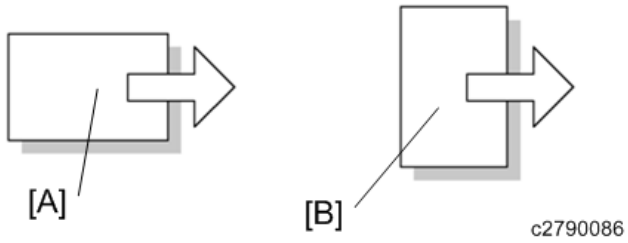
LCIT RT4050
Machine Code: D710
Field Service Manual
Ver 1.0

Latest Release: Oct, 2016
Initial Release: Oct, 2016

Symbols, Abbreviations

This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

Symbol	What it means
	Clip ring
	Screw
	Connector
	Clamp
	E-ring
	Flat Flexible Cable
	Timing Belt
SEF	Short Edge Feed
LEF	Long Edge Feed
K	Black
C	Cyan
M	Magenta
Y	Yellow
B/W, BW	Black and White
FC	Full color



[A] Short Edge Feed (SEF)

[B] Long Edge Feed (LEF)

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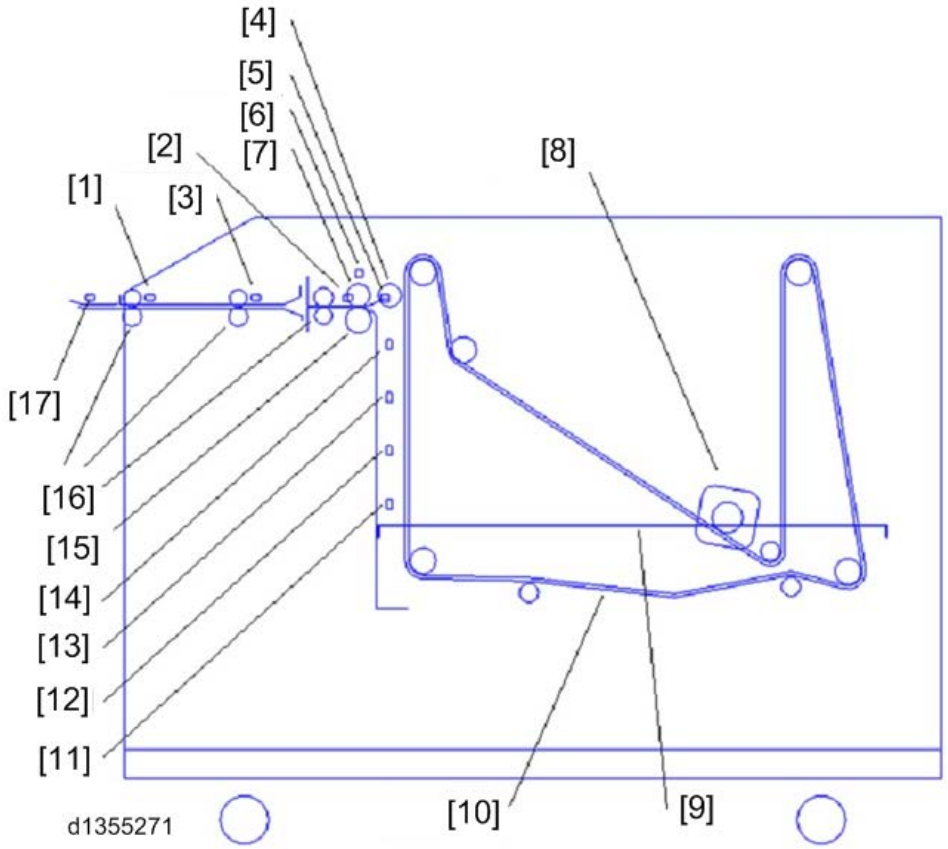
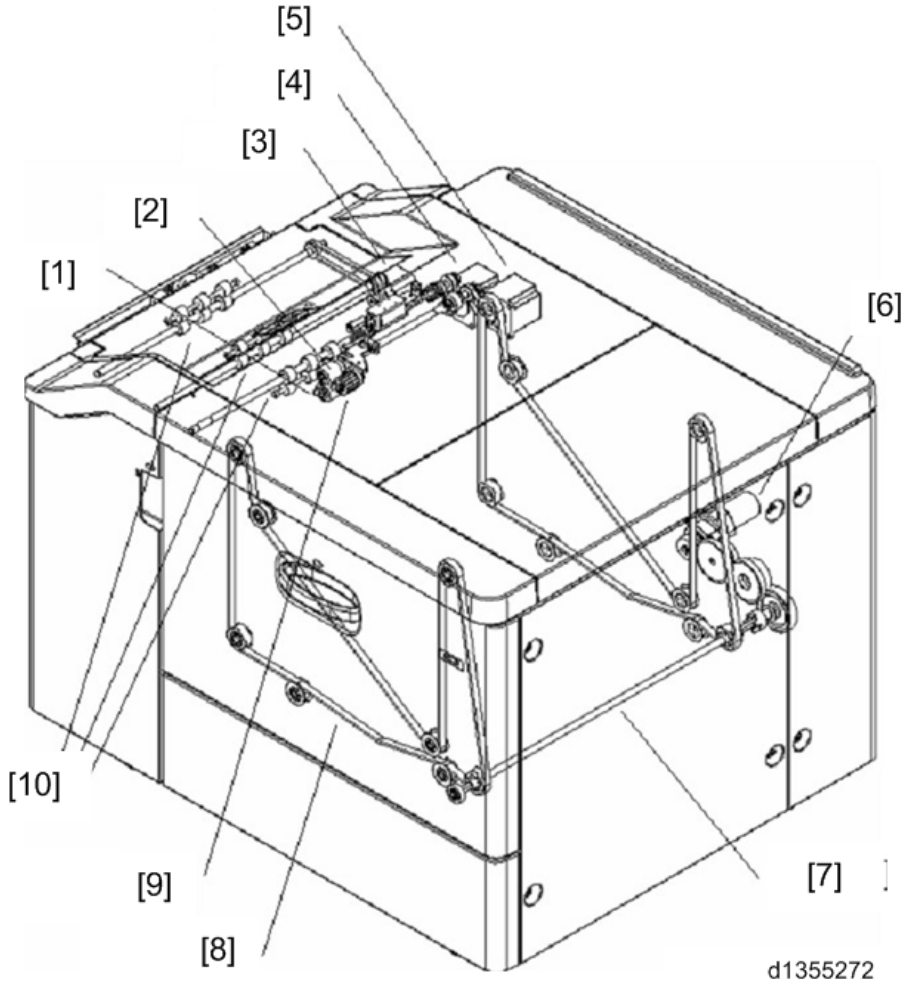
Overview Layout



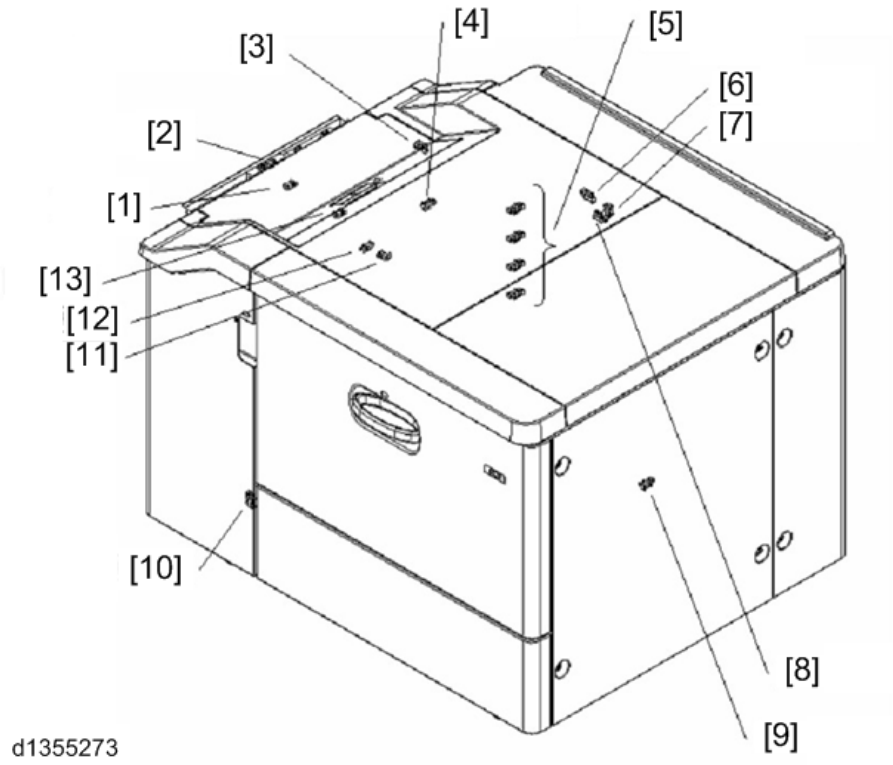
No.	Description	No.	Description
1	Exit Sensor	10	Tray Belt Drive Motor
2	Feed Sensor	11	Paper Height Sensor 4
3	Transport Sensor	12	Paper Height Sensor 3
4	Pick-up Roller	13	Paper Height Sensor 2
5	Paper End Sensor	14	Paper Height Sensor 1
6	Upper Limit Sensor	15	Reverse Roller
7	Feed Roller	16	Transport Roller
8	Tray Lift Motor	17	LCIT Relay Roller
9	Tray		

