

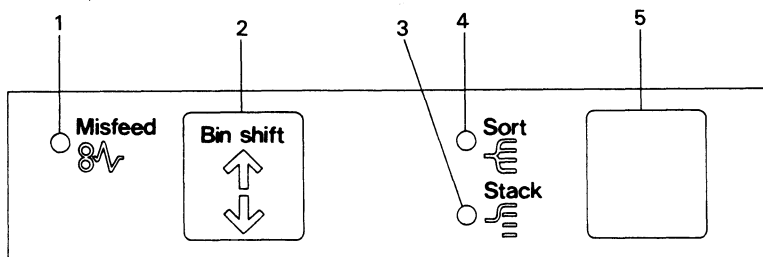
# 1. SPECIFICATIONS

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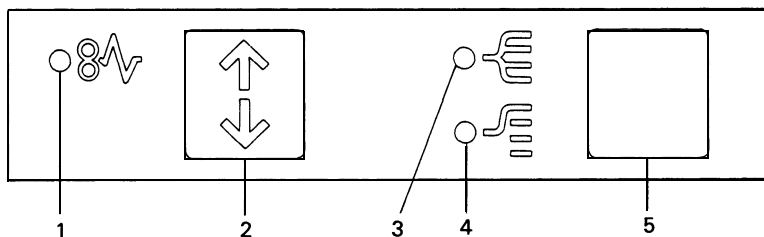
<b>Number of Bins:</b>	<b>10 bins</b>	
<b>Paper Size for Bins:</b>	<b>Maximum</b>	<b>A3, 11" x 17"</b>
	<b>Minimum</b>	<b>A6, 5½" x 8½" (Lengthwise)</b>
<b>Paper Weight:</b>	<b>64 to 90 g/m<sup>2</sup> (17 to 24 lb)</b>	
<b>Bin Capacity:</b>	<b>Sort/Stack Mode</b>	<b>20 sheets/ A4, 8½" x 11" 15 sheets/ B4, 8½" x 14" 10 sheets/ A3, 11" x 17"</b>
<b>Top Bin Capacity: (Non-Sort/Stack Mode)</b>	<b>100 sheets (all sizes)</b>	
<b>Power Source:</b>	<b>+ 5 volts and +24 volts from the copier</b>	
<b>Power Consumption:</b>	<b>7.7 W</b>	
<b>Dimensions: (WxDxH)</b>	<b>440 mm x 391 mm x 367 mm (1 7.3" x 15.4" x 14.4")</b>	
<b>Weight:</b>	<b>7.5 kg (16.5 lb).</b>	

## 2. OPERATION PANEL

(115V)



(220/240V)



1. Check Sorter Paper Path Indicator

Lights when there is a paper misfeed in the sorter.

2. Bin Shift Key

Press to shift the bins. Use this key to remove jammed paper.

3. Stack Indicator

Lights when copies from different copy runs are to be grouped into individual stacks.

4. Sort Indicator

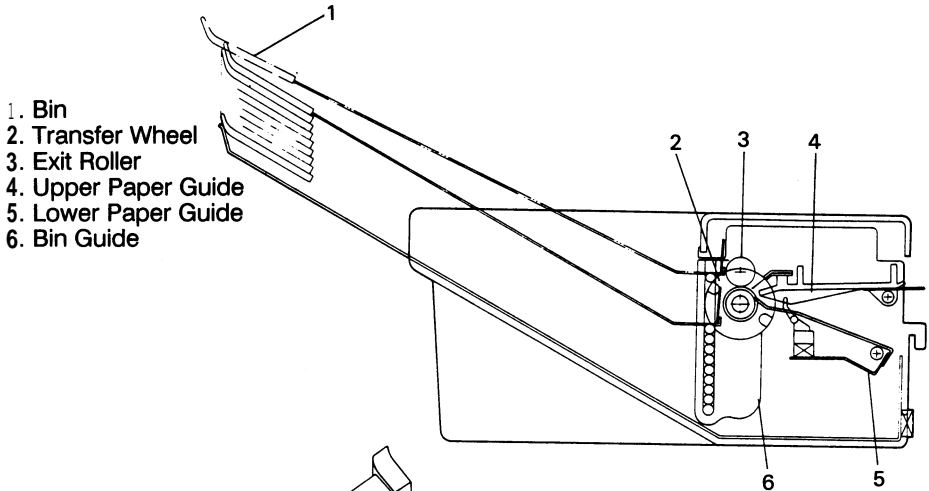
Lights when sets of copies are to be assembled in order.

5. Sorter Key

Press to select sort and stack modes or to turn off the sorter (clear mode).

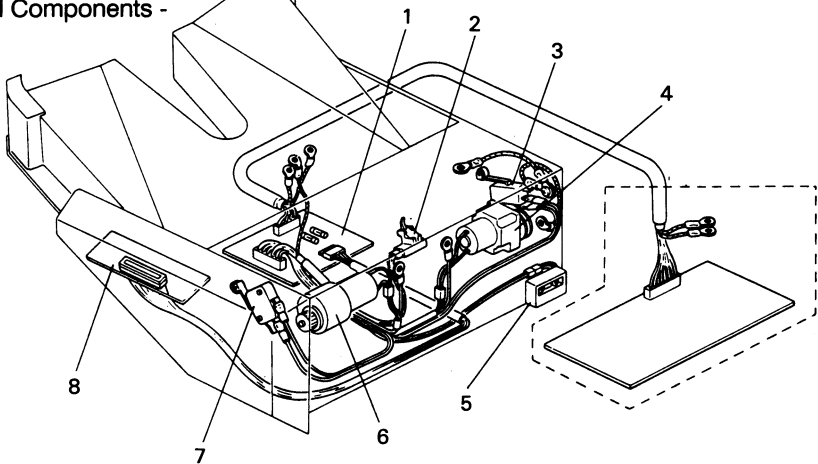
### 3. COMPONENT LAYOUT

#### - Mechanical Components -



1. Bin
2. Transfer Wheel
3. Exit Roller
4. Upper Paper Guide
5. Lower Paper Guide
6. Bin Guide

#### Electrical Components -



1. Sorter Main Board
2. Paper Sensor
3. Wheel Switch
4. Roller Drive Motor

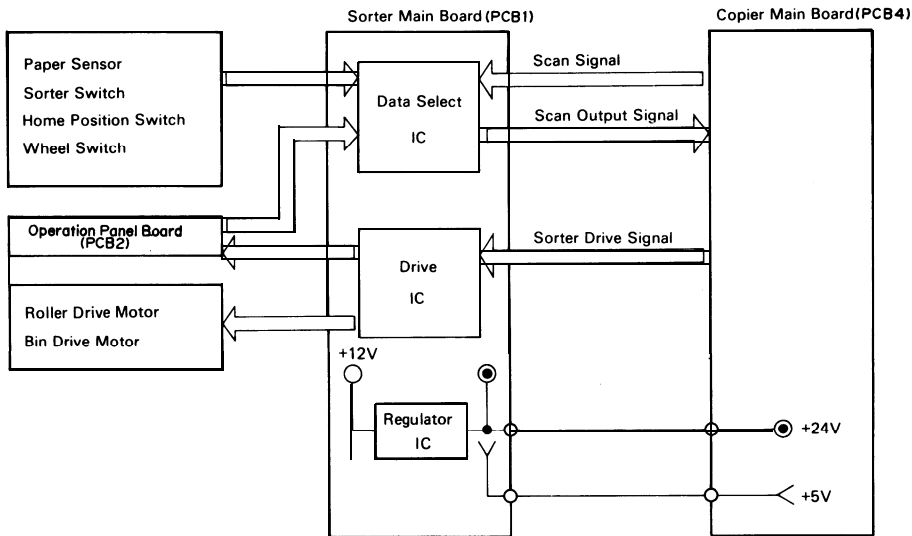
5. Sorter Switch
6. Bin Drive Motor
7. Home Position Switch
8. Operation Panel Board

