

**1000-SHEET FINISHER**  
**(Machine Code: B408)**

# 1. REPLACEMENT AND ADJUSTMENT

## ⚠ CAUTION

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

**NOTE:** This manual uses the following symbols.

☞ : See or Refer to

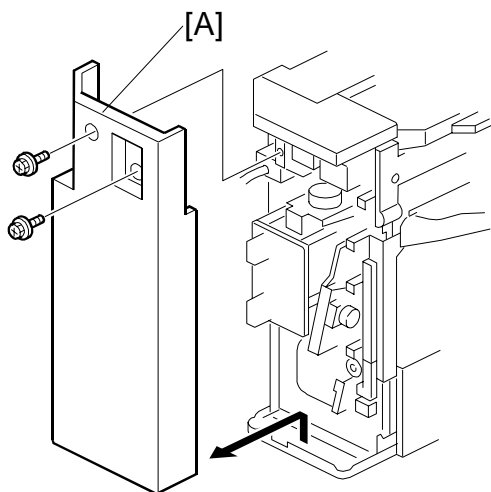
🔩 : Screws

🔌 : Connector

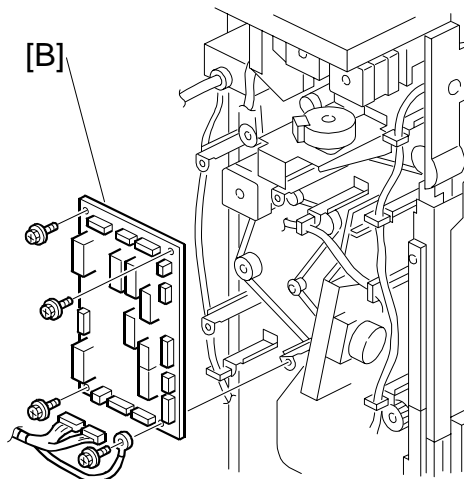
🔗 : Clip ring

Ⓢ : E-ring

## 1.1 MAIN PCB



B408R109.WMF

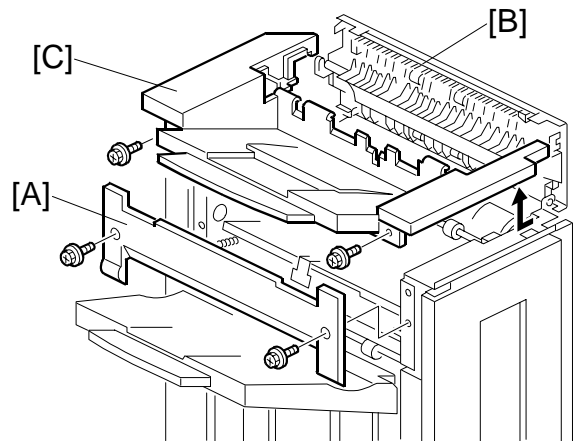


B408R110.WMF

1. Rear cover [A] (🔩 x 2)
2. Main PCB [B] (🔩 x 4, All 🔌)

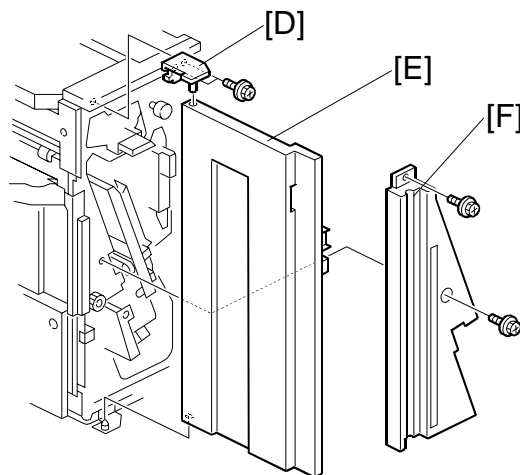
## 1.2 STAPLER UNIT

1. Side cover [A] (⚙ x 2)
2. Open exit guide plate [B]
3. Upper side cover [C] (⚙ x 2)



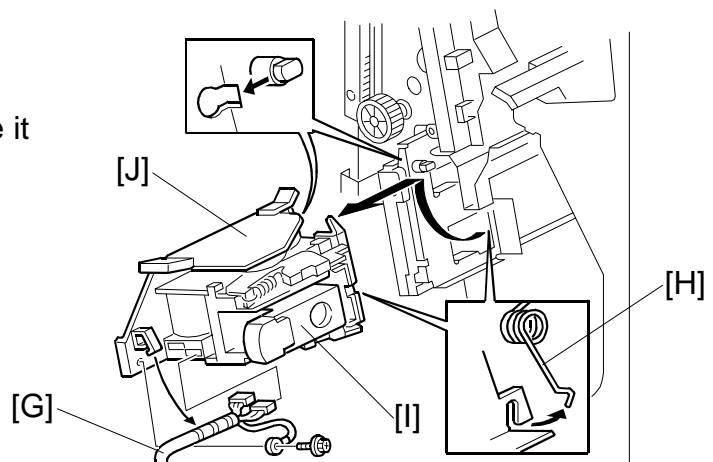
B408R102.WMF

4. Front cover support plate [D] (⚙ x 1)
5. Front cover [E]
6. Front inner cover [F] (⚙ x 2)



B408R113.WMF

7. Harness [G]
8. Unhook the spring [H]
9. Turn the stapler unit [I] and take it out.
10. Bracket [J] (⚙ x 2)

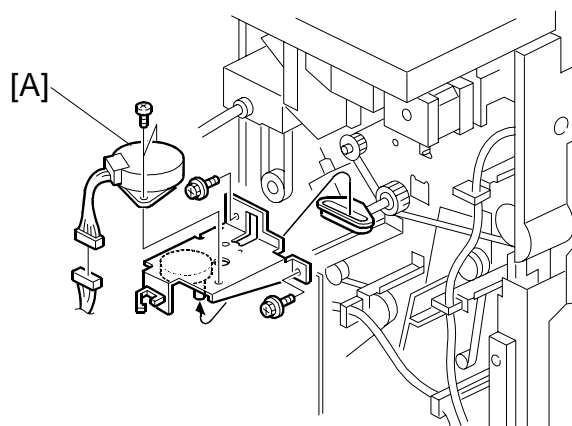


B408R114.WMF

## 1.3 MOTORS

### 1.3.1 SHIFT MOTOR

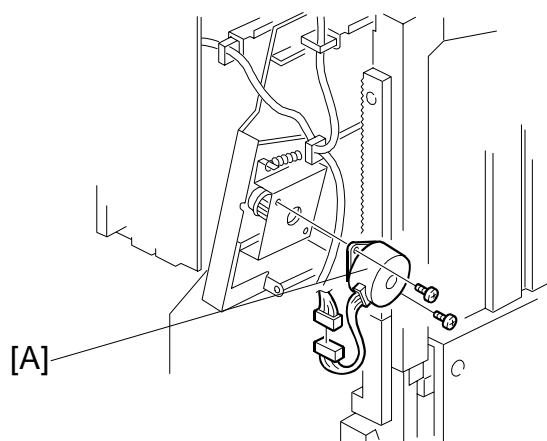
1. Rear cover (🔩1.1)
2. Shift motor [A] (🔩 x 2, 📡 x 1)



