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# DF-73

## SERVICE MANUAL

Published in Sep. '03  
845HL110

### **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.



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# Safety precautions


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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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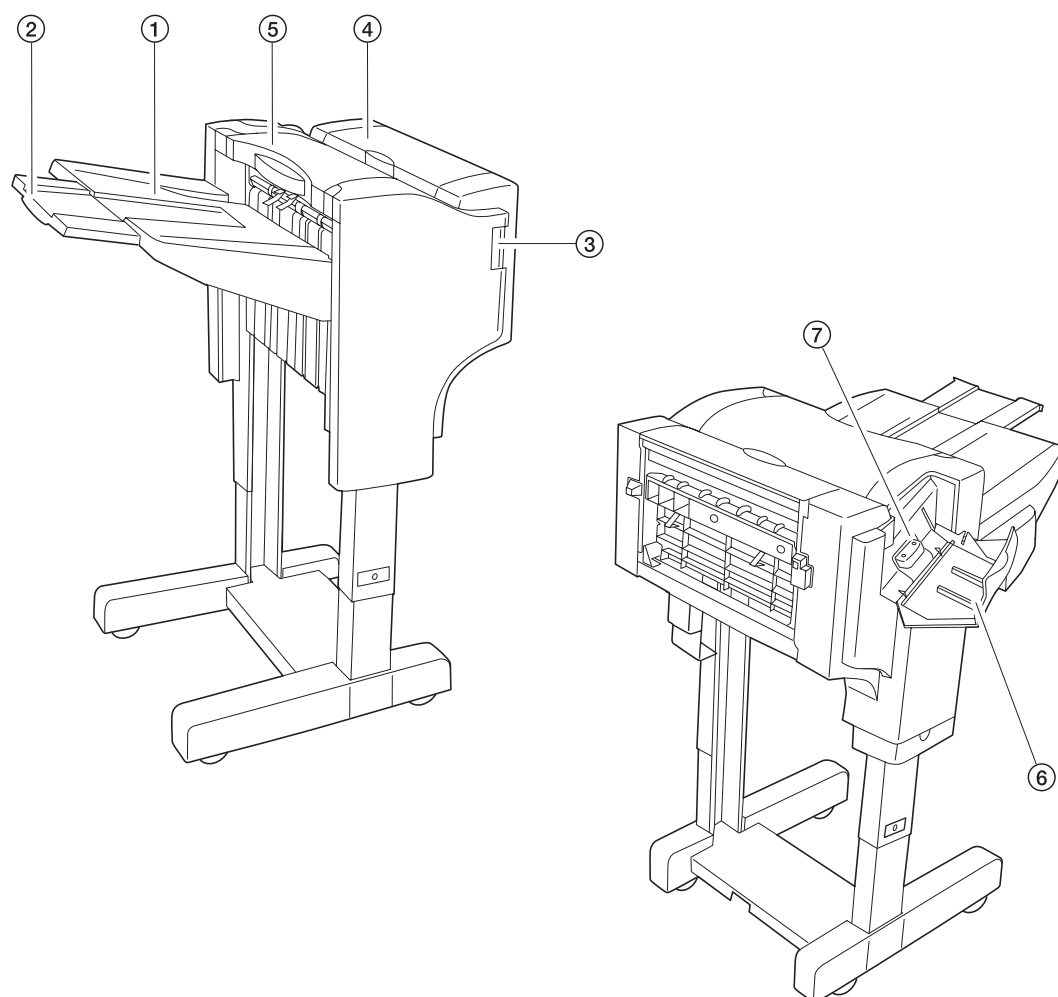
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## 1-1-1 Specifications

Type .....	Floor model
Number of trays .....	One tray
Tray capacity .....	When not stapling: A3, B4 (257 mm × 364 mm), 11" × 17" or 8 <sup>1</sup> / <sub>2</sub> " × 14": 500 sheets A4R, A4, 8 <sup>1</sup> / <sub>2</sub> " × 11" or 11" × 8 <sup>1</sup> / <sub>2</sub> ": 1000 sheets* *A4R and 8 <sup>1</sup> / <sub>2</sub> " × 11" during sorting or offset ejection: 500 sheets (For B5R, job offset is not available.) When stapling 2 or 9 sheets: A3, B4 (257 mm × 364 mm), 11" × 17" or 8 <sup>1</sup> / <sub>2</sub> " × 14": 70 to 28 sets A4R, A4, B5, 8 <sup>1</sup> / <sub>2</sub> " × 11" or 11" × 8 <sup>1</sup> / <sub>2</sub> ": 70 to 50 sets When stapling 10 or 20 sheets: A3, B4 (257 mm × 364 mm), 11" × 17" or 8 <sup>1</sup> / <sub>2</sub> " × 14": 25 to 12 sets A4R, A4, B5, 8 <sup>1</sup> / <sub>2</sub> " × 11" or 11" × 8 <sup>1</sup> / <sub>2</sub> ": 45 to 16 sets When stapling 21 or 30 sheets: A4R, A4, B5, 8 <sup>1</sup> / <sub>2</sub> " × 11" or 11" × 8 <sup>1</sup> / <sub>2</sub> ": 45 to 16 sets
Stapling limit .....	A3, B4 (257 mm × 364 mm), Folio, 11" × 17" or 8 <sup>1</sup> / <sub>2</sub> " × 14": 20 sheets A4R, A4, 8 <sup>1</sup> / <sub>2</sub> " × 11" or 11" × 8 <sup>1</sup> / <sub>2</sub> ": 30 sheets
Power source .....	Electrically connected to the copier
Dimensions .....	558 (W) × 526 (D) × 916 (H) mm 22" (W) × 20 <sup>11</sup> / <sub>16</sub> " (D) × 36 <sup>1</sup> / <sub>16</sub> " (H)
Weight .....	Approx. 25 kg/55 lbs (with attachments)

## 1-1-2 Parts names



**Figure 1-1-1**

- ① Exit tray
- ② Exit tray extension
- ③ Finisher release button
- ④ Reverse cover
- ⑤ Upper cover
- ⑥ Stapler cover
- ⑦ Staple holder

