



DP-410

SERVICE MANUAL

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CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

CAUTION

Double-pole/neutral fusing.





Safety precautions


This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions


Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

 **DANGER:** High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

 **WARNING:** Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

 **CAUTION:** Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

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



General warning.



Warning of risk of electric shock.



Warning of high temperature.

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



General prohibited action.



Disassembly prohibited.

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



General action required.



Remove the power plug from the wall outlet.



Always ground the copier.

1. Installation Precautions

WARNING

• Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current.



• Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities.



CAUTION:

• Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury.



• Do not install the copier in a humid or dusty place. This may cause fire or electric shock.



• Do not install the copier near a radiator, heater, other heat source or near flammable material. This may cause fire.



• Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance.



• Always handle the machine by the correct locations when moving it.



• Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury.



• Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention.













• Advise customers that they must always follow the safety warnings and precautions in the copier's instruction handbook.








2. Precautions for Maintenance

WARNING

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

CAUTION

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

• Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself.



• Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item.



• Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks.



• Remove toner completely from electronic components.



• Run wire harnesses carefully so that wires will not be trapped or damaged.



• After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws.



• Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary.



• Handle greases and solvents with care by following the instructions below:



- Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
- Ventilate the room well while using grease or solvents.
- Allow applied solvents to evaporate completely before refitting the covers or turning the main switch on.
- Always wash hands afterwards.

• Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc.



• Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately.



3. Miscellaneous

WARNING

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



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|---|--------|
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1-1-1 Specifications

| | |
|---------------------------------|---|
| Type | Machine mounted type duplex sheet-through document processor |
| Original feed system | Automatic feed |
| Originals | Sheets |
| Original weights | Single-sided original mode: 45 – 160 g/m ² Double-sided original mode: 50 – 120 g/m ² |
| Original paper | Plain paper, recycled paper, thermal paper, art paper and colored paper |
| Original sizes | A3 – A5R/11" × 17" – 5 ¹ / ₂ " × 8 ¹ / ₂ " |
| No. of originals | 50 sheets (50 – 80 g/m ²) 30 sheets in the auto selection mode |
| Original processing speed | Original replacement: Max. 20 sheets/min (A4/11" × 8 ¹ / ₂ ") Original scanning: 100 mm/s (100%) |
| Power source | Electrically connected to the copier |
| Dimensions | 552 (W) × 483 (D) × 120 (H) mm 21 ³ / ₄ " (W) × 19" (D) × 4 ³ / ₄ " (H) |
| Weight | Approx. 6.0 kg/13.2 lbs |

3HL

1-1-2 Parts names and their functions

(1) Parts names

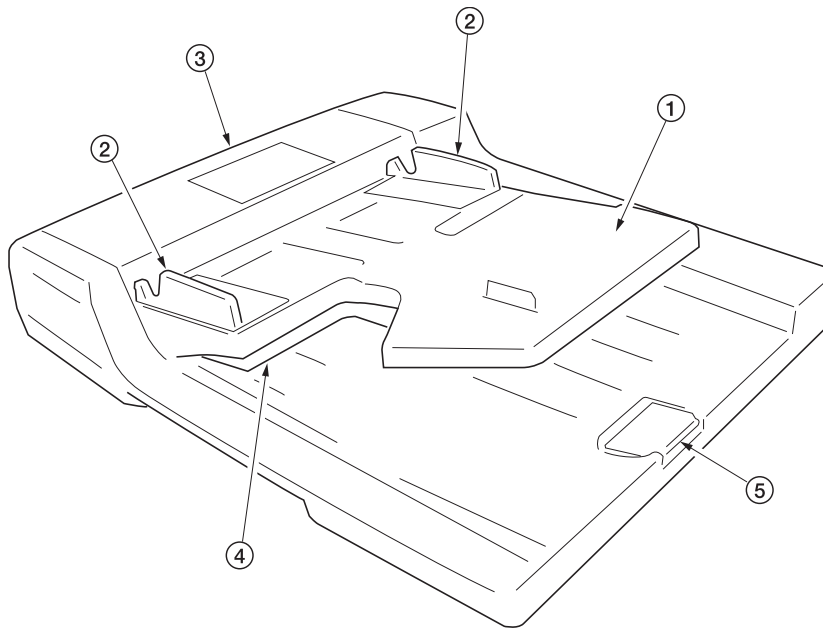


Figure 1-1-1

- ① Original table
- ② Original insert guides
- ③ DP original cover
- ④ Switchback tray
- ⑤ Ejection extension

1-1-3 Machine cross section

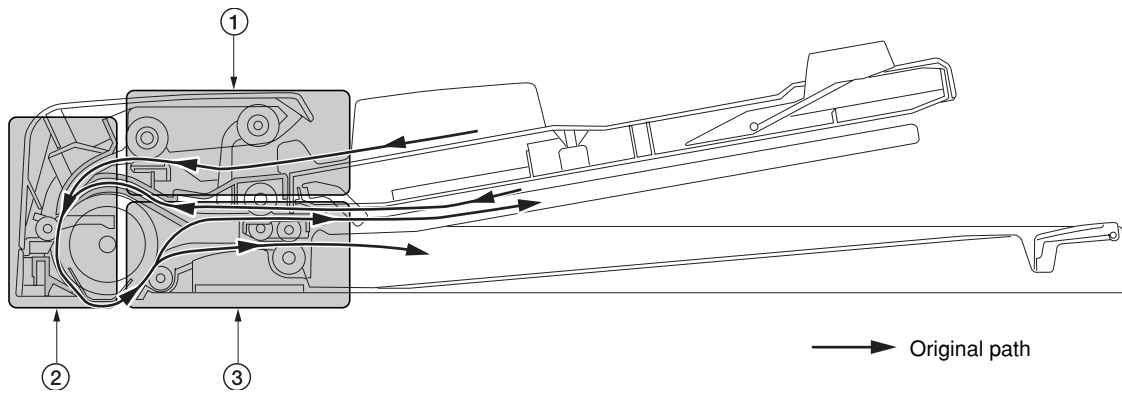
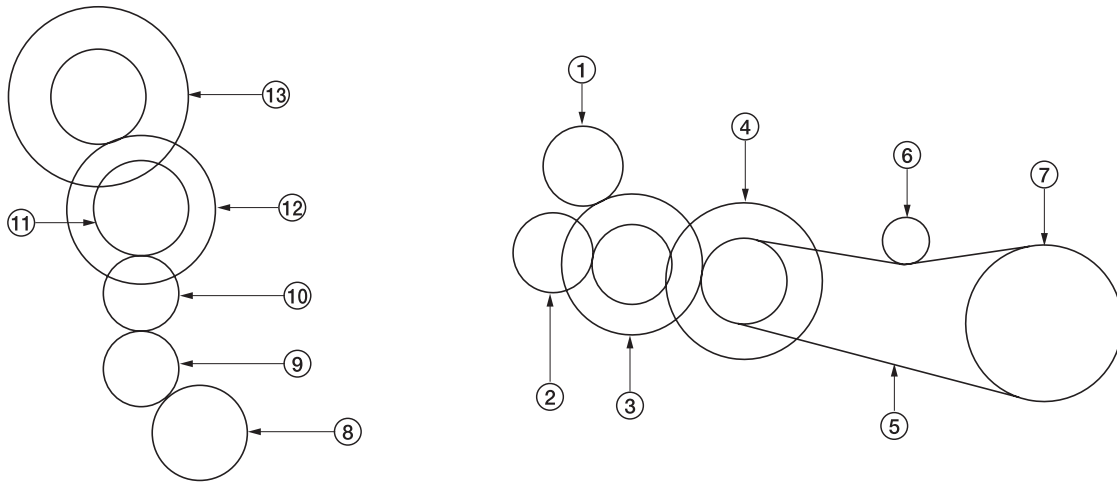


Figure 1-1-2 Machine cross section

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

1-1-4 Drive system

• Original conveying motor



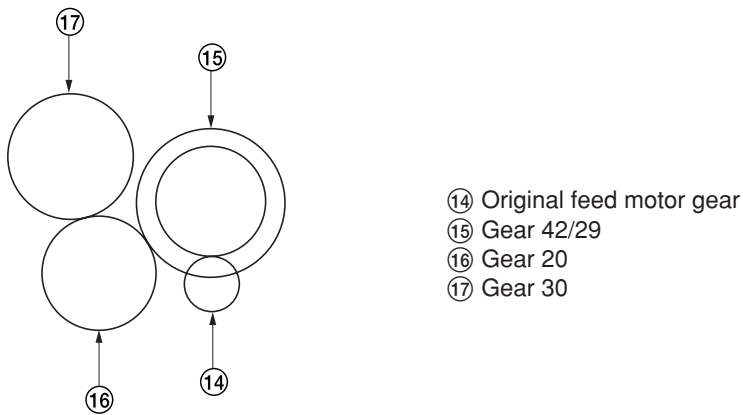
• Inside front of machine

• Inside rear of machine

Figure 1-1-3 Drive system

- | | |
|---------------------------------|----------------|
| ① Original conveying motor gear | ⑧ Exit gear 16 |
| ② Gear 16 | ⑨ Idle gear 15 |
| ③ Idle gear 49/13 | ⑩ Idle gear 15 |
| ④ Gear 24/30 | ⑪ Exit gear 16 |
| ⑤ Belt 174S2M | ⑫ Gear 40 |
| ⑥ Pulley | ⑬ Gear 30 |
| ⑦ Conveying pulley 40 | |

• Original feed motor



- | |
|----------------------------|
| ⑭ Original feed motor gear |
| ⑮ Gear 42/29 |
| ⑯ Gear 20 |
| ⑰ Gear 30 |