## 4. ELECTRICAL COMPONENT DESCRIPTIONS

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Symbol	Name	Function	Location
<b>Motors</b>			
M1	Roller Drive Motor	DC motor that energizes to drive the lower exit rollers.	4
M2	Bin Drive Motor	Reversible DC motor that energizes to move the bins up or down.	6
<b>Switches</b>			
SW1	Wheel Switch	Detects the rotation of the transfer wheel and steps it in the correct position.	3
SW2	Sorter Switch	Read 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 setter.	5
SW3	Home Position Switch	Informs the CPU that all the bins are lowered.	7
<b>Sensors</b>			
S1	Paper Sensor	Serves as the misfeed sensor for the sorter and also sets exit roller and bin drive timing.	2
<b>Printed Circuit Boards</b>			
PCB1	Sorter Main Board	Serves as the communication board between the copier main board and the sorter.	1
PCB2	Operation Panel Board	Contains the Sorter key and Sorter Misfeed indicators.	8

## 5. OVERALL MACHINE CONTROL



The copier main board provides the sorter main board with +24 volts and +5 volts. +24 volts powers the roller drive motor and the indicator LEDs on the operation panel board, and +5 volts powers all sensors and switches. Also, +24 volts is changed to +12 volts by the regulator IC, which powers the bin drive motor.

The copier main board controls the drive and checks the status of the sorter via the sorter main board. The copier main board sends the scan signal 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, switches, or keys as the scan output signal.

The copier main board also sends the sorter drive signal. After receiving the drive signals, the drive IC turns on the appropriate motors and operation panel indicators.

## 6. BASIC OPERATION

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### - 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 on 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 -

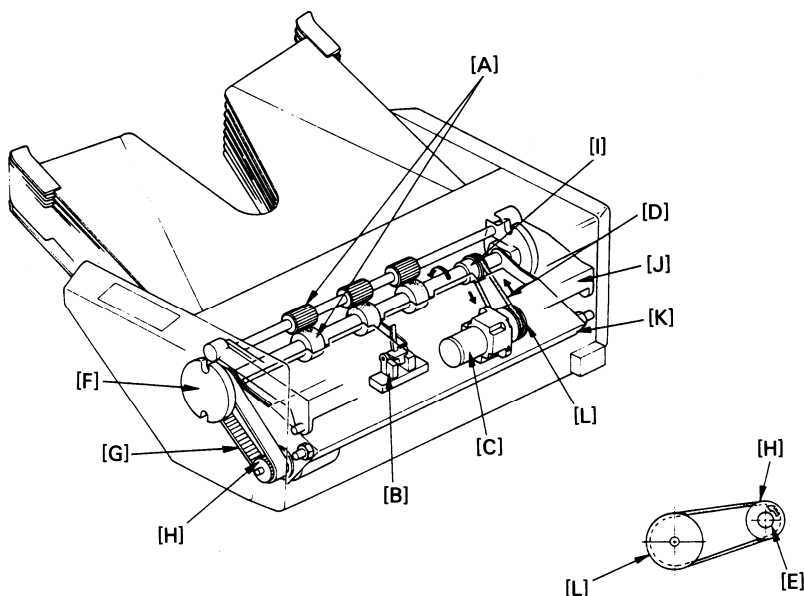
Pressing the Sorter key once shifts the copier to the sort mode. In this mode, all copies of the first original are delivered to separate bins starting from the top. The copies of the second original are delivered to the same bins, but starting from the bottom. The copies of the third original start 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 during the sort mode, 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 during stack mode, all bins shift to home position.

## 7. EXIT ROLLER DRIVE

### 7.1 Roller Drive Mechanism

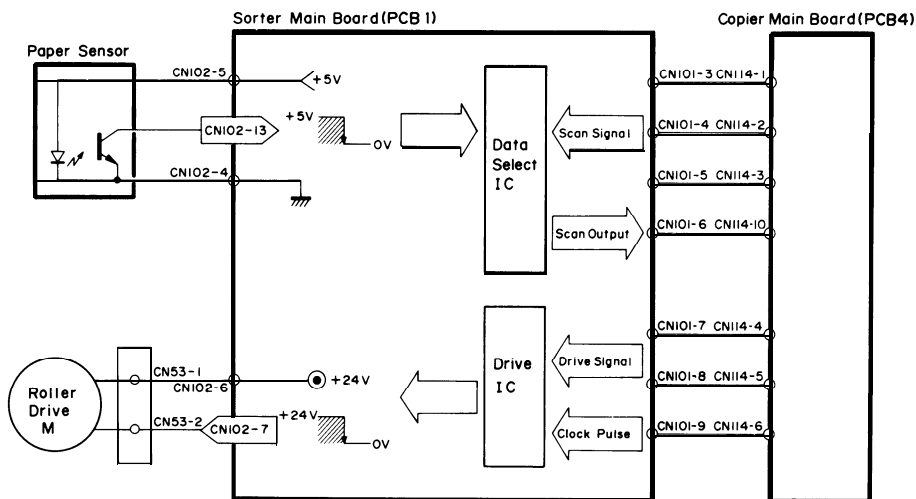


F:	Transfer Wheel
G:	Bin Drive Belt
H:	Bin Drive Pulley
I:	Exit Roller Pulley
J:	Upper Paper Guide
K:	Lower Paper Guide
L:	Roller Drive Motor Pulley

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.