Drive Layout



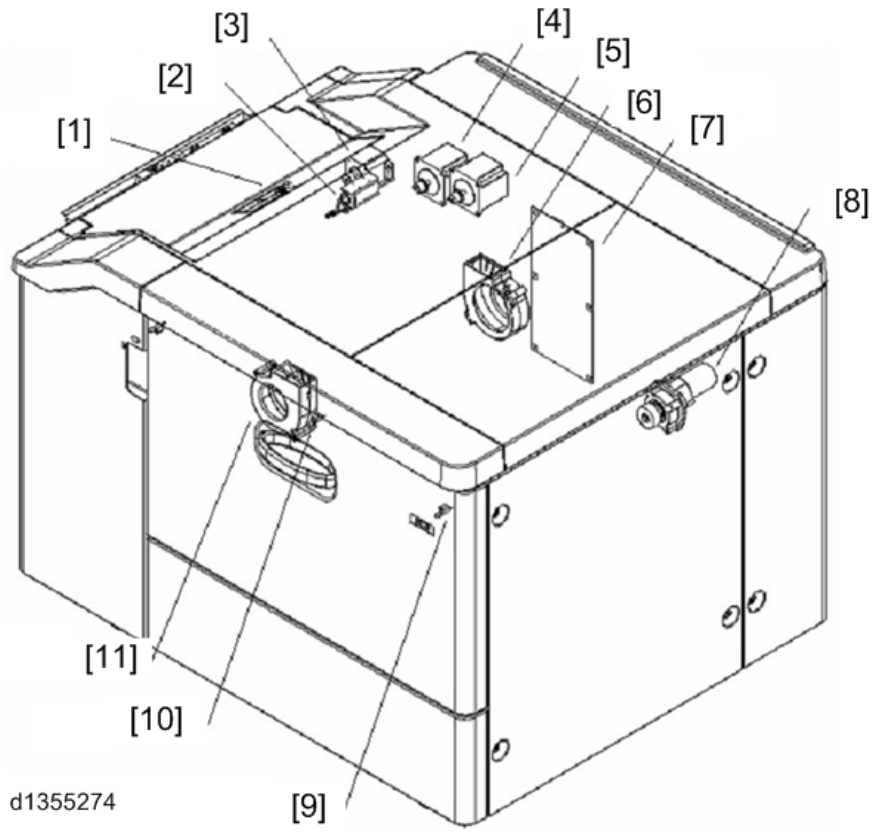
No.	Description	No.	Description
1	Reverse Roller	6	Lift Motor
2	Feed Roller	7	Tray Lift Shaft
3	Exit Motor	8	Tray Drive Belt
4	Transport Motor	9	Pick-up Roller
5	Feed Motor	10	Transport Roller

Electrical Components



No.	Description	No.	Description
1	Exit Sensor	8	Paper Size Sensor 1
2	LCIT Relay Sensor	9	Paper Length Sensor
3	Left Upper Cover Open/Closed Sensor	10	Front Cover Open/Closed Sensor
4	Upper Limit Sensor	11	Paper End Sensor
5	Paper Height Sensor (1 ~ 4)	12	Feed Sensor
6	Paper Size Sensor 3	13	Transport Sensor
7	Paper Size Sensor 2		

Other Components



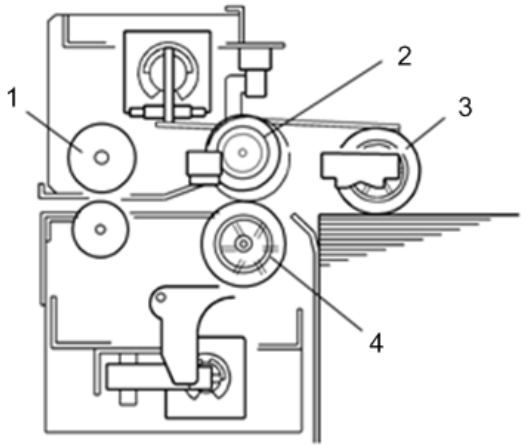
No.	Description	No.	Description
1	Left Upper Cover LED	7	PCB
2	Pick-up Solenoid	8	Lift Tray Motor
3	Exit Motor	9	Paper Feed LED
4	Transport Motor	10	Tray Lift LED
5	Feed Motor	11	Blower Fan (Front)
6	Blower Fan (Rear)		

Mechanism Details

Feed, Separation

The feed unit includes a pick-up roller, a feed roller, and a reverse roller (FRR feed method). It also includes a φ20 transport roller.

A magnetic torque limiter is attached to the reverse roller. Reverse pressure is applied in accordance with opening and closing of the tray.



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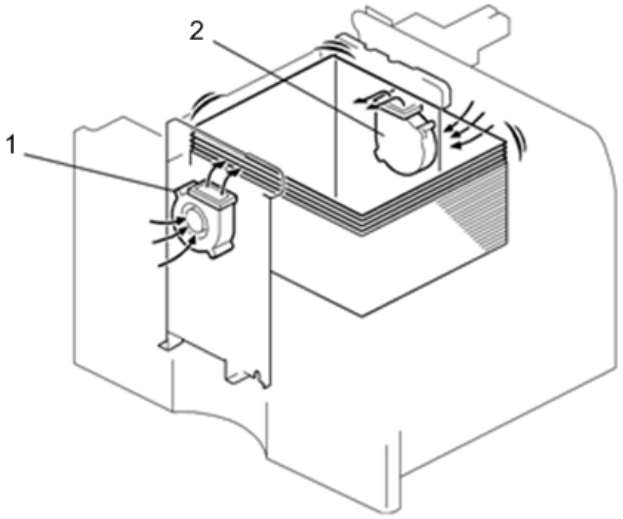
No.	Description	No.	Description
1	Transport Roller	3	Pick-up Roller
2	Feed Roller	4	Reverse Roller

Air-Assisted Separation

The two air assisting fans use air to separate the top sheet from the rest. This prevents double feed. This mechanism applies only to thick paper.



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No.	Description	No.	Description
1	Blower Fan (Front)	2	Blower Fan (Rear)

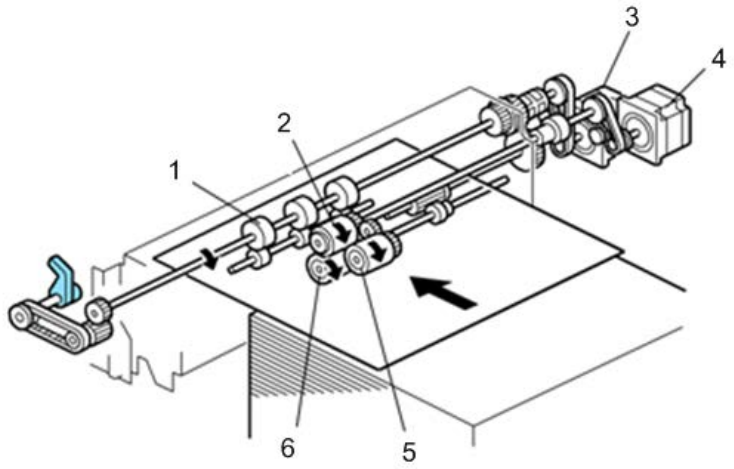
Feed, Separation Operation

The transport motor turns on and then the pickup solenoid turns on.

The feed motor turns on and the feed roller rotates. At the same time, through a relay gear, the pickup roller rotates to feed the top sheet of the paper stack.

The reverse roller contains a torque limiter. The friction between the reverse roller and the feed roller exceeds the limit of the torque limiter, and the reverse roller rotates with the feed roller. When two or more sheets of paper are fed, the torque limiter makes the reverse roller rotate to push the lower sheet of paper back to the tray.

When the feed sensor (reflective photosensor) detects paper, the pickup solenoid turns off and the pickup roller lifts away from the paper, to reduce the resistance to paper feed.



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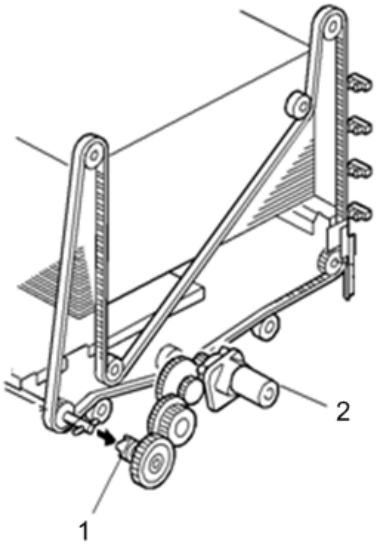
No.	Description	No.	Description
1	Transport Roller	4	Feed Motor
2	Feed Roller	5	Pick-up Roller
3	Transport Motor	6	Reverse Roller

Tray Shift Up/Down

As shown in the picture below, the tray lift motor on the back of the tray drives a belt and pulley in order to lift the tray.

When the tray is pulled out, the tray's coupling with the tray lift motor is released and the tray shifts down under its own weight.



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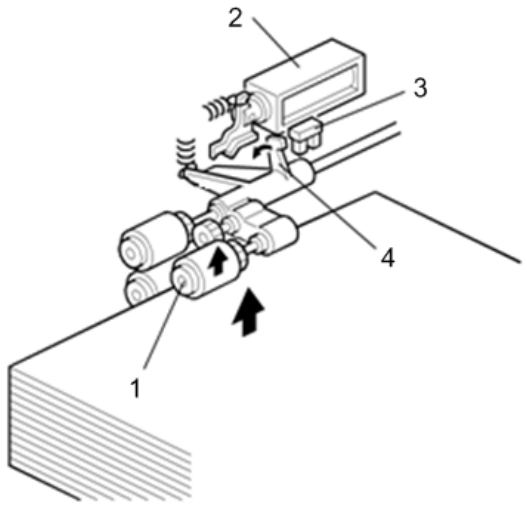
No.	Description	No.	Description
1	Coupling Gear	2	Tray Lift Motor

After paper is added to the tray, the pickup solenoid turns ON and the pickup roller contacts the top sheet of the paper stack. At this time, if the lift sensor detects the actuator, the lift motor turns on in order to lift the bottom plate of the tray. When the tray shifts up, the pickup roller is lifted off the surface of paper. When the actuator exits the lift sensor (sensor turns ON), the lift motor turns off. After that, to enhance the accuracy of the bottom tray lift, the lift motor drives in the reverse direction for 1 s (when reversing, the mechanism acts as a brake), 10ms after the lift motor stops. If the tray is already at the correct height when the pickup roller moves down, this brake operation is done immediately without lift. The top of the paper stack drops during printing, and when the lift sensor becomes “interrupted”, the lift motor drives forward again to lift the paper stack.



