FINISHER - J1

SERVICE MANUAL

REVISION 0

Canon

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Printed in Japan

Imprimé au Japon

Caution

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

INTRODUCTION

This Service Manual contains basic data and figures on the Finisher-J1 needed to service the machine in the field.

CHAPTER 1 General Description introduces the finisher's features and specifications, and shows how to operate the finisher.

CHAPTER 2 Basic Operation provides outlines of the finisher's various mechanical workings, and explains the principles used for the finisher's various control mechanisms in view of the functions of electrical and mechanical units and in relation to their timing of operation.

CHAPTER 3 Mechanical System shows how the finisher's various mechanical workings are constructed, and how the finisher may be disassembled/assembled and adjusted.

CHAPTER 4 Maintenance and Servicing provides tables of periodically replaced parts and consumables/durables.

CHAPTER 5 Troubleshooting provides tables of maintenance/inspection, standards/adjustments, and problem identification (image fault/malfunction).

APPENDIX contains a general timing chart and general circuit diagrams.

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

CHAPTER 2 OPERATION AND TIMING

CHAPTER 3 MECHANICAL SYSTEM

CHAPTER 4 MAINTENANCE AND SERVICING

CHAPTER 5 TROUBLESHOOTING

APPENDIX

CHAPTER 1

GENERAL DESCRIPTION

I. Features

1. Small and light.

2. Inner delivery.

3. Sorting and stapling by stack offset.

Sheets are put into order and grouped into stacks for offset and stapling.

4. Delivery Tray

The delivery tray can hold as many as 300 small-size sheets and 150 large-size sheets.
It can also hold as many as 30 sets of sheets (stacks; each consisting of 30 sheets, A4/LTR).

II. Specifieations

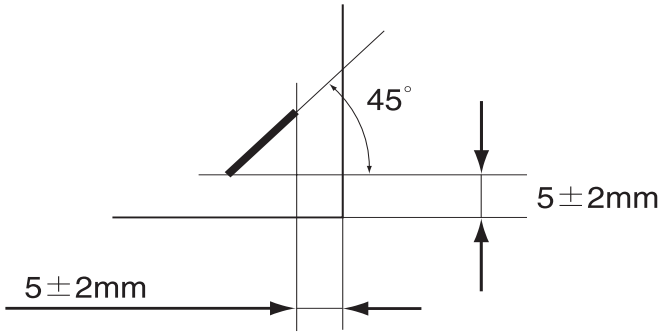
A. Specifications

Item			Specifications			
Method of stacking			Delivery tray: descent type (intermediate tray fixed in place)			
Side of deposit			Face-down			
Size of paper	A/B		A3, A4, A4R, A5, A5R, B4, B5, B5R, postcard			
	Inch		279mm x 432mm (11x17), LGL, LTR, LTRR, STMT, STMTR			
Weight of paper			64 to 128 g/m^2 (may be postcard)			
Number of bins			1 (stack tray)			
Types of modes			Staple stack Non-staple stack Non-staple stack offset stack			
Sheets per stack			Non-stapling	Small-size	300 sheets	Paper of 80 g/m^2
				Middle size	200 sheets	
				Large-size	150 sheets	
			Stapling sorting	All sizes	30 sets	
Standby completion time			3.5 sec or less			
Size for grouping			A3, A4, A4R, A5, A5R, B4, B5, B5R			
			279mm x 432mm (11x17), LGL, LTR, LTRR, STMT, STMTR			
Size for stapling			A3, A4, A4R, B4, B5			
			279mm x 432mm (11x17), LGL, LTR, LTRR			
Alignment	Non-Stapling		X: 30 mm or less, Y: 20 mm or less			In the case of non-Japanese A3, 40 mm or less for X direction. Specifications are not set for tracing paper, transparencies, or special papers. Specifications are not set for mixing of sizes.
	Non-stapling/ sorting	Plain paper Recycle paper Eco paper	X: 30 mm or less Y: must be identifiable in reference to leading edge			
		Thick paper (90 to 128 g/m^2)	X: 20 mm or less Y: 10 mm or less (within stack) 10 mm or more (between stacks) 40 mm or less (between stacks)			
	Stapling/ sporting	Plain paper Recycle paper Eco paper	2.0 mm or less			
		Thick paper (90 to 128 g/m^2)	2.0 mm or less			

Item	Specifications		
Method of stapling	Punching by rotating cam		
Position of stapling	Front corner, 1-point, diagonal (Figure 1-101)		
Number of sheets	297 mm or less in feed length	2 to 30 sheets	Paper of 80 g/m^2
	297 to 364 mm in feed length	2 to 20 sheets	
	364 mm or more in feed length	2 to 15 sheets	
Supply of staples	Special cartridge (3000 staples)		
Type of staple	Special staple (Staple L1)		
Detection of staples	Yes		
Manual stapling	No		
Detection of paper	Yes		
Display	No (indications on host machine)		
Size (W x D x H)	565 x 509 x 232 mm / 22.2 x 20.0 x 9.13inches		
Weight	11 kg / 24.3lb		
Power supply	24 V (from host machine)		
Maximum power consumption	22 W or less (in operation), 10 W or less (in standby)		
Operating noise	Host machine + 1.5 dB (one-sided, non-sort mode)		

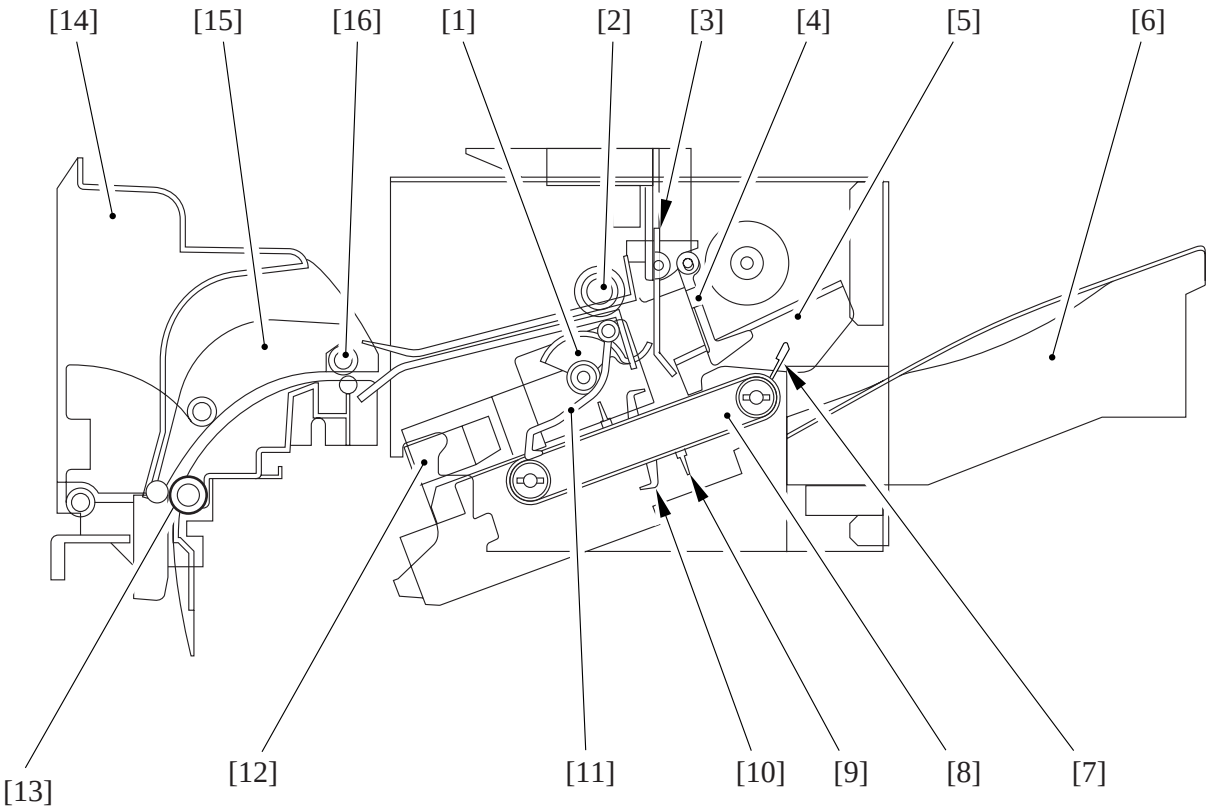
Terms Used

1. Small-size: A4, A4R, A5, B5, B5R, postcard, LTR, LTRR, STMT, STMTR.
2. Middle-sized: B4, LGL.
3. Large-size: A3, 279 x 432 mm (11 x 17)
4. Alignment with: Width of sheets that may be positioned in front/rear direction.
5. Offset width: Distance over which the stack is displaced for sorting.
6. Stack offset width: Distance over which stacks are displaced in sorting.



F01-101 Stapling Position

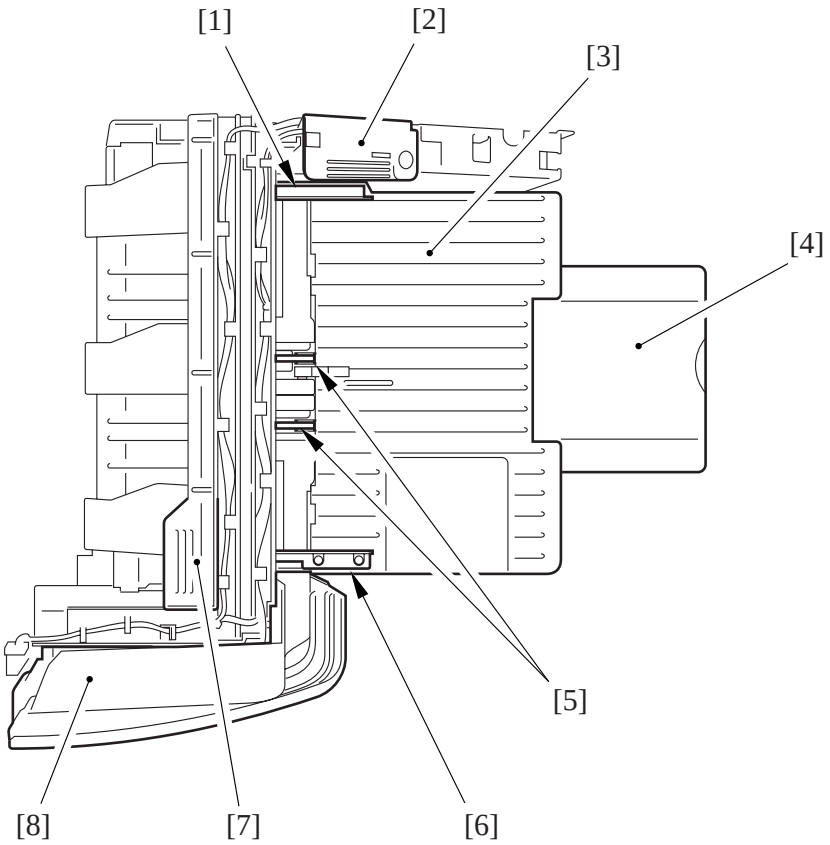
B. Cross Section



[1] Return roller
[2] Delivery roller
[3] Paper feeding guide B
[4] Paper feeding guide A
[5] Aligning plate (front, rear)
[6] Delivery tray
[7] Stack retaining lever
[8] Stack delivery belt
[9] Intermediate handling tray auxiliary plate
[10] Stack delivery lever
[11] Stopper plate
[12] Stapler unit
[13] Relay delivery inlet roller
[14] Relay delivery assembly
[15] Relay delivery paper deflecting plate
[16] Relay delivery outlet roller

F01-102

C. Top view



[1]	Rear aligning plate	[5]	Stack delivery belt
[2]	Handle (rear)	[6]	Front alignment plate
[3]	Delivery tray	[7]	Handle (front)
[4]	Delivery extension tray	[8]	Front cover

F01-103

III. Maintenance by the User

A. Maintenance by the User

No.	Time	Timing
1	Staple cartridge (replacement)	When indicated

T01-401

CHAPTER 2

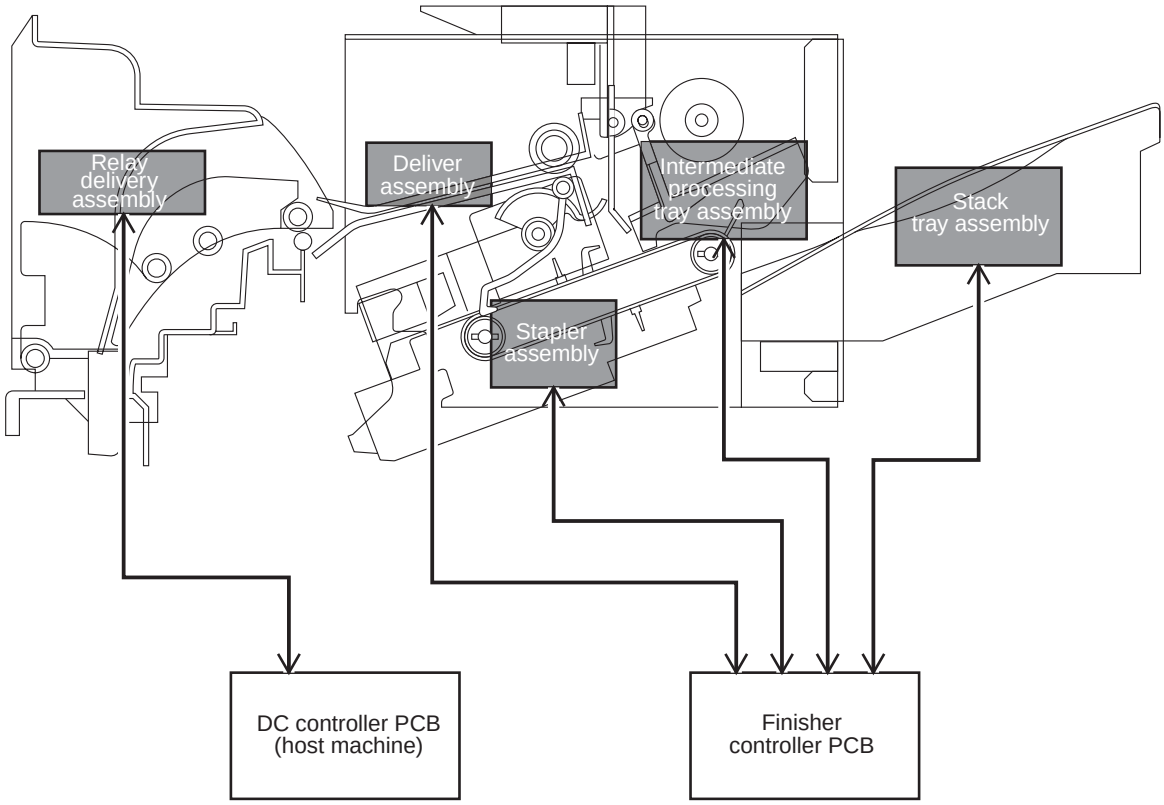
OPERATION AND TIMING

I. Basic Construction

1.1 Outline

The finisher consists of four functional blocks: delivery assembly, intermediate processing tray assembly, stapler assembly, stack tray assembly. F02-101 gives an outline of its functional construction.

The relay delivery assembly used to forward sheets from the host machine is designed for installation inside the host machine.



F02-101-01

1.2 Outline of the Electrical Circuitry

The sequence of operations of the finisher is controlled by the finisher controller PCB, which is a 32-bit CPU; the control is by means of serial communication.

The CPU on the finisher controller PCB is equipped with a flash ROM used to store the sequence program.

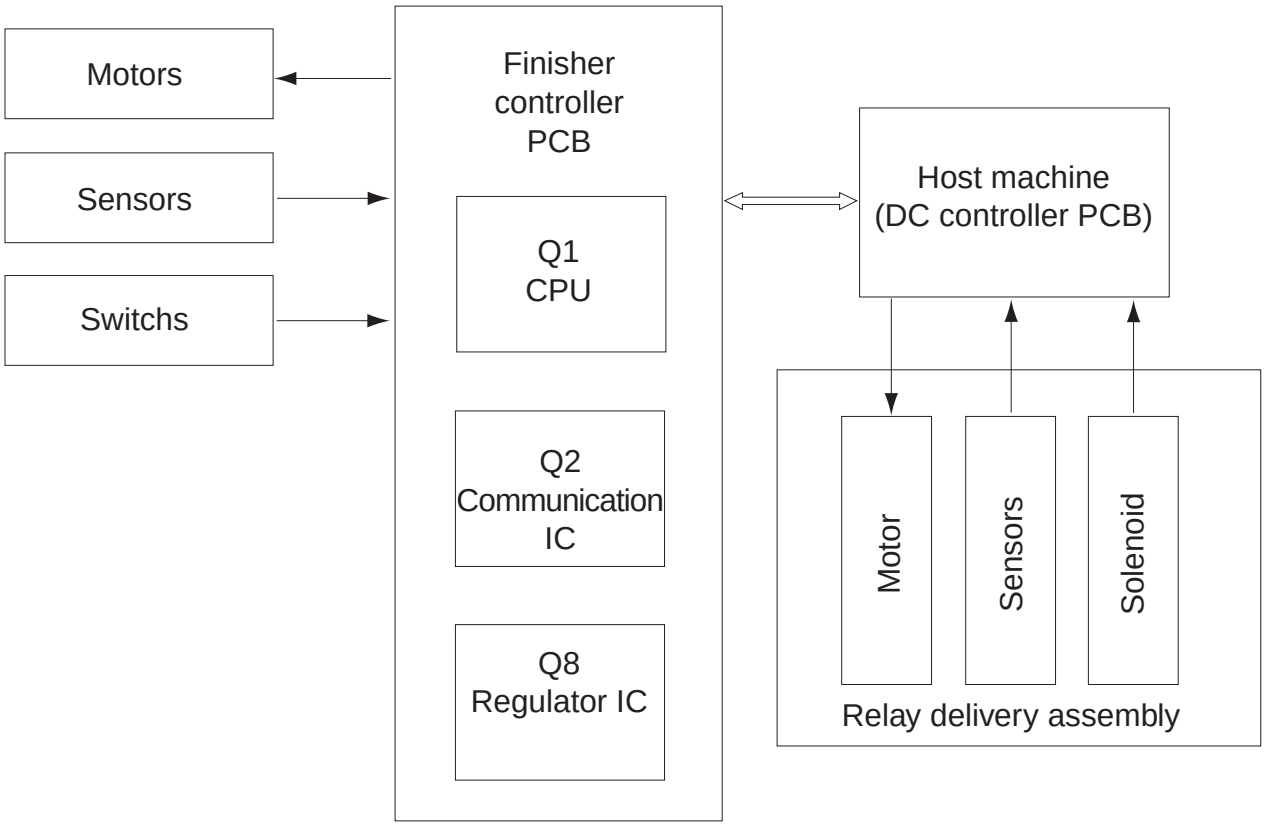
The finisher controller PCB drives the motor in response to the various commands from the host machine. In turn, it communicates the states of various sensors and switches to the host machine by means of serial communication.

The ICs mounted on the finisher controller has the following major functions.

Q1 (CPU; w/ built-in flash ROM)
- Controls the sequence of operations
- Stores the sequence program

Q2 (communication IC)
- Communicates with the host machine (IPC II)

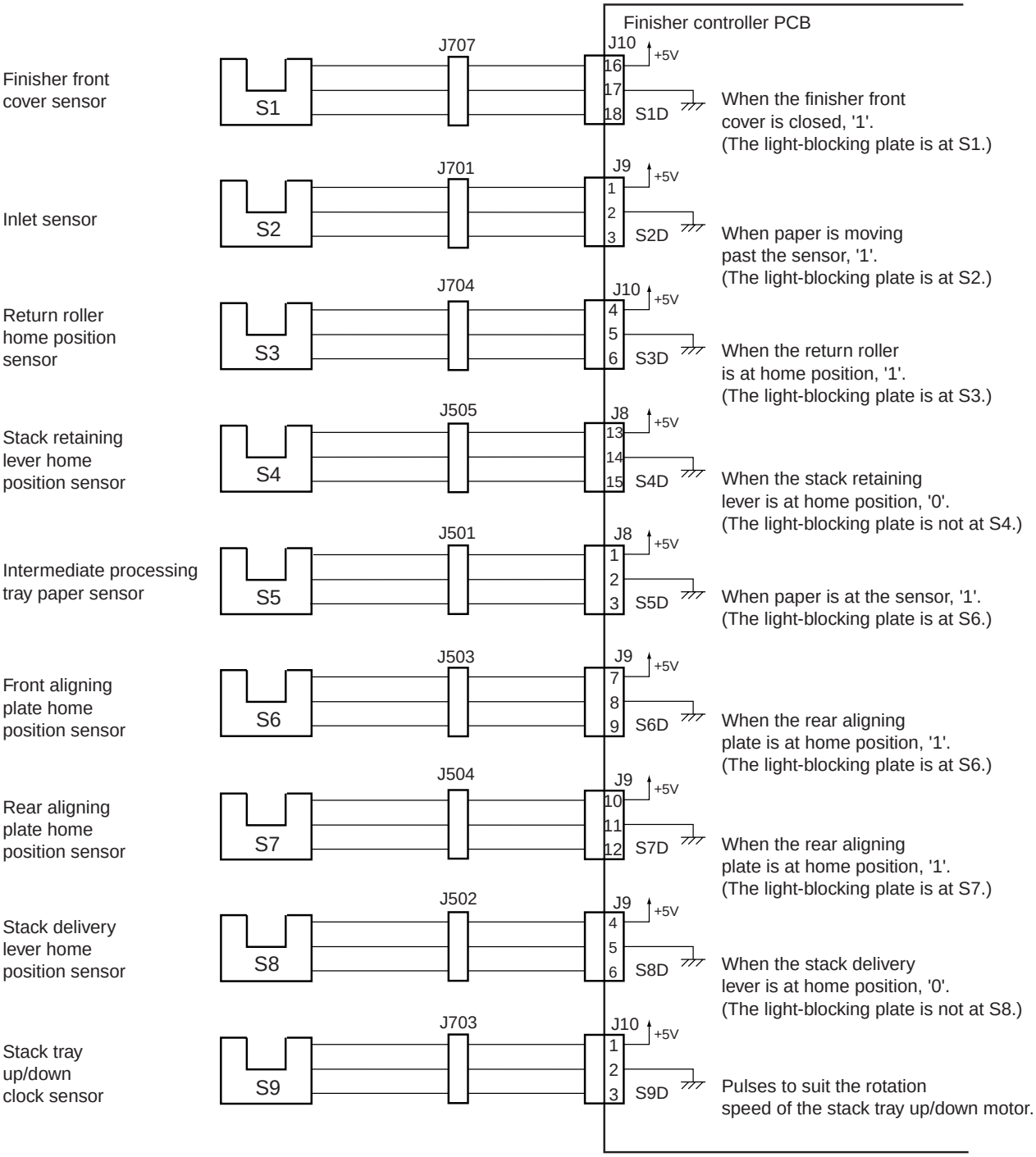
Q8 (regulator IC)
- Generates 5 V used to drive sensors and logic devices



F02-102-01

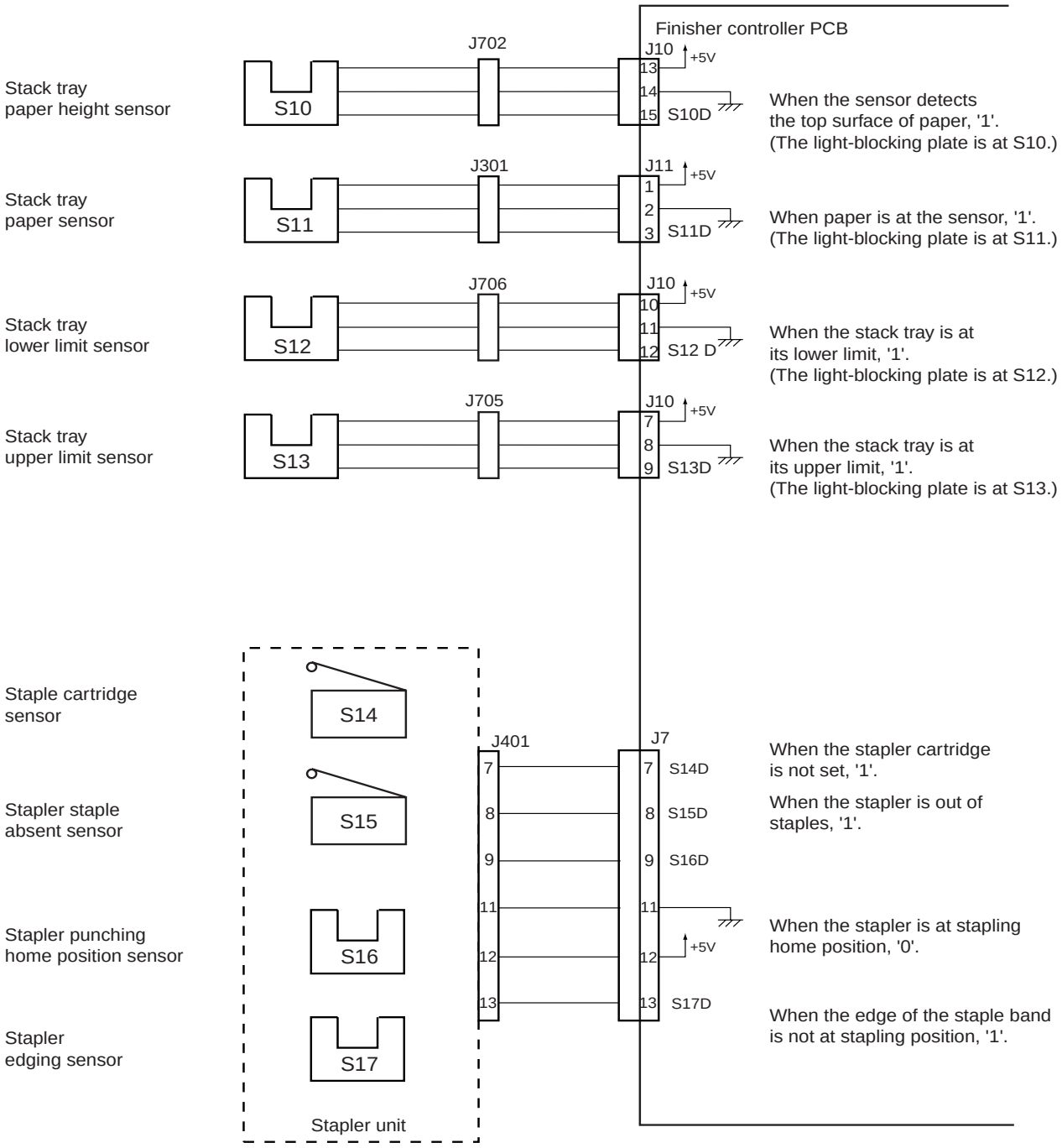
1.3 Inputs to and Outputs from the Finisher Controller PCB

Inputs to the Finisher Controller PCB (1/2)



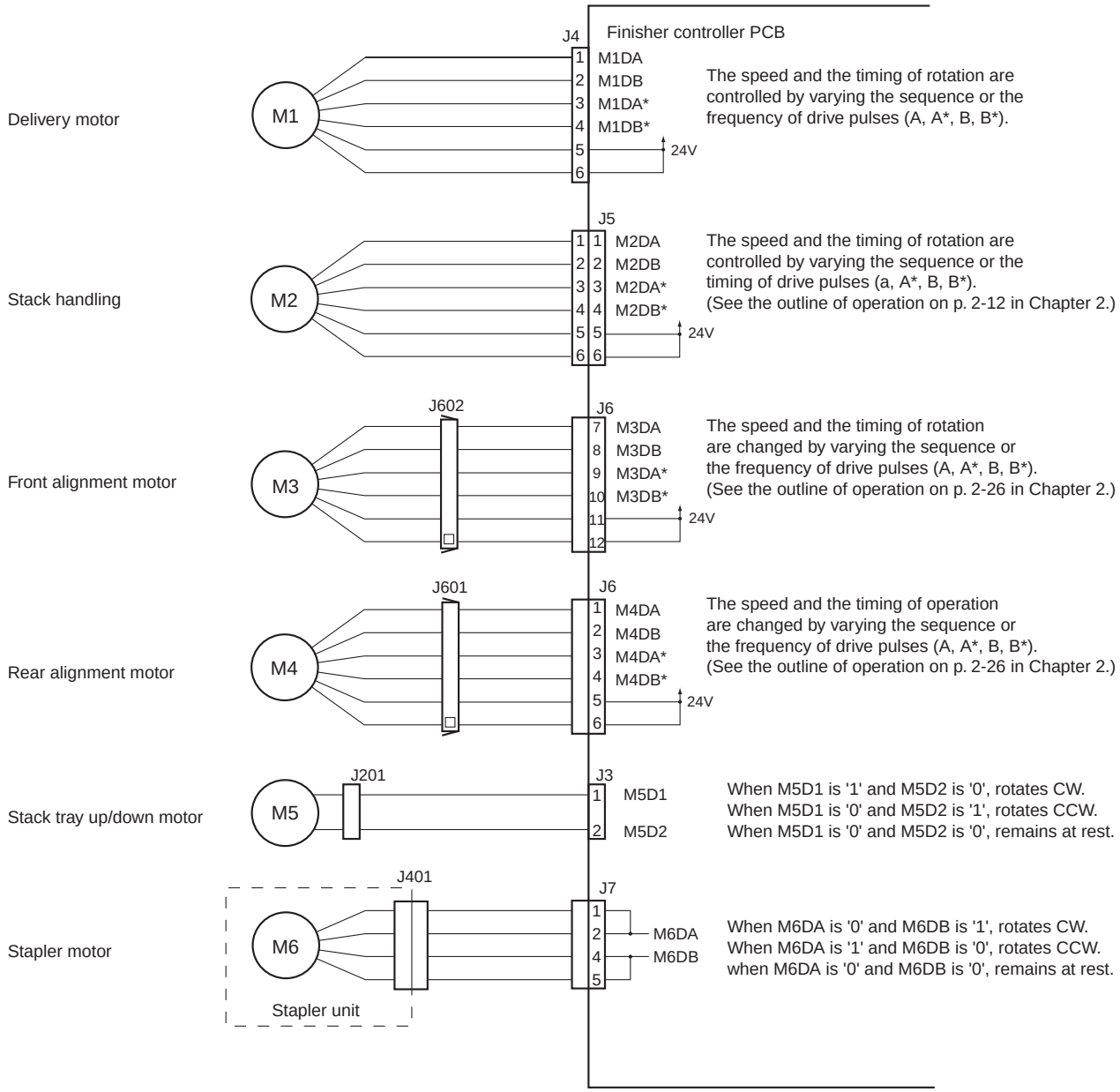
F02-103-01

Inputs to the Finisher Controller PCB (2/2)



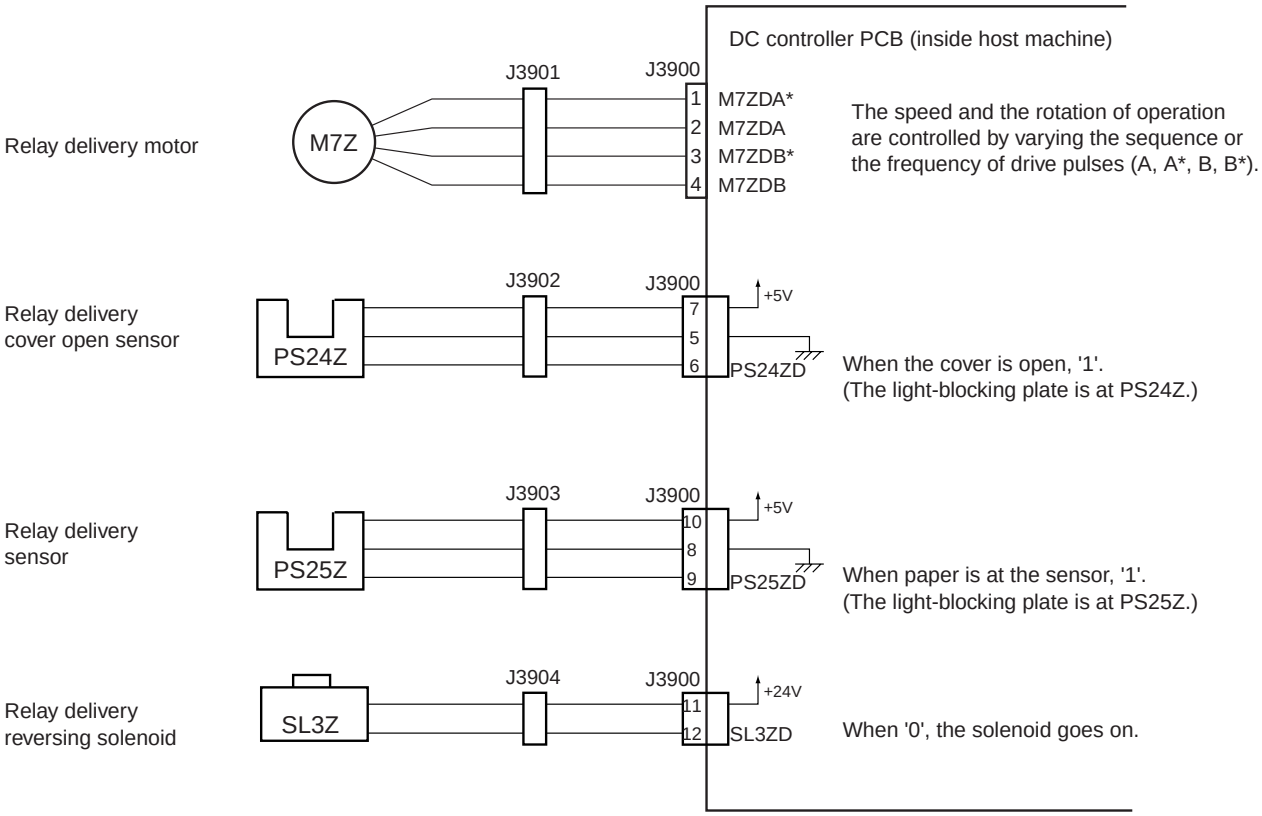
F02-103-02

Outputs from the Finisher Controller PCB



F02-103-03

Inputs to and Outputs from the DC Controller PCB

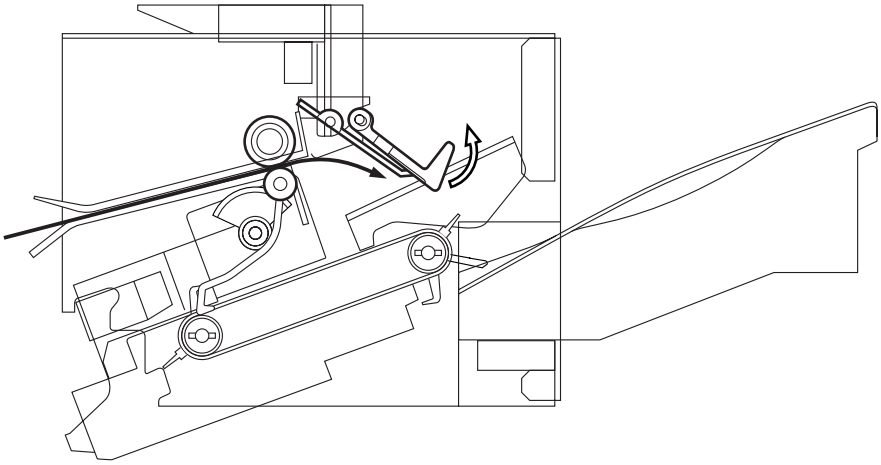


F02-103-04

II. Basic Operations

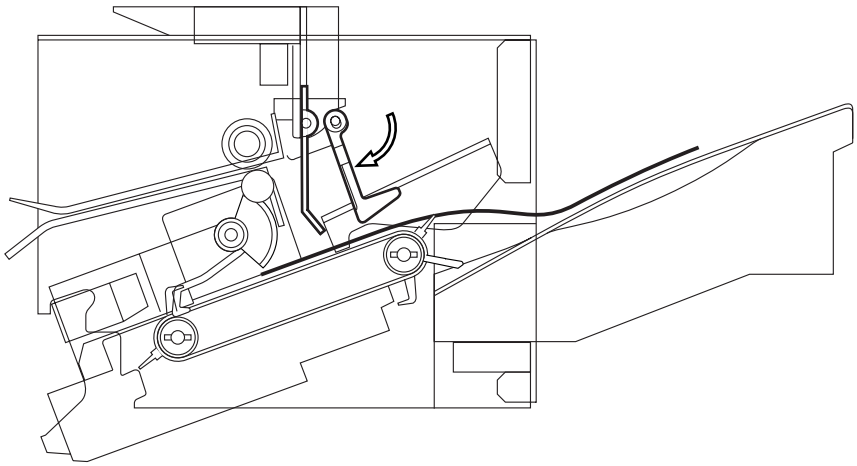
The machine operates as follows:

1) A sheet comes from the host machine by way of the relay delivery assembly.



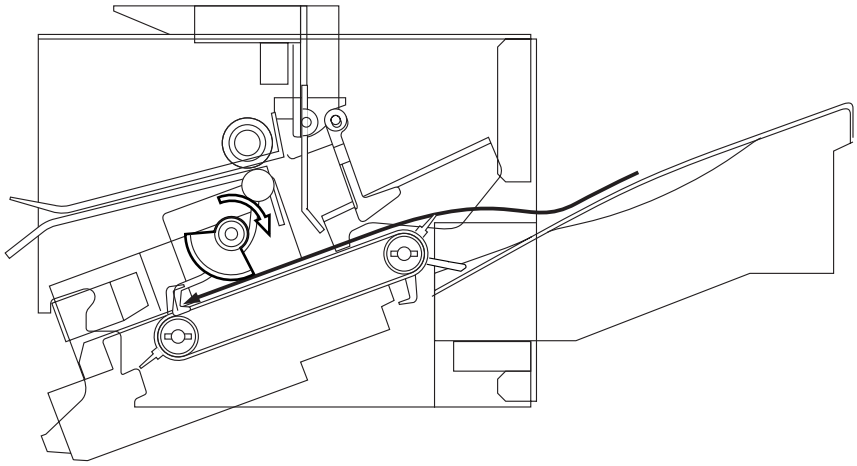
F02-201

2) The sheet arrives at the intermediate handling tray.



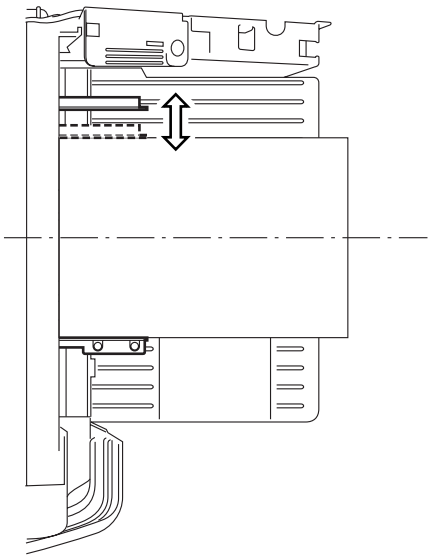
F02-202

3) The return roller moves the sheet until it butts against the stopper plate.



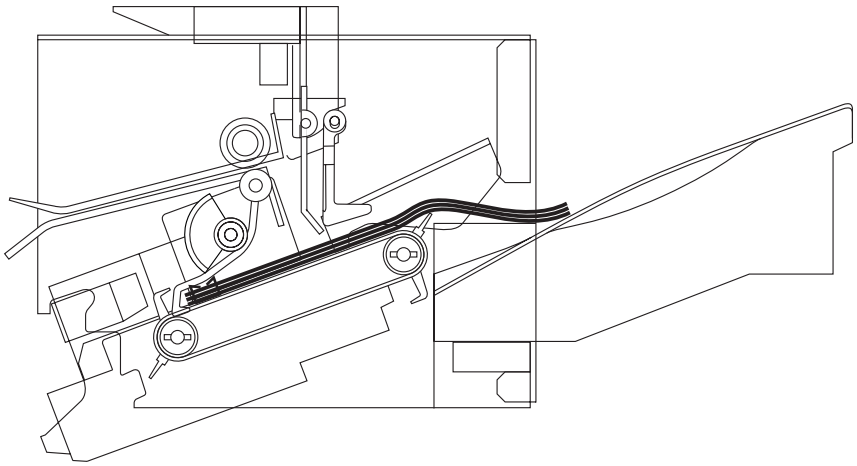
F02-203

4) The sheet is positioned by the front/rear aligning plate in a specific direction.



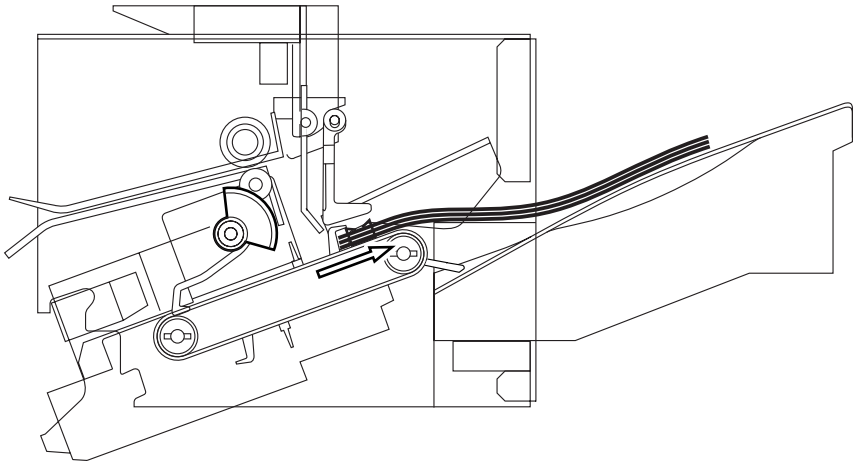
F02-204

5) Operations from 1 through 4 are repeated for as many sheets as there are, and the sheets are stacked on the intermediate handling tray.
6) The sheets are stapled (if stapling is selected).



F02-205

7) The stack of sheets in the intermediate handling tray is delivered (stack delivery) to the stack tray.



F02-206

III. Feed Drive System

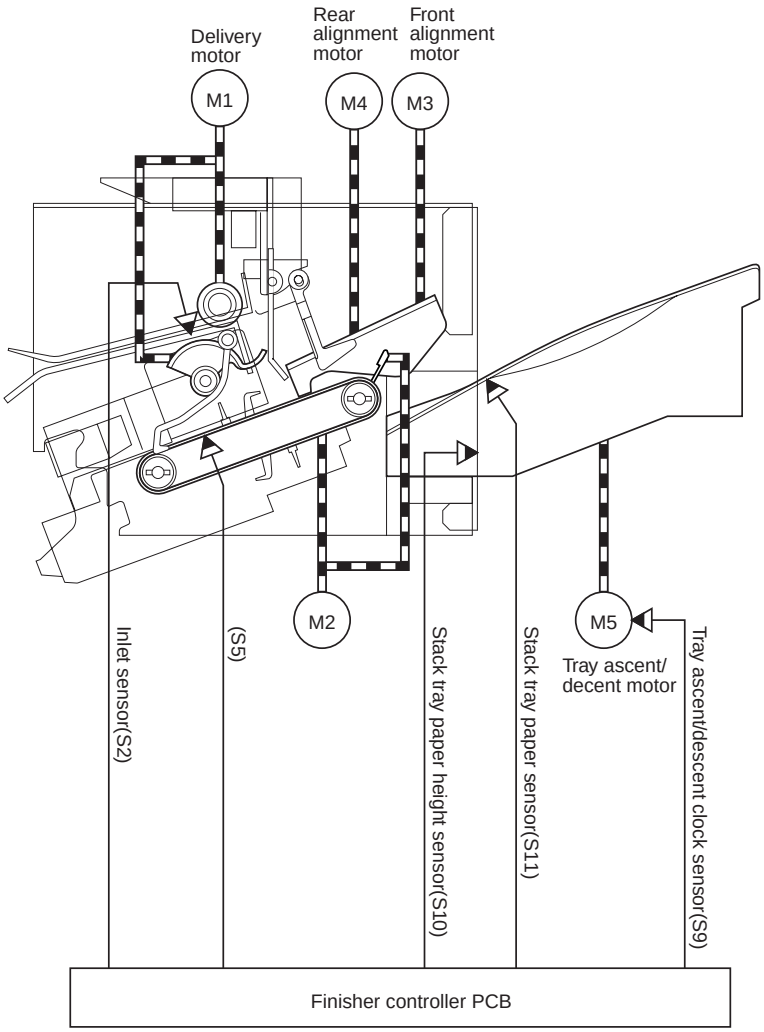
A. Outline

A sheet coming from the host machine by way of the relay delivery assembly is deposited to the intermediate handling tray. The deposited sheets are then aligned, shifted (offset), and stapled in the intermediate handling tray for delivery to the stack tray.