## 7.2 Roller Drive Circuit



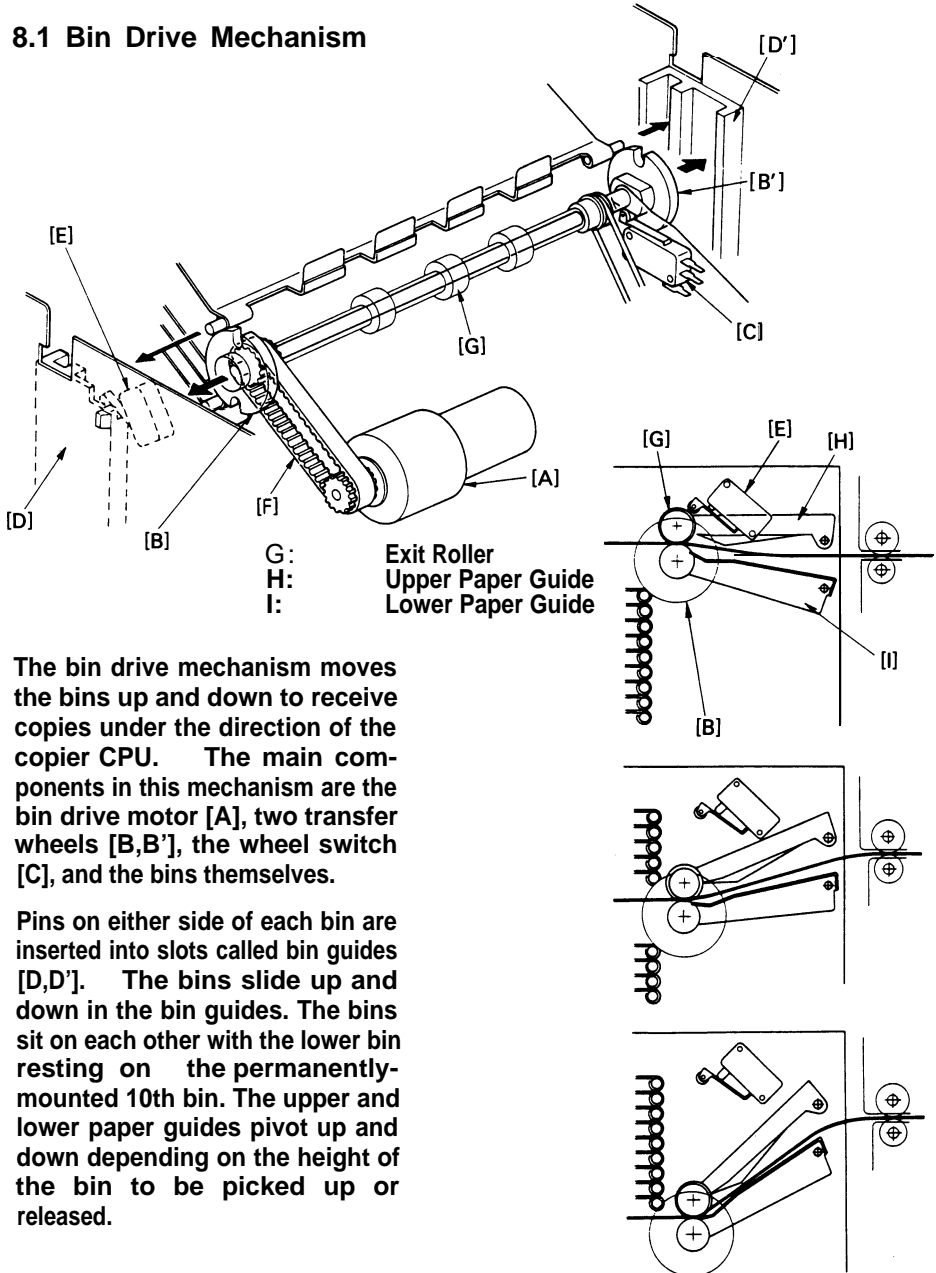
To turn on the roller drive motor, the copier main board sends a drive signal to the drive IC on the sorter main board. After receiving the drive signal, the drive IC drops CN102-7 from +24 to 0 volt to turn on the roller drive motor.

When the paper sensor is actuated, CN102-13 drops to LOW. The 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. For safety reasons, the CPU limits the operation time of the roller drive motor to 5 seconds.



## 8. BIN DRIVE

### 8.1 Bin Drive Mechanism



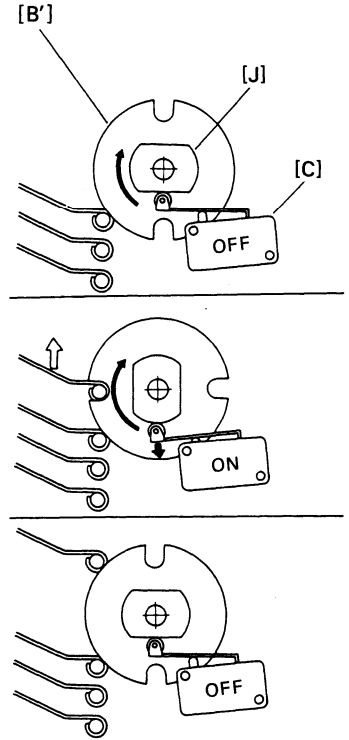
The home position switch [E] informs the CPU when all the bins are lowered.

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

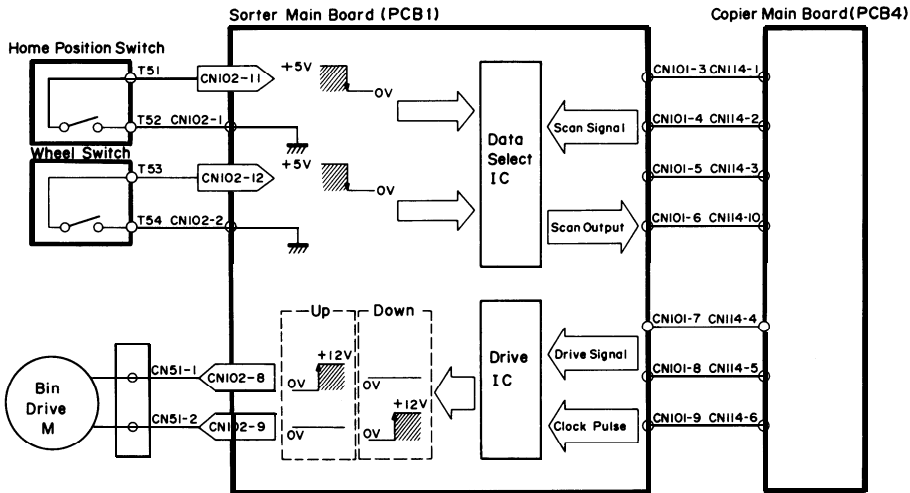
The transfer wheels have two slots in them 180 degrees apart. As the transfer wheels turn, these slots engage the bins and lift them up. Each time the transfer wheels turn 180 degrees, they raise one bin.

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

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.



## 8.2 Bin Drive Circuit

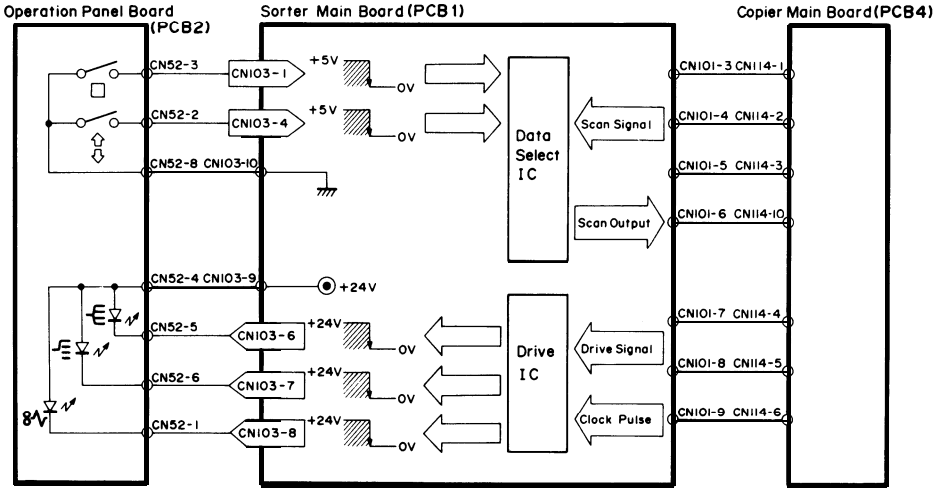


To turn on the bin drive motor, the copier main board sends drive signals to the drive IC on the sorter main board. After receiving the drive signals, the drive IC either raises CN102-8 or CN102-9 to + 12 volts. This turns on the bin drive motor which respectively moves a bin up or down. The main board 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 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.

