



DF-35
DF-71



SERVICE MANUAL

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Safety precautions

This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions

Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

⚠ DANGER: High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠ WARNING: Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠ CAUTION: Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

The triangle (△) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.



General warning.



Warning of risk of electric shock.



Warning of high temperature.

⊘ indicates a prohibited action. The specific prohibition is shown inside the symbol.



General prohibited action.



Disassembly prohibited.

● indicates that action is required. The specific action required is shown inside the symbol.



General action required.





Remove the power plug from the wall outlet.











Always ground the copier.

1. Installation Precautions

WARNING

- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. 
- Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. 

CAUTION:

- Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury. 
- Do not install the copier in a humid or dusty place. This may cause fire or electric shock. 
- Do not install the copier near a radiator, heater, other heat source or near flammable material. This may cause fire. 
- Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. 
- Always handle the machine by the correct locations when moving it. 
- Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury. 
- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. 
- Advice customers that they must always follow the safety warnings and precautions in the copier's instruction handbook. 

2. Precautions for Maintenance

WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly.
- Always follow the procedures for maintenance described in the service manual and other related brochures.
- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits.
- Always use parts having the correct specifications.
- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident.
- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully.
- Always check that the copier is correctly connected to an outlet with a ground connection.
- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock.
- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight.
- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly.













CAUTION

- Wear safe clothing. If wearing loose clothing or accessories such as ties, make sure they are safely secured so they will not be caught in rotating sections.
- Use utmost caution when working on a powered machine. Keep away from chains and belts.
- Handle the fixing section with care to avoid burns as it can be extremely hot.
- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures.
- Do not remove the ozone filter, if any, from the copier except for routine replacement.




TONER

- Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself. 
- Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item. 
- Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks. 
- Remove toner completely from electronic components. 
- Run wire harnesses carefully so that wires will not be trapped or damaged. 
- After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws. 
- Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary. 
- Handle greases and solvents with care by following the instructions below: 
 - Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
 - Ventilate the room well while using grease or solvents.
 - Allow applied solvents to evaporate completely before refitting the covers or turning the main switch on.
 - Always wash hands afterwards.
- Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc. 
- Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately. 

3. Miscellaneous

WARNING

- Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas. 

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1-1-1 Specifications

Type	Floor standing
Number of trays	Sort tray: 1 Non-sort tray: 1
Tray capacity	Sort tray (75 – 80 g/m ² weight paper) When not stapling: 1500 sheets: A3, B4 (257 mm × 364 mm), 11" × 17", 8 ¹ / ₂ " × 14" 3000 sheets: A4, A4R, 8 ¹ / ₂ " × 11", 11" × 8 ¹ / ₂ " When stapling 2 sheets: 300 sheets: A3, B4 (257 mm × 364 mm) 450 sheets: 11" × 17" 600 sheets: 8 ¹ / ₂ " × 14" 700 sheets: 8 ¹ / ₂ " × 11" 750 sheets: A4, A4R 850 sheets: 11" × 8 ¹ / ₂ " When stapling 3 or 4 sheets: 300 sheets: A3, B4 (257 mm × 364 mm) 400 sheets: 11" × 17" 700 sheets: A4, A4R, 8 ¹ / ₂ " × 14" 750 sheets: 8 ¹ / ₂ " × 11" 800 sheets: 11" × 8 ¹ / ₂ " When stapling 5 to 10 sheets: 500 sheets: A3, B4 (257 mm × 364 mm), 11" × 17" 800 sheets: 8 ¹ / ₂ " × 14" 850 sheets: A4, A4R 900 sheets: 8 ¹ / ₂ " × 11", 11" × 8 ¹ / ₂ " When stapling 11 to 20 sheets: 800 sheets: A3, B4 (257 mm × 364 mm) 950 sheets: 11" × 17" 1000 sheets: 8 ¹ / ₂ " × 14" 1100 sheets: A4, A4R 1200 sheets: 8 ¹ / ₂ " × 11", 11" × 8 ¹ / ₂ " When stapling 21 to 29 sheets: 1300 sheets: A3, B4 (257 mm × 364 mm) 1400 sheets: 11" × 17" 1500 sheets: 8 ¹ / ₂ " × 14" When stapling 21 to 49 sheets: 2700 sheets: A4R 3000 sheets: A4, 8 ¹ / ₂ " × 11", 11" × 8 ¹ / ₂ " When stapling 30 sheets: 1500 sheets: A3, B4 (257 mm × 364 mm), 11" × 17", 8 ¹ / ₂ " × 14" When stapling 50 sheets: 3000 sheets: A4, A4R, 8 ¹ / ₂ " × 11", 11" × 8 ¹ / ₂ " Non-sort tray: 150 sheets: A3, B4 (257 mm × 364 mm), folio, 11" × 17", 8 ¹ / ₂ " × 14" 250 sheets: A4, A4R, A5R, A6R, 11" × 8 ¹ / ₂ ", 8 ¹ / ₂ " × 11"
Stapling limit	30 sheets: A3, B4 (257 mm × 364 mm), 11" × 17", 8 ¹ / ₂ " × 14" [75 – 80 g/m ²] 50 sheets: A4, A4R, 11" × 8 ¹ / ₂ ", 8 ¹ / ₂ " × 11" [75 – 80 g/m ²]
Power source	Electrically connected to the copier
Dimensions	688 (W) × 598 (D) × 1055 (H) mm 27 ¹ / ₈ " (W) × 23 ⁹ / ₁₆ " (D) × 41 ¹ / ₂ " (H)
Weight	Approx. 50 kg/110 lbs

1-1-2 Parts names

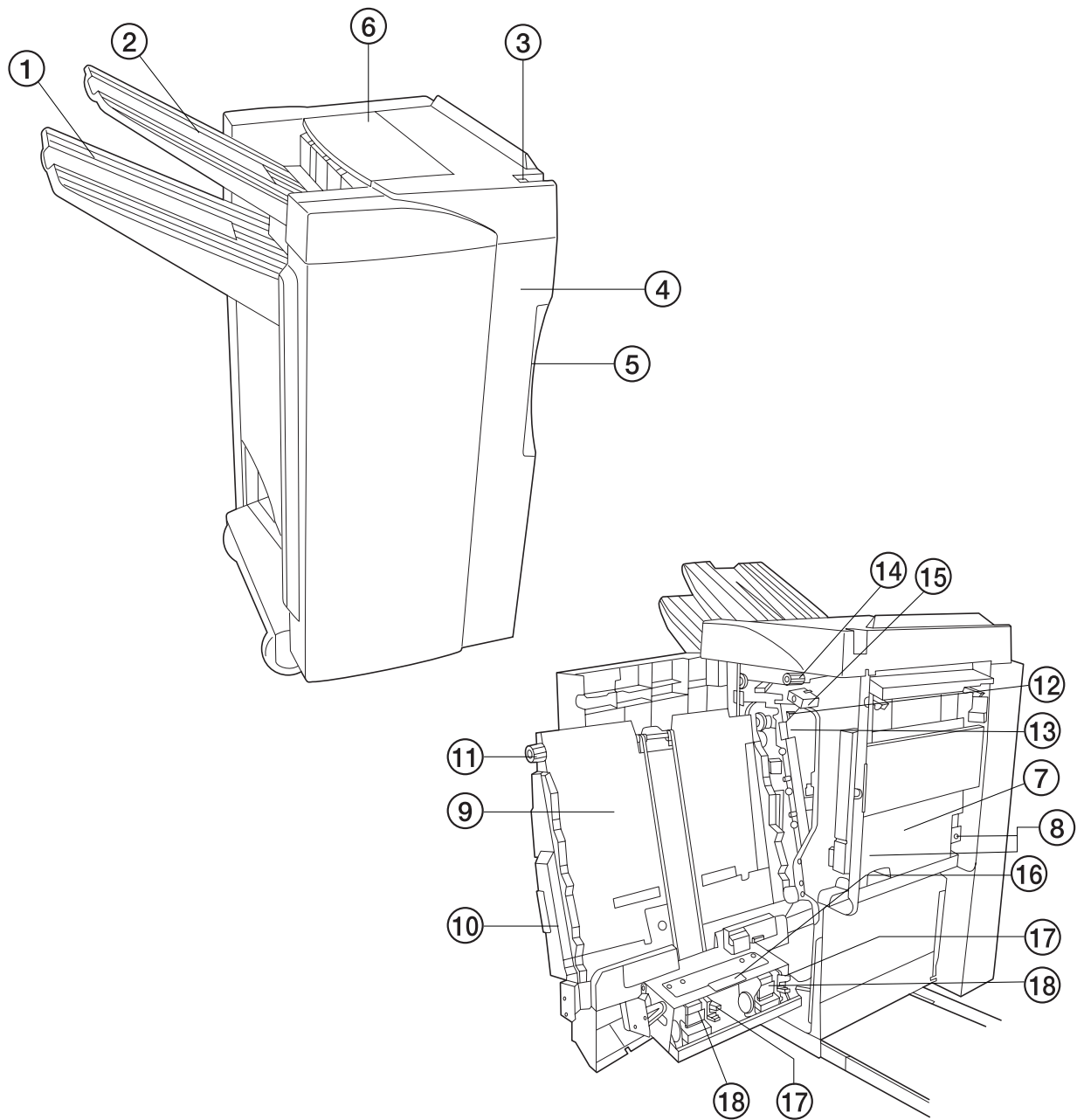


Figure 1-1-1 Parts names

- | | |
|---------------------------|-------------------------------|
| ① Sort tray | ⑩ Internal tray handle |
| ② Non-sort tray | ⑪ Conveyor knob (A) |
| ③ Finisher release button | ⑫ Conveyor guide handle (A) |
| ④ Front cover | ⑬ Conveyor guide handle (B) |
| ⑤ Front cover handle | ⑭ Conveyor knob (B) |
| ⑥ Upper cover | ⑮ Pressure adjustment lever |
| ⑦ Waste punch box | ⑯ Stapling unit handle |
| ⑧ Waste punch box knobs | ⑰ Staple holder release lever |
| ⑨ Internal tray | ⑱ Staple holder |

1-1-3 Machine cross section

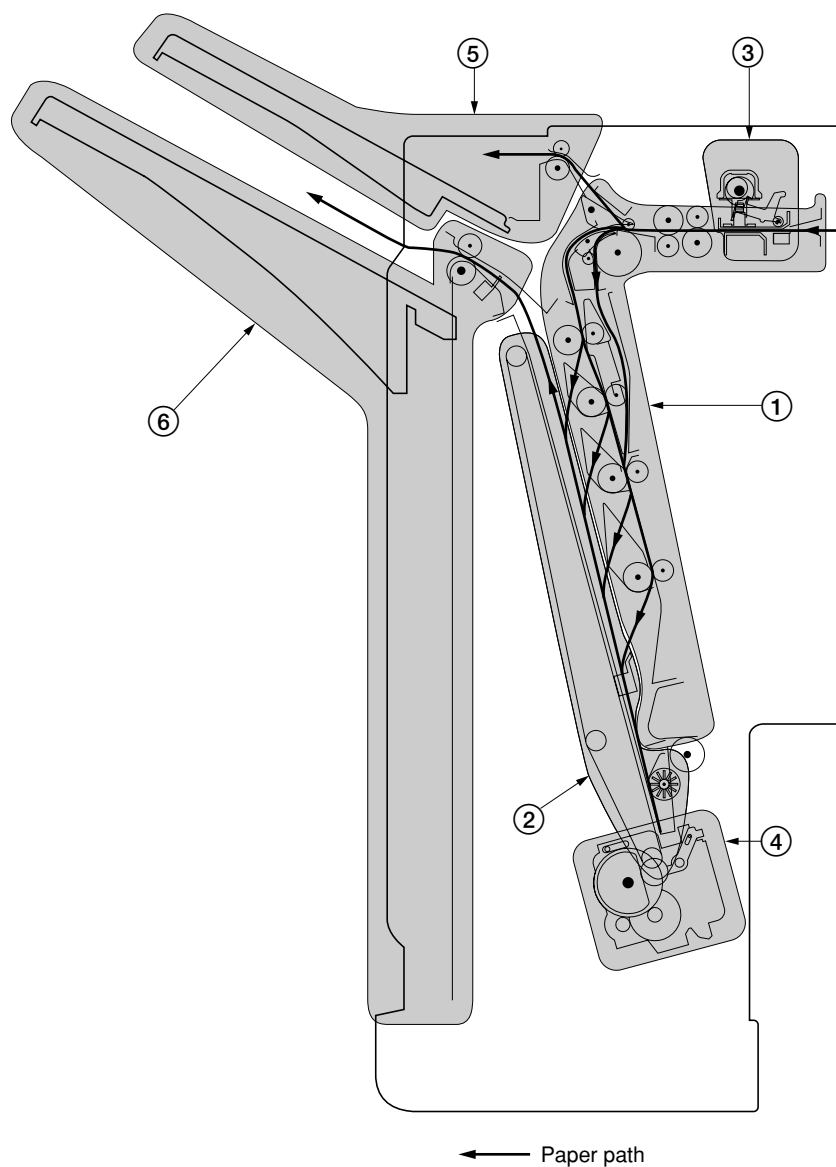


Figure 1-1-2 Cross section

- ① Paper conveying section
- ② Internal tray section
- ③ Punch section
- ④ Stapler section
- ⑤ Non-sort tray section
- ⑥ Sort tray section

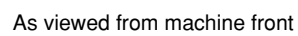
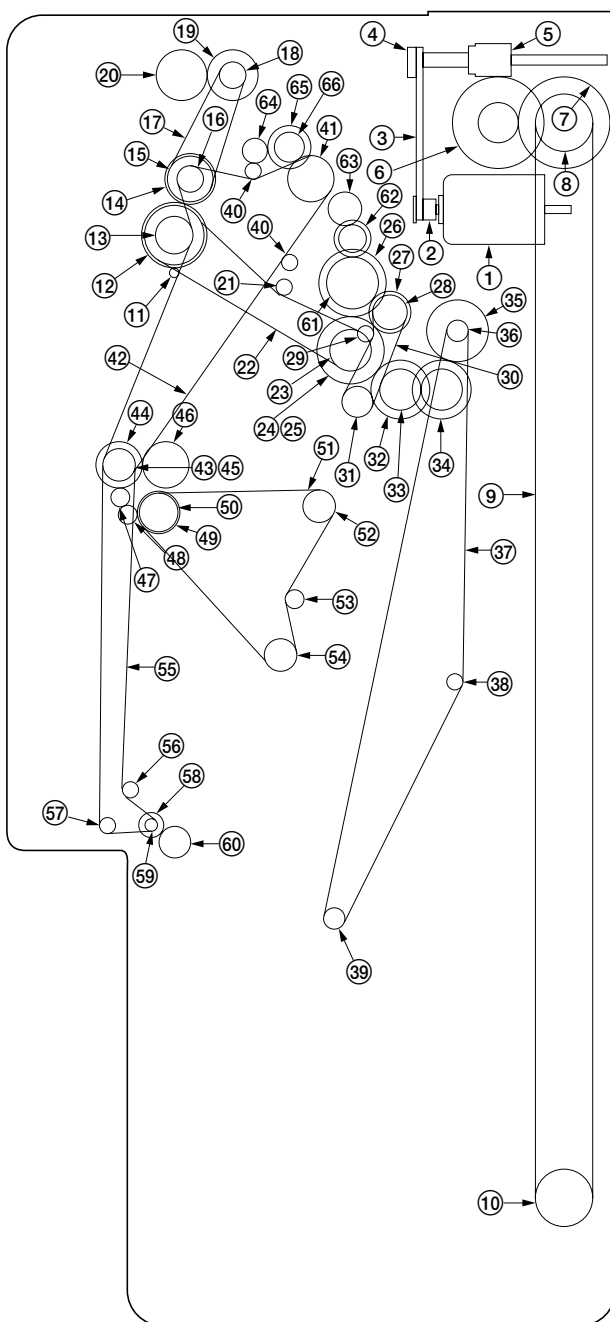


Figure 1-2-3 Drive system 1 (machine front)

- ① Eject drive belt
- ② Paper entry pulley 40
- ③ Tension pulley
- ④ Sort eject pulley 27
- ⑤ Eject pulley 20
- ⑥ Tray elevation belt
- ⑦ Pulley 20S5M
- ⑧ Pulley 20S5M
- ⑨ Gear 20
- ⑩ Gear 20



As viewed from machine rear

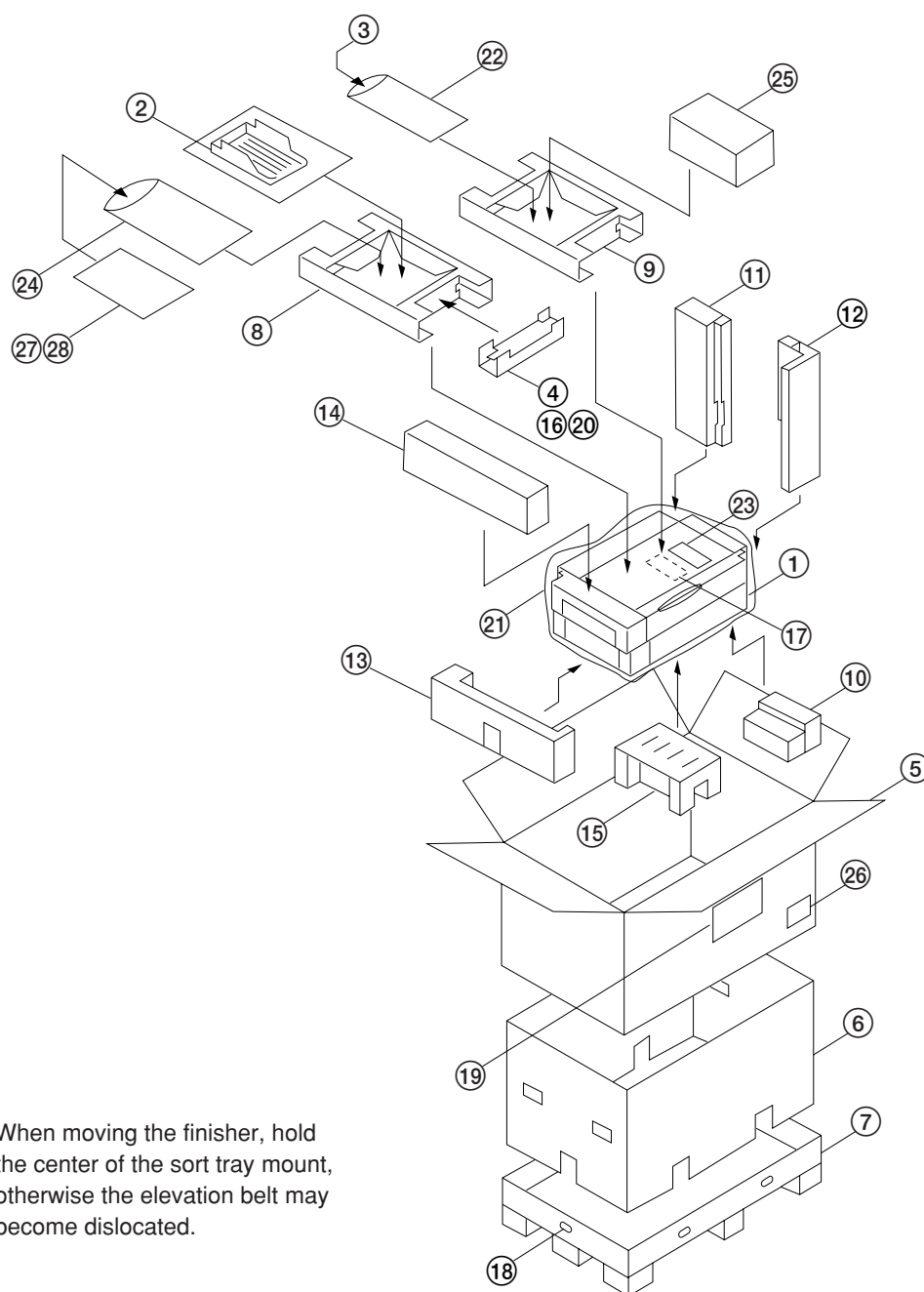
Figure 1-2-4 Drive system 2 (machine rear)

- | | |
|-------------------------------|------------------------------|
| ① Tray elevation motor | ⑧ Pulley 20S5M |
| ② Tray elevation motor pulley | ⑨ Tray elevation belt |
| ③ Tray drive belt 22 | ⑩ Pulley 20S5M |
| ④ Pulley 34 | ⑪ Paper conveying motor gear |
| ⑤ Worm gear | ⑫ Pulley 37/48 |
| ⑥ Gear 18/50 | ⑬ Tension pulley 20 |
| ⑦ Gear 51 | ⑭ Gear 45 |

- ⑮ Pulley 40
- ⑯ Pulley 30
- ⑰ Punch drive belt
- ⑱ Pulley 14
- ⑲ Gear 29
- ⑳ Punch clutch gear
- ㉑ Tension pulley
- ㉒ Middle drive belt
- ㉓ Pulley 21
- ㉔ Gear 40
- ㉕ Feedshift drive gear 31
- ㉖ Paddle input gear 42
- ㉗ Feedshift roller gear 17
- ㉘ Coupling pulley 20
- ㉙ Tension pulley
- ㉚ Upper feedshift belt
- ㉛ Coupling pulley 20
- ㉜ Gear 33
- ㉝ Gear 24SB
- ㉞ Gear 24/33
- ㉟ Paper conveying belt clutch gear
- ㊱ Pulley 20S3M
- ㊲ Paper conveying belt
- ㊳ Tension pulley 20S3M
- ㊴ Middle tray idle pulley 22
- ㊵ Tension pulley
- ㊶ Pulley 31
- ㊷ Feedshift drive belt
- ㊸ Coupling pulley 20
- ㊹ Drive switching gear 27
- ㊺ Coupling pulley 22
- ㊻ Gear 27
- ㊼ Sub-section interconnecting gear
- ㊽ Sub-section interconnecting gear
- ㊾ Feedshift gear 22
- ㊿ Coupling pulley 20
- ① Lower feedshift belt
- ② Coupling pulley 20
- ③ Tension pulley
- ④ Coupling pulley 20
- ⑤ Forwarding drive belt
- ⑥ Tension pulley
- ⑦ Shutter pulley
- ⑧ Gear Z29
- ⑨ Shutter pulley
- ⑩ Paper conveying clutch gear
- ⑪ Gear 23
- ⑫ Paddle idle gear 20/22
- ⑬ Clutch gear 36
- ⑭ Gear 16
- ⑮ Decurler gear 34
- ⑯ Decurler gear 27

1-2-1 Unpacking

(1) Unpacking



Important: When moving the finisher, hold the center of the sort tray mount, otherwise the elevation belt may become dislocated.