B408R123.WMF

### 1.3.2 STAPLER MOTOR

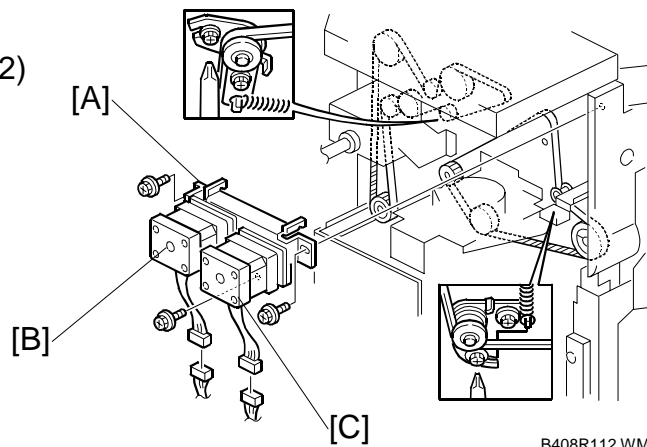
1. Rear cover (🔩1.1)
2. Stapler motor [A] (🔩 x 2, 📡 x 1)



B408R124.WMF

### 1.3.3 UPPER TRANSPORT MOTOR AND EXIT MOTOR

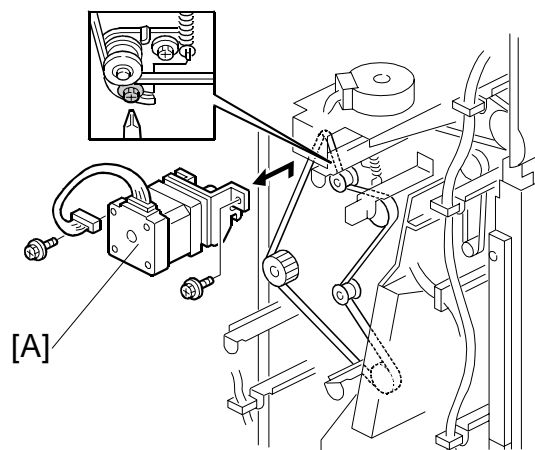
1. Rear cover (☛1.1)
2. Motor assembly [A] (⚙ x 4, 📡 x 2)
3. Upper transport motor [B] (⚙ x 4)
4. Exit motor [C] (⚙ x 4)



B408R112.WMF

### 1.3.4 LOWER TRANSPORT MOTOR

1. Main PCB (☛1.1)
2. Lower transport motor [A] (⚙ x 2, 📡 x 1)

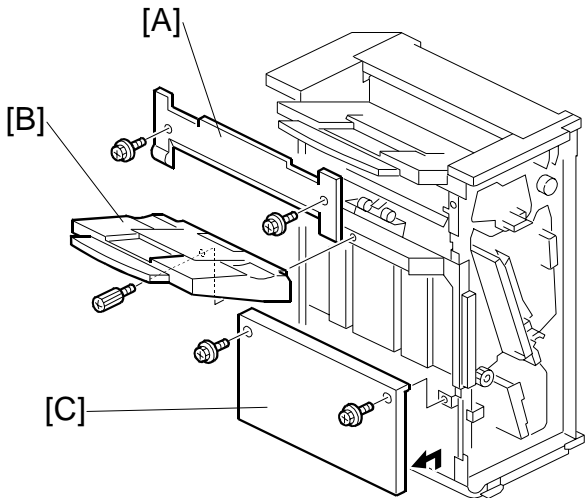


B408R111.WMF

## 1.4 MOTORS AND SENSORS

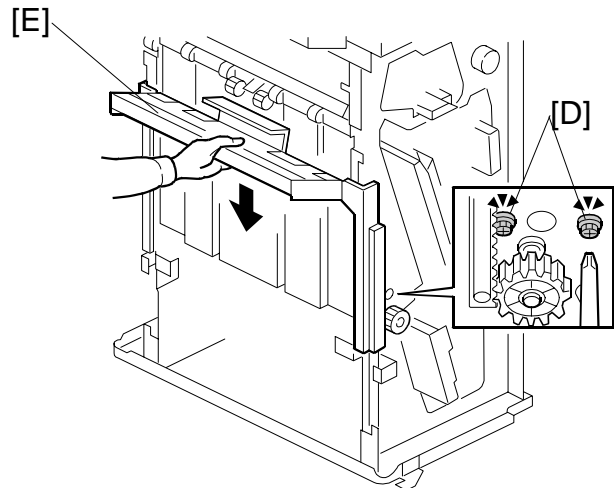
### 1.4.1 PREPARATION

1. Front cover and inner cover (☛1.2)
2. Upper side cover [A] (☛ x 2)
3. Upper tray [B] (☛ x 1)



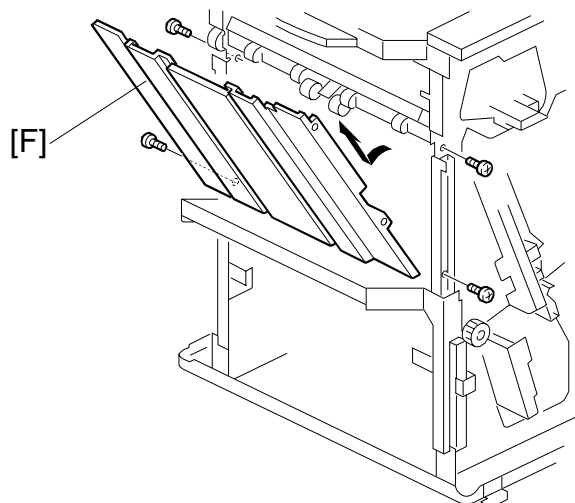
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4. Lower side cover [C] (☛ x 2)
5. Loosen the 2 screws [D].
6. Lower the lower tray guide plate [E].





