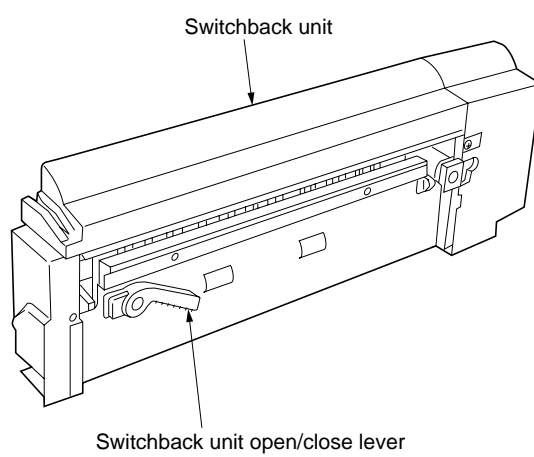

RA-1

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1-1-1 Part names**Figure 1-1-1**

1-1-2 Machine cross section

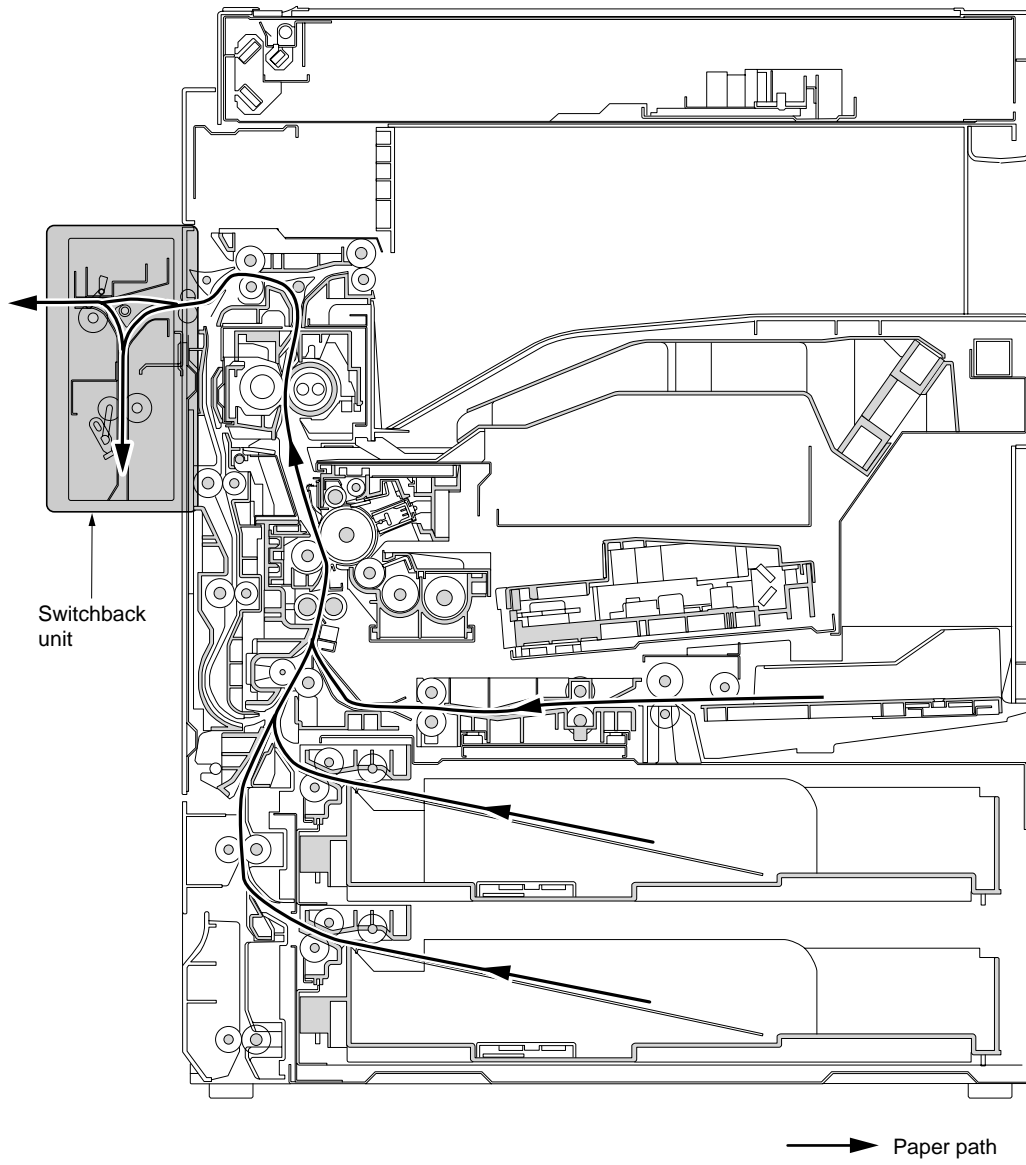


Figure 1-1-2

1-1-3 Drive system

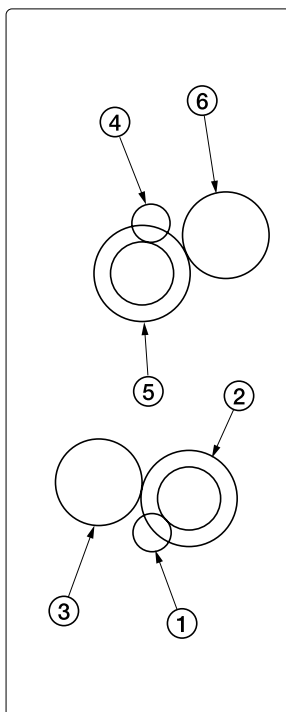


Figure 1-1-3

- ① Switchback motor gear
- ② Eject motor gear
- ③ Gear 23/31
- ④ Gear 21

1-2-1 Unpacking

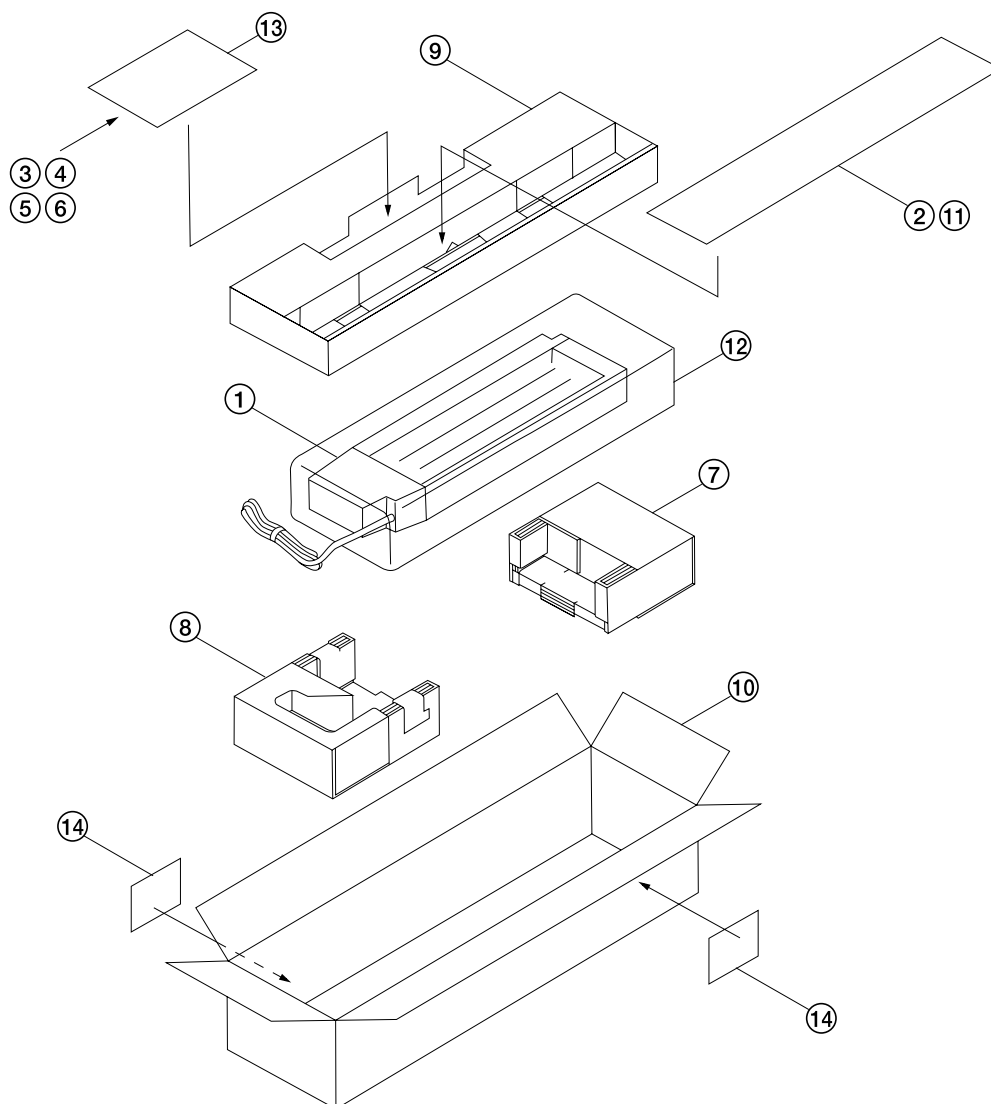


Figure 1-2-1 Unpacking

- | | |
|--------------------------|--------------------|
| ① Switchback unit | ⑧ Front bottom pad |
| ② Front cover | ⑨ Rear bottom pad |
| ③ Spacer | ⑩ Upper pad |
| ④ Binding screws M3 × 08 | ⑪ Outer case |
| ⑤ Binding screws M4 × 06 | ⑫ Plastic bag |
| ⑥ TP screws M4 × 12 | ⑬ Plastic bag |
| ⑦ TP screws M4 × 16 | ⑭ Bar-code labels |

1-3-1 Paper misfeed detection

(1) Paper misfeed indication

When paper jams, the machine immediately stops operation and the occurrence of a paper jam is indicated on the copier operation panel.

To remove the jammed paper, raise the switchback unit open/close lever and open the switchback unit.

To reset the paper misfeed detection, open and close the switchback unit to turn the switchback unit safety switch off and on.