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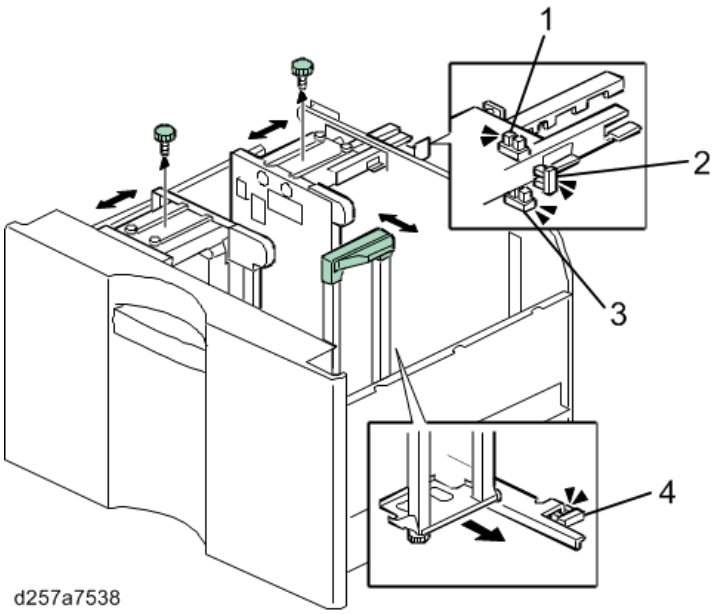
No.	Description	No.	Description
1	Pick-up Roller	3	Lift Sensor
2	Pick-up Solenoid	4	Actuator

Paper Size Detection

Paper size is detected with three width sensors and a length sensor.



No.	Description	No.	Description
1	Width Sensor (W3)	3	Width Sensor (W1)
2	Width Sensor (W2)	4	Length Sensor (L1)

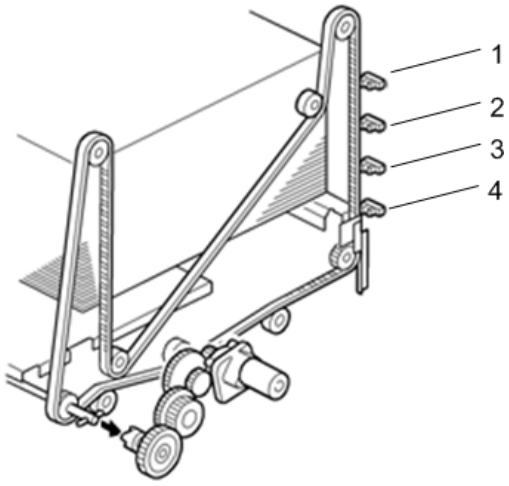
The detection patterns are as follows:

Correlation between Sensor States and Paper Sizes

Size		Width Sensors			Length Sensor
		W1	W2	W3	L1
Paper with Margin	12"x18"	Not Interrupted	Not Interrupted	Not Interrupted	Interrupted
A3 SEF	297 x 420	Not Interrupted	Not Interrupted	Interrupted	Interrupted
A4 LEF	297 x 210	Not Interrupted	Not Interrupted	Interrupted	Not Interrupted
DLT SEF	11"x17"	Not Interrupted	Interrupted	Not Interrupted	Interrupted
LT LEF	11"x8 1/2"	Not Interrupted	Interrupted	Not Interrupted	Not Interrupted
B4 SEF	257x364	Not Interrupted	Interrupted	Interrupted	Interrupted
B5 LEF	257x182	Not Interrupted	Interrupted	Interrupted	Not Interrupted
A4 SEF	210x297	Interrupted	Not Interrupted	Not Interrupted	Interrupted
LT SEF	8 1/2"x11"	Interrupted	Not Interrupted	Not Interrupted	Interrupted
A5 LEF	210x148	Interrupted	Not Interrupted	Not Interrupted	Not Interrupted
HLT LEF	8 1/2"x5 1/2"	Interrupted	Not Interrupted	Not Interrupted	Not Interrupted
B5 SEF	182x257	Interrupted	Not Interrupted	Interrupted	Interrupted
F SEF	8"x13"	Interrupted	Not Interrupted	Interrupted	Interrupted
A5 SEF	148 x 210	Interrupted	Interrupted	Not Interrupted	Not Interrupted
HLT SEF	5 1/2"x8 1/2"	Interrupted	Interrupted	Interrupted	Not Interrupted

Paper Remaining Amount Detection

The amount of remaining paper is detected with four photo-interrupters, and the operation panel shows the remaining amount.



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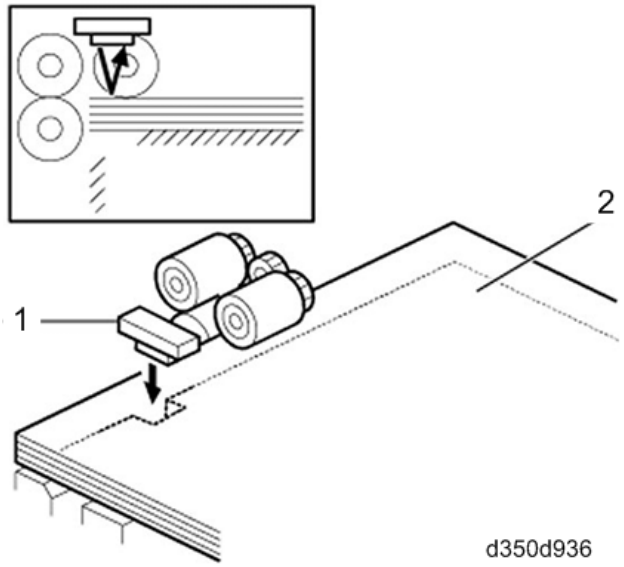
No.	Description	No.	Description
1	Paper Height Sensor 1	3	Paper Height Sensor 3
2	Paper Height Sensor 2	4	Paper Height Sensor 4

Correlation of Sensor Output and Paper Amount Remaining

Remaining Paper Amount	Sensor interrupted / not interrupted			
	Paper Height Sensor 1	Paper Height Sensor 2	Paper Height Sensor 3	Paper Height Sensor 4
100%	Not Interrupted	Not Interrupted	Not Interrupted	Not Interrupted
75%	Not Interrupted	Not Interrupted	Not Interrupted	Interrupted
50%	Not Interrupted	Not Interrupted	Interrupted	-
25%	-	Interrupted	-	-
Near End	Interrupted	Not Interrupted	-	-

Paper End Detection

A reflective photo-sensor on the upper stay detects the surface of the paper. If there is no paper, the sensor detects paper end. When paper end is detected, the lift motor drives in reverse to move the tray down.



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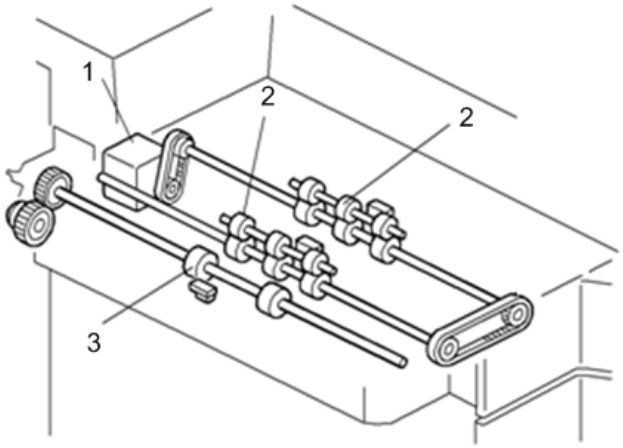
No.	Description	No.	Description
1	Paper End Sensor	2	Paper

Paper Exit

The LCIT exit motor drives the exit rollers through a timing belt in order to output paper. At the output, the entrance roller in the main machine sends the paper into the machine.



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No.	Description	No.	Description
1	Exit Motor	3	Entrance Roller (main machine side)
2	Exit Roller		

2. Replacement and Adjustment

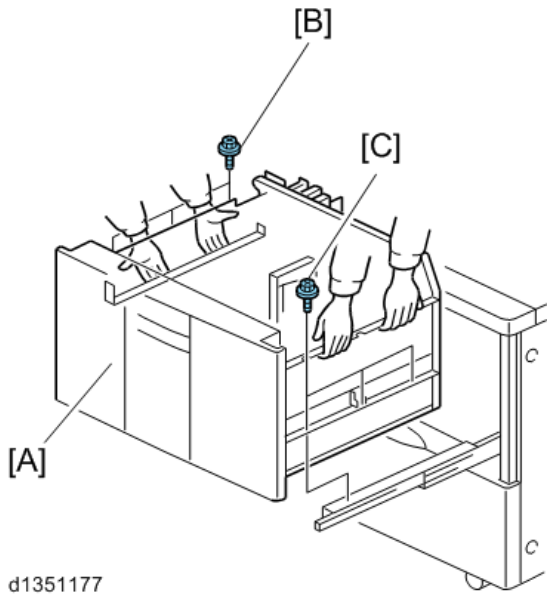
Common Procedures

Paper Tray

⚠CAUTION

- The tray weighs 25 kg empty. To prevent damage to the tray and personal injury, never attempt to lift the tray alone. The tray must be lifted by two or more persons.

1. Pull the tray [A] out of the LCT until it stops.
2. Remove the screws from the right rail [B] (x3).
3. Remove the screws from the left rail [C] (x3).
4. Lift and remove the tray [A].

