

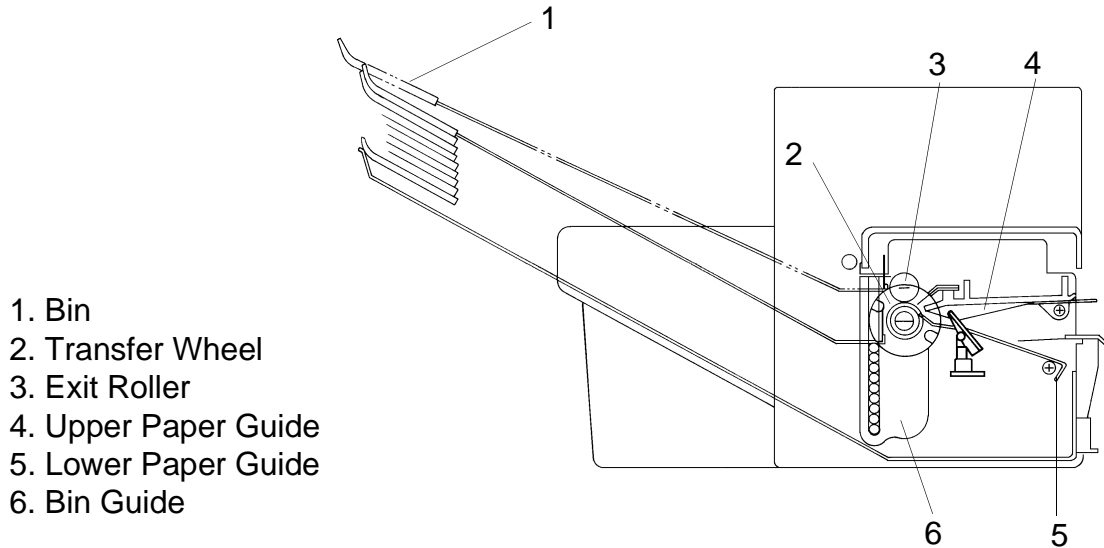
SORTER

1. SPECIFICATIONS

Number of Bins:	10 bins	
Paper Size for Bins:	Maximum	A3, 11" x 17"
	Minimum	A5, 5 1/2" x 8 1/2"
Paper Weight:	64 to 90 g/m ² (17 to 24 lb)	
Bin Capacity:	Sort/Stack	20 sheets / A4, 8 1/2" x 11"
	Mode	15 sheets / B4, 8 1/2" x 14"
		10 sheets / A3, 11" x 17"
Top Bin Capacity: (Non-Sort/Stack Mode)	100 sheets (all sizes)	
Power Source:	+5 volts and +24 volts from the copier	
Power Consumption:	7.7 W	
Dimensions: (W x D x H)	402 mm x 443 mm x 217 mm	
	(15.8" x 17.4" x 8.5")	
Weight:	7.5 kg (16.5 lb)	

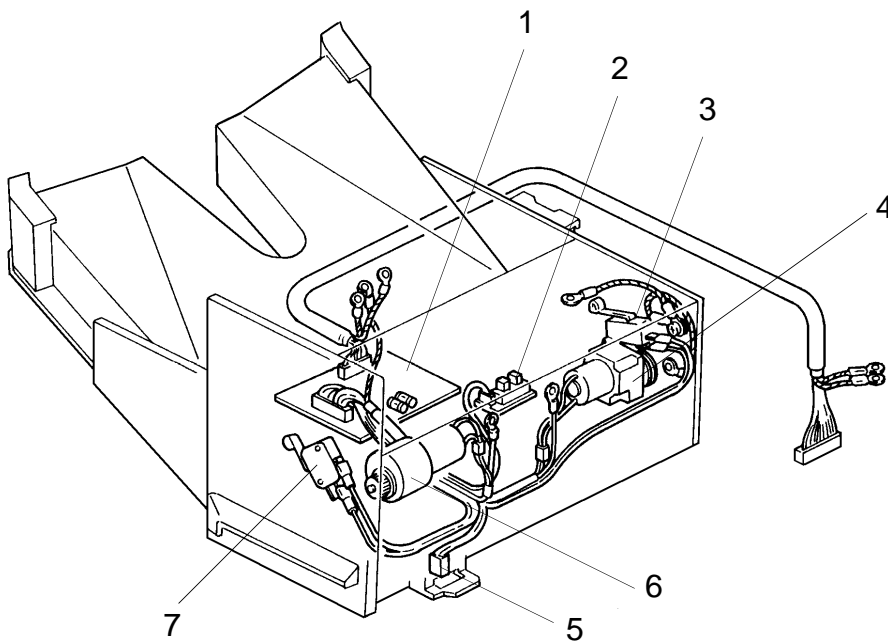
2. COMPONENT LAYOUT

– Mechanical Components –



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– Electrical Components –

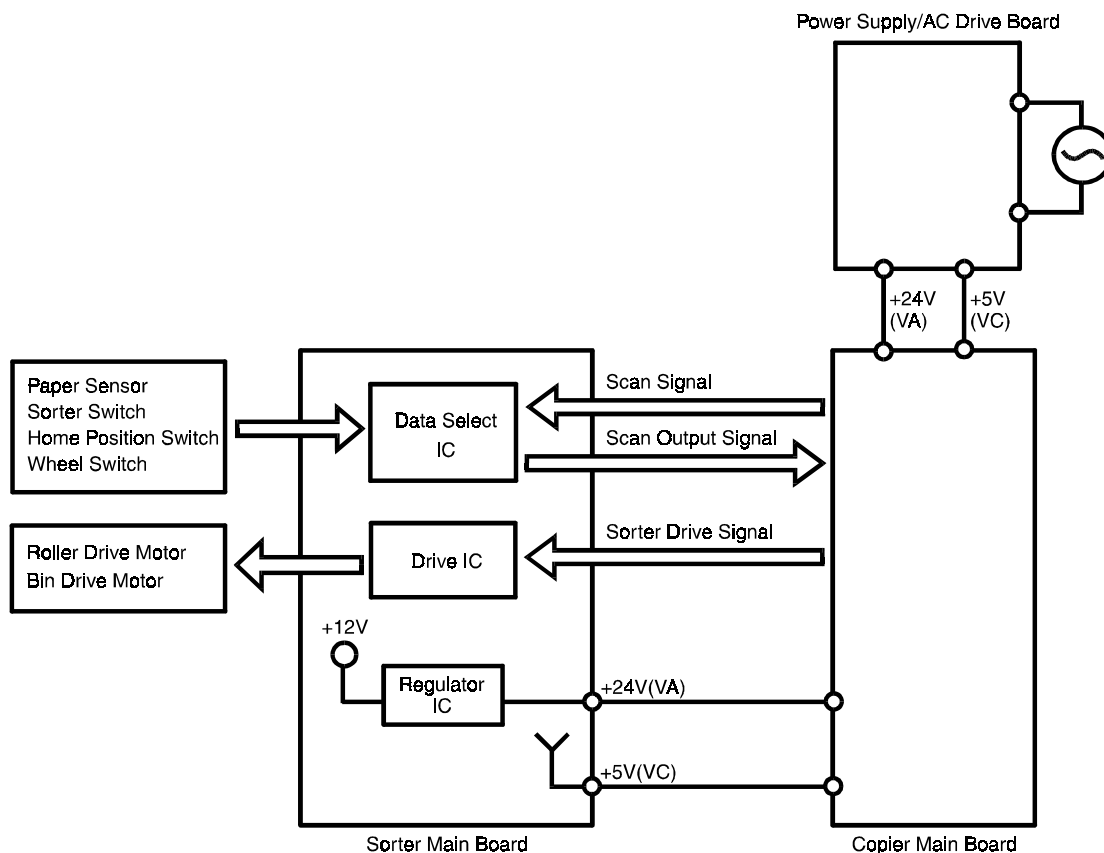


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3. ELECTRICAL COMPONENT DESCRIPTIONS

Name	Function	Index No.
Motors		
Roller Drive Motor	A DC motor that drives the lower exit rollers.	4
Bin Drive Motor	A reversible DC motor that to moves the bins up or down.	6
Switches		
Wheel Switch	Detects the rotation of the transfer wheel and stops it in the correct position.	3
Sorter Switch	Reed switch that becomes activated when the sorter is in the proper position (aligned next to the copier). Also works as a jam reset switch for the sorter.	5
Home Position Switch	Informs the CPU that all the bins are lowered.	7
Sensor		
Paper Sensor	Serves as the misfeed sensor for the sorter and also sets exit roller and bin drive timing.	2
Printed Circuit Board		
Sorter Main Board	Serves as the communication board between the copier main board and the sorter.	1

4. OVERALL MACHINE CONTROL



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The copier main board provides +24 volts (VA) and +5 volts (VC) to the sorter main board. +24 volts powers the roller drive motor, and +5 volts powers all sensors and switches. Also, the regulator IC changes +24 volts to +12 volts, which powers the bin drive motor.

The copier main board controls the sorter drive and checks the status of the sorter via the sorter main board. The copier main board sends the scan signals to the data select IC on the sorter main board. After receiving the scan signals, the data select IC outputs the status of the sensor and switches as the scan output signal.

The copier main board also sends the sorter drive signal to the drive IC on the sorter main board. After receiving the drive signal, the drive IC turns on the appropriate motors.

5. BASIC OPERATION

– Clear Mode –

When the main switch of the copier is turned on, the sorter automatically assumes the clear mode. In this mode, all copies are stacked in the first bin. The sorter also assumes the clear mode when either the interrupt mode or the manual feed mode is selected.