### 1-1-3 Machine cross section

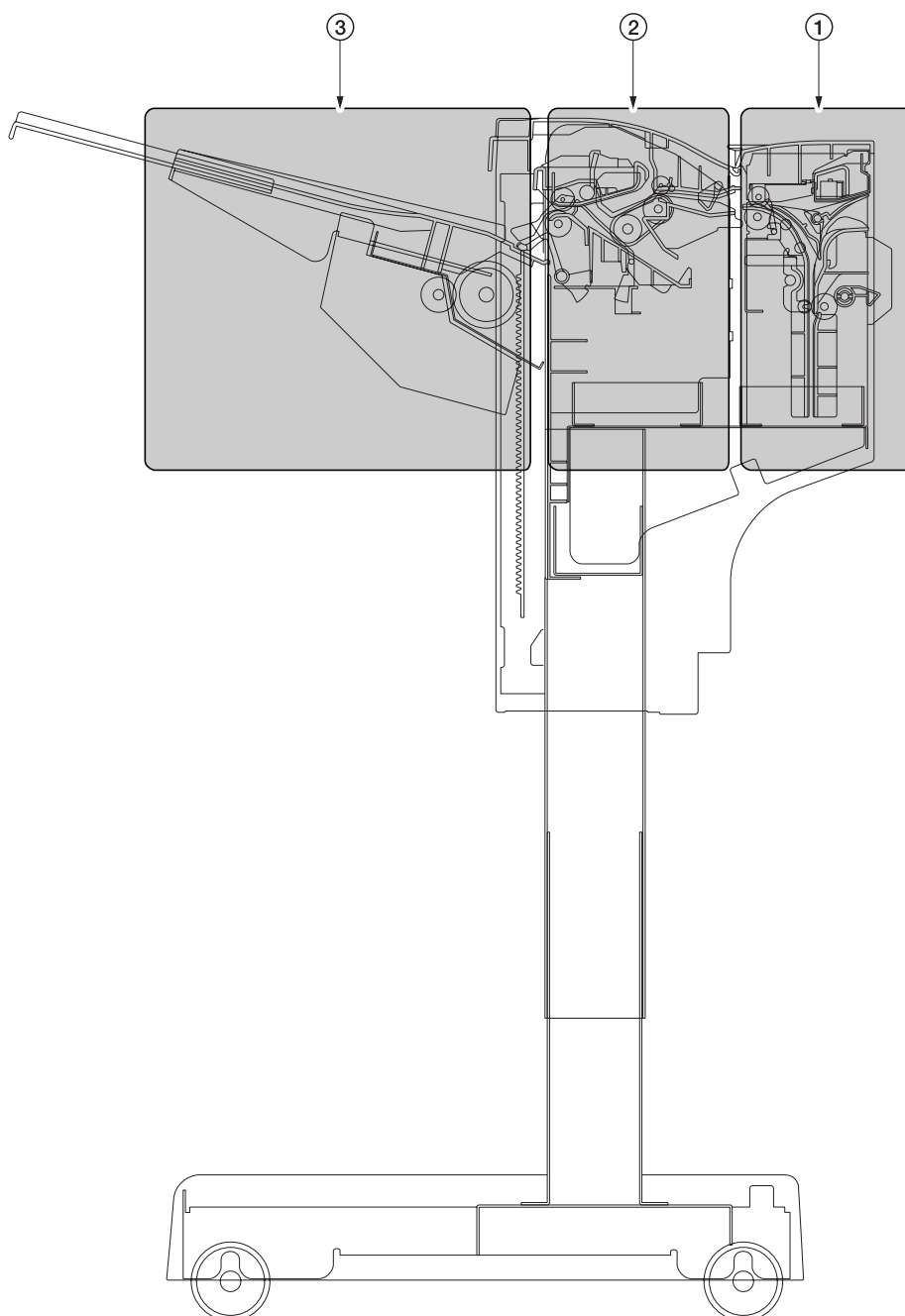


Figure 1-1-2 Machine cross section

- ① Reverse section
- ② Processing section
- ③ Exit tray section

## 1-1-4 Drive system

### (1) Drive system 1 (machine front side)

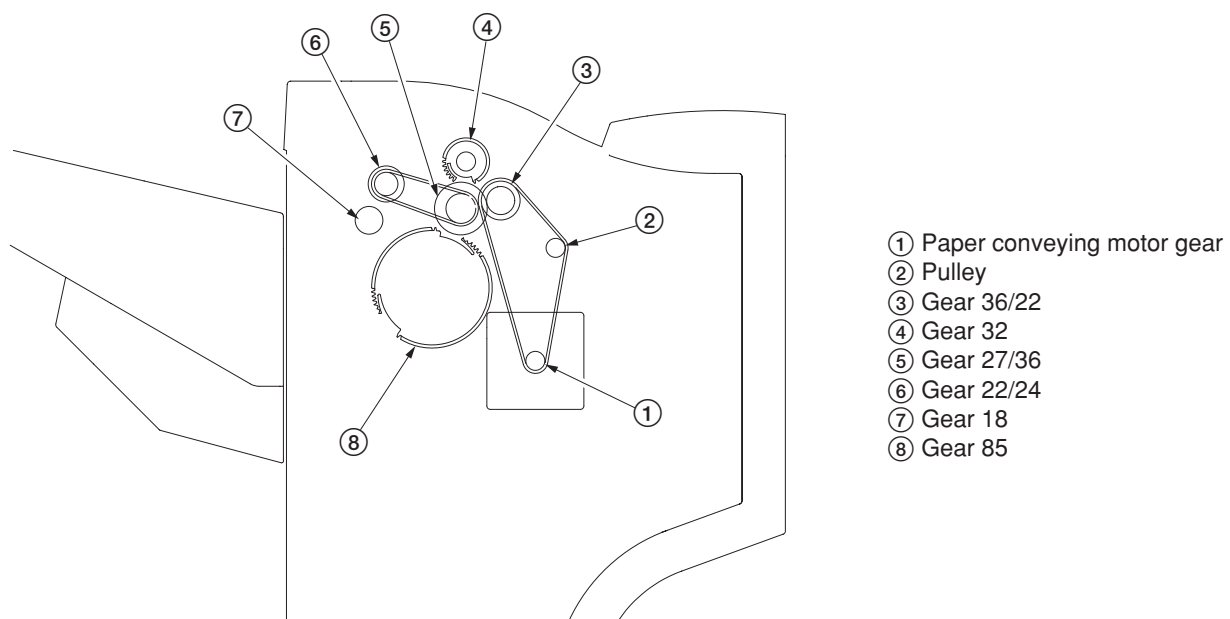


Figure 1-1-3

### (2) Drive system 2 (machine rear side)

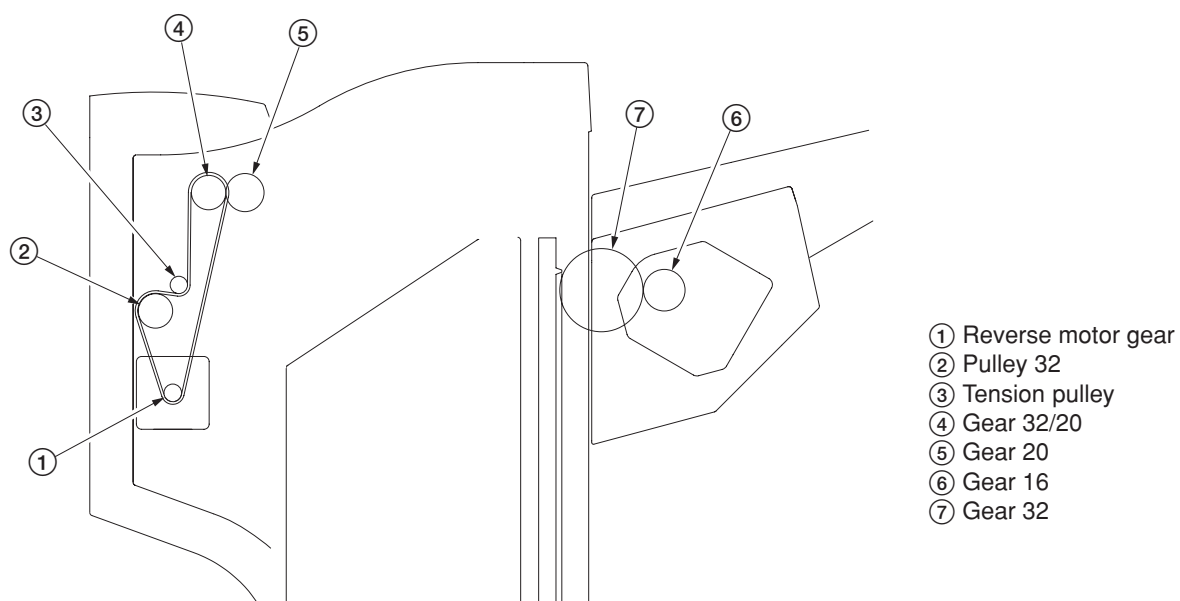


Figure 1-1-4

## 1-2-1 Unpacking and installation

### (1) Unpacking

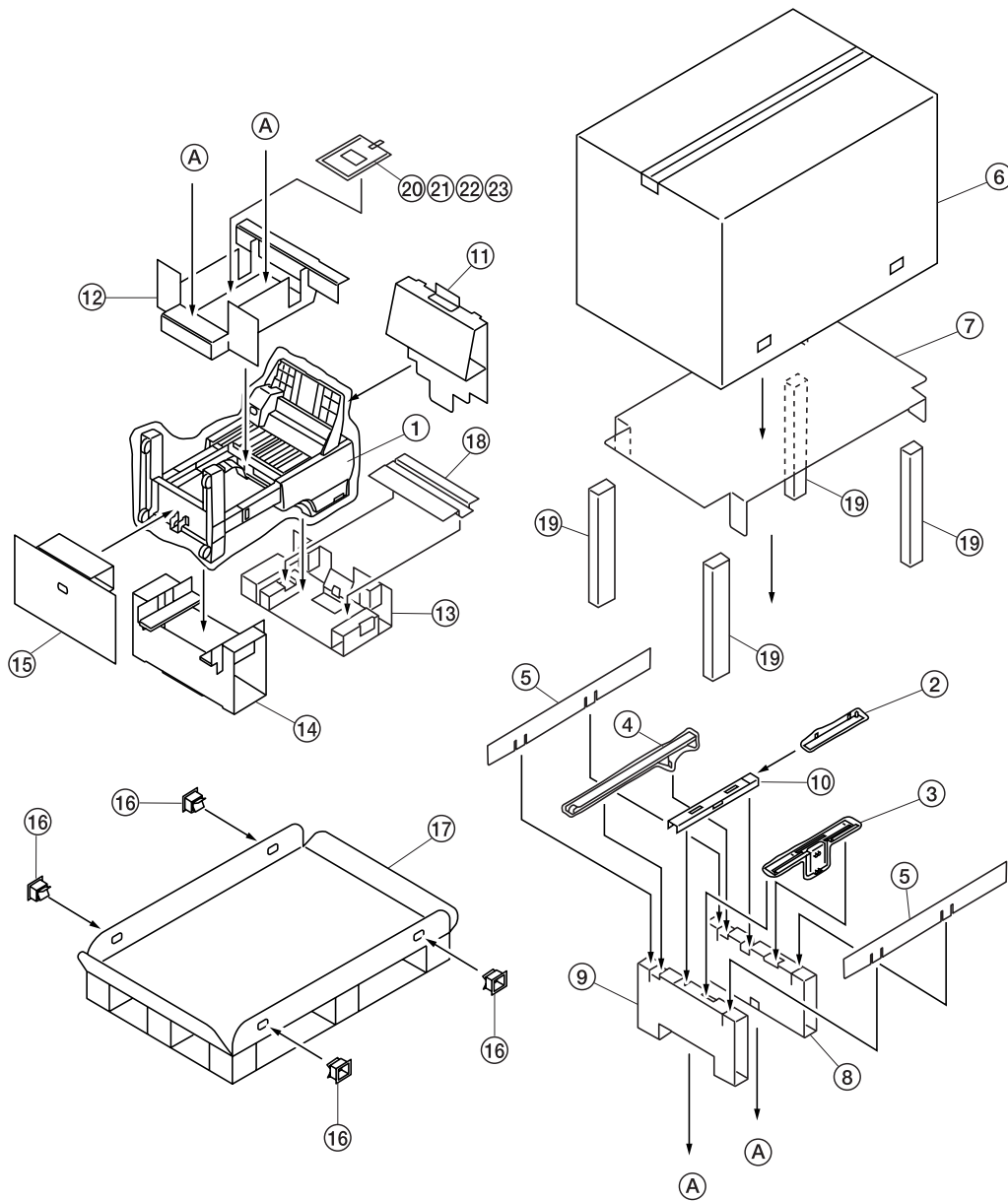


Figure 1-2-1 Unpacking

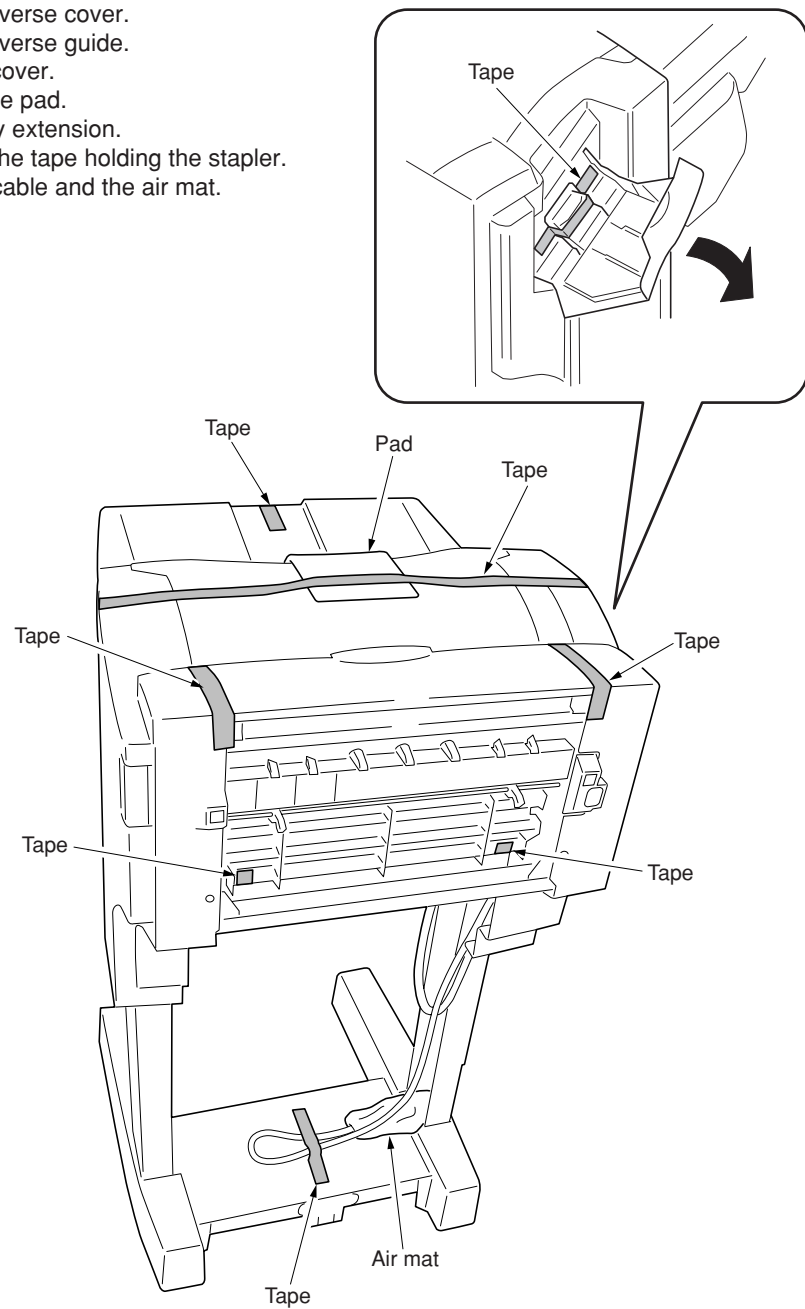
- |                     |                         |
|---------------------|-------------------------|
| ① Document finisher | ⑬ Pad                   |
| ② Latch catch       | ⑭ Pad                   |
| ③ Rail retainer     | ⑮ Pad                   |
| ④ Guide rail        | ⑯ Hinge joints          |
| ⑤ Joints            | ⑰ Skid                  |
| ⑥ Outer case        | ⑱ Pad                   |
| ⑦ Top plate         | ⑲ Supports              |
| ⑧ Pad               | ⑳ Installation handbook |
| ⑨ Pad               | ㉑ Clamp                 |
| ⑩ Pad               | ㉒ M4x6 binding screws   |
| ⑪ Pad               | ㉓ M4x10 binding screws  |
| ⑫ Pad               |                         |

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

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

**Procedure**

1. Remove the two tapes holding the reverse cover.
2. Remove the two tapes holding the reverse guide.
3. Remove the tape holding the upper cover.
4. Open the upper cover and remove the pad.
5. Remove the tape holding the exit tray extension.
6. Open the stapler cover and remove the tape holding the stapler.
7. Remove the tape holding the signal cable and the air mat.



**Figure 1-2-2**

### 1-3-1 Paper misfeed detection

#### (1) Paper misfeed indication

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

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

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

#### (2) Paper misfeed detection conditions

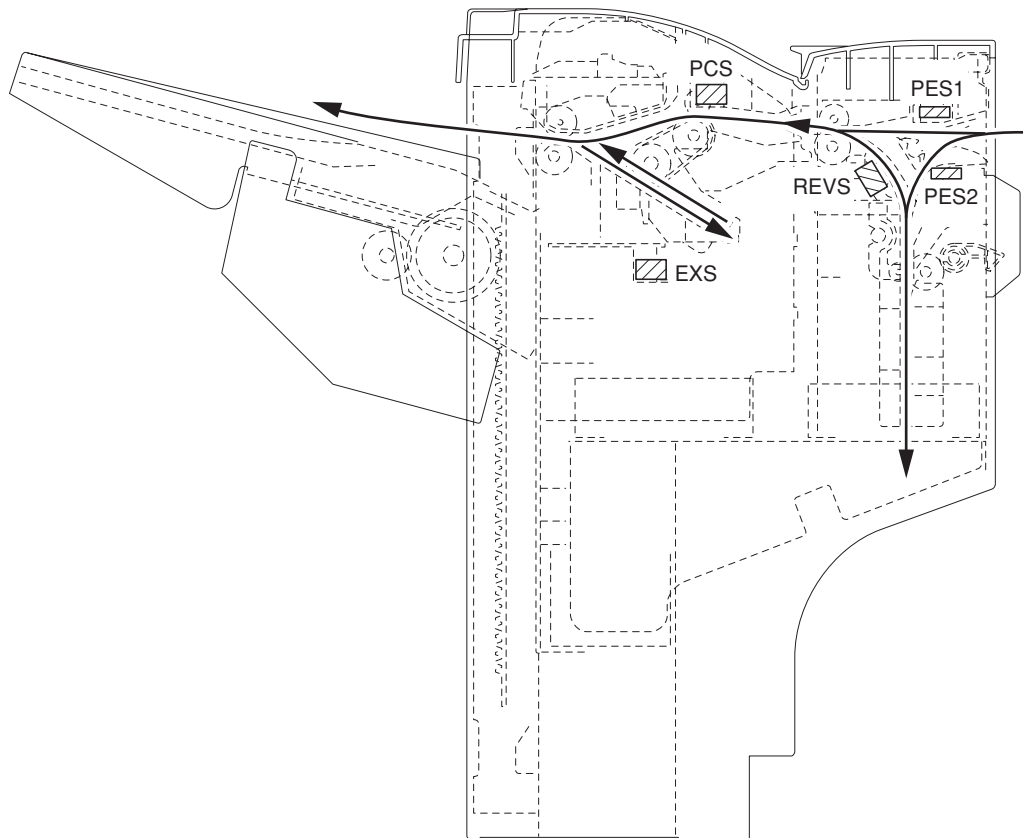


Figure 1-3-1



Section	Jam code	Description	Conditions
Reverse section	80	Paper entry sensor non-arrival jam	The paper entry sensor (PES) is not turned on even if a specified time has elapsed after the copier exit signal was received.
	81	Paper entry sensor stay jam	The paper entry sensor (PES) is not turned off even if a specified time has elapsed after the paper entry sensor (PES) was turned on.
		Paper entry sensor remaining jam	The ON status of the paper entry sensor (PES) is detected when the power is turned on.
	82	Reverse sensor non-arrival jam	The reverse sensor (REVS) is not turned on even if a specified time has elapsed after the paper entry sensor (PES) was turned on.
			The reverse sensor (REVS) is not turned on even if a specified time has elapsed after paper was reversed.
	83	Reverse sensor stay jam	The reverse sensor (REVS) is not turned off even if a specified time has elapsed after the reverse sensor (REVS) was turned on.
		Reverse sensor remaining jam	The ON status of the reverse sensor (REVS) is detected when the power is turned on.
Processing section	84	Paper conveying sensor non-arrival jam	The paper conveying sensor (PCS) is not turned on even if a specified time has elapsed after the reverse sensor (REVS) was turned on.
	85	Paper conveying sensor stay jam	The paper conveying sensor (PCS) is not turned off even if a specified time has elapsed after the reverse sensor (REVS) was turned off.
		Paper conveying sensor remaining jam	The ON status of the paper conveying sensor (PCS) is detected when the power is turned on.
	86	Exit sensor non-arrival jam	In the straight mode, the exit sensor (EXS) is not turned on even if a specified time has elapsed after the paper entry sensor (PES) was turned on.
	87	Exit sensor stay jam	In the straight mode, the exit sensor (EXS) is not turned off even if a specified time has elapsed after the exit sensor (EXS) was turned on.
			In the offset or staple mode, the exit sensor (EXS) is not turned off when a specified time elapses after the bundle discharge unit starts descending.
		Exit sensor remaining jam	The ON status of the exit sensor (EXS) is detected when the power is turned on.

**(3) Paper misfeeds**

<b>Problem</b>	<b>Causes/check procedures</b>	<b>Corrective measures</b>
(1) An paper jams when the power switch is turned on. Jam code 81, 83, 85, 87	A piece of paper torn from an paper is caught around the paper entry sensor.	Check visually and remove it, if any.
	Defective paper entry sensor.	With 5 V DC present at CN14-1 and CN14-3 on the main PCB, check if CN14-2 and CN14-4 on the main PCB remains low or high when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	A piece of paper torn from an paper is caught around the reverse sensor.	Check visually and remove it, if any.
	Defective reverse sensor.	With 5 V DC present at CN14-5 on the main PCB, check if CN14-7 on the main PCB remains low or high when the reverse sensor is turned on and off. If it does, replace the reverse sensor.
	A piece of paper torn from an paper is caught around the paper conveying sensor.	Check visually and remove it, if any.
	Defective paper conveying sensor.	With 5 V DC present at CN4-4 on the main PCB, check if CN4-6 on the main PCB remains low or high when the paper conveying sensor is turned on and off. If it does, replace the paper conveying sensor.
	A piece of paper torn from an paper is caught around the exit sensor.	Check visually and remove it, if any.
	Defective exit sensor.	With 5 V DC present at CN5-4 on the main PCB, check if CN5-6 on the main PCB remains low or high when the exit sensor is turned on and off. If it does, replace the exit sensor.
(2) An paper jams in the reverse section is indicated during copying (paper entry sensor non-arrival jam). Jam code 80	Defective main PCB.	Replace the main PCB and check for correct operation.
	Extremely curled paper.	Change the paper.
	Defective paper entry sensor.	With 5 V DC present at CN14-1 and CN14-3 on the main PCB, check if CN14-2 and CN14-4 on the main PCB remains low or high when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	Check if the paper entry guide is deformed.	Check and remedy.
(3) An paper jams in the reverse section is indicated during copying (paper entry sensor stay jam). Jam code 81	Defective main PCB.	Replace the main PCB and check for correct operation.
	Extremely curled paper.	Change the paper.
	Defective paper entry sensor.	With 5 V DC present at CN14-1 and CN14-3 on the main PCB, check if CN14-2 and CN14-4 on the main PCB remains low or high when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	Check if the paper entry guide is deformed.	Check and remedy.

Problem	Causes/check procedures	Corrective measures
(4) An paper jams in the reverse section is indicated during copying (reverse sensor non-arrival jam). Jam code 82	Defective reverse sensor.	With 5 V DC present at CN14-5 on the main PCB, check if CN14-7 on the main PCB remains low or high when the reverse sensor is turned on and off. If it does, replace the reverse sensor.
	Check if the reverse motor malfunctions.	Check (see page 1-3-8).
	Check if the reverse roller and reverse pulley contact each other.	Check and remedy.
	Check if the reverse guide is deformed.	Check and remedy.
	Defective main PCB.	Replace the main PCB and check for correct operation.
(5) An paper jams in the reverse section is indicated during copying (reverse sensor stay jam). Jam code 83	Defective reverse sensor.	With 5 V DC present at CN14-5 on the main PCB, check if CN14-7 on the main PCB remains low or high when the reverse sensor is turned on and off. If it does, replace the reverse sensor.
	Check if the reverse motor malfunctions.	Check (see page 1-3-8).
	Check if the reverse roller and reverse pulley contact each other.	Check and remedy.
	Check if the reverse guide is deformed.	Check and remedy.
	Defective main PCB.	Replace the main PCB and check for correct operation.
(6) An paper jams in the processing section is indicated during copying (paper conveying sensor non-arrival jam). Jam code 84	Defective paper conveying sensor.	With 5 V DC present at CN4-4 on the main PCB, check if CN4-6 on the main PCB remains low or high when the paper conveying sensor is turned on and off. If it does, replace the paper conveying sensor.
	Check if the paper conveying motor malfunctions.	Check (see page 1-3-8).
	Check if the paper conveying roller and paper conveying pulley contact each other.	Check and remedy.
	Check if the paper conveying guide is deformed.	Check and remedy.
	Defective main PCB.	Replace the main PCB and check for correct operation.
(7) An paper jams in the processing section is indicated during copying (paper conveying sensor stay jam). Jam code 85	Defective paper conveying sensor.	With 5 V DC present at CN4-4 on the main PCB, check if CN4-6 on the main PCB remains low or high when the paper conveying sensor is turned on and off. If it does, replace the paper conveying sensor.
	Check if the paper conveying motor malfunctions.	Check (see page 1-3-8).
	Check if the paper conveying roller and paper conveying pulley contact each other.	Check and remedy.

Problem	Causes/check procedures	Corrective measures
(7) An paper jams in the processing section is indicated during copying (paper conveying sensor stay jam). Jam code 85	Check if the paper conveying guide is deformed.	Check and remedy.
	Defective main PCB.	Replace the main PCB and check for correct operation.
(8) An paper jams in the processing section is indicated during copying (exit sensor non-arrival jam). Jam code 86	Defective exit sensor.	With 5 V DC present at CN5-4 on the main PCB, check if CN5-6 on the main PCB remains low or high when the exit sensor is turned on and off. If it does, replace the exit sensor.
	Check if the paper conveying motor malfunctions.	Check (see page 1-3-8).
	Check if the exit roller and exit pulley contact each other.	Check and remedy.
	Check if the exit guide is deformed.	Check and remedy.
	Defective main PCB.	Replace the main PCB and check for correct operation.
(9) An paper jams in the processing section is indicated during copying (exit sensor stay jam). Jam code 87	Defective exit sensor.	With 5 V DC present at CN5-4 on the main PCB, check if CN5-6 on the main PCB remains low or high when the exit sensor is turned on and off. If it does, replace the exit sensor.
	Check if the paper conveying motor malfunctions.	Check (see page 1-3-8).
	Check if the exit roller and exit pulley contact each other.	Check and remedy.
	Check if the exit guide is deformed.	Check and remedy.
	Defective main PCB.	Replace the main PCB and check for correct operation.

## 1-3-2 Self-diagnosis

### (1) Self-diagnostic function

When a problem is detected in the finisher, copying is disabled and the copier operation section displays a code consisting of "C" followed by a number between 8030 and 8460, indicating the nature of the problem.

After removing the problem, the self-diagnostic function can be reset by reattaching the finisher to turn the joint switch off and on. (C8440 and C8460, however, are released by turning the power off and then on.)

### (2) Self diagnostic codes

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
<b>C8030</b>	<b>Tray upper limit detection problem</b> When the tray elevation motor raises a tray, the ON status of the tray upper limit sensor is detected.	The tray upper limit sensor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective tray upper limit sensor.	Replace the tray upper limit sensor and check for correct operation.
		The push paper sensor or surface view sensor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective push paper sensor or surface view sensor.	Replace the push paper sensor or surface view sensor and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.
<b>C8140</b>	<b>Tray elevation motor problem</b> When the tray elevation motor is driving, the ON status of the tray lower limit sensor or surface view sensor cannot be detected even if a specified time has elapsed.	The tray elevation motor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The tray elevation motor malfunctions.	Replace the tray elevation motor and check for correct operation.
		The tray lower limit connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective tray lower limit sensor.	Replace the tray lower limit sensor or surface view sensor and check for correct operation.
		The push paper sensor or surface view sensor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective push paper sensor or surface view sensor.	Replace the push paper sensor or surface view sensor and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
C8170	<b>Adjustment motor problem</b> When the adjustment motor is driving, the ON status of the adjustment home position sensor cannot be detected even if a specified time has elapsed. When adjustment operation starts, the ON status of the adjustment home position sensor is not detected.	The Adjustment motor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The Adjustment motor malfunctions.	Replace the Adjustment motor and check for correct operation.
		The Adjustment 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.
		Defective Adjustment home position sensor.	Replace the Adjustment home position sensor and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.
C8210	<b>Stapler problem</b> When the stapler motor is driving, the ON status of the stapler home position sensor cannot be detected even if a specified time has elapsed.	The stapler connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		The stapler is blocked with a staple.	Remove the stapler cartridge, and check the cartridge and the stapling section of the stapler.
		The stapler is broken.	Replace the stapler and check for correct operation.
		Defective main PCB.	Replace the main PCB and check for correct operation.
C8440	<b>Sensor adjusting problem</b> The sensor cannot be adjusted within the specified range.	The paper entry sensor connector makes poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
		Defective paper entry sensor.	Replace the paper entry sensor and check for correct operation.
		The optical path of the paper entry sensor is blocked by foreign matter.	Remove the foreign matter.
		Defective main PCB	Replace the main PCB and check for correct operation.
C8460	<b>EEPROM problem</b> Reading from or writing to EEPROM cannot be performed.	Defective EEPROM or main PCB.	Replace the main PCB and check for correct operation.

