KYOCERA

# PF-645

# SERVICE MANUAL

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843CY110

## 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.

KYOCERA

# 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. .....

- 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 power 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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# CONTENTS

### 1-1-1 Specifications

| | |
|---|---|
| Type | Desk type |
| Paper feed system | Friction retard system |
| Paper capacity | 500 sheets (80 g/$m^2$, 110 μ thick) |
| Copy paper | Plain paper, recycled paper and colored paper (60 to 105 g/$m^2$) |
| Paper sizes | A4 (210 x 297 mm) |
| | A3 (297 x 420 mm) |
| | B4 (257 x 364 mm) |
| | B5 (182 x 257 mm) |
| | A5 (148 x 210 mm) |
| | Letter ($8_{1/2}$" x 11") |
| | Legal ($8_{1/2}$" x 14") |
| | Non-standard size (148 to 297 mm x 210 to 420 mm) |
| Power source | Electrically connected to the machine |
| Dimensions | 679 (W) x 641.6 (D) x 434.2 (H) mm |
| | $26_{3/4}$" (W) x $25_{1/4}$" (D) x $17_{1/16}$" (H) |
| Weight | Approx. 41.5 kg/91.3 lbs |

### 1-1-2 Parts names

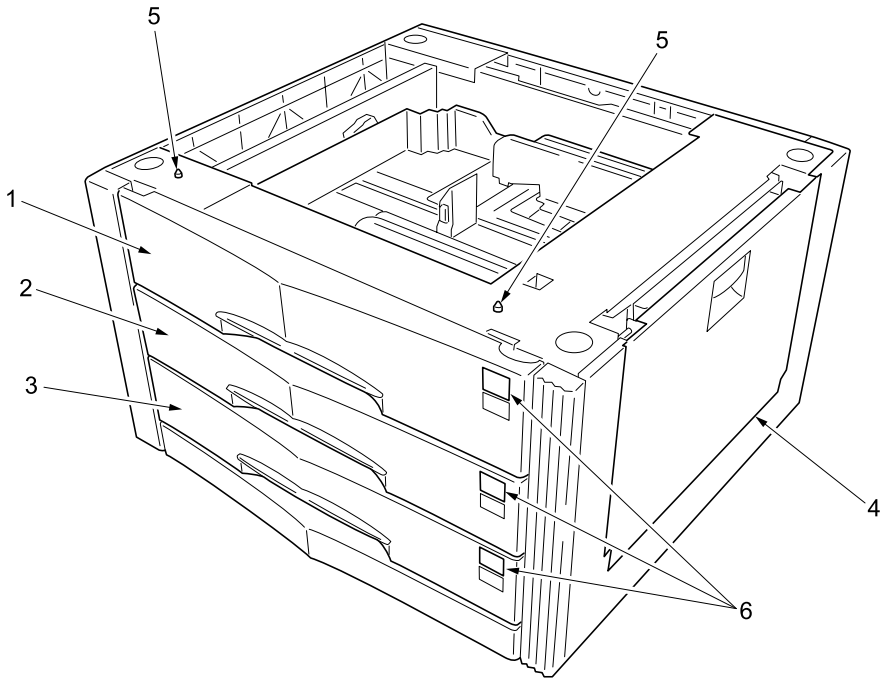


**Figure 1-1-1**

1. Upper paper cassette
2. Middle paper cassette
3. Lower paper cassette
4. Paper feeder right cover
5. Positioning pins
6. Paper size indications

### 1-1-3 Cross section view

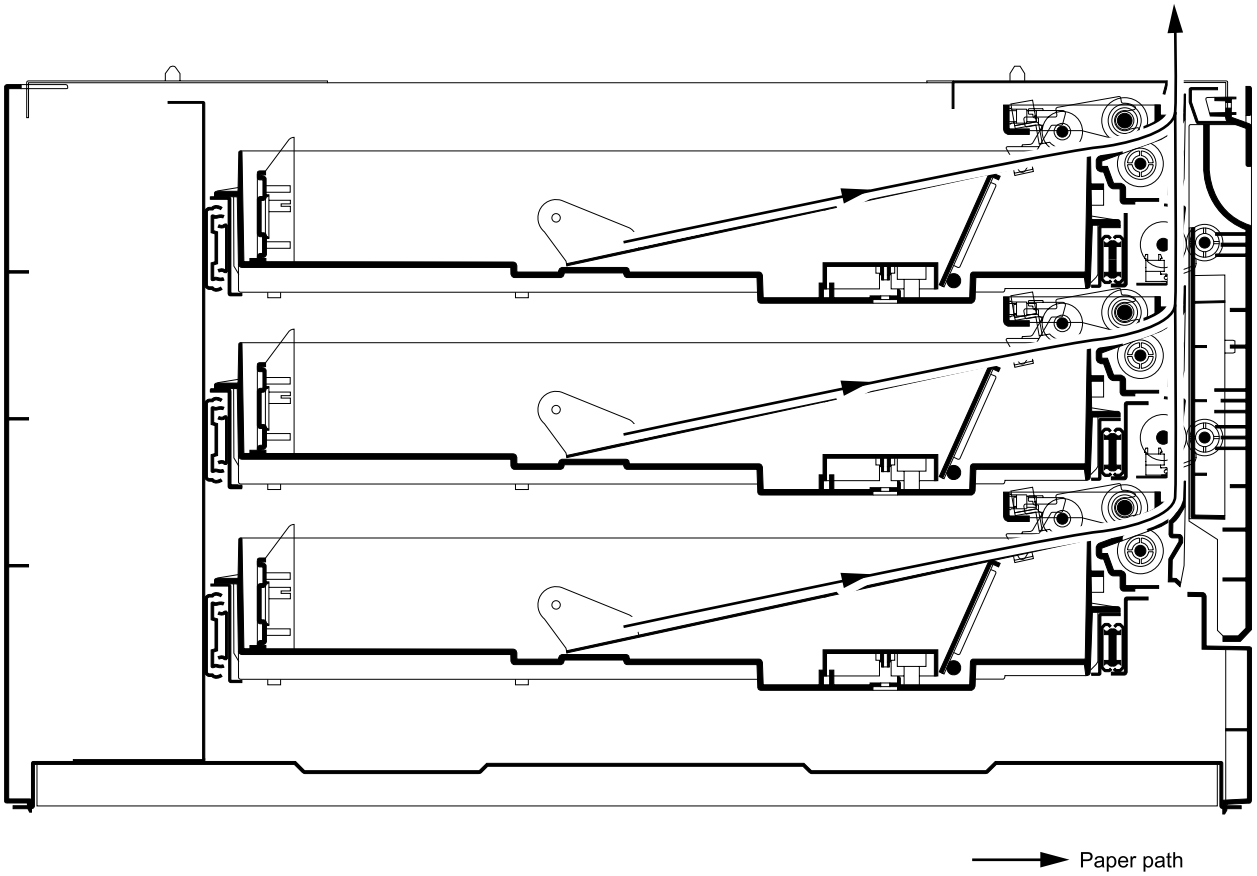


**Figure 1-1-2**

## 1-1-4 Drive system

### (1) Drive system 1 (primary paper feed unit)

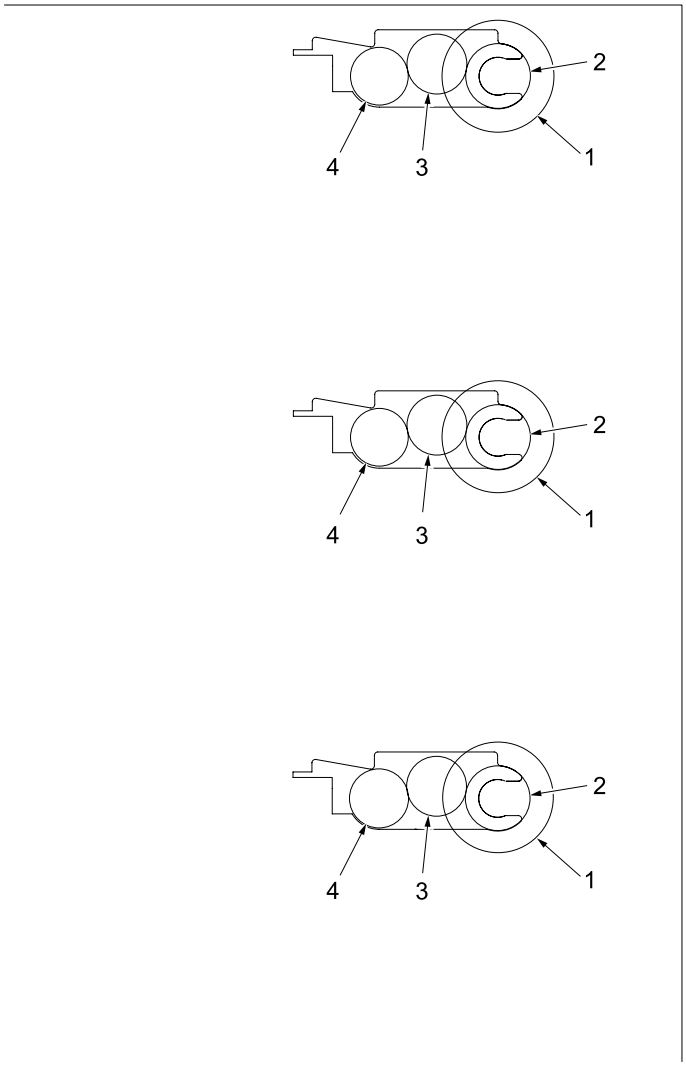


**Figure 1-1-3 Drive system 1 (primary paper feed unit)**

1. Feed gear Z33S
2. Paper feed gear
3. Retard gear 18
4. Retard gear 18

**(2) Drive system 2 (drive unit)**

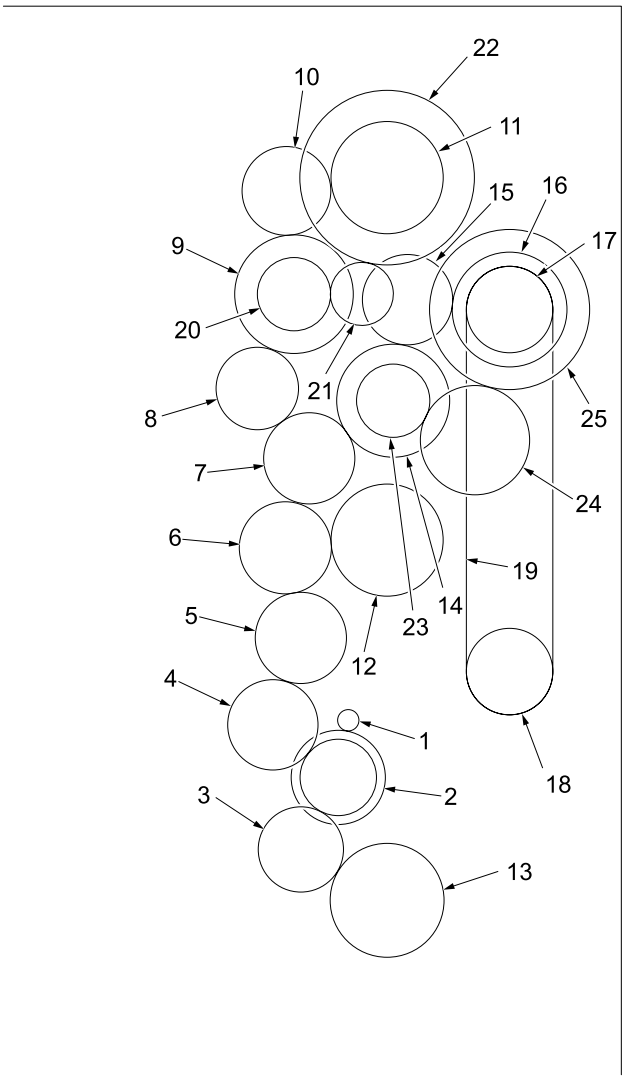


**Figure 1-1-4 Drive system 2 (drive unit)**

1. Paper feeder main motor (gear)
2. Gear 20/53
3. Feed gear 27
4. Feed gear 27
5. Feed gear 27
6. Feed gear 27
7. Gear 26
8. Gear 24
9. Paper feeder upper feed L clutch (gear)
10. Feed gear 27
11. Paper feeder upper feed H clutch (gear)/ Feed gear Z33S
12. Paper feeder middle feed H clutch (gear)/ Feed gear Z33S
13. Paper feeder lower feed H clutch (gear)/ Feed gear Z33S
14. Paper feeder conveying L clutch (gear)
15. Paper feed gear 25
16. Paper feeder conveying H clutch (gear)
17. Feed pulley 19
18. Feed pulley 19
19. Belt 267
20. Gear 23D
21. Idle gear 19
22. Gear 44D
23. Gear 23D
24. Drive gear
25. Feed gear 47

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### 1-2-1 Installation environment

1. Temperature: 10 - 32.5 °C/50 - 90.5 °F
2. Humidity: 15 - 80%RH
3. Power supply: Electrically connected to the machine
4. Installation location

- Avoid extremes of temperature and humidity, abrupt ambient temperature changes, and hot or cold air directed onto the machine.
- Avoid dust and vibration.
- Choose a surface capable of supporting the weight of the machine.
- Place the machine on a level surface (maximum allowance inclination: 1°).
- Avoid air-borne substances that may adversely affect the machine or degrade the photo-conductor, such as mercury, acidic of alkaline vapors, inorganic gasses, NOx, SOx gases and chlorine-based organic solvents.
- Select a room with good ventilation.