### - Service Call Condition (EA1) -

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 more than twelve seconds, the CPU stops machine operation and displays EA1 on the copier operation panel.

## 9. OPERATION PANEL CIRCUIT

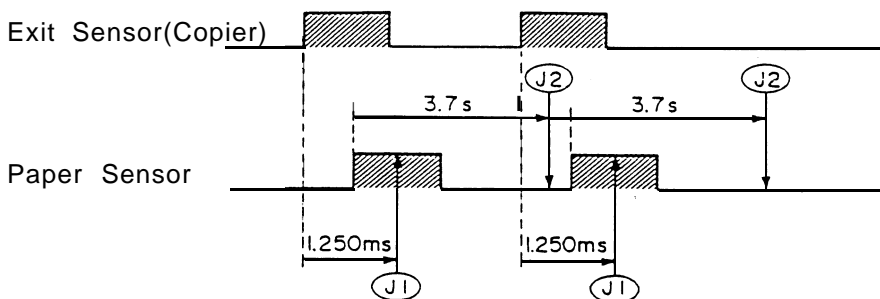


As with the monitoring and the controlling of the switches and the motors, the data select IC and the drive IC are respectively used to detect a pressed key and to turn on the LEDs on the operation panel board.

When the Sorter key or the Bin Shift key is pressed, CN103-1 or CN103-4 drops to LOW respectively, informing the data select IC of the pressed key.

To turn on the Sort indicator LED, the Stack indicator LED, or the Check Sorter Paper Path indicator LED, the drive IC drops either CN103-6, CN103-7, or CN103-8 to LOW respectively.

## 10. JAM DETECTION



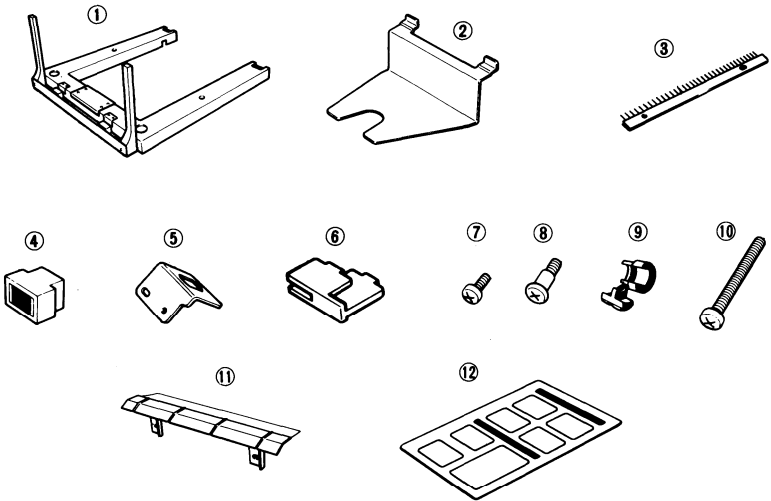
In addition to being used for the exit roller and bin drive timing, the paper sensor checks for a misfeed in the sorter.

When the copier exit sensor is actuated by the copy paper, the CPU on the copier main board starts a timing cycle. After 1,250 mini seconds, the CPU checks whether or not the paper sensor is actuated. (J1: Paper Sensor ON Check)

The CPU also starts a timing cycle when the paper sensor is actuated. Then at 3.7 seconds, the CPU checks whether or not the copy paper has passed the paper sensor. (J2: Paper Sensor OFF Check)

In misfeed condition, the "Check Sorter Paper Path" indicator on the sorter operation panel lights and copier operation is inhibited. 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.

# 11 .ACCESSORY CHECK



Check the accessories and their quantities according to the following list:

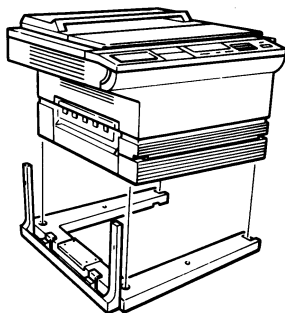
1. Mounting Base .....	1 pc
2. Proof Tray .....	1 pc
3. Anti-static Brush .....	1 pc
4. Magnet . . . * * *	1 pc
5. Harness Bracket .....	1 pc
6. Mounting Lock .....	2 pcs
7. Short Screw .....	3 pcs
(Incl. 1 Grounding Screw)	
8. Stepped Screw .....	1 pc
9. Bushing .....	1 pc
10. Long Screw .....	2 pcs (not used)
11. Lower Guide Plate .....	1 pc
12. Decal .....	1 pc
13. Installation Procedure .....	1 pc
14. N. E.C.R. ....	1 pc
15. Envelope for N. E.C.R. (115V only) .....	1 pc

**NOTE:** To install the sorter on the FT2050 a sorter compatible main board must be obtained. This is available as an options.

## 12. INSTALLATION PROCEDURE

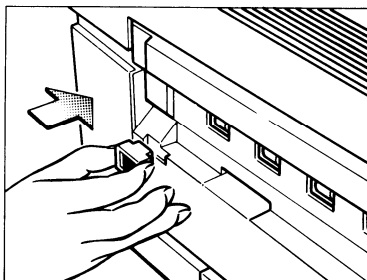
1. Install the copier on the mounting base.

**NOTE:** Make sure that the legs rest securely in the cut-outs of the mounting base.

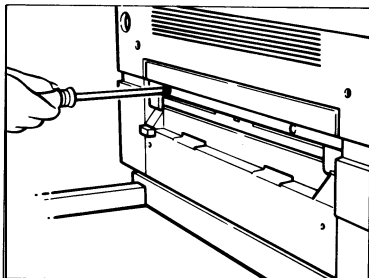


2. Install the magnet on the left cover as shown.

**NOTE:** Place the magnet in the bottom right-hand corner of the cutout.

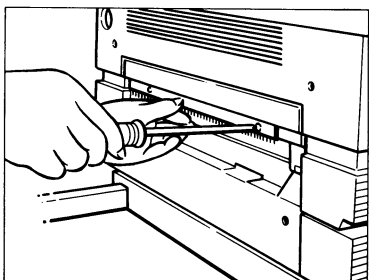


3. Remove the two screws on the exit cover.

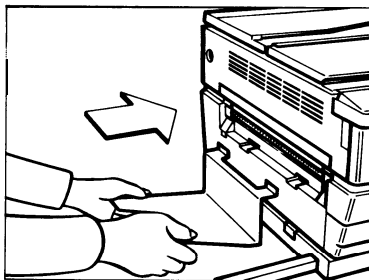


4. Install the anti-static brush.

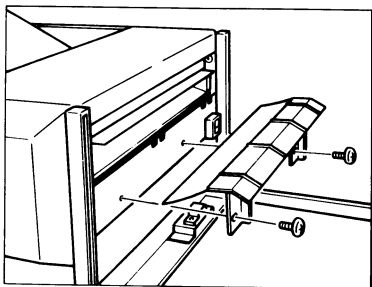
**NOTE:** Use one of the screws removed in step 3 to secure the left side, and the stepped screw of the accessories to secure the right side.



