

# **DUAL JOB FEEDER**

## **(Machine Code: A610)**

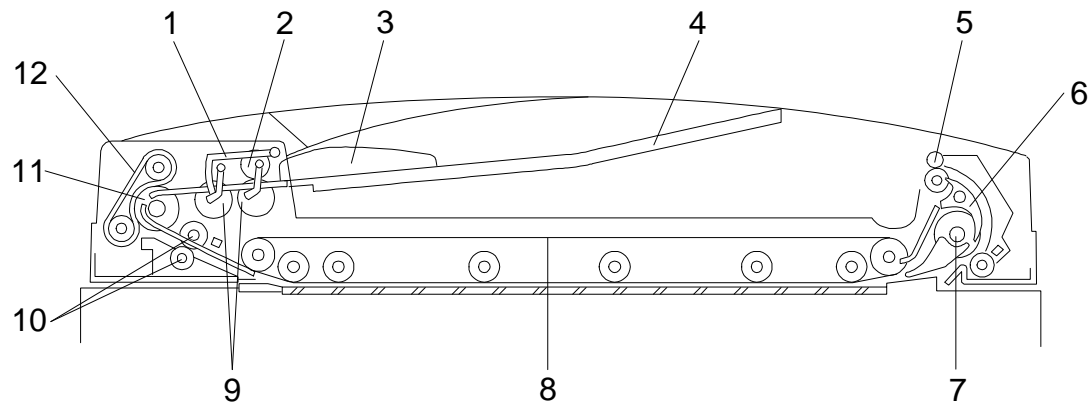
# 1. SPECIFICATIONS

Original Feed Mode:	Automatic document feed mode Automatic reverse document feed mode Semi-automatic document feed mode Combine 2 originals mode Mixed sized mode Preset mode
Original Size and Weight:	Thick original mode (default mode) Use this setting for normal paper types Maximum: A3, 11" x 17" Minimum: B6, 5 1/2" x 8 1/2" Weight: 52 ~ 128 g/m <sup>2</sup> (14-34 lb)  Thin original mode Maximum: A3, 11" x 17" Minimum: B6, 5 1/2" x 8 1/2" Weight: 40 ~ 128 g/m <sup>2</sup> (11-34 lb)  Auto reverse mode Maximum: A3, 11" x 17" Minimum: B6 (lengthwise) Weight: 52 ~ 105 g/m <sup>2</sup> (14-28 lb)  Combine two originals mode Maximum: A4 (sideways), 8 1/2" x 11" (sideways) Minimum: B5 (sideways), 5 1/2" x 8 1/2" (sideways) Weight: 52 ~ 128 g/m <sup>2</sup> (14-34 lb)  Mixed size Mode Maximum: A3, 11" x 17" Minimum: B5, 8 1/2" x 11" Weight: 52 ~ 80 g/m <sup>2</sup> (14-21 lb)
Original Table Capacity:	50 sheets at 80 g/m <sup>2</sup> (21 lb) (or stack height of less than 5 mm)
Original Standard Position:	Rear left
Original Separation:	Feed and friction belt
Original Transport:	One flat belt

Power Source:	DC24 V from the copier, 2.5 A (average)
Power Consumption:	70W
Dimensions (W x D x H):	680 x 522 x 133 mm (26.8" x 20.0" x 4.6")
Weight:	14.5 kg (32.0 lb)

# 2. COMPONENT LAYOUT

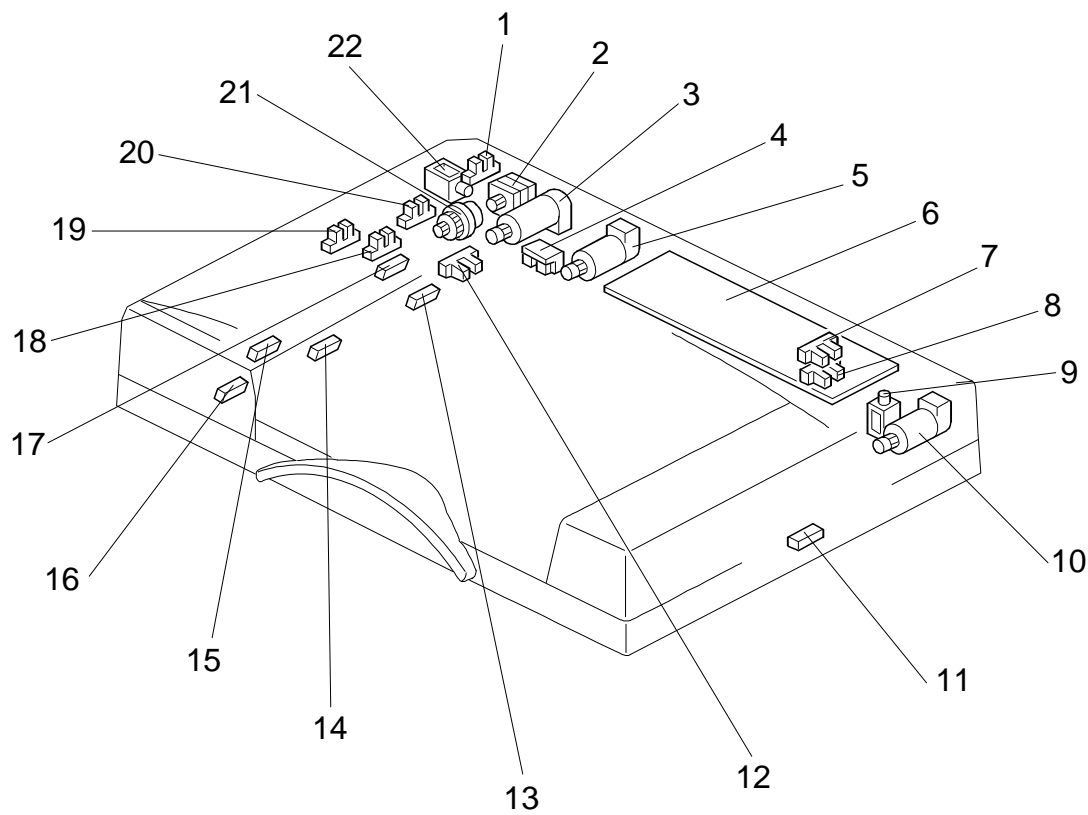
## 2.1 MECHANICAL COMPONENT LAYOUT



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- |                     |                      |
|---------------------|----------------------|
| 1. Original Stopper | 7. Inverter Roller   |
| 2. Press Roller     | 8. Transport Belt    |
| 3. Side Fence       | 9. Pick-up Rollers   |
| 4. Original Table   | 10. Pull-out Rollers |
| 5. Exit Roller      | 11. Feed Roller      |
| 6. Inverter Pawl    | 12. Friction Belt    |

2.2 ELECTRICAL COMPONENT LAYOUT



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- |                              |                               |
|------------------------------|-------------------------------|
| 1. Feed-in Cover Open Sensor | 12. Pulse Count Sensor        |
| 2. Friction Belt Motor       | 13. Registration-2 Sensor     |
| 3. Feed-in Motor             | 14. Original Width-1 Sensor   |
| 4. Indicator Panel Lamps     | 15. Original Width-2 Sensor   |
| 5. Belt Drive Motor          | 16. Original Width-3 Sensor   |
| 6. DF Main Board             | 17. Registration-1 Sensor     |
| 7. DF Position Sensor        | 18. Original Set Sensor       |
| 8. APS Start Sensor          | 19. Original Feed Sensor      |
| 9. Inverter Solenoid         | 20. Friction Belt Turn Sensor |
| 10. Feed-out Motor           | 21. Feed-in Clutch            |
| 11. Feed-out Sensor          | 22. Stopper Solenoid          |

### 3. ELECTRICAL COMPONENT DESCRIPTION

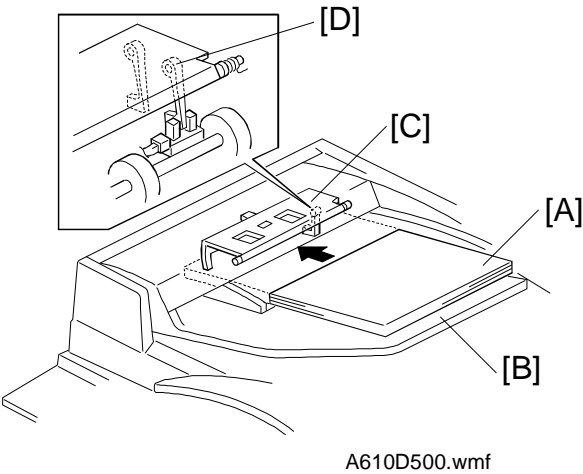
Refer to the electrical component layout on the reverse side of the point-to-point diagram for symbols and index numbers.

Symbol	Name	Function	Index No.
<b>Motors</b>			
M1	Friction Belt	Drives the friction belt.	2
M2	Feed-in	Drives the feed-in system (pick-up, feed, pull-out rollers)	3
M3	Belt Drive	Drives the transport belt.	5
M4	Feed-out	Drives the feed-out and the inverter system.	10
<b>Sensors</b>			
S1	Feed-in Cover Open	Detects whether or not the feed-in cover is open.	1
S2	DF Position	Informs the CPU whether the DJF is in the up or down position.	7
S3	APS Start	Informs the CPU when the DJF is being closed so that the original size sensors in the main body can check the original size (in platen mode).	8
S4	Feed-out	Checks for original misfeeds and sets original stop timing when in auto-reverse mode.	11
S5	Pulse Count	Counts the pulses generated by the pulse generator disc to determine the original length.	12
S6	Registration-2	Detects the leading edge of the original to turn off the feed-in clutch and to change the feed-in motor speed. Also detects the original length.	13
S7	Original Width-1	Detects the original width.	14
S8	Original Width-2	Detects the original width.	15
S9	Original Width-3	Detects the original width.	16
S10	Registration-1	Detects the original length and original jam by detecting the trailing edge of the original.	17
S11	Original Set	Detects if originals have been placed on the feed table.	18
S12	Original Feed	Detects if the originals have reached the feed roller or not.	19
S13	Friction Belt Turn	Counts the pulses generated by the pulse generator disk to monitor the friction belt motor.	20

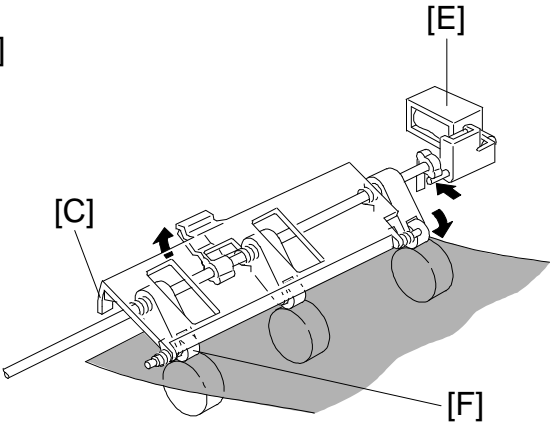
Dual Job Feeder

Symbol	Name	Function	Index No.
<b>Solenoids</b>			
SOL1	Inverter	Inverts the original when copying two-sided originals.	9
SOL2	Stopper	Lifts the original stopper and lowers the press roller to feed the set of originals to the feed roller.	22
<b>PCBs</b>			
PCB1	DF Main Board	Controls all DJF functions.	6
<b>Magnetic Clutch</b>			
CL1	Feed-in	Transmits the feed-in motor drive to the pick-up, feed, and pull-out rollers.	21
<b>Indicator Lamps</b>			
L1	Ready	Informs the operator that the DJF is in the down position.	4
	Auto	Informs the operator that the auto feed mode is available.	

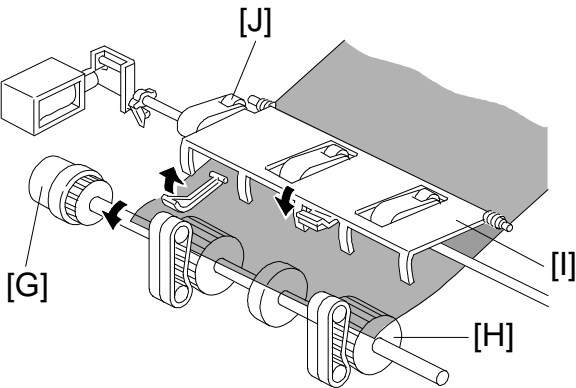
# 4. ORIGINAL PICK-UP MECHANISM



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When an original [A] is placed on the original table [B], the leading edge is stopped by the stopper [C], and the feeler [D] is pushed out of the original set sensor. The Insert Original indicator light goes out and the DJF informs the copier's CPU that the originals have been placed on the original table.

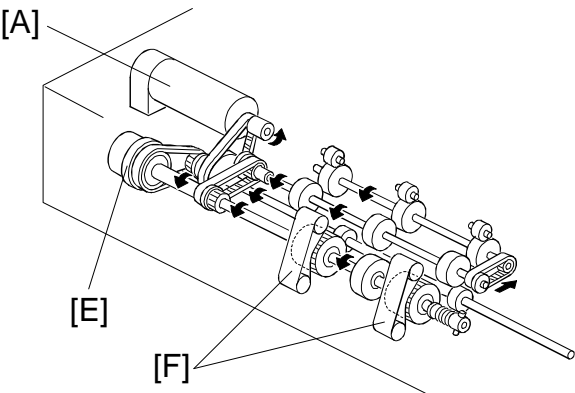
When the Start key is pressed, the copier's CPU sends the feed-in signal to the DJF. On receipt of this signal, the stopper solenoid [E] activates to raise the stopper, which allows the originals to be fed in, and to lower the press rollers [F] to press the originals against the pick-up rollers, as shown.

The feed-in clutch [G] also activates when the DJF receives the feed-in signal. 200 ms after the feed-in clutch activates, the feed-in motor feeds all originals to the feed roller [H].

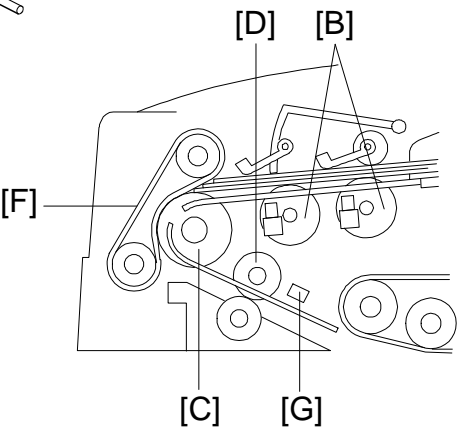
When the originals reach the feed roller, the stopper solenoid de-activates to lower the original stopper [I] and to lift up the press rollers [J].



# 5. SEPARATION AND FEED MECHANISM



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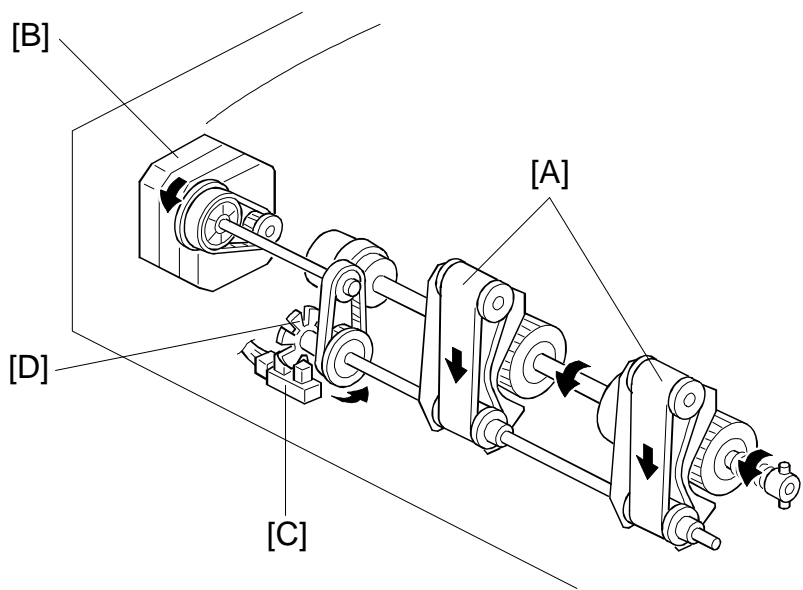
Drive from the feed-in motor [A] is transmitted to the pick-up [B], feed [C], and pull-out rollers [D], through the feed-in clutch [E], as shown. The feed roller and the friction belts [F] are used to feed and separate the originals.

Original feed starts when the feed roller starts turning to advance the bottom original of the stack. The feed roller moves the original past the separation belt because the driving force of the feed roller is greater than the resistance of the friction belt. The friction belt prevents multiple feeds because the resistance of the friction belt is greater than the friction between original sheets. At this time, the feed-in motor rotates slowly to ensure proper feed and separation of the original.

When the leading edge of the original activates registration sensor-2 [G], the feed-in clutch turns off and the motor rotates more quickly. To reduce mechanical load, only the pull-out rollers are driven to feed the original to the exposure glass.

To prepare the next original, it is separated in the same manner as explained above, and stopped when the leading edge is detected by the registration sensor-2 [G]. When it is time to feed this sheet to the exposure glass, the feed-in motor rotates at high speed.

