


**20 BIN SORTER  
(MIDI)  
(Machine Code: A411)**

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## 1. SPECIFICATIONS

Paper Size for Bins:	Maximum A3, 11" x 17" Minimum A5, 5 $\frac{1}{2}$ " x 8 $\frac{1}{2}$ "
Paper Weight:	60 to 90 g/m <sup>2</sup> (16 to 24 lb)
Number of Bins:	20 bins + proof tray
Bin Capacity:	Sort Mode: 50 sheets/A4 (8 $\frac{1}{2}$ " x 11") 35 sheets/A3 (11" x 17") Stack Mode: 35 sheets/A4 (8 $\frac{1}{2}$ " x 11") 20 sheets/A3 (11" x 17")
Proof Tray Capacity:	150 sheets (all sizes)
Power Source:	100 volts, 50/60 Hz, 0.8 A  (from copier)
Power Consumption:	80 W
Dimensions: (W x D x H)	450 x 508 x 503 (millimeters) 17.7 x 20 x 19.8 (inches)
Weight:	21 kg (46.3 lb)

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## **2. BASIC OPERATION**

### **2.1 CLEAR MODE**

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

Sorter operation starts when a sheet of copy paper actuates the copier exit sensor. Simultaneously, the roller drive motor and relay drive motor energize. The motors de-energize when the paper exits the copier and the paper sensor is deactuated. The paper sensor signal goes through the sorter main board to the copier. The wheel drive motor does not turn on when in the clear mode.

### **2.2 SORT MODE**

After the sort mode is selected by pressing the Sorter key, the wheel drive motor turns on to move the proof tray up. When the first sheet of paper activates the paper exit sensor, the roller drive motor turns on. Shortly after the paper sensor turns off, the wheel drive motor turns and advances the bins one step. When the wheel sensor activates, the wheel drive motor turns off.

### **2.3 STACK MODE**

As in the sort mode, the roller drive motor turns on when the first sheet of paper actuates the copier exit sensor. All copies of the copy run are then fed to the first bin. When the final copy passes the paper sensor, the wheel drive motor turns on and advances the bins one step.

There are no limitations 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 the bins have been used, the wheel drive motor turns on and lowers all the bins (including the proof tray). Simultaneously, the Max indicator blinks.

## 2.4 EXAMPLE OF SORT MODE OPERATION

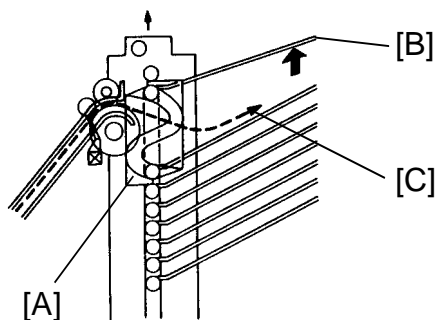
"3" copies entered and the Start key pressed 3 times.

In the illustrations the following call-outs are used:

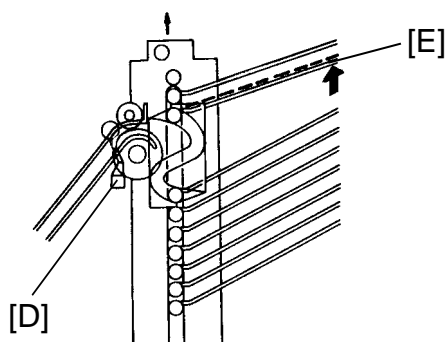
- A: Helical Wheel
- B: Proof Tray
- C: Paper
- D: Paper Sensor
- E: Bin

### - Start Key ON -

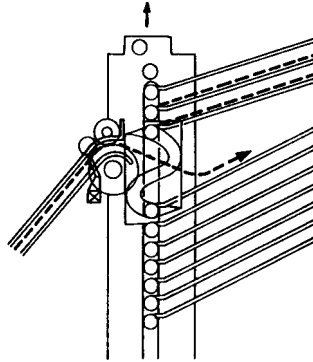
- 1) After the sort key is pressed, the wheel drive motor turns on. The helical wheel [A] moves the proof tray [B] up. The first copy paper [C] is directed to the first bin.



- 2) Shortly after the paper sensor [D] turns off, the wheel drive motor turns and advances the bin one step.

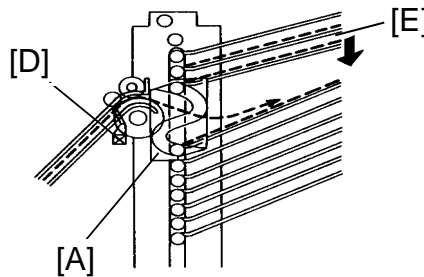


- 3) The third copy feeds to the third bin. The bin drive motor does not turn on after the paper sensor turns off. (The sorter will stay at this position until auto-reset or until copying resumes.)

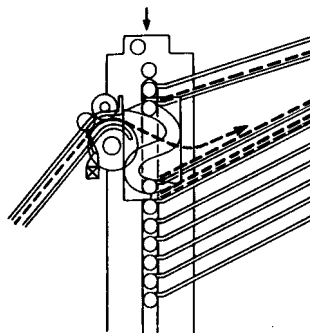


**- Start Key ON -**

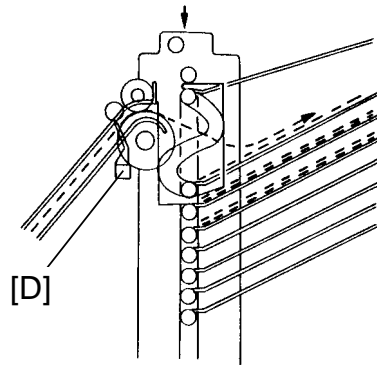
- 4) The first copy goes to the third bin. After the paper sensor [D] turns off, the bin drive motor turns on and the helical wheel [A] moves the second bin [E] down.



- 5) The same as #4.

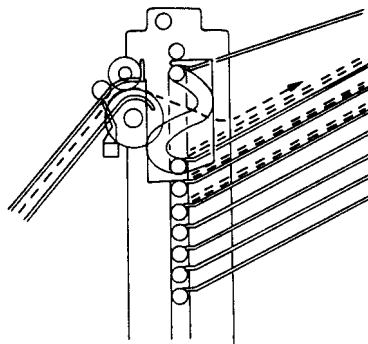


- 6) The third copy goes to the first bin. The bin motor does not turn on after the paper sensor [D] turns off.

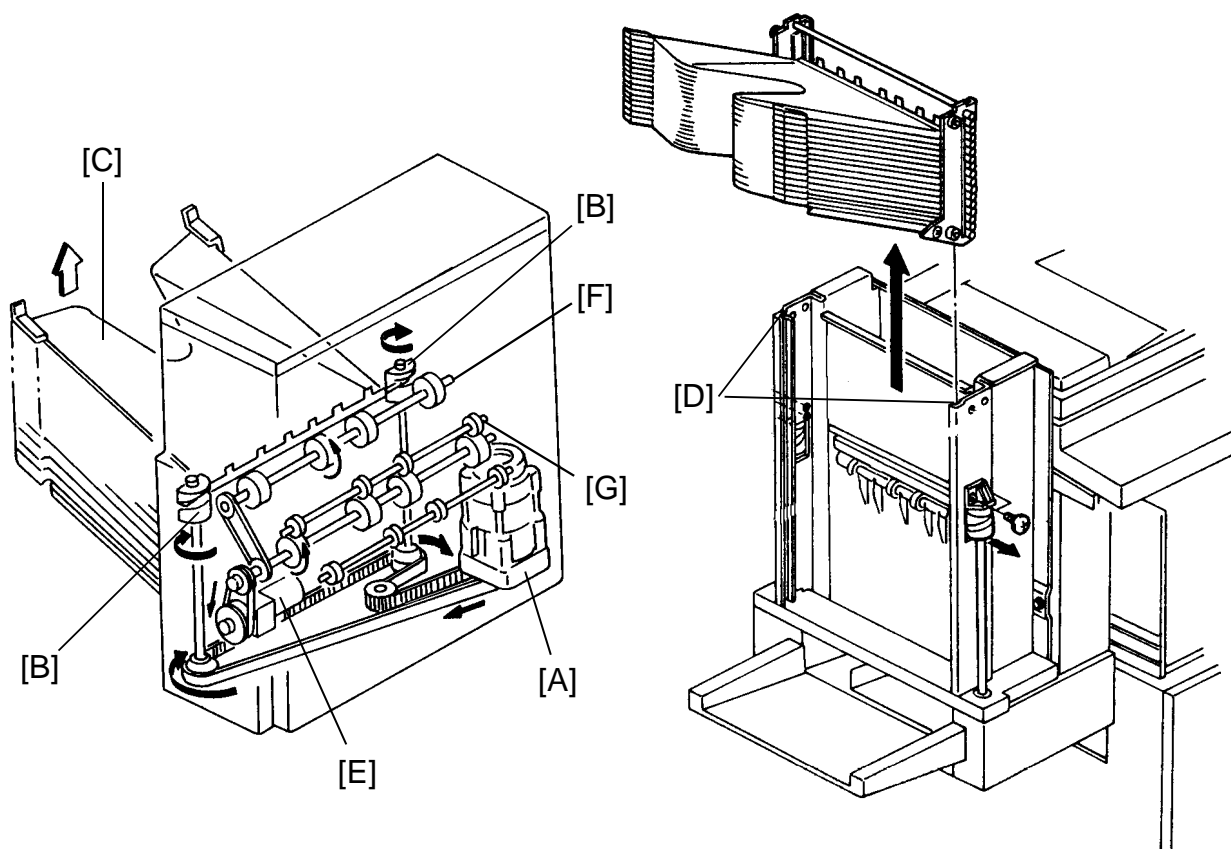


**- Start Key ON -**

- 7) The first sequence (1, 2, and 3) starts again.



### 3. BIN DRIVE MECHANISM



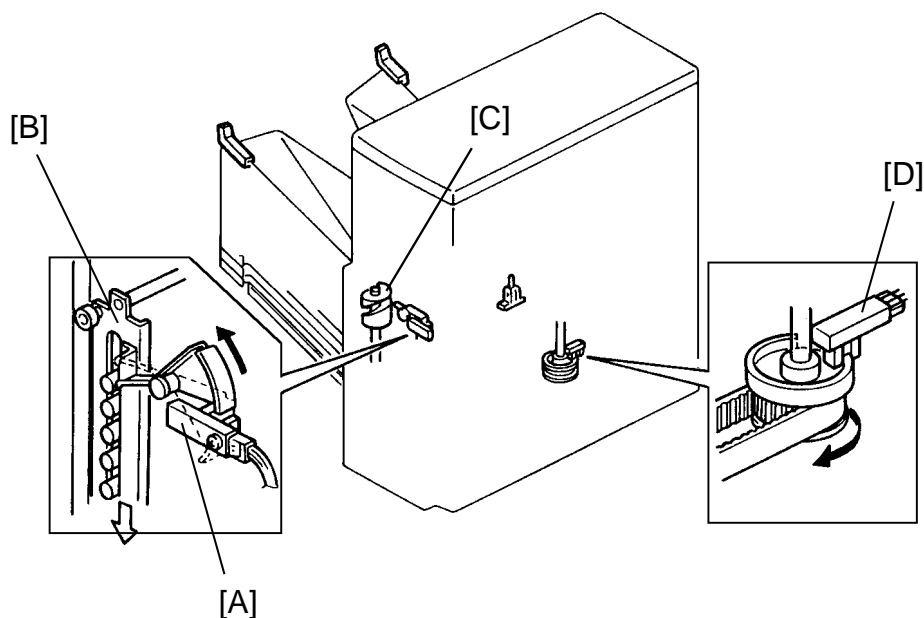
The bin drive mechanism moves the bins up and down to receive copies under the direction of the copier CPU. The main components in this mechanism are the bin drive motor [A], the helical wheels [B], the bin sensor, and the bins [C] themselves. Pins on either side of each bin fit into the slots of the bin holder [D]. The pins slide up and down in these slots.

A timing belt turns both helical wheels. The rear pulley has a slot which detects when the helical wheel has rotated 360 degrees. The helical wheels lift and lower the bins. They also lift the bin holder itself by lifting up the bottom bin.

The roller drive motor [E] drives the exit rollers [F] and the transport rollers [G]. When the copy activates the copier's exit sensor, the CPU sends a signal to the sorter to turn on the roller drive motor. It turns off shortly after the sorter's paper exit sensor is deactivated.

