20-BIN SORTER
(MINI - α)
(Machine Code: A556)

1. SPECIFICATIONS

Number of Bins: 20 bins + proof tray

Paper Size for Bins: Sort/Stack Mode:
Maximum - A3, 11" x 17"
Minimum - A5, 5 1/2" x 8 1/2"

Paper Weight: Sort/Stack Mode: 52 to 90 g/m^2 (14 to 24 lb)
Non-Sort/Stack Mode: 52 to 162 g/m^2 (14 to 43 lb)

Bin Capacity:

	Sort/Stack Mode (Bins 1 to 20)	**Non-Sort/Stack Mode (Proof tray)**
A4, 8 1/2" x 11" or less	30	100
B4, 8 1/2" x 14"	15/10	100
A3, 11" x 17"	10	100

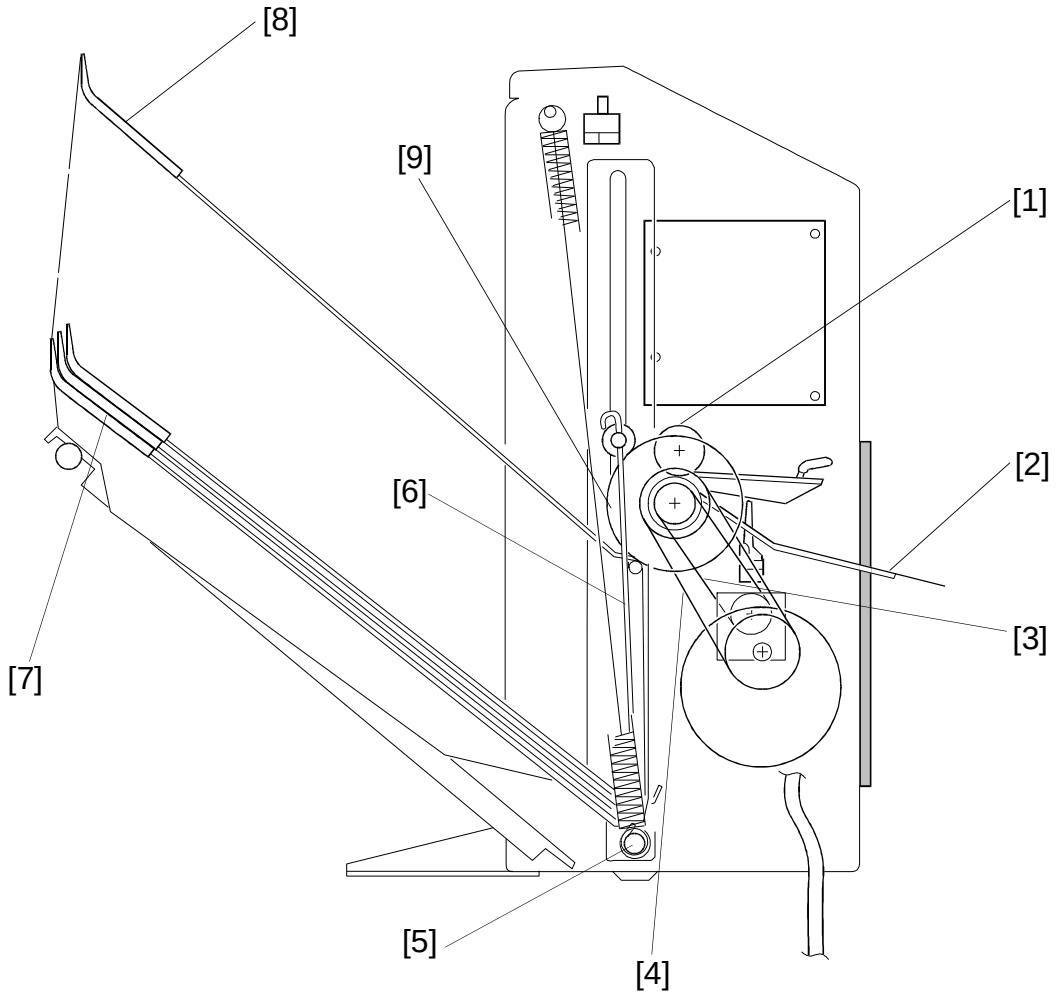
Power Source: +5 volts and +24 volts from the copier

Power Consumption: 24 W

Dimensions: 346 mm x 474 mm x 338 mm
(W x D x H) 13.6" x 18.7" x 13.3"

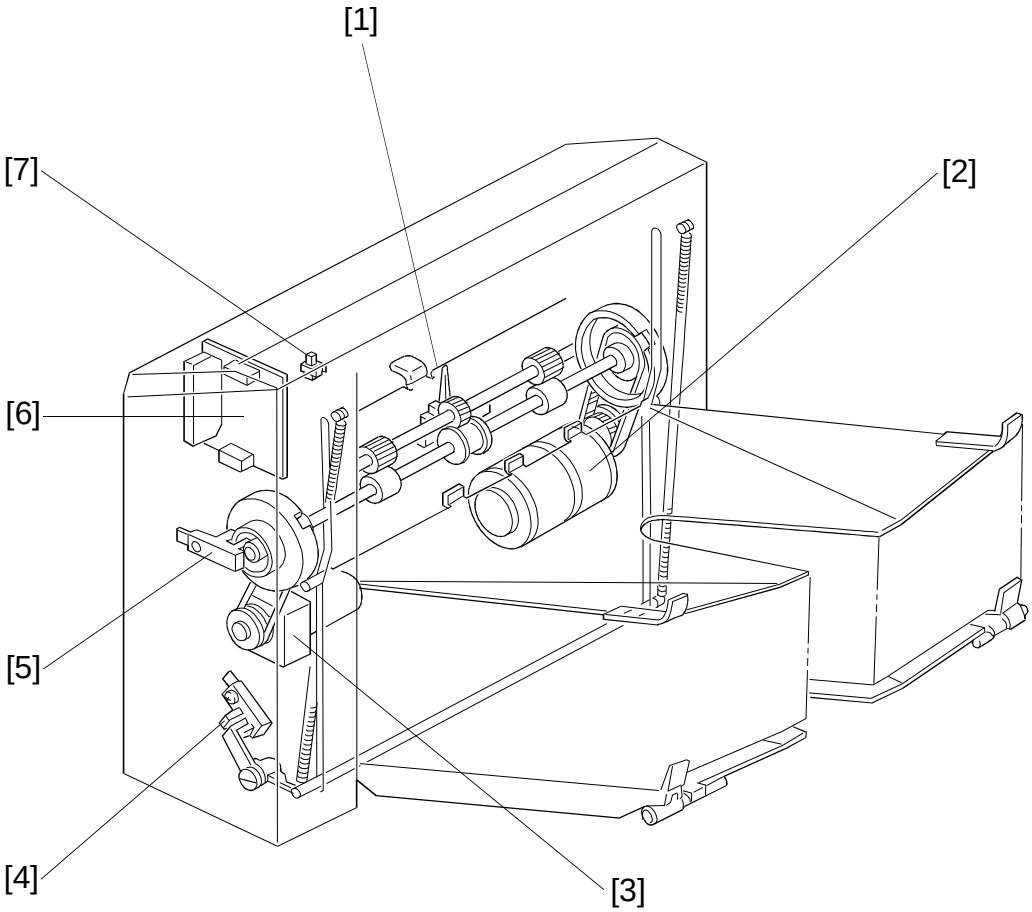
Weight: 12.5 kg (27.8 lb)

