500-SHEET PAPER TRAY UNIT (SECOND AND THIRD TRAYS)

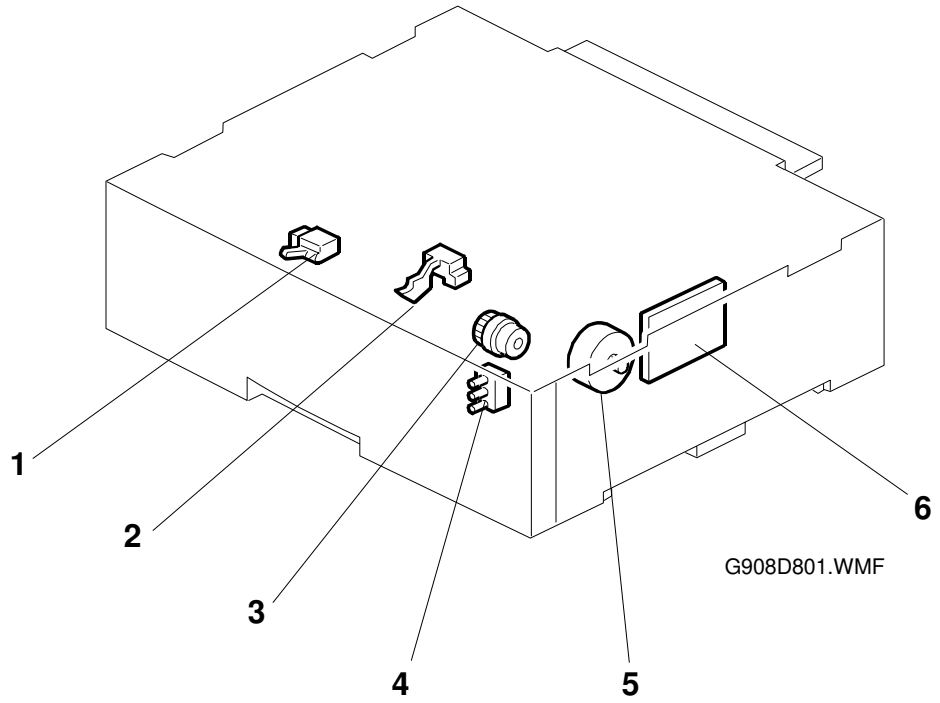
(Machine Code: G908)

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Paper Feed Method	Friction pad
Configuration	Front loading
Paper Capacity	500 sheets (80 g/m^2, 20 lbs.)
Paper Size	Short edge feed: A3, 11" x 17", 8 1/2" x 14", Others* (B4 JIS, 8" x 13", 8 1/4" x 13", 8 1/2" x 13") Long edge feed: A4, 8 1/2" x 11", 7 1/4" x 10 1/2", Others* (B5 JIS, A5, 5 1/2" x 8 1/2") * The paper size should be specified with the system menu (at the operation panel by the user).
Paper Weight	64 to 105 g/m^2 (17 to 28 lbs.)
Power	DC 24V, DC 5V (supplied by the main unit)
Dimensions	580 x 465 x 138 mm (22.8” x 18.3” x 5.4”)
Tray Weight	6.0 kg.

1.2 PARTS LAYOUT

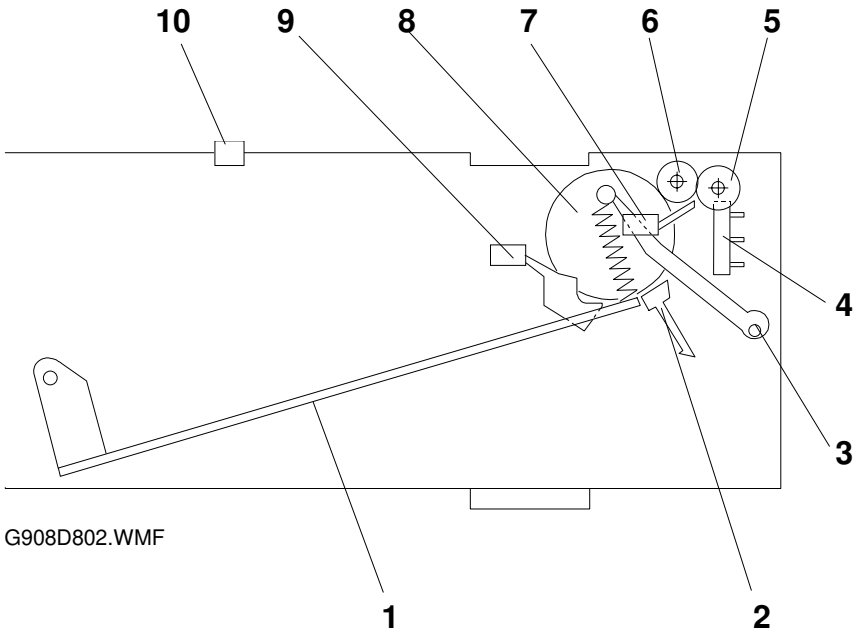


1. Pull-out sensor
2. Paper end sensor
3. Paper feed clutch
4. Paper size switch
5. Tray main motor
6. Tray control board

