
AD-61

CONTENTS

1-1 Specifications	
1-1-1 Specifications	1-1-1
1-1-2 Part names and their functions	1-1-2
1-1-3 Machine cross section	1-1-3
1-1-4 Drive system	1-1-4
(1) Feedshift section	1-1-4
(2) Duplex unit	1-1-5
1-2 Installation	
1-2-1 Unpacking	1-2-1
1-3 Troubleshooting	
1-3-1 Paper misfeed detection	1-3-1
(1) Paper misfeed indication	1-3-1
(2) Paper misfeed detection conditions	1-3-2
(3) Paper misfeeds	1-3-3
(1) Paper jams in the duplex unit when the main switch is turned on.	1-3-3
(2) Paper jams in the feedshift section during copying (jam in feedshift section).	1-3-3
(3) Paper jams in the duplex unit during copying (jam in duplex paper conveying section 1).	1-3-3
(4) Paper jams in the duplex unit during copying (jam in duplex paper conveying section 2).	1-3-3
1-3-2 Electrical problems	1-3-4
(1) The feedshift solenoid does not operate.	1-3-4
(2) The feedshift motor does not operate.	1-3-4
1-3-3 Mechanical problems	1-3-5
(1) Paper jams.	1-3-5
(2) Abnormal noise is heard.	1-3-5
1-4 Assembly and Disassembly	
1-4-1 Precautions for assembly and disassembly	1-4-1
(1) Precautions	1-4-1
1-4-2 Procedure for assembly and disassembly	1-4-2
(1) Adjusting the margin for printing	1-4-2
(2) Adjusting the amount of slack at the registration roller	1-4-3
(3) Adjusting the center line of image printing	1-4-4
2-1 Mechanical construction	
2-1-1 Feedshift section	2-1-1
(1) Paper conveying operation in the feedshift section	2-1-2
2-1-2 Duplex unit	2-1-3
2-2 Electrical Parts Layout	
2-2-1 Electrical parts layout	2-2-1
2-3 Appendixes	
Periodic maintenance procedures	2-3-1

1-1-1 Specifications

Type	Outboard
Paper	Plain paper: 75 – 80 g/m ² Special paper: colored paper
Paper sizes	A3 – A5R, folio/11" × 17" – 5 ¹ / ₂ " × 8 ¹ / ₂ "
Power source	Electrically connected to the copier
Dimensions	48 (W) × 450 (D) × 397 (H) mm 1 ⁷ / ₈ " (W) × 17 ¹¹ / ₁₆ " (D) × 15 ⁵ / ₈ " (H)
Weight	Approximately 4.8 kg/10.56 lbs

