20-BIN SORTER STAPLER

(Machine Code: A664)

1. SPECIFICATIONS

Configuration: Console

Number of Bins: 20 + Proof Tray

Paper for Proof Tray:

Size: Maximum: A3, 11" x 17"
Minimum: A6 lengthwise, 5 1/2" x 8 1/2"

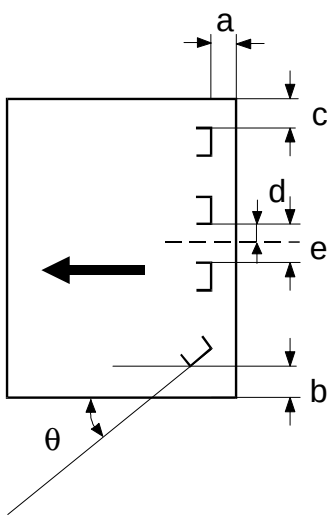
Weight: 52 ~ 157 g/m^2,14 ~ 42 lb

Capacity: Proof Tray - 250 sheets (80 g/m^2, 20 lb)

Paper for Bins: See the table below.

	Sort	Stack	Staple
Maximum paper size	A3, 11" x 17"	A3, 11" x 17"	A3, 11" x 17"
Minimum paper size	Sideways: A5, 8 1/2" x 11" Lengthwise: A5, 5 1/2" x 8 1/2"	Sideways: A5, 8 1/2" x 11" Lengthwise: A5, 5 1/2" x 8 1/2"	B5, 8 1/2" x 11"
Maximum paper weight	157 g/m^2, 42 lb	157 g/m^2, 42 lb	157 g/m^2, 42 lb
Minimum paper weight	52 g/m^2, 14 lb	52 g/m^2, 14 lb	52 g/m^2, 14 lb
Maximum capacity	All sizes: 50 sheets/bin Two-sided copies: 40 sheets/bin	All sizes: 50 sheets/bin Two-sided copies: 40 sheets/bin	All sizes: 50 sheets (80 g/m^2)

Stapling Positions:



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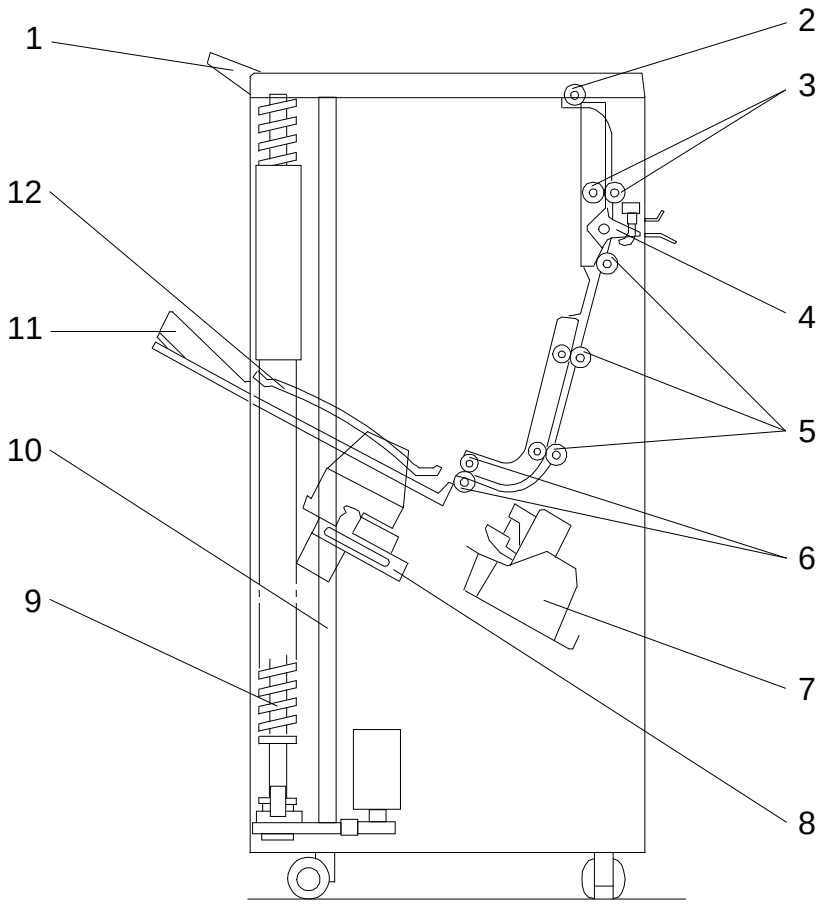
a = 6 ± 3 mm
b = 6 ± 3 mm
c = 6 ± 3 mm
d = 66 ± 3 mm
e = 132 ± 2 mm
θ = 45 ± 5°

Staple Replenishment:	Cartridge refill (5,000 pieces/cartridge)
Power Source:	DC24 V (from copier)
Power Consumption:	Average: less than 50 W (without punch) Maximum: In sort/stack mode: Less than 45 W (without punch) In staple mode: Less than 50 W
Dimensions: (W x D x H)	566 x 583 x 978 mm
Weight:	Approximately 48 kg

2. COMPONENT LAYOUT

2.1 MECHANICAL COMPONENT LAYOUT



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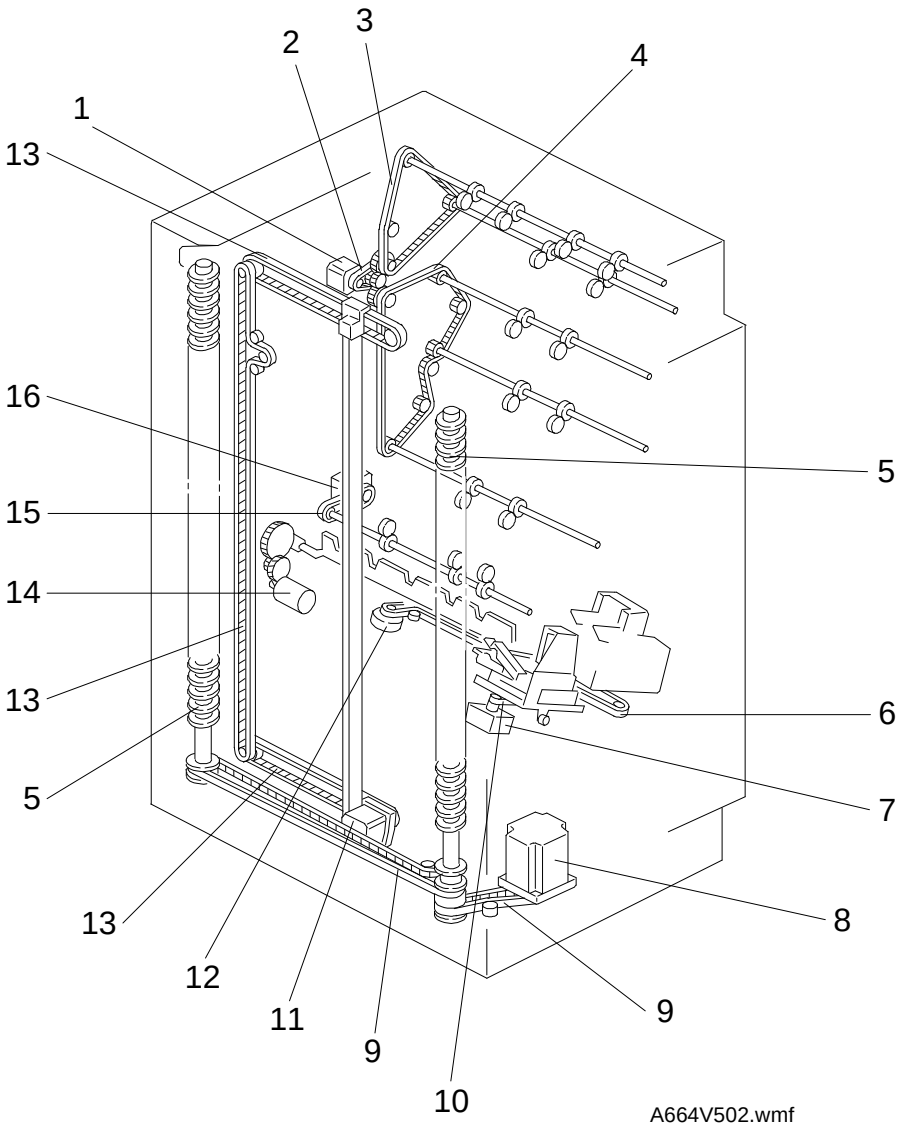
1. Proof Tray
2. Proof Exit Rollers
3. Proof Transport Rollers
4. Turn Gate
5. Sorter Transport Rollers
6. Sorter Exit Rollers
7. Staple Unit
8. Grip Assembly
9. Helical Wheels
10. Jogger Plate
11. Bins
12. Upper Guide Plate

2.2 DRIVE LAYOUT



1. Main Motor
2. Main Drive Belt
3. Proof Drive Belt
4. Sorter Drive Belt
5. Helical Wheels
6. Staple Unit Drive Belt
7. Gripper Motor
8. Bin Drive Motor
9. Wheel Drive Belts
10. Grip Drive Belt
11. Jogger Motor
12. Staple Unit Drive Motor
13. Jogger Drive Belts
14. Bin Rear Plate Drive Motor
15. Sorter Exit Drive Belt
16. Sorter Exit Motor

3. ELECTRICAL COMPONENT DESCRIPTION

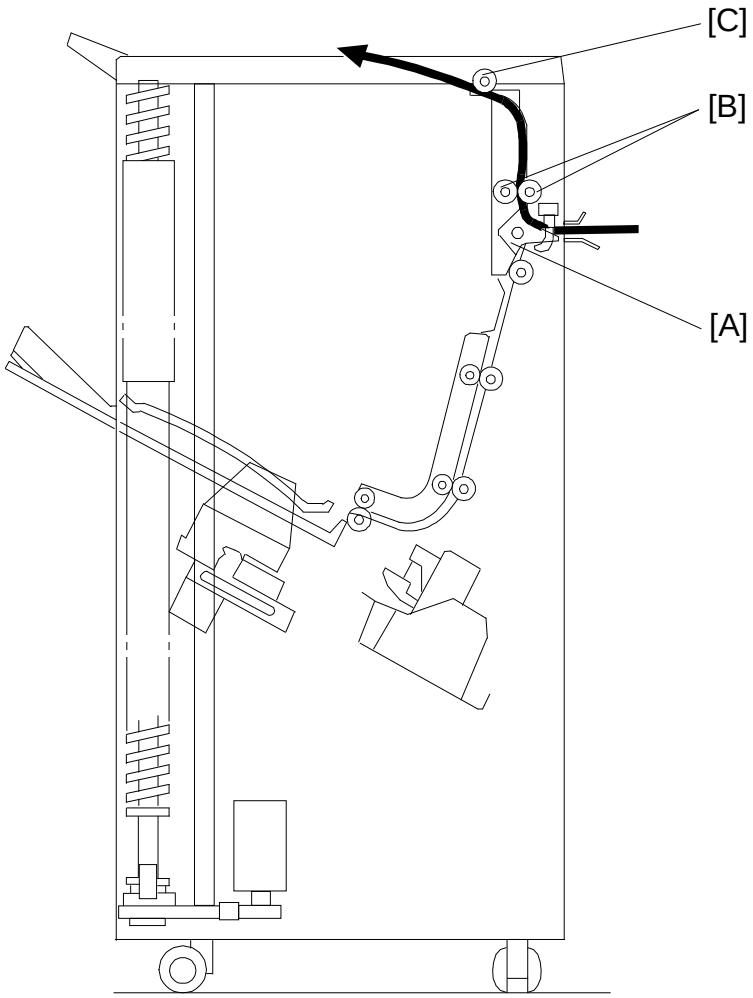
Please refer to the electrical component layout on the reverse side of the point-to-point diagram on waterproof paper.

Symbol	Name	Function	Index No.
Motors			
M1	Main	Drives the paper transport rollers.	1
M2	Stapler	Feeds the staples and drives the stapler hammer.	9
M3	Grip	Drives the grip assembly forward and backward into the bin to grip the copies and bring them to the stapling position.	23
M4	Bin Drive	Drives the bins upward and downward by rotating the three helical wheels.	17
M5	Jogger	Drives the jogger plate to jog the copies against the front side plate.	20
M6	Stapler Unit Drive	Drives the stapler unit in accordance with the required staple position and angle.	24
M7	Bin Rear Plate Drive	Lowers and raises the bin rear plate.	25
M8	Sorter Exit	Delivers the paper into the bins.	28
Sensors			
S1	Bin Jam (LED)	Detects paper jams at the distribution section and detects if there is paper in the bins.	3
S2	Proof Exit	Detects paper jams at the proof tray exit.	4
S3	Entrance	Detects paper jams at the entrance guides.	5
S4	Staple Hammer Home Position	Detects if the staple hammer is at the home position.	10
S5	Stapler Unit Pulled-out position	Detects if the stapler unit is at the pulled-out position.	11
S6	Paper	Detects whether copies are under the hammer.	12
S7	Stapler Unit Home Position	Detects if the stapler unit is at the home position.	14
S8	Grip Home Position	Detects if the grip assembly is in the home position.	16
S9	Bin Jam (Photo Tr.)	Detects paper jams at the distribution section and detects if there is paper in the bins.	19
S10	Wheel Sensor	Detects the bin position.	18
S11	Bin Home Position	Detects if the bins are at the home position.	21
S12	Jogger Home Position	Detects if the jogger plate is at the home position.	22
S13	Bin Rear Plate Open	Detects if the bin rear plate is at the open position.	26
S14	Bin Rear Plate Home Position	Detects if the bin rear plate is at the home (closed) position.	27

Symbol	Name	Function	Index No.
Solenoids			
SOL1	Turn Gate	Opens and closes the turn gate to direct the copies into either the proof tray or the bins.	2
SOL2	Grip	Opens and closes the grip arms to grip the copies on the bins.	13
SOL3	Grip Arm Positioning	Moves the grip ass'y to the rear and front to catch or release the paper to carry it to the stapler.	15
PCBs			
PCB1	Main Control	Controls all sorter stapler functions.	29
Switches			
SW1	Door Safety	Cuts the dc power when the front door is opened.	6
SW2	Cartridge Set	Detects if the staple cartridge is installed or not.	7
SW3	Staple End	Detects staple end.	8

4. BASIC OPERATION

4.1 NORMAL (PROOF MODE) AND SORT/STACK MODE



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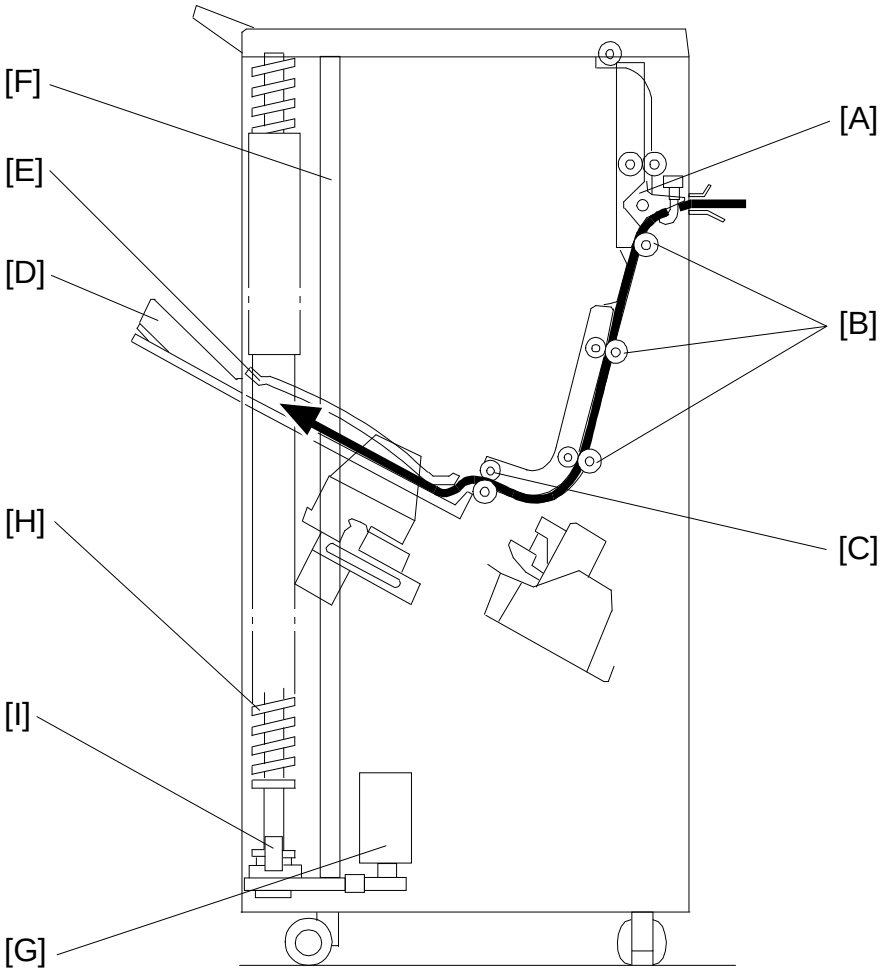
Copies exiting the copier pass through the entrance guide plates to the turn gate section. The turn gate [A] will send copies either to the proof tray or to the bins, depending on the mode.