Sorter operation begins when a copy actuates the copier exit sensor. At this time, the roller drive motor energizes. When the paper exits onto the sorter bin, the paper sensor is de-activated and the roller drive motor is then de-energized. The copier main board monitors the paper sensor through the sorter main board to check for paper misfeeds.

– Sort Mode –

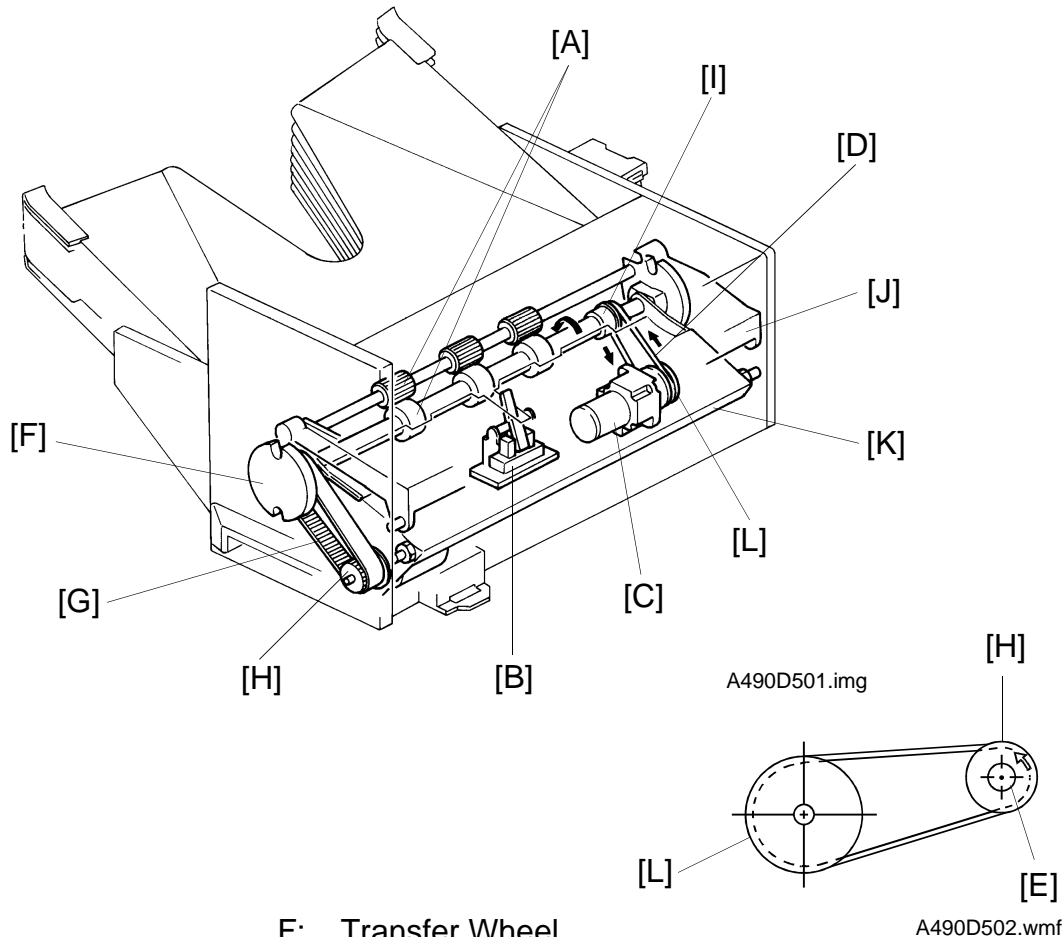
Pressing the Sorter key once shifts the copier to the sort mode. In this mode, all copies of the first original are delivered to separate bins starting from the top. The copies of the second original are delivered to the same bins, but starting from the bottom. The copies of the third original start from the top and so on. The bin drive motor turns on to advance the bin one step, 250 milliseconds after the copy has gone through the paper sensor. If the Copy Quantity, Clear/Stop, Book Copy, or Sorter key is pressed when sort mode has been selected, all bins shift to the home position.

– Stack Mode –

Pressing the Sorter key twice shifts the copier to the stack mode. In this mode, all copies of the first original are delivered to the first bin, all copies of the second original are delivered to the second bin, and so on. The bin drive motor turns on to advance the bin one step, 250 milliseconds after the last copy of the original has gone through the paper sensor. If the Sorter key is pressed when stack mode has been selected, all bins shift to home position.

6. EXIT ROLLER DRIVE

6.1 ROLLER DRIVE MECHANISM

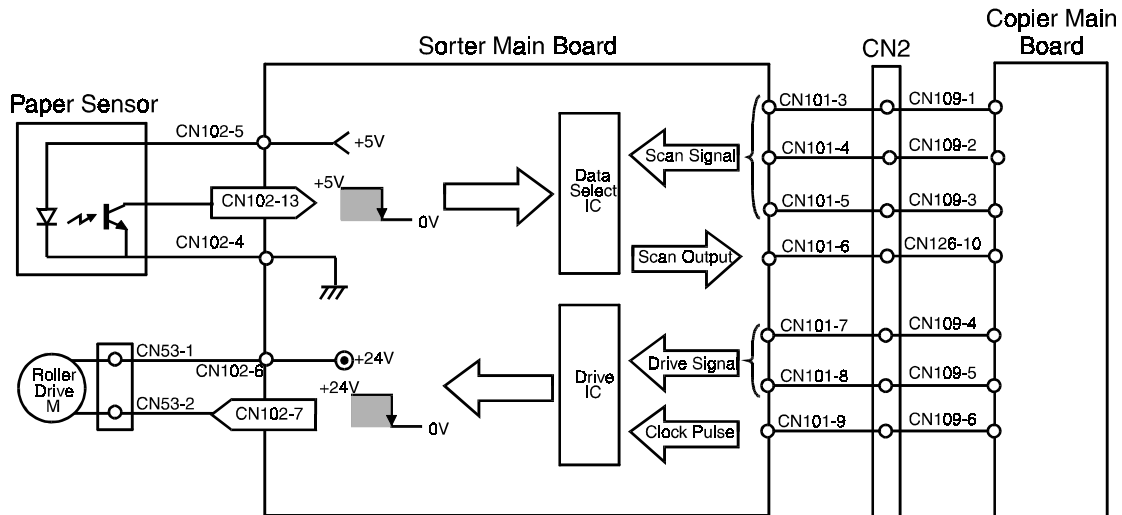


- F: Transfer Wheel
- G: Bin Drive Belt
- H: Bin Drive Pulley
- I: Exit Roller Pulley
- J: Upper Paper Guide
- K: Lower Paper Guide
- L: Roller Drive Motor Pulley

The exit rollers [A] take over paper transport from the copier. When the copy paper actuates the copier exit sensor, the exit rollers start rotating. The exit rollers continue to rotate for 250 milliseconds after the copy paper has gone through the paper sensor [B].

The roller drive motor [C] rotates the lower exit roller via the roller drive belt [D]. The shaft of the lower exit roller is a cylindrical cavity type which rotates around the transfer wheel shaft [E]. The paper sensor is positioned just in front of the exit rollers. The paper sensor detects misfeeds in the sorter.

6.2 ROLLER DRIVE CIRCUIT



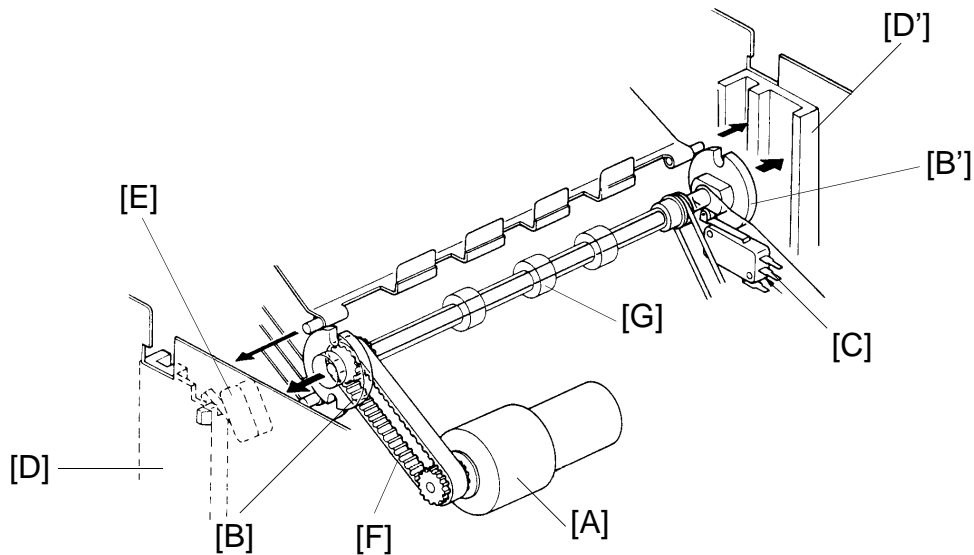
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To turn on the roller drive motor, the copier main board sends a drive signal to the drive IC on the sorter main board. After receiving the drive signal, the drive IC drops CN102-7 from +24 to 0 volt to turn on the roller drive motor.

When the paper sensor is actuated, CN102-13 drops to LOW. The copier main board outputs three scan signals to the data select IC. The status of the sensor changes the resulting scan output signal. Using the scan output signal, the copier main board determines the status of the sensor. The CPU limits the operation time of the roller drive motor to 5 seconds.

