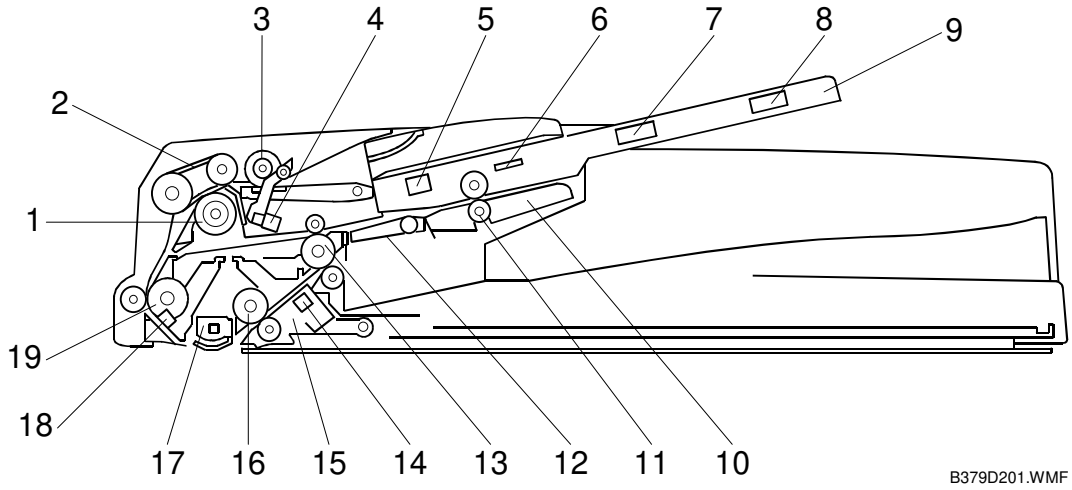
AUTO REVERSE DOCUMENT FEEDER
(Machine Code: B379)

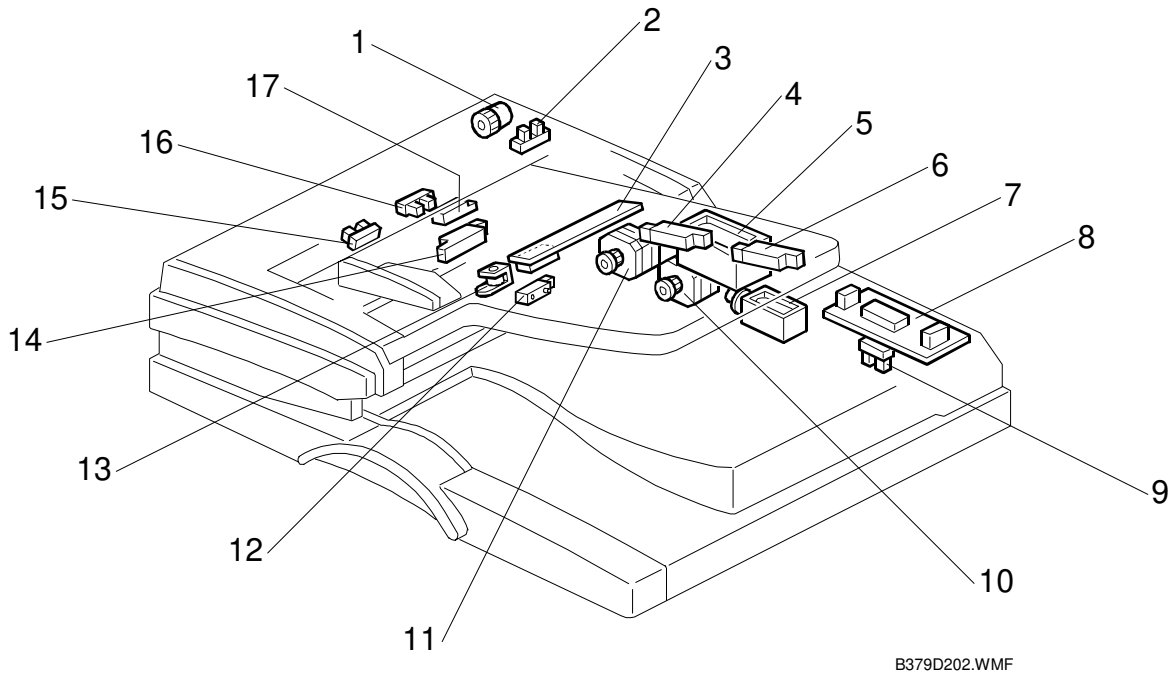
1. OVERALL MACHINE INFORMATION

1.1 MECHANICAL COMPONENT LAYOUT



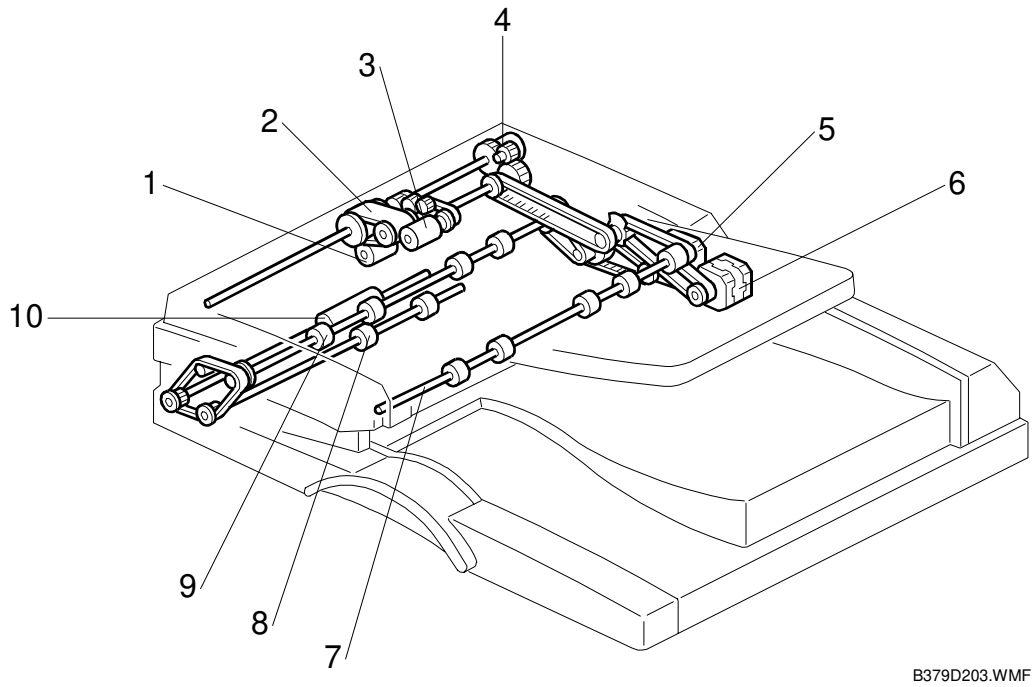
1. Separation Roller
2. Paper Feed Belt
3. Pick-up Roller
4. Original Set Sensor
5. Original Trailing Edge Sensor
6. Original Width Sensor Board
7. Original Length Sensor 1
8. Original Length Sensor 2
9. Original Table
10. Reverse Table
11. Reverse Roller
12. Junction Gate
13. Exit Roller
14. Original Exit Sensor
15. Stamp
16. 2nd Transport Roller
17. Original Exposure Guide
18. Registration Sensor
19. 1st Transport Roller

1.2 ELECTRICAL COMPONENT LAYOUT



1. DF Feed Clutch
2. Feed Cover Sensor
3. Original Width Sensor Board
4. Original Length Sensor 1
5. DF Pick-up Solenoid
6. Original Length Sensor 2
7. Junction Gate Solenoid
8. DF Drive PCB
9. DF Position Sensor
10. DF Feed Motor
11. DF Transport Motor
12. Original Exit Sensor
13. Stamp Solenoid
14. Original Trailing Edge Sensor
15. Original Set Sensor
16. Original Reverse Sensor
17. Registration Sensor

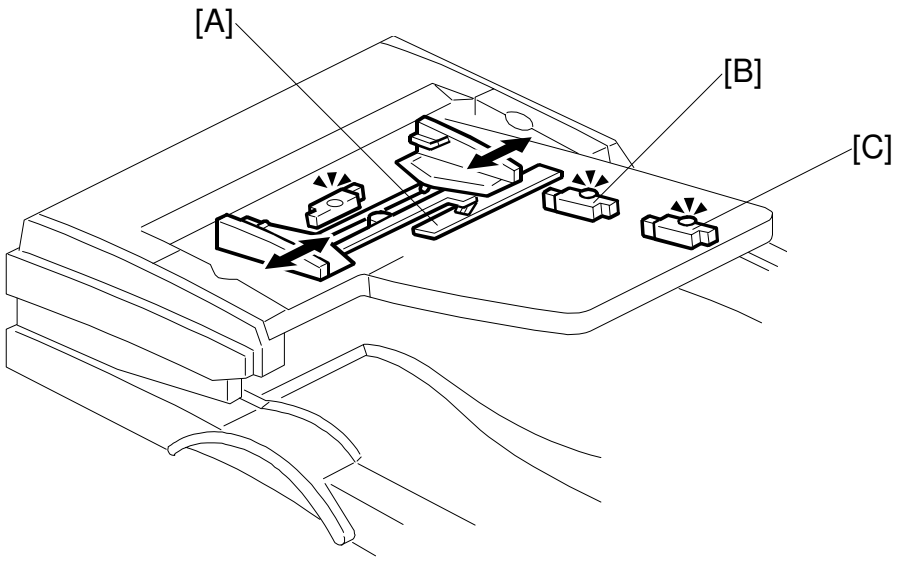
1.3 DRIVE LAYOUT



1. Separation Roller
2. Original Feed Belt
3. Pick-up Roller
4. DF Feed Clutch
5. DF Transport Motor
6. DF Feed Motor
7. Reverse Table Roller
8. 2nd Transport Roller
9. Exit Roller
10. 1st Transport Roller

2. DETAILED SECTION DESCRIPTIONS

2.1 ORIGINAL SIZE DETECTION



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The original size detection mechanism consists of the original width sensor board [A] and two original length sensors-1 [B] and -2 [C]. Based on the combined output of the length sensors and the width sensor board, the machine can detect the size of the original. This integrated detection mechanism is detailed in the table on the next page.

