

Paper Feed Unit PB3000
Machine Code: B800



SERVICE MANUAL

Apr. 21st, 2006
Subject to change

Read This First

Safety and Symbols

Replacement Procedure Safety



CAUTION

- Turn off the main power switch and unplug the machine before beginning any of the replacement procedures in this manual.

Symbols Used in this Manual

This manual uses the following symbols.



: See or Refer to



: Screws



: Connector



: Clip ring



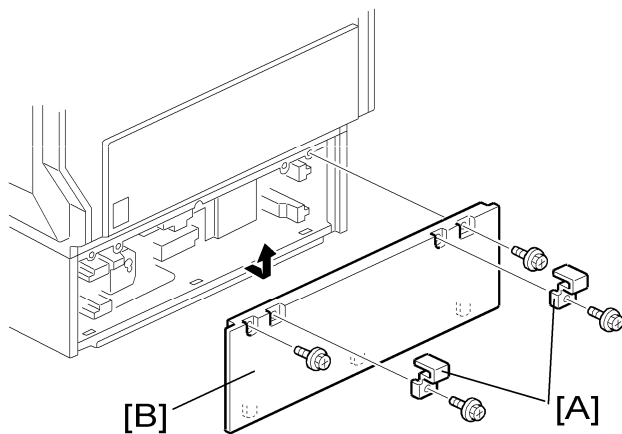
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1. Replacement and Adjustment

