



DF-410

**SERVICE
MANUAL**

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843HP110

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

CAUTION

Double-pole/neutral fusing.

Revision history

Revision	Date	Replaced pages	Remarks
-	-	-	-
-	-	-	-
-	-	-	-

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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. 
- Advise 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. 

- 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	Built-in
Number of trays	1 (intermediate tray)
Stapling limit	A4/11" × 8 ¹ / ₂ " or smaller: 30 sheets Other sizes than above: 20 sheets
Power source	Electrically connected to the MFP
Dimensions	325 (W) × 450 (D) × 165 (H) mm 12 ³ / ₄ " (W) × 17 ¹¹ / ₁₆ " (D) × 6 ⁷ / ₁₆ " (H)
Weight	Approximately 8 kg/17.64 lbs

1-1-2 Part names

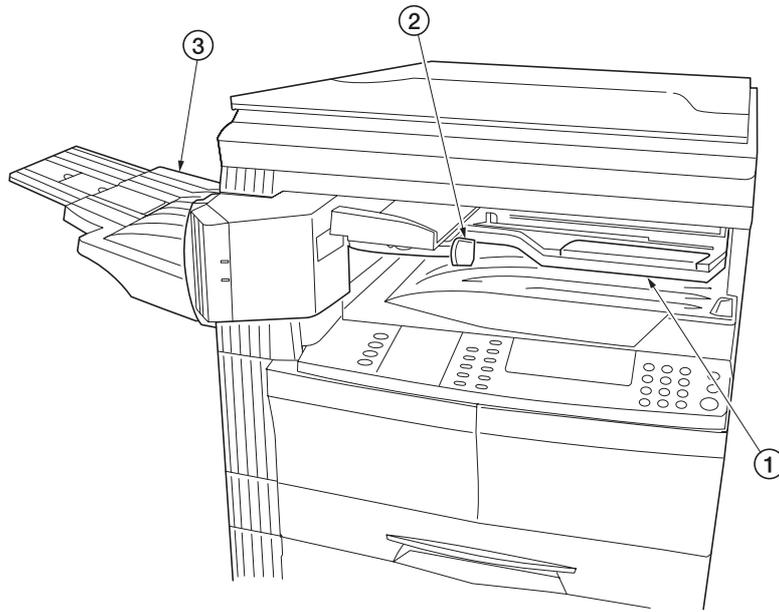


Figure 1-1-1

- ① Intermediate tray
- ② JAM release lever
- ③ Eject tray

1-1-3 Machine cross section

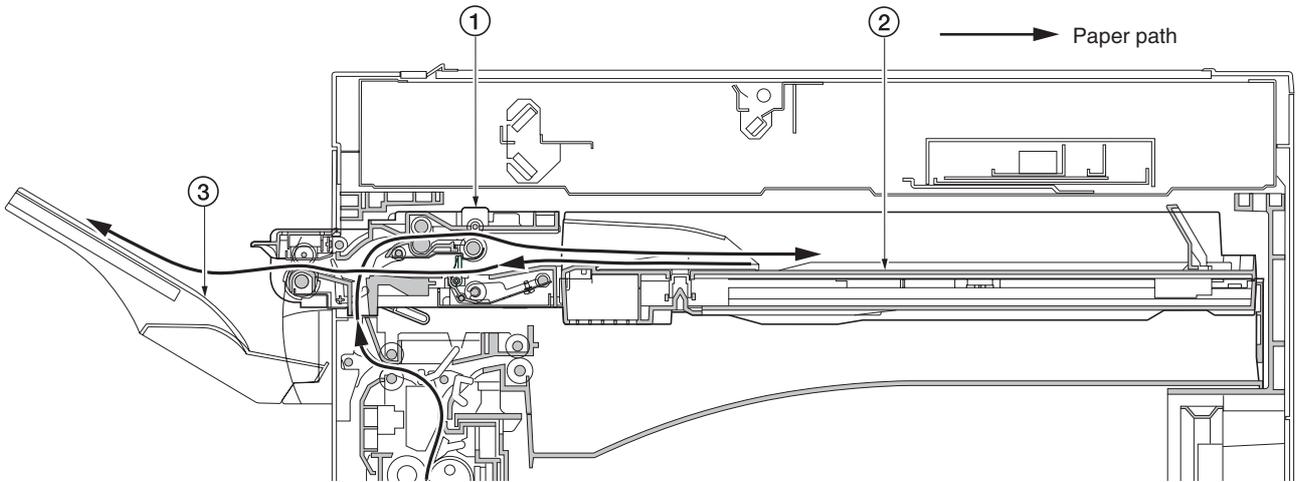


Figure 1-1-2 Machine cross section

- ① Paper conveying section
- ② Intermediate tray section
- ③ Eject section

1-1-4 Drive system

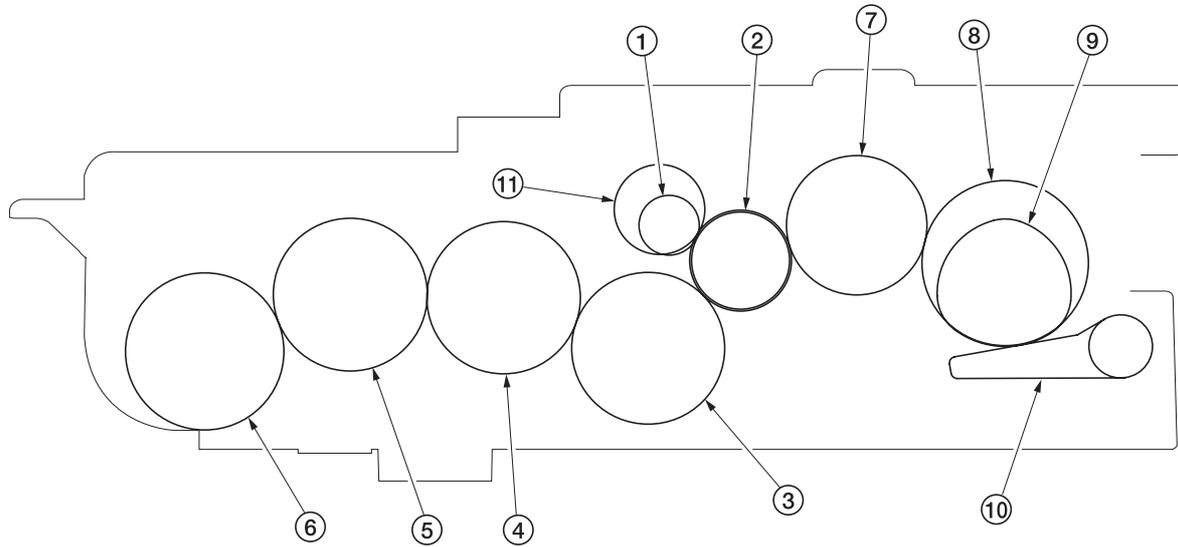


Figure 1-1-3

- | | |
|------------------------------|------------------------|
| ① Paper conveying motor gear | ⑦ Gear 22 |
| ② Gear Z32/Z16 | ⑧ Clutch cam gear |
| ③ Idle gear 24 | ⑨ Clutch cam |
| ④ Idle gear 24 | ⑩ Cam lever |
| ⑤ Idle gear 24 | ⑪ Curl eliminator gear |
| ⑥ Gear 25 | |

1-2-1 Unpacking

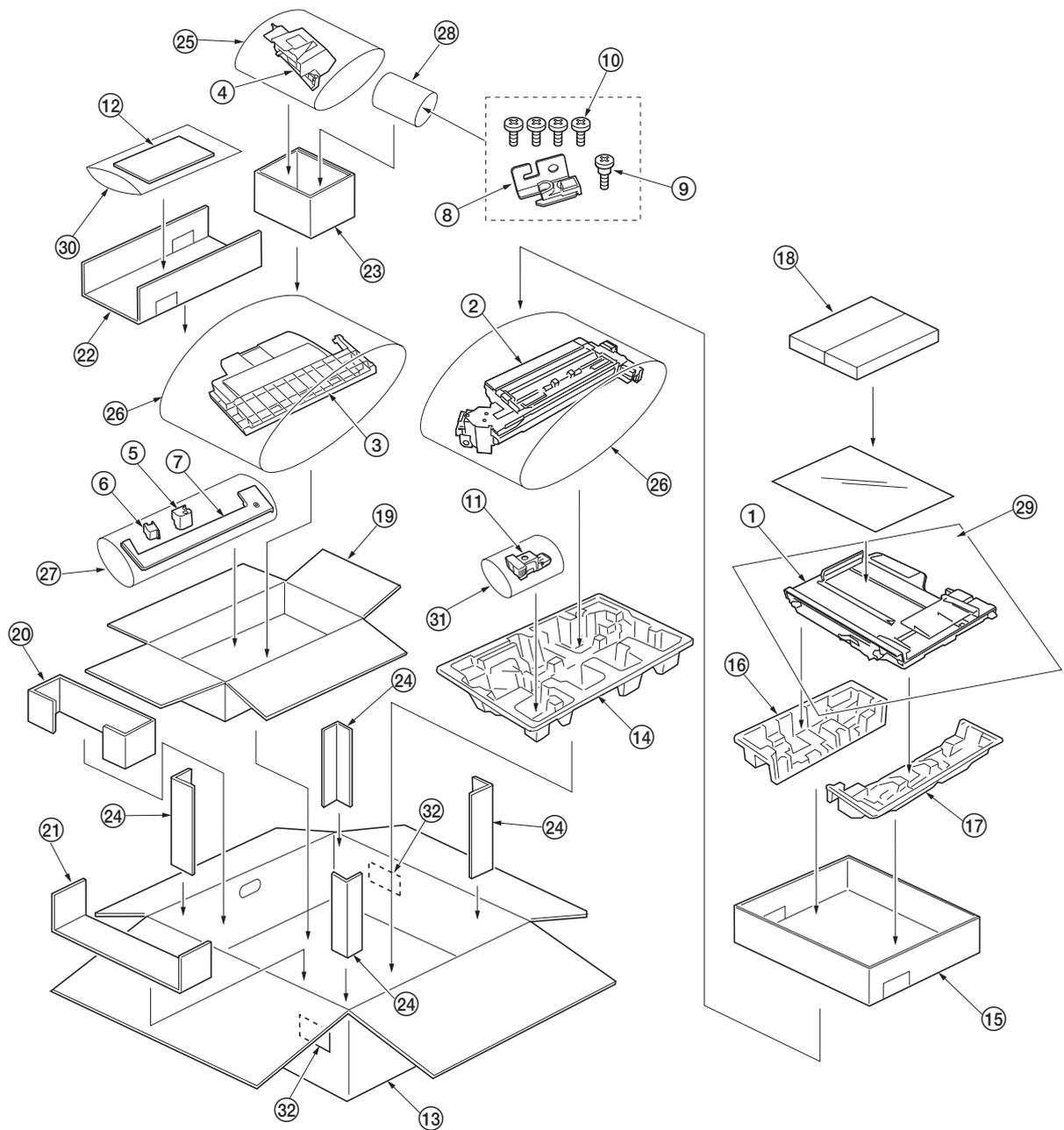


Figure 1-2-1 Unpacking

- | | | |
|---|----------------------|-------------------|
| ① Intermediate tray unit | ⑪ Staple cartridge | ⑳ Spacer A |
| ② Paper conveying unit | ⑫ Installation guide | ㉑ Spacer B |
| ③ Eject tray | ⑬ Outer case | ㉒ Spacer C |
| ④ Stapler cover | ⑭ Bottom pad | ㉓ Spacer D |
| ⑤ Front eject cover | ⑮ Tray case | ㉔ Stay |
| ⑥ Rear eject cover | ⑯ Left tray pad | ㉕ Plastic bag |
| ⑦ Large eject cover | ⑰ Right tray pad | ㉖ PE bag |
| ⑧ Hook | ⑱ Upper tray pad | ㉗ Plastic bag |
| ⑨ Pin | ㉒ Accessory case | ㉘ Plastic bag |
| ⑩ Binding tap tight S chrome screws M3 × 06 | ㉓ Spacer A | ㉙ Plastic bag |
| | ㉔ Spacer B | ㉚ Bar-code labels |
| | | ㉛ Plastic bag |
| | | ㉜ Plastic sheet |
| | | ㉝ Plastic bag |
| | | ㉞ Plastic bag |
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1-3-1 Paper misfeed detection

(1) Paper misfeed indication

When paper jams, the machine immediately stops operation and the occurrence of a paper jam is indicated on the message display of MFP.

