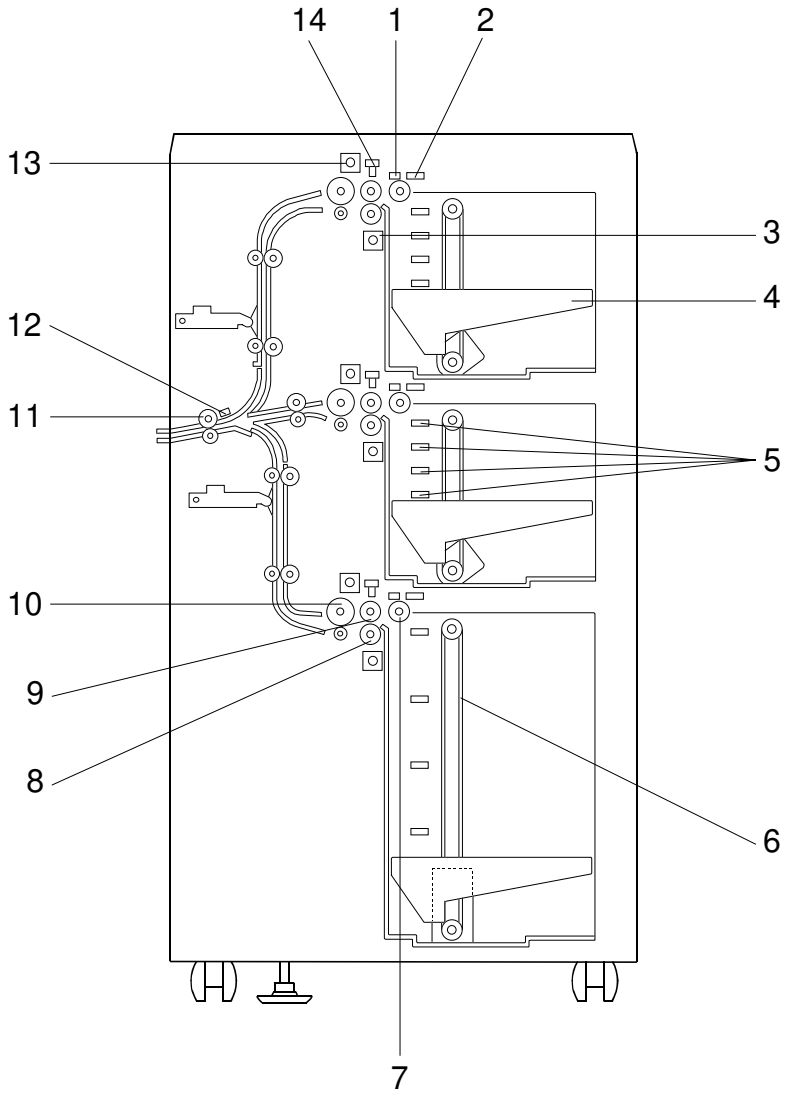
LCT
(Machine Code: B303)

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Paper Size:	A4 sideways, B5 sideways, LT sideways, A5, HLT
Paper Weight:	Upper & Middle Tray: 52 to 216 g/m^2 16 to 40 lbs Bond 50 to 80 lbs Cover 90 to 110 lbs Index Lower Tray: 52 to 163 g/m^2 16 to 40 lbs Bond 50 to 60 lbs Cover 90 lbs Index (no Tab)
Tray Capacity:	Upper & Middle Tray: 1,000 sheets (80 g/m^2, 20lb) Lower Tray: 2,550 sheets (80 g/m^2, 20lb)
Tab Sheet:	Available from the upper or middle trays
Paper Feed System:	FRR
Remaining Paper Detection:	4 steps
Power Source:	24 Vdc, 5 Vdc (from copier)
Power Consumption:	55 W
Weight:	78.8 kg
Size (W x D x H):	540 mm x 730 mm x 980 mm

1.2 MECHANICAL COMPONENT LAYOUT



B303V101.WMF

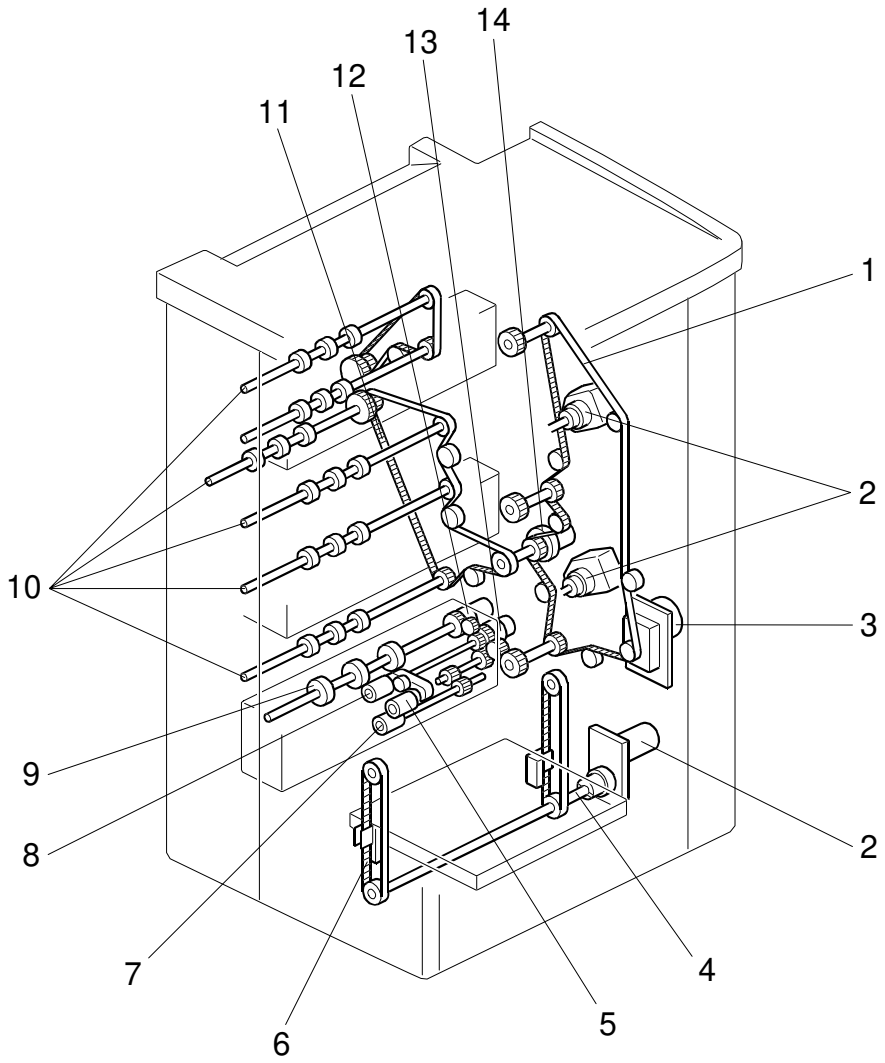
1. Paper Feed Sensor
2. Paper End Sensor
3. Separation Roller Solenoid
4. Paper Tray
5. Paper Height Sensors
6. Tray Drive Belt
7. Pick-up Roller
8. Separation Roller
9. Paper Feed Roller
10. Grip Roller
11. Relay Roller
12. Relay Sensor
13. Pick-up Solenoid
14. Lift Sensor

