

**SERVICE MANUAL**  
**(Sorter machine code: C592)**

# **IMPORTANT SAFETY NOTICES**

## **PREVENTION OF PHYSICAL INJURY**

1. Before disassembling or assembling parts of the printer and peripherals, make sure that the power cord is unplugged.
2. The wall outlet should be near the printer and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.

## **HEALTH SAFETY CONDITIONS**

1. If you get ink in your eyes by accident, try to remove it with eye drops or flush with water as first aid. If unsuccessful, get medical attention.
2. If you ingest ink by accident, induce vomiting by sticking a finger down your throat or by giving soapy or strong salty water to drink.

## **OBSERVANCE OF ELECTRICAL SAFETY STANDARDS**

1. The printer and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

## **SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL**

1. Dispose of replaced parts in accordance with local regulations.
2. Used ink and masters should be disposed of in an environmentally safe manner and in accordance with local regulations.

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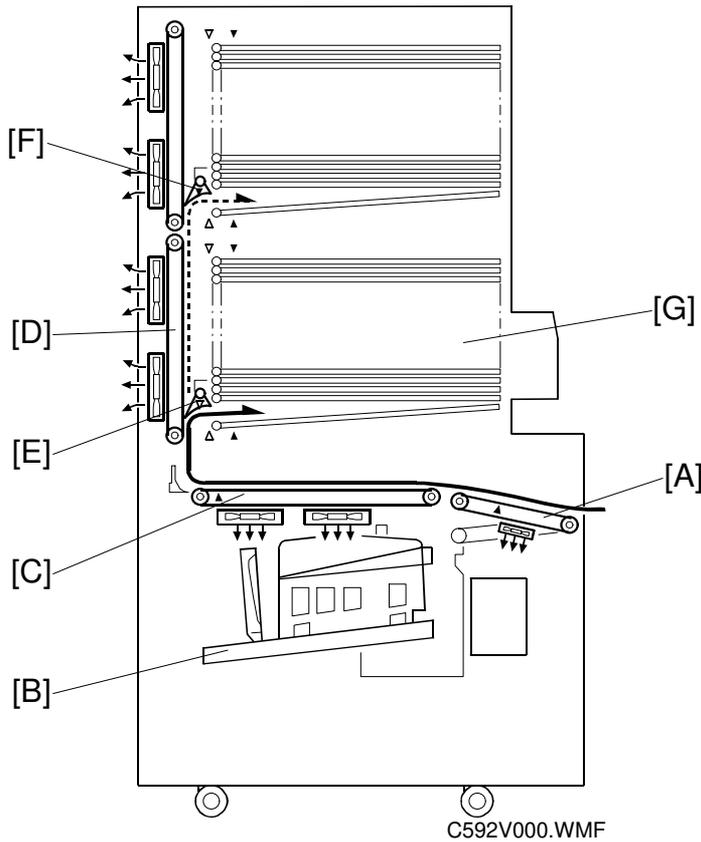
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# 1. OVERALL INFORMATION

## 1.1 SPECIFICATIONS

Configuration:	Console
Number of Bins:	40 bins and 1 delivery table
	Sort mode can use up to 40 bins.
	Class sort mode can use up to 38 bins only (the top 2 bins of the upper bin unit cannot be used).
Printing Speed:	60, 75, 90, 105, 120 sheets/minute (5 steps)
Paper for Bins:	
Size:	A3☐, B4☐, A4☐, A4☐, B5☐, DLT☐, LG☐, LT☐, LT☐, F☐
Weight:	52.3 g/m <sup>2</sup> to 104.7 g/m <sup>2</sup> [12.5 lb to 41.7 lb]
Capacity:	Maximum 50 sheets (80 g/m <sup>2</sup> ) 40 sheets (90 g/m <sup>2</sup> )
Paper for Delivery Table:	
Size:	Minimum: 70 mm x 148 mm [2.8" x 5.8"] Maximum: 325 mm x 447 mm [12.8" x 17.6"]
Weight:	47.1 g/m <sup>2</sup> to 209.3 g/m <sup>2</sup> [12.5 lb to 55.6 lb]
Capacity:	1000 sheets (80 g/m <sup>2</sup> [20 lb])
Weight:	148 kg
	Upper part: Approximately 87 kg
	Lower part: Approximately 61 kg
Power Source:	110/120 V, 50/60 Hz: 3 A 220 - 240 V, 50/60 Hz: 3 A
Maximum Power Consumption:	180 W
Noise Emission: (At operation position)	At 60 rpm printing speed: 69 dB At 90 rpm printing speed: 70 dB At 120 rpm printing speed: 71 dB
Dimensions: (Width x Depth x Height)	900 mm x 650 mm x 1700 mm

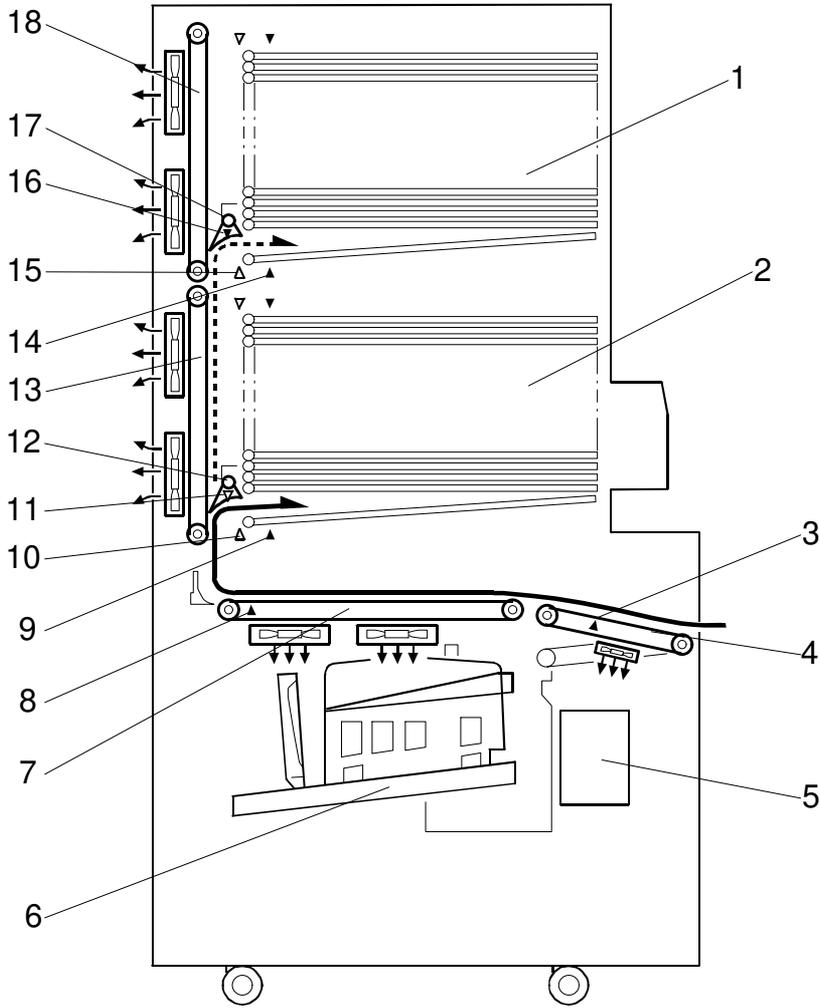
## 1.2 SORTING PROCESS



**Paper detection in the feed path:** Relay paper sensor → Horizontal paper sensor → Turn gate paper sensor (upper or lower) → Entry sensor (upper or lower) → Bin sensor (upper or lower). See the next page for the sensor locations

- |   |  |
|---|--|
| <p>1. Transports a print to the delivery table:</p> <p>↓</p>    | <p>Transports a trial print to the delivery table [B] by re-directing the relay transport unit [A].</p>                                      |
| <p>2. Transports prints towards the vertical unit:</p> <p>↓</p> | <p>Transports prints towards the vertical transport unit [D] through the relay transport unit [A] and the horizontal transport unit [C].</p> |
| <p>3. Transports prints to the turn gate unit:</p> <p>↓</p>     | <p>Transports prints to the turn gate units [E] and [F] through the vertical transport unit [D].</p>   |
| <p>4. Directs prints to the bins:</p> <p>↓</p>                  | <p>Directs prints to the bins [G] using the turn gates [E] and [F].</p>  |
| <p>5. Stacks the prints:</p>                                    | <p>Stacks the prints using the side jogger and the end jogger (not shown).</p>   |

### 1.3 COMPONENT LAYOUT

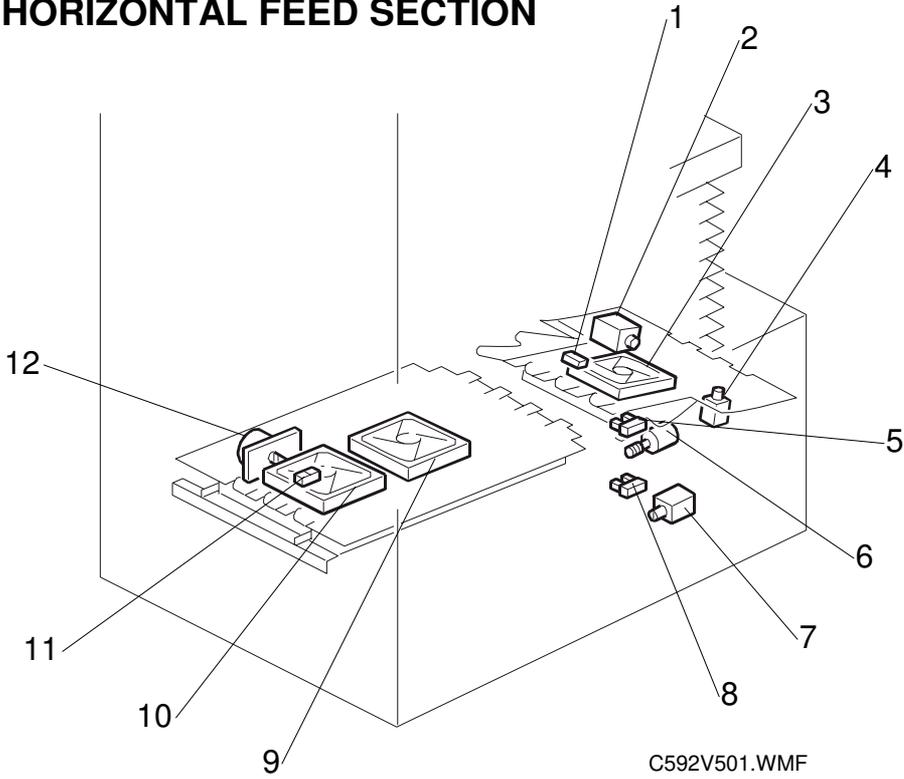


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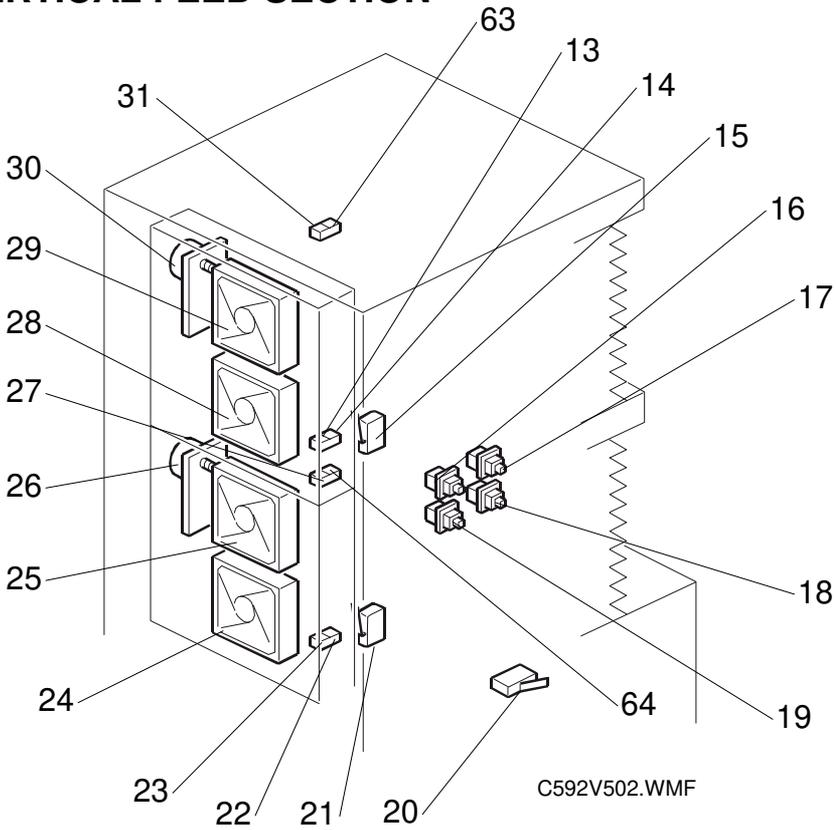
- |                              |                                   |
|------------------------------|-----------------------------------|
| 1. Upper bins (20 bins)      | 10. Lower entry sensor            |
| 2. Lower bins (20 bins)      | 11. Lower turn gate sensor        |
| 3. Relay paper sensor        | 12. Lower turn gate unit          |
| 4. Relay transport unit      | 13. Lower vertical transport unit |
| 5. Job separator unit        | 14. Upper bin sensor              |
| 6. Paper delivery table      | 15. Upper entry sensor            |
| 7. Horizontal transport unit | 16. Upper turn gate sensor        |
| 8. Horizontal paper sensor   | 17. Upper turn gate unit          |
| 9. Lower bin sensor          | 18. Upper vertical transport unit |

# 1.4 ELECTRICAL COMPONENT LAYOUT

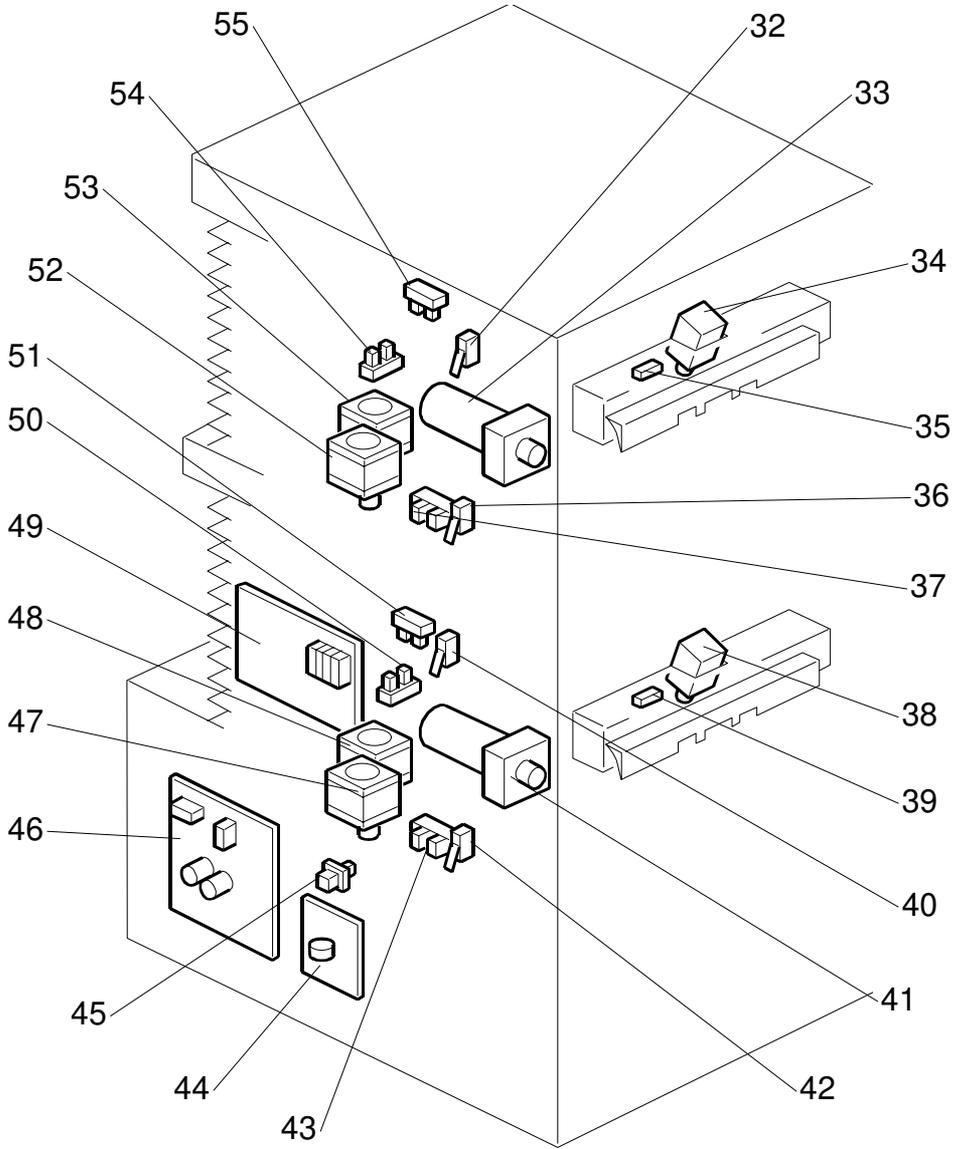
## 1.4.1 HORIZONTAL FEED SECTION



## 1.4.2 VERTICAL FEED SECTION



### 1.4.3 REAR SECTION



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**Boards**

<b>Index No.</b>	<b>Name</b>	<b>Function</b>
49	Main Processing Unit (MPU)	Controls all machine functions.
46	Power Supply Unit (PSU)	Provides dc power to the system.
44	Noise Filter Board	Filters out electrical noise on the ac power input lines.

**Motors**

<b>Index No.</b>	<b>Name</b>	<b>Function</b>
33	Upper Turn Gate Motor	Moves the turn gate up/down and opens the bins.
41	Lower Turn Gate Motor	Moves the turn gate up/down and opens the bins.
2	Relay Transport Motor	Transports paper.
12	Horizontal Transport Motor	Transports paper.
30	Upper Vertical Transport Motor	Transports paper.
26	Lower Vertical Transport Motor	Transports paper.
6	Relay Transport Switching Motor	Drives the relay transport unit to direct paper to either the delivery table or the sort bins.
53	Upper Side Jogger Motor	Trues up the paper by driving the side jogger bar.
48	Lower Side Jogger Motor	Trues up the paper by driving the side jogger bar.
52	Upper End Jogger Motor	Trues up the paper by driving the end jogger bar.
47	Lower End Jogger Motor	Trues up the paper by driving the end jogger bar.
3	Relay Transport Fan Motor	Sucks air through the holes in the transport belts to hold paper on the transport belts.
9	Horizontal Transport Fan 1 Motor	Sucks air through the holes in the transport belts to hold paper on the transport belts.
10	Horizontal Transport Fan 2 Motor	Sucks air through the holes in the transport belts to hold paper on the transport belts.
24	Lower Vertical Transport Fan 1 Motor	Sucks air through the holes in the transport belts to hold paper on the transport belts.
25	Lower Vertical Transport Fan 2 Motor	Sucks air through the holes in the transport belts to hold paper on the transport belts.
28	Upper Vertical Transport Fan 1 Motor	Sucks air through the holes in the transport belts to hold paper on the transport belts.
29	Upper Vertical Transport Fan 2 Motor	Sucks air through the holes in the transport belts to hold paper on the transport belts.

**Solenoids**

<b>Index No.</b>	<b>Name</b>	<b>Function</b>
4	Wing Guide Solenoid	Changes the position of the paper wing guides in the relay transport unit.
7	Delivery Table Lock Solenoid	Locks the delivery table during printing, so that the user cannot pull the table out to remove prints.
38	Lower Turn Gate Solenoid	Opens and closes the turn gate, either to direct paper into the bins in the lower unit or to send it towards the upper unit.
34	Upper Turn Gate Solenoid	Opens and closes the turn gate to direct paper into the bins in the upper unit.

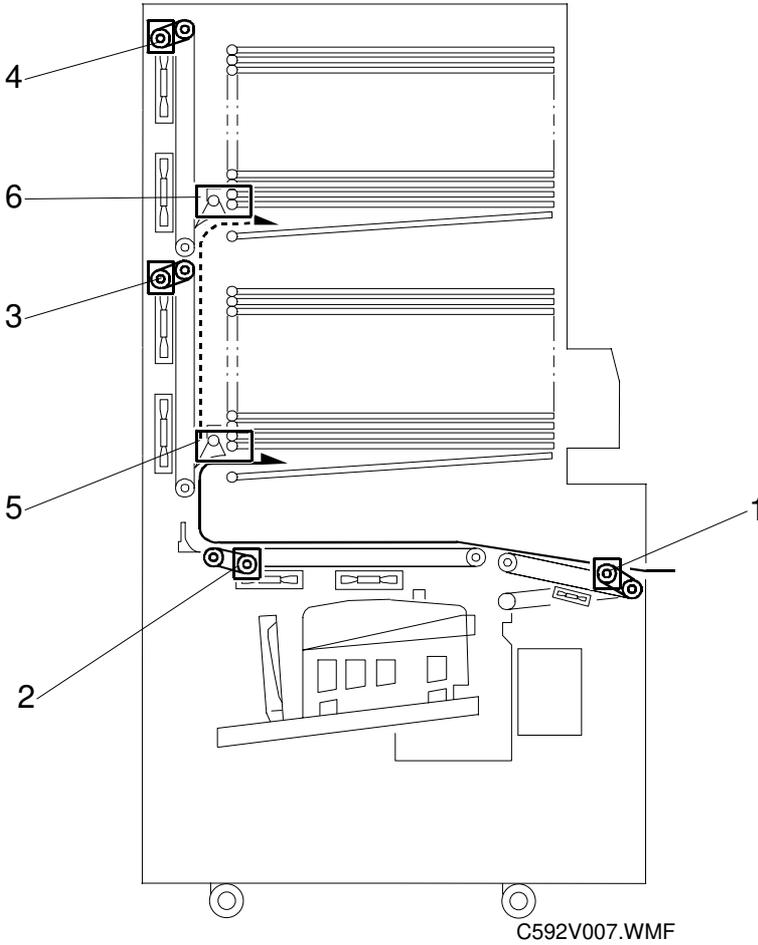
**Switches**

<b>Index No.</b>	<b>Name</b>	<b>Function</b>
19	Lower Door Safety Switch	Checks whether the lower door cover is properly closed.
16	Upper Door Safety Switch	Checks whether the upper door cover is properly closed.
45	Delivery Table Set Switch	Detects whether the user has put the delivery table back correctly after removing prints
15, 21	Vertical Cover Safety Switch	Checks whether the vertical transport unit is properly closed.
20	Horizontal Cover Safety Switch	Checks whether the horizontal cover is properly closed.
17	Upper Bins Operation Switch	Moves the upper 20 bins.
18	Lower Bins Operation Switch	Moves the lower 20 bins.
42	Lower Low Turn Gate Limit Switch	Detects when the lower turn gate unit has moved down too much (displays SC45-10).
40	Lower High Turn Gate Limit Switch	Detects when the lower turn gate unit has moved up too much (displays SC45-11).
36	Upper Low Turn Gate Limit Switch	Detects when the upper turn gate unit has moved down too much (displays SC45-12).
32	Upper High Turn Gate Limit Switch	Detects when the upper turn gate unit has moved up too much (displays SC45-13).

**Sensors**

<b>Index No.</b>	<b>Name</b>	<b>Function</b>
22	Lower Bin Sensor (Light Emitter)	Detects whether paper is present in the lower bins.
23	Lower Entry Sensor (Light Emitter)	Detects paper misfeeds.
14	Upper Bin Sensor (Light Emitter)	Detects whether paper is present in the upper bins.
13	Upper Entry Sensor (Light Emitter)	Detects paper misfeeds.
27	Lower Entry Sensor (Light Receiver)	Detects light from the lower entry sensor light emitter (item 23).
64	Lower Bin Sensor (Light Receiver)	Detects light from the lower bin sensor light emitter (item 22).
31	Upper Entry Sensor (Light Receiver)	Detects light from the upper entry sensor light emitter (item 13).
63	Upper Bin Sensor (Light Receiver)	Detects light from the upper bin sensor light emitter (item 14).
1	Relay Paper Sensor	Detects paper misfeeds.
11	Horizontal Paper Sensor	Detects paper misfeeds.
8	Delivery Table Position Sensor	Detects when the relay transport unit is in the delivery table position.
5	Sort Position Sensor	Detects when the relay transport unit is in the sort position.
51	Lower Side Jogger HP Sensor	Detects when the side jogger bar in the lower unit is at the home position.
55	Upper Side Jogger HP Sensor	Detects when the side jogger bar in the upper unit is at the home position.
50	Lower End Jogger HP Sensor	Detects when the end jogger bar in the lower unit is at the home position.
54	Upper End Jogger HP Sensor	Detects when the end jogger bar in the upper unit is at the home position.
39	Lower Turn Gate Paper Sensor	Detects paper misfeeds.
35	Upper Turn Gate Paper Sensor	Detects paper misfeeds.
43	Lower Turn Gate HP Sensor	Detects when the lower turn gate is at the home position.
37	Upper Turn Gate HP Sensor	Detects when the upper turn gate is at the home position.

# 1.5 DRIVE LAYOUT



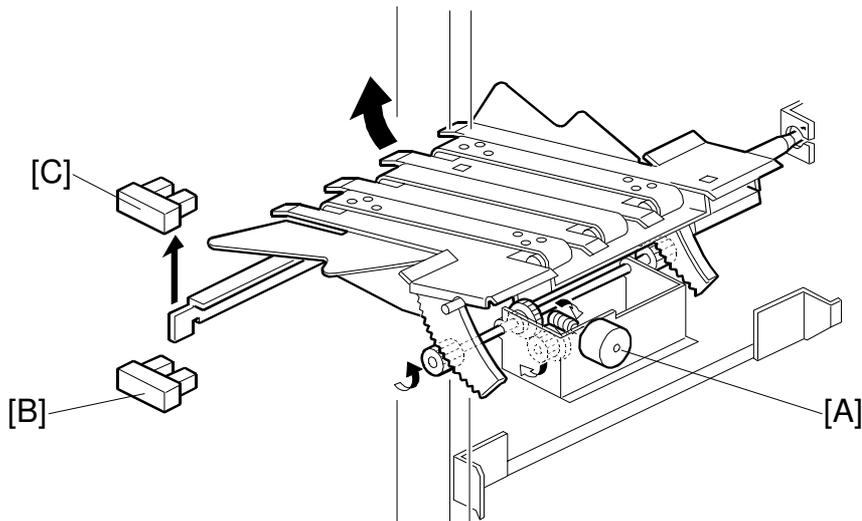
- 1. Relay transport motor
- 2. Horizontal transport motor
- 3. Lower vertical transport motor
- 4. Upper vertical transport motor
- 5. Lower turn gate motor
- 6. Upper turn gate motor

## 2. DETAILED SECTION DESCRIPTIONS

### 2.1 PAPER TRANSPORT

#### 2.1.1 RELAY TRANSPORT UNIT

##### *Switching mechanism*



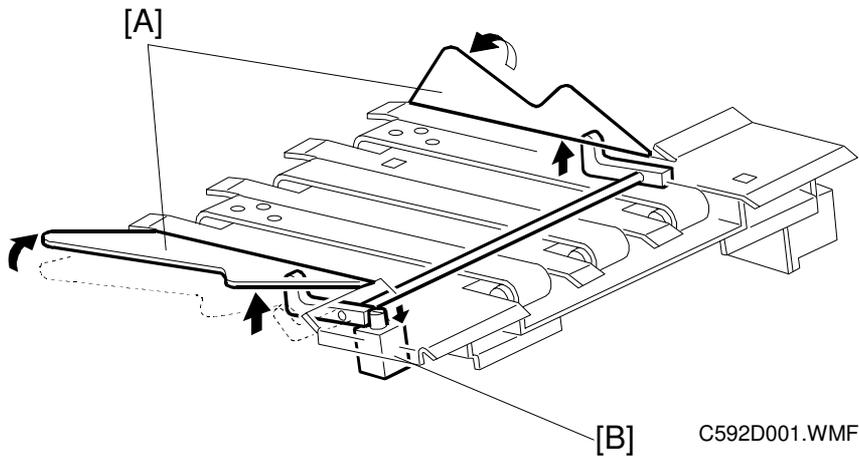
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Prints are delivered to the bins in the Sort and Class-sort modes, and to the delivery table for other cases.

