

SORTER STAPLER
(Machine Code: A821)

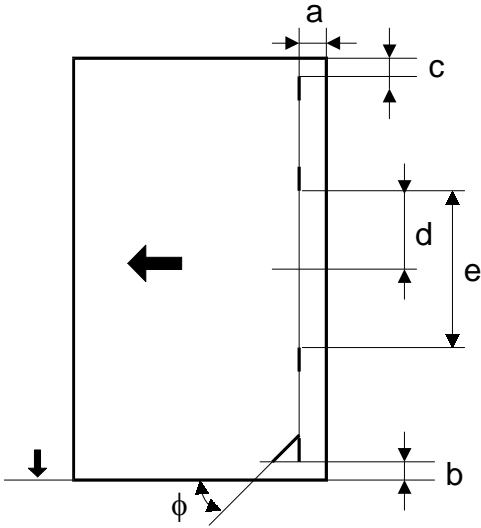
1. OVERALL MAHCINE INFORMATION

1.1 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 ~ 200 g/m², 14 ~ 53 lb.
 Capacity: 250 sheets (80 g/m², 20 lb.)
 Paper for Bins: See the table below.

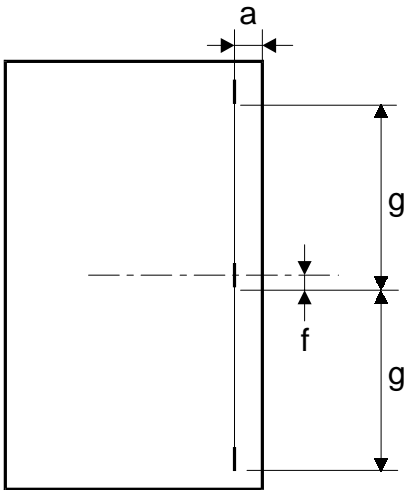
	Sort	Stack	Staple	Punch
Maximum paper size	A3, 11" x 17"	A3, 11" x 17"	A3, 11" x 17"	A3, 11" x 17"
Minimum paper size	Sideways: A4, 8 1/2" x 11" Lengthwise: A5, 5 1/2" x 8 1/2"	Sideways: A4, 8 1/2" x 11" Lengthwise: A5, 5 1/2" x 8 1/2"	B5, 8 1/2" x 11"	A5 (2 holes) B5 sideways 8 1/2" x 11" sideways (3 holes)
Maximum paper weight	200 g/m ² , 53 lb.	200 g/m ² , 53 lb.	163 g/m ² , 43 lb.	128 g/m ² , 34 lb. (2 holes) 104 g/m ² , 28 lb. (3 holes)
Minimum paper weight	52 g/m ² , 14 lb.	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 2 sided copies: 40 sheets/bin	All sizes: 50 sheets/bin 2 sided copies: 40 sheets/bin	All sizes 50 sheets/bin 2 sided copies: 40 sheets/bin	All sizes: 40 sheets/bin 2 sided copies: 35 sheets/bin

Staple Position:



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- $a = 6 \pm 3 \text{ mm}$
- $b = 6 \pm 3 \text{ mm}$
- $c = 6 \pm 3 \text{ mm}$
- $d = 66 \pm 3 \text{ mm}$
- $e = 132 \pm 2 \text{ mm}$
- $f = 6 \pm 3 \text{ mm}$
- $g = 116.5 \pm 2 \text{ mm}$
- $\phi = 45 \pm 5^\circ$



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Staple Replenishment:

Cartridge refill (5,000 pieces/cartridge)

Power Source:

DC24 V (from copier)

Power Consumption:

Average:

less than 60 W (without punch)

less than 70 W (with punch)

Maximum:

in sort/stack mode:

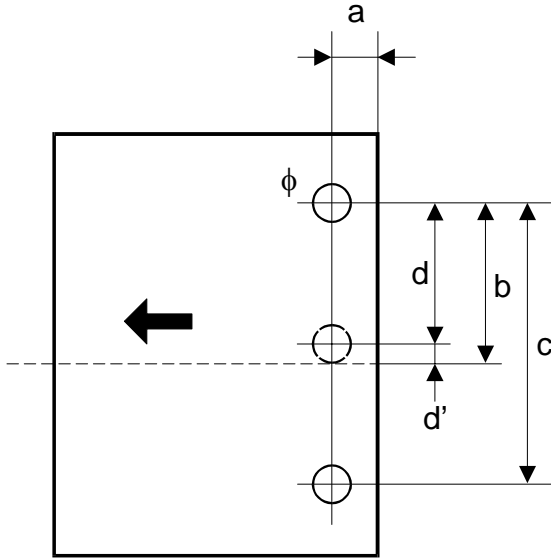
less than 60 W (without punch)

less than 70 W (with punch)

in staple mode:

less than 45 W

Dimensions (W x D x H): 566 x 583 x 990
 Weight: Approximately 50 kg
 Punch Position:



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2 Holes (European version)

$a = 12 \pm 3 \text{ mm}$

$b = 40 \pm 3 \text{ mm}$

$c = 80 \pm 1 \text{ mm}$

3 Holes (U.S.A. version)

$a = 9.5 (3/8") \pm 3 \text{ mm}$

$c = 216 (8 1/2") \pm 1 \text{ mm}$

$d = 108 (4 1/4") \pm 1 \text{ mm}$

$d' = \pm 3 \text{ mm}$

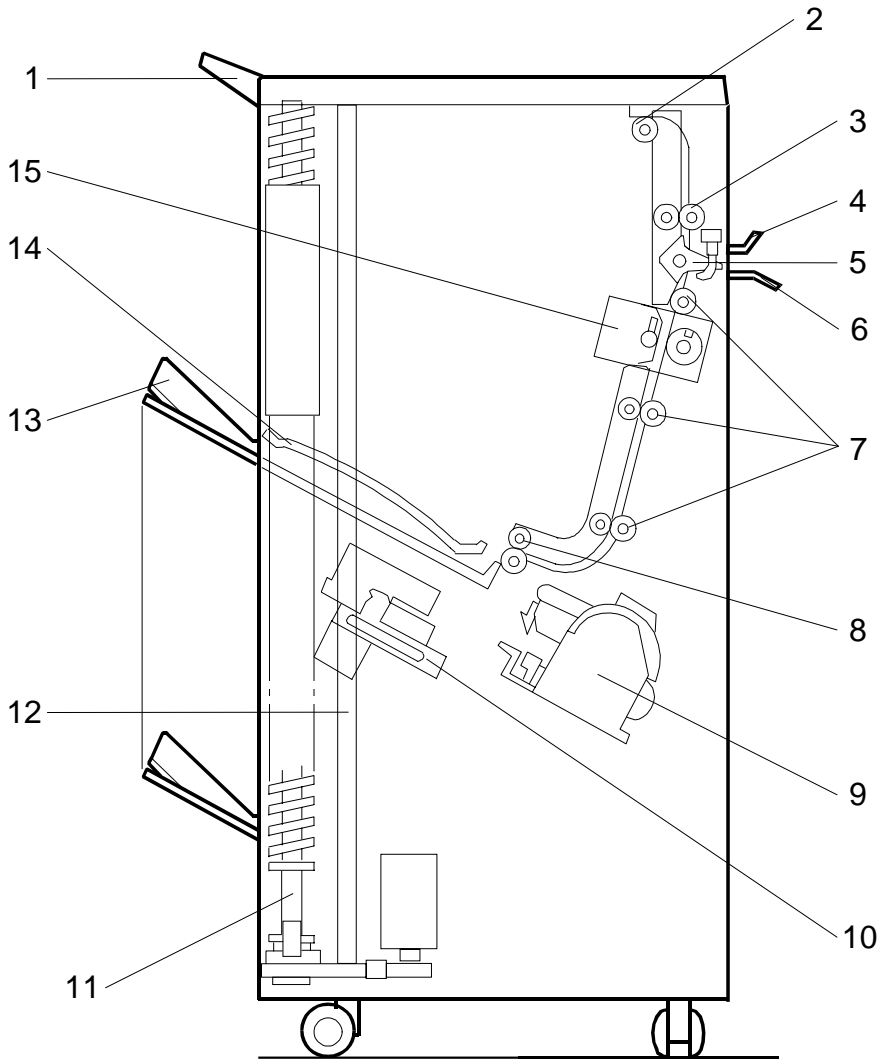
Punch Hole Size

2 Holes: $\phi = 6.5 \pm 0.5 \text{ mm}$

3 Holes: $\phi = 8.0 \pm 0.5 \text{ mm}$

1.2 COMPONENT LAYOUT

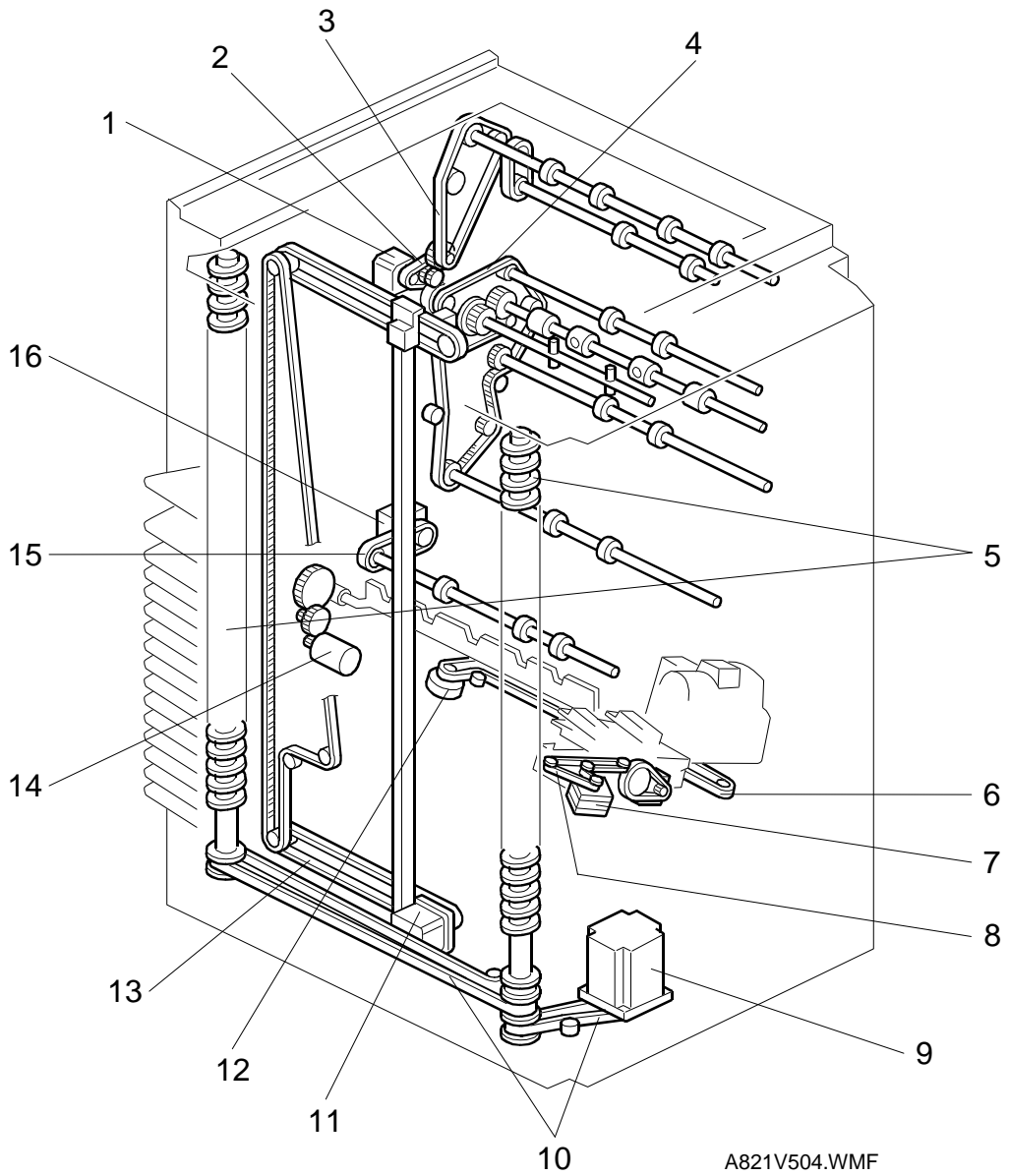
1.2.1 MECHANICAL COMPONENT LAYOUT



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- | | |
|-----------------------------|-------------------------------------|
| 1. Proof Tray | 9. Staple Unit |
| 2. Proof Exit Rollers | 10. Grip Assembly |
| 3. Proof Transport Rollers | 11. Helical Wheels |
| 4. Upper Entrance Guide | 12. Jogger Plate |
| 5. Turn Gate | 13. Bins |
| 6. Lower Entrance Guide | 14. Upper Guide Plate |
| 7. Sorter Transport Rollers | 15. Punch Unit (Punch version only) |
| 8. Sorter Exit Rollers | |

1.2.2 DRIVE LAYOUT



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

1.3 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the point-to-point diagram for the location of the components using the symbols and index numbers.

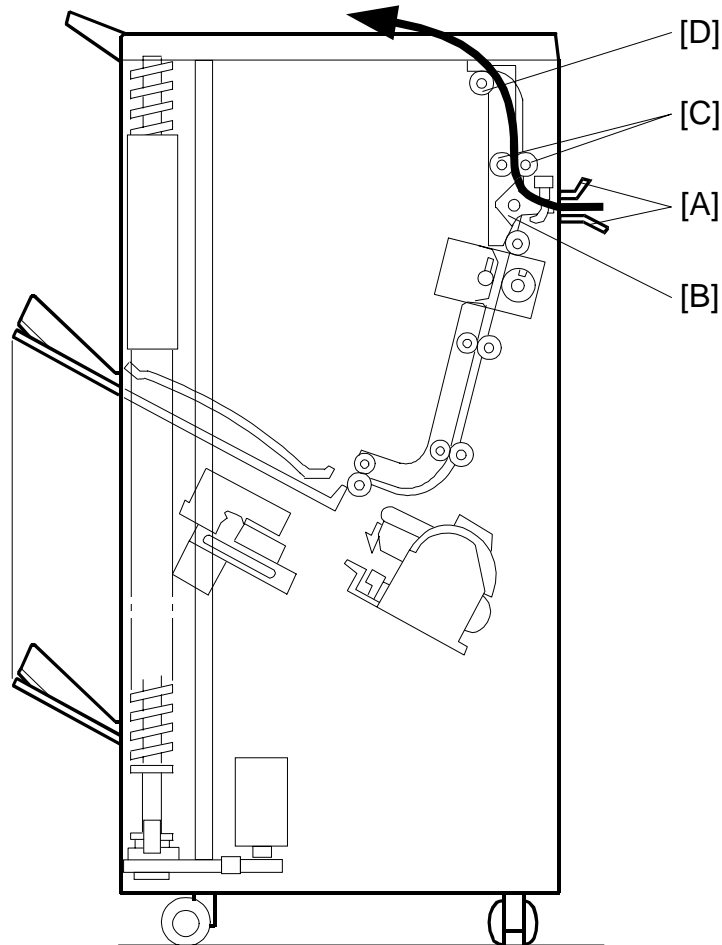
Symbol	Name	Function	Index No.
Motors			
M1	Transport	Drives the paper transport rollers.	32
M2	Exit	Delivers the Paper into the bin.	26
M3	Bin	Drives the bins up and down.	19
M4	Jogger	Drives the jogger plate to jog the copies against the front side plate.	22
M5	Bin Rear Plate	Drives the bin rear plate up and down.	27
M6	Grip	Grips the paper.	15
M7	Grip Shift	Drives the grip unit forward and backward into the bin.	17
M8	Stapler	Feeds the staples and drive the stapler hammer.	11
M9	Stapler Unit	Drives the stapler unit according to the staple position and angle.	24
M10	Punch	Drives the punch shaft and roller.	31
Switches			
SW1	Door Safety	Cuts the dc power when front door is open.	6
SW2	Cartridge Set	Detects installation of the staple cartridge.	8
SW3	Staple End	Detects the staple end.	9
Solenoids			
SOL1	Turn Gate	Opens and closes the turn gate to direct the copies into either the proof tray or bins.	1
Sensors			
S1	Entrance	Detects the paper miss-feeds.	5
S2	Bin Jam	Detects the miss-feeds and detects if there is the paper in the bin.	21
S3	Proof Exit	Detects the paper miss-feeds.	4
S4	Bin HP	Detects if the bins are in the home position.	23
S5	Wheel Sensor	Detects the bin position.	20
S6	Jogger HP	Detects if the jogger plate is in the home position.	25
S7	Grip HP	Detects if the grip is in the home position.	16
S8	Grip Shift Motor HP	Detects if the grip unit is in the home position.	14
S9	Bin Rear Plate Close	Detects if the bin rear plate is in the closed position.	28
S10	Bin Rear Plate Open	Detects if the bin rear plate is in the open position.	29
S11	Stapler HP	Detects if the stapler hammer is in the home position.	10

Symbol	Name	Function	Index No.
S12	Stapler Unit HP	Detects if the stapler unit is in the home position.	18
S13	Paper	Detects whether copies are under hammer.	13
S14	Stapler Unit Pull-out Position	Detects if the stapler unit is in the pullout position.	12
S15	Punch HP	Detects if the punch is in the home position.	33
S16	Punch waste Overflow	Detects punch waste overflow and detects whether the waste hopper is set or not.	7
PCBs			
PCB1	Main	Controls all sorter stapler functions.	30
PCB2	Bin Jam Sensor LED	Provides the light to the bin jam sensor.	3
PCB3	Punch Control	Controls the punch function.	2

2. DETAILED DESCRIPTION

2.1 BASIC OPERATION

2.1.1 NORMAL (PROOF MODE) AND SORT/STACK MODE

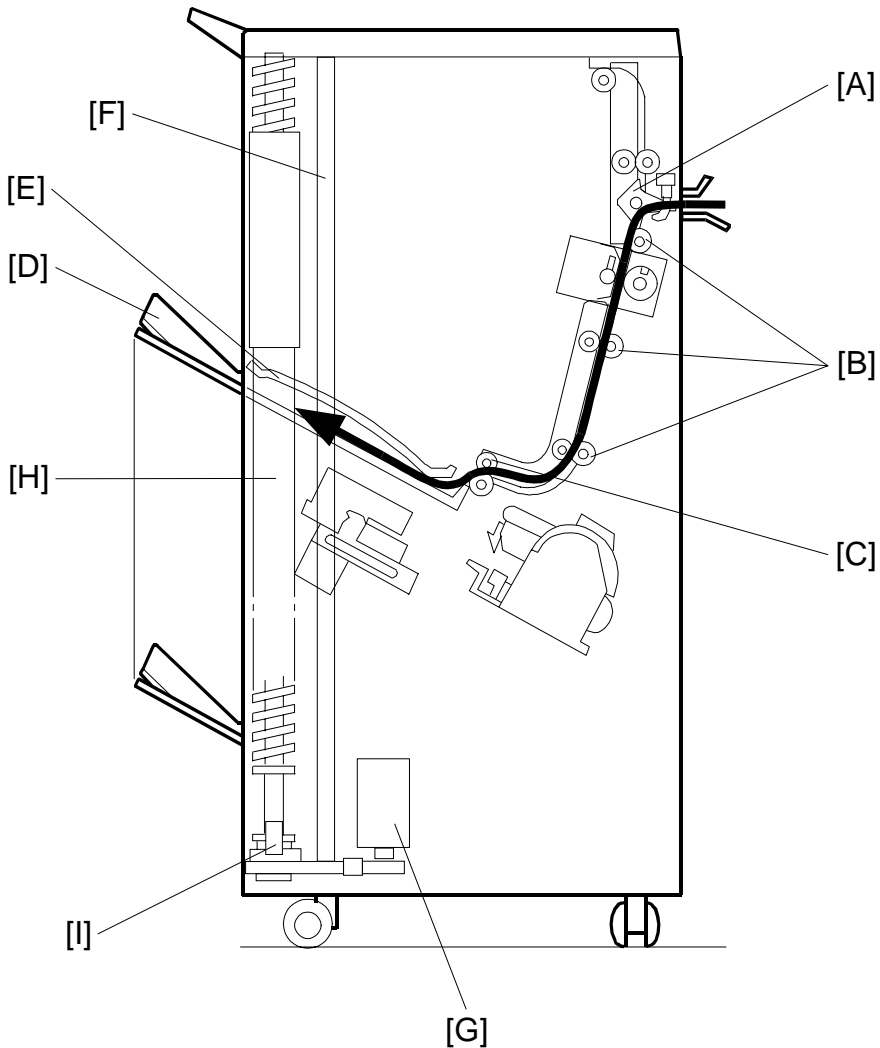


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Copies exiting the copier pass through the entrance guide plates [A] to the turn gate section. The turn gate [B] will send copies either to the proof tray or to the bins, depending on the mode.