1-1-2 Part names and their functions

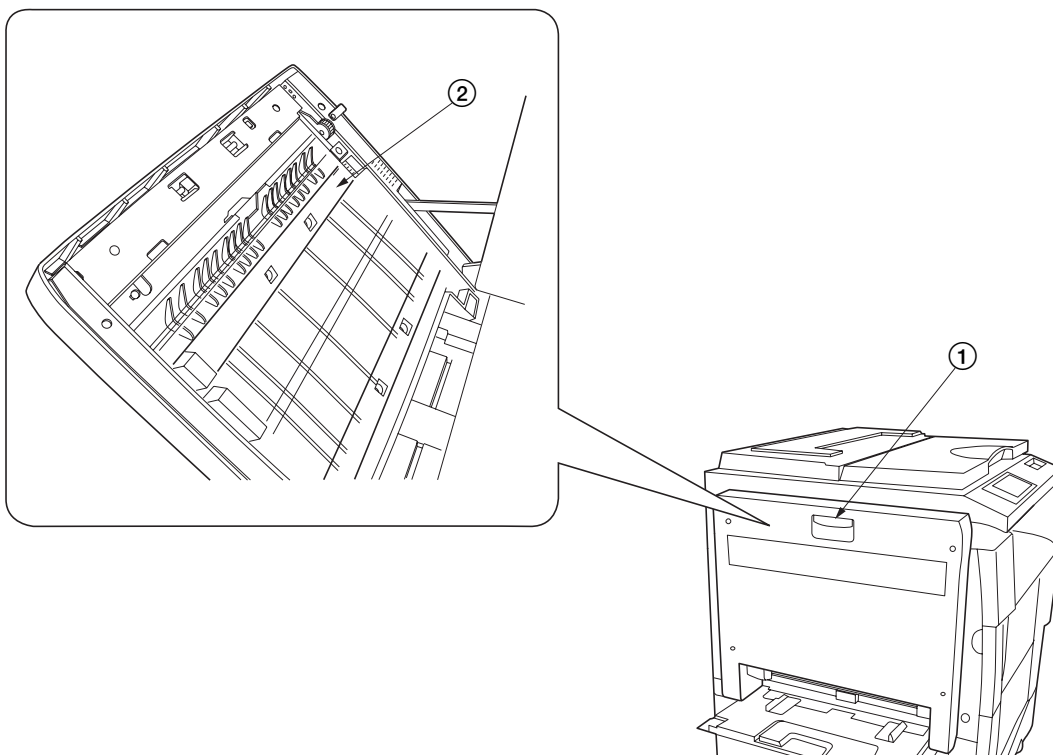


Figure 1-1-1

- ① Duplex handle
- ② Open/close guide

1-1-3 Machine cross section

1-1

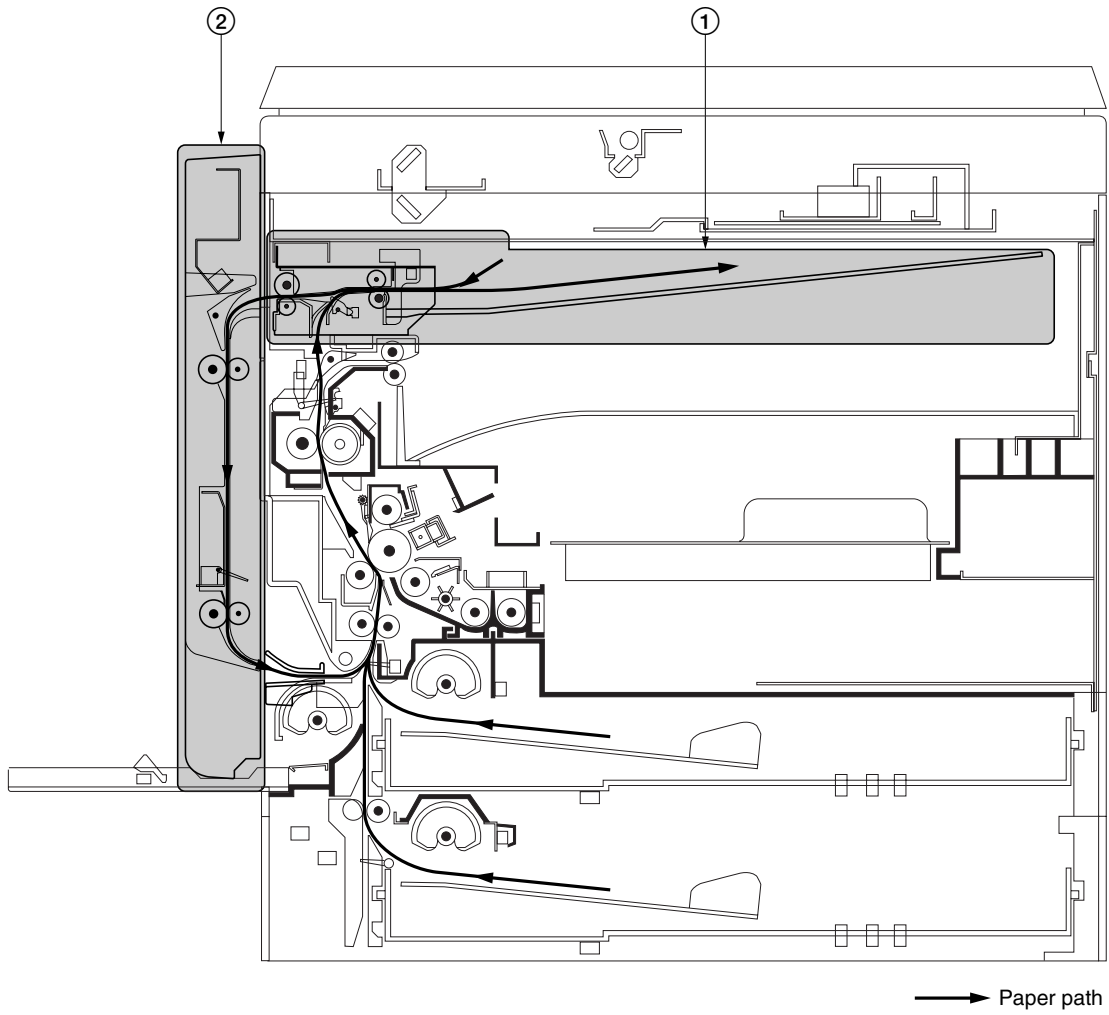


Figure 1-1-2

- ① Feedshift section
- ② Duplex unit

1-1-4 Drive system

(1) Feedshift section

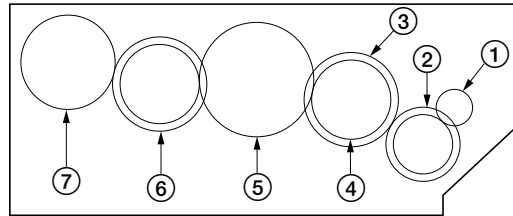


Figure 1-1-3

- | | |
|------------------------|--------------|
| ① Feedshift motor gear | ⑤ Gear 30 |
| ② Gear 19/38 | ⑥ Gear 19/21 |
| ③ Gear 23 | ⑦ Gear 25 |
| ④ Gear 19 | |

(2) Duplex unit

1-1

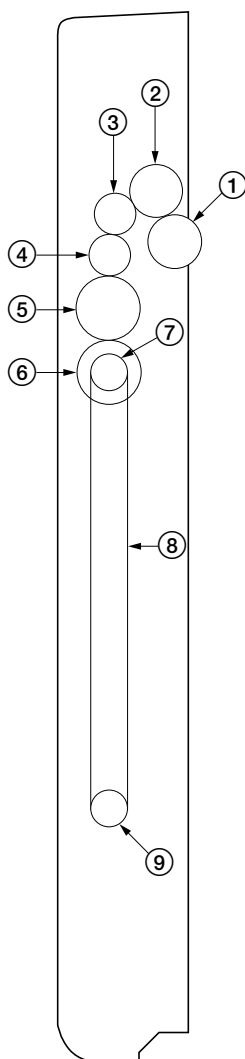


Figure 1-1-4

- | | |
|-----------|---------------|
| ① Gear 20 | ⑥ Gear 25 |
| ② Gear 20 | ⑦ Pulley 20 |
| ③ Gear 16 | ⑧ Duplex belt |
| ④ Gear 16 | ⑨ Pulley 20 |
| ⑤ Gear 25 | |