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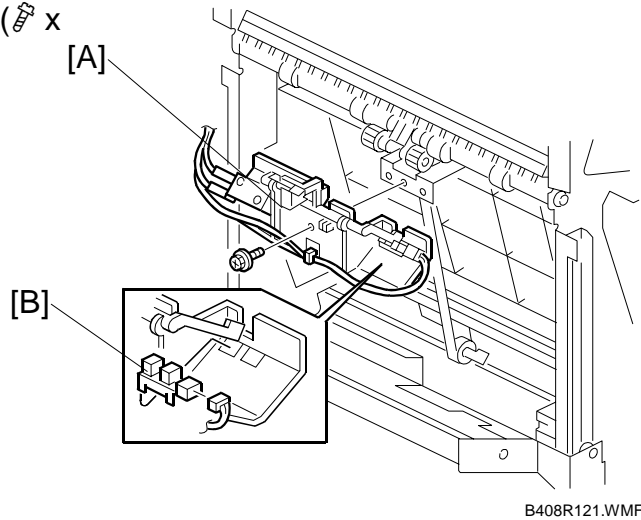
7. Guide plate [F] (☛ x 4)



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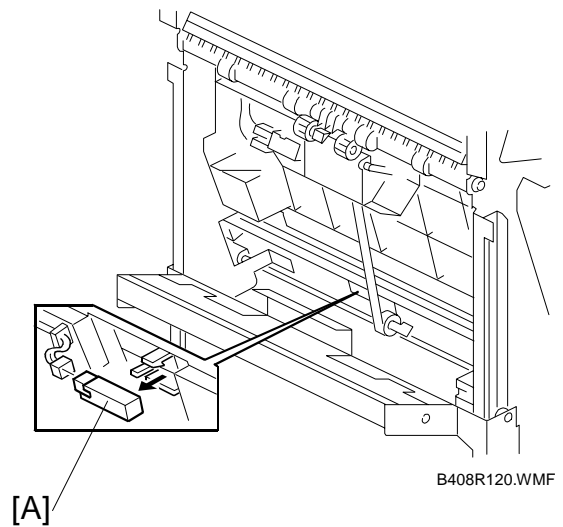
### 1.4.2 STACK HEIGHT SENSOR

1. Stack height sensor assembly [A] (  x 1)
2. Stack height sensor [B] (  x 1)



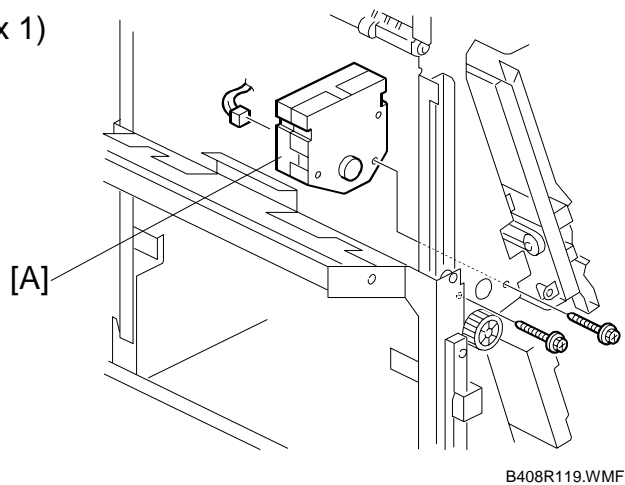
### 1.4.3 STAPLER TRAY PAPER SENSOR

1. Stapler tray paper sensor [A] (  x 1)



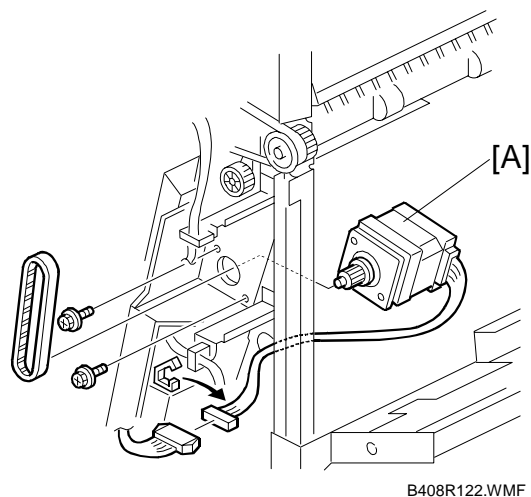
## 1.4.4 LOWER TRAY LIFT MOTOR

1. Lower tray lift motor [A] (⚙ x 2, 📡 x 1)



## 1.4.5 STACK FEED-OUT MOTOR

1. Stack feed-out motor [A] (⚙ x 2, 📡 x 1)





## 2. TROUBLESHOOTING

### 2.1 JAM DETECTION

Mode		Jam	Content
Shift	Staple		
✓	✓	Entrance sensor: On check	The entrance sensor does not turn on within the normal time after the main machine exit sensor turns on
✓	✓	Entrance sensor: Off check	The entrance sensor does not turn off within the normal time after it turns on.
✓		Lower tray exit sensor: On check	The lower tray exit sensor does not turn on within the normal time after the entrance sensor turns off.
✓		Tray exit sensor: Off check	The tray exit sensor does not turn off within the normal time after it turns on.
	✓	Stapler tray entrance sensor: On check	The stapler tray entrance sensor does not switch on within the normal time after the entrance sensor switched on.
	✓	Stapler tray entrance sensor: Off check	The staple tray entrance sensor does not turn off within the normal time after it turns on.
	✓	Lower tray exit sensor: On check	The lower exit sensor does not turn on after the feed-out pawl feeds out the outputs.
	✓	Lower tray exit sensor: Off check	The lower exit sensor turns on when the feed-out pawl returns to its home position after feeding out the outputs.

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## 3. SERVICE TABLES

### 3.1 DIP SWITCH SETTINGS

The DIP switches should not be set to any combination other than those listed in the table below.

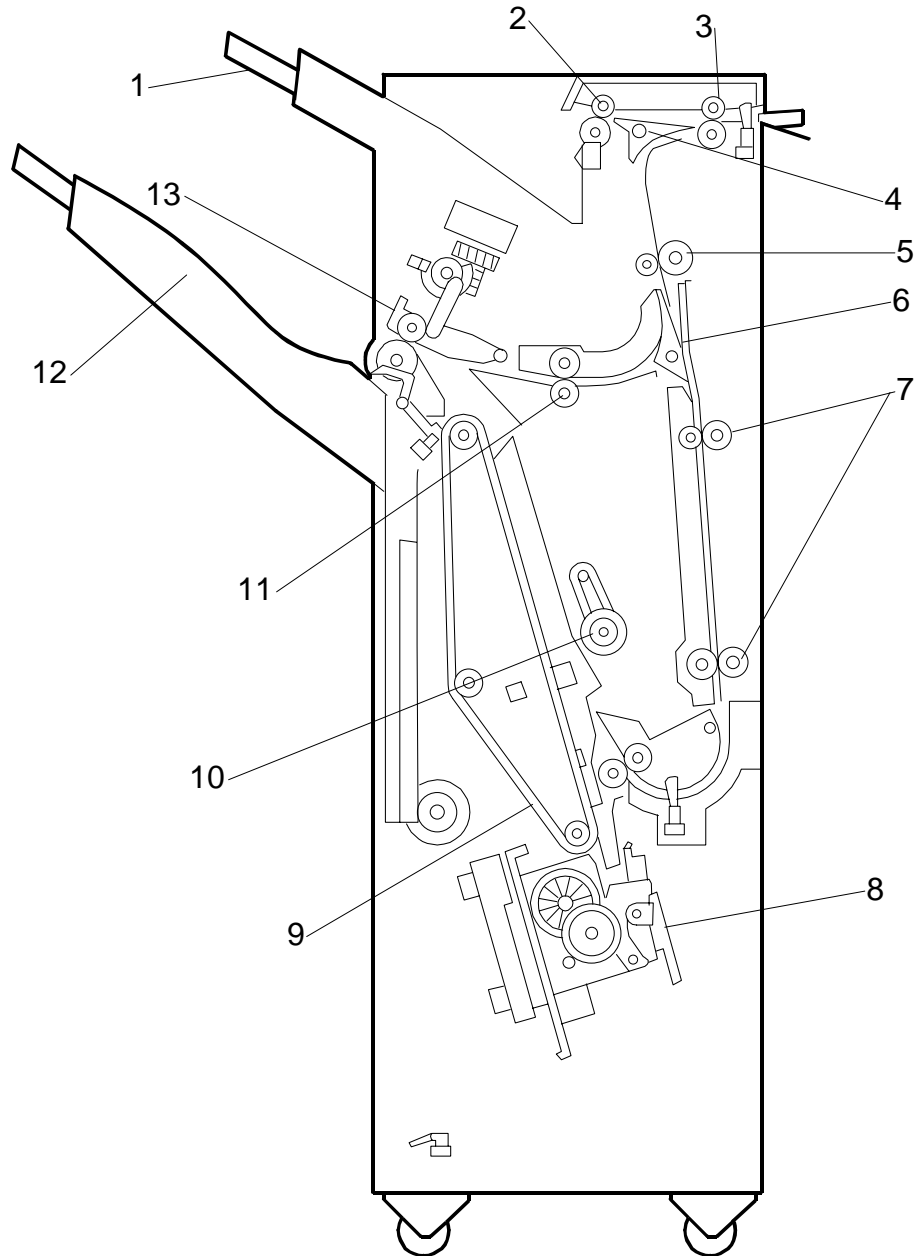
SW100		Description
1	2	
0	0	Normal operation mode (Default)
1	0	Packing mode.