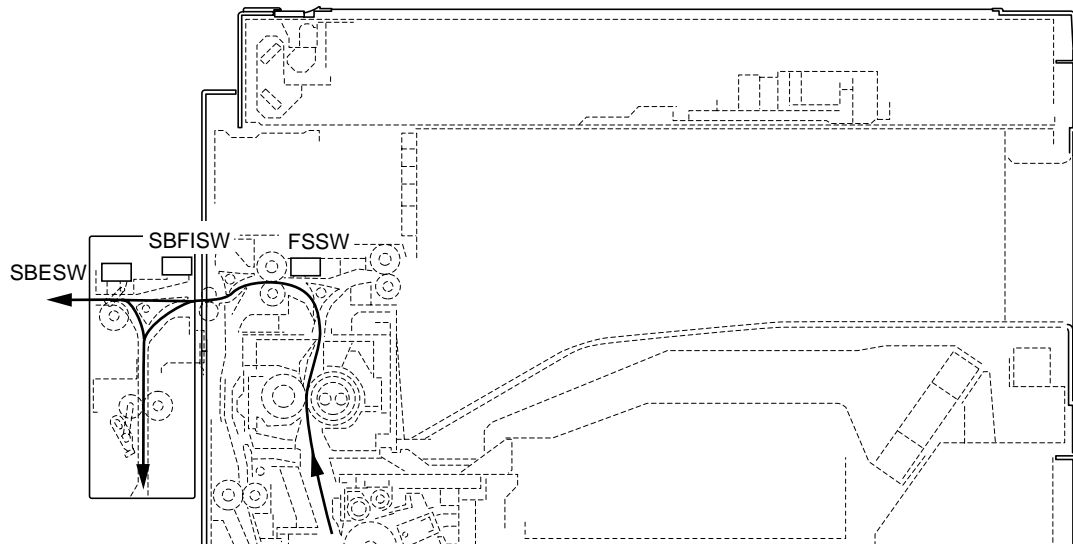
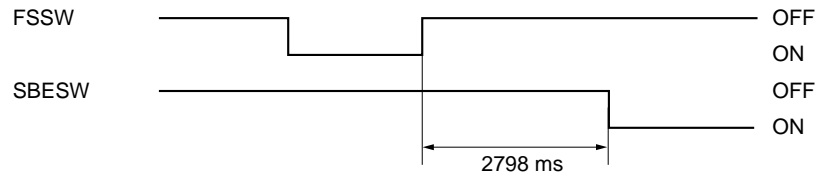


Figure 1-3-1 Paper misfeed detection

(2) Paper misfeed detection condition

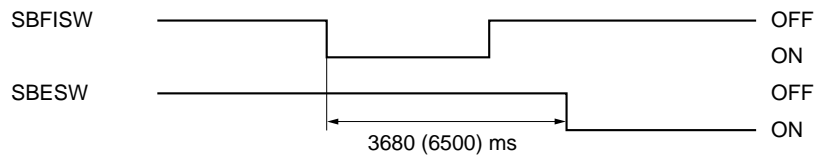
- Misfeed in switchback section (jam code 53)

The switchback eject switch (SBESW) does not turn off within 2797 ms of the copier feedshift switch (FSSW) turning on.



Timing chart 1-3-1

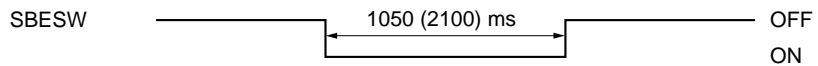
The switchback eject switch (SBESW) does not turn on within 3680 ms (6500 ms) of the switchback feed in switch (SBFISW) turning on.



Paper size: A4R/81/2"×11"
The value in the parentheses indicates A3/11"×17"

Timing chart 1-3-2

The switchback eject switch (SBESW) does not turn off within 1050 ms (2100 ms) of turning on.



Paper size: A4R/81/2"×11"
The value in the parentheses indicates A3/11"×17"

Timing chart 1-3-3

(3) Paper misfeeds

Problem	Causes	Check procedures/corrective measures
(1) Paper jams in the switchback unit when the main switch is turned on.	A piece of paper torn from copy paper is caught around the switchback eject switch and switchback feed in switch.	Remove any found.
	Defective switchback feed in switch.	With 5 V DC present at CN5-1 on the main PCB, check if CN5-3 on the main PCB remains high or low when the switchback feed in switch is turned on and off. If it does, replace the switchback feed in switch.
	Defective switchback eject switch.	With 5 V DC present at CN5-2 on the main PCB, check if CN5-4 on the main PCB remains high or low when the switchback eject switch is turned on and off. If it does, replace the switchback eject switch.
(2) Paper jams in the switchback section is indicated during copying (jam in switchback unit). Jam code 53	Broken switchback eject switch actuator.	Check visually and replace the switchback eject switch if its actuator is broken.
	Defective switchback feed in switch.	With 5 V DC present at CN5-1 on the main PCB, check if CN5-3 on the main PCB remains high or low when the switchback feed in switch is turned on and off. If it does, replace the switchback feed in switch.
	Defective switchback eject switch.	With 5 V DC present at CN5-2 on the main PCB, check if CN5-4 on the main PCB remains high or low when the switchback eject switch is turned on and off. If it does, replace the switchback eject switch.

1-3-2 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The switchback conveying motor does not operate.	Broken switchback conveying motor coil.	Check for continuity across the coil. If none, replace the switchback conveying motor.
	Poor contact of the switchback conveying motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
(2) The switchback eject motor does not operate.	Broken switchback eject motor coil.	Check for continuity across the coil. If none, replace the switchback eject motor.
	Poor contact of the switchback eject motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
(3) The feedshift solenoid does not operate.	Broken feedshift solenoid coil.	Check for continuity across the coil. If none, replace the feedshift solenoid.
	Poor contact of the feedshift solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
(4) The press solenoid does not operate.	Broken press solenoid coil.	Check for continuity across the coil. If none, replace the press solenoid.
	Poor contact of the press solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.