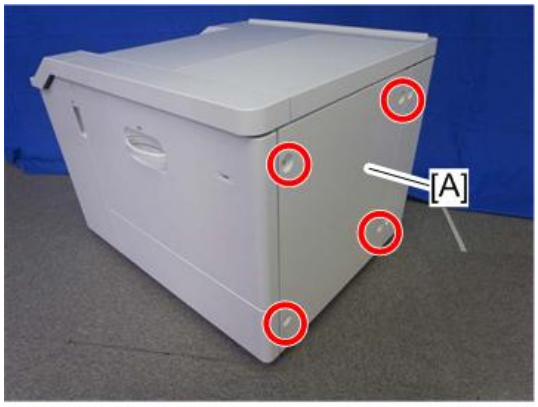


Note

- You do not need to remove the screw for the stopper pin bracket at the back of the left rail.

External Covers

1. Right cover [A] (x4)



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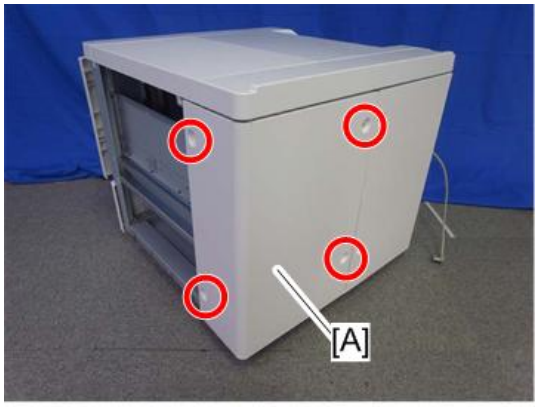
2. Right rear cover [A] (x4)



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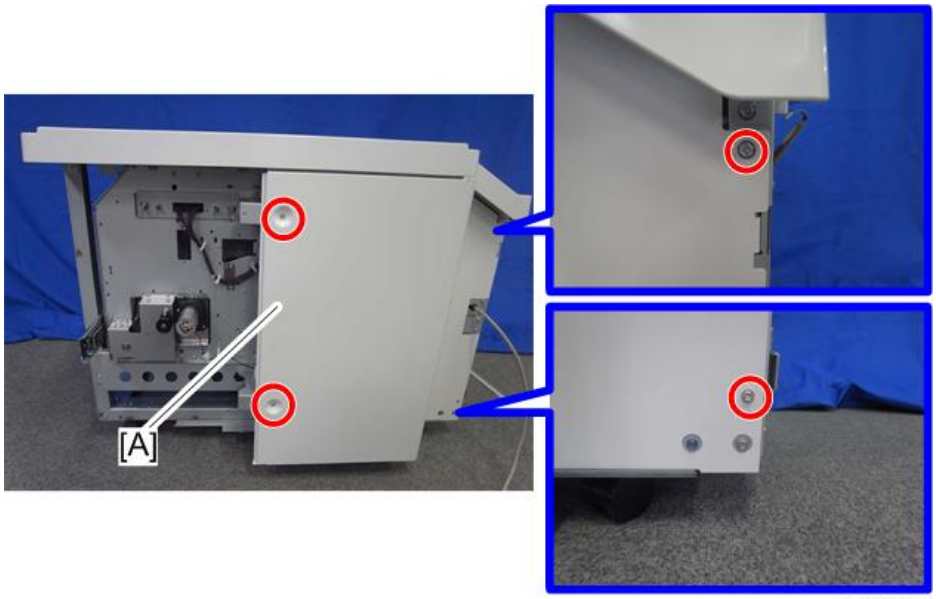
3. Left rear cover [A]



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Side Registration Adjustment

The side-to-side registration for this LCT can be adjusted with SP1-003-800 (Side-to-Side Reg: LCT).

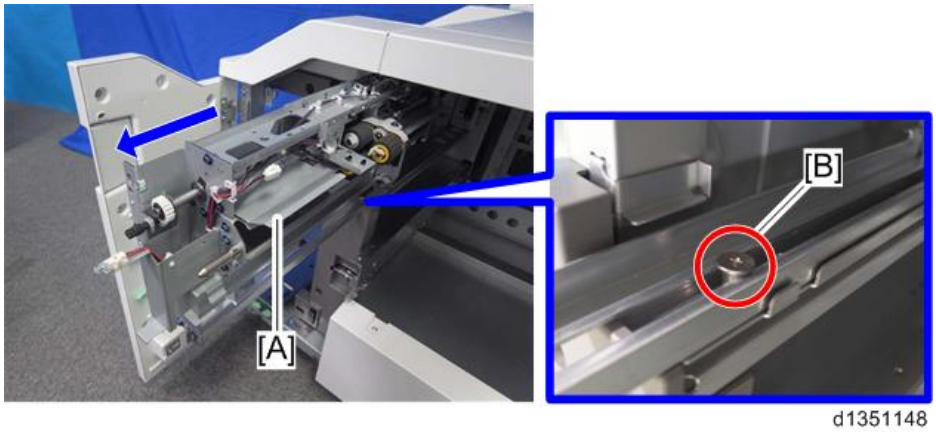
However, if punched hole positions are not aligned on paper fed from this LCT, you can first adjust the side registration by changing the tray cover position as described below, and then adjust the side registration of the image with SP1-003-800.

1. Pull out the tray [A].
2. Change the screw positions at both the right and left sides as shown.
   - Adjustment range: 0±3.0 mm
   - Step: 0.1 mm

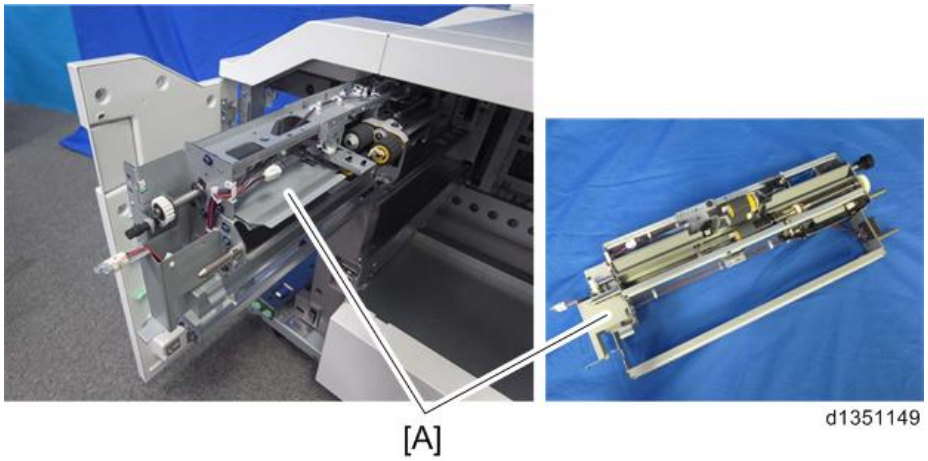
Paper Feed Unit

1. Paper tray (Paper Tray)
2. Open the front door [A], and then remove the inner cover [B]. (x4)

3. Pull out the paper feed unit [A], and then remove the screw [B]. (x1)



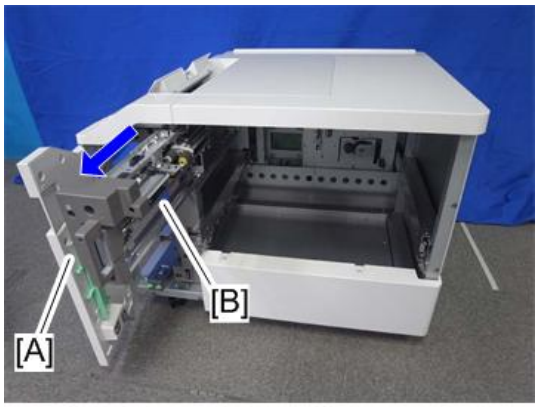
4. Paper feed unit [A]



Rollers

Pick-Up Roller, Feed Roller, Separation Roller

1. Paper feed unit (Paper Feed Unit)
2. Open the front door [A], and then pull out the paper feed unit [B].



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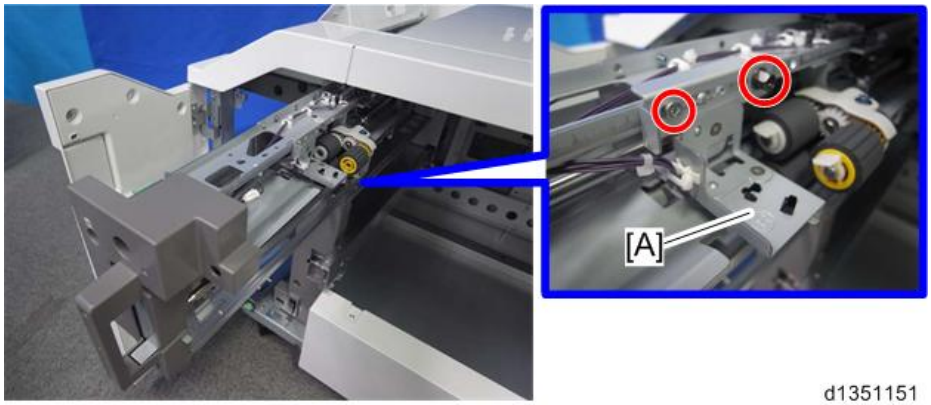
3. Paper feed tray bracket [A] (x2)



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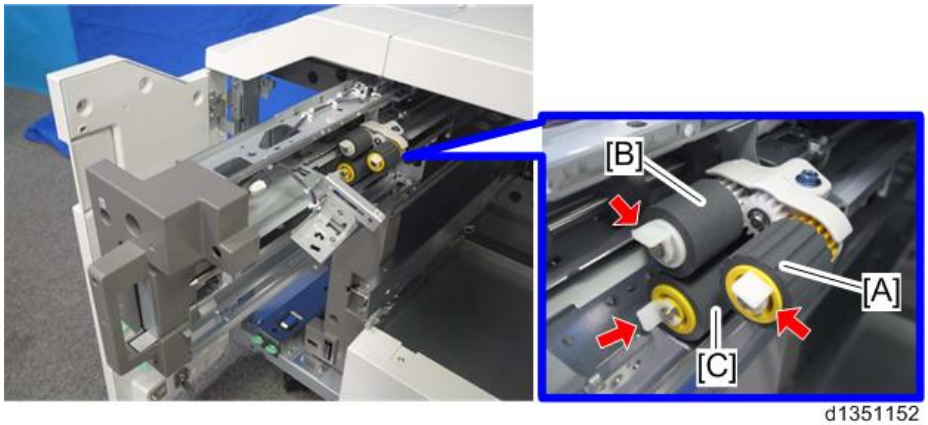
4. Remove the pick-up roller [A], feed roller [B], and separation roller [C]