2. MECHANICAL COMPONENT LAYOUT



1. Exit Rollers
2. Paper Guide
3. Roller Drive Belt
4. Wheel Drive Belt
5. Lift Bar
6. Securing Wire
7. Bins
8. Proof Tray
9. Transfer Wheel

3. ELECTRICAL COMPONENT LAYOUT



1. Paper Sensor (S1)
2. Wheel Drive Motor (M1)
3. Roller Drive Motor (M2)
4. Bin Home Position Sensor (S2)
5. Wheel Sensor (S3)
6. Sorter Main Board (PCB1)
7. Cover Safety Switch (SW1)

4. ELECTRICAL COMPONENT DESCRIPTIONS

Index No.	Name	Function	Symbol
Motors			
2	Wheel Drive Motor	Drives the wheel that changes the bin positions	M1
3	Roller Drive Motor	Drives all rollers in the sorter paper path	M2
Sensors			
1	Paper Sensor	Misfeed detection for the sorter	S1
4	Bin Home Position Sensor	Detects when all bins are in the down position (home)	S2
5	Wheel Sensor	Detects each half-turn of the wheel (1 bin is changed for each half-turn)	S3
Switch			
7	Cover Safety Switch	Detects when the sorter cover is opened	SW1
Printed Circuit Board			
6	Sorter Main Board	Controls all sorter functions. Communicates with the copier main board through the interface PCB	PCB1

5. BASIC OPERATION

- Clear Mode -

When the main switch of the copier is turned on, the sorter automatically assumes a clear mode condition. It also changes to clear mode if sort or stack mode is recalled or if the interrupt key is pressed. In clear mode, all copies are stacked on the proof tray.

Sorter operation starts when the copier sends the paper feed signal to the selected paper feed station. At this time the roller drive motor energizes. The roller drive motor de-energizes when the paper exits the copier and the paper sensor is actuated (lifted up). The paper sensor signal is sent to the copier through an interface board to check for a paper misfeed. The wheel drive motor does not turn on when in clear mode.

- Sort Mode -

After sort mode is selected by pressing the Sorter key, the wheel drive motor turns on to move the proof tray up. The start timing of the roller drive motor is the same as in clear mode. At 250 ms after the paper sensor turns off, the paper is safely in the bin, so the wheel drive motor turns and advances the bins one step. When the wheel sensor is de-activated, the next bin is in position, so the wheel drive motor turns off.

- Stack Mode -

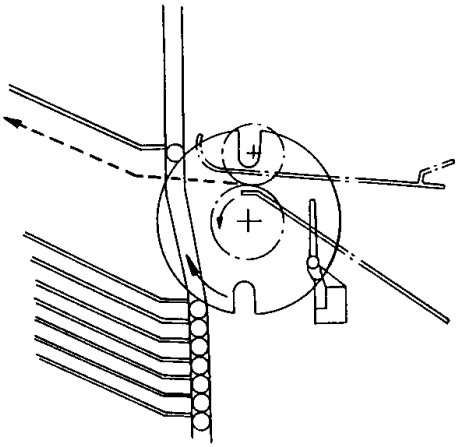
As in clear mode, the roller drive motor turns on when the copier sends the paper feed signal to the selected paper feed station. All copies of the copy run are then fed to the first bin. At 250 ms after the final copy passes the paper sensor, the wheel drive motor turns on and advances the bins one step.

There are no limits on the number of copies that can be entered up to the full 999 copy limit of the copier. However, the physical capacity of the bins is a good deal less. (See "Bin Capacity" in the specifications.)

When all 20 bins have been used, the wheel drive motor turns on until all the bins have been lowered (including the proof tray).

6. EXAMPLE OF SORT MODE OPERATION

1)



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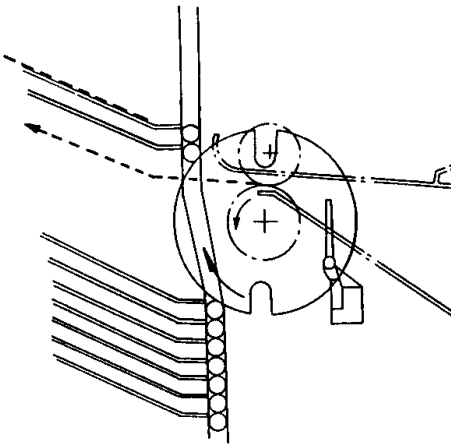

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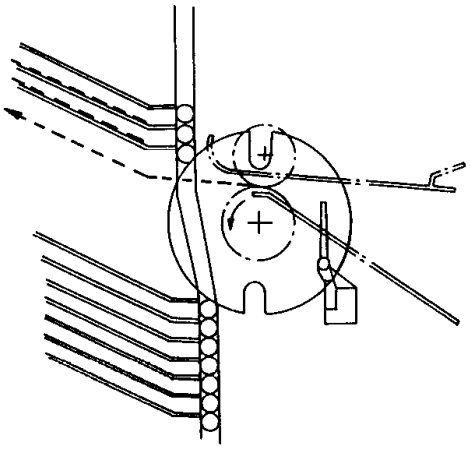


The following explains how the sorter handles three consecutive three-copy runs of a single original in sort mode. This illustrates what happens when an odd number of copies of a multi-page original is made.

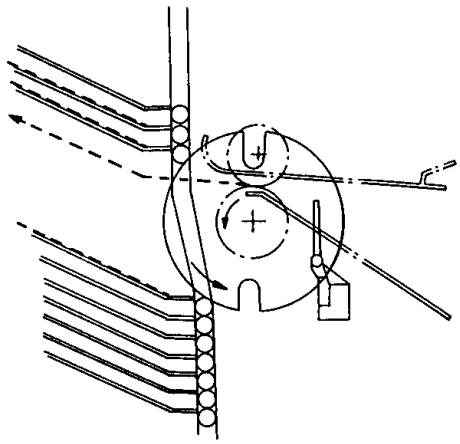
- Start Key Pressed for the First Copy Run -

1) The first copy feeds to the first bin. When the copy is in the bin, the wheel sensor turns off. After that, the wheel drive motor turns on and moves the first bin up.

