TOSHIBA

SERVICE MANUAL

FINISHER

MJ-1011

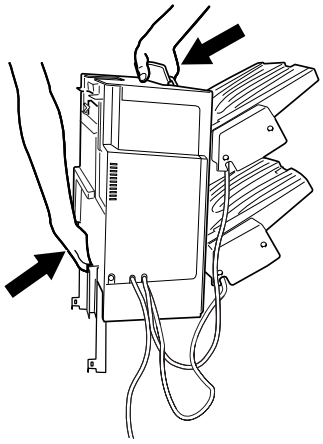


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General Precautions for Installation/Servicing/Maintenance

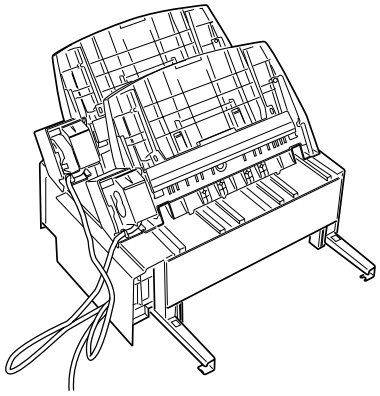
The installation and service should be done by a qualified service technician.

1. When installing the Finisher MJ-1011 to the Plain Paper Copier, be sure to follow the instructions described in the “Unpacking/Set-Up Procedure for the MJ-1011” booklet which comes with each unit of the MJ-1011.
2. The MJ-1011 should be installed by an authorized/qualified person.
3. Before starting installation, servicing or maintenance work, be sure to unplug the copier first.
4. When servicing or maintaining the MJ-1011, be careful about the rotating or operating sections such as gears, pulleys, sprockets, cams, belts, etc.
5. When parts are disassembled, reassembly is basically the reverse of disassembly unless otherwise noted in this manual or other related materials. Be careful not to assemble small parts such as screws, washers, pins, E-rings, toothed washers to the wrong places.
6. Basically, the machine should not be operated with any parts removed or disassembled.
7. Delicate parts for preventing safety hazard problems (such as breakers, thermofuses, fuses, door switches, sensors, etc. if any) should be handled/installed/adjusted correctly.
8. Use suitable measuring instruments and tools.
9. During servicing or maintenance work, be sure to check the serial No. plate and other cautionary labels (if any) to see if they are clean and firmly fixed. If not, take appropriate actions.
10. The PC board must be stored in an anti-electrostatic bag and handled carefully using a wristband, because the ICs on it may be damaged due to static electricity. Before using the wrist band, pull out the power cord plug of the copier and make sure that there is no uninsulated charged objects in the vicinity.
11. For the recovery and disposal of used MJ-1011s, consumable parts and packing materials, it is recommended that the relevant local regulations/rules should be followed.
12. When the Finisher is to be carried, be sure to hold the locations shown in the figures.





13. Place the finisher as shown in the figure below making sure that the cord is not nipped.



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INTRODUCTION

This Service Manual contains basic data and figures for the Finisher MJ-1011 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 adjustments, problem identification and electrical parts arrangement.

Appendix containts general timing chart, tables of signals, circuit diagram and solvent/oils.

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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CHAPTER 1

GENERAL DESCRIPTION

I. FEATURES 1-1
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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 900 sheets (BIN-1: 200 sheets, BIN-2: 700 sheets) of small-size paper or 450 sheets (BIN-1: 100 sheets, BIN-2: 350 sheets) of large-size paper.
  Further, it can hold as many as 80 sets (BIN-1: 30 sets, BIN-2: 50 sets) of stapled stacks (each consisting of up to 30 sheets).

II. SPECIFICATIONS

A. Specifications

<table>
<tr><th colspan="3">Item</th><th colspan="5">Description</th></tr>
<tr><td colspan="3">Stacking</td><td colspan="5">Stack tray (tray lift mechanisms, with intermediary tray fixed in position)</td></tr>
<tr><td colspan="3">Stacking mode</td><td colspan="5">Face-down stacking</td></tr>
<tr><td colspan="2" rowspan="2">Stack paper size</td><td>A/B</td><td colspan="5">A3, A4, A4-R, A5-R, B4, B5, B5-R</td></tr>
<tr><td>Inch</td><td colspan="5">LD, LG, LT, LT-R, ST-R, FOLIO, COMPUTER</td></tr>
<tr><td colspan="3">Paper weight</td><td colspan="5">50 to 200 g/m^2 (Plain paper), 64 to 80 g/m^2 (Recycled paper)</td></tr>
<tr><td colspan="3" rowspan="2">Bins</td><td colspan="5">Stack tray 2</td></tr>
<tr><td colspan="5">Intermediary processing tray 1</td></tr>
<tr><td colspan="3" rowspan="3">Modes</td><td colspan="5">Staple stacking</td></tr>
<tr><td colspan="5">Non-staple stacking</td></tr>
<tr><td colspan="5">Non-staple offset stacking</td></tr>
<tr><td colspan="2" rowspan="2">Stack tray capacity [height (sheets)]</td><td rowspan="2">Bin</td><td colspan="3">Plain Paper/Recycled Paper</td><td rowspan="2"></td></tr>
<tr><td>Small-size*1</td><td>Middle-size*2</td><td>Large-size*3</td></tr>
<tr><td rowspan="6"></td><td rowspan="2">Simple stacking</td><td>1</td><td>30mm (200 sheets)</td><td>20mm (140 sheets)</td><td>15mm (100 sheets)</td><td rowspan="6">Equivalent of 80 g/m^2 paper</td></tr>
<tr><td>2</td><td>99mm (700 sheets)</td><td>70mm (490 sheets)</td><td>49mm (350 sheets)</td></tr>
<tr><td rowspan="2">Job offset</td><td>1</td><td>30mm (200 sheets)</td><td>20mm (140 sheets)</td><td>15mm (100 sheets)</td></tr>
<tr><td>2</td><td>99mm (700 sheets)</td><td>70mm (490 sheets)</td><td>49mm (350 sheets)</td></tr>
<tr><td rowspan="2">Staple stacking</td><td>1</td><td>30 sets (170 sheets)</td><td>30 sets (110 sheets)</td><td>30 sets (80 sheets)</td></tr>
<tr><td>2</td><td>50 sets (600 sheets)</td><td>50 sets (400 sheets)</td><td>50 sets (300 sheets)</td></tr>
<tr><td rowspan="2">Stacking width*4</td><td>Not stapled</td><td colspan="5">139.7 to 297 mm</td></tr>
<tr><td>Stapled</td><td colspan="5">210 to 297 mm</td></tr>
<tr><td colspan="3" rowspan="2">Stacking size</td><td colspan="5">A3, A4, A4-R, B4, B5</td></tr>
<tr><td colspan="5">LD, LG, LT, LT-R, ST-R, FOLIO, COMPUTER</td></tr>
<tr><td colspan="3" rowspan="2">Stapling size</td><td colspan="5">A3, A4, A4-R, B4, B5</td></tr>
<tr><td colspan="5">LD, LG, LT, LT-R, FOLIO, COMPUTER</td></tr>
<tr><td colspan="3">Stack offset width*6</td><td colspan="5">210 to 297 mm</td></tr>
<tr><td colspan="3">Offset width*5</td><td colspan="5">20 mm</td></tr>
</table>

Item	Description	
Stapling method	Punching by rotating cam	
Stapling position	1-point rear, slant (Figure 1-201)	
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-1600)	
Staple detection	Yes	
Manual stapling	No	
Paper detection	Yes	
Control panel	No (operated from copier)	
Display	None (display on copier)	
Dimensions (W×D×H)	431 × 541 × 413 mm	
Weight	17 kg	
Power supply	24V, 5V (from copier)	
Maximum power consumption	40W or less	

*1 Small-size, i.e., A4, A4-R, A5-R, B5, B5-R, postcard, LT, LT-R and ST-R.
*2 Medium-size, i.e., B4 and LG.
*3 Large-size, i.e., A3, FOLIO, COMPUTER and LD.
*4 The width of paper that may be put into order in the 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.

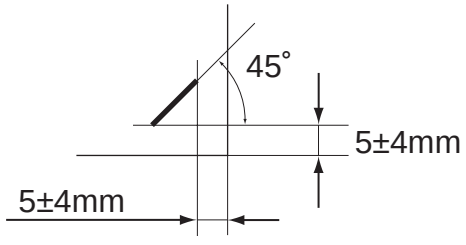
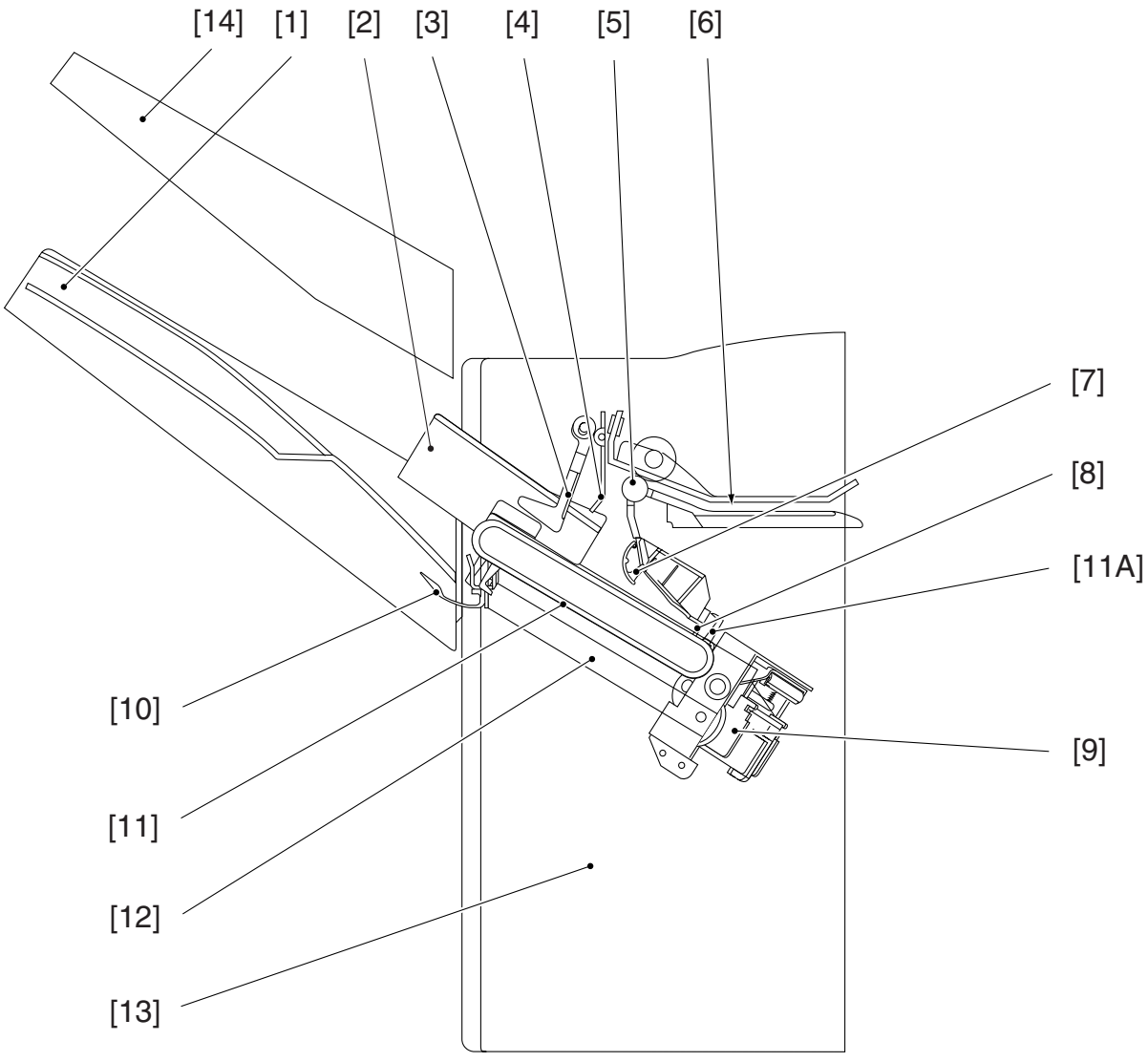


Figure 1-201 Stapling Positions

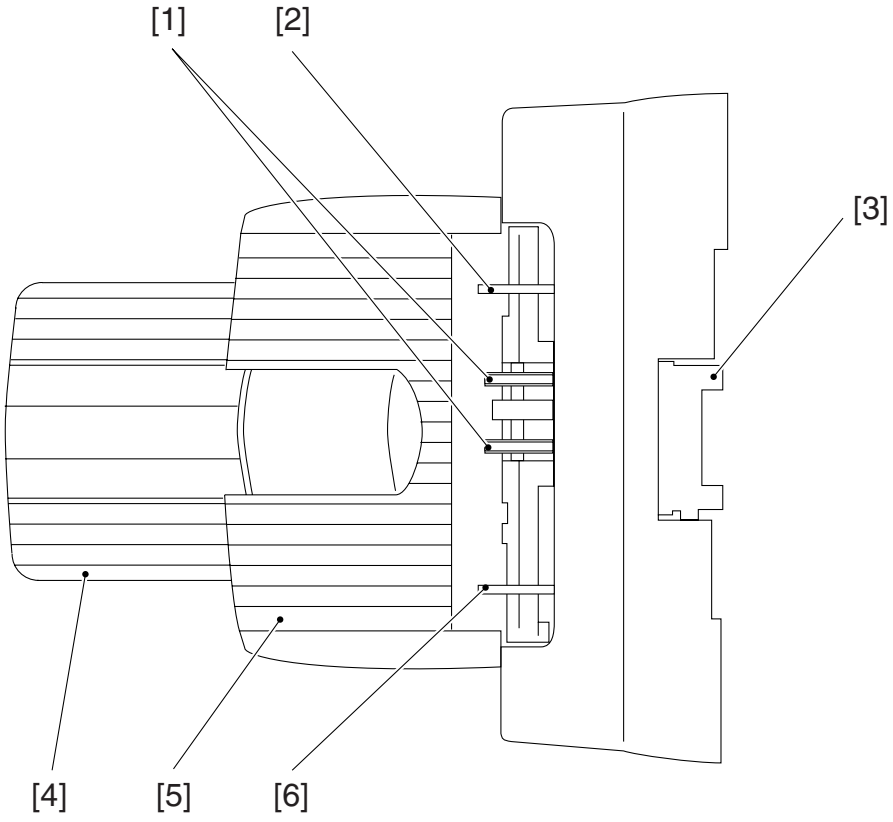
■ Cross Section



[1]	Lower 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	[12]	Intermediary processing tray
[6]	Paper path	[13]	Frame
[7]	Returning roller	[14]	Upper stack tray
[8]	Stopper plate		

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 is turned on to indicate the presence of a jam in the finisher, perform the following:

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

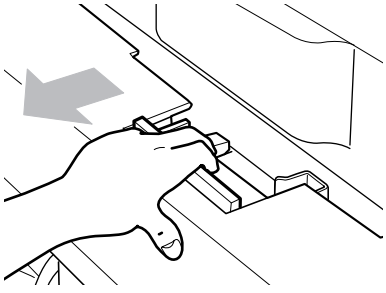


Figure 1-301

2) Remove the paper visible from the outside.

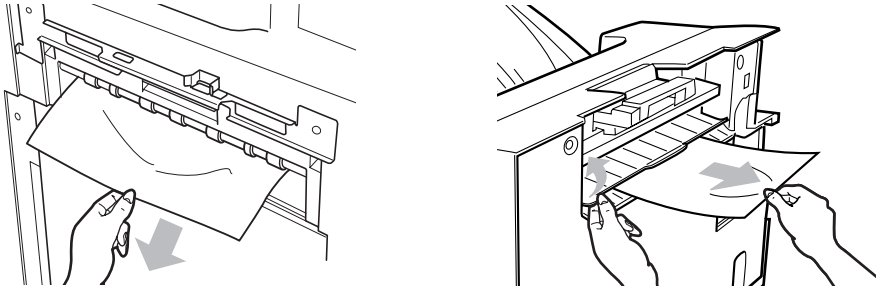


Figure 1-302

Caution:

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

3) Connect the finisher to the copier.

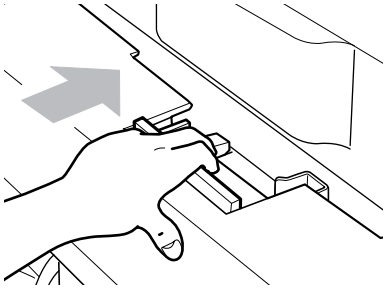


Figure 1-303

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.

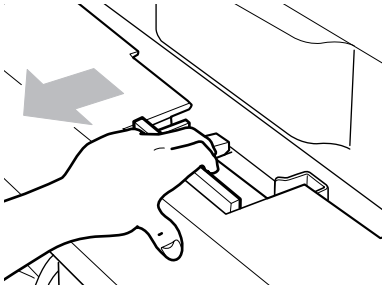


Figure 1-304

2) Pick up the staple cartridge by its left and right side (light blue) and pull it off.

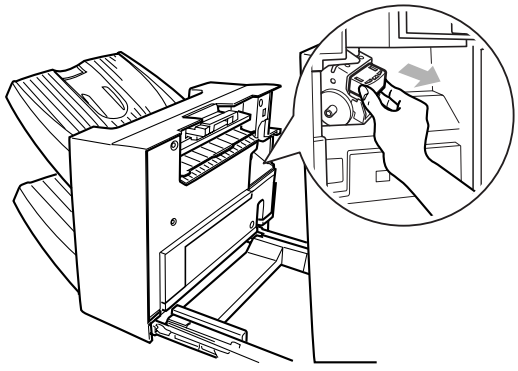


Figure 1-305

3) Pick up the empty staple case by its left and right side and pull it off.

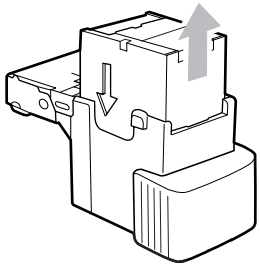


Figure 1-306

4) Set the new staple case.

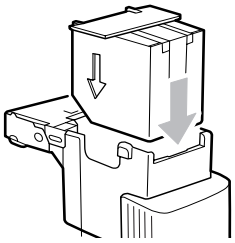


Figure 1-307

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.

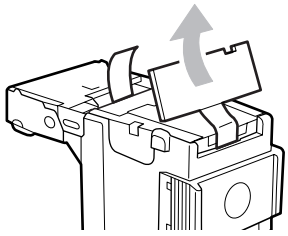


Figure 1-308

6) Fit the staple cartridge into the stapler unit.

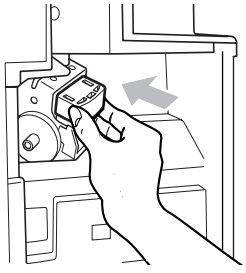


Figure 1-309

7) Connect the finisher to the copier.

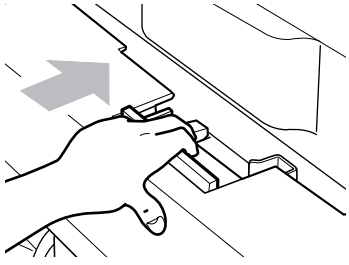


Figure 1-310

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.

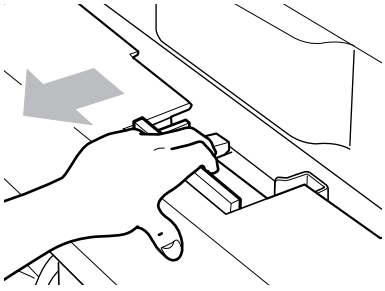


Figure 1-312

3) Pick up the staple cartridge by its left and right side (light blue) and pull it off.

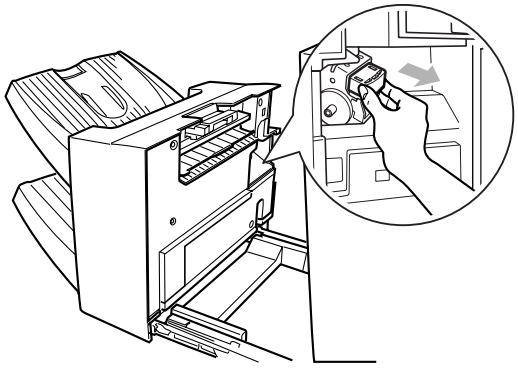


Figure 1-313

4) Shift down the staple cartridge.

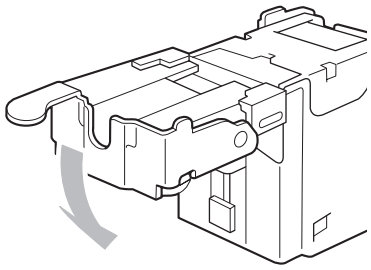


Figure 1-314

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

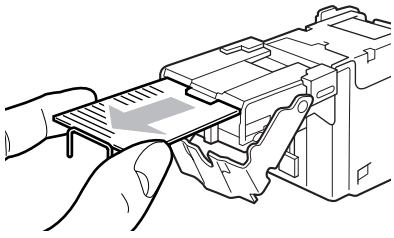


Figure 1-315

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

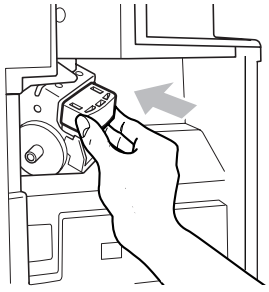


Figure 1-316

7) Connect the finisher to the copier.

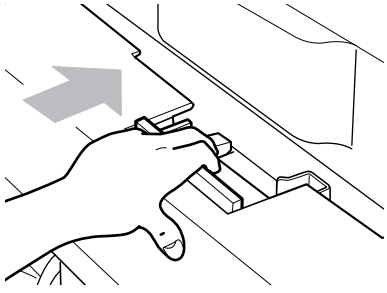


Figure 1-317

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

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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.

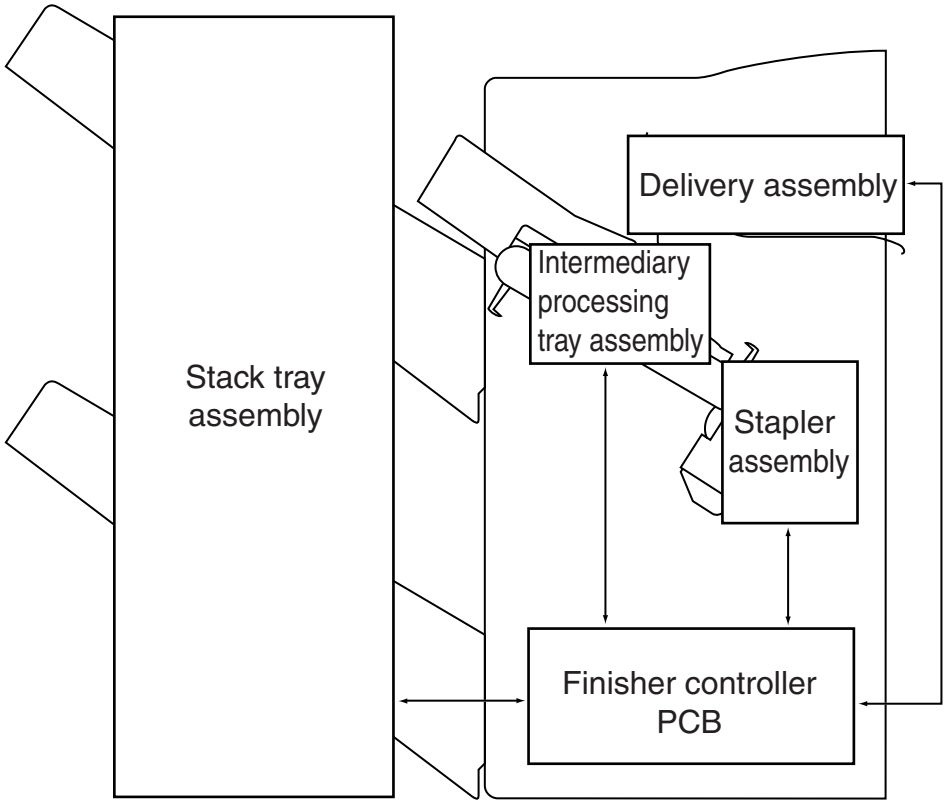


Figure 2-101

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 solenoids, motors etc., 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 the serial mode of communication.

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

- IC1 (CPU): Controls sequence
- IC2 (RAM): Stores various kinds of data temporarily
- IC3 (ROM): Stores sequence program
- IC4 (Communication IC): Communicates with the copier

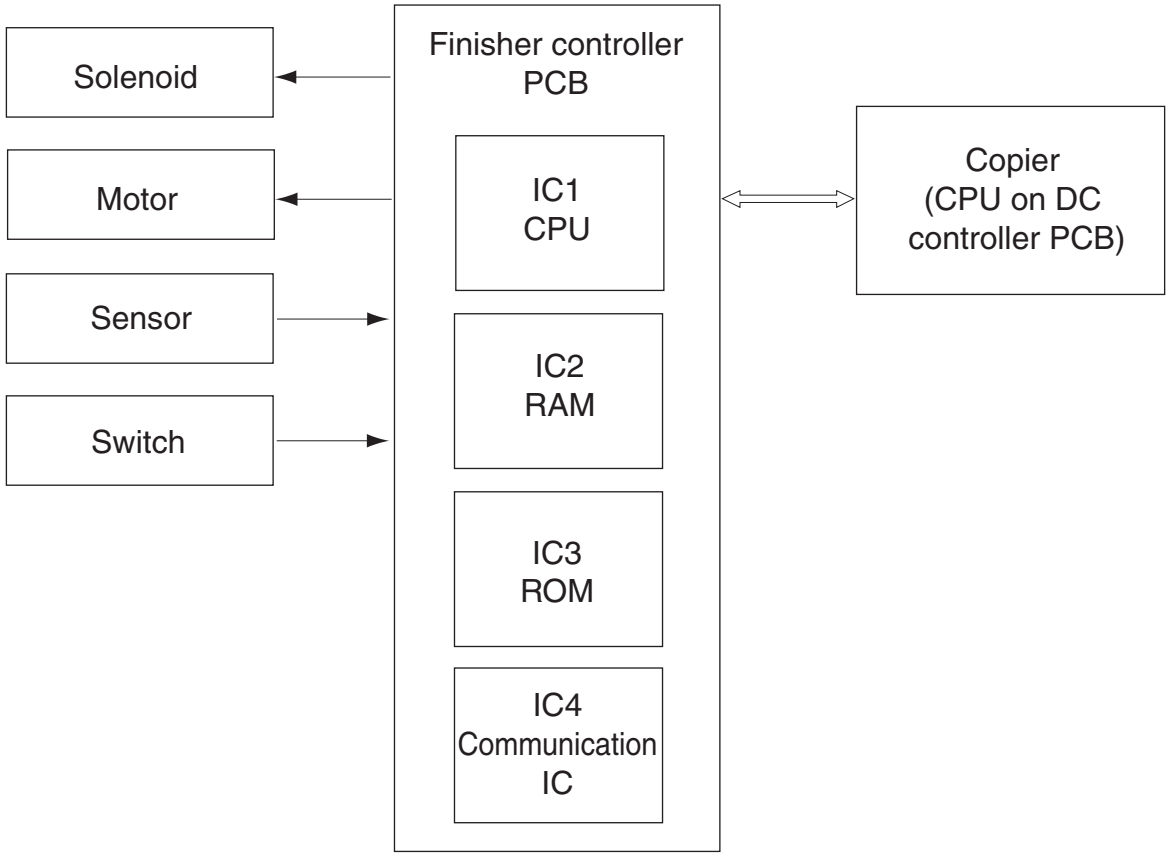


Figure 2-102

C. Inputs to and Outputs from the Finisher Controller PCB

- Inputs to the Finisher Controller PCB (1/3)

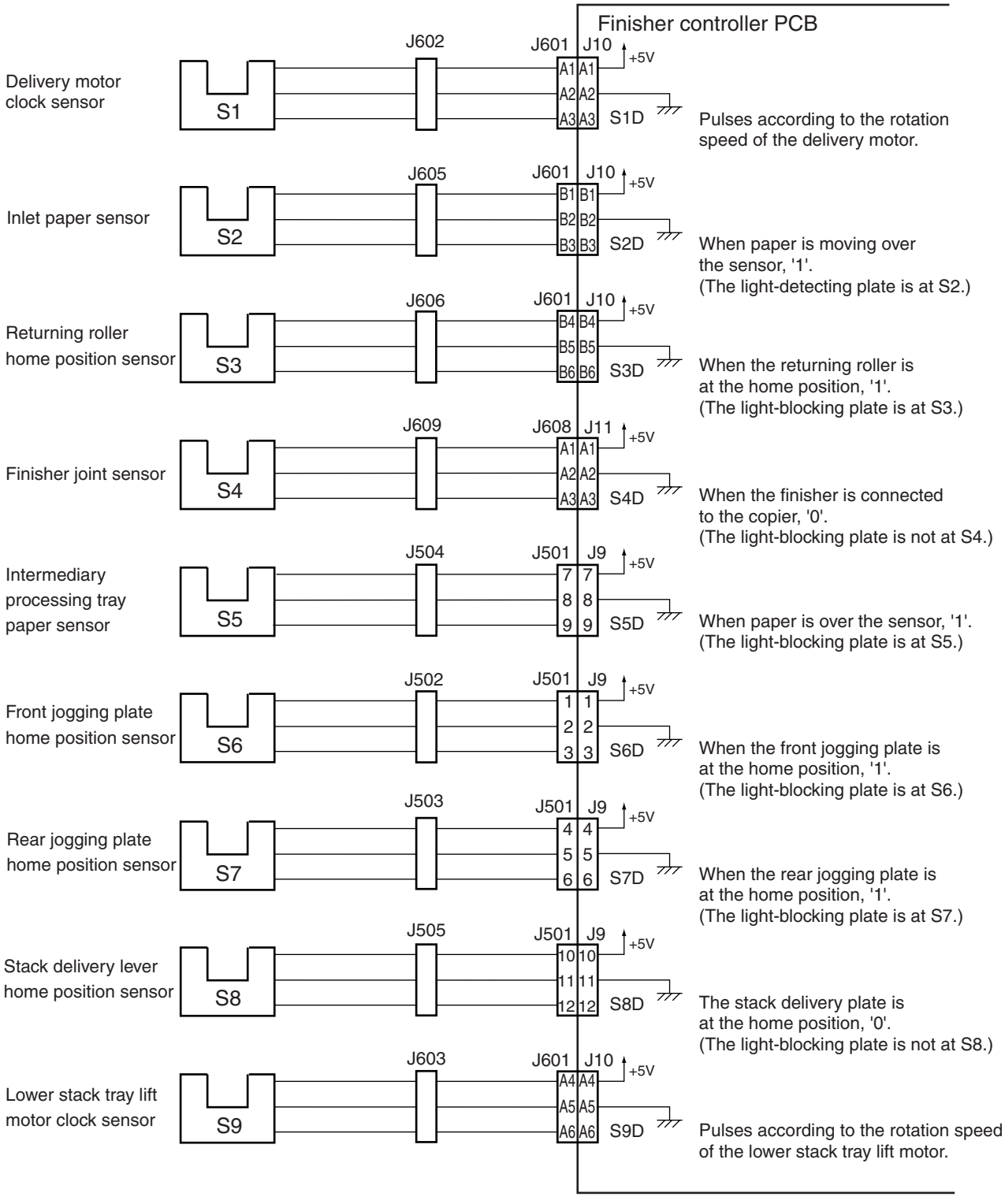


Figure 2-103

- Inputs to the Finisher Controller PCB (2/3)

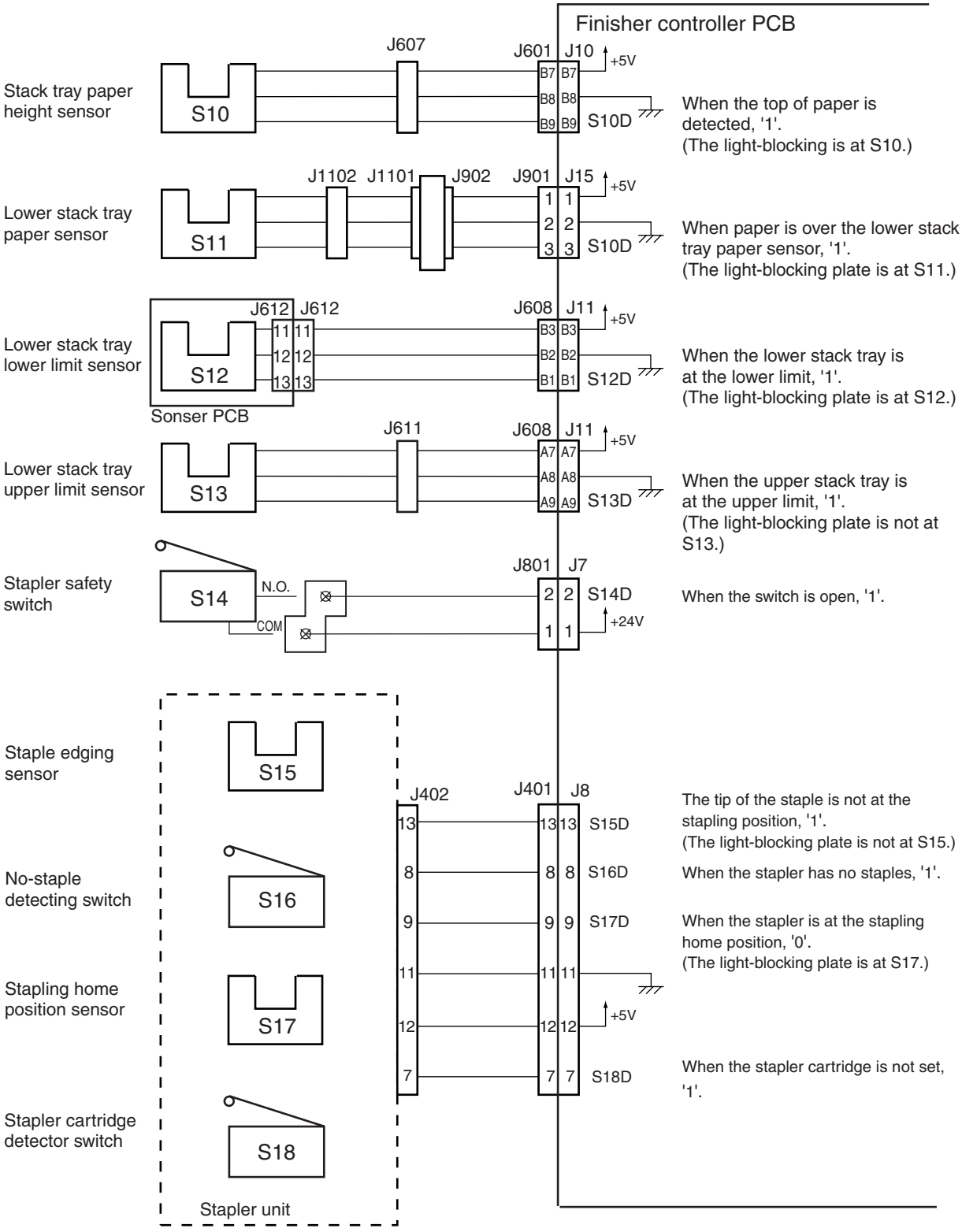


Figure 2-104

- Inputs to the Finisher Controller PCB (3/3)

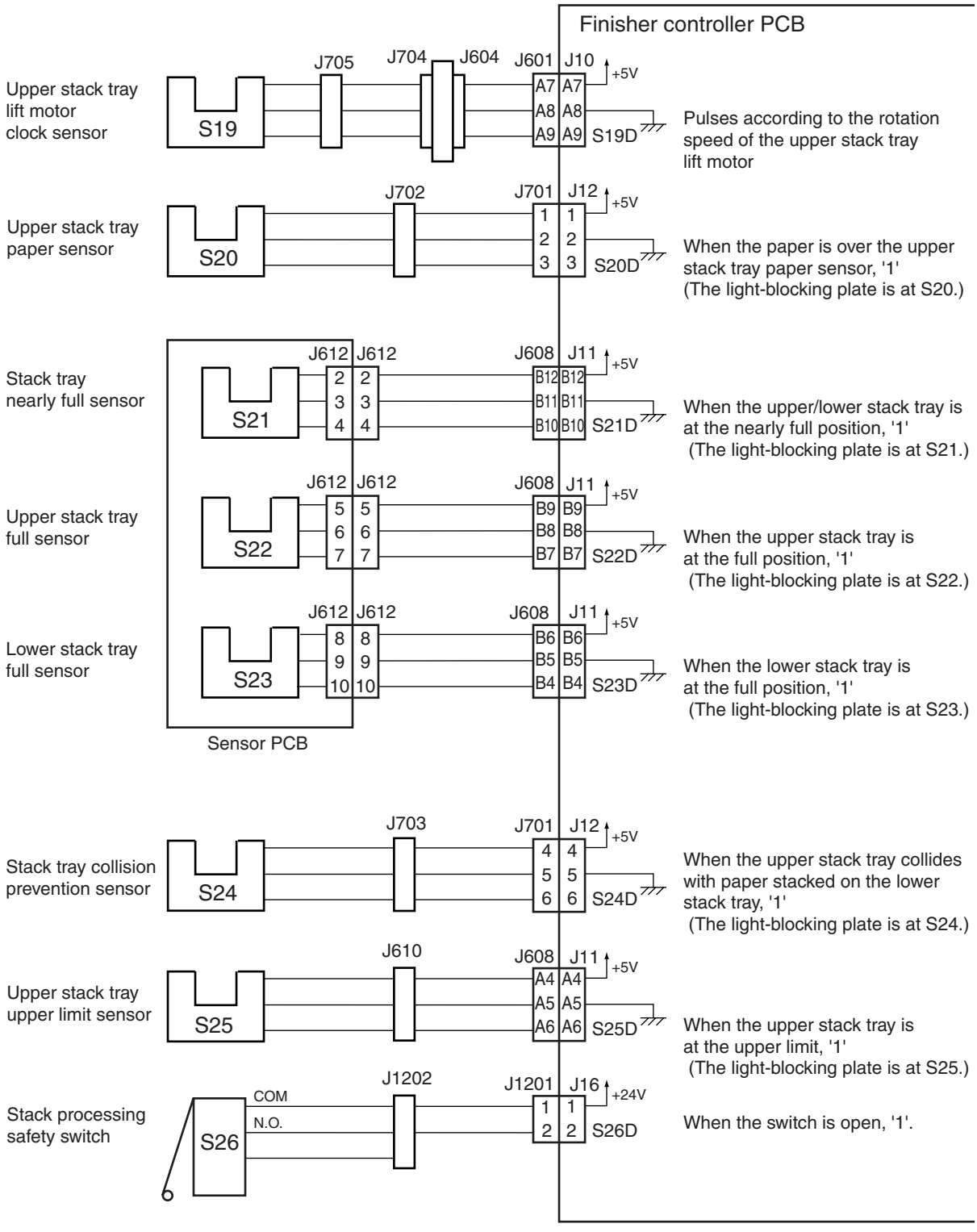


Figure 2-105

• Outputs of the Finisher Controller PCB (1/2)