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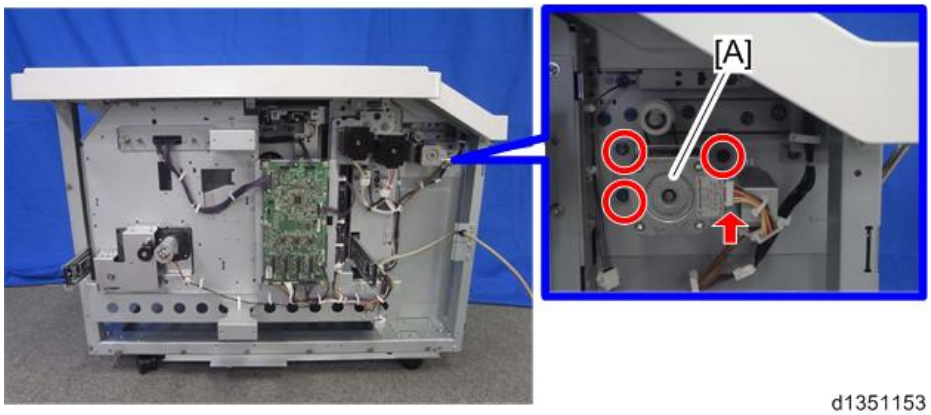
Note

- Never touch the surface of the rollers with bare hands.

Motors

LCT Exit Motor

1. Left rear cover (External Covers)
2. LCT exit motor bracket [A] (x3, x1, gear x 1, timing belt x 1)
3. 

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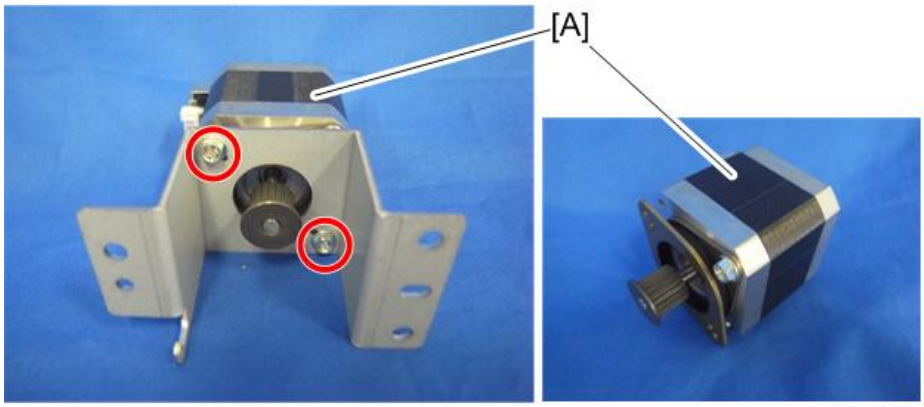
4. LCT exit motor [A] (x2)



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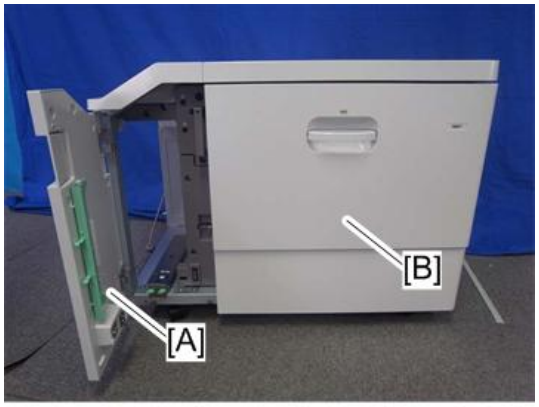
Feed Motor, Transport Motor

1. Open the front door [A], and then pull out the paper tray [B].



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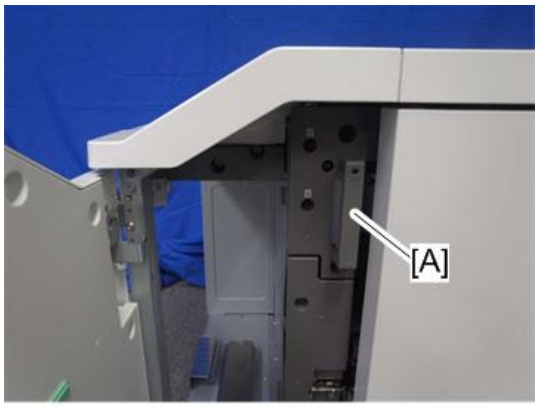
2. Pull out the paper feed unit [A]



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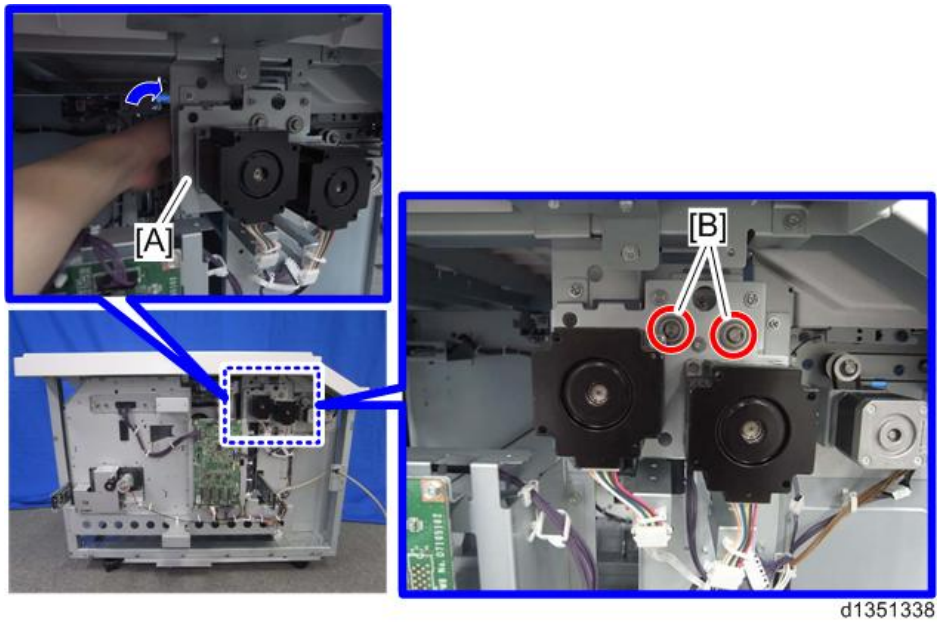
1. Left rear cover (External Covers)
2. Put a hand to the rear side of the bracket [A] for feed motor and transport motor , then push the pin [B] towards the front side.
3. Remove the bracket [A] for feed motor and transport motor.



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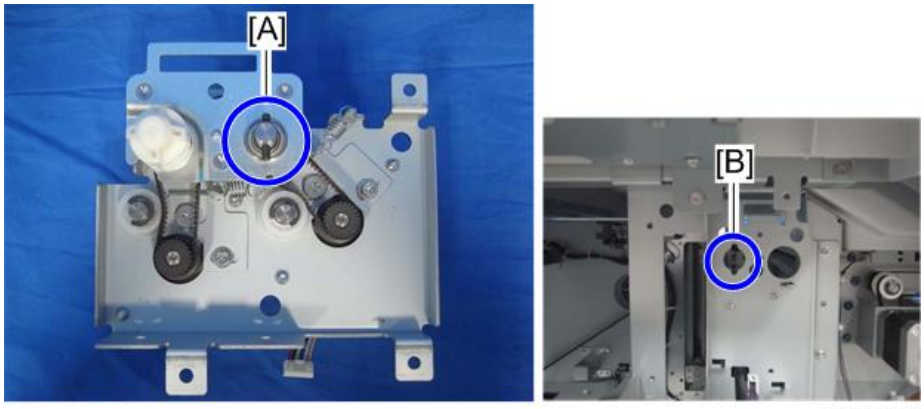
Note

- When pushing the pin towards the front side, turn the shaft [A] so the pin can slip out from the keyhole [B].



