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# ***SRDF-2***

# **SERVICE MANUAL**

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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 ( $\triangle$ ) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.



General warning.



Warning of risk of electric shock.



Warning of high temperature.

 indicates a prohibited action. The specific prohibition is shown inside the symbol.



General prohibited action.



Disassembly prohibited.

 indicates that action is required. The specific action required is shown inside the symbol.



General action required.





Remove the power plug from the wall outlet.











Always ground the copier.

# 1. Installation Precautions

## WARNING











- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. .... 
- Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. .... 

## CAUTION:






- Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury. .... 
- Do not install the copier in a humid or dusty place. This may cause fire or electric shock. .... 
- Do not install the copier near a radiator, heater, other heat source or near flammable material. This may cause fire. .... 
- Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. .... 
- Always handle the machine by the correct locations when moving it. .... 
- Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury. .... 
- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. .... 
- Advise customers that they must always follow the safety warnings and precautions in the copier's instruction handbook. .... 

## 2. Precautions for Maintenance

### WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly..... 
- Always follow the procedures for maintenance described in the service manual and other related brochures. .... 
- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits. .... 
- Always use parts having the correct specifications. .... 
- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident. .... 
- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully. .... 
- Always check that the copier is correctly connected to an outlet with a ground connection. .... 
- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock. .... 
- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight. .... 
- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly. .... 

### CAUTION

- Wear safe clothing. If wearing loose clothing or accessories such as ties, make sure they are safely secured so they will not be caught in rotating sections..... 
- Use utmost caution when working on a powered machine. Keep away from chains and belts. .... 
- Handle the fixing section with care to avoid burns as it can be extremely hot. .... 
- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures. .... 
- Do not remove the ozone filter, if any, from the copier except for routine replacement. .... 

- Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself. ....
- Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item. ....
- Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks. ....
- Remove toner completely from electronic components. ....
- Run wire harnesses carefully so that wires will not be trapped or damaged. ....
- After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws. ....
- Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary. ....
- Handle greases and solvents with care by following the instructions below: .....
  - Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
  - Ventilate the room well while using grease or solvents.
  - Allow applied solvents to evaporate completely before refitting the covers or turning the main switch on.
  - Always wash hands afterwards.
- Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc. ....
- Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately. ....



### 3. Miscellaneous

#### WARNING

- Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas. ....



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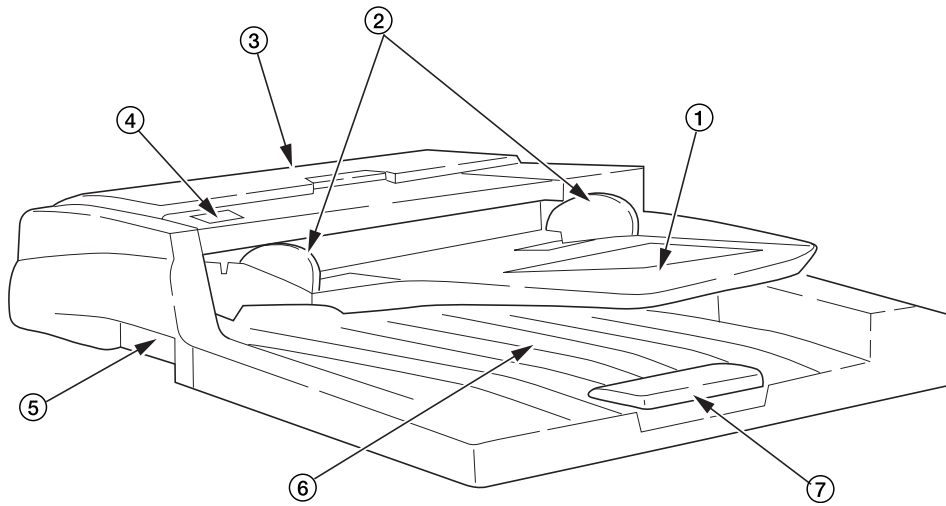


## 1-1-1 Specifications

Type .....	Machine mounted type duplex sheet-through document feeder
Original feed system .....	Automatic feed
Originals .....	Sheets
Original weights .....	Single-sided original mode: 35 – 160 g/m <sup>2</sup> Double-sided original mode: 50 – 120 g/m <sup>2</sup>
Original paper .....	Plain paper, thermal paper, art paper and colored paper
Original sizes .....	A3 – A5R, folio/11" × 17" – 5 <sup>1</sup> / <sub>2</sub> " × 8 <sup>1</sup> / <sub>2</sub> "
No. of originals .....	Up to 70 sheets (A3, B4, folio, 11" × 17", 8 <sup>1</sup> / <sub>2</sub> " × 14") Up to 100 sheets (up to A4/11" × 8 <sup>1</sup> / <sub>2</sub> ") Up to 30 sheets in the auto selection mode
Original processing speed .....	Original replacement: Max. 62 sheets/min (A4/11" × 8 <sup>1</sup> / <sub>2</sub> ") Original scanning: 167 mm/s (100%)
Power source .....	Electrically connected to the copier (5 V DC and 24 V DC)
Dimensions .....	553 (W) × 478 (D) × 137 (H) mm 21 <sup>3</sup> / <sub>4</sub> " (W) × 18 <sup>13</sup> / <sub>16</sub> " (D) × 5 <sup>3</sup> / <sub>8</sub> " (H)
Weight .....	Approx. 10.5 kg/23.1 lbs

## 1-1-2 Parts names and their functions

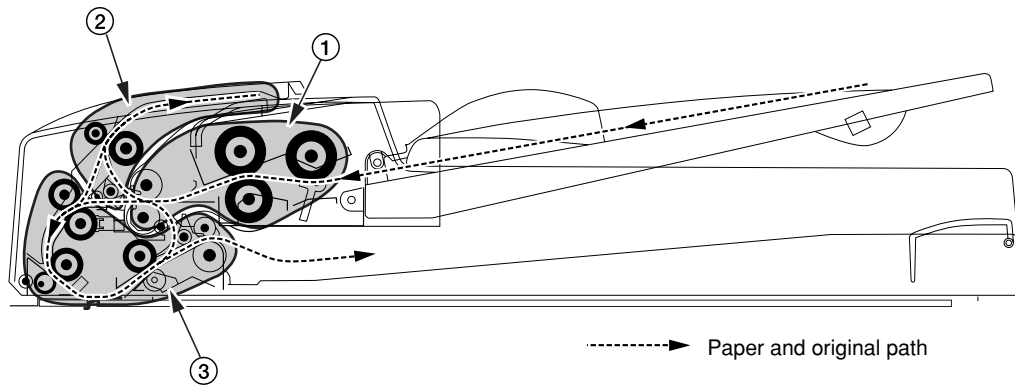
### (1) Parts names



**Figure 1-1-1**

- ① Original table
- ② Original insert guides
- ③ DF original reversing cover
- ④ Original set indicator
- ⑤ Original eject cover
- ⑥ DF opening/closing lever
- ⑦ Ejection extension

### 1-1-3 Machine cross section

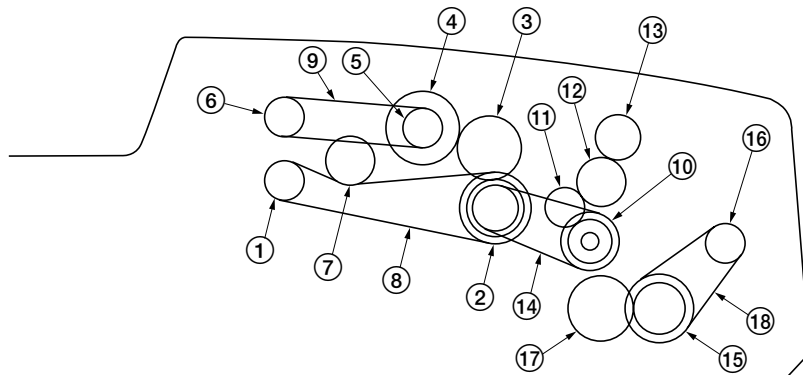


**Figure 1-1-2 Machine cross section**

- ① Original feed section
- ② Original switchback section
- ③ Original conveying section

### 1-1-4 Drive system

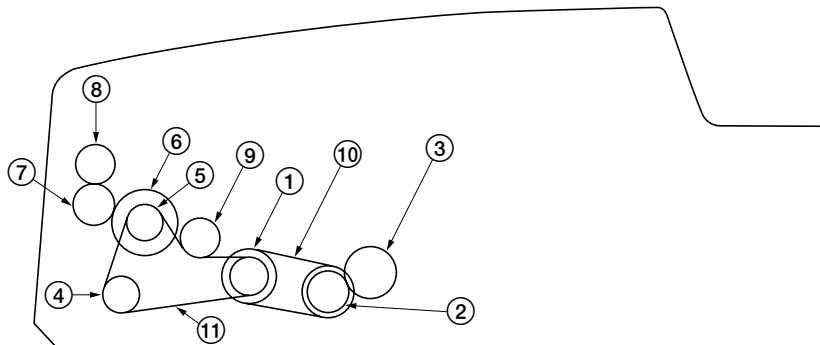
#### (1) Drive system



As viewed from machine rear

**Figure 1-1-3 Drive system (inside rear of machine)**

- |                              |                                   |
|------------------------------|-----------------------------------|
| ① Original feed motor pulley | ⑩ DF registration pulley 28/18    |
| ② Pulley 35/22/22            | ⑪ Idle gear 15                    |
| ③ Idle gear 26               | ⑫ Idle gear 20                    |
| ④ Original feed clutch gear  | ⑬ Switch back gear 18             |
| ⑤ DF original feed pulley 18 | ⑭ DF registration drive belt      |
| ⑥ DF forwarding pulley 18    | ⑮ Gear 22/35                      |
| ⑦ Tension pulley             | ⑯ Original conveying motor pulley |
| ⑧ Original feed drive belt   | ⑰ Gear 28                         |
| ⑨ DF forwarding belt         | ⑱ Original conveying drive belt 1 |



As viewed from machine front

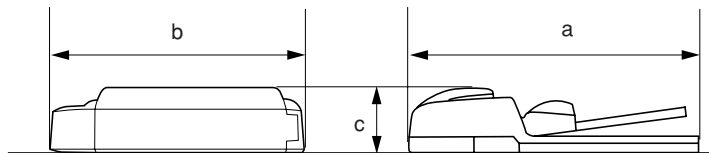
**Figure 1-1-4 Drive system (inside front of machine)**

- |   |                          |
|---|--------------------------|
| ① Lower original conveying pulley 25/18 | ⑦ Joint gear 14          |
| ② Gear 18/25                            | ⑧ JAM release gear 14    |
| ③ Eject gear 18                         | ⑨ Tension pulley         |
| ④ Middle original conveying pulley 18   | ⑩ Eject drive belt       |
| ⑤ Upper original conveying pulley 18    | ⑪ Conveying drive belt 2 |
| ⑥ JAM release gear 24                   |                          |

## 1-2-1 Installation environment

### 1. Installation location (Be based on the copier establishment place.)

- Avoid direct sunlight or bright lighting. Ensure that the photoconductor will not be exposed to direct sunlight or other strong light when removing paper jams.
- Avoid extremes of temperature and humidity, abrupt ambient temperature changes, and hot or cold air directed onto the machine.
- Avoid dust and vibration.
- Choose a surface capable of supporting the weight of the machine.
- Place the machine on a level surface (maximum allowance inclination:  $1^\circ$ ).
- Avoid air-borne substances that may adversely affect the machine or degrade the photoconductor, such as mercury, acidic or alkaline vapors, inorganic gasses, NOx, SOx gases and chlorine-based organic solvents.
- Select a room with good ventilation.

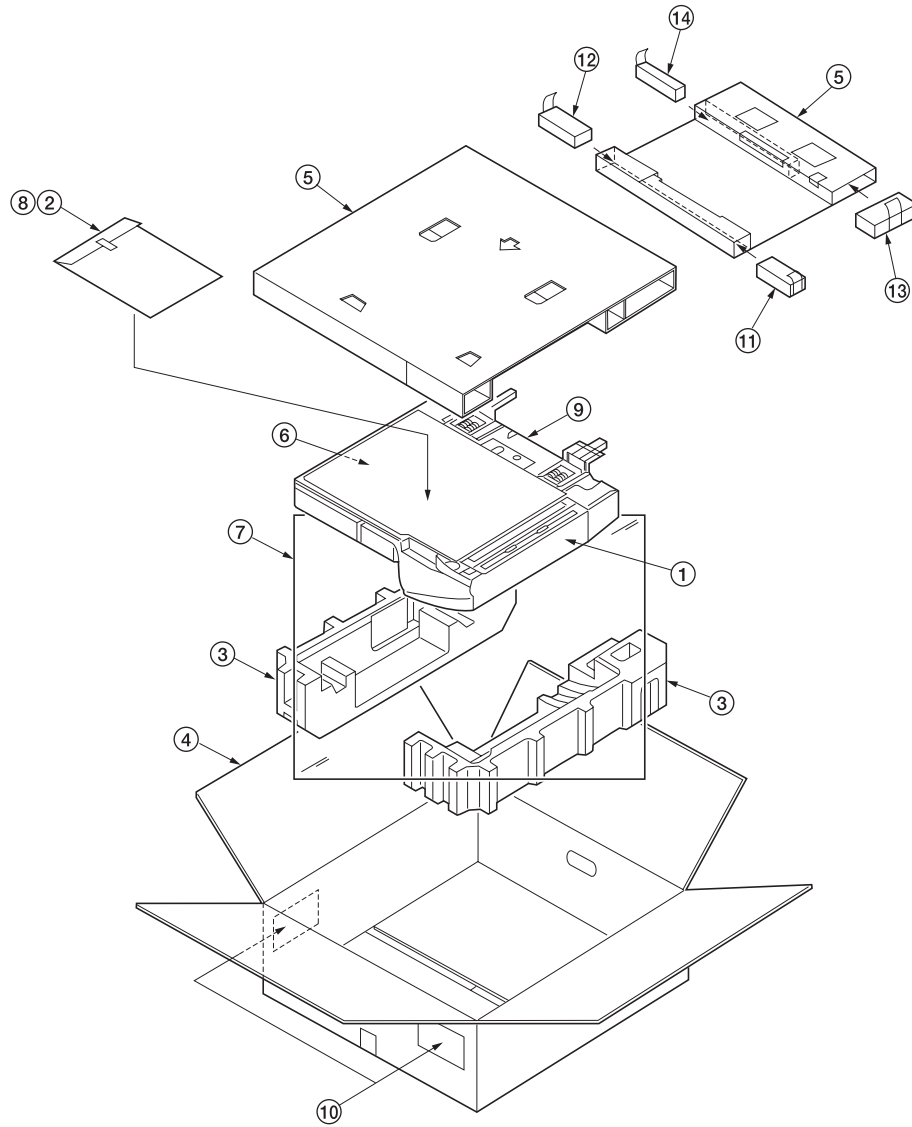


a: 553 mm/21<sup>3</sup>/<sub>4</sub>"  
b: 478 mm/18<sup>13</sup>/<sub>16</sub>"  
c: 137 mm/5<sup>3</sup>/<sub>8</sub>"

**Figure 1-2-1 Installation dimensions**

## 1-3-1 Unpacking and installation

### (1) Unpacking



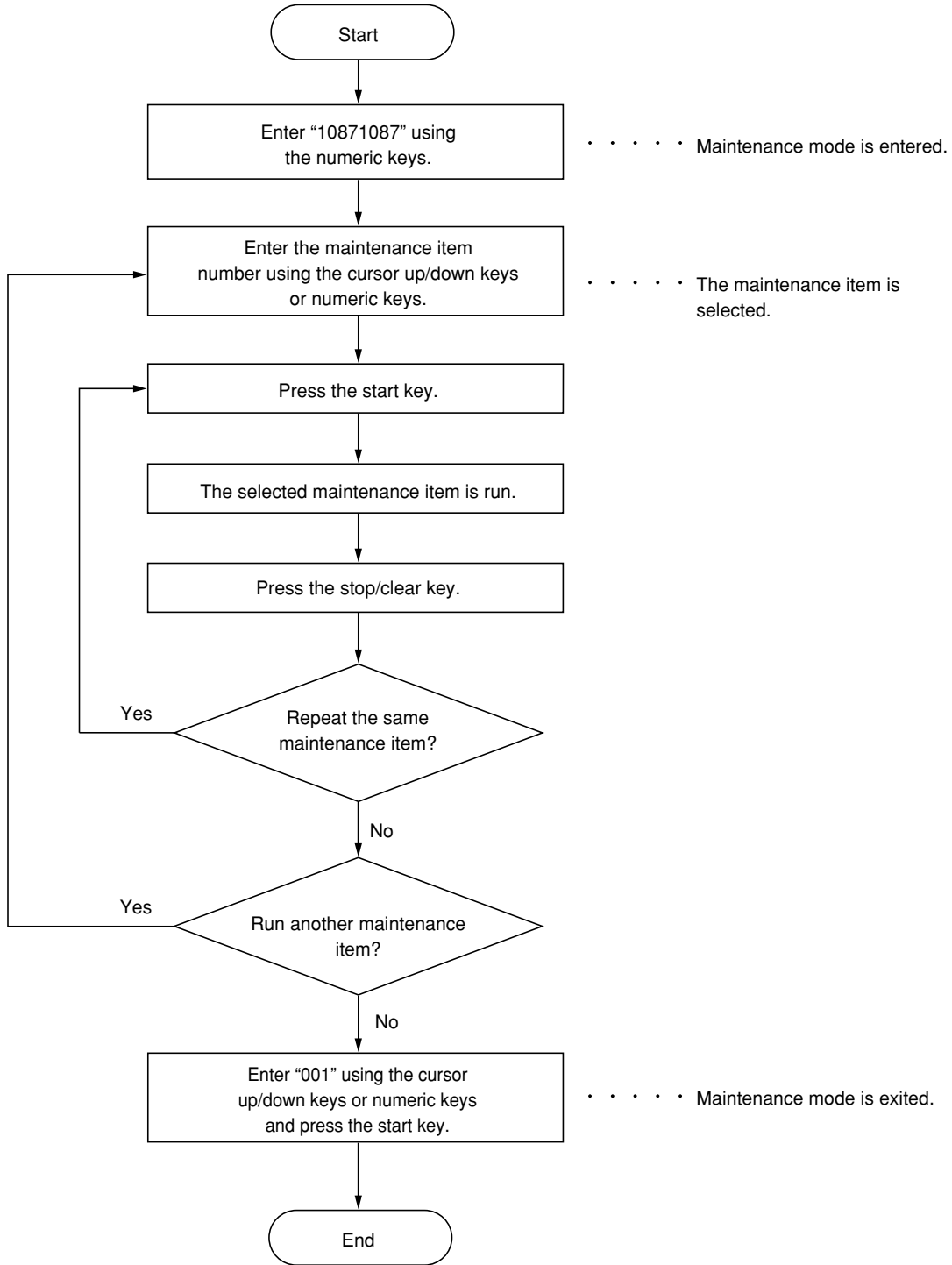
**Figure 1-3-1 Unpacking**

- |                               |                           |
|-------------------------------|---------------------------|
| ① Document feeder             | ⑧ Plastic bag             |
| ② Installation guide          | ⑨ Plastic bag (200 × 200) |
| ③ Bottom pad                  | ⑩ Bar code labels         |
| ④ Outer case                  | ⑪ Front A pad             |
| ⑤ Upper pad                   | ⑫ Front B pad             |
| ⑥ Eject pad                   | ⑬ Rear A pad              |
| ⑦ Plastic sheet (1300 × 1300) | ⑭ Rear B pad              |

### 1-4-1 Maintenance mode

The copier is equipped with a maintenance function which can be used to maintain and service the machine.

