

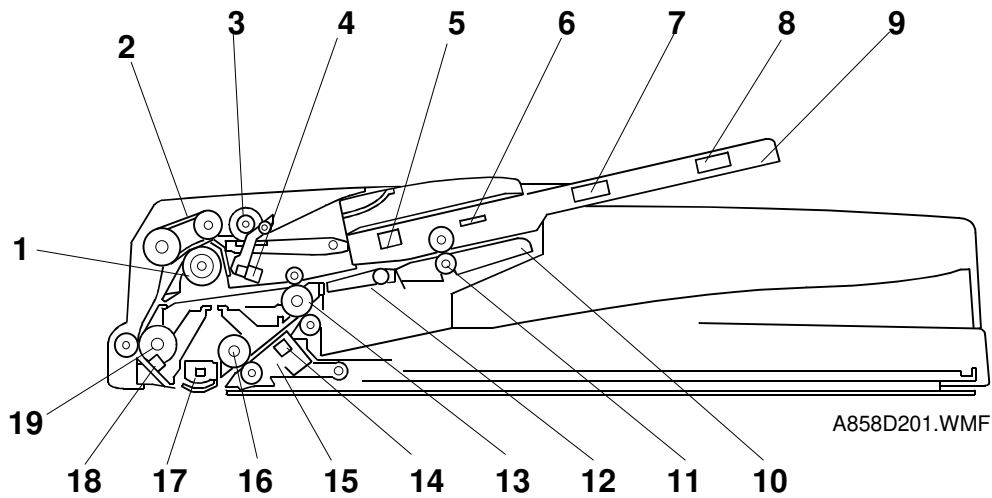
AUTO REVERSE DOCUMENT FEEDER
(Machine Code: A858)

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

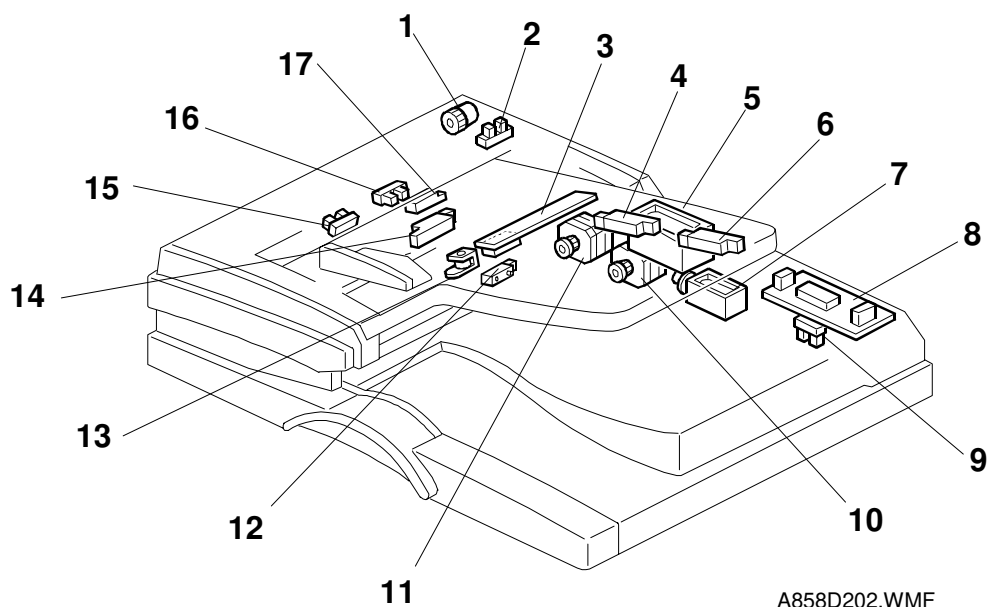
Original Size:	Standard sizes Single-sided mode: A3 to A5, DLT to HLT Double-sided mode: A3 to A4, DLT to LT Non-standard sizes (Single-sided mode only) Max. width 297 mm Min. width 105 mm Max. length 1260 mm Min. length 128 mm
Original Weight:	Single-sided mode: 52~128 g/m ² , 14~34 lb Double-sided mode: 52~105 g/m ² , 14~28 lb
Table Capacity:	30 sheets (70 kg)
Original Standard Position:	Center
Separation:	FRR
Original Transport:	Roller transport
Original Feed Order:	From the top original
Reproduction Range:	50 to 200 % (Sub scan direction only)
Power Source:	24 & 5 Vdc from the copier
Power Consumption:	50 W
Dimensions (W x D x H):	550 x 470 x 110 mm
Weight:	10 kg

1.2 MECHANICAL COMPONENT LAYOUT



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

1.3 ELECTRICAL COMPONENT LAYOUT

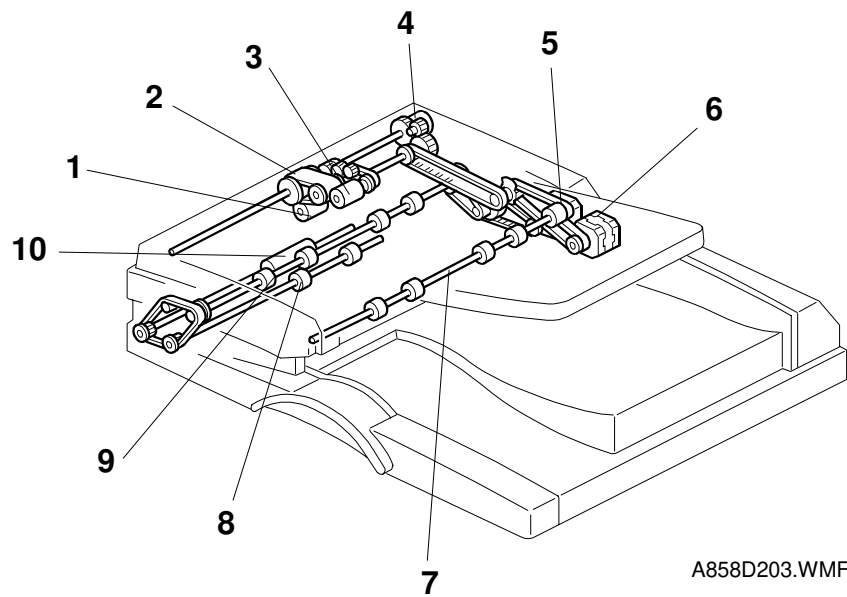


- | | |
|--------------------------------|-----------------------------------|
| 1. DF Feed Clutch | 10. DF Feed Motor |
| 2. Feed Cover Sensor | 11. DF Transport Motor |
| 3. Original Width Sensor Board | 12. Original Exit Sensor |
| 4. Original Length Sensor 1 | 13. Stamp Solenoid |
| 5. DF Pick-up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

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	DF Feed	Drives the feed belt, separation, pick-up, and reverse table rollers.	10
M2	DF Transport	Drives the transport and exit rollers	11
Sensors			
S1	DF Position	Detects whether the DF is lifted or not.	9
S2	Registration	Detects the leading edge of the original to turn off the DF feed and transport motors, detects the original exposure timing, and checks for original misfeeds.	17
S3	Feed Cover Open Sensor	Detects whether the feed-in cover is opened or not.	2
S4	Original Width Sensor Board	Detects the original width.	3
S5	Original Length - 1	Detects the original length.	4
S6	Original Length - 2	Detects the original length.	6
S7	Original Set	Detects if an original is on the feed table.	15
S8	Original Exit	Detects the leading edge of the original to turn on the junction gate solenoid and checks for original misfeeds. Detects the trailing edge of the original to turn off the transport and feed motor and junction gate solenoid. In single-sided mode, used to detect original misfeeds.	12
S9	Original Trailing Edge	Detects the trailing edge of the last original to stop copy paper feed and to turn off the transport motor, and checks for original misfeeds.	14
S10	Original Reverse Sensor	Detects when the original is fed from the reverse area during duplex scanning.	16
Solenoids			
SOL1	DF Pick-up	Controls the up-down movement of the original table.	5
SOL2	Stamp	Energizes the stamper to mark the original.	13
SOL3	Junction Gate	Opens and closes the junction gate.	7
Clutches			
MC1	DF Feed	Transfers transport motor drive to the pick-up roller and feed belt.	1
PCBs			
PCB1	DF Drive	Interfaces the sensor signals with the copier, and transfers the magnetic clutch, solenoid and motor drive signals from the copier.	8