Notation	Name
M1	Delivery motor
M2	Stack delivery motor
S2	Inlet sensor
S5	Intermediate processing tray paper sensor

T02-301

The following is a block diagram of the feed drive system:

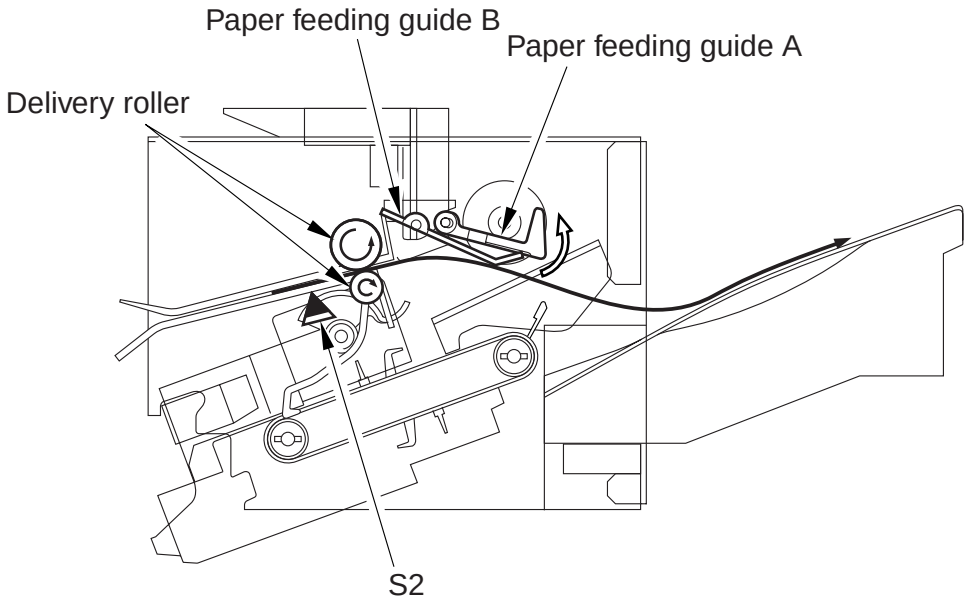


F02-301

B. Delivery

A sheet coming from the host machine is forwarded to the intermediate handling tray by the work of the delivery motor (M1). The movement of the sheet is monitored by the inlet sensor (S2).

The delivery slot of the machine is equipped with paper feeding guides (A/B). These paper feeding guides hold down the trailing edge of the sheet on its own weight, and help move back the sheet to the return roller.



F02-302

IV. Intermediate Handling Tray Assembly

A. Movement of the Intermediate Handling Tray

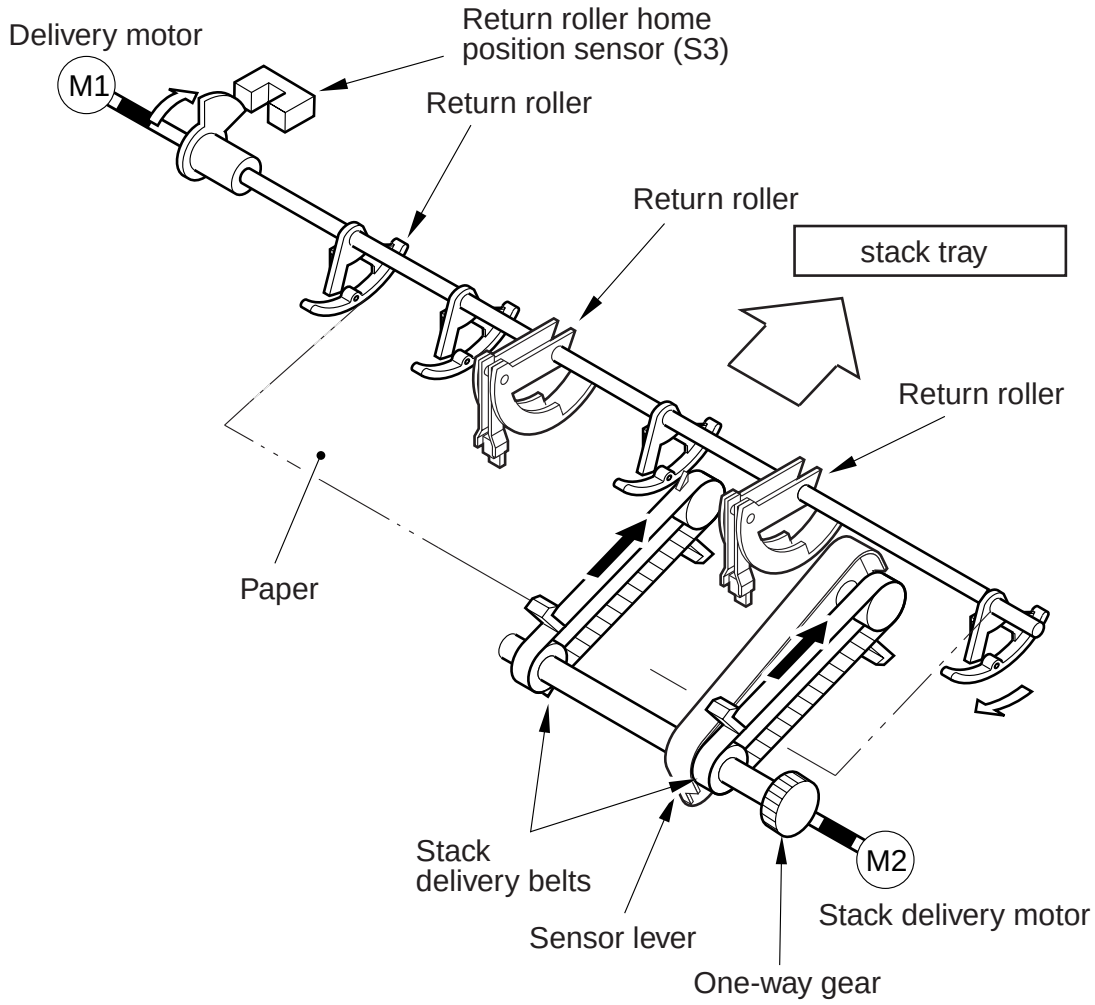
1. Outline

The intermediate handling tray serves to put sheets coming from the host machine into stacks for alignment, offset, and stapling.

The intermediate handling tray consists of a return roller and two stack handling belts; of the two stack handling belts, the one at the front is equipped with two stack delivery levers.

When a sheet is deposited in the intermediate handling tray, the intermediate handling tray paper sensor (S5) goes ON.

The stack delivery belt is driven by the stack delivery motor (M2). The return roller, on the other hand, is driven by the delivery motor (M1) when the motor rotates in reverse.



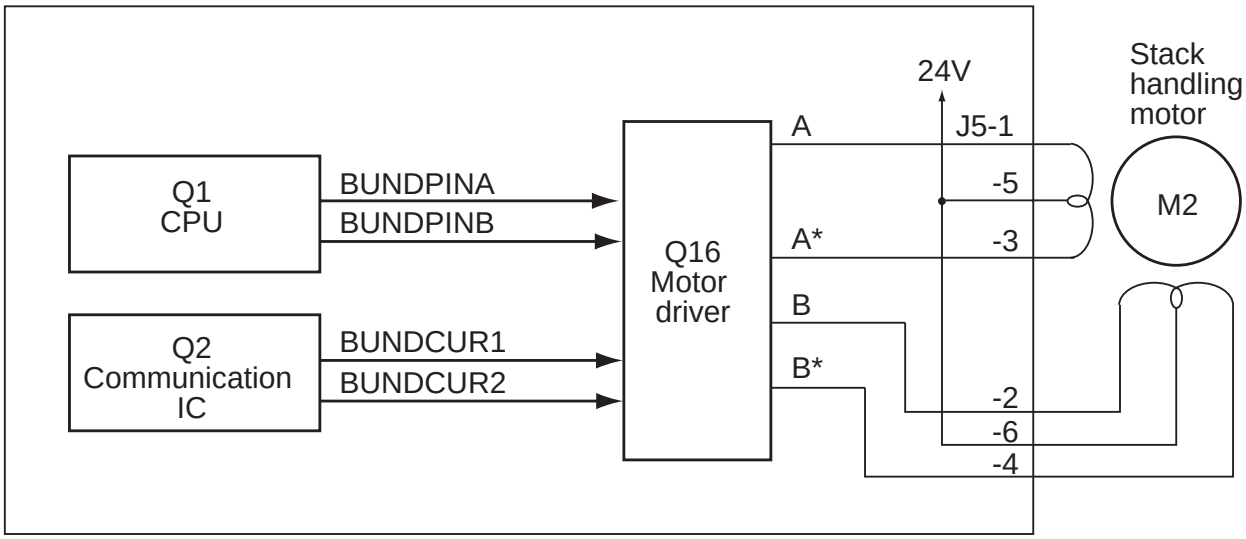
F02-401

2. Controlling the Stack Handling Motor (M2)

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

The direction and speed of rotation of the motor are controlled in relation to the phase of the pulse signals BUNDPINA and BUNDPINB sent by the CPU to Q16, which generates pulse signals A, A*, B, and B* to control the direction and speed of rotation of the motor.

The motor drive current is controlled based on combinations of the current control signals BUNDCUR1 and BUNDCUR2 ROM sent by Q2 (communication IC) to Q16. The drive current may be in any of three levels: hold, drive (low), drive (high). Each level is used as follows:



F02-402

Drive current	Description
Hold	While on hold
Drive (high)	While pushing a stack
Drive (low)	While in home position search, while pushing a stack, while in stack retainer home position search

T02-401

3. Maximum Number of Sheets in the Intermediate Handling Tray

The maximum number of sheets that may be deposited in the intermediate handling tray is as follows:

If the number of sheets exceeds the specified count or the maximum number, the maximum number of sheets will be aligned/offset in the intermediate handling tray; thereafter, the stack will be delivered to the stack tray, and the remaining number will be aligned.

In offset alignment, all sheets within the same stack will be offset in the same direction.

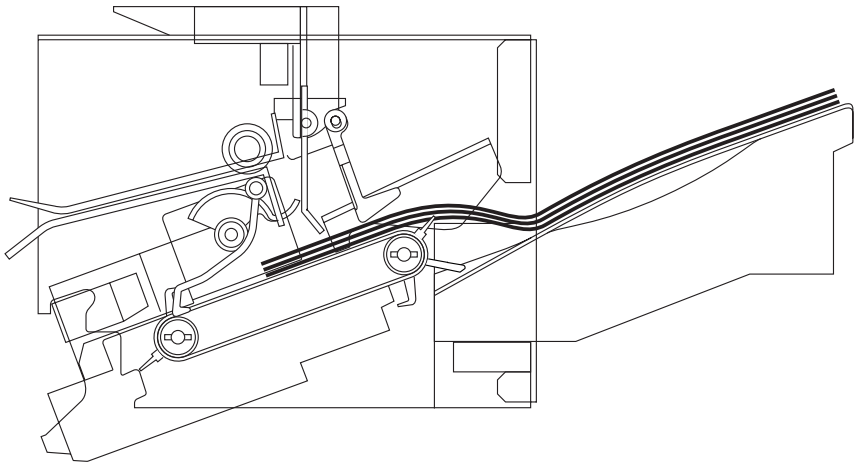
	Small-size	Middle-size	Large-size
Cassette	32	32	16
Paper deck			
Multifeeder	2		

Note: Small size: A4, A4R, A5, A5R, B5, B5R, postcard
LTR, LTRR, STMT, STMTR
Middle-size : B4
LGL
Large-size : A3
279x432 mm (11 x 17)

T02-402

4. Tracing Paper Mode

When tracing paper is used, the return roller, aligning plate, and stapler will not be driven. Further, stack delivery will not be used, and paper handling will stop in the intermediate handling tray.



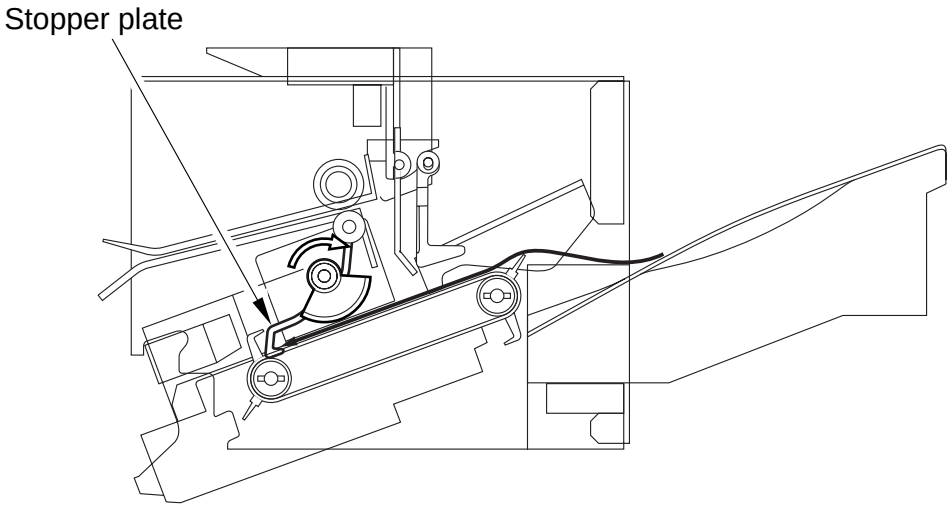
F02-403a

B. Return Roller

1. Outline

The return roller butts the sheet delivered by the host machine against the stopper plate to align the sheet in feed direction.

The return roller is driven by the delivery motor (when the motor rotates in reverse).

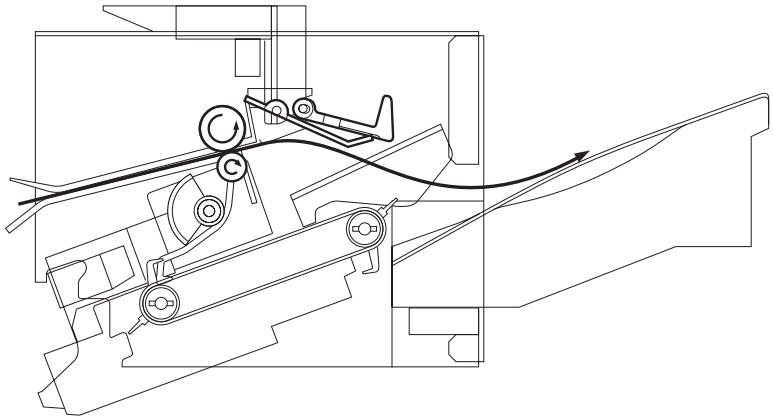


F02-404

2. Outline of Operation

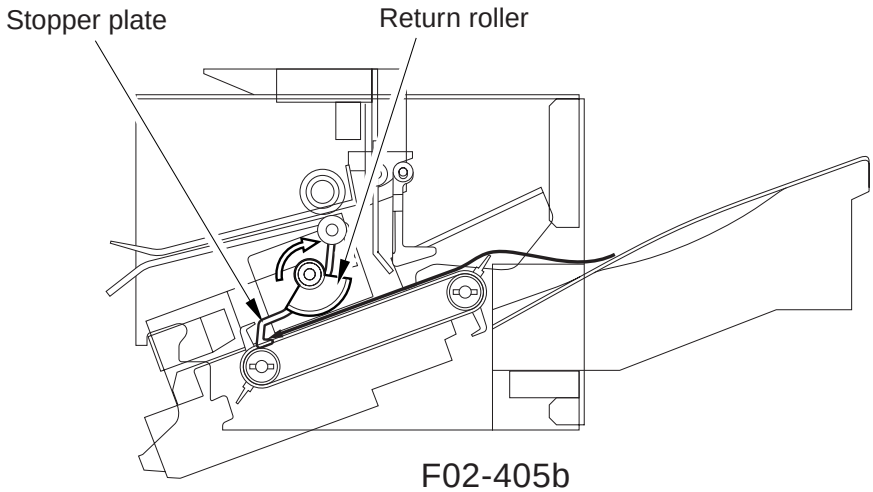
The return roller operates as follows:

1) A sheet comes from the host machine by way of the relay delivery assembly.



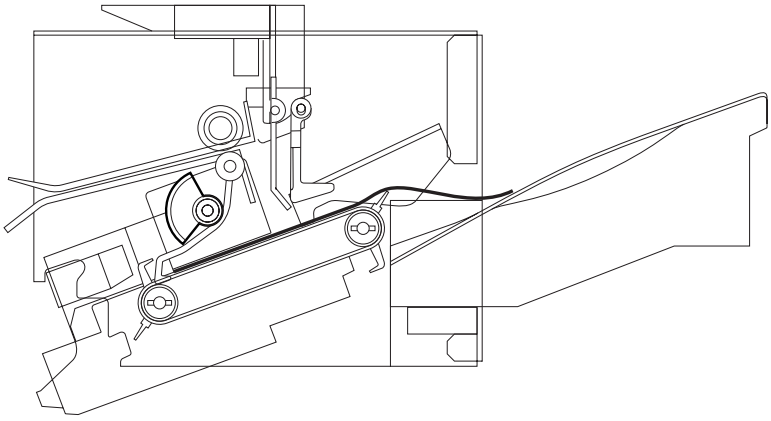
F02-405a

2) The return roller rotates clockwise to butt the sheet arriving at the intermediate handling tray against the stopper plate.



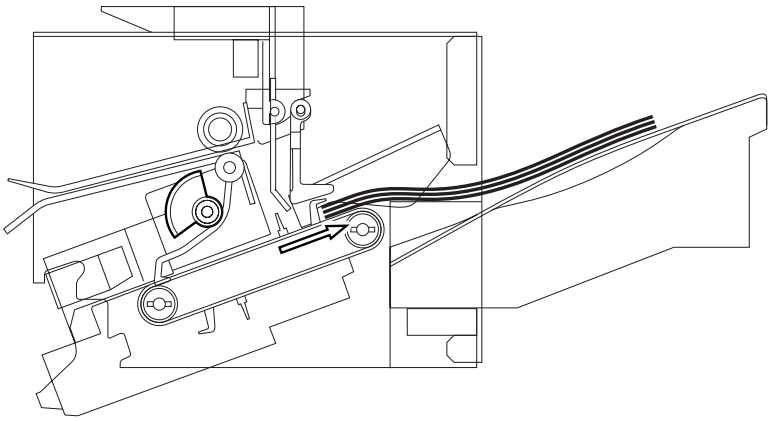
F02-405b

3) The return roller continues to rotate, and waits in home position.



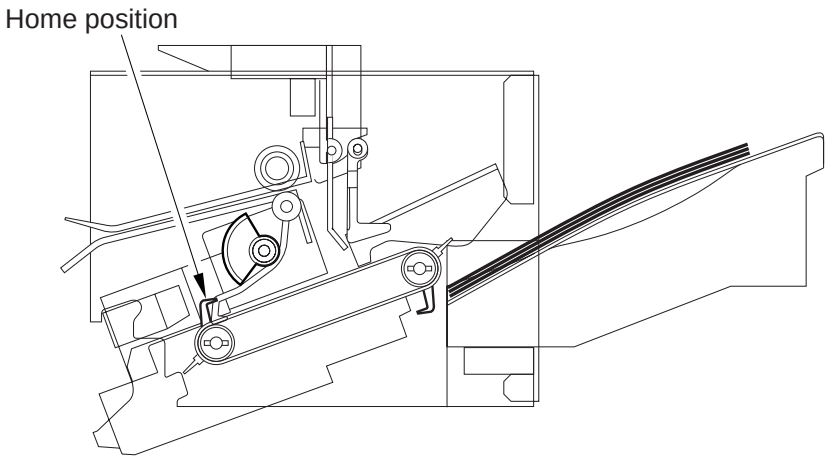
F02-405c

4) When the next sheet arrives from the host machine, operations 1 and 2 are repeated to organize a stack.
5) When a set of sheets has been aligned, the stack delivery lever delivers the stack.



F02-405d

6) The stack handling belt reaches home position to end stack delivery.



F02-405e

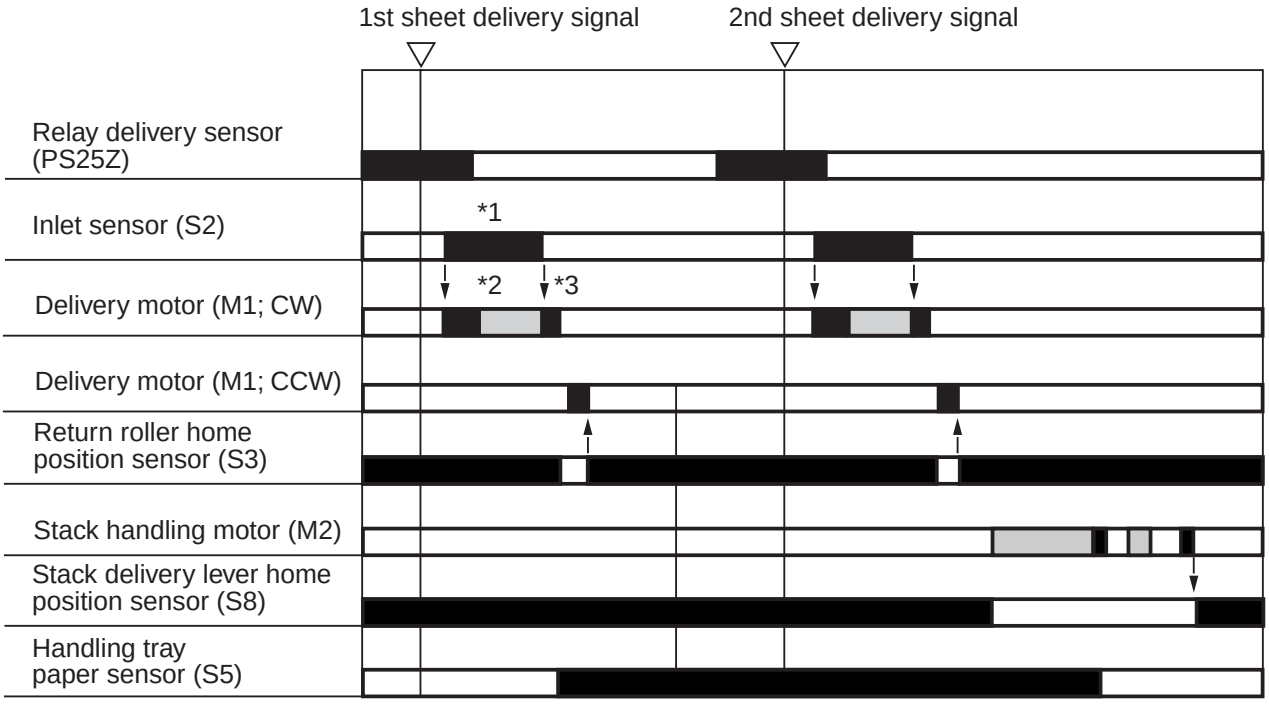
7) Thereafter, operations 1 through 6 are repeated for each stack of sheets.

Delivery Tracing Paper

If tracing paper is selected on the control panel, the stack will not be delivered to the delivery tray, but the series of operations ends as soon as the sheets have been stacked on the intermediate handling tray. At this time, the return roller and the front/rear aligning plate are not involved in the operations.

As many as 15 sheets may be stacked in the intermediate handling tray; in the event of an excess, the condition will be identified as overstacking, and will be communicated to the host machine. The operation will be suspended if paper has already been picked up and delivered; the display of the host machine will indicate a message prompting the removal of the paper.

3. Sequence of Operations



: low-speed rotation. : high-speed rotation (delivery motor M1 CW)

*1: Varies depending on the length of paper.
*2: When the trailing edge of the paper leaves the relay delivery sensor (PS25Z), the speed of motor rotation increases to increase the distance between sheets.
*3: When the trailing edge of paper leaves the inlet sensor (S2), the speed of rotation is decreased for delivery to the handling tray, thus preventing the paper from sliding beyond the handling tray.

F02-406

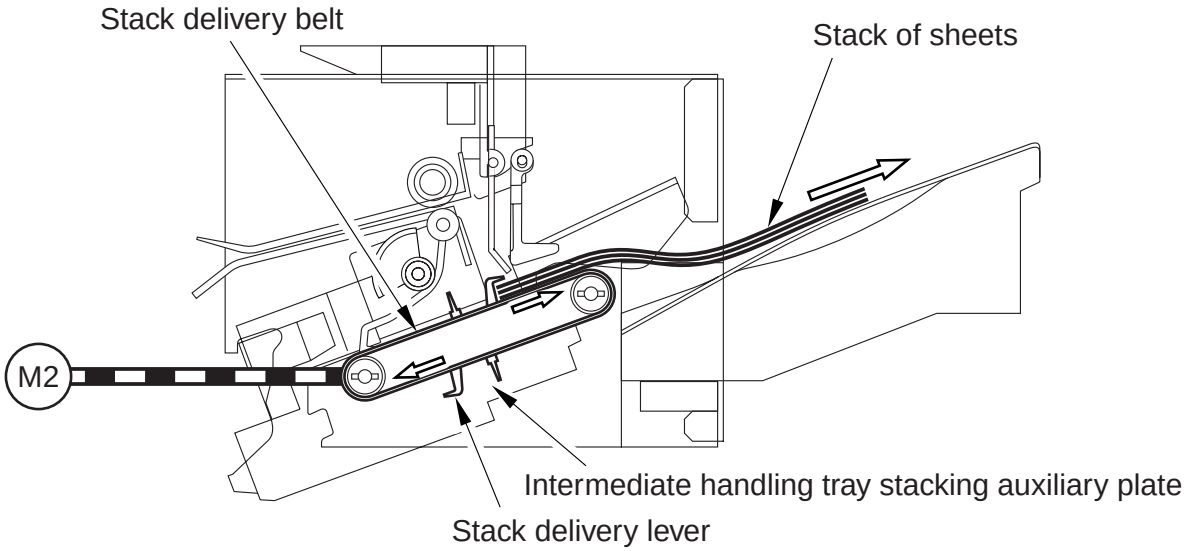
C. Driving the Stack Delivery Belt

1. Outline of Operations

The stack delivery belts are driven by the stack handling motor (M2), and the two are moved in parallel at the same time.

The stack delivery belt is equipped with stack delivery levers mounted opposite each other, and a sheet is delivered when the belt makes a 1/2 rotation.

At the beginning of operation, the stack handling motor (M2) is driven to set the stack delivery lever to home position.

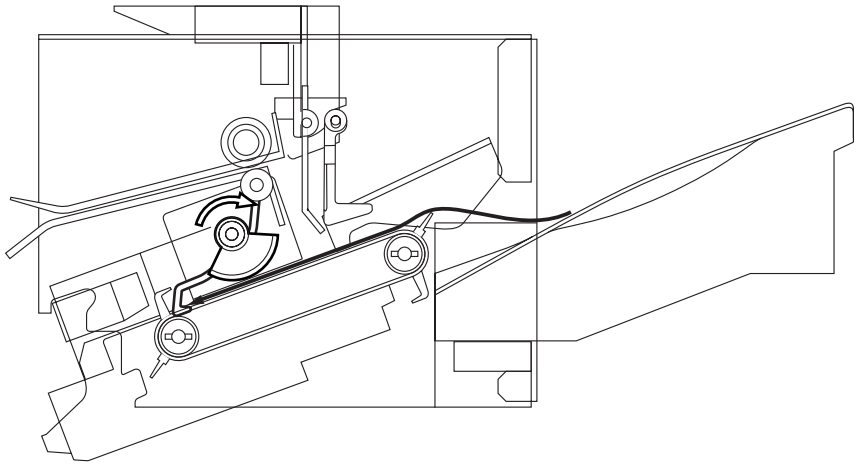


F02-407

2. Outline of Operations

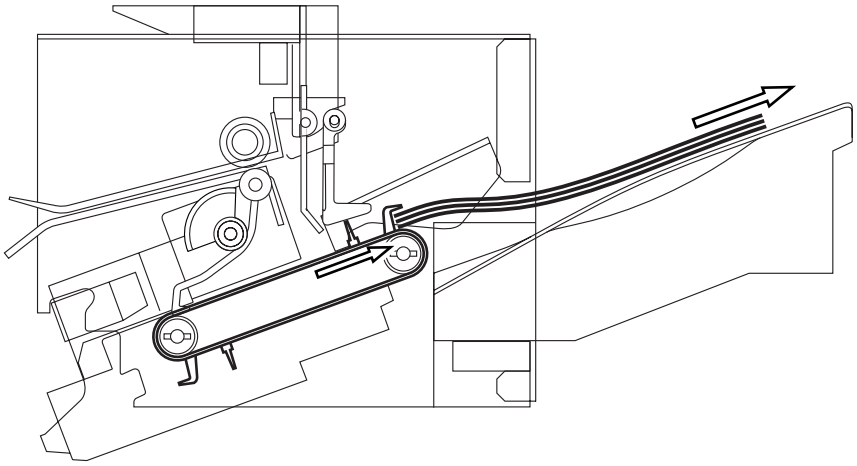
The stack delivery belt operates as follows:

1) A sheet is delivered and deposited in the intermediate handling tray. As may sheets as are specified are deposited in the intermediate handling tray.



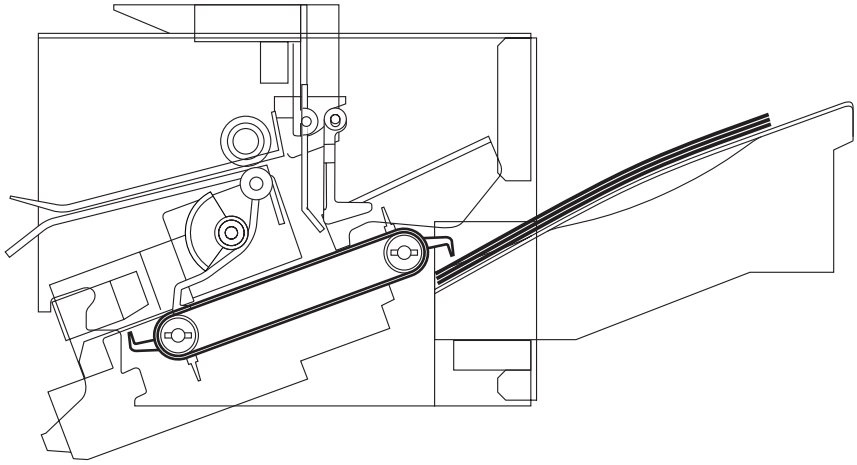
F02-408a

2) The stack delivery belt uses the stack delivery lever to move the stack of sheets in the direction of the delivery tray.



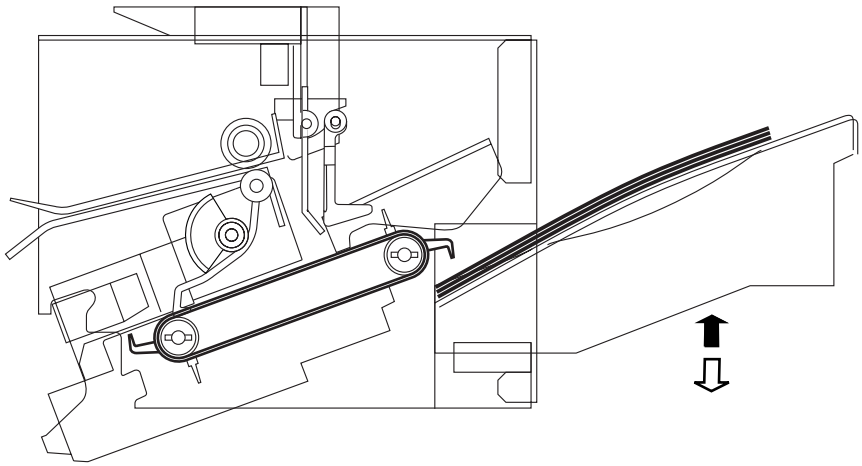
F02-408b

3) Then, the stack delivery belt moves the stack of sheets to the stack tray. Thereafter, the stack delivery belt is stopped once in front of its home position.



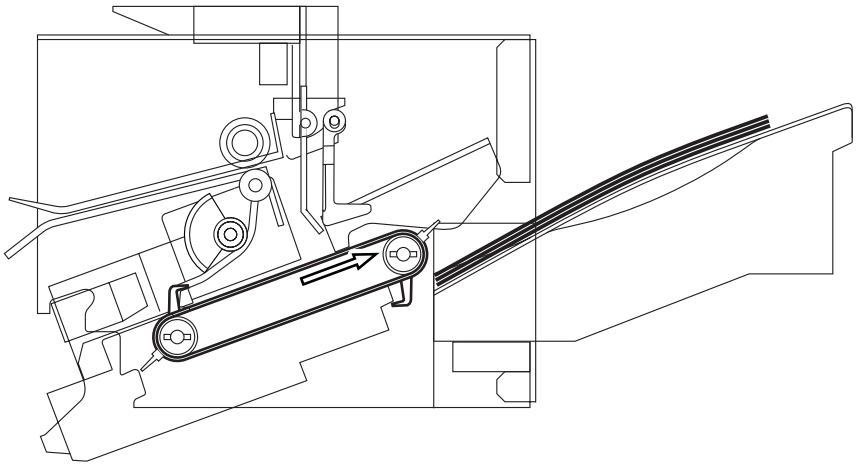
F02-408c

4) Immediately thereafter, the stack tray moves down and then up to put the stack of sheets in the stack tray into order.



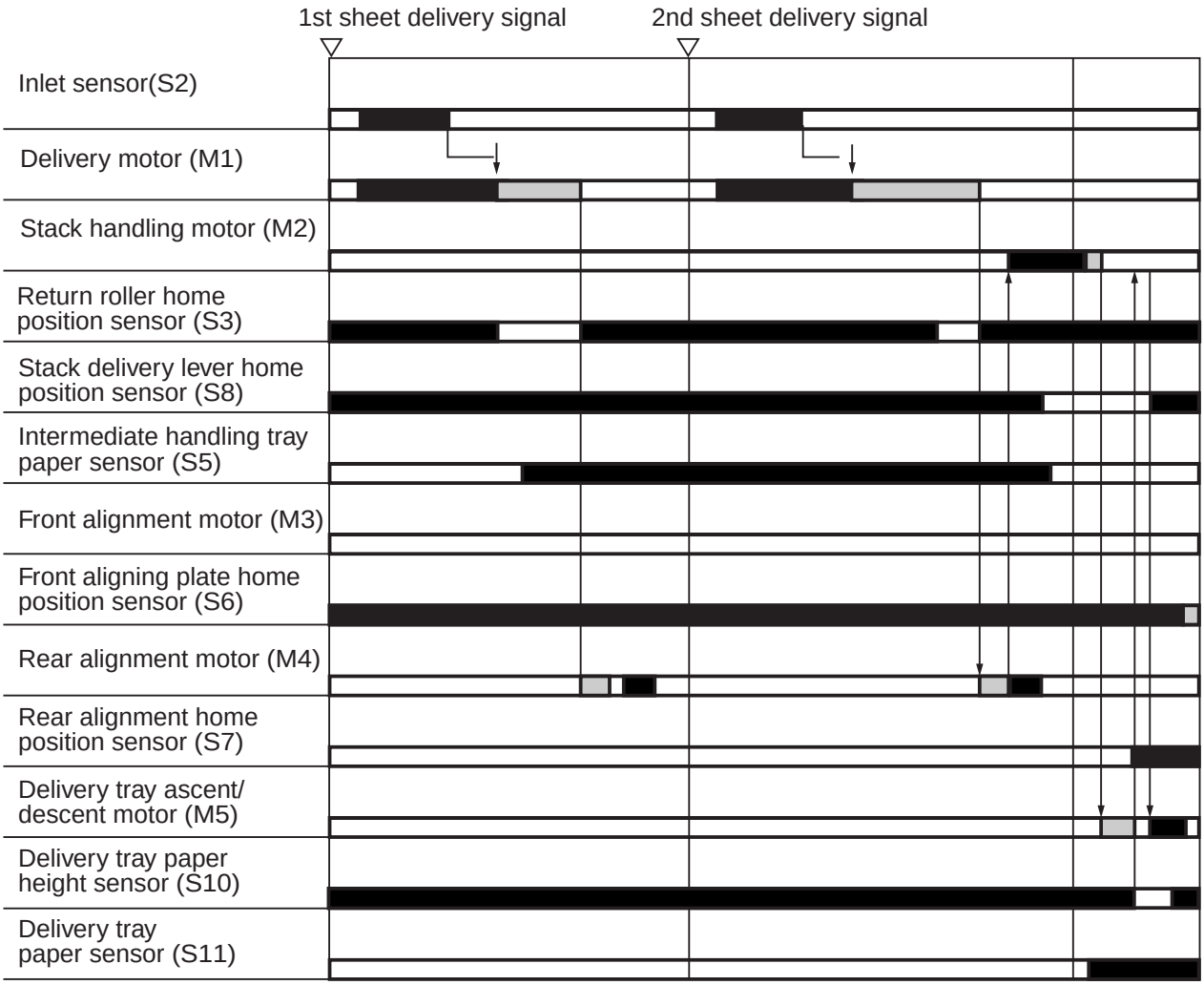
F02-410d

5) The stack delivery belt moves to home position, and waits for the next sheet.



F02-410e

3. Sequence of Operations



: CW rotation : CCW rotation

Delivery motor: CW to drive the delivery roller/CCW to drive the return roller.
Front alignment motor: CW to move to the front/CCW to move to the rear.
Rear alignment motor: CW to move to the rear/CCW to move to the front.
Delivery tray ascent/descent motor: CW to move up/CCW to move down.
Stack handling motor: CW for stack delivery/CCW for stack retention.

F02-411a (stapling selected)

D. Alignment/Offset

1. Outline

The sheets are aligned in width direction in the intermediate handling tray by the work of the front/rear aligning plate.

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

The front aligning plate home position sensor (S6) and the rear aligning plate home position sensor (S7) are used to detect the home position of the respective aligning plate.

The following shows the position of alignment and the sizes for alignment:

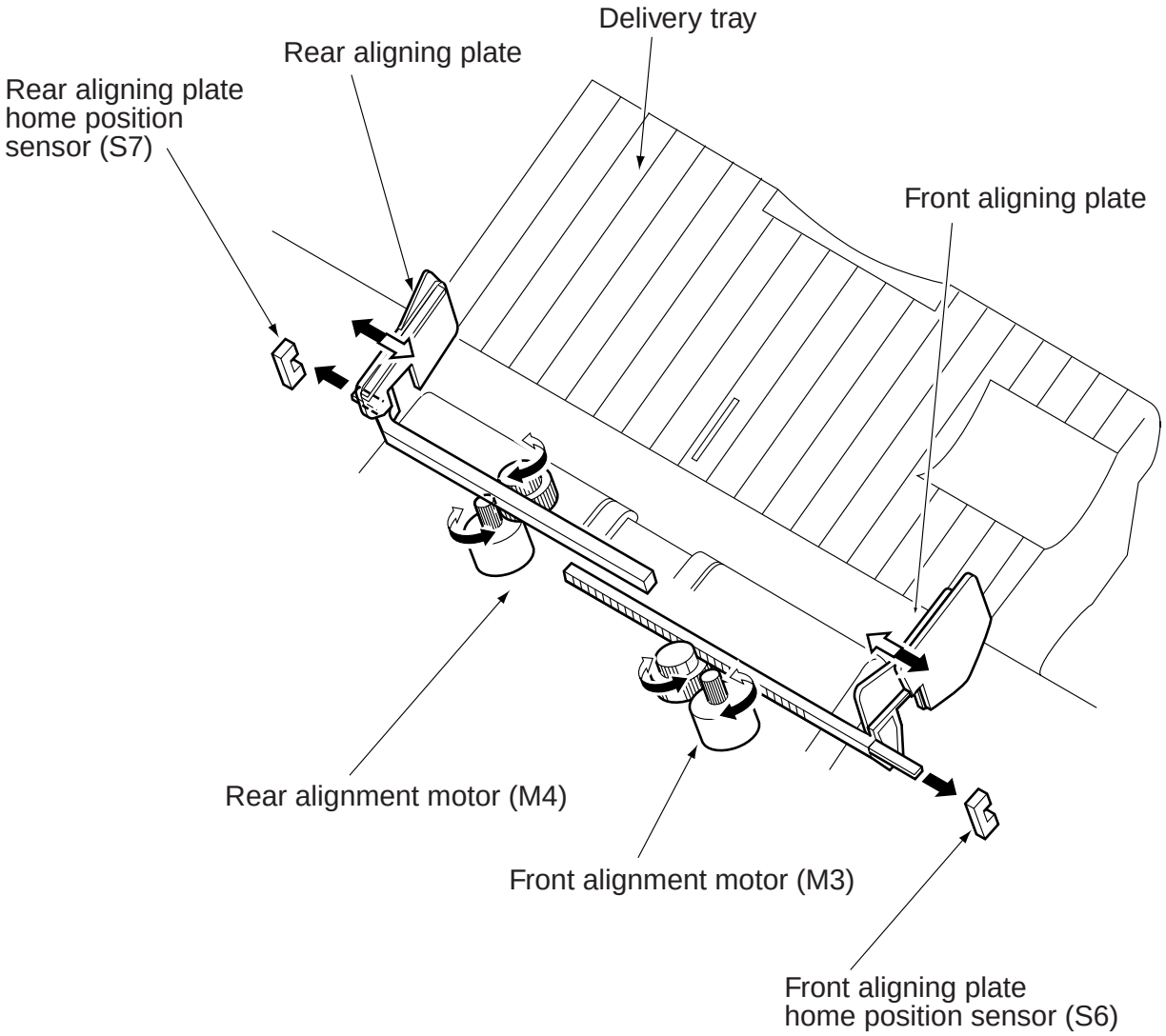
Type of sort	Position of alignment
Non-sort	Alignment (front)
Staple sort	Front alignment
Sort	Offset alignment

T02-403

	Alignment size
Small-size	A4, A4R, A5, A5R, B5, B5R LTR, LTRR, STMT,STMTR
Medium-size	B4 LGL
Large-size	A3 279x432 mm (11 x 17)

T02-404

Reference:
The machine initializes itself at the start of operation. As such, the front/rear aligning plate will not be moved to home position if it is not already in home position when the power is turned on.