2. DETAILED SECTION DESCRIPTIONS

2.1 OVERVIEW

2.1.1 MECHANICAL LAYOUT



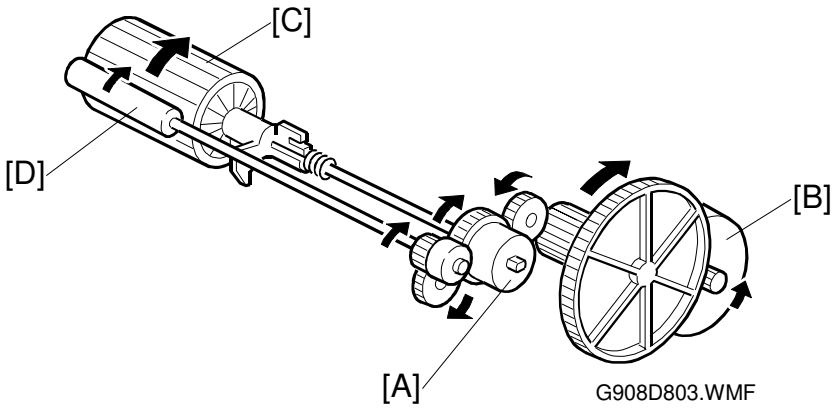
1. Tray bottom plate
2. Friction pad
3. Paper lift arm
4. Paper size switch
5. Pull-out roller (idler)
6. Pull-out roller (drive)
7. Pull-out sensor
8. Paper feed roller
9. Paper end sensor
10. Grounding point

2.1.2 CONFIGURATION

Function	Main function	Overview
Paper feed	Paper feed/separation	Friction pad separation method
	Tray bottom plate pressure	Paper tray bottom plate pressurized by a spring under tension
	Paper end detection	Detection by actuator and photo interrupter
	Paper size detection	User-specified by a dial; detected by switches.
Drive	Motor drive	Stepper motor

2.2 MECHANISMS

2.2.1 DRIVE

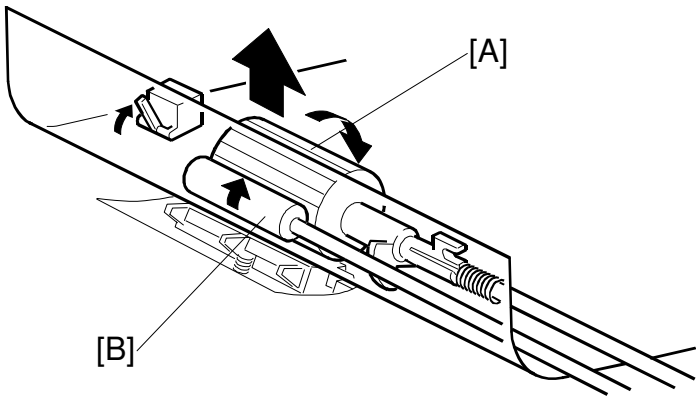


Gears and the paper feed clutch [A] transfer drive from the tray main motor [B] to the paper feed roller [C].

The gear for the paper feed clutch transfers drive to the pull-out roller [D].

The MCU controls the drive motor and paper feed clutch.

2.2.2 PAPER FEED AND SEPARATION



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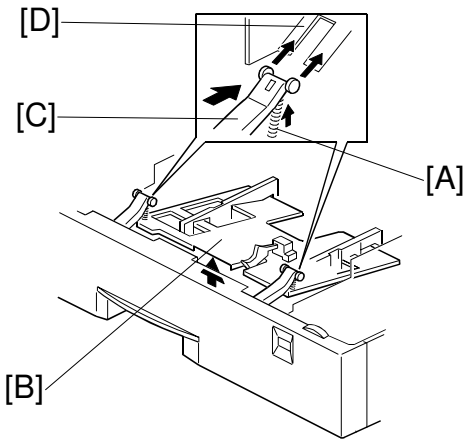
The paper feed unit uses a friction pad.

The paper feed clutch drives the paper feed roller [A].

The paper feed roller feeds one sheet to the pull-out roller [B].