7. BIN DRIVE

7.1 BIN DRIVE MECHANISM

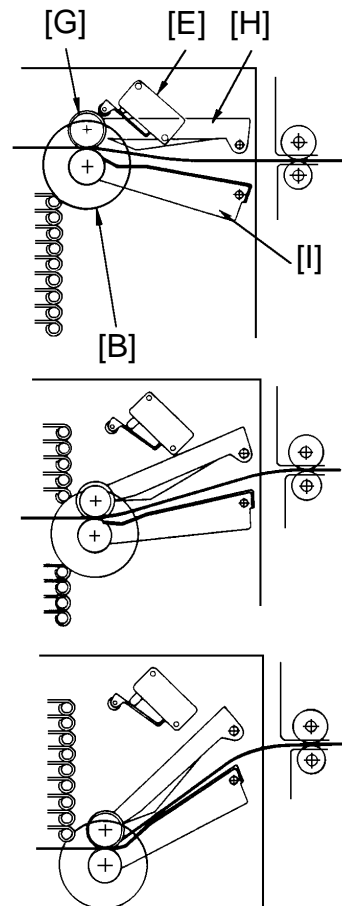


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- G : Exit Roller
 H : Upper Paper Guide
 I : Lower Paper Guide

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

Pins on either side of each bin are inserted into slots called bin guides [D,D']. The bins slide up and down in the bin guides. The bins sit on each other with the lower bin resting on the permanently-mounted 10th bin. The upper and lower paper guides pivot up and down depending on the height of the bin to be picked up or released.



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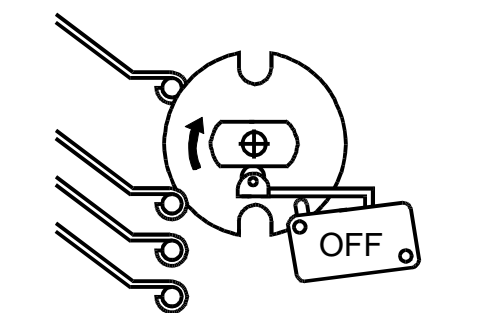
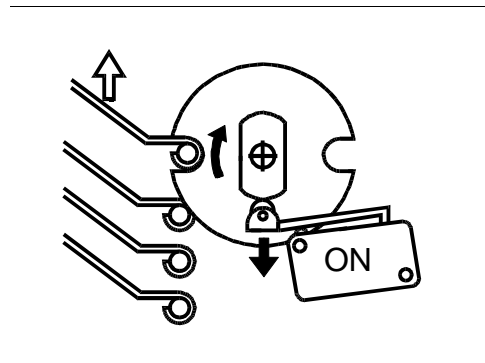
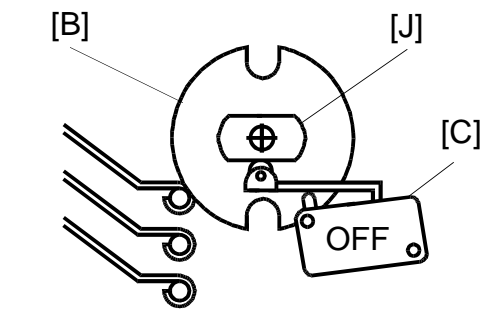
The home position switch [E] informs the CPU when all the bins are lowered.

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

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

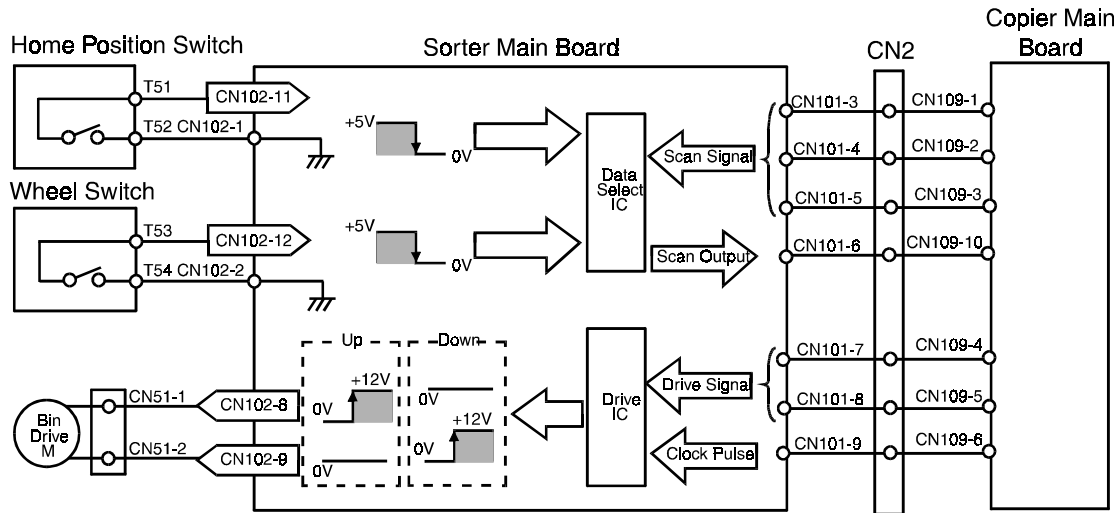
To move the bins down, the CPU reverses the bin drive motor and the above process reverses.

The CPU monitors the position of the bins through pulses generated by the wheel switch and the actuator cam [J]. The actuator cam has two flat sides that are 180 degrees apart and is mounted behind the rear transfer wheel. A pulse is generated each time one of the lobes of the actuator cam passes the wheel switch.



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7.2 BIN DRIVE CIRCUIT

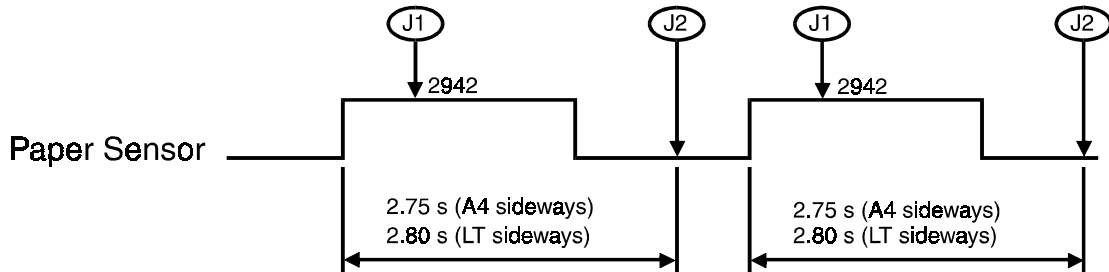


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To turn on the bin drive motor, the copier main board sends drive signals to the drive IC on the sorter main board. After receiving the drive signals, the drive IC either raises CN102-8 or CN102-9 to +12 volts. This turns on the bin drive motor which respectively moves a bin up or down. The sorter main board monitors the output of both sorter switches through the data select IC. When either the home position switch or wheel switch is actuated, CN102-11 or CN102-12 drops to LOW. The copier main board outputs three scan signals to the data select IC. The status of the switches changes the resulting scan output signal. Using the scan output signal, the copier main board determines the status of the switch.

The CPU monitors the on-time of the bin drive motor to detect a malfunction of the bin drive motor. If the bin drive motor continues to rotate for more than twelve seconds, the CPU stops the machine.

8. MISFEED DETECTION



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In addition to being used for the exit roller and bin drive timing, the paper sensor checks for misfeeds in the sorter. The copier CPU checks whether the paper sensor is actuated within 942 pulses (3.8 seconds) after the registration clutch turns on (at 2,000 pulses). (J1: Paper Sensor ON Check)

Also, the copier CPU starts a timing cycle when the paper sensor is actuated. Then, after 2.75 (A4 sideways) or 2.80 (Letter sideways) seconds, the CPU checks whether the copy paper has passed through the paper sensor. (J2: Paper Sensor OFF Check)

In a misfeed condition, the "Check Paper Path" and "Misfeed Location" indicators light and copier operation is disabled. To recover the sorter from the misfeed condition, the sorter has to be slid away from the copier, then, after misfed paper removal, returned to its original position.

Sorter

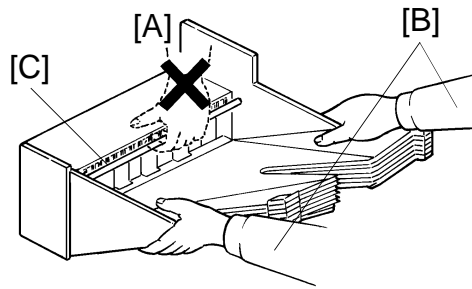
9. INSTALLATION PROCEDURE

9.1 ACCESSORY CHECK

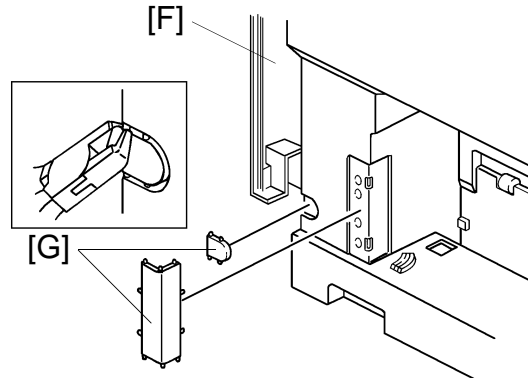
Check the quantity and condition of the accessories in the box against the following list:

1. Magnet Catch	1
2. Sorter Holder Bracket	1
3. Sorter Holder Bracket Cover	1
4. Philips Pan Head Screw - M4 x 8	8
5. Philips Pan Head Screw - M4 x 8	1
6. Screw M4 x 8	1
7. Snap Ring	1
8. Toothed Washer	1
9. Spring Washer	1
10. Interface Harness	1