Figure 1-1-4 Drive system

1-2-1 Unpacking and installation

(1) Unpacking

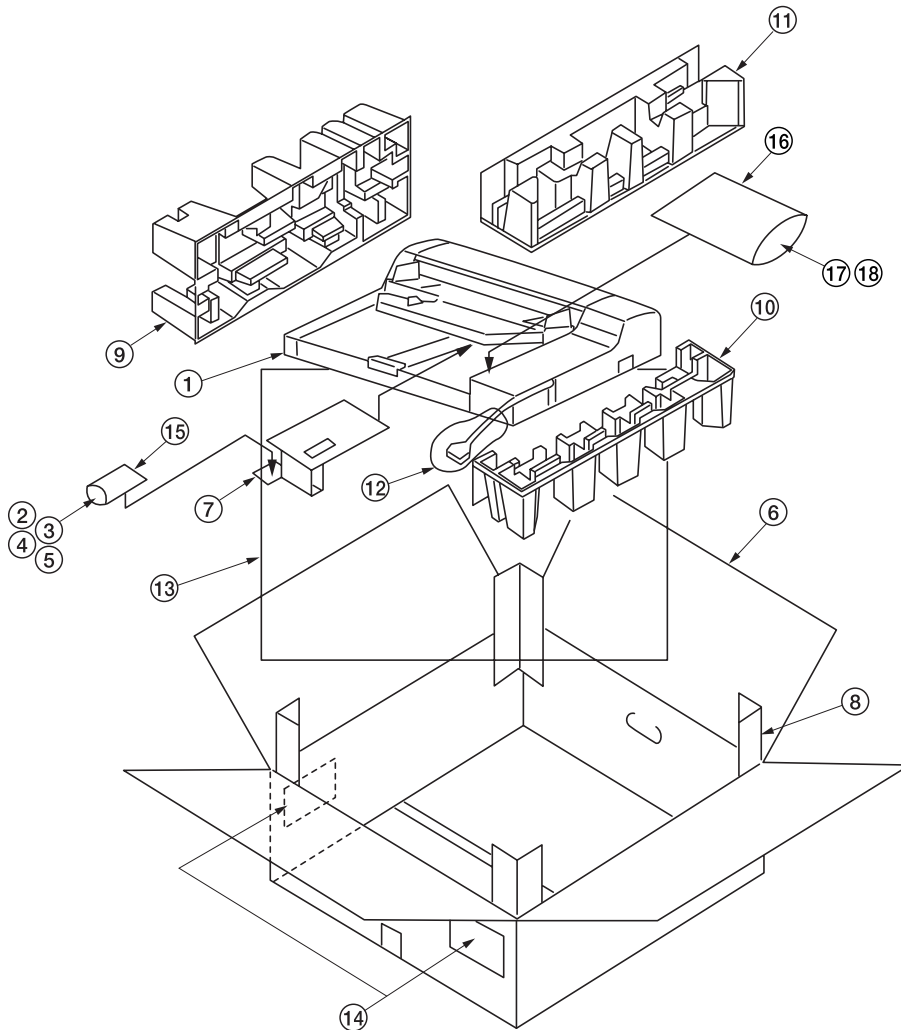


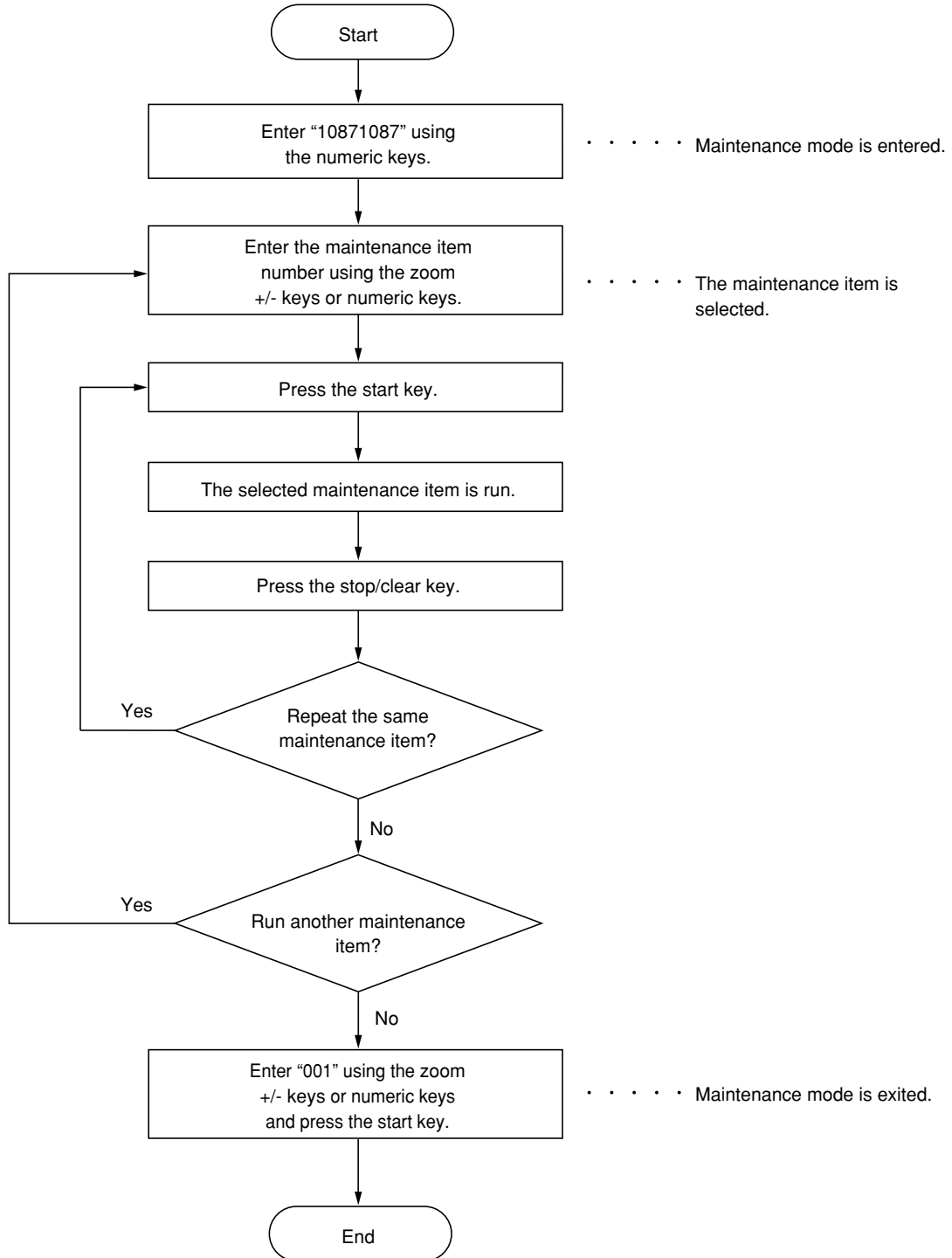
Figure 1-2-1 Unpacking

- | | |
|-------------------------|-------------------------------|
| ① Document processor | ⑩ Rear bottom pad |
| ② Fixing fitting | ⑪ Rear upper pad |
| ③ Pin | ⑫ Air cap bag (70 × 280) |
| ④ Bronze TP screw M3x06 | ⑬ Plastic sheet (1300 × 1300) |
| ⑤ Chrome TP screw M4x10 | ⑭ Bar code labels |
| ⑥ Outer case | ⑮ Plastic bag (70 × 110) |
| ⑦ Spacer | ⑯ Plastic bag (240 × 350) |
| ⑧ Supports | ⑰ Caution label |
| ⑨ Front pad | ⑱ Installation guide |

1-3-1 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* |
|---------|----------|---|------------------|
| DP | U019 | Displaying the ROM version | — |
| | U068 | Adjusting the scanning position for originals from the DP | 0 |
| | U070 | Adjusting the DP magnification | 0 |
| | U071 | Adjusting the DP scanning timing • DP leading edge registration • DP trailing edge registration | 0 0 |
| | U072 | Adjusting the DP center line | 0 |
| | U074 | Adjusting the DP input light luminosity | 1 |
| | U087 | Turning the DP scanning position adjust mode on/off | 35 |
| | U203 | Operating DP separately | — |
| | U243 | Checking the operation of the DP motors and solenoids | — |
| | U244 | Checking the DP switches | — |
| | U404 | Adjusting margins for scanning an original from the DP | — |
| | | | |

* Initial setting for executing maintenance item U020

(3) Contents of maintenance mode items

| Maintenance item No. | Description | | | | | | | | | | | | | | | |
|---|--|---|--------------------------|-----------------------|--|-------------------|--|---|------------------|--|--|----------------------------|---|---|--------|----------------------|
| U019 | <p>Displaying the ROM version</p> <p>Description Displays the part number of the ROM fitted to each board.</p> <p>Purpose To check the part number or to decide if the ROM version is new from the last digit of the number.</p> <p>Method</p> <ol style="list-style-type: none"> 1. Press the start key. A selection item appears. 2. Select the item to be displayed using the image mode selection key and copy exposure adjustment keys. <table border="1" data-bbox="320 577 1382 1126"> <thead> <tr> <th data-bbox="320 577 639 645">Image mode LEDs</th> <th data-bbox="639 577 874 645">Copy exposure indicator</th> <th data-bbox="874 577 1382 645">Copy quantity display</th> </tr> </thead> <tbody> <tr> <td data-bbox="320 645 639 757"> <input type="radio"/> Text & Photo <input type="radio"/> Photo <input checked="" type="radio"/> Text </td> <td data-bbox="639 645 874 757">Exp. 1 Exp. 2</td> <td data-bbox="874 645 1382 757">number of the main ROM number of the main ROM sub</td> </tr> <tr> <td data-bbox="320 757 639 875"> <input type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text </td> <td data-bbox="639 757 874 875">Exp. 1 Exp. 2</td> <td data-bbox="874 757 1382 875">number of the engine ROM number of the engine ROM sub</td> </tr> <tr> <td data-bbox="320 875 639 1010"> <input checked="" type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text </td> <td data-bbox="639 875 874 1010">Exp. 1 Exp. 2 Exp. 3</td> <td data-bbox="874 875 1382 1010">number of the first paper feeder ROM number of the second paper feeder ROM number of the third paper feeder ROM</td> </tr> <tr> <td data-bbox="320 1010 639 1126"> <input checked="" type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text <input checked="" type="radio"/> Text </td> <td data-bbox="639 1010 874 1126">Exp. 1</td> <td data-bbox="874 1010 1382 1126">number of the DP ROM</td> </tr> </tbody> </table> <p data-bbox="320 1137 632 1167">○ : Off, ● : On, : Flashing</p> <p>Completion Press the stop/clear key. The indication for selecting a maintenance item No. appears.</p> | Image mode LEDs | Copy exposure indicator | Copy quantity display | <input type="radio"/> Text & Photo <input type="radio"/> Photo <input checked="" type="radio"/> Text | Exp. 1 Exp. 2 | number of the main ROM number of the main ROM sub | <input type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text | Exp. 1 Exp. 2 | number of the engine ROM number of the engine ROM sub | <input checked="" type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text | Exp. 1 Exp. 2 Exp. 3 | number of the first paper feeder ROM number of the second paper feeder ROM number of the third paper feeder ROM | <input checked="" type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text <input checked="" type="radio"/> Text | Exp. 1 | number of the DP ROM |
| Image mode LEDs | Copy exposure indicator | Copy quantity display | | | | | | | | | | | | | | |
| <input type="radio"/> Text & Photo <input type="radio"/> Photo <input checked="" type="radio"/> Text | Exp. 1 Exp. 2 | number of the main ROM number of the main ROM sub | | | | | | | | | | | | | | |
| <input type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text | Exp. 1 Exp. 2 | number of the engine ROM number of the engine ROM sub | | | | | | | | | | | | | | |
| <input checked="" type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text | Exp. 1 Exp. 2 Exp. 3 | number of the first paper feeder ROM number of the second paper feeder ROM number of the third paper feeder ROM | | | | | | | | | | | | | | |
| <input checked="" type="radio"/> Text & Photo <input checked="" type="radio"/> Photo <input checked="" type="radio"/> Text <input checked="" type="radio"/> Text | Exp. 1 | number of the DP ROM | | | | | | | | | | | | | | |
| U068 | <p>Adjusting the scanning position for originals from the DP</p> <p>Description Adjusts the position for scanning originals from the DP.</p> <p>Purpose Used when there is a regular error between the leading edges of the original and the copy image when the DP is used.</p> <p>Method Press the start key.</p> <p>Setting</p> <ol style="list-style-type: none"> 1. Change the setting using the zoom +/- keys. <table border="1" data-bbox="320 1570 1382 1653"> <thead> <tr> <th data-bbox="320 1570 639 1615">Description</th> <th data-bbox="639 1570 852 1615">Setting range</th> <th data-bbox="852 1570 1062 1615">Initial setting</th> <th data-bbox="1062 1570 1382 1615">Change in value per step</th> </tr> </thead> <tbody> <tr> <td data-bbox="320 1615 639 1653">Scanning position</td> <td data-bbox="639 1615 852 1653">-17 to +17</td> <td data-bbox="852 1615 1062 1653">0</td> <td data-bbox="1062 1615 1382 1653">0.254 mm</td> </tr> </tbody> </table> <p data-bbox="320 1659 1331 1688">Increasing the setting moves the image backward, and decreasing it moves the image forward.</p> <ol style="list-style-type: none"> 2. Press the start key. The value is set. <p>Completion Press the stop/clear key. The indication for selecting a maintenance item No. appears.</p> | Description | Setting range | Initial setting | Change in value per step | Scanning position | -17 to +17 | 0 | 0.254 mm | | | | | | | |
| Description | Setting range | Initial setting | Change in value per step | | | | | | | | | | | | | |
| Scanning position | -17 to +17 | 0 | 0.254 mm | | | | | | | | | | | | | |

| Maintenance item No. | Description | | | | | | |
|---------------------------|--|-----------------|---------------|-----------------|---------------------------|--------|---|
| U070 | <p>Adjusting the DP magnification</p> <p>Adjustment See pages 1-5-6.</p> | | | | | | |
| U071 | <p>Adjusting the DP scanning timing</p> <p>Adjustment See page 1-5-8 and 9.</p> | | | | | | |
| U072 | <p>Adjusting the DP center line</p> <p>Adjustment See page 1-5-7.</p> | | | | | | |
| U074 | <p>Adjusting the DP input light luminosity</p> <p>Description Adjusts the luminosity of the exposure lamp for scanning originals from the DP.</p> <p>Purpose Used if the exposure amount differs significantly between when scanning an original on the contact glass and when scanning an original from the DP.</p> <p>Method Press the start key.</p> <p>Setting</p> <ol style="list-style-type: none"> 1. Change the setting using the zoom +/- keys. <table border="1" data-bbox="304 891 1366 972"> <thead> <tr> <th data-bbox="304 891 683 936">Description</th> <th data-bbox="683 891 1026 936">Setting range</th> <th data-bbox="1026 891 1366 936">Initial setting</th> </tr> </thead> <tbody> <tr> <td data-bbox="304 936 683 972">DP input light luminosity</td> <td data-bbox="683 936 1026 972">0 to 8</td> <td data-bbox="1026 936 1366 972">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"> 2. Press the start key. The value is set. <p>Test copy mode While this maintenance item is being performed, copying from an original can be made in test copy mode.</p> <p>Completion Press the stop/clear key. The indication for selecting a maintenance item No. appears.</p> | Description | Setting range | Initial setting | DP input light luminosity | 0 to 8 | 1 |
| Description | Setting range | Initial setting | | | | | |
| DP input light luminosity | 0 to 8 | 1 | | | | | |

| Maintenance item No. | Description | | | | | | | | | | | | | | | | | | |
|--|---|-------------------------|-------------|--------|-------------------------|--------|---|---------|-------------|----|-------------------------------------|-----|--------------------------------------|-------------|---------------|-----------------|--|----------|----|
| U087 | <p>Turning the DP scanning position adjust mode on/off</p> <p>Description Turns on or off the DP scanning position adjust mode, in which the DP original scanning position is adjusted automatically by determining the presence or absence of dust on the slit glass. Also changes the reference data for identifying dust.</p> <p>Reference In the DP original scanning position adjust mode, the presence or absence of dust is determined by comparing the scan data of the original trailing edge and that taken after the original is conveyed past the DP original scanning position. If dust is identified, the DP original scanning position is adjusted for the following originals.</p> <p>Purpose Used to prevent appearance of black lines due to dust adhering in the original scanning position on the slit glass when the DP is used.</p> <p>Method</p> <ol style="list-style-type: none"> 1. Press the start key. 2. Select the item to be set by lighting a copy exposure indicator using the copy exposure adjustment keys. <table border="1" data-bbox="320 725 1382 837"> <thead> <tr> <th>Copy exposure indicator</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Exp. 1</td> <td>Setting the mode on/off</td> </tr> <tr> <td>Exp. 2</td> <td>Setting the reference data for identifying dust</td> </tr> </tbody> </table> <p>Setting the mode on/off</p> <ol style="list-style-type: none"> 1. Select "on" or "oFF" using the zoom +/- keys. <table border="1" data-bbox="320 916 1382 1028"> <thead> <tr> <th>Display</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>on</td> <td>DP scanning position adjust mode on</td> </tr> <tr> <td>oFF</td> <td>DP scanning position adjust mode off</td> </tr> </tbody> </table> <p>Initial setting: on</p> <ol style="list-style-type: none"> 2. Press the start key. The setting is set. <p>Setting the reference data for identifying dust Available only when the mode is turned on.</p> <ol style="list-style-type: none"> 1. Change the setting using the zoom +/- keys. <table border="1" data-bbox="320 1198 1382 1279"> <thead> <tr> <th>Description</th> <th>Setting range</th> <th>Initial setting</th> </tr> </thead> <tbody> <tr> <td>Minimum density to be regarded as dust</td> <td>10 to 95</td> <td>35</td> </tr> </tbody> </table> <p>Example The figure indicates the density in 256 levels of gray (0: white, 255: black). When the setting is 35, data of the level of 35 or higher is regarded as dust and data of lower level is regarded as the background (scan data taken when there is no original).</p> <ol style="list-style-type: none"> 2. Press the start key. The value is set. <p>Completion Press the stop/clear key while a selection item is displayed. The indication for selecting a maintenance item No. appears.</p> | Copy exposure indicator | Description | Exp. 1 | Setting the mode on/off | Exp. 2 | Setting the reference data for identifying dust | Display | Description | on | DP scanning position adjust mode on | oFF | DP scanning position adjust mode off | Description | Setting range | Initial setting | Minimum density to be regarded as dust | 10 to 95 | 35 |
| Copy exposure indicator | Description | | | | | | | | | | | | | | | | | | |
| Exp. 1 | Setting the mode on/off | | | | | | | | | | | | | | | | | | |
| Exp. 2 | Setting the reference data for identifying dust | | | | | | | | | | | | | | | | | | |
| Display | Description | | | | | | | | | | | | | | | | | | |
| on | DP scanning position adjust mode on | | | | | | | | | | | | | | | | | | |
| oFF | DP scanning position adjust mode off | | | | | | | | | | | | | | | | | | |
| Description | Setting range | Initial setting | | | | | | | | | | | | | | | | | |
| Minimum density to be regarded as dust | 10 to 95 | 35 | | | | | | | | | | | | | | | | | |

