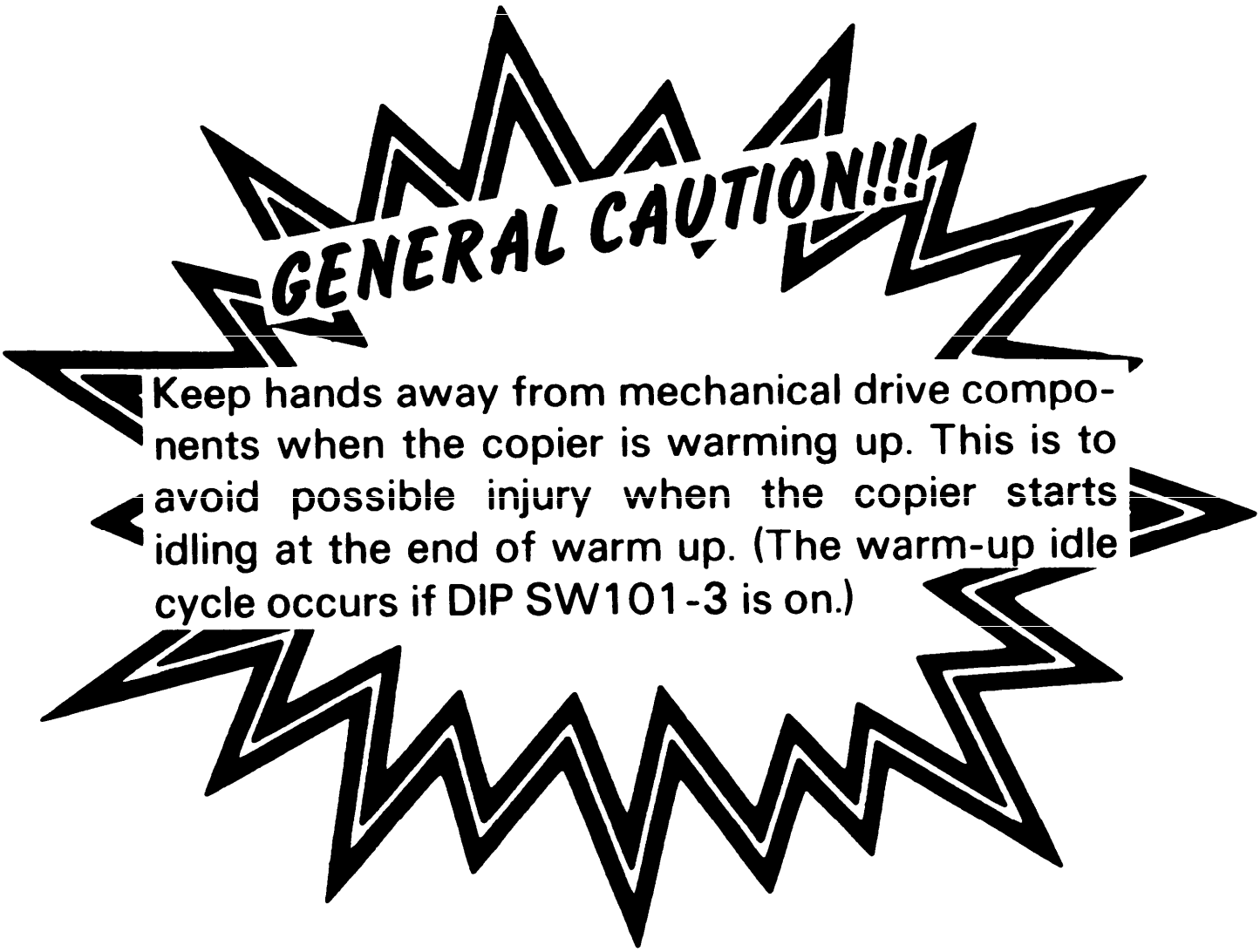
RICOH®
CUSTOMER SERVICE

FT5000/5010/5520
FIELD SERVICE MANUAL

REV. NO.	DATE	COMMENTS
*	11/87	Original Printing
1	5/88	FT5520 Addition
2	4/92	Sections 4 and 5 Addition

PN: RCFM5010

lotes, Additions, Corrections:


GENERAL CAUTION!!!
Keep hands away from mechanical drive components when the copier is warming up. This is to avoid possible injury when the copier starts idling at the end of warm up. (The warm-up idle cycle occurs if DIP SW101-3 is on.)

FT5000/5010/5520 FIELD SERVICE MANUAL
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SECTION 1

INSTALLATION REQUIREMENT

1. INSTALLATION REQUIREMENTS

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INSTALLATION REQUIREMENTS

1-1. Environment

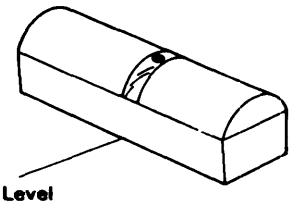
1. Temperature Range: 10°C to 30°C (50°F to 86°F)
2. Humidity Range: 15% to 90% RH
3. Ambient Illumination: Less than 1,500 lux
   (Do not expose to direct sunlight)
4. Ventilation: Room air should turn over at least 3 times/hour.
5. Ambient Dust: Less than 0.15mg/m^3
   (4 x 10^{-3}oz/yd^3)
6. Room Size: More than 10m^3 (13.4yd^3)
7. If the installation place is air conditioned or heated, place the machine:
   a. Where it will not be subjected to sudden temperature changes from low to high, or vice versa.
   b. Where it will not be directly exposed to cool air from an air conditioner in the summer.

   c. Where it will not be directly exposed to reflected heat from a space heater in winter.
8. Avoid placing the copier in an area filled with corrosive gas.
9. Avoid any area higher than 2,000 meters (6,500 feet) above sea level.
10. Place the copier on a strong and level base.
11. Avoid any area where the copier may be subjected to frequent strong vibration.

1-2. Machine Level

1. Front to back:

   Within 5 mm (0.2") of level

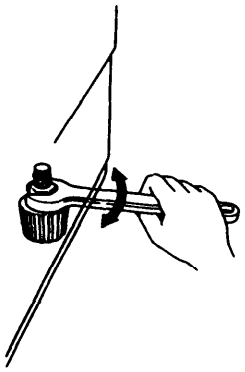


Carpenter's Level

2. Right to left:

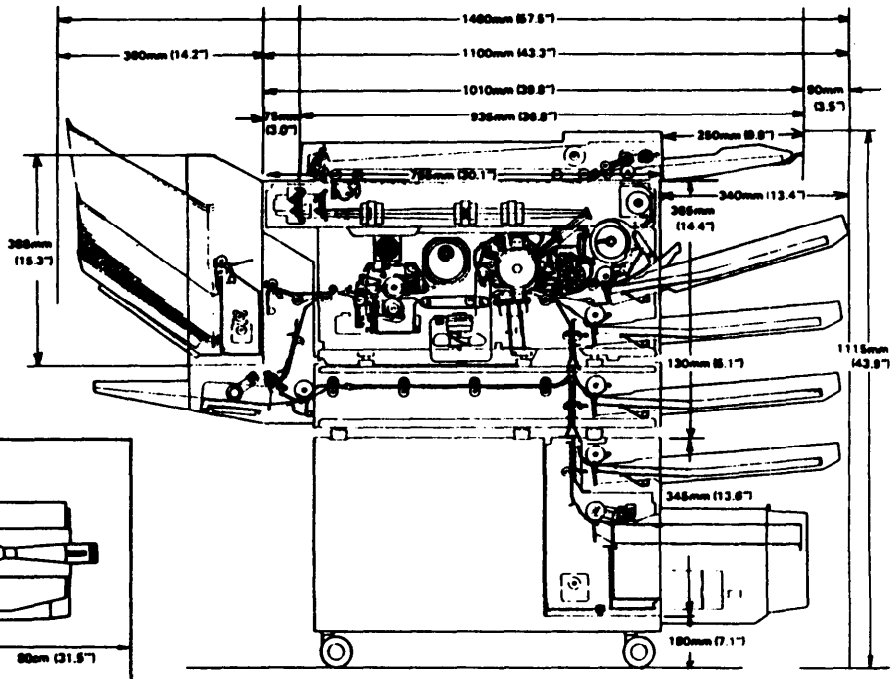
   Within 5 mm (0.2") of level

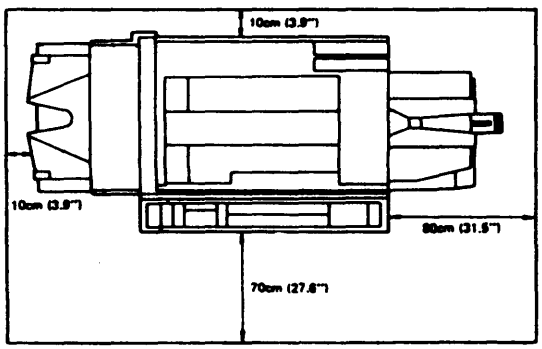
   (Legs may be screwed up or down to level the machine. Set a carpenter's level on the exposure glass.)



1-3. Minimum Space Requirements

1. Front: 70cm (27.6")
2. Back: 10cm (3.9")
3. Right: 80cm (31.5")
4. Left: 10cm (3.9")





1-4. Power Source

1. Input voltage level

   110V/60Hz: More than 15A
   115V/60Hz: More than 15A
   220V/50Hz: More than 7A
   240V/50Hz: More than 7A

2. Permissible voltage fluctuation: ±10%

3. Permissible extension cord:
   At least 300V, 30A capacity and less than 5m (16.4") long.

   NOTE: a. Be sure to ground the machine. (Do not connect the grounding wire to a gas pipe.)
   b. Make sure the plug is firmly inserted in the outlet.
   c. Avoid multi-wiring.

4. Do not set anything on the power cord.

SECTION 2

UNPACKING AND INSTALLATION

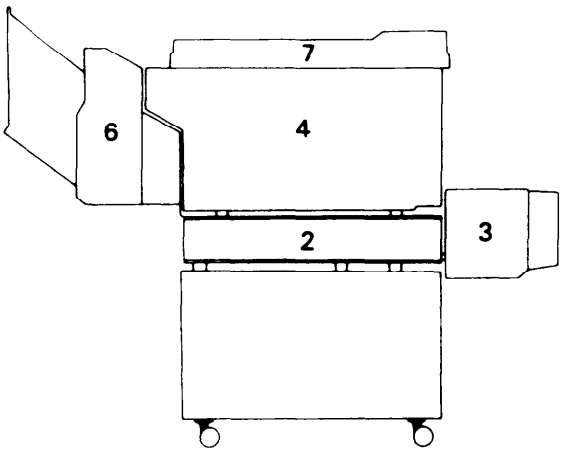
2. UNPACKING AND INSTALLATION

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2-1. System Installation Procedure

1. (Paper Bank) ..... cannot be equipped
2. Expansion Unit
3. Large Capacity Tray
4. Copier
5. (Auto Duplex Unit) ..... cannot be equipped
6. Sorter
7. Document Feeder



The illustration at the right depicts the relative order of installing the different components to the base copier to obtain the system configuration desired by the customer.

The installation of the system should begin with the lowest numbered component and progress to the highest. If a component is not included in the system, the next higher numbered component may be installed.

Refer to the corresponding procedures in the FT5010 field service manual.

2-2. System Configuration Table

Use this table to determine what extra equipment is required to install optional equipment.

Optional Equipment \ Required Equipment	Expansion Unit	Interface Board (Note)	Sorter Adapter
Auto Document Feeder		•	
Sorter		•	•
Large Capacity Tray	•		
Expansion Unit (3rd Cassette)			

Note: If the copier already has an ADF or sorter, you do not need an interface board.

2-3. Copier Installation

Accessory Check

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

1. Installation procedure 1
   (115V - English only/220V - five languages)
2. New Equipment Condition Report 1
3. Envelope - NECR (115V only) 1
4. Cassette - large 1
5. Cassette - small 2
6. Receiving tray 1
7. Original holder 1
8. Operating instructions holder 1
9. Operating instructions 1
   (115V - English only/220V - five languages)
10. Operating instruction cards 1
    (115V - English only/220V - five languages)
11. Multilingual decals (220/240V only) ..... 1 set
12. DF Key Cover 1
    (For DF Installation)

1. Remove the shipping tapes (A) from the copier as shown.

2. Open the copier front cover (B), remove the shipping tape (C) and the wedge (D) between the registration rollers as shown.

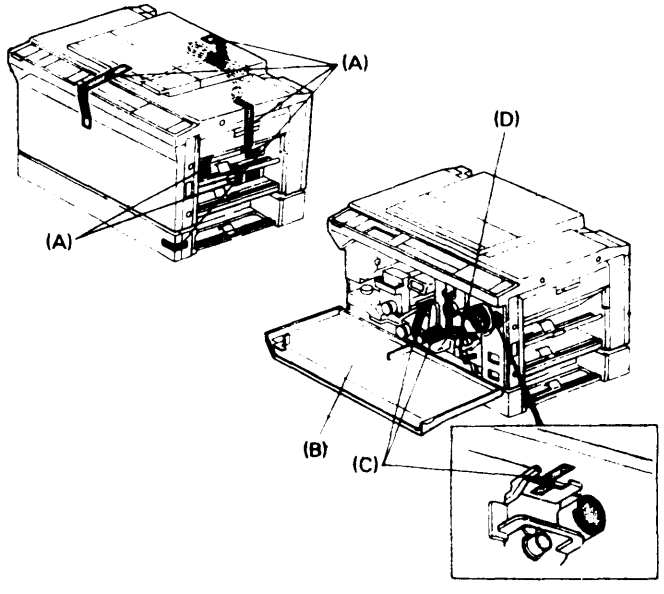
3. Remove the left side screw (E) of the front inner cover (F).

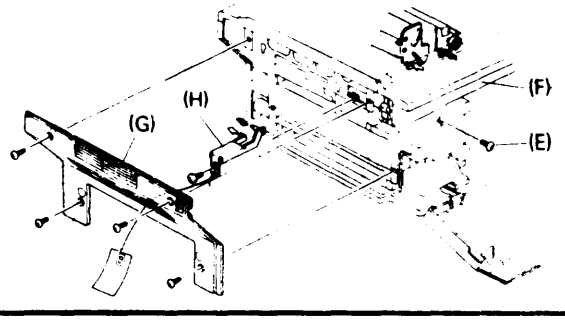
4. Remove the copier left cover (G) (4 screws).

5. Remove the scanner lock plate (H) (1 screw).

   NOTE: Save the scanner lock plate for future use.

6. Reinstall the copier left cover and the left side screw of the front inner cover.





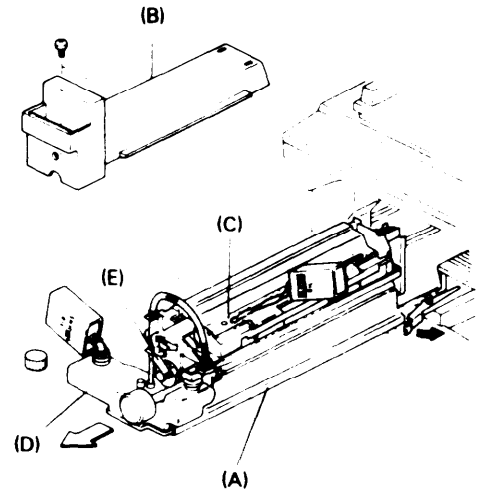
7. Pull out the fusing unit (A) to the lock position and remove the fusing unit cover (B) (2 screws).

8. Prime the oil supply pad (C) with silicon oil.

9. Fill the oil tank (D) with silicon oil.

10. Manually operate the oil pump lever (E) and confirm the proper operation and condition of the silicon oil supply system.

11. Reassemble the fusing unit and return it to its original position.

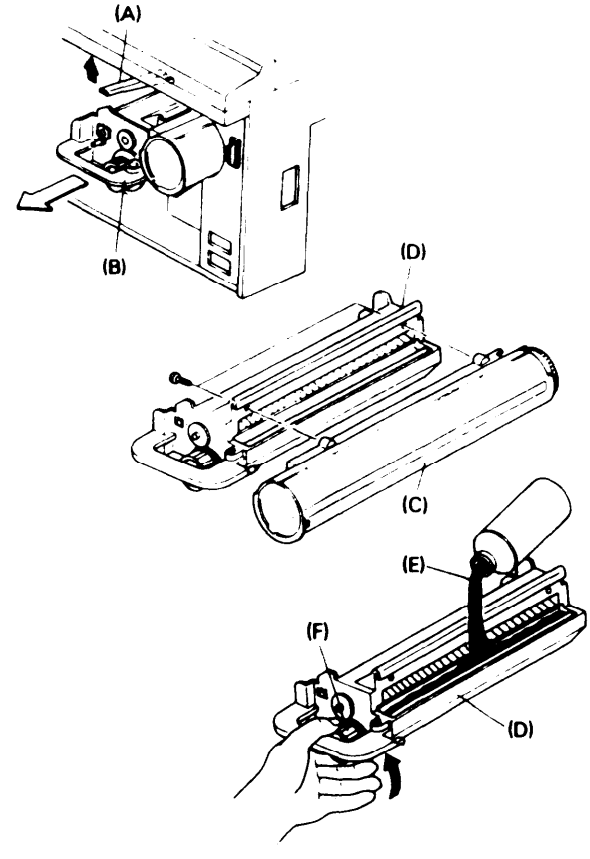


12. Raise the development lock lever (A) and pull out the development unit (B). Place the unit on a clean sheet of paper.

13. Separate the toner tank (C) from the development unit (D) (2 screws).

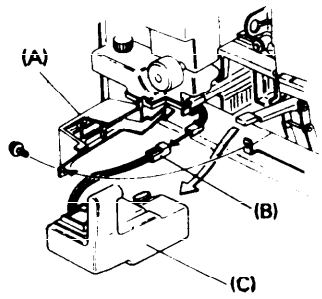
14. Pour one bottle of developer (E) into the development unit while turning the knob (F) counterclockwise to distribute the developer.

15. Remount the toner tank on the development unit.



16. Swing the toner collection bottle cover (A) to the left (1 screw) and unplug the toner overflow sensor connector (B).

17. Remove the toner collection bottle (C).

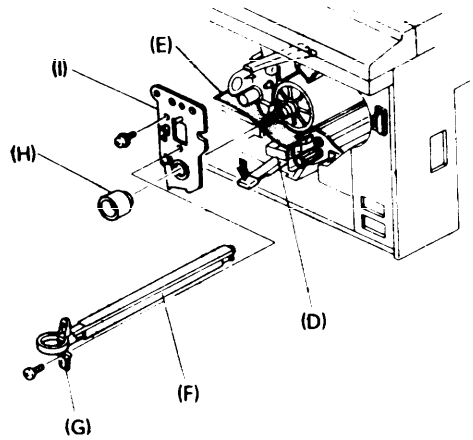


18. Lower the T/S corona unit (D).

19. Place a sheet of paper (E) over the T/S corona unit.

20. Remove the charge corona unit (F) together with the wire cleaner (G) (1 screw).

21. **NOTE:** The drum stay knob (H) is reverse threaded.
Remove the drum stay (I) (1 knob and 1 screw).



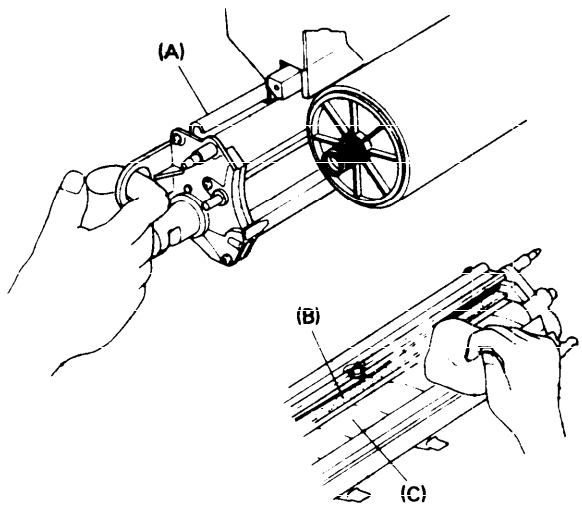
22. Remove the cleaning unit (A). Dust the cleaning blade (B) and brush (C) with setting powder (P/N 54429101).

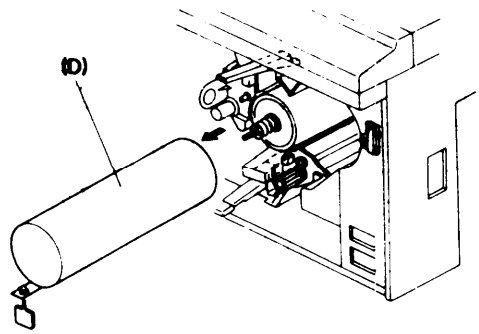
23. Reinstall the cleaning unit.

24. Pull out the drum protective sleeve (D).
NOTE: Save the drum protective sleeve for future use when servicing the copier.

25. Make sure that the wire cleaner is properly positioned, then reinstall the drum stay and the charge corona unit.

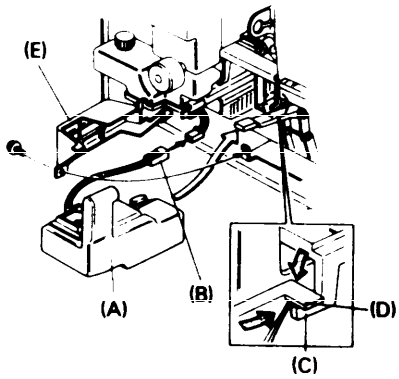
26. Remove the paper over the T/S corona unit and return the T/S corona unit to its original position.





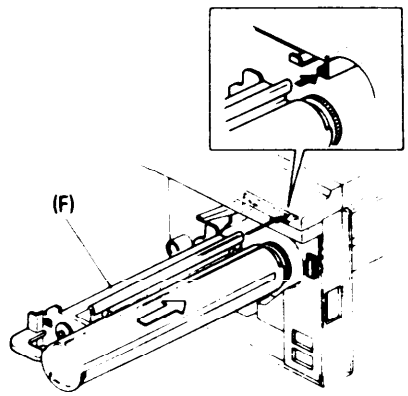
27. Reinstall the toner collection bottle (A) and plug in the toner overflow sensor connector (B).

28. Make sure that the hooks of the transport plate (C) are positioned underneath the bottle cover (D), then reinstall the toner collection bottle cover (E) (1 screw).

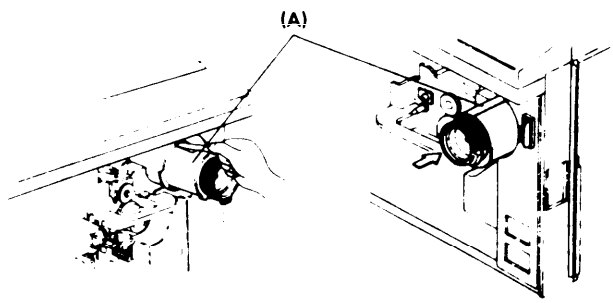


29. **CAUTION:** When installing the development unit (F), be sure the development unit rail is properly engaged with the unit guide rail on the copier.

Reinstall the development unit.

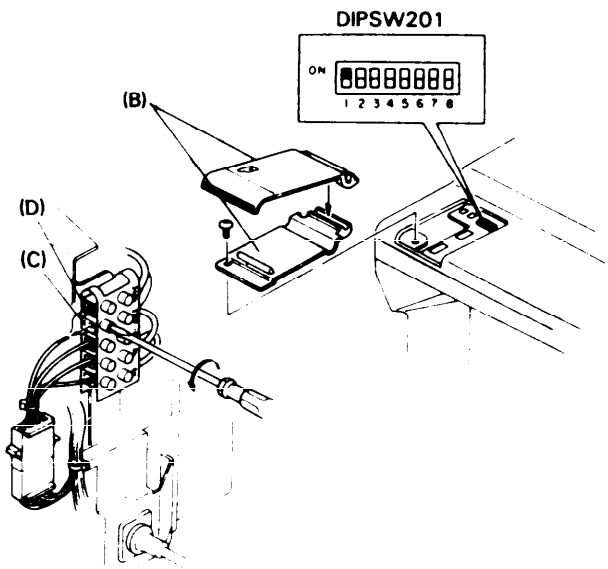


30. Install one toner cartridge (A).
NOTE: Confirm that the toner cartridge gear is properly engaged by attempting to rotate the cartridge counterclockwise. When the toner cartridge gear is properly engaged, the toner cartridge will not rotate freely.



31. Remove the Dip switch cover (B) on the left side of the operation panel (1 screw) and turn on Dip switch 201-1.

32. ***240 volt areas only:***
Remove the copier rear cover (3 screws), disconnect the wire from the 220 volt terminal (C), and connect this wire to the 240 volt terminal (D) as shown. Then reinstall the copier rear cover.

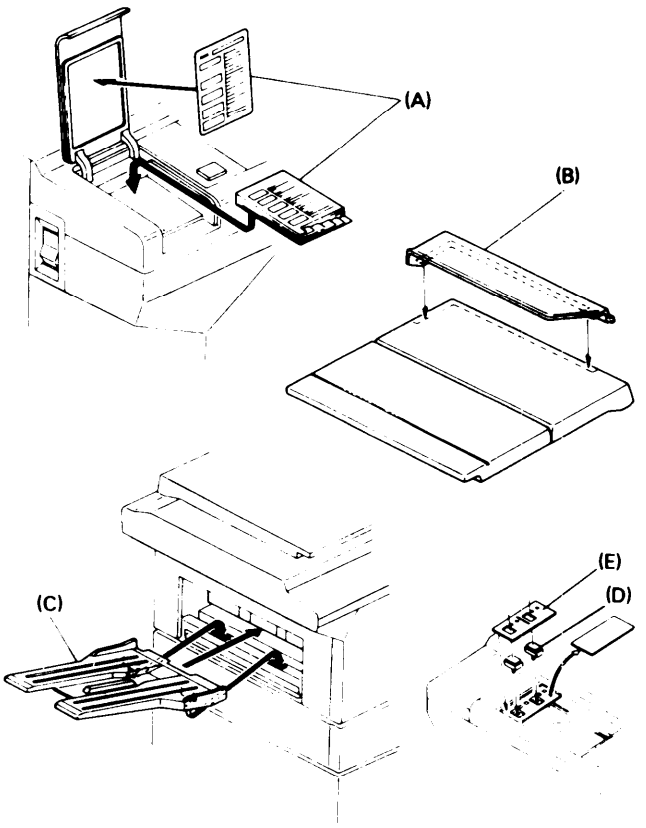


33. Lower the platen cover.
34. Plug in the machine and turn on the main switch.
35. After the warm up period is completed, enter 99 copies and press the Start key for drum conditioning.
36. After the machine stops, turn off the main switch.
37. Turn off Dip switch 201-1 and reinstall the Dip switch cover.
38. Install the operating instruction cards (A) over the Dip switch cover as shown (two-sided tape).
39. Install the original holder (B) on the platen cover as shown and install the receiving tray (C).
40. Load paper into the cassette and check machine operation and copy quality.
41. Fill out the New Equipment Condition Report.

Note: Only when installing document feeder (DF34 Procedure step 23)

23. Set the DF key tops (D) and adhere the DF key cover (E) as shown.

Note: This DF key cover is required only for FT5000 due to no Auto Enlarge/Reduce mode.



2-4. Color Development Unit Installation

Accessory Check

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

1. Actuator – Red 1pc
2. Actuator – Blue 1pc
3. Actuator – Green 1pc
4. Screw – M3 x 4 ..... 1pc
5. Color Decal Sheet 1pc

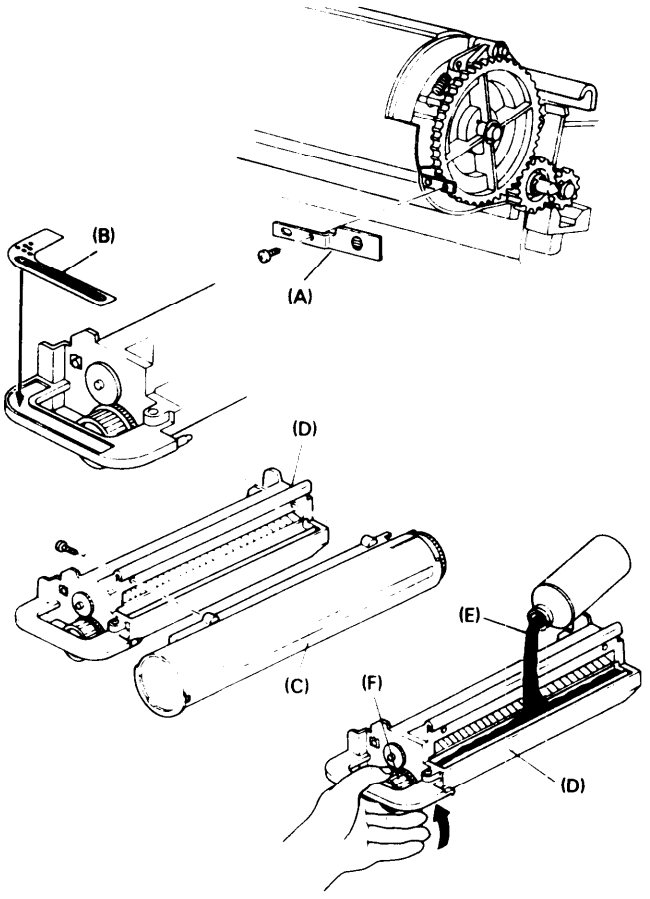
NOTE: 1. The color development unit should be installed after drum conditioning is finished. (See the copier installation procedure.)

2. The following procedure should be done when the color developer is replaced.

1. Install the color actuator (A) on the color development unit (1 screw).

NOTE: Each actuator has a colored sticker. Install the appropriate actuator.

2. Stick the appropriate decal (B) on the development unit handle.
3. Separate the toner tank (C) from the development unit (D) (2 screws).
4. Pour one bottle of color developer (E) into the development unit while turning the knob (F) counterclockwise to distribute the developer.

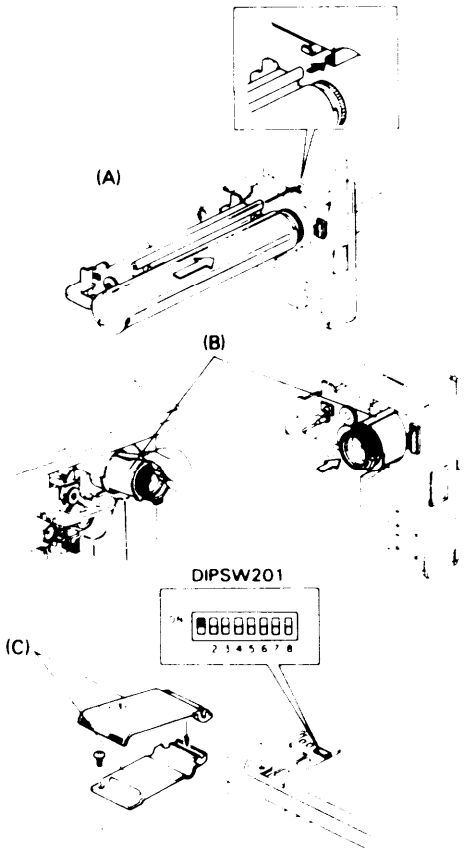


5. Remount the toner tank on the development unit.
6. **CAUTION:** When installing the color development unit, be sure the development unit rail is properly engaged with the unit guide rail on the copier.

   Install the color development unit (A).
7. Install a color toner cartridge (B) .
8. Remove the DIP switch cover (C) on the left side of the operation panel (1 screw) and turn on DIP SW 201-1.
9. Plug in the machine and turn on the main switch. Confirm that the color toner indicator is displayed on the operation panel.
10. Press the Enter/Recall key. The copy counter displays "20".
11. Lower the platen cover.
12. After the Warm up period is completed, press the Start key.

    A. The copier will begin drum conditioning and sound one beep for each copy cycle from the 10th to the 17th copy to display and calculate the actual data from Vsp and Vsg.

    B. At the end of the 20th copy cycle, the copier will stop and sound five beeps. The control level is now in memory.



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13. After the machine stops, press a number key according to the following list, to display the current control level in the magnification window.

    Red Toner: 7
    Green Toner: 8
    Blue Toner: 9

14. Turn off DIP SW201-1 and check for satisfactory image density. If image density is satisfacory, proceed to step 15. If image density is low (light copies), perform the following procedures:

    A. Turn on DIP SW201-1, select 30 copies, and press the print key. As the copier is going through drum conditioning, hold down the Enter/Recall key and the #7 key simultaneously. This will energize the toner supply solenoid and toner will be added as long as both keys are pressed.

    B. At the end of drum conditioning, turn off DIP SW201-1 and check for satisfactory image density. (If image density is unsatisfactory, repeat this procedure.)

    C. Now turn on DIP SW201-1, press the Enter/Recall key and then the print key. The CPU will now determine the new control level and store this level in the CPU's memory.

    D. Turn off DIP SW201-1 and verify that the image density is correct.

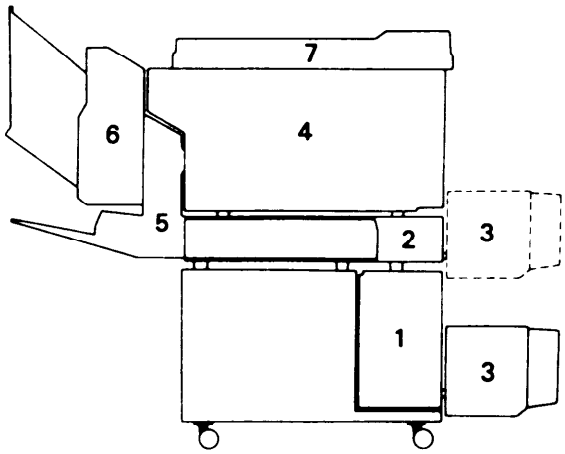
15. Turn off the main switch.

16. Reinstall the Dip Switch cover (1 screw).

FT5000 INFORMATION!

System Installation Procedure

1. Paper Bank
2. Expansion Unit
3. Large Capacity Tray
4. Copier
5. Auto Duplex Unit
6. Sorter
7. Document Feeder



The illustration at the right depicts the relative order of installing the different components to the base copier to obtain the system configuration desired by the customer.
The installation procedures in this field service manual have been tailored to this illustration.

The installation of the system should begin with the lowest numbered component and progress to the highest. If a component is not included in the system, the next higher numbered component may be installed.

FT5010 System Configuration Table

Use this table to determine what extra equipment is required to install optional equipment.

Optional equipment \ Required Equipment		Expansion Unit	Interface Board (Note 2)	Sorter Adapter	System Table	Optional Cassette (Note 1)
Auto Document Feeder			•			
Sorter	With Duplex Unit		•			
Sorter	Without Dupiex Unit		•	•		
Duplex Unit		•	•			
Large Capacity Tray		•				
Paper Bank (4th & 5th Cassette)		•			•	•
Expansion Unit (3rd Cassette)						

↑—Copier Type-I Only

Note 1: Both copiers type-I and -II have 3 cassettes as accessories.

Note 2: If the copier already has an ADF, sorter, or duplex unit installed, you do not need an interface board.

How to use:

As shown in the following example, check off each piece of optional equipment to be installed. For each checked item, the asterisks to the right show the required equipment. Check off each piece of required equipment.

Example:

	Optional equipment \ Required Equipment		Expansion Unit	Interface Board (Note 2)	Sorter Adapter	System Table	Optional Cassette (Note 1)
			✓	✓	✓		
✓	Auto Document Feeder			•			
✓	Sorter	With Duplex Unit		•			
		Without Duplex Unit		•	•		
	Duplex Unit		•	•			
✓	Large Capacity Tray		•				
	Paper Bank (4th & 5th Cassette)		•			•	•
	Expansion Unit (3rd Cassette)						

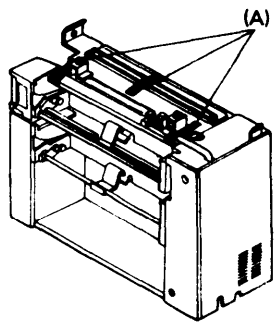
↑ Copier Type-I Only

1. Paper Bank Installation

Accessory Check

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

1.	Installation procedure (115V - English only/220V - five languages)	1
2.	New Equipment Condition Report	1
3.	Envelope - NECR (115V only)	1
4.	Expansion docking bracket	2
5.	Expansion docking plate	2
6.	Mylar paper guide	1
7.	Expansion relay roller unit	1
8.	Spring	1
9.	Nylon wire clamp - large (12N)	1
10.	Nylon wire clamp - small (4N)	1
11.	Bank docking bracket	1
12.	Pan head screw - M4 X 8	15
13.	Pan head screw with washer - M4 X 8	2
14.	Shoulder screw	1
15.	Multilingual decals (220/240V only)	1 set



1. Remove the strips of shipping tape (A).

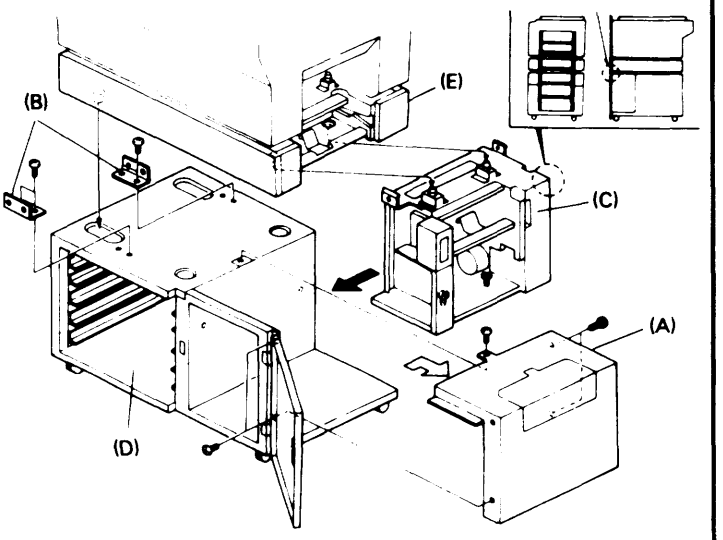
2. Remove the right side of the system table (A) (5 screws).