The relay transport switching motor [A] switches the relay transport unit to feed paper either to the bins or to the delivery table.

The delivery table position sensor [B] and the sort position sensor [C] monitor the position of the relay transport unit. When the sorter feeds out paper to the delivery table, the relay transport unit moves until the delivery table position sensor [B] is actuated. When the sorter feeds out paper to the sort bins, the relay transport unit moves until the sort position sensor [C] is actuated.

The trial print, which is the print after making a master, always exits to the delivery table.

***Wing mechanism***

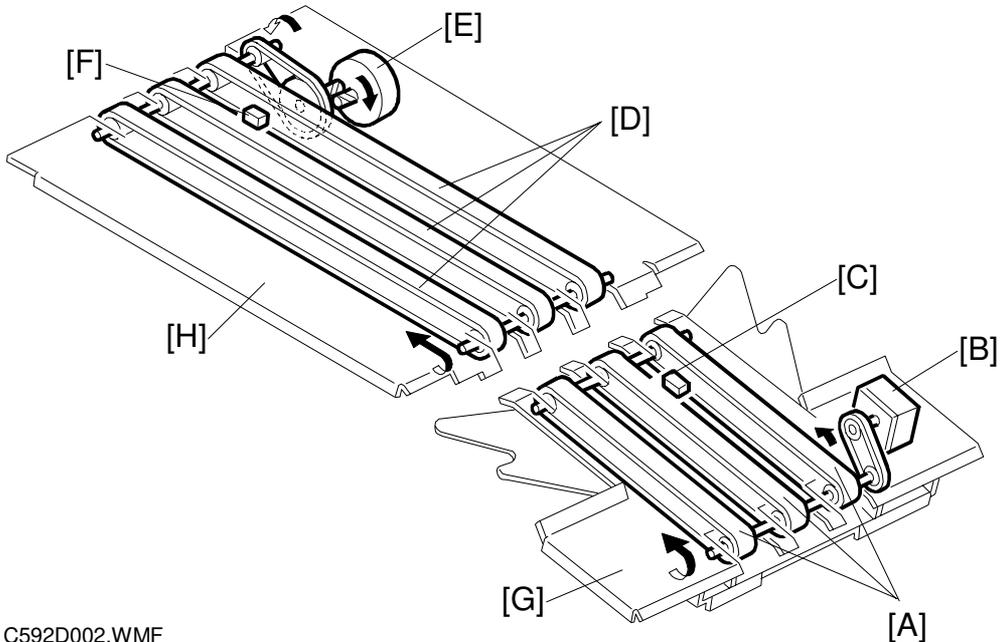
These wings [A] are used only in delivery table mode.

The paper guide wings [A] lift the side of the paper when it leaves the relay transport unit. This stiffens the paper so that the leading edge of the paper will not sag and brush against the sheets already on the delivery table. This prevents the ink on freshly printed sheets from being smeared.

The angle of the paper wing guides [A] is changed by the wing guide solenoid [B], depending on the paper type.

When the wing guide solenoid [B] turns on, the paper wing guides lift up.

## 2.1.2 HORIZONTAL TRANSPORT MECHANISM



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The fan motor (not shown) inside the relay transport unit [G] holds the paper against the 3 rubber belts [A] to deliver paper to the horizontal transport unit. The relay transport motor [B] (a stepper motor) drives these transport belts.

The relay transport motor rotation speed depends on the selected sort mode. The speed is as shown below.

Mode	Speed
60, 75, 90 sheets/minute in delivery table mode	1106 mm/s
105 sheets/minute in delivery table mode	1313 mm/s
120 sheets/minute in delivery table mode	1520 mm/s
All sort mode (60, 75, 90, 105, 120 sheets/minute)	2073 mm/s

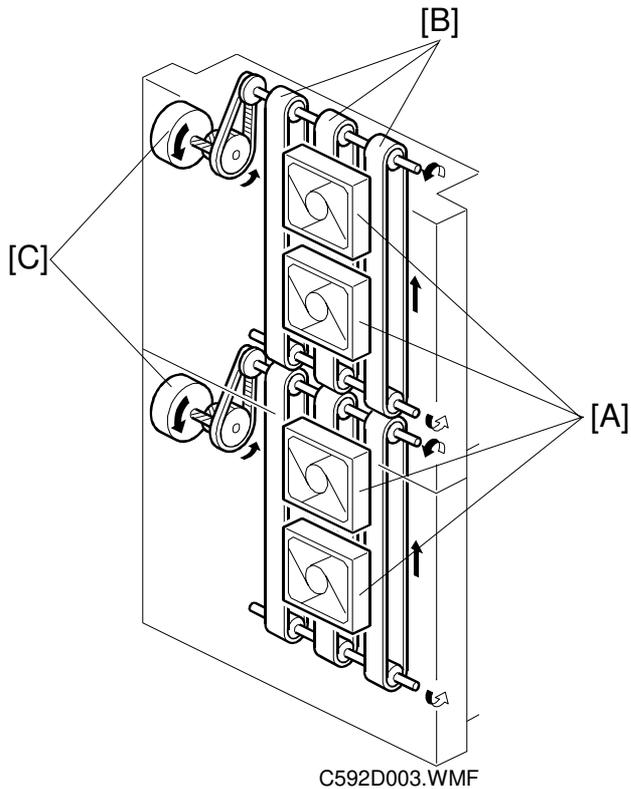
The relay transport sensor [C] detects paper jams.

The fan motor (not shown) inside the horizontal transport unit [H] holds the paper against the 3 rubber belts [D] to deliver paper to the vertical transport unit. The horizontal transport motor [E] drives these transport belts.

The motor [E] rotation speed is fixed. The speed is 2205 mm/second.

The horizontal transport sensor [F] detects paper jams.

### 2.1.3 VERTICAL TRANSPORT MECHANISM



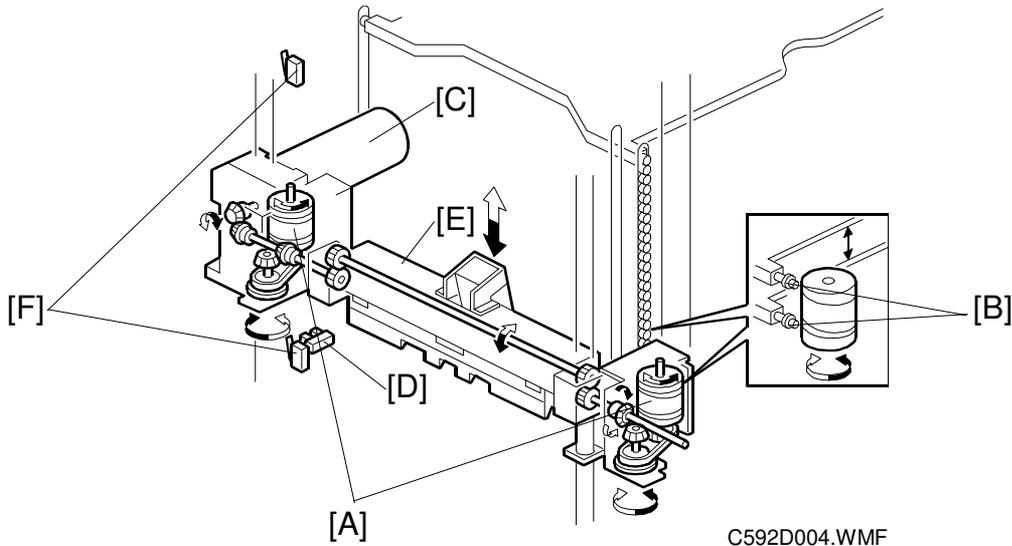
The fan motors [A] inside the vertical transport unit hold the paper against the 3 rubber belts [B] to deliver the paper to the bins. The vertical transport motor [C] drives these transport belts.

The motor rotation speed is fixed. The speed is 2205 mm/second.

## 2.2 PAPER DELIVERY TO THE BINS

### 2.2.1 TURN GATE UNIT

#### *Turn gate unit drive*



The helical wheels [A], the turn gate motor [C] and the turn gate unit [E] are connected by a belt and gears.

The turn gate unit directs paper into the bins, starting from the bottom bin. After feeding to the bottom bin, the turn gate moves up one bin, then directs paper to the next bin.

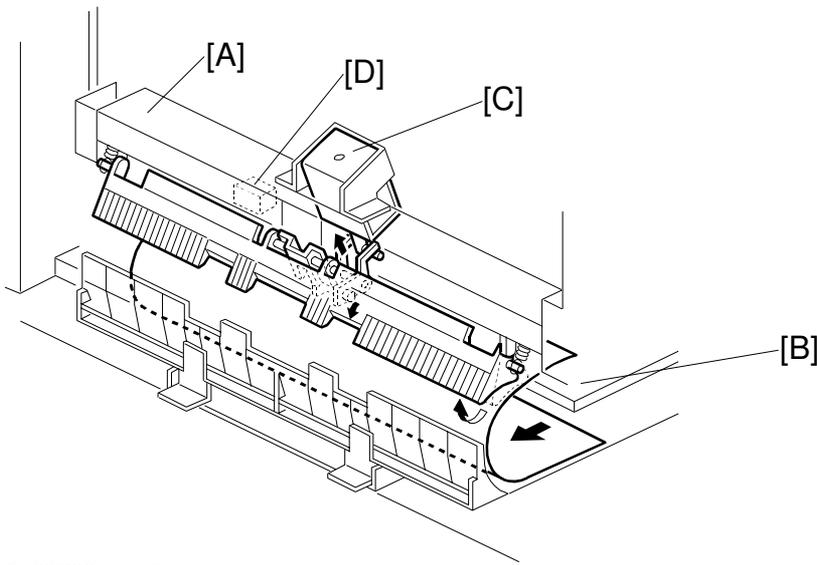
The turn gate motor [C] drives the helical wheels [A]. The small roller [B] on the bin engages the groove in the helical wheels [A]. When the helical wheels [A] turn, the turn gate unit [E] moves up/down by climbing up the small rollers [B].

The helical wheels hold two small rollers at a time. When the helical wheels climb, the gaps between adjacent bins open and close. The turn gate motor stops when the distance between the two bins is at its widest. At this time, paper goes through to the bin.

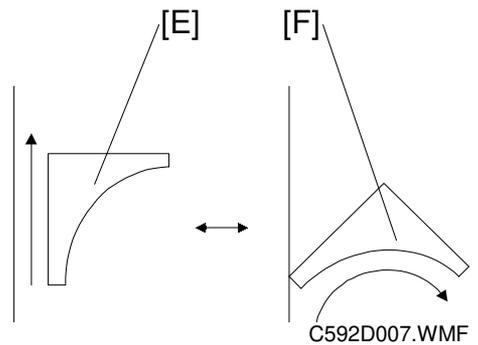
The turn gate HP sensor [D] is at the lowest position for the turn gate unit [E], which is the home position. The turn gate motor [C] moves the turn gate to the bin positions, controlled by pulses from the MPU (the starting point is at the turn gate HP sensor).

The low and high turn gate limit switches [F] detect when the helical wheel [A] has moved too much. When a turn gate limit switch [F] turns on, the main body displays a service call code (SC45-10, -11, -12, or -13).

**Paper distribution to the bins**



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C592D007.WMF

The turn gate unit [A] directs paper to the bins [B].

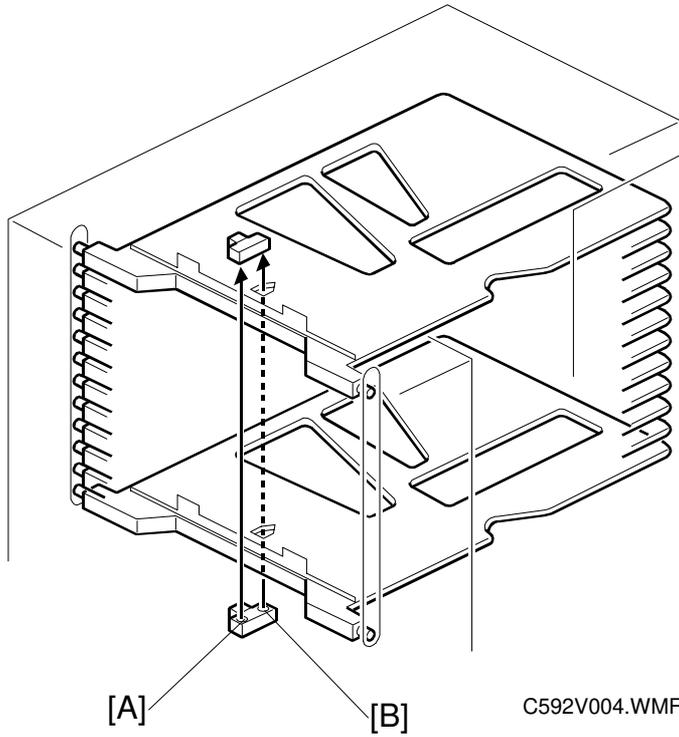
The lower turn gate solenoid [C] turns on [F] when paper is fed to one of the bins. The turn gate [A] directs the paper into the bin.

The lower turn gate solenoid [C] stays off [E] when paper is fed upwards to one of the upper bins.

After paper enters a bin, the turn gate moves up one bin.

The paper turn gate sensor [D] controls the turn gate motor on timing to shift the turn gate unit up one bin. It also works as a jam detector.

***Paper detection in the bins***

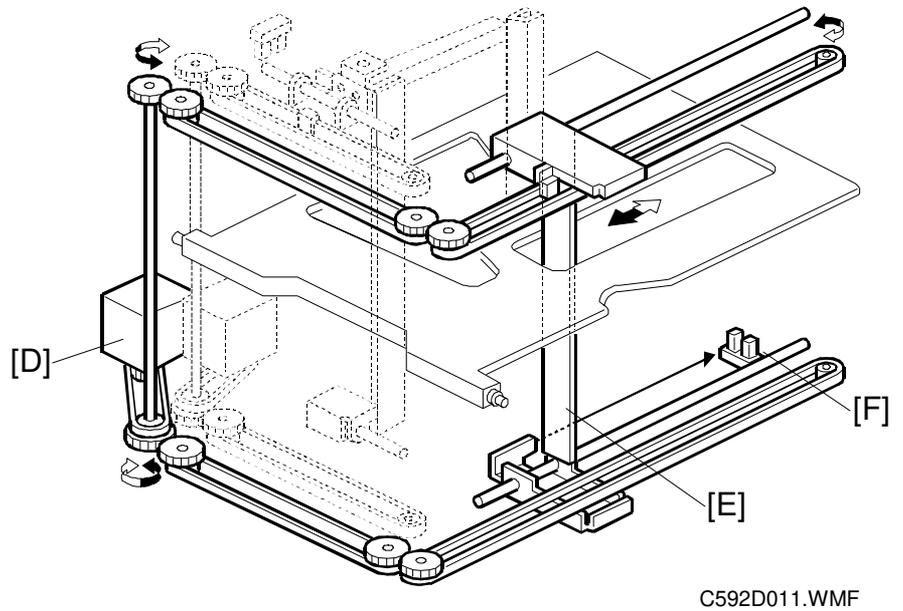
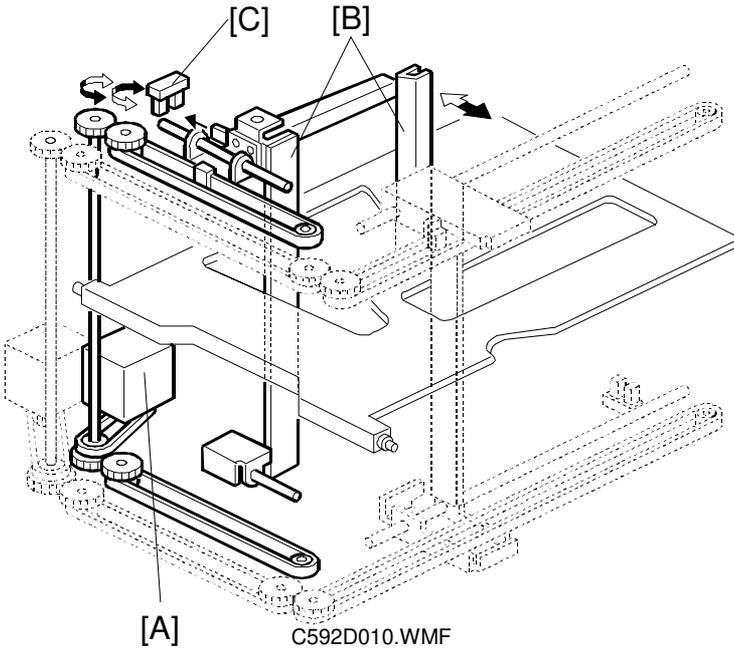


Detailed  
Descriptions

The entry sensor [A] monitors paper jams.

The bin sensor [B] detects when paper is present in the bins.

### 2.2.2 JOGGER MECHANISM



A stepper motor [A] (the side jogger motor) drives the side jogger bars [B] through small timing belt, shaft, gears, and the upper and lower timing belts. The side jogger HP sensor [C] is at the home position for the side jogger bars [B].

Another stepper motor [D] (the end jogger motor) drives the end jogger bar [E] through a similar mechanism. The end jogger HP sensor [F] is at the home position for the end jogger bar [E].

When the start key is pressed in the sort mode, the main body sends the paper size information to the sorter. In accordance with this data, the side jogger motor [A] drives the side jogger bars [B] from the side jogger home position to a position 20 mm wider than the paper size. In addition, the end jogger motor [D] drives the end jogger bar [E] from the end jogger home position [F] to a position 70 mm longer than the paper size.

After the first pages are delivered to the bins, the side jogger bars shifts to a position 10 mm wider than the paper size, and the end jogger bar shifts to a position 10 mm longer than the paper size.

The end jogger bar trues the stack up first. To do this, it shifts to a position 2 mm narrower than the paper size. Then, it shifts away to a position 10 mm longer than the paper size. Then, it again shifts to a position 2 mm narrower than the paper size. Finally, it returns 2 mm to the exact paper size position, then it stops.

After that, the side jogger bars shift to a position 2 mm narrower than the paper size. Then, they shift away to a position 10 mm wider than the paper size. They again shift to a position 2 mm narrower than the paper size. Finally, they return 2 mm to the exact paper size position, then they stop.

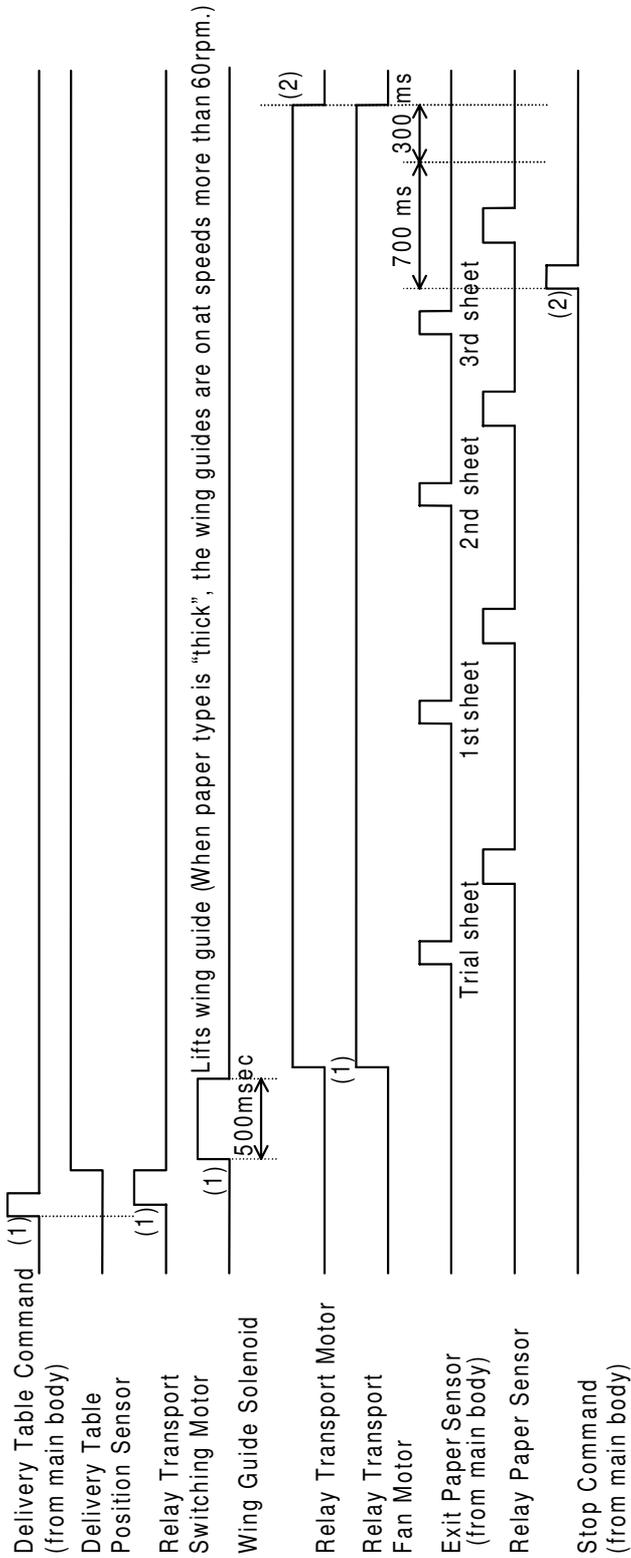
To be ready for the copies of the next page, the side jogger bars return to a position 20 mm wider than the paper size, and the end jogger bar returns to a position 70 mm longer than the paper size.

The same jogging movement is repeated each time after all copies of a page have entered the bins.

After all copies are delivered to the bins, the end jogger bar returns to home position, and the side jogger bars stop at the paper size position.

## 2.3 TIMING CHART

### 2.3.1 DELIVERY TABLE MODE



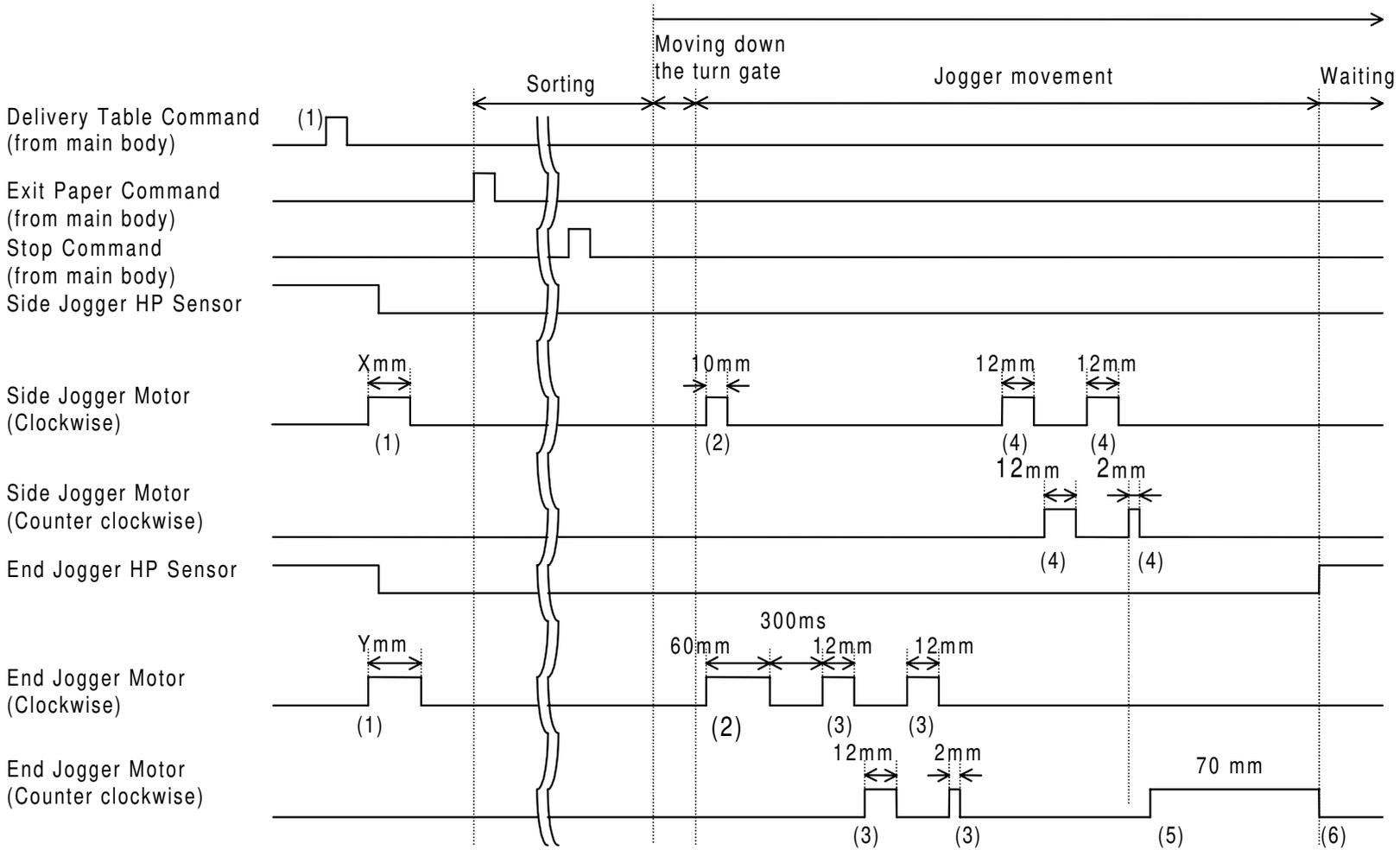
C592D500.WMF

- 1) When the machine receives the delivery table command, it moves the relay transport unit to the delivery table position using the relay transport switching motor, and turns on the wing guide solenoid. After that, it turns on the relay transport motor and relay transport fan motor.
- 2) 700 ms after receiving the stop command, the relay paper sensor checks for paper. If it does not detect paper during the next 300 ms, the relay transport motor and the relay transport fan motor turn off.



- 1) When the sort command is received, the wing guide solenoid turns off. The relay transport switching motor moves the relay transport unit to the sort position, and the transport motors and fans turn on.
- 2) When the 1st exit paper command is received, the lower turn gate solenoid turns on.
- 3) After T ms (T ms depends on paper size, and SP 6-660) since the turn gate paper sensor detected the 1st sheet, the turn gate motor moves up one bin.
- 4) The turn gate solenoid turns off, and the turn gate motor turns on at the same time. After 200 ms, the turn gate solenoid turns on again.
- 5) After sending all sheets, the motors, the fans and the turn gate solenoid turn off.
- 6) When the machine has finished feeding to the bins, the turn gate motor moves the turn gate down to the home position. After the turn gate has moved down, jogging starts.