Normal (Proof) Mode - (From the Turn Gate Section to the Proof Tray)

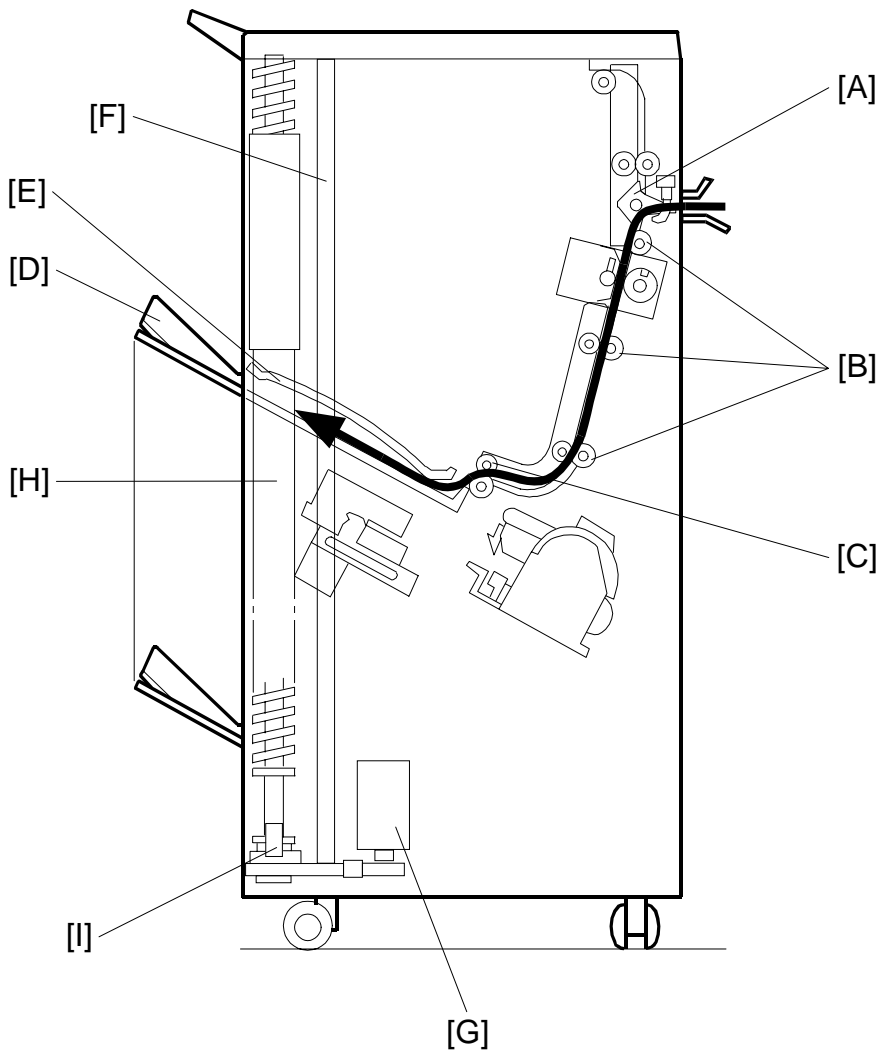
The turn gate solenoid energizes to turn the turn gate clockwise after pressing the Start key. The main motor turns counter-clockwise to rotate the vertical transport rollers [C] and proof exit roller [D]. The turn gate directs copies through the proof transport section to the proof tray.

Sort Mode (From the Turn Gate Section to the Bins)

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In this mode, the turn gate solenoid remains off to maintain the turn gate [A] in 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, delivering the first copy 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 of the actuator reaches below the wheel sensor [I], the bin drive motor turns off. The bin advances with each delivered copy.

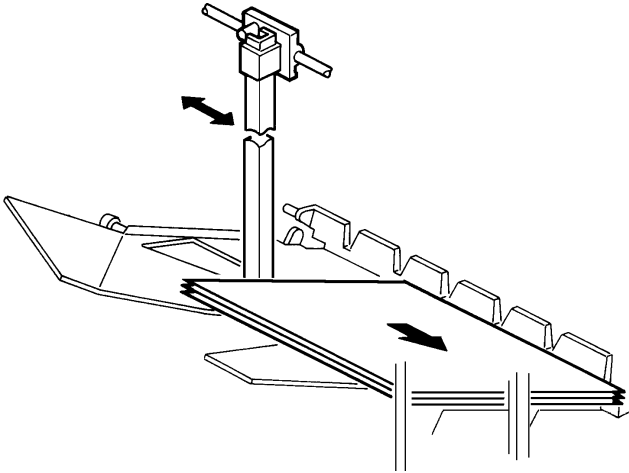
Stack Mode (From the Turn Gate Section to the Bins)

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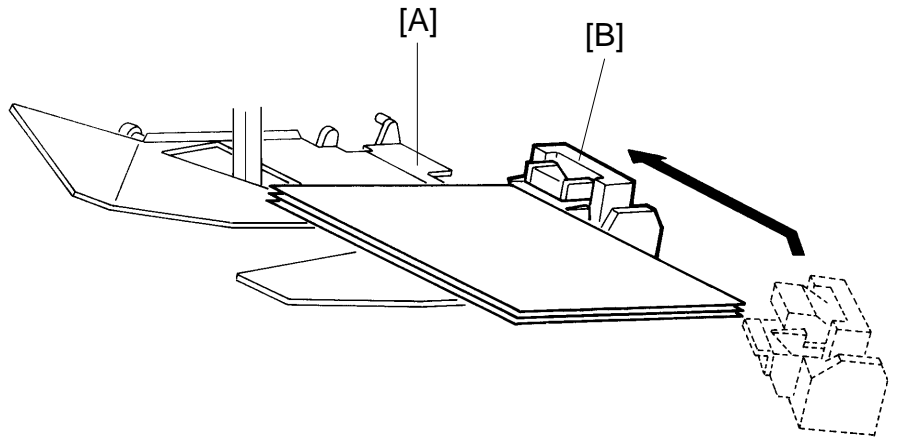
As with sort mode, the turn gate solenoid stays off and the turn gate [A] stays up after pressing the start key. The main motor turns clockwise to rotate the sorter transport rollers [B] and the exit motor rotates the exit rollers [C].

The turn gate directs copies to the sorter bins through the sorter transport section, delivering the copies between the top bin [D] and the upper guide plate [E]. The jogger plate [F] then jogs back and forth to square the copies each time. All copies from the copy run then feed into 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 of the actuator reaches below the wheel sensor [I], the bin drive motor turns off.

2.1.2 STAPLE MODE

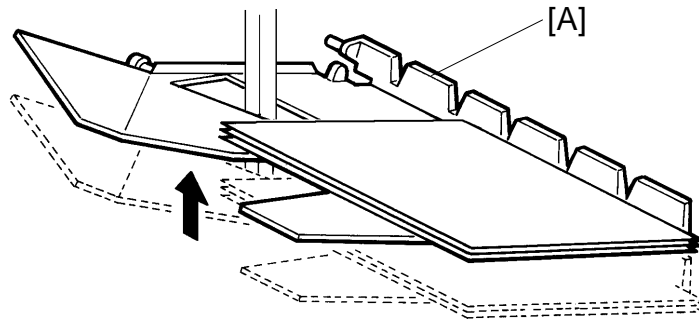


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A821D504.PCX

After jogging the final set of copies, the staple unit staples the stacked copies as follows: The grip arms move inside the front side plate and catch the paper. The rear bin plate [A] is turned so it is flat with the sorter bin. The grip assembly brings the copies down underneath the stapler [B]. The staple unit changes the position (the position varies depending on the copy size and staple mode) and the stapler staples the copies.



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

The grip assembly releases the copies and return to outside the front side plate so as not to disturb the bin movement.

The bin advances one step.

After stapling the final set of copies, the staple unit returns to the home position.

There are two staple modes:

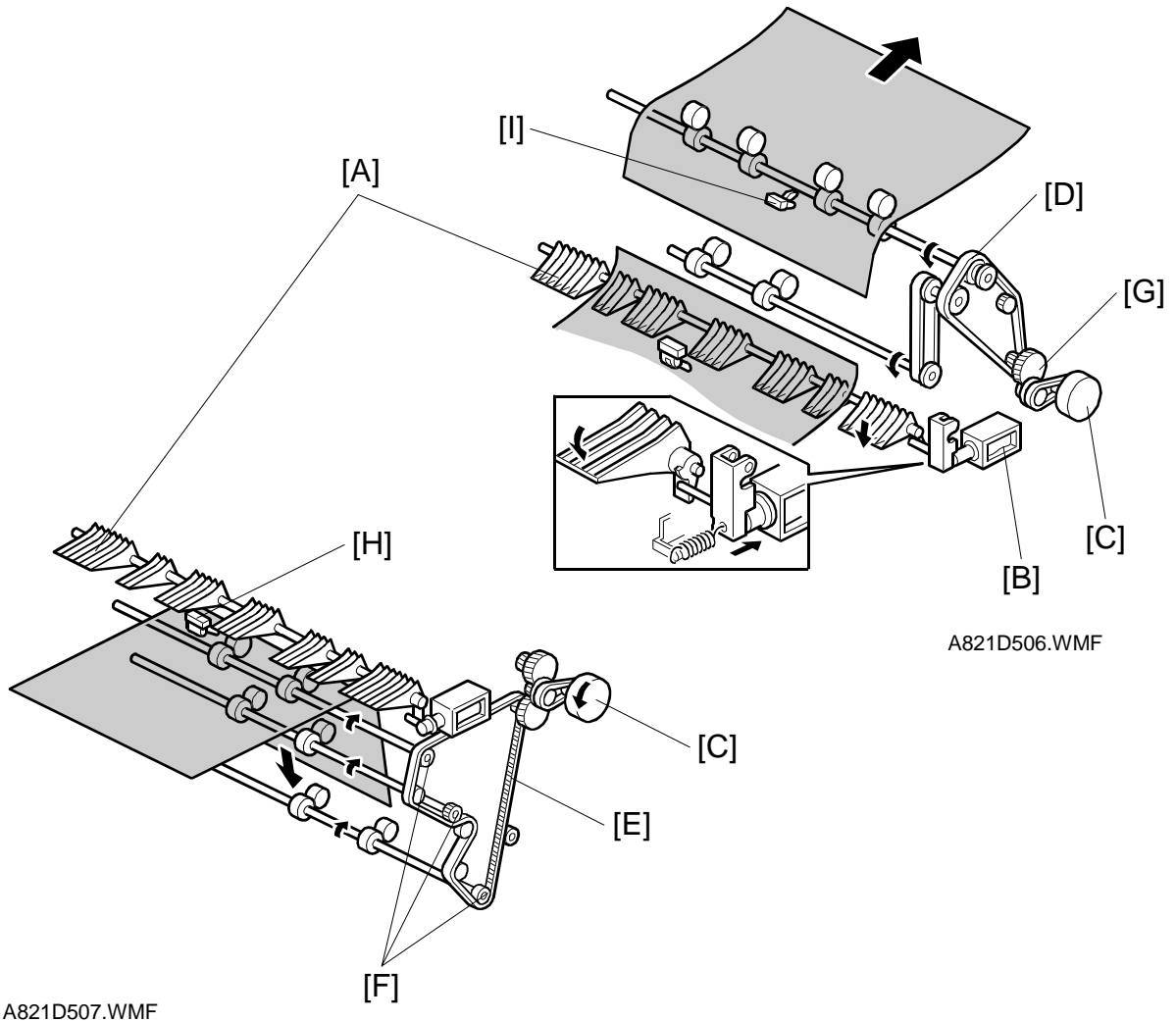
1) Automatic stapling:

In ADF mode, when the staple mode is selected before pressing the start key, copies will be delivered to each bin and stapled automatically.

2) Manual stapling:

In sort mode, after sorting the copies in the bins, the stapling mechanism will staple them after the user presses the manual staple key and selects the staple position. In stack mode, manual stapling is impossible.

2.2 TURN GATE SECTION



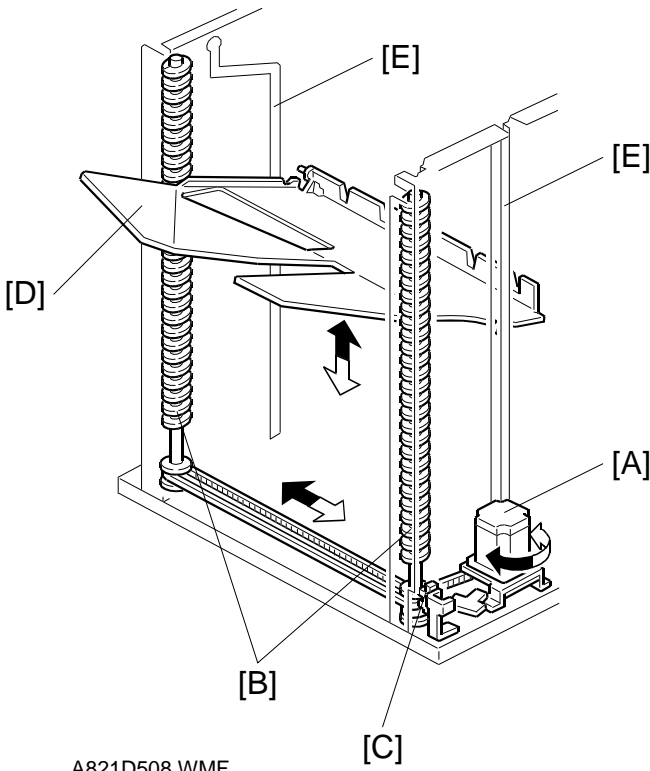
The turn gate [A] sends copies to the proof tray or the sorter bins depending on the mode. In proof mode, the turn gate solenoid [B] turns on and the main motor [C] turns clockwise after pressing the start key.

The turn gate [A] directs copies upward through the proof transport section to the proof tray. In this mode, both the proof drive belt [D] and sorter drive belt [E] transmit the main motor drive. However, the one-way clutches in the drive gears [F] for each sorter transport roller do not transmit the drive to the sorter transport rollers.

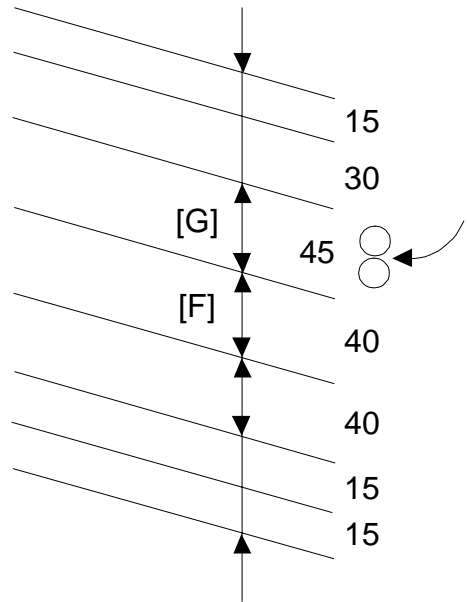
In the sort, stack and staple modes, the turn gate solenoid stays off to direct copies downward to the sorter transport section. After the user presses the start key, the main motor [C] turns counter-clockwise. In this mode, the one-way clutch in the pulley [G] prevents the main motor drive from transmitting to the proof drive belt [D].

The entrance [H] and the proof exit [I] sensors monitor the paper jam.

