

**Inner-Finisher
MJ1032/1036
Hole Punch Unit
MJ6007
Maintenance Manual**

060114A

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General Precautions for Installation/Service/Maintenance for MJ-1032/1036/6007

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

1. When installing the MJ-1032/1036/6007, be sure to follow the instructions described in the “Unpacking/Set-Up Procedure for the MJ-1032/1036/6007”.
2. The MJ-1032/1036/6007 should be installed by an authorized/qualified person.
3. The Finisher is quite heavy; MJ-1032/1036 weighs approximately 15.3 kg (33.73 lb.) and MJ-6007 weighs approximately 3.4 kg (7.50 lb.), therefore pay full attention when handling it.
4. Before starting installation, servicing or maintenance work, be sure to turn OFF and unplug the equipment first.
5. Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.
6. Unplug the power cable and clean the area around the prongs of the plug and socket outlet once a year or more. A fire may occur when dust lies on this area.
7. When servicing or maintaining the MJ-1032/1036/6007, be careful about the rotating or operation sections such as gears, pulleys, sprockets, cams, belts, etc.
8. When parts are disassembled, reassembly is basically the reverse of disassembly unless otherwise noted in this manual or other related materials.
Be careful not to reassemble small parts such as screws, washers, pins, E-rings, toothed washers, harnesses to the wrong places.
9. Basically, the machine should not be operated with any parts removed or disassembled.
10. When servicing the equipment with the power turned ON, be sure not to touch live sections and rotating/operating sections.
11. Delicate parts for preventing safety hazard problems (such as switches, sensors, etc. if any) should be handled/installed/adjusted correctly.
12. Use suitable measuring instruments and tools.
13. During servicing or maintenance work, be sure to check the serial No. plate and other cautionary labels (if any) to see if they are clean and firmly fixed.
If not, take appropriate actions.
14. The PC board must be stored in antistatic envelope and handled carefully using a wristband, because the ICs on it may be damaged due to static electricity.
Before using the wrist band, pull out the power cable plug of the equipment and make sure that there is no uninsulated charged objects in the vicinity.
15. For the recovery and disposal of used MJ-1032/1036/6007, consumable parts and packing materials, follow the relevant local regulations/rules.
16. After completing installation, servicing and maintenance of the MJ-1032/1036/6007, return the MJ-1032/1036/6007 to its original state, and check operation.

17. When the MJ-1032/1036/6007 is removed from the equipment due to malfunction or other reasons but no substitute machine is to be installed, be sure to remove all the installation hardware from the equipment as well.
18. When the equipment is used after the option is removed, be sure to install the parts or the covers which have been taken off so that the inside of the equipment is not exposed.

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1. SPECIFICATIONS, ACCESSORY AND CONSUMABLES

1.1 Specifications

- Product Type Inner Finisher (2 trays)
- Paper Stacking Device Stationary Tray or Movable Tray
- Paper Size A3, A4, A4-R, A5-R, A6-R, B4, B5, B5-R, FOLIO, LD, LG, LT, LT-R, ST-R, COMPUTER, 13"LG, 8.5"SQ, 8K, 16K, 16K-R, Special paper (transparencies, label sheets, postcards, envelopes, paper index dividers, and tracing paper)
- Paper Basis Weight 52 - 209g/m² (14 lb. Bond to 77 lb. Cover)
- Stacking Mode Simple, Job Offset, Staple and composite
 - * Mixed-size in the sort mode or offset mode: Same width only
 - * Mixed-size in the staple mode: Same width only
- Dimensions with Sub-tray put in : W 481.6 x D 507.5 x H 232.1 (mm)
with Sub-tray drawn out : W 686.8 x D 507.5 x H 232.1 (mm)
- Gross Weight Finisher Section: Approximately 13.0 kg (28.66 lb),
Receiving Section: Approximately 2.3 kg (5.07 lb)
- Power Supply DC24V±10% and DC5V±5% supplied from the main equipment.
- Power Consumption DC24V 6A or less
5V 3W or less

1.1.1 Finisher section

- Stacking Type Facedown
- Stacking Height with

Stationary Tray

Paper Size	Stacking Height	Number of sheets (reference)		
		64 - 80g/m ² Paper	81 - 90g/m ² Paper	91 - 105g/m ² Paper
A4, A4-R, A5-R, A6-R, B5, B5-R, LT, LT-R, ST-R, 8.5"SQ, 16K, 16K-R	14mm	100	89	76
A3, B4, FOLIO, LD, LG, COMPUTER, 13"LG, 8K	7mm	50	45	38

The maximum stacking height is 7 mm for mixed size paper.

Movable Tray (Except for the staple mode)

Paper Size	Stacking Height	Number of sheets (reference)		
		64 - 80g/m ² Paper	81 - 90g/m ² Paper	91 - 105g/m ² Paper
A4, A4-R, A5-R, A6-R, B5, B5-R, LT, LT-R, ST-R, 8.5"SQ, 16K, 16K-R	73mm	500	444	381
A3, B4, FOLIO, LD, LG, COMPUTER, 13"LG, 8K	36mm	250	222	191

The maximum stacking height is 36 mm for mixed size paper.

The maximum number of sheets acceptable is 250 for mixed size paper.

Movable Tray (For the staple mode)

Paper Size	Stacking Height	Number of sheets (reference)
		64 - 105g/m ² Paper
A4, A4-R, B5, B5-R, LT, LT-R, 8.5"SQ, 16K, 16K-R	73mm	When reaching 500 sheets or 50 sets
A3, B4, FOLIO, LD, LG, COMPUTER, 13"LG, 8K	36mm	When reaching 250 sheets or 25 sets

• Stapling Position

Front single position

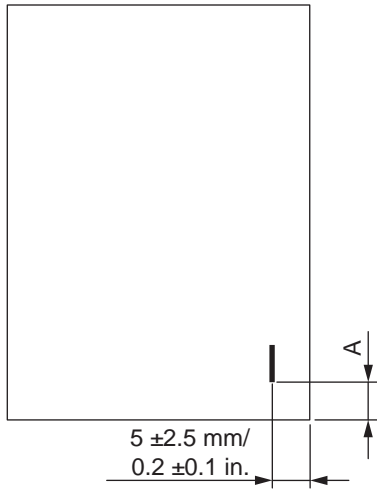


Fig. 1-1

Rear single position

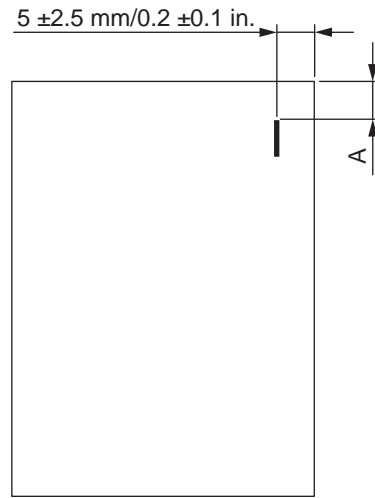


Fig. 1-2

Two-Position Stapling

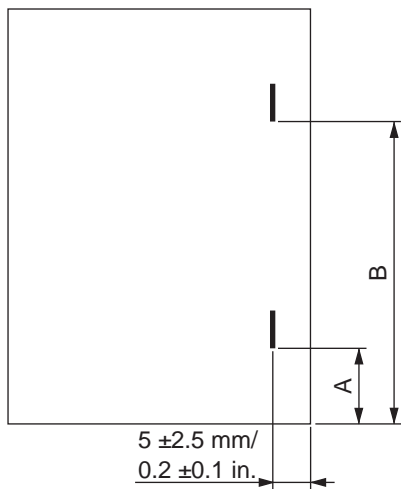


Fig. 1-3

Paper Size	Distance	Front single position/ Rear single position	Two-Position Stapling
A3 A4	A	4.5 ± 2.5mm	90.0 ± 4mm
	B	-	196.0 ± 4mm
A4-R FOLIO	A	4.5 ± 2.5mm	46.5 ± 4mm
	B	-	152.5 ± 4mm
B4 B5	A	4.5 ± 2.5mm	70.0 ± 4mm
	B	-	176.0 ± 4mm
B5-R	A	4.5 ± 2.5mm	32.5 ± 4mm
	B	-	138.5 ± 4mm
LD LT	A	4.5 ± 2.5mm	81.2 ± 4mm
	B	-	187.2 ± 4mm
LG LT-R 8.5"SQ 13"LG	A	4.5 ± 2.5mm	49.4 ± 4mm
	B	-	155.5 ± 4mm
COM- PUTER	A	4.5 ± 2.5mm	70.1 ± 4mm
	B	-	176.1 ± 4mm
8K 16K	A	4.5 ± 2.5mm	76.5 ± 4mm
	B	-	182.5 ± 4mm
16K-R	A	4.5 ± 2.5mm	39.0 ± 4mm
	B	-	145.0 ± 4mm

- Paper Size for stapling

Stapling Position	Paper Size
Front Single	A3, A4, A4-R, B4, B5, B5-R, FOLIO, LD, LG, LT, LT-R, COMPUTER, 13"LG, 8.5"SQ, 8K, 16K, 16K-R
Rear Single	A3, A4, A4-R, B4, B5, B5-R, FOLIO, LD, LG, LT, LT-R, COMPUTER, 13"LG, 8.5"SQ, 8K, 16K, 16K-R
Two-Positions	A3, A4, A4-R, B4, B5, B5-R, FOLIO, LD, LG, LT, LT-R, COMPUTER, 13"LG, 8.5"SQ, 8K, 16K, 16K-R

Stapling is not available for paper in sizes other than the above.

- Paper Basis Weight for stapling 64 - 105g/m²

- Number of sheets that can be stapled

Paper Size	64 - 80g/m ² Paper	81 - 90g/m ² Paper	91 - 105g/m ² Paper
A4, A4-R, B5, B5-R, LT, LT-R, 8.5"SQ, 16K, 16K-R	50	50	30
A3, B4, FOLIO, LD, LG, COMPUTER, 13"LG, 8K	25	25	15

* Two sheets of cover sheet (106-209 g/m²) can be included.

- Staple Loading exclusive cartridge
- Manual Stapling Function is not included

1.1.2 Hole Punch Unit

- Destination

MJ-6007E:	2 holes	Europe/Japan/China
MJ-6007N:	Automatically switches between 2 and 3 holes	North America
MJ-6007F:	4 holes	France
MJ-6007S:	4 holes	Sweden
- Punching method Sequential punching
- Hole position correction system Provided
- Paper size

MJ-6007E:	A3, A4, A4-R, B4, B5, B5-R, FOLIO, LD, LG, LT, LT-R, COMPUTER, 13"LG, 8.5"SQ, 8K, 16K, 16K-R	
MJ-6007N:		
2 holes:	A4-R, B4, B5, B5-R, FOLIO, LG, LT-R, COMPUTER, 13"LG, 8.5"SQ, 16K-R	
3 holes:	A3, A4, LD, LT, 8K, 16K	
MJ-6007F:	A3, A4, LD, LT, 8K, 16K	
MJ-6007S:	A3, A4, A4-R, B4, B5, B5-R, FOLIO, LD, LG, LT, LT-R, COMPUTER, 13"LG, 8.5"SQ, 8K, 16K, 16K-R	
- Paper weight 64 to 128g/m²
(17 lb. Bond to 34 lb. Bond)
 - * Punching is not available for special paper (transparencies, label sheets, postcards, envelopes, paper index dividers, and tracing paper).
- Punched hole diameter

MJ-6007E:	φ6.5 mm (φ0.256 in.)
MJ-6007N:	φ8.0 mm (φ0.315 in.)
MJ-6007F:	φ6.5 mm (φ0.256 in.)
MJ-6007S:	φ6.5 mm (φ0.256 in.)
- Punched scrap container capacity

MJ-6007E:	Approx. 1,000 sheets	80g/m ² (21.3 lb. Bond) paper or equivalent
MJ-6007N:	Approx. 1,000 sheets	80g/m ² (21.3 lb. Bond) paper or equivalent
MJ-6007F:	Approx. 1,000 sheets	80g/m ² (21.3 lb. Bond) paper or equivalent
MJ-6007S:	Approx. 1,000 sheets	80g/m ² (21.3 lb. Bond) paper or equivalent
- Dimensions W 126.3 x D 463.3 x H 174.1 (mm)
W 4.972 x D 18.240 x H 6.854 (inch)
- Weight Approx. 3.4kg (Approx. 7.50 lb.)
- Power supply DC24V±10%, DC5V±5% supplied from the Finisher

- Hole position

[1] 2-Hole (MJ-6007E)

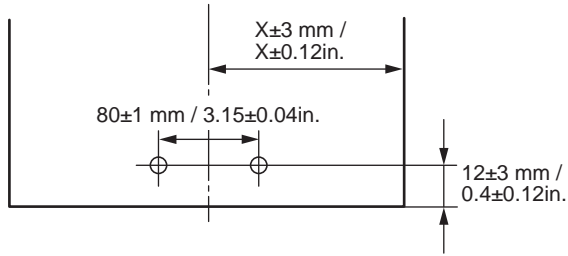


Fig. 1-4

[3] 4-Hole (MJ-6007F)

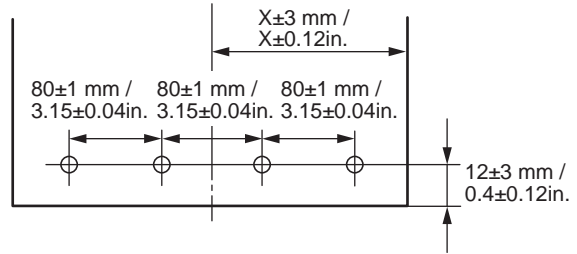


Fig. 1-5

[2] 2-Hole / 3-Hole (MJ-6007N)

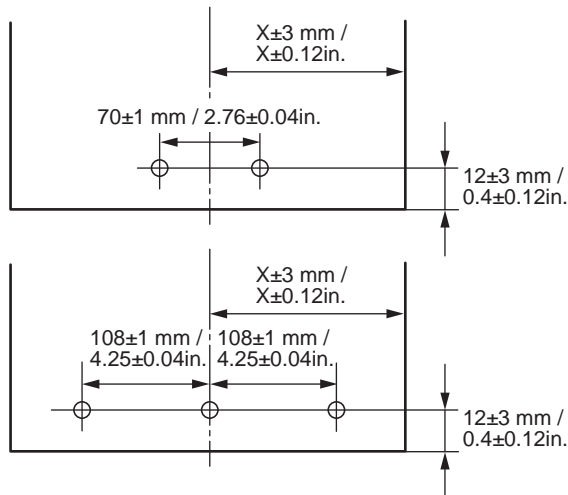


Fig. 1-6

[4] 4-Hole (MJ-6007S)

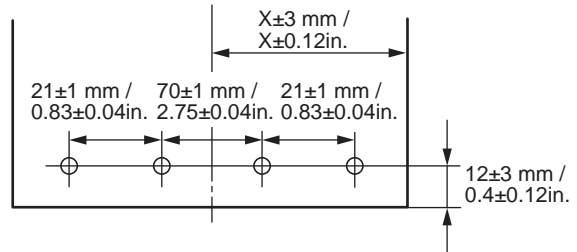


Fig. 1-7

X:

A3/A4	148.5 mm / 5.85 in.
B4/B5	128.5 mm / 5.06 in.
A4-R/FOLIO	105 mm / 4.13 in.
B5-R	91 mm / 3.58 in.
LD/LT	139.5 mm / 5.5 in.
LG/LT-R/13"LG/8.5"SQ	108 mm / 4.25 in.
COMPUTER	128.5 mm / 5.06 in.
8K/16K	135 mm / 5.31 in.
16K-R	97.5 mm / 3.84 in.

1.2 Accessory

1.2.1 Finisher Section

	MJ-1032	MJ-1036
Unpacking Instruction	1set	1set
Receiving section	1pc	1pc
Receiving section position fixing bracket	1pc	1pc
Rail	1pc	1pc
Rail fixing bracket	1pc	1pc
Rail stopper (feeding end)	1pc	1pc
Rail stopper (exit end)	1pc	1pc
Inner finisher installation cover	1pc	1pc
Inner finisher installation rear cover	1pc	1pc
Support bracket	1pc	1pc
Stabilizer	2pcs	2pcs
Harness cover	1pc	1pc
Converter board	1pc	-
Front cover	1pc	1pc
Connector cover	1pc	1pc
Equipment rear left cover	1pc	1pc
Screw: BID M4x5	1pc	-
Screw: BID M3x4	10pcs	12pcs
Screw: BID M3x17	1pc	-
Screw: TPAN M3x10	5pcs	3pcs
Binding band	1pc	1pc
Locking support	1pc	1pc
Clip	1pc	1pc

1.2.2 Hole Punch Unit

	MJ-6007
Unpacking Instruction	1set
Bridge transport unit	1pc
Finisher front cover	1pc
Finisher rear cover	1pc
Locking bracket	1pc
Drawer bracket	1pc
Screw: BID M3x4	8pcs
Harness clamp	1pc

1.3 Consumables

- Staple cartridge for the Finisher section
exclusive cartridge (STAPLE-2400: 5,000staples X 3 cartridges /box)

2. GENERAL DESCRIPTION

2.1 Main Components

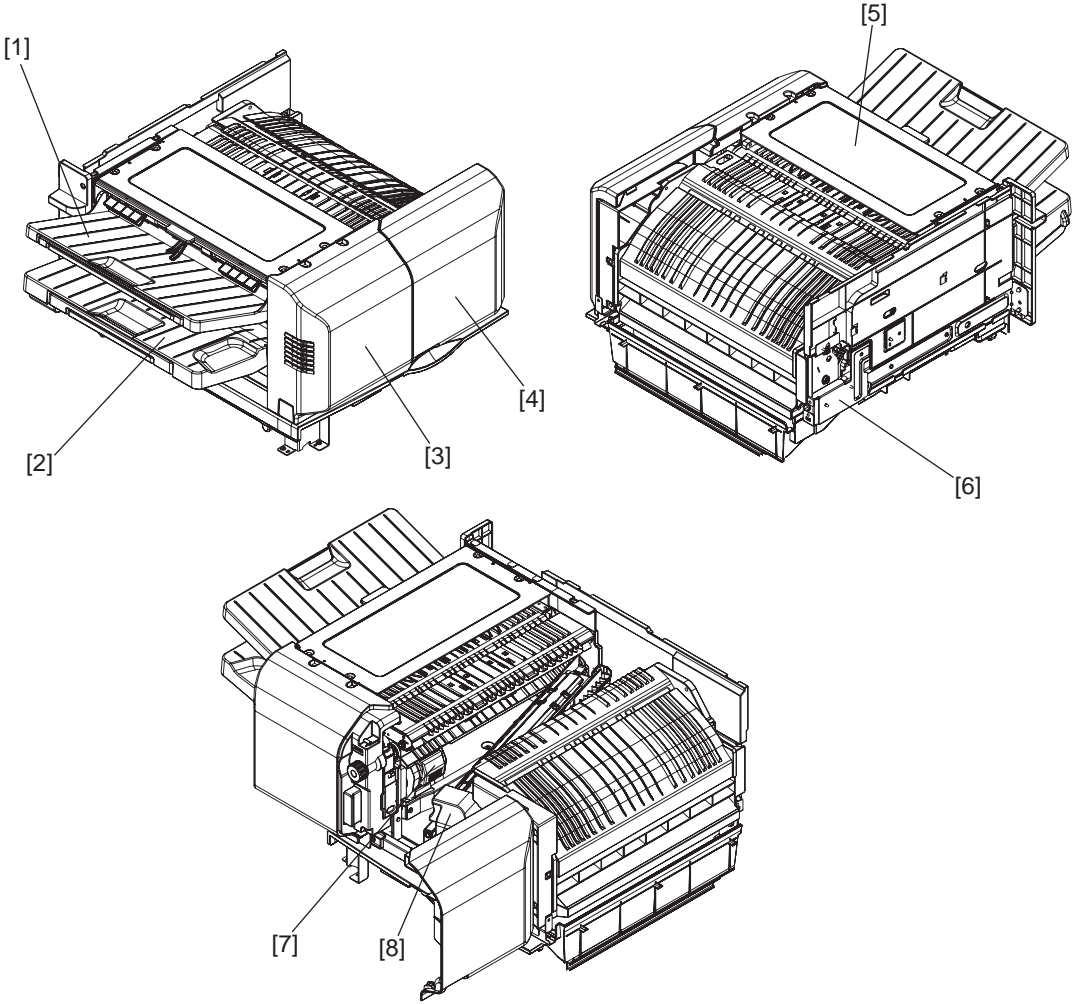


Fig. 2-1

1	Stationary tray	5	Upper cover
2	Movable tray	6	Rail
3	Front left cover	7	Staple unit
4	Front cover	8	Hole Punch Unit

2.2 Sectional View

The Finisher consists of three sections: a finisher section [1], a Hole Punch Unit [2], and a receiving section [3].

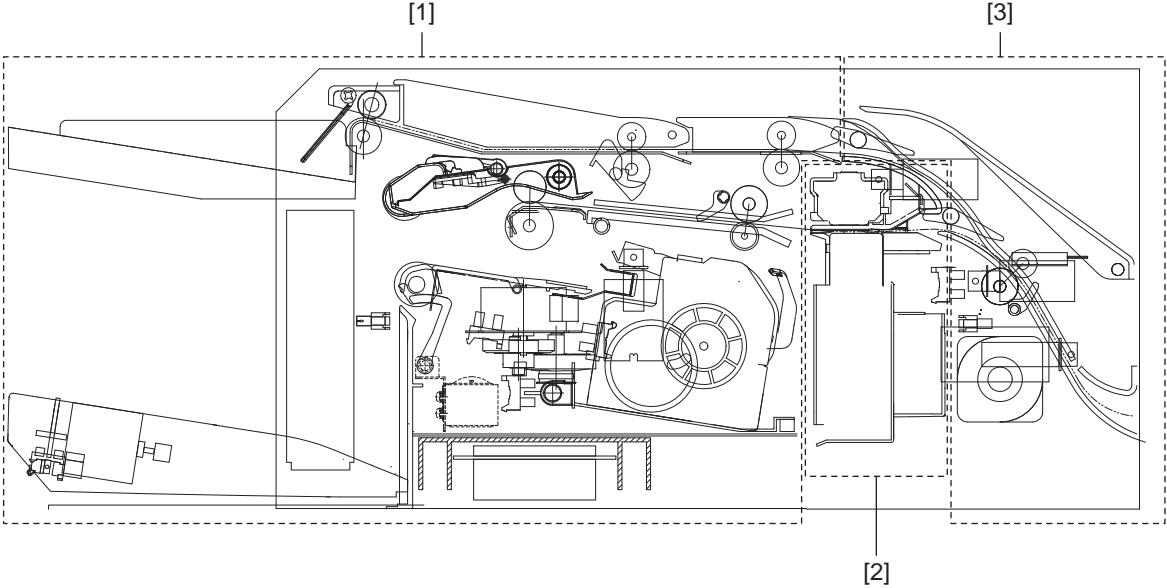


Fig. 2-2

[A] Center sectional view

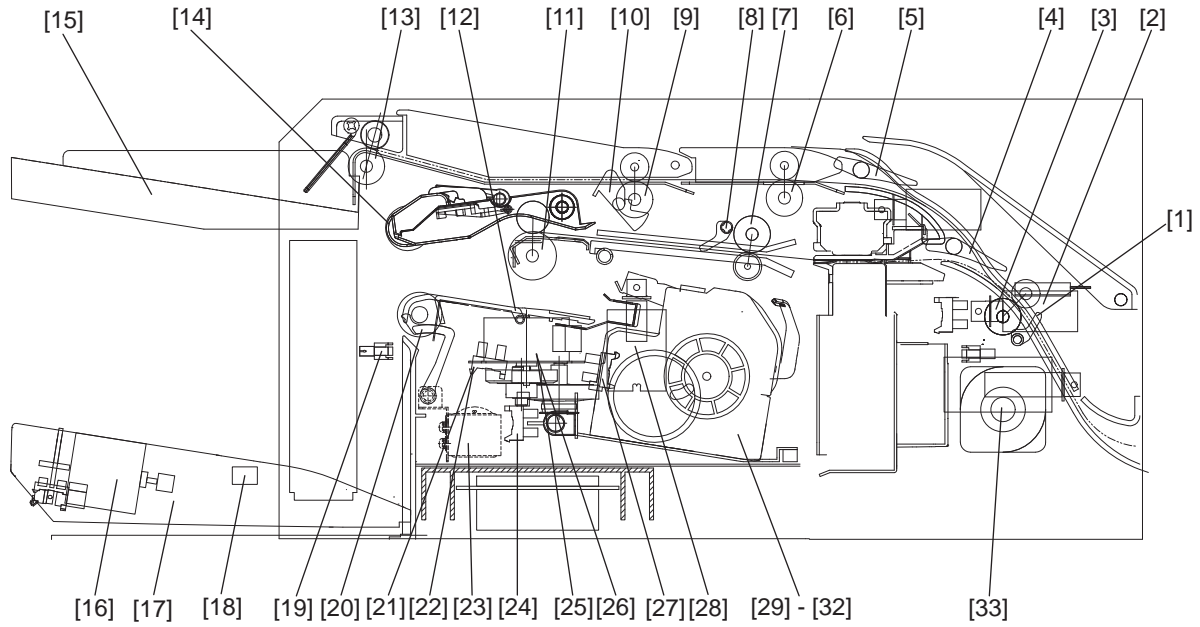


Fig. 2-3

1	Entrance path sensor	18	Movable tray paper exist sensor
2	1st flapper solenoid	19	Movable tray lower limit sensor
3	Entrance transport roller	20	Stack top detecting lever
4	1st flapper	21	Front alignment plate home position sensor
5	2nd flapper	22	Rear alignment plate home position sensor
6	1st sub-path roller	23	Stack top detection solenoid
7	Middle transport roller	24	Staple unit sliding home position sensor
8	Middle path sensor	25	Front alignment motor
9	2nd sub-path roller	26	Rear alignment motor
10	Sub-path sensor	27	Staple unit improper clinching prevention sensor
11	Exit roller	28	Trailing edge holding solenoid
12	Finishing tray sensor	29	Stapler motor
13	Sub-path exit roller	30	Staple unit clinching home position sensor
14	Stack exit roller	31	Stapling start position sensor
15	Stationary tray	32	Staple empty sensor
16	Movable tray shift motor	33	1st transport motor
17	Movable tray		

[B] Front sectional view

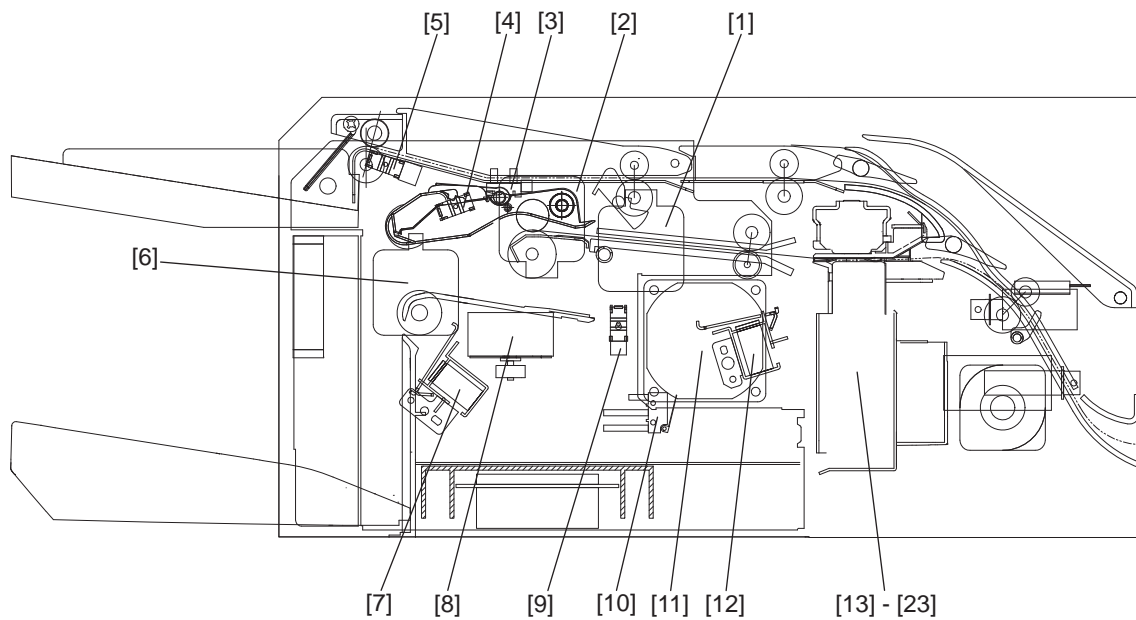


Fig. 2-4

1	2nd transport motor	13	Punch motor
2	Stack exit motor	14	Punch motor clock sensor
3	Sub-path opening/closing sensor	15	Punch unit rotational direction sensor (MJ-6007N only)
4	Stack exit roller home position sensor	16	Hole puncher home position sensor
5	Stationary tray full detection sensor	17	Punch waste full sensor
6	Stack exit roller shift motor	18	Punch unit sliding motor
7	Paddle solenoid	19	Paper detection sensor
8	Staple unit sliding motor	20	Punch sliding unit home position sensor
9	Knurled roller home position sensor	21	Punch unit setting sensor
10	Front cover switch	22	Punch unit destination detection sensor-1
11	1st fan motor	23	Punch unit destination detection sensor-2
12	Knurled roller shift solenoid		

2.3 Electric Parts Layout

2.3.1 Finisher unit

[A] Sensors and switches

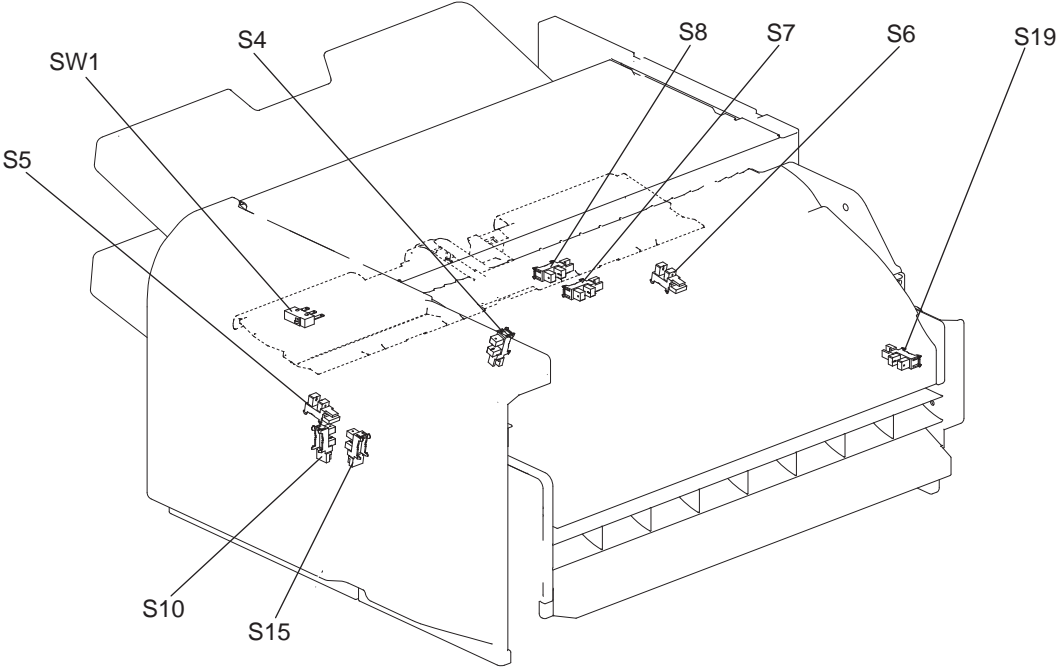


Fig. 2-5

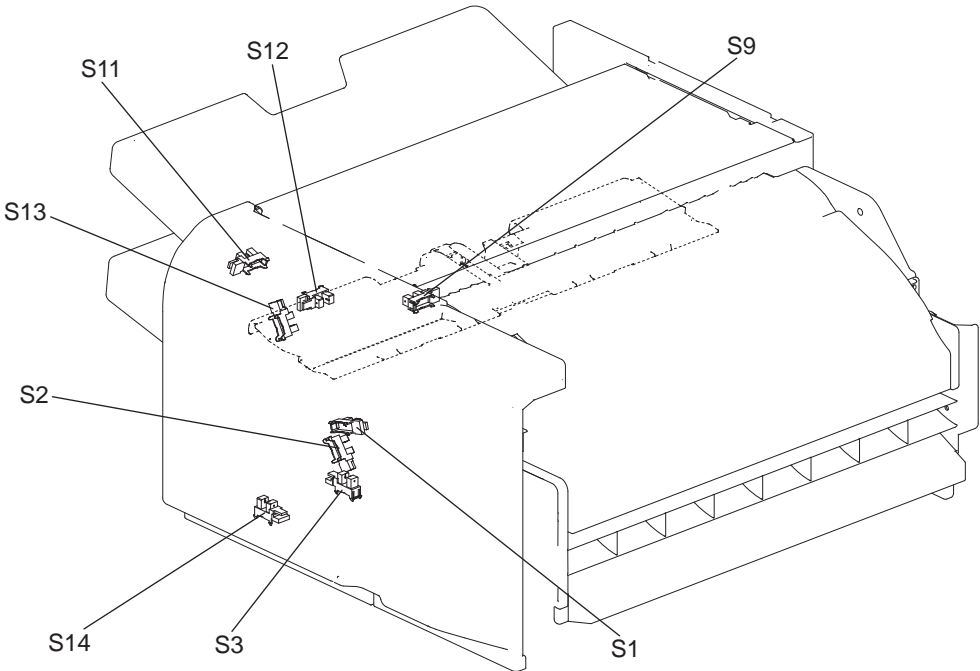


Fig. 2-6

[B] Motors and PC boards

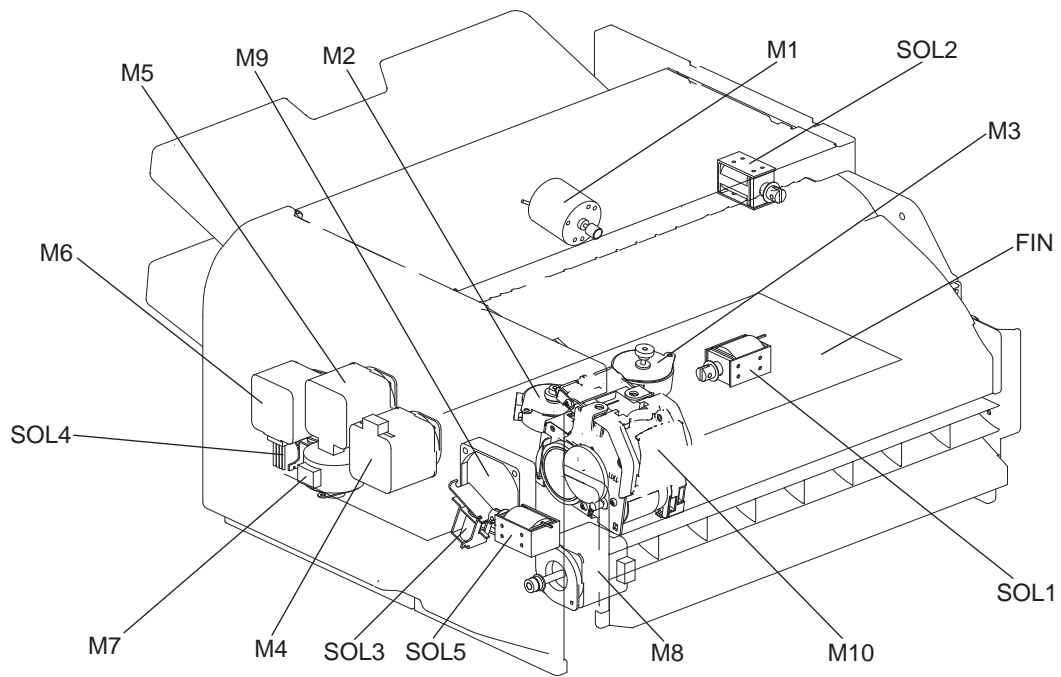


Fig. 2-7

2.3.2 Hole Punch Unit

[A] Sensors

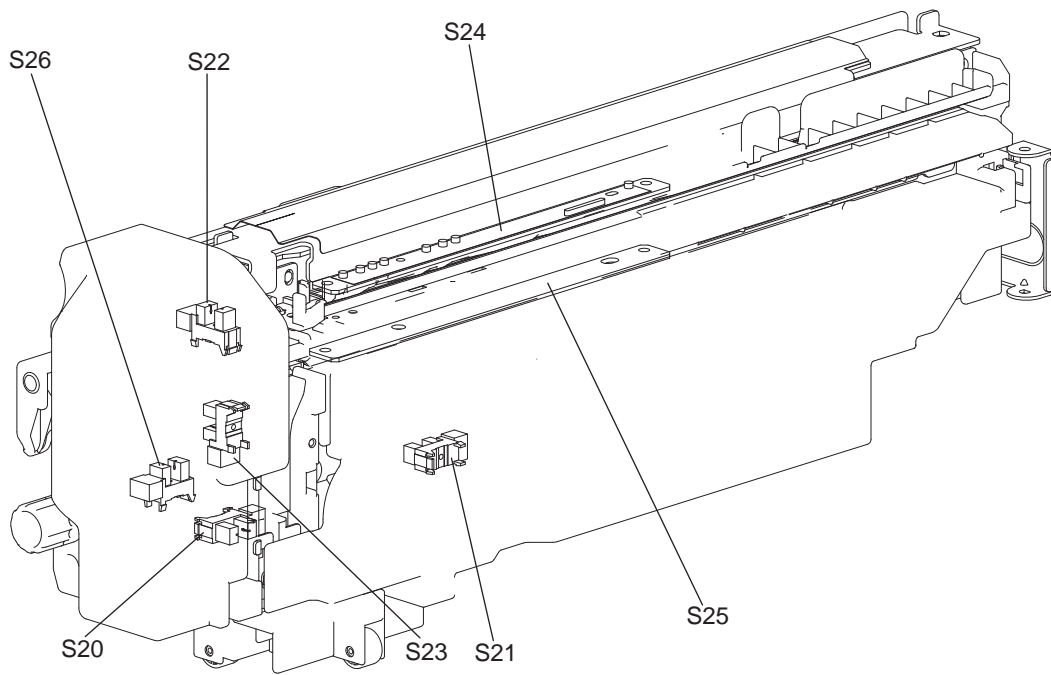


Fig. 2-8

[B] Motors and PC boards

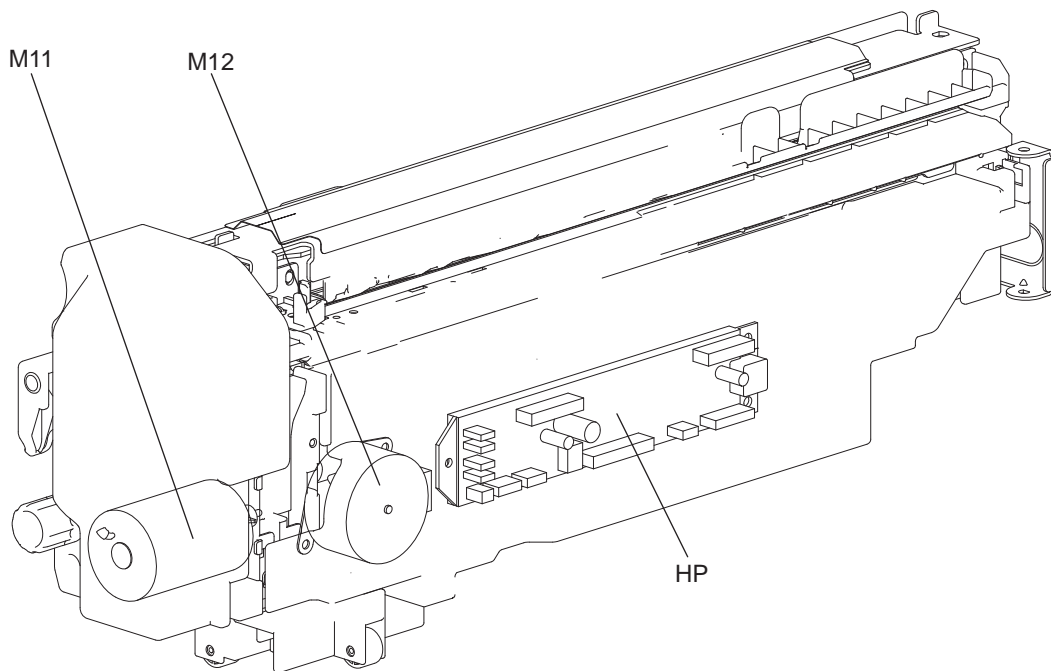














Fig. 2-9

2.4 Symbols and Functions of Various Components






1. Motors (Finisher unit)

Symbol	Name	Function	Remarks
M1	Movable tray shift motor	Lifts up/down the movable tray.	Refer to  P.2-6 "Fig. 2-7 ".
M2	Front alignment motor	Drives the front alignment plate.	Refer to  P.2-6 "Fig. 2-7 ".
M3	Rear alignment motor	Drives the rear alignment plate.	Refer to  P.2-6 "Fig. 2-7 ".
M4	2nd transport motor	Drives the middle transport roller.	Refer to  P.2-6 "Fig. 2-7 ".
M5	Stack exit motor	Drives the stack exit roller.	Refer to  P.2-6 "Fig. 2-7 ".
M6	Stack exit roller shift motor	Lifts up/down the stack exit roller.	Refer to  P.2-6 "Fig. 2-7 ".
M7	Staple unit sliding motor	Moves the staple unit front and rear side.	Refer to  P.2-6 "Fig. 2-7 ".
M8	1st transport motor	Drives the entrance transport roller.	Refer to  P.2-6 "Fig. 2-7 ".
M9	Fan motor	Drives the fan.	Refer to  P.2-6 "Fig. 2-7 ".
M10	Stapler motor	Drives the stapling mechanism.	Refer to  P.2-6 "Fig. 2-7 ".

















2. Motors (Hole Punch Unit)


Symbol	Name	Function	Remarks
M11	Punch motor	Drives the punching head to punch paper.	Refer to  P.2-7 "Fig. 2-9 ".
M12	Punch unit sliding motor	Drives the punching head to the front and rear sides.	Refer to  P.2-7 "Fig. 2-9 ".

3. Solenoids (Finisher unit)








Symbol	Name	Function	Remarks
SOL1	Stack top detection solenoid	Drives the stack top detecting lever.	Refer to  P.2-6 "Fig. 2-7 ".
SOL2	Trailing edge holding solenoid	Drives the trailing edge holder.	Refer to  P.2-6 "Fig. 2-7 ".
SOL3	Knurled roller shift solenoid	Lifts up/down the knurled roller.	Refer to  P.2-6 "Fig. 2-7 ".
SOL4	Paddle solenoid	Rotates the paddle.	Refer to  P.2-6 "Fig. 2-7 ".
SOL5	1st flapper solenoid	Drives the 1st flapper to switch the transport path.	Refer to  P.2-6 "Fig. 2-7 ".

4. Sensors and switches (Finisher unit)


Symbol	Name	Function	Remarks
S1	Stack top detection sensor-1	Detect the top of the paper stacked on the movable tray by the combined outputs of stack top detection sensor-1 and -2.	Refer to  P.2-5 "Fig. 2-6 ".
S2	Stack top detection sensor-2	Detect the top of the paper stacked on the movable tray by the combined outputs of Stack top detection sensor-1 and -2.	Refer to  P.2-5 "Fig. 2-6 ".
S3	Staple unit sliding home position sensor	Detects the home position of the staple unit when it is slid to the front and rear sides.	Refer to  P.2-5 "Fig. 2-6 ".
S4	Finishing tray sensor	Detects the presence/absence of paper on the finishing tray.	Refer to  P.2-5 "Fig. 2-5 ".
S5	Front alignment plate home position sensor	Detects the home position of the front alignment plate.	Refer to  P.2-5 "Fig. 2-5 ".
S6	Rear alignment plate home position sensor	Detects the home position of the rear alignment plate.	Refer to  P.2-5 "Fig. 2-5 ".
S7	Middle path sensor	Detects the presence/absence of paper in the middle transport roller section.	Refer to  P.2-5 "Fig. 2-5 ".
S8	Sub-path sensor	Detects the presence/absence of paper in the 2nd sub-path roller section.	Refer to  P.2-5 "Fig. 2-5 ".
S9	Movable tray paper exist sensor	Detects the presence/absence of paper on the movable tray.	Refer to  P.2-5 "Fig. 2-6 ".
S10	Knurled roller home position sensor	Detects the home position of the knurled roller.	Refer to  P.2-5 "Fig. 2-5 ".
S11	Stationary tray full detection sensor	Detects the full status of the stationary tray.	Refer to  P.2-5 "Fig. 2-6 ".
S12	Sub-path opening/closing sensor	Detects the opening/closing of the jam access upper cover.	Refer to  P.2-5 "Fig. 2-6 ".
S13	Stack exit roller home position sensor	Detects the home position of the stack exit roller.	Refer to  P.2-5 "Fig. 2-6 ".
S14	Movable tray lower limit sensor	Detects the lower limit of the movable area for the movable tray.	Refer to  P.2-5 "Fig. 2-6 ".
S15	Staple unit improper clinching prevention sensor	Detects the interference between the stapler unit clincher section and the finishing tray stopper.	Refer to  P.2-5 "Fig. 2-5 ".
S16	Staple unit clinching home position sensor	Detects the home position of the stapling operation. (Built-in sensor in the staple unit)	-
S17	Stapling start position sensor	Detects the top position of a staple. (Built-in sensor in the staple unit)	-
S18	Staple empty sensor	Detects the presence/absence of staples in a staple cartridge. (Built-in sensor the staple unit)	-
S19	Entrance path sensor	Detects the presence/absence of paper at the entrance of the Finisher.	Refer to  P.2-5 "Fig. 2-5 ".

Symbol	Name	Function	Remarks
SW1	Front cover switch	Cuts off the drive current (+24V) when the opening status of the front cover is detected.	Refer to  P.2-5 "Fig. 2-5 ".


5. Sensors and switches (Hole Punch Unit)

Symbol	Name	Function	Remarks
S20	Punch motor clock sensor	Detects timing for stopping the punch motor.	Refer to  P.2-7 "Fig. 2-8 ".
S21	Punch waste full sensor	Detects the full status of punch waste case.	Refer to  P.2-7 "Fig. 2-8 ".
S22	Rear punch shaft home position sensor	Detects the home position of the hole puncher.	Refer to  P.2-7 "Fig. 2-8 ".
S23	Punch sliding unit home position sensor	Detects the home position of the punch sliding unit.	Refer to  P.2-7 "Fig. 2-8 ".
S24	Paper detection sensor (light-receiving)	Detects the trailing edge of paper. (Light-receiving section)	Refer to  P.2-7 "Fig. 2-8 ".
S25	Paper detection sensor (light-emitting)	Detects the side edges of paper. (Light-emitting section)	Refer to  P.2-7 "Fig. 2-8 ".
S26	Punch shaft home position sensor (MJ-6007N only)	Detects the home position of the 3-hole puncher.	Refer to  P.2-7 "Fig. 2-8 ".

6. PC board (Finisher unit)

Symbol	Name	Function	Remarks
FIN	Finisher control PC board	Controls the Finisher.	Refer to  P.2-6 "Fig. 2-7 ".

7. PC board (Hole Punch Unit)

Symbol	Name	Function	Remarks
HP	Hole punch control PC board	Controls the Hole Punch Unit.	Refer to  P.2-7 "Fig. 2-9 ".

2.5 Diagram of Signal Blocks

The operational sequence of the Finisher is controlled by the finisher control PC board (FIN). A 32-bit CPU (with a flash memory) is embedded in the finisher control PC board (FIN). This board controls paper feeding and serial communication between the Finisher and the equipment or the Hole Punch Unit.

The major functions of the ICs mounted on the finisher control PC board (FIN) are as follows:

- IC1 (CPU)
Controls the operational sequence.
Communicates with the equipment and other options.
Incorporates sequence programs.
- IC23 (EEPROM)
Backs up adjustment values.

Figure 2-10 shows the flow of signals between the Finisher and the Hole Punch Unit.