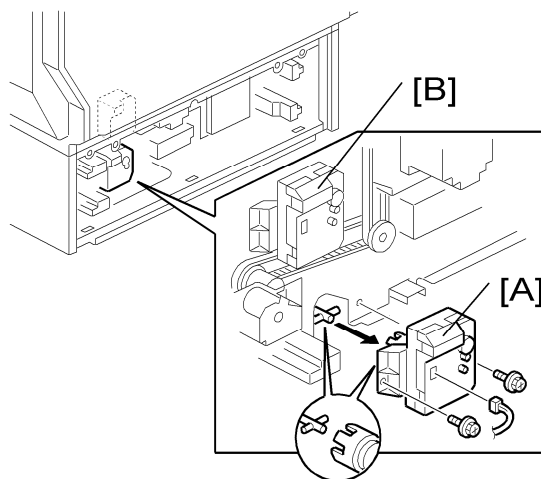
Rear Cover



1. Securing brackets [A] (🔩 x 1 each)
2. Rear cover [B] (🔩 x 2)

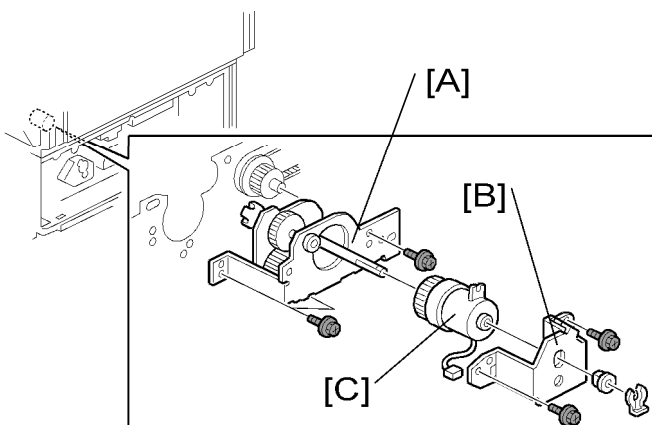
Motors and Clutches

Lift Motors

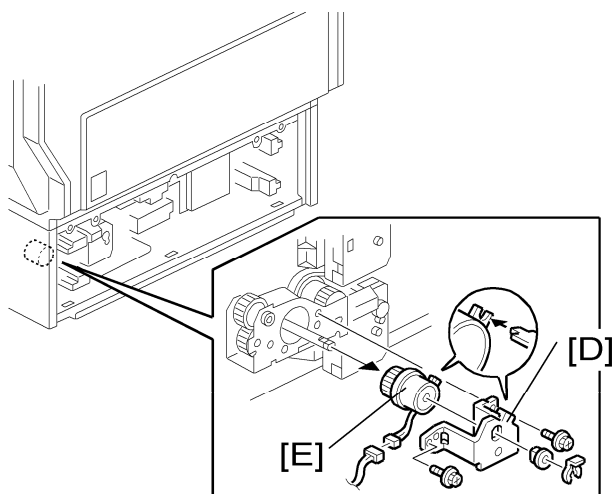


1. Rear cover (Rear Cover)
2. Lift motors [A][B] (x 2, x 1 each)

Upper and Lower Paper Feed Clutches



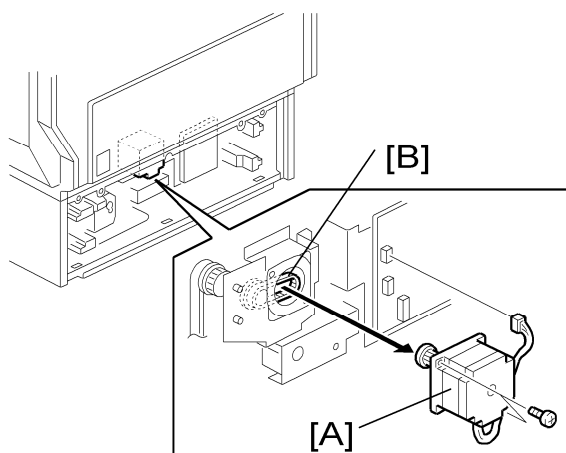
1. Rear cover (Rear Cover)
2. Upper paper feed gear unit [A] (x 3, x 1)
3. Upper paper feed clutch bracket [B] (x 1, x 2, bushing x 1)
4. Upper paper feed clutch [C]



5. Lower paper feed clutch bracket [D] (⚙ x 1, bushing x 1, 🔩 x 2)

6. Lower paper feed clutch [E] (🔌 x 1)

Paper Feed Motor



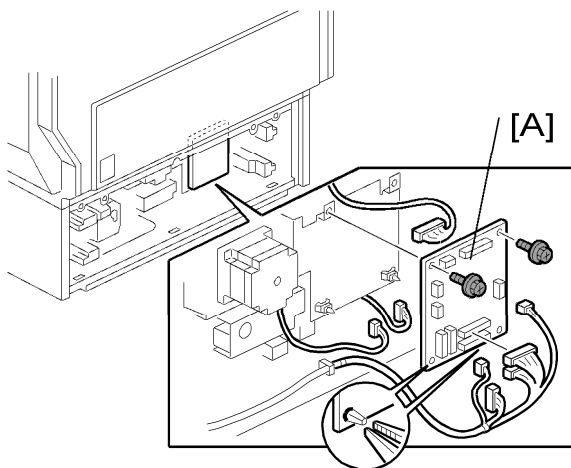
1. Rear cover (🔌 "Rear Cover")

2. Paper feed motor [A] (🔌 x 1, 🔩 x 2)

⬇ Note

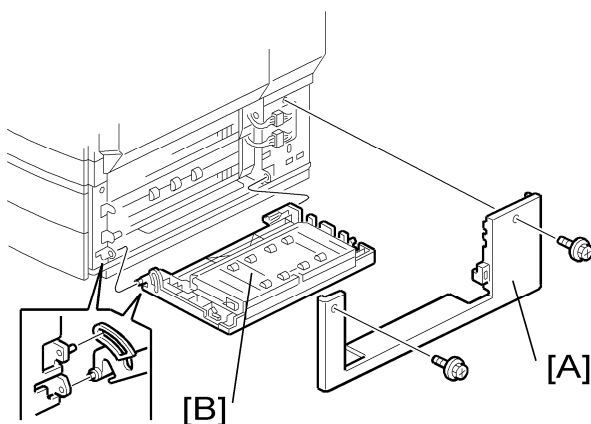
- When installing the paper feed motor, make sure that the gear of the paper feed motor holds the timing belt [B].