2.3.3 JOGGER MODE



- 7) When the start key is pressed in the sort mode, the main body sends the paper size information to the sorter. In accordance with this data, the side jogger motor drives the side jogger bars X mm from the side jogger home position to a position 20 mm wider than the paper size. In addition, the end jogger motor drives the end jogger bar Y mm from the end jogger home position to a position 70 mm longer than the paper size.
  - 8) After the first pages are delivered to the bins, the side jogger bars shifts to a position 10 mm wider than the paper size, and the end jogger bar shifts to a position 10 mm longer than the paper size.
  - 9) The end jogger bar trues the stack up first. To do this, it shifts to a position 2 mm narrower than the paper size. Then, it shifts away to a position 10 mm longer than the paper size. Then, it again shifts to a position 2 mm narrower than the paper size. Finally, it returns 2 mm to the exact paper size position, then it stops.
  - 10) After that, the side jogger bars shift to a position 2 mm narrower than the paper size. Then, they shift away to a position 10 mm wider than the paper size. They again shift to a position 2 mm narrower than the paper size. Finally, they return 2 mm to the exact paper size position, then they stop.
  - 11) To be ready for the copies of the next page, the side jogger bars return to a position 20 mm wider than the paper size, and the end jogger bar returns to a position 70 mm longer than the paper size.
  - 12) The same jogging movement is repeated each time after all copies of a page have entered the bins.
- After all copies are delivered to the bins, the end jogger bar returns to home position, and the side jogger bars stop at the paper size position.

## 2.4 ERROR DETECTION

Jam location	Display on main body
Relay transport unit, horizontal transport unit	R1
Vertical transport unit	R2
Lower 20 bins	R3
Upper 20 bins	R4

### 2.4.1 HORIZONTAL TRANSPORT ERROR DETECTION

“R1” is displayed in the LCD when one of the following conditions occurs.

#### ***Sort mode and Class Sort mode***

- The relay paper sensor does not detect paper for more than 800 ms after the paper exit sensor in the main body detects paper.
- The horizontal paper sensor does not detect paper for more than 700 ms after the relay paper sensor detects paper.
- The horizontal paper sensor is activated for more than 350 ms.

#### ***Delivery table mode***

- The relay paper sensor does not detect paper for more than 1.5 s after the paper exit sensor in the main body detects paper.
- The relay paper sensor is activated for more than 1.0 s.

### 2.4.2 VERTICAL TRANSPORT ERROR DETECTION

“R2” is displayed in the LCD when one of the following conditions occurs.

- The lower turn gate paper sensor does not detect paper for more than 500 ms after the horizontal paper sensor detects paper (when feeding to the lower bins).
- The upper turn gate paper sensor does not detect paper for more than 1 s after the horizontal paper sensor detects paper (when feeding to the upper bins).
- The turn gate paper sensor is activated for more than 450 ms.

### 2.4.3 ENTRY ERROR DETECTION IN THE LOWER 20 BINS

“R3 + jam bin no.” is displayed in the LCD when the following condition occurs.

- After 180 ms since the turn gate motor started, the entry sensor still detects paper.

### 2.4.4 ENTRY ERROR DETECTION IN THE UPPER 20 BINS

“R4 + jam bin no.” is displayed in the LCD when the following condition occurs.

- After 180 ms since the turn gate motor started, the entry sensor still detects paper.

---

## 3. INSTALLATION

### 3.1 INSTALLATION REQUIREMENTS

Please carefully select the installation location, as environmental conditions greatly affect machine performance.

#### 3.1.1 OPTIMUM ENVIRONMENTAL CONDITIONS

1. Temperature —10 to 30°C (50 to 86°F)
2. Humidity —20 to 90 % RH 20 to 70 % RH (ADF)
3. Install the machine on a strong and level base. The machine must be level within 5 mm (0.2”) - both front to back and left to right.

#### 3.1.2 ENVIRONMENTS TO AVOID

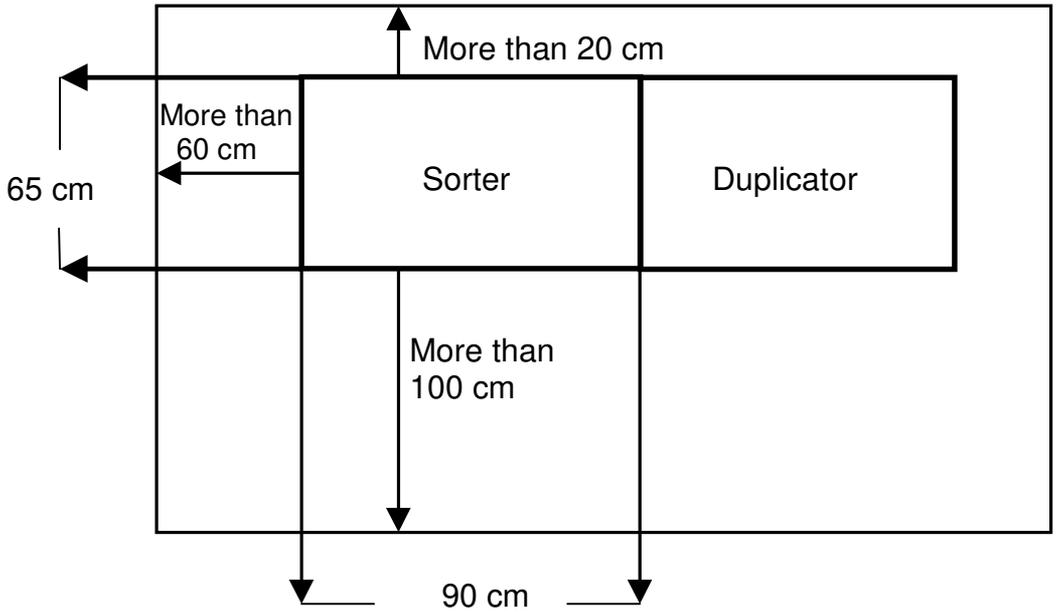
1. Locations exposed to direct sunlight or strong light (more than 1,500 lux).
2. Dusty areas.
3. Areas containing corrosive gases.
4. Locations directly exposed to cool air from an air conditioner or to reflected heat from a space heater. (Sudden temperature changes from low to high or vice versa may cause condensation within the machine.)

#### 3.1.3 POWER CONNECTION

1. Securely connect the power cord to a power source.
2. Make sure that the wall outlet is near the machine and easily accessible.
3. Make sure the plug is firmly inserted in the outlet.
4. Voltage must not fluctuate more than 10%.
5. Avoid multi-wiring.
6. Make sure that the power cord is not pinched.

### 3.1.4 ACCESS TO THE MACHINE

Place the machine near a power source, providing the amount of clearance as shown below.



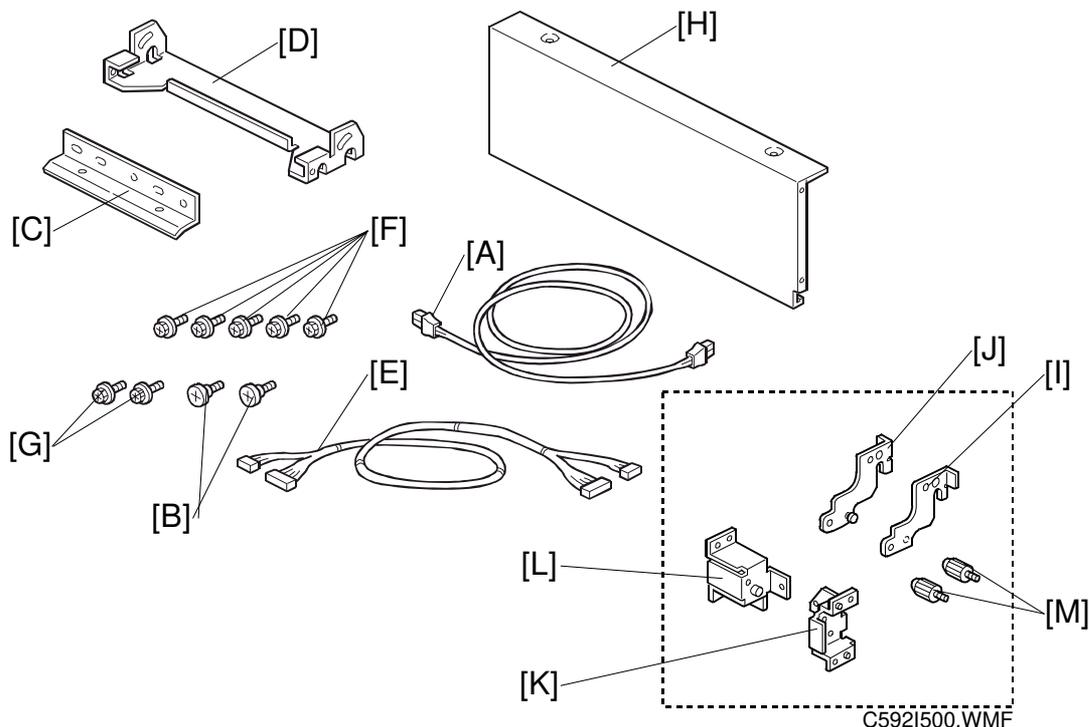


## 3.2 INSTALLATION PROCEDURE

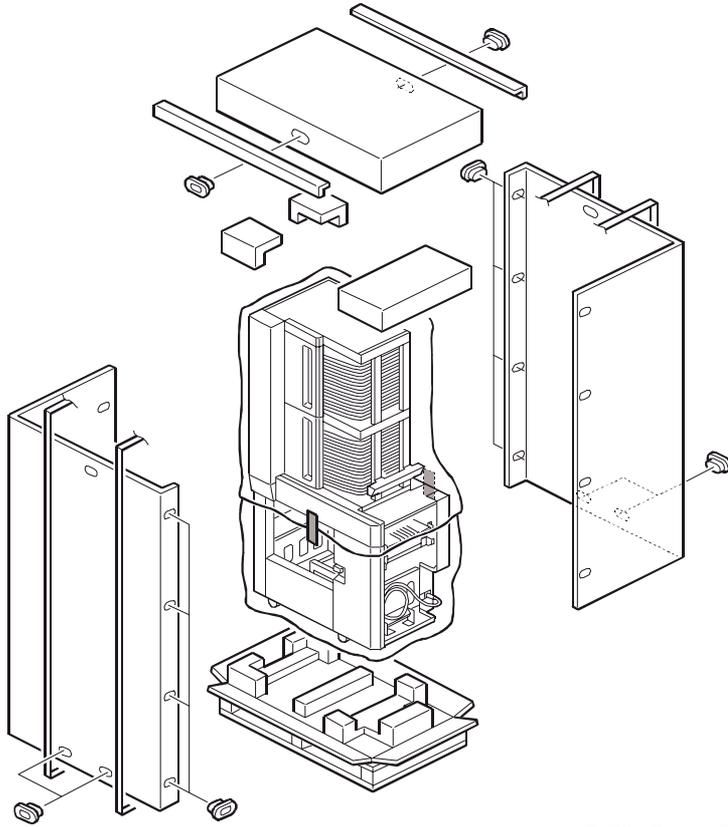
### 3.2.1 ACCESSORY CHECK

Make sure that you have all the accessories listed below:

Optical fiber cable [A].....	1
(Product of Tohoku Ricoh Co., Ltd., P/N: AW030028)	
Stepped screw [B] (To install the upper joint bracket).....	2
Lower joint bracket [C] .....	1
Upper joint bracket [D] .....	1
Job separator relay harness [E] .....	1
M4x8 screw [F] (To install the lower joint bracket) .....	2
M4x8 screw [F] (To join copier machine and sorter) .....	3
M4x8 screw [G] (To install the front lower cover) .....	2
Front lower cover [H].....	1
Front arm [I] (For models #C233 only) .....	1
Rear arm [J] (For models #C233 only) .....	1
Front bracket [K] (For models #C233 only) .....	1
Rear bracket [L] (For models #C233 only) .....	1
Knob screw [M] (For models #C233 only).....	2



### 3.2.2 INSTALLATION PROCEDURE

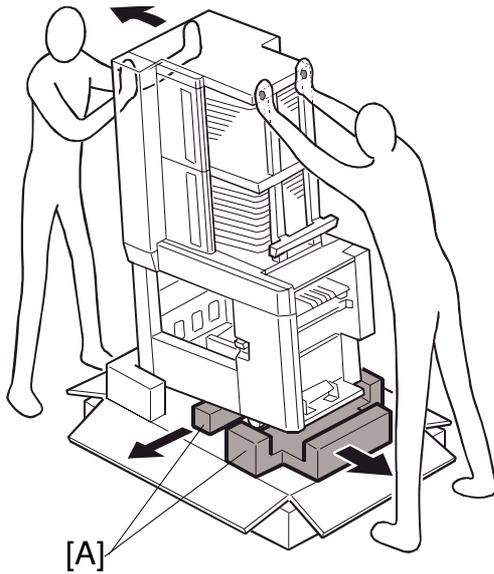


C592I501.WMF

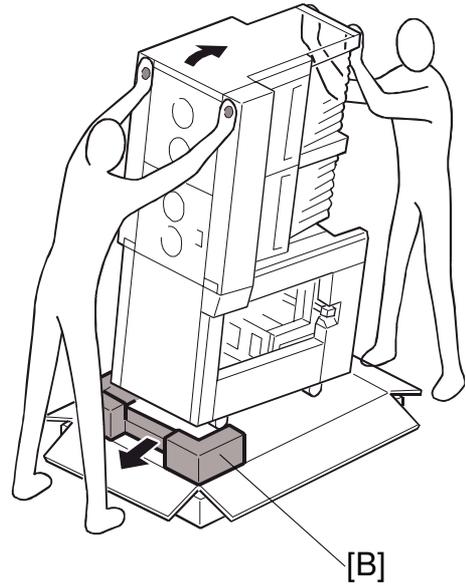
#### ***Unpacking***

#### ***Opening the box***

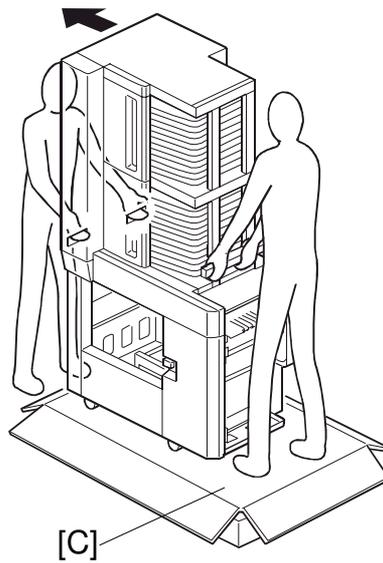
1. Unpack the box.



C592I512.WMF



C592I513.WMF

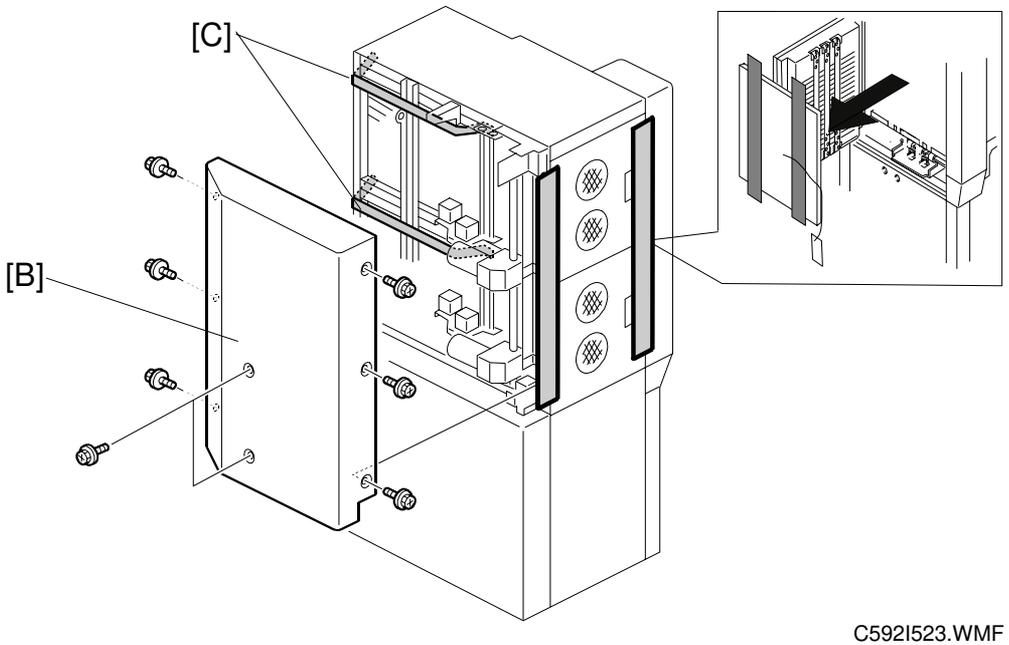
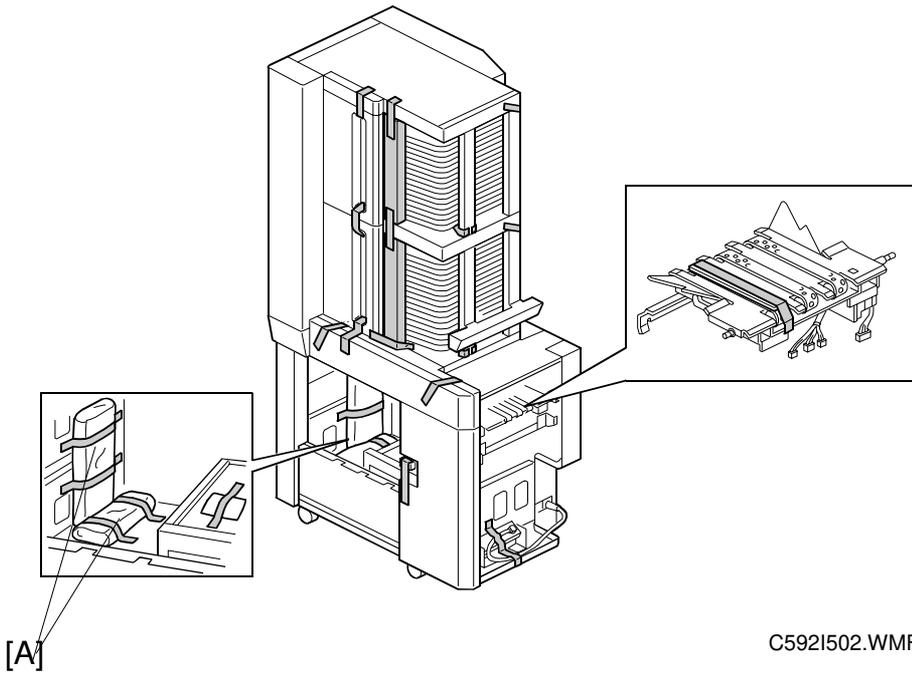


C592I514.WMF

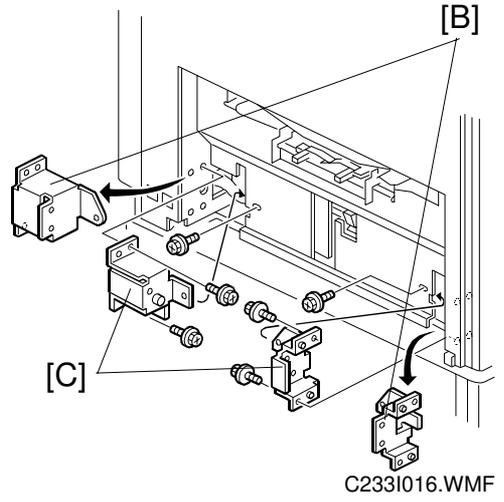
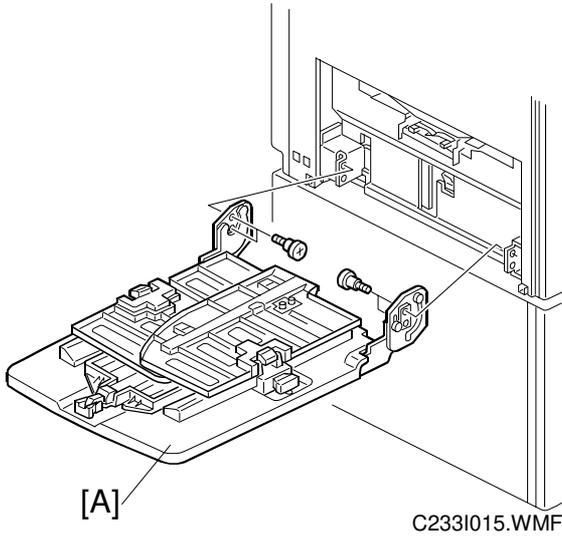
***Procedure for lifting the machine off the base***

2. Tilt the sorter to the left and remove the 2 Styrofoam paddings [A] in the middle and at the right corner under the sorter.
3. Tilt the sorter to the right and remove the last Styrofoam padding [B].
4. Slide the sorter off the base [C].

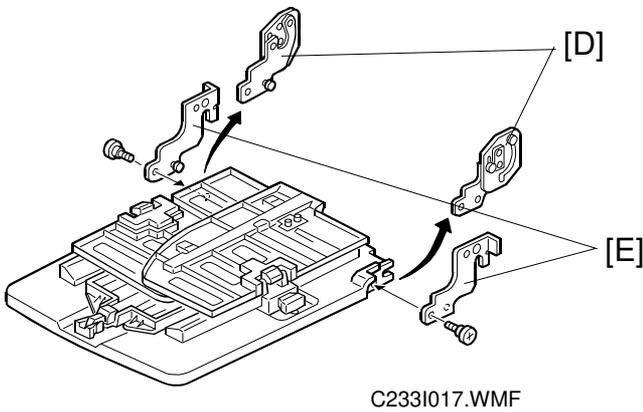
**⚠ CAUTION**  
**Take care not to overbalance the sorter when sliding it off the base.**



5. Make sure that both accessory bags [A] are present.
6. Remove the tape securing the cover and units.
7. Remove the rear cover [B] and remove the tape [C].



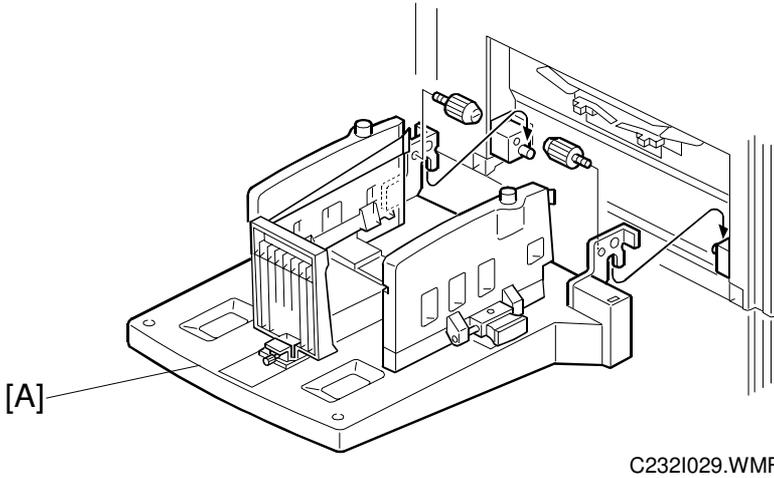
Installation



**Installation**

*For models #C233 only*

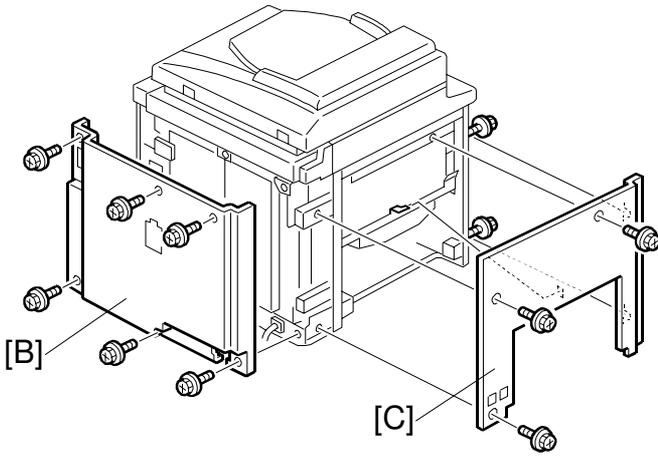
1. Turn off the main switch of the duplicator, and make sure that the power cords of both sorter and duplicator are unplugged.
2. Remove the paper delivery table [A] from the main body (2 screws).
3. Remove the front and rear brackets [B], and install the new front and rear brackets [C] (packed in the accessory bag).
4. Remove the front and rear arms [D], and install the new front and rear arms [E] (packed in the accessory bag).



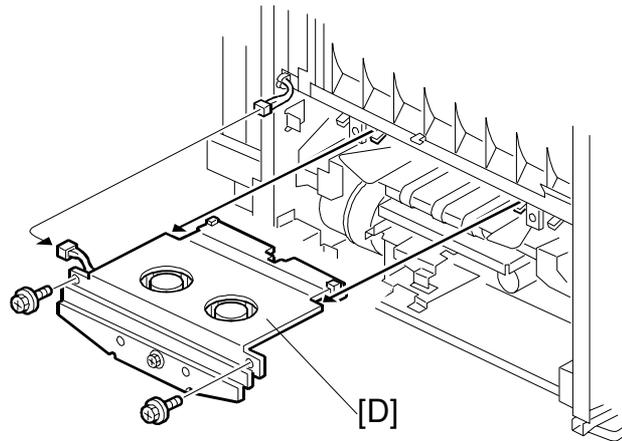
C2321029.WMF

*For model #C232 only*

1. Turn off the main switch of the duplicator, and make sure that the power cords of both sorter and duplicator are unplugged.
2. Remove the paper delivery table [A] from the main body (2 screws, 1 connector).



C229R512.WMF

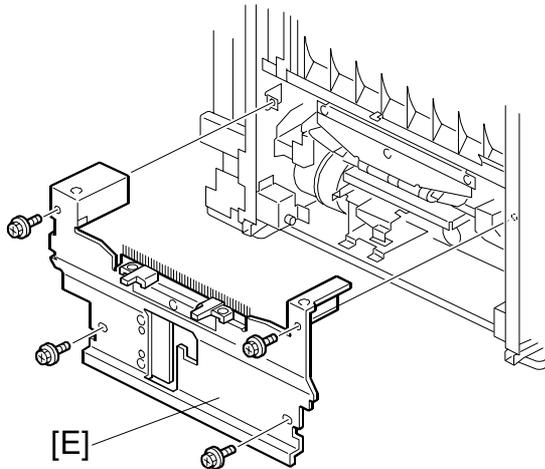


C229R521.WMF

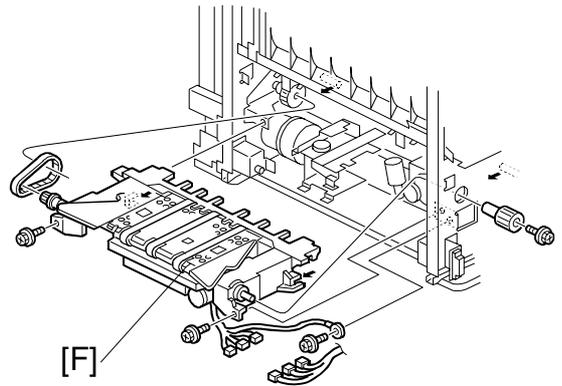
***Installation (common steps)***

***Preparation in the main body***

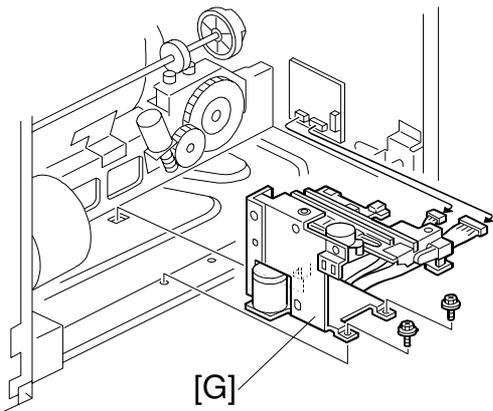
1. Turn off the main switch of the duplicator, and make sure that the power cords of both sorter and duplicator are unplugged.
2. Remove the rear cover [B] (6 screws) and the left cover [C] (5 screws), and the air knife unit [D] (2 screws, 1 connector) from the main body.