1.3 ELECTRICAL COMPONENT DESCRIPTIONS

Symbol	Name	Function
Motors		
M1	LCT	Drives all rollers.
M2	1st Lift	Drives the 1st paper tray up or down.
M3	2nd Lift	Drives the 2nd paper tray up or down.
M4	3rd Lift	Drives the 3rd paper tray up or down.
Sensors		
S1	1st Paper Feed	Detects the copy paper coming to the 1st paper feed roller and checks for misfeeds.
S2	2nd Paper Feed	Detects the copy paper coming to the 2nd paper feed roller and checks for misfeeds.
S3	3rd Paper Feed	Detects the copy paper coming to the 3rd paper feed roller and checks for misfeeds.
S4	1st Lift	Detects when the paper in the 1st tray is at the correct paper feed height.
S5	2nd Lift	Detects when the paper in the 2nd tray is at the correct paper feed height.
S6	3rd Lift	Detects when the paper in the 3rd tray is at the correct paper feed height.
S7	1st Paper End	Informs the copier when the paper in the 1st tray has run out.
S8	2nd Paper End	Informs the copier when the paper in the 2nd tray has run out.
S9	3rd Paper End	Informs the copier when the paper in the 3rd tray has run out.
S10	1st Paper Height 1	Detects the paper height in the 1st tray.
S11	1st Paper Height 2	Detects the paper height in the 1st tray.
S12	1st Paper Height 3	Detects the paper height in the 1st tray.
S13	1st Paper Height 4	Detects the paper height in the 1st tray.
S14	2nd Paper Height 1	Detects the paper height in the 2nd tray.
S15	2nd Paper Height 2	Detects the paper height in the 2nd tray.
S16	2nd Paper Height 3	Detects the paper height in the 2nd tray.
S17	2nd Paper Height 4	Detects the paper height in the 2nd tray.
S18	3rd Paper Height 1	Detects the paper height in the 3rd tray.
S19	3rd Paper Height 2	Detects the paper height in the 3rd tray.
S20	3rd Paper Height 3	Detects the paper height in the 3rd tray.
S21	3rd Paper Height 4	Detects the paper height in the 3rd tray.
S22	Relay	Checks for misfeeds.
Switches		
SW1	Front Door Safety	Detects whether the tray cover is opened or not.
SW2	1st Paper Size	Detects the paper size in the 1st tray, and whether the 1st tray is in the machine.
SW3	2nd Paper Size	Detects the paper size in the 2nd tray, and whether the 2nd tray is in the machine.
SW4	3rd Paper Size	Detects whether the 3rd tray is in the machine.

Symbol	Name	Function
Magnetic Clutches		
MC1	1st Paper Feed	Drives the paper feed roller in the 1st tray.
MC2	2nd Paper Feed	Drives the paper feed roller in the 2nd tray.
MC3	3rd Paper Feed	Drives the paper feed roller in the 3rd tray.
MC4	1st Grip	Drives the grip roller in the 1st tray.
MC5	2nd Grip	Drives the grip roller in the 2nd tray.
MC6	3rd Grip	Drives the grip roller in the 3rd tray.
MC7	Transport	Drives the transport rollers.
Solenoids		
SOL1	1st Pick-up	Controls up-down movement of the pick-up roller in the 1st tray.
SOL2	2nd Pick-up	Controls up-down movement of the pick-up roller in the 2nd tray.
SOL3	3rd Pick-up	Controls up-down movement of the pick-up roller in the 3rd tray.
SOL4	1st Separation Roller	Controls up-down movement of the separation roller in the 1st tray.
SOL5	2nd Separation Roller	Controls up-down movement of the separation roller in the 2nd tray.
SOL6	3rd Separation Roller	Controls up-down movement of the separation roller in the 3rd tray.
PCBs		
PCB1	Main	Controls the LCT and communicates with the copier.