– Normal (proof) mode (from the turn gate section to the proof tray) –

The turn gate solenoid energizes to turn the turn gate clockwise when the ◇ key is pressed. The turn gate directs copies through the proof transport section to the proof tray. The main motor turns counterclockwise to rotate the vertical transport rollers [B] and proof exit roller [C].

– Sort mode (from the turn gate section to the bins) –



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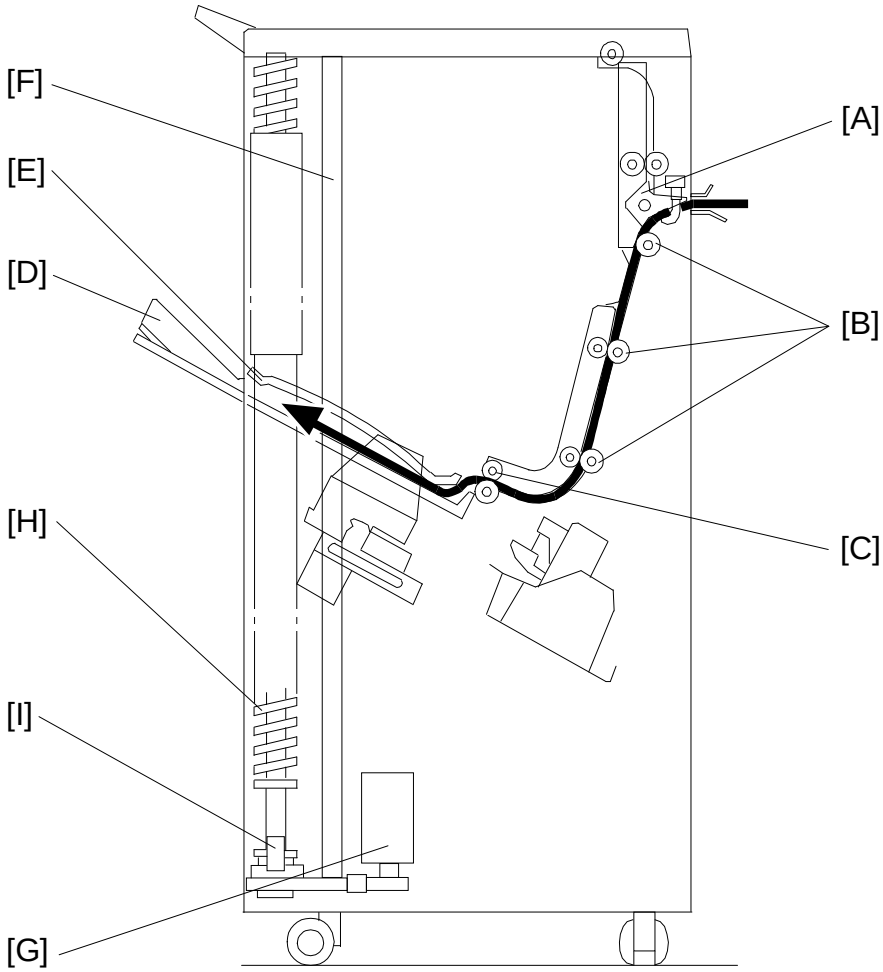
In this mode, the turn gate solenoid stays off to keep the turn gate [A] at the upper position. The main motor turns clockwise to rotate the sorter transport rollers [B] and the exit motor rotates the exit rollers [C].

The turn gate directs copies to the sorter bins through the sorter transport section, then the first copy is delivered between the top bin [D] and the upper guide plate [E]. The jogger plate [F] then jogs to square the copies each time.

Before the next copy reaches the sorter exit roller, the bin drive motor [G] rotates and advances the bin one step (the helical wheels [H] rotate once). When the cut out in the actuator reaches below the wheel sensor [I], the bin drive motor turns off.

Bins advance each time copies are delivered.

– Stack mode (from the turn gate section to the bins) –



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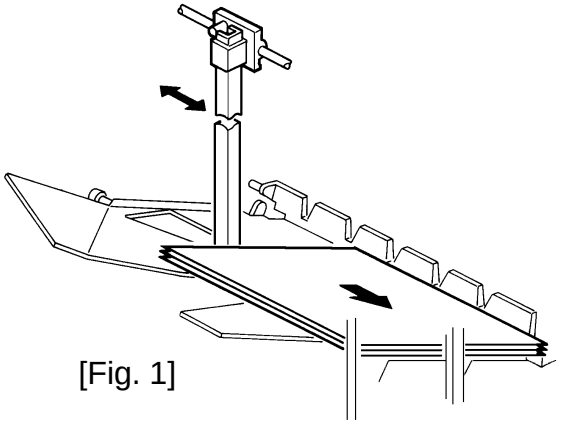
As with sort mode, the turn gate solenoid stays off and the turn gate [A] stays up when the ◇ key is pressed. The main motor turns clockwise to rotate the sorter transport rollers [B] and the exit motor rotates the exit rollers [C].

The turn gate directs copies to the sorter bins through the sorter transport section, then the copies are delivered between the top bin [D] and the upper guide plate [E]. The jogger plate [F] then jogs to square the copies each time.

All copies of the copy run are then fed to the first bin. When the final copy is delivered, the wheel drive motor [G] turns and advances the bin one step (the helical wheels [H] rotate once). When the cut out in the actuator reaches below the wheel sensor [I], the bin drive motor turns off.

4.2 STAPLE MODE



[Fig. 1]

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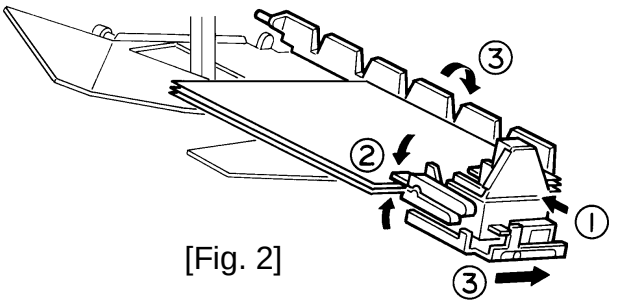

[Fig. 2]

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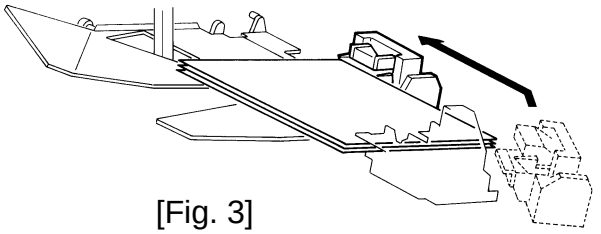

[Fig. 3]

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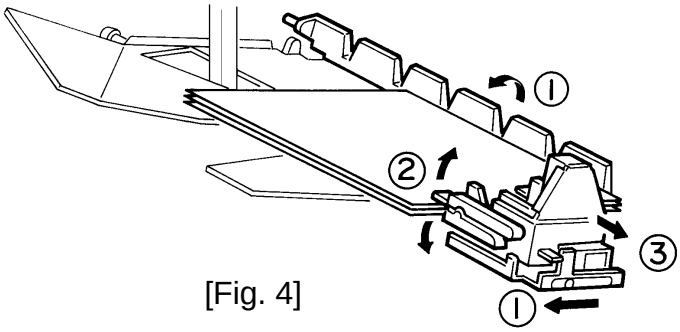
When the final set of copies is jogged [Fig. 1], the stapler unit staples the stacked copies as follows:

The grip arms move inside the front side plate and catch the paper.

The bin rear plate is turned so as to be flat with the sorter bin.

The grip assembly brings the copies down underneath the stapler [Fig. 2].

The staple unit changes position (the position varies depending on the copy size and staple mode) and the stapler staples the copies [Fig. 3].



[Fig. 4]

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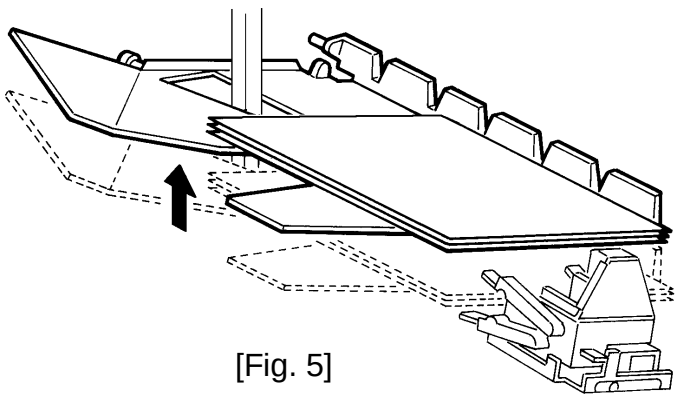

[Fig. 5]

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The grip assembly brings the stapled copies back to the bin and the bin rear plate returns to the original position.

The grip assembly releases the copies and returns to outside the front side plate so as not to disturb the bin movement [Fig. 4].

The bin advances one step [Fig. 5].

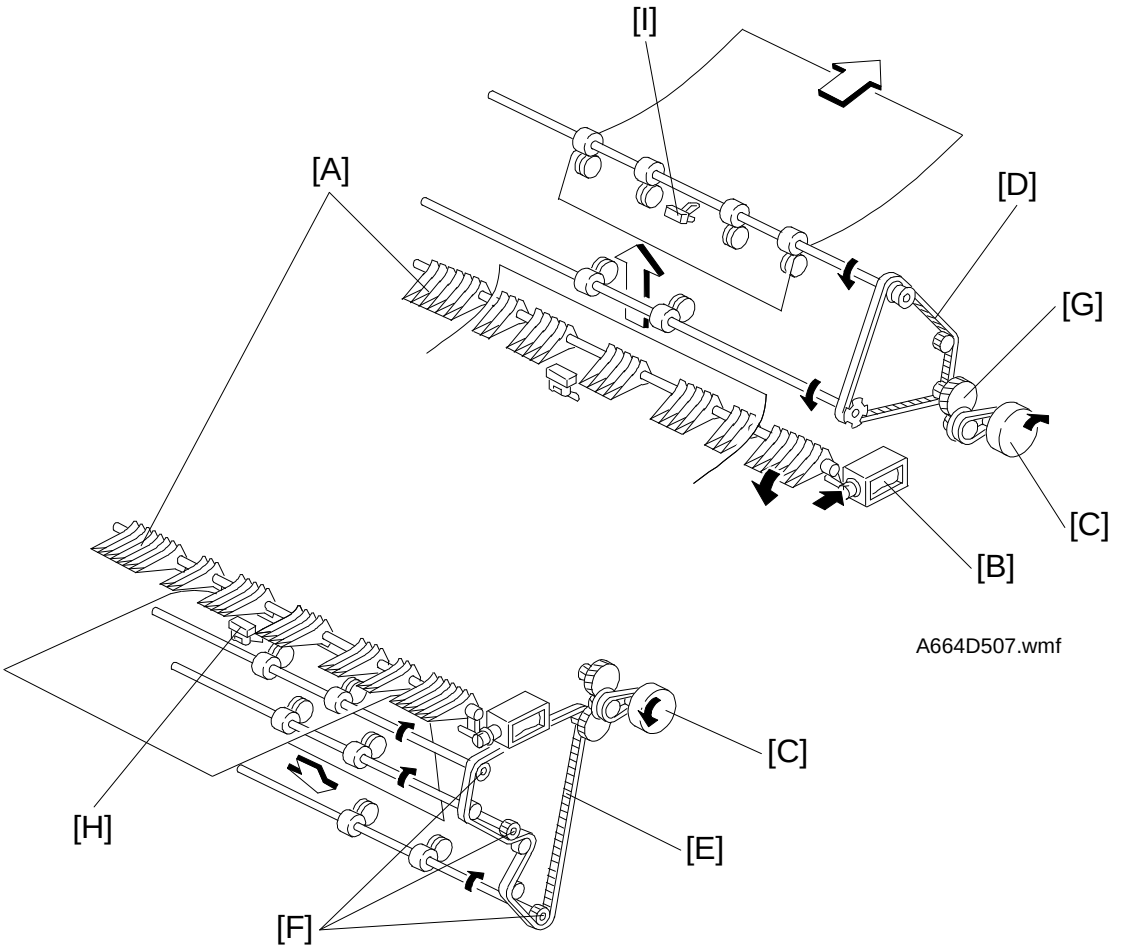
When the final set of copies is stapled, the stapler unit is returned to the home position.

There are two staple modes.

1) Automatic stapling:
   In ADF mode, when staple mode is selected before pressing the ◇ key, copies will be delivered to each bin and stapled automatically.

2) Manual stapling:
   In sort mode, after copies are sorted in the bins, the copies will be stapled when the manual staple key is pressed and the staple position is selected. In stack mode, manual stapling is impossible.

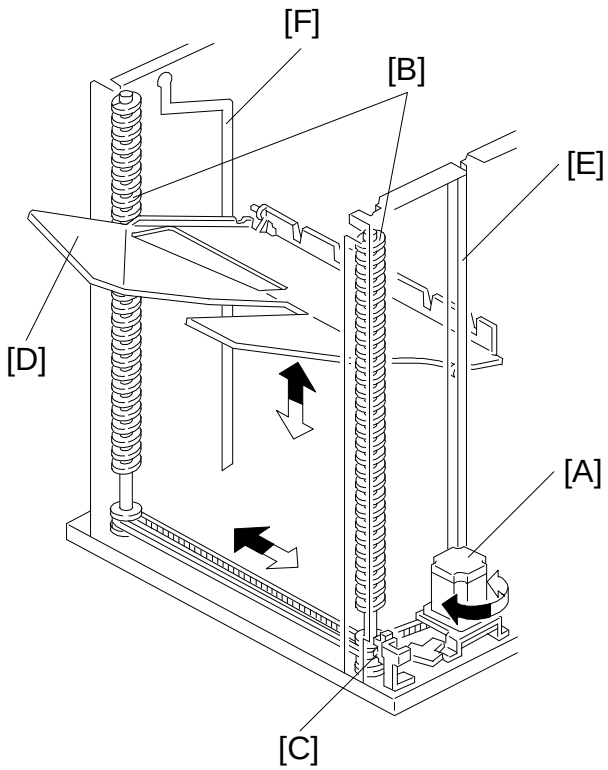
5. TURN GATE



The turn gate [A] sends copies to the proof tray or the sorter bins depending on the mode. In the proof mode, the turn gate solenoid [B] turns on and the main motor [C] turns clockwise when the ◇ key is pressed.
The turn gate [A], directs copies upward through the proof transport section to the proof tray. In this mode, main motor drive is transmitted by both the proof drive belt [D] and sorter drive belt [E]. However, the one-way clutch in each sorter transport roller drive gear [F] does not transmit the drive to the sorter transport rollers.

In the sort, stack, and staple modes, the turn gate solenoid stays off to direct copies downward to the sorter transport section. When the ◇ key is pressed, the main motor [C] turns counterclockwise.
In this mode, main motor drive is not transmitted to the proof drive belt [D] because of the one-way clutch in the pulley [G]. The entrance [H] and the proof exit [I] sensors check for paper jams.

6. BIN DRIVE MECHANISM



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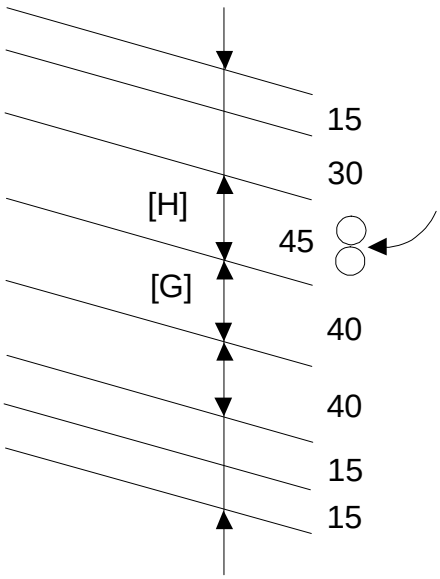

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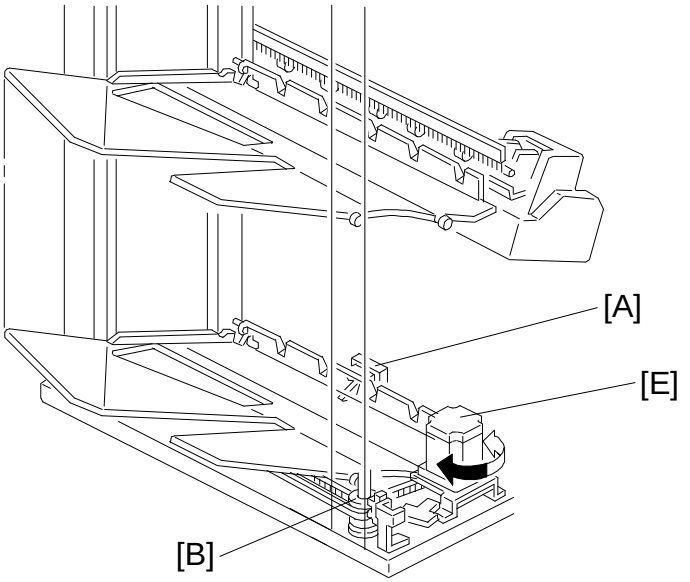
The bin drive mechanism moves the bins up and down to receive copies. The main components in this mechanism are the bin drive motor [A], the two helical wheels [B], the wheel sensor [C], and the bins themselves [D]. There are four pins on each bin. Two of them fit in the slots in the helical wheels. Another pin fits into the slot [E] in the front side frame, and the last pin fits in the guide rail [F]. The pins slide up and down in these slots.