Figure 1-2-1 Unpacking

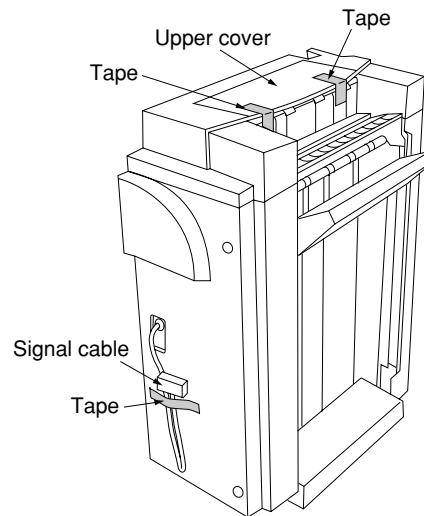
- | | | |
|----------------------|----------------------|-----------------------|
| ① Finisher | ⑪ Rear right spacer | ⑳ Machine cover |
| ② Tray set assembly | ⑫ Front right spacer | ㉑ Air-padded bag |
| ③ Retainer | ⑬ Lower left spacer | ㉒ Leaflet |
| ④ Stapler cartridges | ⑭ Upper left spacer | ㉓ Plastic bag |
| ⑤ Outer case | ⑮ Middle left spacer | ㉔ Curl eliminator set |
| ⑥ Inner frame | ⑯ Spacer (stapler) | ㉕ Code labels |
| ⑦ Bottom case | ⑰ Spacer (conveyor) | ㉖ Installation guide |
| ⑧ Upper spacer | ⑱ Hinge joints | ㉗ Installation guide |
| ⑨ Top spacer | ㉘ Bar code labels | |
| ⑩ Spacer (casters) | ㉙ Air-padded bag | |

(2) Removing tapes and metal fittings

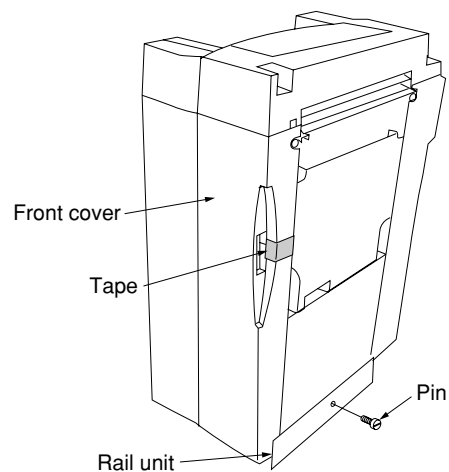
When installing the machine, be sure to remove the following tapes and metal fittings.

Procedure

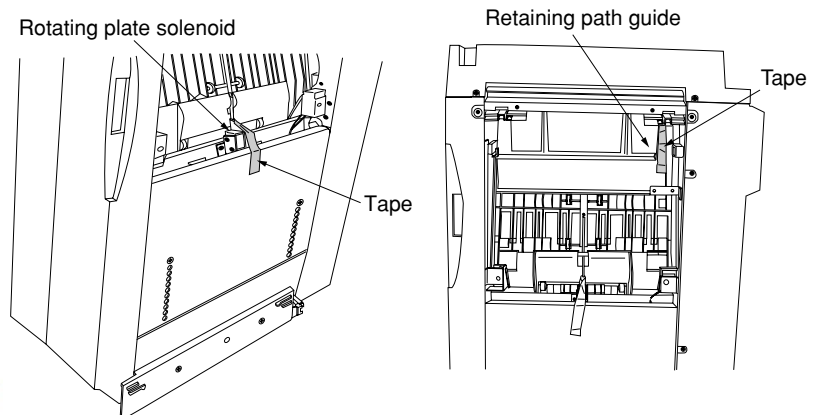
1. Remove the two tapes holding the upper cover.
2. Remove the tape holding the signal cable.

**Figure 1-2-2**

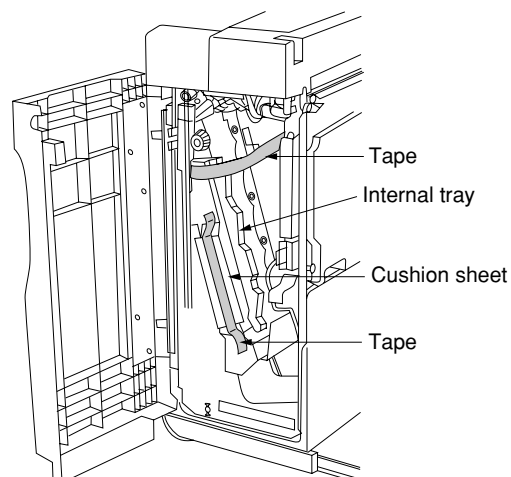
3. Remove the tape holding the front cover.
4. Remove the pin holding the rail unit.

**Figure 1-2-3**

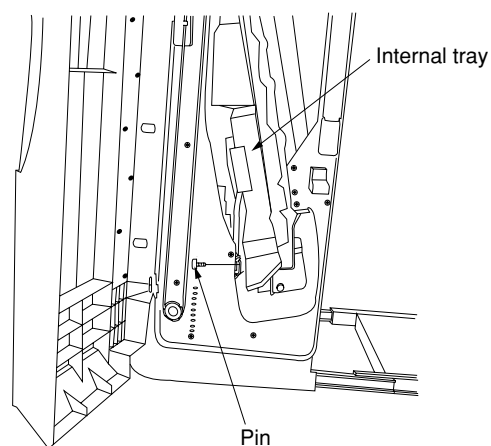
5. Remove the scrap hole-punch tank and then the tapes holding the rotating plate solenoid and the retaining path guide.

**Figure 1-2-4**

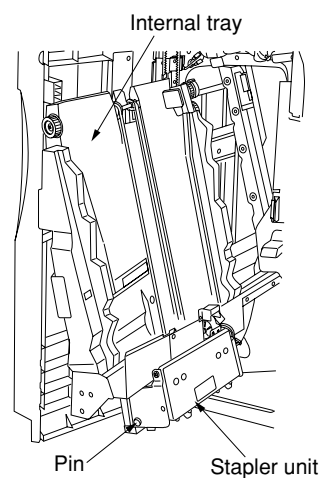
6. Open the front cover and remove the tape holding the internal tray.
7. Remove the tape and cushion sheet

**Figure 1-2-5**

8. Remove the tape and then the pin holding the internal tray.

**Figure 1-2-6**

9. Pull the internal tray out. Remove the tape and then the pin holding the stapler unit.

**Figure 1-2-7**

10. Remove the tape and then the cushion sheet holding the internal tray wheel sensor.
11. Remove the tape and then the pin holding the stapler unit.

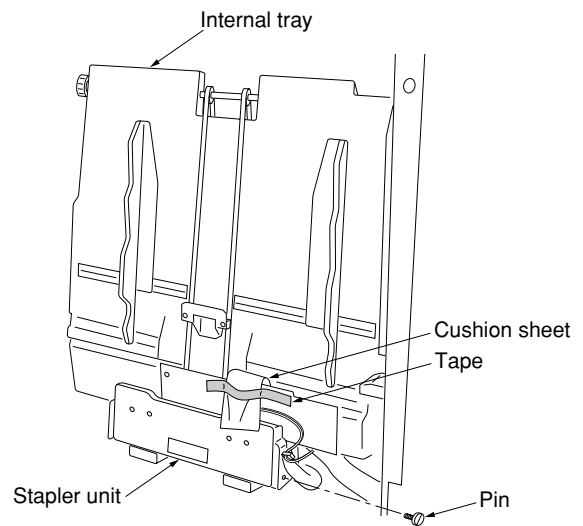


Figure 1-2-8

1-2-2 Installing the mailbox (option)

Procedure

1. Remove the front top cover and rear top cover at the top of the finisher using a flat-blade screwdriver or the like.

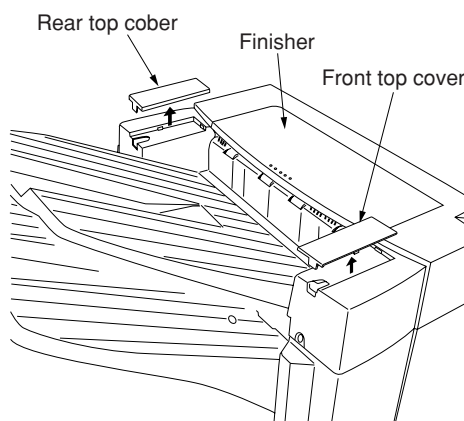


Figure 1-2-9

2. While inserting the pins located at the front and rear of the bottom of the mailbox into the notches located at the front and rear of the top of the finisher, attach the mailbox to the finisher.

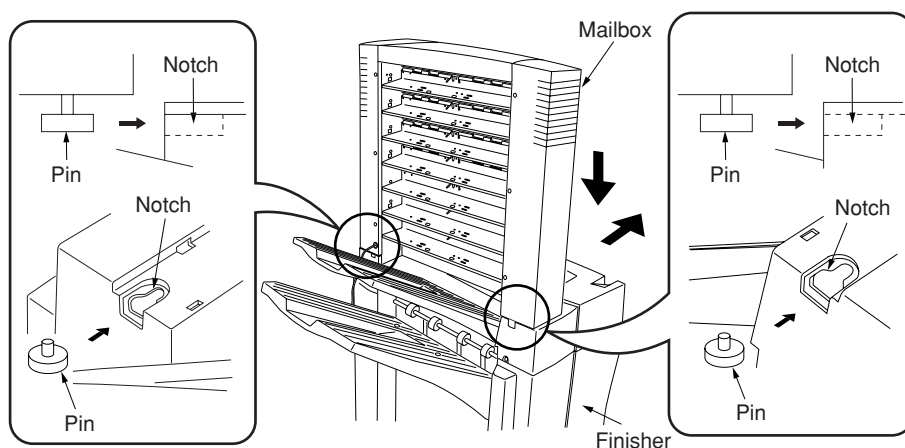


Figure 1-2-10

3. Secure the front and rear attachment points of the mailbox and finisher using a TP-A chrome screw M4 x 14 for each.

Note: Be sure to secure the front connection portion together with the mounting plate cover.

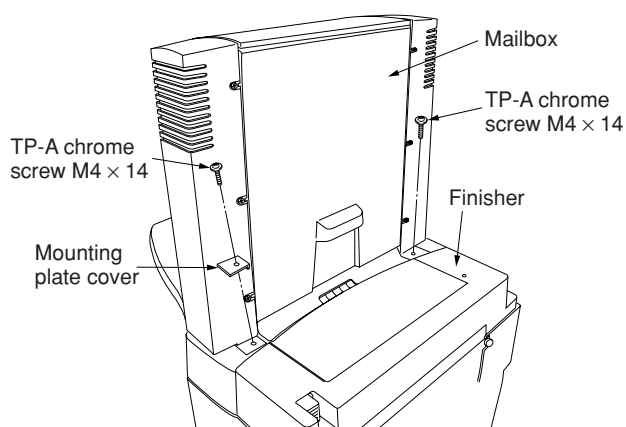


Figure 1-2-11

4. Fit the seven copy eject bins to the ejection section of the mailbox from the lowest bin to the highest.

Note: To fit a copy eject bin, hold it at an angle as shown in the diagram, warp it lightly by squeezing at both ends and then insert the pins located at the front and rear into the round holes located at the front and rear of the mailbox.

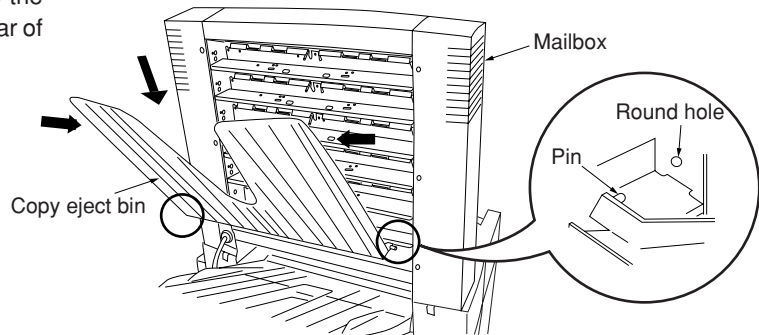


Figure 1-2-12

5. Remove the two screws located as shown in the illustration that secure the side cover of the mailbox, and remove the blanking seal from the finisher.

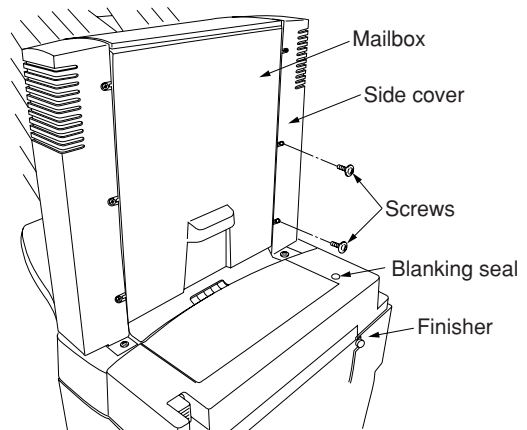


Figure 1-2-13

6. Attach the main body mounting plate to the mailbox and finisher using the two TP-A chrome screws M3 × 10 and the + bind chrome screw M4 × 25.

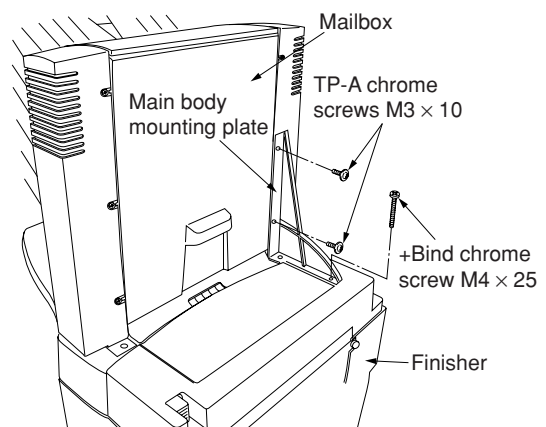
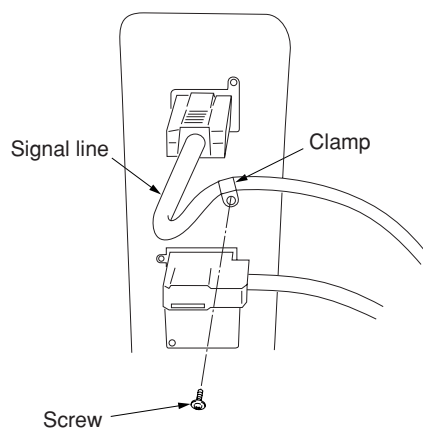


Figure 1-2-14

7. Connect the finisher to the copier and connect the signal lines of the mailbox to the connector at the rear part of the copier.
8. Only for 230V specifications
Insert the clamp, GNK-5N and shield to near the base of the signal line of the mailbox.
Remove the screw fitted to the copier, and secure the clamp, GNK-5N and shield to the copier using the screw.
9. Insert the copier power plug to the outlet and turn the copier main switch on to check the operation.

**Figure 1-2-15**

1-3-1 Maintenance mode

• Copier

Maintenance item No.	Description																		
U237	<p>Setting finisher stack quantity</p> <p>Description Sets the number of sheets of each stack on the main tray and on the intermediate tray in the optional finisher.</p> <p>Purpose To change the setting when a stack malfunction has occurred.</p> <p>Method</p> <ol style="list-style-type: none"> 1. Press the start key. The screen for selecting an item is displayed. 2. Select the item to be set. The selected item is displayed in reverse. <table border="1"> <thead> <tr> <th>Display</th><th>Description</th></tr> </thead> <tbody> <tr> <td>MAIN TRAY</td><td>Number of sheets of stack on the main tray</td></tr> <tr> <td>MIDDLE TRAY</td><td>Number of sheets of stack on the intermediate tray for sort copying or staple copying</td></tr> </tbody> </table> <p>Setting the number of sheets of stack on the main tray</p> <ol style="list-style-type: none"> 1. Change the setting using the cursor up/down keys. <table border="1"> <thead> <tr> <th>Setting</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>1500 sheets</td></tr> <tr> <td>1</td><td>3000 sheets</td></tr> </tbody> </table> <p>Initial setting: 1</p> <ol style="list-style-type: none"> 2. Press the start key. The setting is set. <p>Setting the number of sheets of stack on the intermediate tray for sort copying or staple copying</p> <ol style="list-style-type: none"> 1. Change the setting using the cursor up/down keys. <table border="1"> <thead> <tr> <th>Setting</th><th>Description</th></tr> </thead> <tbody> <tr> <td>0</td><td>For sort copying: 30 sheets, for staple copying: 50 sheets</td></tr> <tr> <td>1</td><td>For sort copying: 30 sheets, for staple copying: 30 sheets</td></tr> </tbody> </table> <p>Initial setting: 1</p> <ol style="list-style-type: none"> 2. Press the start key. The setting is set. <p>Completion Press the stop/clear key. The screen for selecting a maintenance item No. is displayed.</p>	Display	Description	MAIN TRAY	Number of sheets of stack on the main tray	MIDDLE TRAY	Number of sheets of stack on the intermediate tray for sort copying or staple copying	Setting	Description	0	1500 sheets	1	3000 sheets	Setting	Description	0	For sort copying: 30 sheets, for staple copying: 50 sheets	1	For sort copying: 30 sheets, for staple copying: 30 sheets
Display	Description																		
MAIN TRAY	Number of sheets of stack on the main tray																		
MIDDLE TRAY	Number of sheets of stack on the intermediate tray for sort copying or staple copying																		
Setting	Description																		
0	1500 sheets																		
1	3000 sheets																		
Setting	Description																		
0	For sort copying: 30 sheets, for staple copying: 50 sheets																		
1	For sort copying: 30 sheets, for staple copying: 30 sheets																		

Maintenance item No.	Description												
U246	<p>Setting the finisher</p> <p>Description Adjusts the amount of slack in the paper for the optional finisher in punch mode when it is attached.</p> <p>Purpose • Adjustment of the amount of slack in the paper in punch mode Adjusts the amount of slack in the paper while in the punch section if, in punch mode, paper jams or is Z-folded frequently due to too much slack in the paper, or, the position of punch holes varies due to too little slack in the paper.</p> <p>Start 1. Press the start key. The screen for selecting an item is displayed. 2. Select the item to be set and press the start key. The screen for executing each item is displayed.</p> <table><tr><th>Display</th><th>Description</th></tr><tr><td>3000 FINISHER</td><td>Adjustment of the amount of slack in the paper in punch mode</td></tr><tr><td>SADDLE FINISHER</td><td>Booklet stapling position adjustment</td></tr></table> <p>Setting the amount of slack in the paper 1. Change the setting using the cursor up/down keys.</p> <table><tr><th>Description</th><th>Setting range</th><th>Initial setting</th></tr><tr><td>Amount of slack in the paper</td><td>-15 to +15</td><td>0</td></tr></table> <p>If the position of punch holes varies, increase the setting to make the amount of slack larger. If paper jams or is Z-folded frequently, decrease the setting to make the amount of slack smaller.</p> <p>2. Press the start key. The value is set. 3. To return to the screen for selecting an item, press the stop/clear key.</p> <p>Completion Press the stop/clear key at the screen for selecting an item. The screen for selecting a maintenance item No. is displayed.</p>	Display	Description	3000 FINISHER	Adjustment of the amount of slack in the paper in punch mode	SADDLE FINISHER	Booklet stapling position adjustment	Description	Setting range	Initial setting	Amount of slack in the paper	-15 to +15	0
Display	Description												
3000 FINISHER	Adjustment of the amount of slack in the paper in punch mode												
SADDLE FINISHER	Booklet stapling position adjustment												
Description	Setting range	Initial setting											
Amount of slack in the paper	-15 to +15	0											
U330	<p>Setting the number of sheets to enter stacking mode during sort operation</p> <p>Description When sort copying is set to perform automatically in the output form setting of the user simulation, sets the number of sheets at which the eject location is switched to the optional finisher.</p> <p>Purpose To be set as required according to the number of copies the user makes.</p> <p>Method Press the start key. The current setting is displayed.</p> <p>Setting 1. Set the number of sheets (0 to 250) using the numeric keys or cursor up/down keys. 2. Press the start key. The setting is set. The screen for selecting a maintenance item No. is displayed.</p> <p>Completion To exit this maintenance item without changing the current setting, press the stop/clear key. The screen for selecting a maintenance item No. is displayed.</p>												

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• Printer

Maintenance item No.	Description									
U237	<p>Setting finisher stack quantity</p> <p>Description Sets the number of sheets of each stack on the main tray and on the intermediate tray in the optional finisher.</p> <p>Purpose To change the setting when a stack malfunction has occurred.</p> <p>Method</p> <p>1. Enter the maintenance mode and press the Δ or ∇ key to display "U237".</p> <div><div>>Adjust Finish.> [U237] Limit</div></div> <p>2. Press the \triangleright key to display the submenu screen.</p> <p>3. Press the Δ or ∇ key to select the item for which the preset value is to be changed.</p> <table><tr><th>Display</th><th>Description</th><th>Preset value</th></tr><tr><td>Main Tray</td><td>Number of sheets of stack on the main tray</td><td>3000 or 1500 sheets</td></tr><tr><td>Middle Tray</td><td>Number of sheets of stack on the intermediate tray for sort printing or staple printing</td><td>50 or 30 sheets</td></tr></table> <p>4. Press the ENTER key. "?" will be displayed.</p> <div><div>>>Main Tray [237.1] ? 3000</div></div> <p>5. Press the Δ or ∇ key to change the preset value.</p> <p>6. Press the ENTER key. The value is set. To keep the preset value, press the CANCEL key.</p>	Display	Description	Preset value	Main Tray	Number of sheets of stack on the main tray	3000 or 1500 sheets	Middle Tray	Number of sheets of stack on the intermediate tray for sort printing or staple printing	50 or 30 sheets
Display	Description	Preset value								
Main Tray	Number of sheets of stack on the main tray	3000 or 1500 sheets								
Middle Tray	Number of sheets of stack on the intermediate tray for sort printing or staple printing	50 or 30 sheets								

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1-4-1 Paper misfeed detection

(1) Paper misfeed detection

When a paper jam occurs, the machine stops operating immediately. The copier operation section shows a jam message and the jam location.