Main Board

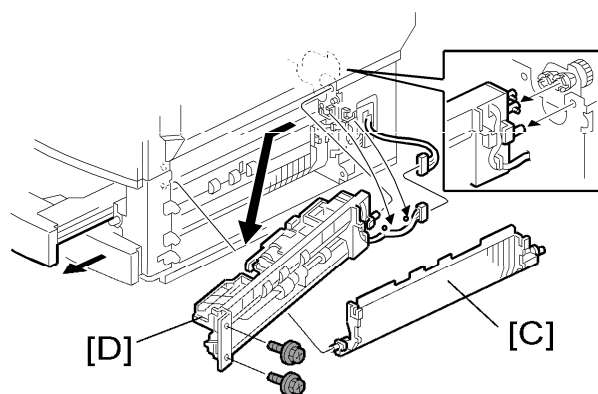


1. Rear cover (🔌 "Rear Cover")
2. Main board [A] (All 📏s, 🔑 x 2, snap pin x 2)

Paper Feed Unit



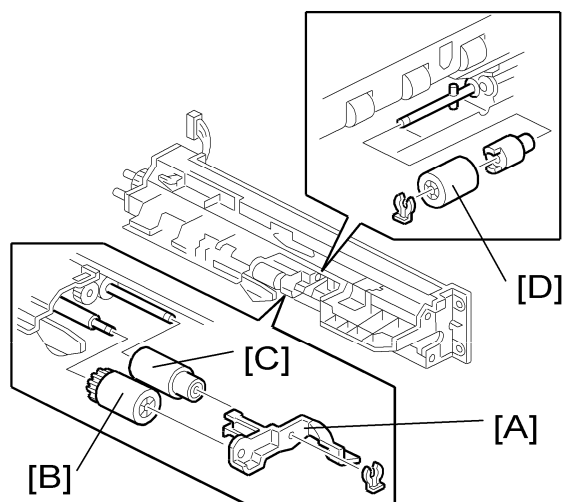
1. Right cover [A] (🔩 x 2)
2. Vertical transport guide [B] of the paper feed unit



3. Pull the tray 3 (or 4).
4. Paper guide [C]
5. Paper feed unit [D] (🔩 x 2, 📐 x 1, 📐 x 2)

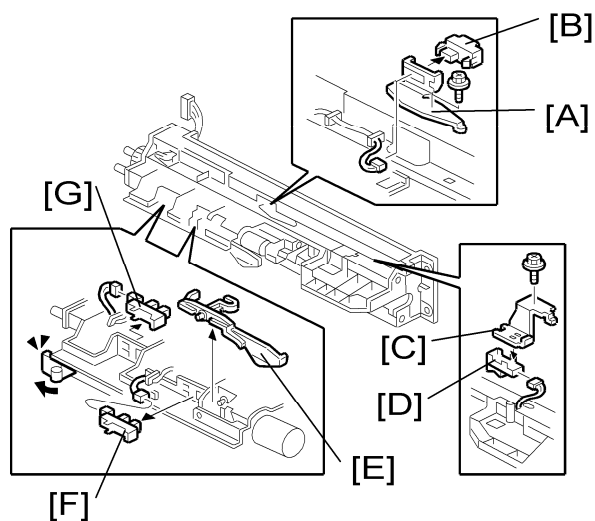
When replacing the paper feed unit of tray 4, do the same.

Pick-up, Paper Feed and Separation Rollers



1. Paper feed unit (Paper Feed Unit)
2. Roller holder [A] (x 1)
3. Pick-up roller [B]
4. Paper feed roller [C]
5. Separation roller [D] (x 1)