3. Install the front and rear expansion docking brackets (B) on the system table as shown (2 screws each).

   NOTE: If an LCT is to be installed in the system, do the following steps first:
   - LCT Installation with Paper Bank (all steps)
   - Common procedures for LCT installation (Steps 1 - 21)

4. Place the paper bank (C) on the right side of the system table.
   NOTE: The bank's left side plate should be flush against the system table (D).

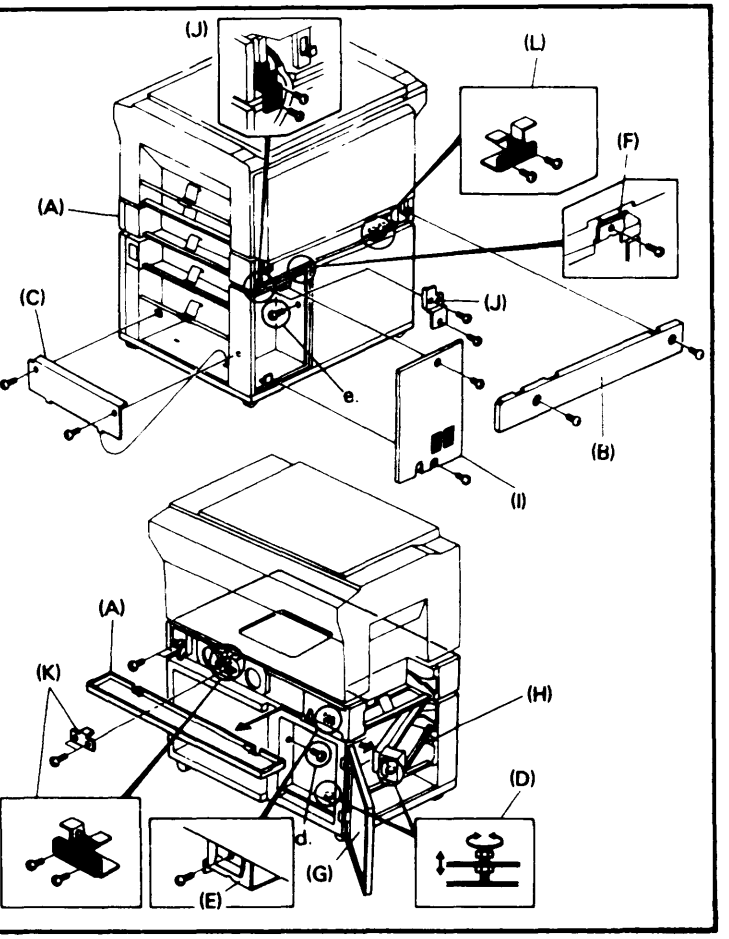
5. Set the expansion unit (E) onto the system table. Align the 2 pins of the paper bank with the holes in the base plate of the expansion unit. At this time the expansion and the paper bank right side cover and cassette holders will align with one another.



6. Remove the front (A) and rear (B) covers from the expansion unit (2 screws each).

7. Adjust the height of the paper bank.
   a. Remove the internal cover (C) from the paper bank (2 screws).
   b. Using the height adjusting bolts (D), raise or lower the paper bank so that both the front (E) and rear (F) screw holes of the paper bank and expansion unit align.
   c. Secure the paper bank to the expansion unit (2 screws).
   d. Open the system table front door (G), swing out the 4th paper feed station (H), and secure the paper bank to the front side of the system table as shown (1 screw).
   e. Remove the bank rear cover (I) (2 screws) and secure the bank to the rear side of the system table (1 screw).
   f. Install the bank docking bracket (J) (2 screws).
   g. Install the internal cover to the paper bank (2 screws).

8. Install the front (K) and rear (L) expansion docking plates as shown (2 screws each).



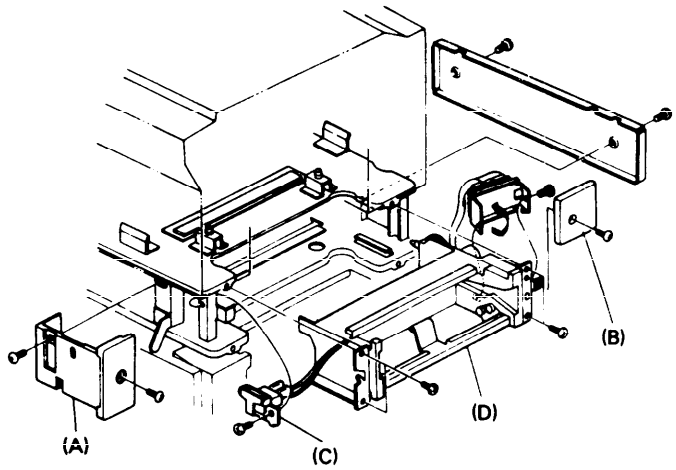
9. Remove the front right (A) and rear right (B) covers of the expansion unit (front — 2 screws, rear — 1 screw).

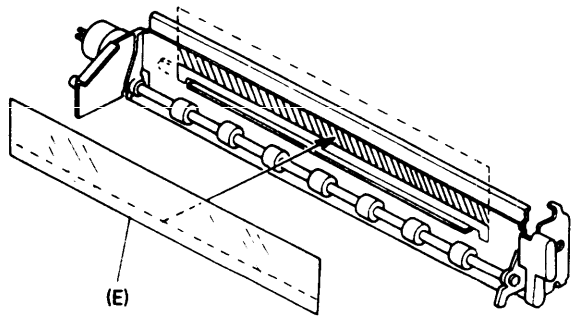
10. Remove the right side safety switch assembly (C) (1 screw).

11. ***Type 2 only:***
Remove the copier rear cover (3 screws), lower the PCB plate (2 screws), and disconnect the expansion interface harness from the copier.

12. Pull the 3rd feed unit out (D) (4 screws).

13. ***System without duplex unit only:***
Install the mylar paper guide (E) to the expansion relay roller unit.



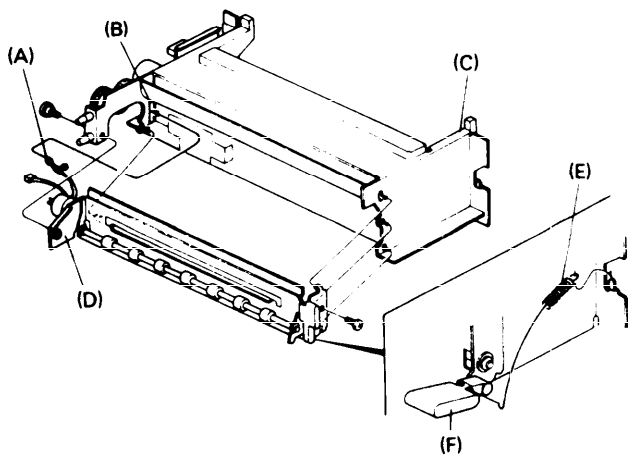


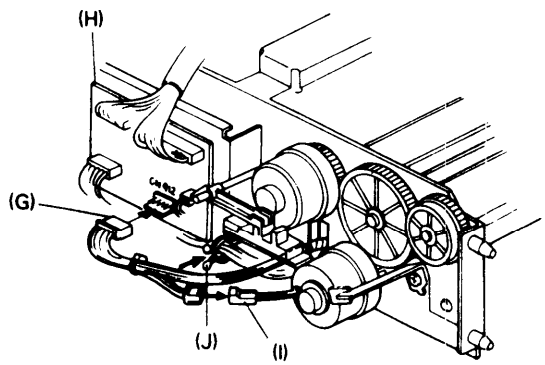
14. **NOTES:** When doing this step:
a. Run the expansion relay unit harness (A) (except the clutch harness) through the harness access hole (B) on the rear side of the 3rd paper feed unit (C).
b. Set the front of the relay unit before setting the hook on the rear.
Mount the expansion relay roller unit (D) onto the 3rd feed unit (front — 1 screw and 2 hooks, rear — 1 shoulder screw and 1 hook).

15. Hook the spring (E) between the guide plate lever (F) and the 3rd feed unit mounting bracket.

16. **NOTE:** When doing this step, pass the expansion interface harness and the safety switch assembly around their respective expansion unit uprights before reinstalling the 3rd paper feed unit.
Plug the 5P connector (red) (G), into CN912 of the 3rd paper feed PCB (H), connect the other end to the expansion relay clutch (I), and clamp the harnesses with the twist clamp (J).

17. Reinstall the 3rd paper feed unit and the safety switch assembly (1 screw)in the expansion unit (4 screws).





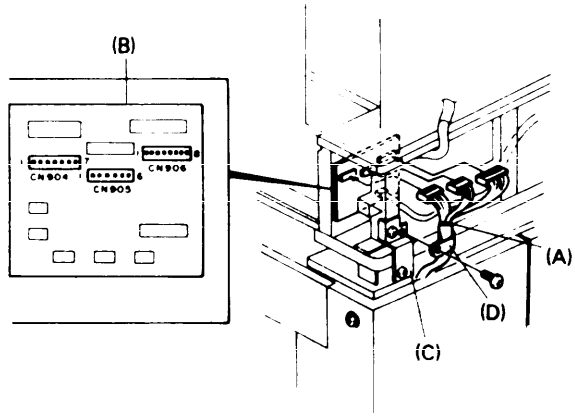
18. Connect the bank interface harness (A) to the 3rd paper feed PCB (B) as shown.

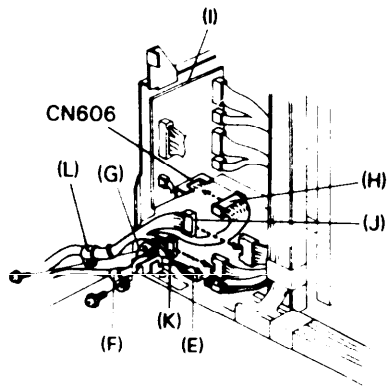
19. Clamp the bank interface harness to the bank docking bracket (C) with the large nylon wire clamp (D) (1 screw with washer).

20. ***Type 2 only:***
    a. *Connect the ac paper bank harness (E) to the copier and clamp the harness with the small nylon wire clamp (F) on the left hinge plate (G) of the PCB plate as shown(1 screw with washer).*

    b. ***NOTE:*** *When doing this step, run the harness from the left side of the PCB plate so that the rear cover may close properly.*
    Connect the 9P expansion interface harness connector (H) to CN606 of the paper feed PCB (I) and 2 free connectors (8P (J) and 6P (K)) to free connectors from the dc harness.

    c. *Fix the expansion interface harness to the left hinge plate of the PCB plate with the nylon wire clamp (L) (1 screw with washer).*





21. **NOTE: When reinstalling the expansion rear cover, place the bank ac harness inside the expansion unit.**
    Reinstall all covers. (with the following exceptions)
    - **If the LCT is to be installed, leave off the bank rear cover.**
    - **If the duplex unit is to be installed, leave off the expansion rear cover.**
    - ***Type 2 only:***
      Leave off the copier rear cover if the duplex unit, DF, and/or sorter are to be installed.

22. **Fill out the New Equipment Condition Report.**

2. Expansion Unit Installation

Accessory Check

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

1. Installation procedure 1
   (115V - English only/220V - five languages)
2. New Equipment Condition Report 1
3. Envelope - NECR (115V only) 1
4. Paper guide 1
5. Copier relay unit 1
6. Nylon wire clamp (10N) 1
7. Pan head screw - M4 X 8 5
8. Pan head screw with washer - M4 X 8 1

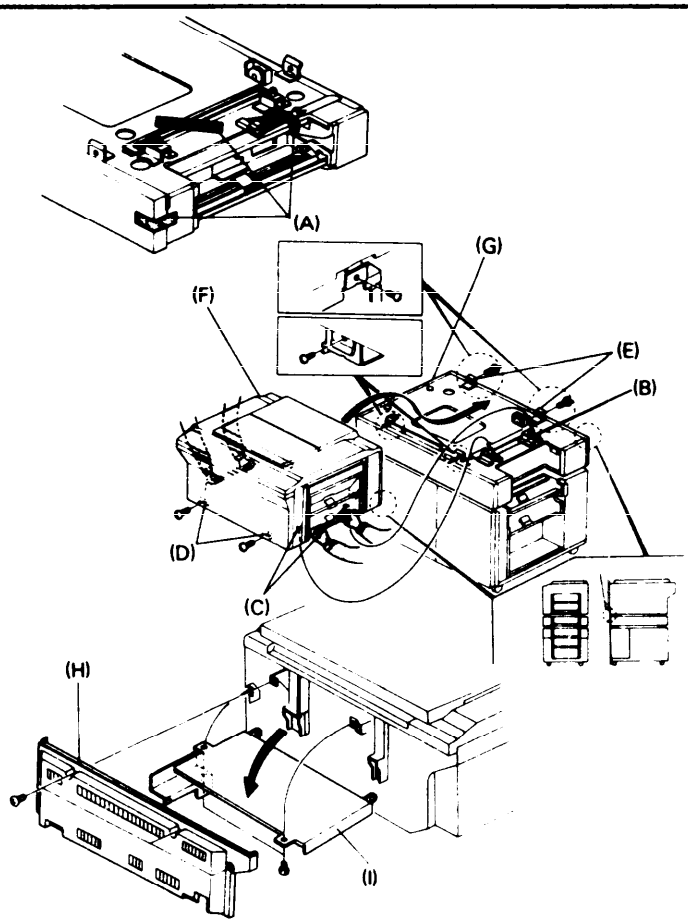
1. Remove the strips of shipping tape (A).

2. **NOTES:** When doing this step:
   a. Align the 2 pins (B) of the expansion unit with the holes (C) in the base plate of the copier. At this time, the copier and the expansion unit right side covers and cassette holders will align with one another.

   b. The mounting brackets (D) of the copier must be positioned in front of the mounting brackets (E) of the expansion unit.

   Set the copier (F) on the expansion unit (G) and secure the copier (4 screws).

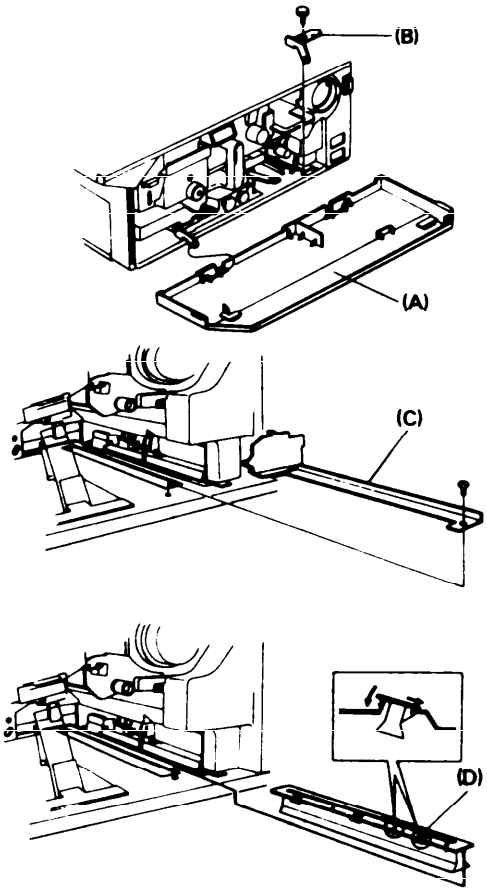
3. Remove the rear cover (H) of the copier (3screws) and lower the PCB plate (I) (2screws).



4. Remove the copier front cover (A) and right side hinge bracket (B) (1 knob screw).

5. Remove the cover plate (C) from the base of the copier (1 screw).

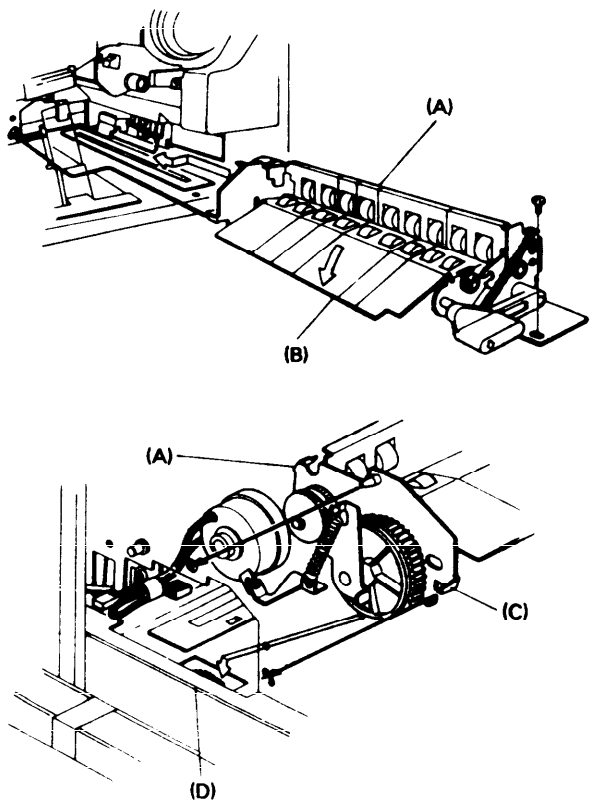
6. Install the paper guide (D) into the opening of the copier base plate as shown.



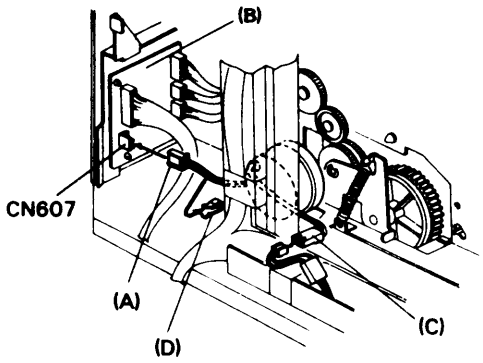
7. Install the copier relay unit (A) by opening the relay guide plate (B) as shown (1 screw).

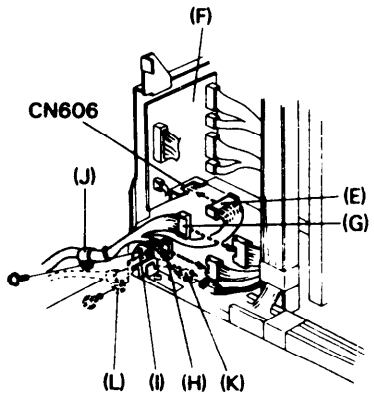
   NOTE: Be sure the pins (C) and gears (D) are properly aligned with one another on the rear side of the copier.

8. Remove the tape binding the harnesses of the copier relay unit.



9. Connect the copier relay unit harnesses (A) to CN607 of the paper feed PCB (B) and the copier relay clutch connector (C) to the 2P free connector from the dc harness.
10. Fix the copier relay unit harness with the wire clamp (D) on the copier base plate as shown.
11. **NOTE:** Before doing the following step, run the harness to the left side of the PCB plate so that the rear cover may close properly.
    Connect the 9P expansion interface harness connector (E) to CN606 of the paper feed PCB (F) and 2 free connectors (8P (G) and 6P(H)) to free connectors from the dc harness.
12. Fix the expansion interface harness to the left hinge plate of the PCB plate (I) with the nylon wire clamp (J) (1 screw with washer).
13. ***System with Paper Bank only***
    Connect the ac paper bank harness (K) to the copier and clamp the harness with the small nylon wire clamp (L) on the left hinge plate of the PCB plate as shown (1 screw with washer).
14. **NOTE:** When doing this step, place the bank ac harness inside the expansion unit rear cover.
    Reinstall the expansion unit covers.
    (Leave off the expansion rear cover if the duplex unit or LCT will be installed in the expansion unit.)
15. Fill out the New Equipment Condition Report.





3. Large Capacity Tray Installation

Accessory Check

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

1. Installation procedure 1
   (115V - English only/220V - five languages)
2. New Equipment Condition Report 1
3. Envelope - NECR (115V only) 1
4. Snap collar 1
5. Pick-up roller assembly 1
6. Plastic bushing 1
7. Feed roller pulley 1
8. Drive belt 1
9. Spring 1
10. Paper end sensor unit 1
11. Caution decal 1
12. E-ring - M6 1
13. Pan head screw - M4 X 8 2
14. Pan head screw - M4 X 12 2
15. Multilingual decals (220/240V only) ..... 1 set

3-1. Large Capacity Tray Installation with Paper Bank

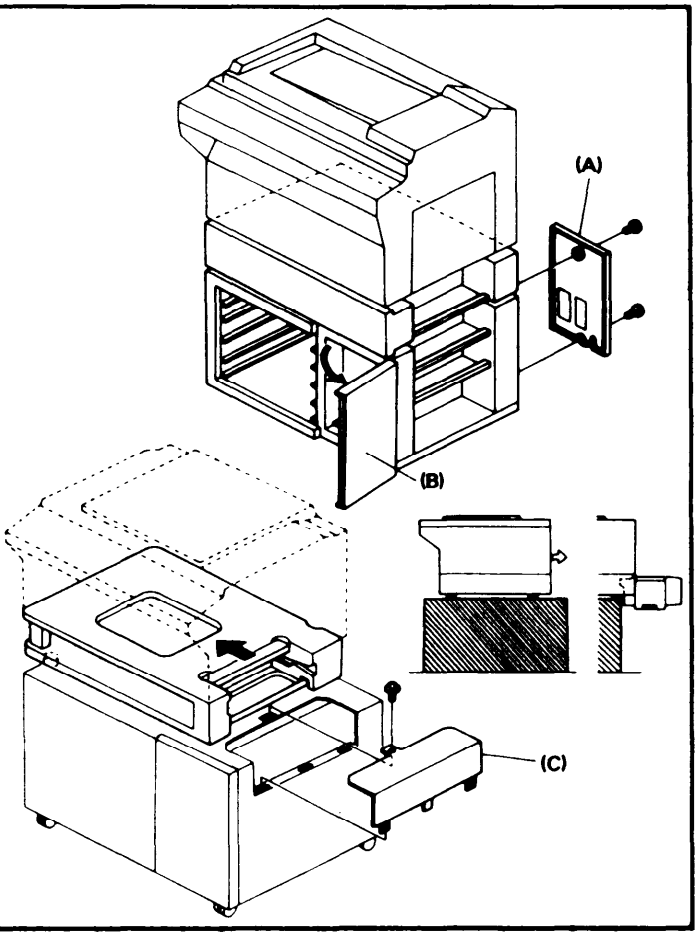
When installing the large capacitytray, the paper bank must be modified as follows:

1. Remove the paper bank rear cover (A) (2 screws) and open the system table front door (B).
2. Refer to the common procedure for large capacity tray installation.

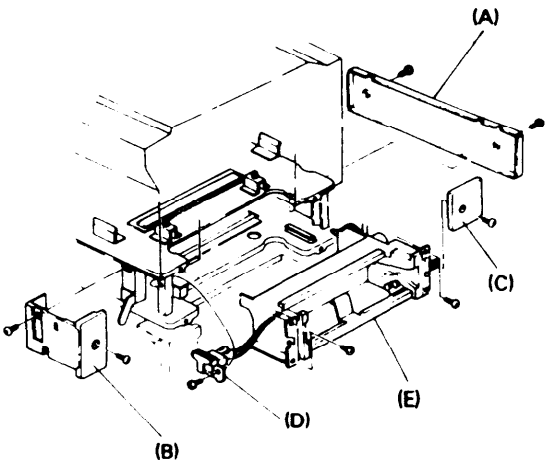
3-2. Large Capacity Tray Installation without Paper Bank

When installing the large capacity tray, the 3rd paper feed unit must be modified as follows:

1. Move the copier to the left and remove the cover plate (C) on the right side of the system table (1 screw),and then reposition the copier on the table.
   NOTE: If the system does not contain the special system table, move the copier to the right so that the large capacity tray can overhang the end of the table.

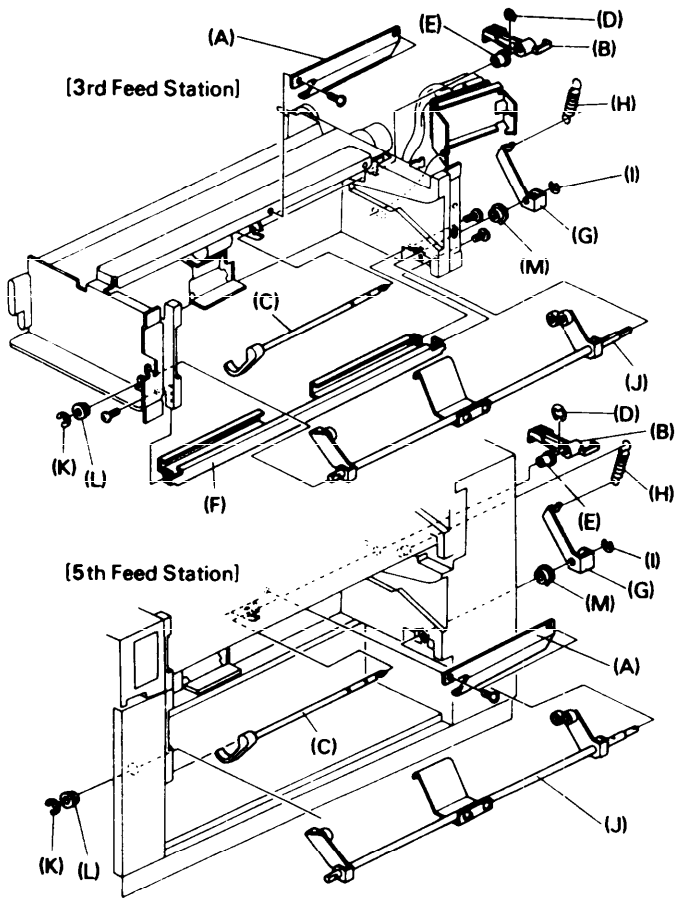


2. Remove the rear expansion unit cover (A) (2 screws).
3. Remove the front (B) and rear (C) right covers of the expansion unit (front - 2 screws, rear - 1 screw).
4. Remove the right side safety switch assembly (D) (1 screw).
5. Disconnect the expansion interface harness from the copier if installed.
6. Pull out the 3rd paper feed unit (E) from the expansion unit.
7. Remove the 3rd paper feed PCB assembly (1 screw).
8. Refer to the common procedure for large capacity tray installation.

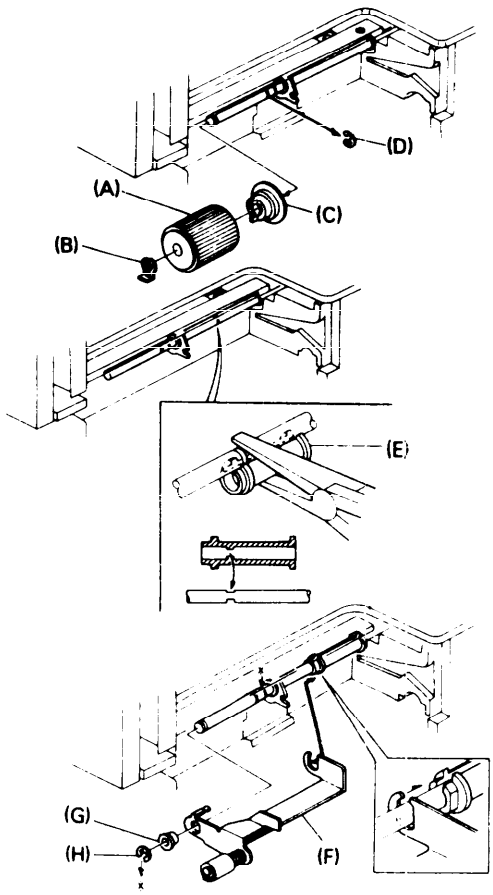


3-3 Common Procedure for Large Capacity Tray Installation

1. Remove the paper end feeler cover (A) (2 screws).
2. Remove the actuator (B) of the paper end feeler.
3. Remove the paper end feeler (C) (1 E-ring (D), 1 nylon bushing (E)).
4. ***3rd feed station only:***
   Remove the feed stay (F) (3 screws).
5. Remove the cassette arm lever (G) (1 spring (H), 1 E-ring (I)).
6. Remove the cassette arm assembly (J) (front – 1 E-ring (K) and 1 bushing (L), rear – 1 bushing (M)).



7. Slide off the feed roller (A) (1 snap ring (B)).
8. Remove the nylon hub (C) from the feed roller.
9. Remove the E-ring (D) on the feed roller shaft.
10. Set the snap collar (E) onto the feed roller shaft like an E-ring. (The snap collar has only one direction. Align the inside lip of the snap collar with the groove on the feed roller shaft.)
11. Install the pick-up roller assembly (F) onto the feed roller shaft (1 nylon bushing (G), 1 E-ring (H)).
    NOTE: The end of snap collar is kind of bushing. Be sure that the pick-up roller bracket fits the end of snap collar.

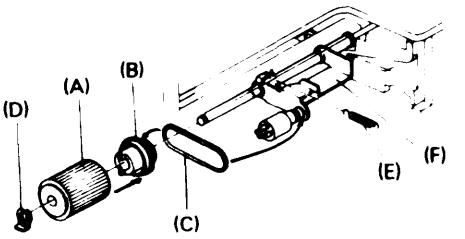


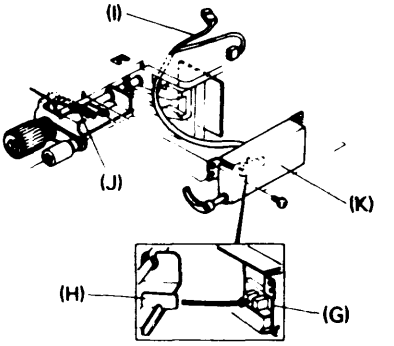
12. Reinstall the feed roller (A) with the feed roller pulley (B) and drive belt (C) (1 snap ring (D)). (Make sure that the drive belt is positioned in the groove of the pick-up and feed roller pulleys.)

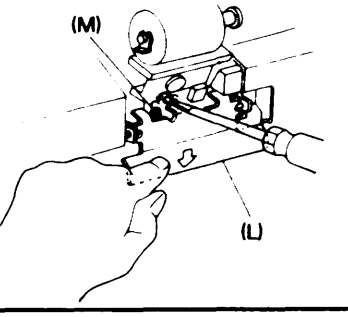
13. Hook one end of the spring (E) to the pick-up roller assembly (F).

14. **CAUTION:** On this step, be careful not to damage the photo-interrupter (G) with the actuating part of the pick-up roller bracket (H).
    a. First run the paper end sensor harness (I) through the access hole of the rear side plate of the 3rd paper feed unit or paper bank and hook the spring (J) onto the paper end sensor unit (K).
    b. Then, install the paper end sensor unit (2 screws). (The pick-up roller should be positioned over the paper end feeler.)

15. Press the pad positioning plate (L) down and unhook the spring (M) using a small screwdriver.







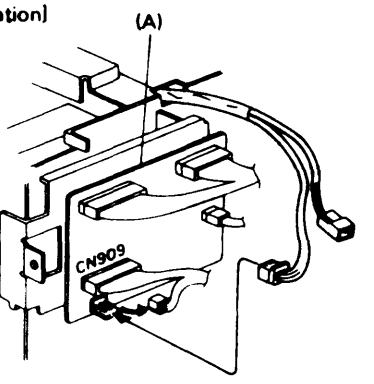
16. ***3rd feed station only:***
    Reinstall the 3rd paper feed PCB.

17. Disconnect the red 3P connector:
    - *from CN909 (3rd paper feed PCB (A))*
      or
    - from CN957 (paper bank PCB (B)).

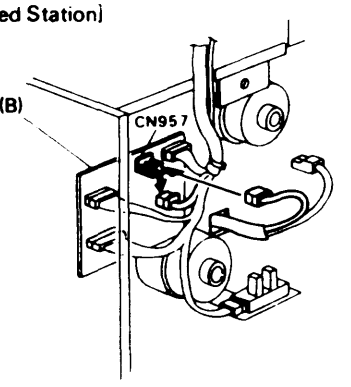
18. Connect the paperend sensor harness to:
    - *CN909 (3rd paper feed PCB)*
      or
    - To CN957 (paper bank PCB).

19. ***3rd feed station only:***
    a. *Pass the expansion interface harness and the safety switch assembly around their respective expansion unit uprights.*
    b. *Reinstall the 3rd paper feed unit into the expansion unit (4 screws)and the safety switch assembly (1 screw).*
    c. *Reconnect the expansion interface harness to the copier (CN606 of the paper feed PCB and 2 free connectors).*
    d. *Reinstall front and rear right expansion unit covers.*

[3rd Feed Station]



[5th Feed Station]



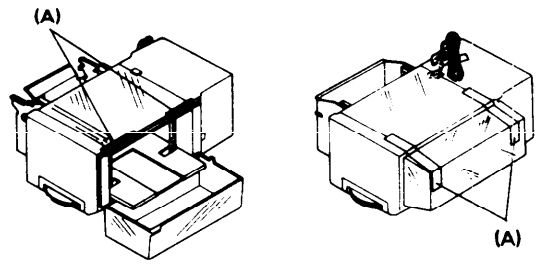
20. Remove the strips of shipping tape (A).

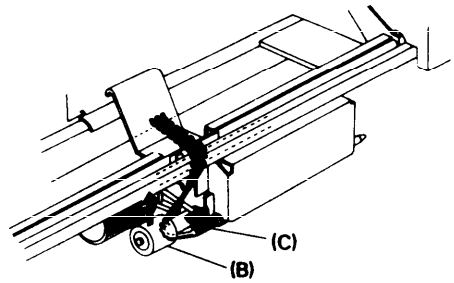
21. Fix the pick-up roller (B) at the up position with (shipping) tape (C) as shown.

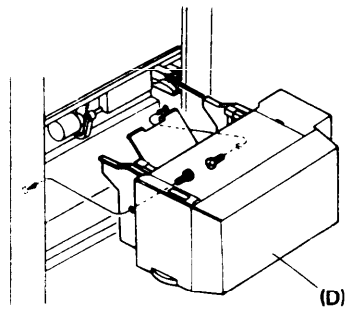
22. Place the large capacity tray (D) in the cassette holders of either the 3rd or 5th feed station.
    NOTE: Make sure that the rib of the tray side plate fits into the groove of the cassette holder.

23. Remove the strip of tape holding the pick up roller.

24. Open the side and top covers and secure the tray to the 3rd or 5th feed station (2 long screws).







25. Disconnect the white 7P connector from:
    - *CN908 (3rd paper feed PCB(A))*
    or
    - CN956 (paper bank PCB (B)).