To remove the jammed paper, detach the finisher from the copier.

To reset the paper misfeed detection, turn the joint switch (JSW) off and on.

(2) Paper misfeed detection conditions

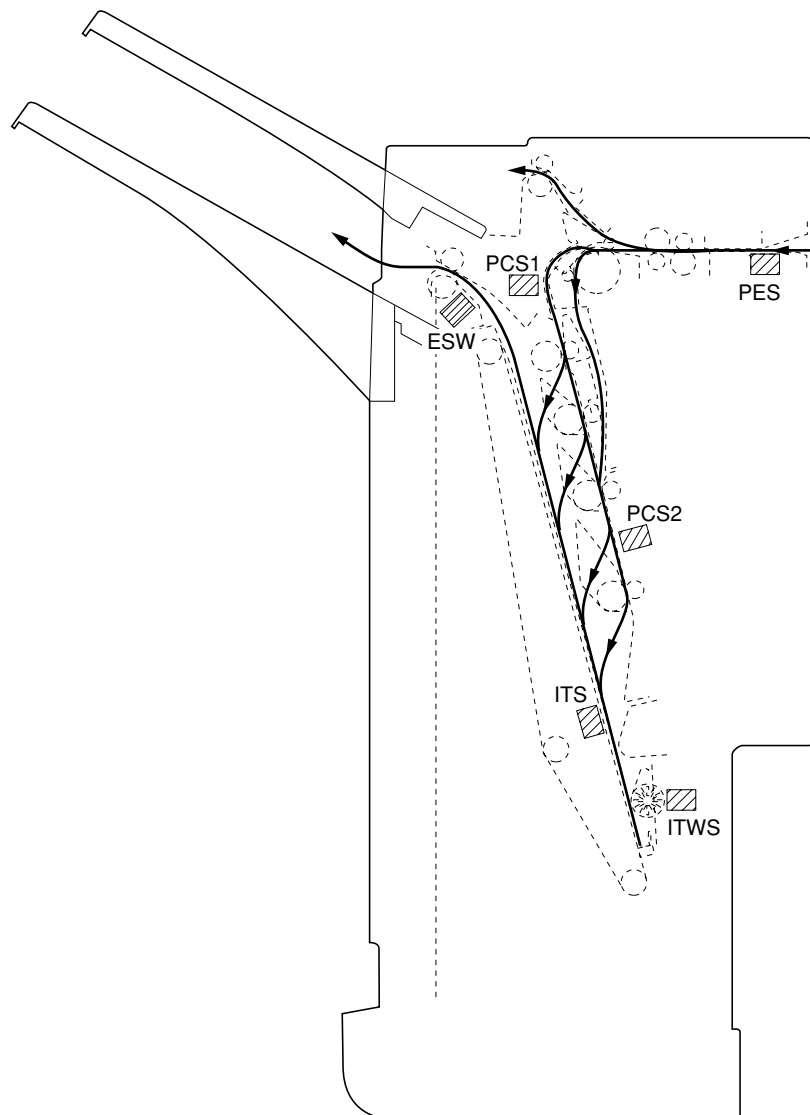


Figure 1-4-1

1. Initial clogging jam (jam code 00)

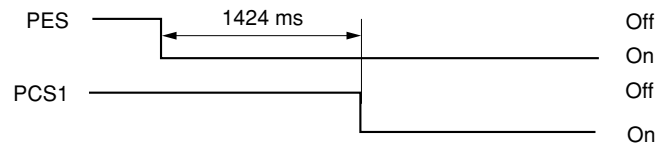
- When the power is turned on, the paper entry sensor (PES), paper conveying A3 sensor (PCSA3), paper conveying A4 sensor (PCSA4), eject switch (ESW) and internal tray sensor (ITS) are on.

2. Jam in paper entry section (jam code 81)

- The paper entry sensor (PES) does not turn on within 1287 ms of paper ejection from the copier.

3. Jam in eject section of non-sort tray (jam code 82)

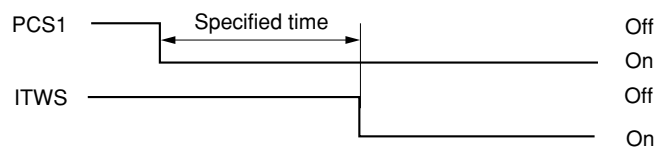
- The paper conveying sensor 1 (PCS1) does not turn on when 1424 ms elapses after the paper entry sensor (PES) has turned on.



Timing chart 1-4-1

4. Jam in paper conveying section of internal tray (jam code 83)

- When large paper (A3, B4, A4R, ledger or legal) is fed, the internal tray wheel sensor (ITWS) does not turn on even if certain time (depending on the paper size. See Table 1-4-1.) elapses after the paper conveying sensor 1 (PCS1) has turned on.

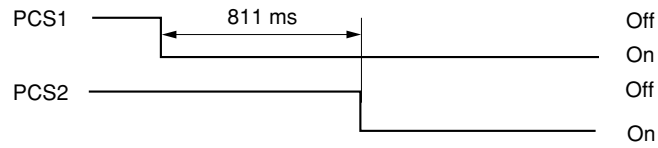


Timing chart 1-4-2

Paper size	Time (ms)
A3	1544
B4	1544
A4R	1488
Ledger	1544
Legal	1544

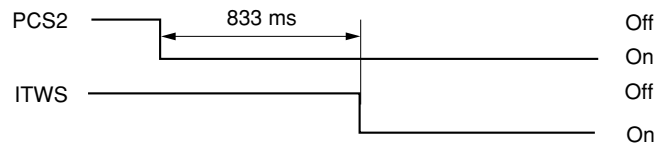
Table 1-4-1

- When small paper (A4, B5 or letter) is fed, the paper conveying sensor 2 (PCS2) does not turn on even if 811 ms elapses after the paper conveying sensor 1 (PCS1) has turned on.



Timing chart 1-4-3

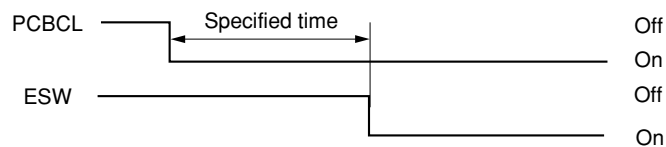
- When small paper (A4, B5 or letter) is fed, the internal tray wheel sensor (ITWS) does not turn on even if 833 ms elapses after the paper conveying sensor 2 (PCS2) has turned on.



Timing chart 1-4-4

5. Jam in eject section of sort tray (jam code 84)

- The eject switch (ESW) does not turn on within a specified time (varies depending on the paper size; see Table 1-4-2) of the paper conveying belt clutch (PCBCL) turning on.

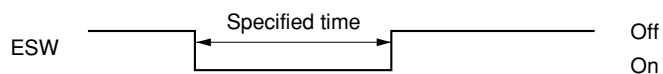


Timing chart 1-4-5

Paper size	Time (ms)
A3	500
B4	700
A4R	850
A4	1000
B5	1200
11" × 17"	500
8 1/2" × 14"	700
8 1/2" × 11"R	850
11" × 8 1/2"	1000

Table 1-4-2

- The eject switch (ESW) does not turn off within a specified time (varies depending on the paper size; see Table 1-4-3) of its turning on.



Timing chart 1-4-6

Paper size	Time (ms)
A3	1400
B4	1200
A4R	950
A4	700
B5	600
11" × 17"	1400
8 ¹ / ₂ " × 14"	1200
8 ¹ / ₂ " × 11"R	950
11" × 8 ¹ / ₂ "	700

Table 1-4-3

(3) Paper misfeeds

Problem	Causes/check procedures	Corrective measures
(1) Paper jams when the main switch is turned on.	A piece of paper torn from copy paper is caught around the paper entry sensor.	Check visually and remove any found.
	Defective paper entry sensor.	With 5 V DC present at CN6-1 on the main PCB, check if CN6-2 on the main PCB remains low or high when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	A piece of paper torn from copy paper is caught around the paper conveying sensor 1.	Check visually and remove any found.
	Defective paper conveying sensor 1.	With 5 V DC present at CN12-16 on the main PCB, check if CN12-14 on the main PCB remains low or high when the paper conveying sensor 1 is turned on and off. If it does, replace the paper conveying sensor 1.
	A piece of paper torn from copy paper is caught around the paper conveying sensor 2.	Check visually and remove any found.
	Defective paper conveying sensor 2.	With 5 V DC present at CN12-15 on the main PCB, check if CN12-13 on the main PCB remains low or high when the paper conveying sensor 2 is turned on and off. If it does, replace the paper conveying sensor 2.
	A piece of paper torn from copy paper is caught around the eject switch.	Check visually and remove any found.
	Defective eject switch.	With 5 V DC present at CN6-3 on the main PCB, check if CN6-4 on the main PCB remains low or high when the eject switch is turned on and off. If it does, replace the eject switch.
	A piece of paper torn from copy paper is caught around the internal tray sensor.	Check visually and remove any found.
	Defective internal tray sensor.	With 5 V DC present at CN5-25 on the main PCB, check if CN5-26 on the main PCB remains low or high when the internal tray sensor is turned on and off. If it does, replace the internal tray sensor.
(2) A paper jam is indicated in the paper entry section during copying (jam in the paper entry section).	Extremely curled paper.	Change the paper.
	Defective paper entry sensor.	With 5 V DC present at CN6-1 on the main PCB, check if CN6-2 on the main PCB remains low or high when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	Check if the upper or lower paper entry guide is deformed.	Check and remedy.

Problem	Causes/check procedures	Corrective measures
(3) A paper jam is indicated in the paper conveying section during copying (jam in the non-sort tray eject section).	Defective paper entry sensor.	With 5 V DC present at CN6-1 on the main PCB, check if CN6-2 on the main PCB remains low or high when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	The paper conveying roller and the upper paper conveying pulley do not make proper contact.	Check and replace if there are any problems.
	Check if the upper or lower paper conveying guide is deformed.	Check and remedy.
(4) A paper jam is indicated in the internal tray section during copying (jam in the internal tray paper conveying section).	Defective internal tray wheel sensor.	With 5 V DC present at CN5-19 on the main PCB, check if CN5-8 on the main PCB remains low or high when the internal tray wheel sensor is turned on and off. If it does, replace the internal tray wheel sensor.
	The feedshift rollers 1, 2, 3 and 4 and the feedshift pulleys 1, 2, 3 and 4 do not make proper contact.	Replace if there are any problems.
(5) A paper jam is indicated in the ejection section (jam in the sort tray eject section).	Damaged eject switch actuator.	Check and replace if there are any problems.
	Defective eject switch.	With 5 V DC present at CN6-3 on the main PCB, check if CN6-4 on the main PCB remains low or high when the eject switch is turned on and off. If it does, replace the eject switch.
	The eject roller and pulley do not make proper contact.	Check and replace if there are any problems.
	Defective paper conveying belt.	Check and replace if there are any problems.
(6) Paper jams frequently.	The surfaces of the paper conveying roller, or upper and lower paper conveying pulleys are soiled with paper powder.	Clean with isopropyl alcohol.
	Check if the paper conveying roller, and upper and lower paper conveying pulleys make proper contact.	Remedy if necessary.
	The surfaces of the sort tray eject roller and pulley, or the non-sort tray eject roller and pulley are soiled with paper powder.	Clean with isopropyl alcohol.
	Check if the sort tray eject roller and pulley, and non-sort tray eject roller and pulley make proper contact.	Remedy if necessary.

1-4-2 Self-diagnosis

(1) Self-diagnostic function

When a problem is detected in the finisher, copying is disabled and the copier operation section displays a code consisting of "C" followed by a number between 801 and 822, indicating the nature of the problem.

After removing the problem, the self-diagnostic function can be reset by reattaching the finisher to turn the joint switch off and on.

(2) Self diagnostic codes

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C801	Paper conveying motor problem The paper conveying motor lockup signal is detected for 0.5 s or longer.	The paper conveying motor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The paper conveying motor malfunctions.	Replace the paper conveying motor and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.
C803	Paper conveying belt problem An on-to-off or off-to-on state change of the paper conveying belt home position sensor is not detected within 2 s of the paper conveying belt clutch turning on.	The paper conveying belt is out of phase.	Adjust the paper conveying belt so that it is in phase and check for correct operation.
		The paper conveying belt clutch malfunctions.	Replace the paper conveying belt clutch and check for correct operation.
		The paper conveying belt home position sensor malfunctions.	Replace the paper conveying belt home position sensor and check for correct operation.
		The paper conveying belt home position sensor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The internal tray is incorrectly inserted.	Check whether the internal tray unit or front cover catches are damaged.
C814	Tray elevation motor problem The sort tray is not detected in the home position within 30 s of the start of the tray elevation motor rotation. When the elevation motor rises, the tray upper limit sensor turns on for more than 2 s.	The tray elevation motor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The tray elevation motor malfunctions.	Replace the tray elevation motor and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C817	Front jogger motor problem While the front jogger is not detected in the home position, the front jogger home position sensor does not detect the jogger within 1.5 s of the start of front jogger motor clockwise rotation. After the front jogger is detected in the home position, the front jogger home position sensor still detects the jogger within 0.5 s of the start of front jogger motor counterclockwise rotation.	The front jogger motor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The front jogger motor malfunctions.	Replace the front jogger motor and check for correct operation.
		The front jogger motor home position sensor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The front jogger motor home position sensor malfunctions.	Replace the front jogger home position sensor and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.
C818	Rear jogger motor problem While the rear jogger is not detected in the home position, the rear jogger home position sensor does not detect the jogger within 1.5 s of the start of rear jogger motor clockwise rotation. After the rear jogger is detected in the home position, the rear jogger home position sensor still detects the jogger within 0.5 s of the start of rear jogger motor counterclockwise rotation.	The rear jogger motor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The rear jogger motor malfunctions.	Replace the rear jogger motor and check for correct operation.
		The rear jogger motor home position sensor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The rear jogger motor home position sensor malfunctions.	Replace the rear jogger home position sensor and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.
C821	Front stapler problem The front stapler home position sensor does not change state from non-detection to detection within 0.2 s of the start of front stapler motor counterclockwise (forward) rotation. During initialization, the front stapler home position sensor does not change state from non-detection to detection within 0.6 s of the start of front stapler motor clockwise (reverse) rotation.	The front stapler connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The front stapler malfunctions. a) The front stapler is blocked with a staple. b) The front stapler is broken.	a) Remove the front stapler cartridge, and check the cartridge and the stapling section of the stapler. b) Replace the front stapler and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C822	Rear stapler problem The rear stapler home position sensor does not change state from non-detection to detection within 0.2 s of the start of rear stapler motor counterclockwise (forward) rotation. During initialization, the rear stapler home position sensor does not change state from non-detection to detection within 0.6 s of the start of rear stapler motor clockwise (reverse) rotation.	The rear stapler connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The rear stapler malfunctions. a) The rear stapler is blocked with a staple. b) The rear stapler is broken.	a) Remove the rear stapler cartridge, and check the cartridge and the stapling section of the stapler. b) Replace the rear stapler and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.

1-4-3 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The paper conveying motor does not operate (C801).	Poor contact of the paper conveying motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective paper conveying motor.	Check if the paper conveying motor rotates when 24 V DC is present at CN11-1 and 5 V DC at CN8-1, and CN8-4 is held low. If not, replace the paper conveying motor.
	Defective main PCB.	Check if 24 V DC is present at CN11-1, 5 V DC is present at CN8-1, and CN8-4 goes low. If not, replace the main PCB.
(2) The front jogger motor does not operate (C817).	Poor contact of the front jogger motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective front jogger motor.	Check if the front jogger motor rotates when 24 V DC is present at CN4-5 and CN4-6, and drive pulses are at CN4-1, CN4-2, CN4-3 and CN4-4 on the main PCB. If not, replace the front jogger motor.
	Defective main PCB.	Check if 24 V DC is present at CN4-5 and CN4-6 on the main PCB. If not, replace the main PCB.
(3) The rear jogger motor does not operate (C818).	Poor contact of the rear jogger motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective rear jogger motor.	Check if the rear jogger motor rotates when 24 V DC is present at CN4-7 and CN4-8, and drive pulses are at CN4-9, CN4-10, CN4-11 and CN4-12 on the main PCB. If not, replace the rear jogger motor.
	Defective main PCB.	Check if 24 V DC is present at CN4-7 and CN4-8 on the main PCB. If not replace the main PCB.
(4) The tray elevation motor does not operate (C814).	Poor contact of the tray elevation motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective tray elevation motor.	Check if the tray elevation motor rotates when 24 V DC is present at CN9-1 and CN9-2 on the main PCB. If not, replace the tray elevation motor.
	Defective main PCB.	Check if 24 V DC is present at CN9-1 and CN9-2 on the main PCB. If not, replace the main PCB.
(5) The front stapler motor does not operate (C821).	Poor contact of the front stapler motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective front stapler motor.	Check if the front stapler motor rotates when 24 V DC is present at CN10-1 and CN10-3 on the main PCB. If not, replace the front stapler motor.
	Defective main PCB.	Check if 24 V DC is present at CN10-1 and CN10-3 on the main PCB. If not, replace the main PCB.

Problem	Causes	Check procedures/corrective measures
(6) The rear stapler motor does not operate (C822).	Poor contact of the rear stapler motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective rear stapler motor.	Check if the rear stapler motor rotates when 24 V DC is present at CN10-5 and CN10-7 on the main PCB. If not, replace the rear stapler motor.
	Defective main PCB.	Check if 24 V DC is present at CN10-5 and CN10-7 on the main PCB. If not, replace the main PCB.
(7) The paper conveying belt clutch does not operate.	Broken paper conveying belt clutch coil.	Check for continuity across the coil. If none, replace the paper conveying belt clutch.
	Poor contact of the paper conveying belt clutch connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN5-2 on the main PCB goes low. If not, replace the main PCB.
(8) The paddle clutch does not operate.	Broken paddle clutch coil.	Check for continuity across the coil. If none, replace the paddle clutch.
	Poor contact of the paddle clutch connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN7-16 on the main PCB goes low. If not, replace the main PCB.
(9) The punch clutch does not operate.	Broken punch clutch coil.	Check for continuity across the coil. If none, replace the punch clutch.
	Poor contact of the punch clutch connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN7-18 on the main PCB goes low. If not, replace the main PCB.
(10) The trailing edge press solenoid does not operate.	Broken trailing edge press solenoid coil.	Check for continuity across the coil. If none, replace the trailing edge press solenoid.
	Poor contact of the trailing edge press solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN12-9,10 on the main PCB goes low. If not, replace the main PCB.
(11) Feedshift solenoid 1 does not operate.	Broken feedshift solenoid 1 coil.	Check for continuity across the coil. If none, replace feedshift solenoid 1.
	Poor contact of feedshift solenoid 1 connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN7-2 on the main PCB goes low. If not, replace the main PCB.

Problem	Causes	Check procedures/corrective measures
(12) Feedshift solenoid 2 does not operate.	Broken feedshift solenoid 2 coil.	Check for continuity across the coil. If none, replace feedshift solenoid 2.
	Poor contact of feedshift solenoid 2 connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN7-4 on the main PCB goes low. If not, replace the main PCB.
(13) Paddle solenoid 1 does not operate.	Broken paddle solenoid 1 coil.	Check for continuity across the coil. If none, replace paddle solenoid 1.
	Poor contact of paddle solenoid 1 connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN8-12 on the main PCB goes low. If not, replace the main PCB.
(14) Paddle solenoid 2 does not operate.	Broken paddle solenoid 2 coil.	Check for continuity across the coil. If none, replace paddle solenoid 2.
	Poor contact of paddle solenoid 2 connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN8-16 on the main PCB goes low. If not, replace the main PCB.
(15) Paddle solenoid 3 does not operate.	Broken paddle solenoid 3 coil.	Check for continuity across the coil. If none, replace paddle solenoid 3.
	Poor contact of the paddle solenoid 3 connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN8-20 on the main PCB goes low. If not, replace the main PCB.
(16) The rotating plate solenoid is not activated.	Broken rotating plate solenoid coil.	Check for continuity across the coil. If none, replace the rotating plate solenoid.
	Poor contact of the rotating plate solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN12-2 on the main PCB goes low. If not, replace the main PCB.
(17) The drive switching solenoid does not operate.	Broken drive switching solenoid coil.	Check for continuity across the coil. If none, replace the drive switching solenoid.
	Poor contact of the drive switching solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN8-23 on the main PCB goes low. If not, replace the main PCB.

Problem	Causes	Check procedures/corrective measures
(18) The punch pattern solenoid does not operate.	Broken punch pattern solenoid coil.	Check for continuity across the coil. If none, replace the punch pattern solenoid.
	Poor contact of the punch pattern solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN7-8 on the main PCB goes low. If not, replace the main PCB.
(19) The pressure switching solenoid does not operate.	Broken pressure switching solenoid coil.	Check for continuity across the coil. If none, replace the pressure switching solenoid.
	Poor contact of the pressure switching solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN7-14 on the main PCB goes low. If not, replace the main PCB.
(20) Forwarding solenoid does not operate.	Broken forwarding solenoid coil.	Check for continuity across the coil. If none, replace the forwarding solenoid.
	Poor contact of the forwarding solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN12-6 on the main PCB goes low. If not, replace the main PCB.
(21) Paper jams when the main switch is turned on.	A piece of paper torn from copy paper is caught around the paper entry sensor.	Check visually and remove any found.
	Defective paper entry sensor.	With 5 V DC present at CN6-1 on the main PCB, check if CN6-2 on the main PCB remains low when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	A piece of paper torn from copy paper is caught around the paper conveying sensor 1.	Check visually and remove any found.
	Defective paper conveyingsensor 1.	With 5 V DC present at CN12-16 on the main PCB, check if CN12-14 on the main PCB remains low when the paper conveying sensor 1 is turned on and off. If it does, replace the paper conveying sensor 1.
	A piece of paper torn from copy paper is caught around the paper conveying sensor 2.	Check visually and remove any found.
	Defective paper conveying sensor 2.	With 5 V DC present at CN12-15 on the main PCB, check if CN12-13 on the main PCB remains low when the paper conveying sensor 2 is turned on and off. If it does, replace the paper conveying sensor 2.
	A piece of paper torn from the copy paper is caught around the eject switch.	Check visually and remove any found.