- Before packing the machine, do the following: Set switch 1 to 1 then back to zero. The lower tray moves to the lowest position. Then turn off the main switch.
- After unpacking the machine, do the following: After turning the main switch back on, the lower tray returns to home position automatically.

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## 4. DETAILED DESCRIPTIONS

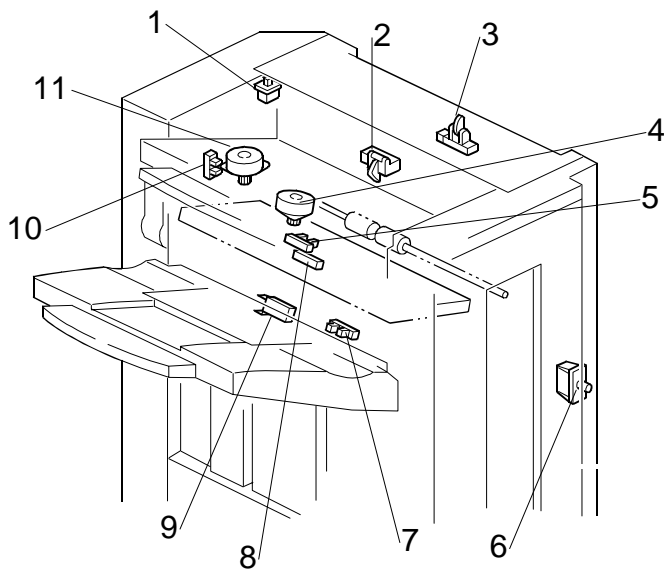
### 4.1 GENERAL LAYOUT



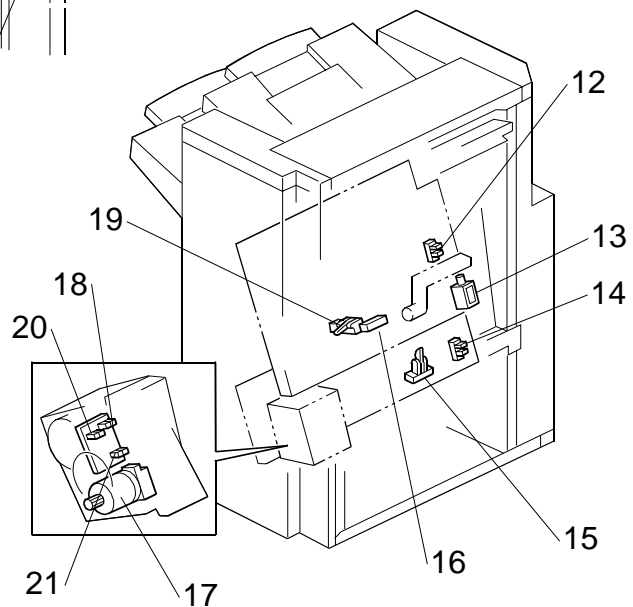
B408D101.WMF

- |                            |                            |
|----------------------------|----------------------------|
| 1. Upper Tray              | 8. Stapler                 |
| 2. Upper Tray Exit Roller  | 9. Stack Feed-out Belt     |
| 3. Entrance Roller         | 10. Positioning Roller     |
| 4. Tray Junction Gate      | 11. Shift Roller           |
| 5. Upper Transport Roller  | 12. Lower Tray             |
| 6. Stapler Junction Gate   | 13. Lower Tray Exit Roller |
| 7. Lower Transport Rollers |                            |

## 4.2 ELECTRICAL COMPONENT LAYOUT

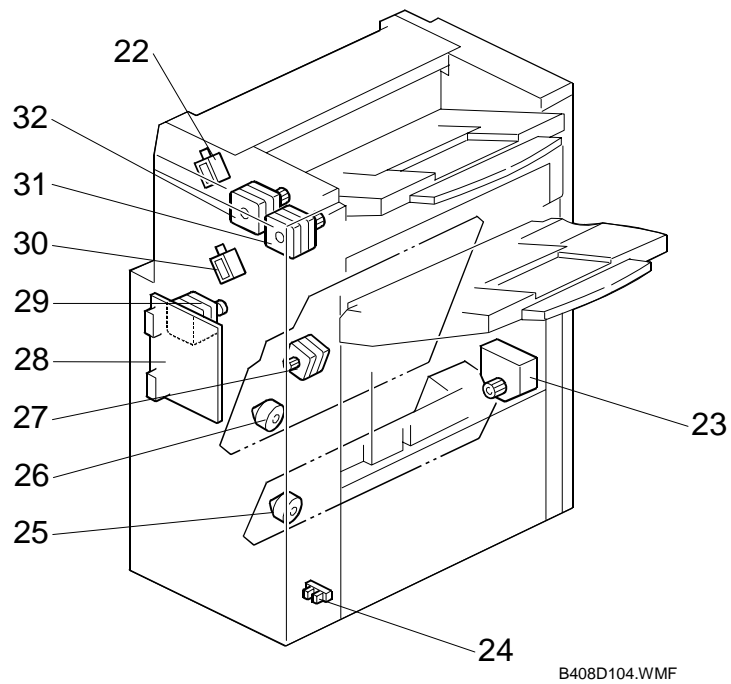


B408D102.WMF



B408D103.WMF

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| 1. Upper Cover Switch            | 12. Jogger Fence HP Sensor        |
| 2. Paper Limit Sensor            | 13. Positioning Roller Solenoid   |
| 3. Entrance Sensor               | 14. Stapler HP Sensor             |
| 4. Exit Guide Plate Motor        | 15. Stapler Tray Entrance Sensor  |
| 5. Exit Guide Plate HP Sensor    | 16. Stapler Tray Paper Sensor     |
| 6. Front Door Safety Switch      | 17. Stapler Hammer Motor          |
| 7. Stack Height Sensor           | 18. Staple Sheet Sensor           |
| 8. Lower Tray Exit Sensor        | 19. Stack Feed-out Belt HP Sensor |
| 9. Lower Tray Upper Limit Switch | 20. Stapler Rotation HP Sensor    |
| 10. Shift HP Sensor              | 21. Staple Sensor                 |
| 11. Shift Motor                  |                                   |