2.2.3 TRAY LIFT



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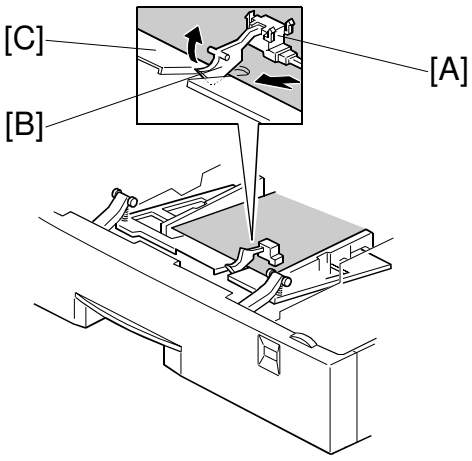
A spring [A] under tension connects the bottom plate [B] of each tray to the paper tray arm [C].

When the paper tray is placed in the main unit, the guide block [D] on the main unit base lifts the paper tray arm. The spring connected to the bottom plate keeps the top of the paper at the correct level for paper feed.

2.2.4 PAPER END DETECTION



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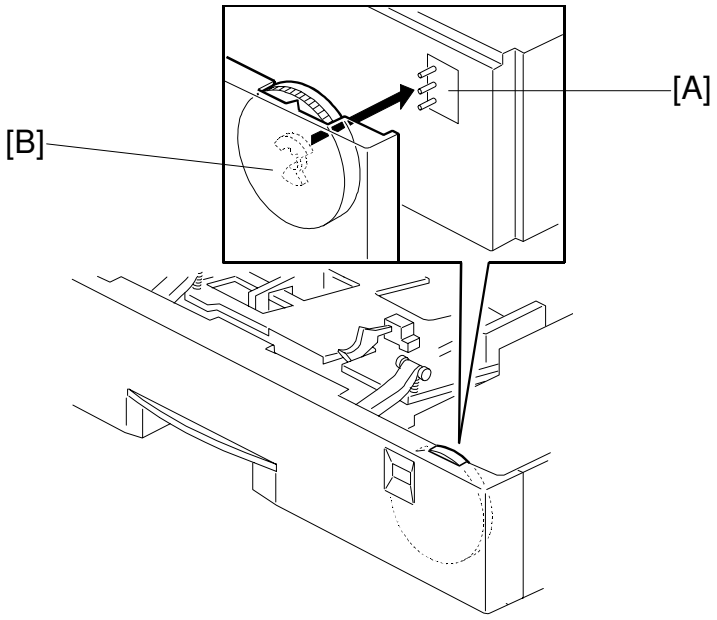
The paper end sensor [A] is installed in the main body of the 500-sheet paper tray unit. When the sensor feeler [B] falls into the notch in the bottom plate [C], paper end is detected.

2.2.5 SIZE DETECTION



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Paper size detection is based on the three paper size switches [A] on the main body of the 500-sheet paper tray unit, which detect the setting of the paper size dial [B] on the tray.

The paper size dial has grooves and ridges on the side facing the paper size switches. Each switch is turned off when it falls into a groove, and is turned on when a ridge presses it.

Paper size detection for tray 2 and 3

Dial No.	Paper Size	Sensor Status		
		J9 (SPS2)	J10 (SPS1)	J11 (SPS0)
1	11" x 17" SEF	0	0	0
2	A3 SEF	1	1	0
3	A4 LEF	0	1	0
4	8 1/2" x 11" LEF	1	0	1
5	8 1/2" x 14" SEF	1	0	0
6	71/4" x 101/2" LEF	0	0	1
7	Others	0	1	0
8	No Cassette	1	1	1

SEF: Short edge feed
LEF: Long edge feed
Others: SEF - B4 JIS, 8" x 13", 8 1/4" x 13", 8 1/2" x 13"
LEF - B5 JIS, A5, 5 1/2" x 8 1/2"

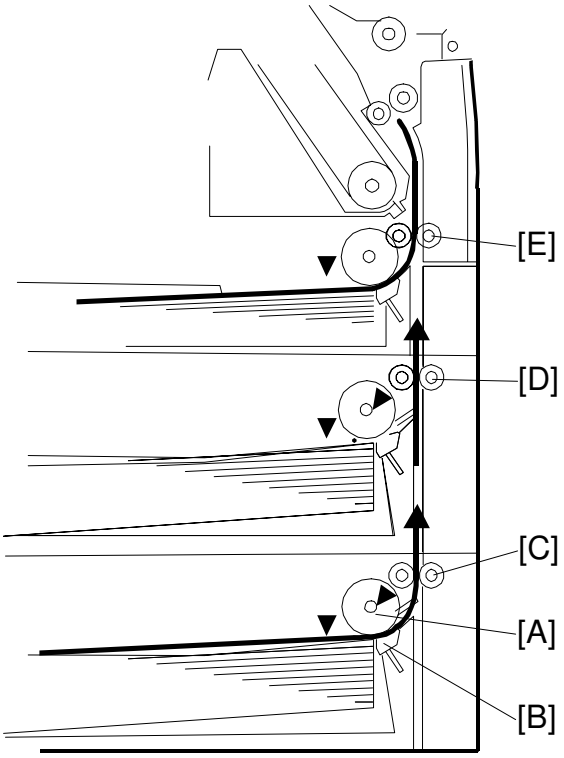
2.2.6 VERTICAL TRANSPORT

A sheet fed from the paper feed roller [A] for the third tray turns on the pull-out sensor [B], and then the pull-out roller [C] sends it upwards in the direction of the second tray.