F02-412

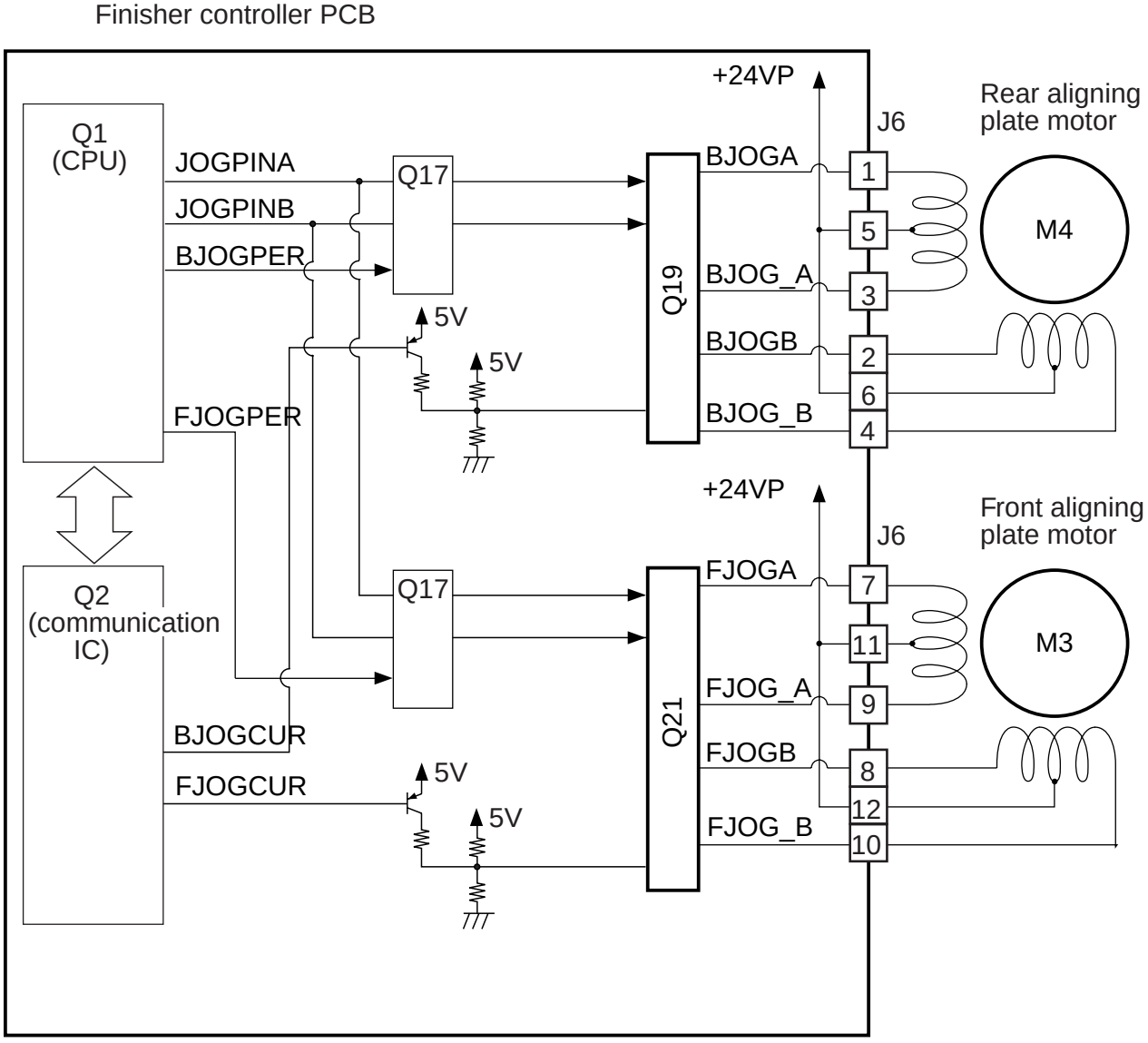
2. Controlling the Alignment Motor

F02-419 is a block diagram of the drive circuit used for the front alignment motor (M3) and the rear alignment motor (M4). Both motors are 4-phase stepping motors.

Q1 (CPU) and Q2 (communication IC) generate the following signals to control the motors:

Type	Signal	Motor
Motor rotation direction/ speed control	JOGPINA	Front alignment motor
	JOGPINB	Rear alignment motor
Motor drive enable	FJOGPER	Front alignment motor
	BJOGPER	Rear alignment motor
Drive current switch	FJOGCUR	Front alignment motor
	BJOGCUR	Rear alignment motor

T02-405



F02-413

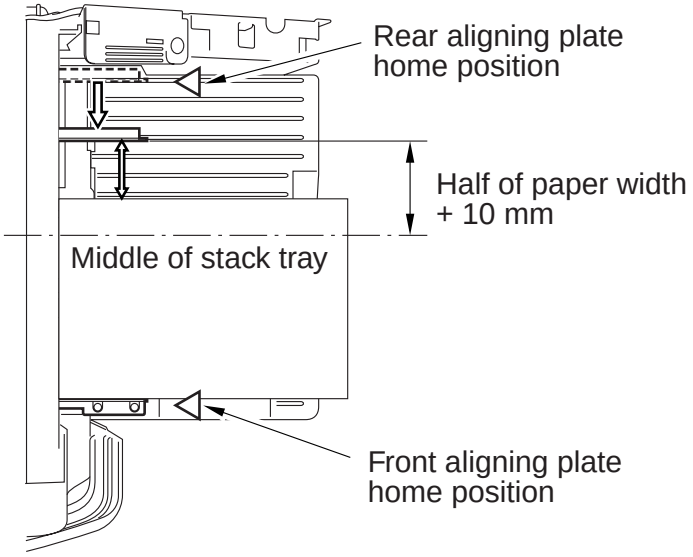
3. Front Alignment (staple sort)

The machine's stapler is used in place at the front and, therefore, sheets are stapled at the front.

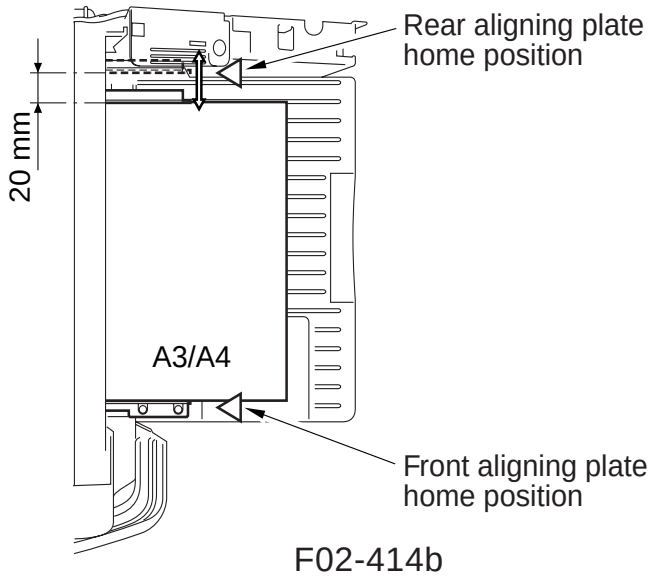
When the Start key is turned on and the paper size is communicated by the host machine, the front aligning plate is moved to the home position and the rear aligning plate is moved to a point "half the paper width + 10 mm to the rear" from the middle of the stack tray; the plates are then held in wait.

A sheet is delivered by the host machine, and is deposited to the intermediate handling tray.

When the sheet reaches the intermediate handling tray, the return roller butts it against the stopper plate to align it in feed direction, moving the sheet to stapling position. Thereafter, the rear aligning plate is driven and the sheet is aligned to the front.



F02-414a



F02-414b

4. Offset Alignment (non-stapling)

a. Sort

In sort mode, each stack of sheets is displaced for alignment, referred to as “offset alignment.”

A stack of sheets is displaced by 20 mm. The first stack is displaced to the front (i.e., when there is no paper in the delivery tray).

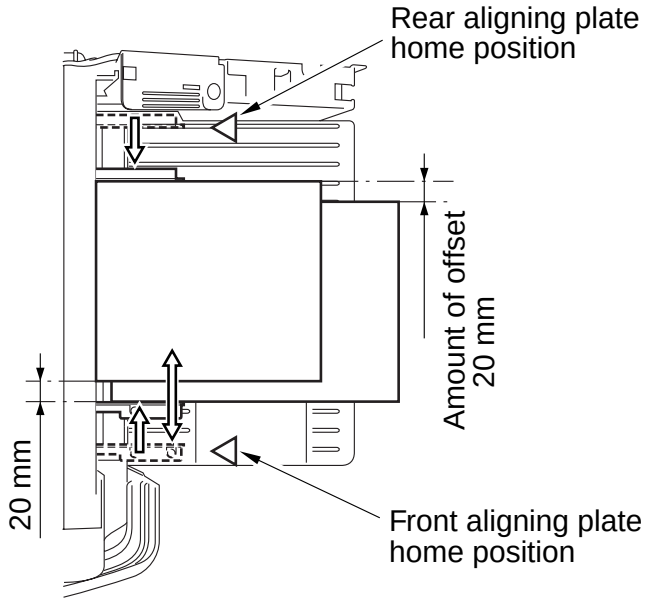
When the paper size is communicated by the copier, the finisher controller PCB drives both the front and rear aligning plates at the same time to move the stack of sheets to a point “width of the stack + 10 mm.” (F02-415a)

The stack is then aligned by either the front or rear aligning plate. To align to the front, the rear aligning plate is used; to align to the rear, on the other hand, the front aligning plate is used (moving the plate to the edge of the stack).

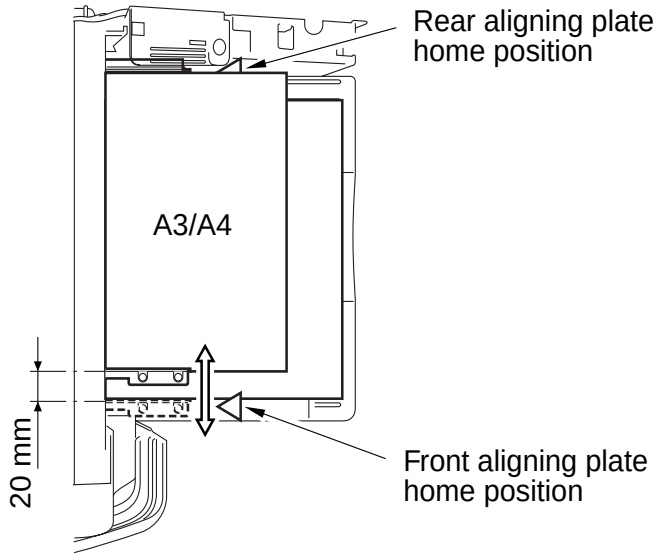
If the sheets are A4 or A3, the home position of the front aligning plate will be used as the reference when the alignment is to the front; the home position of the rear aligning plate will be used as the reference when the alignment is to the rear. The aligning plate (the rear aligning plate if aligning is to the front, or the front aligning plate if the alignment is to the rear) is held in wait in home position.

When alignment takes place, the aligning plate is driven as far as the edge of the stack to be offset from the home position. (F02-415b)

If the number of sheets specified or of originals is in excess of the limit imposed on the intermediate handling tray, as many sheets as can be accommodated (limit) are delivered; thereafter, the subsequent sheets are aligned in the same direction.



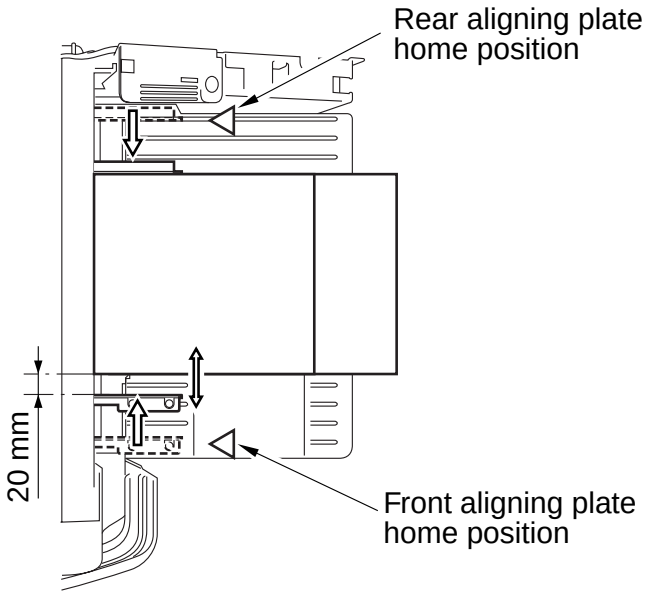
F02-415a



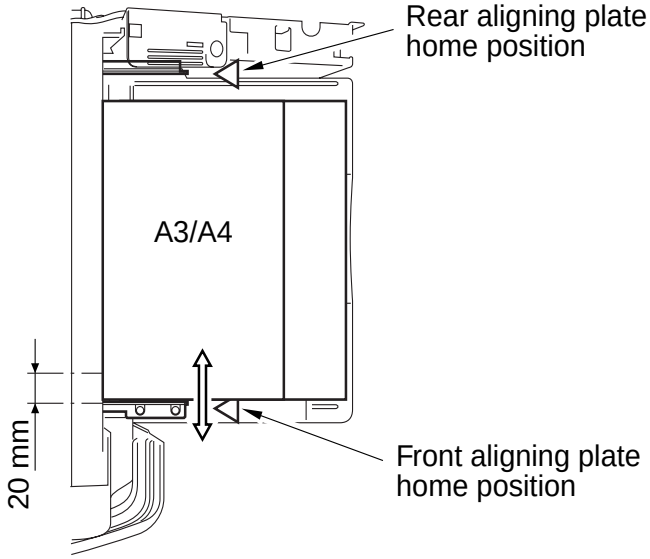
F02-415b

b. Non-Sort

In non-sort mode, the sheets are aligned where it would be offset to the front in sort mode.



F02-416a



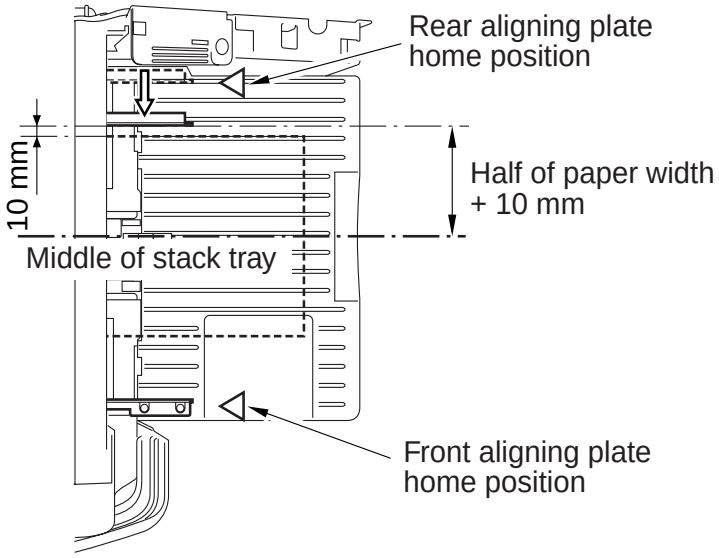
F02-416b

5. Outline of Operation

a. Staple Sort

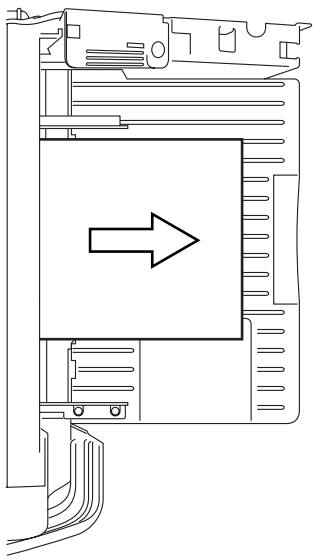
The machine operates as follows in staple sort mode:

1) The host machine communicates the selection of stapling and paper size.
2) The rear aligning plate moves from home position to a point “half the paper width + 10 mm to the front” from the middle of the delivery tray.



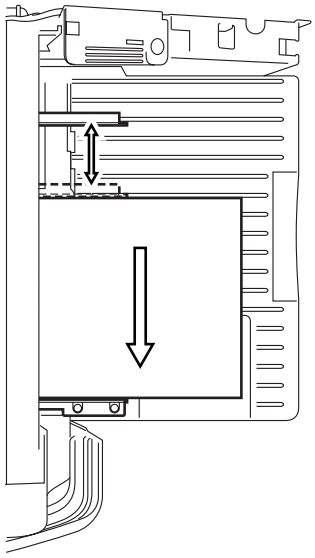
F02-417a

3) A sheet is deposited in the intermediate handling tray



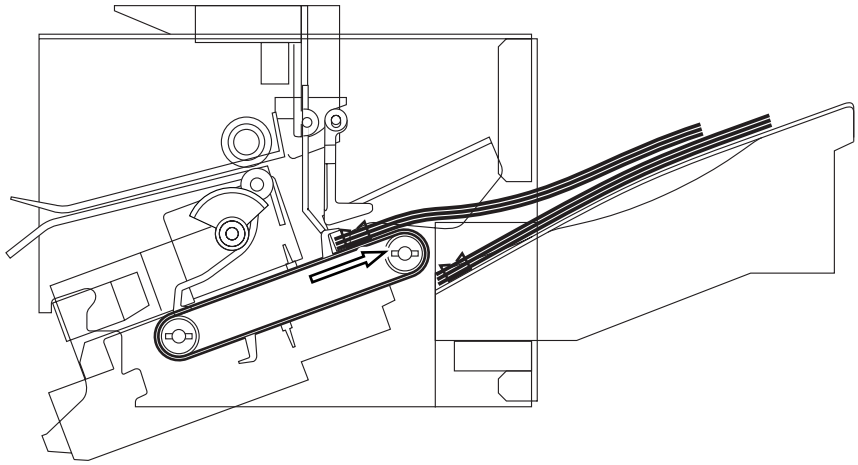
F02-417b

4) The rear aligning plate is driven to align the sheet to the front.
5) The rear aligning plate is returned to the position in step 2.



F02-417c

6) Operations 3 through 5 are repeated each time a sheet is delivered by the copier.
7) When the first set has been aligned, the stack is stapled.
8) The stack delivery belt is driven, and the stack is delivered to the delivery tray (stack delivery).



F02-417d

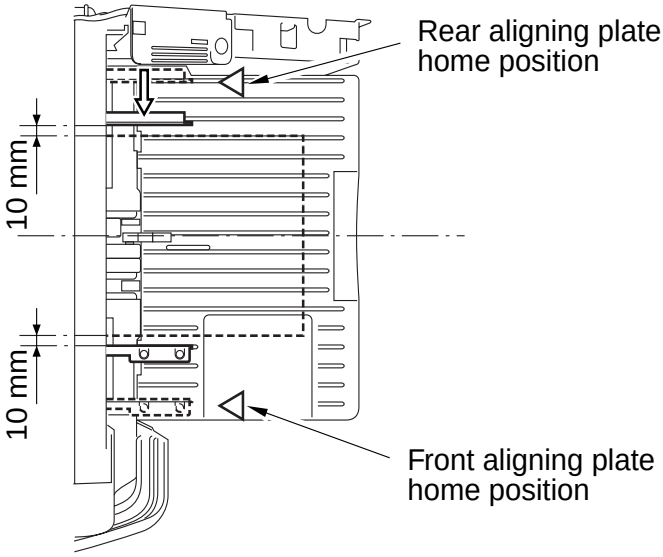
9) The delivery tray is moved up/down so that the stack tray is at a specific position.
10) Thereafter, operations 3 through 8 are repeated.

Reference:
If the number of originals exceeds the limit imposed on the intermediate handing tray, the stack in the intermediate handling tray will not be stapled but will be delivered to the delivery tray. The subsequent sheets will not be stapled either.

b. Offset Alignment

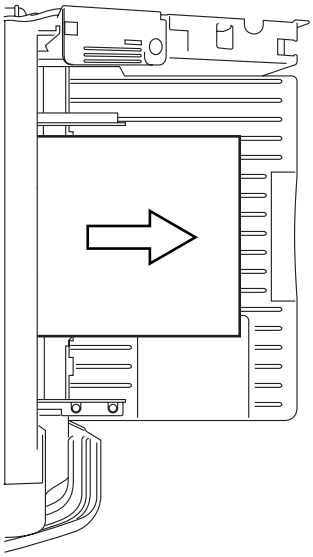
The machine executes offset alignment as follows:

1) The host machine communicates the selection of sort and paper size.
2) The front/rear aligning plate is moved to a point “paper width + 10 mm to both sides” from the home position in relation to the middle of the tray.



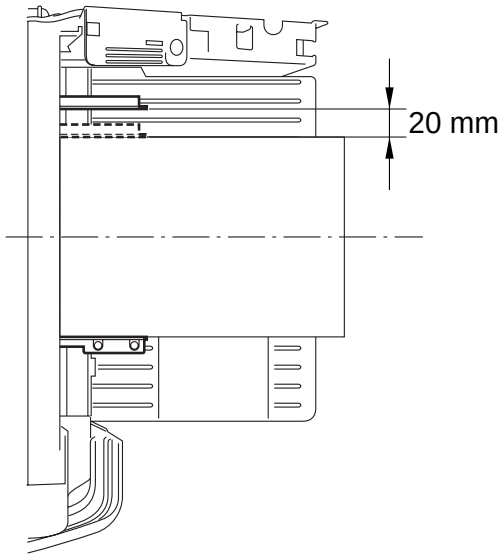
F02-418a

3) The sheet is deposited in the intermediate handling tray.



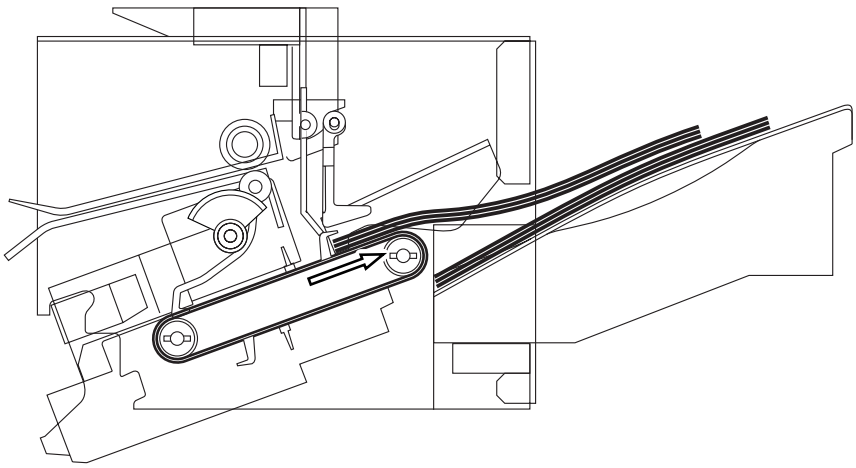
F02-418b

4) To align to the front, the rear aligning plate is used; to align to the rear, on the other hand, the front aligning plate is driven.
5) The front or the rear aligning plate is returned to the position in operation 2.



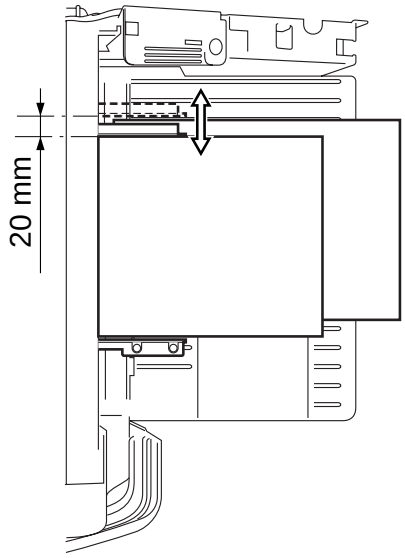
F02-418c

6) For each delivery, operations 3 through 5 are repeated.
7) The machine executes stack delivery:
   (a) If the number of originals is under the limit imposed on the intermediate handling tray, The sheets are delivered on a stack basis.
   (b) If the number of originals is over the limit imposed on the intermediate handling tray, The sheets are delivered to the delivery tray (stack delivery); thereafter, the subsequent sheets are aligned at the same offset position, and are delivered to the delivery tray as a stack (stack delivery).



F02-418d

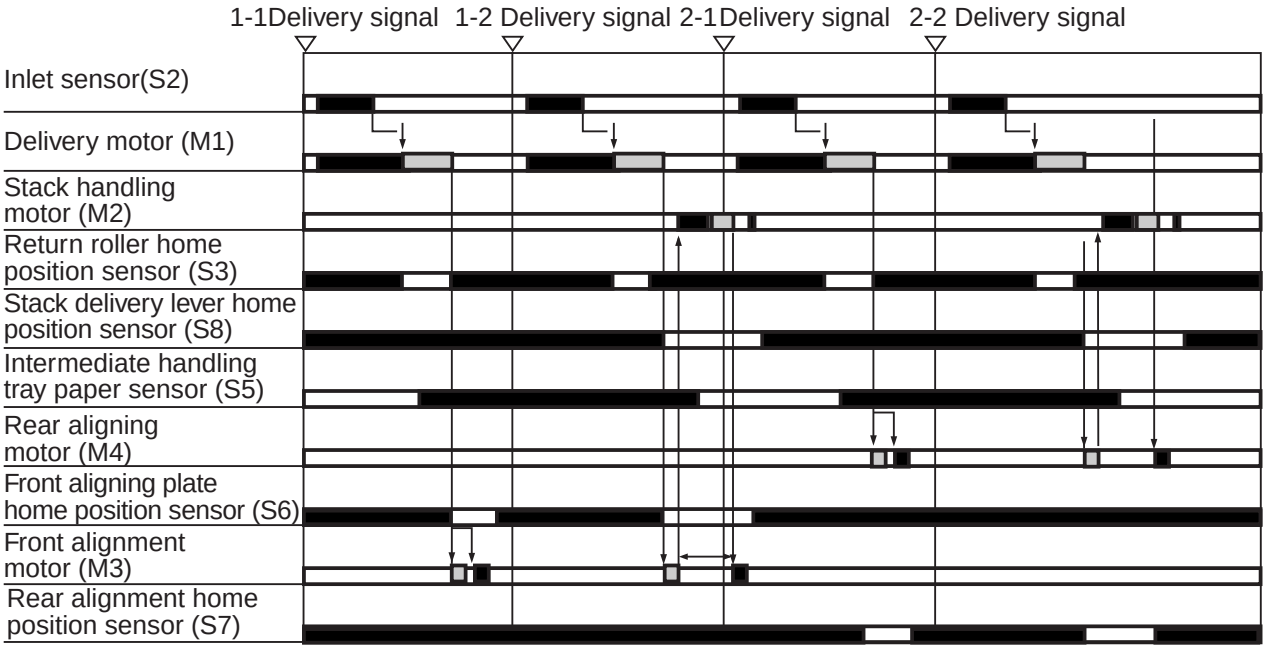
8) The delivery tray is moved up/down so that the stack tray is at a specific level.
9) Thereafter, operations 3 through 9 are repeated by alternating the aligning plates to drive.



F02-418e

5. Sequence of Operations

(1) Offset (2 originals, 2 sets)

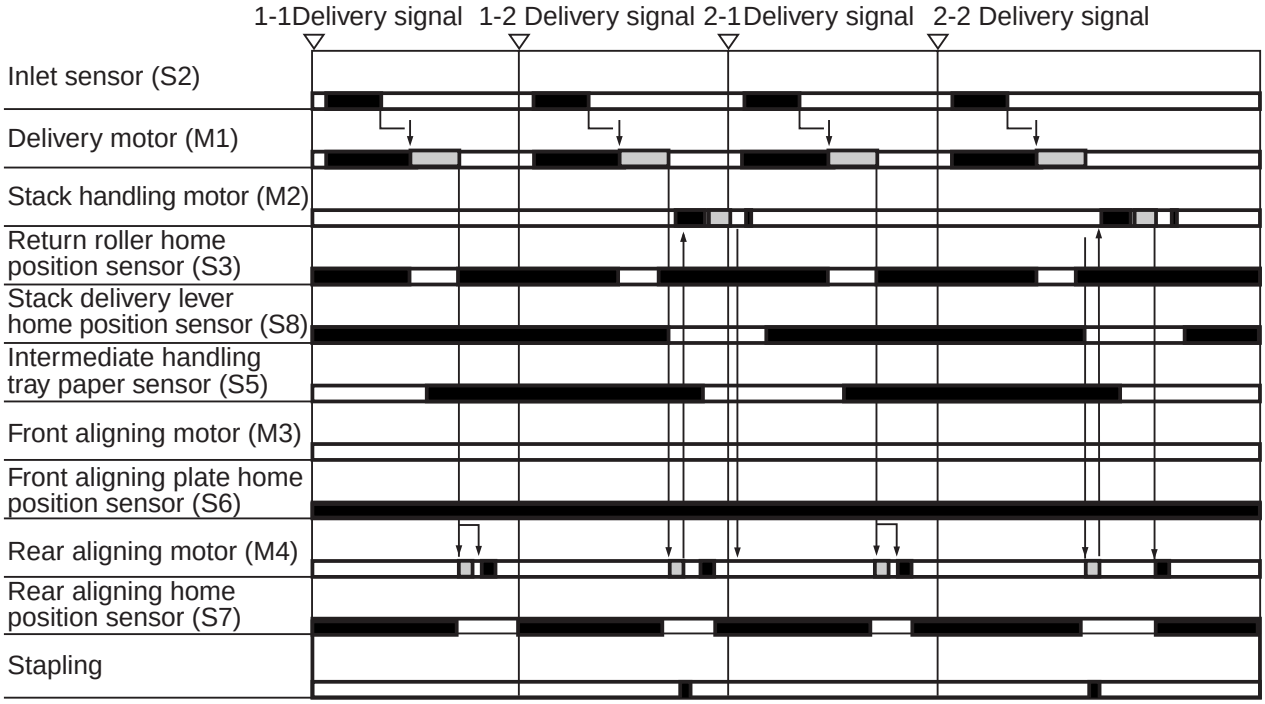


: CW rotation. : CCW rotation.

Delivery motor: CW to drive the delivery roller/CCW to drive the return roller.
Front alignment motor: CW to move to the front/CCW to move to the rear.
Rear alignment motor: CW to move to the rear/CCW to move to the front.
Stack tray ascent/decent motor: CW to move up/ CCW to move down.
Stack handling motor: CW to deliver the stack/CCW to hold the stack.

F02-419a

(2) Stapling (2 originals, 2 sets)



: CW rotation. : CCW rotation.

Delivery motor: CW to drive the delivery roller/CCW to drive the return roller.
Front alignment motor: CW to move to the front/CCW to move to the rear.
Rear alignment motor: CW to move to the rear/CCW to move to the front.
Stack tray ascent/descent motor: CW to move up/CCW to move down.
Stack handling motor: CW to deliver the stack

F02-419b

V. Stapling

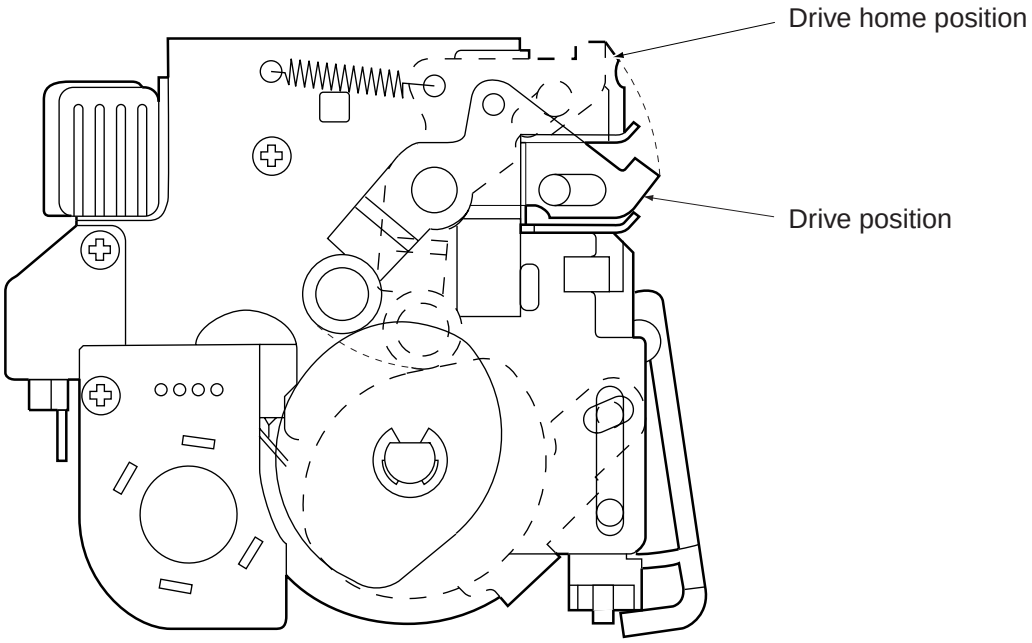
1. Outline

The machine's stapler is fixed in position at the front, and is not designed to shift or swing. Stapling takes place at the same position, and a staple is driven from under the sheets.

The machine is not equipped with a manual stapling function, and the size of paper and the number of sheets that may be stapled are as follows:

Paper size	Number of sheets
A4, A4R LTR, LTR	30
B4 LGL	20
A3 279x432 mm (11 x 17)	15

T02-501



F02-501

Reference:
If the number of sheets specified or the number of originals exceeds the limit imposed on stapling, the machine will not staple the stack and instead delivers it to the stack tray.

2. Stapler Unit

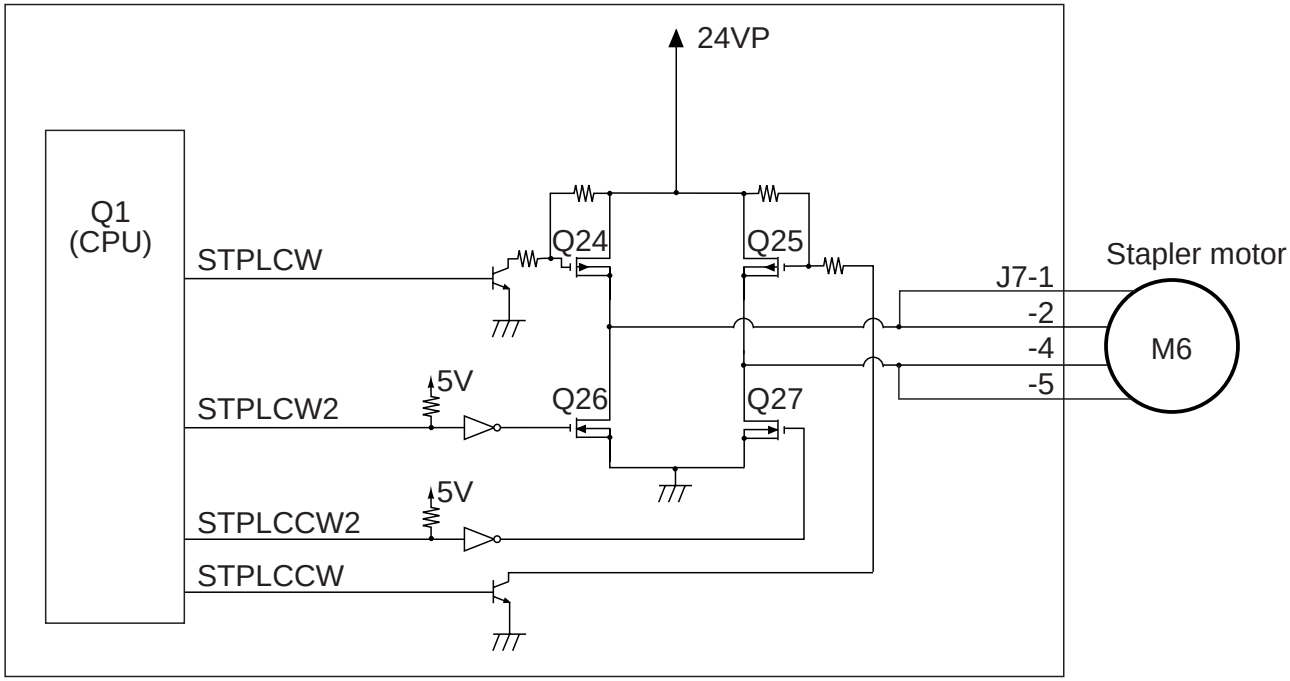
The following motor and the sensors are involved in stapling operation:

Notation	Name	SW/PI	Description	Remarks
M6	Stapler motor	-	Used to drive a staple.	Inside the stapler unit
S17	Staple edging sensor	PI	Used to make sure that the sheets are where stapling takes place; otherwise, idle stapling is executed to enable stapling.	Inside the stapler unit
S15	Staple sensor	SW	Detects the presence/absence of staples inside the cartridge.	Inside the stapler unit
S16	Stapling home position sensor	PI	Detects the home position for stapling.	Inside the stapler unit
S14	Stapler cartridge sensor	SW	Used to make sure that a cartridge is inside the stapler unit.	Inside the stapler unit

T02-502

3. Controlling the Stapler Motor

F02-502 is a block diagram of the drive circuit for the stapler motor (M6). The stapler motor is a DC motor, and the direction of its rotation is switched by signals (T02-503) sent from the finisher controller PCB Q1 (CPU) to the motor drive circuit.



F02-502

Direction	Output signal	
	STPLCW/STPCW2	STPLCCW/STPLCCW2
CW rotation	L	H
CCW rotation	H	L

T02-503

VI. Operation of the Delivery Tray

1. Moving Up/Down the Delivery Tray

a. Outline

The machine is equipped with a single delivery tray to which stacks of sheets are deposited after they have been aligned, offset, and stapled in the intermediate handling tray.

When the first stack of sheets has been deposited in the delivery tray, the delivery tray paper sensor (S11) goes ON. The delivery tray is moved up/down by the work of the delivery tray ascent/descent motor (M5).

If the delivery tray is not in home position at the start of copying/printing operation, the delivery tray ascent/descent motor is driven to move it to home position, which is a position 5 mm above the point at which the delivery tray paper height sensor has detected the top surface of the delivery tray.

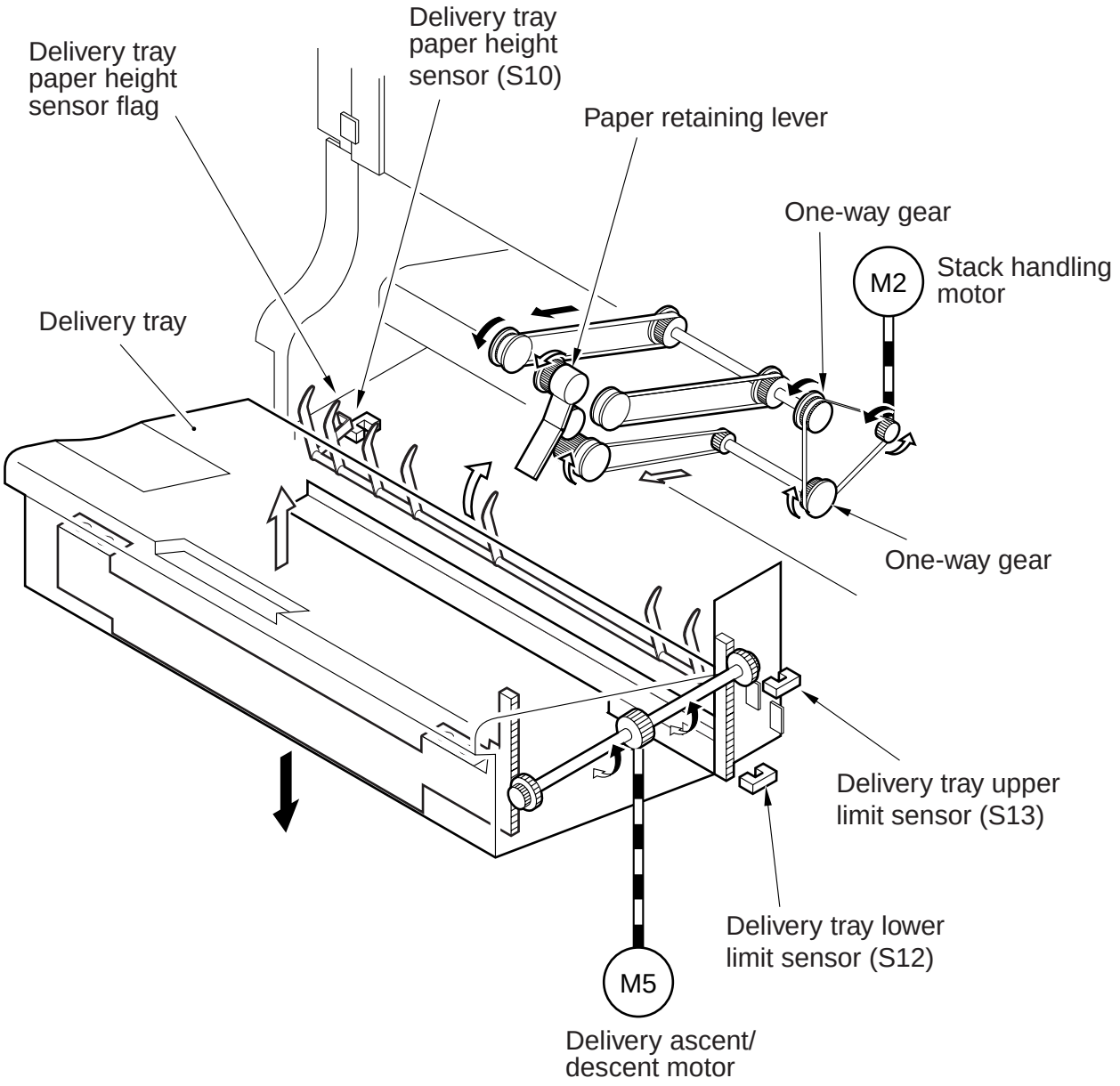
The position of the delivery tray is monitored in reference to the number of clocks generated since it has left the delivery tray paper height sensor (S10).

The upper limit of the delivery tray is detected by the delivery tray upper limit sensor (S13), while its lower limit is detected by the lower limit sensor (S12). If the delivery tray upper/lower limit sensor goes ON, the delivery tray motor is allowed to rotate in the direction that moves the tray in the opposite direction (in relation to the sensor that has gone ON).

The limit imposed on the delivery tray in terms of the number of sheets is recognized for the following:

	Reference of detection
Not stapled	Paper height and the state of the delivery tray lower limit sensor
Stapled	Paper height or the count of the number of sheets

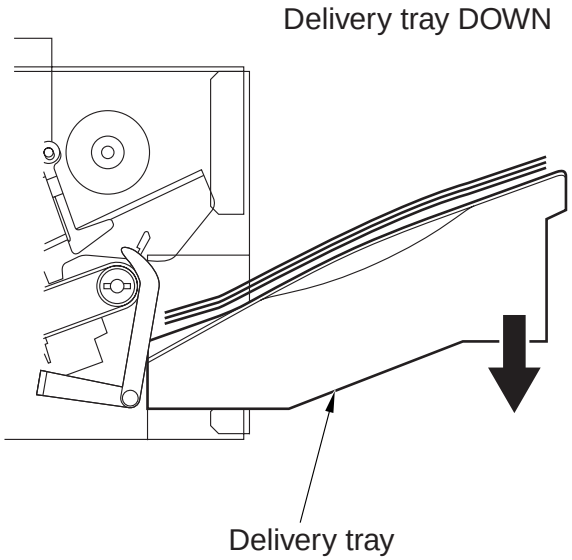
T02-601



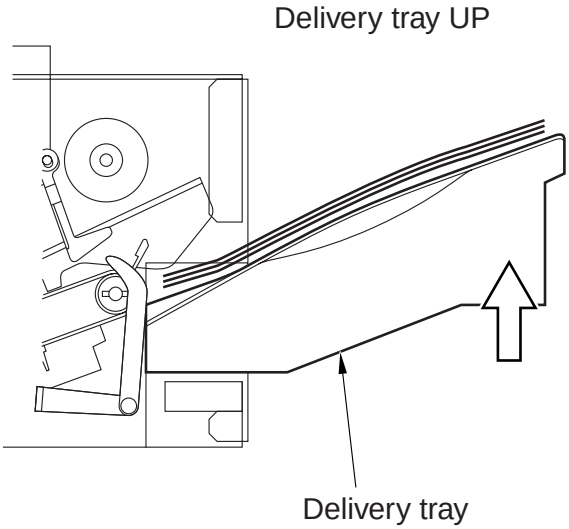
F02-601

b. Moving Up/Down the Delivery Tray

When a stack of sheets has been delivered, the delivery tray moves down until the delivery tray paper height sensor (S10) goes off. Thereafter, it moves up to a point about 5 mm above the point at which the paper height sensor (S10) detects the top surface of the paper in the delivery tray.