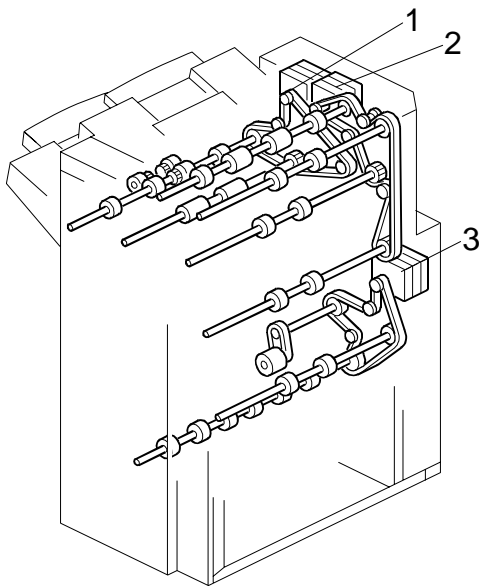
- 22. Tray Junction Gate Solenoid
- 23. Lower Tray Lift Motor
- 24. Lower Tray Lower Limit Sensor
- 25. Stapler Motor
- 26. Jogger Fence Motor
- 27. Stack Feed-out Motor
- 28. Main Board
- 29. Lower Transport Motor
- 30. Stapler Junction Gate Solenoid
- 31. Exit Motor
- 32. Upper Transport Motor

### 4.3 ELECTRICAL COMPONENT DESCRIPTION

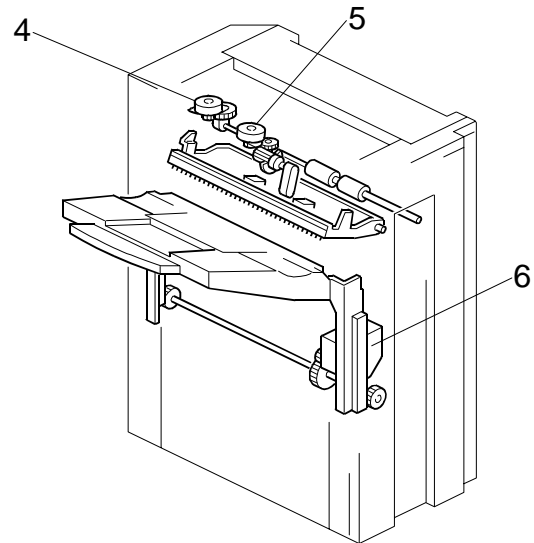
Symbol	Name	Function	Index No.
<b>Motors</b>			
M1	Upper Transport	Drives the entrance roller, upper transport rollers, and upper exit tray rollers.	32
M2	Lower Transport	Drives the lower transport rollers and positioning roller.	29
M3	Jogger Fence	Drives the jogger fences.	26
M4	Staple Hammer	Drives the staple hammer.	17
M5	Stack Feed-out	Drives the stack feed-out belt.	27
M6	Exit Guide Plate	Opens and closes the exit guide plate.	4
M7	Exit	Drives the lower tray exit rollers and the shift roller.	31
M8	Lower Tray Lift	Moves the lower tray up or down.	23
M9	Shift	Moves the shift roller from side to side.	11
M10	Stapler	Moves the stapler unit from side to side.	25
<b>Sensors</b>			
S1	Entrance	Detects copy paper entering the finisher and checks for misfeeds.	3
S2	Paper Limit	Detects when the paper stack height in the upper tray is at its limit.	2
S3	Jogger Fence HP	Detects when the jogger fence is at home position.	12
S4	Shift HP	Detects when the shift roller is at home position.	10
S5	Stack Feed-out Belt HP	Detects when the stack feed-out belt is at home position.	19
S6	Stapler HP	Detects when the stapler is at home position.	14
S7	Exit Guide Plate HP	Detects when the exit guide plate is at home position.	5
S8	Stapler Tray Entrance	Detects copy paper entering the stapler tray and checks for misfeeds.	15
S9	Lower Tray Exit	Checks for misfeeds.	8
S10	Stack Height	Detects the top of the copy paper stack.	7
S11	Lower Tray Lower Limit	Detects when lower tray is at its lower limit position.	24
S12	Stapler Tray Paper	Detects when there is copy paper in the stapler tray.	16
S13	Staple Sheet	Detects the leading edge of the staple sheet.	18
S14	Stapler Rotation HP	Detects when the staple hammer is at home position.	20
S15	Staple	Detects whether there are staples in the staple cartridge.	21
<b>Solenoids</b>			
SOL1	Tray Junction Gate	Drives the tray junction gate.	22
SOL2	Stapler Junction Gate	Drives the stapler junction gate.	30

Symbol	Name	Function	Index No.
SOL3	Positioning Roller	Moves the positioning roller.	13
<b>Switches</b>			
SW1	Lower Tray Upper Limit	Detects when the lower tray is at its upper limit position.	9
SW2	Front Door Safety	Cuts the dc power when the front door is opened.	6
SW3	Upper Cover	Cuts the dc power when the upper cover is opened.	1
<b>PCBs</b>			
PCB1	Main	Controls the finisher and communicates with the copier/printer.	28