1-2-1 Unpacking

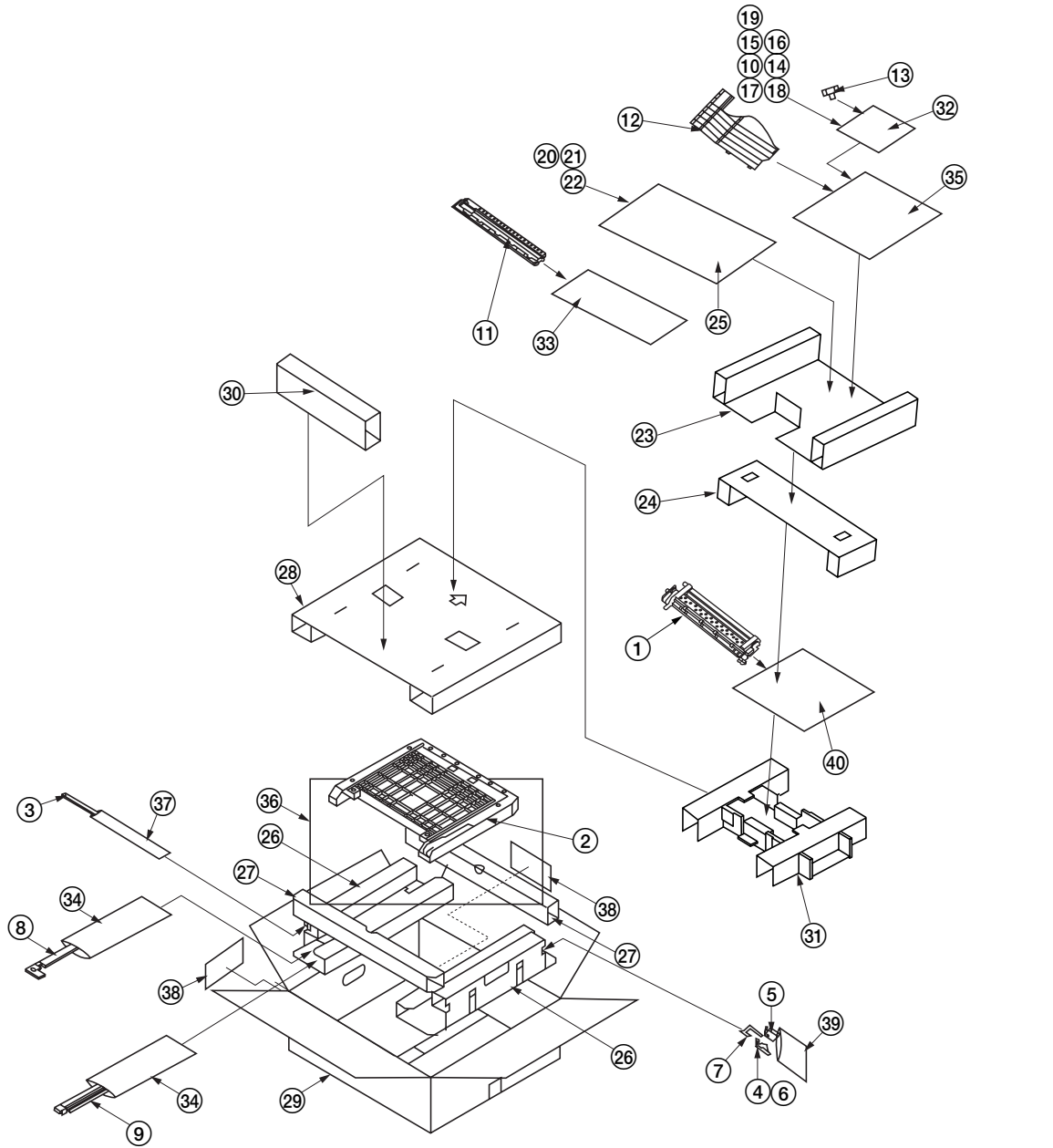


Figure 1-2-1 Unpacking

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> ① Feedshift unit ② Duplex unit ③ Duplex joint ④ Front duplex fulcrum plate ⑤ Rear duplex fulcrum plate ⑥ Front fulcrum hook ⑦ Duplex stopper ⑧ Left cover ⑨ Entry guide ⑩ Two (2) stoppers 5 ⑪ Right eject cover ⑫ Job separator tray ⑬ Pin ⑭ Two (2) cross-head bronze binding screws BVM3 × 05 | <ul style="list-style-type: none"> ⑮ Seven (7) cross head chrome binding screws M3 × 14 ⑯ One (1) cross-head chrome TP-A screw M3 × 05 ⑰ One (1) cross-head tap-tight P chrome TP-A screw M3 × 08 ⑱ One (1) cross-head tap-tight P chrome TP-A screw M4 × 12 ⑲ Clamp ⑳ Jam correction label ㉑ Eject section static eliminator ㉒ Installation manual ㉓ Upper pad ㉔ Spacer ㉕ Plastic bag | <ul style="list-style-type: none"> ㉖ Bottom pad ㉗ Spacers ㉘ Upper pad ㉙ Outer case ㉚ Spacer ㉛ Bottom pad ㉜ Plastic bag ㉝ Plastic bag ㉞ Plastic bag ㉟ Product cover ㊱ Air-padded bag ㊲ Bar-code label ㊳ Air-padded bag ㊴ Plastic bag |
|---|---|---|

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, open the duplex unit.