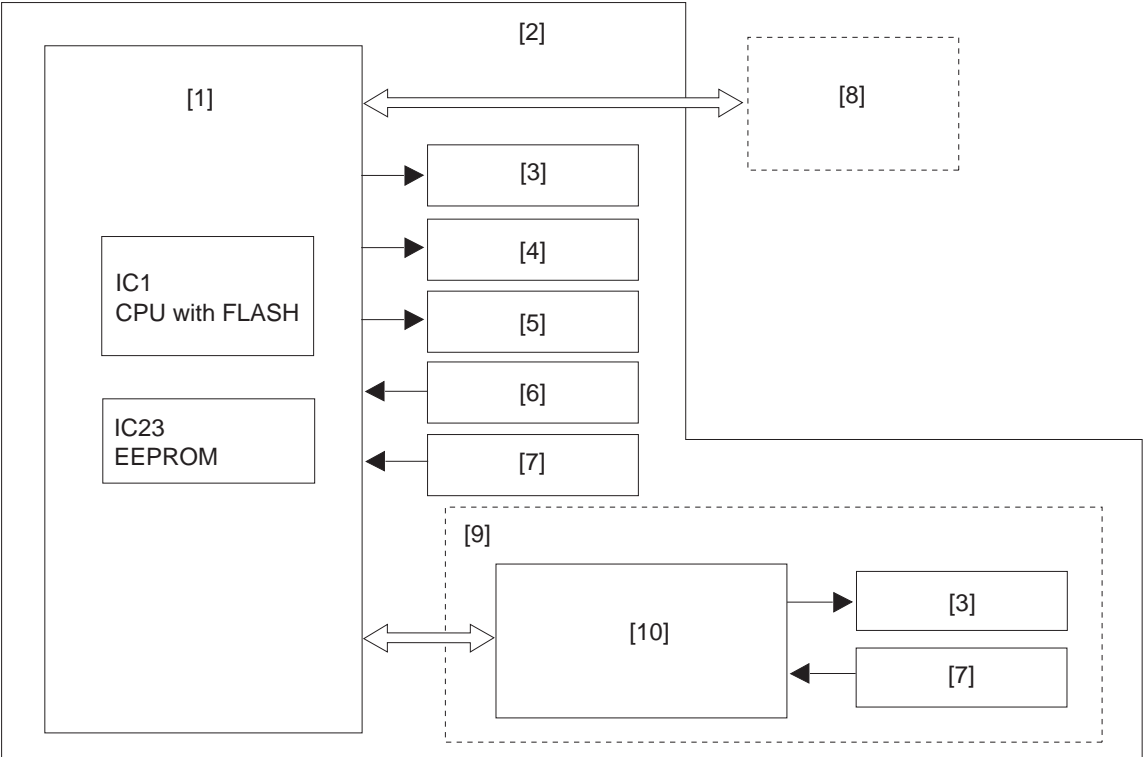


Fig. 2-10

- | | |
|-------------------------------------|---------------------------------------|
| [1] Finisher control PC board (FIN) | [6] Switches |
| [2] Finisher section | [7] Sensors |
| [3] Motors | [8] Converter board (CNV) |
| [4] Solenoids | [9] Hole Punch Unit |
| [5] Fans | [10] Hole punch control PC board (HP) |

3. DESCRIPTION OF OPERATIONS

3.1 Basic Operations

3.1.1 Specifications

The Finisher exits paper transported from the equipment. Paper exit modes available are; the simple stack (straight-through paper exit) mode, job offset mode* and staple stack mode.

The Hole Punch Unit is designed to be installed in the feeding section of the Finisher in order to punch a stack of paper transported from the equipment.

The operations noted above are controlled by the finisher control PC board (FIN) in accordance with commands from the equipment.

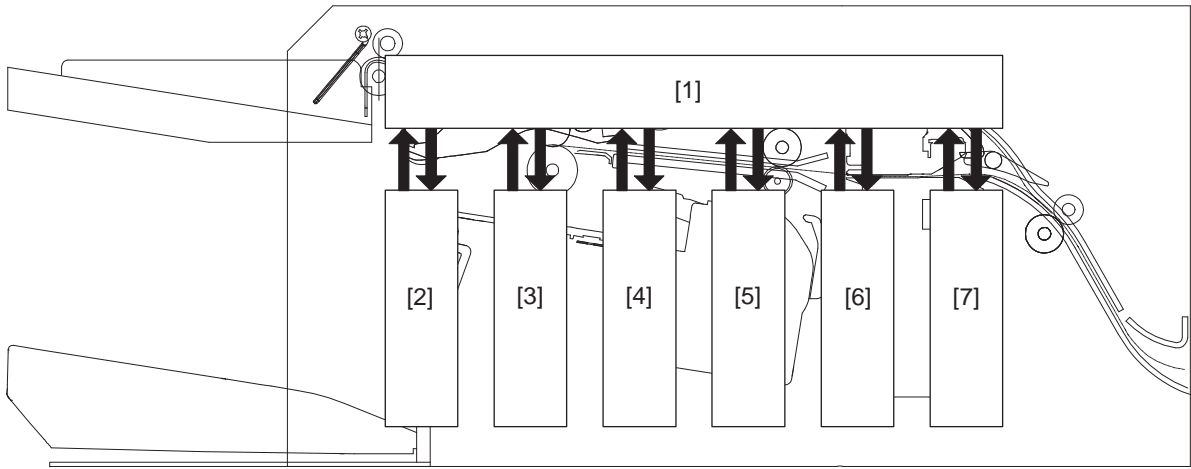


Fig. 3-1

- [1] Control system
- [2] Transport drive system
- [3] Alignment drive system
- [4] Staple unit drive system
- [5] Paper exit drive system
- [6] Tray drive system
- [7] Hole Punch Unit drive system

* "Job offset" refers to an operation by which one stack of paper is slid forward and then the next stack is slid backward alternately before being exited so that the exited stacks will be easily sorted.

3.1.2 Transport drive system - General description

The Finisher selects an appropriate exiting mode among the simple stack (straight-through paper exit) mode, job offset mode and staple stack mode in accordance with commands from the equipment, and then exits the finished paper onto a tray.

If the Hole Punch Unit is installed, the Finisher punches a stack of paper and exits it onto the movable tray.

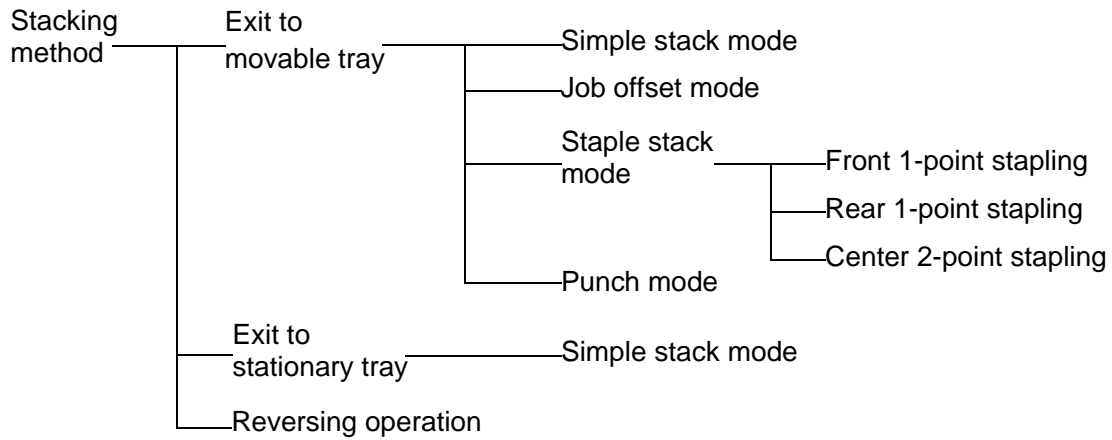


Fig. 3-2

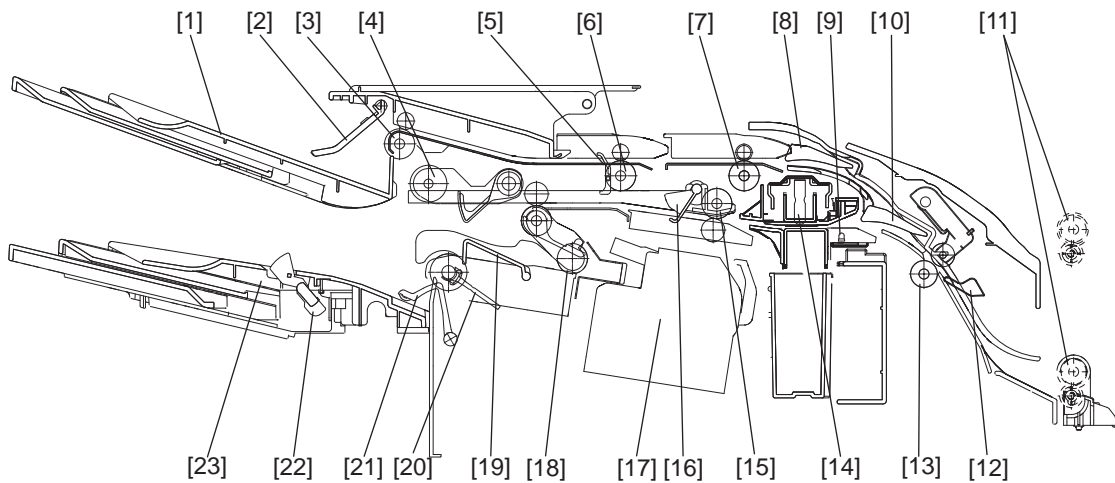


Fig. 3-3

1	Stationary tray	13	Entrance transport roller
2	Stationary tray full detection sensor	14	Hole puncher
3	Sub-path exit roller	15	Middle transport roller
4	Stack exit roller	16	Middle path sensor
5	Sub-path sensor	17	Staple unit
6	2nd sub-path roller	18	Knurled roller
7	1st sub-path roller	19	Finishing tray sensor
8	2nd flapper	20	Paddle
9	Punch waste full sensor	21	Stack top detecting lever
10	1st flapper	22	Movable tray paper exist sensor
11	Exit roller of equipment	23	Movable tray
12	Entrance path sensor		

3.1.3 Exit to movable tray

[A] Simple stack (straight-through paper exit) mode

- (1) The 1st transport motor (M8) and the 2nd transport motor (M4) are driven at the same as the exiting speed of the equipment so that the Finisher can receive paper [1] exited from the equipment.

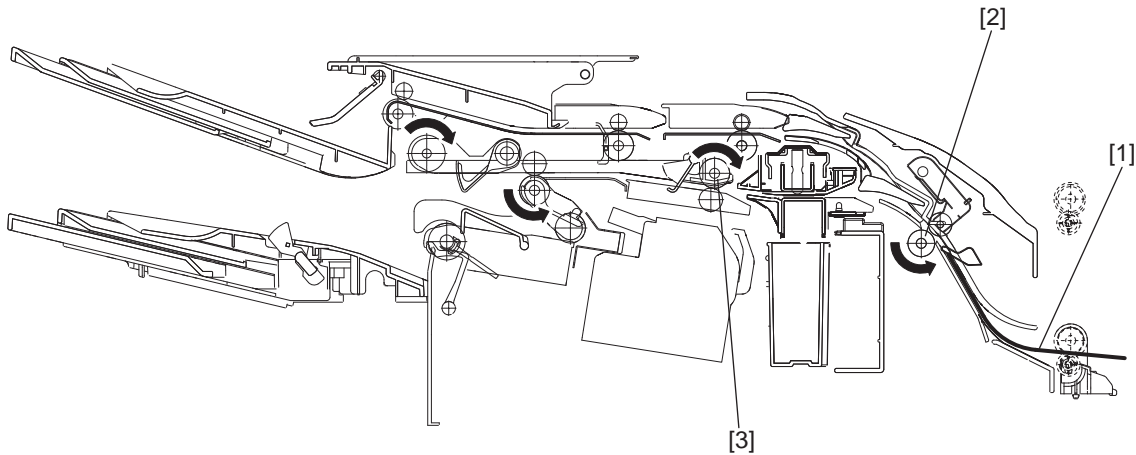


Fig. 3-4

[2] Entrance transport roller [3] Middle transport roller

- (2) After the middle path sensor (S7) [4] is turned ON and the paper [1] is transported to the specified position, the speeds of the 1st transport motor (M8) and the 2nd transport motor (M4) are changed to the same as the copying speed of the equipment. Then the stack exit roller [5] is lowered while it is being driven to the paper exiting direction after the leading edge of the paper [1] has passed through the specified position.

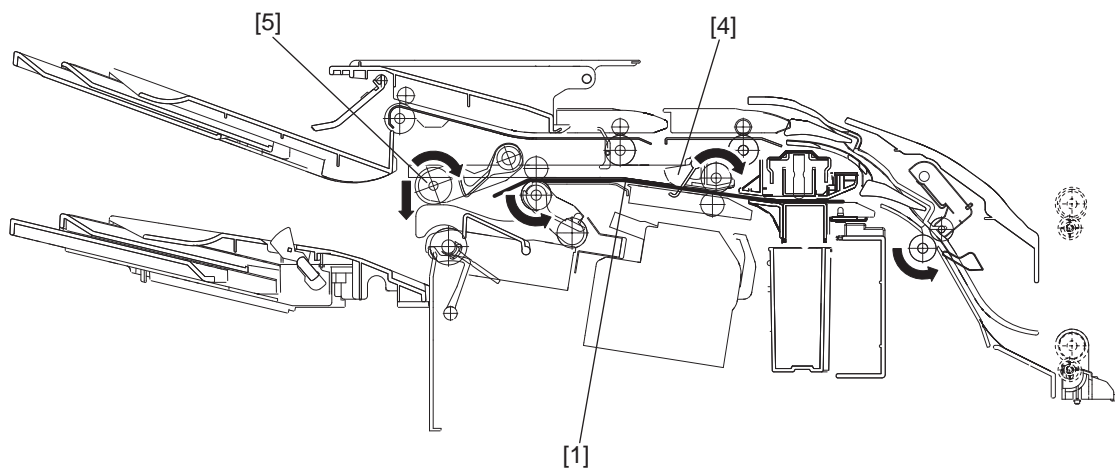


Fig. 3-5

- (3) The speed of the 1st transport motor (M8) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [1] has passed through the entrance transport roller [2].
- (4) The speed of the 2nd transport motor (M4) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [1] has passed through the exit roller [6].
- (5) The stack exit motor (M5) is driven at the same speed as the copying speed of the equipment until the trailing edge of the paper [1] has passed through the stack exit roller [5]. Also the stack top detecting lever is stored.

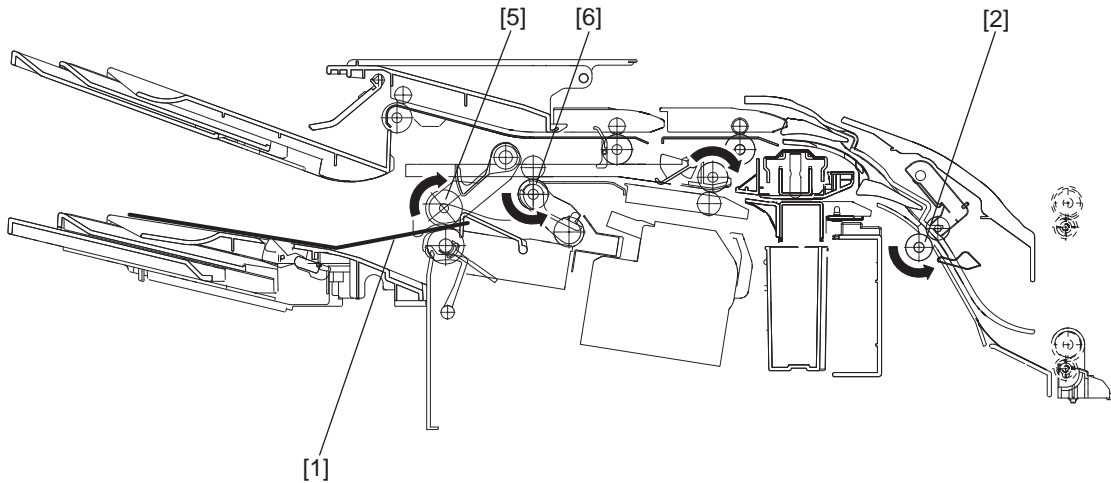


Fig. 3-6

- (6) The stack exit roller [5] is raised after the trailing edge of the paper [1] has passed through this roller.
- (7) After a specified period of time has passed from the start of the raising of the stack exit roller [5], the paddle [7] is rotated to scrape together paper [1] falling onto the movable tray [8]. The stack exit motor (M5) is stopped after the one rotation of the paddle [7].

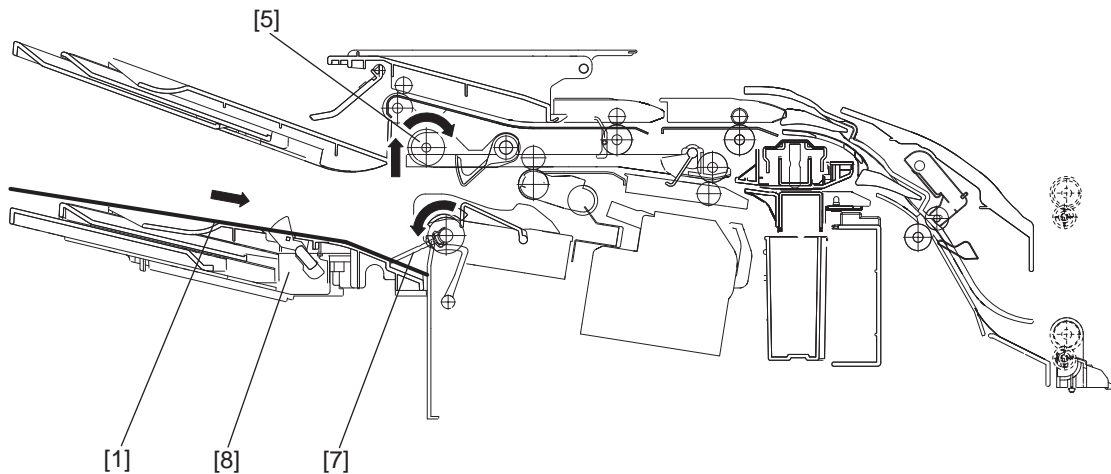


Fig. 3-7

- (8) The stack top detecting lever [9] is ejected and the movable tray [8] is moved in accordance with the stack height.

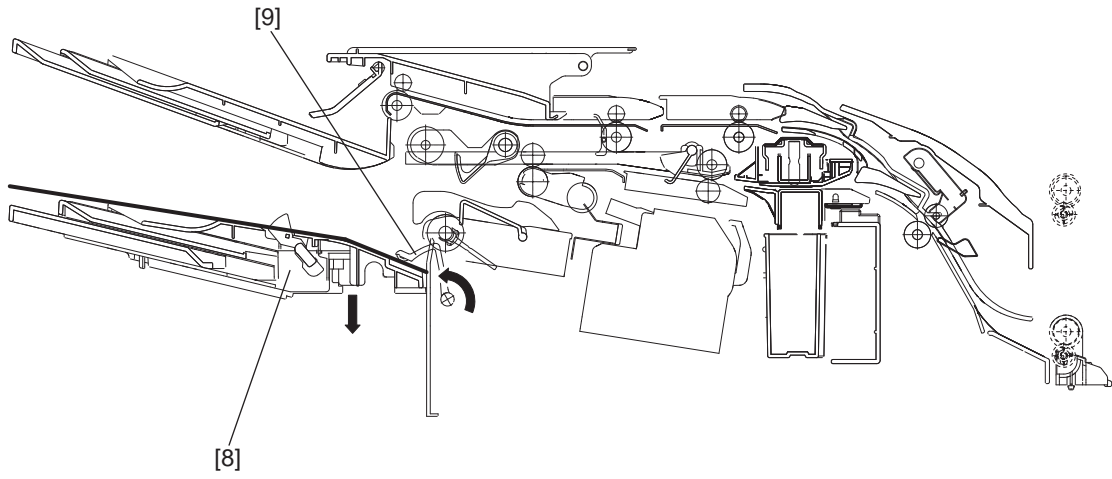


Fig. 3-8

[B] Job offset mode

- (1) The 1st transport motor (M8) and the 2nd transport motor (M4) are driven at the same as the exiting speed of the equipment so that the Finisher can receive paper [1] exited from the equipment.

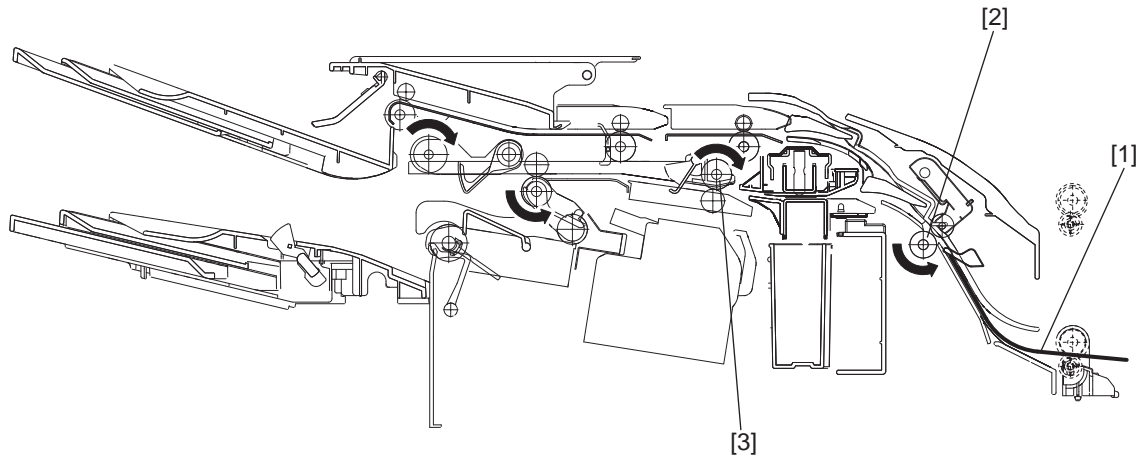


Fig. 3-9

[2] Entrance transport roller [3] Middle transport roller

- (2) After the middle path sensor (S7) [4] is turned ON and the paper [1] is transported to the specified position, the speeds of the 1st transport motor (M8) and the 2nd transport motor (M4) are changed to the same as the copying speed of the equipment. Also after the leading edge of the paper [1] has passed through the specified position, the alignment plate is moved to a point where the paper [1] is received. Then the stack exit roller [5] is lowered while it is being driven to the paper exiting direction.

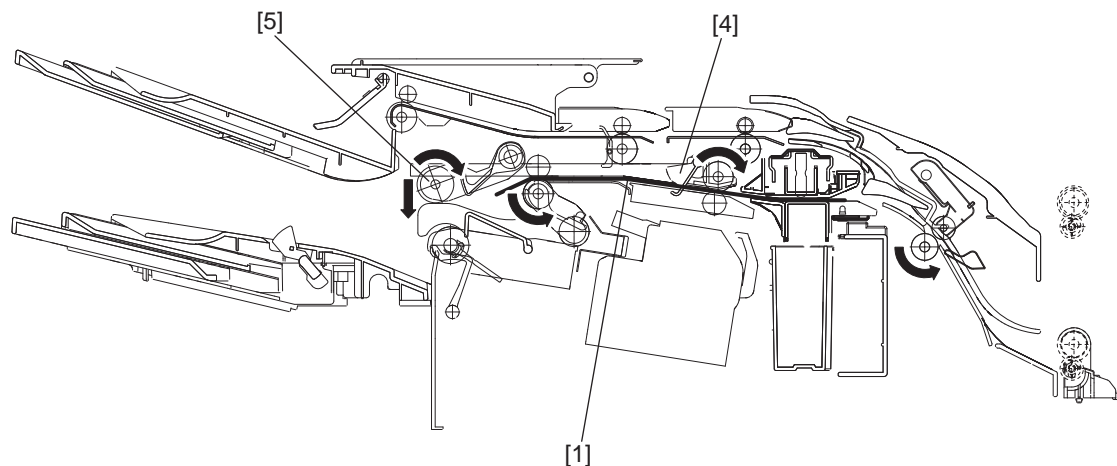


Fig. 3-10

- (3) The speed of the 1st transport motor (M8) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [1] has passed through the entrance transport roller [2].
- (4) The speed of the 2nd transport motor (M4) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [1] has passed through the exit roller [6]. Also the stack exit motor (M5) is stopped.
- (5) The stack exit motor (M5) is driven to the scraping direction to scrape paper [1] together into the finishing tray [7].

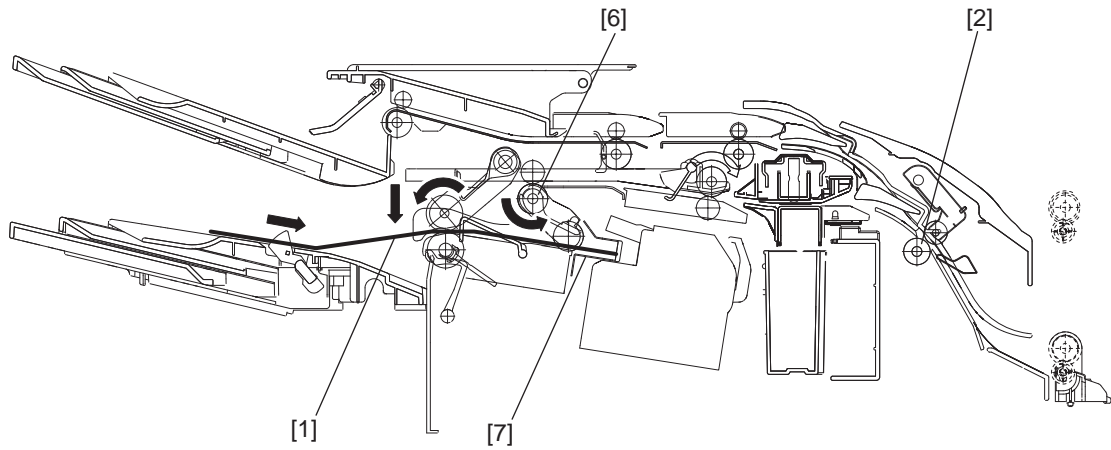


Fig. 3-11

- (6) The stack exit roller [5] is raised after the trailing edge of the paper [1] has reached the knurled roller [8].
- (7) After a specified period of time has passed from the start of the raising of the stack exit roller [5], the paper [1] is moved to the specified offsetting position and then the sheets of the paper [1] are aligned as a stack by the alignment plate [7].
- (8) Movement of steps 2 to 7 above is repeated until the number of stacks [1] on the finishing tray [7] reaches the specified number or three*.

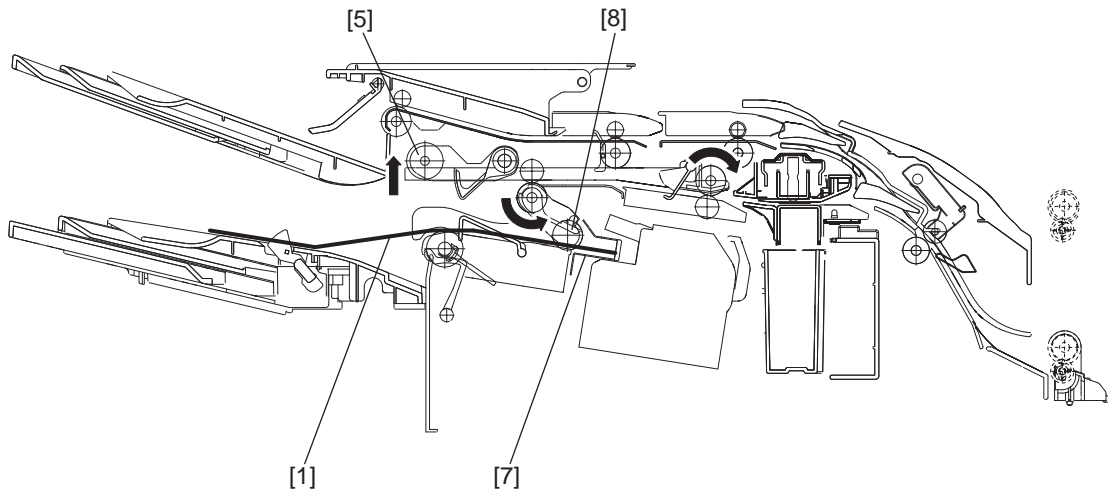


Fig. 3-12

- * If the remainder is one after the specified number is divided by three, the last four sheets of paper are exited as one stack.
 E.g.: If the specified number is ten, three sheets are exited as one stack, then the next three sheets are exited as one stack, and the last four sheets are exited as one stack (not three stacks of three sheets and one extra sheet).

(9) After the number of stacks [1] on the finishing tray [7] has reached the specified number or three, the stack exit roller [5] is lowered*. Also the alignment plate is escaped to the outside.

* The alignment plate may be escaped before the stack exit roller is lowered depending on the paper width.

(10) The stack exit roller [5] is moved to the paper exiting direction while it keeps nipping the stack [1].

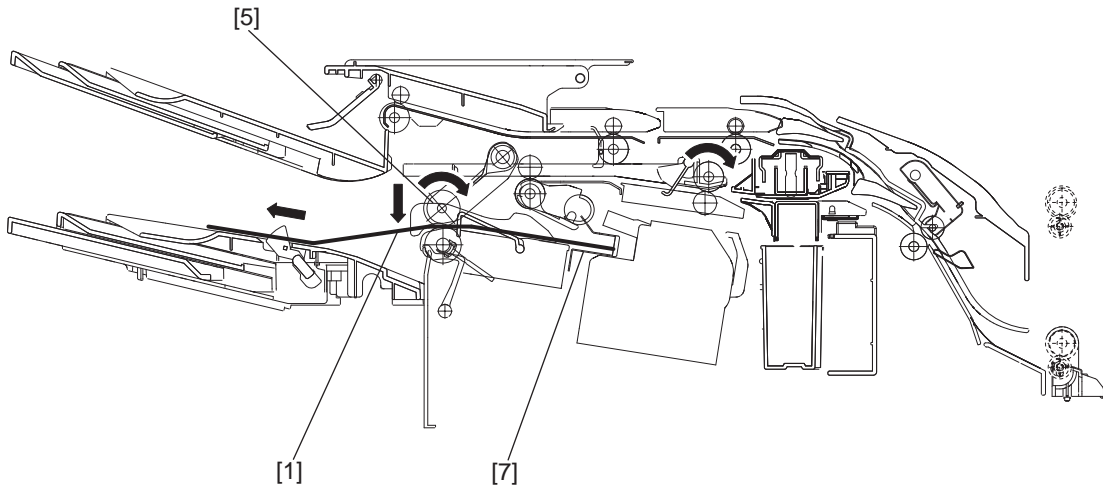


Fig. 3-13

(11) After the trailing edge of the paper [1] has passed through the stack exit roller [5], this roller is raised.

(12) After a specified period of time has passed from the start of the raising of the stack exit roller [5], the paddle [9] is rotated to scrape together paper [1] falling onto the movable tray [10]. The stack exit motor (M5) is stopped after the one rotation of the paddle [9].

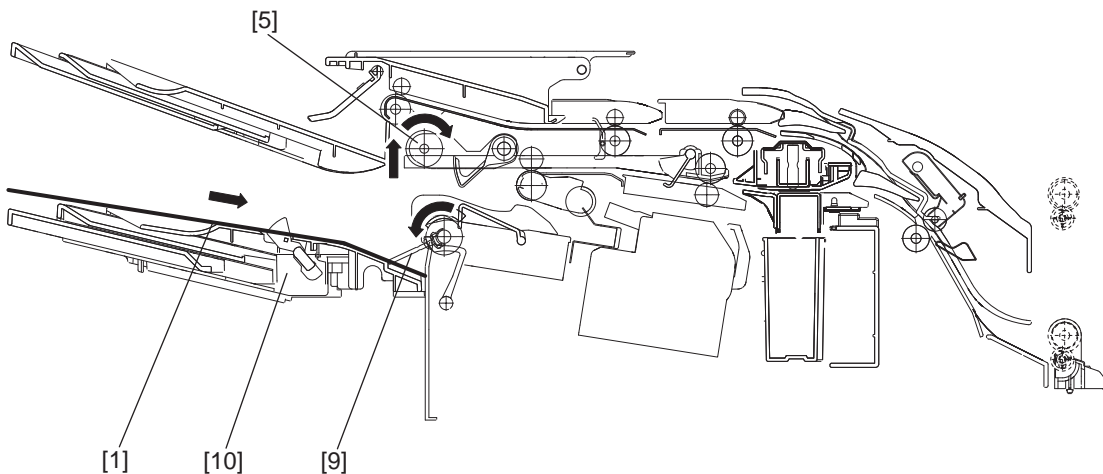


Fig. 3-14

(13) The stack top detecting lever [11] is ejected and the movable tray [10] is moved in accordance with the stack height.

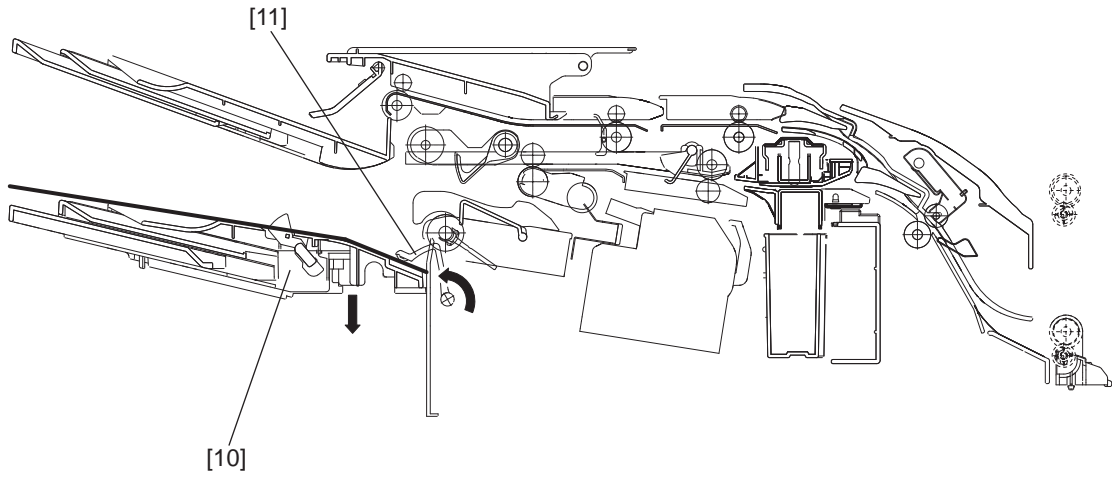


Fig. 3-15

[C] Staple stack mode

- (1) The 1st transport motor (M8) and the 2nd transport motor (M4) are driven at the same as the exiting speed of the equipment so that the Finisher can receive paper [1] exited from the equipment.

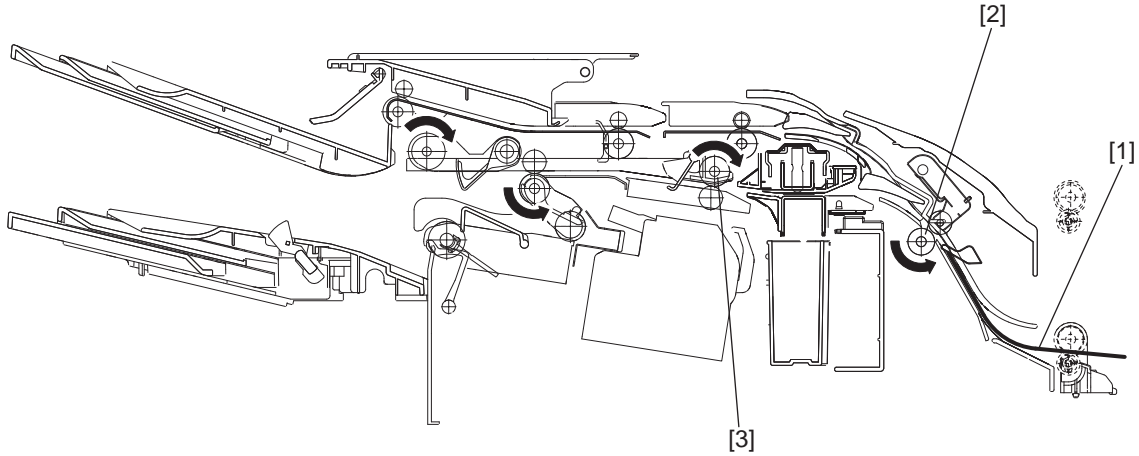


Fig. 3-16

[2] Entrance transport roller [3] Middle transport roller

- (2) After the middle path sensor (S7) [4] is turned ON and the paper [1] is transported to the specified position, the speeds of the 1st transport motor (M8) and the 2nd transport motor (M4) are changed to the same as the copying speed of the equipment. Also after the leading edge of the paper [1] has passed through the specified position, the alignment plate is moved to a point where the paper [1] is received. Then the stack exit roller [5] is lowered while it is being driven to the paper exiting direction.

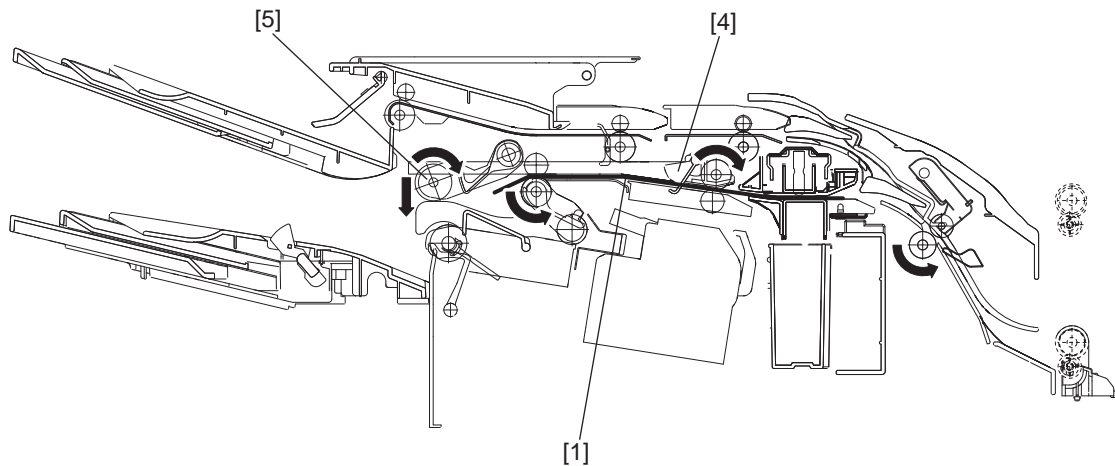


Fig. 3-17

- (3) The speed of the 1st transport motor (M8) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [1] has passed through the entrance transport roller [2].
- (4) The speed of the 2nd transport motor (M4) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [1] has passed through the exit roller [6]. Also the stack exit motor (M5) is stopped.
- (5) The stack exit motor (M5) is driven to the scraping direction to scrape paper [1] together into the finishing tray [7].

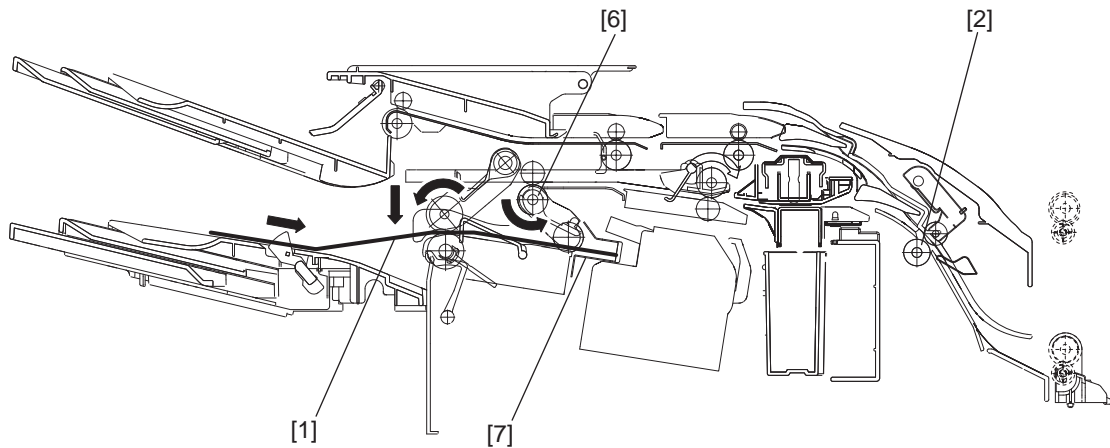


Fig. 3-18

- (6) The stack exit roller [5] is raised after the trailing edge of the paper [1] has reached the knurled roller [8].
- (7) After a specified period of time has passed from the start of the raising of the stack exit roller [5], the paper [1] is moved to the specified offsetting position and then the sheets of the paper [1] are aligned as a stack by the alignment plate.
- (8) Movement of steps 2 to 7 above is repeated until the number of stacks [1] on the finishing tray [7] reaches the specified number.

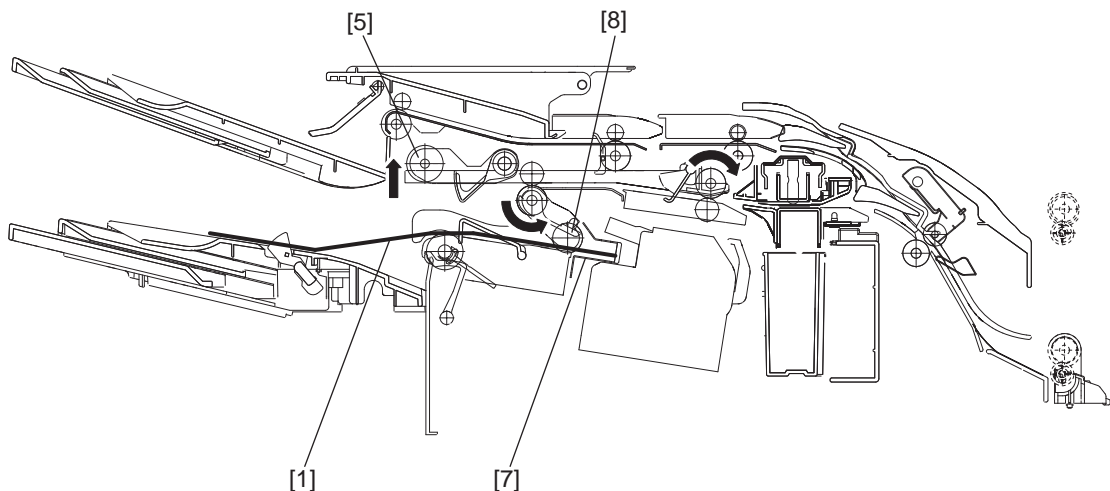


Fig. 3-19

(9) After the number of stacks [1] on the finishing tray [7] has reached the specified number, the stack exit roller [5] is lowered*. Also the alignment plate is escaped to the outside.

* The alignment plate may be escaped before the stack exit roller is lowered depending on the paper width.

(10) After the lowering of the stack exit roller [5] is finished, stapling is performed. In case of 2-point stapling, the staple unit [9] is moved to the second stapling position after stapling at the first position is finished.

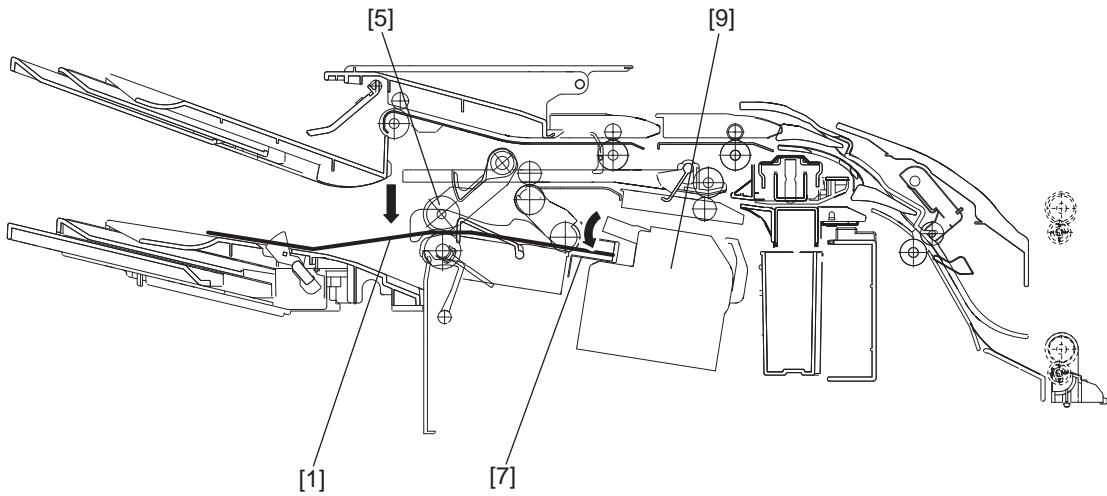


Fig. 3-20

(11) The stack exit roller [5] is moved to the paper exiting direction while it keeps nipping the stack [1].

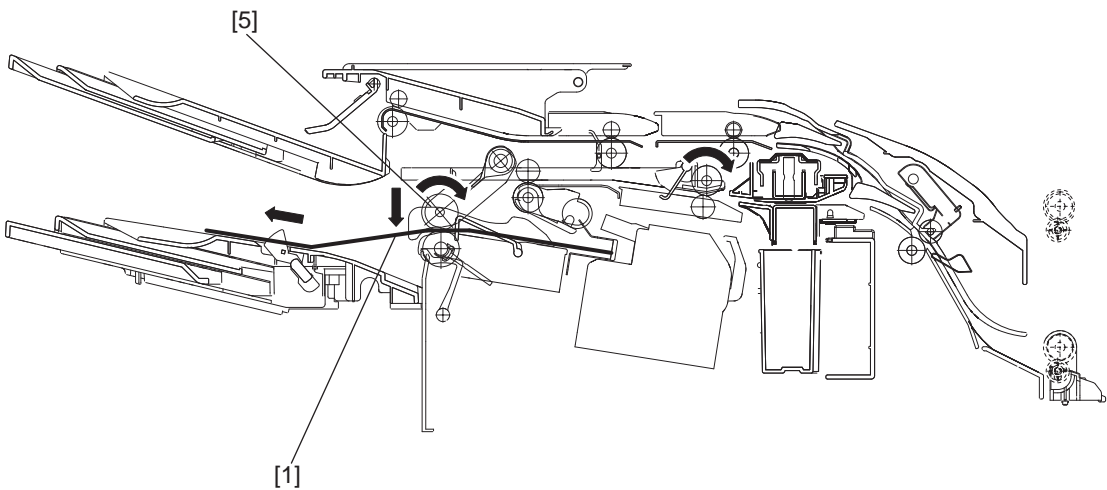


Fig. 3-21

- (12) After the trailing edge of the paper [1] has passed through the stack exit roller [5], this roller is raised.
- (13) After a specified period of time has passed from the start of the raising of the stack exit roller [5], the paddle [10] is rotated to scrape together paper [1] falling onto the movable tray [11]. The stack exit motor (M5) is stopped after the one rotation of the paddle [10].

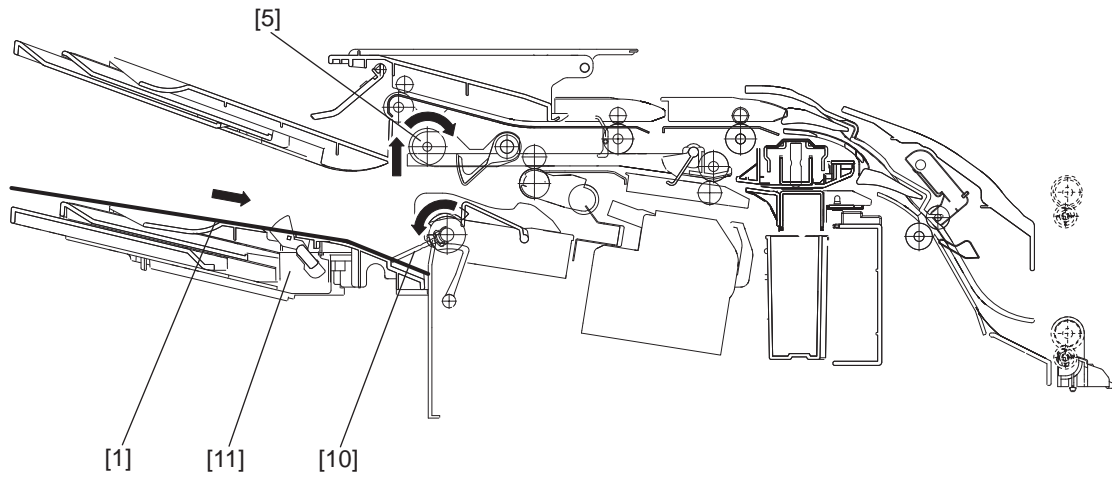


Fig. 3-22

- (14) The stack top detecting lever [12] is ejected and the movable tray [11] is moved in accordance with the stack height.

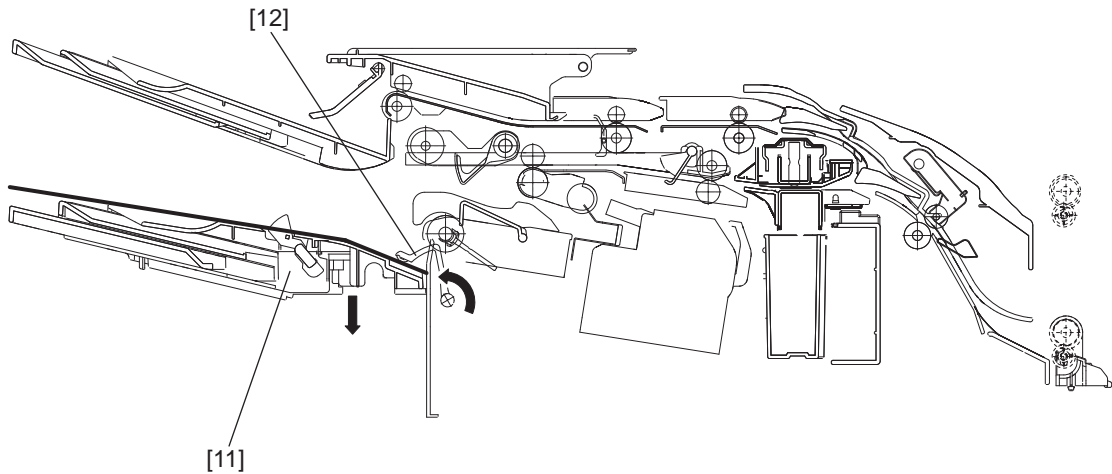


Fig. 3-23

3.1.4 Exit to stationary tray

[A] Simple stack mode

- (1) The 1st flapper solenoid (SOL5) pulls the 1st flapper [1] in order to switch the transport path.