2) The same action as #1.

3) The third copy feeds to the third bin. As this is the final copy, the wheel drive motor does not turn on this time after the paper sensor turns off. (The sorter will stay at this position until auto-reset or until copying resumes.)

4)



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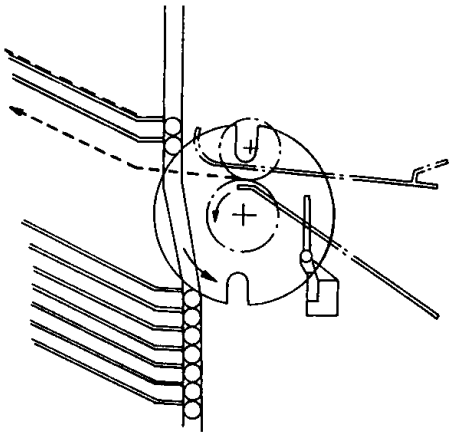

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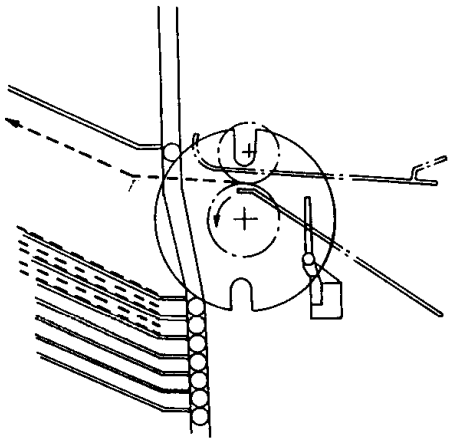

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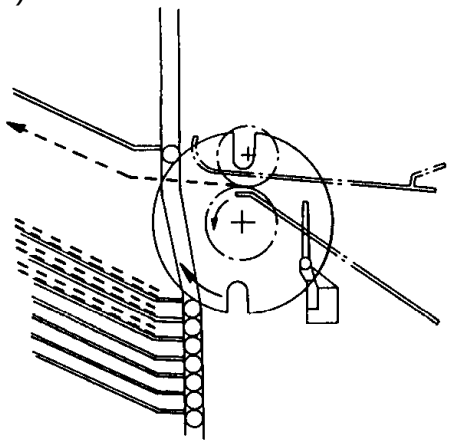


- Start Key Pressed for the Second Copy Run -

4) The first copy is fed to the third bin. After the paper sensor turns off, the wheel drive motor turns on and moves the second bin down.

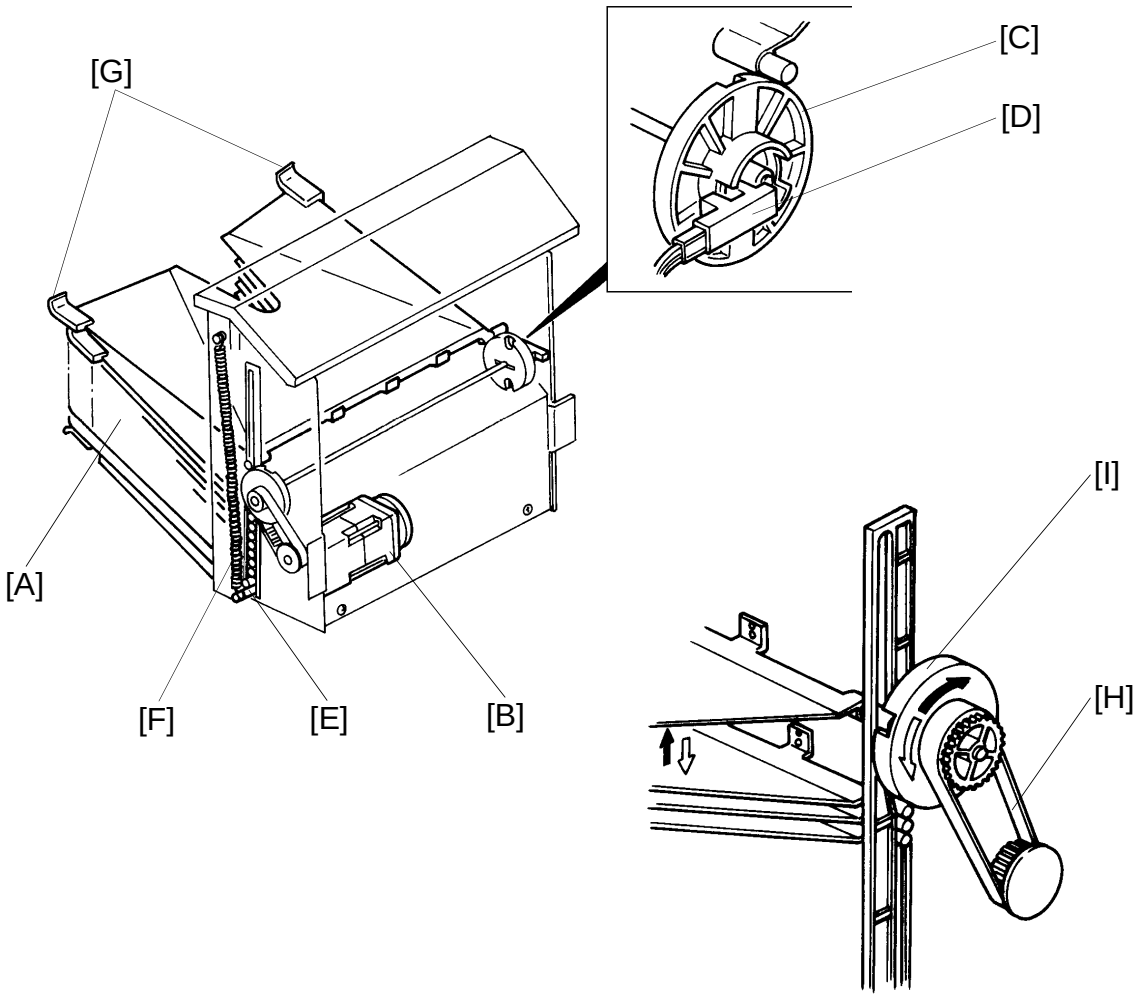
5) The same as #4.

6) The third copy is fed to the first bin. The wheel drive motor does not turn on after the paper sensor turns off.

- Start Key Pressed for the Third Copy Run -

7) The first sequence (1, 2, and 3) is repeated.