When the pull-out sensor for the third tray is turned on, the pull-out roller [D] for the second tray starts rotating.

The pull-out roller for the second tray feeds the sheet arriving from the third tray to the pull-out roller [E] for the main unit.

The pullout roller rotates in synchronization with the drive motor.



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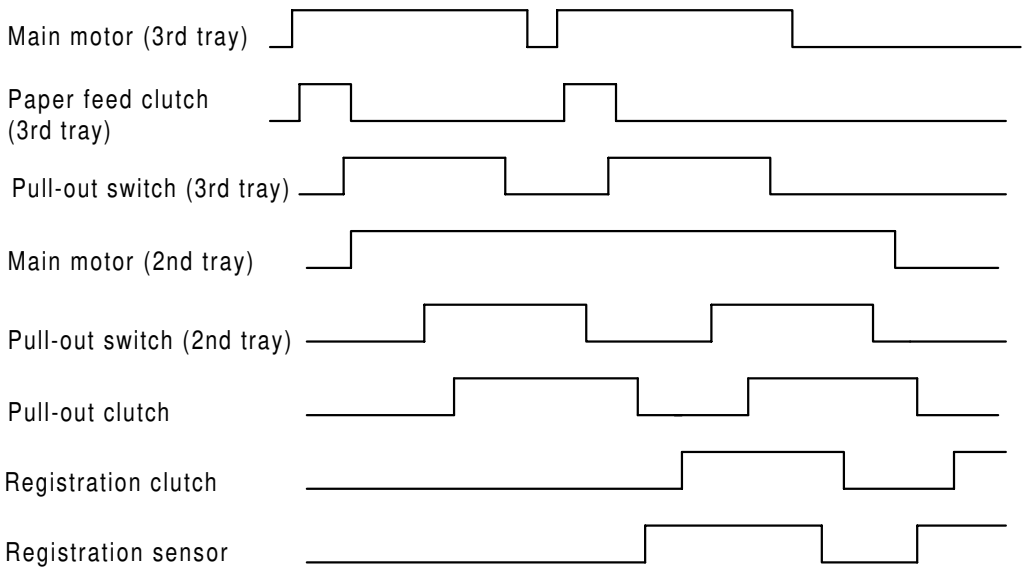