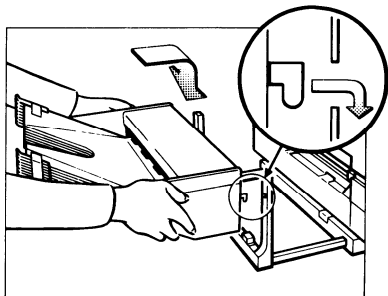
5. Install the proof tray where the copy tray normally fits.  
(FT2050/2070 only)



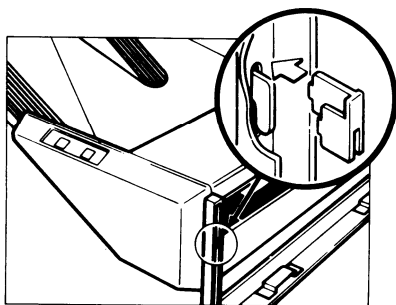
6. Replace the lower guide plate with the accessory lower guide plate (2 screws).  
(FT2050/2070 only)



7. Insert the sorter hooks into the vertical posts of the mounting base, and then remove the strips of tape from the sorter bins.



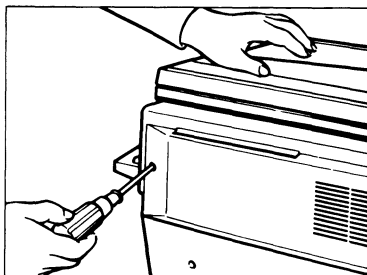
8. Secure the sorter hooks by installing the mounting locks.



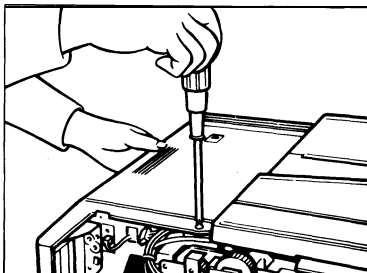


**NOTE:** Separate installation procedures are needed to install the sorter on the FT2050 and the FT2070/2260. Follow the procedure from step 9 when installing the sorter on the FT2050. Proceed to step 22 when installing the sorter on the FT2070/2260.

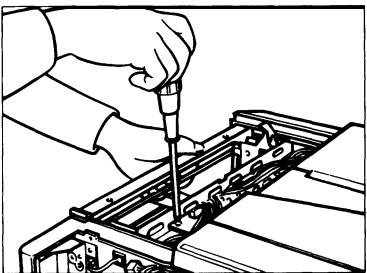
9. Remove the rear cover (2 screws).



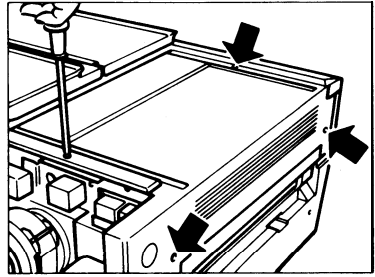
10. Move the slider to the left by pressing the slider lock release lever. Then, lower the front cover and remove the right cover (4 screws).



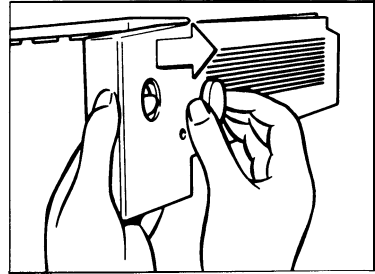
11. Replace the copier main board with the sorter compatible main board (3 screws and 8 connectors).



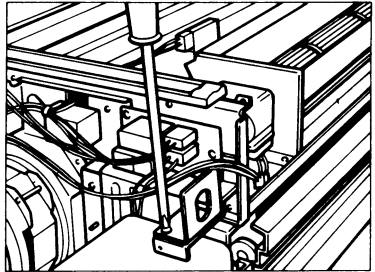
12. Remove the upper left cover (4 screws).



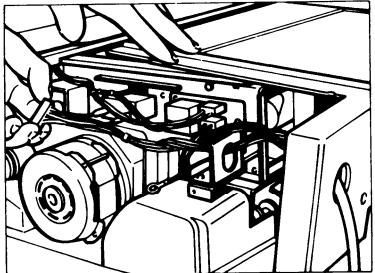
13. Remove the plastic cap from the docking hole of the upper left cover.



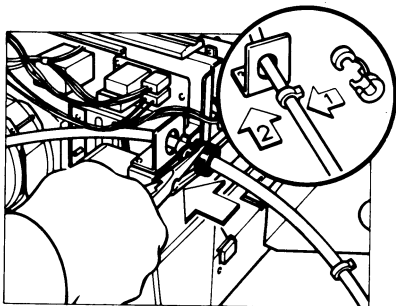
14. Install the harness bracket (2 screws).



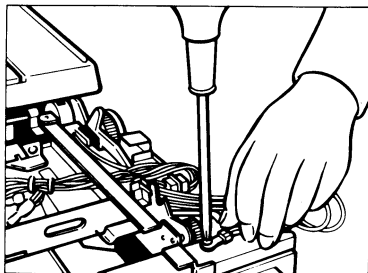
15. Thread the sorter harness through the docking hole and the harness bracket.



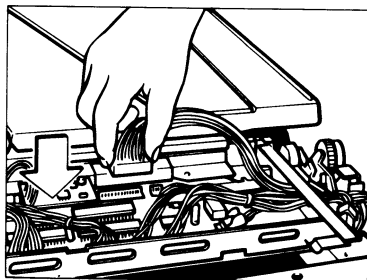
16. The sorter harness has two harness bands used as markers. Place the bushing on the sorter harness just behind the first harness band from the connector. Secure the bushing in the harness bracket.



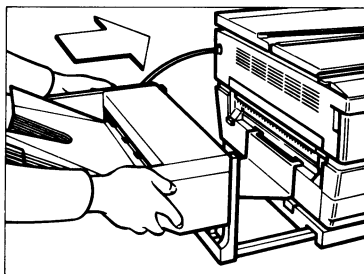
17. Secure both ground wires to the rear cover bracket (1 screw).
18. Couple the connector to CN114 on the main board.



19. Reassemble the copier.

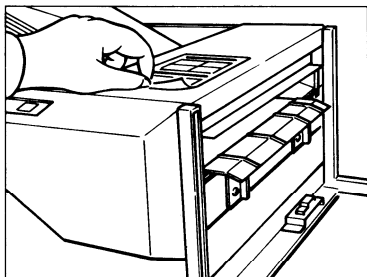


20. Slide the sorter to its normal position.

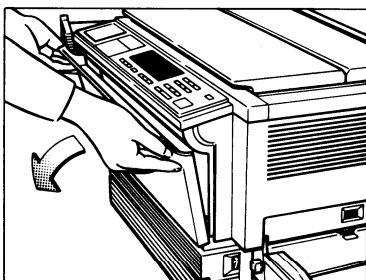


21. Replace the decal on the sorter with the accessory decal, and check the operation in all modes.

This completes the sorter installation on the FT2050.



22. Open the front cover.

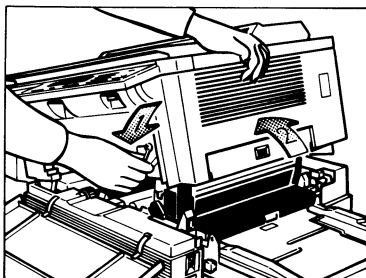


23. (FT2070)

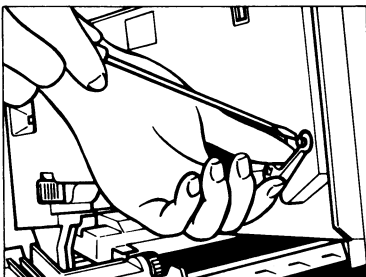
Move the slider to the center and push down the release lever to open the top unit.

