

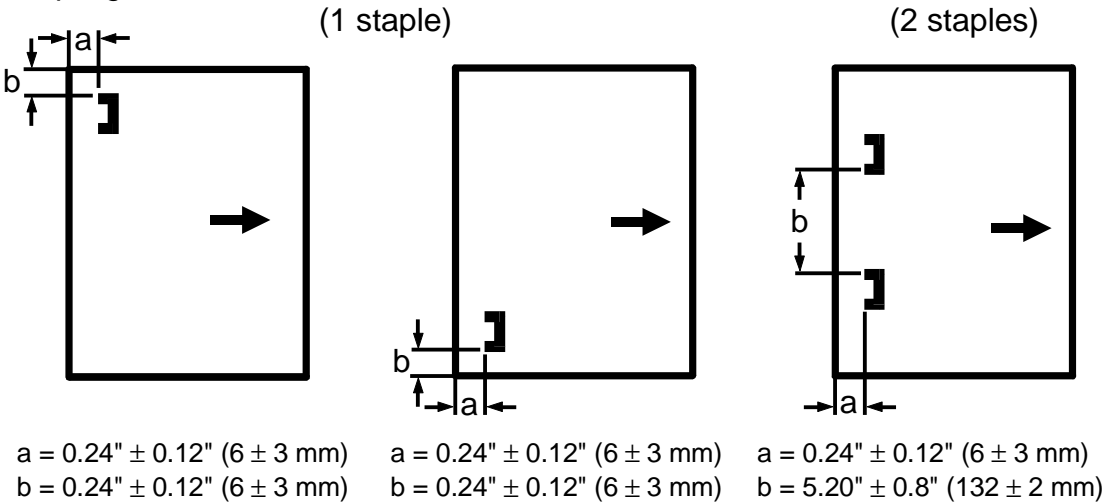
FINISHER
(Machine Code: A608)

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Paper Size:	Maximum: 11" x 17"/A3 Minimum: 5½" x 8½"/A6 sideways
Paper Weight:	Standard copying/Stack mode 14 ~ 42 lb/52 ~ 157 g/m² Staple mode 17 ~ 20 lb/64 ~ 80 g/m²
Paper Capacity:	1,500 sheets: 8½" x 11"/A4 or smaller size (20 lb/80 g/m²) 1,000 sheets: 8½" x 14"/B4 or larger size (20 lb/80 g/m²)
Stapler Capacity:	8½" x 11"/A4 or smaller size (20 lb/80 g/m²): from 2 to 50 sheets 8½" x 14"/B4 or large size (20 lb/80 g/m²): from 2 to 30 sheets
Staple Replenishment:	Cartridge refill (5,000 pieces/cartridge)
Power Source:	DC 24 V (from copier)
Power Consumption:	48.0 W (average)
Weight:	35 kg (77.1 lb)

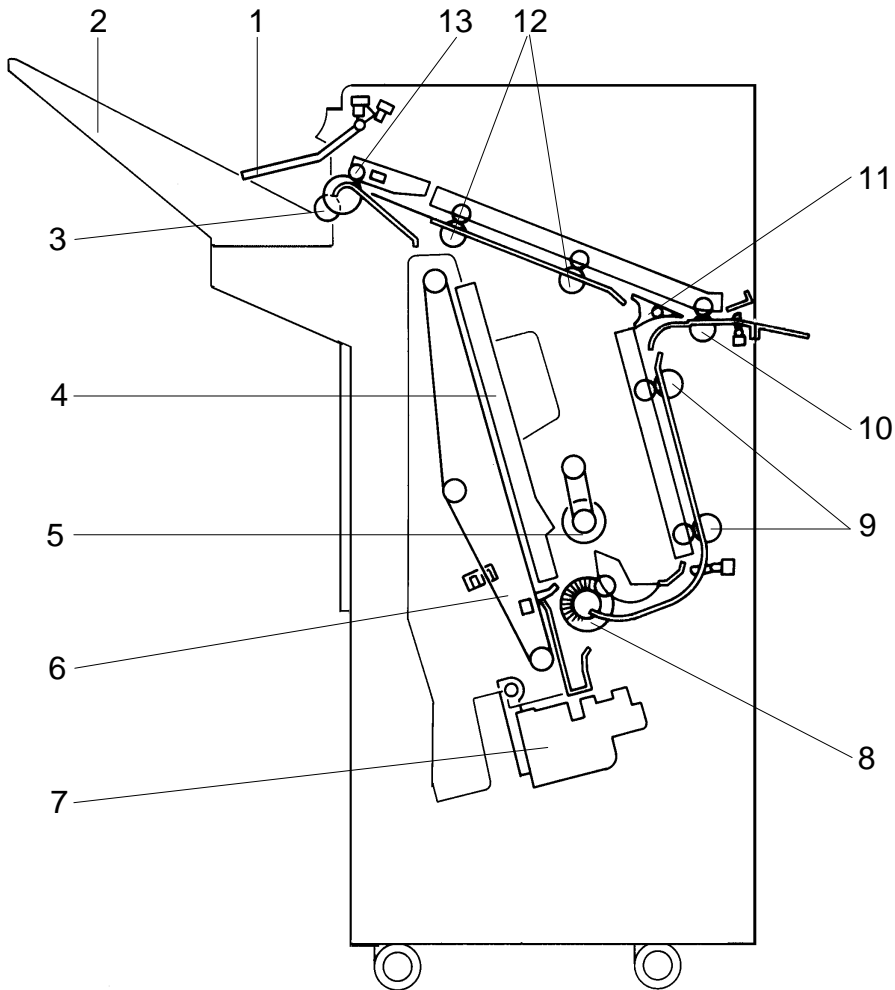
Stapling Position:



Finisher

Dimensions:	26.5" x 20.3" x 37.5" (671 mm x 514 mm x 950 mm)
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1.2 MECHANICAL COMPONENT LAYOUT



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

1.3 ELECTRICAL COMPONENT DESCRIPTION

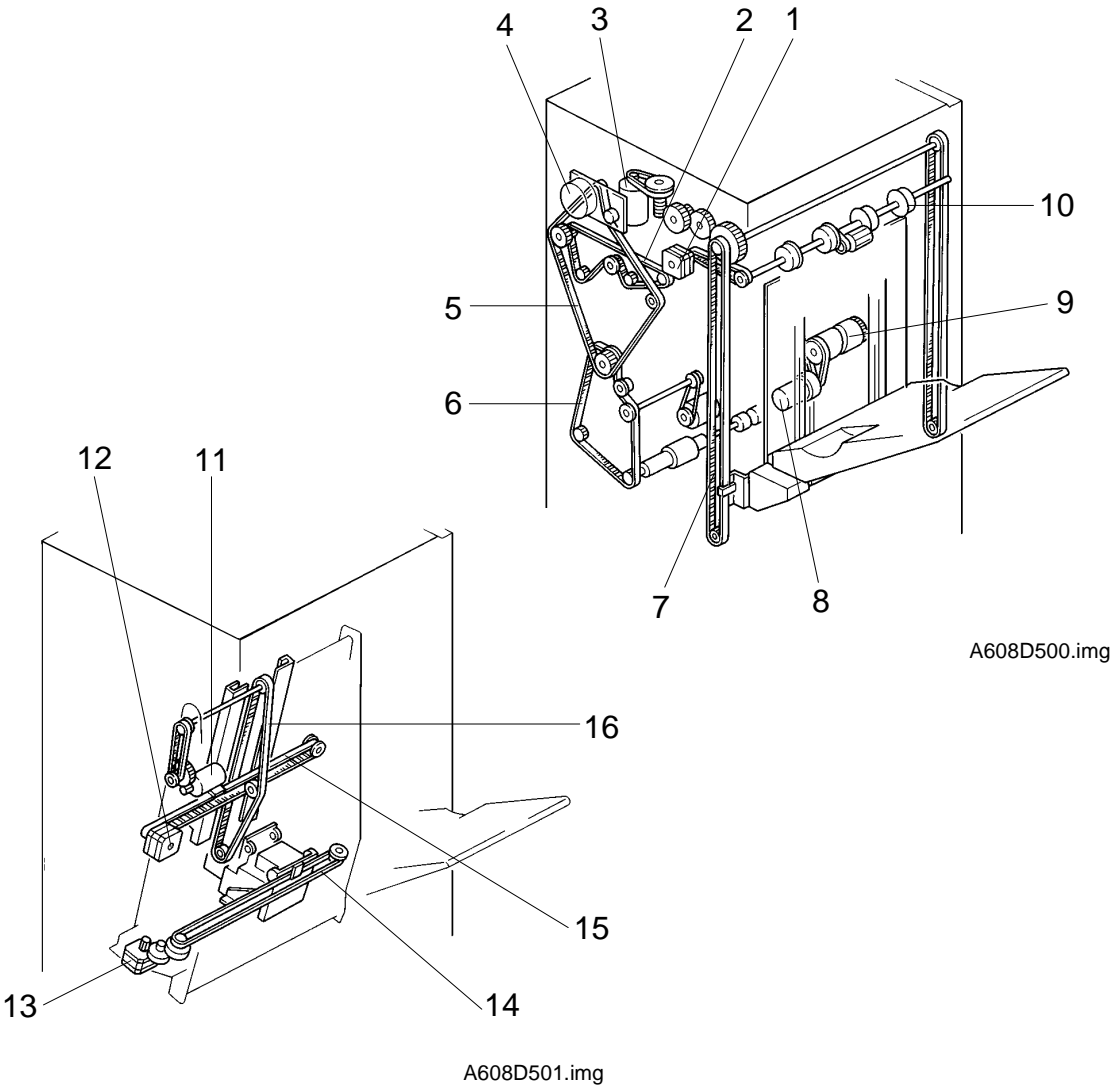
Refer to the electrical component layout on the reverse side of the Point to Point (water proof paper) index numbers.