To remove the jammed paper, lower the intermediate tray.

To reset the paper misfeed detection, detach and refit the intermediate tray to turn the tray open/close switch off and on.

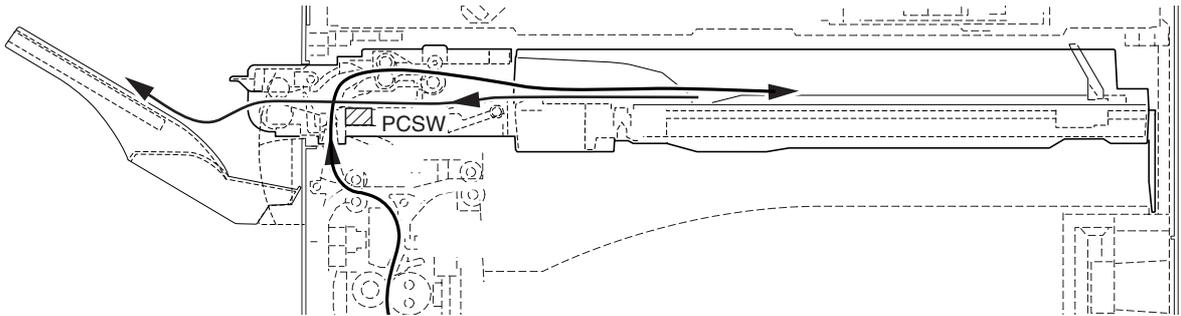


Figure 1-3-1 Paper misfeed detection

(2) Paper misfeed detection conditions

Section	Jam code	Description	Conditions
Finisher	80	Jam between the finisher and MFP	The paper conveying switch does not turn on within 1550 ms of the signal requesting paper ejection is output from the MFP.
	81	Intake jam	During paper intake from the MFP, the paper conveying switch (PCSW) does not turn off within 1960 to 3480 ms (depending on paper size) of paper conveying switch (PCSW) turning on.
	83	Jam during paper conveying for batch ejection 1	When ejection a stack of paper, the paper conveying switch (PCSW) does not turn on within 1590 ms of the paper conveying motor (PCM) turning on.
	84	Jam during paper conveying for batch ejection 2	When ejection a stack of paper, the paper conveying switch (PCSW) does not turn off within 2260 to 3190 ms (depending on the paper size) of the paper conveying motor (PCM) turning on.

(3) Paper misfeeds

Problem	Causes	Check procedures/corrective measures
(1) Paper jams in the finisher when the power switch is turned on.	A piece of paper torn from copy paper is caught around the paper conveying switch.	Remove any found.
	Defective paper conveying switch.	With 5 V DC present at YC2-23 on the main PCB, check if YC2-21 on the main PCB remains low when the paper conveying switch is turned on and off. If it does, replace the paper conveying switch.
(2) Paper jams in the finisher during printing (intake jam). Jam code 81	Defective paper conveying switch.	With 5 V DC present at YC2-23 on the main PCB, check if YC2-21 on the main PCB remains high or low when the paper conveying switch is turned on and off. If it does, replace the paper conveying switch.
	Check if the feedshift roller or feedshift pulley is deformed.	Check visually and replace the pulley or roller if deformed.
(3) Paper jams in the finisher during printing (jam during paper conveying for batch ejection 1). Jam code 83	Defective paper conveying switch.	With 5 V DC present at YC2-23 on the main PCB, check if YC2-21 on the main PCB remains high or low when the paper conveying switch is turned on and off. If it does, replace the paper conveying switch.
	Check if the feedshift roller or press roller is deformed.	Check visually and replace the pulley or roller if deformed.
(4) Paper jams in the finisher during printing (jam during paper conveying for batch ejection 2). Jam code 84	Defective paper conveying switch.	With 5 V DC present at YC2-23 on the main PCB, check if YC2-21 on the main PCB remains high or low when the paper conveying switch is turned on and off. If it does, replace the paper conveying switch.
	Check if the eject roller or eject pulley is deformed.	Check visually and replace the pulley or roller if deformed.

1-3-2 Self-diagnosis

(1) Self-diagnostic function

This unit is equipped with a self-diagnostic function. When a problem is detected, printing is disabled and the problem displayed as a code consisting of “C” followed by a number between 0440 and 8220, indicating the nature of the problem. A message is also displayed requesting the user to call for service. After removing the problem, the self-diagnostic function can be reset by turning the tray open/close switch or MFP safety switch 1 or 2 off and back on.

(2) Self-diagnostic codes

Code	Contents	Remarks	
		Causes	Check procedure/corrective measures
C0440	Finisher communication problem Abnormal communication: a communication error (parity or checksum error) is detected five times in succession.	Defective installation of finisher.	Check the connection of finisher and MFP. Repair if necessary.
		Defective MFP engine PCB or finisher main PCB.	Replace the MFP engine PCB or finisher main PCB and check for correct operation.
C8170	Finisher front side registration motor problem If the front side registration home position sensor is on in initialization, the sensor does not turn off within 570 ms of starting initialization. If the front side registration home position sensor is off in initialization, the sensor does not turn on within 3180 ms of starting initialization.	The front side registration 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 side registration motor malfunctions.	Replace the front side registration motor and check for correct operation.
		The front side registration 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 side registration home position sensor malfunctions.	Replace the front side registration home position sensor and check for correct operation.
		Defective finisher main PCB.	Replace the finisher main PCB and check for correct operation.
C8180	Finisher rear side registration motor problem If the rear side registration home position sensor is on in initialization, the sensor does not turn off within 570 ms of starting initialization. If the rear side registration home position sensor is off in initialization, the sensor does not turn on within 2880 ms of starting initialization.	The rear side registration 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 side registration motor malfunctions.	Replace the rear side registration motor and check for correct operation.
		The rear side registration 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 side registration home position sensor malfunctions.	Replace the rear side registration home position sensor and check for correct operation.
		Defective finisher main PCB.	Replace the finisher main PCB and check for correct operation.

Code	Contents	Remarks	
		Causes	Check procedure/corrective measures
C8190	Finisher trailing edge registration motor problem If the trailing edge registration home position sensor is on in initialization, the sensor does not turn off within 570 ms of starting initialization. If the trailing edge registration home position sensor is off in initialization, the sensor does not turn on within 4550 ms of starting initialization.	The trailing edge registration motor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The trailing edge registration motor malfunctions.	Replace the trailing edge registration motor and check for correct operation.
		The trailing edge registration 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 trailing edge registration home position sensor malfunctions.	Replace the trailing edge registration home position sensor and check for correct operation.
		Defective finisher main PCB.	Replace the finisher main PCB and check for correct operation.
C8210	Finisher front stapler problem The front stapler home position sensor does not change state from non-detection to detection within 200 ms 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 600 ms 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 finisher main PCB.	Replace the finisher main PCB and check for correct operation.

1-3-3 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The paper conveying motor does not operate.	Broken paper conveying motor coil.	Check for continuity across the coil. If none, replace the paper conveying motor.
	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 finisher main PCB.	Check if a motor drive coil energization signal is output at YC2-4, YC2-6, YC2-8 and YC2-10 on the finisher main PCB. If not, replace the finisher main PCB.
(2) The feedshift solenoid does not operate.	Broken feedshift solenoid coil.	Check for continuity across the coil. If none, replace the feedshift solenoid.
	Poor contact of the feedshift solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective finisher main PCB.	Check if YC2-1 and YC2-3 on the finisher main PCB go low. If not, replace the finisher main PCB.
(3) The pickup solenoid does not operate.	Broken pickup solenoid coil.	Check for continuity across the coil. If none, replace the pickup solenoid.
	Poor contact of the pickup solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective finisher main PCB.	Check if YC2-2 on the finisher main PCB goes low. If not, replace the finisher main PCB.
(4) The front side registration motor does not operate.	Broken front side registration motor coil.	Check for continuity across the coil. If none, replace the front side registration motor.
	Poor contact of the front side registration motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective finisher main PCB.	Check if a motor drive coil energization signal is output at YC4-1, YC4-3, YC4-4 and YC4-5 on the finisher main PCB. If not, replace the finisher main PCB.
(5) The rear side registration motor does not operate.	Broken rear side registration motor coil.	Check for continuity across the coil. If none, replace the rear side registration motor.
	Poor contact of the rear side registration motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective finisher main PCB.	Check if a motor drive coil energization signal is output at YC4-6, YC4-8, YC4-9 and YC4-10 on the finisher main PCB. If not, replace the finisher main PCB.
(6) The trailing edge registration motor does not operate.	Broken trailing edge registration motor coil.	Check for continuity across the coil. If none, replace the trailing edge registration motor.
	Poor contact of the trailing edge registration motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective finisher main PCB.	Check if a motor drive coil energization signal is output at YC4-11, YC4-13, YC4-14 and YC4-15 on the finisher main PCB. If not, replace the finisher main PCB.

1-3-4 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) Paper jams.	Check if the contact between the feedshift roller and feedshift pulley is correct.	Check and remedy.
	Check if the contact between the feedshift roller and press roller is correct.	Check and remedy.
	Check if the contact between the eject roller and eject pulley is correct.	Check and remedy.
(2) Abnormal noise is heard.	Check if the rollers and gears operate smoothly.	Grease the bushings and gears.