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## 1-3-1 Unpacking and installation

### (1) Unpacking

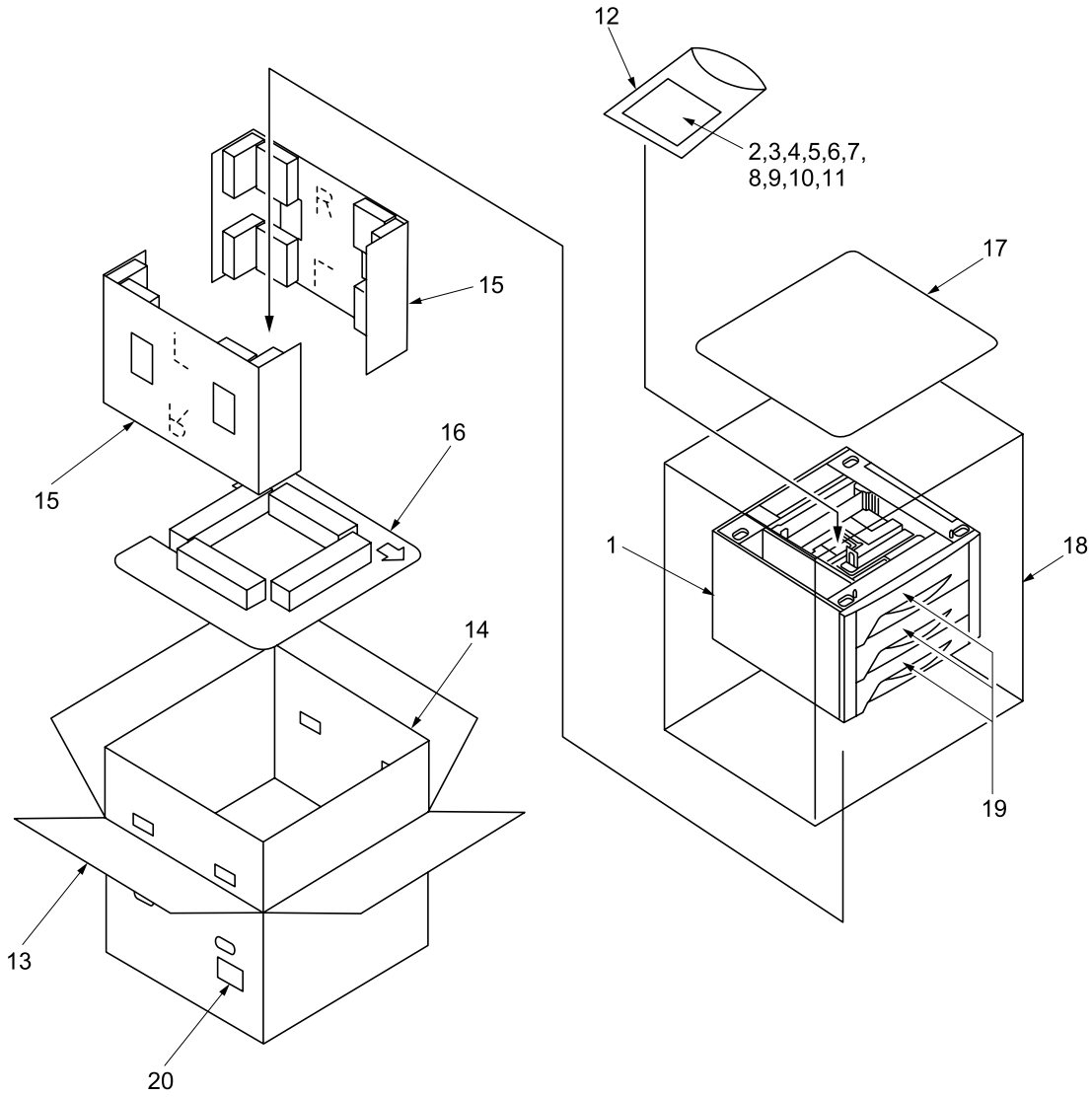


**Figure 1-3-1 Unpacking**

1. Paper feeder
2. Size plates
3. Label 2
4. Label 3
5. Label 4
6. Label 5
7. Display instruction plates
8. Screws (M3 x 10)
9. Plastic bag
10. Installation guide
11. Leaflet for cassette note
12. Plastic bag
13. Outer case
14. Inner case
15. Side pads
16. Bottom pad
17. Upper pad
18. Machine cover
19. Cassette spacers
20. Bar code labels

**(2) Remove the tapes and spacers**

**<Procedure>**

1. Remove the ten tapes from the paper feeder.

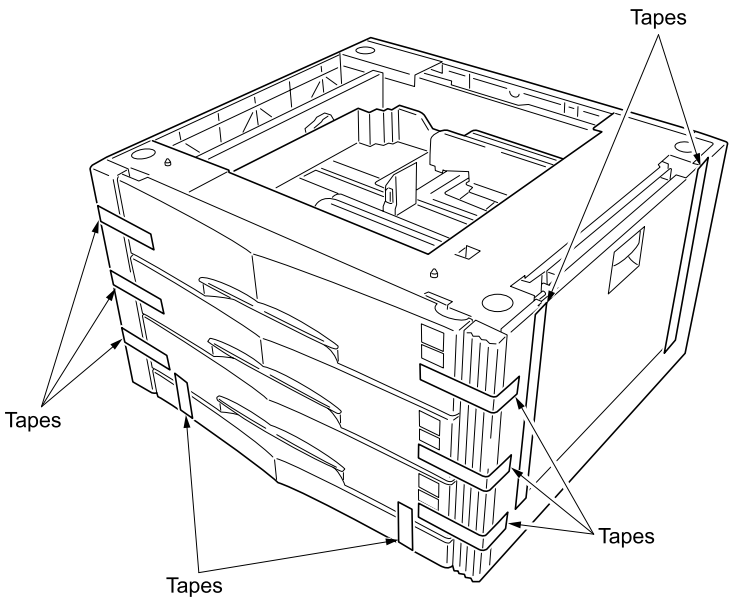


**Figure 1-3-2**

2. Pull out each of the paper cassettes. Remove the two tapes and the cassette spacer from each of the paper cassettes.

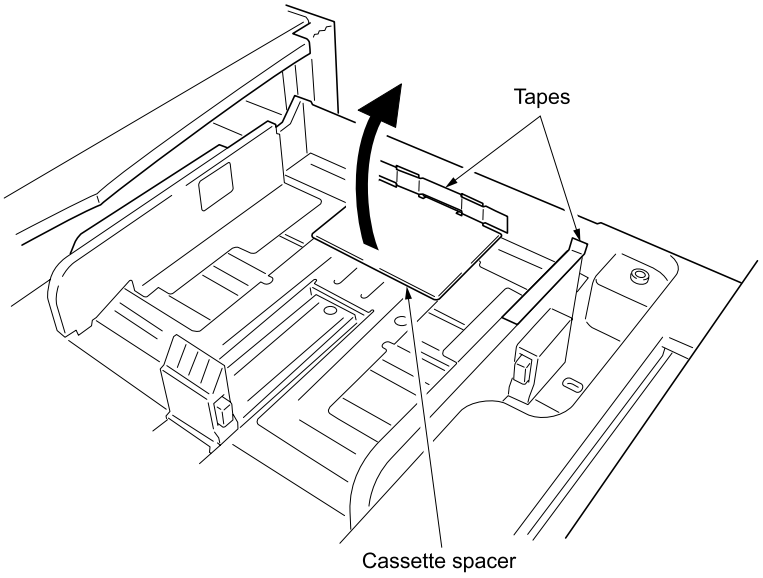


**Figure 1-3-3**

### 1-3-2 Installing the dehumidifier heater

Dehumidifier heater installation requires the following parts:

- Set, dehumidifier heater 120 (P/N 3CY68020) for 120 V specifications
- Set, dehumidifier heater 240 (P/N 3CY68030) for 220-240 V specifications

**<Procedure>**

1. Pull out each of the paper cassettes.
2 Remove the rear cover.
3 Pass each dehumidifier heater cable into the hole (rear plate).
4 Hang the two dehumidifier heaters on their respective hooks and then secure them with a screw for each.
5 Attach a snap-on band to each dehumidifier heater cable and insert it into the hole.
6 Stick the two caution labels.

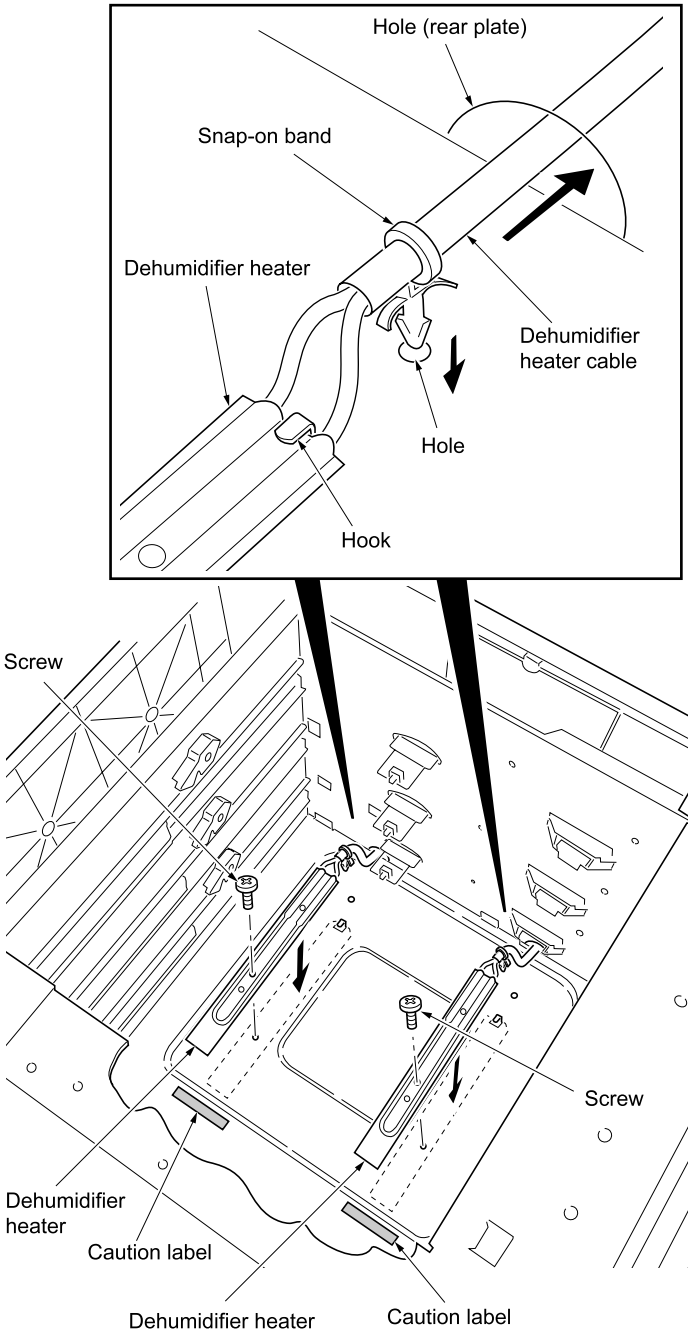


**Figure 1-3-4**

7 Pass each of the dehumidifier heater cables through the wire saddles.
8. Connect each of the connectors of dehumidifier heater cable to the connectors for power supply.
9 Refit all the removed parts.