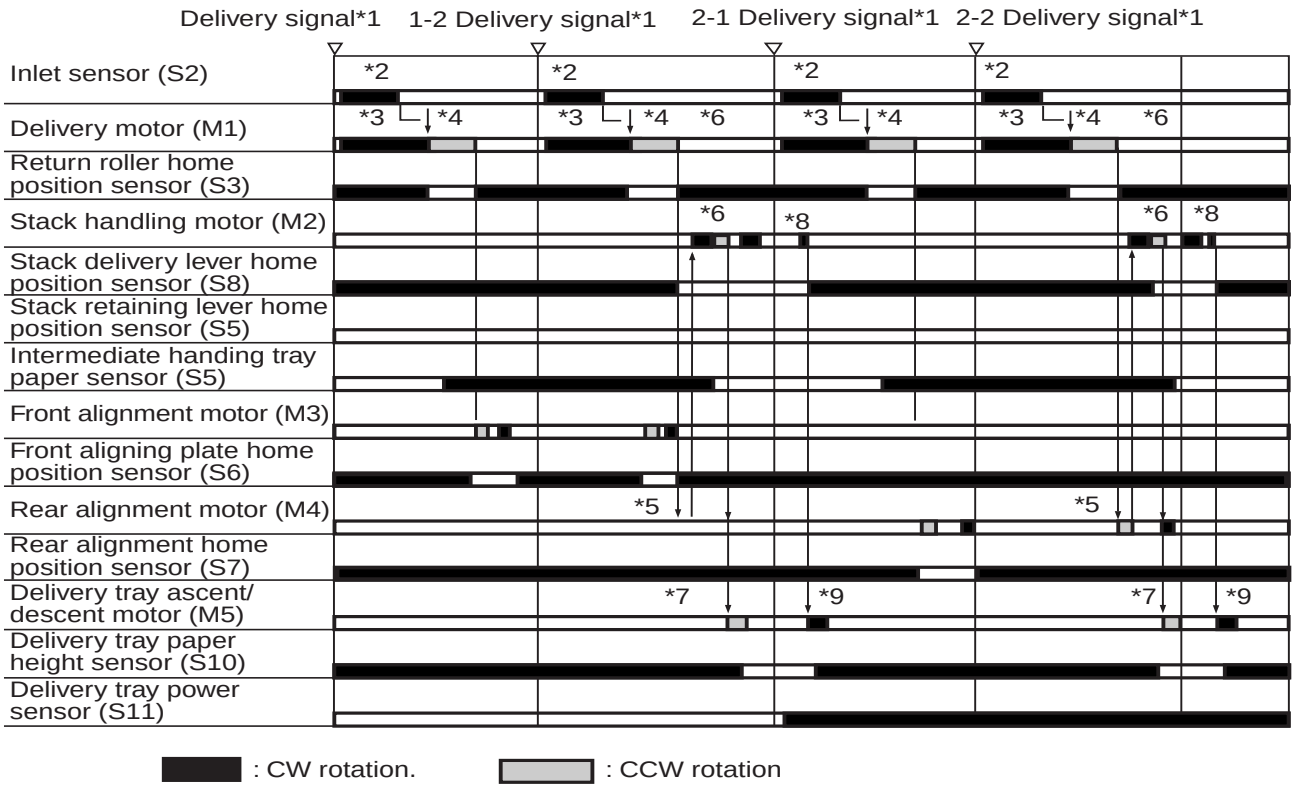
F02-602



F02-603

c. Sequence of Operations

The delivery tray is moved up/down according to the following sequence of operations:



: CW rotation. : CCW rotation

Delivery motor: CW to drive the delivery roller/CCW to drive the return roller.
Stack delivery motor: CW to drive the stack delivery belt/CCW to drive the stack retaining paddle.
Front alignment motor: CW to move to the front/CCW to move to the rear.
Rear alignment motor: CW to move to the rear/CCW to move to the front.
Stack tray ascent/descent motor: CW to move up/CCW to move down.
*1: A-B delivery signal; A sets, Bth delivery signal.
*2: varies according to the length of paper.
*3: 0.2 sec.
*4: about 0.35 sec.
*5: varies according to the size of paper.
*6: about 0.5 sec.
*7: moves down until the stack tray paper height sensor goes OFF.
*8: drives until the stack delivery lever reaches home position.
*9: moves up to a point 5 mm above the position at which the stack tray paper sensor goes ON.

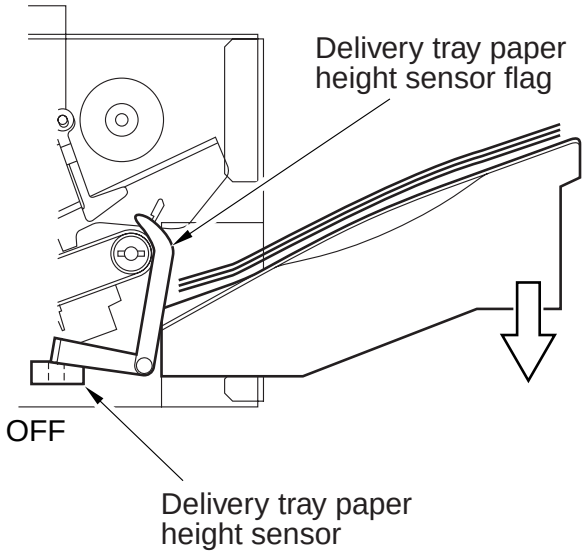
F02-604

2. Detecting the Height of the Stack in the Delivery Tray

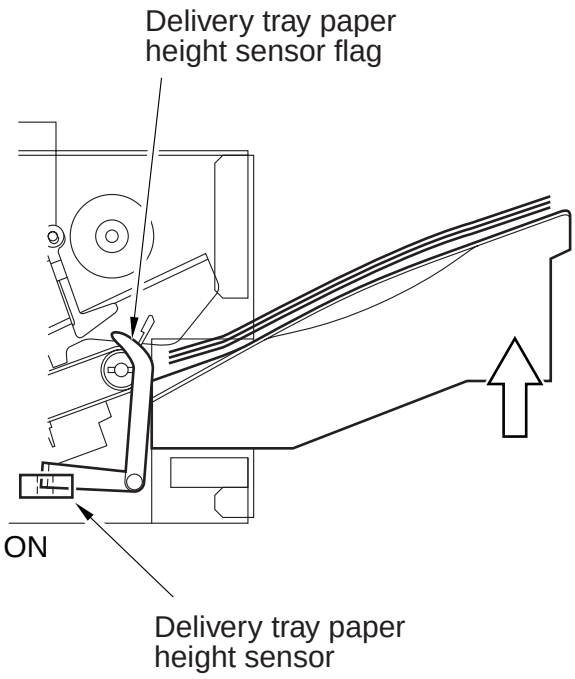
In all modes, the stack in the delivery tray is detected in reference to its height by the delivery tray paper height sensor (S10).

The delivery tray moves down until the delivery tray paper height sensor (S10) goes off after the delivery of a stack. Thereafter, it moves up to a point about 5 mm from the point at which the paper height sensor (S10) detects the top surface of the paper in the delivery tray.

If the delivery tray lower limit sensor detects the delivery tray while the delivery tray paper height sensor remains ON, the finisher controller PCB communicates the overstacking condition to the host machine; when the stack is removed, the delivery tray moves to home position, ready to receive the next delivery.



F02-605a



F02-605b

3. Stacks in the Stack Tray

T02-602 shows the maximum numbers of stacks that may be deposited in the stack tray.

When stapling is selected, the limit imposed on stacking is considered in reference to the number of stacks in the stack tray, in addition to the height of paper. A stack of sheets increases the count by '1'; a total of 30 counts causes an overstacking condition, and the fact will be communicated to the host machine, which in response indicates a message prompting the removal of the stacks.

	Stacking limit
Small-size	30 stacks (of 30 sheets)
Middle-size	30 stacks (of 20 sheets)
Large-size	30 stacks (of 15 sheets)

T02-602

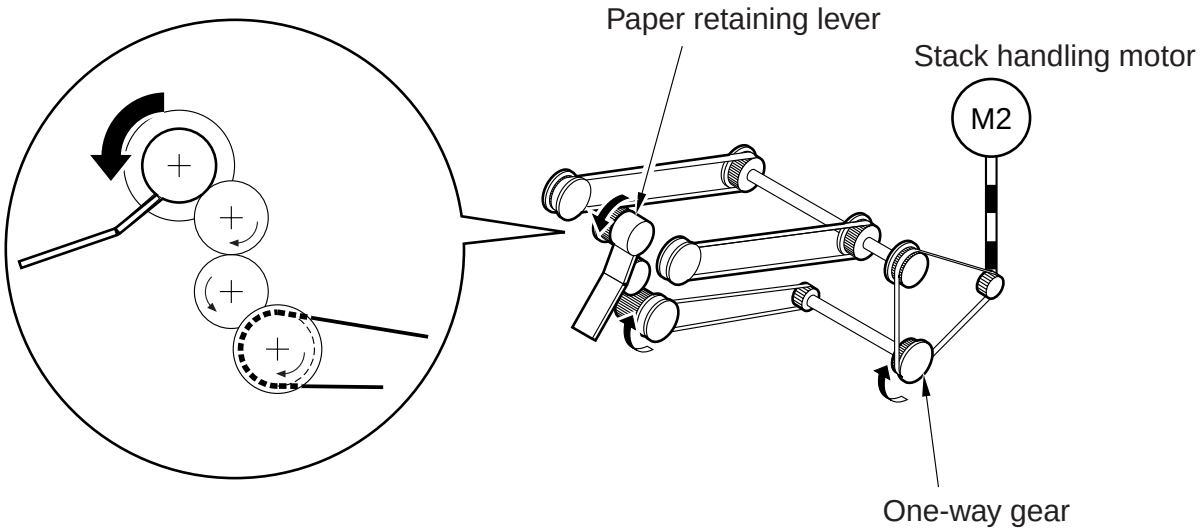
4. Holding Paper in Place in the Delivery Tray

The paper retaining lever serves to prevent the wrong detection of paper height otherwise caused by curling of the stack. The paper retaining lever is driven when the stack handling motor (M2) rotates in reverse, operating as follows:

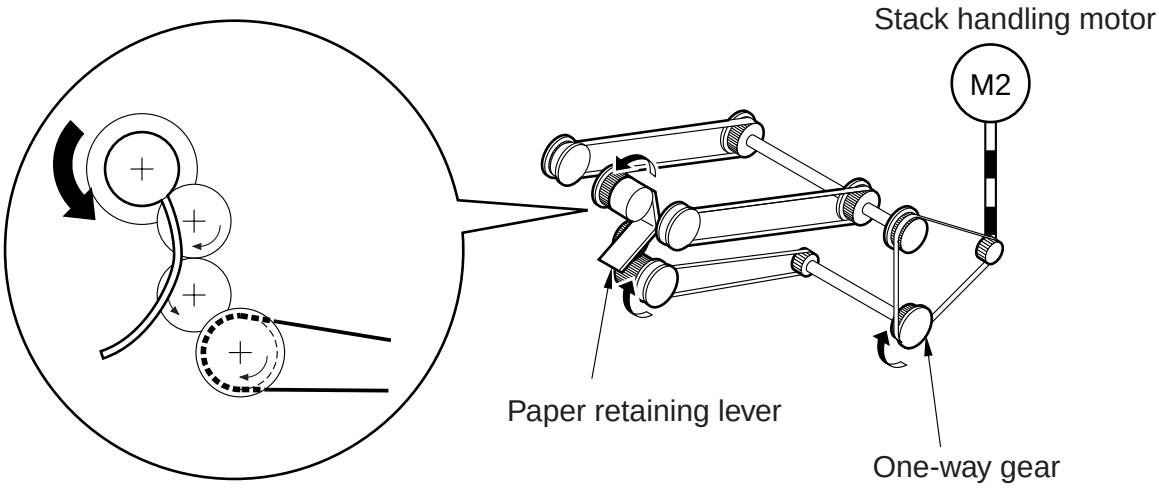
When sheets are delivered to the delivery tray in the form of a stack, it is deposited on the paper retaining lever, which makes a single turn to hold down the paper. Then, the delivery tray continues to move down until the delivery tray paper height sensor (S10) goes OFF.

The delivery tray then moves up to a point about 5 mm above the position at which the stack tray paper height sensor (S10) detects the top surface of the paper.

The foregoing operations are repeated to hold down the stack.



F02-606



F02-607

5. Controlling the Delivery Tray Ascent/Descent Motor

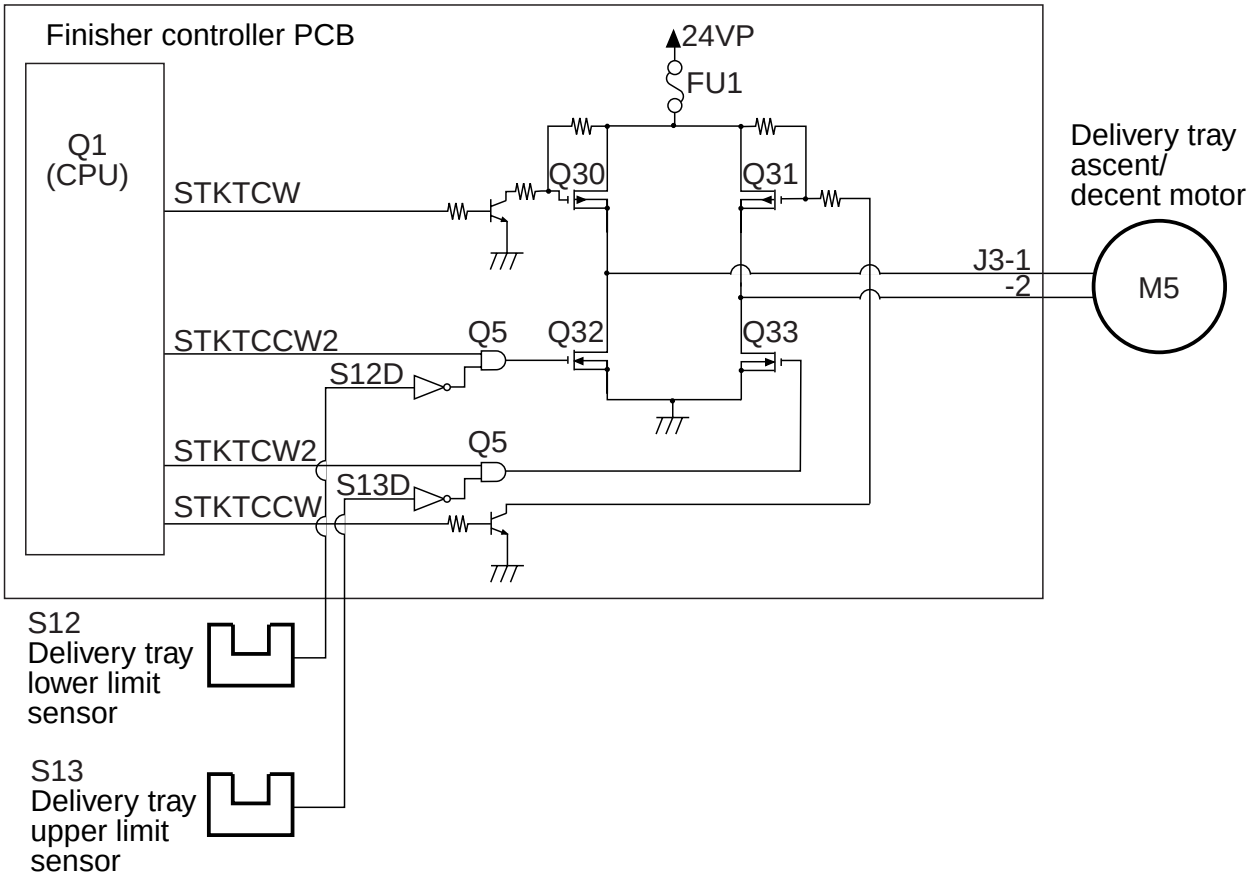
a. Outline

F02-608 is a block diagram of the drive circuit of the delivery tray ascent/descent motor (M5), which is a DC motor.

The direction of motor rotation is switched by signals from the finisher controller PCB Q1 (CPU) to the motor driver circuit (T02-603).

When the delivery tray reaches the delivery tray upper limit sensor (S13) and, as a result, the sensor sends a signal (S13D) to Q5, STCTCW2 will be cut off, causing the motor to stop rotating clockwise.

Likewise, when the delivery tray reaches the delivery tray lower sensor (S12) and, as a result, the sensor sends a signal (S12D) to Q5, STCTCCW2 will be cut of, causing the motor to stop rotating counterclockwise.



F02-608

Rotation direction	Output signal	
	STKTCW/STKTCW2	STKTCCW/STKTCCW2
CW rotation	L	H
CCW rotation	H	L

T02-603

VII. Detecting Jams

A.Outline

1. Finisher Assembly

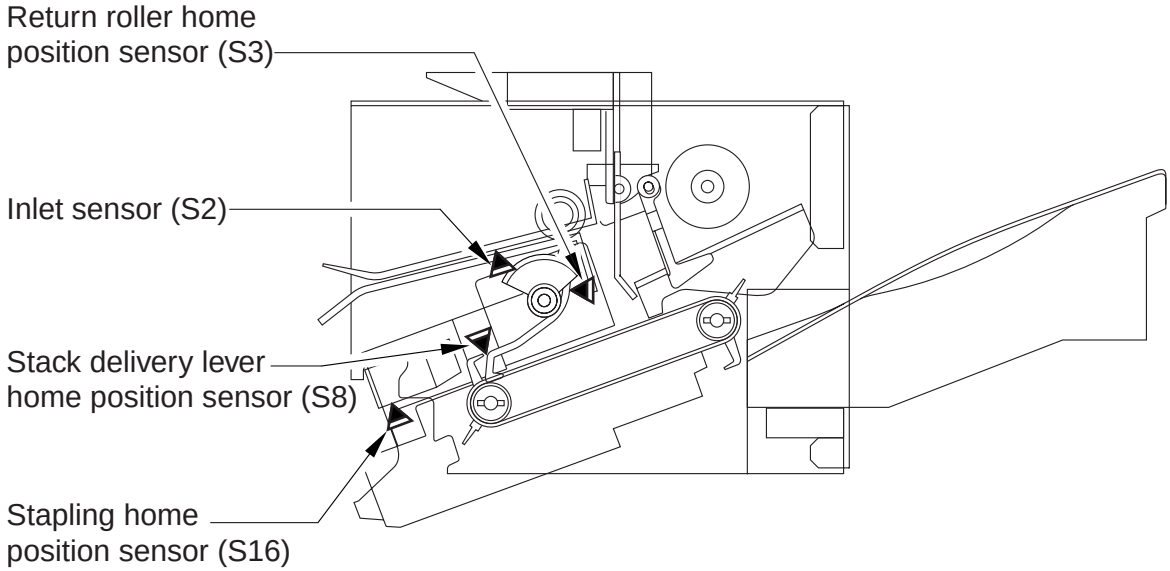
The presence/absence and the movement of paper are checked using the following sensors:

- Inlet sensor (S2)
- Stack retaining lever home position sensor (S4)
- Return roller home position sensor (S3)
- Stack delivery lever home position sensor (S8)

Stapling operations are monitored using the following sensor:

- Stapling home position sensor (S16)

A check for a jam is made at such times as programmed in advance in the CPU on the finisher controller PCB; in response to a jam, the machine stops its operation and causes its host machine to indicate the presence of a jam.



F02-701

2. Relay Delivery Assembly

The presence/absence and the movement of paper are checked using the following sensor:

- Relay delivery sensor (PS25Z)

The state (open/closed) of the relay delivery assembly door is checked using the following sensor:

- Relay delivery cover open sensor (PS24Z)

A check for a jam is made at such times as programmed in advance in the CPU on the DC controller PCB of the host machine; in response to a jam, the machine will stop delivery operation and cause its host machine to indicate the presence of a jam.

Jam type	Sensor	Description	Code
Inlet sensor delay	S2	The inlet sensor (S2) of the finisher does not detect paper 1.0 sec after the finisher controller PCB detects the paper delivery signal from the host machine.	0003
Inlet sensor stationary		The inlet sensor (S2) remains ON after all the following: the inlet sensor detects paper; the machine moves the paper as far as its trailing edge leaves the delivery roller; and the machine moves the paper another 21 mm.	0004
Power-on jam		The inlet sensor (SW2) of the finisher is ON at time of power-on.	0007
Stack delivery	S8	Paper does not reach the stack delivery lever home position sensor (S8) after all the following: the stack delivery lever is driven by the stack delivery motor (M2); and it is driven as much as will move the paper to reach the stack lever home position sensor. Or, the paper does not leave the stack lever home position sensor after the stack delivery lever is driven as much as will move the paper to leave the stack delivery lever home position sensor. A check for this jam is made while paper is on the move; if the same condition is detected during initialization, it will be processed as an error.	0081
Stack return jam	S3	Paper does not reach the return roller home position sensor (S3) after all the following: the return roller is driven by the delivery motor (M1); and it is driven as much as will move the paper to reach the return roller home position sensor. Or, the paper does not leave the return roller home position sensor after the return roller is driven as much as will move the paper to leave the return roller home position sensor. A check for this jam is made while the paper is on the move; if the same condition is detected during initialization, it will be processed as an error.	0082
Staple	S17	After the stapler motor is rotated clockwise and the sensor goes off, the sensor dose not turn on in 0.5 sec; in addition, the sensor turns on within 0.5 sec when the stapler motor is turned counterclockwise. (If the sensor remains off 0.5 sec after the motor is rotated counterclockwise, an error will be identified.)	0006

Reference:
If the finisher front cover is opened, the machine will stop operation upon detection and identify the sate of the paper according to how it is found.

Jam type	Sensor	Description	Code
Relay delivery sensor delay jam	PS19Z	The relay delivery sensor remains OFF a specific period of time after the fixing delivery sensor (S13) detects paper.	0114
Relay delivery sensor		The relay delivery sensor remains ON after all the following: the relay delivery sensor detects paper; and the paper is moved as much as its trailing edge will leave the relay delivery sensor.	0214
Door open jam	PS24Z	The relay delivery door is found to be open while paper is on the move.	0B35

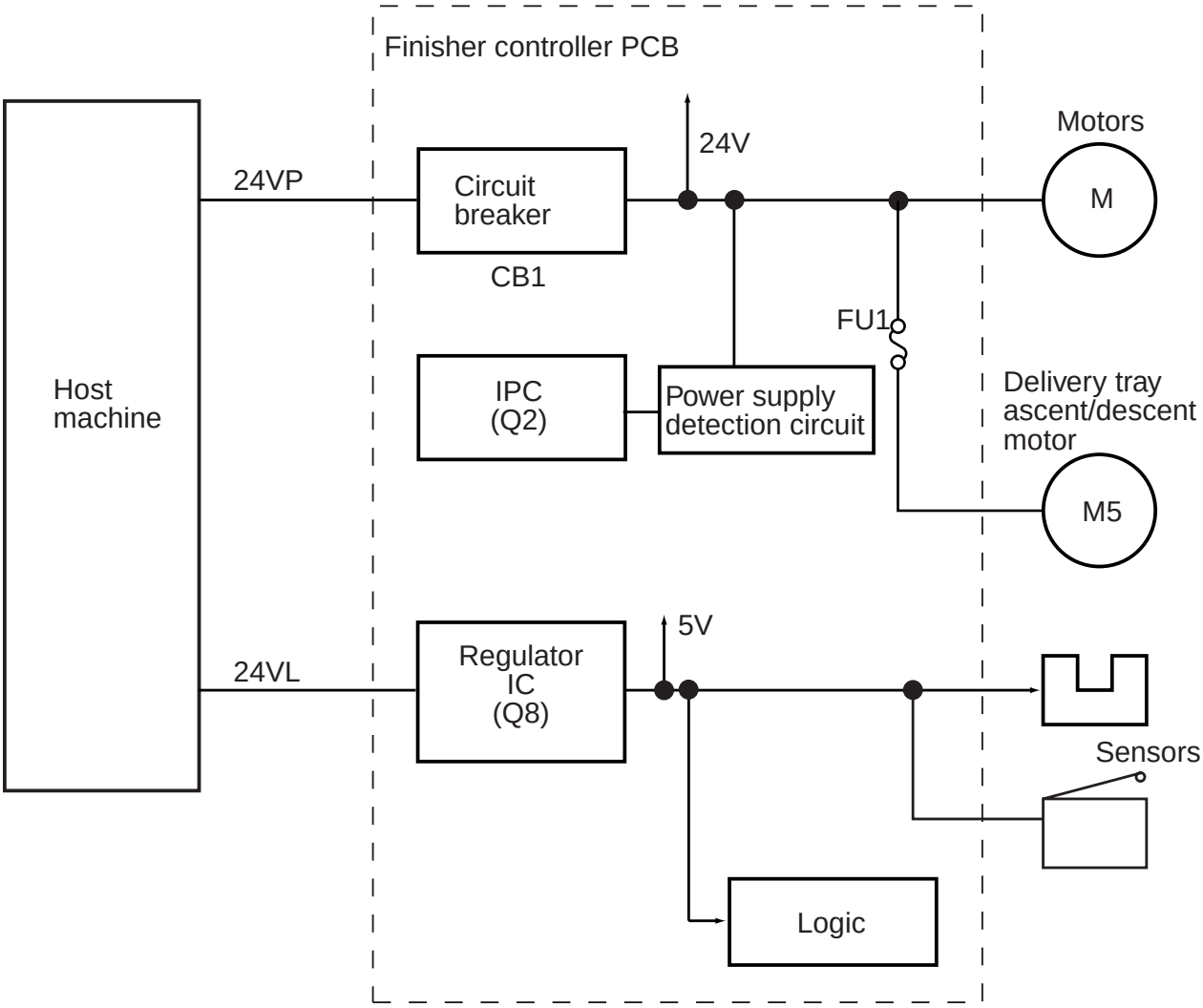
VIII. Power Supply System

1. Outline (finisher assembly)

When the host machine is turned on, it sends two systems of 24 VDC to the finisher controller PCB; one of them is used to drive the motors while the other is used to generate 5 VDC for sensors and ICs on the PCB.

The power line for the motor is equipped with a power supply detection circuit, enabling the IPC to check the presence/absence of paper.

Block Diagram of the Power Supply



F02-801

2. Protective Functions (finisher assembly)

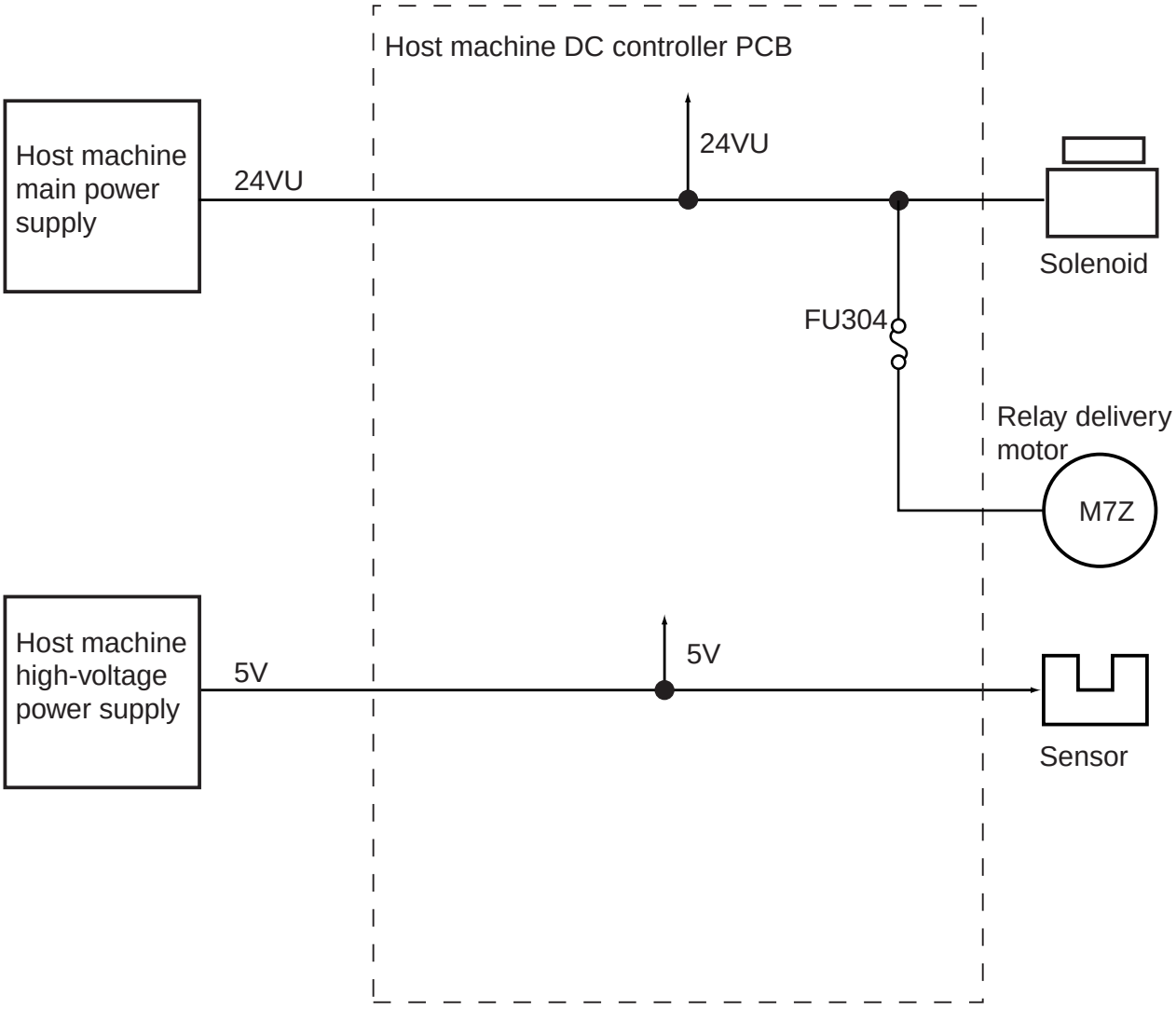
The 24VDC system used to drive the motors is equipped with a circuit breaker (CB1) to protect against overcurrent.

The power line to the delivery tray ascent/descent motor (M5), on the other hand, is equipped with a fuse (FU1) which melts in the presence of overcurrent.

3. Outline (relay delivery assembly)

All power to each load is supplied by way of the DC controller PCB.

The power line to the relay delivery motor is provided with a built-in fuse (FU304).



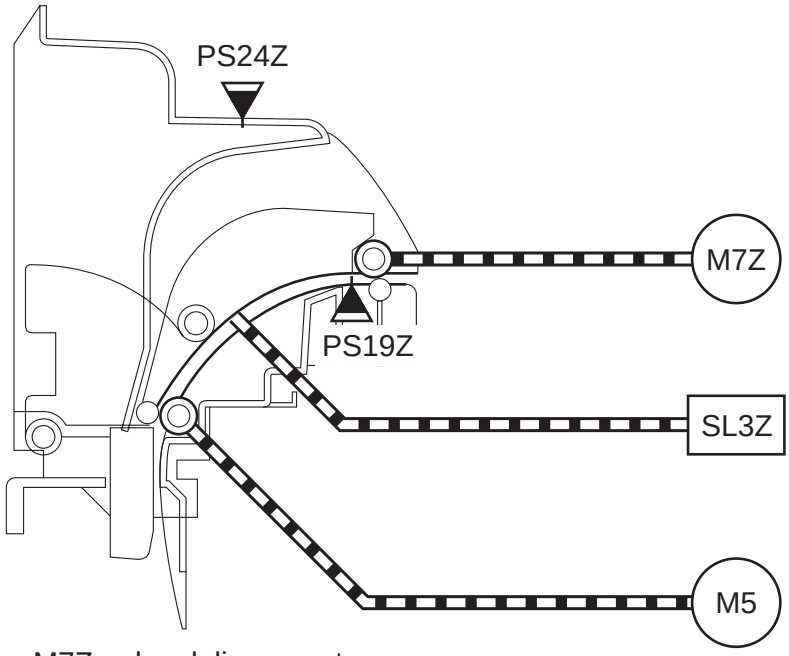
F02-802

IX. Relay Delivery Assembly

1. Outline

The relay delivery assembly serves to forward sheets delivered by the host machine to the finisher assembly. The drive motor is a 4-phase stepping motor, and is controlled to rotate CW or CCW. A flapper driven by a solenoid is used to configure paper paths, as when sending paper to the duplexing unit or turning it over for double-sided handling.

The movement of paper is monitored by a sensor, and the state (open/closed) of the cover is monitored by another sensor.



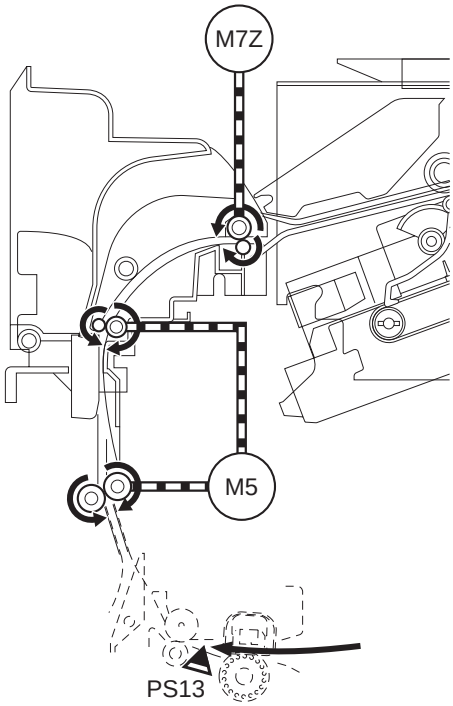
M7Z: relay delivery motor
M5: delivery motor (on host machine side)
SL3Z: relay delivery solenoid (1_OUT_SL)
PS19Z: relay delivery sensor (2OUT_PD)
PS24Z: relay delivery open/closed sensor (2OUT_DOOR_D)

F0-02-019-01

2. Delivery to the Finisher

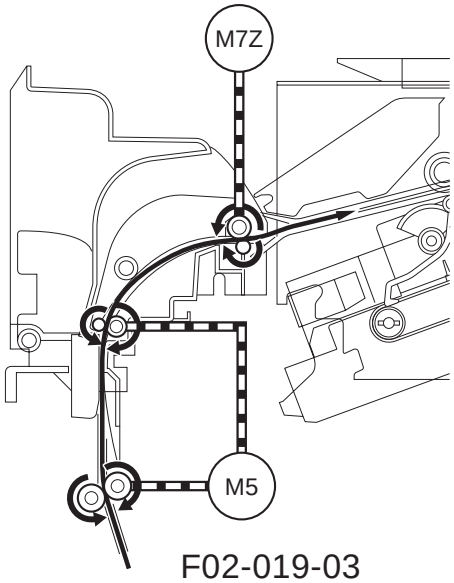
The finisher operates as follows in response to delivery.

1) The host machine sends a sheet. A specific period of time after the leading edge of the sheet reaches the fixing delivery sensor (PS13), the relay delivery motor (M7Z) starts to rotate.



F02-019-02

2) The relay delivery motor sends the sheet to the finisher.



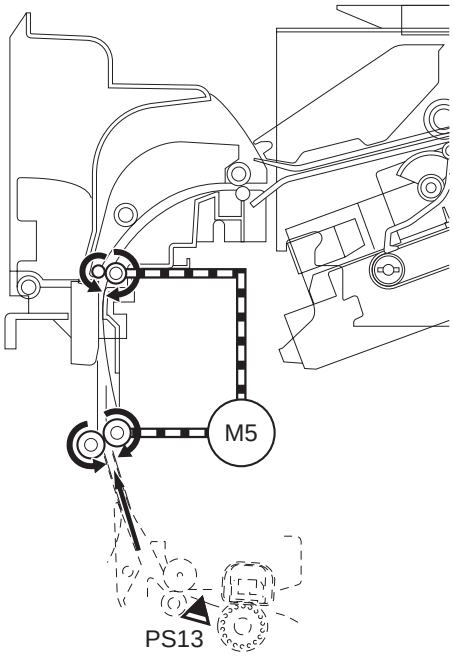
F02-019-03

3) When the last sheet moves past the relay delivery sensor (PS19Z), the relay delivery motor stops.

3. Double-Sided Printing

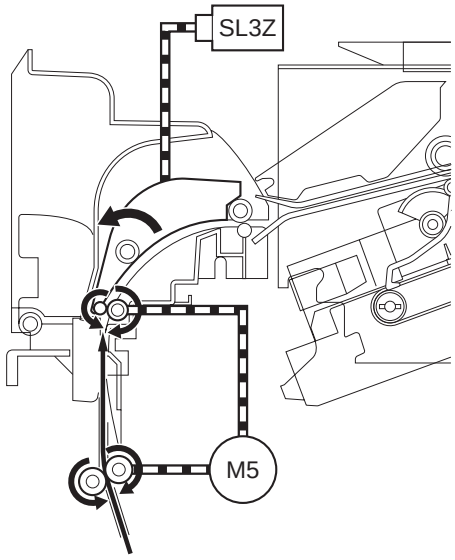
The finisher operates as follows in double-sided printing:

1) The host machine sends a sheet. A specific period of time after the leading edge of the sheet reaches the fixing delivery sensor (PS13), the delivery motor (M5; host machine side) starts to rotate.



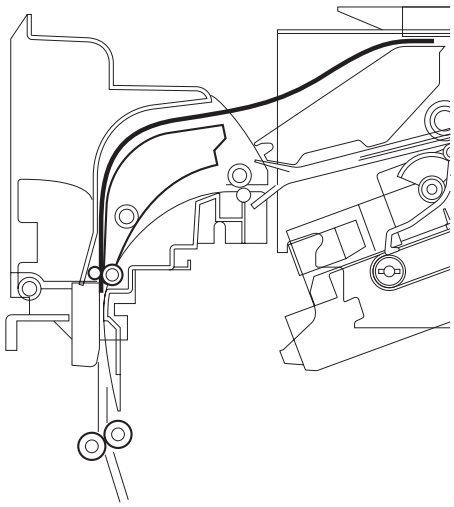
F02-019-04

2) About 1 sec before the leading edge of the sheet reaches the flapper, the relay delivery reversing solenoid (SL3Z) goes ON so that the relay delivery paper deflecting plate forms the path used to turn over the sheet.



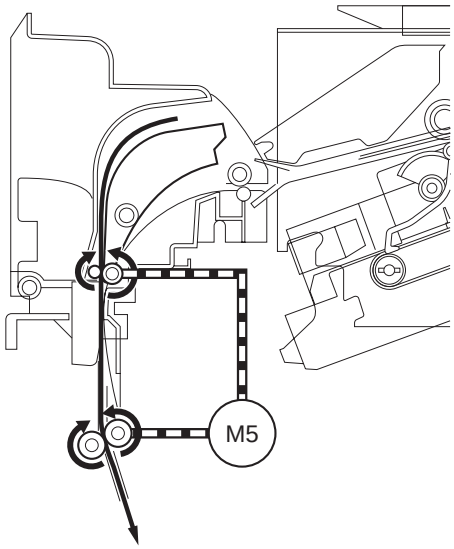
F-02-019-05

3) A specific period of time after the trailing edge of the sheet moves past the fixing assembly, the delivery motor stops.



F02-019-06

4) The delivery motor starts to rotate in reverse to move the sheet in the direction of the duplex unit



F02-019-07

CHAPTER 3

MECHANICAL SYSTEM

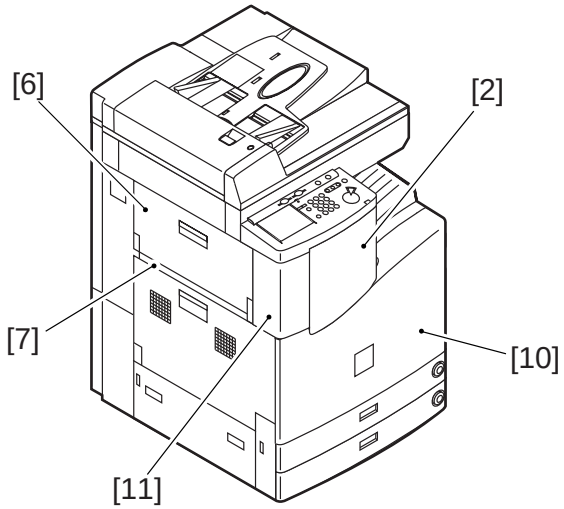
I. Disassembly / Assembly

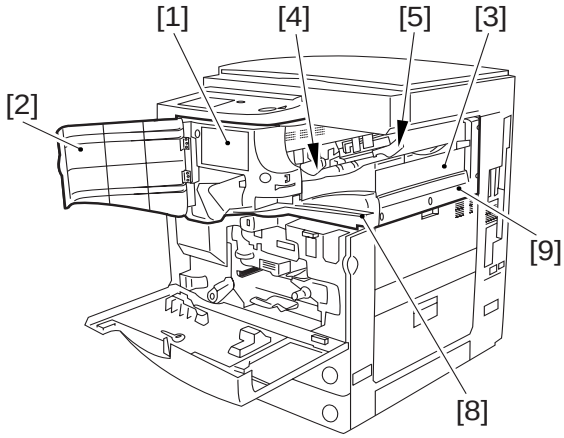
The discussions that follow cover the machine's mechanical characteristics and how to disassemble/assemble the machine. Keep the following in mind whenever you work with the machine:

1. ⚠ The power plug must remain disconnected for safety when disassembling/assembling the machine.
2. Unless otherwise noted, the machine may be assembled by reversing the steps used to disassemble it.
3. The screws must be identified by type (length, diameter) and location.
4. The mounting screws used for the grounding wire and the varistors come with a washer, which must not be left out when assembling the machine.
5. ⚠ As a rule, the machine must not be operated with any of its parts removed.

A. External Covers

[1] Finisher unit inside cover
[2] Finisher unit front cover
[3] Finisher unit delivery tray
[4] Front aligning plate
[5] Rear aligning plate
[6] Relay delivery upper unit
[7] Relay delivery lower unit
[8] Right front cover
[9] Right cover
[10] Host machine front cover
[11] Host machine support cover

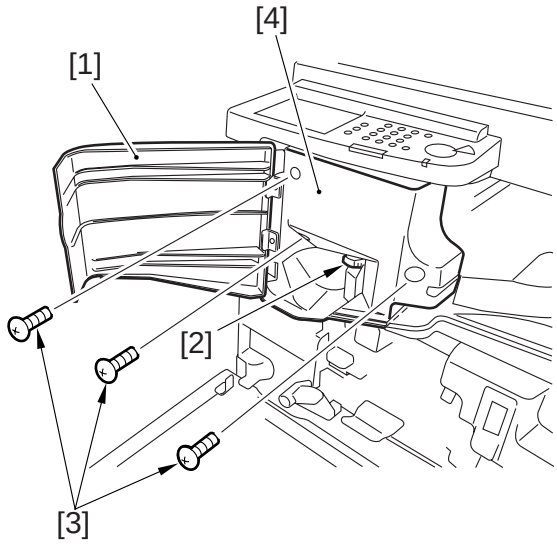




F03-301-01

1. Removing the Front Cover Assembly

1) Open the front cover of the host machine.
2) Open the finisher unit front cover [1], and detach the stapler cartridge [2].
3) Remove the three screws[3] and detach the finisher unit front cover assembly [4].

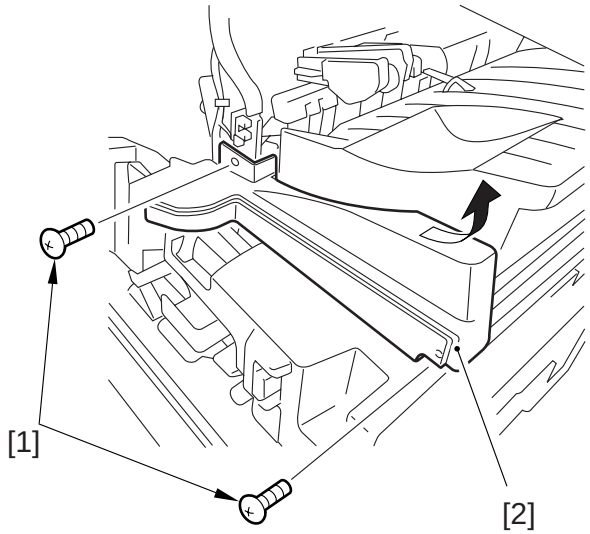


F03-301-02

2. Remove the Right Front Cover

1) Open the front cover of the host machine.

2) Remove the two screws [1], and detach the right front cover [2].



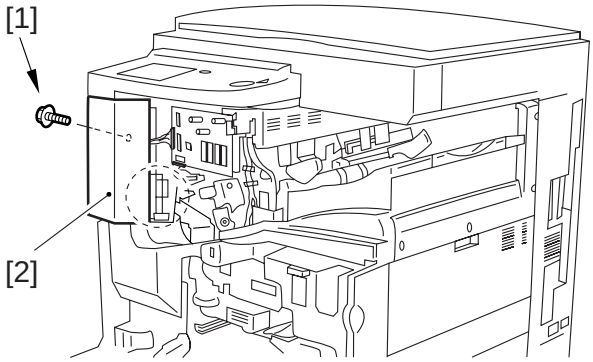
F03-301-03

3. Removing the Support Cover

1) Remove the front cover assembly. (p. 3-2)

2) Remove the screw [1], and detach the support cover [2].