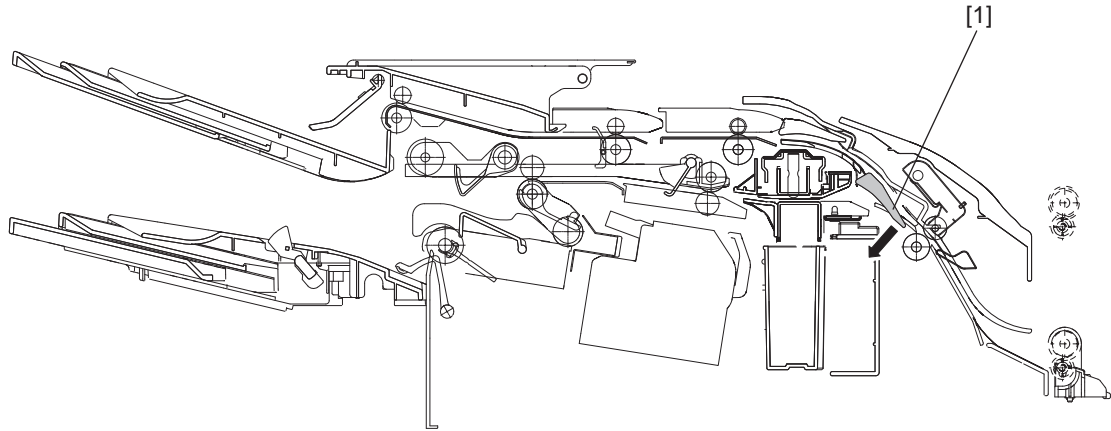


Fig. 3-24

- (2) The 1st transport motor (M8) and the 2nd transport motor (M4) are driven at the same as the exiting speed of the equipment so that the Finisher can receive paper [2] exited from the equipment.

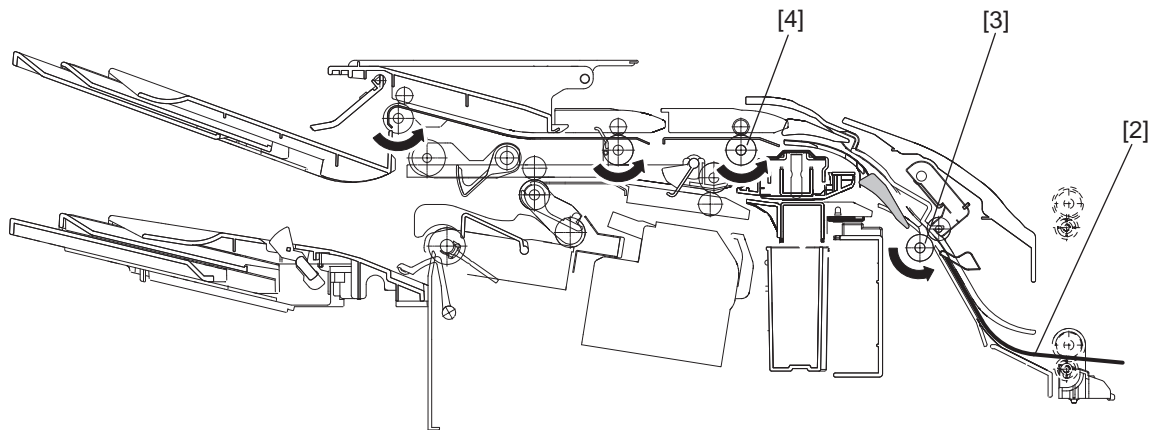


Fig. 3-25

[3] Entrance transport roller [4] 1st sub-path roller

- (3) After the trailing edge of paper [2] has passed through the last roller in the equipment, the speeds of the 1st transport motor (M8) and the 2nd transport motor (M4) are changed to the same as the copying speed of the equipment.
- (4) The speed of the 1st transport motor (M8) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [2] has passed through the entrance transport roller [3].

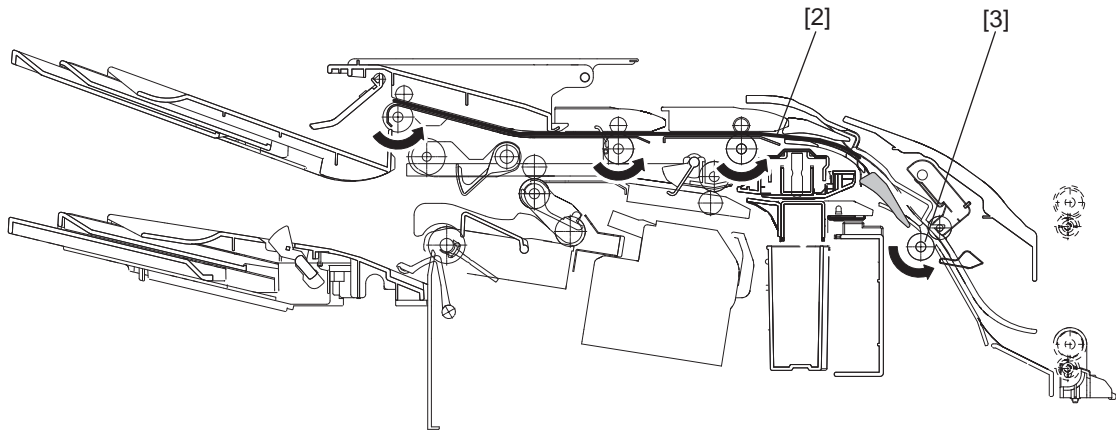


Fig. 3-26

- (5) The stack exit motor (M5) is driven at the same as the copying speed of the equipment until the trailing edge of the paper [2] has passed through the sub-path exit roller [5].

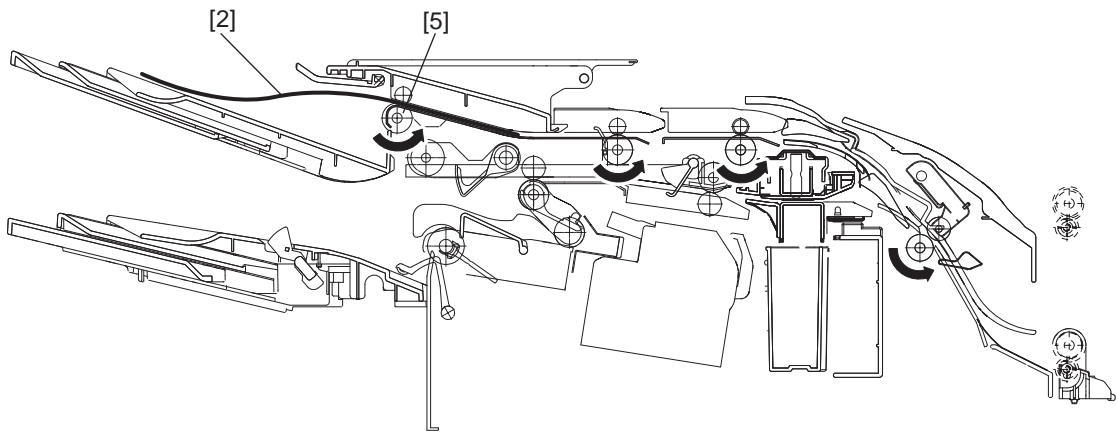


Fig. 3-27

- (6) The speed of the 2nd transport motor (M4) is changed to the same as the exiting speed of the equipment after the trailing edge of the paper [2] has passed through the sub-path exit roller [5].

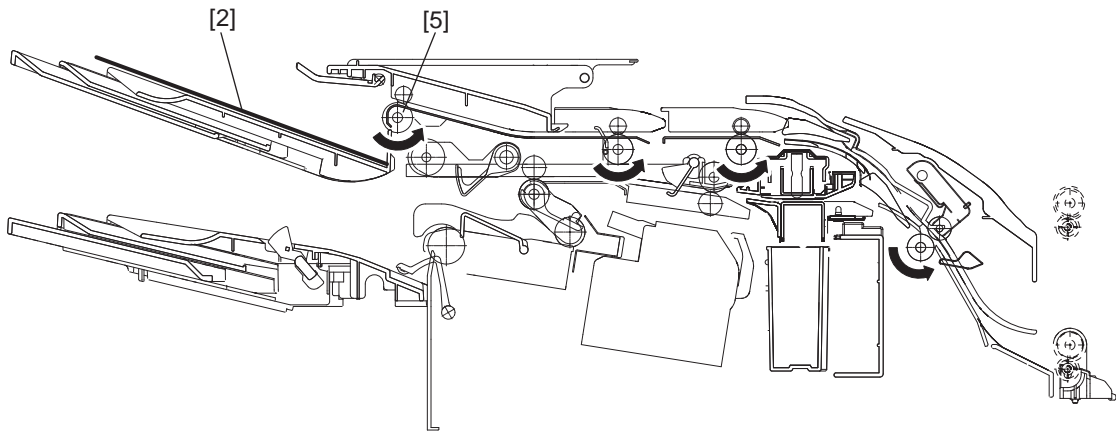


Fig. 3-28

3.1.5 Reversing operation

- (1) The 1st flapper solenoid (SOL5) pulls the 1st flapper [1] in order to switch the transport path.
- (2) The 1st transport motor (M8) is driven in a reverse rotation to release the entrance transport roller [2] and switch the 2nd flapper [3] so that the Finisher can receive paper [4].

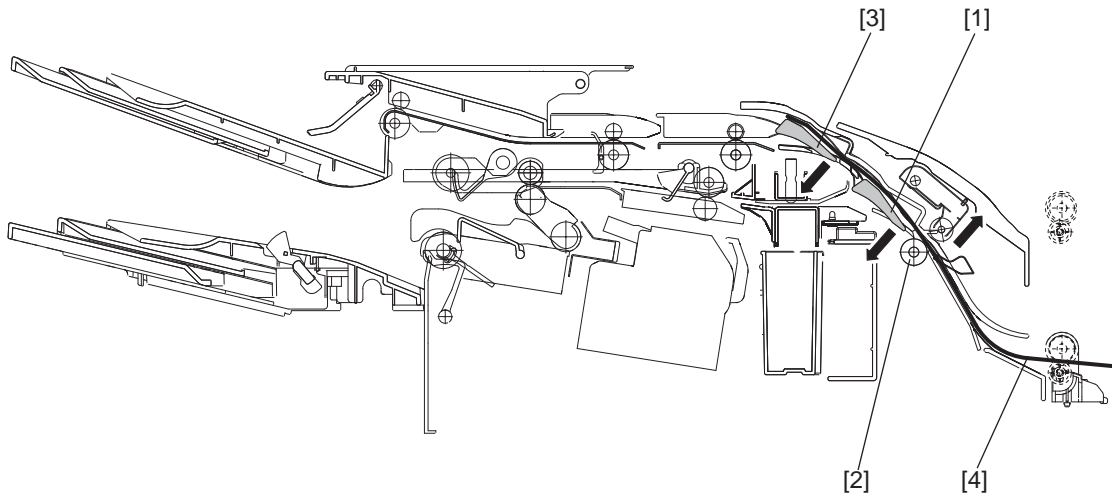


Fig. 3-29

- (3) The 1st transport motor (M8) is stopped after the Finisher receives the switchback command.
 - * The paper is returned by the equipment.
- (4) The 1st flapper [1] is returned to its original position after the leading edge of the paper [4] has passed through the entrance transport roller [2].

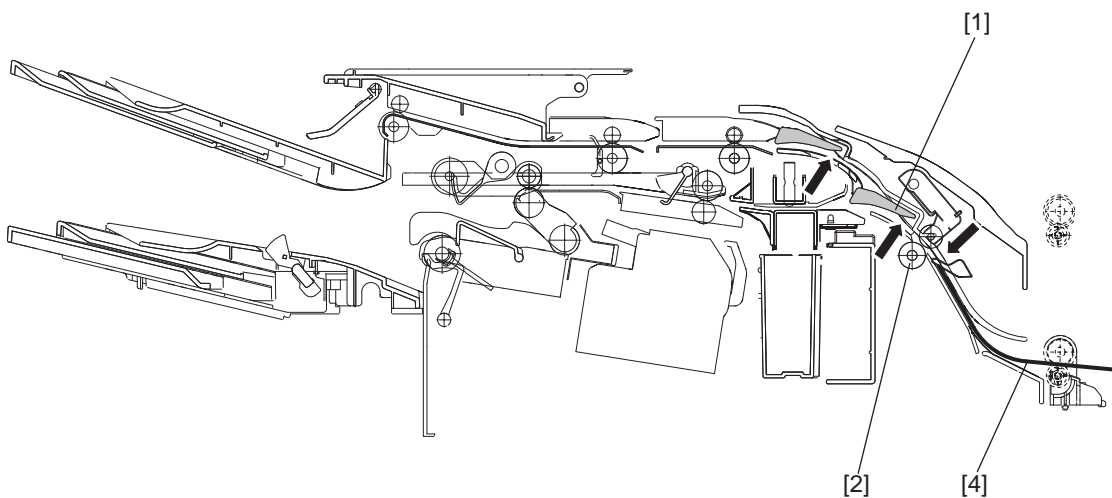


Fig. 3-30

3.1.6 Stapling operation

Stapling is an operation to staple a specified number of sheets of paper [1] with the staple unit [2]. Stapling positions differ depending on the mode and paper size selected.

When any of the covers and doors is opened or closed, or immediately after power-ON, the finisher control PC board (FIN) drives the staple unit sliding motor (M7) [3] in order to move the staple unit [2] to its home position. Then the staple unit [2] is moved to the front side and stopped at a position where the staple unit sliding home position sensor (S3) [4] is turned ON.

Symbol	Sensor	Function	Remarks
S3	Staple unit sliding home position sensor [4]	Detects the home position for the stapler moving front and rear sides.	-
S15	Staple unit improper clinching prevention sensor [5]	Detects the interference between the stapler unit clincher section and the finishing tray stopper.	-
S16	Staple unit clinching home position sensor	Detects the home position for the stapling operation.	In the stapler
S17	Stapling start position sensor	Detects the staple top position.	In the stapler
S18	Staple empty sensor	Detects the presence/absence of staples in the cartridge.	In the stapler

Symbol	Motor	Function	Remarks
M7	Staple unit sliding motor [3]	Moves the staple unit front and rear sides.	-
M10	Stapler motor	Moves the stapler.	-

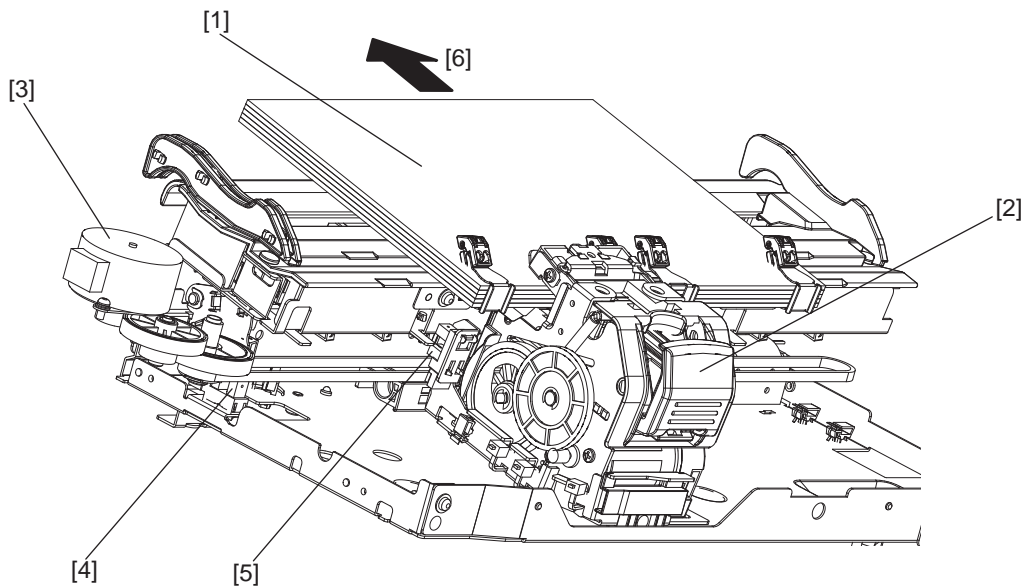


Fig. 3-31

[6] Paper exiting direction

[A] Stapling operation

When the loading of paper [2] on the finishing tray [1] and alignment are finished, the finisher control PC board (FIN) drives the stack exit roller shift motor (M6) to lower the stack exit roller [3]. The lowered stack exit roller [3] nips the stack. Then the finisher control PC board (FIN) moves the staple unit [4] to have it staple at the specified stapling position.

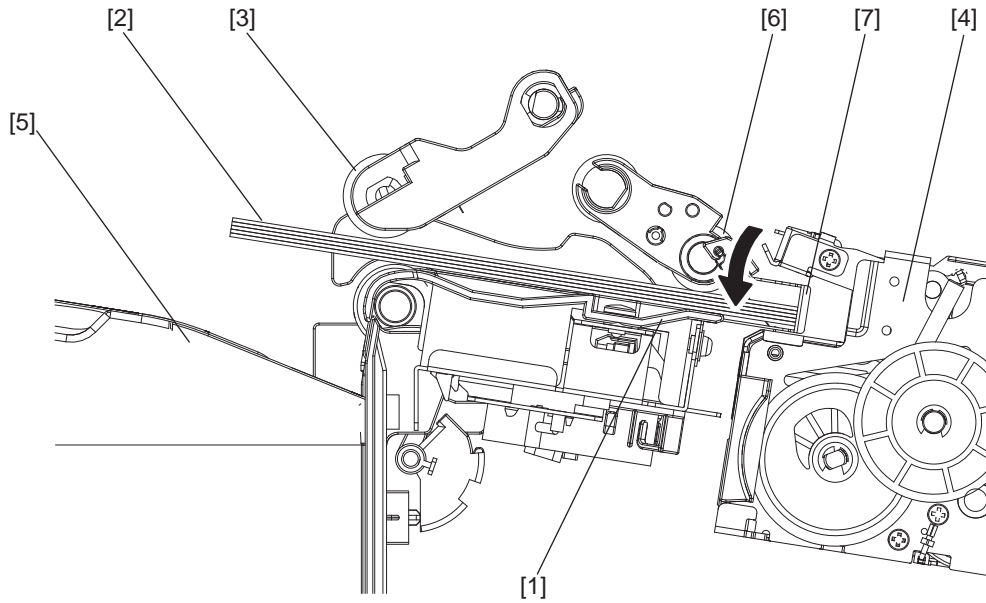


Fig. 3-32

[5] Movable tray [6] Knurled roller [7] Trailing edge stopper

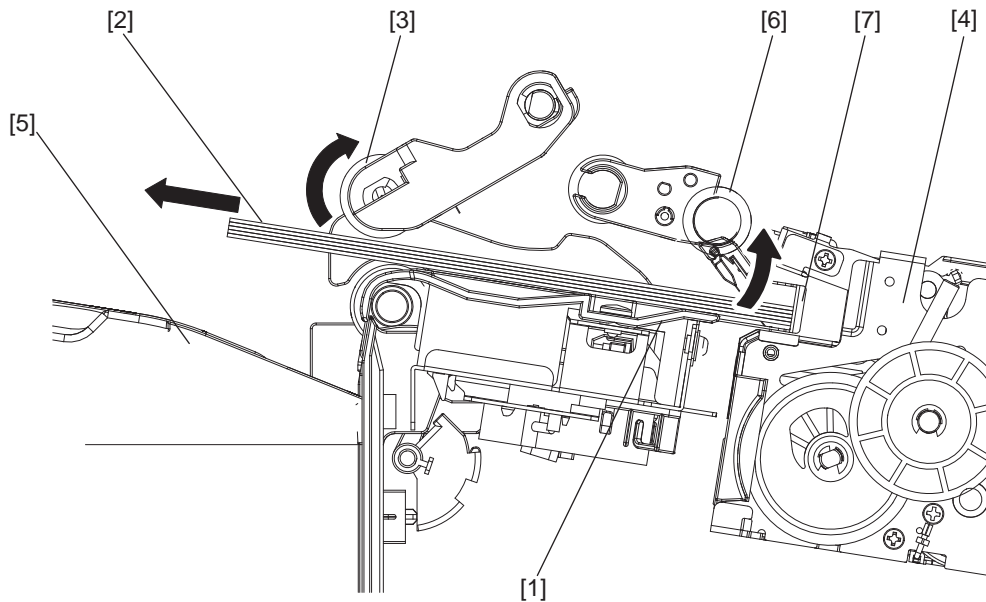


Fig. 3-33

[B] Staple unit

One rotation of the cam of the stapler motor (M9) performs one stapling. The staple unit clinching home position sensor (S16) detects the home position of this cam.

A microcomputer (IC1) on the finisher control PC board (FIN) controls whether the stapler motor (M9) is rotated in a normal or a reverse direction.

When the staple unit clinching home position sensor (S16) is OFF, the finisher control PC board (FIN) drives the stapler motor (M9) to rotate in a normal direction until this sensor is turned ON, and returns the staple cam to its home position.

The staple empty sensor (S18) detects the presence or the absence of a staple cartridge and staples in the staple cartridge.

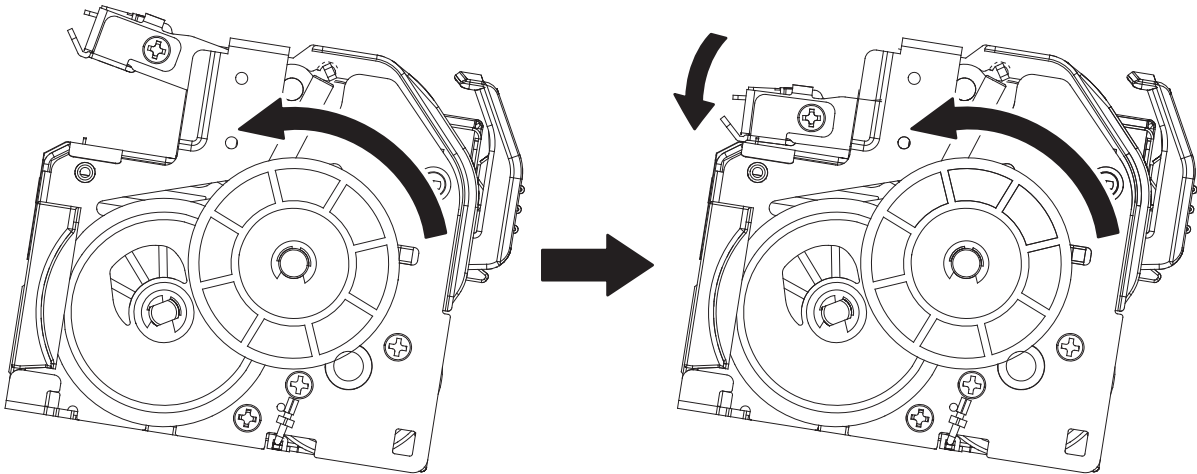


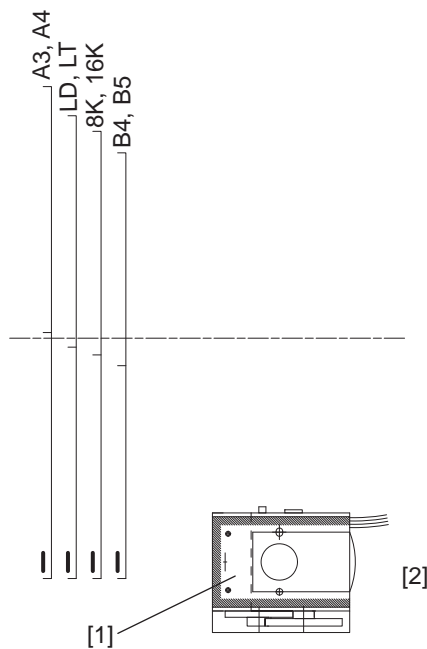
Fig. 3-34

[C] Staple unit shift control

The staple unit sliding motor (M7) moves the staple unit [1], and its home position is detected by the staple unit sliding home position sensor (S3). When the staple unit receives signals for a stapling mode and a paper size from the equipment, it moves the staple unit [1] to the specified stapling position accordingly.

The figure below shows the stapling positions in each mode.

[C-1] Front 1-point stapling (paper width: Larger than LT)



[2] The stapling position is the same as the stapler waiting one.

Fig. 3-35

[C-2] Front 1-point stapling (Paper width: Same or smaller than LT)

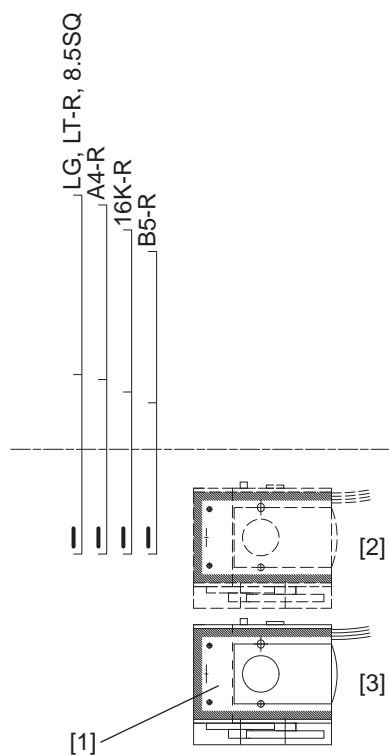


Fig. 3-36

- [1] Staple unit
- [2] Stapling position
- [3] Stapler waiting position

[C-3] Rear 1-point stapling (Paper width: Larger than LT)

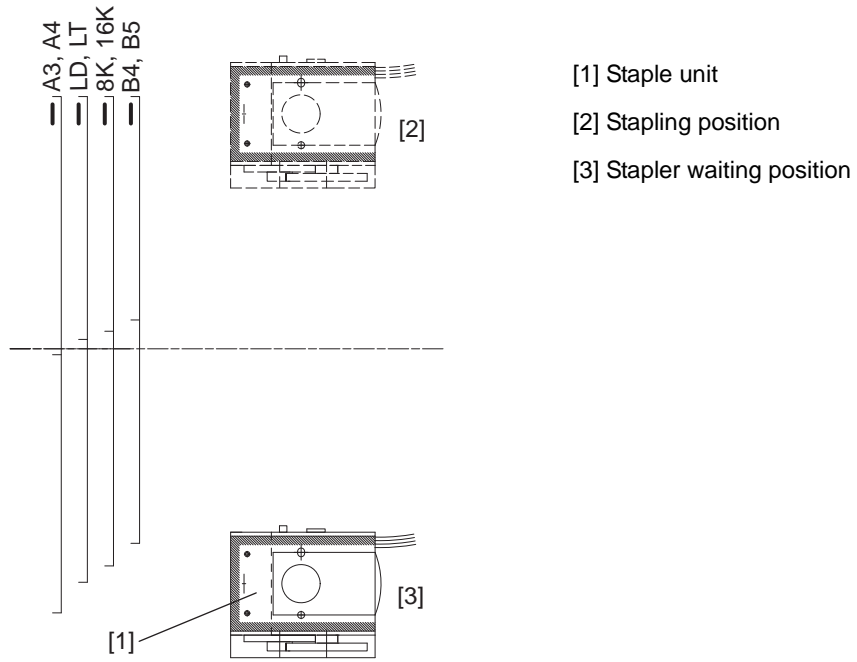


Fig. 3-37

[C-4] Rear 1-point stapling (Paper width: Same or smaller than LT)

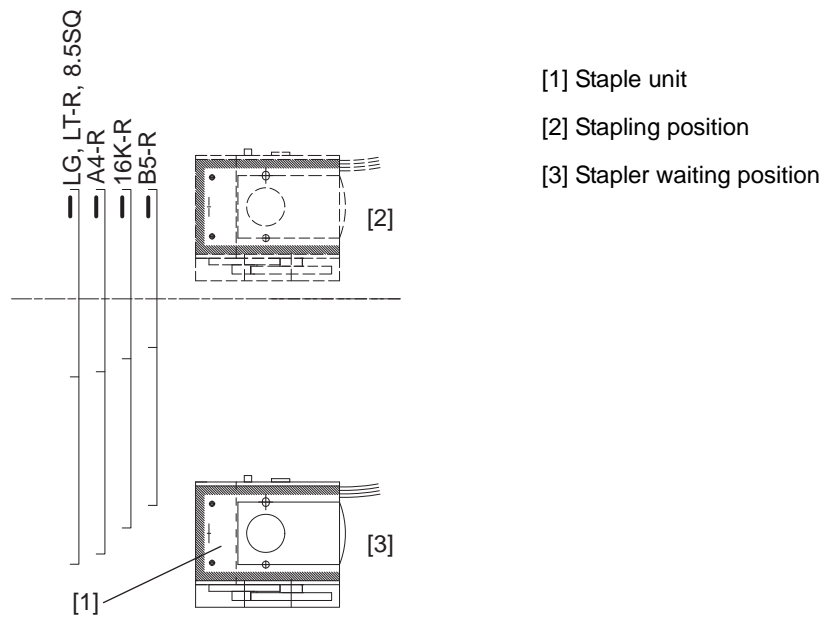


Fig. 3-38

[C-5] 2-point stapling

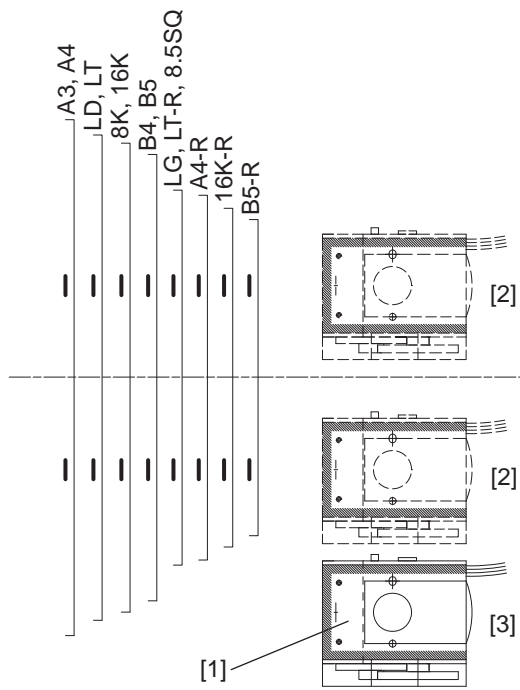


Fig. 3-39

3.1.7 Operations of trays

The Finisher has the movable and stationary trays.

Every sheet of paper transported to the sub-path is exited to the stationary tray.

The stationary tray full detection sensor (S11) [1] is mounted on the stationary tray to detect the full status of paper.

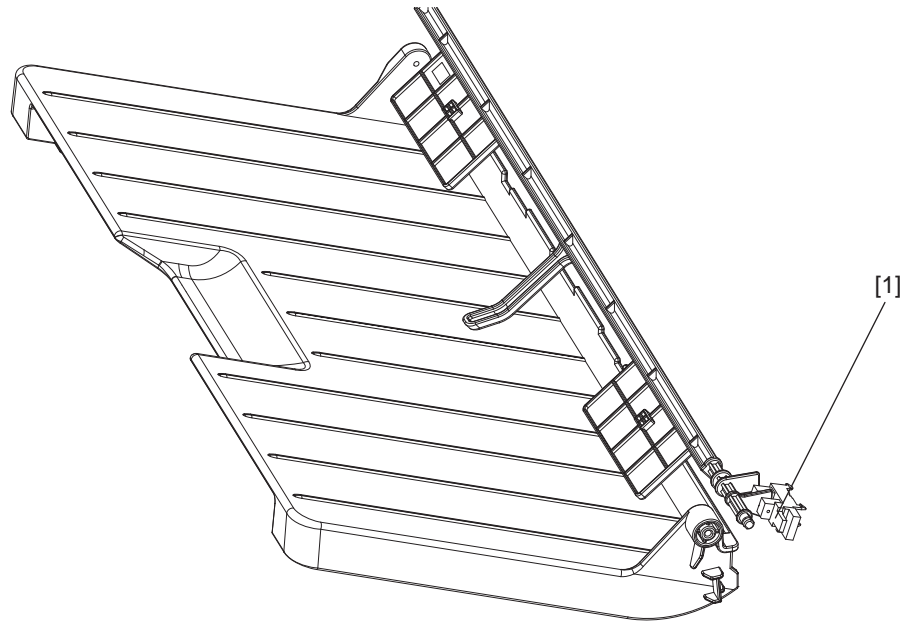


Fig. 3-40

The movable tray lifts itself up and down with the drive of the movable tray shift motor (M1) [2]. The movable tray paper exist sensor (S9) [3] is mounted on the movable tray to detect if there is any paper on this tray.

The home position of the movable tray is detected by the movable tray lower limit sensor (S14) [4]. When the power is turned ON or a job is finished, the movable tray shift motor (M1) [2] is driven to return the movable tray to its home position.

The stack top detection sensor-1 (S1) [5] and the stack top detection sensor-2 (S2) [6] are mounted on the movable tray to detect the stack top position. Turning ON or OFF of these sensors is switched with the inclination angle of the stack top detecting lever [8]. The position of the movable tray is detected by the combination of ON and OFF of these sensors.

When a job is sent, the stack top detection solenoid (SOL1) [7] controls the stack top detecting lever [8] and the movable tray shift motor (M1) is driven to lift up the movable tray. When the stack top is detected by the stack top detection sensor-1 (S1) [5] and the stack top detection sensor-2 (S2) [6], the movable tray shift motor (M1) [2] is stopped.

When the stacks of paper exited from the finishing tray are loaded on the movable tray, the stack top detection sensors detect the stack top, and then the movable tray shift motor (M1) [2] is driven to lower the movable tray.

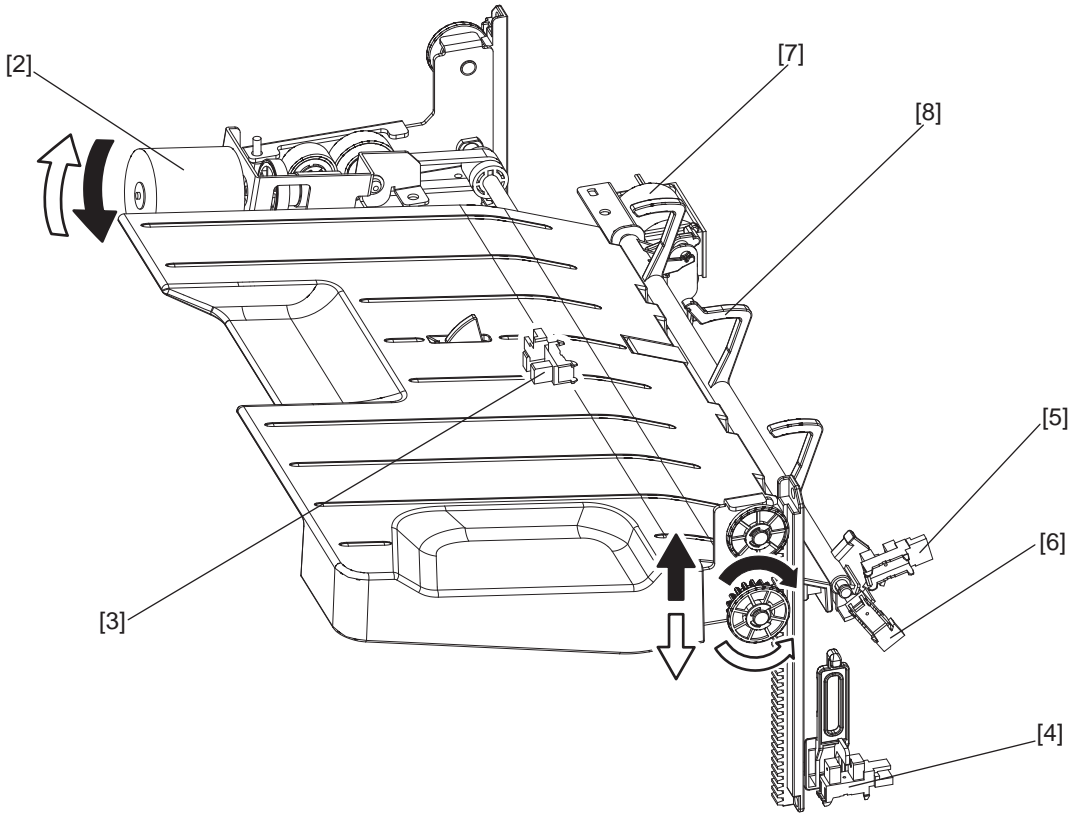


Fig. 3-41

3.1.8 Hole Punch Unit operations

The Hole Punch Unit is designed to be installed in the paper feeding section of the Finisher. The Hole Punch Unit is not equipped with a paper feeding mechanism. Paper from the equipment passes through the Hole Punch Unit and then it is transported in the transport system of the Finisher. When the trailing edge of the paper from the equipment reaches the Hole Punch Unit, the paper is stopped once, and the punch motor (M11) is rotated to punch a hole along the trailing edge. These operations are controlled with various commands from the finisher control PC board (FIN) in accordance with commands from the hole punch control PC board (HP).

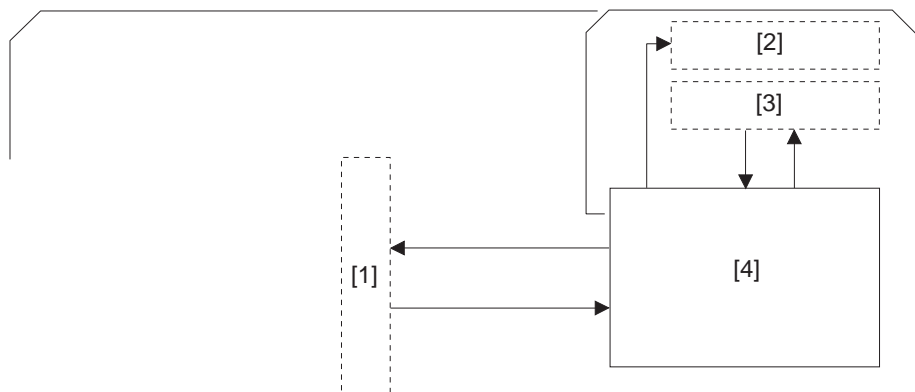


Fig. 3-42

- [1] Finisher control PC board
- [2] Punch drive system
- [3] Horizontal registration drive system
- [4] Hole punch control PC board

[A] Hole Punch Unit operations - General description

The Hole Punch Unit is designed to be installed in the feeding section of the Finisher, and punches paper successively when the paper transported from the equipment is paused. When the trailing edge of the paper reaches the Hole Punch Unit, the paper is temporarily stopped by the middle transport roller of the Finisher to be punched along its trailing edge.

The Hole Punch Unit consists of a die and a hole puncher (blade).

The hole puncher is driven by the punch motor (M11). The spiral and slide cams of the hole puncher convert the rotation of the punch motor (M11) to reciprocating movement, and thus punching is performed.

The punch motor (M11) is a DC motor. The home position of the hole puncher is detected by the rear punch shaft home position sensor (S22). To stop the punch motor (M11) precisely, the punch motor clock sensor (S20) counts the specified number of clocks. One punching is performed by rotating the spiral cam.

Eight light-receiving transistors (light-receiving PC boards) are mounted over the entrance path of the punch unit, and eight light-emitting LEDs (light-emitting PC boards) are mounted under the entrance path. Each transistor and LED work as a sensor in combination. At the front end, a combination of the transistor and LED work as the trailing edge detection sensors to detect the trailing edge of paper. Other seven combinations work as the horizontal registration detection sensors detecting the rear side of the paper for determining punching positions.

The punch motor (M11), Hole Punch Unit and sensors above compose the punch sliding unit which is slid forward and backward according to the paper size. This forward and backward movement is driven by the punch unit sliding motor (M12). The home position of the punch sliding unit is detected by the punch sliding unit home position sensor (S23). The punch unit sliding motor (M12) is a stepping motor. Drives of the punch motor (M11) and the punch unit sliding motor (M12) are controlled by the hole punch control PC board (HP) in accordance with commands from the finisher control PC board (FIN). Punches generated by punching is accumulated in a punch waste case. The full status of the punch waste case is detected by the punch waste full sensor (S21) with the rotation of the flag driven by the punch motor (M11).

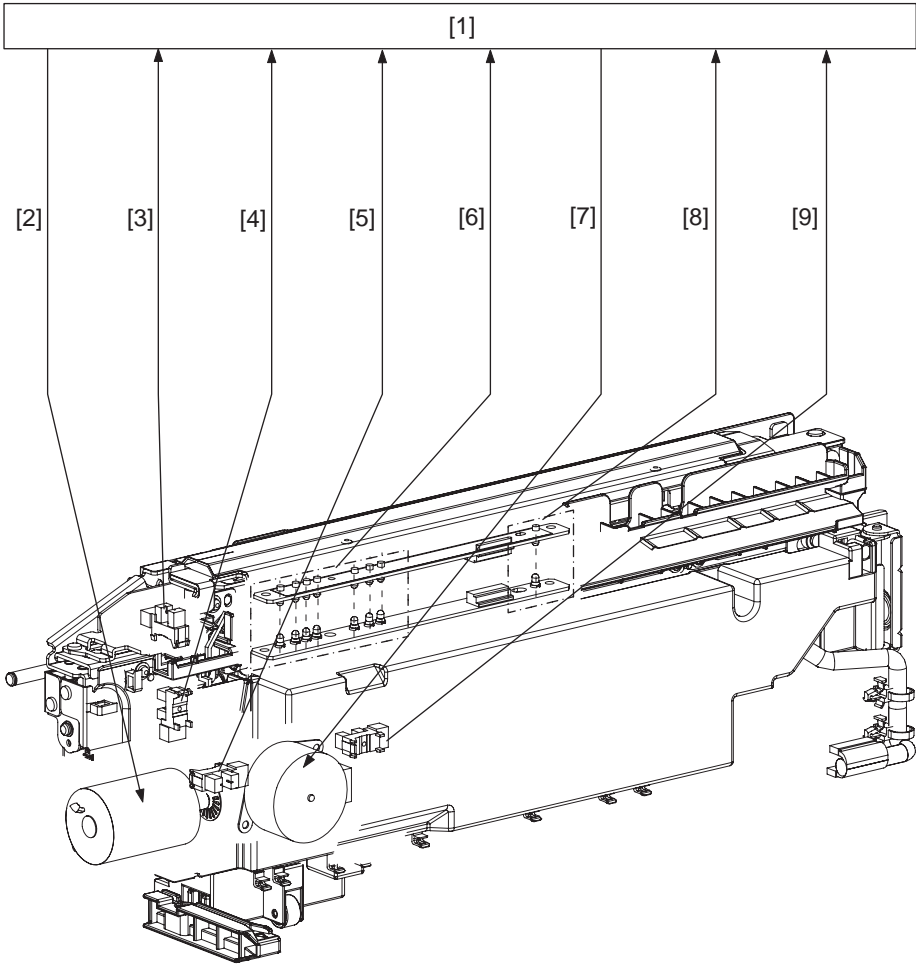


Fig. 3-43

- [1] Hole punch control PC board
- [2] Punch motor drive signal
- [3] Rear punch shaft home position detection signal
- [4] Punch sliding unit home position detection signal
- [5] Punch motor clock detection signal
- [6] Horizontal registration detection signal
- [7] Punch unit sliding motor drive signal
- [8] Trailing edge detection signal
- [9] Punch waste full detection signal

[B] Punching operation

The hole puncher is driven by the punch motor (M11) and its home position is detected by the rear punch shaft home position sensor (S22).

There are four punching types of the Hole Punch Unit according to destinations; 2-hole, 2- and 3-hole and two 4-hole types.

As for the 2-hole and 4-hole types, the spiral cam is rotated 180 degrees in the normal and reverse directions so that the hole puncher will punch with its one reciprocating movement. In the 2- and 3-hole type Hole Punch Unit, the spiral cam is rotated 360 degrees in a normal direction so that the hole puncher will punch two holes with its one reciprocating movement, and if it is a 3-hole type, the spiral cam is further rotated 180 degrees in a normal direction to punch the third hole.

[B-1] 2-hole and 4-hole types

When the rear punch shaft home position sensor (S22) is OFF, the hole puncher is at its home position. Punching is finished when the spiral cam is rotated 180 degrees in the normal and reverse directions and the rear punch shaft home position sensor (S22) is turned OFF from ON.

The overview of 2-hole and 4-hole type punching operation is shown below.

- (1) A hole is punched along the trailing edge of paper.

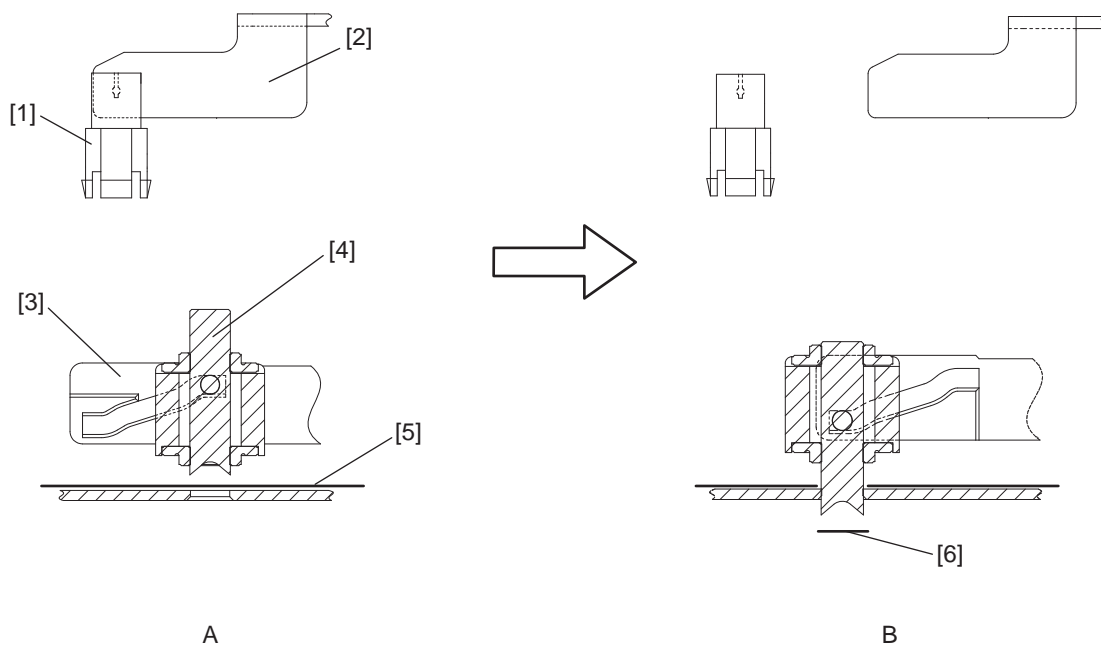


Fig. 3-44

[1] Rear punch shaft home position sensor

[5] Paper

A: Spiral cam at reset / home position

[2] Sensor flag

[6] Punches

B: Spiral cam rotates 180 degrees in normal direction / hole made

[3] Slide cam

[4] Hole puncher

[B-2] 2- and 3-hole type

When the rear punch shaft home position sensor (S22) is OFF, the hole puncher is at its home position. In a case of 2-hole type, the punching of two holes is finished when the spiral cam is rotated 131.7 degrees in the normal and reverse directions and the rear punch shaft home position sensor (S22) is turned OFF from ON. At this time, the hole puncher for the 3-hole type remains unmoved. A waiting position in a case of 3-hole type is a point where the punch shaft home position sensor (S26) is turned OFF from ON and the spiral cam is rotated 177.3 degrees from the home position in the normal direction. Punching is started after the spiral cam is rotated in the normal and reverse directions 360 degrees from the waiting position, and punching is finished when the punch shaft home position sensor (S26) is turned OFF from ON.

The overview of a 2- and 3-hole type punching operation is shown below.

- (1) Two holes are made along the trailing edge of paper.