Timing chart for optional trays

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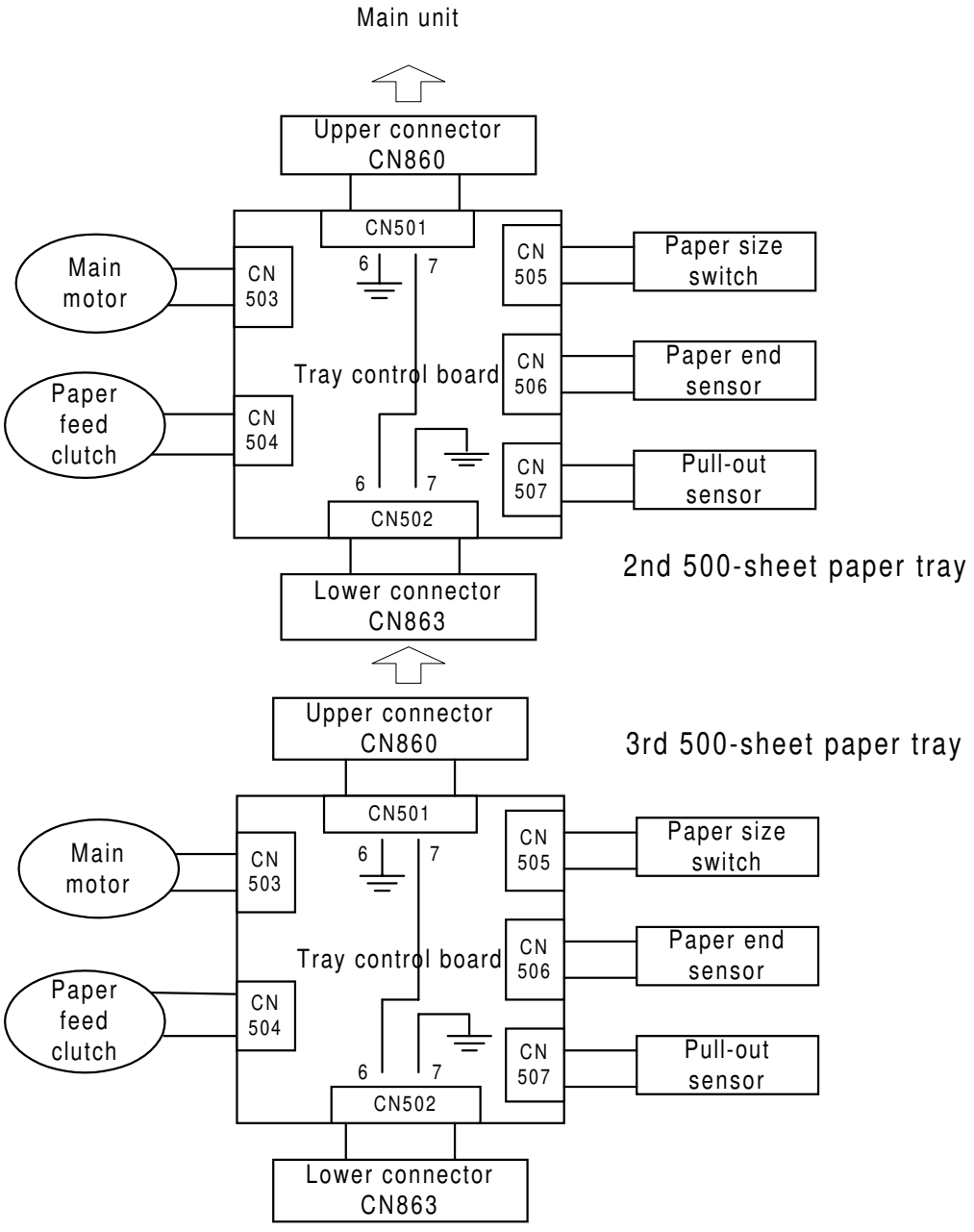
Options

2.3 CIRCUITS

2.3.1 BLOCK DIAGRAM



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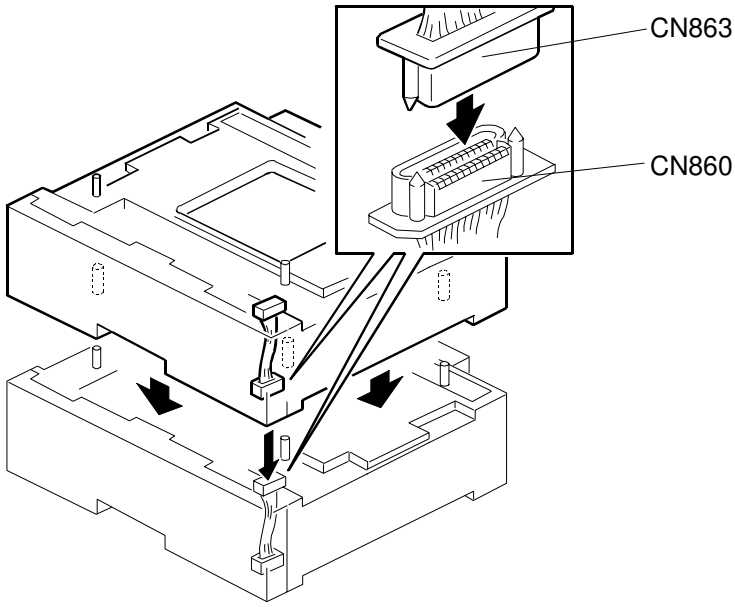

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Combinations of signals from the J6 (XSPST0) and J5 (XSPST1) pins on the CN860 connector indicate the presence of a 500-sheet paper tray unit (second or third tray).

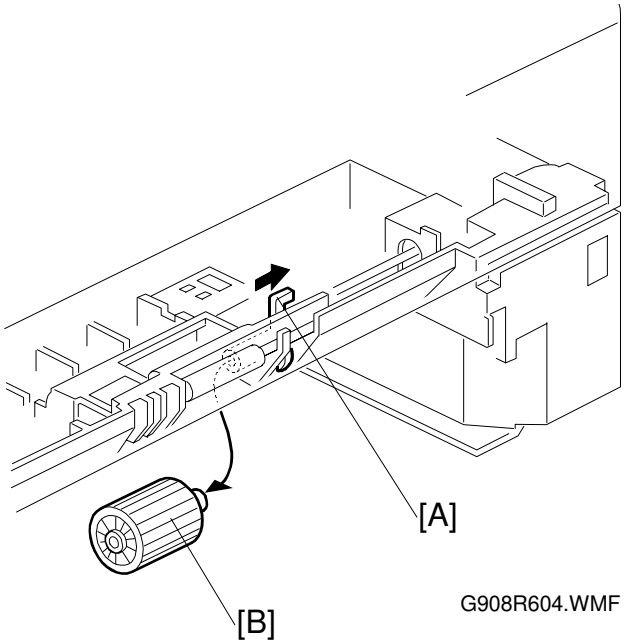
	CN860 (Tray 2) Status	
	J6	**J5**
No tray detected	H	H
Tray 2 detected	L	H
Tray 2 and 3 detected	L	L
Error	H	L

The J4 (SPSEL) pin of connector CN860 determines which of the two trays the cpu is controlling or detecting signals from.