[E]  
C229R520.WMF

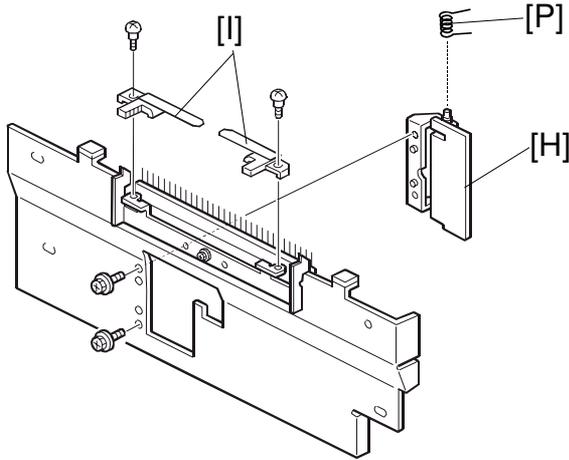


[F]  
C229R515.WMF

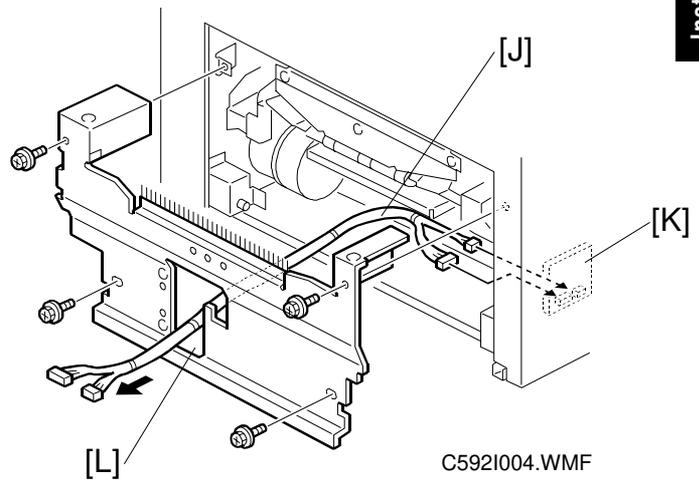


[G]  
C229R522.WMF

3. Remove the paper delivery cover [E] (4 screws).
4. Remove the paper delivery unit [F] (2 screws, 3 connectors, ground wire, knob, belt).
5. Remove the job separator unit [G] (2 screws, 2 connectors).



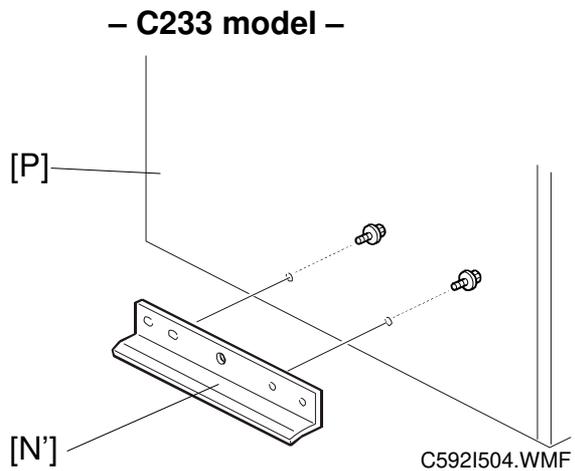
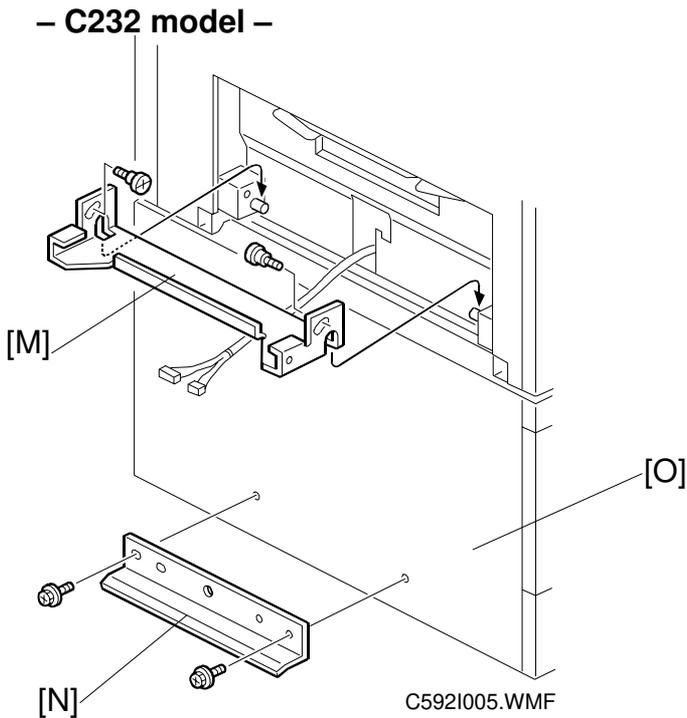
C5921003.WMF



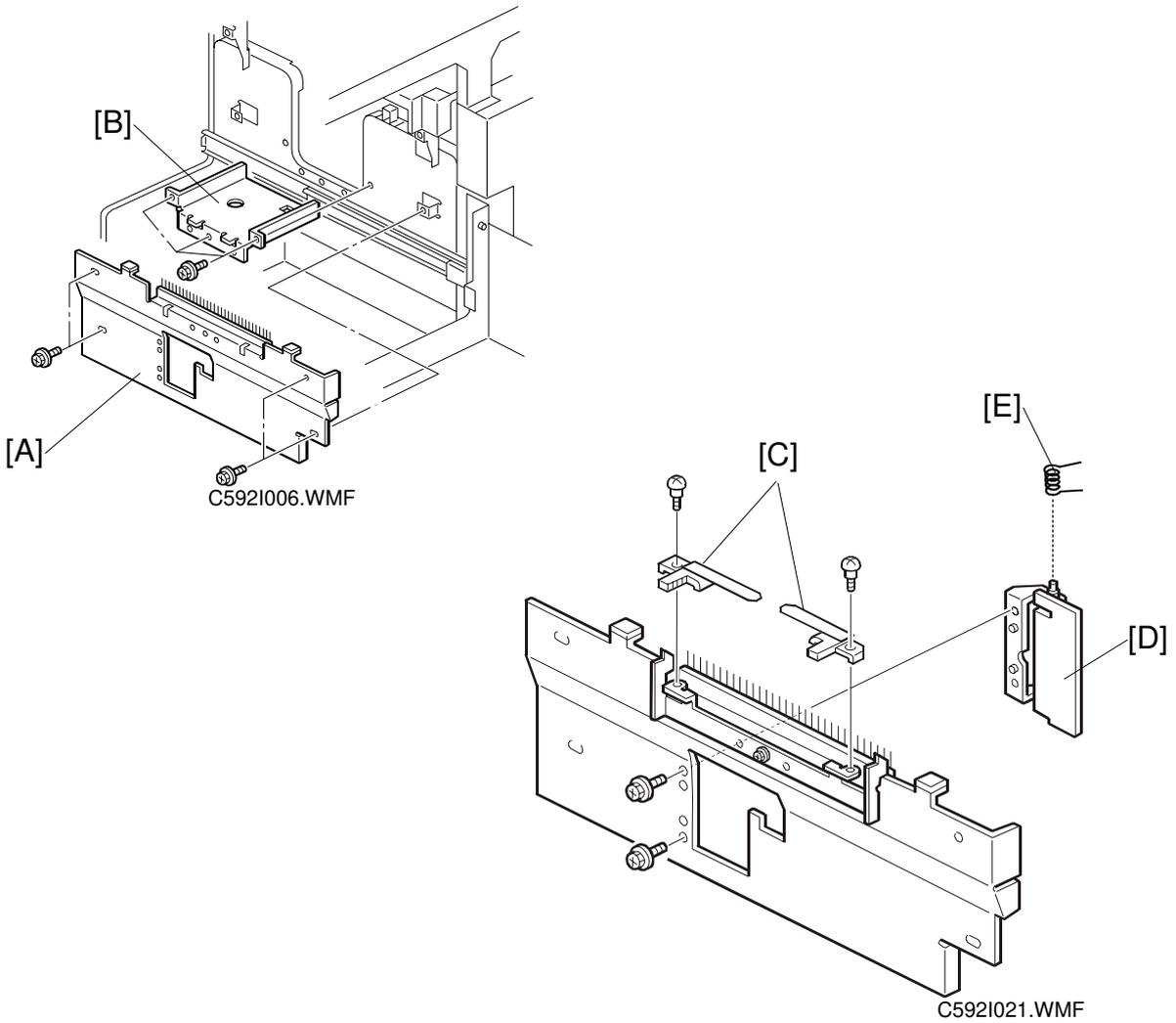
C5921004.WMF

6. Remove the job separator door [H] (2 screws, 1 spring).  
**NOTE:** Take care not to lose the spring [P].
7. Remove the trailing edge guides [I] from the paper delivery cover (2 stepped screws).
8. Connect the job separator relay harness [J] (packed in the accessory bag) to the job separator board [K].
9. Reinstall the left cover and the air knife unit, removed in step 3.
10. Reinstall the paper delivery unit, removed in step 5.
11. Reinstall the paper delivery cover, removed in step 4.  
**NOTE:** Make sure to lead the job separator relay harness [J] through the cut-out [L] in the paper delivery cover.

**NOTE:** Make sure to keep all removed parts. They are used for installing the sorter.



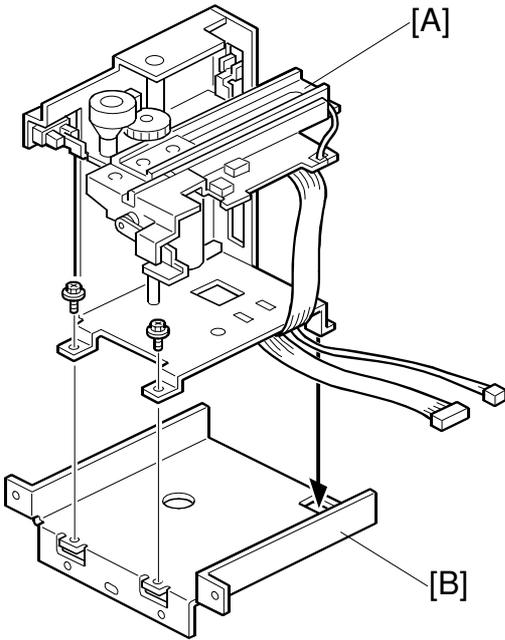
12. Install the upper joint bracket [M] (2 stepped screws, packed in the accessory bag).
13. Install the lower joint bracket [N] (2 screws, packed in the accessory bag).
  - NOTE:** 1) When the main body is C232, tighten screws from outside of the paper bank [O].
  - 2) When the main body is C233, tighten screws from inside of the table [P].



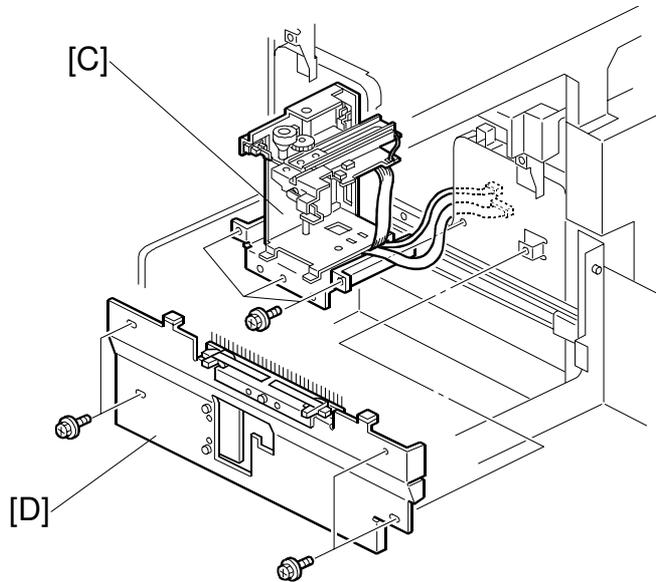
### *Preparation in the sorter*

1. Slide out the delivery table base, and remove the sorter delivery cover [A].
2. Remove the job separator base [B].
3. Attach the trailing edge guides [C] to the sorter delivery cover [A].
4. Attach the job separator door [D] to the sorter delivery cover [A].  
**NOTE:** Make sure to attach the spring [E].

**NOTE:** For steps 3 and 4, use the door, guides, and screws that were kept from the previous procedure.

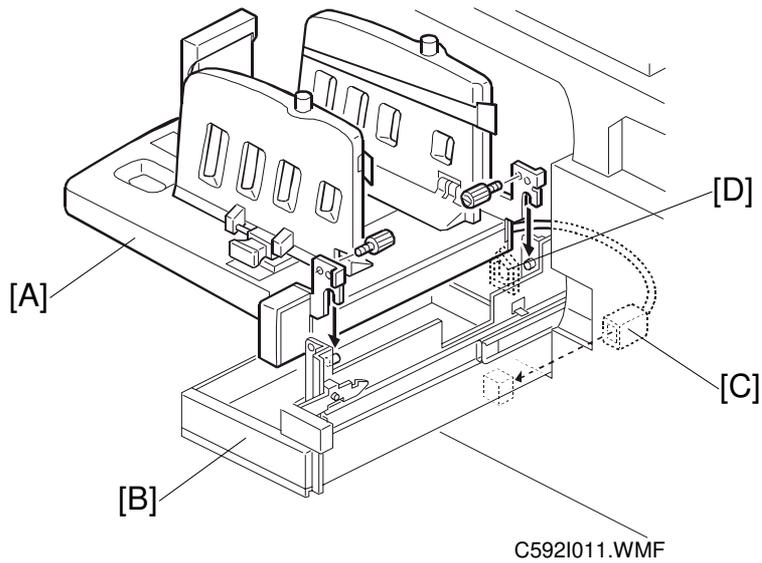


C5921008.WMF

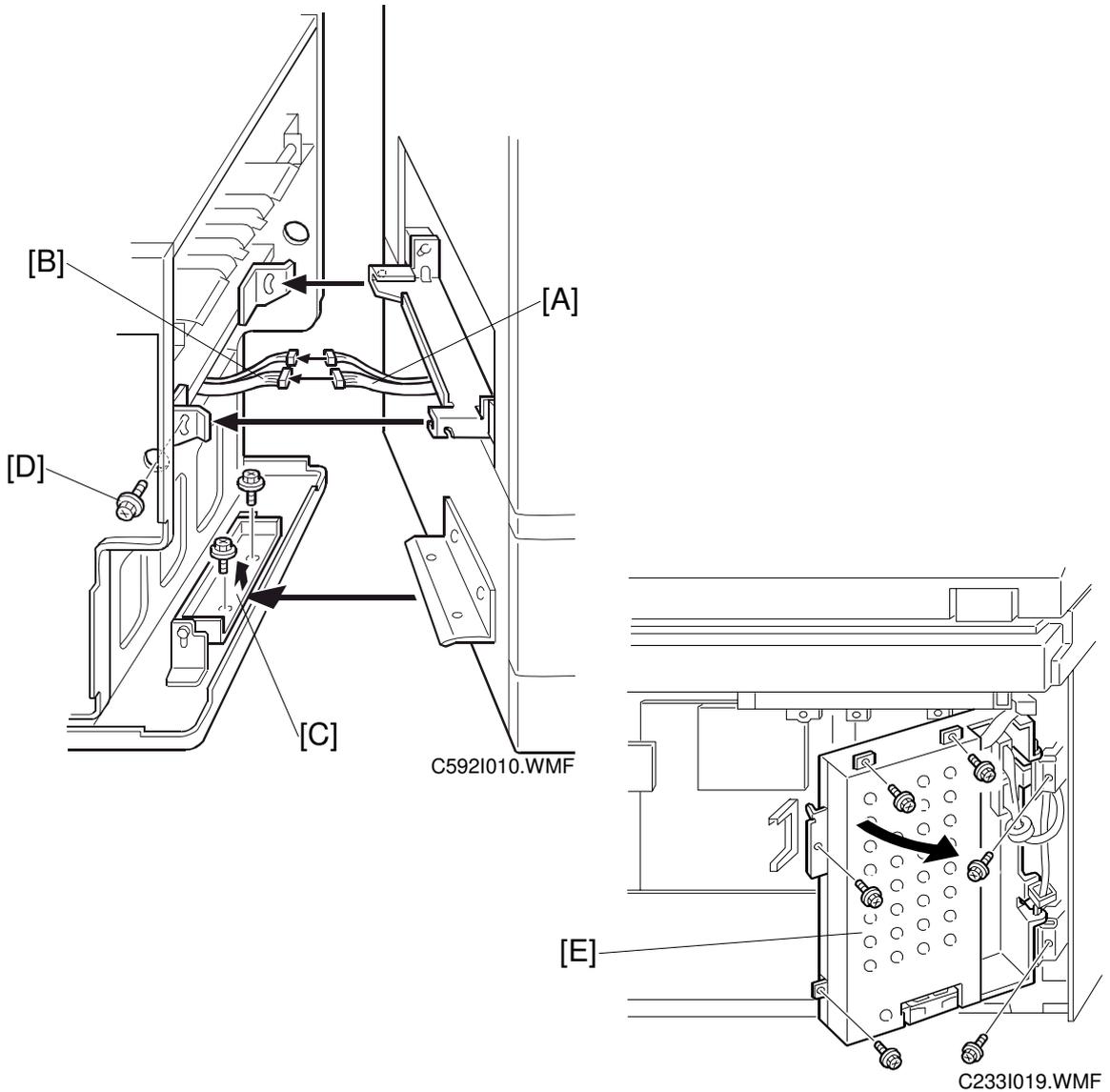


C5921009.WMF

5. Attach the job separator unit [A] to the job separator base [B].  
**NOTE:** For step 5, use the unit and screws that were removed in step 6 of the previous procedure.
6. Reinstall the job separator base with the unit [C].
7. Reinstall the sorter delivery cover [D].

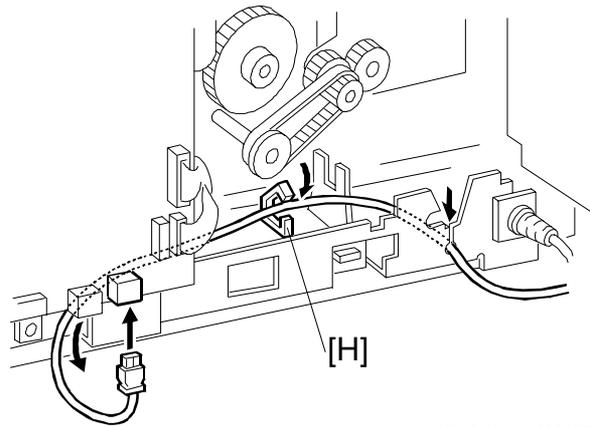
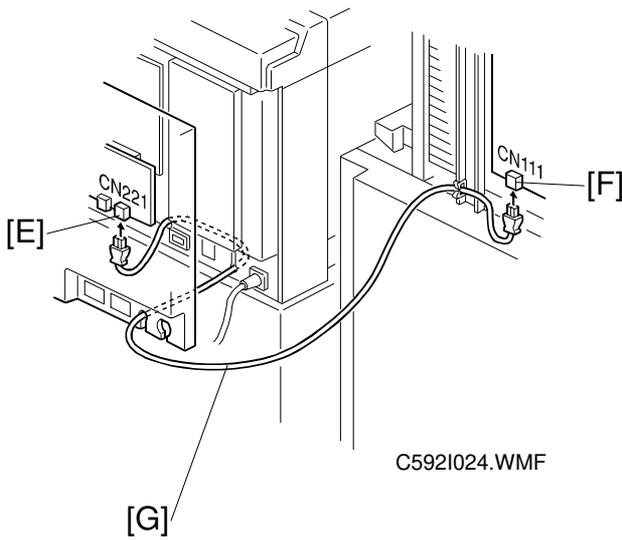


8. Install the paper delivery table [A] on the base [B] (2 screws).  
**NOTE:** 1) When the main body is C232, use the table and the screws that were kept from the previous procedure.  
2) When the main body is C233, use the table that was kept from the previous procedure, and the screws packed in the accessory bag.
9. **C232 only:** Connect the table cord [C].  
**NOTE:** Clamp the cord [C] using the clamp [D].
10. Slide in the base [B].



***Connecting the sorter to the machine***

1. Remove the front right cover (3 screws).
2. Connect the job separator relay harness [A] and the job separator harness [B].
3. Join the sorter to the main body at the lower joint bracket with 2 screws [C] and at the upper joint bracket with 1 screw [D].
4. Remove the sorter rear cover.
5. Open the power supply unit [E] (6 screws).



6. Connect CN221 [E] on the I/O board and CN111 [F] on the sorter main board with the optical fiber cable [G] (packed in the accessory bag).

**NOTE:** 1) Make sure to route the cable [G] as shown above.  
2) Clamp the cable [G] using the clamp [H].

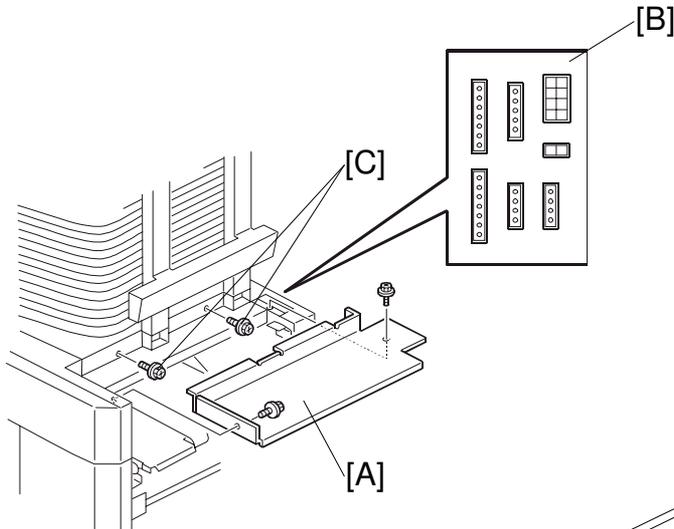
7. Reinstall the power supply unit.
8. Reinstall both rear covers.
9. Reinstall the front right cover.
10. Install the front lower cover (packed in the accessory bag).
11. Lock the casters of the sorter.

***SP mode***

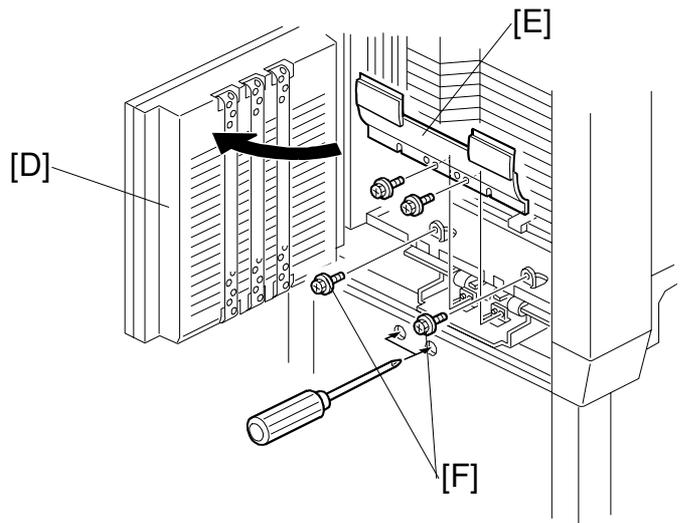
1. Firmly insert the plug in the wall outlet.
2. Turn on the main switch.  
**NOTE:** When the main body is C232, the first time that the main switch is turned on after the copier and sorter are connected, an error will result. However, the error will be cleared after performing the following steps.
3. Access SP2-4 (Sorter select mode) and set it to "2".
4. Turn the main switch off and on.
5. Push the sort key.
6. Make some test prints to confirm normal operation.

**Division**

**Purpose:** When the sorter cannot be carried through a door, divide it into the upper and lower parts. It may be necessary to do this for transportation also.



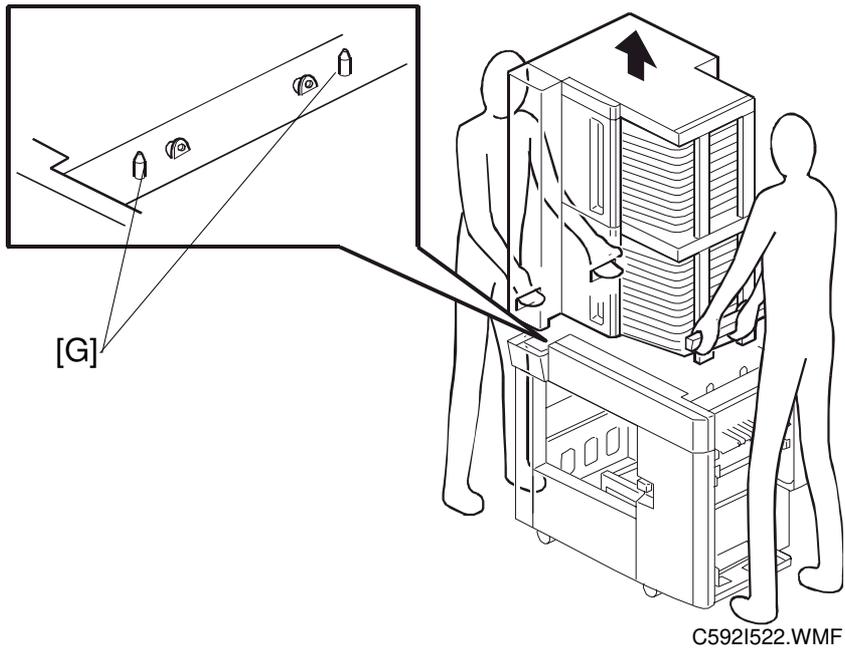
C5921520.WMF



C5921016.WMF

**Division procedure**

1. Remove the rear lower cover (6 screws).
2. Remove the right cover [A] (2 screws).
3. Remove the connectors [B] that the join the upper and lower units.
4. Remove the 2 screws [C].
5. Open the vertical delivery unit [D] (lower side).
6. Remove the guide plate [E] (2 screws).
7. Remove the 2 screws [F].



When lifting the upper part, use the handles and the shaft as shown in the diagram, and take it down to floor.

**⚠ CAUTION**

**Take care not to overbalance the upper part of the sorter when taking it down to the floor.**

Upper part: Approximately 87 kg

Lower part: Approximately 61 kg

*Precautions when rejoining*

- NOTE:** 1) Take care not to disfigure the cover when putting the upper unit on.  
2) Fit the pins on the lower part into the holes [G] in the upper part.