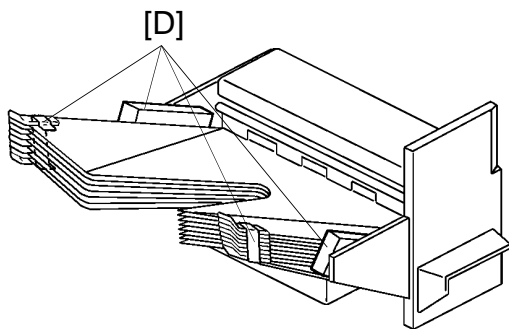
9.2 INSTALLATION PROCEDURE



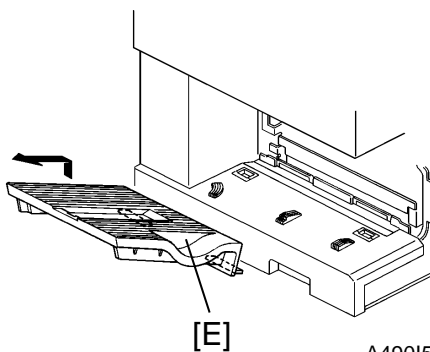
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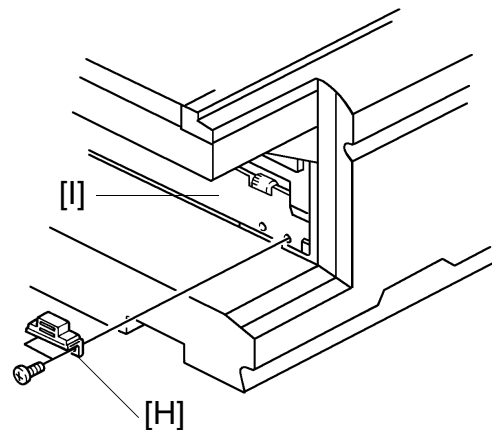
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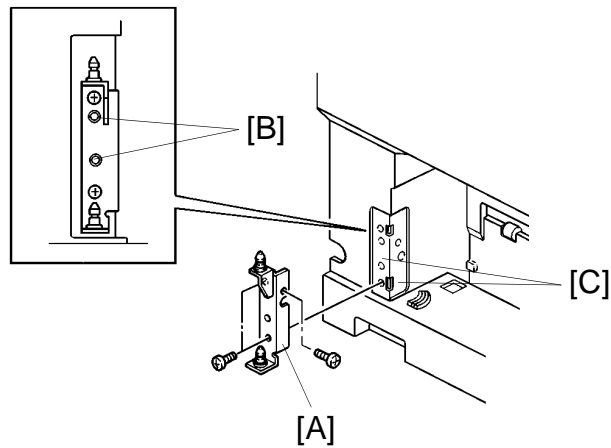
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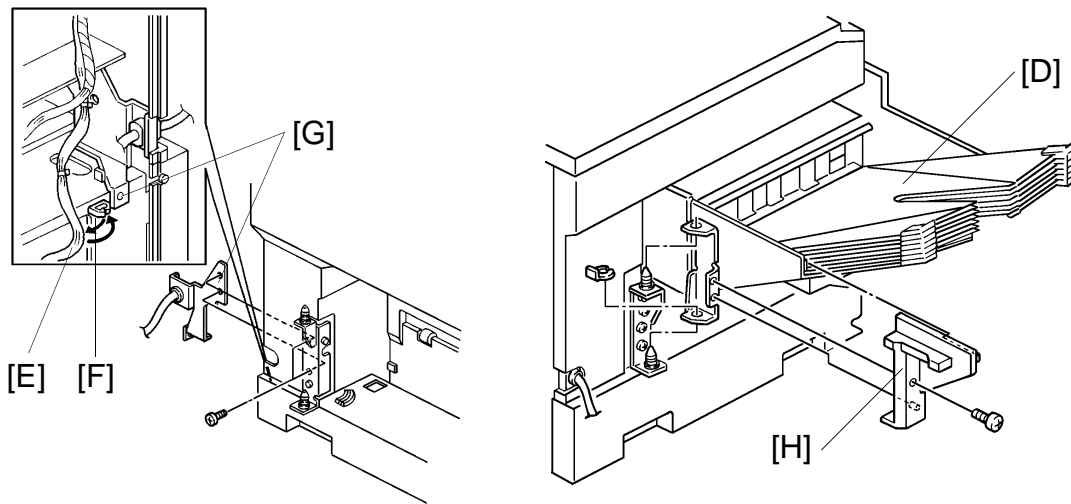
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NOTE: Do not grasp the sorter by the top cover and stay as shown by [A]. Hold both sides of the sorter as shown by [B]. This is to prevent damage to the anti-static brush [C].

1. Turn off the main switch and unplug the power supply cord of the copier.
2. Remove the strips and styrofoam blocks [D].
3. Remove the receiving tray [E].
4. Remove the rear cover [F] (4 screws).
5. Remove the caps [G] on the upper left side cover with pliers.
6. Install the magnet catch [H] on the exit unit [I] (2 screws).



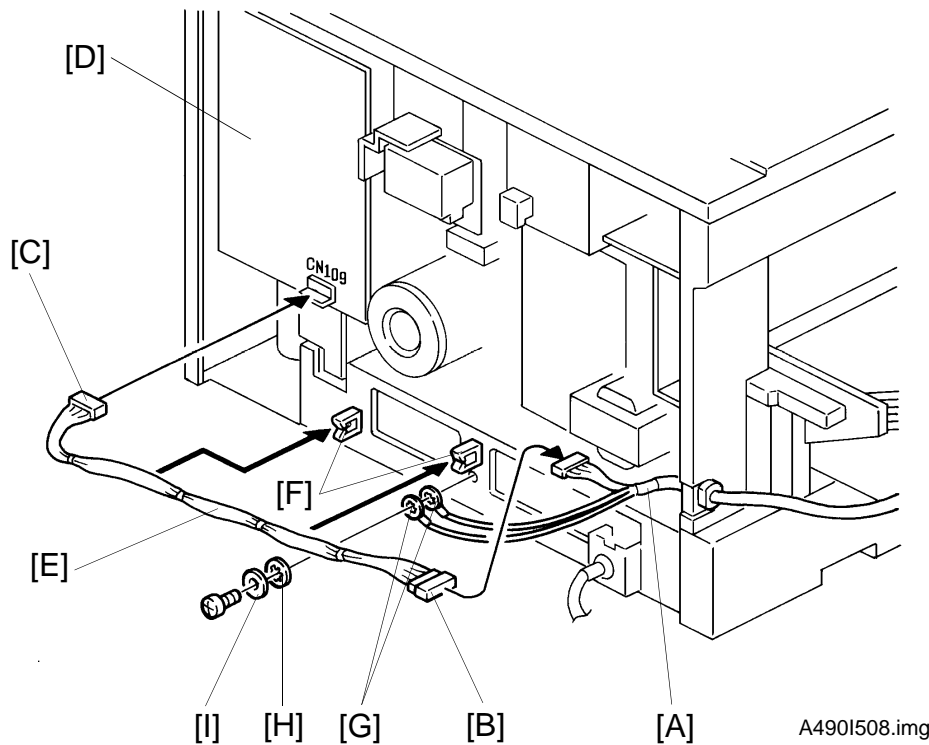
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A490I507.img

7. Install the sorter holder bracket [A] (3 screws) so that the two holes [B] on the bracket align with the holes [C] on the copier frame as shown.
8. Install the sorter [D] on the sorter holder bracket (1 snap ring) as shown.
9. Remove the ac harness [E] from the wire clamp [F] as shown.
10. Install the sorter harness bracket [G] with the harness (2 screws).
11. Reinstall the ac harness in the wire clamp.
12. Install the sorter holder bracket cover [H] (1 screw).



13. Connect the sorter dc harness [A] (10P/Brown) to the interface harness connector [B].
14. Connect the interface harness connector [C] to CN109 on the main board [D].
15. Set the interface harness [E] into the clamps [F] as shown.
16. Secure the grounding wire [G] (1 screw, toothed washer [H], and spring washer [I]) on the bottom plate as shown.
17. Plug in the copier power supply cord.
18. Change the setting of SP71 data to "1" (sorter installed).
19. Reinstall the rear cover and turn on the main switch.
20. Check the operation of the sorter.