Symbol	Name	Function	Index No.
Motors			
M1	Transport Drive	Drives transport rollers.	21
M2	Shift Tray Lift	Moves the shift tray up or down.	25
M3	Exit Drive	Drives the exit and shift tray positioning rollers.	27
M4	Stack Feed-out	Drives the stack feed-out belt.	5
M5	Jogger	Moves the jogger fences.	19
M6	Stapler Drive	Moves the stapler unit.	17
M7	Shift	Moves the shift tray side to side.	7
M8	Staple	Drives the staple hammer.	13
Sensors			
S1	Entrance	Detects copy paper entering into the finisher.	26
S2	Jogger Unit Entrance	Detects copy paper entering into the jogger unit.	24
S3	Jogger Unit Paper	Detects copy paper in the jogger unit.	8
S4	Stack Feed-out Belt HP	Detects the home position of the stack feed-out belt.	9
S5	Jogger HP	Detects the jogger home position.	18
S6	Exit	Detects misfeeds in exit area.	3
S7	Stack Height 1	Detects copy paper stack height in staple mode.	2
S8	Stack Height 2	Detects copy paper stack height in sort/stack mode.	1
S9	Shift Tray Lower Limit	Detects the lower limit of the shift tray position.	15
S10	Stapler Hammer HP	Detects the staple hammer home position.	14
S11	Shift Tray Half-Turn	Detects shift tray side-to-side position.	6
S12	Stapler Unit HP	Detects the stapler unit home position.	10
Switches			
SW1	Front Door Safety (Switch)	Cuts dc power when the front door is opened.	22
SW2	Shift Tray Upper Limit (Switch)	Detects the upper limit of the shift tray position.	4
SW3	Cartridge Set	Detects whether a staple cartridge is installed.	12
SW4	Staple End	Detects staples in the cartridge	11

Finisher

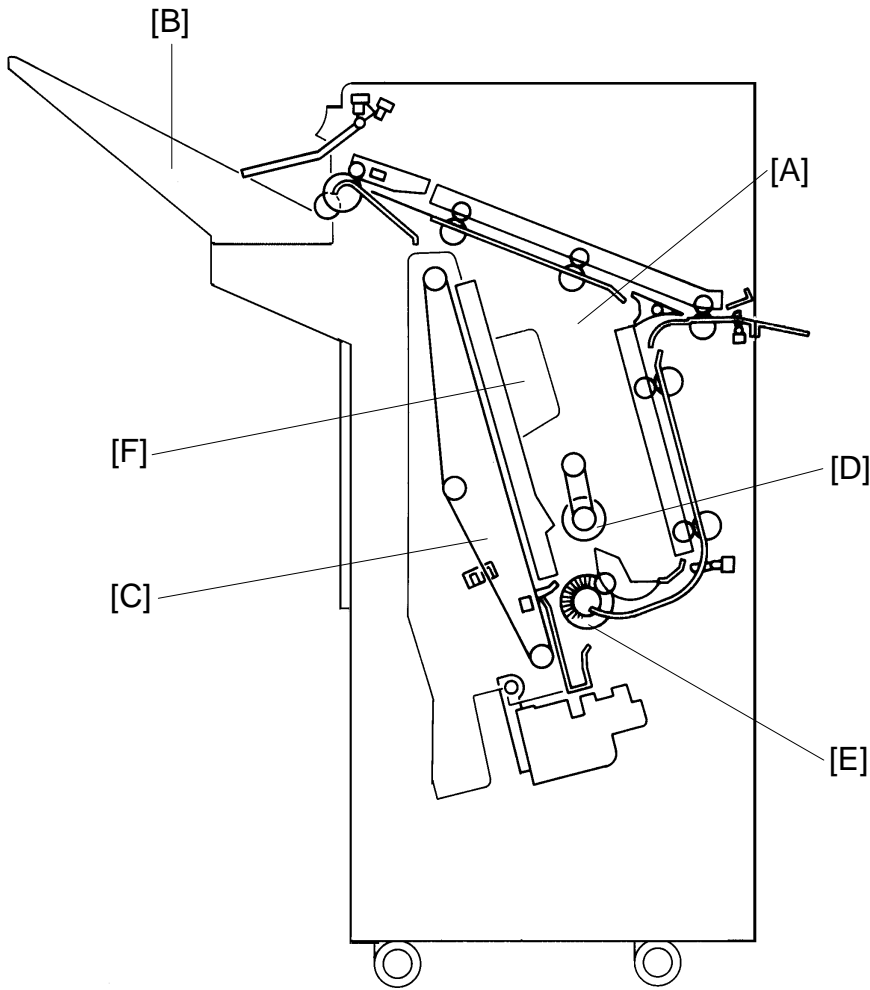
Symbol	Name	Function	Index No.
Solenoids			
SOL1	Positioning Roller	Lowers the positioning roller in the jogger unit.	20
SOL2	Junction Gate	Drives the junction gate.	23
PCBs			
PCB1	Main Control	Controls overall finisher operation.	16

1.4 DRIVE LAYOUT



- | | |
|--------------------------------|--------------------------|
| 1. Exit Drive Motor | 9. Shift Cam |
| 2. Upper Transport Drive Belt | 10. Exit Roller |
| 3. Shift Tray Lift Motor | 11. Stack Feed-out Motor |
| 4. Transport Drive Motor | 12. Jogger Motor |
| 5. Transport Drive Belt | 13. Stapler Drive Motor |
| 6. Lower Transport Drive Motor | 14. Stapler Drive Belt |
| 7. Shift Tray Lift Belt | 15. Jogger Drive Belt |
| 8. Shift Motor | 16. Stack Feed-out Belt |

1.5 BASIC OPERATION



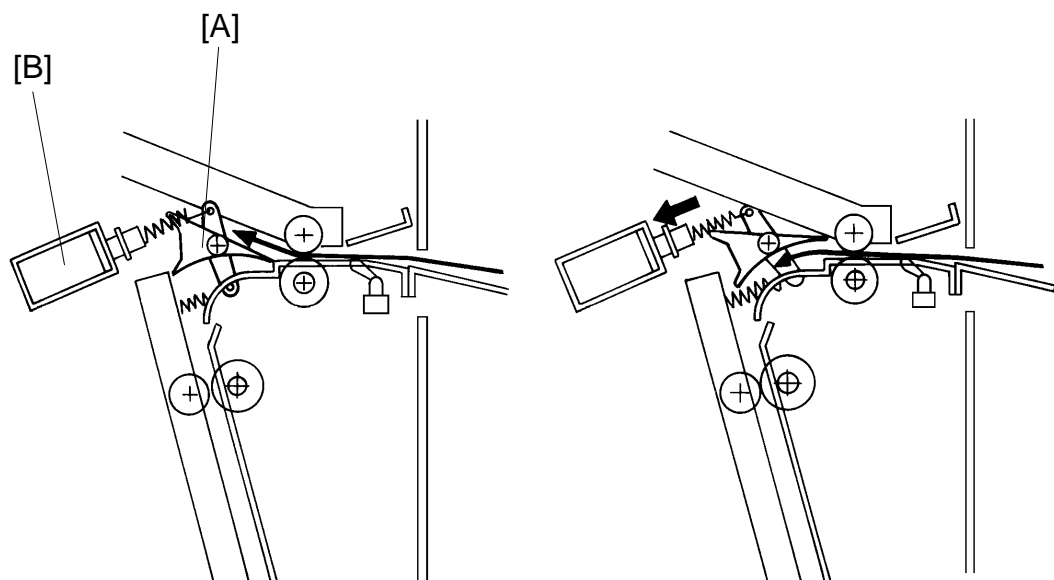
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After the copy is completed, the paper is directed to the finisher. If the sort/stack mode is selected, the junction gate [A] directs the paper upwards to transport it to the shift tray [B]. In these modes, the shift tray is shifted from side to side to stagger and separate sets of copies. The amount of shift is approximately 30 mm.

When the staple mode is selected, the junction gate directs the paper below to transport the paper to the jogger unit [C]. Each time a copy is delivered to the jogger unit, the positioning roller [D], the alignment brush roller [E], and the jogger fences [F] square the stack of copies. After the final copy of the set is squared, the set is stapled, and then delivered to the shift tray.

2. SECTIONAL DESCRIPTIONS

2.1 PAPER DELIVERY SWITCHING

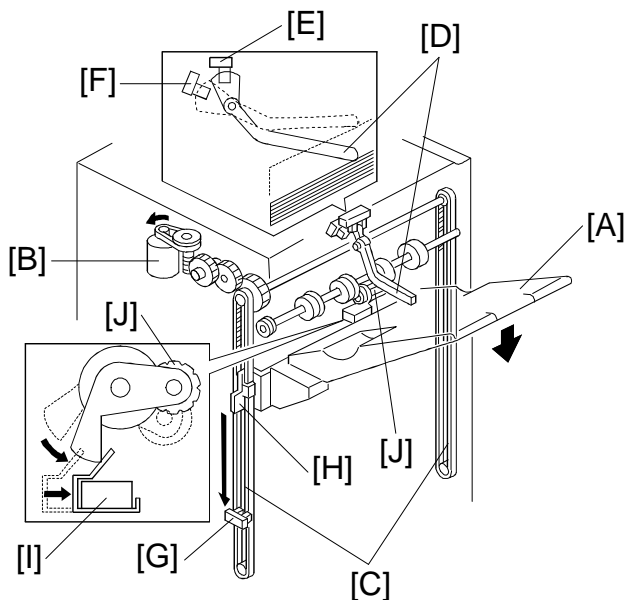


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Depending on the selected finishing mode, the copies are directed up or down by the junction gate [A], is controlled by a solenoid.

- (1) When the exit sensor of the copier is activated while in staple mode, the solenoid [B] is energized. Then, the junction gate directs the copies down to transport them to the jogger unit.
- (2) When the exit sensor of the copier is activated while in the sort/stack mode, the solenoid stays off. The junction gate directs the copies up to deliver them to the shift tray.

2.2 SHIFT TRAY UP/DOWN MECHANISM



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The shift tray lift motor (a dc motor) [B] controls the vertical position of the shift tray [A] through gears and timing belts [C]. When the main switch is turned on, the tray is initialized at the upper position. The tray's upper position is detected when the shift tray pushes up actuator [D] until the actuator has just left the stack height sensor 1 [E], and is now between the two sensors [E] and [F].