1.4 DRIVE LAYOUT



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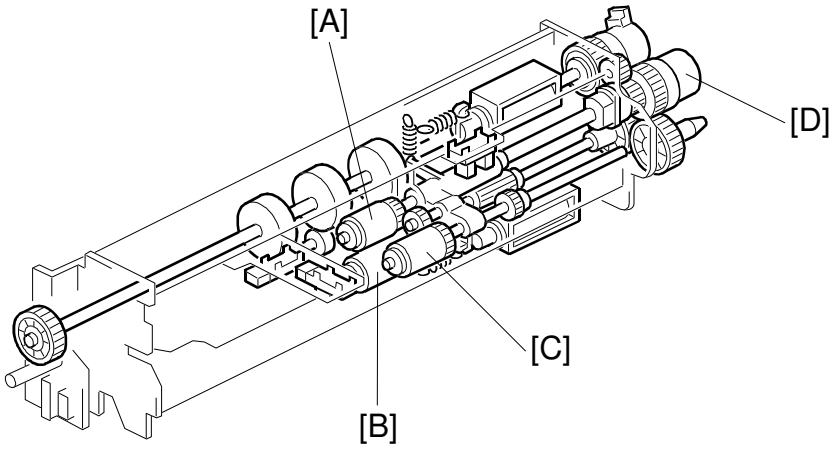
1. Main Drive Belt
2. Tray Lift Motors
3. LCT Motor
4. Tray Drive Shaft
5. Pick-up Roller
6. Tray Drive Belt
7. Separation Roller
8. Paper Feed Roller
9. Grip Roller
10. Transport Rollers
11. Relay Roller Drive Belt
12. Grip Roller Clutch
13. Paper Feed Clutch
14. Transport Clutch

2. DETAILED DESCRIPTIONS

2.1 PAPER FEED



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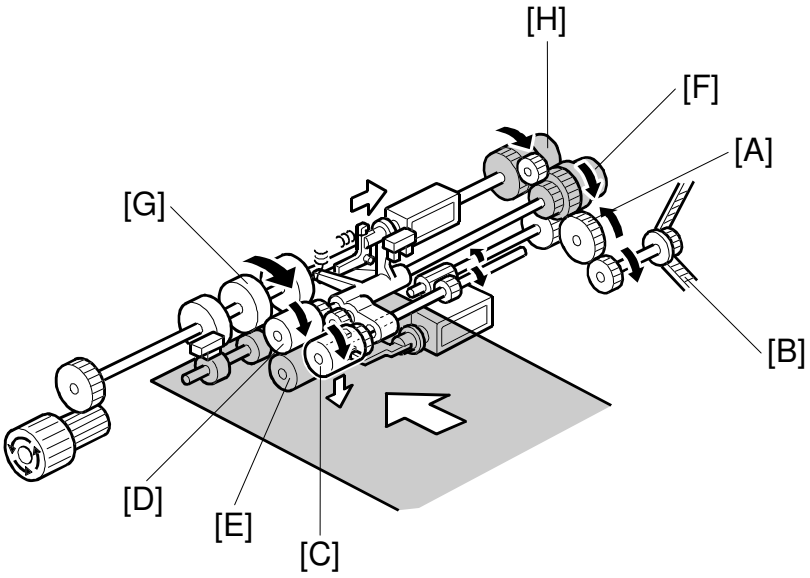
This LCT has three paper tray feed stations.

The upper and middle trays can each hold 1,000 sheets of paper. The lower tray can hold 2,500 sheets of paper.

All feed stations use an FRR paper feed system (paper feed roller [A], separation roller [B], pick-up roller [C]), and those rollers are driven by the LCT motor via the paper feed clutch [D].

2.2 PICK-UP AND FEED

2.2.1 OVERVIEW



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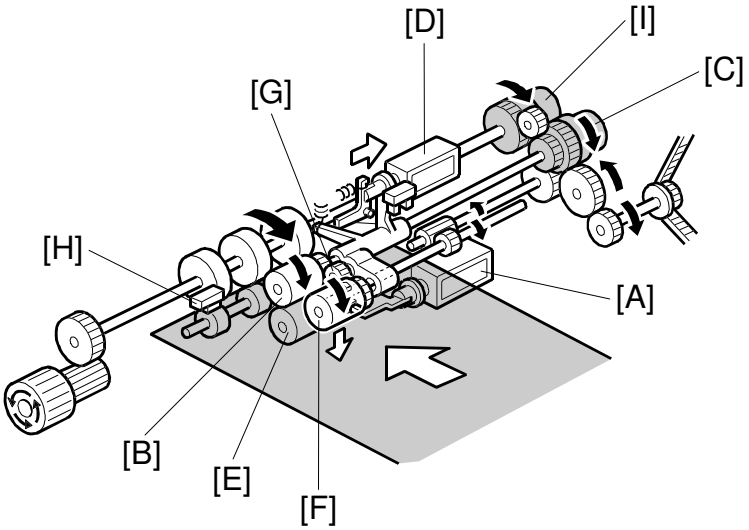
Drive from the LCT motor is transmitted to the gear [A] in the paper feed unit via the timing belt [B].

Then the gear [A] transmits the drive to the pick-up [C], paper feed [D] and separation [E] rollers via gears and the paper feed clutch [F].

The gear [A] also transmits the drive to the grip roller [G] via gears and the grip roller clutch [H].

2.2.2 PICK-UP AND FEED



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If a paper feed station is not selected, its separation roller solenoid [A] is de-activated and the separation roller [B] can turn freely in the opposite direction to paper feed.

When the paper feed station is selected and the start key is pressed, the feed clutch [C], separation roller solenoid [A], and the pick-up solenoid [D] all turn on.

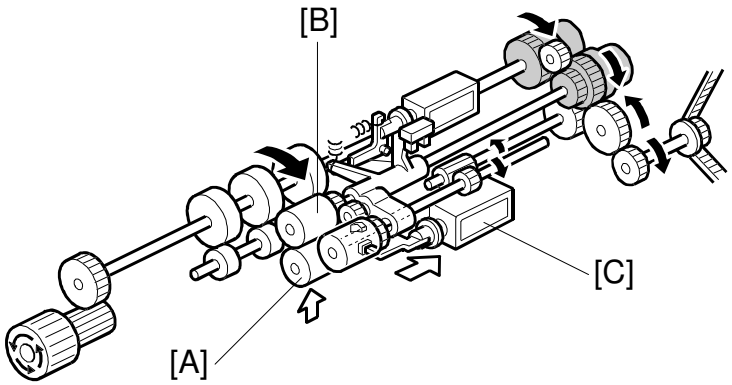
When the feed clutch [C] activates to transfer drive to the feed roller [E], the pick-up roller [F] also turns because it is linked to the feed roller by an idle gear [G].