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## 4. BIN HOME POSITION

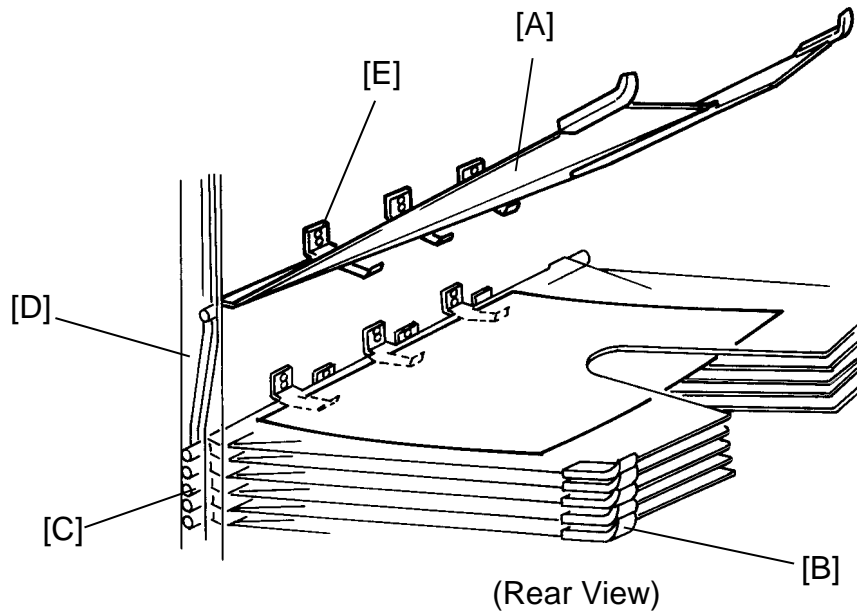


The bin home position sensor [A] is located on the sorter frame towards the front. It is deactuated by the bin holder [B] when all bins are lowered. The CPU detects the home position by monitoring this sensor when sort mode or stack mode is released. Every time the helical wheel [C] turns 360 degrees, the actuator of the bin sensor [D] also turns 360 degrees. This provides the CPU with off timing for the bin drive motor.



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## 5. BINS



The proof tray [A] and the twenty bins are all basically the same. Formed out of thin flexible steel plate, they have spacers [B] that hold them apart, and pins [C] on both sides, which are inserted in guide slots in the bin holder [D]. (The bin holder is mounted in the sorter frame.)

On the right edge, the bins have stoppers [E] which prevent copies from sliding back into the sorter after they have been fed out. The pattern of these stoppers is different for even and odd numbered bins.

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## **6. INSTALLATION (FT4227/5233)**

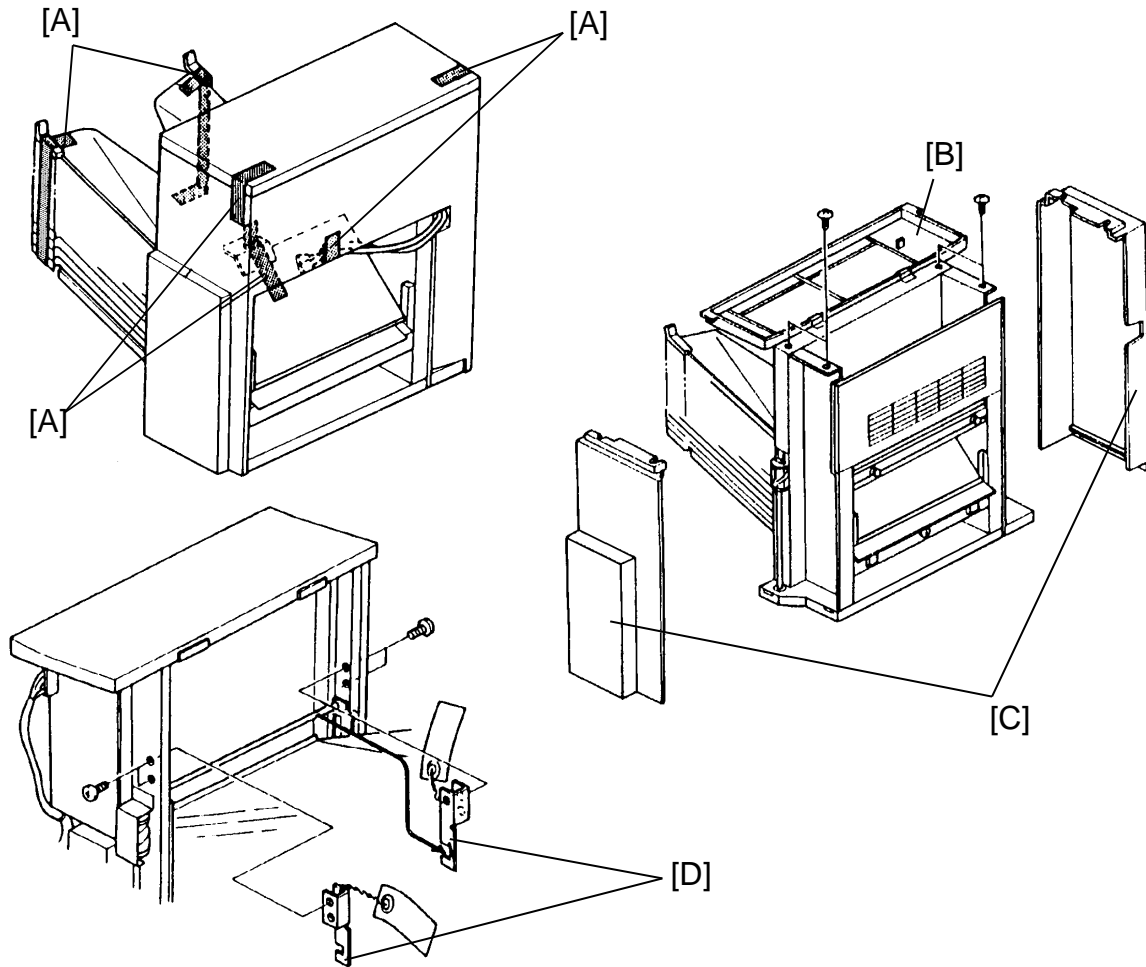
### **6.1 ACCESSORY CHECK**

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

1. Relay Guide .....	1
2. Knob Screw .....	1
3. Spacer .....	1
4. Stud .....	2
5. Grounding Screw .....	1
6. New Equipment Condition Report (-17, -27 machines only) .....	1
7. Toothed Washer (-25, -26, -27 machines only) .....	1
8. Multiple Language Decal (-25, -26, -27 machines only) .....	1
9. Envelope - NECR (-17 machine only) .....	1
10. Installation Procedure .....	1



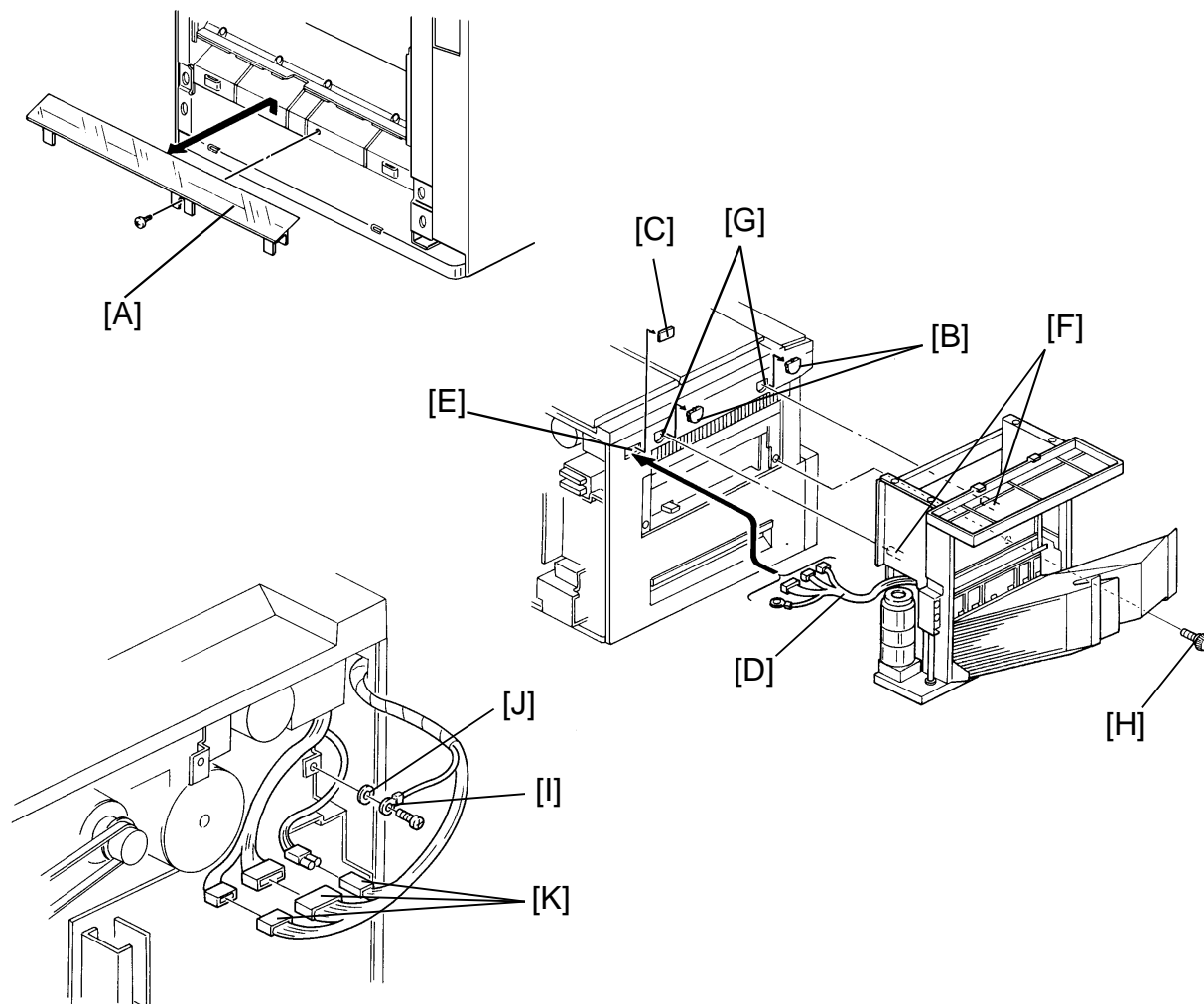
## 6.2 INSTALLATION PROCEDURE



**CAUTION: Unplug the copier power cord before starting the following procedure.**

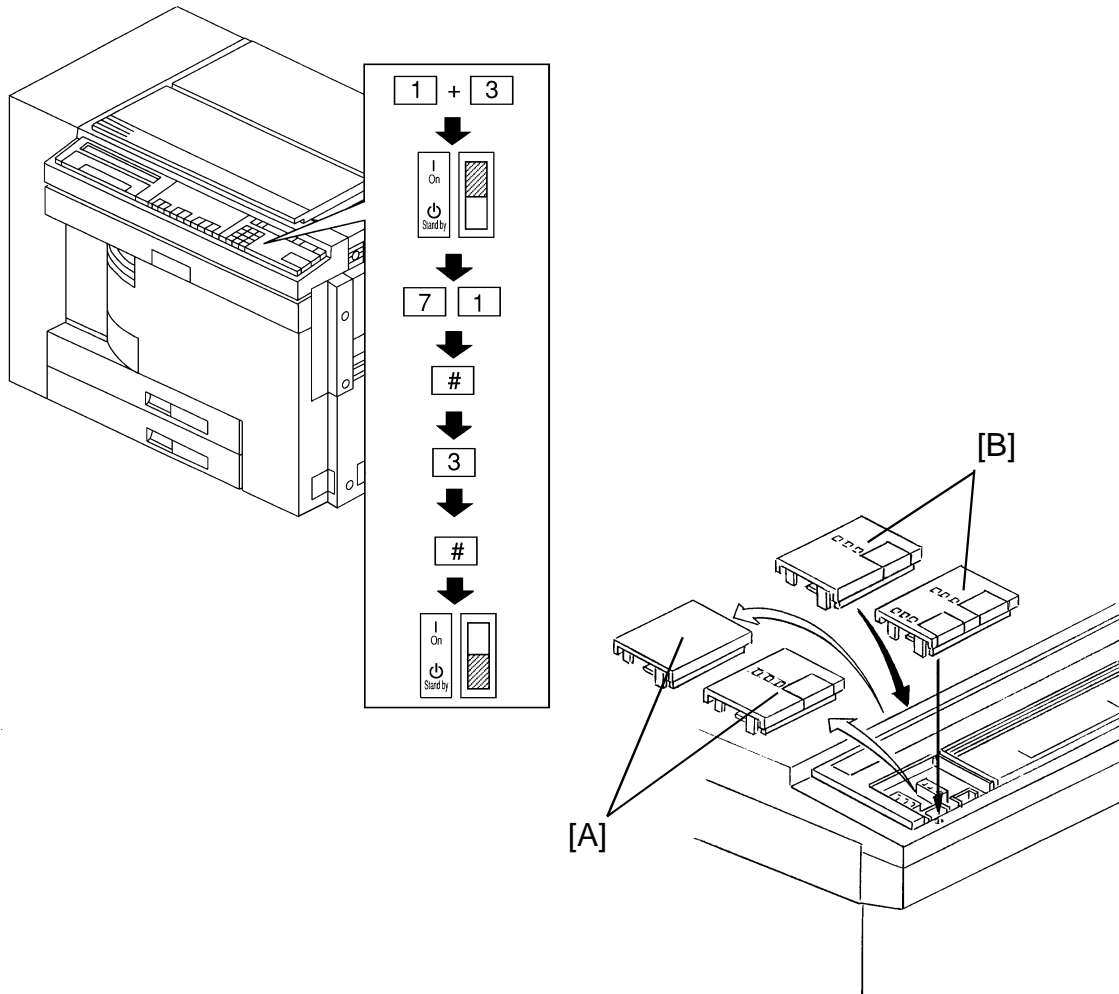
- NOTE:**
- Keep the shipping retainers after installing the machine. They will be reused if in the future the machine is transported to an another location.
  - Proper reinstallation of the shipping retainers is required in order to avoid any transport damage.
  - The sorter adapter (A328) should be installed before the sorter is installed

1. Remove the strips of tape [A].
2. Open the sorter top cover [B], and remove the side covers [C] (2 screws each). Remove the shipping retainers [D] (2 screws each).