2.3 BIN DRIVE MECHANISM



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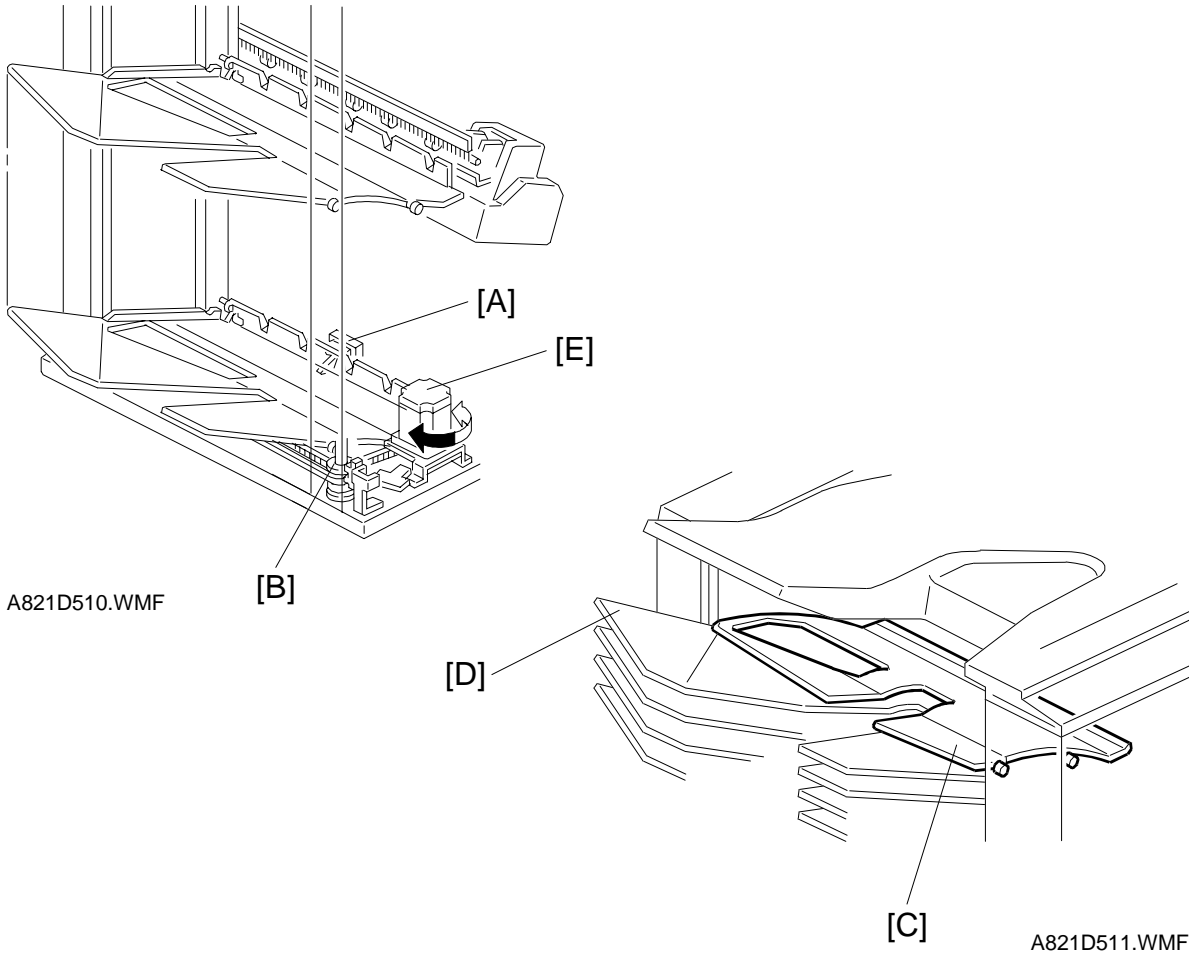
The bin drive mechanism moves the bins up and down to receive copies. The main components in this mechanism are the bin drive motor [A], the two helical wheels [B], the wheel sensor [C], and the bins [D] themselves. There are four pins on each bin. Two of them fit in the slot on the helical wheels. Other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

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

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

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

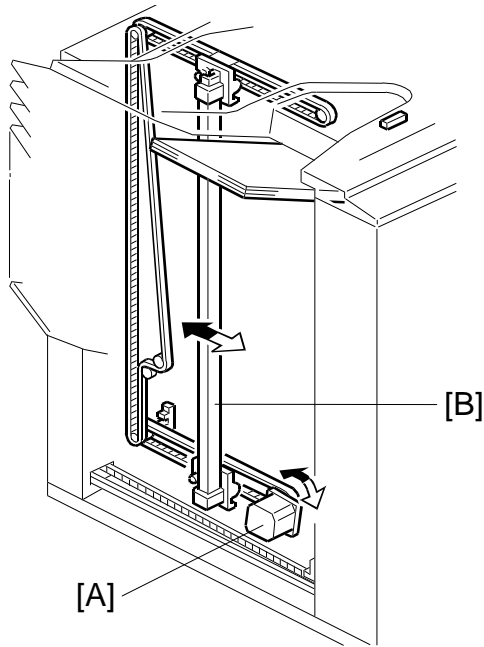
2.4 BIN HOME POSITION



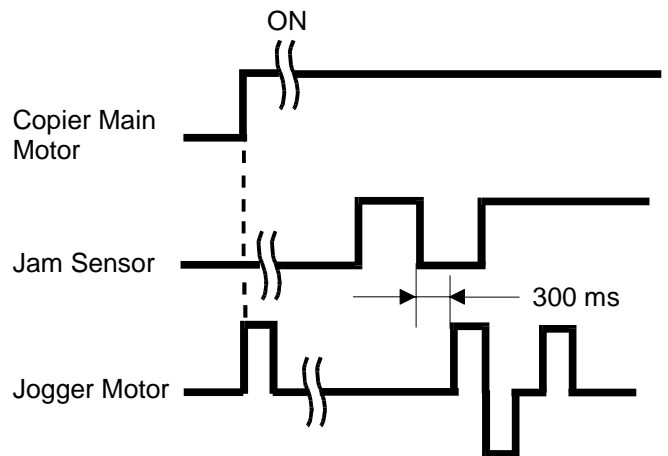
The bin HP sensor [A] and the wheel sensor [B] ensure that the sorter exit roller is between the upper guide plate [C] and the 1st bin [D] when all the bins are in their home position.

After turning on the main switch, the bin lift motor [E] lowers the bins (turns counter-clockwise) until the bottom bin actuates the bin HP sensor. Then, the bin lift motor raises the bins (turns clockwise) until the wheel sensor activates. Consequently, the bins are in the home position.

2.5 JOGGER SECTION



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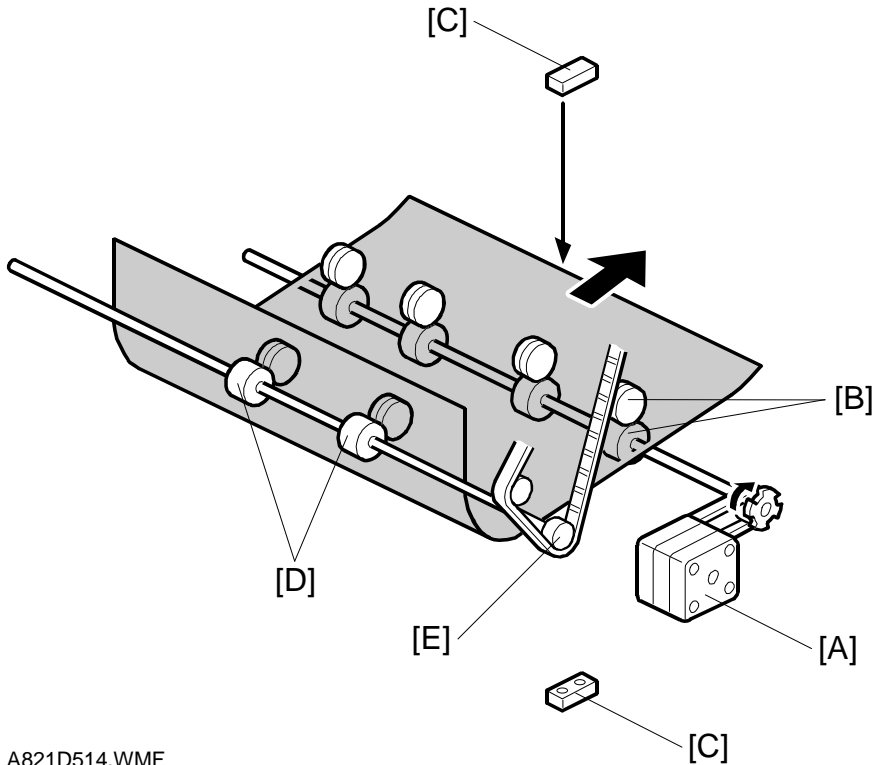


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After pressing the start key in the sort, staple and stack modes, the copier sends the paper size information to the sorter/stapler. In accordance with this data, the jogger motor [A] drives the jogger plate [B] from the jogger HP to a width 10 mm wider than the selected paper. 300 ms after the trailing edge of the copy passes underneath the jam sensor, 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. It shifts to a position 1 mm narrower than the paper size when the bins lowers.

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

When the bin sensor detects that all copies are no longer in the bins after jogging finishes, the jogger plate returns to its home position.



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Normally, all rollers in the sorter/stapler transport the paper at a speed of 345 mm/s (A246) or 450 mm/s (A247/A248). To have enough jogging time, the rotation speed for the sorter exit motor [A] changes, to transport the paper quickly and stack it smoothly into the bins, in the following manner:

345 mm/s (A246) or 450 mm/s (A247/A248): When the sorter exit roller [B] catches the leading edge of the paper

1,000 mm/s: After the jam sensors [C] detects the leading edge of the paper

600 mm/s: When releasing the trailing edge of the paper

The transport roller [D] turns at a constant speed of 345 mm/s (A246) or 450 mm/s (A247/A248). However, when the sorter exit roller [B] rotates quickly, the transport rollers do the same with the pulled paper. This occurs 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 selecting sort/stack or staple mode.
 - If the selected paper size does not match stapling specifications.
 - If copy of smaller width is delivered in the bins later in the "Mixed sizes" mode.
2. If paper is in a bin before turning on the main switch, the sort/stack mode is disabled after the user touches the sort key.

2.6 BIN REAR PLATE DRIVE SECTION

Fig. 1

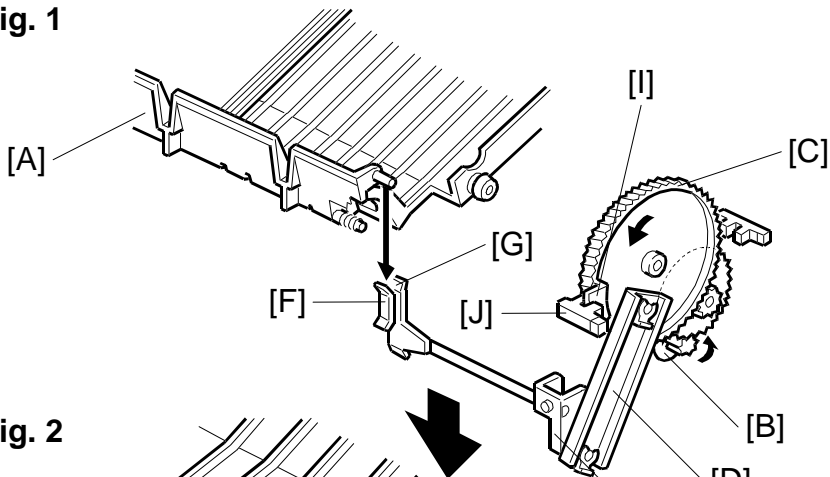
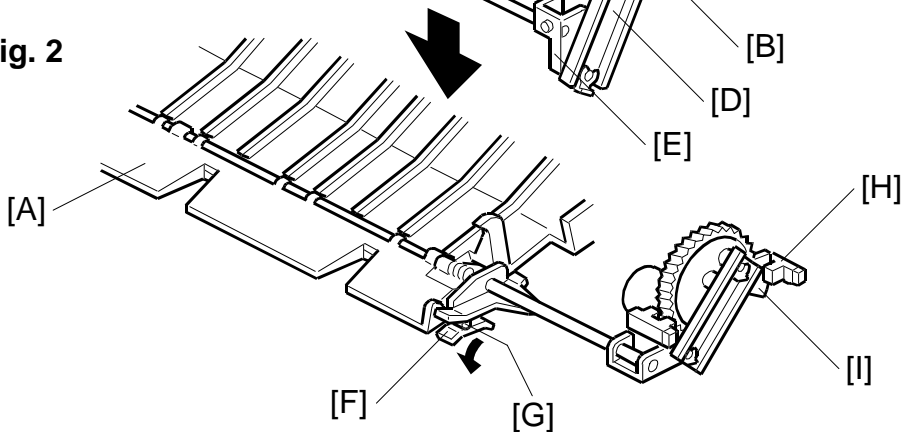


Fig. 2



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The bin rear plates [A] stand up as shown (Fig. 1). They are lowered only during stapling as shown (Fig. 2).

In staple mode, when the jogger plate has jogged all copies, the bin rear plate drive motor [B] rotates a gear [C]. The gear [C] drives the piston rod [D], pushing the lever [E] down.

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

During stapling, the actuator [I] interrupts the rear plate open sensor [H] (Fig. 2) for the bin.

When the bin rear plates are in their home position, the actuator [I] interrupts their HP sensor [J] (Fig. 1).

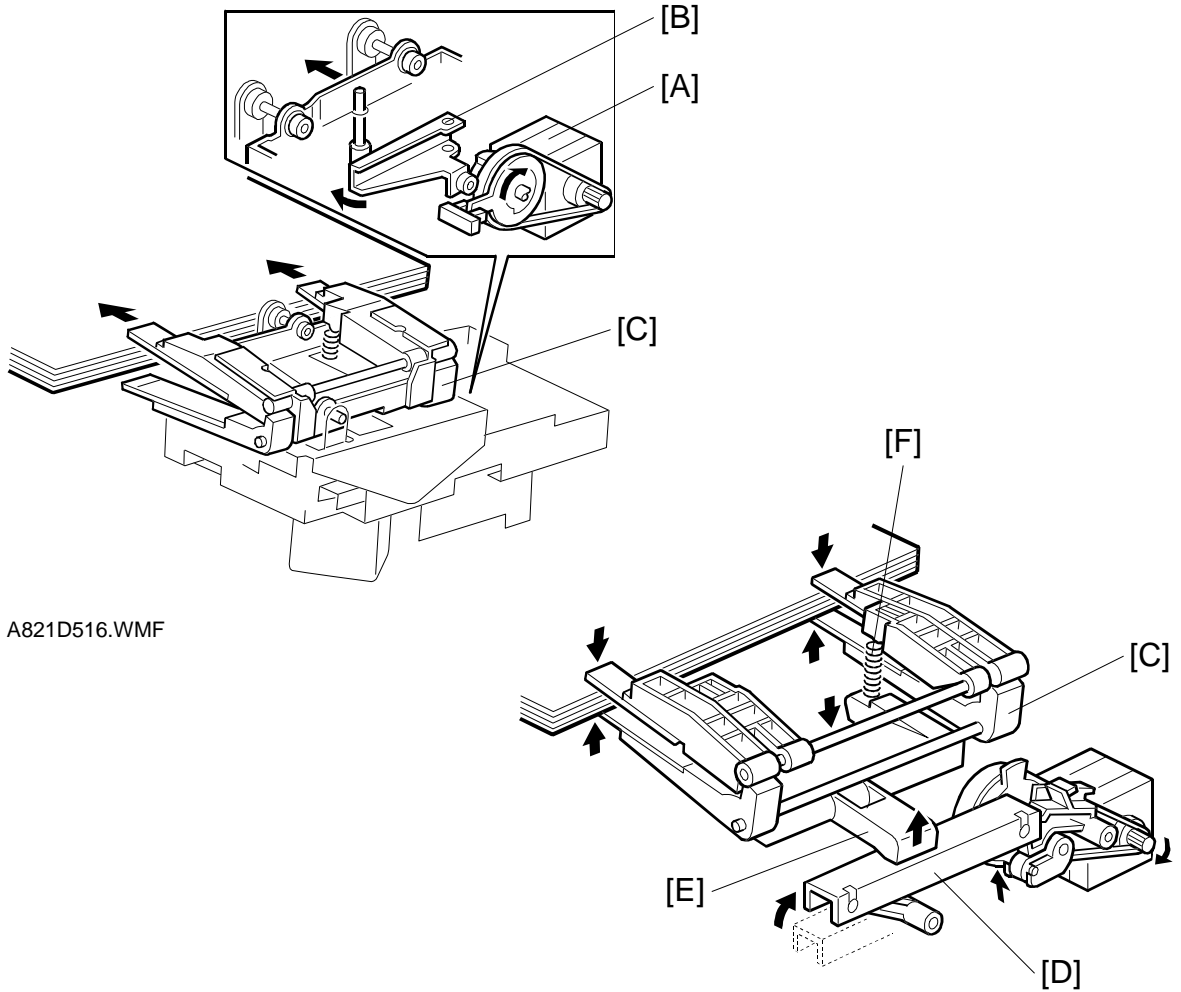
Under this condition, a pin [G] enters the holder [F] or passes through it.

After stapling is complete and the stapled paper returns to the bin, the gear [C] rotates 180 degrees and the bin rear plate returns to its home position.

2.7 GRIP ASSEMBLY

The grip assembly catches the jogged copies and moves them to the staple unit. After stapling, the grip assembly catches the copies again and moves them back. The grip assembly consists of grip arms, and the grip and grip shift motors. The grip arms catch the paper. The grip motor moves the grip arms inside and outside, and enables the grip arms to catch the paper. The grip shift motor causes the grip arms to carry the paper to the staple unit.

2.7.1 GRIP MOTOR

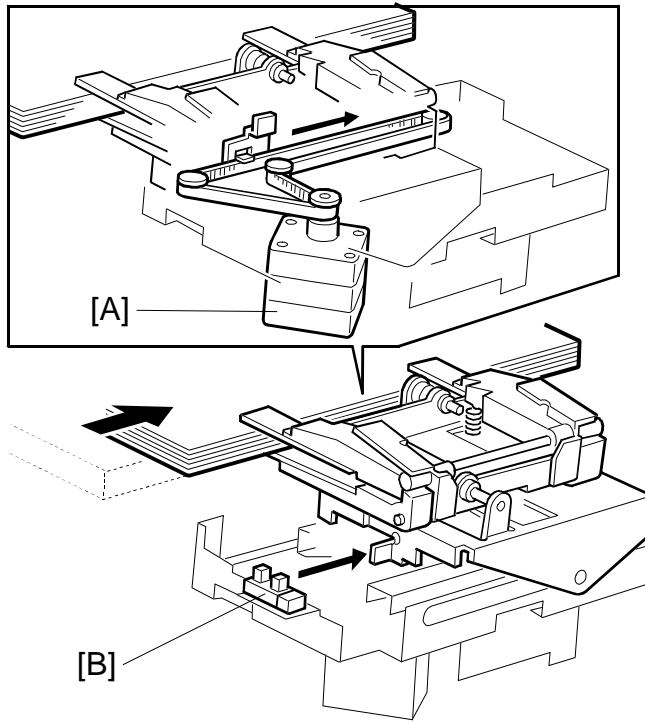


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When the grip motor [A] rotates several times, the lever [B] moves inside and pushes the grip arms [C]. After the grip motor rotates some more, the bracket [D] moves upward and pushes the pressure arm [E]. When the pressure arm move upward, the grip springs [F] attract the upper grip arms, then the grip arms catch the paper.