### 1-3-3 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The reverse motor does not operate.	Poor contact in the reverse motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective reverse motor.	Check if the reverse motor rotates when 24 V DC is present at CN15-1 and CN15-2, and drive pulses are at CN15-3, CN15-4, CN15-5 and CN15-6 on the main PCB. If not, replace the reverse motor.
	Defective main PCB.	Check if CN15-3, CN15-4, CN15-5 and CN15-6 on the main PCB goes low. If not, replace the main PCB.
(2) The paper conveying motor does not operate.	Poor contact in the paper conveying motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective paper conveying motor.	Check if the paper conveying motor rotates when 24 V DC is present at CN7-5 and CN7-6, and drive pulses are at CN7-1, CN7-2, CN7-3 and CN7-4 on the main PCB. If not, replace the paper conveying motor.
	Defective main PCB.	Check if CN7-1, CN7-2, CN7-3 and CN7-4 on the main PCB goes low. If not, replace the main PCB.
(3) The adjustment motor does not operate.	Poor contact in the adjustment motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective adjustment motor.	Check if the adjustment motor rotates when drive pulses are at CN8-1, CN8-2, CN8-3 and CN8-4 on the main PCB. If not, replace the adjustment motor.
	Defective main PCB.	Check if CN8-1, CN8-2, CN8-3 and CN8-4 on the main PCB goes low. If not, replace the main PCB.
(4) The tary elevation motor does not operate.	Poor contact in the tary elevation motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective tary elevation motor.	Check if the tary elevation motor rotates when 24 V DC is present at CN11-7 and CN11-8 on the main PCB. If not, replace the tary elevation motor.
	Defective main PCB.	Check if 24 V DC is present at CN11-7 and CN11-8 on the main PCB. If not, replace the main PCB.
(5) The separate solenoid does not operate.	Defective separate solenoid coil.	Check for continuity across the coil. If none, replace the separate solenoid.
	Poor contact in the separate solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN12-3 on the main PCB goes low. If not, replace the main PCB.
(6) The flapper solenoid does not operate.	Defective flapper solenoid coil.	Check for continuity across the coil. If none, replace the flapper solenoid.
	Poor contact in the flapper solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN12-1 on the main PCB goes low. If not, replace the main PCB.

Problem	Causes	Check procedures/corrective measures
(7) The large gear solenoid does not operate.	Defective large gear solenoid coil.	Check for continuity across the coil. If none, replace the large gear solenoid.
	Poor contact in the large gear solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN17-2 on the main PCB goes low. If not, replace the main PCB.
(8) The paddle solenoid does not operate.	Defective paddle solenoid coil.	Check for continuity across the coil. If none, replace the paddle solenoid.
	Poor contact in the paddle solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN9-2 on the main PCB goes low. If not, replace the main PCB.
(9) The surface view solenoid does not operate.	Defective surface view solenoid coil.	Check for continuity across the coil. If none, replace the surface view solenoid.
	Poor contact in the surface view solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Check if CN6-2 and CN6-3 on the main PCB goes low. If not, replace the main PCB.
(10) Paper jams when the power switch is turned on.	A piece of paper torn from an paper is caught around the paper entry sensor.	Check visually and remove it, if any.
	Defective paper entry sensor.	With 5 V DC present at CN14-1 and CN14-3 on the main PCB, check if CN14-2 and CN14-4 on the main PCB remains low or high when the paper entry sensor is turned on and off. If it does, replace the paper entry sensor.
	A piece of paper torn from an paper is caught around the reverse sensor.	Check visually and remove it, if any.
	Defective reverse sensor.	With 5 V DC present at CN14-5 on the main PCB, check if CN14-7 on the main PCB remains low or high when the reverse sensor is turned on and off. If it does, replace the reverse sensor.
	A piece of paper torn from an paper is caught around the paper conveying sensor.	Check visually and remove it, if any.
	Defective paper conveying sensor.	With 5 V DC present at CN4-4 on the main PCB, check if CN4-6 on the main PCB remains low or high when the paper conveying sensor is turned on and off. If it does, replace the paper conveying sensor.
	A piece of paper torn from an paper is caught around the exit sensor.	Check visually and remove it, if any.
	Defective exit sensor.	With 5 V DC present at CN5-4 on the main PCB, check if CN5-6 on the main PCB remains low or high when the exit sensor is turned on and off. If it does, replace the exit sensor.
	Defective main PCB.	Replace the main PCB and check for correct operation.



Problem	Causes	Check procedures/corrective measures
(11) "Out of staples. Add staples." is displayed when the power switch is turned on.	Defective stapler empty sensor.	With 5 V DC present at CN10-6 on the main PCB, check if CN10-6 on the main PCB remains low or high when the stapler empty sensor is turned on and off. If it does, replace the stapler empty sensor.
	Poor contact in the stapler empty sensor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective stapler cartridge sensor.	With 5 V DC present at CN10-5 on the main PCB, check if CN10-5 on the main PCB remains low or high when the stapler cartridge sensor is turned on and off. If it does, replace the stapler cartridge sensor.
	Poor contact in the stapler cartridge sensor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Replace the main PCB and check for correct operation.

### 1-3-4 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No paper conveying.	Paper outside specifications is used.	Use only paper conforming to the specifications.
	Check if the surfaces of the paper conveying roller, paper conveying pulleys, reverse roller and reverse pulleys are soiled with paper powder.	Clean with isopropyl alcohol, if they are soiled.
	Check if the paper conveying roller, paper conveying pulleys, reverse roller and reverse pulleys are deformed.	Replace any deformed or worn pulleys or roller.
(2) No paper ejection to the exit tray.	Paper outside specifications is used.	Use only paper conforming to the specifications.
	Check if the surfaces of the exit roller and pulleys are soiled with paper powder.	Clean with isopropyl alcohol, if they are soiled.
	Check if the exit roller and pulleys are deformed.	Replace any deformed or worn pulleys or roller.
(3) Paper jams.	Paper outside specifications is used.	Use only paper conforming to the specifications.
	Check if the paper is extremely curled.	Change the paper.
	Check if the paper conveying roller and pulleys, or reverse roller and pulleys make proper contact.	Remedy if there are any problems.
	Check if the exit roller and pulleys make proper contact.	Remedy if there are any problems.
(4) Abnormal noise is heard.	Check if rollers, pulleys and gears all operate smoothly.	Apply grease to the bushings and gears.
	Check to see if the vibration noise of each motor is abnormally high.	Readjust the tension of the motor bracket.

## 1-4-1 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

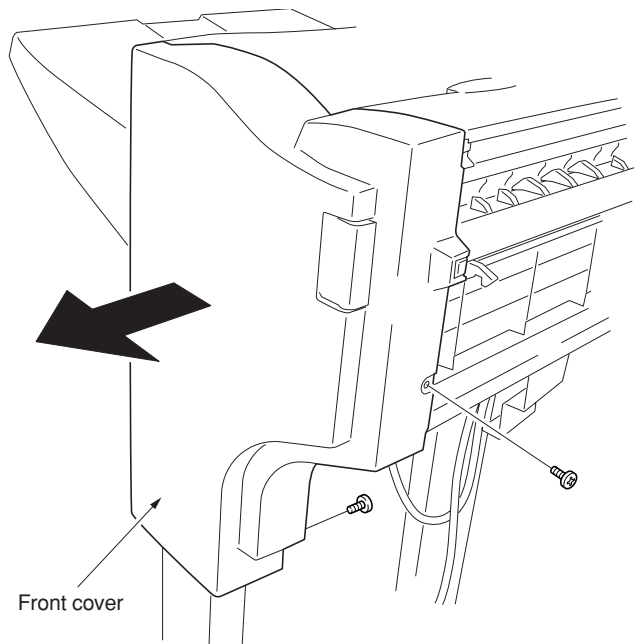
\* Capable of measuring RMS values.

**(2) Cleaning the paper conveying roller and reverse exit roller**

Follow the procedure below to clean the paper conveying roller and reverse exit roller.

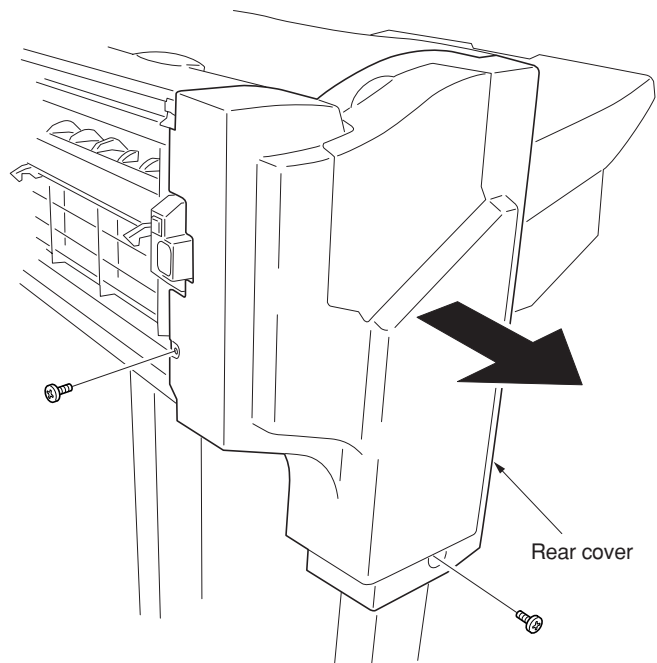
**Procedure**

1. Remove the two screws holding the front cover and then the cover.



**Figure 1-4-1**

2. Remove the two screws holding the rear cover and then the cover.



**Figure 1-4-2**

3. Open the upper cover and release the front and rear stopper.
4. Release the fitting portions of the upper cover and then remove the cover.

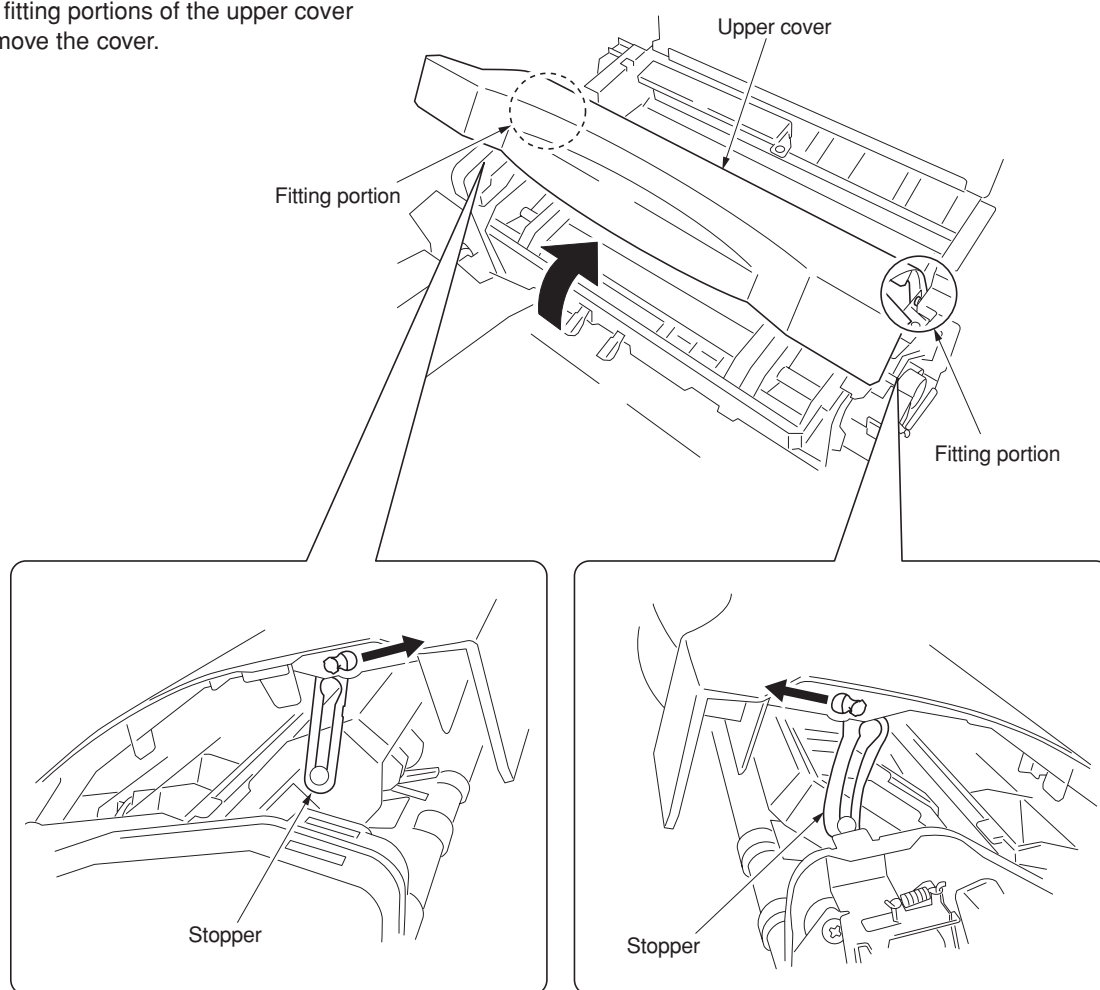


Figure 1-4-3

5. Remove the two screws and connector and then remove the paper conveying guide unit.
6. Clean the paper conveying roller and reverse exit roller.

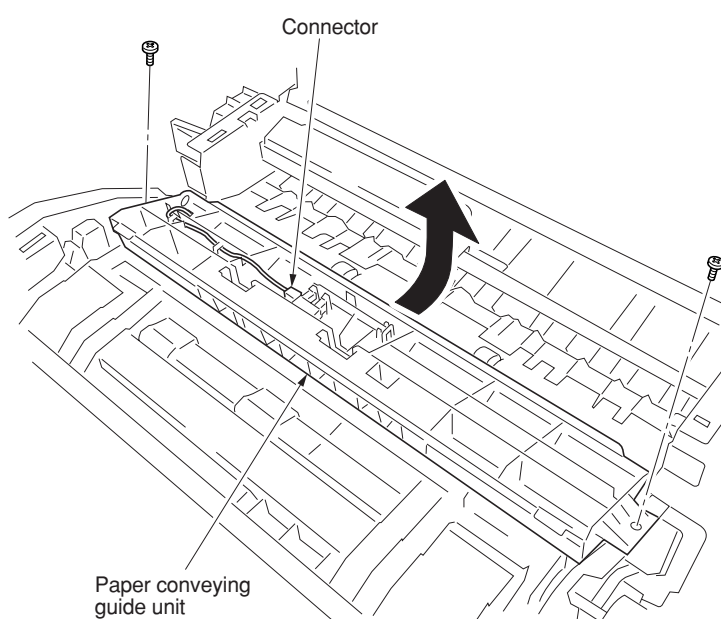


Figure 1-4-4

## 2-1-1 Mechanical construction

### (1) Reverse section

The reverse section consists of the components shown in Fig. 2-1-1 and conveys paper that is fed from the copier into the finisher to the reverse unit or the processing section. Feedshift to the reverse unit or the processing section is performed with the flapper that is activated by the flapper solenoid (FSOL).

In the reverse mode, paper that is fed into the finisher is temporarily fed to the reverse unit, is reversed, and then is conveyed to the processing section with the rotation of the reverse roller and reverse exit roller.

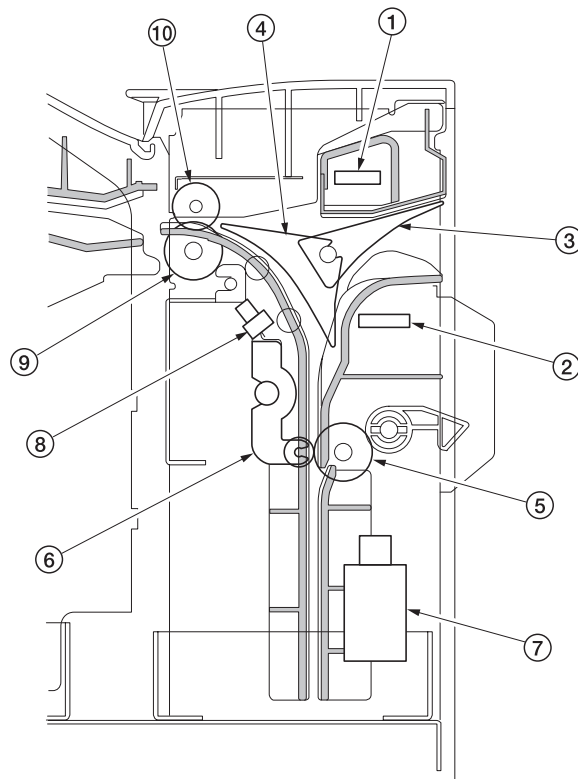


Figure 2-1-1

- |                               |                            |
|-------------------------------|----------------------------|
| ① Paper entry sensor 1 (PES1) | ⑥ Reverse pulley           |
| ② Paper entry sensor 2 (PES2) | ⑦ Separate solenoid (SSOL) |
| ③ Flapper                     | ⑧ Reverse sensor (REVS)    |
| ④ Flapper                     | ⑨ Reverse exit roller      |
| ⑤ Reverse roller              | ⑩ Paper conveying pulley   |

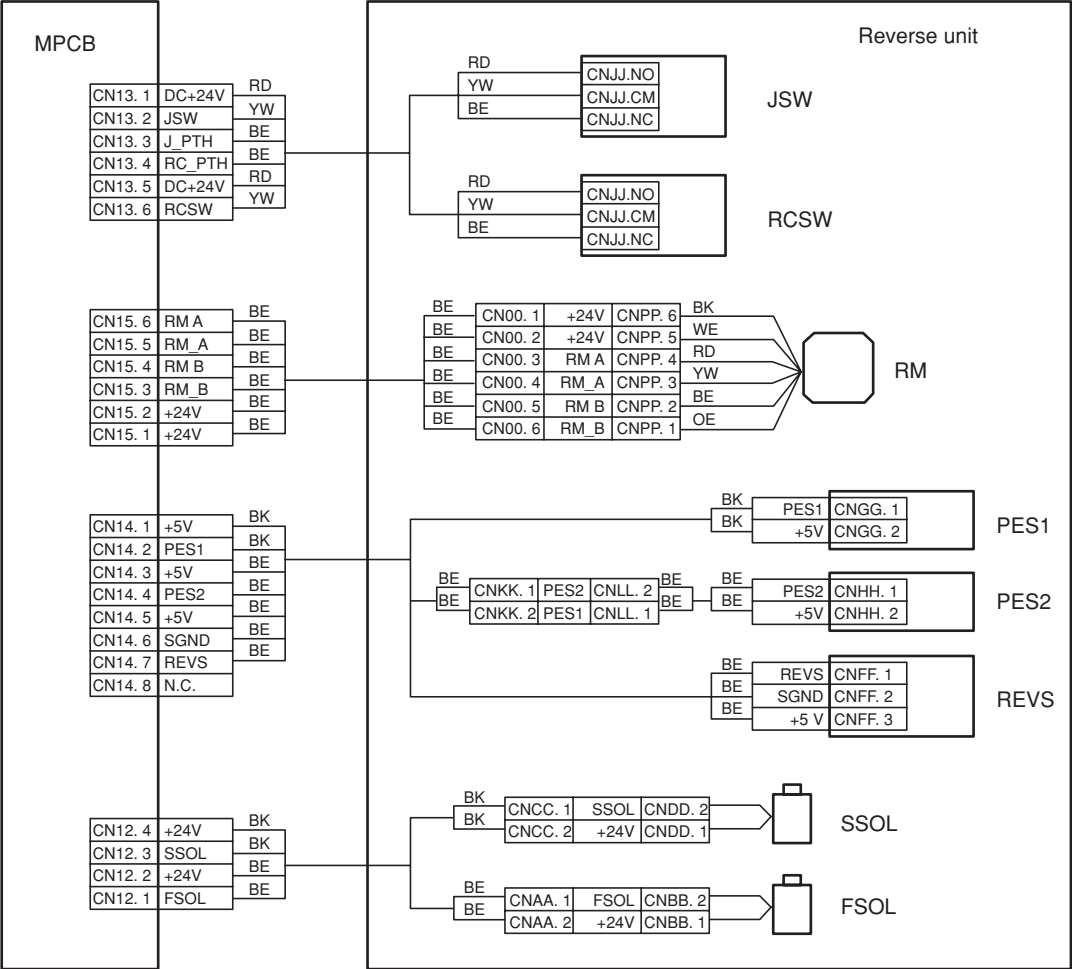
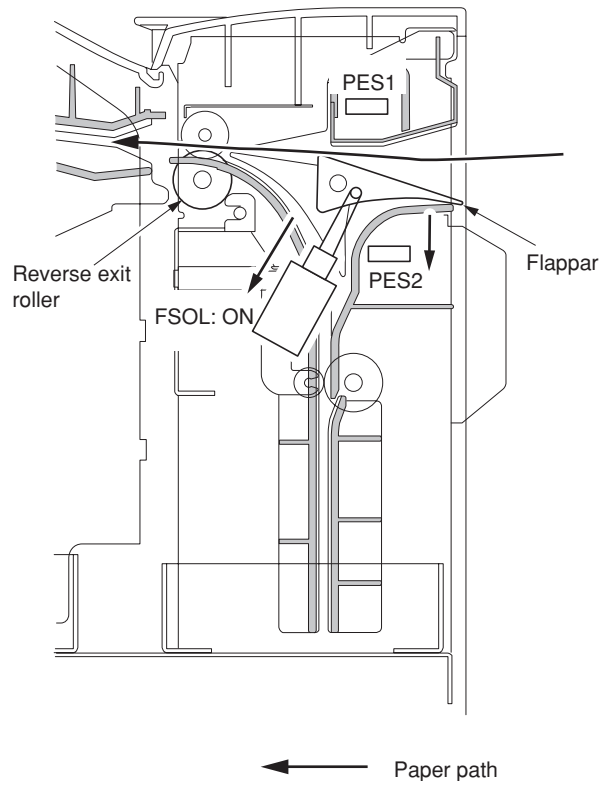