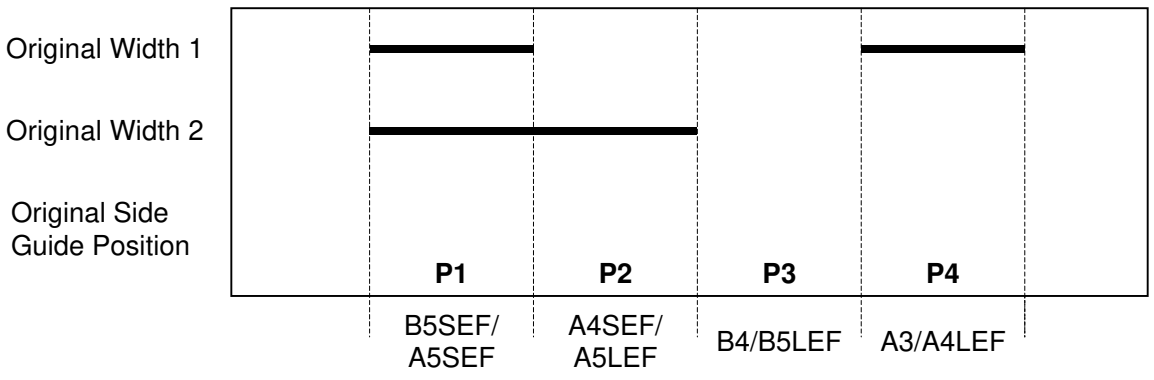
Note that the width sensor's terminal plate is attached to the original guide, so the widths of the originals must all be the same.

		NA	EU	Original Length 1	Original Length 2	P1	P2	P3	P4
1	A3 (297 x 420)	✗	❍	ON	ON	-	-	-	ON
2	B4 (257 x 364)	✗	❍	ON	ON	-	-	ON	-
3	A4 SEF (210 x 297)	✗	❍	ON	-	-	ON	-	-
4	A4 LEF (297 x 210)	✗	❍	-	-	-	-	-	ON
5	B5 SEF (182 x 257)	✗	❍	ON	-	ON	-	-	-
6	B5 LEF (257 x 182)	✗	❍	-	-	-	-	ON	-
7	A5 SEF (148 x 210)	✗	❍	-	-	ON	-	-	-
8	A5 LEF (210 x 148)	✗	❍	-	-	-	ON	-	-
9	11" x 17"	❍1	✗	ON	ON	-	-	-	ON
10	11" x 15"	●1	✗	ON	ON	-	-	-	ON
11	10" x 14"	❍	✗	ON	ON	-	-	ON	-
12	8 1/2" x 14"	❍2	✗	ON	ON	-	ON	-	-
13	8 1/2" x 13"	✗	❍4	ON	ON	-	ON	-	-
14	8" x 13"	●2	●4	ON	ON	-	ON	-	-
15	8 1/2" x 11" SEF	❍3	✗	ON	-	-	ON	-	-
16	11" x 8 1/2" LEF	❍	✗	-	-	-	-	-	ON
17	8" x 10" SEF	●3	✗	ON	-	-	ON	-	-
18	5 1/2" x 8 1/2" SEF	❍	✗	-	-	ON	-	-	-
19	8 1/2" x 5 1/2" LEF	❍	✗	-	-	-	ON	-	-

NA: America (North, Middle, South) EU: Europe, Asia, China, Taiwan
✗: No ❍: Yes ON: Paper present

❍1, ●1: In NA, original size 11" x 15" is detected as 11" x 17"
❍2, ●2: In NA, original size 8" x 13" is detected as 8 1/2" x 14"
❍3, ●3: In NA, original size 8" x 10" is detected as 8 1/2" x 11"
❍4, ●4: In EU, original size 8" x 13" is detected as 8 1/2" x 13"

Original Width Sensor Board



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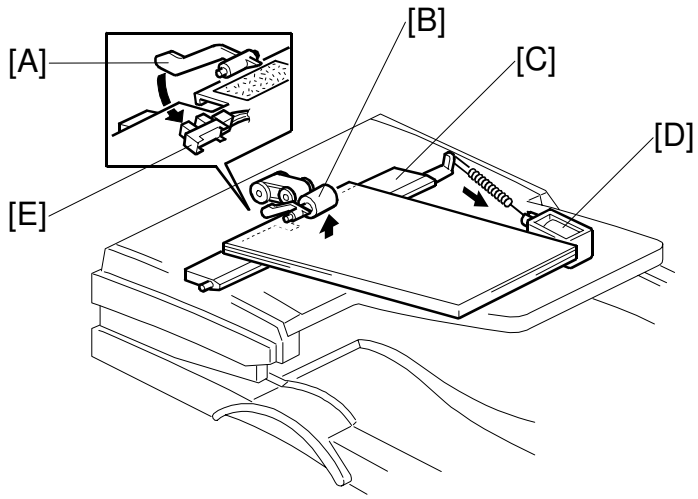
2.2 PICK-UP AND SEPARATION



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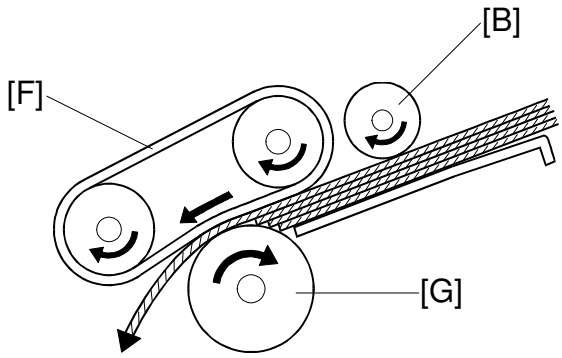

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The original is set with the image facing up. The original pushes actuator [A] and the original set sensor [E] is activated.

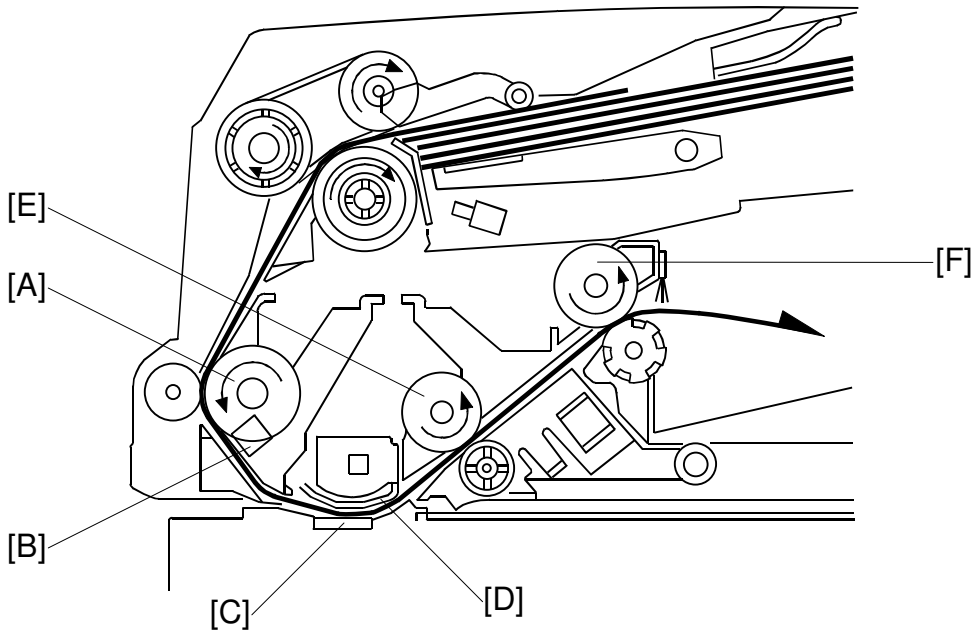
After pressing the start button, the pick-up solenoid [D] is activated and the lift plate [C] lifts the original up until it comes in contact with the pick-up roller [B]. The pick-up roller then feeds the top sheet of paper.

After being fed from the pick-up roller, the topmost sheet is separated from the stack by the separation roller and sent to the first transport roller.