2.7.2 GRIP SHIFT MOTOR

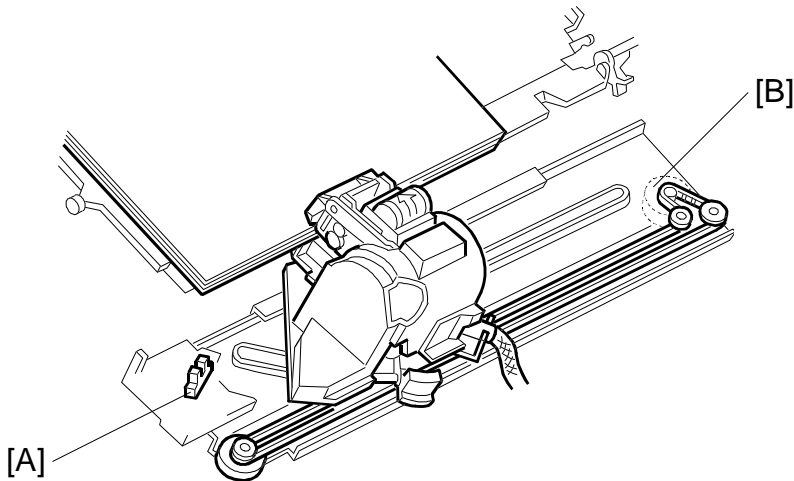


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The grip shift motor [A], a stepper motor, enables the grip arms to carry the paper to the staple unit and after stapling make it carry them back. The grip shift motor HP sensor [B] is actuated while the gripper is in the home (grip) position. The sorter/stapler main control board sends the appropriate pulses to the grip shift motor to determine the grip and staple positions. Vertical staple positions are adjusted by changing the number of the stepping motor pulses from the home position (SP1-11-1 “Staple Position Adjustment”).

2.8 STAPLE UNIT

2.8.1 STAPLE UNIT DRIVE MECHANISM

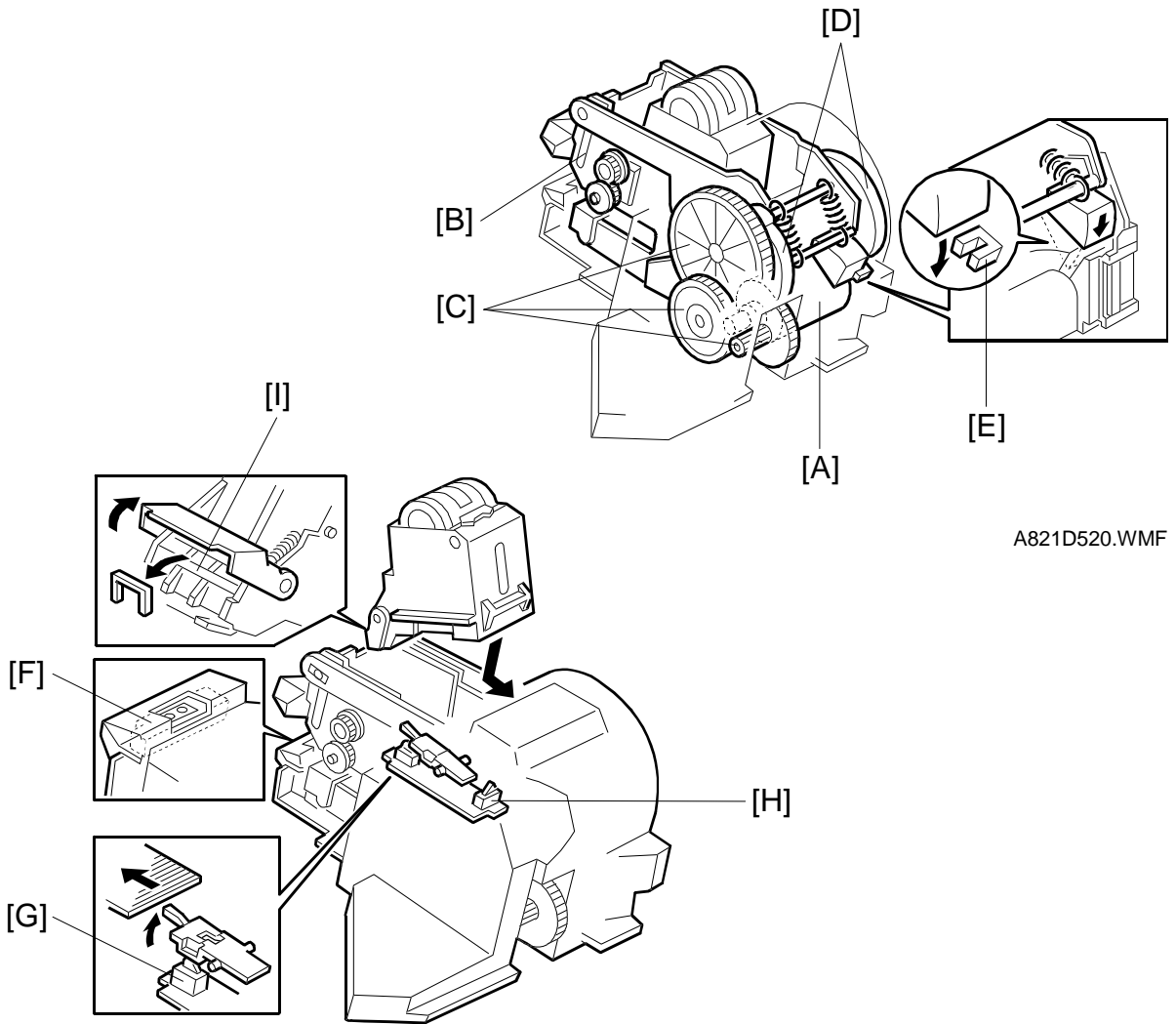


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The staple unit moves from the home position (top slant position) to the rear side of the machine in order to change the staple position. The staple HP sensor [A] activates when the staple unit is in the home position. In Top Slant mode, the stapler is only at the home position. In “Top” (or “Bottom”) single staple mode, the staple unit moves to the front (or rear) single staple position and stays there until stapling is complete. It then returns to the home position. In “2 Staples” mode or “Bottom” single staple mode; the staple positions differ according to the paper size. The staple unit drive motor [B] is a stepper motor, and the number of steps from the home position determine the staple position.

In “2 Staples” mode, the staple unit goes back and forth to staple the two positions. Horizontal staple positions are adjusted by changing the number of stepping motor pulses from the home position (SP1-11-1”Staple Position Adjustment”).

2.8.2 STAPLER



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The stapler motor [A] drives the staple sheet drive belt.

The staple sheets go under the hammer [B].

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

When the grip brings the aligned copies to the staple position, the stapler motor starts rotating. When the cams complete one rotation, the staple HP sensor [E] is de-actuated. The stapler motor then stops.

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

There are two sensors in the staple unit. One is the staple end sensor [G], which detects staple end conditions. The other is the cartridge set sensor [H], which detects when the staple cartridge is not installed.

The staple cartridge has a clinch area [I], a deposit for jammed staples. Operators can remove the jammed staples from the cartridge.

Staple Prohibit Conditions

1. Under the following conditions, staple mode is disabled after pressing the staple key on the operation panel:

If paper is in the bin before turning on the main switch.

If the selected paper size does not match stapling specifications.

If the paper comes from the by-pass feed table.

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

If paper is manually loaded into a bin after selecting staple mode.

If only one sheet is delivered to the bin.

If the stack, slip-sheet or interrupt modes are selected.

3. Under the following conditions, manual stapling mode in sort mode is prohibited:

If paper is manually loaded into a bin after selecting sort mode.

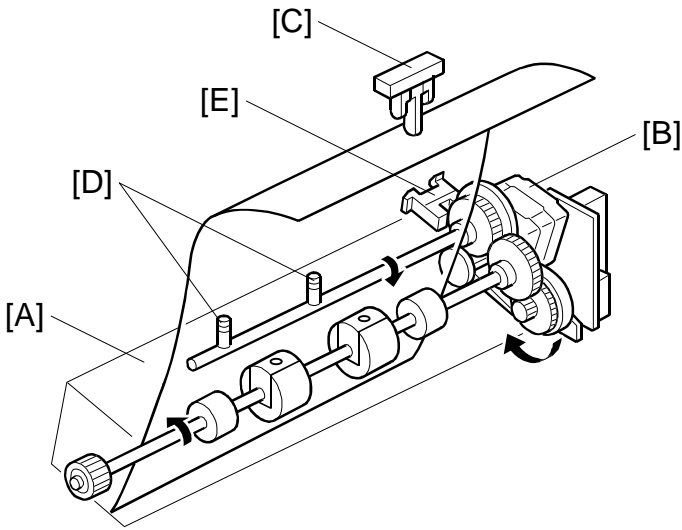
If the paper size in the bin does not match stapling specifications.

If only one sheet is delivered to the bin.

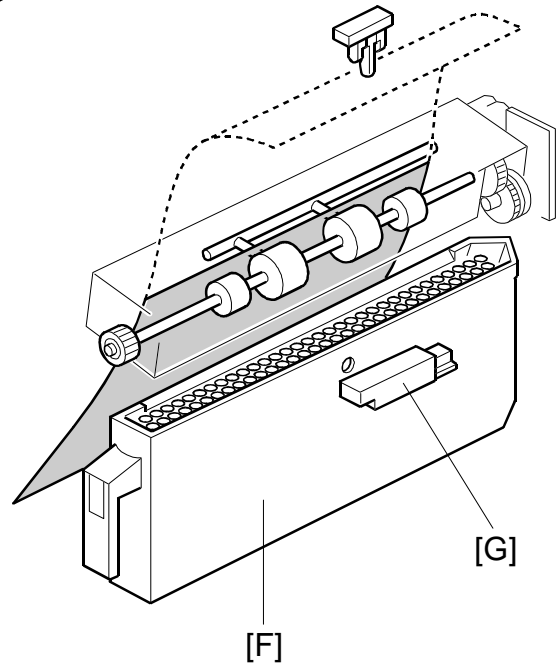
The delivery of a smaller width paper to the bin later in "Mixed Sizes" mode.

If copies already stapled, remain in the bin.

2.8.3 PUNCH MECHANISM



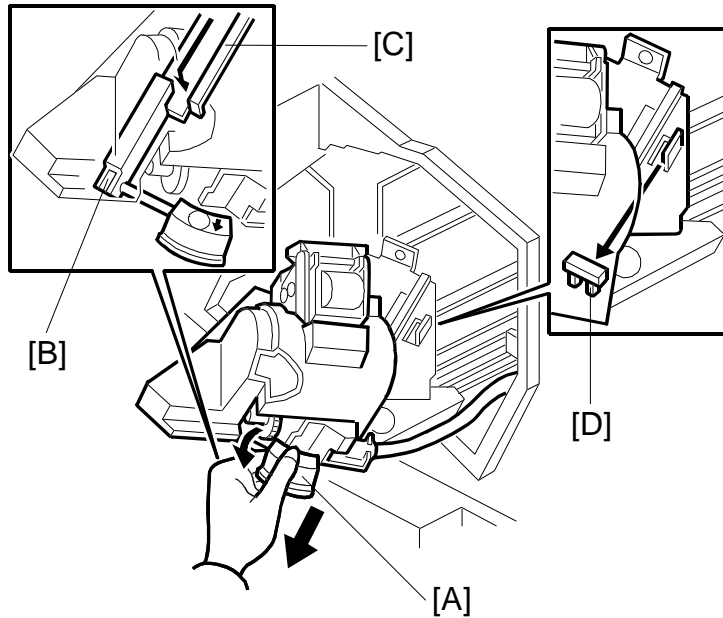
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A821D523.WMF

The punch unit [A], which is in the copy transport path, makes punched holes for every copy paper in the punch mode. The punch drive motor [B] (stepping motor) drives the punch unit. At the appropriate timing after the entrance sensor [C] detects the trailing edge of the copy paper, the punch drive motor rotates and the hole puncher [D] makes holes in the paper. The punch HP sensor [E] detects if the hole puncher is in the home position. The punch collection cartridge [F] collects punch rubbish (waste). When the punch rubbish (waste) overflow sensor [G] detects the overflow condition, the machine indicates the condition in the operation panel after the punch job is done.

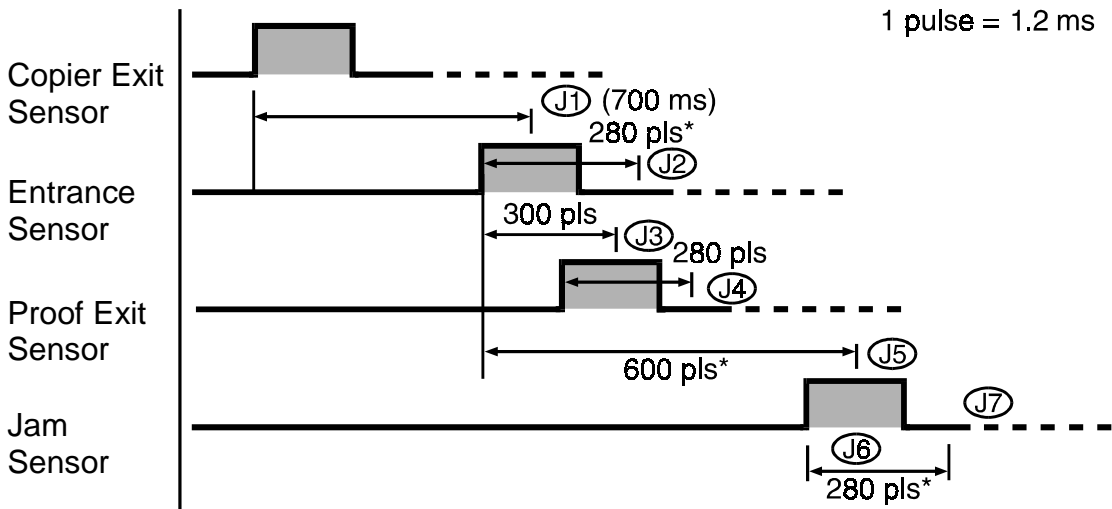
2.8.4 STAPLE UNIT PULLED-OUT MECHANISM



A821D524.WMF

For easy staple cartridge replenishment, the staple unit can be pulled-out from the front. Pulling out the R3 release grip [A] releases the stopper and enables the staple unit to be removed (staple unit pulled-out position). In this position, the stopper arm [B] locks the staple unit by dropping the arm to the edge of bracket [C]. When the staple unit is not in completely (the staple unit is between the staple unit HP and the staple unit pulled-out positions [D]), the LCD displays a message advising the user to set the staple unit in the home position.

2.9 JAM DETECTION



* Timing depends on the paper sizes.

A821D525.WMF

Sorter Jams

The main control board for the sorter/stapler detects jams under the following conditions: (In these cases, a jam signal is sent to the copier, the copier stops the paper feed and indicates a sorter miss-feed.)

Normal (Proof) Mode

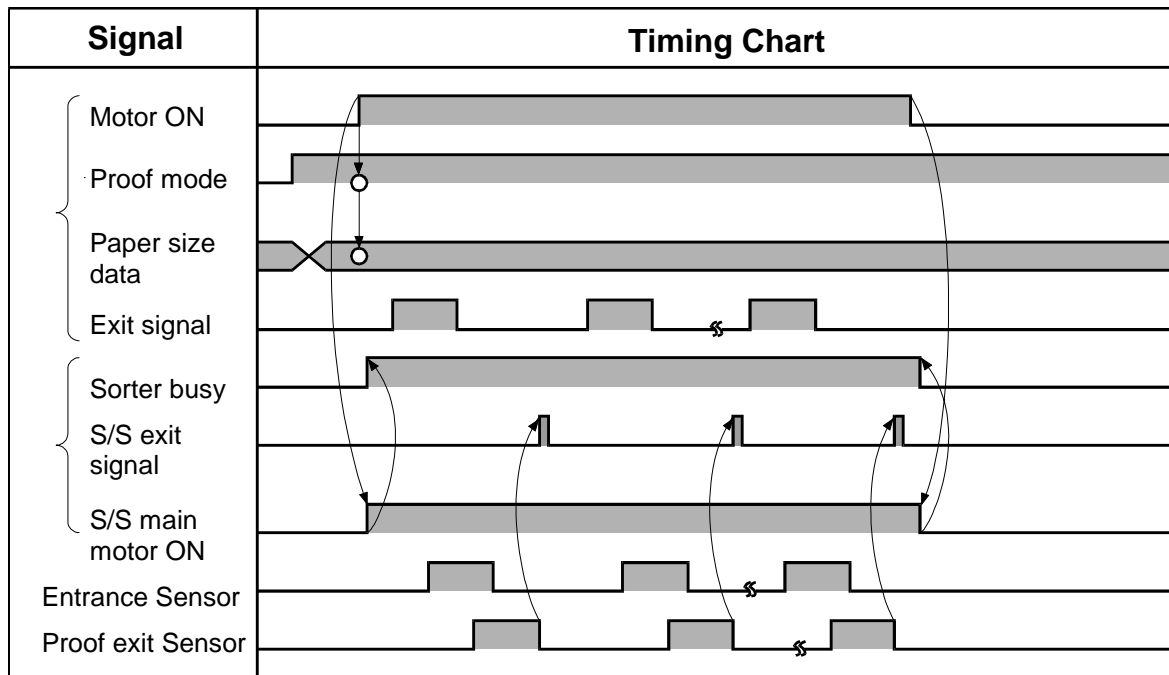
- J1: The entrance sensor has not turned on for the 700 ms after the copier exit sensor turns on.
- J2: The entrance sensor stays on for the appropriate number of pulses (for example, 280 pulses for A4 sideways) or more.
- J3: The proof exit sensor has not turned on for 300 pulses after the entrance sensor turns on.
- J4: The proof exit sensor stays on for the appropriate number of pulses (for example, 280 pulses for A4 sideways) or more.

In Sort/Stack or Staple Mode

- J1 and J2: Same as the Normal mode.
- J5: The jam sensor has not turned on for 600 pulses after the entrance sensor turns on.
- J6: The jam sensor stays on for the appropriate number of pulses (for example, 280 pulses for A4 sideways) or more.
- J7: The bin drive motor turns on while the bin drive motor turns on.