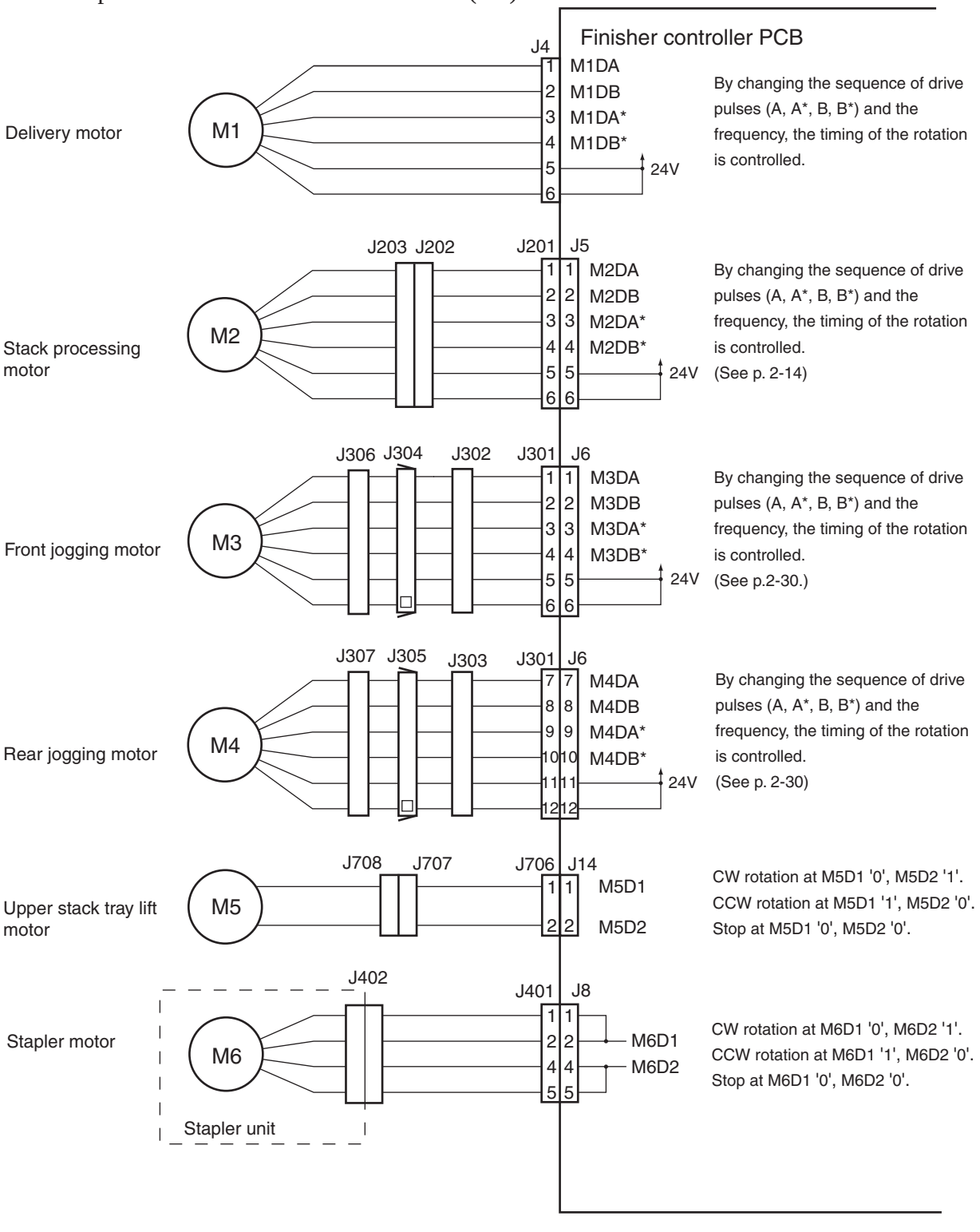


Figure 2-106

• Outputs of the Finisher Controller PCB (2/2)

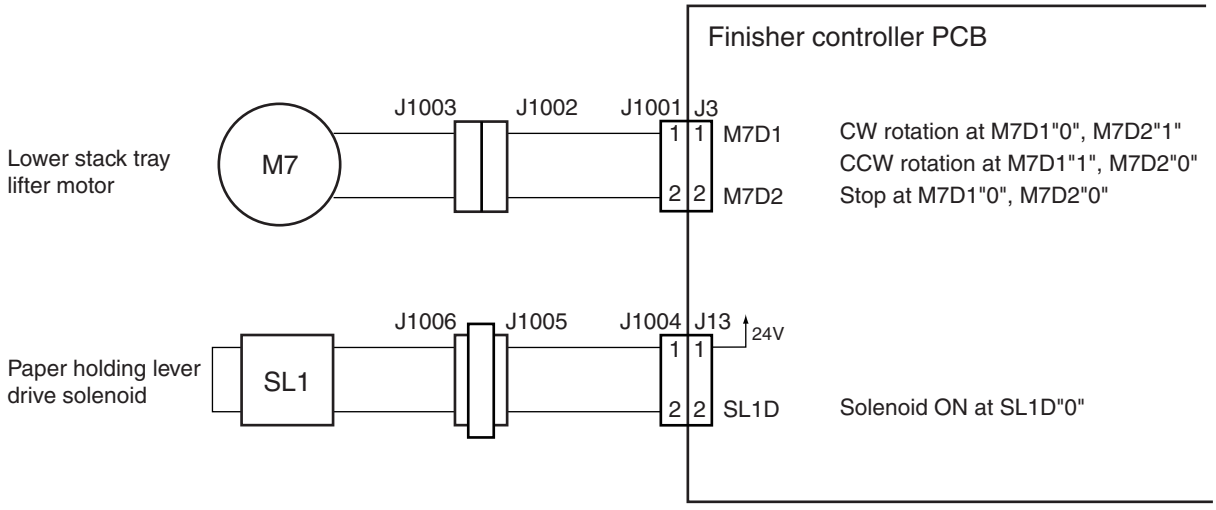


Figure 2-107

II. BASIC OPERATIONS

The finisher is designed to operate as follows:

1. Paper arrives from the copier.

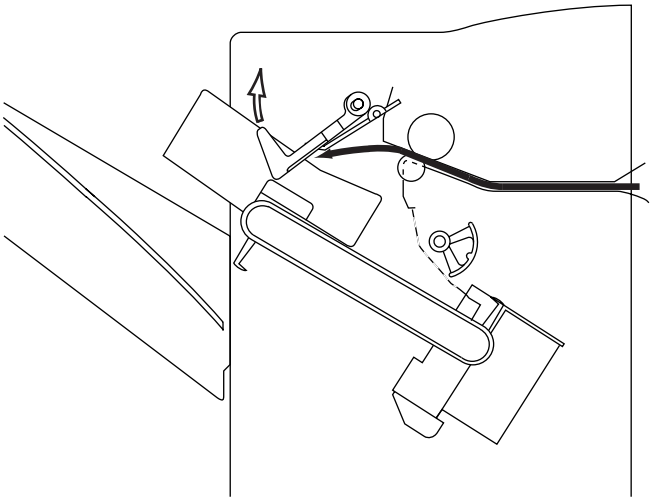


Figure 2-201

2. Paper reaches the intermediary processing tray.

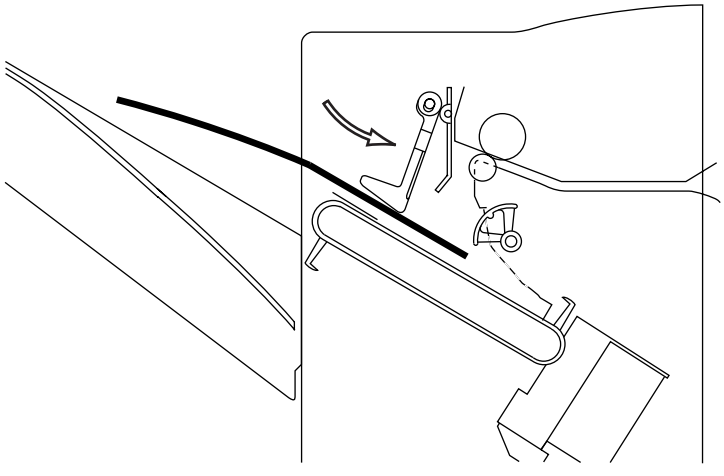


Figure 2-202

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

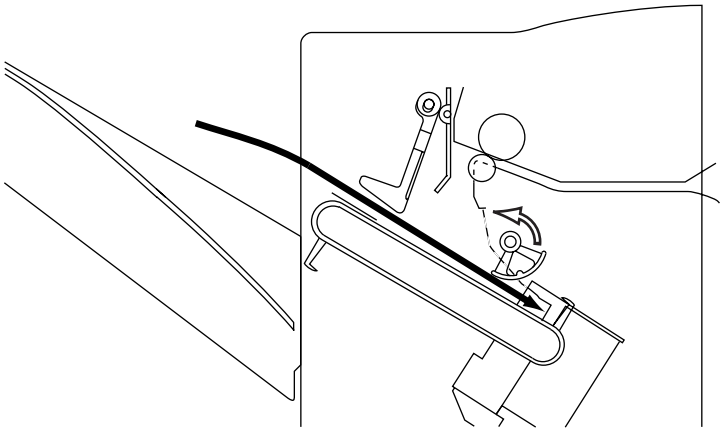


Figure 2-203

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

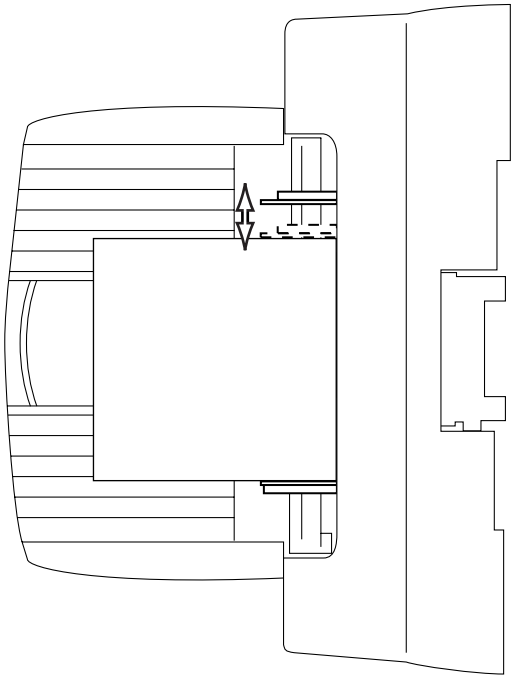


Figure 2-204

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).

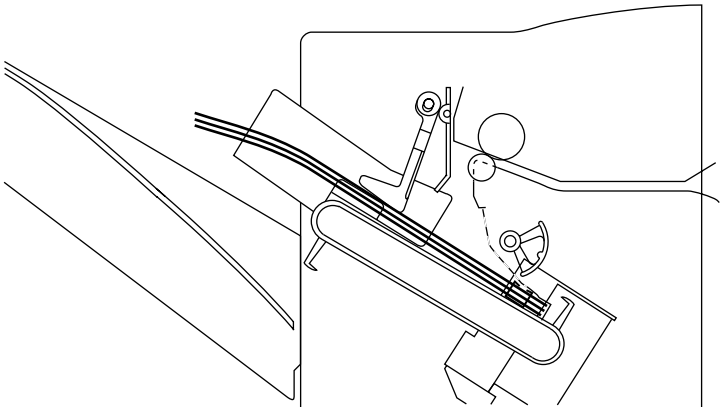


Figure 2-205

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

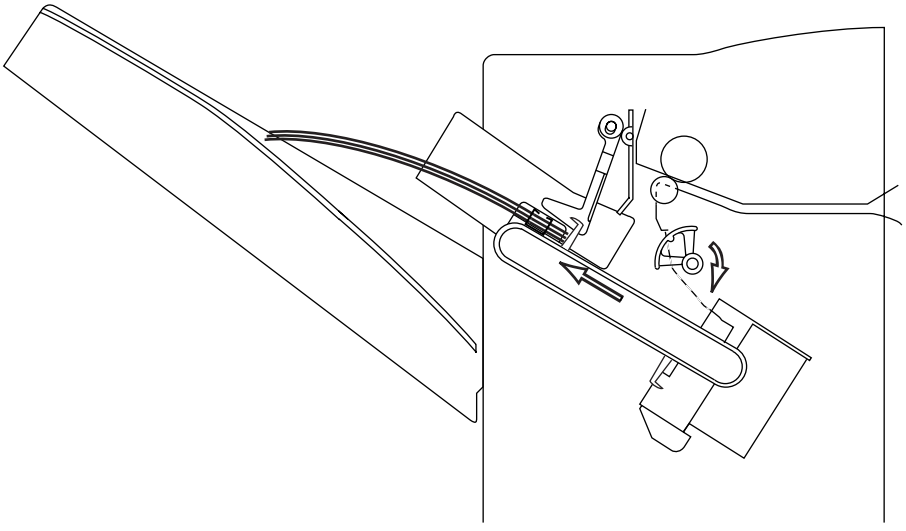


Figure 2-206

III. FEEDING DRIVE SYSTEM

A. Outline

Paper coming from the copier is sent to the intermediary processing tray, on which it is arranged 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

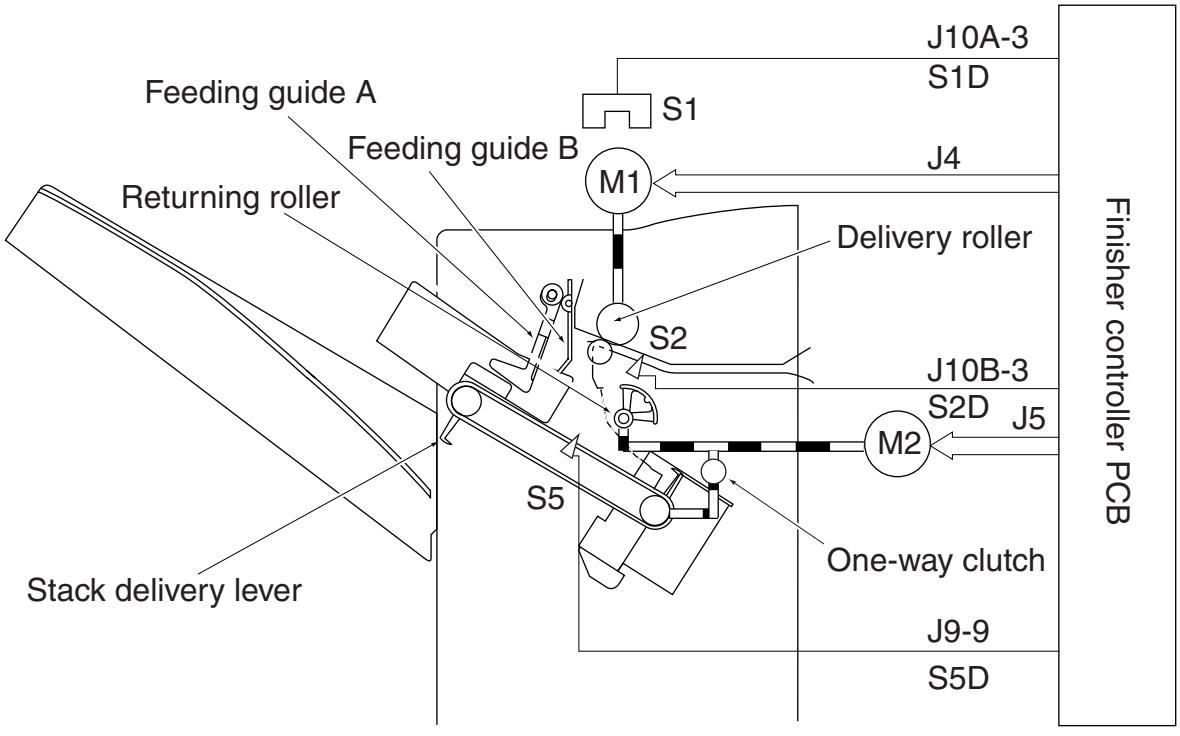


Figure 2-301

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.

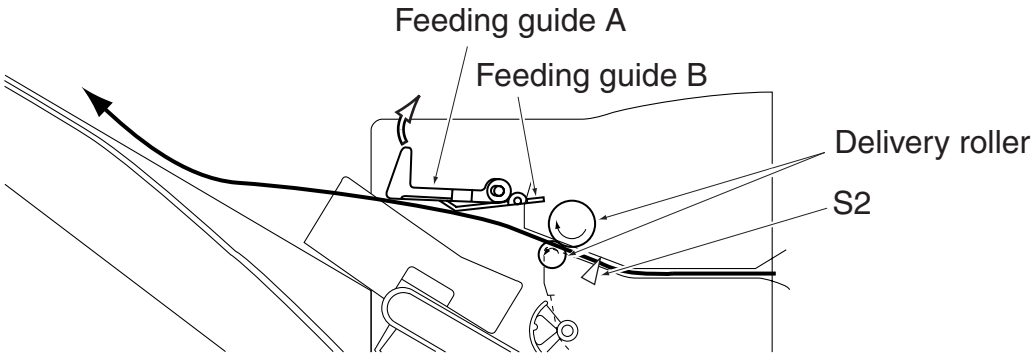


Figure 2-302

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) is turned 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.

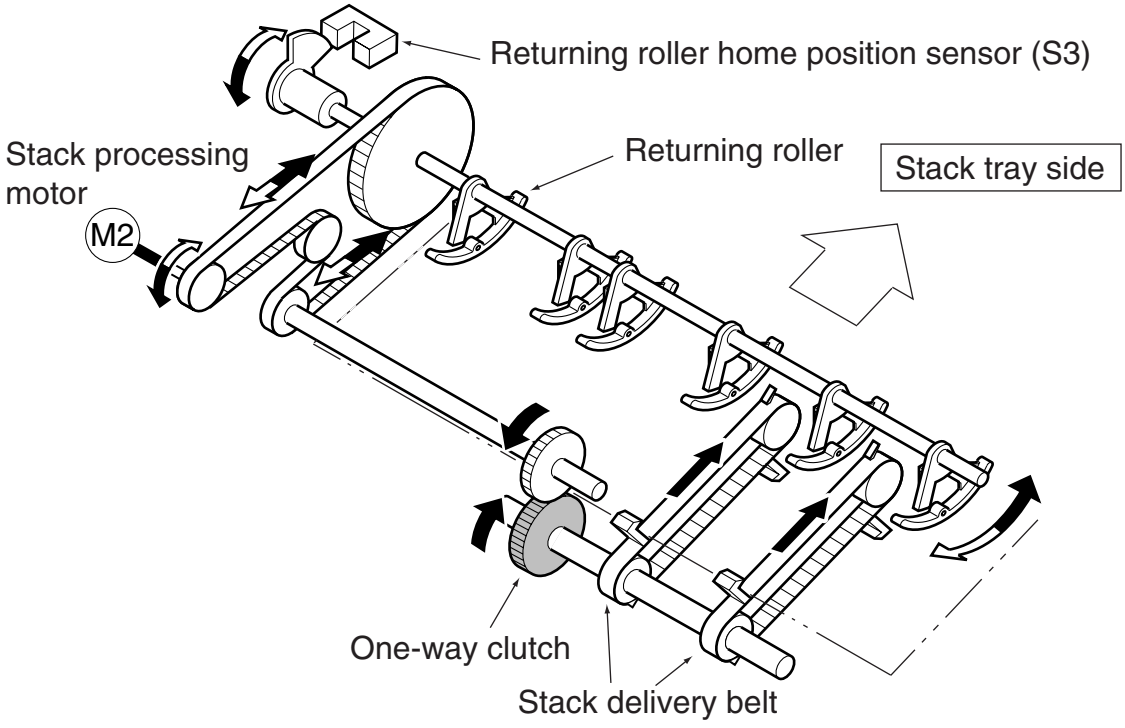


Figure 2-401

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 the 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 IC10, 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 IC10.

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).

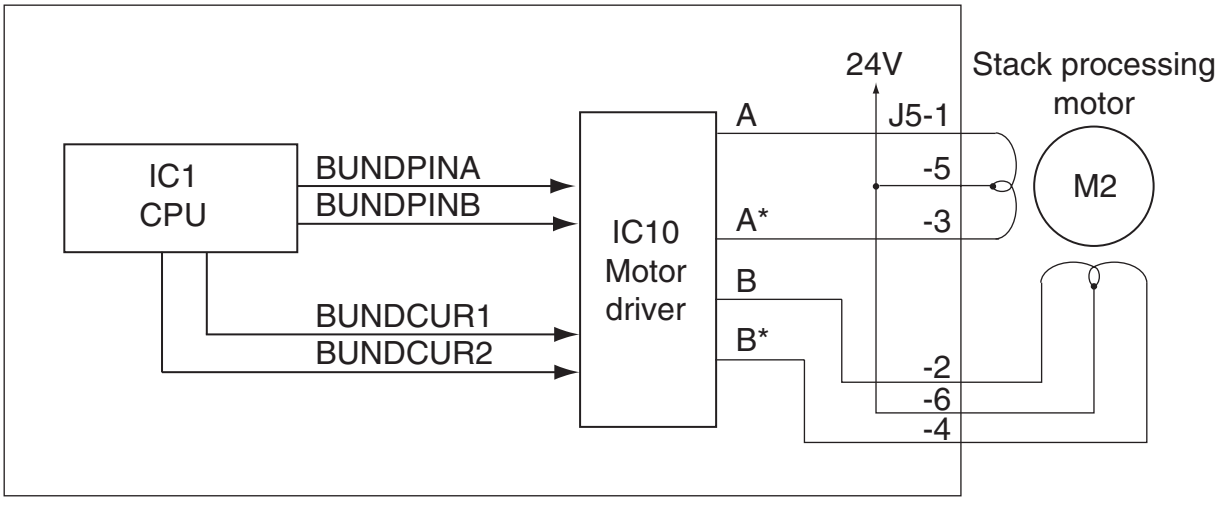


Figure 2-402

3. Stacking Limit on the Intermediary Processing Tray

The intermediary processing tray is capable of holding as many 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			

Small-size: A4, A4-R, A5-R, B5, B5-R, postcard, LT, LT-R, ST-R
Medium-size: B4, LG
Large-size: A3, FOLIO, COMP, LD

Table 2-402

B. Returning Roller

1. Outline

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

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

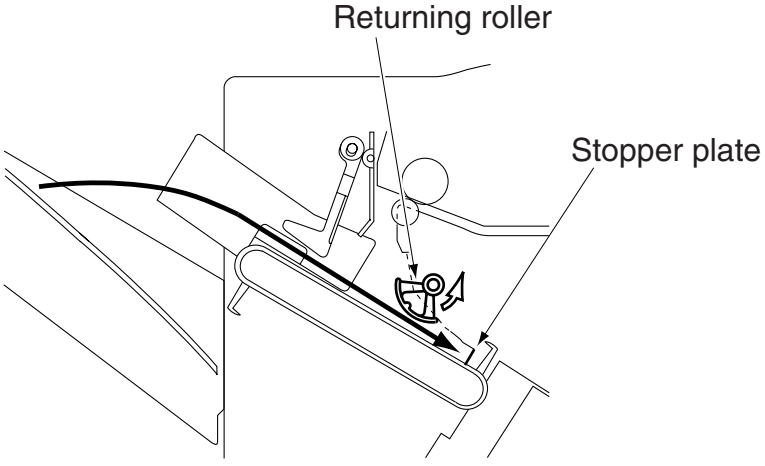


Figure 2-403

2. Outline of Operations

The returning roller operates as follows:

1. Paper arrives from the copier.

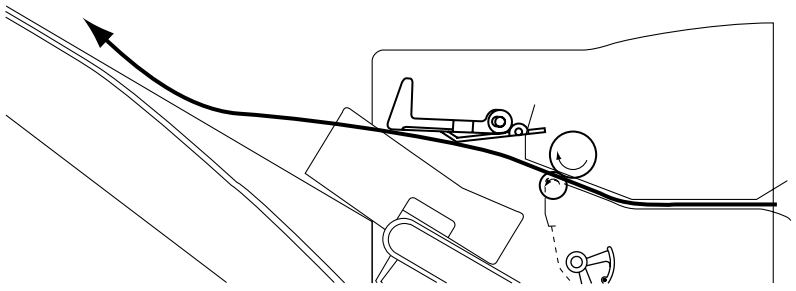


Figure 2-404a

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

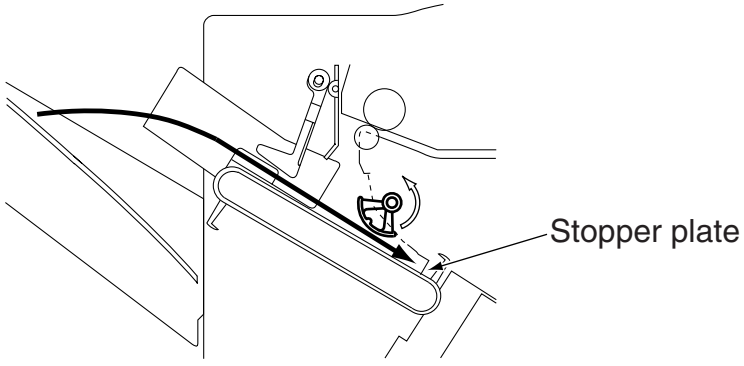


Figure 2-404b

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 the paper in position.

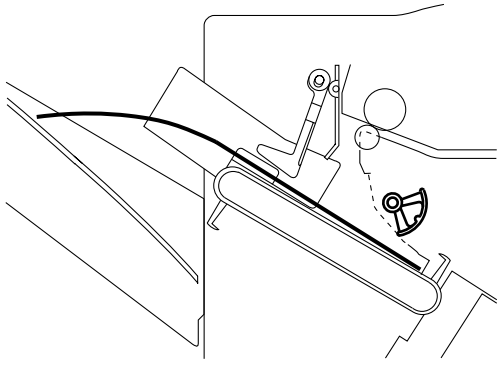


Figure 2-404c

4. When the next sheet of 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.

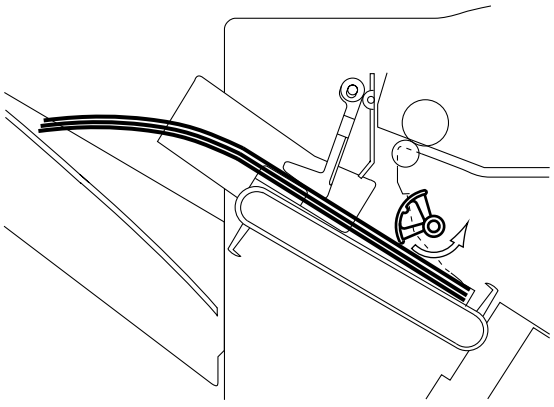


Figure 2-404d

5. When a single set has been arranged, 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.”)

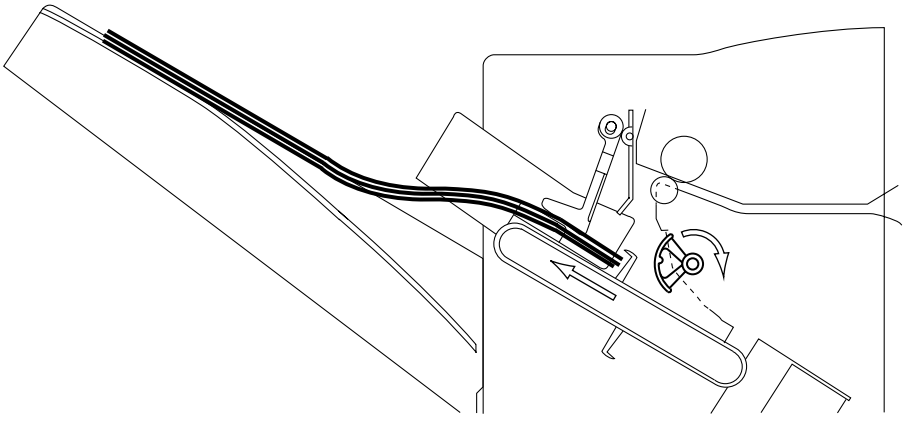


Figure 2-404e

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.

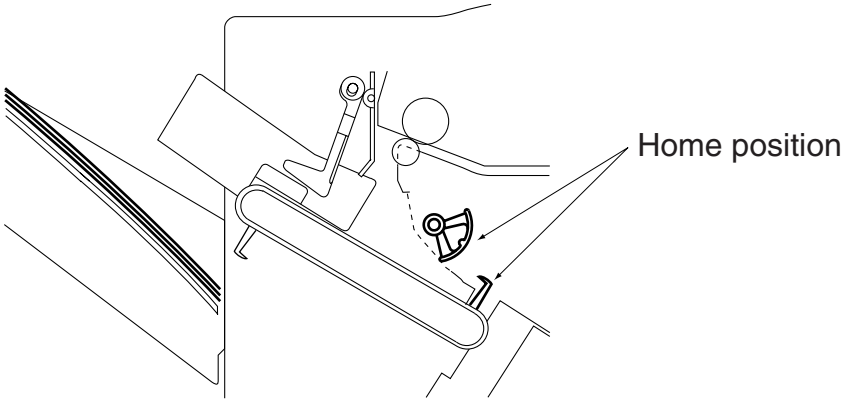


Figure 2-404f

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.

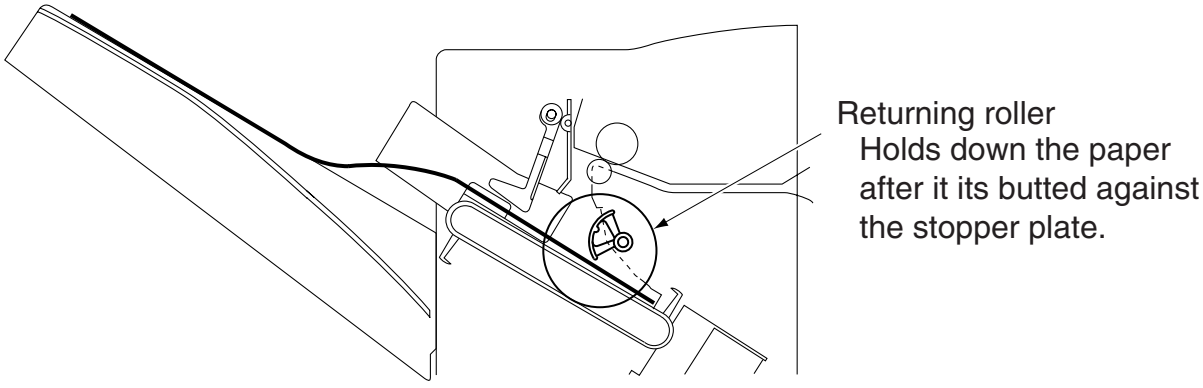
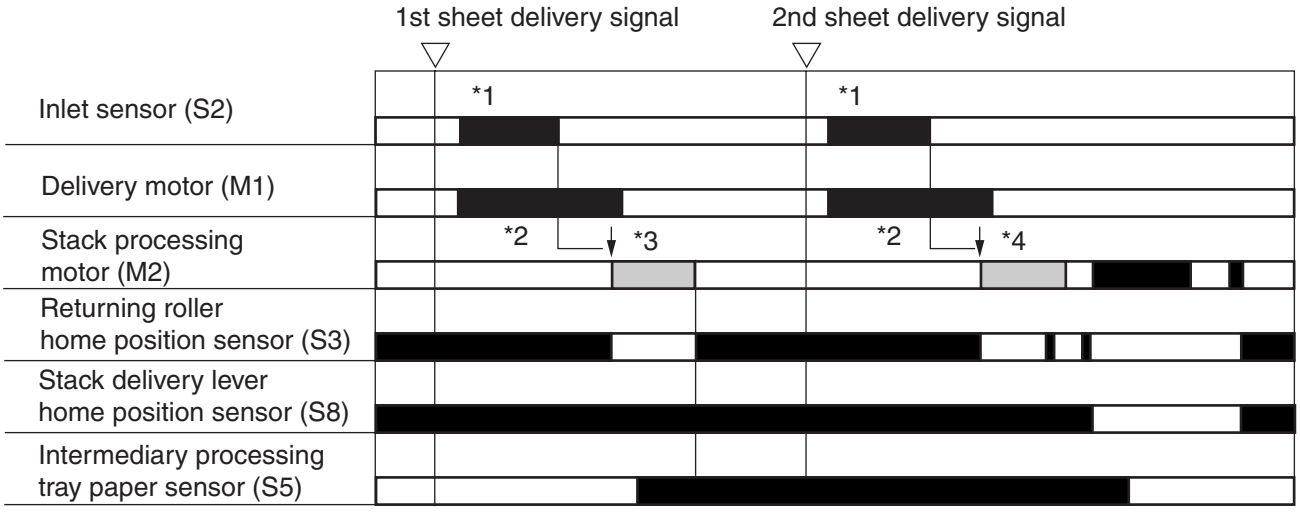


Figure 2-405

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 2-406

(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 the returning operation, the returning roller is driven continuously and stopped where its end can hold down the paper.
*5: Holds down the 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 2-407

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.

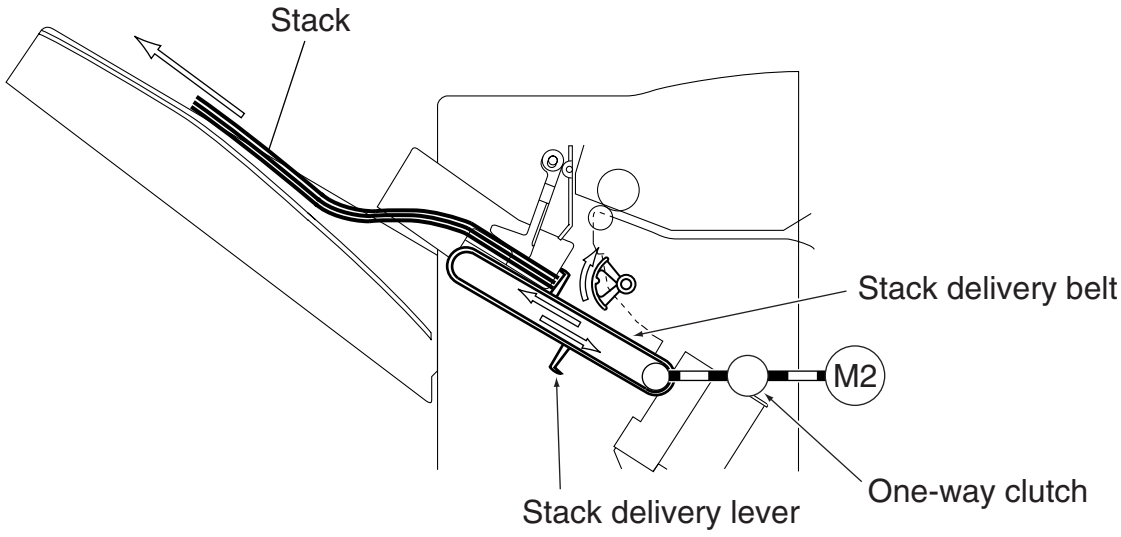


Figure 2-408

2. Outline of Operations

The stack delivery belt operates as follows:

1. When the copier's 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 arranged. As many sheets as specified are stacked on the intermediary processing tray.

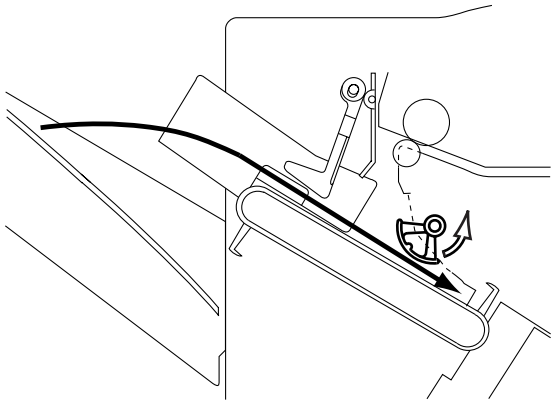


Figure 2-409a

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.

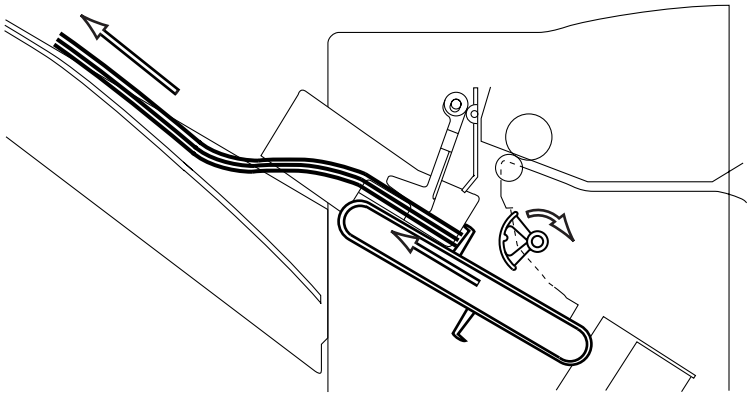


Figure 2-409b

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.

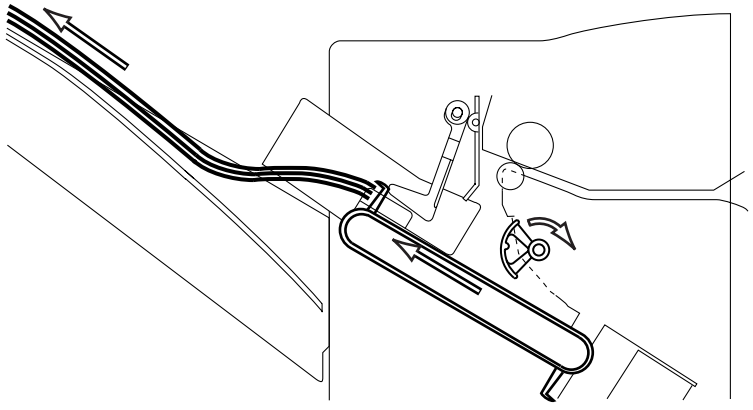


Figure 2-409c

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

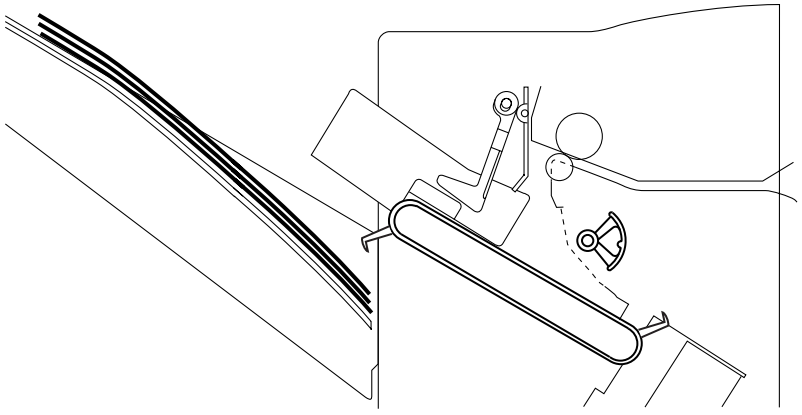


Figure 2-409d

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.