Lift, Paper End, and Relay Sensors

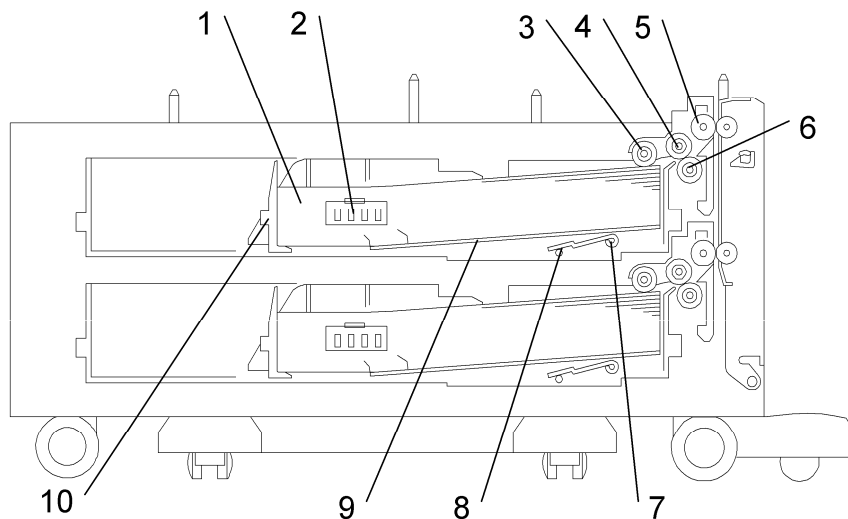


1. Paper feed unit (Icon "Paper Feed Unit")
2. Vertical transport sensor bracket [A] (Icon x 1)
3. Vertical transport sensor [B] (Icon x 1)
4. Paper feed sensor bracket [C] (Icon x 1)
5. Paper feed sensor [D] (Icon x 1)
6. Paper end sensor filler [E]
7. Paper end sensor [F] (Icon x 1)
8. Lift sensor [G] (Icon x 1)

2. Detailed Descriptions

Component Layout

Mechanical Component Layout

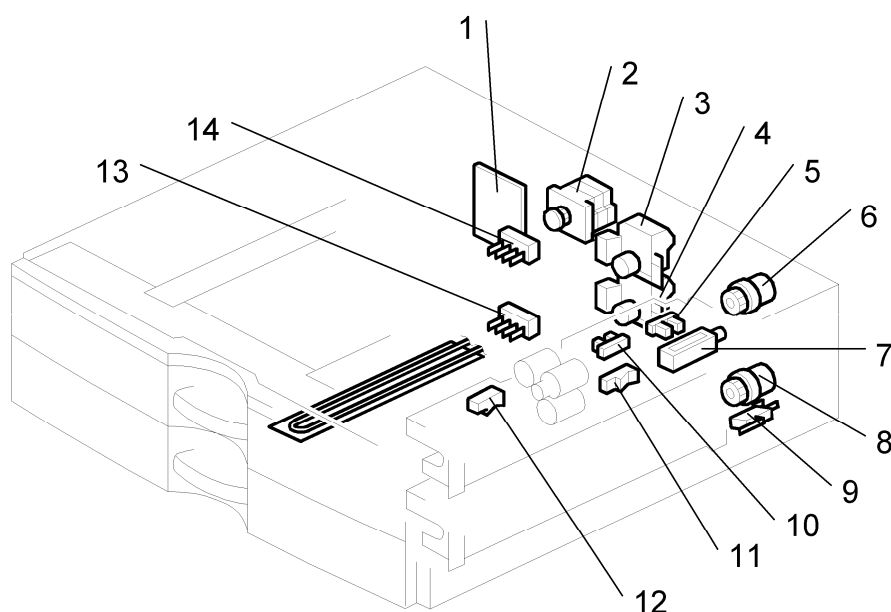


1. Upper tray	6. Separation roller
2. Paper size switch: Upper tray	7. Tray lift arm
3. Pick-up roller: Upper tray	8. Lift arm shaft
4. Paper feed roller	9. Bottom plate
5. Vertical transport roller	10. End plate

Note

- Listed above are the components of tray 1 (upper tray). Tray 2 (lower tray) has the same components as tray 1.