1.5 DRIVE LAYOUT

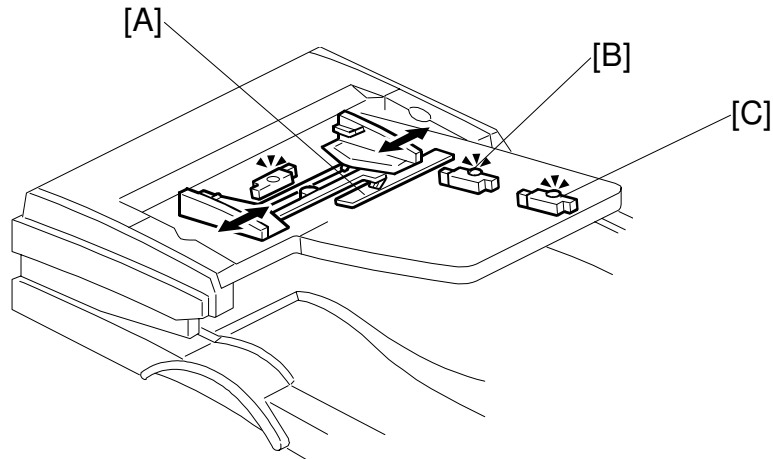


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- | | |
|-----------------------|--------------------------|
| 1. Separation Roller | 6. DF Feed Motor |
| 2. Original Feed Belt | 7. Reverse Table Roller |
| 3. Pick-up Roller | 8. 2nd Transport Roller |
| 4. DF Feed Clutch | 9. Exit Roller |
| 5. DF Transport Motor | 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 Width-1	Original Width-2	Original Width-3				Original Length-1	Original Length-2
					P4	P3	P2	P1		
A3 (297 x 420)	X	○	L	L	ON	—	—	—	ON	ON
B4 (257 x 364)	X	○	L	H	—	ON	—	—	ON	ON
A4 (Lengthwise) (210 x 297)	X	○	H	L	—	—	ON	—	ON	—
A4 (297 x 210) (Sideways)	X	○	L	L	ON	—	—	—	—	—
B5 (182 x 257) (Lengthwise)	X	○	H	H	—	—	—	ON	ON	—
B5 (257 x 182) (Sideways)	X	○	L	H	—	ON	—	—	—	—
A5 (148 x 210) (Lengthwise)	X	X	H	H	—	—	—	ON	—	—
A5 (210 x 148) (Sideways)	X	○	H	L	—	—	ON	—	—	—
11" x 17" (DLT)	○	X	L	L	ON	—	—	—	ON	ON
11" x 15"	○	X	L	L	ON	—	—	—	ON	ON
10" x 14"	○	X	L	H	—	ON	—	—	ON	—
8.5" x 14" (LG)	○	X	H	L	—	—	ON	—	ON	—
8.5" x 13" (F4)	X	○	H	L	—	—	ON	—	ON	—
8" x 13" (F)	○	○	H	L	—	—	ON	—	ON	—
8.5" x 11" (Lengthwise)	○	X	H	L	—	—	ON	—	ON	—
8.5" x 11" (Sideways)	○	X	L	L	ON	—	—	—	—	—
10" x 8" (Lengthwise)	○	X	L	H	—	ON	—	—	ON	—
5.5" x 8.5" (Lengthwise) (HLT)	○	X	H	H	—	—	—	ON	—	—
5.5" x 8.5" (Sideways) (HLT)	○	X	H	L	—	—	ON	—	—	—

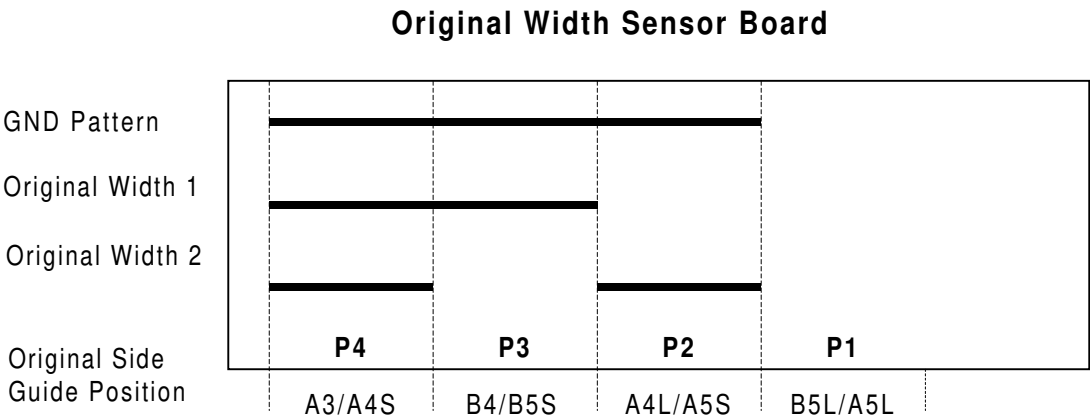
Key

X: No, ○: Yes

ON: Paper present

NA: North America, EU: Europe

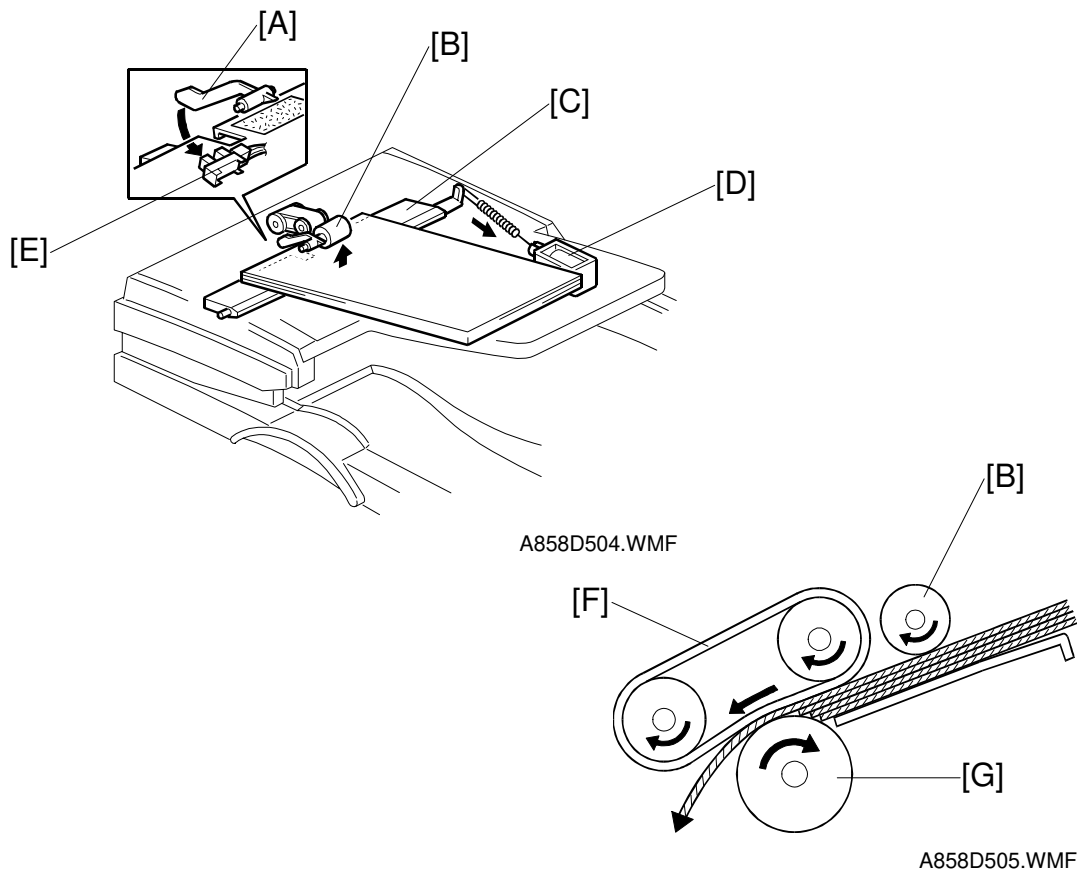
- NOTE:** 1) P1-P4 represent the four positions on the width sensor board. ON indicates the presence of the terminal plate in a given position. "Original Width-1" and "Original Width-2" are the outputs from the sensor board to the DF main board. The state of these outputs (L or H) depends on the position of the terminal plate on the sensor board (P1, P2, P3, or P4). For example, if the terminal plate is at P4, both outputs are L.
- 2) A reading of "L" on either of the width sensor outputs indicates that the terminal plate is connecting the GND pattern with the width sensor output signal line.
- 3) The machine cannot detect more than one size of originals in the same job.



The signal is "L" when the terminal plate is connected to the GND pattern.