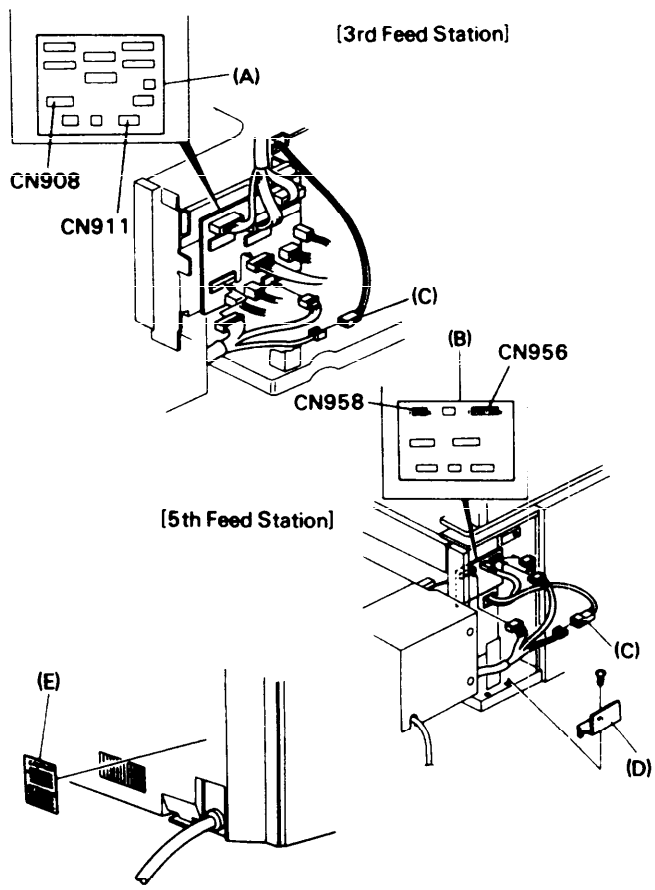
26. Connect the tray harness to the expansion unit or the paper bank as follows:
    - 4P connector to:
      - *CN911 (3rd paper feed PCB)*
      or
      - CN958 (paper bank PCB)
    - 7P connector to:
      - *CN908 (3rd paper feed PCB)*
      or
      - CN956 (paper bank PCB)
    - 3P connector to the free connector (C) from the paper end sensor unit.

27. ***5th Feed Station Only:***
    Remove the harness hole plate (D) (1 screw).

28. Reinstall the covers except for the expansion and copier (type II only) rear covers for duplex installation.

29. Stick the caution decal (E) on the copier rear cover.

30. Fill out the New Equipment Condition Report.



4. Copier Installation

Accessory Check

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

1. Installation procedure 1
   (115V - English only/220V - five languages)
2. New Equipment Condition Report 1
3. Envelope - NECR (115V only) 1
4. Cassette - large 1
5. Cassette - small 2
6. Receiving tray 1
7. Original holder 1
8. Operating instructions holder 1
9. Operating instructions 1
   (115V - English only/220V - five languages)
10. Operating instruction cards 1
    (115V - English only/220V - five languages)
11. Multilingual decals (220/240V only) ..... 1 set

1. Remove the shipping tapes (A) from the copier as shown.

2. Open the copier front cover (B), remove the shipping tape (C) and the wedge (D) between the registration rollers as shown.

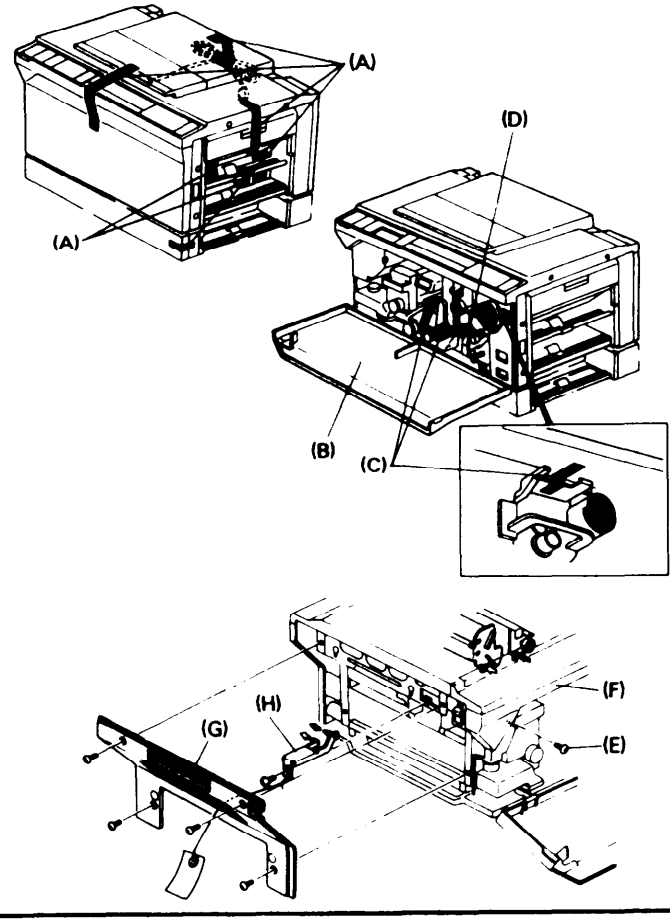
3. Remove the left side screw (E) of the front inner cover (F).

4. Remove the copier left cover (G) (4 screws).

5. Remove the scanner lock plate (H) (1 screw).

   NOTE: Save the scanner lock plate for future use.

6. Reinstall the copier left cover and the left side screw of the front inner cover.



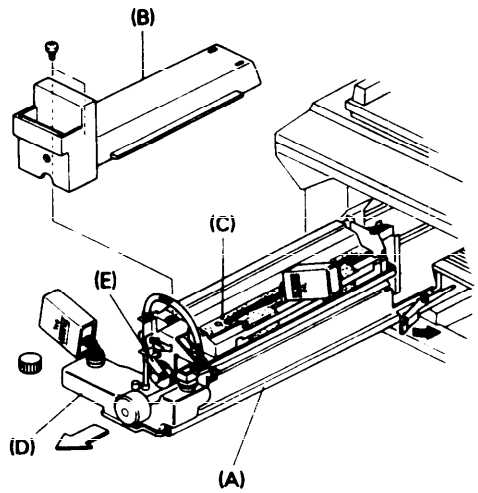
7. Pull out the fusing unit (A) to the lock position and remove the fusing unit cover (B) (2 screws).

8. Prime the oil supply pad (C) with silicon oil.

9. Fill the oil tank (D) with silicon oil.

10. Manually operate the oil pump lever (E) and confirm the proper operation and condition of the silicon oil supply system.

11. Reassemble the fusing unit and return it to its original position.

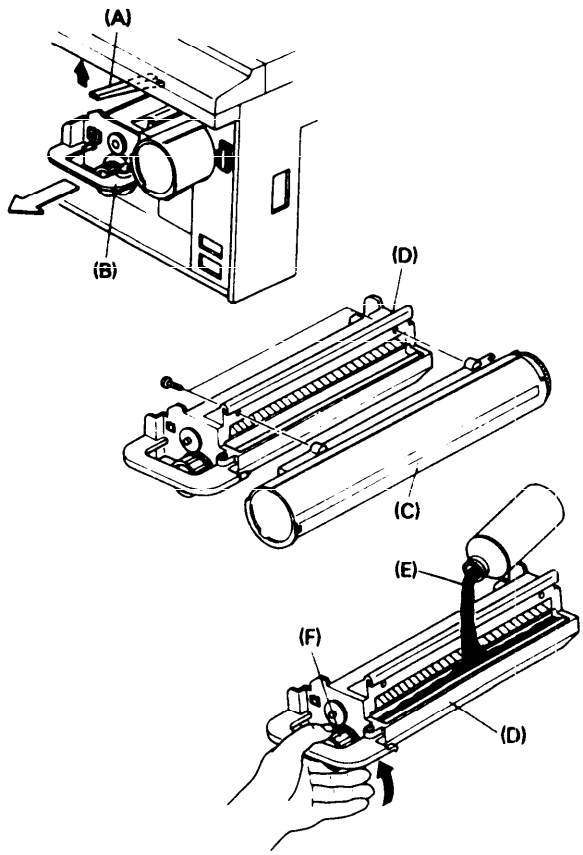


12. Raise the development lock lever (A) and pull out the development unit (B). Place the unit on a clean sheet of paper.

13. Separate the toner tank (C) from the development unit (D) (2 screws).

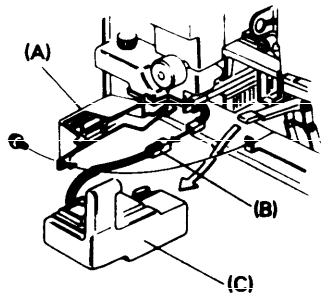
14. Pour one bottle of developer (E) into the development unit while turning the knob (F) counterclockwise to distribute the developer.

15. Remount the toner tank on the development unit.



16. Swing the toner collection bottle cover (A) to the left (1 screw) and unplug the toner overflow sensor connector (B).

17. Remove the toner collection bottle (C).

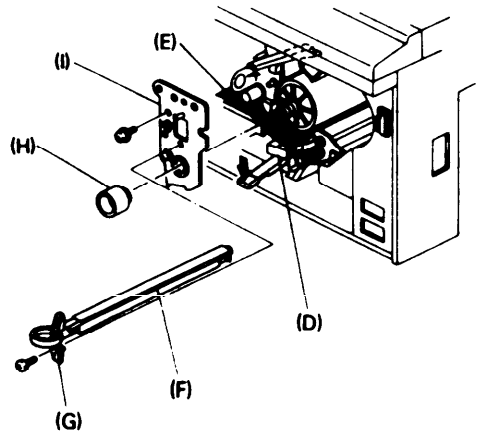


18. Lower the T/S corona unit (D).

19. Place a sheet of paper (E) over the T/S corona unit.

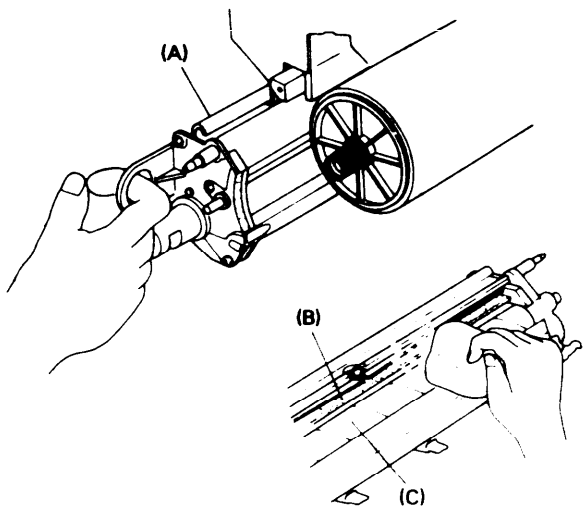
20. Remove the charge corona unit (F) together with the wire cleaner (G) (1 screw).

21. **NOTE:** The drum stay knob (H) is reverse threaded.
Remove the drum stay (I) (1 knob and 1 screw).



22. Remove the cleaning unit (A). Dust the cleaning blade (B) and brush (C) with setting powder (P/N 54429101).

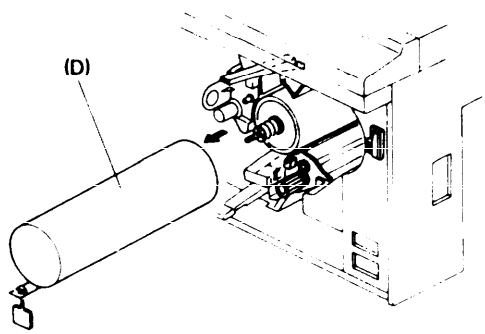
23. Reinstall the cleaning unit.



24. Pull out the drum protective sleeve (D).
NOTE: Save the drum protective sleeve for future use when servicing the copier.

25. Make sure that the wire cleaner is properly positioned, then reinstall the drum stay and the charge corona unit.

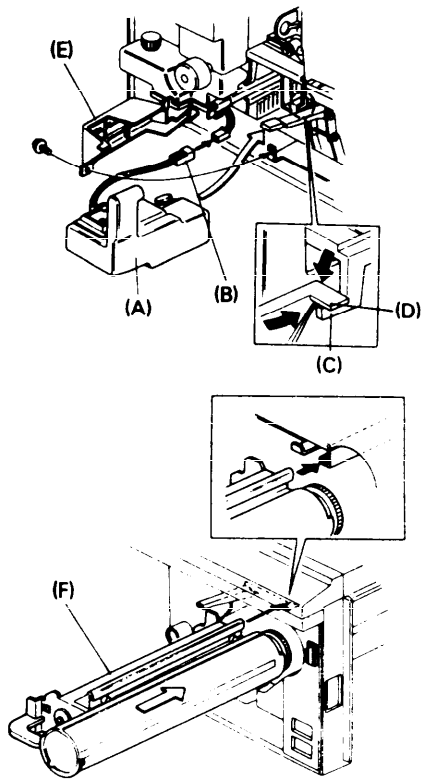
26. Remove the paper over the T/S corona unit and return the T/S corona unit to its original position.



27. Reinstall the toner collection bottle (A) and plug in the toner overflow sensor connector (B).

28. Make sure that the hooks of the transport plate (C) are positioned underneath the bottle cover (D), then reinstall the toner collection bottle cover (E) (1 screw).

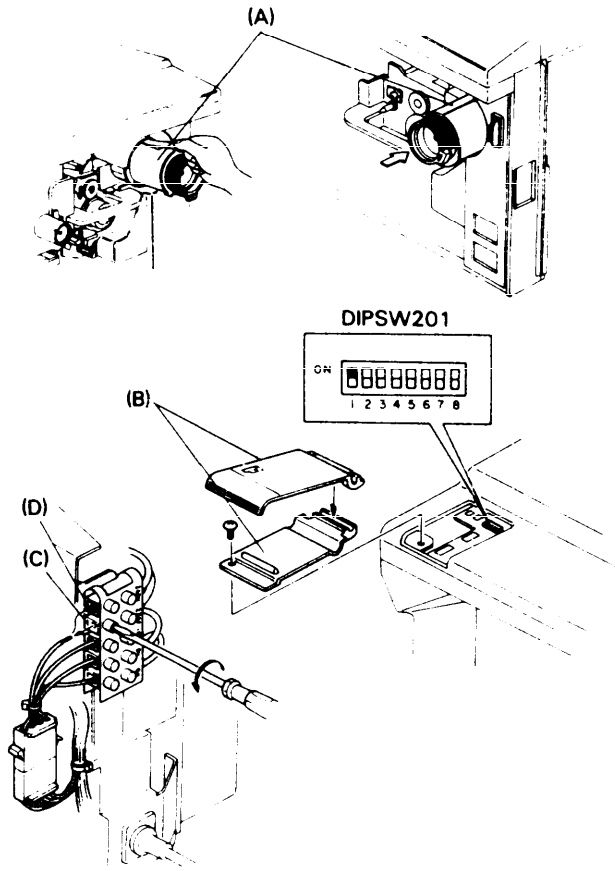
29. **CAUTION:** When installing the development unit (F), be sure the development unit rail is properly engaged with the unit guide rail on the copier.
Reinstall the development unit.



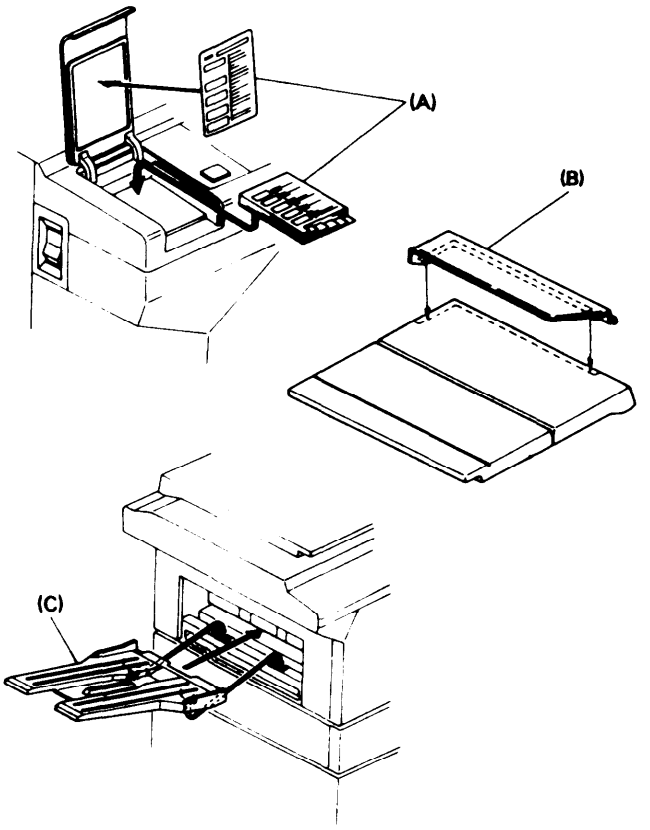
30. Install one toner cartridge (A).
NOTE: Confirm that the toner cartridge gear is properly engaged by attempting to rotate the cartridge counterclockwise. When the toner cartridge gear is properly engaged, the toner cartridge will not rotate freely.

31. Remove the Dip switch cover (B) on the left side of the operation panel (1 screw) and turn on Dip switch 201-1.

32. ***240 volt areas only:***
Remove the copier rear cover (3 screws), disconnect the wire from the 220 volt terminal (C), and connect this wire to the 240 volt terminal (D) as shown. Then reinstall the copier rear cover.

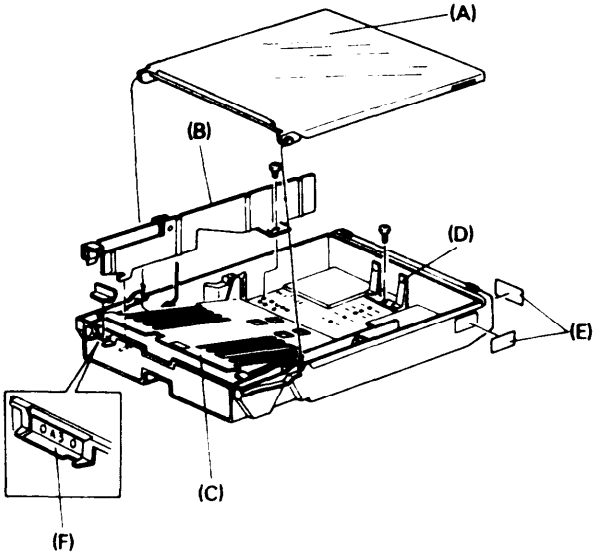


33. Lower the platen cover.
34. Plug in the machine and turn on the main switch.
35. After the warm up period is completed, enter 99 copies and press the Start key for drum conditioning.
36. After the machine stops, turn off the main switch.
37. Turn off Dip switch 201-1 and reinstall the Dip switch cover.
38. Install the operating instruction cards (A) over the Dip switch cover as shown (two-sided tape).
39. Install the original holder (B) on the platen cover as shown and install the receiving tray (C).
40. Load paper into the cassette and check machine operation and copy quality.
41. Fill out the New Equipment Condition Report.



Cassette Modification

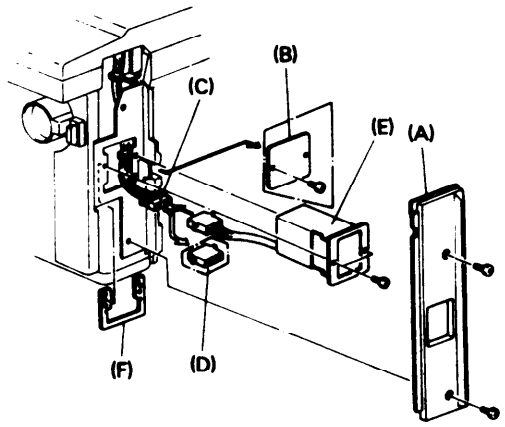
1. Take off the cassette cover (A).
2. Remove the side fences (B) (1 screw each) and the bottom plate (C).
3. Reposition the rear fence (D) in the desired paper size position (1 screw).
   NOTE: Paper size positions are shown on the inside of the cassette.
4. Reinstall the bottom plate.
5. Reinstall the side fences in the desired paper size position.
6. Attach the proper paper size decals (E) on the cassette at the positions shown.
7. Insert the actuator plate (F) in the slot on the front of the cassette as shown.



Key Counter Holder Installation

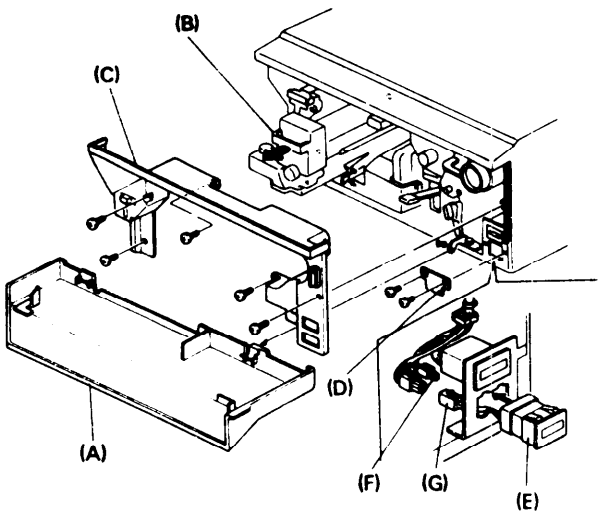
NOTE: Three types of counters are recommended for this copier (Ricoh, Hecon, and Hengstler key counters).

1. Remove the right front cover (A) (2 screws).
2. Remove the cover plate (B) (2 screws).
3. Pull out the 4p key counter connector (C) through the key counter access hole and remove the shorting plug (D).
4. Connect the 4P connector on the key counter holder (E) to the key counter harness.
5. Hold the fixing plate on the inside of the key counter bracket (F) and insert the key counter holder.
6. Align the holes in the fixing plate with the mounting holes of the key counter holder and secure the key counter holder.
   NOTE: The fixing plate has three sets of holes. Make sure to use the holes that match the type of counter when installing.
7. Reinstall all covers.



Accessory Counter Installation

1. Remove the front cover (A) (1 knob screw).
2. Pull out the fusing unit (B) about half way.
3. Remove the front inner cover (C) (5 screws); this cover should be removed from the top first.
4. Remove the accessory counter cover plate (D) (2 screws).
5. Push the accessory counter (E) into the space provided until it locks.
6. Connect the 2P connector (F) on the accessory counter to the counter harness (G).
7. Reinstall all covers.



5. Duplex Unit Installation

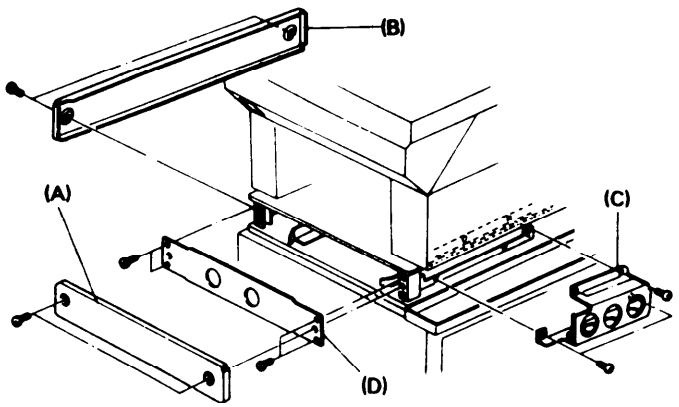
Accessory Check

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

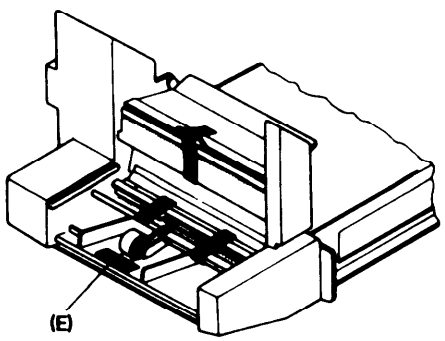
1. Installation procedure 1
   (115V - English only/220V - five languages)
2. New Equipment Condition Report 1
3. Envelope - NECR (115V only) 1
4. Cover stopper 1
5. Duplex safety switch cover 1
6. Duplex receiving tray 1
7. Jogger unit cover 1
8. Tray supporter 1
9. Duplex key top 1
10. Duplex key cover 1
11. Exit roller belt 2
12. Pan head screw - M4 X 8 7
13. Pan head screw - M4 X 12 2
14. Truss screw - M4 X 8 4
15. Washer - 4.2 X 20 2
16. Multilingual decals (220/240V only) ..... 1 set

1. Remove the left (A) and rear (B) covers from the expansion unit (2 screws each).

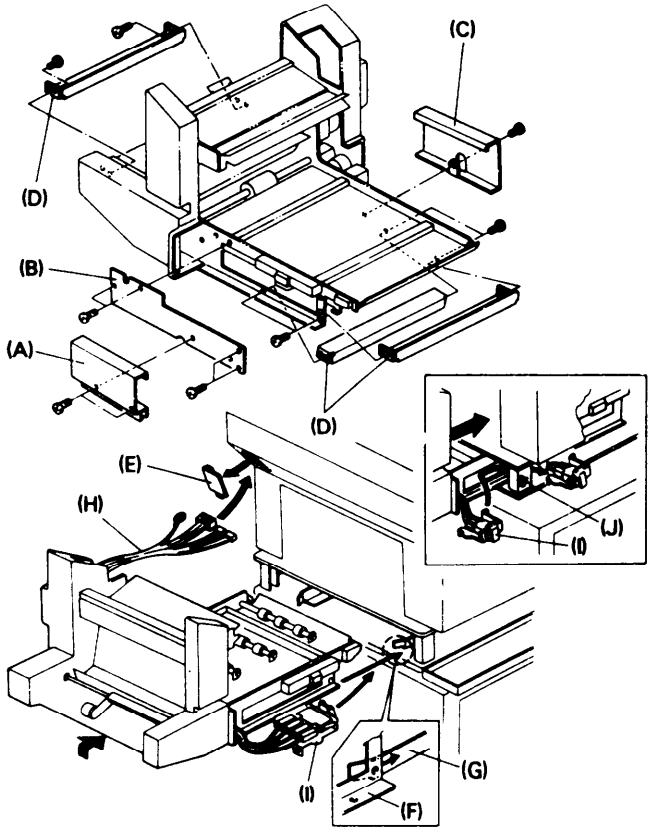
2. Remove the front (C) and left (D) side expansion shipping brackets (4 screws each).



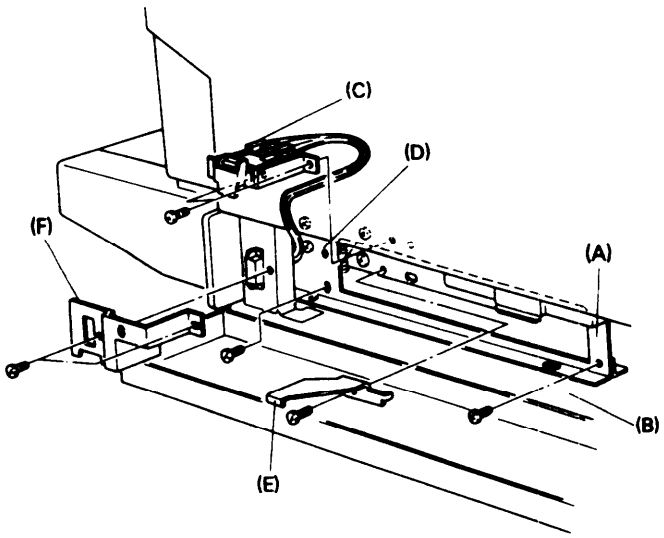
3. Remove the strips of shipping tape (E).



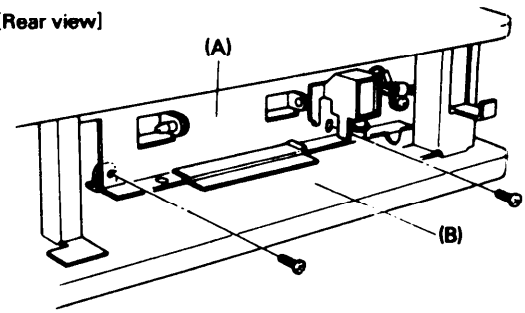
4. Remove the outer (A) and inner (B) front side duplex shipping brackets (outer - 2 screws, inner - 4 screws).
5. Remove the rear duplex shipping bracket (C) (1 screw).
6. Remove all three shipping stays (D) from the duplex unit (2 screws each).
7. *If the mylar paper guide was previously installed, lower the guide plate lever of the expansion relay unit and remove the mylar paper guide.*
8. Remove the duplex harness hole cap (E) from the copier left cover.
9. **NOTE:** When sliding the duplex unit into the expansion unit, lift the jogger unit by the sides to prevent the turn guide from being damaged.
   Slide the duplex unit halfway into the expansion unit. Make sure that the duplex unit side plates (F) fit to the outside of the expansion unit rails (G).
10. Run the harness (H) into the copier through the duplex harness hole and place the duplex safety switch (I) (inside)around the duplex unit frame upright (J).
11. Slide the duplex unit all the way into the expansion unit.



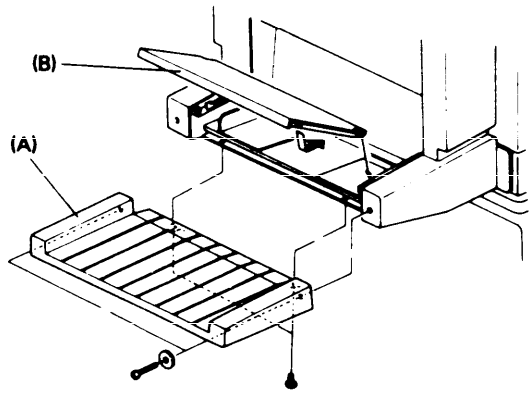
12. Secure the duplex unit (A) to the expansion unit (B) (4 screws).
13. Secure the duplex safety switch (C) to the duplex unit front side plate (D) (2 screws).
14. Secure the cover stopper (E) to the duplex transport side plate (1 screw).
15. Install the duplex safety switch cover (F) (2 truss screws).



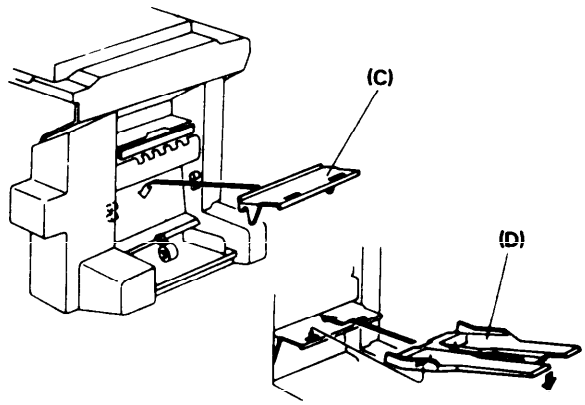
[Rear view]



16. Install the duplex receiving tray (A) (2 truss screws and 2 long screws + washers) and the jogger unit cover (B).



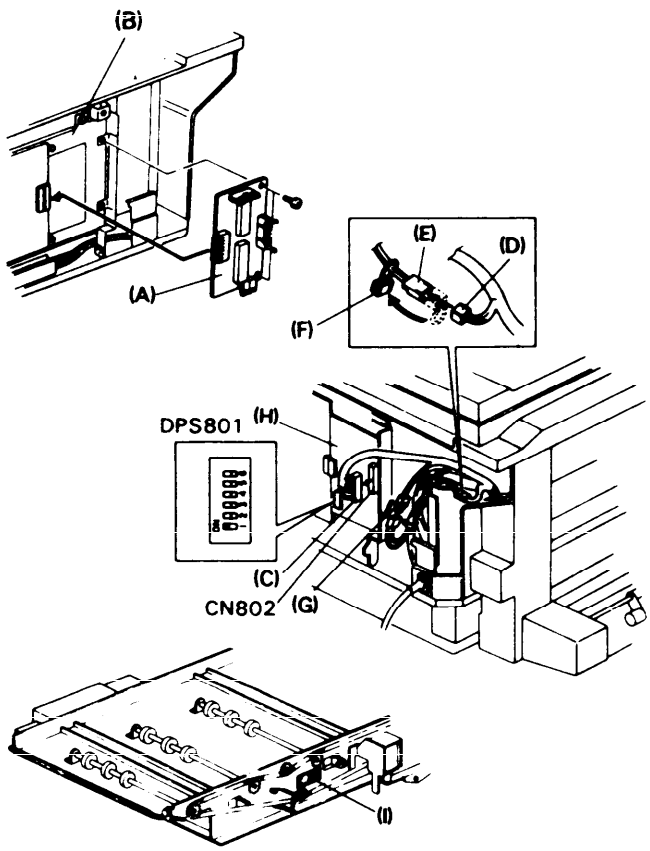
17. Install the tray supporter (C) and copier receiving tray (D).



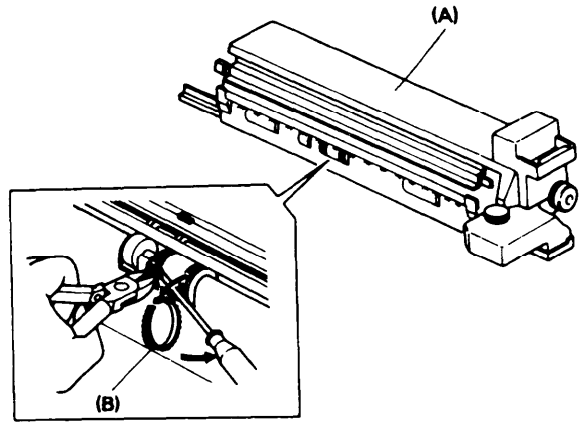
18. Remove the copier rear cover (3 screws) and install the interface board (A) on the PCB plate (B) (2 screws, 1 connector).

19. Connect the duplex harness to the copier as follows:
    - Black connector (C) to CN802 on the interface board.
    - Yellow connector (D) to yellow 2P connector (E) on the dc harness which is shorted by a yellow connector (F).
    - White connector (G) to white 2P connector on the ac harness

20. Turn on Dip switch 801-1 on the interface board (H).
    NOTE: Read the instructions on the decal (I) on the duplex rear side plate and change the position of DIP SW801-5 accordingly.



21. Pull out the fusing unit (A) and remove the 2 belts (B) off of the center exit roller.

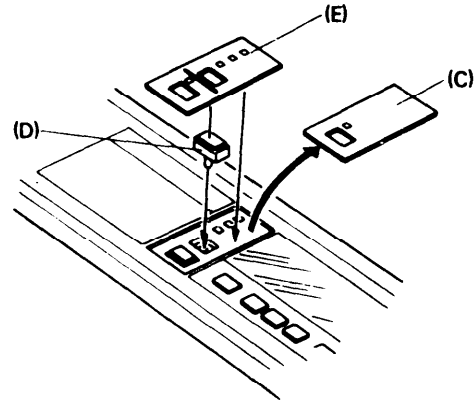


22. Peel off the panel cover (C) on the left side of the operation panel.

23. Set the duplex key top(D) and adhere the duplex key cover (E) as shown.

24. Install all covers except the rear copier cover for sorter and DF installation.

25. Fill out the New Equipment Condition Report.



6. Sorter Installation

Accessory Check

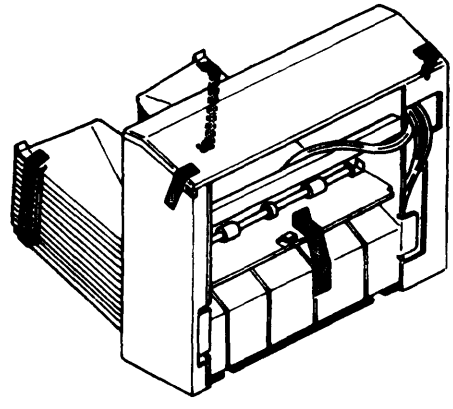
Check the quantity and condition of the accessories in the box according to the following list.

1. Knob Screw 2
2. Grounding Screw 1
3. Star Washer 1
4. New Equipment Condition Report 1
5. Envelope-NECR (115V only) 1
6. Multilingual Decal (220/240V only) 1
7. Sort/Stack Key Top 1
8. Sort/Stack Key Cover 1

The following parts are required to install the sorter.

Sorter Adapter Type B 1
Interface PCB Type B 1

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

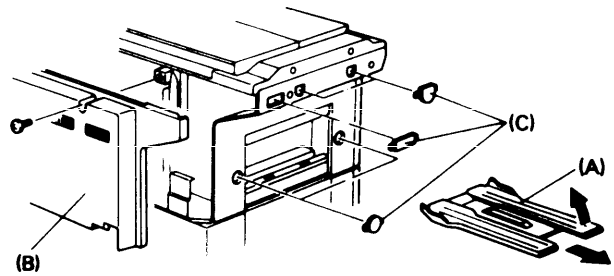


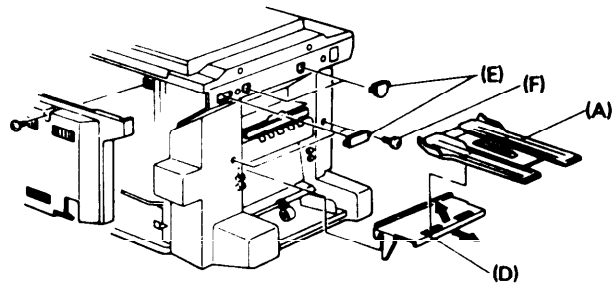
Check the accessories according to the following list.