(FT2260)

Push down the release lever to open the top unit.



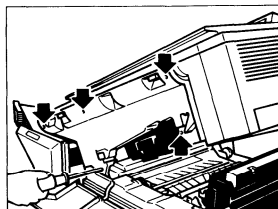
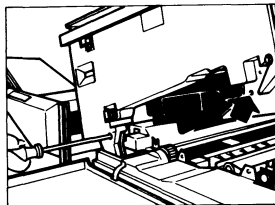
24. Remove the release lever (1 E-ring).



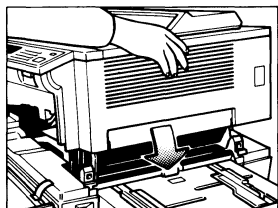
25. (FT2070)  
Remove the inner cover (2 screws).

(FT2260)

- Remove the inner cover (5 screws).



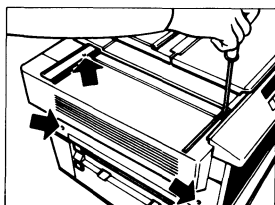
26. Lower the top unit.



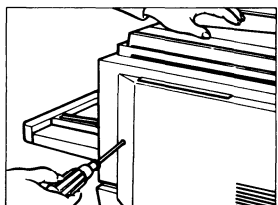
27. (FT2070)  
Move the slider fully to the right, then remove the upper left cover (4 screws).

(FT2260)

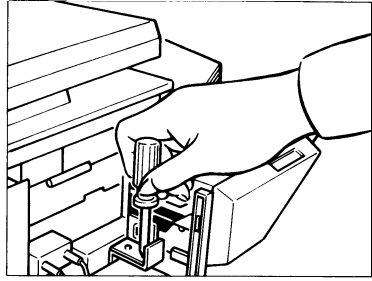
- Remove the upper left cover (4 screws).



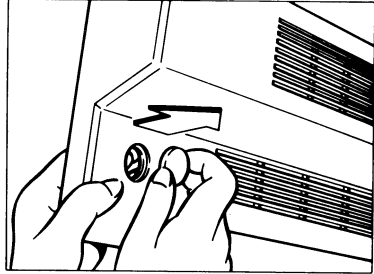
28. Remove the rear cover (2 screws).



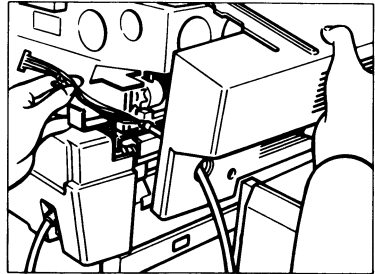
29. Install the harness bracket on the mounting bracket at the rear of the copier (2 screws).



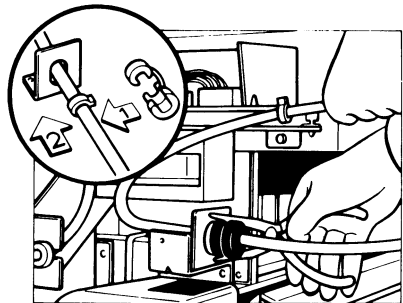
30. Remove the plastic cap from the docking hole of the upper left cover.



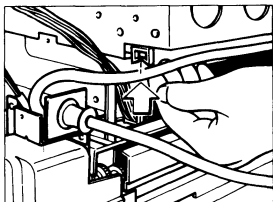
31. Thread the sorter harness through the docking hole and the harness bracket.



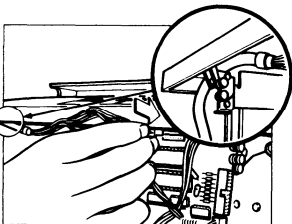
32. The sorter harness has two harness bands used as markers. Place the bushing on the sorter harness just behind the second harness band from the connector. Secure the bushing in the harness bracket.



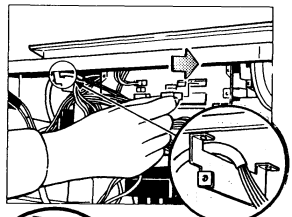
33. Secure the sorter harness into the three wire clamps which are mounted on the left underside of the optics unit.



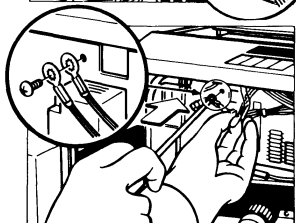
34. (FT2070)  
Run the sorter harness above the total counter bracket, and couple the connector to CN114 on the main board.



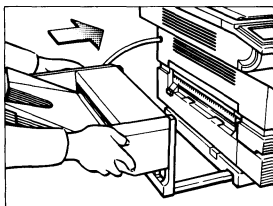
- (FT2260)  
Run the sorter harness above the operation panel bracket, and couple the connector to CN114 on the main board.



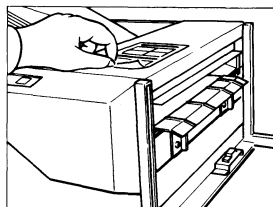
35. Secure the ground wire to the front machine plate (1 screw).
36. Reassemble the copier.



37. Slide the sorter to its normal position.



38. (FT2070)  
Replace the decal on the sorter with the accessory decal.

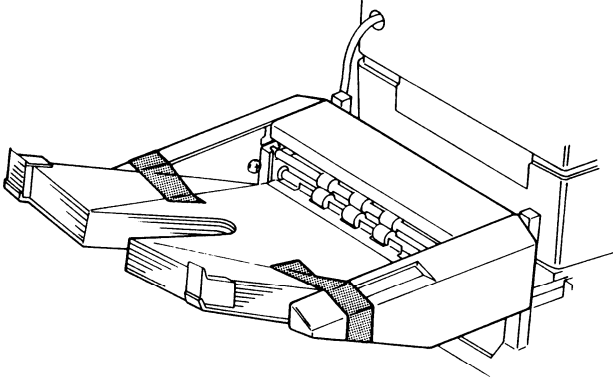


- 39 Check the operation in all modes. Fill out the New Equipment Condition Report.

This completes the sorter installation on the FT2070/2260.

## 13. PREPARATION FOR TRANSPORTATION

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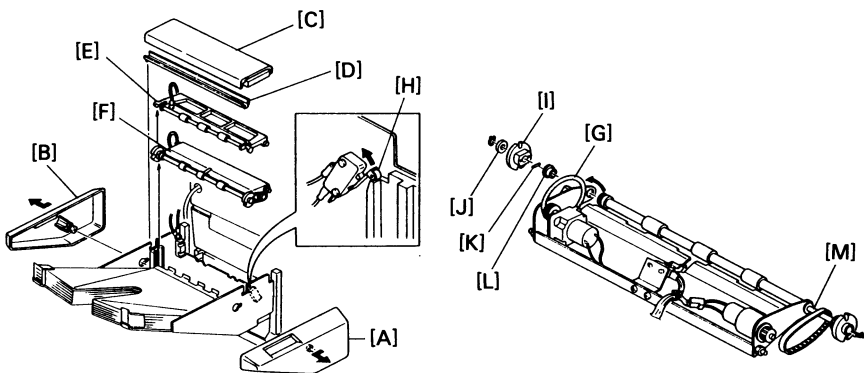
**CAUTION:** When removing and transporting the sorter, be careful not to carry it in a vertical position as the bins will become dislocated.