# 6. FRICION BELT DRIVE MECHANISM



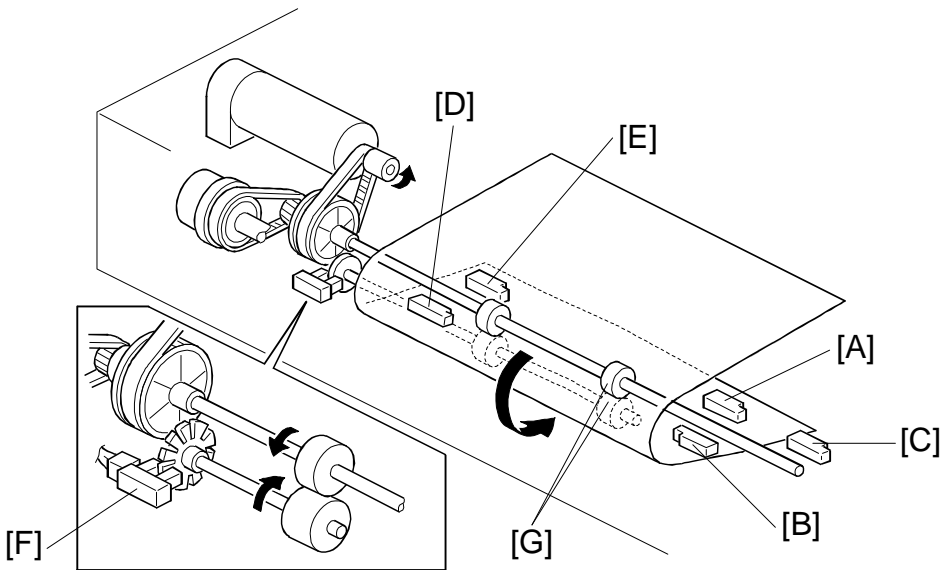
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The friction belts [A] are driven by the friction belt drive motor [B] through timing belts, as shown.

When the Start key is pressed, the friction belts are not rotated (the motor is electrically ON but the motor does not turn as the voltage is too low; see the timing chart in section 13.1). As the leading edge of the original activates the registration sensor-2, the friction belts rotate in the reverse direction to reverse out the next original from in between the friction belts and feed rollers. This results in less of a chance for originals to be damaged or become dirty. Also, the area of the friction belt that contacts the feed roller or the original changes, to prevent multiple feeding.

The friction belt turn sensor [C] counts the pulses generated by the pulse generator disk [D] on the friction belt shaft. The sensor detects friction belt motor error conditions.

## 7. ORIGINAL SIZE DETECTION



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The DJF detects original width through the on/off combination of the three original width sensors-1 [A], -2 [B], -3 [C]. It also detects the original length with the registration sensors-1 [D], -2 [E] and the pulse count sensor [F].

The DJF CPU counts the pulses between registration sensor-2 [E] on timing, and registration sensor-1 [D] off timing. Based on this pulse count, the CPU determines the original length.

The reasons for using two registration sensors are:

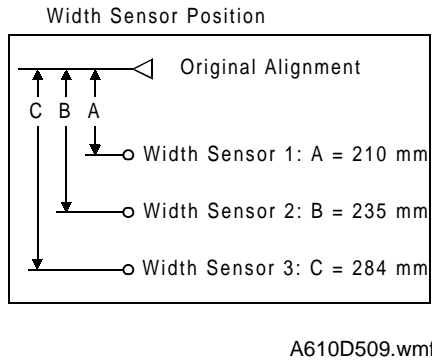
- 1) Registration sensor-2 [E] is used to stop the pre-fed original, which waits until the previous original is fed out. For precise control, the original stop position must be after the pull-out rollers [G]. Therefore, registration sensor-2 is placed after the pull-out rollers.
- 2) Registration sensor-1 [D] checks the trailing edge of the original. This check is used to place the original in the correct position on the exposure glass. Because this is a fast feeding mechanism, some distance is required between the sensor and the original scale. If sensor-2 was used to detect the stop timing, there would not be enough time to stop the original at the correct place. Therefore, registration sensor-1 is used for this; it is placed 34.9 mm before sensor-2.

(The diagram at the start of section 8-1 shows the position of the sensors with respect to the rollers.)

Width Sensor			Upper: Original Size Lower: Threshold Level for Each Size (Pulse Count)
1	2	3	
○	○	○	<div><div>A4S</div><div>A3</div><div>231 mm (78)</div></div>
○	○	×	<div><div>B5S</div><div>LTS</div><div>B4</div><div>11" x 15"</div><div>A3</div><div>201 mm (68)</div><div>236 mm (80)</div><div>377 mm (136)</div><div>399 mm (145)</div></div>
○	×	×	<div><div>B6S</div><div>A5S</div><div>B6 L</div><div>A5 L</div><div>B5 L</div><div>LT L</div><div>A4 L</div><div>B4</div><div>A3</div><div>143 mm (44)</div><div>166 mm (54)</div><div>201 mm (68)</div><div>231 mm (78)</div><div>271 mm (95)</div><div>294 mm (103)</div><div>316 mm (115)</div><div>387 mm (140)</div></div>
or			
×	×	×	

○ : Paper Present  
× : No Paper  
S : Sideways  
L : Lengthwise

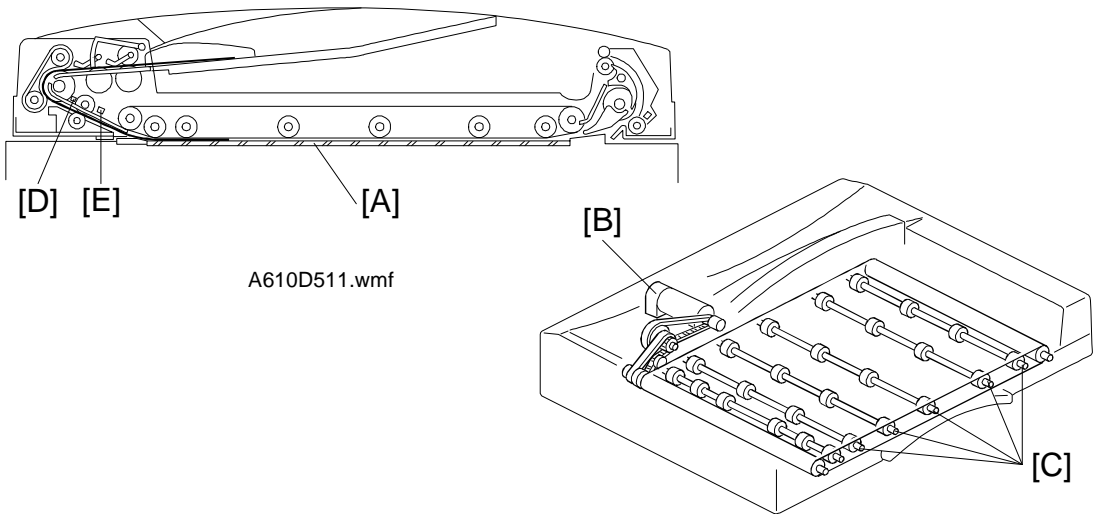
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The original size is determined by the combination of the detected original width and length as shown above. Note that when only width sensor 1 detect that paper is preset, or if all width sensors are off, the original size is detected only by the pulse count sensor data.

## 8. TRANSPORT MECHANISM

### 8.1 BASIC OPERATION



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The transport belt [A] is driven by an independent motor called the belt drive motor [B]. The belt drive motor starts rotating soon after the copier sends an original feed-in signal. Inside the transport belt are five pressure roller shafts [C], which achieve the proper amount of pressure between the belt and the original.

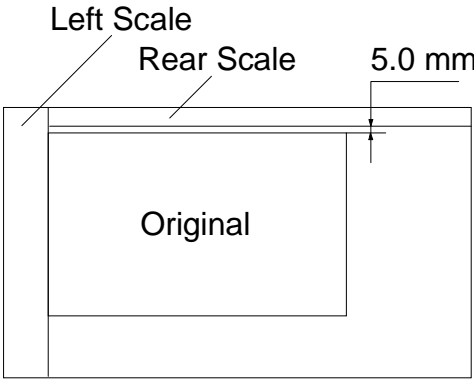
When the leading edge of the original reaches the exposure glass, the original is transported by the transport belt (the belt drive motor turns on 200 ms after the start key is pressed).

When the trailing edge of the original passes through registration sensor-1 [D], the feed-in motor turns off. When the trailing edge of the original passes through registration sensor-2 [E], the belt drive motor gradually decreases its speed to stop the original at the proper place on the exposure glass.

100 ms after the belt drive motor turns off, the feed-in motor turns on until the next original activates registration sensor-2 [E], the next original waits until the first original copy job is complete. This operation reduces the original feed in time.

When the scanner reaches the return position, the copier's CPU sends the feed-out and feed-in signals to the DJF CPU, and the feed-in motor is activated again to change the original.

If the original is smaller than A4 sideways, the original just copied is transported to the right side of the exposure glass then waits until the next original copy job is completed. Then the previous original is delivered. This operation also reduces the original feed-in time.

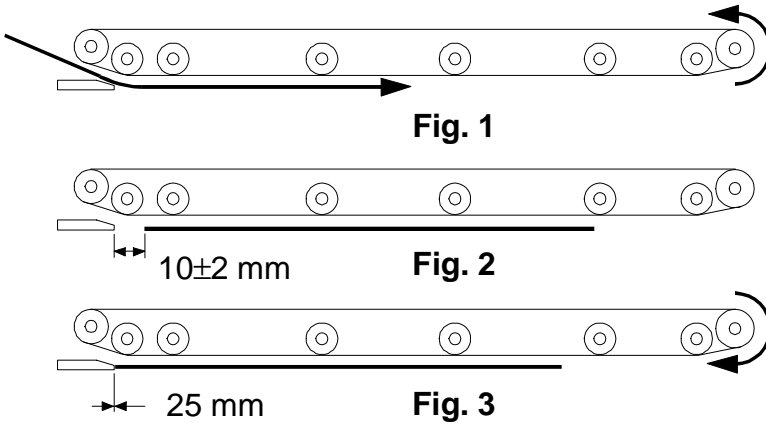


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Since the copier's original alignment position is at the left rear corner (not in the center), the originals fed from the DJF must also be at this position. But if the original was to be fed along the rear scale, original skews, jams or wrinkling, may occur.

To prevent such problems, the original transfer position is set to 5.0 mm away from the rear scale as shown. The correction for this 5.0 mm gap is compensated for by the base copier's optics unit.

## 8.2 THIN/THICK ORIGINAL MODES



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This document feeder has two different ways of stopping originals on the exposure glass at the correct position. They are thin original mode and thick original mode. The user can select the desired settings to match the type of original being used.

### 1. Thick Original Mode

When thick original mode is selected, the belt drive motor remains energized to carry the original approximately 10 mm past the left scale (Figures 1 and 2). Then, the belt drive motor pauses and reverses to feed the original back against the original scale for about 25 mm (Fig. 3). This forces the original against the left scale and thus aligns the trailing edge of the original with the scale.

Thick original mode is selected at the factory.

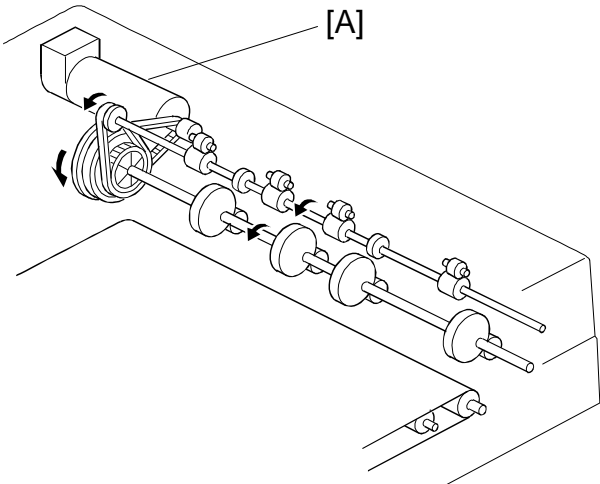
### 2. Thin Original Mode

To protect originals from being damaged by the movements of the transfer belt, thin original mode can be selected. The original is stopped at the correct position on the exposure glass based on an encoder pulse count. The belt drive motor stops shortly after the original trailing edge passes registration sensor-2. (Exact timing depends on registration adjustment.)

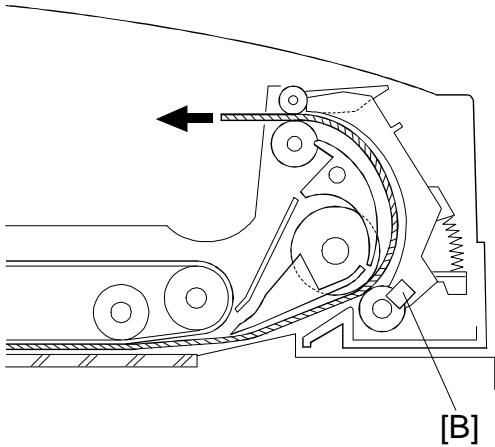
The feed amount for both modes can be adjusted.

For more details, refer to the "Replacement and Adjustment" section.

# 9. ORIGINAL FEED-OUT MECHANISM



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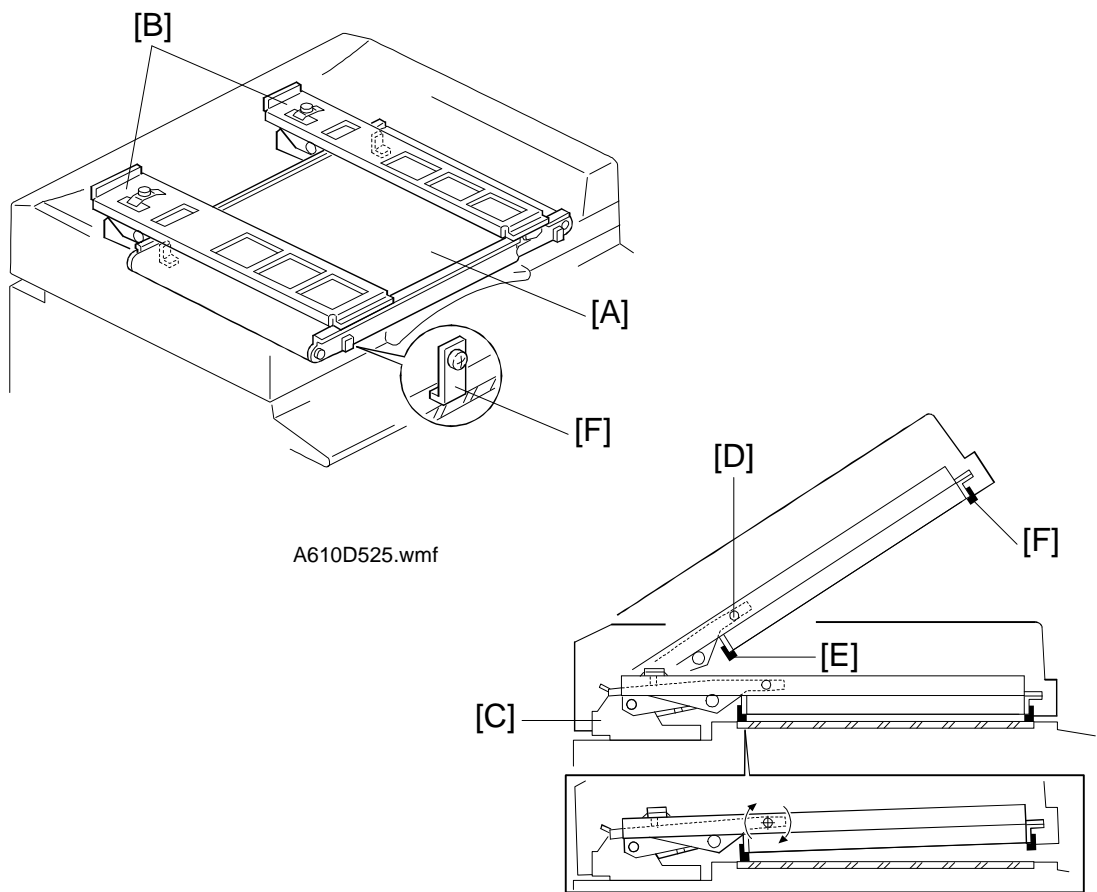
When the scanner reaches the return position, the copier's CPU sends the feed-out signal to the DJF CPU.

When the DJF receives the feed-out signal, the belt drive and feed-out motors [A] turn on.

The feed-out sensor [B] installed in the feed-out section counts the number of pulses to calculate how long the feed-out motor must stay on to feed the original out of the machine properly. Also, the motor rotates at low speed for the last 50 mm of the detected trailing edge to improve stacking efficiency.



# 10. TRANSPORT BELT LEVELING MECHANISM



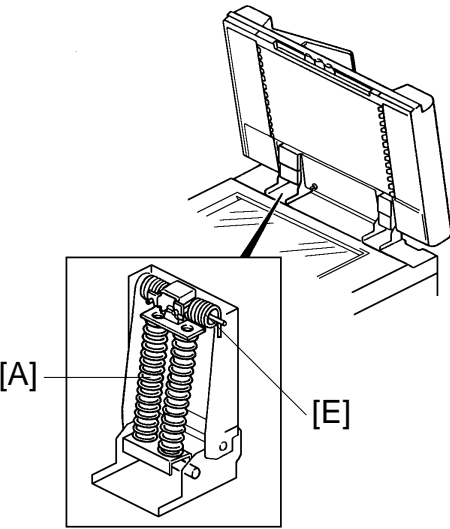
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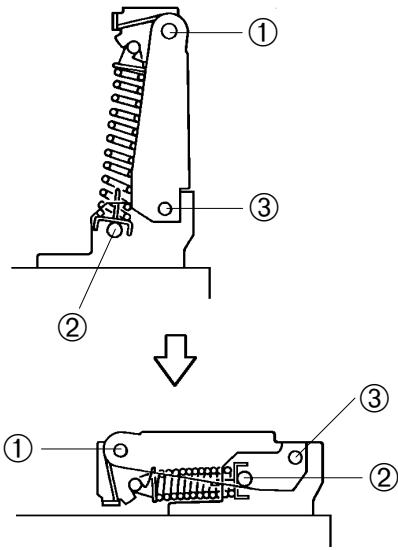
The transport belt [A] and the two support arms [B] are formed as one unit, (made of aluminum). This results in a more flexible structure than the monocoque type (in which the cover carries all of the stress), and the gap between the transport belt and the original can easily be kept precise during belt transport.