Problem	Causes	Check procedures/corrective measures
(21) Paper jams when the main switch is turned on.	Defective eject switch.	With 5 V DC present at CN6-3 on the main PCB, check if CN6-4 on the main PCB remains low when the eject switch is turned on and off. If it does, replace the eject switch.
	A piece of paper torn from the copy paper is caught around the internal tray sensor.	Check visually and remove any found.
	Defective internal tray sensor.	With 5 V DC present at CN5-25 on the main PCB, check if CN5-26 on the main PCB remains low when the internal tray sensor is turned on and off. If it does, replace the internal tray sensor.
(22) “Out of staples. (Front) Add staples.” or “Out of staples. (Rear) Add staples.” is displayed when the main switch is turned on.	Defective front stapler empty sensor.	With 5 V DC present at CN5-23 on the main PCB, check if CN5-18 on the main PCB remains low or high when the front stapler empty sensor is turned on and off. If it does, replace the front stapler empty sensor.
	Defective front stapler cartridge sensor.	With 5 V DC present at CN5-23 on the main PCB, check if CN5-20 on the main PCB remains low or high when the front stapler cartridge sensor is turned on and off. If it does, replace the front stapler cartridge sensor.
	Defective rear stapler empty sensor.	With 5 V DC present at CN5-21 on the main PCB, check if CN5-10 on the main PCB remains low or high when the rear stapler empty sensor is turned on and off. If it does, replace the rear stapler empty sensor.
	Defective rear stapler cartridge sensor.	With 5 V DC present at CN5-21 on the main PCB, check if CN5-12 on the main PCB remains low or high when the rear stapler cartridge sensor is turned on and off. If it does, replace the rear stapler cartridge sensor.

1-4-4 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No paper feed.	Check if the surfaces of the paper conveying roller, or upper and lower paper conveying pulleys are soiled with paper powder.	Clean with isopropyl alcohol, if they are soiled.
	Check if the paper conveying roller, or upper and lower paper conveying pulleys are deformed.	Replace any deformed or worn pulley or roller.
(2) No paper ejection to the sort or non-sort trays.	Paper outside specifications is used.	Use only paper conforming to the specifications.
	Check if the surfaces of the sort tray eject pulley and roller, or non-sort tray eject pulley and roller are soiled with paper powder.	Clean with isopropyl alcohol, if they are soiled.
	Check if the sort tray eject pulley and roller, or non-sort tray eject pulley and roller are deformed.	Replace any deformed or worn pulleys or rollers.
(3) Paper jams.	Check if the paper is extremely curled.	Change the paper.
	Check if the paper conveying roller, and upper and lower paper conveying pulley make proper contact.	Remedy if there are any problems.
	Check if the sort tray eject pulley and roller, and non-sort tray eject pulley and roller contact each other properly.	Remedy if there are any problems.
(4) Abnormal noise is heard.	Check if rollers, pulleys and gears all operate smoothly.	Apply grease to the bushings and gears.

1-5-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the main switch off and disconnect the finisher power plug before starting disassembly.
- When handling PCBs, do not touch connectors with bare hands or damage the boards.
- Do not touch any PCB containing ICs with bare hands or any object prone to static charge.

1-5-2 Procedure for assembly and disassembly

(1) Detaching and refitting the static eliminator brushes

Replace the static eliminator brushes as follows.

Non-sort tray static eliminator brush

Procedure

1. Open the upper cover.
2. Remove the non-sort tray static eliminator brush.
3. Fit a new non-sort tray static eliminator brush so that it makes contact with the grounding plate.

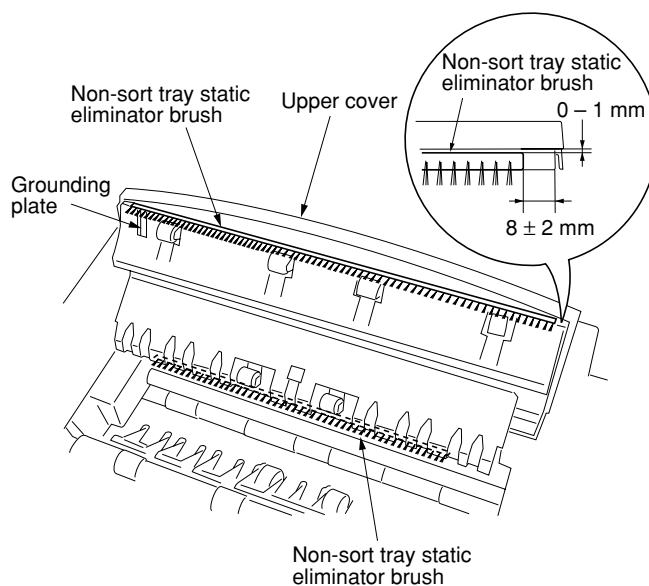


Figure 1-5-1

Sort tray static eliminator brush

Procedure

1. Remove the top cover (four screws).
2. Remove the sort tray static eliminator brush.
3. Fit a new sort tray static eliminator brush.

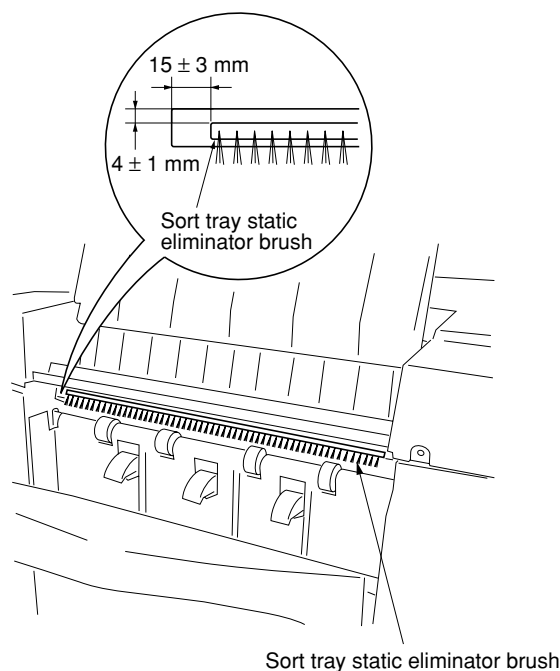


Figure 1-5-2

(2) Detaching and refitting the punch unit

Replace the punch unit as follows.

Procedure

1. Remove the top cover (four screws).
2. Open the front cover.
3. Remove the lower paper entry guide (two screws).

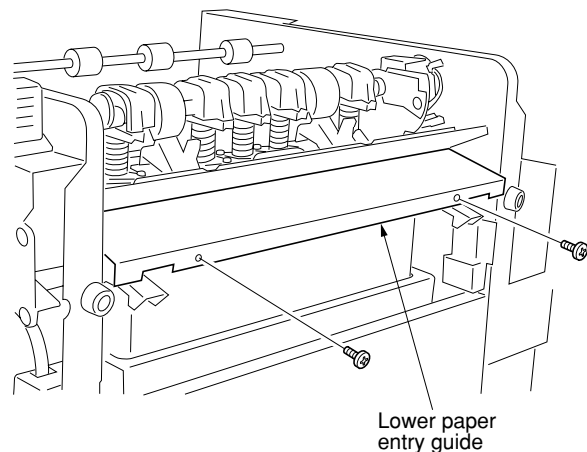


Figure 1-5-3

4. Remove the 3-pin connector of the hole-punch pattern solenoid, and the 2-pin connector of the punch clutch.
5. Remove the two screws holding the finisher release button mount, and pull it in the direction of the arrow.
6. Remove the screws holding the punch unit at the machine front and rear (one screw each).
 *At this time, turn on the punch pattern solenoid (the axis is slid to the front side of the machine).
7. Slide the punch unit toward the machine front and detach it.
8. Fit a new punch unit.
 *When fitting the new unit, tighten the screw at the machine rear and then the screw at the front.

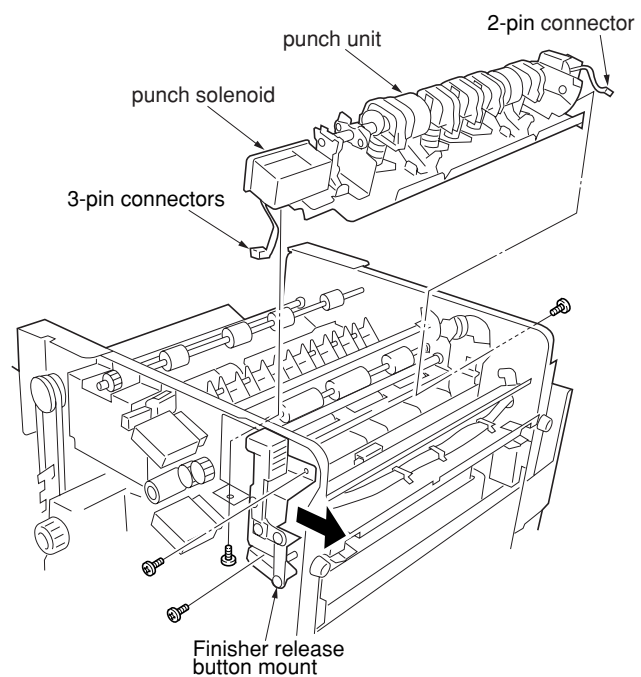


Figure 1-5-4

9. Loosen the two screws of the punch drive unit, check the tension of the tension belt, and then tighten the screws again.
10. Refit all removed parts.

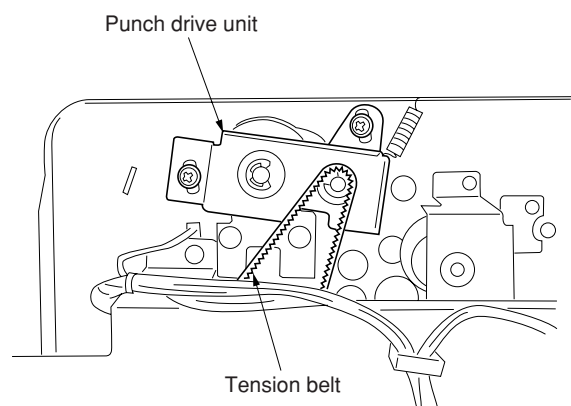


Figure 1-5-5

(3) Adjusting the center of the punch holes

Adjust the center of the punch holes after installing the finisher or when the center is displaced.

Procedure

1. Measure the distance (mm) of the punch hole center displacement.
2. Loosen the four screws securing the retainer. Shift the retainer by the measured distance (mm), and tighten the screws.
 - When the punch hole is displaced toward the machine front (Figure 1-5-6), shift the retainer toward the machine rear (➡).
 - When the punch hole is displaced toward the machine rear (Figure 1-5-7), shift the retainer toward the machine front (⬅).

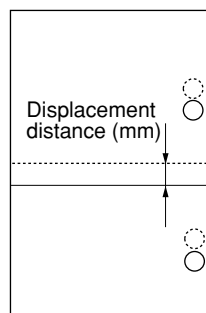


Figure 1-5-6

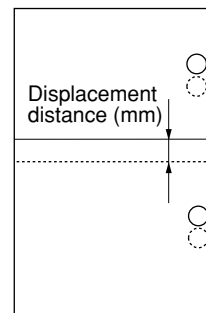


Figure 1-5-7

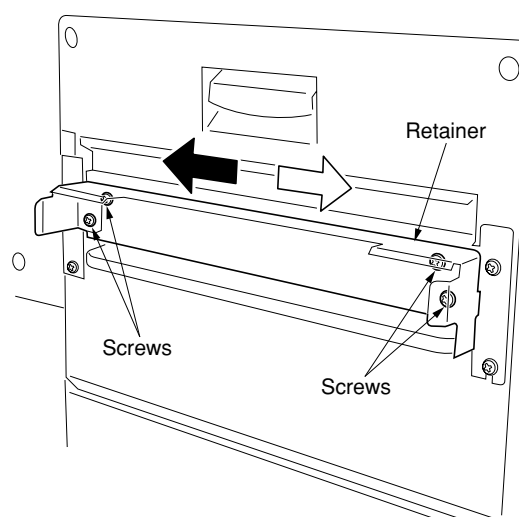


Figure 1-5-8

(4) Adjusting paddle clutch turn-on timing

Adjust the paddle clutch turn-on timing if, after disassembling or replacing the drive section or adjusting the belt tension, a paper jam occurs in the paper conveying section during continuous sort copying from 2 or more originals.

Procedure

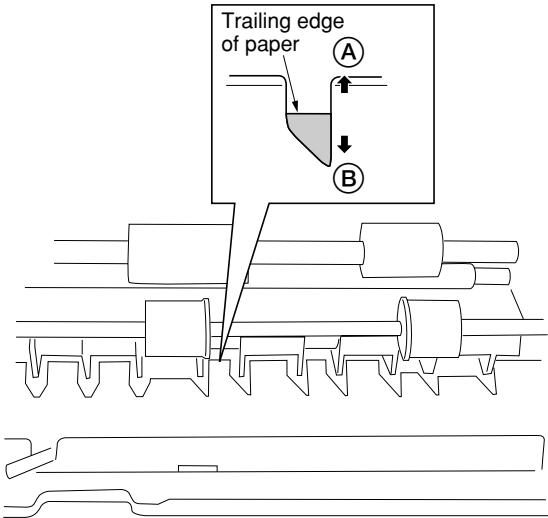
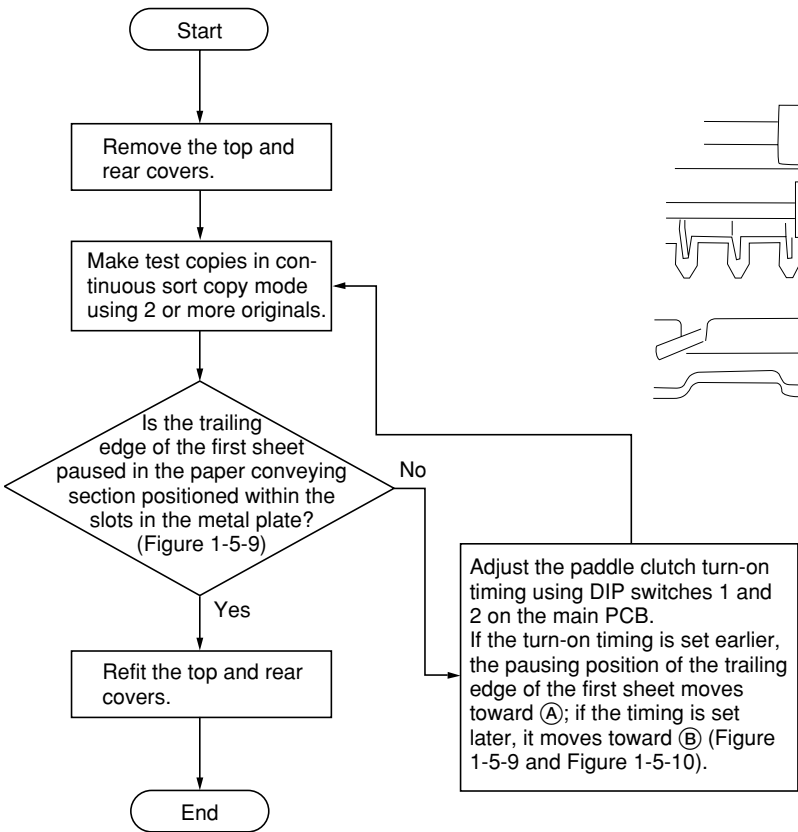


Figure 1-5-9

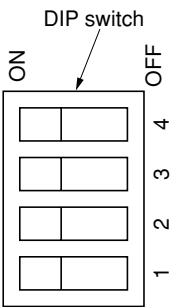


Figure 1-5-10

Off timing	DIP switch No.	1	2	Paddle clutch turn-off timing	
				Inch	Metric
Earlier ↑ ↓ Later	A	ON	ON	100 ms	105 ms
	B	ON	OFF	105 ms	110 ms
	C	OFF	OFF	110 ms	115 ms
	D	OFF	ON	115 ms	120 ms

Table 1-5-1

(5) Adjusting the pressure of the curl eliminator mechanism

If paper ejected from the copier is curled and a paper jam occurs, adjust the pressure of the curl eliminator mechanism to reduce curl of paper.

Procedure

1. Remove the top cover (four screws).
2. Open the front cover.
3. Adjust the pressure of the curl eliminator using the pressure adjusting levers (five steps from 1 to 5).
 - * Turn the pressure adjusting levers clockwise.
 - If upward curl is strong in paper ejected in the main tray (example A) or downward curl is strong in paper ejected in the sub tray (example B):
Decrease the preset value for the upper pressure adjusting lever and increase the preset value for the lower pressure adjusting lever.
 - If downward curl is strong in paper ejected in the main tray (example B) or upward curl is strong in paper ejected in the sub tray (example A):
Increase the preset value for the upper pressure adjusting lever and decrease the preset value for the lower pressure adjusting lever.

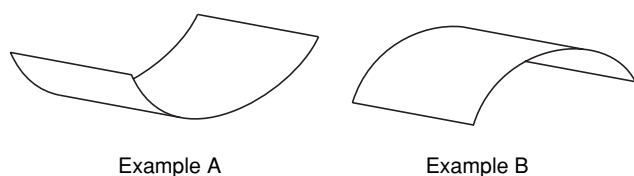


Figure 1-5-11

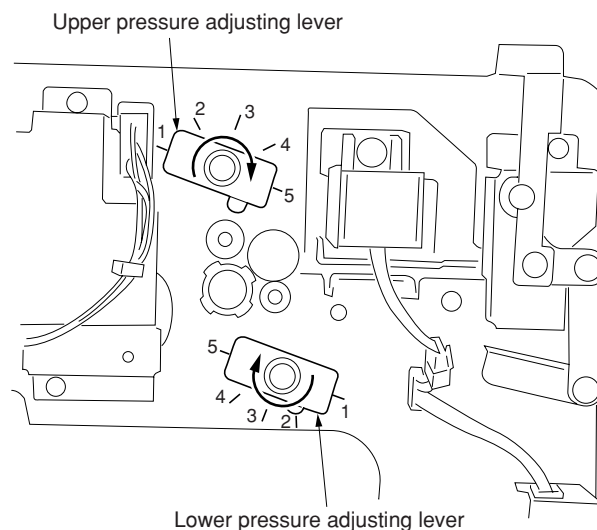


Figure 1-5-12

2-1-1 Construction of each section

(1) Paper conveying section

The paper conveying section consists of the components shown in Figure 2-1-1. This section conveys paper entering from the copier to the finisher to the non-sort tray or internal tray. Feedshift claw 1 switches the paper path between the path to the non-sort tray and the path to the internal tray.

Feedshift claw 1 is controlled by feedshift solenoid 1 (FSSOL1).

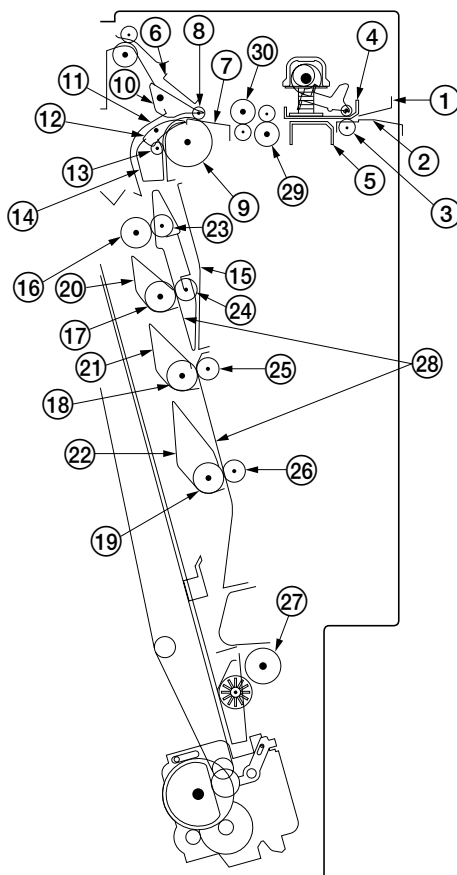


Figure 2-1-1 Paper conveying section

- | | |
|--------------------------------|---------------------------------|
| ① Upper paper entry guide | ①⑥ Feedshift roller 1 |
| ② Lower paper entry guide | ①⑦ Feedshift roller 2 |
| ③ Paper entry roller | ①⑧ Feedshift roller 3 |
| ④ Upper punch guide | ①⑨ Feedshift roller 4 |
| ⑤ Lower punch guide | ②① Feedshift guide 1 |
| ⑥ Upper paper conveying guide | ②② Feedshift guide 2 |
| ⑦ Lower paper conveying guide | ②③ Feedshift guide 3 |
| ⑧ Upper paper conveying pulley | ②④ Feedshift pulley 1 |
| ⑨ Paper conveying roller | ②⑤ Feedshift pulley 2 |
| ⑩ Feedshift claw 1 | ②⑥ Feedshift pulley 3 |
| ⑪ Left paper conveying guide | ②⑦ Feedshift pulley 4 |
| ⑫ Feedshift claw 2 | ②⑧ Forwarding roller |
| ⑬ Lower paper conveying pulley | ②⑨ Feedshift guide |
| ⑭ Paper conveying guide | ②⑩ Right curl eliminator roller |
| ⑮ Retaining path guide | ③① Left curl eliminator roller |

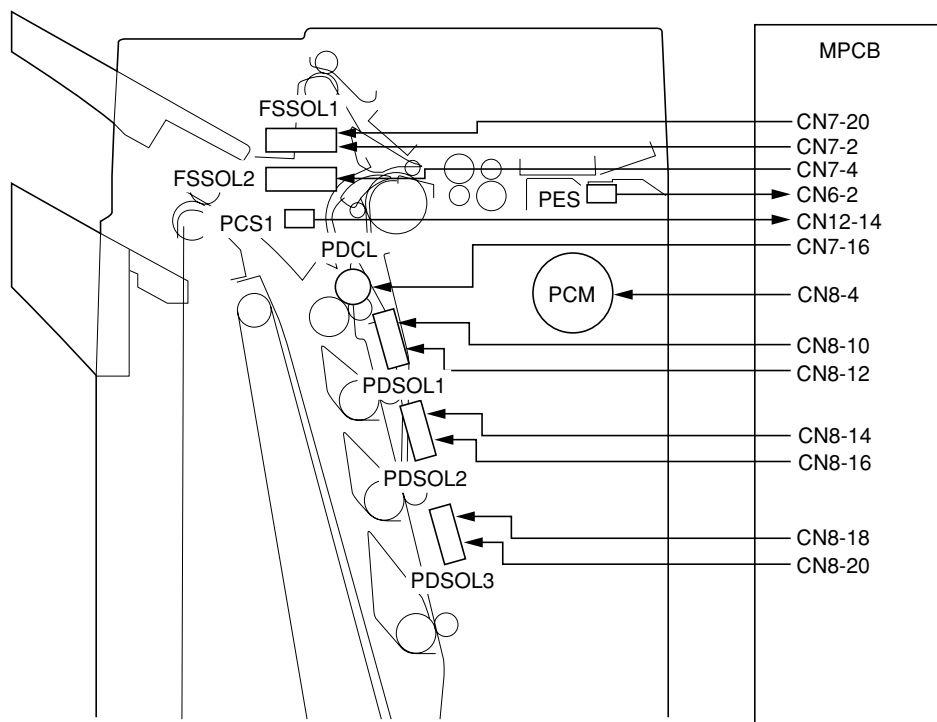


Figure 2-1-2 Paper conveying section block diagram

Conveying paper to non-sort tray

In the non-sort mode, paper is conveyed through the paper conveying roller and non-sort tray eject roller to the non-sort tray. However, paper is conveyed to the internal tray when the stapler is used or when originals are fed from the SRDF and the punch is used.