9. INSTALLATION PROCEDURE

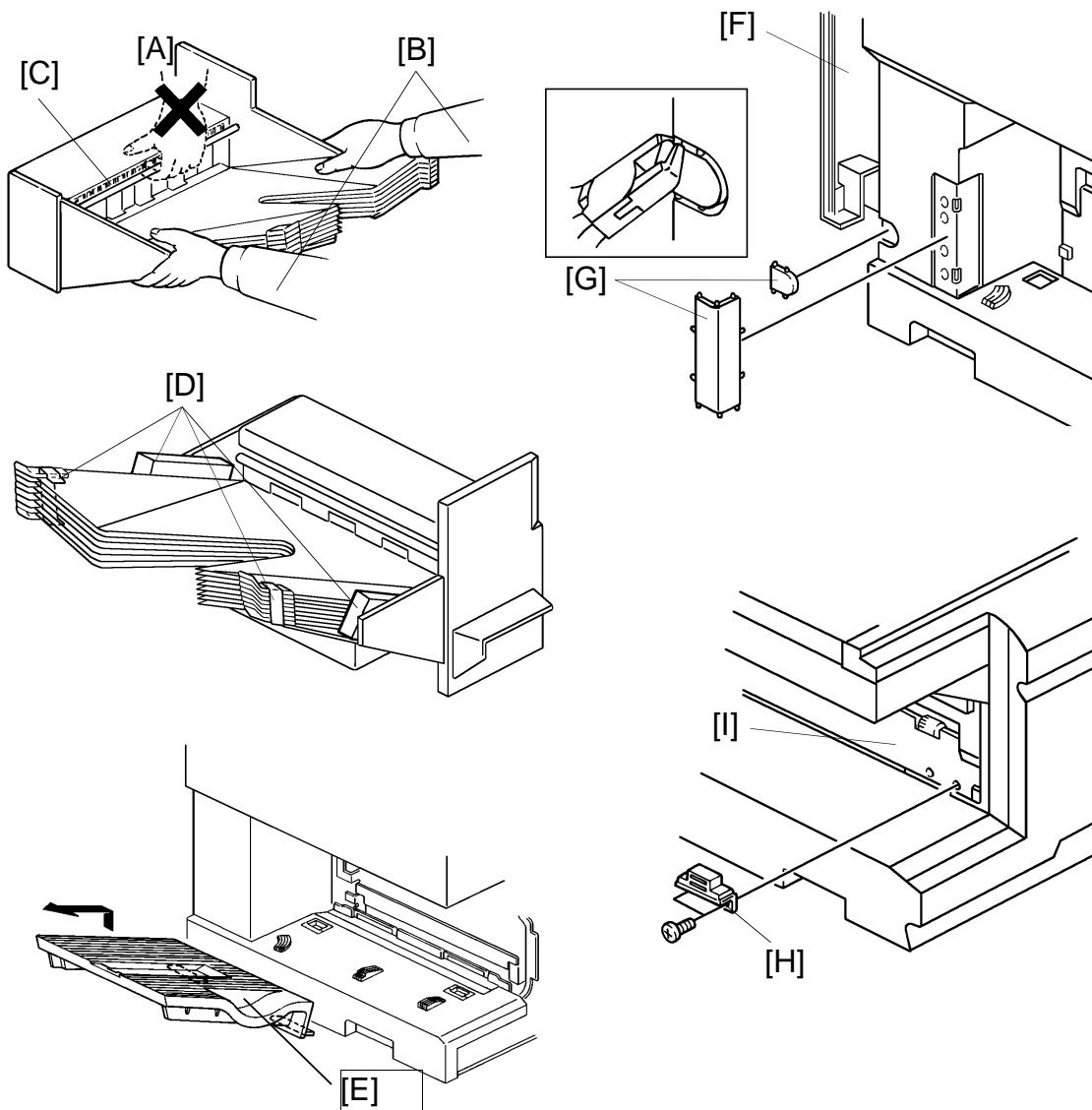
(for Machine Code: A110/A111)

9.1 ACCESSORY CHECK

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

1. Magnet Catch	1
2. Sorter Holder Bracket	1
3. Sorter Holder Bracket Cover	1
4. Philips Pan Head Screw - M4 x 8	8
5. Philips Pan Head Screw - M4 x 8	1
6. Screw M4 x 8	1
7. Snap Ring	1
8. Toothed Washer	1
9. Spring Washer	1
10. Interface Harness	1

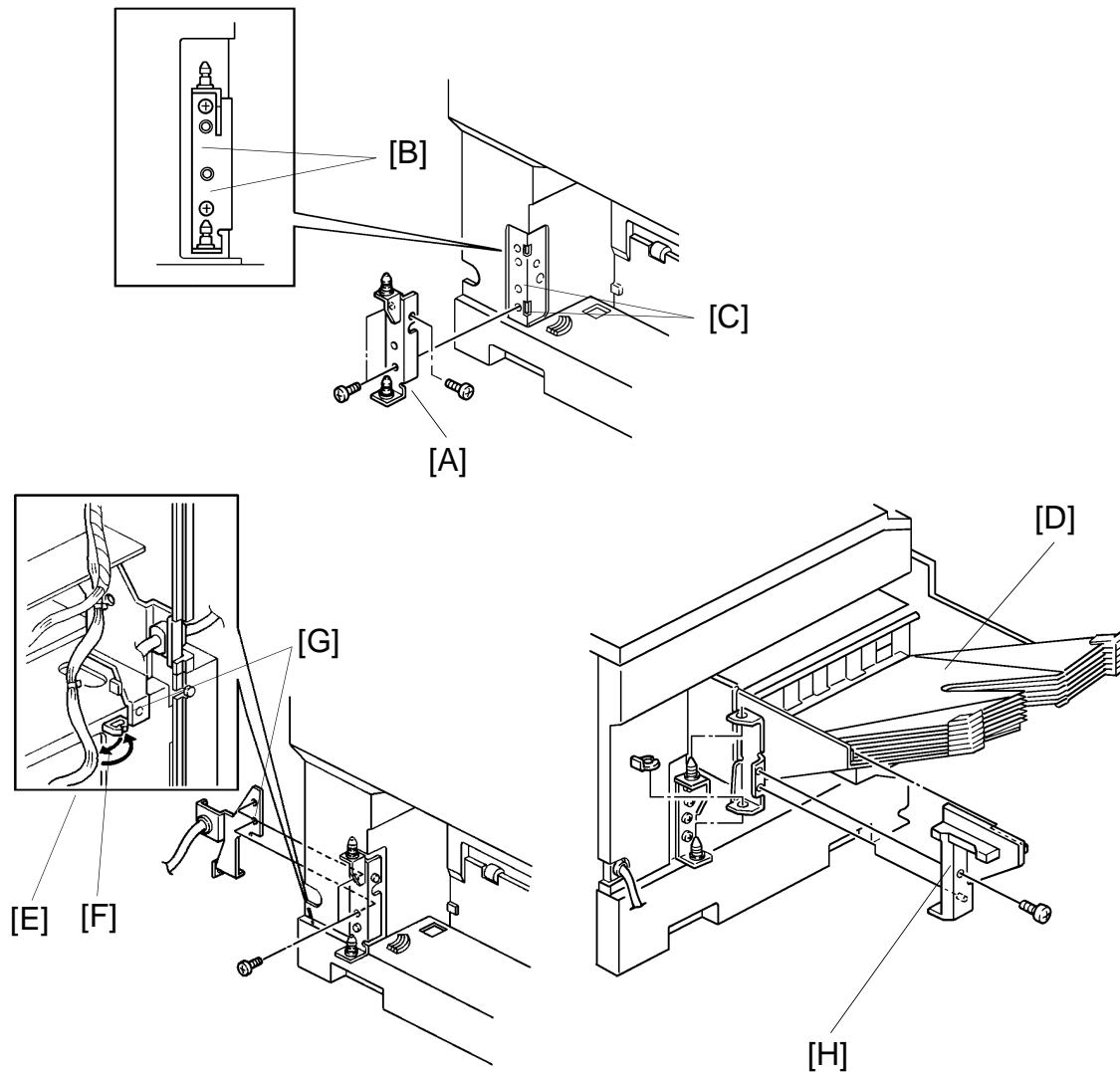
9.2 INSTALLATION PROCEDURE



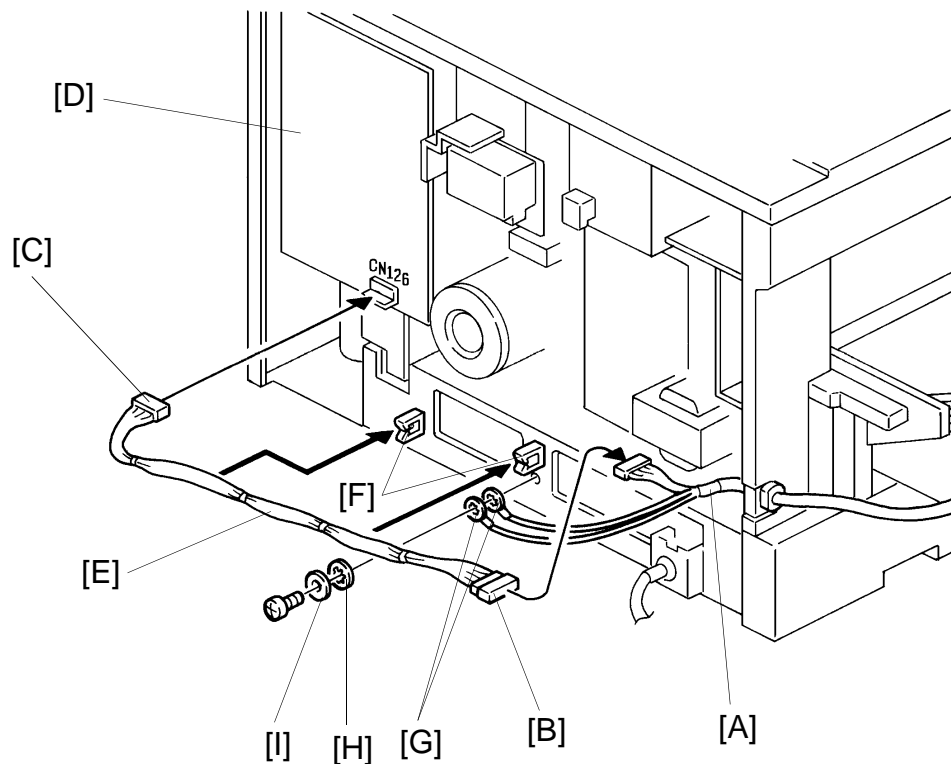
NOTE: Do not grasp the sorter by the top cover and stay as shown by [A]. Hold both sides of the sorter as shown by [B]. This is to prevent anti-static brush [C] damage.