3. Remove the relay guide [A] (1 screw).
4. Remove the cover plates [B] with cutting pliers and the plastic cap [C].
5. Mount the sorter on the copier. (Pass the harness [D] through the access hole [E] and insert the two mounting studs [F] into the docking holes [G]).
6. Fix the sorter to the copier with the knob screw [H] (front side only).
7. Secure the sorter protective earth wire [I] (1 screw). (A toothed washer [J] must also be installed with the European version.)
8. Connect the three sorter connectors [K] as follows:
  - 2P red to 2P red free
  - 4P white to 4P white free
  - 11P white to 11P white free

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9. Reinstall all the covers.
10. Plug in the copier power cord.
11. While pressing both 1 and 3 on the operation panel number keys, turn on the main switch in order to access the SP mode.  
**NOTE:** Release the number keys after confirming that the call service indicator and the copy counter number 0 are blinking.
12. Enter 71 using the number keys and then press the enter key.
13. Enter 3 using the number keys and then press the enter key.
14. Turn off the main switch.
15. Remove the left plastic cover [A] on the operation panel and install the sorter key top and cover [B] instead.  
**NOTE:** The sorter key top and cover are provided as an accessory for the copier.
16. Turn on the main switch and check the sorter's operation.

## **6. INSTALLATION (FT6750)**

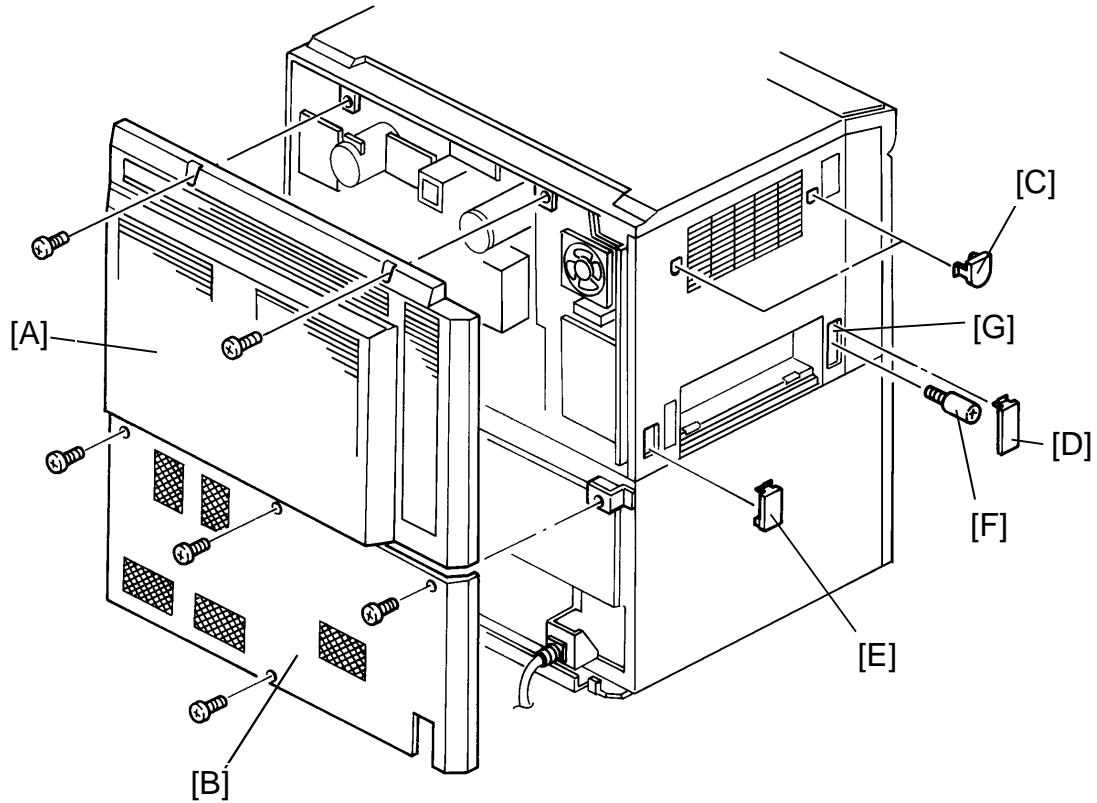
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### **6.1 ACCESSORY CHECK**

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

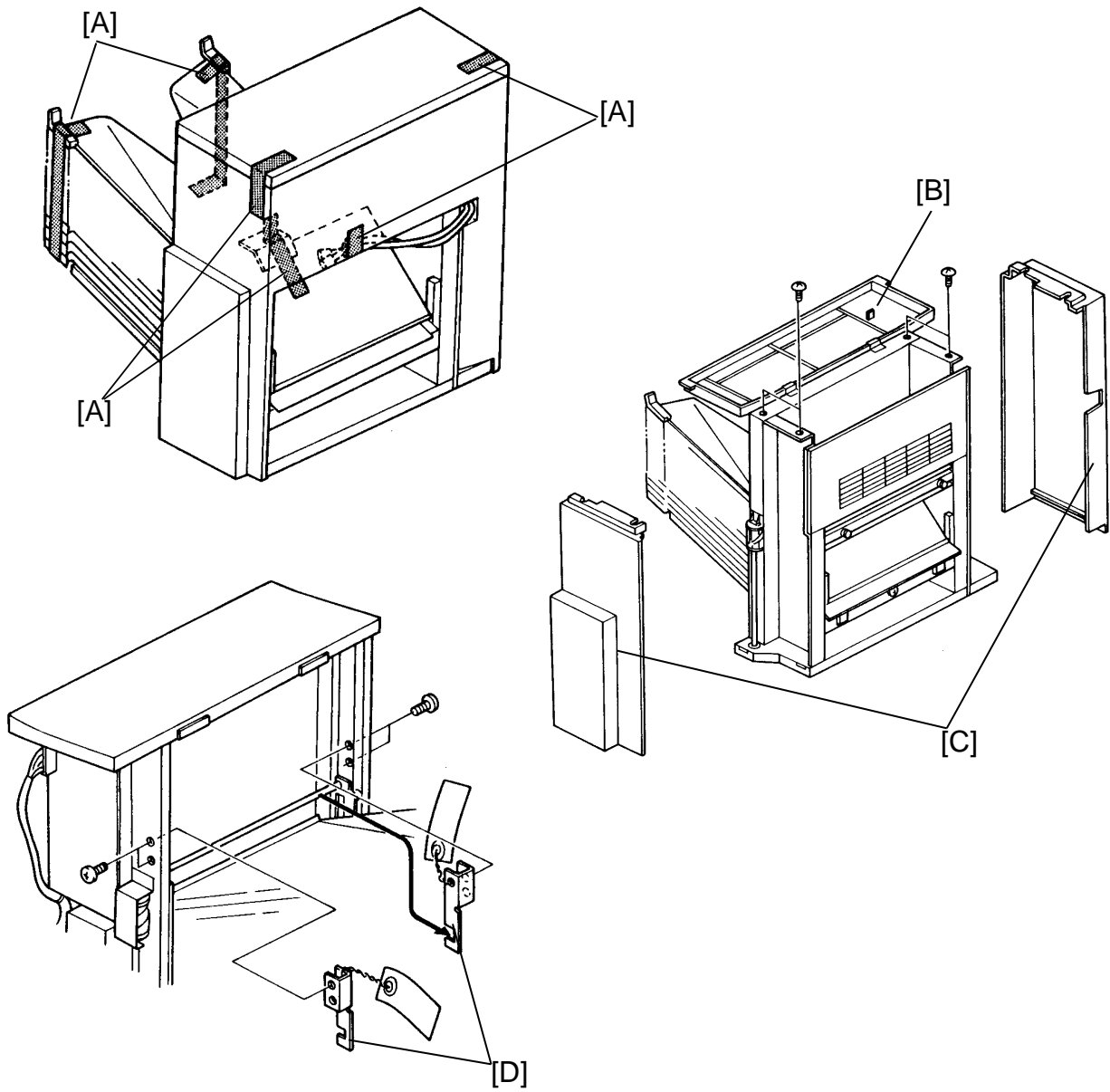
- |  |   |
|--|---|
| 1. Relay Guide                           | 1 |
| 2. Knob Screw                            | 1 |
| 3. Spacer                                | 1 |
| 4. Stud                                  | 2 |
| 5. Grounding Screw                       | 1 |
| 6. NECR                                  | 1 |
| 7. Toothed Washer (Europe only)          | 1 |
| 8. Multiple Language Decal (Europe only) | 1 |
| 9. Envelope - NECR (U.S.A. only)         | 1 |

## 6.2 INSTALLATION PROCEDURE



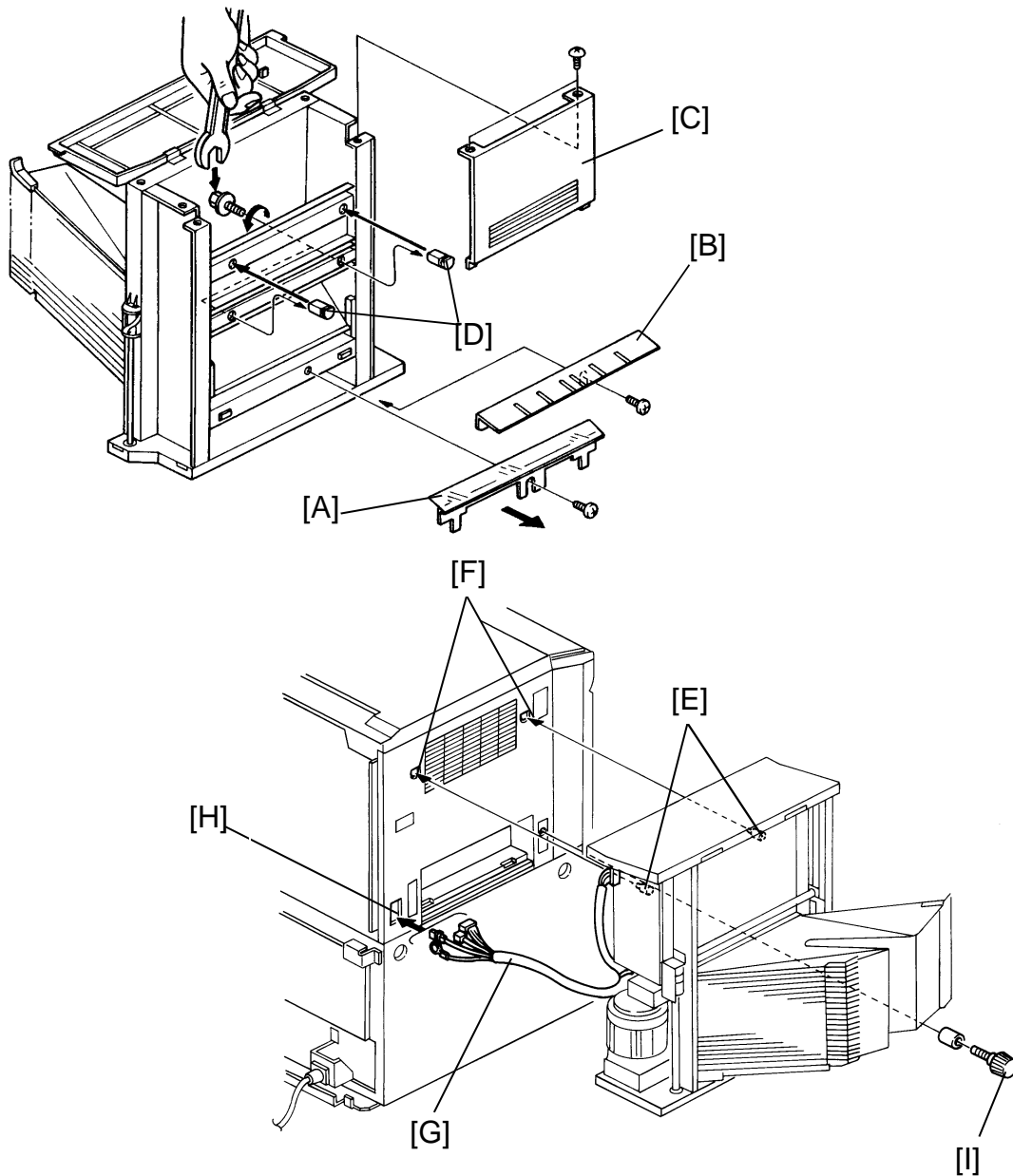
**Warning: Before installing the sorter, make sure the copier is unplugged.**

1. Remove the copier's rear covers [A] and [B] (2 screws, 4 screws).
2. Remove the 4 plastic caps [C] x 2, [D], and [E] from the left cover.
3. Install the stud [F] in the lower hole [G].