1-3-3 Mechanical problems

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

2-1-1 Construction of each section

The switchback unit consists of the parts shown in Figure 2-1-1 and performs switchback operation for switching the ejection side of paper when ejecting paper to the saddle finisher.

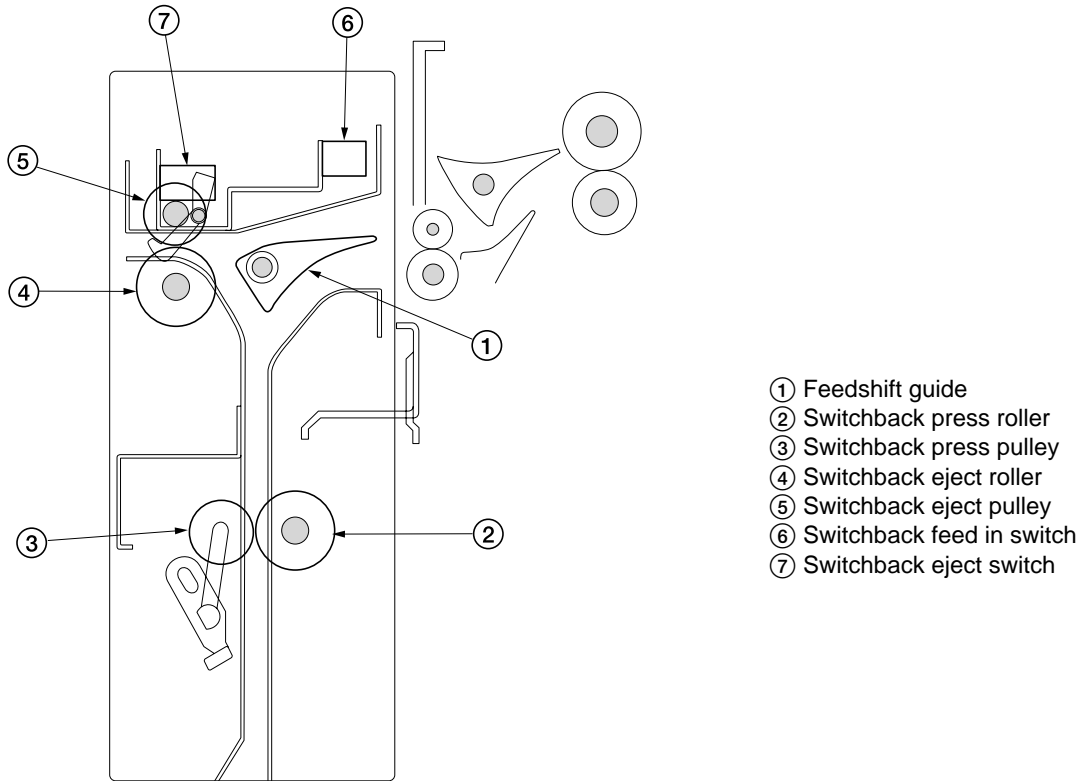


Figure 2-1-1 Switchback unit

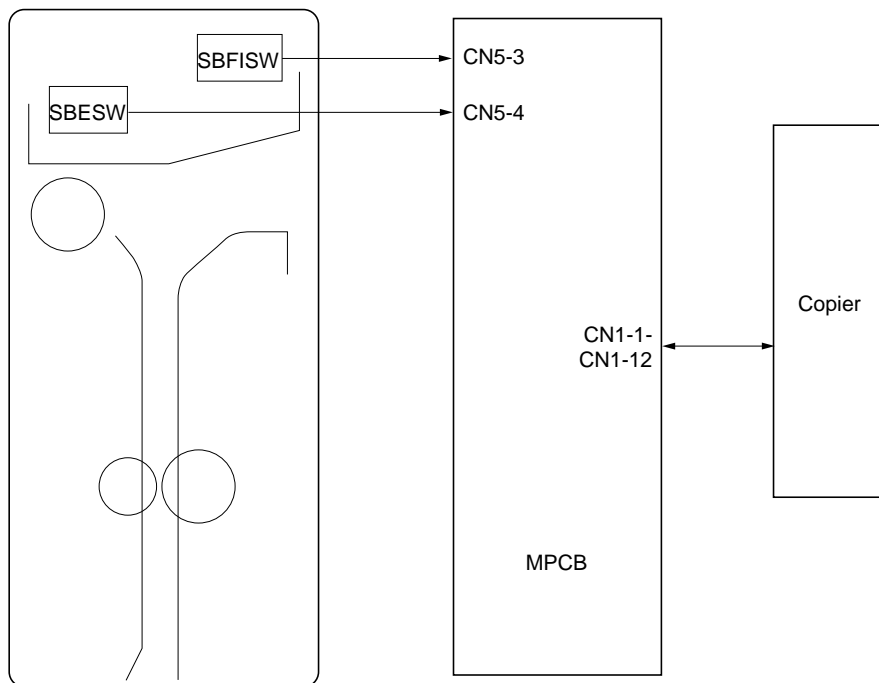


Figure 2-1-2 Switchback unit block diagram

(1) Paper switchback operation

Paper of which copying is complete is conveyed to the switchback unit and sent to the switchback section by the feedshift guide. In the switchback section, paper is conveyed by touching of the switchback press roller rotated by normal rotation of the switchback feed motor (SBFM), with the switchback press pulley activated by turning on the press solenoid (PRSOL). When a certain time (depending on the paper size) elapses, the switchback feed motor (SBFM) reverses the direction of rotation to reverse the rotation of the switchback press roller to switch the direction of paper conveyance.