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2.2 PICK-UP AND SEPARATION



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

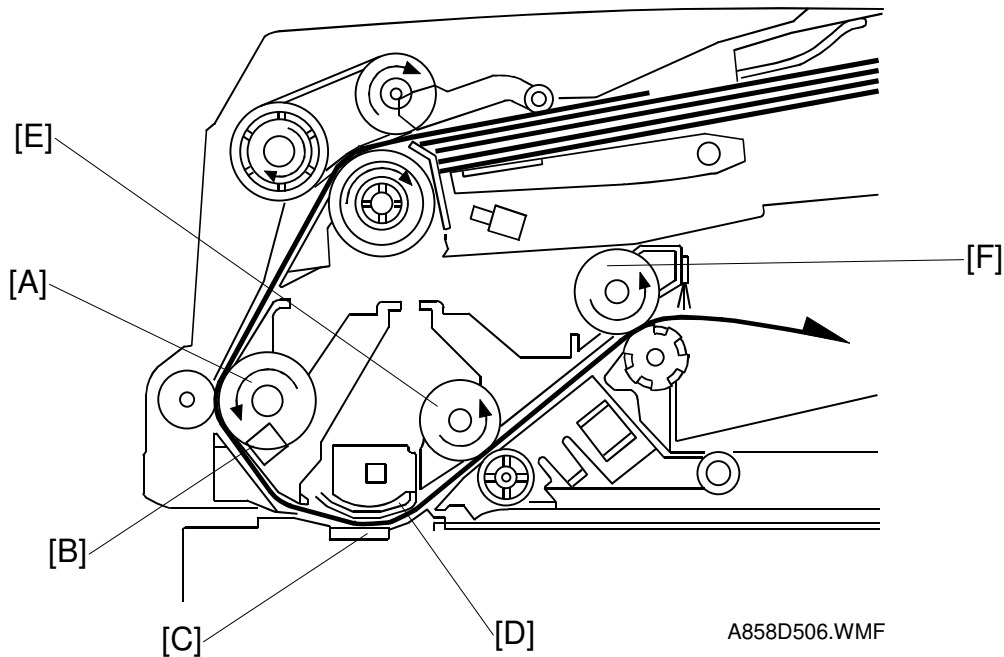
After pressing the start button, the pick-up solenoid [D] is activated and the lift plate [C] lifts the original up until it comes in contact with the pick-up roller [B]. The pick-up roller then feeds the top sheet of paper.

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].

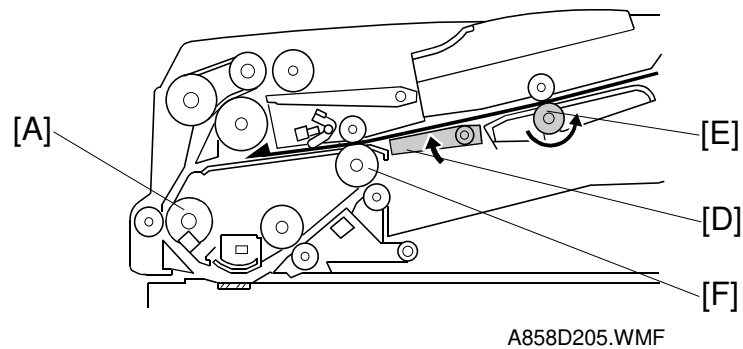
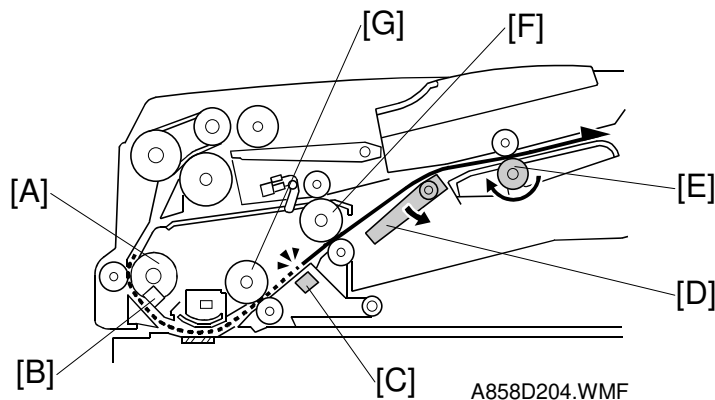
2.3 ORIGINAL TRANSPORT AND EXIT

2.3.1 SINGLE-SIDED ORIGINALS



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 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].

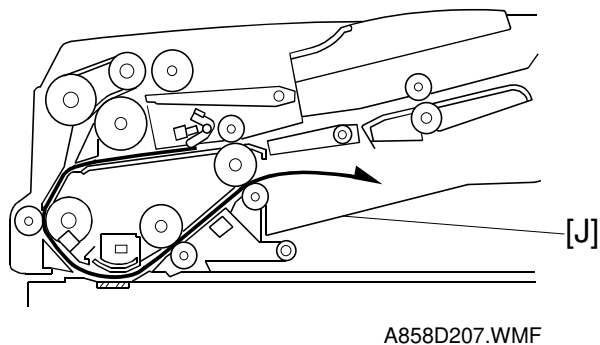
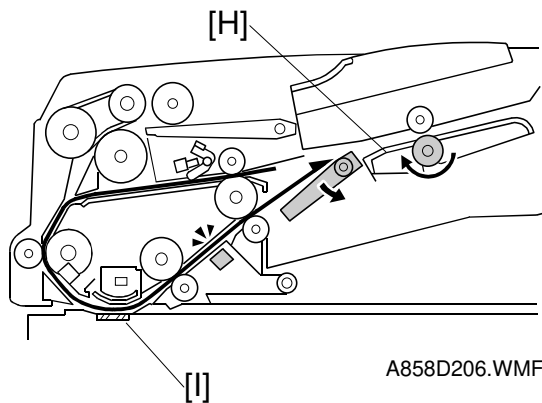
2.3.2 DOUBLE-SIDED ORIGINALS



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 [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).

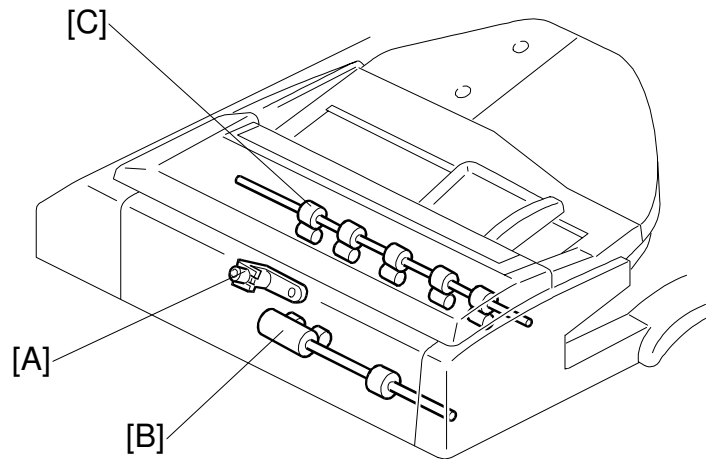


The original is then sent to the reverse table [H] a second time to be turned over. This is done so that the duplex copies will be properly stacked front side down in the exit tray [J] in the correct order.

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



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This function is only for fax mode.

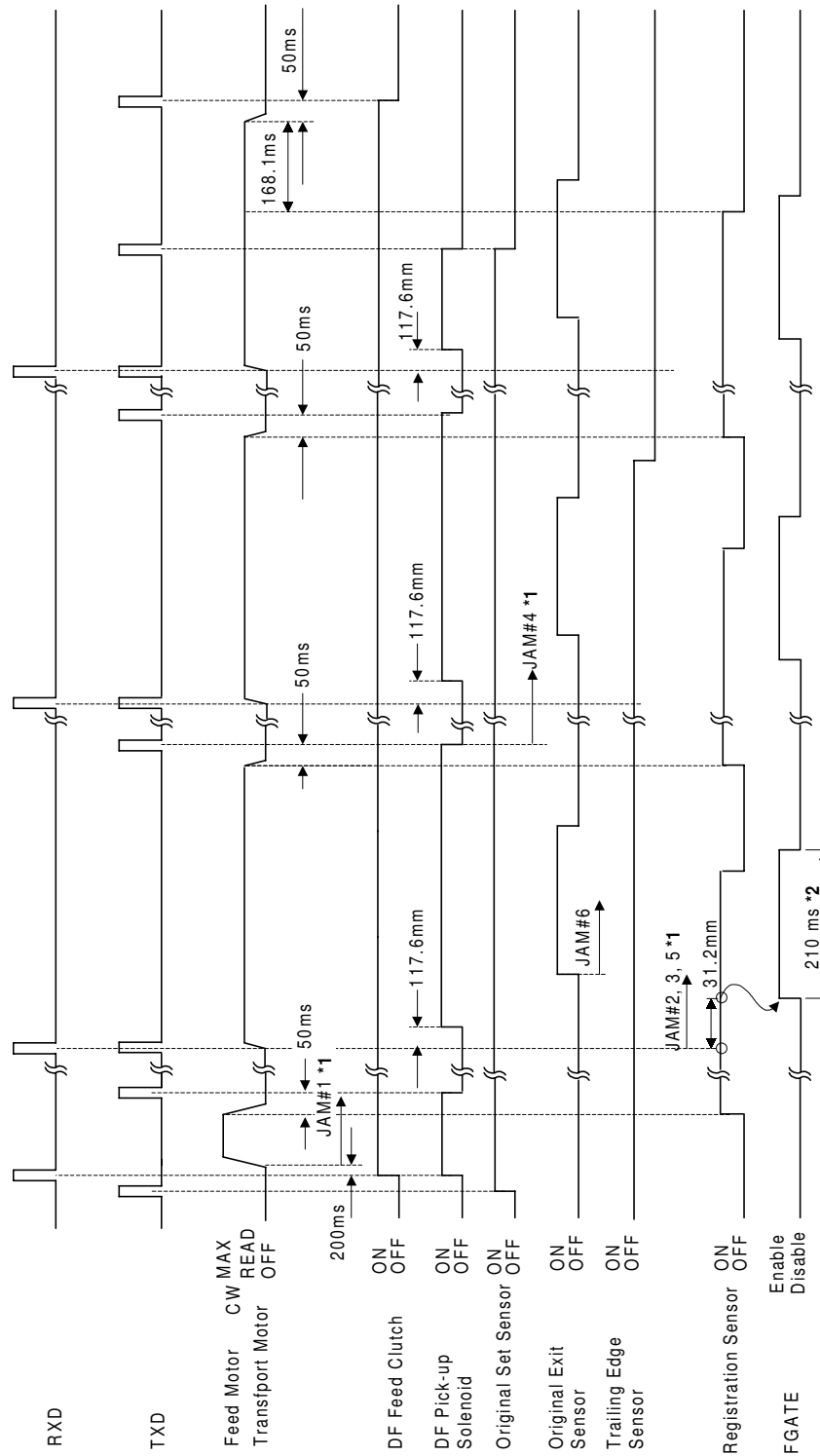
There is a stamp [A] between the 2nd transport roller [B] and the exit roller [C], and its solenoid is controlled by the copier directly.