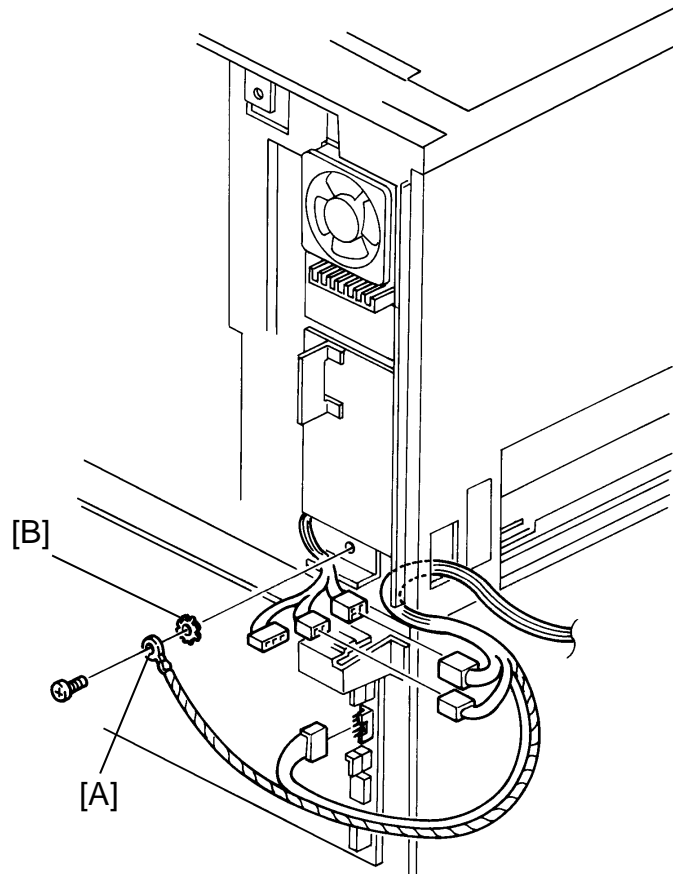


4. Remove the strips of tape [A].
5. Open the sorter top cover [B], and remove the side covers [C] (2 screws each). Remove the shipping retainers [D] (2 screws each).





6. Replace the relay guide [A] (1 screw) with the relay guide [B] from the accessories.
7. Remove the sorter cover [C] and discard. Use a spanner to move the studs [D] to the upper position.
8. Mount the sorter on the copier. (Insert the two mounting studs [E] into the docking holes [F], and pass the harness [G] through the access hole [H].)
9. Fix the sorter to the copier with and the knob screw [I] (front side only).



10. Secure the sorter ground wire [A] (1 screw). (A toothed washer [B] must also be installed with the European version.)
11. Connect the three connectors as follows:
  - Red 2P to red 2P free
  - White 4P to White 4P free
  - White 12P to CN108 on the main PCB
12. Install the sorter covers and the copier rear cover.
13. Set SP71 then select #1 as S20.
14. Check the sorter's operation.

## **6. INSTALLATION (FT5540/5550/5570)**

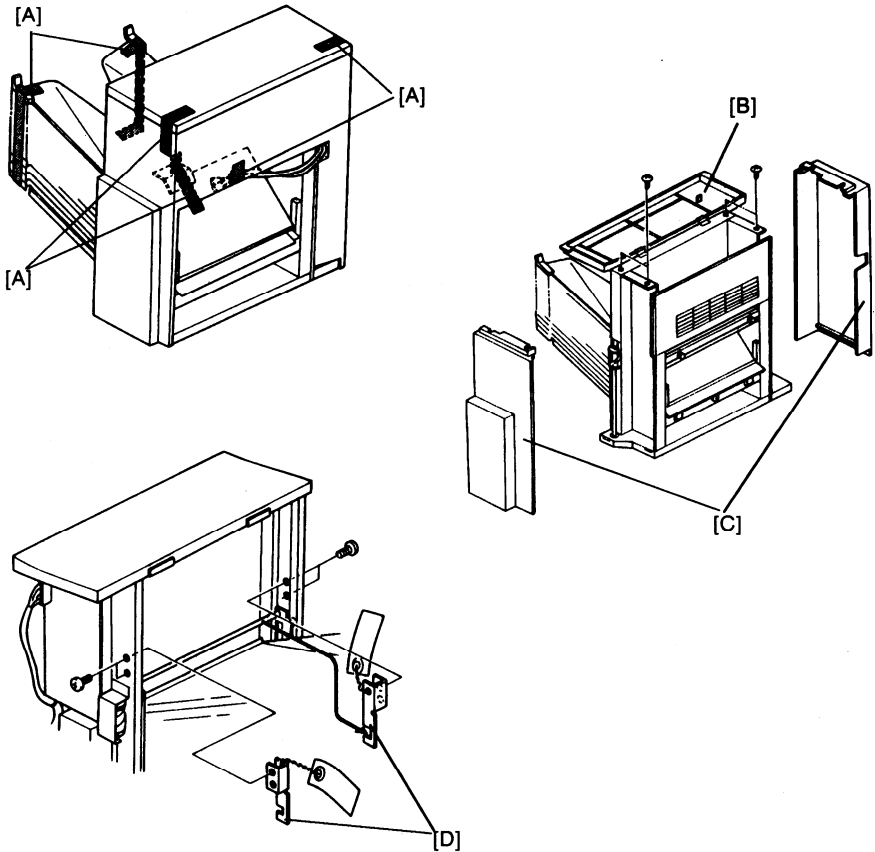
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### **6.1 Accessory Check**

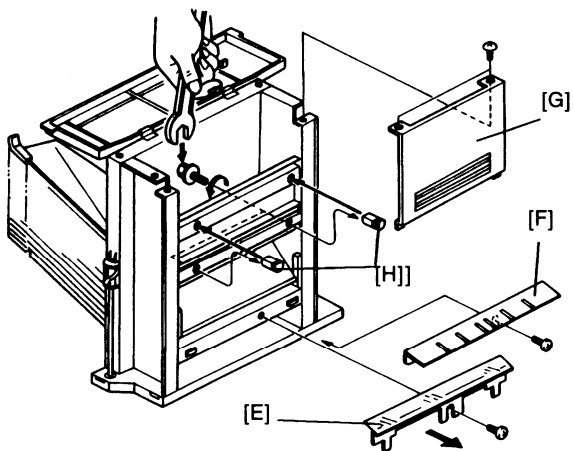
Check the quantity and condition of the accessories in the box according to the following list:

1. Relay Guide	1
2. Knob Screw	1
3. Spacer	1
4. Stud	2
5. Grounding Screw	1
6. Toothed Washer (220/240V only)	1
7. Multiple Language Decal (220/240V only)	1
8. NECR	1
9. Envelope - NECR (115V only)	1

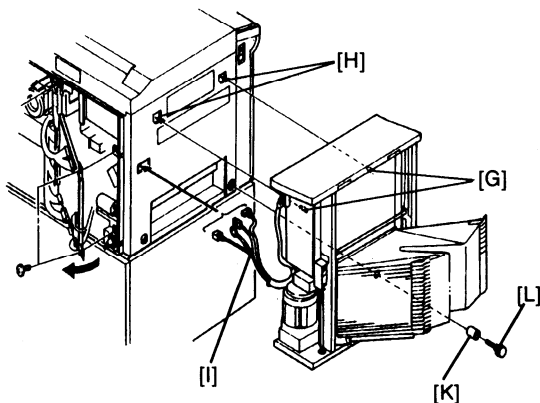
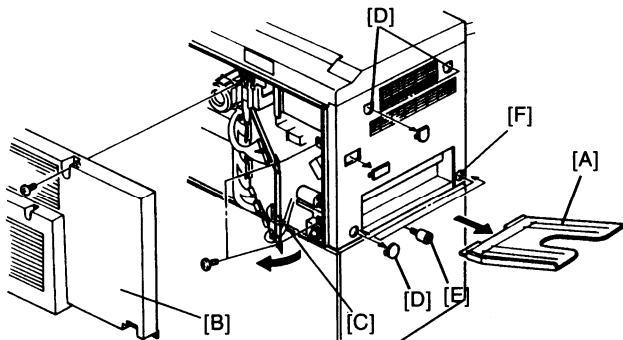
## 6.2 Installation Procedure



1. Remove the strips of tape [A].
2. Open the sorter top cover [B], and remove the side covers [C] (2 screws each). Remove the shipping retainers [D] (2 screws each).



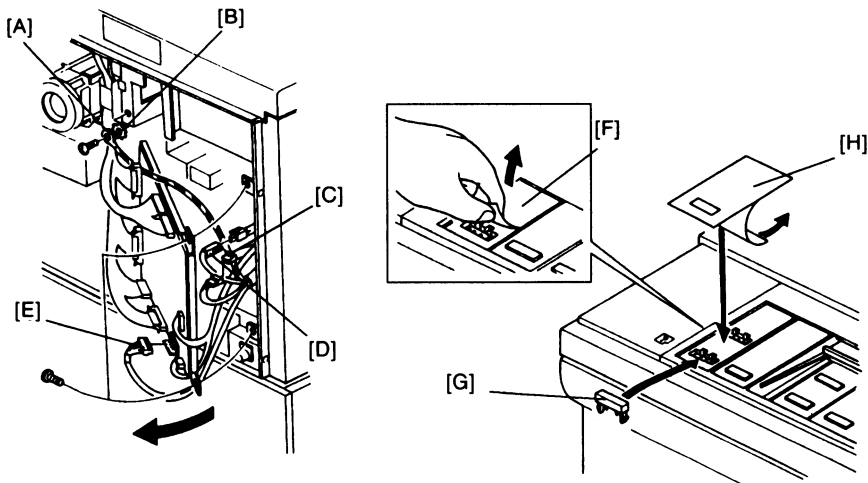
3. Exchange the relay guide [E] (1 screw) with the relay guide [F] from the accessories.
4. Remove the sorter cover [G] and discard. Use a spanner to move the studs [H] to the upper position.
5. Turn off the main switch and unplug the copier power supply cord.



6. Remove the receiving tray [A] and the rear cover [B] of the copier (2 screws). Swing out the main board [C] (2 screws).

**CAUTION: Be careful not to damage the fiber optics cable.**

7. Remove the five plastic caps [D] from the left cover.
8. Install the two studs [E] in the lower holes [F].
9. Mount the sorter on the copier. (Insert the two mounting studs [G] into the docking holes [H], and pass the harness [I] through the access hole [J].)
10. Fix the sorter to the copier with the spacer [K] and the knob screw [L] (front side only).



11. Secure the sorter ground wire [A] (1 screw). (A toothed washer [B] must also be installed with the European version).
12. Connect the three connectors as follows:
  - Red 2P [C] to Red 2P free
  - White 4P [D] to white 4P free
  - White 12P [E] to CN108 on the main PCB
13. Reinstall the main PCB (2 screws).
14. Install the sorter covers and copier rear cover.
15. Peel off the cover [F] from the Sort/Stack key panel (left side of the operation panel).
16. Install the Sort/Stack key top [G] (copier accessory), and affix the Sort/Stack key cover [H] (copier accessory) as shown.
17. Set SP71-1 to enable the sorter. (Refer to the copier installation procedure.)
18. Check the sorter's operation and fill out the New Equipment Condition Report.