In the Sorter Adapter Type B box:

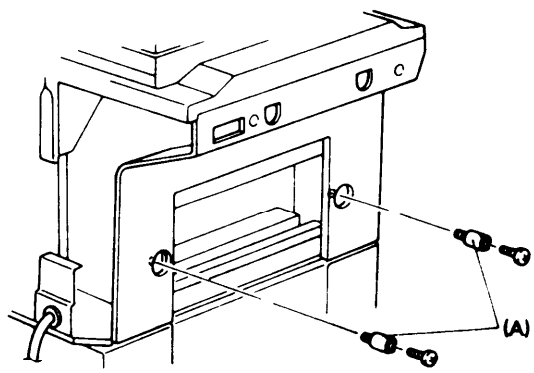
1. Mounting Stud 2
2. M4 x 8 Screw 2

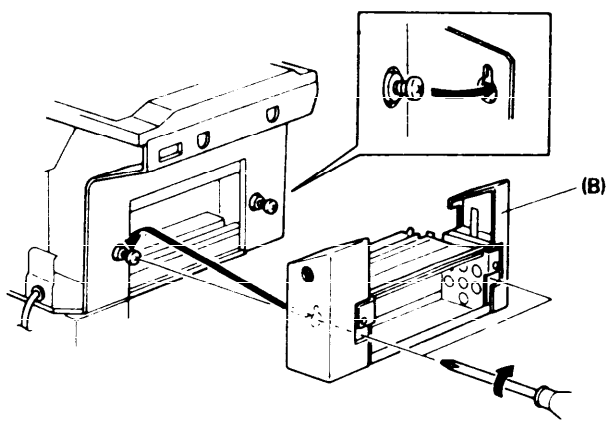
1. Remove the strips of tape shown in the figure on the preceding page.
2. Turn off the main switch and unplug the power supply cord of the copier.
3. Remove the receiving tray (A) and rear cover (B) of the copier. (2 screws)
4. a. If the duplex is not installed, remove the five plastic caps (C) from 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.



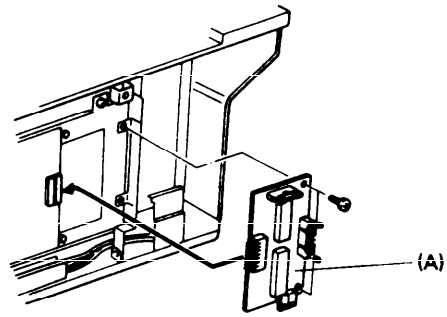


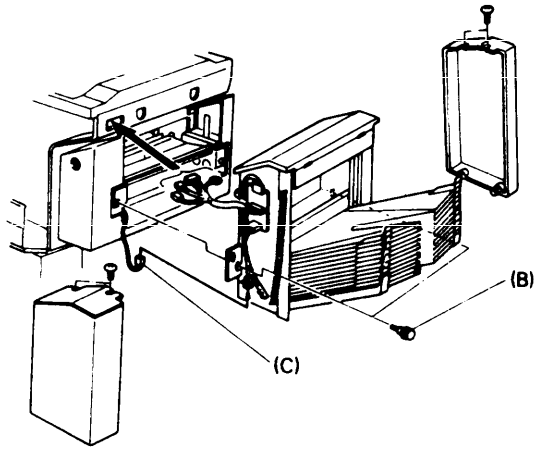
5. If the copier is not fitted with the duplex option, install the sorter adapter as follows:
   a. Screw in the lower mounting studs (A).
   b. Screw the M4 x 8 screws halfway into the mounting studs.
   c. Hook the sorter adapter (B) on the screws, and tighten the screws to fix the adapter.



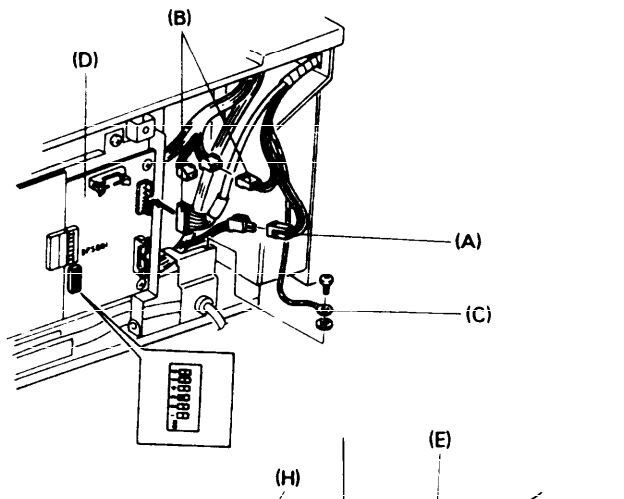


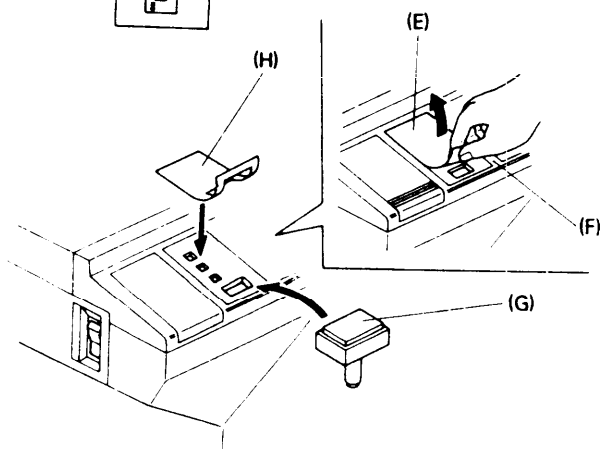
6. Install the interface board (A) on the PCB plate (2 screws, 1 connector).
7. Remove the sorter covers (2 screws each).
8. Mount the sorter on the copier. Insert the two mounting studs into the docking holes, and pass the harness through the access hole.
9. Fix the sorter unit to the copier with two knob screws (B).
10. If the copier in not fitted with the duplex option, connect the sorter adapter harness (C) to the sorter (Free white 2P connector).





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 star washer).
14. Turn on DIP SW801-3 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. Set the Sort/Stack key top (G) and adhere the Sort/Stack key cover (H).
18. Check the sorter's operation and fill out the New Equipment Condition Report.





7. Document Feeder Installation

Accessory Check

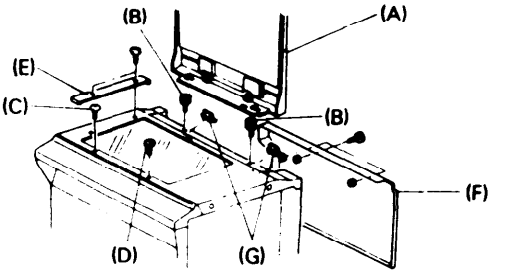
Check the quantity and condition of the accessories in the box according to the following list.

1. Installation procedure 1
   (115V - English only/220V - five languages)
2. New Equipment Condition Report 1
3. Envelope - NECR (115V only) 1
4. Original exit guide 1
5. Flip scale 1
6. Flip scale spring 1
7. Flathead shoulder screw 2
8. Original feed table 1
9. Original table cover 1
10. DF interface harness 1
11. Nylon harness bushing 1
12. DF key top 1
13. DF key cover 1
14. Test chart A4 1
15. Flathead screw - M4 X 6 2
16. Ground screw 2
17. Star washer 2
18. Pan head screw - M4 X 6 4
19. Pan head screw with washer - M4 X 6 2
20. Pan head screw - M5 X 12 4
21. Multilingual decals (220/240V only) ..... 1 set

1. Turn off the main switch.

2. Remove the following parts:
   A) Platen cover
   B) Mounting stud (2 pcs)
   C) Truss screw
   D) Plastic screw
   E) Left scale (2 screws)
   F) Rear cover (3 screws)
   G) ADF docking hole cap (2 pcs)

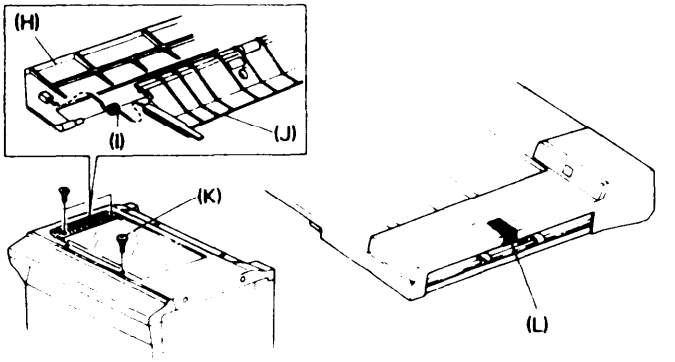
   NOTE: Save the above parts for future use.



3. Set the flip scale (H) (with the flip scale spring (I)) on the original exit guide (J); then, mount it as shown (2 flathead screws).

4. Secure two flathead shoulder screws (K) as shown in the figure.

5. Remove the strips of shipping tape (L).



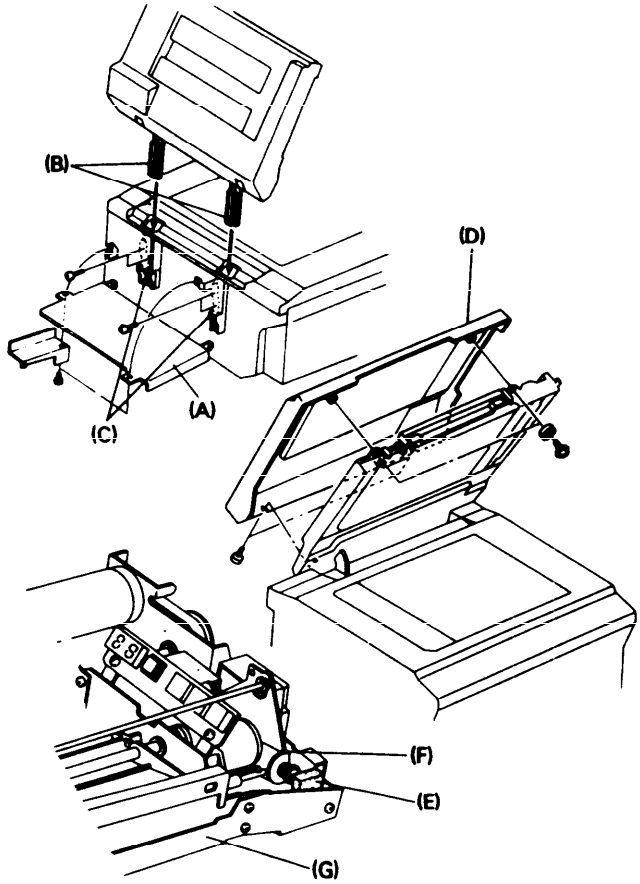
6. Lower the PCB plate (A) (2 screws).

7. Insert the mounting posts (B) into the DF mounting brackets (C).

8. Temporarily secure the mounting posts to the DF mounting brackets (4 screws,M5 x 7).

9. Remove the DF cover (D) (4 screws).

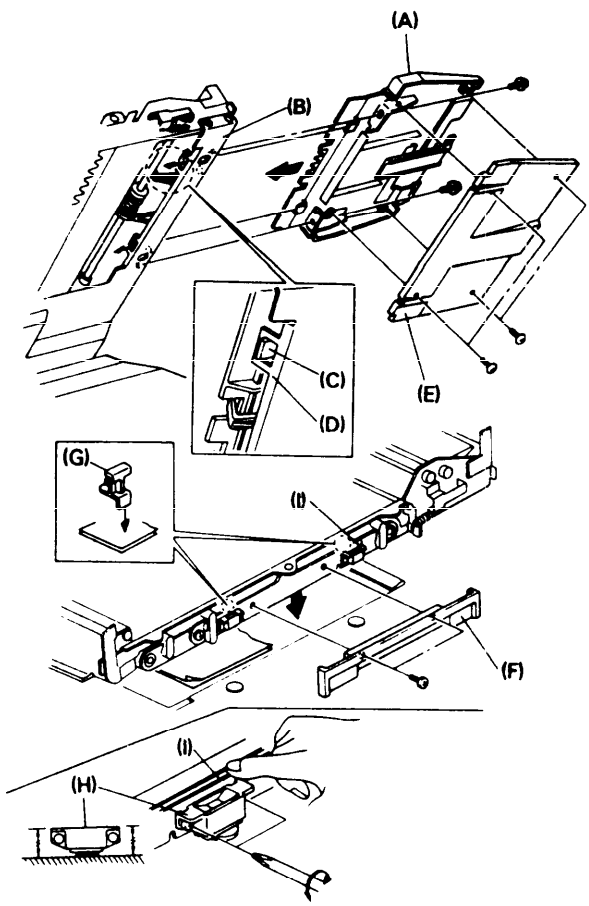
10. Remove the shipping form (E) between the stopper solenoid (F) and the DF side plate (G).



11. Install the original feed table (A) on the right side of the belt unit (B) (2 screws with washer). (Be sure to engage the 2 hooks (C) of the original table with the docking holes (D) of the belt unit.)

12. Install the original table cover (E) under the original table (4 screws).

13. Level the DF as follows:
    a) Remove the DF grip plate (F) (2 screws).
    b) Place 2 sheets of A3 (11" x 17") paper between the white belt guide spacers (G) and the exposure glass.
    c) Loosen the mounting screws of the right side magnetic catch (H). Push down the rightside of the magnetic catch bracket (I), then tighten the screws of the right magnetic catch. Repeat this process with the left side magnetic catch.
    NOTE: Make sure the magnetic catches are parallel with the copier top cover.
    d) Remove the 2 sheets of paper.



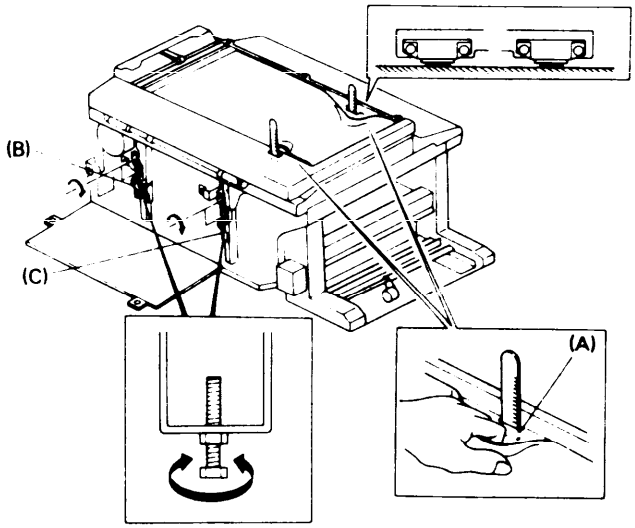
e) Adjust the height of rear side of the belt unit as follows:
   1) Lift the upper part of the feed belt out of the way and measure the distance between the top of the access hole (A) in the pressure roller support bracket and the lower part of the feed belt at the front and rear left corners.
   2) Adjust the two distances so that they are the same by using the left height adjusting bolt (B) on the DF mounting bracket.
   3) Adjust the right rear height adjusting bolt (C) so that the DF closes properly.

   NOTE: Make sure that the belt is properly positioned in the belt guide spacers.

   4) Tighten the four screws (M5 x 12) on the mounting posts. Lock the height adjusting bolts (B) (C) (2 lock nuts).

f) Install the DF grip plate.

g) Check that the DF closes properly.



14. **CAUTION**: On this step, avoid bending the fiber optics sharply; this will damage the fiber optics.

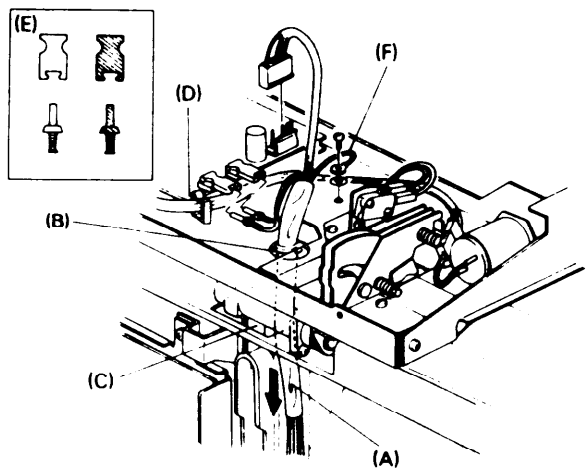
    Pass the DF interface harness (A) through the harness hole (B) of the DF and the docking hole of the copier (C).

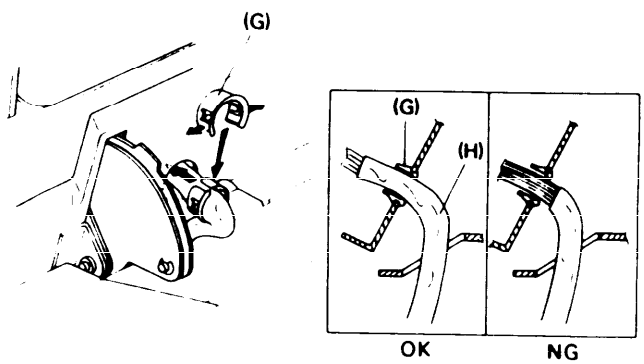
15. Connect the DF interface harness to the DF PCB (D) (3 connectors).

    NOTE: The fiber optics connectors (E) have different colors. Be sure to match these colors when making these connections.

16. Secure the DF ground wire (F) on the DF base plate (1 ground screw and star washer).

17. Open the DF and install the nylon harness bushing (G) from the underside. (This harness bushing should be positioned around the vinyl tube (H) of the DF harness as shown.)



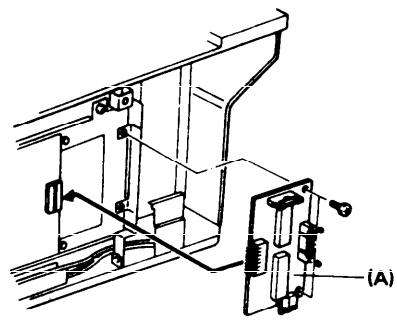


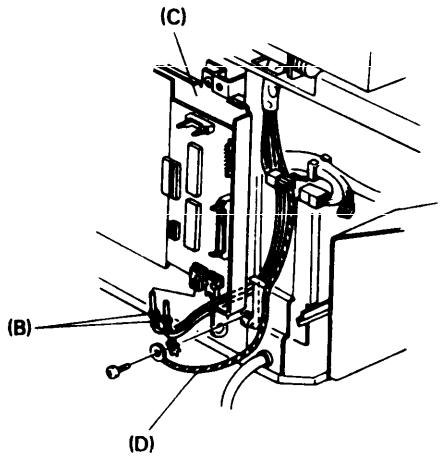
18. Raise and secure the copier PCB plate (2 screws).

19. Install the interface board (A) (2 screws, 1 connector). (This is not necessary if a sorter or duplex unit has already been installed on the system.)

20. Connect the 3 DF connectors.
    a) Run the two fiber optic connectors (B) from behind the PCB plate (C), being careful not to damage them, and connect them to the interface board as follows.
    CN806 — — Brown
    CN807 — — Black
    b) Connect the DF harness connector to the copier's ac 4P connector.

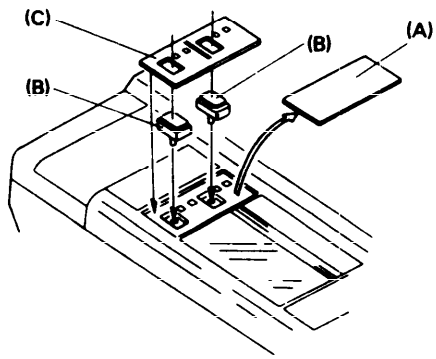
21. Secure the ground wire (D) to the copier frame (1 ground screw and star washer).





22. Peel off the panel cover (A) to the left of the special functions key cover on the operation panel.

23. Set the DF key tops(B) and adhere the DF key cover (C) as shown.



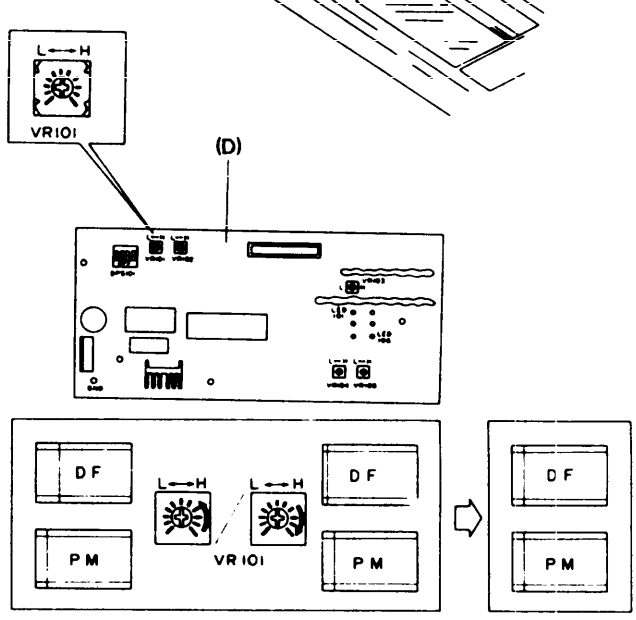
24. Adjust the lead edge registration as follows:
    a) Turn on the copier main switch and make a copy using the test chart in the platen mode with the flip scale.

    b) Keep this copy for reference and mark "PM" (Platen Mode) on the reverse side of it.

    c) Make a copy using the test chart with the DF.

    d) Adjust the DF registration against the platen reference mode ("PM") by using VR101 on the DF PCB (D).
    PM > DF: Turn VR101 clockwise
    PM < DF: Turn VR101 counterclockwise

    e) Continue to repeat steps 'c' and 'd' until you achieve the same registration as in step 'b'.



25. Replace all covers.

26. Check the operation of the DF and copier system.

27. Fill out the New Equipment Condition Report.

January15, 1986

8. Color Development Unit Installation

Accessory Check

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

1. Actuator – Red 1pc
2. Actuator – Blue 1pc
3. Actuator – Green 1pc
4. Screw – M3 x 4 ..... 1pc
5. Color Decal Sheet 1pc

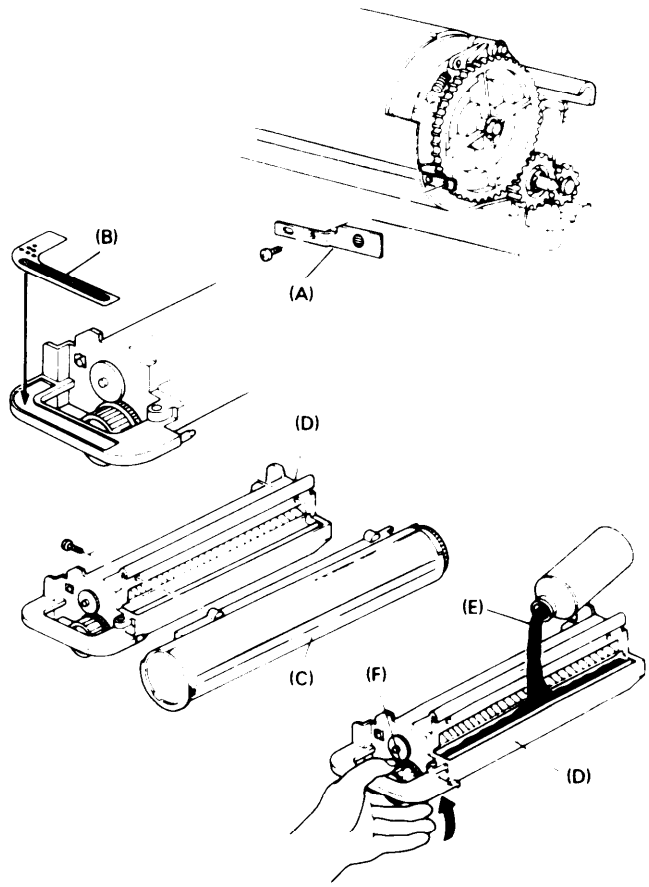
NOTE: 1. The color development unit should be installed after drum conditioning is finished. (See the copier installation procedure.)

2. The following procedure should be done when the color developer is replaced.

1. Install the color actuator (A) on the color development unit (1 screw).

   NOTE: Each actuator has a colored sticker. Install the appropriate actuator.

2. Stick the appropriate decal (B) on the development unit handle.
3. Separate the toner tank (C) from the development unit (D) (2 screws).
4. Pour one bottle of color developer (E) into the development unit while turning the knob (F) counterclockwise to distribute the developer.

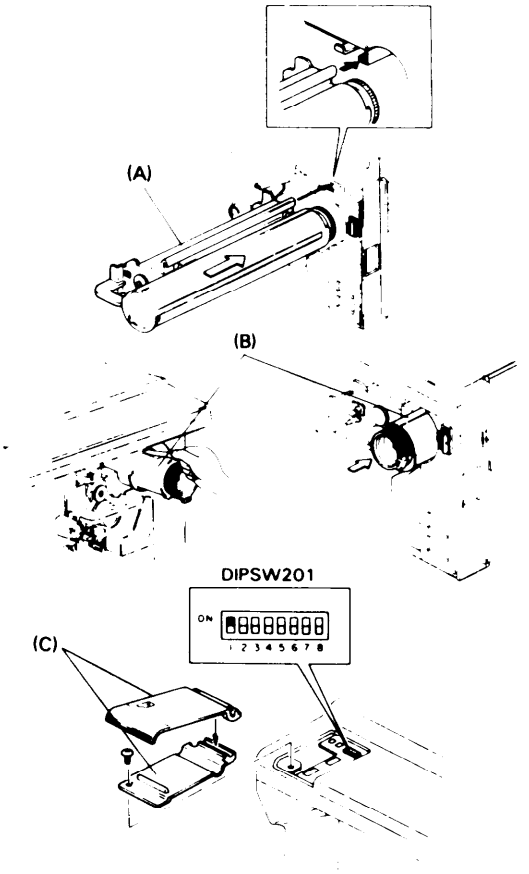


5. Remount the toner tank on the development unit.
6. **CAUTION:** When installing the color development unit, be sure the development unit rail is properly engaged with the unit guide rail on the copier.

   Install the color development unit (A).
7. Install a color toner cartridge (B).
8. Remove the DIP switch cover (C) on the left side of the operation panel (1 screw) and turn on DIP SW 201-1.
9. Plug in the machine and turn on the main switch. Confirm that the color toner indicator is displayed on the operation panel.
10. Press the Program key. "20" will be displayed on the copy counter.
11. Lower the platen cover.
12. After the Warm up period is completed, press the Start key.

    A. The copier will begin drum conditioning and sound one beep for each copy cycle from the 10th to the 17th copy to display and calculate the actual data from Vsp and Vsg.

    B. At the end of the 20th copy cycle, the copier will stop and sound five beeps. The control level is now in memory.



13. After the machine stops, press a number key according to the following list, to display the current control level in the magnification window.

    Red Toner: 7
    Green Toner: 8
    Blue Toner: 9

14. Turn off DIP SW201-1, select 30 copies, and press the print key. If image density is satisfacory, proceed to step 15. If image density is low (light copies), perform the following procedures:

    A. Turn on DIP SW201-1, select 30 copies, and press the print key. As the copier is going through drum conditioning, hold down the program key and the front margin adjustment key simultaneously. This will energize the toner supply solenoid and toner will be added as long as both keys are pressed.

    B. At the end of drum conditioning, turn off DIP SW201-1 and check for satisfactory image density. (If image density is unsatisfactory, repeat this procedure.)

    C. Now turn on DIP SW201-1, press the program key and then the print key. The CPU will now determine the new control level and store this level in the CPU's memory.

    D. Turn off DIP SW201-1 and verify that the image density is correct.

15. Turn off the main switch.

16. Reinstall the Dip Switch cover (1 screw).

SECTION 3

PREPARATION FOR TRANSPORTING THE COPIER

3. PREPARATION FOR TRANSPORTING THE COPIER

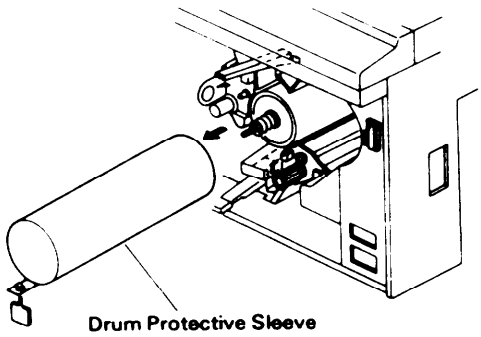
3-1. Short Haul Transportation 3-1
3-2. Long Haul Transportation 3-3

3-1. Short Haul Transportation:

Before moving the copier from its place of installation, be sure to prepare it for transportation as follows:

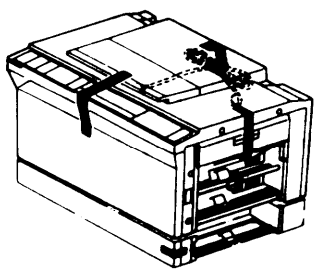
CAUTION: The copier may be seriously damaged if it is moved without proper preparation.

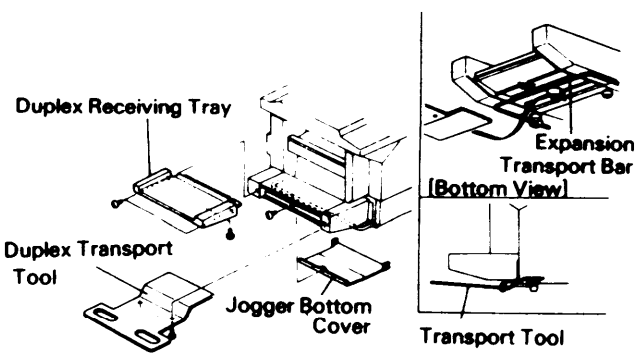
1. Insert the drum protective sleeve.
2. Re-install the development unit.
3. Re-install the drum stay and charge corona unit.



4. Secure the following items with tape:
   1) Manual feed table
   2) Platen cover or document feeder
   3) The power supply cord (roll up first)
   4) Expansion front cover
   5) System table front door
5. Remove the sorter to prevent damage to the bins.
6. Remove the duplex receiving tray.
7. Remove the cassettes.
8. Remove the original table from the document feeder.
9. Remove the LCT if it is installed in the 3rd feed station.

   CAUTION: If the duplex unit is installed, do not lift directly on the duplex module; use the transport tool instead (available from marketing).

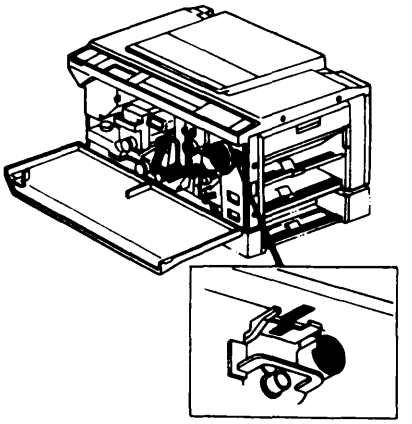


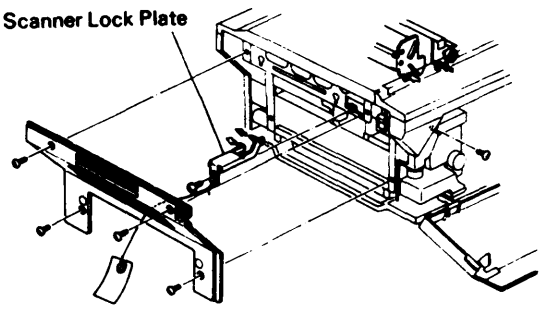


3-2. Long Haul Transportation by Vehicle:

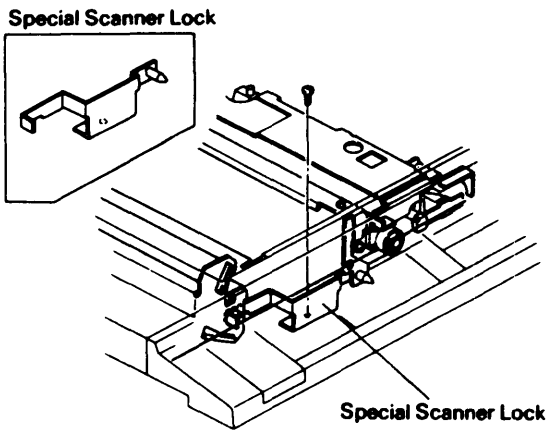
If the machine is to be transported by vehicle, do the following steps after you have completed the above short haul procedure.

1. Remove the developer from the development unit.
2. Place a wedge between the registration rollers.
3. Remove the left cover and install the scanner lock plate.
   NOTE: 1) Confirm that the scanner is at the home position.
   2) If the sorter adapter or the duplex unit is installed, the left cover cannot be removed. In this case use the special scanner lock (available from marketing). The 1st scanner is moved away from the home position when this lock is used. (See Next Page.)
4. Secure the following items with tape:
   1) T/S corona release lever to the drum stay knob
   2) Transport plate to the toner collection bottle cover
   3) Toner shield glass
   4) 1st and 2nd feed guide plates





5. Remove the sorter and secure the following items with tape.
   1) Top cover
   2) Jam clearing tray
   3) Bins-tape the right and left edges of the spacers together.
6. Remove the LCT if it is installed in the 5th feed station.
7. Secure the LCT covers and power supply cord with tape.
8. Separate the system into the two units as follows:
   1) Paper Bank and System Table
   2) Copier expansion unit, duplex unit and/or document feeder
9. Tape the bank interface harness and ac harnesses to the top of the bank.



SECTION 4

SERVICE REMARKS

4. SERVICE REMARKS

4-1. Service Remarks 4-1

4-1. Service Remarks

General Caution:

Keep hands away from mechanical drive components when the copier is warming up. This is to avoid possible injury when the copier starts idling at the end of warm up. (The warm-up idle cycle occurs if DIP SW101-3 is on.)

Drum Charge

1. The corona wires should be cleaned at every service call by sliding the corona unit or with dry cloth. Do not use emery paper or any solvent for wire cleaning.
2. Do not touch the corona wires with oily hands.
3. Make sure that the corona wires are correctly positioned between the cleaner pads.
4. After cleaning the charge corona unit, make sure that there are no threads on the casing to avoid white lines on the copy.

Optics

1. Do not adjust the following parts:
   a. Scanner Guide Plate (3 screws)
   b. Lens Axis Adjusting Cam (1 screw)
   c. Lens Position Adjusting Screws
   d. Fourth Mirror Angle Adjusting Screw
   e. Lens Home Position Sensor (1 screw)
2. The lens home position sensor does not have a convenient adjusting procedure. When replacing the sensor, mark the position of the sensor bracket before removing it, and adjust the fine position of the sensor by checking the copy image (horizontal magnification and focus).
3. Do not bend or damage the lens support plate or the mylar strip.
4. Launa oil or an equivalent oil should be used to lubricate or clean the following:
   a. Scanner Guide Rod (Cleaning)
   b. Scanner Guide Rod Pads (Lubrication)
   c. Scanner Guide Plate (Lubrication/Cleaning)

CAUTION: Do not use silicone oil or any other kind of oil.

5. Clean the exposure glass with alcohol and water.
6. Clean the mirrors only with alcohol and/or water and a soft cloth.
7. Do not touch the following parts with bare hands:
   a. Reflectors
   b. Exposure Lamp
   c. Mirrors and Lens
8. Do not bend the Auto ID fiber optics cable sharply.
9. When adjusting the light intensity, make ten copies before proceeding to check copy image if the main switch has just been turned on. This is to eliminate the effect of rest time compensation.
10. After adjusting the light intensity, check and adjust the Auto ID sensor.

Development

1. Be careful not to nick or scratch the development roller sleeve.
2. Place a sheet of paper under the development unit when it is out of the copier.
3. Be careful not to bend the bias terminal.
4. Clean the drive gears and end magnets after removing used developer.
5. Clean the development unit guide plate before reinstalling the unit.

Toner Supply

1. The image density sensor and the erase lamp unit should be cleaned at every EM or PM with a blower brush.

2. When reinstalling the support bracket after cleaning the ID sensor, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.

3. Do not touch the sensor pattern with bare hands.

4. Image density sensor adjustment is required when:

a. The ID sensor board is replaced.
b. The main board is replaced.
c. The drum has been replaced and Vsg is out of standard.
d. Problems with toner supply have occurred and ID sensor check shows Vsg to be out of standard.

5. Grease the toner supply clutch with Mobil Temp 78 periodically to avoid noise and bad operation.

Transfer and Separation

1. The corona wires should be cleaned with a dry cloth at every EM or PM.

2. While the drum stay is out and the drum is installed on the drum guide, do not lift up the corona unit. (The corona casing will hit against the drum.)

Cleaning

1. When servicing, be careful not to damage the edge of the cleaning blade.

2. Do not touch the cleaning brush with oily hands.

3. Before pulling out the cleaning unit, place a sheet of paper under it to catch falling toner.

4. Be careful not to damage the drum with the pick-off pawls when pulling out or inserting the unit.

5. When a new cleaning blade and/or a new cleaning brush is installed, dust them with setting powder before reinstalling the unit.