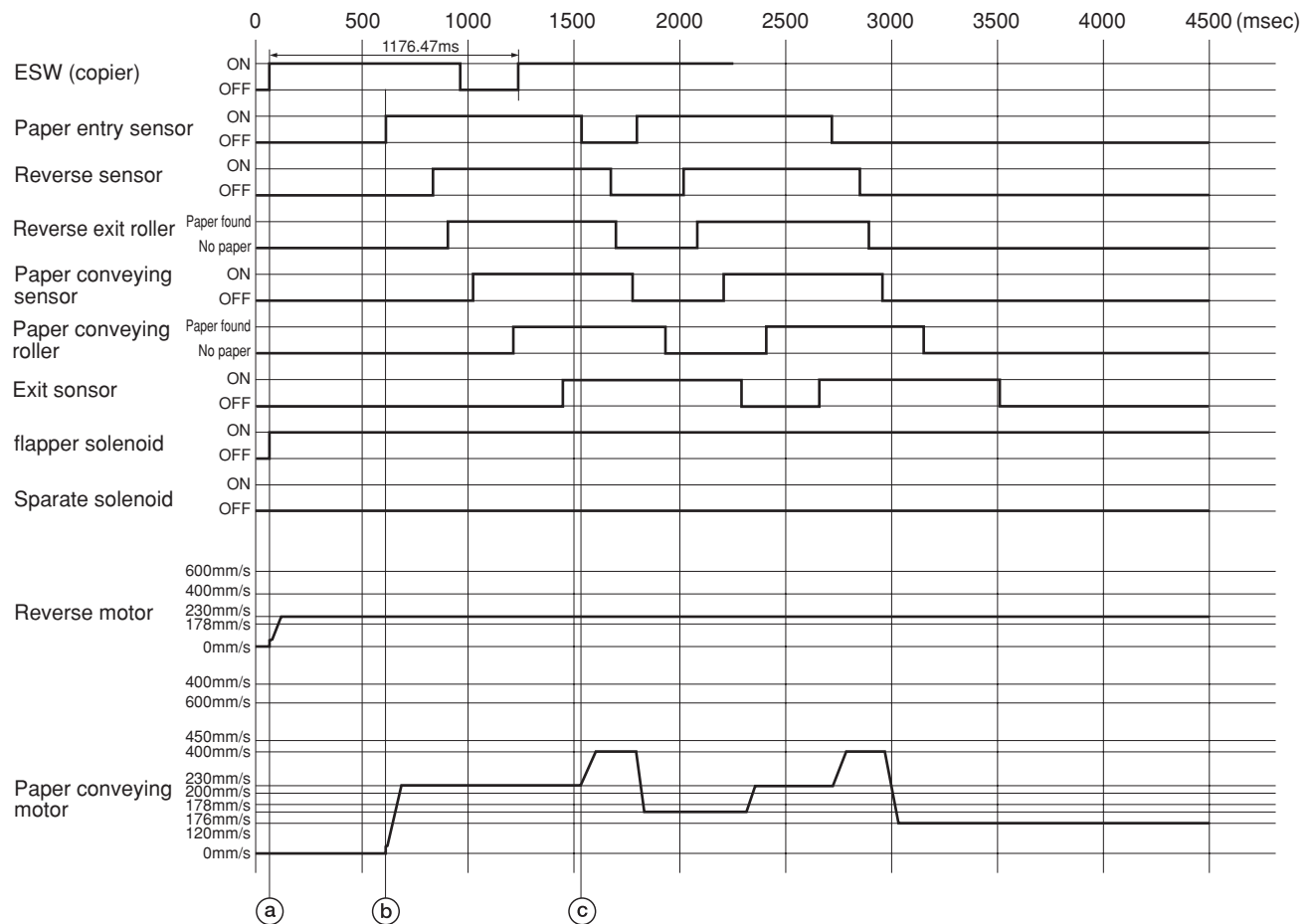
Figure 2-1-2 Block diagram

**Operation without reversing**

1. When the operation start signal is received, the flapper solenoid (FSOL) is turned on to open the non-reverse path.
2. After the copier exit signal is received, the reverse motor (RM) is turned on at the copier exit speed.
3. When the leading edge of paper arrives at the paper entry sensor (PES), the paper conveying motor (PCM) is turned on at the copier exit speed.
4. The reverse exit roller that is rotated by the drive of the reverse motor (RM) conveys paper to the processing section.

**Figure 2-1-3 Operation without reversing**





**Timing chart 2-1-1 Operation without reversing**

- ① When the copier exit switch is turned on, the flapper solenoid (FSOL) is turned on. Also the reverse motor (RM) is turned on at 230 mm/s (copier exit speed).
- ② When the paper entry sensor (PES) is turned on by the leading edge of paper, the paper conveying motor (PCM) is turned on at 230 mm/s (copier exit speed).
- ③ When the trailing edge of paper has passed and the paper entry sensor (PES) is turned off, the paper conveying motor (PCM) is accelerated to 400 mm/s.

### Operation with reversing

1. When the operation start signal is received, the flapper solenoid (FSOL) is turned off to open the reverse path.
2. After the copier exit signal is received, the reverse motor (RM) is turned on at the copier exit speed.

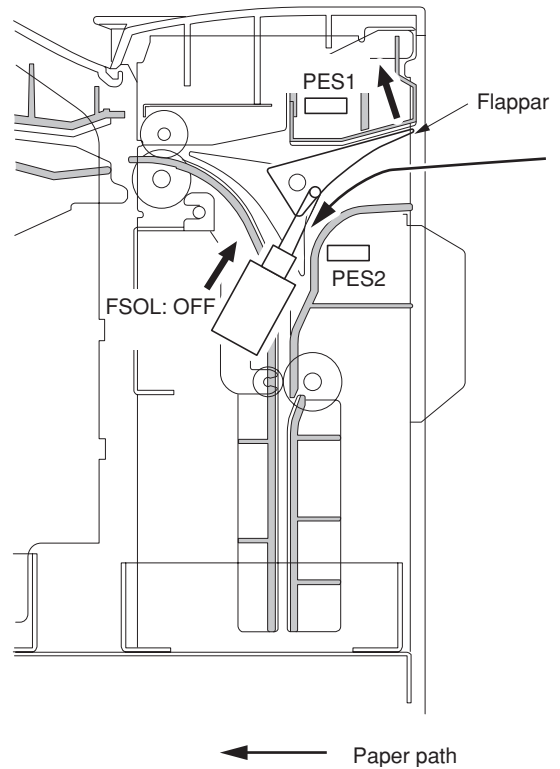


Figure 2-1-4

3. When the leading edge of paper arrives at the paper entry sensor (PES), if the separate solenoid (SSOL) is in the suction state, the paper is separated. If the paper conveying motor (PCM) stops, the motor is turned on at the copier exit speed.

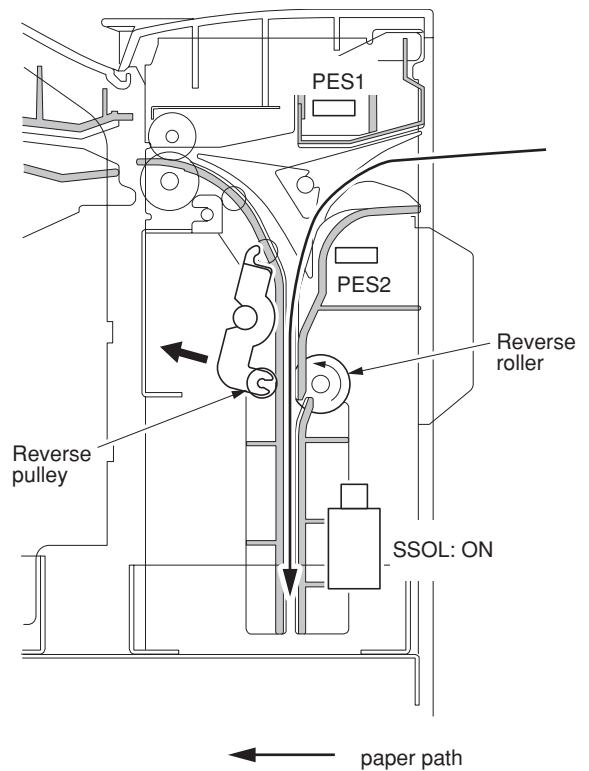


Figure 2-1-5

4. Suction of the separate solenoid (SSOL) is activated just before the trailing edge of paper passes through the copier exit roller.
5. When the trailing edge of paper passed through the copier exit roller, the reverse motor (RM) is accelerated to pull the paper out.

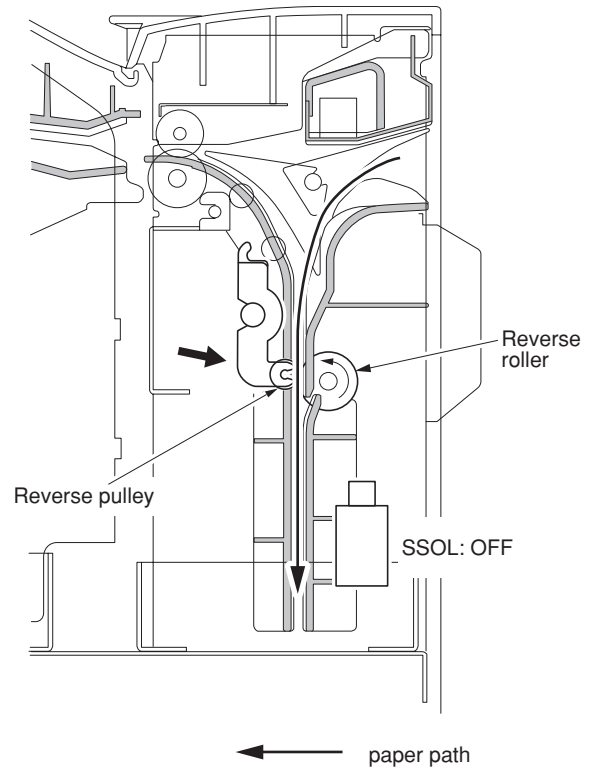


Figure 2-1-4

6. After the paper stops at the reverse position, the reverse motor (RM) is rotated in the reverse direction to convey the paper to the processing section.
7. After the leading edge of paper arrives at the reverse sensor (REVS), the separate solenoid (SSOL) is separated to receive the next paper.

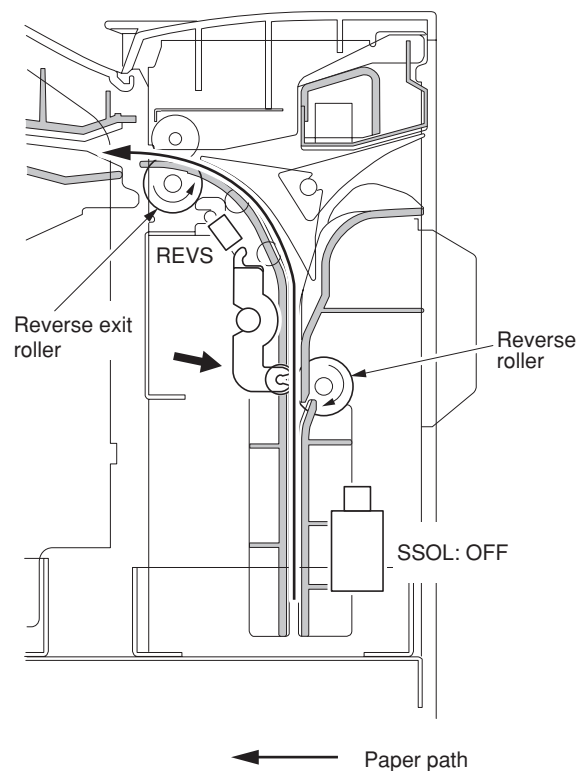
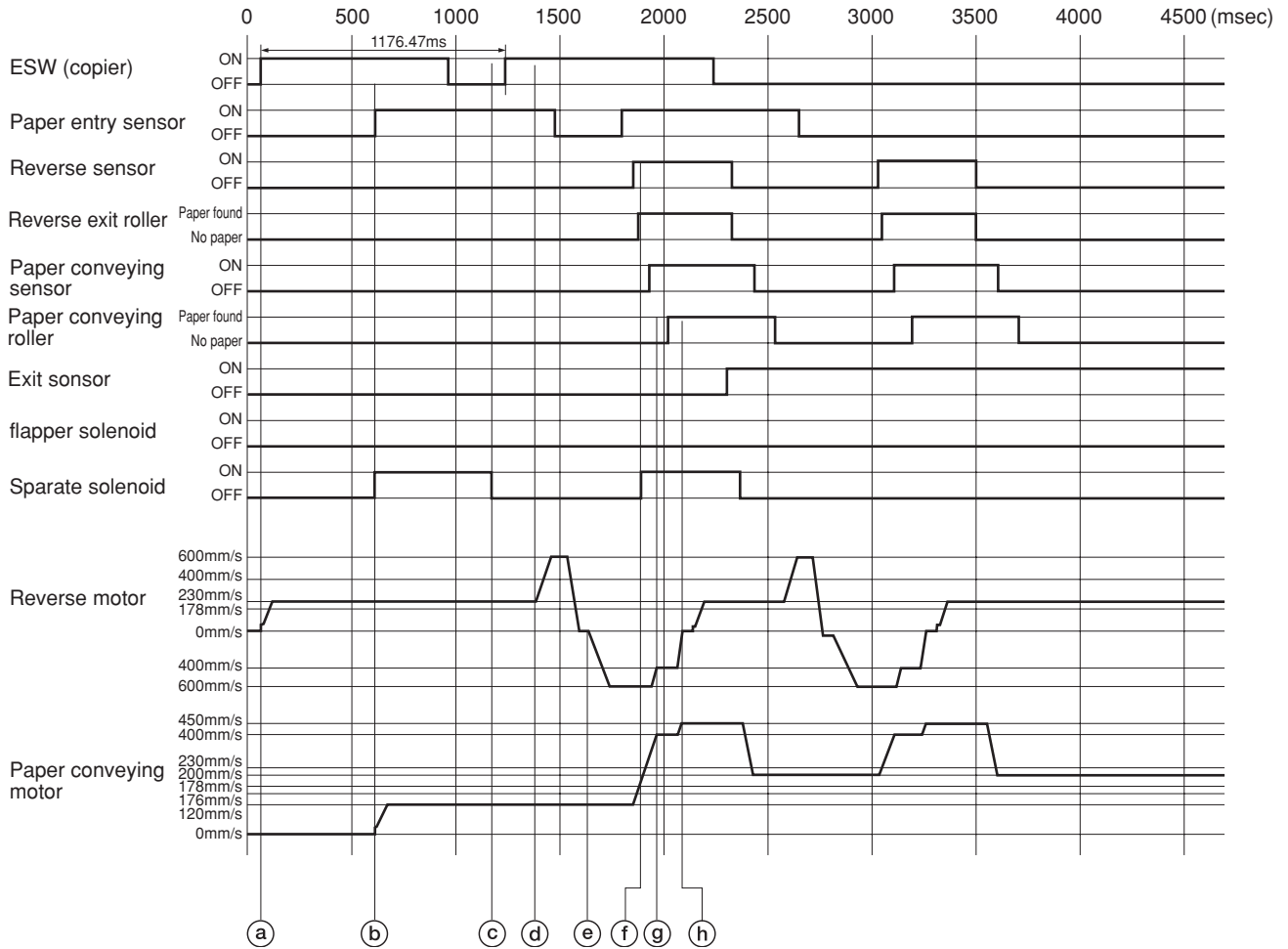


Figure 2-1-5

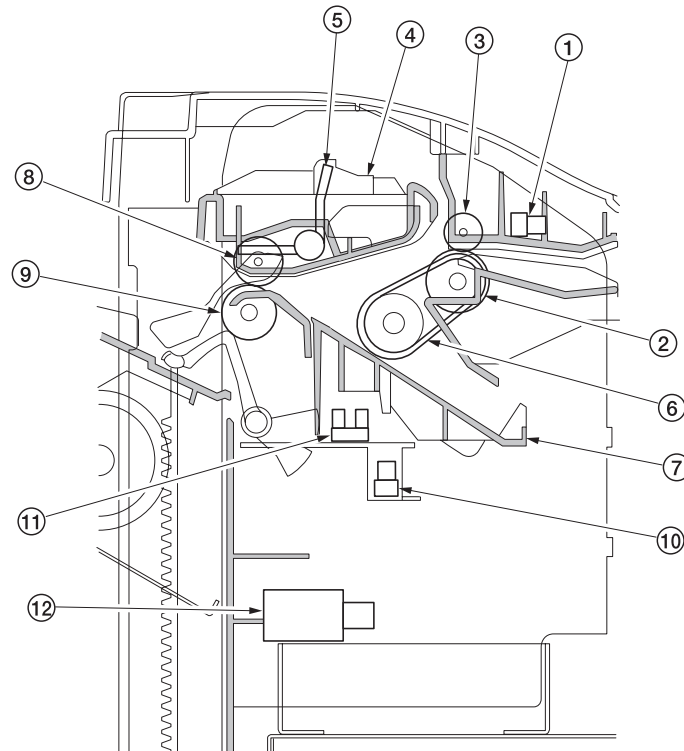


**Timing chart 2-1-2 Operation with reversing**

- (a) When the copier exit switch is turned on, the reverse motor (RM) is turned on at 230 mm/s (copier exit speed).
- (b) When the paper entry sensor (PES) is turned on by the leading edge of paper, the separate solenoid (SSOL) is turned on. Also the paper conveying motor (PCM) is turned on at 230 mm/s (copier exit speed).
- (c) Just before the trailing edge of paper passes through the copier exit roller, the separate solenoid (SSOL) is turned off.
- (d) After the trailing edge of paper has passed through the copier exit roller, the reverse motor (RM) is accelerated to 600 mm/s.
- (e) After the paper stops at the reverse position, the reverse motor (RM) is started in the reverse direction at 600 mm/s.
- (f) After the leading edge of paper has passed the reverse sensor (REVS), the separate solenoid (SSOL) is turned on.
- (g) Before the leading edge of paper arrives at the paper conveying roller, the reverse motor (RM) and the paper conveying motor (PCM) are accelerated or decelerated to 400 mm/s.
- (h) After the leading edge of paper has passed through the paper conveying roller, the reverse motor (RM) is turned off. Also the paper conveying motor (PCM) is accelerated to 450 mm/s.