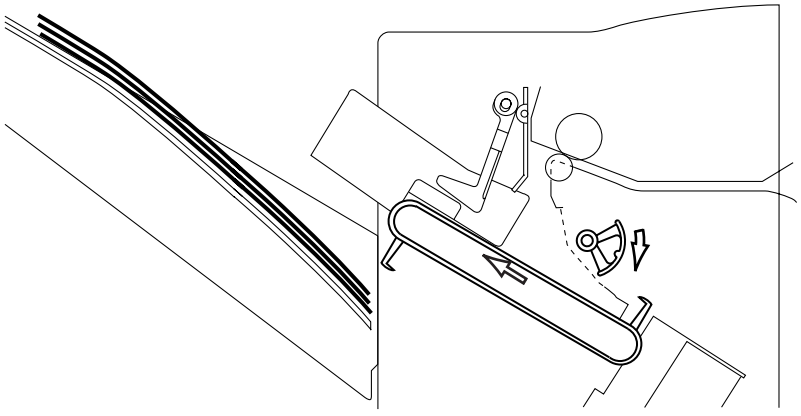
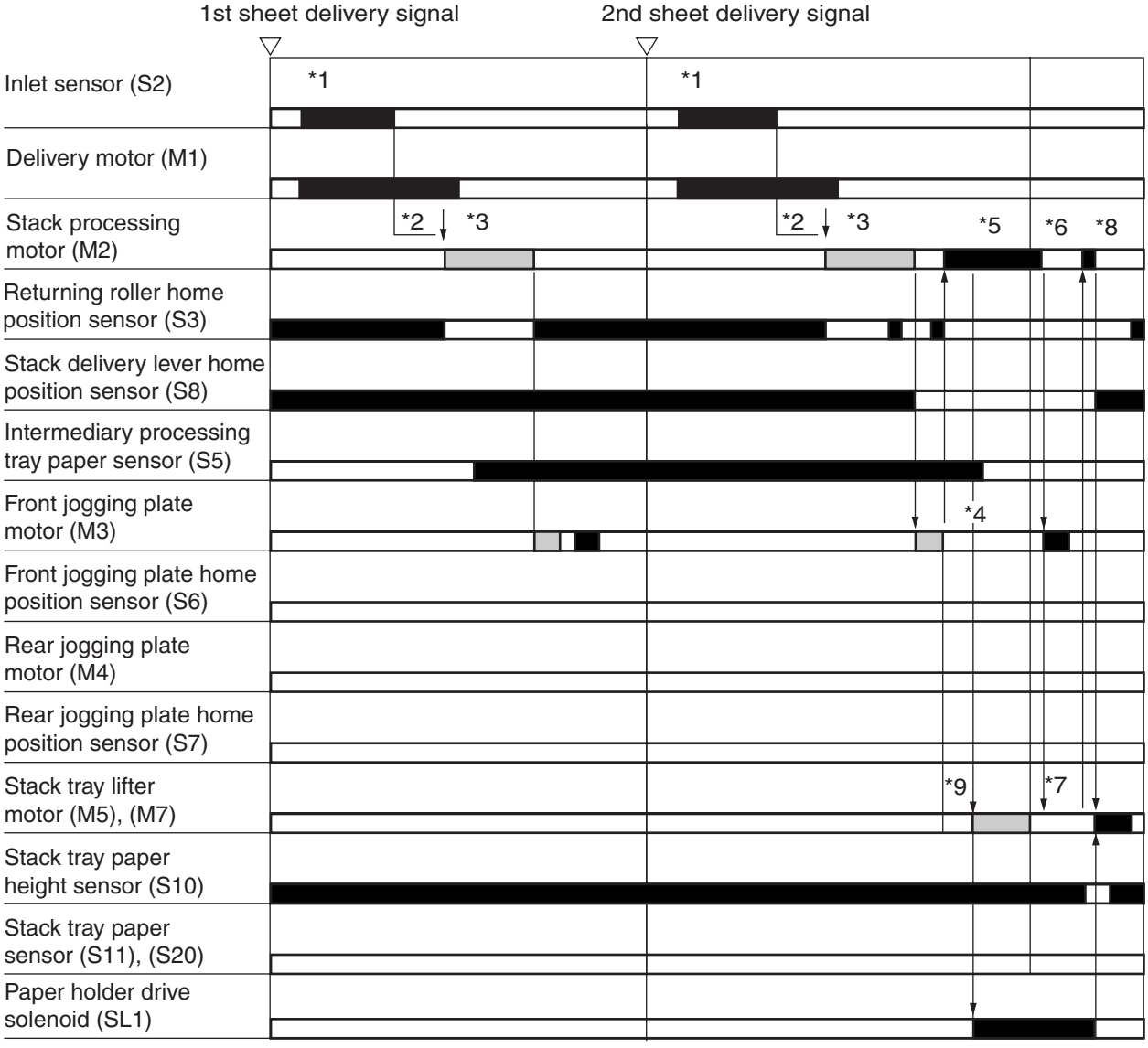


Figure 2-409e

3. Sequence of Operations

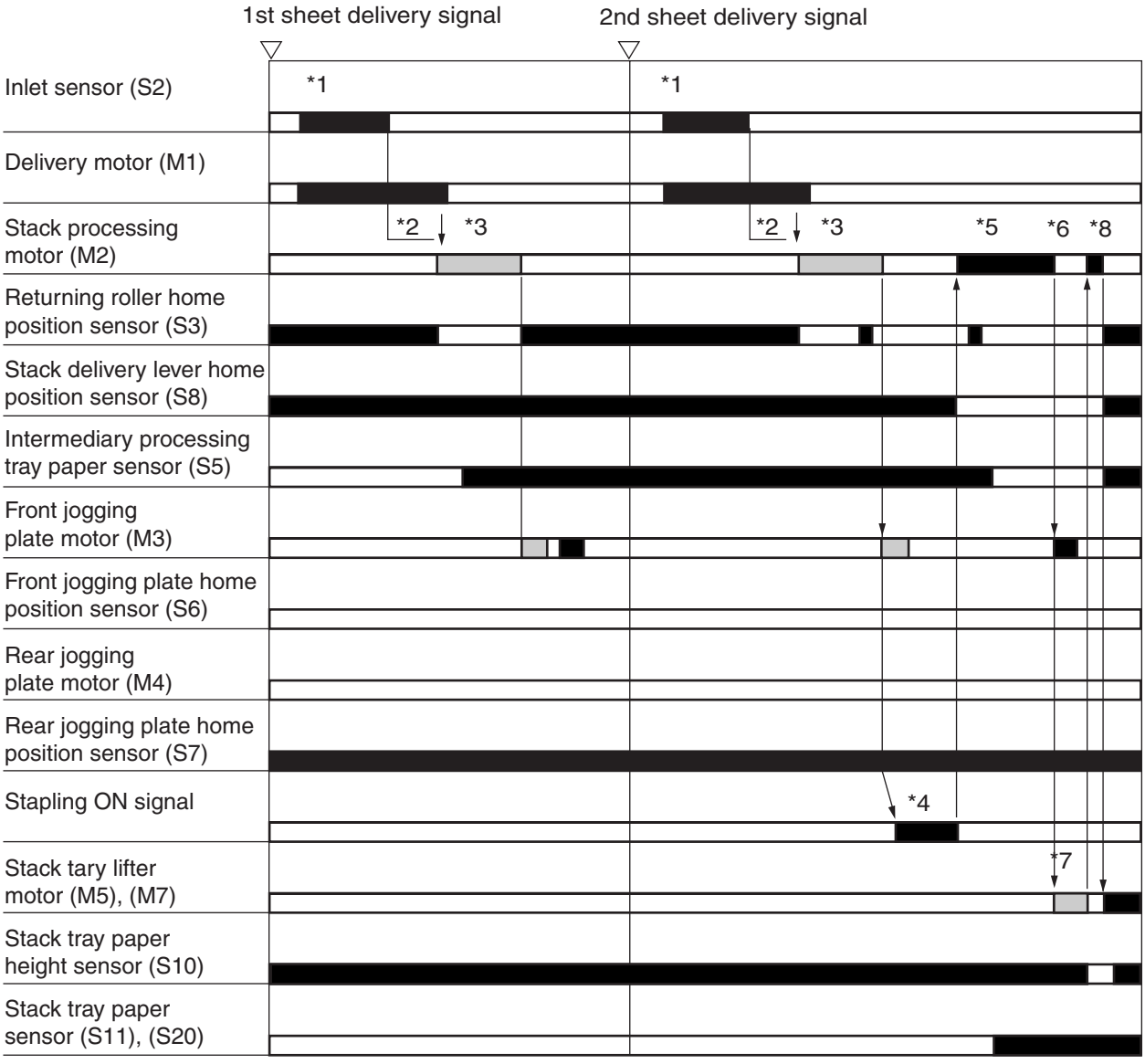


: CW rotation : CCW rotation

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 is turned OFF.
*8: After the stack tray has moved up and stopped, driven until the stack delivery lever reaches its home position.
*9: Comes ON 0.2 sec. after the stack processing motor turns ON.

Figure 2-410a



: 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 at 0.1 sec after the returning roller is turned off
*5: 0.5 sec.
*6: Stops temporarily.
*7: Driven until the stack tray paper height sensor is turned off.
*8: When the stack tray has moved up and stopped, driven until the stack delivery lever reaches its home position.

Figure 2-410b

D. Arranging Sheets and Offsetting Sheets

1. Outline

Sheets are arranged in a 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 (S6) 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 arranged and possible sizes:

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

Table 2-403

	Possible sizes
Small-size	A4, A4-R, B5 LT, LT-R, ST-R
Medium-size	B4 LG
Large-size	A3, FOLIO, COMP LD

Table 2-404

Reference:

The finisher is initialized at the start of the operation. At power-on, the front/rear jogging plates move to the home position if they are not at the home position.

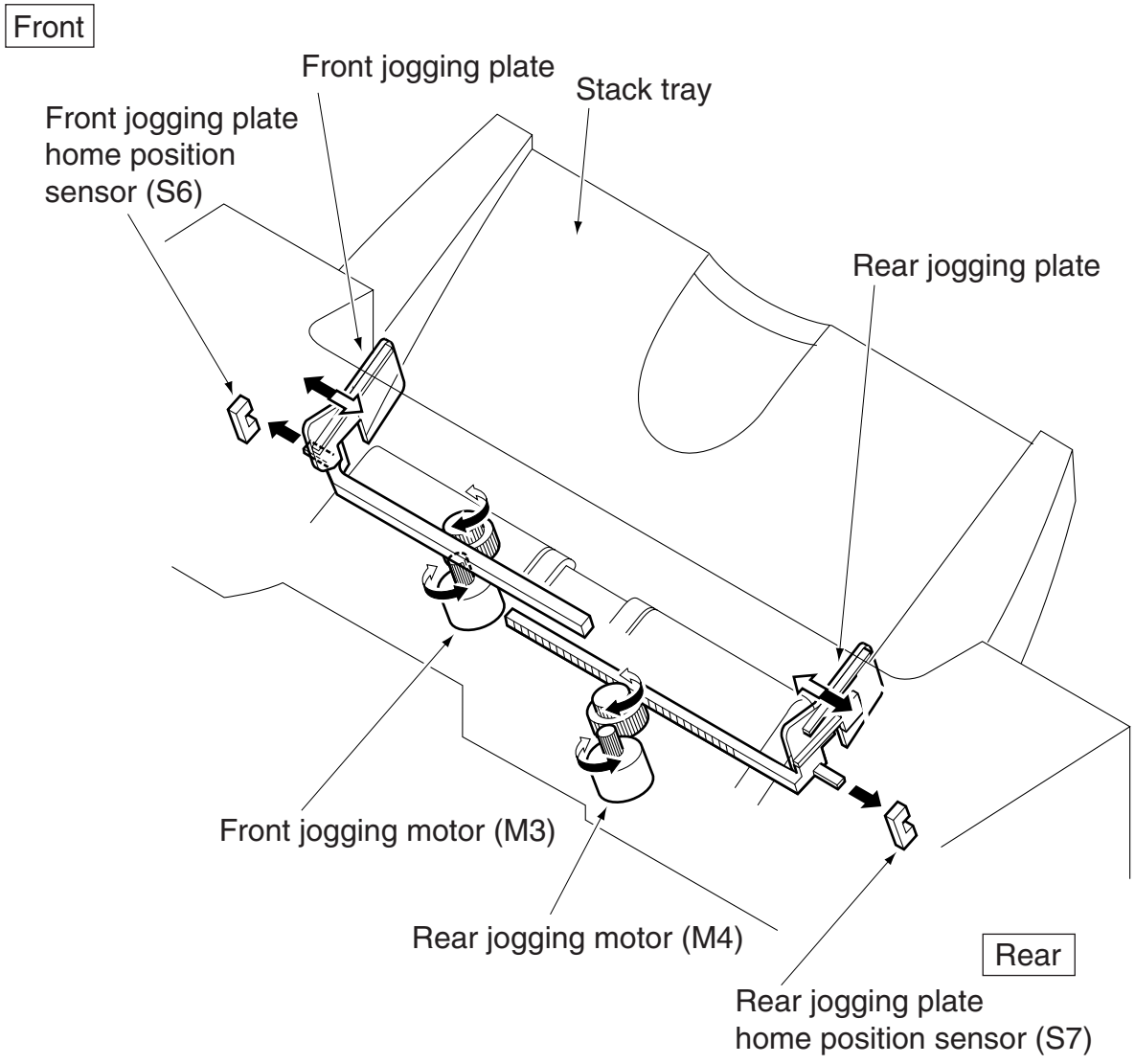

Front
Front jogging plate
Stack tray
Front jogging plate
home position
sensor (S6)
Rear jogging plate
Front jogging motor (M3)
Rear jogging motor (M4)
Rear
Rear jogging plate
home position sensor (S7)

Figure 2-411

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.

IC1 (CPU) generates 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

IC1 controls the timing of JOGPINA and JOGPINB to suit the direction (clockwise/counterclockwise) and speed of the motor.

IC1 generates either FJOGPER or BJOGPER depending on which motor to drive. When FJOGPER is generated, IC11 sends JOGPINA and JOGPINB to IC12 (motor driver IC) in response to FJOGPER.

IC12 generates 4-phase motor drive signals (FJOGA, FJOGB, FJOG_A, FJOB_B) in response to JOGPINA and JOGPINB. Likewise, IC11 sends JOGPINA and JOGPINB to IC13 (motor driver IC) in response to BJOGPER.

IC13 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 signals and the motor in question is driven in response.

To keep the motor at rest, IC12 and IC13 continue to generate the phase signals they sent, thereby putting the motor on hold.

FJOGCUR, BJOGUR and JSTPOFF from IC1 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)
Keeping the motor free	Current OFF (free)

Table 2-406

Finisher controller PCB

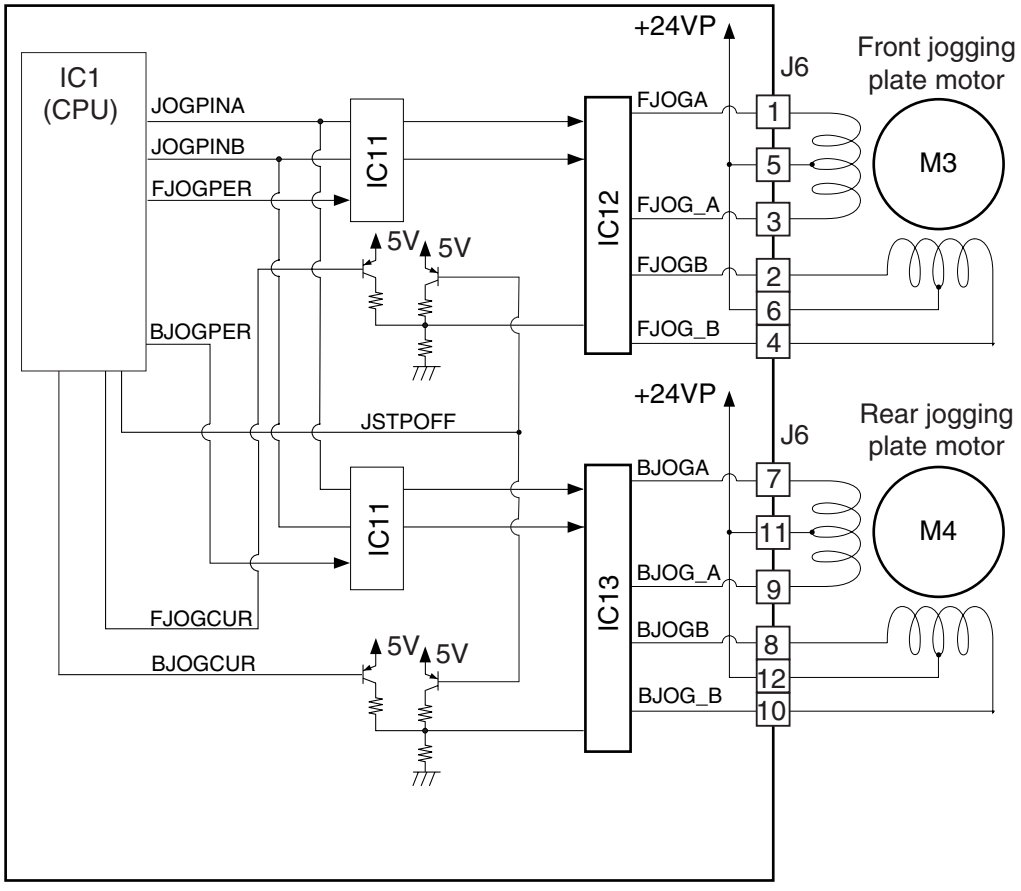


Figure 2-412

3. Rear Jogging (staple sort)

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

When the 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 is 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 the feeding direction. The paper is then moved to the stapling position, and arranged once again toward the rear by the work of the front jogging plate.

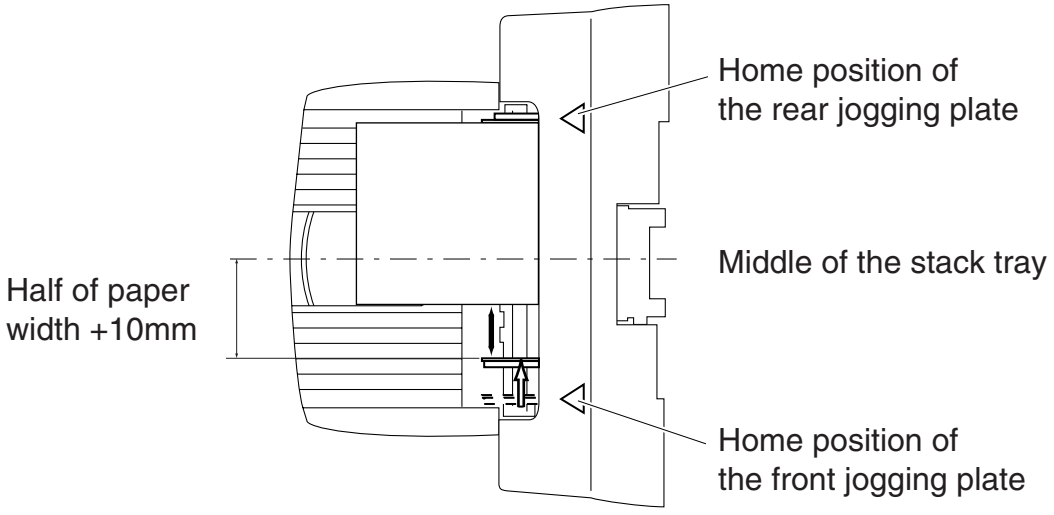


Figure 2-413a

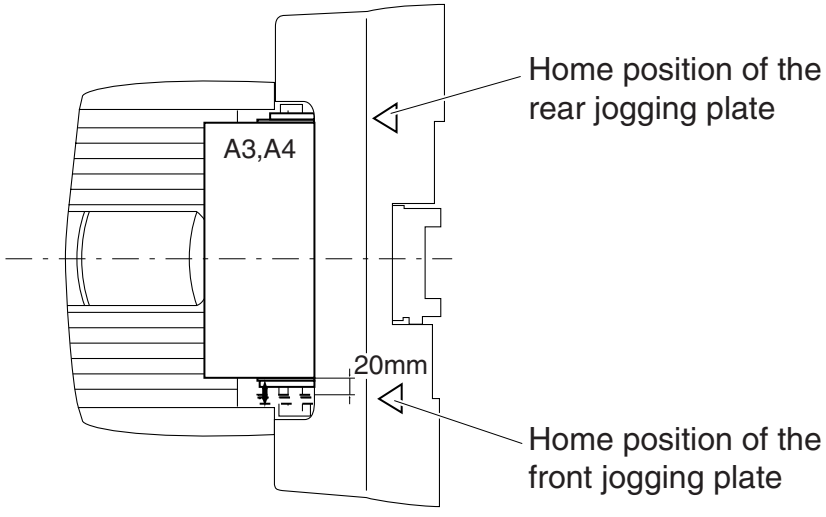


Figure 2-413b

4. Offset Jogging (non stapling)

a. Sort

In the sort mode, the stack of sheets on the intermediary processing tray is moved so that it is arranged; this is called the “offset operation.”

The distance of the offset is 20 mm.

The direction of the offset (front/rear) of each set is the opposite of the direction of the 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. the width of paper placed in the middle of the stack tray + 10 mm on both sides (Figure 2-414a).

Sheets are arranged 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 the jogging operation (Figure 2-414b).

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 arranged in the same direction.

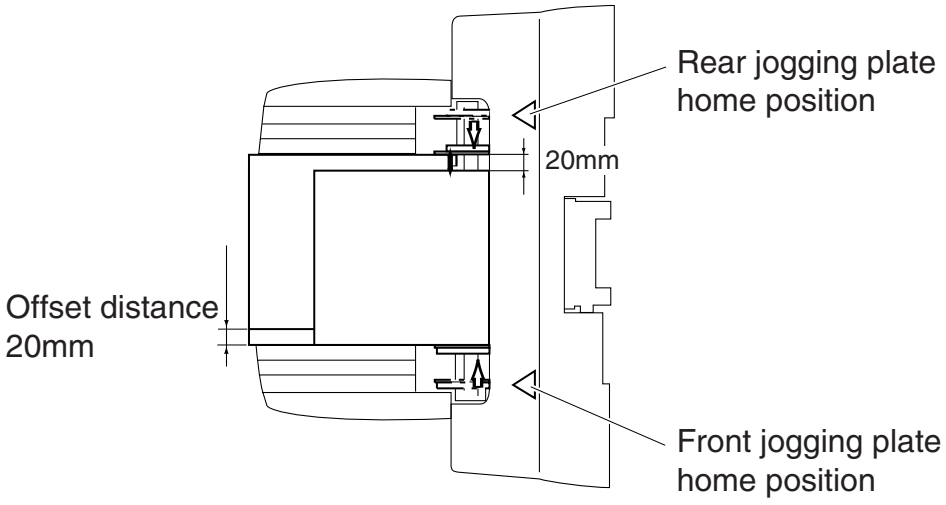


Figure 2-414a

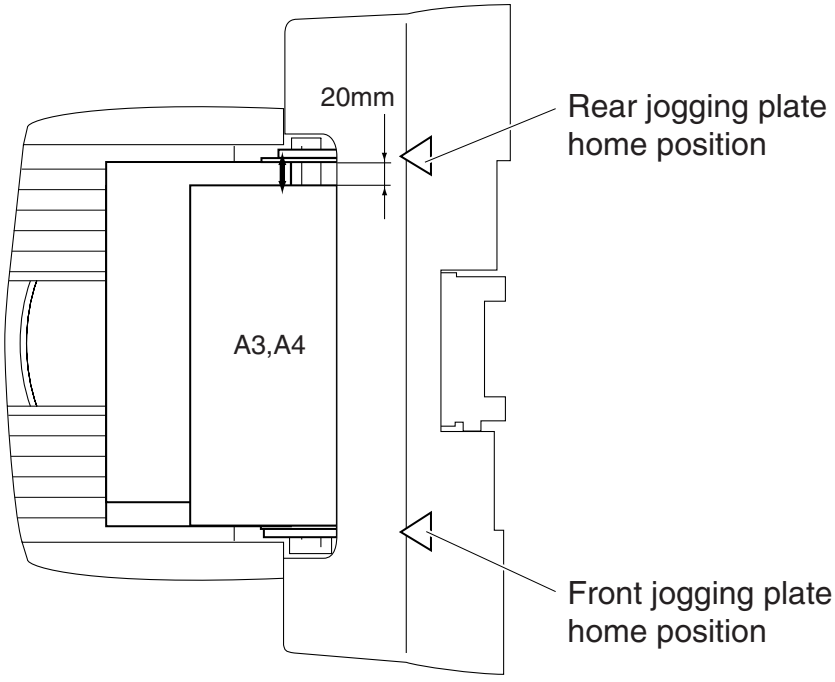


Figure 2-414b

b. Non-Sort

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

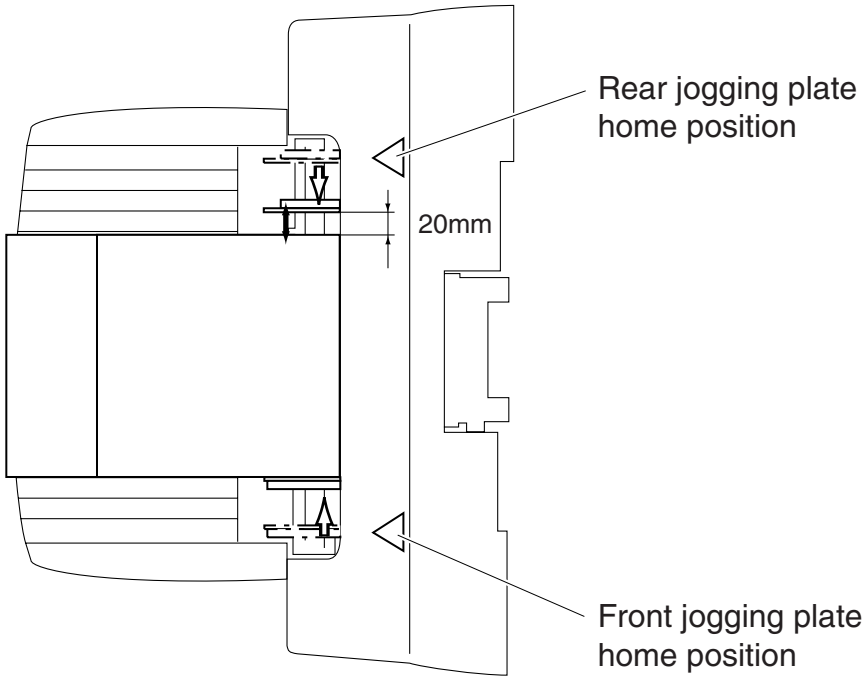


Figure 2-415a

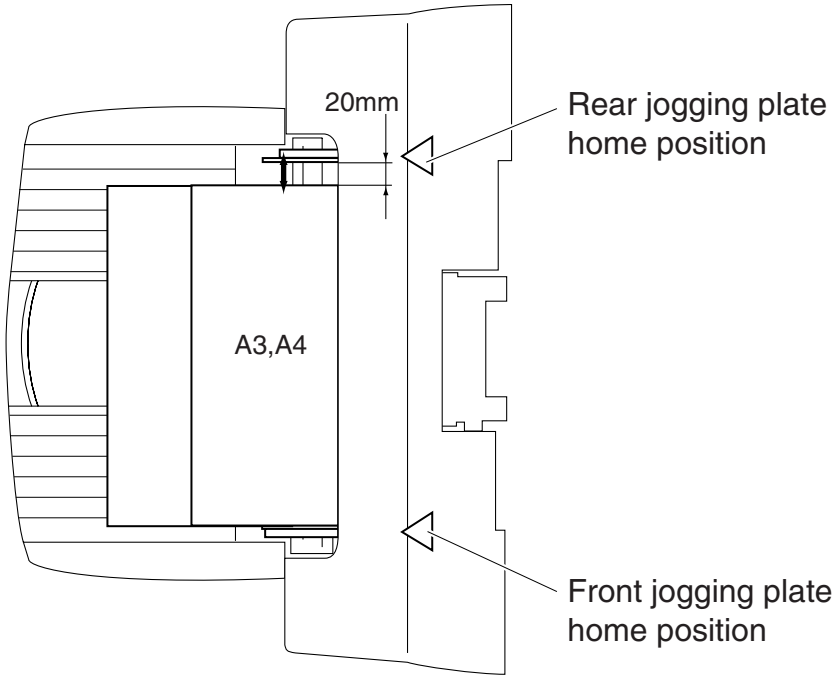


Figure 2-415b

5. Outline of Operations

a. Staple Sort

The machine operates as follows in the staple sort mode:

1. The copier's Start key is pressed.
   The copier communicates data such 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.

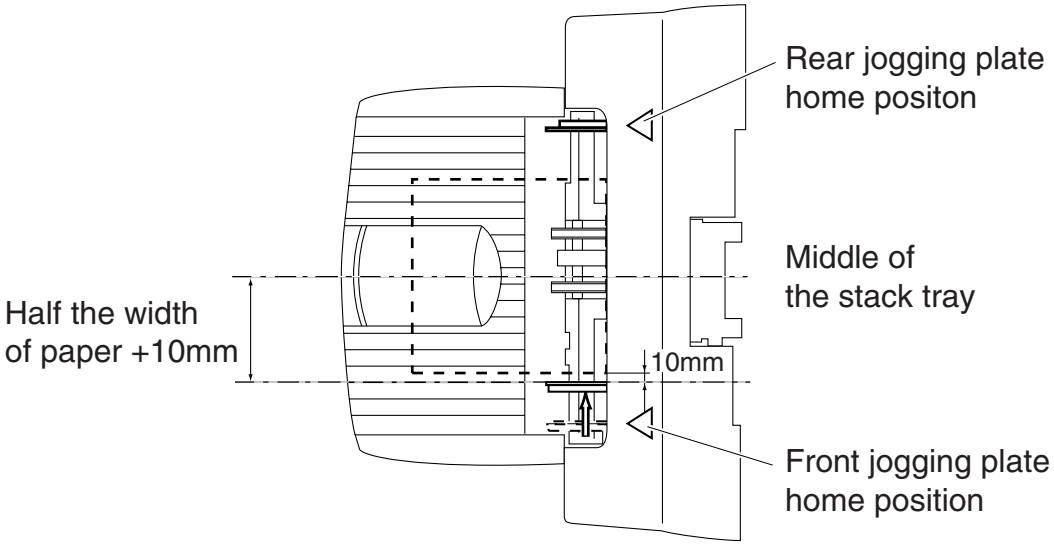


Figure 2-416a

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

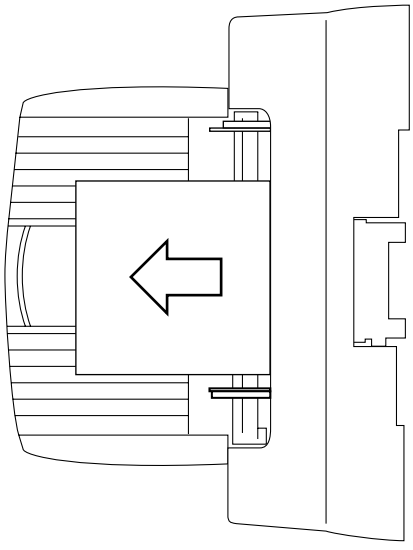


Figure 2-416b

4. The front jogging plate is driven and arranged.
5. The front jogging plate is returned to its position in operation 2.

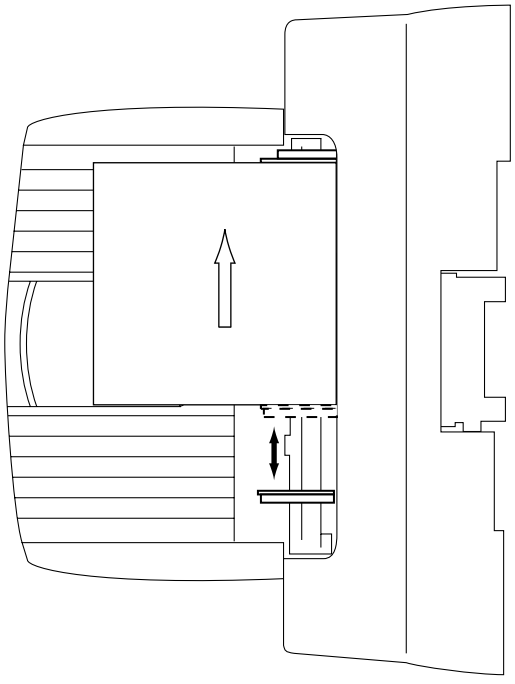


Figure 2-416c

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.

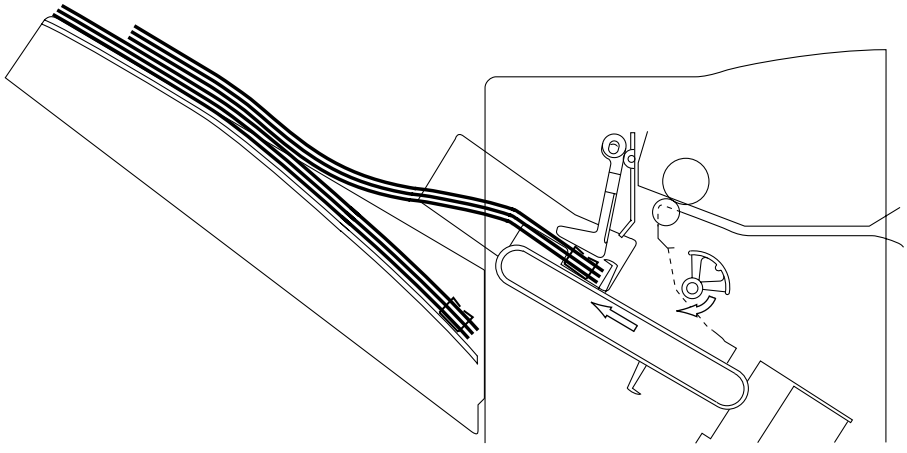


Figure 2-416d

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.

b. Offset Jogging

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

1. The copier's Start key is pressed.
   The copier communicates such data such 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.

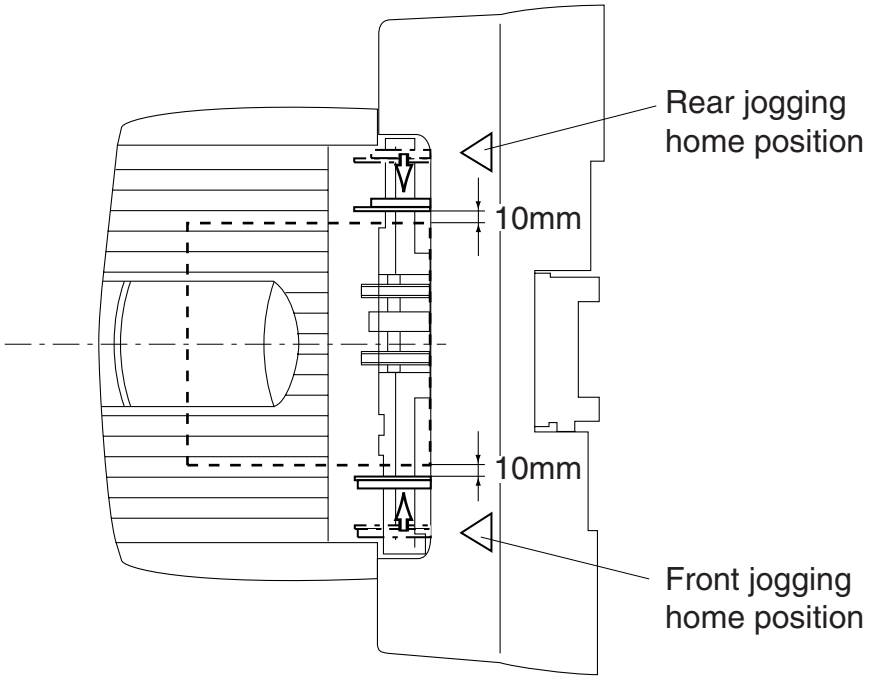


Figure 2-417a

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

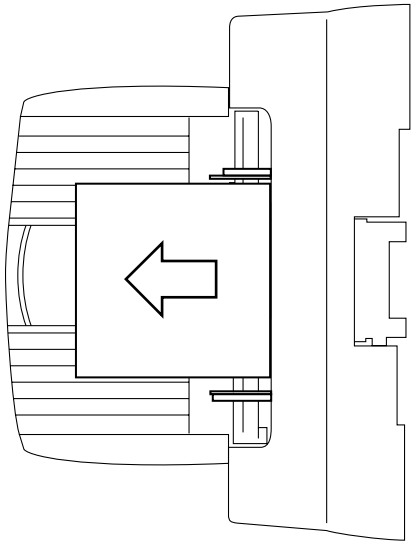


Figure 2-417b

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.

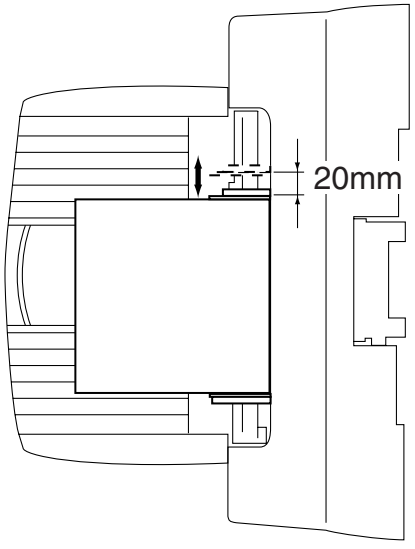


Figure 2-417c

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.