#### (1) Executing a maintenance item



## (2) Maintenance mode item list

Section	Item No.	Maintenance item contents	Initial setting*
DF	U068	Adjusting the scanning position for originals from the DF	0
	U070	Adjusting the DF magnification	0
	U071	Adjusting the DF scanning timing • DF leading edge registration  • DF trailing edge registration	8 (black and white copiers) 0 (color copiers) 0
	U072	Adjusting the DF center line	0
	U074	Adjusting the DF input light luminosity (black and white copiers only)	1
	U203	Operating DF separately	—
	U243	Checking the operation of the DF motors, solenoids and clutch	—
	U244	Checking the DF switches	—
	U263	Setting the paper ejection when copying from the DF (color copiers only)	TRAY (NORMAL)
	U404	Adjusting margins for scanning an original from the DF	—

\* Initial setting for executing maintenance item U020



## (3) Contents of maintenance mode items

Maintenance item No.	Description											
U068	<p><b>Adjusting the scanning position for originals from the DF</b></p> <p><b>Description</b> Adjusts the position for scanning originals from the DF.</p> <p><b>Purpose</b> Used when there is a regular error between the leading edges of the original and the copy image.</p> <p><b>Method</b> Press the start key. The screen for executing is displayed.</p> <p><b>Setting</b></p> <ol style="list-style-type: none"> <li>1. Change the setting using the cursor up/down keys (in the case of black and white copiers). Change the setting using the cursor left/right keys (in the case of color copiers).</li> </ol> <table border="1" data-bbox="316 573 1367 751"> <thead> <tr> <th>Description</th> <th>Setting range</th> <th>Initial setting</th> <th>Change in value per step</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Scanning position</td> <td>-2 to +3</td> <td>0</td> <td>0.254 mm (in the case of black and white copiers)</td> </tr> <tr> <td>-9 to +9</td> <td>0</td> <td>0.169 mm (in the case of color copiers)</td> </tr> </tbody> </table> <p>Increasing the setting moves the image backward, and decreasing it moves the image forward.</p> <ol style="list-style-type: none"> <li>2. Press the start key. The value is set.</li> </ol> <p><b>Completion</b> Press the stop/clear key. The screen for selecting a maintenance item No. is displayed.</p>	Description	Setting range	Initial setting	Change in value per step	Scanning position	-2 to +3	0	0.254 mm (in the case of black and white copiers)	-9 to +9	0	0.169 mm (in the case of color copiers)
Description	Setting range	Initial setting	Change in value per step									
Scanning position	-2 to +3	0	0.254 mm (in the case of black and white copiers)									
	-9 to +9	0	0.169 mm (in the case of color copiers)									
U070	<p><b>Adjusting the DF magnification</b></p> <p><b>Adjustment</b> See pages 1-6-8.</p>											
U071	<p><b>Adjusting the DF scanning timing</b></p> <p><b>Adjustment</b> See page 1-6-10.</p>											
U072	<p><b>Adjusting the DF center line</b></p> <p><b>Adjustment</b> See page 1-6-9.</p>											
U074	<p><b>Adjusting the DF input light luminosity (black and white copiers only)</b></p> <p><b>Description</b> Adjusts the luminosity of the exposure lamp for scanning originals from the DF.</p> <p><b>Purpose</b> Used if the exposure amount differs significantly between when scanning an original on the contact glass and when scanning an original from the DF (installed to the black and white copiers).</p> <p><b>Method</b> Press the start key. The screen for executing is displayed.</p> <p><b>Setting</b></p> <ol style="list-style-type: none"> <li>1. Change the setting using the cursor up/down keys.</li> </ol> <table border="1" data-bbox="316 1524 1367 1608"> <thead> <tr> <th>Description</th> <th>Setting range</th> <th>Initial setting</th> </tr> </thead> <tbody> <tr> <td>DF input light luminosity</td> <td>0 to 8</td> <td>1</td> </tr> </tbody> </table> <p>Increasing the setting makes the luminosity higher, and decreasing it makes the luminosity lower.</p> <ol style="list-style-type: none"> <li>2. Press the start key. The value is set.</li> </ol> <p><b>Interrupt copy mode</b> While this maintenance item is being performed, copying from an original can be made in interrupt copy mode.</p> <p><b>Completion</b> Press the stop/clear key at the screen for selecting an item. The screen for selecting a maintenance item No. is displayed.</p>	Description	Setting range	Initial setting	DF input light luminosity	0 to 8	1					
Description	Setting range	Initial setting										
DF input light luminosity	0 to 8	1										

Maintenance item No.	Description																														
U203	<p><b>Operating DF separately</b></p> <p><b>Description</b> Simulates the original conveying operation separately in the DF.</p> <p><b>Purpose</b> To check the DF.</p> <p><b>Method (in the case of black and white copiers)</b></p> <ol style="list-style-type: none"> <li>1. Press the start key. The screen for selecting an item is displayed.</li> <li>2. Place an original in the DF if running this simulation with paper.</li> <li>3. Select the item to be operated. The selected item is displayed in reverse.</li> <li>4. Select the magnification using the cursor up/down keys.</li> </ol> <table border="1" data-bbox="345 506 1398 732"> <thead> <tr> <th>Display</th> <th>Operation</th> <th>Setting range</th> <th>Initial setting</th> </tr> </thead> <tbody> <tr> <td>ADF</td> <td>With paper, single-sided original</td> <td>50 to 200 (%)</td> <td>100</td> </tr> <tr> <td>RADF</td> <td>With paper, double-sided original</td> <td>50 to 200 (%)</td> <td>100</td> </tr> <tr> <td>ADF (NON-P)</td> <td>Without paper, single-sided original (continuous operation)</td> <td>50 to 200 (%)</td> <td>100</td> </tr> <tr> <td>RADF (NON-P)</td> <td>Without paper, double-sided original (continuous operation)</td> <td>50 to 200 (%)</td> <td>100</td> </tr> </tbody> </table> <ol style="list-style-type: none"> <li>5. Press the start key. The operation starts for the selected magnification.</li> <li>6. To stop continuous operation, press the stop/clear key.</li> </ol> <p><b>Method (in the case of color copiers)</b></p> <ol style="list-style-type: none"> <li>1. Press the start key. The screen for selecting an item is displayed.</li> <li>2. Place an original in the DF if running this simulation with paper.</li> <li>3. Select the item to be operated using the cursor up/down keys. The selected item is displayed in reverse.</li> </ol> <table border="1" data-bbox="345 926 1398 1094"> <thead> <tr> <th>Display</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>ADF</td> <td>With paper, single-sided original</td> </tr> <tr> <td>RADF</td> <td>With paper, double-sided original</td> </tr> <tr> <td>ADF (NON-P)</td> <td>Without paper, single-sided original (continuous operation)</td> </tr> <tr> <td>RADF (NON-P)</td> <td>Without paper, double-sided original (continuous operation)</td> </tr> </tbody> </table> <ol style="list-style-type: none"> <li>4. Press the start key. The operation starts.</li> <li>5. To stop continuous operation, press the stop/clear key.</li> </ol> <p><b>Completion</b> Press the stop/clear key when the operation stops. The screen for selecting a maintenance item No. is displayed.</p>	Display	Operation	Setting range	Initial setting	ADF	With paper, single-sided original	50 to 200 (%)	100	RADF	With paper, double-sided original	50 to 200 (%)	100	ADF (NON-P)	Without paper, single-sided original (continuous operation)	50 to 200 (%)	100	RADF (NON-P)	Without paper, double-sided original (continuous operation)	50 to 200 (%)	100	Display	Operation	ADF	With paper, single-sided original	RADF	With paper, double-sided original	ADF (NON-P)	Without paper, single-sided original (continuous operation)	RADF (NON-P)	Without paper, double-sided original (continuous operation)
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RADF (NON-P)	Without paper, double-sided original (continuous operation)																														

Maintenance item No.	Description																								
U243	<p><b>Checking the operation of the DF motors, solenoids and clutch</b></p> <p><b>Description</b> Turns the motors, solenoids or clutch in the DF on.</p> <p><b>Purpose</b> To check the operation of the DF motors, solenoids and clutch .</p> <p><b>Method</b></p> <ol style="list-style-type: none"> <li>1. Press the start key. The screen for selecting an item is displayed.</li> <li>2. Select the item to be operated (in the case of black and white copiers). Select the item to be operated using the cursor up/down keys (in the case of color copiers). The selected item is displayed in reverse and the operation starts.</li> </ol> <table border="1" data-bbox="316 506 1367 764"> <thead> <tr> <th>Display</th> <th>Motors, solenoids and clutch</th> <th>Operation In operation</th> </tr> </thead> <tbody> <tr> <td>F MOT</td> <td>Original feed motor (OFM)</td> <td>In operation</td> </tr> <tr> <td>C MOT</td> <td>Original paper conveying motor (OCM)</td> <td>In operation</td> </tr> <tr> <td>FD CL</td> <td>Original feed clutch (OFCL)</td> <td>On for 0.5 s</td> </tr> <tr> <td>EJ SL</td> <td>Eject feedshift solenoid (EFSSOL)</td> <td>On for 0.5 s</td> </tr> <tr> <td>RJ SL</td> <td>Switchback feedshift solenoid (SBFSSOL)</td> <td>On for 0.5 s</td> </tr> <tr> <td>FD SL</td> <td>Original feed solenoid (OFSOL)</td> <td>On and off</td> </tr> <tr> <td>RP SL</td> <td>Switchback pressure solenoid (SBPSOL)</td> <td>On and off</td> </tr> </tbody> </table> <ol style="list-style-type: none"> <li>3. To turn each motor off, press the stop/clear key.</li> </ol> <p><b>Completion</b> Press the stop/clear key when operation stops. The screen for selecting a maintenance item No. is displayed.</p>	Display	Motors, solenoids and clutch	Operation In operation	F MOT	Original feed motor (OFM)	In operation	C MOT	Original paper conveying motor (OCM)	In operation	FD CL	Original feed clutch (OFCL)	On for 0.5 s	EJ SL	Eject feedshift solenoid (EFSSOL)	On for 0.5 s	RJ SL	Switchback feedshift solenoid (SBFSSOL)	On for 0.5 s	FD SL	Original feed solenoid (OFSOL)	On and off	RP SL	Switchback pressure solenoid (SBPSOL)	On and off
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FD SL	Original feed solenoid (OFSOL)	On and off																							
RP SL	Switchback pressure solenoid (SBPSOL)	On and off																							
U244	<p><b>Checking the DF switches</b></p> <p><b>Description</b> Displays the status of the respective switches in the DF.</p> <p><b>Purpose</b> To check if respective switches in the DF operate correctly.</p> <p><b>Start</b></p> <ol style="list-style-type: none"> <li>1. Press the start key. The screen for selecting an item is displayed.</li> <li>2. Select the type of switches (SW or VR) to be checked (in the case of black and white copiers). Select the type of switches (SW or VR) to be checked using the cursor up/down keys (in the case of color copiers). The screen for executing each item is displayed.</li> </ol> <table border="1" data-bbox="316 1215 1367 1327"> <thead> <tr> <th>Display</th> <th>Type of switches</th> </tr> </thead> <tbody> <tr> <td>SW</td> <td>On/off switches</td> </tr> <tr> <td>VR</td> <td>Volume switch</td> </tr> </tbody> </table> <p><b>Method for the on/off switches (SW)</b></p> <ol style="list-style-type: none"> <li>1. Turn the respective switches on and off manually to check the status. If the on-status of a switch is detected, the corresponding switch is displayed in reverse.</li> </ol> <table border="1" data-bbox="316 1436 1367 1631"> <thead> <tr> <th>Display</th> <th>Switches</th> </tr> </thead> <tbody> <tr> <td>SET SW</td> <td>Original set switch (OSSW)</td> </tr> <tr> <td>FEED SW</td> <td>Original feed switch (OFSW)</td> </tr> <tr> <td>REV SW</td> <td>Original switchback switch (OSBSW)</td> </tr> <tr> <td>TMG SW</td> <td>DF timing switch (DFTSW)</td> </tr> <tr> <td>SZ A SW</td> <td>Original size length switch (OSLSW)</td> </tr> </tbody> </table> <ol style="list-style-type: none"> <li>2. To return to the screen for selecting an item, press the stop/clear key.</li> </ol>	Display	Type of switches	SW	On/off switches	VR	Volume switch	Display	Switches	SET SW	Original set switch (OSSW)	FEED SW	Original feed switch (OFSW)	REV SW	Original switchback switch (OSBSW)	TMG SW	DF timing switch (DFTSW)	SZ A SW	Original size length switch (OSLSW)						
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Maintenance item No.	Description																																											
U244	<p><b>Method for the volume switch (VR)</b></p> <p>1. Move the original insertion guides to check the detection status of the original size width switch. The detected original width is displayed as a numerical value with the decimals omitted.</p> <table border="1" data-bbox="618 306 1138 1220"> <thead> <tr> <th data-bbox="618 306 743 359">Numerical value</th> <th colspan="2" data-bbox="748 306 1138 359">Original width to be detected</th> </tr> </thead> <tbody> <tr> <td data-bbox="618 365 743 396">000</td> <td data-bbox="748 365 954 428" rowspan="3">A5R</td> <td data-bbox="959 365 1138 428"><math>5\frac{1}{2}" \times 8\frac{1}{2}"</math></td> </tr> <tr> <td data-bbox="618 403 743 434">49.664</td> <td data-bbox="959 434 1138 466"></td> </tr> <tr> <td data-bbox="618 430 743 462">50.176</td> <td data-bbox="959 466 1138 497"></td> </tr> <tr> <td data-bbox="618 457 743 489">61.440</td> <td data-bbox="748 495 954 558" rowspan="3">B5R</td> <td data-bbox="959 495 1138 558" rowspan="3"><math>8\frac{1}{2}" \times 14"/</math> <math>8\frac{1}{2}" \times 11"</math></td> </tr> <tr> <td data-bbox="618 485 743 516">61.952</td> <td data-bbox="959 558 1138 590"></td> </tr> <tr> <td data-bbox="618 512 743 543">103.936</td> <td data-bbox="959 590 1138 621"></td> </tr> <tr> <td data-bbox="618 539 743 571">104.448</td> <td data-bbox="748 569 954 632" rowspan="3">Folio/A4R</td> <td data-bbox="959 569 1138 632" rowspan="3"><math>11" \times 17"/</math> <math>11" \times 15"/</math> <math>11" \times 8\frac{1}{2}"</math></td> </tr> <tr> <td data-bbox="618 567 743 598">139.264</td> <td data-bbox="959 632 1138 663"></td> </tr> <tr> <td data-bbox="618 594 743 625">139.776</td> <td data-bbox="959 663 1138 695"></td> </tr> <tr> <td data-bbox="618 621 743 653">146.432</td> <td data-bbox="748 693 954 756" rowspan="3">B4/B5</td> <td data-bbox="959 693 1138 756" rowspan="3"><math>11" \times 17"/</math> <math>11" \times 15"/</math> <math>11" \times 8\frac{1}{2}"</math></td> </tr> <tr> <td data-bbox="618 648 743 680">146.994</td> <td data-bbox="959 756 1138 787"></td> </tr> <tr> <td data-bbox="618 665 743 697">197.120</td> <td data-bbox="959 787 1138 819"></td> </tr> <tr> <td data-bbox="618 693 743 724">197.632</td> <td data-bbox="748 722 954 785" rowspan="3">CF (11" × 15")</td> <td data-bbox="959 722 1138 785" rowspan="3"><math>11" \times 17"/</math> <math>11" \times 15"/</math> <math>11" \times 8\frac{1}{2}"</math></td> </tr> <tr> <td data-bbox="618 720 743 751">197.720</td> <td data-bbox="959 785 1138 816"></td> </tr> <tr> <td data-bbox="618 737 743 768">223.232</td> <td data-bbox="959 816 1138 848"></td> </tr> <tr> <td data-bbox="618 764 743 795">256</td> <td data-bbox="748 793 954 856" rowspan="2">A3/A4</td> <td data-bbox="959 793 1138 856" rowspan="2"><math>11" \times 17"/</math> <math>11" \times 15"/</math> <math>11" \times 8\frac{1}{2}"</math></td> </tr> <tr> <td data-bbox="618 791 743 823"></td> <td data-bbox="959 856 1138 888"></td> </tr> </tbody> </table> <p>For example, if any value between 105 and 139 is displayed when the original insertion guides are adjusted for A4R paper, it indicates that the original width is detected correctly.</p> <p>2. To return to the screen for selecting an item, press the stop/clear key.</p> <p><b>Completion</b> Press the stop/clear key at the screen for selecting an item. The screen for selecting a maintenance item No. is displayed.</p>	Numerical value	Original width to be detected		000	A5R	$5\frac{1}{2}" \times 8\frac{1}{2}"$	49.664		50.176		61.440	B5R	$8\frac{1}{2}" \times 14"/$ $8\frac{1}{2}" \times 11"$	61.952		103.936		104.448	Folio/A4R	$11" \times 17"/$ $11" \times 15"/$ $11" \times 8\frac{1}{2}"$	139.264		139.776		146.432	B4/B5	$11" \times 17"/$ $11" \times 15"/$ $11" \times 8\frac{1}{2}"$	146.994		197.120		197.632	CF (11" × 15")	$11" \times 17"/$ $11" \times 15"/$ $11" \times 8\frac{1}{2}"$	197.720		223.232		256	A3/A4	$11" \times 17"/$ $11" \times 15"/$ $11" \times 8\frac{1}{2}"$		
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Maintenance item No.	Description								
U263	<p><b>Setting the paper ejection when copying from the DF (color copiers only)</b></p> <p><b>Description</b> Sets whether the copies will be ejected in the same or opposite order as the originals when copying from the DF.</p> <p><b>Purpose</b> Set according to the preference of the user when installed to the color copiers.</p> <p><b>Method</b> Press the start key. The screen for selecting an item is displayed.</p> <p><b>Setting</b></p> <ol style="list-style-type: none"> <li>Use the cursor up/down keys to select the ejection order.</li> </ol> <table border="1" data-bbox="318 512 1370 653"> <thead> <tr> <th data-bbox="318 512 695 554">Display</th> <th data-bbox="695 512 1370 554">Setting</th> </tr> </thead> <tbody> <tr> <td data-bbox="318 554 695 590">TRAY(NORMAL)</td> <td data-bbox="695 554 1370 590">Opposite order ejection (during side ejection)</td> </tr> <tr> <td data-bbox="318 590 695 625">TRAY(MEMORY)</td> <td data-bbox="695 590 1370 625">Same order ejection using memory copy (during side ejection)</td> </tr> <tr> <td data-bbox="318 625 695 653">ALL(MEMORY)</td> <td data-bbox="695 625 1370 653">Same order ejection using memory copy</td> </tr> </tbody> </table> <p>Initial setting: TRAY(NORMAL)</p> <ol style="list-style-type: none"> <li>Press the start key. The setting is set, and the screen for selecting a maintenance item No. is displayed.</li> </ol> <p><b>Completion</b> To exit this maintenance item without changing the current setting, press the stop/clear key. The screen for selecting a maintenance item No. is displayed.</p>	Display	Setting	TRAY(NORMAL)	Opposite order ejection (during side ejection)	TRAY(MEMORY)	Same order ejection using memory copy (during side ejection)	ALL(MEMORY)	Same order ejection using memory copy
Display	Setting								
TRAY(NORMAL)	Opposite order ejection (during side ejection)								
TRAY(MEMORY)	Same order ejection using memory copy (during side ejection)								
ALL(MEMORY)	Same order ejection using memory copy								
U404	<p><b>Adjusting margins for scanning an original from the DF</b></p> <p><b>Adjustment</b> See page 1-6-12.</p>								

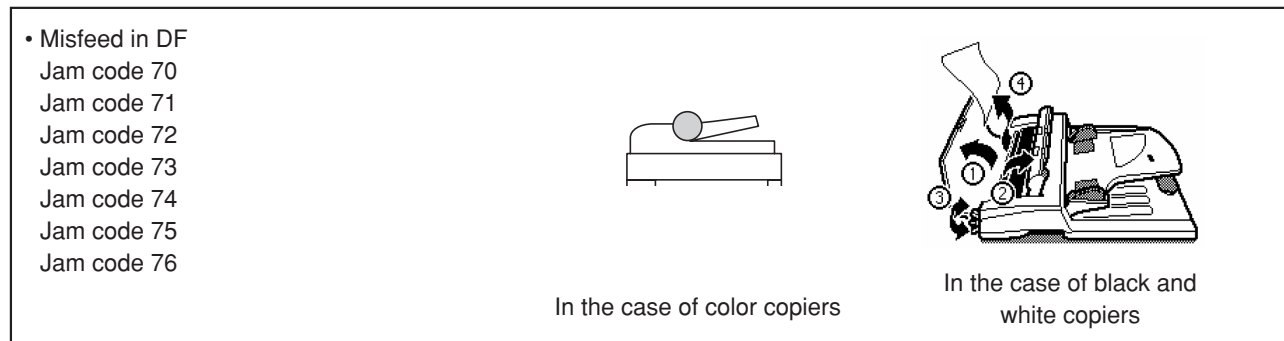
## 1-5-1 Original misfeed detection

### (1) Original misfeed indication

When an original jams, the machine immediately stops operation and a message is shown on the copier operation panel. The DF original set indicator also flashes red.