---

## **4. SERVICE TABLES**

### **4.1 SERVICE REMARKS**

#### **4.1.1 TURN GATE SECTION**

##### ***Turn gate adjustment***

The turn gate must be positioned correctly. See “6.5.5 Turn gate parallel and height adjustment”.

#### **4.1.2 JOGGER SECTION**

##### ***Jogger bar adjustment***

The jogger bar must be positioned correctly. See “SP6-661 Jogger bar adjustment”.

## 4.2 DIPSW, LED, VR, AND FUSE TABLES

### ***MPU***

<b>DIPSW</b>	<b>VR</b>	<b>LED</b>	<b>Function</b>
101-1	104	102	Lower bin sensor adjustment
	103	103	Lower entry sensor adjustment
101-2	102	104	Upper bin sensor adjustment
	101	105	Upper entry sensor adjustment
101-3	-	-	Free running mode
101-4	-	-	Free running ON/OFF
101-5	-	-	Not used
101-6	-	-	Not used
101-7	-	-	Not used
101-8	-	-	Not used
-	-	101	Monitors the CPU operation. Usually, this LED is blinking.

### ***Paper sensor adjustment***

1. Connect the power plug.
2. Confirm that LED102 (lower bin sensor) is off.
3. Put a sheet of paper on the lower bin sensor.
4. Confirm that LED102 is on.
5. If the LED indication is incorrect, adjust using DIPSW 101-1 and VR104 as follows.
  - a) Turn DIPSW 101-1 on.
  - b) Turn VR104 clockwise until LED102 turns off.
  - c) Turn off DIPSW 101-1, and repeat steps 1 to 4.
6. Repeat for LED103 to 105.

### ***Free running mode***

This test is equivalent to main frame SP output check mode 5-660-32.

1. Disconnect the power plug and turn DIPSW101-3 on.
2. Connect the power plug to the power source. (If the fiber cable is connected to the main body, the main body displays "communication error".)
3. Turn DIPSW101-4 on to start the free running mode.
4. To stop the free running mode, turn DIPSW101-4 off.

## 4.2.2 FUSES

<b>Fuse</b>	<b>Rated Current</b>	<b>Protected Unit</b>
Fuse on PSU	6.3A	Power Supply Unit
Fuse on noise filter	8.0 A (120 V) 5.0 A (220/240 V)	Power Supply Unit

## 4.3 SERVICE CALL CODES

This table shows only the SC codes of the main body related to this sorter.

Code	Title	Conditions	Possible Causes
SC45-00	Relay transport switching motor lock	When the relay transport unit moves, the position sensors do not detect it for more than 2 seconds.	<ul style="list-style-type: none"> <li>Relay transport switching motor</li> <li>Delivery table position sensor</li> <li>Sort position sensor</li> </ul>
SC45-10	Lower turn gate motor overrun -low	The turn gate unit overruns its lower limit, and the lower low turn gate limit switch turns on.	<ul style="list-style-type: none"> <li>Lower low turn gate limit switch</li> <li>Lower turn gate HP sensor</li> <li>Lower turn gate motor</li> </ul>
SC45-11	Lower turn gate motor overrun -high	The turn gate unit overruns its upper limit, and the lower high turn gate limit switch turns on.	<ul style="list-style-type: none"> <li>Lower high turn gate limit sensor</li> <li>Lower turn gate HP sensor</li> <li>Lower turn gate motor</li> </ul>
SC45-12	Upper turn gate motor overrun -low	The turn gate unit overruns its lower limit, and the upper low turn gate switch turns on.	<ul style="list-style-type: none"> <li>Upper low turn gate limit sensor</li> <li>Upper turn gate HP sensor</li> <li>Upper turn gate motor</li> </ul>
SC45-13	Upper turn gate motor overrun -high	The turn gate unit overruns its upper limit, and the upper high turn gate switch turns on.	<ul style="list-style-type: none"> <li>Upper high turn gate limit sensor</li> <li>Upper turn gate HP sensor</li> <li>Upper turn gate motor</li> </ul>
SC45-20	Lower side jogger lock	<p>When the side jogger moves, it does not return for more than 4 seconds.</p> <p>When the side jogger moves from home position, the sensor does not de-activate for more than 2 seconds.</p>	<ul style="list-style-type: none"> <li>Lower side jogger HP sensor</li> <li>Lower side jogger motor</li> </ul>
SC45-21	Lower end jogger lock	<p>When the end jogger moves, it does not return for more than 4 seconds.</p> <p>When the end jogger moves from home position, the sensor does not de-activate for more than 2 seconds.</p>	<ul style="list-style-type: none"> <li>Lower end jogger HP sensor</li> <li>Lower end jogger motor</li> </ul>

<b>Code</b>	<b>Title</b>	<b>Conditions</b>	<b>Possible Causes</b>
<b>SC45-22</b>	Upper side jogger lock	When the side jogger moves, it does not return for more than 4 seconds. When the side jogger moves from home position, the sensor does not de-activate for more than 2 seconds.	<ul style="list-style-type: none"> <li>• Upper side jogger HP sensor</li> <li>• Upper side jogger motor</li> </ul>
<b>SC45-23</b>	Lower end jogger lock	When the end jogger moves, it does not return for more than 4 seconds. When the end jogger moves from home position, the sensor does not de-activate for more than 2 seconds.	<ul style="list-style-type: none"> <li>• Upper end jogger HP sensor</li> <li>• Upper end jogger motor</li> </ul>
<b>SC45-30</b>	Lower turn gate motor lock	After the turn gate motor drives for 150 ms, there have been fewer than 100 encoder pulses from the motor.	<ul style="list-style-type: none"> <li>• Lower turn gate motor</li> <li>• MPU board</li> </ul>
<b>SC45-31</b>	Upper turn gate motor lock	After the turn gate motor drives for 150 ms, there have been fewer than 100 encoder pulses from the motor.	<ul style="list-style-type: none"> <li>• Upper turn gate motor</li> <li>• MPU board</li> </ul>

## 4.4 SPECIAL TOOL

The following is a special tool used for service.

<b>Description</b>	<b>Part Number</b>	<b>Application</b>
Pin	C226 9001	For turn gate installation (See 6.5.4 Helical wheel and turn gate adjustment)

## 4.5 SERVICE PROGRAM MODE

This section describes only the main body SP modes related to this sorter.

### 4.5.1 SERVICE PROGRAM TABLE

#### Main Menu Number List

1.Data Logging, 2.Basic Settings, 3.User Custom Settings, 4.Input Test Mode, 5.Output Test Mode, 6.System Adjustment, 7.Memory Data Clear

#### 1. Data Logging

SP No.	Display	Function
1-001-50	M Counter Online Sort	Master counters
1-001-51	M Counter Sort	
1-001-52	M Counter Class Sort	
1-046	JS Sorter ROM Version	
1-100	Open Counter Cover	Counts how often the sorter cover is open and shut
1-320-1	1 master Print Count 1-20	Master counters (arranged by number of copies per master) in sort mode
1-320-2	1 master Print Count 21-40	
1-320-3	1 master Print Count 41-50	
1-320-4	1 master Print Count 51-80	
1-320-5	1 master Print Count 81-	
1-321-1	Master Count on Sort 1-5	Job counters (arranged by number of masters per job) in sort mode
1-321-2	Master Count on Sort 6-10	
1-321-3	Master Count on Sort 11-20	
1-321-4	Master Count on Sort 21-30	
1-321-5	Master Count on Sort 31-50	
1-321-6	Master Count on Sort 51-	
1-322-1	P Counter Sort A4 and larger	Print counters (arranged by print paper size) for the sorter
1-322-2	P Counter Sort less A4	
1-322-3	P Counter Sort paper table	Print counters (arranged by paper feed station) for the sorter
1-322-4	P Counter Sort tray 1	
1-322-5	P Counter Sort tray 2	
1-323-1	Jam Count Relay Trans.	Counters for various location jams for the sorter
1-323-2	Jam Count Horizontal Trans.	
1-323-3	Jam Count Vertical Trans.	
1-323-4	Jam Count Lower 20 Bins	
1-323-5	Jam Count Upper 20 Bins	
1-400-9	Chk SP2-664 Ink Save mode	Check for sales mode

## 2. Basic Settings

SP No.	Display	Function	Default	Setting
2-004	Sorter Select	See Note 1.	0	0 to 2
2-660-1	Set Jogger Mode on Sort	See Note 2.	1	0 to 1
2-660-2	Set Jogger Mode on Class Sort		1	0 to 1
2-661	J Sorter Speed Setting	See Note 3.	No	No/Yes
2-662	J Sorter Sort Number Limit	See Note 4.	No	No/Yes
2-663	J Sorter Set Unit	See Note 5.	Upper and lower	U&L Upper Lower
2-664	Ink Save mode for Sorter	Yes: The Ink Save mode is activated when a sorter mode is selected	No	No/Yes

### 1: 2-004 (Sorter Select)

Selects the sorters.

0: No sorter installed, 1: DS Sorter (only used in Japan), **2: JS Sorter (this sorter)**

### 2: 2-660 (Set Jogger Mode on Sort)

Selects when the jogger operates. It can be either after all copies of each page of the original, or at an interval (every 1, 2, or 3 pages of the original).

0: Interval, 1: Each original

The interval of "**0: Interval jogger mode**" can be changed with SP3-661 (Sorter jogger interval setting).

### 3: 2-661 (J Sorter Speed Setting)

Selects whether SP6-662 is available or unavailable.

No: SP6-662 is unavailable, Yes: SP6-662 is available

**4: 2-662 (J Sorter Sort Number Limit)**

Selects whether the number of copies is limited to match the number of the bins (up to 40) or unlimited (up to 9999).

No: The number of copies is unlimited. However, sets over 40 are all delivered to the delivery table.

Yes: The user cannot make more than 40 copies of an original. If 41 or more is entered, this is reset to 40 automatically.

**5: 2-663 (J Sorter Set Unit)**

Selects the range of bins that can be used.

Upper and Lower: Uses all 40 bin.

Upper: Uses only the upper 20 bins.

Lower: Uses only the lower 20 bins.

**3. User Custom Settings**

SP No.	Display	Function	Default	Setting
3-660	Sorter 1 Bin Capacity Limit		50	0 to 50
3-661-1	Sorter jogger Interval Setting – Sort Mode	See Note 1.	2	1 to 3
3-661-2	Sorter jogger Interval Setting – Class Sort Mode		2	1 to 3

**1: 3-661 (Sorter jogger Interval Setting)**

When SP2-660 is “1”, this SP mode is used. When SP2-660 is “0”, this SP mode is not used.

This SP sets up the interval for jogging. It can be after all the copies of each page of the original have been sorted, or after every 2 originals, or after every 3 originals. When the copies of the last original have been sorted, the jogger always moves.

For example:

**“SP2-660: 0”, “SP3-661: 3”, “Originals: 16”**

The jogger operates after all copies of originals 3, 6, 9, 12, 15, and 16 have gone to the bins.

**4. Input Test Mode**

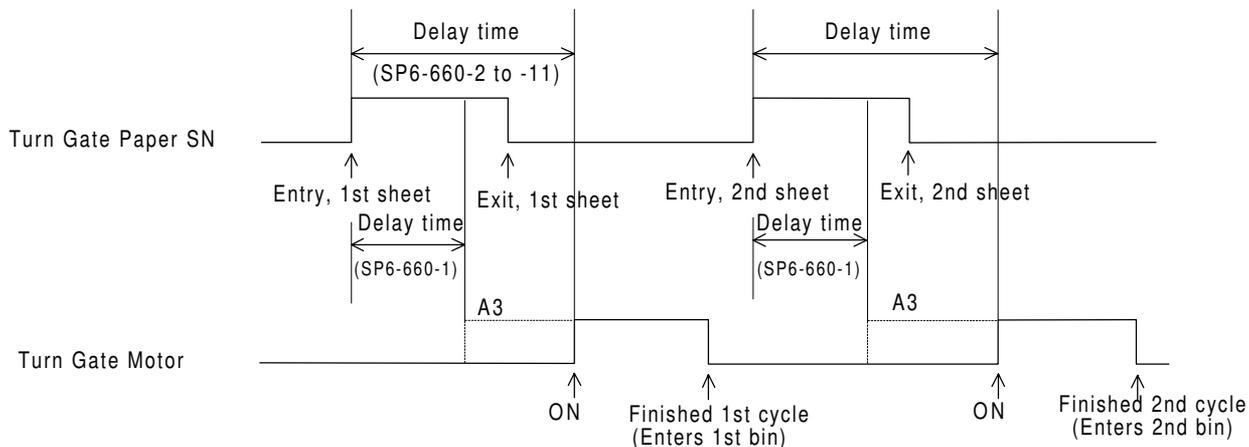
<b>SP No.</b>	<b>Display</b>
4-660-1	Lower Bin SN
4-660-2	Lower Entry SN
4-660-3	Upper Bin SN
4-660-4	Upper Entry SN
4-660-5	Relay Paper SN
4-660-6	Horizontal Paper SN
4-660-7	Delivery Table Position SN
4-660-8	Sort Position SN
4-660-9	Lower Side Jogger HP SN
4-660-10	Upper Side Jogger HP SN
4-660-11	Lower End Jogger HP SN
4-660-12	Upper End Jogger HP SN
4-660-13	Lower Turn Gate Limit SW (High and Low)
4-660-14	Upper Turn Gate Limit SW (High and Low)
4-660-15	Lower Turn Gate Paper SN
4-660-16	Upper Turn Gate Paper SN
4-660-17	Lower Door Safety SW
4-660-18	Upper Door Safety SW
4-660-19	Delivery Table Set SW
4-660-20	Vertical Cover Safety SW
4-660-21	Horizontal Cover Safety SW
4-660-22	Stapler Cover Safety SW (Japan only)
4-660-23	Lower Bins Operation SW
4-660-24	Upper Bins Operation SW
4-660-25	Stapler HP SN (Japan only)
4-660-26	Staple Detection SN (Japan only)
4-660-27	Staple Cartridge SN (Japan only)
4-660-28	Stapler Paper SN (Japan only)

**5. Output Test Mode**

<b>SP No.</b>	<b>Display</b>
5-660-1	Lower Turn Gate Motor Up
5-660-2	Lower Turn Gate Motor Down
5-660-3	Upper Turn Gate Motor Up
5-660-4	Upper Turn Gate Motor Down
5-660-5	Relay Transport Motor
5-660-6	Horiz. Transport Motor
5-660-7	Lower Vert. Transport Motor
5-660-8	Upper Vert. Transport Motor
5-660-9	Relay Switching Mtr To Sort
5-660-10	Relay Switching Mtr To Non
5-660-11	Lower S-Jogger Forward
5-660-12	Lower S-Jogger Reverse
5-660-13	Upper S-Jogger Forward
5-660-14	Upper S-Jogger Reverse
5-660-15	Lower E-Jogger Forward
5-660-16	Lower E-Jogger Reverse
5-660-17	Upper E-Jogger Forward
5-660-18	Upper E-Jogger Reverse
5-660-19	Stapler Motor Forward (Japan only)
5-660-20	Stapler Motor Reverse (Japan only)
5-660-21	Relay Transport Fan Motor
5-660-22	Horz. Transport Fan1 Motor
5-660-23	Horz. Transport Fan2 Motor
5-660-24	Lower Vrt Trans. Fan1 Mtr
5-660-25	Lower Vrt Trans. Fan2 Mtr
5-660-26	Upper Vrt Trans. Fan1 Mtr
5-660-27	Upper Vrt Trans. Fan2 Mtr
5-660-28	Wing Guide Solenoid
5-660-29	Delivery Table Lock SOL
5-660-30	Lower Turn Gate SOL
5-660-31	Upper Turn Gate SOL
5-660-32	Sorter Free Run

**6. System Adjustment**

<b>SP No.</b>	<b>Display</b>	<b>Function</b>	<b>Default</b>	<b>Settings</b>
6-660-1	Timing Delay A3	See Note 1.	0	-10 to 10
6-660-2	Timing Delay B4 Sideways		0	
6-660-3	Timing Delay A4 Sideways		0	
6-660-4	TimingDelayA4Lengthwise		0	
6-660-5	Timing Delay B5 Sideways		0	
6-660-6	TimingDelayDLTSideways		0	
6-660-7	Timing Delay LG Sideways		0	
6-660-8	Timing Delay LT Sideways		0	
6-660-9	TimingDelayLTLengthwise		0	
6-660-10	Timing Delay F Sideways		0	
6-660-11	Timing Delay Other Size		0	
6-661-1	Move Jogger - Sideways	See Note 2.	0	-10 to 10 (x 0.5 mm)
6-661-2	Move Jogger - Lengthwise		0	
6-662-1	J Sorter Feed Speed 1st	See Note 3.	0	-50 to 100 rpm
6-662-2	J Sorter Feed Speed 2nd		0	
6-662-3	J Sorter Feed Speed 3rd		0	
6-662-4	J Sorter Feed Speed 4th		0	
6-662-5	J Sorter Feed Speed 5th		0	

**1: 6-660 (Timing Delay)**

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After paper enters a bin, the turn gate moves up one bin. This SP mode adjusts the time from when the turn gate paper sensor turns on until the turn gate motor turns on. This is represented by “**delay time**” in the above timing chart.

By changing the delay time, the turn gate unit shift timing will change as follows. (The standard delay time depends on the paper size.)

**NOTE:** Only for A3 paper, the turn gate motor turns on before the turn gate paper sensor detects paper exit. This is so that the machine can cope with high-speed sorting even for A3 paper.

If the delay time is too short, the paper entering the bin may not be able to pass through the gate before the gate moves up. In this case, the paper may rub against the entrance, which is noisy and makes the paper feeding entering the bin seem slow.

If the delay time is too long, the paper that has entered the bin hits the end jogger bar and bounces back to the bin entrance before this entrance closes. The paper might be caught at the bin entrance.

To increase the delay time, enter a larger number. To reduce the delay time, enter a smaller number.

**NOTE:** 1) Use the point ( . ) key to switch between + and -.  
2) -10 to 10 (5 ms steps.)

**2: 6-661 (Move Jogger)**

Inputting a positive number moves the jogger bar position away from the operation side of the machine. Use the point ( . ) key to switch between + and -.

**NOTE:** -10 to 10 (in 5 mm steps)

**3: 6-662 (J Sorter Relay Transport Speed)**

**NOTE:** This SP mode is effective only for delivery table mode.

Before using this SP setting, SP2-661 (J Sorter Speed Setting) must be “Yes”.

This SP adjusts the paper transport speed to the delivery table on the relay transport unit. There is one adjustment for each printing speed, as shown below.

**NOTE:** The relay transport unit speed cannot be more than 160 rpm.

Main body speed	Relay transport unit speed (default)	Relay transport unit speed, possible range (Default value -50 → default value +100)
60 rpm (1st speed)	90 rpm	40 to 160 rpm
75 rpm (2nd speed)	90 rpm	40 to 160 rpm
90 rpm (3rd speed)	90 rpm	40 to 160 rpm
105 rpm 4th speed)	105 rpm	55 to 160 rpm
120 rpm(5th speed)	120 rpm	70 to 160 rpm

Do not use this SP mode unless advised by senior technical staff.

**7. Memory Data Clear**

SP No.	Display
7-660	Clear J Sorter Settings

**4.5.2 USER TOOLS**

The following SP mode can be accessed by users with the User Tools. The User Tools key on the operation panel accesses these.

**User Tools Table**

No.	Display	Equivalent SP No.
4-25	Set Jogger Mode on Sort	2-660-1

## 5. PREVENTIVE MAINTENANCE

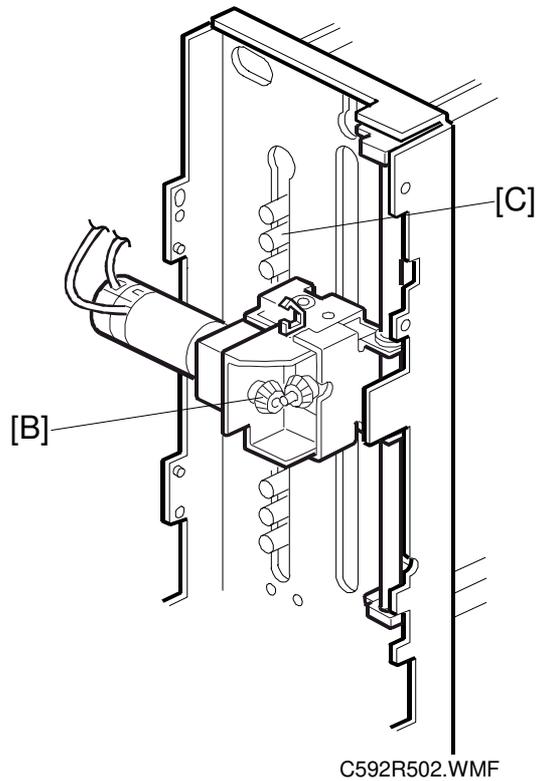
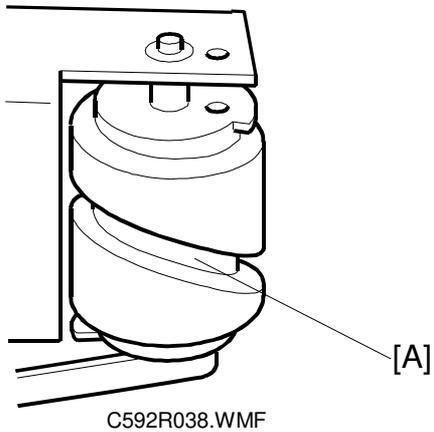
### 5.1 MAINTENANCE TABLE

The following items should be maintained periodically. There are two sets of intervals - one based on time and the other based on print count. For maintenance items with entries in both of them, use whichever comes first.

C: Clean, R: Replace, L: Lubricate, A: Adjust

Item	Interval	Time				Print Counter					EM	NOTE
		6M	1Y	2Y	3Y	300K	600K	1M	1.2M	2M		
<b>Paper Feed</b>												
Transport guide plates		C										Dry Cloth
Turn gate sheet		C										Dry Cloth
Paper transport belts		C										Dry Cloth
Relay paper sensor	C	C	C	C								Dry Cloth
Horizontal paper sensor	C	C	C	C								Dry Cloth
Surface of helical wheel groove		L	L	L								Motor Oil (SAE #20)
Surface of slanting gears for turn gate drive		L	L	L								Motor Oil (SAE #20)
Surface of small rollers		L	L	L								Motor Oil (SAE #20)
<b>Bin</b>												
Bin sensor	C	C	C	C								Dry Cloth
Entry sensor	C	C	C	C								Dry Cloth

## 5.2 LUBRICATION SPOTS

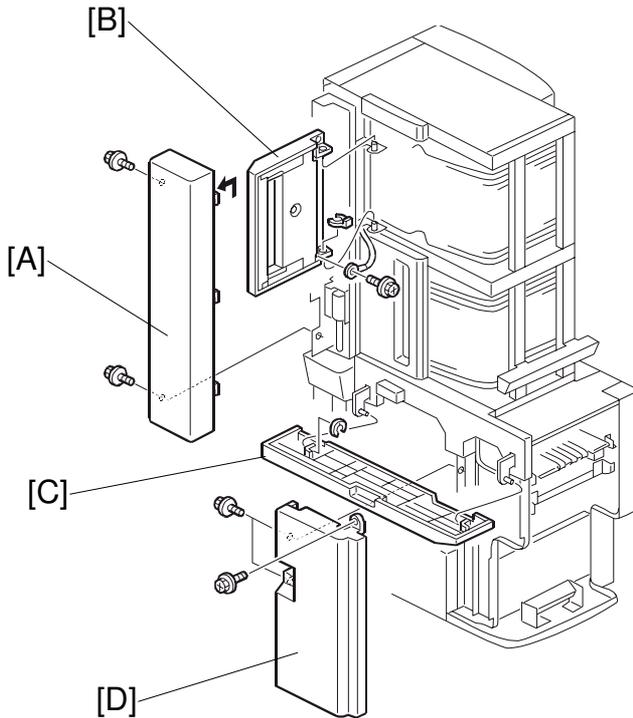


- [A]: Surface of helical wheel groove
- [B]: Surface of slanting gears for turn gate drive
- [C]: Surface of small rollers

## 6. REPLACEMENT AND ADJUSTMENT

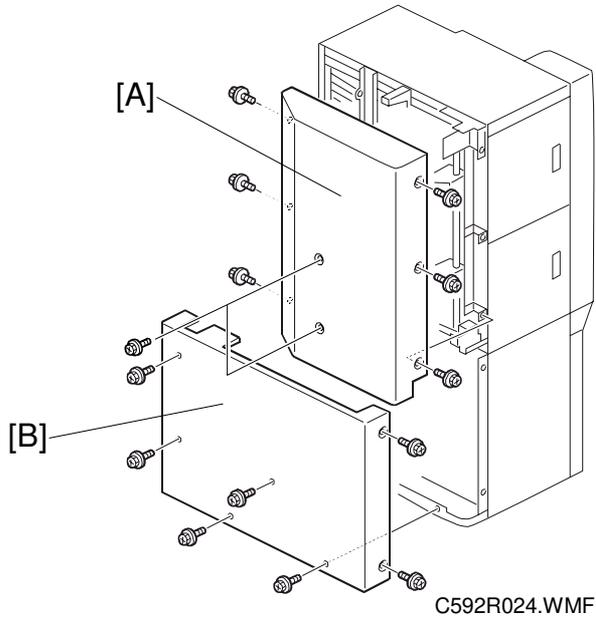
### 6.1 EXTERIOR COVER SECTION

#### 6.1.1 FRONT COVER REMOVAL



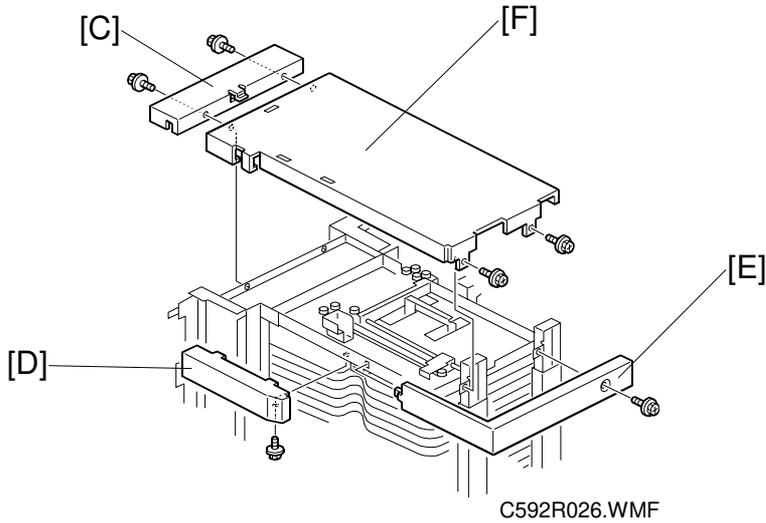
1. Disconnect the power plug.
2. Remove the front left cover [A] (3 screws).
3. Remove the door cover [B] (1 screw, 1 clip).
4. Remove the horizontal cover [C] (1 E-ring).
5. Remove the front right cover [D] (3 screws).