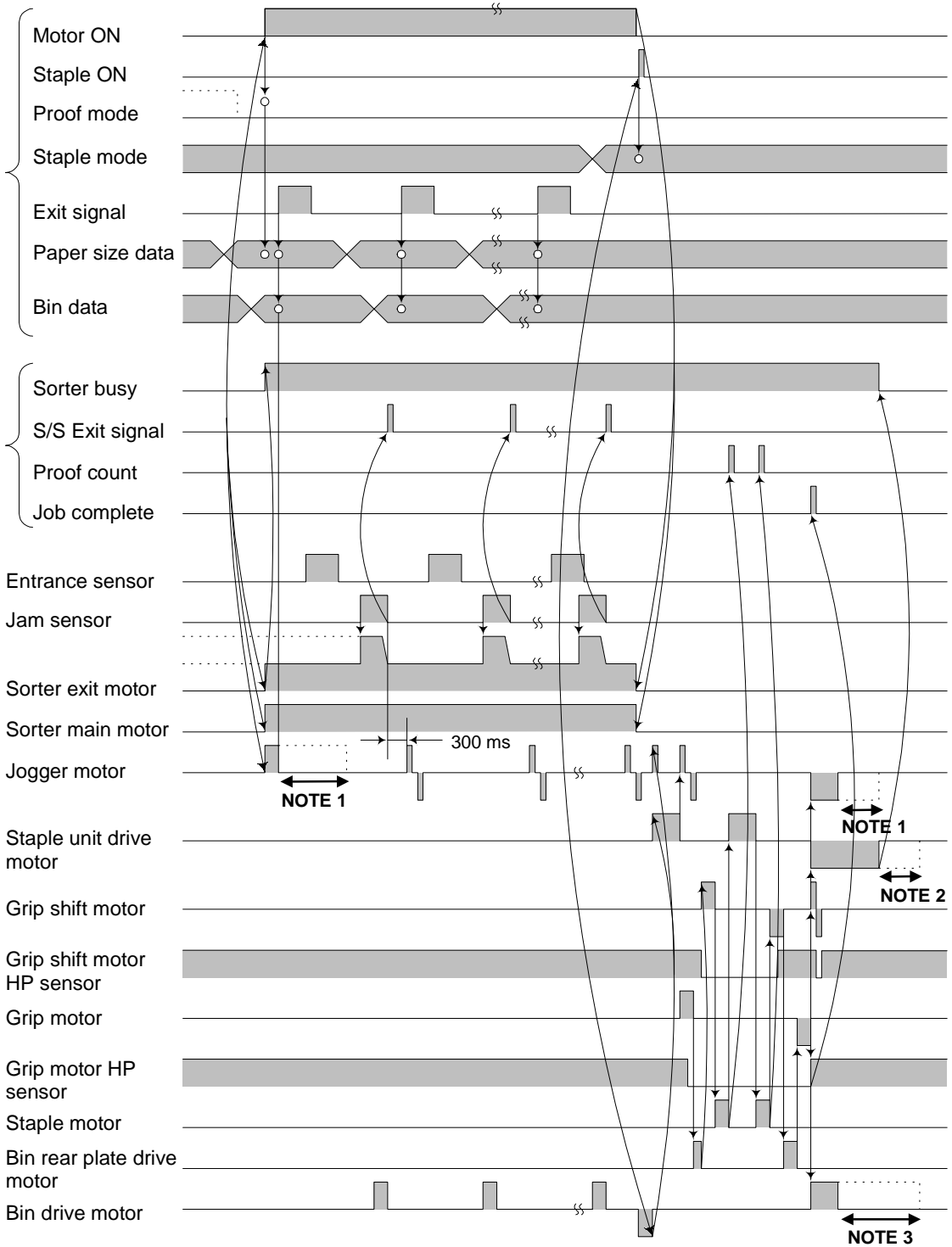
2.10 TIMING CHART

2.10.1 SORTER/STAPLER TIMING CHART (PROOF MODE)



A821D526.WMF

2.10.2 SORTER/STAPLER TIMING CHART (STAPLE MODE)



A821D527.WMF

- NOTE:** 1) Jogger motor on/off time differs depending on the paper size.
 2) Staple unit drive motor off time differs depending on the paper size.
 3) Bin drive motor off time differs depending on the number of copy sets.

3. SP MODE

3.1 SERVICE TABLES (MAIN CONTROL BOARD)

3.1.1 DIP SWITCHES

DIP SW 100 0: OFF 1: ON

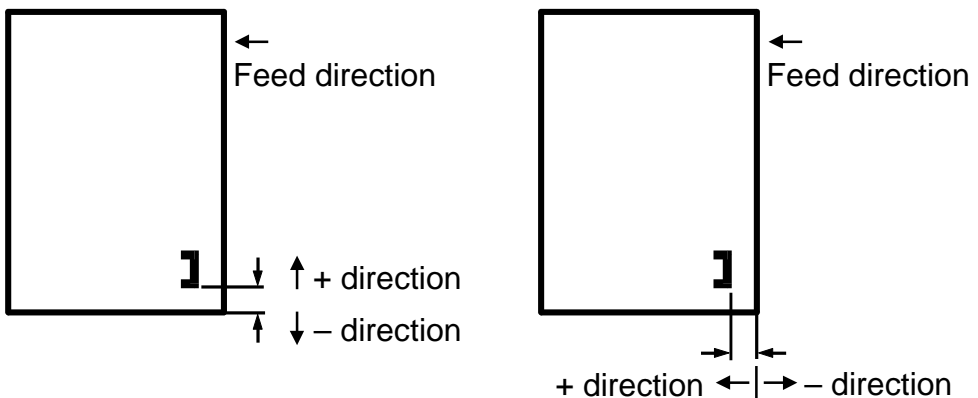
Function	1	2	3	4
Standard setting	0	0	—	—
Raises all bins to the top position.	1	0	—	—
Free run	0	1	—	—
Initialization	1	1	—	—
2 Hole punch setting (Europe)	—	—	0	0
3 Hole punch setting (U.S.A.)	—	—	0	1

DIP SW 101 Vertical Staple Position Adjustment

DIP SW 102 Horizontal Staple Position Adjustment

Adjustment Value	1	2	3	4
Standard Position	0	0	0	—
0.5 mm	1	0	0	0/1
0.1 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 the same on DIP SW 101 and DIP SW 102.

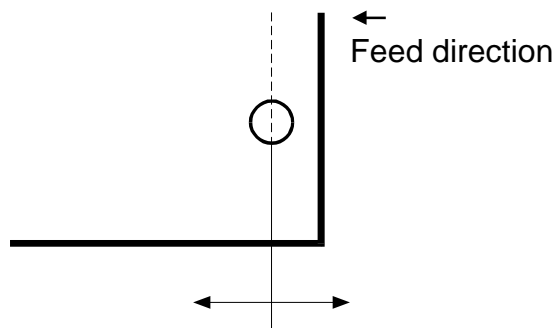


A821M500.WMF

3.1.2 PUNCH POSITION

DPS 100

Adjustment value	1	2	3	4
Standard (3 Holes) 9.5 mm from trailing edge	—	—	0	1
Standard (2 Holes) 12 mm from trailing edge	—	—	0	0



A821M501.WMF

3.1.3 TEST POINTS

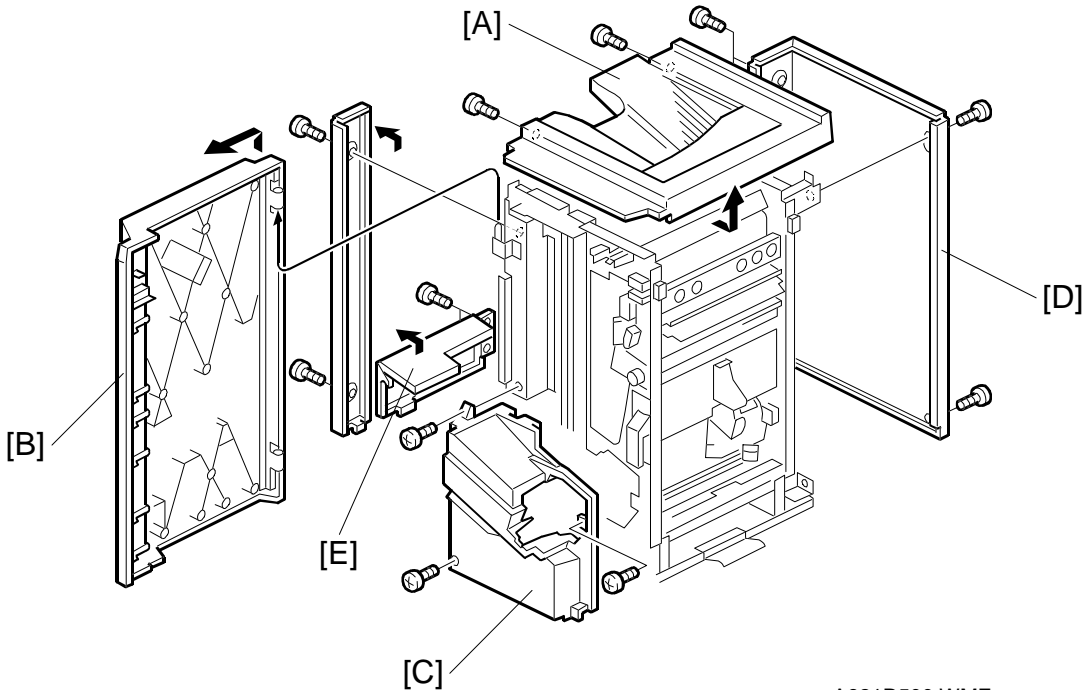
Number	Function
TP100	GND
TP101	+5 V

3.1.4 FUSES

FUSES	Connected Point	Rated Current and Voltage
FUSES100	CN100-1 (+24 V)	250 V T5A

4. REPLACEMENTS AND ADJUSTMENTS

4.1 EXTERIOR COVER REMOVAL



A821R500.WMF

Front Door Removal

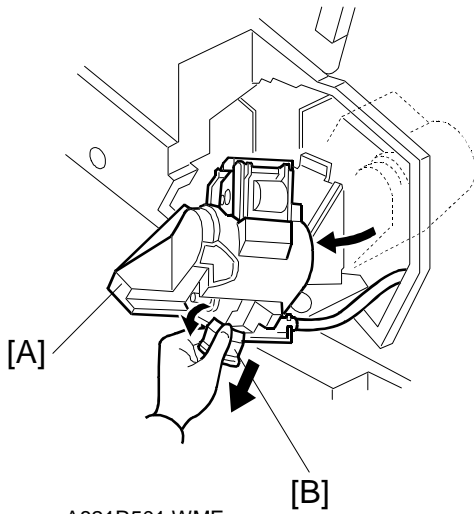
1. Remove the proof tray [A] (2 screws).
2. Open the front door [B] and push away the staple unit.
3. Remove the front inner cover [C] (3 screws).
4. Lift up the front door and remove it.

Bottom Plate Removal

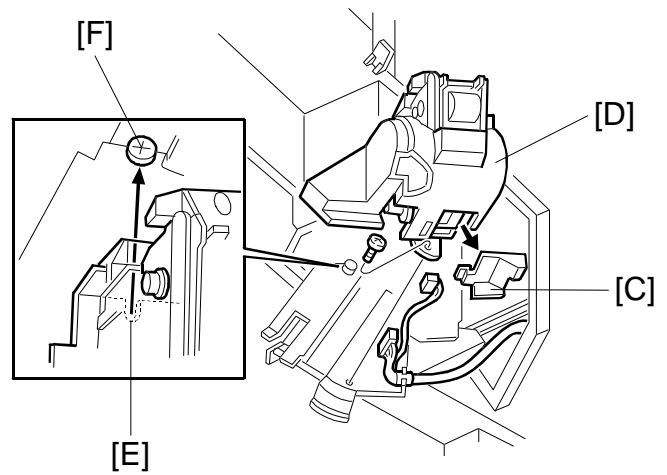
1. Remove the rear cover [D] (4 screws).
2. Remove the bottom plate [E] (2 screws).

NOTE: The proof tray, front inner cover, front left cover, and rear cover can be removed without removing any other parts.

4.2 STAPLER REMOVAL AND REINSTALLATION



A821R501.WMF

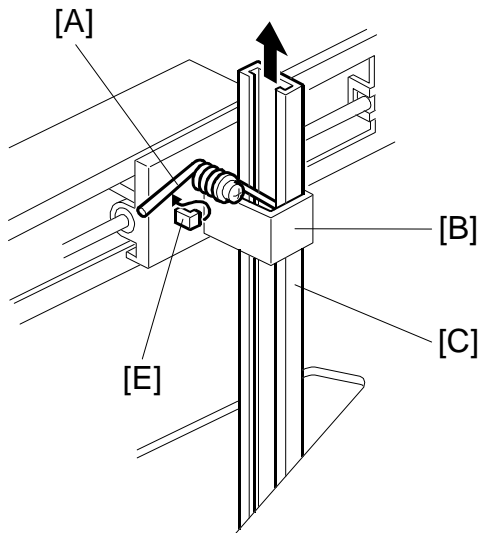


A821R502.WMF

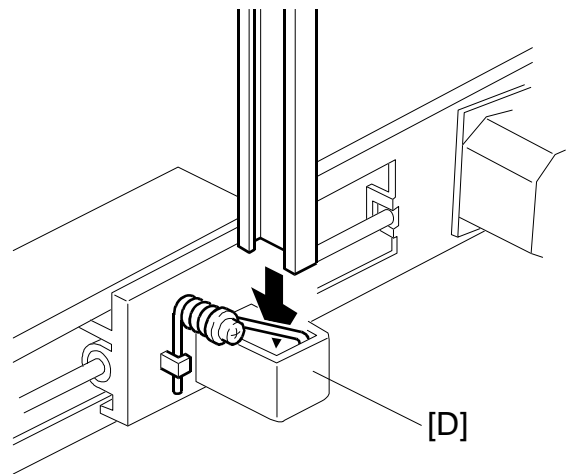
1. Return the staple unit [A] to the home position by pulling out the staple unit.
2. Pull out the R3 release lever [B] and pull out the staple unit.
3. Remove the harness cover [C].
4. Remove the staple unit [D] (1 connector and 1 screw).

NOTE: When re-assembling the parts, hook the cutout [E] to the shoulder screw [F].

4.3 JOGGER PLATE REMOVAL AND INSTALLATION



A821R503.WMF



A821R504.WMF

Removal

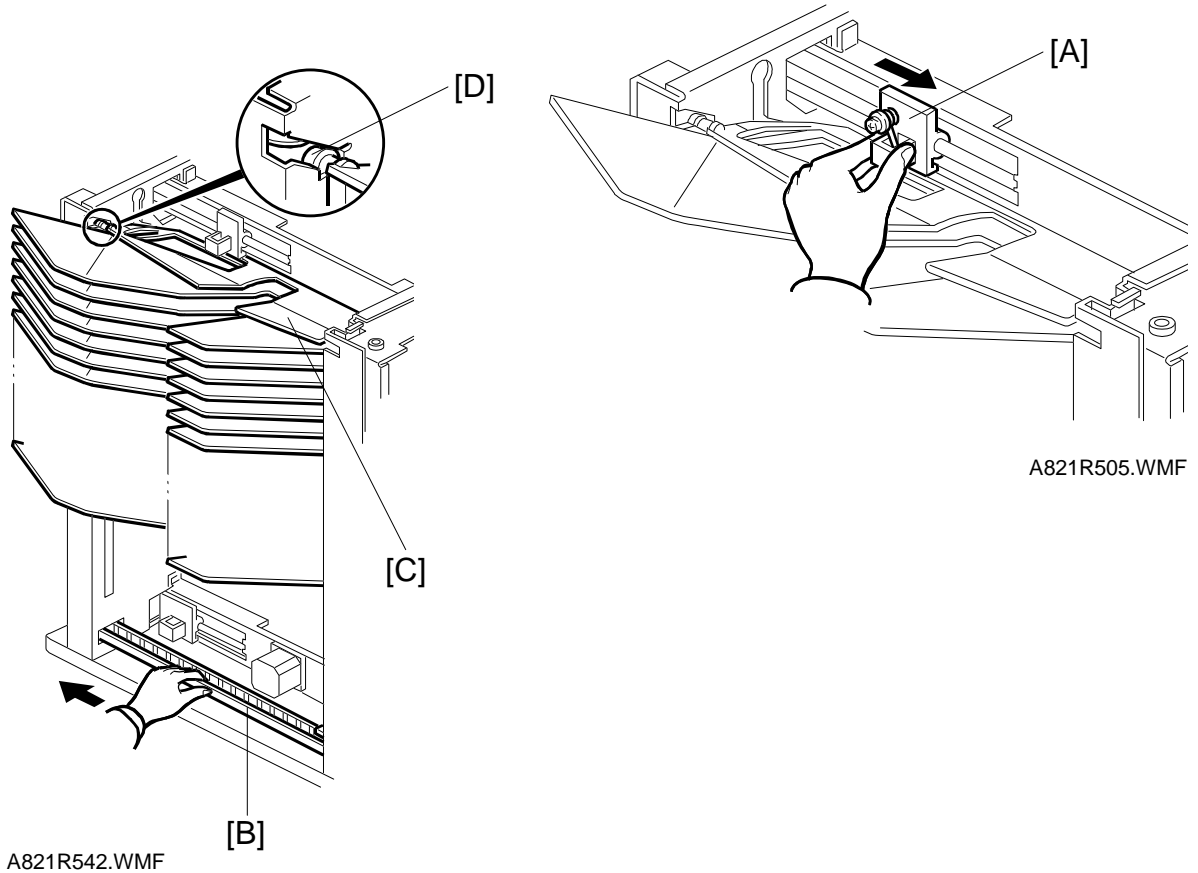
1. Remove the proof tray. (Refer to Exterior Cover Removal, section 4.1.)
2. Release the spring [A] of the upper jogger holder [B], and then pull out the jogger plate [C].