When the separation roller solenoid [A] turns on, the separation roller [B] contacts the paper feed roller [E] and turns with the feed roller in spite of the torque limiter in the separation roller, which forces it in the opposite direction.

When the pick-up solenoid [D] activates, the pick-up roller [F] lowers to contact the top sheet of the paper stack and send it to the paper feed and separation rollers.

When the paper feed sensor [H] detects the leading edge of the paper, the pick-up solenoid de-energizes to lift the pick-up roller [F], and the grip roller clutch [I] energizes to feed the paper out of the tray.

2.2.3 SEPARATION ROLLER RELEASE



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The separation roller [A] is normally away from the feed roller [B]. When the paper feed station is selected, the separation roller solenoid [C] contacts the separation roller with the feed roller as explained on the previous two pages.

This contact/release mechanism has the following three advantages:

1. When the LCT motor turns on, all the separation rollers in the three feed stations rotate. If the separation roller is away from the feed roller, it reduces the load on the paper feed motor and drive mechanism, and it also reduces wear to the rubber surface of the separation roller caused by friction between the separation roller and the feed roller.
2. After paper feed is completed, paper sometimes remains between the feed and separation rollers. If the feed tray is removed at this time, this paper might be torn. When the separation roller is away from the feed roller, the remaining paper can be removed from between the rollers.
3. When paper misfeeds occur around this area, the user can easily pull out the jammed paper between the feed and the separation rollers if the separation roller is away from the feed roller.

After paper feed, the paper feed clutch tuns off, but the LCT motor still turns the separation roller [A] in reverse. The separation roller, still contacting the feed roller, turns the feed roller in reverse for 100 ms. Then the separation solenoid turns off.

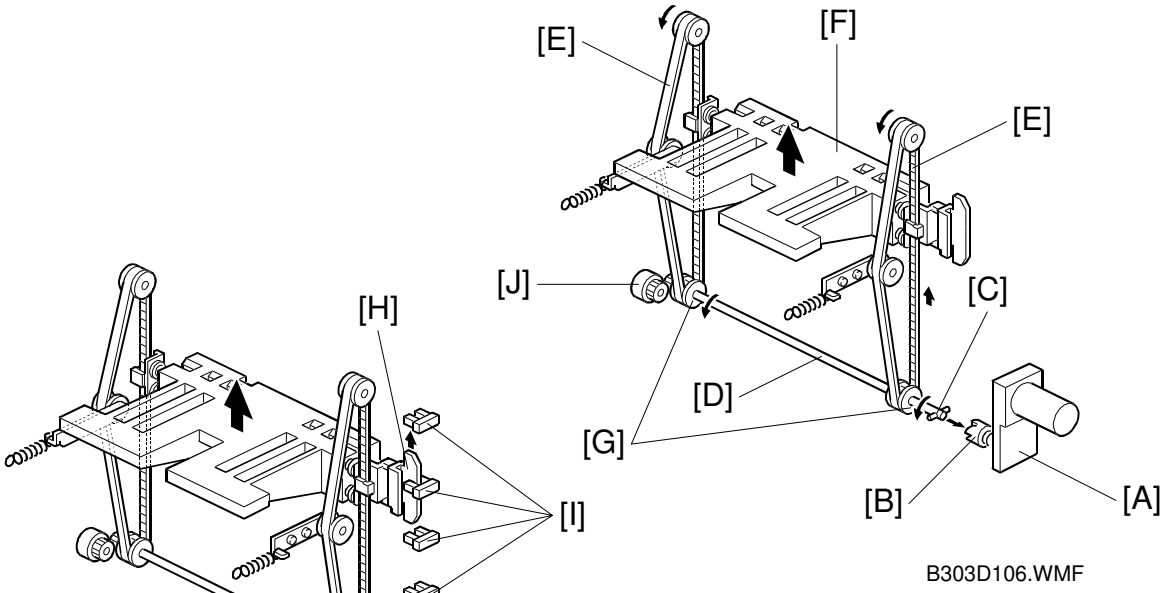
2.3 PAPER LIFT

2.3.1 TRAY DETECTION

When the tray is placed in the machine, the way that the machine detects this depends on the tray.

The upper tray and middle tray are detected when any one of the paper size switch signals is low. The lower tray is detected when the switch 1 signal of the paper size switch is low.

2.3.2 LIFT MECHANISM



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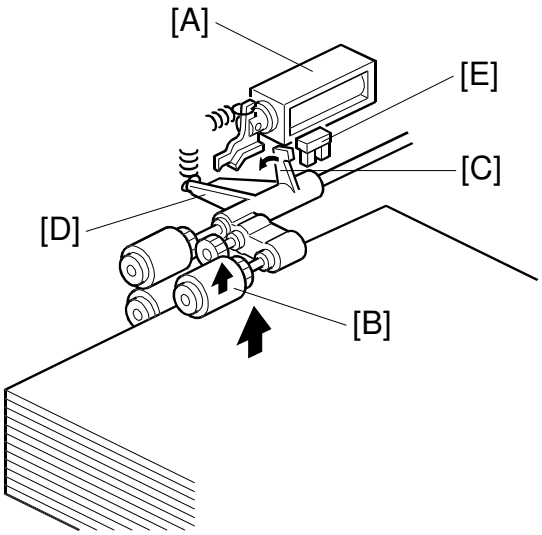
When the machine detects that the paper tray is set in the machine, the tray lift motor [A] rotates and the coupling gear [B] on the tray lift motor engages the pin [C] of the lift drive shaft [D]. The tray drive belts [E] are connected to the tray bottom plate [F] and are driven by the tray lift motor via the lift drive shaft [D] and tray drive pulleys [G]. When the lift motor turns counterclockwise, the tray bottom plate [F] moves up. The tray goes up until the top of the paper stack pushes up the pick-up roller and the lift sensor in the feed unit is activated.