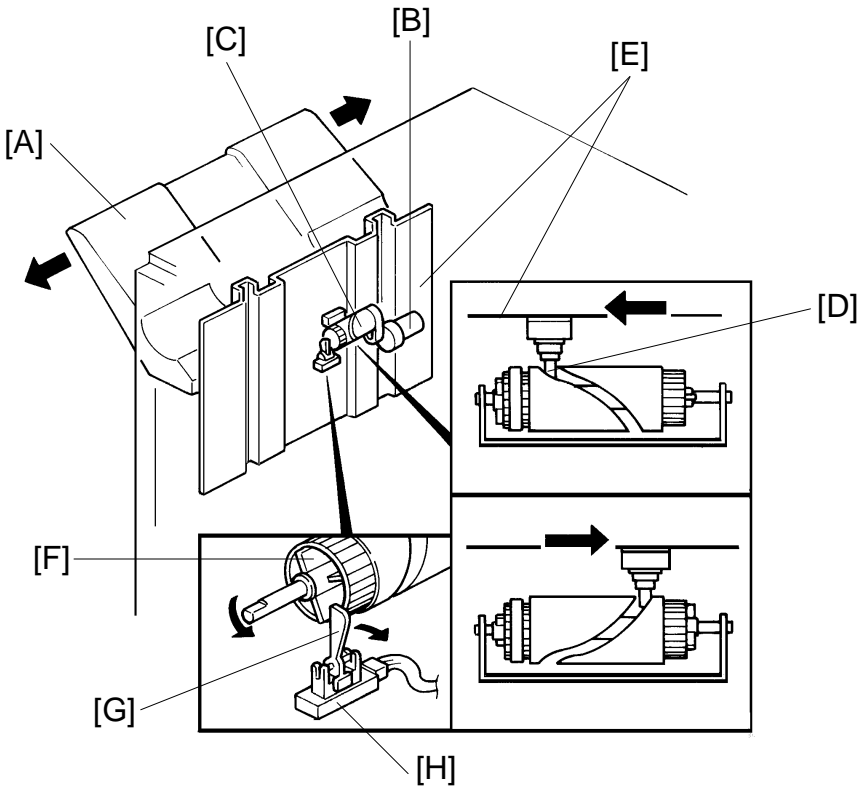
During copying, the actuator feeler gradually rises as the copy stack grows, and the actuator gradually moves towards stack height sensor 2 [F]. In sort/stack mode, if the actuator remains inside stack height sensor 2 [F] for 4 s, the shift tray lift motor lowers the tray unit for 50 ms. In staple mode, if the actuator leaves stack height sensor 1 for 4 s during a copy run, the motor lowers the tray until stack height sensor 1 is actuated. This means the tray lowers earlier in staple mode, to prevent problems caused by sudden arrivals of stapled stacks of paper on the tray (stapling is done inside the machine, and the stapled copy is fed out to the tray; the second copy may suddenly exceed the space currently available on the tray).

For both modes, the shift tray will rise when the user takes the stack of paper from the tray during copying.

When the tray reaches its lower limit, actuator [H] enters the lower limit sensor [G], and copying stops. After copying ends and the machine stops, the tray is raised to its uppermost position 4 s after the copies are removed.

The shift tray upper limit switch [I] prevents the drive gears from being damaged if stack height sensor 1 fails. When the shift tray pushes up the shift tray positioning roller [J], the switch cuts the power to the shift tray lift motor.

2.3 SHIFT TRAY SIDE-TO-SIDE SHIFT MECHANISM



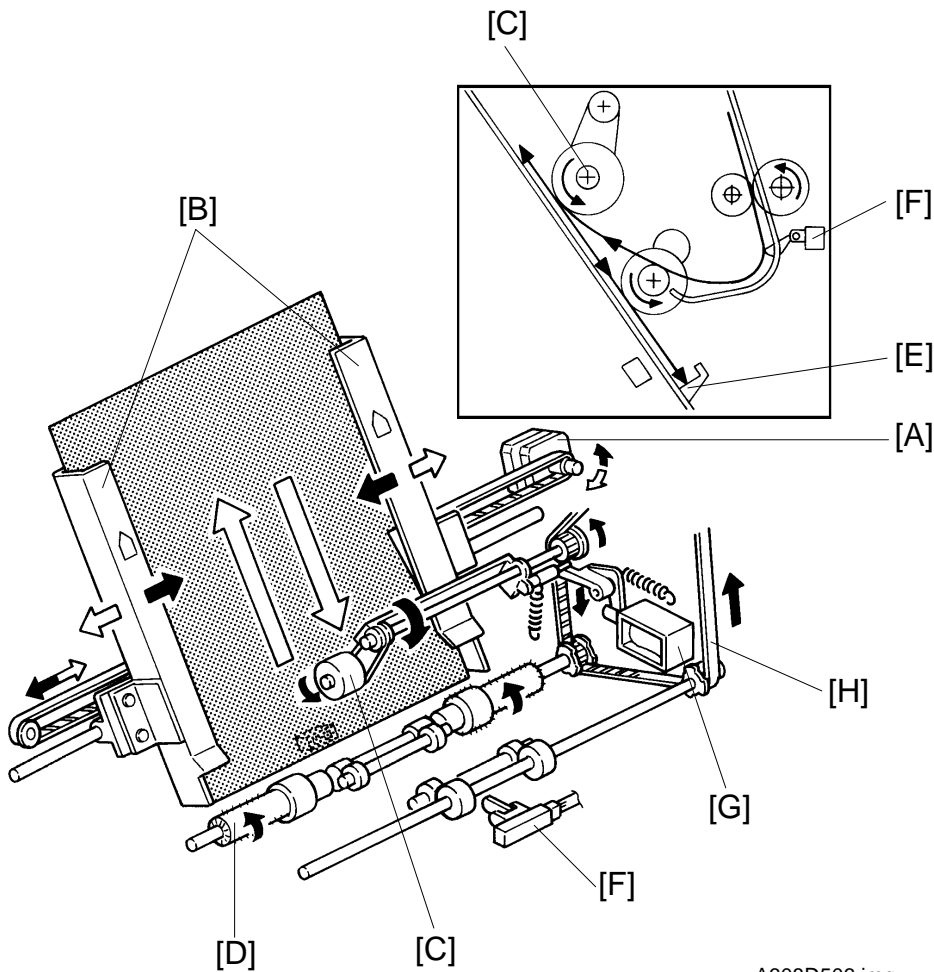
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In the sort/stack mode, the shift tray [A] moves from side to side to stagger and separate sets of copies.

The horizontal position of the shift tray is controlled by the shift motor (dc motor) [B] and the shift cam (helical cam) [C]. After one set of originals is copied and delivered to the shift tray, the shift motor [B] starts rotating, driving the shift cam through the timing belt. The pin [D] fixed to the shift tray base plate [E] is positioned in the groove on the shift cam, creating the side-to-side movement required to stagger copies.

When the shift cam rotates 180 degrees (when the tray is fully shifted.), the plate [F] on the shift cam pushes the actuator [G] of the shift tray half-turn sensor [H] and the shift motor stops. The next set of copies is then delivered. The motor rotates repeating the same process and moving the tray back to the previous position.

2.4 STAPLE UNIT PAPER POSITIONING



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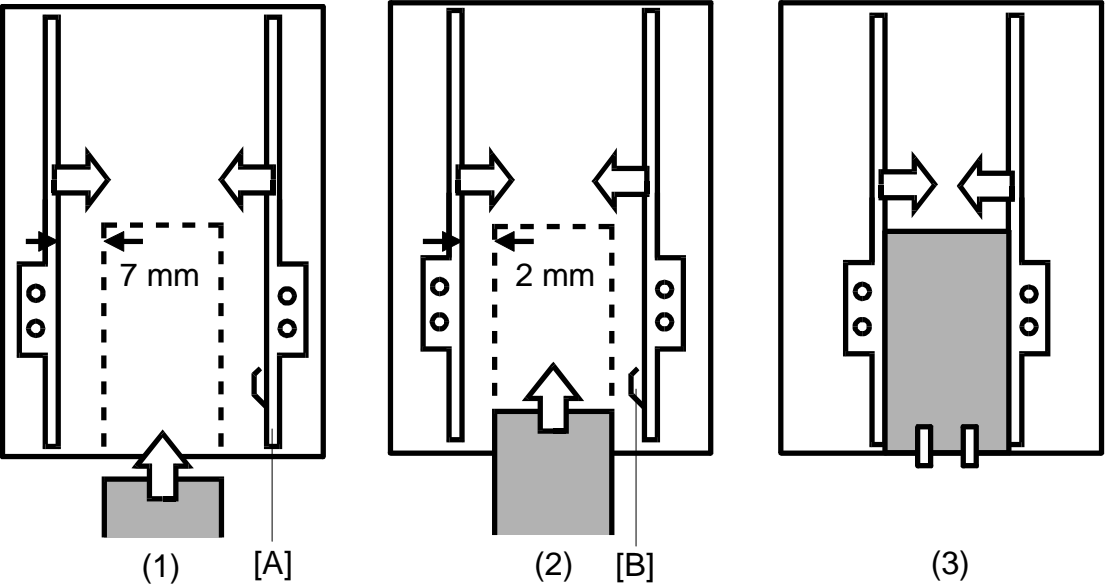
In the staple mode, copies are vertically and horizontally aligned in the jogger unit before being stapled.

For horizontal paper alignment, the jogger motor [A] moves both the front and the rear jogger fences [B] to align the copies.

For vertical paper alignment, the positioning roller [C] and the alignment brush roller [D] push the copy against the stack stopper [E].

After the trailing edge of the copy passes the jogger unit entrance sensor [F], the positioning roller solenoid [G] is energized for 280 ms pushing the positioning roller into contact with the paper. The positioning roller rotates to push the paper back and align the trailing edge of the paper against the stack stopper. Both the positioning roller and the alignment brush roller are driven by the transport drive motor through the timing belt [H].