| Maintenance item No. | Description | | | | | | | | | | |
|--------------------------------------|--|--------------------------------------|-----------|--------------|---------------------------|--------------|--------------------------------------|--------------|---|--------------|---------------------------------------|
| <p>U203</p> | <p>Operating DP separately</p> <p>Description Simulates the original conveying operation separately in the DP.</p> <p>Purpose To check the DP.</p> <p>Method</p> <ol style="list-style-type: none"> 1. Press the start key. 2. Place an original in the DP if running this simulation with paper. 3. Select the item to be operated using the copy exposure adjustment keys. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Display (copy exposure indicator)</th> <th style="text-align: left;">Operation</th> </tr> </thead> <tbody> <tr> <td>d-P (exp. 1)</td> <td>With paper</td> </tr> <tr> <td>d-n (exp. 2)</td> <td>Without paper (continuous operation)</td> </tr> <tr> <td>dp2 (exp. 3)</td> <td>With paper (duplex mode)</td> </tr> <tr> <td>dn2 (exp. 4)</td> <td>Without paper (duplex mode)</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 4. Press the start key. The operation starts. 5. To stop continuous operation, press the stop/clear key. <p>Completion Press the stop/clear key when the operation stops. The indication for selecting a maintenance item No. appears.</p> | Display (copy exposure indicator) | Operation | d-P (exp. 1) | With paper | d-n (exp. 2) | Without paper (continuous operation) | dp2 (exp. 3) | With paper (duplex mode) | dn2 (exp. 4) | Without paper (duplex mode) |
| Display (copy exposure indicator) | Operation | | | | | | | | | | |
| d-P (exp. 1) | With paper | | | | | | | | | | |
| d-n (exp. 2) | Without paper (continuous operation) | | | | | | | | | | |
| dp2 (exp. 3) | With paper (duplex mode) | | | | | | | | | | |
| dn2 (exp. 4) | Without paper (duplex mode) | | | | | | | | | | |
| <p>U243</p> | <p>Checking the operation of the DP motors and solenoids</p> <p>Description Turns the motors and solenoids in the DP on.</p> <p>Purpose To check the operation of the DP motors and solenoids.</p> <p>Method</p> <ol style="list-style-type: none"> 1. Press the start key. 2. Select the motor or solenoid to be operated using the copy exposure adjustment keys. 3. Press the start key. The operation starts. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Indication (copy exposure indicator)</th> <th style="text-align: left;">Motor</th> </tr> </thead> <tbody> <tr> <td>F-0 (exp. 1)</td> <td>Original feed motor (OFM)</td> </tr> <tr> <td>C-0 (exp. 2)</td> <td>Original conveying motor (OCM)</td> </tr> <tr> <td>b-S (exp. 3)</td> <td>Switchback feedshift solenoid (SBFSSOL)</td> </tr> <tr> <td>P-S (exp. 4)</td> <td>Switchback pressure solenoid (SBPSOL)</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 4. To turn each motor off, press the stop/clear key. <p>Completion Press the stop/clear key when operation stops. The indication for selecting a maintenance item No. appears.</p> | Indication (copy exposure indicator) | Motor | F-0 (exp. 1) | Original feed motor (OFM) | C-0 (exp. 2) | Original conveying motor (OCM) | b-S (exp. 3) | Switchback feedshift solenoid (SBFSSOL) | P-S (exp. 4) | Switchback pressure solenoid (SBPSOL) |
| Indication (copy exposure indicator) | Motor | | | | | | | | | | |
| F-0 (exp. 1) | Original feed motor (OFM) | | | | | | | | | | |
| C-0 (exp. 2) | Original conveying motor (OCM) | | | | | | | | | | |
| b-S (exp. 3) | Switchback feedshift solenoid (SBFSSOL) | | | | | | | | | | |
| P-S (exp. 4) | Switchback pressure solenoid (SBPSOL) | | | | | | | | | | |

| Maintenance item No. | Description | | | | | | | | | | | | | | |
|----------------------|--|------|--------|-----------|----------------------------|--------------|--------------------------|-------|----------------------------------|------|-----------------------------------|---------|-------------------------------------|----------|------------------------------------|
| <p>U244</p> | <p>Checking the DP switches</p> <p>Description Displays the status of the switches in the DP.</p> <p>Purpose To check if switches in the DP operate correctly.</p> <p>Method</p> <ol style="list-style-type: none"> 1. Press the start key. "-S-" appears. 2. Turn each switch on and off manually to check the status. When the on-status of a switch is detected, the LEDs on the operation panel corresponding to the operated switch lights. <table border="1" data-bbox="320 546 1382 775"> <thead> <tr> <th data-bbox="320 546 687 591">LEDs</th> <th data-bbox="687 546 1382 591">Switch</th> </tr> </thead> <tbody> <tr> <td data-bbox="320 591 687 624">Auto Exp.</td> <td data-bbox="687 591 1382 624">Original set switch (OSSW)</td> </tr> <tr> <td data-bbox="320 624 687 658">Text & Photo</td> <td data-bbox="687 624 1382 658">DP timing switch (DPTSW)</td> </tr> <tr> <td data-bbox="320 658 687 692">Photo</td> <td data-bbox="687 658 1382 692">Original detection switch (ODSW)</td> </tr> <tr> <td data-bbox="320 692 687 725">Text</td> <td data-bbox="687 692 1382 725">DP original cover switch (DPOCSW)</td> </tr> <tr> <td data-bbox="320 725 687 759">Program</td> <td data-bbox="687 725 1382 759">Original size length switch (OSLSW)</td> </tr> <tr> <td data-bbox="320 759 687 775">Eco-copy</td> <td data-bbox="687 759 1382 775">Original switchback switch (OSBSW)</td> </tr> </tbody> </table> <p>Completion Press the stop/clear key. The indication for selecting a maintenance item No. appears.</p> | LEDs | Switch | Auto Exp. | Original set switch (OSSW) | Text & Photo | DP timing switch (DPTSW) | Photo | Original detection switch (ODSW) | Text | DP original cover switch (DPOCSW) | Program | Original size length switch (OSLSW) | Eco-copy | Original switchback switch (OSBSW) |
| LEDs | Switch | | | | | | | | | | | | | | |
| Auto Exp. | Original set switch (OSSW) | | | | | | | | | | | | | | |
| Text & Photo | DP timing switch (DPTSW) | | | | | | | | | | | | | | |
| Photo | Original detection switch (ODSW) | | | | | | | | | | | | | | |
| Text | DP original cover switch (DPOCSW) | | | | | | | | | | | | | | |
| Program | Original size length switch (OSLSW) | | | | | | | | | | | | | | |
| Eco-copy | Original switchback switch (OSBSW) | | | | | | | | | | | | | | |
| <p>U404</p> | <p>Adjusting margins for scanning an original from the DP</p> <p>Adjustment See pages 1-5-10.</p> | | | | | | | | | | | | | | |

1-4-1 Original misfeed detection

(1) Original misfeed indication

When an original jams, the copier immediately stops copying and displays the jam location on the operation panel.

To remove the jammed original in the DP, open the DP original cover.

To reset the original misfeed detection, open and close the DP original cover to turn DP original cover switch off and on.

(2) Original misfeed detection conditions

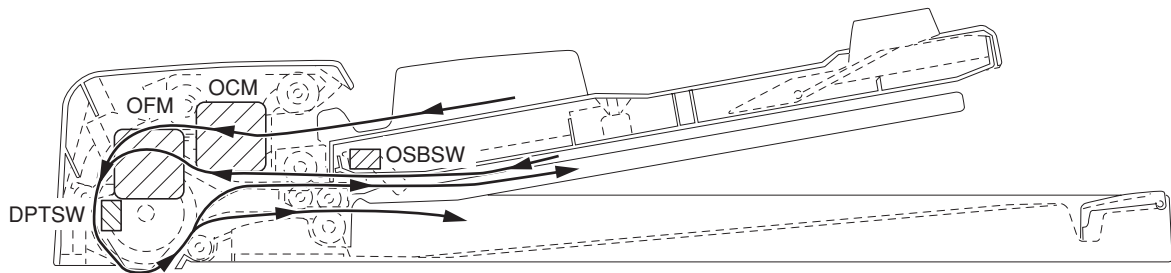


Figure 1-4-1

| Section | Jam code | Description | Conditions |
|-----------------------------|----------|---|---|
| Original feed section | 70 | No original feed | During the primary feed of the second original in the single-sided or double-sided original mode, even if retry operation is performed five times, primary original feed is not performed. |
| Original conveying section | 71 | An original jam in the original conveying section 1 | During the secondary original feed in the single-sided or double-sided original mode, the DP timing switch (DPTSW) does not turn off within 6500 ms of the original conveying motor (OCM) turning on. |
| | 72 | An original size error jam | During the secondary original feed in the single-sided or double-sided original mode, the DP timing switch (DPTSW) does turn off within 750 ms of the original conveying motor (OCM) turning on. |
| | 73 | An original jam in the original conveying section 2 | During scanning of the second side or reversing of the original for ejection in the double-sided original mode, the DP timing switch (DPTSW) does not turn off within 6500 ms of the original conveying motor (OCM) turning on. |
| | 74 | An original jam in the original conveying section 3 | During scanning of the second side or reversing of the original for ejection in the double-sided original mode, the DP timing switch (DPTSW) does not turn on within 750 ms of the original conveying motor (OCM) turning on. |
| Original switchback section | 75 | An original jam in the original switchback section | During the switchback operation of an original in the double-sided original mode, the original switchback switch (OSBSW) does not turn on within 1300 ms of the original conveying motor (OCM) turning on. |

(3) Original misfeeds

| Problem | Causes/check procedures | Corrective measures |
|---|---|---|
| (1) An original jams when the power switch is turned on. | A piece of paper torn from an original is caught around the DP timing switch or original switchback switch. | Check visually and remove it, if any. |
| | Defective DP timing switch. | Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of the corresponding switch is not light. |
| | Defective original switchback switch. | Run maintenance item U244 and turn original switchback switch on and off manually. Replace original switchback switch if indication of the corresponding switch is not light. |
| (2) An original jams in the original feed section is indicated during copying (no original feed). Jam code 70 | Defective original set switch. | Run maintenance item U244 and turn original set switch on and off manually. Replace original set switch if indication of the corresponding switch is not light. |
| | Check if the original feed motor malfunctions. | Run maintenance item U243 and select the original feed motor to be turned on and off. Check the status and remedy if necessary. |
| | Check if the DP paper feed pulley or DP separation pad is deformed. | Check visually and replace the deformed pulley. |
| (3) An original jams in the original conveying section is indicated during copying (An original jam in the original conveying section 1). Jam code 71 | Broken DP timing switch actuator. | Check visually and replace DP timing switch if its actuator is broken. |
| | Defective DP timing switch. | Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of the corresponding switch is not light. |
| | Check if the original conveying motor malfunctions. | Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary. |
| (4) An original jams in the original conveying section is indicated during copying (An original size error jam). Jam code 72 | Broken DP timing switch actuator. | Check visually and replace DP timing switch if its actuator is broken. |
| | Defective DP timing switch. | Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of the corresponding switch is not light. |
| | Check if the original conveying motor malfunctions. | Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary. |
| (5) An original jams in the original conveying section is indicated during copying (An original jam in the original conveying section 2). Jam code 73 | Broken DP timing switch actuator. | Check visually and replace DP timing switch if its actuator is broken. |
| | Defective DP timing switch. | Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of the corresponding switch is not light. |
| | Check if the original conveying motor malfunctions. | Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary. |
| | Check if the switchback feedshift solenoid malfunctions. | Run maintenance item U243 and select the switchback feedshift solenoid to be turned on and off. Check the status and remedy if necessary. |

| Problem | Causes/check procedures | Corrective measures |
|---|--|---|
| (6) An original jams in the original conveying section is indicated during copying (An original jam in the original conveying section 3). Jam code 74 | Broken DP timing switch actuator. | Check visually and replace DP timing switch if its actuator is broken. |
| | Defective DP timing switch. | Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of the corresponding switch is not light. |
| | Check if the original conveying motor malfunctions. | Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary. |
| | Check if the switchback feedshift solenoid malfunctions. | Run maintenance item U243 and select the switchback feedshift solenoid to be turned on and off. Check the status and remedy if necessary. |
| (7) An original jams in the original switchback section is indicated during copying (An original jam in the original switchback section). Jam code 75 | Defective original switchback switch. | Run maintenance item U244 and turn original switchback switch on and off manually. Replace original switchback switch if indication of the corresponding switch is not light. |
| | Check if the original conveying motor malfunctions. | Run maintenance item U243 and select the original conveying motor to be turned on and off. Check the status and remedy if necessary. |
| | Check if the switchback feedshift solenoid malfunctions. | Run maintenance item U243 and select the switchback feedshift solenoid to be turned on and off. Check the status and remedy if necessary. |
| (8) Original jams frequently. | An original outside the specifications is used. | Use only originals conforming to the specifications. |
| | The DP forwarding pulley or DP paper feed pulley is dirty with paper powder. | Clean with isopropyl alcohol. |
| | The DP paper feed pulley and DP separation pad do not contact correctly. | Check and remedy. |

1-4-2 Self-diagnosis

(1) Self-diagnostic function

When a problem is detected, copying is disabled. "C" and a number 041 alternates.

After removing the problem, the self-diagnostic function can be reset by turning safety switch off and back on.

(2) Self diagnostic codes

| Code | Contents | Remarks | |
|-----------------|---|--------------------------------------|---|
| | | Causes | Check procedures/corrective measures |
| C041 (A041*) | Optional DP communication problem <ul style="list-style-type: none"> Communication fails five times successively. | DP installed incorrectly. | Check the installation state of the DP and adjust it if it is not properly installed. |
| | | Defective main PCB or DP driver PCB. | Replace the main PCB or DP driver PCB and check for correct operation. |

"A" is displayed on the operation panel.