**CAUTION:** 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.)



## 14. ROLLER DRIVE BELT REPLACEMENT



1. Remove the front cover [A] (1 screw, 1 connector) and rear cover [B] (1 screw).
2. Lift off the top cover [C].
3. Remove the top stay [D].

**NOTE:** Be sure that the short edge of the top stay is facing the exit side of the sorter when reinstalling it.

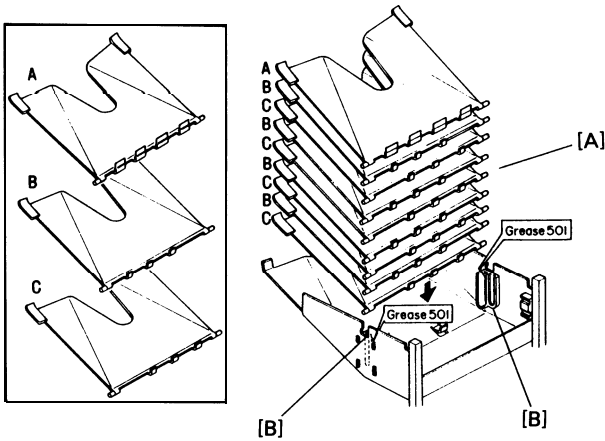
4. Lift the upper paper guide [E] up and out of position.
5. Lift the lower paper guide [F] out of position and turn it over to remove the roller drive belt [G].

**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.

## 15. BIN GUIDE LUBRICATION

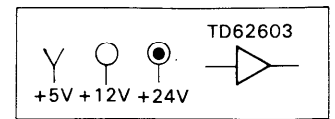
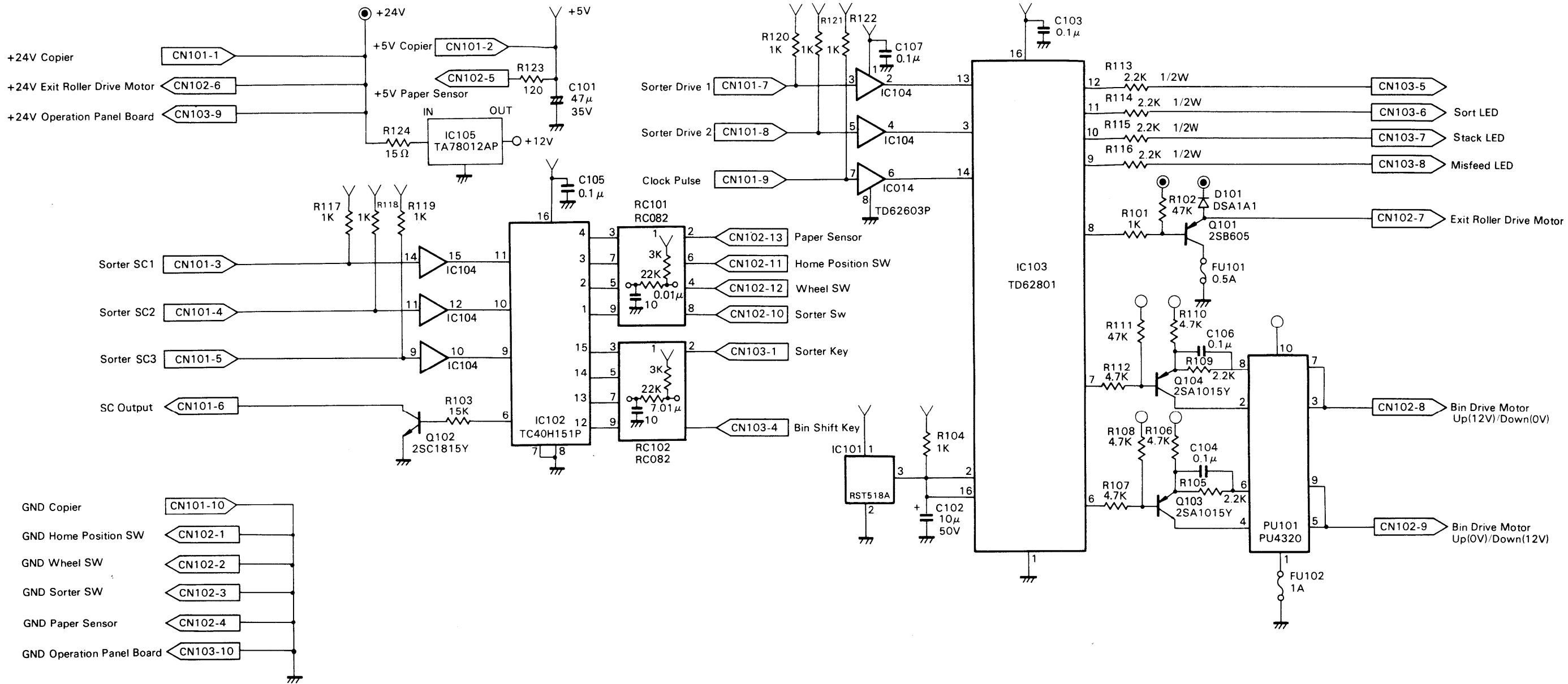
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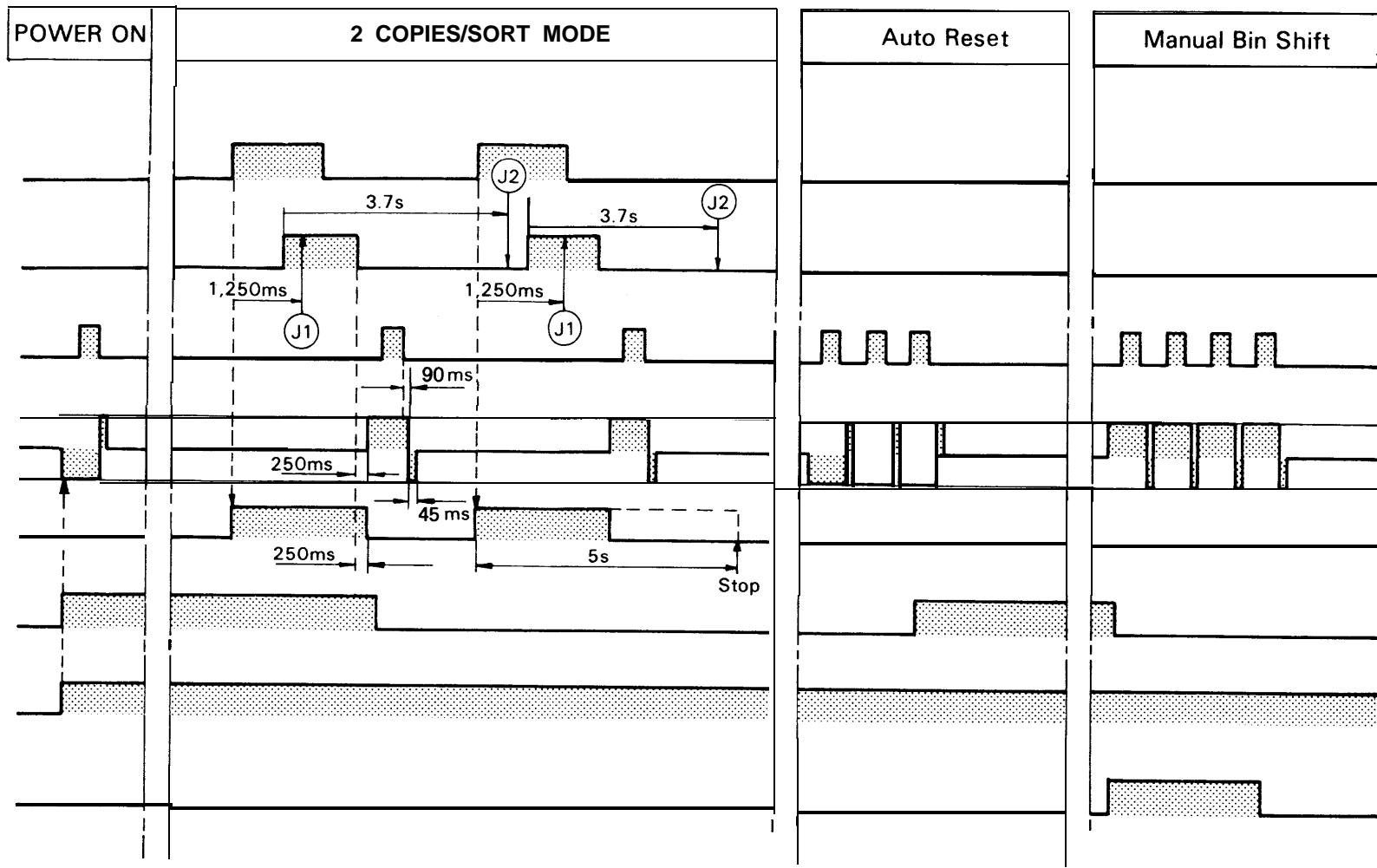