2.5 JOGGER MOVEMENT



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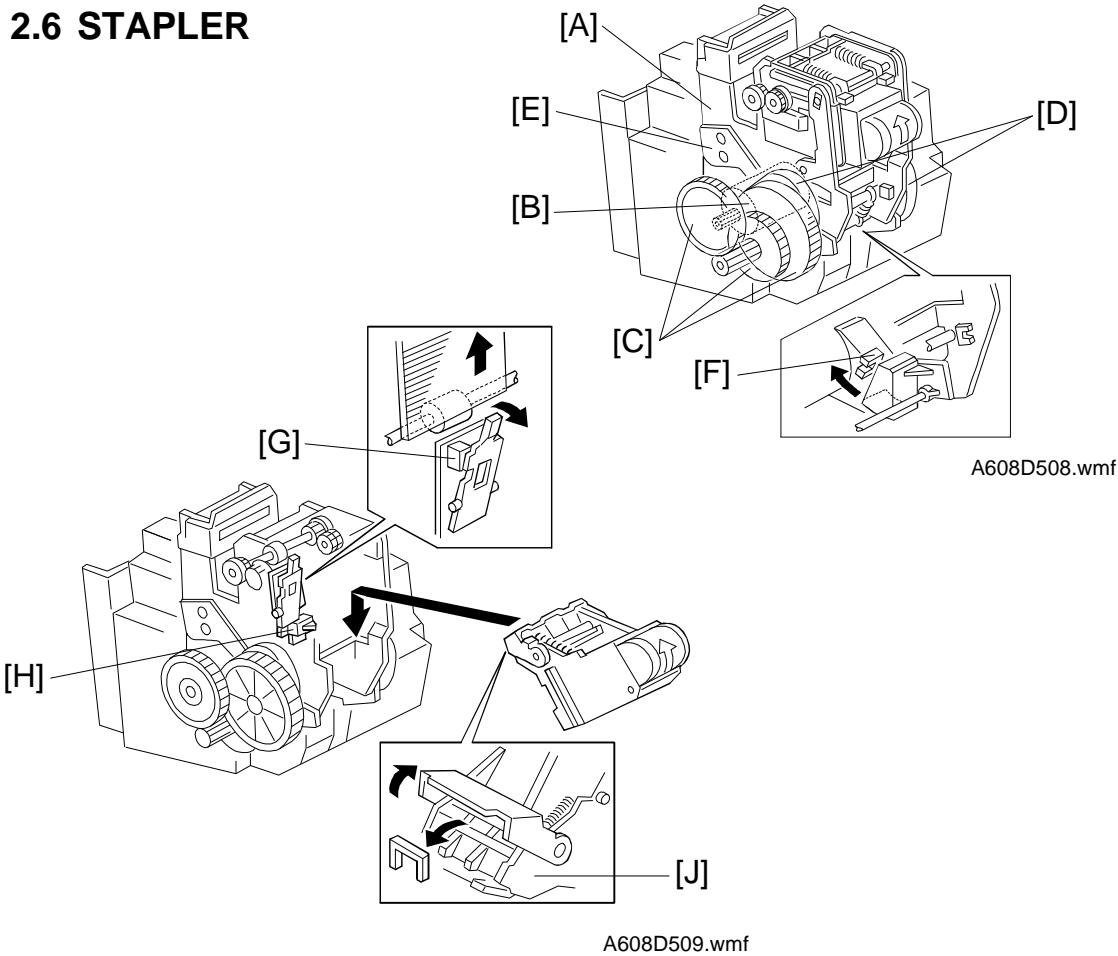
When the Start key is pressed, the copier sends the paper size information to the finisher. In accordance with that data, the jogger motor (stepper motor) starts rotating to position the front and rear jogger fences [A] 7 mm away from the selected paper's edges. (1)

After the trailing edge of the copy passes the jogger unit entrance sensor, each jogger fence moves inward 5 mm. They stop 3 mm away from the paper edges. (2)

Just after the positioning roller pushes the copy back, each jogger fence moves inward 2 mm more so that the leaf spring [B] on the rear jogger fence pushes the copy side edge slightly.

After a copy is stacked in the jogger tray, the jogger fences move back 7 mm from the copy edge for the next copy.

2.6 STAPLER



The staple hammer [A] is driven by the stapler motor [B] via gears [C], two eccentric cams [D], and two links [E].

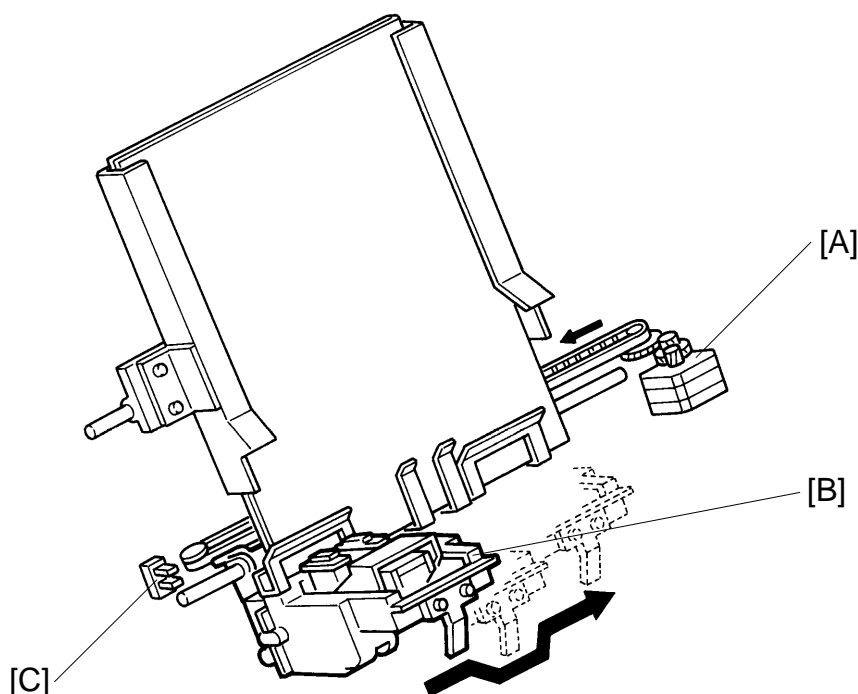
When the aligned copies are brought to the stapling position by the positioning roller, alignment brush roller and jogger fences, the stapler motor starts. When the cams complete one rotation, the staple hammer home position sensor [F] turns on, detecting the end of the stapling operation. The stapler motor then stops.

There are two sensors in the stapler unit. One is the staple end switch [G] for detecting staple end conditions (it detects when there is only one sheet of staples left in the cartridge). The other is the cartridge set switch [H] for detecting whether a staple cartridge is installed.

When a staple end or no staple cartridge condition is detected, a message is displayed advising the operator to install a staple cartridge. If this condition is detected during a copy job, the indication will appear, but will not stop the copy job in any way.

The staple cartridge has a clinch area [J], in which the jammed staples are left. Operators can remove the jammed staples from the cartridge.

2.7 STAPLER UNIT SIDE-TO-SIDE MOVEMENT



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Customers can select one of the following three different staple modes:

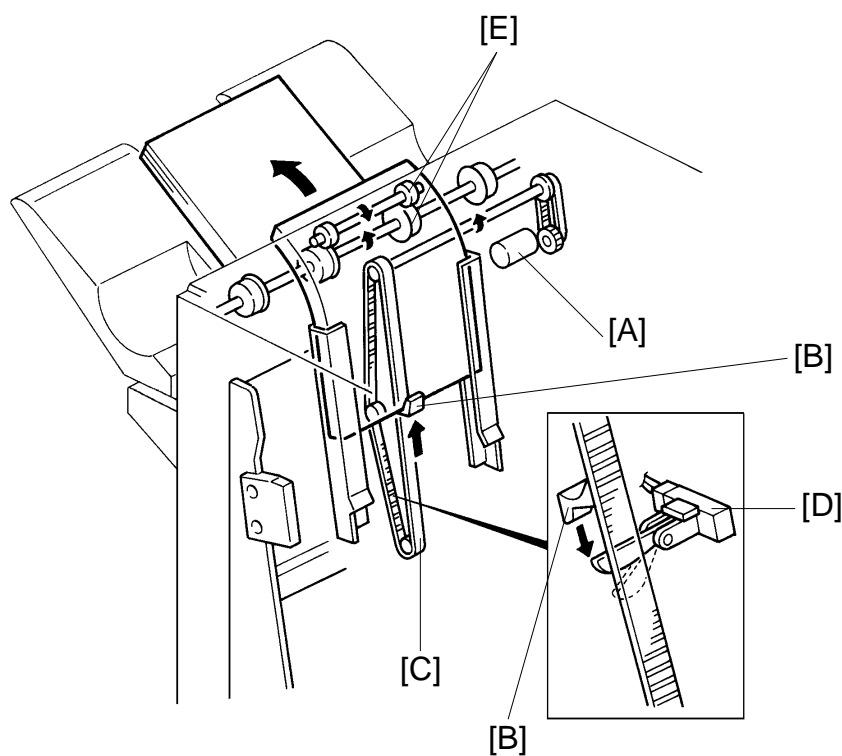
- Staple 1: Top left
- Staple 2: Bottom left
- Staple 3: Top/Bottom left

The stapler drive motor [A] (stepper motor) moves the stapler unit [B] from side to side. When the Start key is pressed, the stapler moves from its home position to the staple position.

If staple mode 3 is selected, the stapler unit moves to the front staple position first, then moves to the rear staple position. However, for the next copy set, it staples in the reverse order; that is, at the rear side first and then at the front.

After the job is completed, the stapler unit moves back to its home position. (The stapler unit home position sensor [C] is actuated.)

2.8 FEED-OUT TO SHIFT TRAY



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After being stapled, the stack feed-out motor [A] starts rotating. The pawl [B] on the lift belt [C] transports the set of stapled copies up, and feeds it to the shift tray. Approximately 0.6 second after the stack feed-out motor starts, the motor stops for 400 ms. At this moment, the exit rollers catch the stapled copies to feed them out to the shift tray. Then the motor rotates again until the pawl actuates its home position sensor [D].

The exit drive motor starts rotating to drive the exit rollers [E] when the first copy activates the entrance sensor. The exit drive motor speed is reduced just before each copy paper is completely fed out. This is to ensure an even copy stack.

3. SERVICE TABLES

3.1 TEST POINT TABLE (Main Board)

Number	Function
TP100	GND
TP101	5 V
TP102	24 V

3.2 FUSE TABLE

Number	Rated Current	Location
Fuse 100	5 A	Main PCB

3.3 LED TABLE

LED No.	ON Status During Adjustment
LED 100	Stack feed-out motor speed is normal.

***NOTE:** Adjust the speed of the stack feed-out motor by setting DIP SW 100/101 to Motor Test Mode (see below). Then adjust VR 100. If the motor speed is either too high or too low, LED 100 will blink.

3.4 DIP SW TABLE

3.4.1 Factory Setting

DIP SW 100				DIP SW 101			
1	2	3	4	1	2	3	4
0	0	0	0	0	0	0	0

3.4.2 Motor Test Mode

DIP SW 100				DIP SW 101				Motor
1	2	3	4	1	2	3	4	
1	1	0	1	0	0	1	0	Stack Feed-out Motor

After setting DIP SW 101-3, turn on switch 1, 2, and 4 of DIP SW 100 to start the stack feed-out motor. Turn off 1, 2, and 4 of DIP SW 100 to stop the motor.