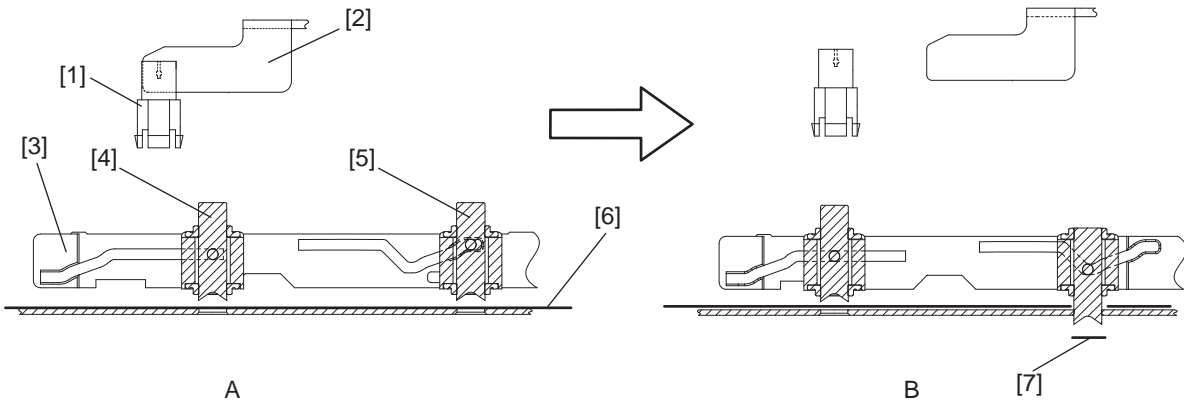


Fig. 3-45

- [1] Rear punch shaft home position sensor
- [2] Sensor flag
- [3] Slide cam
- [4] Hole puncher for 3-hole type

- [5] Hole puncher for 2-hole type
- [6] Paper
- [7] Punches

- A: Spiral cam at reset / home position
- B: Spiral cam rotates 131.7 degrees in normal direction / 2-hole type holes made

(2) Three holes are made along the trailing edge of paper.

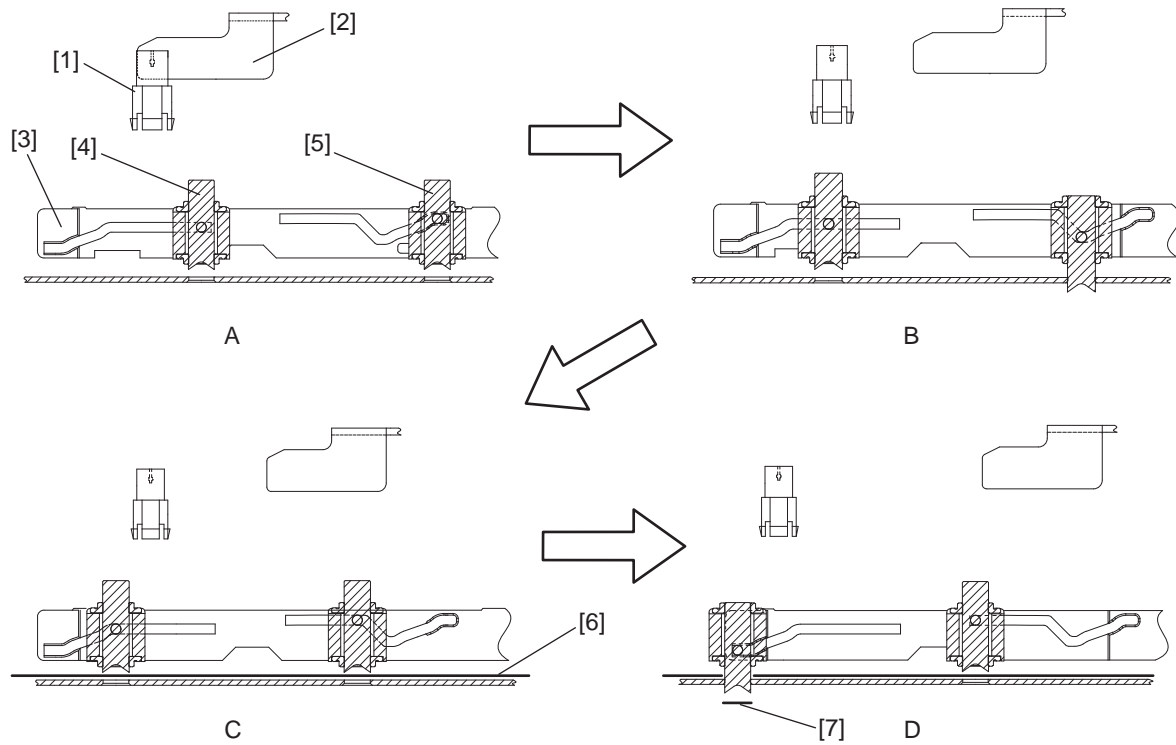


Fig. 3-46

[1] Rear punch shaft home position sensor

[5] Hole puncher for 2-hole type

A: Spiral cam at reset / home position

[2] Sensor flag

[6] Paper

B: Spiral cam rotates 131.7 degrees in normal direction / Hole puncher for 2-hole type lowered

[3] Slide cam

[7] Punches

C: Spiral cam rotates 177.3 degrees in normal direction / Hole puncher for 2-hole type raised
Home position of hole puncher for 3-hole type

[4] Hole puncher for 3-hole type

D: Spiral cam rotates 360 degrees in normal direction / 3-hole type holes made

[C] Horizontal registration movement

The horizontal registration movement of the punch sliding unit [1] is performed by the punch unit sliding motor (M12) [2]. The home position of the punch sliding unit [1] is detected by the punch sliding unit home position sensor (S23) [3]. The punch sliding unit [1] detects the trailing edge of paper with the trailing edge detection section [4] and the horizontal registration detection section [5] of the paper detection sensors (S24/S25) so that this unit can be moved to the proper trailing edge position according to the paper size.

Horizontal registration movement is shown below.

- (1) When the trailing edge of paper transported from the equipment is detected by the trailing edge detection section [4], the punch unit sliding motor (M12) [2] starts moving the punch sliding unit [1] to the front side.

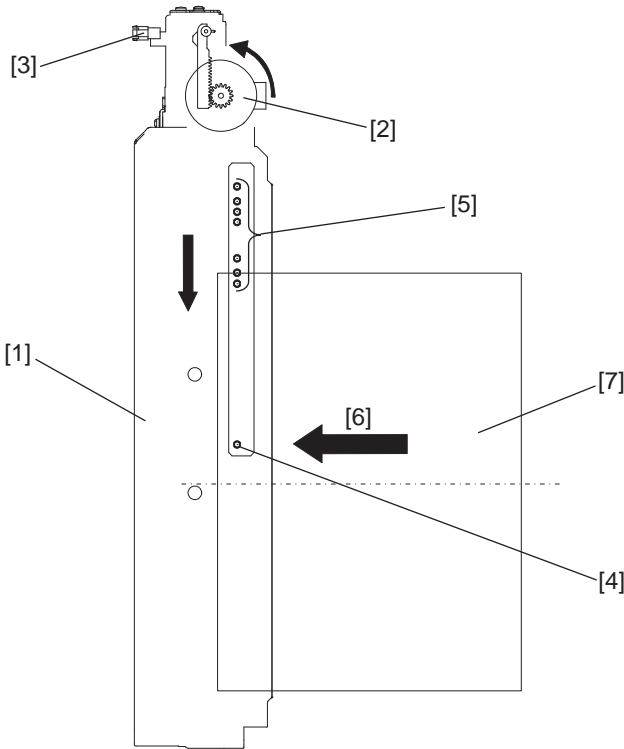


Fig. 3-47

[6] Paper exiting direction

[7] Paper

- (2) The horizontal registration detection section selected in accordance with a paper size signal from the equipment detect the trailing edge of the paper on the rear side. Then the punch unit sliding motor (M12) moves the punch sliding unit [1] until it reaches to the specified position to the front side, and then stops this unit.

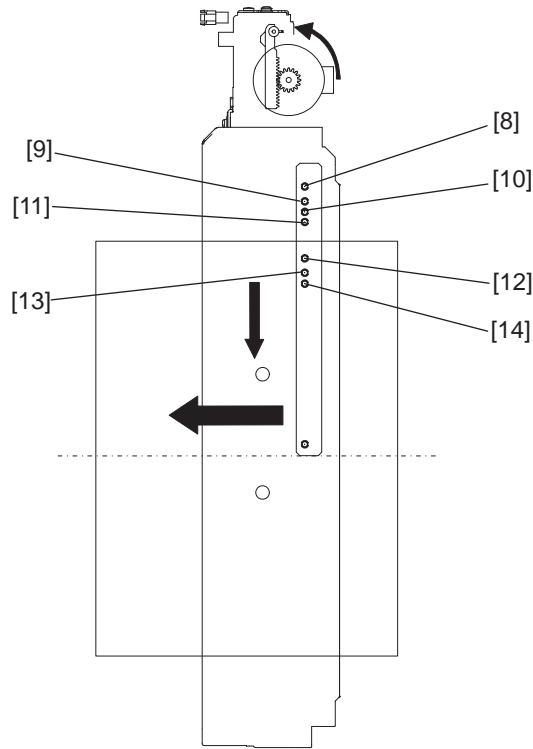


Fig. 3-48

- [8] Horizontal registration detection sensor (A3, A4)
- [9] Horizontal registration detection sensor (LD, LT)
- [10] Horizontal registration detection sensor (8K, 16K)
- [11] Horizontal registration detection sensor (B4, B5)
- [12] Horizontal registration detection sensor (LG, LT-R, A4-R)
- [13] Horizontal registration detection sensor (16K-R)
- [14] Horizontal registration detection sensor (B5-R)

- (3) When the trailing edge detection sensors (S24-1 and S24-2) [4] detect the trailing edge of the paper, the transport motor of the Finisher is stopped to stop the transport of the paper. Then the punch motor (M11) is driven to punch the paper [15].

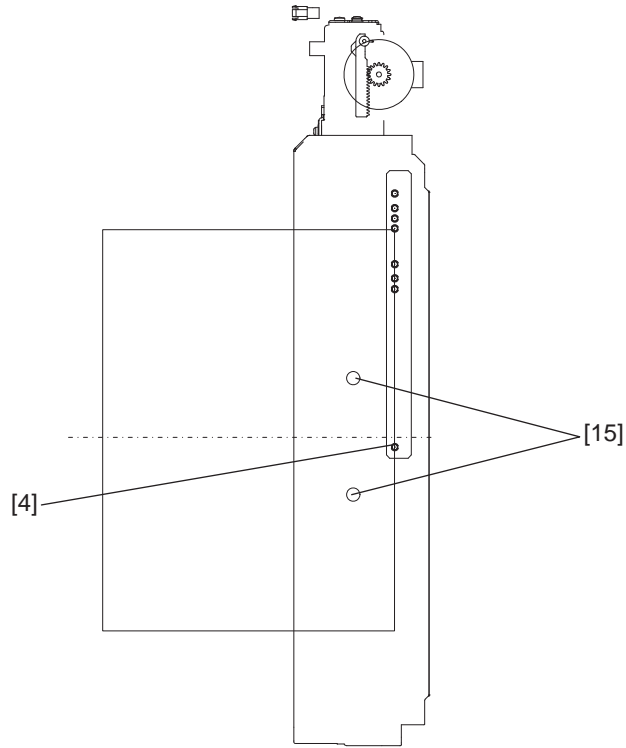


Fig. 3-49

- (4) After punching is finished, the transport motor of the Finisher starts driving, and at the same time, the punch unit sliding motor (M12) starts a reverse rotation to return the punch sliding unit to its home position and stop it.
- (5) The punch sliding unit returns to its home position and repeats steps 1 through 4 every time a sheet of paper is arrived, even if the sheets are transported continuously.

3.1.9 Jam detection

Timing for checking paper jams in the Finisher and the Hole Punch Unit is programmed in a microcomputer (CPU) on the finisher control PC board (FIN) in advance. It checks paper jams at the set timing in accordance with whether paper exists in the sensor section or not. When a paper jam occurs, the finisher control PC board (FIN) sends the data of the jam to the equipment in a form of a self-diagnostic code, so that a user can identify the jam in the self-diagnostic mode on the control panel of the equipment.

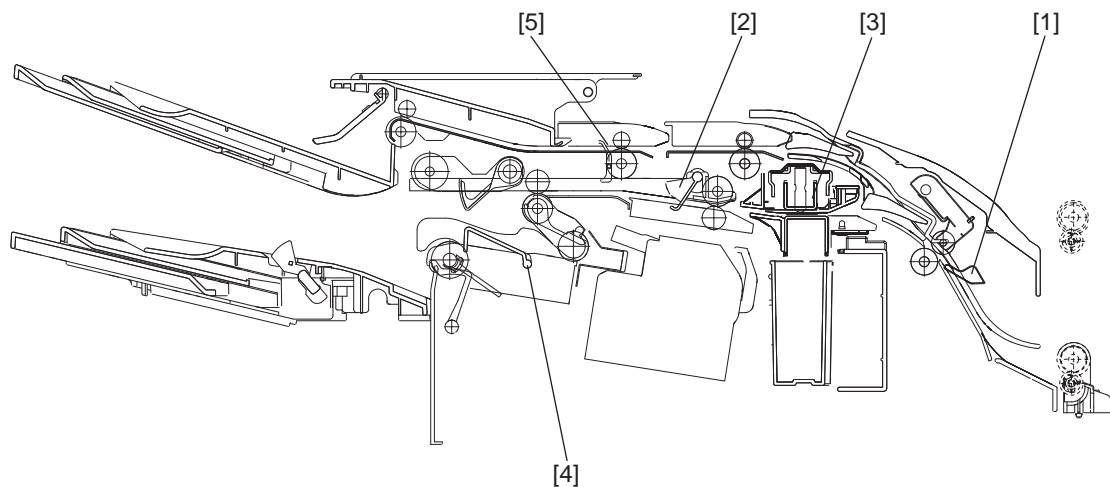


Fig. 3-50

- [1] Entrance path sensor
- [2] Middle path sensor
- [3] Paper detection sensor
- [4] Finishing tray sensor
- [5] Sub-path sensor

[A] Paper remaining jam at Finisher transport path

Any of the following:

Either of the entrance path sensor (S19) and the middle path sensor (S7) detects paper after power-ON or when the jam access front cover is closed.

The paper detection sensor (S24) detects paper after power-ON or the closing of the jam access front cover when the Hole Punch Unit is installed.

[B] Paper remaining jam at Finisher exit outlet

The finishing tray sensor (S4) detects paper after power-ON.

[C] Paper not reaching entrance path sensor

The entrance path sensor (S19) does not detect paper after the specified period of time has passed since a signal was received from the equipment.

[D] Stationary jam at entrance path sensor

The entrance path sensor (S19) does not detect the removal of paper after it detects the paper and the 1st transport motor (M8) is driven at the specified pulses.

[E] Front cover open jam

Any of the following:

Either of the front cover switch (SW1) and the sub-path opening/closing sensor (S12) detects the opening status during the operation of the Finisher.

The Hole Punch Unit connection signal informs the opening status when the Hole Punch Unit is installed.

[F] Stapling jam

Any of the following:

The staple unit improper clinching prevention sensor (S15) detects that stapling is impossible.

The opening status of the stapler is not detected by the staple unit clinching home position sensor (S16) during stapling within specified period of time after this sensor detects the closing status, and also this sensor detects the opening status in a reverse rotation after stapling is stopped.

The stapling start position sensor (S17) does not detect the ejection-ready status of a staple during staple ejection.

[G] Stack exit jam

The finishing tray sensor (S4) does not detect the removal of a stack of paper after the exiting of this stack is started and the stack exit motor (M5) is driven at a specified pulses in the paper exiting direction.

[H] Paper not reaching middle path sensor

The middle path sensor (S7) does not detect paper after the entrance path sensor (S19) detects the paper and the 1st transport motor (M8) is driven at the specified pulses.

[I] Stationary jam at middle path sensor

The middle path sensor (S7) does not detect the removal of paper after it detects the paper and the 2nd transport motor (M4) is driven at the specified pulses.

[J] Paper not reaching sub-path sensor

The sub-path sensor (S8) does not detect paper after the entrance path sensor (S19) detects the paper and the 1st transport motor (M8) and the 2nd transport motor (M4) are driven at a specified period of time.

[K] Stationary jam at sub-path sensor

The sub-path sensor (S8) does not detect the removal of paper after it detects the paper and the 2nd transport motor (M4) is driven at the specified pulses.

[L] Paper remaining jam at sub-path

The sub-path sensor (S8) detects paper after power-ON or the closing of the front cover.

[M] Punching jam

Any of the following:

The rear punch shaft home position sensor (S22) detects that the hole puncher is not at its home position because paper does not reach this sensor or overrunning occurs after punching is finished.

An error occurs on the punch unit sliding motor (M12) during feeding.

[N] Staple unit sliding motor error

An error occurs on the staple unit sliding motor (M7) during feeding.

[O] Stack exit roller shift motor error

An error occurs on the stack exit roller shift motor (M6) during feeding.

3.1.10 Power supply system (Finisher section)

[A] General description

When the power of the equipment is turned ON, it supplies 5 V and 24 V power to the finisher control PC board (FIN). 24 V power is supplied for driving motors and solenoids, while 5 V power is for driving sensors. The ICs on the circuit generate 3.3 V power from 5 V power to be supplied for driving the ICs on the finisher control PC board (FIN).

If the Hole Punch Unit is installed, power divided in the Finisher is also supplied to the hole punch control PC board (HP).

A part of 24 V power for driving motors and solenoids is cut off when the front cover switch (SW1) is opened.

Figure 3-51 shows a block diagram of the power supply system.

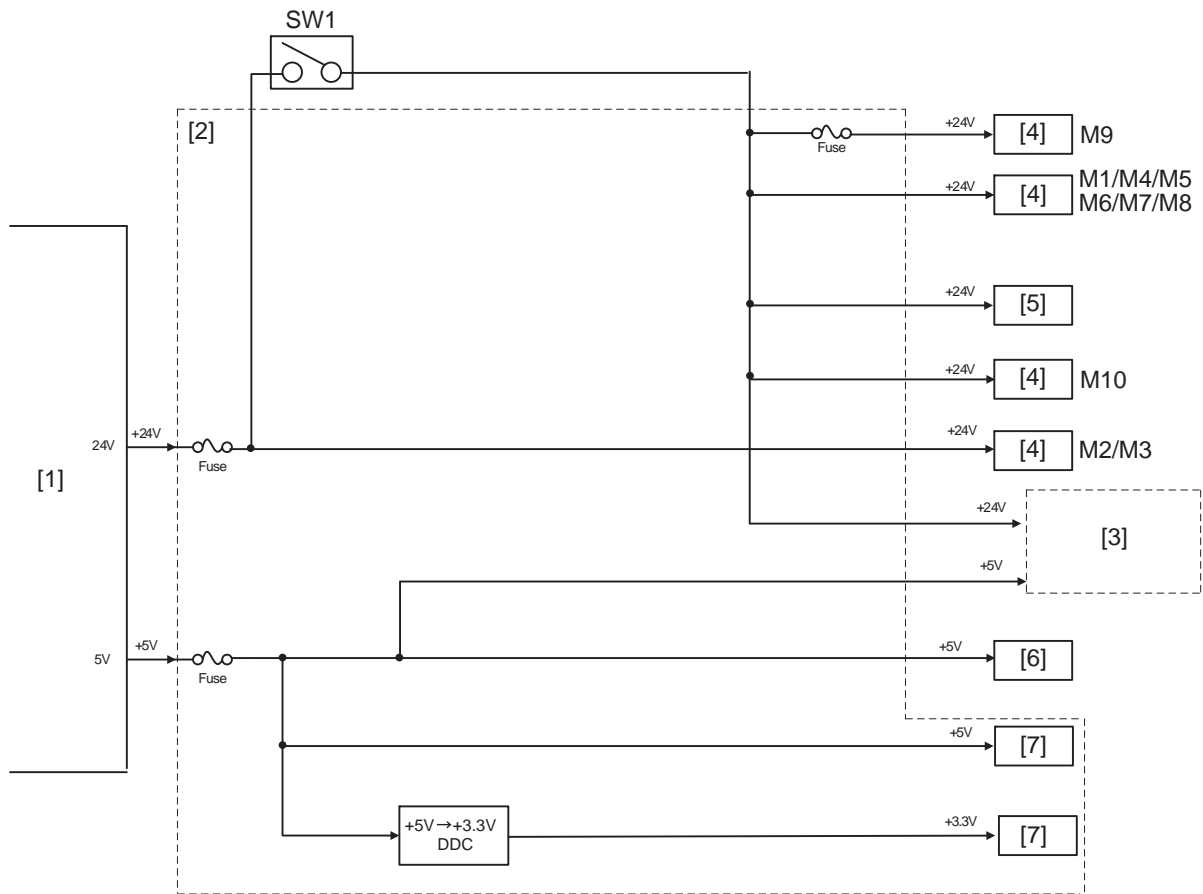


Fig. 3-51

- [1] Equipment
- [2] Finisher control PC board (FIN)
- [3] Hole punch control PC board (HP)
- [4] Motors
- [5] Solenoids
- [6] Sensors
- [7] Logic system

[B] Protective mechanism

A fuse is mounted in 24 V and 5 V power supply on the joint of the Finisher and the equipment as a protective mechanism against overcurrent.

Also a protection device is mounted in 24 V power supply for driving each motor and solenoid for overcurrent protection. It is fused in an overcurrent state.

3.1.11 Power supply system (Hole Punch Unit)

[A] General description

When the power of the equipment is turned ON, 24 V and 5 V power are supplied to the Hole Punch Unit through the finisher control PC board (FIN).

24 V power is supplied for driving motors, while 5 V power is for driving sensors and the ICs on the hole punch control PC board (HP).

24 V power for driving motors is cut off when the front cover switch (SW1) in the Finisher is opened.

Figure 3-52 shows a block diagram of the power supply system.

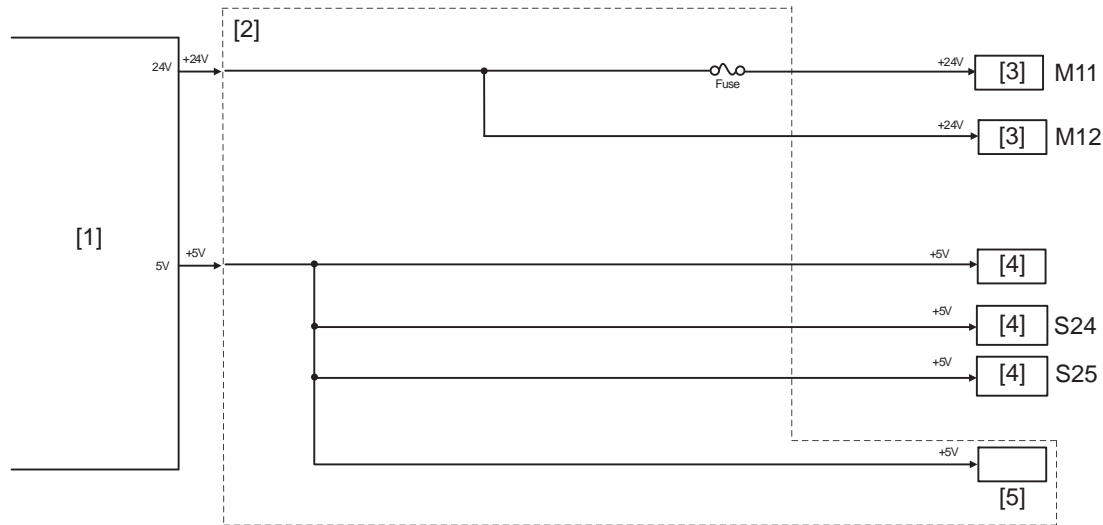


Fig. 3-52

- [1] Finisher control PC board (FIN)
- [2] Hole punch control PC board (HP)
- [3] Motors
- [4] Sensors
- [5] Logic system

[B] Protective mechanism

A protection device is mounted in 24 V power supply for driving the punch motor (M11) and the punch unit sliding motor (M12) for overcurrent protection. It is fused in an overcurrent state.

4. DISASSEMBLY AND INSTALLATION

4.1 Finisher Section

4.1.1 Externals

- [1] Movable tray
- [2] Stationary tray (1)
- [3] Rear cover (3)
- [4] Front left cover (3)
- [5] Upper cover (4)
- [6] Lower cover in finishing section (2)
- [7] Jam access knob (1)

Figures in parentheses show the number of screws required for installation.

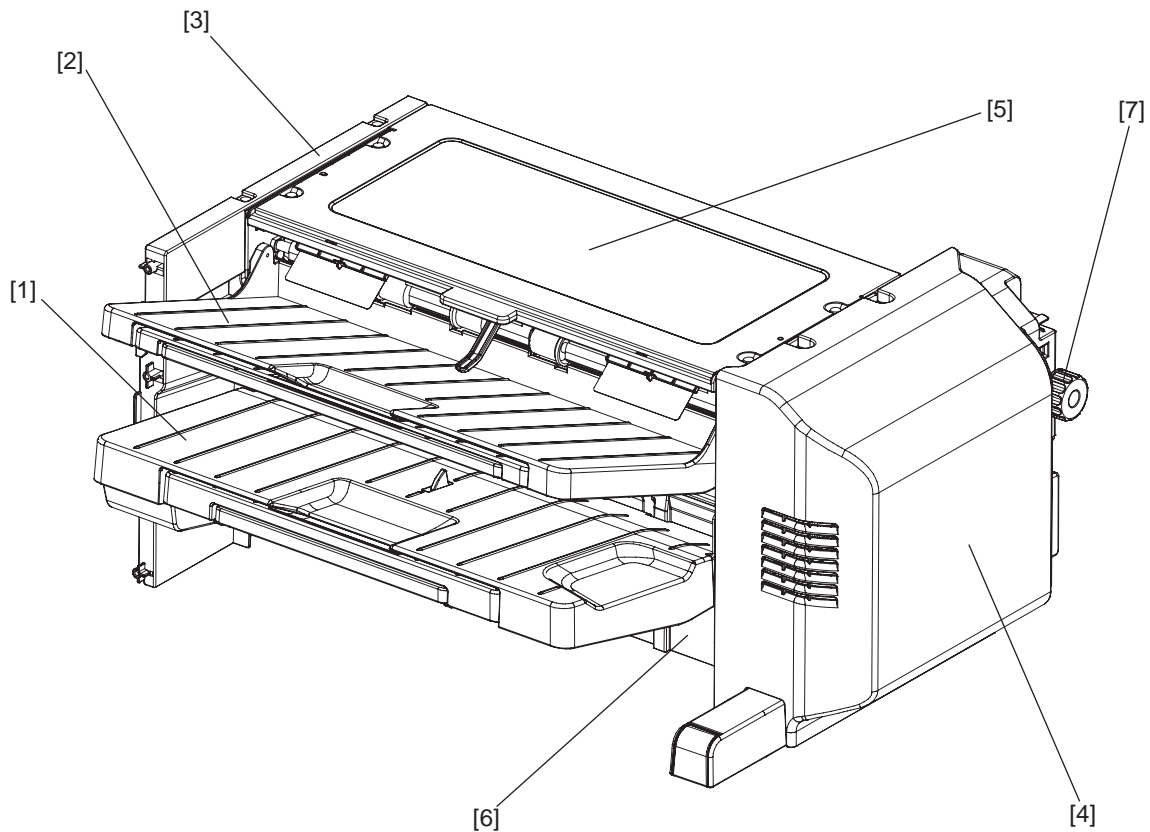


Fig. 4-1

[A] Front left cover

- (1) Remove 1 screw [1] and the jam access knob [2].

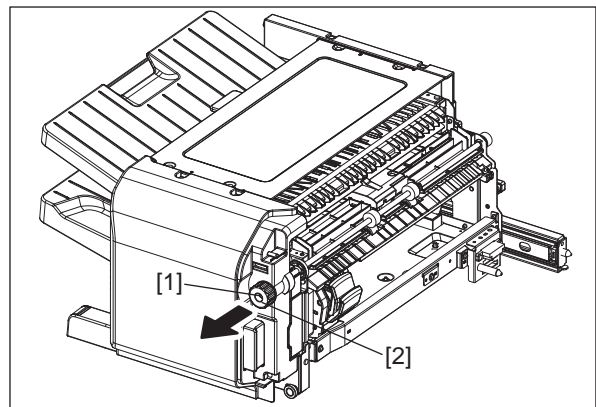


Fig. 4-2

- (2) Remove 3 screws [3] and take off the front left cover [4].

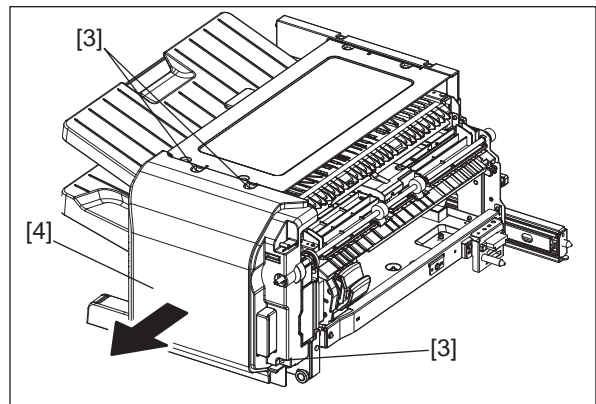


Fig. 4-3

- (3) Remove 1 screw [5] and take off the inner cover [6].

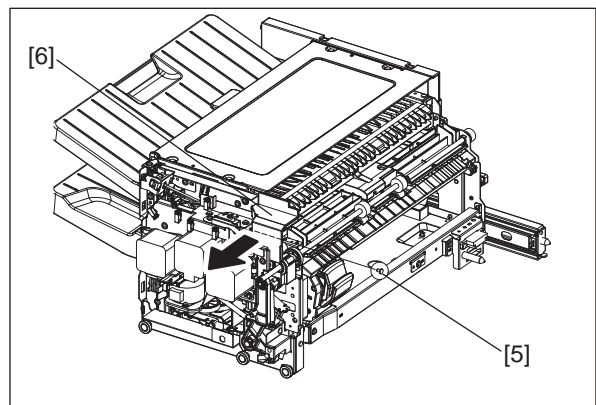


Fig. 4-4

[B] Rear cover

- (1) Remove 3 screws [1]. Then cut off the binding band [2] and take off the rear cover [3].

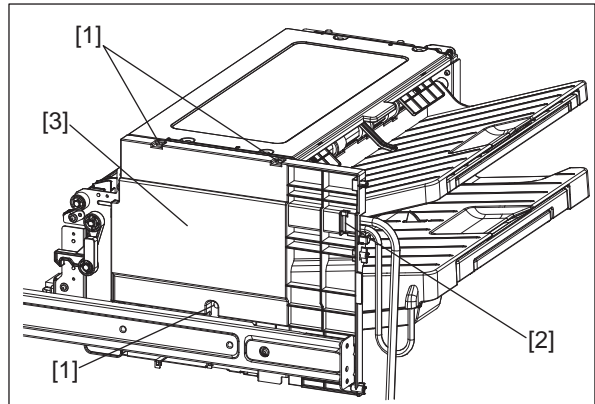


Fig. 4-5

[C] Sub-path upper guide

- (1) Take off the front left cover.
(📖 P.4-2 "[A] Front left cover")
- (2) Take off the rear cover.
(📖 P.4-3 "[B] Rear cover")
- (3) Open the sub-path upper guide [1].
- (4) Remove 3 screws [2] and take off the sub-path upper guide [1].

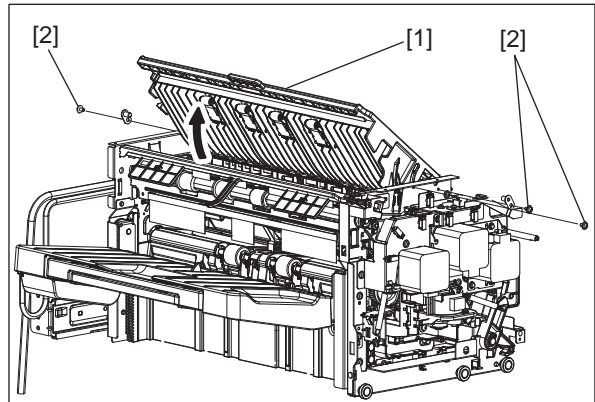


Fig. 4-6

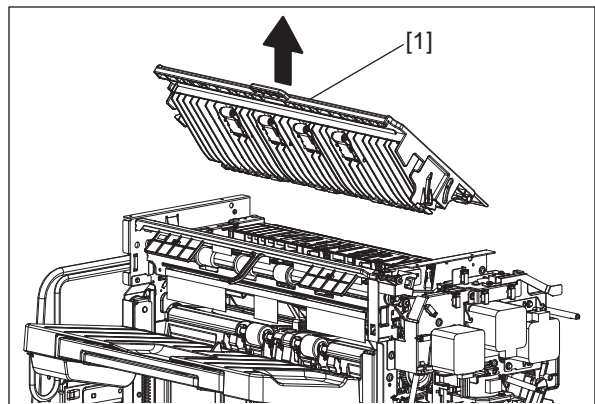



Fig. 4-7

[D] Movable tray

- (1) Take off the rear cover.
( P.4-3 "[B] Rear cover")
- (2) Cut off the binding band [1]. Then remove 1 screw [2] and disconnect the connector [3].

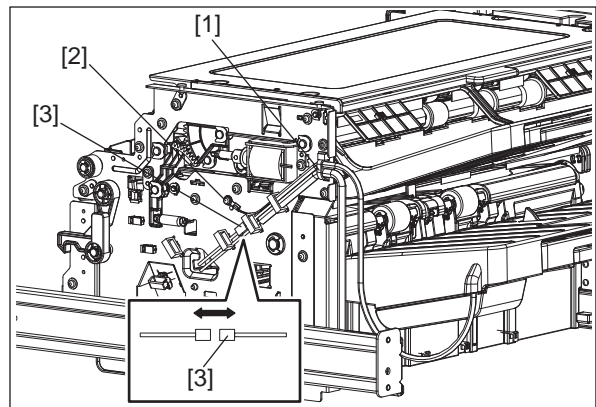


Fig. 4-8

- (3) Place the Finisher upside down.

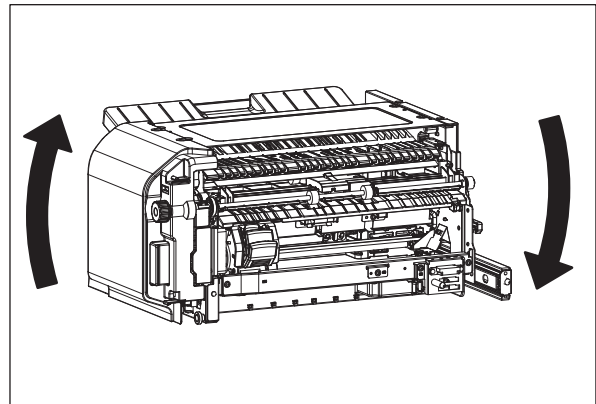


Fig. 4-9

- (4) Remove 4 screws [4] and take off 2 tray covers [5].

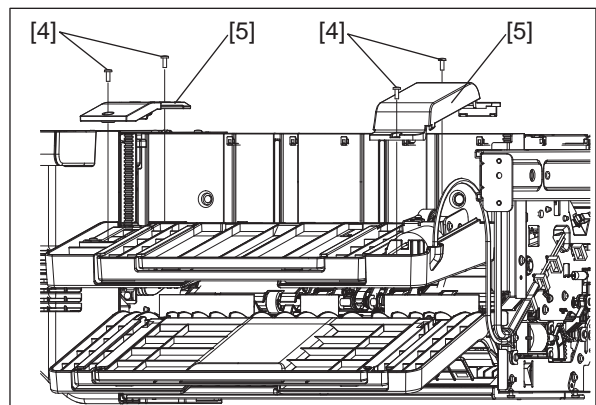


Fig. 4-10

- (5) Slide a ratchet gear [6] to unlock the tray. Then take off the tray [7] by lifting it upward.

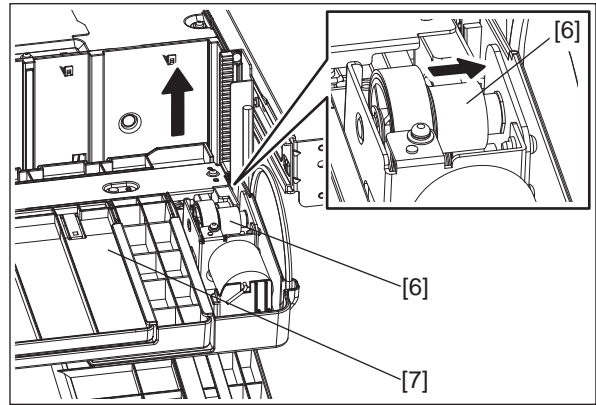


Fig. 4-11

[E] Stationary tray

- (1) Take off the front left cover.
(📖 P.4-2 "[A] Front left cover")
- (2) Take off the rear cover.
(📖 P.4-3 "[B] Rear cover")
- (3) Remove 2 screws [1] and take off the sub-tray [2].

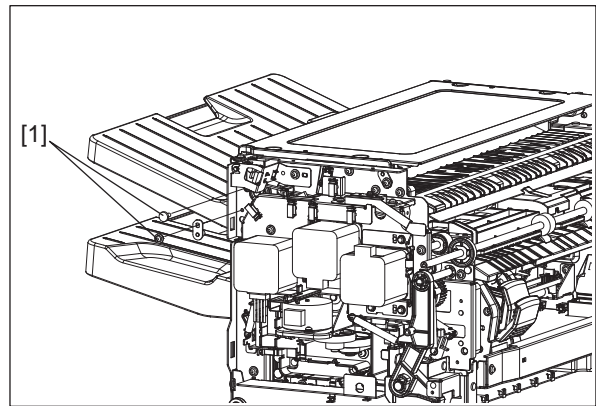


Fig. 4-12

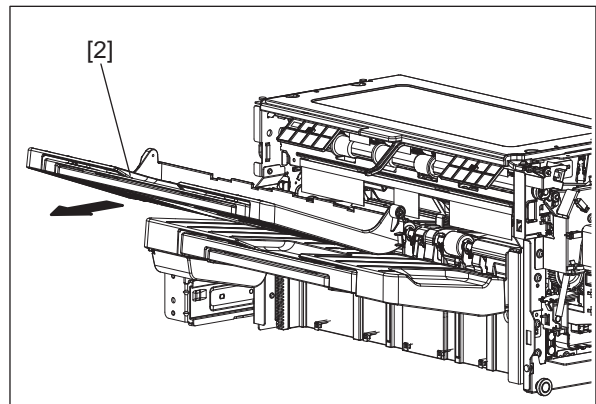


Fig. 4-13

[F] Lower cover in finishing section

- (1) Take off the rear cover.
(📖 P.4-3 "[B] Rear cover")
- (2) Take off the movable tray.
(📖 P.4-4 "[D] Movable tray")
- (3) Remove 2 screws [1] and take off the rack assembly on the rear side [2].
- (4) Remove 2 screws [3] and take off the lower cover [4] in the finishing section.

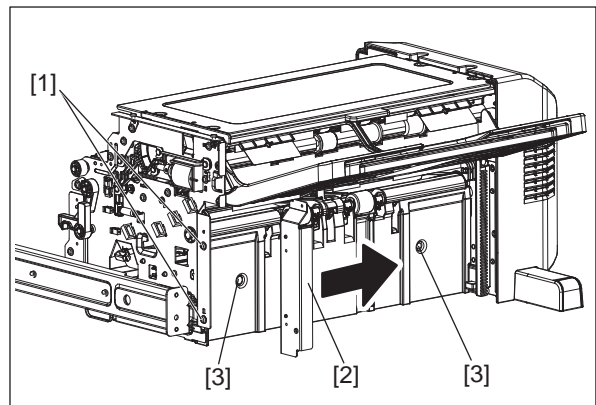


Fig. 4-14

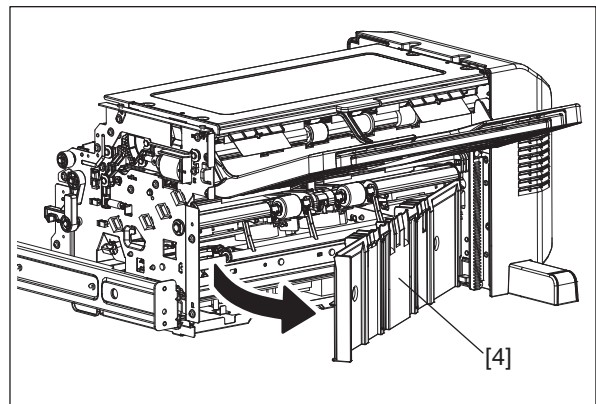


Fig. 4-15

4.1.2 Transport system

[A] Stapler

- (1) If the Hole Punch Unit is installed, take it off.
(☞ P.4-31 "[A] Hole Punch Unit")
- (2) Move the stapler [1] to the front end and place the Finisher upside down.

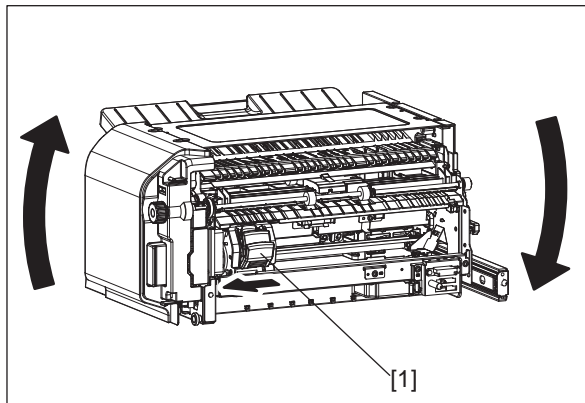


Fig. 4-16

- (3) Remove 4 screws [2] and take off the board cover [3].

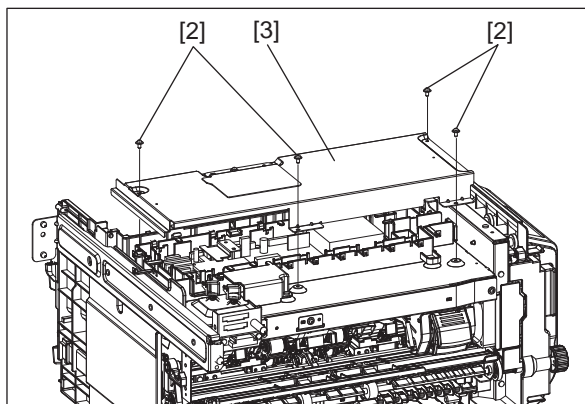


Fig. 4-17

- (4) Remove 2 screws [4] fixing the stapler through 2 access holes.

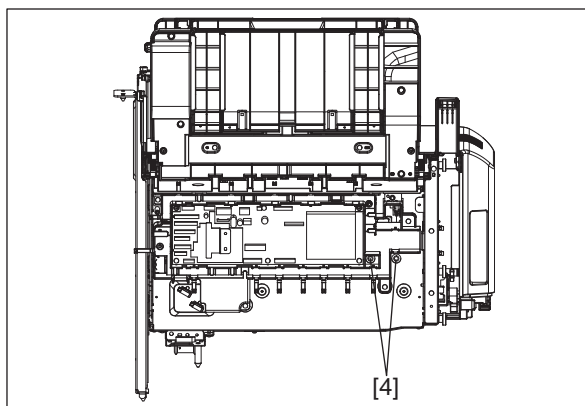


Fig. 4-18

- (5) Remove 2 screws [5] and take off the drawer bracket [6].

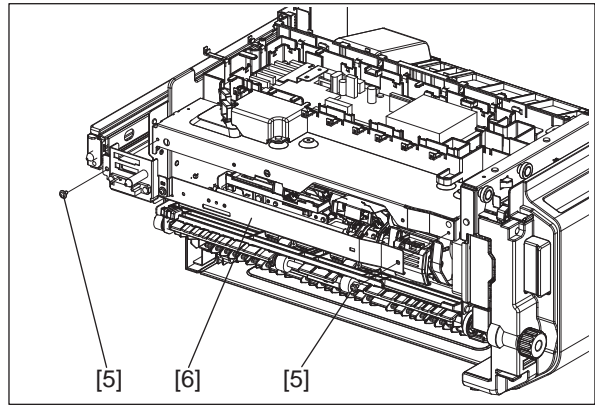


Fig. 4-19

- (6) Disconnect the stapler [1] connector. Then slide the stapler [1] to the rear side to take it off.

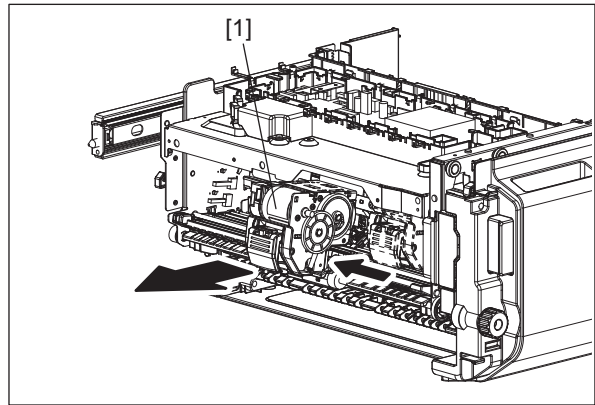


Fig. 4-20

[B] Stack exit unit

- (1) Take off the front left cover.
(P.4-2 "[A] Front left cover")
- (2) Take off the rear cover.
(P.4-3 "[B] Rear cover")
- (3) Take off the stationary tray.
(P.4-5 "[E] Stationary tray")
- (4) Take off the sub-path upper guide.
(P.4-3 "[C] Sub-path upper guide")

- (5) Remove 2 screws [1] and take off the discharge brush bracket [2] of the stationary tray.

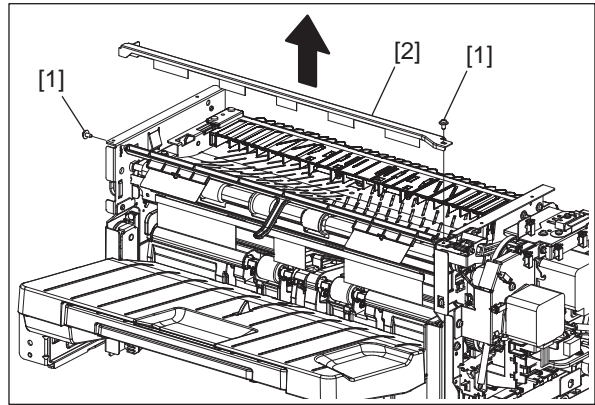


Fig. 4-21

- (6) Remove 2 clips [3] and take off the stationary tray full detection lever [4].

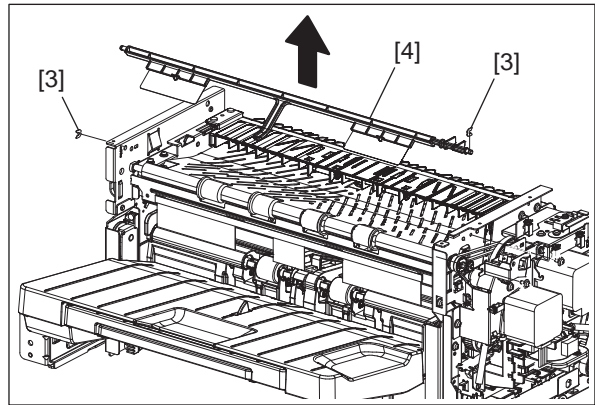


Fig. 4-22

- (7) Remove 2 screws [5] and take off the front cover switch (SW1) assembly [6].
- (8) Remove 4 screws [7] and take off the sub-path guide assembly [8].

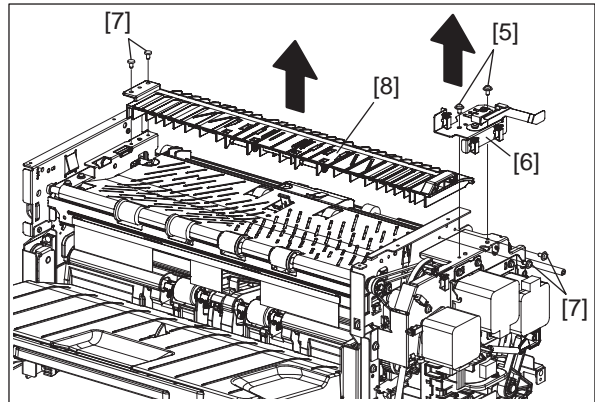


Fig. 4-23

- (9) Remove 4 screws [9] and take off the sub-path guide bracket [10].

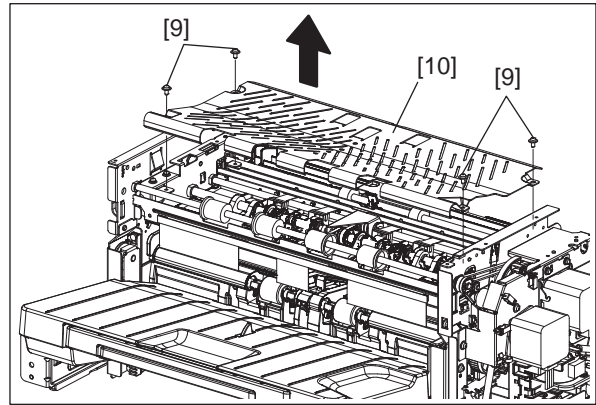


Fig. 4-24

- (10) Remove 2 screws [11] and take off the nip-roller assembly [12].

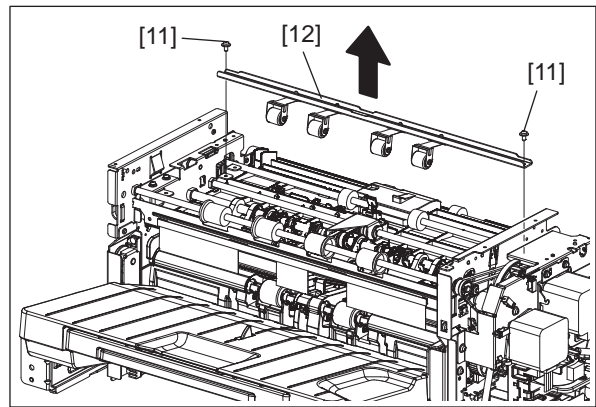


Fig. 4-25

- (11) Remove 1 spring [13] and 3 screws [14].
Then take off the 2nd transfer motor (M4) [15]
- (12) Remove 1 spring [16] and 3 screws [17].
Then take off the stack exit motor (M5) [18].