To remove the jammed original, open the DF or the DF original reversing cover.

To reset the original misfeed detection, open and close the DF or DF original reversing cover to turn DF safety switch 1 or 2 off and on.



### (2) Original misfeed detection conditions

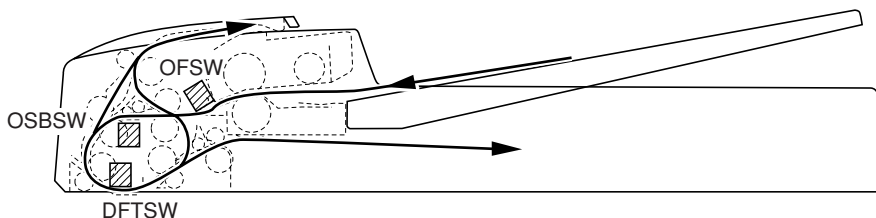


Figure 1-5-1

Section	Jam code	Description	Conditions
Original feed section	70	No original feed	In the primary original feed for the second original or after in the 1 sided or 2 sided original mode, even if retry operation is performed two times, primary original feed is not performed.
	71	An original jam in the original feed section 1	In the secondary original feed in the 1 sided original mode, even if the specified number of pulses of the original feed motor (OFM) passes after the original switchback switch (OSBSW) turns on, the ON status of the DF timing switch (DFTSW) is not detected.
	72	An original jam in the original feed section 2	In the secondary original feed in the 1 sided original mode, even if the specified number of pulses of the original conveying motor (OCM) passes after the DF timing switch (DFTSW) turns on, the OFF status of the original feed switch (OFSW) or the original switchback switch (OSBSW) is not detected. In the original switchback in the 2 sided original mode, even if the specified number of pulses of the original feed motor (OFM) passes after the original feed switch (OFSW) turns on, the OFF status of the original feed switch (OFSW) is not detected and the ON status of the original switchback switch (OSBSW) is not detected.
Original conveying section	73	An original jam in the original conveying section	In the secondary original feed in the 1 sided or 2 sided original mode, even if the specified number of pulses of the original conveying motor (OCM) passes after the DF timing switch (DFTSW) turns on, the OFF status of the DF timing switch (DFTSW) is not detected. In the secondary original feed in the 1 sided or 2 sided original mode, before the specified number of pulses of the original conveying motor (OCM) passes after the DF timing switch (DFTSW) turns on, the OFF status of the DF timing switch (DFTSW) is detected.
Original feed section	74	An original jam remaining after retries	In the secondary original feed in the 1 sided or 2 sided original mode, even if retry operation is performed five times, secondary original feed is not performed.
Original switchback section	75	An original jam in the switchback section 1	In the original switchback in the 2 sided original mode, even if the specified number of pulses of the original feed motor (OFM) passes after the original switchback switch (OSBSW) turns on, the OFF status of the original switchback switch (OSBSW) is not detected. In the secondary original feed in the 2 sided original mode, even if the specified number of pulses of the original feed motor (OFM) passes after the original conveying motor (OCM) turns on, the ON status of the DF timing switch (DFTSW) is not detected. In the original switchback in the 2 sided original mode, even if the specified number of pulses of the original feed motor (OFM) passes after the original feed switch (OFSW) turns on, the OFF status of the original feed switch (OFSW) is not detected and the OFF status of the original switchback switch (OSBSW) is detected.
	76	An original jam in the switchback section 2	While the back side of an original is being scanned in the 2 sided original mode, even if the specified number of pulses of the original conveying motor (OCM) passes after the DF timing switch (DFTSW) turns on, the ON status of the original switchback switch (OSBSW) is not detected.

**(3) Original misfeeds**

<b>Problem</b>	<b>Causes/check procedures</b>	<b>Corrective measures</b>
(1) An original jams when the main switch is turned on.	A piece of paper torn from an original is caught around the original feed switch.	Remove any found.
	Defective original feed switch.	Run maintenance item U244 and turn the original feed switch on and off manually. Replace the original feed switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	A piece of paper torn from an original is caught around the original switchback switch.	Remove any found.
	Defective original switchback switch.	Run maintenance item U244 and turn the original switchback switch on and off manually. Replace the original switchback switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	A piece of paper torn from an original is caught around the DF timing switch.	Remove any found.
	Defective DF timing switch.	Run maintenance item U244 and turn the DF timing switch on and off manually. Replace the DF timing switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
(2) An original jams during continuous copying of multiple originals.	Defective original feed switch.	Run maintenance item U244 and turn the original feed switch on and off manually. Replace the original feed switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	Check if the original feed motor or the original conveying motor malfunction.	Run maintenance item U243 and select the original feed motor/ original conveying motor on the touch panel to be turned on and off. Check the status and remedy if necessary.
(3) An original jams is indicated during copying (no original feed). Jam code 70	Defective original feed switch.	Run maintenance item U244 and turn the original feed switch on and off manually. Replace the original feed switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	Check if the original feed motor malfunctions.	Run maintenance item U243 and select the original feed motor on the touch panel to be turned on and off. Check the status and remedy if necessary.
(4) An original jams during copying (a jam in the original feed/conveying section). Jam code 71/72/73	Defective DF timing switch.	Run maintenance item U244 and turn the DF timing switch on and off manually. Replace the DF timing switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	Defective original feed switch.	Run maintenance item U244 and turn the original feed switch on and off manually. Replace the original feed switch if indication of the corresponding switch on the touch panel is not displayed in reverse.



Problem	Causes/check procedures	Corrective measures
(4) An original jams during copying (a jam in the original feed/conveying section). Jam code 71/72/73	Defective original switchback switch.	Run maintenance item U244 and turn the original switchback switch on and off manually. Replace the original switchback switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	Check if the original feed motor malfunctions.	Run maintenance item U243 and select the original feed motor on the touch panel to be turned on and off. Check the status and remedy if necessary.
	Check if the DF original feed pulley or the DF separation pulley is deformed.	Check visually and replace the deformed pulley.
	Check if the DF registration roller or the DF registration pulley is deformed.	Check visually and replace the deformed pulley.
	Check if the lower original conveying roller or the front scanning pulley is deformed.	Check visually and replace the deformed pulley.
	Check if the original conveying motor malfunctions.	Run maintenance item U243 and select the original conveying motor on the touch panel to be turned on and off. Check the status and remedy if necessary.
(5) An original jams during copying (a jam in the original switchback section). Jam code 75/76	Defective original switchback switch.	Run maintenance item U244 and turn the original switchback switch on and off manually. Replace the original switchback switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	Defective DF timing switch.	Run maintenance item U244 and turn the DF timing switch on and off manually. Replace the DF timing switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	Check if the original feed motor malfunctions.	Run maintenance item U243 and select the original feed motor on the touch panel to be turned on and off. Check the status and remedy if necessary.
	Check if the original conveying motor malfunctions.	Run maintenance item U243 and select the original conveying motor on the touch panel to be turned on and off. Check the status and remedy if necessary.
(6) Original jams frequently.	An original outside the specifications is used.	Use only originals conforming to the specifications.
	The DF forwarding pulleys, DF original feed pulley or DF switchback pulley is dirty with paper powder.	Clean with isopropyl alcohol.
	The DF original feed pulley and the DF separation pulley do not contact correctly.	Check and remedy.

### 1-5-2 Image formation problems

(1) There is a regular error between the centers of the original and copy image.



See page 1-5-6

(2) There is a regular error between the leading edges of the original and copy image.



See page 1-5-6

(3) There is a regular error between the trailing edges of the original and copy image.



See page 1-5-6

- (1) There is a regular error between the centers of the original and copy image.

**Causes**

1. Misadjusted DF center line.

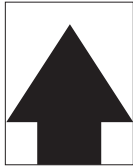


Causes	Check procedures/corrective measures
1. Misadjusted DF center line.	Readjust the DF center line (see page 1-6-9).

- (2) There is a regular error between the leading edges of the original and copy image.

**Causes**

1. Misadjusted DF original scanning start position.



Causes	Check procedures/corrective measures
1. Misadjusted DF original scanning start position.	Readjust the DF original scanning start position (see page 1-6-10).

- (3) There is a regular error between the trailing edges of the original and copy image.

**Causes**

1. Misadjusted DF original scanning end position.



Causes	Check procedures/corrective measures
1. Misadjusted DF original scanning end position.	Readjust the DF original scanning end position (see page 1-6-11).

### 1-5-3 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The original feed motor does not operate.	Defective original feed motor coil.	Check for continuity across the coil. If none, replace the original feed motor.
	The connector terminals of the original feed motor make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF driver PCB.	Check for continuity across the original feed motor coil and connector terminals. If good, replace the DF driver PCB.
(2) The original conveying motor does not operate.	Defective original conveying motor coil.	Check for continuity across the coil. If none, replace the original conveying motor.
	The connector terminals of the original conveying motor make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF driver PCB.	Check for continuity across the original conveying motor coil and connector terminals. If good, replace the DF driver PCB.
(3) The original feed solenoid does not operate.	Defective original feed solenoid coil.	Check for continuity across the coil. If none, replace the original feed solenoid.
	The connector terminals of the original feed solenoid make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF driver PCB.	Check if the original feed solenoid operates when CN5-B13 or CN5-B12 on the DF driver PCB is low. If it does, replace the DF driver PCB.
(4) The switchback feedshift solenoid does not operate.	Defective switchback feedshift solenoid coil.	Check for continuity across the coil. If none, replace the switchback feedshift solenoid.
	The connector terminals of the switchback feedshift solenoid make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF driver PCB.	Check if the switchback feedshift solenoid operates when CN5-B8 on the DF driver PCB is low. If it does, replace the DF driver PCB.
(5) The eject feedshift solenoid does not operate.	Defective eject feedshift solenoid coil.	Check for continuity across the coil. If none, replace the eject feedshift solenoid.
	The connector terminals of the eject feedshift solenoid make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF driver PCB.	Check if the eject feedshift solenoid operates when CN5-A7 on the DF driver PCB is low. If it does, replace the DF driver PCB.
(6) The switchback pressure solenoid does not operate.	Defective switchback pressure solenoid coil.	Check for continuity across the coil. If none, replace the switchback pressure solenoid.
	The connector terminals of the switchback pressure solenoid make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF driver PCB.	Check if the switchback pressure solenoid operates when CN5-A2 or CN5-A3 on the DF driver PCB is low. If it does, replace the DF driver PCB.

Problem	Causes	Check procedures/corrective measures
(7) The original feed clutch does not operate.	Defective original feed clutch coil.	Check for continuity across the coil. If none, replace the original feed clutch.
	The connector terminals of the original feed clutch make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF driver PCB.	Check if the original feed clutch operates when CN5-A5 on the DF driver PCB is low. If it does, replace the DF driver PCB.
(8) A message indicating cover open is displayed when the DF is closed correctly.	The connector terminals of DF safety switch 1 make poor contact.	Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable.
	Defective DF safety switch 1.	Check for continuity across the contacts of the switch. If none when the switch is on, replace DF safety switch 1.
(9) An original jams when the main switch is turned on.	A piece of paper torn from an original is caught around the original feed switch.	Remove any found.
	Defective original feed switch.	Run maintenance item U244 and turn the original feed switch on and off manually. Replace the original feed switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	A piece of paper torn from an original is caught around the original switchback switch.	Remove any found.
	Defective original switchback switch.	Run maintenance item U244 and turn the original switchback switch on and off manually. Replace the original switchback switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	A piece of paper torn from an original is caught around the DF timing switch.	Remove any found.
	Defective DF timing switch.	Run maintenance item U244 and turn the DF timing switch on and off manually. Replace the DF timing switch if indication of the corresponding switch on the touch panel is not displayed in reverse.
	The surface facing the DF timing switch is soiled.	Check if the projection at the center of the conveying cover that is facing the DF timing switch is soiled with paper powder. If so, clean it.

### 1-5-4 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No primary original feed.	The surfaces of the DF forwarding pulleys, DF original feed pulley or DF separation pulley are dirty with paper powder.	Check and clean them with isopropyl alcohol if they are dirty.
	Check if the DF original feed pulley or the DF forwarding pulley is deformed.	If so, replace (see page 1-6-3).
	Electrical problem with the following clutch or solenoid: • Original feed solenoid • Original feed clutch	See pages 1-5-7 and 8.
(2) No secondary original feed.	The DF registration pulley and the DF registration roller do not contact each other correctly.	Check visually and remedy if necessary.
(3) Originals jam.	Originals outside the specifications are used.	Use only originals conforming to the specifications.
	The surfaces of the DF forwarding pulleys, DF original feed pulley or DF separation pulley are dirty with paper powder.	Check and clean them with isopropyl alcohol if they are dirty.
	The DF original feed pulley and the DF separation pulley do not contact each other correctly.	Check visually and remedy if necessary.

## 1-6-1 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\*

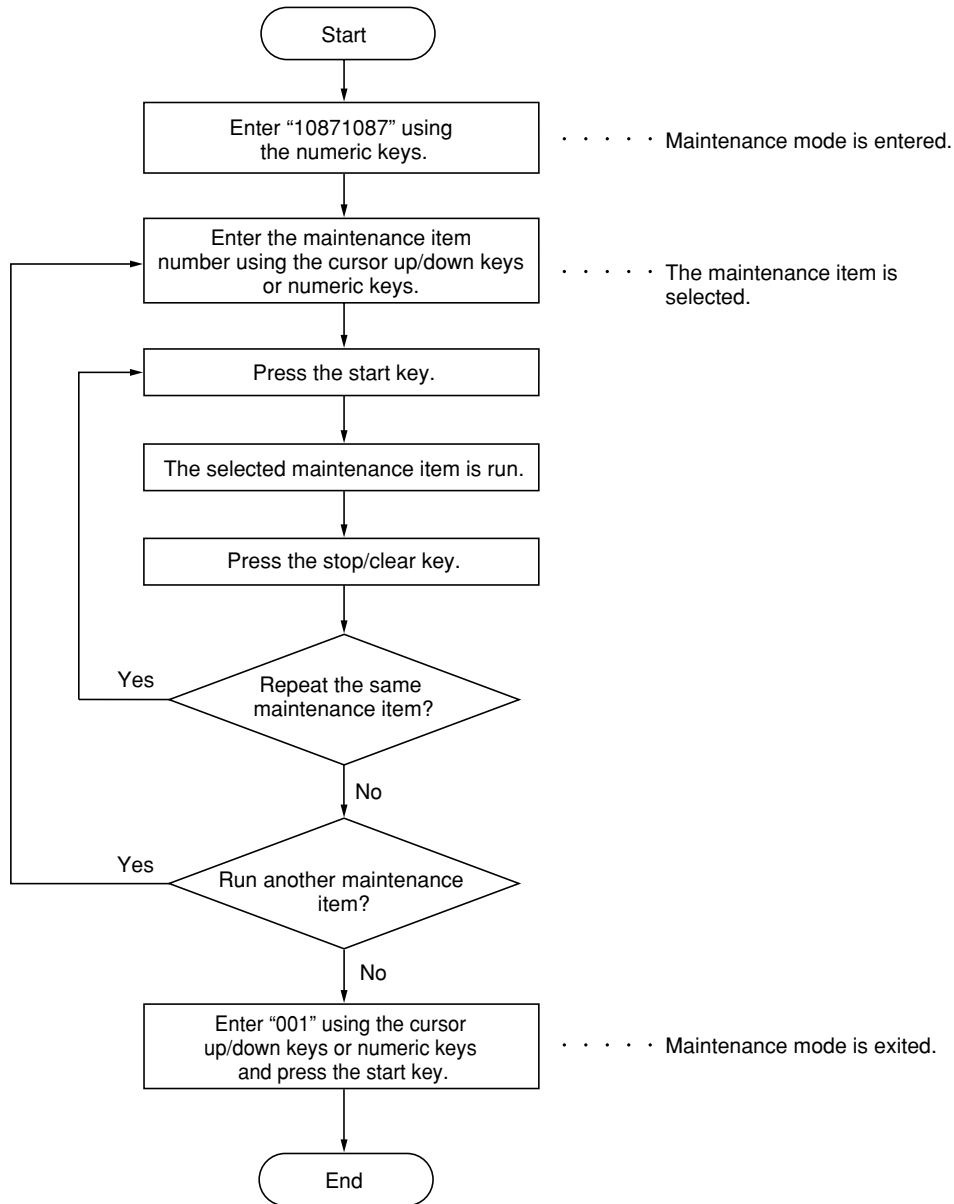
Fluke 8060A\*

Arlec DMM1050

Arlec YF1030C

\* Capable of measuring RMS values.

**(2) Running a maintenance item**





## 1-6-2 Original feed section

### (1) Detaching and refitting the DF forwarding pulley and DF feed pulley

Follow the procedure below to clean or replace the DF forwarding pulley or DF feed pulley.

#### Procedure

1. Open the DF original reversing cover.
2. Remove the two screws holding the upper original feed cover and then the cover.
  - Detaching the DF forwarding pulley
3. Remove the stop ring at the machine front and then remove the bushing.
4. Pull out the forwarding shaft toward the rear side of the machine and slide the bushing.
5. Remove the DF forwarding pulley from the forwarding shaft.
- Detaching the DF feed pulley
6. Remove the stop ring at the machine front and then remove the bushing.
7. Remove the stop ring at the machine rear.
8. Pull out the front original feed shaft toward the rear side of the machine and slide the bushing.
9. Remove the DF feed pulley from the front original feed shaft.
10. Clean or replace the DF forwarding pulley and the DF feed pulley.
11. Refit all the removed parts.
  - \* When refitting the DF forwarding pulley and DF feed pulley, ensure that the notches in the pulleys are aligned with the projections on the one-way clutches.