The mechanism is an FRR system, consisting of the original feed belt [F] and separation roller [G].

2.3 ORIGINAL TRANSPORT AND EXIT

2.3.1 SINGLE-SIDED ORIGINALS



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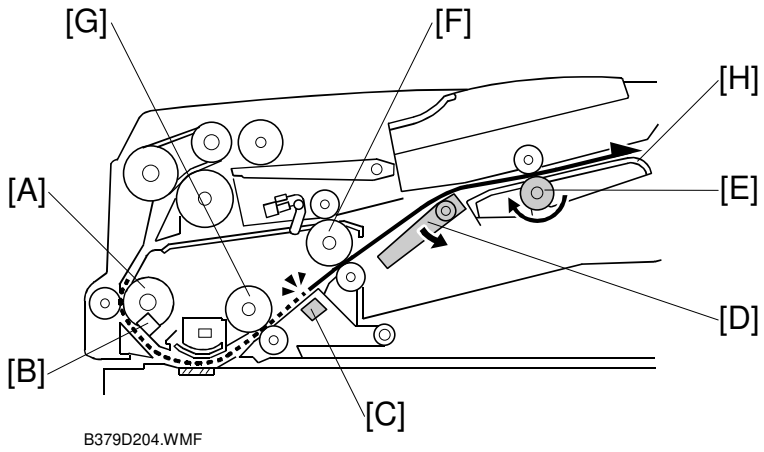
The DF feed motor feeds the separated original to the first transport roller [A] at maximum speed. When the registration sensor [B] detects the leading edge, the motor stops for a short while. Then the feed and transport motors turn on again, and feed the original through the scanning area at a lower speed (the scanning area contains the original exposure guide [D] and DF exposure glass [C]). After scanning, the original is fed out by the second transport roller [E] and exit roller [F].

2.3.2 DOUBLE-SIDED ORIGINALS



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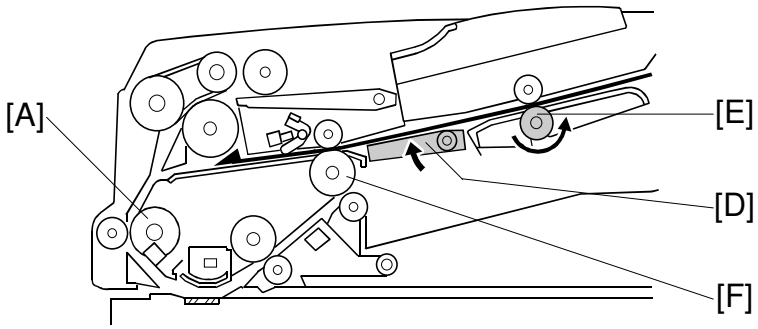

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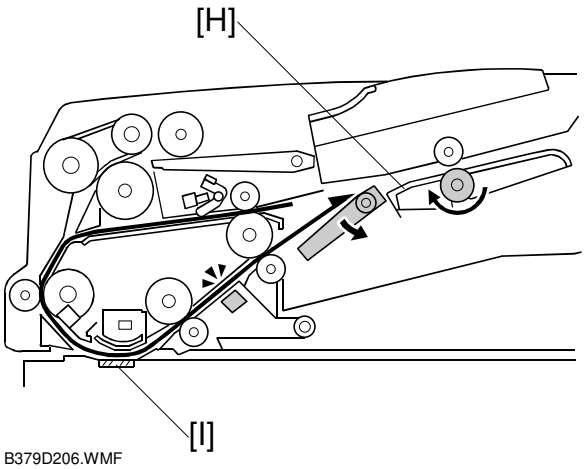
When the registration sensor [B] detects the leading edge of the original, the DF feed motor (which drives the feed roller) and transport motor (which drives the transport roller) both switch off. After a brief interval, the transport motor alone reactivates to drive the first transport roller [A] and second transport roller [G] and the exit roller [F]. The front side of the original is then scanned.

When the original exit sensor [C] detects the leading edge of the original, the junction gate solenoid is activated and the junction gate [D] opens. The original is then transported towards the reverse table [H].

Soon after the trailing edge of the original passes the exit sensor [C], the junction gate solenoid switches off and the junction gate [D] is closed. When the original has been fed onto the reverse table, the DF feed motor switches on in reverse. The original is then fed by the reverse roller [E] and then by the exit roller [F] and first transport roller [A] to the scanning area (where the reverse side will be scanned).



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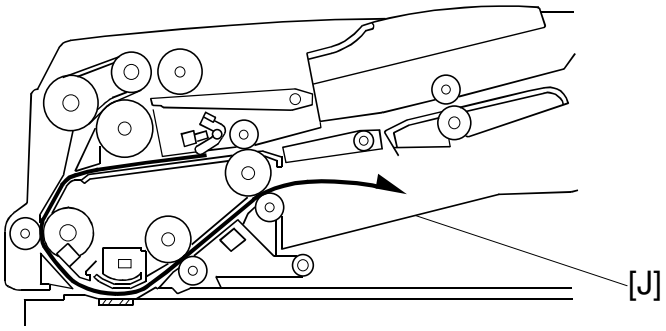

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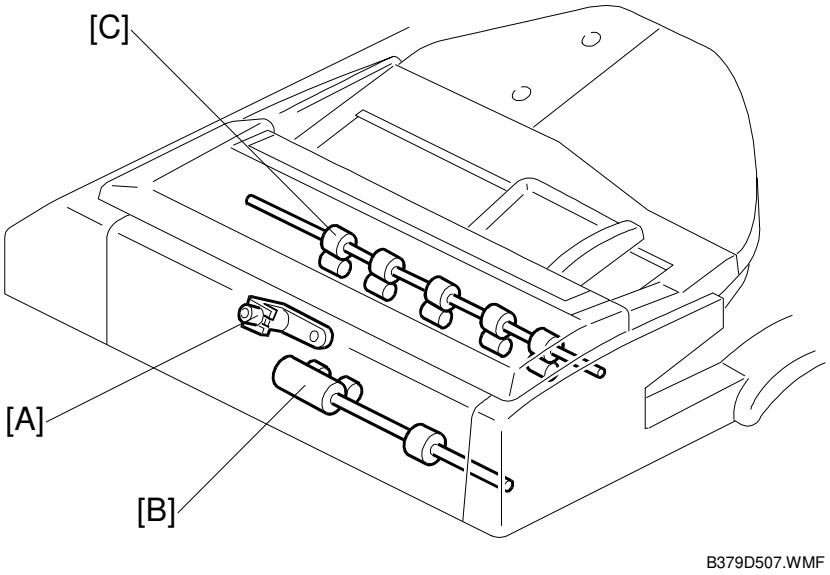
The original is then sent to the reverse table [H] a second time to be turned over. This is done so that the duplex copies will be properly stacked front side down in the exit tray [J] in the correct order.

2.3.3 ORIGINAL TRAILING EDGE SENSOR

During one-to-one copying, copy paper is fed to the registration roller in advance (while the original is still being scanned), to increase the copy speed. The trailing edge sensor monitors the stack of originals in the feeder, and detects when the trailing edge of the last page has been fed in. The main CPU then stops the copier from feeding an unwanted extra sheet of copy paper.

2.4 STAMP



This function is only for fax mode.

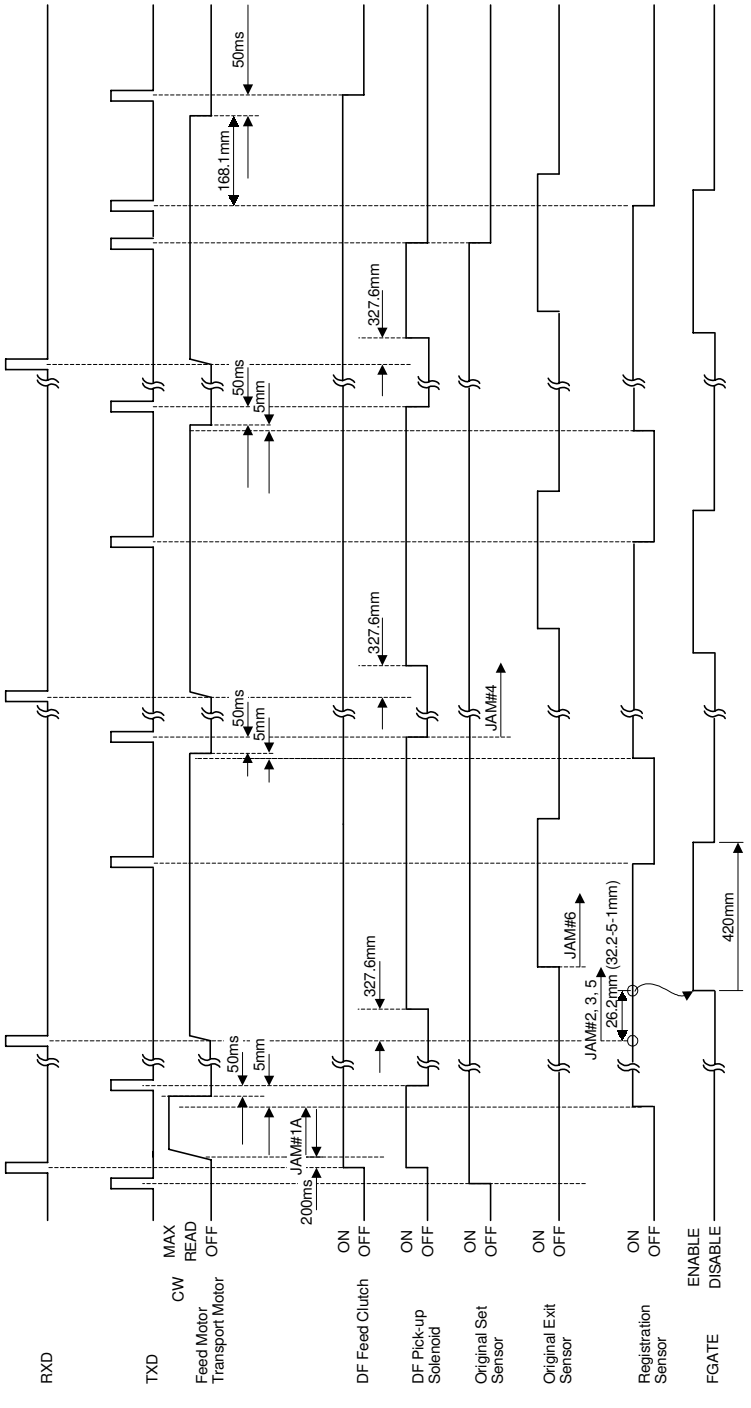
There is a stamp [A] between the 2nd transport roller [B] and the exit roller [C], and its solenoid is controlled by the copier directly.