# INSTALLATION (FT5580/5590/6620)

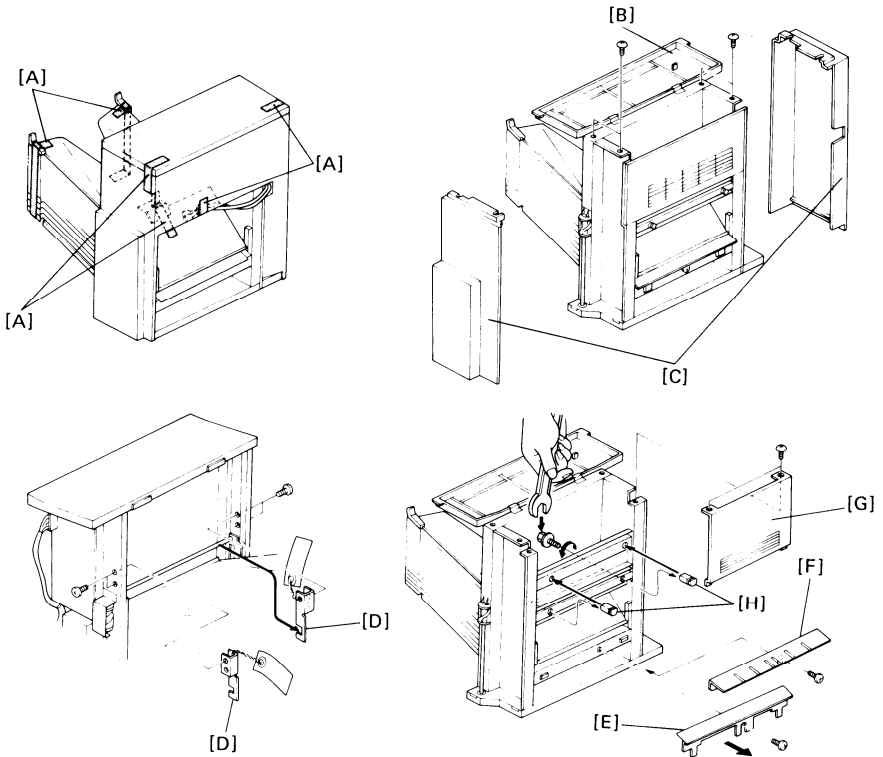
## 1. Accessory Check

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

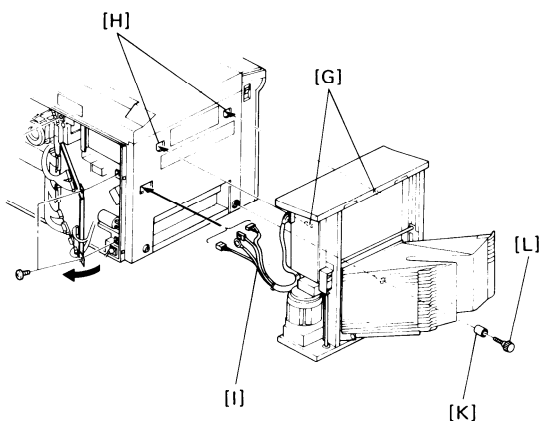
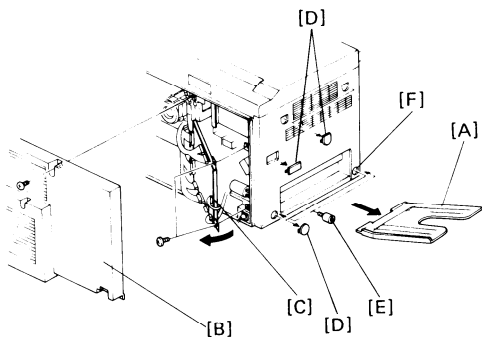
1. Relay Guide .....	1
2. Knob Screw .....	1
3. Spacer .....	1
4. Stud .....	2
5. Grounding Screw .....	1
6. Toothed Washer (220/240V only) .....	1
7. Multiple Language Decal (220/240V only) .....	1
8. NECR .....	1
9. Envelope - NECR (115V only) .....	1



## 2. Installation Procedure



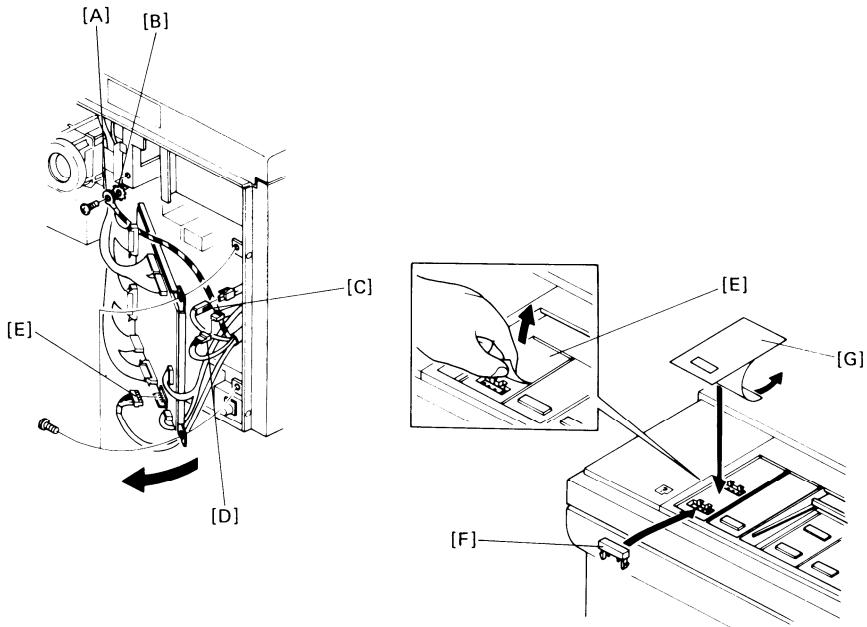
1. Remove the strips of tape [A].
2. Open the sorter top cover [B], and remove the side covers [C] (2 screws each). Remove the shipping retainers [D] (2 screws each).
3. Exchange the relay guide [E] (1 screw) with the relay guide [F] from the accessories.
4. Remove the sorter cover [G] and discard. Change the studs [H] to the upper position using a spanner.
5. Turn off the main switch and unplug the power supply cord of the copier.



6. Remove the receiving tray [A] and the rear cover [B] of the copier (2 screws). Swing out the main board [C] (2 screws).

**CAUTION:** Be careful not to damage the fiber optics cable.

7. Remove the five plastic caps [D] from the left cover.
8. Install the two studs [E] in the lower holes [F].
9. Mount the sorter on the copier. (Insert the two mounting studs [G] into the docking holes [H], and pass the harness [I] through the access hole [J].)
10. Fix the sorter to the copier with the spacer [K] and the knob screw [L] (front side only).



11. Secure the sorter ground wire [A] (1 screw) (toothed washer [B] is also to be installed for European version).
12. Connect the three connectors as follows:  
 Red 2P [C] to Red 2P free  
 White 4P [D] to white 4P free  
 White 12P [E] to CN108 on the main PCB
13. Reinstall the main PCB (2 screws).
14. Install the sorter covers and copier rear cover.
15. Peel off the panel cover [F] at the left end of the operation panel.
16. Set the Sort/Stack key top [G] (copier accessory) and stick down the Sort/Stack key cover [I] (copier accessory).
17. Set SP71-1 to enable the sorter. (Refer to the copier installation procedure.)
18. Check the sorter's operation and fill out the New Equipment Condition Report.

## MIDI SORTER INSTALLATION (FT5560)

### ACCESSORY CHECK

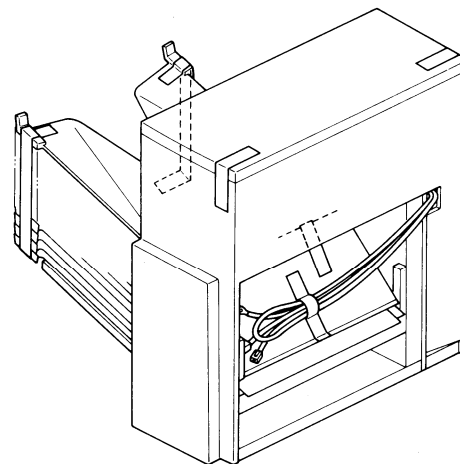
Check the quantity and condition of the accessories in the box according to the following list:

- |  |   |
|--|---|
| 1. Knob Screw                          | 1 |
| 2. Grounding Screw                     | 1 |
| 3. Washer - M4 (220/240V only)         | 1 |
| 4. New Equipment Condition Report      | 1 |
| 5. NECR Envelope (115V only)           | 1 |
| 6. Multilanguage Decal (220/240V only) | 1 |

In addition to the above components, the box also contains two spacers, a collar, and a relay guide plate. These components are not used when installing the midi sorter on this copier.

### REMOVAL OF SHIPPING RETAINERS

1. Remove the strips of tape shown in the figure.



## **SORTER ADAPTER ACCESSORY CHECK**

The following parts are required to install the sorter:

- ▶ Sorter Adapter Type D
- ▶ Interface PCB Type B

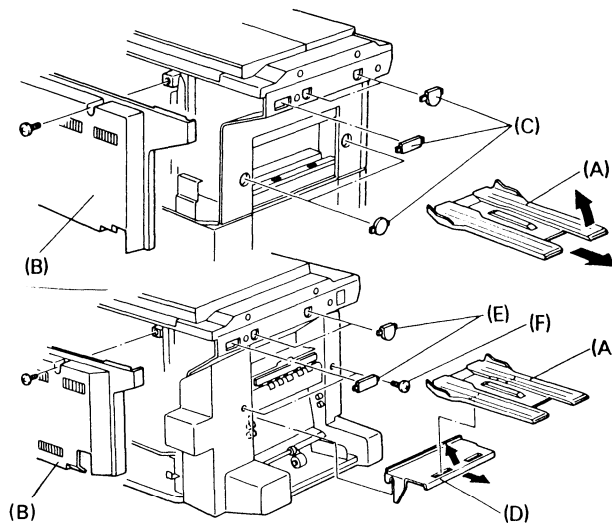
**NOTE: Sorter adapter type D is required only when the system does not include the duplex unit.**

Check the accessories in the Sorter Adapter Type D box according to the following list:

- |                  |   |
|------------------|---|
| 1. Mounting Stud | 2 |
| 2. M4 x 8 Screw  | 2 |

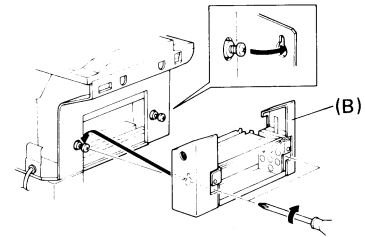
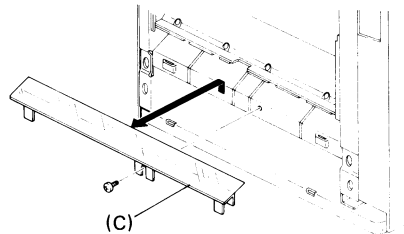
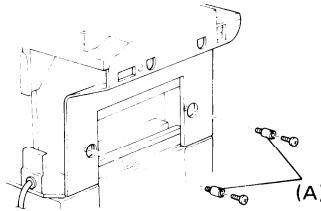
## INSTALLATION PROCEDURE

1. Turn off the main switch and unplug the power supply cord of the copier.
2. Remove the receiving tray [A] and rear cover [B] of the copier (3 screws).
3. a. Remove the five plastic caps [C] from the left cover.  
b. If the duplex unit is installed, remove the tray supporter [D], three plastic caps [E], and two truss screws [F] from the duplex unit.

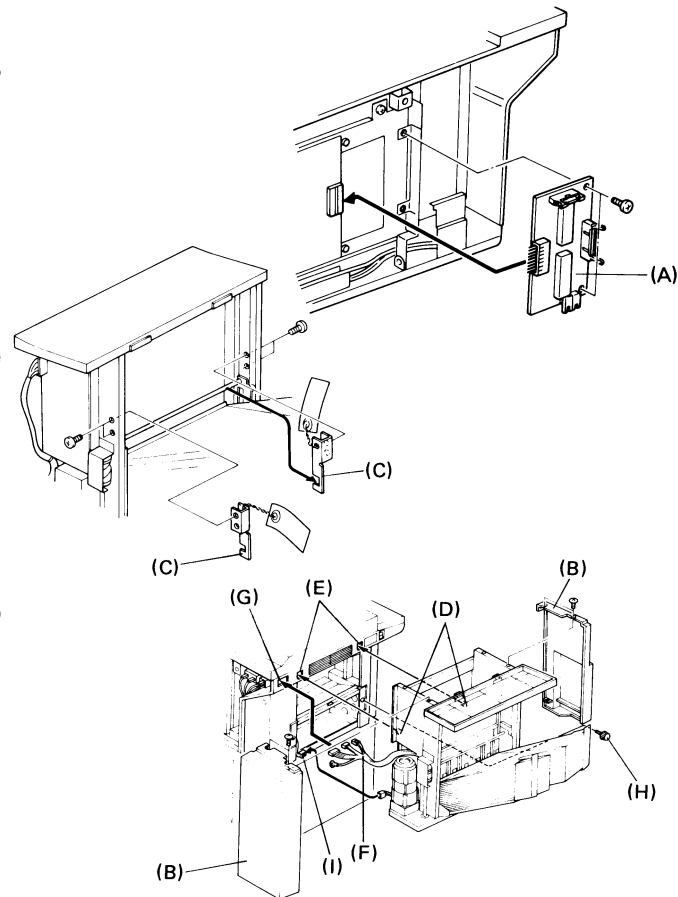


4. Install the sorter adapter as follows:  
(Duplex unit not installed)

- a. Screw in the lower mounting studs [A].
- b. Screw the M4 x 8 screws halfway into the mounting studs.
- c. Hook the sorter adapter [B] on the screws, and tighten the screws to fix the adapter.
- d. Remove the relay guide [C] from the sorter.