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.

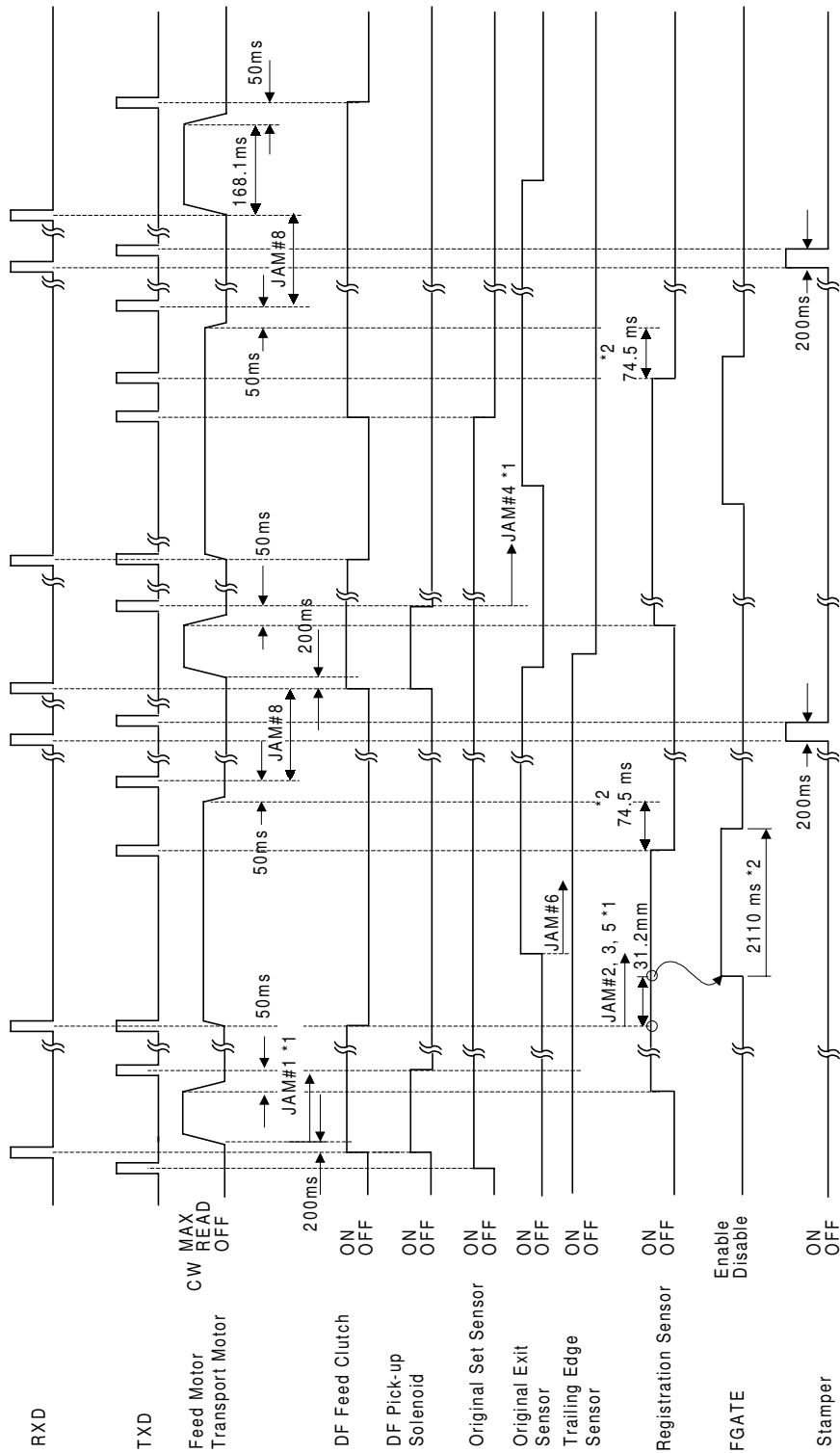
2.5 TIMING CHARTS

2.5.1 LT SIDEWAYS (SINGLE-SIDED ORIGINAL MODE)



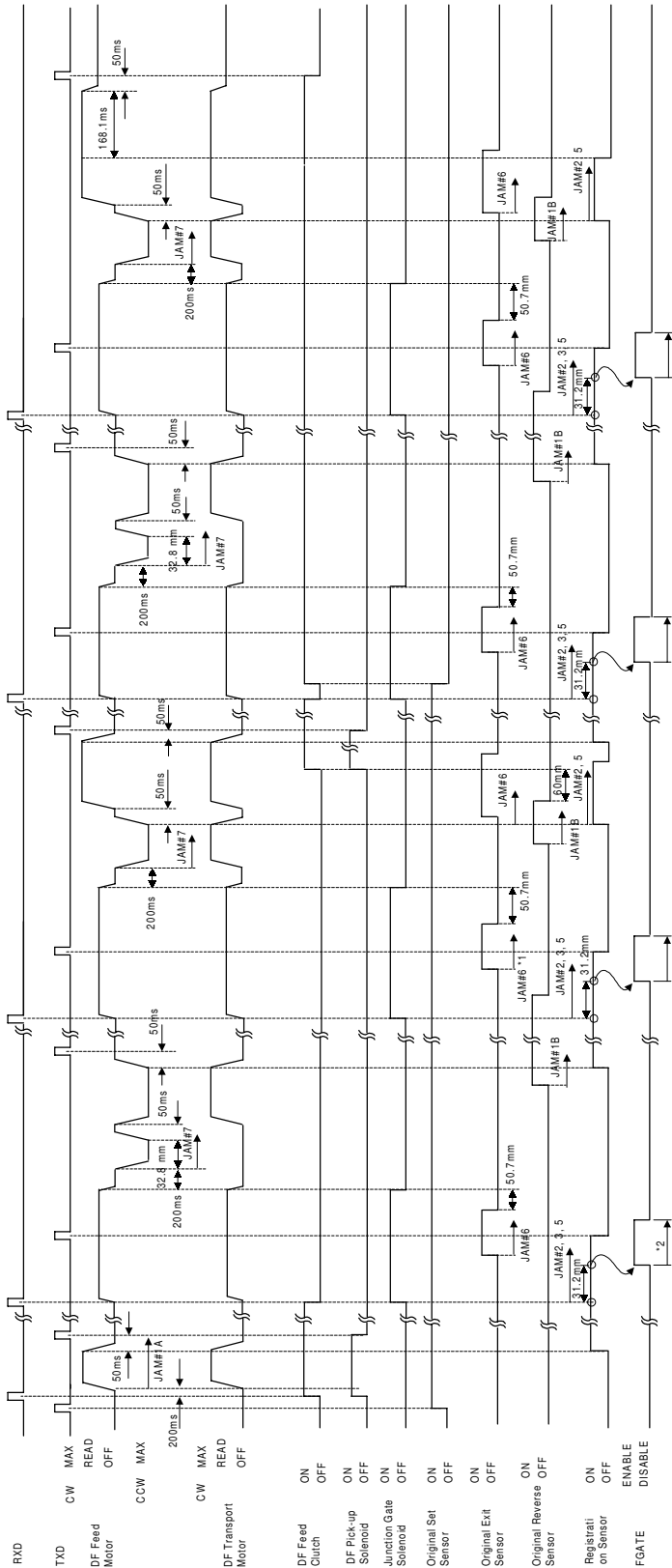
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2.5.2 LT SIDEWAYS STAMP MODE (SINGLE-SIDED ORIGINAL MODE)