When the original reaches the stamp position, the DF feed motor stops. At 300 milliseconds after stopping the DF feed motor, the stamp solenoid turns on if the page was sent successfully (immediate transmission) or stored successfully (memory transmission). After stamping, the DF feed motor starts again to feed out the document, and its speed is about 1.3 times the normal speed.

The stamping position on the original can be changed by adjusting SP6-010.

2.5 TIMING CHARTS

2.5.1 SINGLE-SIDED ORIGINAL MODE (A3)



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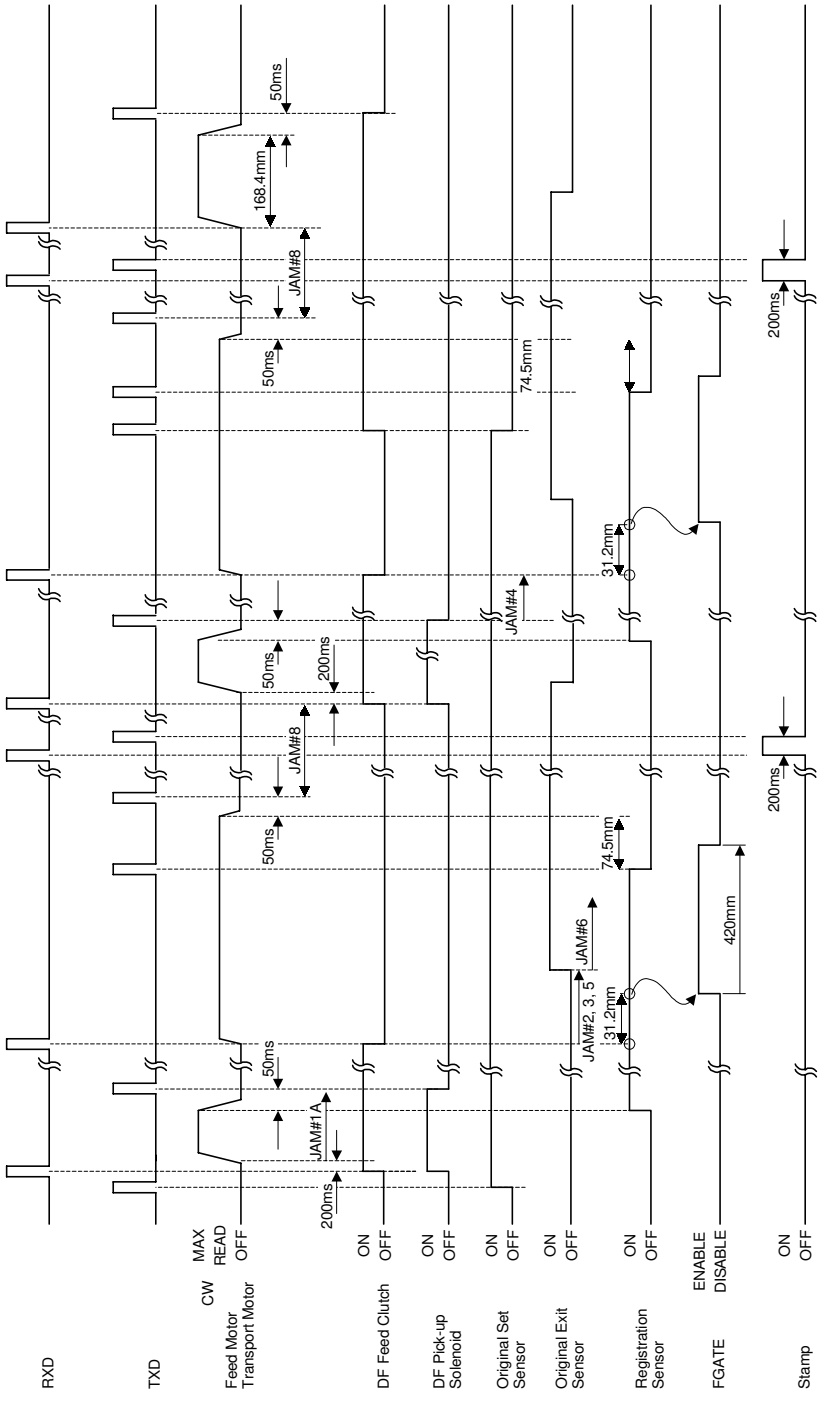
Peripherals

2.5.2 SINGLE-SIDED ORIGINAL MODE (A3, STAMP MODE)



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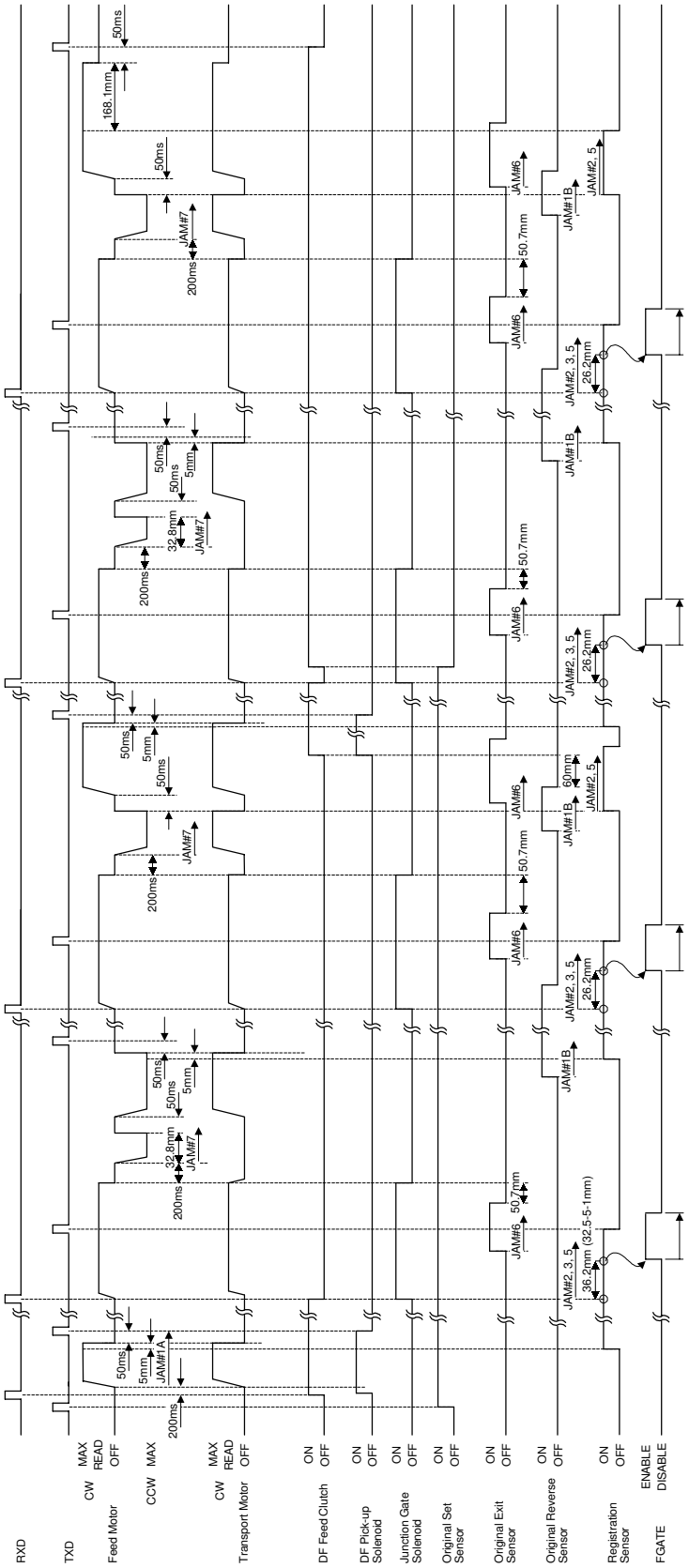
2.5.3 DOUBLE-SIDED ORIGINAL MODE