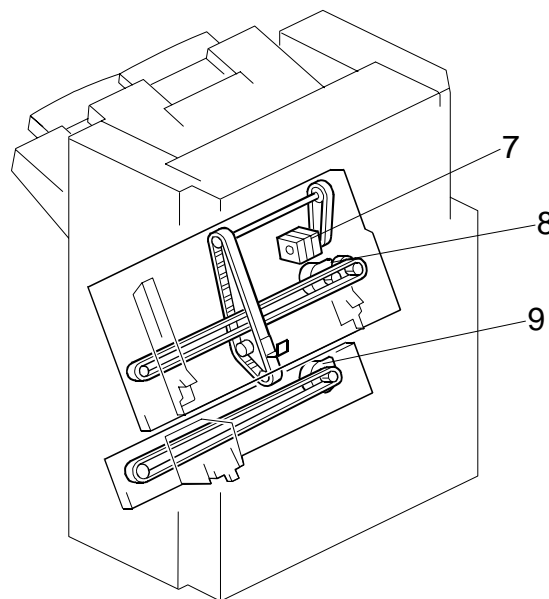
## 4.4 DRIVE LAYOUT



B408D105.WMF



B408D106.WMF

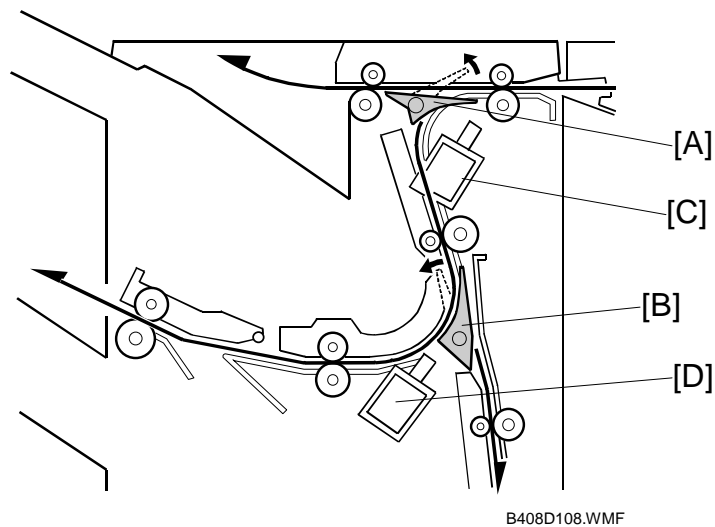


B408D107.WMF

- |                           |                          |
|---------------------------|--------------------------|
| 1. Exit Motor             | 6. Lower Tray Lift Motor |
| 2. Upper Transport Motor  | 7. Stack Feed-out Motor  |
| 3. Lower Transport Motor  | 8. Jogger Motor          |
| 4. Shift Motor            | 9. Stapler Motor         |
| 5. Exit Guide Plate Motor |                          |



## 4.5 JUNCTION GATES



Depending on the finishing mode, the copies are directed up, straight through, or down by the combination of the tray junction gate [A] and stapler junction gate [B]. These gates are controlled by the tray junction gate solenoid [C] and stapler junction gate solenoid [D].

### ***Upper Tray Mode***

The tray junction gate solenoid remains off. The copies go up to the upper tray.

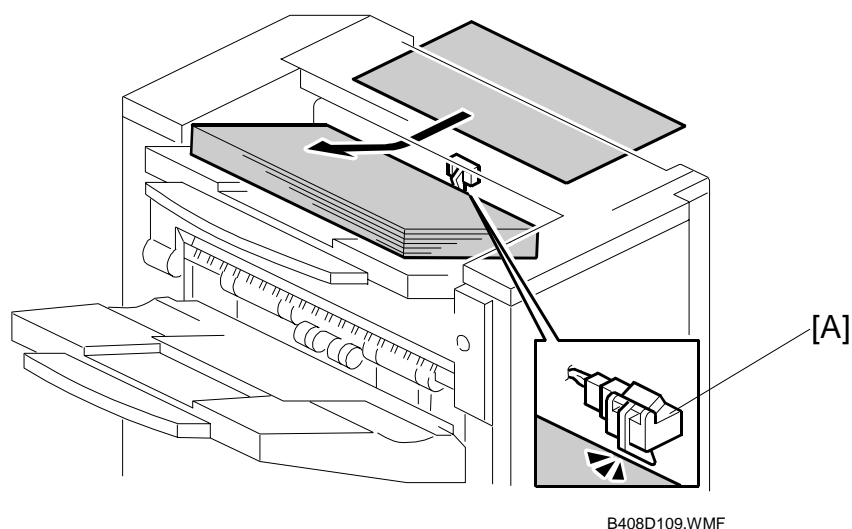
### ***Sort/Stack Mode***

The tray junction gate solenoid turns on and the stapler junction gate solenoid remains off. The copies are sent to the lower tray directly.

### ***Staple Mode***

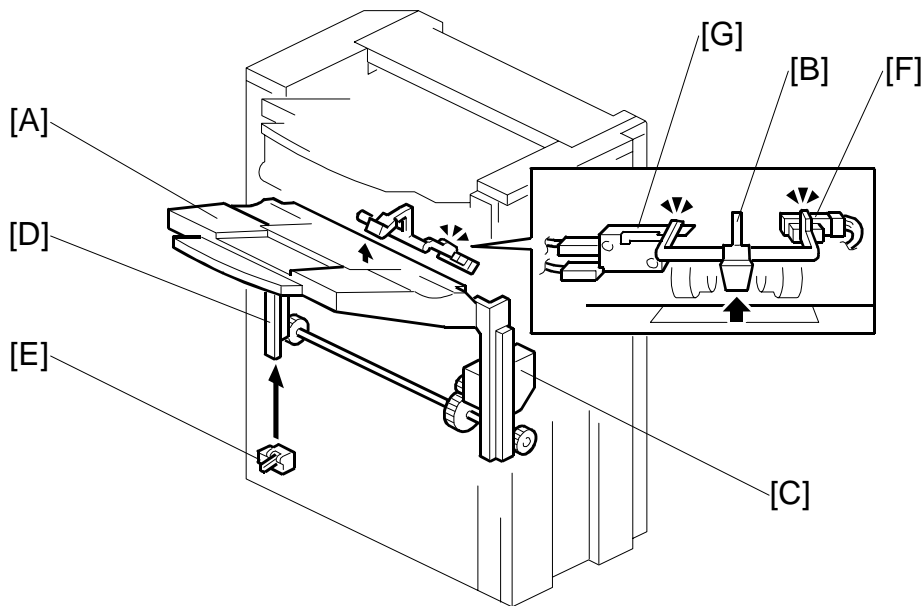
The tray junction gate solenoid and the stapler junction gate solenoid both turn on. The copies go down to the jogger unit.

## 4.6 UPPER TRAY



When the paper limit sensor [A] switches on during feed-out for each of three consecutive sheets of paper, paper overflow is detected.

## 4.7 LOWER TRAY UP/DOWN MECHANISMS



B408D112.WMF

The vertical position of the lower tray [A] depends on the height of the copied paper stack on the lower tray. The stack height sensor feeler [B] contacts the top of the stack, and the lower tray lift motor [C] controls the tray height.

When the lower tray reaches its lowest possible position, the actuator [D] turns on the lower tray lower limit sensor [E], and copying stops.

### **Tray Up**

When the copy paper on the tray is removed, the stack height sensor [F] turns off and the tray lifts up. Then, the tray stops when the sensor turns on again (the tray pushes up the feeler).

If the stack height sensor fails, the lower tray upper limit switch [G] detects the tray and stops the motor. This is a safety measure against stack height sensor failure.