Installation

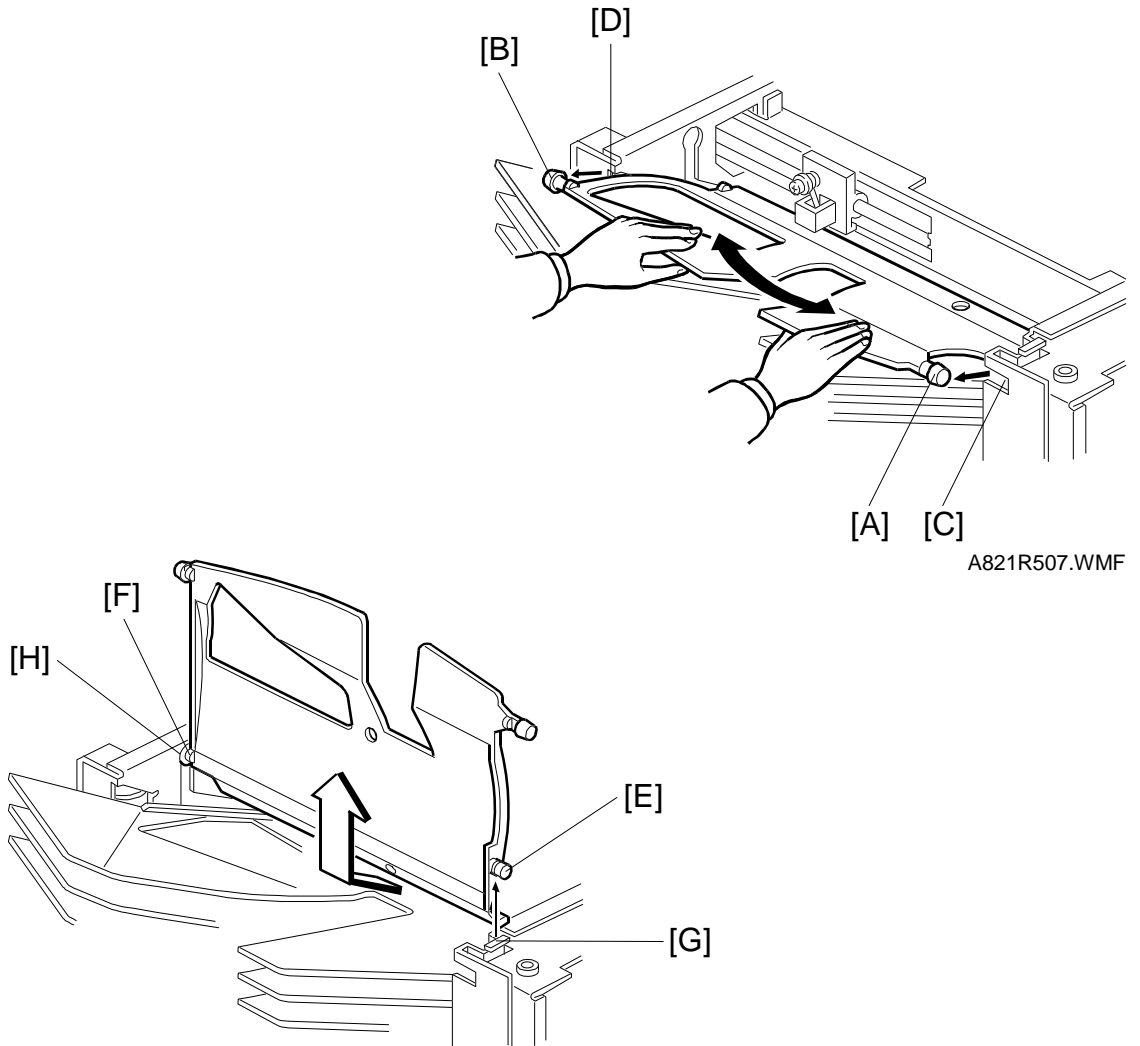
1. Insert the jogger plate through the upper holder [B].
2. Push down the jogger plate towards the lower holder [D].
3. Set the jogger plate in the lower holder [D].
4. Hook the spring [A] of the upper jogger holder to the stopper [E].

4.4 BINS REMOVAL

Removal



1. Remove the rear cover.
2. Raise all bins to the highest position by turning on DIP SW100-1 on the main PCB for the sorter, 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 side.
4. Remove the rear cover then remove the bottom plate to access the drive belt. (Refer to Exterior Cover Removal section.)
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.

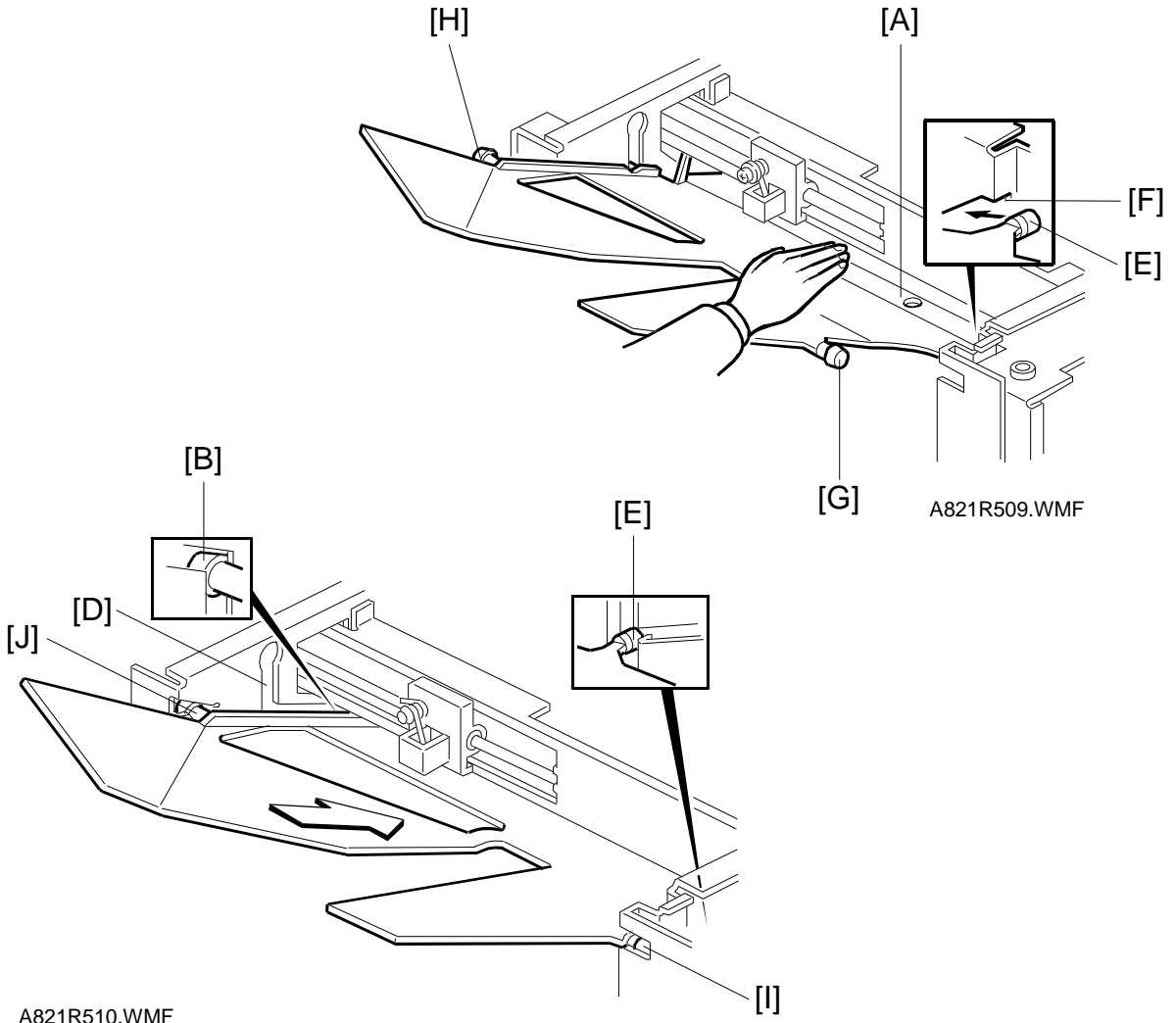


A821R507.WMF

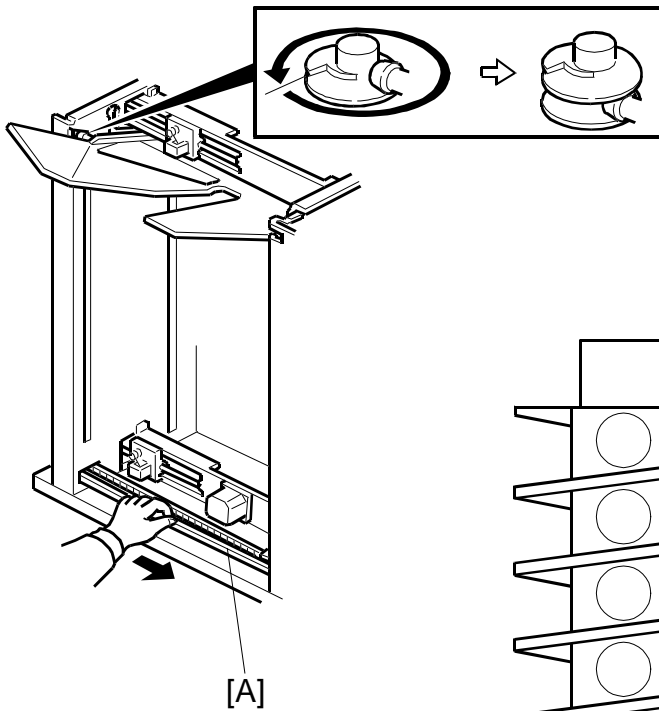
A821R508.WMF

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

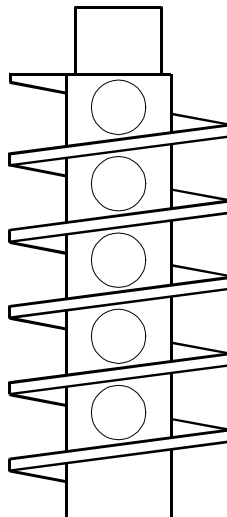
Installation



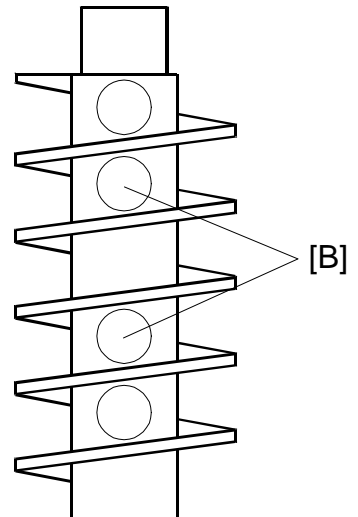
1. While holding the bin rear plate [A] straight, insert the rear right guide pin [B] into the slot [C], and then lower the rear guide pin to the corner [D].
2. While still holding the bin rear plate straight, insert the front right guide pin [E] to guide slot [F].
3. Insert the other guide pins [G]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



A821R511.WMF



Good

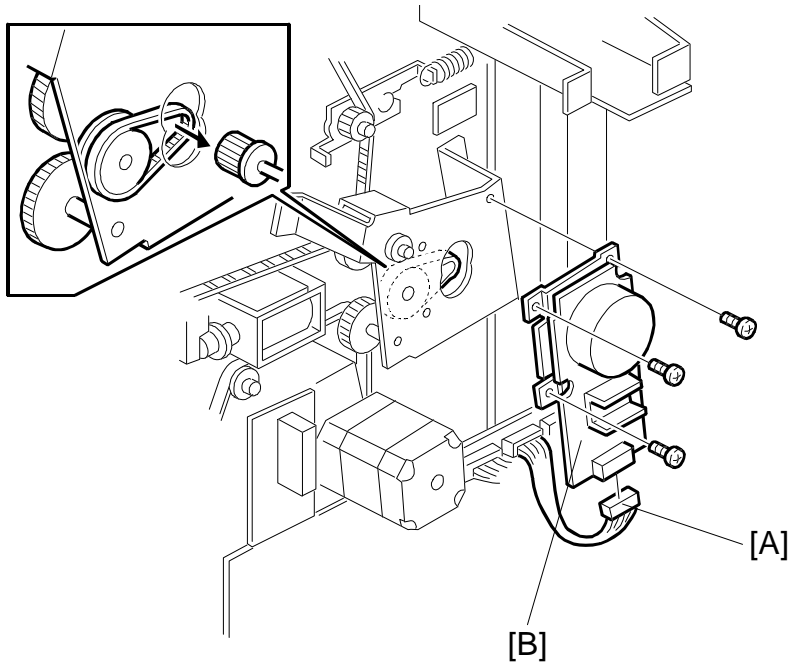


No Good

A821R512.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] become uneven and the bin tilts.
5. Set all bins and the top cover by repeating steps 1 to 4.
6. Re-install the jogger plate and all covers.

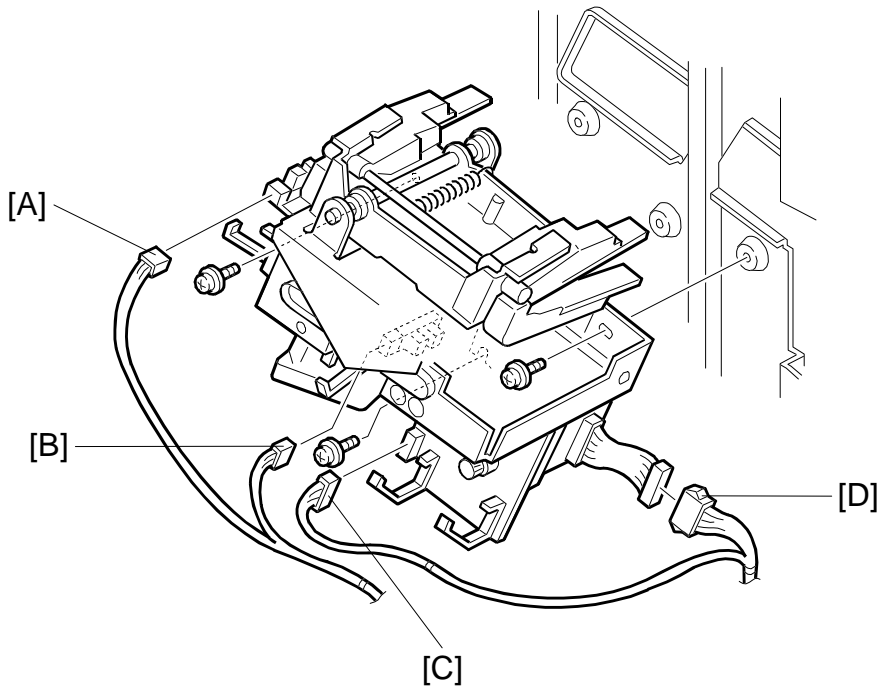
4.5 MAIN MOTOR REMOVAL



A821R513.WMF

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

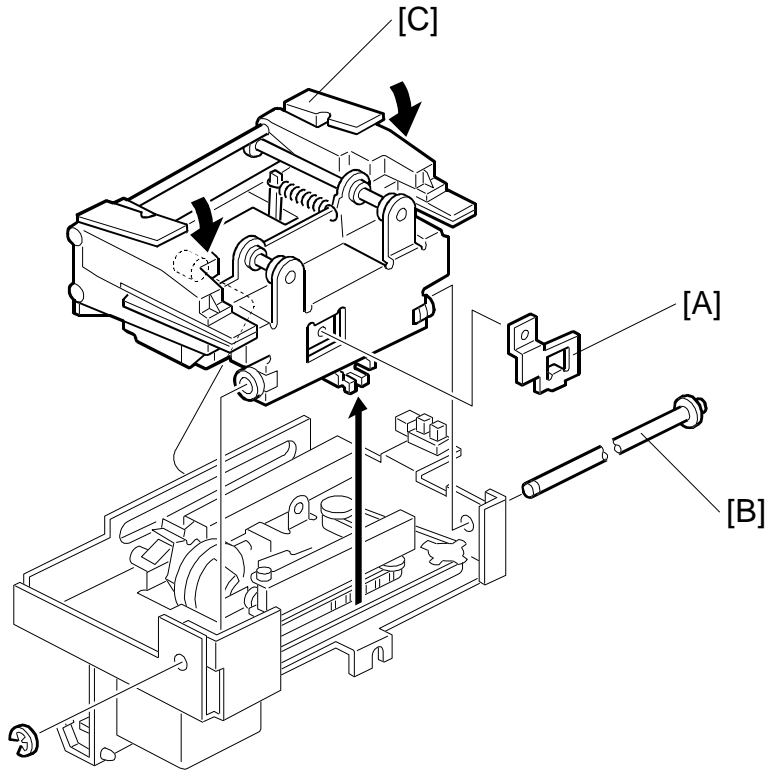
4.6 GRIP ASSEMBLY REMOVAL



A821R514.WMF

1. Open the front door then remove the front inner cover. (Refer to Exterior Cover Removal, section 4.1.)
2. Disconnect the four connectors [A to D].
NOTE: When re-connecting the connectors, connect the longer harness [A] to grip shift motor HP sensor and the shorter harness [B] to grip motor HP sensor.
3. Remove the grip assembly.

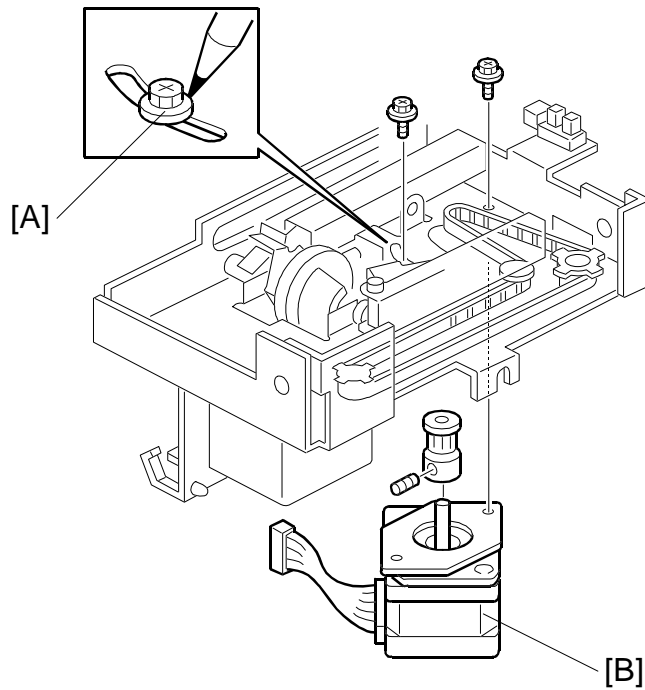
4.7 UPPER GRIP ASSEMBLY REMOVAL



A821R515.WMF

1. Remove the grip assembly. (Refer to Grip Assembly Removal, section 4.6.)
2. Remove the timing belt securing bracket [A] (1 screw).
3. Remove the grip shift shaft [B] (1 E-ring).
4. While closing the upper-grip assembly [C], remove it.