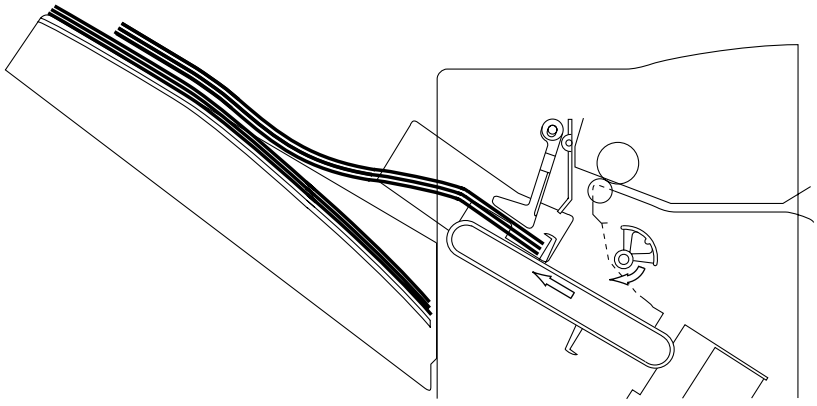


Figure 2-417d

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

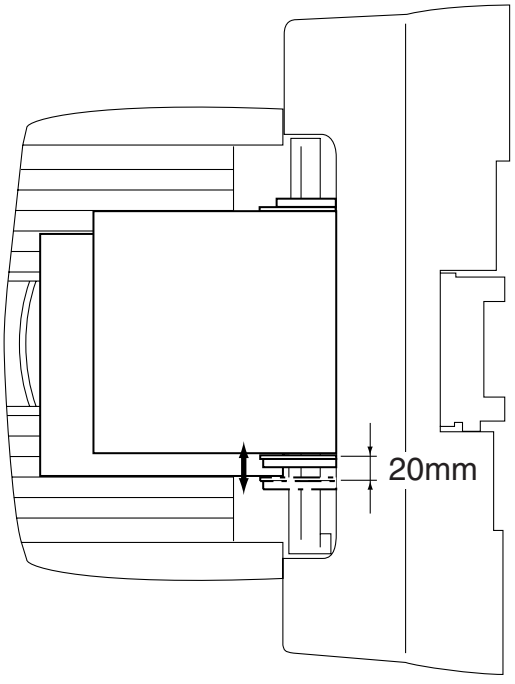
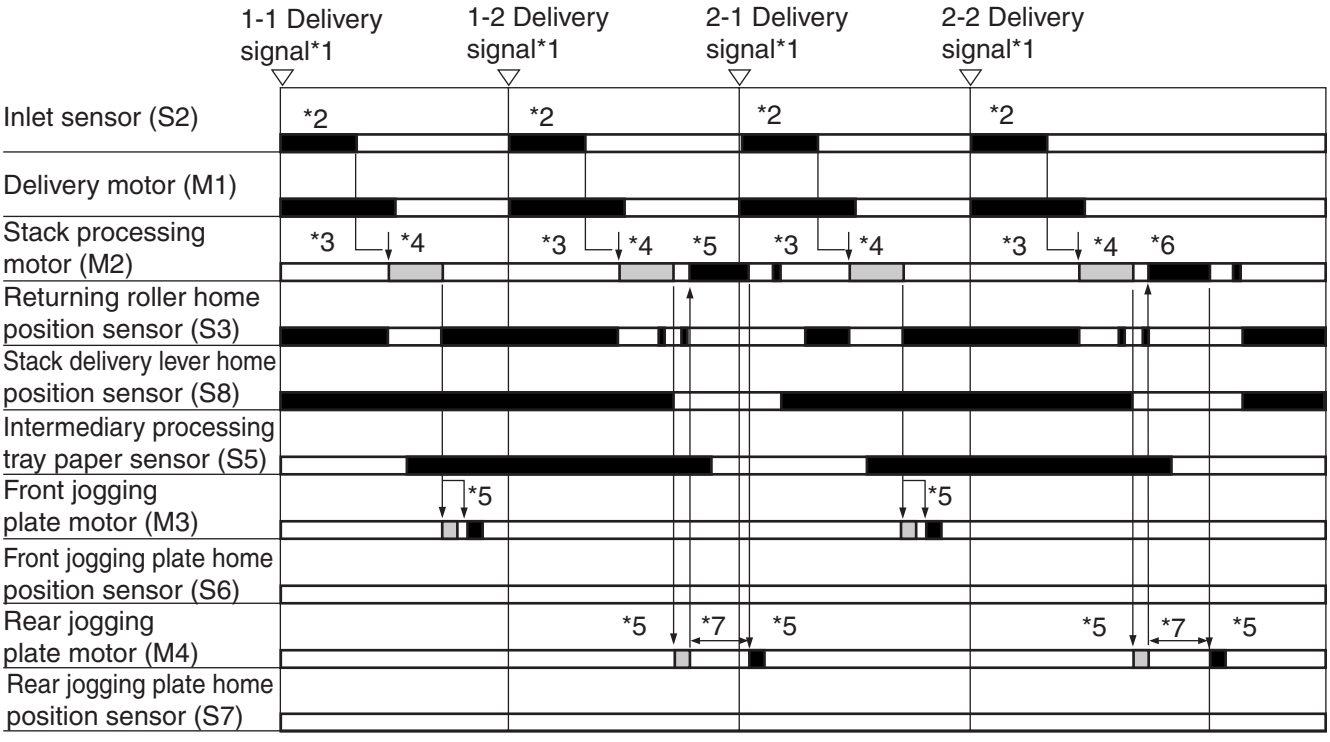


Figure 2-417e

5. Sequence of Operations

(1) Offset (2 originals, 2 sets)



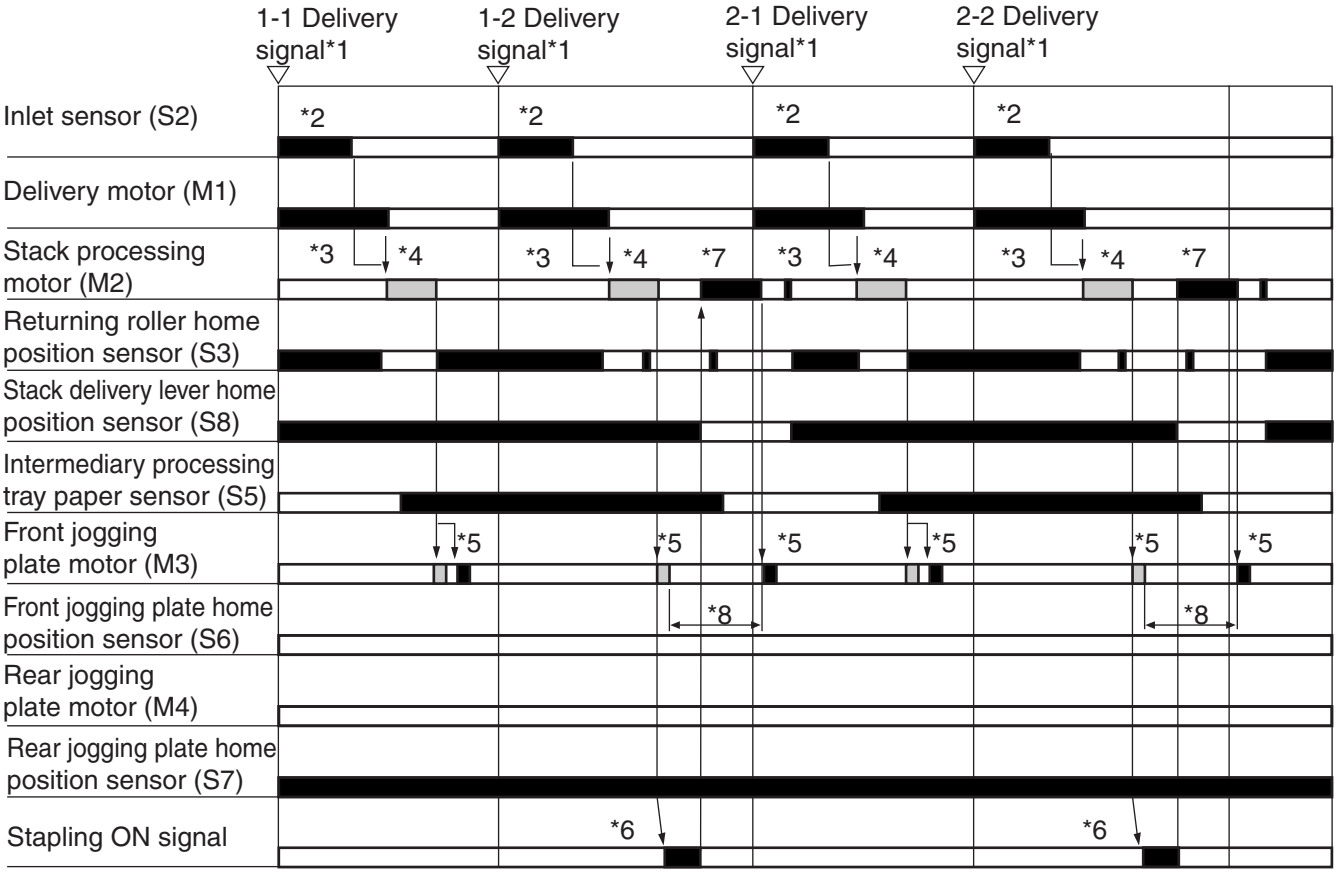
: CW rotation : CCW rotation

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 the paper.
*3: 0.2 sec.
*4: 0.3 sec.
*5: Varies depending on the size of the paper.
*6: 0.5 sec.
*7: Holds down the edge of paper until stack delivery ends.

Figure 2-418a

(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 the paper.
*3: 0.2 sec.
*4: 0.3 sec.
*5: Varies depending on the size of the 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 2-418b

V. STAPLING

1. Outline

The machine's stapler unit is fixed in position at the rear, and is not designed 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 allow for 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, A4-R, B5 LT, LT-R	30
B4 LG	20
A3, FOLIO, COMPUTER LD	15

Table 2-501

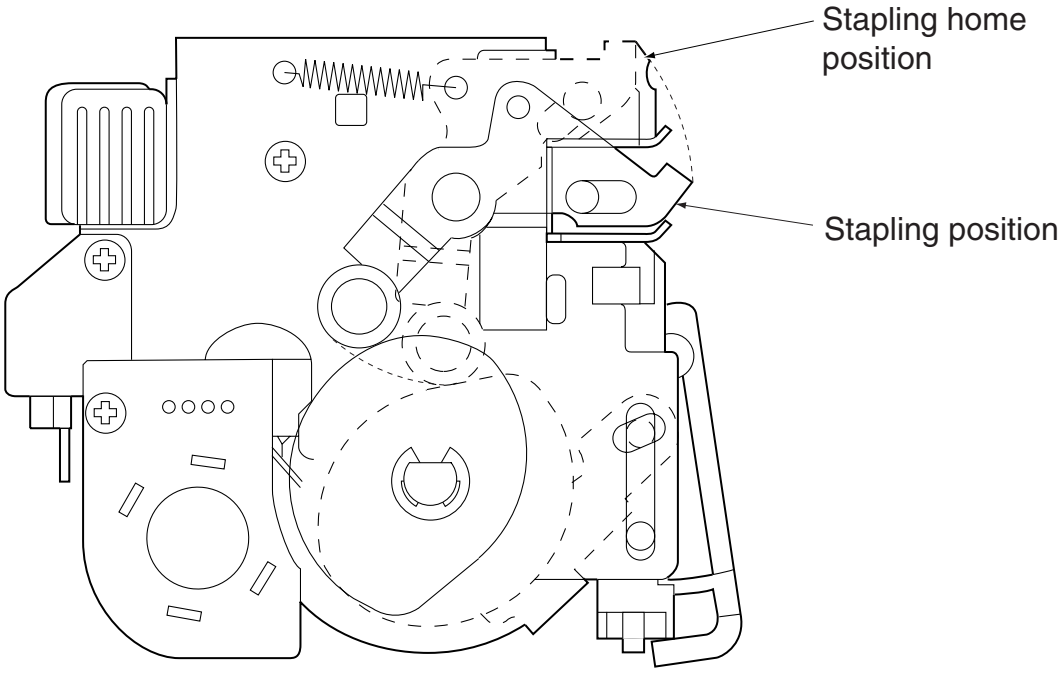


Figure 2-501

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, switches 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 switch	SW	Used to protect the user.	Inside the stapler unit
S15	Staple edging detection sensor	PI	Used to find out if the staple is at a position for stapling. If not, causes the stapler to execute idle punching to enable stapling.	Inside the stapler unit
S16	No-staple detection switch	SW	Used to detect the staples 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 switch	SW	Used to find out whether a cartridge is set inside the stapler unit.	Inside the stapler unit

SW: Microswitch
PI: Photointerruptor

Table 2-502

The stapler safety switch (S14) is used to cut off power to the stapler motor in the event that a finger gets into the stapler assembly or something similar happens.

Note:

If the Start key is pressed without removing the paper on the stack tray, the paper may not be arranged 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 IC1 (CPU) to the motor drive circuit.

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

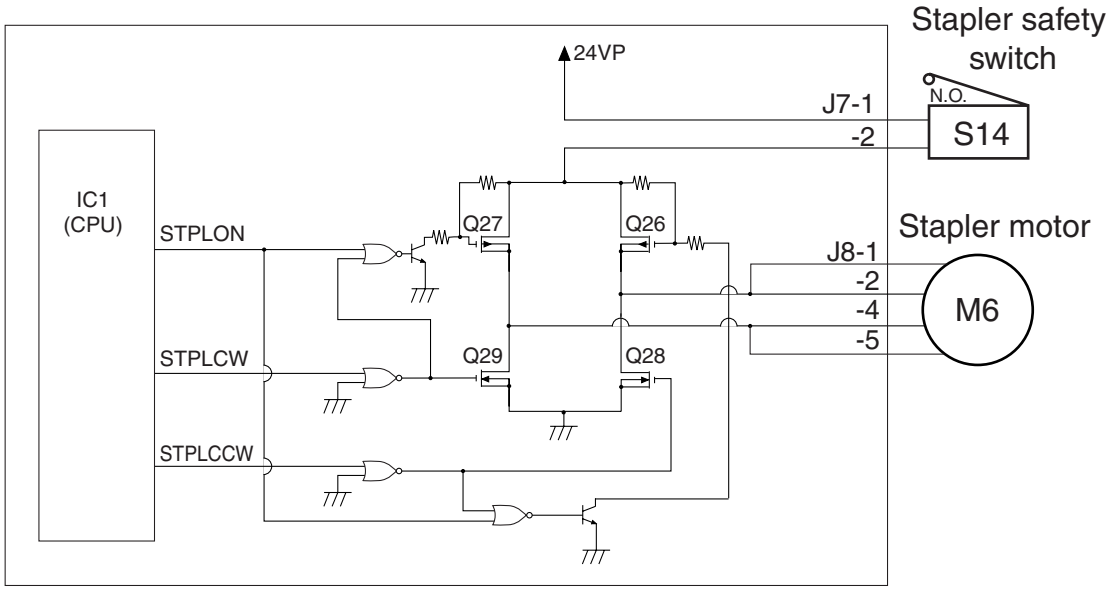


Figure 2-502

Direction	Output signal
Clockwise	STPLCW/STPLON
Counterclockwise	STPLCCW/STPLON

Table 2-503

VI. OPERATIONS OF THE STACK TRAY

1. Moving the Stack Tray Up and Down

a. Outline

The machine is equipped with two stack trays, to which stacks which have been arranged and offset/stapled are delivered.

When paper is delivered to the upper stack tray, the upper stack tray paper sensor (S20) is turned on. When paper is delivered to the lower stack tray, the lower stack tray paper sensor (S11) is turned on.

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

The lower stack tray is moved up/down by the work of the lower stack tray lift motor (M7).

If the stack tray is not at its home position when the copier is turned on, the stack tray lift motor is driven to move it to its 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) was turned on.

The upper limit of the upper stack tray is checked by the upper stack tray upper limit sensor (S25), while the lower limit of the lower limit is checked by the lower stack tray full sensor (S23).

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

The limit of the sheets on the stack tray is detected by the paper height sensor and the full load sensor if the sheets are not stapled. If the sheets are stapled, a 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

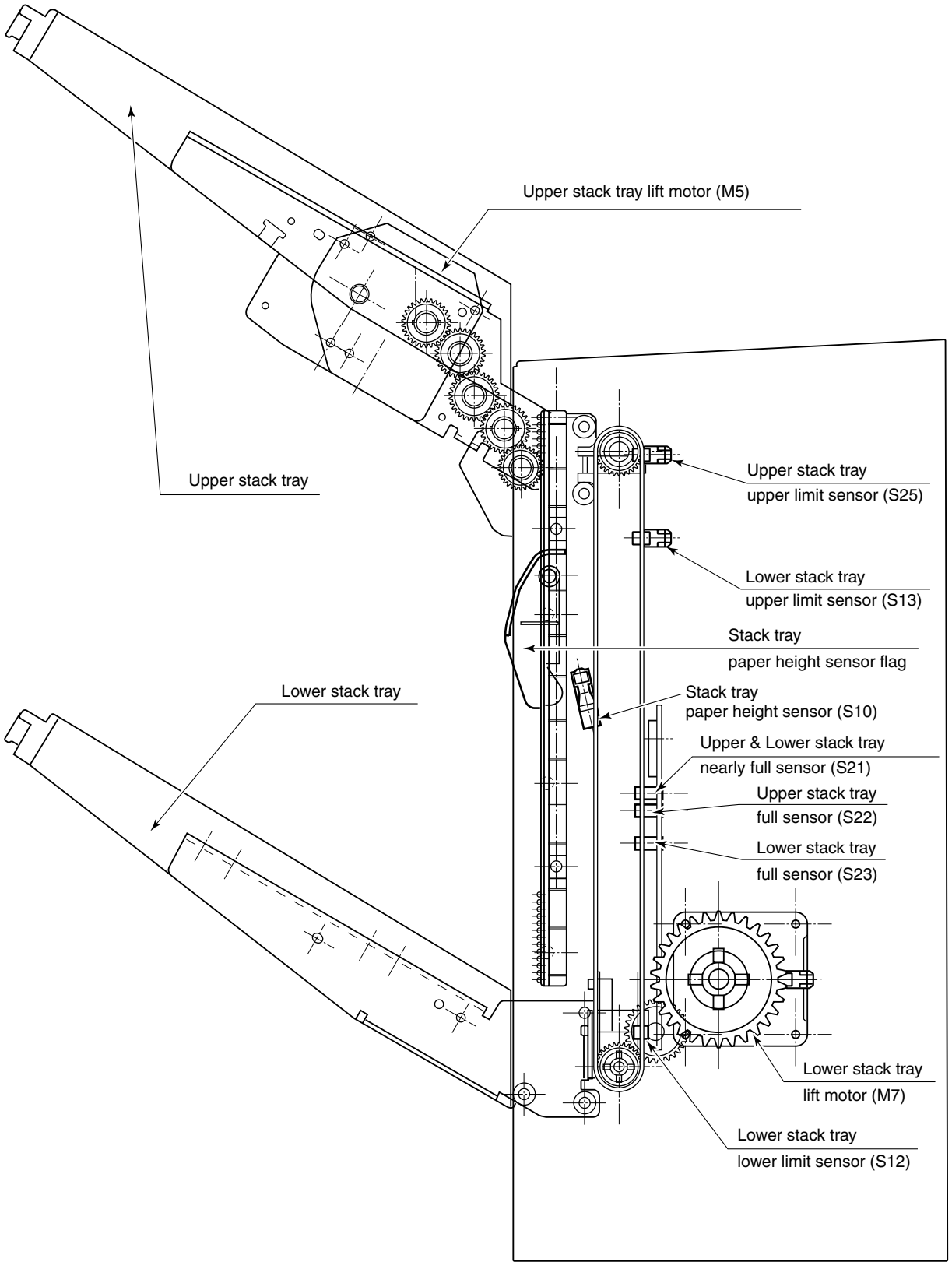

Upper stack tray lift motor (M5)
Upper stack tray
Upper stack tray
upper limit sensor (S25)
Lower stack tray
upper limit sensor (S13)
Stack tray
paper height sensor flag
Lower stack tray
Stack tray
paper height sensor (S10)
Upper & Lower stack tray
nearly full sensor (S21)
Upper stack tray
full sensor (S22)
Lower stack tray
full sensor (S23)
Lower stack tray
lift motor (M7)
Lower stack tray
lower limit sensor (S12)

Figure 2-601

b. Moving the Stack Tray Up and Down

After a stack of sheets has been delivered, the stack tray moves down until the stack tray paper height sensor (S10) is turned 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.

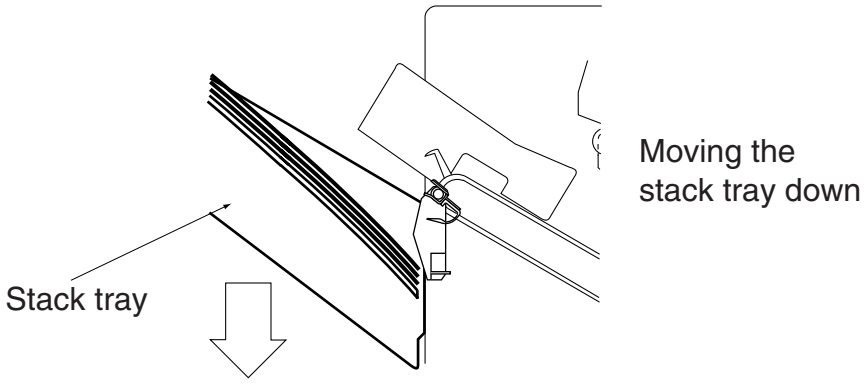


Figure 2-602

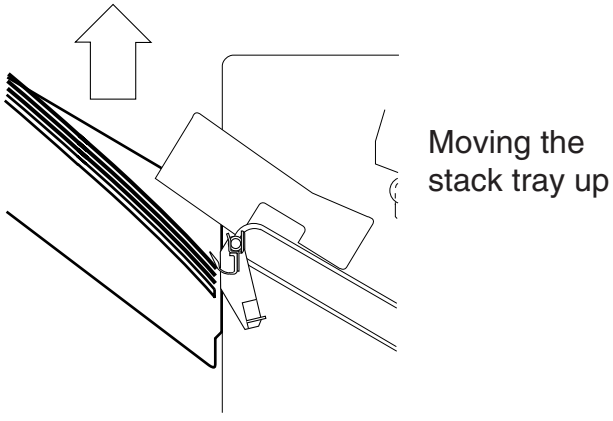
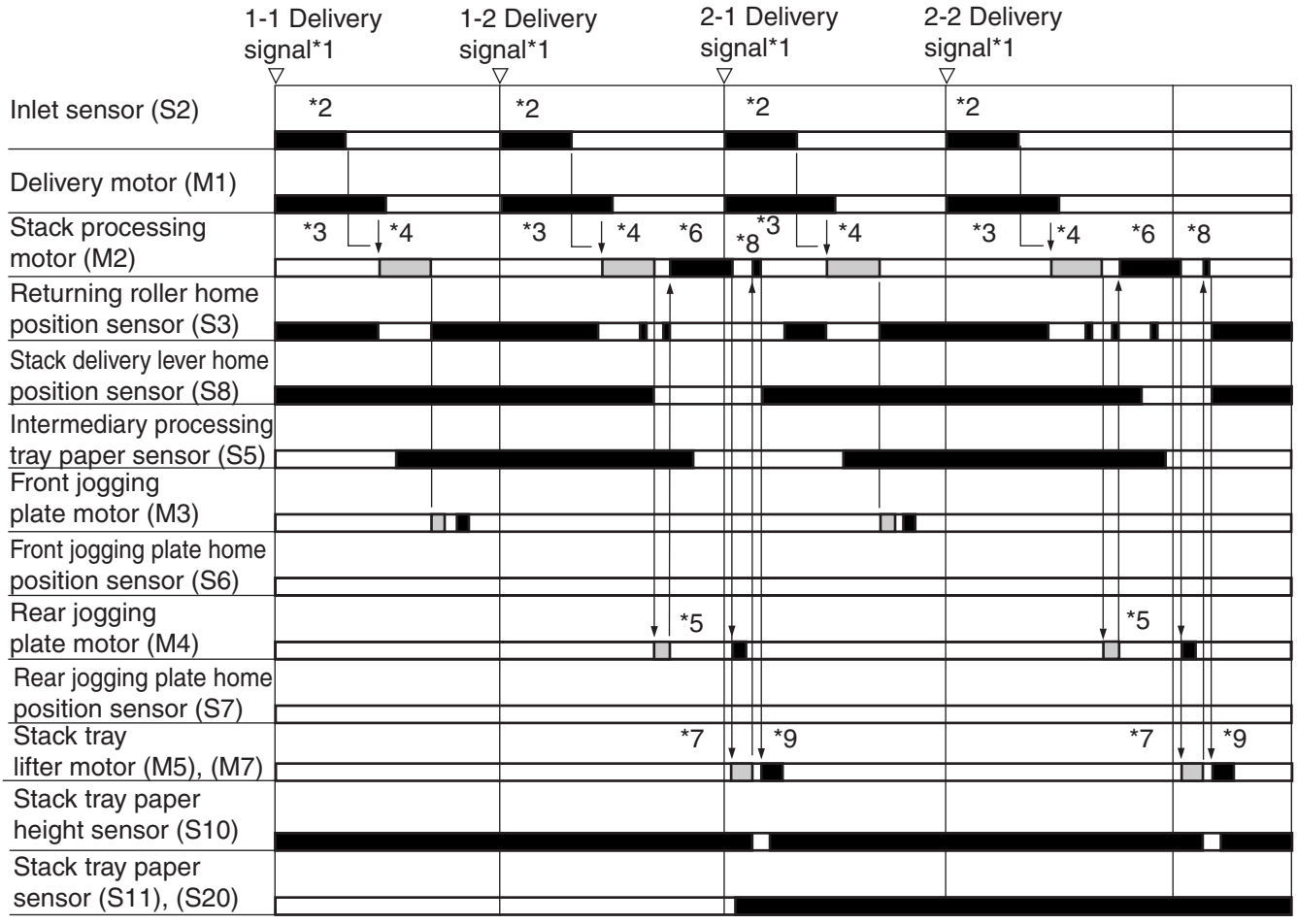


Figure 2-603

c. Sequence of Operations

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



: 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 is turned off.
*8: Driven until the stack delivery lever reaches the home position.
*9: Moves up 12.5mm after the stack tray paper sensor is turned 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 (S10).

After a stack has been delivered, the stack tray moves down until the stack tray paper height sensor (S10) is turned 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 full sensor (S22, S23) 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.

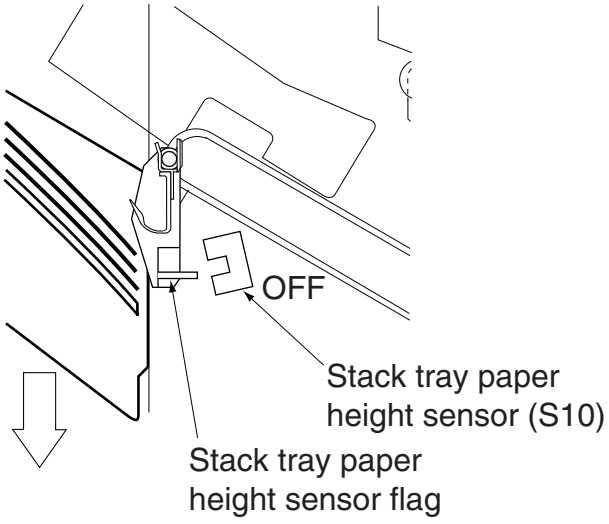


Figure 2-605a

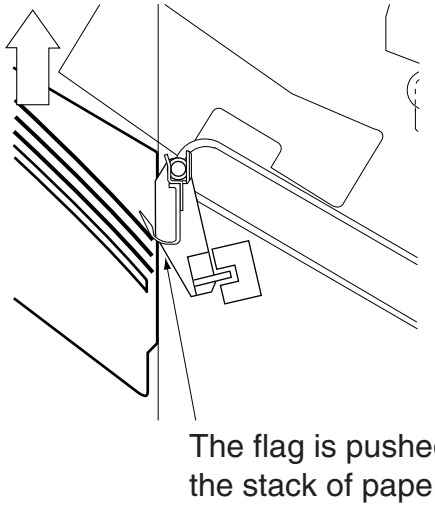


Figure 2-605b

3. Counting the Sets on the Stack Tray

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

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

If the Start key is pressed without removing the paper, the count will be cleared when it is pressed and a new count will be 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 paper holding lever drive solenoid (SL1) and it operates as follows:

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

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

At this time, the paper holding solenoid (SL1) is turned ON, 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 the paper.

At this time, the paper holding solenoid (SL1) is turned OFF, 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 the sheets in place.

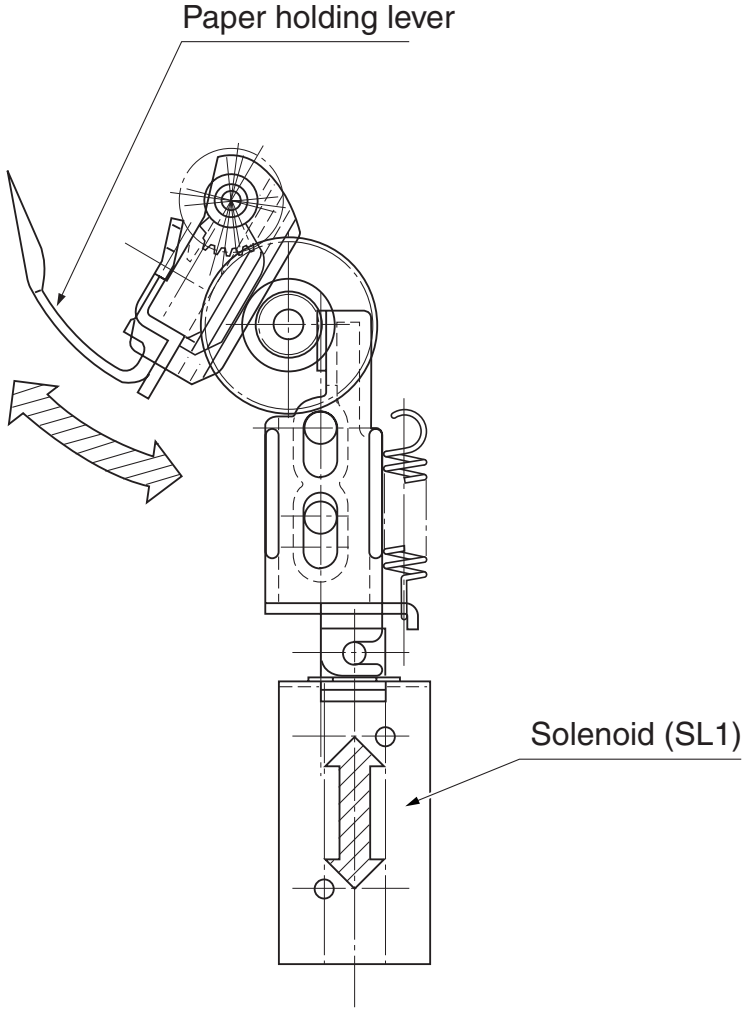


Figure 2-606

5. Controlling the Tray Lift Motors

a. Outline

Figure 2-607 and 2-608 are block diagrams showing the tray lift motors (M5, M7) drive circuits.

The tray lift motors are DC motors.

The direction of motor rotation is switched by signals (Tables 2-603, 2-604) from the finisher controller PCB IC1 (CPU) to the motor drive circuit.

When the upper stack tray reaches the upper stack tray upper limit sensor (S25) and the sensor sends signals (S25D), Q14 will be cut off, and the motors will stop their clockwise rotation.

Likewise, when the upper stack tray reaches the lower stack tray full sensor (S23) and the sensor sends signals (S23D), or the stack tray collision prevention sensor (S24) detects a collision and sends signals (S24D), Q15 will be cut off, and the motors will stop their counterclockwise rotation.

Also, when the lower stack tray reaches the lower stack tray upper limit sensor (S13) and the sensor sends signals (S13D), or the stack tray collision prevention sensor (S24) detects a collision and sends signals (S24D), Q20 will be cut off, and the motors will stop their clockwise rotation.

Likewise, when the lower stack tray reaches the lower stack tray lower limit sensor (S12) and the sensor sends signals (S12D), Q21 will be cut off, and the motors will stop their counterclockwise rotation.

Only the clockwise rotation of the drive power supply (+24V) for the upper stack tray lift motor is interrupted by the stack processing safety switch (S26).

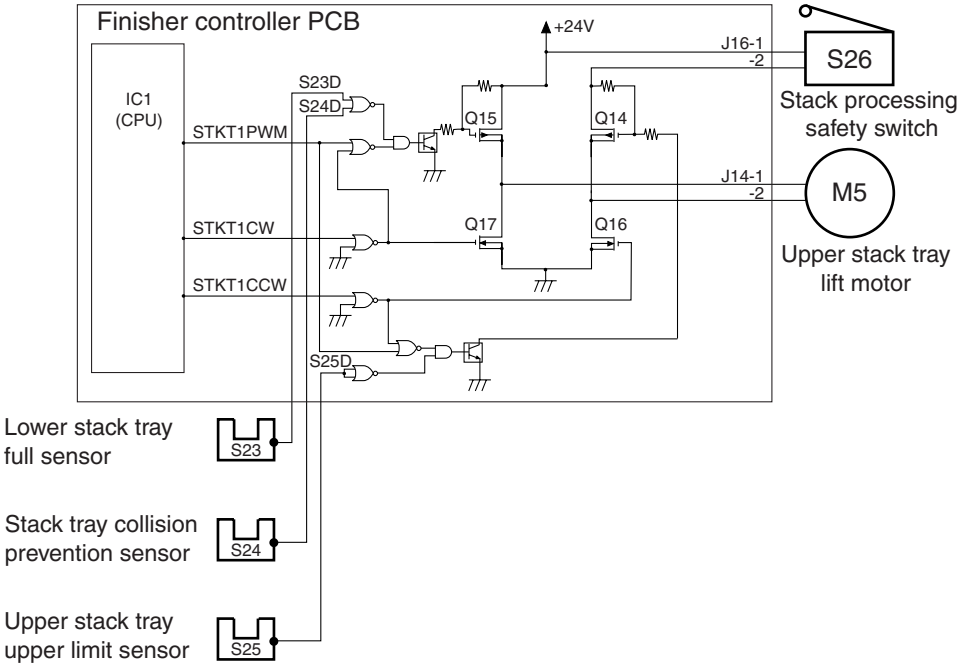


Figure 2-607

Direction	Output signal
Clockwise	STKT1PWM/STKT1CW
Counterclockwise	STKT1PWM/STKT1CCW

Table 2-603

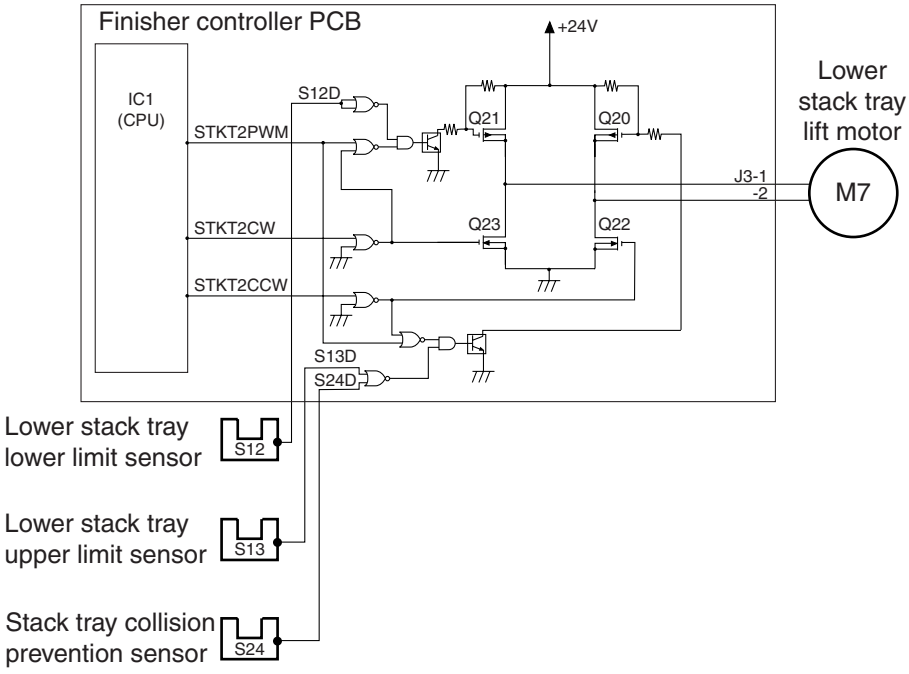


Figure 2-608

Direction	Output signal
Clockwise	STKT2PWM/STKT2CW
Counterclockwise	STKT2PWM/STKT2CCW

Table 2-604

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.

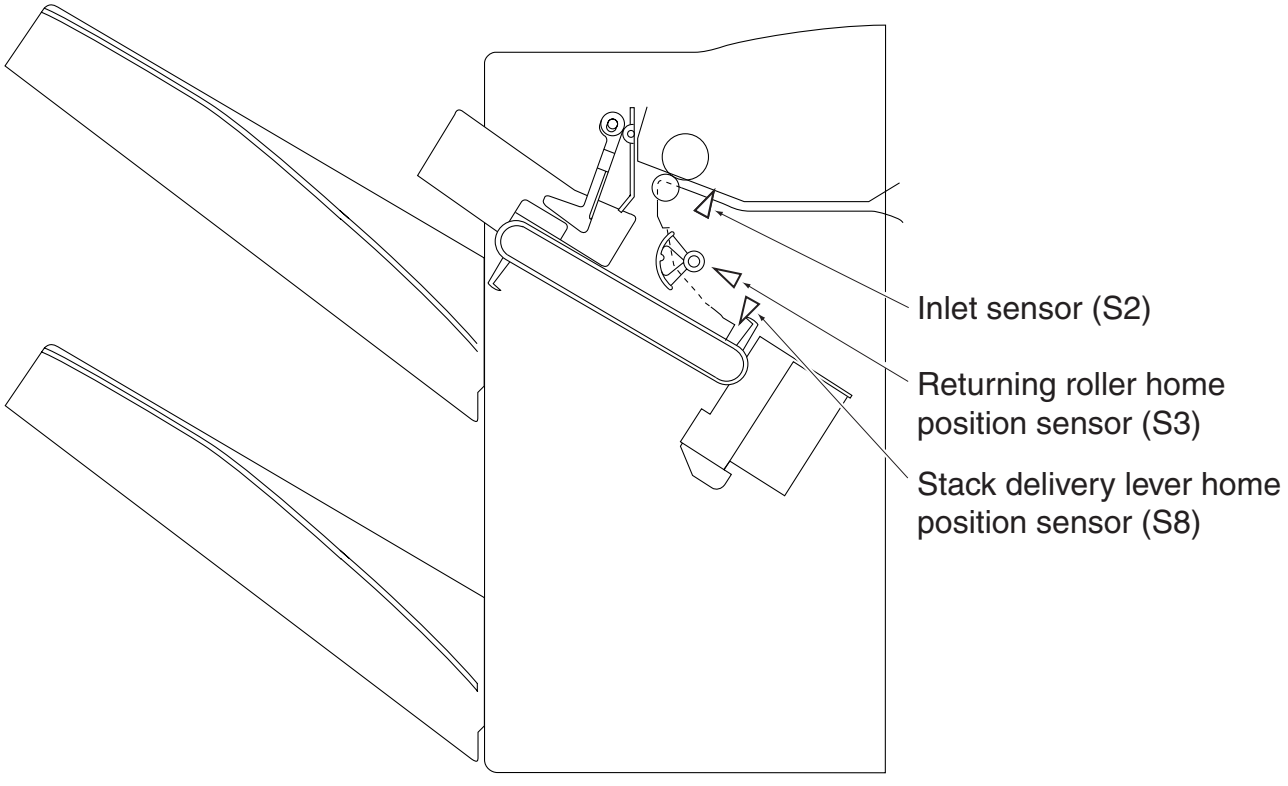


Figure 2-701

B. Detecting Paper Jams

A paper jam may be any of the following:

1. Inlet Sensor Delay Jam

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.