### 6.1.2 REAR COVER REMOVAL



1. Remove the rear cover [A] (8 screws).
2. Remove the rear lower cover [B] (7 screws).

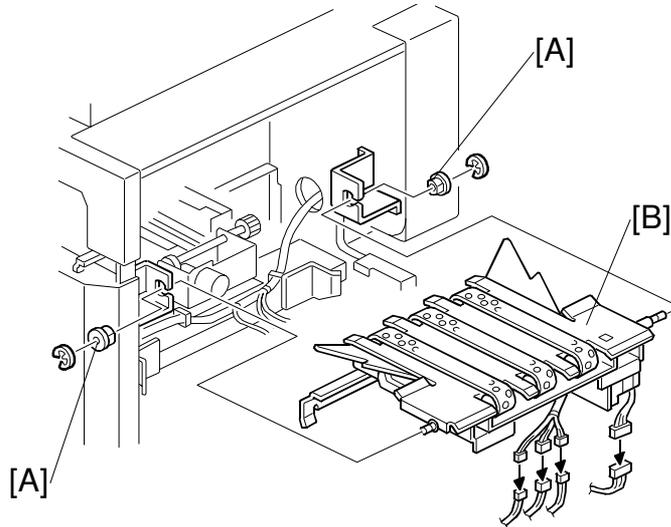
### 6.1.3 UPPER COVER REMOVAL



1. Open the upper vertical transport unit.
2. Remove the upper left cover [C] (2 screws).
3. Remove the upper front cover [D] (1 screw).
4. Remove the upper right cover [E] (1 screw).
5. Remove the upper cover [F] (2 screw).

## 6.2 RELAY TRANSPORT SECTION

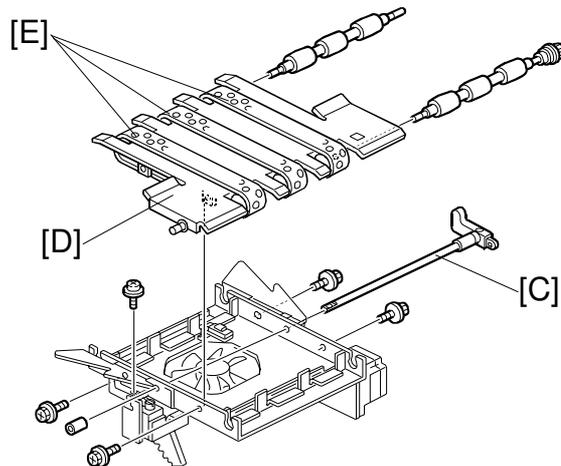
### 6.2.1 RELAY TRANSPORT UNIT REMOVAL



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1. Remove the 2 bushings [A] (2 E-rings).
2. Remove the relay transport unit [B] (4 connectors, 1 screw).

### 6.2.2 TRANSPORT BELT REMOVAL



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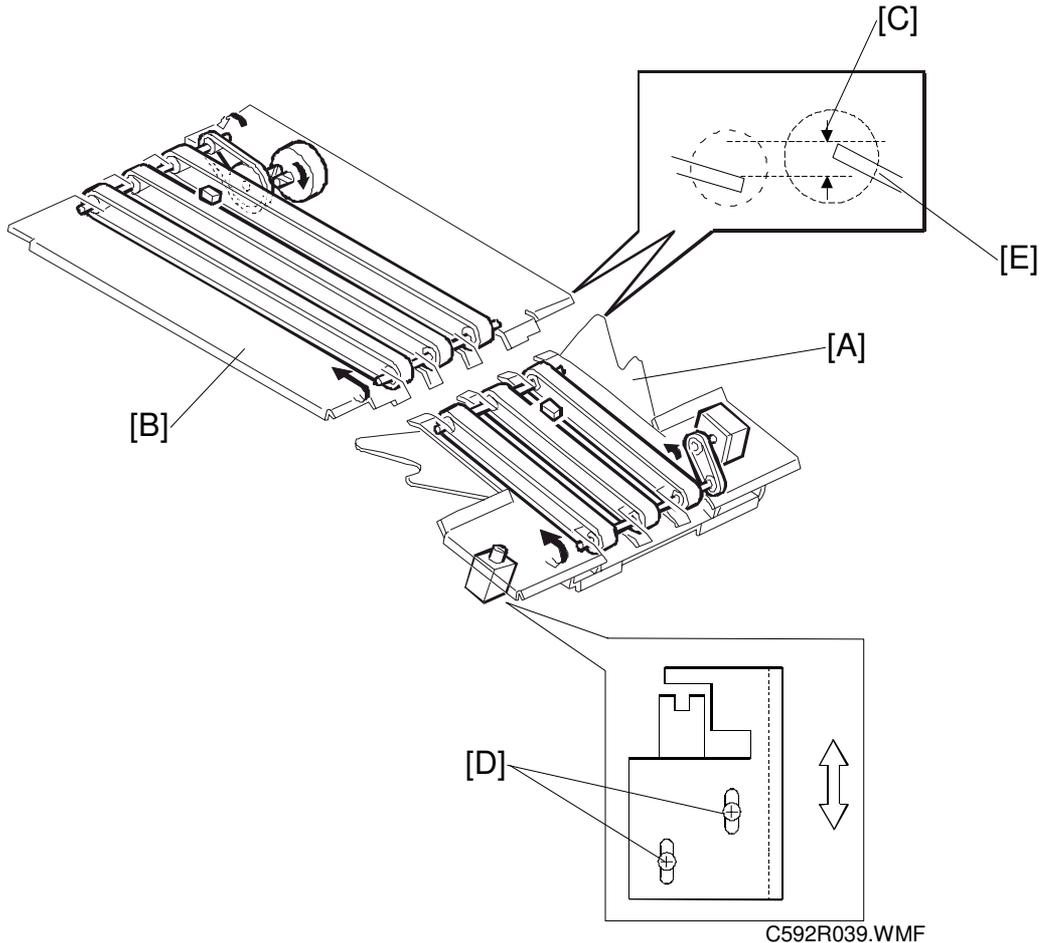
1. Remove the relay transport unit. (See section 6.2.1.)
2. Remove the wing shaft [C] (1 screw).
3. Remove the guide plate [D] (4 screws).
4. Remove the 3 transport belts [E].

### 6.2.3 RELAY TRANSPORT POSITION ADJUSTMENT

**PURPOSE:** To ensure that the wing guide is higher than the horizontal transport unit when transporting paper.

**ADJUSTMENT STANDARD:**

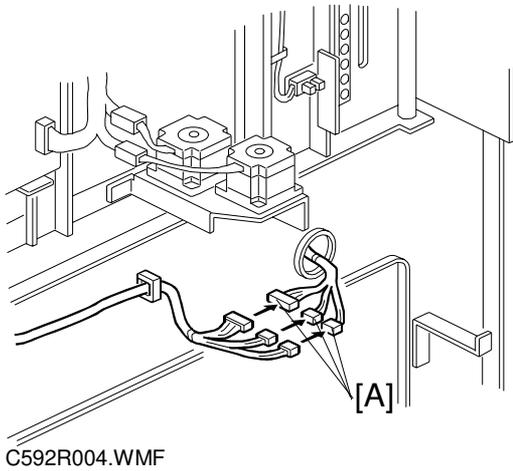
+1 to 0 mm



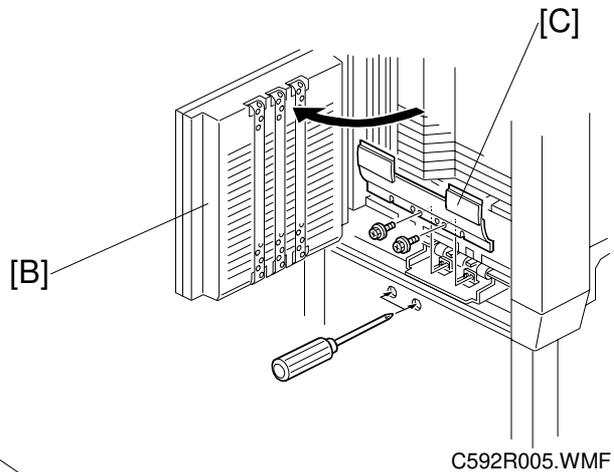
1. Turn on the main switch.
2. Access SP5-660-9 (Relay Switching Motor To Sort) and push the start key.
3. Turn off the main switch and disconnect the power plug.
4. Measure the distance between the wing guide [A] and the horizontal transport unit [B]. The specified distance [C] is +1 to 0 mm.
5. If the distance is not within the specification, loosen the wing guide solenoid screws [D] and adjust the wing position [E].

## 6.3 HORIZONTAL TRANSPORT SECTION

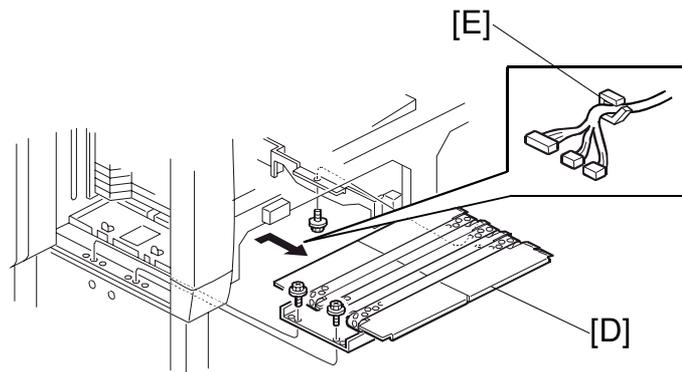
### 6.3.1 HORIZONTAL TRANSPORT UNIT REMOVAL



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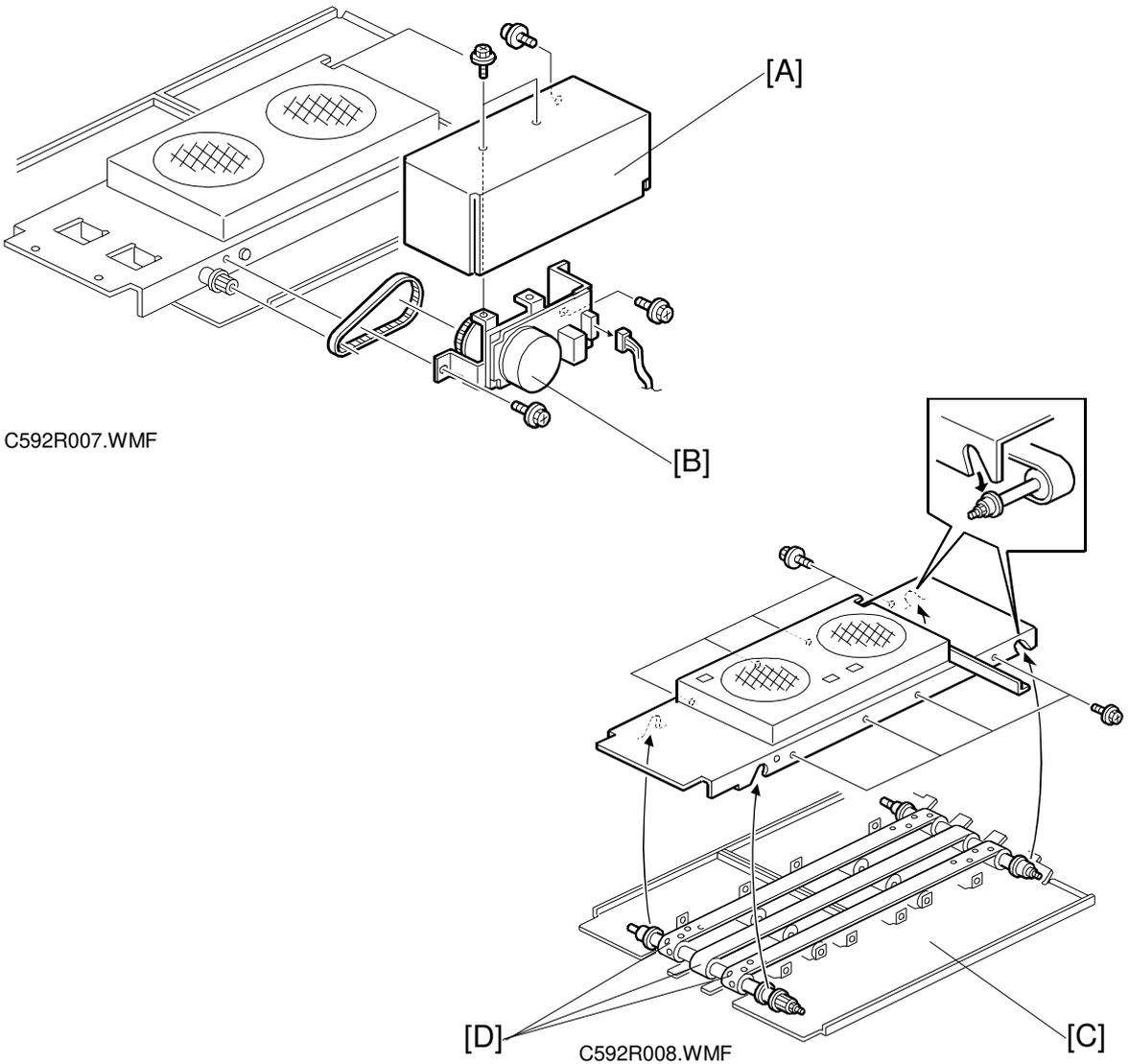


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C592R006.WMF

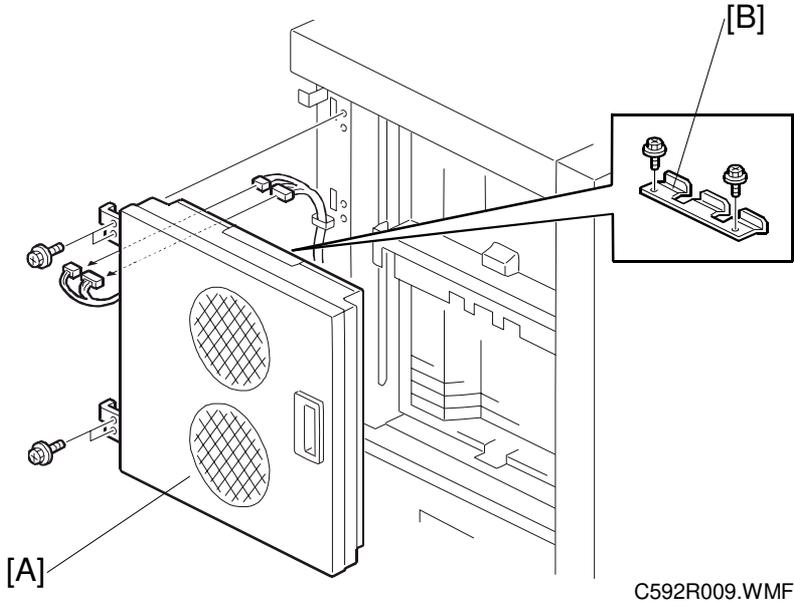
1. Remove the paper delivery table (2 screws, 1 connector).
2. Remove the lower rear cover. (See section 6.1.2.)
3. Remove the 3 connectors [A].
4. Open the lower vertical transport unit [B].
5. Remove the guide plate [C] (2 screws).
6. Release the connectors from the clamp [E].
7. Remove the horizontal transport unit [D] (3 screws).

**6.3.2 TRANSPORT BELT REMOVAL**

1. Remove the horizontal transport unit. (See section 6.3.1.)
2. Remove the motor cover [A] (2 screws).
3. Remove the horizontal transport motor [B] (2 screws, 1 connector).
4. Remove the 2 guide plates [C] (8 screws).
5. Remove the 3 transport belts [D].

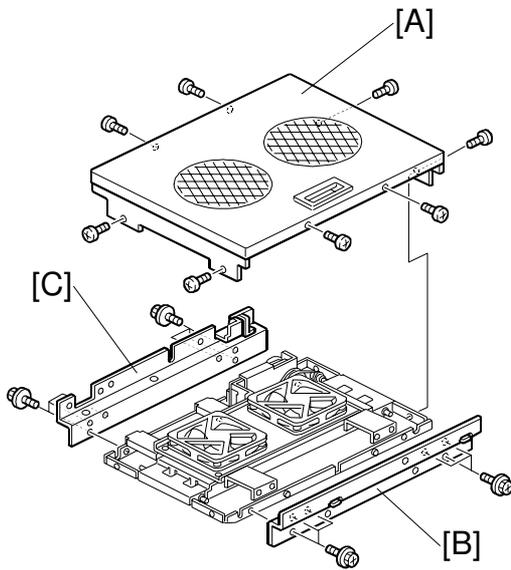
## 6.4 VERTICAL TRANSPORT SECTION

### 6.4.1 VERTICAL TRANSPORT UNIT REMOVAL

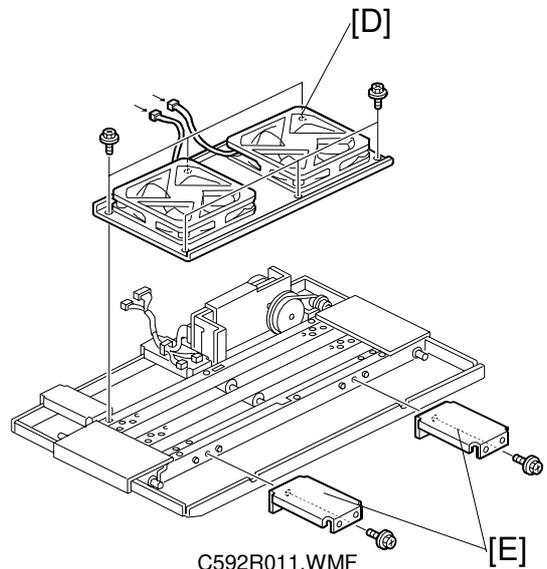


1. Remove the rear cover. (See section 6.1.2.)
2. Remove the vertical transport unit [A] (2 screws, 3 connectors).

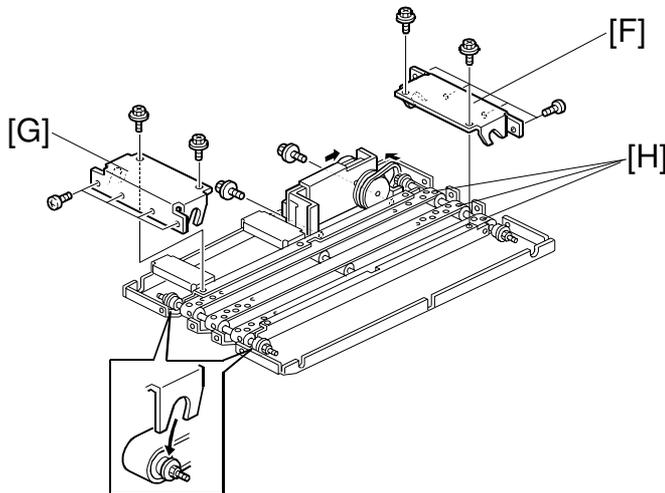
**NOTE:** The upper and lower vertical transport units are slightly different. The lower vertical transport unit has the transport supporting bracket [B].

**6.4.2 TRANSPORT BELT REMOVAL**

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C592R011.WMF



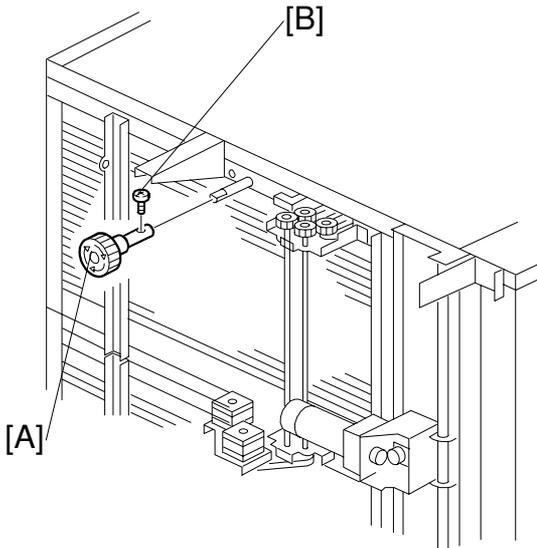
C592R012.WMF

1. Remove the vertical transport unit. (See section 6.4.1.)
2. Remove the cover [A] (8 screws).
3. Remove the right bar [B] and the left bar [C] (12 screws).
4. Remove the fan bracket [D] (6 screws).
5. Remove the 2 support brackets [E] (2 screws).
6. Remove the lower bar [F] and the upper bar [G] (12 screws).
7. Remove the 3 transport belts [H].

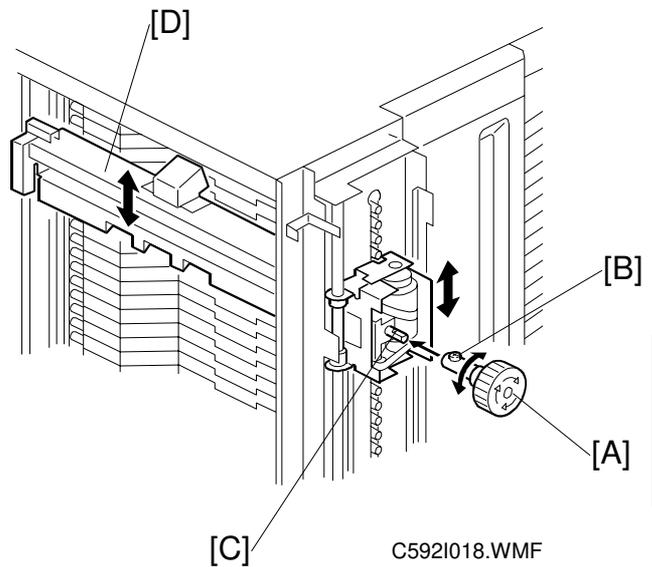
## 6.5 TURN GATE SECTION

### 6.5.1 HOW TO USE THE TURN GATE DRIVE KNOB

**PURPOSE:** Use this knob [A] to move a turn gate unit or open a bin manually (without using electrical power).



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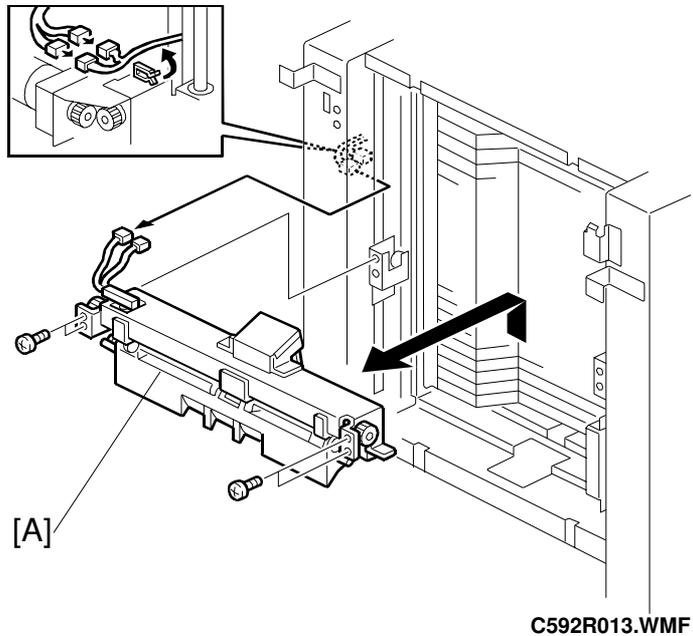


C592I018.WMF

Replacement  
Adjustment

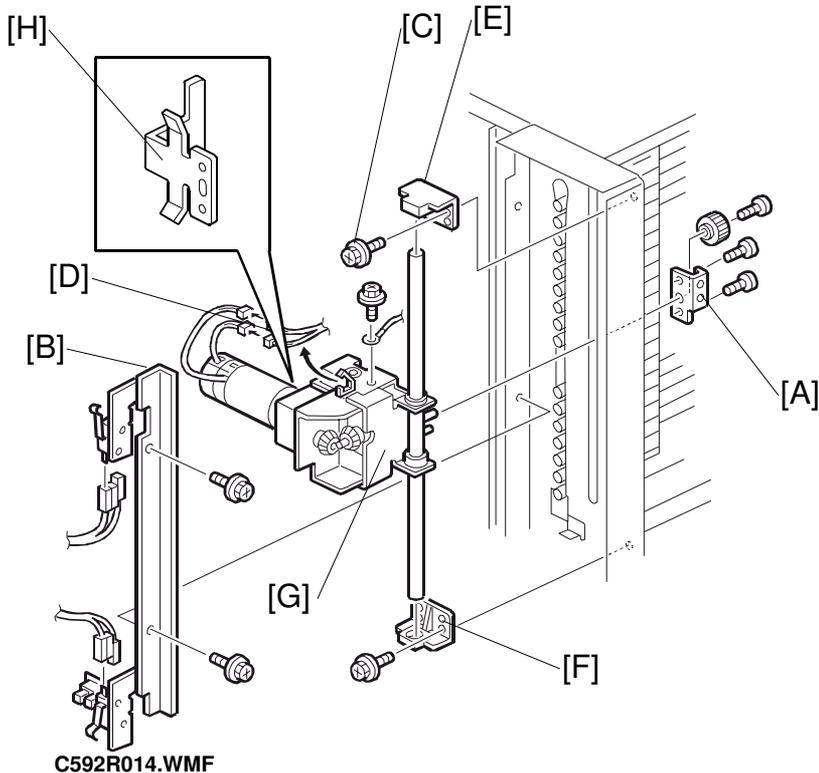
1. Remove the rear cover.
2. Remove the knob [A] from its storage location. (Loosen the screw [B].)
3. Install the knob on the helical wheel shaft [C].
4. Tighten the screw [B].
5. Move the turn gate [D] using the knob.
6. After use, put the knob back.

## 6.5.2 TURN GATE REMOVAL



1. Remove the rear cover. (See section 6.1.2.)
2. Remove the vertical transport unit. (See section 6.4.1.)
3. Remove the turn gate [A] (4 screws, 2 connectors).

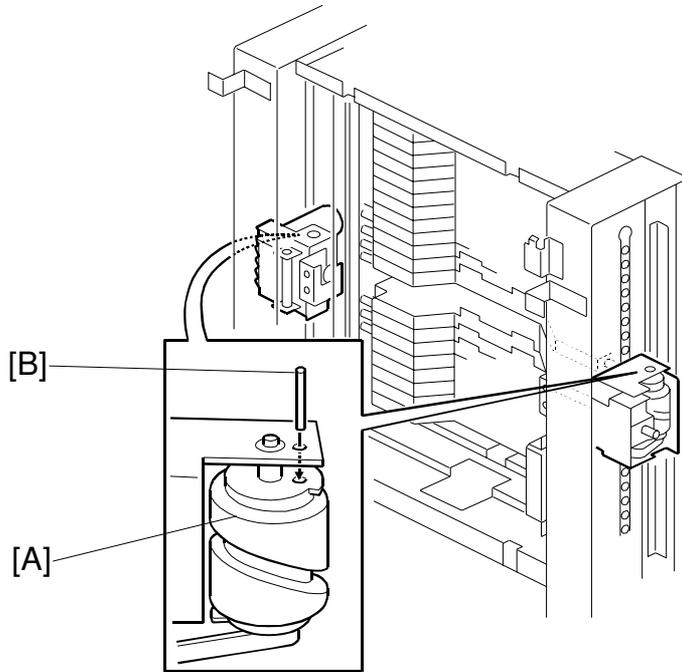
### 6.5.3 HELICAL WHEEL UNIT REMOVAL



1. Move the turn gate to the best position for removal, using the turn gate drive knob.
2. Remove the turn gate. (See section 6.5.2.)
3. Remove the turn gate bracket [A] on the non-operation side (3 screws, 1 gear).
4. Remove the roller rail [B] (2 screws, 4 connectors).
5. Remove the screw [C] and the 2 connectors [D] from the helical wheel unit.
6. Remove the upper/lower shaft supports [E] [F].
7. Remove the helical wheel unit [G].
8. Repeat steps 3 to 7 on the operation side.