1. Remove the lower paper guide. (See Roller Drive Belt Replacement section.)
2. Remove all bins [A] from the bin guides [B].
3. Apply Grease 501 to the grooves of the bin guides.

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

16. SORTER MAIN BOARD SCHEMATIC

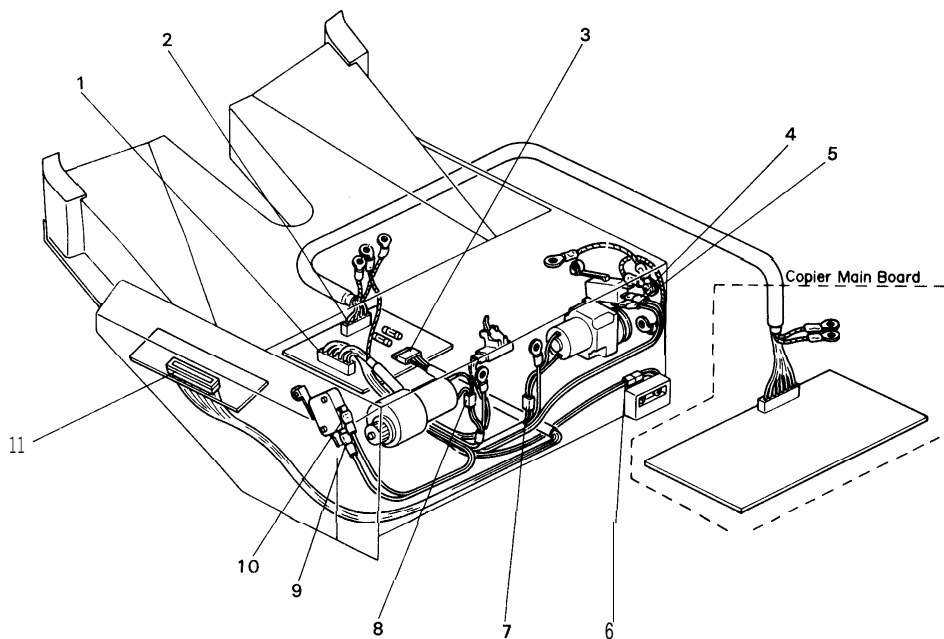
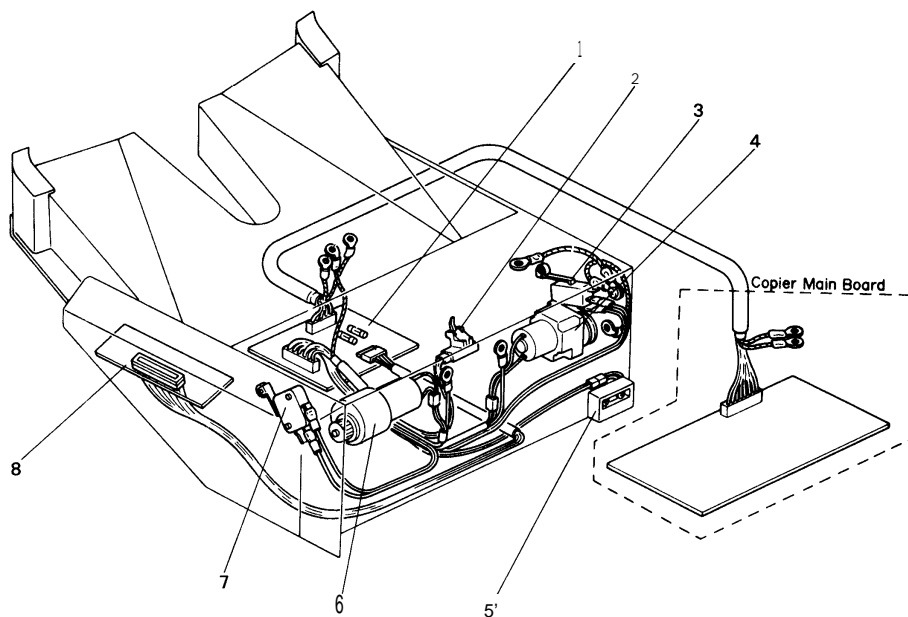




**JAM CHECK**  
 J1 : Paper Sensor ON Check  
 J2 : Paper Sensor OFF Check

# ELECTRICAL COMPONENTS AND CONNECTOR LAYOUT-SORTER

1 August 1988



Index No.	Description	Symbol	P to P
1.	Sorter Main Board	PCB1	A5-B7
2.	Paper Sensor	S1	A5
3.	Wheel Switch	SW 1	A6
4.	Roller Drive Motor	M1	A5
5.	Sorter Switch	SW2	A6
6.	Bin Drive Motor	M2	A5
7.	Home Position Switch	SW3	A6
8.	Operation Panel Board	PCB2	A6-A7

Index No	CN No.	Description	Symbol	Type	P to P
1.	CN102	Sorter Main Board	PCB1	13P/W	A5-A6
2.	CN101	Sorter Main Board	PCB1	1 OP/W	B5-B6
3.	CN103	Sorter Main Board	PCB1	10P/W	A6-A7
4.	T54	Wheel Switch	SW 1	1 P/R	A6
5.	T53	Wheel Switch	SW 1	1 P/R	A6
6.	CN54	Sorter Switch	SW2	2P/W	A6
7.	CN53	Roller Drive Motor	M1	2P/W	A5
8.	CN51	Bin Drive Motor	M2	2P/W	A5
9.	T51	Home Position Switch	SW3	1 P/R	A6
10.	T52	Home Position Switch	SW3	1 P/R	A6
11.	CN52	Operation Panel Board	PCB2	8P/W	A6-A7