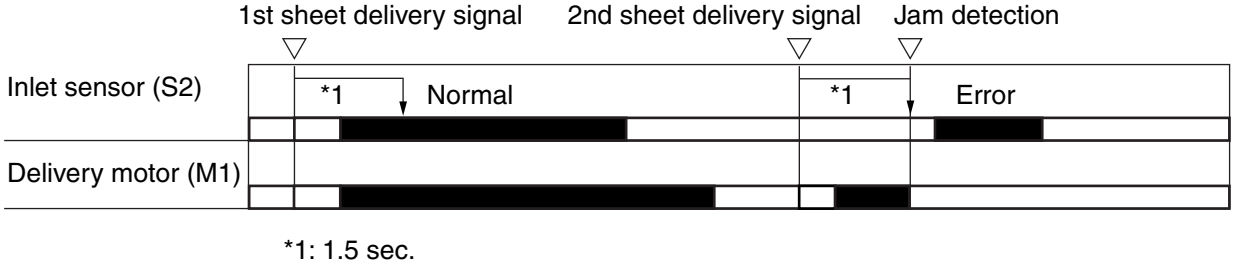


Figure 2-702

2. Inlet Sensor Stationary Jam

The inlet sensor (S2) does not go off after it has been 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.



Figure 2-703

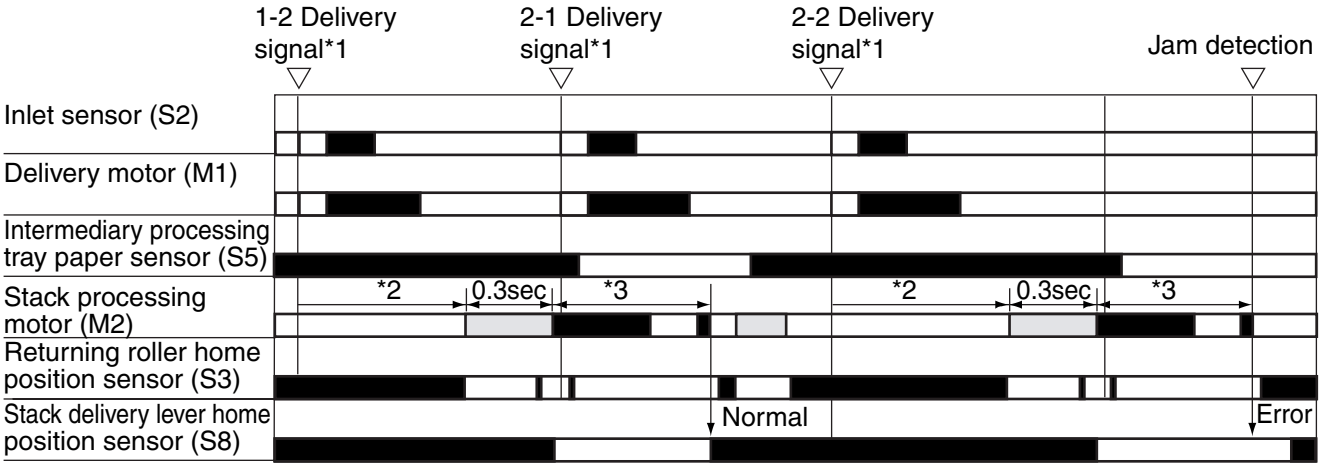
3. Power-On Jam

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

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 the home position)



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

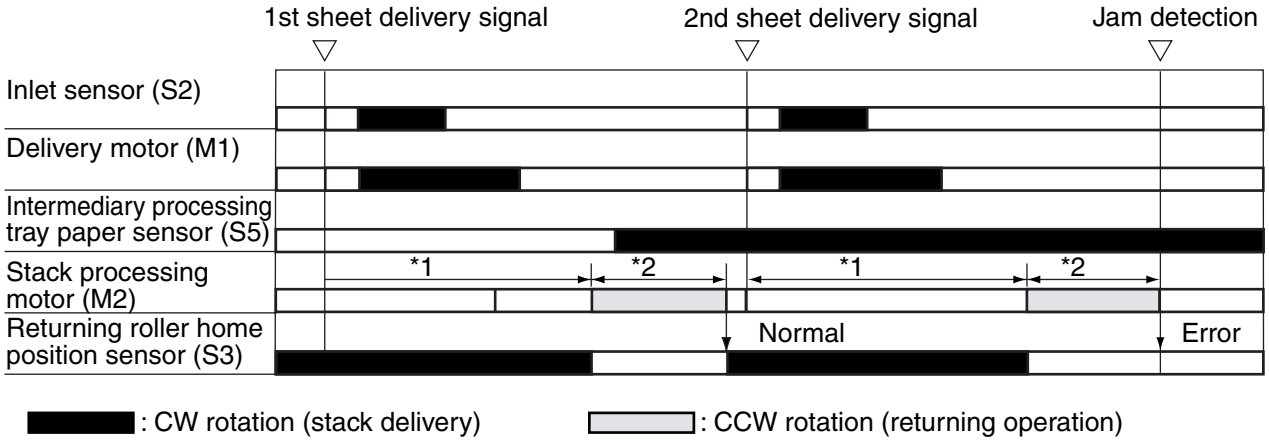
*1: A-B delivery signal (n number of stack, nth sheet).
*2: Varies depending on the length of paper.
*3: Driven until the stack delivery lever leaves its home position.

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

5. Stack Return Jam

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)

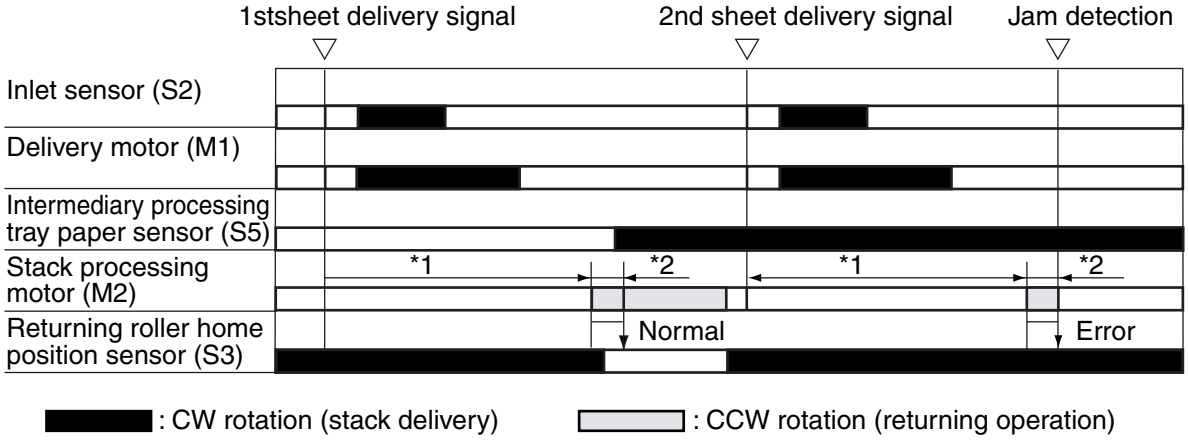


Figure 2-705b (not leaving the home position sensor)

C. Stapler Jam

A staple jam is detected as follows:

1. Stapler Staple Jam

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.

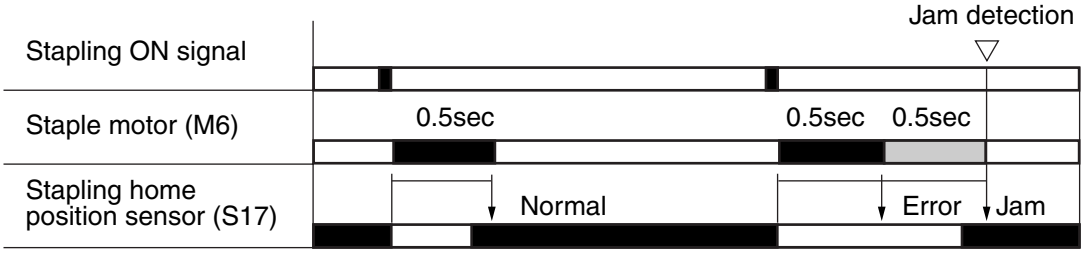


Figure 2-706

VIII. POWER SUPPLY

1. Outline

When the copier is turned on, it supplies the finisher controller PCB with 24VDC and 5VDC. The 24 VDC is for driving the motors and the solenoid. The 5VDC is used 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.

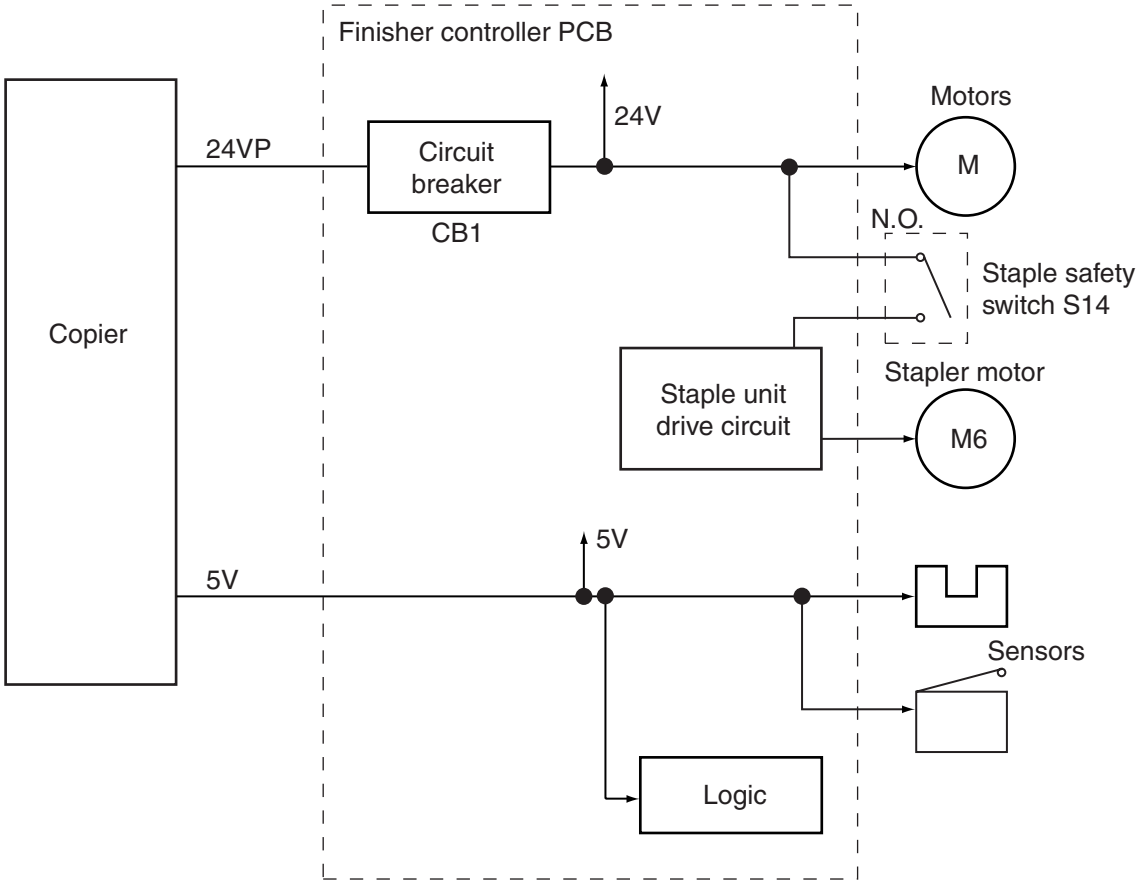


Figure 2-801

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

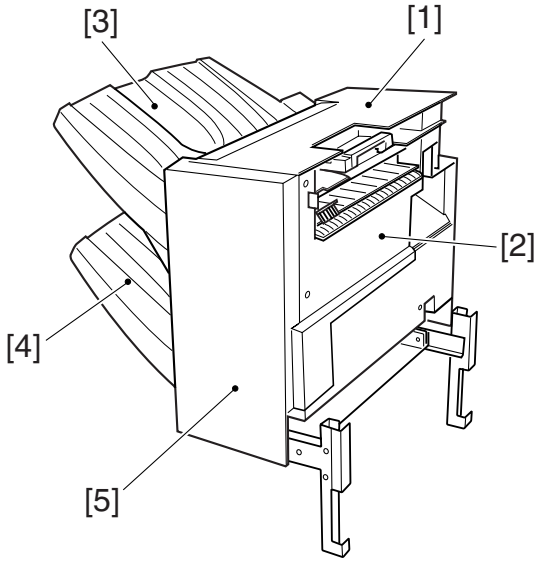
I. EXTERNALS AND CONTROLS 3-1
II. FEEDING SYSTEM 3-6
III. PROCESSING TRAY 3-7
IV. RETURNING ROLLER 3-15
V. STACK TRAY 3-22
VI. STACK TRAY LIFTER UNIT 3-23
VII. STAPLER 3-31
VIII. PCBs 3-32

I. EXTERNALS AND CONTROLS

A. External Covers

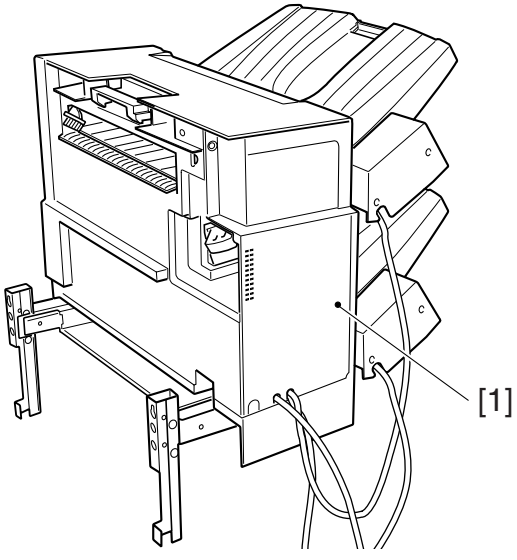
Remove the covers as necessary when cleaning, inspecting, or repairing the inside of the machine.

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



[1] Body frame
[2] Right inside cover (6)
[3] Upper stack tray (5)
[4] Lower stack tray (5)
[5] Front cover (2)

Figure 3-101



[1] Rear cover (2)

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 six mounting screws; then, remove the two mounting screws [4] of the rear cover [3] (they are tightened on top of each other).

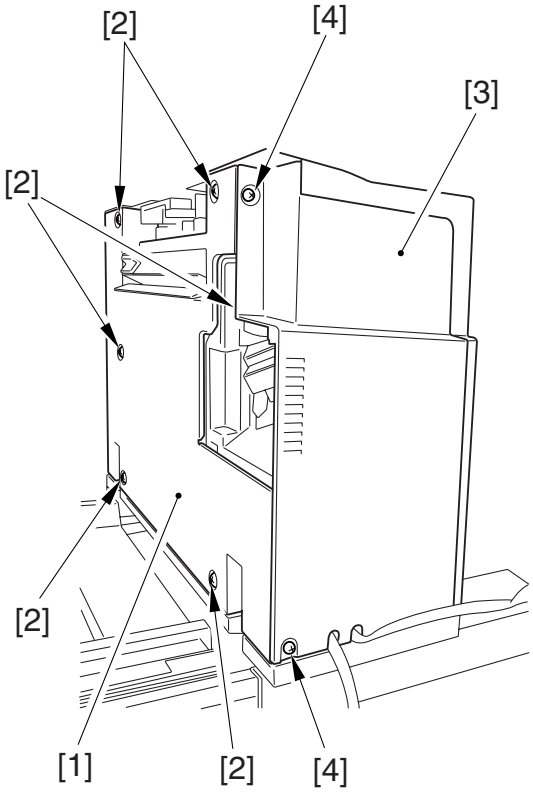


Figure 3-103

C. Removing the Static Eliminator

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

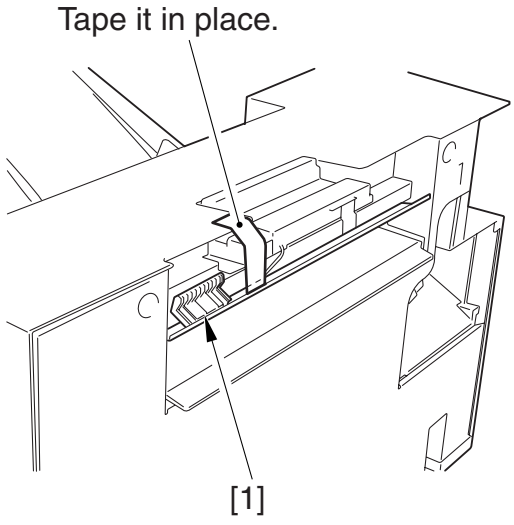


Figure 3-104

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

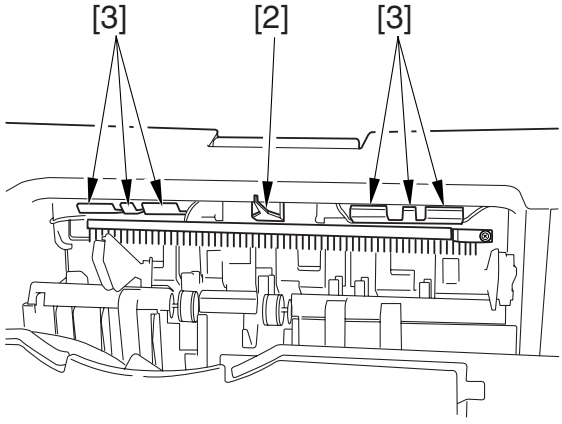


Figure 3-105

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

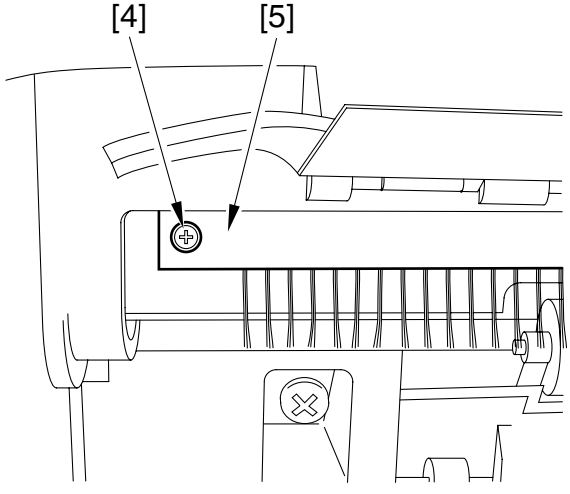


Figure 3-106

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.

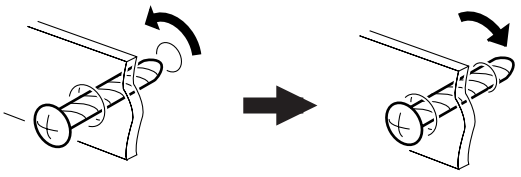


Figure 3-107

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.

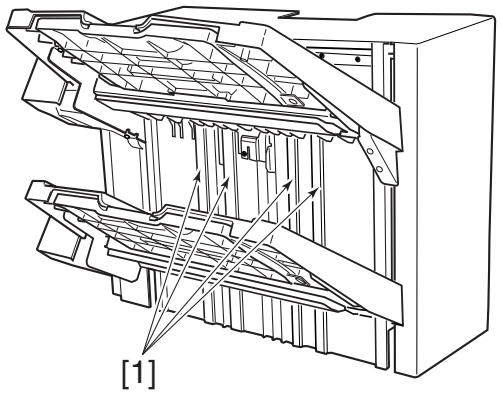


Figure 3-107a

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].

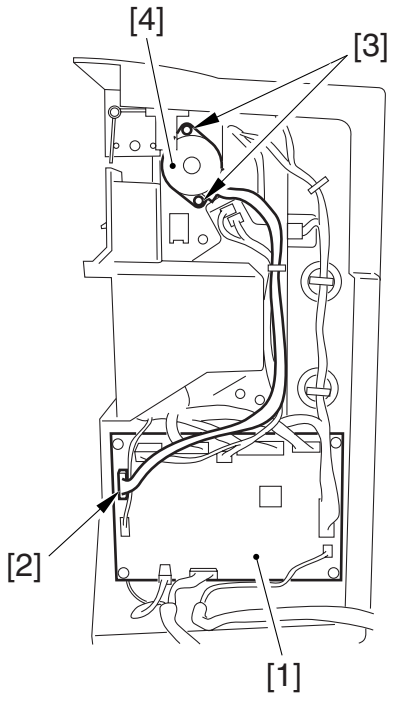


Figure 3-201

III. PROCESSING TRAY

A. Removing the Processing Tray

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the finisher controller PCB. (VIII. PCBs)
3) Remove the stapler. (Figure 3-701)
4) Remove the mounting screw [1] and take out the inlet sensor [2].

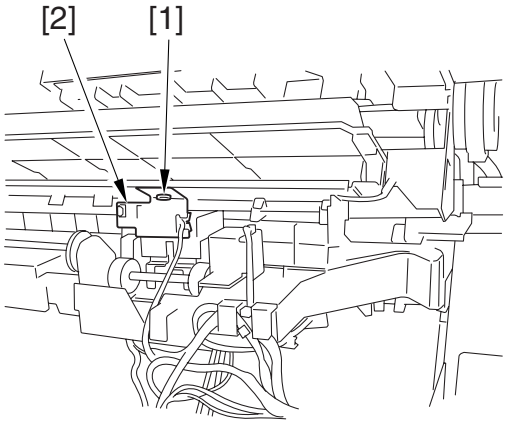


Figure 3-301

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.

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

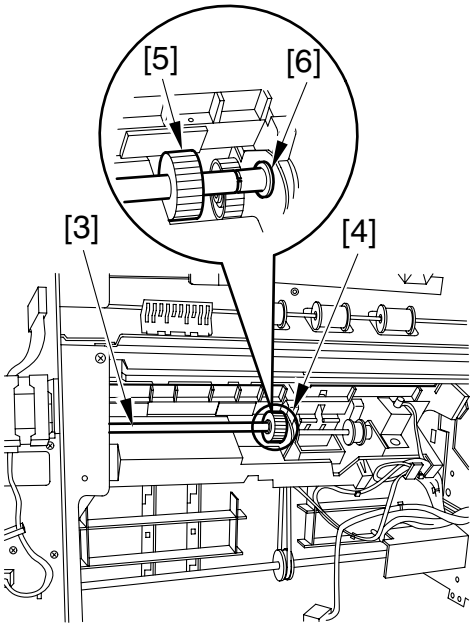


Figure 3-302

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

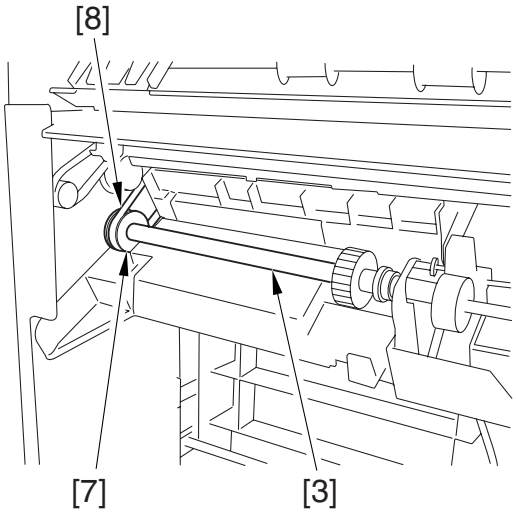


Figure 3-303

7) 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.

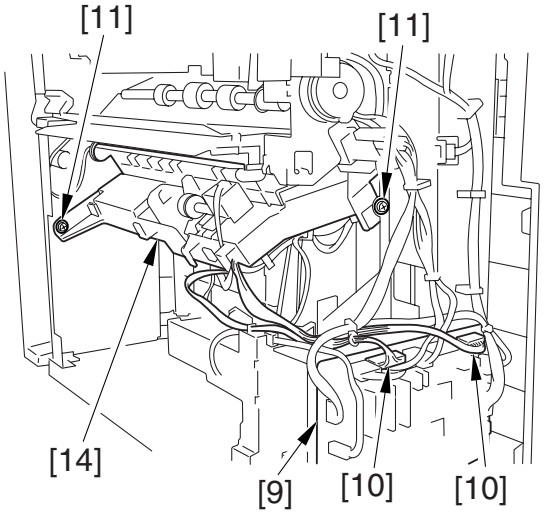


Figure 3-304

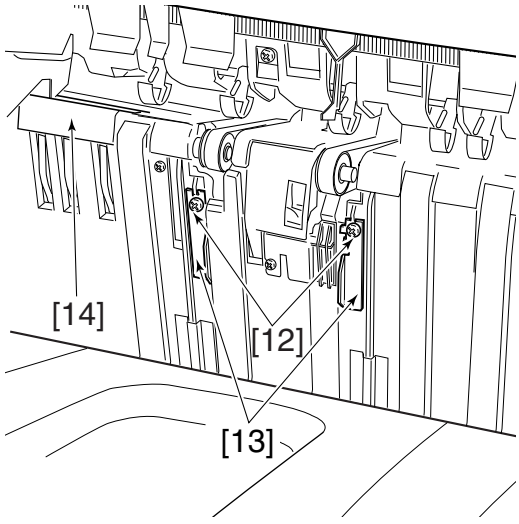


Figure 3-305

Note:
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 3-306.

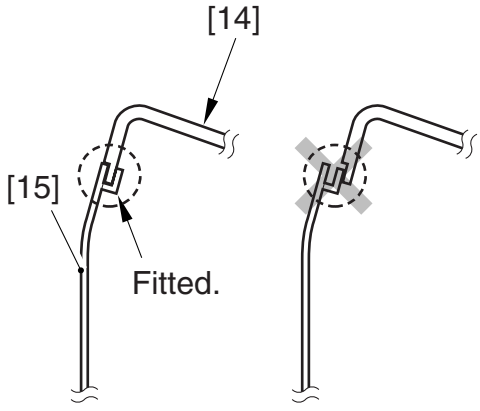


Figure 3-306

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 [3]. (You can remove both jogging plate motors in the same way.)

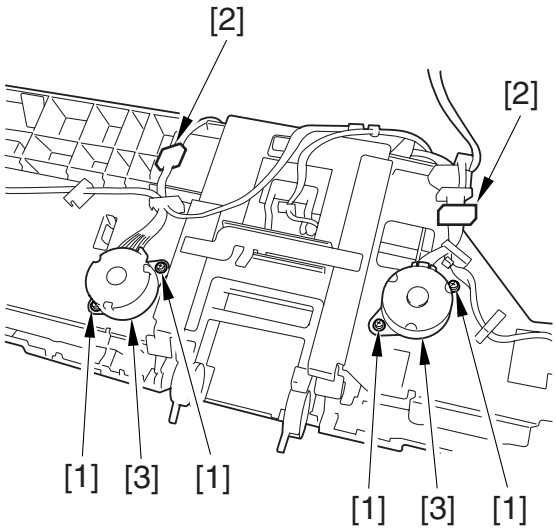


Figure 3-307

C. Adjusting the Jogging Plate Width

Note:
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 SW1 on the finisher controller PCB as shown in Figure 3-308.
2-2) Press SW2 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 SW1 on the finisher controller PCB as shown in Figure 3-309.

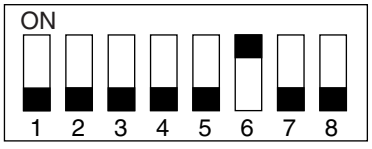


Figure 3-308

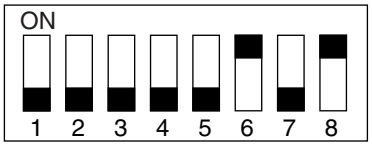


Figure 3-309

3-2) Press SW2 on the finisher controller PCB.
- The rear jogging plate moves to the home position.

Rear jogging plate home position

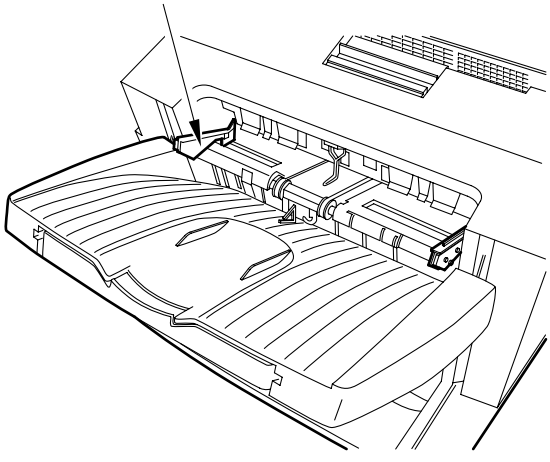


Figure 3-310

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.

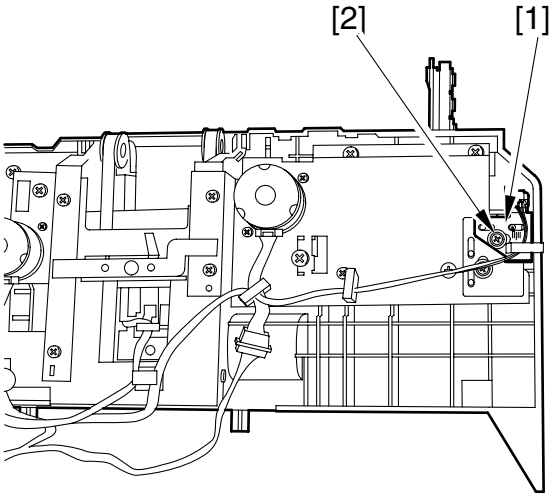


Figure 3-311

7) Adjust the position of the front jogging plate home position sensor (S6) with reference to the index.
   Example 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.
   Example 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.

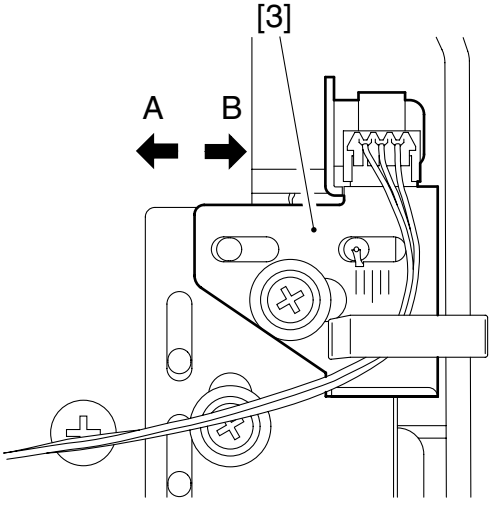


Figure 3-312

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 [1].

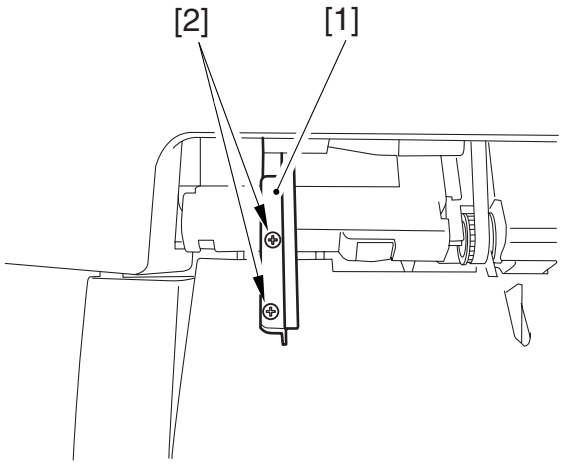


Figure 3-313

2) Place several sheets of A4/LT 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.)

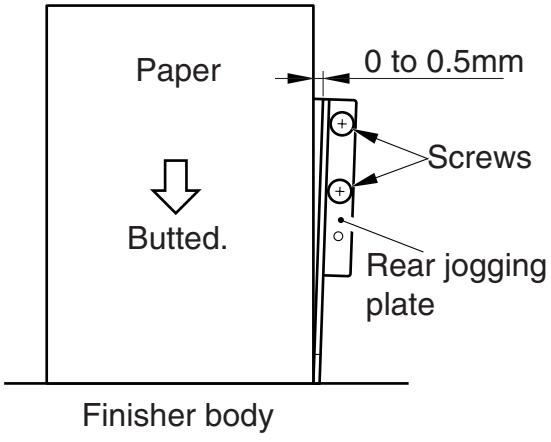


Figure 3-314

3) With reference to the rear jogging plate adjusted in step 2), adjust the front jogging plate in the same manner.

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.

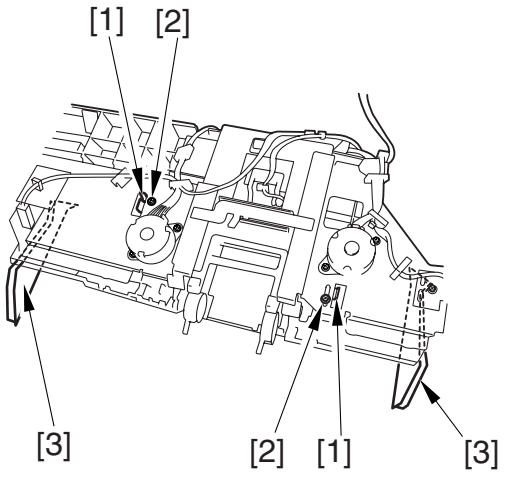


Figure 3-315

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.

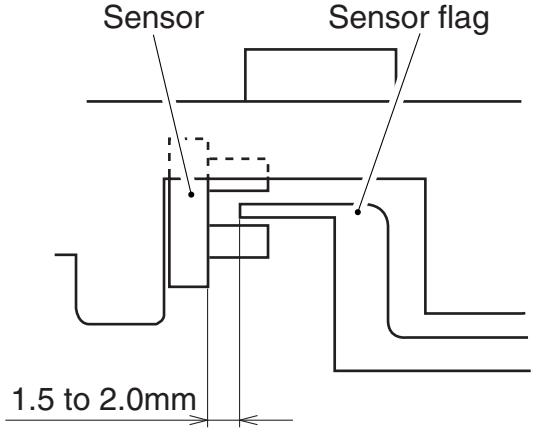


Figure 3-316

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].

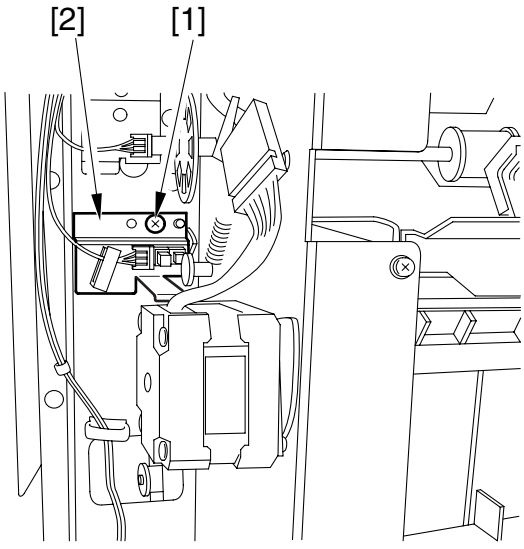


Figure 3-401

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

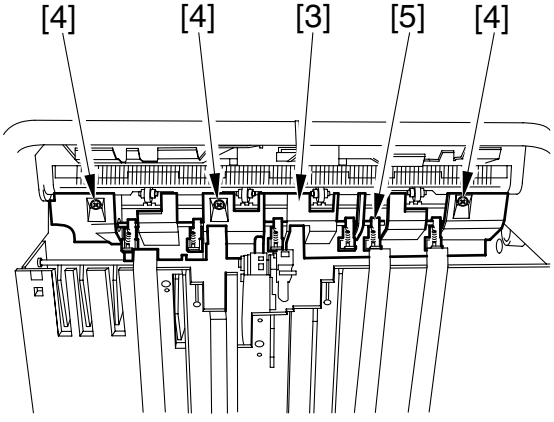


Figure 3-402

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

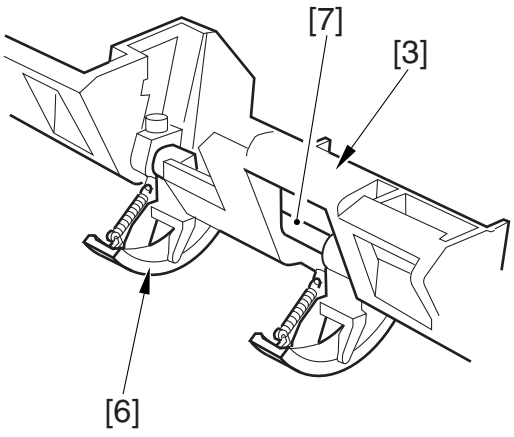


Figure 3-403

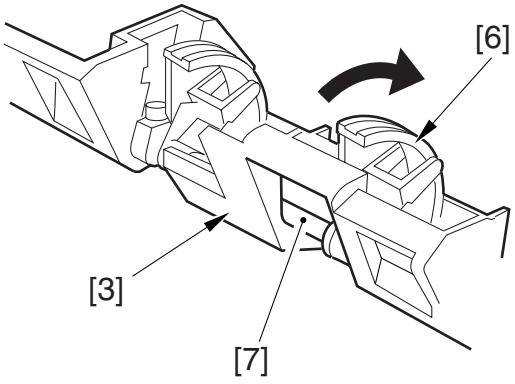


Figure 3-404

B. Removing the Returning Roller Rubber

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

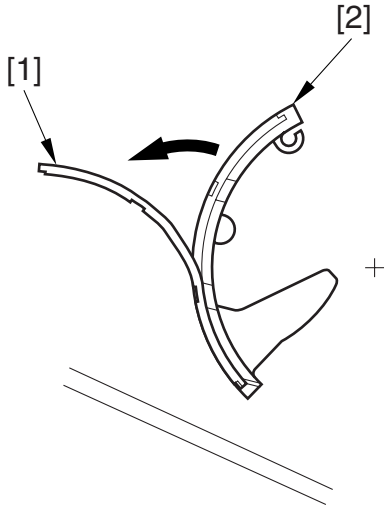


Figure 3-405

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.

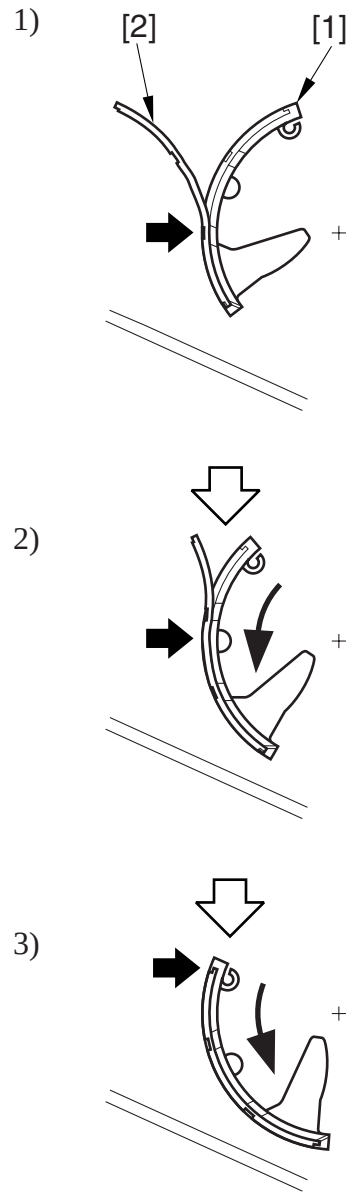


Figure 3-406

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.