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

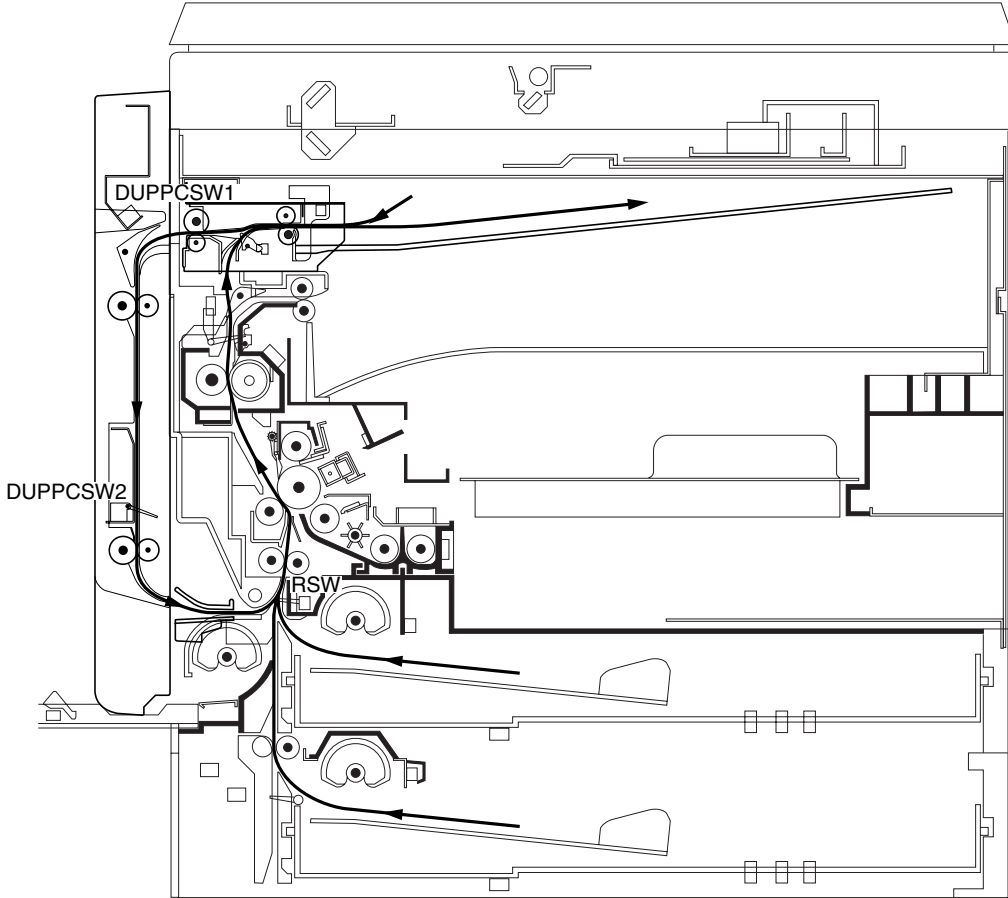


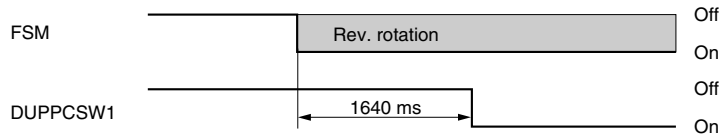
Figure 1-3-1 Paper misfeed detection

1-3

(2) Paper misfeed detection conditions

- Jam in feedshift section (jam code 51)

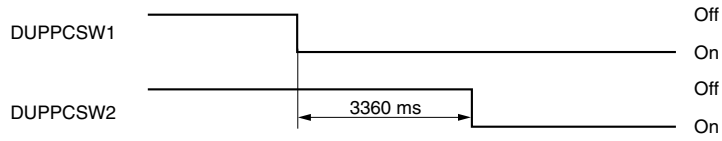
Duplex paper conveying switch 1 (DUPPCSW1) does not turn on within 1640 ms of the start of reverse rotation of the feedshift motor (FSM).



Timing chart 1-3-1

- Jam in duplex paper conveying section 1 (jam code 60)

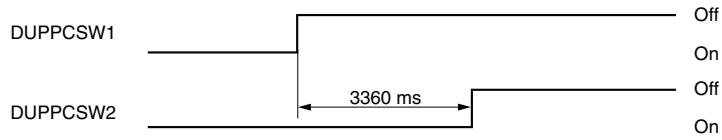
Duplex paper conveying switch 2 (DUPPCSW2) does not turn on within 3360 ms of duplex paper conveying switch 1 (DUPPCSW1) turning on.



Timing chart 1-3-2

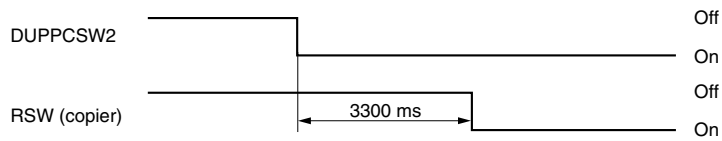
- Jam in duplex paper conveying section 2 (jam code 61)

Duplex paper conveying switch 2 (DUPPCSW2) does not turn off within 3360 ms of duplex paper conveying switch 1 (DUPPCSW1) turning off.



Timing chart 1-3-3

The registration switch (RSW) of the copier does not turn on within 3300 ms of duplex paper conveying switch 2 (DUPPCSW2) turning on.



Timing chart 1-3-4

(3) Paper misfeeds

Problem	Causes	Check procedures/corrective measures
(1) Paper jams in the duplex unit when the main switch is turned on.	A piece of paper torn from copy paper is caught around duplex paper conveying switch 1 or 2.	Remove any found.
	Defective duplex paper conveying switch 1.	With 5 V DC present at CN5-11 on the copier main PCB, check if CN5-10 on the main PCB remains low when duplex paper conveying switch 1 is turned on and off. If it does, replace duplex paper conveying switch 1.
	Defective duplex paper conveying switch 2.	With 5 V DC present at CN5-8 on the copier main PCB, check if CN5-7 on the main PCB remains low when duplex paper conveying switch 2 is turned on and off. If it does, replace duplex paper conveying switch 2.
(2) Paper jams in the feedshift section during copying (jam in feedshift section).	Defective duplex paper conveying switch 1.	With 5 V DC present at CN5-11 on the copier main PCB, check if CN5-10 on the main PCB remains high when duplex paper conveying switch 1 is turned on and off. If it does, replace duplex paper conveying switch 1.
	Check if the right eject pulley or right eject roller is deformed.	Check visually and replace the pulley or roller if deformed.
(3) Paper jams in the duplex unit during copying (jam in duplex paper conveying section 1).	Defective duplex paper conveying switch 2.	With 5 V DC present at CN5-8 on the copier main PCB, check if CN5-7 on the main PCB remains high when duplex paper conveying switch 2 is turned on and off. If it does, replace duplex paper conveying switch 2.
	Check if the duplex pulley or upper duplex roller is deformed.	Check visually and replace the pulley or roller if deformed.
(4) Paper jams in the duplex unit during copying (jam in duplex paper conveying section 2).	Defective duplex paper conveying switch 2.	With 5 V DC present at CN5-8 on the copier main PCB, check if CN5-7 on the main PCB remains low when duplex paper conveying switch 2 is turned on and off. If it does, replace duplex paper conveying switch 2.
	Defective copier registration switch.	With 5 V DC present at CN3-6 on the copier main PCB, check if CN3-7 on the main PCB remains high when the registration switch is turned on and off. If it does, replace the registration switch.
	Check if the duplex pulley or lower duplex roller is deformed.	Check visually and replace the pulley or roller if deformed.

1-3-2 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The feedshift solenoid does not operate.	Broken feedshift solenoid coil.	Check for continuity across the coil. If none, replace the feedshift solenoid.
	Poor contact of the feedshift solenoid connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective main PCB.	Run maintenance item U033 and check if CN16-4 and CN16-5 on the copier main PCB go low. If not, replace the main PCB.
(2) The feedshift motor does not operate.	Broken feedshift motor coil.	Check for continuity across the coil. If none, replace the feedshift motor.
	Poor contact of the feedshift motor connector terminals.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective copier main PCB.	Run maintenance item U030 and check if CN18-7 on the copier main PCB goes low. If not, replace the main PCB.
	Defective motor driver PCB.	Run maintenance item U030 and check if motor drive coil energization signal is output at CN2-1, CN2-2, CN2-6 and CN2-5 on the motor driver PCB. If not, replace the motor driver PCB.