**NOTE:** Take care not to bend the bracket [H].

## 6.5.4 HELICAL WHEEL AND TURN GATE ADJUSTMENT

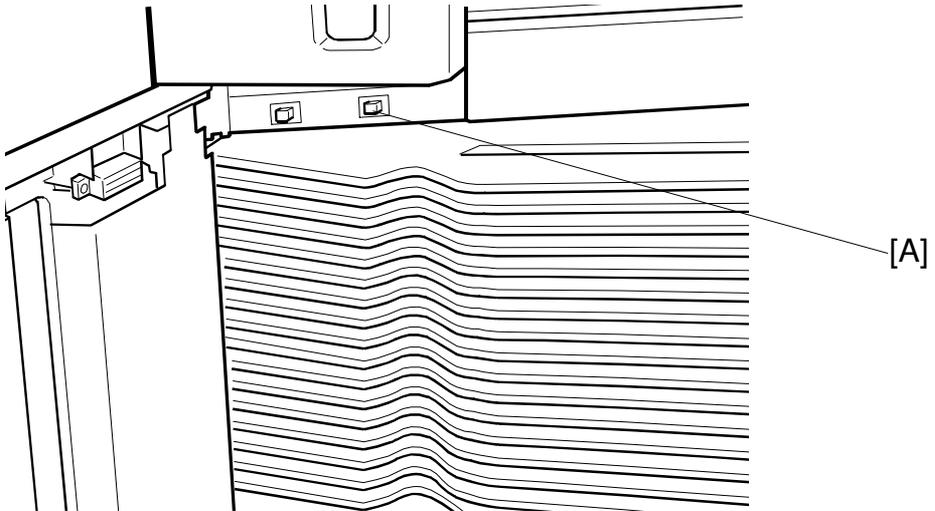


C592R015.WMF

1. Reinstall both the helical wheel units.
2. Move the helical wheel units to about the same height on both the operation side and the non-operation side.
3. Fix both the helical wheel units [A] using the pins [B].  
**NOTE:** The part number of this pin is C2269001.
4. Reinstall the turn gate (4 screws, 2 connectors).
5. Take out the pins [B].

## 6.5.5 TURN GATE PARALLEL & HEIGHT ADJUSTMENT

**PURPOSE:** To ensure that the paper enters the bin smoothly through the turn gate, the vertical distance of the gate from each bin must be correct. Also, the turn gate must be kept parallel with the bin entrance.

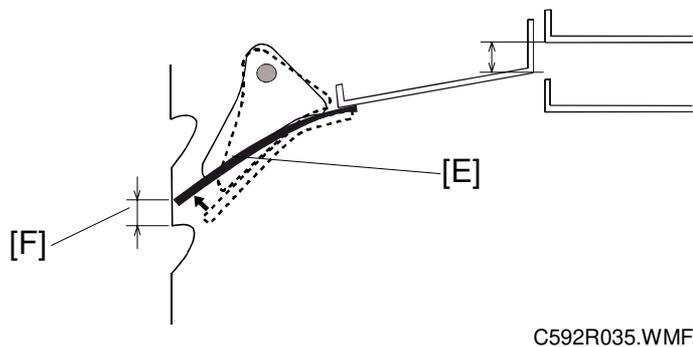
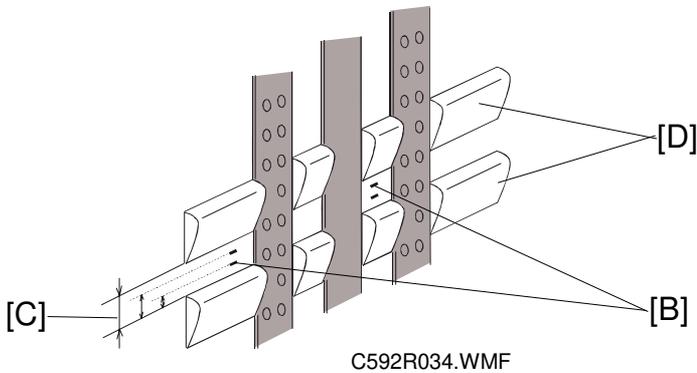


C592R503.WMF

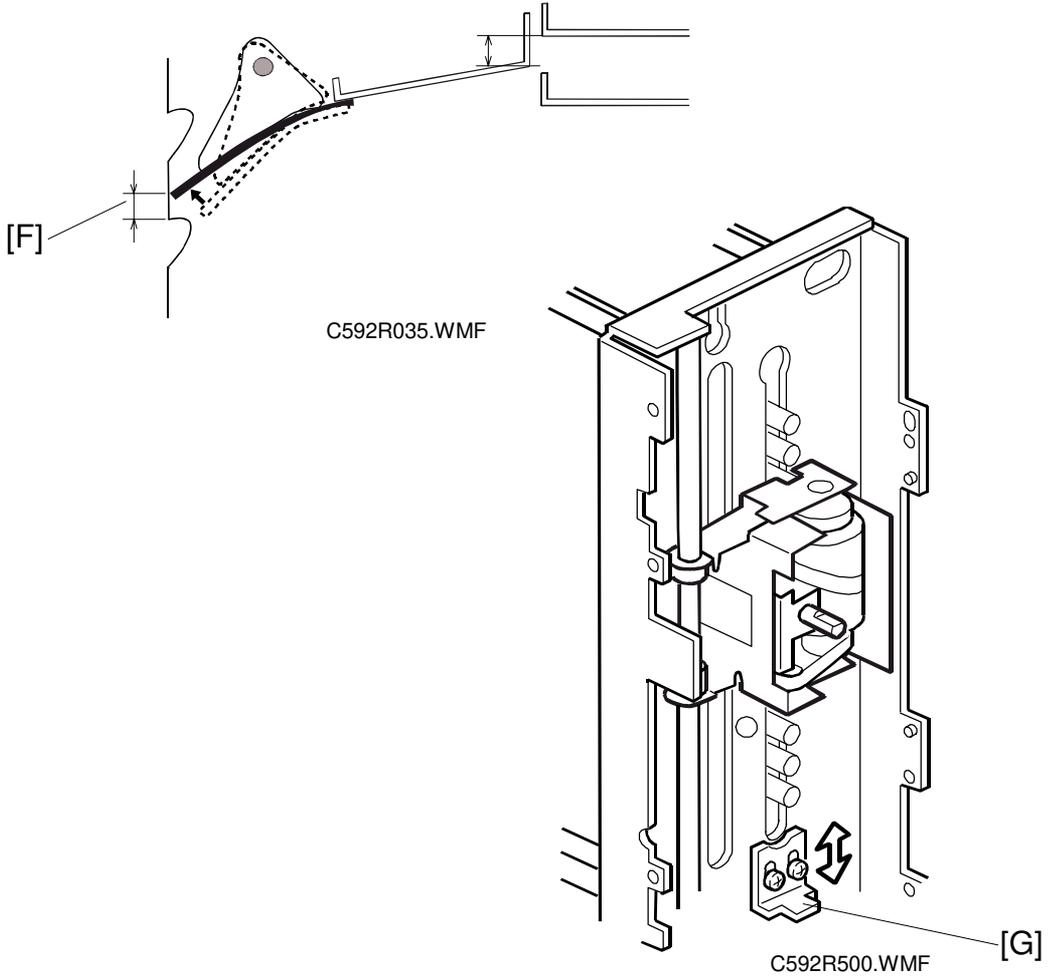
### *Parallel adjustment*

**ADJUSTMENT STANDARD:** 0.5 to 2.0 mm

1. Move the turn gate to the highest bin position using the bin operation switch [A].
2. Disconnect the power plug.

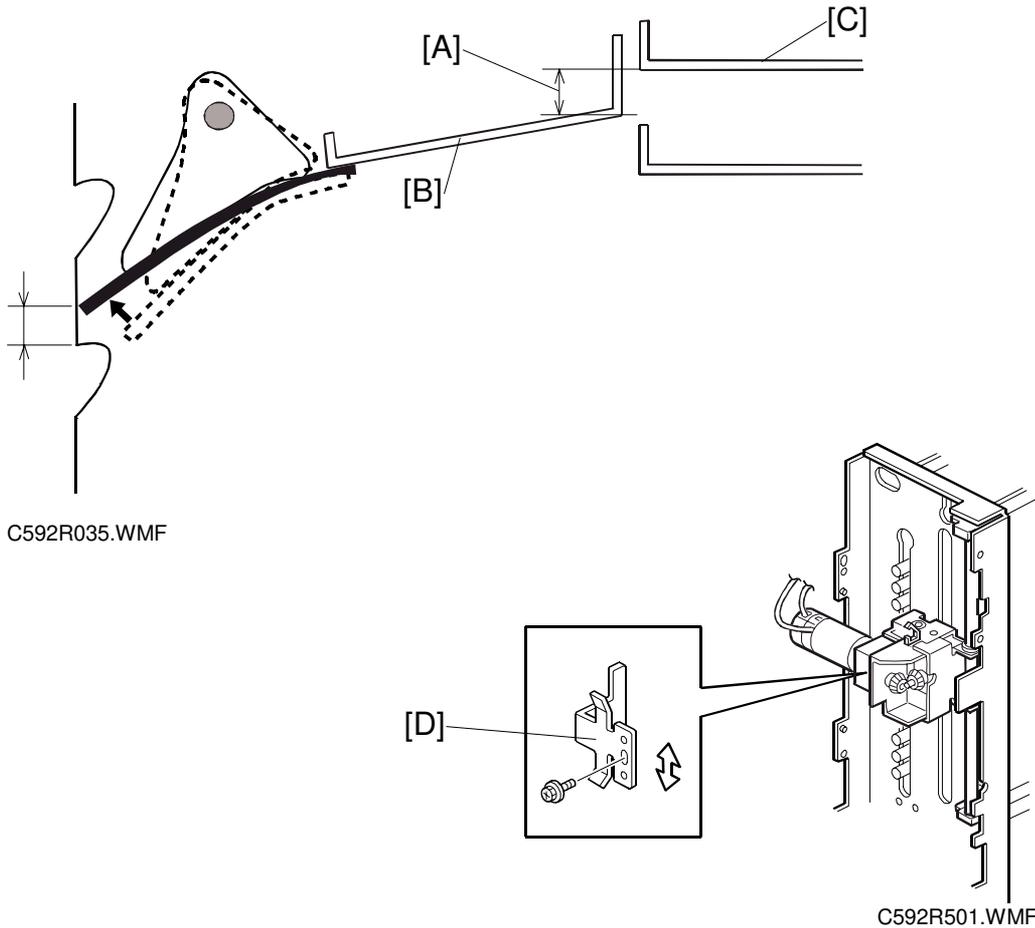


3. Open the vertical transport unit, and mark a 0.5 mm line and a 2.0 mm line [B] at the same height at the front and rear of the vertical transport unit face. (There is a gap of 6 mm [C] between both projections [D])
4. Close the vertical transport unit.
5. Connect the power plug and turn on the main switch.
6. Access SP5-660-30 or 31 (Lower Turn Gate SOL, Upper Turn Gate SOL), then push the start key. The turn gate mylar sheet [E] moves against the vertical transport unit.
7. After the turn gate sheet [E] moves against the vertical transport unit face, look at the distance [F] from the operation side.
8. Measure the distance [F] between where the mylar sheet is attached and the lower projection.



9. If the distance [F] (on the previous page) is 0.5 to 2.0 mm, the turn gate unit position is correct. If it is not, change the turn gate position by moving small roller adjustment plate [G] (on this page) up/down. Then repeat step 6 and continue till you obtain the correct position.
10. Repeat steps 6 to 9 at the non-operation side.

Replacement Adjustment

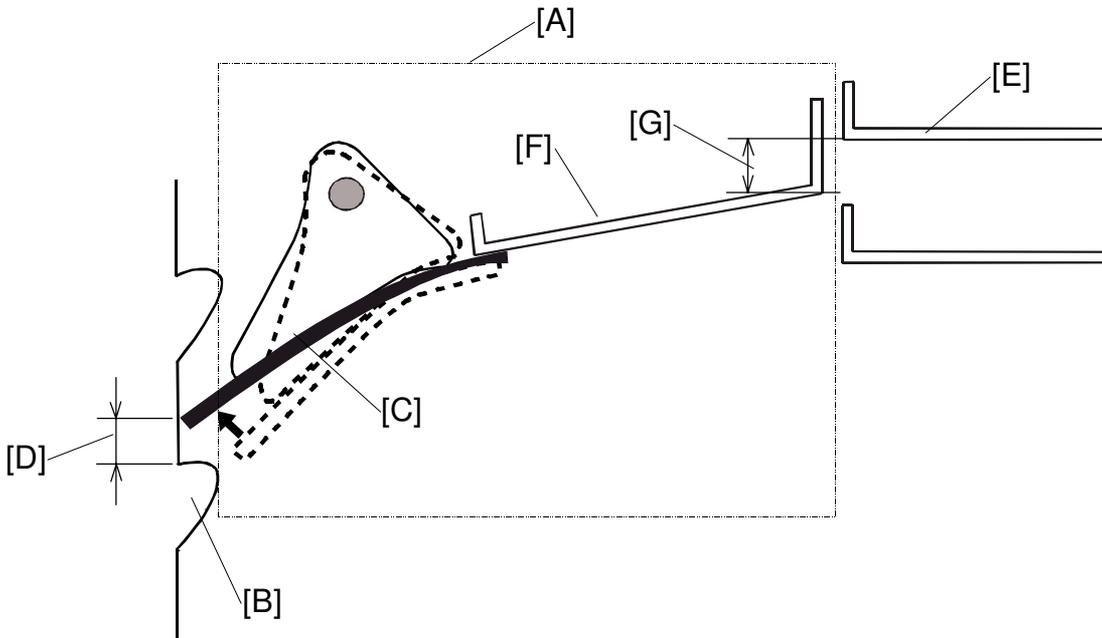


### ***Height adjustment***

**ADJUSTMENT STANDARD:** 6 to 9 mm

1. Move the turn gate to the highest bin position using the bin operation switch.
2. Disconnect the power plug.
3. Measure the distance [A] between the turn gate guide plate [B] and the top bin [C].
4. If the distance [A] is 6 to 9 mm, the turn gate unit position is correct. If it is not, change the turn gate position by moving turn gate position plate [D] up/down.
5. Then repeat step 1 and continue till you obtain the correct position.

**Confirmation**



C592R035.WMF

When the turn gate [A] is at its highest position, check the following standards.

**Parallel adjustment standard:** 0.5 to 2 mm [D] using the small roller adjustment plates

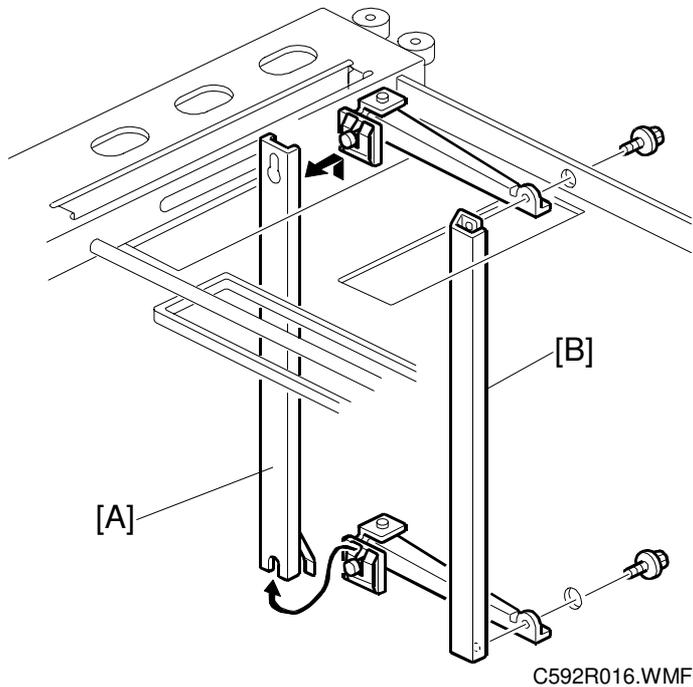
**Height adjustment standard:** 6 to 9 mm [G] using the turn gate position plate

- [A]: Turn gate unit
- [B]: Vertical transport unit face
- [C]: Turn gate mylar sheet
- [E]: Top bin
- [F]: Turn gate guide plate

Replacement Adjustment

## 6.6 JOGGER SECTION

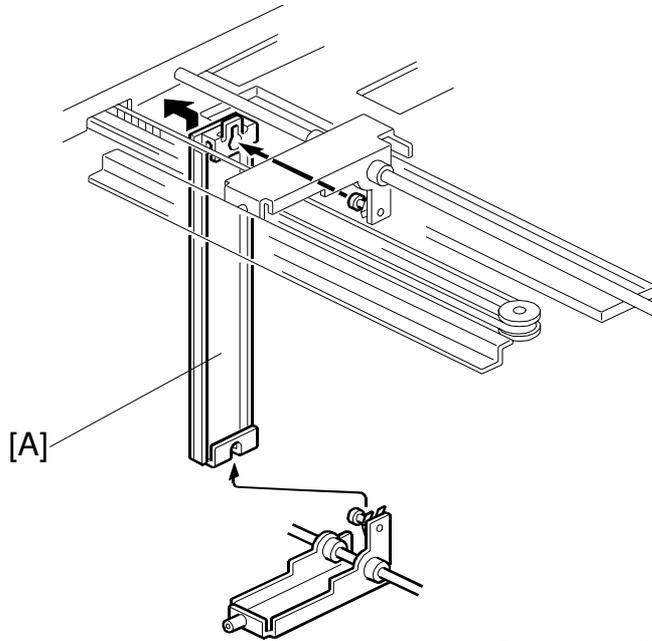
### 6.6.1 SIDE JOGGER BAR REMOVAL



**NOTE:** 1) To remove the upper side jogger bar, remove the upper cover.  
2) To remove the lower side jogger bar, remove the horizontal transport unit.  
3) The long paper side jogger bar [B] warps easily.

1. Remove the main side jogger bar [A].
2. Remove the long paper side jogger bar [B] (2 screws).

## 6.6.2 END JOGGER BAR REMOVAL

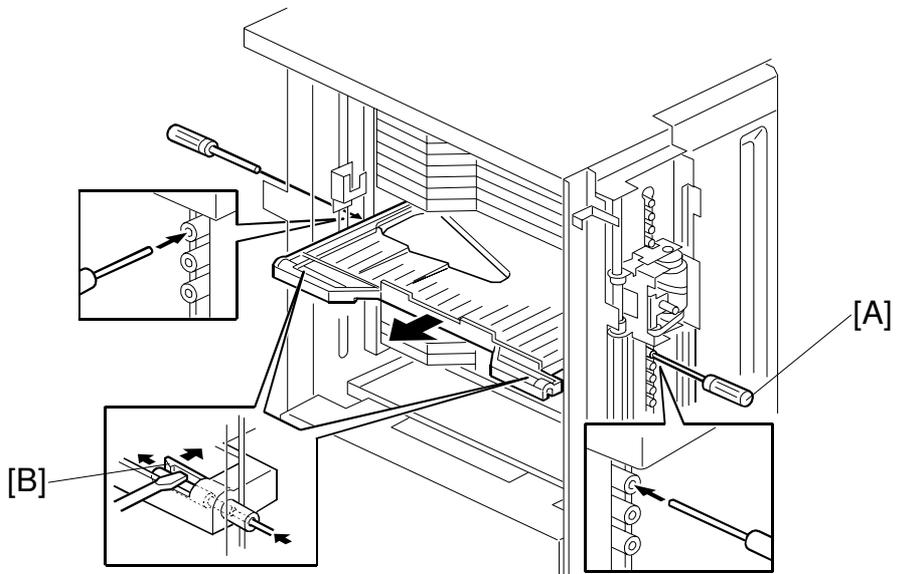


C592R017.WMF

- NOTE:** 1) To remove the upper end jogger bar, remove the upper cover.  
2) To remove the lower end jogger bar, remove the horizontal transport unit.

1. Remove the end jogger bar [A].

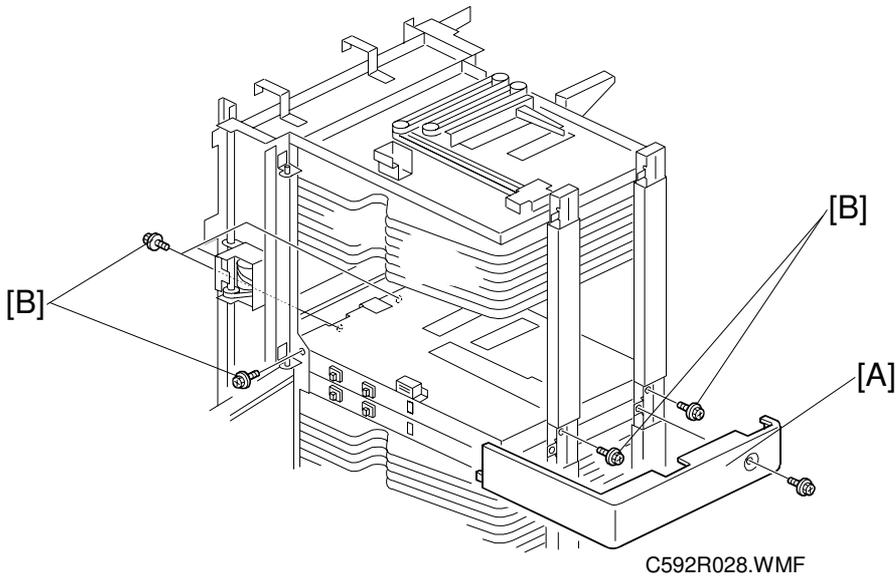
### 6.6.3 BIN REMOVAL



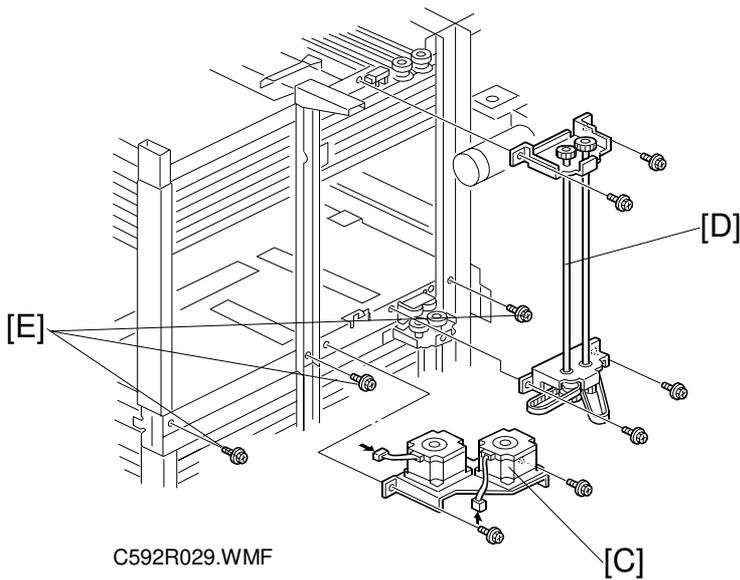
C592R027.WMF

1. Remove the side jogger bar, the support side jogger bar, and the end jogger bar. (See sections 6.6.1. and 6.6.2.)
2. Remove the vertical transport unit. (See section 6.4.1.)
3. Remove the turn gate. (See section 6.5.2.)
4. Remove the bin while pushing the rollers forwards the inside [A] (2 hooks [B]).

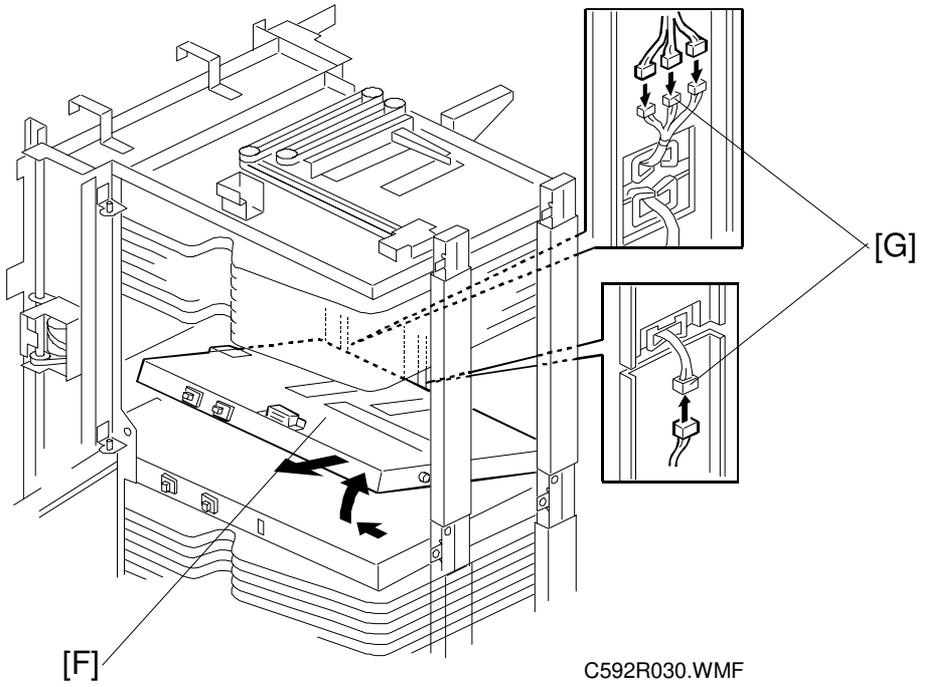
### 6.6.4 SIDE JOGGER BELT REMOVAL



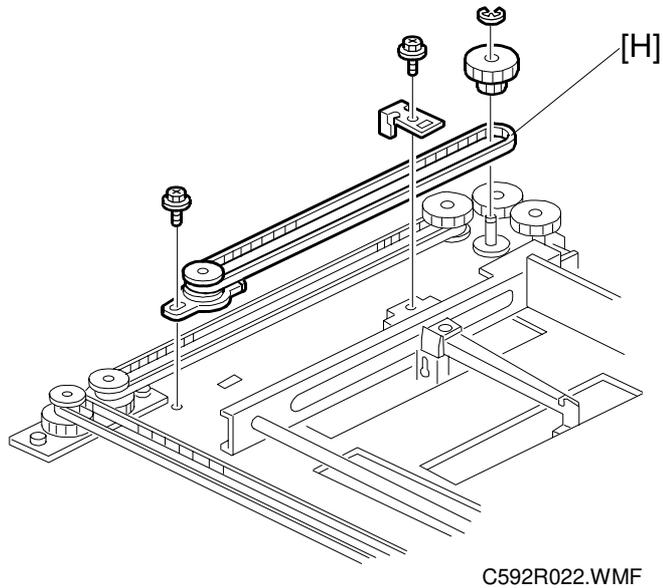
1. Remove all the upper bins (all 20 bins). (See section 6.6.3.)
2. Remove the center right cover [A] (2 screws).
3. Remove the 5 screws [B].



4. Remove the upper jogger motor [C] (2 screws, 2 connectors).
5. Remove the upper jogger drive shaft [D] (4 screws, 1 connector).
6. Remove the 3 screws [E].