J4 (SPSEL) of CN860	Selection
L	Tray 2
H	Tray 3

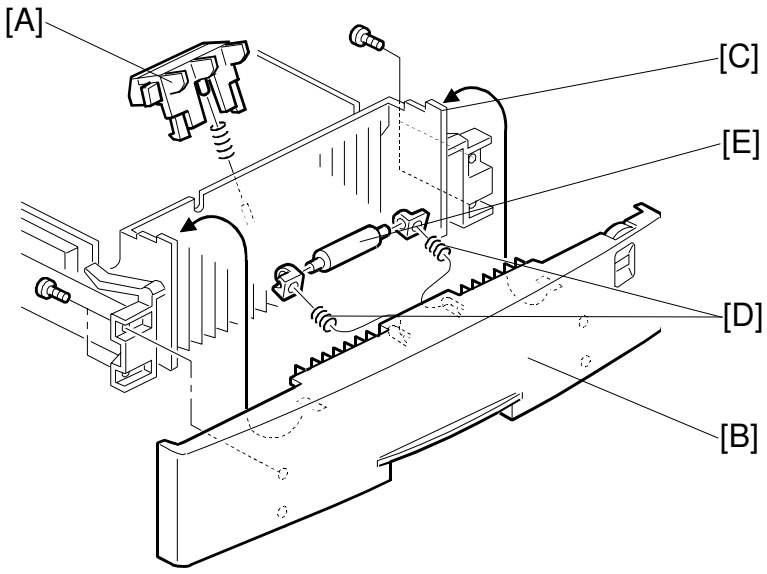
3. REPLACEMENT AND ADJUSTMENT

3.1 PAPER FEED ROLLER



1. Remove the tray.
2. Push the paper feed roller lever [A] toward the right side, and remove the paper feed roller [B].

3.2 FRICTION PAD AND PULL-OUT IDLE ROLLER



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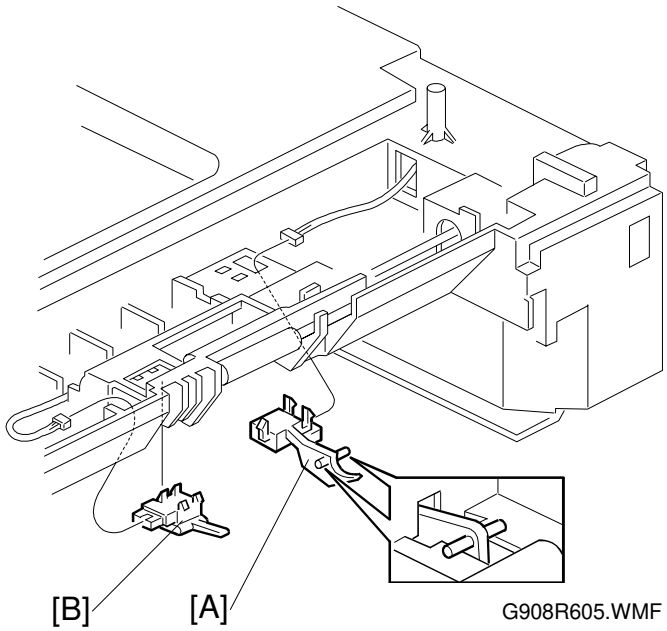
Friction pad

1. Remove the tray.
2. From the back of the tray, remove the friction pad [A] (two hooks).

Pull-out idle roller

1. Remove the four screws retaining the front cover. Pull the bottom side of the front cover [B] forward, then lift it to remove it from the protrusion [C] on each side.
2. Remove the two springs [D] from the bearings.
3. Remove the pull-out idle roller [E] (two bearings).