Also a curl eliminator mechanism is provided in the transfer route to eliminate curl of paper.

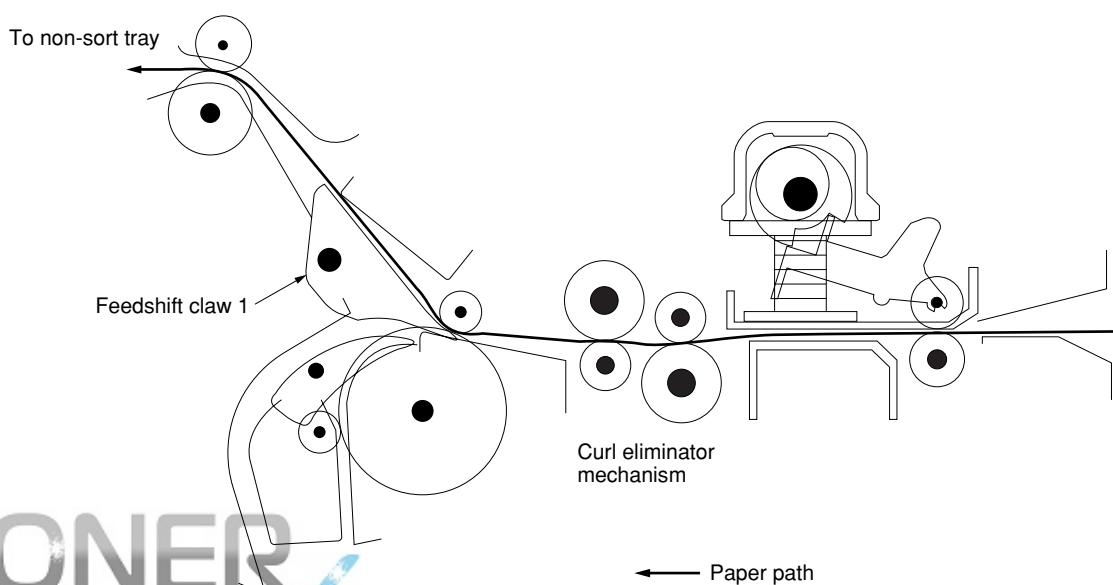


Figure 2-1-3 Conveying paper to non-sort tray

Conveying paper to internal tray

When conveying paper to the internal tray, feedshift guides 1, 2 or 3 are used according to the paper length. This is to prevent paper misfeeding that would lead to a deviation in paper order.

Separation guides 1, 2 and 3 are controlled by paddle solenoids 1, 2 and 3 (PDSOL 1, 2, 3) respectively.

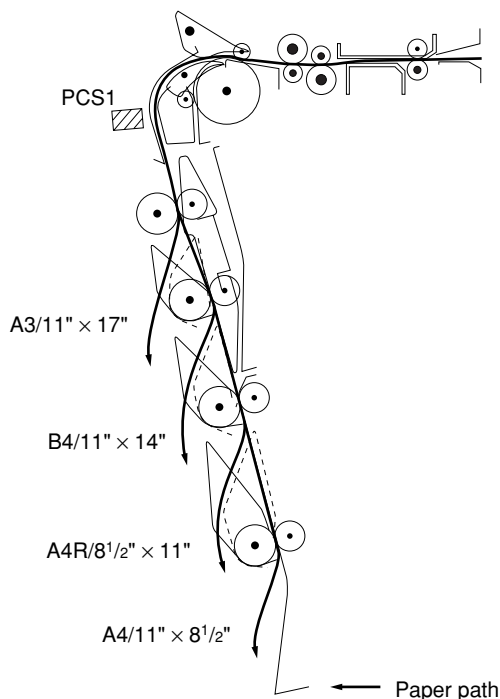
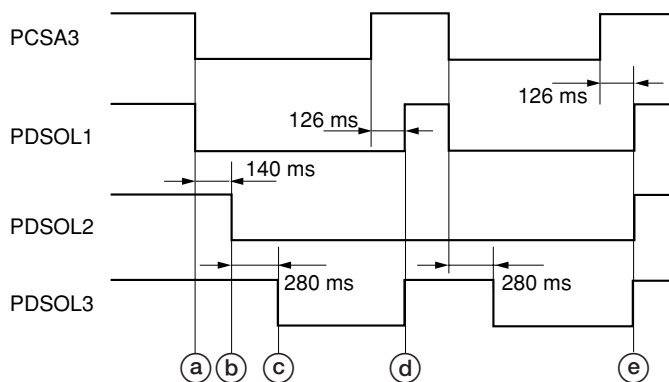


Figure 2-1-4 Paper conveying by feedshift guides



Timing chart 2-1-1 Paper conveying operation

- a: When the leading edge of paper passes across the paper conveying sensor 1 (PCS1), the paper conveying sensor 1 (PCS1) turns on and the paddle solenoid 1 (PDSOL1) also turns on.
- b: 140 ms after the leading edge of paper has passed across the paper conveying sensor 1 (PCS1), the paddle solenoid 2 (PDSOL2) turns on.
- c: 280 ms after the trailing edge of paper has passed across the paper conveying sensor 1 (PCS1), the paddle solenoid 3 (PDSOL3) turns on.
- d: 126 ms after the paper conveying sensor 1 (PCS1) has turned off, the paddle solenoids 1 and 3 (PDSOL1 and 3) turn off.
- e: 126 ms after the trailing edge of the last paper has passed and the paper conveying sensor 1 (PCS1) has turned off, the paddle solenoids 1, 2, and 3 (PDSOL1, 2, and 3) turn off.

Retaining path

When A4/11" × 8½" paper is conveyed to the internal tray in the sort mode, the retaining path is used. The first set of paper is conveyed through the regular path to the internal tray. The first sheet of the second and later sets is conveyed through the regular path, turns the paddle clutch (PDCL) on and stops in the path. Then the second sheet is guided to the retaining path by feedshift claw 2, turning the paddle clutch (PDCL) off. The first and second sheets are conveyed together to the internal tray. The third and later sheets are conveyed through the regular path.

Feedshift claw 2 is controlled by feedshift solenoid 2 (FSSOL2).

The retaining path enables paper conveying during stapling, improving paper conveying efficiency.

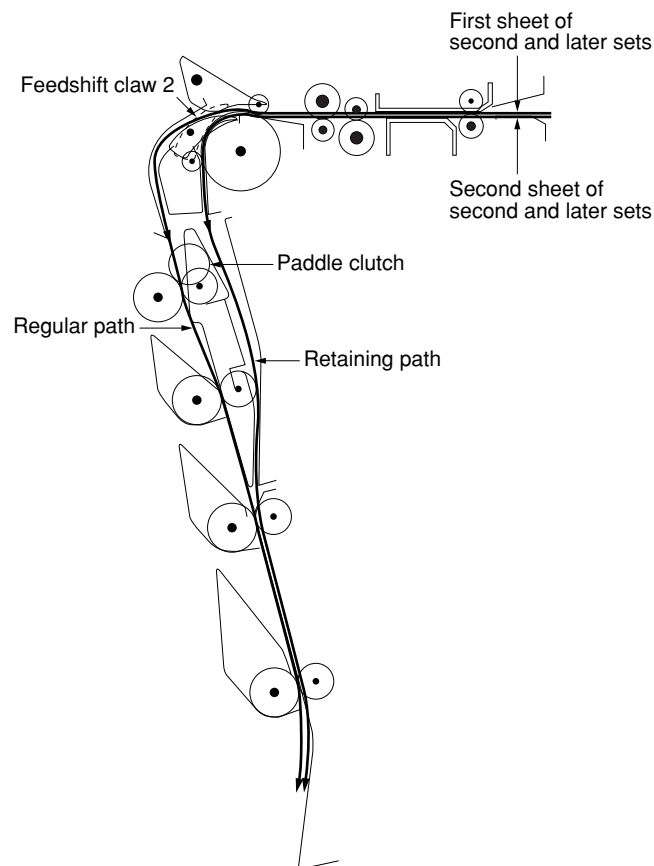
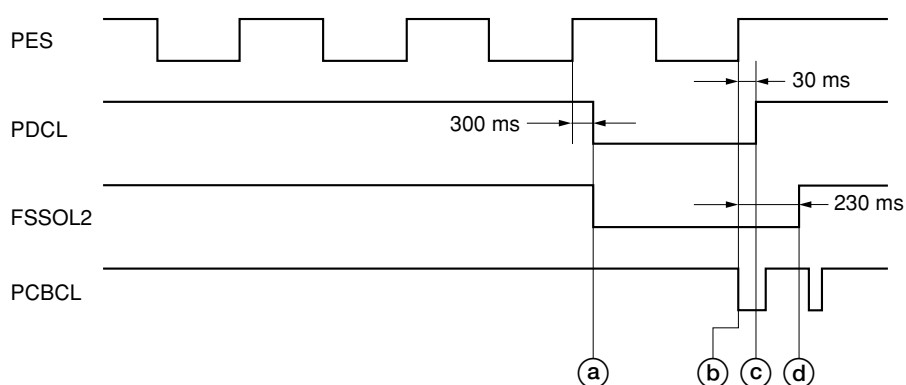


Figure 2-1-5 Paper conveying through retaining path



Copy paper: A4/11" × 8¹/₂", 2 sets of copies from 2 originals

Timing chart 2-1-2 Retaining path

- a: 300 ms after the trailing edge of the first sheet of the second set passes the paper entry sensor (PES), the paddle clutch (PDCL) turns on and the sheet stops in the regular path. At the same time, feedshift solenoid 2 (FSSOL2) turns on and actuates feedshift claw 2 to guide the second sheet into the retaining path.
- b: Simultaneously as the trailing edge of the second sheet of the second set passes the paper entry sensor (PES), the paper conveying belt clutch (PCBCL) turns on and starts conveying paper in the internal tray.
- c: 30 ms after the paper conveying belt clutch (PCBCL) turns off, the paddle clutch (PDCL) turns on and restarts conveying the first sheet of the second set.
- d: 230 ms after the trailing edge of the second sheet of the second set passes the paper entry sensor (PES), feedshift solenoid 2 (FSSOL2) turns off, actuating feedshift claw 2 to guide the sheet into the regular path.

(2) Internal tray section

In the sort mode, paper is aligned by the front and rear joggers while being conveyed to the internal tray. Once one set of sheets is stored in the tray, the sheets of the odd-numbered sets are shifted toward the machine front, and those of the even-numbered sets toward the machine rear. The paper conveying belt clutch (PCBCL) then turns on and the tractor conveys paper to the sort tray.

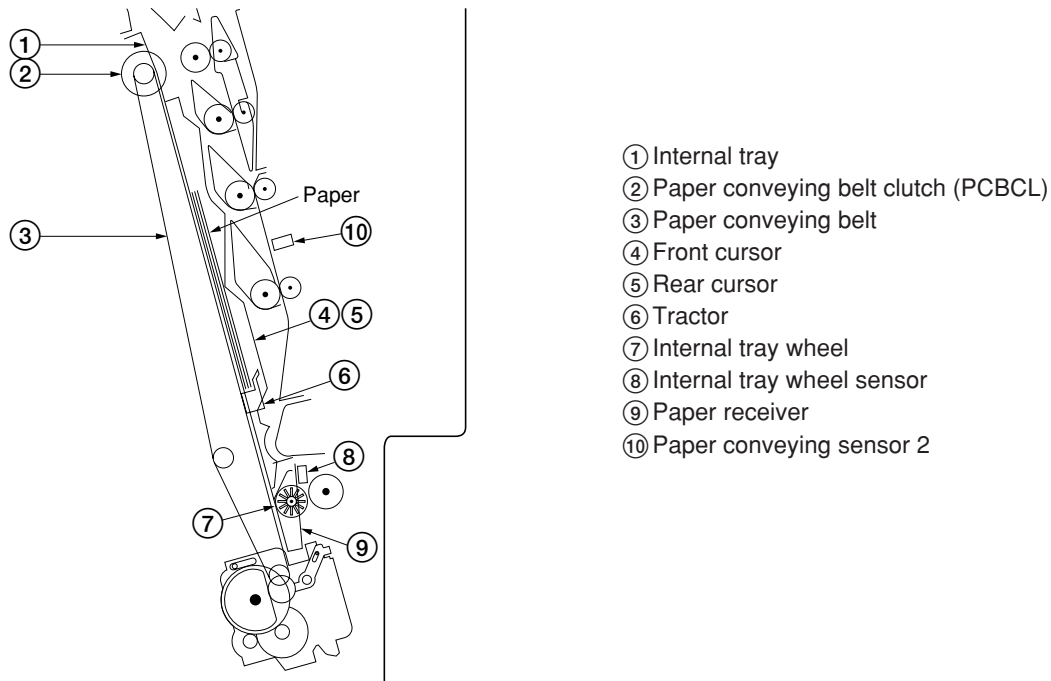


Figure 2-1-6 Internal tray section

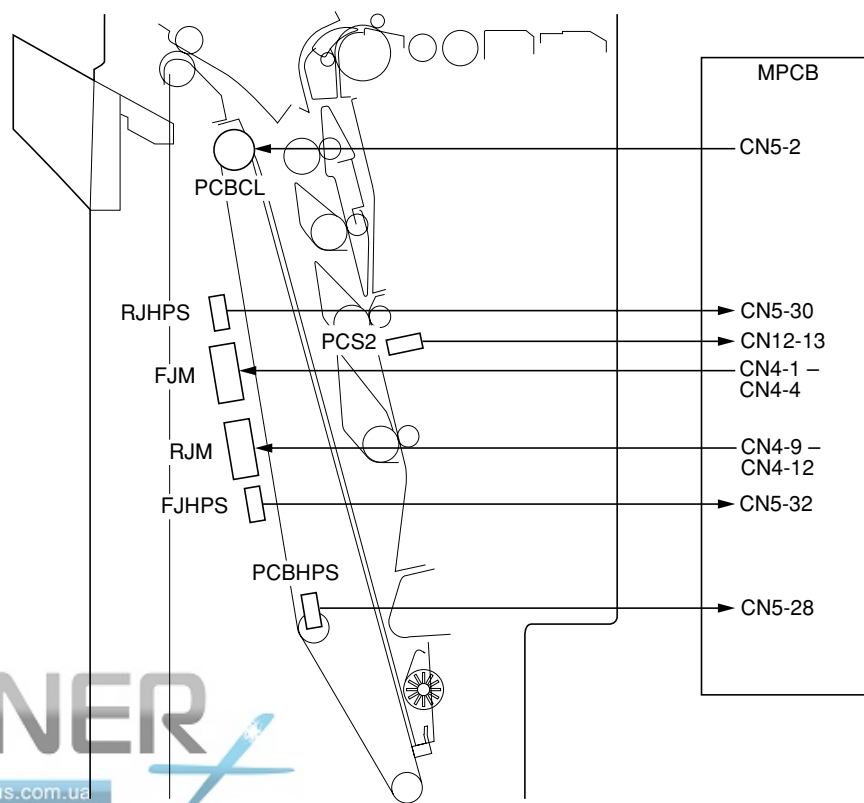


Figure 2-1-7 Internal tray section block diagram

Paper jogging and shifting operation

In the sort mode, the sides of paper are aligned by the front and rear joggers, while paper is stored in the internal tray. Once one set of sheets is stored in the tray, the front and rear joggers shift the sheets and the sheets are then conveyed to the sort tray. For odd-numbered sets, the front and rear joggers move toward the machine front, shifting the sheets toward the machine front; for even-numbered sets, the joggers move toward the machine rear, shifting the sheets toward the machine rear. The paper is thereby stocked by set in staggered order on the sort tray. The front and rear jogger home positions are detected by the front and rear jogger home position sensors (FJHPS, RJHPS) respectively.

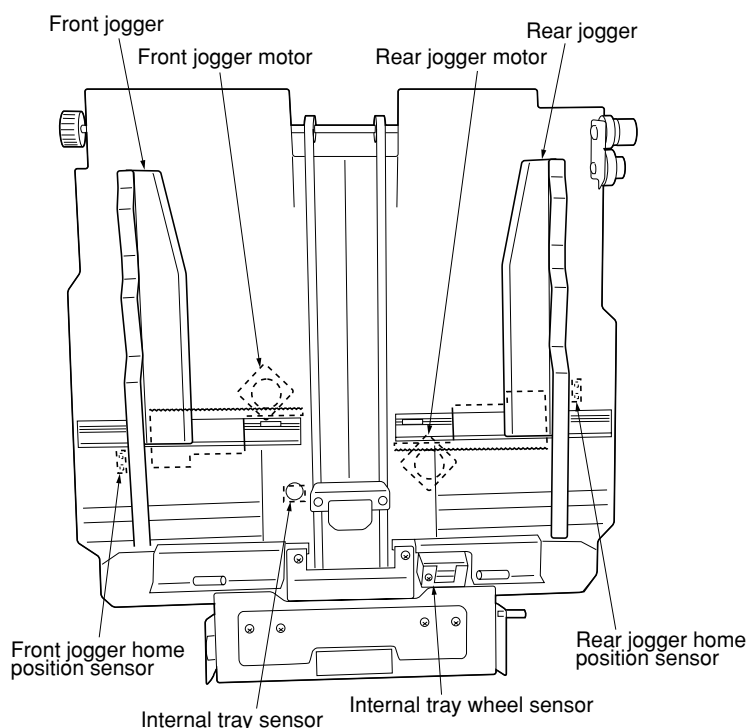
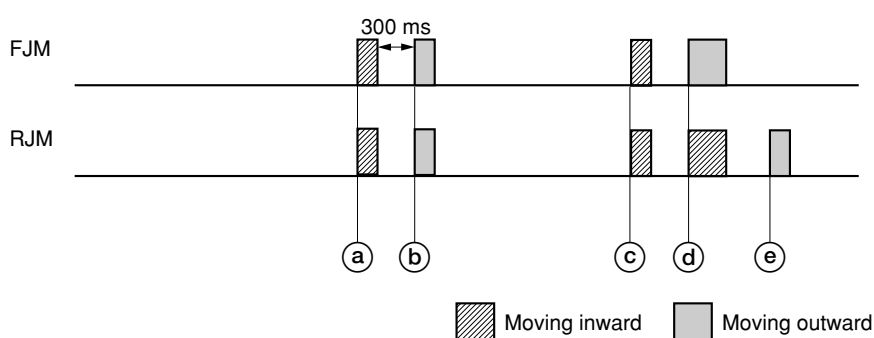


Figure 2-1-8



Timing chart 2-1-3 Paper jogging and shifting

- a: The front and rear jogger motors (FJM, RJM) drive the front and rear joggers inward, aligning the sides of paper being conveyed to the internal tray.
- b: 300 ms after alignment, the front and rear joggers return to the standby positions.
- c: Once one set of sheets is stocked in the internal tray, the front and rear jogger motors (FJM, RJM) drive the front and rear joggers inward, aligning the sides of the sheets.
- d: The front and rear joggers move outward and inward respectively, shifting the paper toward the machine front.
- e: The rear jogger returns to the standby position.

Paper switchback operation

Paper stored in the internal tray is conveyed to the sort tray by the tractor. Since the leading and trailing edges of paper switch positions, the paper ejected face-up from the copier is reversed and stocked on the sort tray face down.

When passing the sensor lever, the tractor presses the lever down, turning on the paper conveying belt home position sensor (PCBHPS) that then detects the tractor in the home position.

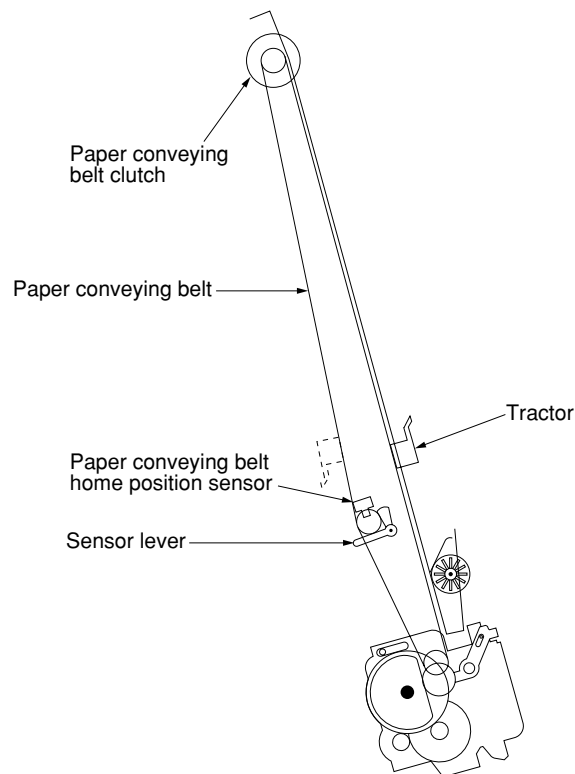
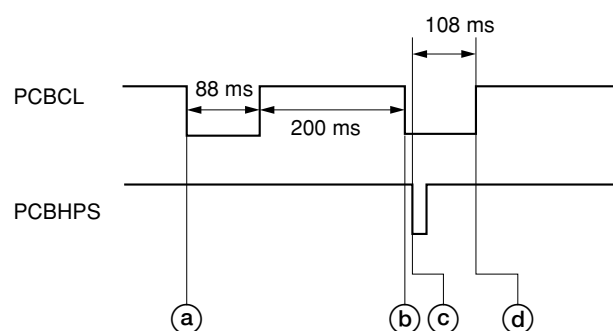


Figure 2-1-9



Timing chart 2-1-4 Paper switchback operation

- a: When the paper conveying belt clutch (PCBCL) turns on, the tractor moves, conveying paper to the sort tray.
- b: 200 ms after the paper conveying belt clutch (PCBCL) turns off, it turns on again.
- c: The tractor moves under the internal tray and passes the sensor lever, turning the paper conveying belt home position sensor (PCBHPS) on.
- d: 140 ms after the paper conveying belt home position sensor (PCBHPS) turns on, the tractor returns to the standby position, turning the paper conveying belt clutch (PCBCL) off.