On the support arm linked with the DJF hinge [C], there is a fulcrum [D] to support the DJF. When the DJF is being closed and the rear stopper [E] contacts the base copier first, the DJF rotates about the fulcrum, rotates and the front stopper [F] will also contact the base copier to level the belt with the exposure glass.

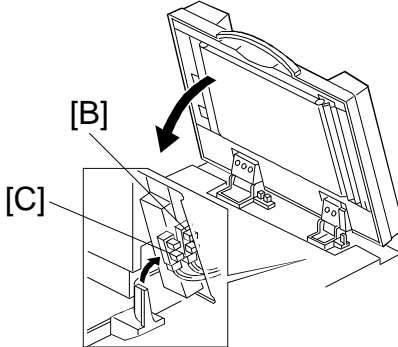
11. LIFT MECHANISM



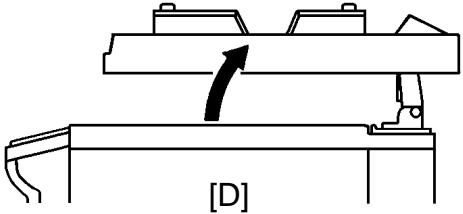
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When the DJF is opened, the lift springs [A] provide enough force to ensure that the DJF does not fall onto the exposure glass. When the DJF is closed, points "①", "②", and "③" are positioned as shown and no upward force is provided to the DJF.

The position sensor [B] is actuated when the DJF is closed. The copier then shifts to the document feeder mode. The position sensor also serves as the reset switch for DJF misfeeds.

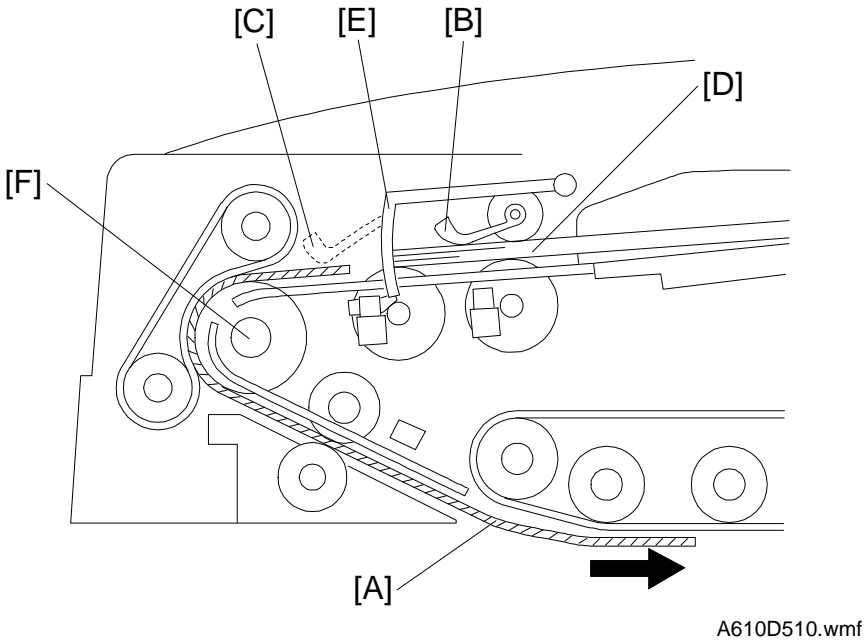
After the cover is closed, the APS start sensor [C], which is below the DF position sensor, informs the base copier CPU that original size sensors in the main body can check the original size for the platen mode.

When a book or thick original (maximum thickness 60 mm) is copied, the DJF acts as a cover for the original as shown in the diagram [D]. The position sensor is turned off during this condition, so the DJF does not function. The tension of spring [E] returns the DJF to the normal condition after copying a thick original.

Dual Job Feeder

# 12. SPECIAL FEATURES

## 12.1 PRESET MODE

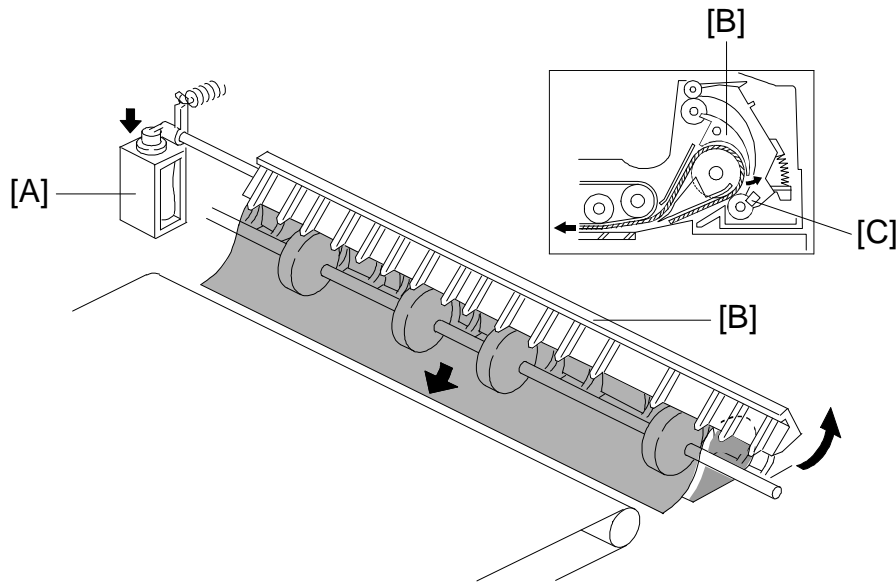


Two sets of originals for independent copy jobs can be set on the original tray at the same time.

While the first set of originals [A] remains on the original tray, both the original set sensor feeler [B] and original feed sensor feeler [C] are lifted out of their sensors. A second set of originals [D] can be placed in the feeder on top of the first set, as far as the original stopper [E]. In this case, when the first set of originals are all fed-in, the original set sensor feeler is still lifted out of the sensor, but the original feed sensor has dropped into the sensor. Therefore, the copier's CPU recognizes that the first job is completed.

If the second job is already preset, the second set of originals is automatically fed to the feed roller [F] and fed one-by-one into the machine in the same manner as the first set of originals.

## 12.2 TWO-SIDED ORIGINAL FEED (AUTO REVERSE) MODE



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Unlike for one-sided original feed, the back side of the original must be copied first to keep the originals and copies in the correct order.

During original feed-in, the sequence is the same as for one-sided feed; however, the belt drive motor continues rotating until the original reaches the inverter section. The DJF CPU also energizes the feed-out motor and the inverter solenoid [A] for a short time to lift the inverter pawls [B].

After the inverter mechanism inverts the original (10 pulses after the feed-out sensor [C] activates), the belt drive motor reverses and the original is fed towards the original scale. It is stopped at the correct position on the exposure glass, and the DJF CPU sends the copy start signal.

When the scanner reaches the return position, the copier's CPU sends the invert original signal to the DJF CPU in order to make a copy of the front side. The original is inverted in the same way as for the back side, as explained above.

12.3 COMBINE TWO ORIGINALS MODE

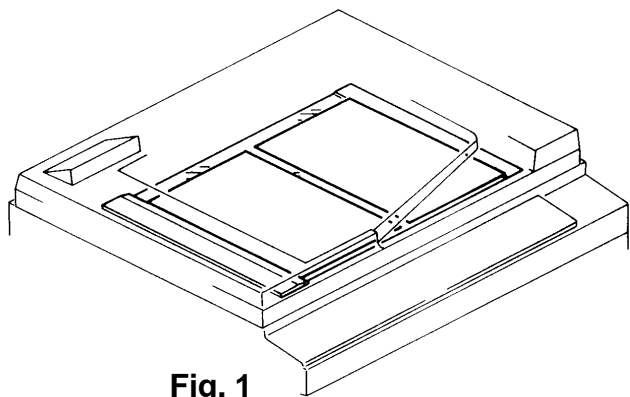


Fig. 1

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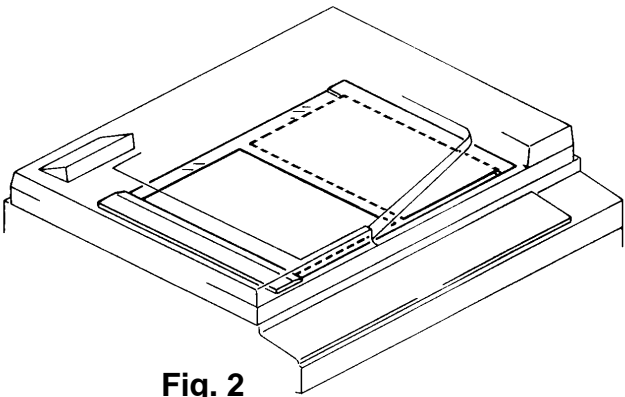


Fig. 2

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- Overview -

Two originals are fed onto the exposure glass at once in the combine two originals mode as shown in figure 1. This allows copying two originals onto one sheet of paper automatically either in the full size mode or in reduction mode.

If an odd number of originals is placed on the original table, the first original is placed on the exposure glass as shown in figure 2.

In this mode, only one-sided originals can be used, and Auto Paper Select (APS) and Auto Reduce/Enlarge modes cannot be used.

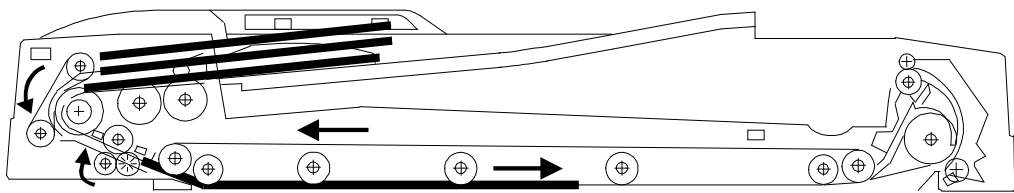


Figure 1

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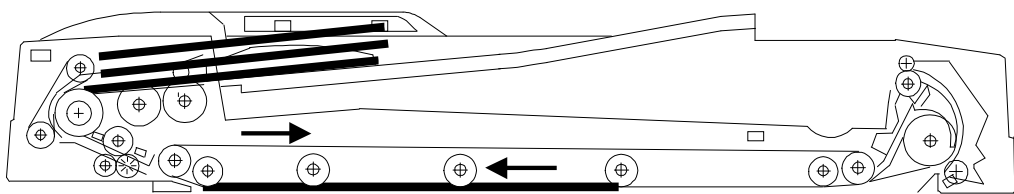


Figure 2

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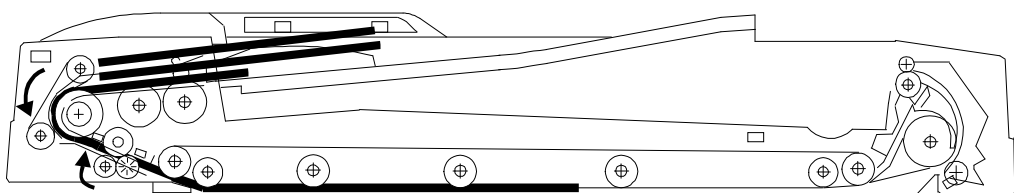


Figure 3

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**- Operation -**

The DF operates in the combine two originals mode as follows:

**Figure 1**

The first original is fed in the same manner as in one-sided original mode. When registration sensor-2 detects the trailing edge of the first original, the feed-in and the belt drive motors stop once and the feed-in clutch turns on again to prepare to feed in the second original.

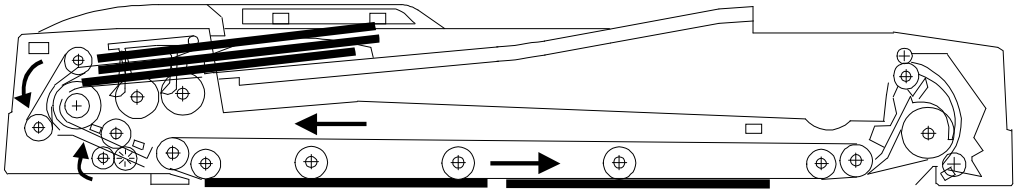
**Figure 2**

As soon as the feed-in and the belt drive motor turn off, the belt drive motor starts rotating in reverse to align the first original against the original scale. Then the belt drive motor turns off.

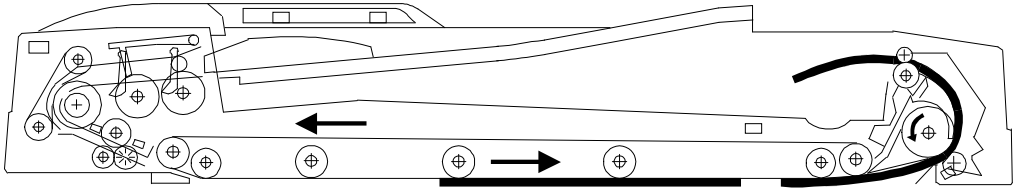
**Figure 3**

50 ms after the feed-in motor turns off, the feed-in motor turns on again at a lower speed (372 mm/) to feed the second original. A few pulses (0 ~ 14 pulses: depending on the settings of DIP switches 102-1 to 4) after the registration sensor-2 is activated by the leading edge of the second original, the feed-in motor and the feed-in clutch turn off.

Dual Job Feeder

**Figure 4**

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**Figure 5**

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**Figure 4**

Soon after the feed-in motor turns off, both the feed-in and the belt drive motors turn on again at the lower speed (372 mm/s).

After registration sensor-2 detects the trailing edge of the second original, the feed-in and the belt drive motors turn off and gradually the belt drive speed reduces to stop the original at the proper place on the exposure glass.

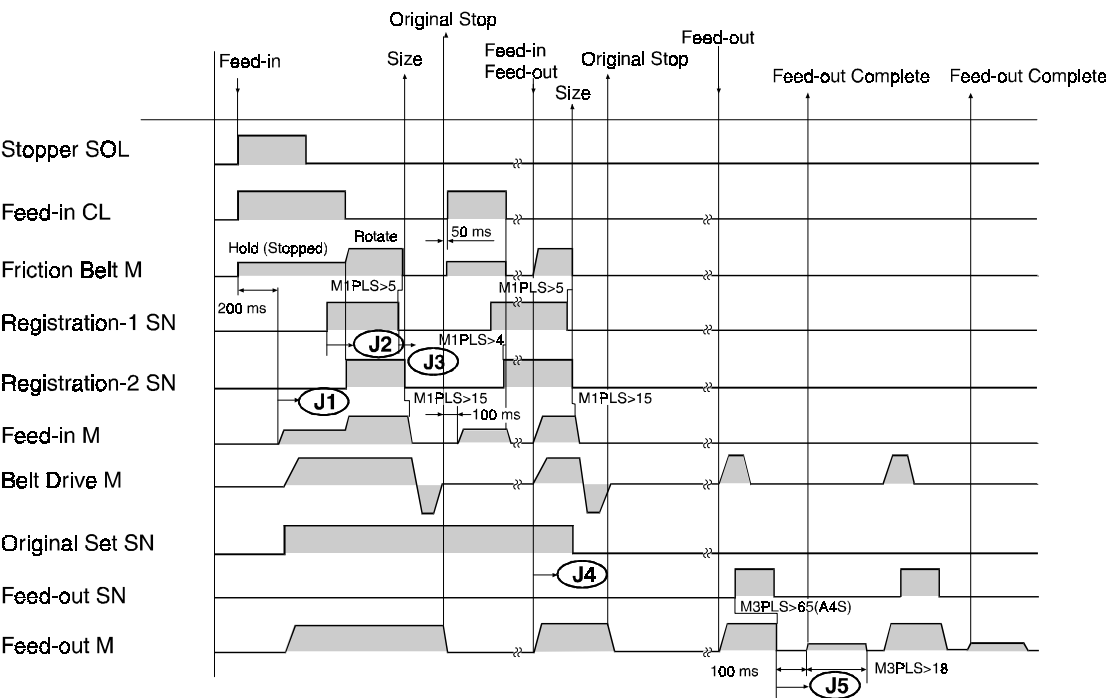
**Figure 5**

After these originals have been copied, the belt drive motor and the feed-out motor turn on to feed out the originals. 50 mm before the trailing edge of the first original de-activates the feed-out sensor, both the belt drive and the feed-out motor rotate at the lower speed to improve original stacking.

48 pulses later, the belt drive motor turns off and 60 pulses after the feed-out sensor detects the trailing edge of the second original, the feed-out motor turns off.