3.4.3 Free Run Test Mode Without Paper

DIP SW 100				DIP SW 101				Test Type
1	2	3	4	1	2	3	4	
1	1	1	0	1	0	0	0	Shift tray mode
1	1	1	0	0	1	0	0	Staple mode - Top left
1	1	1	0	0	0	1	0	Staple mode - Bottom left
1	1	1	0	0	0	0	1	Staple mode - Top/Bottom left

Start the free run test mode by changing DIP SW 100 then DIP SW 101 to select the required test as shown in the table.

In shift tray mode, the finisher works as if 10 sets of 5 LT pages are being sorted. The machine then initializes itself and repeats the operation.

In staple mode, the finisher works as if 5 sets of 5 LT pages are being stapled and delivered. The machine then initializes itself and repeats the operation.

3.4.4 Off Line Test Mode

DIP SW 100				Mode	DIP SW 101					
1	2	3	4		1	2	Copy Q'ty	3	4	Paper Size
1	1	0	0	Shift Tray Mode	0	0	2 sheets	0	0	A4 Sideways
1	0	0	1	Staple Mode (1)	1	0	10 sheets	1	0	A4 Length- wise
0	1	1	0	Staple Mode (2)	0	1	30 sheets	0	1	LT Sideways
0	1	0	1	Staple Mode (3)	1	1	50 sheets	1	1	LT Length- wise

Off line test mode starts when SW 100 appropriate settings of on the main board are turned on, and stops when the settings of DIP SW 100 are turned off to "0" is changed.

The operation of the finisher can be checked without the main copier.

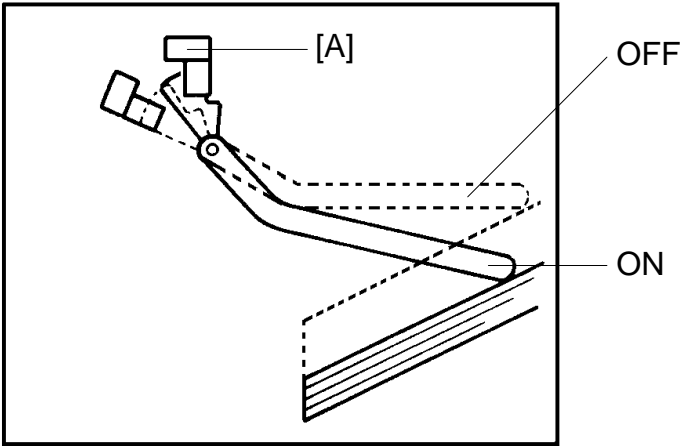
3.4.5 Shift Tray Rise Mode

0: OFF 1: ON

DIP 100				DIP 101			
1	2	3	4	1	2	3	4
1	0	0	0	0	0	0	0

In this mode, the shift tray moves to its uppermost position if the copy paper stacked on the tray is removed while staple mode copying.

When the stapling copy mode is used with the shift tray rise mode, the shift tray moves up and down slightly for each stapled copy set delivered to the tray.



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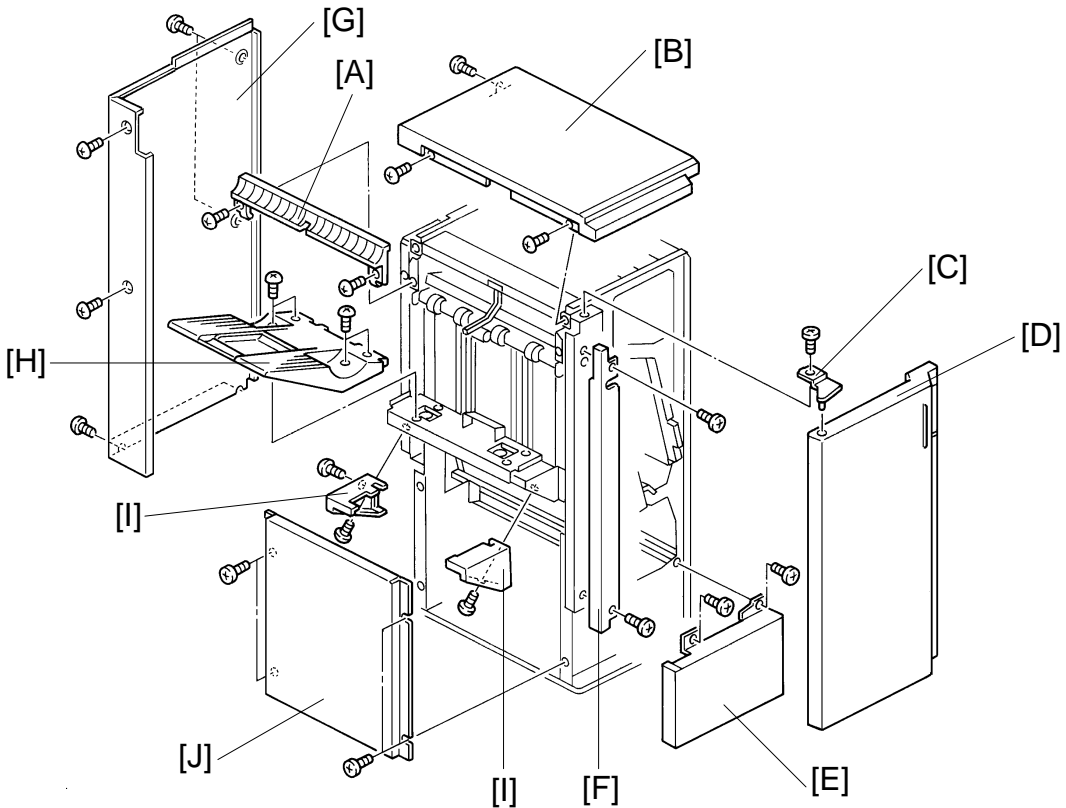
NOTE: In the stapling copy mode (unlike the sort copy mode), the machine cannot detect if the copy stack on the tray is removed. This is because the stack height sensor 1 [A] is always ON while in this copy mode. To counter this, when the shift tray rise mode is selected by turning on DIP switch 100-1 on the finisher main control board, the shift tray slightly moves up just when the stapled copy is delivered. At this time, if the stack height sensor 1 turns off, this means that the tray is in the proper position. The tray moves down soon and returns to the original position (until the sensor turns on again). If the sensor remains ON, this means that the tray position is too low. The tray continuously moves up until the sensor turns off then moves down until the sensor turns on. In this mode the shift tray motor frequently raises or lowers the shift tray to monitor the paper height.

To reduce the load to the shift tray motor, this mode is not enabled as the factory setting.