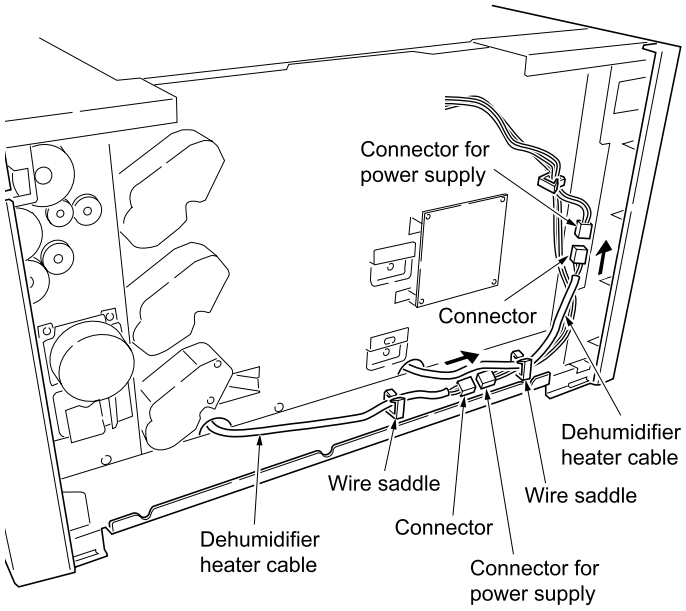


**Figure 1-3-5**

## 1-4-1 Paper misfeed detection

### (1) Paper misfeed indication

When a paper jam occurs, the machine stops immediately and paper jam display appears on the operation panel of the machine.
The paper jam can be reset by opening and closing the paper feeder right cover (turning off and on the paper feeder right cover open/close switch).

### (2) Paper misfeed detection conditions

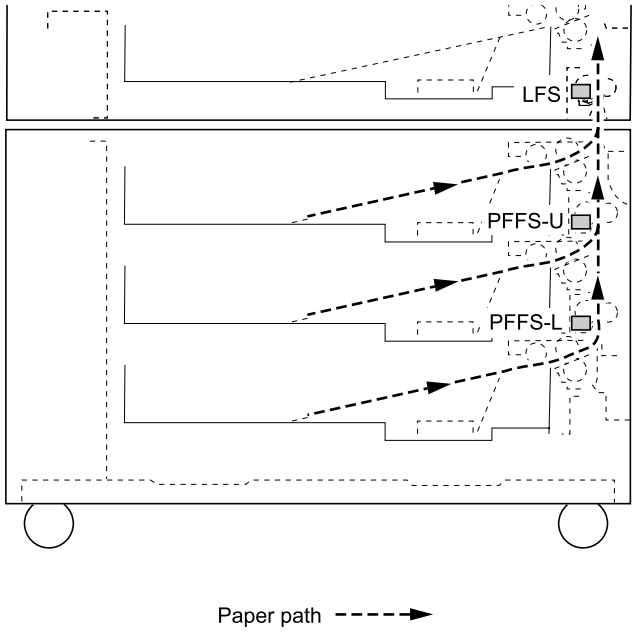


**Figure 1-4-1**

| Section | Jam code | Description | Conditions |
|---|---|---|---|
| Paper feed section | 11 | No paper feed from cassette 2 | Lower feed sensor (LFS) does not turn on within 3358 ms of the paper feeder upper feed H clutch (PFFHCL-U) turning on (when paper is fed from upper paper cassette). |
| | 12 | No paper feed from cassette 3 | Paper feeder upper feed sensor (PFFS-U) does not turn on within 3558 ms of the paper feeder middle feed H clutch (PFFHCL-M) turning on (when paper is fed from middle paper cassette). |
| | 13 | No paper feed from cassette 4 | Paper feeder lower feed sensor (PFFS-L) does not turn on within 3376 ms of the paper feeder lower feed H clutch (PFFHCL-L) turning on (when paper is fed from lower paper cassette). |
| | 22 | Misfeed in copier vertical paper conveying section 3 | Paper feeder upper feed sensor (PFFS-U) does not turn off within 700 ms of the paper feeder lower feed sensor (PFFS-L) turning on.<br>Lower feed sensor (LFS) does not turn on within 866 ms of the paper feeder upper feed sensor (PFFS-U) turning on.<br>Paper feeder upper feed sensor (PFFS-U) does not turn off within 762 ms of the paper feeder conveying H clutch (PFCONHCL) turning on. |
| | 23 | Misfeed in copier vertical paper conveying section 4 | Paper feeder upper feed sensor (PFFS-U) does not turn on within 700 ms of the paper feeder lower feed sensor (PFFS-L) turning on. |
| | 26 | Multiple sheets in cassette 2 paper feed section | Lower feed sensor (LFS) does not turn off within 862 ms of the paper feeder upper feed H clutch (PFFHCL-U) turning on.<br>Lower feed sensor (LFS) does not turn off within 1033 ms of the paper feeder upper feed sensor (PFFS-U) turning on.<br>Lower feed sensor (LFS) does not turn off within a specified time of the paper feeder upper feed H clutch (PFFHCL-U) and paper feeder upper feed L clutch (PFFLCL-U) turning off. |
| | 27 | Multiple sheets in cassette 3 paper feed section | Paper feeder upper feed sensor (PFFS-U) does not turn off within 1487 ms of the paper feeder middle feed H clutch (PFFHCL-M) turning on.<br>Paper feeder upper feed sensor (PFFS-U) does not turn off within a specified time of the paper feeder middle feed H clutch (PFFHCL-M) turning off. |
| | 28 | Multiple sheets in cassette 4 paper feed section | Paper feeder lower feed sensor (PFFS-L) does not turn off within 770 ms of the paper feeder lower feed H clutch (PFFHCL-L) turning on.<br>Paper feeder lower feed sensor (PFFS-L) does not turn off within a specified time of the paper feeder lower feed H clutch (PFFHCL-L) turning off. |

**(3) Paper misfeeds**

| Problem | Causes/check procedures | Corrective measures |
|---|---|---|
| (1)<br>A paper jam in the paper feed section is indicated during copying (no paper feed from cassette 2).<br>Jam code 11 | Paper in the upper paper cassette is extremely curled. | Change the paper. |
| | Check if the lower paper feed pulley, forwarding roller or paper feed roller of the upper paper cassette are deformed. | Check visually and replace any deformed pulleys. |
| | Broken lower feed sensor actuator. | Check visually and replace the lower feed sensor if its actuator is broken. |
| | Defective lower feed sensor. | Run maintenance mode U031, check the operation of the lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Check if the paper feeder upper feed H clutch malfunctions. | Run maintenance item U032 and select the paper feeder upper feed H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder upper feed H clutch. | Check (see page 1-4-8). |
| | Check if the paper feeder feed H clutch malfunctions. | Run maintenance item U032 and select the paper feeder feed H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder feed H clutch. | Check. |
| (2)<br>A paper jam in the paper feed section is indicated during copying (no paper feed from cassette 3).<br>Jam code 12 | Paper in the middle paper cassette is extremely curled. | Change the paper. |
| | Check if the lower paper feed pulley, forwarding roller or paper feed roller of the middle paper cassette are deformed. | Check visually and replace any deformed pulleys. |
| | Broken paper feeder upper feed sensor actuator. | Check visually and replace the paper feeder upper feed sensor if its actuator is broken. |
| | Defective paper feeder upper feed sensor. | Run maintenance mode U031, check the operation of the paper feeder upper feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Check if the paper feeder middle feed H clutch malfunctions. | Run maintenance item U032 and select the paper feeder middle feed H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder middle feed H clutch. | Check (see page 1-4-8). |

| Problem | Causes/check procedures | Corrective measures |
|---|---|---|
| (3)<br>A paper jam in the paper feed section is indicated during copying (no paper feed from cassette 4).<br>Jam code 13 | Paper in the lower paper cassette is extremely curled. | Change the paper. |
| | Check if the lower paper feed pulley, forwarding roller or paper feed roller of the lower paper cassette are deformed. | Check visually and replace any deformed pulleys. |
| | Broken paper feeder lower feed sensor actuator. | Check visually and replace the paper feeder lower feed sensor if its actuator is broken. |
| | Defective paper feeder lower feed sensor. | Run maintenance mode U031, check the operation of the paper feeder lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Check if the paper feeder lower feed H clutch malfunctions. | Run maintenance item U032 and select the paper feeder lower feed H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder lower feed H clutch. | Check (see page 1-4-9). |
| (4)<br>A paper jam in the paper feed section is indicated during copying (jam in copier vertical paper conveying section 3).<br>Jam code 22 | Broken paper feeder upper feed sensor actuator. | Check visually and replace the paper feeder upper feed sensor if its actuator is broken. |
| | Defective paper feeder upper feed sensor. | Run maintenance mode U031, check the operation of the paper feeder upper feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Broken paper feeder lower feed sensor actuator. | Check visually and replace the paper feeder lower feed sensor if its actuator is broken. |
| | Defective paper feeder lower feed sensor. | Run maintenance mode U031, check the operation of the paper feeder lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Broken lower feed sensor actuator. | Check visually and replace the lower feed sensor if its actuator is broken. |
| | Defective lower feed sensor. | Run maintenance mode U031, check the operation of the lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Check if the paper feeder conveying H clutch malfunctions. | Run maintenance item U032 and select the paper feeder conveying H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder conveying H clutch. | Check (see page 1-4-9). |
| (5)<br>A paper jam in the paper feed section is indicated during copying (jam in copier vertical paper conveying section 4).<br>Jam code 23 | Broken paper feeder upper feed sensor actuator. | Check visually and replace the paper feeder upper feed sensor if its actuator is broken. |
| | Defective paper feeder upper feed sensor. | Run maintenance mode U031, check the operation of the paper feeder upper feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Broken paper feeder lower feed sensor actuator. | Check visually and replace the paper feeder lower feed sensor if its actuator is broken. |
| | Defective paper feeder lower feed sensor. | Run maintenance mode U031, check the operation of the paper feeder lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |

| Problem | Causes/check procedures | Corrective measures |
|---|---|---|
| (6)<br>A paper jam in the paper feed section is indicated during copying (multiple sheets in cassette 2 paper feed section).<br>Jam code 26 | Broken lower feed sensor actuator. | Check visually and replace the lower feed sensor if its actuator is broken. |
| | Defective lower feed sensor. | Run maintenance mode U031, check the operation of the lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Broken paper feeder upper feed sensor actuator. | Check visually and replace the paper feeder upper feed sensor if its actuator is broken. |
| | Defective paper feeder upper feed sensor. | Run maintenance mode U031, check the operation of the paper feeder upper feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Check if the paper feeder upper feed H clutch malfunctions. | Run maintenance item U032 and select the paper feeder upper feed H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder upper feed H clutch. | Check (see page 1-4-8). |
| | Check if the paper feeder upper feed L clutch malfunctions. | Run maintenance item U032 and select the paper feeder upper feed L clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder upper feed L clutch. | Check (see page 1-4-9). |
| (7)<br>A paper jam in the paper feed section is indicated during copying (multiple sheets in cassette 3 paper feed section).<br>Jam code 27 | Broken paper feeder upper feed sensor actuator. | Check visually and replace the paper feeder upper feed sensor if its actuator is broken. |
| | Defective paper feeder upper feed sensor. | Run maintenance mode U031, check the operation of the paper feeder upper feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Check if the paper feeder middle feed H clutch malfunctions. | Run maintenance item U032 and select the paper feeder middle feed H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder middle feed H clutch. | Check (see page 1-4-8). |
| (8)<br>A paper jam in the paper feed section is indicated during copying (multiple sheets in cassette 4 paper feed section).<br>Jam code 28 | Broken paper feeder lower feed sensor actuator. | Check visually and replace the paper feeder lower feed sensor if its actuator is broken. |
| | Defective paper feeder lower feed sensor. | Run maintenance mode U031, check the operation of the paper feeder lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Check if the paper feeder lower feed H clutch malfunctions. | Run maintenance item U032 and select the paper feeder lower feed H clutch on the touch panel to be turned on and off. Check the status and remedy if necessary. |
| | Electrical problem with the paper feeder lower feed H clutch. | Check (see page 1-4-9). |

## 1-4-2 Self-diagnosis

### (1) Self-diagnostic function

If a machine error is detected, the machine disables operation and character “C” and a four-digit number (1100 to 2600) that indicate the result of self-diagnosis are displayed on the operation panel of the machine. A message is also displayed requesting the user to call for service.
The detected status is cleared by opening and closing the paper feeder right cover (turning off and on the paper feeder right cover open/close switch) after taking measures against the cause of the trouble.