Paper that has been switched back is conveyed to the saddle finisher by the switchback eject roller rotated by turning on the switchback eject motor (SBEM) and the switchback eject pulley. At this time, the second paper is conveyed to the switchback unit, the press solenoid (PRSOL) is turned off, the switchback press pulley separates from the switchback press roller, and the first paper and the second paper are interchanged in the switchback section.

(Depending on the copier model and the paper size, the press solenoid may not turn off and the switch press pulley may always touch the switchback press roller.)

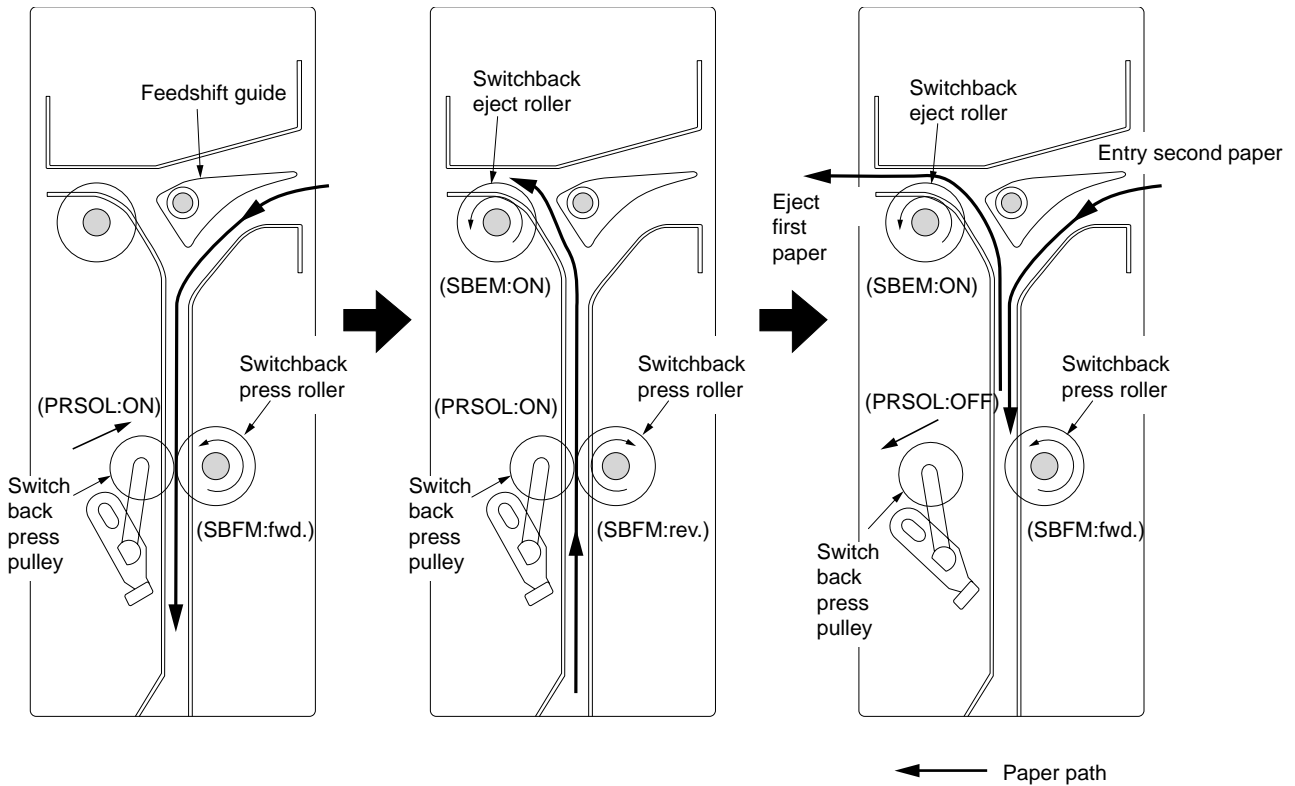
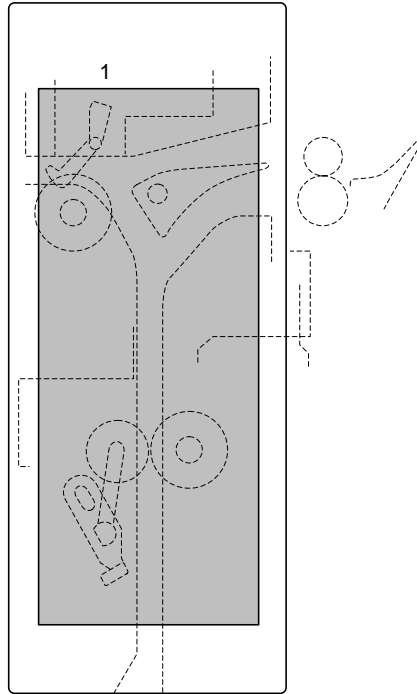