1-4-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the power switch off and disconnect the power plug before starting disassembly.
- When handling PCBs, do not touch connectors with bare hands or damage the board.
- Do not touch any PCB containing ICs with bare hands or any object prone to static charge.
- Use the following testers when measuring voltages:

Hioki 3200

Sanwa MD-180C

Sanwa YX-360TR

Beckman TECH300

Beckman DM45

Beckman 330*

Beckman 3030*

Beckman DM850*

Fluke 8060A*

Arlec DMM1050

Arlec YF1030C

* Capable of measuring RMS values.

(2) Adjusting the positions of the front side registration cursor, rear side registration cursor and trailing edge registration cursor (reference)

Perform the following adjustment if paper registration is poor or stapling is made outside the specified area.

Procedure

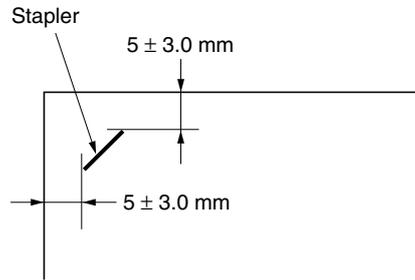
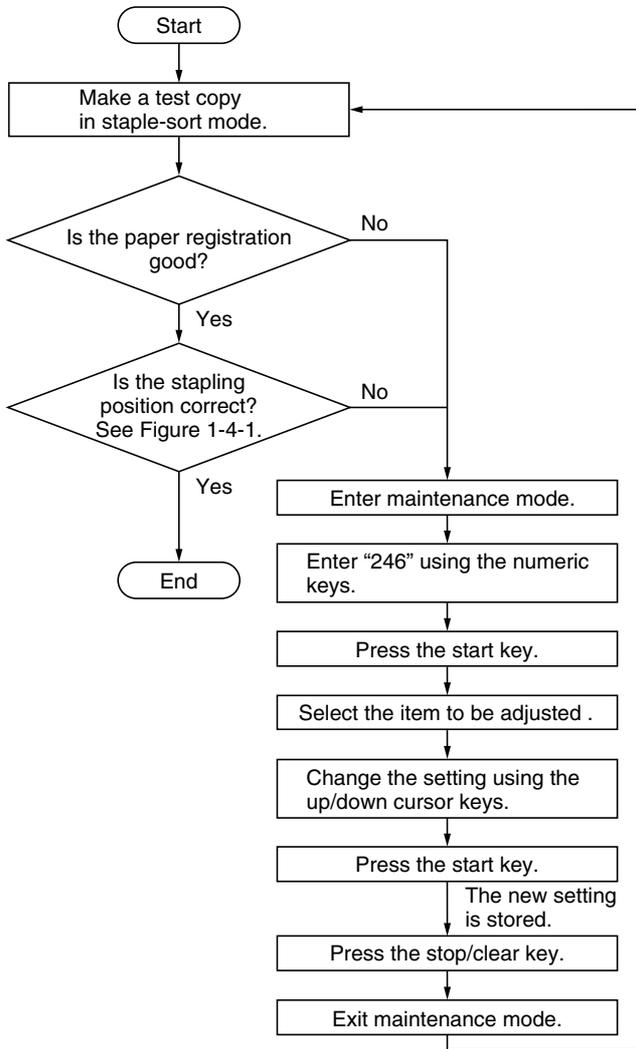


Figure 1-4-1 Stapling position

ADJUST FRONT JOGGER: Stop position of the front side registration cursor
 ADJUST REAR JOGGER: Stop position of the rear side registration cursor
 ADJUST END JOGGER: Stop position of the trailing edge registration cursor

Setting range: -4 to 4
 Reference: 4
 Changing the value by 1 changes the position by 0.56 mm.
 Increasing the value moves the front or rear side registration cursor or trailing edge registration cursor outward (➡); decreasing the value moves each cursor inward (⇐).

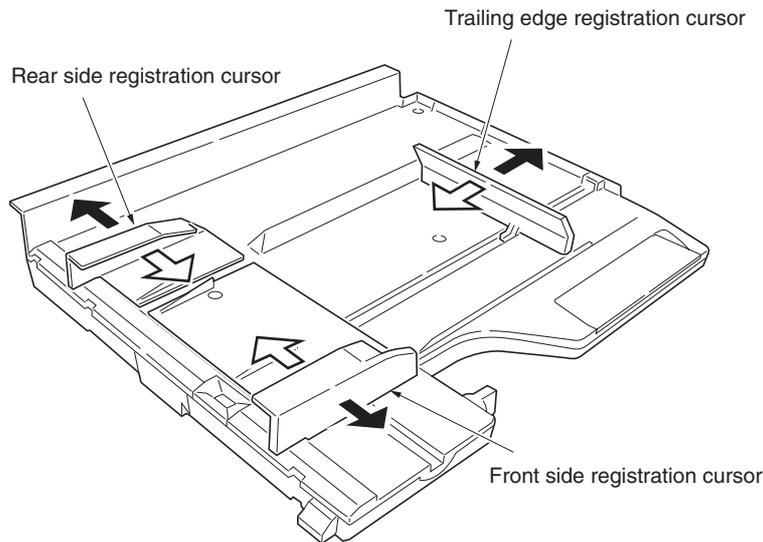


Figure 1-4-2

(3) Cleaning the stapler

During periodic maintenance, remove all the staples remaining inside the machine due to failure of stapling.

Procedure

1. Open the front and conveying covers of the MFP.
2. Remove the staple cartridge.
3. Remove the four screws securing the stapler cover and then the cover.
4. Remove the staples attracted to the magnet on the inside of the stapler cover.
5. Refit all the removed parts.

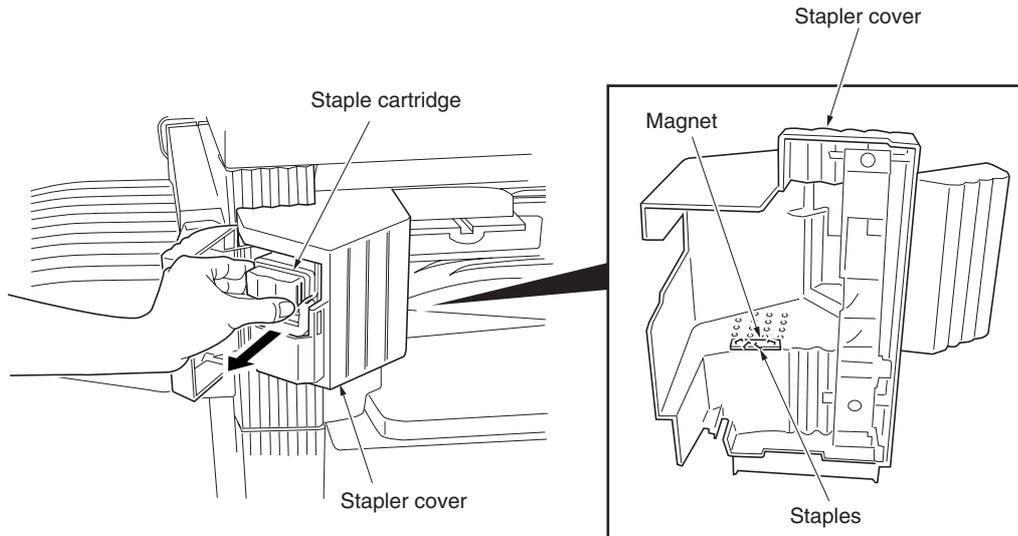


Figure 1-4-3

(4) Adjusting the pressure of curl eliminator mechanism

Increase the pressure of the curl eliminator mechanism to reduce upward curling of paper stacked on the intermediate tray if a paper jam occurs when batch ejection is performed because of strong upward curling.

Procedure

1. Remove the paper conveying unit from the MFP.
2. Loosen the two screws from the front and rear curl eliminator pressure adjusting plates respectively and then remove the plates.
3. Refit the all removed parts.

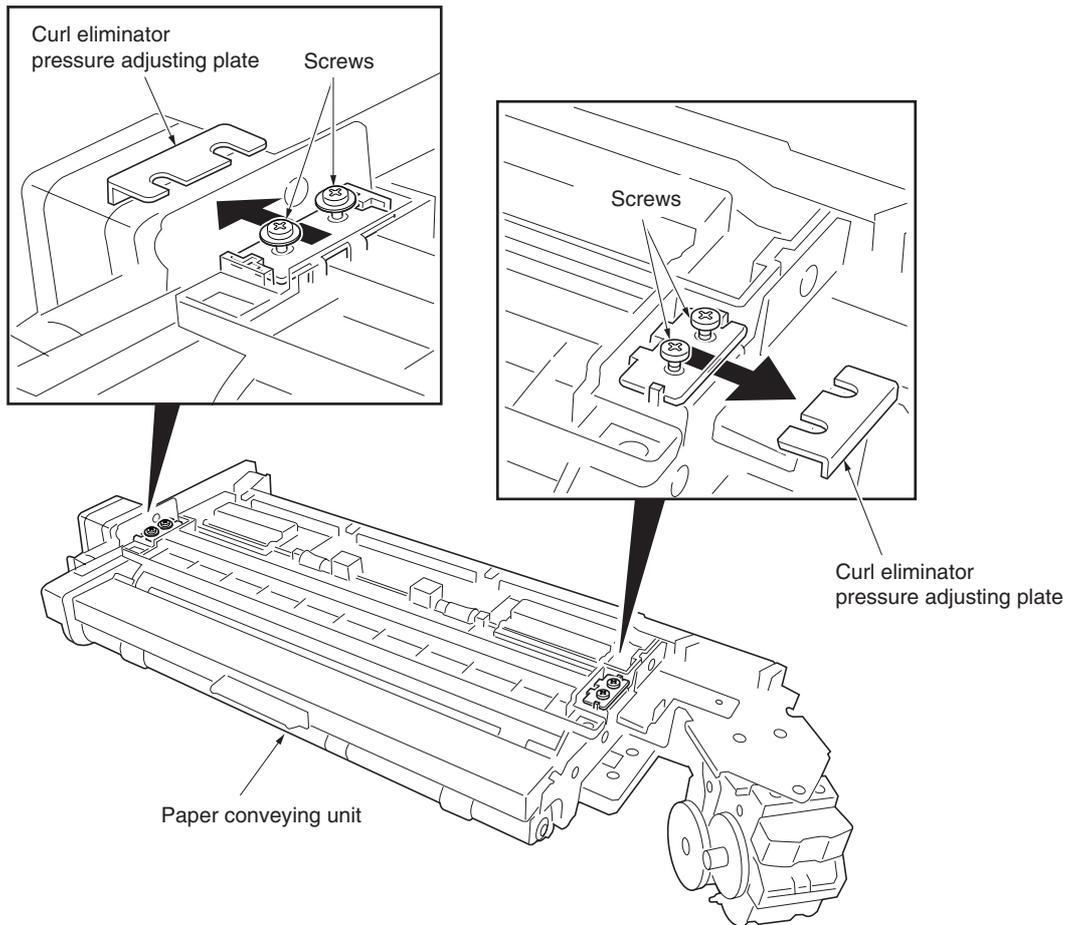


Figure 1-4-4

2-1-1 Construction of each section

The paper conveying section consists of the components shown in Figure 2-1-1. It switches the path for the paper conveyed from the MFP in sort mode. Also the paper conveying section contains a curl eliminator mechanism, which reduces curling of paper with curl eliminator rollers.