1-4-3 Image formation problems

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



See page 1-4-7

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



See page 1-4-7

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

Causes

1. Misadjusted DP center line.



| Causes | Check procedures/corrective measures |
|--------------------------------|---|
| 1. Misadjusted DP center line. | Readjust the DP center line (see page 1-5-7). |

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

Causes

1. Misadjusted DP original scanning start position.



| Causes | Check procedures/corrective measures |
|---|--|
| 1. Misadjusted DP original scanning start position. | Readjust the DP original scanning start position (see page 1-5-8). |

1-4-4 Electrical problems

| Problem | Causes | Check procedures/corrective measures |
|---|--|---|
| (1) The machine does not operate when the power switch is turned on. | The DP original cover is not closed completely. | Check the DP original cover. |
| | Defective DP original cover switch. | Check for continuity across the contacts of switch. If none, replace the switch. |
| (2) The original feed motor does not operate. | Poor contact in the original feed motor connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Broken original feed motor gear. | Check visually and replace the original feed motor if necessary. |
| | Defective original feed motor. | Run maintenance item U243 and check if the original feed motor operates when YC8-3,4,5,6 on the DP driver PCB goes low. If not, replace the original feed motor. |
| | Defective DP driver PCB. | Run maintenance item U243 and check if YC8-3,4,5,6 on the DP driver PCB goes low. If not, replace the DP driver PCB. |
| (3) The original conveying motor does not operate. | Poor contact in the original conveying motor connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Broken original conveying motor gear. | Check visually and replace the original conveying motor if necessary. |
| | Defective original conveying motor. | Run maintenance item U243 and check if the original conveying motor operates when YC8-9,10,11,12 on the DP driver PCB goes low. If not, replace the original conveying motor. |
| | Defective DP driver PCB. | Run maintenance item U243 and check if YC8-9,10,11,12 on the DP driver PCB goes low. If not, replace the DP 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. |
| | Poor contact in the switchback feedshift solenoid connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective DP driver PCB. | Run maintenance item U243 and check if YC7-5 on the DP driver PCB goes low. If not, replace the DP driver PCB. |
| (5) 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. |
| | Poor contact in the switchback pressure solenoid connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective DP driver PCB. | Run maintenance item U243 and check if YC7-2,3 on the DP driver PCB goes low. If not, replace the DP driver PCB. |
| (6) The original size is not detected correctly. | Poor contact in the original size length switch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective original size length switch. | Check if YC2-4 on the DP driver PCB goes low when the original size length switch is turned on. If not, replace the original size length switch. |

| Problem | Causes | Check procedures/corrective measures |
|---|--|---|
| (6) The original size is not detected correctly. | Poor contact in the original size width switch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective original size width switch. | Check if YC2-2 on the DP driver PCB goes low when the original size width switch is turned on. If not, replace the original size width switch. |
| (7) A original jam in the DP is indicated when the power switch is turned on. | A piece of paper torn from copy paper is caught around DP timing switch or original switchback switch. | Check and remove if any. |
| | Defective DP timing switch. | Run maintenance item U244 and turn DP timing switch on and off manually. Replace DP timing switch if indication of the corresponding sensor is not light. |
| | Defective original switchback switch. | Run maintenance item U244 and turn original switchback switch on and off manually. Replace original switchback switch if indication of the corresponding sensor is not light. |
| (8) The message requesting cover to be closed is displayed when the DP original cover is closed. | Poor contact in the DP original cover switch connector terminals. | Reinsert the connector. Also check for continuity within the connector cable. If none, remedy or replace the cable. |
| | Defective DP original cover switch. | Run maintenance item U244 and turn DP original cover switch on and off manually. Replace DP original cover switch if indication of the corresponding sensor is not light. |
| (9) Others. | Wiring is broken, shorted or makes poor contact. | Check for continuity. If none, repair. |
| | Noise. | Locate the source of noise and remove. |

1-4-5 Mechanical problems

| Problem | Causes/check procedures | Corrective measures |
|---|---|---|
| (1) No primary original feed. | Check if the surfaces of the following pulleys are dirty with paper powder: DP forwarding pulley, DP paper feed pulley and DP separation pad. | Clean with isopropyl alcohol. |
| | Check if the DP forwarding pulley, DP paper feed pulley or DP separation pad is deformed. | Check visually and replace any deformed pulleys (see page 1-5-3 and 5). |
| (2) Multiple sheets of original are fed at one time. | Check if the DP separation pad is worn. | Replace the DP separation pad if it is worn (see page 1-5-5). |
| (3) Originals jam. | Deformed guides along the paper conveying path. | Repair or replace if necessary. |
| | Check if the contact between the conveying roller and pulley is correct. | Check visually and remedy if necessary. |
| | Check if the contact between the exit roller and pulley is correct. | Check visually and remedy if necessary. |
| | Check if the contact between the switchback roller and pulley is correct. | Check visually and remedy if necessary. |
| (4) Abnormal noise is heard. | Check if the pulleys, rollers and gears operate smoothly. | Grease the bearings and gears. |

1-5-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the power switch off and disconnect the power plug before starting disassembly.
- When handling 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*

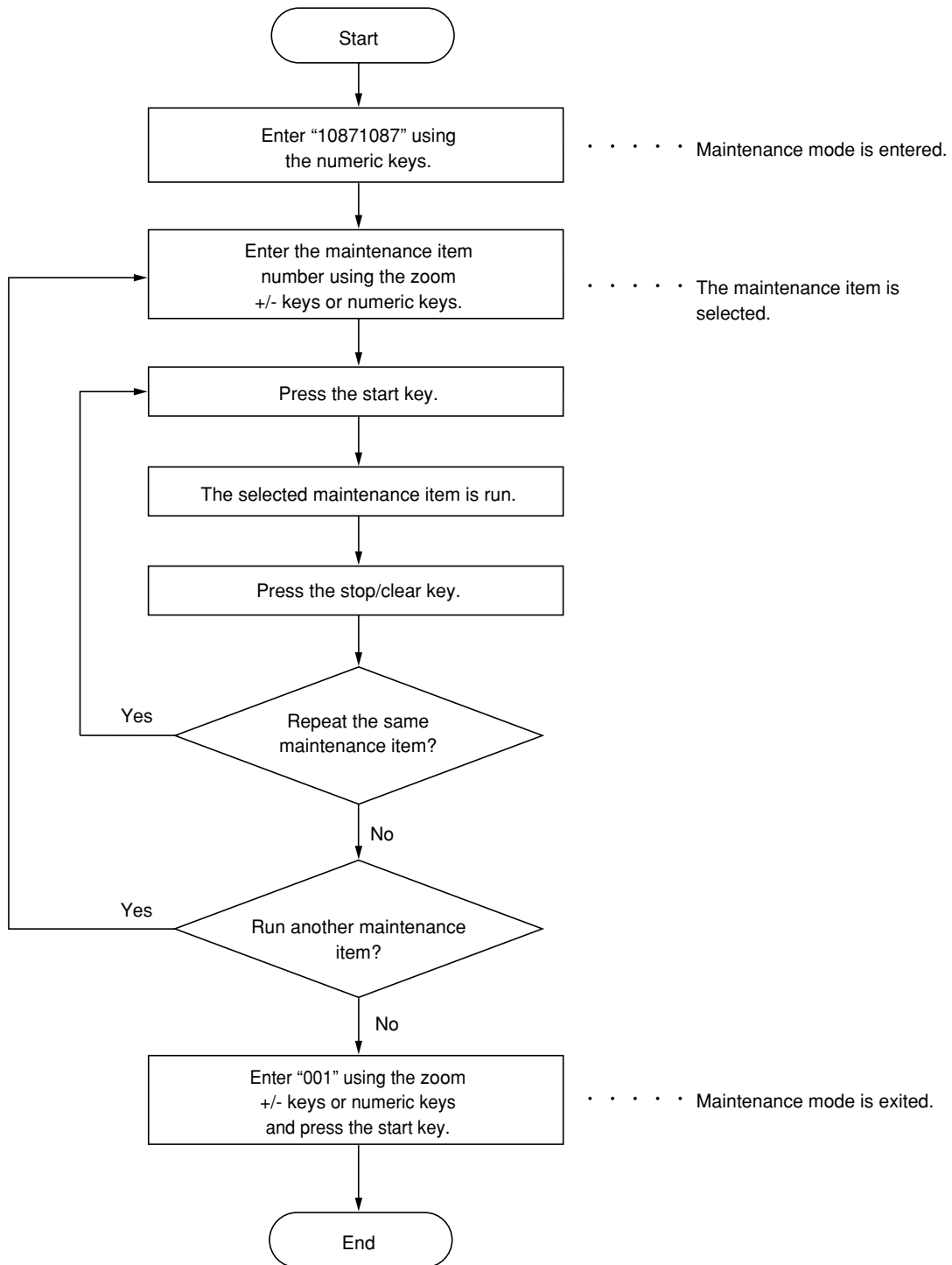
Fluke 8060A*

Arlec DMM1050

Arlec YF1030C

* Capable of measuring RMS values.

(2) Running a maintenance item



1-5-2 DP

(1) Detaching and refitting the DP forwarding pulley and DP paper feed pulley

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

Procedure

- Detaching the DP forwarding pulley

1. Open the DP original cover.
2. Raise the DP paper feed pulley unit and pull the hooking portion for the DP forwarding pulley shaft toward the front side to remove the DP forwarding pulley shaft.
3. Remove the DP forwarding pulley.

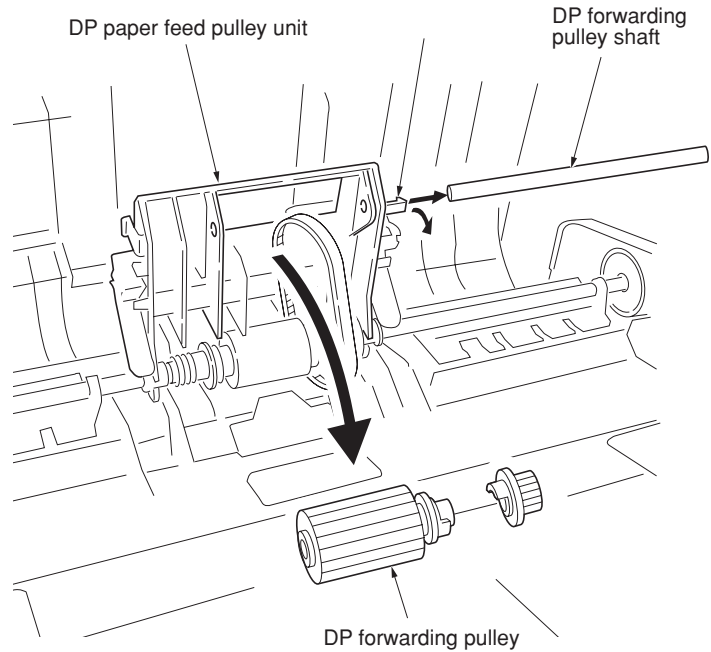


Figure 1-5-1

- Detaching the DP paper feed pulley
4. Remove the stop ring and paper feed guide at front side of the DP paper feed pulley shaft.
 - * When mounting the paper feed guide, fit the projection of the paper feed guide into the groove of the DP paper feed pulley shaft.
 5. Remove the DP paper feed pulley unit from DP.

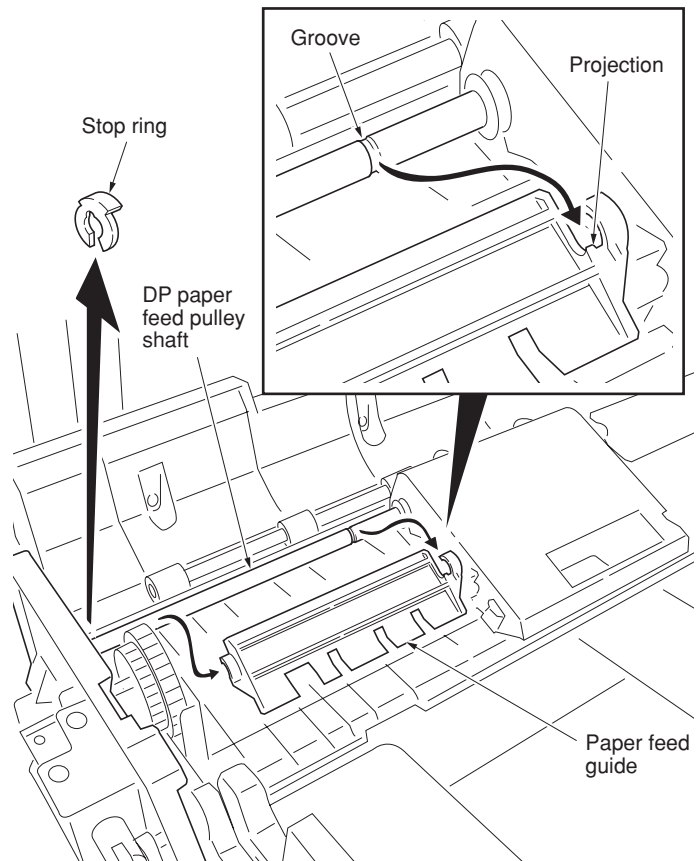


Figure 1-5-2

3HL

6. Remove the two stop rings and then remove the DP paper feed pulley shaft from the DP paper feed pulley unit.
7. Remove the DP paper feed pulley from the DP paper feed pulley shaft.
8. Clean or replace the DP forwarding pulley and the DP paper feed pulley and refit all the removed parts.

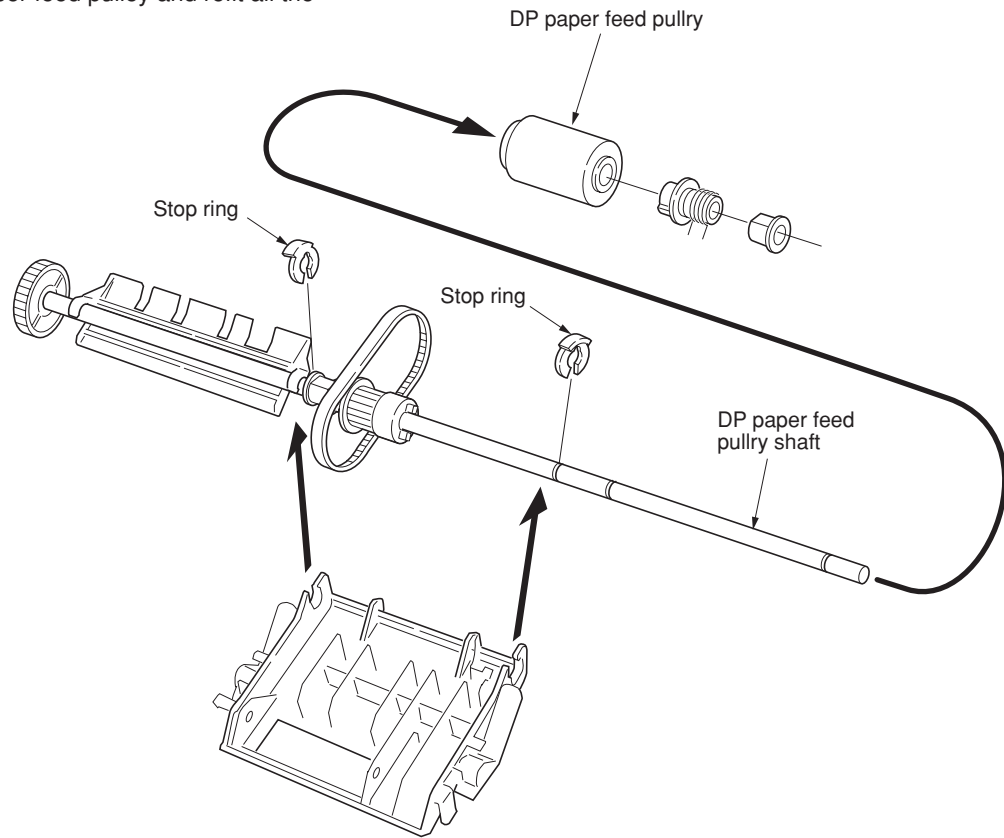


Figure 1-5-3

(2) Detaching and refitting the DP separation pad

Follow the procedure below to clean or replace the DP separation pad.