**(2) Processing section**

The processing section consists of the components shown in Fig. 2-1-8 and discharges paper conveyed from the finisher reverse section to the exit tray. Also this section performs processing in the bundle discharge mode and the staple mode.



**Figure 2-1-8**

- |                                |   |
|--------------------------------|---|
| ① Paper conveying sensor (PCS) | ⑧ Exit pulley                             |
| ② Paper conveying roller       | ⑨ Exit roller                             |
| ③ Paper conveying pulley       | ⑩ Exit sensor (EXS)                       |
| ④ Bundle discharge unit        | ⑪ Adjustment home position sensor (ADHPS) |
| ⑤ Paddle                       | ⑫ Large gear solenoid (LGSOL)             |
| ⑥ Paper conveying belt         |   |
| ⑦ Processing tray              |   |

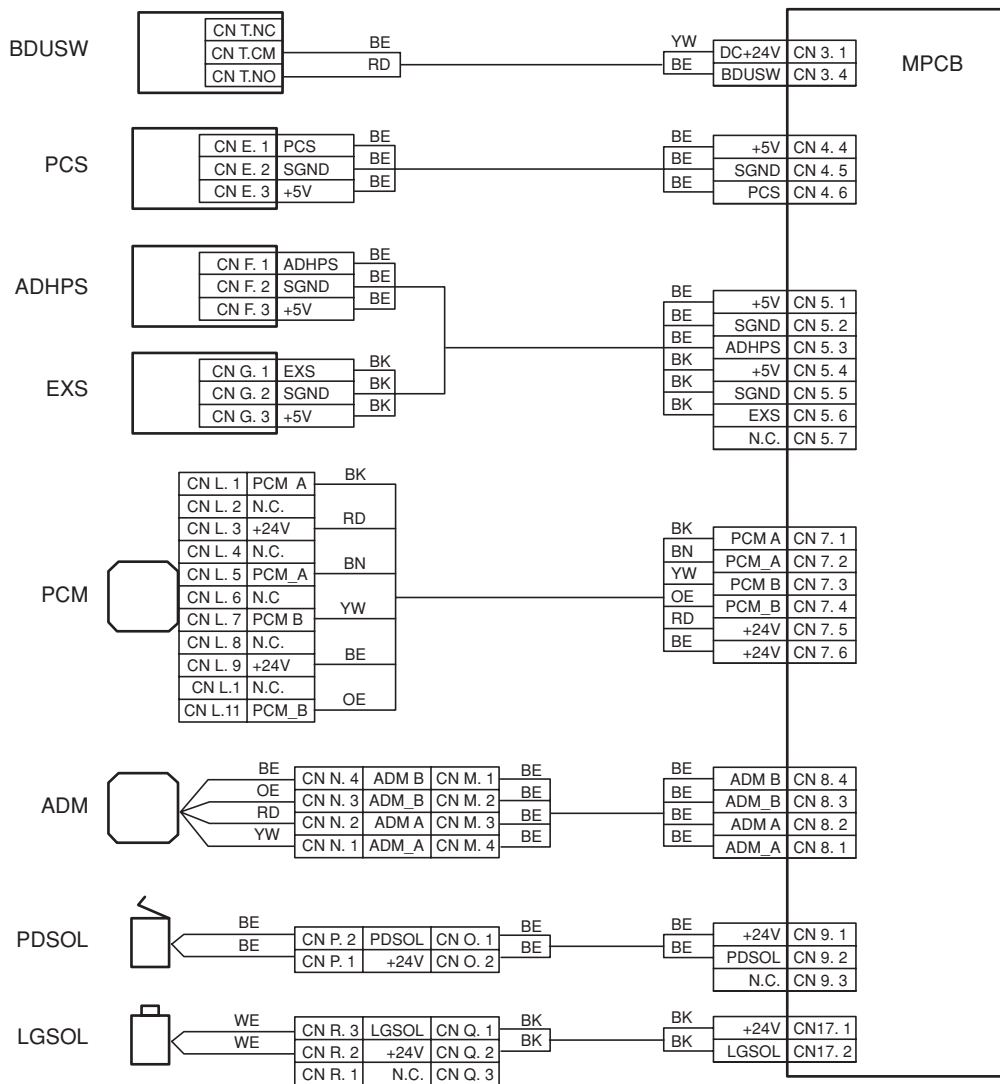


Figure 2-1-9 Block diagram

### Bundle discharge operation

1. When paper is conveyed into the processing section, the large gear solenoid (LGSOL) is turned on to raise the bundle discharge unit.

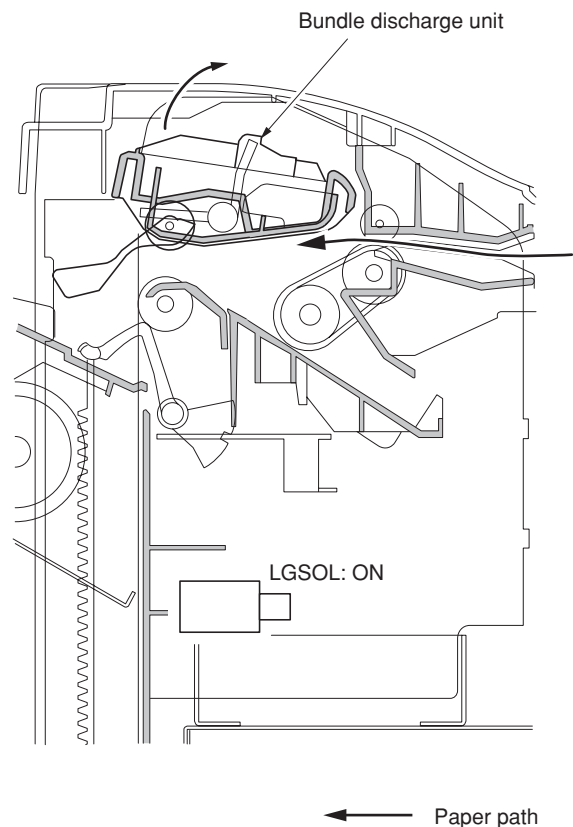


Figure 2-1-10

2. Before the trailing edge of paper passes through the conveying roller, the paper conveying motor (PCM) is decelerated to discharge the paper to the processing tray.
3. The paddle solenoid (PDSOL) is turned on and the paddle rotates one turn to carry the paper into the processing tray.
4. The adjustment motor (ADM) is started to adjust the paper using the adjustment plate.

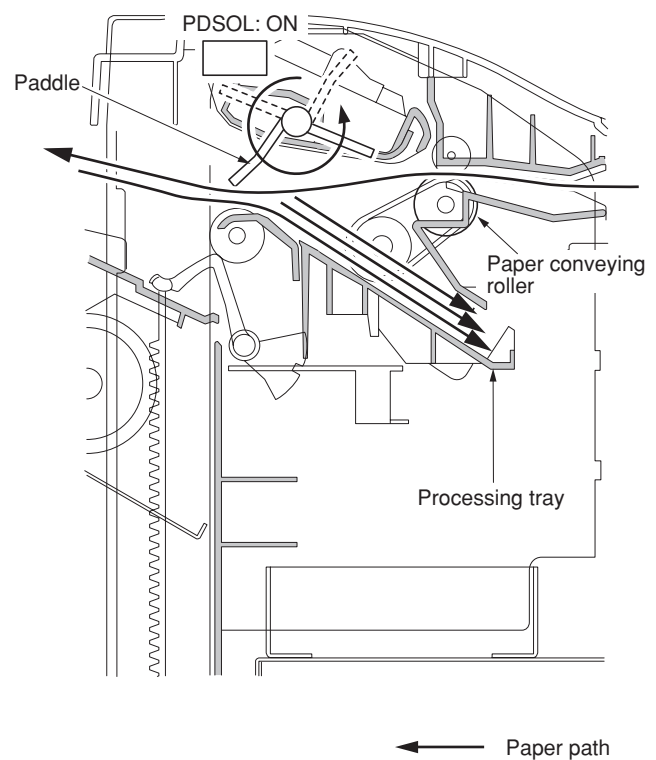
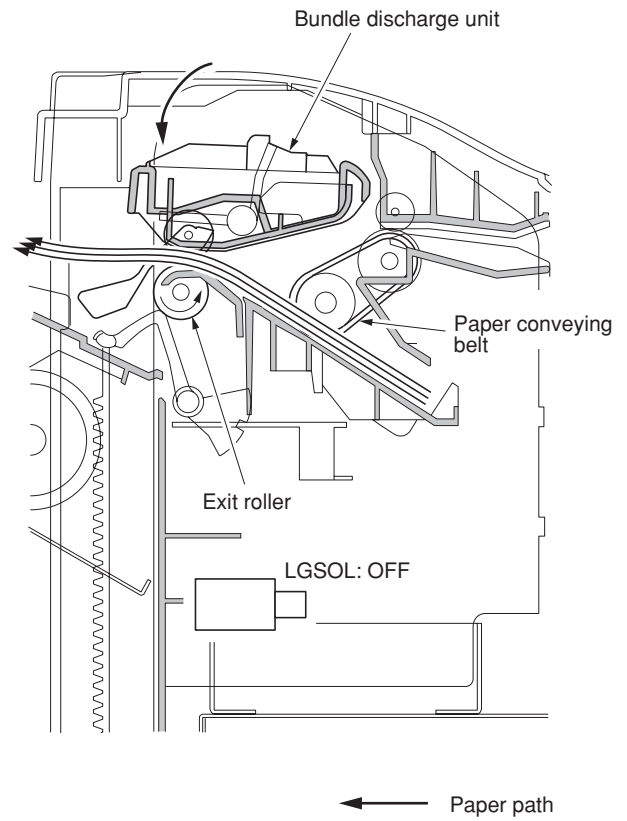
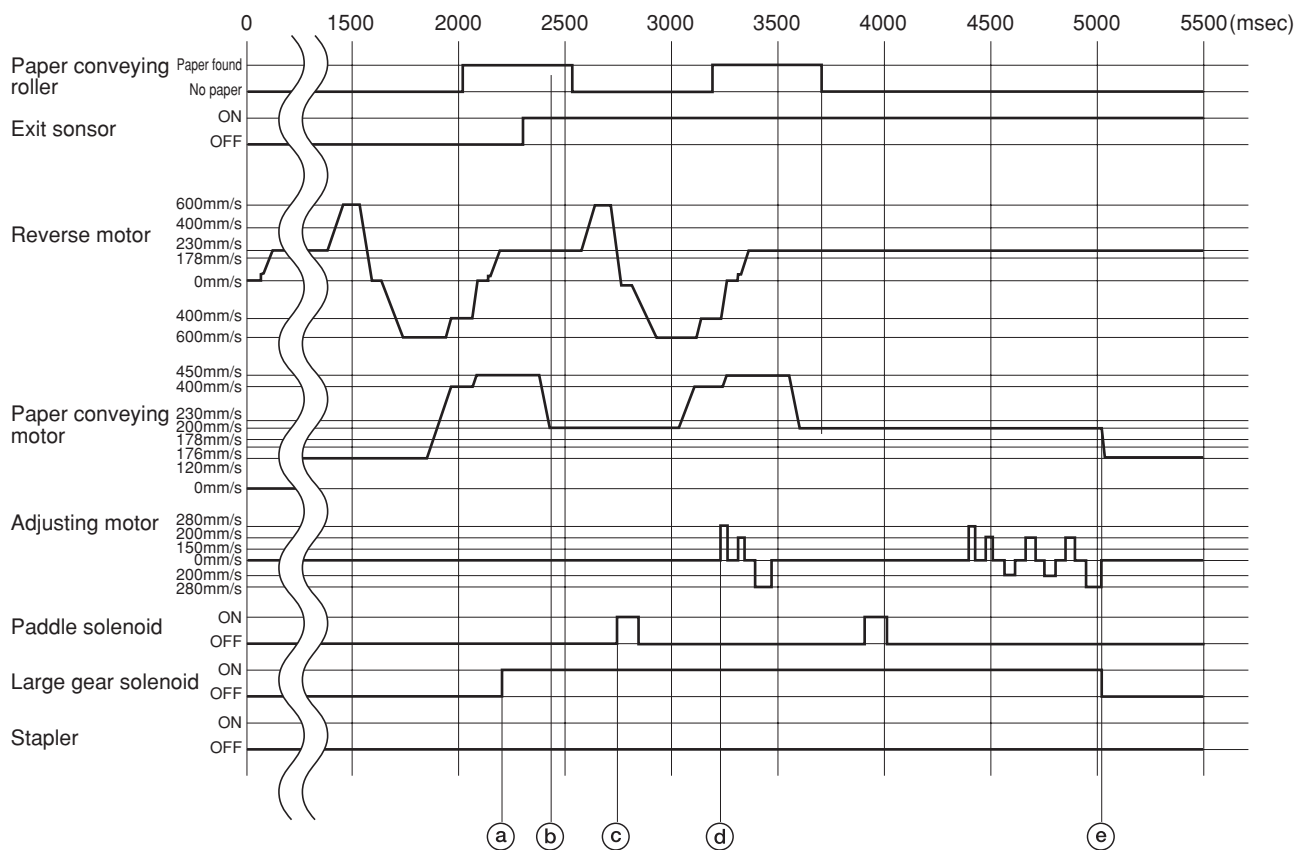


Figure 2-1-11

5. When adjustment of the last sheet of the bundle is completed, the large gear solenoid (LGSOL) is turned off to lower the bundle discharge unit.
6. The conveying belt and the exit roller rotate to discharge the bundle of paper to the exit tray.

**Figure 2-1-12**





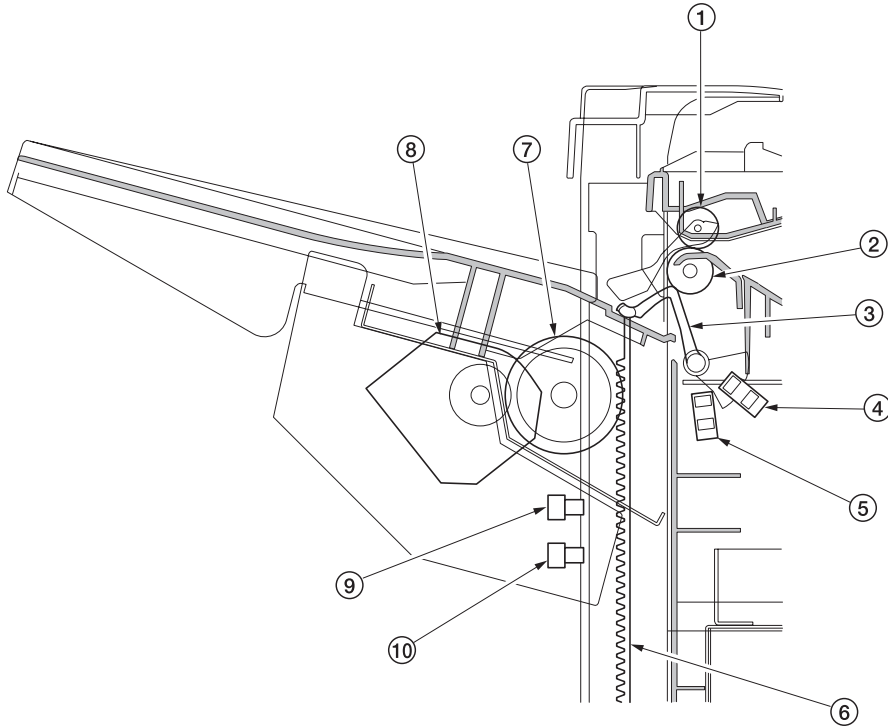
**Timing chart 2-1-3 Bundle discharge operation**

- ① The large gear solenoid (LGSOL) is turned on to raise the bundle discharge unit.
- ② Before the trailing edge of paper passes through the paper conveying roller, the paper conveying motor (PCM) is accelerated or decelerated to 200 mm/s.
- ③ The paddle solenoid (PDSOL) is turned on and the paddle rotates one turn.
- ④ The adjustment motor (ADM) starts to adjust the paper.
- ⑤ After adjustment of the last sheet of the bundle is completed, the paper conveying motor (PCM) is accelerated or decelerated to 176 mm/s. Also the large gear solenoid (LGSOL) is turned off to lower the bundle discharge unit.

### (3) Exit tray section

The exit tray section consists of the components shown in Fig. 2-1-13 and stocks paper discharged from the processing section using rotation of the exit roller and exit pulley.

The upper limit position and the lower limit position of the exit tray are detected with the tray upper limit sensor (TULS) and the tray lower limit sensor (TLLS). Also the paper stock quantity is detected with the push paper sensor (PPS) and the surface view sensor (SVS).