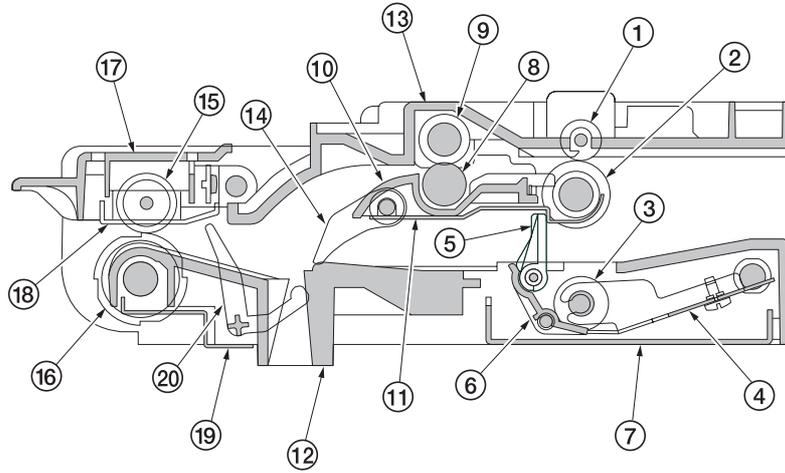


Figure 2-1-1 Paper conveying section

- | | |
|--------------------------------|-----------------------------------|
| ① Feedshift pulley | ⑪ Lower intermediate guide |
| ② Feedshift roller | ⑫ Paper conveying base |
| ③ Press roller | ⑬ Upper guide |
| ④ Stopper press mount | ⑭ Feedshift claw |
| ⑤ Stopper | ⑮ Eject pulley |
| ⑥ Stopper link | ⑯ Eject roller |
| ⑦ Press plate | ⑰ Eject cover |
| ⑧ Upper curl eliminator roller | ⑱ Eject guide |
| ⑨ Lower curl eliminator roller | ⑲ Lower guide plate |
| ⑩ Upper intermediate guide | ⑳ Paper conveying switch actuator |

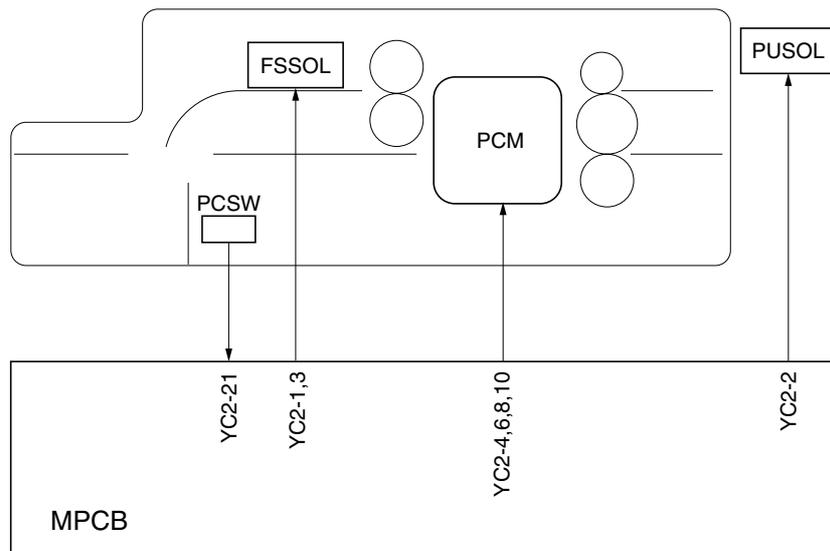


Figure 2-1-2 Paper conveying section block diagram

(1) Paper conveying operation in sort mode

When a print is made in the sort mode, the feedshift solenoid (FSSOL) turns on and the feedshift guide of the MFP operates to switch the paper path to the paper conveying unit. After curling of the conveyed paper is eliminated by the curl eliminator rollers, the paper is conveyed to the intermediate tray by the feedshift roller. When the trailing edge registration cursor of the intermediate tray shifts the paper stocked in the intermediate tray to the stopper, the pickup solenoid (PUSOL) turns on to lift the feedshift roller and eject roller. The stack of paper on the intermediate tray is ejected to the eject tray by the feedshift roller and eject roller.

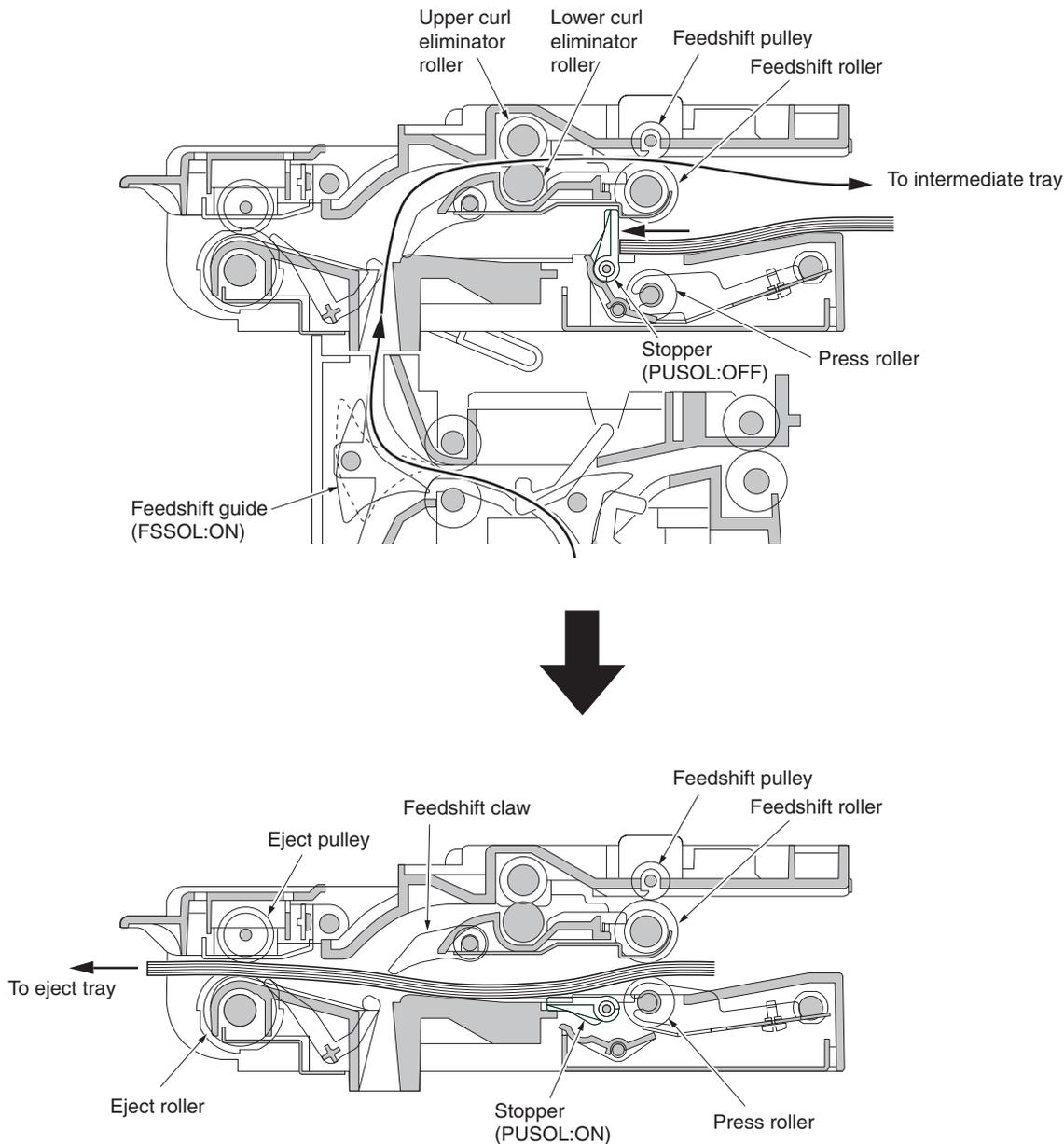


Figure 2-1-3

2-1-2 Intermediate tray section

The intermediate tray section consists of the components shown in Figure 2-1-4. It stores and evens up the paper conveyed from the paper conveying section and returns the stack of paper to the paper conveying section.