Procedure

1. Remove the DP paper feed pulley unit (see page 1-5-3).
2. Push the fitting portions of the DP separation pad. Remove the DP separation pad.
3. Clean or replace the DP separation pad and refit all the removed parts.

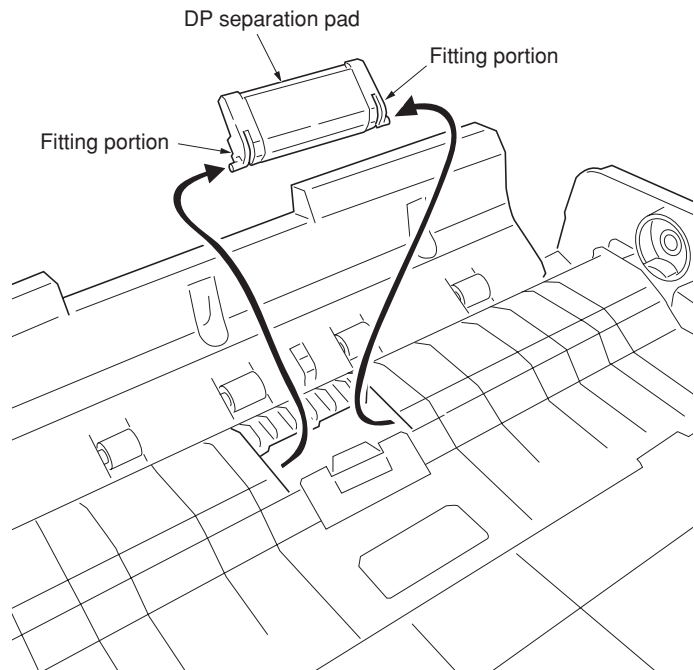
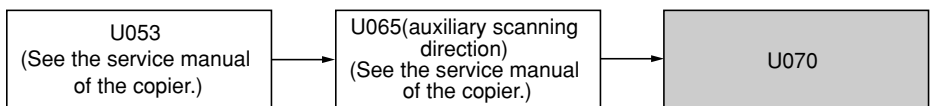


Figure 1-5-4

(3) Adjusting the DP magnification

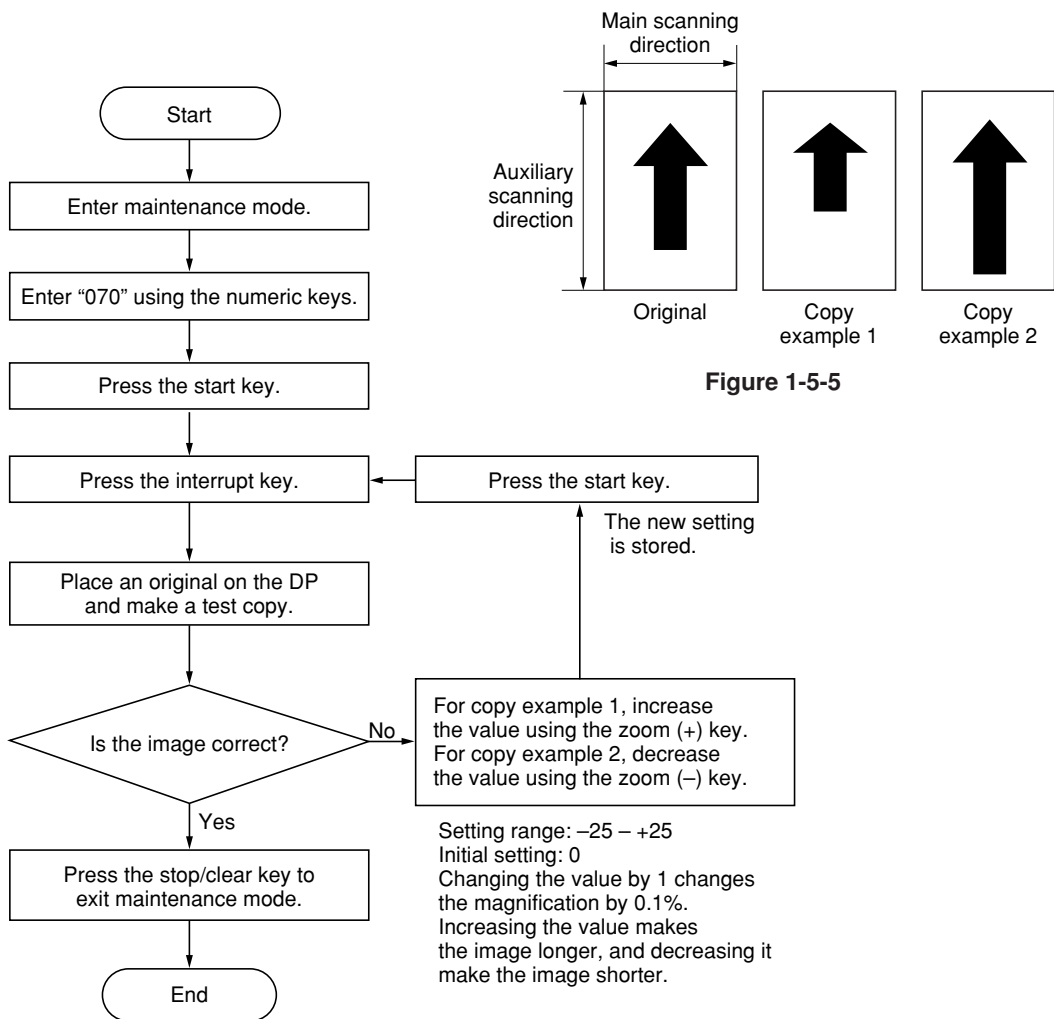
Adjust magnification in the auxiliary scanning direction if magnification is incorrect when the DP is used.



Caution

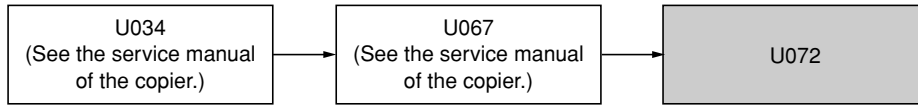
Before making the following adjustment, ensure that the above adjustments have been made in maintenance mode.

Procedure



(4) Adjusting the DP center line

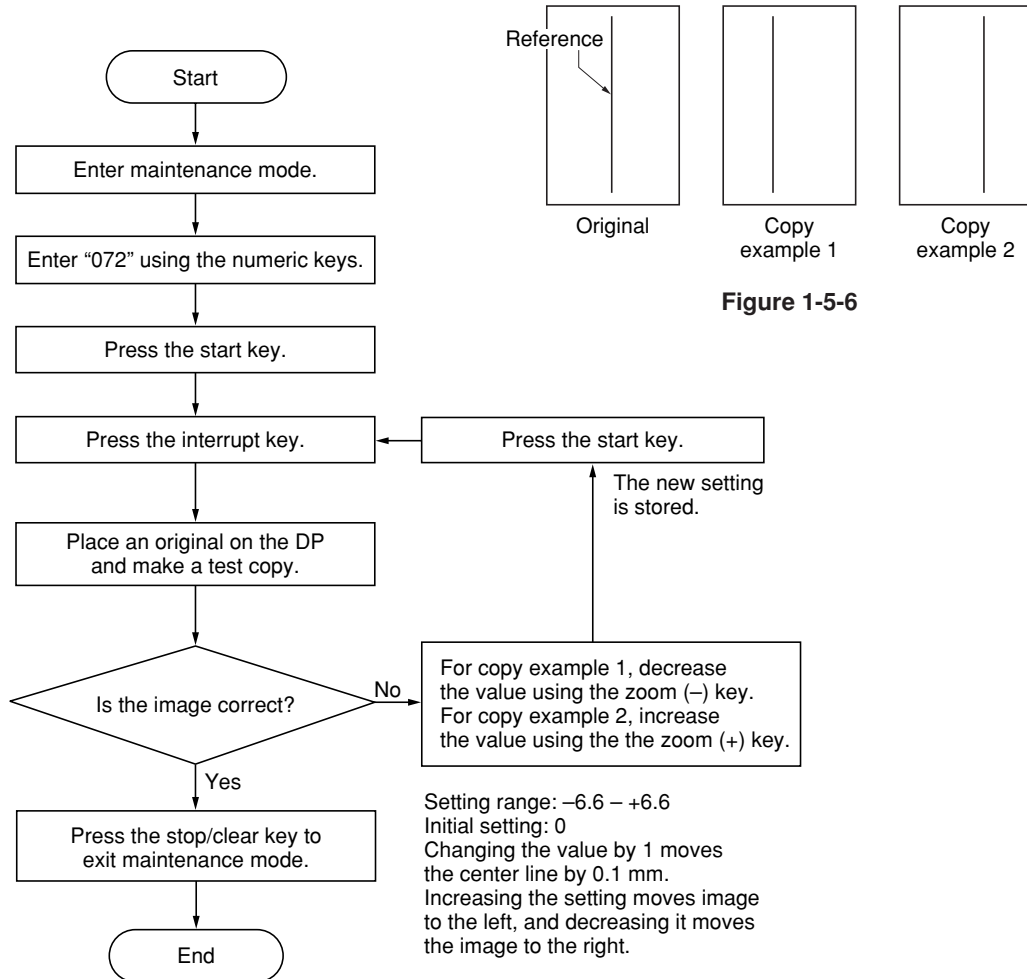
Perform the following adjustment if there is a regular error between the centers of the original and the copy image when the DP is used.



Caution

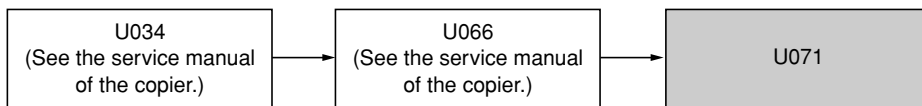
Before making the following adjustment, ensure that the above adjustments have been made in maintenance mode.

Procedure



(5) Adjusting the DP scanning timing

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 DP leading edge registration

Procedure

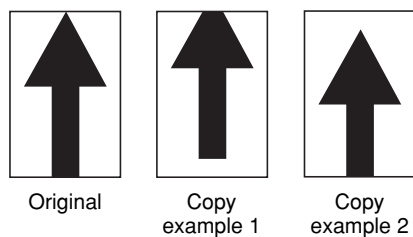
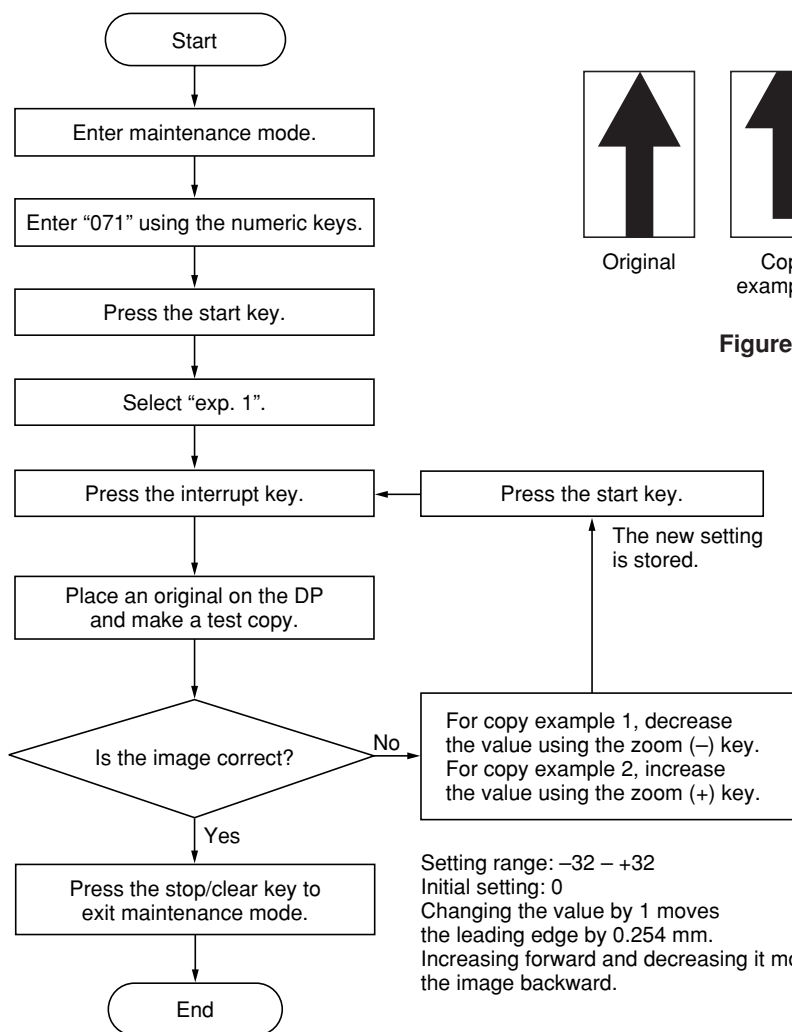


Figure 1-5-7

(5-2) Adjusting the DP trailing edge registration

Procedure

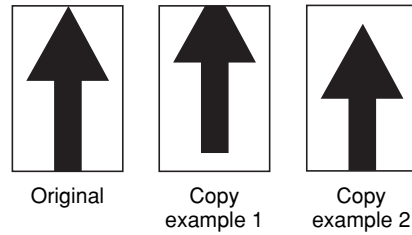
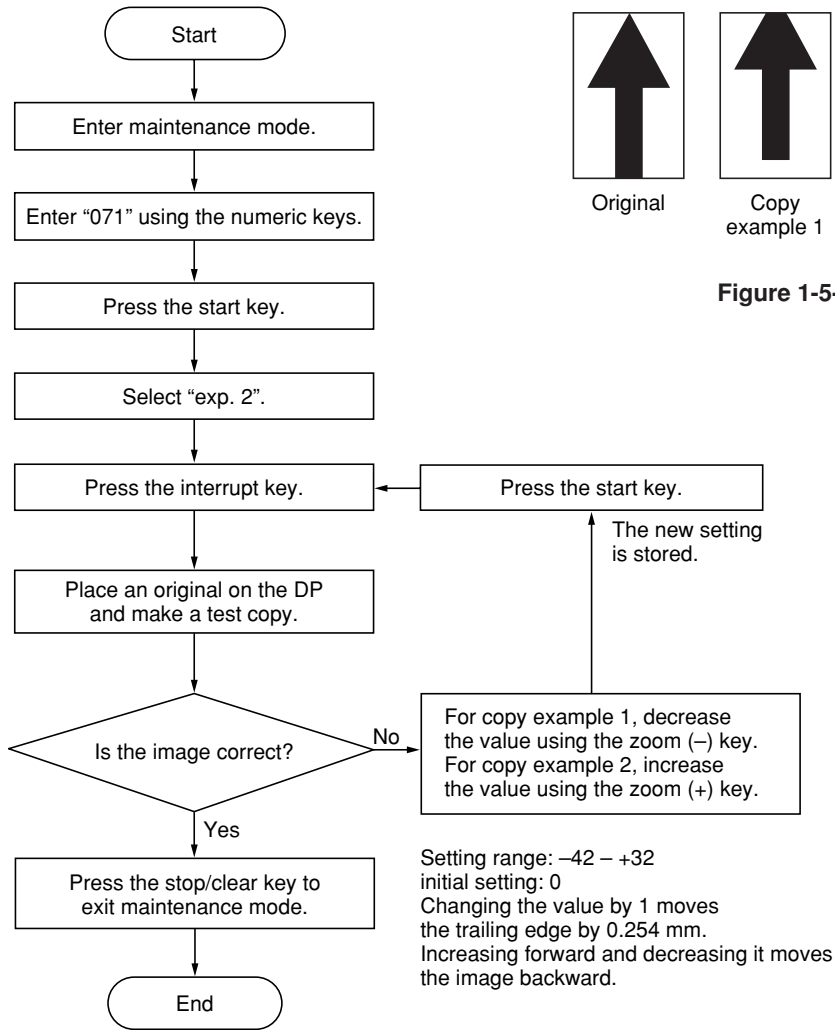
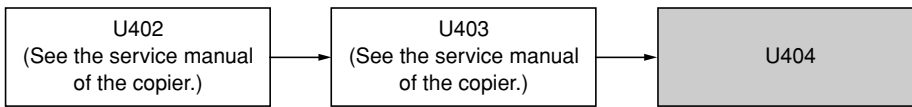