Electrical Component Layout

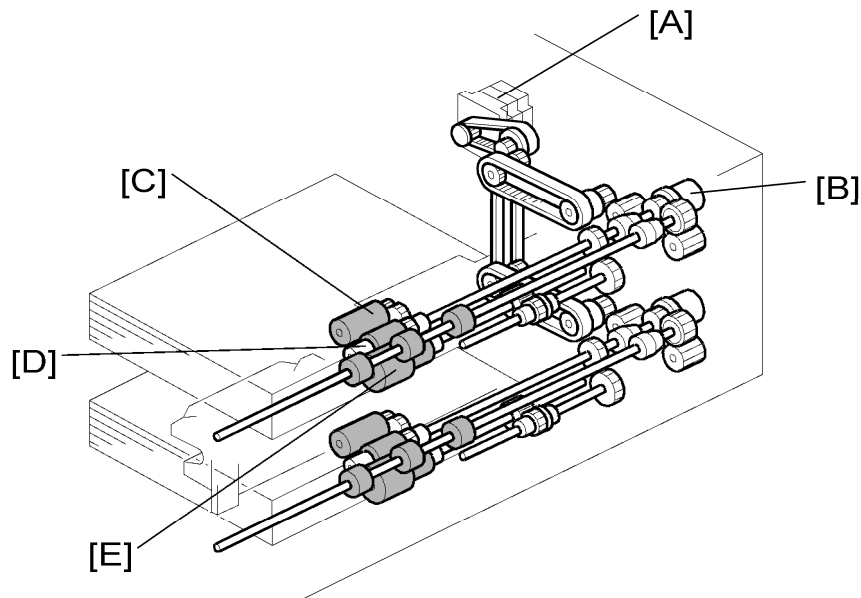


1. Main board	8. Lower paper feed clutch
2. Feed motor	9. Vertical transport guide switch
3. Upper tray lift motor	10. Paper end sensor
4. Lower tray lift motor	11. Vertical transport sensor 1
5. Upper lift sensor	12. Paper feed sensor
6. Upper paper feed clutch	13. Paper size switch: Lower tray
7. Pick-up solenoid	14. Paper size switch: Upper tray

Note

- Listed above are the components of tray 1 (upper tray), except for the right cover switch and anti-condensation heater (there is only one each of these for the entire unit). Tray 2 (lower tray) has the same components as tray 1.

Paper Feed



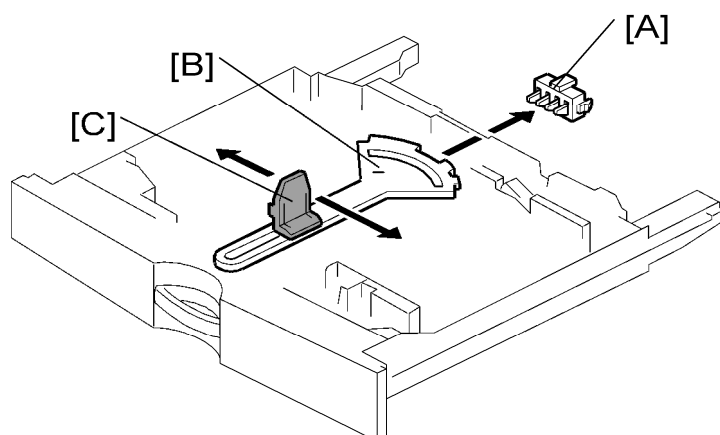
Paper Feed Mechanism

An FRR (feed and reverse roller) feed mechanism is used (see "Paper Feed Methods" in the Core Technology Manual).

Drive Path

Tray 3 (upper tray) and tray 4 (lower tray) have identical paper feed systems. The feed motor [A] drives all the rollers in the unit. The paper feed clutch [B] controls the pick-up roller [C], paper feed roller [D], and separation roller [E].

Paper Size Detection



There are four paper size switches [A] working in combination. Switch 1 (right end) is for tray set detection. The other three switches detect the paper size as shown in the table below. The actuator [B] is moved by the end plate [C].

0: Not pushed, 1: Pushed

Models		Switch Location		
North America	Europe/Asia	SW4	SW3	SW2
DLT (A3) SEF ^{*1}	A3 (DLT) SEF ^{*1}	1	1	0
LG (B4) SEF ^{*2}	B4 (LG) SEF ^{*2}	1	1	1
A4 SEF	A4 SEF	0	0	1
B5 SEF	B5 SEF	0	0	0
LT (A4) LEF ^{*3}	A4 (LT) LEF ^{*3}	0	1	1
B5 (Exe) LEF ^{*4}	B5 (Exe) LEF ^{*4}	1	0	1
A5 LEF	A5 LEF	0	1	0