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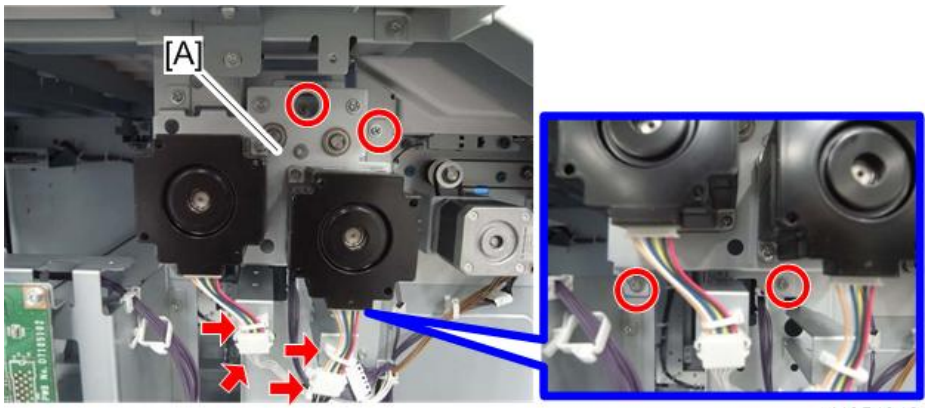
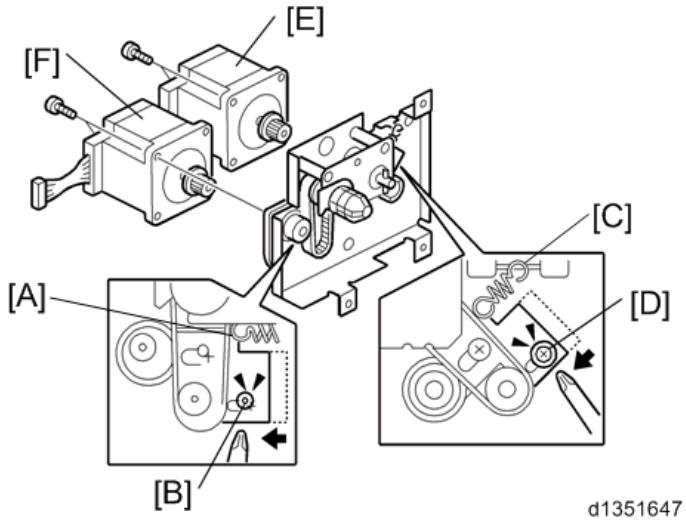
4. Feed/transport motor bracket [A] (x4, x2, x2)



5.
6. Remove the spring [A], and then loosen screw [B].
7. Remove the spring [C], and then loosen screw [D].
8. Paper feed motor [E] (x2, Timing belt x1)
9. Transport motor [F] (x2, Timing belt x1)



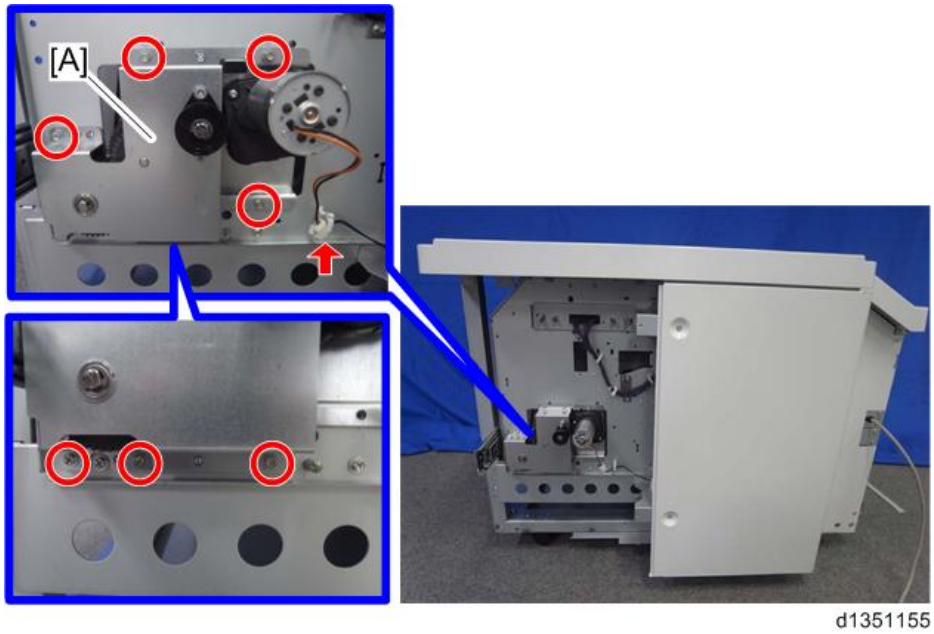
Note

- When you reinstall the motors, attach the tension springs, and then tighten the screws to tighten the belts.

Lift Motor

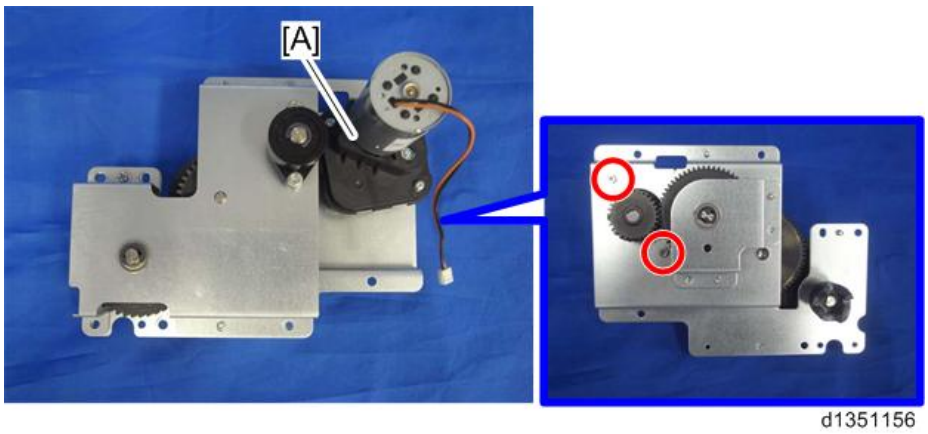
1. Left rear cover (External Covers)

2. Lift motor bracket [A] (x7, x 1)



3. Lift motor [A] (x2, gear x 1, x1)

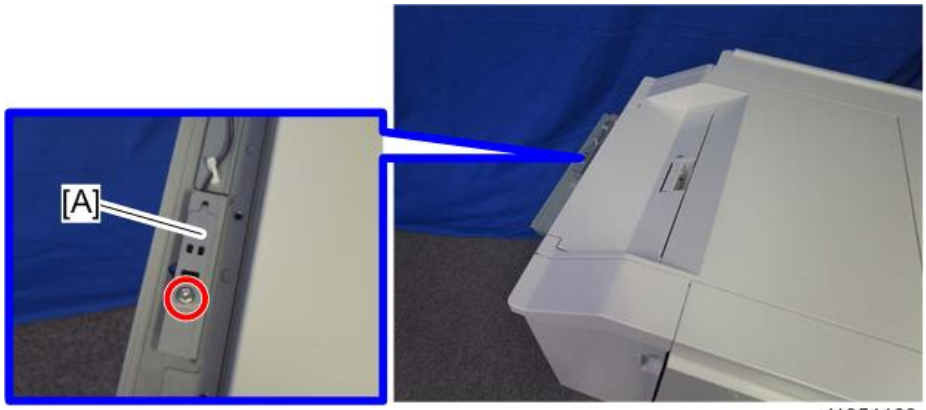
4.



Sensors

LCT Relay Sensor

1. LCT Relay Sensor bracket [A] (x1)



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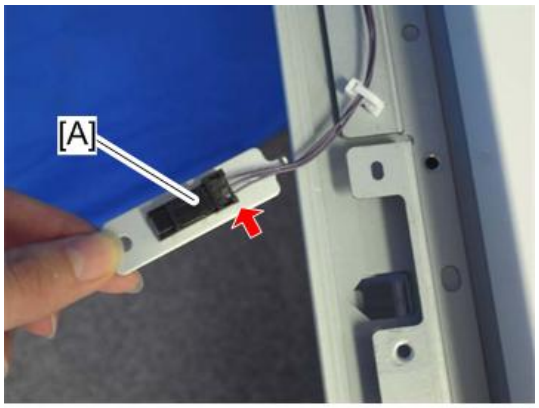
2. LCT Relay Sensor [A] (x1, hook x 3)



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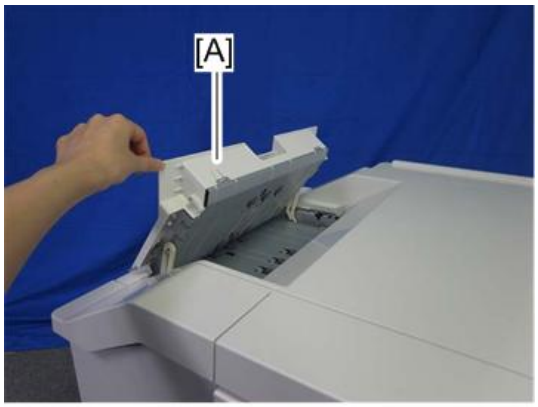
LCT Exit Sensor, Transport Sensor

1. Open the exit cover [A].



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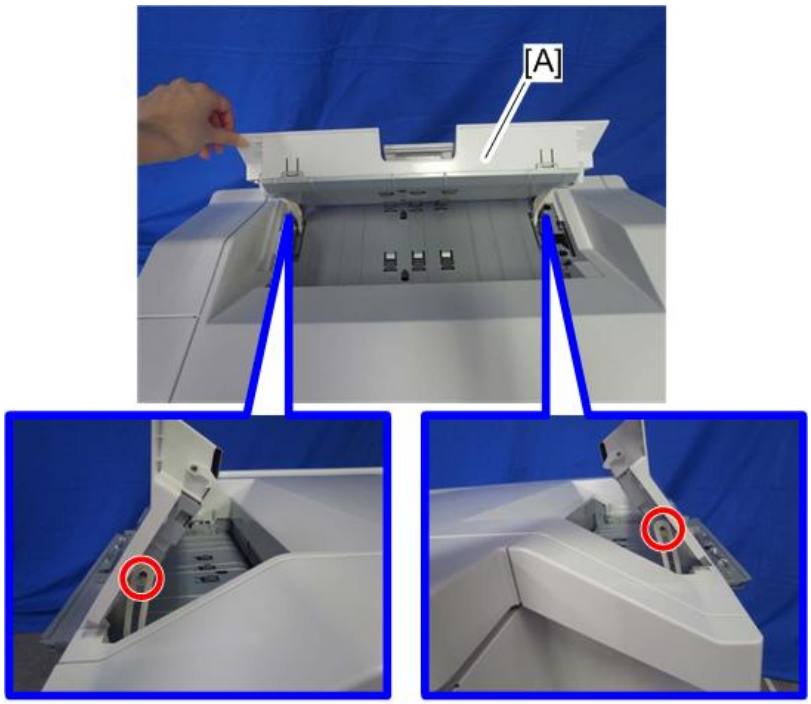
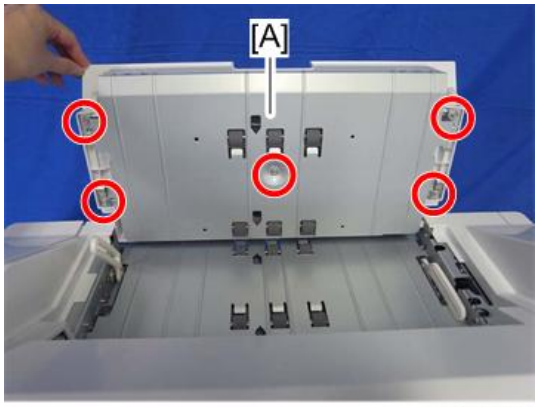
2. Remove the screws of the exit cover [A]. (x2)