Duplex Unit

1. When replacing the positioning roller drive belt, be careful not to bend the lift shaft bracket.

2. When servicing the duplex unit, make sure that the main switch of the copier is off.

Expansion Unit and Paper Bank

1. When servicing the expansion unit and/or the paper bank, make sure that the main switch of the copier is off.

Document Feeder

1. Do not bend the DF interface harness sharply to avoid damaging the fiber optics cables.

2. When connecting the DF interface harness to the interface board, run the fiber optics connectors from behind the PCB plate.

3. When servicing the document feeder, make sure that the main switch of the copier is off.

6. When installing the toner collection bottle cover, be sure that the hooks of the transport plate are positioned underneath the bottle cover.

Quenching

1. Clean the PTL and QL filters at every EM or PM.

2. When reinstalling the QL filter, make sure that the filter is inserted in the correct direction.

Fusing

1. When removing the fusing unit, keep it in an upright position so that the silicone oil does not spill.

2. After replacing the oil blade and oil supply pad, prime them with silicone oil.

3. Be careful not to damage the edge of the hot roller strippers or their tension springs.

4. Do not touch the fusing lamp with bare hands.

5. Be sure that the fusing lamp is not in contact with the inner surface of the hot roller.

6. Be sure that the oil end sensor contacts the bottom of the oil tank.

Paper Feed

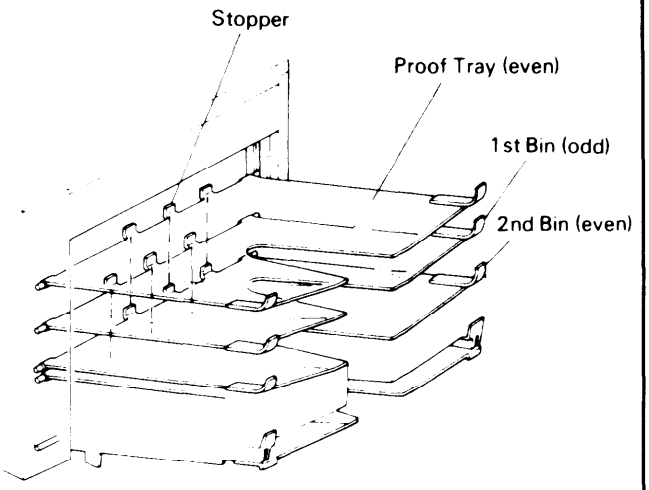
1. When replacing the friction pad, make sure that the friction pad is 0.05 to 0.35 mm below the surface of the front lip of the pad holder.

2. When reinstalling the support bracket after cleaning the registration sensor, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.

Sorter

1. The sorter has two types of bins; one type is used for odd numbered bins and the others used for even numbers. (See the figure.) Be careful not to mix them up.

2. If bin operation is not smooth, lubricate the slot liners and transfer wheels using grease 501.



Large Capacity Tray

1. Unplug the power supply cord of the LCT before servicing it.

2. Before placing the large capacity tray in the cassette holders, fix the pick-up roller in the up position with shipping tape.

Handling the Drum

1. Never touch the drum surface with bare hands.

2. Store the drum in a cool dry place away from heat.

3. When cleaning the drum, always use a pair of gloves. Do not throw away cotton used for cleaning. Bring it back to the service depot for disposal according to local regulations.

4. Always prime the drum with setting powder after cleaning the drum, and when installing a new drum. This should be done within one minute in a location not exposed to room light.

5. To protect the drum, always apply setting powder to a new cleaning blade and/or a new cleaning brush before installing them.

Others

1. When the main board is removed from the PCB plate, do not put it on a conductive surface. (This is to avoid discharging the battery of the user program memory.)

2. When installing a new main board, clear the user program RAM as follows:

   a. Make sure that the main switch is off.
   b. Fix the new main board to the PCB plate and plug in all the connectors.
   c. Connect test pins TP101 and TP102 with a jumper wire.
   d. Turn on the main switch.
   e. Turn off the main switch and remove the jumper wire.

6. Drum conditioning is necessary when a new drum is installed. In addition, it is useful at the following times:

   a. When image density is reduced due to over-exposure of the drum.
   b. After cleaning the drum.
   c. When the oxidized layer on the surface of the drum is lightly scratched.

7. Always keep the drum in the protective sleeve when inserting or pulling the drum out of the copier (except when applying setting powder).

8. Before inserting or pulling out the drum, the cleaning unit should be pulled slightly out to avoid drum damage by the pick-off pawls.

9. Before inserting the protective sleeve on the drum while it is in the copier, always take out the development unit. If the sleeve is inserted while the development unit is in the copier, the edge of the sleeve will scrape off developer from the development roller.

10. Send used drums to the distributor according to standard procedure.

SECTION 5

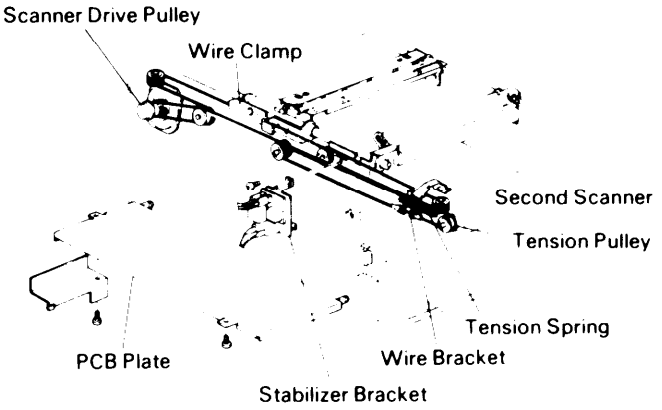
REPLACEMENT AND ADJUSTMENT

5. REPLACEMENT AND ADJUSTMENT

5-1. **FT5000** Scanner Drive Wire Replacement 5-1
5-2. **FT5000** Color Copy Counter Check 5-4
5-1. Unit Removal 5-5
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5-18. **FT5000/5010** Color Copy Counter Check 5-127

5-1. Scanner Drive Wire Replacement

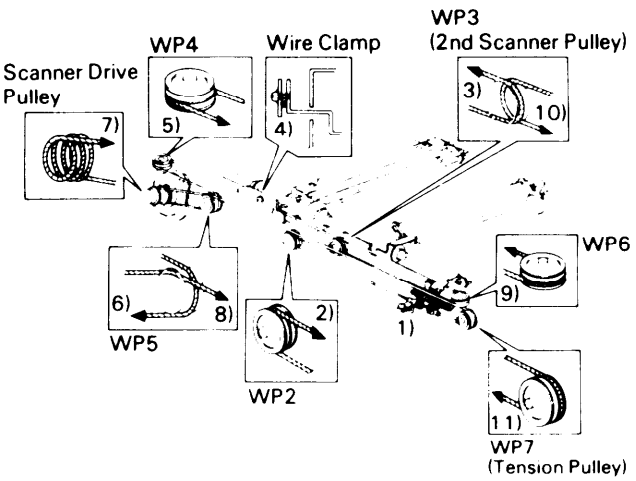
1. Turn off the main switch.
2. Remove the platen cover, the mounting studs, and the upper cover.
3. Remove the left scale (2 short screws) and the exposure glass.
4. Remove the rear cover and lower the PCB plate (2 screws each).
5. Loosen the wire clamp screw.
6. Move the 2nd scanner to the return position.
7. Unhook the tension spring and take out the old wire.
8. Remove the QL/PTL stabilizer PCB bracket (1 screw).



9. Run the scanner drive wire over the pulleys in the following order:

   1) Hook one end of the wire to the left side of the wire bracket.
   2) Outer track (WP2)
   3) Outer track (WP3)
   4) Lower side (Wire Clamp)
   5) Lower track (WP4)
   6) Inner track (WP5)
   7) Three and half turns from lower to upper (Scanner Drive Pulley)
   8) Outer track (WP5)
   9) Lower track (WP6)
   10) Inner track (WP3)
   11) Inner track (WP7)

10. Hook the end of the wire to the right side of the wire bracket.
11. Push the tension pulley to the right. Take the wire off of the pulley in figure 8) (WP5) of step 8, so that you can hook the tension spring easily.
12. Hook the tension spring and reposition the wire on the pulleys as in step 8).



13. Rotate the scanner drive pulley and make sure that the scanner drive wire moves smoothly and there is no overlapping around the scanner drive pulley.

    NOTE: Step 13 is important! If overlapping of the scanner drive wire occurs, then the trailing edge of A3/11" x 17" copies may be reduced.

5-2. Color Copy Counter Check

The number of copies made with each color unit can be checked on the operation panel to decide whether or not the color developer should be replaced.

— Method A —

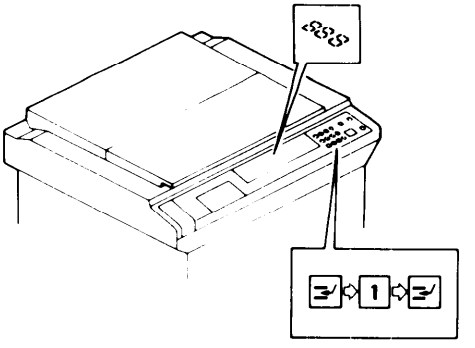
1. Turn off the main switch.
2. Remove the rear cover (3 screws).
3. Turn on DIP SW 102-2 on the main board.
4. Turn on the main switch.
5. Press the "⇶" key, then "1", then the "⇶" key again.
6. Press and hold number keys as follows to display the number of color copies made.

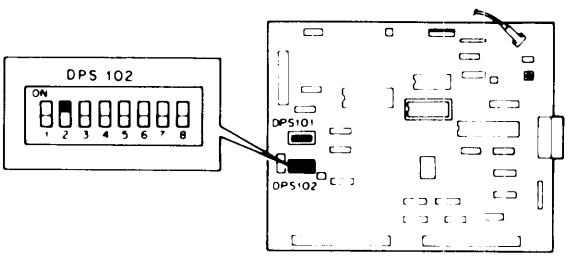
   "4": Red Copy Number
   "5": Green Copy Number
   "6": Blue Copy Number

   The displayed numbers are in hundreds of copies.

Example:

Actual Number Copied	Display
30	0
130	1
2580	25





NOTE: In this condition, the control level of the toner supply (Vsp/Vsg x 100%) can also be displayed as follows:

"7": Red Toner
"8": Green Toner
"9": Blue Toner

7. Turn off the main switch.
8. Turn off DIP SW 102-2, and reinstall the rear cover.

Note: The color copy counters are cyclical. The maximum number is 999 (actual number is 99,999), and on the next count it returns to 000. The counter cannot be reset by reinstalling the color development unit.

– Method B –

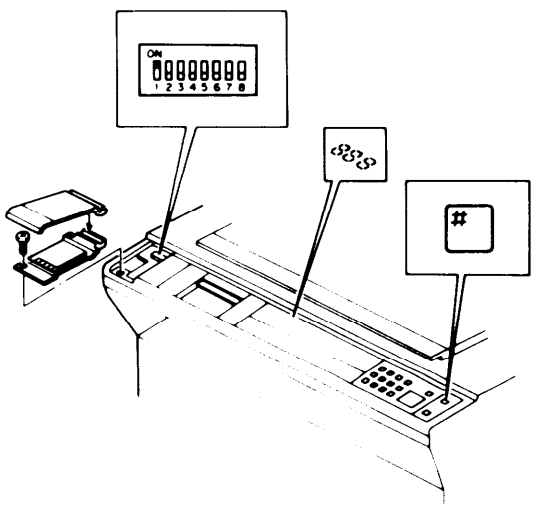
This method is effective only when a color development unit is installed.

1. Turn off the main switch.
2. Remove the DIP switch cover on the left side of the operation panel (1 screw).
3. Turn on DIP SW201-1.
4. Press the Enter/Recall key.
5. Press and hold number keys as follows to display the number of color copies made.

"4": Red Copy Number
"5": Green Copy Number
"6": Blue Copy Number

NOTE: If the Start key is pressed in this condition, the machine starts the control level checking program; so, do not press the Start key.

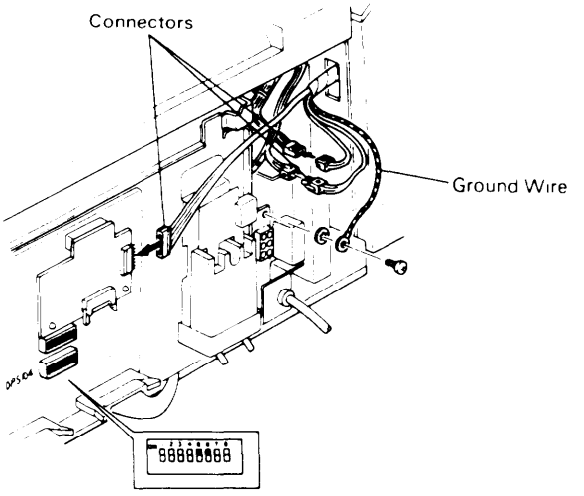
6. Turn off the main switch.
7. Turn off DIP SW201-1,and replace the DIP switch cover.

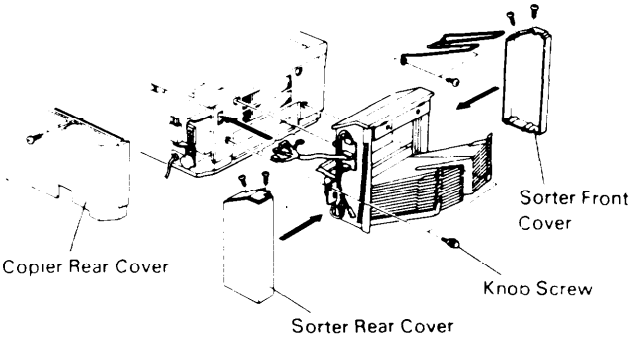


5-1. UNIT REMOVAL

Sorter Removal

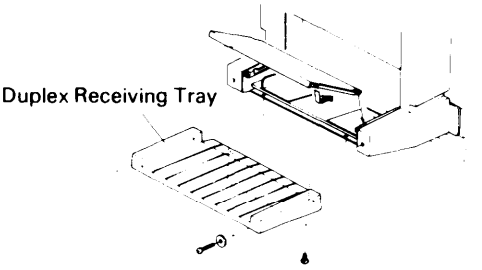
1. Turn off the main switch of the copier and unplug the power supply cord.
2. Remove the copier rear cover (3 screws).
3. Disconnect the sorter harness from the copier as follows:
   a. Red connector from ac harness
   b. White 4P connector from dc harness
   c. Black connector from CN804 on the interface board
4. Remove the sorter ground wire from the copier (1 grounding screw and 1 star washer).
5. Remove the front and rear covers (2 screws each).
6. If the sorter adapter is installed, disconnect the sorter adapter harness (white 2P connector).
7. Remove the sorter from the copier.

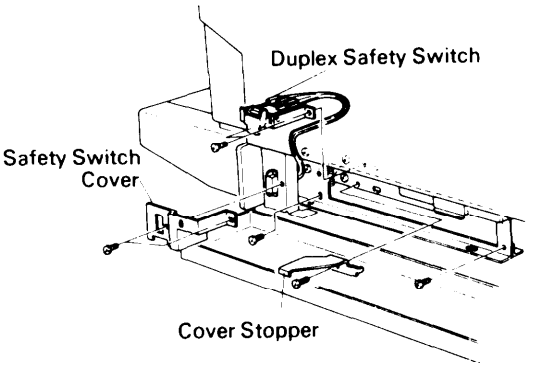


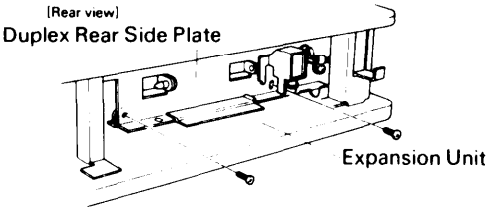


Duplex Unit Removal

1. Turn off the main switch of the copier and unplug the power supply cord.
2. Remove the sorter if installed. (See Sorter Removal.)
3. Remove the duplex receiving tray (4 screws and 2 washers).
4. Open the expansion front door and remove the duplex safety switch cover (2 truss screws).
5. Remove the duplex safety switch (2 screws) and the cover stopper (1 screw).
6. Remove the 2 screws securing the front side of the duplex unit to the expansion unit.
7. Remove the expansion rear cover (3 screws).
8. Remove the 2 screws securing the rear side of the duplex unit to the expansion unit.
9. Remove the copier rear cover (3 screws).

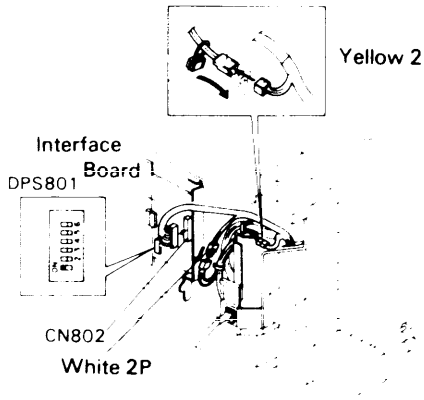


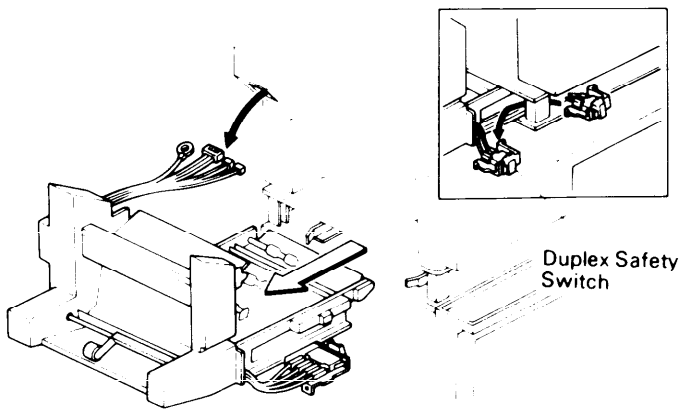




10. Disconnect the duplex harness from the copier as follows:
    a. Black connector from CN802 on the interface board.
    b. Yellow 2P connector from the dc harness.
    NOTE: If the copier will be operated without the duplex unit, insert the yellow short plug into the yellow connector of the dc harness.
    c. White 2P connector from the ac harness.

11. Place the duplex safety switch inside the duplex unit frame upright and slide out the duplex unit.





Document Feeder Removal

1. Turn off the main switch of the copier and unplug the power supply cord.

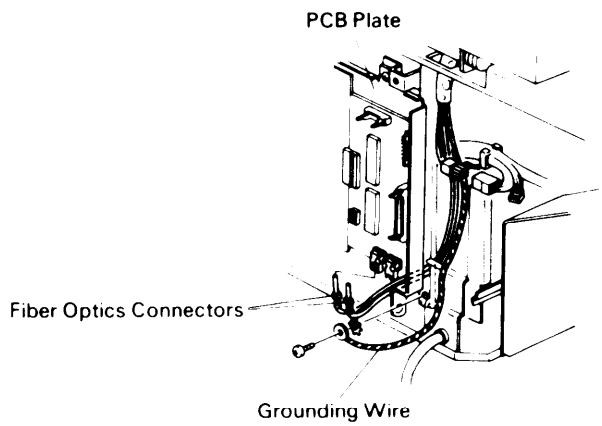
2. Remove the copier rear cover (3 screws).

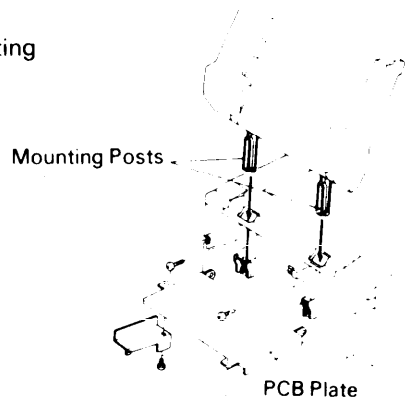
3. Disconnect the two fiber optics connectors from CN806 and CN807 on the interface board.

4. Remove the DF grouding wire from the copier (1 grounding screw and 1 star washer).

5. Lower the PCB plate (2 screws).

6. Remove the 4 screws securing the mounting posts to the DF mounting brackets.





7. Raise and lift the DF, then remove it.
   CAUTION
   a. When handling the DF or placing it on something, be careful not to damage the fiber optic cables.

   b. When installing the DF:

      * Run the DF interface harness through the DF docking hole first and then, insert the mounting posts into the DF mounting brackets.
      * Pull down the DF interface harness before lowering the to prevent damaging the fiber optic cables.

Large Capacity Tray Removal

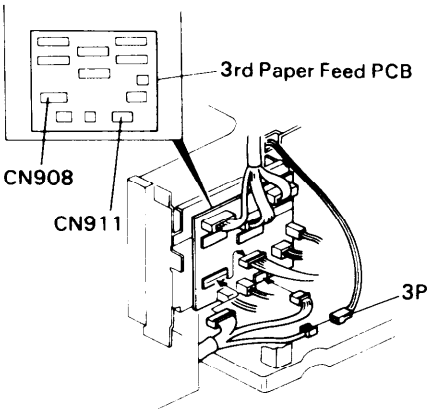
A. From the 3rd paper feed station:

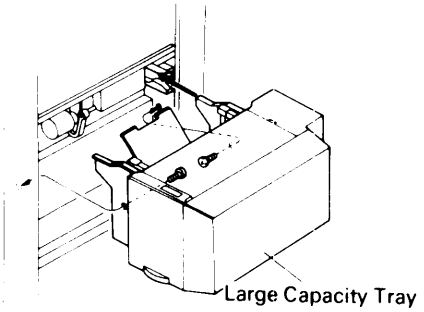
1. Turn off the main switch of the copier and unplug the power supply cord of the large capacity tray.

2. Remove the expansion rear cover (2 screws).

3. Disconnect the large capacity tray harness from the expansion unit as follows:
   a. 4P connector from CN911 on the 3rd paper feed PCB
   b. 7P connector from CN908 on the 3rd paper feed PCB
   c. 3P connector from the free connector of the paper end sensor unit

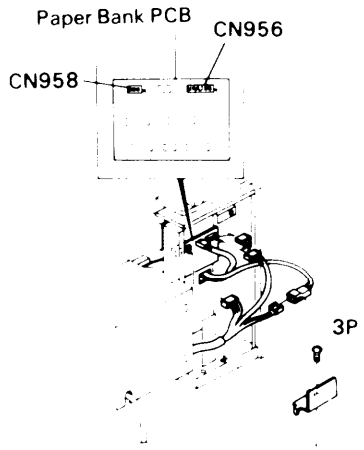
4. Remove the large capacity tray from the 3rd feed station (2 long screws).

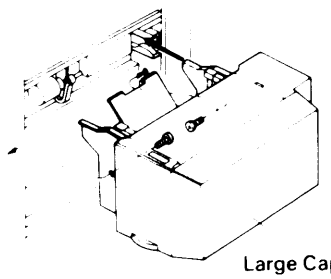




B. From the 5th paper feed station:

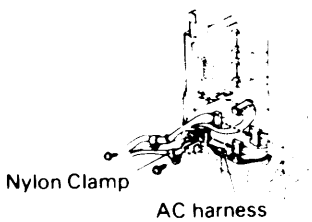
1. Turn off the main switch of the copier and unplug the power supply cord of the large capacity tray.
2. Remove the bank rear cover (2 screws).
3. Disconnect the tray harness from the paper bank as follows:
   a. 4P connector from CN958 on the paper bank PCB
   b. 7P connector from CN956 on the paper bank PCB
   c. 3P connector from the free connector of the paper end sensor unit
4. Remove the large capacity tray from the 5th feed station (2 long screws).

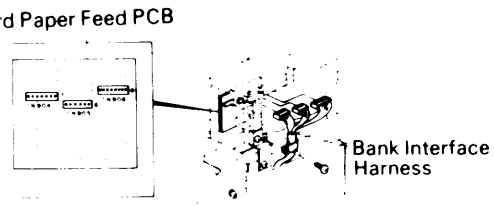


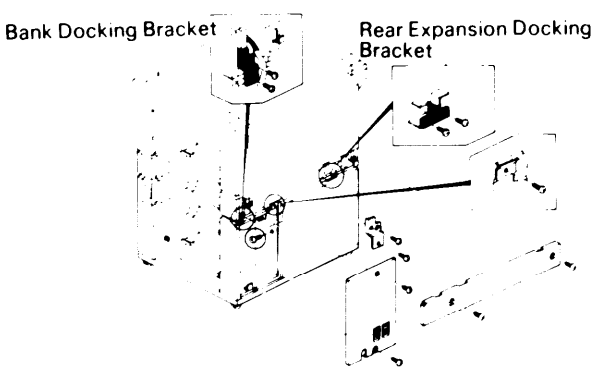


Paper Bank Removal

1. Turn off the main switch of the copier snd unplug the power supply cord.
2. Remove the copier rear cover (3 screws) and lower the PCB plate (2 screws).
3. Disconnect the bank ac harness and remove the nylon clamp of the harness (1 screw).
4. Raise and secure the PCB plate, the remove the expansion rear cover (2 screws).
5. Remove the nylon clamp securing the bank interface harness to the bank docking bracket (1 screw).
6. Disconnect the bank interface harness from CN904, CN905, and CN906 on the 3rd paper feed PCB.
7. Remove the bank docking bracket and the rear expansion docking plate (2 screws each).
8. Remove the expansion front cover and the front expansion docking plate (2 screws each).
9. Remove the 2 screws securing the paper bank to the expansion unit.







10. Lift and remove the copier, expansion unit, duplex unit, and/or document feeder together from the bank and system table.

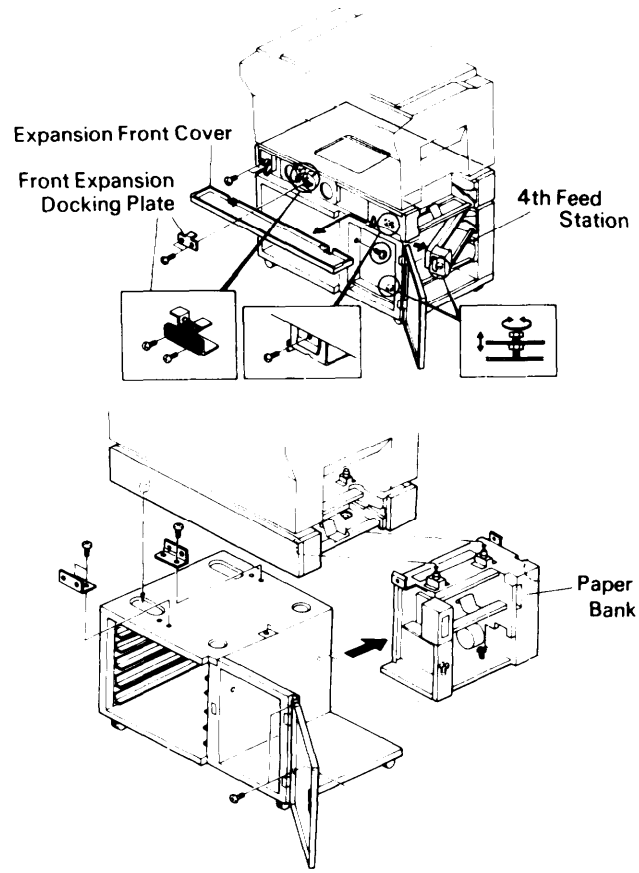
11. Remove the bank rear cover (2 screws).

12. Remove the screw securing the bank to the rear side of the system table.

13. Open the system table from door and swing out the 4th feed station.

14. Remove the screw securing the bank to the front side of the system table.

15. Remove the paper bank from the system table.



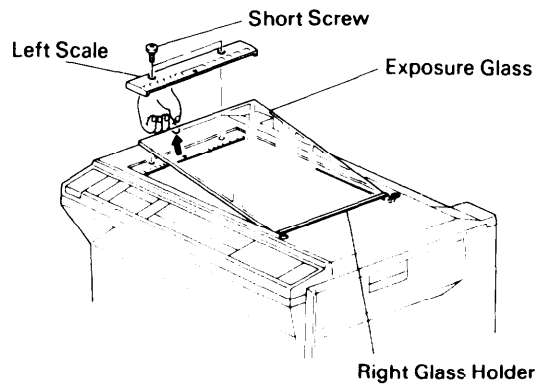
5-2. OPTICS

Exposure Glass Removal

1. Take off the left scale (2 short screws).

2. Grasp the left edge of the exposure glass and lift it up slightly. Slide the other edge out from under the right glass holder. Remove the exposure glass.

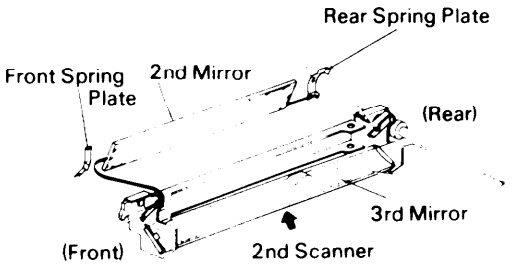
NOTE: When reinstalling the exposure glass:
- Make sure that the left edge of the glass is flush with the 2 tabs to the left on the scale plate.
- Make sure that the right glass holder firmly secures the exposure glass.



2nd Mirror Removal

NOTE: This procedure is usually performed in order to make cleaning the 3rd mirror easier.

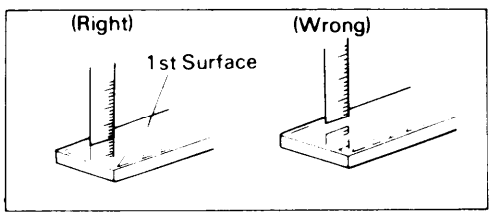
1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the 1st scanner 2/3 to the right by pushing it at the rear side.
4. Remove the front spring plate by depressing the top of the spring and moving the plate towards the front side of the machine.
5. Carefully pull the 2nd mirror towards the front side of the machine to remove the rear spring plate.
6. Lift the mirror out of the machine rear side first.
7. Clean mirrors with alcohol followed by water, and then dry.

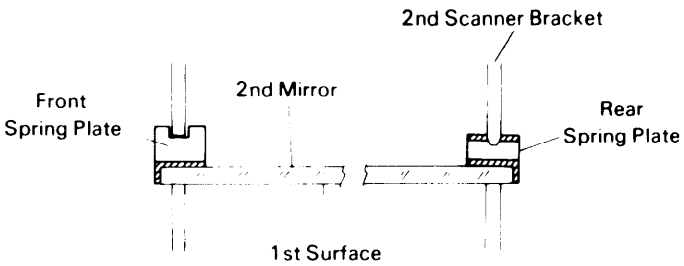


– To Reinstall –

8. Place the rear spring plate in place and hold it with your finger.
9. Insert the 2nd mirror into the front side plate cut out.
10. Insert the rear side of the mirror into the rear spring plate.
11. Locate the bottom of the front spring plate and rotate the top of the spring into position.

NOTE: Make sure that you install the mirrors with the 1st surface facing the lens as shown.



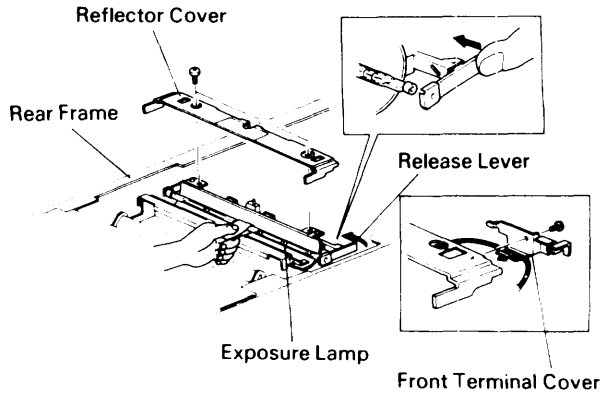


Exposure Lamp Replacement

1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the first scanner to the position where the rear frame is cut out.
4. Remove the front terminal cover (1 screw) and the reflector cover (2 screws).

   NOTE: Unhook the fiber optics cable from the reflector cover.
5. Wrap a strip of paper around the exposure lamp as shown.

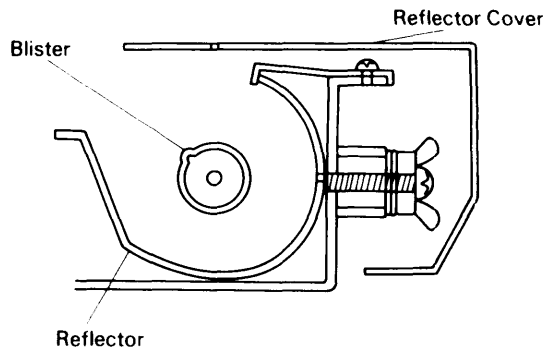
   CAUTION: Do not touch the reflector or the new exposure lamp with your bare hands. Use a strip of paper as shown. (Finger oil marks on the lamp or reflectors will be affected by the heat and will result in discoloration.)
6. Press the release lever on the front lamp terminal as shown as take out the lamp.



7. Install a new lamp using a strip of paper. (Set the rear terminal first.)

   NOTE: The blister on the lamp must point toward the mouth of the reflector as shown.
8. Reassemble the 1st scanner.

   NOTE: When reinstalling the front terminal cover, be careful not to damage the fiber optics cable.
9. Check the exposure lamp position, the light intensity and Auto ID Sensor. (See Exposure Lamp Position, Light Intensity and Auto ID Sensor Adjustments.)



Exposure Lamp Position

1. Remove the exposure glass. (See Exposure Glass Removed.)

2. Move the first scanner to the position where the rear frame is cut out.

3. Remove the front and rear terminal covers (1 screw each).

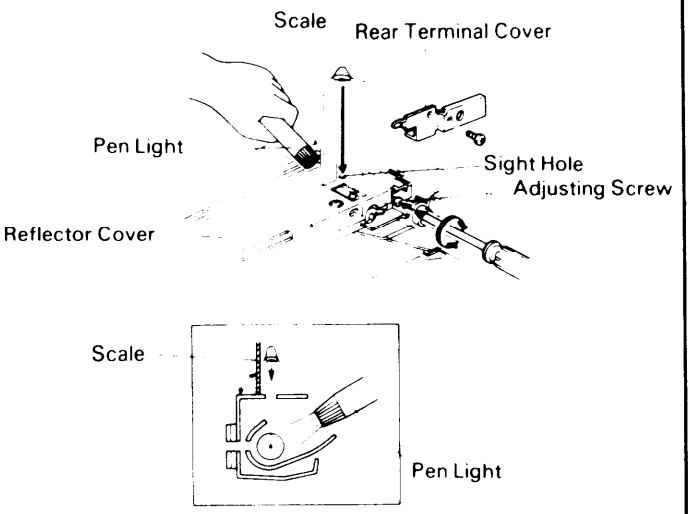
– Horizontal Adjustment –

4. Position a scale near the rear sight hole of the reflector cover to form right angle for viewing alignment as shown.

5. View the lamp filament through the sight hole in parallel with the scale. The filament should be directly beneath the sight hole.

   NOTE: If the filament cannot be seen easily, use a pen light to illuminate the exposure lamp.

6. To correct the position of the filament turn the adjusting screw.



7. Repeat the above steps from 4 to 6 with the front right hole.

– Vertical Adjustment –

8. Position a mirror beside the rear sight hole at a 45° angle as shown.

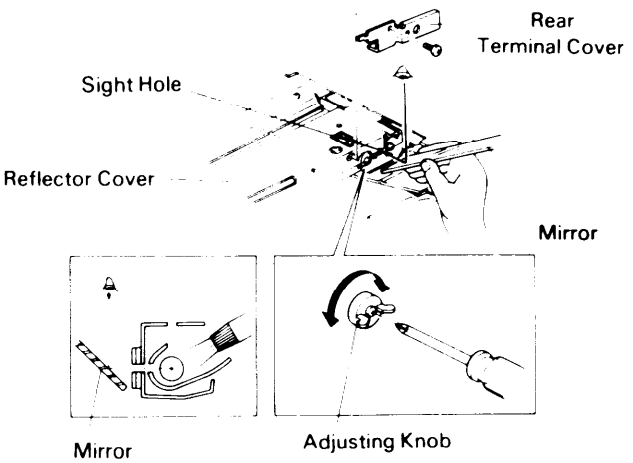
   NOTE: If you do not have a mirror, remove and use the 2nd mirror.

9. View the lamp filament through the sight hole reflected on the mirror. The filament should be level with the sight hole.

   NOTE: If the filament cannot be seen easily, use a pen light to illuminate the exposure lamp.