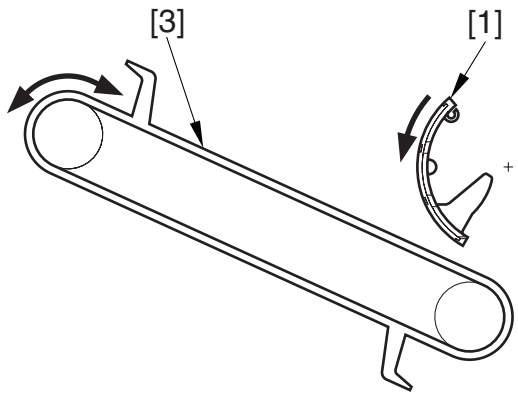


Figure 3-407a

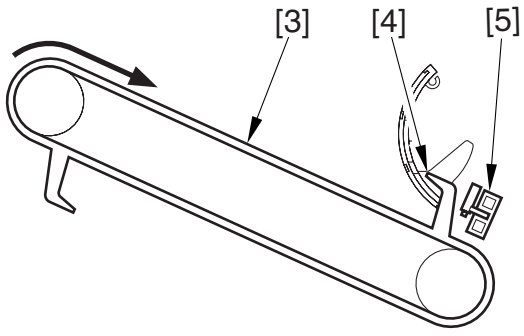


Figure 3-407b

D. Adjusting the Tension of the Stack Processing Motor Belt

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the two mounting screws [3], and detach the grip unit [4].

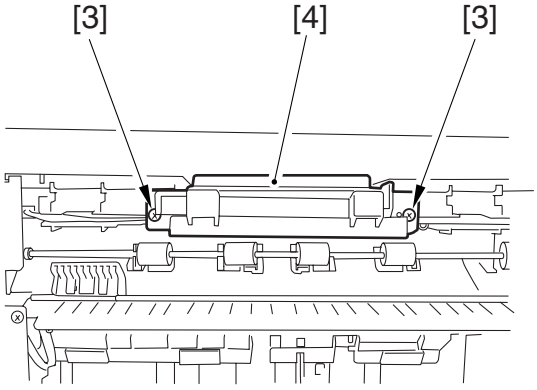


Figure 3-408

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

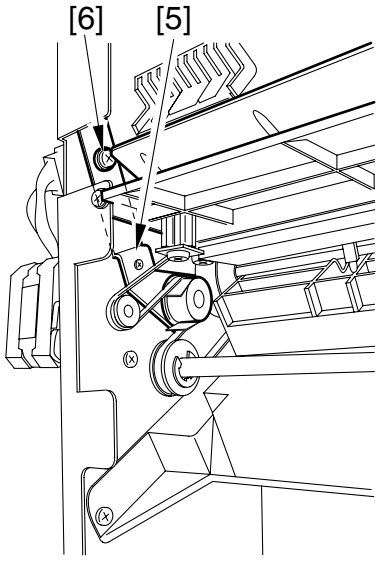


Figure 3-409

4) Move the returning roller shaft [7] to its lower limit (The slack of a belt is lightly taken.); then tighten the screw [6] on the tension arm plate [5].

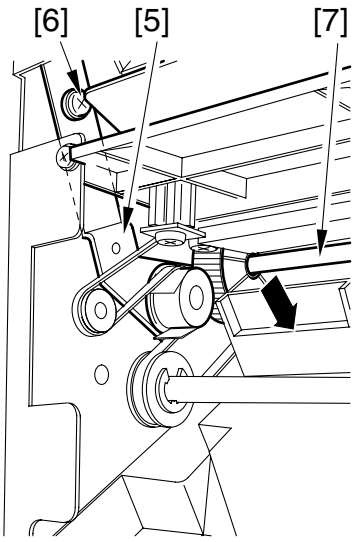


Figure 3-410

5) Check to make sure that the returning roller shaft [7] moves smoothly.

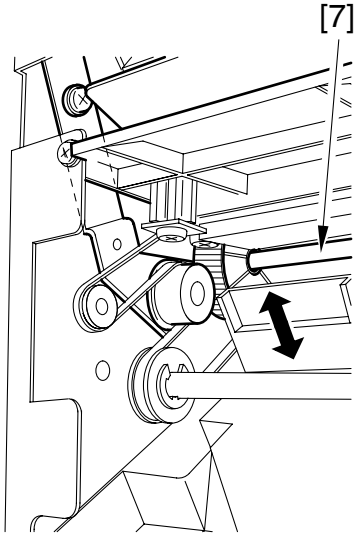
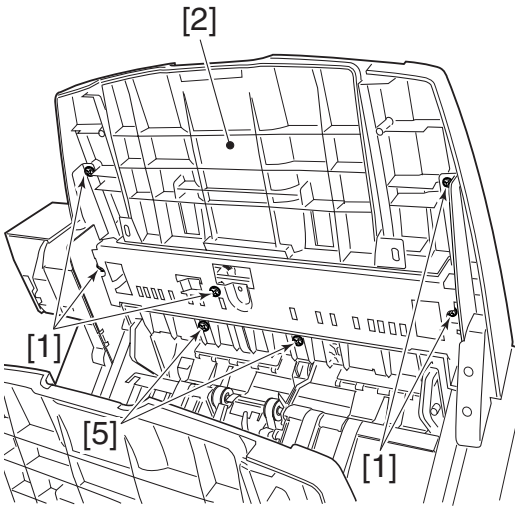


Figure 3-411

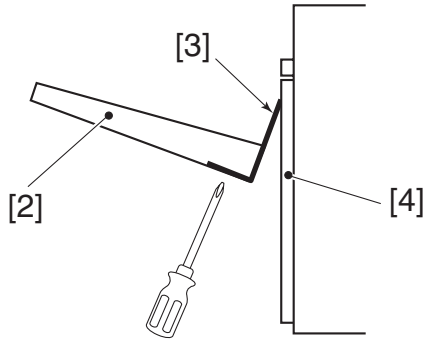
V. STACK TRAY

A. Removing the Stack Tray

1) Remove the collision prevention flag.
2) Remove the five mounting screws [1] from behind the stack tray and remove the upper stack tray [2].
3) Detach the lower stack tray in the same manner.



Note:
When attaching the upper stack tray, adjust the stopper top section [3] at the rear end of the tray so that it contacts the rib [4].



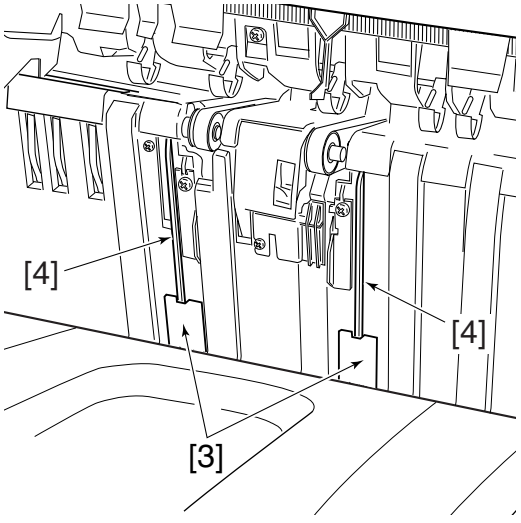


Figure 3-501

VI. STACK TRAY LIFTER UNIT

A. Removing the Stack Tray Lifter Unit

1) Remove the inside right cover, rear cover, and front 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.

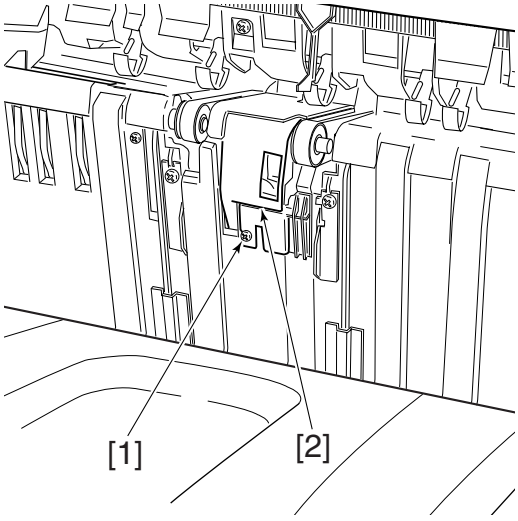


Figure 3-601

4) Remove the returning roller unit. (Figures 3-401 and -402)
5) Remove the finisher controller PCB. (See VIII. “PCBs.”)
6) Remove the stack tray drive unit. (See B. Removing the stack tray drive unit.)
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].

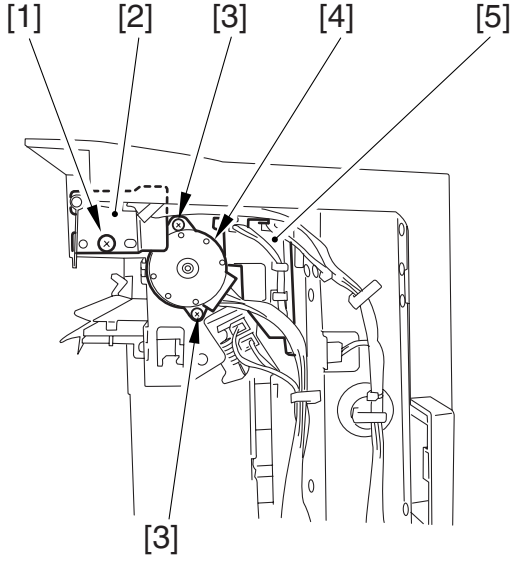


Figure 3-602

9) Remove the three mounting screws [8] and detach the PCB bracket [9].
10) Remove the two mounting screws and detach the sensor PCB.
11) Release the stack tray guide lever fixing plates in the front and rear side. (See C. Releasing the Stack Tray Guide Lever Fixing Plate)

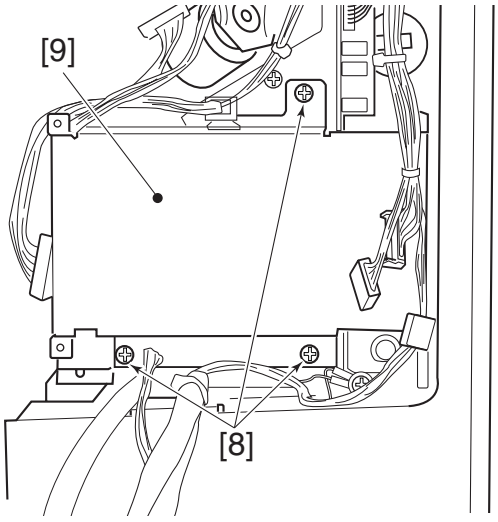


Figure 3-603

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

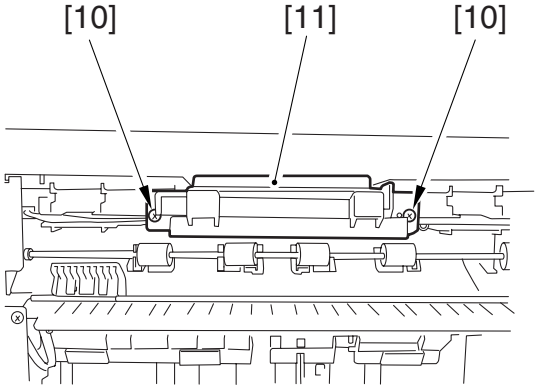


Figure 3-604

13) Remove the two mounting screws [12] and detach the grounding wire [13].
14) Remove the seven mounting screws [14] from the rear side plate.

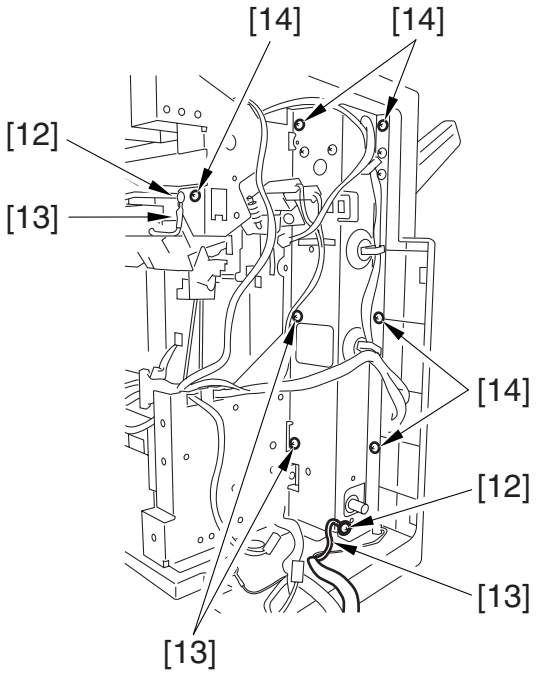


Figure 3-605

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

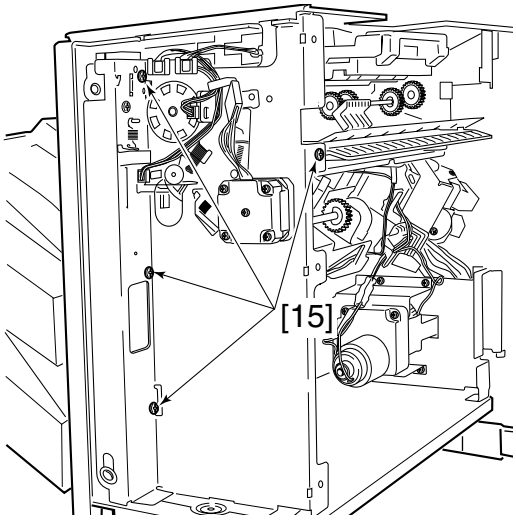


Figure 3-606

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

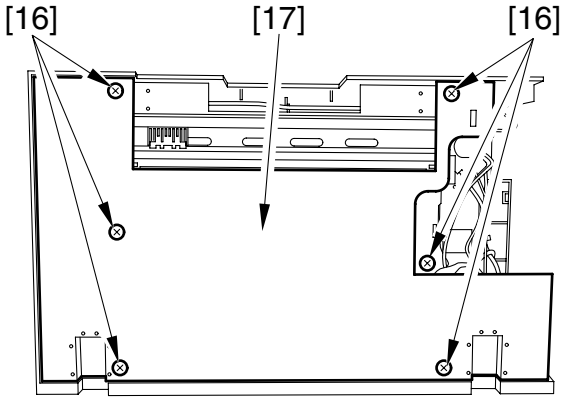


Figure 3-607

17) Remove the four mounting screws [19] of the bottom of the body frame [18], and detach the stack tray lifter unit together with the inside right cover.
18) Pull out the lower tray supporting plate unit from the lower side of the main body frame.

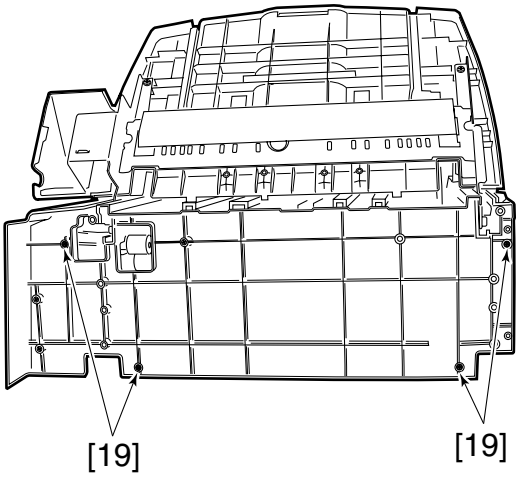


Figure 3-608

19) Remove the two mounting screws [1] from the upper tray supporting plate unit and detach the motor cover [2].

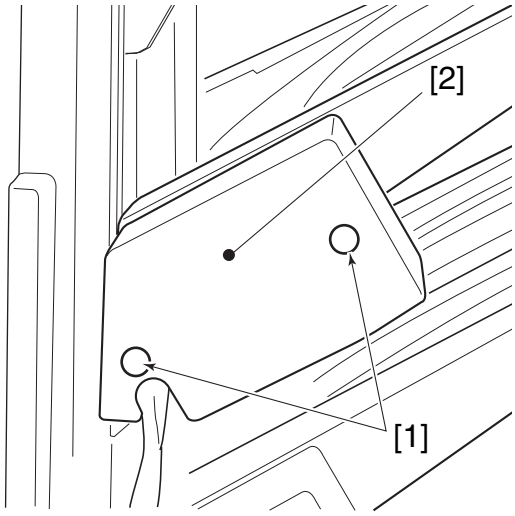


Figure 3-609

20) Slide the upper tray lifter motor cam [3] toward the arrow in the figure, and pull out the upper tray supporting plate unit from the lower side of the main body frame.

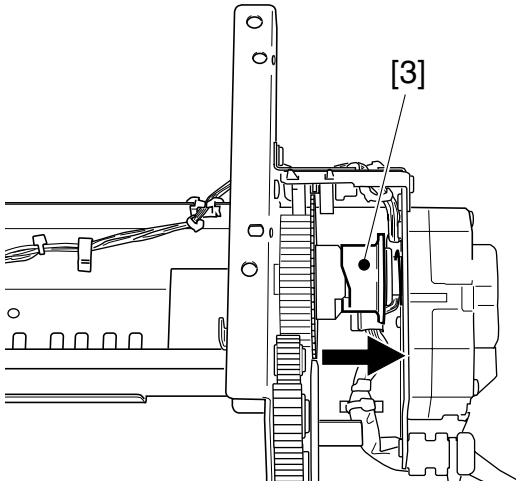


Figure 3-610a

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

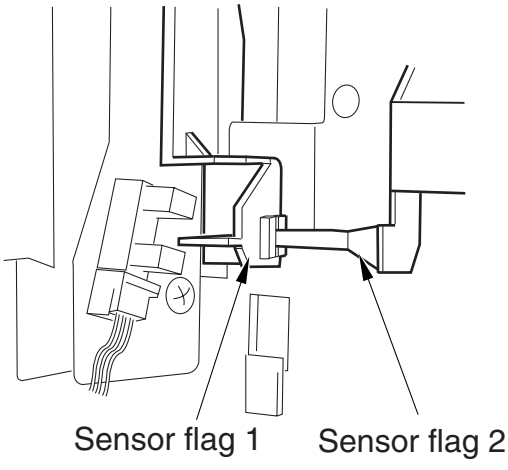


Figure 3-610b

B. Removing the Stack Tray Drive Unit

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the mounting screw [1], and detach the lower stack tray lifter motor clock sensor support plate [2].
3) Remove the three mounting screws [3] and disconnect the connector [4]; then detach the stack tray drive unit [5].

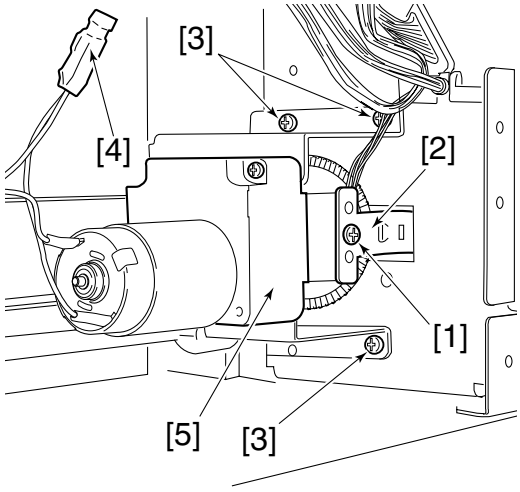


Figure 3-611

C. Releasing the Stack Tray Guide Lever Fixing Plate

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the finisher control PCB, PCB bracket and sensor PCB.
3) Remove the stack tray. (Figure 3-501)
4) Remove the stack tray drive unit.
5) Place the stack tray guide lever fixing plate [1] so that it is in view through the hole in the side plate (front, rear). Then remove the fixing screw [2]. (Perform the same for the front and the rear.)

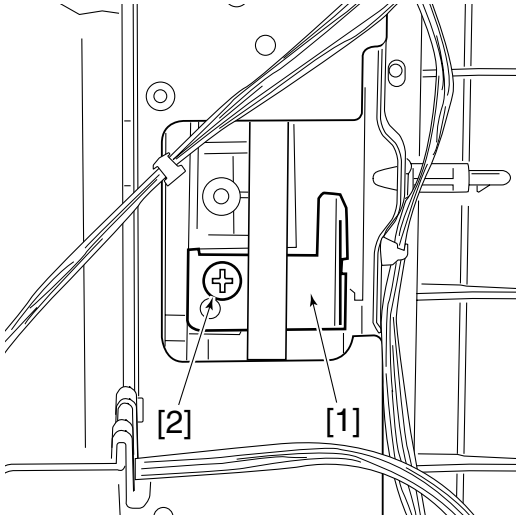


Figure 3-612

Note:
When removing the mounting screw [2], be sure to hold the stack tray guide lever [3] up from below.

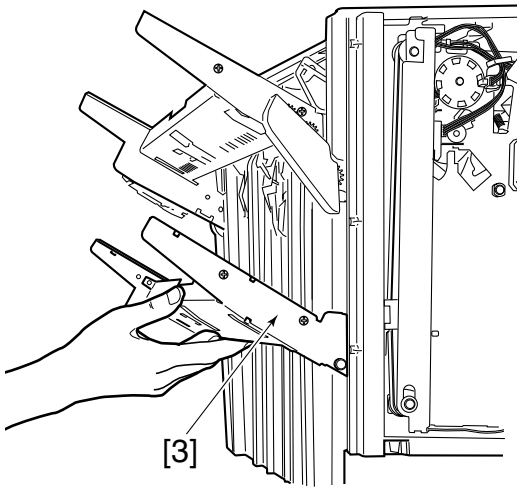


Figure 3-613

D. 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].

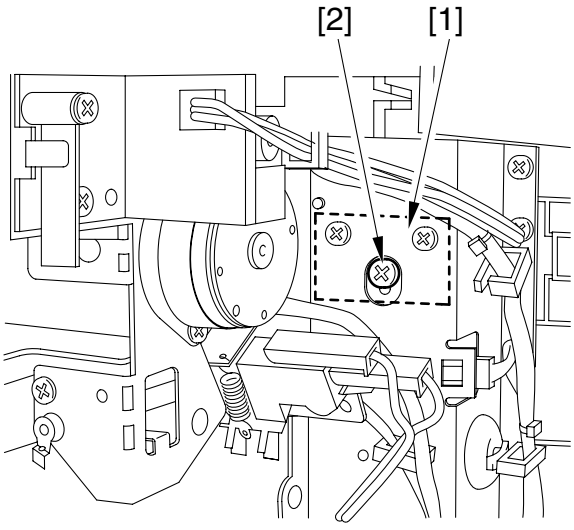


Figure 3-614

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.
3) Tighten the mounting screw [2] of the belt pulley plate [1] to add the tension of the stack tray guide lever belt [4].

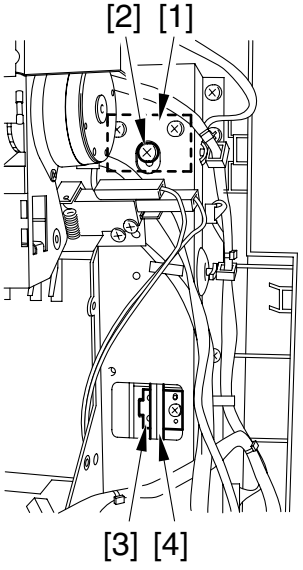


Figure 3-615

VII.STAPLER

A. Removing the Stapler

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the finisher controller PCB [2]. (See VIII PCBs.)
3) Remove the two mounting screws [3] and detach the stapler [4].

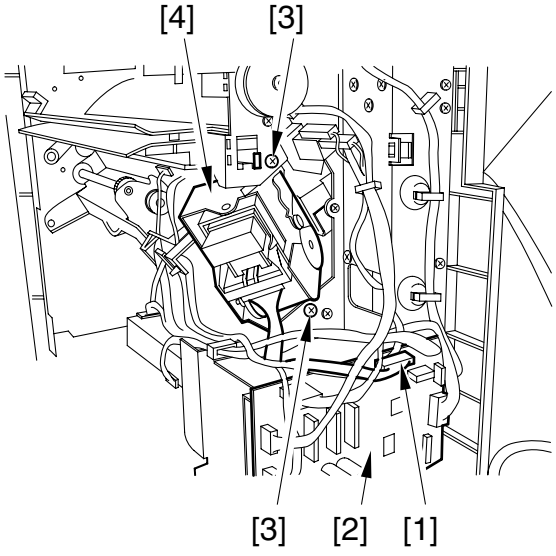


Figure 3-701

VIII. PCBs

A. Removing the Finisher Controller PCB

1) Remove the rear cover. (Figure 3-103)
2) Disconnect the 16 connectors [1], and remove the four mounting screws [2]; then, detach the finisher controller PCB [3].

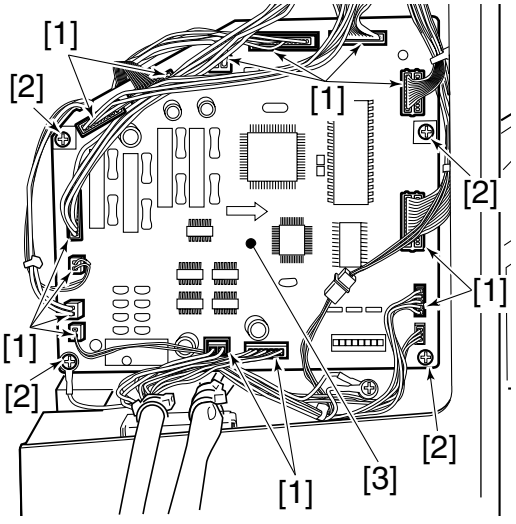


Figure 3-801

CHAPTER 4

MAINTENANCE AND INSPECTION

I. PERIODICALLY REPLACED PARTS 4-1
II. CONSUMABLES AND DURABLES 4-1
III. SCHEDULED MAINTENANCE ... 4-1

I. PERIODICALLY REPLACED PARTS

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

II. CONSUMABLES AND DURABLES

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

III. SCHEDULED MAINTENANCE

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

CHAPTER 5

TROUBLESHOOTING

I. ADJUSTMENTS 5-1
II. TROUBLESHOOTING 5-12
III. ARRANGEMENT OF ELECTRICAL PARTS 5-17

I. ADJUSTMENTS

A. Adjusting the Jogging Plate Width

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 SW1 on the finisher controller PCB as shown in Figure 5-101.

2-2) Press SW2 twice on the finisher controller PCB.

- The front jogging plate moves to the home position.

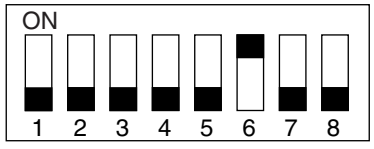


Figure 5-101

3) Adjust the rear jogging plate to the home position.

3-1) Set SW1 on the finisher controller PCB as shown in Figure 5-102.

3-2) Press SW2 twice on the finisher controller PCB.

- The rear jogging plate moves to the home position.

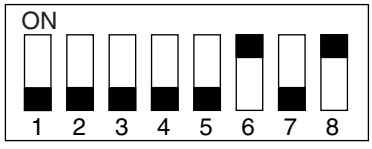


Figure 5-102

Rear jogging plate home position

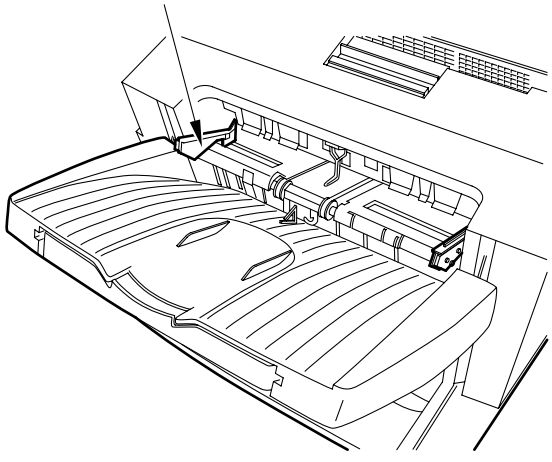


Figure 5-103

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.

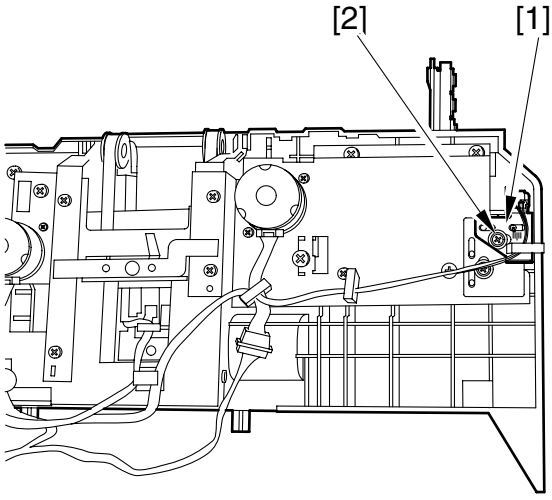


Figure 5-104

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.

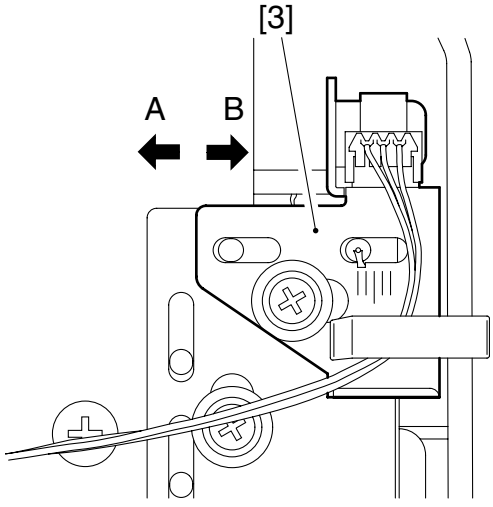


Figure 5-105

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 [1].

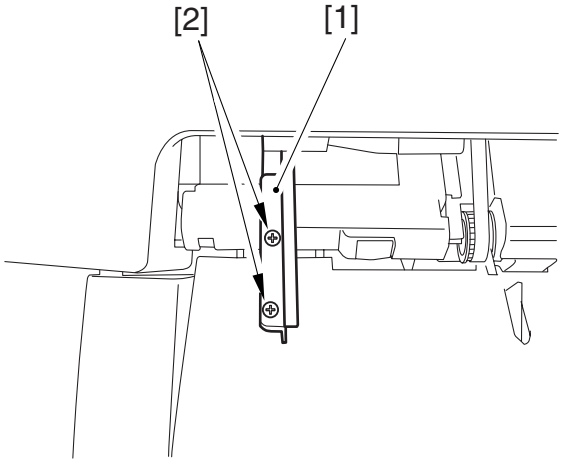


Figure 5-106

2) Place several sheets of A4/LT 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.)

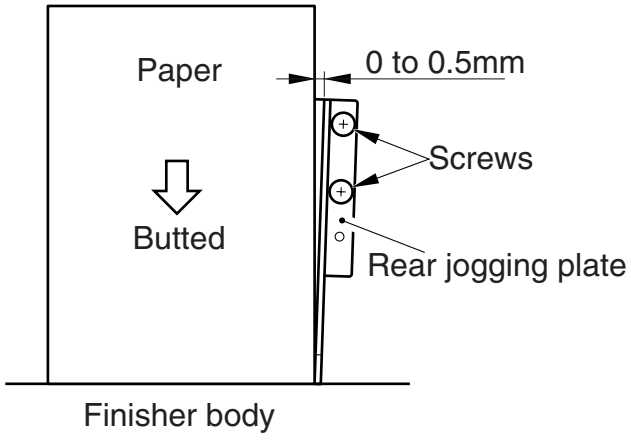


Figure 5-107

3) With reference to the rear jogging plate adjusted in step 2), adjust the front jogging plate in the same manner.

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 to the left and the right.

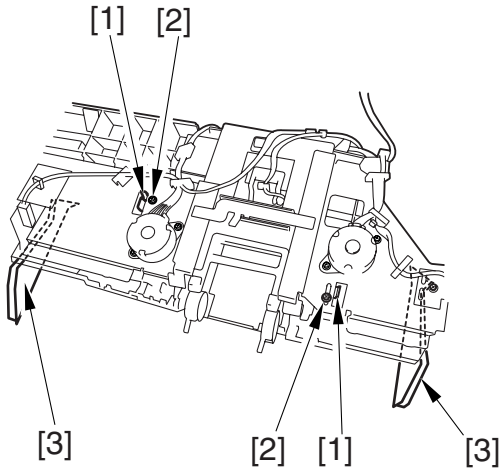


Figure 5-108

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.

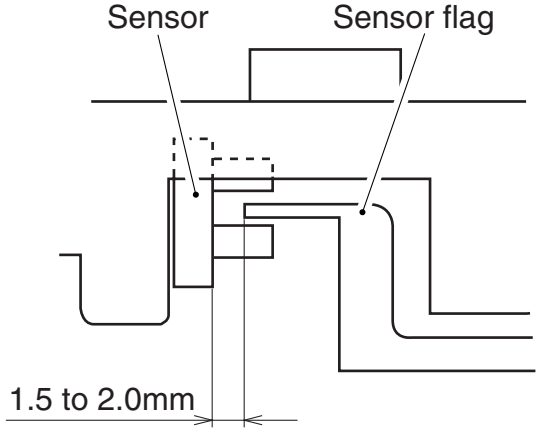


Figure 5-109

D. Adjusting the Tension of the Stack Processing Motor Belt

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the two mounting screws [3], and detach the grip unit [4].

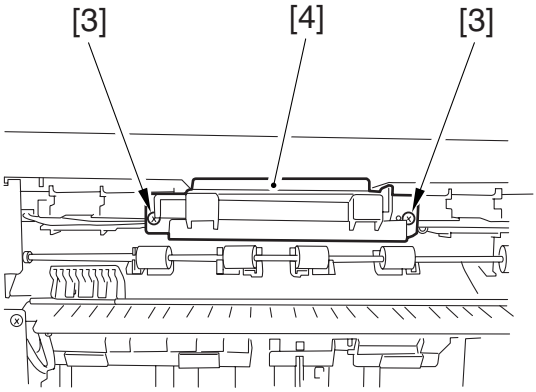


Figure 5-110

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

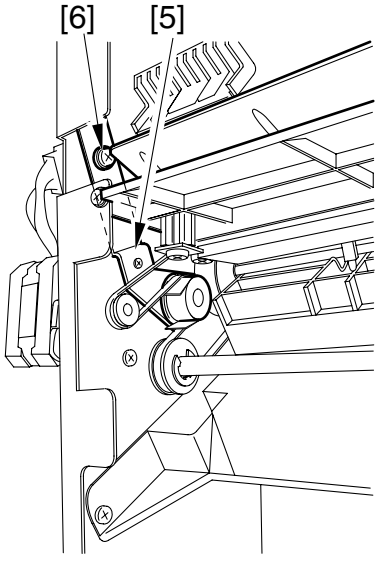


Figure 5-111

4) Move the returning roller shaft [7] to its lower limit (the slack of a belt is lightly taken); then, tighten the screw [6] on the tension arm plate [5].

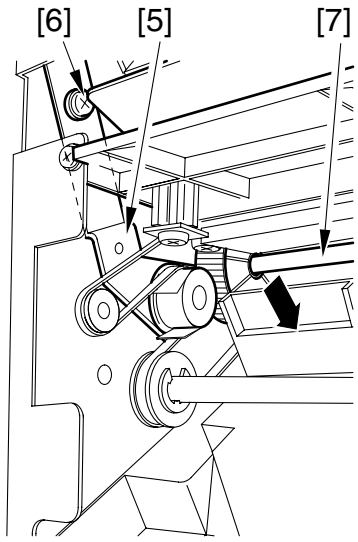


Figure 5-112

5) Check to make sure that the returning roller shaft [7] moves smoothly.

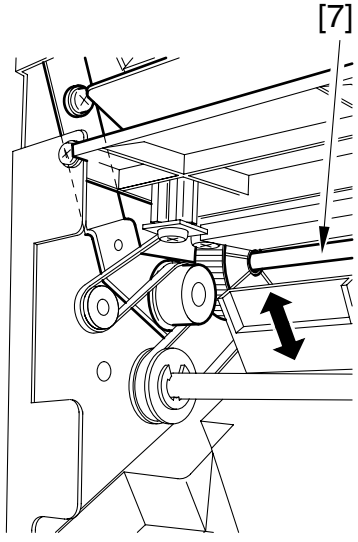


Figure 5-113

E. Releasing the Stack Tray Guide Lever Fixing Plate

1) Remove the inside right cover and the rear cover. (Figure 3-103)
2) Remove the finisher control PCB, PCB bracket and sensor PCB.
3) Remove the stack tray. (Figure 3-501)
4) Remove the stack tray drive unit.
5) Place the stack tray guide lever fixing plate [1] so that it is in view through the hole in the side plate (front, rear). Then remove the fixing screw [2]. (Perform the same for the front and the rear.)

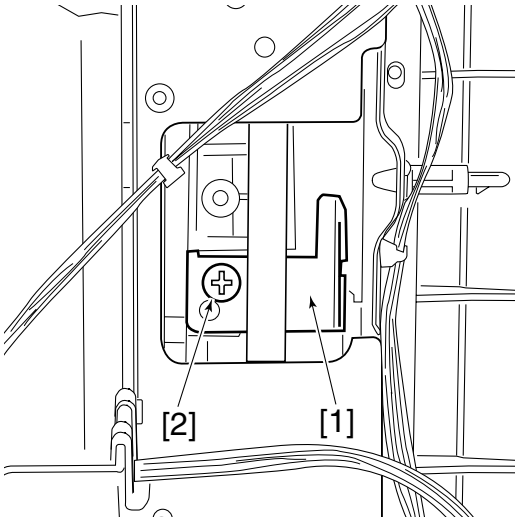


Figure 5-114

Note:
When removing the mounting screw [2], be sure to hold the stack tray guide lever [3] up from below.

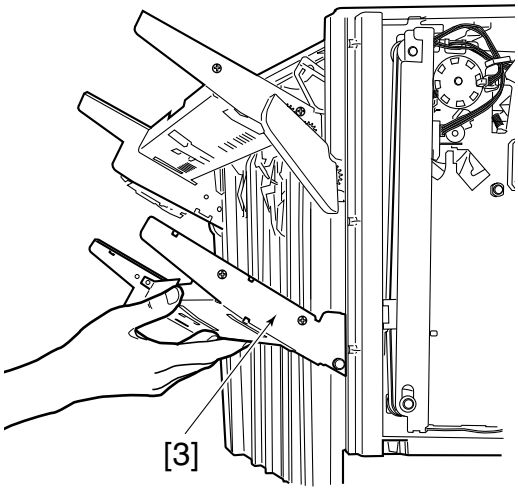


Figure 5-115

F. Adjustment of the Upper Tray Angle

1) Remove the front cover.

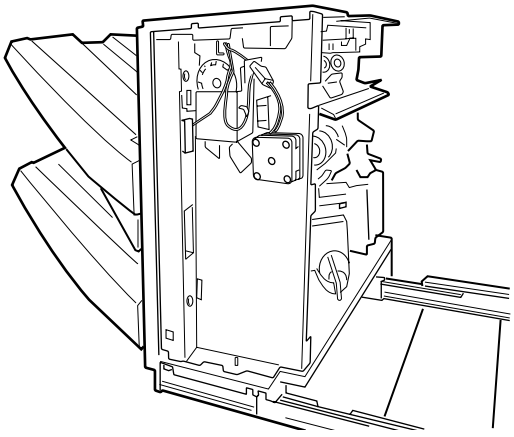


Figure 5-116

2) Loosen the screw of the arrow.