1-3

1-3-3 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) Paper jams.	Check if the contact between the right eject pulley and right eject roller is correct.	Check and remedy.
	Check if the contact between the left eject pulley and left eject roller is correct.	Check and remedy.
	Check if the duplex pulley, upper duplex roller or lower duplex roller is deformed.	Check visually and replace the pulley or roller if deformed.
(2) Abnormal noise is heard.	Check if rollers and gears operate smoothly.	Apply grease to the bushings and gears.

1-3

1-4-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the main 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.

- Prepare the following as test originals:

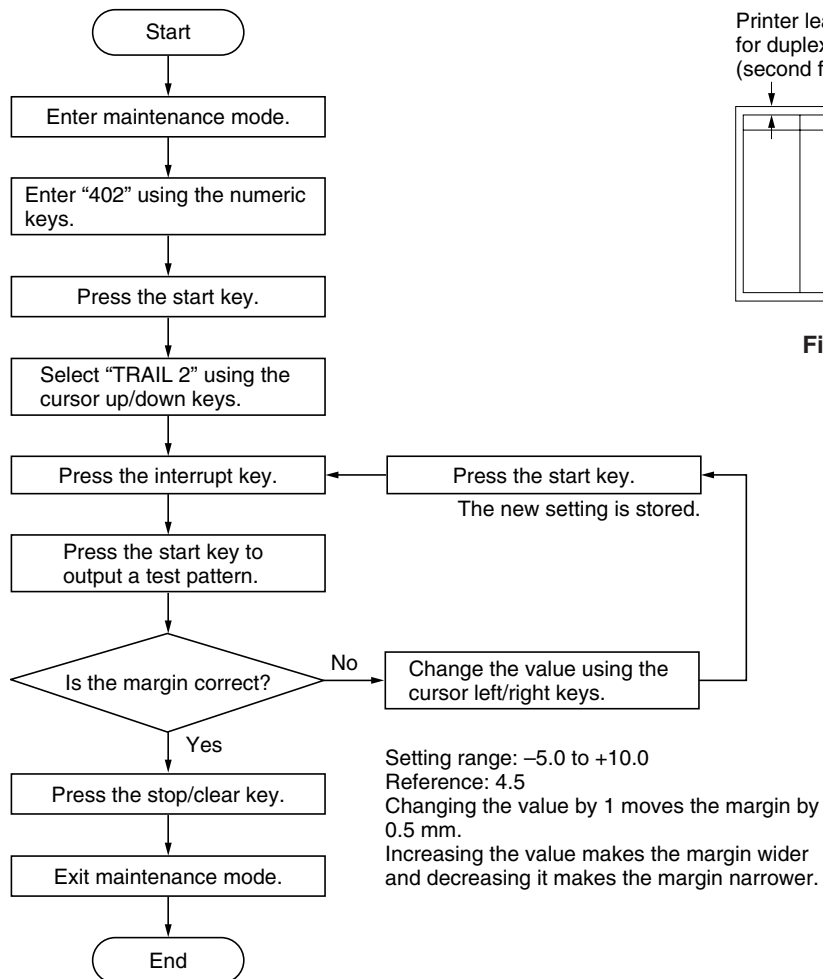
1. NTC (new test chart)
2. NPTC (newspaper test chart)

1-4-2 Procedure for assembly and disassembly

(1) Adjusting the margin for printing

Perform the following adjustment if the printer leading edge margin for duplex copying (second face) is not correct.

Procedure



Printer leading edge margin for duplex copying (second face, 3 ± 2.5 mm)

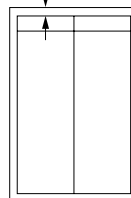


Figure 1-4-1

(2) Adjusting the amount of slack at the registration roller

Perform the following adjustment if the leading edge of the copy image is missing or varies randomly, or if the copy paper is Z-folded during duplex copying.

Procedure

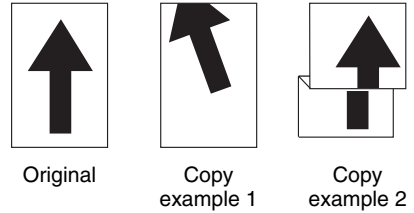
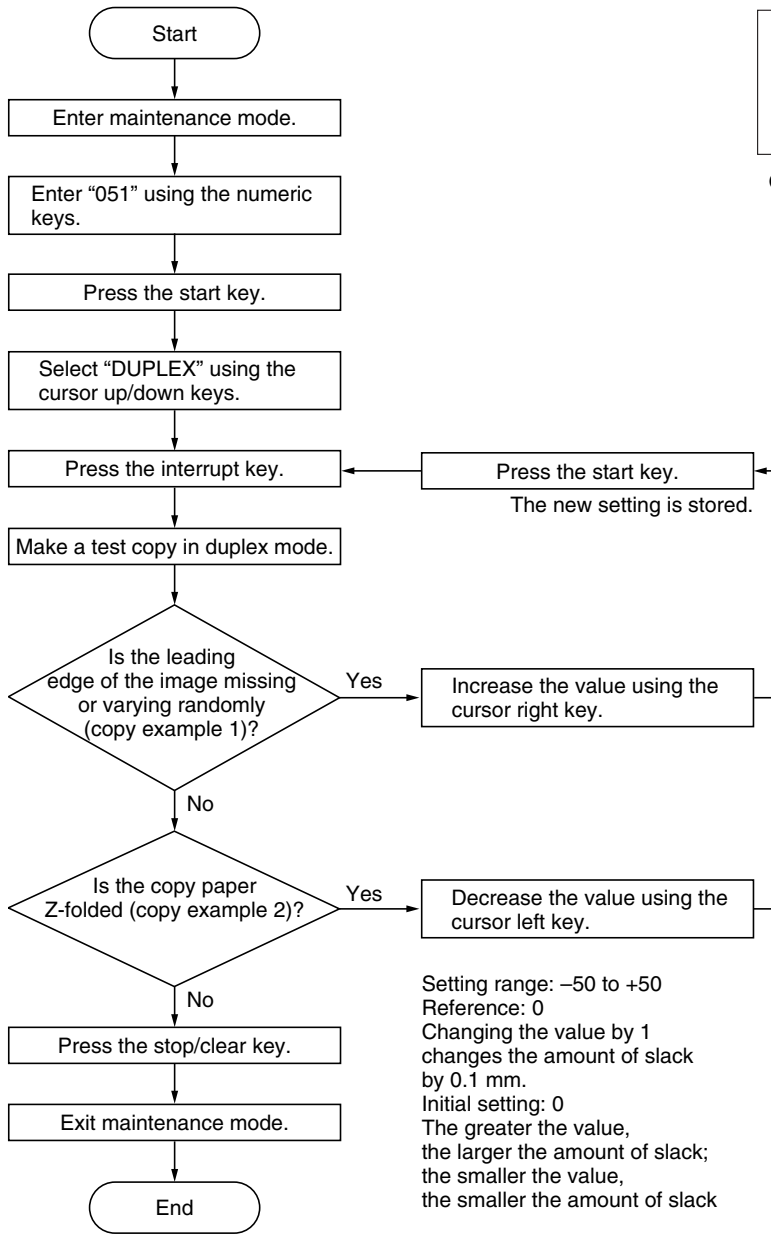