Two timing belts transmit drive from the bin drive motor to the helical wheels. When the motor rotates clockwise, the bins lift (black arrow) and when it rotates counterclockwise, the bins lower (white arrow). The wheel sensor actuator on the front helical wheel has a slot which detects when the helical wheel has rotated 360 degrees.

When the bins are advanced, the helical wheels rotate once (360 degrees) for each step.

As the pitch of the spiral on the helical wheel is greater when bins are at the staple and paper exit area than when bins are elsewhere, the amount of bin shift is greater when bins are at the staple and paper exit area. This leaves enough space to staple [G] and stack paper [H] and reduces the total machine height.

7. BIN HOME POSITION



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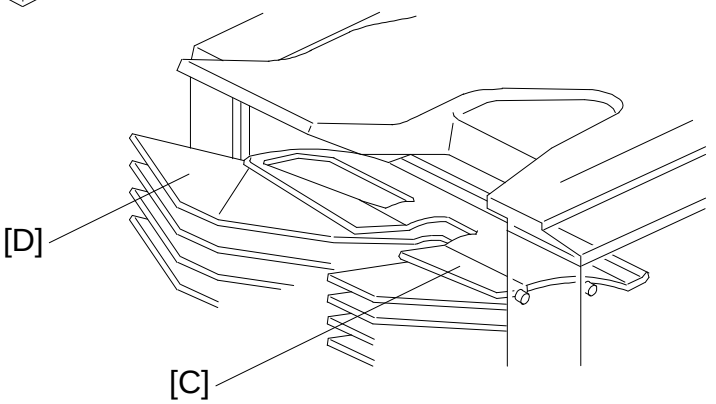

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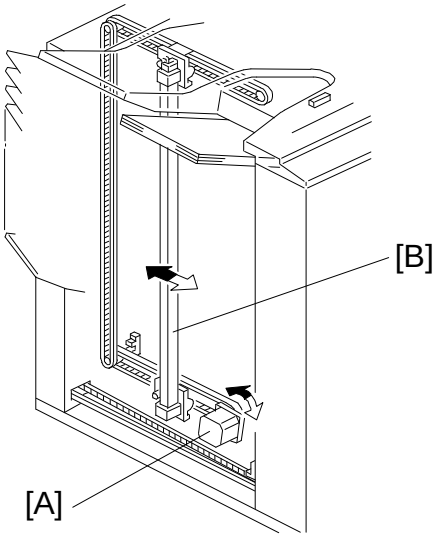
The bin home position sensor [A] and the wheel sensor [B] ensure that the sorter exit roller is between the upper guide plate [C] and the 1st bin [D] when all the bins are at the home position.

When the main switch is turned on, the bin lift motor [E] lowers the bins (turns counterclockwise) until the bottom bin actuates the bin home position sensor. Then, the bin lift motor raises the bins (turns clockwise) until the wheel sensor activates. At this point, the bins are in the home position.

8. JOGGER



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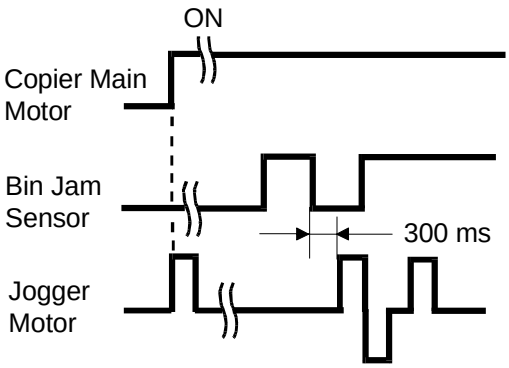

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NOTE:
- The bin jam detector contains two LED/phototransistor pairs.
- To detect jams, light from an LED above the bins passes through the slots in the bins to a phototransistor below the bins. If the light path is blocked at the wrong time, a jam is detected.
- To detect paper in the bins, light from another LED above the bins passes through the circular holes in the bins to another phototransistor below the bins. If the light path is blocked, the machine determines that there is paper in the bins.

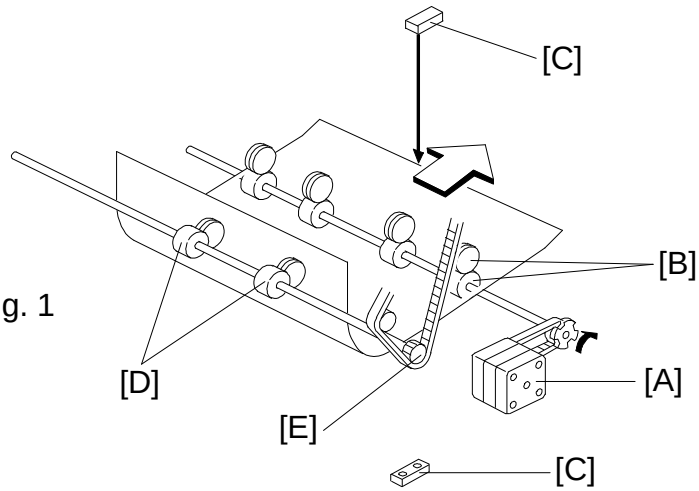
When the ⧫ key is pressed in the sort, staple, and stack modes, the copier sends the paper size information to the sorter stapler. In accordance with this data, the jogger motor [A] drives the jogger plate [B] from the jogger home position to a point 10 mm wider than the selected paper.

300 ms after the trailing edge of the copy passes underneath the bin jam sensor (jam detection part), the jogger motor rotates forward and in reverse. This makes the jogger plate push all the copies against the front side plate to square the sheets. When the jogger plate pushes the paper, the plate shifts to a position 5 mm wider than the paper size when the bins lift, and it shifts to a position 1 mm narrower than the paper size when the bins lower.

The jogger plate then returns to 10 mm away from the selected paper size for the next copy.

When the bin jam sensor (paper detector part) detects that all copies have been removed from the bins after jogging is finished, the jogger plate returns to its home position.

Fig. 1



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Normally all rollers in the sorter stapler transport the paper at a speed of 360 mm/s. To have enough paper jogging time, the sorter exit motor [A] rotation speed changes as follows to transport the paper quickly and to stack the paper smoothly into the bins.

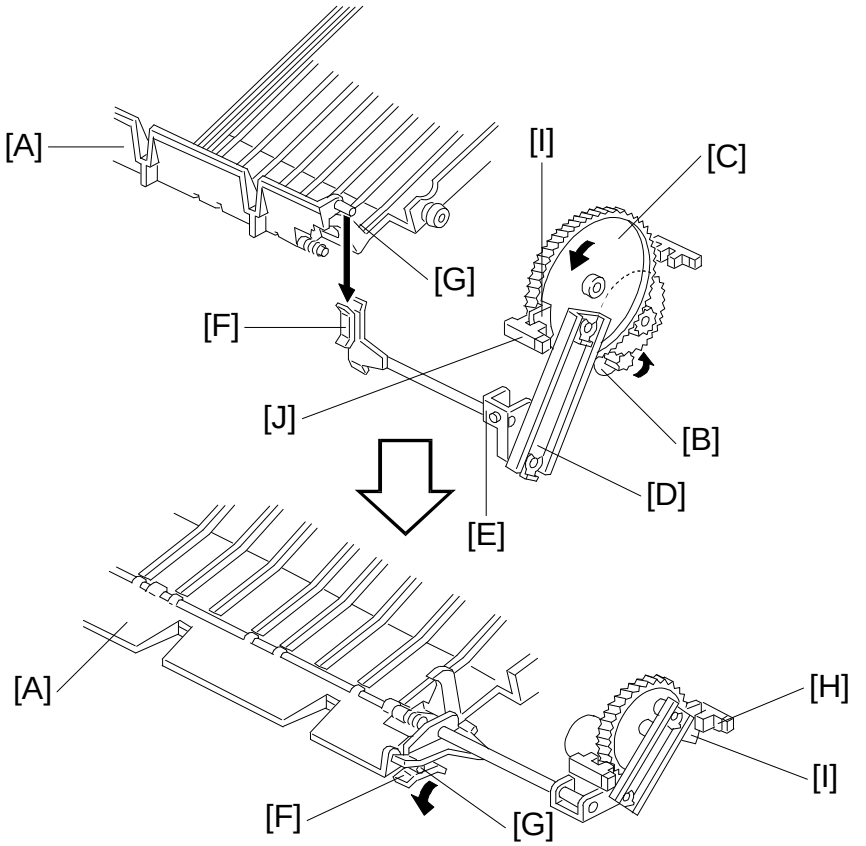
- 360 mm/s: When the sorter exit roller [B] catches the leading edge of the paper
- 1,000 mm/s: After the bin jam sensor [C] detects the leading edge of the paper
- 600 mm/s: When releasing the trailing edge of the paper

The transport roller [D] is driven at a speed of 360 mm/s constantly. However, when the sorter exit roller [B] rotates quickly, the transport rollers also rotate quickly with the pulled paper because of the one-way clutch in the drive gear [E].

– Jogger Off Conditions –

1. Under the following conditions, the jogger plate does not jog after copies are delivered to the bins.
   - If paper is loaded in a bin by hand while the sort/stack or staple mode is selected.
   - If the selected paper size does not match the stapling specifications.
   - If copy of smaller width is delivered to the bins later in the "Mixed sizes" mode.
2. If paper is in a bin before the main switch is turned on, the sort/stack mode is disabled when the sort key is touched.

9. BIN REAR PLATE DRIVE



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The bin rear plates [A] basically stand up as shown (top diagram). They are lowered only during stapling as shown (bottom diagram).

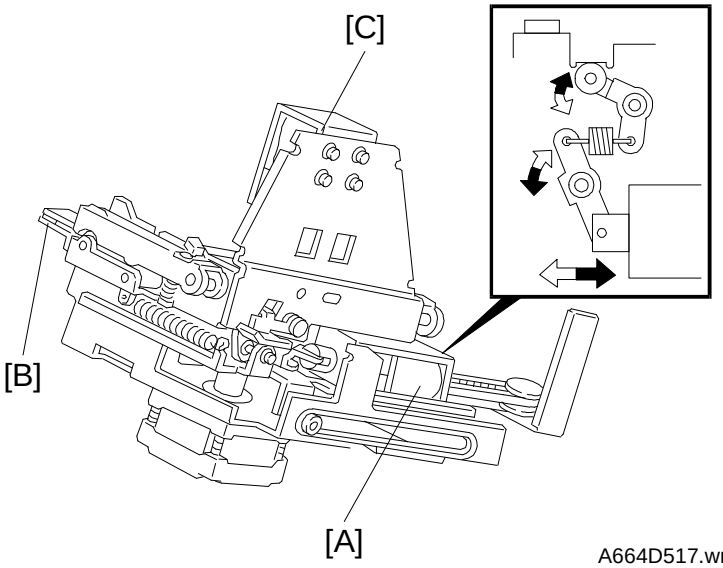
In staple mode, when all copies have been jogged by the jogger plate, the bin rear plate drive motor [B] rotates gear [C]. Gear [C] drives the piston rod [D] to push the lever [E] down.

The holder [F] engaging the pin [G] on the bin rear plate lowers with the lever [E]. Thus, the bin rear plate becomes flat so as not to interfere with the copies being brought to the stapling position by the grip assembly.

While the rear plate is down (during stapling), the bin rear plate open sensor [H] is interrupted by the actuator [I] (bottom diagram). After stapling is completed and stapled paper is returned to the bin, gear [C] rotates 180 degrees and the bin rear plate returns to its home position.

When the bin rear plates are in the home position, the bin rear plate HP sensor [J] is interrupted by the actuator [I] (top diagram). Also, the holder [F] is vertical again, and the pins [G] on the bins can move up or down through the holder as the bins are moved up or down.

10. GRIP ASSEMBLY



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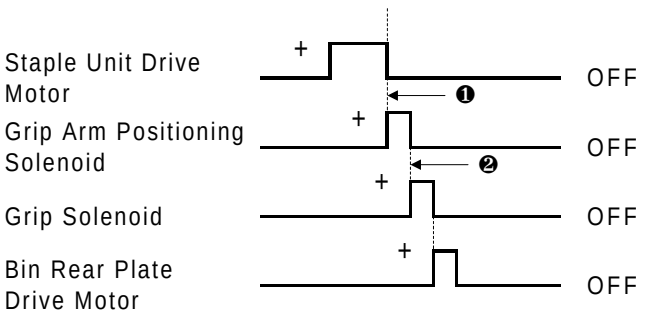

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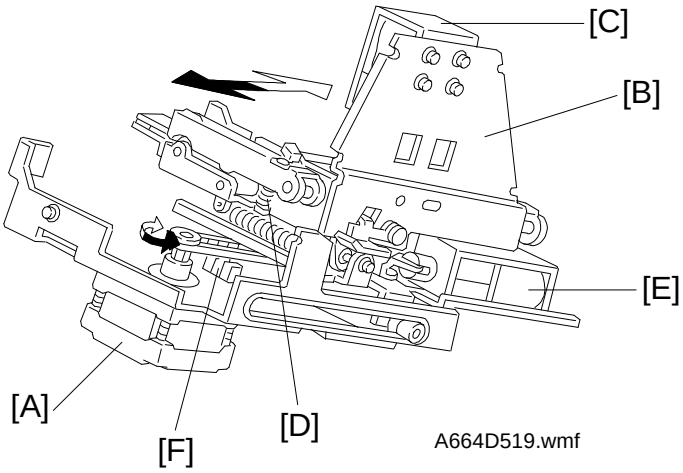
The grip assembly works as follows:

❶ When the stapler unit reaches the stapling position, the grip arm positioning solenoid [A] activates and the plunger is pulled in to move the grip arms [B] towards the rear of the machine. This is to access the paper on the bin.
The grip arm positioning solenoid has a strong magnet inside; the plunger stays in this condition until the solenoid is energized by an opposite charge.
The inset at the upper right of the illustration shows the mechanical linkage as seen from the top.

❷ The grip solenoid [C] activates to close the grip arms and the grip arms catch the papers.
For this solenoid also, the plunger keeps the grip arms closed until the solenoid is energized by an opposite charge.



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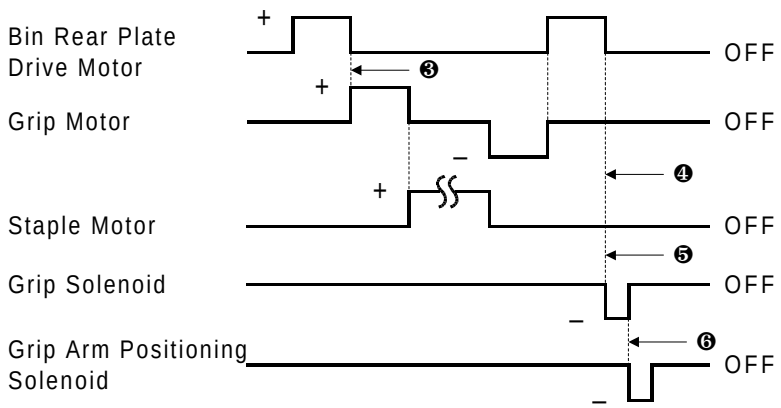

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❸ After the bin rear plate drive motor lowers the bin rear plate, the grip motor [A] turns clockwise (white arrow) until the gripper [B] carries the paper to the stapling position.

❹ After stapling is finished, the grip motor turns counterclockwise to move the stapled copies held in the grip arms back to the bin.

❺ When the grip solenoid [C] activates in reverse, the return spring [D] opens the grip arms to release the copy into the bin.