Finisher

4. REPLACEMENTS AND ADJUSTMENTS

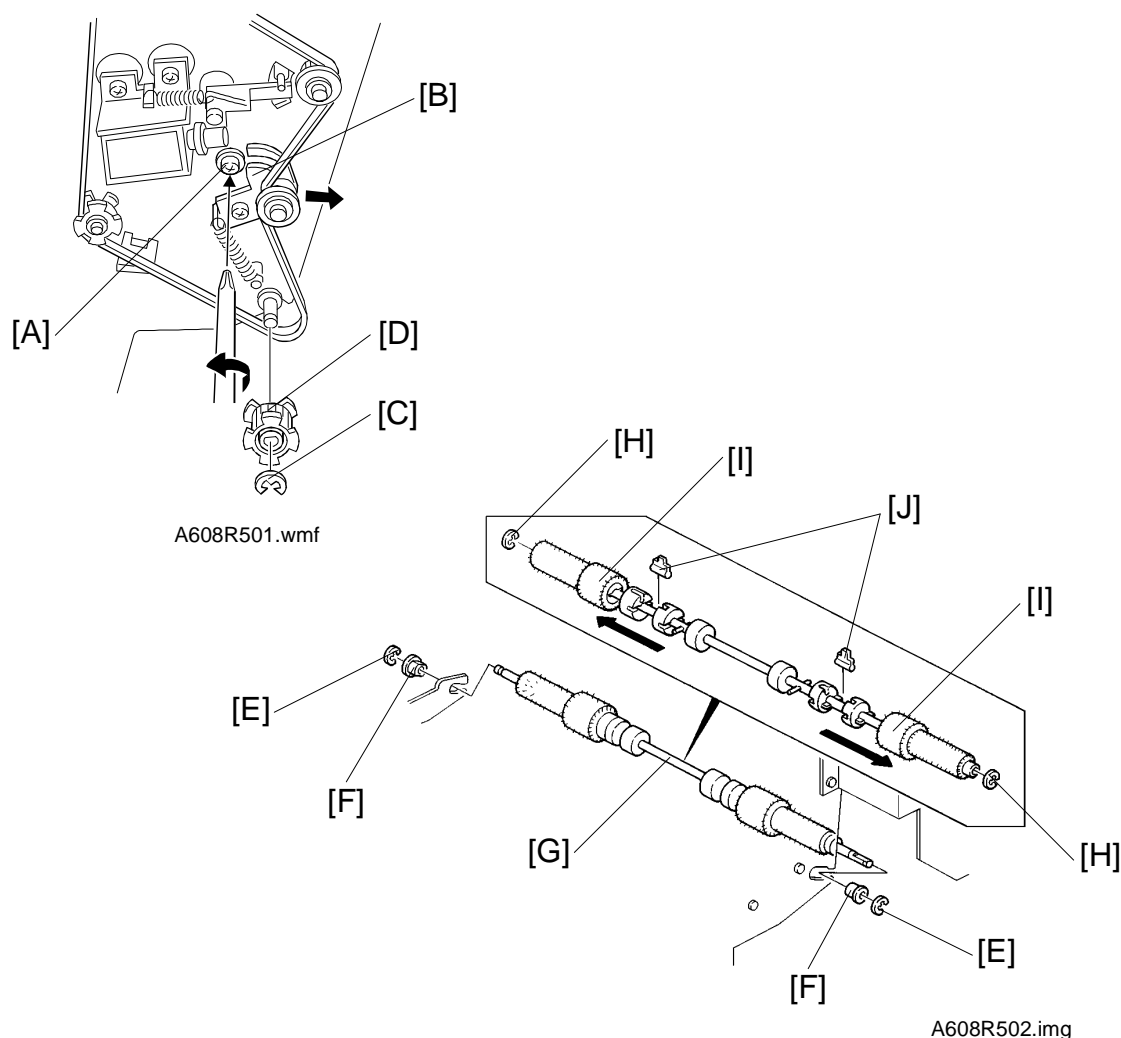
4.1 EXTERIOR REMOVAL



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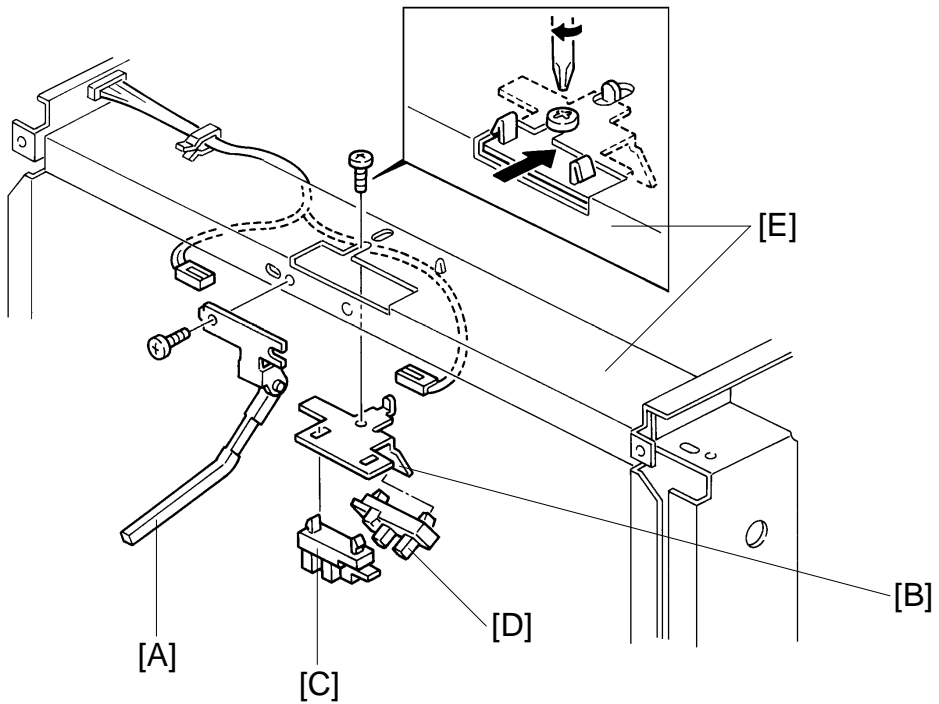
1. Remove the left upper cover [A] (2 screws).
2. Remove the upper cover [B] (3 screws).
3. Remove the upper door bracket [C] (1 screw) and remove the front door [D].
4. Remove the lower front cover [E] (2 screws).
5. Remove the front shift cover [F] (2 screws).
6. Remove the rear cover [G] (6 screws).
7. Remove the shift tray [H] (4 screws).
8. Remove the front and rear tray cover [I] (1 screws at the front, 2 screws at the rear).
9. Remove the left cover [J] (4 screws).

4.2 ALIGNMENT BRUSH ROLLER REPLACEMENT



1. Open the front door and slide out the jogger unit.
 2. Remove the rear cover.
 3. Loosen the screw [A] and flip the tension bracket [B] to release the tension of the lower transport drive belt.
 4. Remove the E-ring [C], slide out the pulley [D], remove 2 E-rings [E], then remove 2 bushings [F].
- NOTE:** When reinstalling, the metal bushing goes at the front side.
5. Remove the alignment brush roller assembly [G].
 6. Remove the 2 E-rings [H] and the brush rollers [I].
- NOTE:** Do not lose the link keys [J].

4.3 SENSOR REPLACEMENT



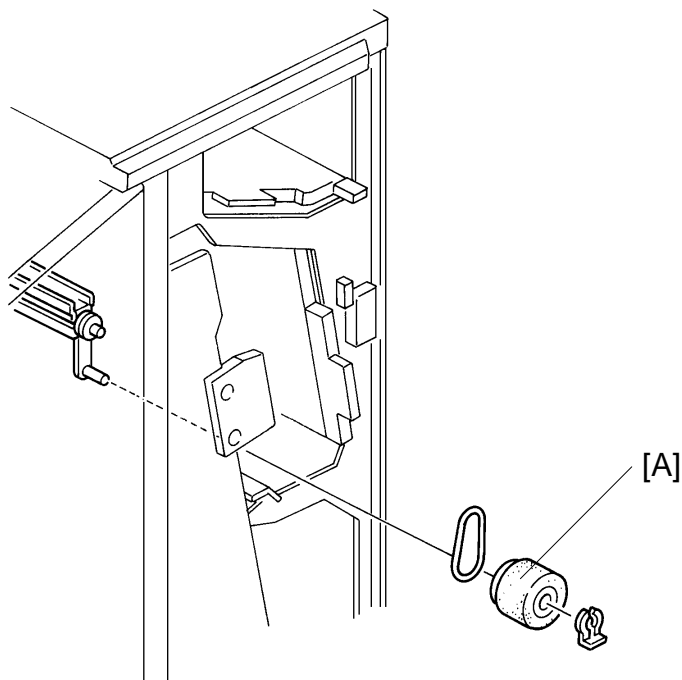
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Stack Height Sensors

1. Remove the upper cover.
2. Remove the stack height sensor actuator [A] (1 screw).
3. Remove the bracket [B] (1 screw, 2 connectors).
4. Replace stack height sensor 1 [C] and stack height sensor 2 [D].

NOTE: When reinstalling the bracket [B], align the edge of the bracket with the stay [E].

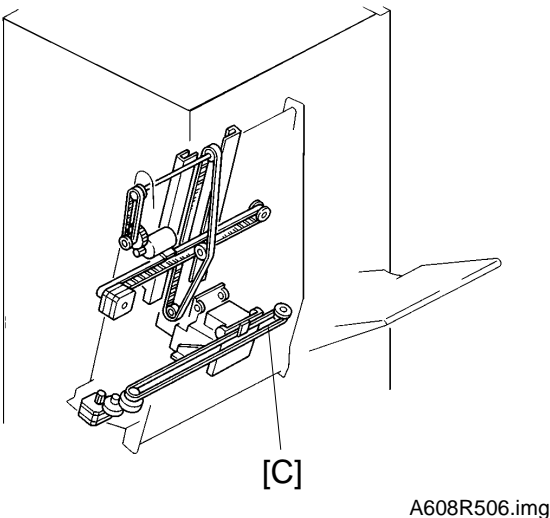
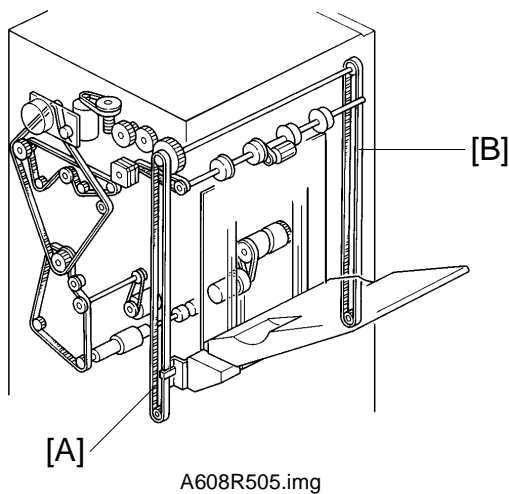
4.4 POSITING ROLLER REPLACEMENT



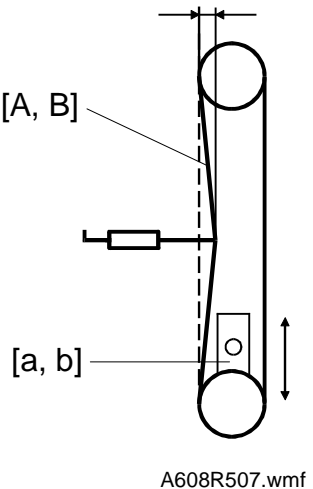
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1. Open the front door and slide out the jogger unit.
2. Remove the positioning roller [A] (1 clip).

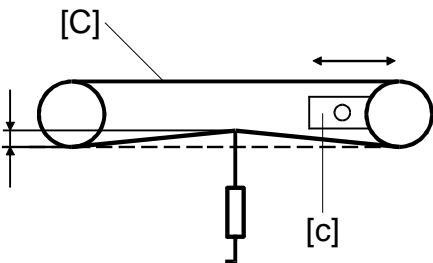
4.5 BELT TENSION ADJUSTMENT

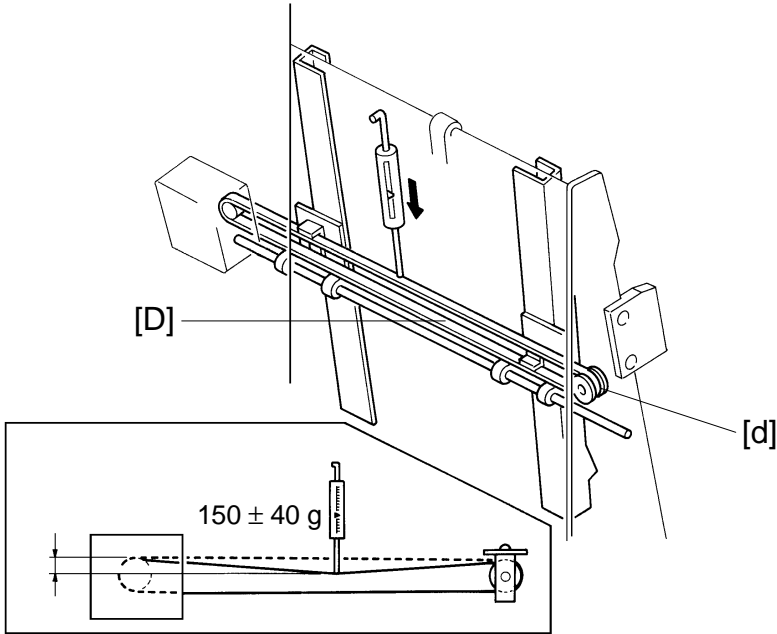


1. Remove the rear cover and adjust the belt [A] tension with tightener [a]. Remove the left upper cover, the upper cover, the front door, and the front shift cover and the front supporting cover (2 screws). Adjust the belt [B] with tightener [b].
- Standard: 10 mm deflection at 180 ± 100 g pressure.