Figure 1-5-8

(6) Adjusting the margins for scanning the original from the DP

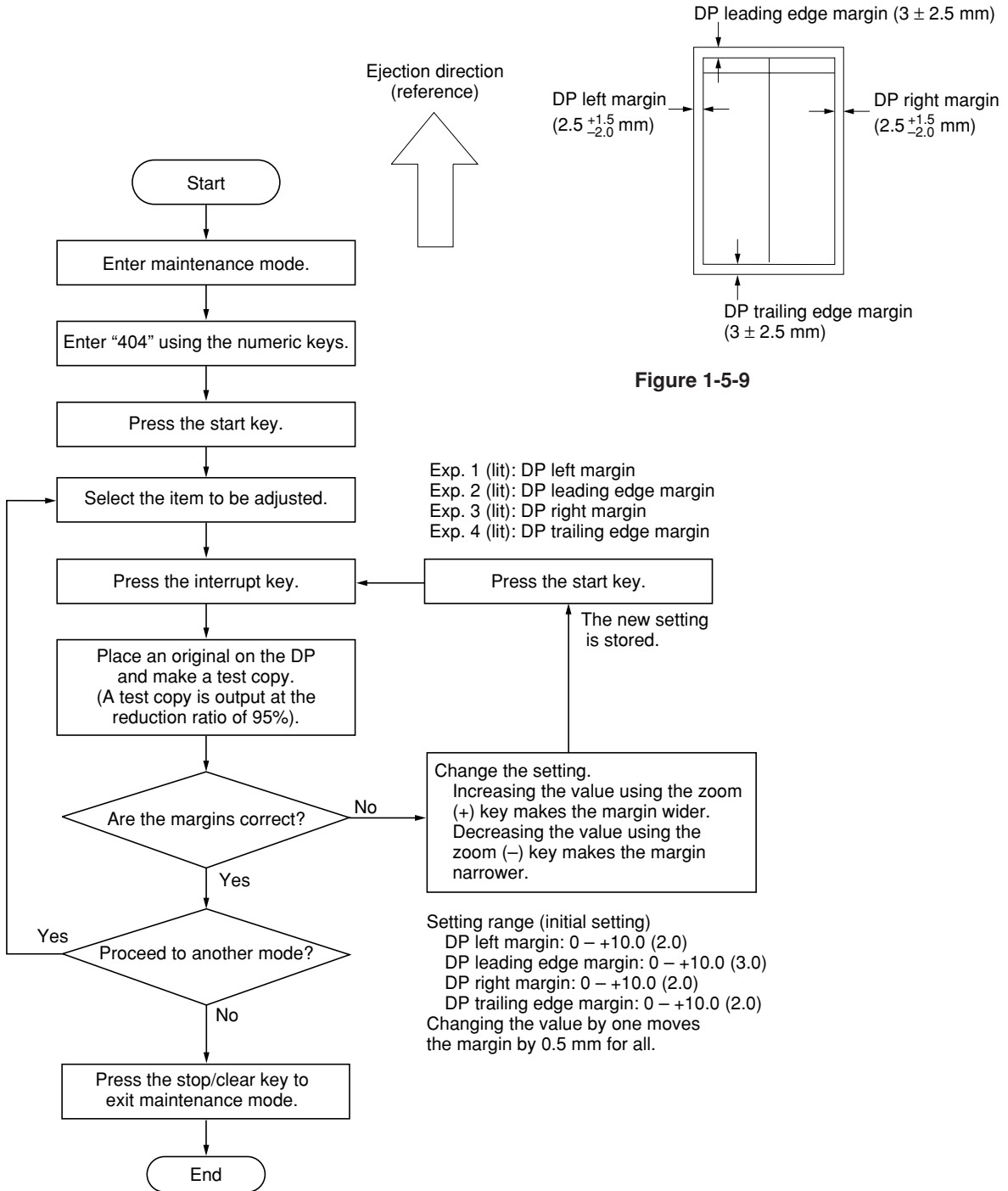
Perform the following adjustment if margins are not correct.



Caution

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

Procedure



2-1-1 Mechanical construction

The DP consists of the original feed section, original conveying section and original switchback section.
 The original feed section conveys an original set on the original table to the original conveying section in synchronization with original scanning of the scanner on the copier.
 The original conveying section conveys an original onto the slit glass and ejects it after scanning is complete.
 The original switchback section reverses an original conveyed from the original conveying section and conveys it again to the original conveying section in the double-sided original mode.

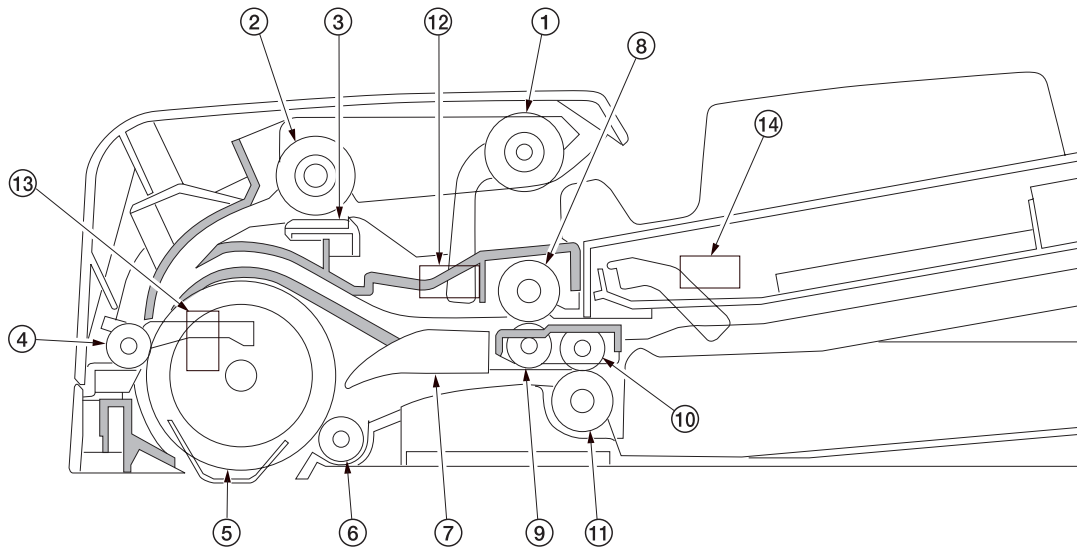


Figure 2-1-1

- | | |
|------------------------------|--------------------------------------|
| ① DP forwarding pulley | ⑨ Switchback pulley |
| ② DP paper feed pulley | ⑩ Exit pulley |
| ③ DP separation pad | ⑪ Exit roller |
| ④ Conveying pulley | ⑫ Original set switch (OSSW) |
| ⑤ Conveying roller | ⑬ DP timing switch (DPTSW) |
| ⑥ Conveying pulley | ⑭ Original switchback switch (OSBSW) |
| ⑦ Switchback feedshift guide | |
| ⑧ Switchback roller | |

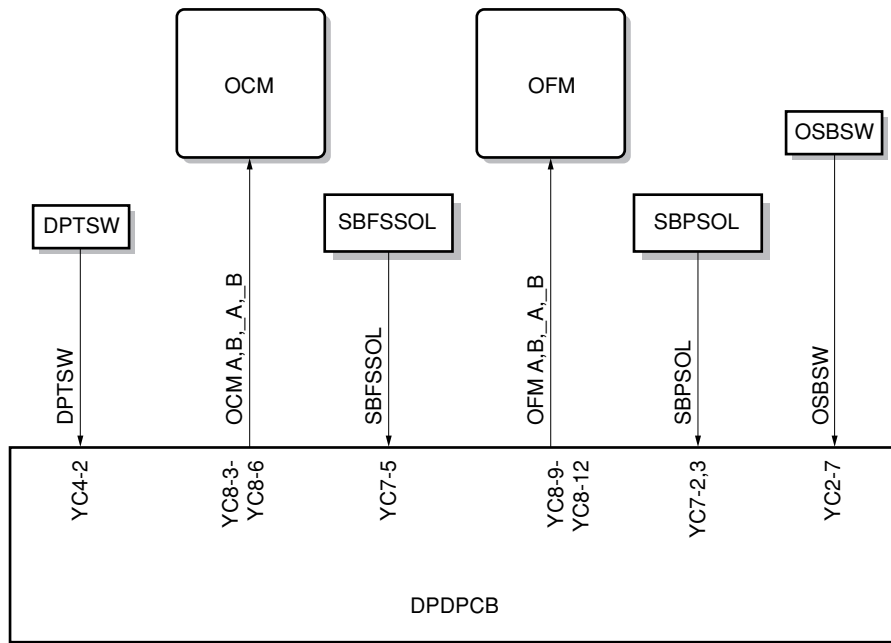
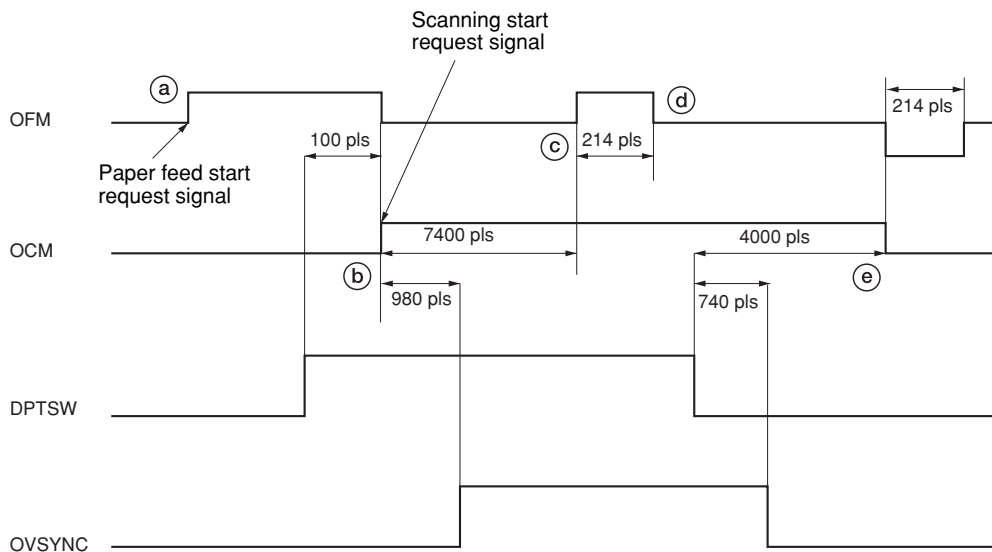


Figure 2-1-2 Block diagram



Timing chart 2-1-1 Original feed (A3, single-sided original mode)

- (a) When the paper feed start request signal is input from the copier, the original feed motor (OFM) turns on and an original is fed.
- (b) 100 pulses after the DP timing switch (DPTSW) turns on, the original feed motor (OFM) turns off and original conveying motor (OCM) turns on.
- (c) 7400 pulses after the original conveying motor (OCM) turns on, the original feed motor (OFM) turns on.
- (d) 214 pulses after the original feed motor (OFM) turns on, the original feed motor (OFM) turns off.
- (e) 4000 pulses after the DP timing switch (DPTSW) turns off, the original conveying motor (OCM) turns off.

(1) Operation of original switchback

In the double-sided original mode, after the first side of an original is scanned, the switchback feedshift guide is activated to switch the conveying path to the switchback tray side and the original is fed to the switchback tray. Then, the original is reversed by the reverse rotation of the original conveying motor (OCM) and conveyed again to the original conveying section. After the second side is scanned, the original is fed temporarily to the switchback tray, is reversed, is conveyed without scanning, and then is ejected to the exit tray. Also the switchback press solenoid (SBPSOL) is activated to release the switchback pulley for preventing original jams in the original switchback section.