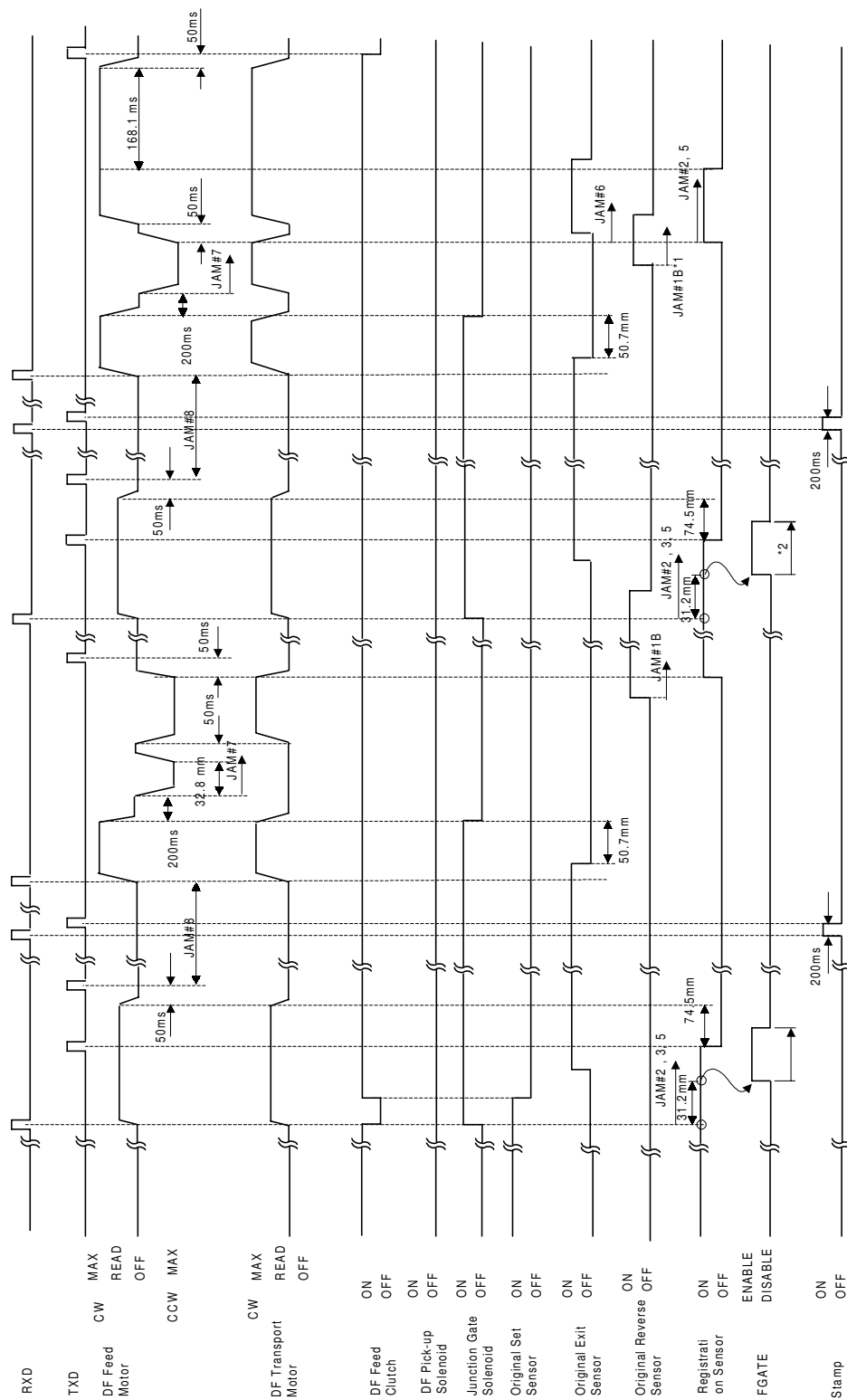
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2.5.3 LT SIDEWAYS (DOUBLE-SIDED ORIGINAL MODE)



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2.5.4 LT SIDEWAYS STAMP MODE (DOUBLE-SIDED ORIGINAL MODE)



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2.6 CONDITION OF JAM DETECTION

JAM 1A: If the registration sensor does not turn on within X1 ms after original feed starts.

$$X1 = (114 \times 1.1) / \text{line speed} + 2000 \text{ ms}$$

JAM 1B: If the registration sensor does not turn on within 500 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 mm after turning on.

$$X2 = (\text{Original length} / \text{line speed}) + 2000 \text{ ms}$$

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.

$$X3 = 140 \text{ mm} / \text{line speed}$$

JAM 6: If the original exit sensor does not turn off within X4 ms after the original exit sensor turns on.

$$X4 = (\text{Original length} / \text{line speed}) + 2000 \text{ ms}$$

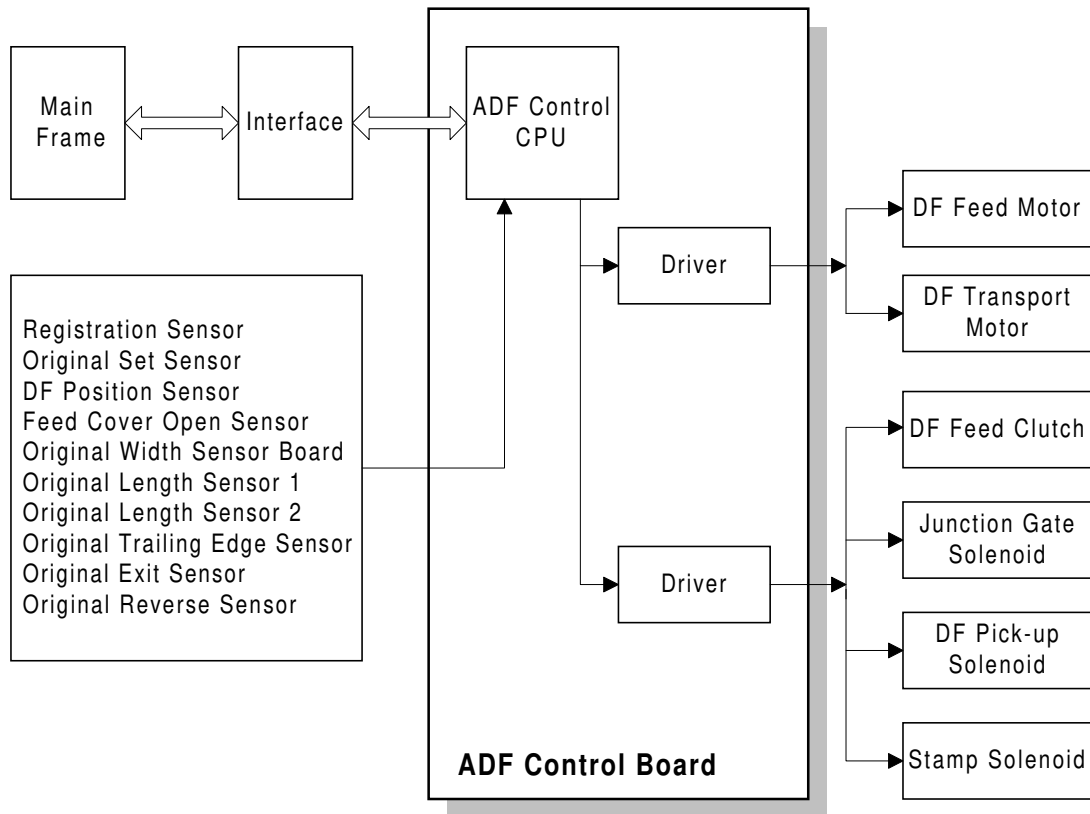
JAM 7: If the original reverse sensor does not turn on within 1700 ms after the reversing process begins (duplex mode only).

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.

2.7 OVERALL ELECTRICAL CIRCUIT

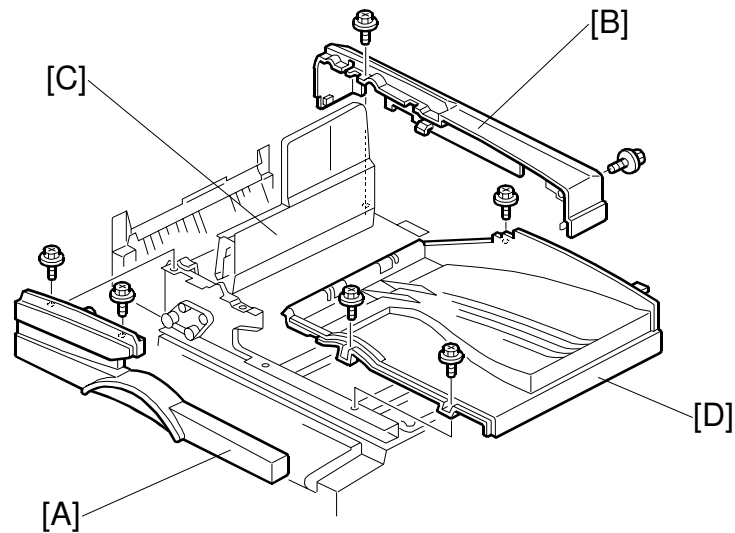
The DF CPU controls the transport motor, DF feed motor, DF feed clutch, junction Gate solenoid, stamp solenoid, and pick-up solenoid. The DF CPU also monitors all DF sensors and provides updated status information when prompted at regular intervals by the mainframe, which may then take action based on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