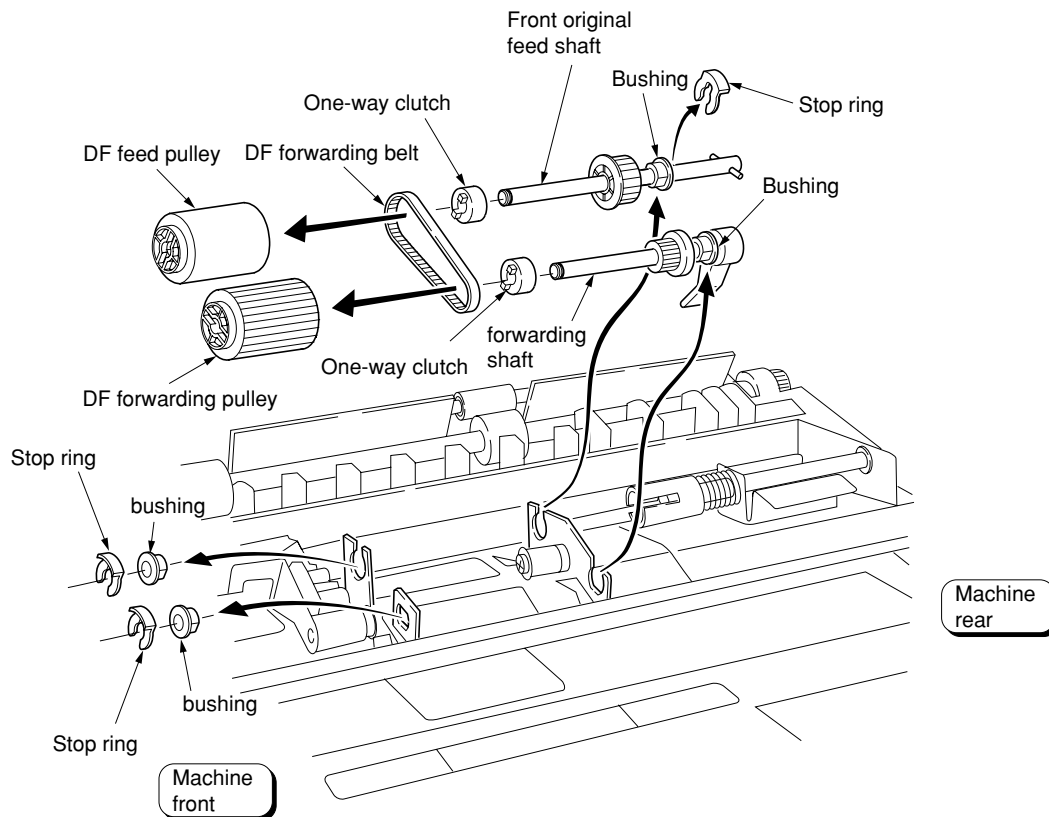


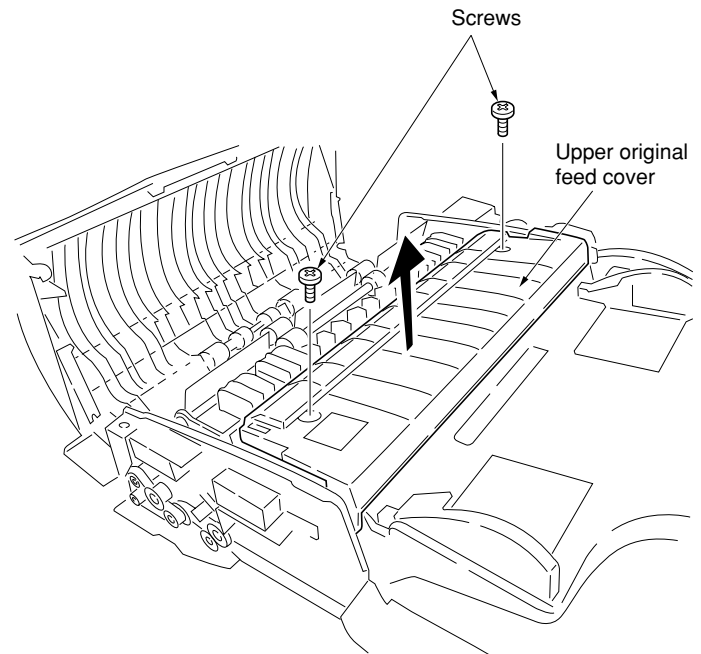
Figure 1-6-1

**(2) Detaching and refitting the DF separation pulley**

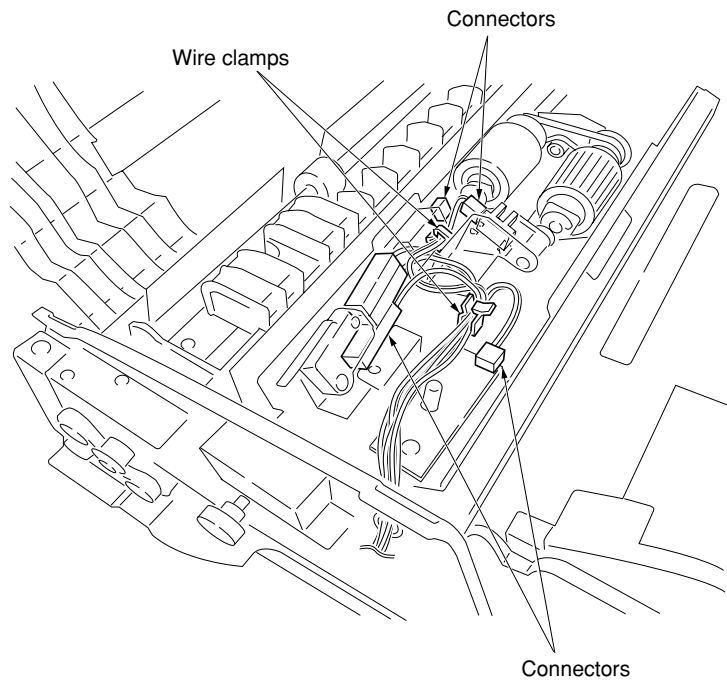
Follow the procedure below to clean or replace the DF separation pulley.

**Procedure**

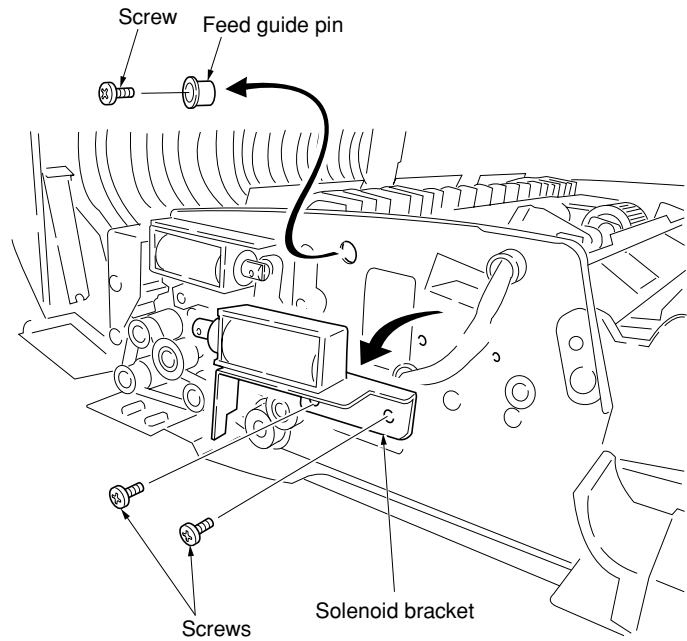
1. Open the DF original reversing cover.
2. Remove the DF front and rear covers.
3. Remove the two screws holding the upper original feed cover and then the cover.

**Figure 1-6-2**

4. Remove the four connectors and then remove the wires from the two wire clamps.

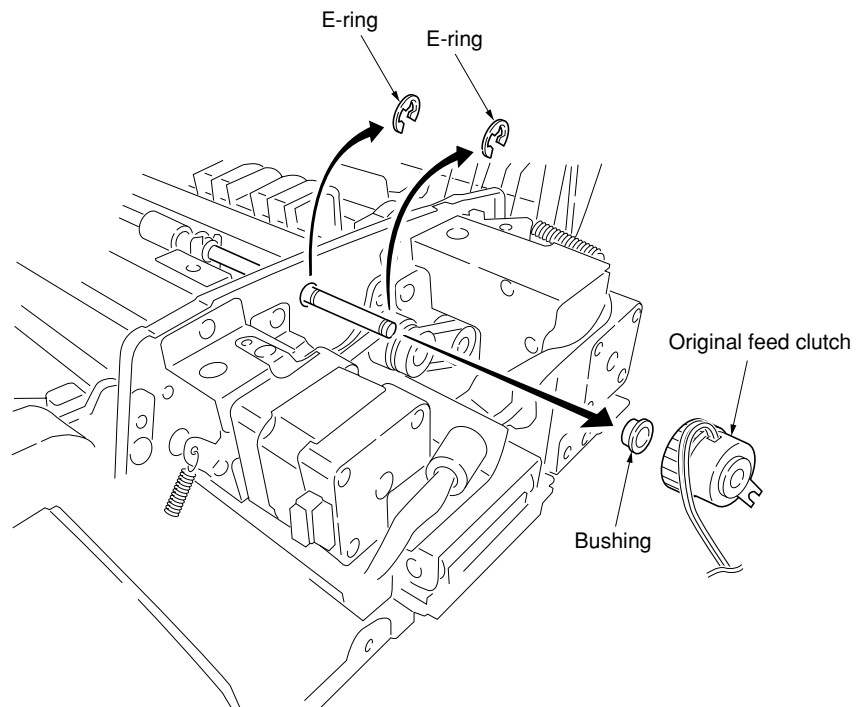
**Figure 1-6-3**

5. Remove the two screws holding the solenoid bracket and then the bracket.
6. Remove the screw and then remove the feed guide pin.



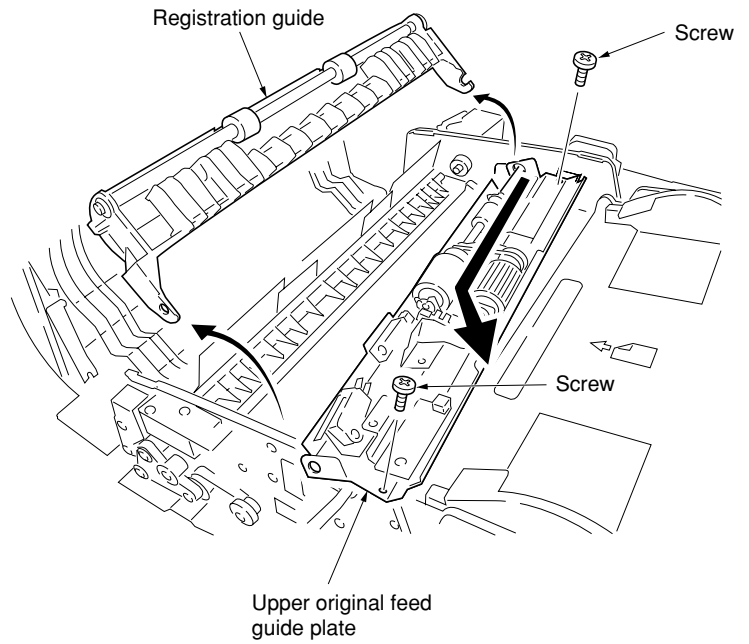
**Figure 1-6-4**

7. Remove the E-ring and then the original feed clutch.
8. Remove the E-ring and then remove the bushing.



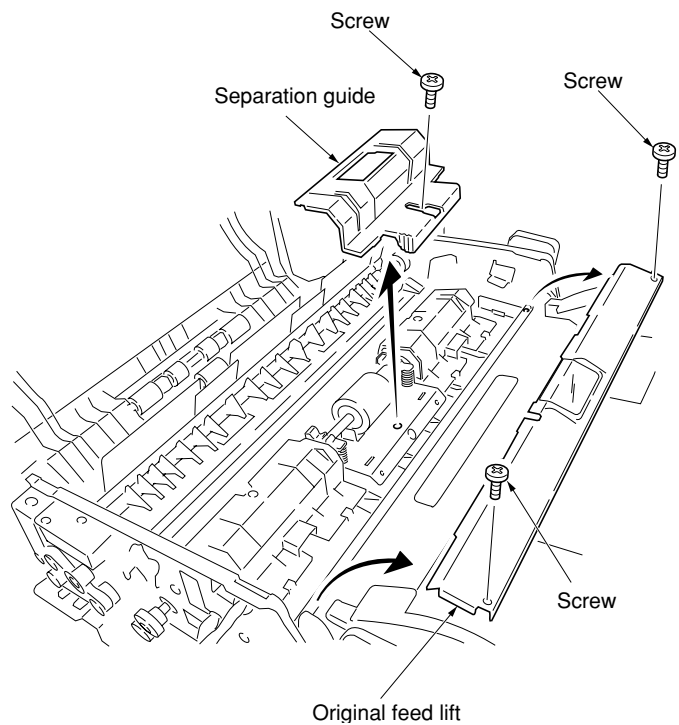
**Figure 1-6-5**

9. Open the registration guide and remove the guide.
10. Remove the two screws holding the upper feed guide plate and then the plate.



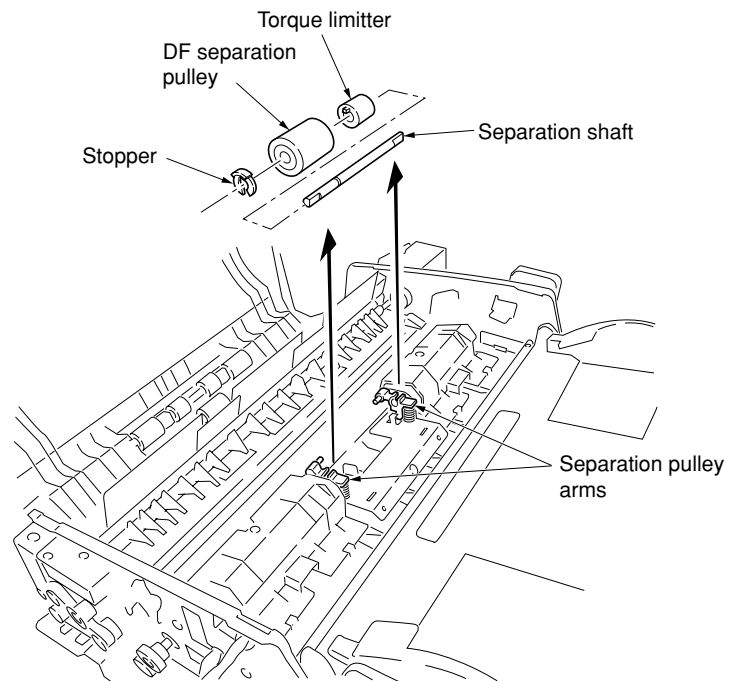
**Figure 1-6-6**

11. Remove the two screws holding the original feed lift and then the lift.
12. Remove the screw holding the separation guide and then the guide.



**Figure 1-6-7**

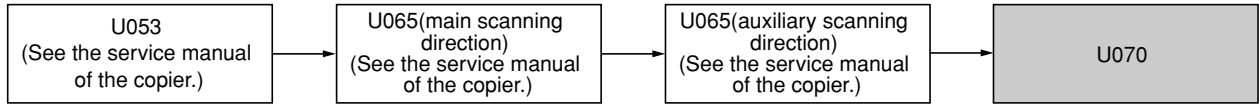
13. Remove the separation shaft from the separation pulley arms.
14. Remove the stopper and torque limiter from the separation shaft and then remove the DF separation pulley.
15. Clean or replace the DF separation pulley.
16. Refit all the removed parts.



**Figure 1-6-8**

**(3) Adjusting the DF magnification**

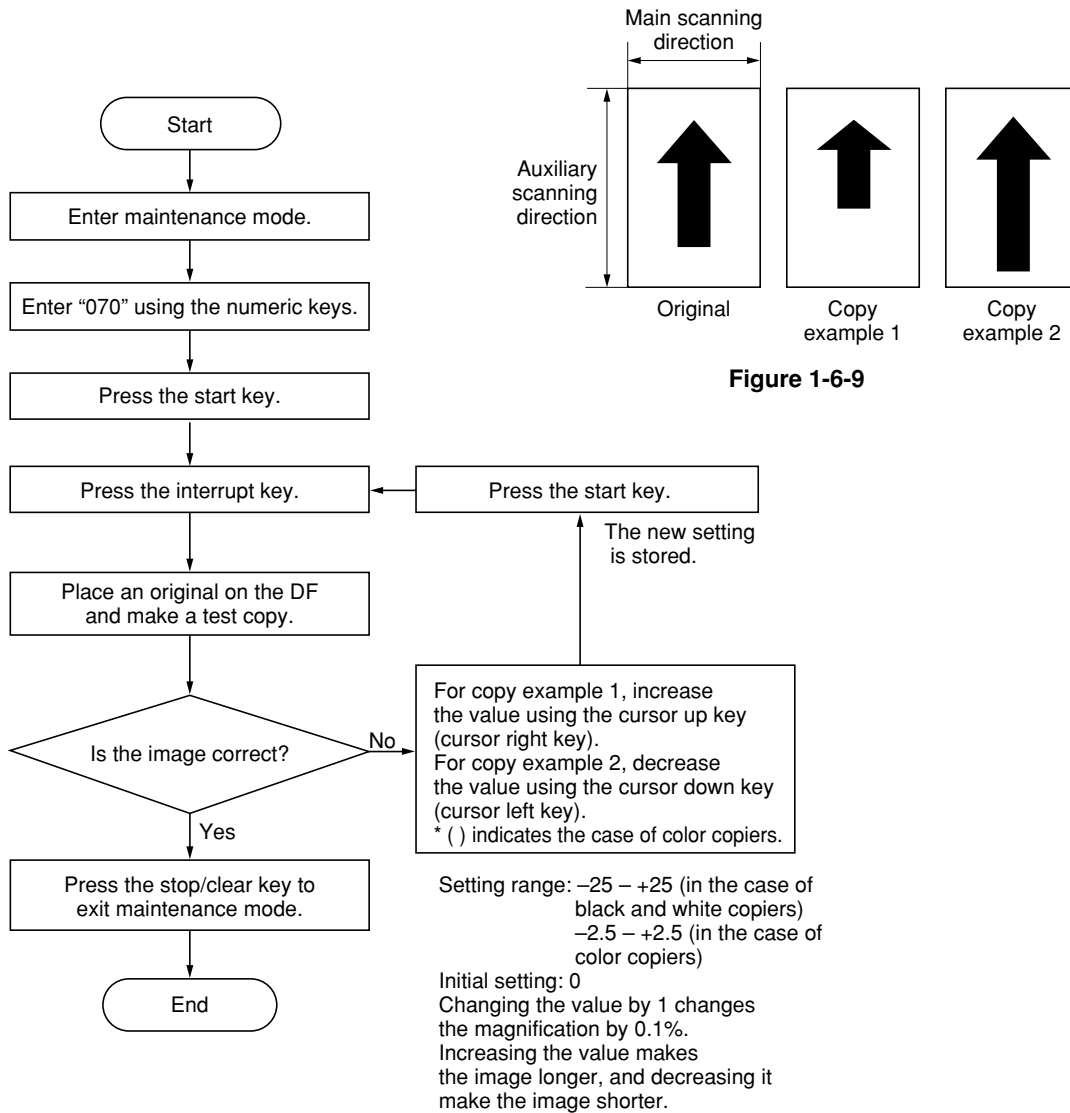
Adjust magnification in the auxiliary scanning direction if magnification is incorrect when the DF is used.



**Caution**

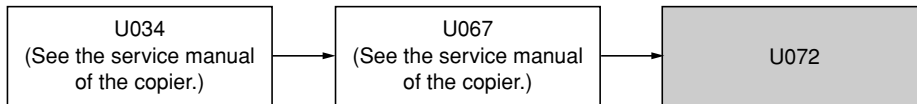
Before making the following adjustment, ensure that the above adjustments have been made in maintenance mode.