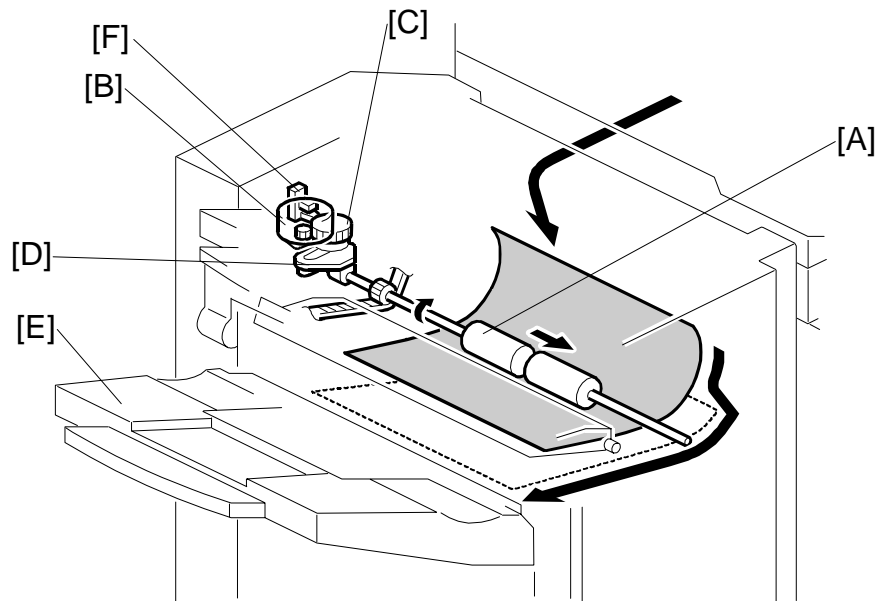
### **Sort/Stack Mode (Tray Down)**

Every five sheets of paper, the tray goes down until the sensor turns off again. Then, it goes up until the sensor is on again.

### **Staple Mode (Tray Down)**

After a stapled copy is fed out, the tray goes up for 220 ms and stops for 300 ms. Then, it goes down for 1 second, waits for 500 ms, then goes up until the sensor turns on.

## 4.8 PAPER SHIFT MECHANISM



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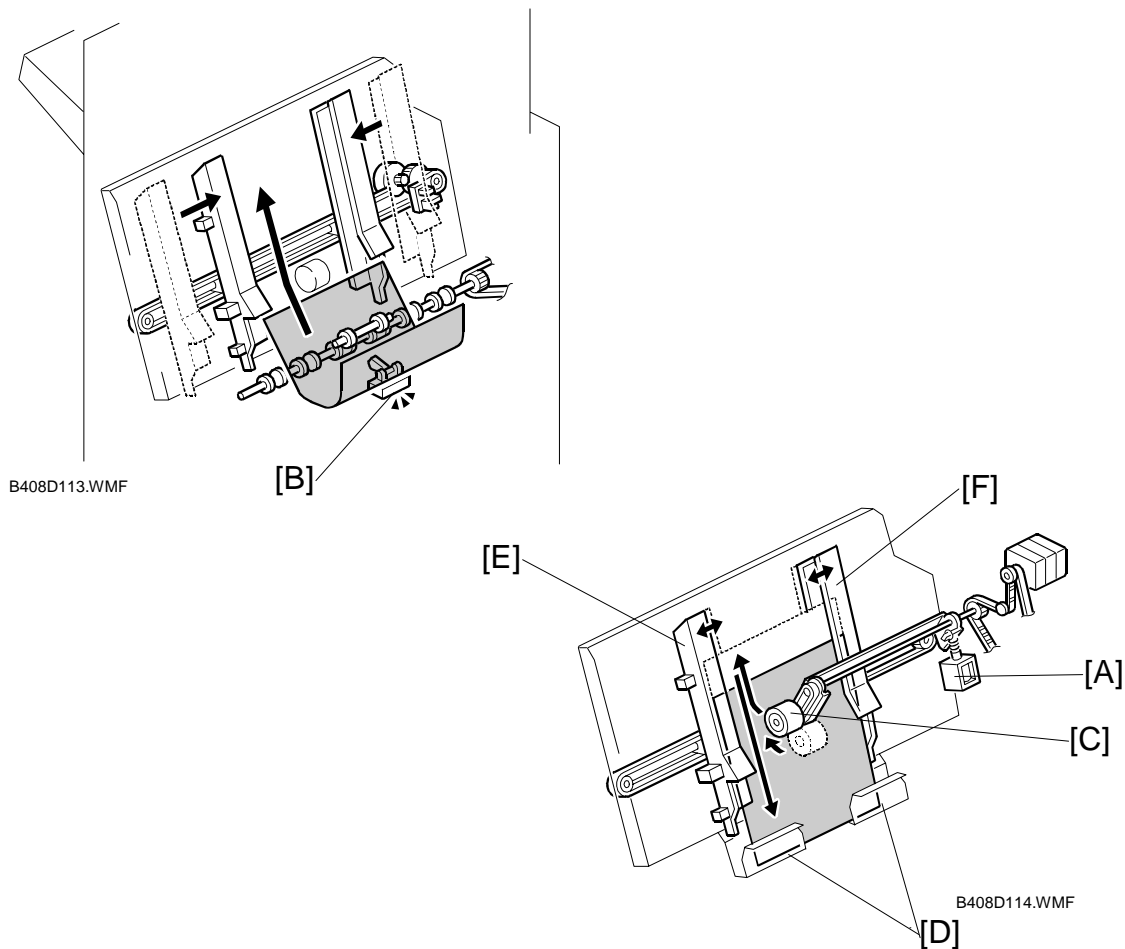
In the sort/stack mode, the shift roller [A] moves from side to side to separate the sets of copies.

The horizontal position of the shift roller is controlled by the shift motor [B] and the shift gear disk [C]. After the trailing edge of the copy passes the upper transport roller, the shift motor turns on, driving the shift gear disk and the link [D].

After the paper is delivered to the lower tray [E], the shift roller moves to its home position, which is detected by the shift HP sensor [F]. Then, when the trailing edge of the next copy passes the upper transport roller, the shift roller shifts again. This operation is done every sheet.

When the trailing edge of each page in the next set of copies passes the upper transport roller, the shift roller shifts in the opposite direction.

## 4.9 JOGGER UNIT PAPER POSITIONING MECHANISM

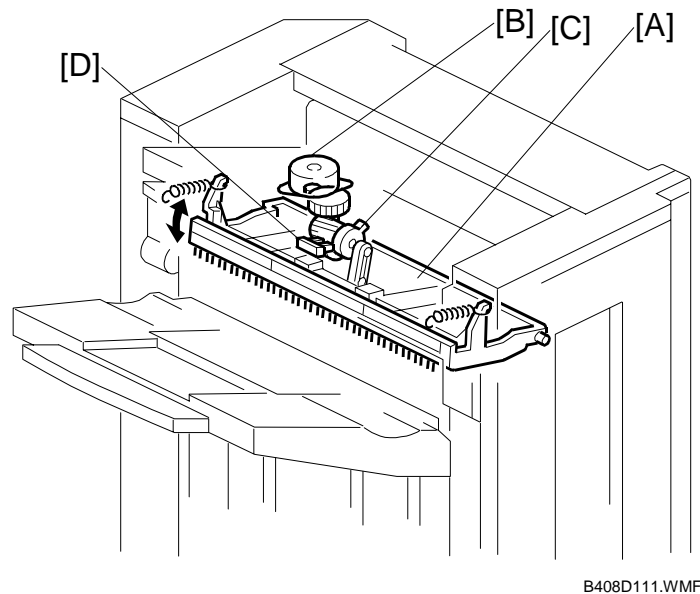


In staple mode, each sheet of copy paper is vertically and horizontally aligned when it arrives in the jogger unit.