When the actuator [H] on the rear end of the bottom plate activates the paper height sensors [I], the remaining paper capacity is detected (4 levels).

When pulling out the tray, the coupling gear [B] separates from the pin [C], so that the tray bottom plate moves downward. In the bottom tray, the damper [J] lets the tray bottom plate drop slowly.

2.3.3 LIFT SENSOR



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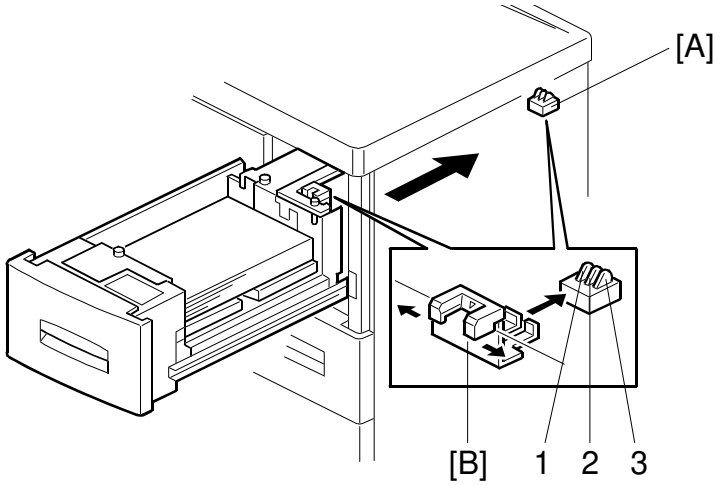
When the lift motor turns on, the pick-up solenoid [A] activates to lower the pick-up roller [B]. When the top sheet of paper reaches the proper paper feed level, the paper pushes up the pick-up roller and the actuator [C] on the pick-up roller supporter [D] activates the lift sensor [E] to stop the lift motor.

After several paper feeds, the paper level gradually lowers then the lift sensor is de-activated and the lift motor turns on again until the lift sensor is activated again.

2.4 PAPER SIZE DETECTION



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	A4-S	B5-S	A5-S	A5-L	LT-S	HLT-S	HTL-L
SW1	0	1	0	0	0	1	1
SW2	1	0	1	0	0	0	1
SW3	1	1	0	1	0	0	0

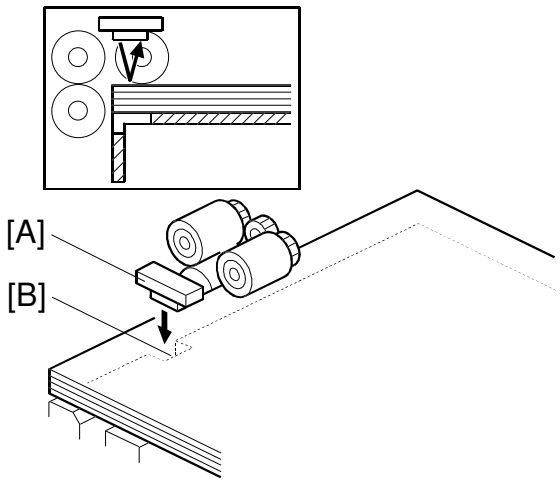
1: HI 0: LOW -S: Sideways -L: Lengthwise

For the bottom tray, the paper size has to be stored with SP5-019-006.

For the top and middle trays, the paper size switch [A] detects the paper size. The paper size switch contains three microswitches. The paper size switch is actuated by an actuator plate [B] at the rear of the tray. Each paper size has its own unique combination as shown in the table and the CPU determines the paper size by the combination.

The bottom tray has the same switch as the top and middle trays. However, it is only used for detecting when the tray is pushed in.

2.5 PAPER END DETECTION



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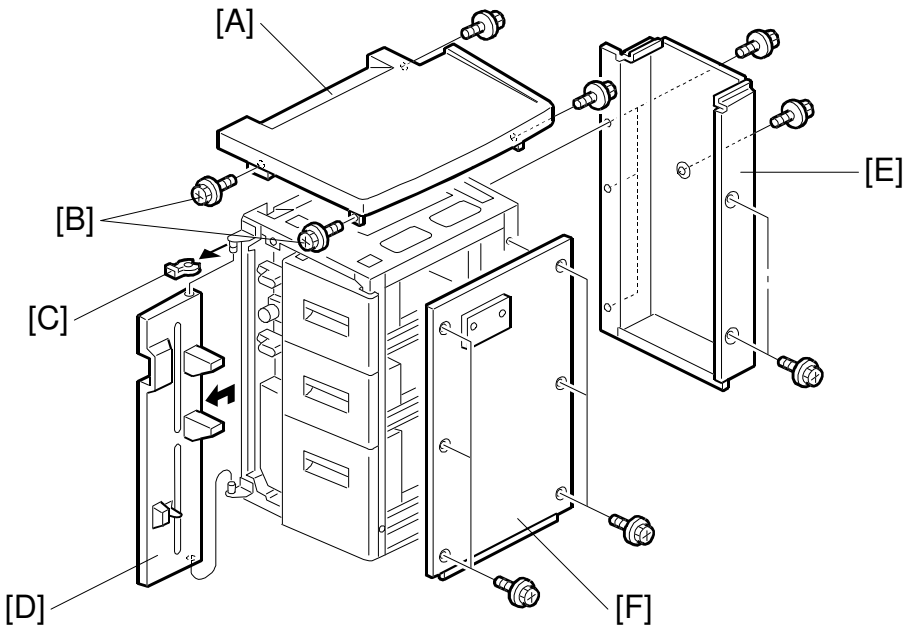
The paper end sensor [A] detects the top sheet of the paper in the tray by monitoring the reflected light. When the paper tray runs out of paper, the paper end sensor does not receive the reflected light due to the cutout [B]. Then, the tray lift motor rotates backwards 2 seconds to drop the tray bottom plate.