**Procedure**



**(4) Adjusting the DF center line**

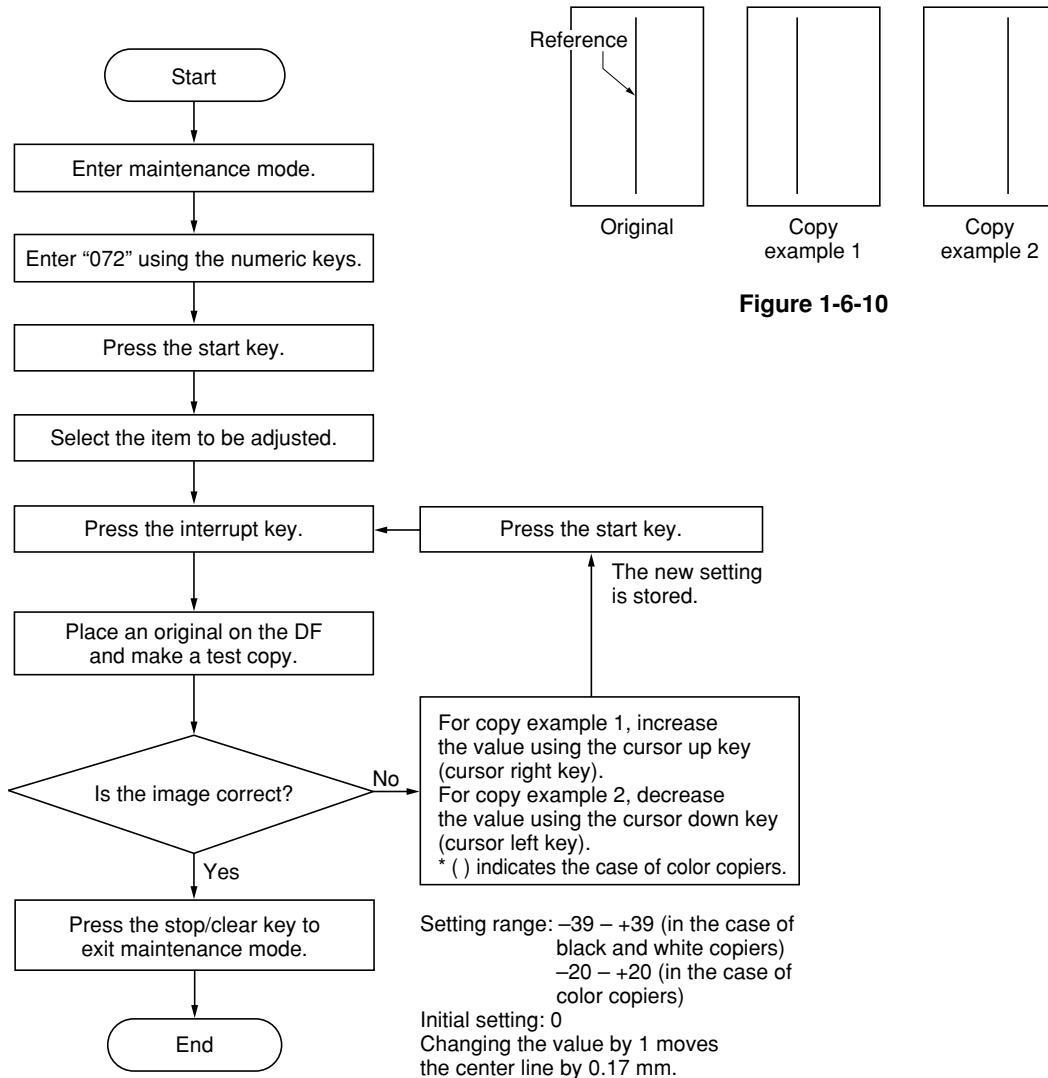
Perform the following adjustment if there is a regular error between the centers of the original and the copy image when the DF is used.



**Caution**

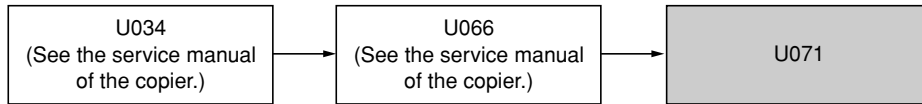
Before making the following adjustment, ensure that the above adjustments have been made in maintenance mode.

**Procedure**



**(5) Adjusting the scanning start position**

Perform the following adjustment if there is a regular error between the leading or trailing edges of the original and the copy image.

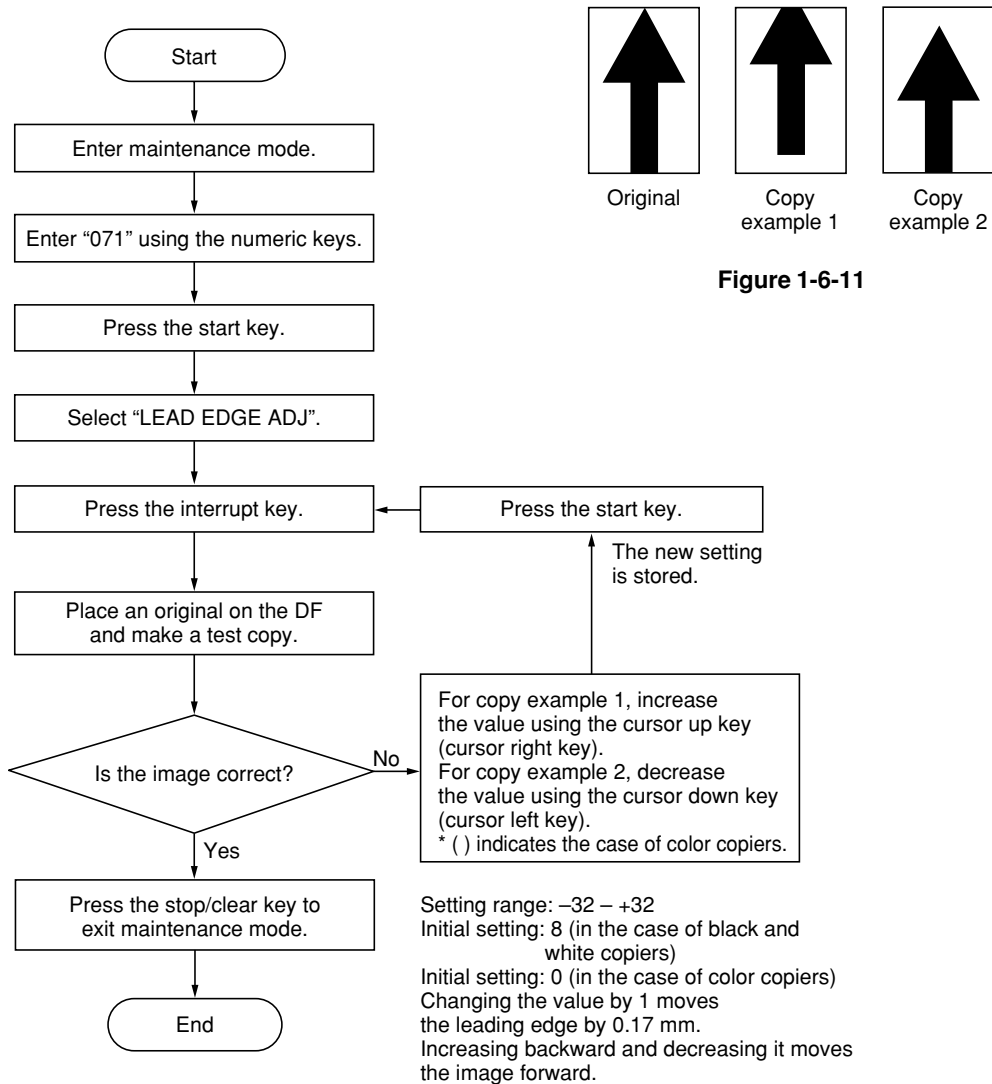


**Caution**

Before making the following adjustment, ensure that the above adjustments have been made in maintenance mode.

**(5-1) Adjusting the DF leading edge registration**

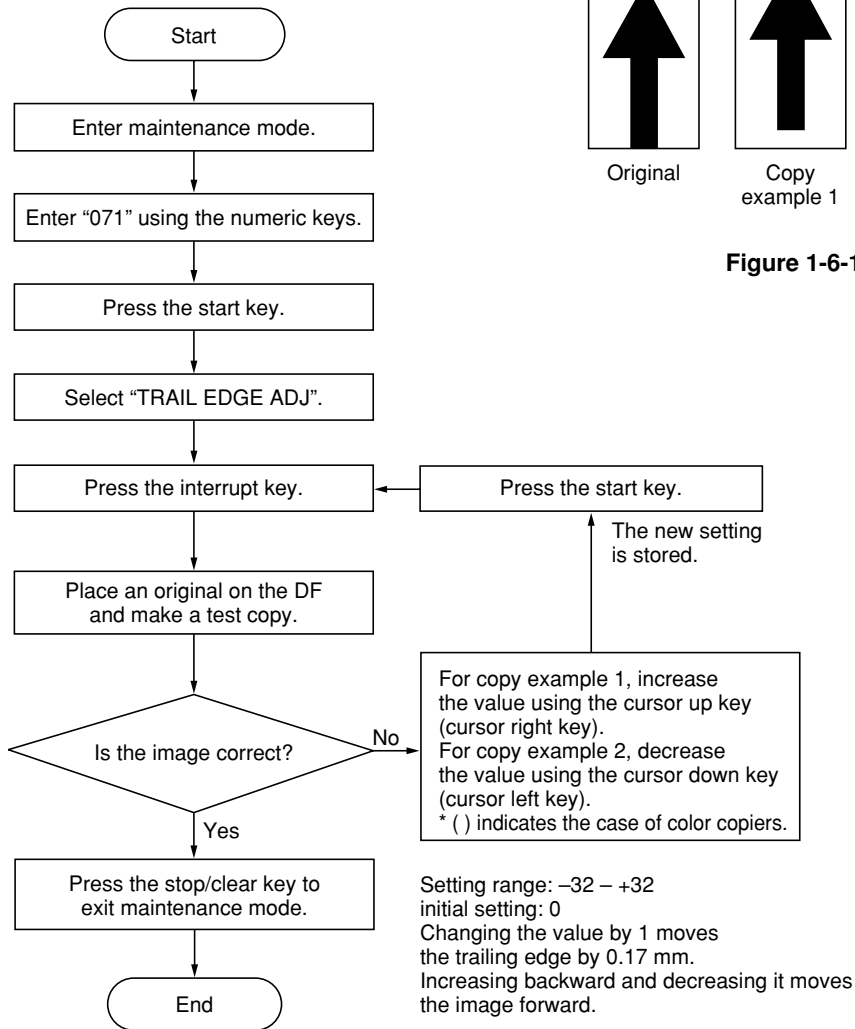
**Procedure**





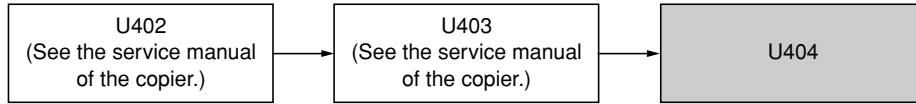
(5-2) Adjusting the DF trailing edge registration

Procedure



**(6) Adjusting the margins for scanning the original from the DF**

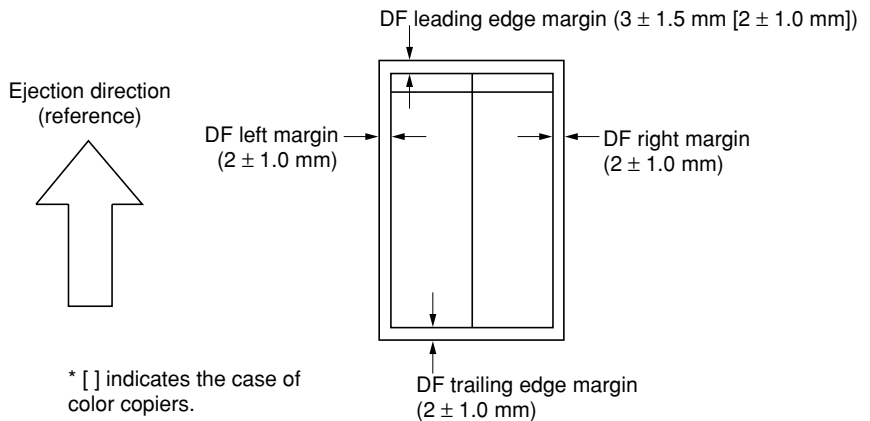
Perform the following adjustment if margins are not correct.



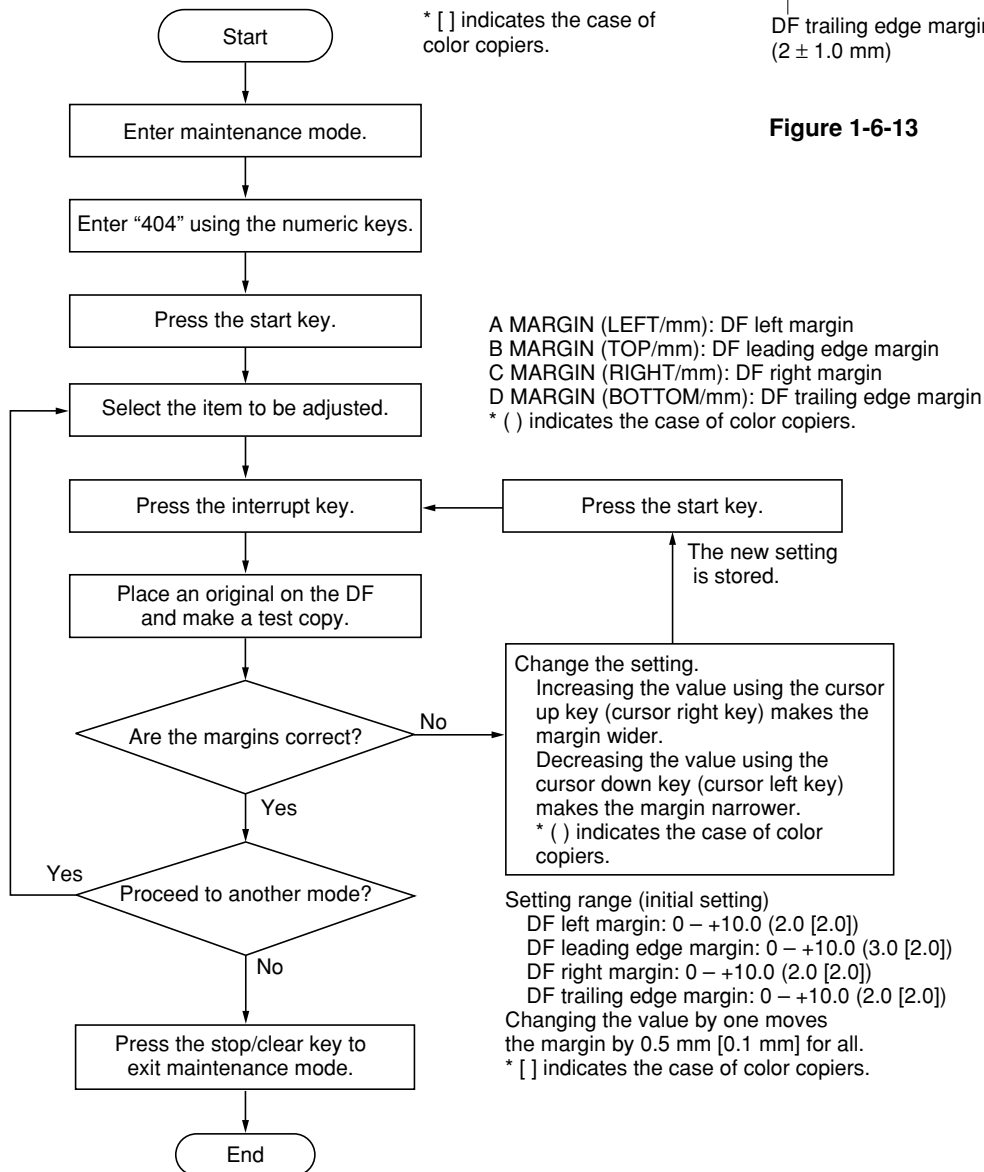
**Caution**

Before making the following adjustment, ensure that the above adjustments have been made in maintenance mode.

**Procedure**



**Figure 1-6-13**



### 2-1-1 Original feed section

The original feed section consists of the parts shown in Figure. An original placed on the original table is conveyed to the original switchback section or the original conveying section.

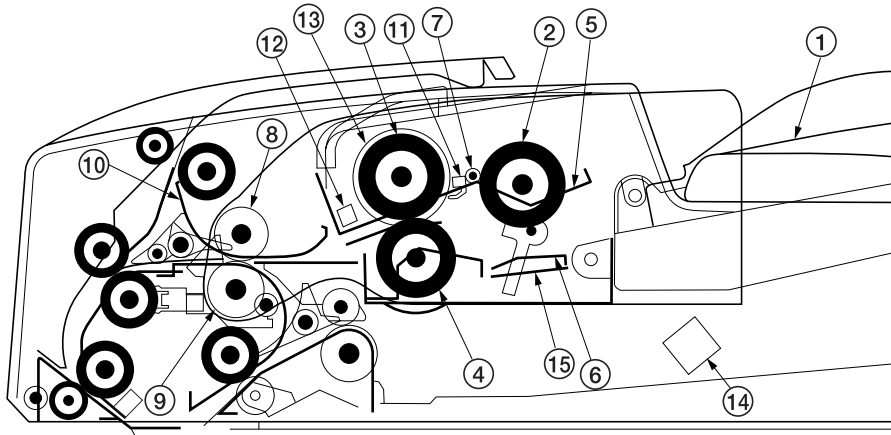


Figure 2-1-1 Original feed section

- |                                |                                  |
|--------------------------------|----------------------------------|
| ① Original table               | ⑨ DF registration roller         |
| ② DF forwarding pulleys        | ⑩ DF registration guide          |
| ③ DF original feed pulley      | ⑪ Original set switch (OSSW)     |
| ④ DF separation pulley         | ⑫ Original feed switch (OFSW)    |
| ⑤ DF original feed upper guide | ⑬ Original feed clutch (OFCL)    |
| ⑥ DF original feed lower guide | ⑭ Original feed solenoid (OFSOL) |
| ⑦ Original stopper             | ⑮ Original feed lift             |
| ⑧ DF registration pulley       |                                  |