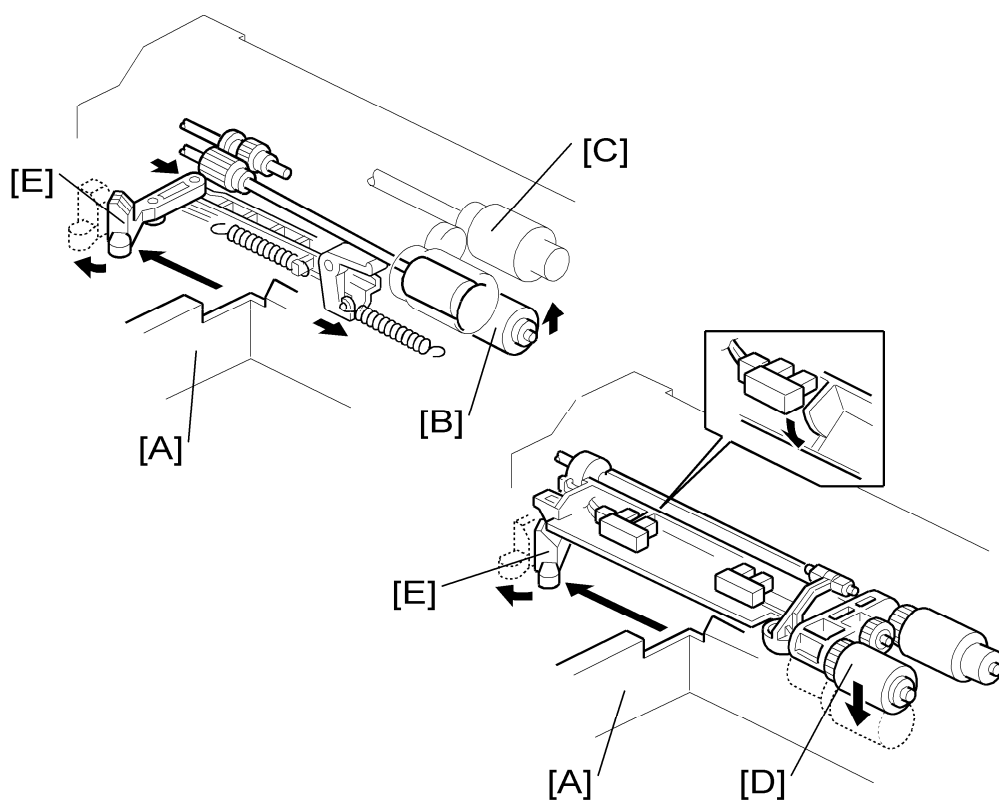
Note

- ^{*1}: Detects either DLT SEF or A3 SEF, depending on the setting of SP5-181-7 or 11.
- ^{*2}: Detects either LG SEF or B4 SEF, depending on the setting of SP5-181-8 or 12.
- ^{*3}: Detects either LT LEF or A4 LEF, depending on the setting of SP5-181-6 or 10.
- ^{*4}: Detects either Exe LEF or B5 LEF, depending on the setting of SP5-181-9 or 13

The machine disables paper feed from a tray if the paper size cannot be detected (if the paper size actuator is broken or no tray is installed).

For non-standard paper sizes, if they are not visible on the user tool screen for selecting paper sizes, then set SP 5-112 to 1. If the user selects one of these sizes, auto paper size selection is disabled.

Reverse Roller and Pick-Up Roller Release

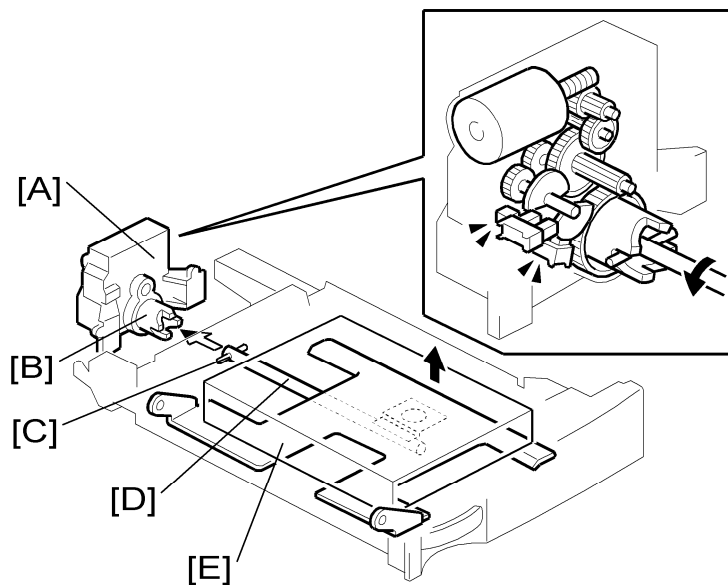


The pick-up roller and separation roller release the paper when it is not being fed. This helps remove jammed paper easily.

When the paper tray [A] is not in the machine, the separation roller [B] is away from the paper feed roller [C] and the pick-up roller stays in its upper position.