Figure 1-4-2

1-4

Setting range: -50 to +50
Reference: 0
Changing the value by 1 changes the amount of slack by 0.1 mm.
Initial setting: 0
The greater the value, the larger the amount of slack; the smaller the value, the smaller the amount of slack

(3) Adjusting the center line of image printing

Make the following adjustment if there is a regular error between the center lines of the copy image and original when copying using the duplex unit.

Procedure

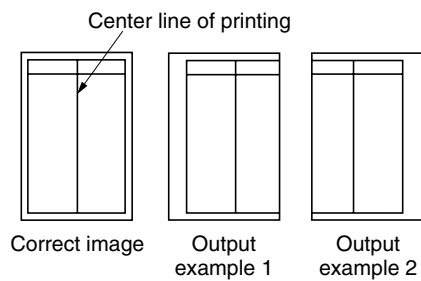
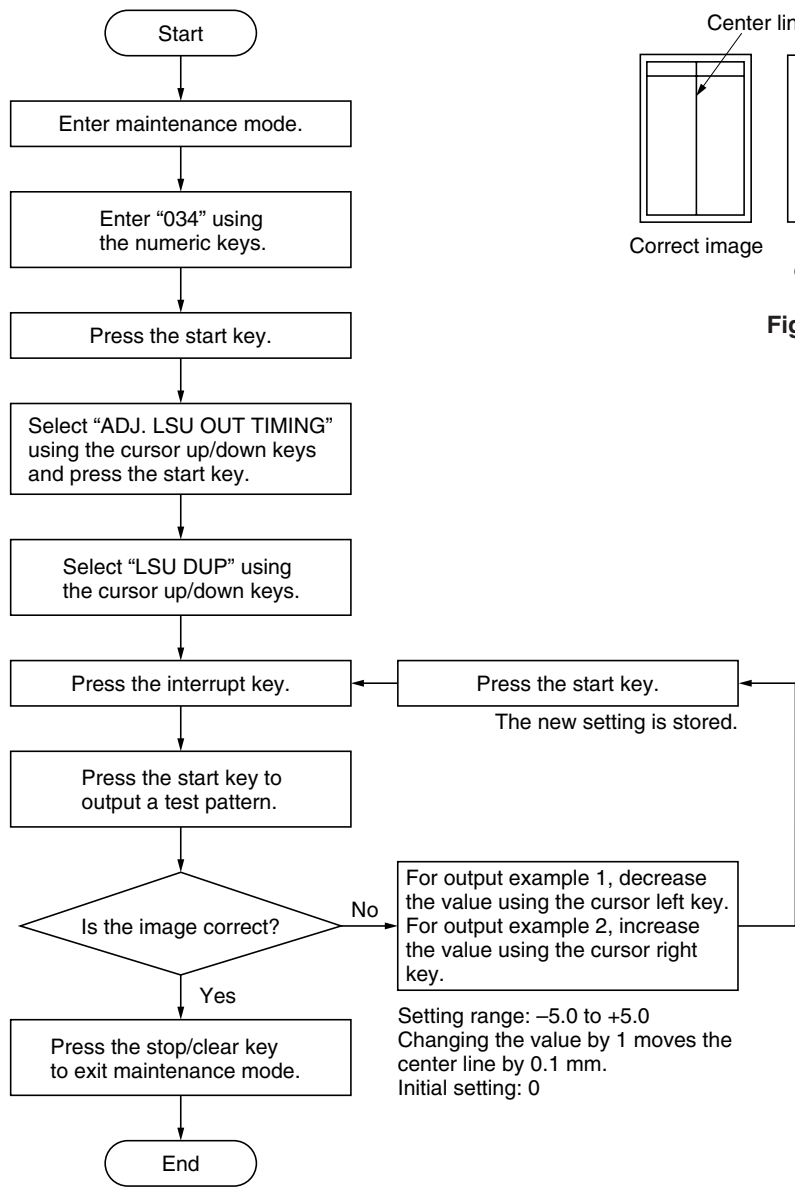


Figure 1-4-3

1-4

2-1-1 Feedshift section

The feedshift section consists of the components shown in Figure 2-1-1. It switches the path for the paper conveyed from the copier during duplex copying.