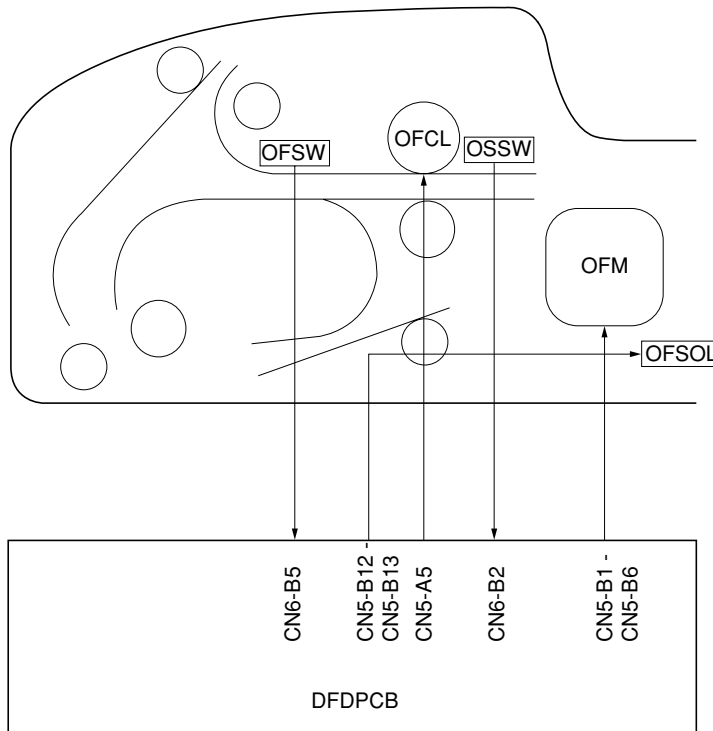
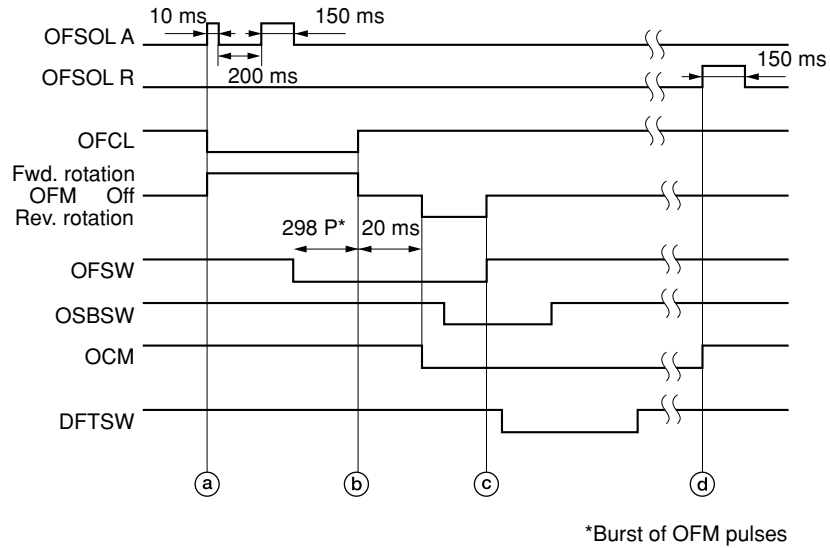


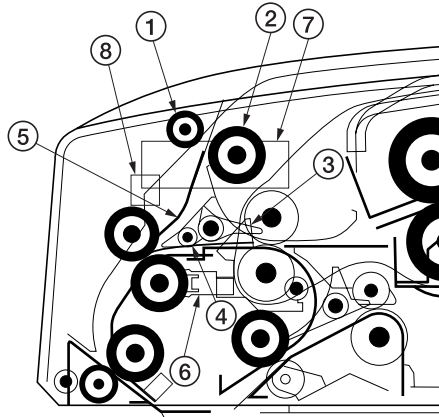
Figure 2-1-2 Original feed section block diagram

**(1) Original feed timing****Timing chart 2-1-1 Original feed (in simple-sided original mode)**

- Ⓐ The OFSOL A signal goes high for 10 ms and then turns off for 200 ms. It goes high again for 150 ms and the original feed solenoid (OFSOL) turns on, raising the original feed lift to convey the original forward.
- Ⓑ 298 OFM pulses after the leading edge of the original turns the original feed switch (OFSW) on, the original feed clutch (OFCL) and original feed motor (OFM) turn off. 20 ms later, the rotation of the motor switches to the reverse direction and secondary original feed is performed by rotation of the DF registration roller.
- Ⓒ Simultaneously as the trailing edge of the original turns the original feed switch (OFSW) off, the original feed motor (OFM) turns off.
- Ⓓ After ejection of the original, as the original conveying motor (OCM) turns off, the OFSOL R signal turns on for 150 ms and the original feed solenoid (OFSOL) turns off.

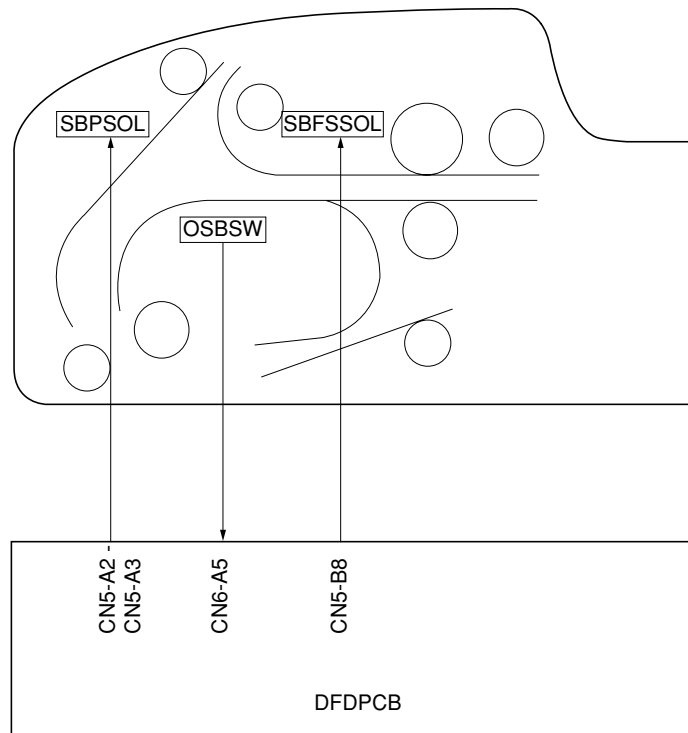
### 2-1-2 Original switchback section

The original switchback section consists of the parts shown in Figure. The original from the original feed section or original conveying section is reversed and conveyed to the original conveying section.



**Figure 2-1-3 Original switchback section**

- ① Switchback pulley
- ② Switchback roller
- ③ Switchback feedshift guide
- ④ Left switchback guide
- ⑤ Switchback guide
- ⑥ Original switchback switch (OSBSW)
- ⑦ Switchback feedshift solenoid (SBFSSOL)
- ⑧ Switchback pressure solenoid (SBPSOL)

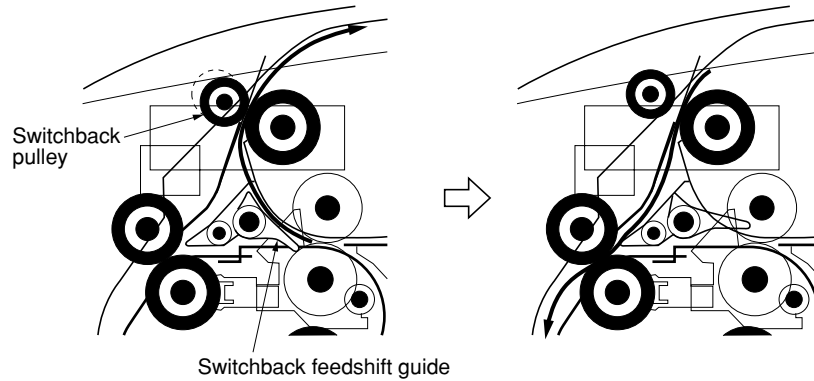


**Figure 2-1-4 Original switchback section block diagram**

**(1) Operation of original switchback**

In the double-sided original mode, the switchback feedshift solenoid (SBFSSOL) turns on, changing the position of the switchback feedshift guide. This switches the path of the original to the original switchback section to where the original is fed.

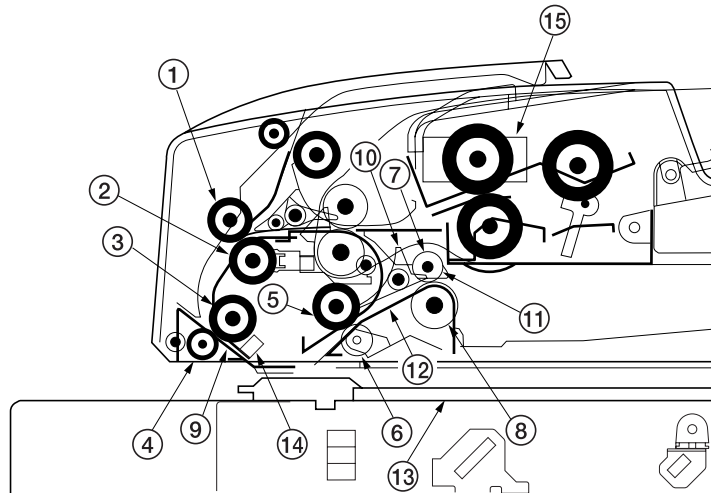
The switchback feedshift solenoid (SBFSSOL) then turns off, allowing the switchback feedshift guide to return to the original position by which the path of the original is switched back to the original conveying section. The now reversed original is carried to the original conveying section and the switchback pressure solenoid (SBPSOL) turns off, releasing the switchback pulley to prevent an original jam in the original switchback section.

**Figure 2-1-5**

### 2-1-3 Original conveying section

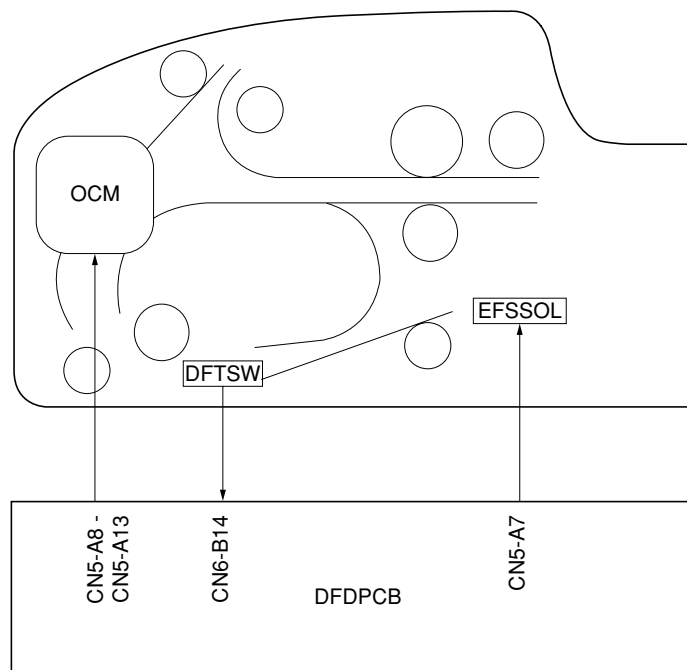
The original conveying section consists of the parts shown in Figure. Synchronized with the copier scanning operation, the original is conveyed across the slit glass and ejected when scanning is complete.

In the double-sided original mode, the eject feedshift solenoid (EFSSOL) turns on, moving the eject feedshift guide to switch the path of the original. When the scanning of the first face (reverse face) of the original is complete, the original is conveyed to the original switchback section again.

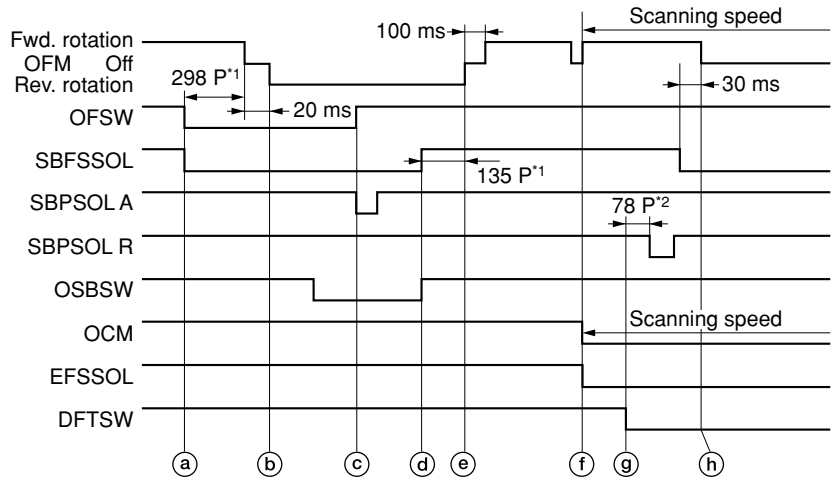


**Figure 2-1-6 Original conveying section**

- |                                    |                                     |
|------------------------------------|-------------------------------------|
| ① Upper original conveying pulley  | ⑨ Original conveying guide          |
| ② Upper original conveying roller  | ⑩ Eject feedshift guide             |
| ③ Lower original conveying roller  | ⑪ Upper eject guide                 |
| ④ Front scanning pulley            | ⑫ Lower eject guide                 |
| ⑤ Middle original conveying roller | ⑬ Slit glass (copier)               |
| ⑥ Middle original conveying pulley | ⑭ DF timing switch (DFTSW)          |
| ⑦ Eject pulley                     | ⑮ Eject feedshift solenoid (EFSSOL) |
| ⑧ Eject roller                     |                                     |



**Figure 2-1-7 Original conveying section block diagram**

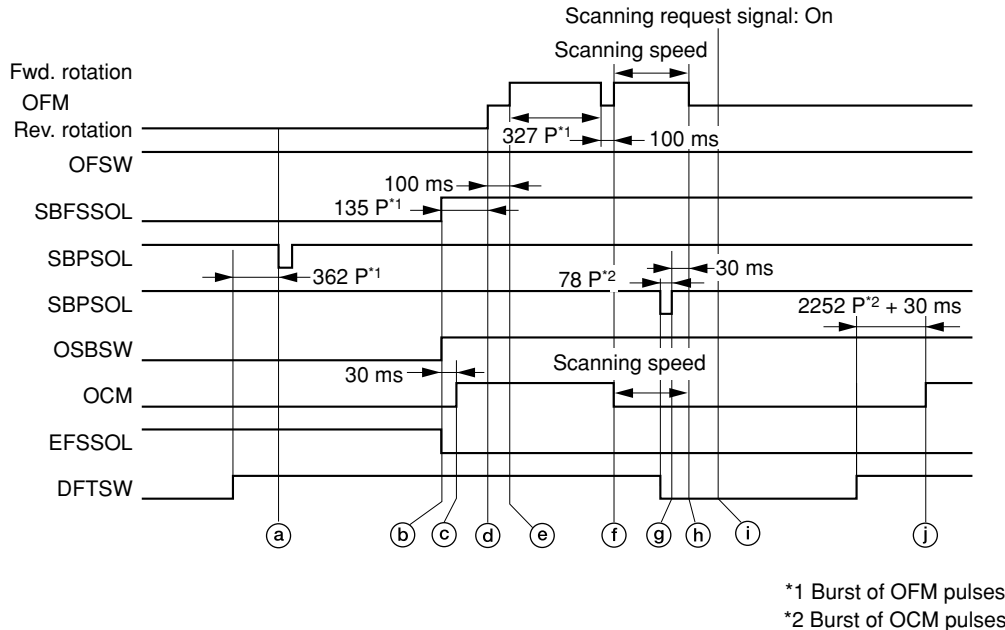
**(1) Original switchback/conveying timing**

\*1 Burst of OFM pulses  
\*2 Burst of OCM pulses

**Timing chart 2-1-2 Reversing the first face of the original**

- Ⓐ During primary original feed, when the original feed switch (OFSW) turns on, the switchback feedshift solenoid (SBFSSOL) also turns on, changing the position of the switchback feedshift guide. This switches the path of the original to the original switchback section.
- Ⓑ 298 OFM pulses plus 20 ms after the original feed switch (OFSW) turns on, the rotation of the original feed motor (OFM) switches to the reverse direction and the original is conveyed to the switchback section by the rotation of the switchback roller.
- Ⓒ Simultaneously as the original feed switch (OFSW) turns off, the switchback pressure solenoid (SBPSOL) turns on to operate the switchback pulley.
- Ⓓ When the trailing edge of the original turns the original switchback switch (OSBSW) off, the switchback feedshift solenoid (SBFSSOL) turns off, the switchback feedshift guide returns to the original position.
- Ⓔ 135 OFM pulses after the original switchback switch (OSBSW) turns off, the original feed motor (OFM) turns off. 100 ms later, the original feed motor (OFM) rotates forward, switching the rotational direction of the switchback roller. The original in the original switchback section is then reversed and conveyed to the original conveying section.
- Ⓕ Simultaneously as the original feed motor (OFM) starts rotating forward, the original conveying motor (OCM) turns on to convey the original onto the slit glass. The eject feedshift solenoid (EFSSOL) simultaneously turns on, changing the position of the eject feedshift guide. This switches the path of the original to the original switchback section.
- Ⓖ When the original is conveyed onto the slit glass, the DF timing switch (DFTSW) turns on. 78 OCM pulses later, the switchback pressure solenoid (SBPSOL).
- Ⓗ 30 ms after the switchback pressure solenoid (SBPSOL) turns off, the original feed motor (OFM) turns off.



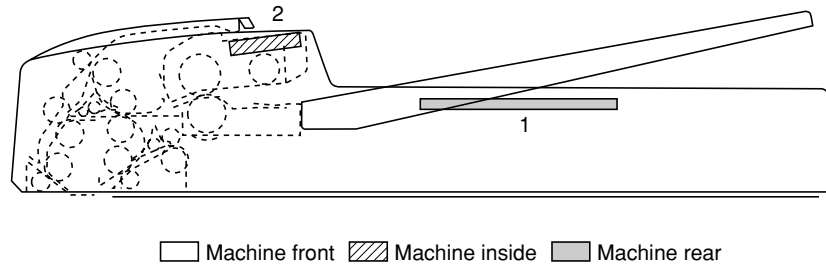


**Timing chart 2-1-3 Reversing of the second face of the original and ejection**

- (a) 362 OFM pulses after the scanning of the first face (reverse face) of the original completes and the DF timing switch (DFTSW) turns off, the switchback pressure solenoid (SBPSSOL) turns on, operating the switchback pulley.
- (b) When the trailing edge of the original turns the original switchback switch (OSBSW) off, the eject feedshift solenoid (EFSSOL) turns off and the eject feedshift guide returns to the original position, switching the path of the original to the eject section. Simultaneously, the switchback feedshift solenoid (SBFSSOL) turns off and the switchback feedshift guide returns to the original position.
- (c) 30 ms after the original switchback switch (OSBSW) turns off, the original conveying motor (OCM) turns off.
- (d) 135 OFM pulses after the original switchback switch (OSBSW) turns off, the original feed motor (OFM) turns off.
- (e) 100 ms after the original feed motor (OFM) turns off, the motor starts rotating forward, switching the rotational direction of the switchback roller. The original in the original switchback section is then reversed and conveyed to the original conveying section.
- (f) 327 OFM pulses plus 100 ms after the original feed motor (OFM) turns off, the motor starts rotating forward again and the original conveying motor (OCM) turns on simultaneously, conveying the original onto the slit glass.
- (g) 78 OFM pulses after the original is conveyed onto the slit glass and the DF timing switch (DFTSW) turns on, the switchback pressure solenoid (SBPSSOL) turns off.
- (h) 30 ms after the switchback pressure solenoid (SBPSSOL) turns off, the original feed motor (OFM) turns off.
- (i) When the scanning request signal turns on, scanning of the second face (front face) of the original starts.
- (j) 2252 OCM pulses plus 30 ms after scanning of the second face (front face) of the original completes and the DF timing switch (DFTSW) turns off, the original conveying motor (OCM) turns off, completing the ejection of the original.