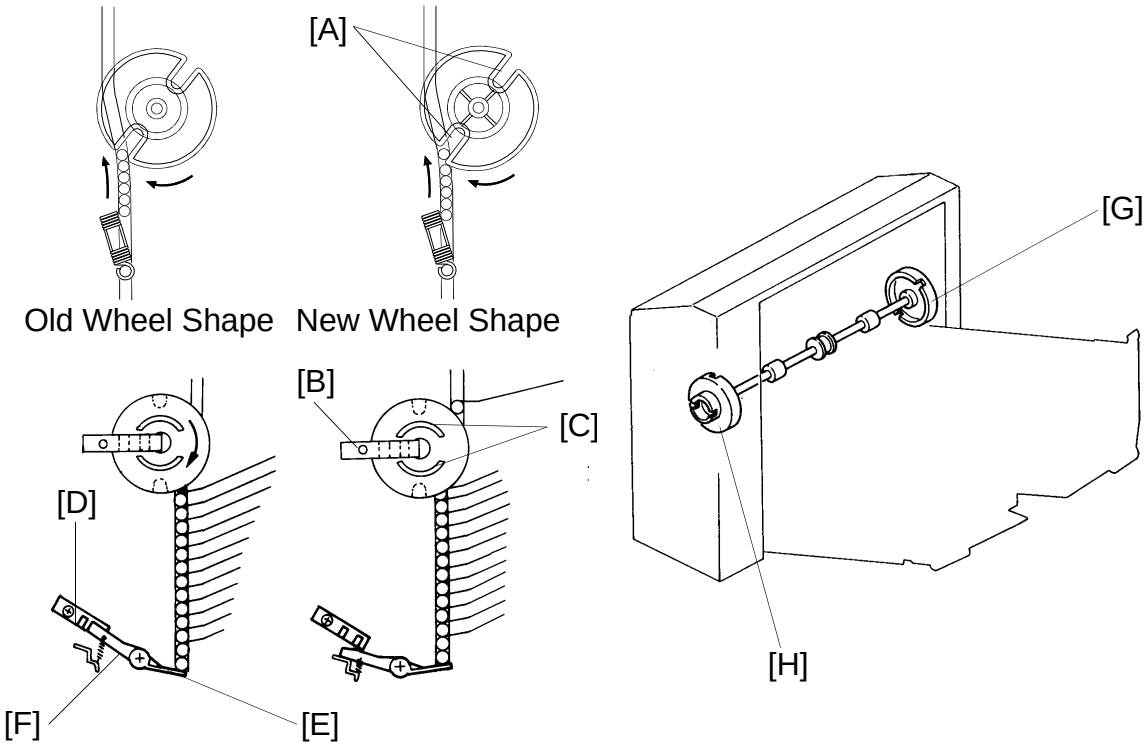
7. BIN DRIVE MECHANISM



The bin drive mechanism moves the bins [A] up and down to receive copies under the direction of the copier CPU. The main components in this mechanism are the wheel drive motor [B], the two transfer wheels [C], the wheel sensor [D], and the bins themselves.

Pins on either side of each bin slide up and down in slots in the sorter side frame. The bins rest on each other with the bottom one resting on the lift bar [E]. The springs [F] on either end of the lift bar lift it up, forcing the bin pins against the transfer wheels. Plastic spacers [G] on both ends of each bin keep the bins separated.

To move the bins up, the wheel drive motor turns clockwise (as viewed from the front). A timing belt [H] turns the transfer wheels [I].



The transfer wheels have two slots [A] in them 180 degrees apart. As the transfer wheels turn, these slots engage the pins of the bins and lift them up. Each time the transfer wheels turn 180 degrees, they raise one bin.

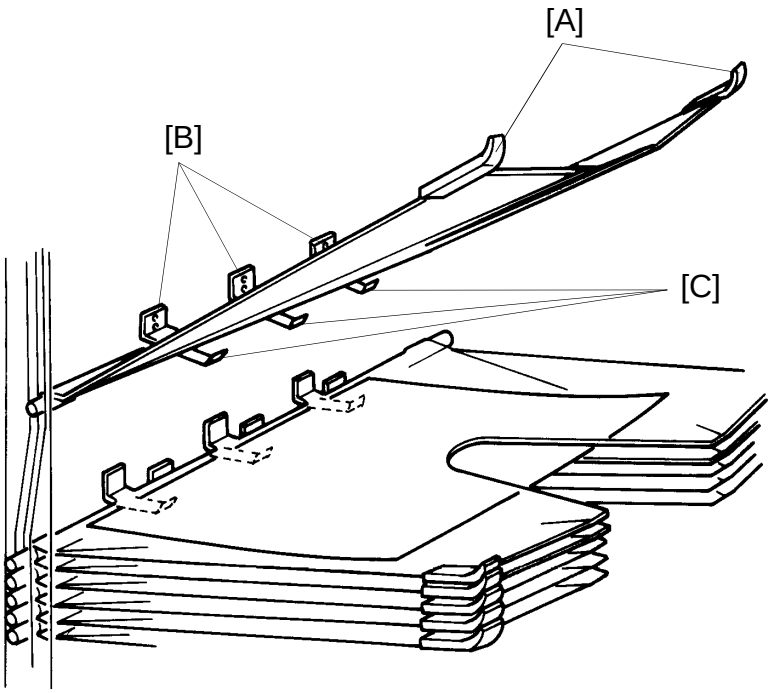
The CPU counts the bins using the wheel sensor [B]. This sensor monitors the movement of the wheel drive motor as well. When one of the slots on the cylindrical actuator [C] passes the sensor, the sensor is deactivated and the wheel drive motor turns off.

To move the bins down, the CPU reverses the wheel drive motor and the above process reverses.

The bin home position sensor [D] is located at the lower rear end of the sorter. When all the bins are lowered, the lift bar [E] presses down on the actuator [F], actuating the sensor. The CPU checks the sensor whenever the power is turned on. At this time, if the bins are not in the home position, the home position sensor is deactuated and the CPU will return the sorter bins to the home position.

The mounting position is about 18.5 degrees off between the front transfer wheel [G], and the rear transfer wheel [H]. Therefore, the front and rear of the bins do not rise simultaneously, thus preventing unusual noise and reducing load. Also, the shape of the transfer wheels has been modified from previous models to reduce banding on copies that is caused by vertical slippage due to the movement of the sorter bins.