**Figure 2-1-13**

- |                             |                                  |
|-----------------------------|----------------------------------|
| ① Exit pulley               | ⑥ Rack                           |
| ② Exit roller               | ⑦ Rack gear                      |
| ③ Push paper lever          | ⑧ Tray elevation motor (TEM)     |
| ④ Push paper sensor (PPS)   | ⑨ Tray upper limit sensor (TULS) |
| ⑤ Surface viaw sensor (SVS) | ⑩ Tray lower limit sensor (TLLS) |

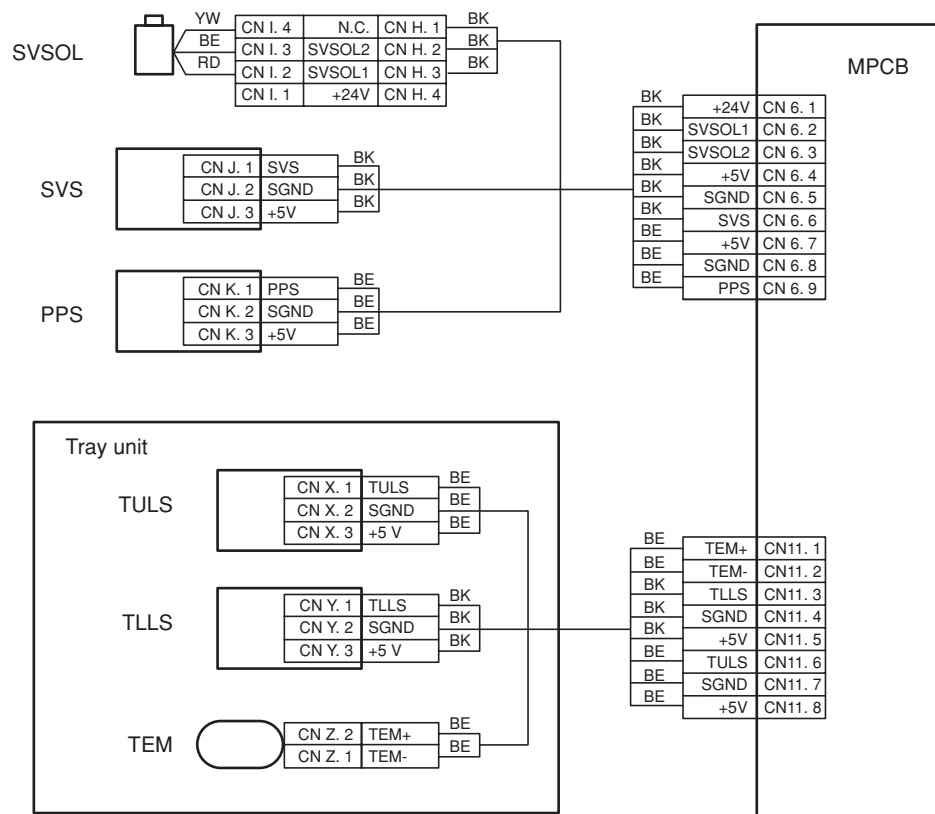


Figure 2-1-14 Block diagram

## Exit tray up/down operation

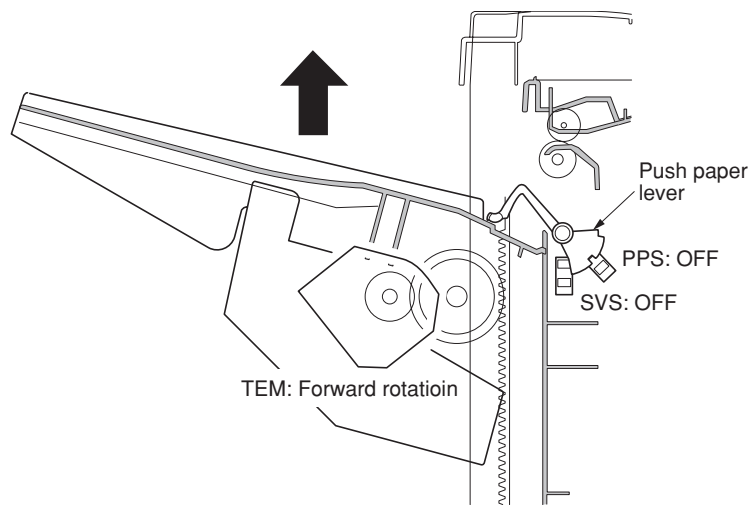


Figure 2-1-15 Paper surface empty status

**1. Paper surface empty status**

- Sensor status  
Push paper sensor (PPS): OFF  
Surface view sensor (SVS): OFF
- Exit tray control  
Tray elevation motor (TEM): Forward rotation.  
Exit tray: Moves up.  
This status occurs when paper is removed from the exit tray.

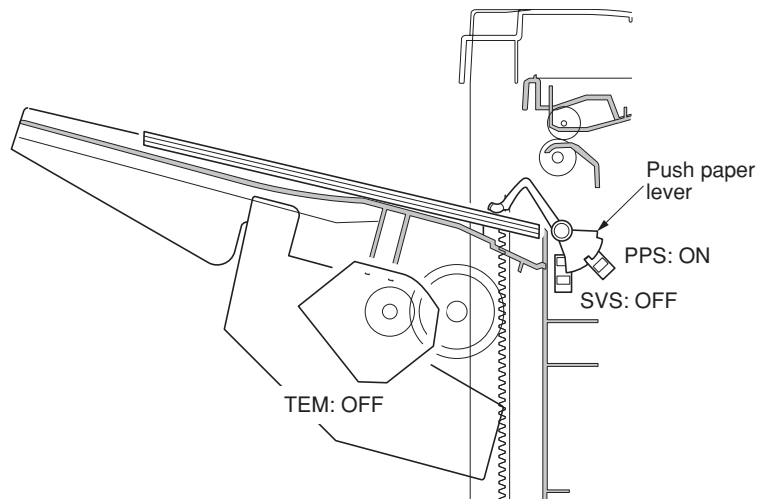


Figure 2-1-16 Paper surface off status

**2. Paper surface off status**

- Sensor status  
Push paper sensor (PPS): ON  
Surface view sensor (SVS): OFF
- Exit tray control  
Tray elevation motor (TEM): OFF  
Exit tray: Does not move.  
If this status is detected when the exit tray is moving up or down, the tray is stopped.

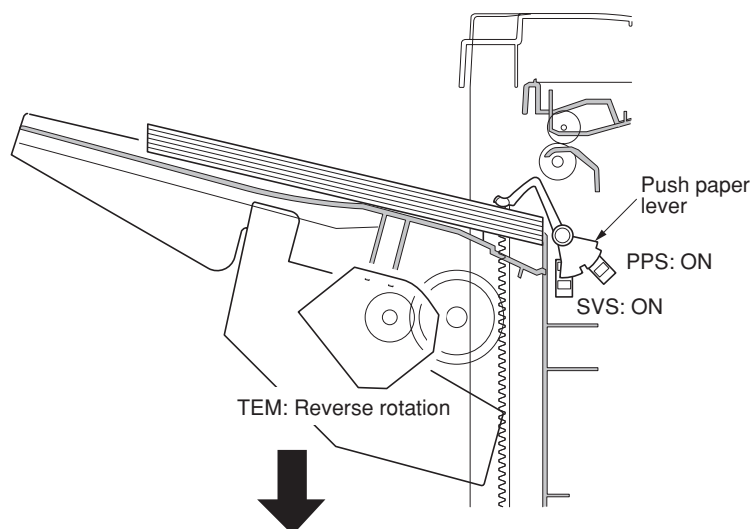
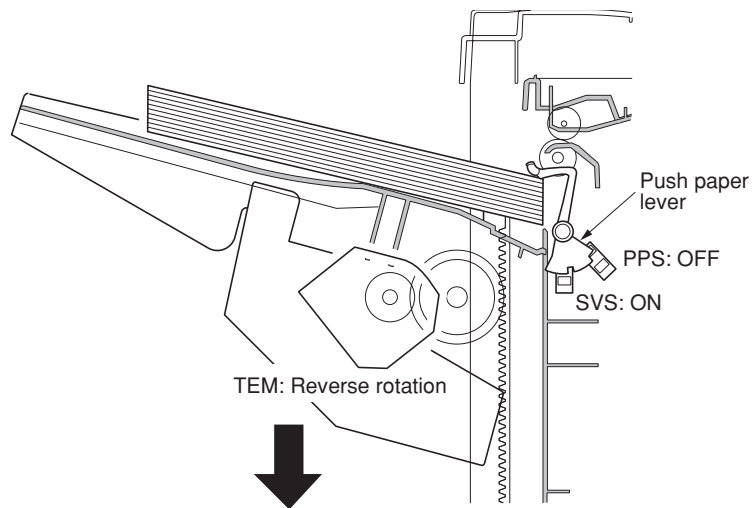


Figure 2-1-17 Paper surface on status

**3. Paper surface on status**

- Sensor status  
Push paper sensor (PPS): ON  
Surface view sensor (SVS): ON
- Exit tray control  
Tray elevation motor (TEM): Reverse rotation.  
Exit tray: Moves down.  
This status occurs when paper is output onto the exit tray during copying and is accumulated.



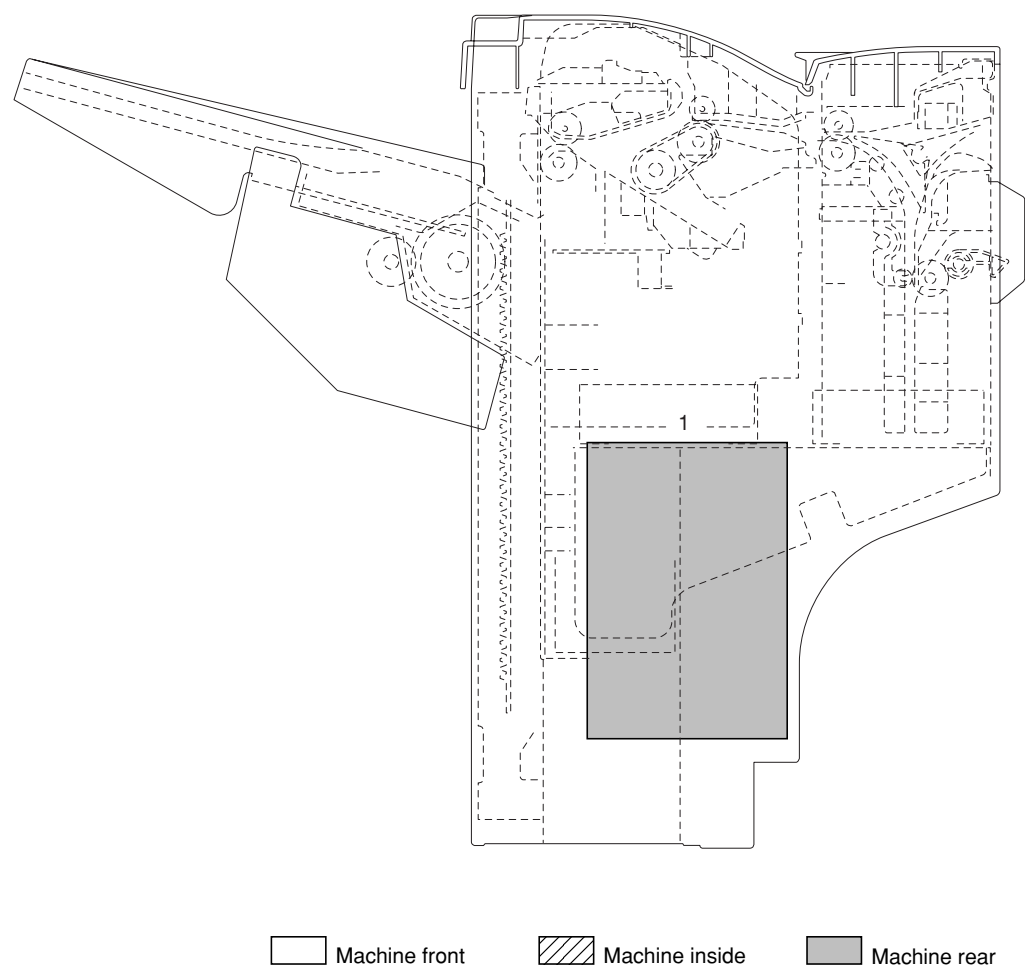
#### 4. Lever stored status

- Sensor status
    - Push paper sensor (PPS): OFF
    - Surface view sensor (SVS): ON
  - Exit tray control
    - Tray elevation motor (TEM): Reverse rotation.
    - Exit tray: Moves down.
- This status occurs when paper is accumulated so much, for example at the start of copying, that the push paper lever cannot be released.

Figure 2-1-18 Lever stored status

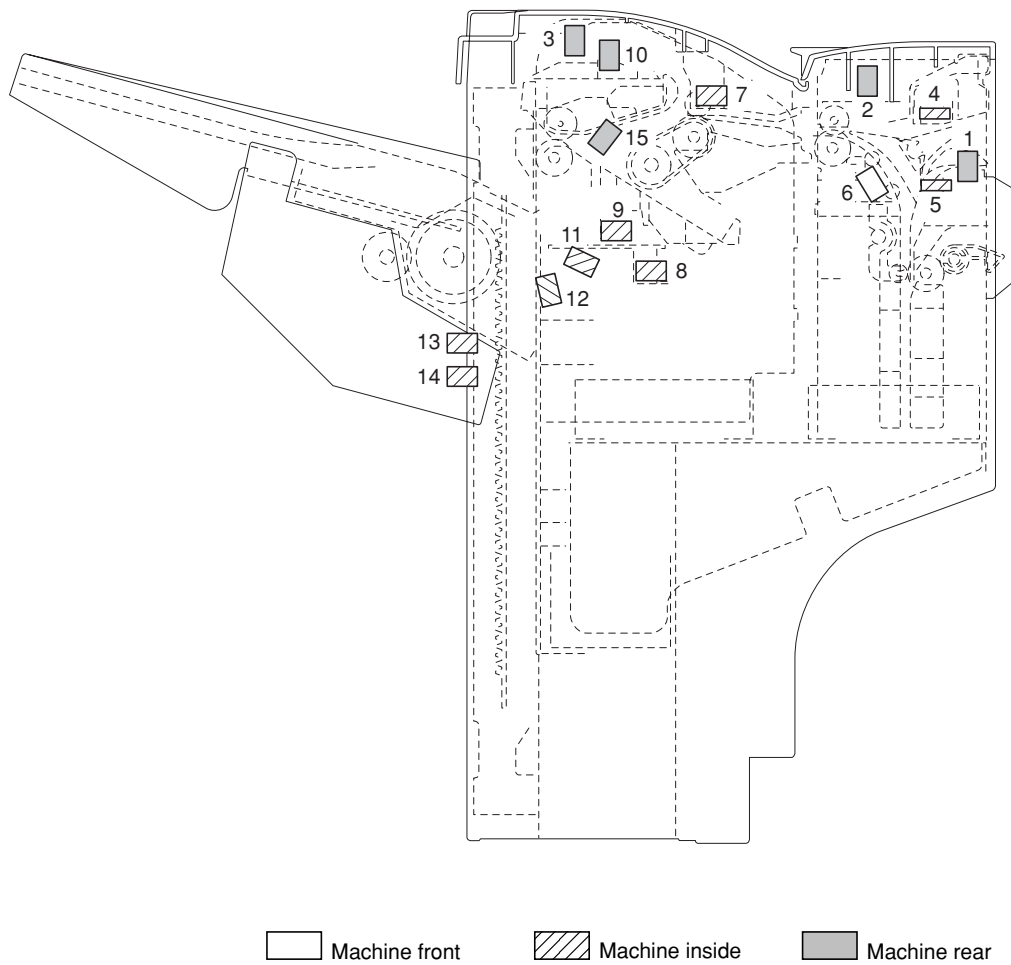
**2-2-1 Electrical parts layout**

**(1) PCB**



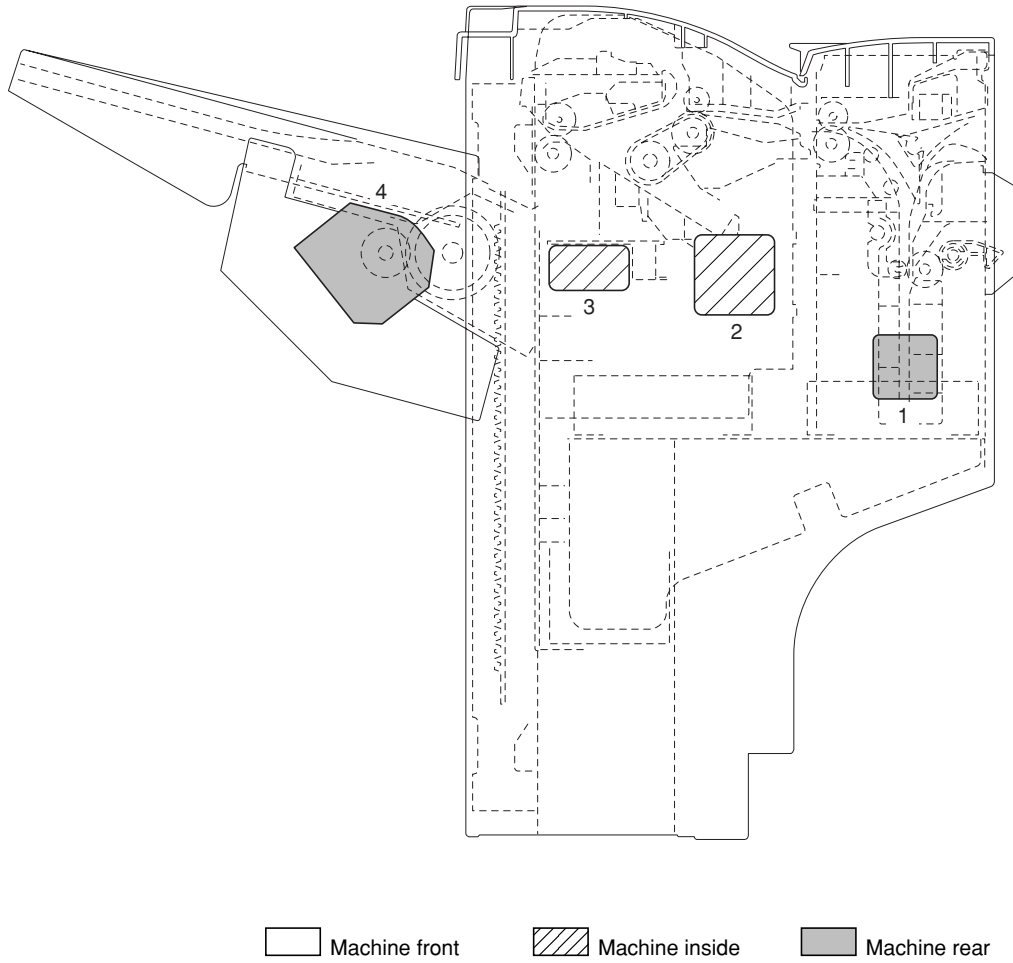
**Figure 2-2-1 Electrical parts layout (PCB)**

- 1. Main PCB (MPCB) ..... Controls electrical components.