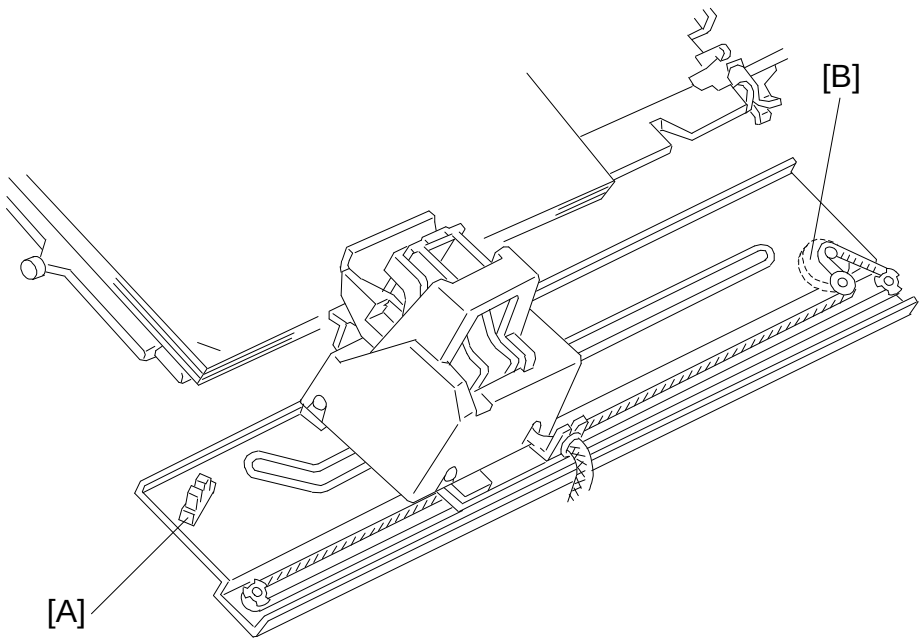
❻ The grip arm positioning solenoid [E] activates to return the grip arms to the home position to prepare for the next stapling cycle.

The grip home position sensor [F] is actuated while the gripper is in the home (grip) position. The sorter stapler main control board sends the appropriate pulses to the grip motor (a stepper motor) [A] to reach the grip position and stapling position.

Vertical stapling positions can be adjusted by changing the number of stepper motor pulses from the home position (see the SP mode table in the copier service manual).

11. STAPLER UNIT

11.1 STAPLER UNIT DRIVE MECHANISM



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The stapler unit moves from the home position (top slant position) towards the rear of the machine in order to change the stapling position. The stapler unit HP sensor [A] activates when the stapler unit is in the home position.

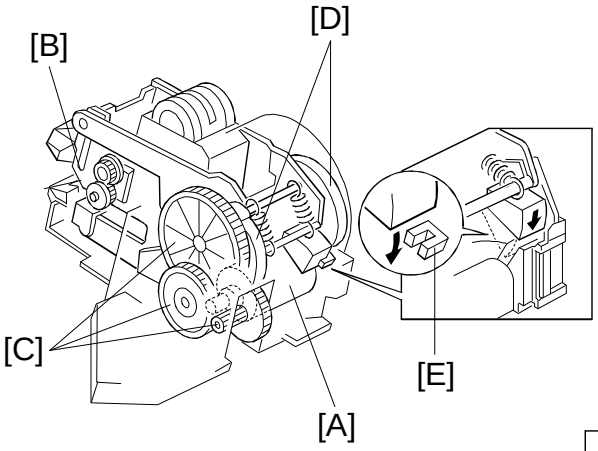
In Top Slant mode, the stapler stays at the home position.

In "Top" ("Bottom") single staple mode, the stapler unit moves to the front (rear) single staple position and stays there until all stapling is completed. It then returns to the home position.

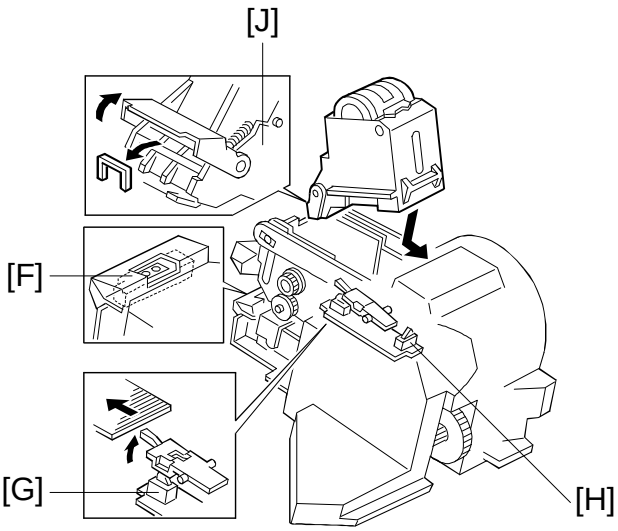
In "2 Staples" mode or "Bottom" single staple mode, the stapling positions depend on the paper size. The stapler unit drive motor [B] is a stepper motor, and the stapling position is reached by counting the steps from the home position. During stapling in the "2 Staples" mode, the stapler unit goes back and forth to staple the two positions.

Horizontal stapling positions can be adjusted by changing the number of stepper motor pulses from the home position (see the SP mode table in the copier service manual).

11.2 STAPLER



A664D521.wmf



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The stapler motor [A] drives the staple sheet drive belt. The staple sheets are fed under the hammer [B].

The stapler motor drives the staple hammer via gears [C] and two eccentric cams [D].

When the aligned copies are brought to the stapling position by the grip, the stapler motor starts rotating to staple the copies. When the cams complete one rotation, the staple hammer home position sensor [E] is de-actuated. The stapler motor then stops.

When the paper sensor [F] in the grip assembly does not detect copies under the hammer, the stapler motor does not rotate.

The staple end sensor [G] detects staple end conditions. The cartridge set sensor [H] detects when the staple cartridge is not installed.

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

– Conditions in which Stapling is Disabled –

1. Under the following conditions, the staple mode is disabled when the staple key on the operation panel is pressed.

   - If there is paper in a bin before the main switch is turned on.
   - If the selected paper size does not match the stapling specifications.
   - If the paper is fed from the by-pass feed table.

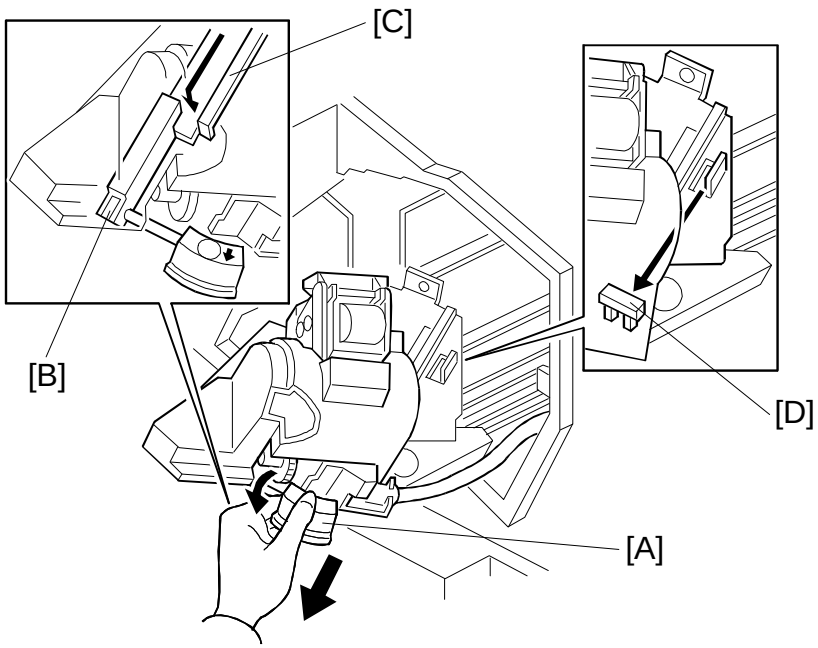
2. Under the following conditions, the staple mode is canceled.

   - If paper is loaded in a bin by hand while the staple mode is selected.
   - If only one sheet is delivered to the bin.
   - If the stack, slip sheet, or interrupt modes are selected.

3. Under the following conditions, the manual stapling mode in sort mode cannot be selected.

   - If paper is loaded in a bin by hand while the sort mode is selected.
   - If the paper size in the bin does not match the stapling specifications.
   - If only one sheet is delivered to the bin.
   - If a smaller width of paper is delivered on the bin later in "Mixed Sizes" mode.
   - If copies already stapled are left in the bin.

11.3 STAPLER UNIT PULL-OUT MECHANISM



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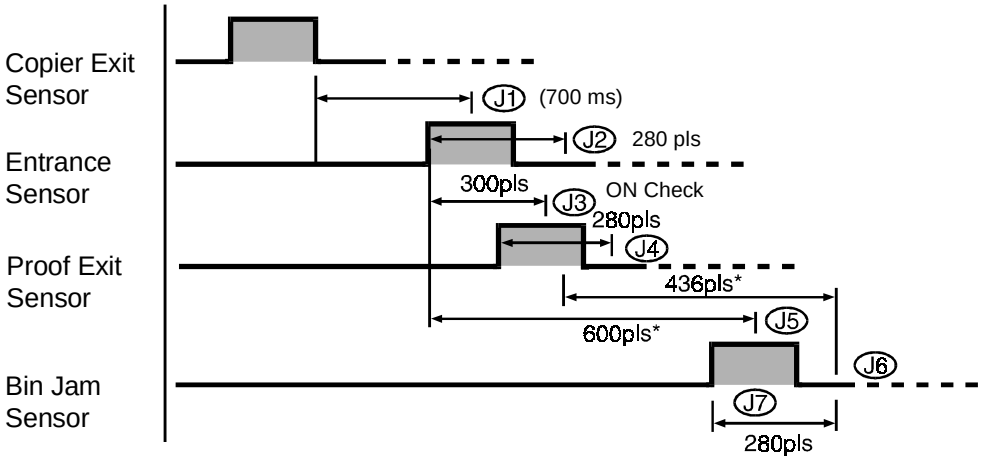
For easy staple cartridge replenishment, the stapler unit can be pulled out to the front. When pulling out the R3 release grip [A] , the stopper is released and the staple unit can be pulled out (to the "staple unit pulled-out" position). At this position, the stopper arm [B] locks the stapler unit by dropping the arm to the edge of bracket [C].

When the stapler unit is not pushed in completely (the staple unit is between the stapler unit home position and stapler unit pulled-out position [D]), a message is displayed advising the user to put the staple unit in the home position.

12. JAM DETECTION



*This is the jam detection timing for the 1st bin. Timing depends on the bins used.

1 pulse ¢ 3.61 ms

A664D526.wmf

– Sorter Jams –

The sorter stapler main control board detects jams when the following conditions are detected. In these cases, a jam signal is sent to the copier, then the copier stops the paper feed and indicates a sorter misfeed.

– Normal (Proof) mode –

J1: The entrance sensor has not turned on 700 ms after the copier exit sensor turns on.

J2: The entrance sensor stays on for more than a certain number of pulses (for example, 280 pulses for A4 sideways).

J3: The proof exit sensor has not turned on 300 pulses after the entrance sensor turns on.

J4: The proof exit sensor stays on for more than a certain number of pulses (for example, 280 pulses for A4 sideways).

– In Sort/Stack or Staple Mode –

J1 and J2: Same as Normal mode.

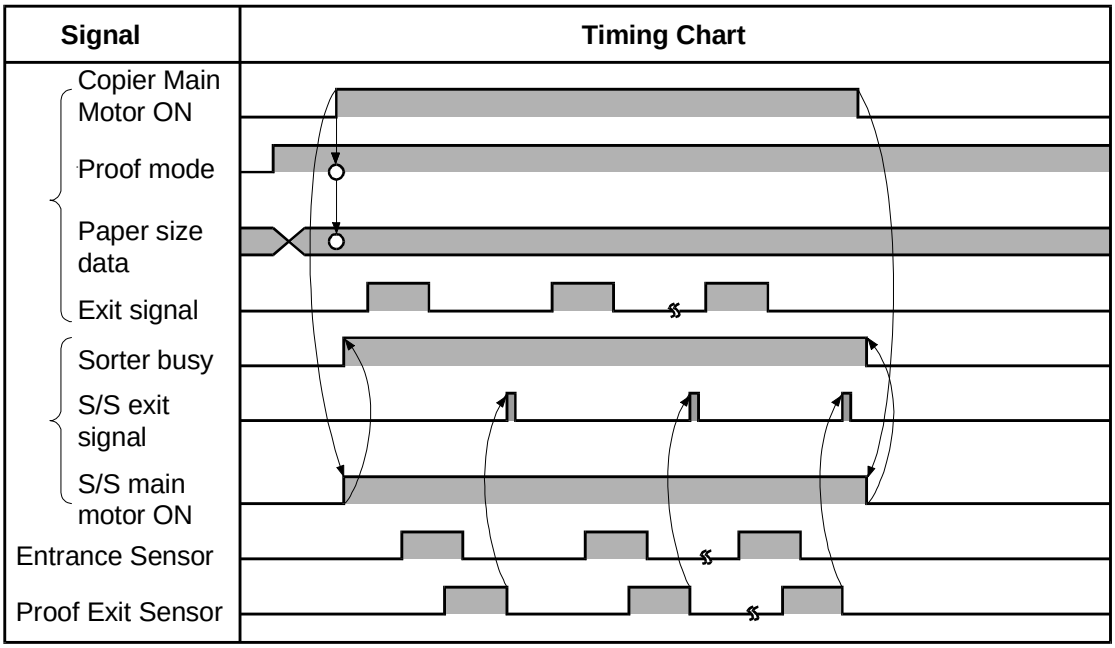
J5: The bin jam sensor has not turned on for 600 pulses after the entrance sensor turns on.

J6: The bin jam sensor stays on for more than a certain number of pulses (for example, 280 pulses for A4 sideways).

J7: The bin jam sensor is still on when the bin drive motor turns on.

13. TIMING CHARTS

13.1 SORTER/STAPLER TIMING CHART (PROOF MODE)



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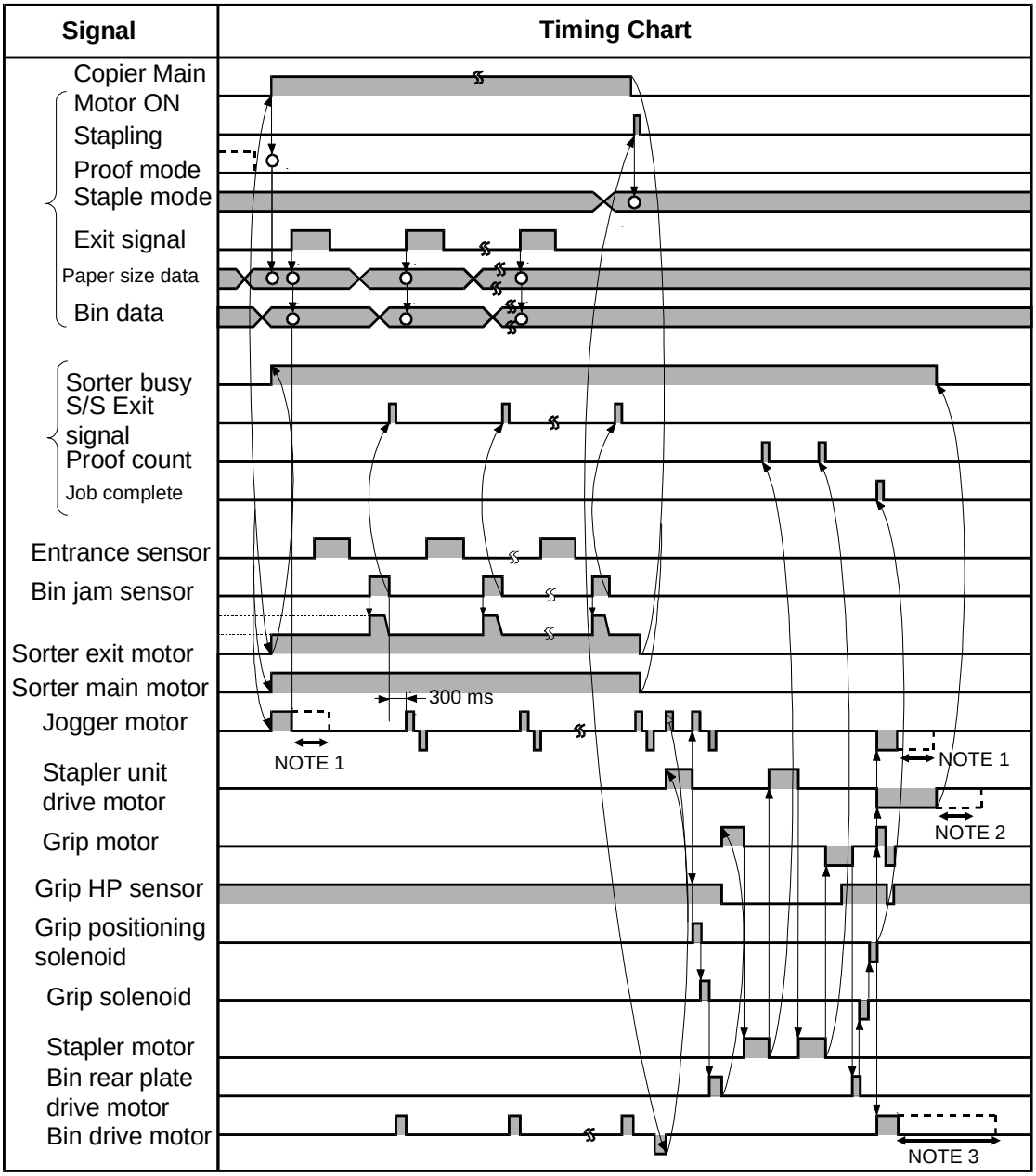
13.2 SORTER/STAPLER TIMING CHART (STAPLE MODE)



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NOTE: 1) Jogger motor on time depends on the paper size.