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3. REPLACEMENT AND ADJUSTMENT

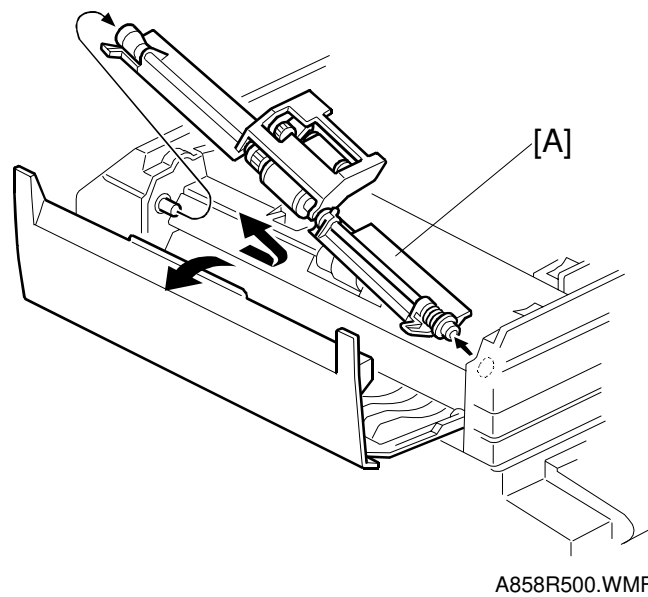
3.1 DF EXIT TABLE AND COVER



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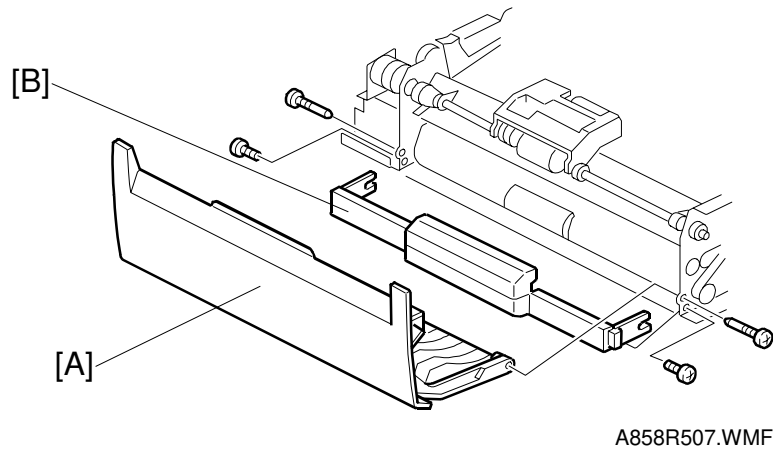
1. Open the DF feed cover.
2. Remove the front cover [A] (3 screws).
Remove the rear cover [B] (3 screws).
3. Open the reverse table [C].
Remove the original exit table [D] (3 screws).

3.2 ORIGINAL FEED UNIT



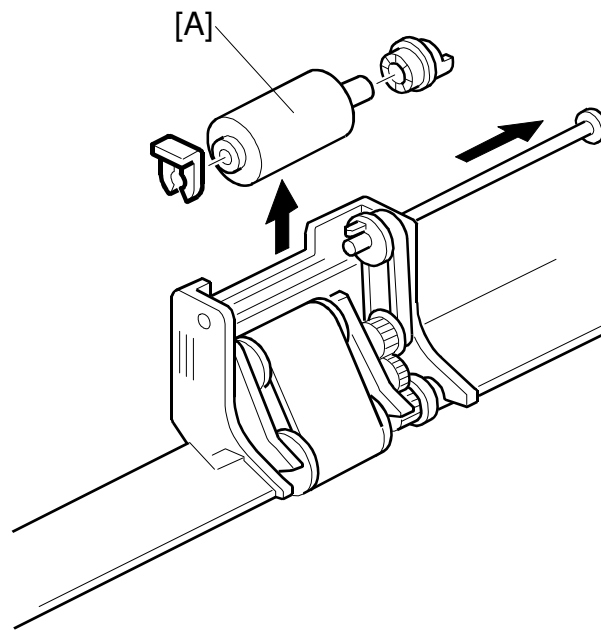
1. Open the left cover.
2. Detach the paper feed unit by sliding it toward the front of the machine (spring-loaded side) and then lifting the far side.

3.3 LEFT COVER



1. Remove the front and rear covers.
2. Remove the left cover [A].
3. Remove the lower left stay unit [B] (2 screws).

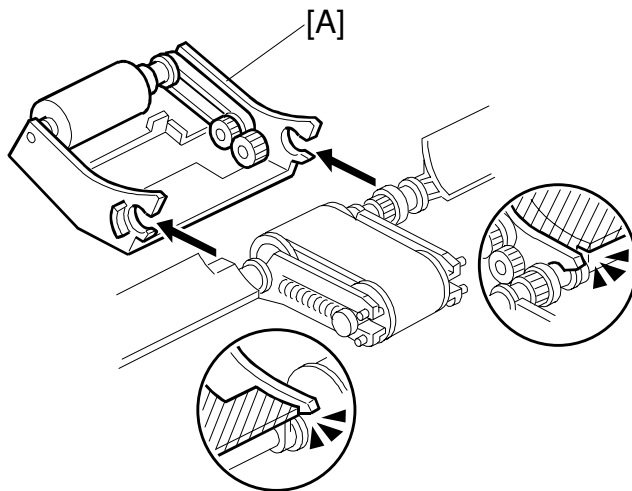
3.4 PICK-UP ROLLER



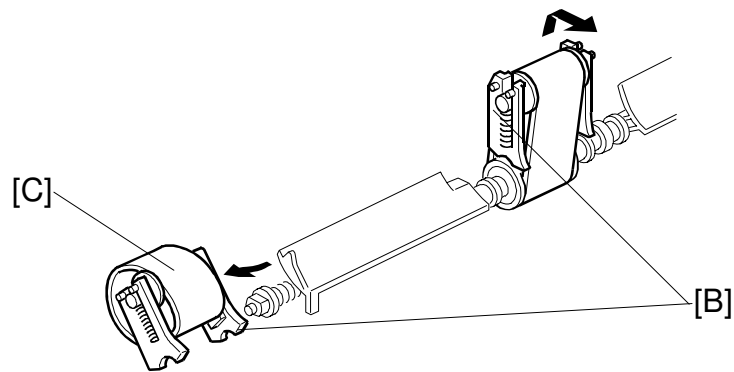
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1. Remove the original feed unit.
2. Replace the pick-up roller [A] (1 snap ring).

3.5 FEED BELT



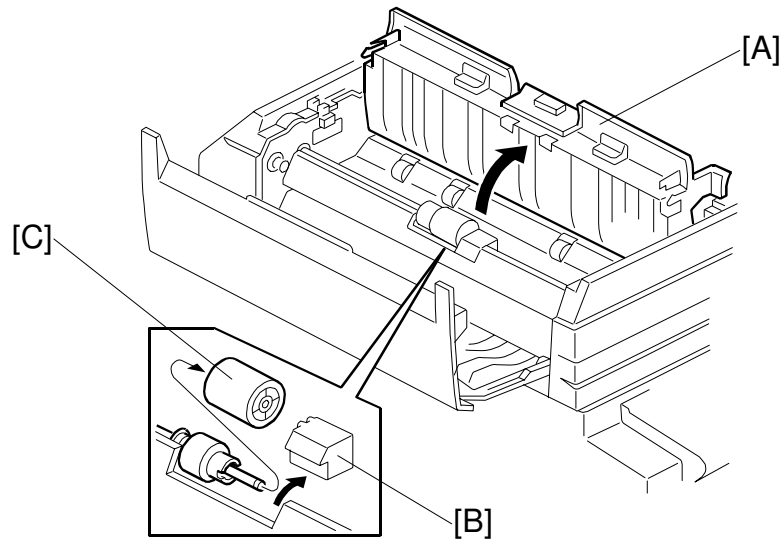
A858R204.WMF



A858R205.WMF

1. Remove the original feed unit.
2. Open the paper feed guide [A].
3. Remove the belt holders [B].
4. Replace the feed belt [C].