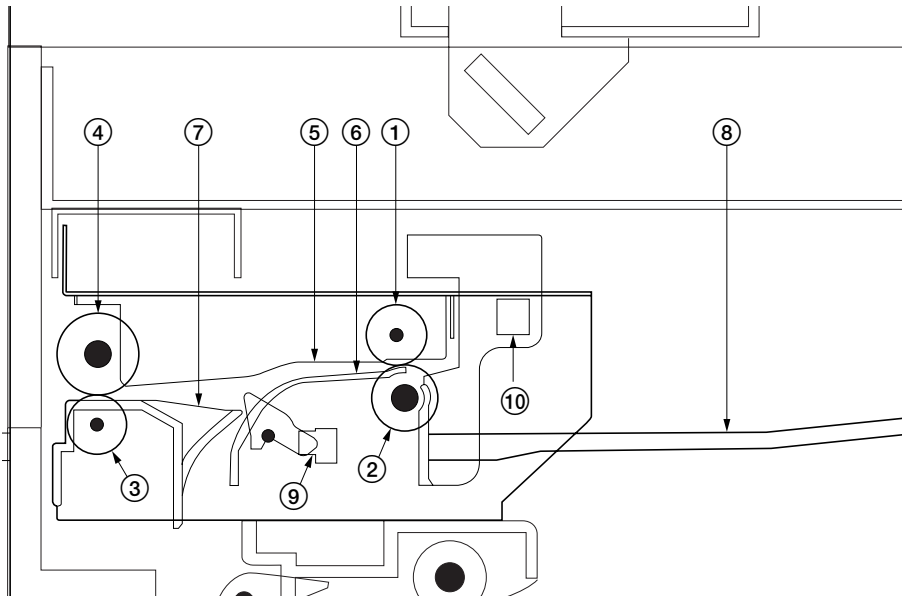


Figure 2-1-1 Feedshift section

- ① Right eject pulley
- ② Right eject roller
- ③ Left eject pulley
- ④ Left eject roller
- ⑤ Upper guide
- ⑥ Lower right guide
- ⑦ Lower left guide
- ⑧ Job separator tray
- ⑨ Feedshift eject switch (FSESW)
- ⑩ Ejected paper detection switch (EPDSW)

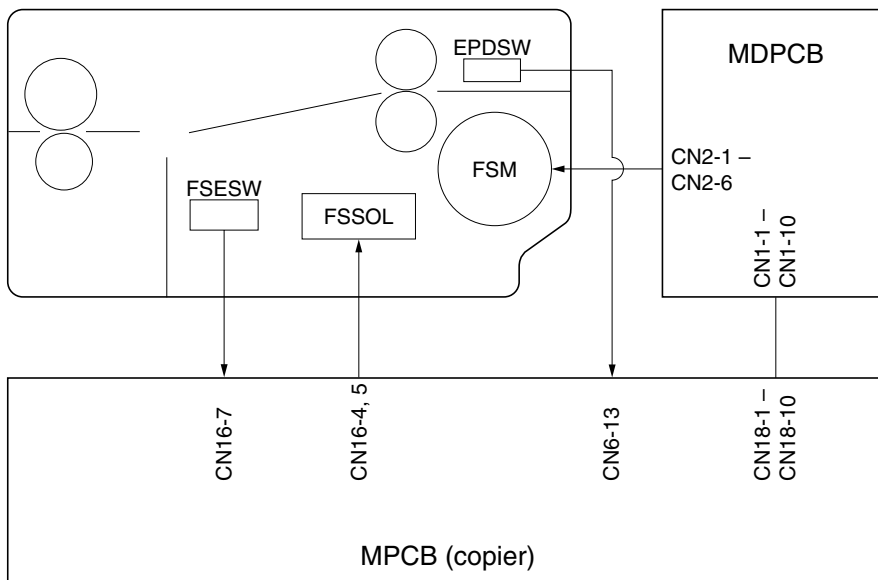


Figure 2-1-2 Feedshift section block diagram

2-1

(1) Paper conveying operation in the feedshift section

In duplex mode, when the reverse face of the paper is copied, the feedshift solenoid (FSSOL) turns on and the feedshift guide of the copier operates to switch the paper path to the feedshift section. When the trailing edge of the paper passes the paper conveying switch (PCSW), the feedshift motor (FSM) reverses, rotating the right eject roller in the reverse direction to switch back the paper into the duplex unit.

If the job separator tray is selected for the copy eject location, copied paper is conveyed through the feedshift section to the job separator tray without being switched back.