4.8 GRIP SHIFT MOTOR REMOVAL

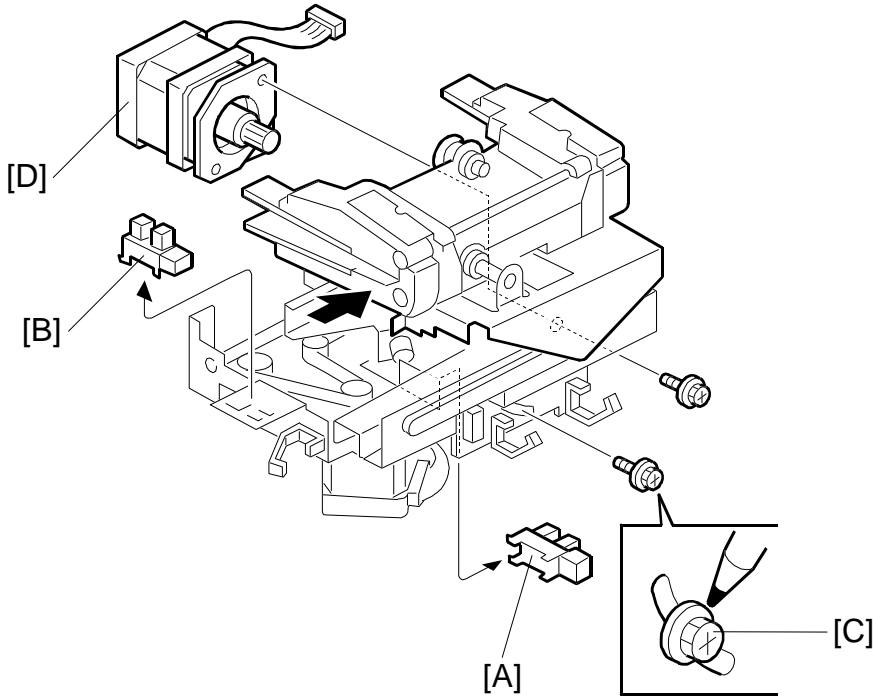


A821R516.WMF

1. Remove the upper grip assembly. (Refer to Upper Grip Assembly Removal, section 4.7.)
2. Mark the original position of the screw [A] securing the grip shift motor [B].
3. Remove the grip shift motor.
NOTE: When re-installing the grip shift motor, place the motor at the original position by referring to the mark you made.

4.9 GRIP MOTOR AND SENSORS REMOVAL

4.9.1 GRIP MOTOR/GRIP MOTOR HP SENSOR/GRIP SHIFT MOTOR HP SENSOR REMOVAL

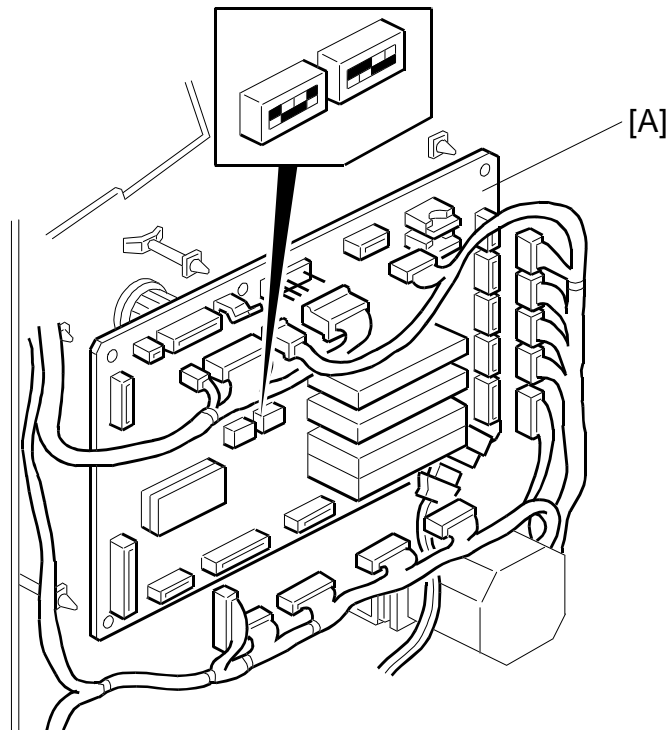


A821R517.WMF

1. Remove the grip assembly. (Refer to Grip Assembly Removal, section 4.6.)
2. Replace the grip motor HP sensor [A].
3. Replace the grip shift motor HP Sensor [B].
4. Mark the original position of the screw [C] securing the grip motor [D].
5. Remove the grip motor.

NOTE: When re-installing the grip motor, place the motor at the original position by referring to the mark you made.

4.10 MAIN CONTROL BOARD REPLACEMENT



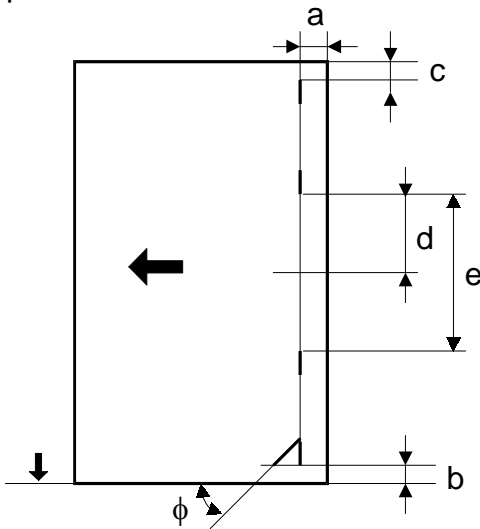
A821R518.WMF

1. Remove the rear cover (refer to Exterior Cover Removal, section 4.1) 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 set all connectors.
4. Position DIP SW 100, 101 and 102 as on the original main control board (DIP SW 101 and 102 are for staple position adjustment and DIP SW 100 is for SP mode).
5. Turn on the main switch for the copier, and then confirm the staple position. If incorrect, adjust the staple position. (Refer to the Staple Position Adjustment, section 4.11.)

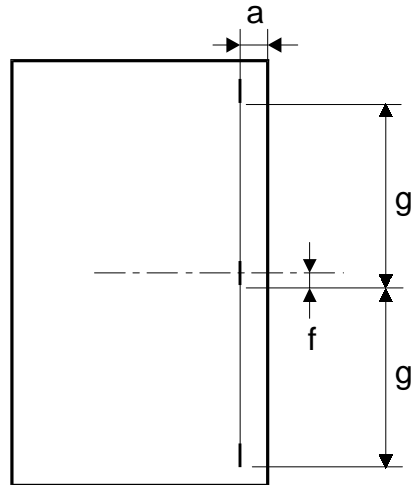
4.11 STAPLE POSITION ADJUSTMENT

Adjustment Standard

Staple Position:



A821R539.WMF



A821R540.WMF

- a = 6 ± 3 mm
- b = 6 ± 3 mm
- c = 6 ± 3 mm
- d = 66 ± 3 mm
- e = 132 ± 2 mm
- f = 6 ± 3 mm
- g = 116.5 ± 2 mm
- φ = 45 ± 5°

Adjustment

<p>Staple Position Adjustment</p> <p>1 Vertical (Rear, Front) 00 <input type="button" value="-"/> <input type="button" value="+"/> [A]</p> <p>2 Horizontal (Left, Right) 00 <input type="button" value="-"/> <input type="button" value="+"/> [B]</p>	<p>Punch Hole Position Adjustment</p> <p>00 <input type="button" value="-"/> <input type="button" value="+"/></p>												
<table border="1" style="border-collapse: collapse;"> <tr><td colspan="2" style="text-align: center;">Index</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">9</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">10</td></tr> </table>		Index		1	6	2	7	3	8	4	9	5	10
Index													
1	6												
2	7												
3	8												
4	9												
5	10												
<p><input type="button" value="Copy in SP"/> <input type="button" value="1"/> SP Adjustment PAGE11 <input type="button" value="Prev."/> <input type="button" value="Next"/></p>													

A821R538.PCX

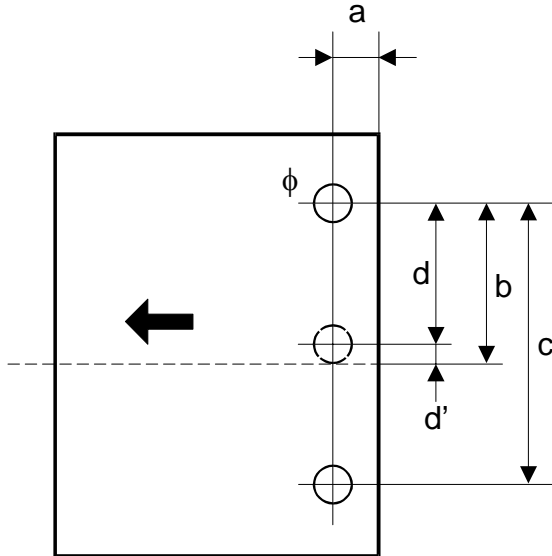
Both the vertical and the horizontal staple positions are adjustable as follows:

1. Enter SP1-11-1 (Staple Position Adjustment).
2. Adjust the vertical staple position by touching the “-,” “+” keys [A] and the horizontal staple position by touching the “-,” “+” keys [B].

NOTE: 0.5 mm/step

4.12 PUNCH POSITION ADJUSTMENT STANDARD

Punch Position:



A821R541.WMF

2 Holes (European version)

$a = 12 \pm 3 \text{ mm}$

$b = 40 \pm 3 \text{ mm}$

$c = 80 \pm 1 \text{ mm}$

3 Holes (U.S.A. version)

$a = 9.5 (3/8") \pm 3 \text{ mm}$

$c = 216 (8 1/2") \pm 1 \text{ mm}$

$d = 108 (4 1/4") \pm 1 \text{ mm}$

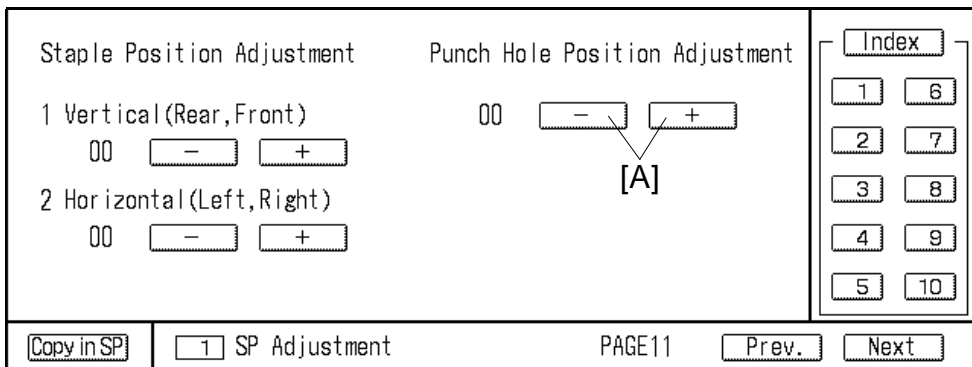
$d' = \pm 3 \text{ mm}$

Punch Hole Size

2 Holes: $\phi = 6.5 \pm 0.5 \text{ mm}$

3 Holes: $\phi = 8.0 \pm 0.5 \text{ mm}$

Adjustment



A821R538.PCX

1. Enter SP1-11-2 (Punch Hole Position Adjustment).
2. Adjust the punch position by touching the “-,” “+” keys [A] (vertical position only).

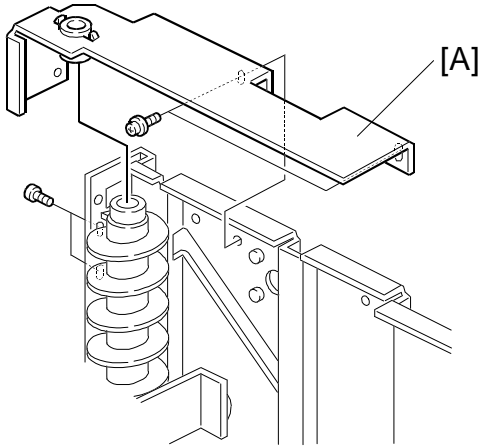
NOTE: 1 mm/step

4.13 HELICAL WHEELS REMOVAL

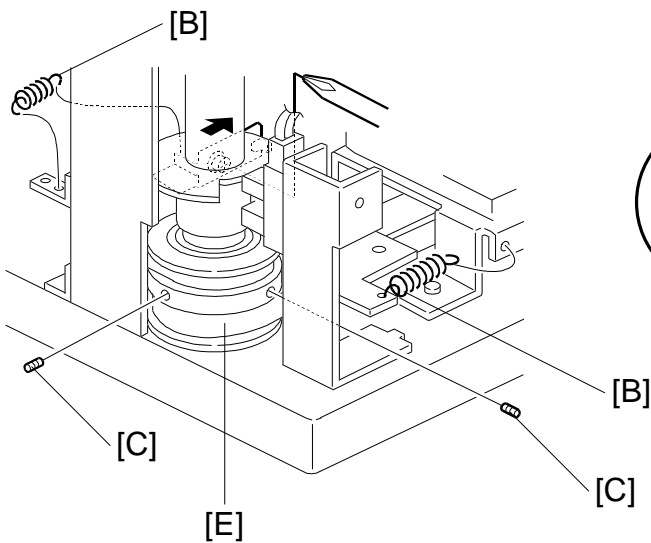
Removal

Before removing the helical wheels, remove all bins and all exterior covers. (Refer to Exterior Cover, section 4.1, and Bins Removal, section 4.4.)

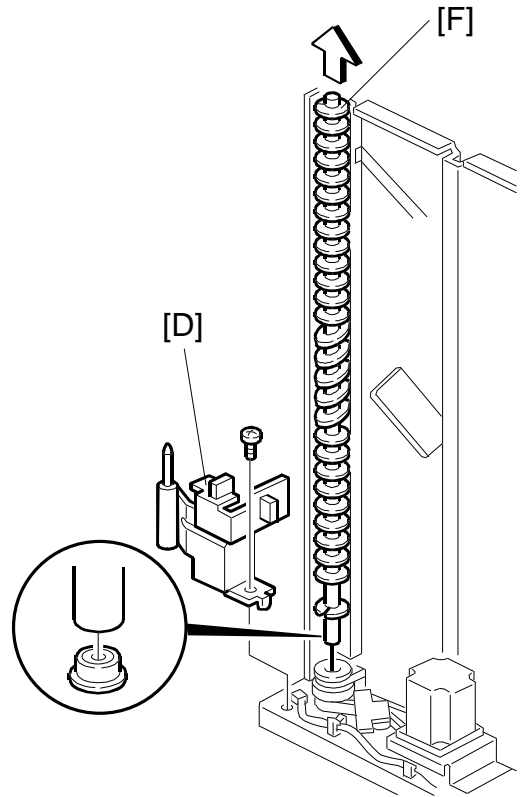
Front Helical Wheel



A821R523.WMF



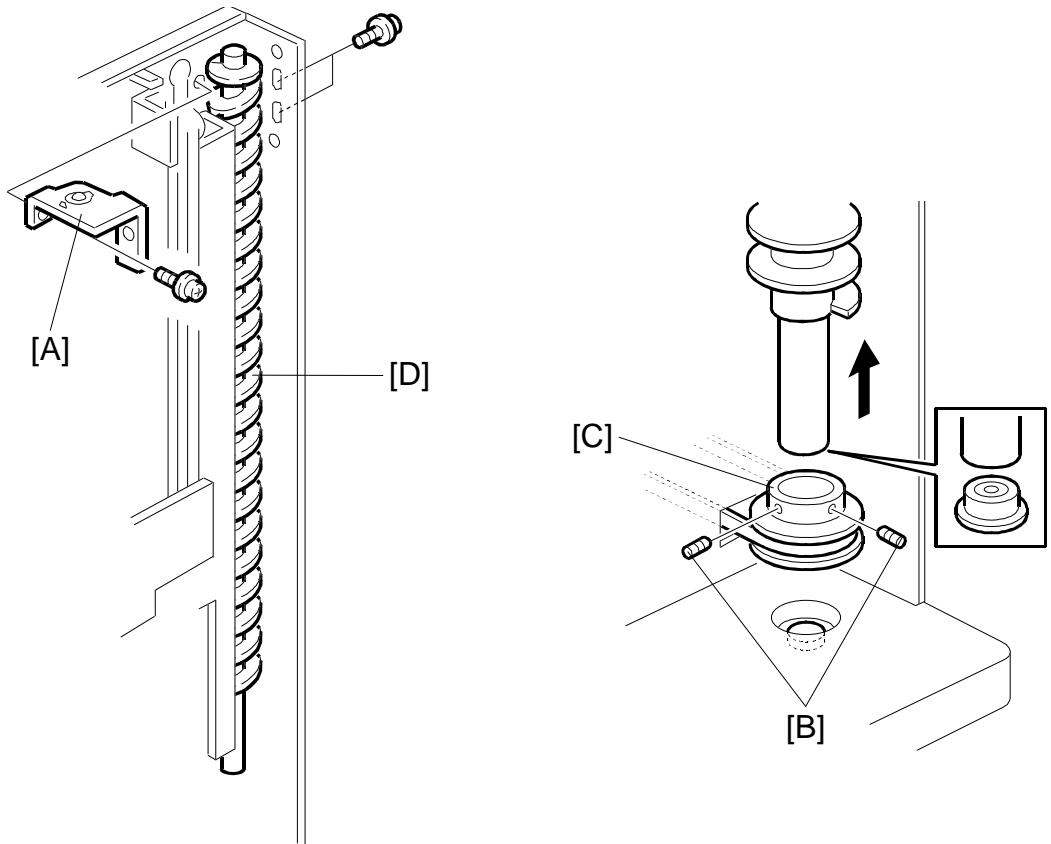
A821R525.WMF



A821R524.WMF

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

Rear Helical Wheel



A821R526.WMF

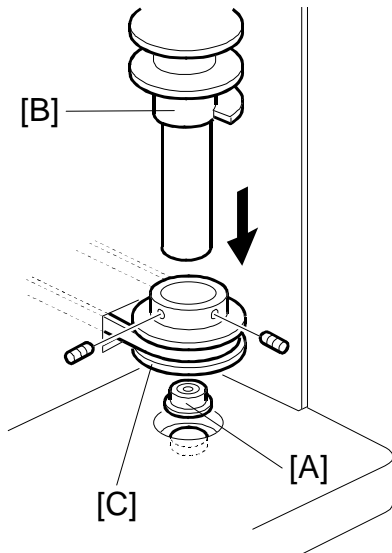
A821R527.WMF

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].