8. BINS

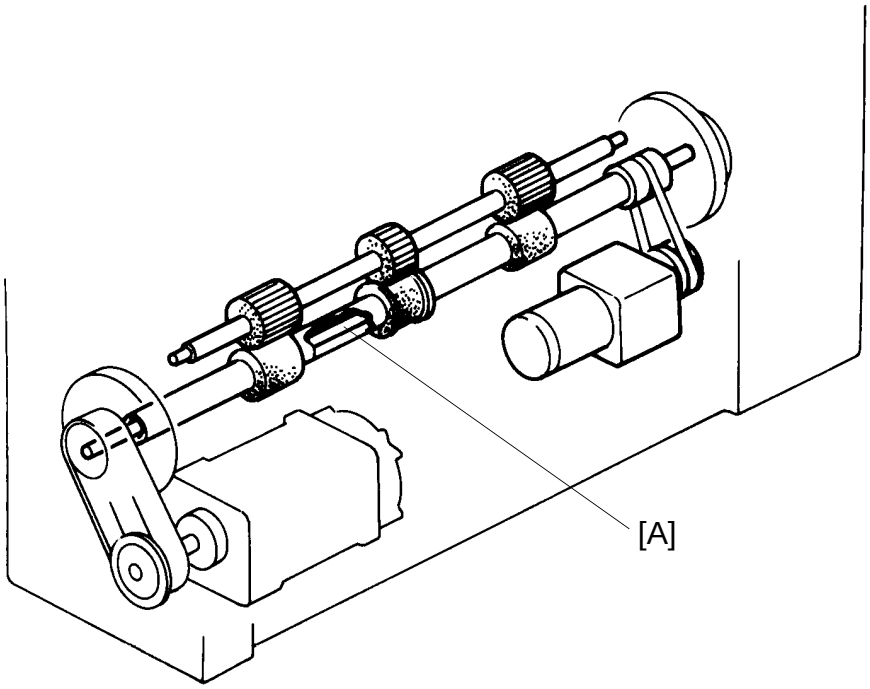


The proof tray and the twenty bins are all basically the same. Formed out of thin flexible steel plate, they have spacers [A] at the end to hold them apart and pins at the front and rear on the other end, which are inserted in guide slots in the sorter frame.

The stoppers [B] prevent copies from sliding back into the sorter after they have been fed out. The arrangement of these stoppers is different for even and odd numbered bins.

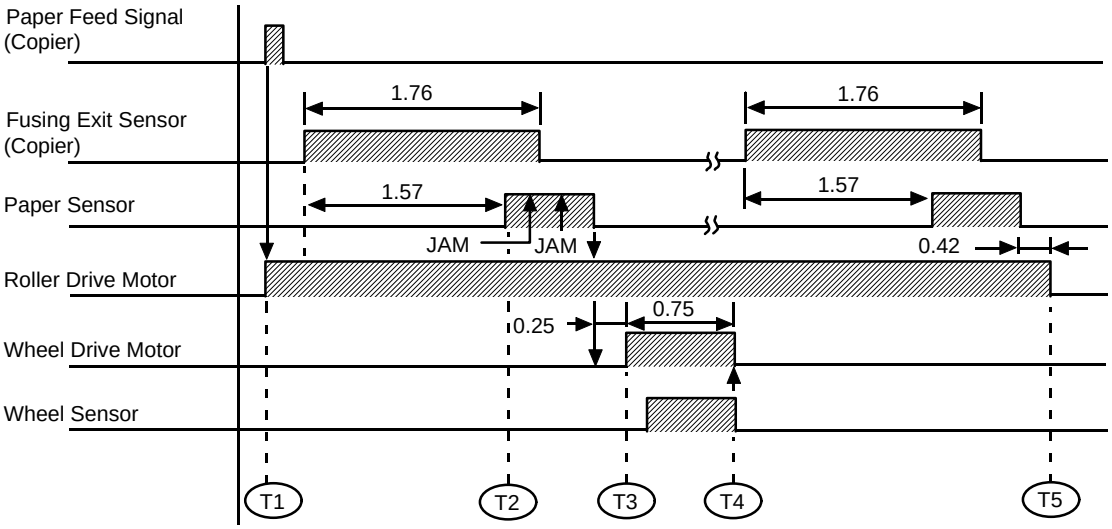
Three leaf springs [C] on the underside of each bin hold the copies flat in the underlying bin.

9. EXIT ROLLERS



The exit roller shaft is hollow and is mounted coaxially on the transfer wheel shaft [A]. When the copier sends a signal to the selected paper feed station to feed paper, the CPU sends a signal to the sorter to turn on the roller drive motor. After copying, the roller drive motor turns off at the same time as the copier main motor.

10. TIMING CHART



T1: When the copier sends the paper feed signal to the selected paper feed station, the roller drive motor starts rotating.

T2: 1.57 seconds after the fusing exit sensor turns on, the paper sensor turns on.

T3: 0.25 second after the paper sensor turns off, the wheel drive motor starts rotating and shifts the bin.

T4: When the wheel sensor is de-actuated, the wheel drive motor turns off.

T5: 0.42 second after the paper sensor turns off, the roller drive motor stops.