(3) Punch section

The punch section consists of the components shown in Figure 2-1-10. Paper ejected from the copier is punched in this section.

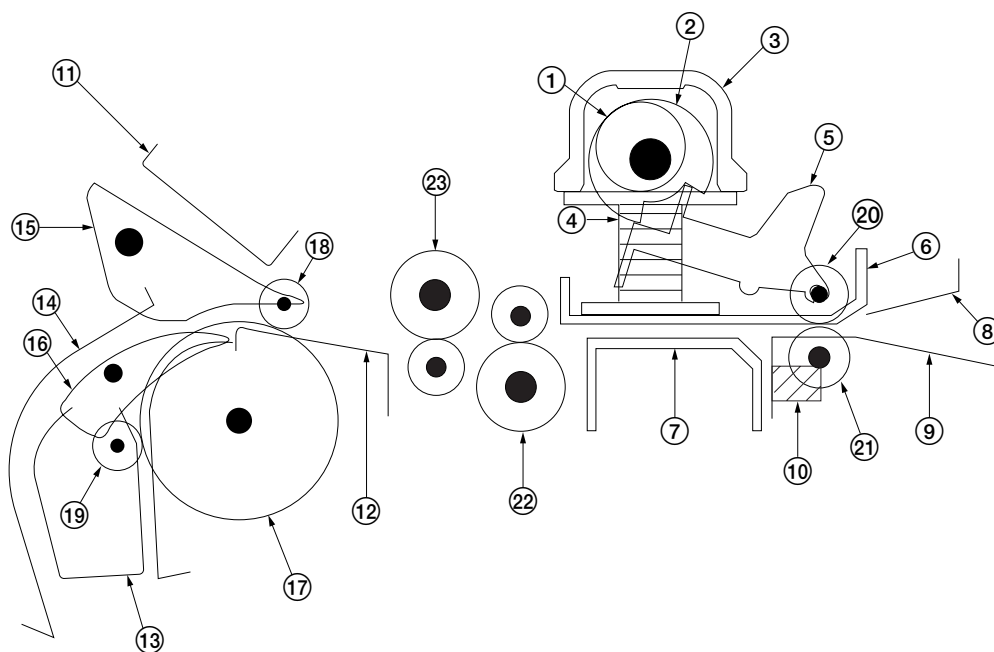


Figure 2-1-10 Punch section

- | | |
|-------------------------------|--------------------------------|
| ① Punch cam | ⑬ Paper conveying guide |
| ② Paper stopper cam | ⑭ Left paper conveying guide |
| ③ Punch cam holder | ⑮ Feedshift claw 1 |
| ④ Punch shaft | ⑯ Feedshift claw 2 |
| ⑤ Punch stopper | ⑰ Paper conveying roller |
| ⑥ Upper punch guide | ⑱ Upper paper conveying pulley |
| ⑦ Lower punch guide | ⑲ Lower paper conveying pulley |
| ⑧ Upper paper entry guide | ⑳ Paper entry pulley |
| ⑨ Lower paper entry guide | ㉑ Paper entry roller |
| ⑩ Paper entry sensor (PES) | ㉒ Right curl eliminator roller |
| ⑪ Upper paper conveying guide | ㉓ Left curl eliminator roller |
| ⑫ Lower paper conveying guide | |

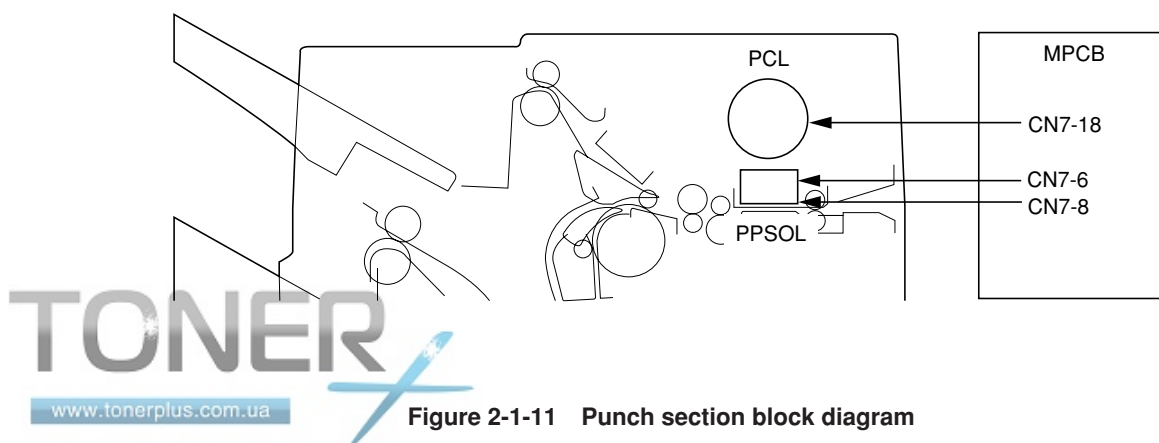


Figure 2-1-11 Punch section block diagram

Punching operation

To punch paper, the punch cam rotates to lower the punch shaft holders.

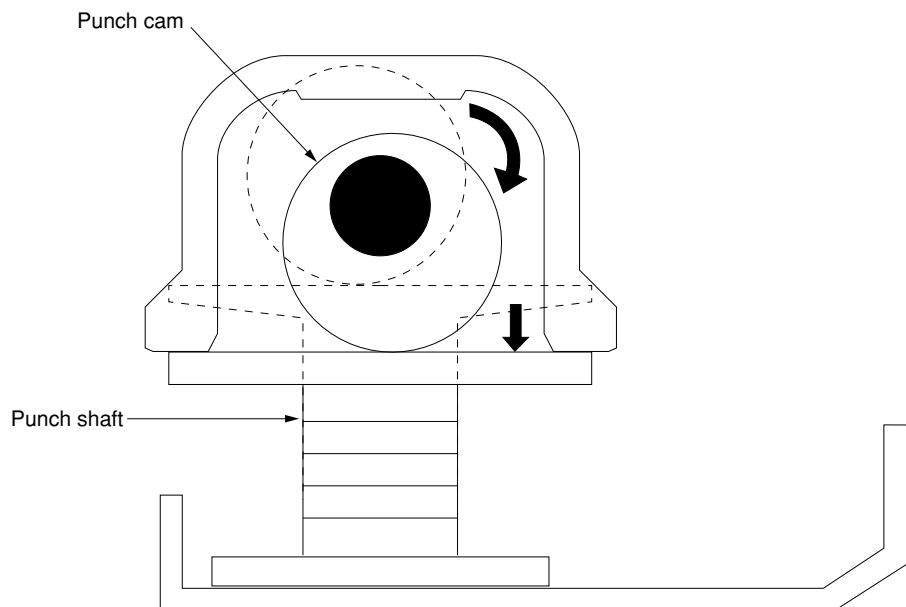
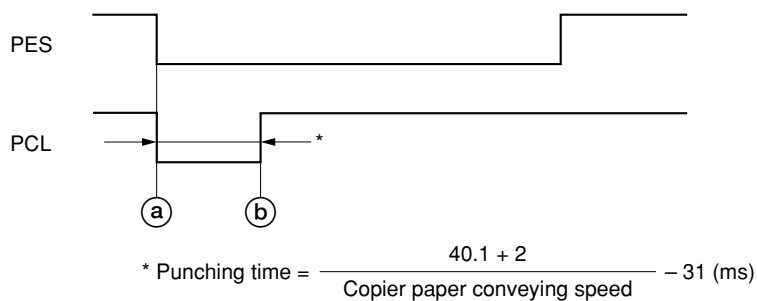


Figure 1-2-12 Punching operation



Timing chart 2-1-5 Punching operation

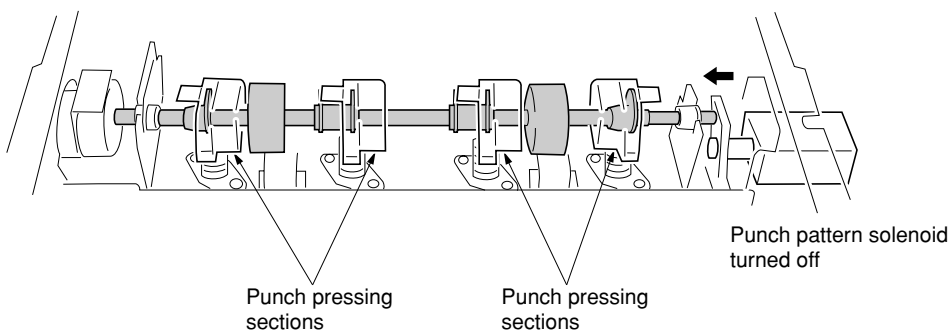
- a: When the leading edge of paper passes the paper entry sensor (PES), the punch clutch (PCL) turns on.
The punch stopper holds the paper and the punch shafts punches the paper.
- b: The punch clutch (PCL) turns off.

Punch pattern mechanism

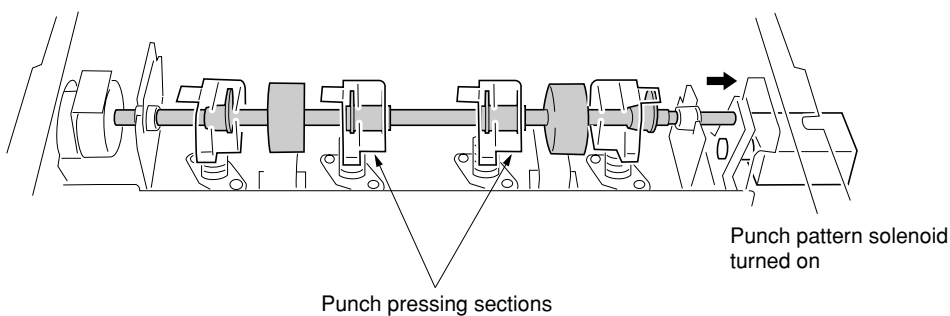
The punch pattern solenoid (PPSOL) switches the punch pattern. When the solenoid turns on, the punch shaft move toward the machine front and the number of punch cams that press the section changes.

Metric

• Four-hole punch

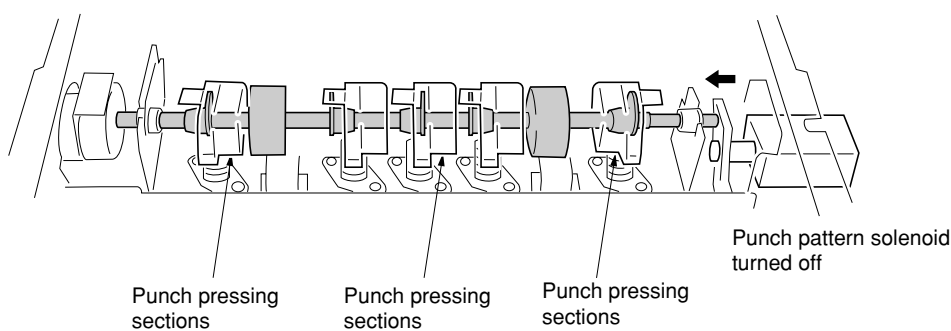


• Two-hole punch

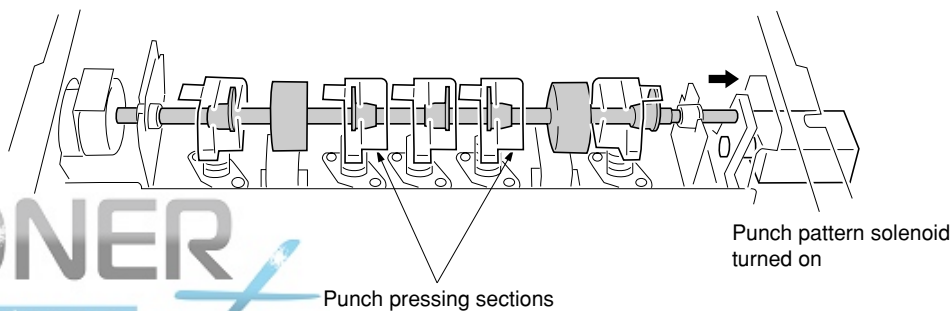


Inch

• Three-hole punch



• Two-hole punch



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Figure 2-1-13 Punch pattern switching

(4) Stapler section

In the staple mode, paper stored in the internal tray is stapled by the front and rear staplers. The staple modes include the 2-point stapling, front one-point stapling, rear one-point stapling modes.

The stapler motors (FSTM, RSTM) drive the front and rear staplers.

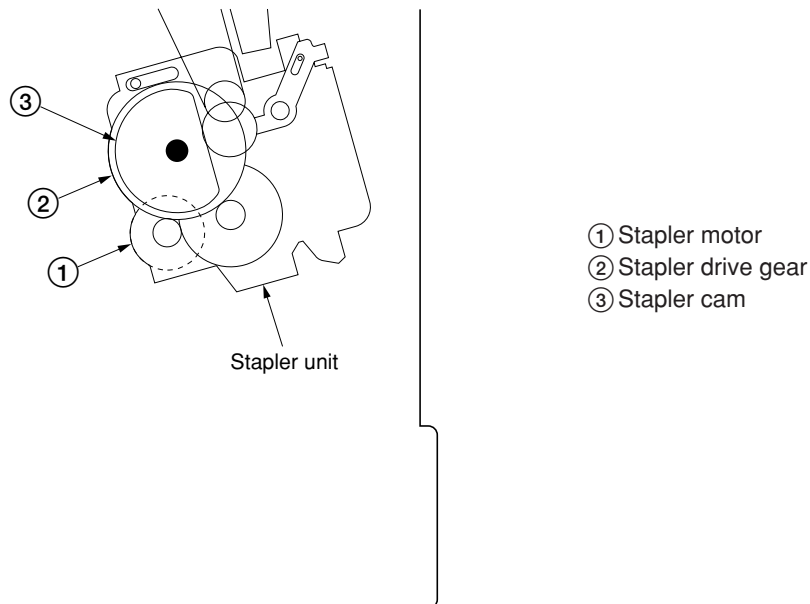


Figure 2-1-14 Stapler section

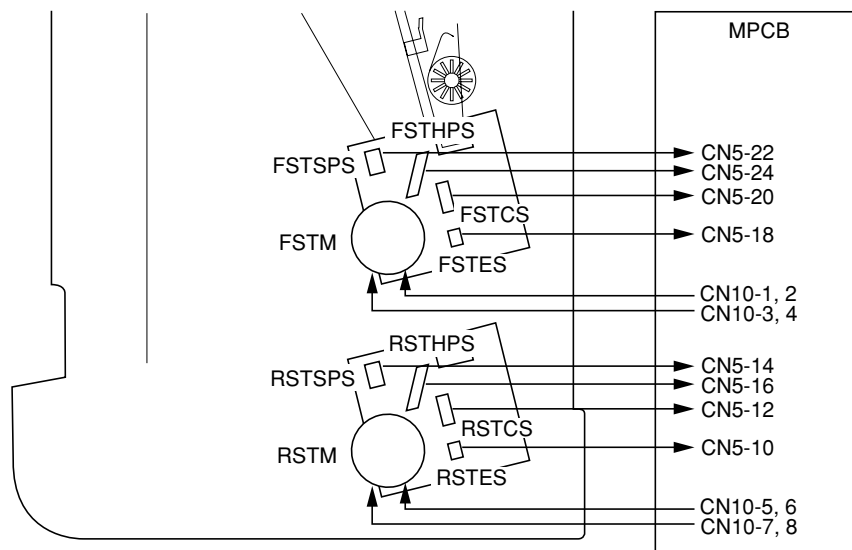
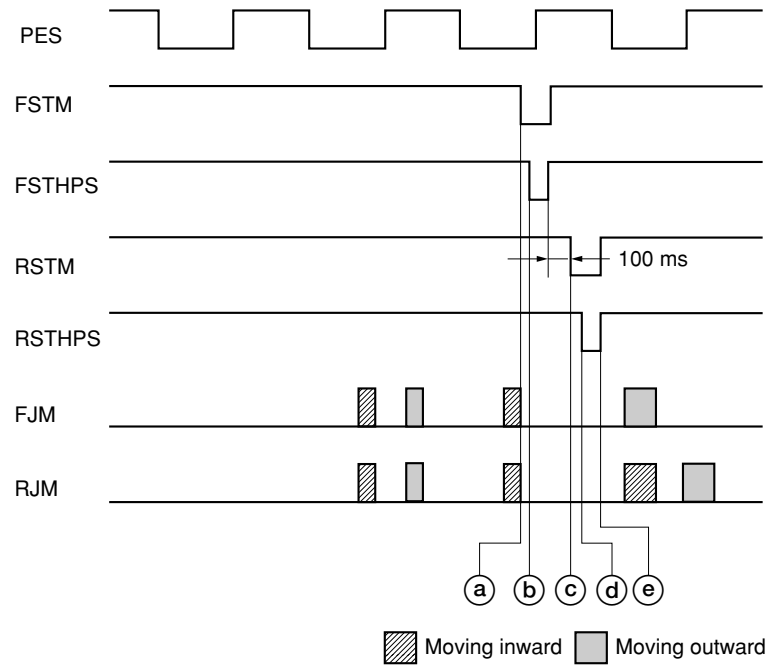


Figure 2-1-15 Stapler section block diagram



Timing chart 2-1-6 Stapling operation

- a: When jog operation for stapling of the one set of sheets stored in the internal tray completes, the front stapler motor (FSTM) starts.
- b: After the front stapler motor (FSTM) starts rotating, the front stapler home position sensor (FSTHPS) turns on.
- c: 100 ms after the front stapler finishes stapling, the rear stapler motor (RSTM) starts rotating.
- d: After the rear stapler motor (RSTM) starts rotating, the rear stapler home position sensor (RSTHPS) turns on.
- e: The two-point stapling completes.

Stapling operation

The staplers are operated by the rotation of the stapler cams interlocked with the stapler drive gear.

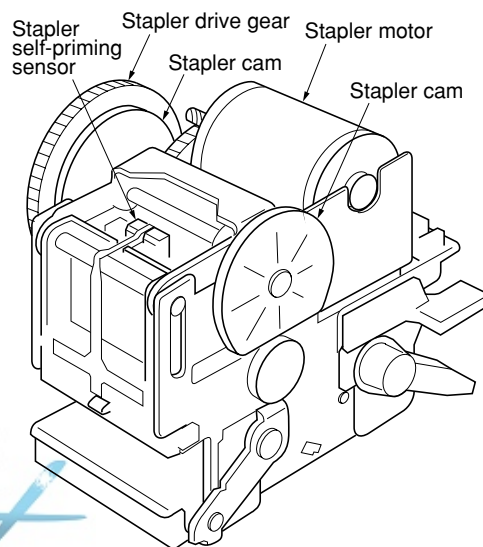


Figure 2-1-16 Stapling operation

(5) Non-sort tray section

Feedshift claw 1 guides paper to the upper paper path. The paper is then ejected to the non-sort tray by the non-sort tray eject roller and pulley.

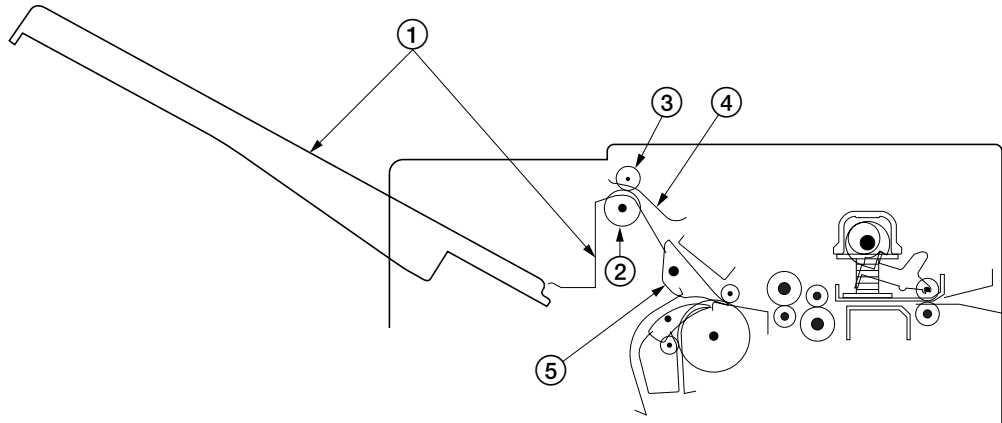


Figure 2-1-17 Non-sort tray section

- ① Non-sort tray
- ② Non-sort tray eject roller
- ③ Non-sort tray eject pulley
- ④ Non-sort tray eject guide
- ⑤ Feedshift claw 1

(6) Sort tray section

Sets of paper conveyed from the internal tray are ejected to the sort tray by the sort tray eject roller and pulley. When paper on the sort tray is detected by tray stock sensors A and B (TSSA, TSSB), the sort tray descends. The tray midpoint sensor (TMS) and tray lower limit sensor (TLLS) detect the sort tray reaching the stock limit.