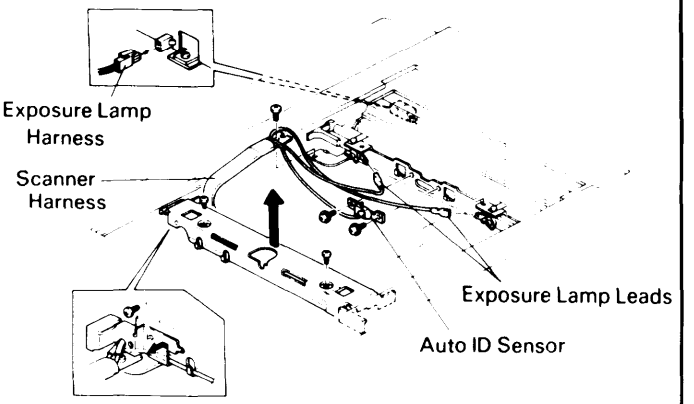
10. To correct the position of the filament, turn the adjusting knob.

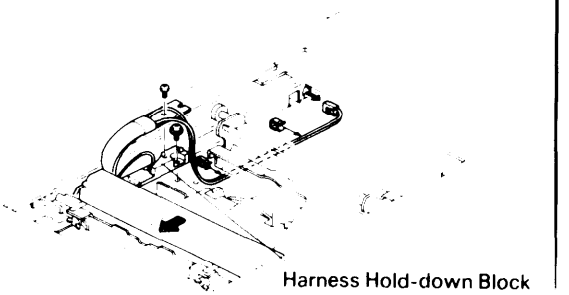
11. Repeat the above steps from 8 to 10 with the front sight hole.



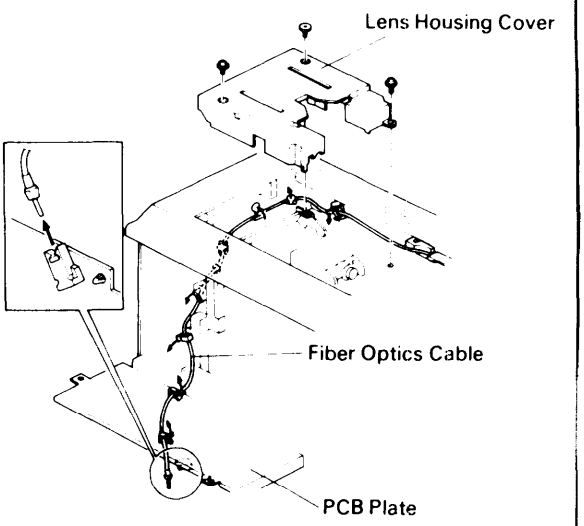
Auto ID Fiber Optics Cable Replacement

1. Remove the front cover (1 knob screw) and pull out the fusing unit about 1/2 way.
2. Remove the front inner cover (5 screws).
   NOTE: This cover should be removed from the top first.
3. Disconnect the exposure lamp harness (1 - 2p white connector).
4. Remove the exposure glass. (See Exposure Glass Removal section.)
5. Remove the front terminal cover (1 screw) and the reflector cover (2 screws).
   NOTE: Unhook the fiber optics cable from the reflector cover.
6. Remove the leads to the exposure lamp terminals.
7. Remove the auto ID sensor (2 screws).
8. Remove the scanner harness from the 1st scanner (1 screw).
9. Slide the scanner to the right and remove the female end of the exposure lamp power supply harness from the copier.
10. Remove the scanner harness from the harness hold-down block (1 screw).
11. Remove the fiber optics cable and hold down block from the optics area baseplate (1 screw) and release the fiber optics cable from the clamps.



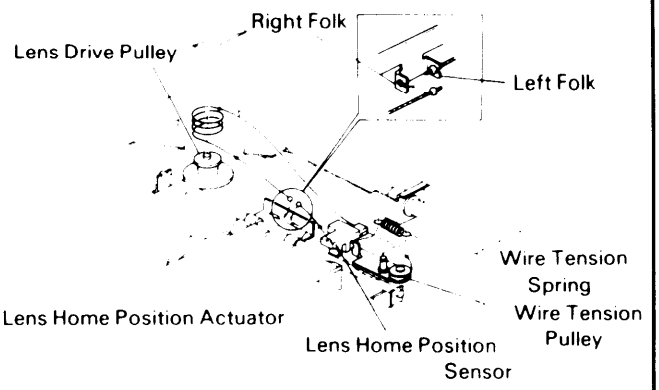


12. Slide the scanner to the left and remove the lens housing cover (3 screws).
13. Release the fiber optics cable from the clamps in the optics cavity.
14. Remove the copier rear cover (2 screws).
15. Disconnect the fiber optic cable from CN109 on the main board.
16. Lower the rear PCB plate (2 screws).
17. Pull the fiber optics cable into the optics cavity.
18. Replace the auto ID fiber optics cable.



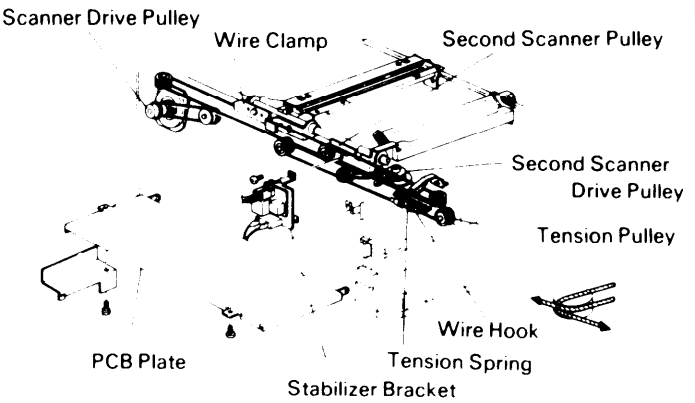
Lens Drive Wire Replacement

1. Turn off the main switch.
2. Remove the exposure glass. (See the Exposure Glass Removal section.)
3. Remove the lens housing cover (3 screws).
4. Remove the wire tension spring and remove the old wire.
5. Set the end bead in the left fork of the lens home position actuator.
6. Run the wire to the lens drive pulley and wrap the wire 3-1/2 times.
7. Run the wire under the lens home position sensor bracket.
8. Set the other end bead in the right fork of the lens home position actuator.
9. Set the wire loop in the wire tension pulley.
10. Push the wire tension pulley to the right and set the tension spring.
11. Move the lens manually and examine the lens drive wire. The wire should not overlap.



Scanner Drive Wire Replacement

1. Turn off the main switch.
2. Remove the platen cover, the mounting studs, and the upper cover.
3. Remove the left scale (2 short screws) and the exposure glass.
4. Remove the rear cover and lower the PCB plate (2 screws each).
5. Loosen the wire clamp screw.
6. Move the 2nd scanner to the return position.
7. Unhook the tension spring and take off the wire hook. Take out the old wire.



8. Remove the 2nd scanner drive pulley (1 Allen screw) by aligning the notch of the pulley disk with the 2nd scanner home position sensor.

9. Position the bead of the new wire on the groove of the 2nd scanner drive pulley and wrap the wire around the pulley with two and half turns as shown.

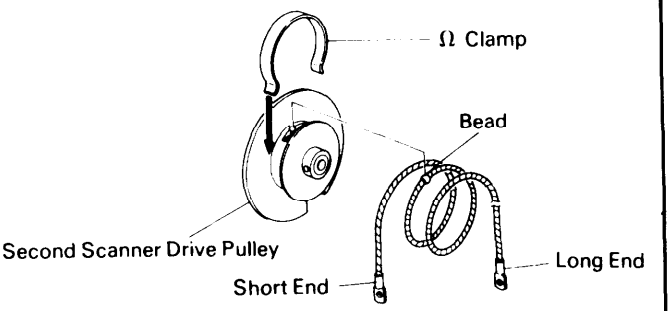
10. Secure the turns of the wire on the pulley with the Ω clamp (or with tape).

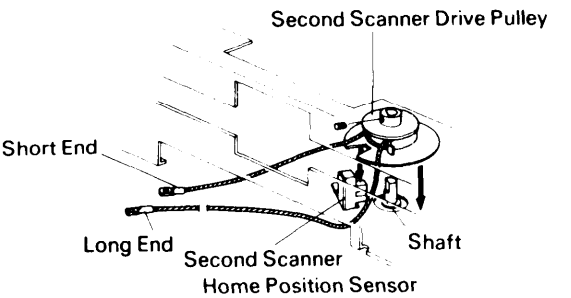
11. Set the 2nd scanner drive pulley on the drive motor shaft as shown and tighten the Allen screw on the flat side of the shaft.

    NOTE: * The end of the second scanner drive pulley should be flush with the end of the motor shaft.

    * The 2nd scanner home position sensor should be positioned between the short and long ends of the wire.

12. Remove the QL/PTL stabilizer PCB bracket (1 screw).

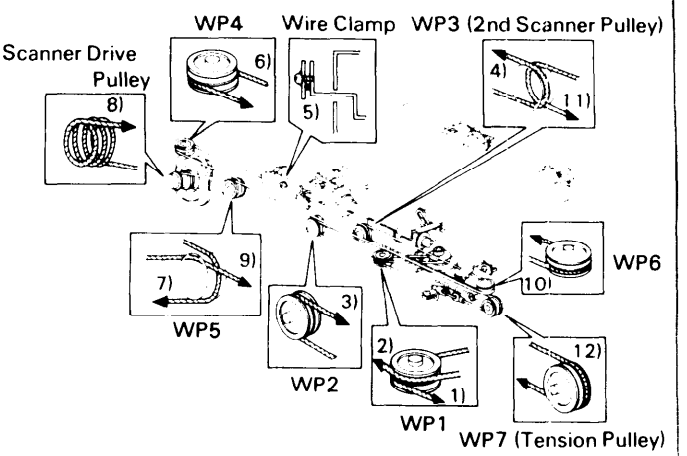




13. Run the scanner drive wire over the pulleys in the following order:

    1) Short end should be in lower track (WP1). (Tape the wire on the bracket.)
    2) Long end should be in the upper track (WP1).
    3) Outer track (WP2)
    4) Outer track (WP3)
    5) Lower side (Wire Clamp)
    6) Lower track (WP4)
    7) Inner track (WP5)
    8) Three and half turns from lower to upper (Scanner Drive Pulley)
    9) Outer track (WP5)
    10) Lower track (WP6)
    11) Inner track (WP3)
    12) Inner track (WP7)

14. Remove the tape and pull the ends of the wire together and join them with the wire hook.
15. Push the tension pulley to the right. Take the wire off of the pulleys in figures 2) (WP1) and 9) (WP5) of step 12, so that you can hook the tension spring easily.
16. Hook the tension spring and reposition the wire on the pulleys in steps 2) and 9).



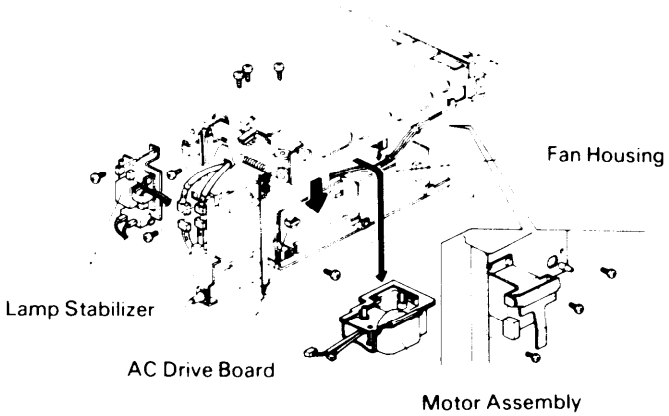
17. Remove the Ω clamp.

18. Rotate the scanner drive pulley and make sure that the scanner drive wire moves smoothly and there is no overlapping around the scanner drive pulley.

    NOTE: Step 18 is important! If overlapping of the scanner drive wire occurs, then the trail edge of A3 (11" x 17") copies may be reduced.

Lens Drive and 2nd Scanner Drive Motor Replacement

1. Remove the platen cover and the mounting studs.
2. Remove the upper cover.
3. Remove the rear cover and lower the PCB plate (2 screws each).
4. Disconnect the two connectors of the motors and remove the nylon clamp (1 screw).
5. Move the scanner to the return position and put the Ω clamp (or tape) on the 2nd scanner drive pulley.
6. Fix the pulley (WP1) with tape as shown. (See next page).
7. Loosen the Allen screw on the 2nd scanner drive pulley and align the notch of the disk with the 2nd scanner home position sensor.
8. Take off the 2nd scanner drive pulley from the motor shaft.
9. Open the front cover and take out the fusing unit (1 lock pin - orange).
10. Remove the front inner cover (5 screws).
11. Lower the fan housing (5 screws).
12. Remove the ac drive board (1 screw).



13. Tape the lens drive pulley as shown and remove (1 E-ring).

14. Take out the motor assembly (3 screws).

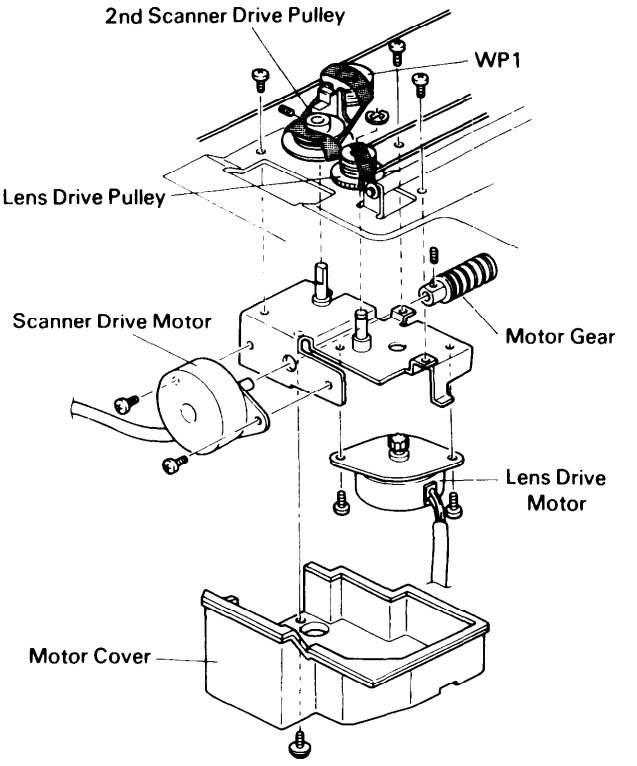
15. Remove the motor cover (1 screw) from the motor assembly.

16. Loosen the Allen screw of the motor gear on the motor shaft. Remove the motors from the assembly - lens drive motor and/or 2nd scanner drive motor - (2 screws each).

17. Install the new motor in the motor assembly.

CAUTION: * Make sure that the harnesses are properly positioned.

* When installing the motor gear, push the gear against the motor and then secure the Allen screw on the flat surface of the motor shaft.
* When installing the 2nd scanner motor, rotate the drive gear so that the flat side of the shaft faces the rear of the copier.

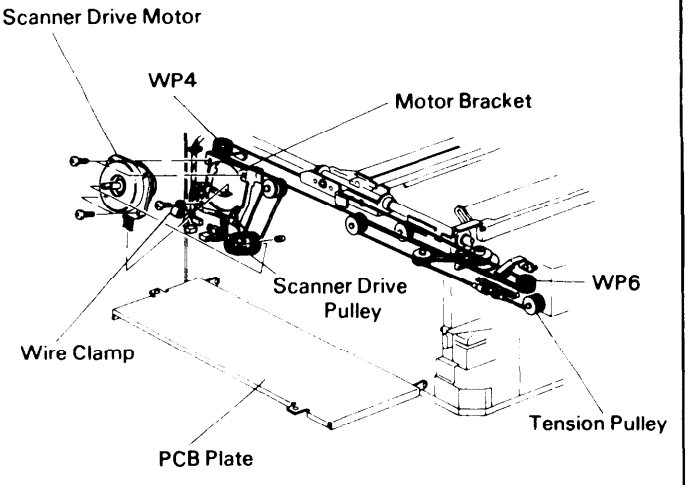


18. Reinstall the motor assembly and reassemble the copier.

CAUTION: When installing the 2nd scanner drive pulley, make sure that the notch of the 2nd scanner drive pulley faces the right rear corner of the copier.

Scanner Drive Motor Replacement

1. Turn off the main switch.
2. Remove the platen cover, the mounting studs, and the upper cover (8 screws).
3. Remove the left scale (2 short screws) and the exposure glass.
4. Remove the rear cover and lower the PCB plate (2 screws each).
5. Tape the scanner drive pulley and the WP4 and WP6 as shown.
6. Loosen the scanner drive pulley (2 Allen screws).
7. Remove the scanner drive pulley from the motor shaft by pushing the tension pulley to the left.
8. Remove the nylon wire clamp on the left side of the motor bracket.
9. Remove the scanner drive motor (4 screws and 2 connectors).



10. Install the new scanner drive motor and reassemble.

NOTE: a. When installing the scanner drive motor, make sure the angled face on the rear plate is facing up.

b. When installing the scanner drive pulley on the motor shaft:

* Make sure that one of the allen screws is secured squarely on the flat side of the motor shaft.

* The scanner drive pulley should be flush with the end of the motor shaft.

11. Examine the scanner drive wire for proper installation.

5-3. DEVELOPMENT AND TONER SUPPLY

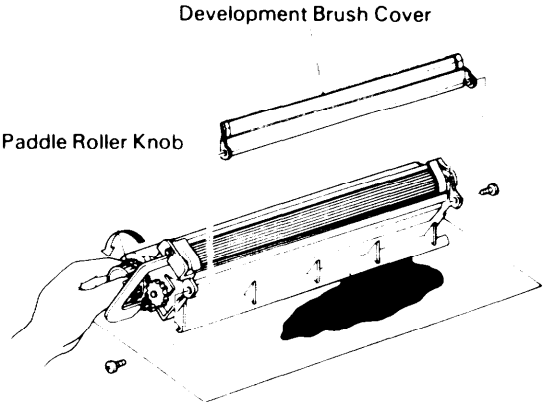
Developer Replacement

CAUTION: * Be careful not to bend the bias terminal.

* Be careful not to damage the upper brush seal.

* After removing used developer, clean the drive gears and end magnets.

1. Take out the development unit and remove the toner tank (2 screws).
2. Remove the development brush cover (2 screws) and clean it.
3. Set the development unit on a large sheet of paper with the unit's inlet facing downward.
4. Turn the paddle roller knob counterclockwise. The developer will fall out onto the paper.
5. Hold the unit at an angle and dump out the developer that has collected at the ends of the development unit.
6. Repeat the above steps until you have removed all of the developer.
7. Clean the development end magnets.
8. Turn the unit right side up and pour in one bottle (1 kg).



9. Put the used developer into the empty bottle or disposal bag and dispose it according to the local regulations.

10. Reassemble the toner tank (2 screws) and replace the development unit.

Image Density Sensor Removal

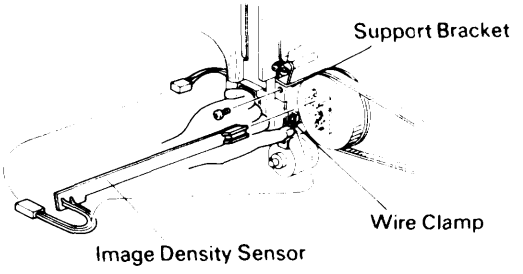
1. Remove the copier rear cover (3 screws) and lower the PCB plate (2 screws).

2. Remove the wires from the wire clamp on the support bracket.

3. Move the support bracket (1 screw).

4. Slide out the image density sensor (1 connector).

5. Clean and replace the sensor.



CAUTION: * When sliding in the ID sensor board, make sure that the board is properly located on the rails.

* When reinstalling the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.

* The support bracket is responsible for holding the ID and registration sensors in place, make sure it is correctly positioned.

Image Density Sensor Check and Adjustment

NOTE: ID sensor adjustment is required in the following cases:

- When the ID sensor board is replaced.
- When the main board is replaced.
- When the drum has been replaced and Vsg is out of standard.
- When a problem with toner supply occurs and checking ID sensor shows the Vsg to be out of standard.

ADJUSTMENT STANDARD: +4 ± 0.2V

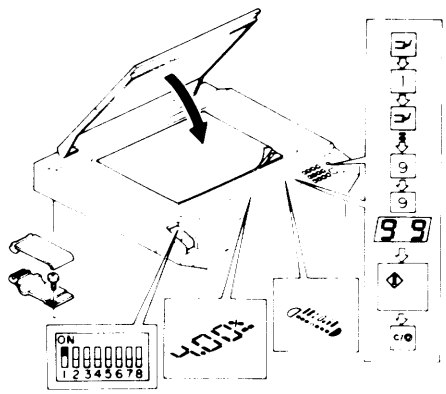
METHOD A – USING THE CPU

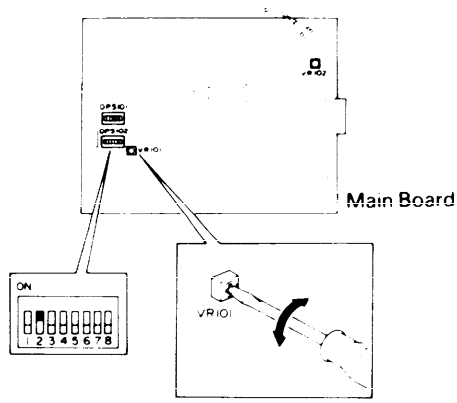
1. Clean the following parts:
   - Image density sensor
   - Optics (Mirrors, reflectors, lens, and toner shield glass)
   - Charge corona wire with dry cloth
   - Erase lamp unit
   - PTL and QL filters

2. Place 2 or 3 sheets of A3 (11" x 17") on the exposure glass and lower the platen cover.
3. Remove the rear cover (3 screws).
4. Confirm that the main switch is off and turn on Dip switch 201-1 under the instruction cards on the operation panel and 102-2 on the main board

   NOTE: Toner supply amount should be set at 15%.

5. Actuate the rear safety switch (115V machines only).
6. Turn on the machine and allow it to warm up.
7. Press the ⇒ key, then 1, then the ⇒ key on the operation panel.
8. Enter 99 into the copy counter.
9. Press the start key to show Vsp in the reduction ratio indicator.
10. Press and hold the # key to display Vsg in the reduction ratio indicator.





11. With Vsg being displayed, adjust VR101 on the main board to +4 volts ± 0.2 volts.

    NOTE: * VR101 clockwise = increase voltage
    VR101 counterclockwise = decrease voltage

12. Press the C/S key to stop the copier.

13. Turn off the main switch and turn off Dip switch 201-1 and 102-2.

    METHOD B — WITH A DIGITAL MULTIMETER

    Follow steps 1 - 3 of method A (using the CPU)

14. Confirm that the main switch is off and turn on Dip switches 102-2 and 101-7 on the main board. Reset the toner supply amount to the proper one.

15. Hook up the multimeter leads as follows:

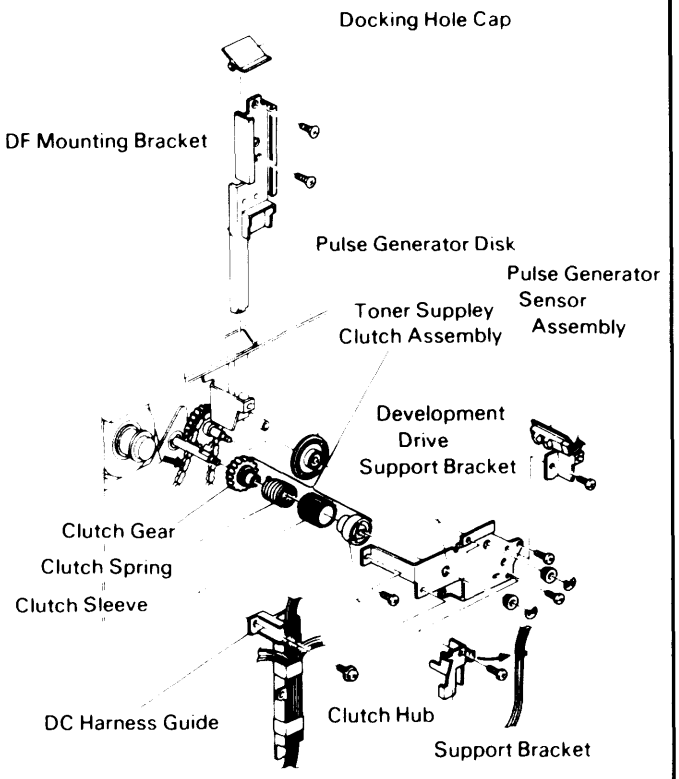
    Red to TP105
    Black to TP112 (Ground) and select the 20 volt dc setting.

16. Turn on the main switch and adjust VR101 to +4 volts ± 0.2 volts.

17. Turn off the main switch, turn off Dip switch 101-7 and reassemble.

Toner Supply Clutch Disassembly

1. Remove the rear cover(3 screws).
2. Lower the PCB plate (2 screws).
3. Remove the platen cover or the Document Feeder.
4. Remove the right ADF docking hole cap (if installed).
5. Remove the right DF mounting bracket through the docking hole (2 flathead screws).
6. Remove the pulse generator assembly (1 screw).
7. Release the PTL wires from the wire clamp and remove the support bracket (1 screw).
8. Remove the screw securing the dc harness guide to the development drive support bracket.
9. Disconnect the bias line from the bias terminal.
10. Remove the development drive support bracket (3 screws, 2E-rings and 2 bushings).
11. Remove the pulse generator disk.
12. Remove the toner supply clutch assembly from the drive shaft while pushing the main drive chain to the right (1 allen screw).



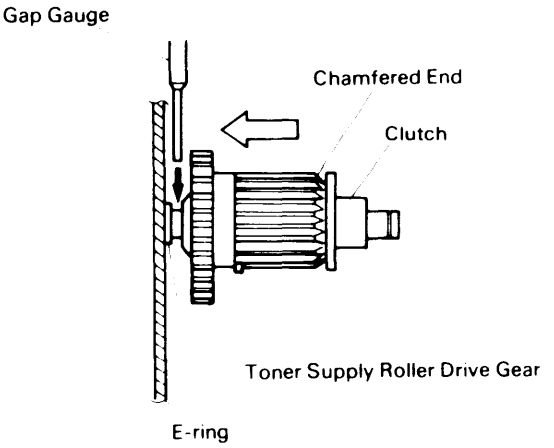
13. Disassemble the toner supply clutch.

14. Clean the clutch hub, spring and gear. Then, lightly grease the spring with Mobil Temp 78.

NOTE: * When reassembling, make sure that the chamfered end of the clutch sleeve is to the outside. Also, make sure the right angle projection the inside notch of the sleeve.

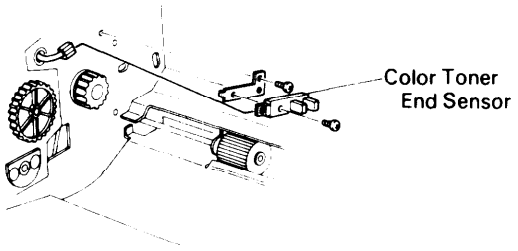
* When securing the Allen screw of the clutch hub, insert a 0.1mm gap gauge between the E-ring and the toner supply roller drive gear as shown in the figure.

* When reinstalling the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.



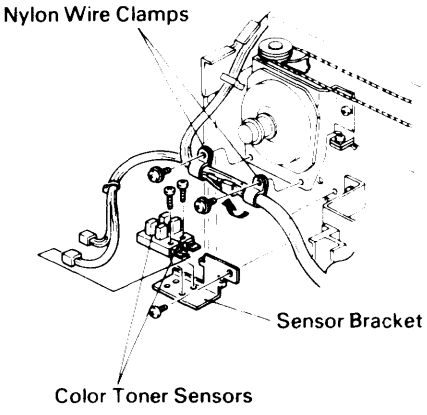
Color Toner End Sensor Replacement

1. Turn off the main switch and remove the following parts:
   - Development unit
   - Charge corona unit (1 screw)
   - Drum stay (1 screw and 1 knob)
   - Cleaning unit
   - Drum flange and drum - should be covered with a shielding sleeve
   - Toner shield glass
2. Remove the color toner end sensor (1 screw and 1 connector). When reinstalling the color toner end sensor, insert the aligning pin on the rear of the sensor into the proper hole on the copier rear plate before installing.
3. Reinstall the above parts.



Color Toner Sensor Replacement

1. Remove the rear cover (3 screws) and lower the PCB plate.
2. Remove the two nylon wire clamps on the motor bracket (1 screw each).
3. Remove the color toner sensor bracket (1 screw).
4. Replace the color toner sensors (1 screw and 1 connector each).
5. Reassemble.

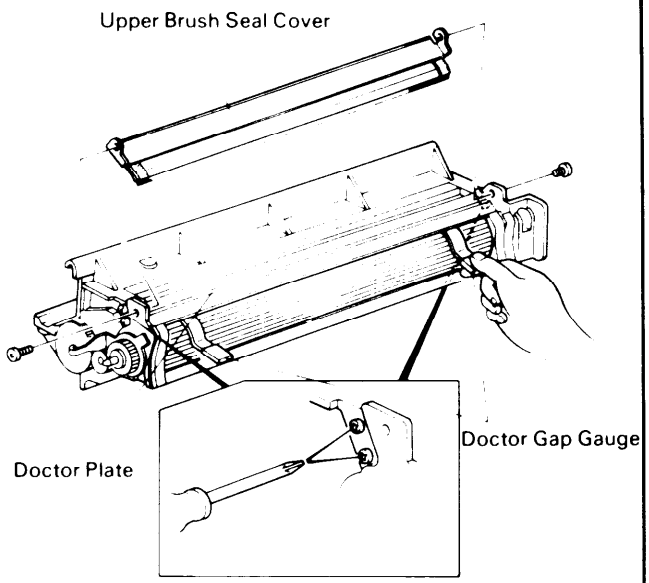


Doctor Gap Adjustment

NOTE: This adjustment is done only when the doctor blade has either been removed or replaced.

1. Remove the upper brush seal cover (2 screws).
2. Turn the development roller sleeve in the opposite direction of normal operation to drop the developer into the development tank.
3. Loosen the doctor plate (4 screws).
4. Clean the development roller and insert the DG (Doctor Gap) shims near both ends of the development roller between the doctor blade.
5. Press on the doctor plate and tighten the screws.
6. Pull the shims to the lower sleeve and remove them.

   NOTE: Do not scratch the seal with the shims.
7. Reassemble the development unit.

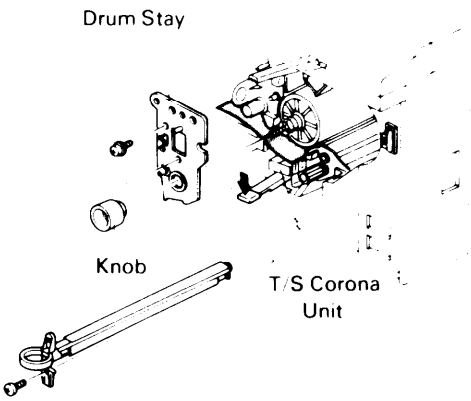


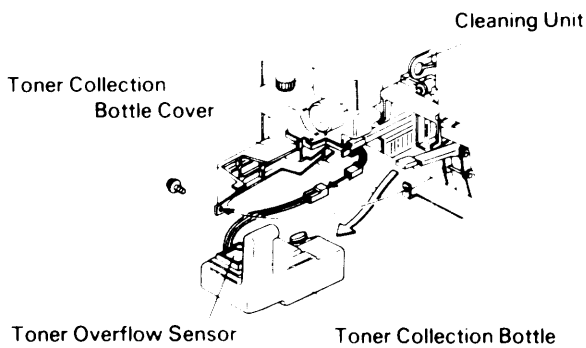
5-4. CLEANING

Cleaning Unit Removal

1. Remove the development unit.
2. Lower the T/S corona unit.
3. Remove the charge corona unit (1 screw) and the drum stay (1 knob and 1 screw).
   NOTE: The drum stay knob has a reverse thread.
4. Swing the toner collection bottle cover to the left (1 screw).
5. Disconnect the toner collection bottle sensor (1 connector).
6. Remove the toner collection bottle.
7. Slide out the cleaning unit.

   CAUTION: Be sure the pick-off pawls are kept away from the drum when removing the cleaning unit or serious drum damage will result.



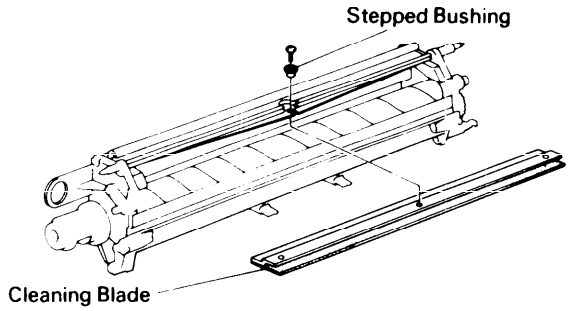


Cleaning Blade Replacement

1. Take out the cleaning unit. (See Cleaning Unit Removal section.)
2. Remove the cleaning blade (1 screw).
3. Dust the edge of the new cleaning blade with setting powder.
4. Install the new cleaning blade.

CAUTION: * Be careful not to touch the edge of the new blade.

* After installing the blade, make sure that the blade swivels.

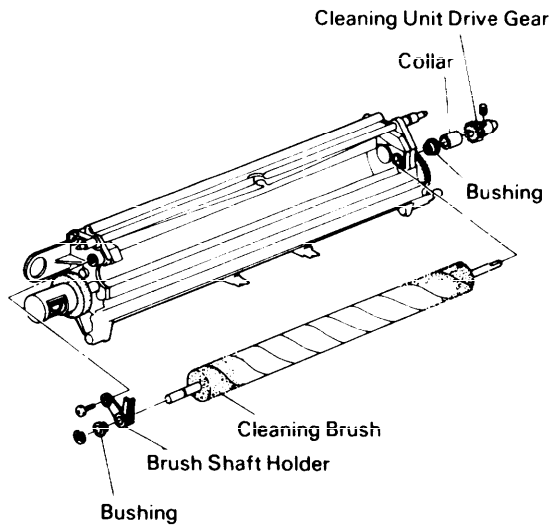


Cleaning Brush Replacement

1. Remove the cleaning unit drive gear (1 Allen screw), the collar, and the bushing from the rear end of the cleaning brush shaft.
2. Remove the bushing from the front end (1 E-ring).
3. Take out the cleaning brush with the brush shaft holder (1 screw).
4. Take the brush shaft holder off the front end.
5. Dust the new brush with setting powder.

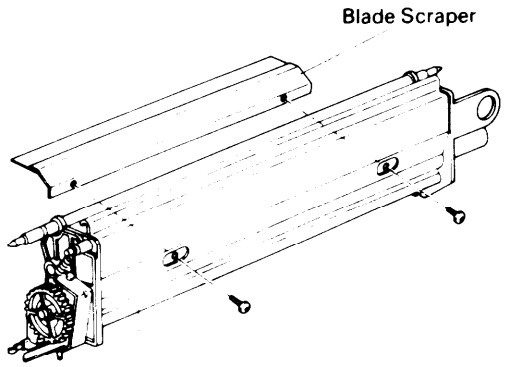
NOTE: Do not touch the new brush; handle only the shaft.

6. Install the new cleaning brush and reassemble the unit.



Blade Scraper Replacement

1. Remove the cleaning blade. (See Cleaning Blade Replacement.)
2. Remove the cleaning brush. (See Cleaning Blade Replacement.)
3. Take out the blade scraper (2 screws).
4. Clean the inside of the cleaning unit, and install a new blade scraper.

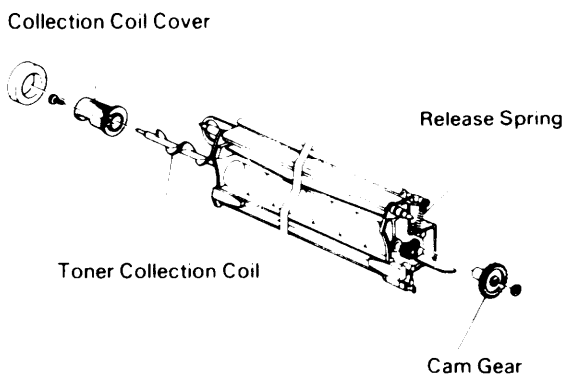


Cleaning Unit

Toner Collection Coil Replacement

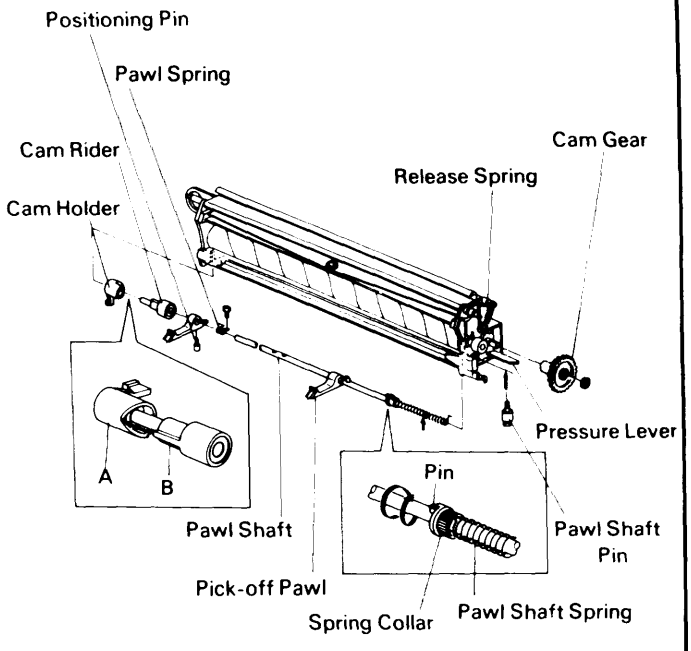
1. Remove the collection coil gear from the toner collection coil shaft (1 E-ring).
2. Remove the bottle joint seal and the toner collection coil cover (1 screw).
3. Slide out the toner collection coil from the front side of the cleaning unit.