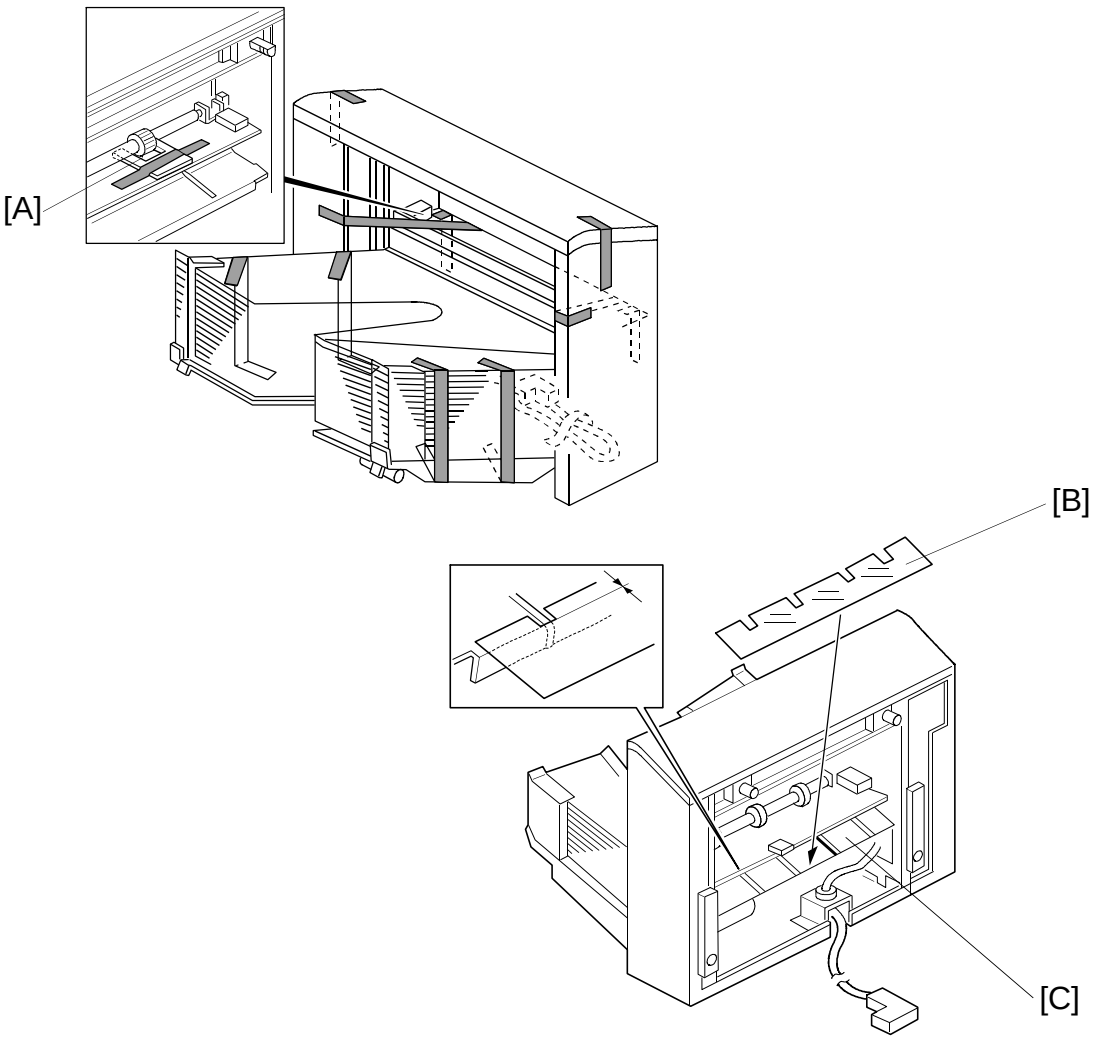
11. INSTALLATION

11.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box against the following list:

1. Installation Procedure 1
2. New Equipment Condition Report 1
3. Entrance Guide Mylar 1
4. Knob Screw 2

11.2 INSTALLATION PROCEDURE



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

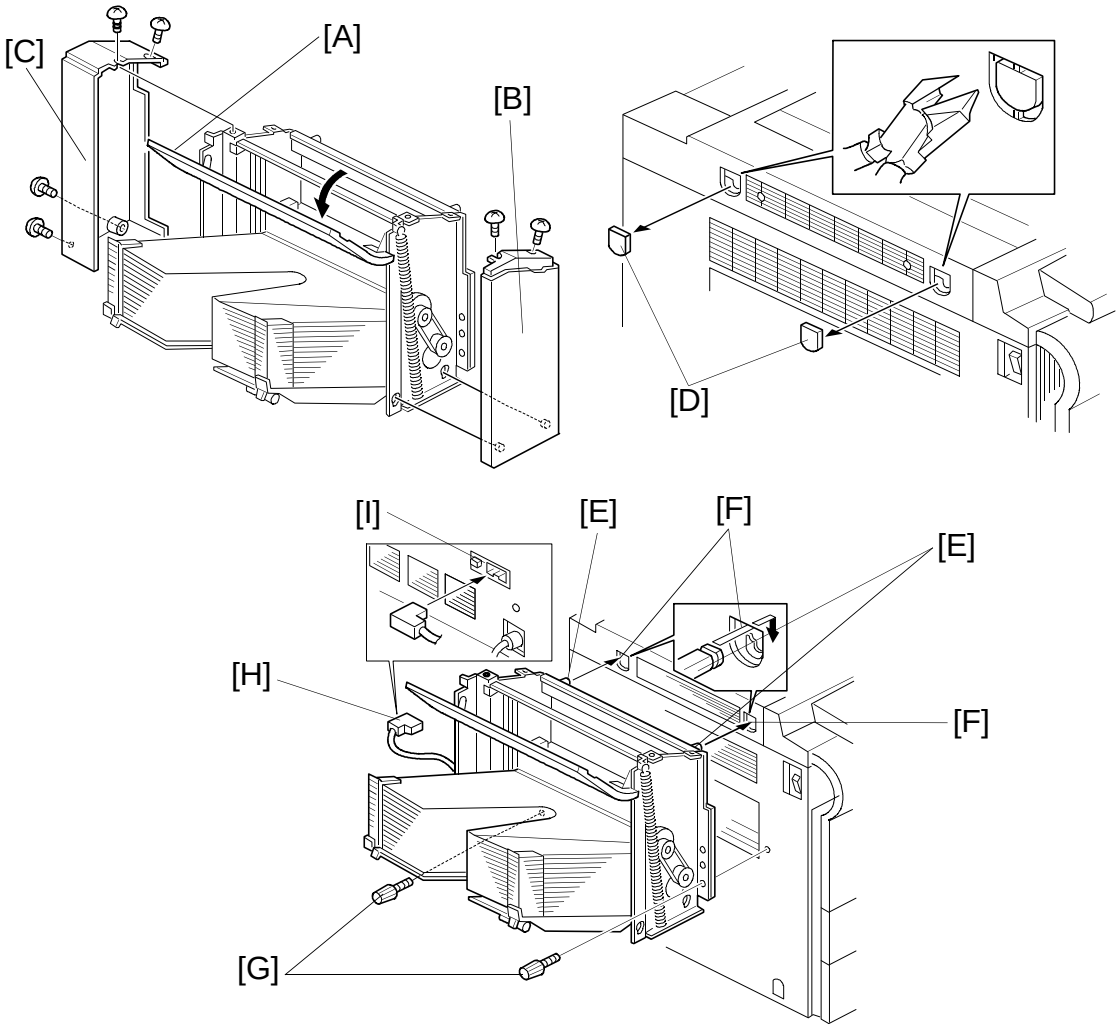
(2) Proper reinstallation of the shipping retainers is required in order to avoid any transport damage.

(3) A sorter adapter (A568) is required to install this sorter in the A157/A159/A160/A161/A162 copiers. Before installing this sorter, please install the sorter adapter in the copier.

! CAUTION

Unplug the copier power cord before starting the following procedure.

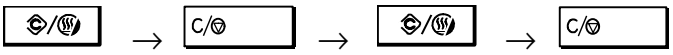
1. Remove the strips of tape and the shipping retainer [A].
2. Attach the entrance guide mylar [B] to the entrance guide plate [C].

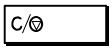


3. Open the sorter top cover [A], and remove the front cover [B] (2 screws) and the rear cover [C] (4 screws).
4. Remove the two plastic caps [D] from the copier left cover with nippers.
5. Mount the sorter on the copier (insert the two mounting studs [E] into the docking holes [F]).
6. Attach the sorter to the copier with the two knob screws [G].

   NOTE: Tighten these knob screws until they stop halfway. Do **not** tighten them forcibly after they stop.
7. Remount the sorter front cover [B] (2 screws) and the rear cover [C] (4 screws) and close the sorter top cover [A].
8. Connect the connector [H] to the socket [I] on the rear cover of the copier.

9. Plug in the copier power cord and turn on the main switch.
10. Press the following sequence of keys to enter SP mode.



NOTE: (1) Hold the last  key for more than 3 seconds.