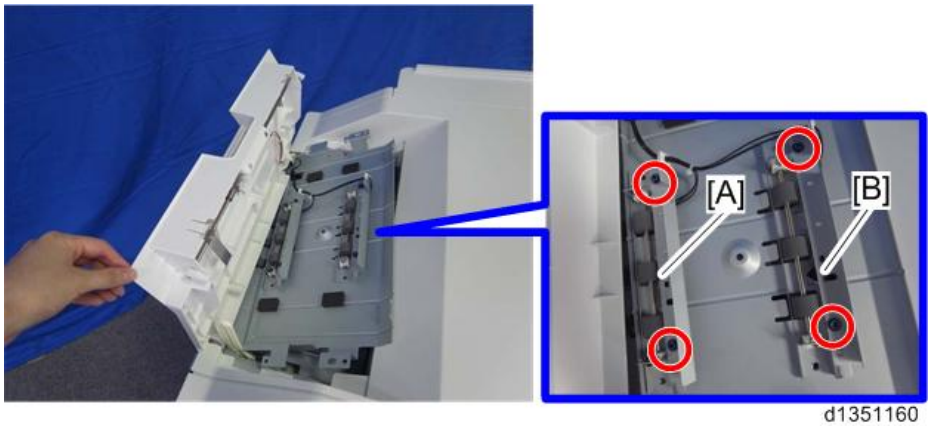
d1351158

3. Disconnect the bottom plate [A] from the exit cover. (x5)



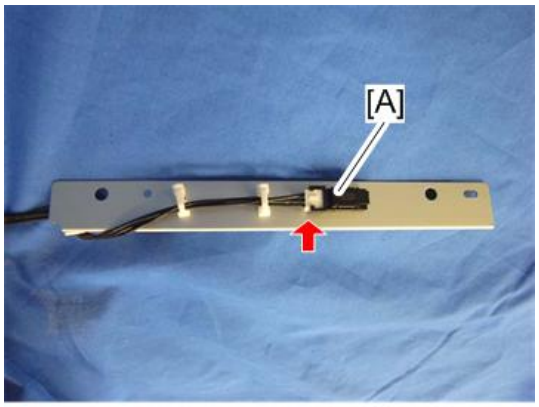
d1351159

4. Remove the LCT exit sensor bracket [A] and transport sensor bracket [B] from the bottom plate. (x2 each)



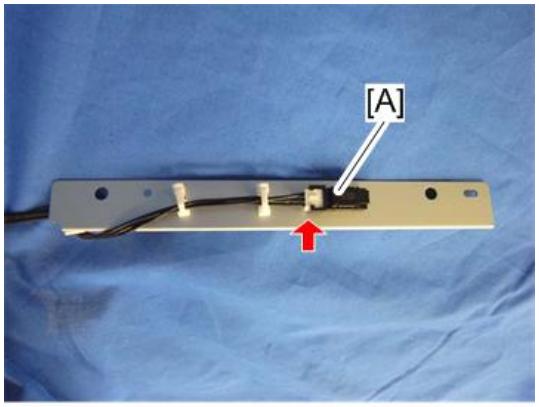
d1351160

5. Remove the LCT exit sensor [A] from the LCT exit sensor bracket. (x1, hook x 4)



d1351161

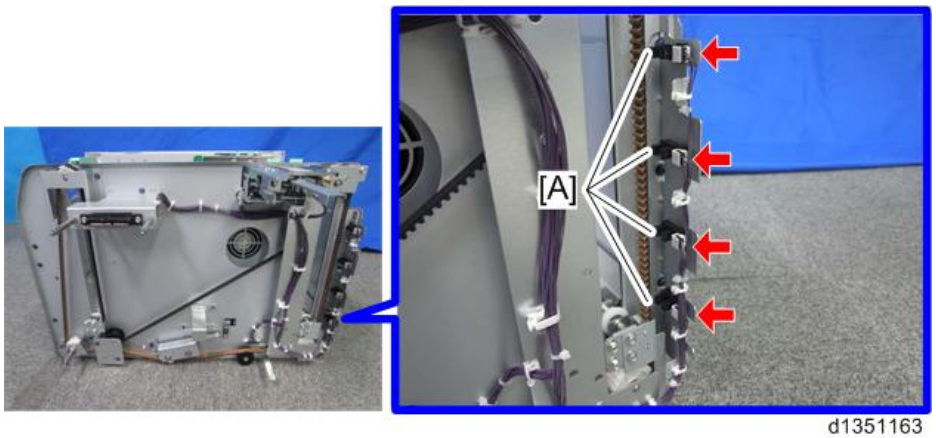
6. Remove the transport sensor [A] from the bracket. (x1, hook x 4)



d1351161

Paper Height Sensors

1. Paper tray (Paper Tray)
2. Paper height sensors [A] (x 4) (x1, hook x 4 each)

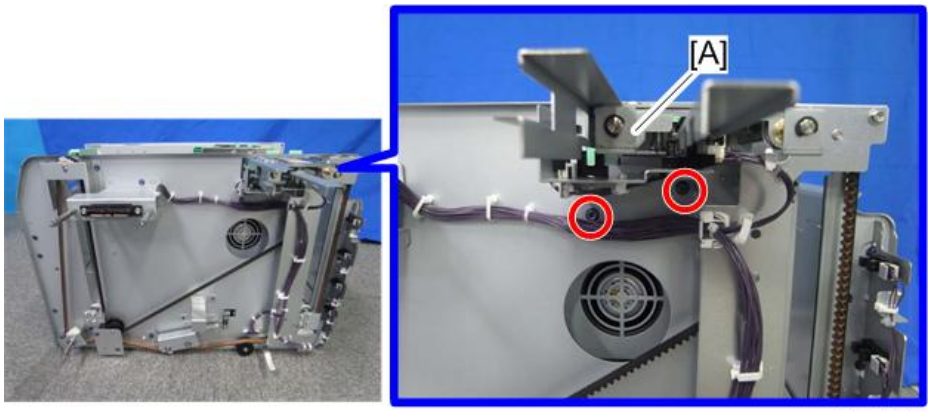


d1351163

Paper Width Sensors

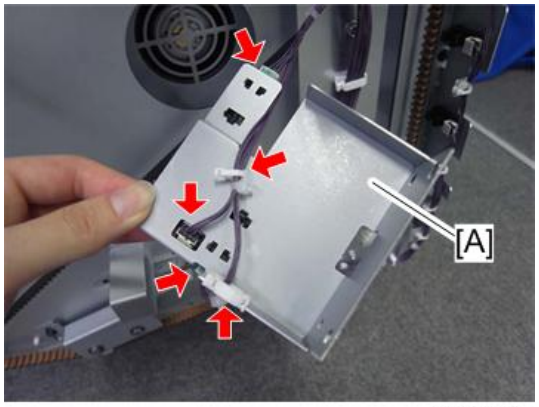
1. Paper tray (Paper Tray)