# 13. TIMING CHARTS WITH ORIGINAL MISFEED DETECTION

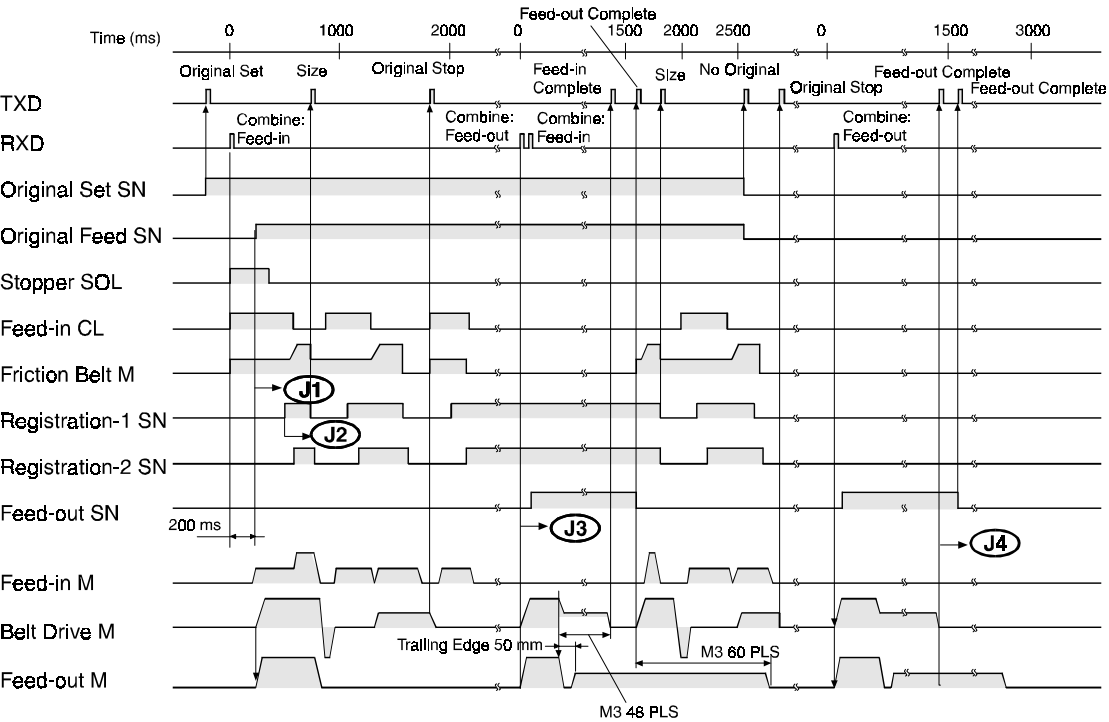
## 13.1 A4 SIDEWAYS: ONE-SIDED, TWO ORIGINALS



- J1** : Registration-1 sensor does not activate within 150 pulses after the feed-in motor starts turning.
- J2** : Registration-1 sensor does not de-activate within 200 pulses.
- J3** : The current paper size data is 40 mm longer or 80 mm shorter than the previous original size data (this check is disabled in the mixed size original mode).
- J4** : Feed-out sensor does not activate within 125 pulses after the feed-out motor starts turning.
- J5** : Feed-out sensor does not de-activate within 30 pulses after the feed out motor starts turning.

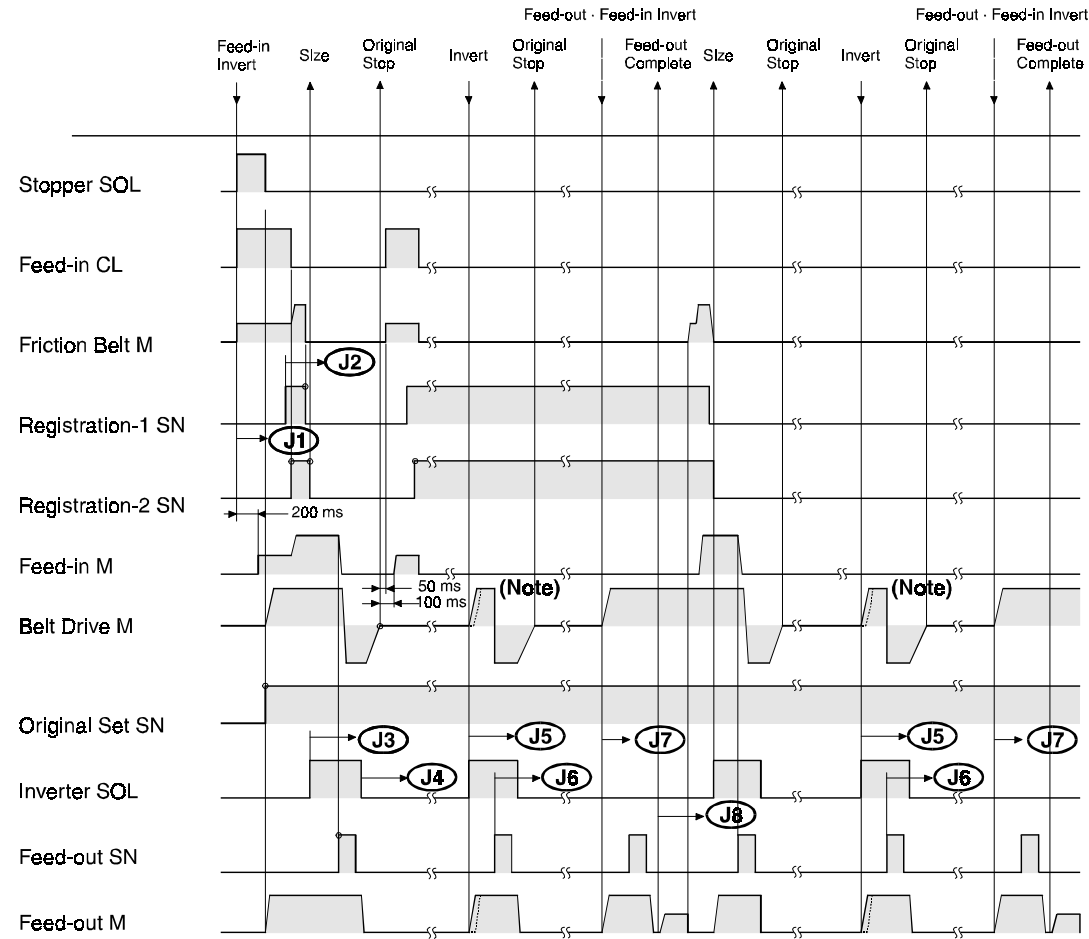


13.2 COMBINE TWO ORIGINALS MODE



- J1** : Registration-1 sensor does not activate within 150 pulses after the feed-in motor starts turning.
- J2** : Registration-1 sensor does not de-activate within 200 pulses.
- J3** : Feed-out sensor does not activate within 125 pulses after the feed-out motor starts turning.
- J4** : Feed-out sensor does not de-activate within 150 pulses after the feed-out motor starts turning.

13.3 A4 SIDEWAYS: TWO-SIDED, TWO ORIGINALS



- J1** : Registration-1 sensor does not activate within 150 pulses after the feed-in motor starts turning.
- J2** : Registration-1 sensor does not de-activate within 200 pulses.
- J3** : Feed-out sensor does not activate within 130 pulses after the feed-out motor start turning.
- J4** : Feed-out sensor does not de-activate within 200 pulses.
- J5** : Feed-out sensor does not activate within 130 pulses after the feed-out motor start turning.
- J6** : Feed-out sensor does not de-activate within 200 pulses after the feed-out motor starts turning.
- J7** : Feed-out sensor does not activate within 125 pulses after the feed-out motor starts turning.
- J8** : Feed-out sensor does not de-activate within 30 pulses after the feed-out motor starts turning.

**Note:** Motor ON timing will be delayed for 50 ms when an A3/DTL original is fed.

14. SERVICE TABLES

14.1 DIP SWITCHES AND SWITCH

0: OFF    1: ON    ↓ : Push

Modes	DPS101				DPS102				SW	Function
	1	2	3	4	1	2	3	4	101	
Motor Tests (Speed Adj.)	1	1	0	1	1	0	0	0	—	Feed-in motor (M2) activates (High Speed)
					1	0	0	1	—	Feed-in motor (M2) activates (Low Speed)
					0	1	0	0	—	Belt drive motor (M3) activates
					0	0	1	0	—	Feed-out motor (M4) activates (High Speed)
					0	0	1	1	—	Feed-out motor (M4) activates (Low Speed)
Friction Belt Free Run	1	1	1	0	1	0	0	0	↓	Friction belt motor (M1) activates (Reverse)
					1	0	0	1	↓	Friction belt motor (M1) activates (Forward)
					1	0	0	—	↓	Push SW101 to feed the page in. Push it again to feed the sheet out.
MC, SOL Tests	0	0	1	1	1	0	0	0	—	Stopper solenoid (SOL2) activates
					0	1	0	0	—	Not used
					0	0	1	0	—	Feed-in clutch (CL1) activates
					0	0	0	1	—	Inverter solenoid (SOL1) activates
Original Feed Tests	0	1	0	1	0	0	0	0	↓	Feeds the original in and out (thick / one-sided)
					0	0	0	1	↓	Feeds the original in and out (thin / one-sided)
					1	0	0	0	↓	Feeds the original in and out (thick / two-sided)
					1	0	0	1	↓	Feeds the original in and out (thin / two-sided)
					0	0	1	0	↓	Feeds the original in and out (low speed / thick / one-sided)
					0	0	1	1	↓	Feeds the original in and out (low speed / thin / one-sided)
					1	0	1	0	↓	Feeds the original in and out (low speed / thick / two-sided)
					1	0	1	1	↓	Feeds the original in and out (low speed / thin / two-sided)
					0	1	0	0	↓	Feeds the original in and out (pasted original mode)
					1	1	1	0	↓	Feeds the original in and out (combine original mode)

Modes	DPS101				DPS102				SW	Function
	1	2	3	4	1	2	3	4	101	
Free Run Mode	1	0	0	1	0	0	0	0	↓	Thick / one-sided original mode
					0	0	0	1	↓	Thin / one-sided original mode
					1	0	0	0	↓	Thick / two-sided original mode
					1	0	0	1	↓	Thin / two-sided original mode
					0	1	0	0	↓	Thick / mixed size original mode
					0	1	0	1	↓	Thin / mixed size original mode
					0	0	1	0	↓	Low speed / thick / one-sided
					0	0	1	1	↓	Low speed / thin / one-sided
					1	0	1	0	↓	Low speed / thick / two-sided
					1	0	1	1	↓	Low speed / thin / two-sided
					1	1	1	0	↓	Combine two originals mode
LED	1	1	1	1	0	0	0	0	—	Turns on the indicator lamp (L1)
Standard Operation	1	0	0	0	0	0	0	0	—	Standard setting for A172/A199
	0	0	0	0	0	0	0	0	—	Standard setting for A175/A176/A177/A191/A192

14.2 VARIABLE RESISTORS

VR No.	FUNCTION
101	Adjusts the registration in one-sided original mode
102	Adjusts the registration in two-sided original mode
103	Adjusts the feed-in motor (M2) speed (high speed)
104	Adjusts the feed-in motor (M2) speed (low speed)
105	Adjusts the belt drive motor (M3) speed
106	Adjusts the feed-out motor (M4) speed (low speed)
107	Adjusts the feed-out motor (M4) speed (high speed)

14.3 LEDs

These LEDs monitor motor speed. Use in conjunction with VRs 103 - 107.

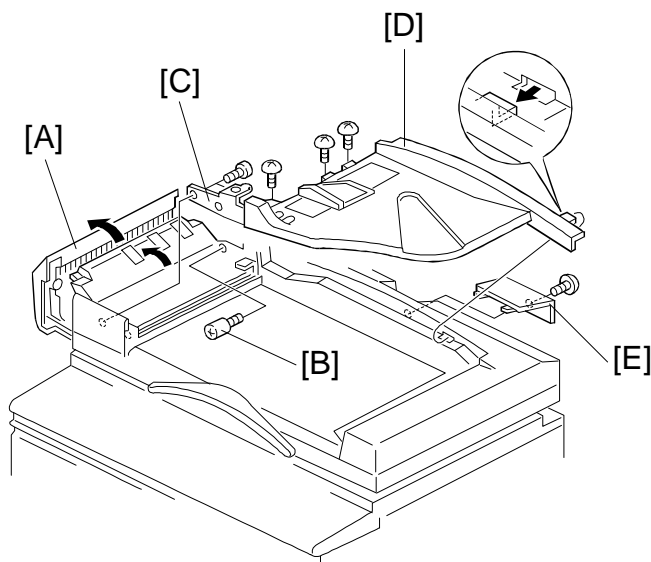
LED 101	LED 102	FUNCTION
ON	ON	Correct speed, if they stay on for more than 10 s
ON	OFF	The motor is too fast
OFF	ON	The motor is too slow

14.4 FUSE

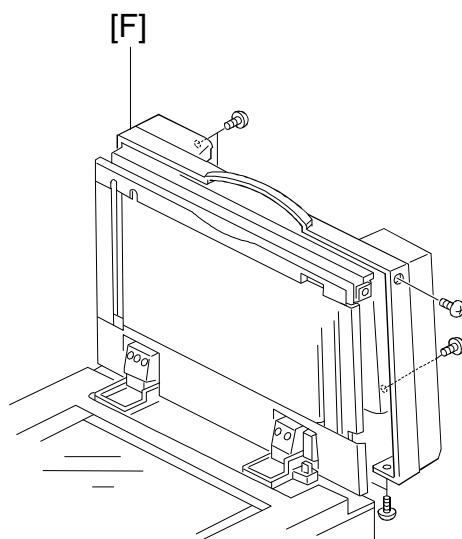
Fuse No.	FUNCTION
101	Protects all voltage lines (5 V, 12 V, 24 V)

## 15. REPLACEMENTS AND ADJUSTMENTS

### 15.1 UPPER COVER REMOVAL



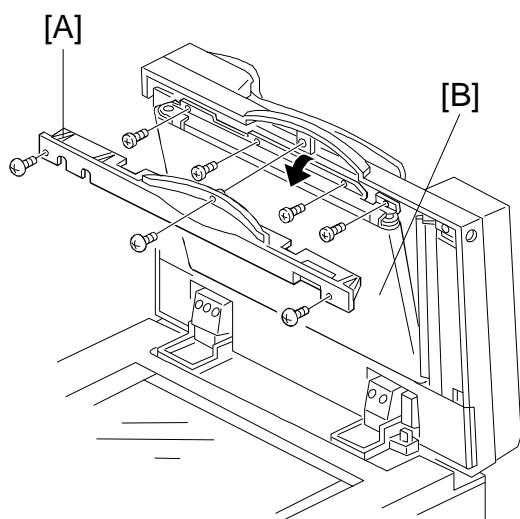
A610R500.wmf



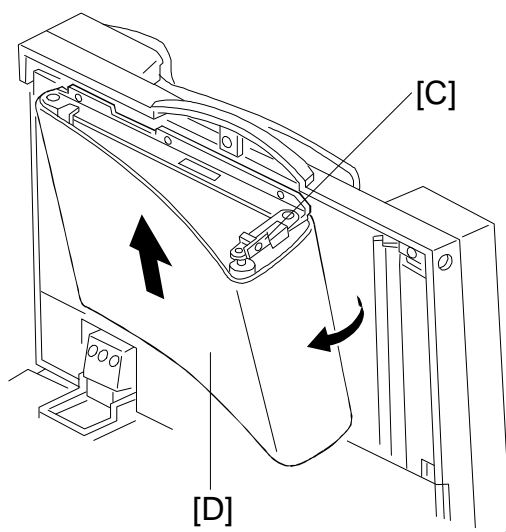
A610R501.wmf

1. Turn off the main switch and open the feed-in cover [A].
2. Remove the stopper screw [B].
3. Remove the 2 screws securing the table bracket [C].
4. Remove the original table [D] (3 screws).  
**NOTE:** Do not loosen the 2 screws securing the original table to the table bracket.
5. Remove the small cover [E] at the rear side of the upper DJF cover (1 screw).
6. Remove the upper cover [F] (6 screws).

## 15.2 TRANSPORT BELT REPLACEMENT



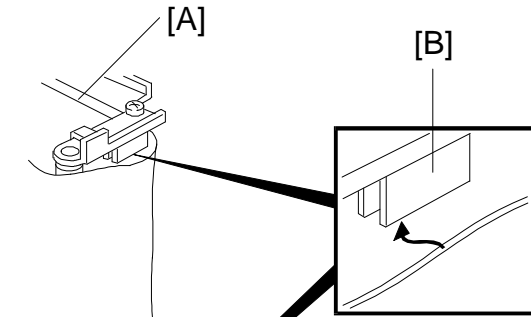
A610R502.wmf



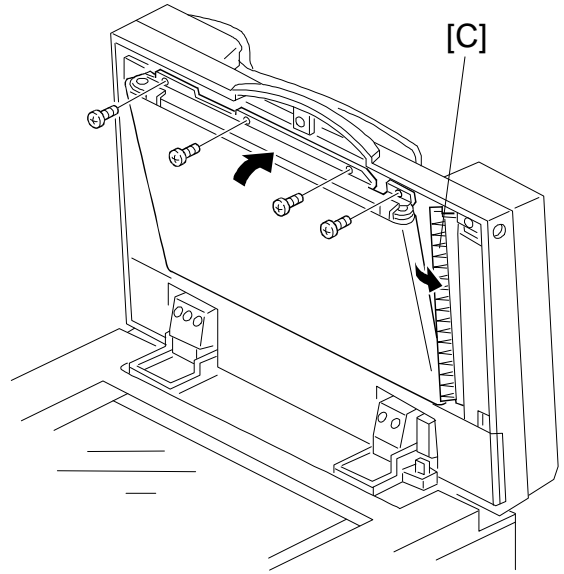
A610R503.wmf

**NOTE:** Never use alcohol to clean the transport belt. The coating will be damaged.

1. Turn off the main switch and lift up the DJF.
2. Remove the front cover [A] (3 screws).
3. Remove the 4 screws securing the transport belt guide assembly [B].
4. Fold the stay [C] as shown.
5. Remove the transport belt [D].