3. REPLACEMENT AND ADJUSTMENT

3.1 EXTERIOR COVER REMOVAL



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Top Cover

1. Remove the top cover [A] (4 screws).

Front Door

1. Remove the two screws [B] securing the front side of the top cover.
2. While lifting the top cover, remove the snap ring [C] and front door [D].

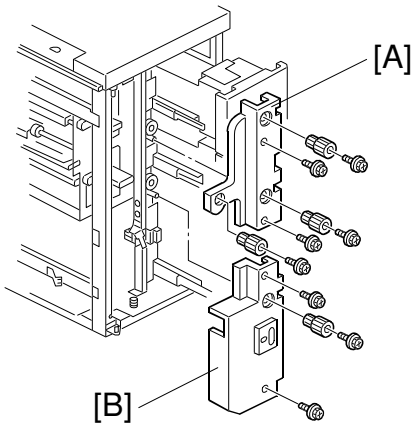
Rear Cover

1. Remove the rear cover [E] (6 screws).

Right Cover

1. Remove the right cover [F] (6 screws).

3.2 INNER COVER REMOVAL



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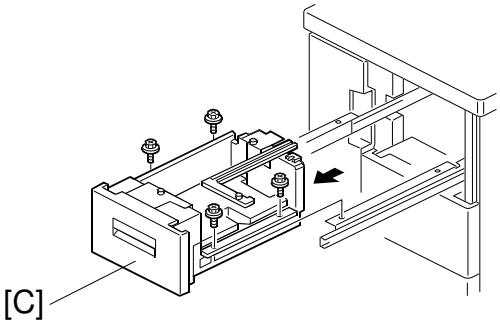
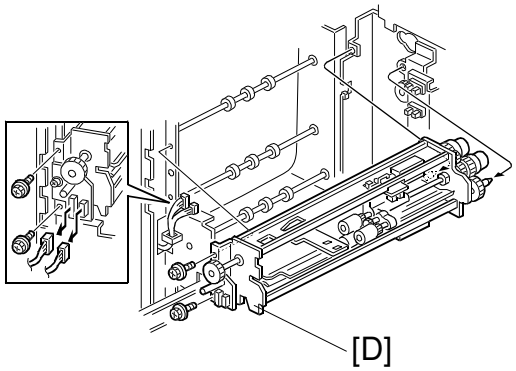


B303R108.WMF



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Upper Inner Cover

1. Open the front door and remove the upper inner cover [A] (5 screws and 3 knobs).

Lower Inner Cover

1. Open the front door and remove the lower inner cover [B] (3 screws and 1 knob).

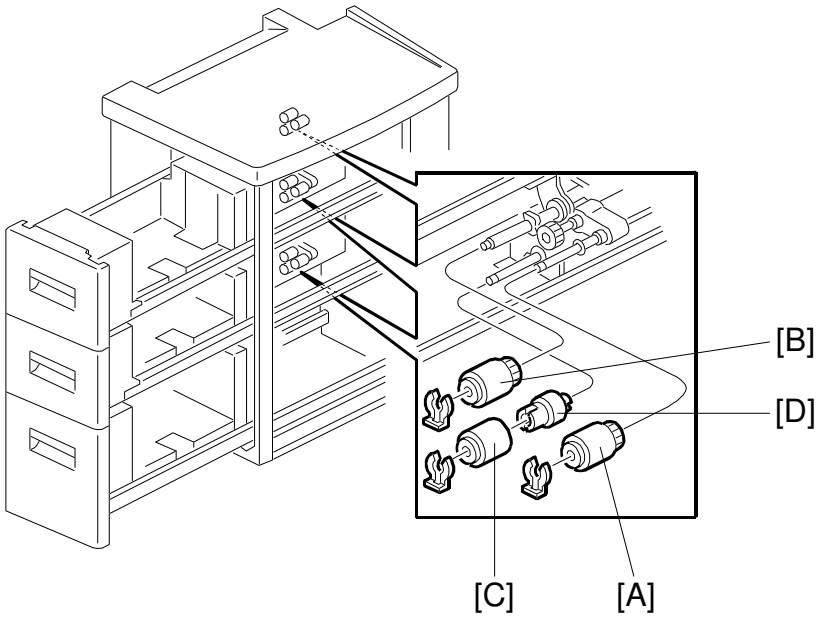
Tray Removal

1. Pull out the tray [C] and remove it (4 screws).

Paper Feed Unit Removal

1. Remove the right cover.
2. Remove the tray for the paper feed unit that will be removed.
3. Remove the upper and lower inner covers.
4. Remove the paper feed unit [D] (2 connectors and 2 screws).

3.3 PAPER FEED ROLLER REPLACEMENT



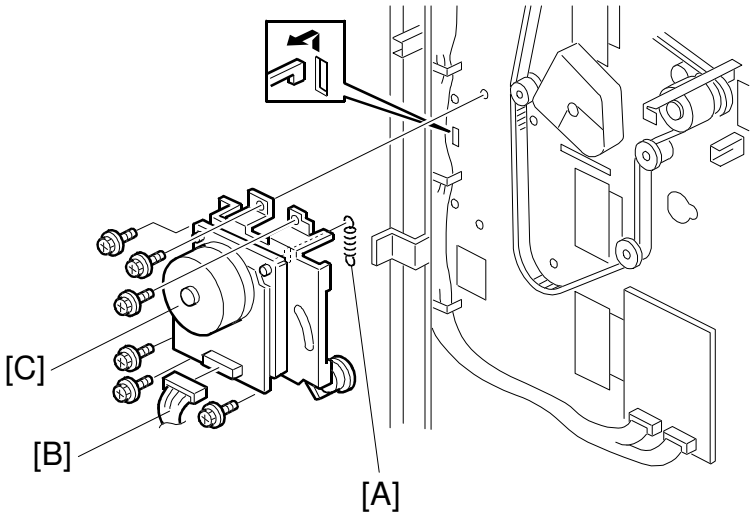
B303R103.WMF

1. Remove the right cover.
2. Pull out the paper trays.
3. Remove the pick-up roller [A] (1 snap ring).
4. Remove the feed roller [B] (1 snap ring).
5. Remove the separation roller [C] from the torque limiter [D] (1 snap ring).