2. Remove the screws of the paper width sensor bracket [A]. (x2)



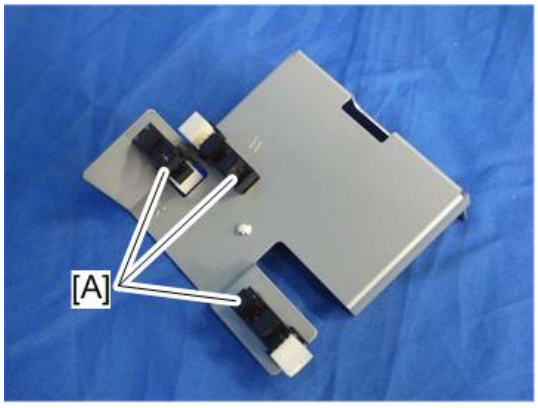
d1351164

3. Paper width sensor bracket [A] (x3, x 2 each)



d1351165

4. Paper width sensors [A] (x 3) (hook x 4 each)

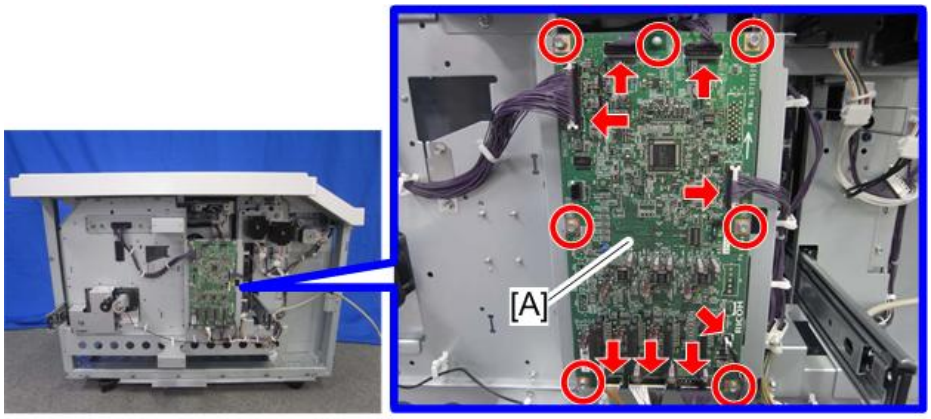


d1351166

Boards

Main Board

1. Remove the right rear cover and left rear cover. (External Covers)
2. Main board [A] (x8, x6, Stand off x1)

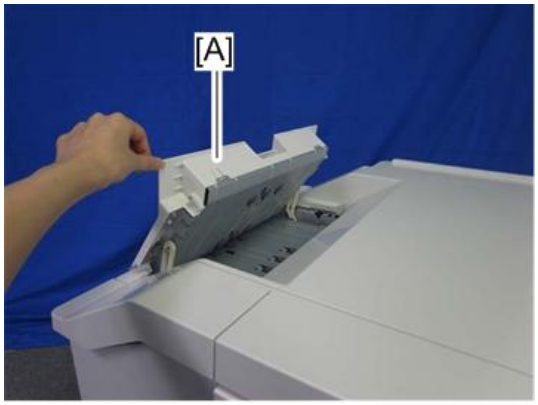


d1351167

Others

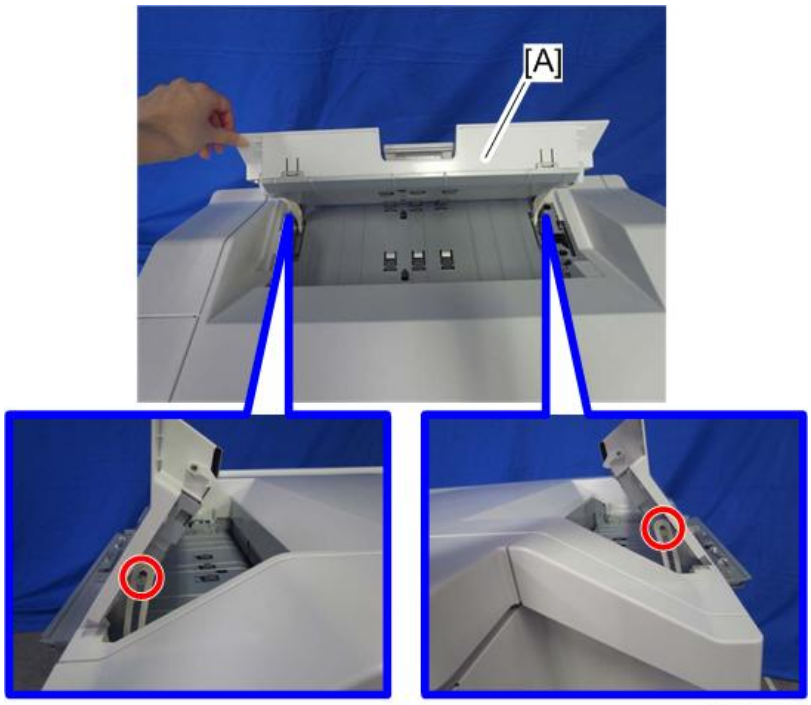
LCT Exit LED

1. Open the exit cover [A].



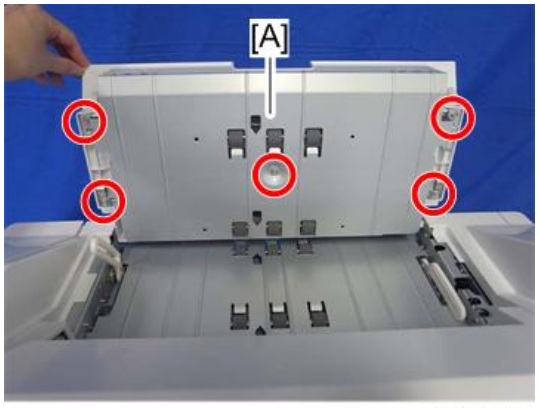
d1351157

2. Remove the screws of the exit cover [A]. (x2)



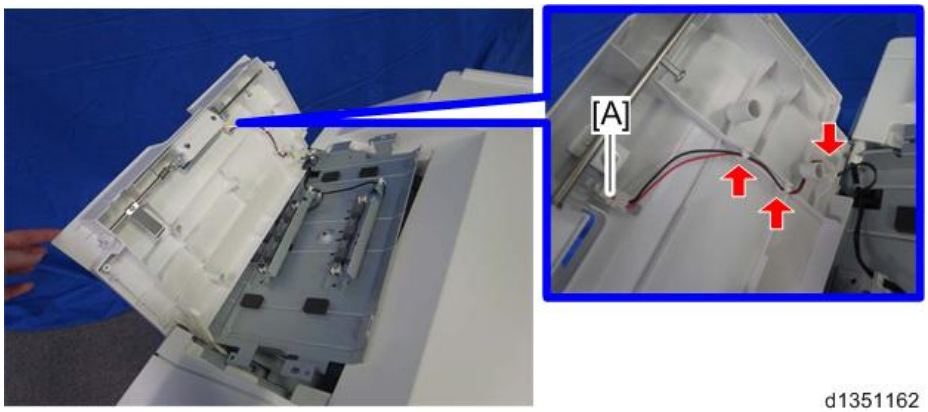
d1351158

3. Disconnect the bottom plate [A] from the exit cover. (x5)



d1351159

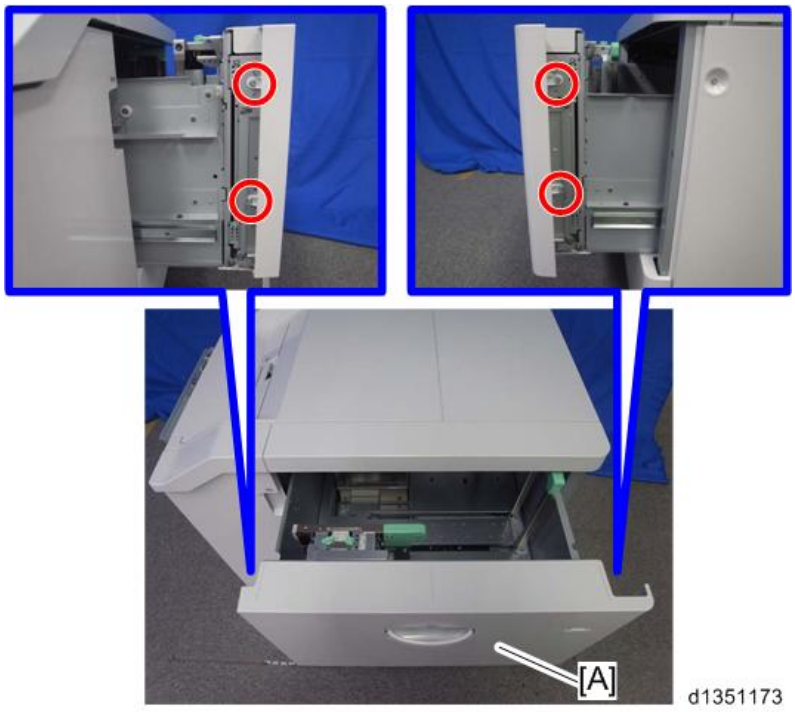
4. Remove the LCT Exit LED [A] from the back side of the exit cover. (x1, x 2)



d1351162

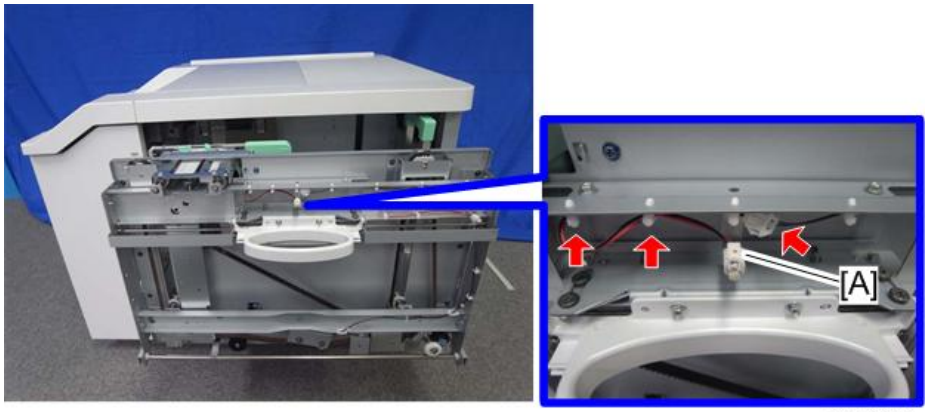
Tray Lift LED, Paper Feed LED

1. Pull out the tray.
2. Tray cover [A] (x4)



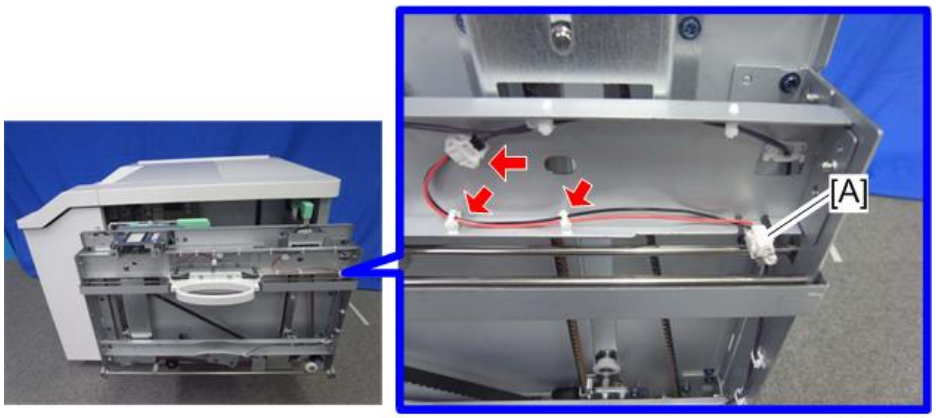
d1351173

3. Tray lift LED [A] (x1, x 2)



d1351172

4. Paper feed LED [A] (x1, x 2)



d1351174

Front Door LED

1. Open the front door [A].
2. Inner cover [B] (x4)

d1351175

3. Pull out the tray, and then remove the front door LED [A]. (x1, x 3)