A610R504.wmf



A610R505.wmf

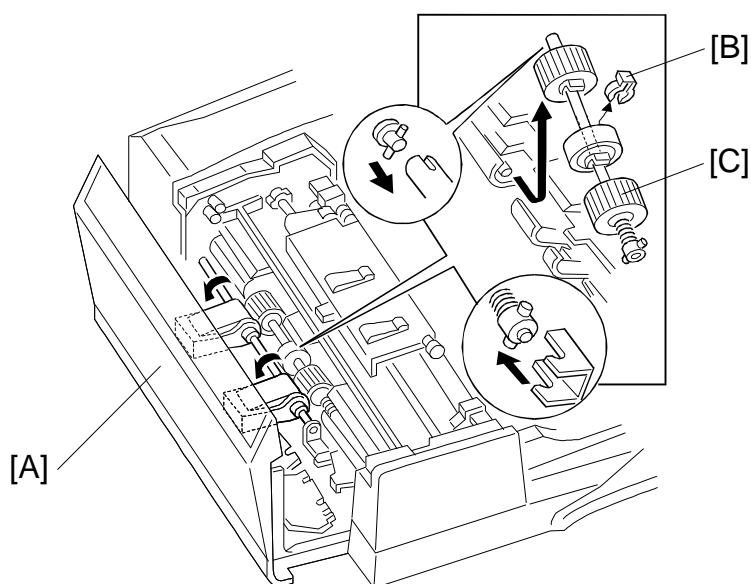
6. Install the new belt on the belt guide assembly [A].

**NOTE:** When installing the new belt, set the belt between the belt guides [B].

7. While opening the original guide [C], carefully install the belt guide assembly on the DJF (4 screws), making sure that the mylars on the feed-in unit side are not damaged.

8. Reinstall the machine and check the machine operation.

## 15.3 FEED ROLLER REPLACEMENT



A610R506.wmf

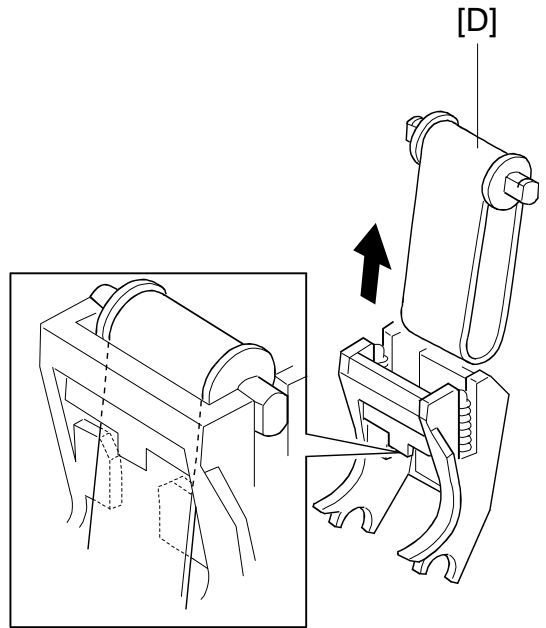
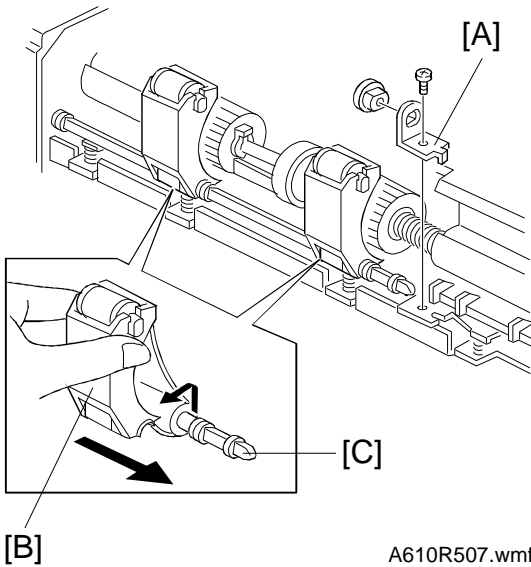
1. Turn off the main switch and open the feed cover [A].
2. Remove the snap ring [B].
3. Push the feed roller shaft to the front, then remove the roller assembly [C] as shown.
4. Remove the 4 snap rings, then replace the feed rollers.

**NOTE:** When reinstalling the feed rollers, be sure that the one-way bearing (silver color) is located at the front side (the roller must rotate only counter-clockwise when the shaft is fixed).

Do not touch the rollers with bare hands.



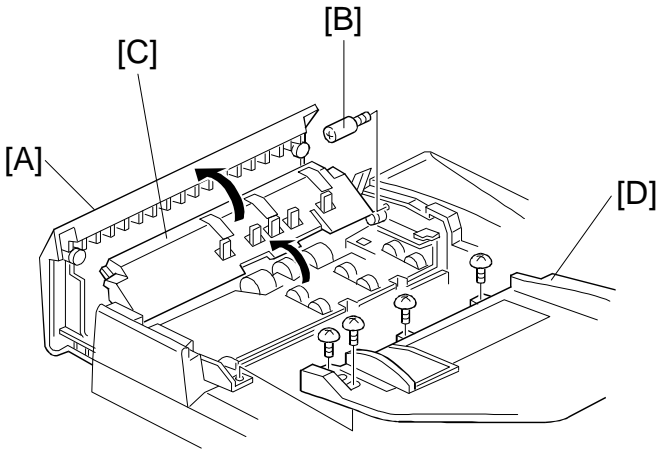
## 15.4 FRICTION BELT REPLACEMENT



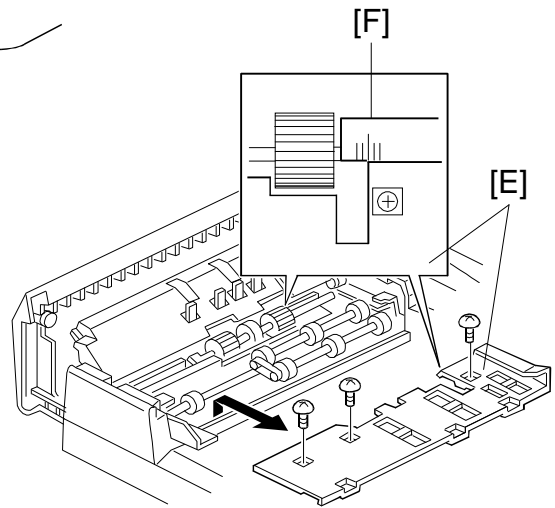
1. Turn off the main switch and open the feed cover.
2. Remove the shaft receiving bracket [A] (1 screw).
3. Gently pull up the friction belt assembly [B] and remove it from the drive shaft [C].
4. Replace the friction belts [D].

**NOTE:** Use alcohol to clean the friction belts.  
Do not touch the belts with bare hands.

## 15.5 ORIGINAL SET/FEED, REGISTRATION-1/-2, AND ORIGINAL WIDTH-1/-2/-3 SENSOR REPLACEMENT



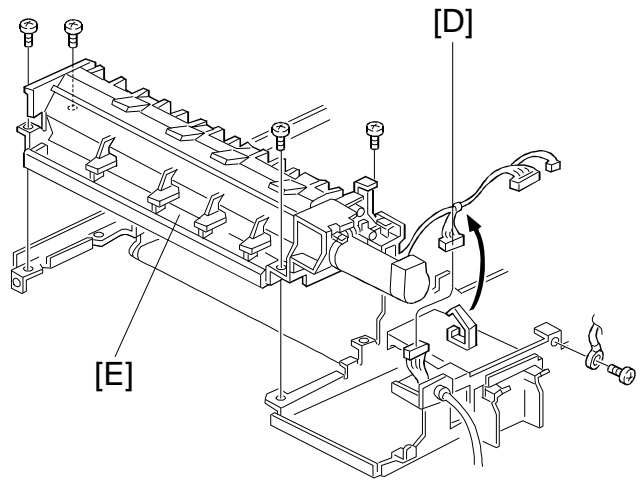
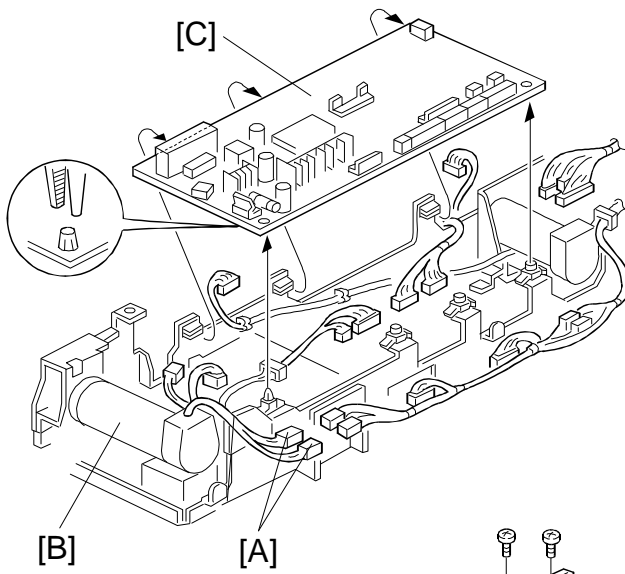
A610R509.wmf



A610R510.wmf

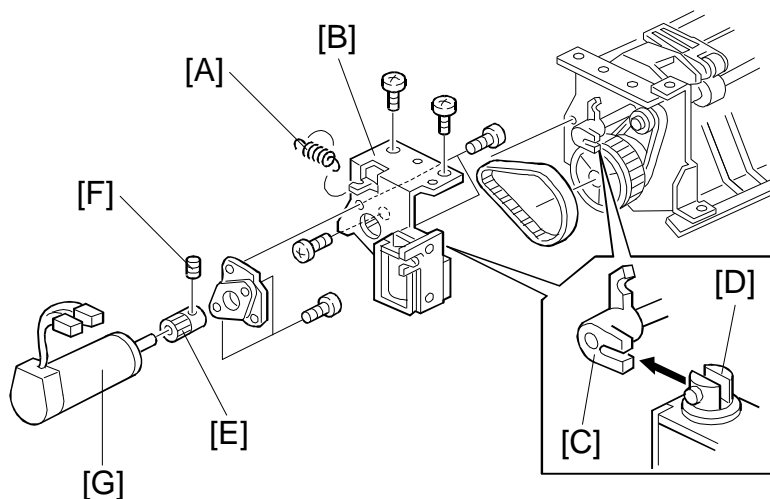
1. Turn off the main switch and open the feed cover [A].
2. Remove the stopper screw [B] and open the original stopper [C].
3. Remove the original table [D] (5 screws).
4. Remember the location of the original guide [E] against the guide plate [F] as shown. This is to keep the same original side-to-side registration after re-installation.
5. Remove the original guide (3 screws).
6. Replace the required sensor.
7. After this replacement, adjust the side-to side original registration if necessary.

## 15.6 FEED-OUT UNIT REMOVAL



1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal)
2. Disconnect the 4P and 2P connectors [A] of the feed-out motor [B].
3. Disconnect all the connectors and remove the DJF main board [C].
4. Disconnect the APS start/DJF position sensor connector [D].
5. Remove the feed-out unit [E] (4 screws and 1 grounding screw).

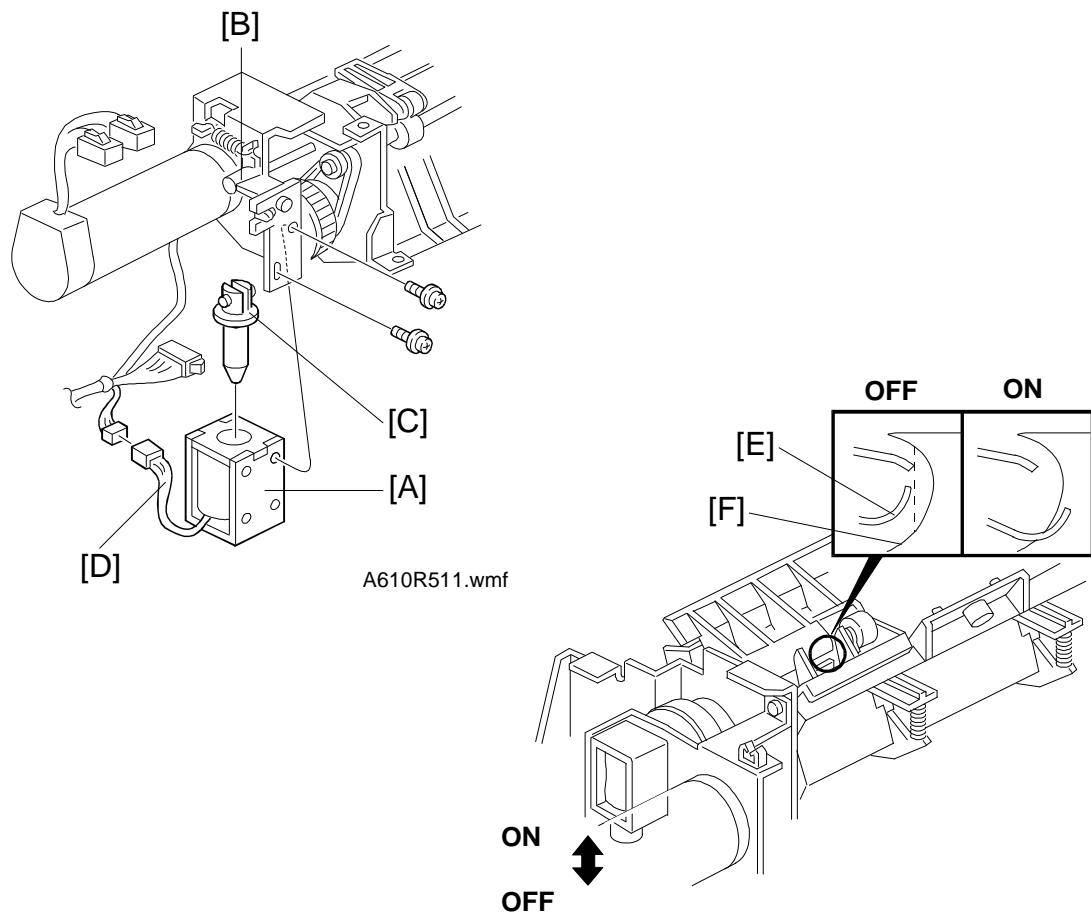
## 15.7 FEED-OUT MOTOR REPLACEMENT



A610R528.wmf

1. Remove the feed-out unit. (Refer to Feed-out Unit Removal.)
2. Remove the spring [A].
3. Remove the bracket [B] with the feed-out motor from the feed-out unit (3 screws).  
**NOTE:** When reinstalling the bracket, be sure to set the arm [C] on the plunger pin [D].
4. Remove the pulley [E] (1 Allen screw [F]).
5. Remove the feed-out motor [G] (4 screws).

## 15.8 INVERTER SOLENOID REMOVAL AND ADJUSTMENT



A610R511.wmf

A610R512.wmf

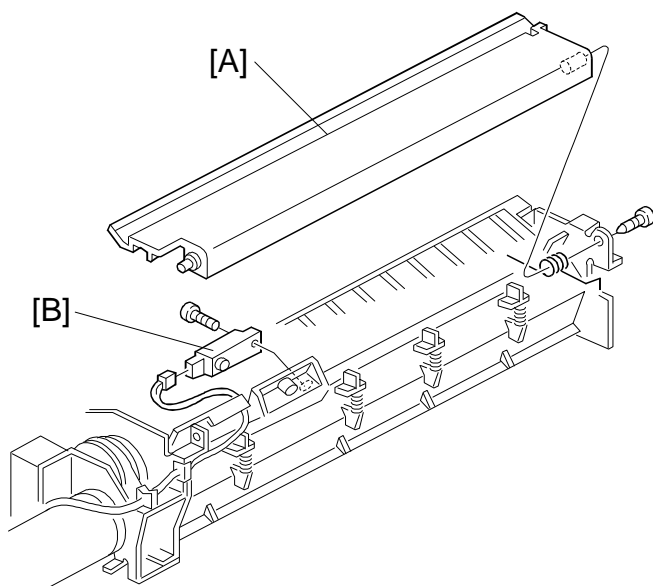
1. Remove the feed-out unit. (Refer to Feed-out Unit Removal.)

2. Remove the inverter solenoid [A] (2 screws).

**NOTE:** When installing the inverter solenoid, check the following:

- 1) The arm [B] must be set on the plunger pin [C].
- 2) The inverter solenoid connector harness [D] should be facing the outside of the unit as shown.
- 3) Manually push the plunger and check that it works smoothly.
- 4) When the inverter solenoid does not activate (OFF), the inverter guide [E] must be inside the outer inverter guide [F], and when the inverter solenoid activates (ON), the inverter guide must be outside the outer inverter guide, as shown.

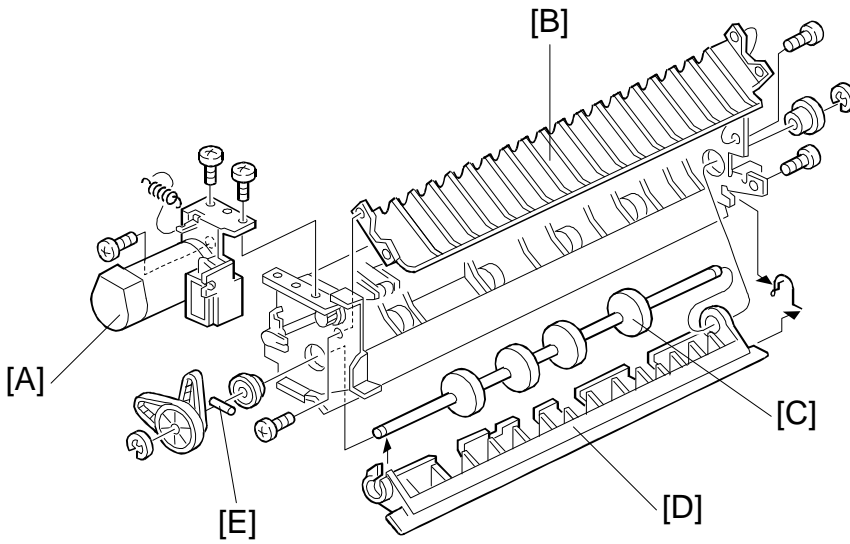
## 15.9 FEED-OUT SENSOR REPLACEMENT



A610R513.wmf

1. Turn off the main switch and remove the feed-out unit. (Refer to Feed-out Unit Removal.)
2. Remove the right cover [A] (1 screw).
3. Replace the feed-out sensor [B] (1 screw and 1 connector).