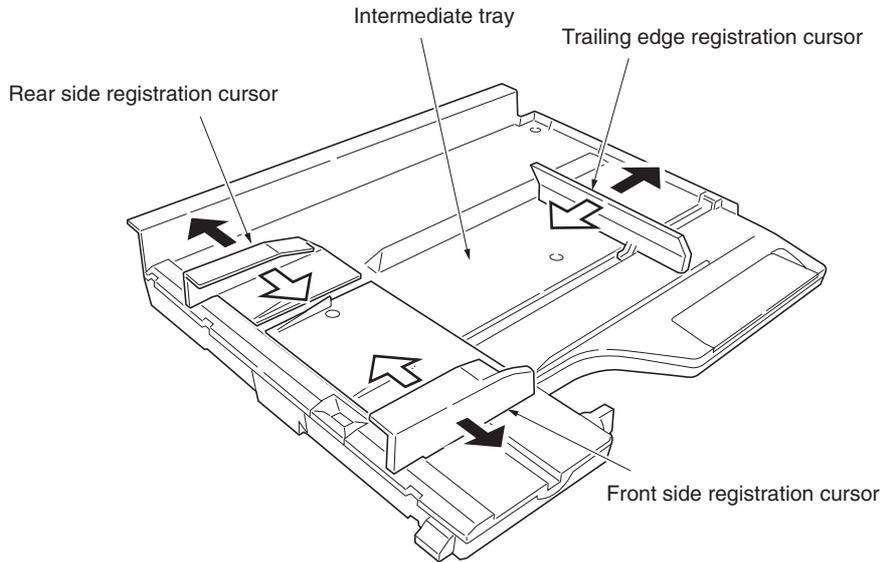


Figure 2-1-4 Intermediate tray section

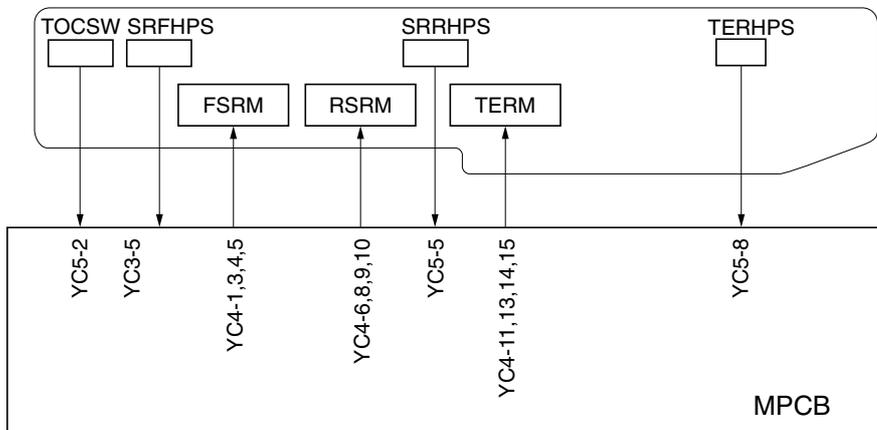
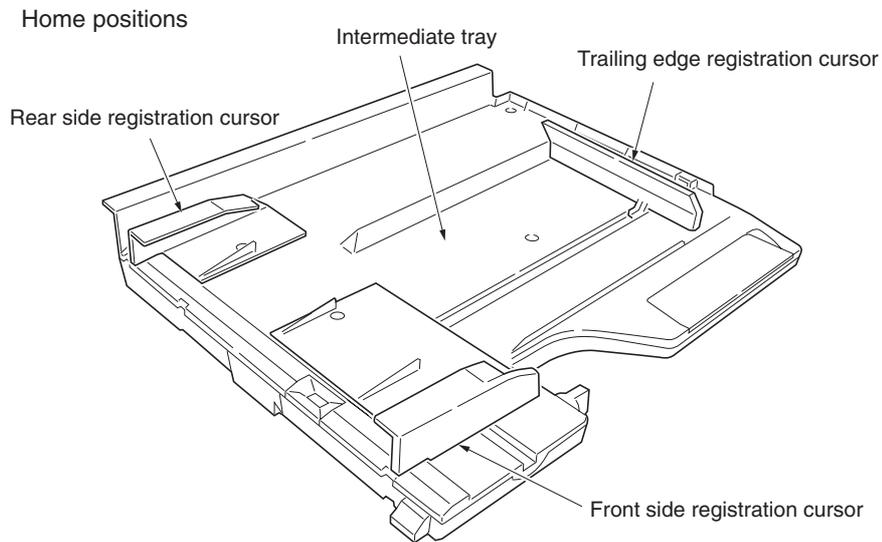


Figure 2-1-5 Intermediate tray section block diagram

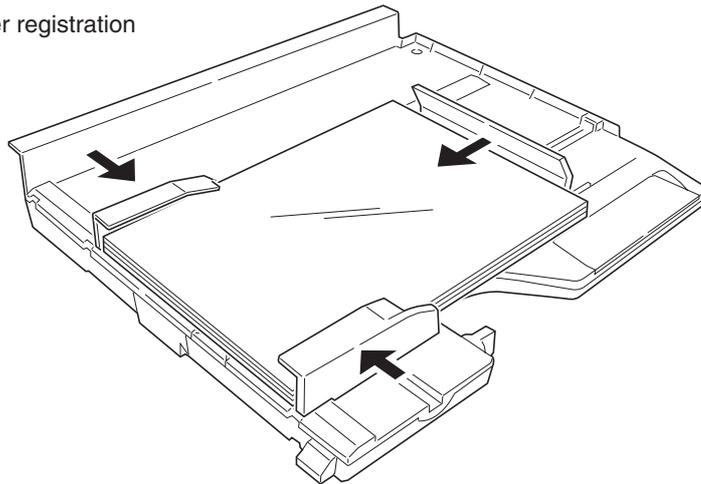
(1) Paper registration on the intermediate tray

In sort mode, the front and rear side registration cursors move to the size of the paper used to even up the sides of the stack of paper and the trailing edge registration cursor shifts the paper to the paper conveying section.

In staple-sort mode, the front and rear side registration cursors even up the sides of the stack of paper and shift the stack toward the machine front, and then the trailing edge registration cursor shifts the stack to the stapling position.



Paper registration



Shifting the paper to the stapling position

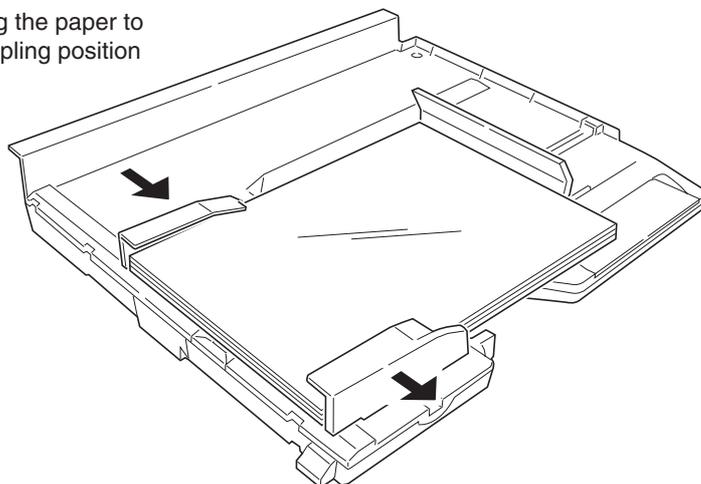


Figure 2-1-6

2-1-3 Stapler section

In staple-sort mode, paper stocked on the intermediate tray is stapled by the stapler. The stapler motor (STM) drives the stapler cam via the stapler drive gear to staple paper.

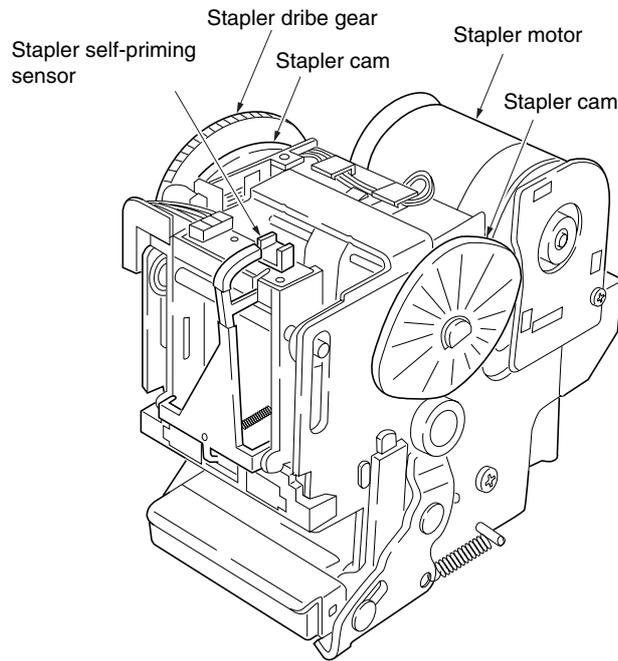


Figure 2-1-7 Stapler section

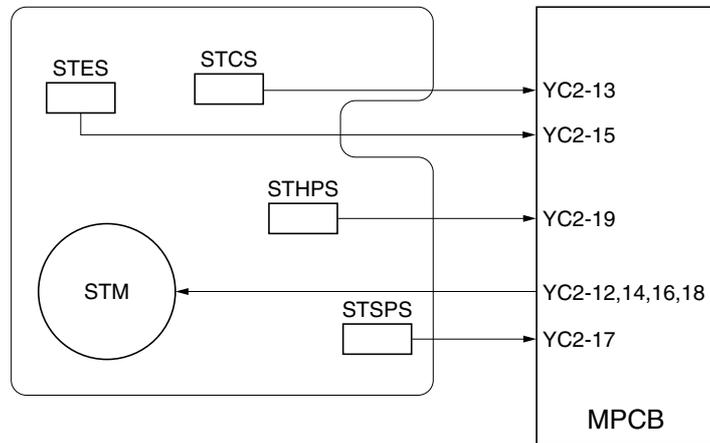


Figure 2-1-8 Stapler section block diagram

2-2-1 Electrical parts layout

(1) Paper conveying section

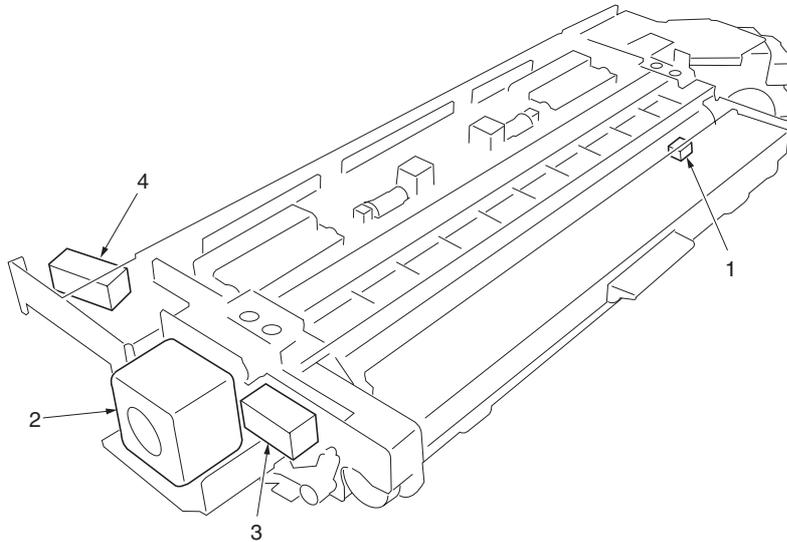


Figure 2-2-1 Paper conveying section

- 1. Paper conveying switch (PCSW) Detects a paper jam in the finisher.
- 2. Paper conveying motor (PCM) Drives the paper conveying section.
- 3. Feedshift solenoid (FSSOL) Operates the feedshift guide of the MFP.
- 4. Pickup solenoid (PUSOL) Operates the press roller.

(2) Intermediate tray section

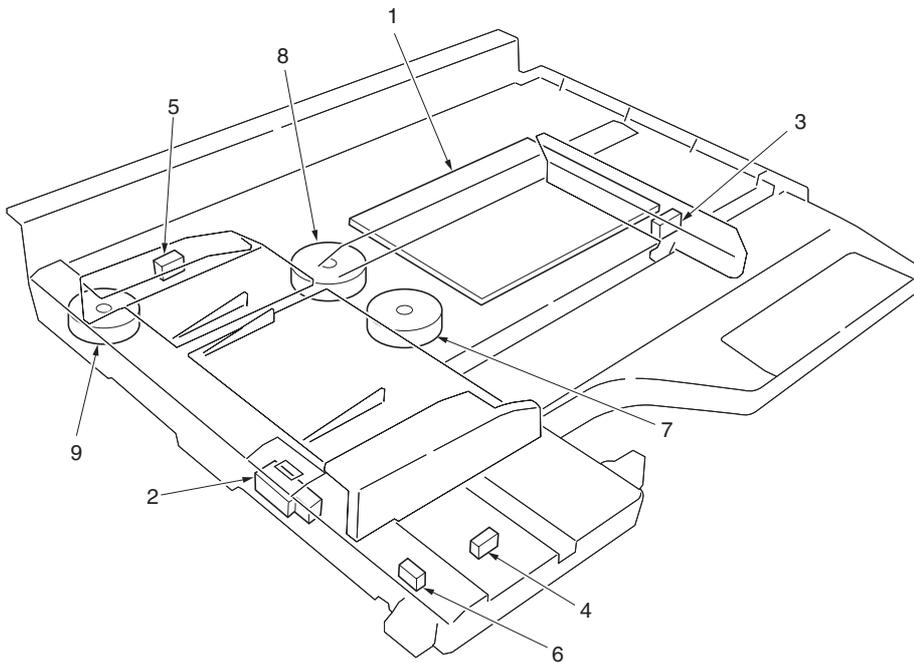


Figure 2-2-2 Intermediate tray section

- 1. Main PCB (MPCB) Controls electrical components.
- 2. Intermediate tray sensor (ITS) Detects the presence of paper on the intermediate tray.
- 3. Trailing edge registration home position sensor (TERHPS) Detects the trailing edge registration cursor in the home position.
- 4. Side registration front home position sensor (SRFHPS) Detects the front side registration cursor in the home position.
- 5. Side registration rear home position sensor (SRRHPS) Detects the rear side registration cursor in the home position.
- 6. Tray open/close switch (TOCSW) Detects if the intermediate tray is opened or closed.
- 7. Trailing edge registration motor (TERM) Drives the trailing edge registration cursor.
- 8. Front side registration motor (FSRM) Drives the front side registration cursor.
- 9. Rear side registration motor (RSRM) Drives the rear side registration cursor.