Figure 2-1-3

2-2-1 Electrical parts layout

(1) PCBs



□ Machine front ▨ Machine inside ■ Machine rear

Figure 2-2-1 PCBs

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

(2) Switches and solenoids

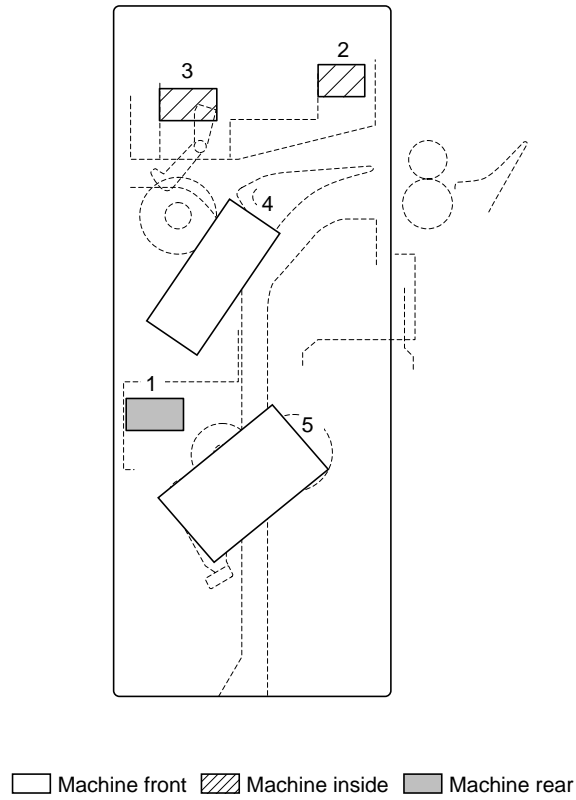


Figure 2-2-2 Switches and solenoids

- 1. Safty switch (SSW) Breaks the safty circuit when the switchback unit is opened.
- 2. Switchback feed in switch (SBFISW) Detects the presence of paper in the switchback unit.
- 3. Switchback eject switch (SBESW) Detects a paper misfeed in the switchback unit.
- 4. Feedshift solenoid (FSSOL) Operates the feedshift guide.
- 5. Press solenoid (PRSOL) Operates the switchback press solenoid.

(3) Motors

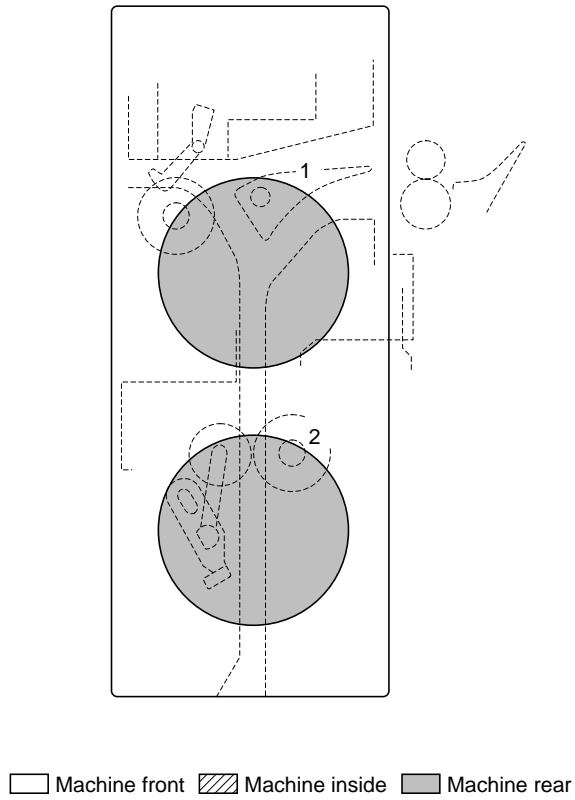


Figure 2-2-3 Motors

- 1. Switchback eject motor (SBEM) Drives the switchback eject roller.
- 2. Switchback feed motor (SBFM) Drives the switchback press roller.