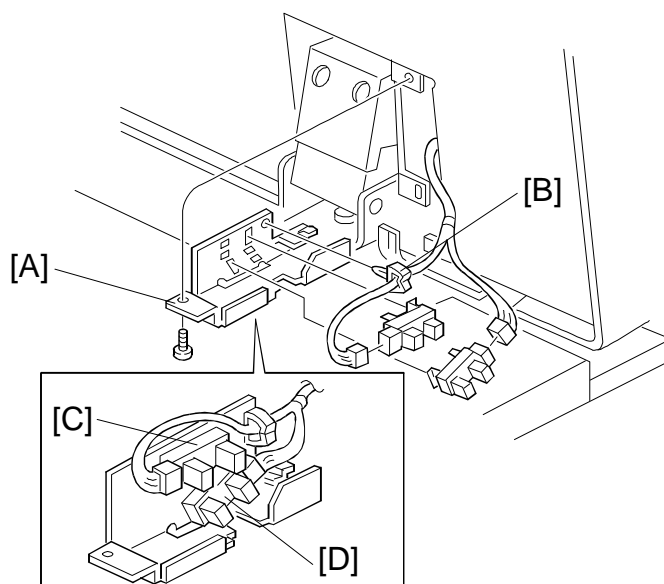
## 15.10 INVERTER ROLLER REPLACEMENT



A610R514.wmf

1. Turn off the main switch and remove the feed-out unit. (Refer to Feed-out Unit Removal.)
2. Remove the feed-out motor [A]. (Refer to Feed-out Motor Removal.)
3. Remove the exit guide [B] (3 screws).
4. Remove the inverter roller [C] with the inverter guide [D] (2 E-rings, 1 pulley, 1 pin [E], and 2 bushings).
5. Replace the inverter roller.

## 15.11 DF POSITION/APS START SENSOR REPLACEMENT

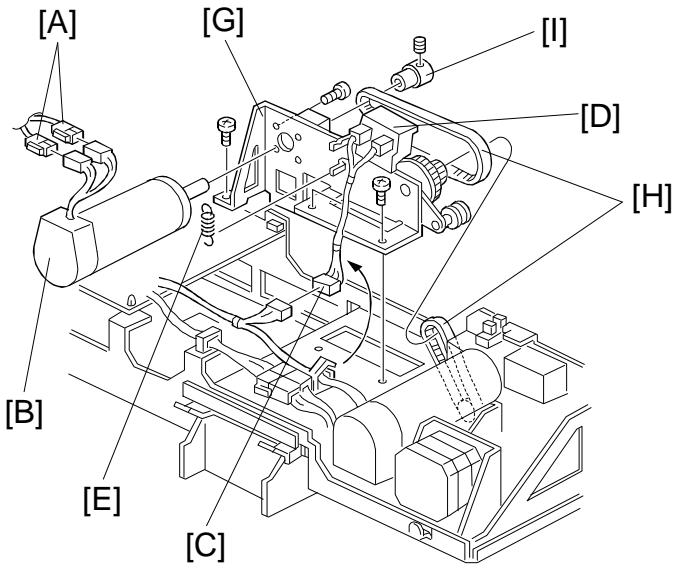


A610R515.wmf

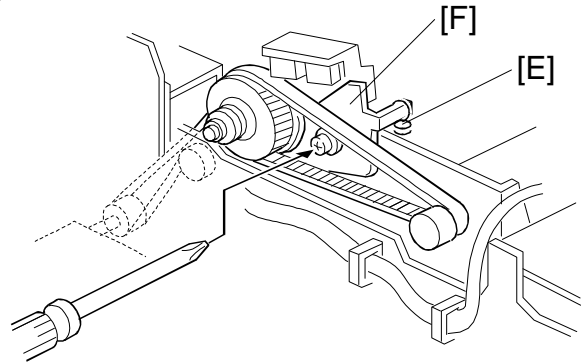
1. Turn off the main switch and lift up the DF.
2. Remove the sensor bracket [A] (1 screw).
3. Remove the harness clamp [B] and replace the DF position sensor [C] or the APS start sensor [D] (1 connector each).



## 15.12 BELT DRIVE MOTOR REPLACEMENT



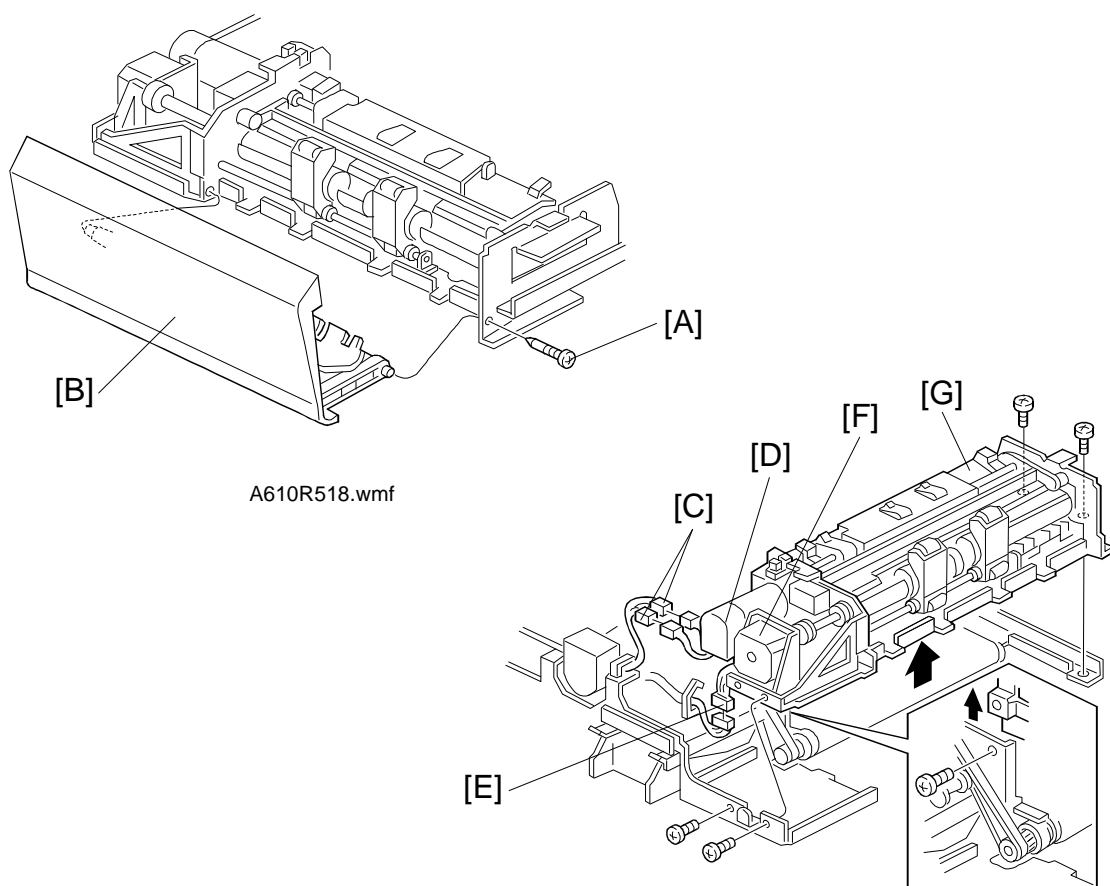
A610R516.wmf



A610R517.wmf

1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Disconnect the 2 connectors [A] of the belt drive motor [B].
3. Disconnect the connector [C] of the indicator panel [D] as shown.
4. Remove the tension spring [E] and loosen the tension bracket [F] as shown.
5. Remove the belt drive motor bracket [G] (3 screws), making sure not to damage the 2 timing belts [H].
6. Remove the drive pulley [I] (1 Allen screw) then replace the belt drive motor (4 screws).

## 15.13 FEED-IN UNIT REMOVAL

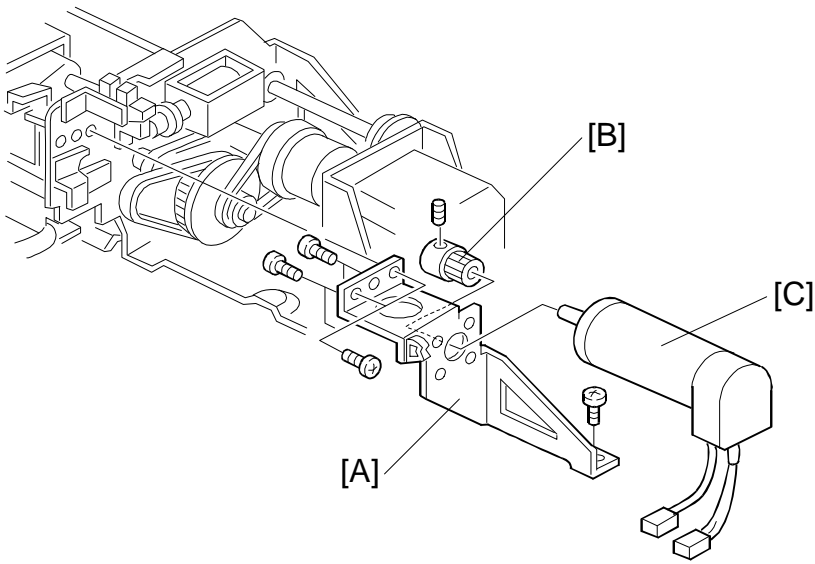


A610R518.wmf

A610R519.wmf

1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the screw [A], then remove the feed cover [B].
3. Disconnect the 2 connectors [C] of the feed-in motor [D].
4. Disconnect the connector [E] of the friction belt motor [F].
5. Disconnect CN104, 105, 108, 109, 110, and 111 on the DJF main board.
6. Disconnect the connector of the indicator panel as well.
7. Remove the feed-in unit [G] (5 screws).

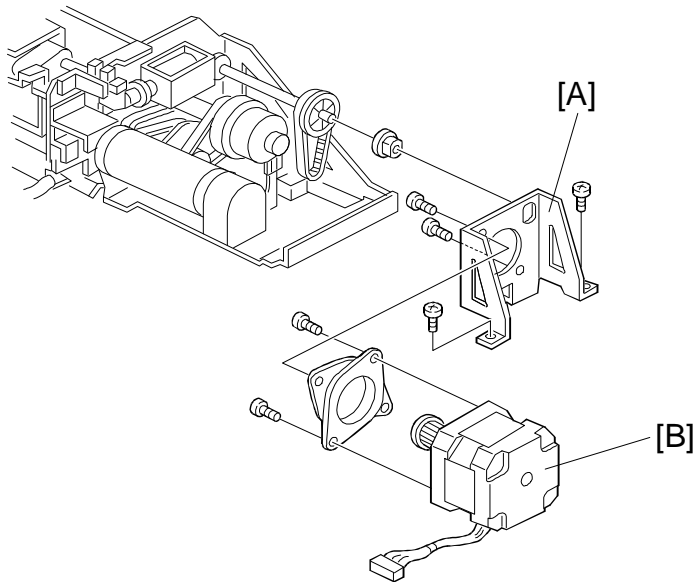
## 15.14 FEED-IN MOTOR REPLACEMENT



A610R520.wmf

1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the feed-in motor bracket [A] (3 screws), making sure not to damage the timing belt.
3. Remove the drive pulley [B] (1 Allen screw), then replace the feed-in motor [C] (4 screws).

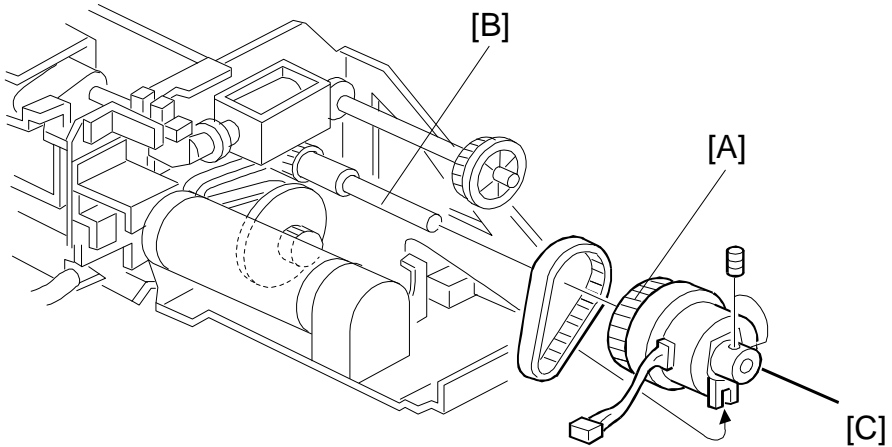
## 15.15 FRICTION BELT MOTOR REPLACEMENT



A610R521.wmf

1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the friction belt motor bracket [A] (2 screws), making sure not to damage the timing belt.
3. Replace the friction belt motor [B] (4 screws).

## 15.16 FEED-IN CLUTCH REPLACEMENT



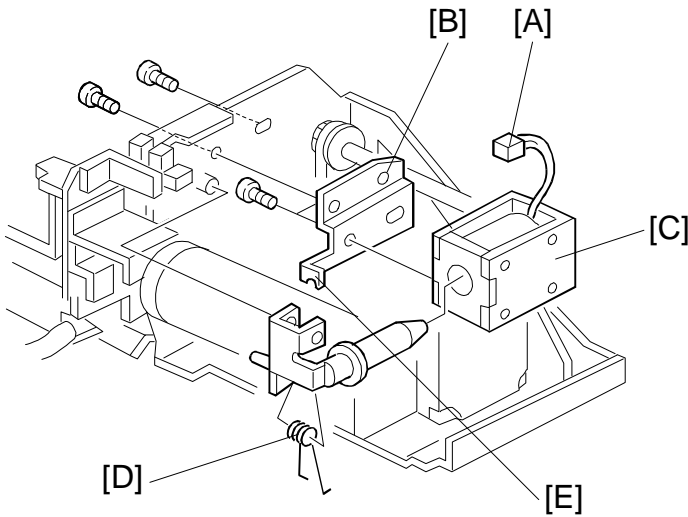
A610R522.wmf

1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the friction belt motor. (Refer to Friction Belt Motor Replacement.)
3. Replace the feed-in clutch [A] (2 Allen screws).

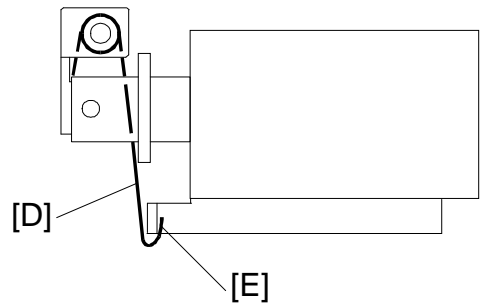
**NOTE:** When reinstalling, make sure of the following.

- 1) The clutch stopper groove must engage the clutch stopper.
- 2) The end of the clutch stopper [C] must be flush with the head of the shaft.

## 15.17 STOPPER SOLENOID REPLACEMENT



A610R523.wmf



A610R533.wmf

1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Disconnect the connector [A] of the stopper solenoid.
3. Open the feed-in cover and the original stopper.
4. Remove the bracket [B] with the stopper solenoid (2 screws and 1 E-ring.)
5. Remove the stopper solenoid [C] (2 screws).

**NOTE:** When installing the stopper solenoid, pay attention to the following points:

- 1) The spring [D] must be correctly hooked onto the stopper [E], as shown.
- 2) Manually pull the stopper solenoid plunger to confirm that the press rollers firmly contact the pick-up rollers. When the pick-up rollers are manually rotated, the press rollers also rotate. If not, adjust the stopper solenoid position.

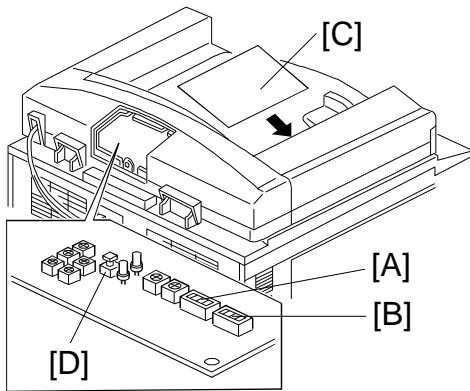
## 15.18 VERTICAL REGISTRATION ADJUSTMENT

### 15.18.1 One-sided Thin Original Mode

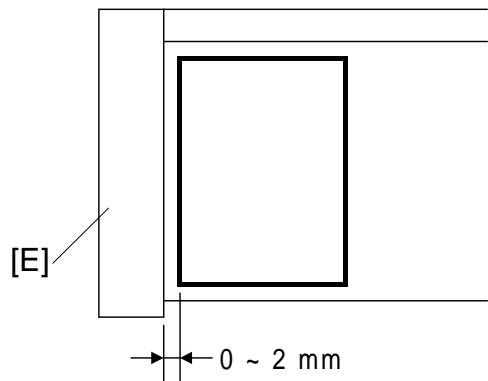
Perform this adjustment for machines having problems using the Thick Original Mode as well.

The original stopping position in thick original mode depends on the setting of this adjustment. (For details, refer to Detailed Descriptions.)

- NOTE:**
- 1) After replacing the DJF main board, always perform the adjustment using VR101 on the DJF main board.
  - 2) At other times, adjust with either the base copier SP mode or VR101. Both procedures will move the original stopping position.
  - 3) After finishing the adjustment, be sure to turn off the dip switches.