3.3 PAPER END SENSOR AND PULL-OUT SENSOR



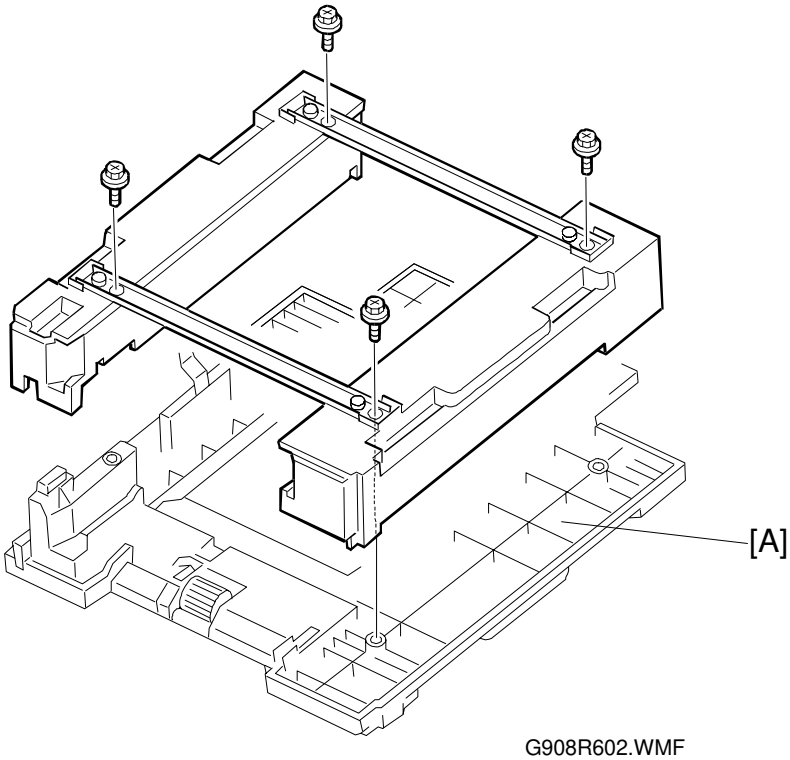
Paper end sensor

1. Detach the printer from the optional paper tray unit.
2. Remove the tray.
3. Remove the paper end sensor [A] (three hooks and one connector).

Pull-out sensor

1. Remove the pull-out sensor [B] (four hooks and one connector).

3.4 TOP COVER



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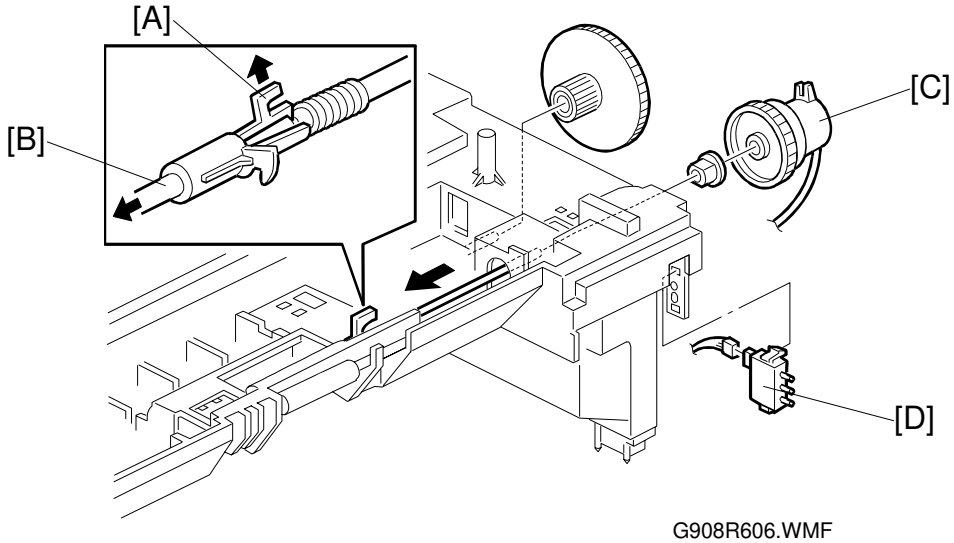
1. Detach the printer from the optional paper tray unit.
2. Remove the tray.
3. Turn the main unit upside down. Remove the top cover [A] (four screws).