1. Turn off the main switch and unplug the power supply cord of the copier.
2. Remove the strips and styrofoam blocks [D].
3. Remove the receiving tray [E].
4. Remove the rear cover [F] (4 screws).
5. Remove the caps [G] on the upper left side cover with the pliers.
6. Install the magnet catch [H] on the exit unit [I] (2 screws).

Sorter



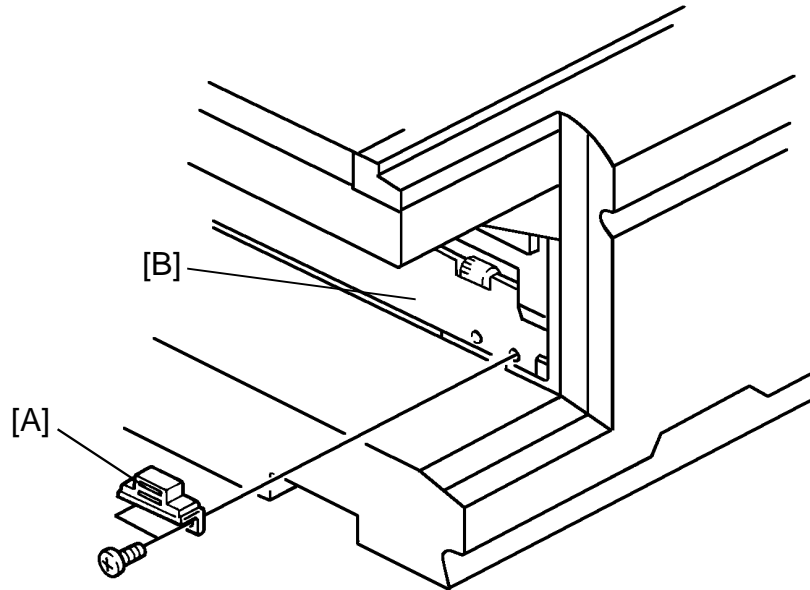
7. Install the sorter holder bracket [A] (3 screws) so that the two holes [B] on the bracket align with the holes [C] on the copier frame as shown.
8. Install the sorter [D] on the sorter holder bracket (1 snap ring) as shown.
9. Remove the ac harness [E] from the wire clamp [F] as shown.
10. Install the sorter harness bracket [G] with the harness (2 screws).
11. Reinstall the ac harness into the wire clamp.
12. Install the sorter holder bracket cover [H] (1 screw).



13. Connect the sorter dc harness [A] (10P/Brown) to the interface harness connector [B].
14. Connect the interface harness connector [C] to CN126 on the main board [D].
15. Set the interface harness [E] into the clamps [F] as shown.
16. Secure the grounding wire [G] (1 screw, toothed washer [H], and spring washer [I]) on the bottom plate as shown.
17. Plug in the copier power supply cord.
18. Change the SP71 data to "1" (sorter instruction).
19. Reinstall the rear cover and turn on the main switch.
20. Check the operation of the sorter.

9.3.5 Sorter Installation (Option)

A128 Copier



1. Do **steps 1 to 5** of the installation procedure for the A110/A111 copier (page 13 of the section for the sorter).
2. Install the magnet catch [A] on the exit unit [B] (2 screws).
NOTE: When installing the magnet catch [A] for the A128 copier, be sure to use the two tapping screws included in the plastic bag which is located on the inner side of the rear cover.
3. Do **steps 7 to 20** of the installation procedure for the A110/A111 copier **skipping steps 9 and 11** (page 14 to 15 of the section for the sorter).

9. INSTALLATION PROCEDURE

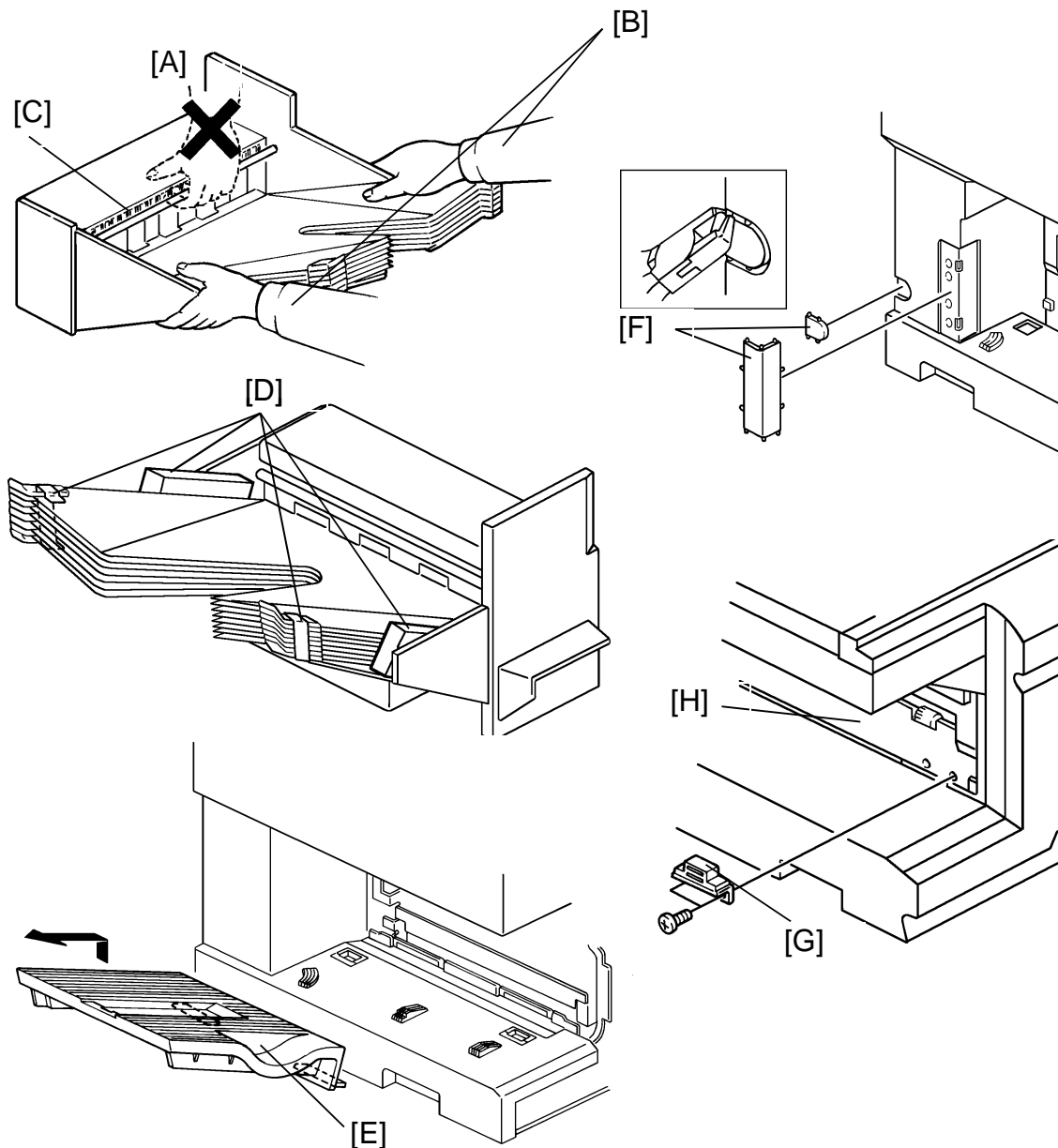
9.1 ACCESSORY CHECK

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

1. Magnet Catch	1
2. Sorter Holder Bracket	1
3. Sorter Holder Bracket Cover	1
4. Philips Pan Head Screw - M4 x 8	8
5. Philips Pan Head Screw - M4 x 8	1
6. Screw M4 x 8	1
7. Snap Ring	1