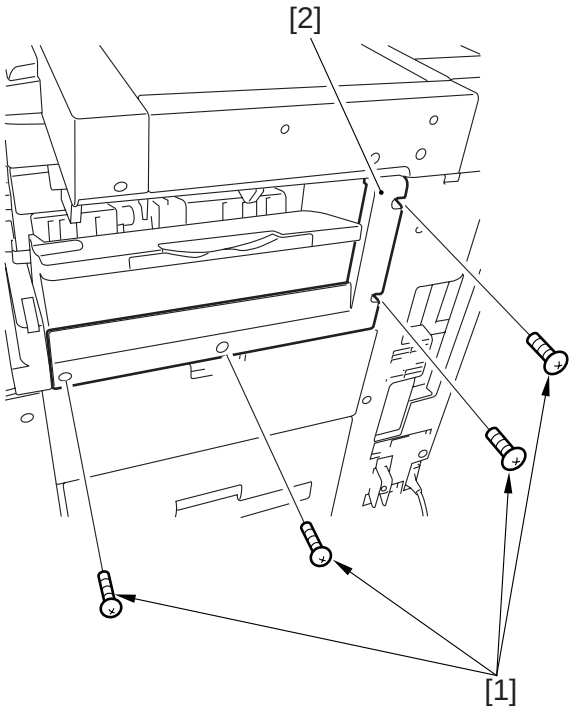
Take care not to break the claw (circled) behind the support cover.



F03-301-04

4. Removing the Right Cover

1) Remove the four screws [1], and detach the right cover [2].

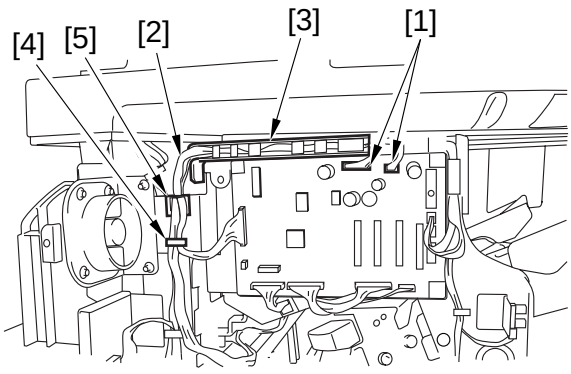


F03-301-05

B. Finisher Body

1. Removing from the Host Machine

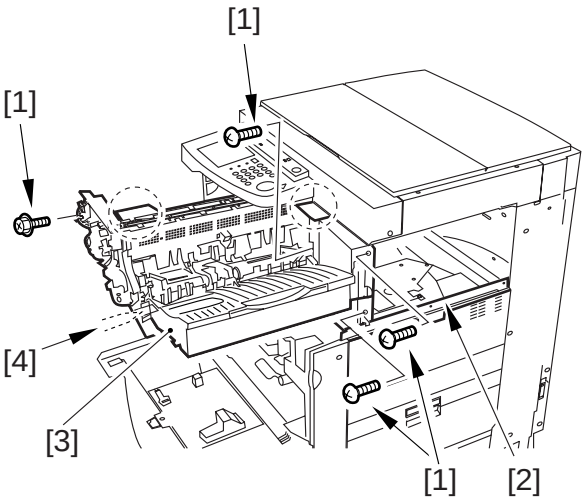
1) Remove the inside cover, right lower cover, support cover, and right cover. (p. 3-2)
2) Disconnect the connector [1] of the relay harness.
3) Disconnect the cable [2] from the cable guide [3] and the cable clamp [4] edge saddle [5].



F03-302-01

4) Remove the four screws [1]; holding the two grips (circled), slide the finisher body [3] along the top of the right side plate [2] of the host machine, thereby removing it.

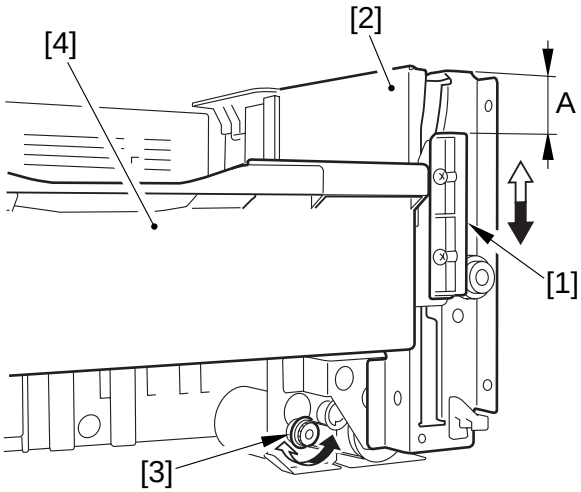
When mounting, match the pin [4] on the back of the finisher with the hole in the side plate of the host machine. When tightening the screw, turn the pulley to adjust if the delivery tray interferes. (See B-2.)



F03-302-02

2. Making Checks Before Installation to the Host Machine

1) Check to make sure that the distance A between the top edge of the deliv ery tray rack [1] and the top edge of the rear frame [2] is 40 + 5 mm.
2) Otherwise, turn the drive motor pulley [3] by hand to adjust.
At this time, do not move the delivery tray [4] by hand or apply force against it.

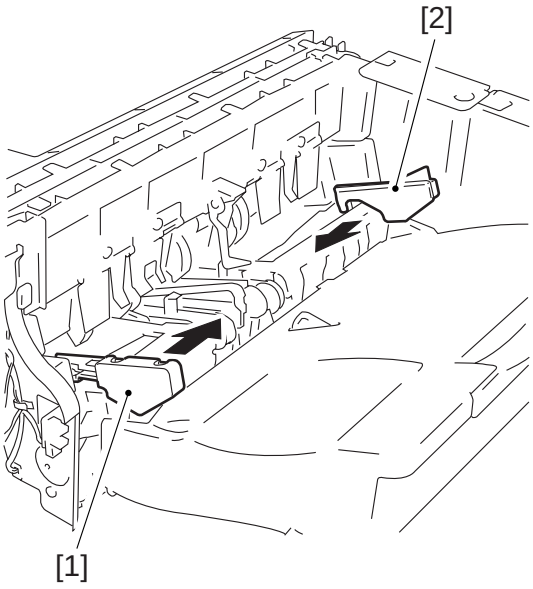


F03-302-03

C. Handling Tray Unit

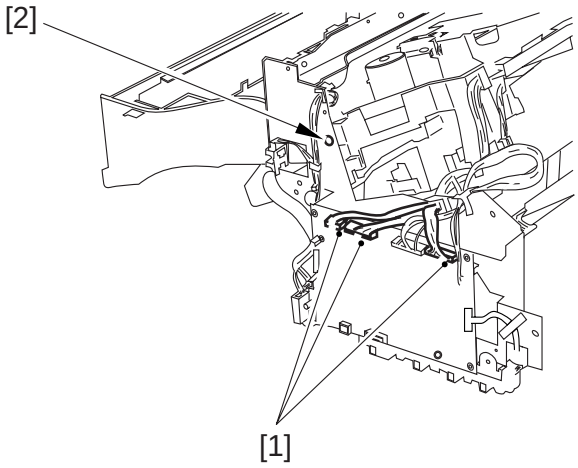
1. Removing the Handling Tray Unit

1) Remove the finisher body. (p. 3-5)
2) Shift the front aligning plate [1] and the rear aligning plate [2] toward the inside by 10 to 20 mm.



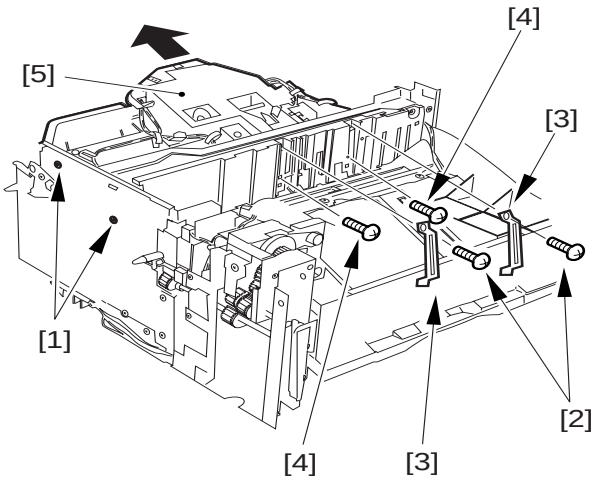
F03-303-18

3) Remove the stapler unit. (p. 3-23)
4) Turn over the handling tray unit, and disconnect the three connectors [1]; then, remove the screw [2] from the front frame.



F03-303-01

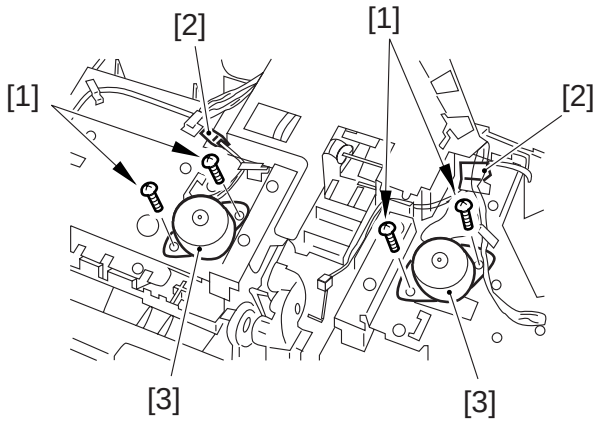
5) Remove the two screws [1] from the rear frame.
6) Remove the screw [2] (1 each), and detach the two grounding plates [3]; then, remove the two screws [4] from under them.
7) Remove the handling tray unit [5].



F03-303-02

2. Removing the Alignment Motor

1) Remove the handling tray unit. (See C-1.)
2) Remove the screws [1] (2 each), and disconnect the connector [2] (1 each); then, detach the two alignment motors [3].



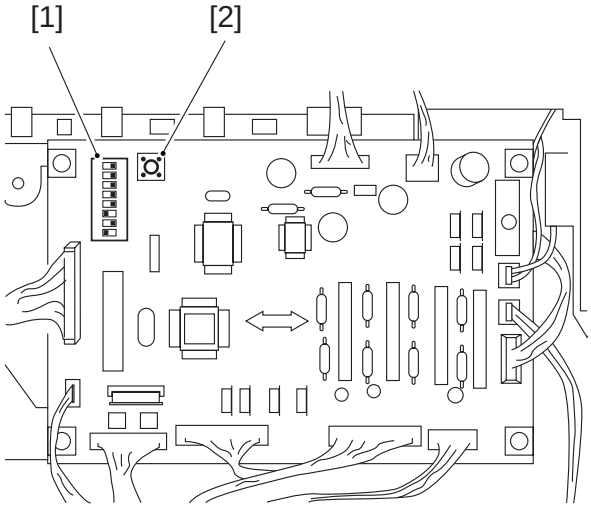
F03-303-03

3. Preparing for the Measurement of the Front Aligning Plate Displacement

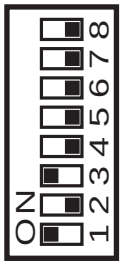
If you have performed C-7 "Adjusting the Front Aligning Plate Angle" and C-8 "Adjusting the Overlap of the Front Aligning Plate Sensor Flag," be sure to perform the steps that follow and 5 "Adjusting the Front Aligning Plate Alignment Width."

1) Remove the finisher unit front cover. (p. 3-2)

2) Set DSW1 [1] on the finisher controller PCB as indicated in F03-303-05.
3) Press SW1 [2] on the finisher controller PCB.

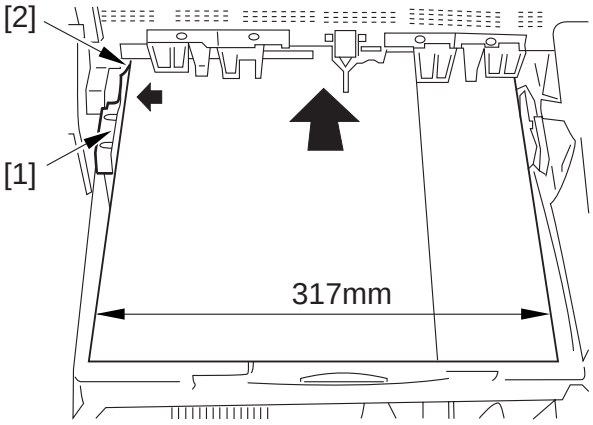


F03-303-04



F03-303-05

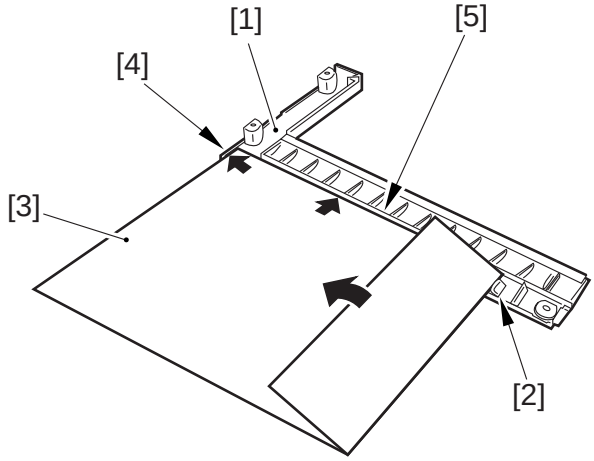
4) See that the front aligning plate [1] moves to home position.
5) Butt paper (317 mm in width) against the left rear of the handling tray and the reference rib [2] at the front, and measure the alignment width and the angle of the front aligning plate. (standard alignment width: 317 mm)



F03-303-06

For standards, see C-4 "Measuring the Front Aligning Plate Alignment Width" and C-6 "Measuring the Front Aligning Plate Angle."

A rib [2] is found behind the right cover [1] for reference (317 mm). Butt two sides of a sheet of large-size paper [3] against the inner sides of the right cover ribs [4] [5]; then, fold one of the remaining sides in relation to the inner side of the rib [2]; the result may be used when measuring the aligning plate width.

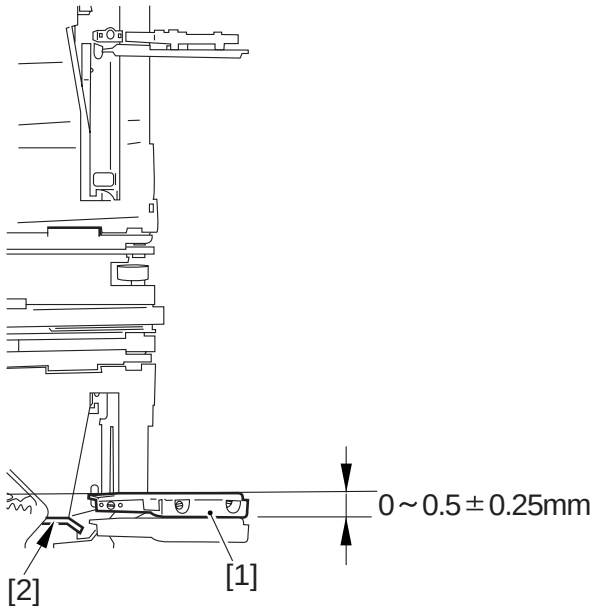


F03-303-07

4. Measuring the Front Aligning Plate Alignment Width

1) For the front aligning plate [1], take measurements in relation to the reference rib [2] and the distance in front/rear direction; then, check to see that the measurements are as indicated in F03-303-08. (Be sure, however, that the plate is not inside off the reference rib.)

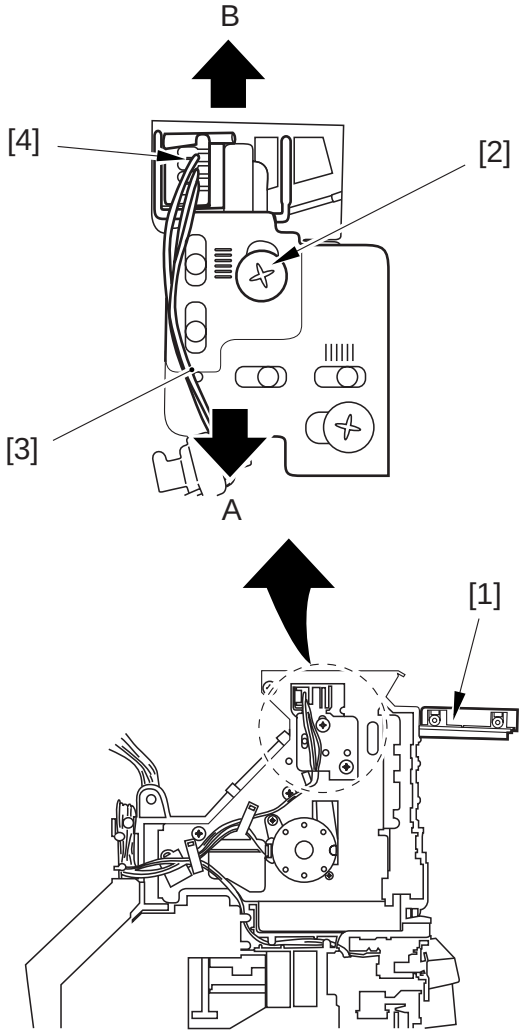
2) If the alignment width is not as indicated, perform C-5 "Adjusting the Front Aligning Plate Alignment Width." (p.3-9)



F03-303-08

5. Adjusting the Front Aligning Plate Alignment Width

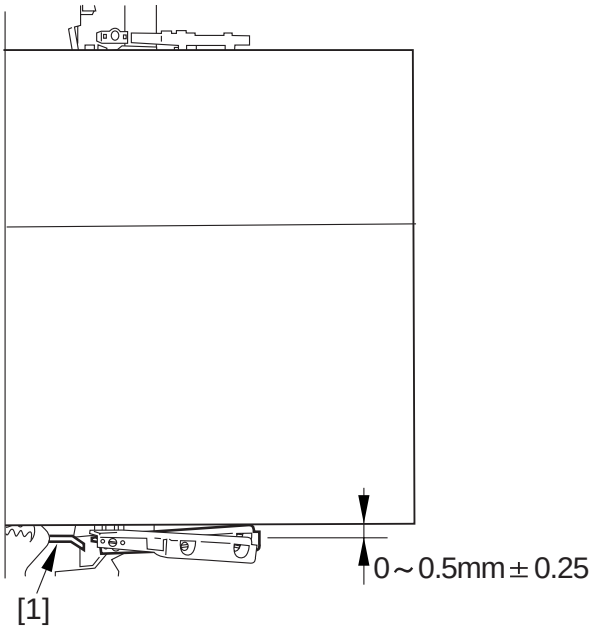
1) Remove the handling tray unit. (p. 3-6)
2) If the front aligning plate [1] is displaced, loosen the screw [2].
3) With reference to the marking (1 index being equal to 1 mm) on the front home position sensor plate [3], move the front aligning plate home position sensor [4] to make up for the difference from the standard value indicated in C-4 "Measuring the Front Aligning Plate Alignment Width." (F03-303-08) (A: toward inside, B: toward outside)



F03-303-09

6. Measuring the Front Aligning Plate Angle

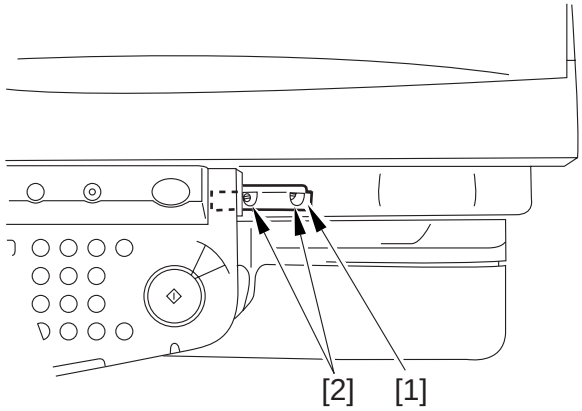
1) Check to make sure that the aligning plate angle (F03-303-10) is as indicated. (Be sure, however, that the plate is not inside off the reference rib [1].)
2) If it is not as indicated, perform C-7 "Adjusting the Front Aligning Plate Angle."



F03-303-10

7. Adjusting the Front Aligning Plate Angle

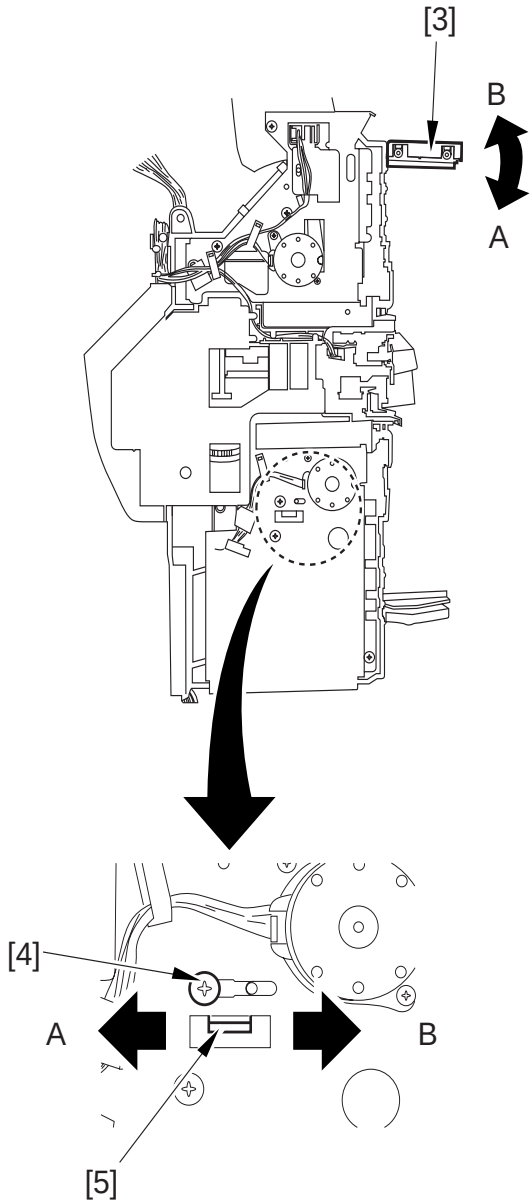
1) Without removing the unit from the host machine, loosen the two screws [2] on the front aligning plate [1].
2) Make adjustments so that the front aligning plate [1] is as indicated in F03-303-10.
3) If the front aligning plate [1] cannot be adjusted as in 2), remove the handling tray unit, and try again. (p. 3-6)



F03-303-11

4) Loosen the front aligning plate adjusting plate fixing screw [4].

5) Move the front aligning plate adjusting plate [5] in relation to the standard (F03-303-10) with reference to the marking (1 index: 1 mm) on the handling tray unit frame to make up for the difference from the standard indicated in C-6 "Measuring the Front Aligning Plate Angle."
(A: toward inside, B: toward outside)

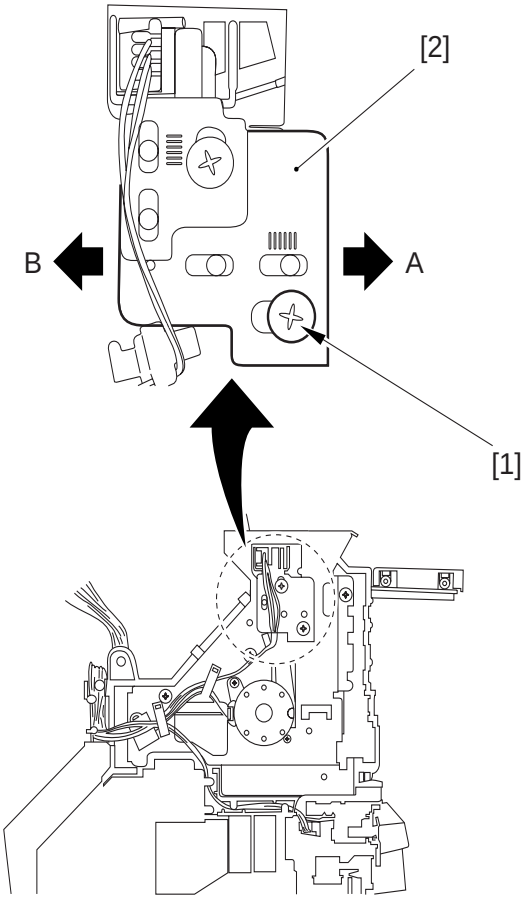


F03-303-12

8. Adjusting the Overlap of the Front Aligning Plate Sensor Flag

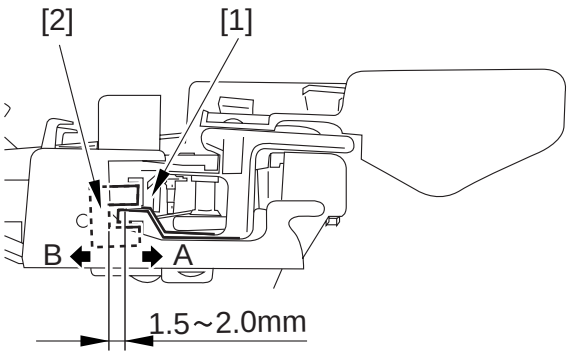
If the overlap is displaced when making the previous adjustments (on the front aligning plate) or when replacing a mechanical part, perform the following:

1) Remove the handling tray unit. (p. 3-6)
2) Loosen the fixing screw [1], and move the rear alignment sensor adjusting plate [2].



F03-303-13

3) Make adjustments so that the overlap of the sensor flag [1] and the sensor [2] of the rack assembly of the aligning plate is between 1.5 and 2.0 mm. (A: toward inside, B: toward outside)

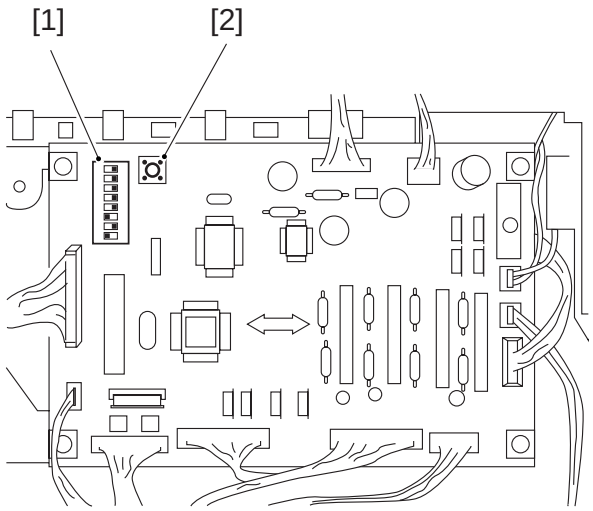


F03-303-14

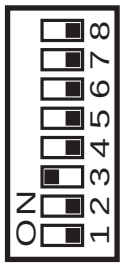
9. Preparing for the Measurement of the Rear Aligning Plate Displacement

If you have performed C-13 "Adjusting the Rear Aligning Plate Angle" and C-14 "Adjusting the Overlap of the Rear Aligning Plate Sensor Flag," be sure to perform the steps that follow and C-11 "Adjusting the Rear Aligning Plate Alignment Width."

1) Remove the finisher unit inside cover. (p. 3-2)
2) Set DSW1 [1] on the finisher controller PCB as indicated in F03-303-16.
3) Press SW1 [2] on the finisher controller PCB.

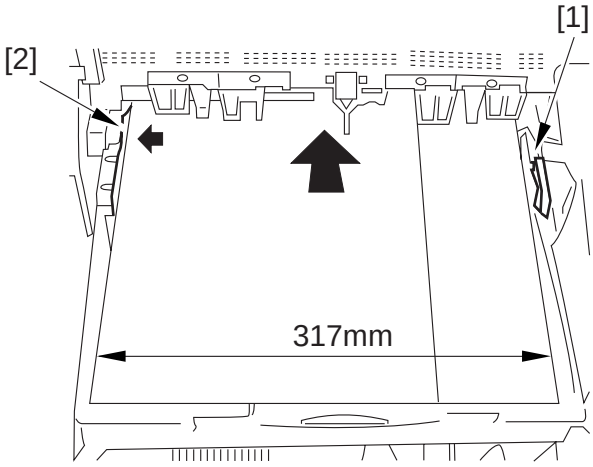


F03-303-15



F03-303-16

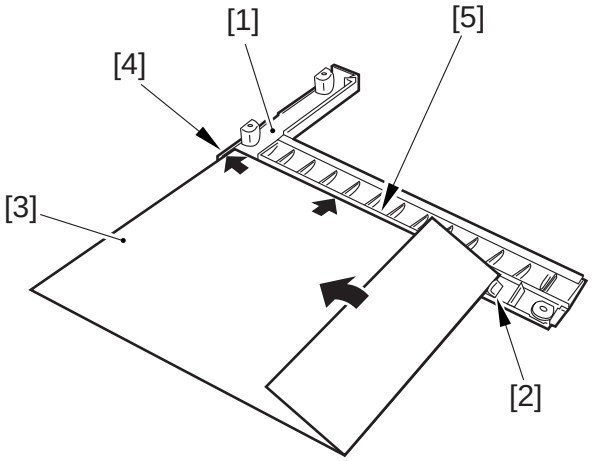
4) See that the rear aligning plate [1] moves to home position.
5) Butt paper (317 mm in width) against the left rear of the handling tray and the reference rib [2] at the front, and measure the alignment width and the angle of the rear aligning plate. (standard alignment width: 317 mm)



F03-303-17

For standards, see C-10 "Measuring the Rear Aligning Plate Alignment Width" and C-12 "Measuring the Rear Aligning Plate Angle."

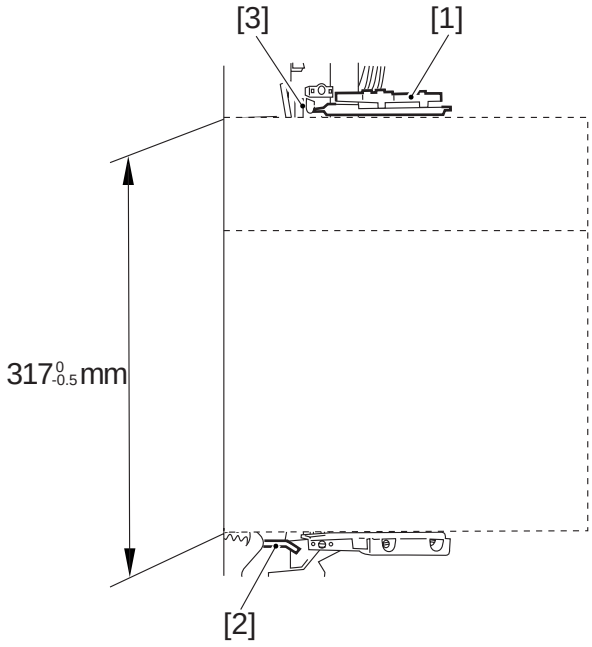
A rib [2] is found behind the right cover [1] for reference (317 mm). Butt two sides of a sheet of large-size paper [3] against the inner sides of the right cover ribs [4] [5]; then, fold one of the remaining sides in relation to the inner side of the rib; the result may be used when measuring the aligning plate width.



F03-303-18

10. Measuring the Rear Aligning Plate Alignment Width

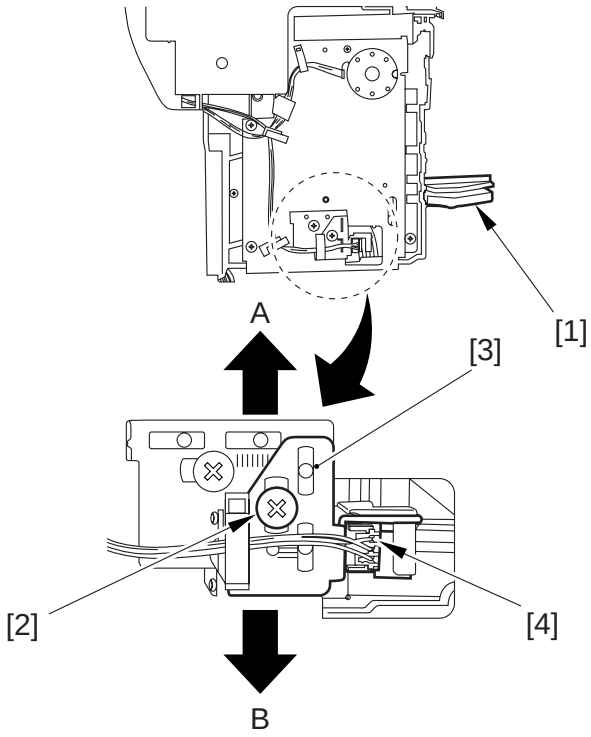
1) For the rear aligning plate [1], take measurements in relation to the reference rib [2] and the distance in front/rear direction; then, check to see that the measurements are as indicated in F03-303-19. (Be sure, however, that the plate is not inside off the rib.)
2) If the alignment width is not as indicated, perform C-11 "Adjusting the Rear Aligning Plate Alignment Width."



F03-303-19

11. Adjusting the Rear Aligning Plate Alignment Width

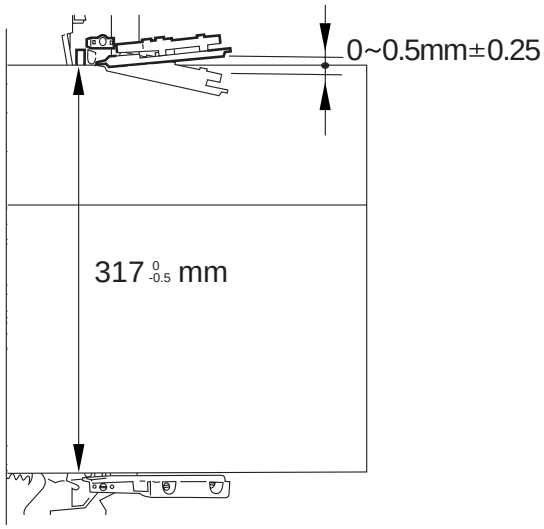
1) Remove the handling tray unit. (p. 3-6)
2) If the rear aligning plate [1] is displaced, loosen the screw [2].
3) With reference to the marking (1 index being equal to 1 mm) on the rear home position sensor plate [3], move the rear aligning plate home position sensor [4] to make up for the difference from the standard value indicated in C-10 "Measuring the Rear Aligning Plate Alignment Width." (F03-303-19) (A: toward inside, B: toward outside)



F03-303-20

12. Measuring the Rear Aligning Plate Angle

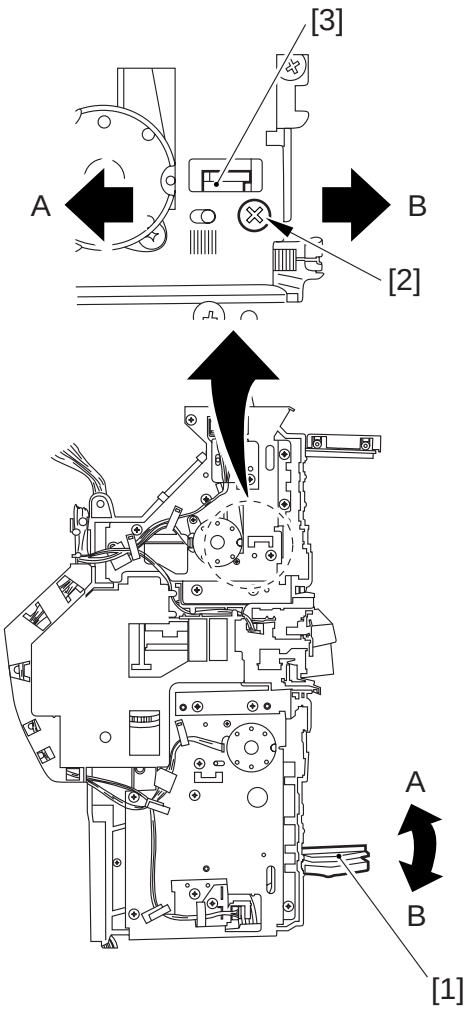
1) Check to make sure that the aligning plate angle (F03-303-21) is as indicated. (Be sure, however, that the plate is not inside off the rib.)
2) If it is not as indicated, perform C-13 "Adjusting the Rear Aligning Plate Angle."



F03-303-21

13. Adjusting the Rear Aligning Plate Angle

1) Remove the handling tray unit. (p. 3-6)
2) Loosen the fixing screw [2] on the rear aligning plate [1].
3) Move the rear aligning plate adjusting plate [3] in relation to the standard (F03-303-21) with reference to the marking (1 index: 1 mm) on the handling tray unit frame to make up for the difference from the standard indicated in C-12 "Measuring the Rear Aligning Plate Angle."
(A: toward inside, B: toward outside)

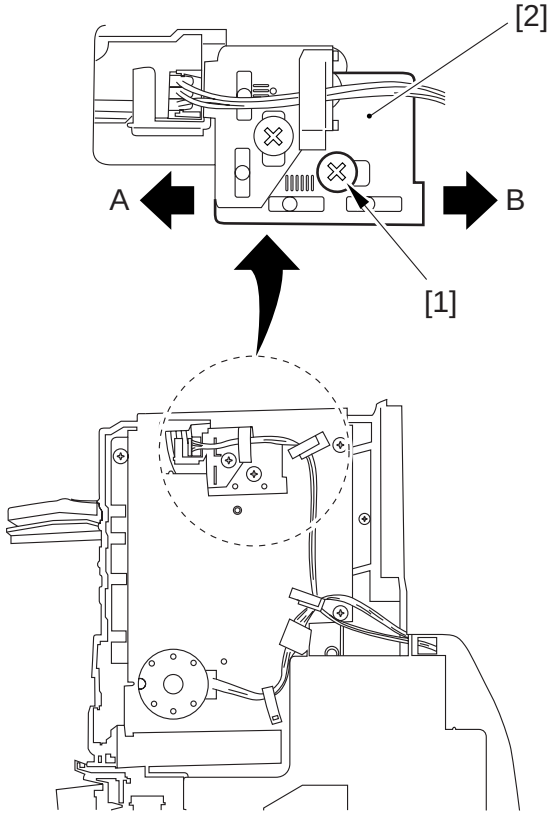


F03-303-22

14. Adjusting the Overlap of the Rear Aligning Plate Sensor Flag

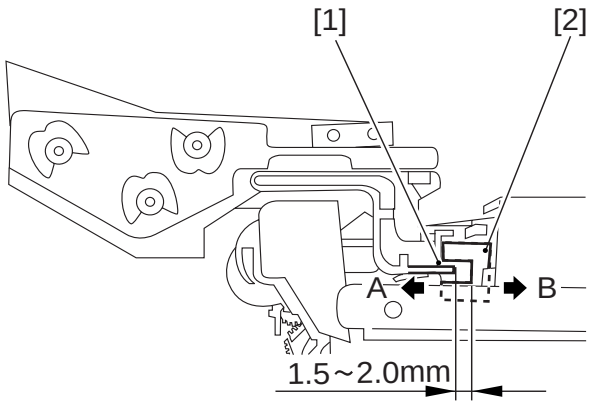
If the overlap is displaced when making the previous adjustments (on the rear alignment plate) or when replacing a mechanical part, perform the following:

1) Remove the handling tray unit. (p.3-6)
2) Loosen the fixing screw [1].
3) Move the front alignment sensor adjusting plate [2].



F03-303-13

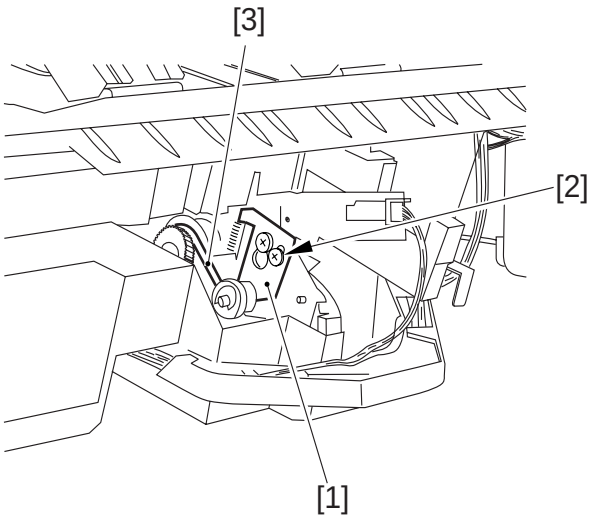
4) Make adjustments so that the overlap of the sensor flag [1] and the sensor [2] of the rack assembly of the aligning plate is between 1.5 and 2.0 mm.
(A: toward inside, B: toward outside)



F03-303-14

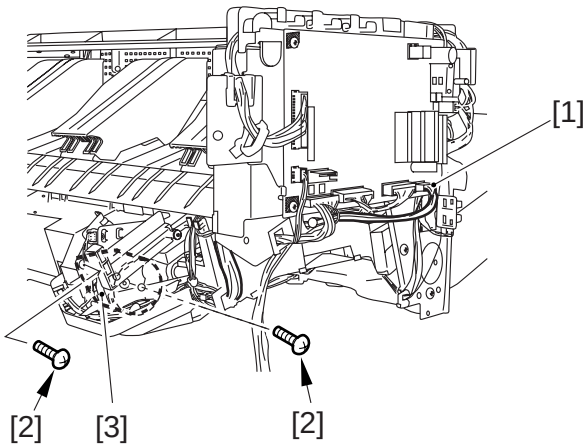
15. Removing the Stack Delivery Motor

1) Remove the finisher body. (p. 3-5)
2) Remove the stapler unit. (p. 3-23)
3) Loosen the fixing screw [2] on the tensioner plate [1] to free the drive belt [3] from tension.



F03-303-16

4) Disconnect the connector [1].
5) Remove the two screws [2], and detach the stack delivery motor [3].

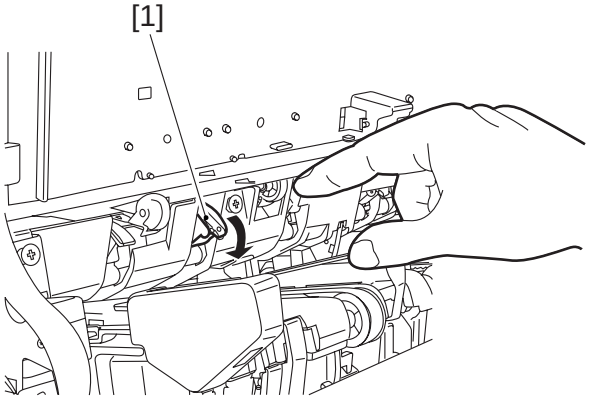


F03-303-17

D. Return Roller Unit

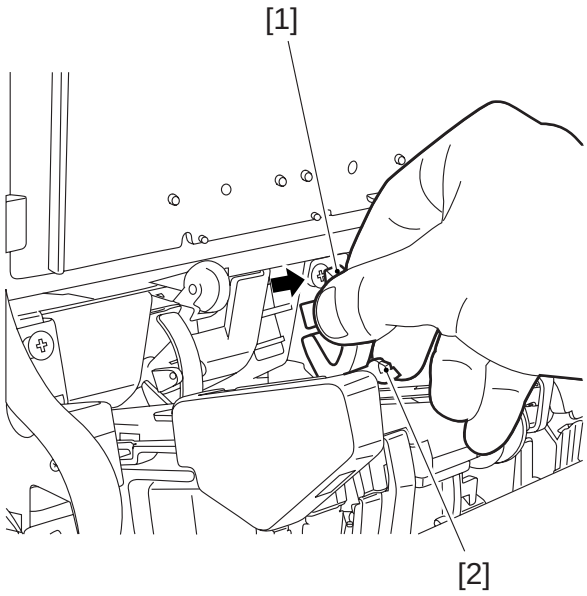
1. Removing the Return Roller

1) Hook your finger on the return roller unit [1] in home position, and turn it in the direction of the arrow.



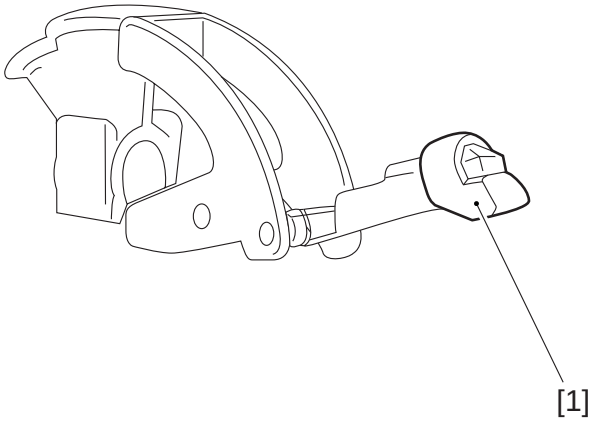
F03-304-01

2) Pull off the return roller [1] to the front.