NOTE: 1) The paper feed (pick-up, feed, separation) rollers used in the 1st ~3rd feed units in the paper tray unit are different from the feed rollers used in the LCT. They are not interchangeable.
2) Do not touch the surface of the rollers with bare hands.

Note that there are counters for these rollers that you may wish to reset after installing a new roller (A294: SP 7-816).

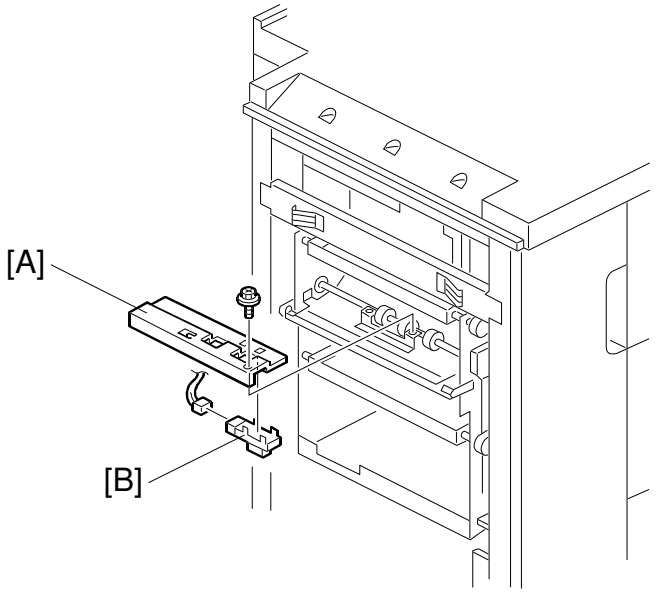
3.4 LCT MOTOR REPLACEMENT



B303R109.WMF

1. Remove the rear cover.
2. Remove the spring [A] and disconnect the connector [B].
3. Remove the motor bracket with the LCT motor [C] (6 screws).

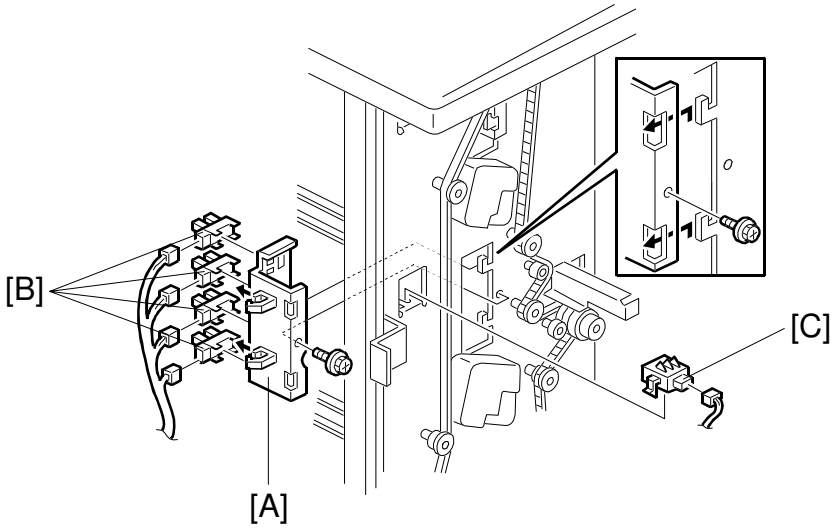
3.5 RELAY SENSOR REPLACEMENT



B303R105.WMF

1. Disconnect the LCT from the copier.
2. Remove the bracket [A] (1 screw).
3. Replace the relay sensor [B] (1 connector).

3.6 PAPER HEIGHT SENSOR AND PAPER SIZE SWITCH REPLACEMENT



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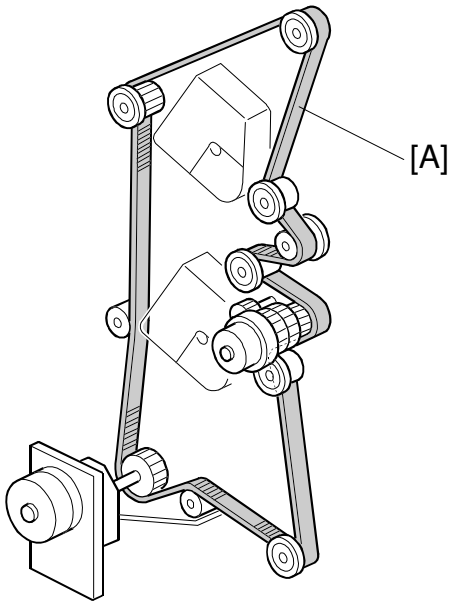
1. Remove the rear cover.
2. Remove the right cover.
3. Remove the bracket [A] (1 screw and 4 connectors) with the paper height sensors.
4. Replace the paper height sensors [B].
5. Replace the paper size switch [C] (1 connector).