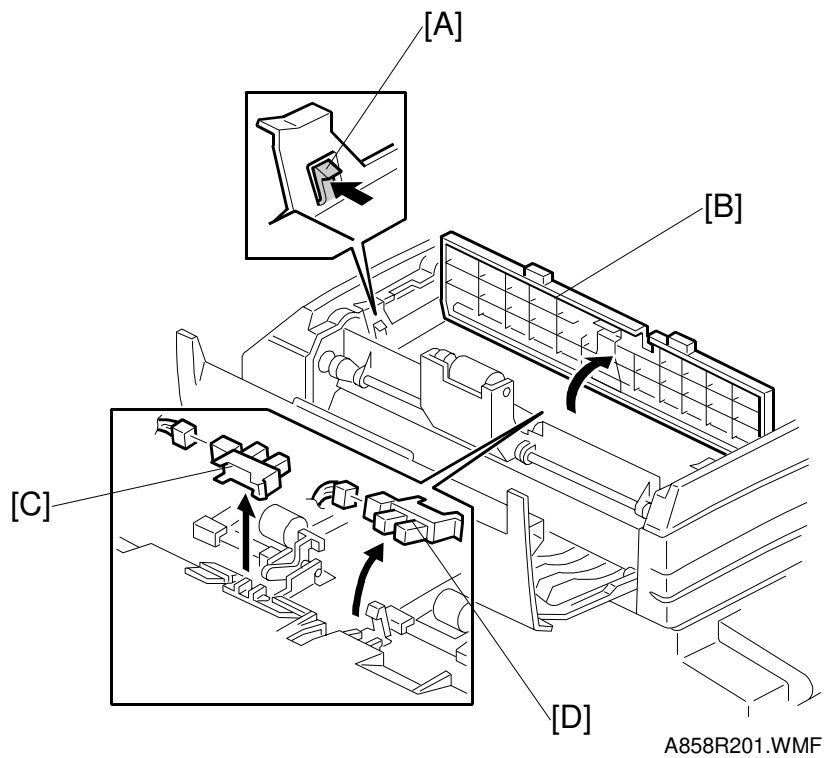
3.6 SEPARATION ROLLER



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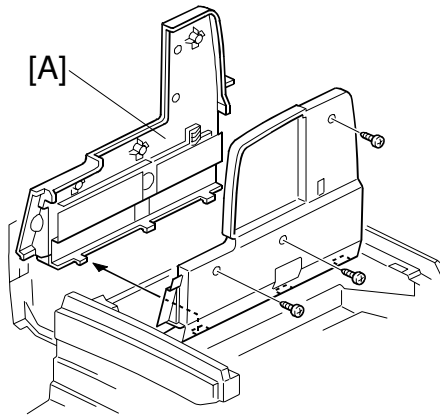
1. Lift the original feed guide [A].
2. Remove the separation roller cover [B].
3. Replace the separation roller [C].

3.7 ORIGINAL SET/ORIGINAL REVERSE SENSOR

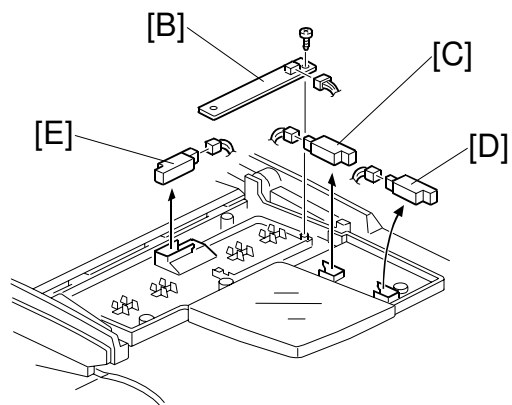


1. Open the left cover.
2. While pushing the left and right pawls [A], open the original feed guide plate [B].
3. Remove the original set sensor [C]
4. Remove the original reverse sensor [D].

3.8 ORIGINAL LENGTH, WIDTH SENSOR BOARD AND TRAILING EDGE SENSOR



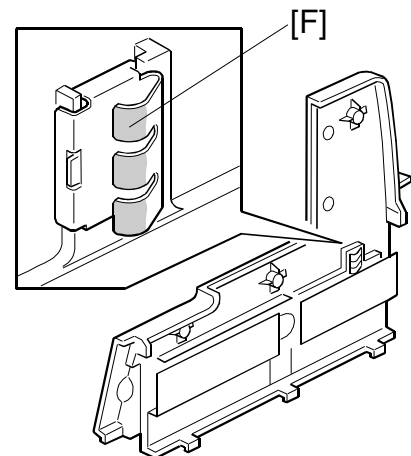
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1. Open the original table [A].
2. Remove the upper part of the table (3 screws).
3. Replace the width sensor board [B], length sensor (-1 [C] and -2 [D]) and trailing edge sensor [E].

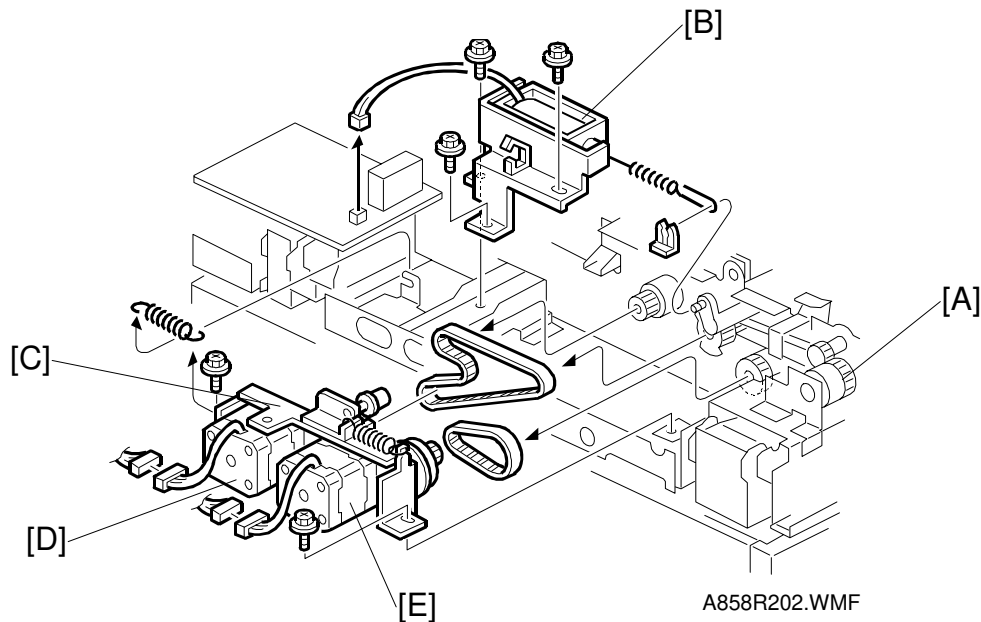
NOTE: To ensure proper detection of paper size, after wiping off the sensor board and terminal plate with a dry cloth (or cloth with alcohol), apply silicone grease (KS-660) to the terminal plate [F].



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Options

3.9 DF FEED CLUTCH/DF PICK-UP SOLENOID/ TRANSPORT/DF FEED MOTORS



First remove the rear cover. Then follow the instructions below for each part replacement:

DF Feed Clutch

1. Replace the DF feed clutch [A] (1 E-ring, 1 connector).

Pick-up Solenoid

1. Replace the pick-up solenoid [B] (3 screws, 1 snap ring, 1 connector).

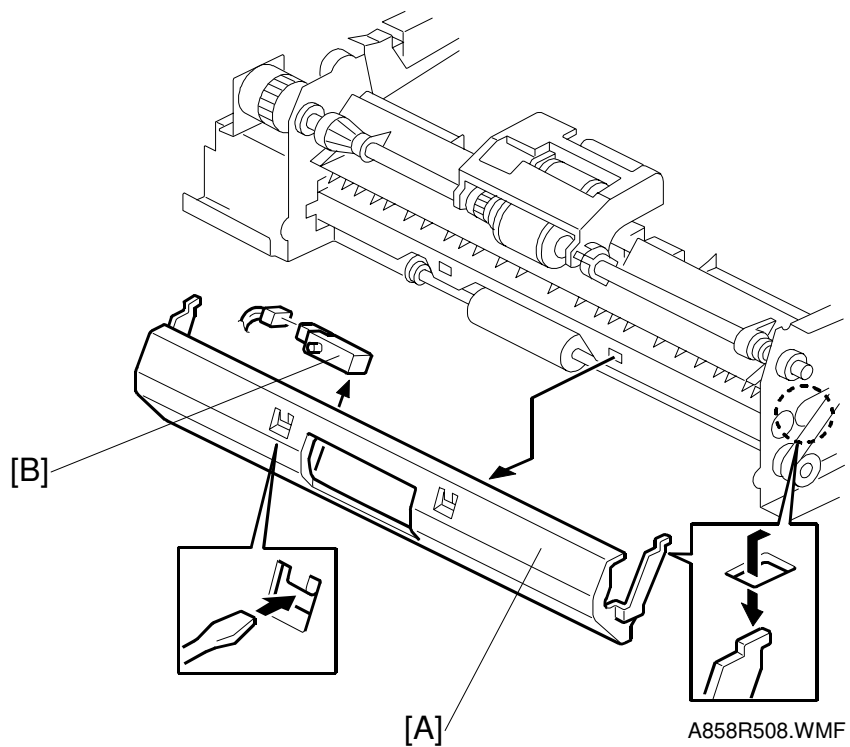
Transport Motor

1. Remove the bracket [C] (2 screws).
2. Replace the transport motor [E] (2 screws, 1 connector).

DF Feed Motor

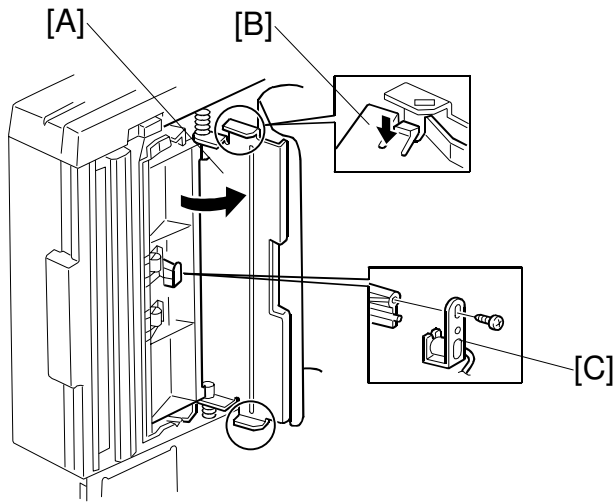
1. Remove the bracket [C] (2 screws).
2. Replace the DF feed motor [D] (2 screws, 1 connector).