## 2-2-1 Electrical parts layout

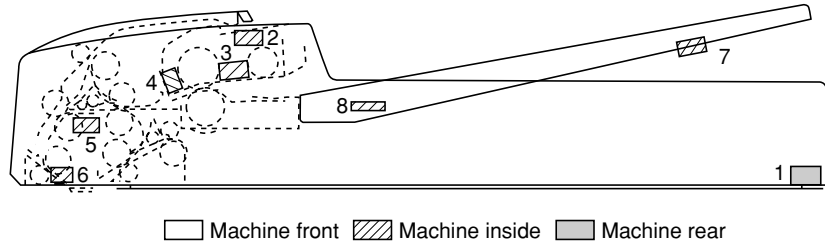
### (1) PCBs



**Figure 2-2-1 PCBs**

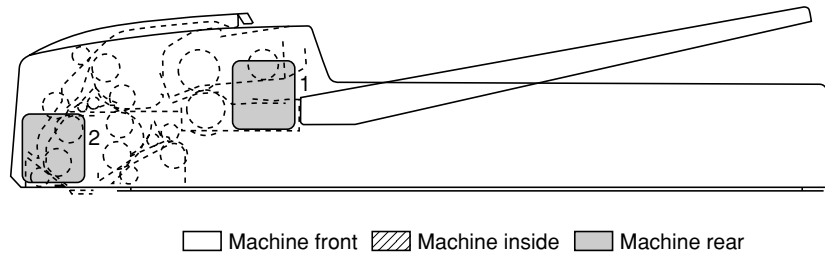
1. DF driver PCB (DFDPCB) ..... Controls electrical components of the DF.
2. Original set LED PCB (OSLEDPCB) ..... Indicates presence of originals on the DF or an original jam.

(2) Switches and sensors

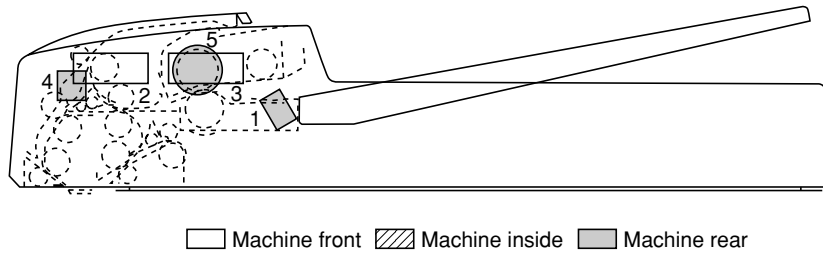


**Figure 2-2-2 Switches and sensors**

- |  |   |
|--|---|
| 1. DF safety switch 1 (DFSSW1) .....         | Breaks the safety circuit when the DF is opened; resets original misfeed detection.                           |
| 2. DF safety switch 2 (DFSSW2) .....         | Breaks the safety circuit when the DF original switchback cover is opened; resets original misfeed detection. |
| 3. Original set switch (OSSW) .....          | Detects the presence of an original.  |
| 4. Original feed switch (OFSW) .....         | Detects primary original feed end timing.   |
| 5. Original switchback switch (OSBSW) .....  | Detects an original misfeed in the original switchback section.   |
| 6. DF timing switch (DFTSW) .....            | Detects the original scanning timing.   |
| 7. Original size length switch (OSLSW) ..... | Detects the length of the original.   |
| 8. Original size width switch (OSWSW) .....  | Detects the width of the original.  |

**(3) Motors****Figure 2-2-3 Motors**

1. Original feed motor (OFM) ..... Drives the original feed and switchback sections.
2. Original conveying motor (OCM) ..... Drives the original conveying section.

**(4) Clutches and solenoids****Figure 2-2-4 Clutches and solenoids**

1. Original feed solenoid (OFSOL) ..... Operates the paper feed lift.
2. Switchback feedshift solenoid  
(SBFSSOL) ..... Operates the switchback feedshift guide.
3. Eject feedshift solenoid (EFSSOL) ..... Operates the eject feedshift guide.
4. Switchback pressure solenoid (SBPSOL) .... Operates the switchback pulley.
5. Original feed clutch (OFCL) ..... Controls the drive of the DF original feed pulley.

2-3-1 DF driver PCB

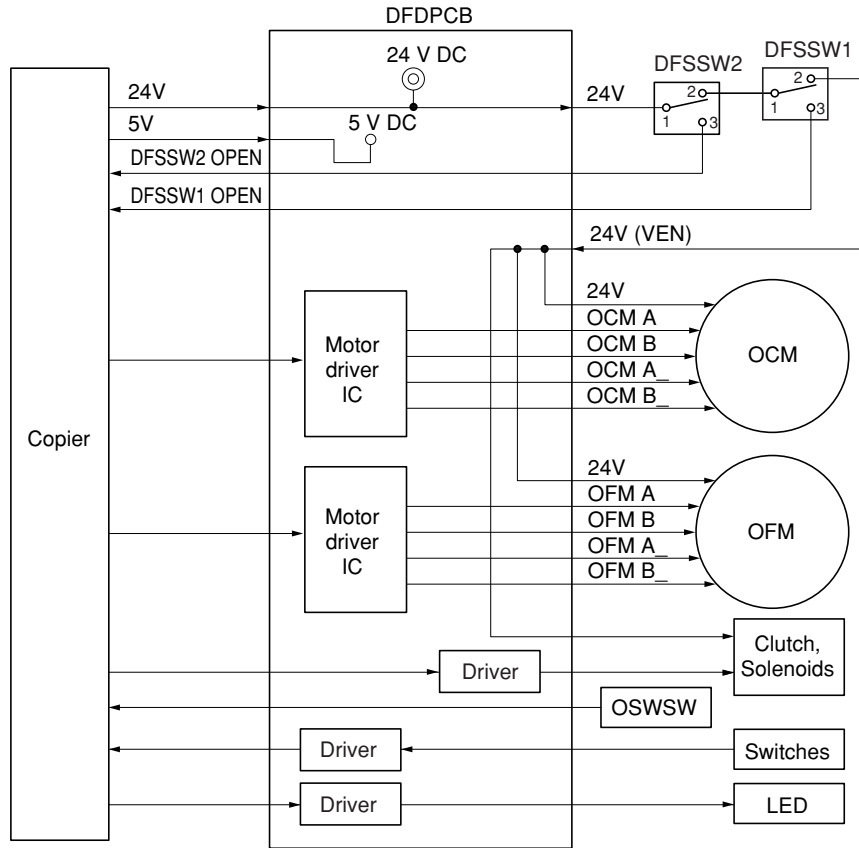


Figure 2-3-1 DF driver PCB block diagram

The DF driver PCB (DFDPCB) consists of the motor driver ICs and other driver circuits. The motor driver ICs are controlled by various motor control signals from the copier to drive the original feed motor (OFM) and the original conveying motor (OCM). The other driver circuits drive the clutch, solenoids, and LED based on the control signals from the copier and function as buffers that output the signals detected by the switches to the copier. The copier supplies DC 24 V and DC 5 V power sources. The DC 24 V is the power source for driving the motors, clutch, and solenoids. The DC 5 V is the power source for driving the switches and LED. The power supply line of the DC 24 V is connected through the DF safety switch 1 (DFSSW1) and the DF safety switch 2 (DFSSW2) to each load to provide a safety circuit that interrupts power supply to each load when the DF is opened or closed or the DF original reversing cover is opened or closed.

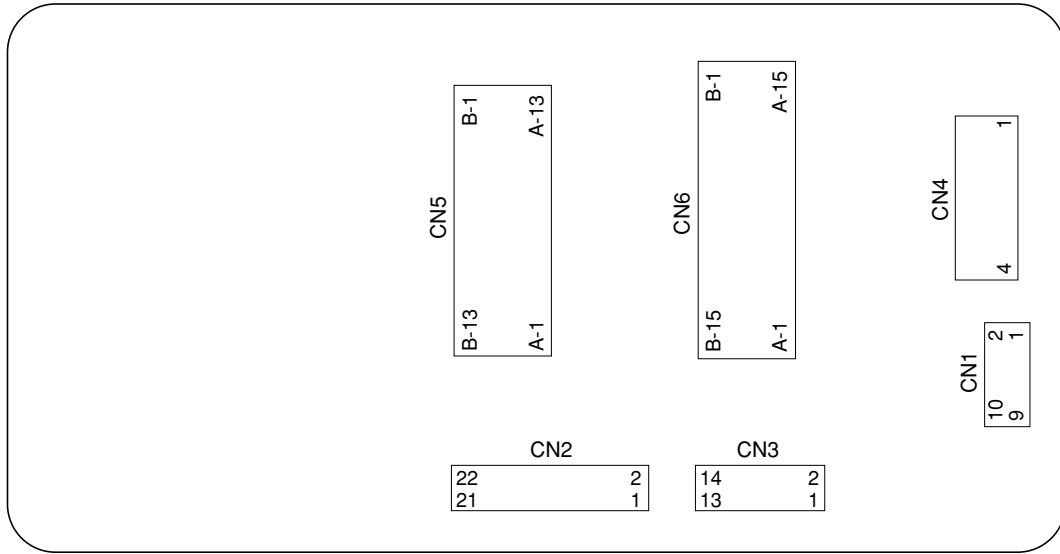


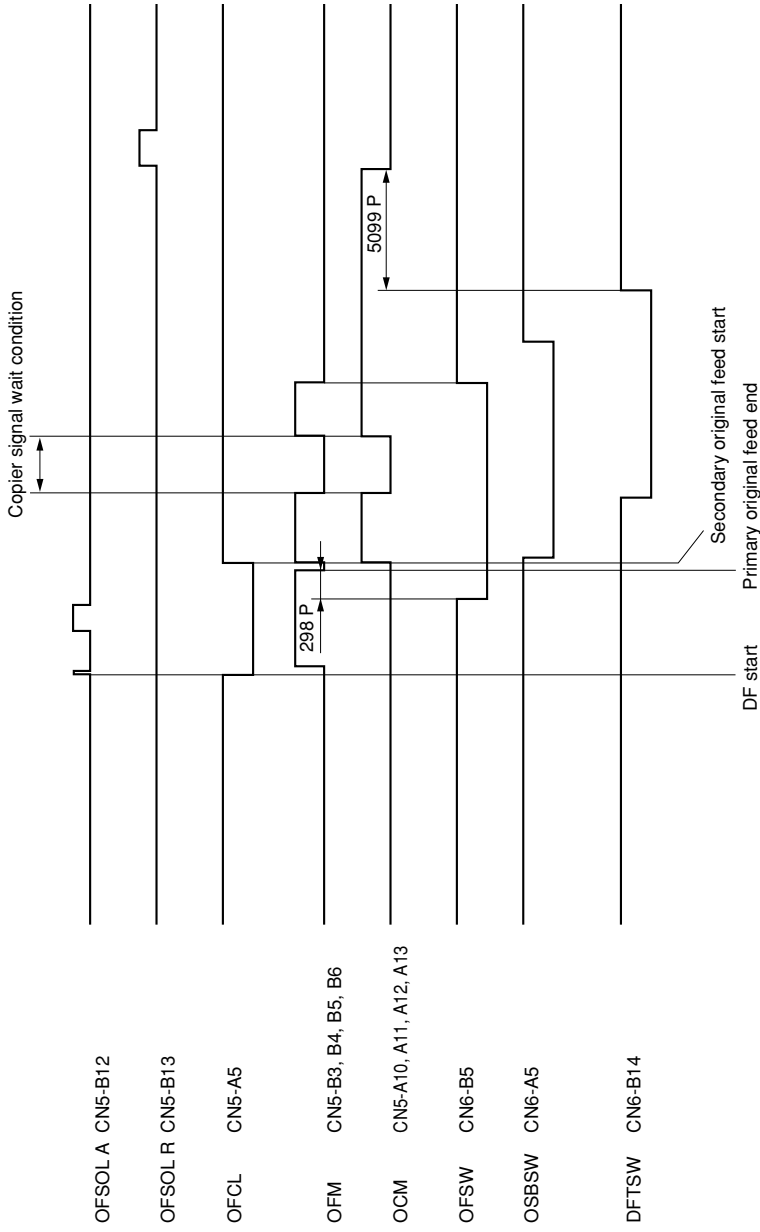
Figure 2-3-2 DF driver PCB silk-screen diagram

Connector	Pin No.	Signal	I/O	Voltage	Description
CN1 Connected to the copier.	1	24 V	I	24 V DC	24 V DC supply
	2	24 V	I	24 V DC	24 V DC supply
	3	PG	-	Ground	Ground for 24 V DC supply
	4	PG	-	Ground	Ground for 24 V DC supply
	5	NC	-	-	Not used
	6	NC	-	-	Not used
	7	5V	I	5 V DC	5 V DC supply
	8	5V	I	5 V DC	5 V DC supply
	9	SG	-	Ground	Ground for 5 V DC supply
	10	SG	-	Ground	Ground for 5 V DC supply
CN2 Connected to the copier.	1	OCM M1	I	0/5 V DC (pulse)	OCM control signal (M1)
	2	OCM M2	I	0/5 V DC (pulse)	OCM control signal (M2)
	3	OCM M3	I	0/5 V DC (pulse)	OCM control signal (M3)
	4	NC	-	-	Not used
	5	NC	-	-	Not used
	6	OCM Vref	I	Analog	OCM current control voltage
	7	OCM CWB	I	0/5 V DC	OCM rotation direction switching signal
	8	OCM CLK	I	0/5 V DC (pulse)	OCM drive clock signal
	9	OCM RET	I	0/5 V DC	OCM control signal
	10	OCM ENABLE	I	0/5 V DC	OCM enable signal
	11	OFM CWB	I	0/5 V DC	OFM rotation direction switching signal
	12	OFM CLK	I	0/5 V DC (pulse)	OFM drive clock signal
	13	OFM RET	I	0/5 V DC	OFM control signal
	14	OFM ENABLE	I	0/5 V DC	OFM enable signal
	15	OFSOL(ACT)	I	0/24 V DC	OFSOL: actuate
	16	OFSOL(RET)	I	0/24 V DC	OFSOL: return
	17	SBFSSOL	I	0/24 V DC	SBFSSOL: On/Off
	18	RESERVE(SOL)	-	-	Not used
	19	EFSSOL	I	0/24 V DC	EFSSOL: On/Off
	20	OFCL	I	0/24 V DC	OFCL: On/Off
	21	SBPSOL(ACT)	I	0/24 V DC	SBPSOL: actuate
	22	SBPSOL(RET)	I	0/24 V DC	SBPSOL: return
CN3 Connected to the copier.	1	OSSW	O	0/5 V DC	OSSW: On/Off
	2	OSFSW	O	0/5 V DC	OSFSW: On/Off
	3	OSBSW	O	0/5 V DC	OSBSW: On/Off
	4	RESERVE (SW)	-	-	Not used
	5	OSLSW	O	0/5 V DC	OSLSW: On/Off
	6	DFSSW1	O	0/5 V DC	DFSSW1: On/Off
	7	DFSSW2	O	0/5 V DC	DFSSW2: On/Off
	8	OSWSW	O	Analog	OSWSW detection voltage
	9	OSLED(GREEN)	I	0/5 V DC	OSLED (green): On/Off
	10	OSLED(RED)	I	0/5 V DC	OSLED (red): On/Off
	11	DF SHORT	O	0/5 V DC	DF installed/not installed detection signal
	12	RESERVE(SW)	-	-	Not used
	13	DFTSW	O	0/5 V DC	DFTSW: On/Off
	14	NC	-	-	Not used
CN4 Connected to the copier.	1	24 V(VEN)	-	0/24 V DC	24 V DC supply via DFSSW1 and DFSSW2
	2	24 V	-	24 V DC	24 V DC supply
	3	DFSSW2 OPEN	-	0/24 V DC	DFSSW2: On/Off
	4	DFSSW1 OPEN	-	0/24 V DC	DFSSW1: On/Off