(3) Stapler section

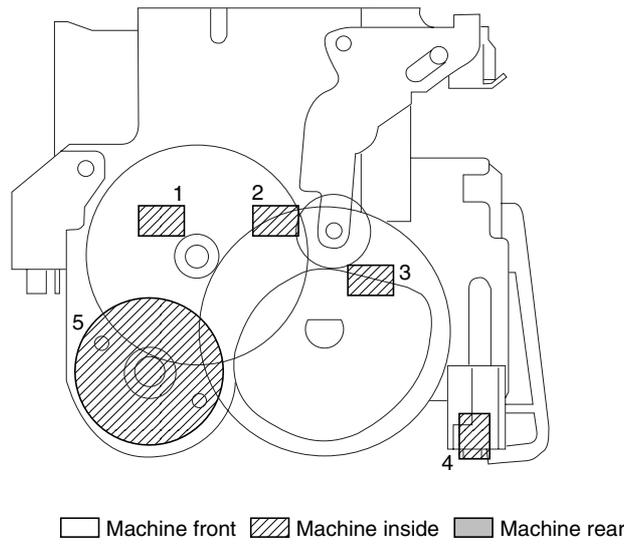


Figure 2-2-3 Stapler section

- 1. Stapler empty sensor (STES) Detects the presence of staples.
- 2. Staple cartridge sensor (STCS) Detects the presence of the staple 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

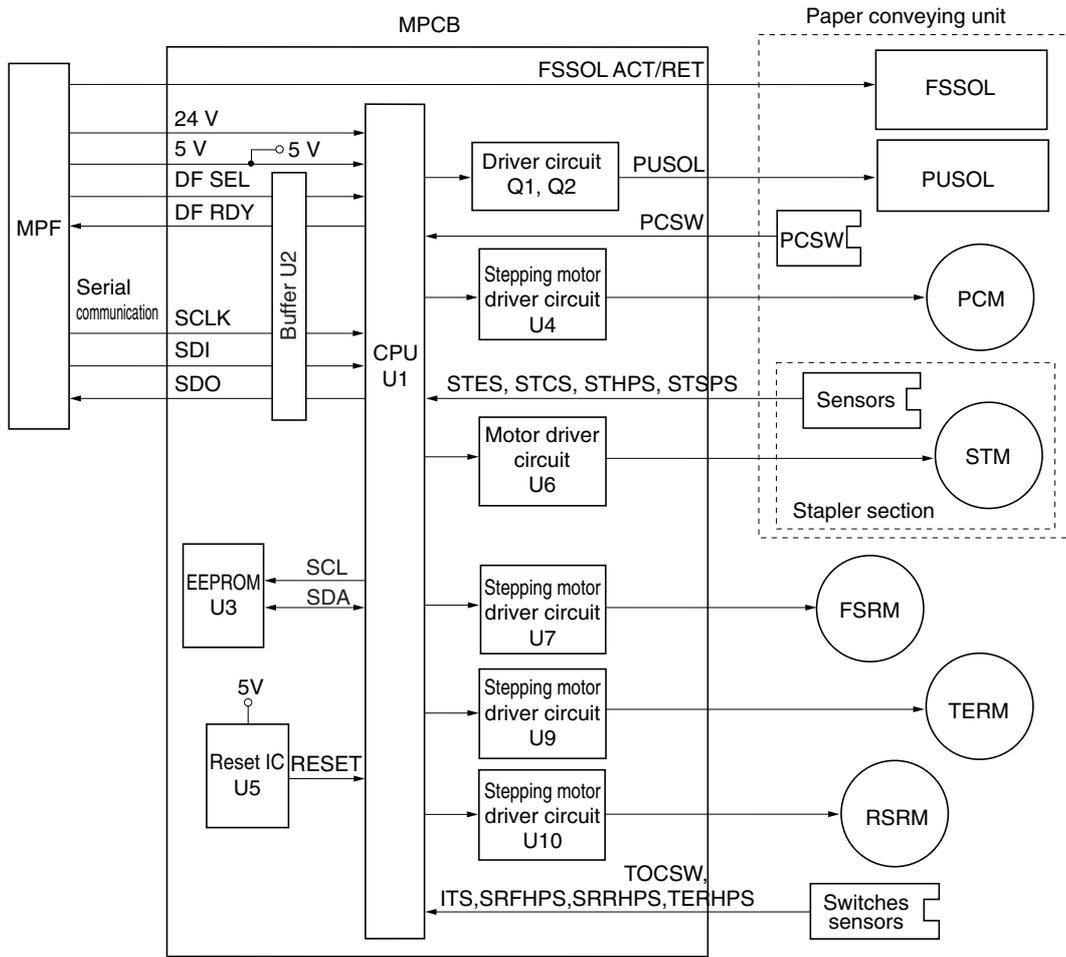


Figure 2-3-1 Main PCB block diagram

The main PCB (MPCB) consists mainly of the CPU U1 and motor drive circuit. The CPU U1 detects the condition of the switches and sensors and controls the motors and solenoids by serially communicating with the MFP. The feedshift solenoid (FSSOL) operates with the control signals from the MFP.

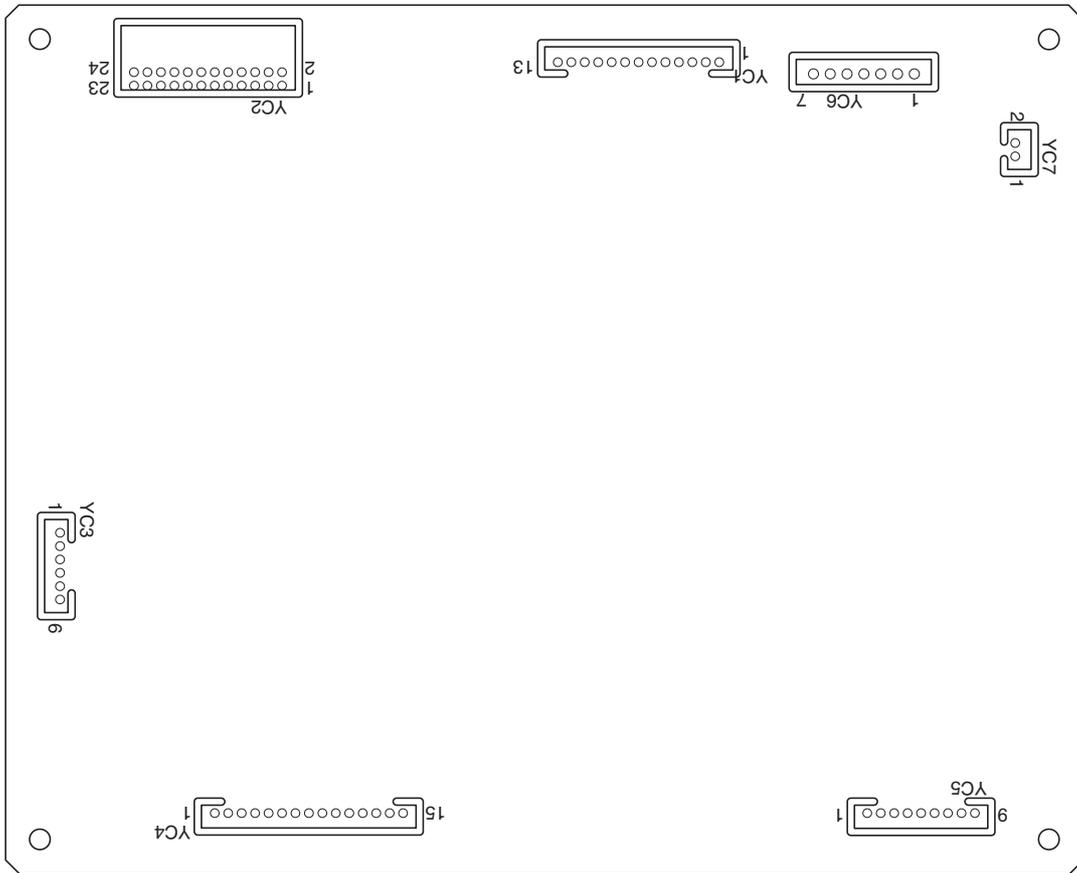


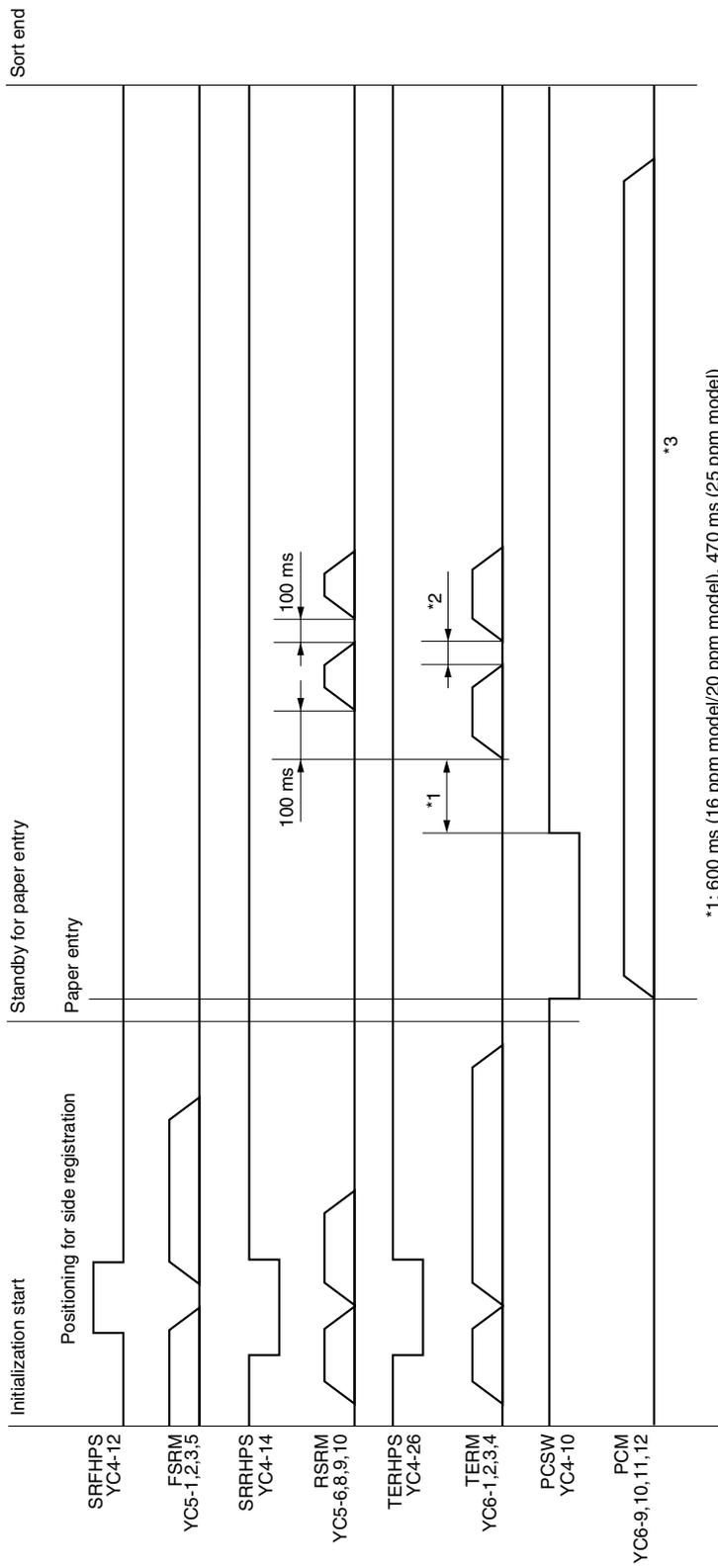
Figure 2-3-2 Main PCB silk-screen diagram