3.10 REGISTRATION SENSOR

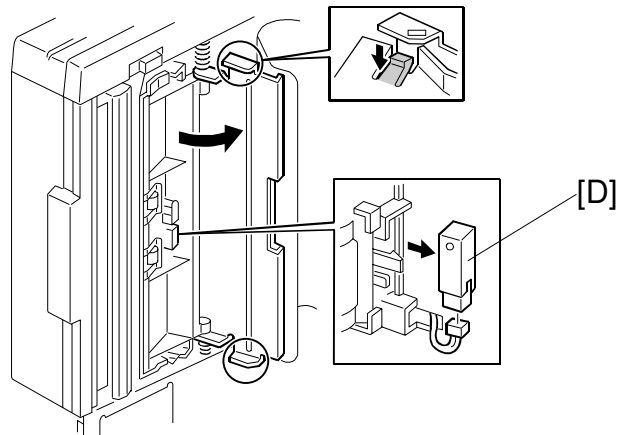


1. Remove the front and rear covers.
2. Remove the transport guide plate [A].
3. Replace the registration sensor [B].

3.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR

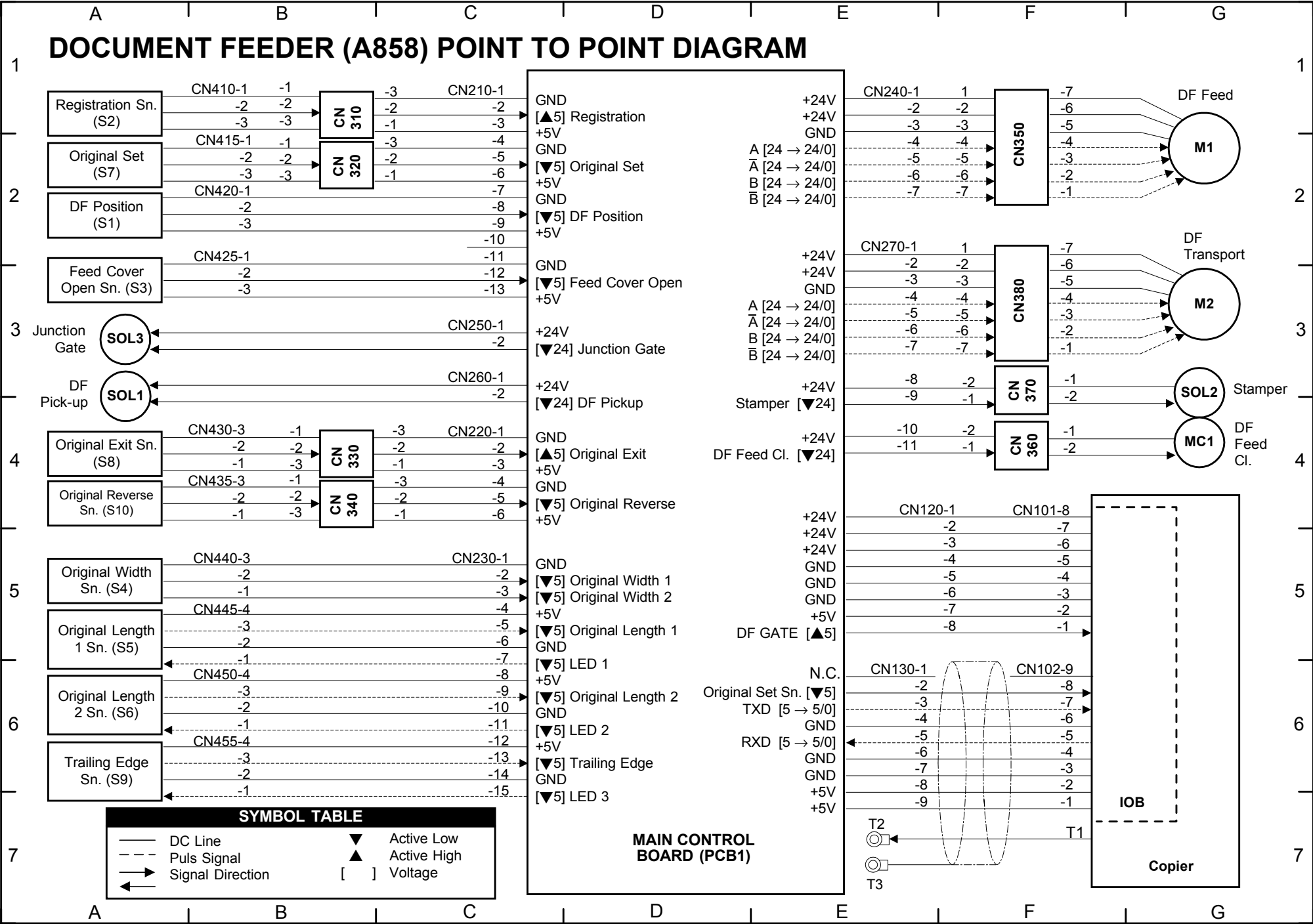


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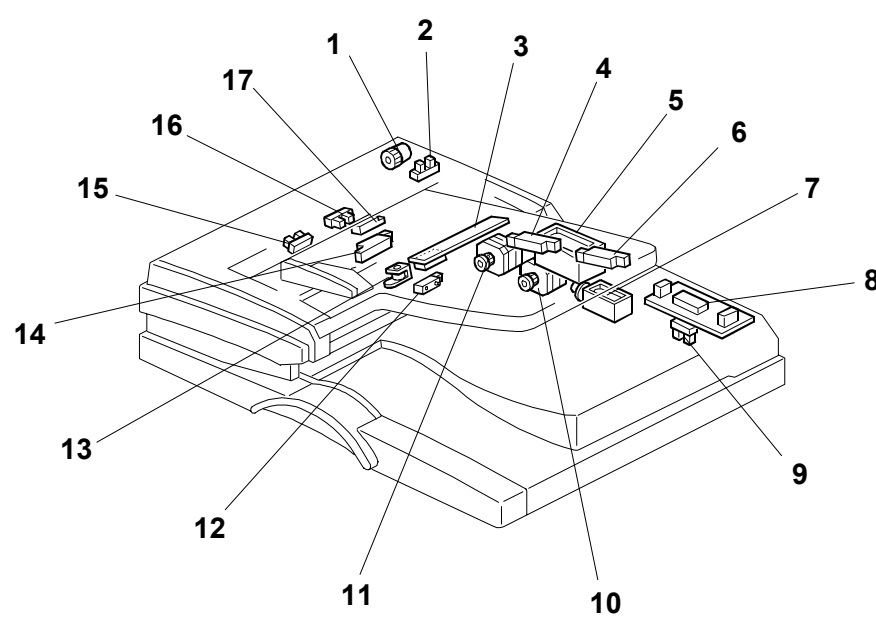


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1. Remove the rear cover (1 connector). Also remove the upper cover (the exit tray).
2. Open the exit guide plate [A]. Next, detach the unit by inserting a screwdriver or other tool into one of the small openings [B] on either side of the guide plate holder and pushing firmly.
3. Remove the stamp solenoid [C] (1 screw).
4. Remove the original exit sensor [D] (1 connector).



DOCUMENT FEEDER ELECTRICAL COMPONENT LAYOUT (A858)



Symbol	Name	Index No.	P to P
Motors			
M1	DF Feed	10	G2
M2	DF Transport	11	G3
Sensors			
S1	DF Position	9	A2
S2	Registration	17	A1
S3	Feed Cover Open Sensor	2	A3
S4	Original Width Sensor Board	3	A5
S5	Original Length - 1	4	A5
S6	Original Length - 2	6	A6
S7	Original Set	15	A2
S8	Original Exit	12	A4
S9	Original Trailing Edge	14	A6
S10	Original Reverse Sensor	16	A4
Solenoids			
SOL1	DF Pick-up	5	A3
SOL2	Stamp	13	G3
SOL3	Junction Gate	7	A3
Clutches			
MC1	DF Feed	1	G4
PCBs			
PCB1	DF Drive	8	G7