2-3-1 Main PCB

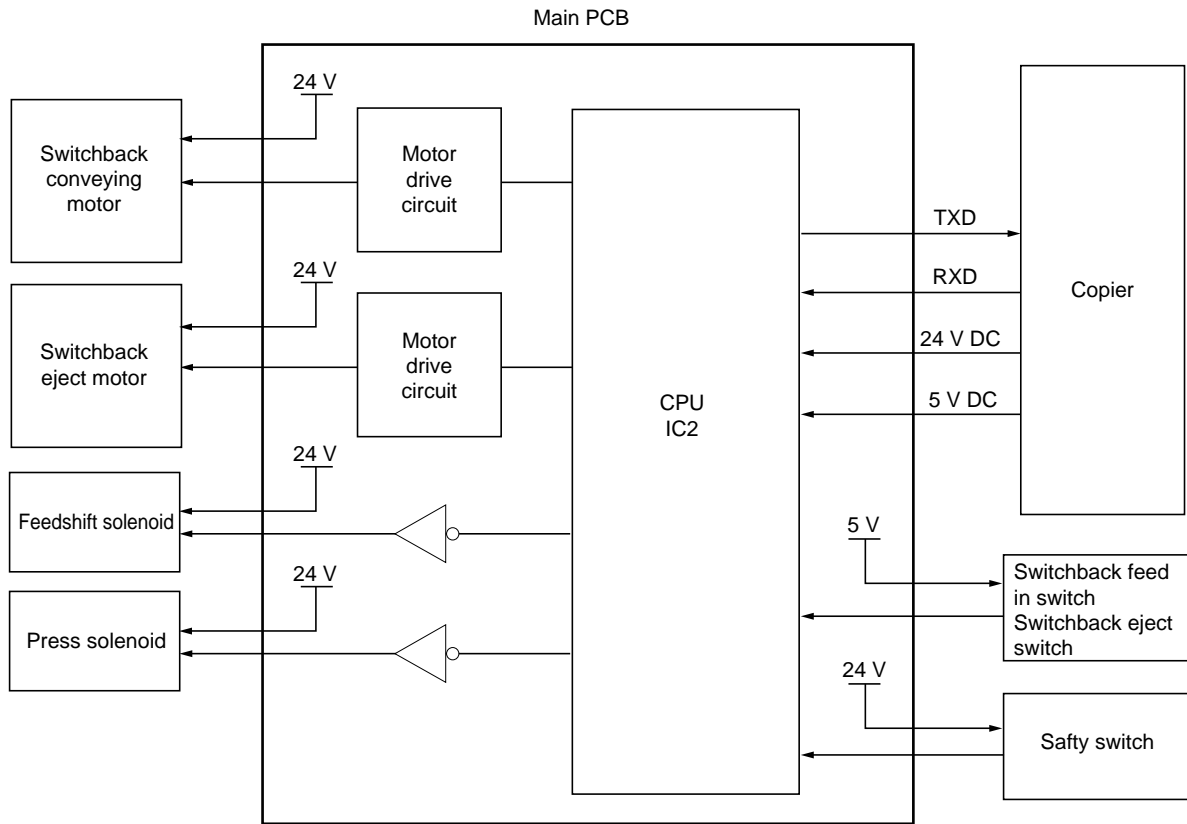


Figure 2-3-1 Main PCB block diagram

The main PCB (MPCB) consists mainly of the CPU IC2 and motor drive circuit. The CPU IC2 detects the condition of the switches and controls the motors and solenoids by serially communicating with the copier.

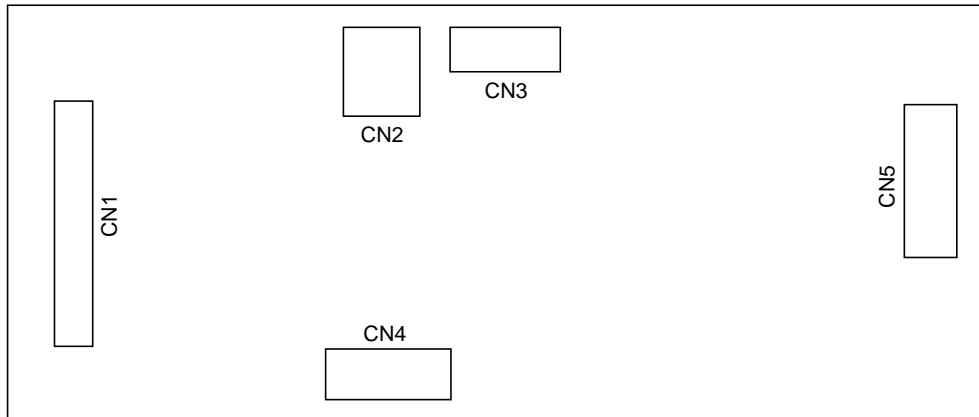
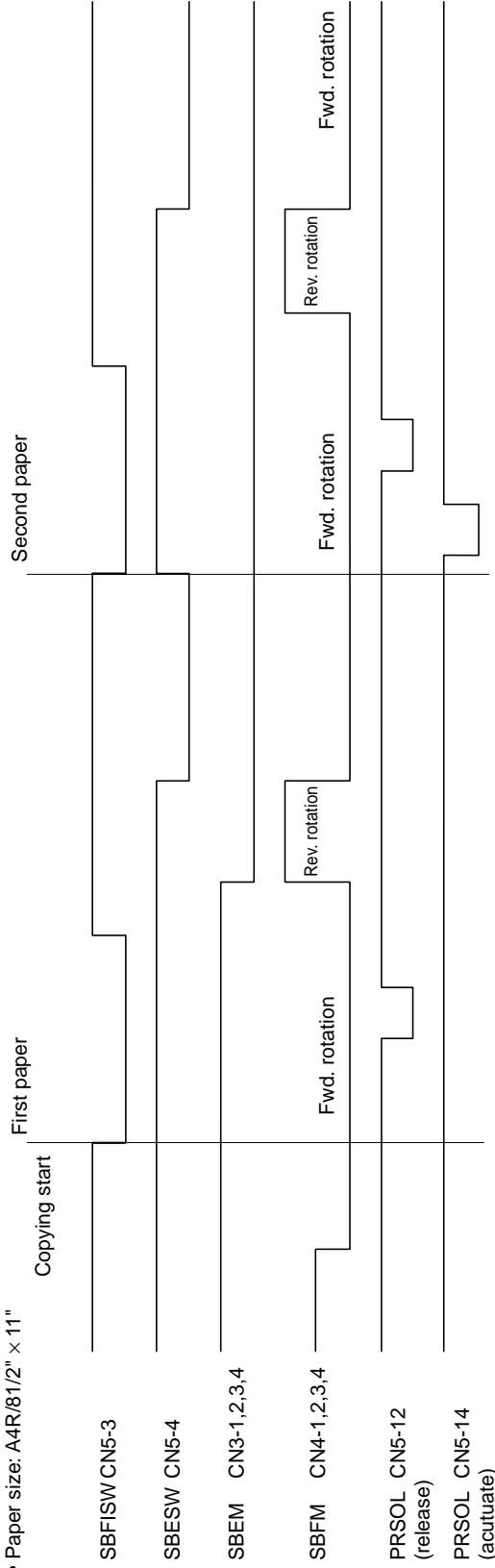