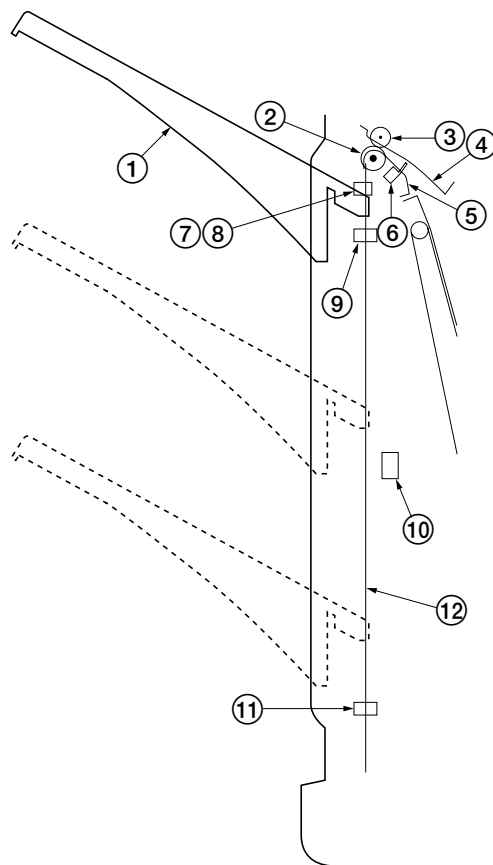


Figure 2-1-18 Sort tray section

- | | |
|-------------------------------|----------------------------------|
| ① Sort tray | ⑦ Tray stock sensor A (TSSA) |
| ② Sort tray eject roller | ⑧ Tray stock sensor B (TSSB) |
| ③ Sort tray eject pulley | ⑨ Tray upper limit sensor (TULS) |
| ④ Upper sort tray eject guide | ⑩ Tray midpoint sensor (TMS) |
| ⑤ Lower sort tray eject guide | ⑪ Tray lower limit sensor (TLLS) |
| ⑥ Eject switch (ESW) | ⑫ Sort tray rail |

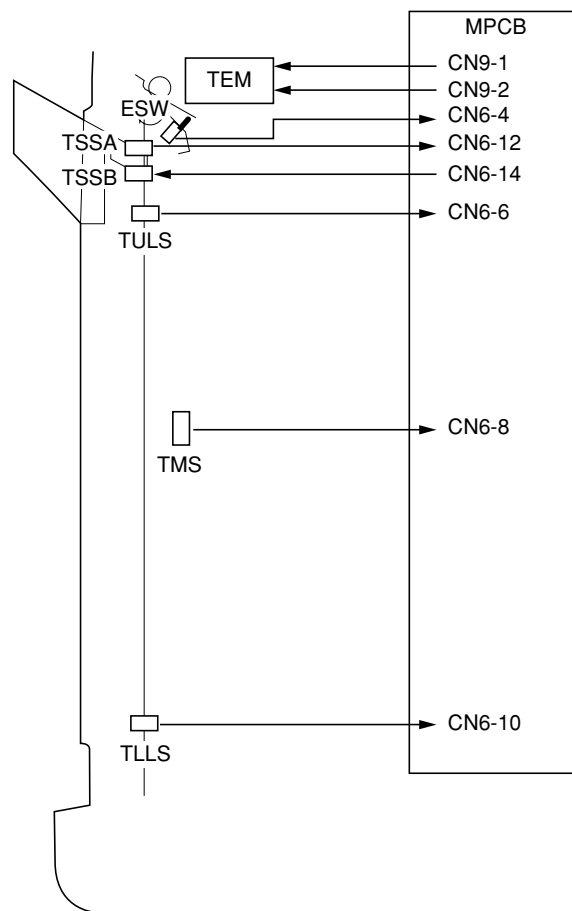


Figure 2-1-19 Sort tray section block diagram

2-2-1 Electrical parts layout



Figure 2-2-1 Electrical parts layout (PCB)

1. Main PCB (MPCB) Controls electrical components.

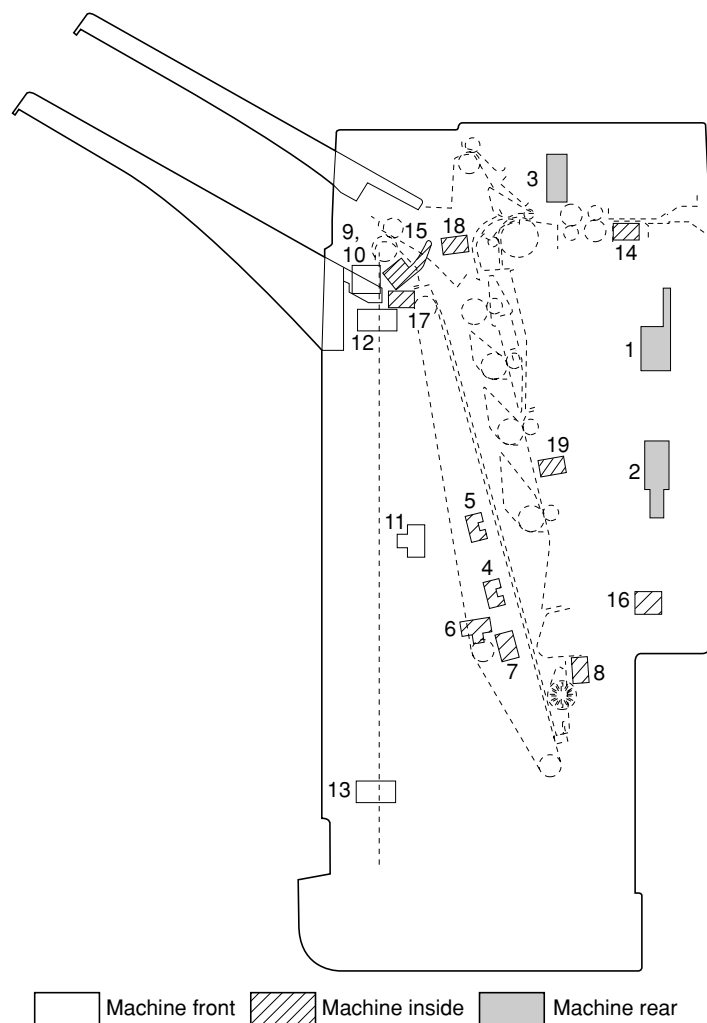


Figure 2-1-2 Electrical parts layout (switches and sensors)

- | | |
|---|--|
| 1. Joint switch (JSW) | Detects the finisher attached to the copier. |
| 2. Front cover switch (FCSW) | Detects opening/closing of the front cover. |
| 3. Upper cover switch (UCSW) | Detects opening/closing of the upper cover. |
| 4. Front jogger home position sensor (FJHPS) | Detects the front jogger in the home position. |
| 5. Rear jogger home position sensor (RJHPS) | Detects the rear jogger in the home position. |
| 6. Paper conveying belt home position sensor (PCBHPS) | Detects the tractor in the home position. |
| 7. Internal tray sensor (ITS) | Detects the paper entering the internal tray. |
| 8. Internal tray wheel sensor (ITWS) | Detects paper entering the internal tray. |
| 9. Tray stock sensor A (TSSA) | Detects the presence of paper in the sort tray (receiver). |
| 10. Tray stock sensor B (TSSB) | Detects the presence of paper in the sort tray (emitter). |
| 11. Tray midpoint sensor (TMS) | Detects the sort tray reaching the lower limit while stapling or stocking paper of other sizes than A4/11" x 8 1/2". |
| 12. Tray upper limit sensor (TULS) | Detects the sort tray reaching the upper limit. |
| 13. Tray lower limit sensor (TLLS) | Detects the sort tray reaching the lower limit. |
| 14. Paper entry sensor (PES) | Detects paper entering the finisher. |
| 15. Eject switch (ESW) | Detects paper exiting to the sort tray. |
| 16. Scrap hole-punch sensor (PDTS) | Detects the presence of the scrap hole-punch tank. |
| 17. Trailing edge press detection sensor (TEPDS) | Detects the presence of paper in the sort tray when the trailing edge press is in contact with the paper in the sort tray. |

- 18. Paper conveying sensor 1 (PCS1) Detects large paper (A3, B4, A4R, ledger or legal) that is fed to the intermediate tray.
- 19. Paper conveying sensor 2 (PCS2) Detects small paper (A4, B5 or letter) that is fed to the intermediate tray.

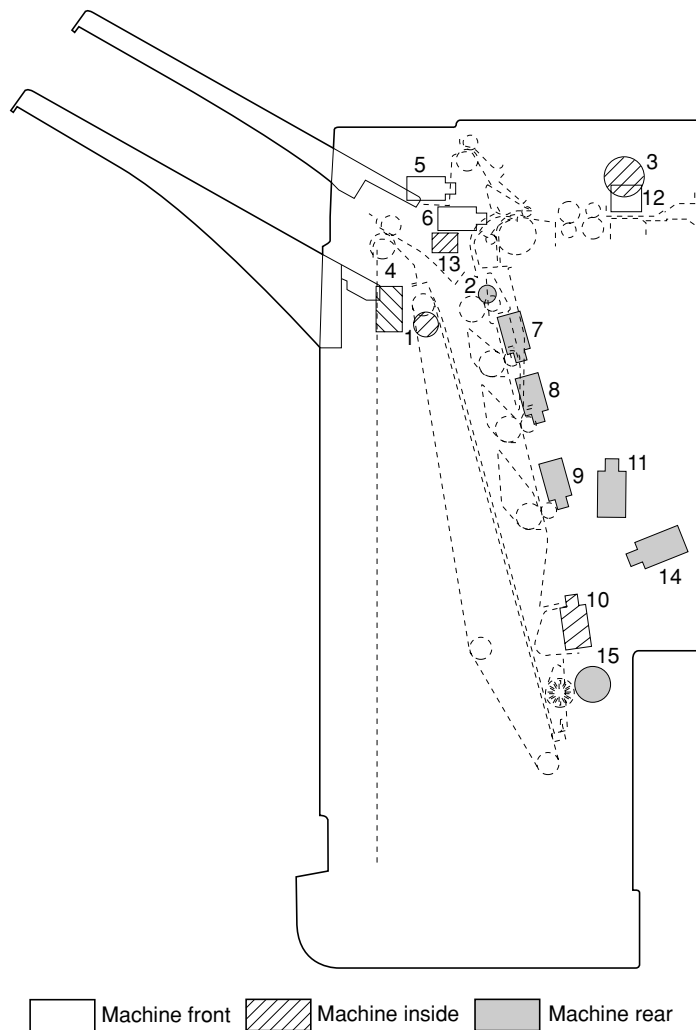


Figure 2-1-3 Electrical parts layout (clutches and solenoids)

- | | |
|--|---|
| 1. Paper conveying belt clutch (PCBCL) | Drives the paper conveying belt. |
| 2. Paddle clutch (PDCL) | Pauses paper passing the regular path. |
| 3. Punch clutch (PCL) | Drives the punch. |
| 4. Trailing edge press solenoid (TEPSOL) | Holds the trailing edge of paper being ejected to the sort tray in non-staple mode. |
| 5. Feedshift solenoid 1 (FSSOL1) | Switches between the sort path and non-sort path. |
| 6. Feedshift solenoid 2 (FSSOL2) | Switches the paper path to the retaining path. |
| 7. Paddle solenoid 1 (PDSOL1) | Guides A3/11" × 17" paper to the internal tray. |
| 8. Paddle solenoid 2 (PDSOL2) | Guides B4/11" × 14" paper to the internal tray. |
| 9. Paddle solenoid 3 (PDSOL3) | Guides A4R/8 ¹ / ₂ " × 11" paper to the internal tray. |
| 10. Rotating plate solenoid (RPSOL) | Drives the rotating plate. |
| 11. Drive switching solenoid (DSSOL) | Switches the rotational direction of feedshift roller 3 and 4 to convey A3/11" × 17" or B4/11" × 14" paper. |
| 12. Punch pattern solenoid (PPSOL) | Switches the punch pattern between two-hole and three-hole (inch specifications) or two-hole and four-hole (metric specifications). |
| 13. Pressure switching solenoid (PSWSOL) | Switches paper retaining pressure while ejecting. |
| 14. Forwarding solenoid (FWSOL) | Drives the forwarding pulley. |
| 15. Paper conveying clutch (PCCL) | Drives the paper conveying pulley. |

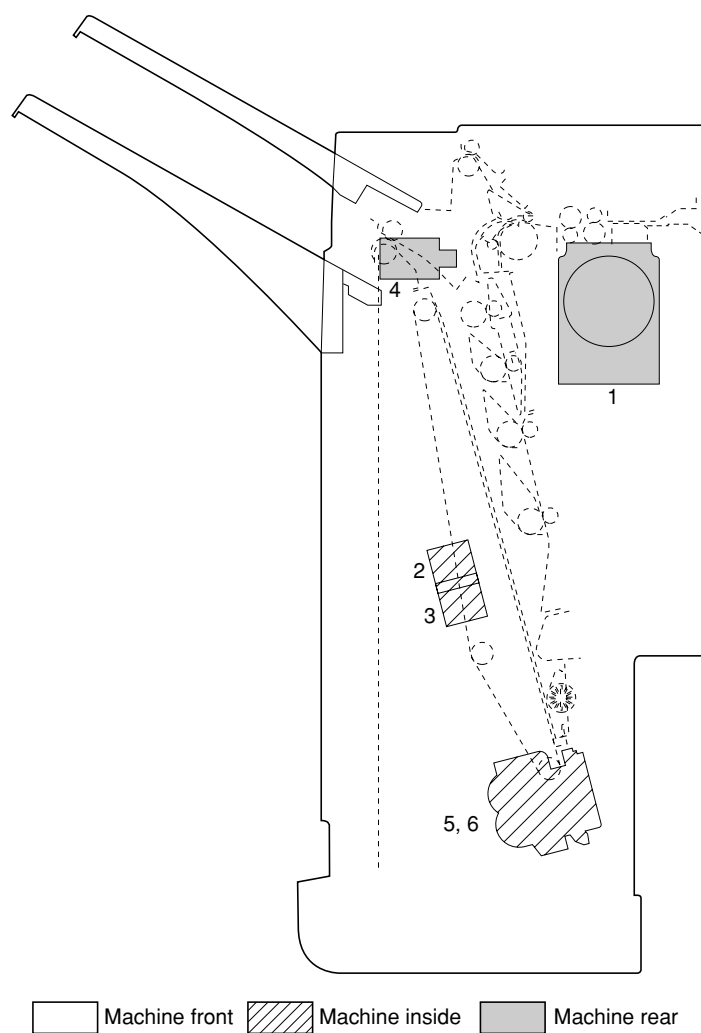


Figure 2-1-4 Electrical parts layout (motors and others)

- | | |
|--------------------------------------|--|
| 1. Paper conveying motor (PCM) | Conveys paper. |
| 2. Front jogger motor (FJM) | Aligns paper in the internal tray. |
| 3. Rear jogger motor (RJM) | Aligns paper in the internal tray. |
| 4. Tray elevation motor (TEM) | Raises and lowers the paper ejection tray. |
| 5. Front stapler (FST) | Staples paper. |
| 6. Rear stapler (RST) | Staples paper. |

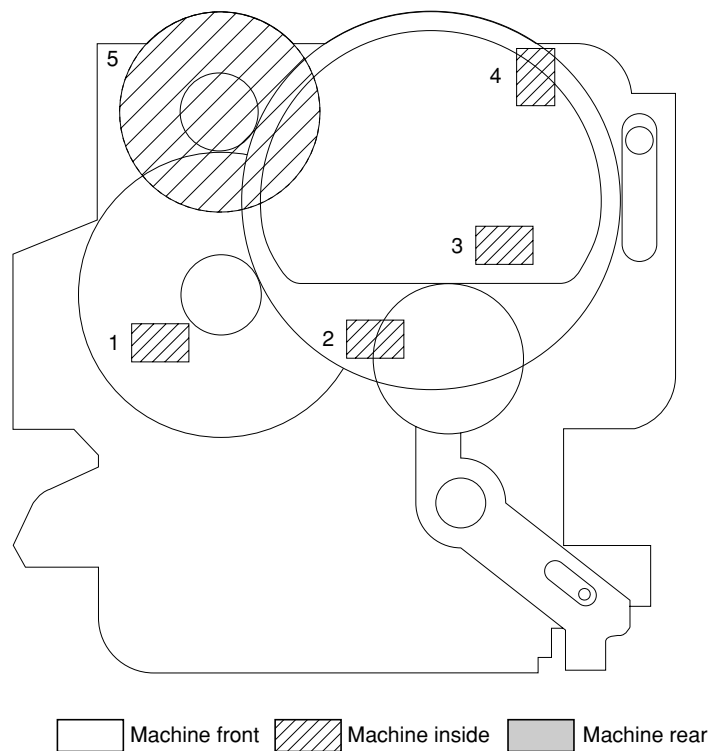


Figure 2-1-5 Electrical parts layout (stapler section)

- | | |
|---|--|
| 1. Stapler empty sensor (STES) | Detects the presence of staples. |
| 2. Stapler cartridge sensor (STCS) | Detects the presence of the stapler cartridge. |
| 3. Stapler home position sensor (STHPS) | Detects the stapler in the home position. |
| 4. Stapler self-priming sensor (STSPS) | Detects the pre-stapling state of the stapler. |
| 5. Stapler motor (STM) | Drives the stapler. |

2-3-1 Main PCB

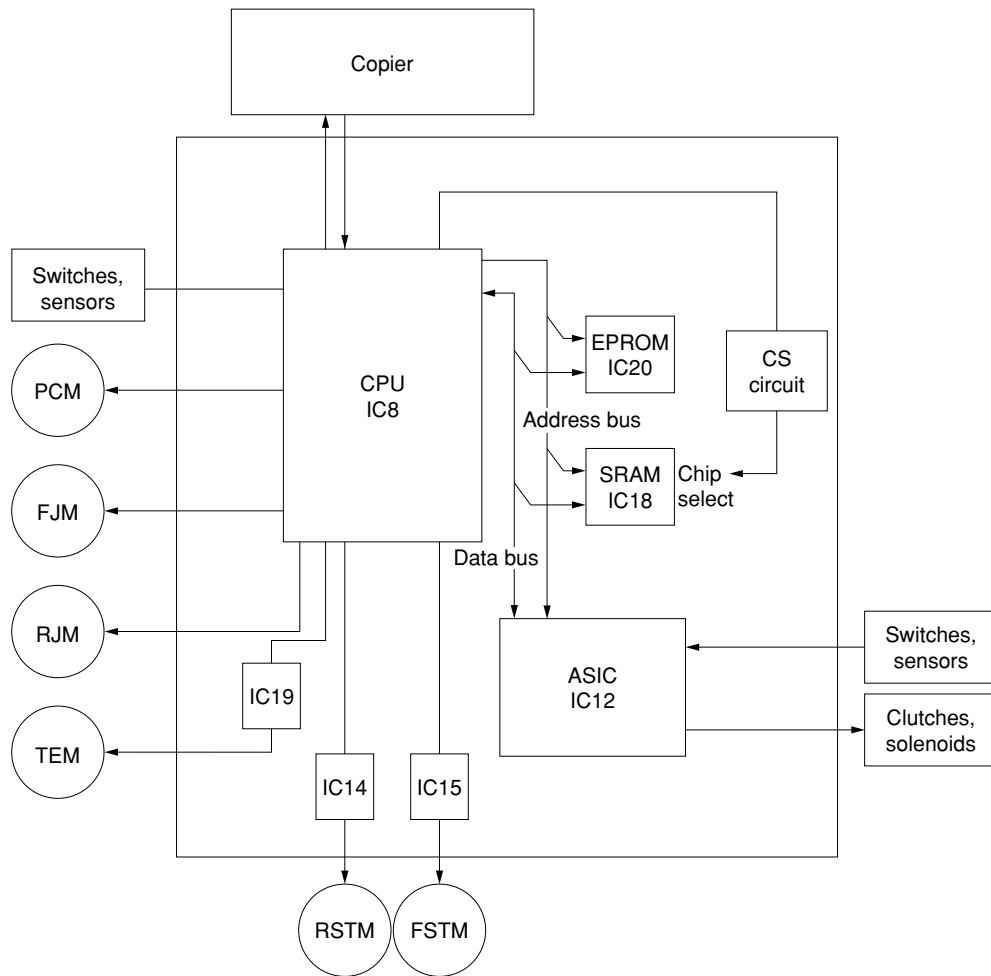


Figure 2-3-1

The main PCB (MPCB) consists of the CPU IC8, EPROM IC20, SRAM IC18 and ASIC IC12. Following the program written on the EPROM IC20, the main PCB controls each device and the entire operation of the finisher. The EPROM IC20 contains a control program which is executed from the SRAM IC18. The ASIC IC12 is an extended I/O. The copier and finisher communicate serially. Based on the communication data from the copier, the CPU IC8 on the main PCB (MPCB) controls the entire operation of the finisher.