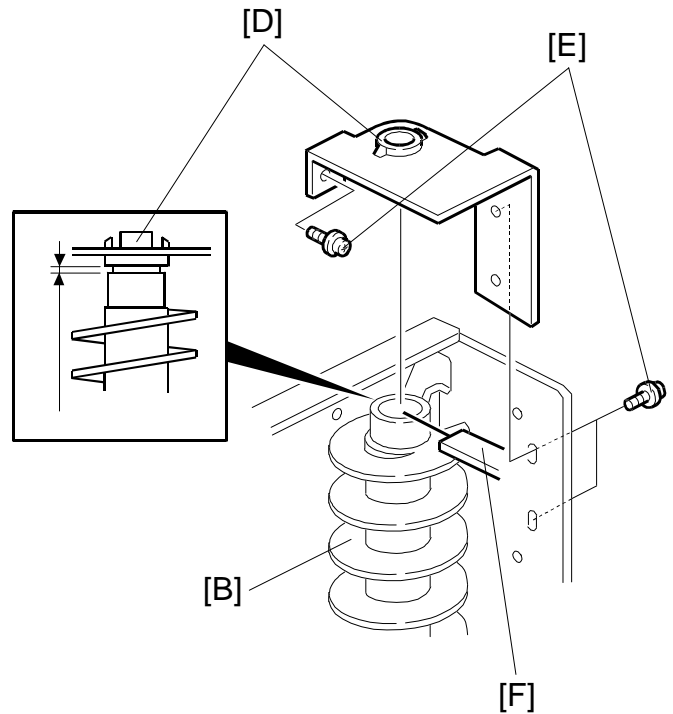
Installation

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

Rear Helical Wheel



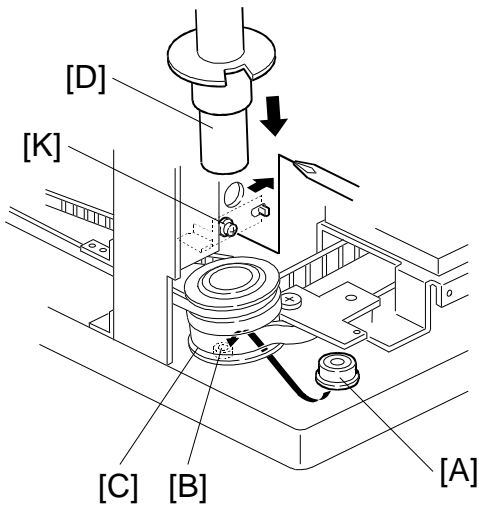
A821R528.WMF



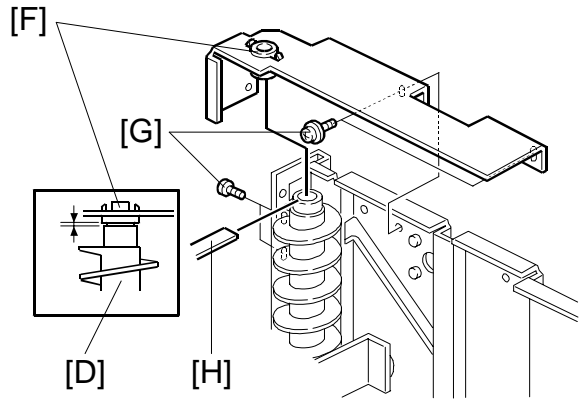
A821R529.WMF

1. Place the bearing [A] on the notch on the bottom plate.
2. Set the helical wheel [B] into the pulley [C] then set the helical wheel on the bearing [A].
3. Set 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 to the helical wheel, tighten the three screws [E].

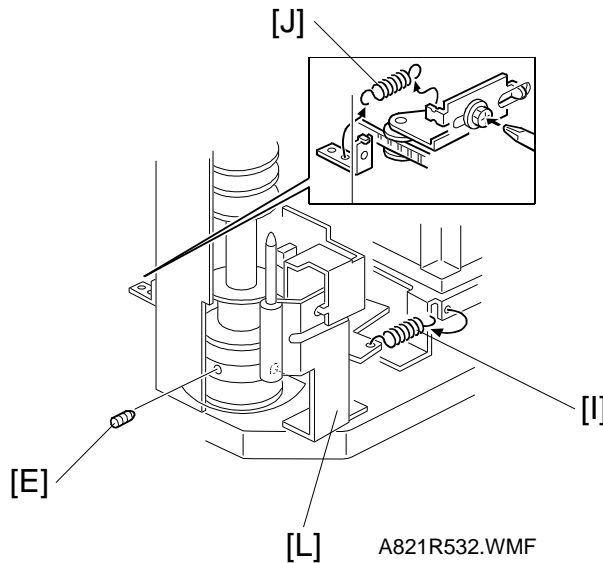
Front Helical Wheel



A821R530.WMF

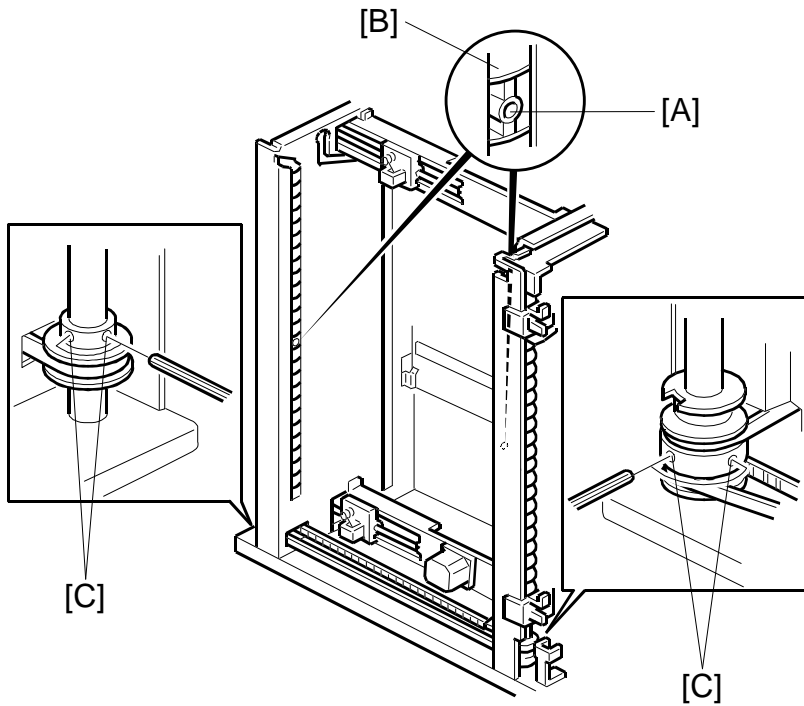


A821R531.WMF

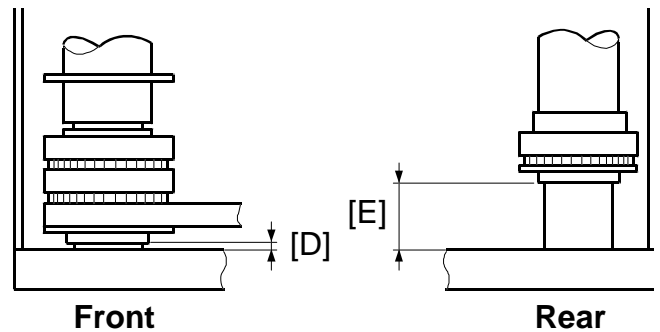


A821R532.WMF

1. Place the bearing [A] on the notch [B] on the bottom plate.
2. Set the pulley [C] on the bearing. The direction of the pulley should be as shown in the illustration.
3. Set the helical wheel [D] in the pulley [C]. Leave the Allen screws [E] loosened.
4. Set the bracket with a bushing [F] on top of the helical wheels then install and slightly tighten the four screws [G].
5. Place a 0.4-mm thickness gauge [H] between the helical wheel and the bushing on the bracket. While holding the bushing down to the helical wheel [D], tighten the four screws [G].
6. Hook tension springs [I and J] then tighten the screw [K].
7. Install the wheel sensor bracket [L].

Alignment of the 2 Helical Wheels

A821R533.WMF

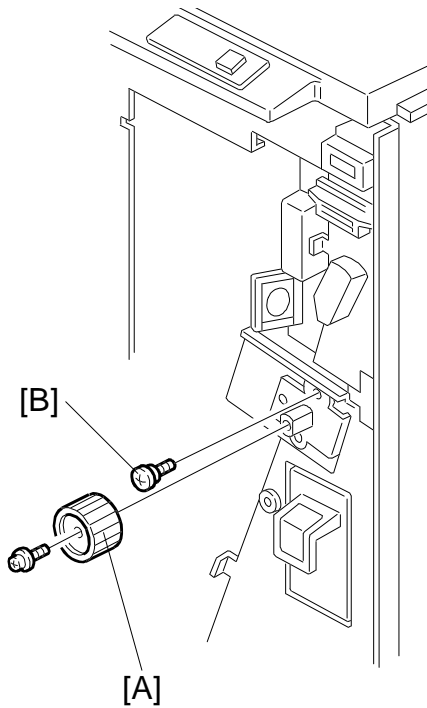


$D = 1.7 \pm 0.5 \text{ mm}$
 $E = 22.5 \pm 0.5 \text{ mm}$

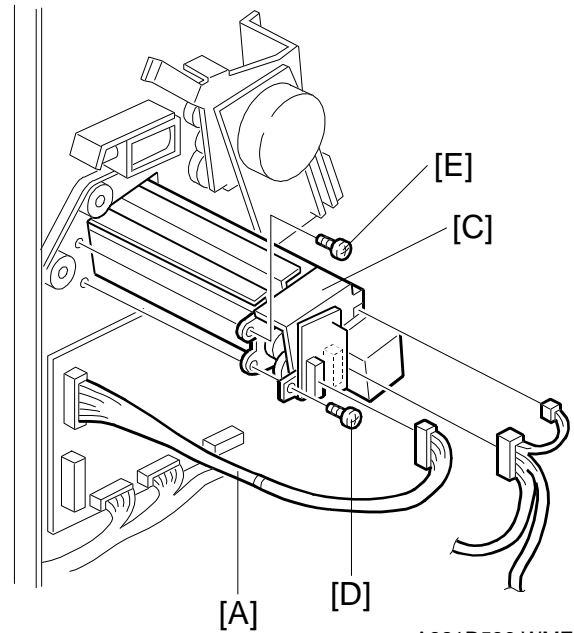
A821R534.WMF

1. Confirm all belts are set correctly.
2. Align all 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] on the helical wheel drive pulleys (2 Allen screws on each drive pulley).
4. Make sure that the gaps [D and E] between the base plates and the pulleys are as shown in the illustration.

4.14 PUNCH UNIT REMOVAL



A821R535.WMF



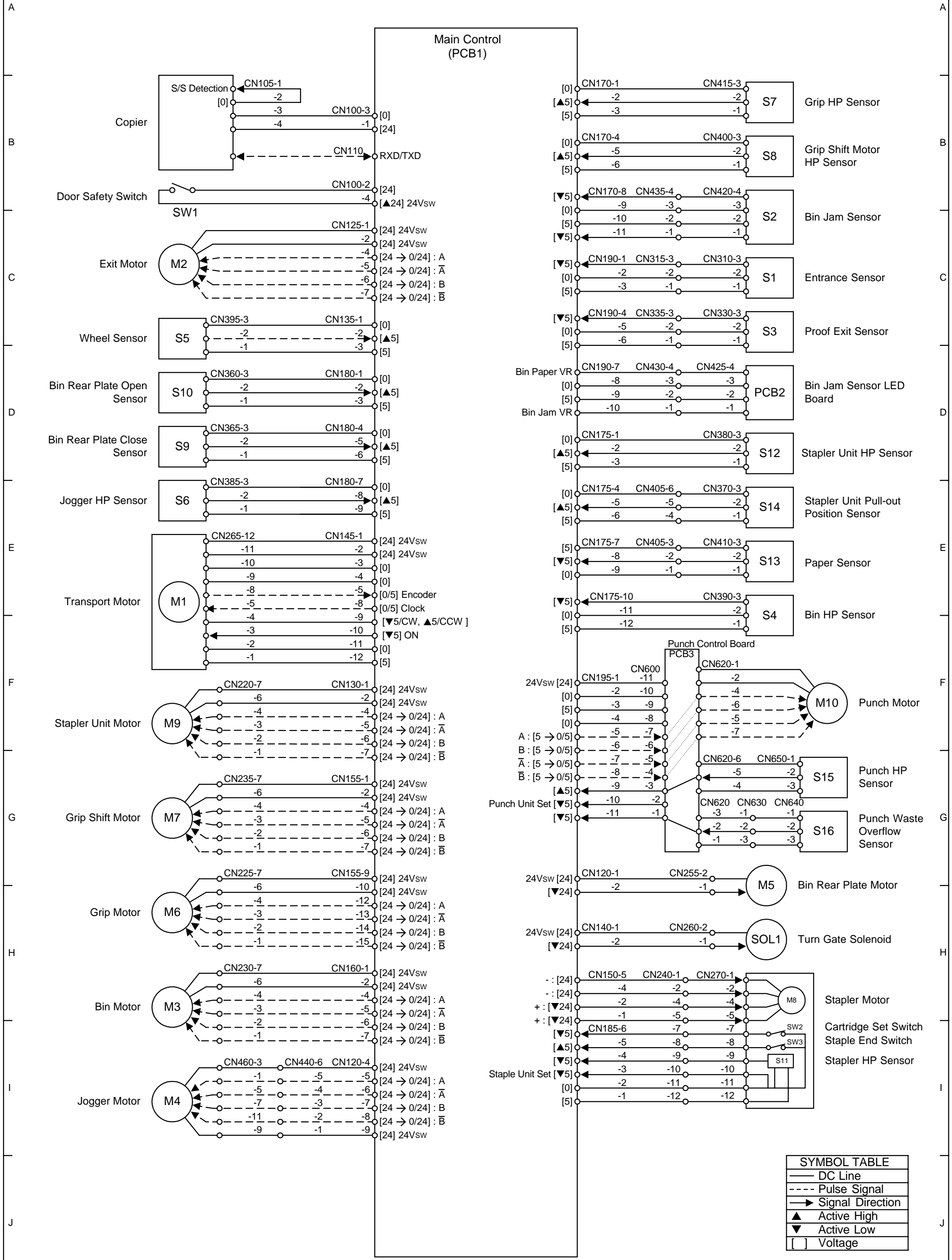
A821R536.WMF

1. Open the front door.
2. Remove the knob [A] (1 screw).
3. Remove the shoulder screw [B].
4. Remove the rear cover.
5. Remove the punch unit [C] (4 screws and 3 connector).

NOTE: To prevent the punch unit from being distorted, re-assemble the parts as follows:

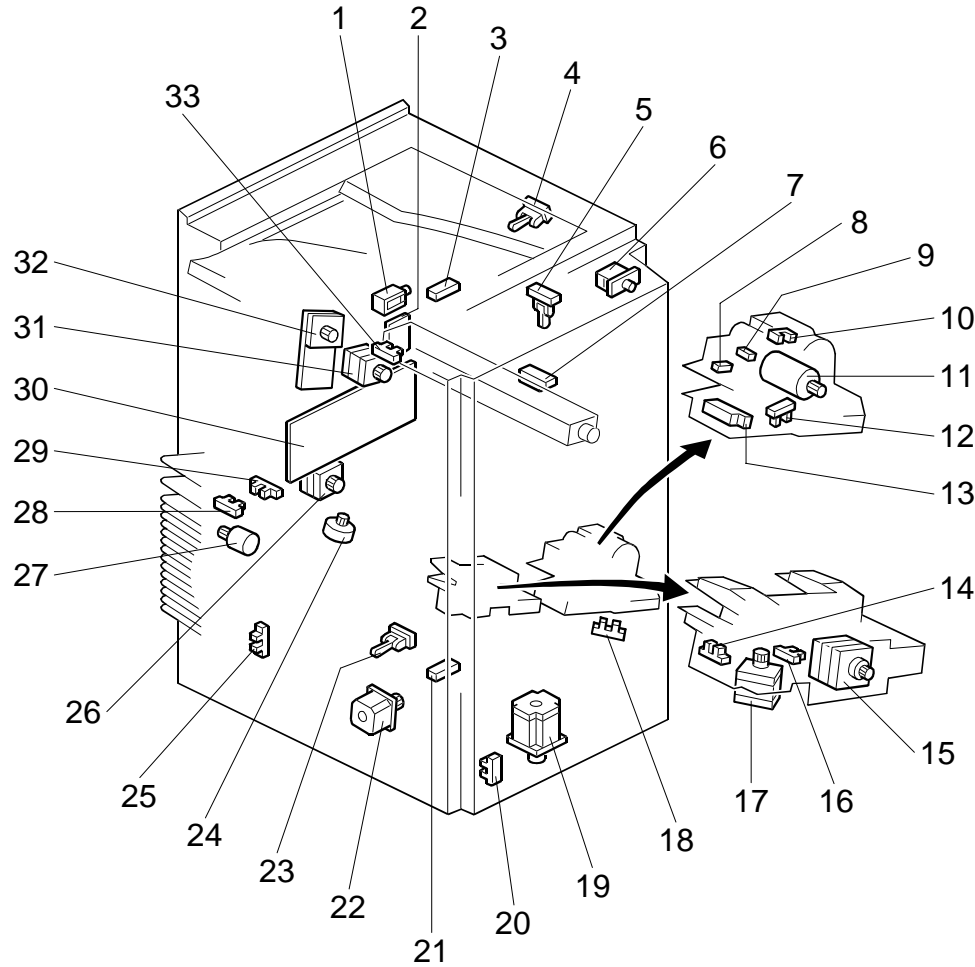
- 1) Push in the punch unit and install the shoulder screw [B].
- 2) Install the knob [A] (1 screw).
- 3) Temporarily secure the lower screw [D] for the rear.
- 4) Secure the upper screw [E] for the rear.
- 5) Set the connectors.
- 6) Leave the lower screw [D] un-tightened.

POINT TO POINT DIAGRAM (SORTER STAPLER: A821)



SYMBOL TABLE	
—	DC Line
- - -	Pulse Signal
→	Signal Direction
▲	Active High
▼	Active Low
[]	Voltage

ELECTRICAL COMPONENT LAYOUT (A821)



A821S500.WMF

Symbol	Name	Index No.	P to P
Motors			
M1	Transport	32	E2
M2	Exit	26	C2
M3	Bin	19	H2
M4	Jogger	22	I2
M5	Bin Rear Plate	27	G6
M6	Grip	15	H2
M7	Grip Shift	17	G2
M8	Stapler	11	H6
M9	Stapler Unit	24	F2
M10	Punch	31	F7
Switches			
SW1	Door Safety	6	B2
SW2	Cartridge Set	8	I6
SW3	Staple End	9	I6
Solenoids			
SOL1	Turn Gate	1	H6
Sensors			
S1	Entrance	5	C6
S2	Bin Jam	21	C6
S3	Proof Exit	4	C6
S4	Bin HP	23	E6
S5	Wheel Sensor	20	C2
S6	Jogger HP	25	E2
S7	Grip HP	16	B6
S8	Grip Shift Motor HP	14	B6
S9	Bin Rear Plate Close	28	D2
S10	Bin Rear Plate Open	29	D2
S11	Stapler HP	10	I6
S12	Stapler Unit HP	18	D6
S13	Paper	13	E6
S14	Stapler Unit Pull-out Position	12	E6
S15	Punch HP	33	G7
S16	Punch waste Overflow	7	G7
PCBs			
PCB1	Main	30	A4
PCB2	Bin Jam Sensor LED	3	D6
PCB3	Punch Control	2	F6