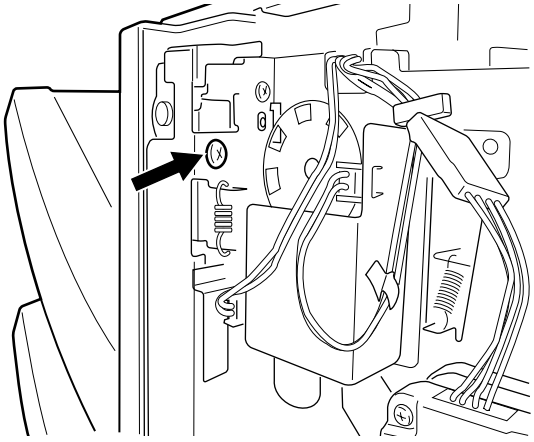


Figure 5-117

3) The tension becomes loose.
While pushing the bracket down, hold the tray and move it up or down, to adjust the angle so that the tray becomes parallel by a visual.

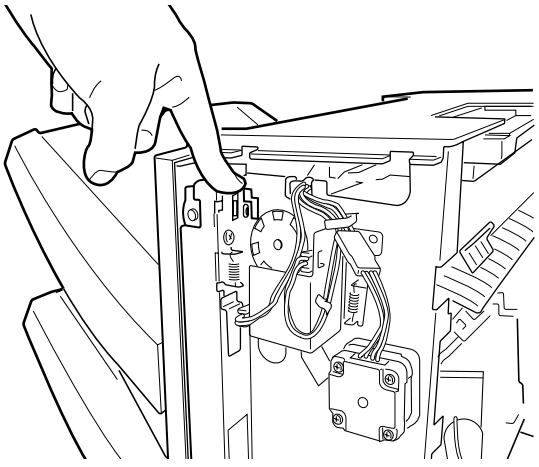


Figure 5-118

4) After the height adjustment, tighten the fixing screw of the bracket.

Note

If the fixing screw of the bracket is not fixed, the belt is loosened which may cause a skipped tooth.

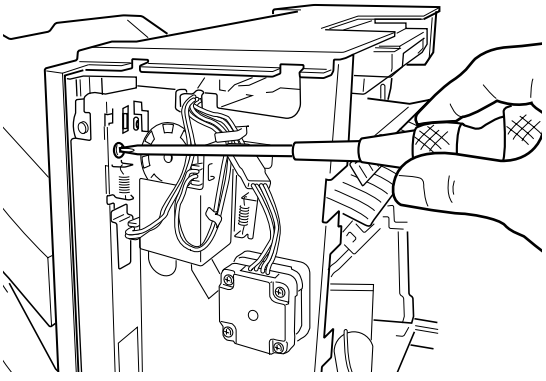


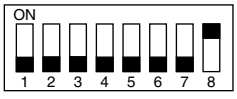
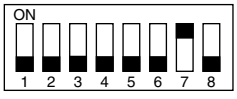
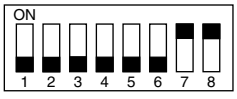
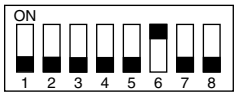
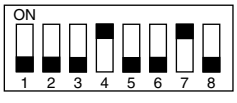
Figure 5-119

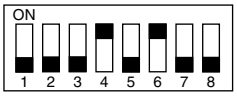
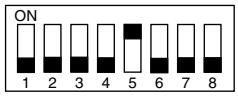
G. DIP Switch Functions

You can simulate various functions by setting the DIP switch (SW1) on the finisher controller PCB appropriately.

■ Initiating Operations

1) Remove any obstacles from the area of operation.
2) Set the DIP switch (SW1) as shown, and turn on the power (so that LED1 will start to flash).
3) Press the pushing switch (SW2) twice 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 speed.		• Press SW2. • 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 not at the home position	The front jogging plate moves to its home position and stops.	• Turn OFF the joint sensor (S4).
		When at the 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 not at the home position	The front jogging plate moves to the home position and stops.	• Turn OFF the joint sensor (S4).
		When at the home position	The front jogging plate moves over a specific distance and stops.	• Turn OFF the joint sensor (S4).
	Upper stack tray motor (up)	The upper stack tray moves up and stops when the upper stack tray upper limit sensor turns on.		• Press SW2. • Turn OFF the joint sensor (S4).
	Upper stack tray motor (down)	The upper stack tray moves down and stops when the lower stack tray paper full sensor turns on.		• Press SW2. • Turn OFF the joint sensor (S4).

Setting	Item	Operation	To stop
	Lower stack tray motor (up)	The lower stack tray moves up and stops when the lower stack tray upper limit sensor is turned ON.	• Press SW2. • Turn OFF the joint sensor (S4).
	Lower stack tray motor (down)	The lower stack tray moves down and stops when the lower stack tray lower limit sensor is turned ON.	• Press SW2. • Turn OFF the joint sensor (S4).
	Stapler motor	The stapler motor stops after the stapling operation.	• Press the stapler safety switch (S14). • Turn OFF the joint sensor (S4).
	Shipping position operation	The upper and lower stack tray move to the shipping position and stop.	• Turn OFF the joint sensor (S4).

Note:

Perform the shipping position operation when the finisher is packed again.

II. TROUBLESHOOTING

1. Fault in communication between copier and finisher

Cause	Step	Checks	Yes/No	Action
Finisher controller PCB, DC controller (copier)	1	Turn on and then 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. 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. 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. Fault in the rear jogging plate motor M4

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 the 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 roller?	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. Fault in the staple motor M6

Cause	Step	Checks	Yes/No	Action
Wiring	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. Fault in the front jogging motor M3

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 roller?	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. Fault in the stack processing motor M2; returning (CCW) direction

Cause	Step	Checks	Yes/No	Action
Stack processing motor (M2)	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?	Yes	End.
Finisher controller PCB			No	Replace the finisher controller PCB.

8. Fault in the upper stack tray lifter motor M5

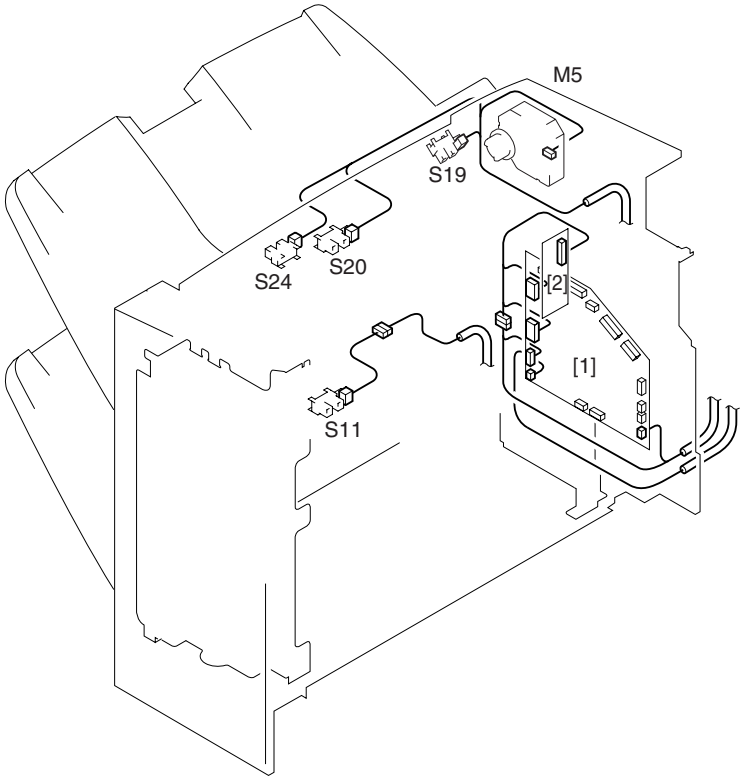
Cause	Step	Checks	Yes/No	Action
Wiring	1	Is the wiring between the finisher controller PCB and the upper stack tray lifter motor (M5) normal?	No	Correct the wiring.
Tray (phase)	2	Is the phase (discrepancy in height) between the front and the rear of the upper stack tray correct?	No	Make adjustments so that the phase is correct.
Upper stack tray lifter motor clock sensor (S19)	3	Check the upper stack tray lifter motor clock sensor (S19). Is it normal?	No	Replace the sensor.
Stack tray paper height sensor (S10)	4	Check the stack tray paper height sensor (S10). Is it normal?	No	Replace the sensor.
Upper stack tray upper limit sensor (S25), Lower stack tray full sensor (S23)	5	Check the upper stack tray upper limit sensor (S25) and the lower stack tray full sensor (S23). Are they normal?	No	Replace the sensor.
Stack processing safety switch (S26)	6	Check the stack processing safety switch (S26). Is it normal?	No	Replace the switch.
Finisher controller PCB	7	Does the voltage between J14-1 and -2 on the finisher controller PCB change to 24 V as soon as the upper stack tray lifter motor (M5) starts to rotate?	No	Replace the finisher controller PCB.
Upper stack tray lifter motor (M5)			Yes	Check the wiring from the upper stack tray lifter motor (M5) to the finisher controller PCB; if normal, replace the motor.

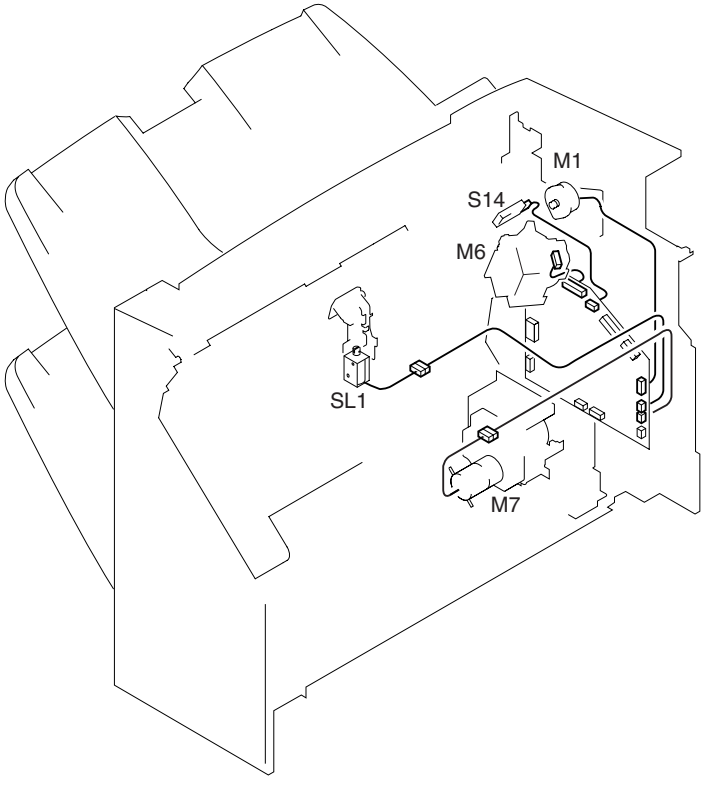
9. Fault in the lower stack tray lifter motor M7

Cause	Step	Checks	Yes/No	Action
Wiring	1	Is the wiring between the finisher controller PCB and the lower stack tray lifter motor (M7) normal?	No	Correct the wiring.
Tray (phase)	2	Is the phase (discrepancy in height) between the front and the rear of the lower stack tray correct?	No	Make adjustments so that the phase is correct.
Lower stack tray lifter motor clock sensor (S9)	3	Check the lower stack tray lifter motor clock sensor (S9). Is it normal?	No	Replace the sensor.
Stack tray paper height sensor (S10)	4	Check the stack tray paper height sensor (S10). Is it normal?	No	Replace the sensor.
Lower stack tray upper limit sensor (S13), Lower stack tray lower limit sensor (S12)	5	Check the lower stack tray upper limit sensor (S13) and the lower stack tray lower limit sensor (S12). Are they normal?	No	Replace the sensor.
Finisher controller PCB	6	Does the voltage between J3-1 and -2 on the finisher controller PCB change to 24 V as soon as the lower stack tray lifter motor (M7) starts to rotate?	No	Replace the finisher controller PCB.
Lower stack tray lifter motor (M7)			Yes	Check the wiring from the lower stack tray lifter motor (M7) to the finisher controller PCB; if normal, replace the motor.

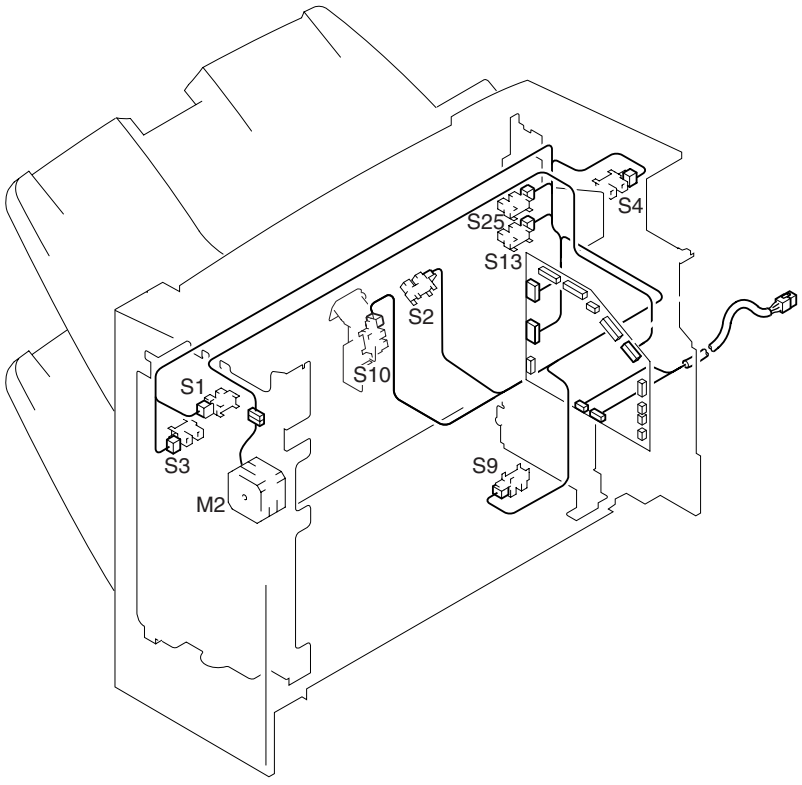
III. ARRANGEMENT OF ELECTRICAL PARTS

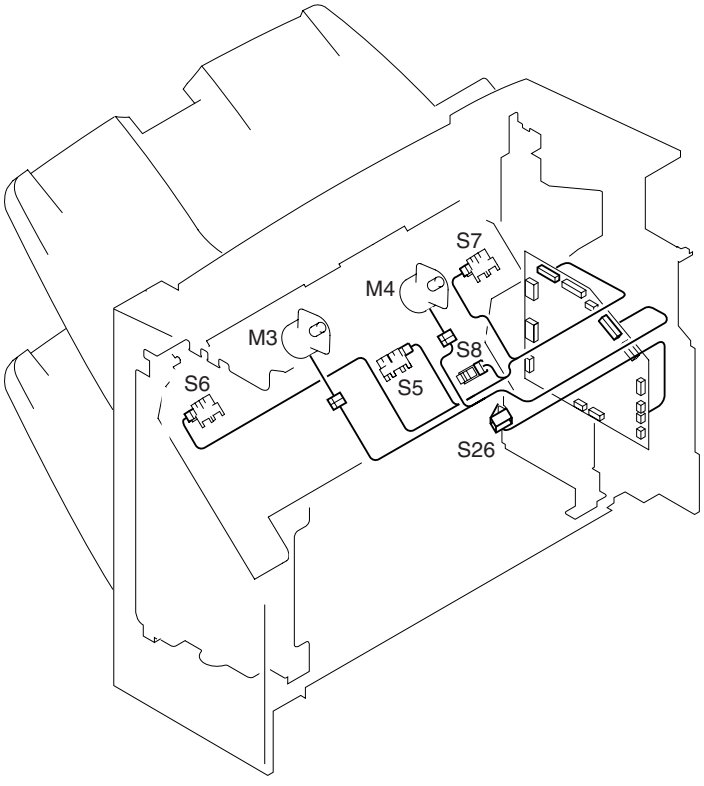
1. Arrangement of Electrical Parts (1/2)





1. Arrangement of Electrical Parts (2/2)





1. Sensors

Name	Notation	Description
Photointerruptor	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	Lower stack tray lifter motor clock detection
	S10	Stack tray paper height detection
	S11	Lower stack tray paper detection
	S12	Lower stack tray lower limit detection (inside sensor PCB)
	S13	Lower stack tray upper limit detection
	S15	Staple edging detection (inside stapler unit)
	S17	Stapling home position detection (inside stapler unit)
	S19	Upper stack tray lifter motor clock detection
	S20	Upper stack tray paper detection
	S21	Stack tray nearly full detection (inside sensor PCB)
	S22	Upper stack tray full detection (inside sensor PCB)
	S23	Lower stack tray full detection (inside sensor PCB)
	S24	Stack tray collision detection
	S25	Upper stack tray upper limit detection

2. Motors

Name	Notation	Description
Motor	M1	Delivery motor
	M2	Stack processing motor
	M3	Front jogging plate motor
	M4	Rear jogging plate motor
	M5	Upper stack tray lifter motor
	M6	Stapler motor
	M7	Lower stack tray lifter motor

3. Solenoid

Name	Notation	Description
Solenoid	SL1	Paper holding lever drive solenoid

4. Microswitches

Name	Notation	Description
Microswitch	S14	Stapler safety detection
	S16	No staple detection (inside stapler unit)
	S18	Stapler cartridge detection (inside stapler unit)
	S26	Stack processing safety switch

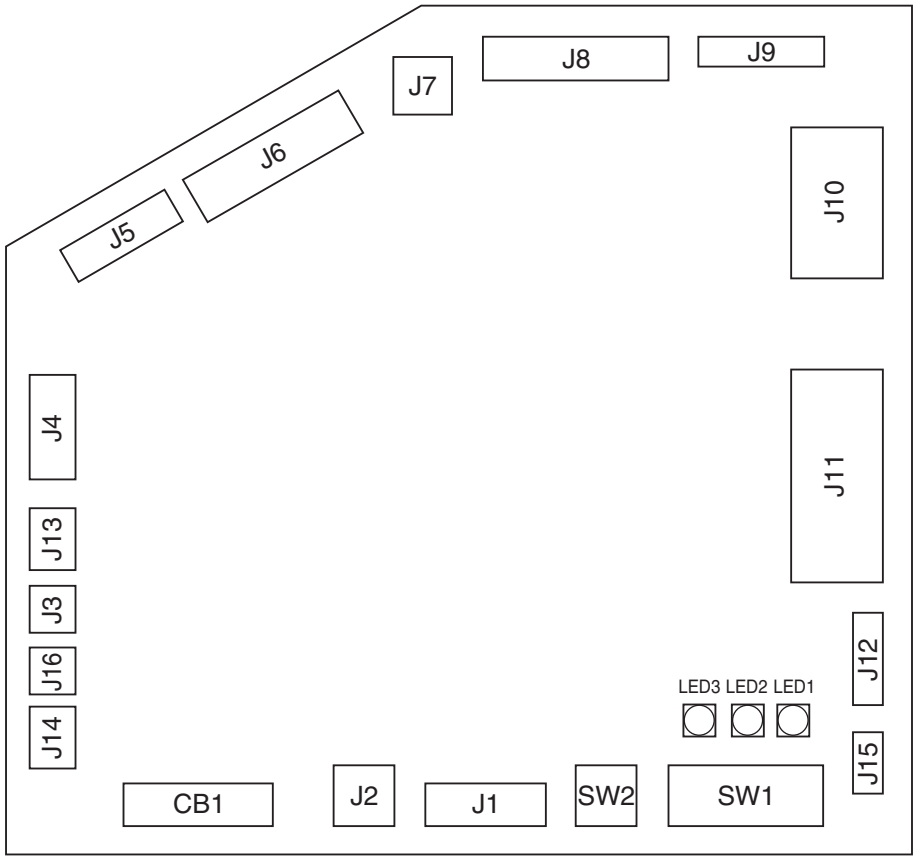
5. PCBs

Ref.	Description
[1]	Finisher controller PCB
[2]	Sensor PCB

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.

Note:
1. Some LEDs emit a 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. They require special tools and a high degree of accuracy. Do not touch them in the field.



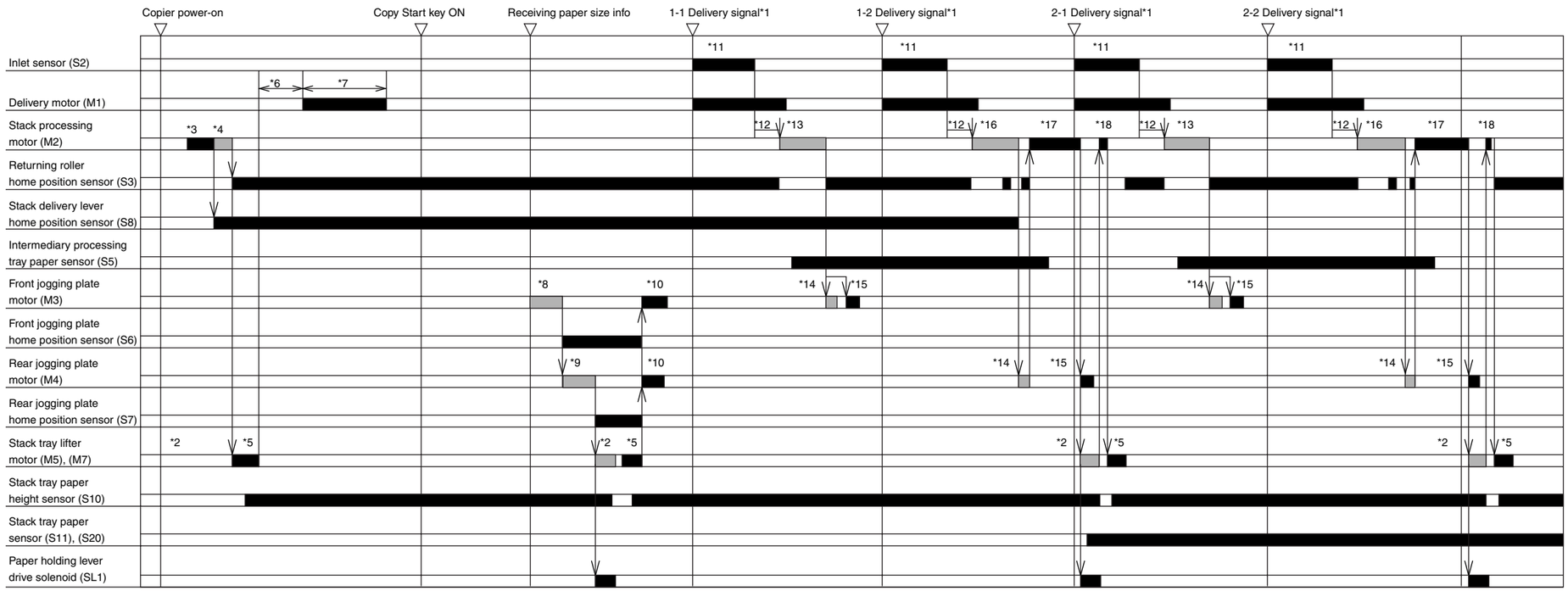
SW1: for the setting test mode. (DIP SW)
SW2: for the starting test mode. (PUSH SW)
LED1: for the test mode.
LED2: for the test mode.
LED3: for the test mode.

APPENDIX

A. GENERAL TIMING CHART A-1
B. SIGNALS AND ABBREVIATIONS A-3
C. GENERAL CIRCUIT DIAGRAM A-7
D. FINISHER CONTROLLER CIRCUIT DIAGRAM A-8
E. SOLVENTS AND OILS A-18

A. GENERAL TIMING CHART

General Timing Chart
(2 original, 2 sets)

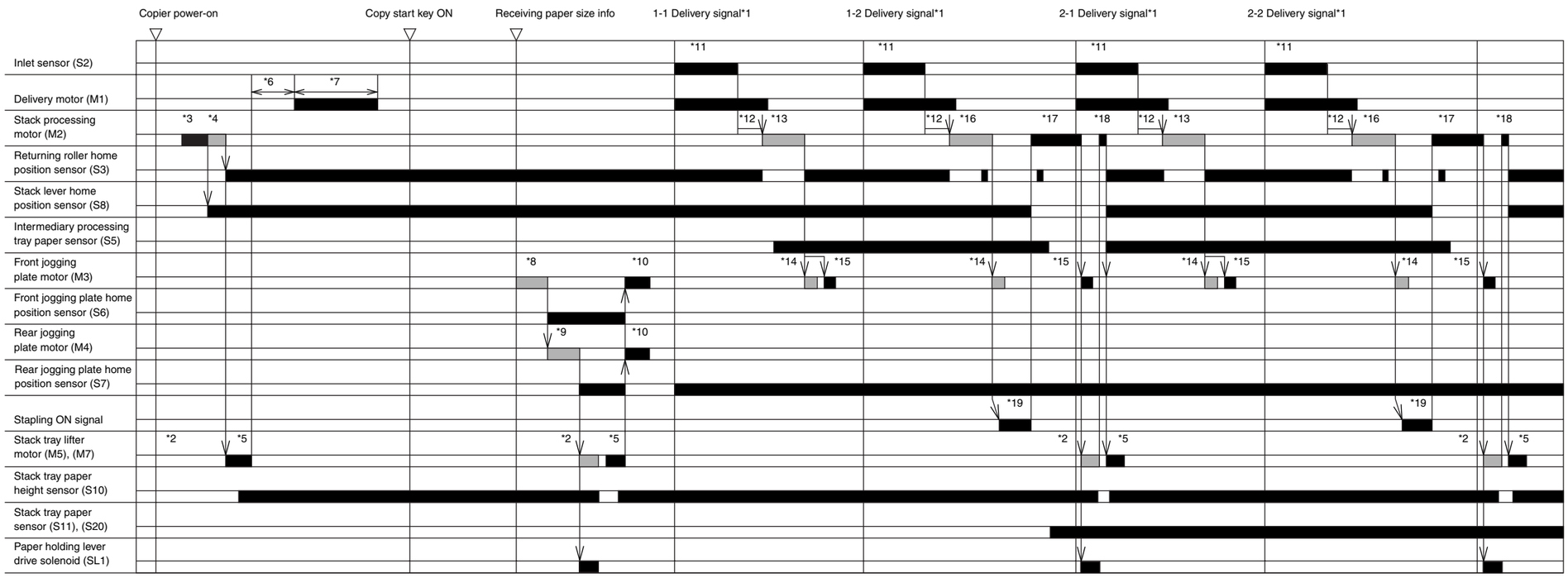


: CW rotation : CCW rotation

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 (“A” number of stack, “B”th sheet).
*2: Moved down until the stack tray paper height sensor goes off.
*3: Driven until the stack delivery lever home position sensor comes on.
*4: Driven until the returning roller home position sensor comes on.
*5: Moved up 12.5mm after the stack tray paper height sensor comes on.
*6: 0.7 sec.
*7: 4 sec. (approx.)
*8: Driven until the front jogging plate home position sensor comes on.
*9: Driven until the rear jogging plate home position sensor comes 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 ("A" number of stack, "B"th sheet).
*2: Moved down until the stack tray paper height sensor goes off.
*3: Driven until the stack delivery lever home position sensor comes on.
*4: Driven until the returning roller home position sensor comes on.
*5: Moved up 12.5mm after the stack tray paper sensor comes on.
*6: 0.7 sec.
*7: 4 sec. (approx.)
*8: Driven until the front jogging plate home position sensor comes on.
*9: Driven until the rear jogging plate home position sensor comes 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 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.
*19: Turned on 0.1 sec. after the returning roller is turned off.

B. SIGNALS AND ABBREVIATIONS

1. Detection Switch and Sensor Signal Abbreviation

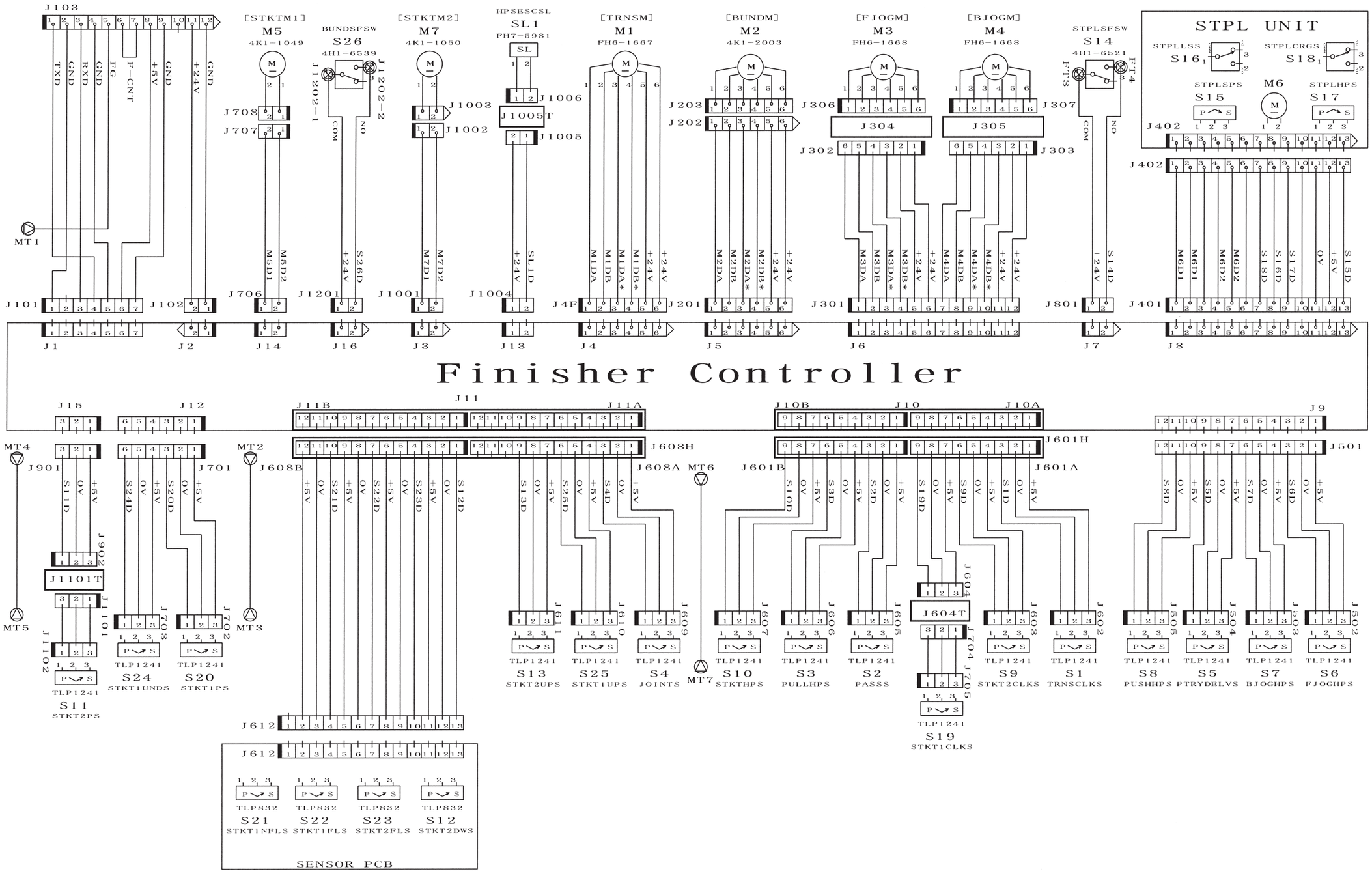
S1D DELIVERY MOTOR CLOCK DETECTION signal
S2D INLET PAPER DETECTION signal
S3D RETURNING ROLLER HOME POSITION signal
S4D JOINT DETECTION signal
S5D INTERMEDIARY PROCESSING TRAY PAPER DETECTION signal
S6D FRONT JOGGING PLATE HOME POSITION signal
S7D BACK ALIGNMENT PLATE HOME POSITION signal
S8D STACK DELIVERY LEVER HOME POSITION signal
S9D LOWER STACK TRAY LIFT MOTOR CLOCK signal
S10D STACK TRAY PAPER HEIGHT DETECTION signal
S11D LOWER STACK TRAY PAPER DETECTION signal
S12D LOWER STACK TRAY LOWER LIMIT DETECTION signal
S13D LOWER STACK TRAY UPPER LIMIT DETECTION signal
S14D STAPLER SAFETY DETECTION signal
S15D STAPLE EDGING DETECTION signal
S16D NO-STAPLE DETECTION signal
S17D STAPLING HOME POSITION DETECTION signal
S18D STAPLE CARTRIDGE DETECTION signal
S19D UPPER STACK TRAY LIFT MOTOR CLOCK signal
S20D UPPER STACK TRAY PAPER DETECTION signal
S21D STACK TRAY NEARLY FULL DETECTION signal
S22D UPPER STACK TRAY FULL DETECTION signal
S23D LOWER STACK TRAY FULL DETECTION signal
S24D STACK TRAY COLLISION DETECTION signal
S25D UPPER STACK TRAY UPPER LIMIT DETECTION signal
S26D STACK PROCESSING SAFETY DETECTION signal

2. Logic Signal Abbreviation

Notation	Part Name	Abbreviation	Full name
M1	Delivery motor	TRNSM	Transport Motor
M2	Stack processing motor	BUNDM	Bundle Motor
M3	Front jogging motor	FJOGM	Front Jog Motor
M4	Rear jogging motor	BJOGM	Back Jog Motor
M5	Upper stack tray lift motor	STKT1M	Stack Tray 1 Motor
M6	Stapler motor	STPLM	Staple Motor
M7	Lower stack tray lift motor	STKT2M	Stack Tray 2 Motor
SL1	Paper holding lever drive solenoid	HPSESCSL	Home Position Escape Solenoid
S1	Delivery motor clock sensor	TRNSCLKS	Transport Clock Sensor
S2	Inlet paper sensor	PASSS	Pass Sensor
S3	Returning roller home position sensor	PULLHPS	Pull Home Position Sensor
S4	Finisher joint sensor	JOINTS	Joint Sensor
S5	Intermediary processing tray paper sensor	PTRYDELVS	Pretray Delivery Sensor
S6	Front jogging plate home position sensor	FJOGHPS	Front Jog Home Position Sensor
S7	Rear jogging plate home position sensor	BJOGHPS	Back Jog Home Position Sensor
S8	Stack delivery lever home position sensor	PUSHHPS	Push Home Position Sensor
S9	Lower stack tray lift motor clock sensor	STKT2CLKS	Stack Tray 2 Clock Sensor
S10	Stack tray paper height sensor	STKTHPS	Stack Tray Home Position Sensor
S11	Lower stack tray paper sensor	STKT2PS	Stack Tray 2 Paper Sensor
S12	Lower stack tray lower limit sensor	STKT2DWS	Stack Tray 2 Down Sensor
S13	Lower stack tray upper limit sensor	STKT2UPS	Stack Tray 2 Up Sensor
S14	Stapler safety switch	STPLSFSW	Staple Safety Switch
S15	Staple edging detection sensor	STPLSPS	Staple Self-Priming Sensor
S16	No-staple detection switch	STPLLSS	Staple Low Staple Sensor
S17	Stapling home position sensor	STPLHPS	Staple Home Position Sensor
S18	Stapler cartridge detection switch	STPLCRGS	Staple Cartridge Sensor
S19	Upper stack tray lift motor clock sensor	STKT1CLKS	Stack Tray 1 Clock Sensor
S20	Upper stack tray paper sensor	STKT1PS	Stack Tray 1 Paper Sensor
S21	Stack tray nearly full sensor	STKT1NFLS	Stack Tray 1 Near-full Sensor
S22	Upper stack tray full sensor	STKT1FLS	Stack Tray 1 Full Sensor
S23	Lower stack tray full sensor	STKT2FLS	Stack Tray 2 Full Sensor
S24	Stack tray collision prevention sensor	STKT1UNDS	Stack Tray 1 Under Sensor
S25	Upper stack tray upper limit sensor	STKT1UPS	Stack Tray 1 Up Sensor
S26	Stack processing safety switch	BUNDSFSW	Bundle Safety Switch

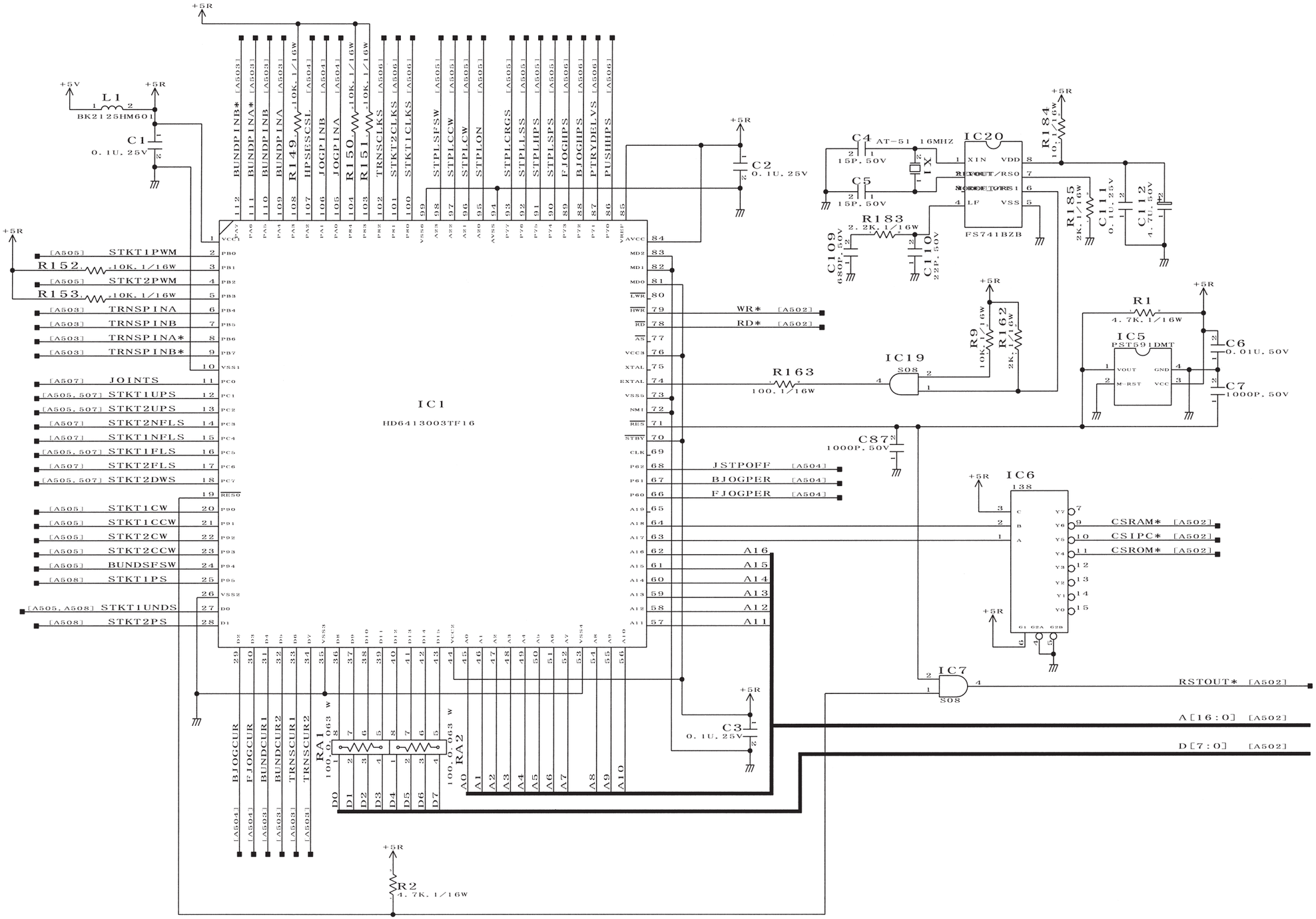
Notation	Part Name	Abbreviation	Full name
M1	Delivery motor	TRNSPINA	Transport Motor Pulse Input A Phase
		TRNSPINB	Transport Motor Pulse Input B Phase
		TRNSPINA*	Transport Motor Pulse Input A* Phase
		TRNSPINB*	Transport Motor Pulse Input B* Phase
		TRNSCUR1	Transport Motor Current 1
		TRNSCUR2	Transport Motor Current 2
M2	Stack processing motor	BUNDPINA	Bundle Motor Pulse Input A Phase
		BUNDPINB	Bundle Motor Pulse Input B Phase
		BUNDPINA*	Bundle Motor Pulse Input A* Phase
		BUNDPINB*	Bundle Motor Pulse Input B* Phase
		BUNDCUR1	Bundle Motor Current 1
		BUNDCUR2	Bundle Motor Current 2
M3/M4	Front/Rear jogging motor	JOGPINA	Jog Motor Pulse Input A Phase
		JOGPINB	Jog Motor Pulse Input B Phase
		FJOGCUR	Front Jog Motor Current
		BJOGCUR	Back Jog Motor Current
		FJOGPER	Front Jog Motor Permit
		BJOGPER	Back Jog Motor Permit
		JSTPOFF	Jog Step OFF
M5	Upper stack tray lift motor	STKT1PWM	Stack Tray 1 Motor PWM
		STKT1CW	Stack Tray 1 Motor Clockwise
		STKT1CCW	Stack Tray 1 Motor Counter-clockwise
M6	Stapler motor	STPLON	Staple Motor ON
		STPLCW	Staple Motor Clockwise
		STPLCCW	Staple Motor Counterclockwise
M7	Lower stack tray lift motor	STKT2PWM	Stack Tray 2 Motor PWM
		STKT2CW	Stack Tray 2 Motor Clockwise
		STKT2CCW	Stack Tray 2 Motor Counter-clockwise
Others		CSRAM*	Chip Select RAM
		CSIPC*	Chip Select IPC
		CSROM*	Chip Select ROM
		WR*	Write
		RD*	Read
		RSTOUT*	Reset Output
		POWER	Power