**(2) Self diagnostic codes**

| Code | Contents | Remarks | |
|---|---|---|---|
| | | **Causes** | **Check procedures/corrective measures** |
| **C1100** | **Paper feeder upper lift motor error (upper paper cassette of paper feeder)**<br>• The paper feeder upper limit detection sensor is not turned on within 10,000 ms after the upper cassette is inserted and the sensor is not turned on within 200 ms at the second time and after. | Defective bottom plate elevation mechanism. | Check to see if the bottom plate can move smoothly and repair it if any problem is found. |
| | | Defective paper feeder upper lift motor. | Replace the paper feeder upper lift motor. |
| | | Defective engine controller PWB or paper feeder main PWB. | Replace the engine controller PWB or paper feeder main PWB. |
| **C1110** | **Paper feeder middle lift motor error (middle paper cassette of paper feeder)**<br>• The paper feeder middle limit detection sensor is not turned on within 10,000 ms after the middle cassette is inserted and the sensor is not turned on within 500 ms at the second time and after. | Defective bottom plate elevation mechanism. | Check to see if the bottom plate can move smoothly and repair it if any problem is found. |
| | | Defective paper feeder middle lift motor. | Replace the paper feeder middle lift motor. |
| | | Defective engine controller PWB or paper feeder main PWB. | Replace the engine controller PWB or paper feeder main PWB. |
| **C1120** | **Paper feeder lower lift motor error (lower paper cassette of paper feeder)**<br>• The paper feeder lower limit detection sensor is not turned on within 10,000 ms after the lower cassette is inserted and the sensor is not turned on within 500 ms at the second time and after. | Defective bottom plate elevation mechanism. | Check to see if the bottom plate can move smoothly and repair it if any problem is found. |
| | | Defective paper feeder lower lift motor. | Replace the paper feeder lower lift motor. |
| | | Defective engine controller PWB or paper feeder main PWB. | Replace the engine controller PWB or paper feeder main PWB. |
| **C2600** | **Paper feeder main motor error**<br>• After the motor drive ON signal is output and 2 s elapse, paper feed motor error communication data is transmitted continuously for 1 s. | Poor contact in the connector terminals. | Check the connection of connector YC27 on the engine controller PWB. Repair or replace if necessary. |
| | | Defective paper feeder main motor. | Replace the paper feeder main motor. |
| | | Defective engine controller PWB or paper feeder main PWB. | Replace the engine controller PWB or paper feeder main PWB. |

### 1-4-3 Electric problems

| Problem | Causes | Check procedures/corrective measures |
|---|---|---|
| (1) The paper feeder main motor does not operate. | Poor contact in the paper feeder main motor connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Broken paper feeder main motor gear. | Check visually and replace the paper feeder main motor if necessary. |
| | Defective paper feeder main motor. | Run maintenance item U030 and check if the paper feeder main motor operates when YC3-5 on the paper feeder main PWB goes low. If not, replace the paper feeder main motor. |
| | Defective paper feeder main PWB. | Run maintenance item U030 and check if YC3-5 on the paper feeder main PWB goes low. If not, replace the paper feeder main PWB. |
| (2) The paper feeder upper lift motor does not operate. | Poor contact in the paper feeder upper lift motor connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Broken paper feeder upper lift motor gear. | Check visually and replace the paper feeder upper lift motor if necessary. |
| (3) The paper feeder middle lift motor does not operate. | Poor contact in the paper feeder middle lift motor connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Broken paper feeder middle lift motor gear. | Check visually and replace the paper feeder middle lift motor if necessary. |
| (4) The paper feeder lower lift motor does not operate. | Poor contact in the paper feeder lower lift motor connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Broken paper feeder lower lift motor gear. | Check visually and replace the paper feeder lower lift motor if necessary. |
| (5) The paper feeder upper feed H clutch does not operate. | Broken paper feeder upper feed H clutch coil. | Check for continuity across the coil. If none, replace the paper feeder upper feed H clutch. |
| | Poor contact in the paper feeder upper feed H clutch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective paper feeder main PWB. | Run maintenance item U032 and check if YC12-2 on the paper feeder main PWB goes low. If not, replace the paper feeder main PWB. |
| (6) The paper feeder middle feed H clutch does not operate. | Broken paper feeder middle feed H clutch coil. | Check for continuity across the coil. If none, replace the paper feeder middle feed H clutch. |
| | Poor contact in the paper feeder middle feed H clutch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective paper feeder main PWB. | Run maintenance item U032 and check if YC12-6 on the paper feeder main PWB goes low. If not, replace the paper feeder main PWB. |

| Problem | Causes | Check procedures/corrective measures |
|---|---|---|
| (7)<br>The paper feeder lower feed H clutch does not operate. | Broken paper feeder lower feed H clutch coil. | Check for continuity across the coil. If none, replace the paper feeder lower feed H clutch. |
| | Poor contact in the paper feeder lower feed H clutch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective paper feeder main PWB. | Run maintenance item U032 and check if YC12-12 on the paper feeder main PWB goes low. If not, replace the paper feeder main PWB. |
| (8)<br>The paper feeder upper feed L clutch does not operate. | Broken paper feeder upper feed L clutch coil. | Check for continuity across the coil. If none, replace the paper feeder upper feed L clutch. |
| | Poor contact in the paper feeder upper feed L clutch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective paper feeder main PWB. | Run maintenance item U032 and check if YC12-4 on the paper feeder main PWB goes low. If not, replace the paper feeder main PWB. |
| (9)<br>The paper feeder conveying H clutch does not operate. | Broken paper feeder conveying H clutch coil. | Check for continuity across the coil. If none, replace the paper feeder conveying H clutch. |
| | Poor contact in the paper feeder conveying H clutch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective paper feeder main PWB. | Run maintenance item U032 and check if YC12-8 on the paper feeder main PWB goes low. If not, replace the paper feeder main PWB. |
| (10)<br>The paper feeder conveying L clutch does not operate. | Broken paper feeder conveying L clutch coil. | Check for continuity across the coil. If none, replace the paper feeder conveying L clutch. |
| | Poor contact in the paper feeder conveying L clutch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective paper feeder main PWB. | Run maintenance item U032 and check if YC12-10 on the paper feeder main PWB goes low. If not, replace the paper feeder main PWB. |
| (11)<br>A paper jam in the paper feeder is indicated when the power switch is turned on. | A piece of paper torn from paper is caught around paper feeder upper/lower feed sensor. | Check and remove if any. |
| | Defective paper feeder upper feed sensor. | Run maintenance mode U031, check the operation of the paper feeder upper feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| | Defective paper feeder lower feed sensor. | Run maintenance mode U031, check the operation of the paper feeder lower feed sensor caused by turning it on and off manually, and replace it if any problem is found. |
| (12)<br>The message requesting cover to be closed is displayed when the paper feeder right cover is closed. | Poor contact in the connector terminals of paper feeder right cover open/close switch. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective paper feeder right cover open/close switch. | Check for continuity across switch. If there is no continuity when the paper feeder right cover open/close switch is on, replace it. |
| (13)<br>Others. | Wiring is broken, shorted or makes poor contact. | Check for continuity. If none, repair. |
| | Noise. | Locate the source of noise and remove. |

### 1-4-4 Mechanical problems

| Problem | Causes/check procedures | Corrective measures |
|---|---|---|
| (1)<br>No primary paper feed. | Check if the surfaces of the following rollers or pulleys are dirty with paper powder: lower paper feed pulley, forwarding roller and paper feed roller. | Clean with isopropyl alcohol. |
| | Check if the lower paper feed pulley is deformed. | Check visually and replace any deformed pulley (see page 1-5-6). |
| | Electrical problem with the following electromagnetic clutches: paper feeder upper feed H clutch, paper feeder middle feed H clutch, paper feeder lower feed H clutch, paper feeder upper feed L clutch, paper feeder conveying H clutch and paper feeder conveying L clutch. | See pages 1-4-8 and 1-4-9. |
| (2)<br>Skewed paper feed. | Width guide in a cassette installed incorrectly. | Check the width guide visually and correct or replace if necessary. |
| | Deformed width guide in a cassette. | Repair or replace if necessary. |
| (3)<br>Multiple sheets of paper are fed at one time. | Check if the lower paper feed pulley is worn. | Replace the lower paper feed pulley if it is worn (see page 1-5-6). |
| | Check if the paper is curled. | Change the paper. |
| (4)<br>Paper jams. | Check if the paper is excessively curled. | Change the paper. |
| | Deformed guides along the paper conveying path. | Repair or replace if necessary. |
| (5)<br>Abnormal noise is heard. | Check if the pulleys, rollers and gears operate smoothly. | Grease the bearings and gears. |
| | Check if the following electromagnetic clutches are installed correctly: paper feeder upper feed H clutch, paper feeder middle feed H clutch, paper feeder lower feed H clutch, paper feeder upper feed L clutch, paper feeder conveying H clutch and paper feeder conveying L clutch. | Check visually and remedy if necessary. |

## 1-5-1 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 PWBs (printed wiring boards), do not touch parts with bare hands. The PWBs are susceptible to static charge.
Do not touch any PWB containing ICs with bare hands or any object prone to static charge.
Use the following circuit testers when measuring voltages:

- Hioki 3200
- Sanwa MD-180C
- Sanwa YX-360TR
- Beckman TECH300
- Beckman DM45
- Beckman 330 (Capable of measuring RMS values.)
- Beckman 3030 (Capable of measuring RMS values.)
- Beckman DM850 (Capable of measuring RMS values.)
- Fluke 8060A (Capable of measuring RMS values.)
- Arlec DMM1050
- Arlec YF1030C

## 1-5-2 Primary paper feed unit

### (1) Detaching and refitting the primary paper feed unit

<Procedure>

1. Pull out each of the paper cassettes.
2. Open the paper feeder right cover.
3. Remove the band.
4. Remove the paper feeder right cover.