F03-304-02

3) Detach the rubber [1] from the tip of the retaining arm of the return roller.

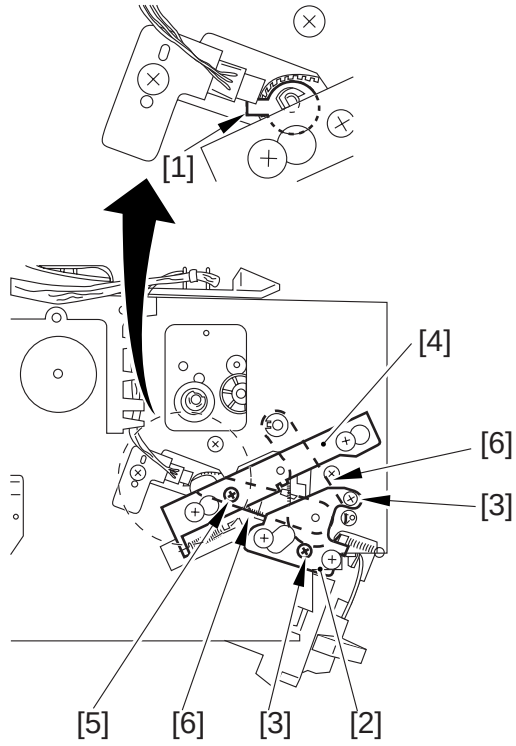


F03-304-03

2. Adjusting the Tension on the Return Roller Belt

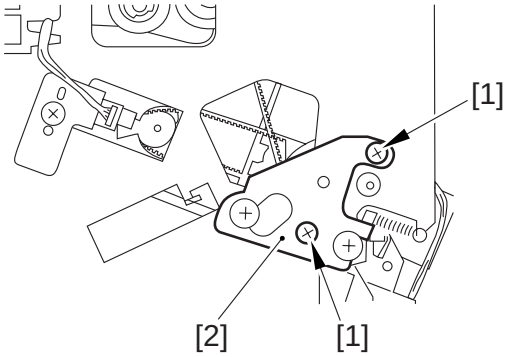
If you have moved the tensioner plate as when replacing the handling tray unit, be sure to perform the following:

1) Check to make sure that the lower home guide home position flag [1] is in home position (as indicated).
2) Remove the fixing screw [2] and the tension spring [3]; then, detach the tensioning plate [4].
3) Loose the two fixing screws [6] on the tensioning pulley plate [5] to release the tension from the two return roller belts [7].



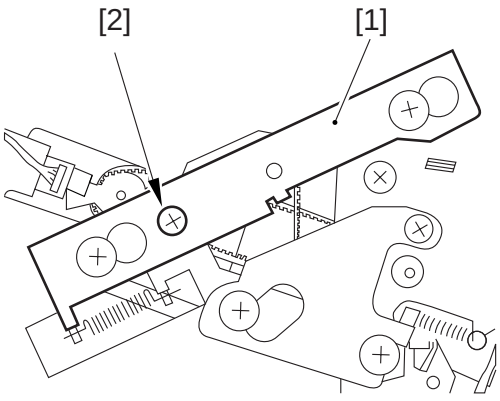
F03-304-04

4) Secure the tensioner pulley plate [2] in place with two screws [1].



F03-304-05

5) Then, mount the tensioning plate [1], and mount the tension spring [2].
6) Fit the screw [3], and secure the tensioning plate [1].

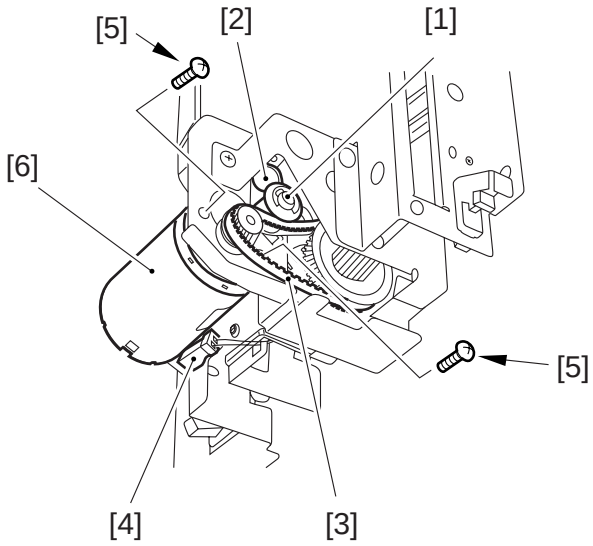


F03-304-06

E. Stack Tray Drive Unit

1. Removing the Stack Tray Drive Motor

1) Remove the finisher body. (p. 3-5)
2) Loosen the fixing screw [2] on the tensioner plate [1] to free the drive belt [3] from tension.
3) Disconnect the connector [4].
4) Remove the two screws [5], and detach the stack tray drive motor [6].

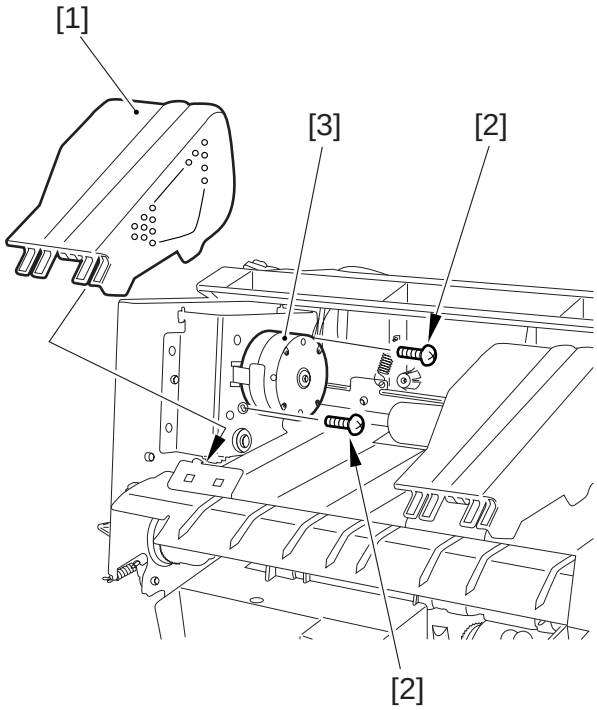


F03-305-01

F. Delivery Unit

1. Removing the Delivery Motor

1) Remove the finisher body. (p. 3-5)
2) Remove the guide [1] at the rear.
3) Remove the two screws [2], and detach the delivery motor [3]. (If difficult, remove also the guide in the middle.(If the removal is difficult, remove also the middle guide.)

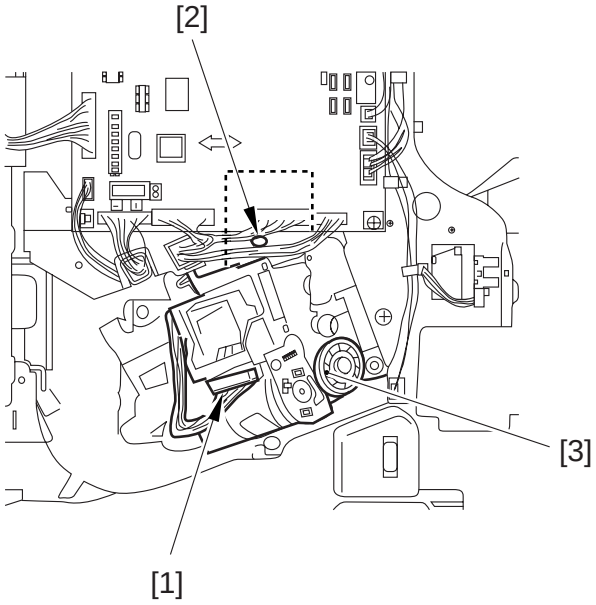


F03-306-01

G. Stapler Unit

1. Removing the Stapler Unit

1) Remove the inside cover. (p. 3-2)
2) Disconnect the connector [1].
3) Remove the screw [3], and detach the stapler unit [3].

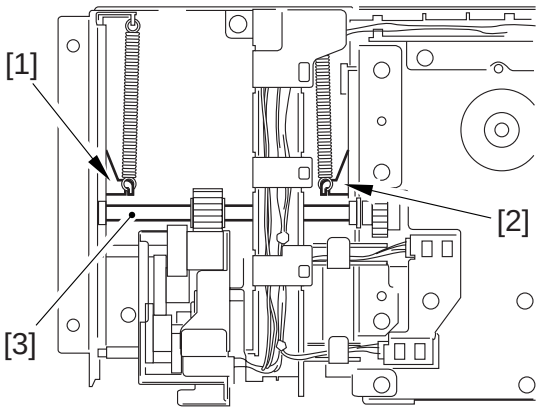


F03-307-01

H. Delivery Tray

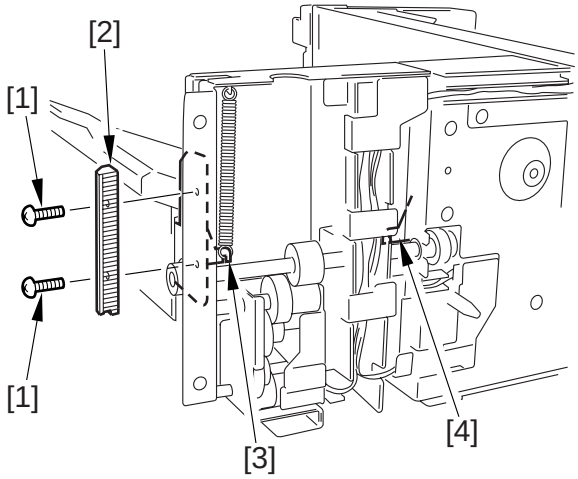
1. Adjusting the Delivery Tray Rack Phase

1) Check that the right spring hook [1] and the left spring hook [2] are in the same position for the tray up/down shaft [3].



F03-308-01

2) If not, remove the delivery tray rack [1] by removing the screws [2].
3) Adjust the right spring hook [3] so that its height is the same as the left spring hook [4].
4) Attach the delivery tray rack [2].

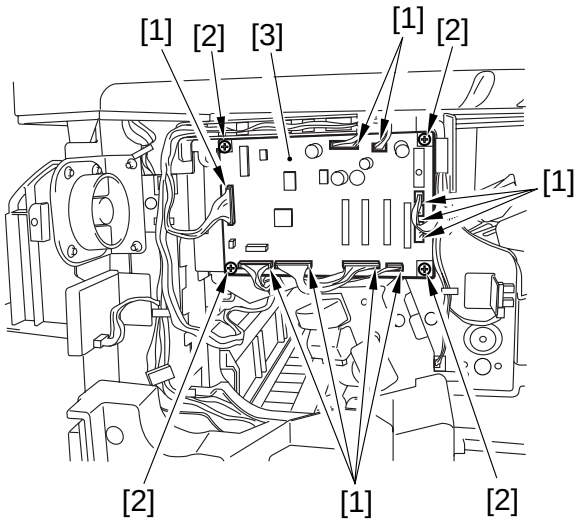


F03-308-02

I. PCBs

1. Removing the Finisher Controller PCB

1) Remove the finisher unit inside cover. (p. 3-2)
2) Disconnect all connectors [1].
3) Remove the four screws [2], and detach the finisher controller PCB [3].

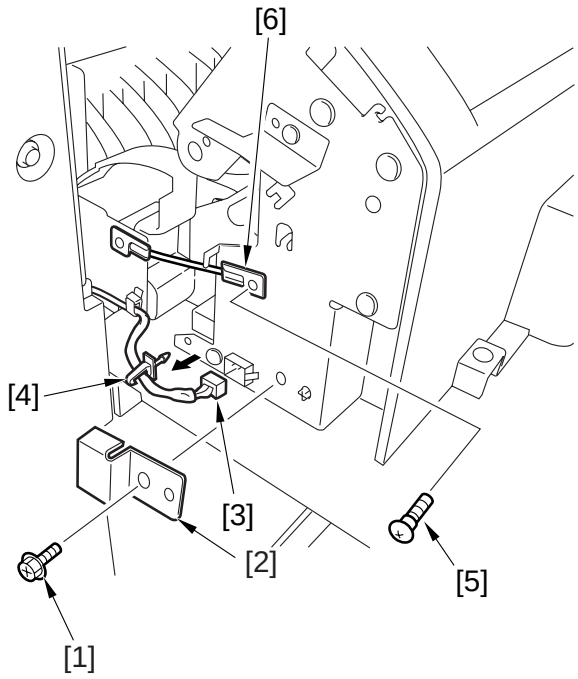


F03-309-01

J. Relay Delivery Assembly

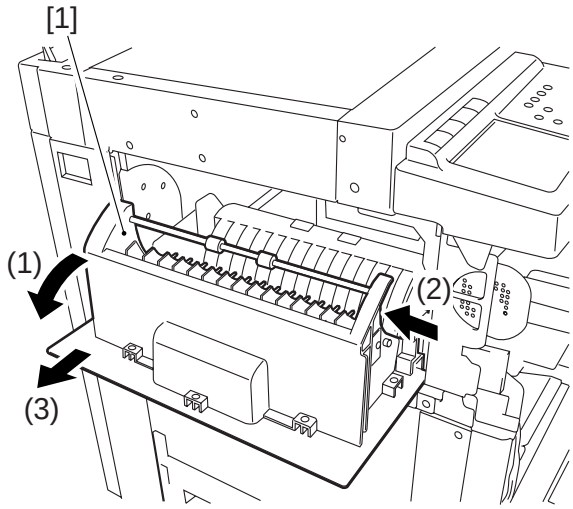
1. Removing the Relay Delivery Upper Unit

1) Open the relay delivery upper unit, and remove the screw [1]; then, detach the connector cover [2].
2) Disconnect the connector [3], and remove the clamp [4].
3) Remove the screw [5], and detach the open/close stopper [6].



F03-310-01

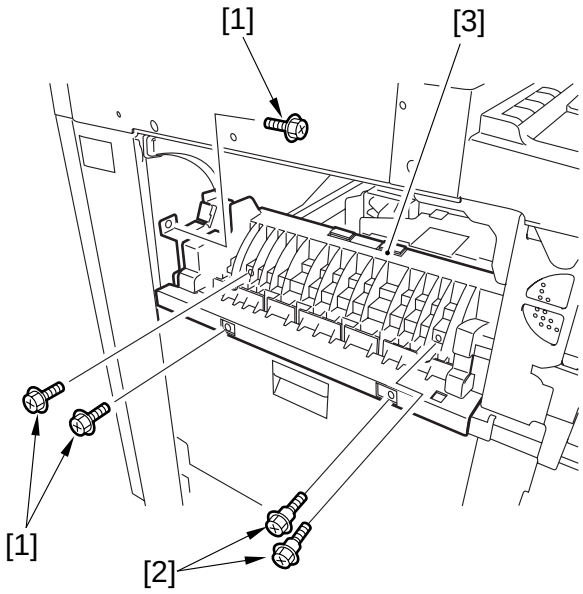
4) Shift the relay delivery upper unit [1] to the outside to detach.



F03-310-02

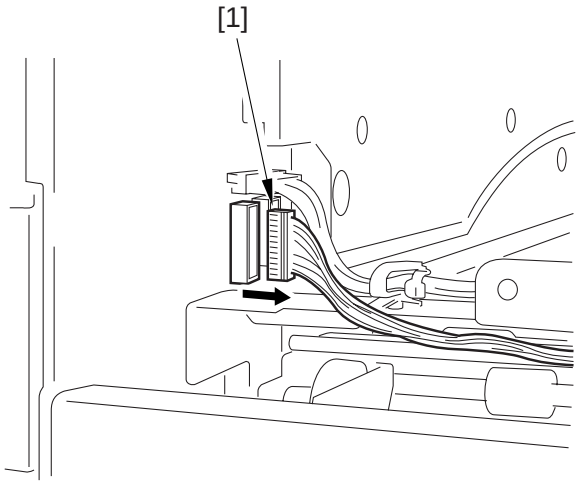
2. Removing the Relay Delivery Lower Unit

1) Remove the three screws [1] and the two stepped screws [2]; then, slide out the relay delivery lower unit [2].



F03-310-03

2) Disconnect the relay delivery assembly lower unit harness [1] from the host machine, and detach the relay delivery lower unit.

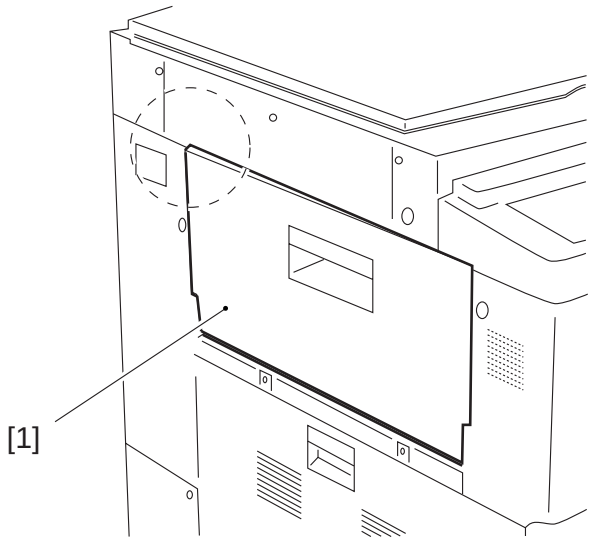


F03-310-04

3. Correcting Displacement of the Relay Delivery Upper Unit

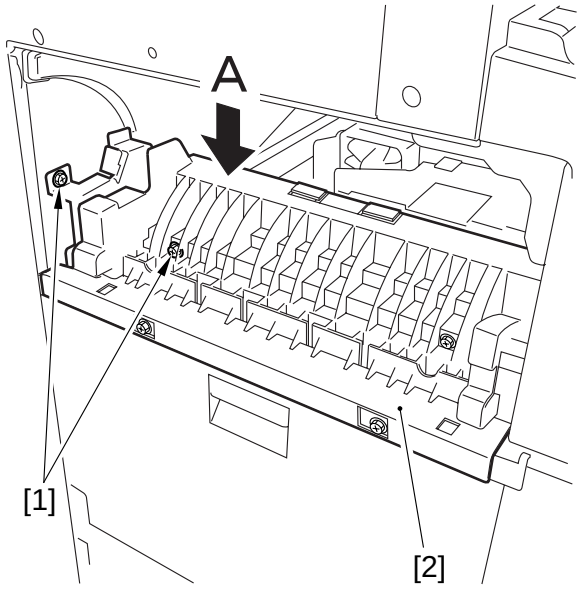
When the relay delivery upper unit is mounted, a gap can occur in its relation to the cover of the host machine. If any, perform the following:

1) If a gap is found in the area indicated (circled) after mounting the relay delivery unit, remove the relay delivery upper unit [1]. (p. 3-26)



F03-310-05

2) Loosen the two screws [1].
3) While pressing area A of the relay delivery lower unit [2], tighten the two screws [1].



F03-310-06

4) Mount the relay delivery upper unit, and check for a gap once again.

CHAPTER 4

MAINTENANCE AND SERVICING

I. Periodically Replaced Parts

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

II. Guide to Durables

No.	Parts name	Parts No.	Q'ty	Estimated life	Remarks
1	Stapler	FG6-3977-000	1	200,000 operations	
2	Return roller rubber	FB5-7899-000	2	500,000 sheets	

III. Scheduled Servicing

The machine does not have items of servicing that require attention on a periodical basis.

CHAPTER 5

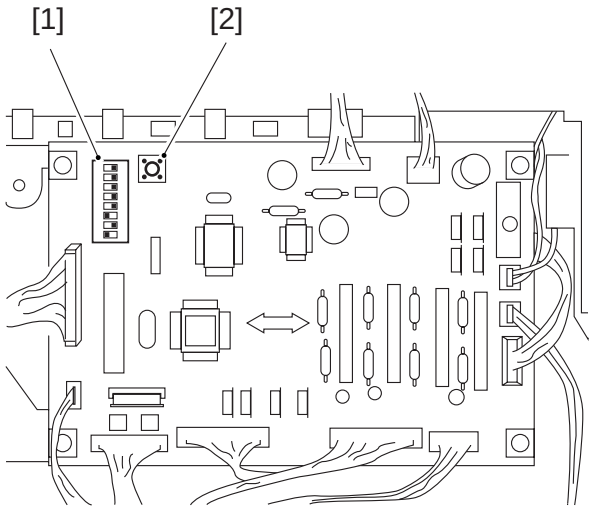
TROUBLESHOOTING

I. ADJUSTMENT

A. Preparing for the Measurement of the Front Aligning Plate Displacement

If you have performed E "Adjusting the Front Aligning Plate Angle" and F "Adjusting the Overlap of the Front Aligning Plate Sensor Flag," be sure to perform the steps that follow and C "Adjusting the Front Aligning Plate Alignment Width."

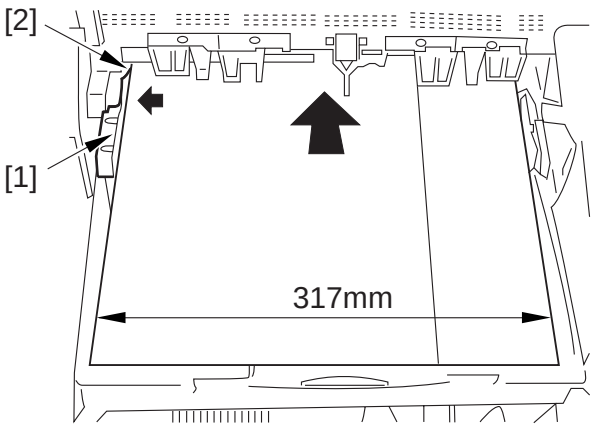
1) Remove the finisher unit front cover.
2) Set DSW1 [1] on the finisher controller PCB as indicated in F05-101-02.
3) Press SW1 [2] on the finisher controller PCB.



F05-101-01

F05-101-02

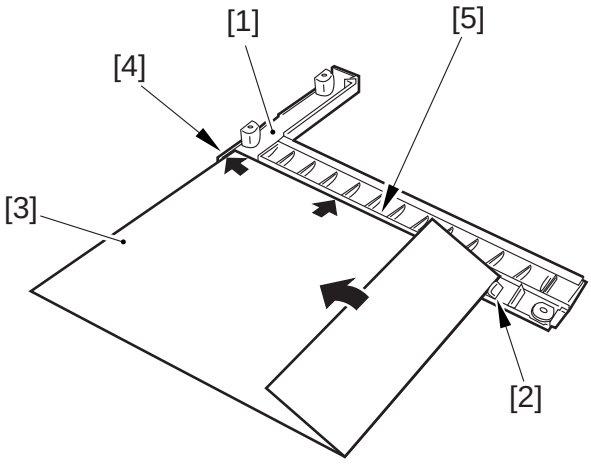
4) See that the front aligning plate [1] moves to home position.
5) Butt paper (317 mm in width) against the left rear of the handling tray and the reference rib [2] at the front, and measure the alignment width and the angle of the front aligning plate. (standard alignment width: 317 mm)



F05-101-03

For standards, see B "Measuring the Front Aligning Plate Alignment Width" and D "Measuring the Front Aligning Plate Angle."

A rib [2] is found behind the right cover [1] for reference (317 mm). Butt two sides of a sheet of large-size paper [3] against the inner sides of the right cover ribs [4] [5]; then, fold one of the remaining sides in relation to the inner side of the rib [2]; the result may be used when measuring the aligning plate width.

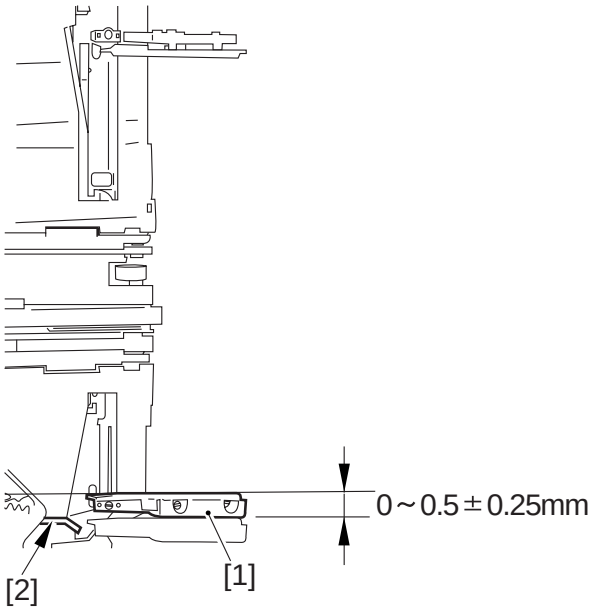


F05-101-04

B. Measuring the Front Aligning Plate Alignment Width

1) For the front aligning plate [1], take measurements in relation to the reference rib [2] and the distance in front/rear direction; then, check to see that the measurements are as indicated in F05-102-01. (Be sure, however, that the plate is not inside off the reference rib.)

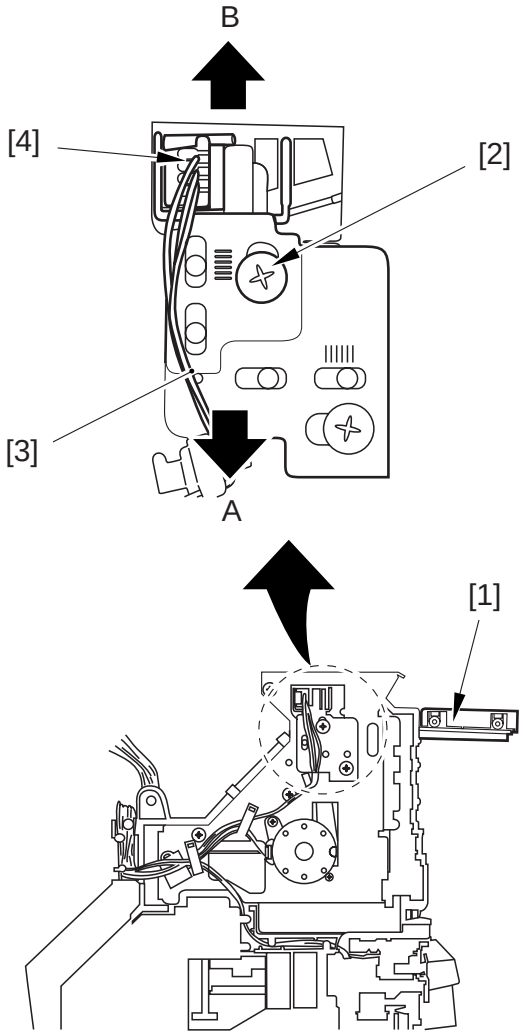
2) If the alignment width is not as indicated, perform C "Adjusting the Front Aligning Plate Alignment Width."



F05-102-01

C. Adjusting the Front Aligning Plate Alignment Width

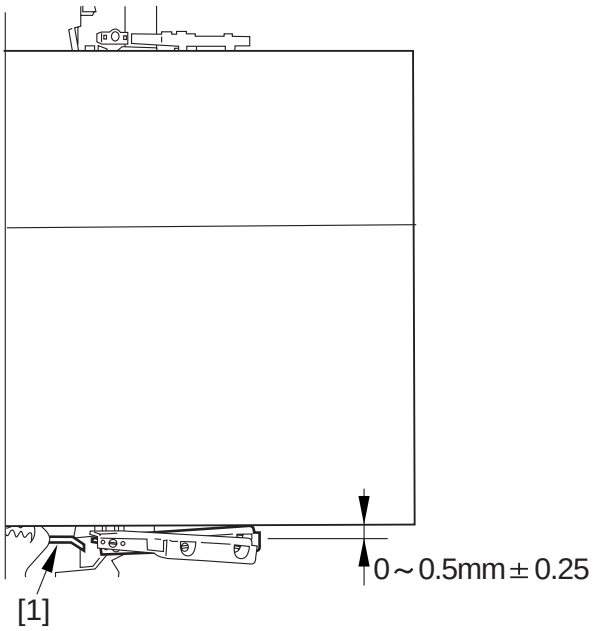
1) Remove the handling tray unit.
2) If the front aligning plate [1] is displaced, loosen the screw [2].
3) With reference to the marking (1 index being equal to 1 mm) on the front home position sensor plate [3], move the front aligning plate home position sensor [4] to make up for the difference from the standard value indicated in B "Measuring the Front Aligning Plate Alignment Width."
(A: toward inside, B: toward outside)



F05-103-01

D. Measuring the Front Aligning Plate Angle

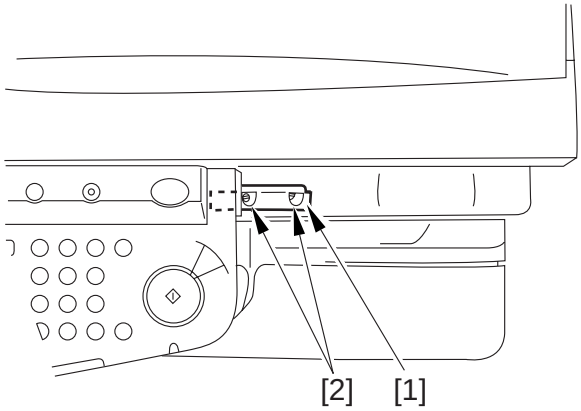
1) Check to make sure that the aligning plate angle is as indicated. (Be sure, however, that the plate is not inside off the reference rib [1].)
2) If it is not as indicated, perform E "Adjusting the Front Aligning Plate Angle."



F05-104-01

E. Adjusting the Front Aligning Plate Angle

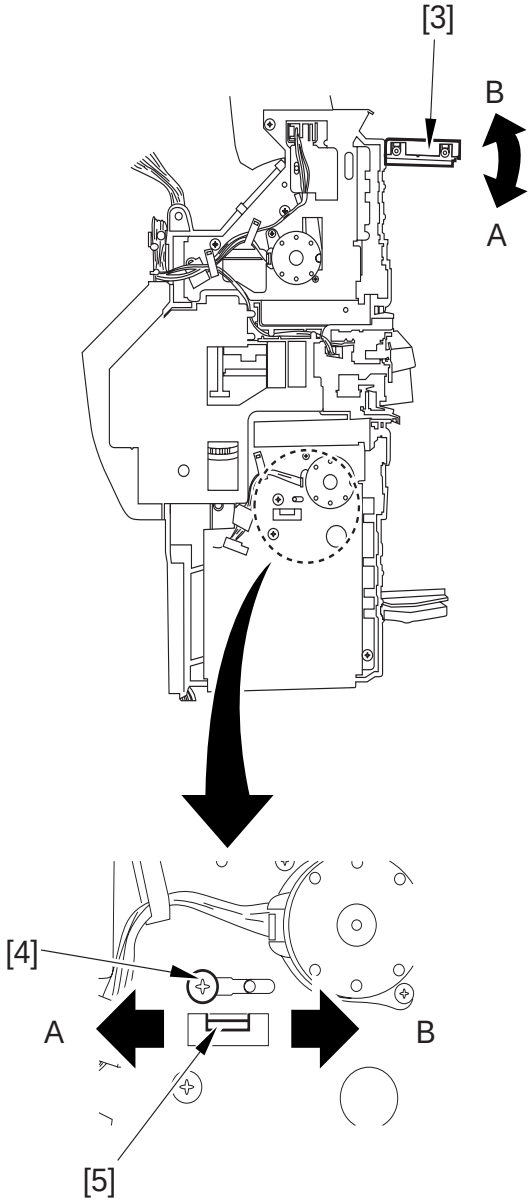
1) Without removing the unit from the host machine, loosen the two screws [2] on the front aligning plate [1].
2) Make adjustments so that the front aligning plate [1] is as indicated in F05-104-01.
3) If the front aligning plate [1] cannot be adjusted as in 2), remove the handling tray unit, and try again.



F05-105-01

4) Loosen the front aligning plate adjusting plate fixing screw [4].

5) Move the front aligning plate adjusting plate [5] in relation to the standard (F05-104-01) with reference to the marking (1 index: 1 mm) on the handling tray unit frame to make up for the difference from the standard indicated in D "Measuring the Front Aligning Plate Angle."
(A: toward inside, B: toward outside)

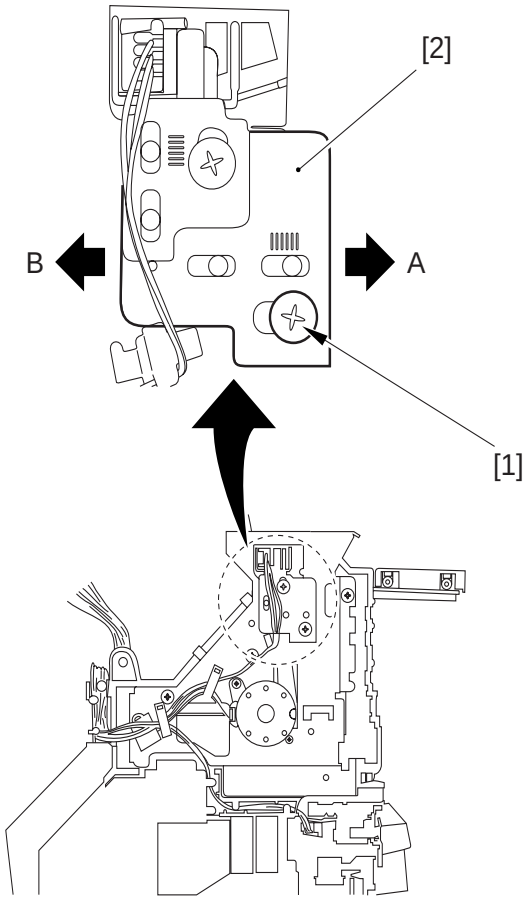


F05-105-02

F. Adjusting the Overlap of the Front Aligning Plate Sensor Flag

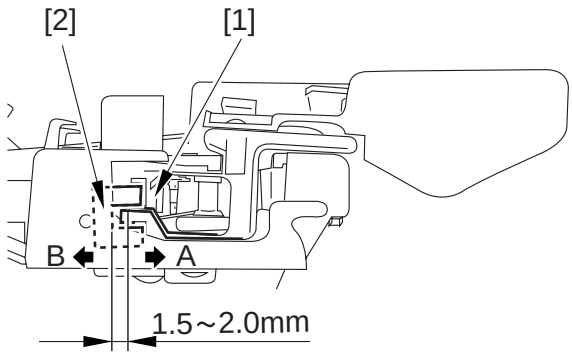
If the overlap is displaced when making the previous adjustments (on the front aligning plate) or when replacing a mechanical part, perform the following:

1) Remove the handling tray unit.
2) Loosen the fixing screw [1], and move the rear alignment sensor adjusting plate [2].



F05-106-01

3) Make adjustments so that the overlap of the sensor flag [1] and the sensor [2] of the rack assembly of the aligning plate is between 1.5 and 2.0 mm. (A: toward inside, B: toward outside)

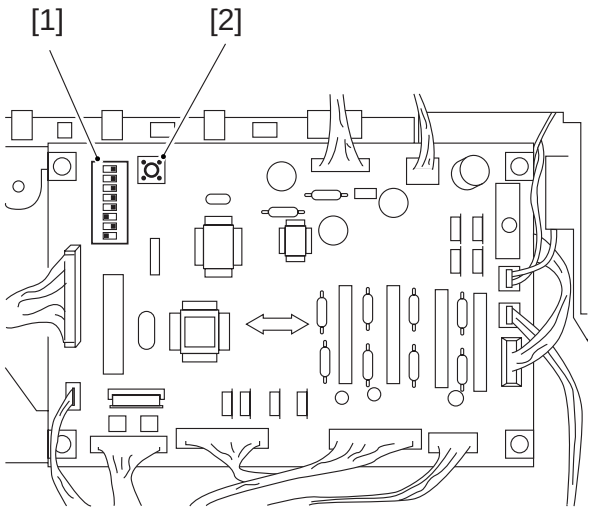


F05-106-02

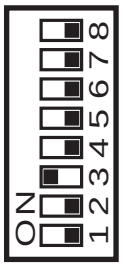
G. Preparing for the Measurement of the Rear Aligning Plate Displacement

If you have performed K "Adjusting the Rear Aligning Plate Angle" and L "Adjusting the Overlap of the Rear Aligning Plate Sensor Flag," be sure to perform the steps that follow and I "Adjusting the Rear Aligning Plate Alignment Width."

1) Remove the finisher unit inside cover.
2) Set DSW1 [1] on the finisher controller PCB.
3) Press SW1 [2] on the finisher controller PCB.

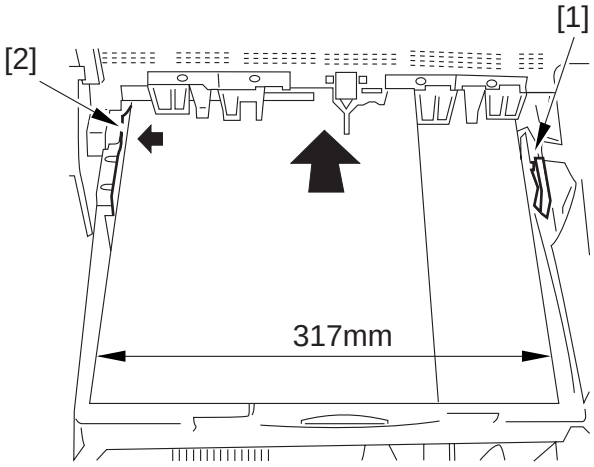


F05-107-01



F05-107-02

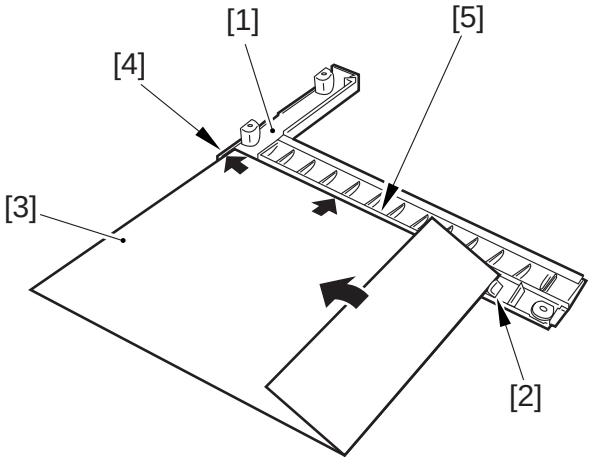
4) See that the rear aligning plate [1] moves to home position.
5) Butt paper (317 mm in width) against the left rear of the handling tray and the reference rib [2] at the front, and measure the alignment width and the angle of the rear aligning plate. (standard alignment width: 317 mm)



F05-107-03

For standards, see H "Measuring the Rear Aligning Plate Alignment Width" and J "Measuring the Rear Aligning Plate Angle."

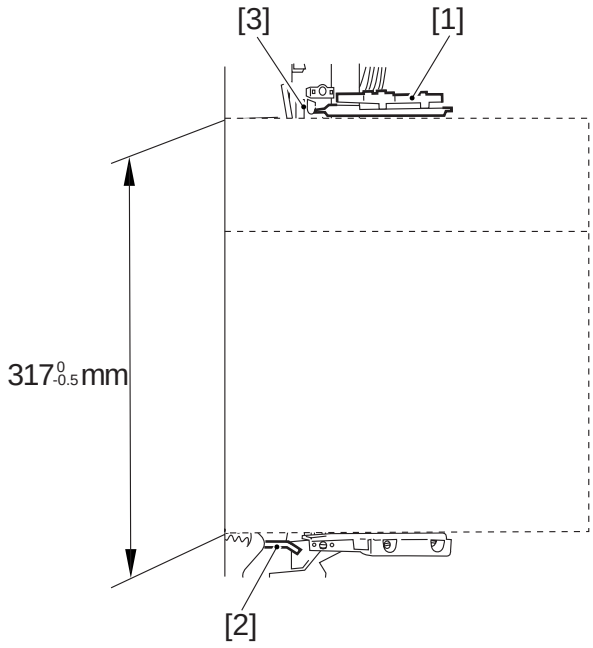
A rib [2] is found behind the right cover [1] for reference (317 mm). Butt two sides of a sheet of large-size paper [3] against the inner sides of the right cover ribs [4] [5]; then, fold one of the remaining sides in relation to the inner side of the rib; the result may be used when measuring the aligning plate width.



F05-107-04

H. Measuring the Rear Aligning Plate Alignment Width

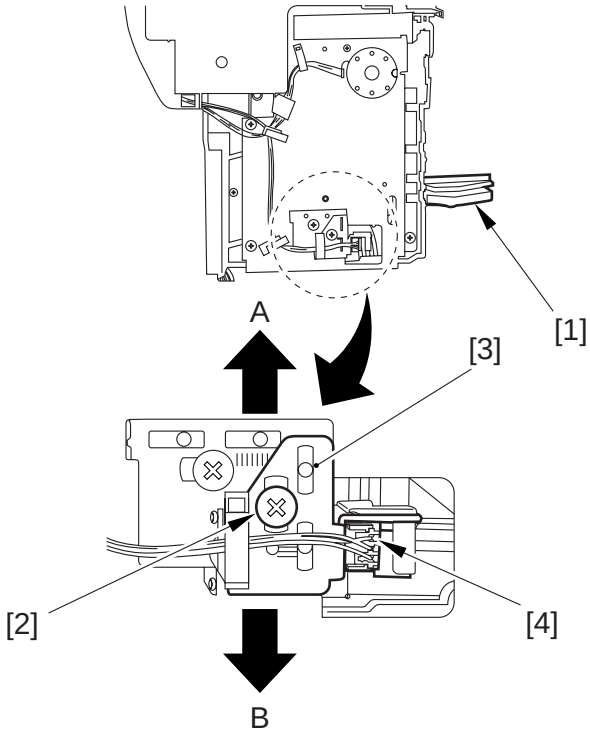
1) For the rear aligning plate [1], take measurements in relation to the reference rib [2] and the distance in front/rear direction; then, check to see that the measurements are as indicated in F05-102-01. (Be sure, however, that the plate is not inside off the rib.)
2) If the alignment width is not as indicated, perform I "Adjusting the Rear Aligning Plate Alignment Width."



F05-108-01

I. Adjusting the Rear Aligning Plate Alignment Width

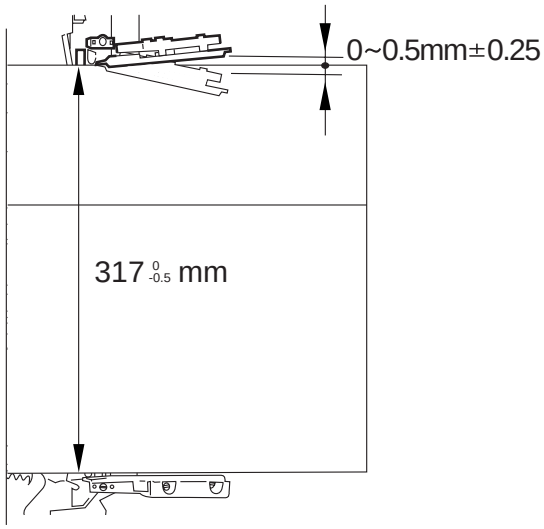
1) Remove the handling tray unit.
2) If the rear aligning plate [1] is displaced, loosen the screw [2].
3) With reference to the marking (1 index being equal to 1 mm) on the rear home position sensor plate [3], move the rear aligning plate home position sensor [4] to make up for the difference from the standard value indicated in H "Measuring the Rear Aligning Plate Alignment Width."
(A: toward inside, B: toward outside)



F05-109-01

J. Measuring the Rear Aligning Plate Angle

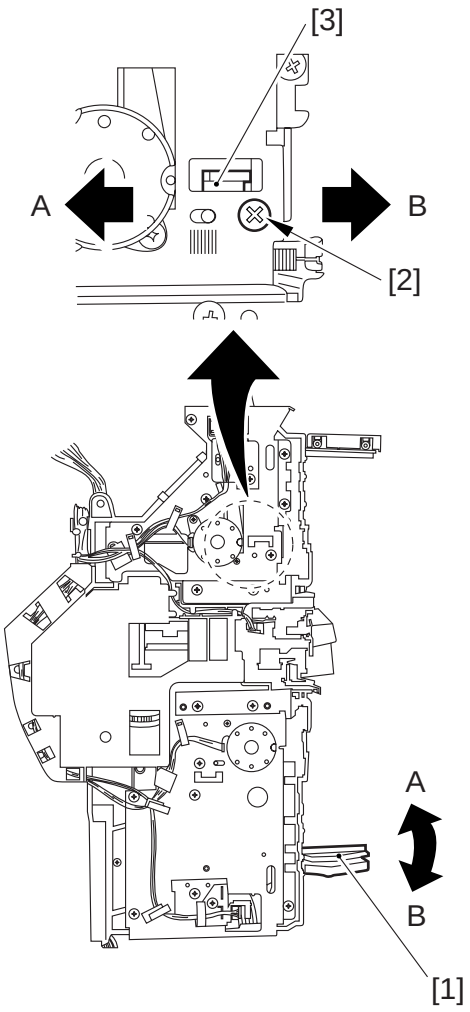
1) Check to make sure that the aligning plate angle (F05-110-01) is as indicated. (Be sure, however, that the plate is not inside off the rib.)
2) If it is not as indicated, perform K "Adjusting the Rear Aligning Plate Angle."