C. GENERAL CIRCUIT DIAGRAM

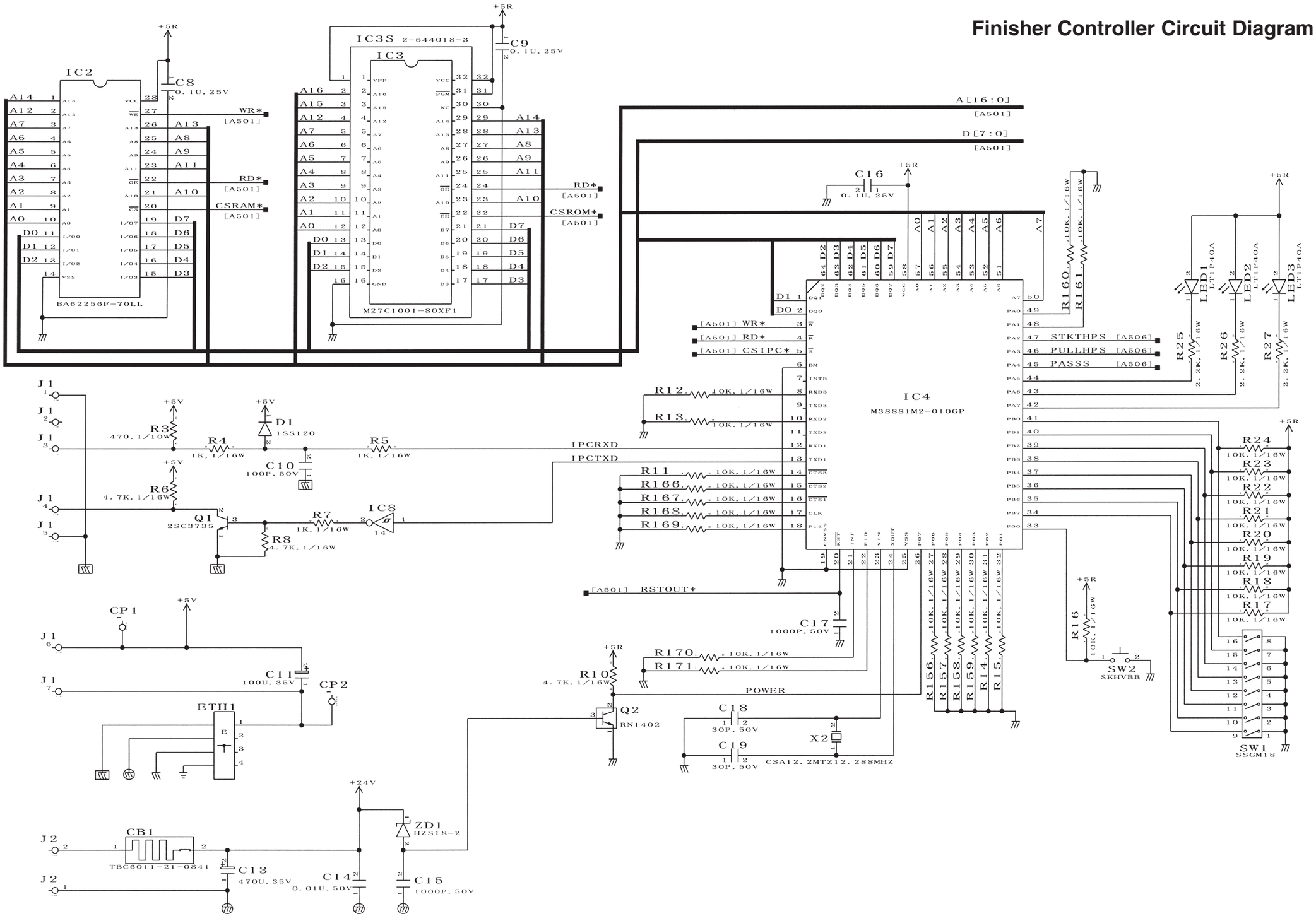


D. FINISHER CONTROLLER CIRCUIT DIAGRAM

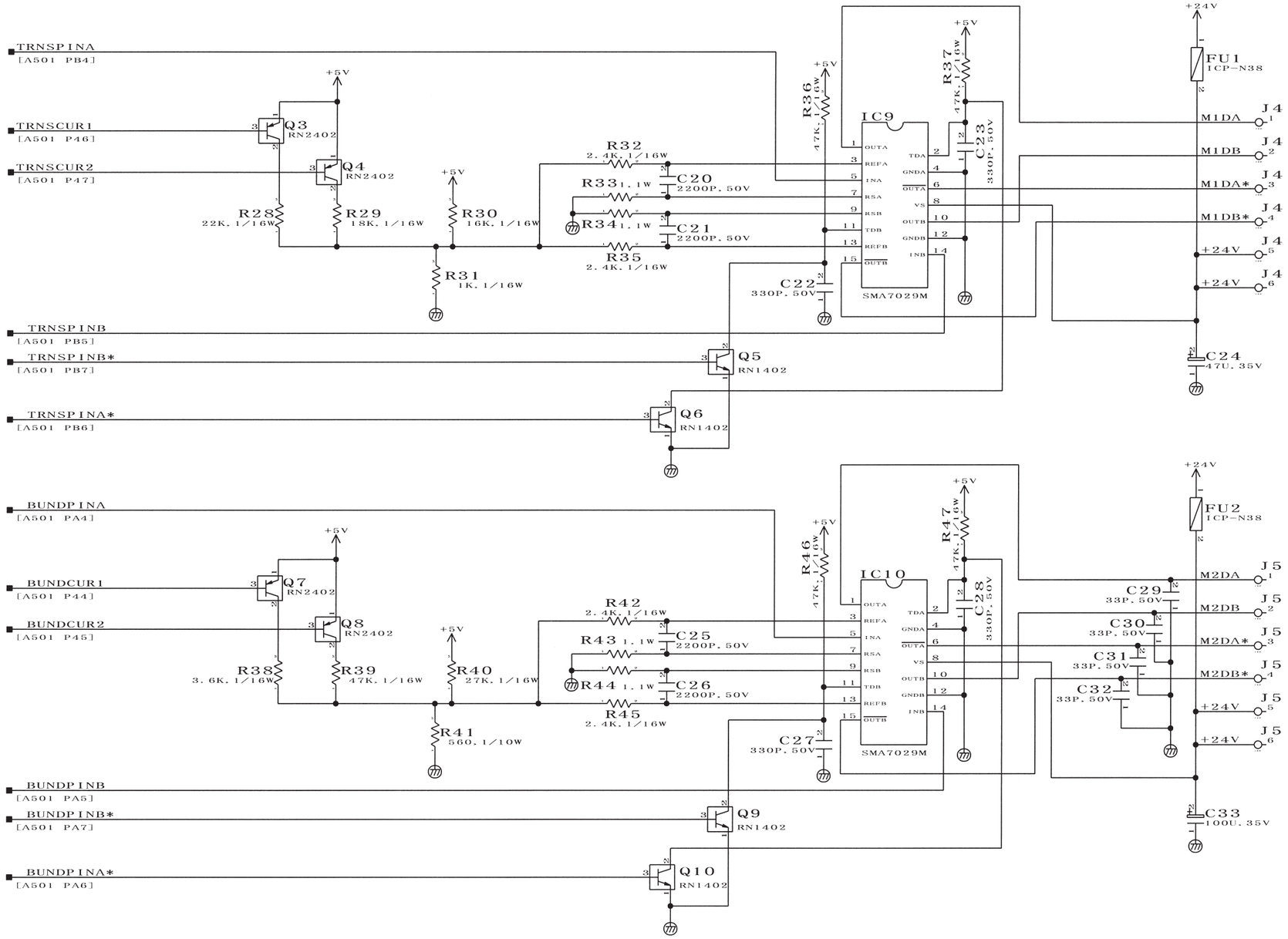
Finisher Controller Circuit Diagram (1/8)

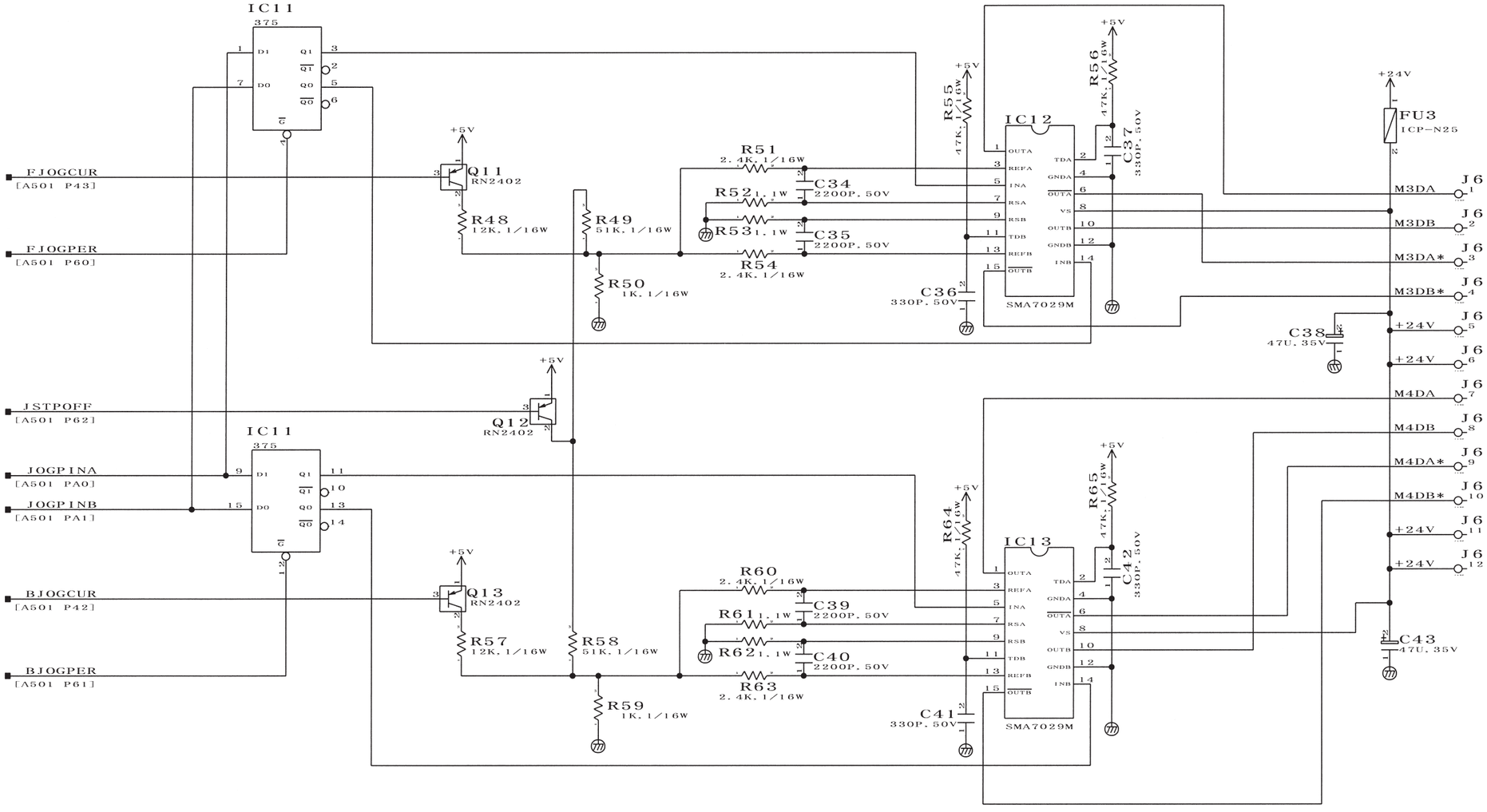


Finisher Controller Circuit Diagram (2/8)

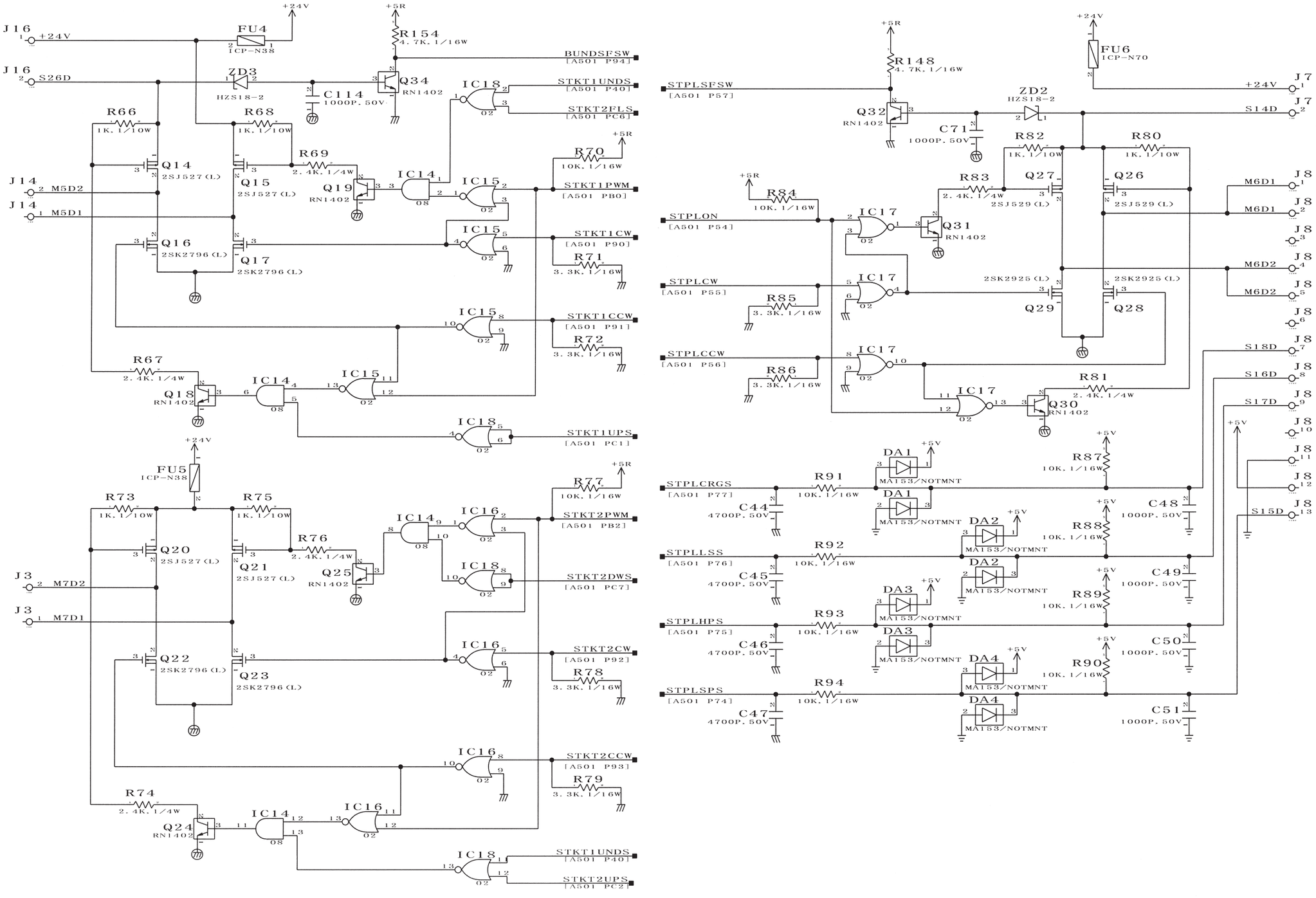


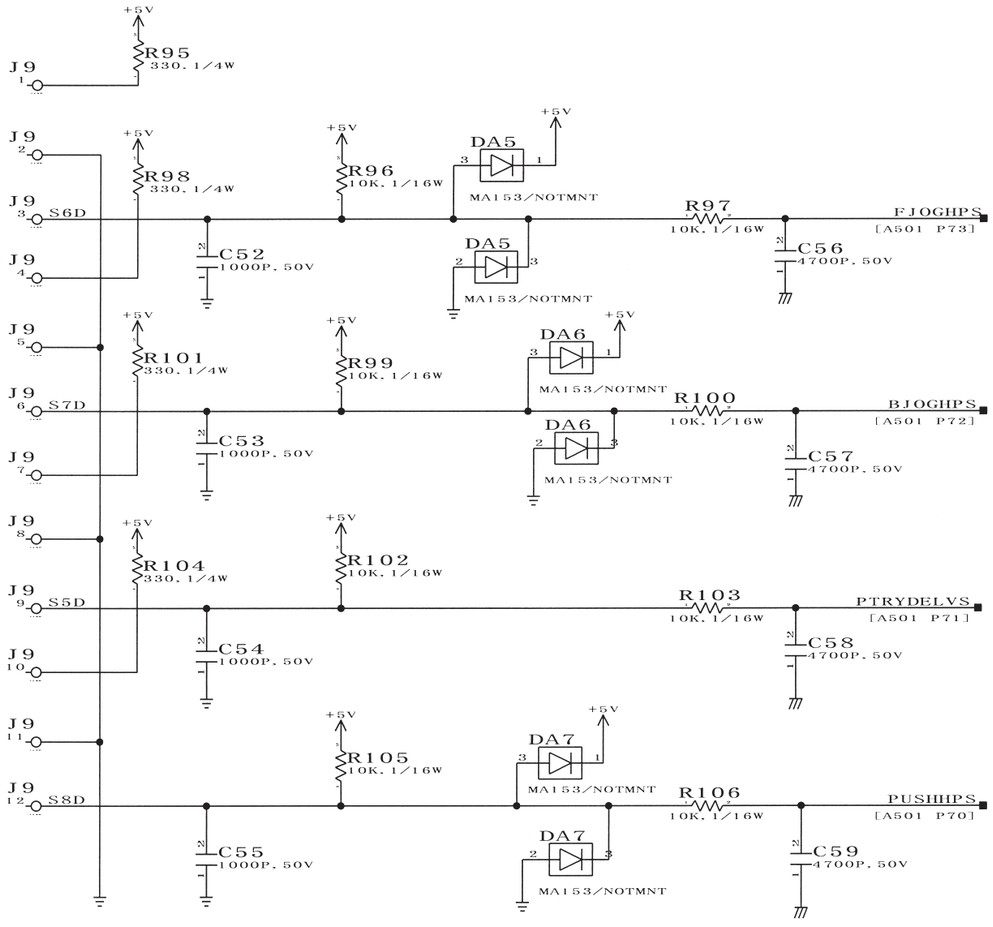
Finisher Controller Circuit Diagram (3/8)

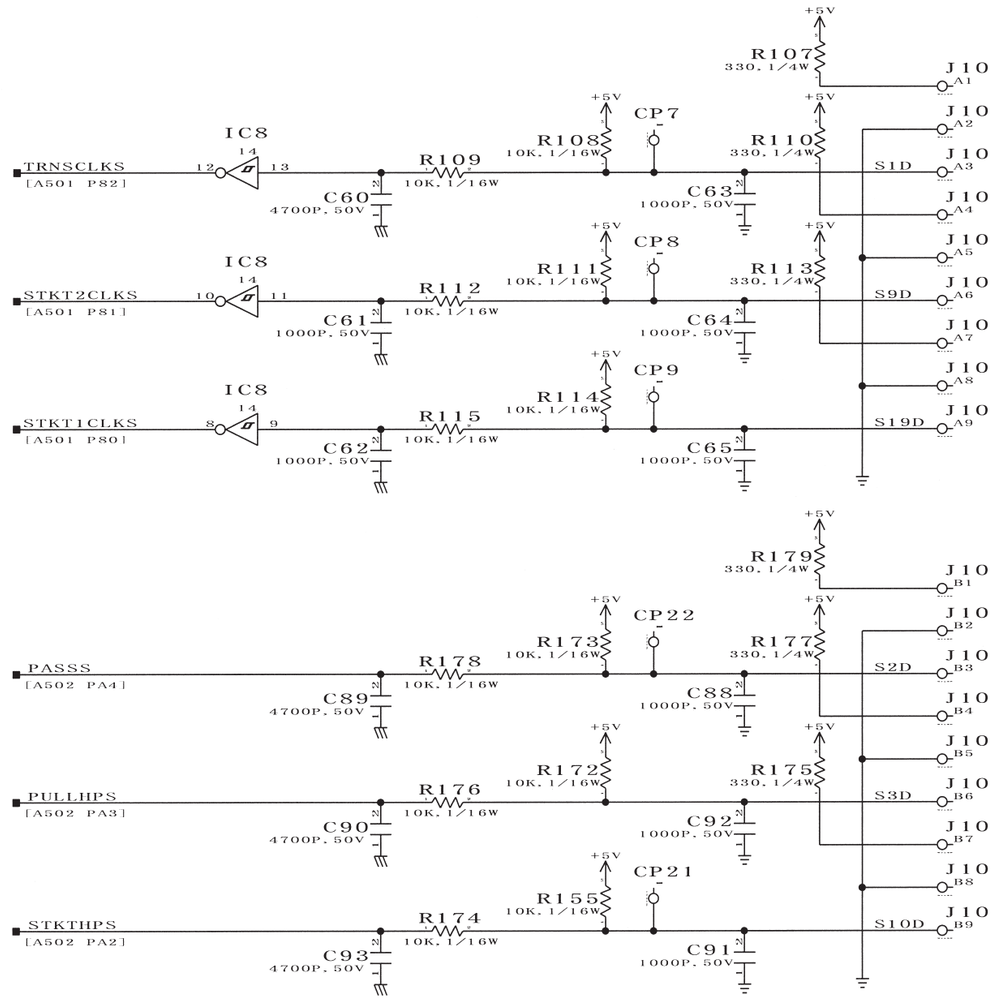



IC11
375
FJOGCUR
[A501 P43]
FJOGPER
[A501 P60]
JSTPOFF
[A501 P62]
JOGPINA
[A501 PA0]
JOGPINB
[A501 PA1]
BJOGCUR
[A501 P42]
BJOGPER
[A501 P61]
Q11
RN2402
Q12
RN2402
Q13
RN2402
R48
12K, 1/16W
R49
51K, 1/16W
R50
1K, 1/16W
R51
2.4K, 1/16W
R52
1, 1W
R53
1, 1W
R54
2.4K, 1/16W
R55
47K, 1/16W
R56
47K, 1/16W
C34
2200P, 50V
C35
2200P, 50V
C36
330P, 50V
C37
330P, 50V
IC12
SMA7029M
R57
12K, 1/16W
R58
51K, 1/16W
R59
1K, 1/16W
R60
2.4K, 1/16W
R61
1, 1W
R62
1, 1W
R63
2.4K, 1/16W
R64
47K, 1/16W
R65
47K, 1/16W
C39
2200P, 50V
C40
2200P, 50V
C41
330P, 50V
C42
330P, 50V
IC13
SMA7029M
FU3
ICP-N25
C38
47U, 35V
C43
47U, 35V
M3DA
M3DB
M3DA*
M3DB*
+24V
+24V
M4DA
M4DB
M4DA*
M4DB*
+24V
+24V
+5V
+24V
J6

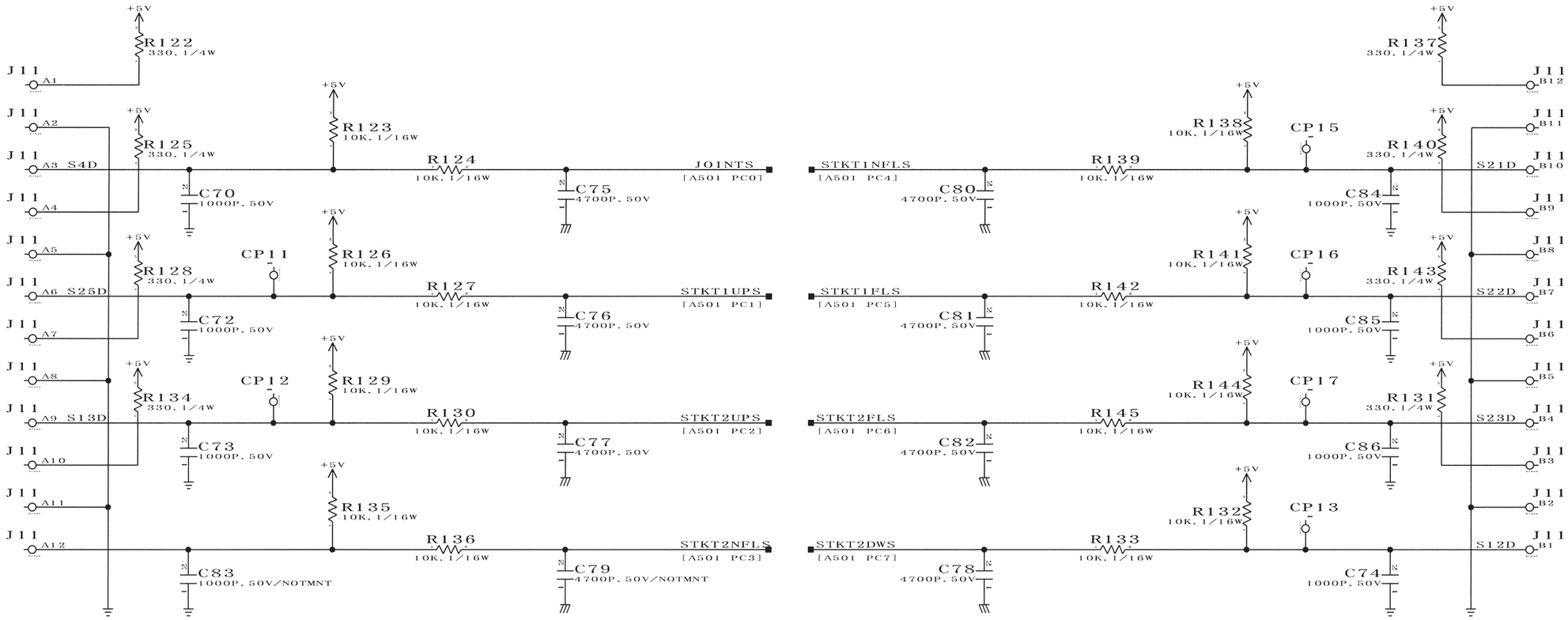
Finisher Controller Circuit Diagram (5/8)



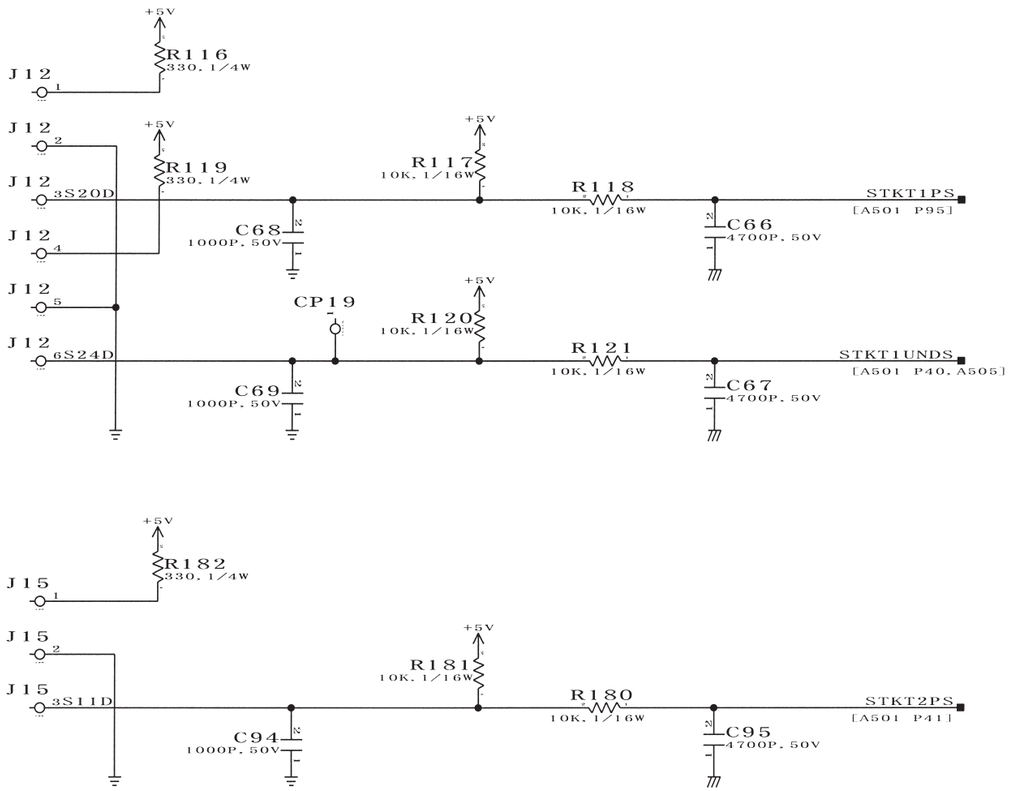

J9 1
J9 2
J9 3 S6D
J9 4
J9 5
J9 6 S7D
J9 7
J9 8
J9 9 S5D
J9 10
J9 11
J9 12 S8D
+5V
R95 330, 1/4W
R98 330, 1/4W
R101 330, 1/4W
R104 330, 1/4W
R96 10K, 1/16W
R99 10K, 1/16W
R102 10K, 1/16W
R105 10K, 1/16W
DA5
DA6
DA7
MA153/NOTMNT
R97 10K, 1/16W
R100 10K, 1/16W
R103 10K, 1/16W
R106 10K, 1/16W
FJOGHPS [A501 P73]
BJOGHPS [A501 P72]
PTRYDELVS [A501 P71]
PUSHHPS [A501 P70]
C52 1000P, 50V
C53 1000P, 50V
C54 1000P, 50V
C55 1000P, 50V
C56 4700P, 50V
C57 4700P, 50V
C58 4700P, 50V
C59 4700P, 50V

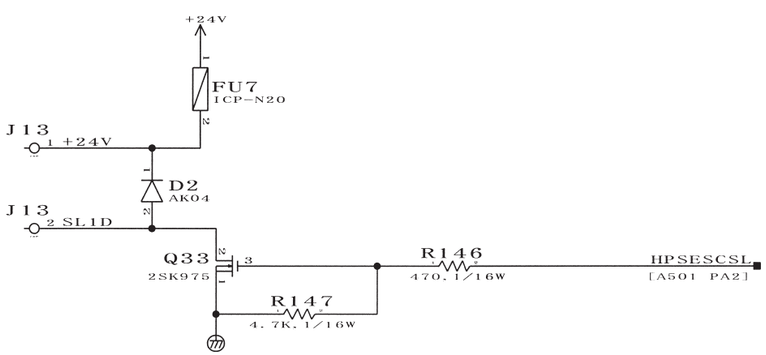

TRNSCLKS [A501 P82]
STKT2CLKS [A501 P81]
STKT1CLKS [A501 P80]
PASSS [A502 PA4]
PULLHPS [A502 PA3]
STKTHPS [A502 PA2]
IC8
+5V
R107 330, 1/4W
R108 10K, 1/16W
R109 10K, 1/16W
R110 330, 1/4W
R111 10K, 1/16W
R112 10K, 1/16W
R113 330, 1/4W
R114 10K, 1/16W
R115 10K, 1/16W
R179 330, 1/4W
R173 10K, 1/16W
R178 10K, 1/16W
R177 330, 1/4W
R172 10K, 1/16W
R176 10K, 1/16W
R175 330, 1/4W
R155 10K, 1/16W
R174 10K, 1/16W
CP7
CP8
CP9
CP22
CP21
C60 4700P, 50V
C61 1000P, 50V
C62 1000P, 50V
C63 1000P, 50V
C64 1000P, 50V
C65 1000P, 50V
C89 4700P, 50V
C90 4700P, 50V
C93 4700P, 50V
C88 1000P, 50V
C92 1000P, 50V
C91 1000P, 50V
J10 A1
J10 A2
J10 A3
J10 A4
J10 A5
J10 A6
J10 A7
J10 A8
J10 A9
J10 B1
J10 B2
J10 B3
J10 B4
J10 B5
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J10 B8
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S1D
S9D
S19D
S2D
S3D
S10D

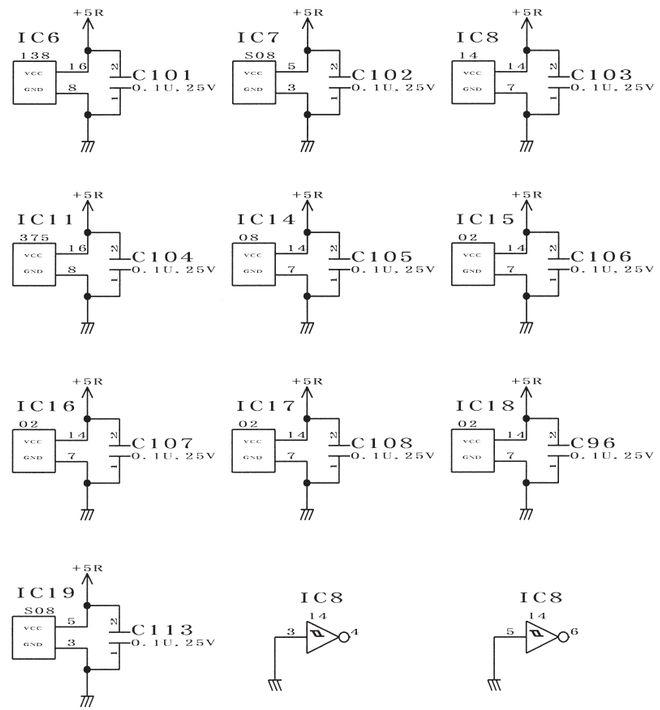
Finisher Controller Circuit Diagram (7/8)



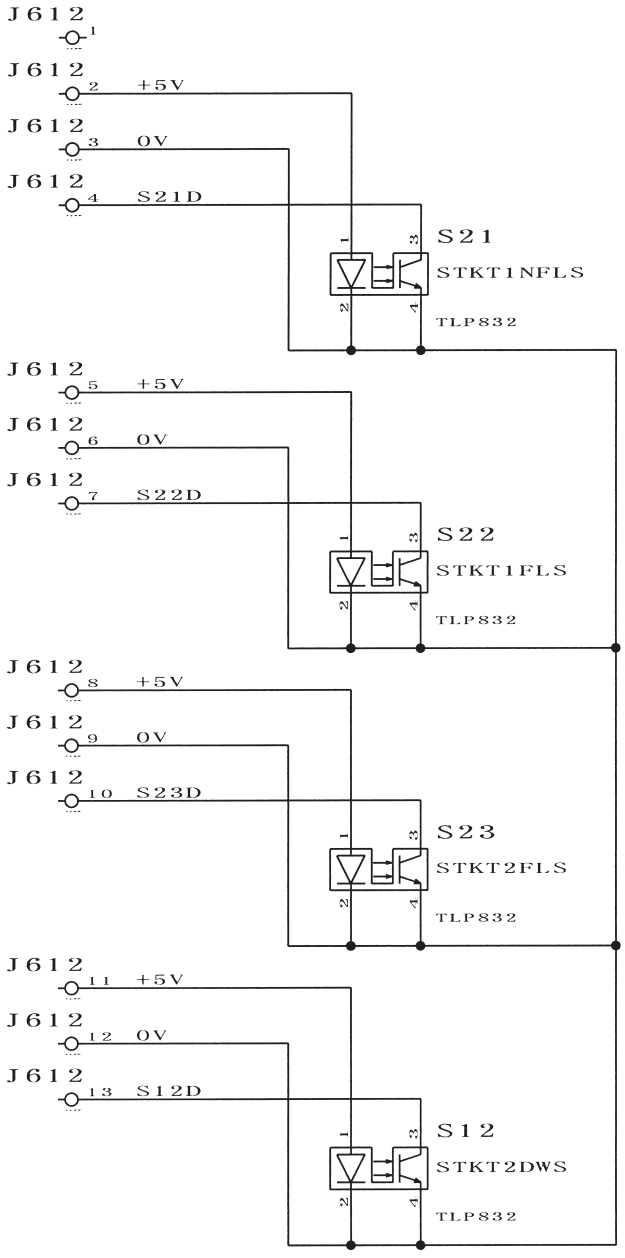
Finisher Controller Circuit Diagram (8/8)







SENSOR PCB


J612 1
J612 2 +5V
J612 3 0V
J612 4 S21D
S21
STKT1NFLS
TLP832
J612 5 +5V
J612 6 0V
J612 7 S22D
S22
STKT1FLS
TLP832
J612 8 +5V
J612 9 0V
J612 10 S23D
S23
STKT2FLS
TLP832
J612 11 +5V
J612 12 0V
J612 13 S12D
S12
STKT2DWS
TLP832

E. SOLVENTS AND OILS

No.	Name	Uses	Composition	Remarks
1	Cleaner	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	

SD-A-111, 00-10AB

TOSHIBA

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