2) Staple unit drive motor on time depends on the paper size.

3) Bin drive motor on time depends on the number of copy sets.

14. SERVICE TABLES (MAIN CONTROL BOARD)

14.1 DIP SWITCHES

Dip Switch 100

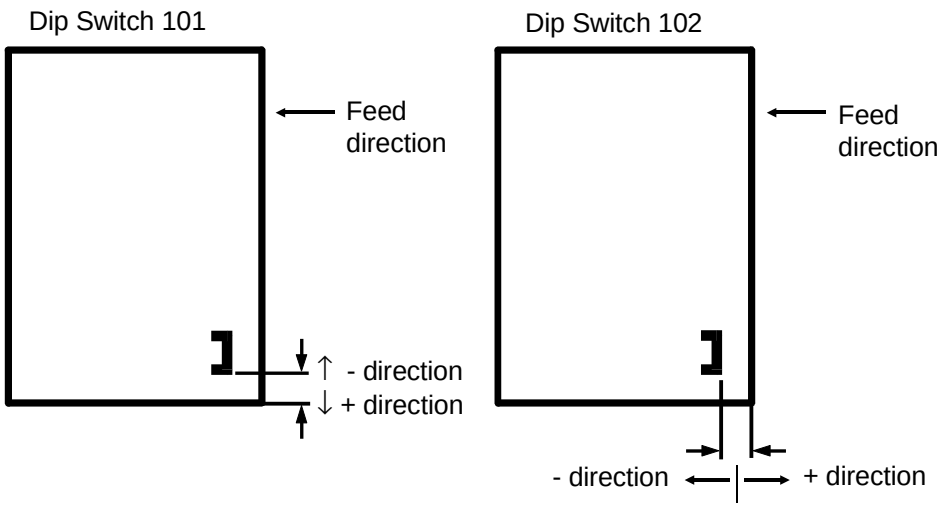
0: OFF 1: ON

Function	1	2	3	4
Standard setting	0	0	—	—
Raises all bins to the top position	1	0	0	0
Free run	0	1	0	0

Dip Switch 101 Vertical Staple Position Adjustment
Dip Switch 102 Horizontal Staple Position Adjustment

Adjustment Value	1	2	3	4
Standard Position	0	0	0	—
0.5 mm	1	0	0	0/1
1.0 mm	0	1	0	0/1
1.5 mm	1	1	0	0/1
2.0 mm	0	0	1	0/1
2.5 mm	1	0	1	0/1
3.0 mm	0	1	1	0/1
3.5 mm	1	1	1	0/1
+ direction (See the illustration below.)	—	—	—	0
– direction (See the illustration below.)	—	—	—	1

NOTE: The adjustment value and the combination of the dip switch positions are exactly the same for Dip Switch 101 and Dip Switch 102.



A664M500.wmf

14.2 TEST POINTS

Number	Function
TP100	GND
TP101	+ 5 V

14.3 FUSES

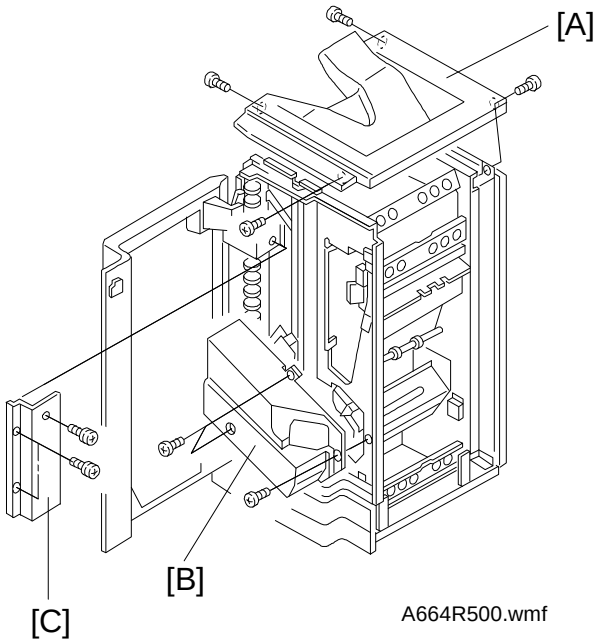
FUSES	Rated Current and Voltage
FUSE100	250 V T5A

15. REPLACEMENT AND ADJUSTMENT

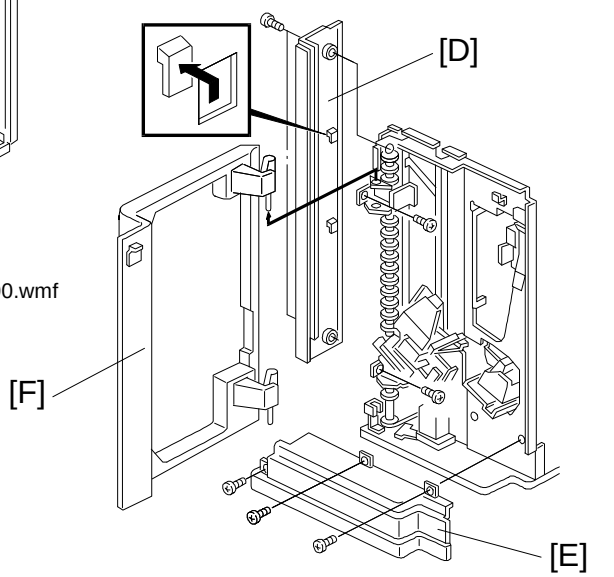
15.1 EXTERIOR COVER REMOVAL

– Front –

Remove the covers in the following order.



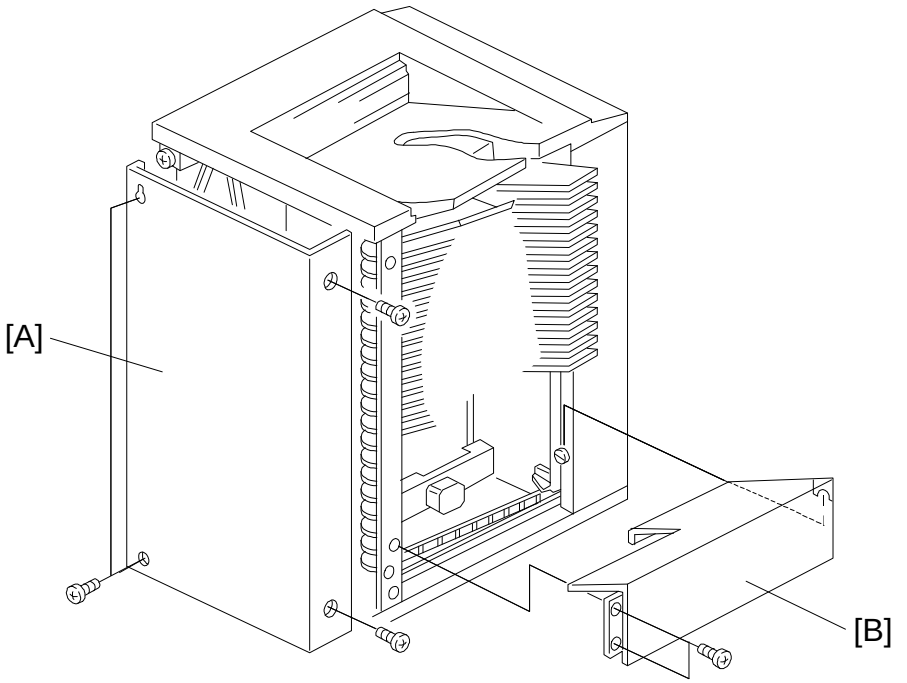
A664R500.wmf



A664R501.wmf

1. Remove the proof tray [A] (4 screws).
2. Open the front door.
3. Remove the front inner cover [B] (3 screws).
4. Remove the front wheel cover [C] (3 screws).
5. Remove the four screws that hold the front left cover [D] and remove the front left cover by shifting the cover up to release the two hooks.
6. Remove the front lower cover [E] (3 screws).
7. Remove the front door [F] (2 hinge pins).

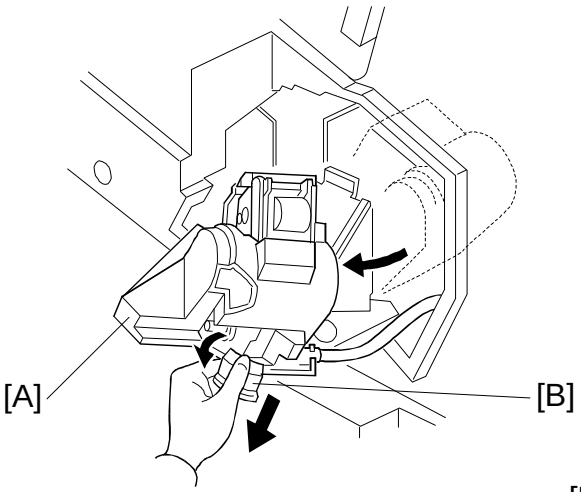
– Rear –



A664R502.wmf

1. Remove the rear cover [A] (6 screws).
2. Remove the bottom plate [B] (2 screws and 1 hook).

15.2 STAPLER REMOVAL AND REINSTALLATION



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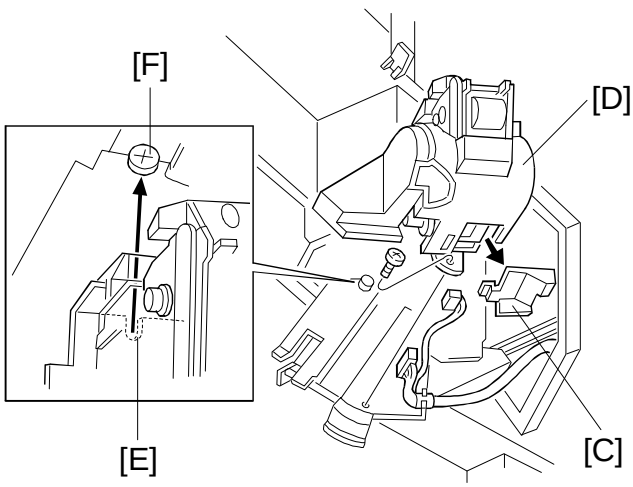
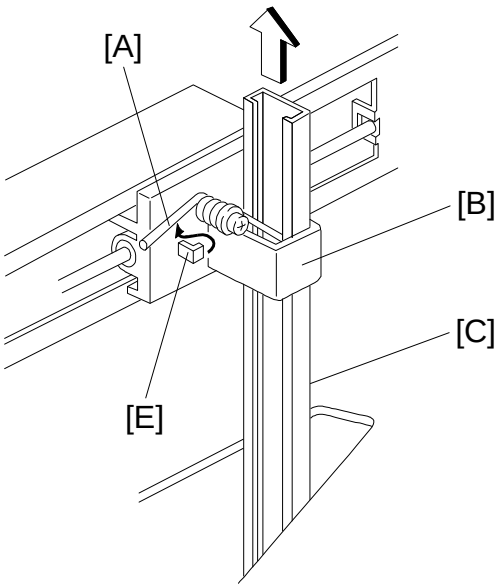


A664R504.wmf

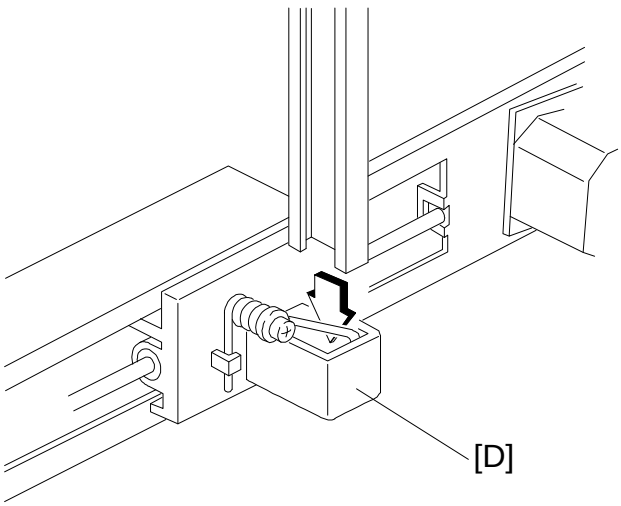
1. Return the stapler unit [A] to the home position by pulling out the stapler unit.
2. Pull out the R3 release lever [B] and pull out the stapler unit.
3. Remove the harness cover [C].
4. Remove the stapler unit [D] (1 connector and 1 screw).

NOTE: When re-assembling, hook the cut-out [E] over the shoulder screw [F].

15.3 JOGGER PLATE REMOVAL AND INSTALLATION



A664R505.wmf



A664R506.wmf

– Removal –

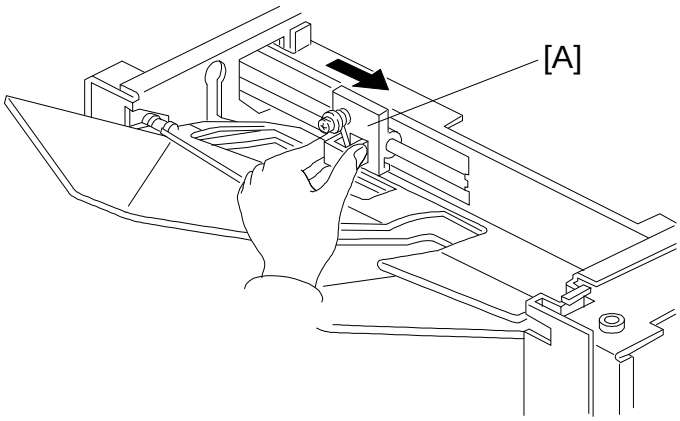
1. Remove the proof tray. (Refer to Exterior Cover Removal.)
2. Release the spring [A] of the upper jogger holder [B], then pull out the jogger plate [C].

– Installation –

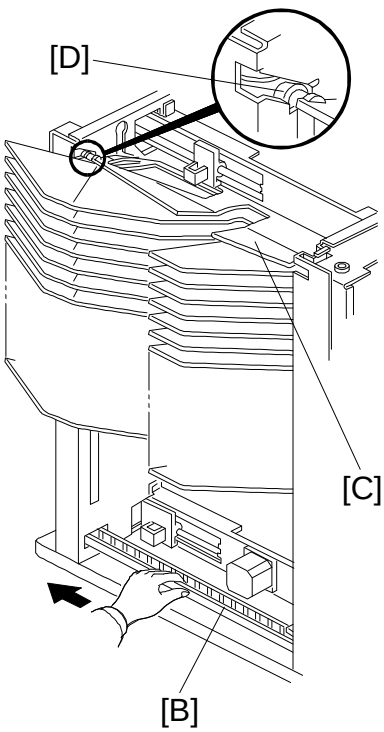
1. Insert the jogger plate through the upper holder [B].
2. Push down the jogger plate towards the lower holder [D].
3. Set the jogger plate in the lower holder [D].
4. Hook the spring [A] of the upper jogger holder onto the stopper [E].