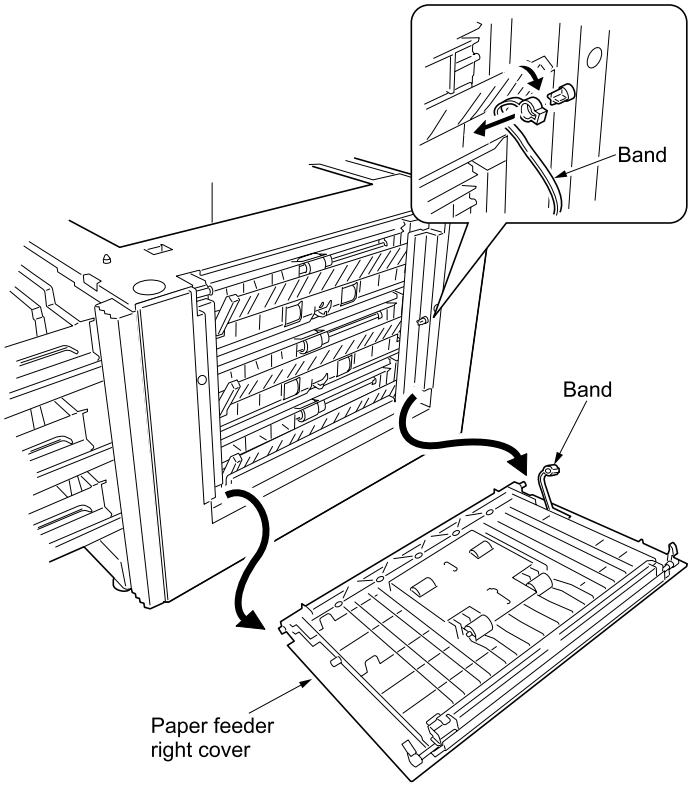


**Figure 1-5-1**

5. Remove the three screws and then the paper feeder lower right cover.

* When refitting the paper feeder lower right cover, lift the guide plate for the lowest cassette.

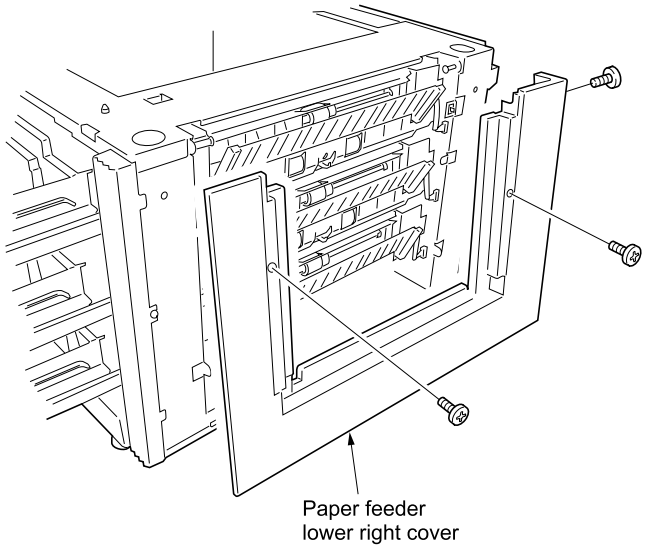


**Figure 1-5-2**

6. Remove the one screw and the one connector.
7. Remove the primary paper feed unit.

* To remove the primary paper feed unit for the middle cassette or the lower cassette, perform similar procedure.

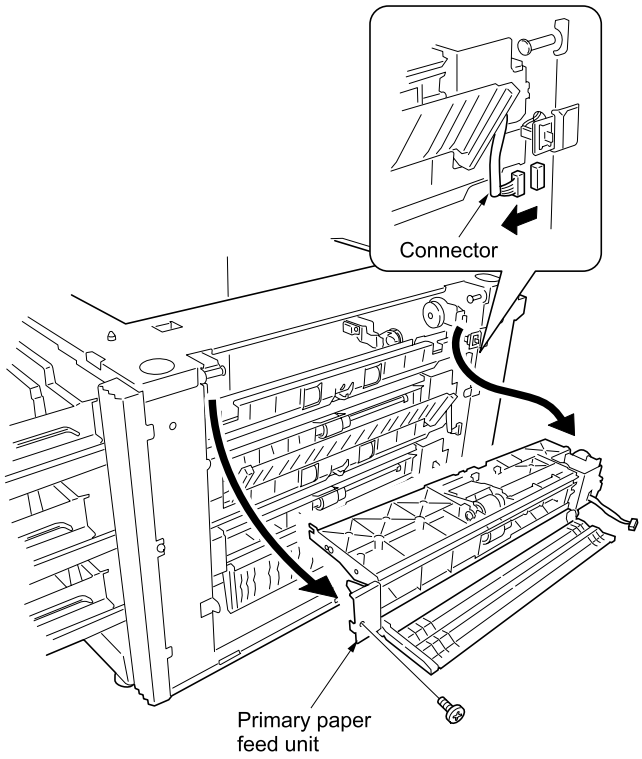


**Figure 1-5-3**

**(2) Detaching and refitting the forwarding roller and paper feed roller**

<Procedure>

1. Remove the primary paper feed unit (see page 1-5-2).
2. Pull up the primary paper feed assembly and remove the assembly from the bearing.

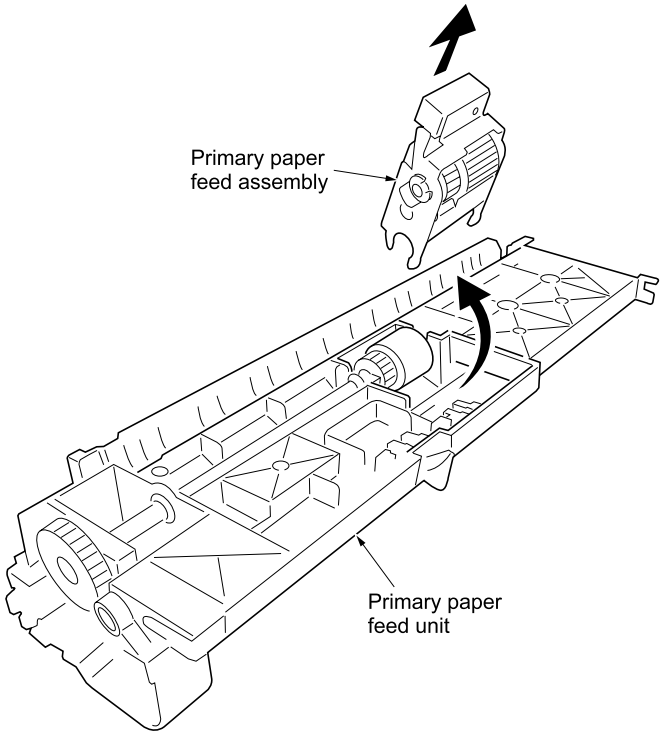


**Figure 1-5-4**

3. Remove one stopper and pull out the shaft, and then remove the forwarding roller.

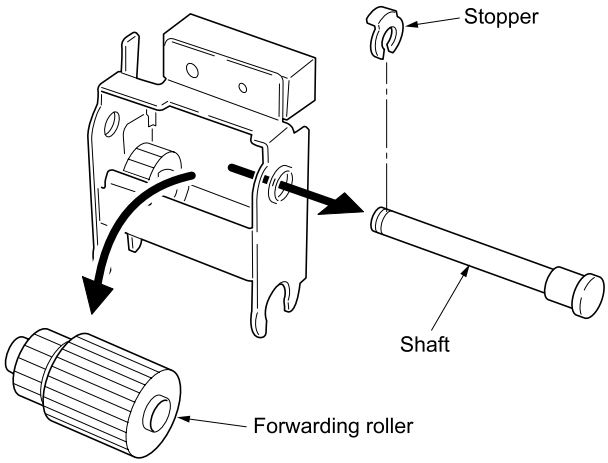


**Figure 1-5-5**

4. Remove three stoppers and slide the shaft, to remove the bearing and paper feed roller.
5. Check or replace the forwarding roller and paper feed roller, and refit all the removed parts.

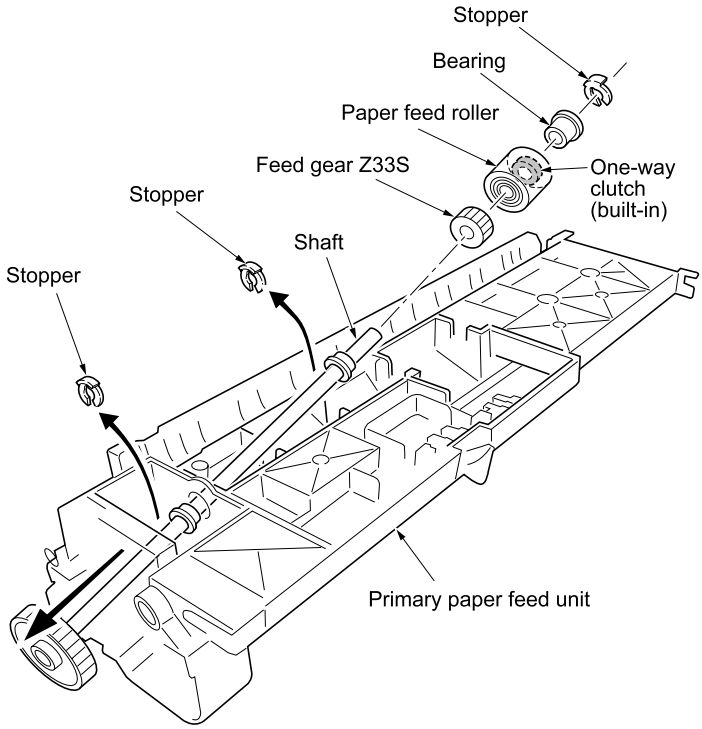


**Figure 1-5-6**

**(3) Detaching and refitting the lower paper feed pulley**

<Procedure>

1. Remove the paper feed roller (see page 1-5-4).
2. Remove two stoppers and slide the shaft to remove the bearing, insulator, lower paper feed pulley release lever, spring, lower paper feed pulley, pin and torque limiter.
3. Check or replace the lower paper feed pulley, and refit all the removed parts.

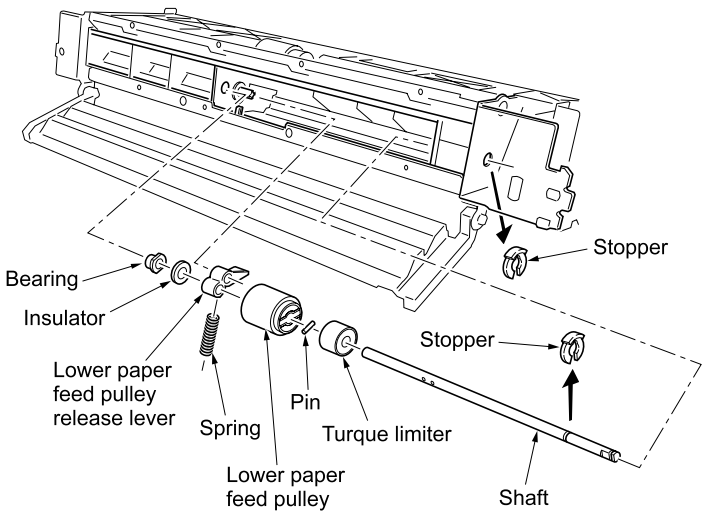


**Figure 1-5-7**

### 1-6-1 Remarks on paper feeder main PWB replacement

When replacing the paper feeder main PWB, remove the EEPROM from the paper feeder main PWB that has been removed and then reattach it to the new paper feeder main PWB.

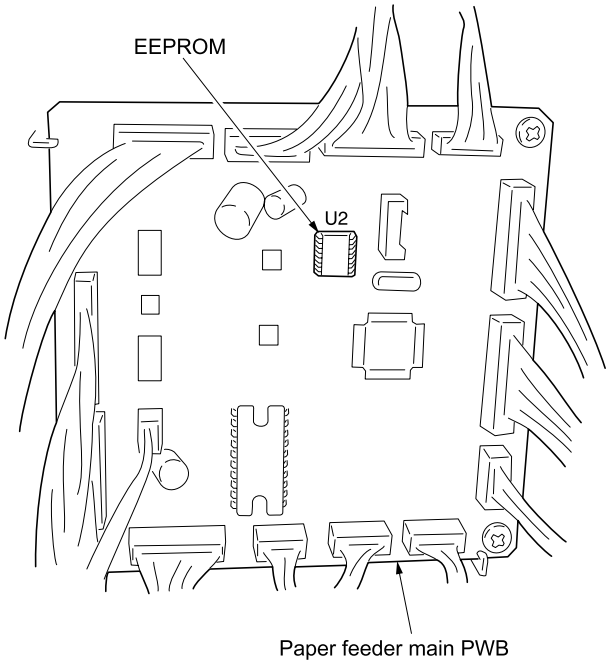


**Figure 1-6-1**

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### 2-1-1 Mechanical construction

This paper feeder includes three paper cassettes that hold 500 sheets of paper each. The paper feeder is installed at the lower part of a copier or a printer and has a mechanism that feeds paper from the paper cassette to the copier or the printer.