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

- |  |   |
|--|---|
| 1. Joint switch (JSW) .....                      | Detects the finisher attached to the copier.  |
| 2. Reverse cover switch (RCSW) .....             | Detects opening/closing of the reverse cover.                                       |
| 3. Upper cover sensor (UCS) .....                | Detects opening/closing of the upper cover.   |
| 4. Paper entry sensor 1 (PES1) .....             | Detects paper entering the finisher (emitter).                                      |
| 5. Paper entry sensor 2 (PES2) .....             | Detects paper entering the finisher (receiver).                                     |
| 6. Reverse sensor (REVS) .....                   | Detects a paper misfeed in the reverse section.                                     |
| 7. Paper conveying sensor (PCS) .....            | Detects a paper misfeed in the processing section.                                  |
| 8. Adjustment home position sensor (ADHPS) ..... | Detects the adjustment plate in the home position.                                  |
| 9. Exit sensor (EXS) .....                       | Detects a paper misfeed in the exit section.  |
| 10. Bundle discharge unit switch (BDUSW) .....   | Power supply to the stapler section caused by descent of the bundle discharge unit. |
| 11. Push paper sensor (PPS) .....                | Detects the position of the push paper lever.                                       |
| 12. Surface view sensor (SVS) .....              | Detects the position of the push paper lever.                                       |
| 13. Tray upper limit sensor (TULS) .....         | Detects the exit tray reaching the upper limit.                                     |
| 14. Tray lower limit sensor (TLLS) .....         | Detects the exit tray reaching the lower limit.                                     |
| 15. Stapler cover switch (STCSW) .....           | Detects opening/closing of the stapler cover.                                       |

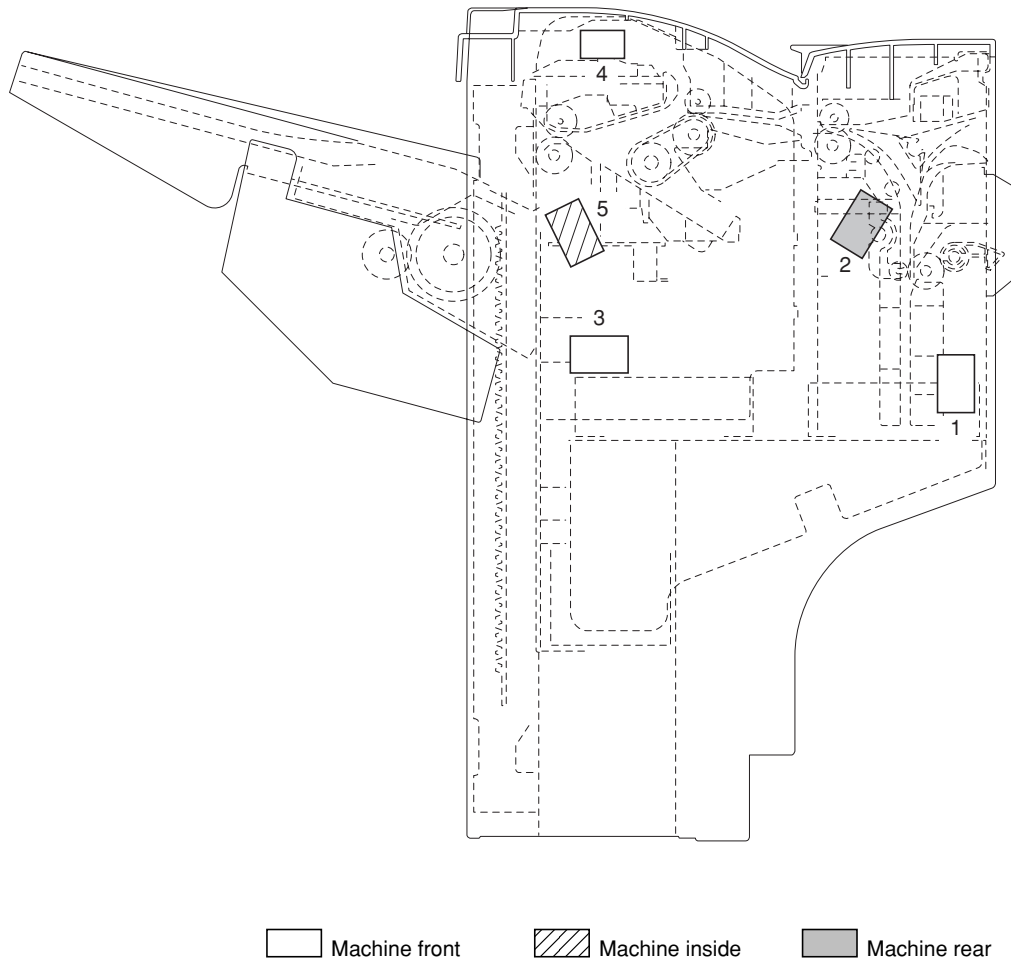
(3) Motors



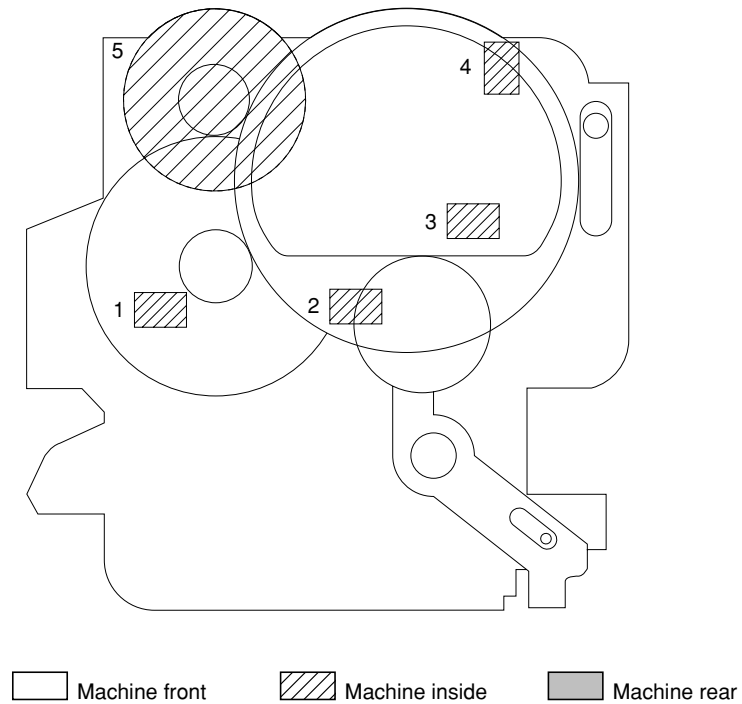
**Figure 2-1-3 Electrical parts layout (motors)**

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| 1. Reverse motor (RM) .....          | Drives the reverse section.      |
| 2. Paper conveying motor (PCM) ..... | Drives the processing section.   |
| 3. Adjustment motor (ADM) .....      | Drives the adjustment plate.     |
| 4. Tray elevation motor (TEM) .....  | Raises and lowers the exit tray. |



**(4) Solenoids****Figure 2-1-4 Electrical parts layout (solenoids)**

- |  |                                     |
|--|-------------------------------------|
| 1. Separate solenoid (SSOL) .....      | Separates the reverse roller.       |
| 2. Flapper solenoid (FSOL) .....       | Operates the flapper.               |
| 3. Large gear solenoid (LGSOL) .....   | Operates the bundle discharge unit. |
| 4. Paddle solenoid (PDSOL) .....       | Operates the paddle.                |
| 5. Surface view solenoid (SVSOL) ..... | Operates the push paper lever.      |

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

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

## 2-3-1 Main PCB

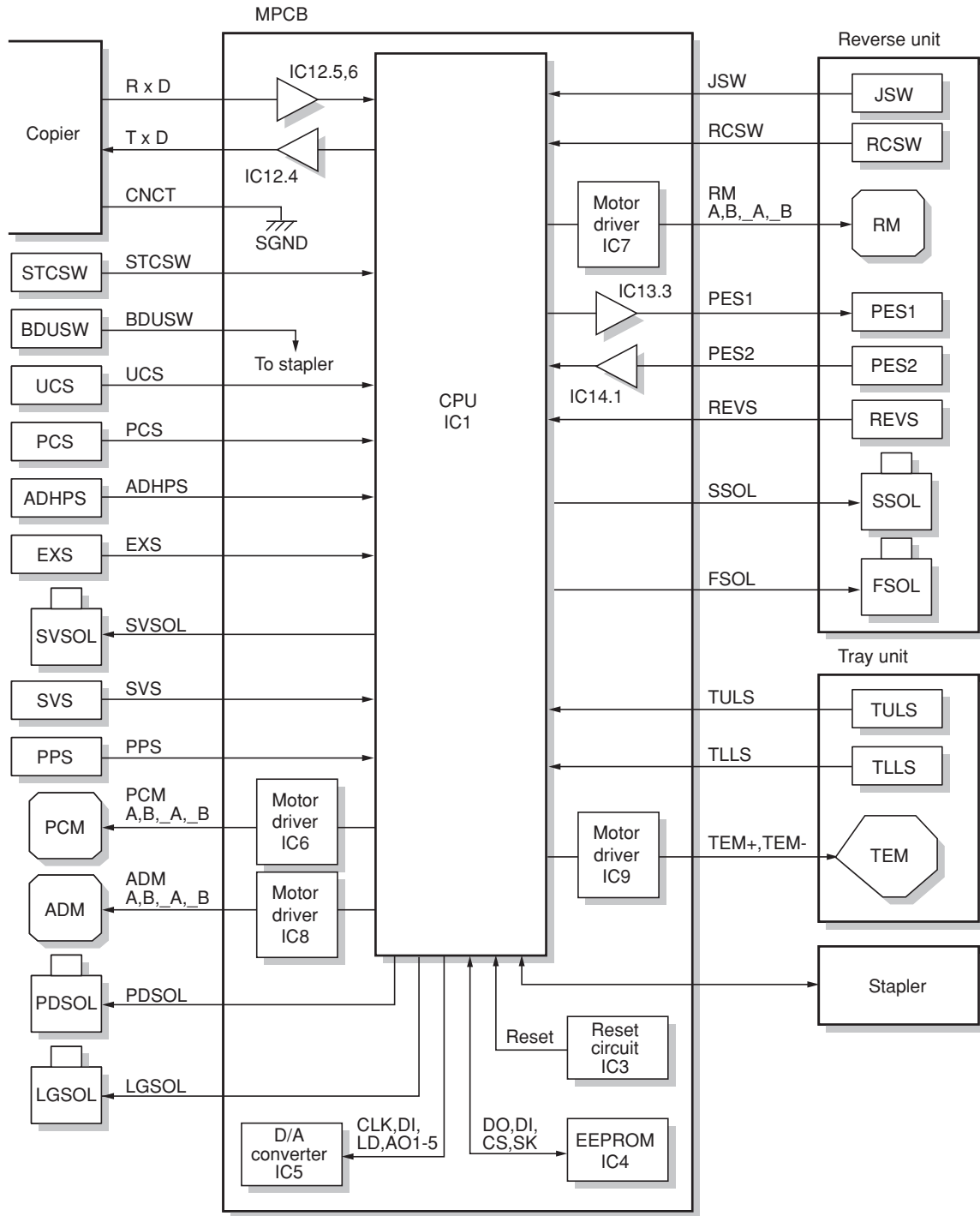


Figure 2-3-1 Main PCB block diagram

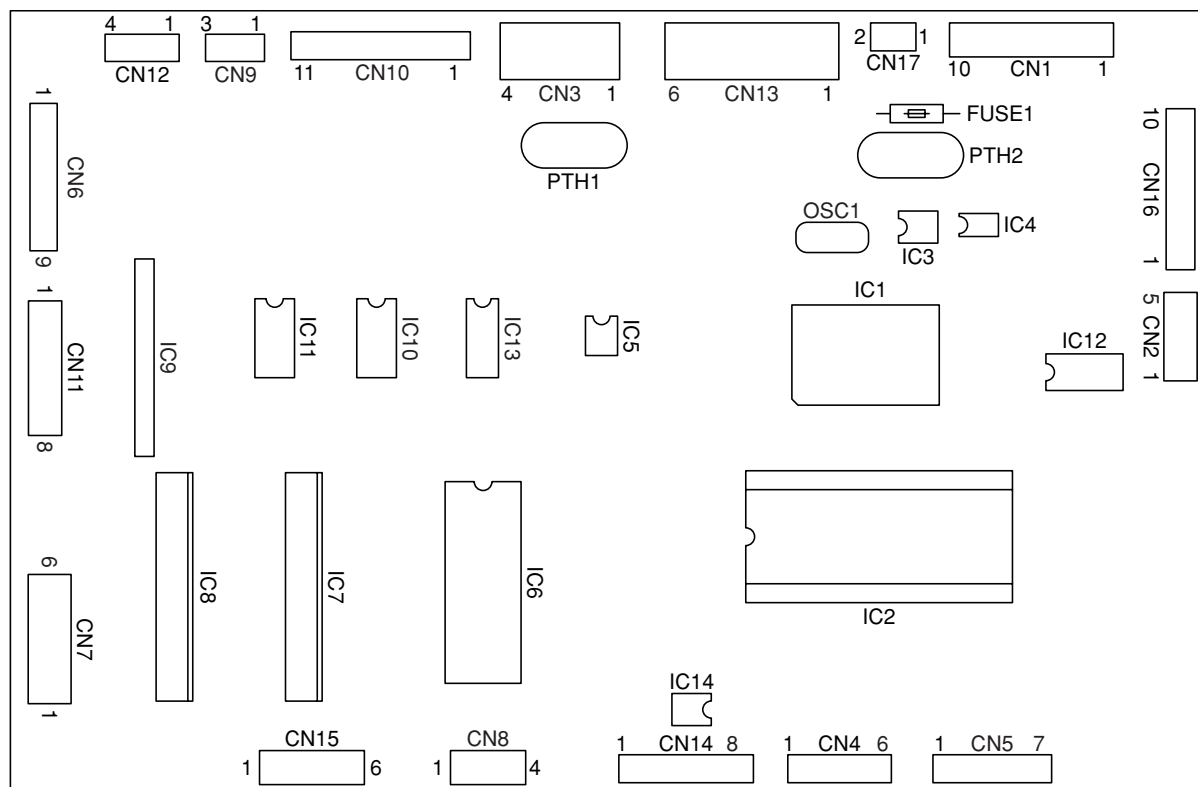


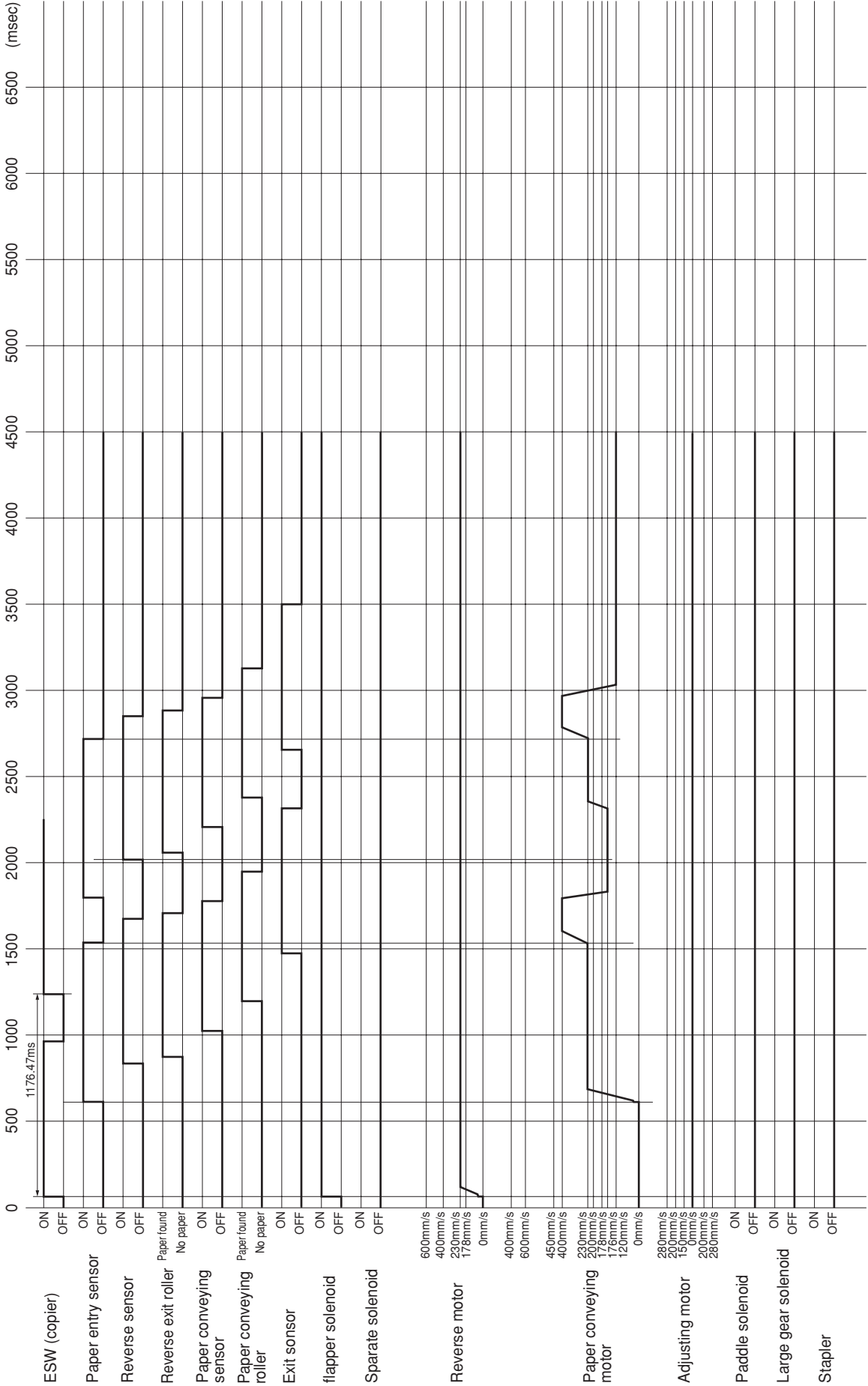
Figure 2-3-2 Main PCB silk-screen diagram

Connector	Pin No.	Signal	I/O	Description
CN1 Connected to the copier	1	DC+5V	I	5 V DC power supply from copier
	2	SGND	-	Ground
	3	PGND	-	Ground
	4	PGND	-	Ground
	5	PGND	-	Ground
	6	PGND	-	Ground
	7	DC+24V	I	24 V DC power supply from copier
	8	DC+24V	I	24 V DC power supply from copier
	9	DC+24V	I	24 V DC power supply from copier
	10	DC+24V	I	24 V DC power supply from copier
CN2 Connected to the copier	1	CNCT	O	Finisher set signal
	2	SGND	-	Ground
	3	RxD	I	Serial communication signal reception
	4	SGND	-	Ground
	5	TxD	O	Serial communication signal transmission
CN3 Connected to the stapler cover switch and budle discharge unit switch	1	DC+24V	O	24 V DC power supply to STCSW/BDUSW
	2	STCSW	I	STCSW: On/Off
	3	STCSW	I	STCSW: On/Off
	4	BDUSW	I	BDUSW: On/Off