15.4 BINS

– Removal –

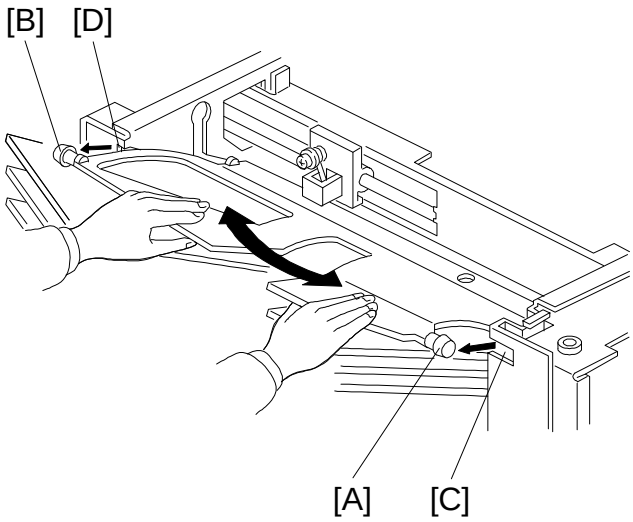


A664R507.wmf

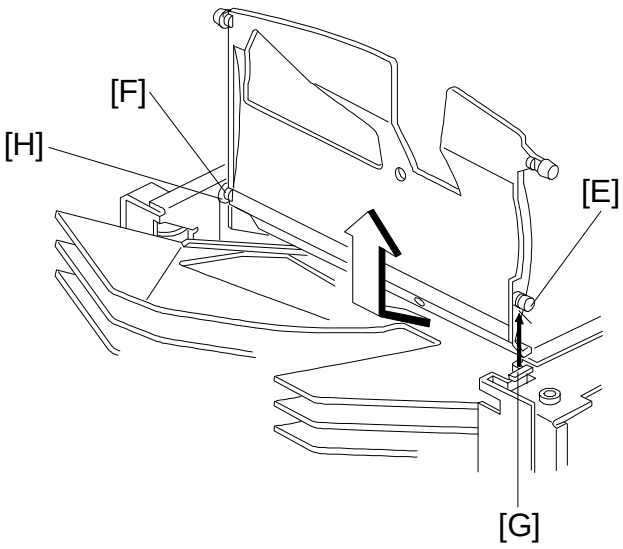


A664R508.wmf

1. Remove the rear cover.
2. Raise all bins to the highest position by turning on DIP SW100-1 on the sorter main PCB, then turn off the main switch of the copier.
3. Remove the jogger plate (refer to Jogger Plate Removal), then move the upper jogger holder [A] to the front.
4. Remove the rear cover, then remove the bottom plate to access the drive belt. (Refer to Exterior Cover Removal.)
5. Manually rotate the helical wheel drive belt [B] and move up the top guide [C] until the three guide pins [D] reach the top of the helical wheel as shown.



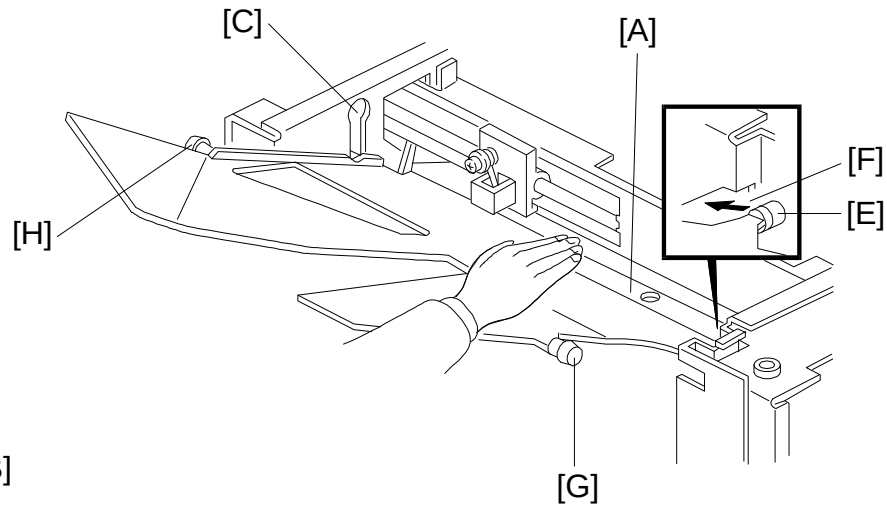
A664R509.wmf



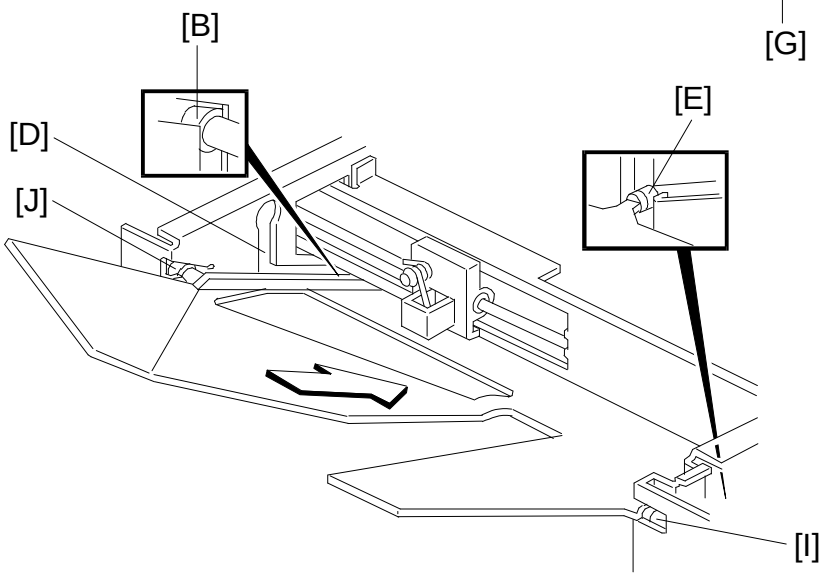
A664R510.wmf

6. Remove the top guide by releasing the pins [A] and [B] from cut-outs [C] and [D] at the end of the bin guide slots. Then remove the pins [E] and [F] from cut-outs [G] and [H].
7. Move up the next bin to the top position by manually rotating the helical wheel drive belt and remove it as in the top guide removal procedure (steps 5 and 6).
8. Remove the other nineteen bins by repeating step 7.

– Installation –

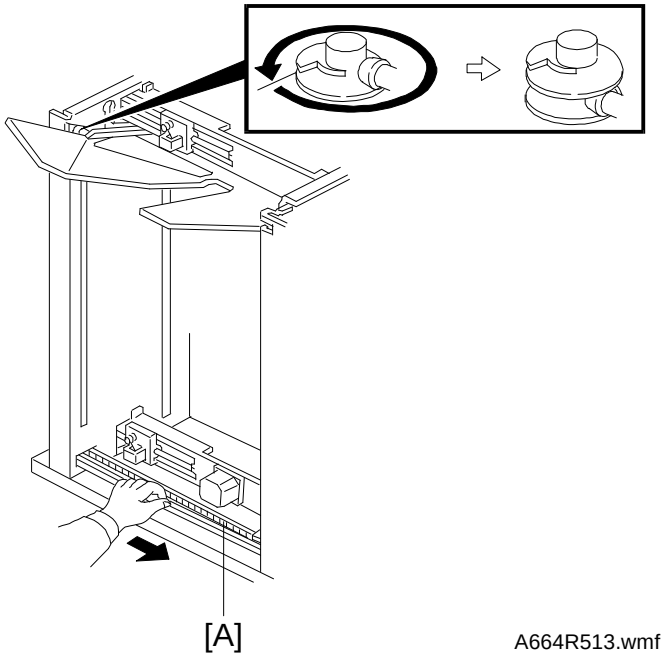


A664R511.wmf



A664R512.wmf

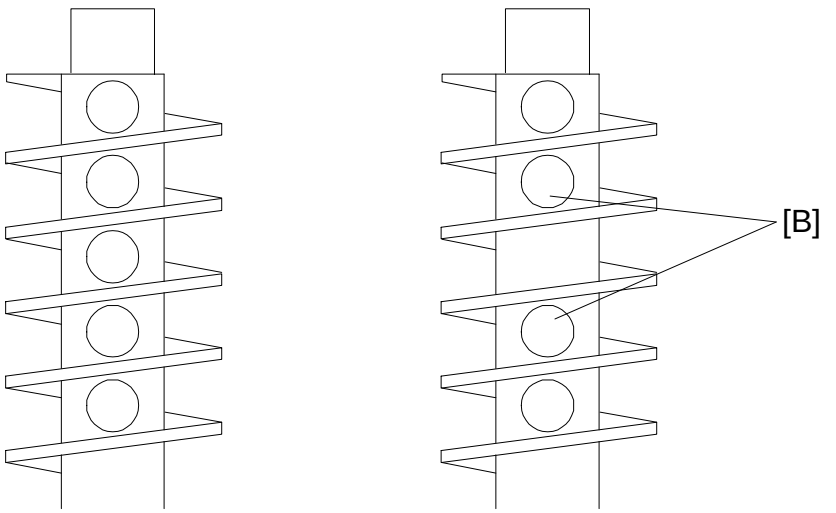
1. While holding the bin rear plate [A] straight, insert rear right guide pin [B] into the slot [C], then lower the rear guide pin to the corner [D].
2. While still holding the bin rear plate straight, insert the front right guide pin [E] into guide slot [F].
3. Insert the other guide pins [G] and [H] into the slots [I] and [J].



A664R513.wmf

4. Manually rotate the helical wheel drive belt [A] and lower the bin.

   NOTE: Before installing the next bin, rotate the helical wheels only once. Otherwise, the distance between the guide pins [B] will become uneven and the bins will tilt.

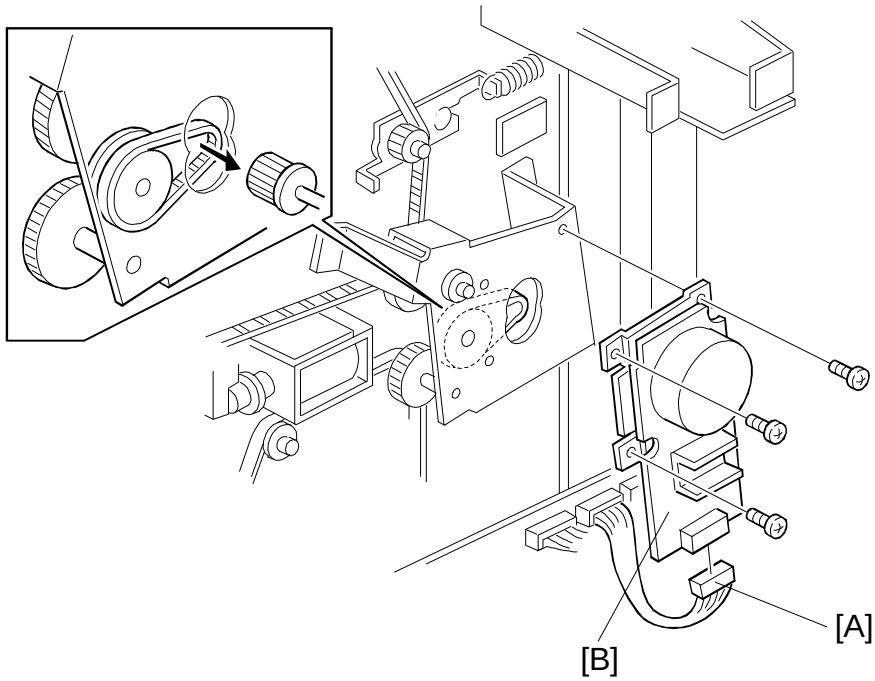


A664R514.wmf

5. Install all bins and the top cover by repeating steps 1 to 4.

6. Re-install the jogger plate and all covers.

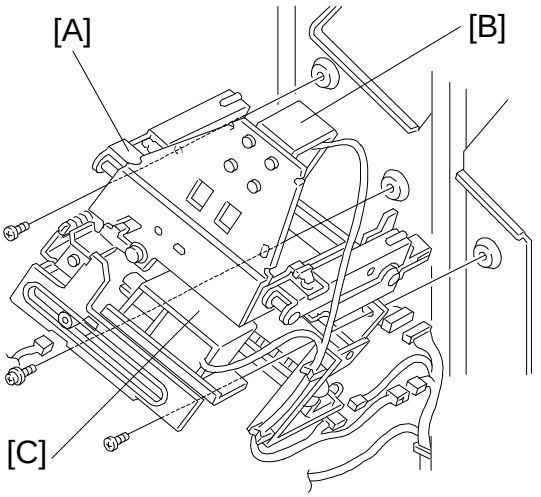
15.5 MAIN MOTOR REMOVAL



A664R515.wmf

1. Remove the rear cover (4 screws).
2. Disconnect the connector [A].
3. Remove the main motor bracket [B] (4 screws) with the main motor.

15.6 GRIP ASSEMBLY REMOVAL, AND GRIP SOLENOID, AND GRIP POSITIONING SOLENOID ADJUSTMENT



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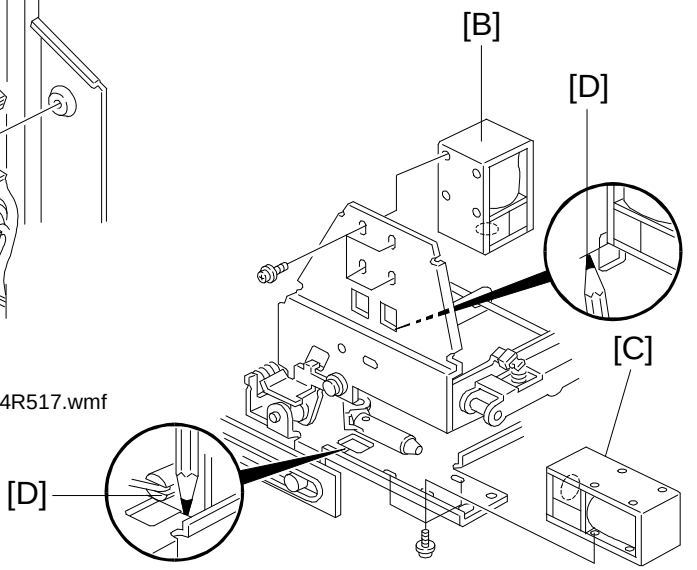


A664R518.wmf

– Grip assembly removal –

1. Open the front cover then remove the front inner cover. (Refer to Exterior Cover Removal.)
2. Remove the grip assembly [A] (4 connectors, 3 screws).
3. Replace the grip solenoid [B] and the grip arm positioning solenoid [C].

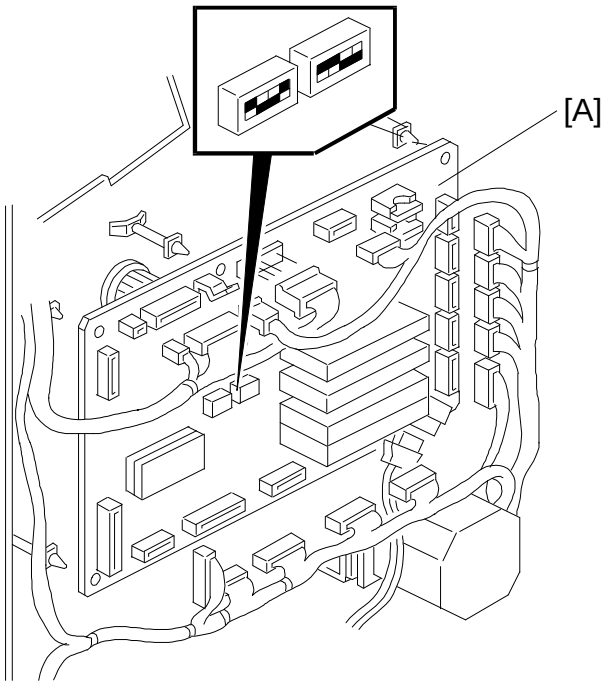
   Note: Mark the original positions of the plungers first (see below).

– Grip solenoid [B] and the grip arm positioning solenoid [C] adjustments –

It is impossible to perform the fine positioning adjustments for these solenoids because the magnets in both solenoids pull the plunger very strongly.

So, mark the original position of the solenoids before removing the solenoid. Then place the solenoid at the original position by referring to the mark you made [D] and tighten the screws (4 screws for the grip solenoid and 3 screws for the grip arm positioning solenoid).

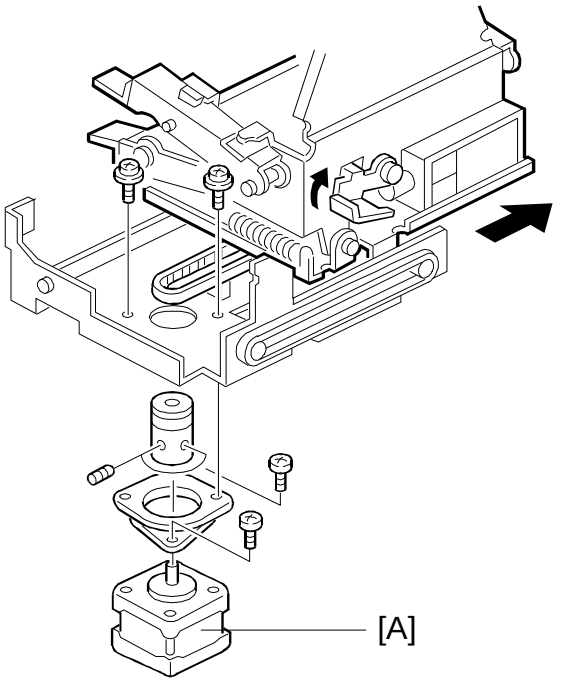
15.7 MAIN CONTROL BOARD REPLACEMENT



A664R520.wmf

1. Remove the rear cover (refer to Exterior Cover Removal), then disconnect all connectors (15 connectors and 1 fiber optics connector).
2. Remove the main control board [A] (6 studs).
3. Install the new main control board and connect all connectors.
4. Position DIP SW 100, 101 and 102 as on the original main control board (DIP SW 101 and 102 are for stapling position adjustment and DIP SW 100 is for SP mode).
5. Turn on the copier main switch then check the stapling position. If it is incorrect, adjust the stapling position. (Refer to the Stapling Position Adjustment.)