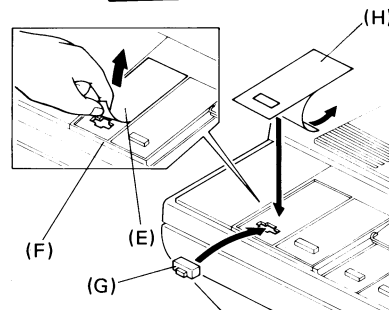
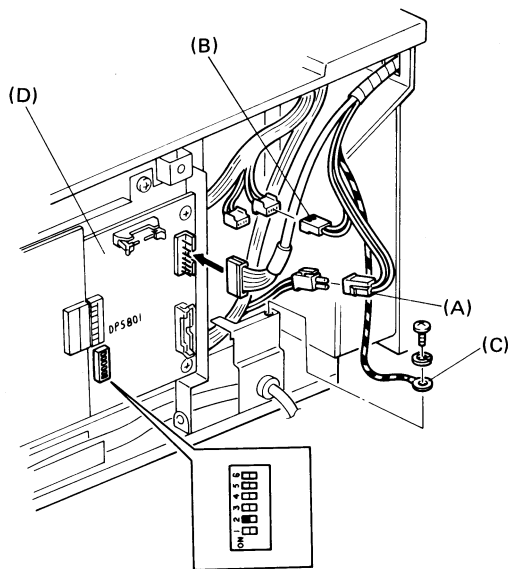


5. Install the interface board [A] on the PCB plate (2 screws, 1 connector).
6. Remove the sorter covers [B] (2 screws each).
7. Remove the shipping retainers [C] (2 screws each).
8. Mount the sorter on the copier. Insert the two mounting studs [D] into the docking holes [E], and pass the harness [F] through the access hole [G].
9. Fix the sorter unit to the copier (front) with the knob screw [H].
10. Connect the sorter adapter harness [I] to the sorter (Free white 2P connector).  
(non duplex machines only)



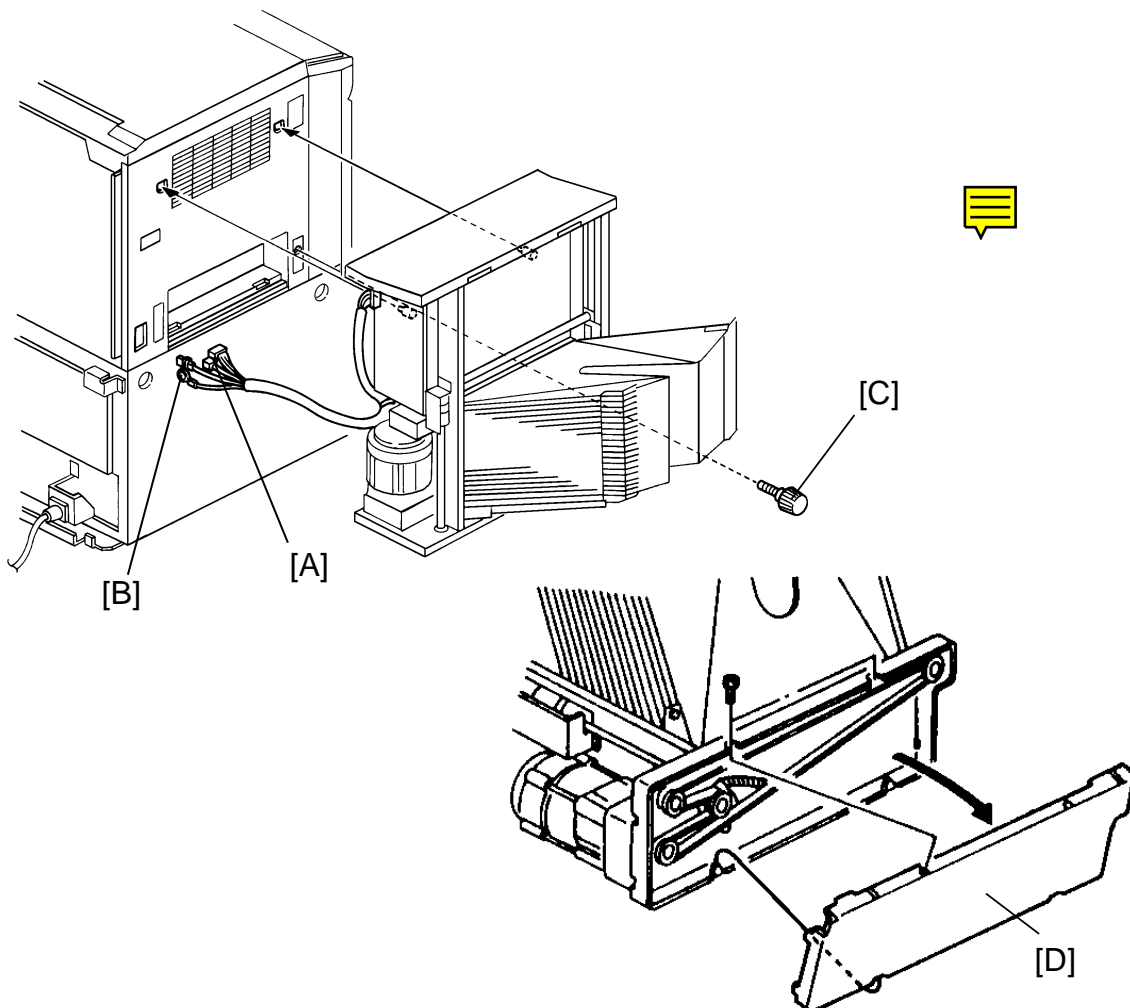


11. Connect the sorter ac harness [A] (Free red 2P connector).
12. Connect the sorter dc harness [B] (CN804, free white 4P connector).
13. Secure the sorter ground wire [C] (1 screw and washer).
14. Turn on DIP SW801-2 on the interface board [D].
15. Mount the sorter covers and copier rear cover.
16. Peel off the panel cover [E] at the left end of the operation panel [F].
17. Insert the Sort/Stack key top (copier accessory [G]) and stick down the Sort/Stack key cover (copier accessory [H]).
18. Check the sorter's operation and fill out the New Equipment Condition Report.

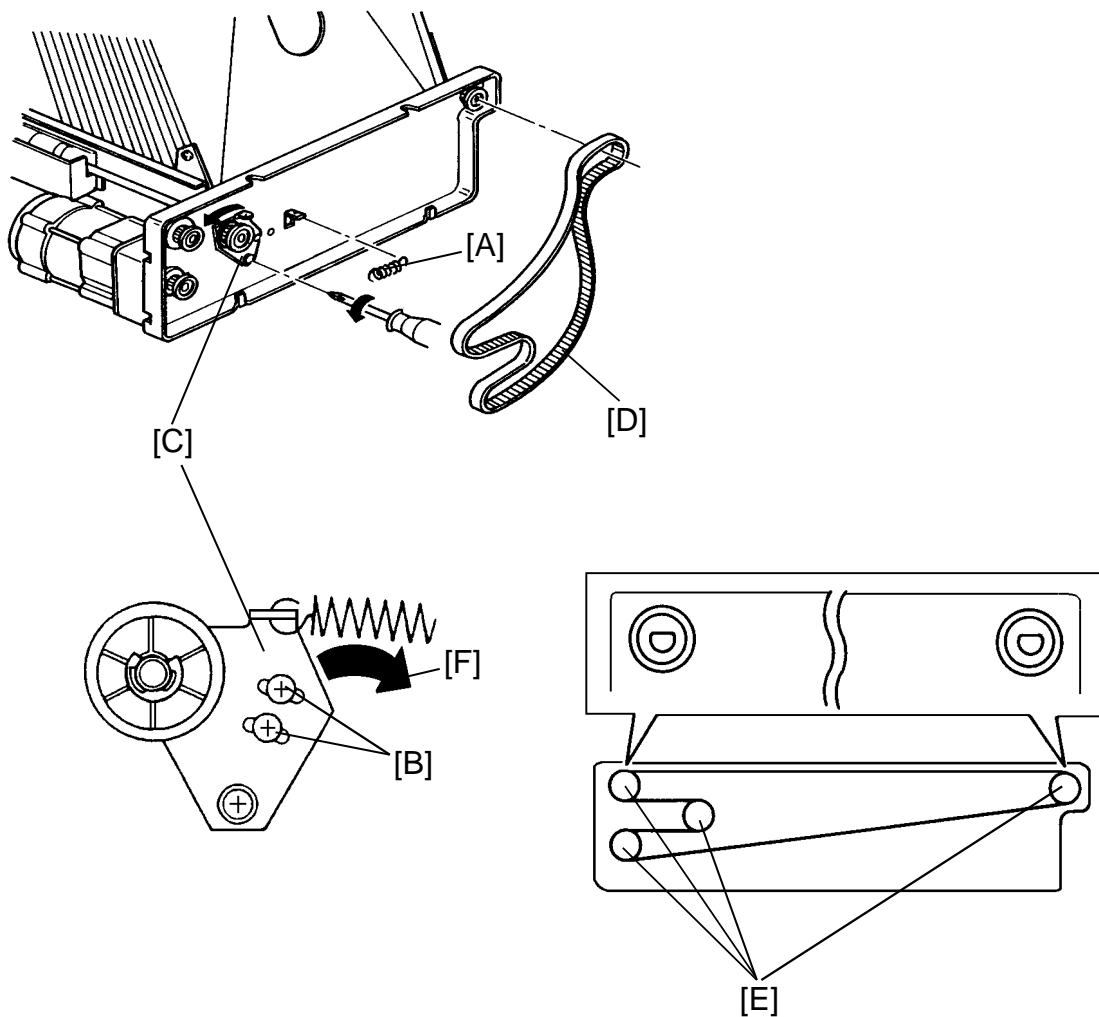


## 7. REPLACEMENT AND ADJUSTMENT

### 7.1 BIN DRIVE BELT REPLACEMENT

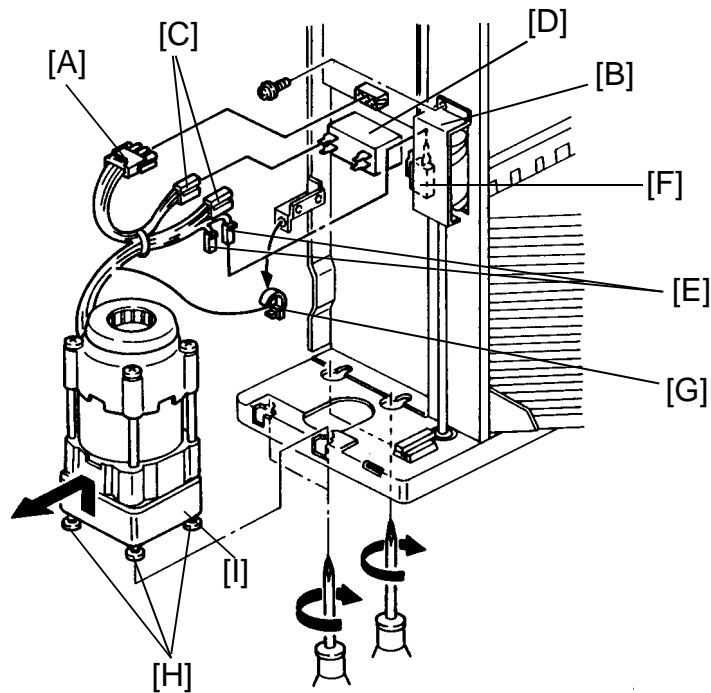


1. Remove the sorter front and rear covers (2 screws each).
2. Remove the rear cover of the copier (Top: 2 screws/Bottom: 4 screws). Then, disconnect the sorter harness [A] (red 2p connector, white 11p connector, and white 4p connector) and the sorter ground wire [B].
3. Remove the knob screw [C].
4. Remove the sorter unit from the machine.
5. Remove the lower cover [D] (2 screws).