A610R524.wmf






A610R525.wmf

#### – Using VR101 –

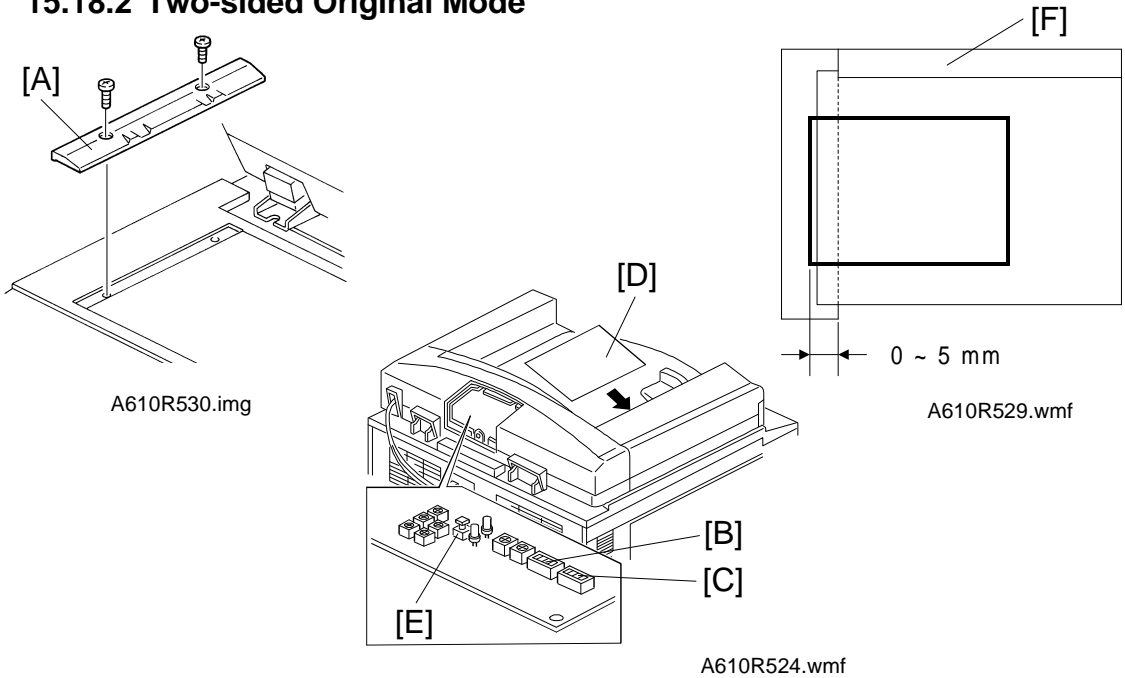
1. Remove the small cover at the rear of the DJF upper cover (1 screw).
2. Turn on dip switch 101-2 and -4 [A].
3. Turn on dip switch 102-4 [B].
4. Place a sheet of A4/8 1/2" x 11" sideways paper [C] (64 g/m<sup>2</sup>, 17 lb) on the original table.
5. Press switch 101 [D]. (Paper will be fed to the exposure glass.)
6. Raise the DJF carefully so that the original does not move.
7. Check that the gap between the trailing edge of paper and the left original scale [E] is  $0 \pm 2.0$  mm.
8. If the gap is not within this specification, adjust registration with VR101. (Looking from the front, turning VR101 counter-clockwise will decrease the gap.)
9. Return the user settings to their defaults, if you have changed any.

### – Using The Copier SP Mode –

- NOTE:**
- 1) When performing this adjustment, always make test copies with the "Copy In SP" mode. If you do not, the adjustment will not be performed properly.
  - 2) Make sure that the DJF dip switches are returned to the standard setting of the base copier, if you have performed the adjustments using the DJF main board.
  - 3) Make sure that the "Thin Mode" is selected with the customer settings of the base copier.
- 
1. Turn the copier main switch off and on to initialize the machine.
  2. Enter the copier SP mode, and open the DJF Registration Adjustment page.
  3. Place a sheet of A4/8 1/2" x 11" sideways paper (64 g/m<sup>2</sup>, 17 lb) on the original table, and press the Copy In SP key.  
To save toner, select BLACK and A4, then press the Start key.
  4. After the original stops on the exposure glass, raise the DJF carefully so that the original does not move.
  5. Check that the gap between the trailing edge of paper and the left original scale is  $0 \pm 2.0$  mm.
  6. If the gap is not within this specification, adjust registration by pressing the  and  keys of the thin mode inside the SP mode. The original paper stopping position will change accordingly. (If you press  , the gap will decrease.)
  7. Return the user settings to their defaults, if you have changed any.



### 15.18.2 Two-sided Original Mode



- NOTE:** 1) After replacing the DJF main board, always perform the adjustment using VR102 on the DJF main board.
- 2) At other times, adjust with either the base copier SP mode or VR102. Both procedures will move the original stopping position.
- 3) After finishing the adjustment, be sure to turn off the dip switches.

#### – Using VR102 –

1. Remove the copier's left original scale [A] (2 screws).
2. Remove the small cover at the rear of the DJF upper cover (1 screw).
3. Turn on dip switch 101-2 and -4 [B].
4. Turn on dip switch 102-1 and -4 [C].
5. Place a sheet of A4/8 1/2" x 11" sideways paper [D] (64 g/m<sup>2</sup>, 17 lb) on the original table.
6. Press switch 101 [E]. (Paper will be fed to the exposure glass.)
7. Raise the DJF carefully so that the original does not move.
8. Check that the distance between the trailing edge of the paper and the left edge of the rear original scale [F] is between 0 ~ 5 mm.
9. If the distance is not within this specification, adjust the registration with VR102. (Looking from the front, turning VR102 counter-clockwise will feed the paper more towards the left.)




### – Using the Copier SP Mode –

**NOTE:** 1) When performing this adjustment, always make test copies using the "Copy In SP" mode. If you do not, the adjustment will not be performed properly.

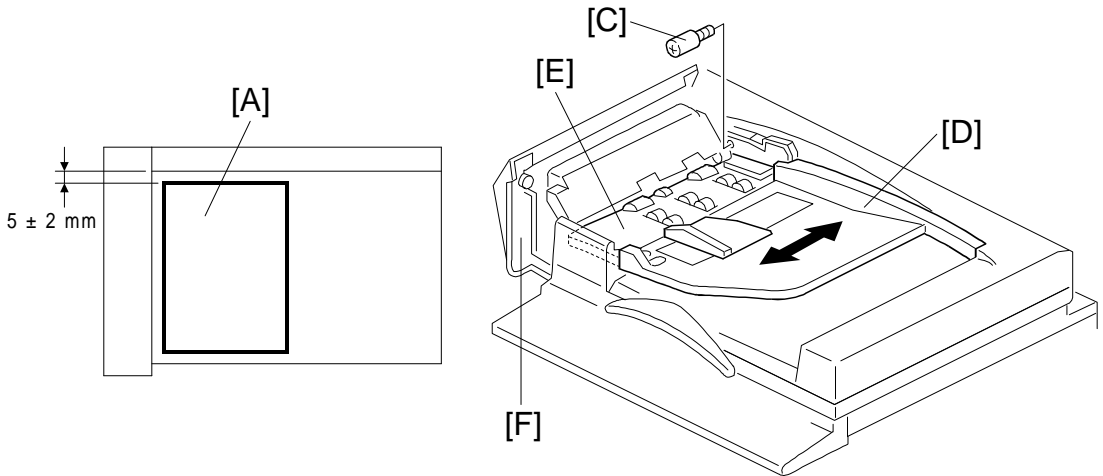
2) Make sure that the DJF dip switches are returned to the standard setting of the base copier, if you have performed the adjustments using the DJF main board.

1. Remove the copier's left original scale (2 screws).
2. Turn off and on the copier main switch to initialize the machine.
3. Enter the copier SP mode, and open the DJF Registration Adjustment page.
4. Place a sheet of A4/8 1/2" x 11" sideways paper (64 g/m<sup>2</sup>, 17 lb) on the original table, and press the Copy In SP key.

Select the two-sided original mode to invert the original paper. Also to save toner, select BLACK and A4 size paper. Then press the Start key.

5. After the original stops on the exposure glass, raise the DJF carefully so that the original does not move.
6. Check that the distance between the trailing edge of the paper and the left edge of the rear original scale is between 15 ~ 20 mm.
7. If the distance is not within this specification, adjust the registration by pressing the  and  keys of the two-sided mode inside the SP mode. The original paper stopping position will change accordingly. (If you press , the original will be fed more towards the left.)

## 15.19 SIDE-TO-SIDE REGISTRATION ADJUSTMENT



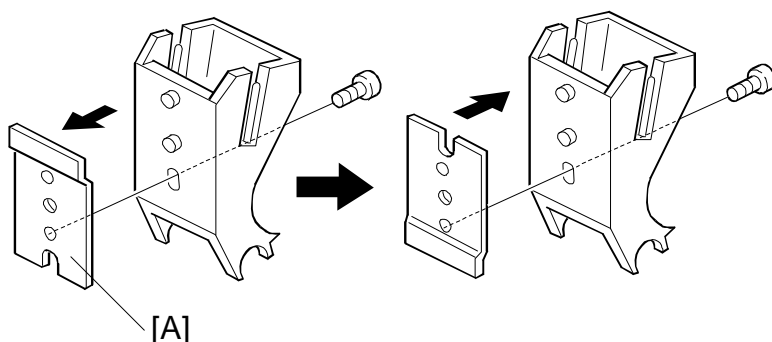
A610R531.wmf

A610R532.wmf

1. Place a sheet of A4/8 1/2" x 11" sideways paper [A] (64 g/m<sup>2</sup>, 17 lb) on the original table and press the Start key.
2. Check the side-to-side registration comparing the original paper and the copied paper.
3. If the side-to-side registration is not within  $0 \pm 2$  mm, enter the SP mode and perform the following steps:
  - 1) Open the DJF Side To Side Registration Adjustment page.
  - 2) Change the setting with the  $\oplus$  and  $\ominus$  keys to meet the above specification. (The original stopping position will not change.)  
Note that the direction of the image shift will differ for each base copier.
4. If it is still out of specification, leave SP mode and perform the following original table positioning adjustment:
  - 1) Place a sheet of A4/8 1/2" x 11" sideways paper [A] (64 g/m<sup>2</sup>, 17 lb) on the original table and press the Start key.
  - 2) After the original stops on the exposure glass, gently raise the DJF so that the original does not move.
  - 3) Check if the gap between the rear edge of the paper and the original rear scale is  $5 \pm 2$  mm.
  - 4) If the gap is not within specification, remove the stopper screw [C], loosen the 8 screws securing the original table [D] and the original guide [E] and shift the original table and the original guide position accordingly.

**NOTE:** Before putting an original on the original table again, open and close the feed unit cover [F].

## 15.20 PREVENTING THE REAR SIDE OF ORIGINALS FROM BECOMING DIRTY



A610R534.wmf

**NOTE:** Perform the following adjustment only when needed (if the friction belt needs to be changed but there is no spare friction belt available). However, after this adjustment, thick originals are likely to be misfed, so it is best to avoid this adjustment if the customer says that thick originals will be used.

1. Remove the friction belt assembly. (Refer to Friction Belt Replacement.)
2. Remove the adjusting plate [A] and re-install it as shown (the belt folds about 1 degree) or remove the adjusting plate (the belt folds about 2 degrees).

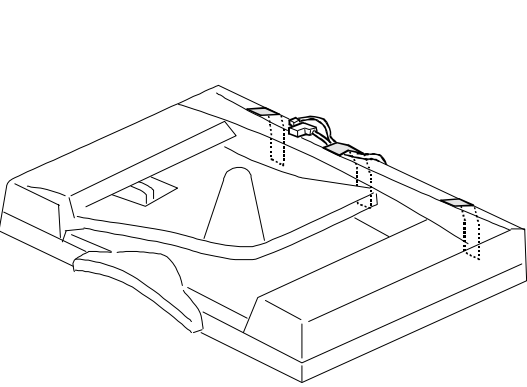
### 3. DUAL JOB FEEDER (A610)

#### 3.1 ACCESSORY CHECK

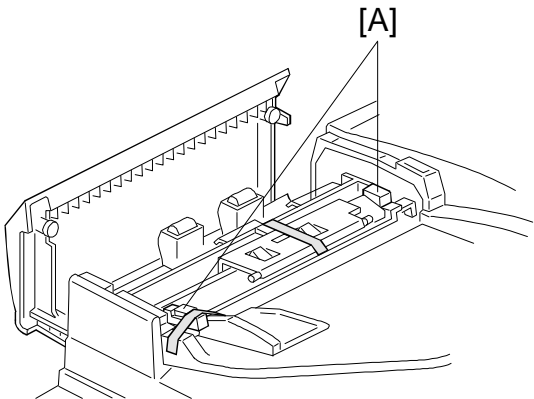
Check the accessories against the following list:

Description	Q'ty
1. Installation Procedure.....	1
2. NECR (-17, -27 only) .....	1
3. Stepped Screw .....	2
4. Sponge Retainer.....	1
5. Philips Pan Head Screw with Washer - M5 x 10 .....	2
6. Hinge Stopper Bracket .....	2
7. Philips Pan Head Screw - M4 x 6.....	2
8. Feed-out Guide Mylar.....	1
9. Decal.....	1

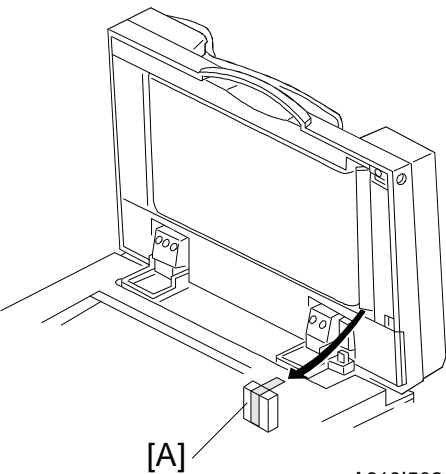
3.2 INSTALLATION PROCEDURE



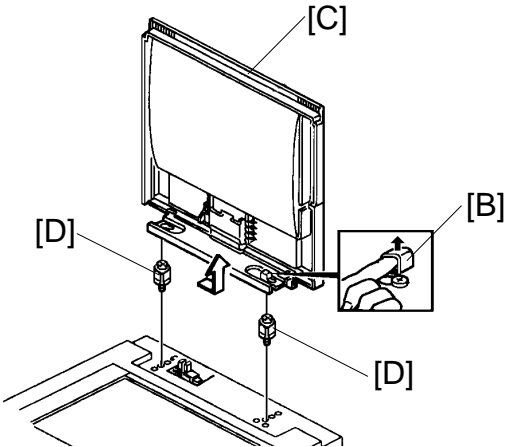
A610I500.wmf



A610I501.wmf

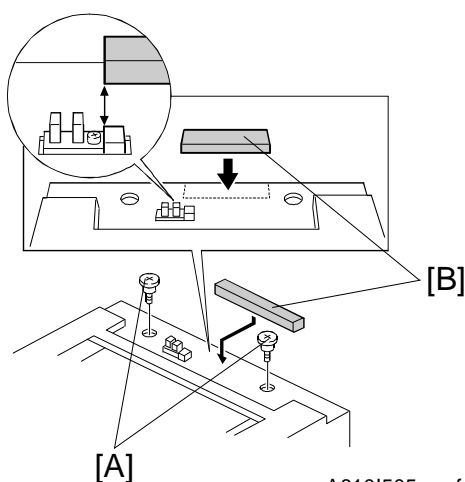


A610I502.wmf

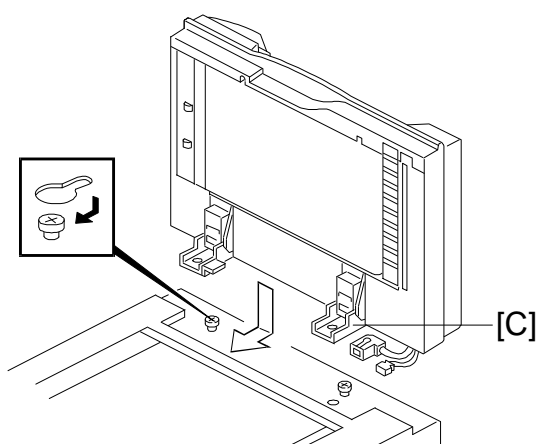


A610I503.img

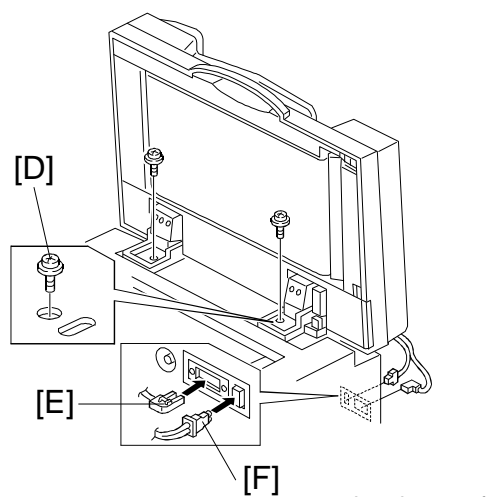
1. Remove the tape strips and the cushions [A] as shown.
2. While raising the lock plate [B], slide the platen cover [C] to the right and remove it.
3. Remove the platen cover mounting screws [D].