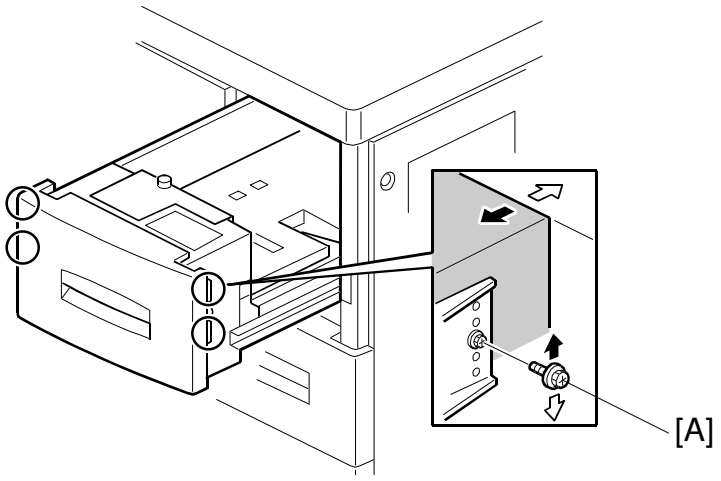
3.7 MAIN DRIVE BELT REPLACEMENT



B303R107.WMF

Route the main drive belt [A] as shown in the illustration, when the main drive belt is removed.

3.8 SIDE REGISTRATION ADJUSTMENT



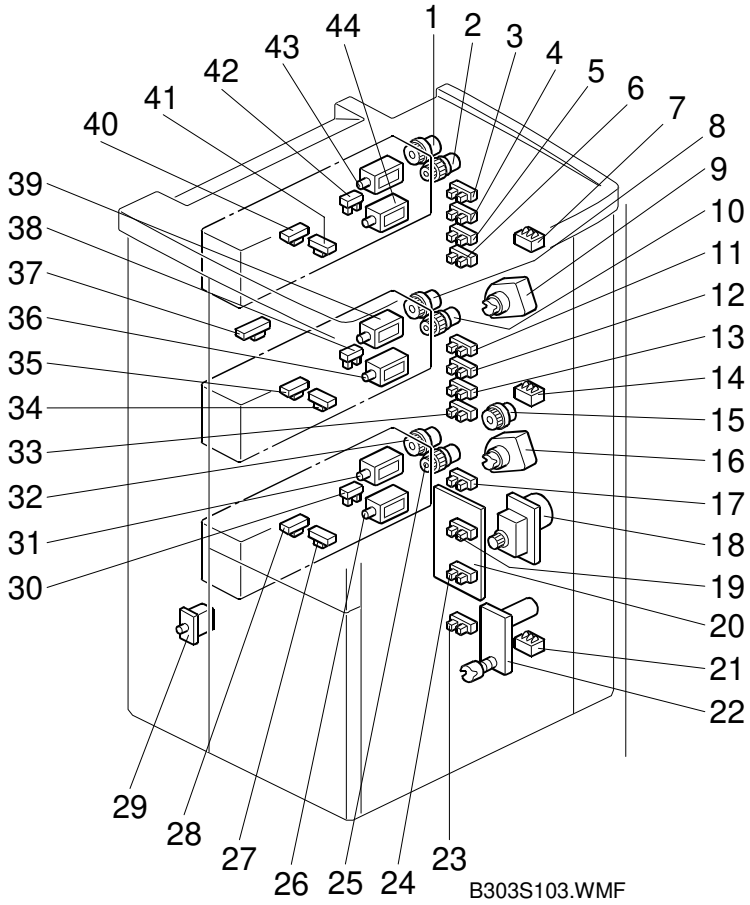
B303R112.WMF

NOTE: Normally the side registration of the image can be adjusted with SP mode. When the punch hole positions are not aligned from a particular feed station, adjusted the side registration by changing the tray cover position for that tray, as described below. Then adjust the side registration of the image with the SP mode.

1. Pull out the tray.
2. Change the screw positions [A] at both the right and left sides as shown.

   Adjustment range: 0 ± 2.0 mm adjustment step: 1.0 mm/step

ELECTRICAL COMPONENT LAYOUT (LCT: B303)



Symbol	Index No.	Description	P to P
Motors			
M1	18	LCT	E2
M2	9	1st Lift	F2
M3	16	2nd Lift	F2
M4	22	3rd Lift	E2
Sensors			
S1	40	1st Paper Feed	E6
S2	35	2nd Paper Feed	F6
S3	28	3rd Paper Feed	G6
S4	42	1st Lift	F6
S5	38	2nd Lift	G6
S6	30	3rd Lift	H6
S7	41	1st End	F6
S8	34	2nd End	G6
S9	27	3rd End	H6
S10	3	1st Paper Height 1	A6
S11	4	1st Paper Height 2	B6
S12	5	1st Paper Height 3	B6
S13	6	1st Paper Height 4	B6
S14	11	2nd Paper Height 1	C6
S15	12	2nd Paper Height 2	C6
S16	13	2nd Paper Height 3	C6
S17	33	2nd Paper Height 4	D6
S18	17	3rd Paper Height 1	D6
S19	19	3rd Paper Height 2	D6
S20	24	3rd Paper Height 3	E6
S21	23	3rd Paper Height 4	E6

Symbol	Index No.	Description	P to P
S22	37	Relay	E6
Switches			
SW1	29	Front Door Safety	J6
SW2	7	1st Paper Size	H6
SW3	14	2nd Paper Size	I6
SW4	21	3rd Paper Size	I6
Magnetic Clutches			
MC1	2	1st Paper Feed	G2
MC2	10	2nd Paper Feed	H2
MC3	25	3rd Paper Feed	H2
MC4	1	1st Grip	G2
MC5	8	2nd Grip	H2
MC6	32	3rd Grip	I2
MC7	15	Transport	F2
Solenoids			
SOL1	43	1st Pick-up	I2
SOL2	39	2nd Pick-up	I2
SOL3	31	3rd Pick-up	J2
SOL4	44	1st Separation	G2
SOL5	39	2nd Separation	G2
SOL6	31	3rd Separation	H2
PCBs			
PCB1	20	Main	J4

POINT TO POINT DIAGRAM (LCT: B303)