2. Open the front door and slide out the jogger unit. Adjust the belt [C] tension with tightener [c].
- Standard: 3 mm deflection at 100 ± 30 g pressure.





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3. Open the front door and slide out the jogger unit. Adjust the belt [D] tension with tightener [d].

Standard: 8 mm deflection at $150 \pm 40 \text{ g}$ pressure.

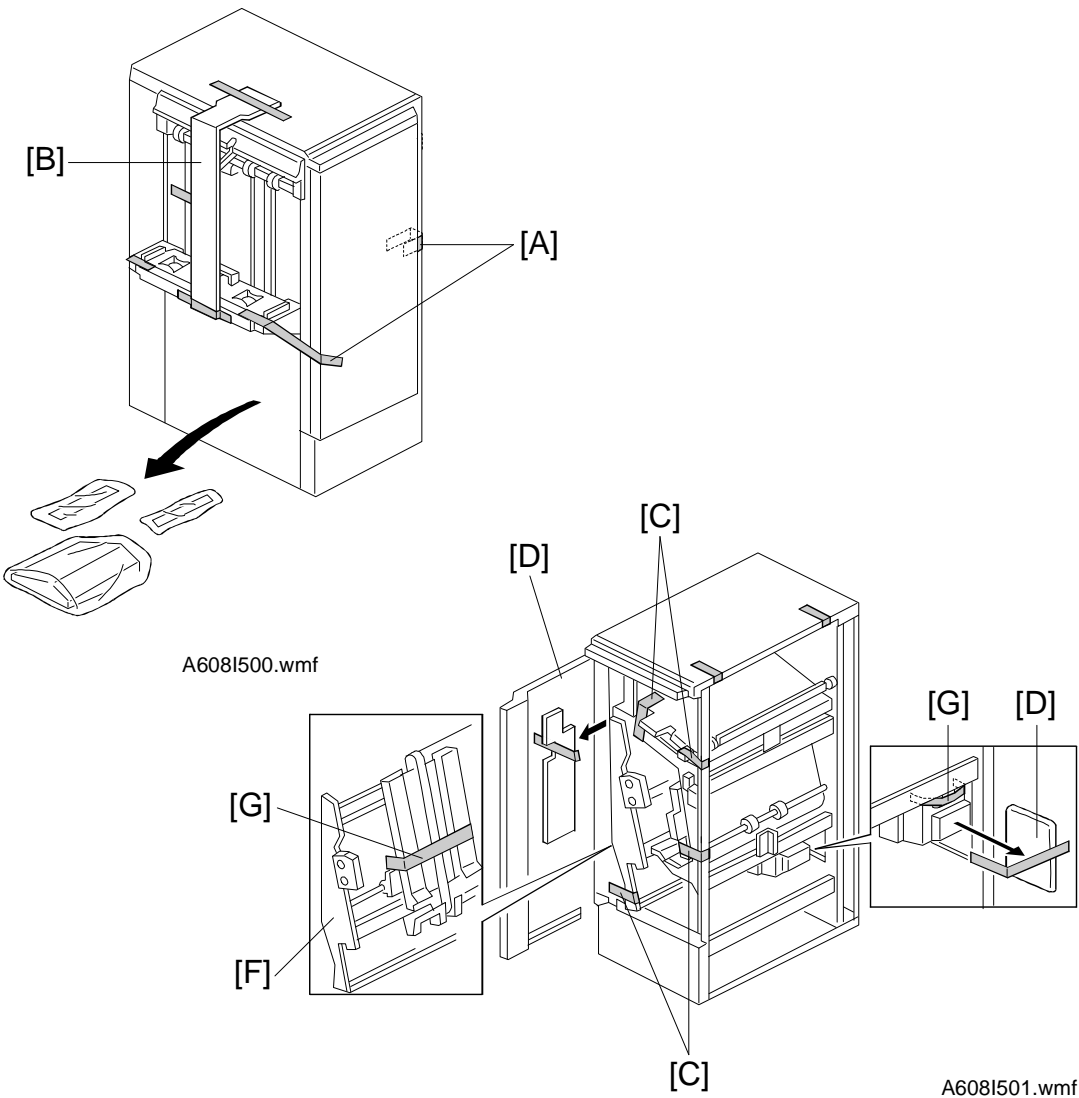
6. FINISHER (A608)

6.1 ACCESSORY CHECK

Check the accessories in the box according to the following list.

Description	Q'ty
1. Front Connecting Bracket.....	1
2. Rear Connecting Bracket	1
3. Relay Guide	1
4. Entrance Guide.....	1
5. Shift Tray	1
6. Cushion - 5 x 10 x 345.....	1
7. Cushion - 5 x 10 x 125.....	1
8. Cushion - 5 x 10 x 637.....	1
9. Philips Truss Head Screw - M4 x 8	4
10. Philips Pan Head Screw - M4 x 12.....	4
11. Philips Pan Head Screw - M4 x 6.....	4
12. Caster Stopper	2

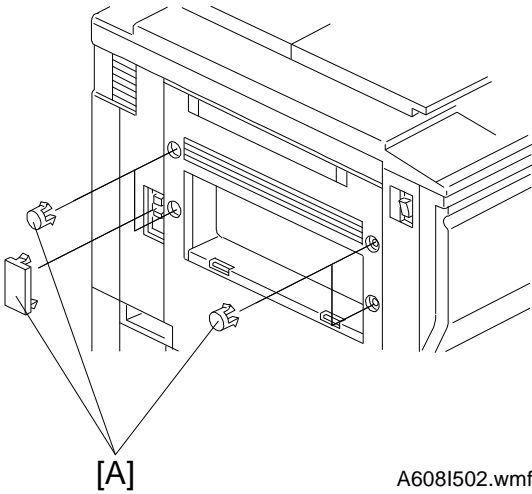
6.2 INSTALLATION PROCEDURE



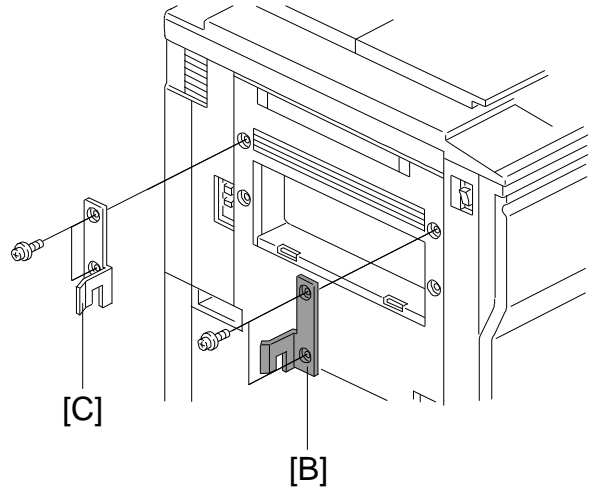
Installation

CAUTION
Unplug the power cord before beginning the following procedure.

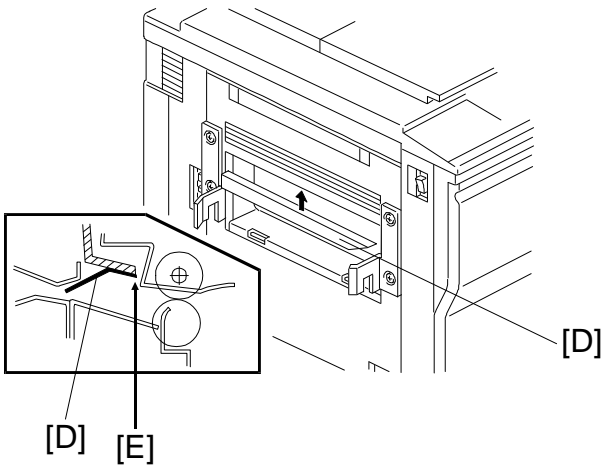
1. Remove the strips of tape [A] and the cushions [B].
2. Open the front door and remove the strips of tape [C] and cushions [D].
3. Extend the staple unit [F].
4. Remove the strip of tape [G].



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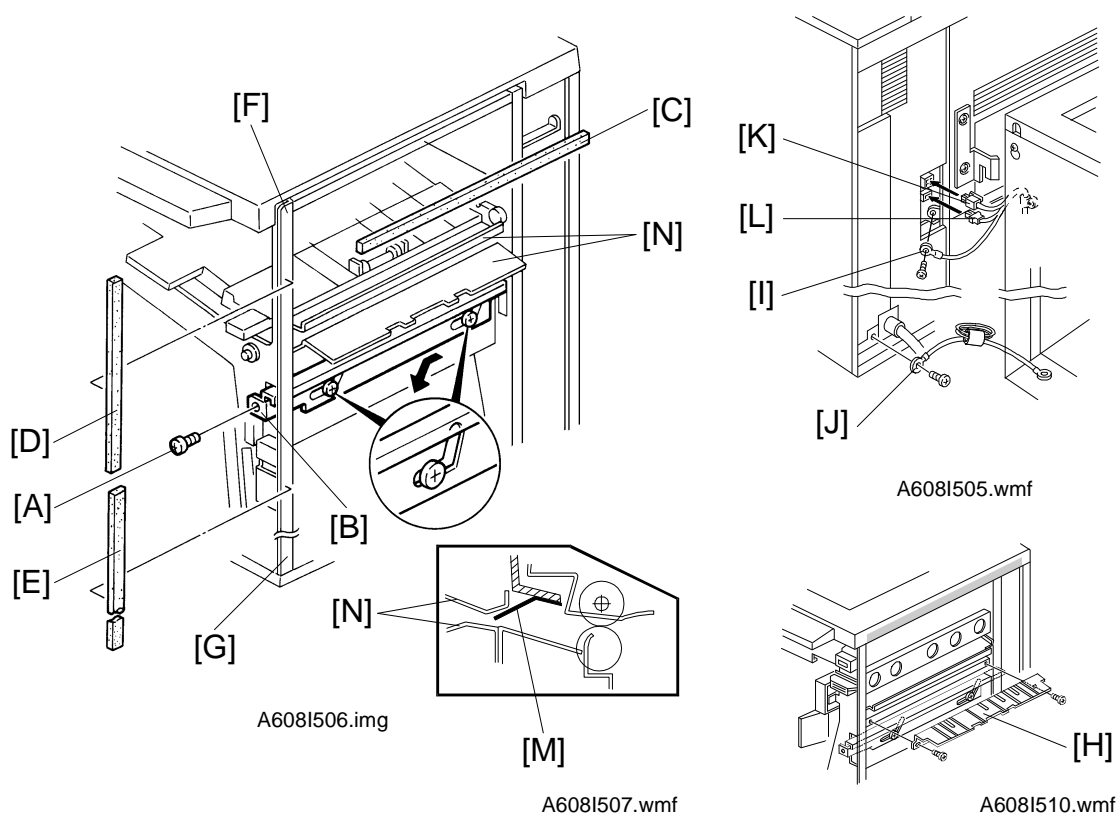


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5. Remove five plastic caps [A] on the copier's left cover.
6. Install the front connecting bracket [B] (2 screws - M4 x 12) and the rear connecting bracket [C] (2 screws - M4 x 12) on the copier.
7. Stick the entrance guide mylar [D] on the copier exit area as shown.
NOTE: Align the edge [E] of the cover and the mylar.