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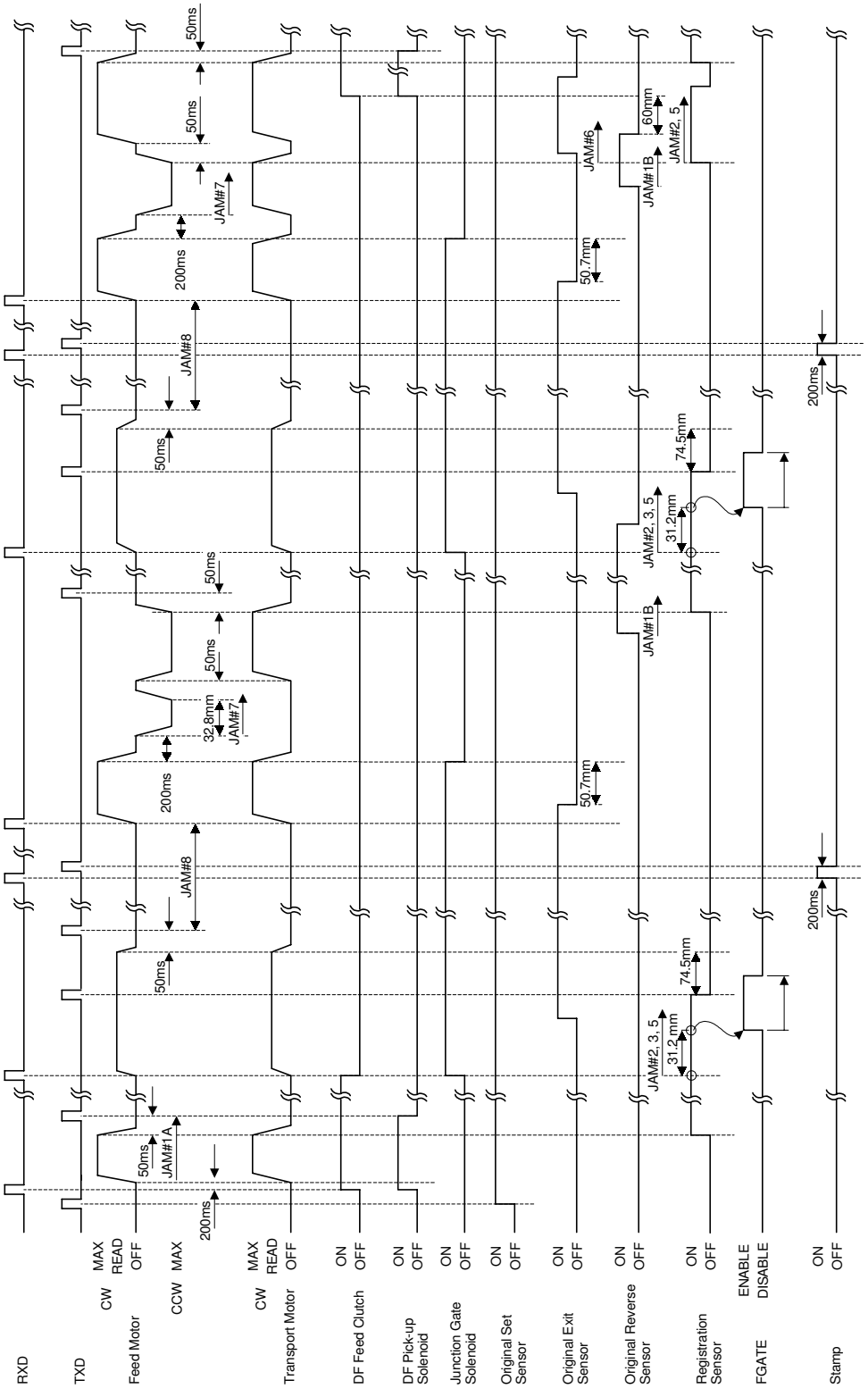
2.5.4 DOUBLE-SIDED ORIGINAL MODE (STAMP MODE)



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2.6 JAM DETECTION

JAM 1A: If the registration sensor does not turn on within X1 ms after original feed starts.
X1 = (114 x 1.1)/line speed + 2,000 ms

JAM 1B: If the registration sensor does not turn on within 685 ms after the leading edge of the original reaches the original reverse sensor (duplex mode only)

JAM 2: If the registration sensor does not turn off within X2 ms after turning on.
X2 = (Original length/line speed) +2,000 ms

JAM 3: If there is no original at the registration sensor when scanning is started, even though the sensor had already turned on.
The operator may then remove the original from the ADF.

JAM 4: The current original is stopped after the registration sensor detects its leading edge, but the previous original is still at the scanning position.

JAM 5: If the original exit sensor does not turn on within X3 ms after the registration sensor turns on.
X3 = 140 mm/line speed

JAM 6: If the original exit sensor does not turn off within X4 ms after the original exit sensor turns on.
X4 = (Original length/line speed) +2,000 ms

JAM 7: If the original reverse sensor does not turn on within 2,329 ms after the reversing process begins (Duplex mode only).

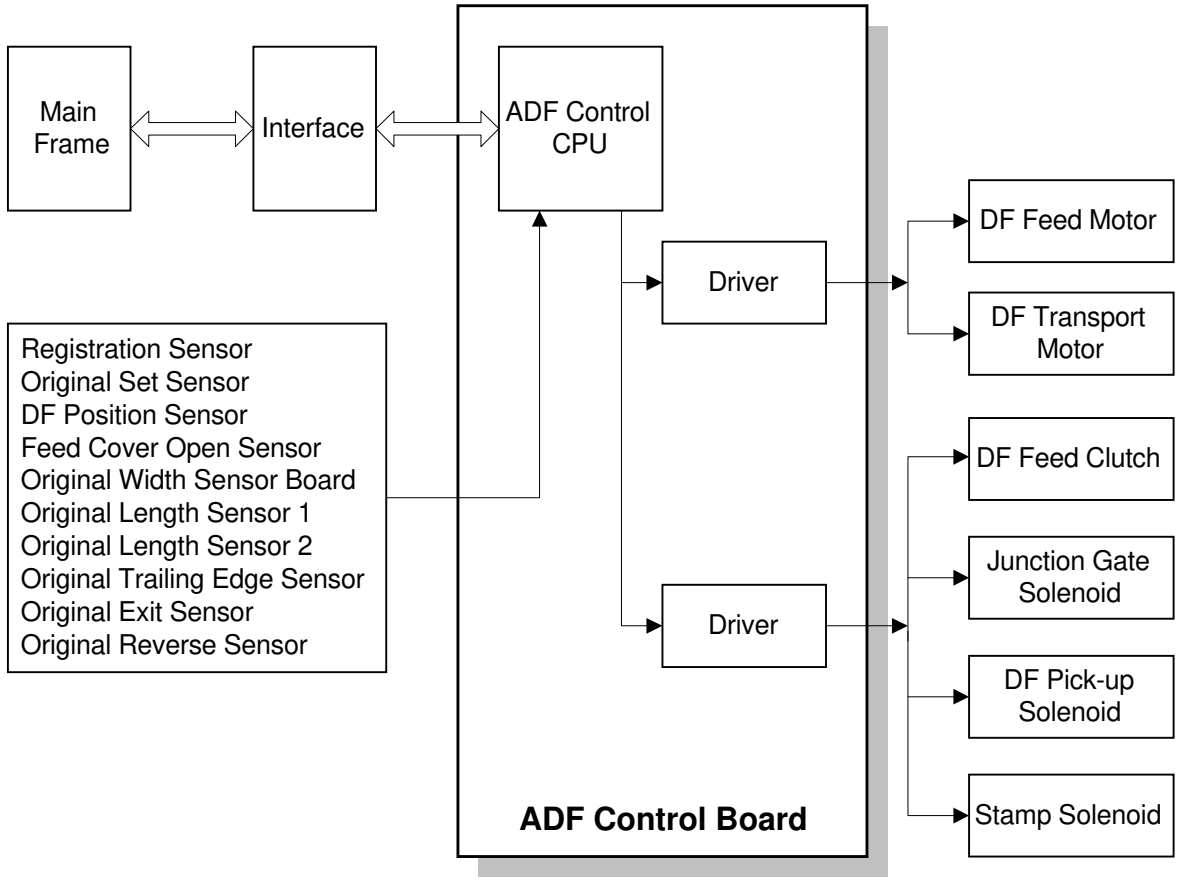
JAM 8: If the original stopped at the stamp position is removed.

JAM 9: If the cover is opened or the ADF is lifted up while the ADF is in operation.

JAM 10: If the DF gate signal (indicating that the original is now in the correct position for scanning) is not asserted when the original trailing edge passes the DF exposure glass.
JAM 10 occurs when the original is pulled out while it is being scanned.