15.8 GRIP MOTOR REMOVAL



A664R519.wmf

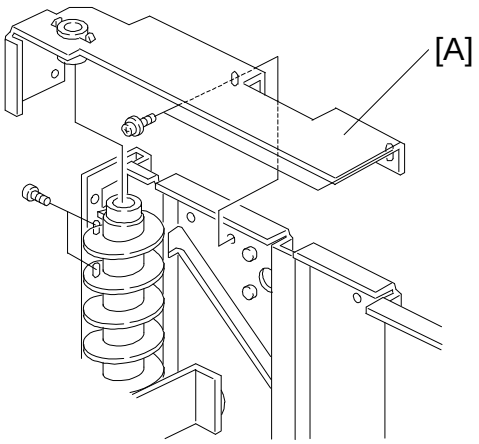
1. Remove the grip assembly.
2. Remove the grip motor [A] (4 screws and 2 Allen screws).

15.9 HELICAL WHEELS

– Removal –

Before removing the helical wheels, remove all bins and all exterior covers. (Refer to Exterior Cover and Bin Removal.)

– Front Helical Wheel –



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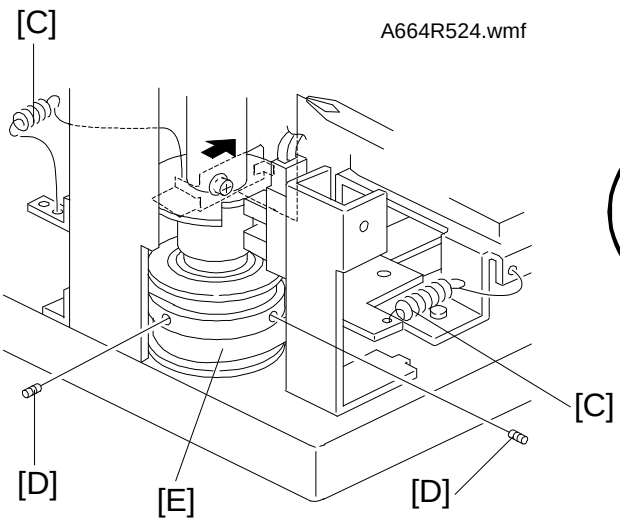

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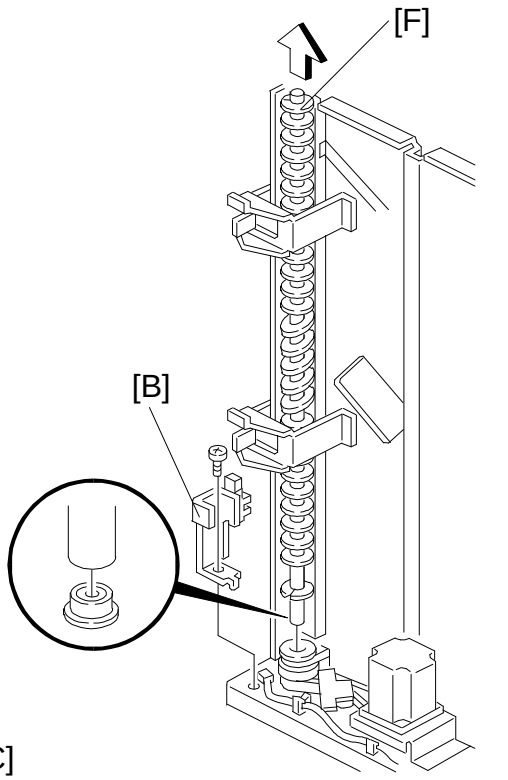
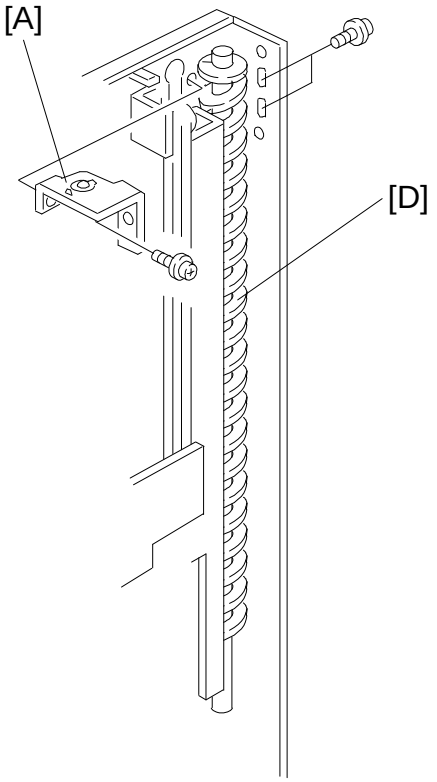


A664R525.wmf

1. Remove the bracket [A] (4 screws).
2. Remove the wheel sensor bracket [B] (1 screw).
3. Unhook the two springs [C].
4. Loosen the two Allen screws [D].
5. While holding the pulley [E] to keep it in position, remove the helical wheel [F].

– Rear Long Helical Wheel –



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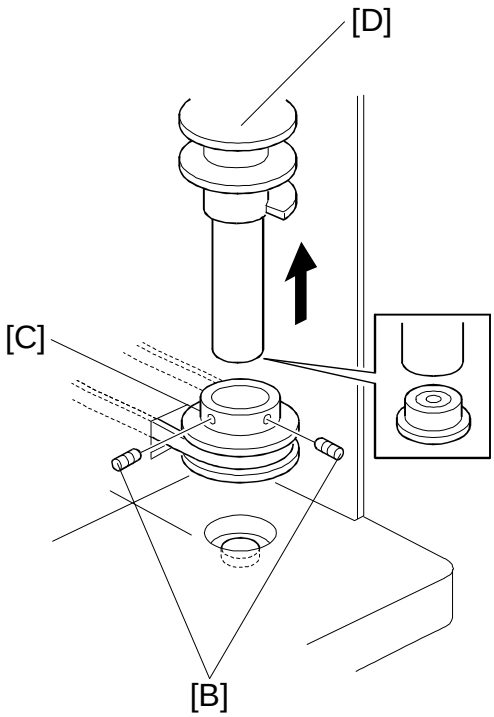


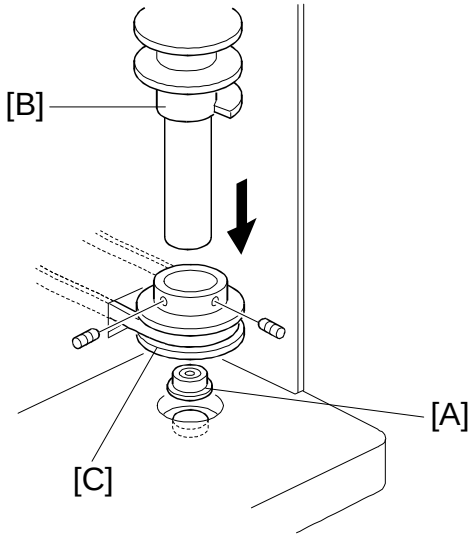
A664R528.wmf

1. Remove the bracket [A] (3 screws).
2. Loosen the two Allen screws [B] on the drive pulley.
3. While holding the pulley [C] to keep it in position, remove the helical wheel [D].

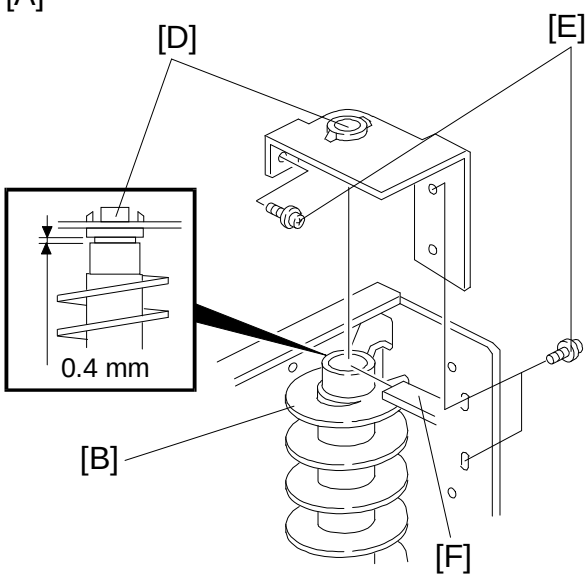
– Installation –

NOTE: After installing the helical wheels, perform the helical wheel alignment, which is explained later.

– Rear Long Helical Wheel –



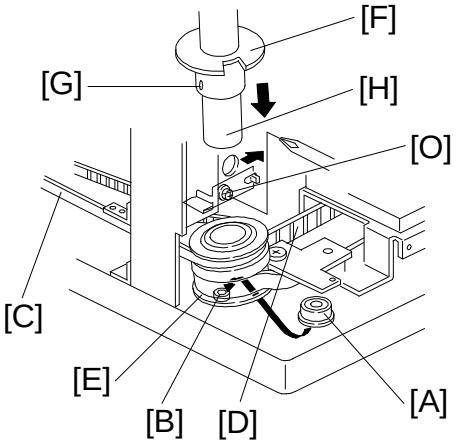
A664R533.wmf



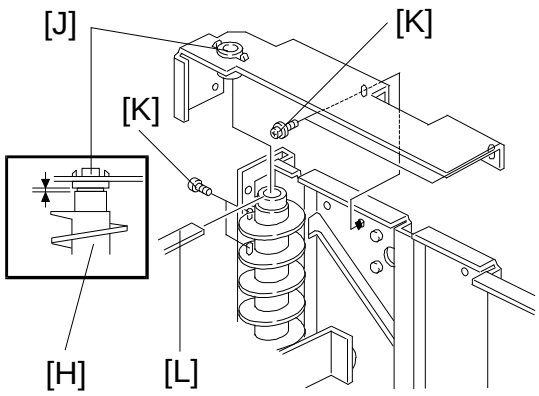
A664R534.wmf

1. Place the bearing [A] over the stud on the bottom plate.
2. Insert the helical wheel [B] into the pulley [C], then place the helical wheel on the bearing [A].
3. Place the bracket with the bushing [D] on top of the helical wheel, then install and slightly tighten three screws [E].
4. Place a 0.4 mm thickness gauge [F] between the helical wheel [B] and the bushing [D] on the bracket. While holding the bushing down on the helical wheel, tighten the three screws [E].

– Front Helical Wheel –



A664R535.wmf



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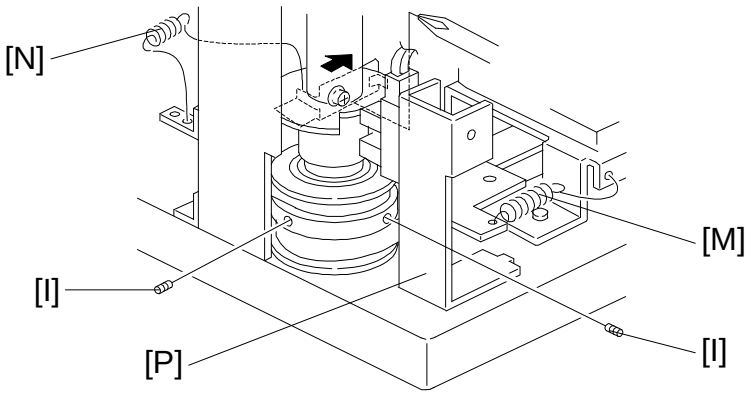

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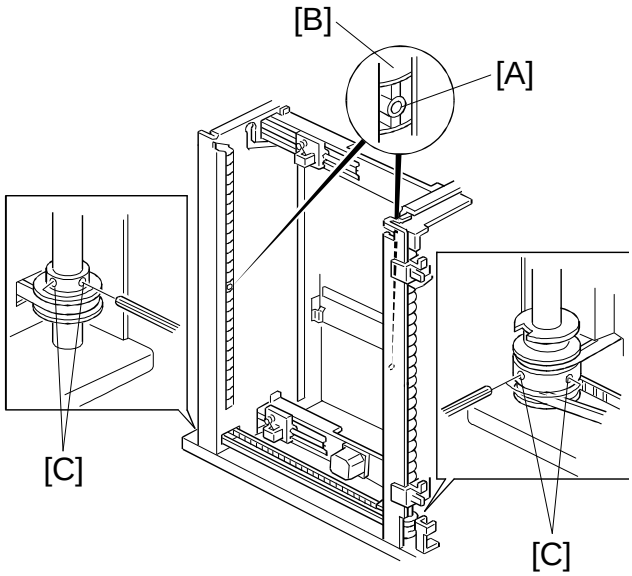
1. Place the bearing [A] over the stud [B] on the bottom plate then thread timing belt-918XL [C] and timing belt-300XL [D] around the pulley.
2. Place the pulley [E] on the bearing. The direction of the pulley should be as shown in the illustration.
3. Feed the helical wheel through the wheel sensor actuator [F]. Leave the Allen screw [G] loosened.
4. Place the helical wheel [H] in the pulley [E]. Leave the Allen screws [I] loosened.
5. Place the bracket with a bushing [J] on top of the helical wheel, then install and slightly tighten the four screws [K].
6. Place a 0.4 mm thickness gauge [L] between the helical wheel and the bushing on the bracket. While holding the bushing down on the helical wheel [H], tighten the four screws [K].
7. Hook tension springs [M] and [N] then tighten the screw [O].
8. Install the wheel sensor bracket [P].

– Alignment of the 2 Helical Wheels –



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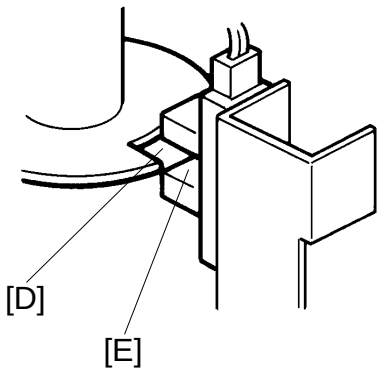

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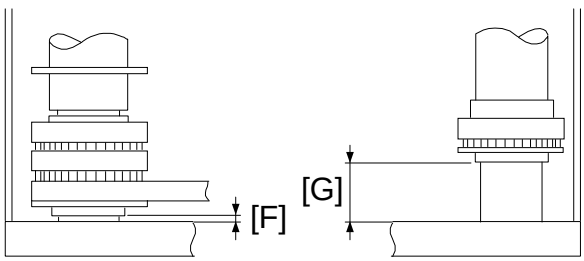


G = 22.5 ± 0.5 mm
F = 1.7 ± 0.5 mm

A664R540.wmf

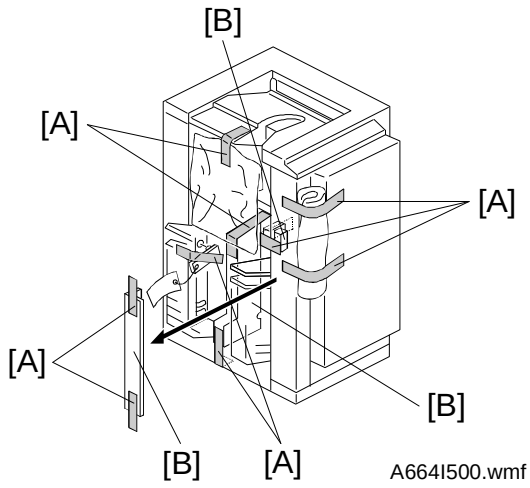
1. Check that all belts are set correctly.
2. Align all screw holes [A] at the middle of the helical wheels at the center of the bin guide slots [B], as shown.
3. In this condition, tighten all Allen screws [C] in the helical wheel drive pulleys (2 Allen screws on each drive pulley).
4. In this condition, place the cut out [D] on the wheel sensor actuator under the wheel sensor [E] then tighten the Allen screw on the wheel sensor actuator.
5. Make sure that the gaps [F and G] between the base plates and the pulleys are as shown in the illustration.