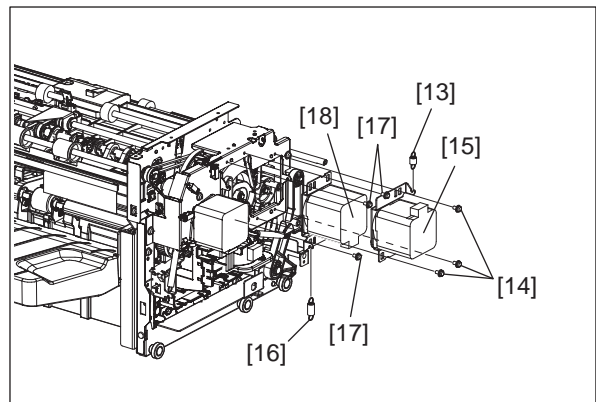


Fig. 4-26

- (13) Remove 1 spring [19] to take off the finisher locking lever [20].
- (14) Remove 6 screws [21] and take off the bracket [22].

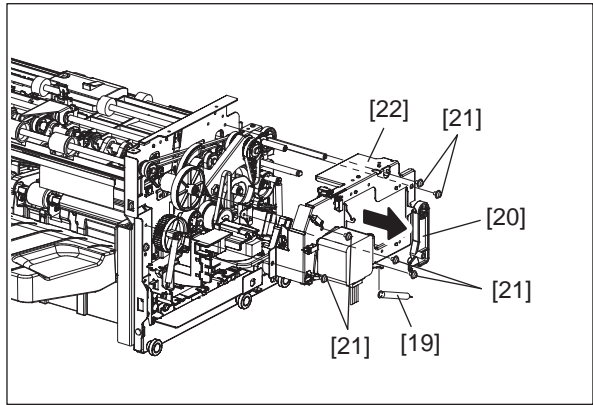


Fig. 4-27

- (15) Remove 1 each of: stack exit roller shift gear 1 [23], gear 2 [24], E-ring [25] and bushing [26].

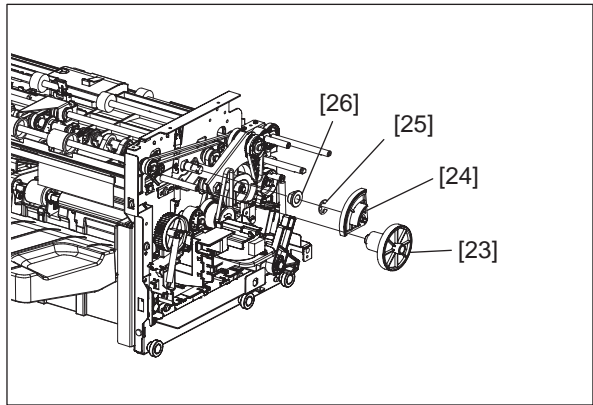


Fig. 4-28

- (16) Remove 1 each of: clip [27], timing belt [28], pulley [29] and parallel pin [30].
- (17) Remove 1 each of: clip [31], bushing [32] and screw [33]. Then take off the bracket [34].
- (18) Remove 1 each of: clip [35], timing belt [36], flange [37], pulley [38], parallel pin [39], timing belt [40], flange [41] and clip [42].

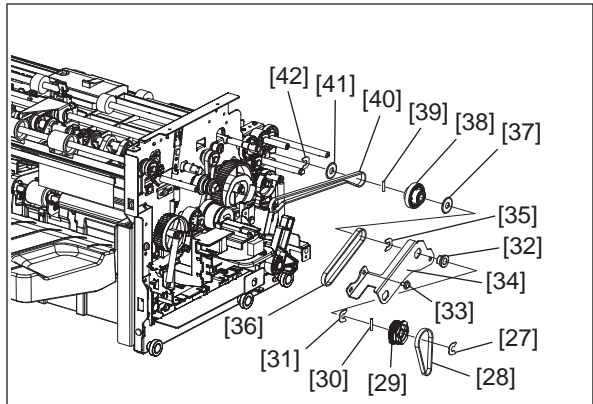


Fig. 4-29

- (19) Remove 1 each of: clip [43], flange [44], pulley [45], parallel pin [46], clip [47] and bushing [48].

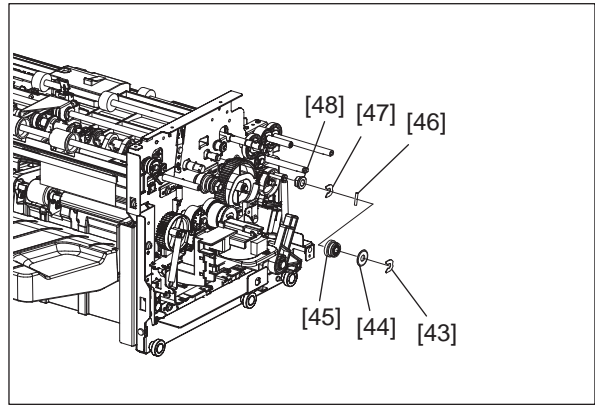


Fig. 4-30

- (20) Remove 2 screws [49] and take off the trailing edge holding solenoid (SOL2) [50].
- (21) Remove 1 each of: clip [51] and trailing edge holding gear [52].
- (22) Remove 1 each of: E-ring [53] and bushing [54].
- (23) Remove 1 each of: E-ring [55] and bushing [56].

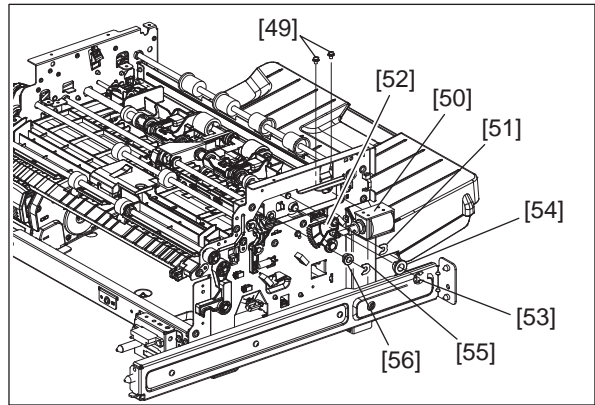


Fig. 4-31

- (24) Remove 2 clips [57] and shift 2 bushings [58].
- (25) Remove 1 clip [59] and shift 1 bushing [60].
- (26) Take off the bushing bracket [61].

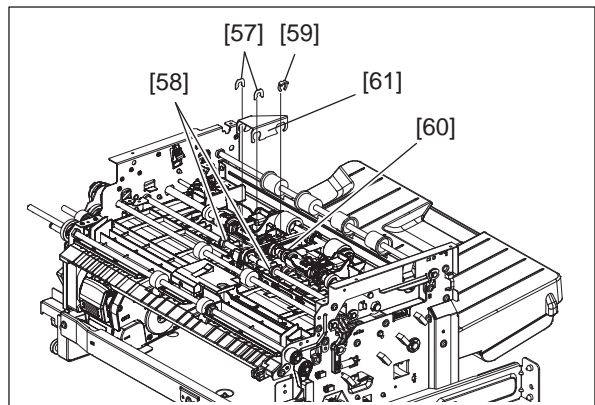


Fig. 4-32

(27) Take off the stack exit unit [62].

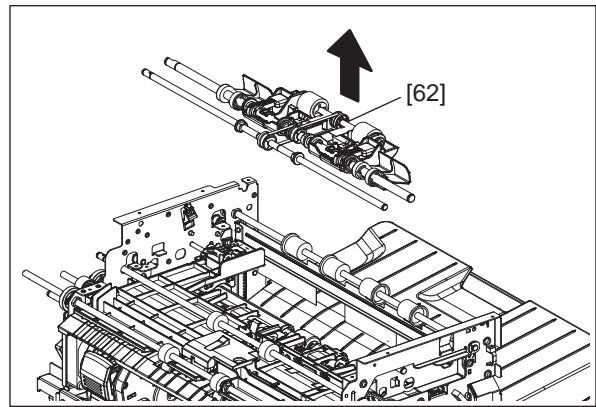


Fig. 4-33

[C] Transport unit in finishing section

- (1) Take off the front left cover.
(📖 P.4-2 "[A] Front left cover")
- (2) Take off the rear cover.
(📖 P.4-3 "[B] Rear cover")
- (3) Take off the stationary tray.
(📖 P.4-5 "[E] Stationary tray")
- (4) Take off the sub-path upper guide.
(📖 P.4-3 "[C] Sub-path upper guide")
- (5) Take off the stack exit unit.
(📖 P.4-8 "[B] Stack exit unit")
- (6) Remove 1 each of: clip [1] and bushing [2].
- (7) Remove 4 screws [3].
- (8) Remove 1 each of: E-ring [4], gear [5], parallel pin [6], clip [7] and bushing [8].

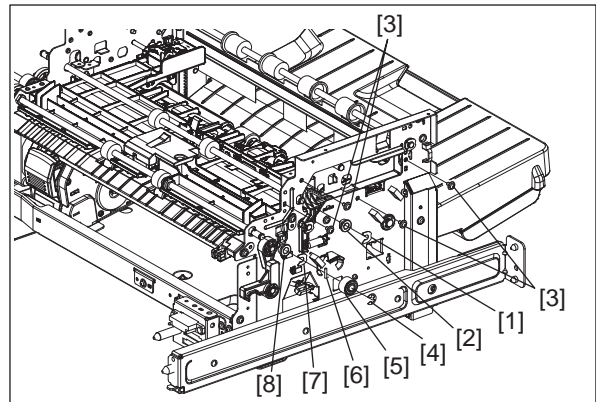


Fig. 4-34

- (9) Remove 1 each of: clip [9], gear [10], parallel pin [11], clip [12] and bushing [13].
- (10) Remove 1 screw [14] and take off the sensor cover [15].
- (11) Take off the transport rollers [16] and [17].

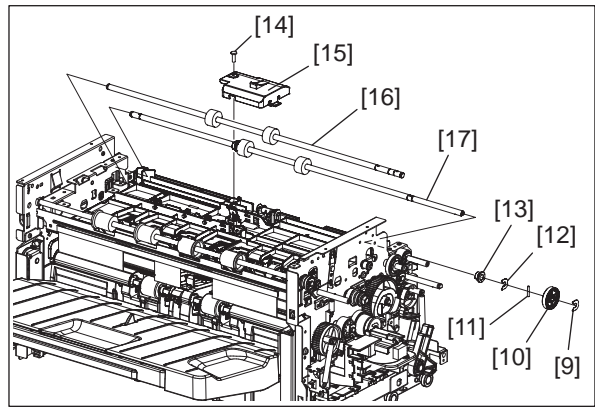


Fig. 4-35

- (12) Take off the rear sub frame [18].

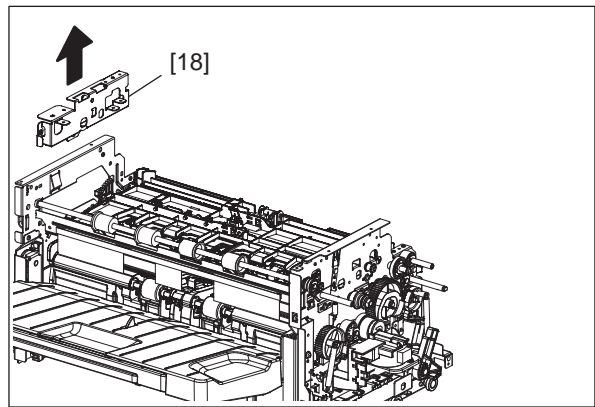


Fig. 4-36

- (13) Release the sensor harnesses [19], [20] and [21] from the harness guides.
- (14) Remove 2 screws [22].

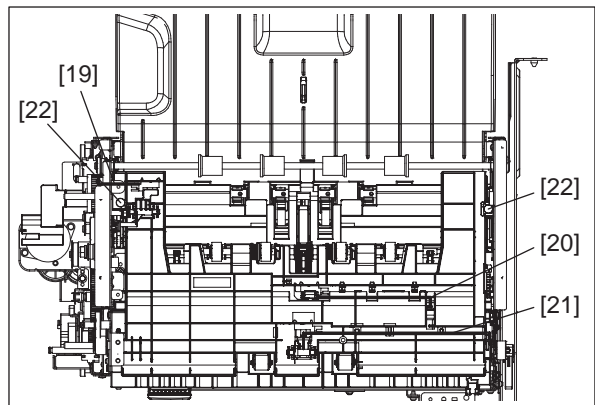


Fig. 4-37

- (15) Take off the transport guide [23] in the finishing section.

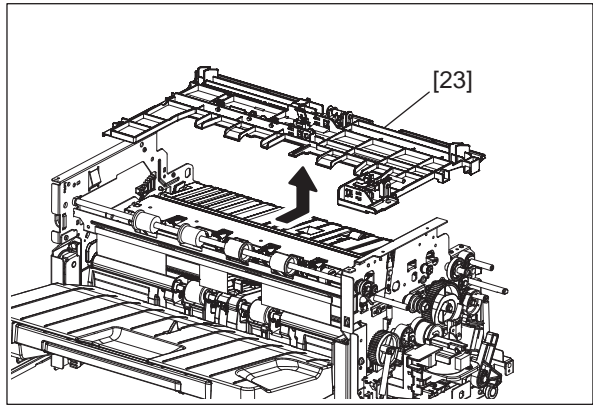


Fig. 4-38

- (16) Remove 1 each of: clip [24] and gear [25].
- (17) Remove 1 screw [26] and take off the solenoid [27].
- (18) Remove the gear [28].
- (19) Remove the E-ring [29].

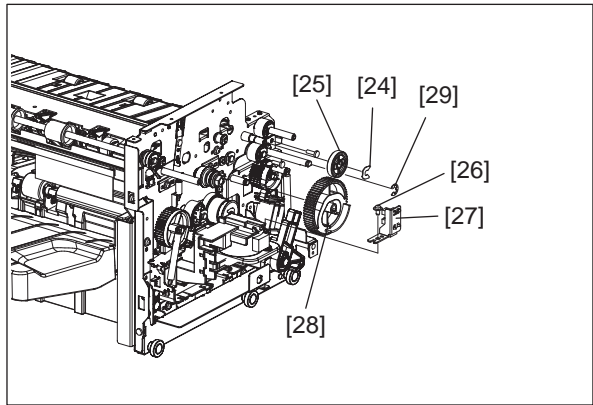


Fig. 4-39

- (20) Take off finisher locking lever 1 [30].
- (21) Take off finisher locking lever 2 [31] and remove 1 E-ring [32]. Then take off the shaft [33].

Note:

Do not lose the bushing [34] when taking off the shaft [33].

- (22) Remove 2 screws [35] and take off 2 caulking stud assemblies [36].
- (23) Take off the transport guide assembly [37] in the finishing section.

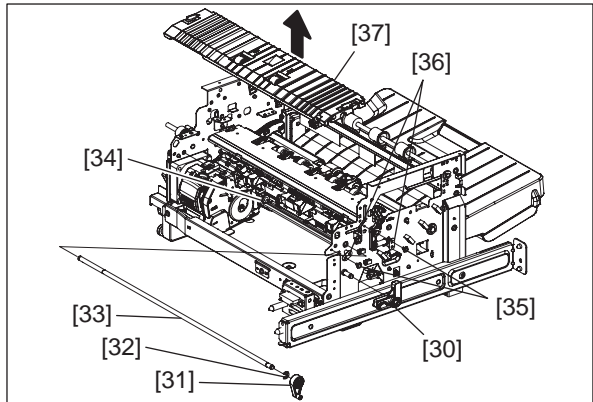


Fig. 4-40

- (24) Remove 1 screw [38] and take off the trailing edge alignment plate [39].
- (25) Remove 2 each of: clips [40] and knurled roller shift links [41].
- (26) Remove the screw [42].

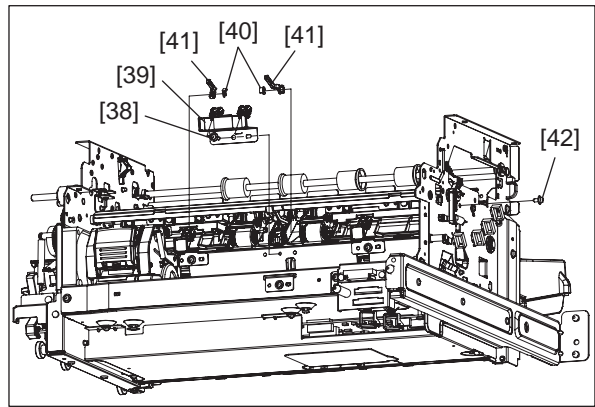


Fig. 4-41

- (27) Remove 1 screw [43] and take off the guide installation bracket [44].
- (28) Remove 1 screw [45] and take off the transport unit [46] in the finishing section.

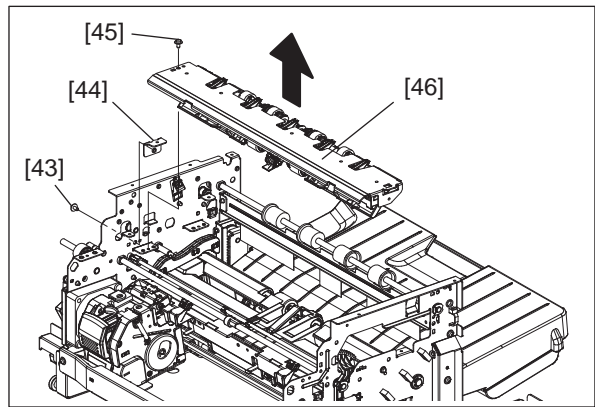


Fig. 4-42

[D] Finishing tray

- (1) Take off the front left cover.
(📖 P.4-2 "[A] Front left cover")
- (2) Take off the rear cover.
(📖 P.4-3 "[B] Rear cover")
- (3) Take off the transport unit in the finishing section.
(📖 P.4-13 "[C] Transport unit in finishing section")
- (4) Take off the movable tray.
(📖 P.4-4 "[D] Movable tray")

- (5) Remove 4 screws [1] and take off the board cover [2].
- (6) Disconnect 2 joint connectors [3] of the finishing tray harness, and then release it from the harness duct.

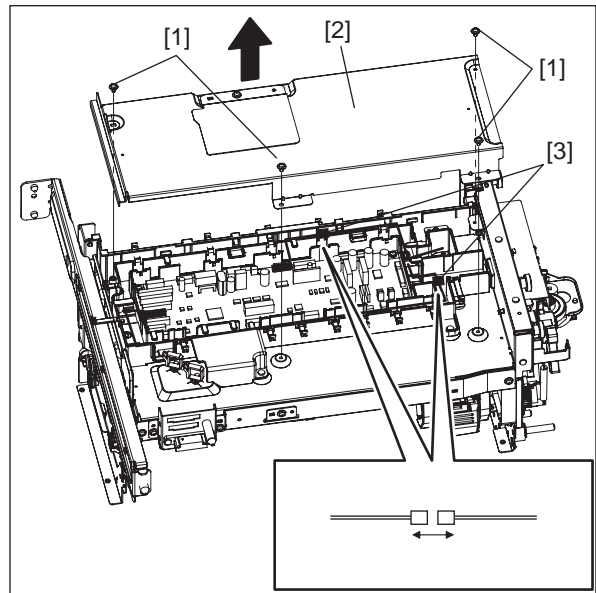


Fig. 4-43

- (7) Place the Finisher with its upper surface facing up so that it returns to its original condition.
- (8) Take off the lower cover in the finishing section.
(P.4-6 "[F] Lower cover in finishing section")
- (9) Remove 3 screws [4] and take off the rack assembly on the front side [5].
- (10) Remove 1 each of: spring [6], gear [7], clip [8] and bushing [9].
- (11) Remove the E-ring [10] and bushing [11].
- (12) Take off the exit roller assembly [12].

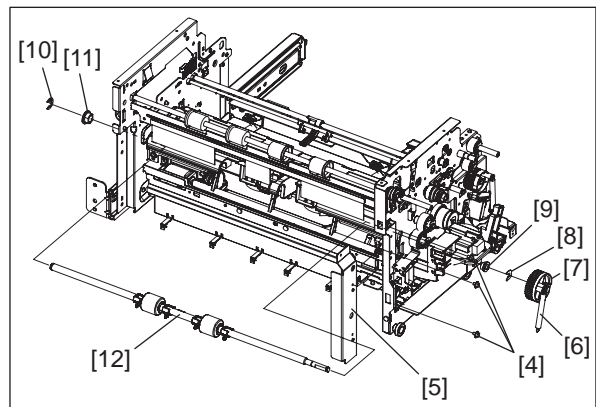


Fig. 4-44

- (13) Remove 2 screws [13] and take off the finishing tray unit [14].

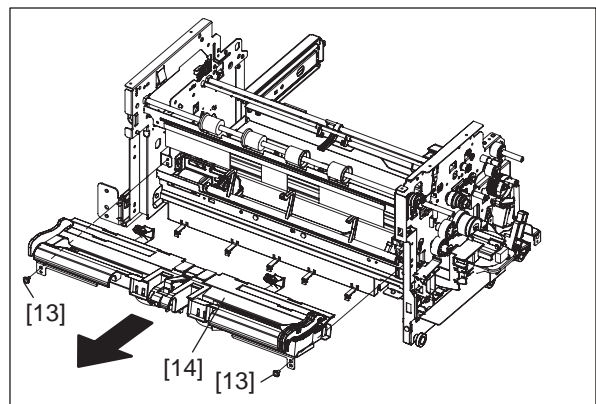


Fig. 4-45

[E] Stack top detecting lever

- (1) Take off the front left cover.
(📖 P.4-2 "[A] Front left cover")
- (2) Take off the rear cover.
(📖 P.4-3 "[B] Rear cover")
- (3) Take off the transport unit in the finishing section.
(📖 P.4-13 "[C] Transport unit in finishing section")
- (4) Take off the movable tray.
(📖 P.4-4 "[D] Movable tray")
- (5) Take off the finishing tray.
(📖 P.4-16 "[D] Finishing tray")
- (6) Remove 1 each of: clip [1], spring [2] and screw [3]. Then take off the sensor installation bracket [4] and stack top detecting lever [5].
- (7) Remove 1 screw [6] and take off the stack top detection solenoid (SOL1) [7].

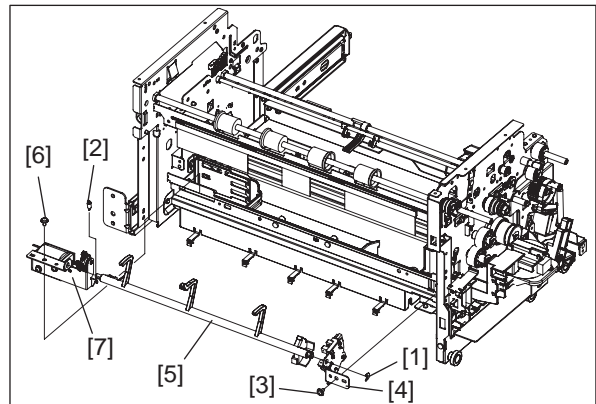


Fig. 4-46

4.1.3 PC Boards

- (1) Place the Finisher with its upper surface facing down.

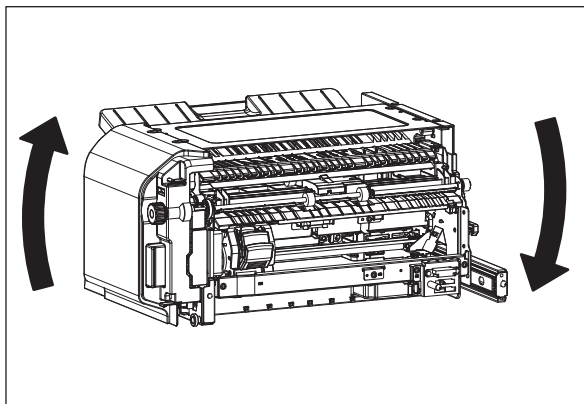


Fig. 4-47

- (2) Remove 4 screws [1] and take off the board cover [2].

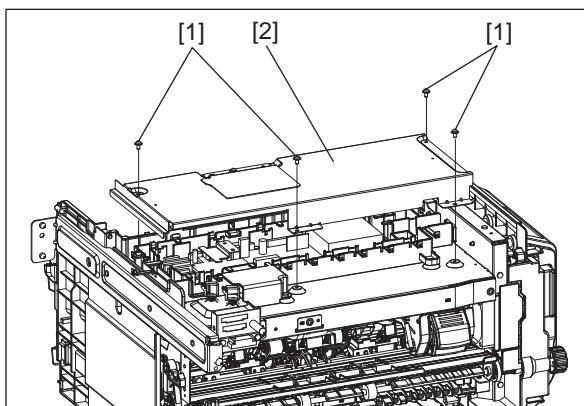


Fig. 4-48

- (3) Disconnect 19 connectors from the finisher control PC board (FIN) [3] and remove 6 screws [4] to take it off.

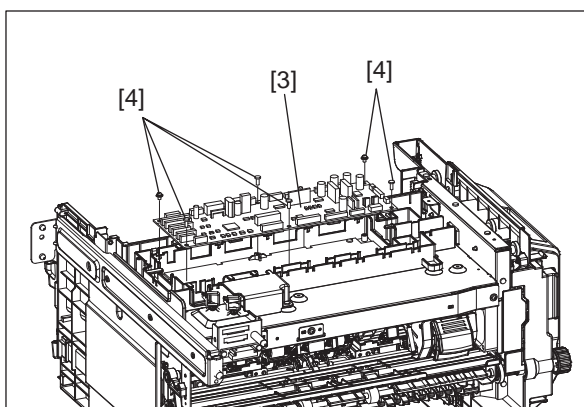


Fig. 4-49

4.2 Receiving Section

4.2.1 Externals

- [1] Front cover
- [2] Receiving section inner cover (3)
- [3] Reverse path guide (2)

Figures in parentheses show the number of screws required for installation.

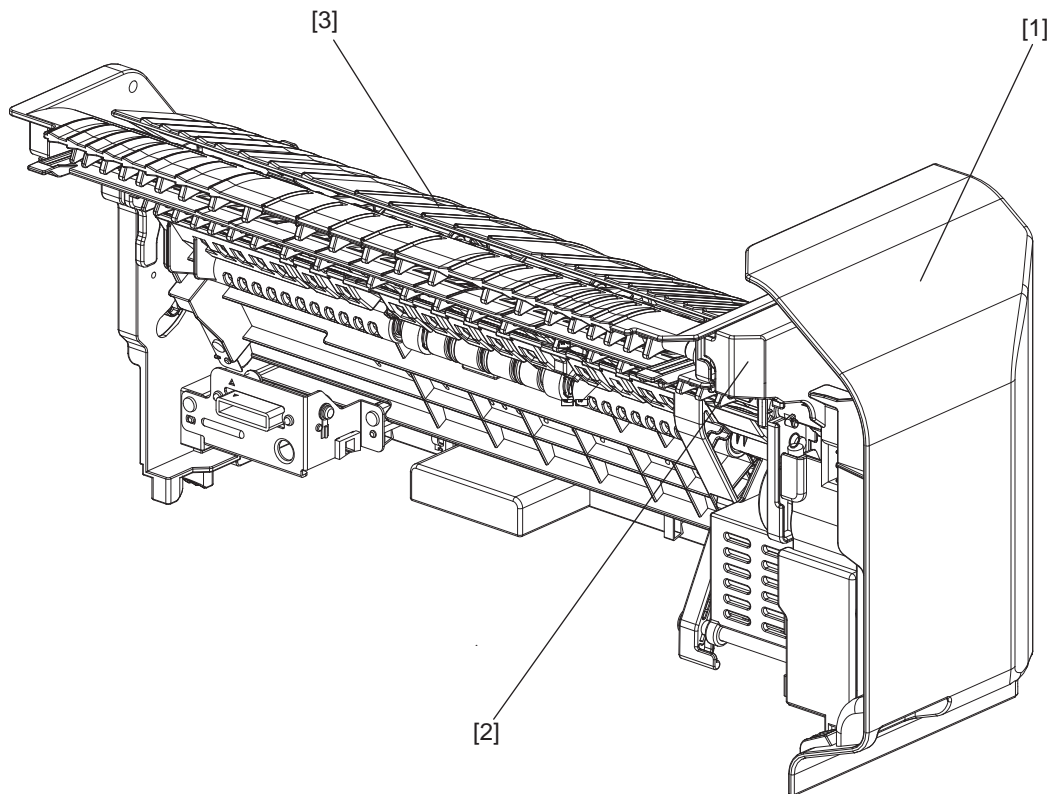


Fig. 4-50

[A] Front cover

- (1) Open the front cover [1] and remove 1 clip [2].

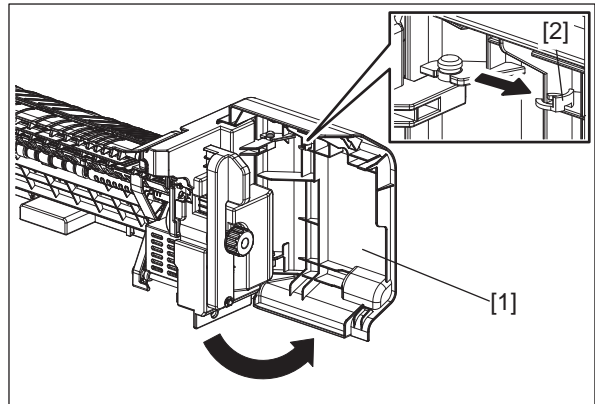


Fig. 4-51

- (2) Take off the front cover [1] by lifting it upward.

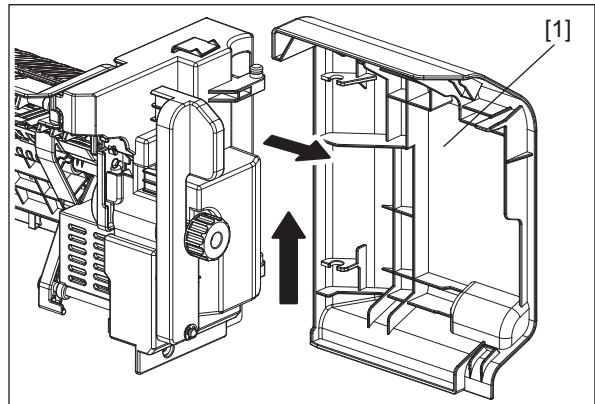


Fig. 4-52

- (3) Remove 1 screw [3] and jam access knob [4].

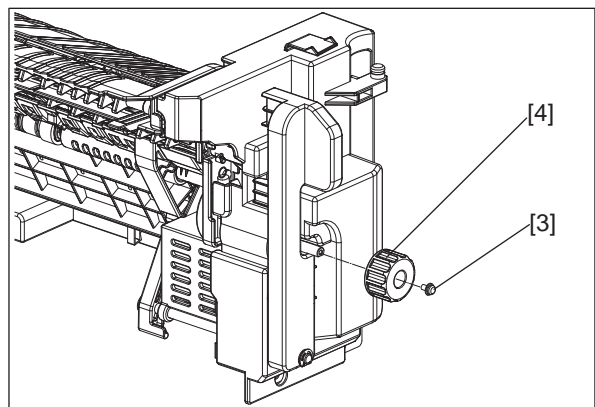


Fig. 4-53

- (4) Remove the E-ring [5] and take off the jam access lever [6].

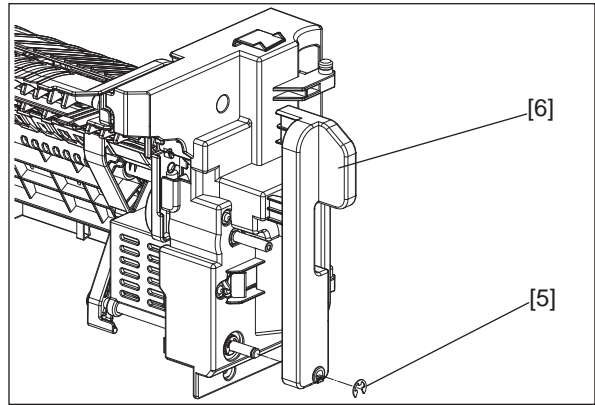


Fig. 4-54

- (5) Remove 3 screws [7] and take off the inner cover [9] by releasing 2 hooks [8].

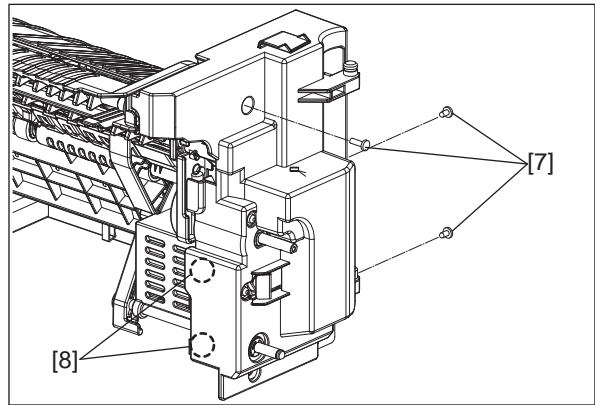


Fig. 4-55

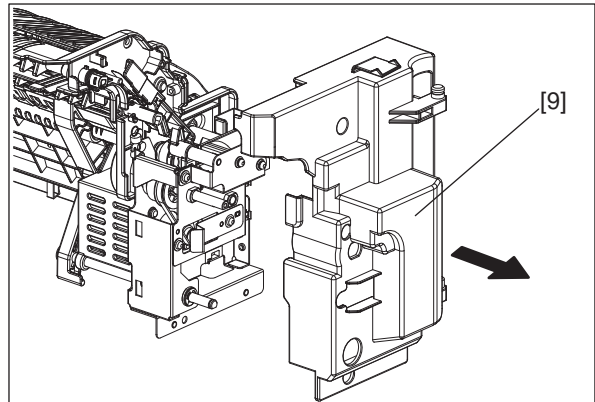



Fig. 4-56

4.2.2 Sensors

[A] Entrance path sensor

- (1) Take off the front cover.
( P.4-21 "[A] Front cover")
- (2) Remove 2 screws [1] and take off the reverse path guide [2].

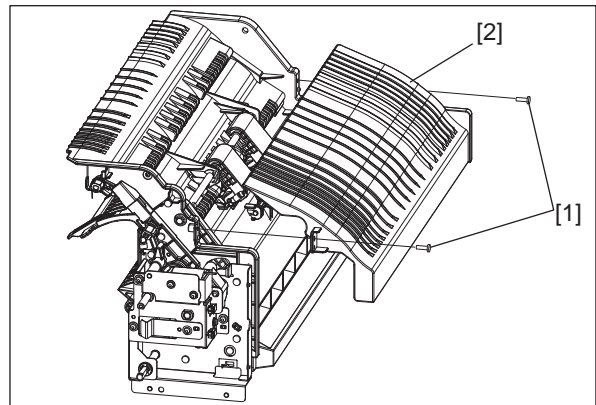


Fig. 4-57

- (3) Take off the entrance path sensor [3].

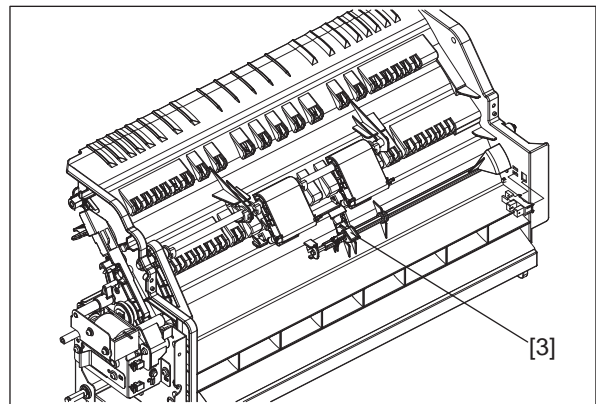



Fig. 4-58

4.2.3 Motors and solenoids

[A] 1st flapper solenoid

- (1) Take off the front cover.
( P.4-21 "[A] Front cover")
- (2) Remove 1 screw [1] and disconnect the connector [2].

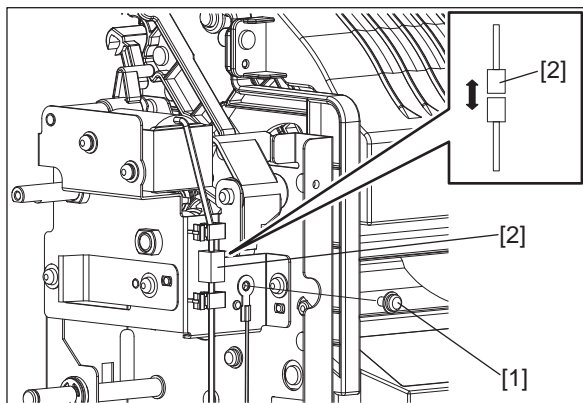


Fig. 4-59

- (3) Remove 3 screws [3] and take off the solenoid bracket [4].

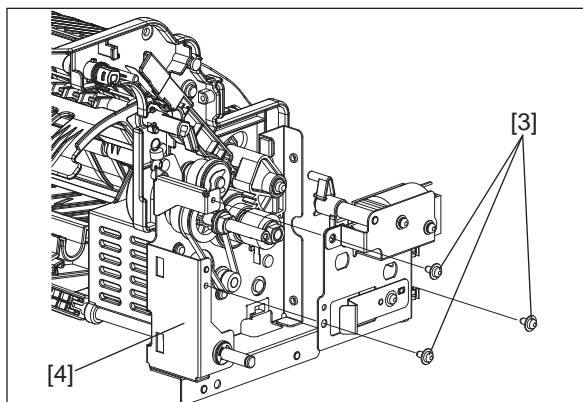


Fig. 4-60

- (4) Remove 2 screws [5] and the lever [6]. Then take off the 1st flapper solenoid [7].

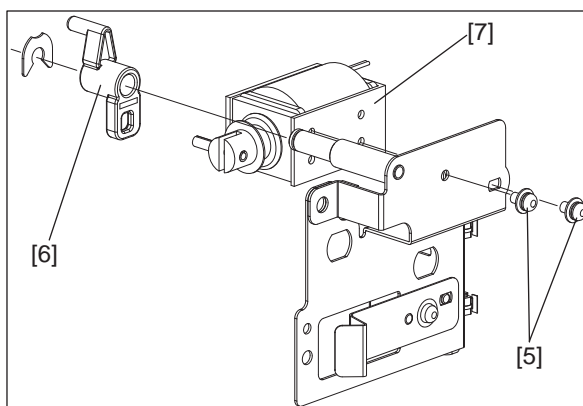


Fig. 4-61

Note:

When assembling, be sure that the arm [8] of the lever is mounted on the right side of the arm [9] of the 1st flapper lever.

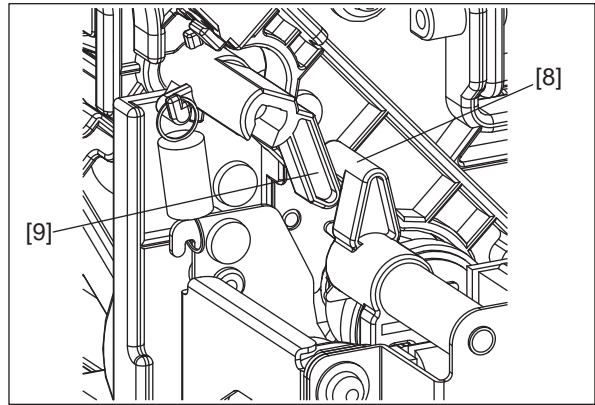


Fig. 4-62

Notes:

- When assembling, be sure that the link lever [10] is mounted beneath the nip releasing link [11].
- When assembling, be sure that the link lever [10] is inserted into the square hole of the 2nd flapper link [12].

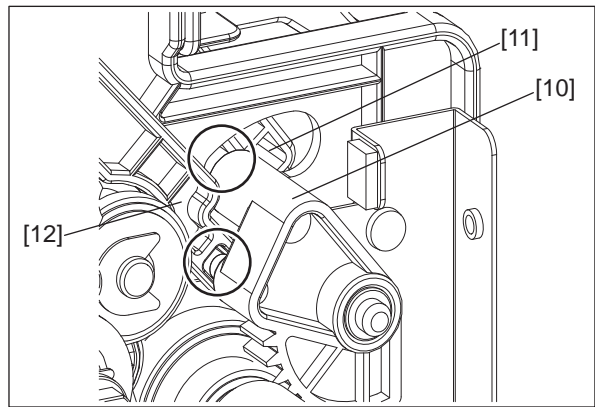



Fig. 4-63

[B] 1st transport motor

- (1) Take off the front cover.
( P.4-21 "[A] Front cover")
- (2) Remove 2 E-rings [1] and take off the jam access control arm [2].

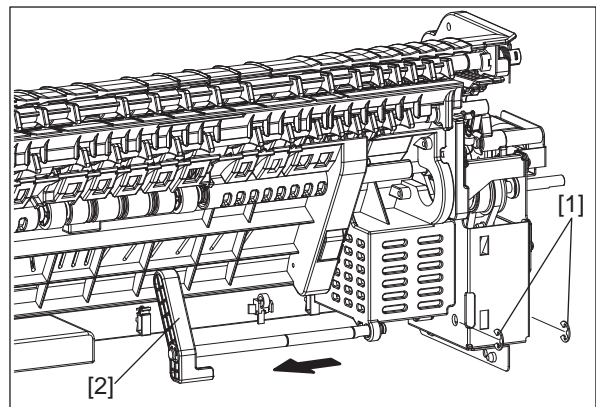


Fig. 4-64

- (3) Remove 1 screw [3] and disconnect the connector [4].

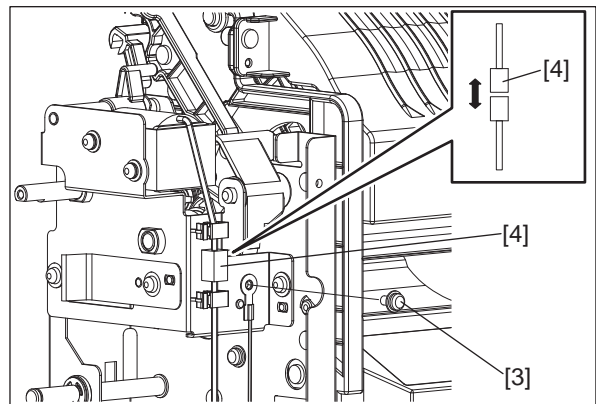


Fig. 4-65

- (4) Remove 4 screws [5] and the spring [6]. Then take off the motor unit [7].

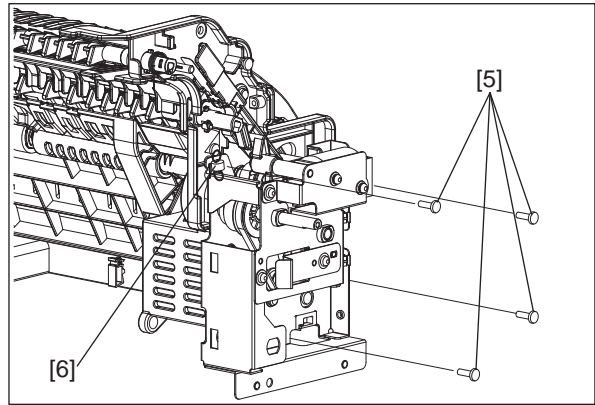


Fig. 4-66

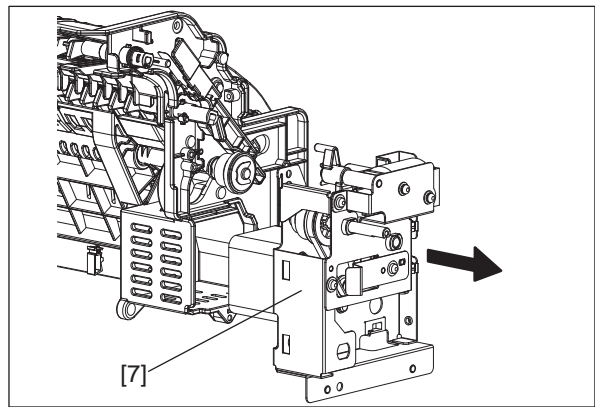


Fig. 4-67

- (5) Remove 3 screws [8] and take off the solenoid bracket [9].

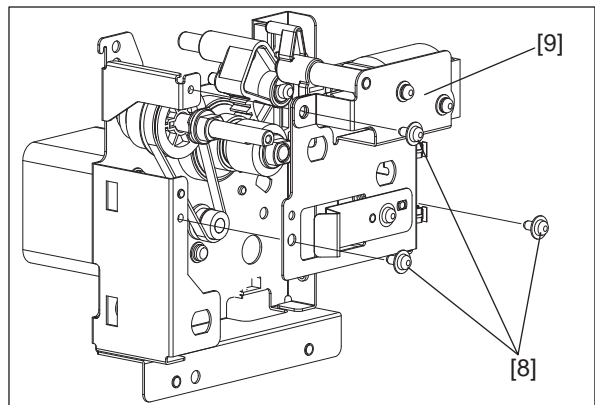


Fig. 4-68

- (6) Remove 2 screws [10] and the belt [11]. Then take off the 1st transport motor [12].

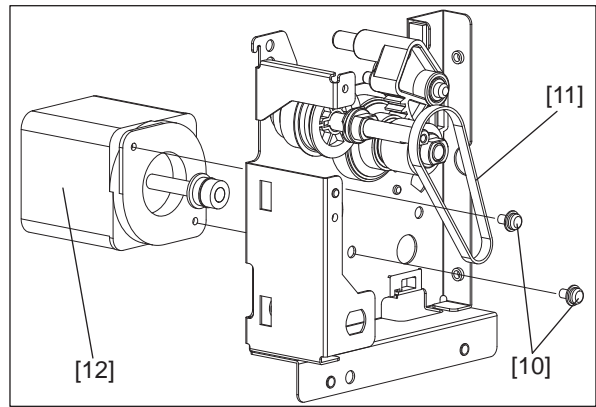


Fig. 4-69

Note:

When assembling, be sure that the arm [13] of the lever is mounted on the right side of the arm [14] of the 1st flapper lever.

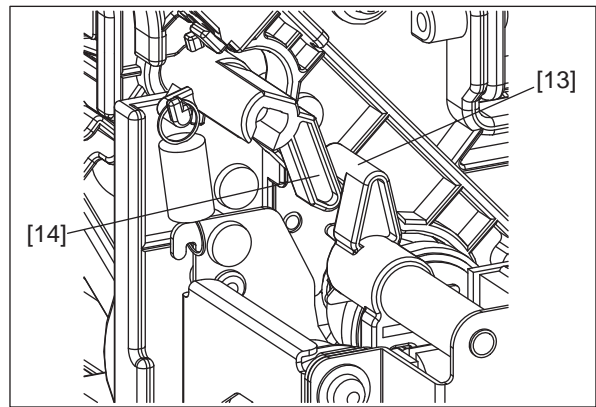


Fig. 4-70

Notes:

- When assembling, be sure that the link lever [15] is mounted beneath the nip releasing link [16].
- When assembling, be sure that the link lever [15] is inserted into the square hole of the 2nd flapper link [17].

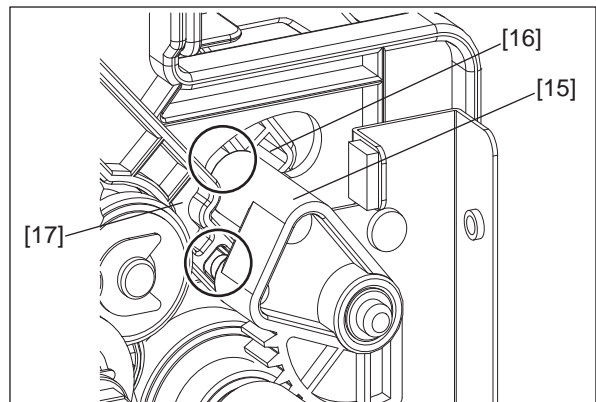


Fig. 4-71

4.2.4 Rollers

[A] Receiving roller

- (1) Take off the front cover.
(☞ P.4-21 "[A] Front cover")
- (2) Take off the 1st transport motor.
(☞ P.4-26 "[B] 1st transport motor")
- (3) Remove the parts [1] on both ends of the roller shaft. Then take off the roller unit [2].