Connector	Pin No.	Signal	I/O	Description
YC1	1	24V	I	24 V DC supply
Connected to the MFP	2	24V	I	24 V DC supply
	3	PGND	-	Ground
	4	PGND	-	Ground
	5	5V	I	5 V DC supply
	6	SGND	-	Ground
	7	DF SEL	I	Finisher select signal (SEL)
	8	DF RDY	O	Finisher ready signal (RDY)
	9	SDI	I	Serial communication data signal
	10	SDO	O	Serial communication data signal
	11	SCLK	I	Clock signal for serial communication
	12	FSSOL ACT	I	FSSOL (ACT): On/Off
	13	FSSOL RET	I	FSSOL (RET): On/Off
YC2	1	FSSOL RET	O	FSSOL drive signal (ACT)
Connected to the paper conveying unit (FSSOL, PUSOL, PCM, stapler section and PCSW)	2	PUSOL	O	PUSOL: On/Off
	3	FSSOL ACT	O	FSSOL drive signal (ACT)
	4	PCM A	O	PCM drive pulse (A)
	5	FSSOL 24V	O	24 V DC supply for FSSOL
	6	PCM B	O	PCM drive pulse (B)
	7	PUSOL 24V	O	24 V DC supply for PUSOL
	8	PCM _A	O	PCM drive pulse (_A)
	9	PCM A 24V	O	24 V DC supply for PCM A
	10	PCM _B	O	PCM drive pulse (_B)
	11	PCM B 24V	O	24 V DC supply for PCM B
	12	STM R	O	STM reverse rotation drive signal
	13	STCS	I	STCS detection signal
	14	STM R	O	STM reverse rotation drive signal
	15	STES	I	STES detection signal
	16	STM F	O	STM forward rotation drive signal
	17	STSPS	O	STSPS detection signal
	18	STM F	O	STM forward rotation drive signal
	19	STHS	I	STHS detection signal
	20	ST GND	-	Ground
	21	PCSW	I	PCSW detection signal
	22	GND	-	Ground
	23	PCSW 5V	O	5 V DC supply for PCSW
	24	ST 5V	O	5 V DC supply for ST
YC3	1	ITS 5V	O	5 V DC supply for ITS
Connected to ITS and SRFHPS	2	ITS	I	ITS detection signal
	3	ITS GND	-	Ground
	4	SRFHPS 5V	O	5 V DC supply for SRFHPS
	5	SRFHPS	I	SRFHPS detection signal
	6	SRFHPS GND	-	Ground

Connector	Pin No.	Signal	I/O	Description
YC4	1	FSRM A	O	FSRM drive pulse (A)
Connected to FSRM, RSRM and TERM	2	FSRM 24V	O	24 V DC supply for FSRM
	3	FSRM _B	O	FSRM drive pulse (_B)
	4	FSRM B	O	FSRM drive pulse (B)
	5	FSRM _A	O	FSRM drive pulse (_A)
	6	RSRM A	O	RSRM drive pulse (A)
	7	RSRM 24V	O	24 V DC supply for RSRM
	8	RSRM _B	O	RSRM drive pulse (_B)
	9	RSRM B	O	RSRM drive pulse (B)
	10	RSRM _A	O	RSRM drive pulse (_A)
	11	TERM A	O	TERM drive pulse (A)
	12	TERM 24V	O	24 V DC supply for TERM
	13	TERM _B	O	TERM drive pulse (_B)
	14	TERM B	O	TERM drive pulse (B)
	15	TERM _A	O	TERM drive pulse (_A)
YC8	1	5 V	-	-
Not used	2	Vpp	-	-
	3	FSO	-	-
	4	FSI	-	-
	5	N.C	-	-
	6	FRSTN	-	-
	7	SGND	-	-
YC5	1	TOCSW 5V	O	5 V DC supply for TOCSW
Connected to TOCSW, SRRHPS and TERHPS	2	TOCSW	I	TOCSW detection signal
	3	TOCSW GND	-	Ground
	4	SRRHPS 5V	O	5 V DC supply for SRRHPS
	5	SRRHPS	I	SRRHPS detection signal
	6	SRRHPS GND	-	Ground
	7	TERHPS 5V	O	5 V DC supply for TERHPS
	8	TERHPS	I	TERHPS detection signal
	9	TERHPS GND	-	Ground

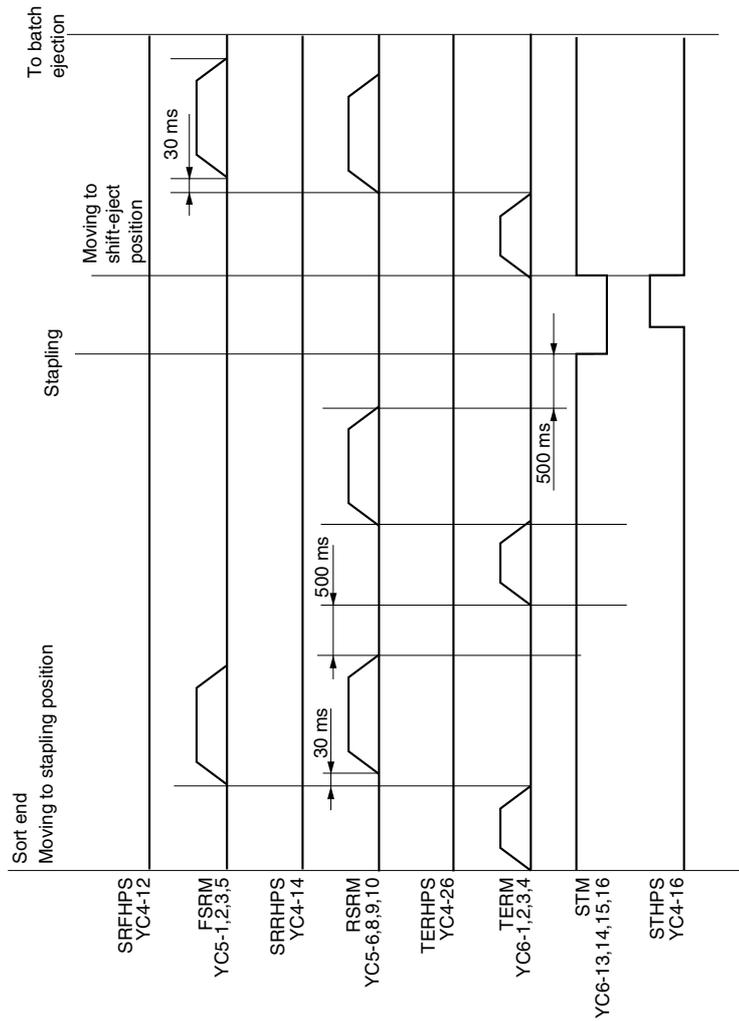
Timing chart No. 1

① Operation start

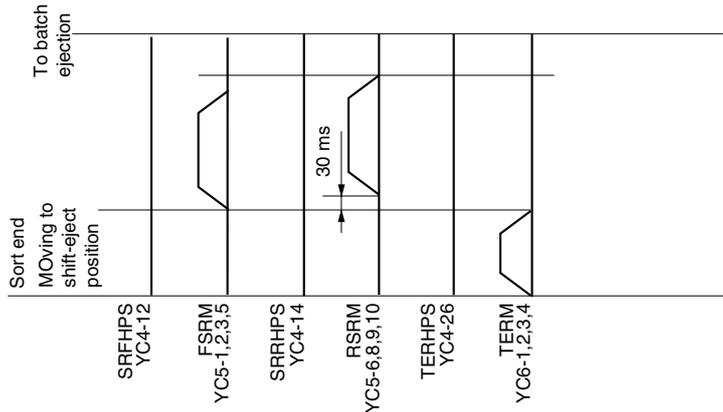


Timing chart No. 2

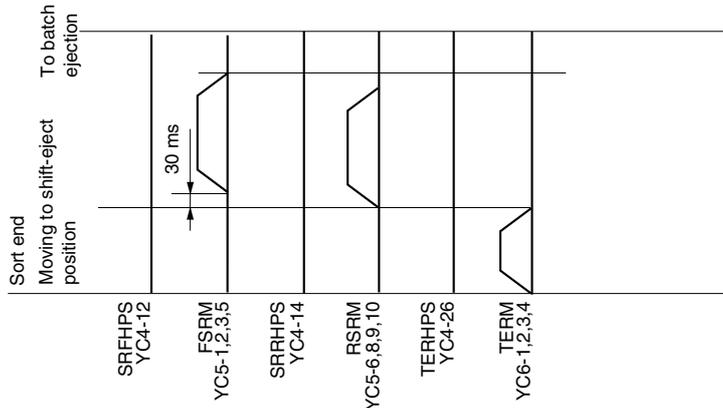
② Stapling operation



③ Non-stapling operation (for front-shift ejection)