3.5 PAPER FEED CLUTCH AND PAPER SIZE SWITCH

3.5.1 PAPER FEED CLUTCH



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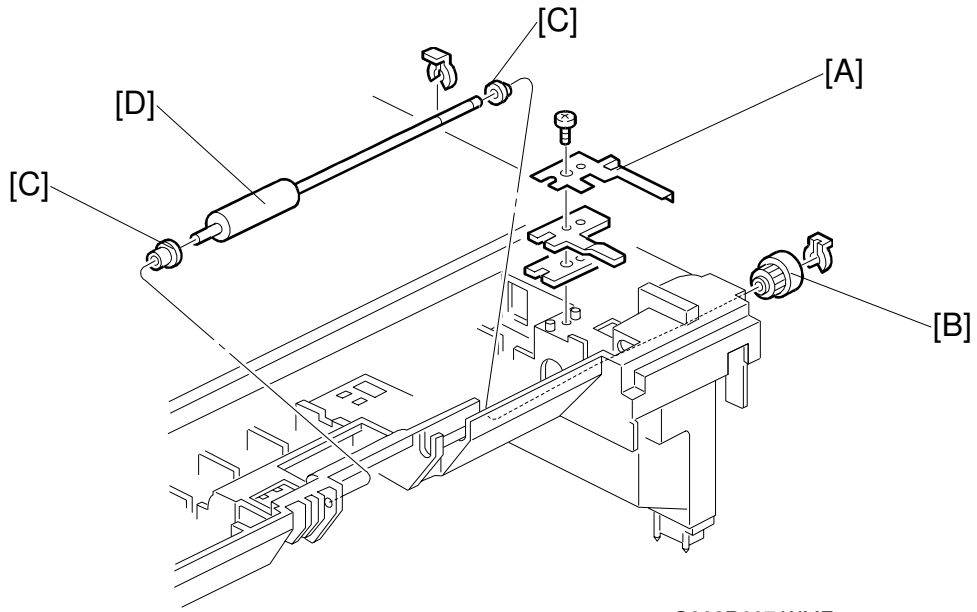
1. Remove the top cover. (See Top Cover Removal.)
2. Place the top cover unit on a level surface, with the bottom facing down.
3. Remove the paper feed roller. (See Paper Feed Roller Removal.)
4. Lift the hook [A] of the paper feed roller lever, and push the paper feed roller shaft [B] towards the left until it is removed from the paper feed clutch [C].
   NOTE: Rotate the shaft into the correct orientation when inserting it into the clutch. (The shaft and its hole in the clutch are D-shaped.)
5. Remove the paper feed clutch (one connector, one gear, one bearing, and one clamp).

NOTE: When installing the paper feed clutch, put the stoppers in the two holes in the top cover before inserting the shaft.

Paper size switch

1. Remove the paper size switch [D] (two hooks, one connector).

3.6 PULL-OUT DRIVE ROLLER



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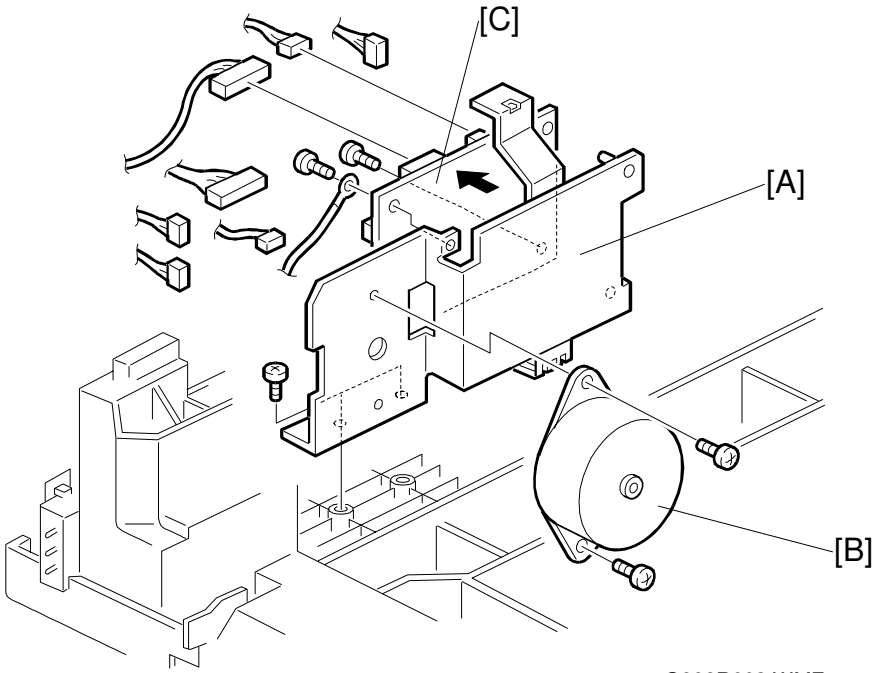
1. Remove the top cover. (See Top Cover Removal.)
2. Place the top cover unit on a level surface, with the bottom facing down.
3. Remove the grounding plate [A] (one screw).
4. Remove the pull-out drive roller [D] (one gear [B], two snap rings, and two bearings [C]).

NOTE: Be careful not to deform the grounding plate.

3.7 TRAY MAIN MOTOR AND TRAY CONTROL BOARD



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Tray main motor

1. Remove the top cover. (See Top Cover.)
2. Remove the bracket [A] (two screws).
3. From the bracket [A], remove the motor [B] (two screws, one connector).

Tray control board

1. Remove the bracket [A] (two screws).
2. Remove the board [C] (two stud locks, two screws, seven connectors, and a grounding wire).