F05-110-01

K. Adjusting the Rear Aligning Plate Angle

1) Remove the handling tray unit.
2) Loosen the fixing screw [2] on the rear aligning plate [1].
3) Move the rear aligning plate adjusting plate [3] in relation to the standard (F05-110-01) with reference to the marking (1 index: 1 mm) on the handling tray unit frame to make up for the difference from the standard indicated in J "Measuring the Rear Aligning Plate Angle."
(A: toward inside, B: toward outside)

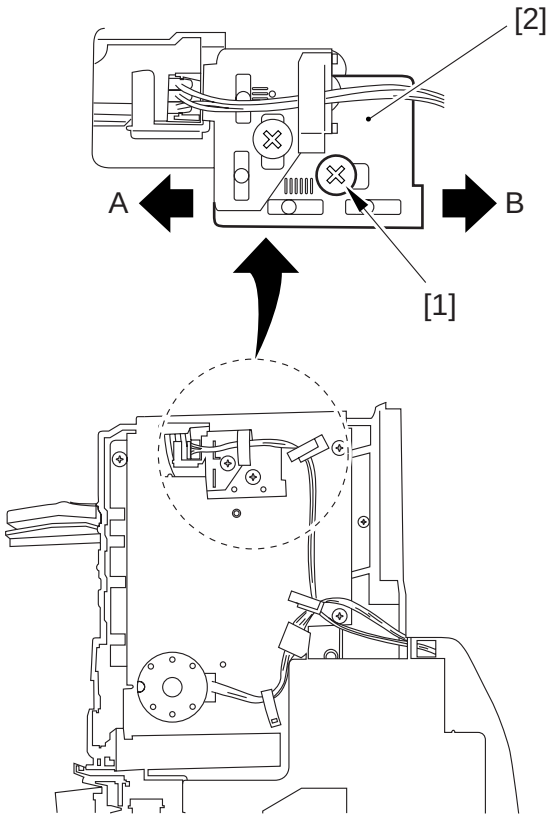


F05-111-01

L. Adjusting the Overlap of the Rear Aligning Plate Sensor Flag

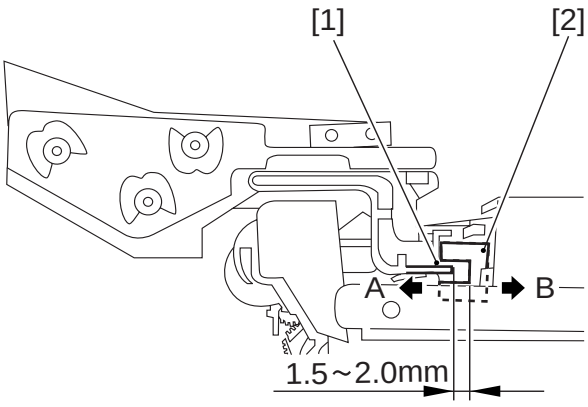
If the overlap is displaced when making the previous adjustments (on the rear alignment plate) or when replacing a mechanical part, perform the following:

1) Remove the handling tray unit.
2) Loosen the fixing screw [1].
3) Move the front alignment sensor adjusting plate [2].



F05-112-01

4) Make adjustments so that the overlap of the sensor flag [1] and the sensor [2] of the rack assembly of the aligning plate is between 1.5 and 2.0 mm.
(A: toward inside, B: toward outside)

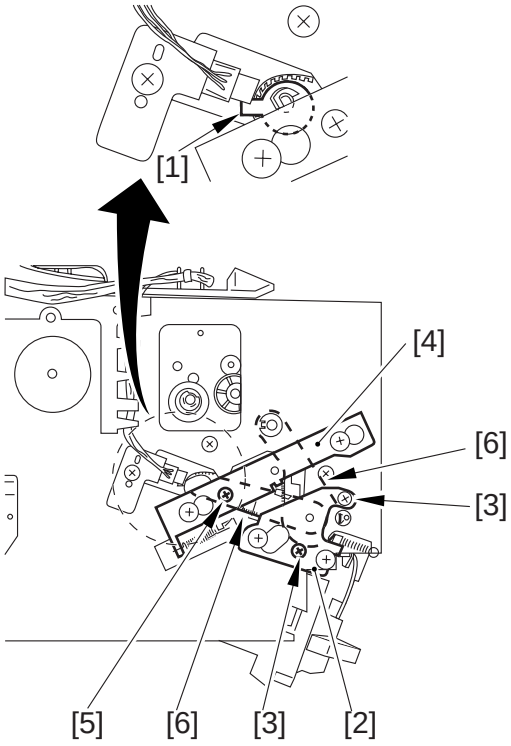


F05-112-02

M. Adjusting the Tension on the Return Roller Belt

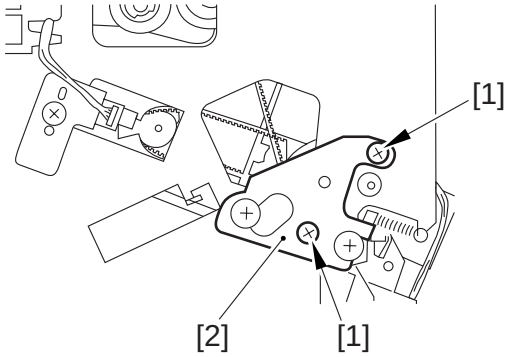
If you have moved the tensioner plate as when replacing the handling tray unit, be sure to perform the following:

1) Check to make sure that the lower home guide home position flag [1] is in home position (as indicated).
2) Remove the fixing screw [2] and the tension spring [3]; then, detach the tensioning plate [4].
3) Loose the two fixing screws [6] on the tensioning pulley plate [5] to release the tension from the two return roller belts [7].



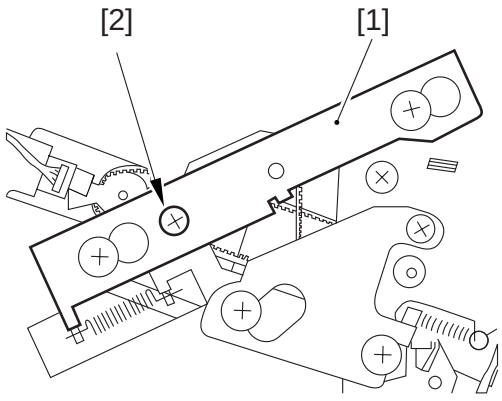
F05-113-01

4) Secure the tensioner pulley plate [2] in place with two screws [1].



F05-113-02

5) Then, mount the tensioning plate [1], and mount the tension spring [2].
6) Fit the screw [3], and secure the tensioning plate [1].

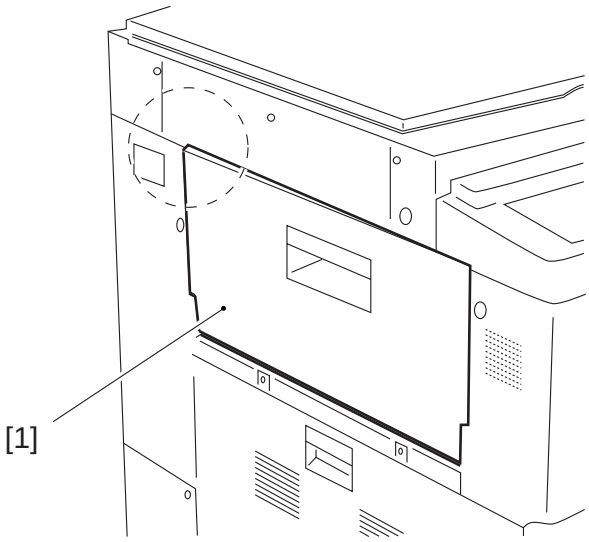


F05-113-03

N. Correcting Displacement of the Relay Delivery Upper Unit

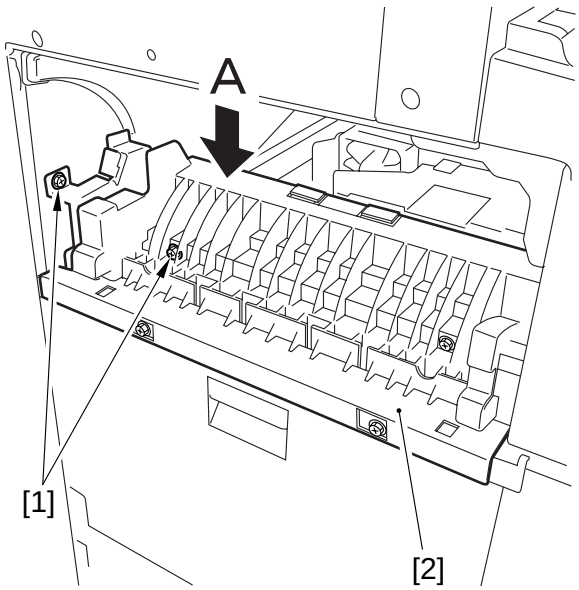
When the relay delivery upper unit is mounted, a gap can occur in its relation to the cover of the host machine. If any, perform the following:

1) If a gap is found in the area indicated (circled) after mounting the relay delivery unit, remove the relay delivery upper unit [1].



F05-114-01

2) Loosen the two screws [1].
3) While pressing area A of the relay delivery lower unit [2], tighten the two screws [1].

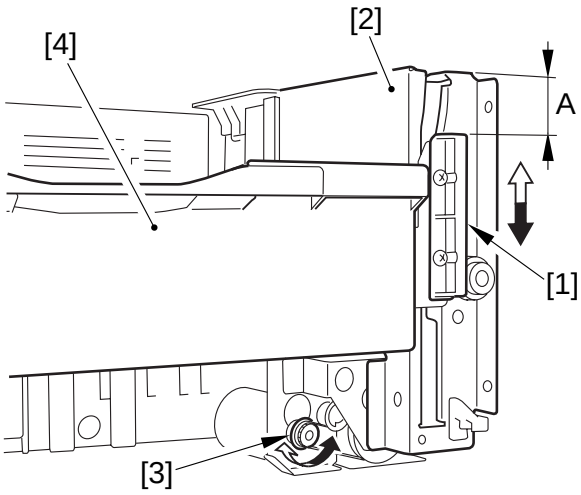


F05-114-02

4) Mount the relay delivery upper unit, and check for a gap once again.

O. Making Checks Before Installation to the Host Machine

1) Check to make sure that the distance A between the top edge of the deliv ery tray rack [1] and the top edge of the rear frame [2] is 40 ± 5 mm.
2) Otherwise, turn the drive motor pulley [3] by hand to adjust.
   At this time, do not move the delivery tray [4] by hand or apply force against it.



F05-115-01

II Outline of Electrical Components

1. Introduction

The electrical components used in the Finisher-J1 and the relay delivery assembly are arranged as shown in the figures that follow; study them with reference to the notations and I/O addresses in the tables; the same notations and addresses are used in the general circuit diagrams so that the tables can be used as indexes to the diagrams. (The general circuit diagrams are provided as Appendix of this manual.)

1.1 Guide to the Tables

The following notations are used:
DC-CON : DC controller PCB (host machine)
FIN-CON: finisher controller PCB

1.1.2 Checking the Photointerrupters

The photointerrupters are checked in service mode; go through the tables attached to the lists of electrical components to find out the state* of a specific sensor, which may be any of the following:

a. Paper Sensor
Move the sensor lever by hand to simulate the presence of paper; then, check the Service Mode screen.
If it is difficult to check the Service Mode screen while moving the sensor lever, put paper over the point of detection, and then check the Service Mode screen.

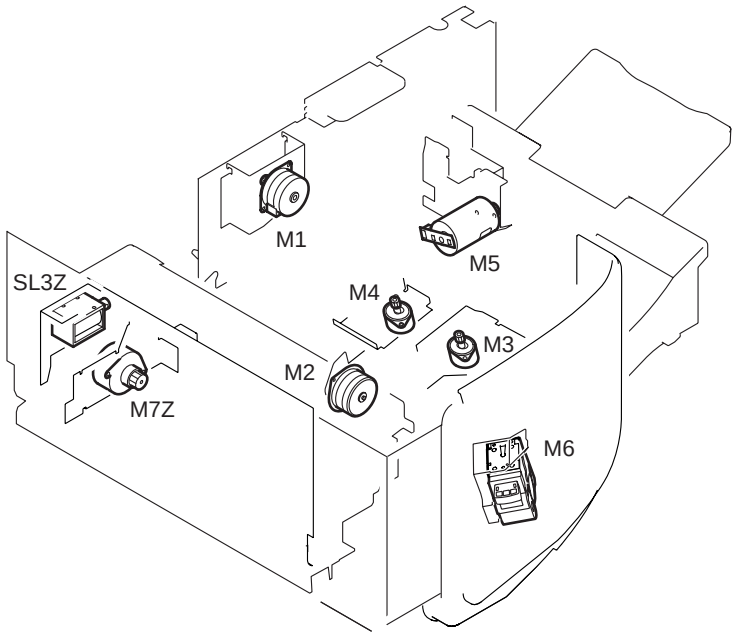
b. Open/Closed Sensor
Check the Service Mode screen while opening/closing the cover/unit in question.

c. Position Sensor, Presence/Absence Sensor
Move the unit in question by hand. Try removing and then mounting it. If the I/O level changes in response to operation, the sensor may be assumed to be normal.

To check a photointerrupter found inside a unit which is detached in conjunction with a drawer connector, be sure to check the Service Mode while the unit in ques tion is set.

*The state of a sensor refers to any of the following:
- For a paper sensor, the presence or the absence of paper.
- For an open/closed sensor, the state in which the cover/unit is closed.
- For a home position sensor or a set sensor, the item in question is in home position or set in place.

2.1 Solenoids
2.2 Motors (1/2)



F04-202-01

2.1 Solenoids
Finisher-J1
The Finisher-J1 does not use solenoids.

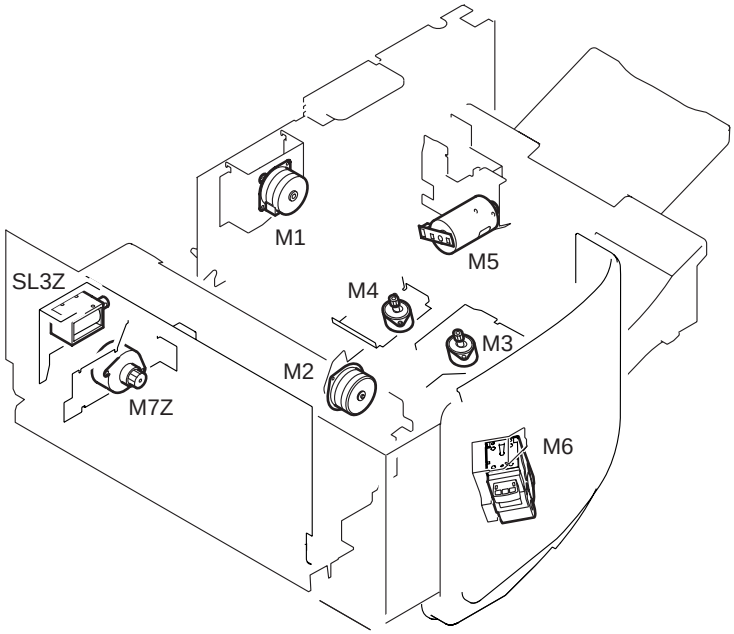
Relay Delivery Assembly

Notation (connection) Name	General circuit diagram	I/O address I/O indication	Remarks
SL3Z(DC-CON) Delivery motor	3-6-F	P002-1 1:ON, 0:OFF	

2.2 Motors (1/2)
Finisher-J1 (1/2)

Notation (connection) Name	General circuit diagram	I/O address I/O indication	Remarks
M1(FIN-CON) Delivery motor	2-8-B	IO-P005-5, P009-5	Current switch-over 2
		IO-P007-4,5	Pulse
		IO-P007-7 1: current ON	
		IO-P011-3	Current switch-over 1
M2(FIN-CON) Stack delivery motor	2-8-C	IO-P006-4,5	Pulse
		IO-P011-4	Current switch-over
		IO-P011-5	Current switch-over 2
M3(FIN-CON) Front alignment motor	2-3-D	IO-P006-0,1	Pulse
		IO-P006-3 1: enable	
		IO-P011-7 0: current large	

2.2 Motors (2/2)



F04-202-01

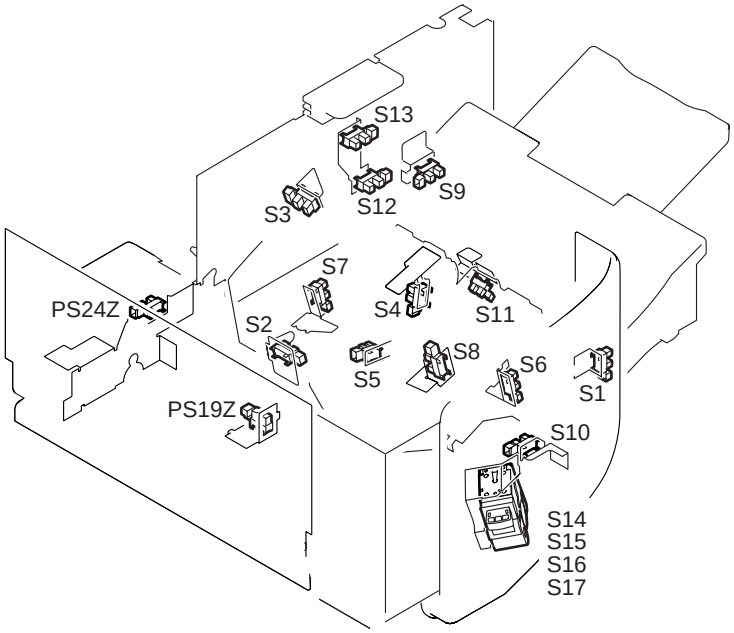
2.2 Motors (2/2)
Finisher-J1 (2/2)

Notation (connection) Name	General circuit diagram	I/O address I/O indication	Remarks
M1(FIN-CON) Rear alignment motor	2-8-B	IO-P006-0,1	Pulse
		IO-P006-2 1: enable	
		IO-P011-6 0: current large	
M2(FIN-CON) Stack tray lift motor	2-8-C	IO-P005-0, P007-2 1: up ON	
		IO--P005-2, P007-3 1: down ON	
M3(FIN-CON) Stapler motor	2-3-D	IO-P006, P007-0 0: CW	
		IO-P006-7,P007-1 0: CCW	

Relay delivery assembly

Notation (connection) Name	General circuit diagram	I/O address I/O indication	Remarks
M7Z(R-CON) Relay delivery motor	3-8-E		

2.5 Sensors (1/2)

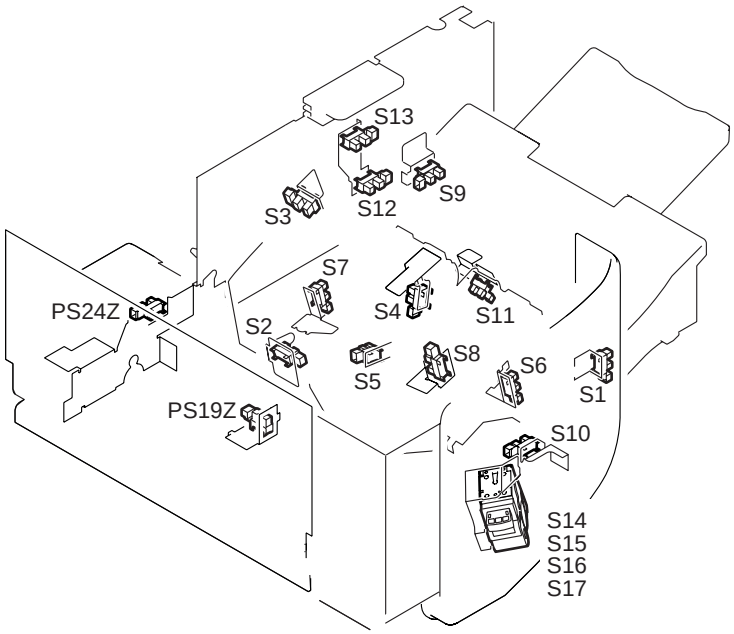


F04-202-02

2.3 Sensors (1/2)
Finisher-J1 (1/2)

Notation (connection) Name	General circuit diagram	I/O address I/O indication	Remarks
S1(FIN-CON) Finisher front cover sensor	2-3-B	IO-P001-3 0: open, 1: closed	
S2(FIN-CON) Inlet sensor	2-8-C	IO-P002-2 1: present, 0: absent	(paper)
S3(FIN-CON) Return roller home position sensor	2-3-C	IO-P001-7 1: HP	
S4(FIN-CON) Stack retaining lever home position sensor	2-3-E	IO-P002-3 0: HP	
S5(FIN-CON) Intermediate handling tray paper sensor	2-3-F	IO-P003-3 1: present, 0: absent	(paper)
S6(FIN-CON) Front aligning plate home position sensor	2-3-F	IO-P003-1 1: HP	
S7(FIN-CON) Rear aligning plate home position sensor	2-3-E	IO-P003-0 1: HP	
S8(FIN-CON) Stack delivery lever home position sensor	2-3-F	IO-P003-2 0: HP	
S9(FIN-CON) Stack tray lift clock sensor	2-3-C	IO-P004-1	
S10(FIN-CON) Stack tray paper height sensor	2-3-B	IO-P001-2 1: upper limit	
S11(FIN-CON) Stack tray paper sensor	2-8-D	IO-P001-4 1: present, 0: absent	(paper)
		IO-P002-0 1: HP	

2.5 Sensors (2/2)



F04-202-02

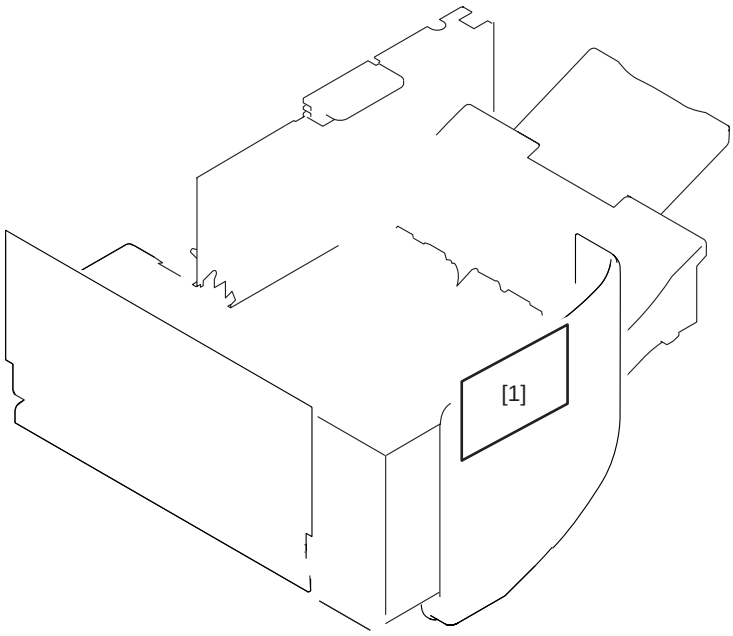
2.3 Sensors (2/2)
Finisher-J1 (2/2)

Notation (connection) Name	General circuit diagram	I/O address I/O indication	Remarks
S12(FIN-CON) Stack tray lower limit sensor	2-3-B	IO-P001-5 1: lower limit	
S13(FIN-CON) Stack tray upper limit sensor	2-3-C	IO-P001-6 1: upper limit	
S14(FIN-CON) Staple cartridge sensor	2-7-E	IO-P003-4 0: detected	
S15(FIN-CON) Stapler staple absent sensor	2-7-E	IO-P003-5 0: detected	
S16(FIN-CON) Stapling position sensor	2-7-E	IO-P003-6 0: detected	
S17(FIN-CON) Stapler edging sensor	2-7-E	IO-P003-7 0: detected	

Relay Delivery Assembly

Notation (connection) Name	General circuit diagram	I/O address I/O indication	Remarks
PS19Z(DC-CON) Relay delivery sensor	3-6-E		
PS24Z(DC-CON) Relay delivery open/ closed sensor	3-7-E		

2.4 PCB



F04-702-03

2.4 PCB
Finisher-J1

Notation (connection) Name	Remarks
[1] Finisher controller PCB	Controls the finisher.

Relay Delivery Assembly

The relay delivery assembly does not have a PCB.

III. Functions of the DIP Switch

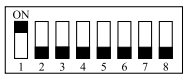
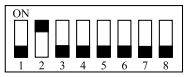
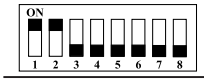
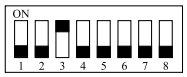
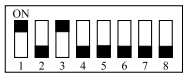
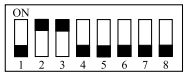
The DIP switch (DSW1) on the finisher controller PCB may be set as follows to make use of various functions.

Using the Switch

(1) Remove all obstacles that may be in the way of a specific operation in question.

(2) Set the DIP switch (DSW1), and turn on the power. (LED1 will start to flash.)

(3) Press the push switch (SW1) to indicate the selected operation. (LED2 remains ON while the operation is under way.)

Setting	Component to operate	Description of operation		Remarks
	Delivery motor	The delivery roller will rotate and then stop after a specific number of rotations.		To stop in the middle of operation, press SW1.
	Stack delivery motor (stack delivery lever)	The stack delivery lever will move to home position and stop. (out of home position) The stack delivery lever will move to the stack delivery position. (at home position)		
	Stack handling motor (stack retaining lever)	The stack retaining lever will move to home position and stop.		
	Rear alignment motor	When not in home position	The rear aligning plate will move to home position and stop.	
		When in home position	The rear aligning plate will move in the direction of alignment for a specific distance and stop in home position.	
	Front alignment motor	When not in home position	The rear aligning plate will move to home position and stop.	
		When in home position	The front aligning plate will move in the direction of alignment and stop in home position.	
	Stack tray motor (up)	The stack tray will move up and then stop when the stack tray upper limit sensor goes ON.		
	Stack tray motor (down)	The stack tray will move down and stop when the stack tray lower limit sensor goes ON.		
	Stapler motor	The stapler will execute stapling and stop.		
	Delivery motor	The return roller will move to home position and stop.		

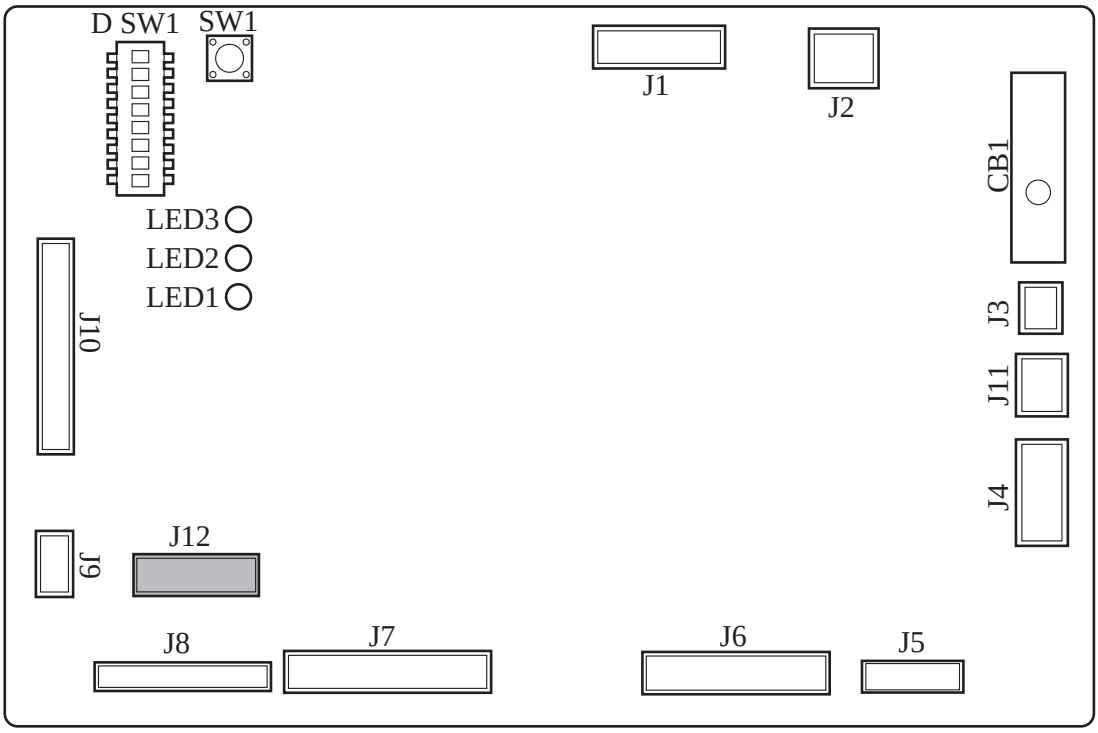
T05-101

2. Finisher Controller PCB LEDs and Check Pins

Of the LEDs and check pins found in the machine, those used in the field are discussed herein.

Caution:

1. Some LEDs emit dim light because of leakage current even when OFF; this is a normal condition and must be kept in mind.
2. Those check pins not discussed herein are for factory use, and require special tools and high accuracy. Do not touch them in the field.



F05-202

DSW1: for test mode settings.
SW1 : for test mode start-up.
LED1: for test mode.
LED2: for test move.
LED3: for test mode.
J12: connector for ROM data download.

IV. Troubleshooting Malfunctions

1. E500 (communication between copier and finisher)

Finisher controller PCB, DC controller PCB (host machine)

1) Turn off and then on the host. Is the problem corrected?

Yes: End.

Wiring

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

No: Correct the wiring.

Finisher controller PCB, DC controller PCB (host machine)

3) Try replacing the finisher controller PCB and the DC controller PCB of the host machine. Is the problem corrected?

Yes: End.

2. E514 (stack handling motor M2; stack delivery in CW direction)

Stack handling motor (M2)

1) Is the tension of the drive belt normal?

No: Loosen the screw on the drive belt, and adjust the tension.

Wiring

2) Is the wiring between the finisher controller PCB and the stack handling motor (M2) normal?

No: Correct the wiring.

3) Are the sensor lever spring and flag normal?

No: correct the spring or lever.

Stack delivery lever home position sensor (S8)

4) Check the stack delivery lever home position sensor (S8). Is the sensor normal?

No: Replace the sensor.

Stack handling motor (M2), Finisher controller PCB

5) Try replacing the stack handling motor (M2). Is the problem corrected?

Yes: End.

No: Replace the finisher controller PCB.

3. E530 (rear aligning motor M5)

Rear aligning plate home position sensor (S7)

1) Check the rear aligning plate home position sensor (S7). Is it normal?

No: Replace the sensor.

Wiring

2) Is the wring between the finisher controller PCB and the rear alignment motor (M4) normal?

No: Correct the wiring.

Rear aligning plate

3) Is the rack riding over the edge of the support member?

Yes: Correct the position.

Rear alignment motor (M4), Finisher controller PCB

4) Try replacing the rear alignment motor (M4). Is the problem corrected?

Yes: End.

No: Replace the finisher controller PCB.

4. E531 (stapler motor M6)

Wiring

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

No: Correct the wiring.

Stapler unit, Finisher controller PCB

2) Try replacing the stapler unit. Is the problem corrected?

Yes: End.

No: Correct the finisher controller PCB.

5. E537 (front alignment motor M5)

Front aligning plate home position sensor (S6), Wiring

1) Check the front aligning plate home position sensor (S6). Is it normal?

No: Replace the sensor.

Front aligning plate

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

No: Correct the wiring.

Front alignment motor (M3)

3) Is the rack riding over the edge of the support member?

Yes: Correct the position.

Finisher controller PCB

4) Try replacing the front alignment motor (M3). Is the problem corrected?

Yes: End.

No: Replace the finisher controller PCB.

6. E577 (stack delivery motor M1; return CCW direction)

Delivery motor (M1), Drive mechanism

1) Is the return roller rotating while the motor is rotating in reverse?

No: Correct the drive mechanism.

2) Is the return roller spring displaced?

Yes: Correct the return roller spring.

3) Is the tension of the stack handling motor drive belt proper?

No: Loosen and then tighten the screw to adjust the tension.

Return roller home position sensor (S3)

4) Check the return roller home position sensor (S3). Is it normal?

No: Replace the sensor.

Delivery motor (M1), Finisher controller PCB

5) Try replacing the delivery motor (M1). Is the problem corrected?

Yes: End.

No: Replace the finisher controller PCB.

7. E580 (delivery tray ascent/descent motor M5)

Delivery tray ascent/descent motor (M5)

1) Turn the flag of the delivery tray ascent/descent clock sensor (S9) by hand. Does it turn smoothly?

No: Make mechanical corrections.

Wiring

2) Is the wiring between the finisher controller PCB and the delivery tray as cent/descent motor (M5) normal?

No: Correct the wiring.

Tray phase

3) Is the delivery tray rack phase on left and right correct?

No: correct the phase.

Delivery tray ascent/descent motor clock sensor (S9)

4) Check the delivery tray ascent/descent motor clock sensor (S9). Is it normal?

No: Replace the sensor.

Delivery tray paper height sensor (S10)

5) Check the delivery tray paper height sensor (S10). Is it normal?

No: Replace the sensor.

Delivery tray upper limit sensor (S13), Delivery tray lower limit sensor (S12)

6) Check the delivery tray upper limit sensor (S13) and the delivery tray lower limit sensor (S12). Are they normal?

No: Replace the sensor.

Finisher controller PCB, Delivery tray ascent/descent motor (M5)

7) Does the voltage between J3-1 and -2 on the finisher controller PCB change to 24 V as soon as the delivery tray ascent/descent motor (M5) starts to rotate?

No: Replace the finisher controller PCB.

Yes: Check the wiring from the delivery tray ascent/descent motor (M5) to the finisher controller PCB; if normal, replace the motor.

8. E585 (stack handling motor M2; stack delivery in CCW direction)

Stack handling motor (M2)

1) Is the tension of the drive belt normal?

No: Loosen the screw on the drive belt, and adjust the tension.

2) Dose the return roller rotating while the motor rotates CCW?

No: Correct the driving mechanism.

Wiring

3) Is the wiring between the finisher controller PCB and the stack handling motor (M2) normal?

No: correct the wiring.

Stack delivery lever home position sensor (S8)

4) Check the stack delivery lever home position sensor (S8). Is the sensor normal?

No: Replace the sensor.

Stack handling motor (M2), Finisher controller PCB

5) Try replacing the stack handling motor (M2). Is the problem corrected?

Yes: End.

No: Replace the finisher controller PCB.

V. Self Diagnosis

A. Self Diagnosis

E500	
Cause	The copier harness is faulty. (disconnected connector, open circuit) The finisher controller PCB or the copier's DC controller PCB is faulty.
Timing of detection	The communication between the copier and the finisher is disrupted and is not corrected for 5 sec or less.
E514	
Cause	The stack handling motor (M2) is faulty. The stack delivery lever home position sensor (S8) is faulty, the connector is disconnected, or an open circuit exits. The stack handling motor (M2) relay harness is faulty. The return roller is faulty.
Timing of detection	At the start of the motor CW operation, the stack handling motor (M2) may be driven for a specific number of rotations; however, the stack delivery lever home position sensor (S8) does not go ON.
Reference	If the same condition is detected during stack delivery, it will be processed as a jam (stack delivery jam; see VI "Detecting Jams" in Chapter 2).
E530	
Cause	The rear alignment motor (M4) is faulty. The rear aligning plate home position sensor (S7) is faulty. The rear alignment motor relay harness is faulty. The rear aligning plate is subjected to an excess load.
Timing of detection	The alignment motor (M4) is driven for a specific number of rotations, but the aligning plate home position sensor (S7) does not go ON. The alignment motor (M4) is driven for a specific number of rotations, but the aligning plate home position sensor (S7) does not go OFF.

E531	
Cause	The stapler motor (M6) is faulty. The stapling home position sensor (S16) is faulty. The stapler harness is faulty. The finisher controller PCB is faulty.
Timing of detection	The stapling home position sensor (S16) does not go off 0.5 sec after the stapler motor is rotated CW. The stapling home position sensor (S16) dos not go ON within 0.5 sec after the stapler motor is rotated CW and, thereafter, the sensor does not go ON within 0.5 sec after the motor is rotated in reverse.
E537	
Cause	The front alignment motor (M3) is faulty. The front aligning plate home position sensor (S6) is faulty. The front alignment motor relay harness is faulty. The front aligning plate is subjected to an excess load.
Timing of detection	The aligning plate home position sensor (S6) does not go ON when the front alignment motor (M3) is driven for a specific number of rotations. The aligning plate home position sensor (S6) does not go OFF when the front alignment motor (M3) is driven for a specific number of rotations.
E577	
Cause	The delivery motor (M1) or the finisher controller PCB is faulty. The return roller home position sensor (S3) is faulty, the harness connector is disconnected, or an open circuit exits. The delivery motor relay harness is faulty. The return roller is faulty.
Timing of detection	The return roller does not reach home position when the delivery motor (M1) has been driven as much as will move it to the return roller home position sensor (S3).
Reference	If the same condition is detected while sheets are aligned in feeding direction, it will be identified as a jam (stack return jam; VI “Detecting Jams” in Chapter 2).

E580

Cause	The delivery tray ascent/descent motor (M5) is faulty. The delivery tray paper height sensor (S10) is faulty, the harness is disconnected, or an open circuit exits. The delivery tray ascent/descent motor lock sensor (S9) is faulty, the connector is disconnected, or an open circuit exits. The delivery tray ascent/descent motor is subjected to an excess load. The finisher controller PCB is faulty.
Timing of detection	The delivery tray upper limit sensor (S13) goes ON while the delivery tray ascent/descent motor (M5) is in operation. The clock signal of the delivery tray ascent/descent motor clock sensor (S9) is not detected 15 times or more within 0.8 sec while the delivery tray ascent/descent motor (M5) is in operation. The delivery tray paper height sensor (S10) does not go ON 4 sec after the delivery tray ascent/descent motor (M5) starts to move up. The delivery tray paper height sensor (S10) does not go OFF 4 sec after the delivery tray ascent/descent motor (M5) starts to move down.

E585

Cause	The stack handling motor (M2) is faulty. The stack delivery lever home position sensor (S8) is faulty, the connector is disconnected, or an open circuit exits. The stack handling motor (M2) relay harness is faulty. The return roller is faulty.
Timing of detection	At the start of the motor CCW operation, the stack handling motor (M2) may be driven for a specific number of rotations; however, the stack delivery lever home position sensor (S8) dose not go ON.
Reference	If the same condition is detected during stack delivery, it will be processed as a jam (stack delivery jam; see VI “Detecting Jams” in Chapter 2).

B. Module Disconnection

1. Outline

The machine is equipped with a module disconnection mechanism, which enables it to operate temporarily in the presence of an error; operations, however, are limited to those associated with delivery. Make use of the mechanisms until the error can be properly removed.

When the module disconnection mechanism is ON, the machine will not execute stapling, alignment, stack delivery or error detection; however, it checks for a jam over the inlet sensor (2).

2. Using the Mechanism

1) In the presence of an error in the machine, turn off and then on the main switch of the host machine.
2) When the host machine has started up, start service or user mode as follows:
2.1) Service Mode
Set '1' to SORTER>OPTION>MD-SPRTN.
2.2) User Mode
Turn off the following: 'adjustment / cleaning'>'staple / offset function'.
3) Then, turn off and then on the main switch of the host machine.

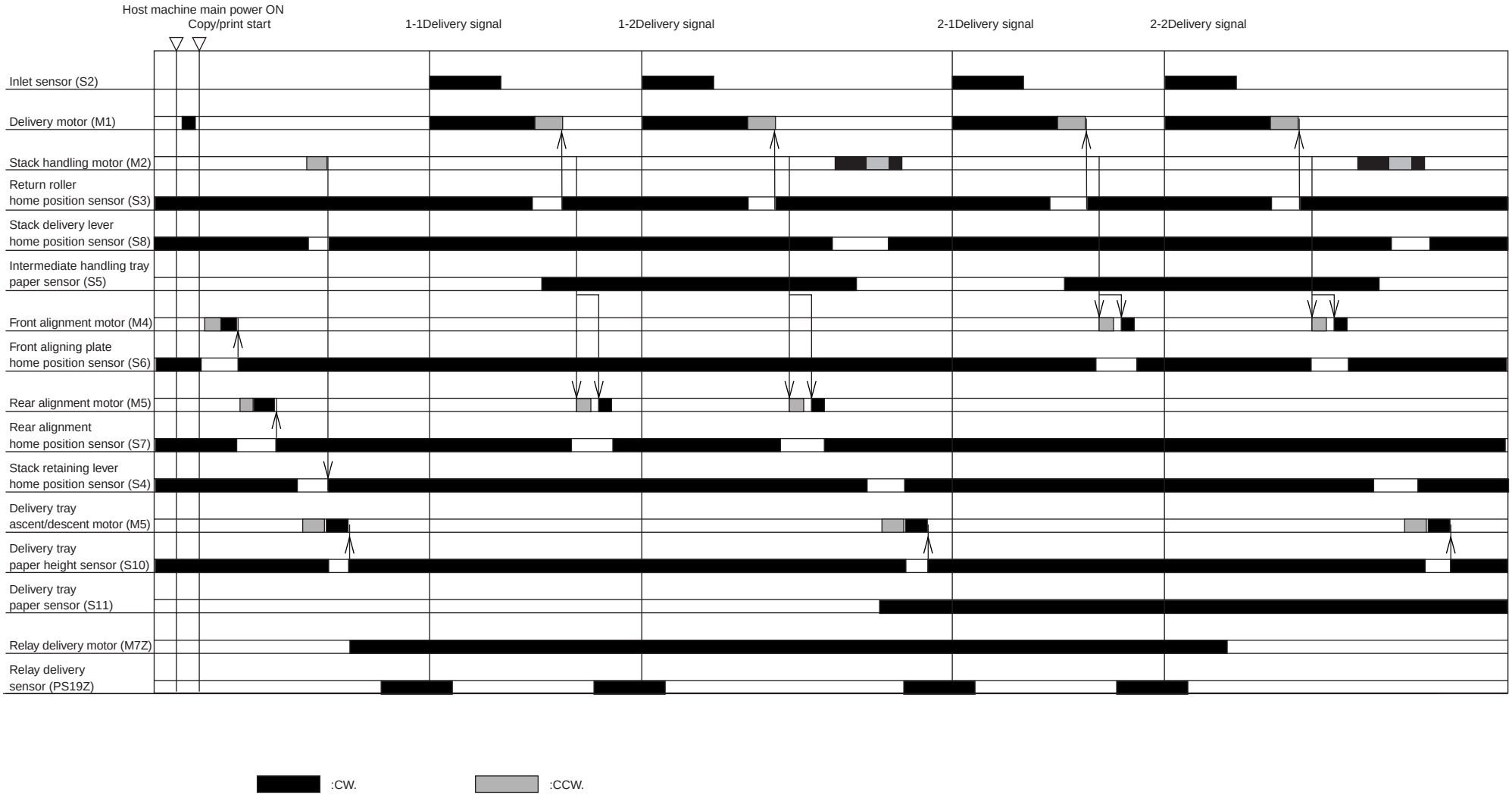
3. Communication with the Host Machine

A. Turning On the Main Power Switch with the Module Disconnection Mechanism Selected
1) When the main power switch is turned on, the main controller PCB communicates the selection of the module disconnection mechanism to the DC controller PCB and, at the same time, causes the control panel to indicate the presence of an error in the finisher.
2) The DC controller PCB backs up the data related to the selection of the module disconnection mechanism.
3) For each pickup, the DC controller PCB communicates to the finisher controller PCB that the module disconnection mechanism is selected.
4) The finisher controller executes operations limited to those associated with delivery.