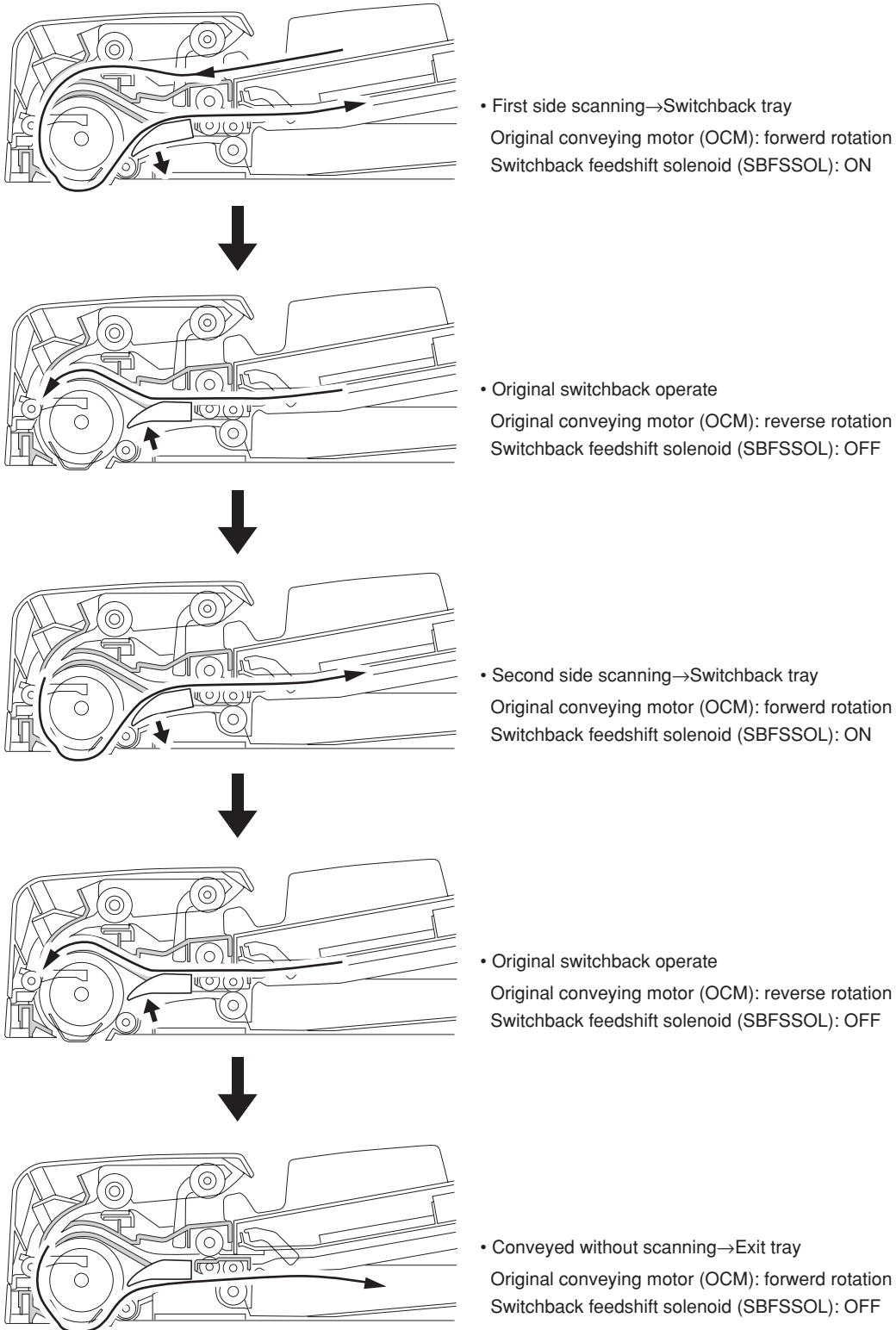
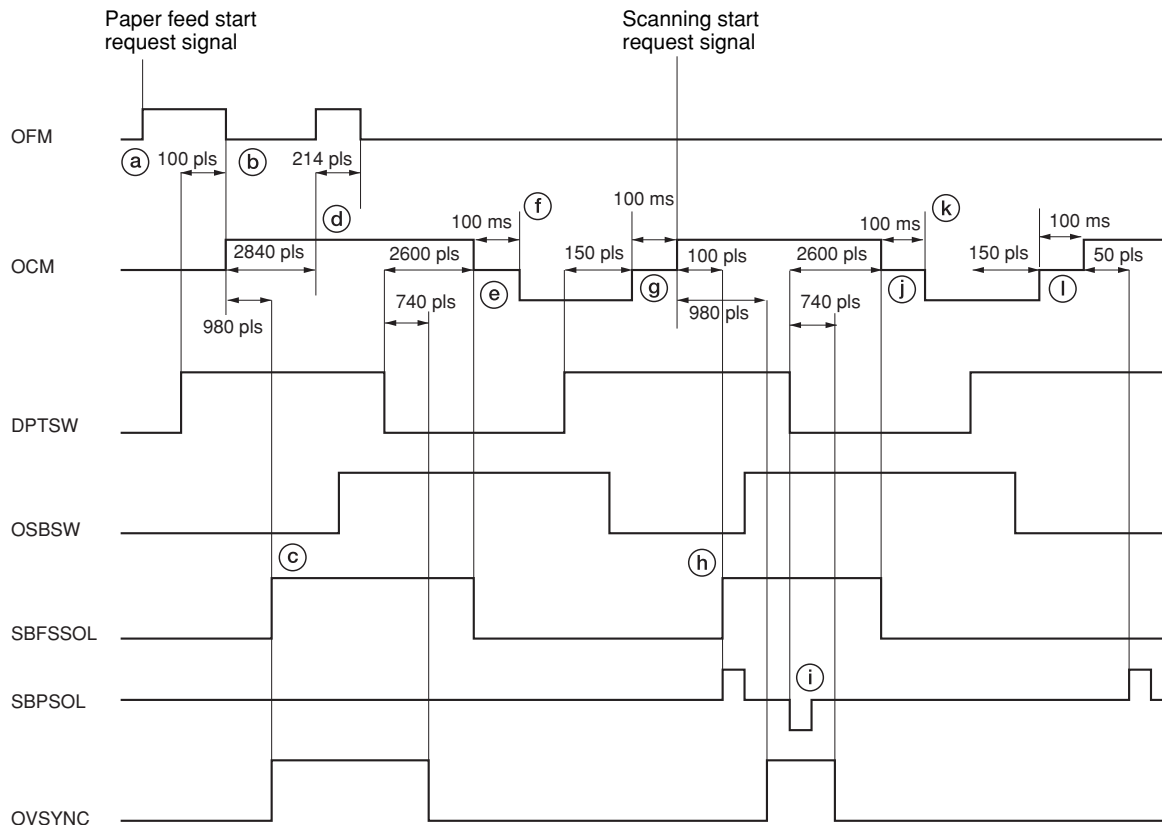


Figure 2-1-3 Operation of original switchback

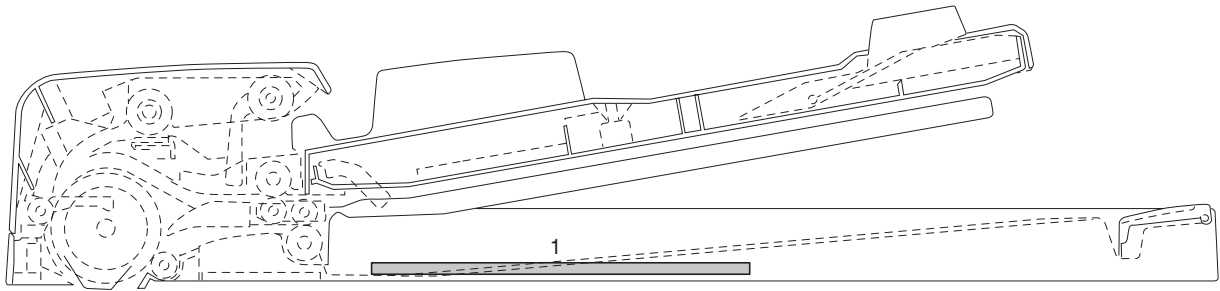


Timing chart 2-1-2 Original feed (A4, double-sided original mode)

- (a) When the paper feed start request signal is input from the copier, the original feed motor (OFM) turns on and an original is fed.
- (b) 100 pulses after the DP timing switch (DPTSW) turns on, the original feed motor (OFM) turns off and original conveying motor (OCM) rotates forward.
- (c) 980 pulses after the original conveying motor (OCM) turns on, the switchback feedshift solenoid (SBFSSOL) turns on.
- (d) 2840 pulses after the original conveying motor (OCM) turns on, the original feed motor (OFM) turns on for 214 pulses.
- (e) 2600 pulses after the DP timing switch (DPTSW) turns on, the original feed motor (OFM) and switchback feedshift solenoid (SBFSSOL) turns off.
- (f) 100 pulses after the original conveying motor (OCM) turns off, the original conveying motor (OCM) rotates reverse.
- (g) 150 pulses after the DP timing switch (DPTSW) turns on, the original conveying motor (OCM) turns off, and 100 ms later, the motor turns on (forward).
- (h) 100 pulses after the original conveying motor (OCM) turns on, the switchback feedshift solenoid (SBFSSOL) and switchback pressure (SBPSOL) turns on.
- (i) The DP timing switch (DPTSW) turns off at the same time, the switchback pressure (SBPSOL) turns off.
- (j) 2600 pulses after the DP timing switch (DPTSW) turns off, the original conveying motor (OCM) and switchback feedshift solenoid (SBFSSOL) turns off.
- (k) 100 pulses after the original conveying motor (OCM) turns off, the original conveying motor (OCM) rotates reverse.
- (l) 150 pulses after the DP timing switch (DPTSW) turns on, the original conveying motor (OCM) turns off, and 100 ms later, the motor turns on (forward).

2-2-1 Electrical parts layout

(1) PCBs





 Machine front  Machine inside  Machine rear

Figure 2-2-1 PCBs

- 1. DP driver PCB (DPDPCB) Controls electrical components of the DP.

(2) Switches and sensors

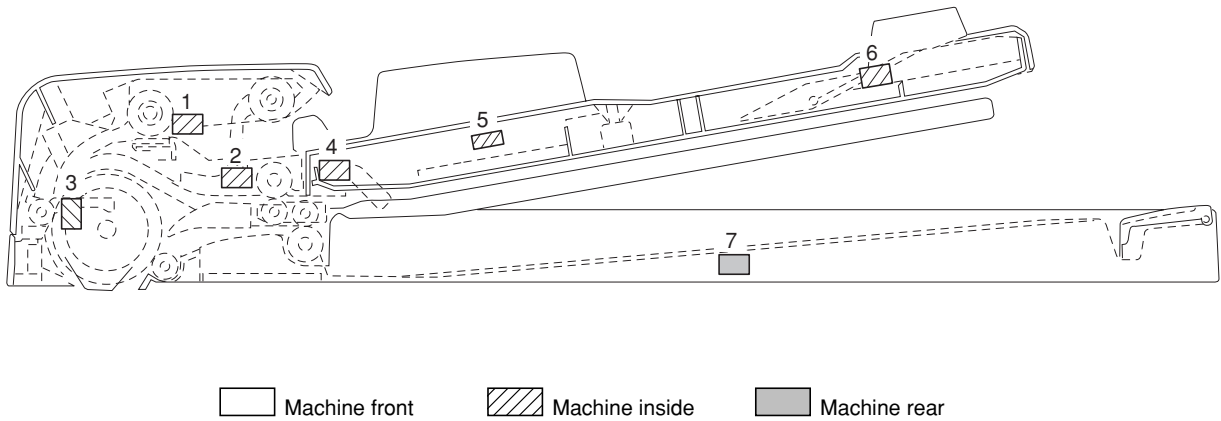


Figure 2-2-2 Switches and sensors

- 1. DP original cover switch (DPOCSW) Breaks the safety circuit when the DP original cover is opened; resets original misfeed detection.
- 2. Original set switch (OSSW) Detects the presence of an original.
- 3. DP timing switch (DPTSW) Detects the original scanning timing.
- 4. Original switchback switch (OSBSW) Detects an original misfeed in the original switchback section.
- 5. Original size width switch (OSWSW) Detects the width of the original.
- 6. Original size length switch (OSLSW) Detects the length of the original.
- 7. DP open/close switch (OPOCSW) Detects the opening/closing of the DP.

(3) Motors and solenoids

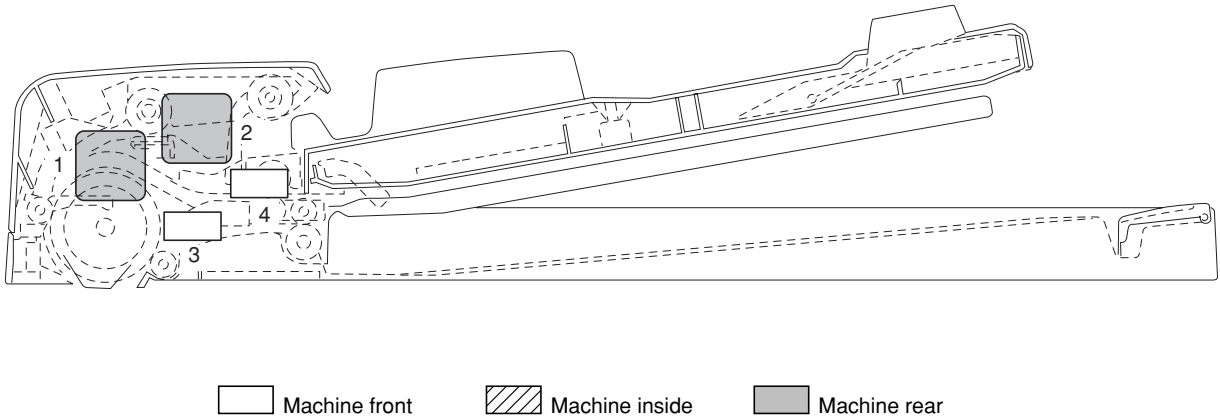


Figure 2-2-3 Motors and solenoids

- 1. Original feed motor (OFM) Drives the original feed section.
- 2. Original conveying motor (OCM) Drives the original conveying and switchback sections.
- 3. Switchback feedshift solenoid (SBFSSOL) Operates the switchback feedshift guide.
- 4. Switchback pressure solenoid (SBPSOL) ... Operates the switchback pulley.