(2) Upon entering SP mode, "1" blinks in the 3rd digit of the copy counter, the Auto Image Density indicator starts blinking and the reduce/enlarge indicator turns off.

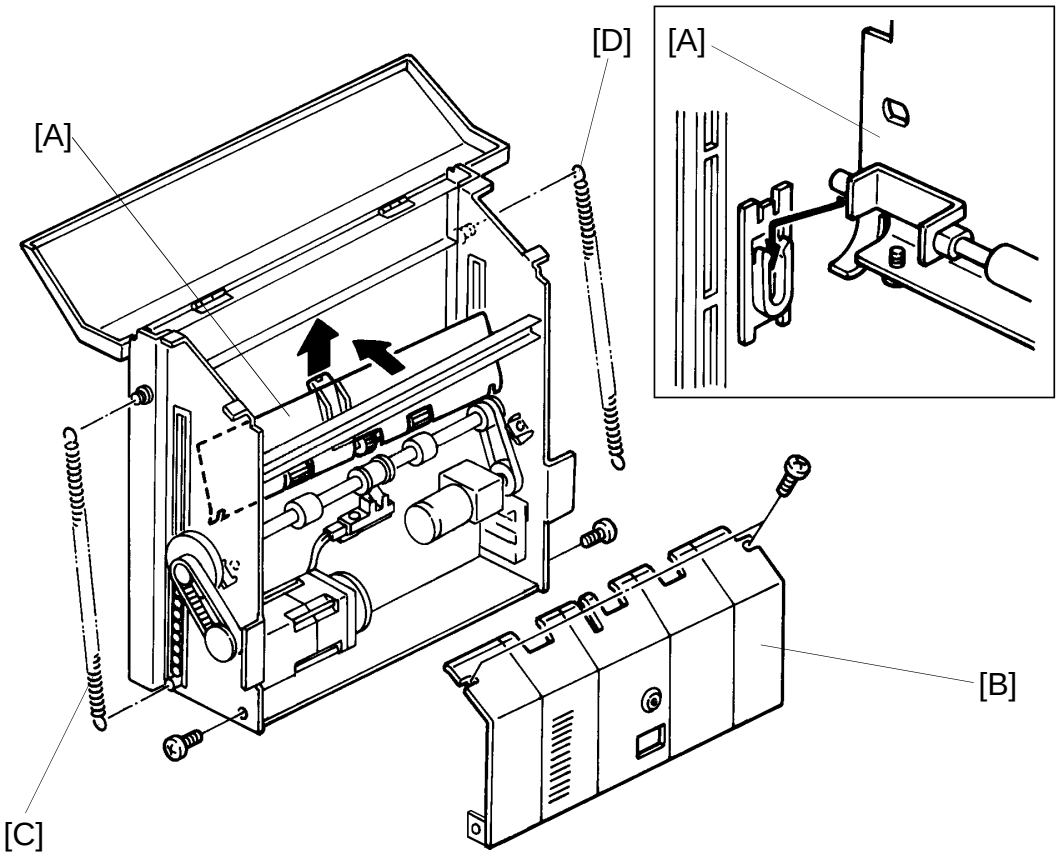
(3) The above procedure must be finished within 20 seconds.

11. Press the following sequence of keys to change the SP6-101 value to "2".

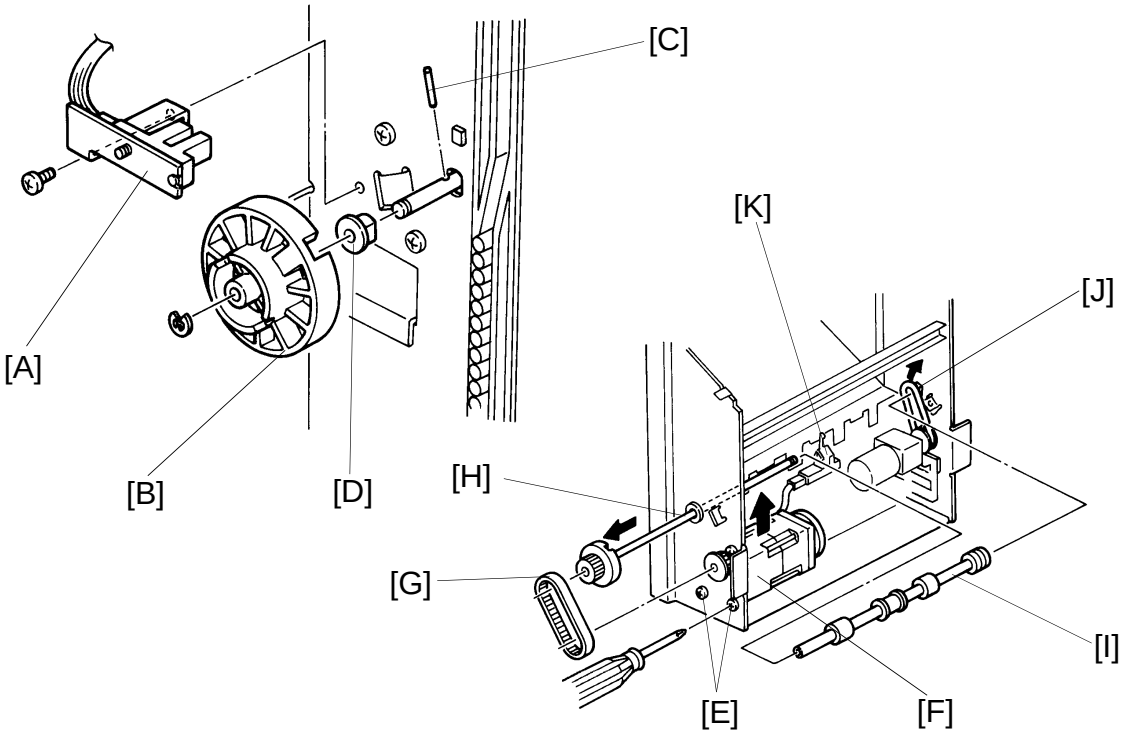
12. Turn the main switch off and on.
13. Check the sorter's operation.

12. REPLACEMENT AND ADJUSTMENT

12.1 EXIT ROLLER AND RUBBER BELT REPLACEMENT



1. Remove the sorter from the copier.
2. Remove the front cover (2 screws).
3. Remove the rear cover (4 screws).
4. Swing the guide plate [A] up, then remove it carefully from the snaps on both sides by pulling it up.
5. Remove the inner cover [B] (4 screws).
6. Unhook the front [C] and rear [D] pressure springs.



7. Remove the wheel sensor assembly [A] (1 screw).
8. Remove the sorter board (2 screws, 2 locking supports, and 3 connectors).
9. Remove the rear transfer wheel [B] (1 E-ring).