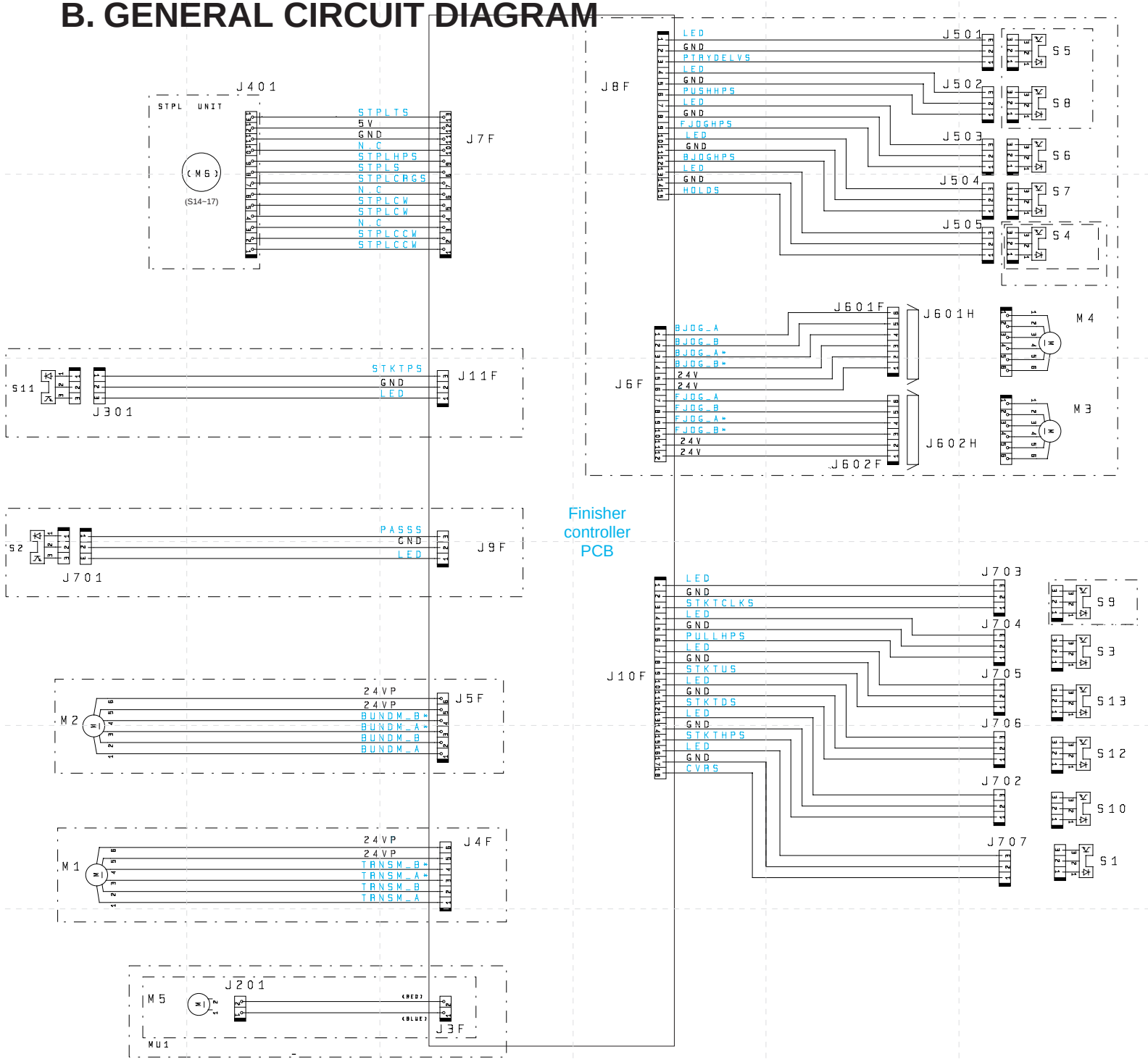
APPENDIX

A. General Timing Chart

(2 originals, 2 sets, no stapling)



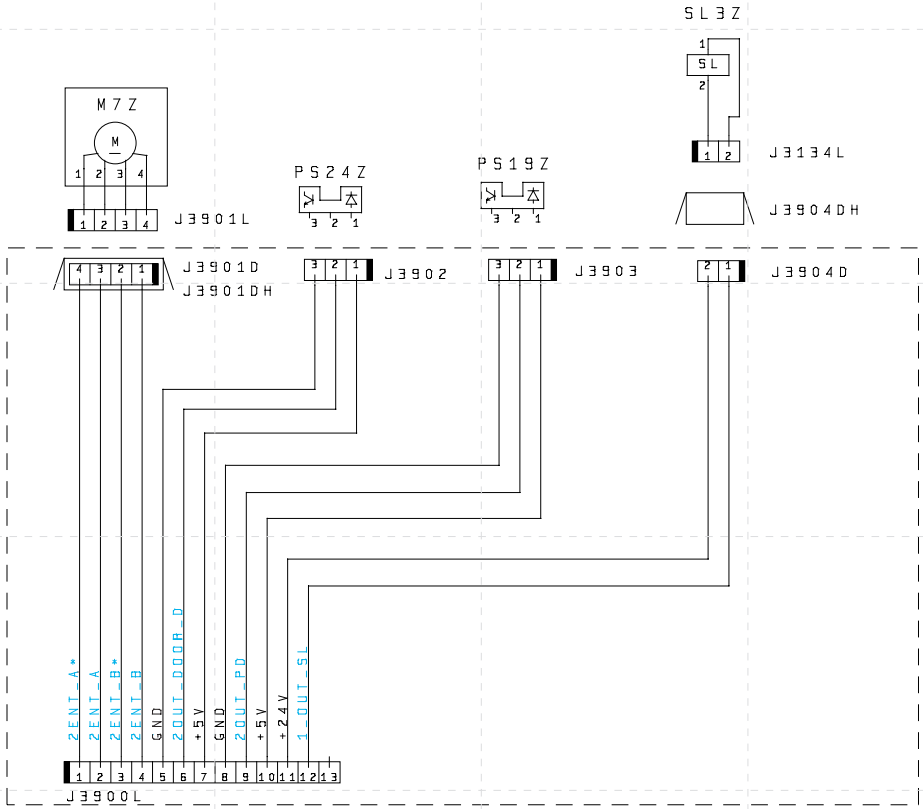
B. GENERAL CIRCUIT DIAGRAM

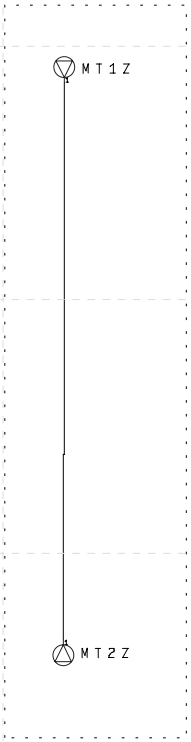


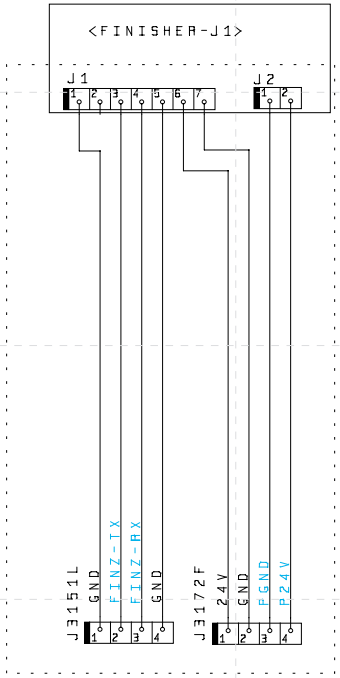
Notation	Name	Position
M1	Delivery motor	8-B
M2	Stack delivery motor	8-C
M3	Front alignment motor	3-D
M4	Rear alignment motor	3-E
M5	Stack tray lift motor	8-A
M6	Stapler motor	7-E
S1	Finisher front cover sensor	3-B
S2	Inlet sensor	8-C
S3	Return roller home position sensor	3-C
S4	Stack retaining lever home position sensor	3-E
S5	Intermediate handling tray paper sensor	3-F
S6	Front aligning plate home position sensor	3-F
S7	Rear aligning plate home position sensor	3-E
S8	Stack delivery lever home position sensor	3-F
S9	Stack tray lift clock sensor	3-C
S10	Stack tray lift clock sensor	3-B
S11	Stack tray paper sensor	8-D
S12	Stack tray lower limit sensor	3-B
S13	Stack tray upper limit sensor	3-C
S14	Staple cartridge sensor	7-E
S15	Stapler staple absent sensor	7-E
S16	Stapling position sensor	7-E
S17	Stapler edging sensor	7-E

C. RELAY DELIVERY ASSEMBLY

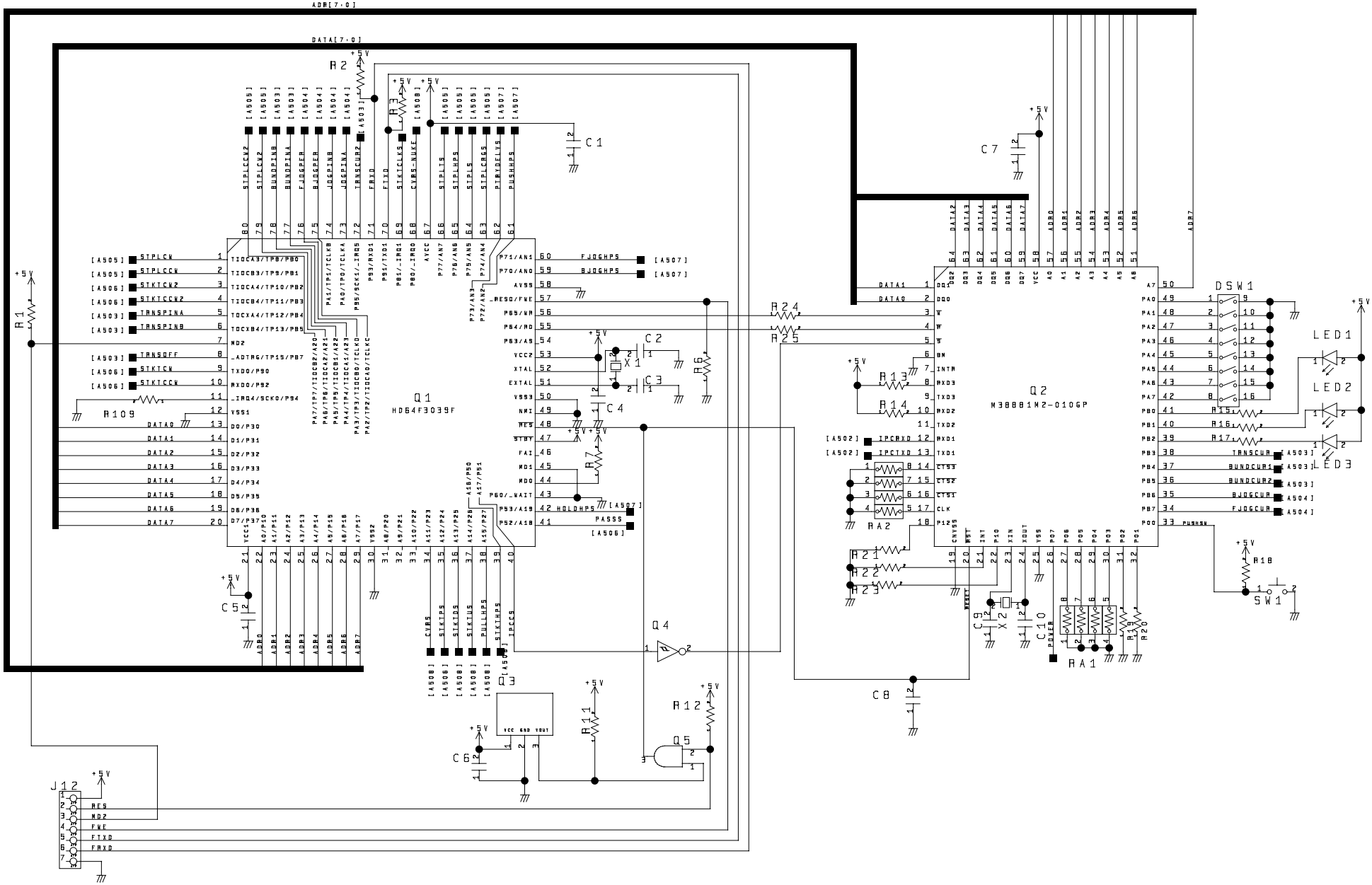
Notation	Name	Position
SL3Z	Relay delivery solenoid	6-F
M7Z	Relay delivery motor	8-E
PS19Z	Relay delivery sensor	6-E
PS24Z	Relay delivery open/closed sensor	7-E

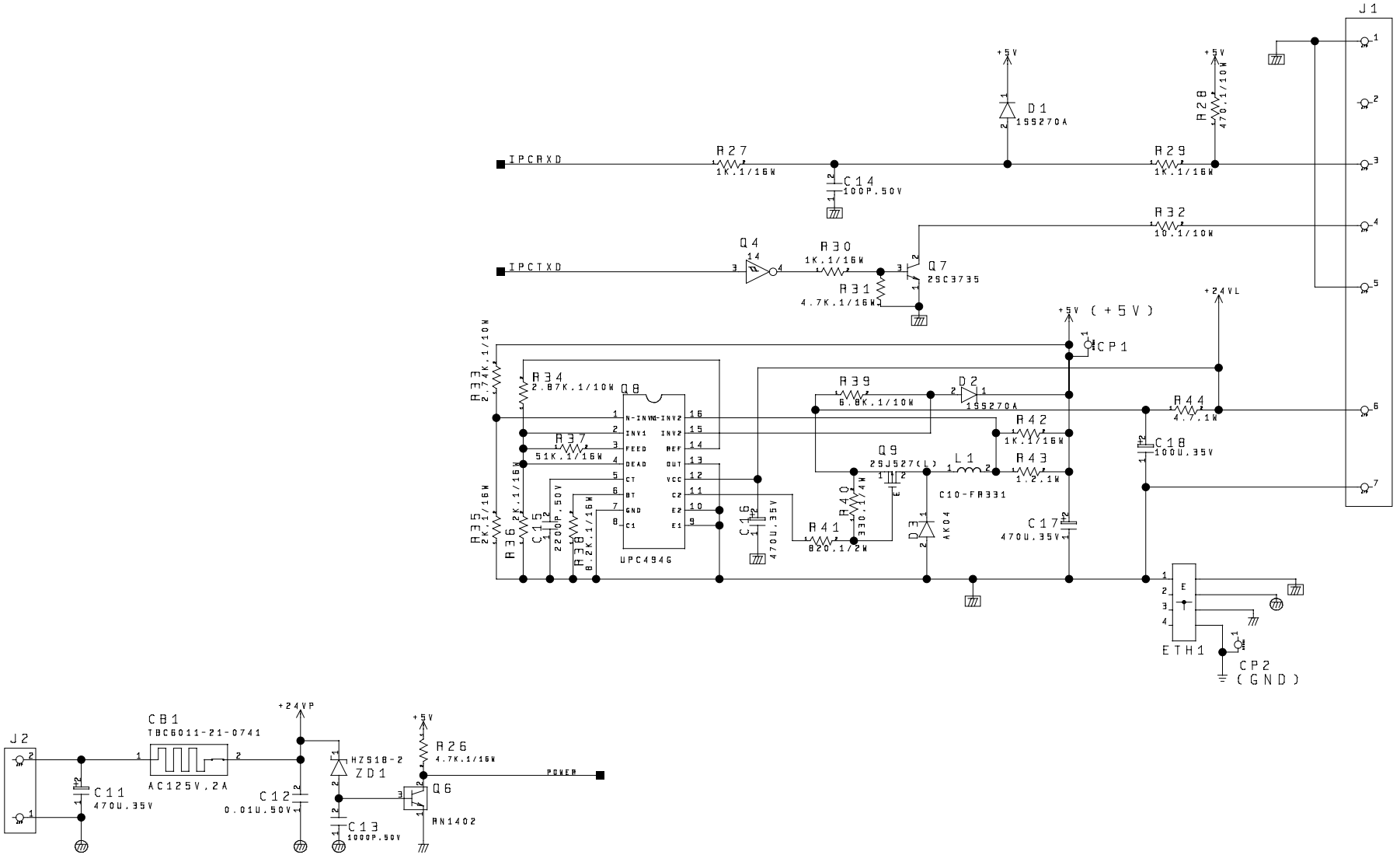


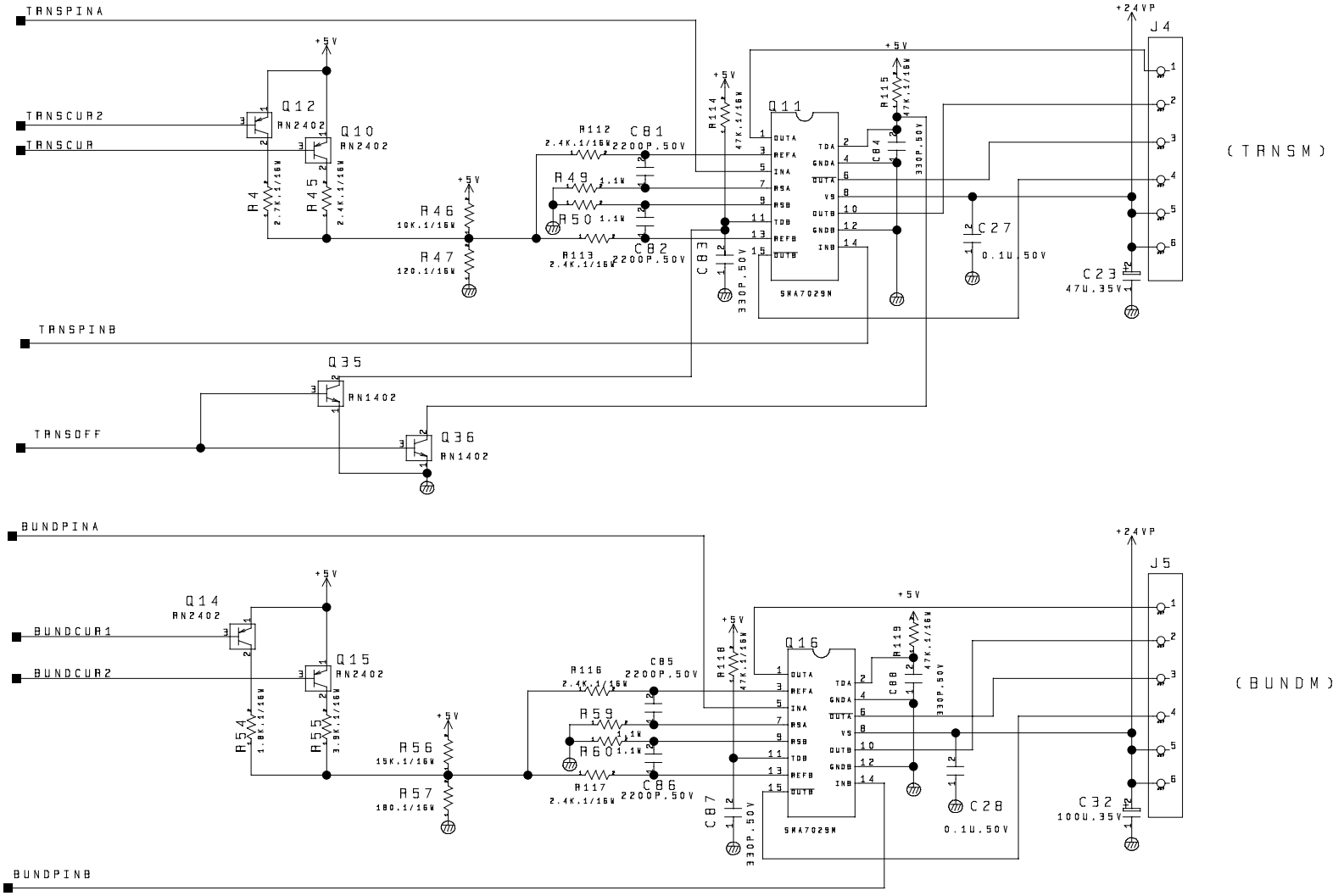


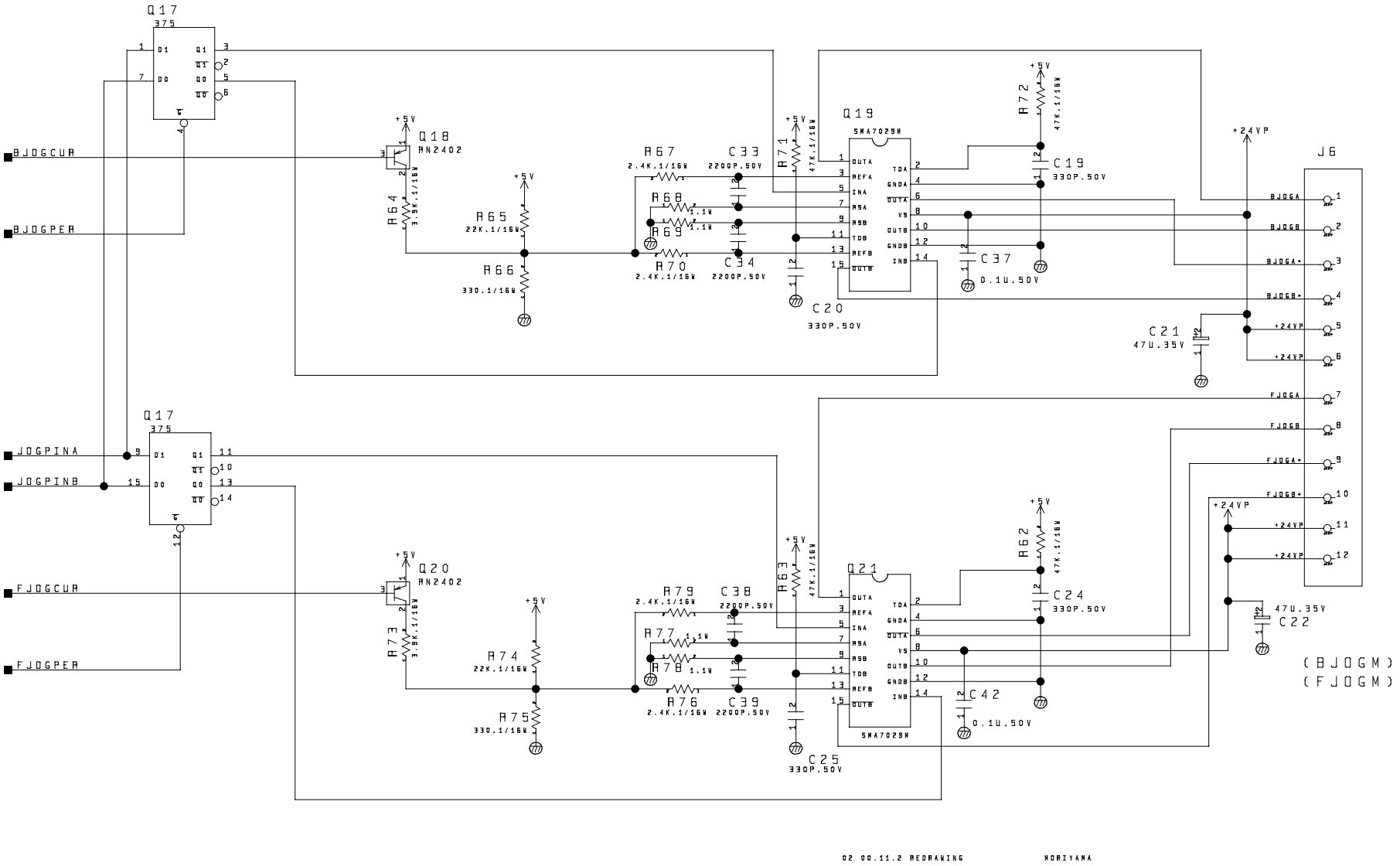


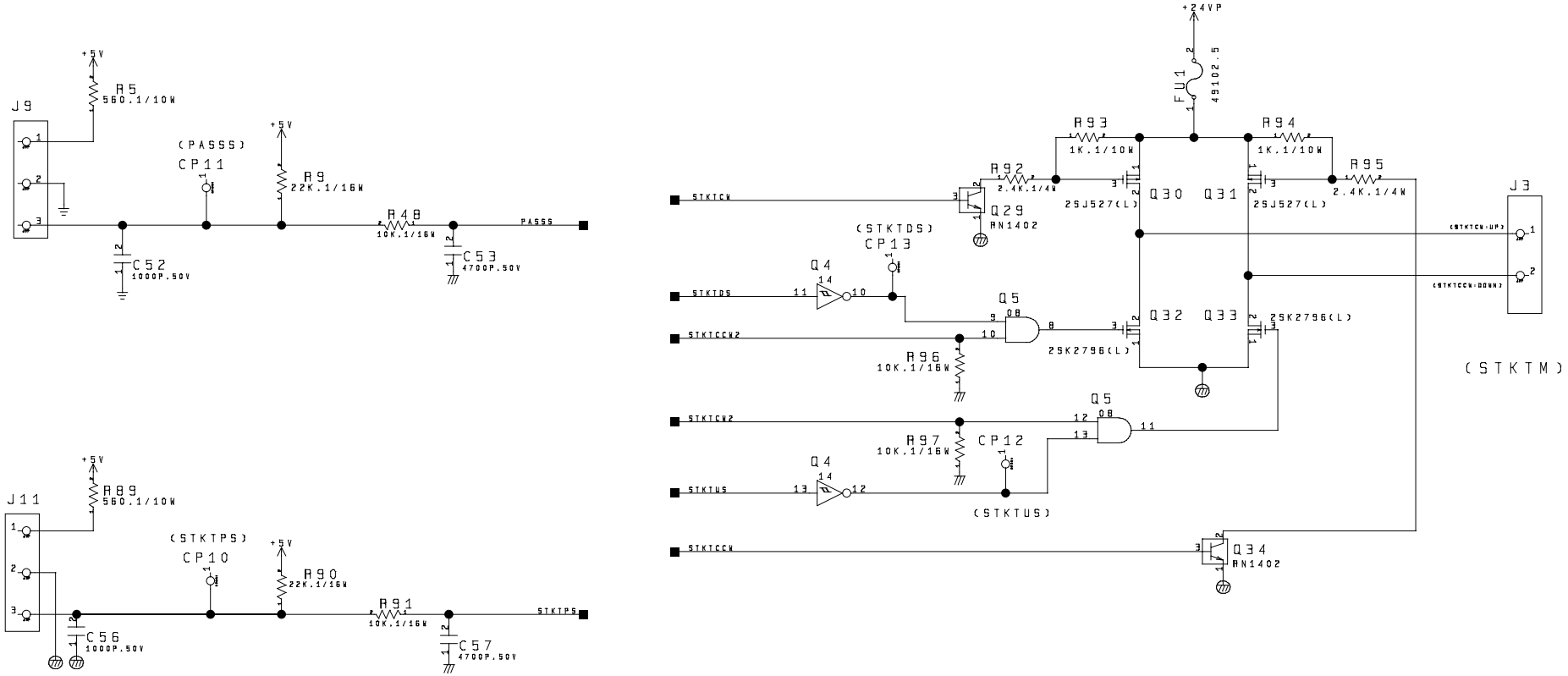
D. Finisher Controller PCB

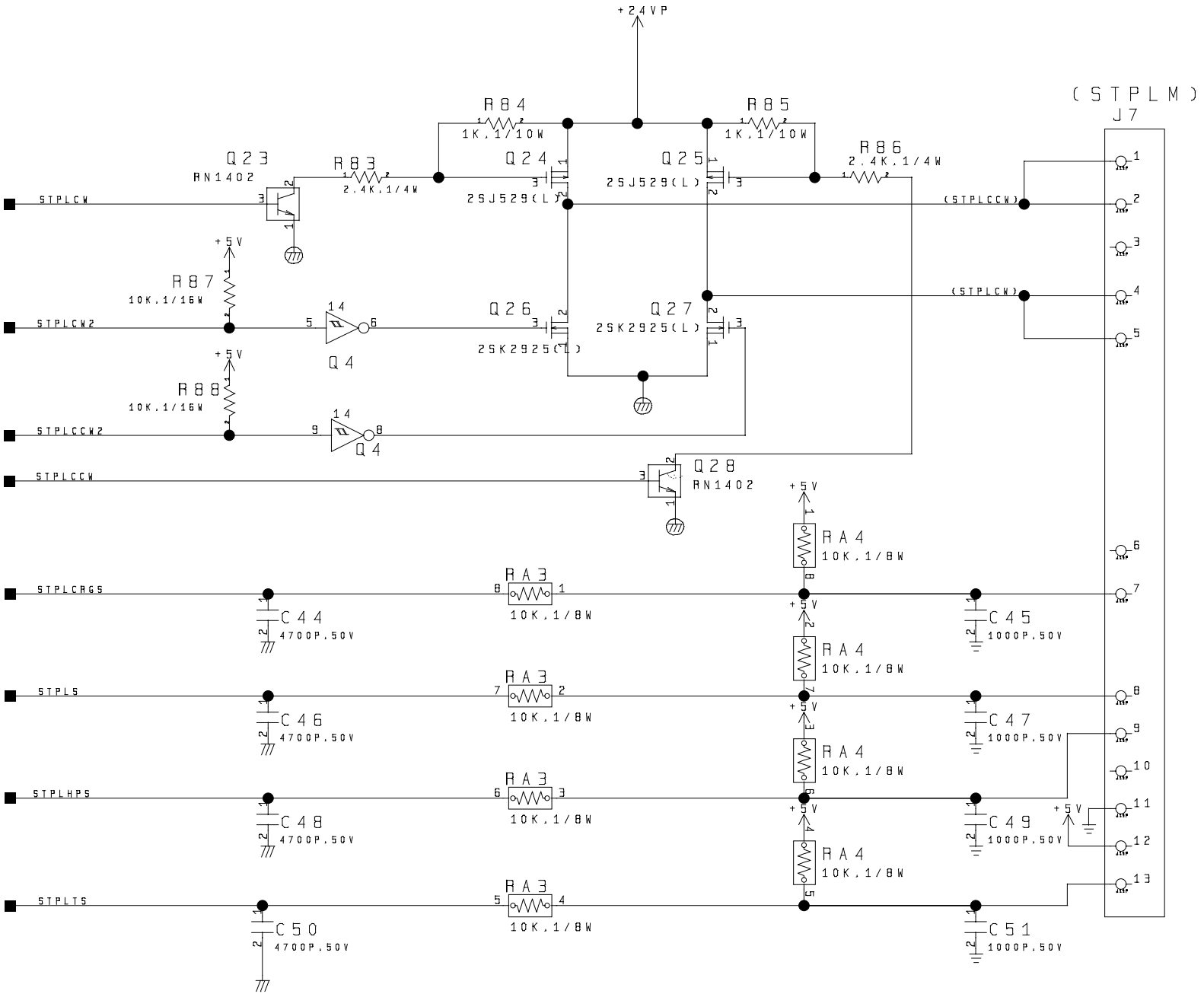


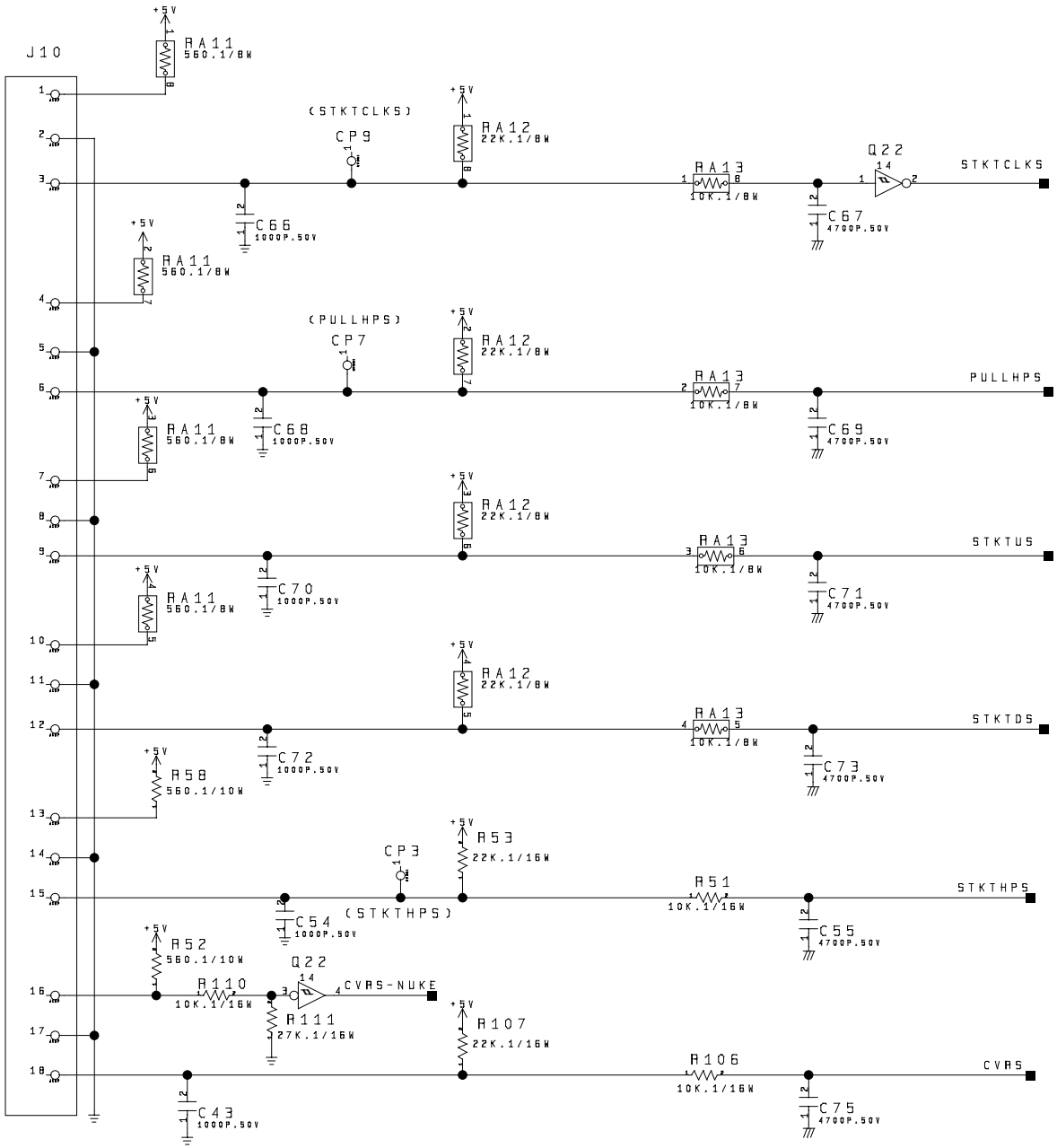


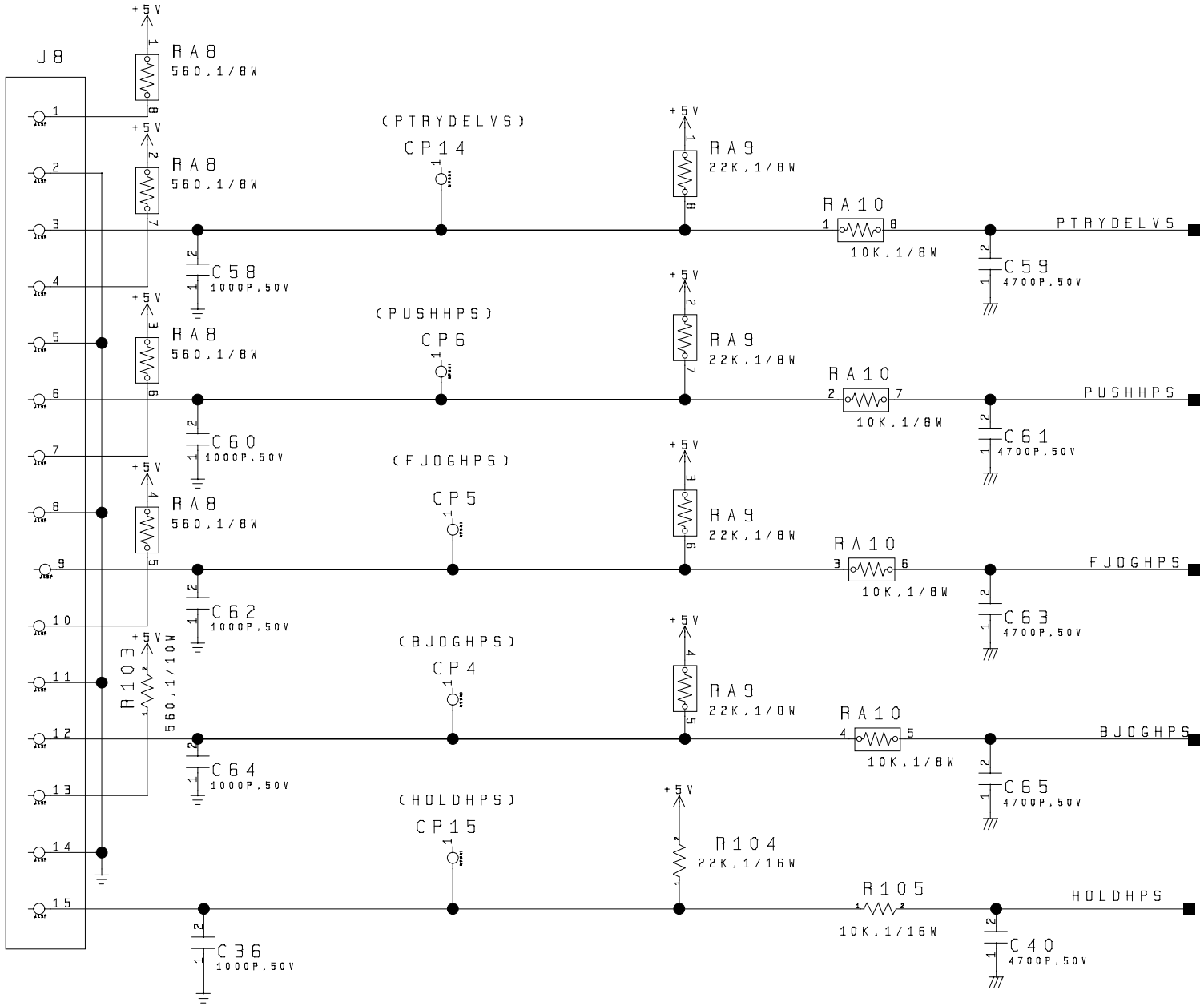


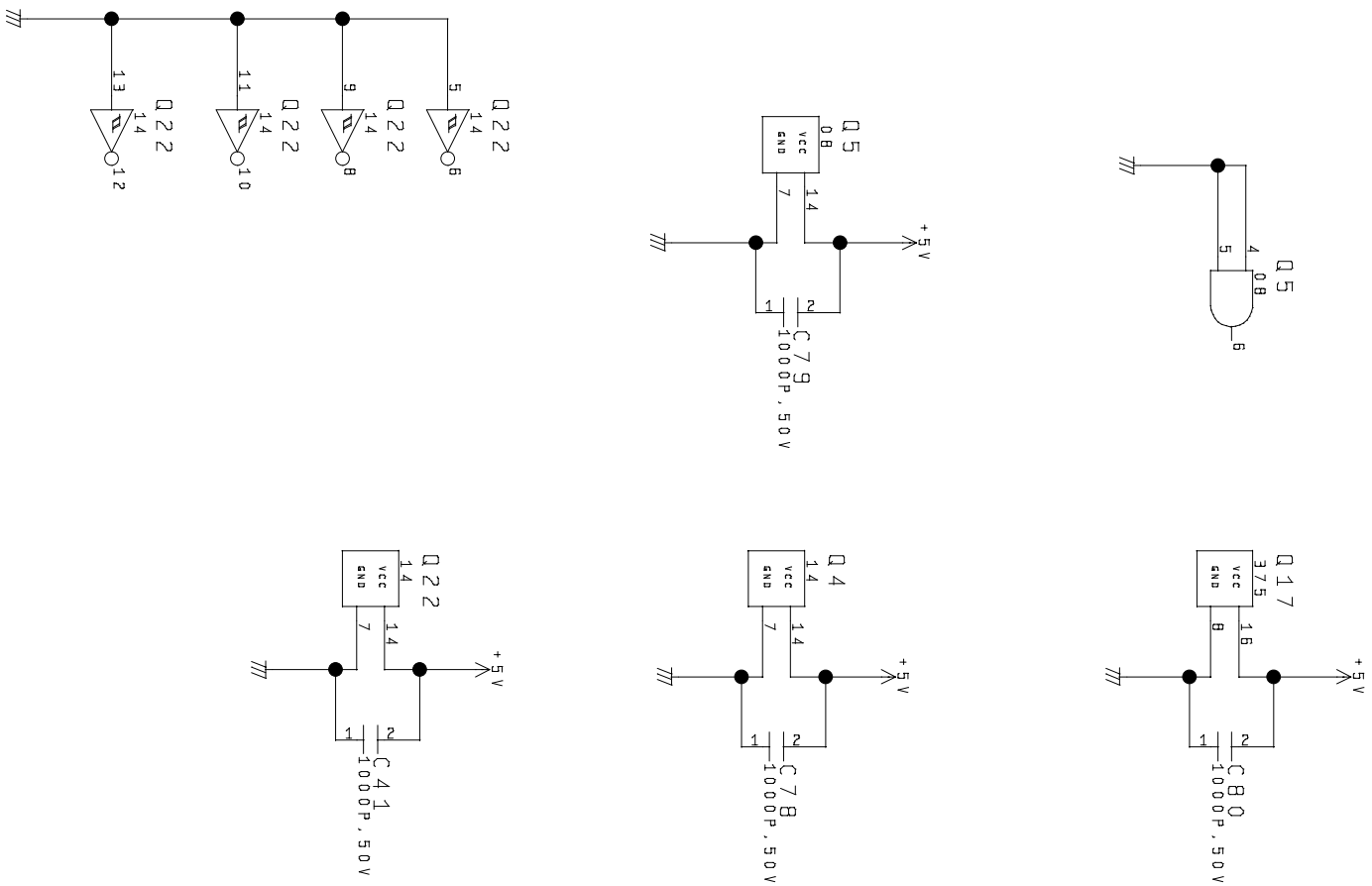










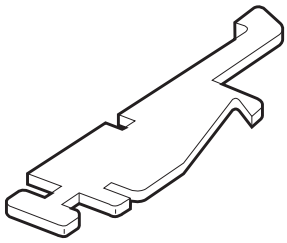
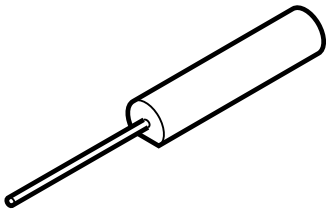
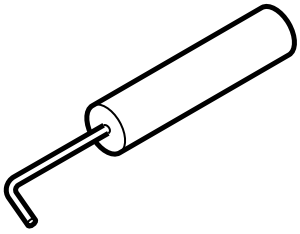


E. SOLVENTS AND OILS LIST

No.	Name	Uses	Composition	Remarks
1	Alcohol	Cleaning; e.g.,glass, plastic, rubber (external covers).	Fluorine-family hydrogen carbon, alcohol, surface activating agent	Do not bring near fire IPA(isopropyl alcohol)
2	Lubricant	Driving parts, friction parts (lead cam)	Silicone oil	FY9-6008 (10g)

F. SPECIAL TOOLS

You will need the following special tools when servicing the machine in addition to the standard tools set.

No.	Tool name	Tool No.	View	Rank	Remarks
1	Door Swich Actuator	TKN-0093		A	
2	Tester Extension pin	FY9-3038-000		A	For making electrical checks; i.e., serving as an attachment to a meter.
3	Tester Extension pin (L-shaped tip)	FY9-3039-000		A	For making electrical checks; i.e., serving as an attachment to a meter.

Rank:

A : Each service person is expected to carry one.

B : Each group of service persons is expected to carry one.

C : Each workshop is expected to keep one.

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