For the vertical paper alignment, the positioning roller solenoid [A] turns on shortly after the stapler tray entrance sensor [B] turns off, and the positioning roller [C] pushes the copy against the bottom of the stack stopper [D].

For the horizontal paper alignment, the jogger front fence [E] and the rear fence [F] move to the waiting position, which is 18 mm away from the side of the paper. When aligning the paper vertically, the jogger fence moves in 14 mm from the waiting position. After the vertical position has been aligned, the jogger fence pushes the paper 4 mm against the rear fence to align the paper horizontally. Then the jogger fence moves back to the previous position.

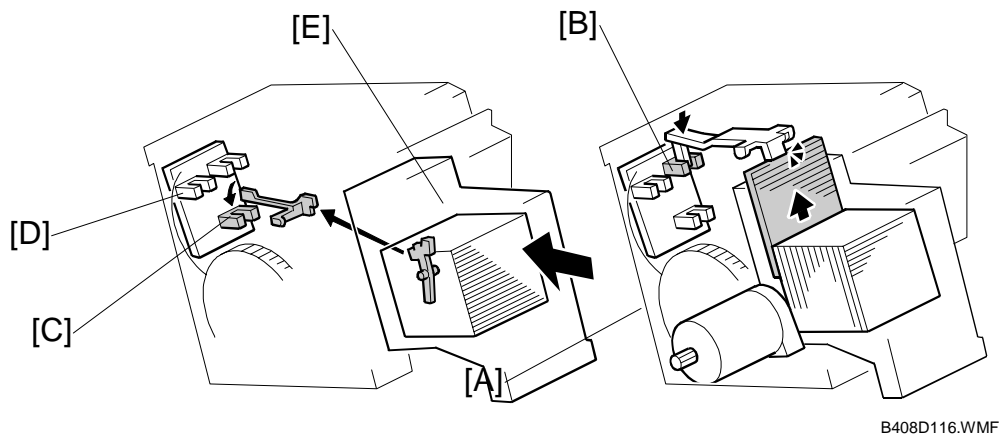
## 4.10 EXIT GUIDE PLATE



When stacking a large size of paper (such as A3, DLT) in the jogger unit, the leading edge of the paper reaches the exit rollers. To prevent the paper from running into the exit rollers and not being aligned correctly, the exit guide plate [A] is moved up to make a gap between the exit rollers. This operation is done for all paper sizes, but is only needed for the larger sizes.

The exit guide plate motor [B] and exit roller release cam [C] control the exit guide plate movement. When the exit guide plate motor starts, the cam turns and the exit guide plate moves up. When stapling is finished, the exit guide plate motor turns on again to close the exit guide plate. When the exit guide plate HP sensor [D] turns on, the motor stops.

## 4.11 STAPLER MECHANISM



The staple hammer motor [A] drives the staple hammer.

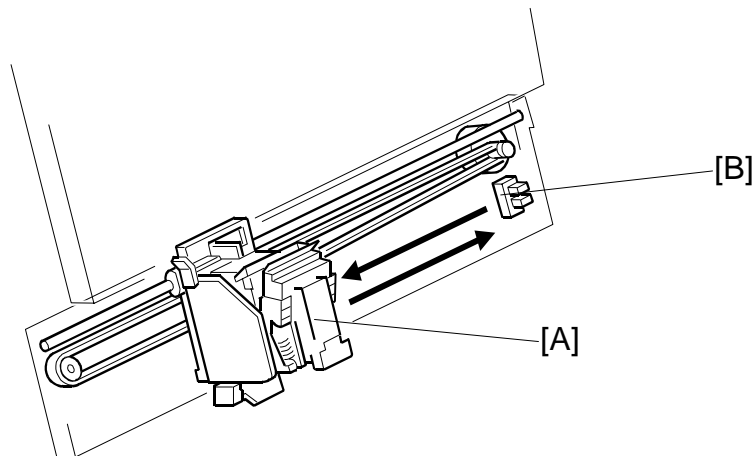
The staple sheet sensor [B] detects the leading edge of the staple sheet at the stapling position to prevent the hammer from operating if there are no staples at the stapling position.

If there is no staple cartridge in the stapler unit or no staples in the staple cartridge, staple end is indicated on the operation panel. The stapler sensor [C] detects this.

The stapler rotation HP sensor [D] checks whether the staple hammer mechanism returns to home position after each stack has been stapled.

When excessive load is applied to the staple hammer motor, the copier detects a staple jam. When a staple jam has occurred, the jammed staple is inside the staple cartridge [E]. Therefore, the jammed staple can be removed easily after pulling out the staple cartridge.

## 4.12 STAPLER UNIT MOVEMENT MECHANISM



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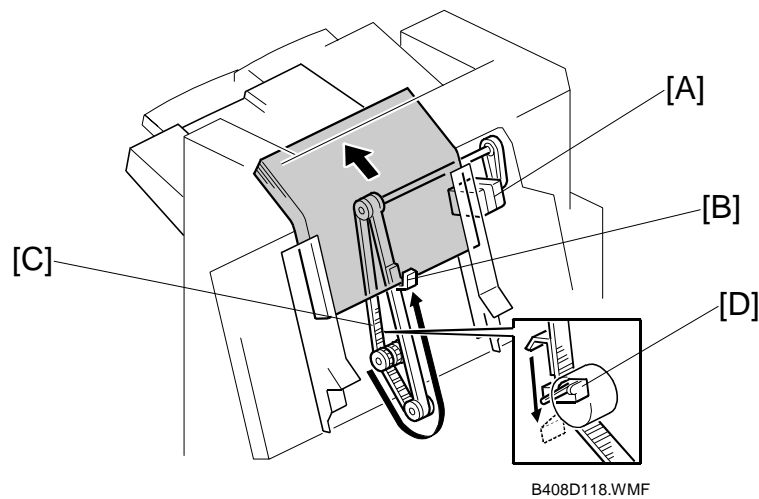
The stapler motor moves the stapler [A] from side to side. After the start key is pressed, the stapler moves from its home position to the stapling position.

If two-staple-position mode is selected, the stapler moves to the front stapling position first, then moves to the rear stapling position. However, for the next copy set, it staples in the reverse order (at the rear side first, then at the front side).

After the job is completed, the stapler moves back to its home position. The stapler HP sensor [B] detects this.



## 4.13 PAPER FEED-OUT MECHANISM



After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift roller. The shift roller takes over stack feed-out after the leading edge reaches this roller.

Just before the stapled stack passes through the lower tray exit sensor, the stack-feed-out motor turns off until the shift rollers have completely fed the stack out to the lower tray. Then, the stack-feed-out motor turns on again until the pawl [B] actuates the stack feed-out belt home position sensor [D].