The paper cassette is fit underneath the primary paper feed unit. The paper stored in the paper cassette is lifted up so that it is contacted against the forwarding roller as the bottom plate in the paper cassette is raised by the lifter mechanism. The sheet at top is rewound to the forwarding roller and sent to the paper feed roller which forward the paper in the copier or printer. In order to prevent paper misfeed during feeding, the lower paper feed pulley which is positioned face-to-face with the paper feed roller acts to prevent feeding more than one sheet at a turn of the forwarding roller.

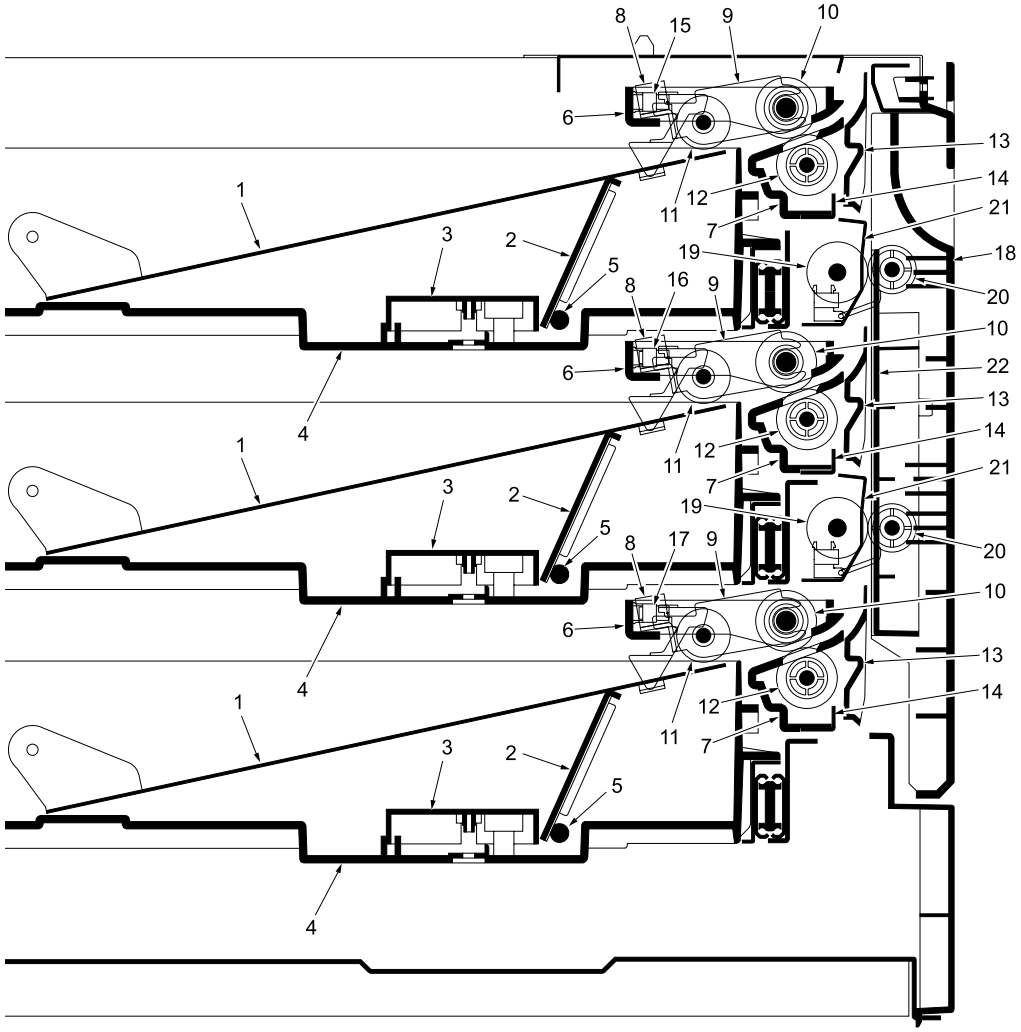



**Figure 2-1-1 Paper feeder**

(1) Bottom plate
(2) Lift plate
(3) Cursor rail A
(4) Paper cassette
(5) Cassette lift shaft
(6) Upper primary paper feed unit housing
(7) Lower primary paper feed unit housing
(8) Forwarding pulley collar
(9) Forwarding pulley support plate
(10) Paper feed roller
(11) Forwarding roller
(12) Lower paper feed pulley
(13) Junction guide
(14) Housing reinforcing plate
(15) Paper feeder upper limit detection sensor
(16) Paper feeder middle limit detection sensor
(17) Paper feeder lower limit detection sensor
(18) Paper feeder right cover
(19) Feed roller
(20) Feed pulley
(21) Vertical conveying guide
(22) Conveying guide