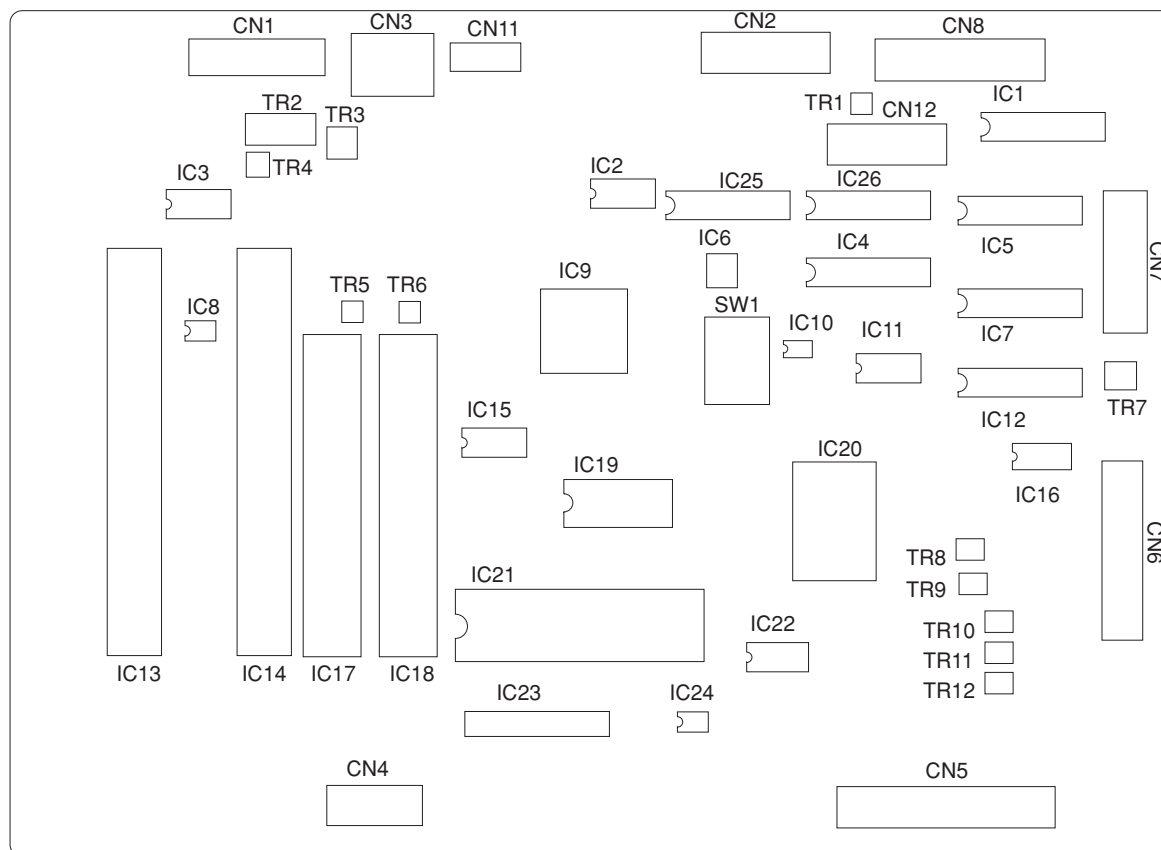


Figure 2-3-2

Terminals (CN)		Voltage	Remarks
1-5	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
1-6	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
1-7	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
1-8	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
2-1	2-2	5 V DC	5 V DC supply, input
2-3	2-4	0/5 V DC (pulse)	Serial communication signal for copier, output
2-5	2-6	0/5 V DC (pulse)	Serial communication signal from copier, input
2-7	2-6	0/5 V DC	RESET signal, input
2-8	2-6	0/5 V DC	SET signal, input
3-1	3-3	24 V DC	24 V DC supply for JSW, output
4-1	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (B)
4-2	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (A_)
4-3	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (B_)
4-4	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (A)
4-5, -6	1-1	24 V DC	24 V DC supply for FJM, output
4-7, -8	1-1	24 V DC	24 V DC supply for RJM, output
4-9	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (B_)
4-10	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (A)
4-11	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (B)
4-12	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (A_)
5-1	5-5	24 V DC	24 V DC supply for PCBCL, output
5-2	5-5	0/24 V DC	PCBCL on/off, output
5-8	5-6	0/5 V DC	ITWS on/off, input
5-10	5-5	0/5 V DC	RSTES on/off, input
5-12	5-5	0/5 V DC	RSTCS on/off, input
5-14	5-5	0/5 V DC	RSTSPS on/off, input
5-16	5-5	0/5 V DC	RSTHPS on/off, input
5-18	5-5	0/5 V DC	FSTES on/off, input
5-19	5-6	5 V DC	5 V DC supply for ITWS, output
5-20	5-5	0/5 V DC	FSTCS on/off, input
5-21	5-5	5 V DC	5 V DC supply for RST, output
5-22	5-5	0/5 V DC	FSTSPS on/off, input
5-23	5-9	5 V DC	5 V DC supply for FST, output
5-24	5-5	0/5 V DC	FSTPS on/off, input
5-25	5-11	5 V DC	5 V DC supply for ITS, output
5-26	5-11	0/5 V DC	ITS on/off, input
5-27	5-13	5 V DC	5 V DC supply for PCBHPS, output
5-28	5-13	0/5 V DC	PCBHPS on/off, input
5-29	5-15	5 V DC	5 V DC supply for RJHPS, output
5-30	5-15	0/5 V DC	RJHPS on/off, input
5-31	5-17	5 V DC	5 V DC supply for FJHPS, output
5-32	5-17	0/5 V DC	FJHPS on/off, input
6-1	6-15	5 V DC	5 V DC supply for PESW, output
6-2	6-15	0/5 V DC	PESW on/off, output
6-3	6-17	5 V DC	5 V DC supply for ESW, output
6-4	6-17	0/5 V DC	ESW on/off, output
6-5	6-19	5 V DC	5 V DC supply for TULS, output
6-6	6-19	0/5 V DC	TULS on/off, output
6-7	6-18	5 V DC	5 V DC supply for TMS, output
6-8	6-18	0/5 V DC	TMS on/off, output
6-9	6-21	5 V DC	5 V DC supply for TLLS, output
6-10	6-21	0/5 V DC	TLLS on/off, output

Terminals (CN)		Voltage	Remarks
6-11	6-13	5 V DC	5 V DC supply for TEPDS, output
6-12	6-23	0/5 V DC	TSSA on/off, input
6-14	6-25	0/5 V DC	TSSB on/off, input
6-16	6-13	0/5 V DC	TEPDS on/off, input
6-22	6-13	0/24 V DC	JSW on/off, input
6-24	6-13	0/24 V DC	FCSW on/off, input
6-26	6-13	0/24 V DC	UCSW on/off, input
7-1	1-1	24 V DC	24 V DC supply for FSSOL1, output
7-2	1-1	0/24 V DC	FSSOL1 release signal, output
7-3	1-1	24 V DC	24 V DC supply for FSSOL2, output
7-4	1-1	0/24 V DC	FSSOL2 on/off, output
7-6	1-1	0/24 V DC	PPSOL latch-on signal, output
7-8	1-1	0/24 V DC	PPSOL release signal, output
7-13	1-1	24 V DC	24 V DC supply for PSWSOL, output
7-14	1-1	0/24 V DC	PSWSOL on/off, output
7-15	1-1	24 V DC	24 V DC supply for PDCL, output
7-16	1-1	0/24 V DC	PDCL on/off, output
7-17	1-1	24 V DC	24 V DC supply for PCL, output
7-18	1-1	0/24 V DC	PCL on/off, output
7-20	1-1	0/24 V DC	FSSOL1 latch-on signal, output
8-1	1-1	5 V DC	5 V DC supply for PCM, output
8-2	1-1	0/5 V DC	PCM LOCK signal, output
8-3	1-1	0/24 V DC	PCM on/off, output
8-6	1-1	0/5 V DC (pulse)	PCM CLOCK signal, output
8-8	1-1	0/5 V DC	PDTS on/off, input
8-10	1-1	0/24 V DC	PDSOL1 latch-on signal, output
8-11	1-1	0/5 V DC	24 V DC supply for PDSOL1, output
8-12	1-1	0/24 V DC	PDSOL1 release signal, output
8-13	1-1	24 V DC	24 V DC supply for PDSOL2, output
8-14	1-1	0/24 V DC	PDSOL2 latch-on signal, output
8-15	1-1	24 V DC	24 V DC supply for PDSOL3, output
8-16	1-1	0/24 V DC	PDSOL2 release signal, output
8-18	1-1	0/24 V DC	PDSOL3 latch-on signal, output
8-19	1-1	24 V DC	24 V DC supply for DSSOL, output
8-20	1-1	0/24 V DC	PDSOL3 release signal, output
8-23	1-1	0/24 V DC	DSSOL latch-on signal, output
8-24	1-1	0/24 V DC	DSSOL release signal, output
9-1	1-1	0/24 V DC	TEM drive signal +, output
9-2	1-1	0/24 V DC	TEM drive signal –, output
10-1, -2	1-1	0/24 V DC	FSTM reverse/forward rotation +, output
10-3, -4	1-1	0/24 V DC	FSTM forward/reverse rotation –, output
10-5, -6	1-1	0/24 V DC	RSTM reverse/forward rotation +, output
10-7, -8	1-1	0/24 V DC	RSTM forward/reverse rotation –, output
11-1, -2	11-3	24 V DC	24 V DC supply for PCM, output
12-1	1-1	24 V DC	24 V DC supply for RPSOL, output
12-2	1-1	0/24 V DC	RPSOL on/off, output
12-3	1-1	24 V DC	24 V DC supply for PCCL, output
12-4	1-1	0/24 V DC	PCCL on/off, output
12-5	1-1	24 V DC	24 V DC supply for FWSOL, output
12-6	1-1	0/24 V DC	FWSOL on/off, output
12-7	1-1	24 V DC	24 V DC supply for TEPSOL, output
12-9	1-1	0/24 V DC	TEPSOL latch-on signal, output
12-10	1-1	0/24 V DC	TEPSOL release signal, output
12-13	12-11	0/5 V DC	PCS2 on/off, input
12-14	12-12	0/5 V DC	PCS1 on/off, input
12-15	12-11	5 V DC	5 V DC supply for PCS2, output
12-16	12-12	5 V DC	5 V DC supply for PCS1, output

2-3-1 Main PCB

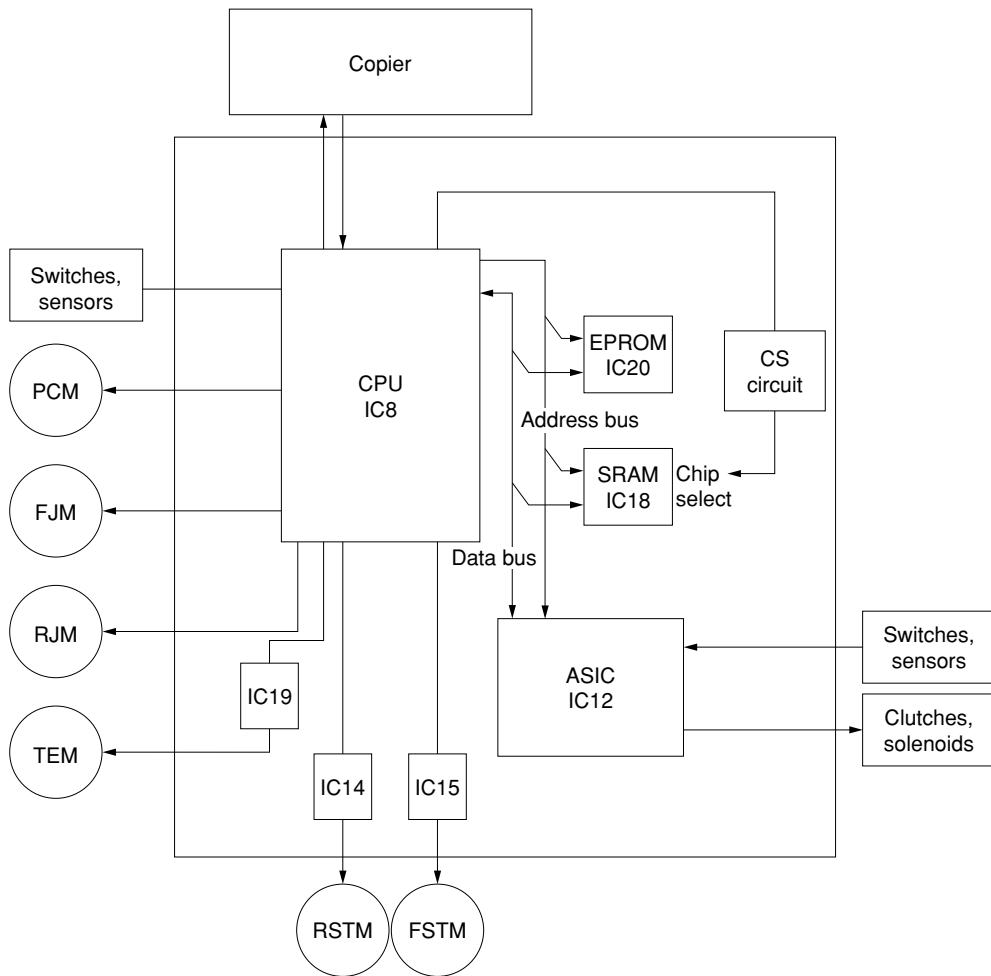


Figure 2-3-1

The main PCB (MPCB) consists of the CPU IC8, EPROM IC20, SRAM IC18 and ASIC IC12. Following the program written on the EPROM IC20, the main PCB controls each device and the entire operation of the finisher. The EPROM IC20 contains a control program which is executed from the SRAM IC18. The ASIC IC12 is an extended I/O. The copier and finisher communicate serially. Based on the communication data from the copier, the CPU IC8 on the main PCB (MPCB) controls the entire operation of the finisher.

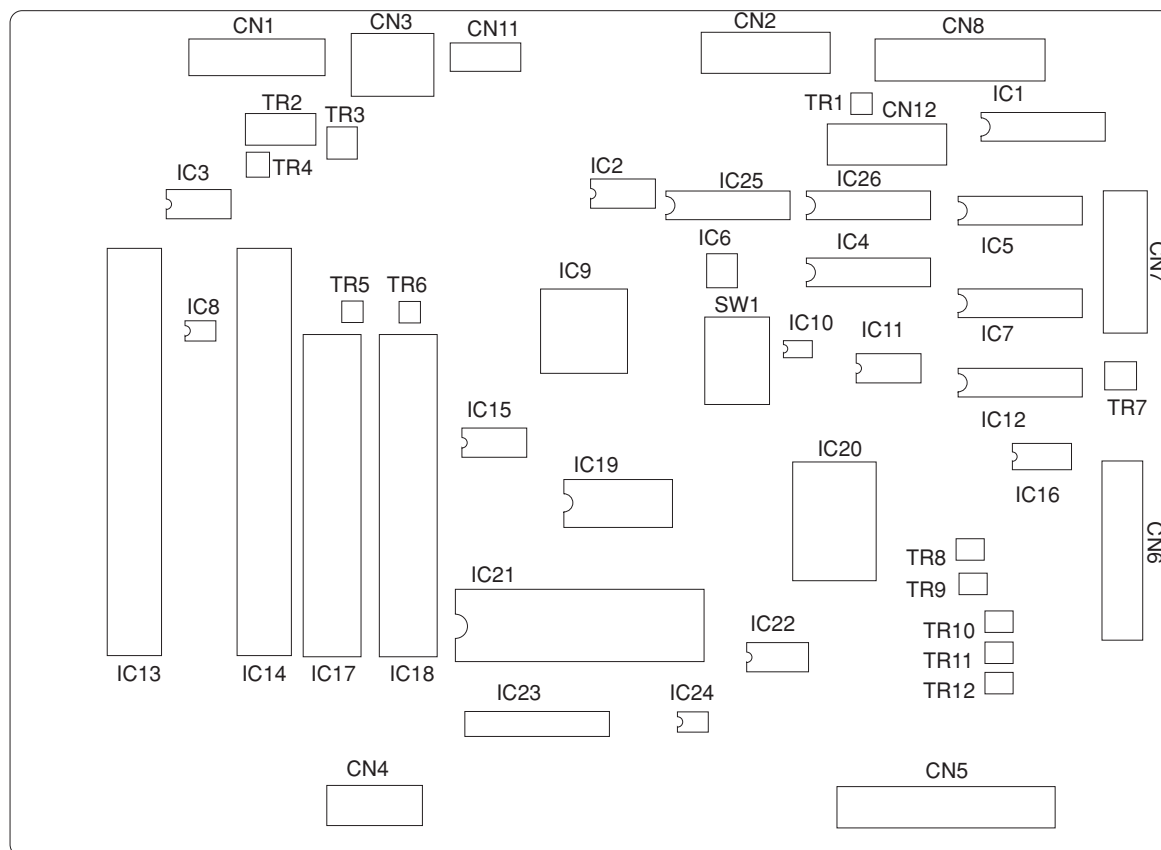


Figure 2-3-2

Terminals (CN)		Voltage	Remarks
1-5	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
1-6	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
1-7	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
1-8	1-1, -2, -3, -4	24 V DC	24 V DC supply, input
2-1	2-2	5 V DC	5 V DC supply, input
2-3	2-4	0/5 V DC (pulse)	Serial communication signal for copier, output
2-5	2-6	0/5 V DC (pulse)	Serial communication signal from copier, input
2-7	2-6	0/5 V DC	RESET signal, input
2-8	2-6	0/5 V DC	SET signal, input
3-1	3-3	24 V DC	24 V DC supply for JSW, output
4-1	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (B)
4-2	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (A_)
4-3	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (B_)
4-4	1-1	0/5 V DC (pulse)	FJM motor coil energization pulse (A)
4-5, -6	1-1	24 V DC	24 V DC supply for FJM, output
4-7, -8	1-1	24 V DC	24 V DC supply for RJM, output
4-9	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (B_)
4-10	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (A)
4-11	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (B)
4-12	1-1	0/5 V DC (pulse)	RJM motor coil energization pulse (A_)
5-1	5-5	24 V DC	24 V DC supply for PCBCL, output
5-2	5-5	0/24 V DC	PCBCL on/off, output
5-8	5-6	0/5 V DC	ITWS on/off, input
5-10	5-5	0/5 V DC	RSTES on/off, input
5-12	5-5	0/5 V DC	RSTCS on/off, input
5-14	5-5	0/5 V DC	RSTSPS on/off, input
5-16	5-5	0/5 V DC	RSTHPS on/off, input
5-18	5-5	0/5 V DC	FSTES on/off, input
5-19	5-6	5 V DC	5 V DC supply for ITWS, output
5-20	5-5	0/5 V DC	FSTCS on/off, input
5-21	5-5	5 V DC	5 V DC supply for RST, output
5-22	5-5	0/5 V DC	FSTSPS on/off, input
5-23	5-9	5 V DC	5 V DC supply for FST, output
5-24	5-5	0/5 V DC	FSTPS on/off, input
5-25	5-11	5 V DC	5 V DC supply for ITS, output
5-26	5-11	0/5 V DC	ITS on/off, input
5-27	5-13	5 V DC	5 V DC supply for PCBHPS, output
5-28	5-13	0/5 V DC	PCBHPS on/off, input
5-29	5-15	5 V DC	5 V DC supply for RJHPS, output
5-30	5-15	0/5 V DC	RJHPS on/off, input
5-31	5-17	5 V DC	5 V DC supply for FJHPS, output
5-32	5-17	0/5 V DC	FJHPS on/off, input
6-1	6-15	5 V DC	5 V DC supply for PESW, output
6-2	6-15	0/5 V DC	PESW on/off, output
6-3	6-17	5 V DC	5 V DC supply for ESW, output
6-4	6-17	0/5 V DC	ESW on/off, output
6-5	6-19	5 V DC	5 V DC supply for TULS, output
6-6	6-19	0/5 V DC	TULS on/off, output
6-7	6-18	5 V DC	5 V DC supply for TMS, output
6-8	6-18	0/5 V DC	TMS on/off, output
6-9	6-21	5 V DC	5 V DC supply for TLLS, output
6-10	6-21	0/5 V DC	TLLS on/off, output

Terminals (CN)		Voltage	Remarks
6-11	6-13	5 V DC	5 V DC supply for TEPDS, output
6-12	6-23	0/5 V DC	TSSA on/off, input
6-14	6-25	0/5 V DC	TSSB on/off, input
6-16	6-13	0/5 V DC	TEPDS on/off, input
6-22	6-13	0/24 V DC	JSW on/off, input
6-24	6-13	0/24 V DC	FCSW on/off, input
6-26	6-13	0/24 V DC	UCSW on/off, input
7-1	1-1	24 V DC	24 V DC supply for FSSOL1, output
7-2	1-1	0/24 V DC	FSSOL1 release signal, output
7-3	1-1	24 V DC	24 V DC supply for FSSOL2, output
7-4	1-1	0/24 V DC	FSSOL2 on/off, output
7-6	1-1	0/24 V DC	PPSOL latch-on signal, output
7-8	1-1	0/24 V DC	PPSOL release signal, output
7-13	1-1	24 V DC	24 V DC supply for PSWSOL, output
7-14	1-1	0/24 V DC	PSWSOL on/off, output
7-15	1-1	24 V DC	24 V DC supply for PDCL, output
7-16	1-1	0/24 V DC	PDCL on/off, output
7-17	1-1	24 V DC	24 V DC supply for PCL, output
7-18	1-1	0/24 V DC	PCL on/off, output
7-20	1-1	0/24 V DC	FSSOL1 latch-on signal, output
8-1	1-1	5 V DC	5 V DC supply for PCM, output
8-2	1-1	0/5 V DC	PCM LOCK signal, output
8-3	1-1	0/24 V DC	PCM on/off, output
8-6	1-1	0/5 V DC (pulse)	PCM CLOCK signal, output
8-8	1-1	0/5 V DC	PDTS on/off, input
8-10	1-1	0/24 V DC	PDSOL1 latch-on signal, output
8-11	1-1	0/5 V DC	24 V DC supply for PDSOL1, output
8-12	1-1	0/24 V DC	PDSOL1 release signal, output
8-13	1-1	24 V DC	24 V DC supply for PDSOL2, output
8-14	1-1	0/24 V DC	PDSOL2 latch-on signal, output
8-15	1-1	24 V DC	24 V DC supply for PDSOL3, output
8-16	1-1	0/24 V DC	PDSOL2 release signal, output
8-18	1-1	0/24 V DC	PDSOL3 latch-on signal, output
8-19	1-1	24 V DC	24 V DC supply for DSSOL, output
8-20	1-1	0/24 V DC	PDSOL3 release signal, output
8-23	1-1	0/24 V DC	DSSOL latch-on signal, output
8-24	1-1	0/24 V DC	DSSOL release signal, output
9-1	1-1	0/24 V DC	TEM drive signal +, output
9-2	1-1	0/24 V DC	TEM drive signal –, output
10-1, -2	1-1	0/24 V DC	FSTM reverse/forward rotation +, output
10-3, -4	1-1	0/24 V DC	FSTM forward/reverse rotation –, output
10-5, -6	1-1	0/24 V DC	RSTM reverse/forward rotation +, output
10-7, -8	1-1	0/24 V DC	RSTM forward/reverse rotation –, output
11-1, -2	11-3	24 V DC	24 V DC supply for PCM, output
12-1	1-1	24 V DC	24 V DC supply for RPSOL, output
12-2	1-1	0/24 V DC	RPSOL on/off, output
12-3	1-1	24 V DC	24 V DC supply for PCCL, output
12-4	1-1	0/24 V DC	PCCL on/off, output
12-5	1-1	24 V DC	24 V DC supply for FWSOL, output
12-6	1-1	0/24 V DC	FWSOL on/off, output
12-7	1-1	24 V DC	24 V DC supply for TEPSOL, output
12-9	1-1	0/24 V DC	TEPSOL latch-on signal, output
12-10	1-1	0/24 V DC	TEPSOL release signal, output
12-13	12-11	0/5 V DC	PCS2 on/off, input
12-14	12-12	0/5 V DC	PCS1 on/off, input
12-15	12-11	5 V DC	5 V DC supply for PCS2, output
12-16	12-12	5 V DC	5 V DC supply for PCS1, output



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