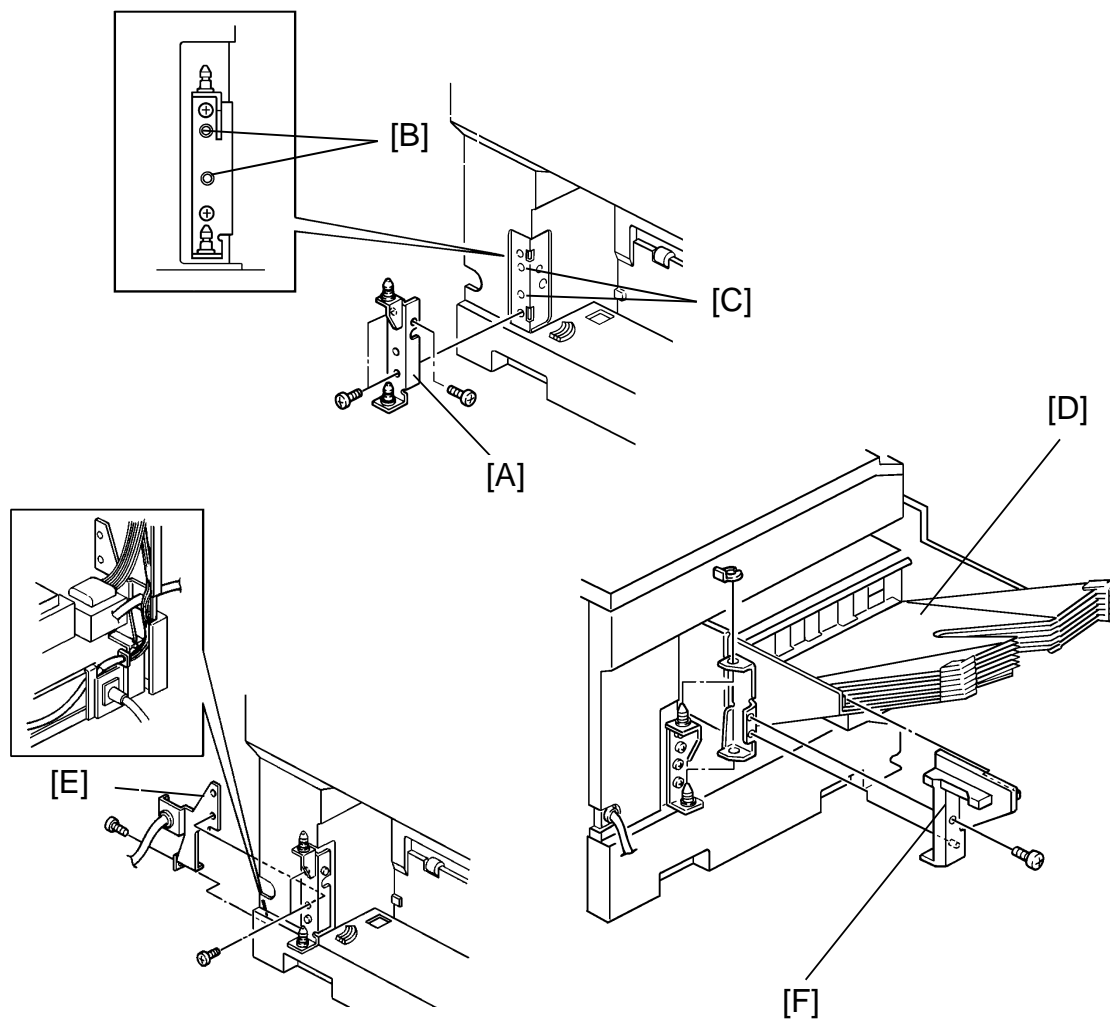
- NOTE:**
1. If the sorter is installed on the copier, the DC Power Supply Unit (option) is required.
 2. When installing the optional DC Power Supply Unit, please refer to the installation procedure enclosed with it.

9.2 INSTALLATION PROCEDURE

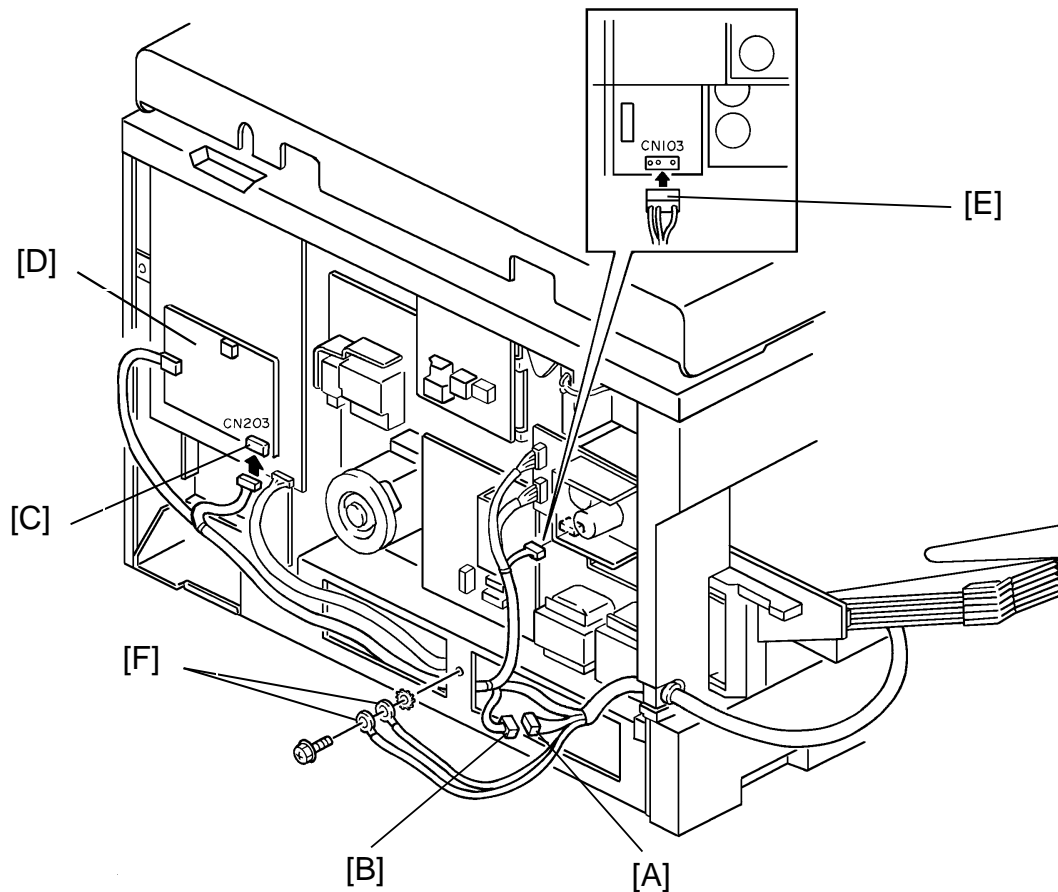


NOTE: Do not grasp the sorter by the top cover and stay as shown by [A]. Hold both sides of the sorter as shown by [B]. This is to prevent anti-static brush [C] damage.

1. Turn off the main switch and unplug the power supply cord of the copier.
2. Remove the strips and styrofoam blocks [D].
3. Remove the receiving tray [E].
4. Remove the caps [F] on the upper left side cover with the pliers.
5. Install the magnet catch [G] on the exit unit [H] (2 screws).

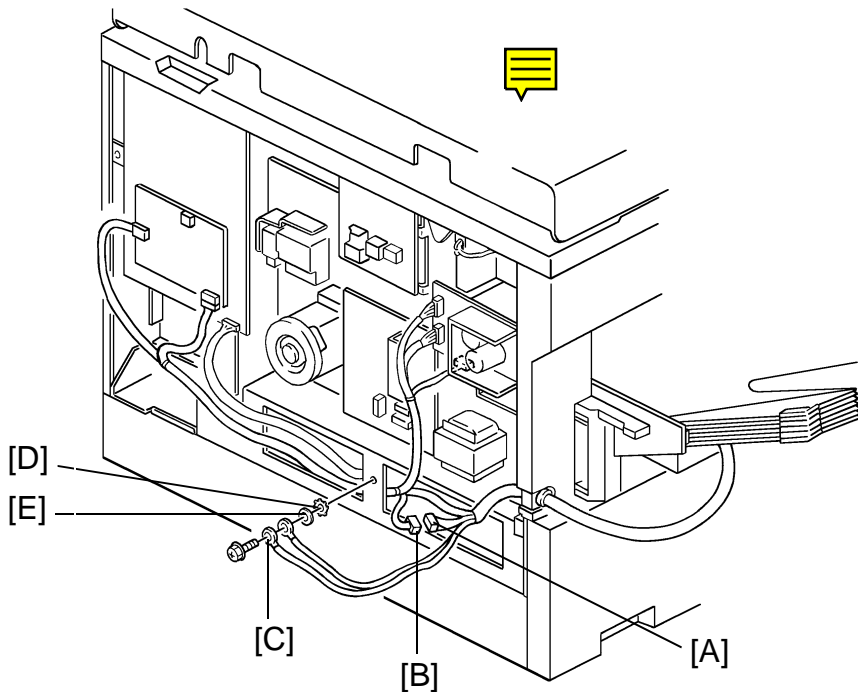


6. Install the sorter holder bracket [A] (3 screws) so that the two holes [B] on the bracket align with the holes [C] on the copier frame as shown.
7. Install the optional DC Power Supply Unit. (See the installation procedure enclosed with the unit.)
8. Install the sorter [D] on the sorter holder bracket (1 snap ring) as shown.
9. Install the sorter harness bracket [E] with the harness (1 screw).
10. Secure the sorter holder bracket and sorter harness bracket (2 screws).
11. Install the sorter holder bracket cover [F] (1 screw).



12. Connect the sorter dc harness [A] (10P/Brown) to the optional harness connector [B]; then, connect the optional harness connector [C] to CN203 on the interface board [D].
13. Connect the dc harness [E] (3P/White) to CN103 on the main dc power supply unit.
14. Secure the grounding wire [F] (1 screw and toothed washer) on the bottom plate as shown.
15. Plug in the copier power supply cord.
16. Turn on DIP switch 101-4 on the main board and turn on the main switch. Then, change the SP Mode #71 data to "1" (sorter instruction).
17. Turn off the main switch and DIP switch 101-4.
18. Replace all covers and turn on the main switch.
19. Check the operation of the sorter.

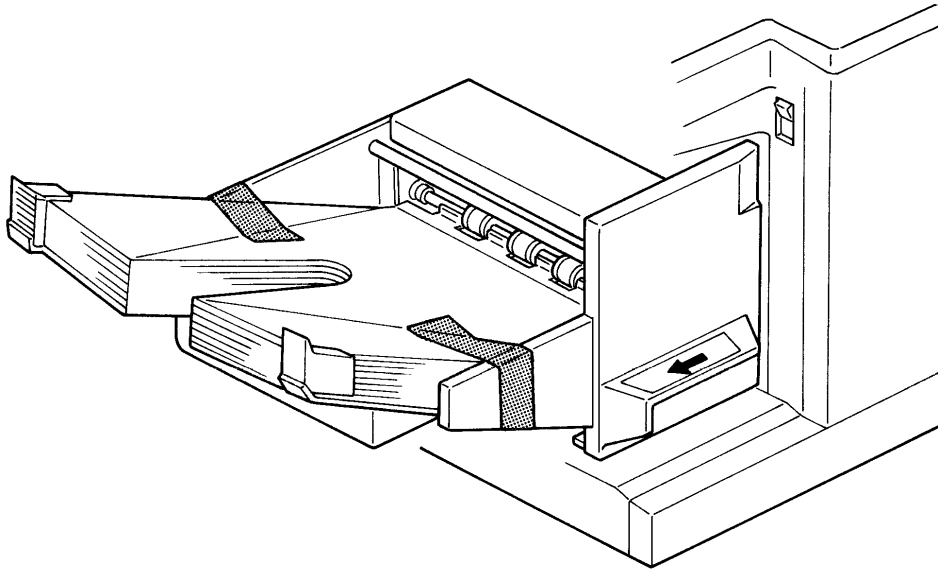
14.4 SORTER INSTALLATION



NOTE: Refer to the list on page 9-12 to check the accessories.