2.7 OVERALL ELECTRICAL CIRCUIT

The DF CPU controls the transport motor, DF feed motor, DF feed clutch, junction gate solenoid, stamp solenoid, and pick-up solenoid. The DF CPU also monitors all DF sensors and provides updated status information when prompted at regular intervals by the mainframe, which may then take action based on this information. The DF–mainframe connection is checked automatically just after power is supplied to the mainframe.



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2.8 FREE RUN

Two types of free runs can be performed by using Dip Switch DPS 100 on the DF control board. The switch settings are as follows:

DPS 100

SW				
1	OFF	ON	OFF	ON
2	OFF	OFF	ON	ON
Mode	Normal	A	B	(*See below)

A: One-sided free run
B: Two-sided free run
*: When both switches have been switched to ON:
If SW 1 was turned ON first, Mode A is enabled. If SW 2 was turned ON first, Mode B is enabled.

Procedure

1. Turn on SW 1 or 2 (DPS 100 on DF control board).
2. Set the original on the original table.
3. After 2 seconds, the free run will automatically start.
4. To stop the free run, turn all DIP switches OFF, then turn the main power off and on.

One-sided Free Run Process

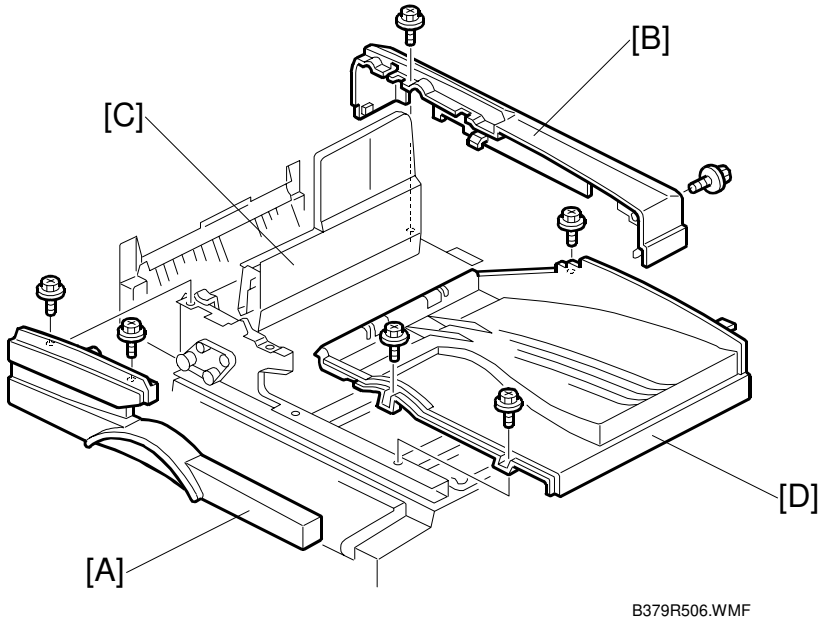
1. The originals are set on the original table.
2. The first page of the original is fed into the DF.
3. The sensors detect the original.
4. The original is output to the exit tray.
5. Steps 2-4 above are repeated for any additional originals set on the original table. If there are no additional originals, the DF will stop and wait.

Two-sided Free Run Process

The process is the same, except that the original reverse cycle is added.

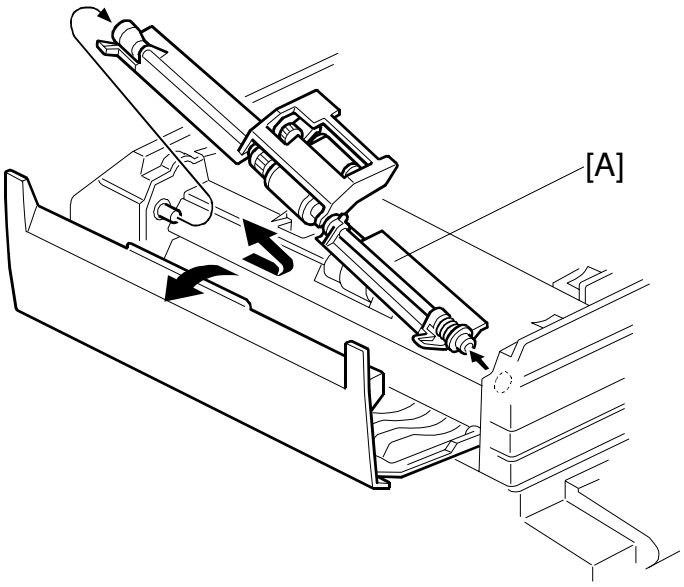
3. REPLACEMENT AND ADJUSTMENT

3.1 DF EXIT TABLE AND COVER



1. Open the left cover.
2. [A] Front cover (🔩 x 2)
3. [B] Rear cover (🔩 x 2). Take care not to break the 3 hooks.
4. [C] Open the reverse table
5. [D] Original exit table (🔩 x 3)

3.2 ORIGINAL FEED UNIT



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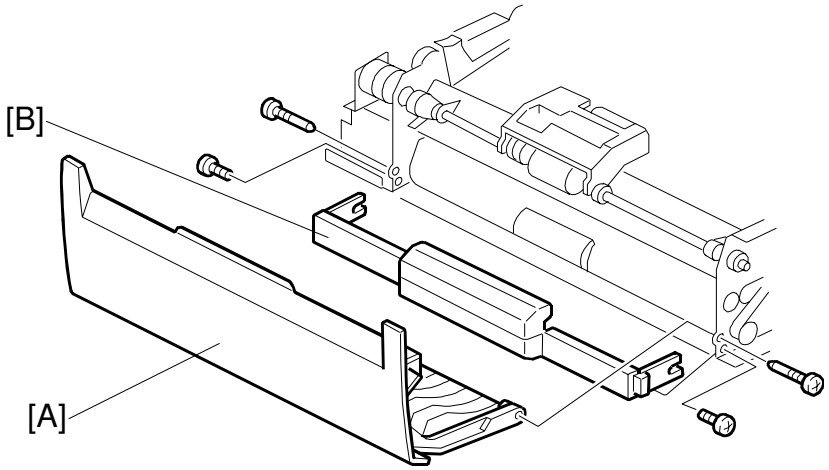
1. Open the left cover.
2. [A] Original feed unit

3.3 LEFT COVER



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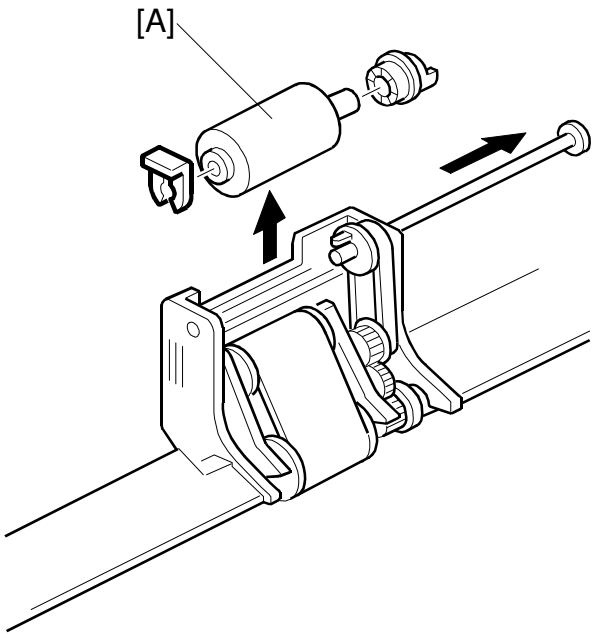
1. Front and rear covers (☛ 3.1)
2. [A] Left cover (🔩 x 2)
3. [B] Lower left stay unit (🔩 x 2)

3.4 PICK-UP ROLLER



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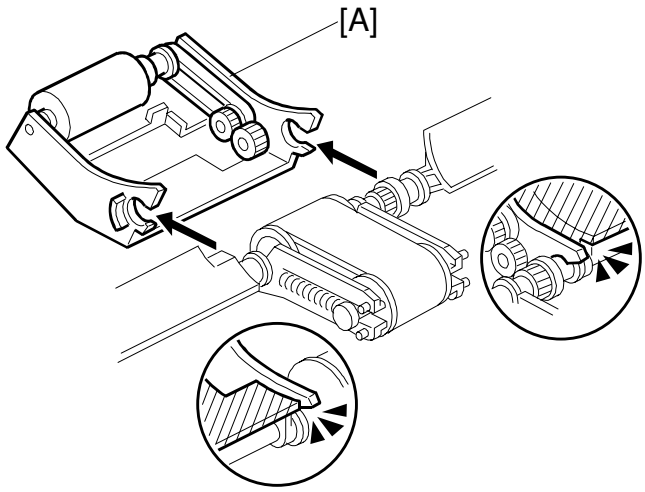
1. Original feed unit (☛ 3.2)
2. [A] Pick-up roller (1 snap ring)