2-3-1 DP driver PCB

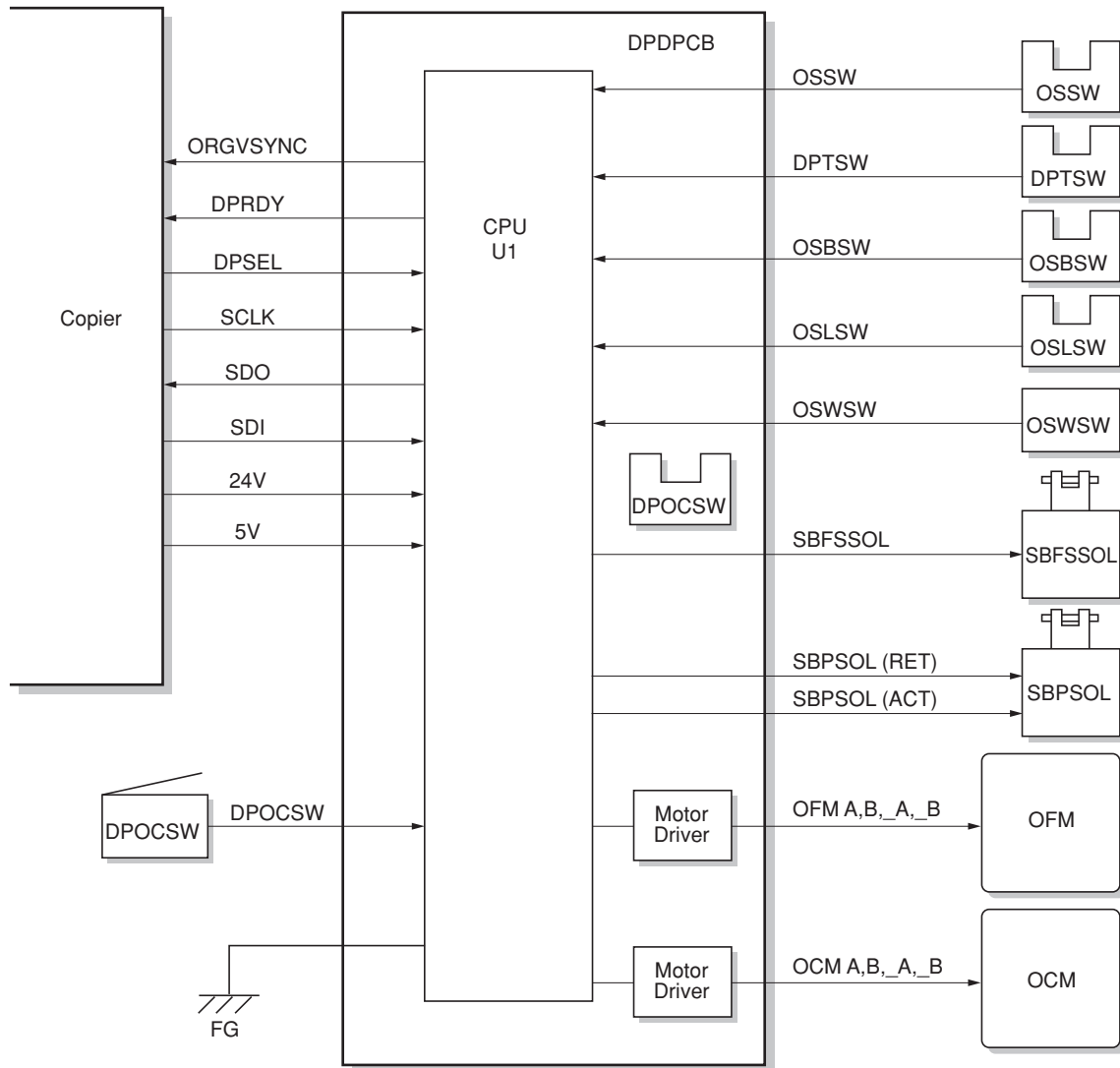


Figure 2-3-1 DP driver PCB block diagram

The DP driver PCB (DPDPCB) is controlled by the engine PCB (EPCB) in the copier, and the engine PCB (EPCB) uses serial communication to control input and output of each motor, solenoid, and switch of the DP through the CPU (U1) equipped with a function of bidirectional serial/parallel conversion of 8-bit data.

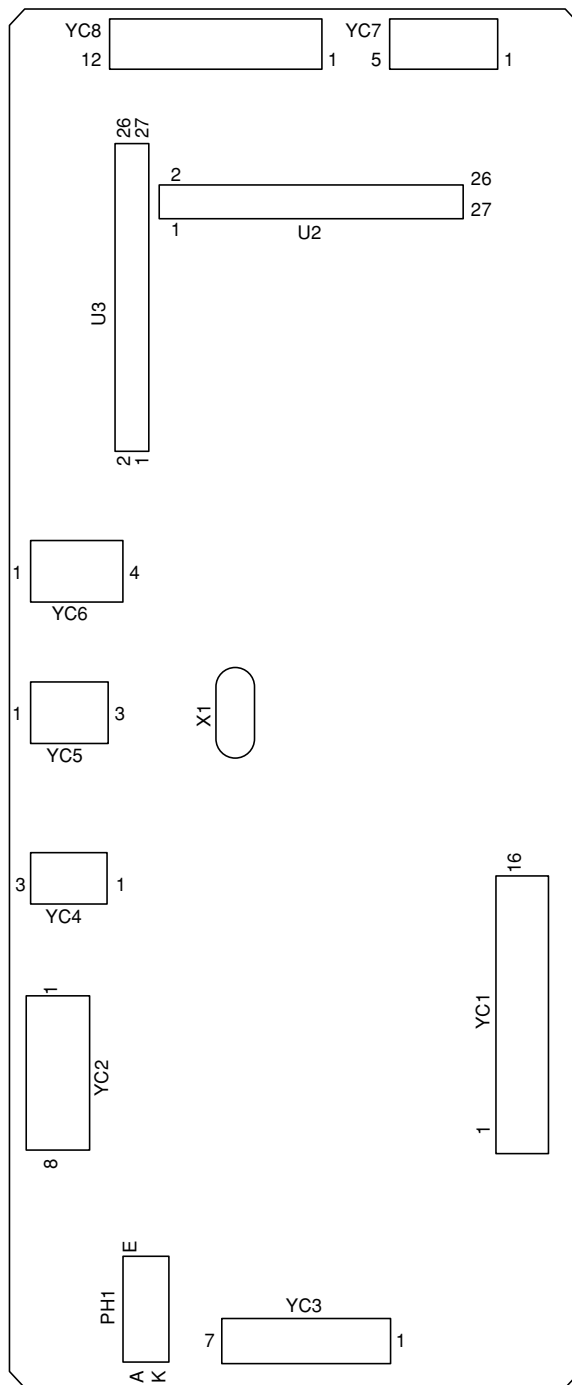


Figure 2-3-2 DP driver PCB silk-screen diagram

| Connector | Pin No. | Signal | I/O | Description |
|---|---------|--------------|-----|--------------------------------------|
| YC1 | 1 | FG | - | Ground |
| Connected to the copier | 2 | 24 V | I | 24 V DC power supply from copier |
| | 3 | 24 V | I | 24 V DC power supply from copier |
| | 4 | P.GND | - | Ground |
| | 5 | P.GND | - | Ground |
| | 6 | SRESETN | I | Reset signal from copier |
| | 7 | ORGVSYNC | O | DP original scanning interval signal |
| | 8 | DPRDY | O | DP READY signal |
| | 9 | DPSEL | I | DP SEL signal |
| | 10 | DPCLK | I | DP clock signal |
| | 11 | SDI | I | DP serial communication reception |
| | 12 | SDO | O | DP serial communication transmission |
| | 13 | FG | - | Ground |
| | 14 | FG | - | Ground |
| | 15 | S.GND | - | Ground |
| | 16 | 5 V | I | 5 V DC power supply from copier |
| YC2 | 1 | 5 V | O | 5 V DC power supply for OSWSW |
| Connected to the original size width switch, original size length switch and original switchback switch | 2 | OSWSW | I | OSWSW on/off |
| | 3 | S.GND | - | Ground |
| | 4 | OSLSW | I | OSLSW on/off |
| | 5 | 5 V | O | 5 V DC power supply for OSLSW |
| | 6 | 5 V | O | 5 V DC power supply for OSBSW |
| | 7 | OSBSW | I | OSBSW on/off |
| | 8 | S.GND | - | Ground |
| | YC4 | 1 | 5 V | O |
| Connected to the DP timing switch | 2 | DPTSW | I | DPTSW on/off |
| | 3 | S.GND | - | Ground |
| YC5 | 1 | 5 V | O | 5 V DC power supply for OSSW |
| Connected to the original set switch | 2 | OSSW | I | OSSW on/off |
| | 3 | S.GND | - | Ground |
| YC6 | 1 | 24 V | O | 24 V DC power supply for DPOCSW |
| Connected to the DP original cover switch | 2 | Reserve | - | Not used |
| | 3 | Reserve | - | Not used |
| | 4 | 24 V | I | 24 V DC power supply |
| YC7 | 1 | 24 V | O | 24 V DC power supply for SBPSOL |
| Connected to the switchback pressure solenoid and switchback feedshift solenoid | 2 | SBPSOL (ACT) | O | SBPSOL (ACT) on/off |
| | 3 | SBPSOL (RET) | O | SBPSOL (RET) on/off |
| | 4 | 24 V | O | 24 V DC power supply for SBFSSOL |
| | 5 | SBFSSOL | O | SBFSSOL on/off |

| Connector | Pin No. | Signal | I/O | Description |
|---|---------|----------|-----|------------------------------|
| YC8 | 1 | OFM 24 V | O | 24 V DC power supply for OFM |
| Connected to the original feed motor and original conveying motor | 2 | OFM 24 V | O | 24 V DC power supply for OFM |
| | 3 | OFM A | O | OFM control signal (A) |
| | 4 | OFM B | O | OFM control signal (B) |
| | 5 | OFM _A | O | OFM control signal (_A) |
| | 6 | OFM _B | O | OFM control signal (_B) |
| | 7 | OCM 24 V | O | 24 V DC power supply for OCM |
| | 8 | OCM 24 V | O | 24 V DC power supply for OCM |
| | 9 | OCM A | O | OCM control signal (A) |
| | 10 | OCM B | O | OCM control signal (B) |
| | 11 | OCM _A | O | OCM control signal (_A) |
| | 12 | OCM _B | O | OCM control signal (_B) |

Maintenance parts list

| Maintenance part name | | Part No. | Fig. No. | Ref. No. |
|-----------------------------|---------------------------|----------|----------|----------|
| Name used in service manual | Name used in parts list | | | |
| DP forwarding pulley | PULLEY, LEADING FEED ADF | 36211110 | 3 | 47 |
| DP paper feed pulley | PULLEY, PAPER FEED | 3BR07040 | 3 | 44 |
| DP separation pad | PAD, SEPARATION | 3HL07100 | 3 | 11 |
| Friction plate | FRICITION PLATE, CASSETTE | 2A107060 | 3 | 36 |
| Conveying roller | CONVEYING ROLLER, ASS'Y | 3HL00010 | 4 | 1 |
| Conveying pulley | PULLEY CONVEYING | 3HL08080 | 3,4 | 32,8 |
| Reading guide | GUIDE READING | 3HL08040 | 2 | 19 |
| Switchback roller | ROLLER LOOP | 3HL10030 | 4 | 15 |
| Switchback pulley | PULLEY LOOP | 3HL10140 | 4 | 25 |
| Exit roller | ROLLER EJECT | 3HL10100 | 4 | 21 |
| Exit pulley | PULLEY CONVEYING | 3HL08080 | 4 | 8 |
| Original holder mat | MAT, ORIGINAL HOLDER | 2A612810 | 1 | 14 |

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 | DP forwarding pulley | Replace or clean | Every 100,000 counts | Clean with alcohol when visiting the user. | 1-5-3 |
| | DP paper feed pulley | Replace or clean | Every 100,000 counts | Clean with alcohol when visiting the user. | 1-5-3 |
| | DP separation pad | Replace or clean | Every 100,000 counts | Clean with alcohol when visiting the user. | 1-5-5 |
| | Friction plate | Clean | Every service | Clean with alcohol when visiting the user. | |



| Section | Maintenance part/location | Method | Maintenance cycle | Points and cautions | Page |
|----------------------------|---------------------------|----------------|-------------------|---|------|
| Original conveying section | Conveying roller | Clean | Every service | Clean with alcohol or a dry cloth. | |
| | Conveying pulley | Check or clean | Every service | Clean with alcohol or a dry cloth if it is dirty. | |
| | Reading guide | Clean | Every service | Clean with alcohol or a dry cloth. | |

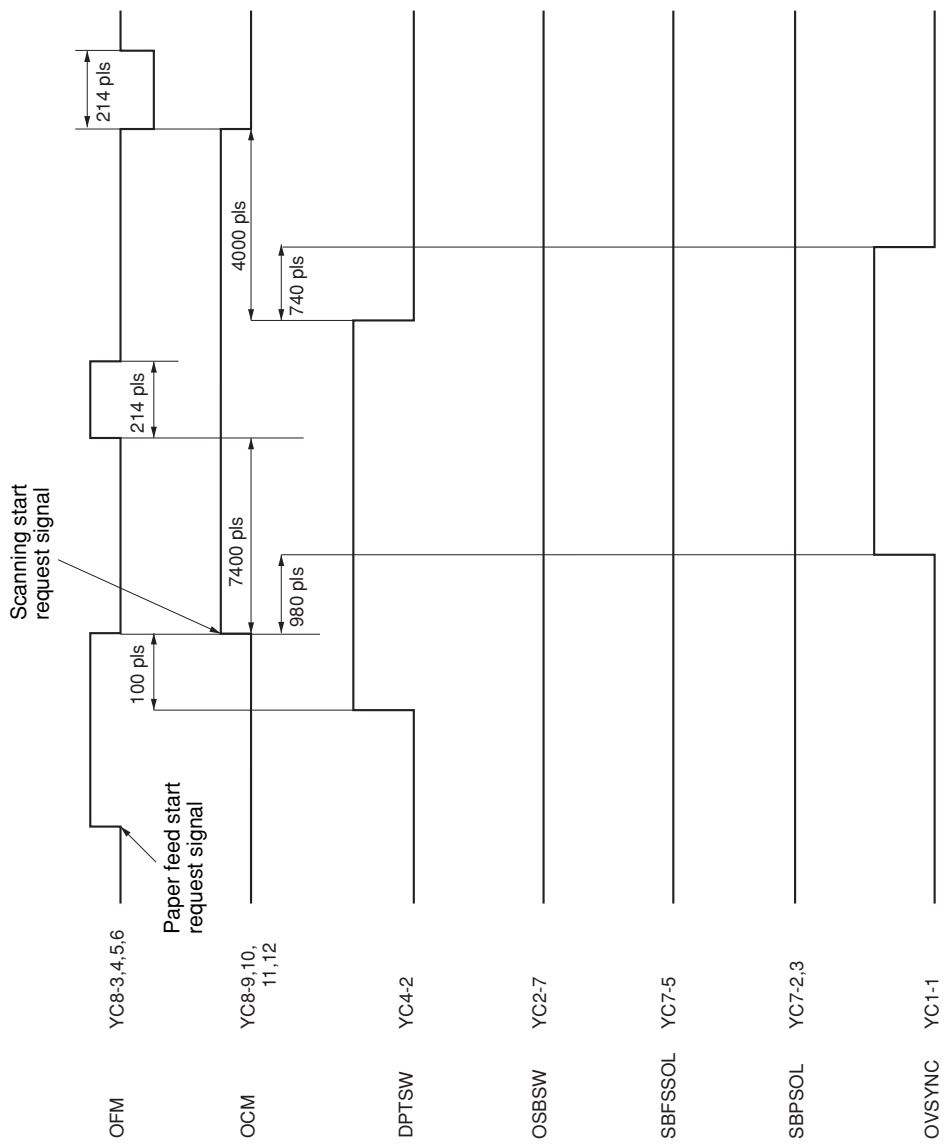


| Section | Maintenance part/location | Method | Maintenance cycle | Points and cautions | Page |
|-----------------------------|---------------------------|----------------|-------------------|---|------|
| Original Switchback section | Switchback roller | Clean | Every service | Clean with alcohol or a dry cloth. | |
| | Switchback pulley | Check or clean | Every service | Clean with alcohol or a dry cloth if it is dirty. | |
| | Exit roller | Clean | Every service | Clean with alcohol or a dry cloth | |
| | Exit 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 |
|---------|---------------------------|--------|-------------------|------------------------------------|------|
| Other | Original holder mat | Clean | Every service | Clean with alcohol or a dry cloth. | |

Timing chart No. 1 Original size A3/11" x 17", 1 sheet, single-sided mode



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