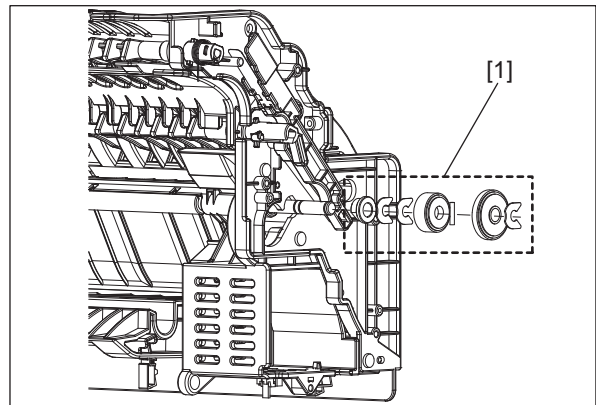


Fig. 4-72

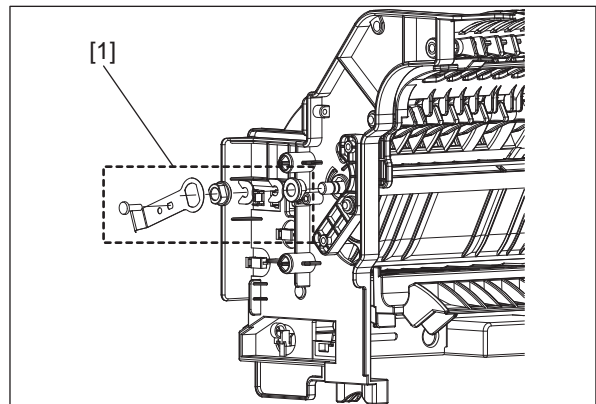


Fig. 4-73

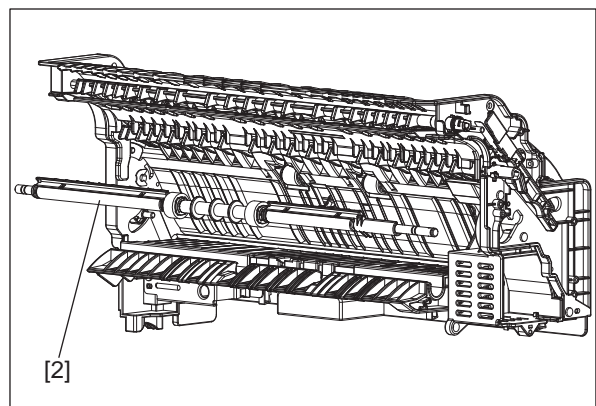


Fig. 4-74

(4) Remove the peripheral assembly and take off the rollers [3].

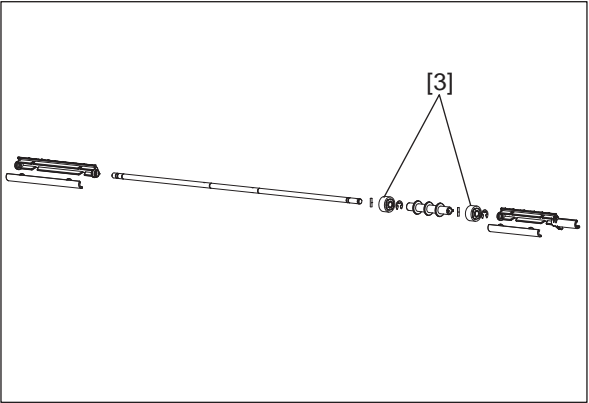


Fig. 4-75

4.3 Hole Punch Unit

4.3.1 Externals

[A] Hole Punch Unit

- (1) Disconnect 2 connectors [1] and remove 2 binding bands [2] and 1 clamp [3].
- (2) Remove 2 screws [4].

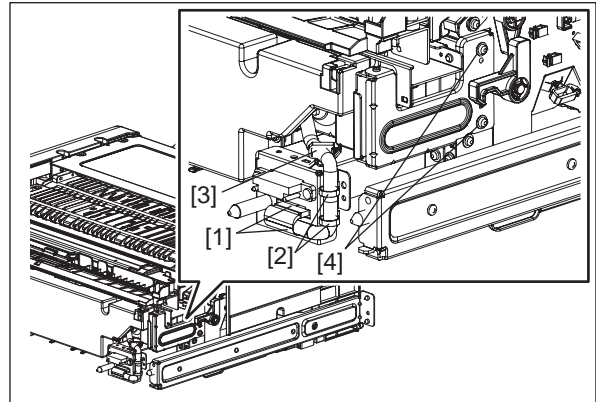


Fig. 4-76

- (3) Move the Hole Punch Unit opening lever [5] to take off the Hole Punch Unit [6].

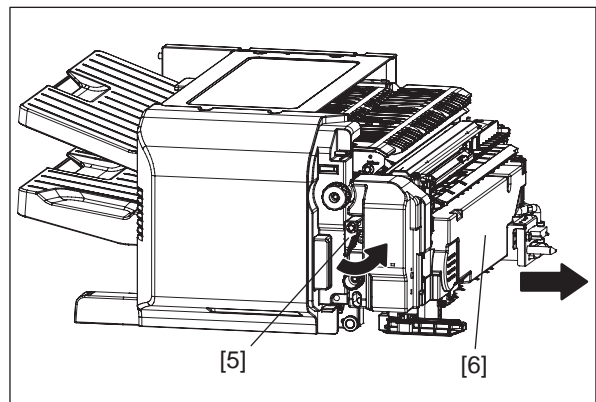


Fig. 4-77

[B] Inner cover

- (1) Remove 1 screw [1] and the jam access knob [2].
- (2) Remove 1 E-ring [3], the Hold Punch Unit opening lever [4] and parallel pin [5].

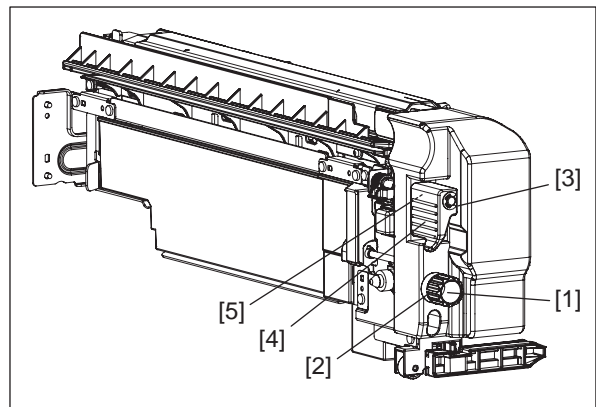


Fig. 4-78

- (3) Remove 4 screws [6] and take off the inner cover [7].

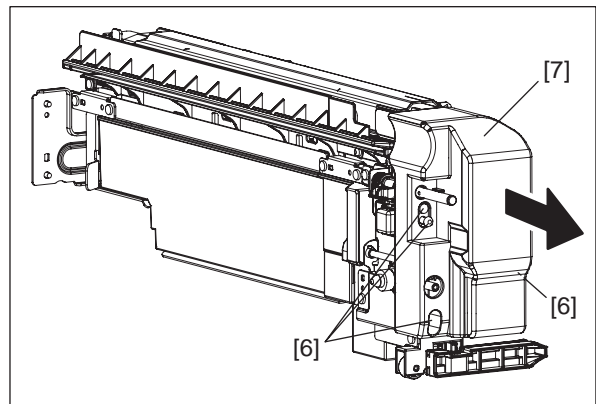


Fig. 4-79

4.3.2 Drive section

[A] Punch sliding unit

- (1) Take off the Hole Punch Unit.
(📖 P.4-31 "[A] Hole Punch Unit")
- (2) Take off the inner cover.
(📖 P.4-32 "[B] Inner cover")
- (3) Take off the punch waste case.
- (4) Remove 2 screws [1] and take off the cover [2] of the hole punch control PC board.

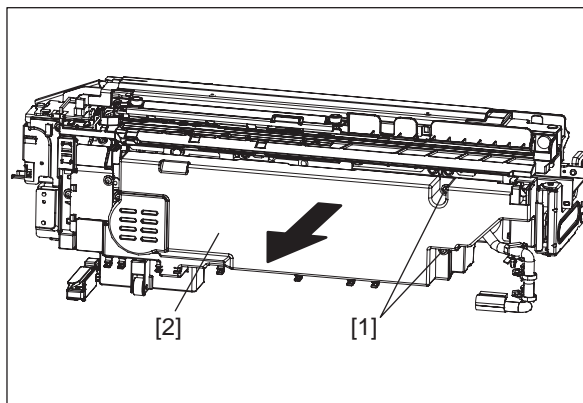


Fig. 4-80

- (5) Remove 1 screw [3] and take off the harness fixing cover [4].
- (6) Disconnect 8 clamps [5] of the harness guide.
- (7) Disconnect 4 connectors [6] and 1 connector [7] and release the harness from the harness guide.

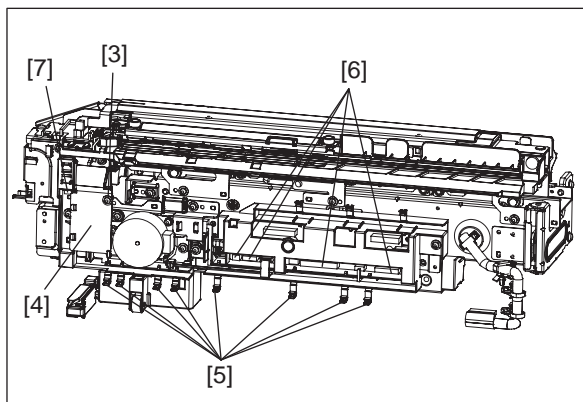


Fig. 4-81

- (8) Remove 1 spring [8] and 2 screws [9]. Then take off 2 fixing brackets [10] of the slide-roller.

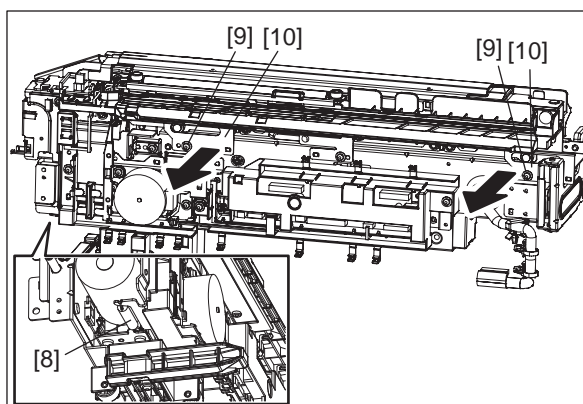


Fig. 4-82

- (9) Remove 4 screws [11] and take off 2 fixing brackets [12] of the slide-roller.

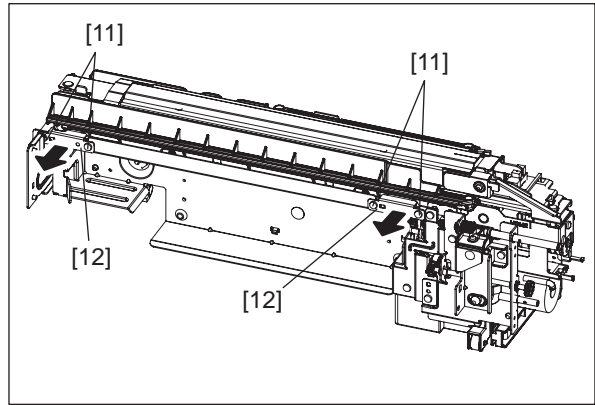


Fig. 4-83

- (10) Take off the punch sliding unit [13].

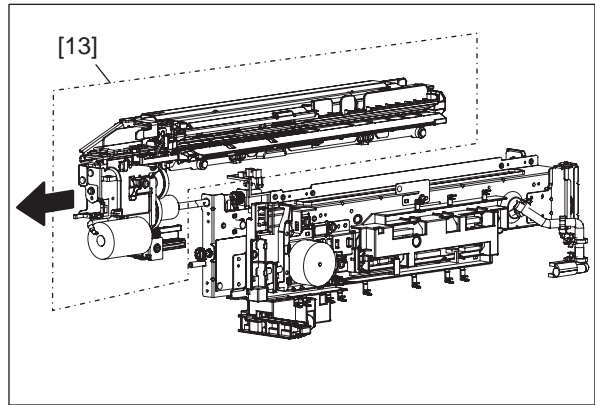



Fig. 4-84

4.3.3 PC Boards

[A] Hole punch control PC board

- (1) Take off the Hole Punch Unit.
( P.4-31 "[A] Hole Punch Unit")
- (2) Remove 2 screws [1] and take off the cover [2] of the hole punch control PC board.

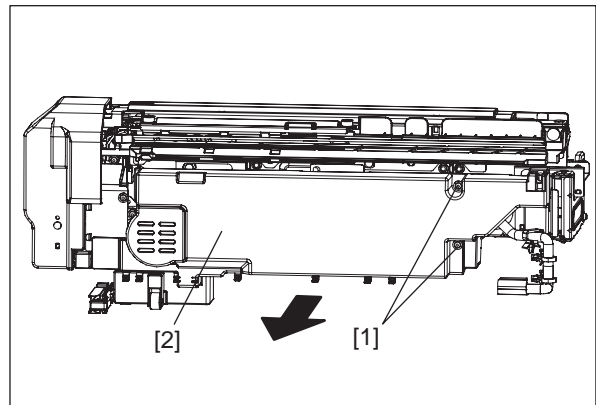


Fig. 4-85

- (3) Disconnect 8 clamps [3] of the harness guide and 8 connectors.
- (4) Remove 2 screws [4] and take off the harness guide [5].

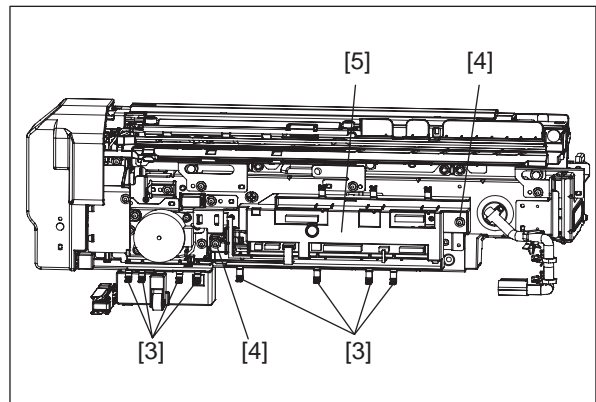


Fig. 4-86

- (5) Remove 1 screw [6] and take off the hole punch control PC board (HP) [7].

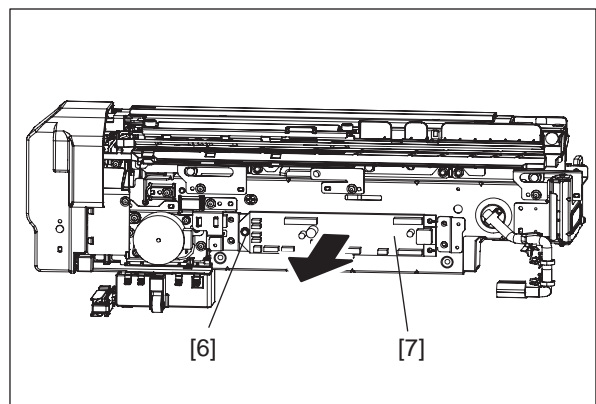


Fig. 4-87

[B] Trailing edge detection sensor board (light-receiving)

- (1) Take off the Hole Punch Unit.
(P.4-31 "[A] Hole Punch Unit")
- (2) Remove 2 each of: screws [1] and screw covers [2]. Then take off the cover [3] of the trailing edge detection sensor board (light-receiving).
- (3) Take off the trailing edge detection sensor board (light-receiving) [4] and disconnect 1 connector.

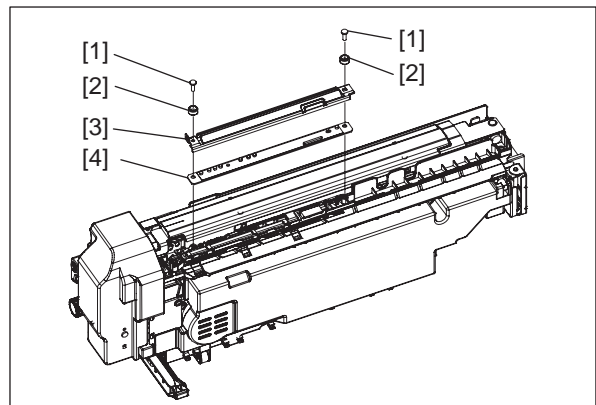


Fig. 4-88

[C] Trailing edge detection sensor board (light-emitting)

- (1) Take off the Hole Punch Unit.
(P.4-31 "[A] Hole Punch Unit")
- (2) Take off the inner cover.
(P.4-32 "[B] Inner cover")
- (3) Take off the punch waste case.
- (4) Take off the punch sliding unit.
(P.4-33 "[A] Punch sliding unit")
- (5) Remove 2 screws [1] and take off the cover [2] of the trailing edge detection sensor board (light-emitting).
- (6) Take off the trailing edge detection sensor board (light-emitting) [3] and disconnect 1 connector.

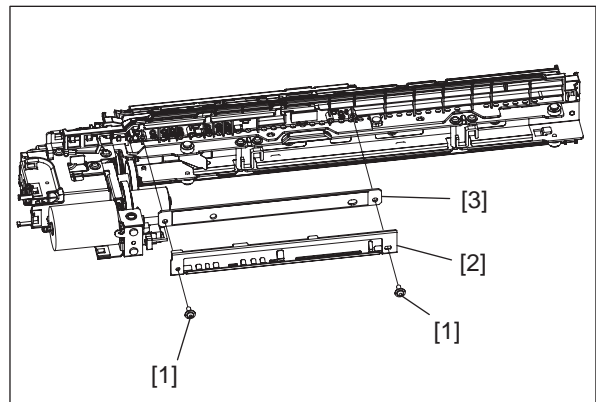


Fig. 4-89

5. ADJUSTMENT

5.1 Power Supply System (Saddle Stitch Finisher Unit)

Note:

Before performing each adjustment, make sure that all covers (including those of the finisher and equipment) are closed. Otherwise, no power is supplied to the Finisher and the adjustment may not be performed properly.

5.1.1 Alignment position adjustment

[A] Alignment position adjustment (front)

This adjustment is performed in the Adjustment Mode (05-4822-0) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-3.0 mm to 3.0 mm	
Adjustment direction	Increasing the value	The alignment plate moves to the center.
	Decreasing the value	The alignment plate moves to the edge of paper.

[B] Alignment position adjustment (rear)

This adjustment is performed in the Adjustment Mode (05-4822-1) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-3.0 mm to 3.0 mm	
Adjustment direction	Increasing the value	The alignment plate moves to the center.
	Decreasing the value	The alignment plate moves to the edge of paper.

5.1.2 Stapling position adjustment

[A] Stapling position adjustment (rear 1-point)

This adjustment is performed in the Adjustment Mode (05-4823-0) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-5.0 mm to 5.0 mm	
Adjustment direction	Increasing the value	The distance between the stapling position and the edge of the paper becomes longer.
	Decreasing the value	The distance between the stapling position and the edge of the paper becomes shorter.

[B] Stapling position adjustment (rear 1-point / "R" series size)

This adjustment is performed in the Adjustment Mode (05-4823-1) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-1.0 mm to 5.0 mm	
Adjustment direction	Increasing the value	The distance between the stapling position and the edge of the paper becomes longer.
	Decreasing the value	The distance between the stapling position and the edge of the paper becomes shorter.

[C] Stapling position adjustment (front 1-point)

This adjustment is performed in the Adjustment Mode (05-4823-2) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-5.0 mm to 5.0 mm	
Adjustment direction	Increasing the value	The distance between the stapling position and the edge of the paper becomes shorter.
	Decreasing the value	The distance between the stapling position and the edge of the paper becomes longer.

[D] Stapling position adjustment (front 1-point / "R" series size)

This adjustment is performed in the Adjustment Mode (05-4823-3) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-5.0 mm to 1.0 mm	
Adjustment direction	Increasing the value	The distance between the stapling position and the edge of the paper becomes shorter.
	Decreasing the value	The distance between the stapling position and the edge of the paper becomes longer.

[E] Stapling position adjustment (center 2-point)

This adjustment is performed in the Adjustment Mode (05-4823-4) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-1.0 mm to 1.0 mm	
Adjustment direction	Increasing the value	The stapling position moves farther to the front side from the center position.
	Decreasing the value	The stapling position moves farther to the rear side from the center position.

[F] Stapling position adjustment (2-point pitch)

This adjustment is performed in the Adjustment Mode (05-4823-5) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-3.0 mm to 2.4 mm	
Adjustment direction	Increasing the value	The pitch between the stapling positions becomes wider.
	Decreasing the value	The pitch between the stapling positions becomes narrower.

5.1.3 Punching position center adjustment

This adjustment is performed in the Adjustment Mode (05-4824) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-3.0 mm to 3.0 mm	
Adjustment direction	Increasing the value	The punching position moves farther to the front side from the center position.
	Decreasing the value	The punching position moves farther to the rear side from the center position.

5.1.4 Punch hole position adjustment

This adjustment is performed in the Adjustment Mode (05-4825) of the equipment.

Adjustment scale	0.2mm	
Adjustable range	-4.0 mm to 1.0 mm	
Adjustment direction	Increasing the value	The distance between the punch hole and the trailing edge of the paper becomes shorter.
	Decreasing the value	The distance between the punch hole and the trailing edge of the paper becomes longer.

5.2 Power Supply System (Hole Punch Unit Section)

5.2.1 Destination setting of hole punch control PC board

This setting is performed when the hole punch control PC board (HP) [1] is replaced with a DIP switch [2] on it.

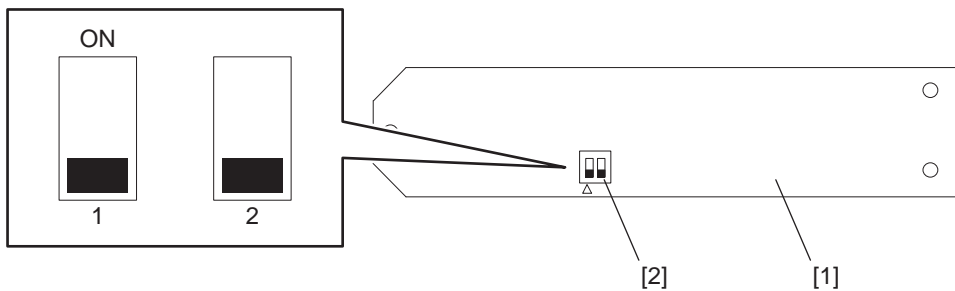


Fig. 5-1

Refer to the table below for the destination settings.

Destination	Number of punch holes	DIP switch	
		1	2
MJ-6007E (Europe/Japan/China)	2 holes	OFF	OFF
MJ-6007N (North America)	2/3 holes	ON	OFF
MJ-6007F (France)	4 holes	OFF	ON
MJ-6007S (Sweden)	4 holes	ON	ON

6. TROUBLESHOOTING

6.1 Troubleshooting (Finisher unit)

[EA10, EA20] 1st transport motor (M8) fault/2nd transport motor (M4) fault

Probable cause	Checking and measures
1st transport motor (M8) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Finisher control PC board (FIN): CN22)
2nd transport motor (M4) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Finisher control PC board (FIN): CN14)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the motor and the connector, exchange the finisher control PC board (FIN).

[EA25] Stack exit motor (M5) abnormality

Probable cause	Checking and measures
Stack exit motor (M5) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connectors. (Finisher control PC board (FIN): CN14)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the motor, sensor and connectors, exchange the finisher control PC board (FIN).

[EA2E, EA31] Transport jam in Finisher

Probable cause	Checking and measures
Entrance path sensor (S19) abnormality	Measure the voltage on TP86 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Middle path sensor (S7) abnormality	Measure the voltage on TP84 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Sub-path sensor (S8) abnormality	Measure the voltage on TP85 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Finisher control PC board (FIN): CN6, CN22)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the sensor and the connector, exchange the finisher control PC board (FIN).

[CC80] Front alignment motor (M2) abnormality

Error	Timing of detection
<ul style="list-style-type: none"> • Front alignment motor (M2) • Front alignment plate home position sensor (S5) 	<ul style="list-style-type: none"> • The turning OFF of the front alignment plate home position sensor (S5) is not detected when the front alignment plate is moved from a point where this sensor is turned ON to one point where this sensor is turned OFF after the front alignment motor (M2) has been driven at the specified number of pulse. • The turning ON of the front alignment plate home position sensor (S5) is not detected when the front alignment plate is moved from a point where this sensor is turned OFF to one point where this sensor is turned ON after the front alignment motor (M2) has been driven at the specified number of pulse.

Probable cause	Checking and measures
Front alignment motor (M2) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Front alignment plate home position sensor (S5) abnormality	Measure the voltage on TP15 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connectors. (Finisher control PC board (FIN): CN5, CN12)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the motor, sensor and connectors, exchange the finisher control PC board (FIN).

[CB40] Rear alignment motor (M3) abnormality

Error	Timing of detection
<ul style="list-style-type: none"> Rear alignment motor (M3) Rear alignment plate home position sensor (S6) 	<ul style="list-style-type: none"> The turning OFF of the rear alignment plate home position sensor (S6) is not detected when the rear alignment plate is moved from a point where this sensor is turned ON to one point where this sensor is turned OFF after the rear alignment motor (M3) has been driven at the specified number of pulse. The turning ON of the rear alignment plate home position sensor (S6) is not detected when the rear alignment plate is moved from a point where this sensor is turned OFF to one point where this sensor is turned ON after the rear alignment motor (M3) has been driven at the specified number of pulse.

Probable cause	Checking and measures
Rear alignment motor (M3) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Rear alignment plate home position sensor (S6) abnormality	Measure the voltage on TP16 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of 3.3V±5% when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connectors. (Finisher control PC board (FIN): CN5, CN12)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the motor, sensor and connectors, exchange the finisher control PC board (FIN).

[EA32] Finishing tray paper detection error

Probable cause	Checking and measures
Finishing tray sensor (S4) abnormality	Measure the voltage on TP14 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of 3.3V±5% when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Finisher control PC board (FIN): CN5)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the sensor and the connector, exchange the finisher control PC board (FIN).

[CB30] Movable tray shift motor (M1) abnormality/Movable tray paper top detection error

Error	Timing of detection
<ul style="list-style-type: none"> Movable tray shift motor (M1) Stack top detection solenoid (SOL1) Stack top detection sensor-1 (S1) Stack top detection sensor-2 (S2) Movable tray lower limit sensor (S14) 	<ul style="list-style-type: none"> A locking signal is detected after the specified time* while the movable tray is moving. * A locking signal is not monitored from the start driving the motor until the specified time has passed.
	<ul style="list-style-type: none"> The stack top position of paper is not detected after the movable tray shift motor (M1) is driven in the specified time when the movable tray is moved up.
	<ul style="list-style-type: none"> The lower limit position of the stack top of paper is not detected after the movable tray shift motor (M1) has been driven in the specified time during the initial movement of the movable tray.
	<ul style="list-style-type: none"> The turning OFF of the movable tray lower limit sensor (S14) is not detected when the movable tray is moved from a point where this sensor is turned ON to one point where this sensor is turned OFF after the movable tray shift motor (M1) has been driven in the specified time.

Probable cause	Checking and measures
Movable tray shift motor (M1) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Movable tray lower limit sensor (S14) abnormality	Measure the voltage on TP17 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity among the connector terminals is normal. If electricity is not conducted, replace the connectors. (Finisher control PC board (FIN): CN4, CN10)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the motor, sensors and connectors, exchange the finisher control PC board (FIN).
Stack top detection solenoid (SOL1) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the solenoid.
Stack top detection sensor-1 (S1) abnormality	Measure the voltage on TP11 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Stack top detection sensor-2 (S2) abnormality	Measure the voltage on TP20 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Finisher control PC board (FIN): CN3)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the solenoid, sensors and connector, exchange the finisher control PC board (FIN).

[CB50] Staple motor (M10) abnormality

Error	Timing of detection
<ul style="list-style-type: none"> • Stapler motor (M9) • Staple unit clinching home position sensor (S16) 	<ul style="list-style-type: none"> • The staple unit clinching home position sensor (S16) does not detect the opening of the staple unit after the stapler motor (M9) has been driven reversely in the specified time from the closing during the initial movement of the staple unit.
	<ul style="list-style-type: none"> • The staple unit clinching home position sensor (S16) does not detect the opening of the staple unit in the specified time from the closing during the clinching movement of the staple unit, and also this sensor does not detect the opening by the reverse rotation of the motor after the stapler is stopped.
	<ul style="list-style-type: none"> • The staple unit clinching home position sensor (S16) does not detect the closing of the staple unit after the specified time during the clinching movement of the staple unit.
	<ul style="list-style-type: none"> • The staple unit clinching home position sensor (S16) does not detect the opening of the staple unit at the start of the clinching.

Probable cause	Checking and measures
Staple motor (M10) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the staple unit.
Staple unit clinching home position sensor (S16) abnormality	Measure the voltage on CN16 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when the sensor is ON and within the range of 3.3V±5% when OFF. If the voltage does not fall within the range mentioned, replace the staple unit.
Staple unit improper clinching prevention sensor (S15) abnormality	Measure the voltage on TP25 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of 3.3V±5% when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connectors. (Finisher control PC board (FIN): CN16, CN17)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the motor, sensors, switch and connectors, exchange the finisher control PC board (FIN).

[EA50] Stapling error

Probable cause	Checking and measures
Staple unit stapling start position sensor (S17) abnormality	Measure the voltage on TP23 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when the sensor is ON and within the range of 3.3V±5% when OFF. If the voltage does not fall within the range mentioned, replace the staple unit.
Staple unit staple empty sensor (S18) abnormality	Measure the voltage on TP24 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when the sensor is ON and within the range of 3.3V±5% when OFF. If the voltage does not fall within the range mentioned, replace the staple unit.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connectors. (Finisher control PC board (FIN): CN17)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the staple unit and the connectors, exchange the finisher control PC board (FIN).

[CB51] Staple unit sliding motor (M7) abnormality

Error	Timing of detection
<ul style="list-style-type: none"> Staple unit sliding motor (M7) Staple unit sliding home position sensor (S3) 	<ul style="list-style-type: none"> The turning OFF of the staple unit sliding home position sensor (S3) is not detected when the staple unit is moved from a point where this sensor is turned ON to one point where this sensor is turned OFF after the staple unit sliding motor (M7) has been driven at the specified number of pulse.
	<ul style="list-style-type: none"> The turning ON of the staple unit sliding home position sensor (S3) is not detected when the staple unit is moved from a point where this sensor is turned OFF to one point where this sensor is turned ON after the staple unit sliding motor (M7) has been driven at the specified number of pulse.

Probable cause	Checking and measures
Staple unit sliding motor (M7) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the staple unit.
Staple unit sliding home position sensor (S3) abnormality	Measure the voltage on TP18 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connectors. (Finisher control PC board (FIN): CN3, CN18)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the staple unit, sensors and connectors, exchange the finisher control PC board (FIN).

[EA40] Cover open detection error

Probable cause	Checking and measures
Sub-path opening/closing sensor (S12) abnormality	Measure the voltage on TP12 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when not shielded and within the range of $3.3V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Front cover switch (SW1) abnormality	Measure the voltage on TP77 on the finisher control PC board (FIN). Then check that the measured voltage is 1V or lower when the switch is ON and within the range of $3.3V \pm 5\%$ when OFF. If the voltage does not fall within the range mentioned, replace the switch.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Finisher control PC board (FIN): CN10, CN13)
Finisher control PC board (FIN) abnormality	If the error still occurs after replacing the switches, sensor and connector, exchange the finisher control PC board (FIN).

[CB80] Finisher control PC board (FIN) backup RAM error

Error	Timing of detection
<ul style="list-style-type: none"> EEPROM 	<ul style="list-style-type: none"> Data readout check is performed after data writing and the result of the data readout check does not conform to the written data.
	<ul style="list-style-type: none"> The equipment does not enter the ready status after the specified time has passed from data writing.

Probable cause	Checking and measures
Finisher control PC board (FIN) abnormality	Replace the finisher control PC board (FIN) as the cause is a fault in the IC of the backup RAM.

[CC02] Stack exit roller nip home position detection error

Error	Timing of detection
<ul style="list-style-type: none"> Stack exit roller shift motor (M6) Stack exit roller home position sensor (S13) 	<ul style="list-style-type: none"> The stack exit roller home position sensor (S13) does not detect that the exit roller is not at the upper position after the stack exit roller motor (M6) has been driven in the specified time when the exit roller is moved down.
	<ul style="list-style-type: none"> The stack exit roller home position sensor (S13) does not detect that the exit roller is at the upper position after the stack exit roller shift motor (M6) has been driven in the specified time when the exit roller is moved up.

[CC93] Knurled roller shift solenoid abnormality

Error	Timing of detection
<ul style="list-style-type: none"> Knurled roller shift solenoid (SOL3) 2nd transport motor (M4) Knurled roller home position sensor (S10) 	<ul style="list-style-type: none"> The knurled roller home position sensor (S10) does not detect that the knurled roller is at the upper position after the 2nd transport motor (M4) has been driven at the specified number of pulses during the initial rising movement of the knurled roller.
	<ul style="list-style-type: none"> The knurled roller home position sensor (S10) does not detect that the knurled roller is not at the upper position after the 2nd transport motor (M4) has been driven at the specified number of pulses during the initial lowering movement of the knurled roller.
	<ul style="list-style-type: none"> The knurled roller home position sensor (S10) does not detect that the knurled roller is at the upper position when the pressurization of stack exit movement is finished.

[CC94] Fan motor abnormality

Error	Timing of detection
<ul style="list-style-type: none"> Fan motor (M10) 	<ul style="list-style-type: none"> The turning ON of the fan locking signal is detected consistently after the specified time*. <p>* A locking signal is not monitored from the start driving the motor until the specified time has passed.</p>

6.2 Troubleshooting (Hole Punch Unit)

[CC60, CC61] Punch motor (M11) abnormality

Error	Timing of detection
<ul style="list-style-type: none"> Punch motor (M11) Paper detection sensor (S24/S25) Punch shaft home position sensor (S26) Rear punch shaft home position sensor (S22) 	<ul style="list-style-type: none"> The paper detection sensors (S24 and S25) do not emit light after specified time when they are selected.
	<ul style="list-style-type: none"> The level of the light-receiving amount is not lowered after the light-emitting amount of the paper detection sensors (S24 and S25) is adjusted to the lower limit.
	<ul style="list-style-type: none"> Punching is not performed after punching request is sent, or the punching request is sent during the punching.
	<ul style="list-style-type: none"> The status of the punch shaft home position sensor (S26) or the rear punch shaft home position sensor (S22) is not changed after punching request is sent.
	<ul style="list-style-type: none"> A punching locking signal is detected consistently over the specified time.
	<ul style="list-style-type: none"> The punch shaft home position sensor (S26) or the rear punch shaft home position sensor (S22) does not detect that the shaft is not at its home position at the start of punching or punch waste full detection.

Probable cause	Checking and measures
Punch motor (M11) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Rear punch shaft home position sensor (S22) abnormality	Measure the voltage on TP25 on the hole punch control PC board (HP). Then check that the measured voltage is 1V or lower when not shielded and within the range of $5V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Punch shaft home position sensor (S26) abnormality	Measure the voltage on TP24 on the hole punch control PC board (HP). Then check that the measured voltage is 1V or lower when not shielded and within the range of $5V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Punch motor clock sensor (S20) abnormality	Measure the voltage on TP27 on the hole punch control PC board (HP). Then check that the measured voltage is 1V or lower when not shielded and within the range of $5V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Hole punch control PC board (HP): CN2, CN5, CN6)
Hole punch control PC board (HP) abnormality	If the error still occurs after replacing the motor, sensors and connectors, exchange the hole punch control PC board (HP).

[CC51] Punch unit sliding motor (M12) abnormality

Error	Timing of detection
<ul style="list-style-type: none"> Punch unit sliding motor (M12) Punch sliding unit home position sensor (S23) 	<ul style="list-style-type: none"> The punch sliding unit is not slid after sliding request is sent.
	<ul style="list-style-type: none"> The punch sliding unit home position sensor (S23) does not detect that the unit is at its home position after the specified time when the unit is returned to the home position, or this sensor does not detect that the unit is out of its home position after the specified time when the unit is released.
	<ul style="list-style-type: none"> The punch sliding unit home position sensor (S23) does not detect that the unit is at its home position after the specified time when the unit is moved, or this sensor does not detect that the unit is at its home position when the unit is released.

Probable cause	Checking and measures
Punch unit sliding motor (M12) abnormality	Check if the electrical continuity of the coil is normal. If electricity is not conducted, replace the motor.
Punch sliding unit home position sensor (S23) abnormality	Measure the voltage on TP26 on the hole punch control PC board (HP). Then check that the measured voltage is 1V or lower when not shielded and within the range of $5V \pm 5\%$ when shielded. If the voltage does not fall within the range mentioned, replace the sensor.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Hole punch control PC board (HP): CN3, CN5, CN6)
Hole punch control PC board (HP) abnormality	If the error still occurs after replacing the motor, sensor and connectors, exchange the hole punch control PC board (HP).

[CC54] Abnormality of paper detection sensors (S24 and S25)

Error	Timing of detection
<ul style="list-style-type: none"> Paper detection sensor (S24/S25) adjustment error 	<ul style="list-style-type: none"> The adjustment of the paper detection sensors (S24 and S25) has been failed.

Probable cause	Checking and measures
Paper detection sensors (S24 and S25) abnormality	Measure the voltage on pin CN6.8 on the hole punch control PC board (HP). Then check that the measured voltage is 3.0V or higher when not shielded and 1.2V or lower when shielded. If the voltage does not fall within the range mentioned, replace a couple of PC boards on either the light-receiving side or the light-emitting side.
Faulty cables and connectors	Check if the electrical continuity between the connector terminals is normal. If electricity is not conducted, replace the connector. (Hole punch control PC board (HP): CN4, CN6)
Hole punch control PC board (HP) abnormality	If the error still occurs after replacing the sensors and the connectors, exchange the hole punch control PC board (HP).

6.3 Self Diagnosis

6.3.1 General description

The CPU on the finisher control PC board (FIN) is equipped with a self-diagnostic function to check the Finisher condition as needed; when it detects an error, the Finisher transmits the content of the error to the equipment.

6.3.2 Alarm (Finisher section)

Error	Condition	Timing of detection	Operation	Resetting
Number of sheets set exceeding the limitation for stapling	The number of sheets set for stapling has exceeded the limitation.	While the stapling mode.	Operation is subject to instructions from the equipment. In case the stapling mode is selected consistently after the occurrence of alarm, the stack of paper on the finishing tray will be exited unstapled and the subsequent stacks of paper will be exited in the non-sort mode.	Resetting is finished when the stack of paper on the finishing tray is exited.
Staple cartridge empty	The staple empty sensor detects that the staple cartridge has run out of staples while the staple unit is not operating.	When the staple unit is not operating.	Normal operation will continue; however, operation is subject to instructions from the equipment.	Replace the staple cartridge; or, set it correctly.
Movable tray full	The movable tray lower limit sensor detects that the tray is full of paper.	Monitoring at all times.	The stacks of paper exited after the detection are not subject to the stack top detection. The movable tray will exit them while it is kept stopped.	Resetting is finished when the stacks of paper on the movable tray are removed and the movable tray lower limit sensor detects that the tray is not full.
Stationary tray full	The stationary tray full detection sensor detects that the tray is full of paper.	Monitoring at all times.	If the movable tray is not full of paper, the exiting is switched to the movable tray with the automatic exiting tray change function.	Resetting is finished when the stacks of paper on the stationary tray are removed and the stationary tray full detection sensor detects that the tray is not full.

6.3.3 Alarm (Hole Punch Unit)

Error	Condition	Timing of detection	Operation	Resetting
Punch waste case full	The punch waste full sensor detects the punches full status five times consecutively with the normal or reverse rotation of the punch motor.	During punching.	Normal operation will continue.	Remove the punches from the punch waste case.

7. PREVENTIVE MAINTENANCE (PM) / FIRMWARE UPDATE

7.1 PM Parts

7.1.1 Finisher section

Staple unit: 300,000 operations (equivalent to the life of the staple unit)

7.1.2 Hole Punch Unit

This unit does not have components that require preventative maintenance.

7.2 Consumables and Duration

Some components of the units may require replacement once or more over the period of the equipment warranty because of deterioration or damage. Replace them as needed.

7.2.1 Finisher section

No.	Name	Qty	Expected life	Remarks
1	Stapler	1	300,000 operations	A single cartridge is good for about 5,000 operations.

7.3 Maintenance by Customers

No.	Item	Remarks
1	Replacement of the staple cartridge for the Finisher section	When the symbol is displayed (on the control panel of the equipment)
2	Disposal of punch waste	When the symbol is displayed (on the control panel of the equipment)

7.4 Maintenance and Inspection Points

Item	Interval	Description	Remarks
Transport roller	Every 30,000 of paper feeding times	Cleaning	Wipe with a cloth soaked in water and then tightly squeezed.
Small rollers in the paper transport section			Wipe with a dry cloth.
Transport path and guides			
Transport path sensor			
Grease application to drive unit	As needed	Applying grease	EM-50L
Paper detection sensor	Minimum maintenance interval set for the equipment	Cleaning	Wipe with a dry cloth or alcohol

7.5 Firmware Update

7.5.1 Update of converter board

Important:

- The harness jig for board connection (HRNS-CNV-DL-JIG) is required for updating the firmware of the converter board of the finisher as well as the download jig (K-PWA-DLM-320).
- Be sure to shut down the equipment before installing and removing the download jig.
- Do not shut down the equipment during the update. The data could be damaged and not be operated properly.

- (1) Install the ROM [2] to the download jig (K-PWA-DLM-320) [1].
Make sure that the type of the ROM and the installation direction are correct.

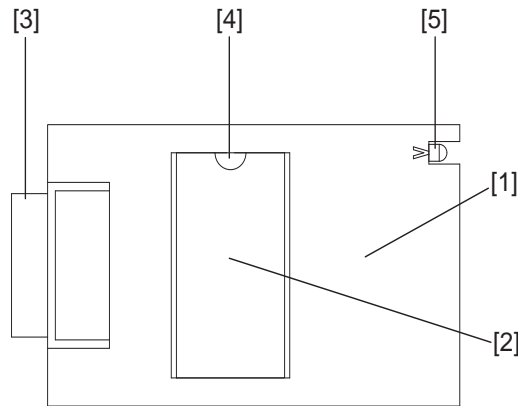



Fig. 7-1

[3] Connector [4] Mark for ROM installation direction [5] LED

- (2) Turn OFF the power of the connected equipment.
- (3) Remove the finisher from the equipment.
- (4) Remove 4 screws and take off the board cover.
( P.4-19 "4.1.3 PC Boards")
- (5) Install the finisher to the equipment.
- (6) Remove the converter board from the equipment.

- (7) Connect the 10-pin side [6] of the harness jig for board connection (HRNS-CNV-DL-JIG) to the connector (CN2) [7] of the converter board.

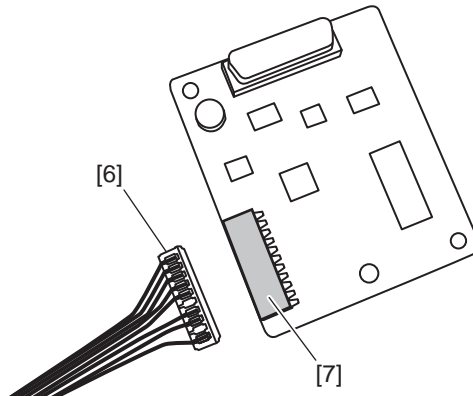


Fig. 7-2

- (8) Connect the 15-pin side of the harness jig for board connection (HRNS-CNV-DL-JIG) to the connector (CN8) [8] on the finisher control PC board (FIN).

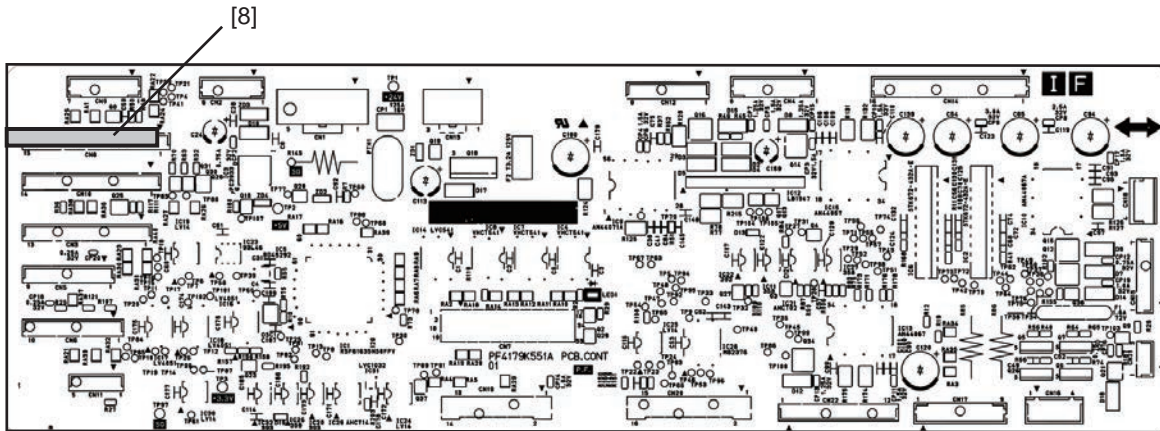


Fig. 7-3

(17) Remove the harness jig for board connection from the converter board.

(18) Install the converter board in the equipment.

7.5.2 Update of finisher control PC board (FIN)

- (1) Install the ROM [2] in the download jig (K-PWA-DLM-320) [1].
Make sure that the type of the ROM and installation direction are correct.

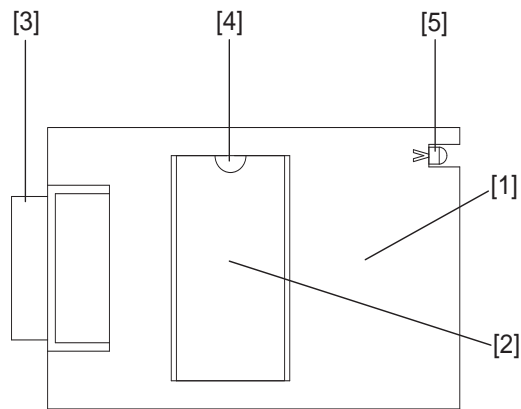


Fig. 7-5

[3] Connector [4] Mark for ROM installation direction [5] LED

- (2) Turn OFF the power of the equipment. Then slide the Finisher and pull it out from the equipment.
- (3) Remove 1 screw [6] and take off the download cover [7].

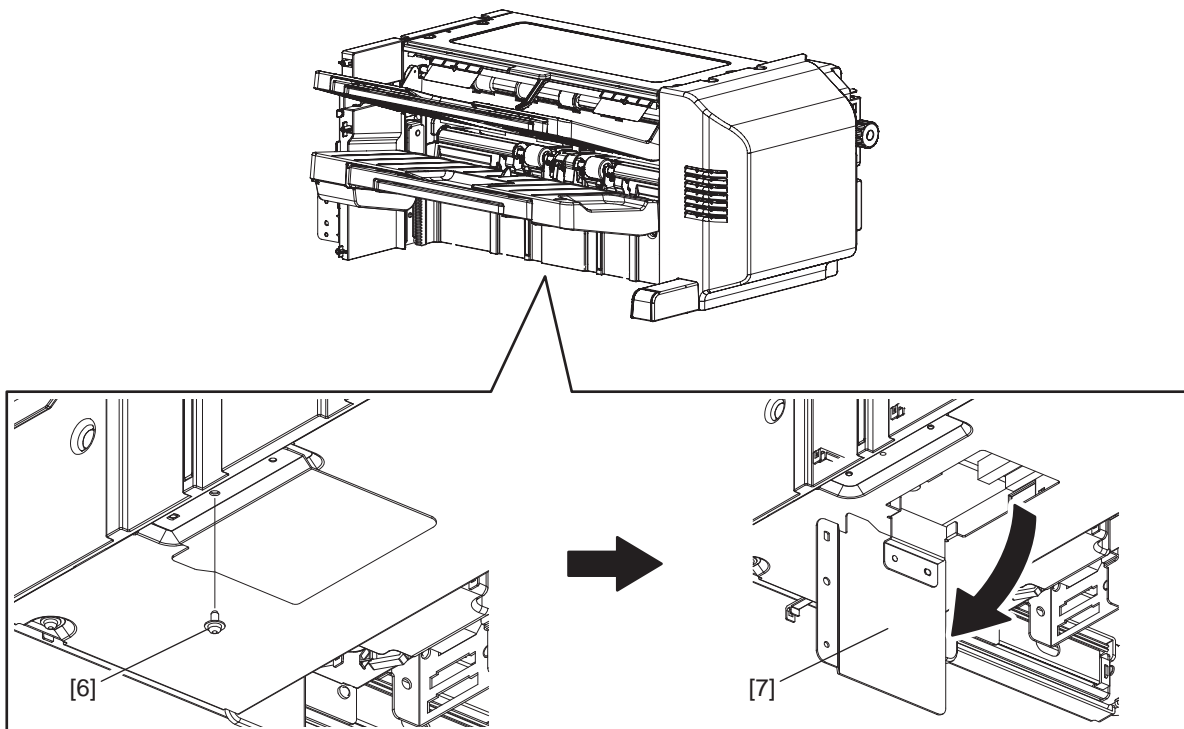


Fig. 7-6

- (4) Connect the download jig [1] to the jig connector (CN7) [8] on the finisher control PC board (FIN).