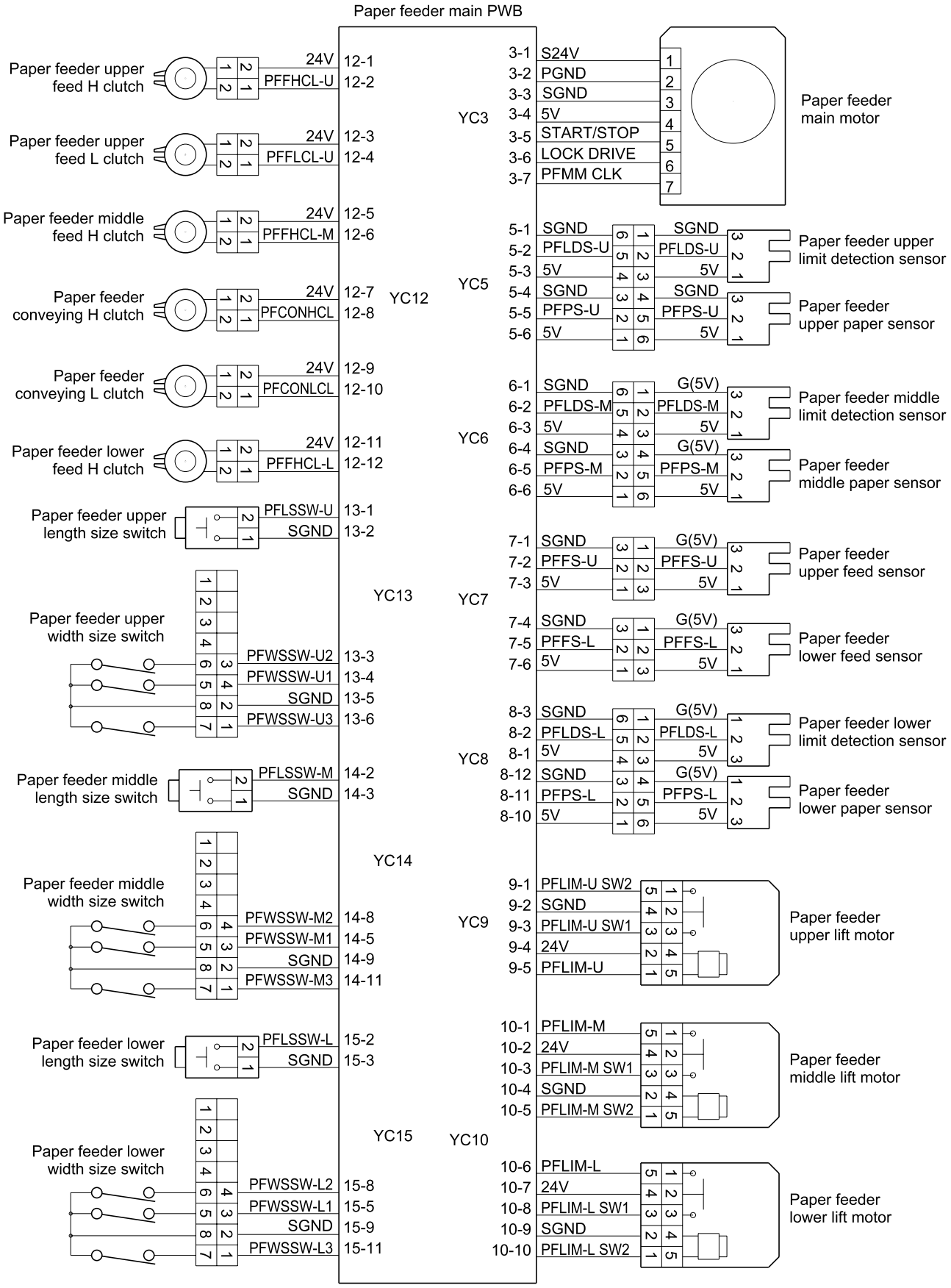



**Figure 2-1-2Paper feeder block diagram**

## 2-2-1 Electrical parts layout

### (1) Paper feeder inside and primary paper feed unit

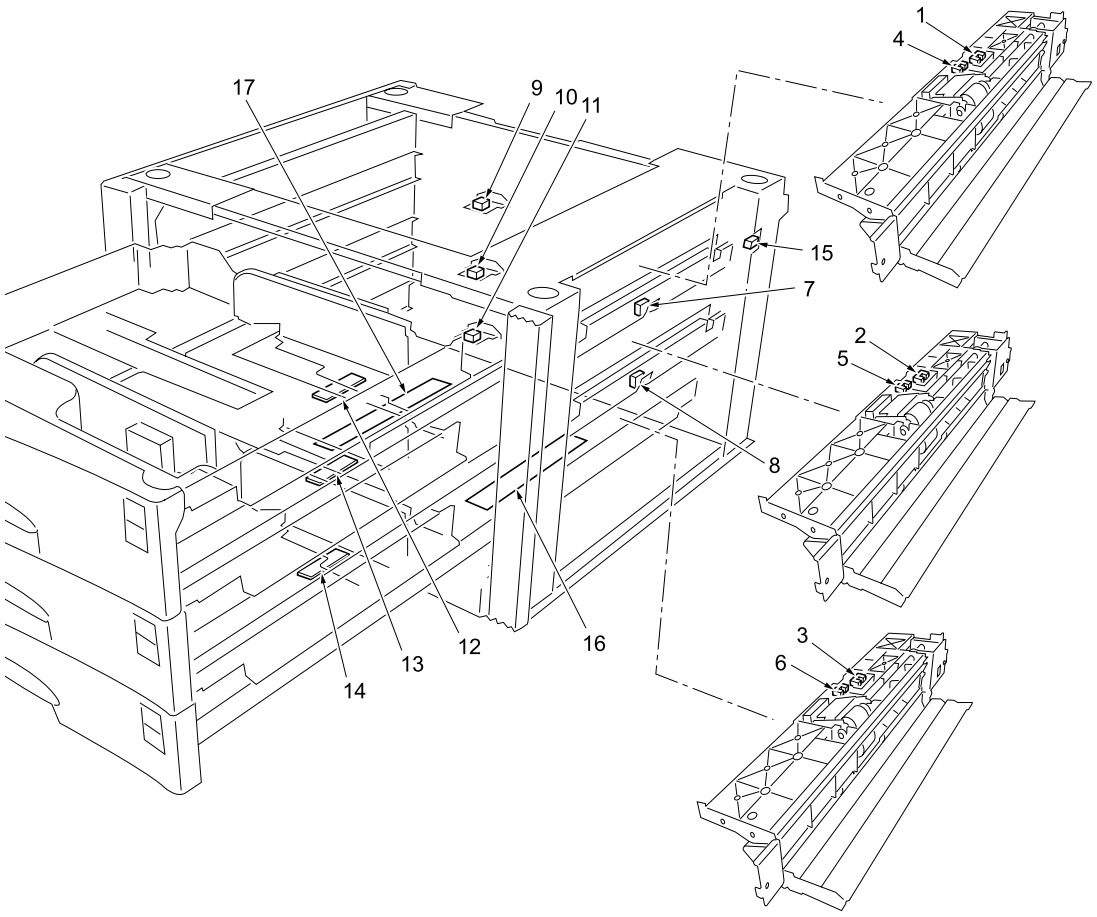



**Figure 2-2-1 Paper feeder inside and primary paper feed unit**

1. Paper feeder upper paper sensor (PFPS-U) ..... Detects paper in the upper paper cassette.
2. Paper feeder middle paper sensor (PFPS-M)..... Detects paper in the middle paper cassette.
3. Paper feeder lower paper sensor (PFPS-L)..... Detects paper in the lower paper cassette.
4. Paper feeder upper limit detection sensor (PFLDS-U) ..... Detects activation of upper limit of the bottom plate in the upper paper cassette.
5. Paper feeder middle limit detection sensor (PFLDS-M)..... Detects activation of upper limit of the bottom plate in the middle paper cassette.
6. Paper feeder lower limit detection sensor (PFLDS-L)..... Detects activation of upper limit of the bottom plate in the lower paper cassette.
7. Paper feeder upper feed sensor (PFFS-U)..... Detects a paper misfeed.
8. Paper feeder lower feed sensor (PFFS-L) ..... Detects a paper misfeed.
9. Paper feeder upper length size switch (PFLSSW-U)..... Detects paper length in the upper paper cassette.
10. Paper feeder middle length size switch (PFLSSW-M)... Detects paper length in the middle paper cassette.
11. Paper feeder lower length size switch (PFLSSW-L)..... Detects paper length in the lower paper cassette.
12. Paper feeder upper width size switch (PFWSSW-U)..... Detects paper width in the upper paper cassette.
13. Paper feeder middle width size switch (PFWSSW-M)... Detects paper width in the middle paper cassette.
14. Paper feeder lower width size switch (PFWSSW-L)..... Detects paper width in the lower paper cassette.
15. Paper feeder right cover open/close switch (PFRCOCSW)..... Detects paper feeder right cover is open.
16. Dehumidify heater 1 (DH1)*..... Dehumidifies the paper feeder inside.
17. Dehumidify heater 2 (DH2)*..... Dehumidifies the paper feeder inside.

*: Optional.

**(2) Paper feeder rear side**

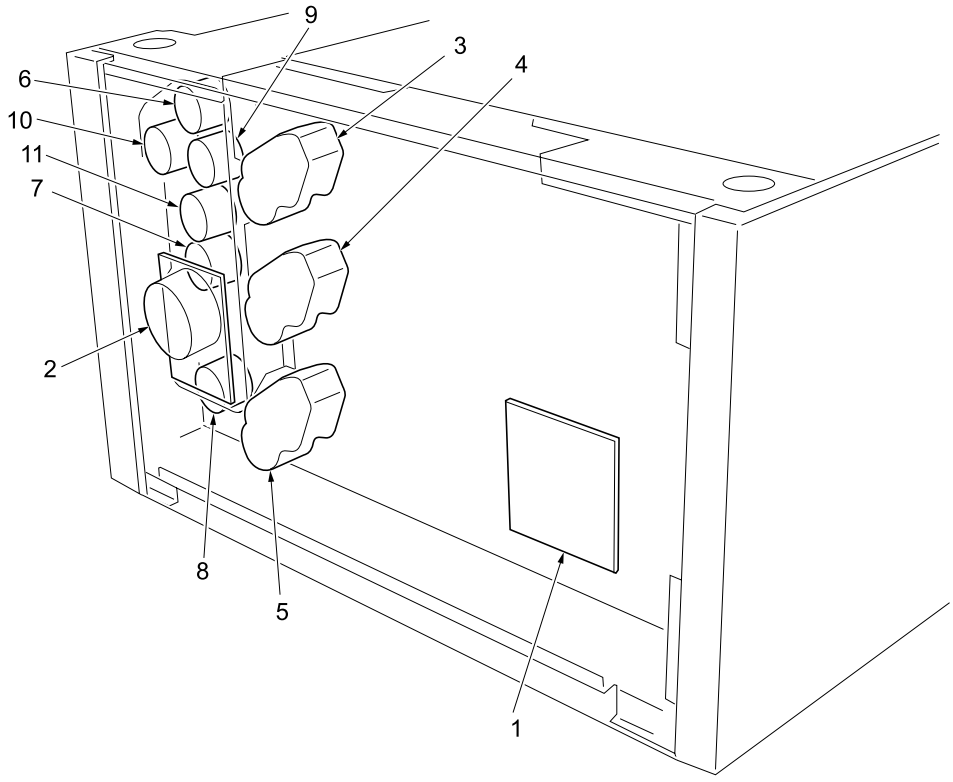



**Figure 2-2-2 Paper feeder rear side**

1. Paper feeder main PWB (PFMPWB)..... Controls electrical components.
2. Paper feeder main motor (PFMM) ..... Drives the paper feed section.
3. Paper feeder upper lift motor (PFLIM-U) ..... Operates the bottom plate in the upper paper cassette.
4. Paper feeder middle lift motor (PFLIM-M)..... Operates the bottom plate in the middle paper cassette.
5. Paper feeder lower lift motor (PFLIM-L)..... Operates the bottom plate in the lower paper cassette.
6. Paper feeder upper feed H clutch (PFFHCL-U)..... Controls the drive of paper feed from the upper paper cassette.
7. Paper feeder middle feed H clutch (PFFHCL-M)..... Controls the drive of paper feed from the middle paper cassette.
8. Paper feeder lower feed H clutch (PFFHCL-L)..... Controls the drive of paper feed from the lower paper cassette.
9. Paper feeder upper feed L clutch (PFFLCL-U)..... Controls the drive of paper feed from the paper cassette.
10. Paper feeder conveying H clutch (PFCONHCL)..... Controls the drive of the feed roller.
11. Paper feeder conveying L clutch (PFCONLCL)..... Controls the drive of the feed roller.

### 2-3-1 Paper feeder main PWB

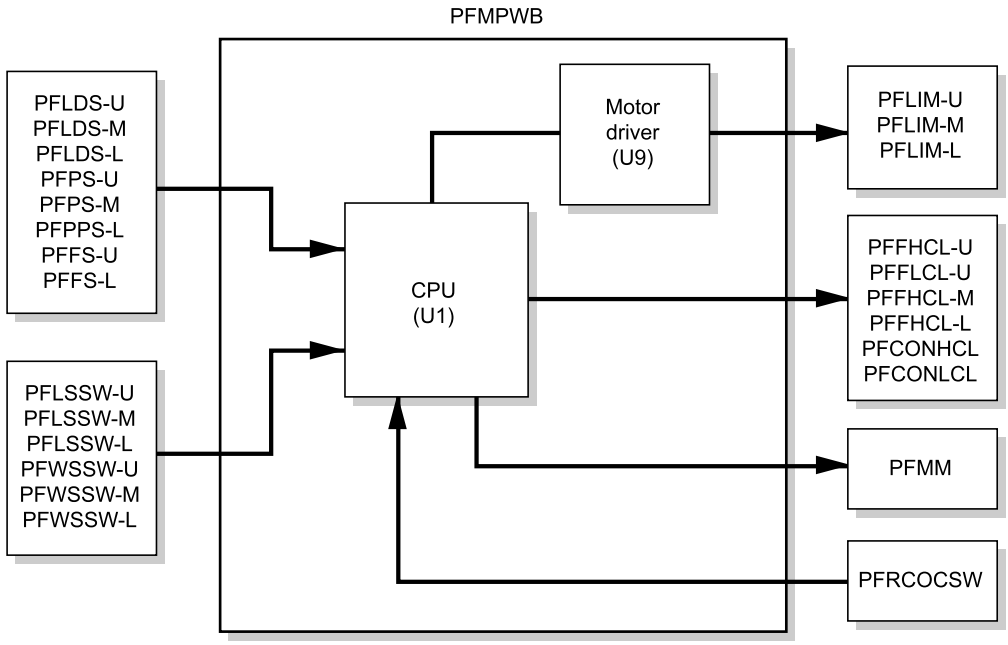



**Figure 2-3-1 Paper feeder main PWB**

The paper feeder main PWB (PFMPWB) is controlled by the engine PWB of the copier or printer and performs operation control of each motor and clutch in the paper feeder and input/output control of each sensor and switch through the CPU (U1) provided on the paper feeder main PWB (PFMPWB).