11.5 20-BIN SORTER STAPLER (A664) ACCESSORY CHECK

Check the accessories against the following list:

Description	Q'ty
1. Front Connection Bracket	1
2. Rear Connecting Bracket	1
3. Cushion	2
4. Entrance Guide Mylar for A204/A206/A207 copiers	1
5. Entrance Guide Mylar for A208/A210/A211 copiers	1
6. Proof Tray	1
7. Caster Stopper	2
8. Relay Guide	1
9. Philips Pan Head Screw - M4 x 12	4
10. Philips Pan Head Screw - M4 x 6	2
11. New Equipment Condition Report (Multi-language)	1
12. Staple Position Decal	1
13. Installation Procedure (English)	1

11.6 20-BIN SORTER STAPLER (A664) INSTALLATION PROCEDURE



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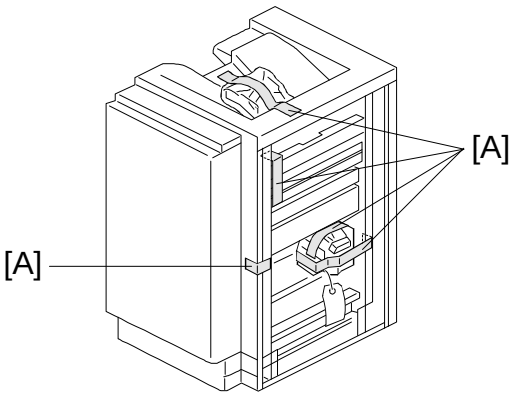
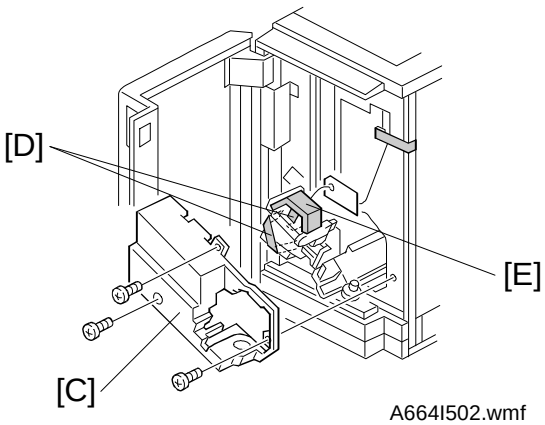


A664I501.wmf



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⚠CAUTION

Unplug the copier power cord before starting the following procedure.

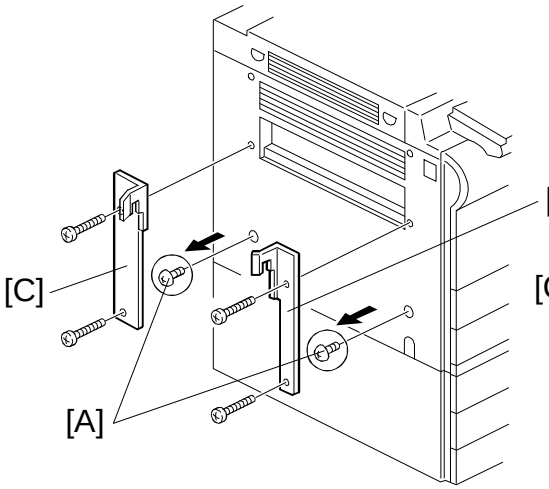
NOTE: 1) Keep the shipping retainers after installing the machine. They will be reused if the machine will be transported to another location.

2) Proper reinstallation of the shipping retainers is required in order to avoid any transport damage.

3) A sorter adapter (A568) is required to install this sorter stapler in the A208/A210/A211 copiers. Before installing this sorter stapler, please install the sorter adapter.

1. Remove the strips of tape [A] and the cushions [B].
2. Open the front door and remove the inner cover [C] (3 screws).
3. Remove the strips of tape [D] and remove the cushion [E]. Then re-install the inner cover [C].

–A204/A206/A207 copiers–



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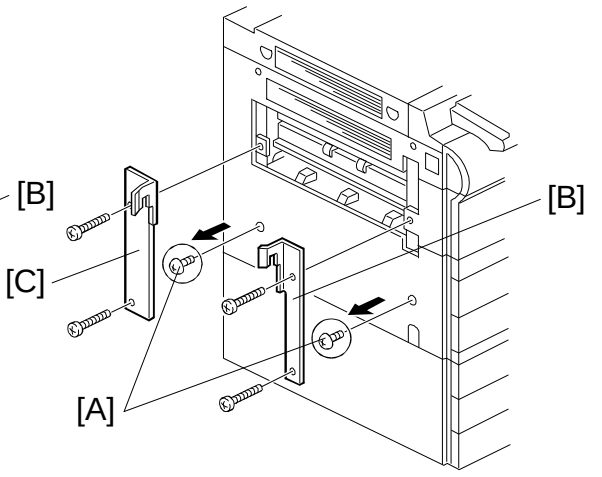
–A208/A210/A211 copiers–



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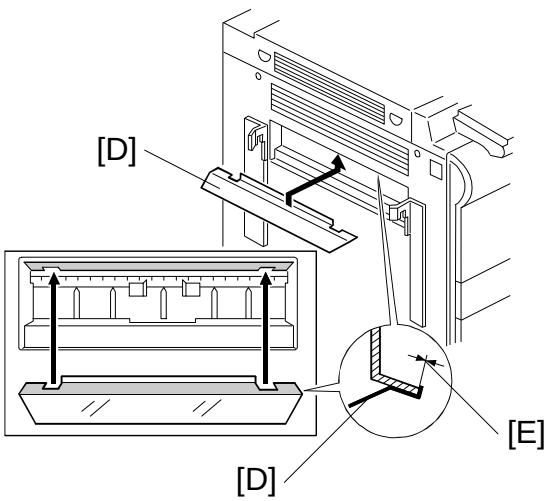
–A204/A206/A207 copiers–



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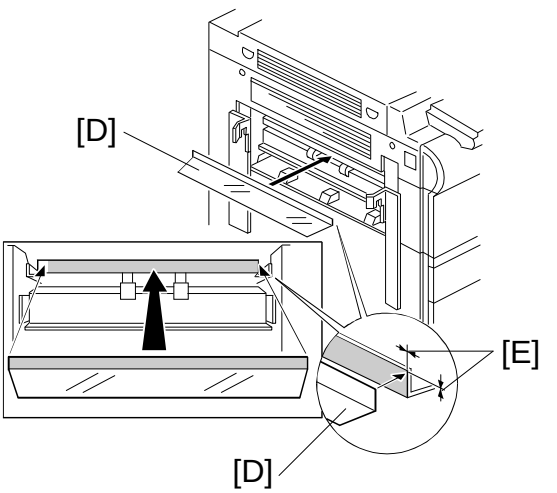
–A208/A210/A211 copiers–



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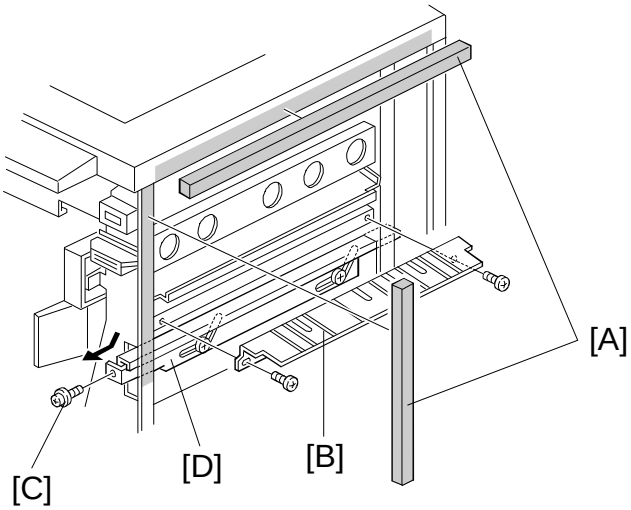
4. Remove the two M4 x 8 round head screws [A] from the left cover of the copier.
5. Install the front connecting bracket [B] (2 screws M4 x 12) and the rear connecting bracket [C] (2 screws M4 x 12) on the copier.
6. Attach the entrance guide mylar [D] to the copier exit area, as shown.

   NOTE: 1) The entrance guide mylar differs depending on the model.

   2) Align the edge [E] of the cover and the mylar.



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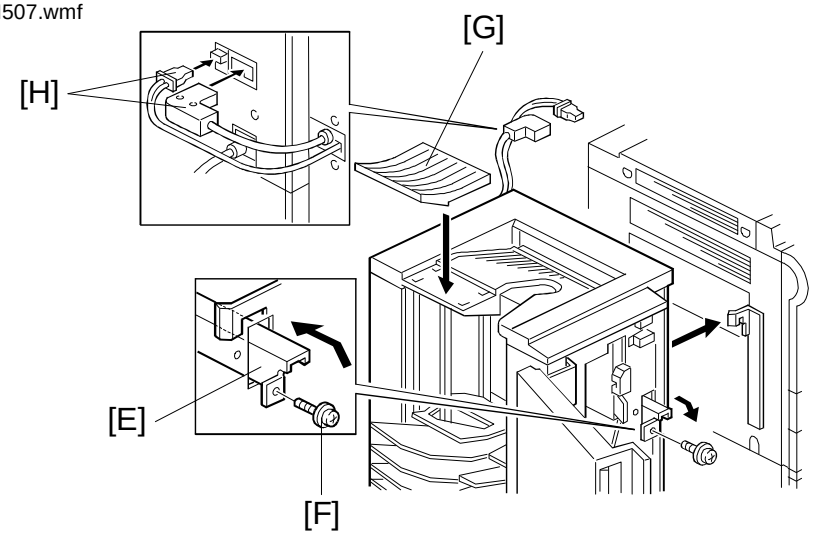

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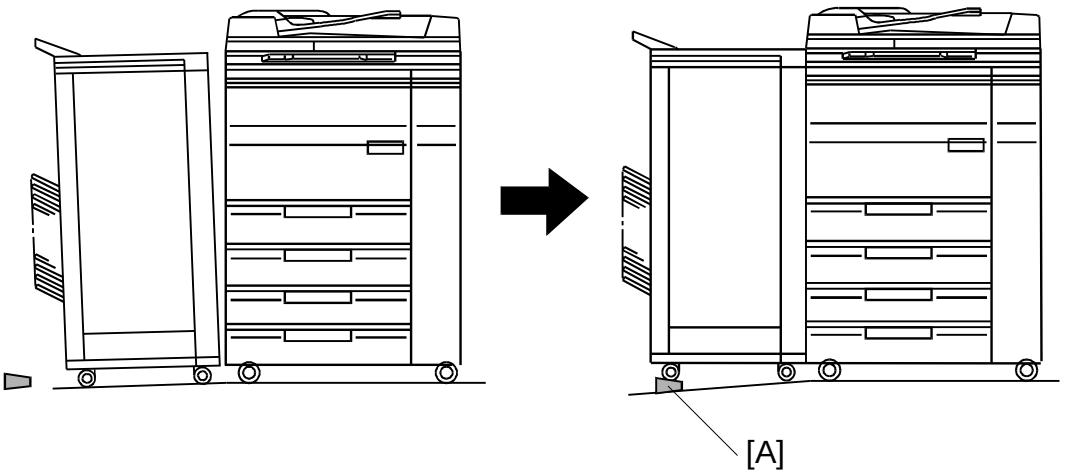
7. Attach the two cushions [A] as shown.
8. Install the relay guide [B] (2 screws M4 x 6).
9. Open the front door of the sorter stapler and remove the screw [C] securing the locking lever [D], then lower the locking lever.
10. Align and press the sorter stapler against the copier and secure them by raising the locking lever [E].
11. Secure the locking lever (1 screw [F]).
12. Install the proof tray [G].
13. Connect the connectors [H] to the sockets at the rear of the copier.



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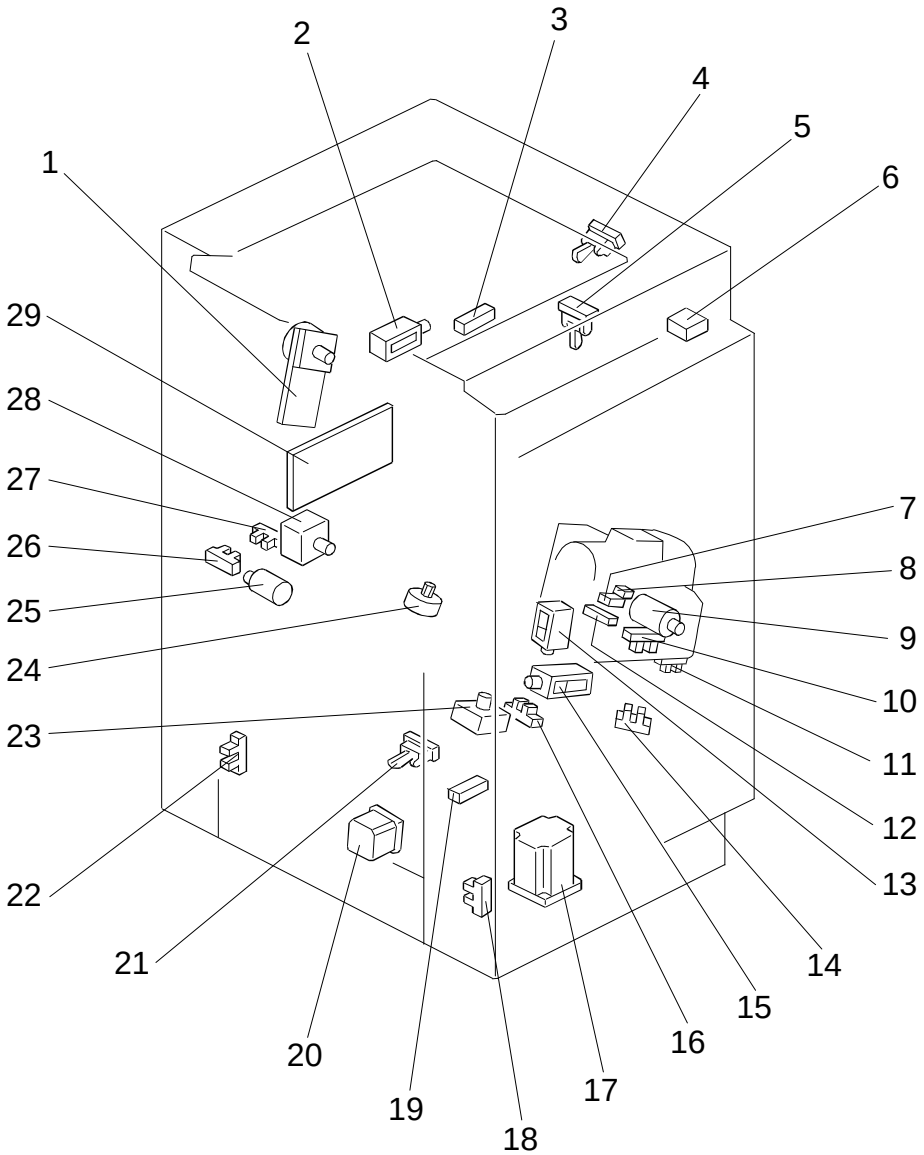
14. If the gap between the top of the sorter stapler and the copier is too great, adjust it by placing caster stoppers [A].
15. Plug in the copier.
16. Turn on the main switch of the copier and test the operation of the sorter stapler.

    NOTE: The copier automatically recognizes that the sorter stapler has been installed.

20 BIN SORTER STAPLER (A664) ELECTRICAL COMPONENT LAYOUT



Description	Index No.	P to P Location
Main Motor (M1)	1	A3
Turn Gate Solenoid (SOL1)	2	A4
Bin Jam (LED) Sensor (S1)	3	G1
Proof Exit Sensor(S2)	4	A5
Entrance Sensor (S3)	5	A4
Door Safety Switch (SW1)	6	B2
Cartridge Set Switch (SW2)	7	A11
Staple End Switch (SW3)	8	A11
Staple Motor (M2)	9	A10
Staple Hammer Home Position Sensor (S4)	10	A11
Staple Unit Pulled-out position Sensor (S5)	11	A7
Paper Sensor (S6)	12	G9
Grip Solenoid (SOL2)	13	A9
Staple Unit Home Position Sensor (S7)	14	A8
Grip Arm Positioning Solenoid (SOL3)	15	A9
Grip Home Position Sensor (S8)	16	G9
Bin Drive Motor (M4)	17	G3
Wheel Sensor (S10)	18	G4
Bin Jam Sensor (Photo Tr.) (S9)	19	G2
Jogger Motor (M5)	20	G6
Bin Home Position (S11)	21	G4
Jogger Home Position Sensor (S12)	22	G5
Grip Motor (M3)	23	G10
Staple Unit Drive Motor (M6)	24	A8
Bin Rear Plate Drive Motor (M7)	25	A10
Bin Rear Plate Open Sensor (S13)	26	A6
Bin Rear Plate Home Position Sensor (S14)	27	A7
Sorter Exit Motor (M8)	28	A5
Main Control Board (PCB1)	29	D1