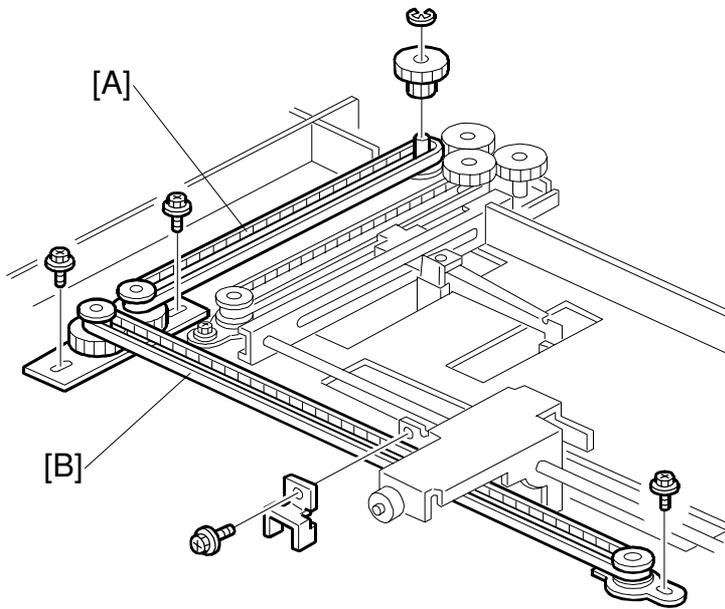


7. Remove the lower cover of the upper bin unit [F] (4 connectors [G]).



8. Remove the side jogger belt [H] (2 screws, 1 E-ring).

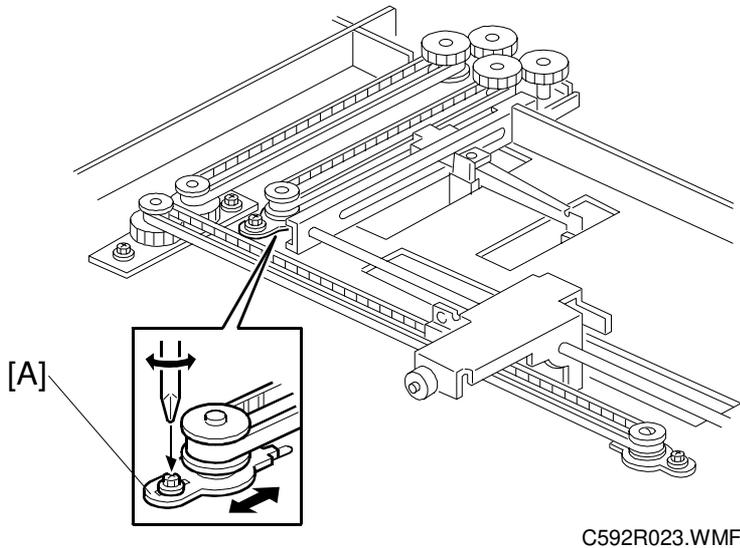
## 6.6.5 END JOGGER BELT REMOVAL



C592R020.WMF

1. Do steps 1 to 7 of section 6.6.4. (side jogger belt removal).
2. Remove the relay end jogger belt [A] and the end jogger belt [B] (4 screws, 1 E-ring).

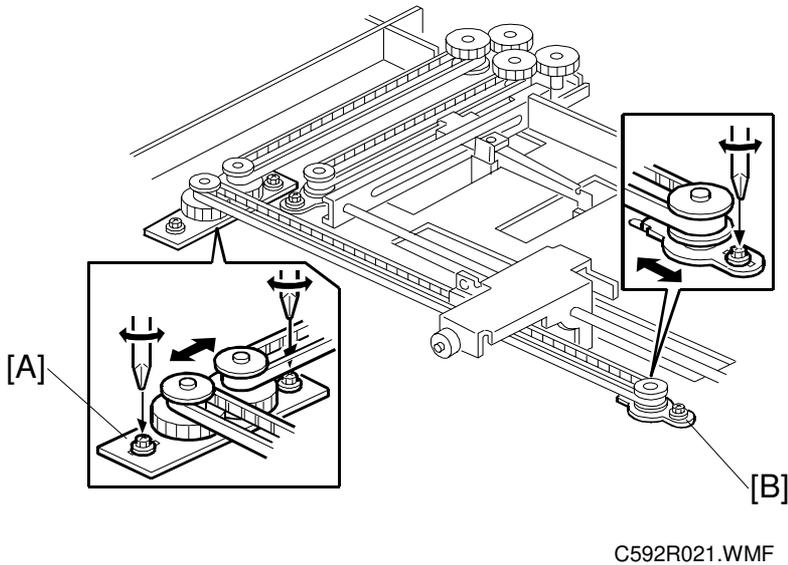
## 6.6.6 SIDE JOGGER BELT ADJUSTMENT



1. Pull the side jogger belt adjustment plate [A] with a tension of 1.5 kgf, then tighten the screw.

**NOTE:** 1) To adjust the upper side jogger belt, remove the upper cover and do steps 1 to 7 of section 6.6.4. (side jogger belt removal).  
2) To adjust the lower side jogger belt, remove the horizontal transport unit and do steps 1 to 7 of section 6.6.4. (side jogger belt removal).

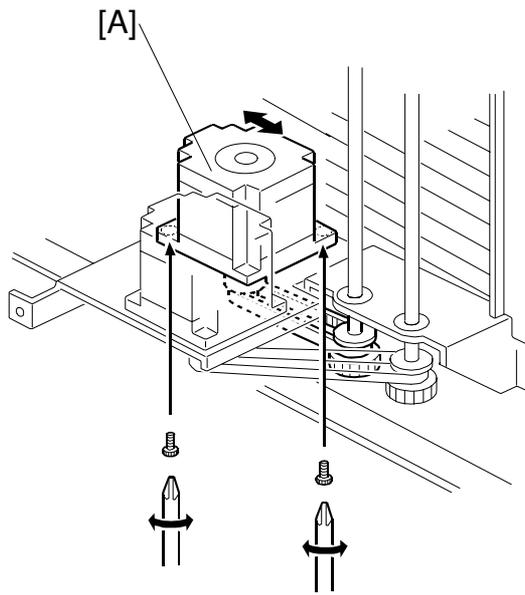
## 6.6.7 END JOGGER BELT ADJUSTMENT



1. Pull the long paper end jogger belt adjustment plate [A] with a tension of 1.5 kgf, then tighten the screw.
2. Pull the end jogger belt adjustment plate [B] with a tension of 1.8 kgf, then tighten the screw.

**NOTE:** 1) To adjust the upper end jogger belt, remove the upper cover and do steps 1 to 7 of section 6.6.4. (side jogger belt removal).  
 2) To adjust the lower end jogger belt, remove the horizontal transport unit and do steps 1 to 7 of section 6.6.4. (side jogger belt removal).

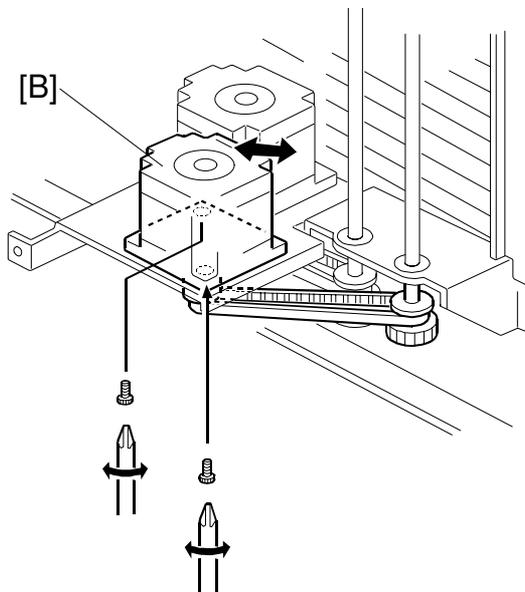
### 6.6.8 SIDE JOGGER MOTOR ADJUSTMENT



C592R018.WMF

1. Remove the rear cover.
2. Pull the side jogger motor [A] with a tension of 1.3 kgf, then tighten the screws.

### 6.6.9 END JOGGER MOTOR ADJUSTMENT



C592R019.WMF

1. Remove the rear cover.
2. Pull the end jogger motor [B] with a tension of 1.3 kgf, then tighten the screws.

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## 7. POINT TO POINT DIAGRAM

### 7.1 LOCATION MAP

The symbols and wire color codes used in the diagrams are as follows:

- SYMBOL TABLE -

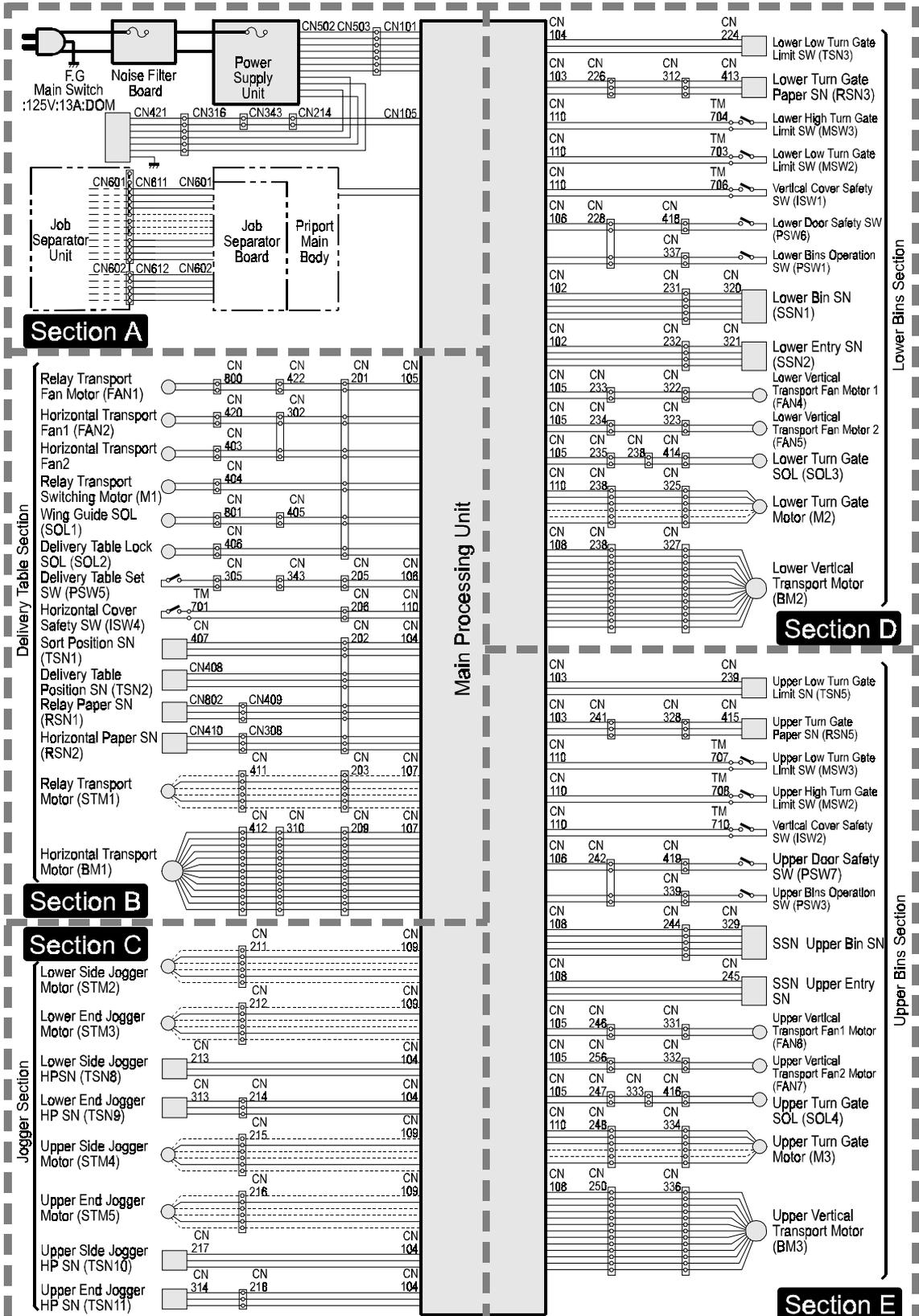
—	AC Line
—	DC Line
.....	Pulse Signal Line
▷	Signal Direction
▲	Active High Signal
▼	Active Low Signal

- WIRE COLOR CODE -

(B)	- Black
(C)	- Blue
(G)	- Green
(H)	- Gray
(M)	- Purple
(P)	- Pink
(R)	- Red
(S)	- Sky blue
(T)	- Brown
(W)	- White
(Y)	- Yellow
(Z)	- Orange

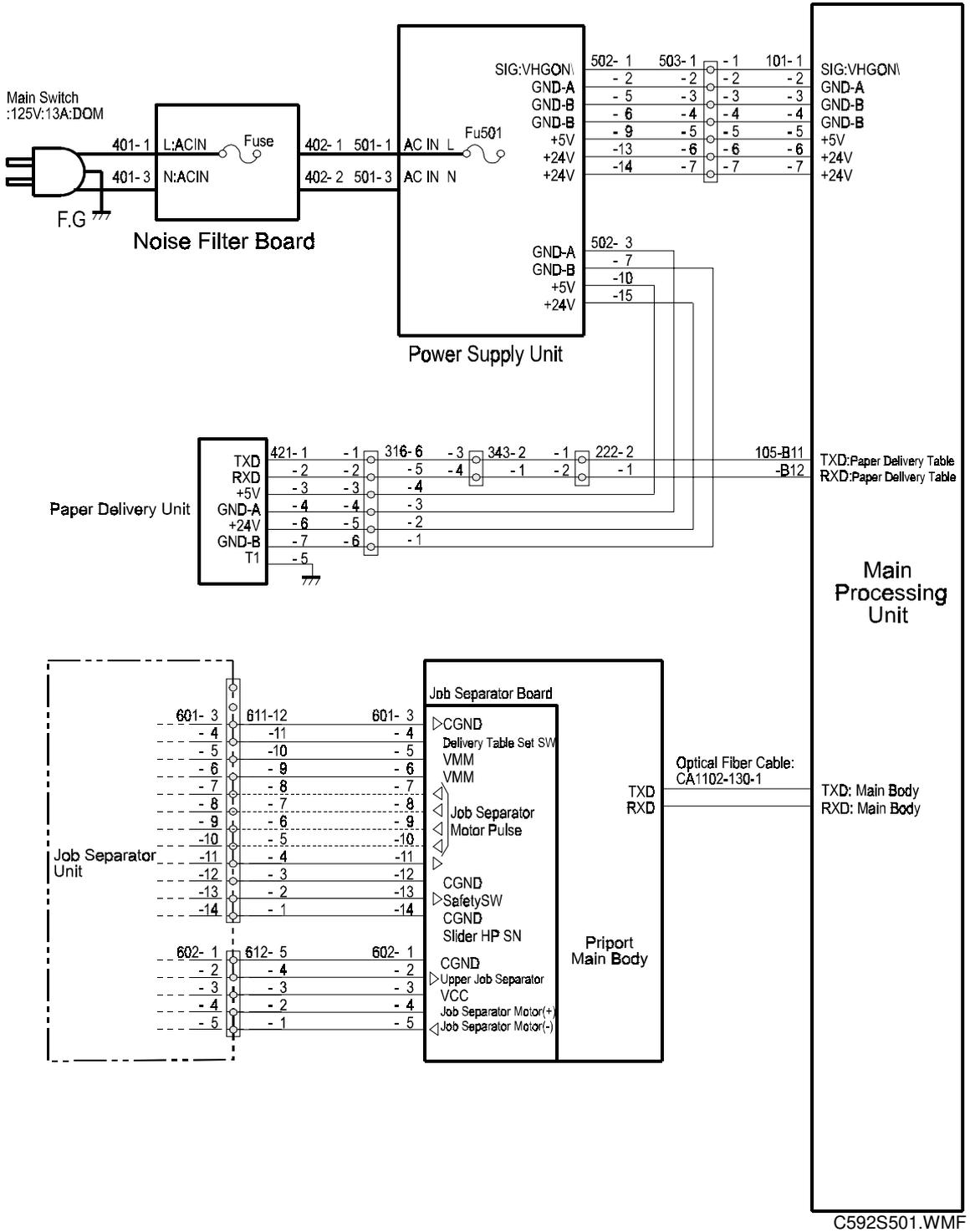
PP.WMF

# Location Map



# 7.2 SECTION A

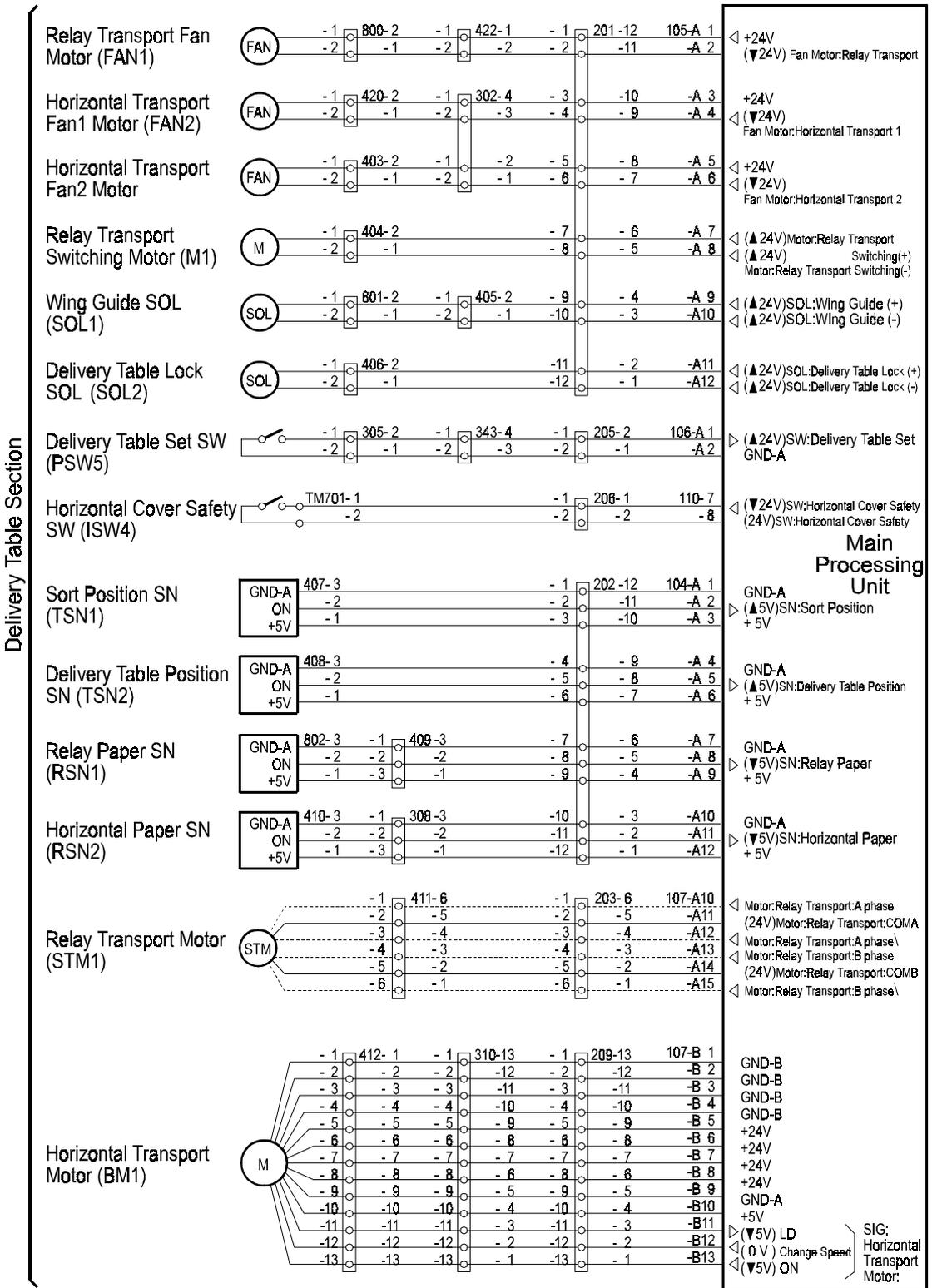
## Section A



P to P  
Diagram

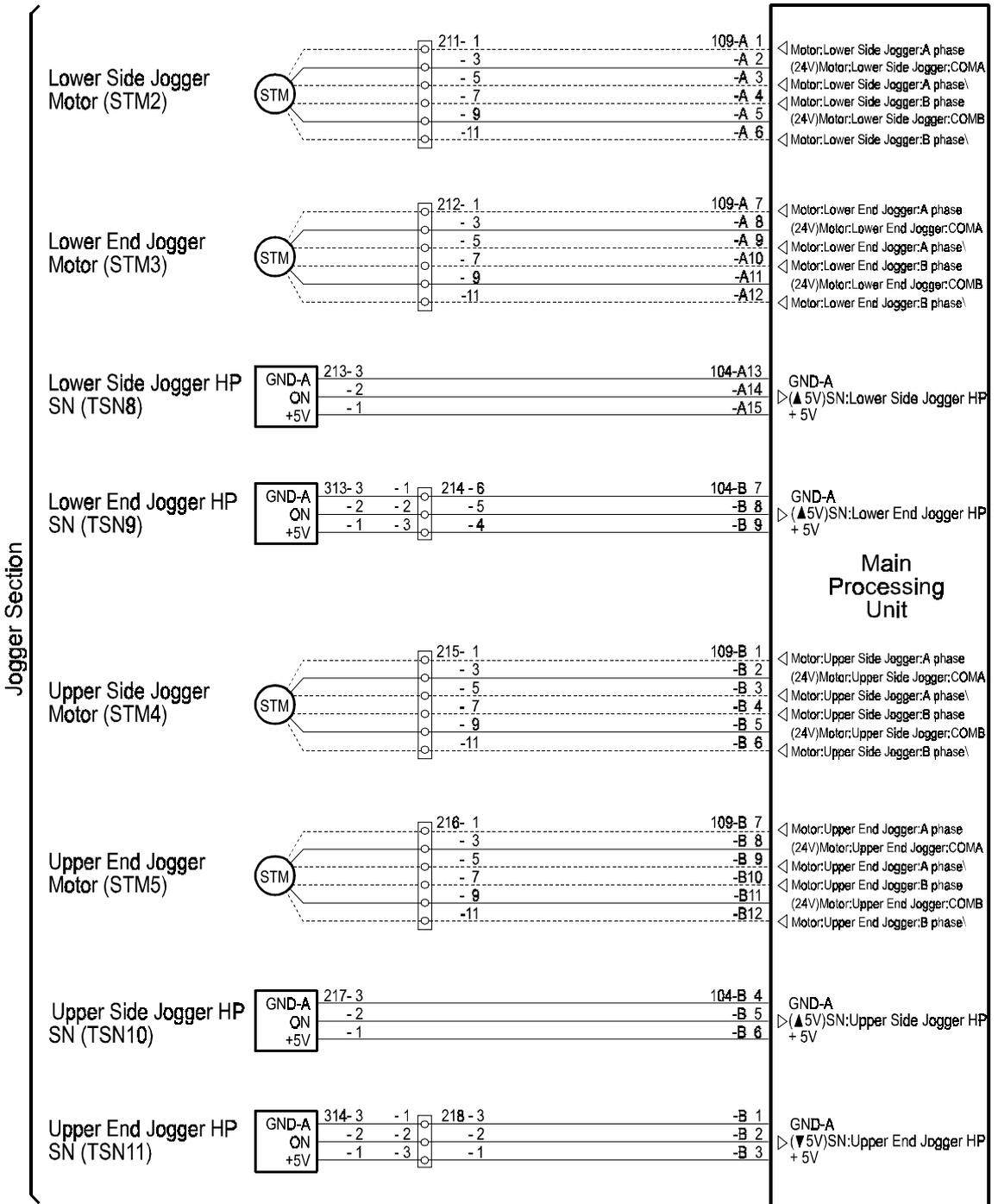
# 7.3 SECTION B

## Section B



# 7.4 SECTION C

## Section C



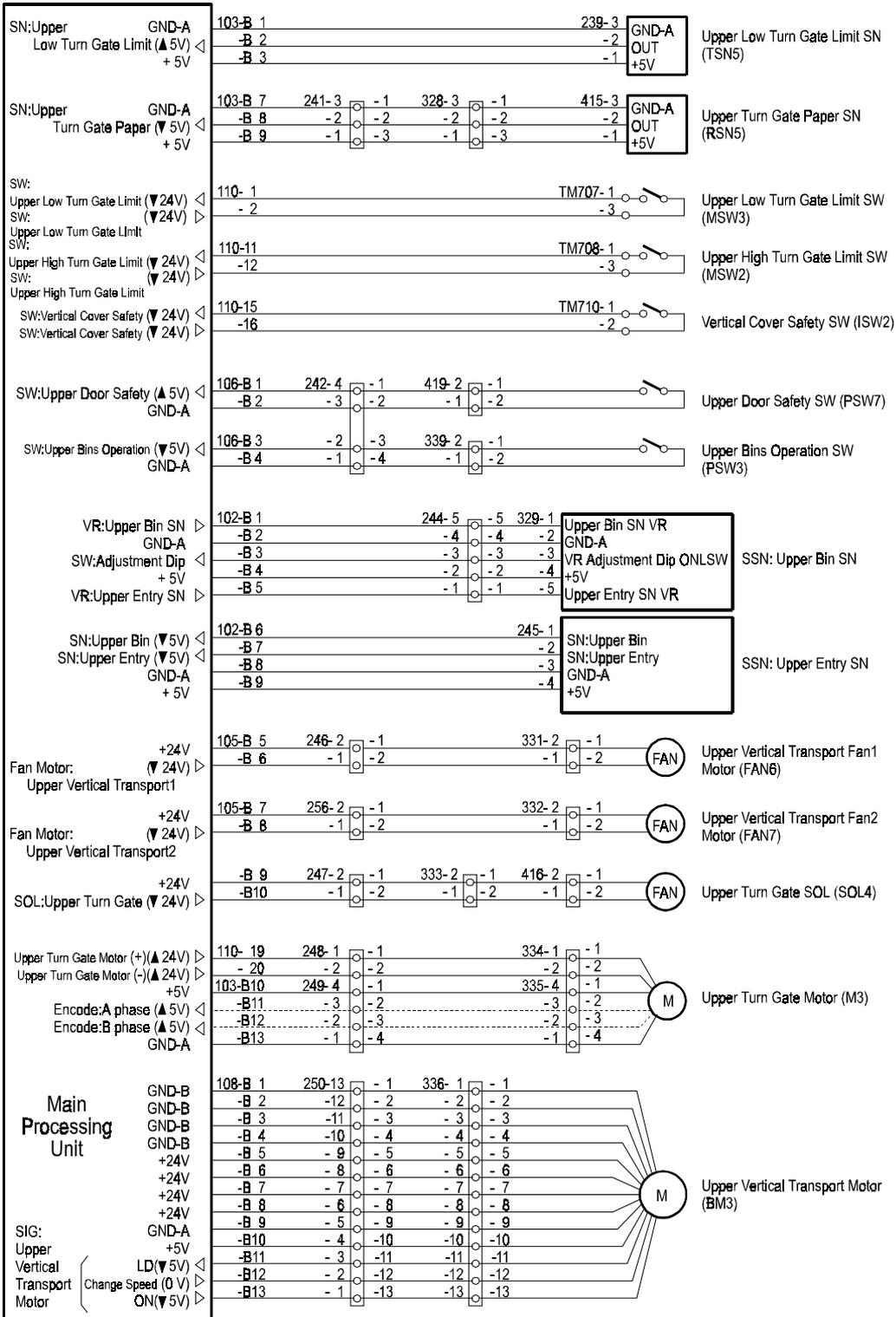
C592S503.WMF

P to P Diagram



# 7.6 SECTION E

## Section E



C592S505.WMF