A610I505.wmf

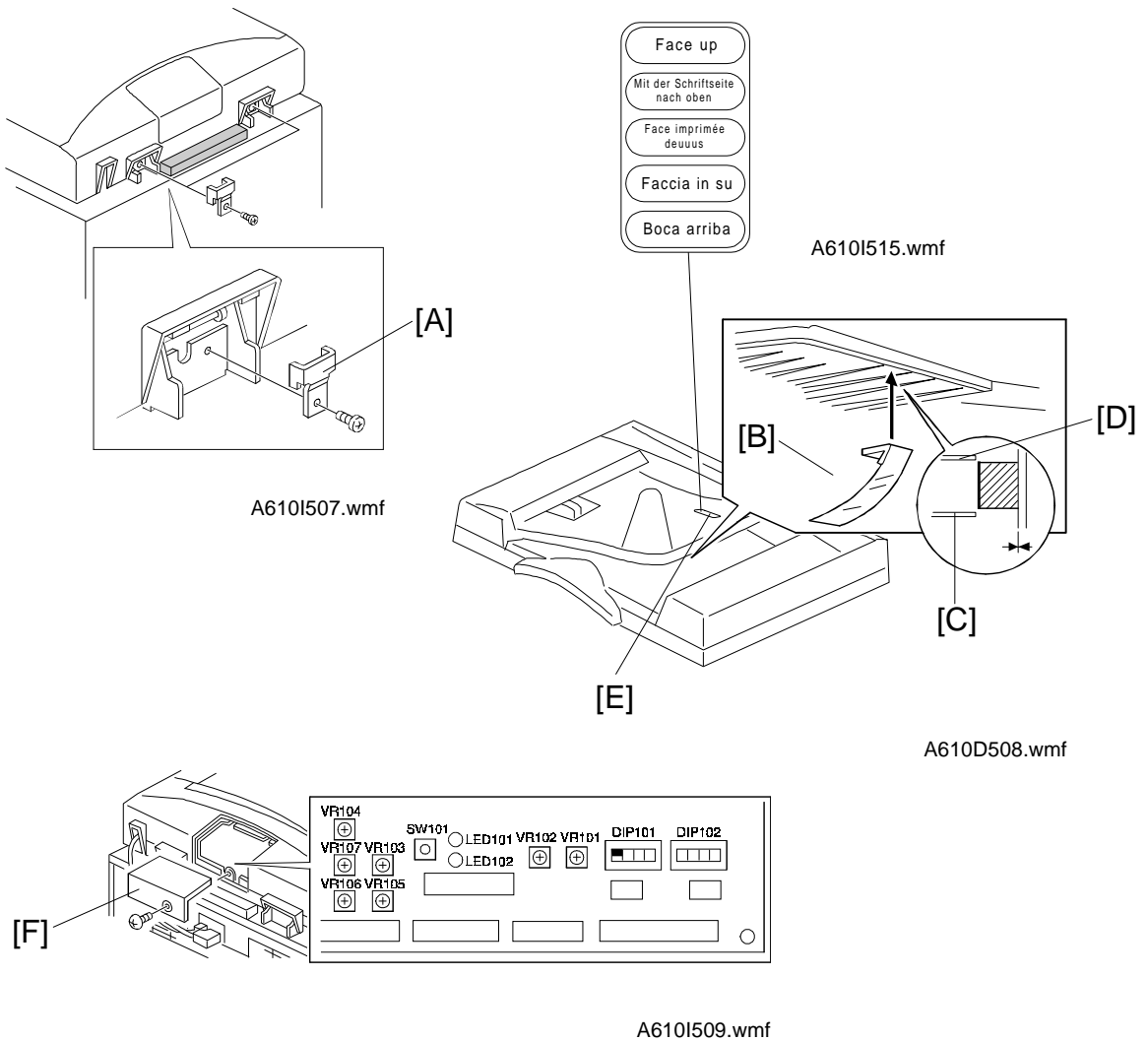


A610I504.wmf



A610I506.wmf

4. Install two stepped screws [A].
5. Attach the sponge retainer [B] to the top cover of the copier as shown.
6. Mount the DF on the copier by inserting the two stepped screws into the holes in the DF hinge [C], then slide the DF to the front, as shown.
7. Secure the DF to the copier by using the screw holes as shown (2 screws - M5 x 10 [D]).
8. Remove the small cap on the upper rear cover then connect the main connector [E] and the fiber optic cable connector [F].



9. Secure the hinge stopper bracket [A] as shown (2 screws - M4 x 6).
  10. Attach the feed-out guide mylar [B] under the original table. Attach it between the 3rd [C] and 4th [D] ribs (counting from the rear).
  11. Apply the appropriate decal at [E].
  12. Remove the small cover [F] at the rear of the DF upper cover (1 screw), and turn on DIP SW101-1.
  13. Plug in the copier and turn on the main switch.
- NOTE:** The copier automatically recognizes that the DF has been installed.
14. Make copies using the DF and confirm the machine functions properly.
  15. Explain to the customer that settings may now be changed, depending on the characteristics of each original.



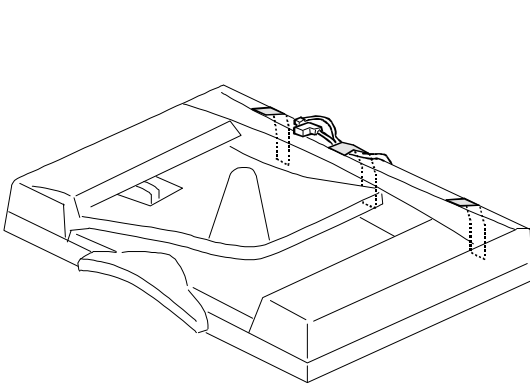
### 3. DUAL JOB FEEDER (A610)

#### 3.1 ACCESSORY CHECK

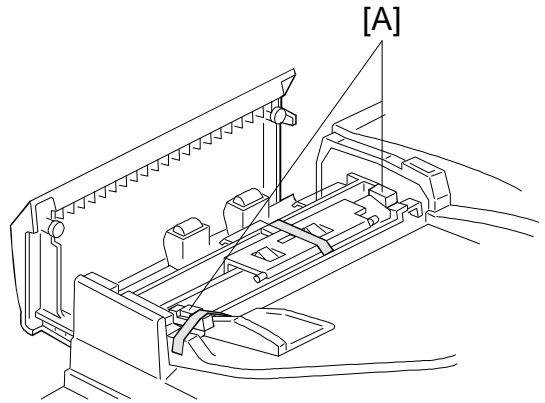
Check the accessories against the following list:

Description	Q'ty
1. Stepped Screw .....	2
2. Sponge Retainer.....	1
3. Philips Pan Head Screw with Washer - M5 x 10.....	2
4. Hinge Stopper Bracket .....	2
5. Philips Pan Head Screw - M4 x 6.....	2
6. Feed-out Guide Mylar.....	1
7. Decal.....	1

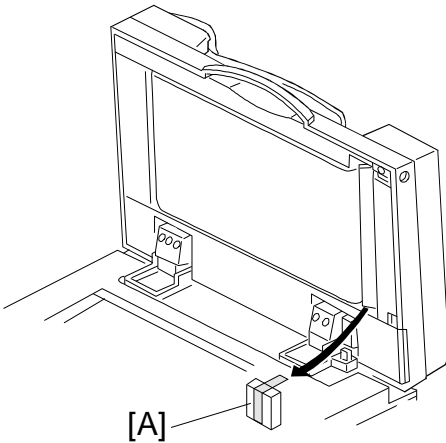
## 3.2 INSTALLATION PROCEDURE



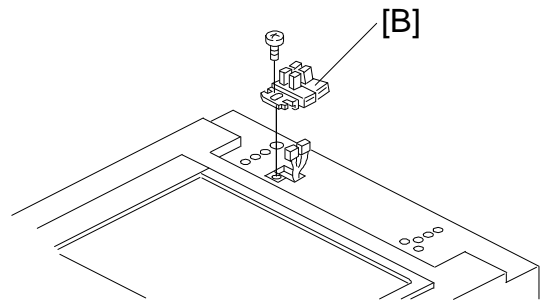
A610I500.wmf



A610I501.wmf



A610I502.wmf



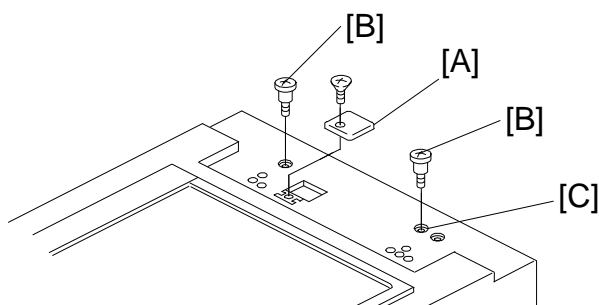
A610I510.wmf

### CAUTION

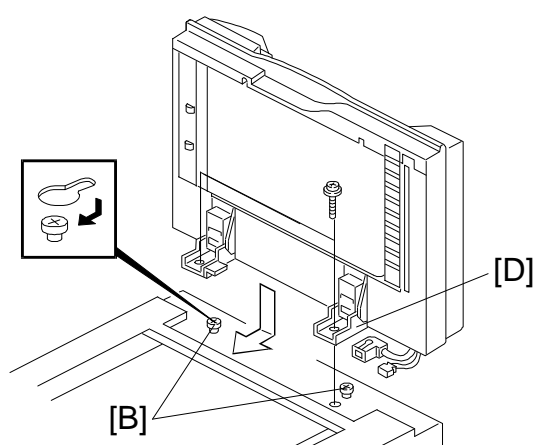
**Unplug the copier power cord before starting the following procedure.**

1. Remove the tape strips and the cushions [A] as shown.
2. Remove the sensor [B], if installed (1 screw).

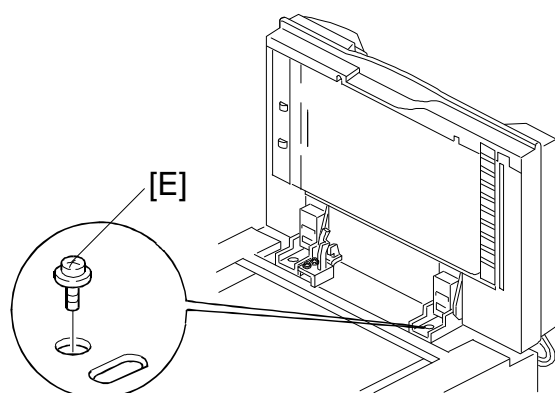
**NOTE:** Sensor [B] is not installed with the copier. It is an accessory of the platen cover (option).



A610I511.wmf



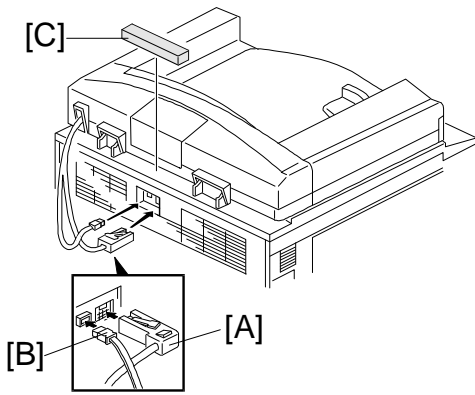
A610I512.wmf



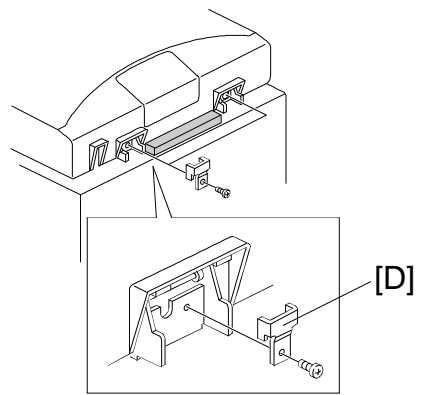
A610I513.wmf

3. Install the cover [A] with the screw (if necessary). The cover and screw are supplied as an accessory with the copier.
4. Install two stepped screws [B].
 

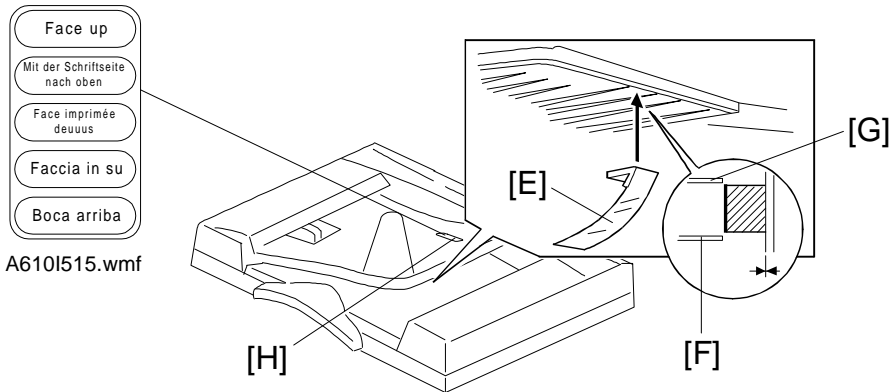
**NOTE:** There is one screw hole on the left side for the stepped screw. However, there are two screw holes on the right where the stepped screw is to be installed. Install the stepped screw into the inner screw hole [C], as shown in the illustration.
5. Mount the DF to the copier [B] by inserting the screws into the holes of the DF hinge [D], then slide the DF to the front as shown.
6. Secure the DF to the copier by using the screw hole as shown (2 screws - M 5 x 10 [E]).



A610I514.wmf



A610I507.wmf



A610I508.wmf

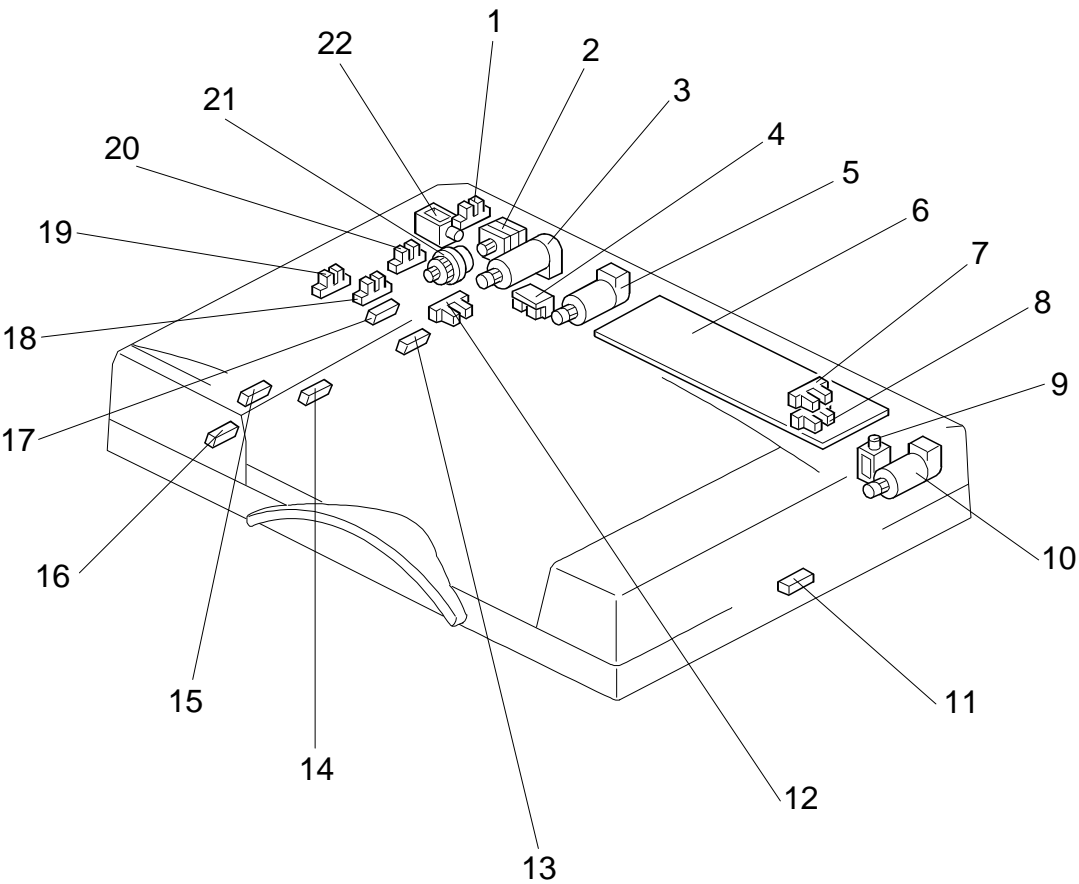
7. Remove the small cap on the upper rear cover, then connect the main connector [A] and the fiber optic cable connector [B].

### **CAUTION**

**When connecting the fiber optic cable, make sure to mount it over the main connector to prevent it from being bent.**

8. Attach the sponge retainer [C] to the top cover as shown.
9. Secure the hinge stopper bracket [D], as shown (2 screws - M4 x 6).
10. Attach the feed-out guide mylar [E] under the original table. Attach it between the 3rd [F] and 4th [G] ribs (counting from the rear).
11. Apply appropriate decal at [H].
12. Plug in the copier and turn on the main switch.  
**NOTE:** The copier automatically recognizes that the DF has been installed.
13. Make copies using the DF and confirm the machine functions properly.
14. Explain to the customer that some settings may now be changed, according to the characteristics of each original.

# DJF ELECTRICAL COMPONENTS



Index No.	Description	Symbol	P-to-P
1	Feed-in Cover Open Sensor	S1	B2
2	Friction Belt Motor	M1	G1
3	Feed-in Motor	M2	G2
4	Indicator Panel Lamps	L1	G7
5	Belt Drive Motor	M3	G3
6	DF Main Board	PCB1	D1
7	DF Position Sensor	S2	B3
8	APS Start Sensor	S3	B3
9	Inverter Solenoid	SOL1	G6
10	Feed-out Motor	M4	G4
11	Feed-out Sensor	S4	B8
12	Pulse Count Sensor	S5	B5
13	Registration-2 Sensor	S6	B6
14	Original Width-1 Sensor	S7	B6
15	Original Width-2 Sensor	S8	B7
16	Original Width-3 Sensor	S9	B7
17	Registration-1 Sensor	S10	B6
18	Original Set Sensor	S11	B4
19	Original Feed Sensor	S12	B4
20	Friction Belt Turn Sensor	S13	B5
21	Feed-in Clutch	CL1	G5
22	Stopper Solenoid	SOL2	G6