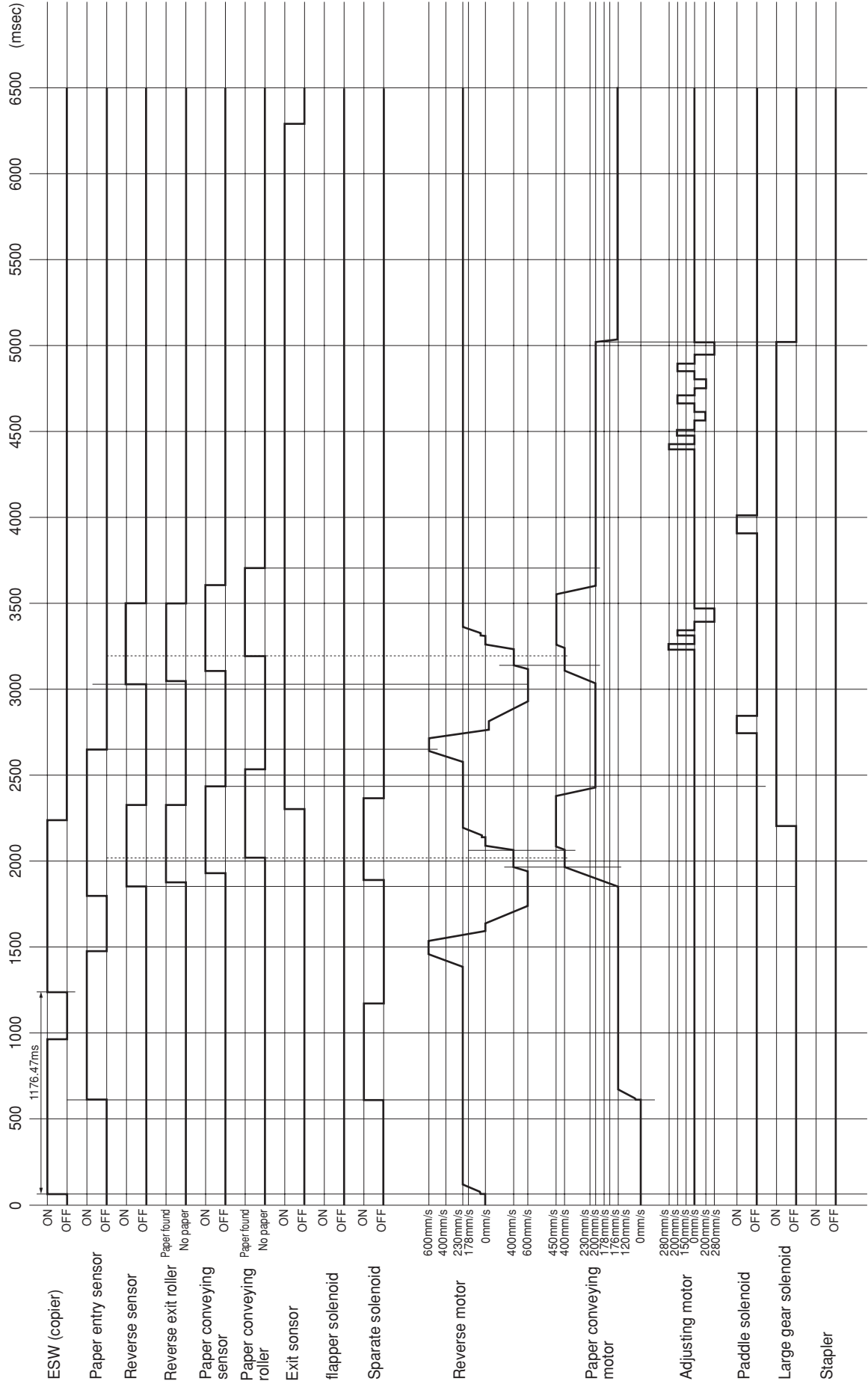
Connector	Pin No.	Signal	I/O	Description
CN4 Connected to the upper cover sensor and paper conveying sensor	1	+5V	O	5 V DC power supply to UCS
	2	SGND	-	Ground
	3	UCS	I	UCS: On/Off
	4	+5V	O	5 V DC power supply to PCS
	5	SGND	-	Ground
	6	PCS	I	PCS: On/Off
CN5 Connected to the adjustment home position sensor and exit sensor	1	+5V	O	5 V DC power supply to ADHPS
	2	SGND	-	Ground
	3	ADHPS	I	ADHPS: On/Off
	4	+5V	O	5 V DC power supply to EXS
	5	SGND	-	Ground
	6	EXS	I	EXS: On/Off
	7	N.C.	-	Not used
CN6 Connected to the surface view solenoid, surface view sensor and push paper sensor	1	+24V	O	24 V DC power supply to SVSOL
	2	SVSOL1	O	SVSOL: On/Off (actuate)
	3	SVSOL2	O	SVSOL: On/Off (release)
	4	+5V	O	5 V DC power supply to SVS
	5	SGND	-	Ground
	6	SVS	I	SVS: On/Off
	7	+5V	O	5 V DC power supply to PPS
	8	SGND	-	Ground
	9	PPS	I	PPS: On/Off
CN7 Connected to the paper conveying motor	1	PCM A	O	PCM drive control signal
	2	PCM_A	O	PCM drive control signal
	3	PCM B	O	PCM drive control signal
	4	PCM_B	O	PCM drive control signal
	5	+24V	O	24 V DC power supply to PCM
	6	+24V	O	24 V DC power supply to PCM
CN8 Connected to the adjustment motor	1	ADM_A	O	ADM drive control signal
	2	ADM A	O	ADM drive control signal
	3	ADM_B	O	ADM drive control signal
	4	ADM B	O	ADM drive control signal
CN9 Connected to the paddle solenoid	1	+24V	O	24 V DC power supply to PDSOL
	2	PDSOL	O	PDSOL: On/Off
	3	N.C.	-	Not used
CN10 Connected to the stapler	1	STSPS	I	STSPS: On/Off
	2	+5V	O	5 V DC power supply to stapler
	3	SGND	-	Ground
	4	STLS	I	STLS: On/Off
	5	STHPS	I	STHPS: On/Off
	6	STES	I	STES: On/Off
	7	STCS	I	STCS: On/Off
	8	STM+	O	STM drive control signal
	9	STM+	O	STM drive control signal
	10	STM-	O	STM drive control signal
	11	STM-	O	STM drive control signal

Connector	Pin No.	Signal	I/O	Description
CN11 Connected to the tray upper limit sensor, tray lower limit sensor and tray elevation motor	1	TEM+	O	TEM drive control signal
	2	TEM-	O	TEM drive control signal
	3	TLLS	I	TLLS: On/Off
	4	SGND	-	Ground
	5	+5V	O	5 V DC power supply to TLLS
	6	TULS	I	TULS: On/Off
	7	SGND	-	Ground
	8	+5V	O	5 V DC power supply to TULS
CN12 Connected to the separate solenoid and flapper solenoid	1	FSOL	O	FSOL: On/Off
	2	+24V	O	24 V DC power supply to FSOL
	3	SSOL	O	SSOL: On/Off
	4	+24V	O	24 V DC power supply to SSOL
CN13 Connected to the joint switch and reverse cover switch	1	DC+24V	O	24 V DC power supply to JSW
	2	JSW	I	JSW: On/Off
	3	J_PTH	-	Ground
	4	RC_PTH	-	Ground
	5	DC+24V	O	24 V DC power supply to RCSW
	6	RCSW	I	RCSW: On/Off
CN14 Connected to the paper entry sensor 1, 2 and reverse sensor	1	+5V	O	5 V DC power supply to PES1
	2	PES1	I	PES1: On/Off
	3	+5V	O	5 V DC power supply to PES2
	4	PES1	I	PES2: On/Off
	5	+5V	O	5 V DC power supply to REVS
	6	SGND	-	Ground
	7	REVS	I	REVS: On/Off
	8	N.C.	-	Not used
CN15 Connected to the reverse motor	1	+24V	O	24 V DC power supply to RM
	2	+24V	O	24 V DC power supply to RM
	3	RM_B	O	RM drive control signal
	4	RM B	O	RM drive control signal
	5	RM_A	O	RM drive control signal
	6	RM A	O	RM drive control signal
CN17 Connected to the large gear solenoid	1	+24V	O	24 V DC power supply to LGSOL
	2	LGSOL	O	LGSOL: On/Off

Timing chart No. 1 Operation without reversing, A4/11"x8<sup>1</sup>/<sub>2</sub>" copy paper in the straight mode

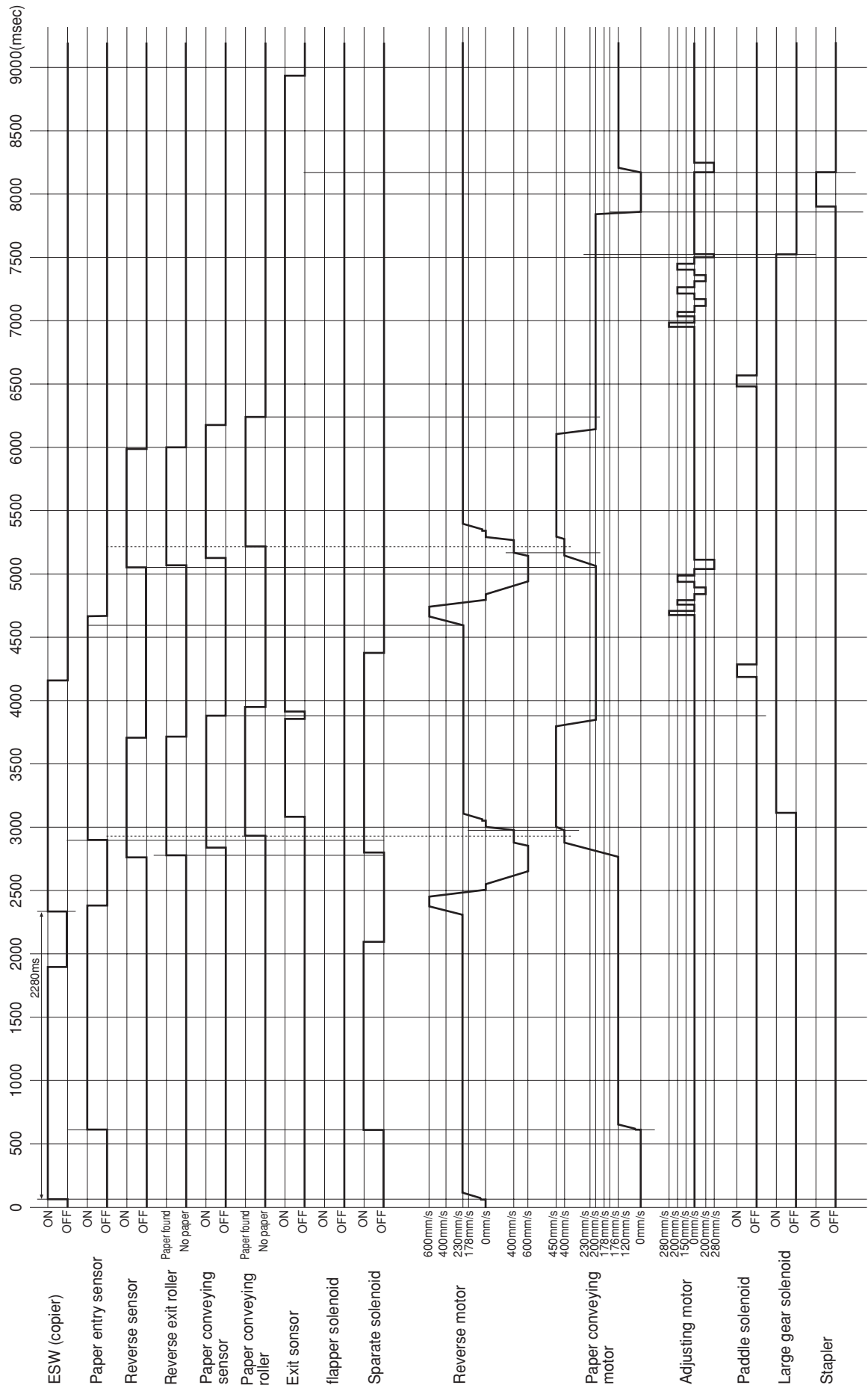


Timing chart No. 2 Operation with reversing, A4/11"x8 1/2" copy paper in the shift mode





Timing chart No. 3 Operation with reversing, A4/11"x8 1/2" copy paper in the stapling mode



## Periodic maintenance procedure

Processing area	Maintenance part(s) and location	Contents	Maintenance cycle	Essential points and notes	Page
Exterior	Overall exterior cover	Cleaning	Every time	Wipe with dry cloth or cloth moistened with alcohol.	



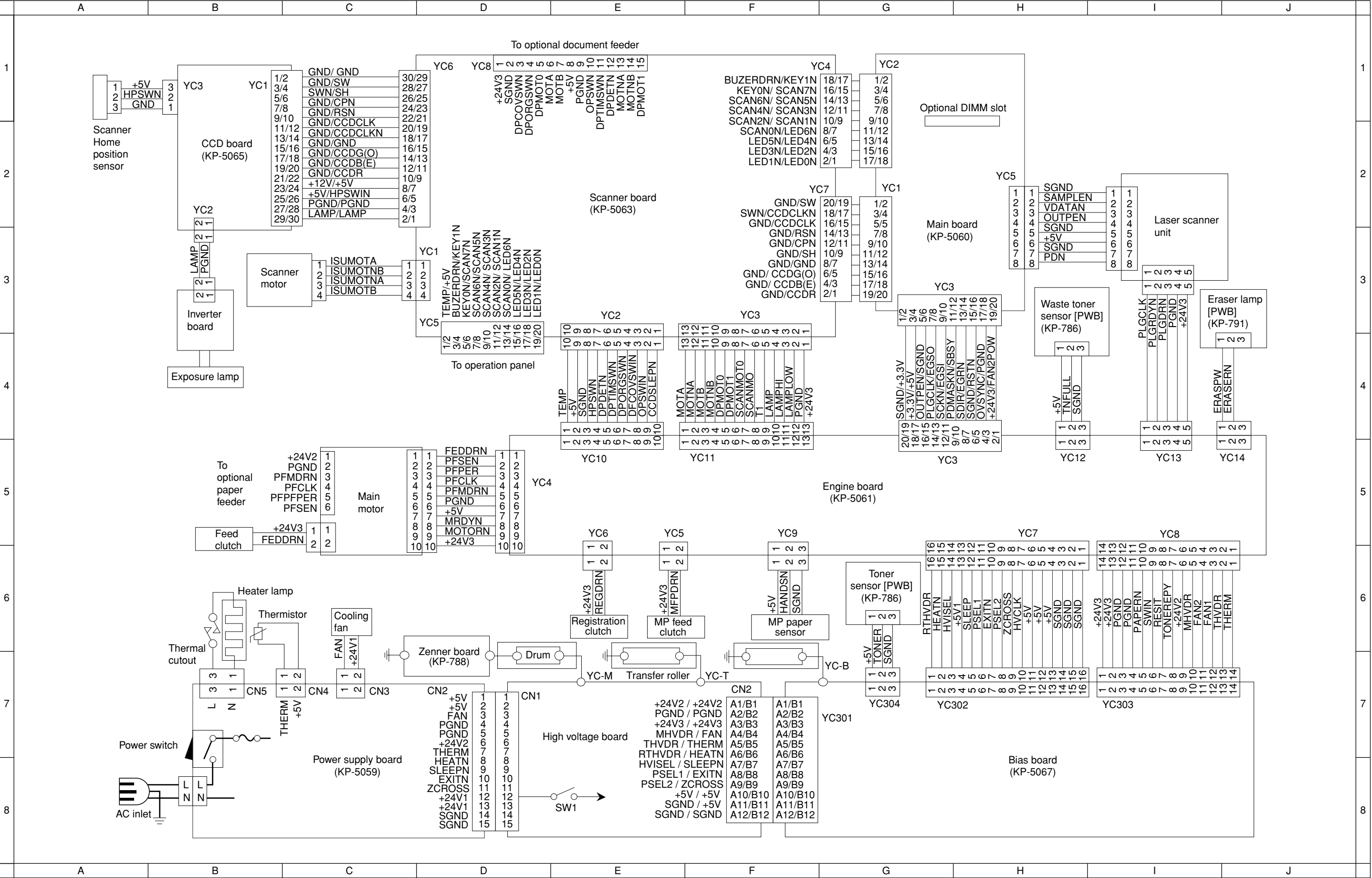
Processing area	Maintenance part(s) and location	Contents	Maintenance cycle	Essential points and notes	Page
Paper conveying section	Push paper sensor	Cleaning	Every time	Air brush	
	Surface view sensor	Cleaning	Every time	Air brush	
	Upper cover sensor	Cleaning	Every time	Air brush	
	Paper conveying sensor	Cleaning	Every time	Air brush	
	Adjusting hone position sensor	Cleaning	Every time	Air brush	
	Exit sensor	Cleaning	Every time	Air brush	
	Tray upper limit sensor	Cleaning	Every time	Air brush	
	Tray lower limit sensor	Cleaning	Every time	Air brush	
	Reverse sensor	Cleaning	Every time	Air brush	
	Exit roller	Cleaning	Every time	Wipe with cloth moistened with alcohol.	
	Paper conveying belt	Cleaning	Every time	Wipe with cloth moistened with alcohol.	
	Paper conveying roller	Cleaning	Every time	Wipe with cloth moistened with alcohol.	
	Paddle	Cleaning	Every time	Wipe with cloth moistened with alcohol.	
	Front static eliminator	Check	Every time	If paper powder or dust adheres to tip of brush, remove it.	
	Rear static eliminator	Check	Every time	If paper powder or dust adheres to tip of brush, remove it.	
	Reverse static eliminator	Check	Every time	If paper powder or dust adheres to tip of brush, remove it.	
	Push paper lever cushion	Cleaning	Every time	Wipe with cloth moistened with alcohol.	

30 cpm: Every 400K counts, 40/50cpm: Every 500K counts

## List of maintenance parts

Part names		Part number	Fig. No.	Ref. No.
Name used in the service manual	Name used in the parts list			
Push paper sensor	TLP1241 (C5)	5AA09040	1	2
Surface view sensor	TLP1241 (C5)	5AA09040	1	2
Upper cover sensor	TLP1241 (C5)	5AA09040	1	2
Paper conveying sensor	TLP1241 (C5)	5AA09040	1	2
Adjusting hone position sensor	TLP1241 (C5)	5AA09040	3	12
Exit sensor	TLP1241 (C5)	5AA09040	3	12
Tray upper limit sensor	TLP1241 (C5)	5AA09040	4	14
Tray lower limit sensor	TLP1241 (C5)	5AA09040	4	14
Reverse sensor	TLP1241 (C5)	5AA09040	5	52
Exit roller	ROL-R-H-OUT	5HL09370	1	41
Paper conveying belt	CAT-C	5HL09360	1	55
Paper conveying roller	ROL-R-CAT	5HL09640	1	45
Paddle	PDL-TH	5HL09430	1	22
Front static eliminator	BRUSH-TH-IN	5HL09440	1	14
Rear static eliminator	BRUSH-TH-OUT	5HL09470	1	13
Reverse static eliminator	BRSH-RV	5HL12320	5	59
Push paper lever cushion	CUSION-TM-YO	5HL09660	1	74

Wiring diagram



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