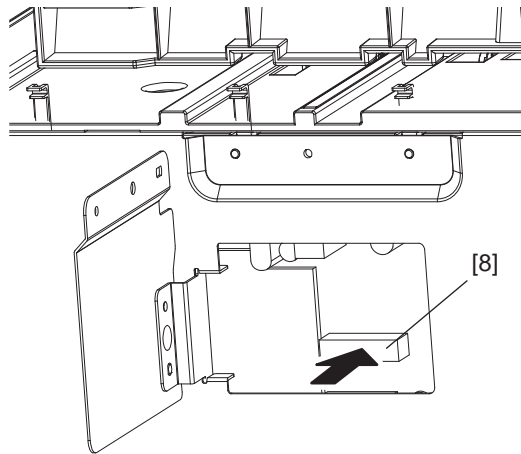


Fig. 7-7

- (5) Turn the power ON with the main power switch while pressing the digital keys [0] and [8] simultaneously.
Updating starts automatically and the LED on the download jig lights.
- (6) When the update is completed normally, the LED on the download jig starts blinking.
It is assumed that the update has failed if the LED does not start blinking even after 1 minute has elapsed. In this case, shut down the equipment and check the following items.
Then clear the problems and restart the update from the beginning.
- Is the download jig connected properly?
 - Is the ROM attached to the download jig properly?
 - Have the update data been written correctly to the ROM on the jig?
 - Is the download jig or the equipment damaged?
- (7) Turn OFF the power of the equipment and disconnect the download jig.
- (8) Install the download cover.

7.6 List of Solvents and Grease

7.6.1 Solvents

No.	Name	Intended use	Components	Remarks
1	IIPA (isopropyl alcohol)	Cleaning	Alcohol	Keep away from fire
2	Synthetic alcohol (ethanol)	Cleaning	Alcohol	Keep away from fire

7.6.2 Greases

No.	Name	Intended use	Components	Remarks
1	EM-50L (Molykote)	Lubrication and sound-deadening for driving and sliding sections	Synthetic oil	
2	TSF451-1M (GE Toshiba silicon)	Lubrication and sound-deadening for driving and sliding sections	Dimethyl silicon oil	

8. ELECTRIC CIRCUIT

8.1 Harness Diagram

[A] Finisher section (1)

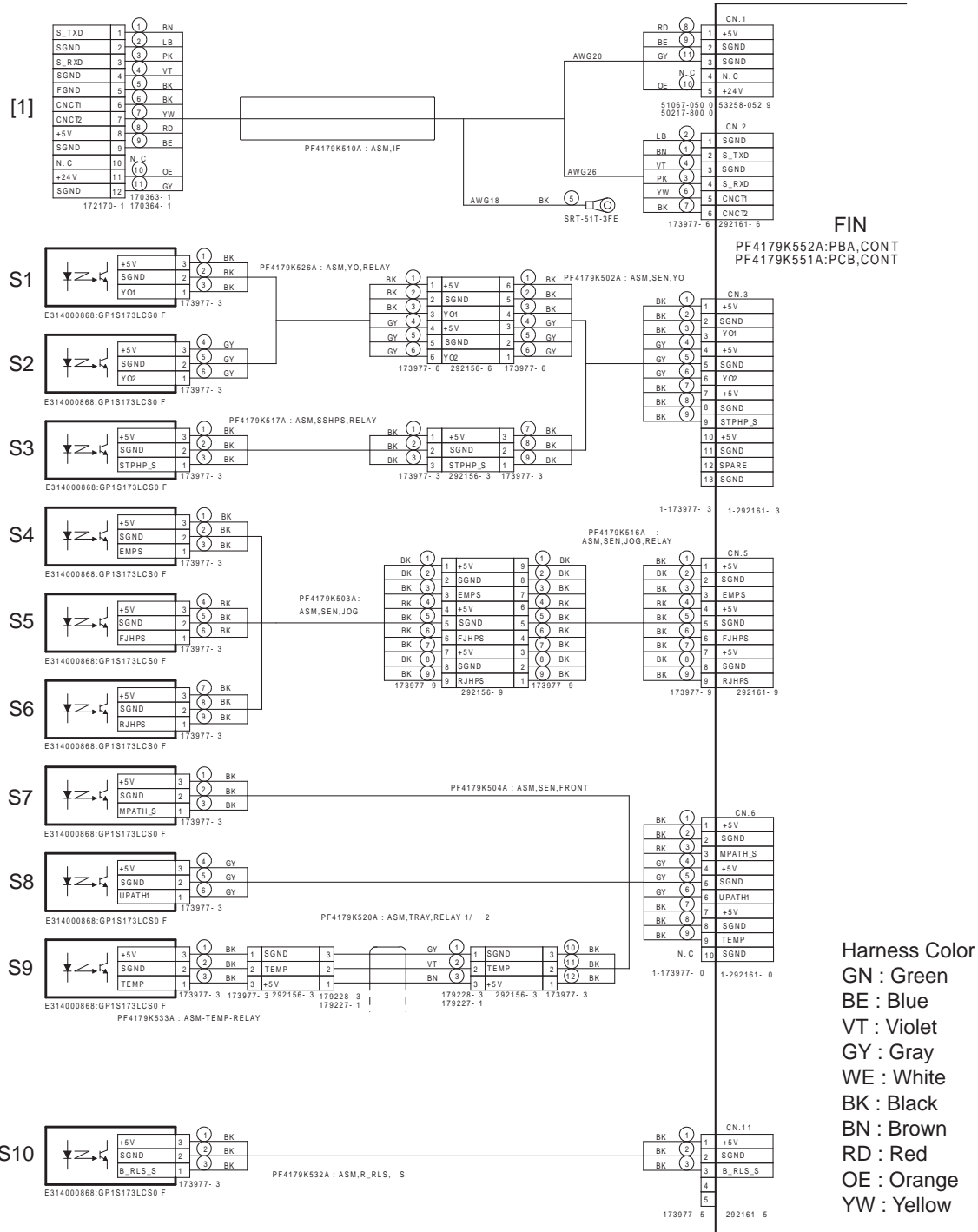
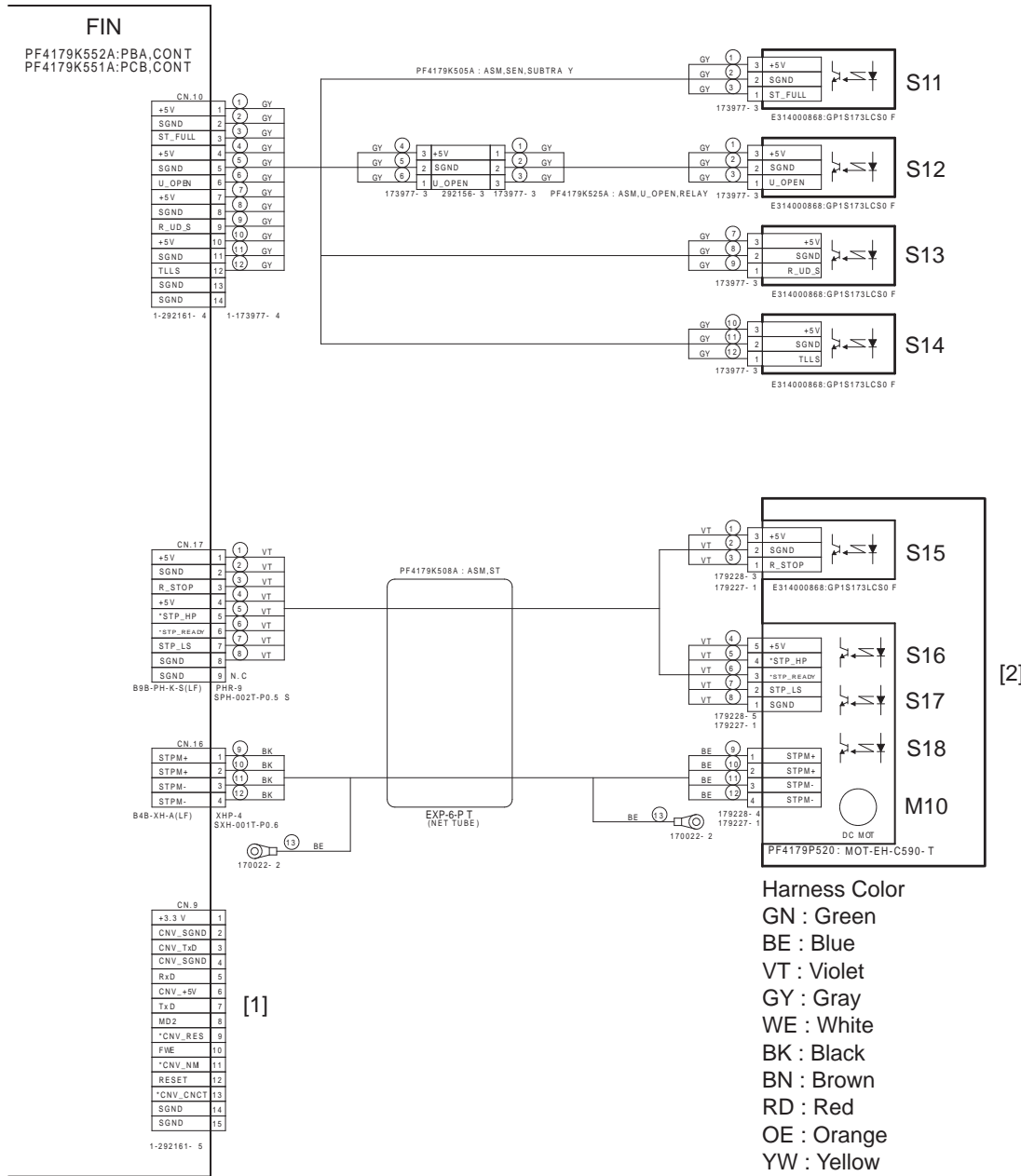


Fig. 8-1

[1]	Equipment interface	S5	Front alignment plate home position sensor
FIN	Finisher control PC board	S6	Rear alignment plate home position sensor
S1	Stack top detection sensor 1	S7	Middle path sensor
S2	Stack top detection sensor 2	S8	Sub-path sensor
S3	Staple unit sliding home position sensor	S9	Movable tray paper exist sensor
S4	Finishing tray sensor	S10	Knurled roller home position sensor

[B] Finisher section (2)



Harness Color
 GN : Green
 BE : Blue
 VT : Violet
 GY : Gray
 WE : White
 BK : Black
 BN : Brown
 RD : Red
 OE : Orange
 YW : Yellow

Fig. 8-2

[1]	Converter board software overwriting	S14	Movable tray lower limit sensor
[2]	Staple unit	S15	Staple unit improper clinching prevention sensor
FIN	Finisher control PC board	S16	Staple unit clinching home position sensor
S11	Stationary tray full detection sensor	S17	Stapling start position sensor
S12	Sub-path opening / closing sensor	S18	Staple empty sensor
S13	Stack exit roller home position sensor	M10	Stapler motor

[C] Finisher section (3)

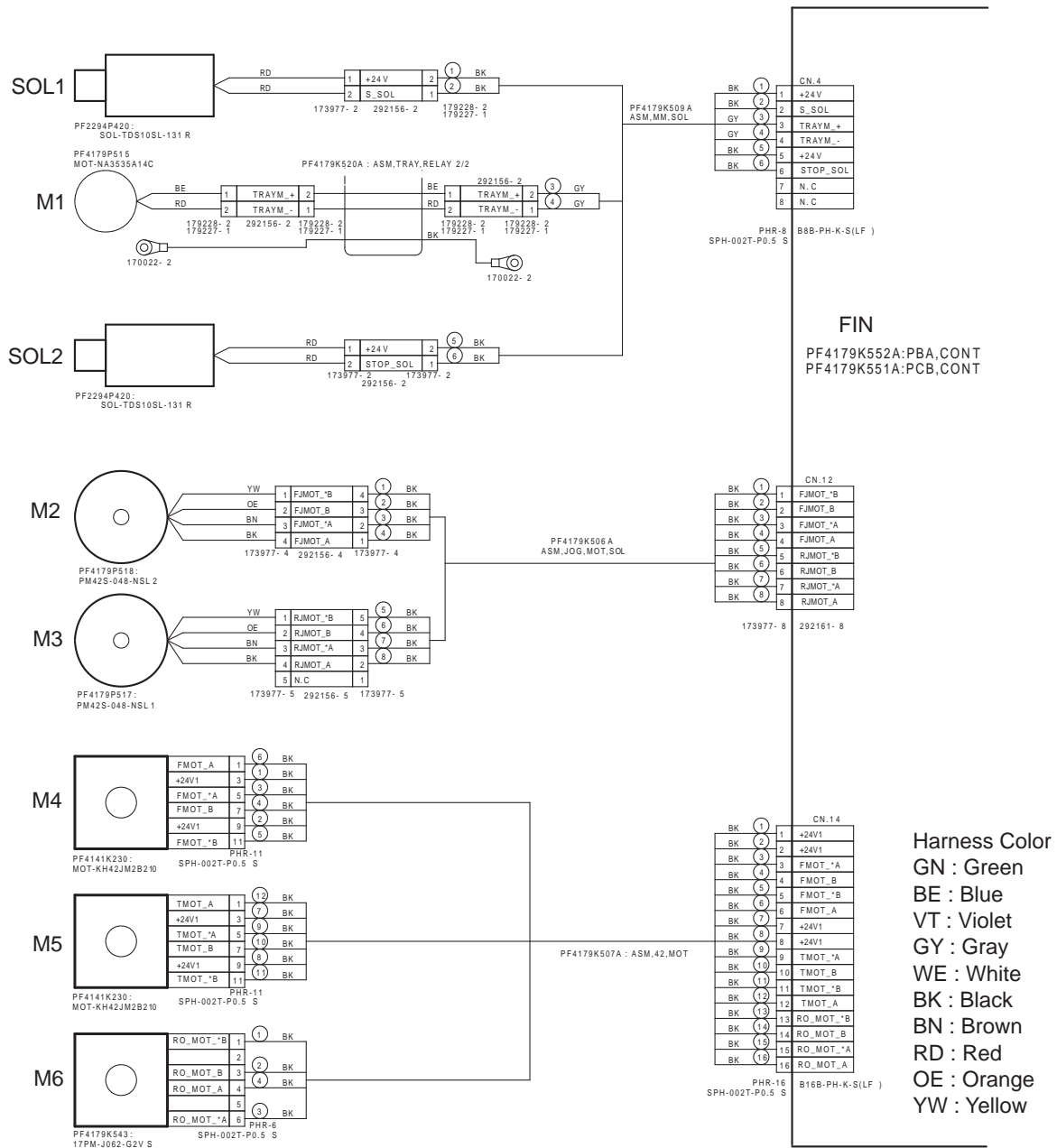


Fig. 8-3

FIN	Finisher control PC board	M3	Rear alignment motor
SOL1	Stack top detection solenoid	M4	2nd transport motor
SOL2	Trailing edge holding solenoid	M5	Stack exit motor
M1	Movable tray shift motor	M6	Stack exit roller shift motor
M2	Front alignment motor		

[D] Finisher section (4)

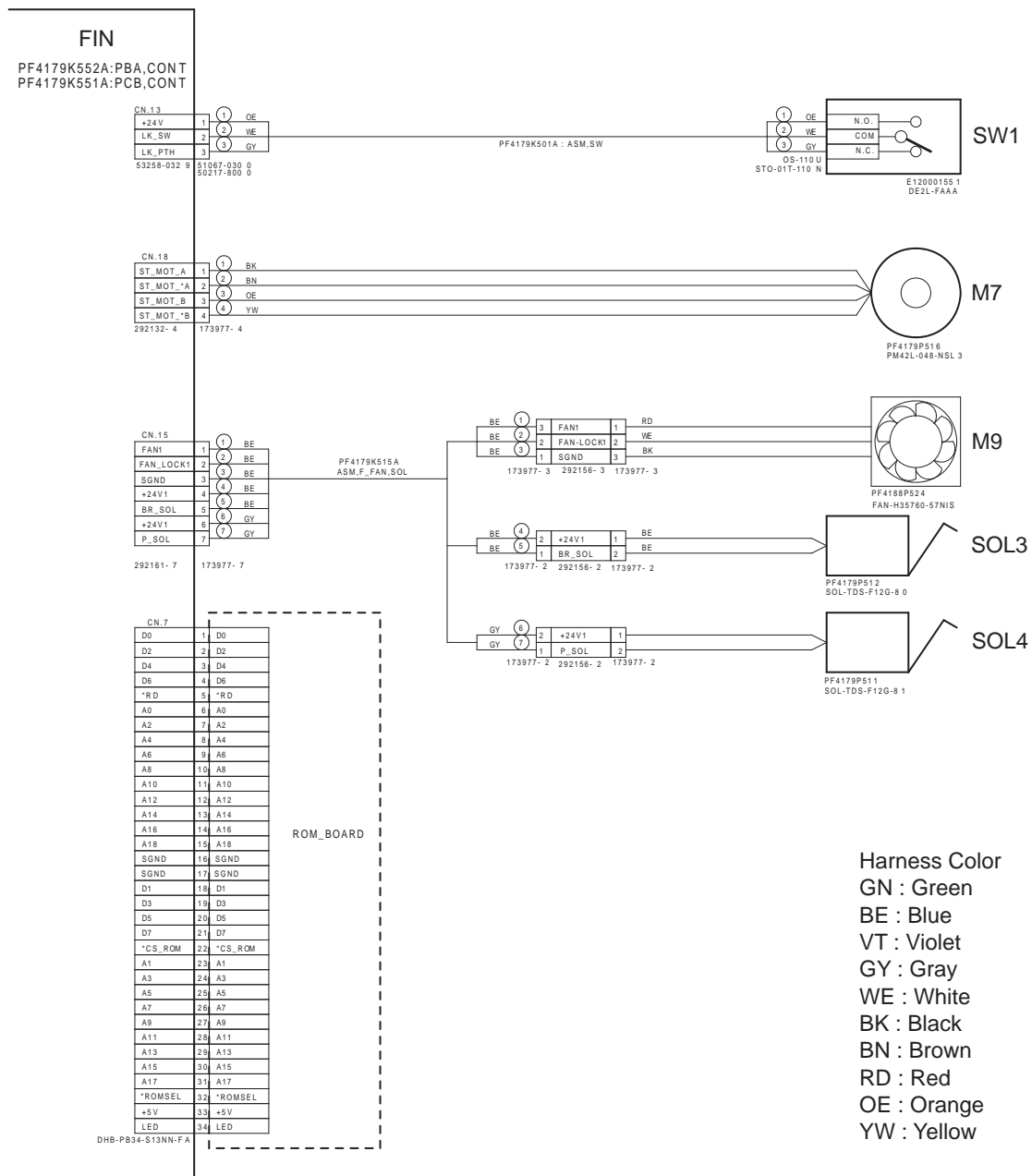


Fig. 8-4

FIN	Finisher control PC board	M9	Fan motor
SW1	Front cover switch	SOL3	Knurled roller shift solenoid
M7	Trailing edge holding solenoid	SOL4	Paddle solenoid

[E] Finisher section (5)

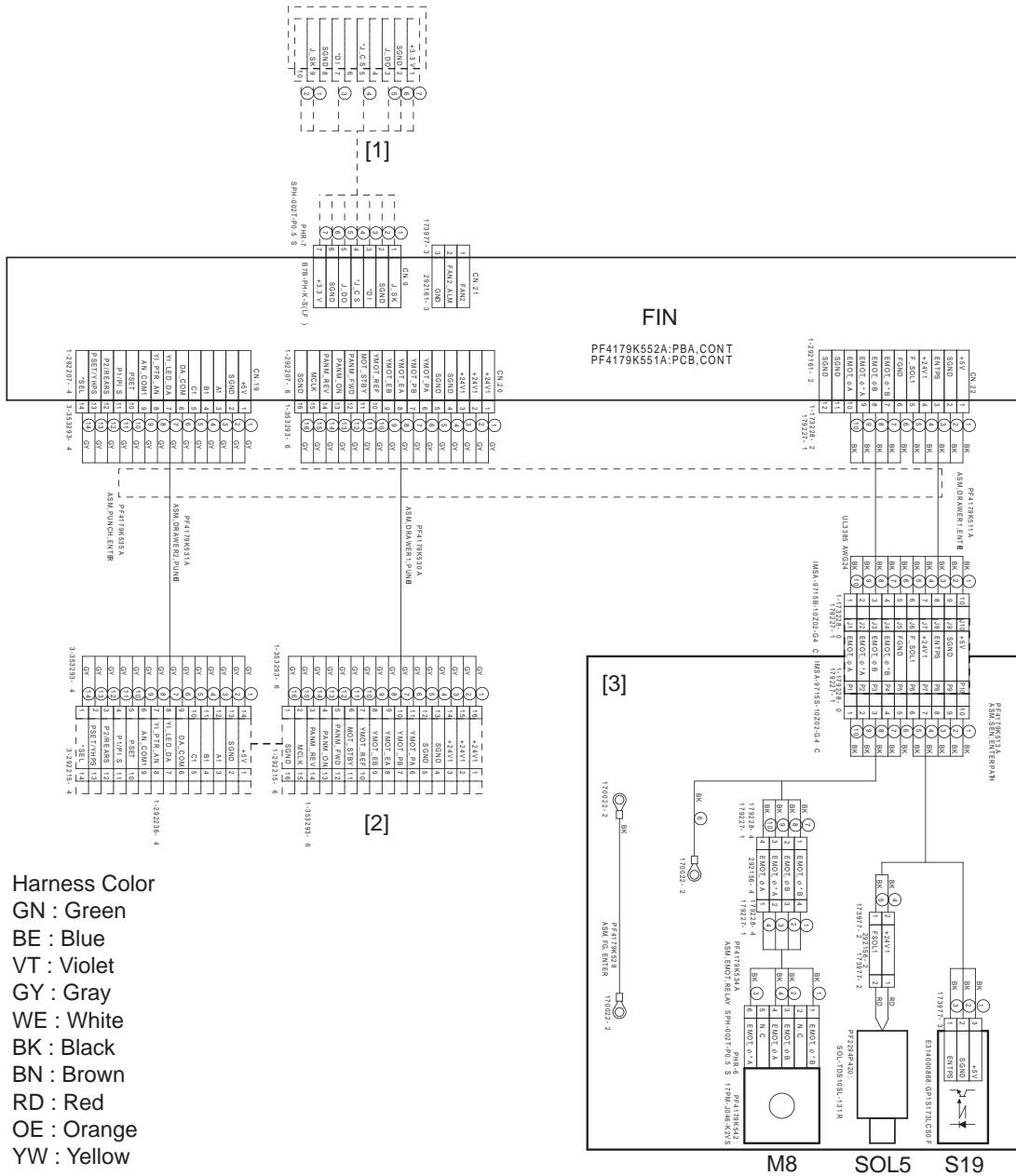


Fig. 8-5

[1]	Jig PC board	M8	1st transport motor
[2]	Hole Punch Unit	SOL5	1st flapper solenoid
[3]	Receiving section	S19	Entrance path sensor
FIN	Finisher control PC board		

[F] Hole Punch Unit section (1)

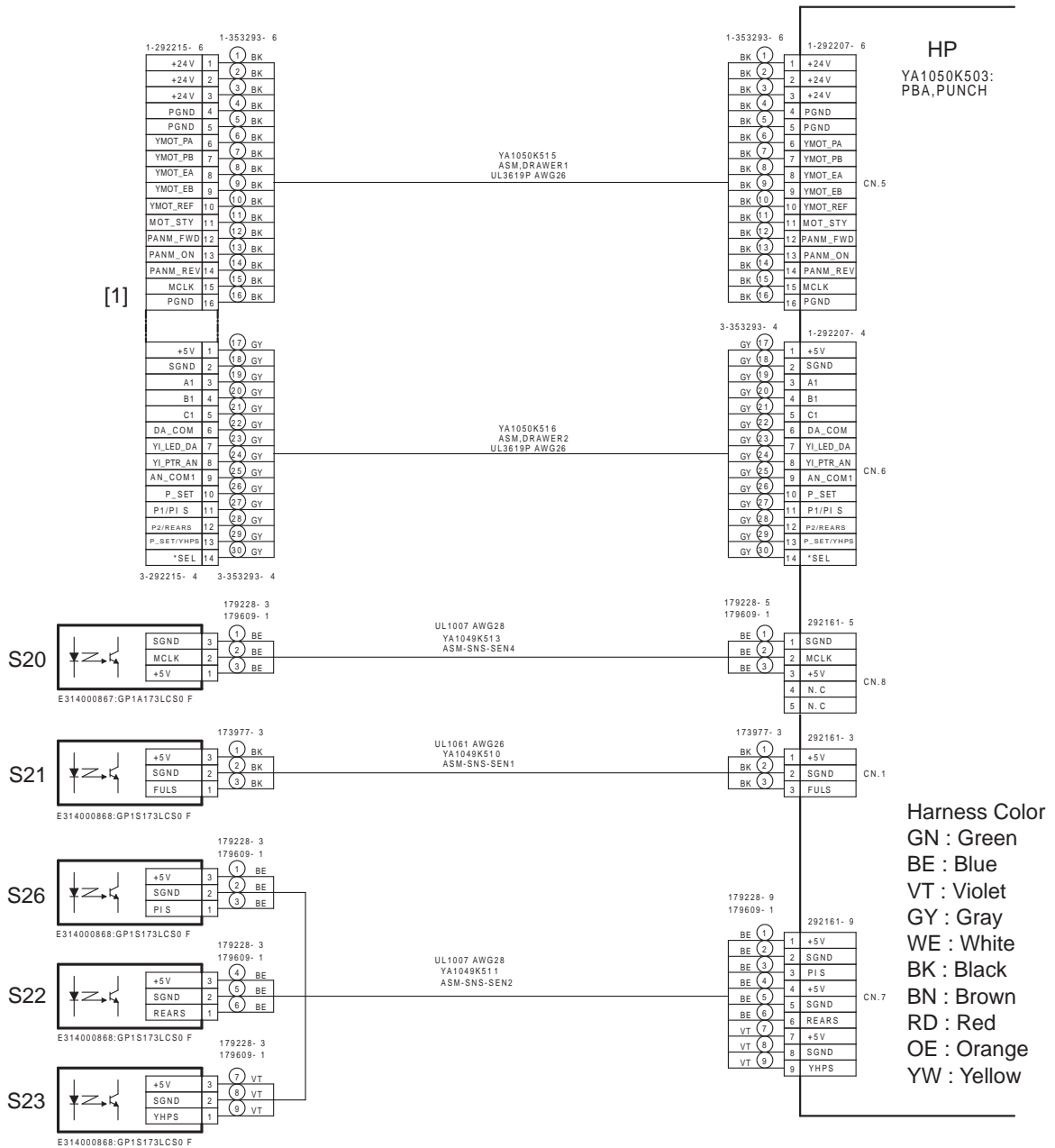


Fig. 8-6

[1]	Finisher	S22	Rear punch shaft home position sensor
HP	Hole punch control PC board	S23	Punch sliding unit home position sensor
S20	Punch motor clock sensor	S26	Punch shaft home position sensor (MJ-6007N only)
S21	Punch waste full sensor		

[G] Hole Punch Unit section (2)

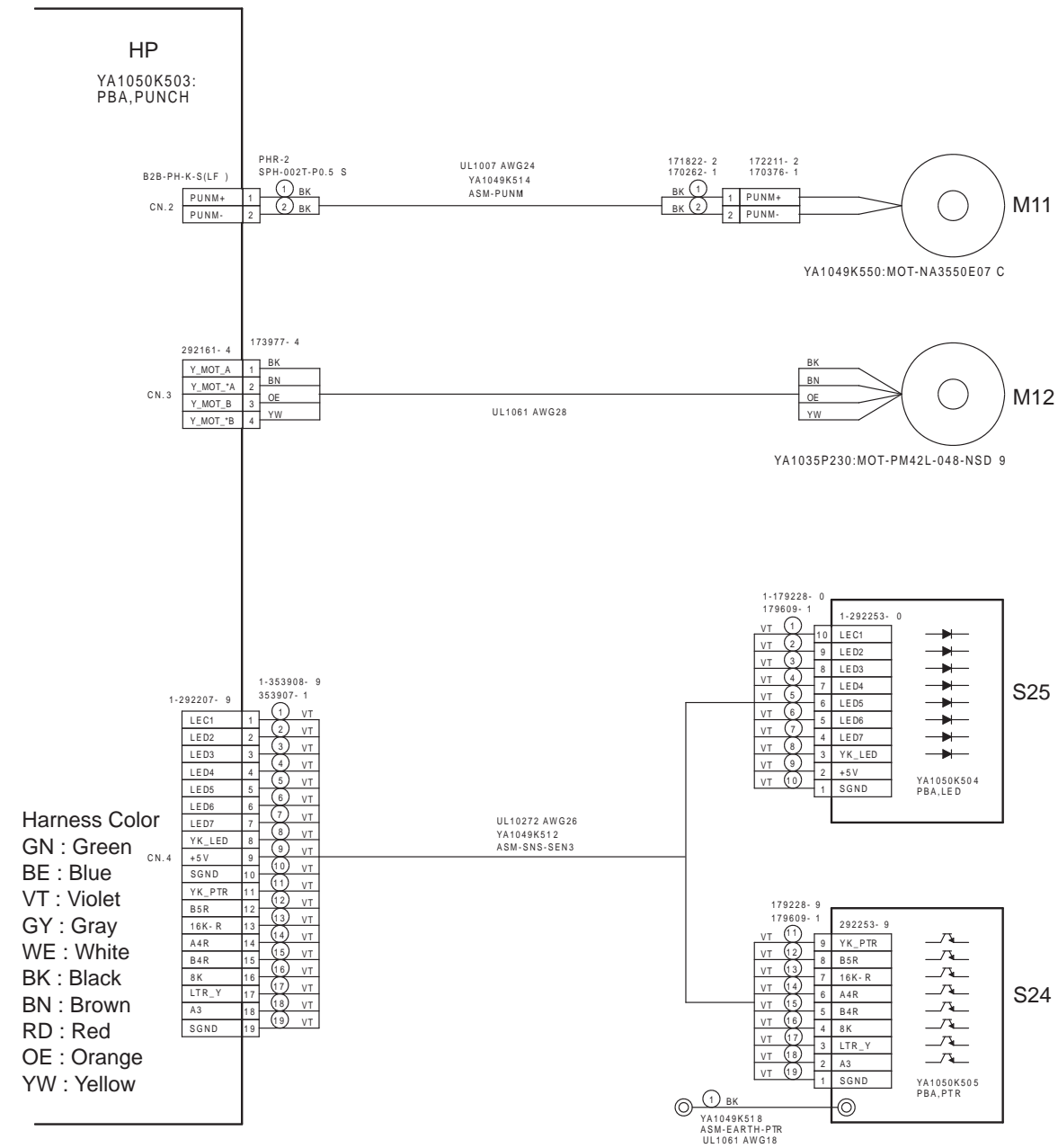


Fig. 8-7

HP	Hole punch control PC board	M11	Punch motor
S24	Paper detection sensor (light-receiving)	M12	Punch unit sliding motor
S25	Paper detection sensor (light-emitting)		

8.2 Circuit Diagram

[A] Finisher section (1)

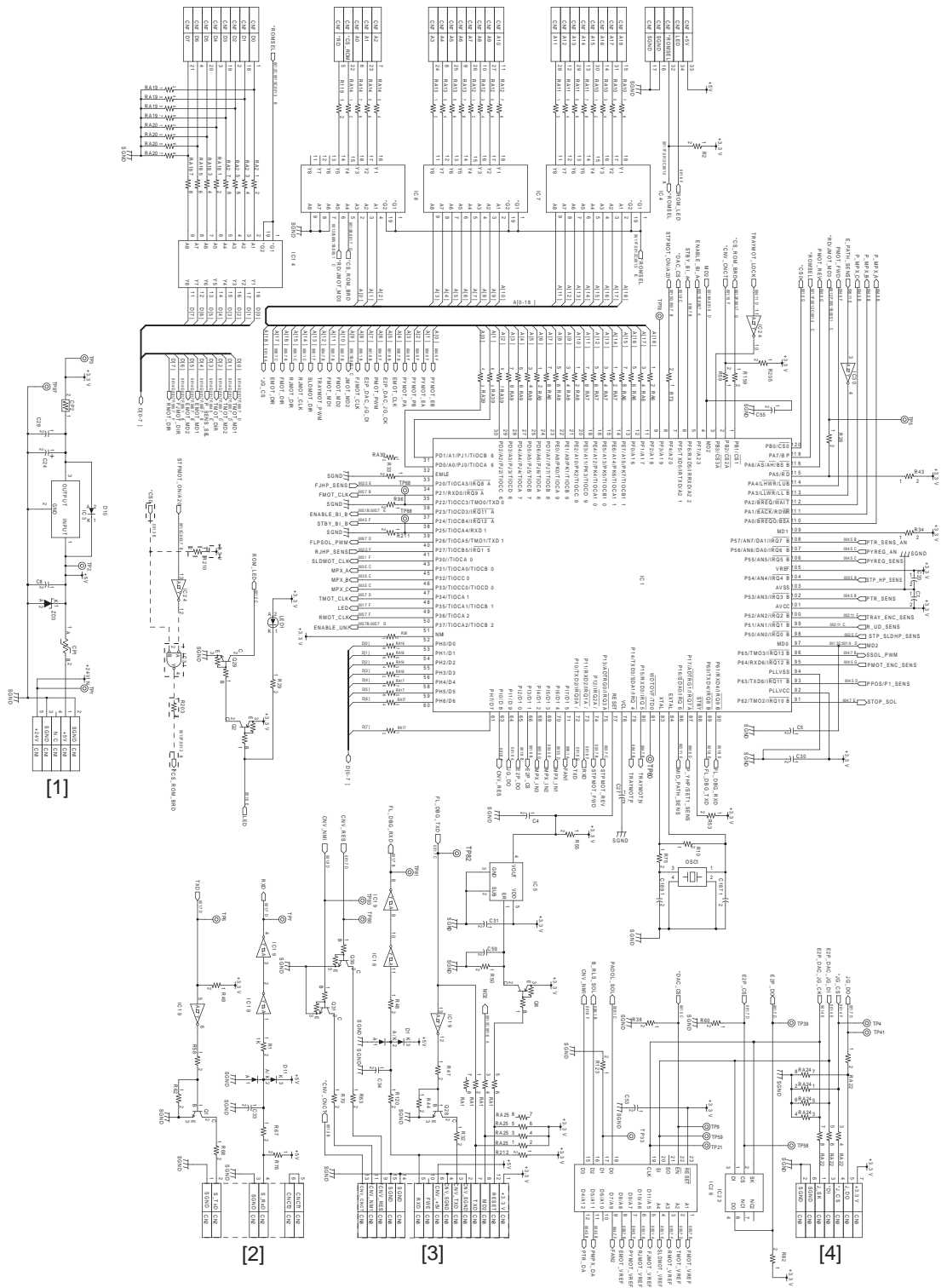


Fig. 8-8

[1]	Finisher power supply section	[3]	Converter board software overwriting
[2]	Equipment communication	[4]	Jig operation PC board

[B] Finisher section (2)

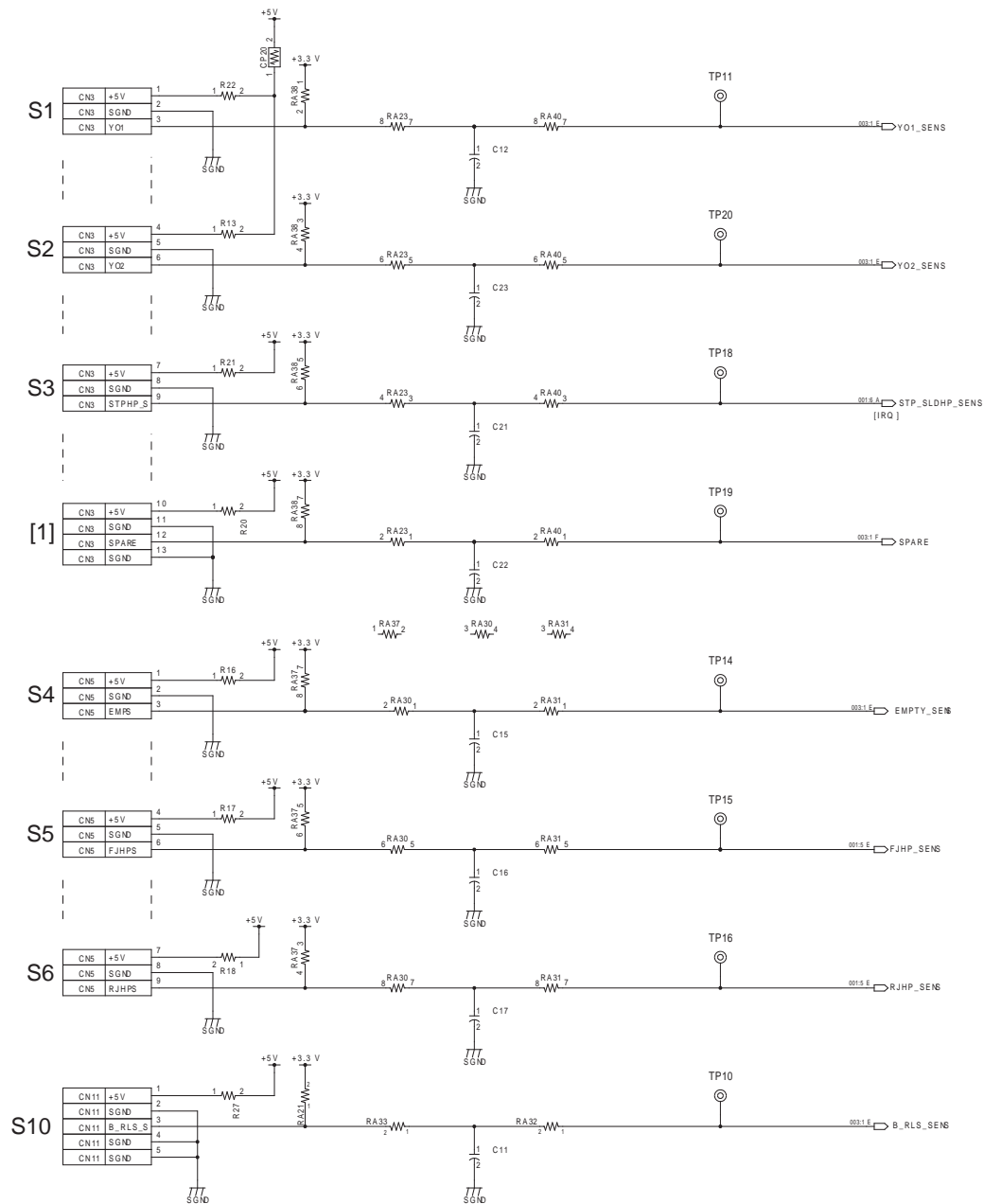


Fig. 8-9

[1]	Backup	S4	Finishing tray sensor
S1	Stack top detection sensor 1	S5	Front alignment plate home position sensor
S2	Stack top detection sensor 2	S6	Rear alignment plate home position sensor
S3	Staple unit sliding home position sensor	S10	Knurled roller home position sensor

[D] Finisher section (4)

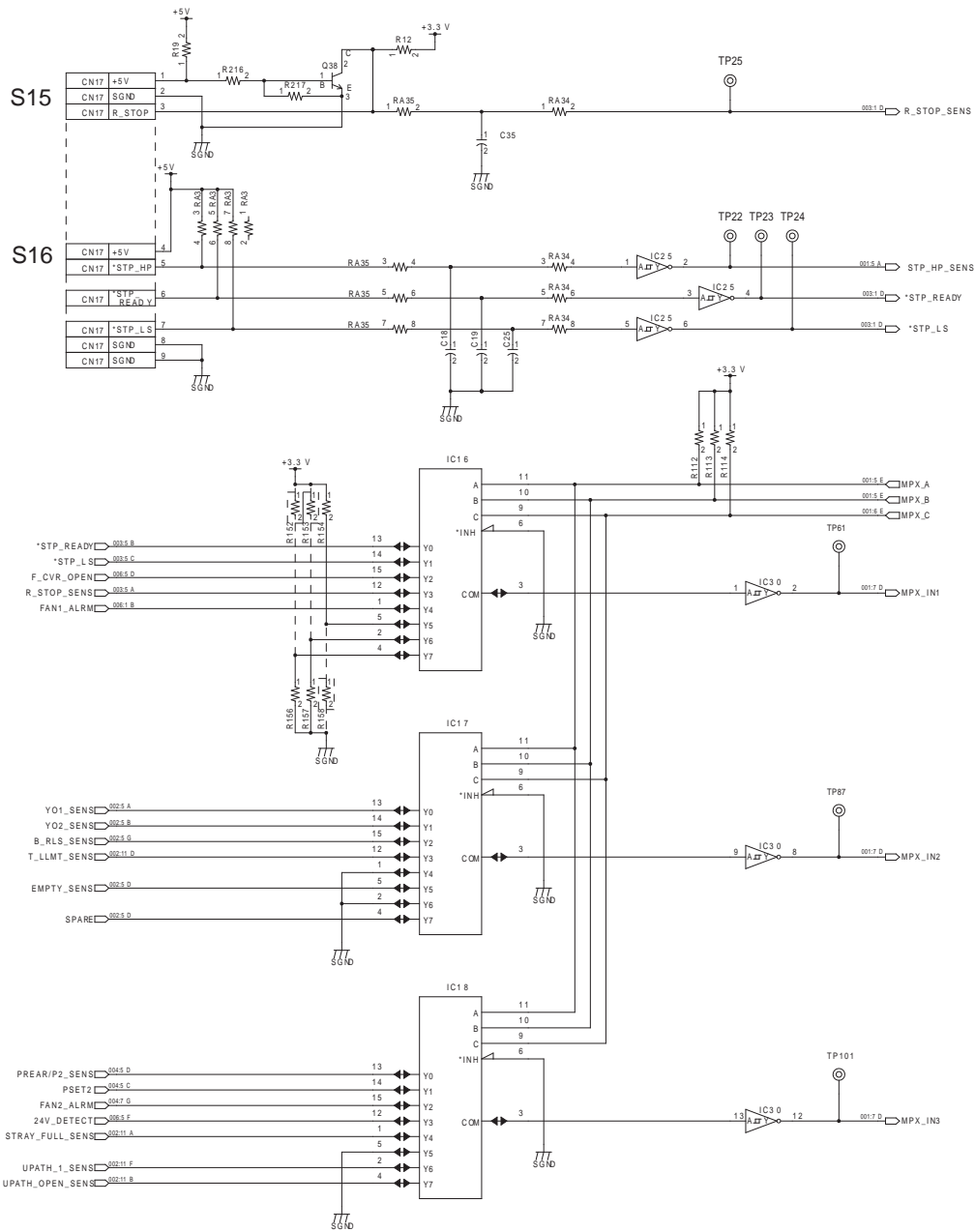


Fig. 8-11

S15	Staple unit improper clinching prevention sensor	S16	Staple unit clinching home position sensor
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[E] Finisher section (5)

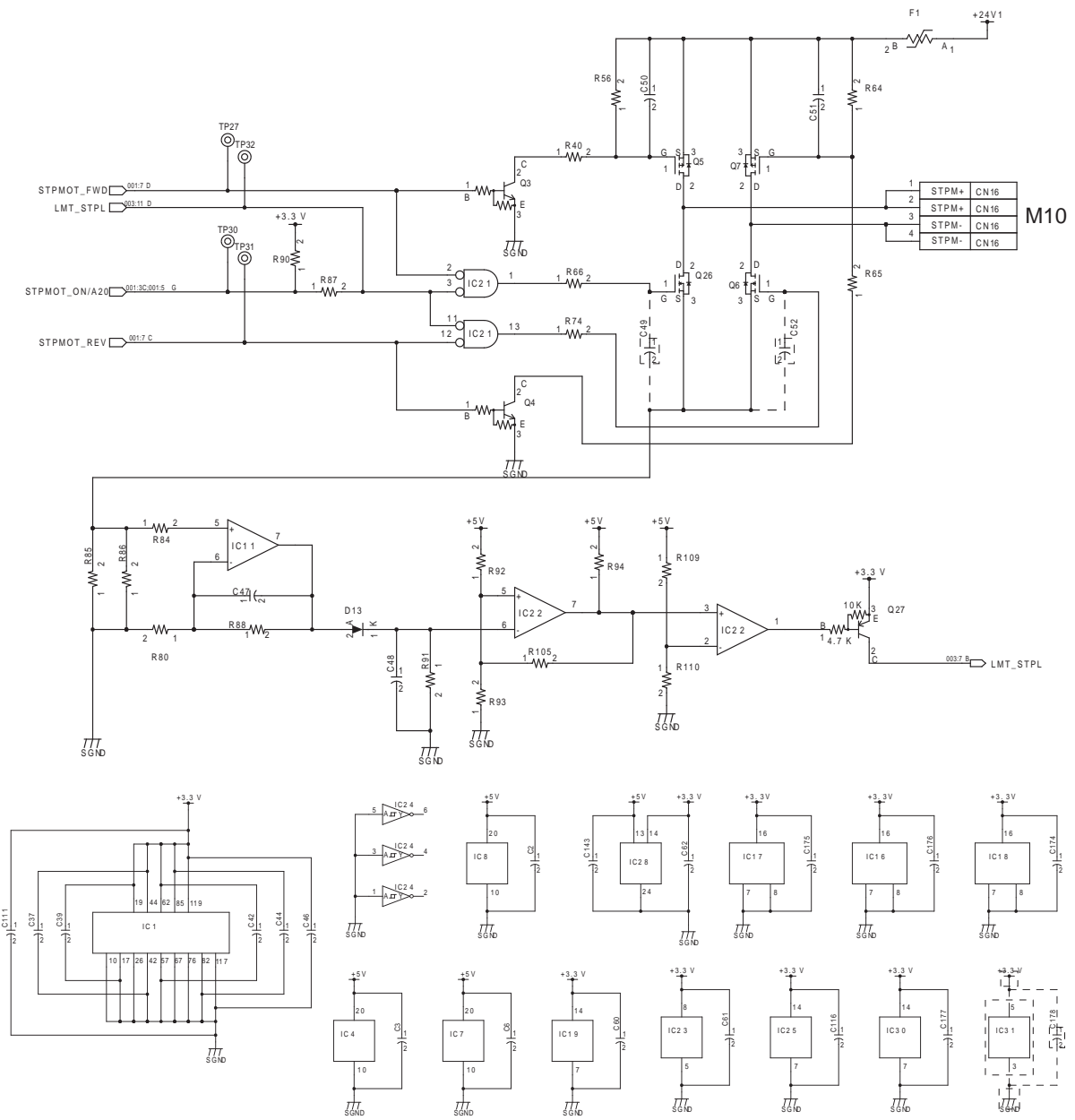


Fig. 8-12

M10	Stapler motor		
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[F] Finisher section (6)

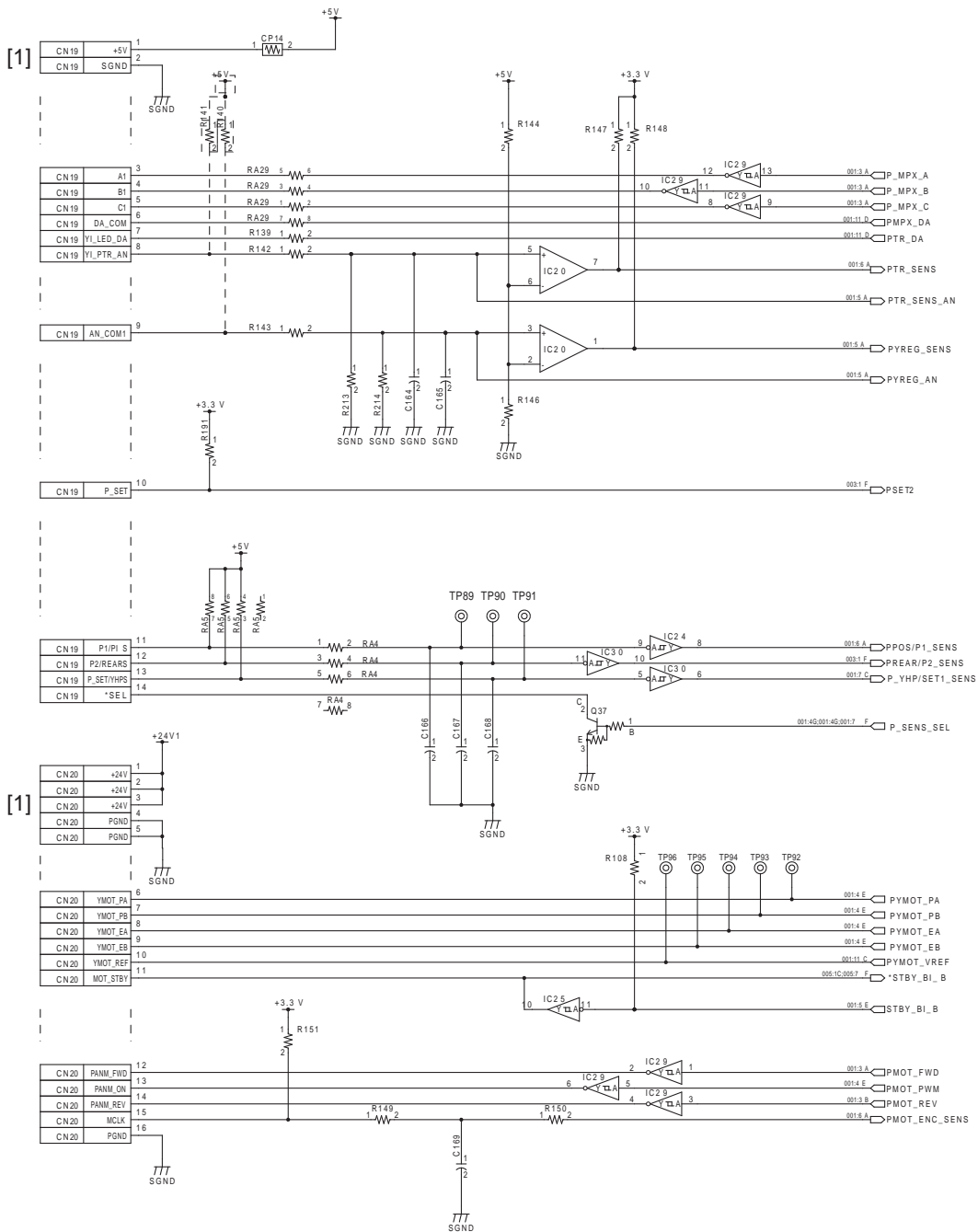


Fig. 8-13

[1]	Hole Punch Unit		
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[G] Finisher section (7)