3.5 FEED BELT



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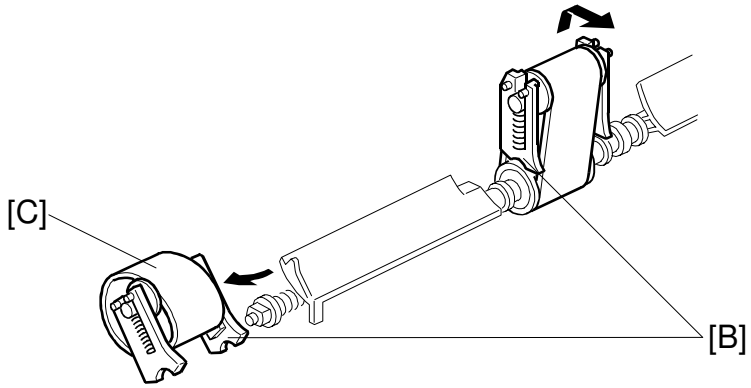

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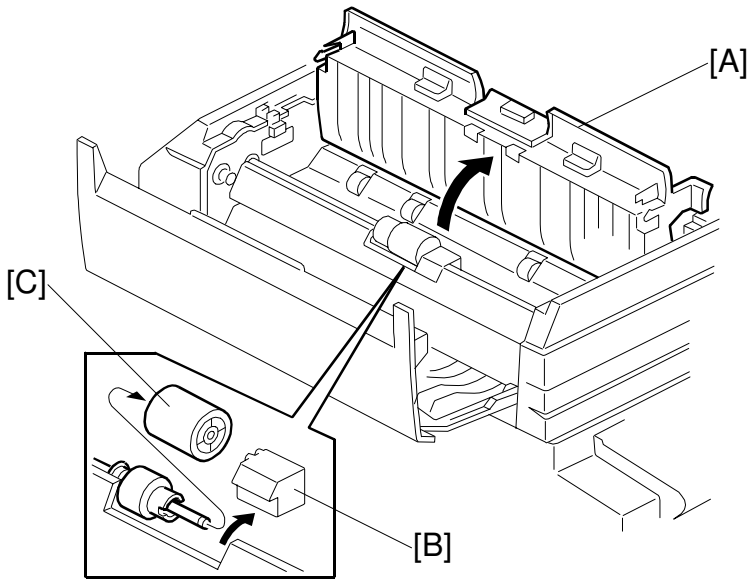
1. Original feed unit (☛ 3.2)
2. [A] Paper feed guide
3. [B] Belt holders
4. [C] Feed belt

3.6 SEPARATION ROLLER



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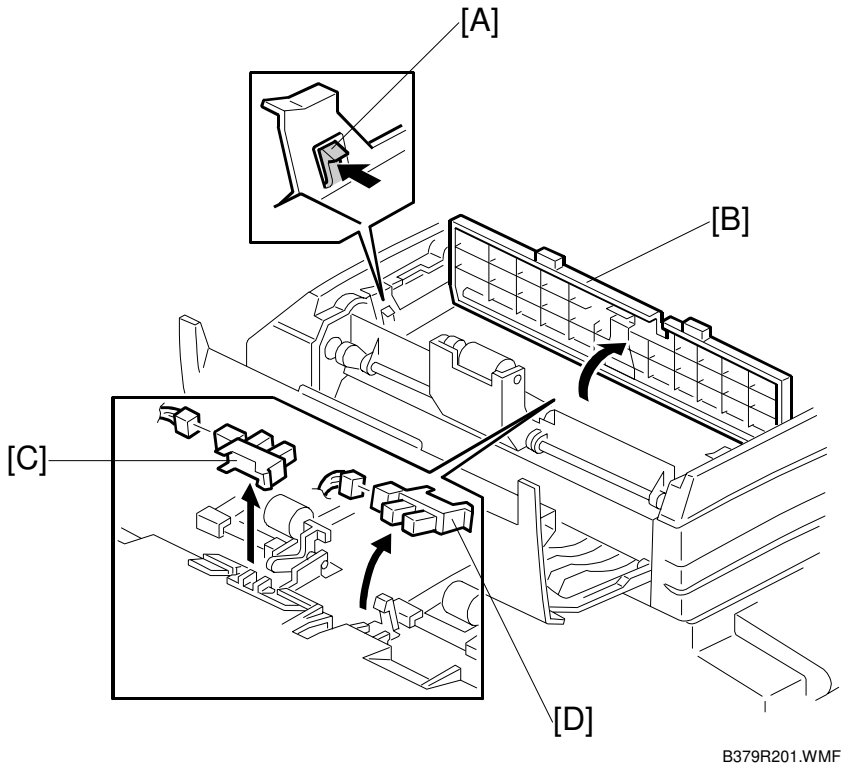
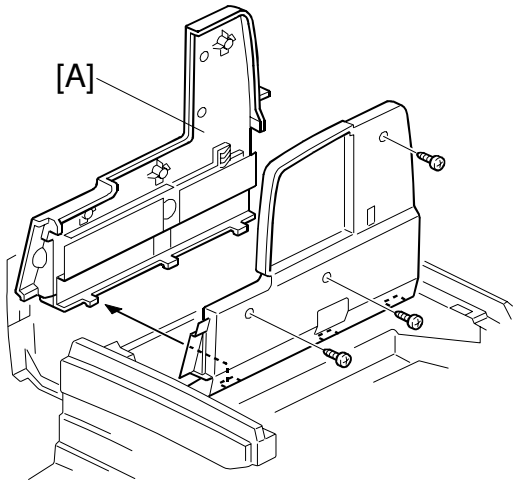
1. Lift the original feed guide [A].
2. [B] Separation roller cover
3. [C] Separation roller

3.7 ORIGINAL SET/ORIGINAL REVERSE SENSORS



1. Open the left cover.
2. While pushing the left and right pawls [A], open the original feed guide plate [B].
3. [C] Original set sensor (☞ x 1)
4. [D] Original reverse sensor (☞ x 1)

3.8 ORIGINAL L/W SENSORS, TRAILING EDGE SENSOR



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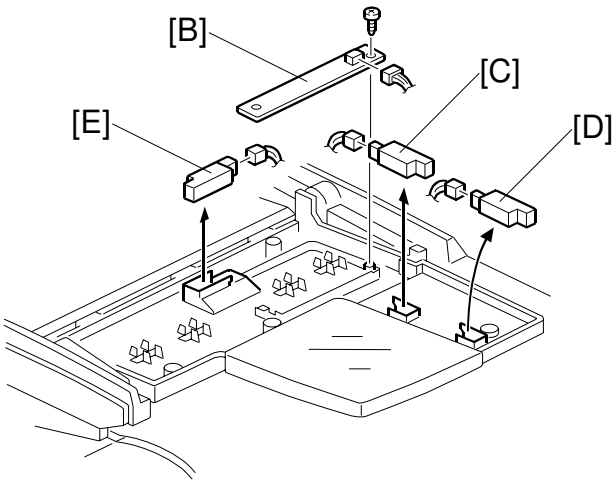

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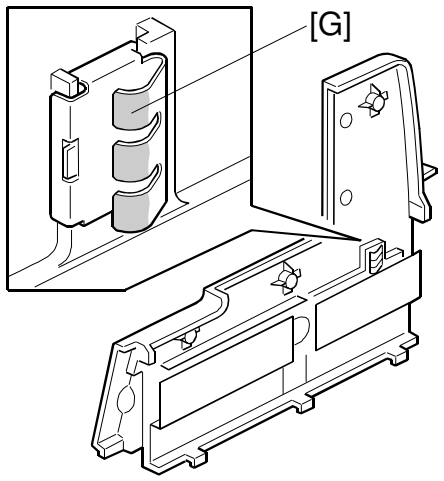
1. Open the original table.
2. [A] Upper part of the table (x 3)
3. [B] Width sensor board (x 1)
4. [C] Length sensor-1 (x 1)
5. [D] Length sensor-2 (x 1)
6. [E] Trailing edge sensor (x 1)

To ensure proper detection of paper size, after wiping off the sensor board and terminal plate with a dry cloth (or cloth with alcohol), apply silicone grease (KS-660) to the terminal plate [G].



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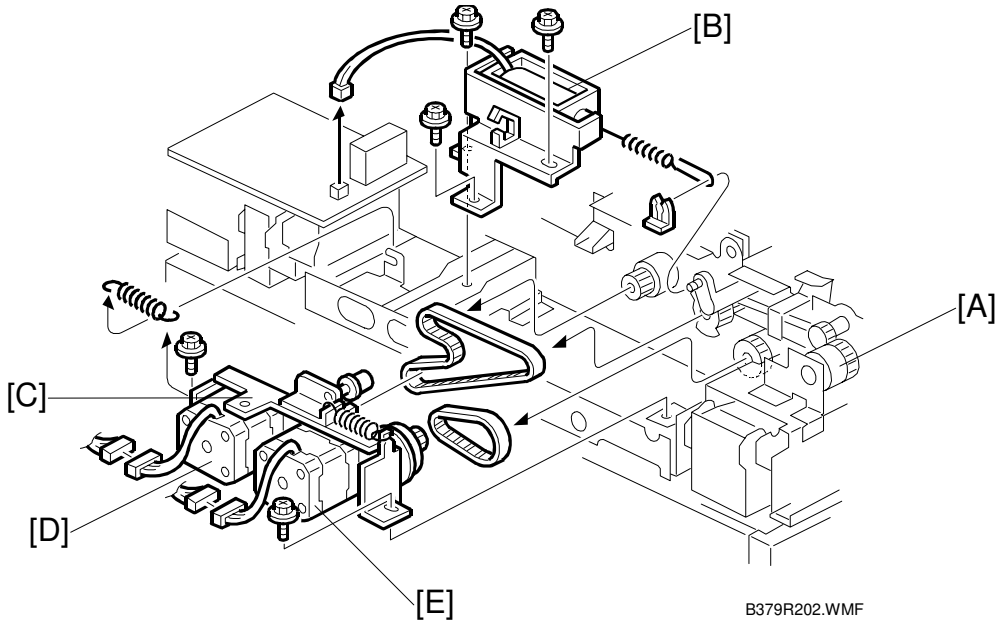
3.9 FEED CLUTCH, PICK-UP SOL, TRANSPORT MOTOR, FEED MOTOR