Figure 2-3-2 Main PCB silk-screen diagram

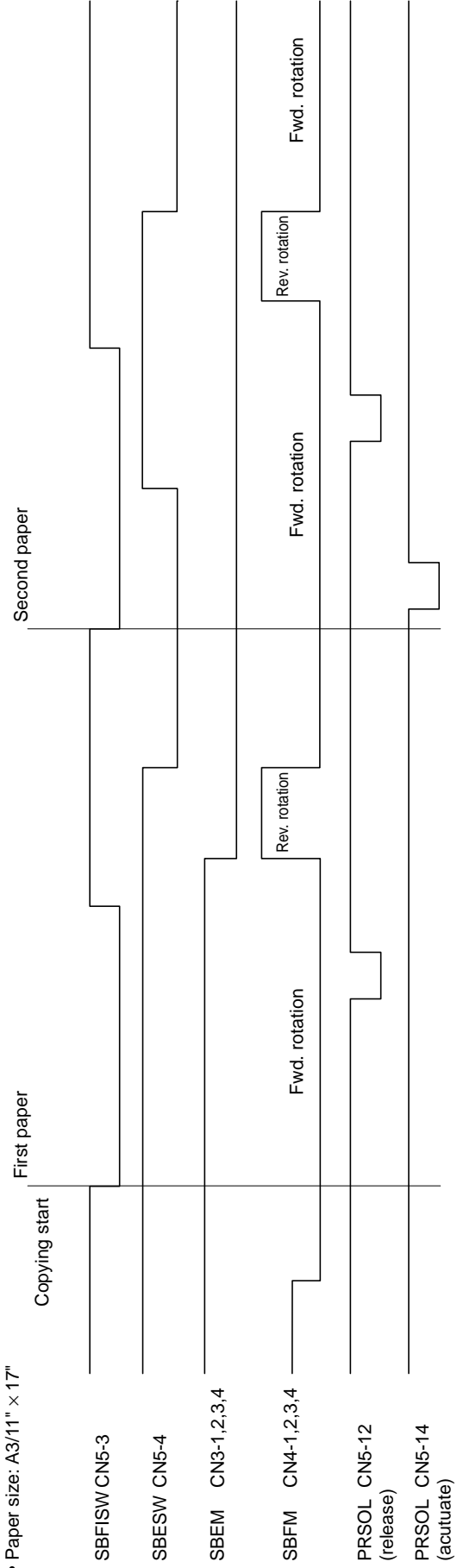
Terminals (CN)		Voltage	Remarks
1-1	1-3	24 V DC	24 V DC supply, input
1-2	1-4	24 V DC	24 V DC supply, input
1-6	1-5	5 V DC	5 V DC supply, input
1-7	1-8	0/5 V DC (pulse)	Serial signal TXD, output
1-9	1-10	0/5 V DC (pulse)	Serial signal RXD, input
1-11	1-5	0/5 V DC	RESET signal, input
1-12	1-5	0/5 V DC	Switchback unit SET signal, output
2-1	1-3	24 V DC	24 V DC supply for SSW, output
2-3	1-3	0/24 V DC	SSW on/off, input
3-1	1-3	0/24 V DC (pulse)	SBEM coil energization pulse, output (A)
3-2	1-3	0/24 V DC (pulse)	SBEM coil energization pulse, output (\bar{A})
3-3	1-3	0/24 V DC (pulse)	SBEM coil energization pulse, output (B)
3-4	1-3	0/24 V DC (pulse)	SBEM coil energization pulse, output (\bar{B})
3-5	1-3	24 V DC	24 V DC supply for SBEM, output
4-1	1-3	0/24 V DC (pulse)	SBFM coil energization pulse, output (A)
4-2	1-3	0/24 V DC (pulse)	SBFM coil energization pulse, output (\bar{A})
4-3	1-3	0/24 V DC (pulse)	SBFM coil energization pulse, output (B)
4-4	1-3	0/24 V DC (pulse)	SBFM coil energization pulse, output (\bar{B})
4-5	1-3	24 V DC	24 V DC supply for SBFM, output
5-1	5-5	5 V DC	5 V DC supply for SBFISW, output
5-2	5-6	5 V DC	5 V DC supply for SBESW, output
5-3	5-5	0/5 V DC	SBFISW on/off, input
5-4	5-6	0/5 V DC	SBESW on/off, input
5-9	1-3	24 V DC	24 V DC supply for FSSOL, output
5-10	1-3	0/24 V DC	FSSOL on/off signal, output
5-11	1-3	24 V DC	24 V DC supply for PRSOL, output
5-12	1-3	0/24 V DC	PRSOL acutate signal, output
5-14	1-3	0/24 V DC	PRSOL release signal, output

Timing chart No. 1

• Paper size: A4R/81/2" × 11"



• Paper size: A3/11" × 17"



The timing of all the motors and the solenoids is controlled based on the ON edge of the switchback feed in switch (SBFISW) as the starting point.

Wiring diagram