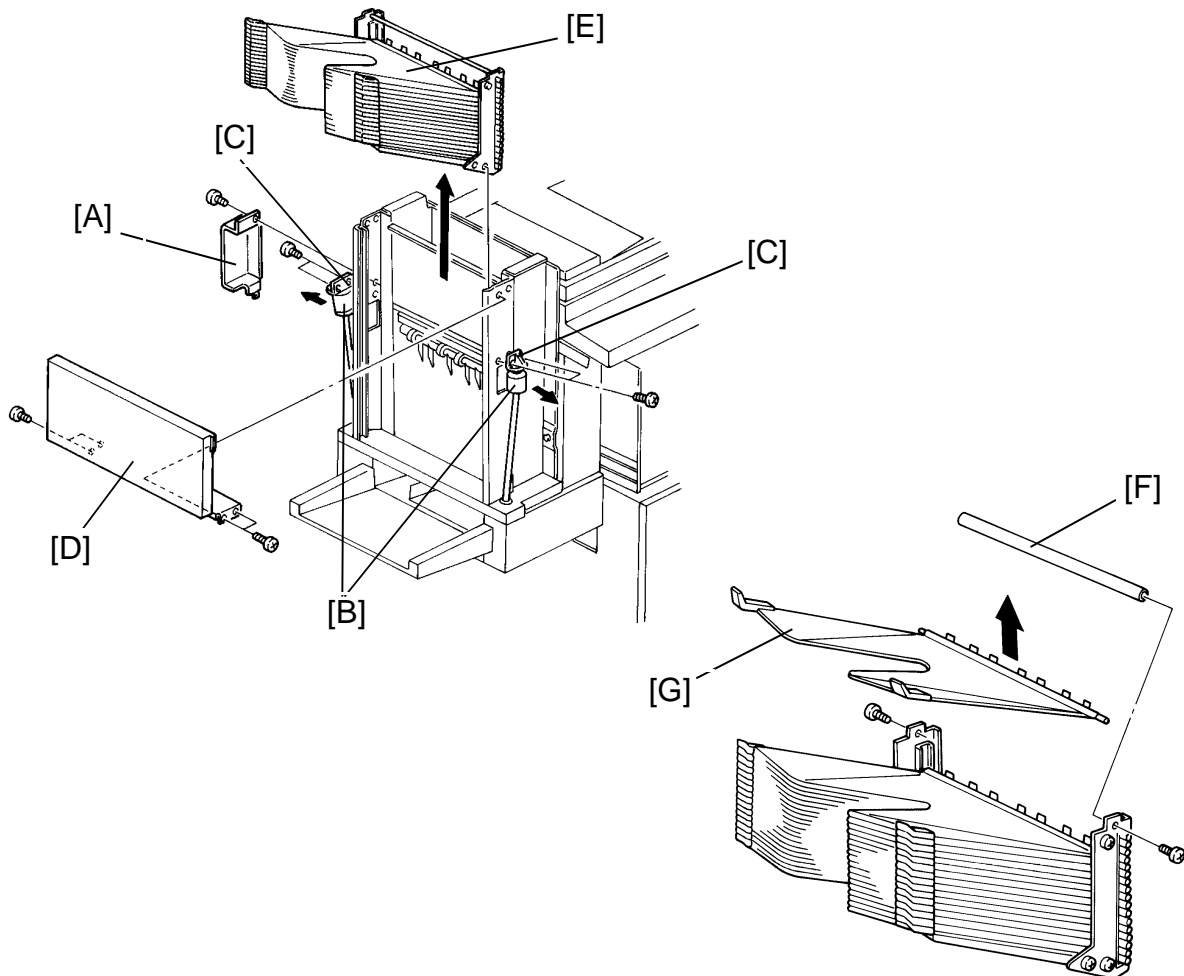
6. Remove the tension spring [A].
7. Remove the screws [B] on the tension plate [C].  
When installing a new drive belt [D], rotate the drive shaft bin pulleys [E] so that the flat surface on each pulley shaft is oriented in the same direction as prior to belt removal.
8. Replace the bin drive belt [D]. Then secure the tension plate [C], while pulling the plate as shown by the arrow [F].

## 7.2 BIN DRIVE MOTOR REPLACEMENT



1. Remove the drive belt. (See the preceding procedure.)
2. Disconnect the 3p connector [A] from the sorter control board.
3. Remove the helical wheel cover [B] (1 screw).
4. Disconnect the 2p connectors [C] from the motor capacitor [D] and the connectors [E] from the overrun switch [F].
5. Remove the cable tie [G].
6. Loosen the 4 mounting screws [H] of the bin drive motor [I].
7. Remove the bin drive motor.

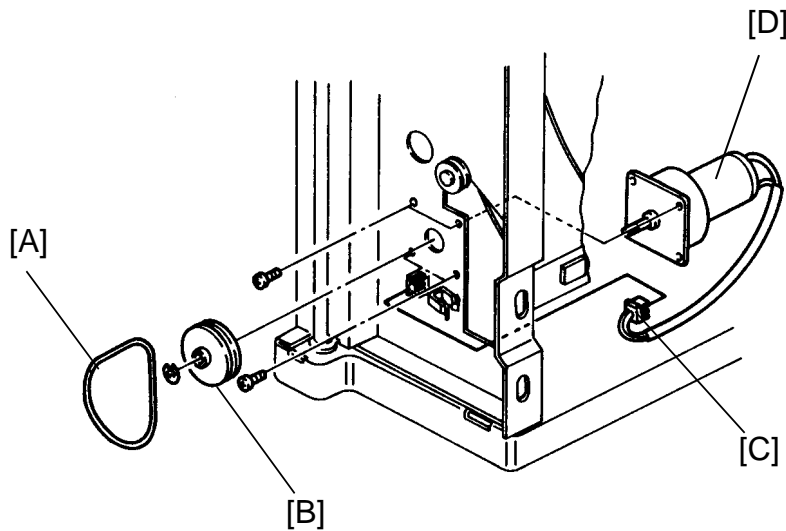
### 7.3 BIN REPLACEMENT



1. Remove the front and the rear covers (2 screws each).
2. Remove the helical wheel cover [A] (1 screw).
3. Slightly move both helical wheels [B] away from the sorter after removing the 2 helical wheel bracket [C] fixing screws.
4. Remove the upper cover [D] (2 screws each side).
5. Lift up the bin unit [E].
6. Remove the upper shaft [F] (2 screws).
7. Remove the bins [G].

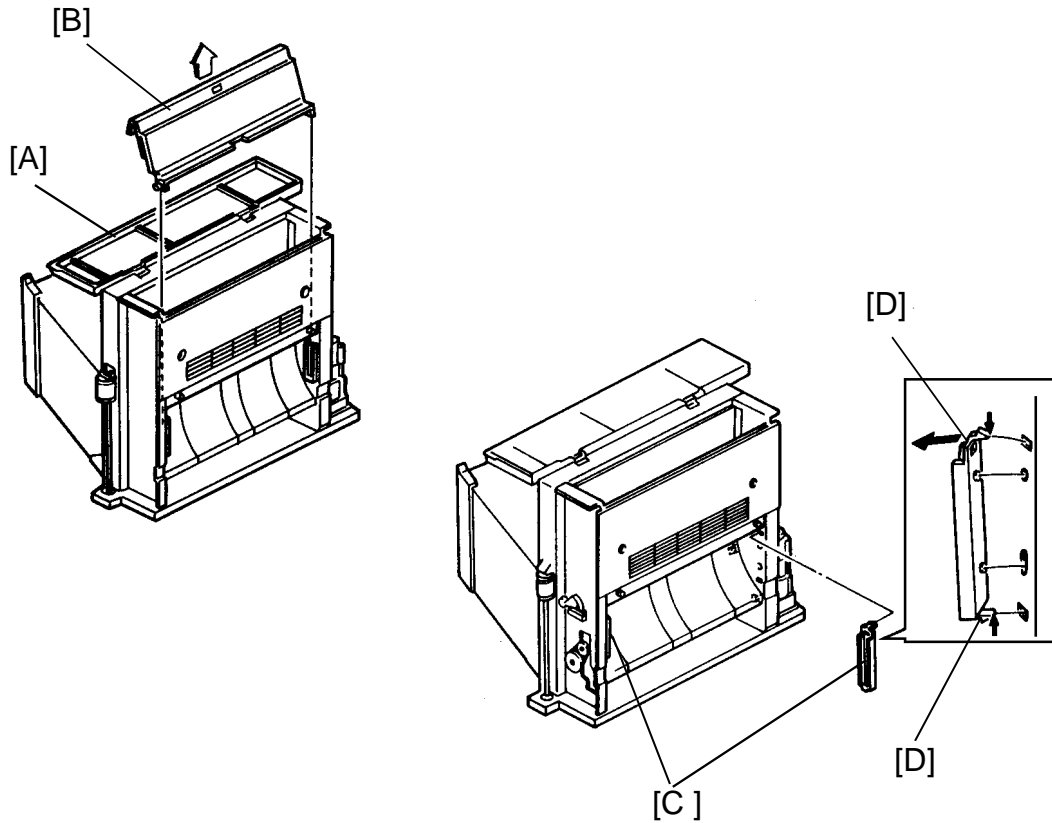
**NOTE:** There are 2 types of bins: odd and even-numbered. The stubs at the base of the odd-numbered bins are shifted to the left; on the even-numbered bins they are shifted to the right. Even and odd-numbered bins alternate, with the odd-numbered bin installed first (bottom).

## 7.4 EXIT ROLLER DRIVE MOTOR REPLACEMENT

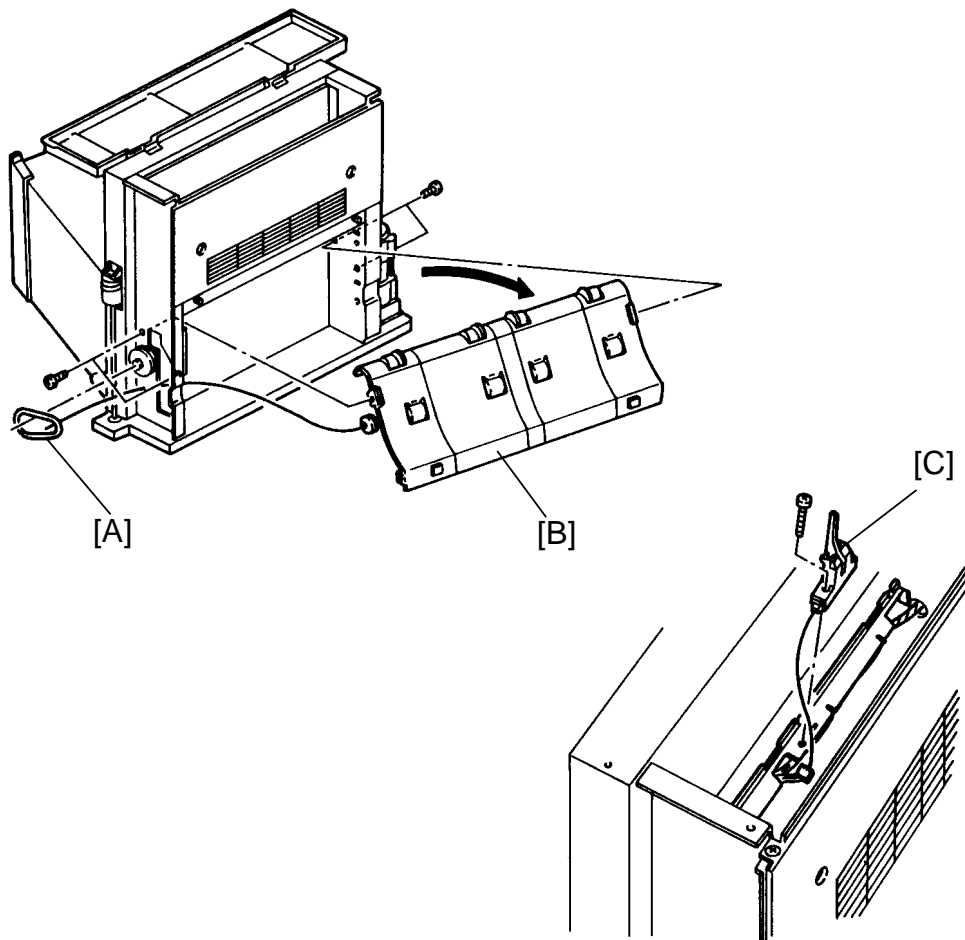


1. Remove the sorter unit from the copier. (Perform steps 1 to 4 of Bin Drive Belt Replacement.)
2. Remove the roller drive belt [A].
3. Remove the pulley [B] (1 E-ring).
4. Disconnect the motor connector [C].
5. Remove the exit roller drive motor [D] (4 screws).

## 7.5 LOWER EXIT ROLLER UNIT AND EXIT SENSOR REPLACEMENT



1. Remove the sorter unit from the copier. (Perform steps 1 to 4 of Bin Drive Belt Replacement.)
2. Open the upper safety cover [A] of the sorter and pull the upper exit roller unit [B] up out of the guide rails as shown.
3. Remove the rear [C] rail by releasing the hooks [D] on both sides as shown.



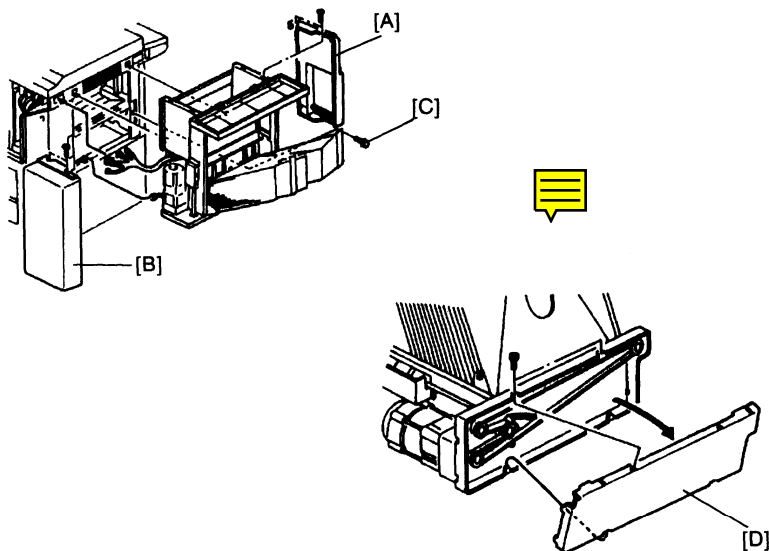
4. Remove the belt [A].
5. Remove the lower exit roller unit [B] (4 screws).
6. Remove the exit sensor [C] shown (1 screw).