   CAUTION: Toner will fall out when the coil is pulled.
4. Clean the inside of the unit and install a new toner collection coil.



Pick-off Pawl Replacement

1. Remove the collection coil (1 E-ring).
2. Remove the pawl shaft pin from the pawl shaft.
3. Push the pawl shaft to the rear and slide off the cam holder from the front side plate.
4. Take out the whole pawl shaft assembly.
5. Slide off the cam holder and cam rider.
6. Slide off the front pick-off pawl (1 positioning pin) and the front pawl spring (1 screw).
7. Slide off the rear pick-off pawl (1 positioning pin).
8. Set new pick-off pawls on the shaft and position them with the positioning pins and pawl springs.



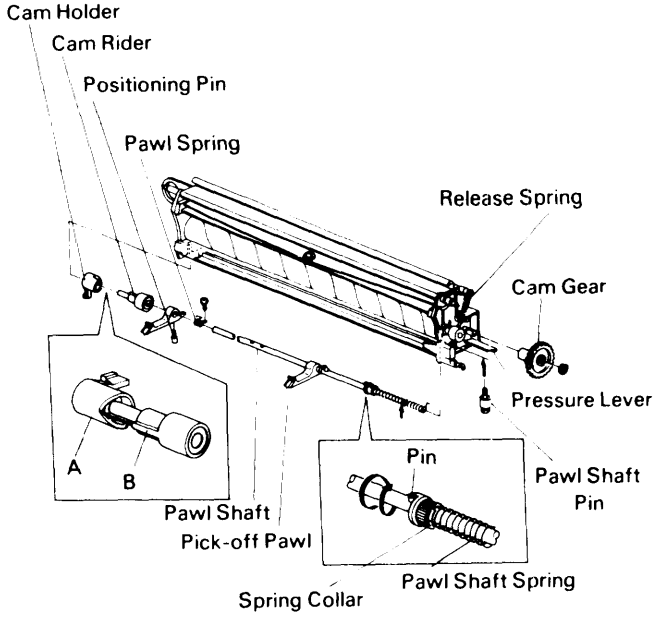
9. Assemble the pawl shaft ass'y and set it on the cleaning unit sliding in the rear end of shaft to the rear side plate.

   NOTE: * When installing the cam holder and the cam rider, align A with B as shown in the figure.
   * Make sure that the spring end is in the small hole on the rear side plate.

10. Install the pawl shaft pin.
11. Push the spring collar to the rear and rotate it with one turn as shown in the figure. Then set the collar on the pin.

    NOTE: Make sure that the end of the spring is correctly positioned in the groove of the collar.

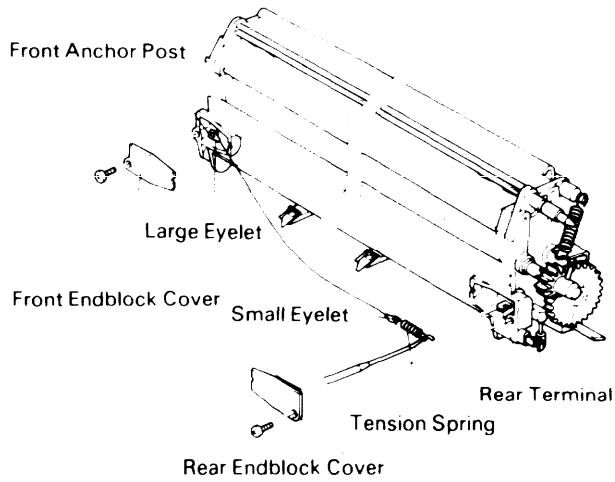
12. Reassemble the cleaning unit.



PCC Wire Replacement

CAUTION: * Do not handle the new corona wire with your bare hands. Oil on the wire will cause uneven charge on the drum.
* Do not rub the corona wires with rough material (sandpaper etc.) because the corona wire is carbon coated.

1. Remove the front and rear endblock covers (1 screw each).
2. Unhook the tension spring and take off the old corona wire.
3. Clean the endblocks, the covers, and the corona casing.
   CAUTION: Be careful not to injure your hand on the pick-off pawls.
4. Hook the large eyelet of the new corona wire to the front anchor post.
5. Hook the tension spring to the small eyelet and then hook it to the rear terminal.
6. Install the endblock covers.

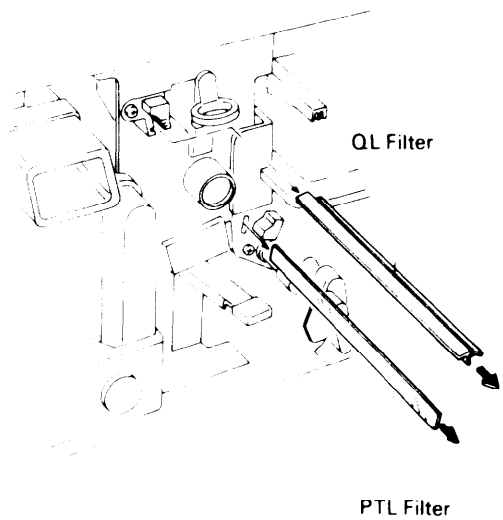


5-5. QUENCHING

PTL and QL Filter Removal

1. Open the copier front cover.
2. Slide out the PTL filter and the QL filter as shown and clean them with a dry cloth.

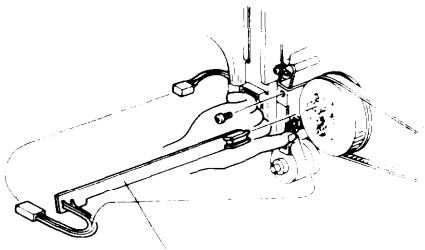
   NOTE: When installing the QL filter, make sure that the filter is inserted as shown in the figure to the right.

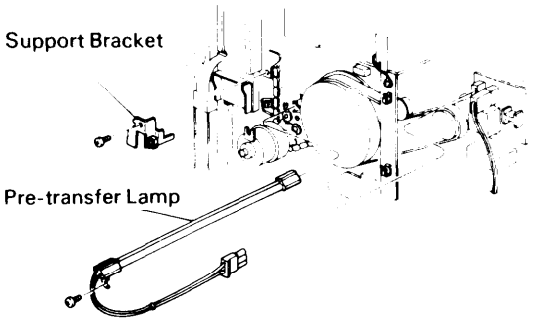


Pre-Transfer Lamp Replacement

1. Remove the copier rear cover and lower the PCB plate (2 screws each).
2. Remove the wires from the wire clamp on the support bracket.
3. Move the support bracket (1 screw).
4. Slide out the image density sensor (1 connector).
5. Remove the support bracket as shown.
6. Slide out the pre-transfer lamp (1 screw and 1 connector) and replace it with a new pre-transfer lamp.
7. Position the support bracket.
8. Clean and replace the image density sensor.
9. Reassemble.

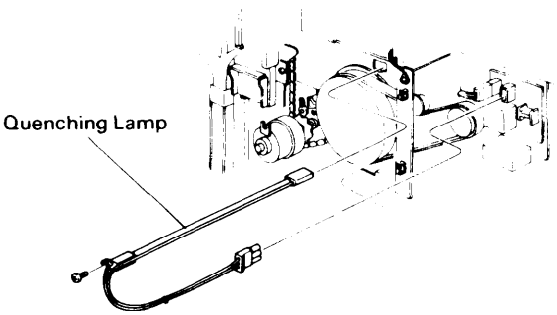
CAUTION: * When installing the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.
* The support bracket is responsible for holding the ID and registration sensors in place, make sure it is correctly positioned.





Quenching Lamp Replacement

1. Remove the rear cover (2 screws).
2. Lower the PCB plate (2 screws).
3. Disconnect the QL connector at the lamp stabilizer and unclamp the wires.
4. Slide out the quenching lamp (1 screw).
5. Install the new quenching lamp.



5-6. PAPER FEED

Manual Feed Table Removal

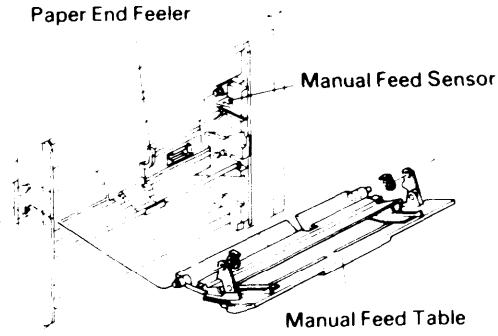
1. Remove the upper manual feed table hinge from the copier (1 snap ring each side).

   CAUTION: Be careful not to damage the manual feed sensor.

2. Slide the lower manual feed table hinge pins up their respective grooves to remove the table.

   CAUTION: Be careful not to damage the paper end feeler.

   NOTE: When reinstalling, slide the manual feed table hinge pins down the grooves.



Feed Rollers and Friction Pad Replacement

For 1st feed station only:

1. Remove the manual feed table (See procedure for manual feed table replacement).

2. Remove the upper front guide plate (2 screws).

Common Procedure for Feed Roller and Friction Pad Replacement:

1. Remove the feed roller and hub (1 snap ring).

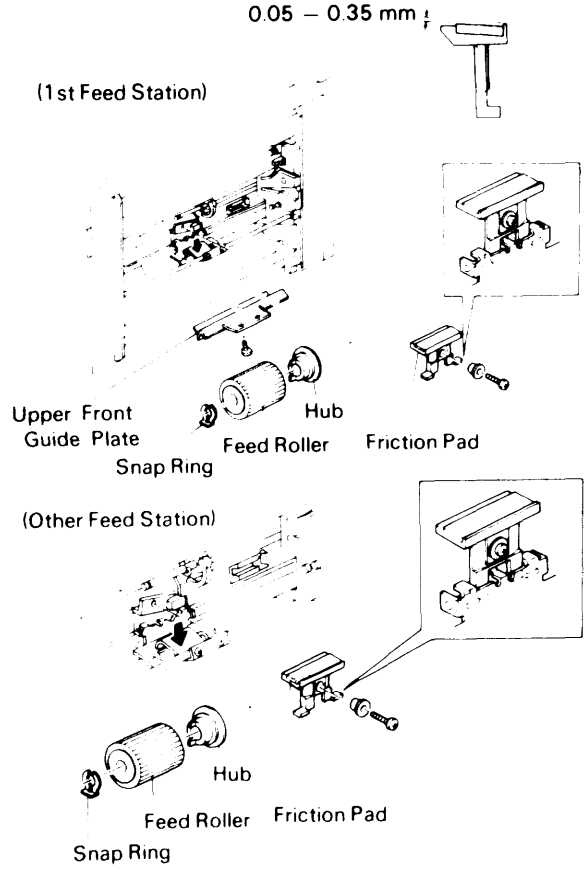
2. Press down on the cassette arm and remove the friction pad holder (1 screwand 1 collar washer).

3. Strip the old friction pad off.

4. Install the new friction pad.

   NOTE: a. Do not touch the pad surface with your oily fingers.

   b. Check that the friction pad is 0.05 to 0.35 mm below the surface of the front lip.



5. Grease the friction pad bracket swivel point with Mobil Temp 78.

6. Reinstall the friction pad bracket (1 screw and 1 collar washer) while holding the cassette arm down.

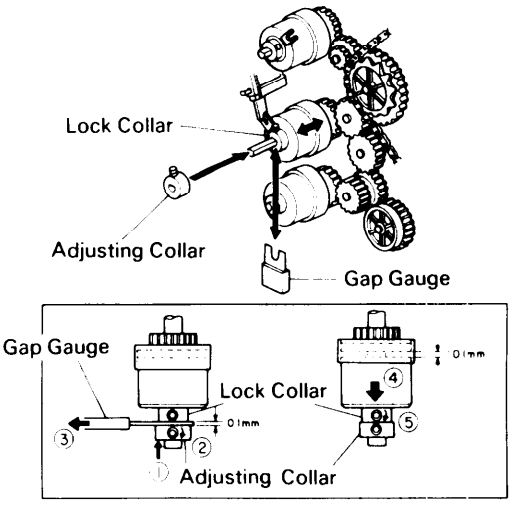
   NOTE: Be sure the legs of the friction pad bracket are positioned under the spring loaded pad positioning mechanism.

7. Reinstall the feed roller and hub (1 snap ring).

Feed Clutch Adjustment

ADJUSTMENT STANDARD: 0.1 mm (0.004")

1. Remove the rear cover (2 screws).
2. Take the adjusting collar off the relay roller shaft (1 Allen screw).
3. Loosen the screw in the lock collar on the clutch which is to be adjusted (1 Allen screw).
4. Place the adjusting collar next to the lock collar on the clutch shaft.
5. Position a 0.1 mm gap gauge (Part number 52059101) between the two collars.
6. Push the collars and the thickness gauge back until the clutch presses against the rear plate. Tighten the Allen screw in the adjusting collar.
7. Remove the thickness gauge and move the lock collar against the adjusting collar. Tighten the Allen screw in the lock collar.



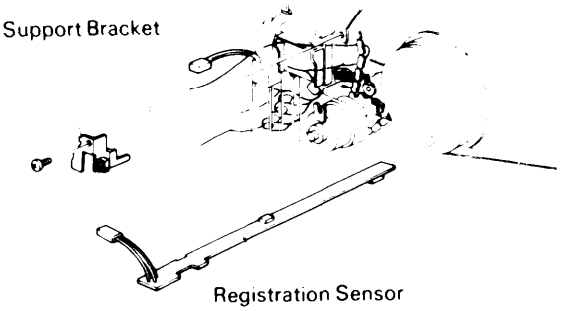
1. Push
2. Tighten
3. Remove Gap Gauge
4. Pull
5. Tighten

Registration Sensor Replacement

1. Remove the rear cover (3 screws) and lower the PCB plate (2 screws).
2. Move the support bracket (1 screw).
3. Slide out the registration sensor (1 connector).

NOTE: When removing the registration sensor, move the main drive chain to the right of the PCB cut-out.

CAUTION:
* When sliding in the registration sensor board, make sure that the board is properly located on the rails.
* When reinstalling the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.
* The support bracket is responsible for holding the ID and registration sensors in place, make sure it is correctly positioned.

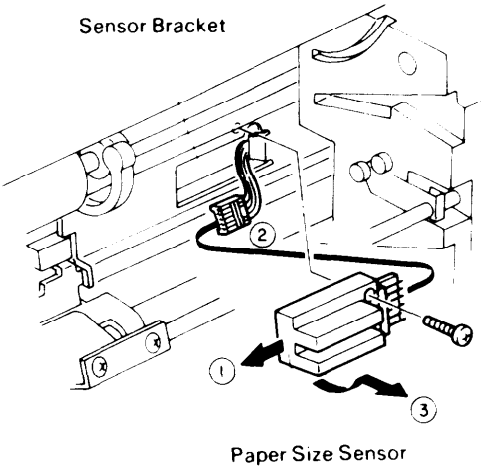


Paper Size Sensor Replacement

NOTE: The following procedure is common for all the feeding stations.

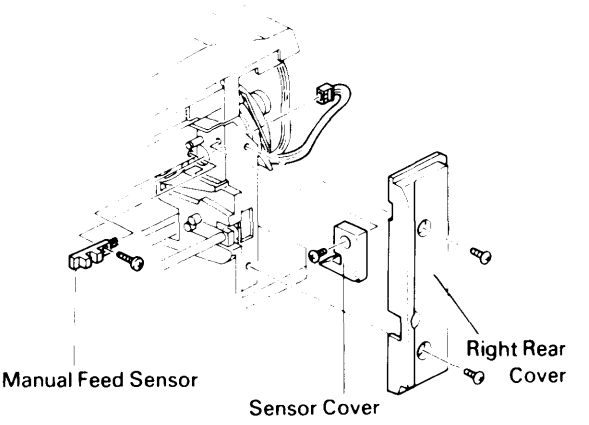
1. Remove the paper size sensor from the sensor bracket (1 screw and 1 connector).

NOTE: When reinstalling a new sensor;
* Position the projection of the sensor in the hole of the sensor bracket.
* Do not over tighten the screw.



Manual Feed Sensor Replacement

1. Remove the manual feed table. (See "Manual Feed Table Removal".)
2. Remove the rear cover (3 screws) and lower the PCB plate (2 screws).
3. Remove the right rear cover (2 screws).
4. Remove the sensor cover (1 screw).
5. Remove the manual feed sensor (1 screw, 1 connector).
6. Install a new sensor.

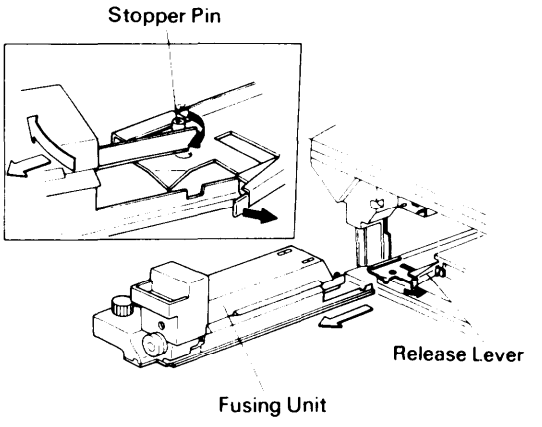


5-7. FUSING

Fusing Unit Removal

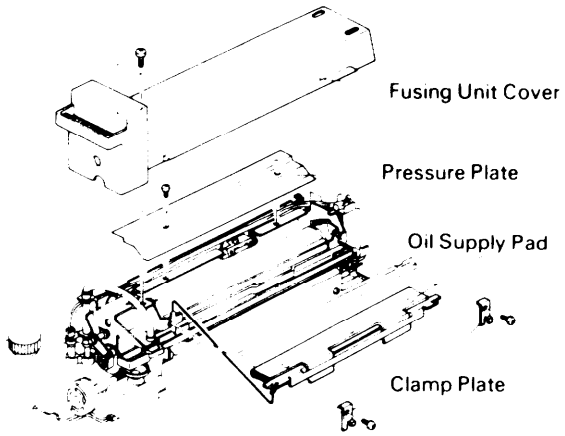
1. Remove the front cover (1 knob screw).
2. Push the fusing unit release lever to the right.
3. Pull out the fusing unit until it is fully extended.
4. Push the fusing unit release lever to the right, move the fusing unit to the left to disengage the stopper pin, and remove the unit from the copier.

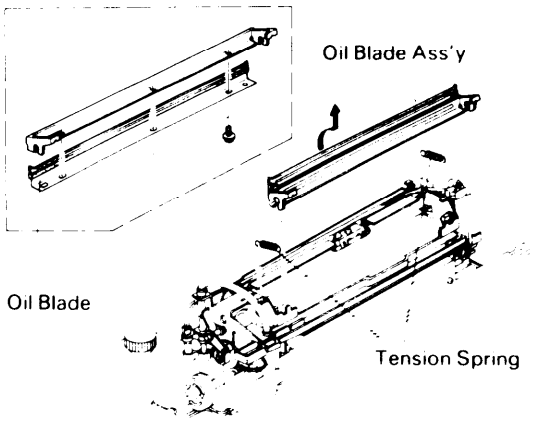
   NOTE: Keep the fusing unit in an upright position so that silicone oil does not spill.



Oil Blade Replacement

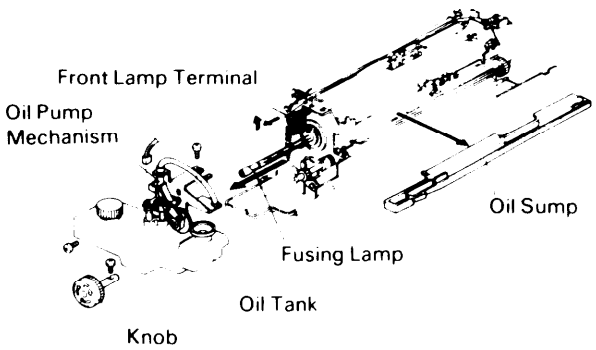
1. Remove the fusing unit. (See Fusing Unit Removal.)
2. Remove the fusing unit cover (2 screws).
3. Remove the pressure plate (2 screws).
4. Remove the oil supply pad (2 screws and 2 clamp plates).
5. Unhook the two tension springs.
6. Turn and remove the oil blade assembly.
7. Remove all screws (3) from the oil blade assembly and remove the blade.
8. Reassemble the new oil blade.

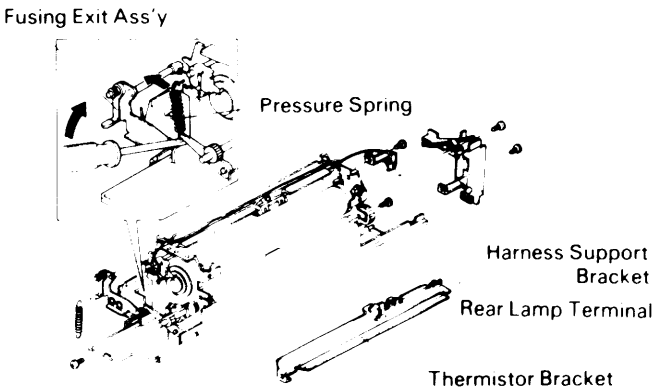




Hot Roller Replacement

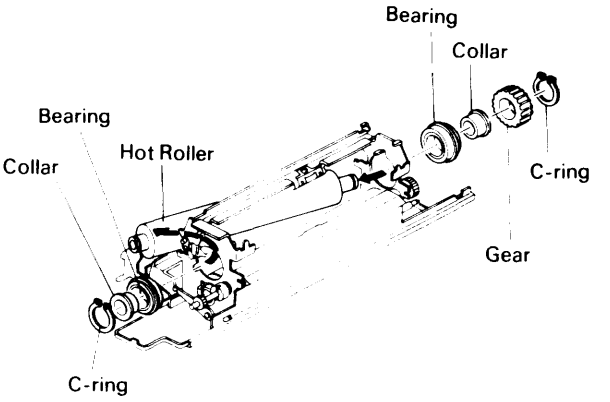
1. Remove the oil blade. (See Oil Blade replacement section.)
2. Remove any excess oil from the oil sump area and remove the oil sump.
3. Remove the fusing unit knob (1 screw).
4. Remove the oil pump mechanism with the oil tank (2 screws and 1 connector).
5. Rotate the front lamp terminal and remove the fusing lamp.
   CAUTION: Do not touch the actual lamp with your hands because finger oil marks may damage the lamp.
6. Swing down the fusing exit assembly and unhook the pressure springs.
7. Remove the harness support bracket (2 screws and 2 hooks).
8. Remove the thermistor bracket (2 screws).
9. Remove the rear lamp terminal (1 screw and 1 hook).





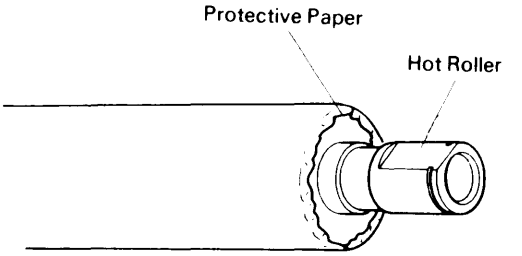
10. Remove the hot roller gear and bearings and collars from both ends of the hot roller (1 C-ring each).

11. Slide the hot roller slightly to the rear and remove the hot roller as shown.



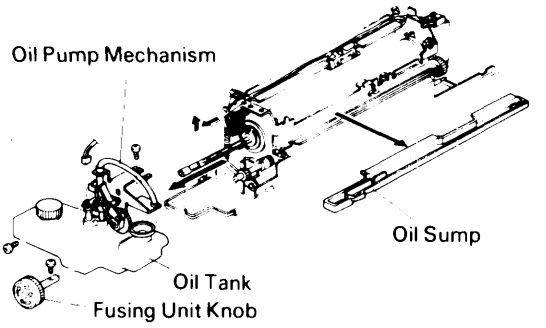
12. Tear the protective paper from the ends of a new hot roller and install it.

13. After the new hot roller is installed, remove the protective paper.
    NOTE: When reinstalling the fusing lamp, make sure it does not touch the inside of the hot roller.

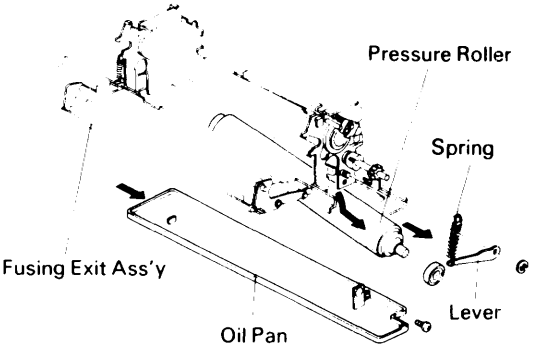


Pressure Roller Replacement

1. Remove the fusing unit and cover (2 screws).
2. Remove the fusing unit knob (1 screw).
3. Remove any excess oil from the oil sump.
4. Remove the oil pump mechanism with the oil tank (2 screws and 1 connector).



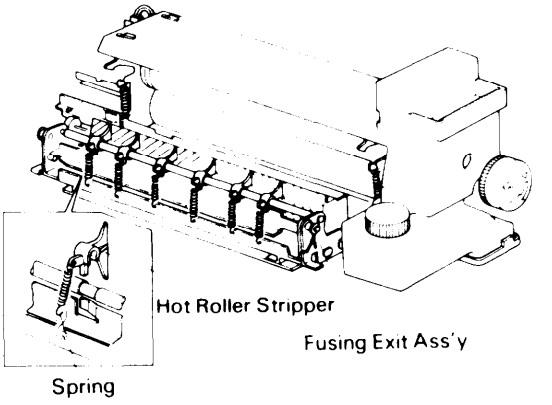
5. Open and remove the fusing exit assembly (1 E-ring and 1 connector).
6. Remove the oil pan (4 screws and 4 hooks).
7. Remove the front pressure spring.
8. Remove the front pressure lever (1 E-ring).
9. Lift up the upper part of the fusing unit and remove the pressure roller.
10. Install the bearings on the new pressure roller.



Hot Roller Stripper Replacement

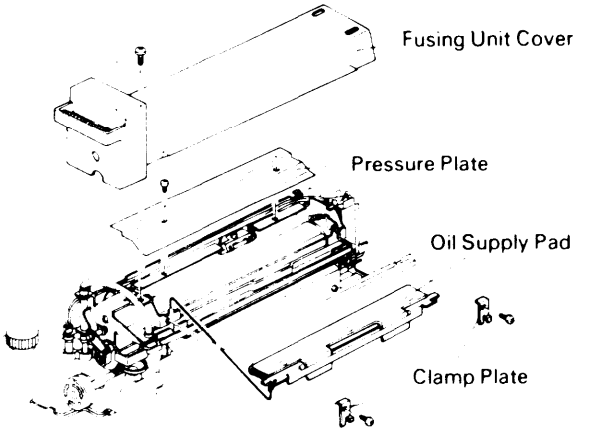
1. Pull out the fusing unit and open the fusing exit assembly.
2. Unhook the springs and remove the hot roller strippers.
3. Install new strippers and connect the springs.

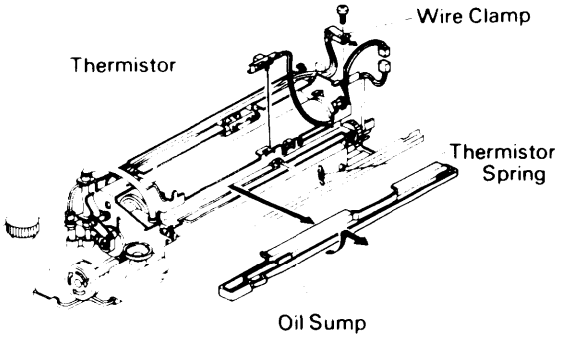
   NOTE: It is best to replace strippers and springs as a set.



Thermistor Replacement

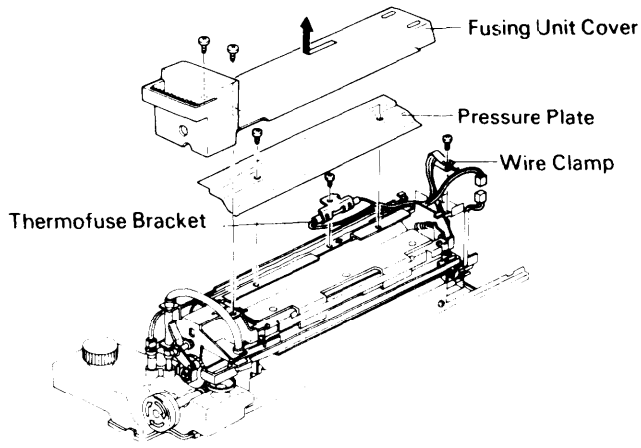
1. Remove the fusing unit.
2. Remove the fusing unit cover (2 screws).
3. Remove the pressure plate (2 screws).
4. Remove the oil supply pad (2 screws and 2 clamp plates).
5. Remove any excess oil from the oil sump and remove the oil sump.
6. Unhook the thermistor spring.
7. Remove the thermistor wire from the metal wire clamp (1 screw) and remove the thermistor (1 connector).
8. Replace the contact thermistor and reassemble.





Thermofuse Replacement

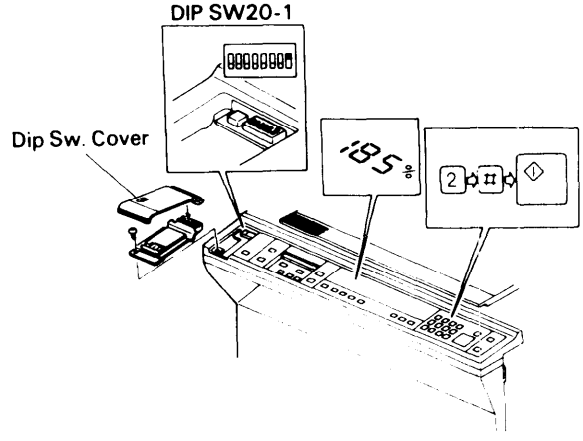
1. Repeat steps 1 to 3 of Thermistor Replacement.
2. Remove the thermofuse bracket (1 screw).
3. Remove the thermofuse wire from the metal wire clamp (1 screw).
4. Disconnect the thermofuse (1 connector) and install the new thermofuse.
   NOTE: Be sure the thermofuse wire is properly dressed.



Checking Hot Roller Temperature

– With Monitor Display –

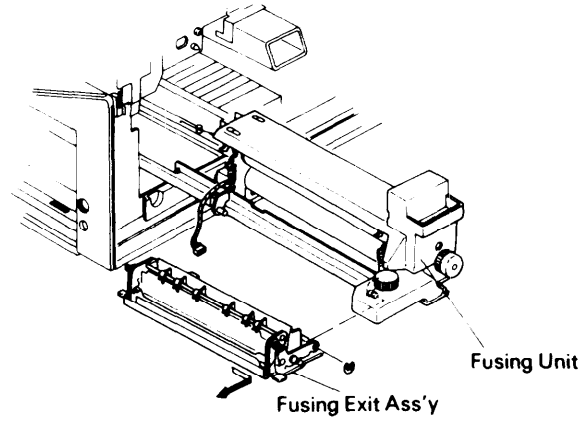
1. Turn off the main switch.
2. Remove the Dip switch cover on the left side of the operation panel (1 screw).
3. Turn on Dip switch 201-8.
4. Turn on the main switch.
5. Press 2, then the # key. The hot roller temperature will be displayed in the magnification ratio indicator.



– With Digital Surface Thermometer –

NOTE: The duplex unit (if installed) must be removed to perform this check.

1. Remove the fusing unit.
2. Remove the fusing exit assembly (1 E-ring and 1 connector).
3. Return the fusing unit to its original position inside the copier.
4. Actuate the front cover safety switch.



25. Replace all covers.

26. Check the operation of the DF and copier system.

27. Fill out the New Equipment Condition Report.

January15, 1986

8. Color Development Unit Installation

Accessory Check

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

1. Actuator – Red 1pc
2. Actuator – Blue 1pc
3. Actuator – Green 1pc
4. Screw – M3 x 4 ..... 1pc
5. Color Decal Sheet 1pc

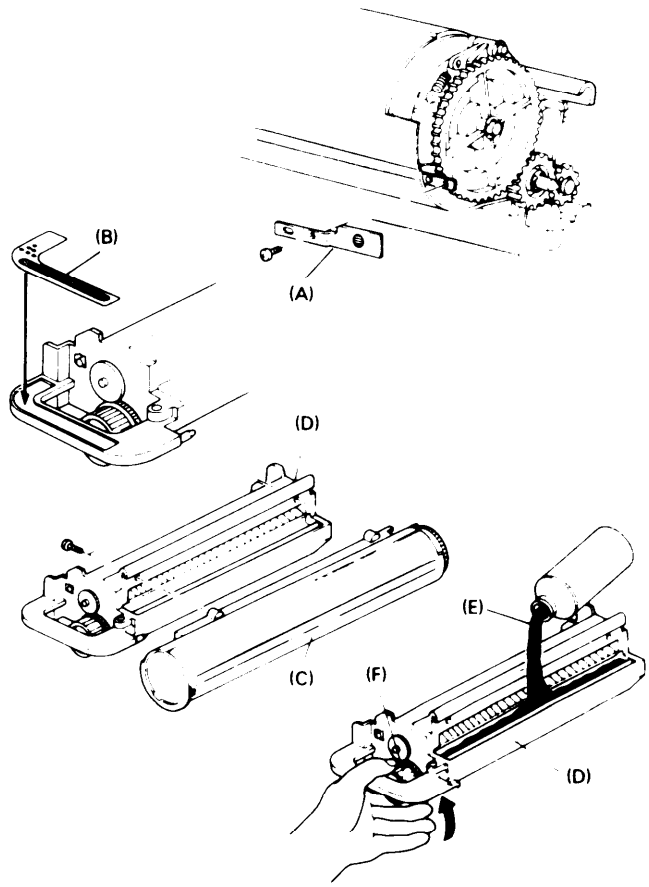
NOTE: 1. The color development unit should be installed after drum conditioning is finished. (See the copier installation procedure.)

2. The following procedure should be done when the color developer is replaced.

1. Install the color actuator (A) on the color development unit (1 screw).

   NOTE: Each actuator has a colored sticker. Install the appropriate actuator.

2. Stick the appropriate decal (B) on the development unit handle.
3. Separate the toner tank (C) from the development unit (D) (2 screws).
4. Pour one bottle of color developer (E) into the development unit while turning the knob (F) counterclockwise to distribute the developer.

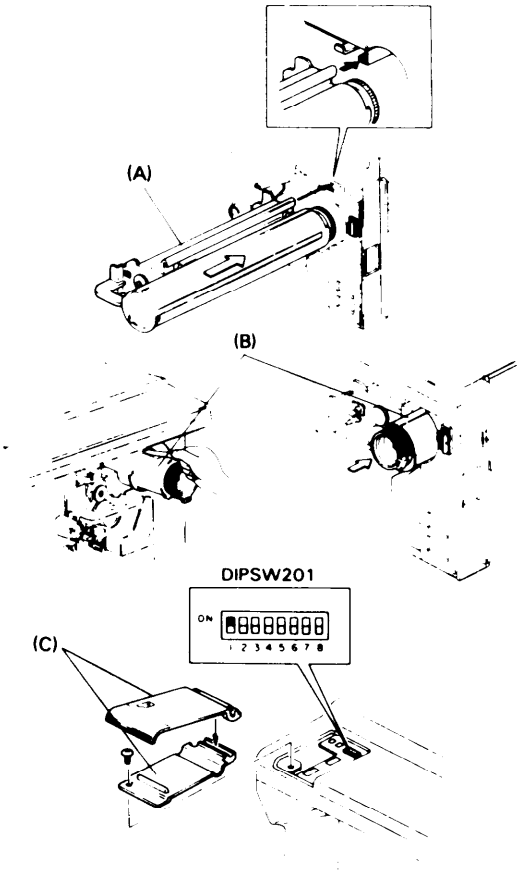


5. Remount the toner tank on the development unit.
6. **CAUTION:** When installing the color development unit, be sure the development unit rail is properly engaged with the unit guide rail on the copier.