When the paper tray is pushed into the machine, it pushes the release lever [E]. This causes the pick-up roller [D] to go down into contact with the top sheet of paper, and causes the reverse roller [B] to move up and contact the paper feed roller.

Paper Lift

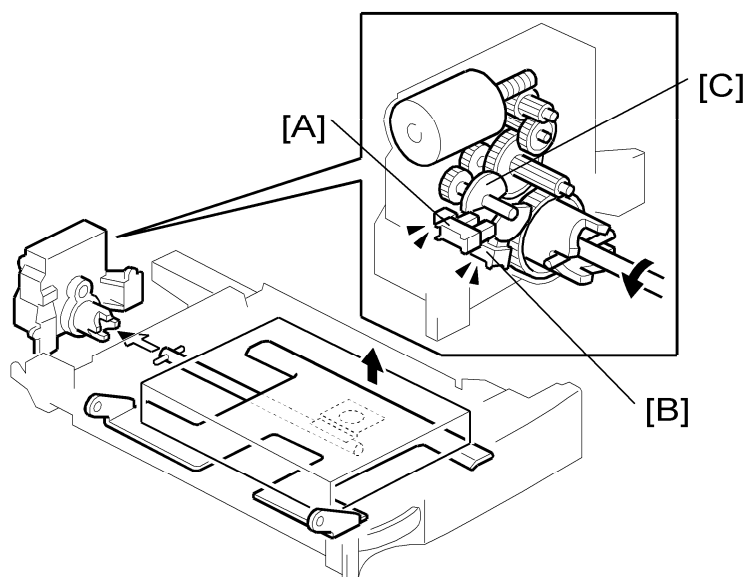


When the machine detects that a tray has been placed in the machine, the tray lift motor [A] rotates and the coupling gear [B] on the tray lift motor engages the pin [C] on the lift arm shaft [D]. Then the tray lift arm lifts the tray bottom plate [E] until the paper lift sensor for the tray detects that the top of the stack is at the paper feed position.

When the tray is removed from the machine, the connection between the coupling gear and lift arm shaft is disengaged, and the tray bottom plate lowers.

Paper Height and End Detection

Paper Height Detection



Two paper height sensors [A] [B] and actuator [C] are built into the paper tray lift motor. The paper height sensors, detect the amount of paper in the tray.

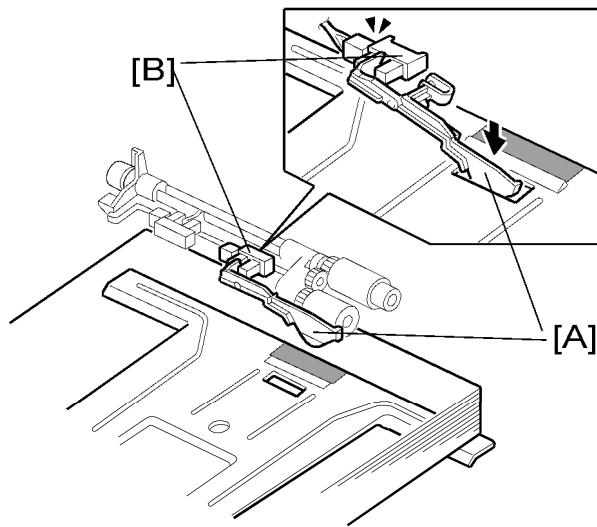
The actuator [C] has two semicircles, and it is engaged with the lift arm shaft via gears. The paper height sensors detect the paper size depending on the position of the two semicircles. The list shown below shows the detection combination of the two sensors.

The paper remaining status bar is displayed in the tray selection icon on the LCD.

Remaining paper	Paper height sensor 1 [A]	Paper height sensor 2 [B]
100% (Status bar x 4)	OFF	OFF
70% (Status bar x 3)	ON	OFF
30% (Status bar x 2)	ON	ON
10% (Status bar x 1)	OFF	ON

OFF: No actuator

Paper End and Bottom Plate



The paper stack raises the paper end feeler [A] and the paper end sensor [B] deactivates if there is some paper in the paper tray.

When the paper tray runs out of paper, the paper end feeler [A] drops into the cutout in the tray bottom plate. At this time the paper end sensor [B] activates