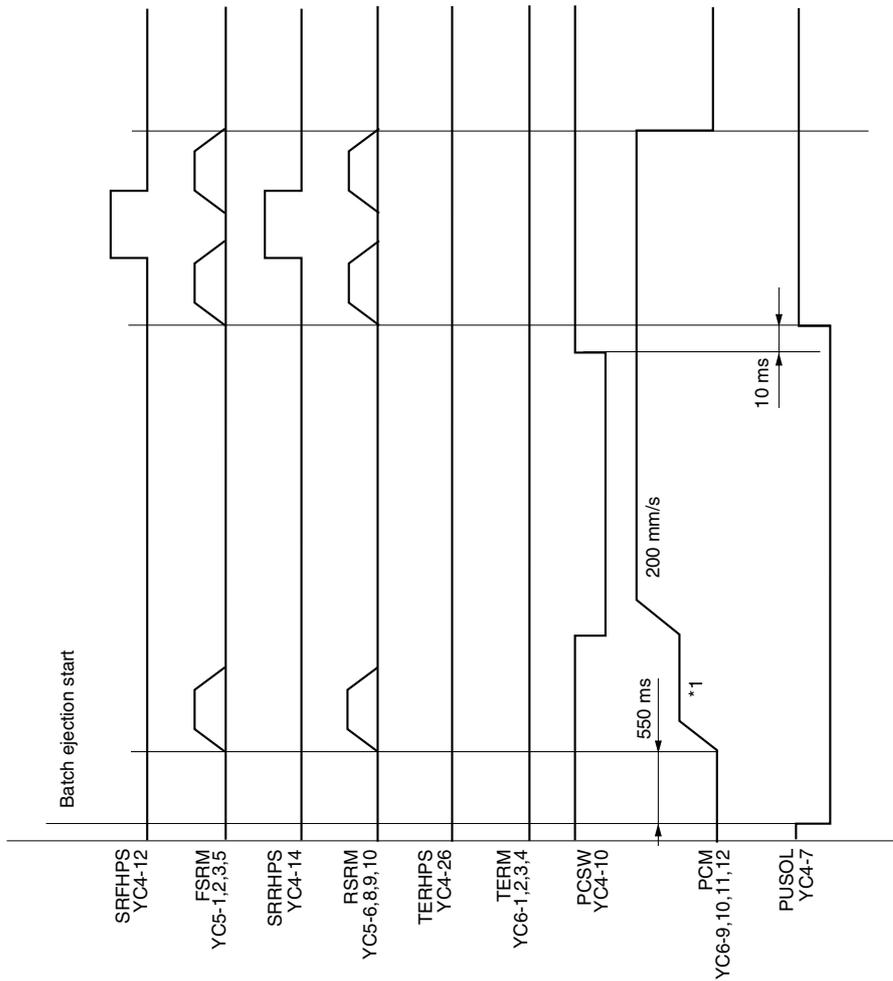


④ Non-stapling operation (for rear-shift ejection)



Timing chart No. 3

⑤ Batch ejection



*1: 100 mm/s (16 ppm model/20 ppm model), 127 mm/s (25 ppm model)

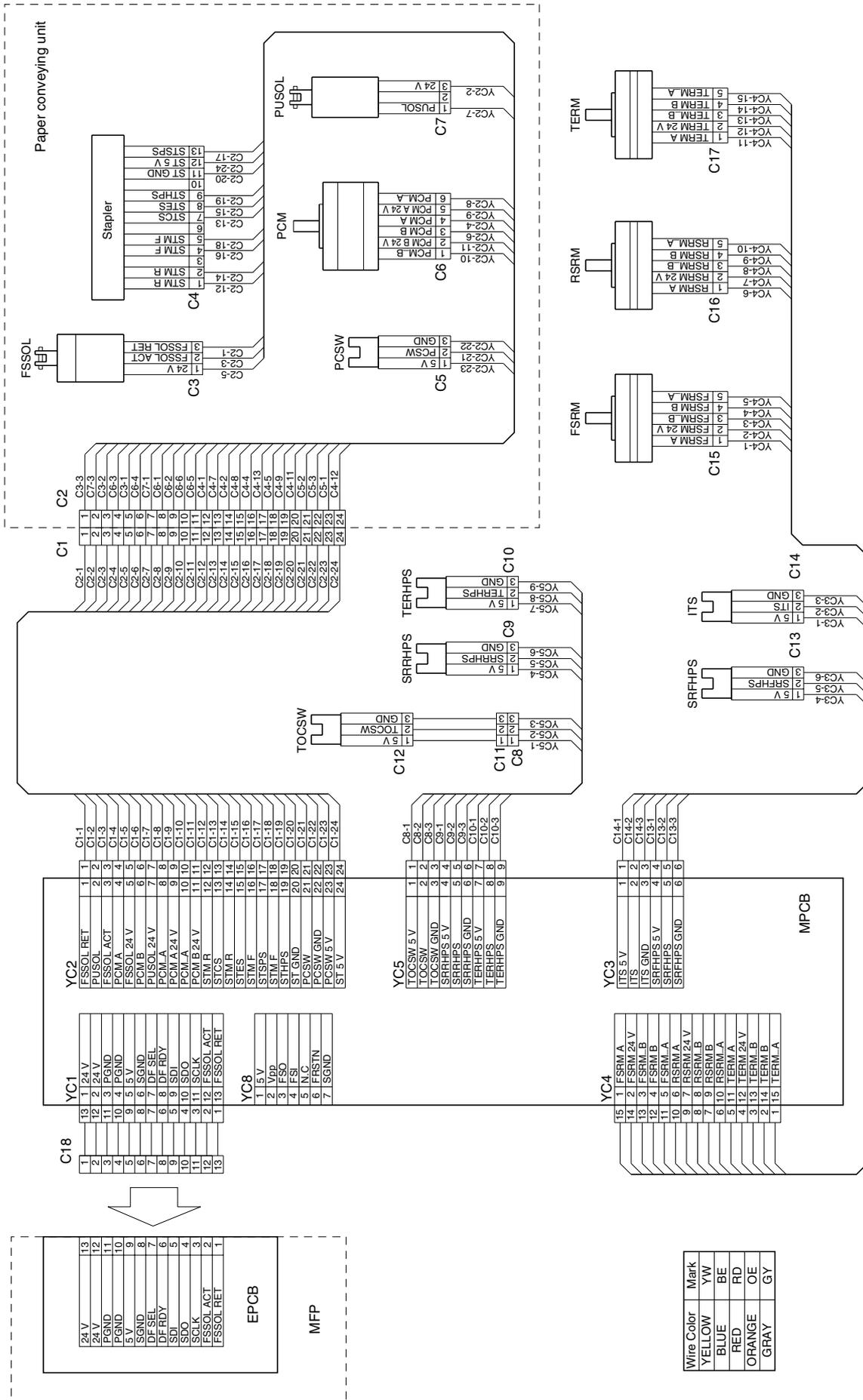
3HP

Periodic maintenance procedures

- Finisher

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Stapler section	Magnet	Clean	Every service	Remove the staples attracted to the magnet inside the stapler cover.	1-4-3

Wiring diagram



KYOCERA MITA EUROPE B.V.

Hoeksteen 40, 2132 MS Hoofddorp,
The Netherlands
Phone: +31.(0)20.654.000
Home page: <http://www.kyoceramita-europe.com>
Email: info@kyoceramita-europe.com

KYOCERA MITA NEDERLAND B.V.

Hoeksteen 40 2132 MS Hoofddorp
The Netherlands
Phone: +31.(0)20.587.7200

KYOCERA MITA (UK) LTD.

8 Beacontree Plaza
Gillette Way,
Reading Berks RG2 0BS, UK
Phone: +44.(0)118.931.1500

KYOCERA MITA ITALIA S.P.A.

Via Verdi 89 / 91 20063 Cernusco sul Naviglio,
Italy
Phone: +39.02.92179.1

S.A. KYOCERA MITA BELGIUM N.V.

Hermesstraat 8A 1930 Zaventem Belgium
Phone: +32.(0)2.720.9270

KYOCERA MITA FRANCE S.A.

Parc Les Algorithmes
Saint Aubin
91194 GIF-SUR-YVETTE
France
Phone: +33.(0)1.6985.2600

KYOCERA MITA ESPAÑA S.A.

Edificio Kyocera, Avda de Manacor N. 2,
Urb. Parque Rozas 28290 Las Rozas,
Madrid, Spain
Phone: +34.(0)91.631.8392

KYOCERA MITA FINLAND OY

Kirvesmiehenkatu 4 00810 Helsinki,
Finland
Phone: +358.(0)9.4780.5200

KYOCERA MITA (SCHWEIZ) AG

Holzliwisen Industriestrasse 28
8604 Volketswil, Switzerland
Phone: +41.(0)1.908.4949

KYOCERA MITA DEUTSCHLAND GMBH

Mollsfeld 12 D-40670 Meerbusch,
Germany
Phone: +49.(0)2159.918.0

KYOCERA MITA GMBH AUSTRIA

Eduard-Kittenberger Gasse 95
1230 Wien, Austria
Phone: +43.(0)1.86338.0

KYOCERA MITA SVENSKA AB

Box 1402 171 27 Solna, Sweden
Phone: +46.(0)8.546.550.00

KYOCERA MITA NORGE

Postboks 150 Oppsal, NO 0619 Oslo
Olaf Helsetsvei 6, NO 0694 Oslo
Phone: +47.(0)22.62.73.00

KYOCERA MITA DANMARK A/S

Slotsmarken 11, 2
DK-2970 Hørsholm, Denmark
Phone: +45.7022.3880

KYOCERA MITA PORTUGAL LDA.

Rua do Centro Cultural, no 41 1700-106
Lisbon, Portugal
Phone: +351.(0)21.842.9100

KYOCERA MITA SOUTH AFRICA

(PTY) LTD.
527 Kyalami Boulevard,
Kyalami Business Park 1685 Midrand South
Phone: +27.(0)11.466.3290

KYOCERA MITA AMERICA, INC.

Headquarters:

225 Sand Road,
Fairfield, New Jersey 07004-0008,
U.S.A.
Phone: (973) 808-8444

KYOCERA MITA AUSTRALIA PTY. LTD.

Level 3, 6-10 Talavera Road, North Ryde,
N.S.W. 2113 Australia
Phone: (02) 9888-9999

KYOCERA MITA NEW ZEALAND LTD.

1-3 Parkhead Place, Albany
P.O. Box 302 125 NHPC, Auckland,
New Zealand
Phone: (09) 415-4517

KYOCERA MITA (THAILAND) CORP., LTD.

9/209 Ratchada-Prachachem Road,
Bang Sue, Bangkok 10800, Thailand
Phone: (02) 586-0320

KYOCERA MITA SINGAPORE

PTE LTD.
121 Genting Lane, 3rd Level,
Singapore 349572
Phone: 67418733

KYOCERA MITA HONG KONG LIMITED

11/F., Mita Centre,
552-566, Castle Peak Road,
Tsuen Wan, New Territories,
Hong Kong
Phone: 24297422

KYOCERA MITA TAIWAN

Corporation.
7F-1~2, No.41, Lane 221, Gangchi Rd.
Neihu District, Taipei, Taiwan, 114. R.O.C.
Phone: (02) 87511560

KYOCERA MITA

2-28, 1-chome, Tamatsukuri, Chuo-ku
Osaka 540-8585, Japan
Phone: (06) 6764-3555
<http://www.kyoceramita.com>

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