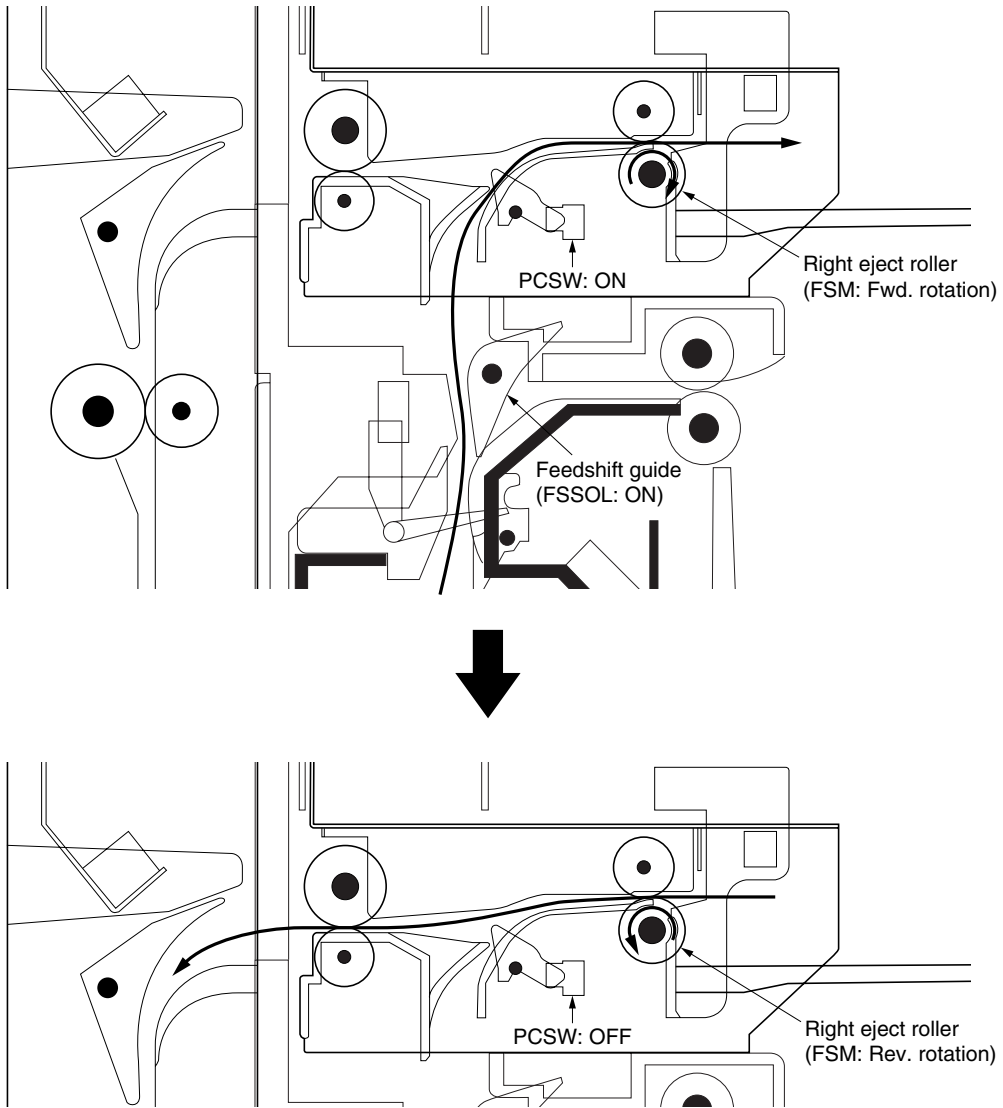


Figure 2-1-3

2-1

2-1-2 Duplex unit

The duplex unit consists of the components shown in Figure 2-1-4. In duplex mode, after copying on to the reverse face of the paper, the paper is reversed in the feedshift section and conveyed to the duplex unit. The paper is then conveyed to the copier paper feed section by the upper and lower duplex rollers.

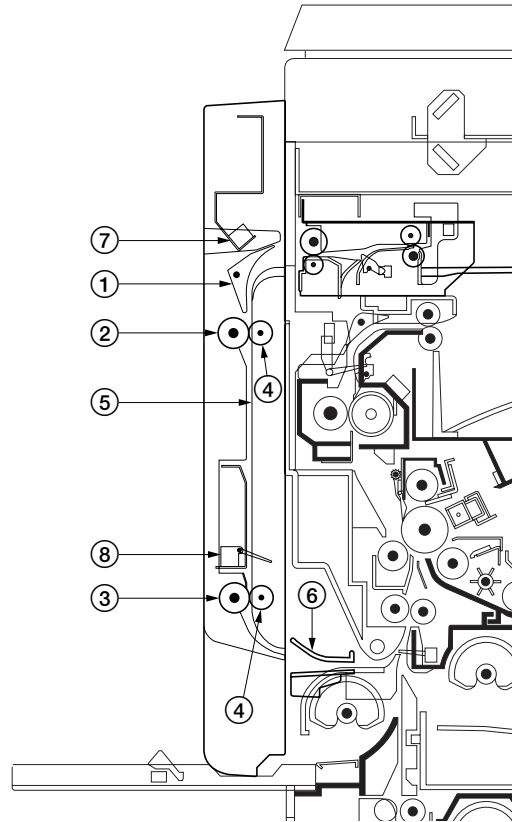


Figure 2-1-4 Duplex unit

- ① Duplex feedshift guide
- ② Upper duplex roller
- ③ Lower duplex roller
- ④ Duplex pulley
- ⑤ Open/close guide
- ⑥ Entry guide
- ⑦ Duplex paper conveying switch 1 (DUPPCSW1)
- ⑧ Duplex paper conveying switch 2 (DUPPCSW2)

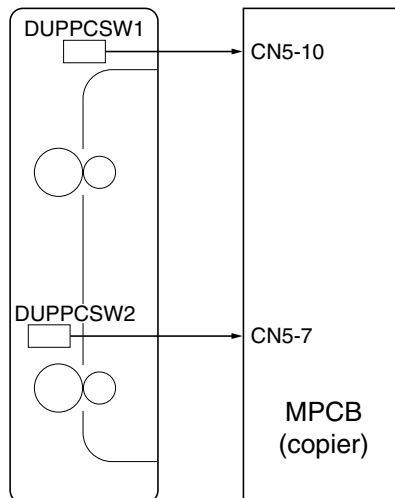


Figure 2-1-5 Duplex unit block diagram

2-1

2-2-1 Electrical parts layout

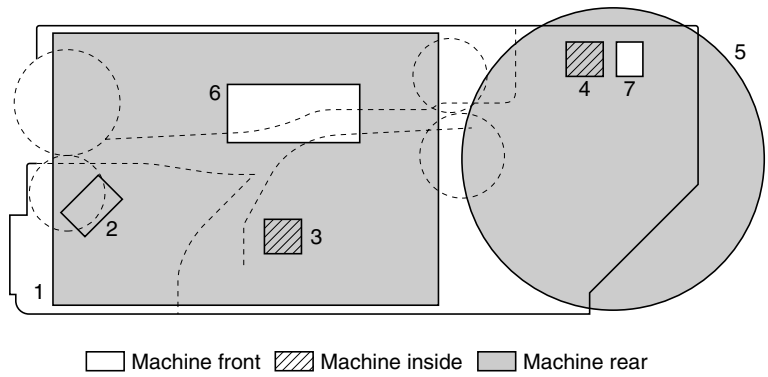
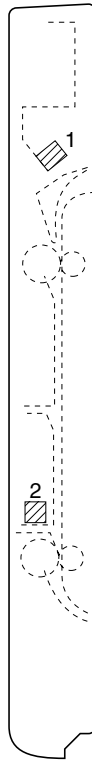


Figure 2-2-1 Feedshift unit

- 1. Motor driver PCB (MDPCB) Controls the feedshift motor.
- 2. Duplex open/close switch (DUPOCSW) Detects if the duplex unit is opened/closed.
- 3. Feedshift eject switch (FSESW) Detects a paper jam in the feedshift unit.
- 4. Ejected paper detection switch (EPDSW) ... Detects the presence of paper on the job separator tray.
- 5. Feedshift motor (FSM) Drives the feedshift section.
- 6. Feedshift solenoid (FSSOL) Operates the feedshift guide of the copier.
- 7. LED Indicates when the job separator tray is full.



□ Machine front ▨ Machine inside □ Machine rear

Figure 2-2-2 Duplex unit

- 1. Duplex paper conveying switch 1 (DUPPCSW1) Detects a paper jam in the duplex unit.
- 2. Duplex paper conveying switch 2 (DUPPCSW2) Detects a paper jam in the duplex unit.

2-2

Periodic maintenance procedures

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Paper conveying section	Upper duplex roller	Clean	Every service	Clean with alcohol or a dry cloth.	
	Lower duplex roller	Clean	Every service	Clean with alcohol or a dry cloth.	
	Job separator tray	Clean	Every service	Spray air onto the black pad.	