1. Do **steps 1 to 11** of the installation procedure for the A048 copier (page 9-13 to 14).
2. Connect the sorter dc harness [A] (10P/Brown) to the harness connector [B].
3. Secure the grounding wire [C] (1 screw, toothed washer [D], and spring washer [E]) to the rear frame as shown.
4. Do **steps 15 to 19** of the installation procedure for the A048 copier (page 9-15).

10. PREPARATION FOR TRANSPORTATION



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IMPORTANT

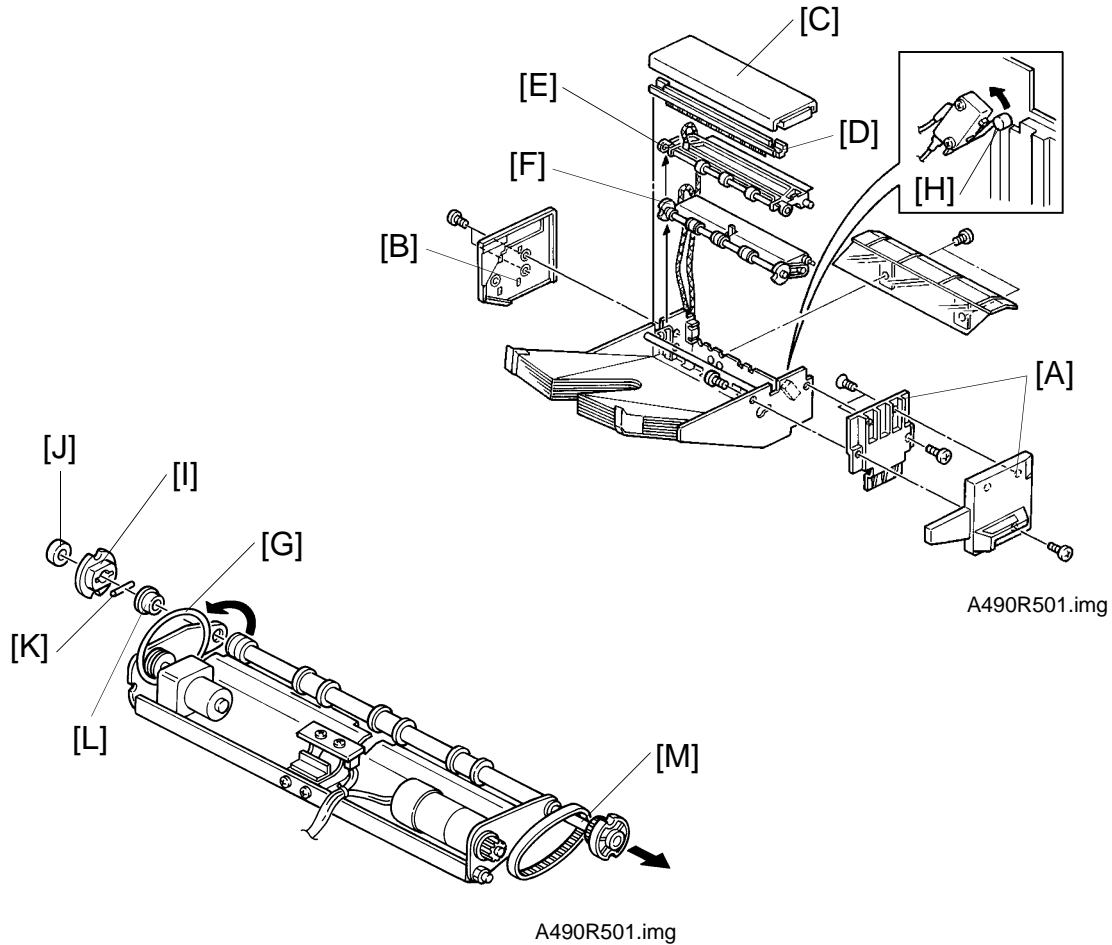
When removing and transporting the sorter, be careful not to carry it in a vertical position as the bins will become dislocated.

IMPORTANT

Before moving the sorter, be sure to prepare it for transportation as follows. The sorter may be badly damaged if it is moved without proper preparation.

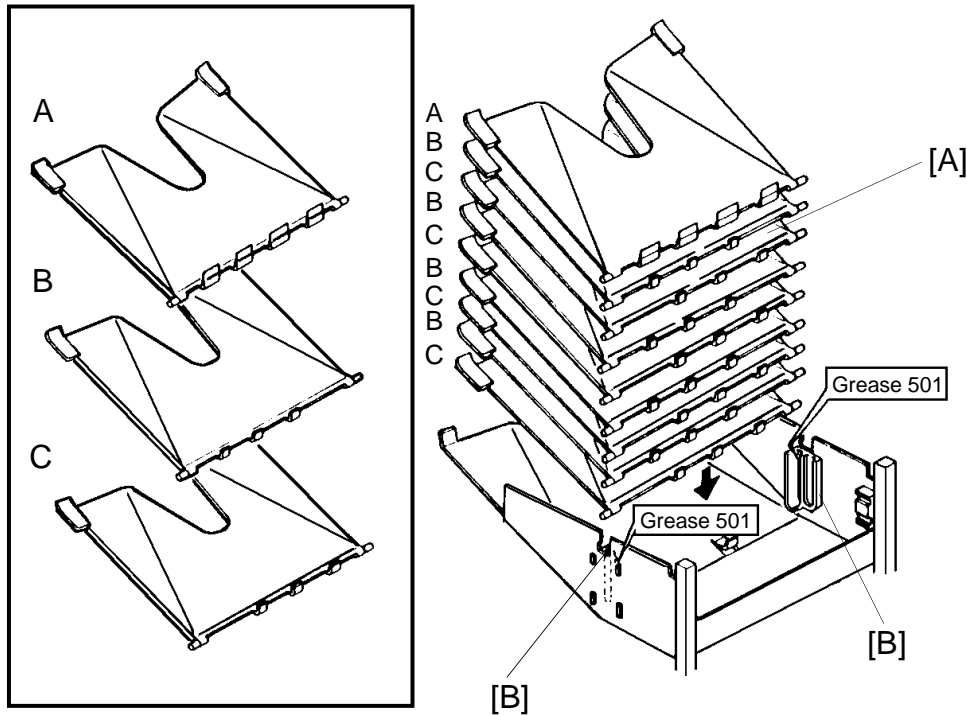
1. If the bins are not at the home position, turn on the main switch of the copier to move the bins to the home position.
2. Secure the bins with strips of tape as shown in the illustration.
3. Remove the sorter from the copier. (See the Installation Procedure [Sorter] section.)

11. ROLLER DRIVE BELT REPLACEMENT



1. Remove the front covers [A] (5 screws) and rear cover [B] (2 screws).
2. Lift off the top cover [C].
3. Remove the top stay [D].
NOTE: Be sure that the discharge brush on the top stay is facing the exit side of the sorter when reinstalling it.
4. Lift the upper paper guide [E] up and out of position.
5. Lift the lower paper guide [F] out of position and turn it over to remove the roller drive belt [G].
NOTE: Be careful not to damage the sorter home position switch actuator [H] when reassembling.
6. Remove the transfer wheel [I], spacer [J], pin [K], and bushing [L] (1 C-ring).
7. Slide the wheel shaft [M] towards the front and remove the roller drive belt.

12. BIN GUIDE LUBRICATION



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1. Remove the lower paper guide. (See Roller Drive Belt Replacement.)
2. Remove all bins [A] from the bin guides [B].
3. Apply Grease 501 to the grooves of the bin guides.

NOTE: There are three types of bins. Therefore, when installing the bins, be sure that they are installed in the correct order.

Sorter Electrical Components

Index No.	Description	Symbol	P to P
1	Sorter Main Board	PCB1	C12 — C15
2	Paper Sensor	S1	B13
3	Wheel Switch	SW1	B14
4	Roller Drive Motor	M1	B12
5	Sorter Switch	SW2	B13
6	Bin Drive Motor	M2	B12
7	Home Position Switch	SW3	B13

Sorter Connectors

Index No.	CN No.	Description	Symbol	Type	P to P
1	CN102	Sorter Main Board	PCB1	13P/W	C12 — C14
2	CN101	Sorter Main Board	PCB1	10P/W	D13 — D14
3	T54	Wheel Switch	SW1	1P/R	B14
4	T53	Wheel Switch	SW1	1P/R	B14
5	CN54	Sorter Switch	SW2	2P/W	B13
6	CN53	Roller Drive Motor	M1	2P/W	B12
7	CN51	Bin Drive Motor	M2	2P/W	B12
8	T51	Home Position Switch	SW3	1P/R	B14
9	T52	Home Position Switch	SW3	1P/R	B14