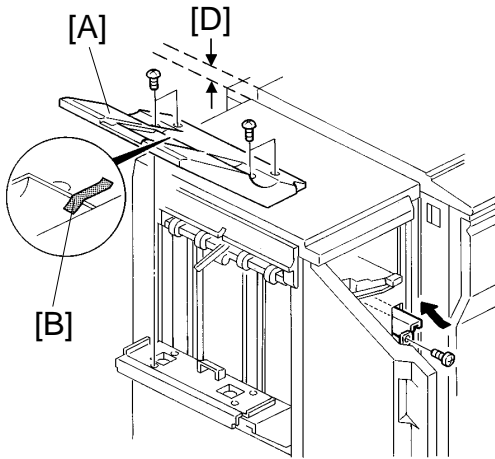


8. Open the front door of the finisher and remove the screw [A] fixing the locking lever [B], then lower the locking lever.
9. Stick the cushions [C] (middle), [D] (short), [E] (long) as shown.

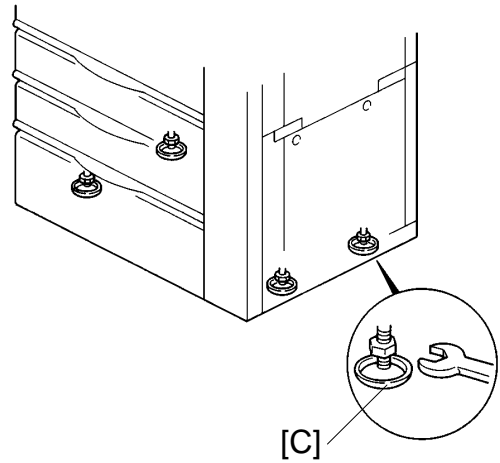
NOTE: Stick the cushion [C] on the metal stay (not on the cover).
Align the upper edge of the cushion [D] with the edge of the stay [F].
Align the lower edge of the cushion [E] with the edge of the stay [G].
10. Install the relay guide [H] (2 screws).
11. Secure the protective earth wire [I]* (1 screw) and the wire [J] (1 screw).

***NOTE:** For all models other than those intended for North America, the green wire is meant to be used as a functional earth and should be connected as shown.
12. Connect the fiber optics connector [K] and the 4P connector [L].
13. Align and press the finisher against the copier and fix them by raising the locking lever [B].

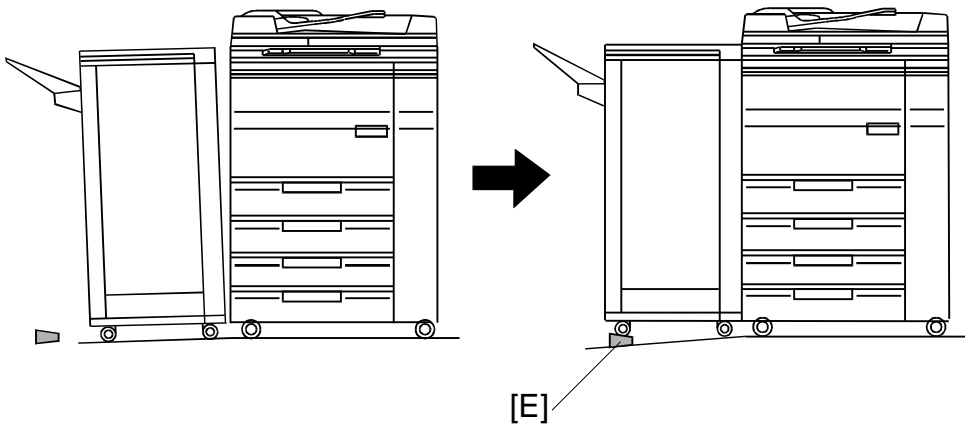
NOTE: At this time, confirm that the mylar [M] is located between the guides [N].
14. Secure the locking lever (1 screw).



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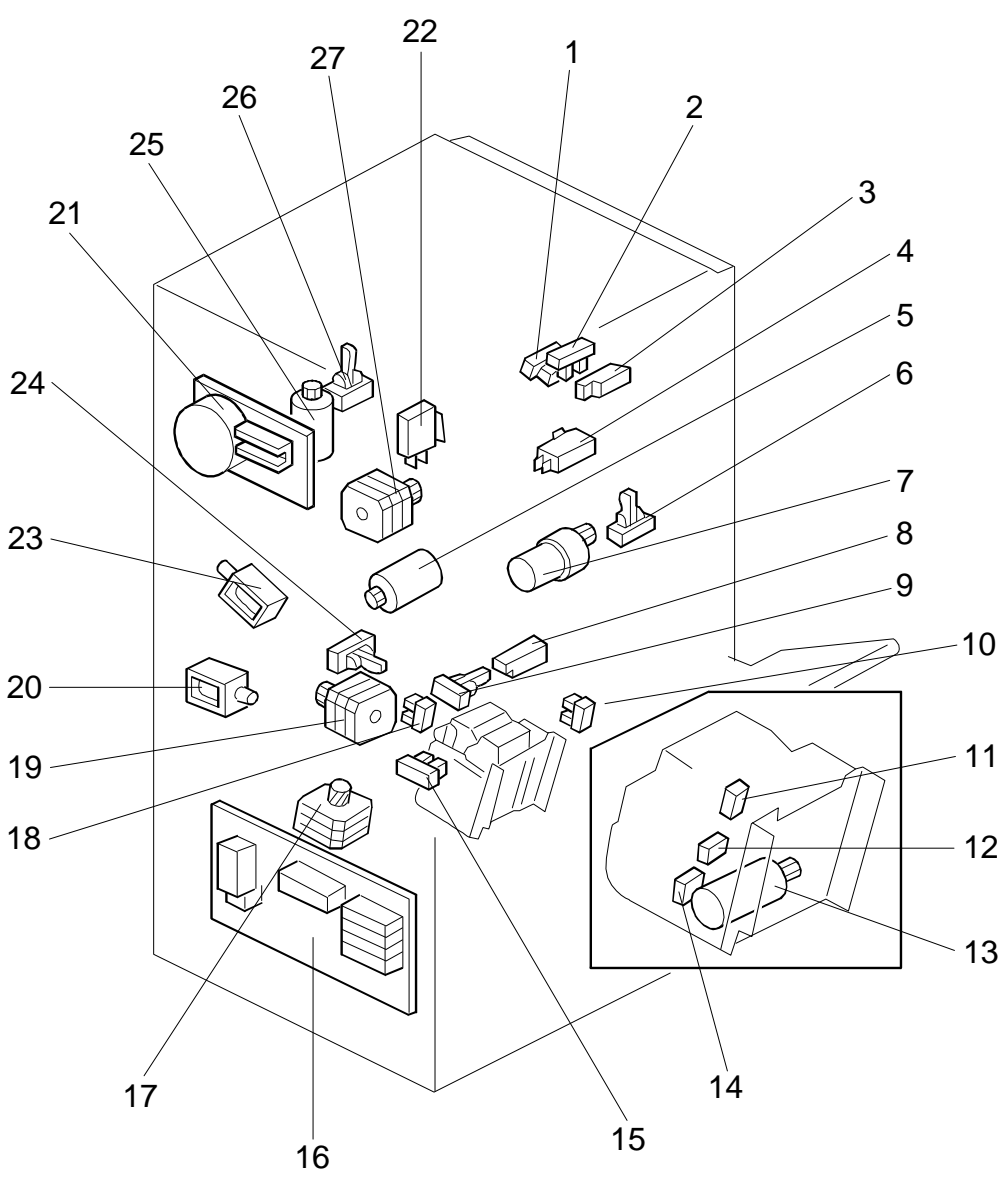
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15. Install the shift tray [A] with 4 screws - M4 x 8 (remove tape [B]).
 16. Adjust the height of the copier by using the leveling foot [C] so that the difference in level between the copier [D] and the finisher will be 30 ± 1 mm.
 17. To ensure grounding between the copier and finisher, insert caster stoppers [E] under the caster as shown.
 18. Plug in the copier.
 19. Turn on the main switch of the copier and test the operation of the finisher.
- NOTE:** The copier recognizes automatically that the finisher is installed.

FINISHER (A608) ELECTRICAL COMPONENTS



Symbol	Description	Index No.	P-to-P
Motors			
M1	Transport Drive	21	N5
M2	Shift Tray Lift	25	N8
M3	Exit Drive	27	D10
M4	Stack Feed-out	5	A3
M5	Jogger	19	A2
M6	Stapler Drive	17	A3
M7	Shift	7	N6
M8	Staple	13	A8
Sensors			
S1	Entrance	26	N1
S2	Jogger Unit Entrance	24	A1
S3	Jogger Unit Paper	8	A4
S4	Stack Feed-out Belt HP	9	A6
S5	Jogger HP	18	A5
S6	Exit	3	N1
S7	Stack Height 1	2	N3
S8	Stack Height 2	1	N4
S9	Shift Tray Lower Limit	15	N3
S10	Stapler Hammer HP	14	A8
S11	Shift Tray Half-Turn	6	N2
S12	Stapler Unit HP	10	A5
Switches			
SW1	Front Door Safety (Switch)	22	N7
SW2	Shift Tray Upper Limit (Switch)	4	N8
SW3	Cartridge Set	12	A8
SW4	Staple End	11	A8
Solenoids			
SOL1	Positioning Roller	20	D10
SOL2	Junction Gate	23	D9
PCBs			
PCB1	Main Control	16	H2