## 8. REPLACEMENT AND ADJUSTMENT

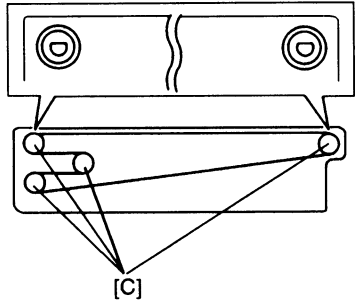
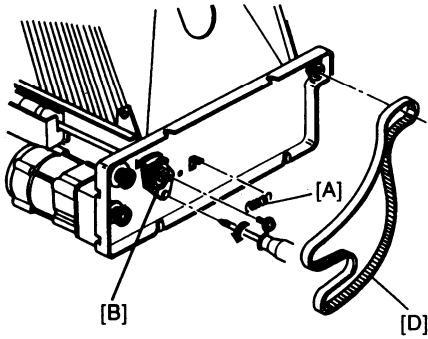
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### 8.1 Bin Drive Belt Replacement



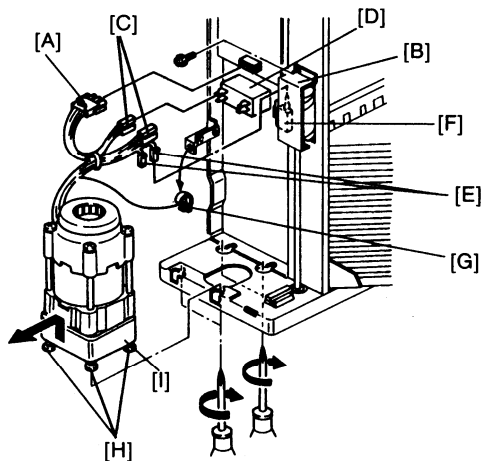
When the duplex unit is not installed, it is not necessary to perform steps 2 to 4. Note the orientation of the flat surface on each pulley shaft before removing the drive belt.

1. Remove the sorter front [A] and rear [B] covers (2 screws each).
2. Remove the rear cover of the copier (3 screws). Then, disconnect the sorter harness (red 2p connector, white 11p connector, and white 4p connector) and the sorter ground wire.
3. Remove the knob screw [C] from the duplex unit.
4. Remove the sorter unit from the machine.
5. Remove the lower cover [D] from the sorter (2 screws).



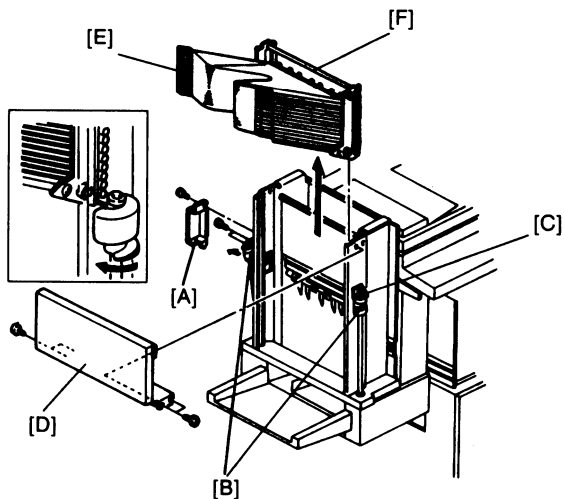
6. Remove the tension spring [A].
7. Remove the screws from the tension plate [B].
  - When installing a new drive belt, rotate the drive shaft bin pulleys [C] so that the flat surface on each pulley shaft is oriented in the same direction as prior to belt removal.
8. Replace the bin drive belt [D].

## 8.2 Bin Drive Motor Replacement



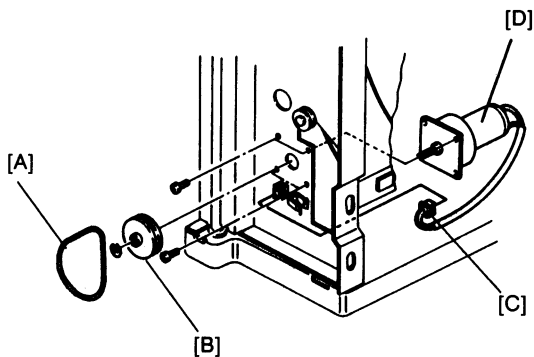
1. Remove the drive belt. (See the preceding procedure.)
2. Disconnect the 3p connector [A] from the sorter control board.
3. Remove the helical wheel cover [B] (1 screw).
4. Disconnect the 2p connectors [C] from the motor capacitor [D] and the connectors [E] from the overrun switch [F].
5. Remove the cable tie [G].
6. Loosen the 4 mounting screws [H] of the bin drive motor [I].
7. Remove the bin drive motor.

### 8.3 Bin Replacement



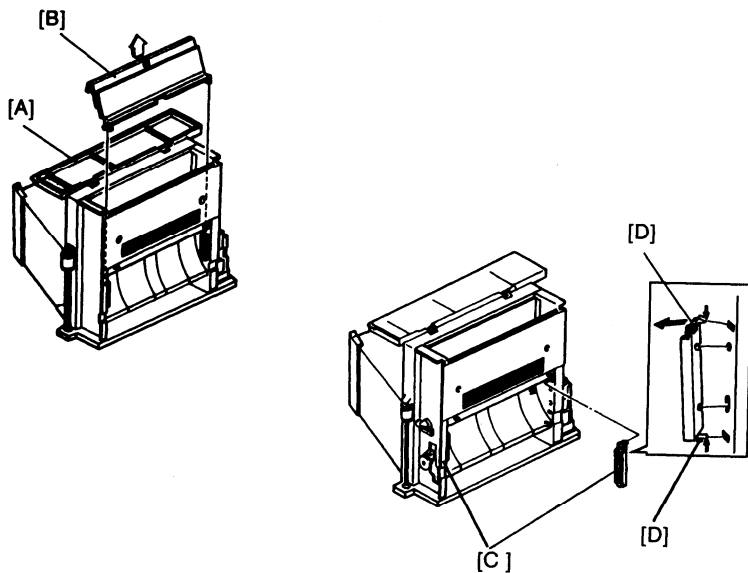
1. Remove the front and the rear covers (2 screws each).
2. Remove the helical wheel cover [A] (1 screw).
3. Slightly move both helical wheels [B] away from the sorter after removing the 2 helical wheel bracket [C] fixing screws.
4. Remove the upper cover [D] (2 screws each side).
5. Lift up the bin unit [E].
6. Remove one of the screws from the upper shaft [F].
7. Remove the bin unit at an angle.

## 8.4 Exit Roller Drive Motor Replacement

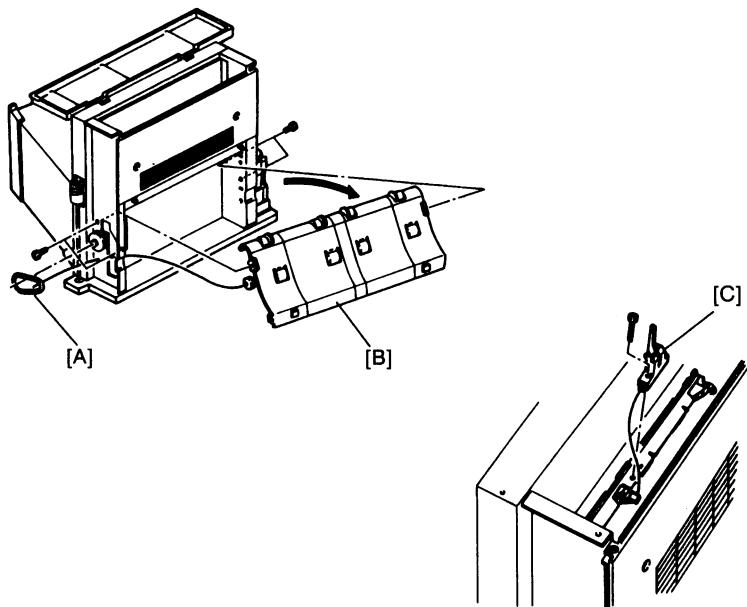


1. Remove the sorter unit from the copier. (Perform steps 2 to 4 of “Bin Drive Belt Replacement”.)
2. Remove the sorter front cover (2 screws).
3. Remove the roller drive belt [A].
4. Remove the pulley [B] from the exit roller motor (E-ring).
5. Disconnect the motor connector [C].
6. Remove the exit roller drive motor [D] (4 screws).

## 8.5 Lower Exit Roller Unit and Exit Sensor Replacement

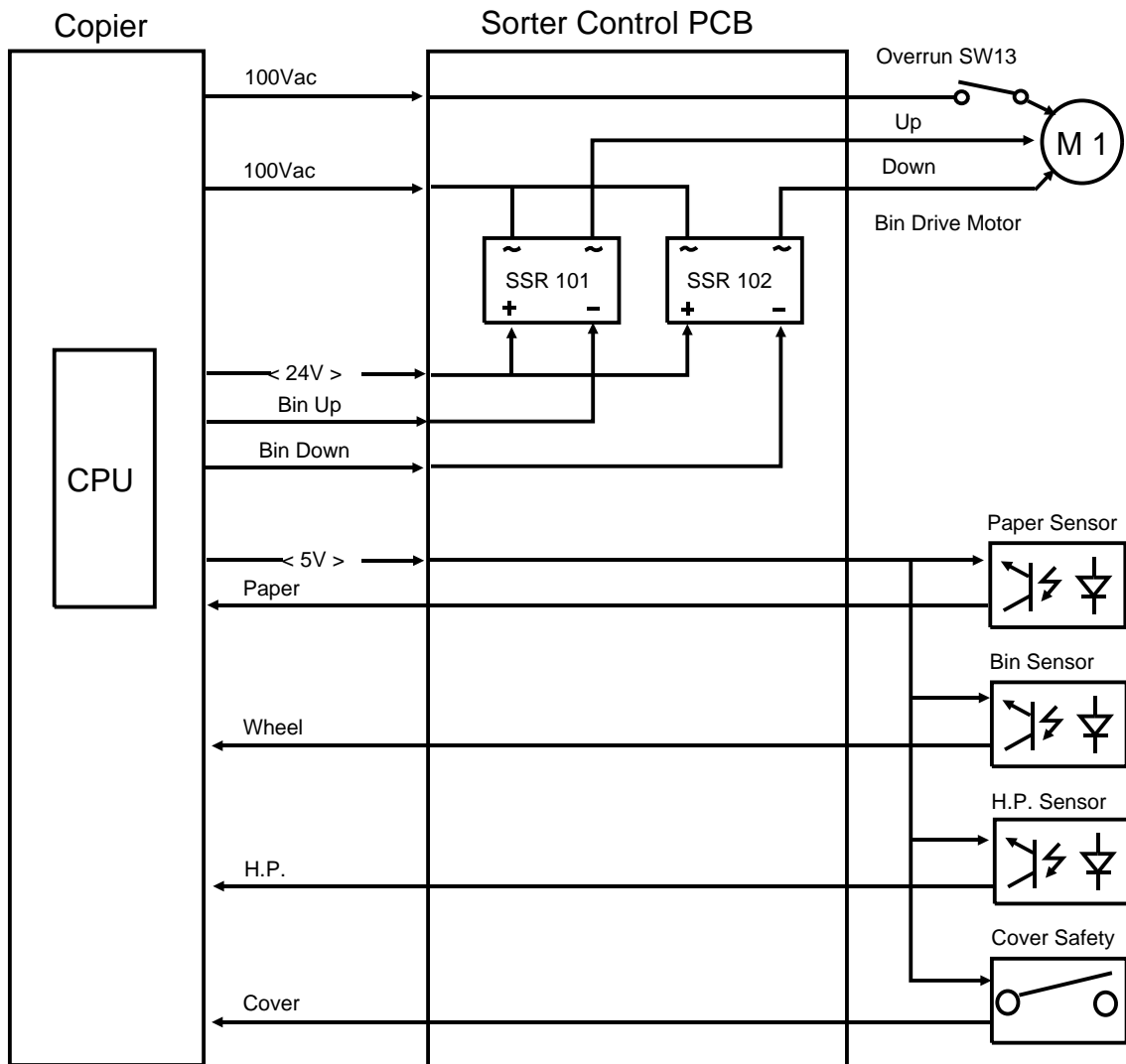


1. Remove the sorter unit from the copier. (Perform steps 2 to 4 of "Bin Drive Belt Replacement".)
2. Open the upper safety cover [A] of the sorter [A] and pull the upper exit roller unit [B] up out of the guide rails as shown.
3. Remove the rear [C] rail by releasing the hooks [D] on both sides as shown.



4. Remove the round belt [A].
5. Remove the lower exit roller unit [B] from the sorter (4 screws).
6. Remove the exit sensor [C] shown (1 screw).

## 9. ELECTRICAL CONTROL



The copier CPU controls all functions of the sorter.

The copier supplies 100 volts ac to the bin drive motor and SSRs. SSR 101 turns on the wheel drive motor to move the bins up. SSR 102 turns the bin drive motor in the opposite direction for the down operation.

Two dc power levels, +5 volts and +24 volts, are supplied from the copier and are used for the dc components.

Signals from the sensors and safety switch go to the copier CPU . The copier CPU operates motors and the SSRs.

The midi sorter has an overrun switch which stops the bin drive motor if the bins move too low.