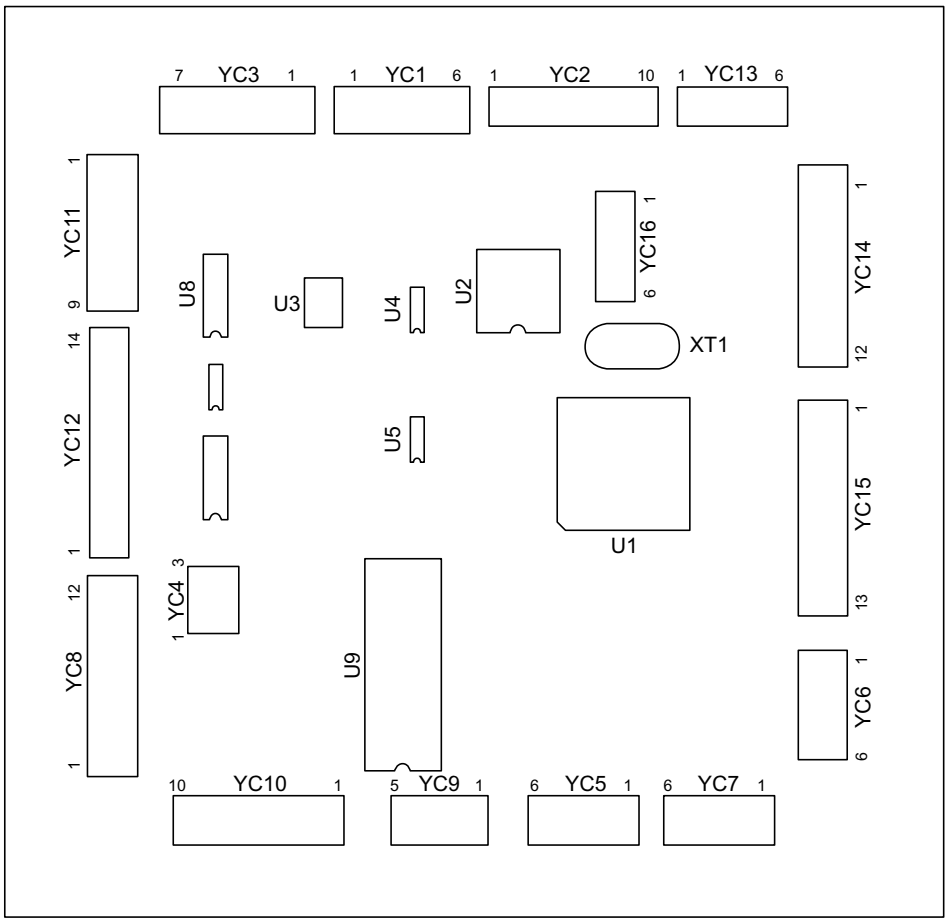


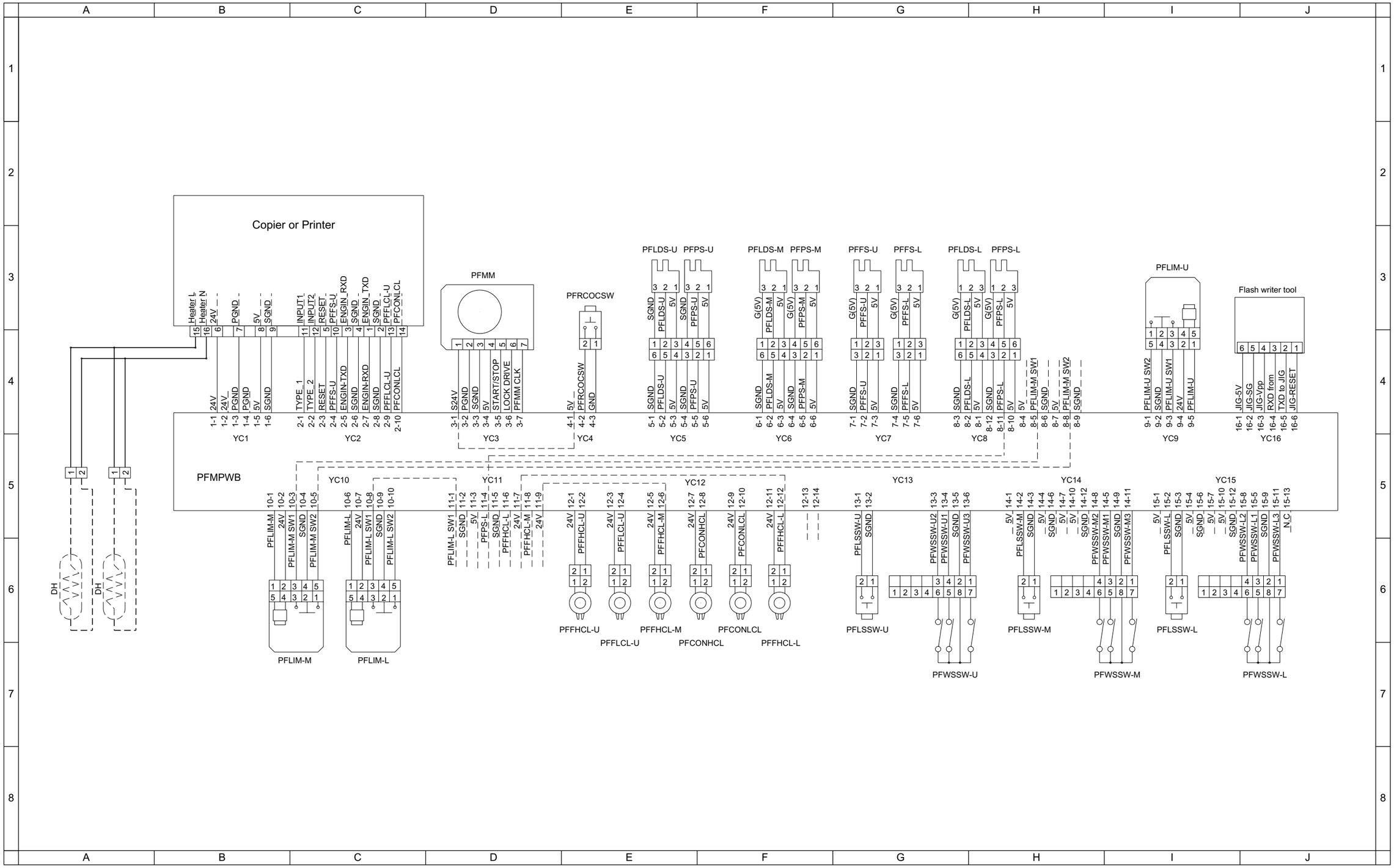

**Figure 2-3-2 Paper feeder main PWB silk-screen diagram**

| Connector | Pin No. | Signal | I/O | Voltage | Description |
|---|---|---|---|---|---|
| YC1 | 1 | 24V | I | 24 V DC | 24 V DC power input |
| Connected to the copier or printer | 3 | PGND | - | - | Ground (power) |
| | 5 | 5V | I | 5 V DC | 5 V DC power input |
| | 6 | SGND | - | - | Ground (signal) |
| YC2 | 1 | TYPE_1 | O | 0 V (ground) | Paper feeder identification signal 1 |
| Connected to the copier or printer | 2 | TYPE_2 | O | - | Not used |
| | 3 | RESET | I | 0/5 V DC | Paper feeder reset signal |
| | 4 | PFFS-U | I | 0/5 V DC | Lower feed sensor: On/Off |
| | 5 | ENGINE-TXD | O | 0/5 V D (pulse) | Paper feeder serial communication signal (transmit) |
| | 6 | SGND | - | - | Ground (signal) |
| | 7 | ENGINE-RXD | I | 0/5 V D (pulse) | Paper feeder serial communication signal (receive) |
| | 8 | SGND | - | - | Ground (signal) |
| | 9 | PFFLCL-U | I | 0/5 V DC | Paper feeder upper feed L clutch: On/Off |
| | 10 | PFFCONLCL | I | 0/5 V DC | Paper feeder conveying L clutch: On/Off |
| YC3 | 1 | S24V | O | 24 V DC | 24 V DC power output |
| Connected to the paper feeder main motor | 2 | PGND | - | - | Ground (power) |
| | 3 | SGND | - | - | Ground (signal) |
| | 4 | 5V | O | 5 V DC | 5 V DC power output |
| | 5 | START/STOP | O | 0/24 V DC | Paper feeder main motor: On/Off |
| | 6 | LOCK/DRIVE | O | 0/5 V DC | Paper feeder main motor drive lock signal |
| | 7 | PFM CLK | O | 0/24 V DC (pulse) | Clock signal for paper feeder main motor |
| YC4 | 2 | PFRCOCSW | I | 0/5 V DC | Paper feeder right cover open/close switch: On/Off |
| Connected to the paper feeder right cover open/ close switch | 3 | SGND | - | - | Ground (signal) |
| YC5 | 1 | SGND | - | - | Ground (signal) |
| Connected to the paper feeder upper limit detection sensor and paper feeder upper paper sensor | 2 | PFLDS-U | I | 0/5 V DC | Paper feeder upper limit detection sensor: On/Off |
| | 3 | 5V | O | 5 V DC | 5 V DC power output |
| | 4 | SGND | - | - | Ground (signal) |
| | 5 | PFPS-U | I | 0/5 V DC | Paper feeder upper paper sensor: On/Off |
| | 6 | 5V | O | 5 V DC | 5 V DC power output |
| YC6 | 1 | SGND | - | - | Ground (signal) |
| Connected to the paper feeder middle limit detection sensor and paper feeder middle paper sensor | 2 | PFLDS-M | I | 0/5 V DC | Paper feeder middle limit detection sensor: On/Off |
| | 3 | 5V | O | 5 V DC | 5 V DC power output |
| | 4 | SGND | - | - | Ground (signal) |
| | 5 | PFPS-M | I | 0/5 V DC | Paper feeder middle paper sensor: On/Off |
| | 6 | 5V | O | 5 V DC | 5 V DC power output |
| YC7 | 1 | SGND | - | - | Ground (signal) |
| Connected to the paper feeder upper/lower feed sensors | 2 | PFFS-U | I | 0/5 V DC | Paper feeder upper feed sensor: On/Off |
| | 3 | 5V | O | 5 V DC | 5 V DC power output |
| | 4 | SGND | - | - | Ground (signal) |
| | 5 | PFFS-L | I | 0/5 V DC | Paper feeder lower feed sensor: On/Off |
| | 6 | 5V | O | 5 V DC | 5 V DC power output |

| Connector | Pin No. | Signal | I/O | Voltage | Description |
|---|---|---|---|---|---|
| YC8 | 1 | 5V | O | 5 V DC | 5 V DC power output |
| Connected to the paper feeder lower limit detection sensor and paper feeder lower paper sensor | 2 | PFLDS-L | O | 0/5 V DC | Paper feeder lower limit detection sensor: On/Off |
| | 3 | SGND | - | - | Ground (signal) |
| | 10 | 5V | O | 5 V DC | 5 V DC power output |
| | 11 | PFPS-L | O | 0/5 V DC | Paper feeder lower paper sensor: On/Off |
| | 12 | SGND | - | - | Ground (signal) |
| YC9 | 1 | PFLIM-U SW2 | I | 0/5 V DC | Paper feeder upper lift motor SW2 signal |
| Connected to the paper feeder upper lift motor | 2 | SGND | - | - | Ground (signal) |
| | 3 | PFLIM-U SW1 | I | 0/5 V DC | Paper feeder upper lift motor SW1 signal |
| | 4 | 24V | O | 24 V DC | 24 V DC power output |
| | 5 | PFLIM-U | O | 0/24 V DC | Paper feeder upper lift motor: On/Off |
| YC10 | 1 | PFLIM-M | O | 0/24 V DC | Paper feeder middle lift motor: On/Off |
| Connected to the paper feeder middle/lower lift motors | 2 | 24V | O | 24 V DC | 24 V DC power output |
| | 3 | PFLIM-M SW1 | I | 0/5 V DC | Paper feeder middle lift motor SW1 signal |
| | 4 | SGND | - | - | Ground (signal) |
| | 5 | PFLIM-M SW2 | I | 0/5 V DC | Paper feeder middle lift motor SW2 signal |
| | 6 | PFLIM-L | O | 0/24 V DC | Paper feeder lower lift motor: On/Off |
| | 7 | 24V | O | 24 V DC | 24 V DC power output |
| | 8 | PFLIM-L SW1 | I | 0/5 V DC | Paper feeder lower lift motor SW1 signal |
| | 9 | SGND | - | - | Ground (signal) |
| | 10 | PFLIM-L SW2 | I | 0/5 V DC | Paper feeder lower lift motor SW2 signal |
| YC12 | 1 | 24V | O | 24 V DC | 24 V DC power output |
| Connected to the paper feeder upper/ middle/lower H clutches, paper feeder upper feed L clutch, and paper feeder conveying H/L clutches | 2 | PFFHCL-U | O | 0/24 V DC | Paper feeder upper feed H clutch: On/Off |
| | 3 | 24V | O | 24 V DC | 24 V DC power output |
| | 4 | PFFLCL-U | O | 0/24 V DC | Paper feeder upper feed L clutch: On/Off |
| | 5 | 24V | O | 24 V DC | 24 V DC power output |
| | 6 | PFFHCL-M | O | 0/24 V DC | Paper feeder middle feed H clutch: On/Off |
| | 7 | 24V | O | 24 V DC | 24 V DC power output |
| | 8 | PFCONHCL | O | 0/24 V DC | Paper feeder conveying H clutch: On/Off |
| | 9 | 24V | O | 24 V DC | 24 V DC power output |
| | 10 | PFCONLCL | O | 0/24 V DC | Paper feeder conveying L clutch: On/Off |
| | 11 | 24V | O | 24 V DC | 24 V DC power output |
| | 12 | PFFHCL-L | O | 0/24 V DC | Paper feeder lower feed H clutch: On/Off |
| YC13 | 1 | PFLSSW-U | I | 0/5 V DC | Paper feeder upper length size switch: On/Off |
| Connected to the paper feeder upper length size switch and paper feeder upper width size switch | 2 | SGND | - | - | Ground (signal) |
| | 3 | PFWSSW-U2 | I | 0/5 V DC | Paper feeder upper width size switch: On/Off |
| | 4 | PFWSSW-U1 | I | 0/5 V DC | Paper feeder upper width size switch: On/Off |
| | 5 | SGND | - | - | Ground (signal) |
| | 6 | PFWSSW-U3 | I | 0/5 V DC | Paper feeder upper width size switch: On/Off |

| Connector | Pin No. | Signal | I/O | Voltage | Description |
|---|---|---|---|---|---|
| YC14 | 2 | PFLSSW-M | I | 0/5 V DC | Paper feeder middle length size switch: On/Off |
| Connected to the paper feeder middle length size switch and paper feeder middle width size switch | 3 | SGND | - | - | Ground (signal) |
| | 5 | PFWSSW-M1 | I | 0/5 V DC | Paper feeder middle width size switch: On/Off |
| | 8 | PFWSSW-M2 | I | 0/5 V DC | Paper feeder middle width size switch: On/Off |
| | 9 | SGND | - | - | Ground (signal) |
| | 11 | PFWSSW-M3 | I | 0/5 V DC | Paper feeder middle width size switch: On/Off |
| YC15 | 2 | PFLSSW-L | I | 0/5 V DC | Paper feeder lower length size switch: On/Off |
| Connected to the paper feeder lower length size switch and paper feeder lower width size switch | 3 | SGND | - | - | Ground (signal) |
| | 5 | PFWSSW-L1 | I | 0/5 V DC | Paper feeder lower width size switch: On/Off |
| | 8 | PFWSSW-L2 | I | 0/5 V DC | Paper feeder lower width size switch: On/Off |
| | 9 | SGND | - | - | Ground (signal) |
| | 11 | PFWSSW-L3 | I | 0/5 V DC | Paper feeder lower width size switch: On/Off |

## Wiring diagram



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