   NOTE: Be sure not to lose the pin [C] for the wheel.

10. Remove the pin [C] and bushing [D].
11. Loosen the two mounting screws [E] of the wheel drive motor [F].
12. Lift the wheel drive motor and slip off the timing belt [G].
13. Slide off the wheel drive shaft [H] and remove the exit roller [I] and rubber belt [J].

! CAUTION

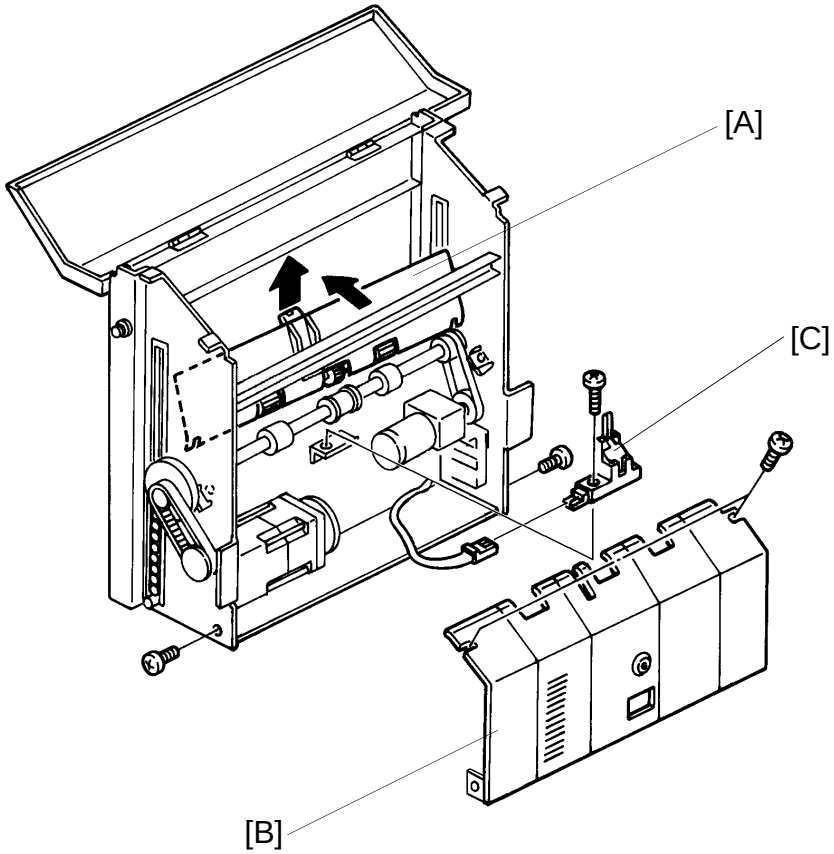
Do not damage the paper sensor [K] when removing the exit roller.

14. Replace the exit roller and rubber belt, then reassemble the machine.

    NOTE: a) When reinstalling the wheel sensor assembly, be sure that the sensor does not touch the wheel.

    b) When remounting the wheel drive motor, adjust the timing belt tension. (See Timing Belt Tension Adjustment.)

12.2 PAPER SENSOR REPLACEMENT

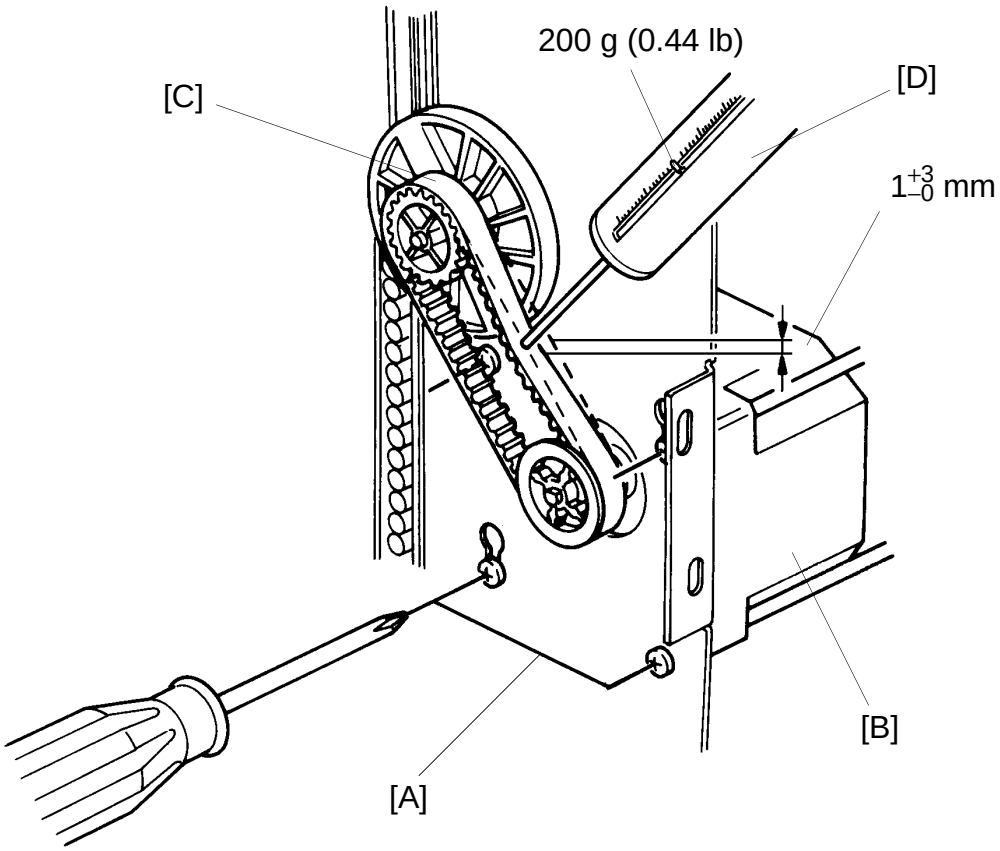


1. Remove the sorter from the copier.
2. Remove the front cover (2 screws).
3. Remove the rear cover (4 screws).
4. Swing up the guide plate [A].
5. Remove the inner cover [B] (4 screws).
6. Replace the paper sensor [C] (1 screw and 1 connector) and reassemble the machine.

! CAUTION

To avoid damaging the sensor, do not over-tighten the sensor mounting screw.

12.3 TIMING BELT TENSION ADJUSTMENT



ADJUSTMENT STANDARD: 1^{+3}_{-0} mm deflection under 200 g (0.44 lb) tension

1. Remove the front cover.
2. Loosen the two mounting screws [A] of the wheel drive motor [B].
3. Press the timing belt [C] with a tension gauge [D] as shown in the diagram and adjust the tension by repositioning the wheel drive motor.

MINI(A556)POINT TO POINT DIAGRAM