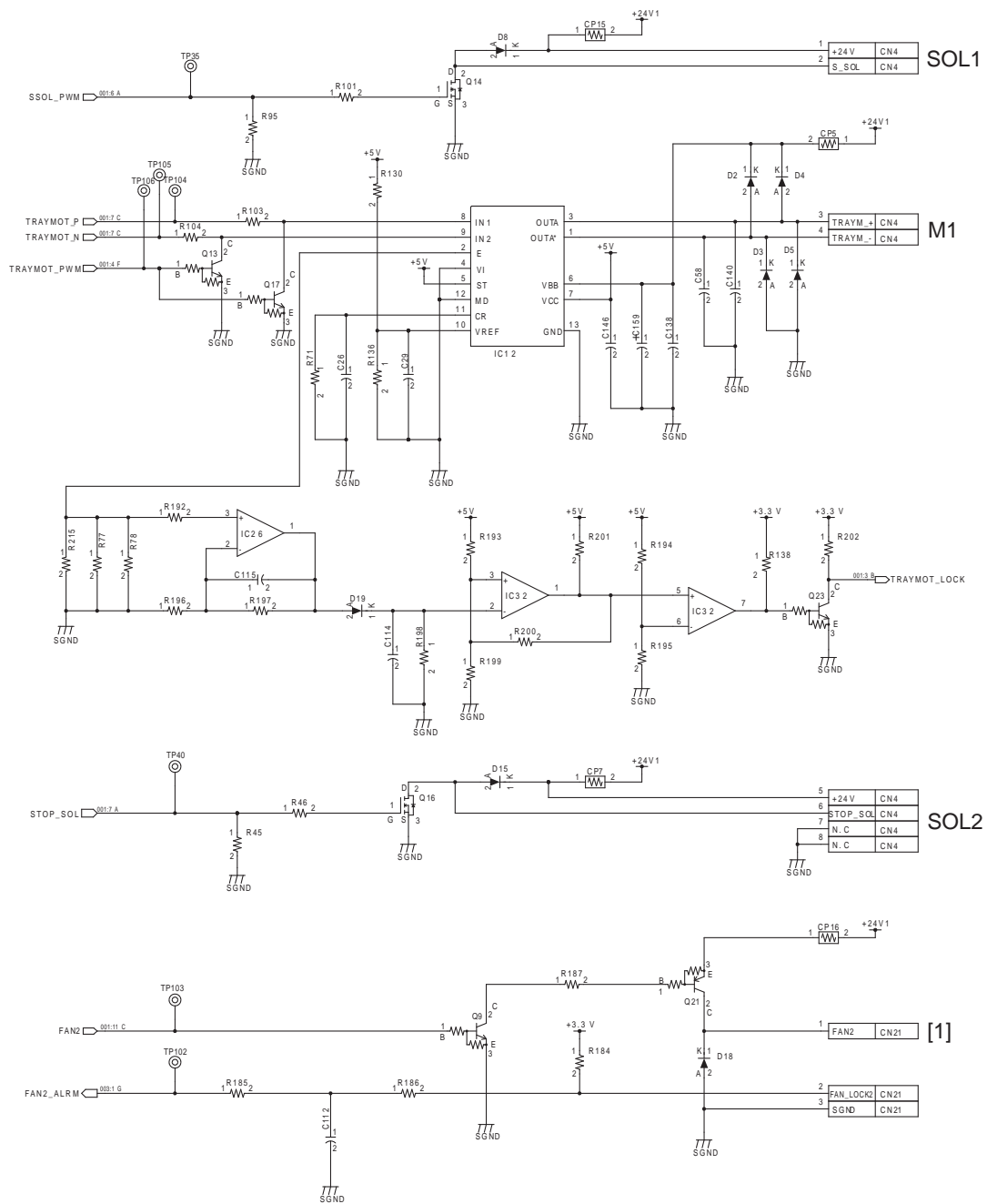


Fig. 8-14

[1]	Fan	SOL1	Stack top detection solenoid
M1	Movable tray shift motor	SOL2	Trailing edge holding solenoid

[H] Finisher section (8)

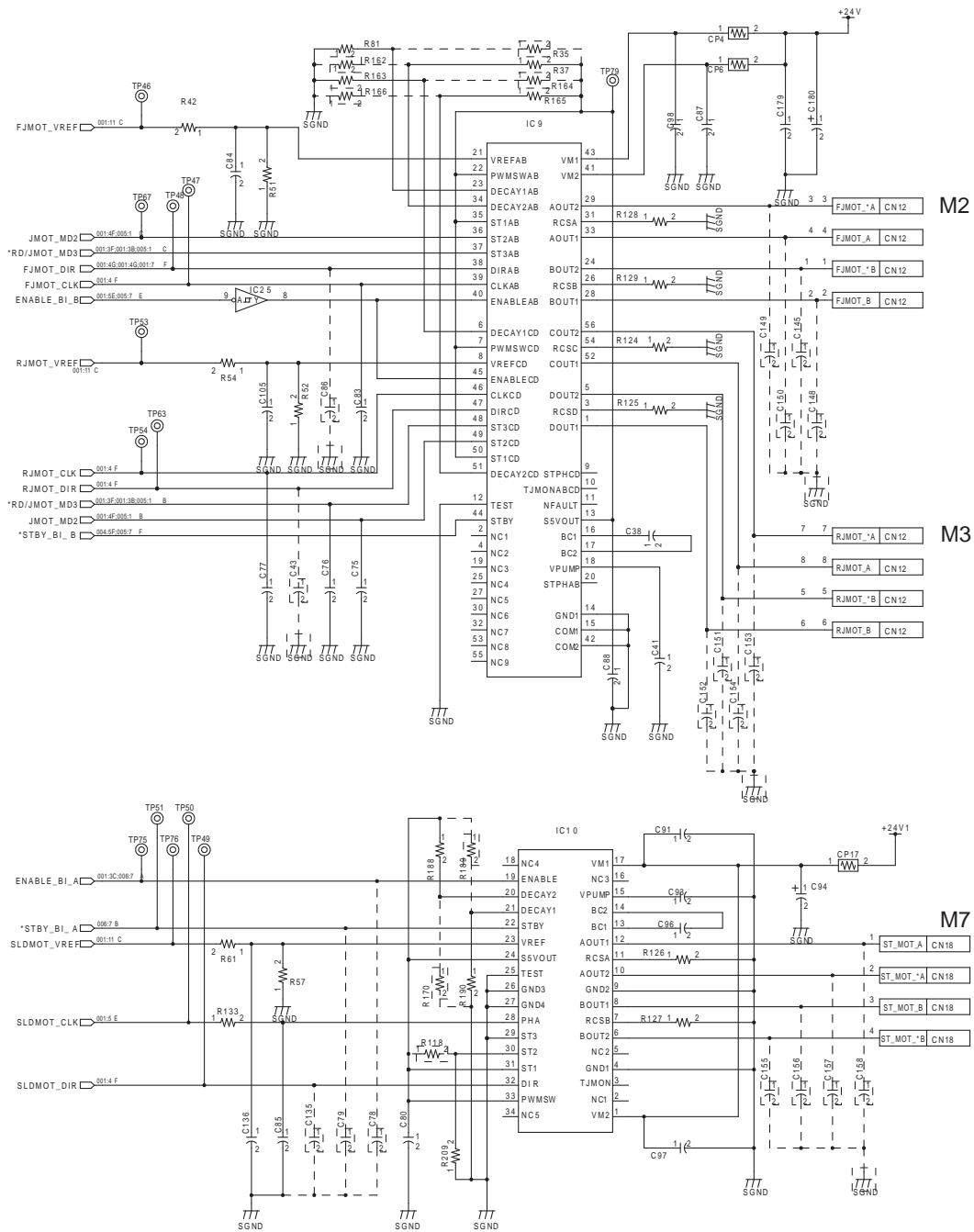


Fig. 8-15

M2	Front alignment motor	M7	Staple unit sliding motor
M3	Rear alignment motor		

[J] Finisher section (10)

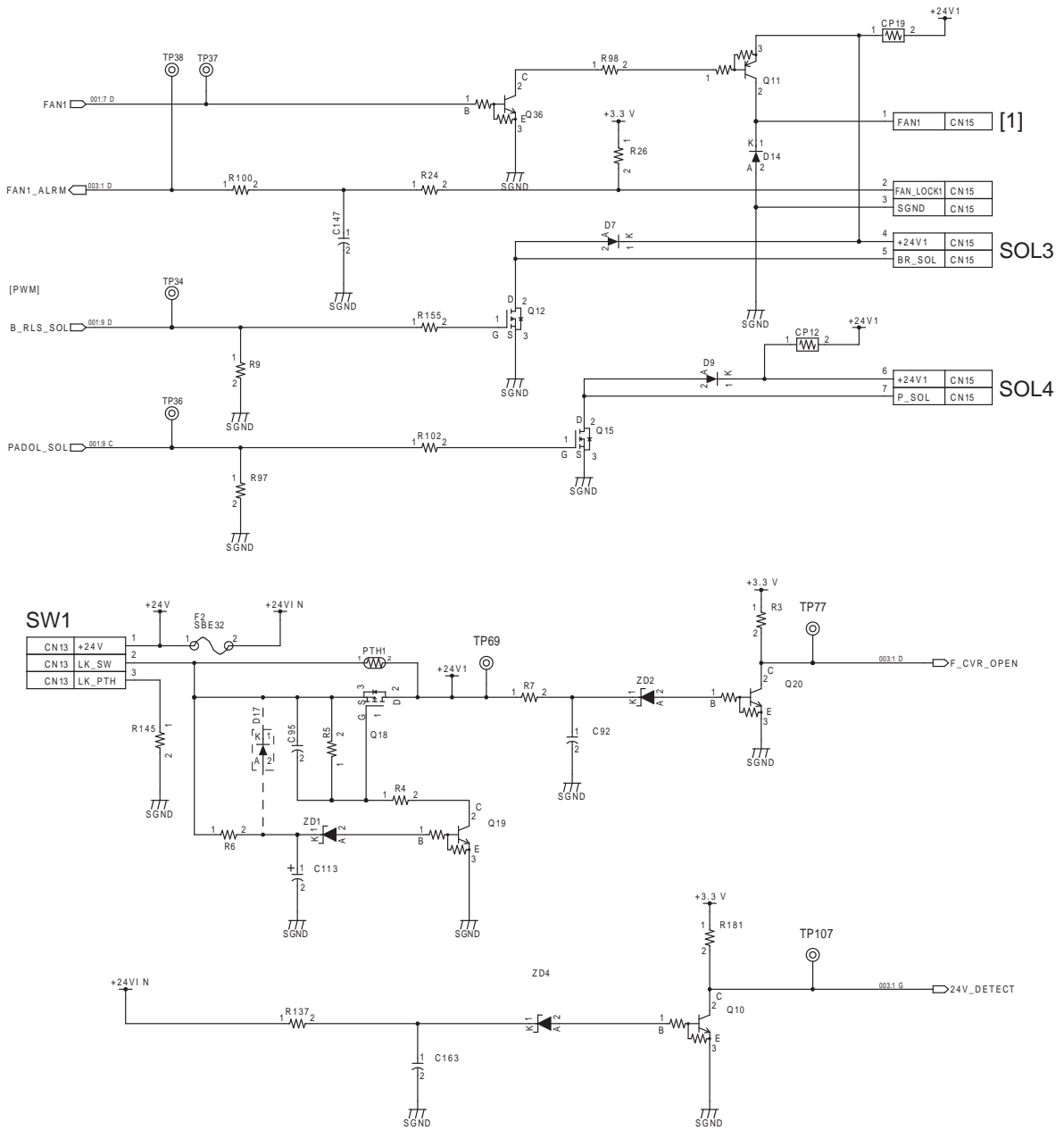


Fig. 8-17

[1]	Fan	SOL3	Knurled roller shift solenoid
SW1	Front cover switch	SOL4	Paddle solenoid

[L] Hole Punch Unit section (1)

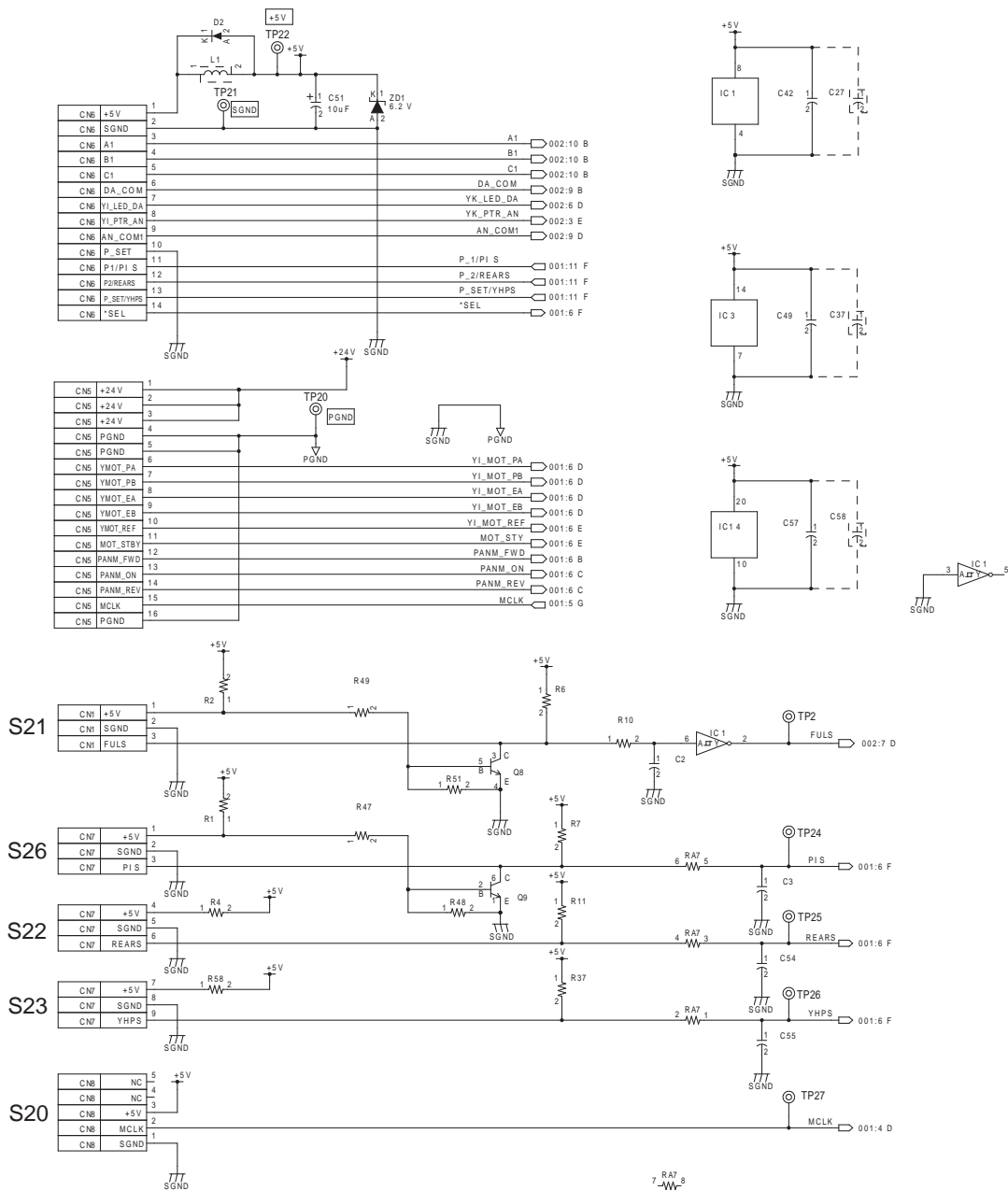


Fig. 8-19

S20	Punch motor clock sensor	S23	Hole punch slide unit home position sensor
S21	Punch waste full sensor	S26	Punch shaft home position sensor (MJ-6007N only)
S22	Rear punch shaft home position sensor		

[M] Hole Punch Unit section (2)

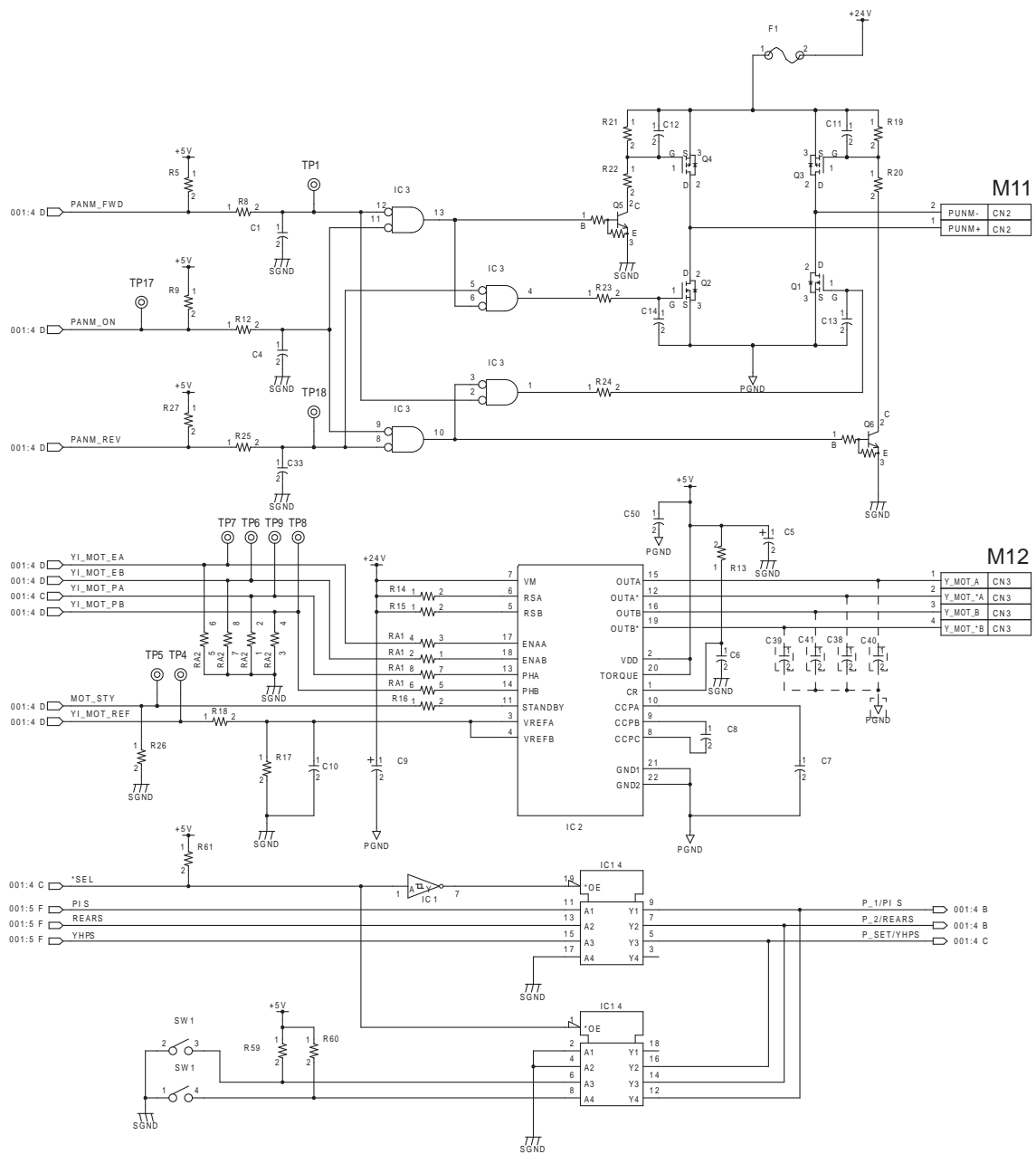


Fig. 8-20

M11	Punch motor	M12	Punch unit sliding motor
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[N] Hole Punch Unit section (3)

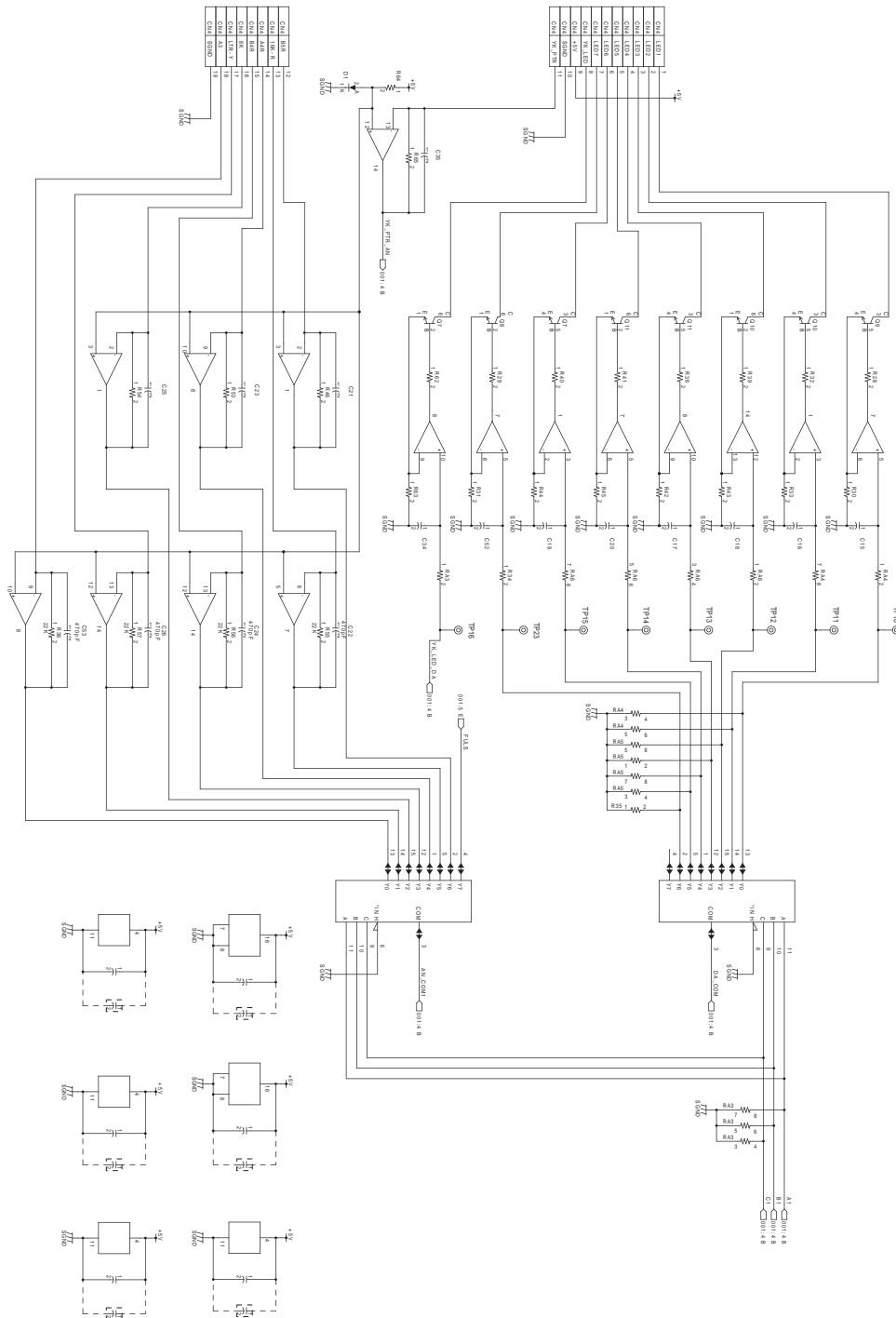


Fig. 8-21

[O] Hole Punch Unit section (trailing edge detection sensor board)

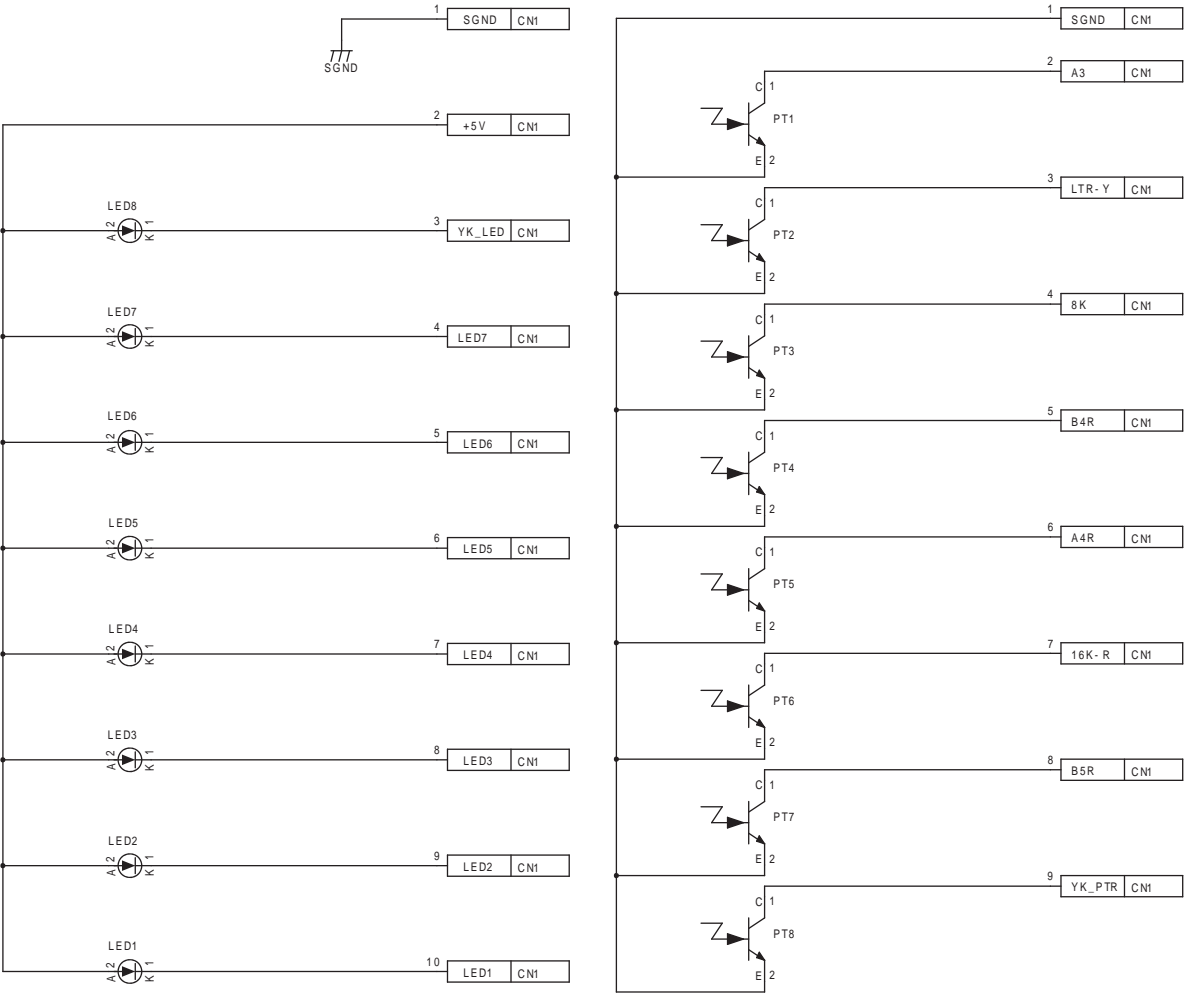


Fig. 8-22

A: Light-emitting board

B: Light-receiving board

8.3 PC Boards

[A] Finisher control PC board

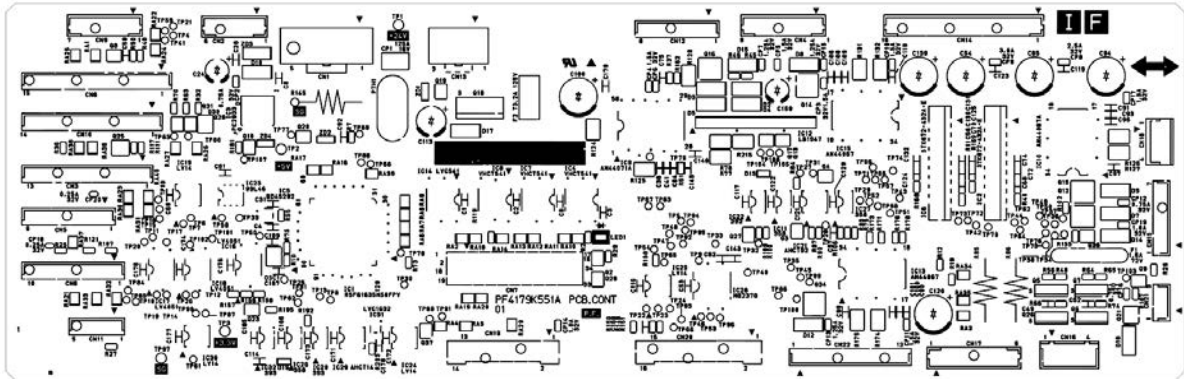


Fig. 8-23

[B] Hole punch control PC board

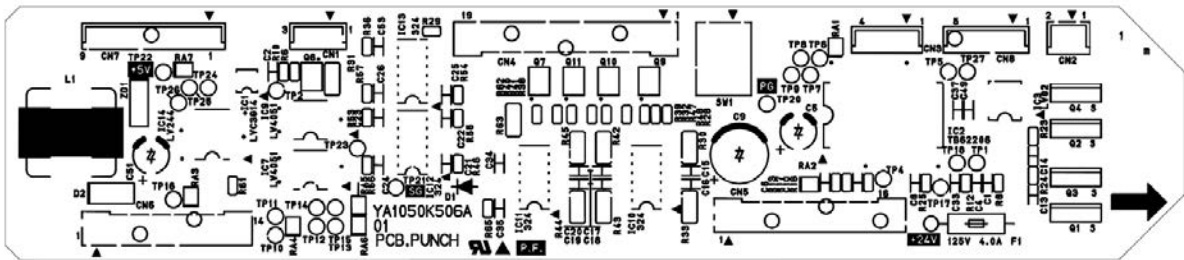


Fig. 8-24

[C] Trailing edge detection sensor board (light-emitting)

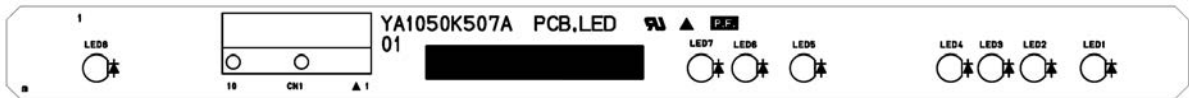


Fig. 8-25

[D] Trailing edge detection sensor board (light-receiving)

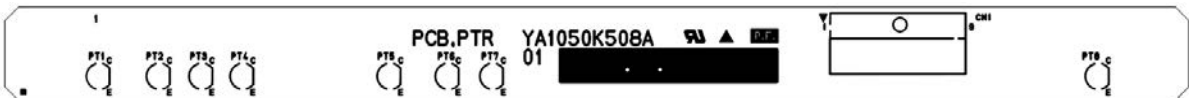


Fig. 8-26

8.4 Electric Signals

8.4.1 Finisher section

Location: IC1

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
P1	0	Hole Punch Unit communication TXD	TXD	CN2	OUT	
	1	Hole Punch Unit communication RXD	RXD	CN2	IN	
	2	Stapler motor rotational direction (normal)	STPMOT_FWD	CN16	OUT	*1
	3	Stapler motor rotational direction (reverse)	STPMOT_REV	CN16	OUT	
	4	Movable tray shift motor (+)	TRAYM_+	CN4	OUT	*2
	5	Movable tray shift motor (-)	TRAYM_-	CN4	OUT	
	6	Middle path sensor	MID_PATH_SENS	CN6	IN	H: Paper exists
7	Hole Punch Unit set 2 / Punch sliding unit home position sensor	P_SET/YHPS	CN19	IN	H: Unit exists / L: Home position	
P2	0	Front alignment plate home position sensor	FJHPS	CN5	IN	H: Home position
	1	2nd transport motor clock	FMOT_CLK	CN14	OUT	
	2	-	-	-	-	
	3	Bipolar motor drive enable mode-B	ENABLE_BI_B	-	OUT	L: Enable
	4	Bipolar motor drive standby mode-B	STBY_BI_B	CN14	OUT	L: Standby
	5	-	-	-	-	
	6	1st flapper solenoid drive output	F_SOL	CN22	OUT	H: ON
	7	Rear alignment plate home position sensor	RJHPS	CN5	IN	H: Home position

*1

Bit-2	Bit-3	PF Bit-4	
L	L	L	Brake
H	L	L	Stapler driven
L	H	L	Staple jam released
H	H	L	Brake
L	L	H	OFF
H	L	H	OFF
L	H	H	OFF
H	H	H	Brake

*2

Bit-4	Bit-5	
L	L	OFF
H	L	Raised
L	H	Brake
H	H	Lowered

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
P3	0	Staple unit sliding motor clock	STDMOT_CLK	CN18	OUT	
	1	Finisher multiplexer input select signal-A	MPX_A	-	OUT	*3
	2	Finisher multiplexer input select signal-B	MPX_B	-	OUT	
	3	Finisher multiplexer input select signal-C	MPX_C	-	OUT	
	4	Stack exit motor clock	TMOT_CLK	CN14	OUT	
	5	Operation indication LED	LED	-	OUT	L: ON
	6	Stack exit roller shift motor clock	RMOT_CLK	CN14	OUT	
	7	Unipolar motor enable signal	ENABLE_UNI	-	OUT	H: Enable
P5	0	Staple unit sliding home position sensor	STPHP_S	CN3	IN	L: Home position
	1	Stack exit roller home position sensor	R_UD_S	CN10	IN	H: Home position
	2	Movable tray paper exist sensor	TEMP	CN6	IN	H: Paper exists
	3	Trailing edge detection sensor	PTR_SENS	CN19	IN	L: Paper exists
	4	Staple unit clinching home position sensor	*STP_HP	CN17	IN	L: Home position
	5	Horizontal registration detection sensor	PYREG_SENS	CN19	IN	L: Paper exists
	6	Horizontal registration detection sensor (analog)	AN_COM1	CN19	IN	
	7	Trailing edge detection sensor (analog)	YI_PTR_AN	CN19	IN	
P6	0	Flash writer signal (TXD)	FL_DBG_TXD	CN8	OUT	
	1	Flash writer signal (RXD)	FL_DBG_RXD	CN8	IN	
	2	Trailing edge holding solenoid	STOP_SOL	CN4	OUT	H: ON
	3	Hole Punch Unit destination setting-1 / Punch shaft home position sensor for NAD (MJ-6007N only)	P1/PIS	CN19	IN	- / L: Home position
	4	Punch motor encoder	MCLK	CN20	IN	
	5	Stack top detection solenoid	S_SOL	CN4	OUT	H: ON

*3

Bit-1	Bit-2	Bit-3	
L	L	L	Y0
H	L	L	Y1
L	H	L	Y2
H	H	L	Y3
L	L	H	Y4
H	L	H	Y5
L	H	H	Y6
H	H	H	Y7

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
PA	0	Hole Punch Unit multiplexer input select signal-A	A1	CN19	OUT	*4
	1	Hole Punch Unit multiplexer input select signal-B	B1	CN19	OUT	
	2	Hole Punch Unit multiplexer input select signal-C	C1	CN19	OUT	
	3	Entrance path sensor	ENTPS	CN22	IN	H: Paper exists
	4	Punch motor rotational direction (normal)	PANM_FWD	CN20	OUT	*5
	5	Alignment motor drive mode setting-3 / also used for *RD	*RD/JMOT_MD3	CN12	OUT	
	6	Punch motor rotational direction (reverse)	PANMOT_REV	CN20	OUT	
	7	ROM board set signal	ROMSEL	CN7	IN	L: ROM board exists
PD	0	Punch unit sliding motor phase B output enable / also used for A (0)	YMOT_EB	CN20	OUT	
	1	Punch unit sliding motor phase A output enable / also used for A (1)	YMOT_EA	CN20	OUT	
	2	Punch unit sliding motor phase B output enable / also used for A (2)	YMOT_PB	CN20	OUT	
	3	Punch unit sliding motor phase A output enable / also used for A (3)	YMOT_PA	CN20	OUT	
	4	1st transport motor clock / also used for A (4)	EMOT_CLK	CN22	OUT	
	5	Peripheral ICs drive serial clock	E2P_DAC_JG_CK	-	OUT	
	6	Punch motor drive output / also used for A (6)	PANMOT_ON	CN20	OUT	
	7	Peripheral ICs serial data TXD / also used for A (7)	E2P_DAC_JG_DI	-	OUT	

*4

Bit-0	Bit-1	Bit-2	
L	L	L	Y0
H	L	L	Y1
L	H	L	Y2
H	H	L	Y3
L	L	H	Y4
H	L	H	Y5
L	H	H	Y6
H	H	H	Y7

*5

Bit-4	Bit-6	PB Bit-6	
L	L	L	Brake
H	L	L	Punching
L	H	L	Moved to home position
H	H	L	Brake
L	L	H	OFF
H	L	H	OFF
L	H	H	OFF
H	H	H	Brake

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
PE	0	Front alignment motor clock / also used for A (8)	FJMOT_CLK	CN12	OUT	
	1	Alignment motors drive mode setting-2 / also used for A (9)	JMOT_MD2	CN12	OUT	
	2	2nd transport motor drive mode setting-2 / also used for A (10)	FMOT_MD2	CN14	OUT	
	3	2nd transport motor drive mode setting-1 / also used for A (11)	FMOT_MD1	CN14	OUT	
	4	Movable tray shift motor drive signal	TRAYMOT_PWM	-	OUT	
	5	Staple unit sliding motor rotational direction / also used for A (13)	STDMOT_DIR	CN18	OUT	
	6	Rear alignment motor clock / also used for A (14)	RJMOT_CLK	CN12	OUT	
	7	Rear alignment motor rotational direction / also used for A (15)	RJMOT_DIR	CN12	OUT	
PF	0	2nd transport motor rotational direction / also used for A (16)	FMOT_DIR	CN14	OUT	
	1	1st transport motor rotational direction / also used for A (17)	EMOT_DIR	CN22	OUT	
	2	Jig board chip select / also used for A (18)	*J_CS	CN9	OUT	
	3	-	-	-	-	
	4	Stapler motor ON / also used for A (20)	STPMOT_ON	CN16	OUT	
	5	D/A converter chip select	*DAC_CS	-	OUT	
	6	Bipolar motor drive standby mode-A	STBY_BI_A	-	OUT	
	7	Bipolar motor drive enable mode-A	ENABLE_BI_A	-	OUT	
PH	0	Stack exit motor drive mode setting-1 / also used for D (0)	TMOT_MD1	CN14	OUT	
	1	Stack exit motor drive mode setting-2 / also used for D (1)	TMOT_MD2	CN14	OUT	
	2	Stack exit motor rotational direction / also used for D (2)	TMOT_DIR	CN14	OUT	
	3	Sensor switch signal / also used for D (3)	P_SENS_SEL	CN19	OUT	
	4	1st transport motor drive mode setting-1 / also used for D (4)	EMOT_MD1	CN22	OUT	
	5	1st transport motor drive mode setting-2 / also used for D (5)	EMOT_MD2	CN22	OUT	
	6	Front alignment motor rotational direction / also used for D (6)	FJMOT_DIR	CN12	OUT	
	7	Stack exit roller shift motor rotational direction / also used for D (7)	RMOT_DIR	CN14	OUT	

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
PI	0	Converter board reset signal	CNV_RES	CN8	OUT	
	1	Jig board serial data RXD	JG_DO	CN9	IN	
	2	E2PROM serial data RXD	E2P_DO	-	IN	
	3	E2PROM chip select	E2P_CS	-	OUT	
	4	Multiplexer-3 input signal	MPX_IN3	-	IN	
	5	Multiplexer-2 input signal	MPX_IN2	-	IN	
	6	Multiplexer-1 input signal	MPX_IN1	-	IN	
	7	1st fan drive output	FAN1	CN15	OUT	H: ON

Location: IC28

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
DAC	A1	2nd transport motor current setting	FMOT_VREF	CN14	OUT	
	A2	Stack exit motor current setting	TMOT_VREF	CN14	OUT	
	A3	Stack exit roller shift motor current setting	RMOT_VREF	CN14	OUT	
	A4	Staple unit sliding motor current setting	SOLDMOT_VREF	CN18	OUT	
	A5	Front alignment motor current setting	FJMOT_VREF	CN12	OUT	
	A6	Rear alignment motor current setting	RJMOT_VREF	CN12	OUT	
	A7/D9	Punch unit sliding motor current setting	YMOT_REF	CN20	OUT	
	A8/D8	1st transport motor current setting	EMOT_VREF	CN22	OUT	
	A9/D7	2nd fan drive output	FAN2	CN21	OUT	
	A10/D6	-	-	-	-	
	A11/D5	Horizontal registration detection sensor (light-emitting amount, output)	DA_COM	CN19	OUT	
	A12/D4	Trailing edge detection sensor (light-emitting amount, output)	YI_LED_DA	CN19	OUT	
	D0	Paddle solenoid output	P_SOL	CN15	OUT	
	D1	-	-	-	-	
	D2	Knurled roller shift solenoid output	BR_SOL	CN15	OUT	
	D3	Converter board interrupt signal	CNV_NMI	CN8	OUT	

Location: IC16

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
MPX1	Y0	Stapling start position sensor	*STP_READY	CN17	IN	L: READY
	Y1	Staple empty sensor	*STP_LS	CN17	IN	H: No staple
	Y2	Front cover opening status detection	F_CVR_OPEN	CN13	IN	H: Cover opened
	Y3	Staple unit improper clinching prevention sensor	R_STOP	CN17	IN	H: Stapler is at a position where stapling is not allowed
	Y4	1st fan operation lock alarm	FAN_LOCK1	CN15	IN	H: Lock detected
	Y5	-	-	-	-	
	Y6	-	-	-	-	
Y7	-	-	-	-		

Location: IC17

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
MPX2	Y0	Stack top detection sensor-1	YO1	CN3	IN	*6
	Y1	Stack top detection sensor-2	YO2	CN3	IN	
	Y2	Knurled roller home position sensor	B_RLS_S	CN11	IN	H: Home position
	Y3	Movable tray lower limit sensor	TLLS	CN10	IN	H: Lower limit
	Y4	-	-	-	-	
	Y5	Finishing tray sensor	EMPS	CN5	IN	L: Paper exists
	Y6	-	-	-	-	
Y7	-	-	-	-		

*6

Y0	Y1	
L	L	Stack top position is higher than the limit
H	L	YO Lever is at an escaping position
L	H	Stack top position is within the acceptable range
H	H	Stack top position is lower than the limit

Location: IC18

Address	Bit	Contents	Signal name	Connector	I/O	Remarks
MPX3	Y0	Hole Punch Unit destination setting-2 / Rear punch shaft home position sensor	P2/REARS	CN19	IN	- / L: Home position
	Y1	Hole Punch Unit setting signal-2	P_SET	CN19	IN	L: Unit exists
	Y2	-	-	-	-	
	Y3	24 V input detection	24V_DETECT	-	IN	L: 24 V detected
	Y4	Stationary tray full detection sensor	STRAY_FULL_SENS	CN10	IN	L: Full
	Y5	-	-	-	-	
	Y6	Sub-path sensor	UPATH1	CN6	IN	L: Paper exists
Y7	Sub-path opening/closing sensor	U_OPEN	CN10	IN	H: Cover opened	

8.4.2 Hole Punch Unit section

No.	Contents	Signal name	Connector	I/O	Remarks
1	Punch waste full sensor	FULS	CN1	OUT	Full status is detected when logic is fixed
2	Punch motor (+)	PUNM+	CN2	OUT	
3	Punch motor (-)	PUNM-	CN2	OUT	
4	Punch unit sliding motor Phase A output	Y_MOT_A	CN3	OUT	H: ON
5	Punch unit sliding motor Phase *A output	Y_MOT_*A	CN3	OUT	H: ON
6	Punch unit sliding motor Phase B output	Y_MOT_B	CN3	OUT	H: ON
7	Punch unit sliding motor Phase *B output	Y_MOT_*B	CN3	OUT	H: ON
8	Horizontal registration detection sensor-1 (light-emitting)	LED1	CN4	IN	
9	Horizontal registration detection sensor-2 (light-emitting)	LED2	CN4	IN	
10	Horizontal registration detection sensor-3 (light-emitting)	LED3	CN4	IN	
11	Horizontal registration detection sensor-4 (light-emitting)	LED4	CN4	IN	
12	Horizontal registration detection sensor-5 (light-emitting)	LED5	CN4	IN	
13	Horizontal registration detection sensor-6 (light-emitting)	LED6	CN4	IN	
14	Horizontal registration detection sensor-7 (light-emitting)	LED7	CN4	IN	
15	Trailing edge detection sensor (light-emitting)	YK_LED	CN4	IN	
16	Trailing edge detection sensor (light-receiving)	YK_PTR	CN4	OUT	L: Paper exists
17	Horizontal registration detection sensor-7 (light-receiving)	B5R	CN4	OUT	L: Paper exists
18	Horizontal registration detection sensor-6 (light-receiving)	16K-R	CN4	OUT	L: Paper exists
19	Horizontal registration detection sensor-5 (light-receiving)	A4R	CN4	OUT	L: Paper exists
20	Horizontal registration detection sensor-4 (light-receiving)	B4R	CN4	OUT	L: Paper exists
21	Horizontal registration detection sensor-3 (light-receiving)	8K	CN4	OUT	L: Paper exists
22	Horizontal registration detection sensor-2 (light-receiving)	LTR-Y	CN4	OUT	L: Paper exists
23	Horizontal registration detection sensor-1 (light-receiving)	A3	CN4	OUT	L: Paper exists
24	Punch unit sliding motor Phase A output	YMOT_PA	CN5	IN	
25	Punch unit sliding motor Phase B output	YMOT_PB	CN5	IN	
26	Punch unit sliding motor enable Phase A output	YMOT_EA	CN5	IN	H: Enable
27	Punch unit sliding motor enable Phase B output	YMOT_EB	CN5	IN	H: Enable
28	Punch unit sliding motor current setting reference voltage signal	YMOT_REF	CN5	IN	
29	Punch unit sliding motor standby signal	MOT_STY	CN5	IN	H: ON
30	Punch motor normal rotation signal	PANM_FWD	CN5	IN	H: ON
31	Punch motor drive signal	PANM_ON	CN5	IN	H: ON

No.	Contents	Signal name	Connector	I/O	Remarks
32	Punch motor reverse rotation signal	PANM_REV	CN5	IN	H: ON
33	Punch motor clock sensor	MCLK	CN5	OUT	
34	Multiplexer port signal-A	A1	CN6	IN	
35	Multiplexer port signal-B	B1	CN6	IN	
36	Multiplexer port signal-C	C1	CN6	IN	
37	Horizontal registration detection sensor (light-emitting amount, output)	DA_COM	CN6	IN	
38	Trailing edge detection sensor (light-emitting amount, output)	YI_LED_DA	CN6	IN	
39	Trailing edge detection sensor (light-receiving amount, input)	YI_PTR_AN	CN6	OUT	
40	Horizontal registration detection sensor (light-receiving amount, input)	AN_COM1	CN6	OUT	
41	Hole Punch Unit detection signal	P_SET	CN6	OUT	L: Unit exists
42	Destination DIP switch-1 / Punch shaft home position sensor (MJ-6007N only)	P1/PIS	CN6	OUT	- / H: Home position
43	Destination DIP switch-2 / Rear punch shaft home position sensor	P2/REARS	CN6	OUT	- / H: Home position
44	Hole Punch Unit detection signal / Punch sliding unit home position sensor	P_SET/YHPS	CN6	OUT	L: Unit exists / H: Home position
45	Select signal	*SEL	CN6	IN	
46	Punch shaft home position sensor (MJ-6007N only)	PIS	CN7		H: Home position
47	Rear punch shaft home position sensor	REARS	CN7		H: Home position
48	Punch sliding unit home position sensor	YHPS	CN7		H: Home position
49	Punch motor clock sensor	MCLK	CN8		