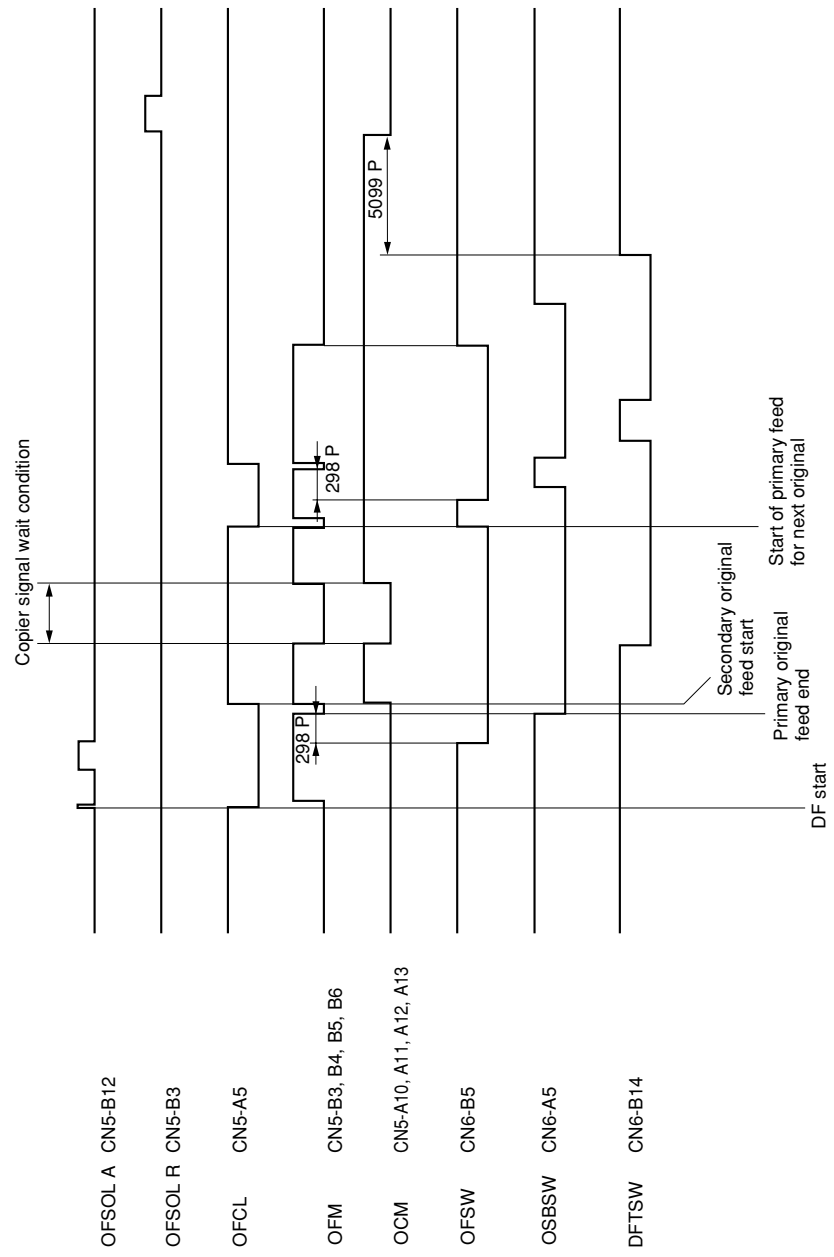


Connector	Pin No.	Signal	I/O	Voltage	Description
CN5 Connected to the switchback pressure solenoid, original feed clutch, eject feedshift solenoid, original conveying motor, original feed motor, switchback feedshift solenoid, original feed solenoid.	A-1	24 V	O	24 V DC	24 V DC supply for SBPSOL (via DFSSW1 and DFSSW2)
	A-2	SBPSOL(ACT)	O	0/24 V DC	SBPSOL: actuate
	A-3	SBPSOL(RET)	O	0/24 V DC	SBPSOL: return
	A-4	24 V	O	24 V DC	24 V DC supply for OFCL (via DFSSW1 and DFSSW2)
	A-5	OFCL	O	0/24 V DC	OFCL: On/Off
	A-6	24 V	O	24 V DC	24 V DC supply for EFSSOL (via DFSSW1 and DFSSW2)
	A-7	EFSSOL	O	0/24 V DC	EFSSOL: On/Off
	A-8	OCM ACOM 24 V(VEN)	O	24 V	24 V DC supply for OCM (via DFSSW1 and DFSSW2)
	A-9	OCM BCOM 24 V(VEN)	O	24 V	24 V DC supply for OCM (via DFSSW1 and DFSSW2)
	A-10	OCM A	O	0/24 V DC (pulse)	OCM motor coil energization pulse (A)
	A-11	OCM B	O	0/24 V DC (pulse)	OCM motor coil energization pulse (B)
	A-12	OCM A_	O	0/24 V DC (pulse)	OCM motor coil energization pulse (A_)
	A-13	OCM B_	O	0/24 V DC (pulse)	OCM motor coil energization pulse (B_)
	B-1	OFM ACOM 24 V(VEN)	O	24 V	24 V DC supply for OFM (via DFSSW1 and DFSSW2)
	B-2	OFM BCOM 24 V(VEN)	O	24 V	24 V DC supply for OFM (via DFSSW1 and DFSSW2)
	B-3	OFM A	O	0/24 V DC (pulse)	OFM motor coil energization pulse (A)
	B-4	OFM B	O	0/24 V DC (pulse)	OFM motor coil energization pulse (B)
	B-5	OFM A_	O	0/24 V DC (pulse)	OFM motor coil energization pulse (A_)
	B-6	OFM B_	O	0/24 V DC (pulse)	OFM motor coil energization pulse (B_)
	B-7	24 V	-	24 V DC	24 V DC supply for SBFSSOL (via DFSSW1 and DFSSW2)
B-8	SBFSSOL	O	0/24 V DC	SBFSSOL: On/Off	
B-9	24 V	-	-	Not used	
B-10	RESERVE(SOL)	-	-	Not used	
B-11	24 V	-	24 V DC	24 V DC supply for SBPSOL (via DFSSW1 and DFSSW2)	
B-12	OFSOL(ACT)	O	0/24 V DC	OFSOL: actuate	
B-13	OFSOL(RET)	O	0/24 V DC	OFSOL: return	
CN6 Connected to the original switchback switch, original size length switch, original size width switch, original set switch, original feed switch, original set LED PCB.	A-1	-	-	-	Not used
	A-2	-	-	-	Not used
	A-3	-	-	-	Not used
	A-4	SG	-	Ground	Ground for 5 V DC supply
	A-5	OSBSW	I	0/5 V DC	OSBSW: On/Off
	A-6	5V	O	5 V DC	5 V DC supply for OSBSW
	A-7	SG	-	Ground	Ground
	A-8	OSLSW	I	0/5 V DC	OSLSW: On/Off
	A-9	5V	O	5 V DC	5 V DC supply for OSLSW
	A-10	SG	-	Ground	Ground
	A-11	OSWSW	I	Analog	OSWSW detection voltage
	A-12	5V	O	5 V DC	5 V DC supply for OSWSW
	A-13	SG	-	-	Not used
	A-14	RESERVE(SW)	-	-	Not used
	A-15	5V	-	-	Not used
	B-1	5V	O	5 V DC	5 V DC supply for OSSW
	B-2	OSSW	I	0/5 V DC	OSSW: On/Off
	B-3	SG	-	Ground	Ground
	B-4	5V	O	5 V DC	5 V DC supply for OFSW
	B-5	OFSW	I	0/5 V DC	OFSW: On/Off
B-6	SG	-	Ground	Ground	
B-7	OSLED(RED)	O	0/5 V DC	OSLED (red): On/Off	
B-8	SG	-	Ground	Ground	
B-9	OSLED(GN)	O	0/5 V DC	OSLED (green): On/Off	
B-10	5V	-	-	Not used	
B-11	DOCSW	-	-	Not used	
B-12	SG	-	-	Not used	
B-13	5V	O	5 V DC	5 V DC supply for DFTSW	
B-14	DFTSW	I	0/5 V DC	DFTSW: On/Off	
B-15	SG	-	Ground	Ground	

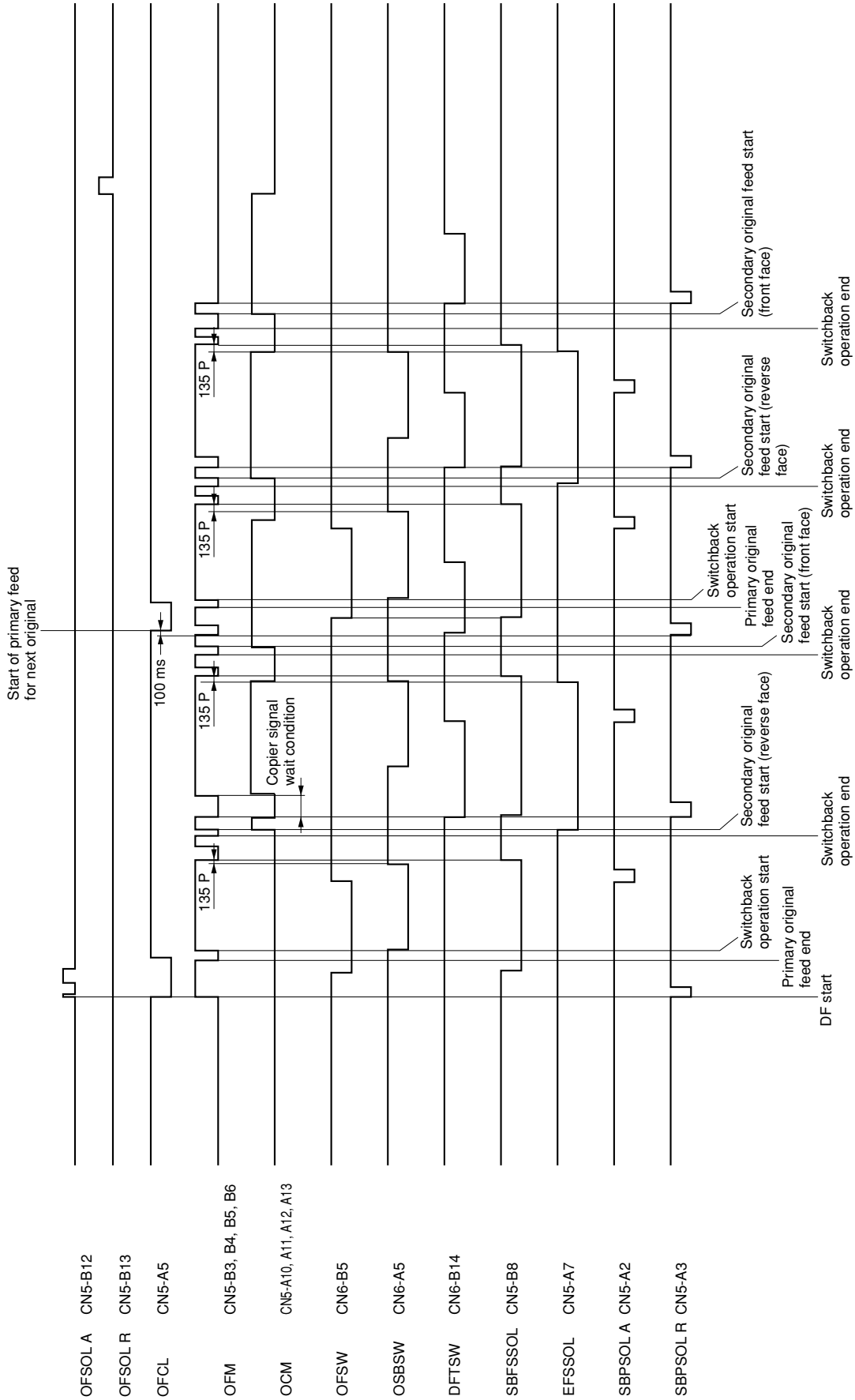
**Timing chart No. 1 Original feed operation 1: Feeding an A4/11" x 8 1/2" original in single-sided original mode**



**Timing chart No. 2 Original feed operation 2: Feeding two A4/11" x 8 1/2" originals successively in single-sided original mode**



### Timing chart No. 3 Original feed operation 3: Feeding two A4R8 1/2" x 11" originals successively in double-sided original mode



## Maintenance parts list

Maintenance part name		Part No.	Fig. No.	Ref. No.
Name used in service manual	Name used in parts list			
DF forwarding pulley	PULLEY,LEADING FEED	3BC07010	4	5
DF feed pulley	PULLEY,SEPARATION	3BC07020	4	6
DF separation pulley	PULLEY,SEPARATION	3BC07020	4	27
DF registration roller	ROLLER,REGISTRATION	3BC08050	6	56
Front reading pulley	FRONT PULLEY,READING	3AL08480	6	7
DF registration pulley	PULLEY B,REGISTRATION	3BC08220	5	12
Original feed switch	SWITCH L,FEED	63227150	4	17
Lower original conveying roller	LOWER ROLLER,CONVEYING	3AL08112	6	32
Upper original conveying roller	UPPER ROLLER,CONVEYING	3AL08161	6	30
Upper original conveying pulley	UPPER PULLEY,CONVEYING	3AL08140	1	5
Original conveying guide	GUIDE,CONVEYING	3AL08033	6	1
Original conveying pulley cover	COVER,CONVEYING PULLEY	3AL08302	6	4
Middle original conveying roller	INNER ROLLER,CONVEYING	3BC08150	6	19
Middle original conveying pulley	INNER PULLEY,CONVEYING	3AL08100	6	52
Eject pulley	PULLEY,EJECT	3AL08170	5	11
Switchback roller	ROLLER,LOOP	3AL10020	5	6
Eject pulley	PULLEY,EJECT	3AL08170	5	20
Eject roller	ROLLER,EJECT	3AL08130	6	39
Original size length switch filter	FILTER CF SENSOR	78706241	3	16
Slit glass*	CONTACT GLASS,ADF	2AV12250	9 [11]	19 [61]
Covers	Covers	-	-	-
Original holder mat	MAT,ORIGINAL HOLDER	3AL04060	1	16
Original holder sheet	SHEET,ORIGINAL HOLDER	3AL08401	6	10
Original size indicator sponge*	SPONGE,ORIGINAL SIZE INDICATOR	35912531	9 [11]	52 [63]

\* Equipped with the copier. [ ] indicates the case of color copiers.

## Periodic maintenance procedures

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Test copy and test print	Perform at the maximum copy size	Test copy	Every service		



Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Original feed section	DF forwarding pulley	Replace or clean	Every 100,000 counts	Clean with alcohol when visiting the user.	1-6-3
	DF feed pulley	Replace or clean	Every 100,000 counts	Clean with alcohol when visiting the user.	1-6-3
	DF separation pulley	Replace or clean	Every 100,000 counts	Clean with alcohol when visiting the user.	1-6-4
	DF registration roller	Clean	Every service	Clean with alcohol or a dry cloth.	
	Front reading pulley	Clean	Every service	Clean with alcohol or a dry cloth.	
	DF registration pulley	Check or clean	Every service	Clean with alcohol or a dry cloth if it is dirty.	
	Original feed switch	Check or clean	Every service	Clean with airbrush or a dry cloth.	



Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Original conveying section	Lower original conveying roller	Clean	Every service	Clean with alcohol or a dry cloth.	
	Upper original conveying roller	Clean	Every service	Clean with alcohol or a dry cloth.	
	Upper original conveying pulley	Check or clean	Every service	Clean with alcohol or a dry cloth if it is dirty.	
	Original conveying guide	Clean	Every service	Clean with alcohol or a dry cloth.	
	Original conveying pulley cover	Clean	Every service	Clean the opposite side of the DF timing switch with alcohol or a dry cloth.	
	Middle original conveying roller	Clean	Every 400,000 counts	Clean with alcohol (Remove the front, rear and right covers and original conveying pulley mount plate).	
	Middle original conveying pulley	Clean	Every 400,000 counts	Clean with alcohol (Remove the front, rear and right covers and original conveying pulley mount plate).	
	Eject pulley	Check or clean	Every service	Clean with alcohol or a dry cloth if it is dirty.	



Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Original Table	Original size length switch Filter	Clean	Every service	Clean with alcohol.	



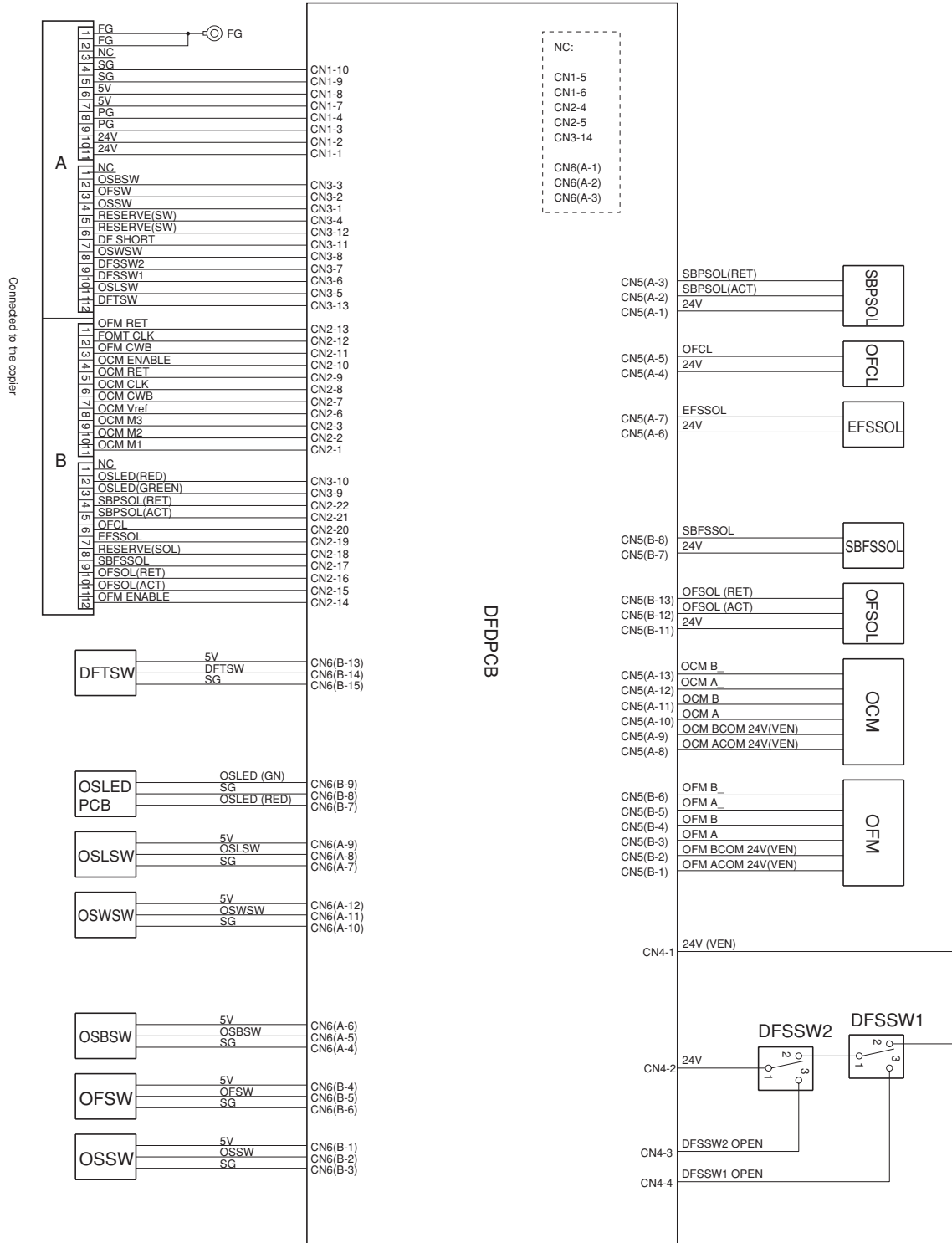
Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Covers	Covers	Clean	Every service	Clean with alcohol.	
	Slit glass*	Clean	Every service	Clean with alcohol or a dry cloth.	



Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Other	Original holder mat	Clean	Every service	Clean with alcohol or a dry cloth.	
	Original holder sheet	Clean	Every service	Clean with alcohol or a dry cloth.	
	Original size indicator sponge*	Clean	Every service	Clean with alcohol or a dry cloth.	

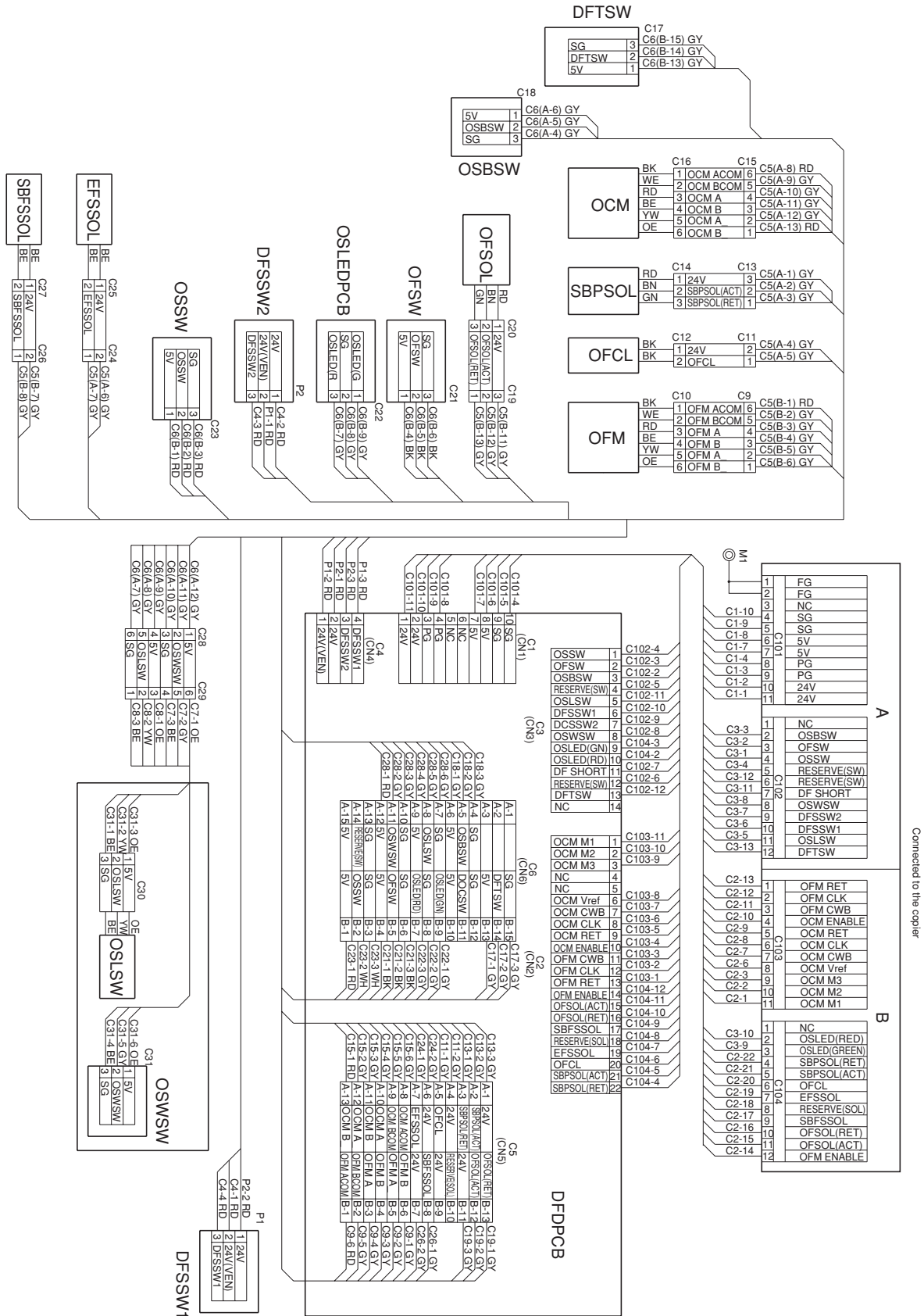
\* Equipped with the copier.

# Connection diagram





Wiring diagram



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