Exterior

1. Rear cover (☛ 3.1)

DF Feed Clutch

1. [A] DF feed clutch [A] (C x 1, x 1)

Pick-up Solenoid

1. [B] Pick-up solenoid (x 3, 1 snap ring, x 1)

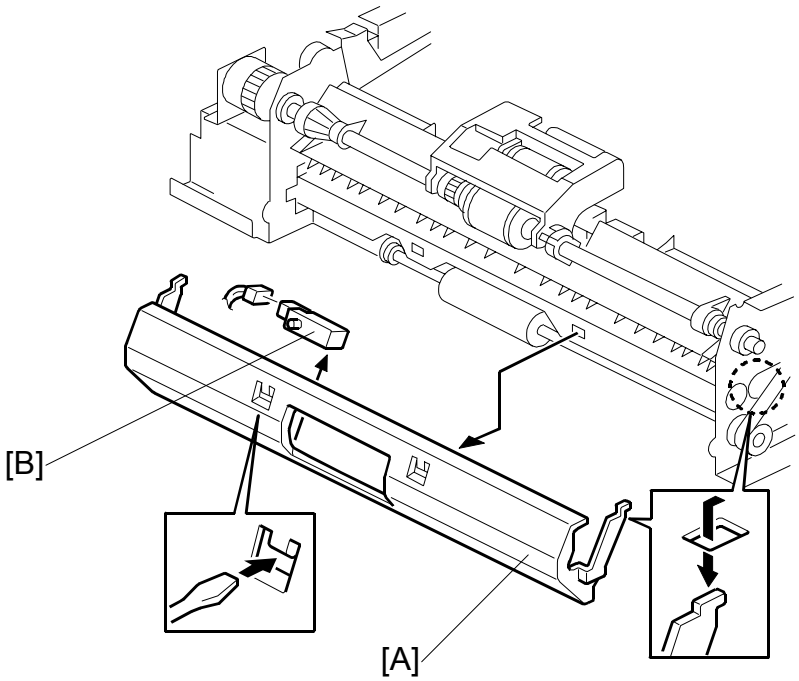
Transport Motor

1. [C] Bracket (x 2)
2. [E] Transport motor (x 2, x 1)

DF Feed Motor

1. [C] Bracket (x 2)
2. [D] DF feed motor (x 2, x 1)

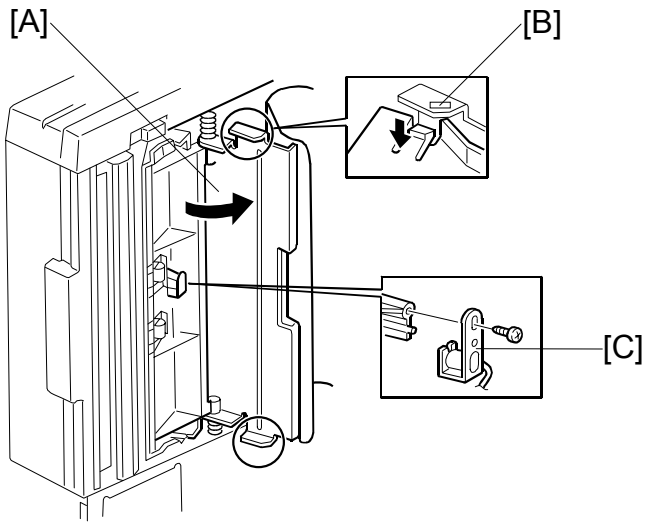
3.10 REGISTRATION SENSOR



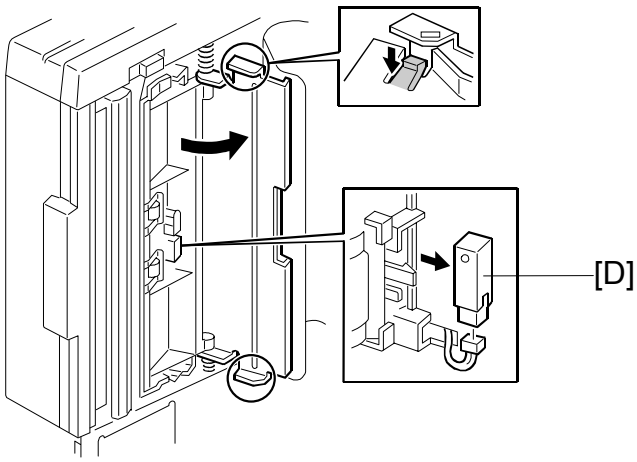
B379R508.WMF

1. Front and rear covers (☛ 3.1)
2. Left cover and lower left stay unit (☛ 3.3)
3. [A] Transport guide plate
4. [B] Registration sensor (☞ x 1)

3.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR



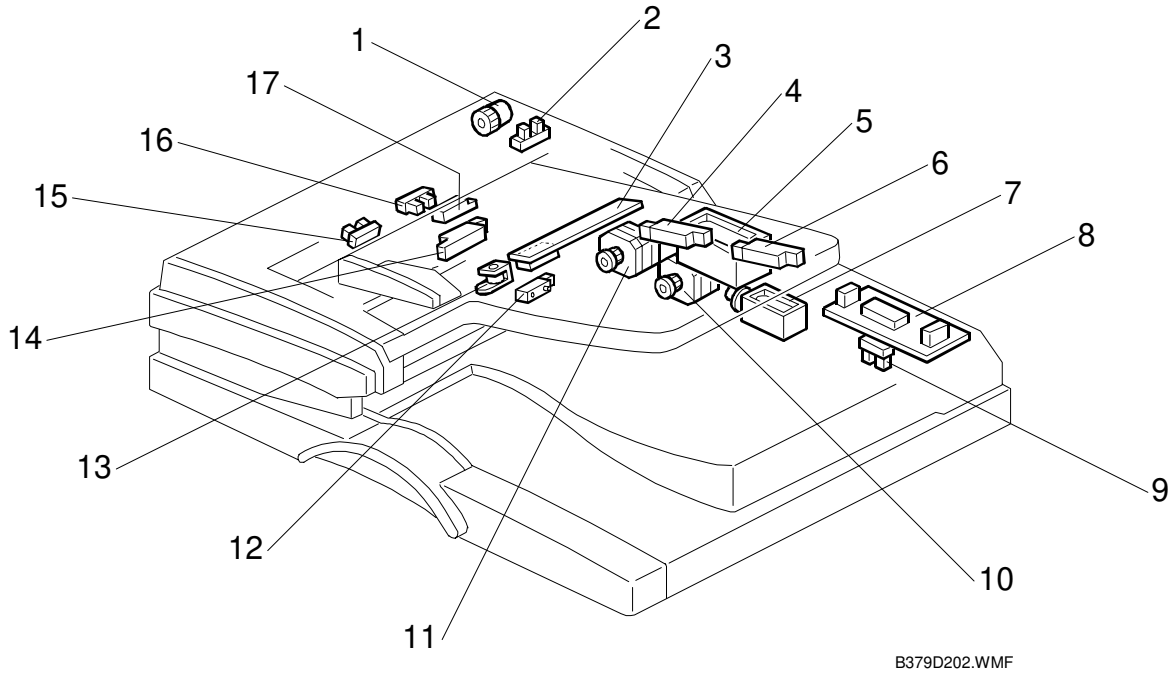
B379R509.WMF



B379R203.WMF

1. Front cover, Rear cover, Original exit table (☛ 3.1)
2. Open the exit guide plate [A]. Next, detach the unit by inserting a screwdriver or other tool into one of the small openings [B] on either side of the guide plate holder and pushing firmly.
3. [C] Stamp solenoid (x 1, x 1)
4. [D] Original exit sensor (x 1)

ELECTRICAL COMPONENT LAYOUT (B379)



Symbol	Name	Index No.	P-to-P
Motors			
M1	DF Feed	10	H12
M2	DF Transport	11	H12
Sensors			
S1	Original Exit	12	H14
S2	Original Reverse	16	H14
S3	Registration	17	H14
S4	Original Set	15	H14
S5	DF Position	9	H15
S6	Feed Cover Open	2	H15
S7	Original Length - 1	4	H15
S8	Original Length - 2	6	H16
S9	Original Trailing Edge	14	H16
Solenoids			
SOL1	Stamp	13	H13
SOL2	DF Pick-up	5	H13
SOL3	Junction Gate	7	H13
Magnetic Clutches			
MC1	DF Feed	1	H13
PCBs			
PCB1	DF Drive Board	8	H12-16
PCB2	Original Width Sensor Board	3	H15