   Install the color development unit (A).
7. Install a color toner cartridge (B).
8. Remove the DIP switch cover (C) on the left side of the operation panel (1 screw) and turn on DIP SW 201-1.
9. Plug in the machine and turn on the main switch. Confirm that the color toner indicator is displayed on the operation panel.
10. Press the Program key. "20" will be displayed on the copy counter.
11. Lower the platen cover.
12. After the Warm up period is completed, press the Start key.

    A. The copier will begin drum conditioning and sound one beep for each copy cycle from the 10th to the 17th copy to display and calculate the actual data from Vsp and Vsg.

    B. At the end of the 20th copy cycle, the copier will stop and sound five beeps. The control level is now in memory.



13. After the machine stops, press a number key according to the following list, to display the current control level in the magnification window.

    Red Toner: 7
    Green Toner: 8
    Blue Toner: 9

14. Turn off DIP SW201-1, select 30 copies, and press the print key. If image density is satisfacory, proceed to step 15. If image density is low (light copies), perform the following procedures:

    A. Turn on DIP SW201-1, select 30 copies, and press the print key. As the copier is going through drum conditioning, hold down the program key and the front margin adjustment key simultaneously. This will energize the toner supply solenoid and toner will be added as long as both keys are pressed.

    B. At the end of drum conditioning, turn off DIP SW201-1 and check for satisfactory image density. (If image density is unsatisfactory, repeat this procedure.)

    C. Now turn on DIP SW201-1, press the program key and then the print key. The CPU will now determine the new control level and store this level in the CPU's memory.

    D. Turn off DIP SW201-1 and verify that the image density is correct.

15. Turn off the main switch.

16. Reinstall the Dip Switch cover (1 screw).

SECTION 3

PREPARATION FOR TRANSPORTING THE COPIER

3. PREPARATION FOR TRANSPORTING THE COPIER

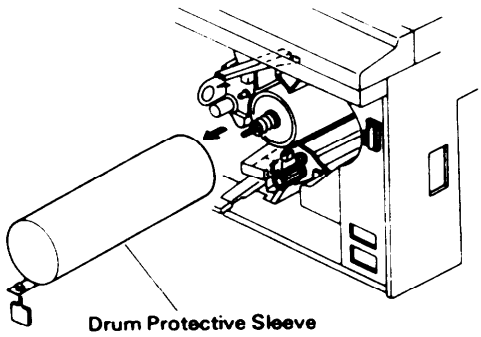
3-1. Short Haul Transportation 3-1
3-2. Long Haul Transportation 3-3

3-1. Short Haul Transportation:

Before moving the copier from its place of installation, be sure to prepare it for transportation as follows:

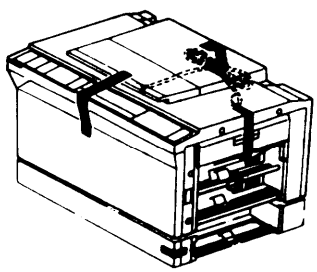
CAUTION: The copier may be seriously damaged if it is moved without proper preparation.

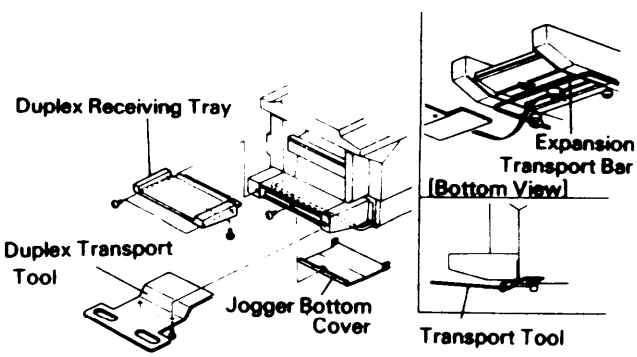
1. Insert the drum protective sleeve.
2. Re-install the development unit.
3. Re-install the drum stay and charge corona unit.



4. Secure the following items with tape:
   1) Manual feed table
   2) Platen cover or document feeder
   3) The power supply cord (roll up first)
   4) Expansion front cover
   5) System table front door
5. Remove the sorter to prevent damage to the bins.
6. Remove the duplex receiving tray.
7. Remove the cassettes.
8. Remove the original table from the document feeder.
9. Remove the LCT if it is installed in the 3rd feed station.

   CAUTION: If the duplex unit is installed, do not lift directly on the duplex module; use the transport tool instead (available from marketing).

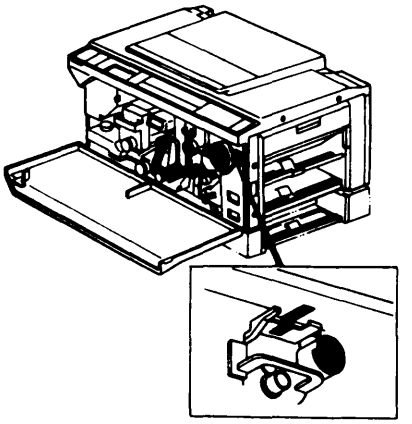


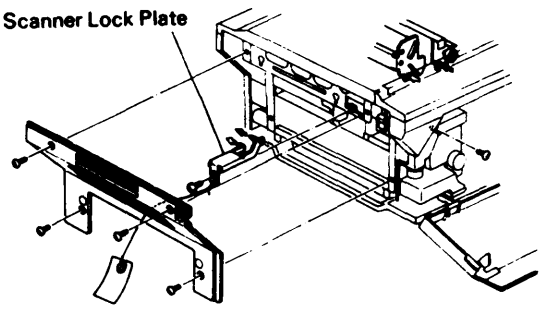


3-2. Long Haul Transportation by Vehicle:

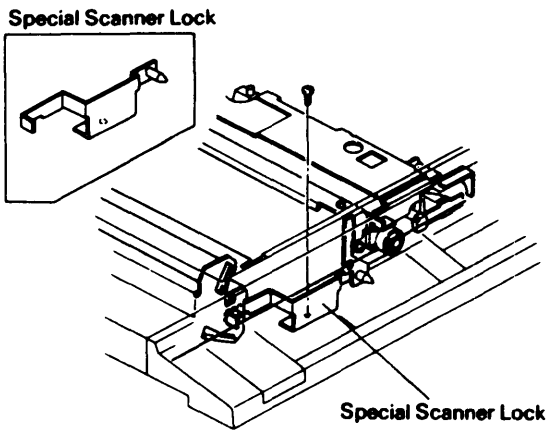
If the machine is to be transported by vehicle, do the following steps after you have completed the above short haul procedure.

1. Remove the developer from the development unit.
2. Place a wedge between the registration rollers.
3. Remove the left cover and install the scanner lock plate.
   NOTE: 1) Confirm that the scanner is at the home position.
   2) If the sorter adapter or the duplex unit is installed, the left cover cannot be removed. In this case use the special scanner lock (available from marketing). The 1st scanner is moved away from the home position when this lock is used. (See Next Page.)
4. Secure the following items with tape:
   1) T/S corona release lever to the drum stay knob
   2) Transport plate to the toner collection bottle cover
   3) Toner shield glass
   4) 1st and 2nd feed guide plates





5. Remove the sorter and secure the following items with tape.
   1) Top cover
   2) Jam clearing tray
   3) Bins-tape the right and left edges of the spacers together.
6. Remove the LCT if it is installed in the 5th feed station.
7. Secure the LCT covers and power supply cord with tape.
8. Separate the system into the two units as follows:
   1) Paper Bank and System Table
   2) Copier expansion unit, duplex unit and/or document feeder
9. Tape the bank interface harness and ac harnesses to the top of the bank.



SECTION 4

SERVICE REMARKS

4. SERVICE REMARKS

4-1. Service Remarks 4-1

4-1. Service Remarks

General Caution:

Keep hands away from mechanical drive components when the copier is warming up. This is to avoid possible injury when the copier starts idling at the end of warm up. (The warm-up idle cycle occurs if DIP SW101-3 is on.)

Drum Charge

1. The corona wires should be cleaned at every service call by sliding the corona unit or with dry cloth. Do not use emery paper or any solvent for wire cleaning.
2. Do not touch the corona wires with oily hands.
3. Make sure that the corona wires are correctly positioned between the cleaner pads.
4. After cleaning the charge corona unit, make sure that there are no threads on the casing to avoid white lines on the copy.

Optics

1. Do not adjust the following parts:
   a. Scanner Guide Plate (3 screws)
   b. Lens Axis Adjusting Cam (1 screw)
   c. Lens Position Adjusting Screws
   d. Fourth Mirror Angle Adjusting Screw
   e. Lens Home Position Sensor (1 screw)
2. The lens home position sensor does not have a convenient adjusting procedure. When replacing the sensor, mark the position of the sensor bracket before removing it, and adjust the fine position of the sensor by checking the copy image (horizontal magnification and focus).
3. Do not bend or damage the lens support plate or the mylar strip.
4. Launa oil or an equivalent oil should be used to lubricate or clean the following:
   a. Scanner Guide Rod (Cleaning)
   b. Scanner Guide Rod Pads (Lubrication)
   c. Scanner Guide Plate (Lubrication/Cleaning)

CAUTION: Do not use silicone oil or any other kind of oil.

5. Clean the exposure glass with alcohol and water.
6. Clean the mirrors only with alcohol and/or water and a soft cloth.
7. Do not touch the following parts with bare hands:
   a. Reflectors
   b. Exposure Lamp
   c. Mirrors and Lens
8. Do not bend the Auto ID fiber optics cable sharply.
9. When adjusting the light intensity, make ten copies before proceeding to check copy image if the main switch has just been turned on. This is to eliminate the effect of rest time compensation.
10. After adjusting the light intensity, check and adjust the Auto ID sensor.

Development

1. Be careful not to nick or scratch the development roller sleeve.
2. Place a sheet of paper under the development unit when it is out of the copier.
3. Be careful not to bend the bias terminal.
4. Clean the drive gears and end magnets after removing used developer.
5. Clean the development unit guide plate before reinstalling the unit.

Toner Supply

1. The image density sensor and the erase lamp unit should be cleaned at every EM or PM with a blower brush.

2. When reinstalling the support bracket after cleaning the ID sensor, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.

3. Do not touch the sensor pattern with bare hands.

4. Image density sensor adjustment is required when:

a. The ID sensor board is replaced.
b. The main board is replaced.
c. The drum has been replaced and Vsg is out of standard.
d. Problems with toner supply have occurred and ID sensor check shows Vsg to be out of standard.

5. Grease the toner supply clutch with Mobil Temp 78 periodically to avoid noise and bad operation.

Transfer and Separation

1. The corona wires should be cleaned with a dry cloth at every EM or PM.

2. While the drum stay is out and the drum is installed on the drum guide, do not lift up the corona unit. (The corona casing will hit against the drum.)

Cleaning

1. When servicing, be careful not to damage the edge of the cleaning blade.

2. Do not touch the cleaning brush with oily hands.

3. Before pulling out the cleaning unit, place a sheet of paper under it to catch falling toner.

4. Be careful not to damage the drum with the pick-off pawls when pulling out or inserting the unit.

5. When a new cleaning blade and/or a new cleaning brush is installed, dust them with setting powder before reinstalling the unit.

Duplex Unit

1. When replacing the positioning roller drive belt, be careful not to bend the lift shaft bracket.

2. When servicing the duplex unit, make sure that the main switch of the copier is off.

Expansion Unit and Paper Bank

1. When servicing the expansion unit and/or the paper bank, make sure that the main switch of the copier is off.

Document Feeder

1. Do not bend the DF interface harness sharply to avoid damaging the fiber optics cables.

2. When connecting the DF interface harness to the interface board, run the fiber optics connectors from behind the PCB plate.

3. When servicing the document feeder, make sure that the main switch of the copier is off.

6. When installing the toner collection bottle cover, be sure that the hooks of the transport plate are positioned underneath the bottle cover.

Quenching

1. Clean the PTL and QL filters at every EM or PM.

2. When reinstalling the QL filter, make sure that the filter is inserted in the correct direction.

Fusing

1. When removing the fusing unit, keep it in an upright position so that the silicone oil does not spill.

2. After replacing the oil blade and oil supply pad, prime them with silicone oil.

3. Be careful not to damage the edge of the hot roller strippers or their tension springs.

4. Do not touch the fusing lamp with bare hands.

5. Be sure that the fusing lamp is not in contact with the inner surface of the hot roller.

6. Be sure that the oil end sensor contacts the bottom of the oil tank.

Paper Feed

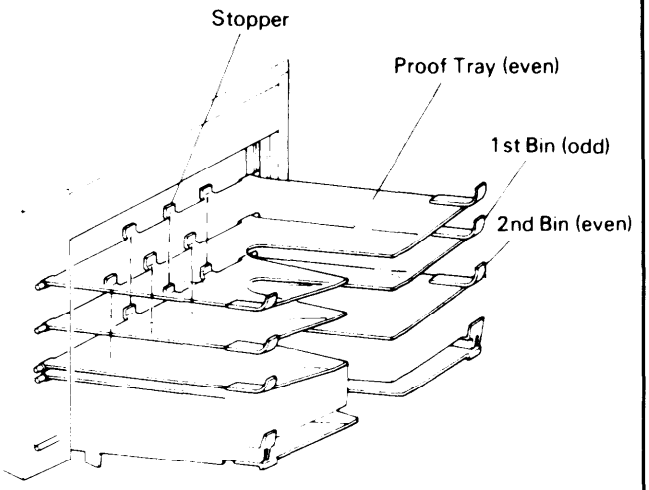
1. When replacing the friction pad, make sure that the friction pad is 0.05 to 0.35 mm below the surface of the front lip of the pad holder.

2. When reinstalling the support bracket after cleaning the registration sensor, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.

Sorter

1. The sorter has two types of bins; one type is used for odd numbered bins and the others used for even numbers. (See the figure.) Be careful not to mix them up.

2. If bin operation is not smooth, lubricate the slot liners and transfer wheels using grease 501.



Large Capacity Tray

1. Unplug the power supply cord of the LCT before servicing it.

2. Before placing the large capacity tray in the cassette holders, fix the pick-up roller in the up position with shipping tape.

Handling the Drum

1. Never touch the drum surface with bare hands.

2. Store the drum in a cool dry place away from heat.

3. When cleaning the drum, always use a pair of gloves. Do not throw away cotton used for cleaning. Bring it back to the service depot for disposal according to local regulations.

4. Always prime the drum with setting powder after cleaning the drum, and when installing a new drum. This should be done within one minute in a location not exposed to room light.

5. To protect the drum, always apply setting powder to a new cleaning blade and/or a new cleaning brush before installing them.

Others

1. When the main board is removed from the PCB plate, do not put it on a conductive surface. (This is to avoid discharging the battery of the user program memory.)

2. When installing a new main board, clear the user program RAM as follows:

   a. Make sure that the main switch is off.
   b. Fix the new main board to the PCB plate and plug in all the connectors.
   c. Connect test pins TP101 and TP102 with a jumper wire.
   d. Turn on the main switch.
   e. Turn off the main switch and remove the jumper wire.

6. Drum conditioning is necessary when a new drum is installed. In addition, it is useful at the following times:

   a. When image density is reduced due to over-exposure of the drum.
   b. After cleaning the drum.
   c. When the oxidized layer on the surface of the drum is lightly scratched.

7. Always keep the drum in the protective sleeve when inserting or pulling the drum out of the copier (except when applying setting powder).

8. Before inserting or pulling out the drum, the cleaning unit should be pulled slightly out to avoid drum damage by the pick-off pawls.

9. Before inserting the protective sleeve on the drum while it is in the copier, always take out the development unit. If the sleeve is inserted while the development unit is in the copier, the edge of the sleeve will scrape off developer from the development roller.

10. Send used drums to the distributor according to standard procedure.

SECTION 5

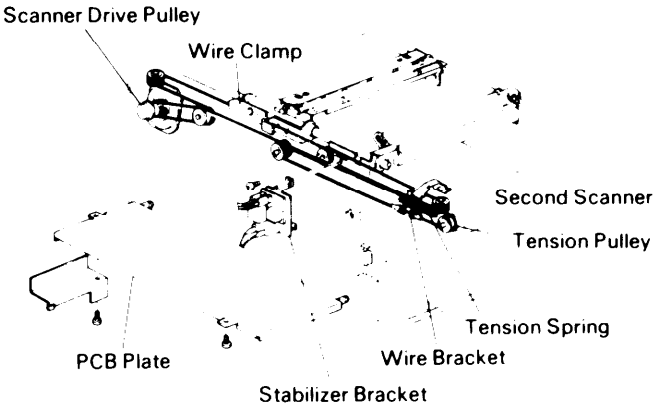
REPLACEMENT AND ADJUSTMENT

5. REPLACEMENT AND ADJUSTMENT

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5-1. Scanner Drive Wire Replacement

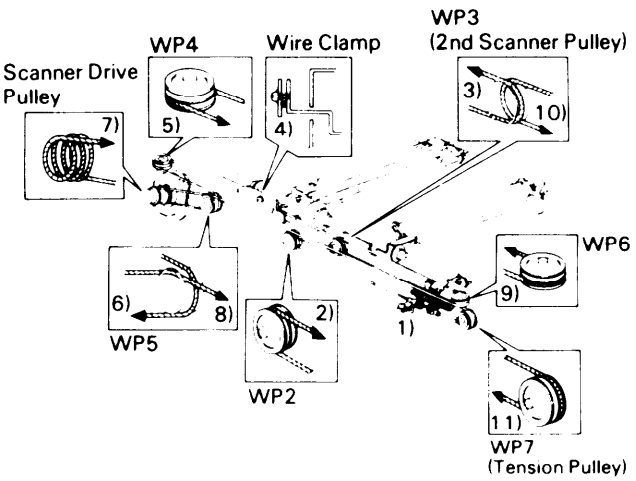
1. Turn off the main switch.
2. Remove the platen cover, the mounting studs, and the upper cover.
3. Remove the left scale (2 short screws) and the exposure glass.
4. Remove the rear cover and lower the PCB plate (2 screws each).
5. Loosen the wire clamp screw.
6. Move the 2nd scanner to the return position.
7. Unhook the tension spring and take out the old wire.
8. Remove the QL/PTL stabilizer PCB bracket (1 screw).



9. Run the scanner drive wire over the pulleys in the following order:

   1) Hook one end of the wire to the left side of the wire bracket.
   2) Outer track (WP2)
   3) Outer track (WP3)
   4) Lower side (Wire Clamp)
   5) Lower track (WP4)
   6) Inner track (WP5)
   7) Three and half turns from lower to upper (Scanner Drive Pulley)
   8) Outer track (WP5)
   9) Lower track (WP6)
   10) Inner track (WP3)
   11) Inner track (WP7)

10. Hook the end of the wire to the right side of the wire bracket.
11. Push the tension pulley to the right. Take the wire off of the pulley in figure 8) (WP5) of step 8, so that you can hook the tension spring easily.
12. Hook the tension spring and reposition the wire on the pulleys as in step 8).



13. Rotate the scanner drive pulley and make sure that the scanner drive wire moves smoothly and there is no overlapping around the scanner drive pulley.

    NOTE: Step 13 is important! If overlapping of the scanner drive wire occurs, then the trailing edge of A3/11" x 17" copies may be reduced.

5-2. Color Copy Counter Check

The number of copies made with each color unit can be checked on the operation panel to decide whether or not the color developer should be replaced.

— Method A —

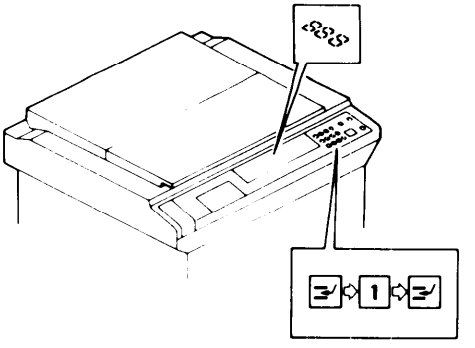
1. Turn off the main switch.
2. Remove the rear cover (3 screws).
3. Turn on DIP SW 102-2 on the main board.
4. Turn on the main switch.
5. Press the "⇶" key, then "1", then the "⇶" key again.
6. Press and hold number keys as follows to display the number of color copies made.

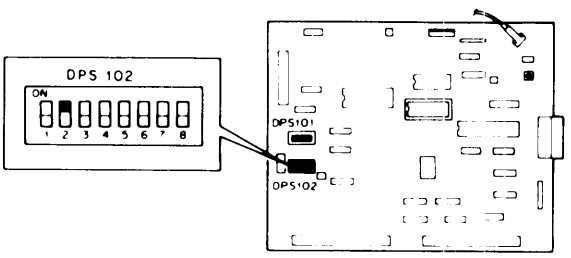
   "4": Red Copy Number
   "5": Green Copy Number
   "6": Blue Copy Number

   The displayed numbers are in hundreds of copies.

Example:

Actual Number Copied	Display
30	0
130	1
2580	25





NOTE: In this condition, the control level of the toner supply (Vsp/Vsg x 100%) can also be displayed as follows:

"7": Red Toner
"8": Green Toner
"9": Blue Toner

7. Turn off the main switch.
8. Turn off DIP SW 102-2, and reinstall the rear cover.

Note: The color copy counters are cyclical. The maximum number is 999 (actual number is 99,999), and on the next count it returns to 000. The counter cannot be reset by reinstalling the color development unit.

– Method B –

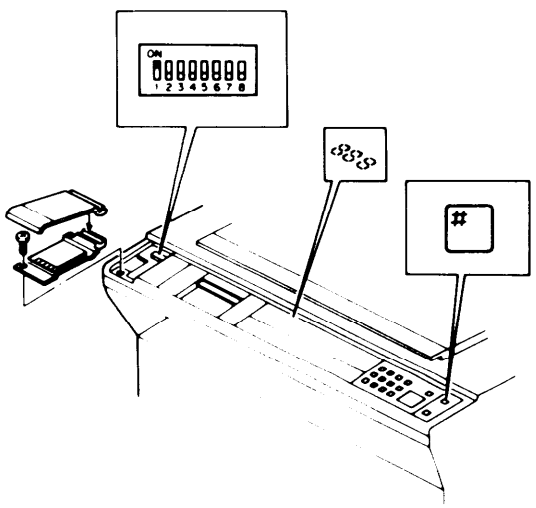
This method is effective only when a color development unit is installed.

1. Turn off the main switch.
2. Remove the DIP switch cover on the left side of the operation panel (1 screw).
3. Turn on DIP SW201-1.
4. Press the Enter/Recall key.
5. Press and hold number keys as follows to display the number of color copies made.

"4": Red Copy Number
"5": Green Copy Number
"6": Blue Copy Number

NOTE: If the Start key is pressed in this condition, the machine starts the control level checking program; so, do not press the Start key.

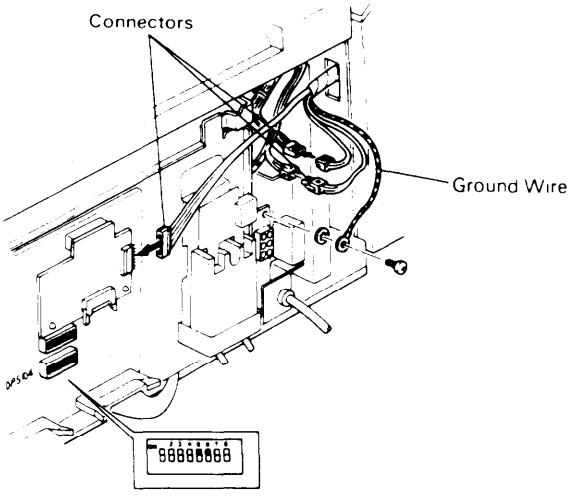
6. Turn off the main switch.
7. Turn off DIP SW201-1,and replace the DIP switch cover.

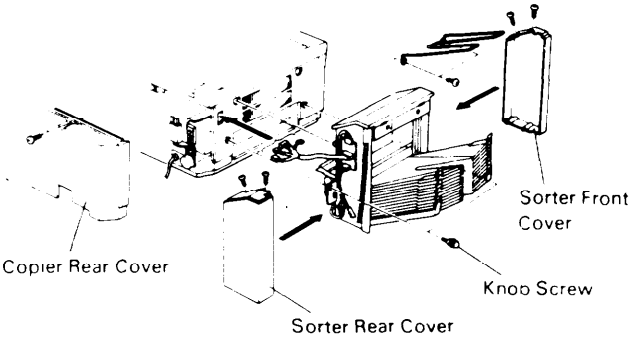


5-1. UNIT REMOVAL

Sorter Removal

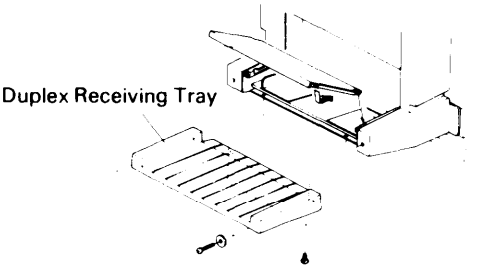
1. Turn off the main switch of the copier and unplug the power supply cord.
2. Remove the copier rear cover (3 screws).
3. Disconnect the sorter harness from the copier as follows:
   a. Red connector from ac harness
   b. White 4P connector from dc harness
   c. Black connector from CN804 on the interface board
4. Remove the sorter ground wire from the copier (1 grounding screw and 1 star washer).
5. Remove the front and rear covers (2 screws each).
6. If the sorter adapter is installed, disconnect the sorter adapter harness (white 2P connector).
7. Remove the sorter from the copier.

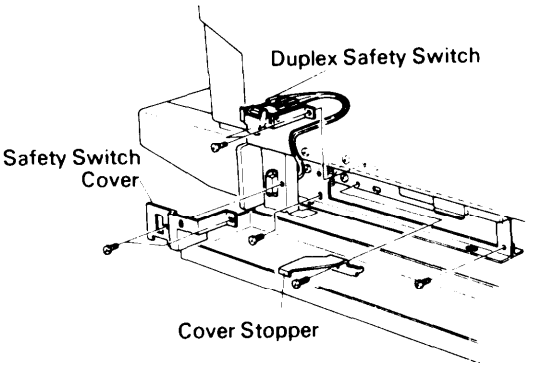


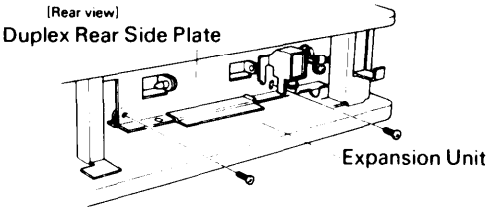


Duplex Unit Removal

1. Turn off the main switch of the copier and unplug the power supply cord.
2. Remove the sorter if installed. (See Sorter Removal.)
3. Remove the duplex receiving tray (4 screws and 2 washers).
4. Open the expansion front door and remove the duplex safety switch cover (2 truss screws).
5. Remove the duplex safety switch (2 screws) and the cover stopper (1 screw).
6. Remove the 2 screws securing the front side of the duplex unit to the expansion unit.
7. Remove the expansion rear cover (3 screws).
8. Remove the 2 screws securing the rear side of the duplex unit to the expansion unit.
9. Remove the copier rear cover (3 screws).

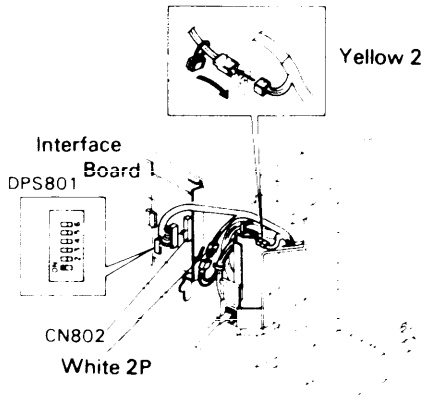


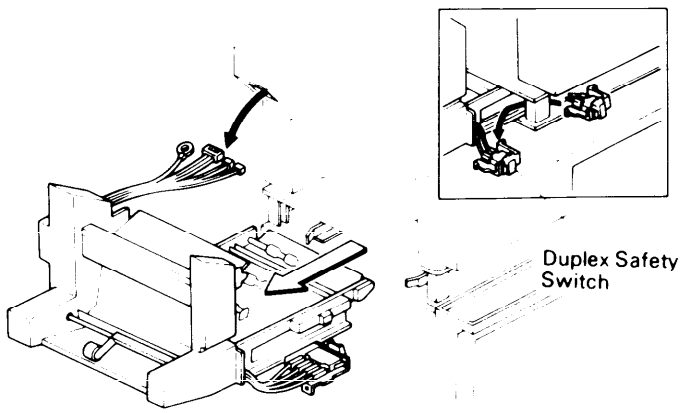




10. Disconnect the duplex harness from the copier as follows:
    a. Black connector from CN802 on the interface board.
    b. Yellow 2P connector from the dc harness.
    NOTE: If the copier will be operated without the duplex unit, insert the yellow short plug into the yellow connector of the dc harness.
    c. White 2P connector from the ac harness.

11. Place the duplex safety switch inside the duplex unit frame upright and slide out the duplex unit.





Document Feeder Removal

1. Turn off the main switch of the copier and unplug the power supply cord.

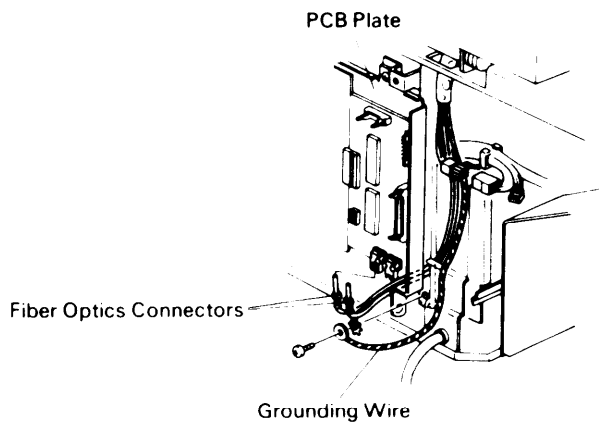
2. Remove the copier rear cover (3 screws).

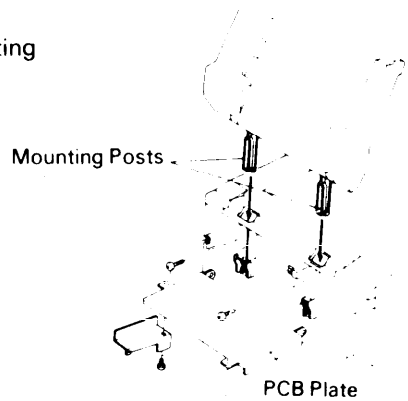
3. Disconnect the two fiber optics connectors from CN806 and CN807 on the interface board.

4. Remove the DF grouding wire from the copier (1 grounding screw and 1 star washer).

5. Lower the PCB plate (2 screws).

6. Remove the 4 screws securing the mounting posts to the DF mounting brackets.





7. Raise and lift the DF, then remove it.
   CAUTION
   a. When handling the DF or placing it on something, be careful not to damage the fiber optic cables.

   b. When installing the DF:

      * Run the DF interface harness through the DF docking hole first and then, insert the mounting posts into the DF mounting brackets.
      * Pull down the DF interface harness before lowering the to prevent damaging the fiber optic cables.

Large Capacity Tray Removal

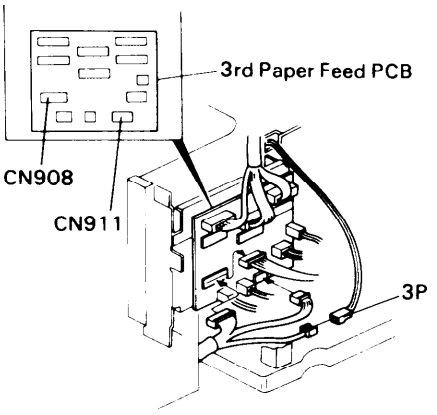
A. From the 3rd paper feed station:

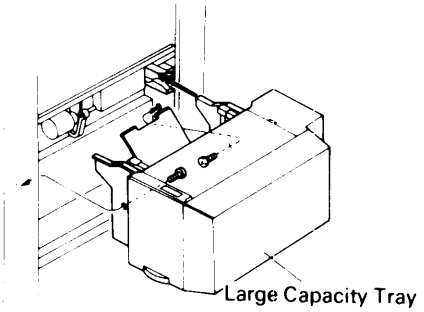
1. Turn off the main switch of the copier and unplug the power supply cord of the large capacity tray.

2. Remove the expansion rear cover (2 screws).

3. Disconnect the large capacity tray harness from the expansion unit as follows:
   a. 4P connector from CN911 on the 3rd paper feed PCB
   b. 7P connector from CN908 on the 3rd paper feed PCB
   c. 3P connector from the free connector of the paper end sensor unit

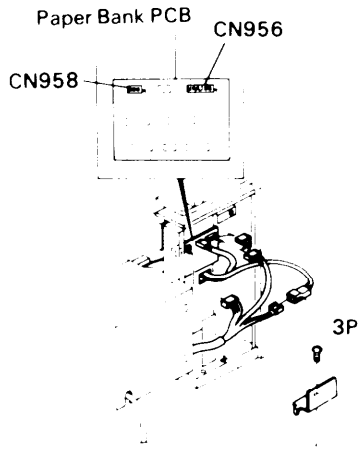
4. Remove the large capacity tray from the 3rd feed station (2 long screws).

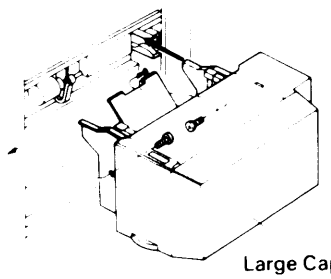




B. From the 5th paper feed station:

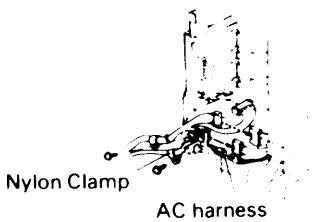
1. Turn off the main switch of the copier and unplug the power supply cord of the large capacity tray.
2. Remove the bank rear cover (2 screws).
3. Disconnect the tray harness from the paper bank as follows:
   a. 4P connector from CN958 on the paper bank PCB
   b. 7P connector from CN956 on the paper bank PCB
   c. 3P connector from the free connector of the paper end sensor unit
4. Remove the large capacity tray from the 5th feed station (2 long screws).

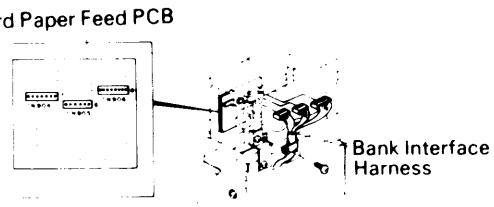


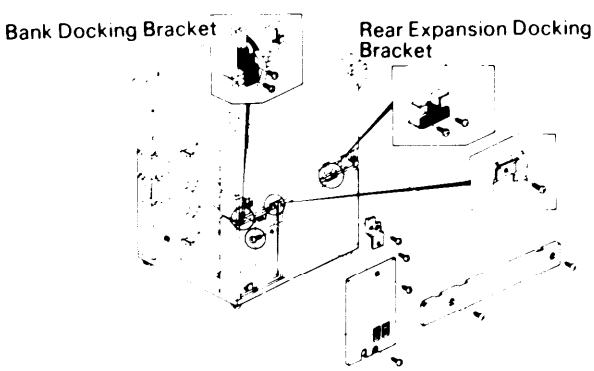


Paper Bank Removal

1. Turn off the main switch of the copier snd unplug the power supply cord.
2. Remove the copier rear cover (3 screws) and lower the PCB plate (2 screws).
3. Disconnect the bank ac harness and remove the nylon clamp of the harness (1 screw).
4. Raise and secure the PCB plate, the remove the expansion rear cover (2 screws).
5. Remove the nylon clamp securing the bank interface harness to the bank docking bracket (1 screw).
6. Disconnect the bank interface harness from CN904, CN905, and CN906 on the 3rd paper feed PCB.
7. Remove the bank docking bracket and the rear expansion docking plate (2 screws each).
8. Remove the expansion front cover and the front expansion docking plate (2 screws each).
9. Remove the 2 screws securing the paper bank to the expansion unit.







10. Lift and remove the copier, expansion unit, duplex unit, and/or document feeder together from the bank and system table.

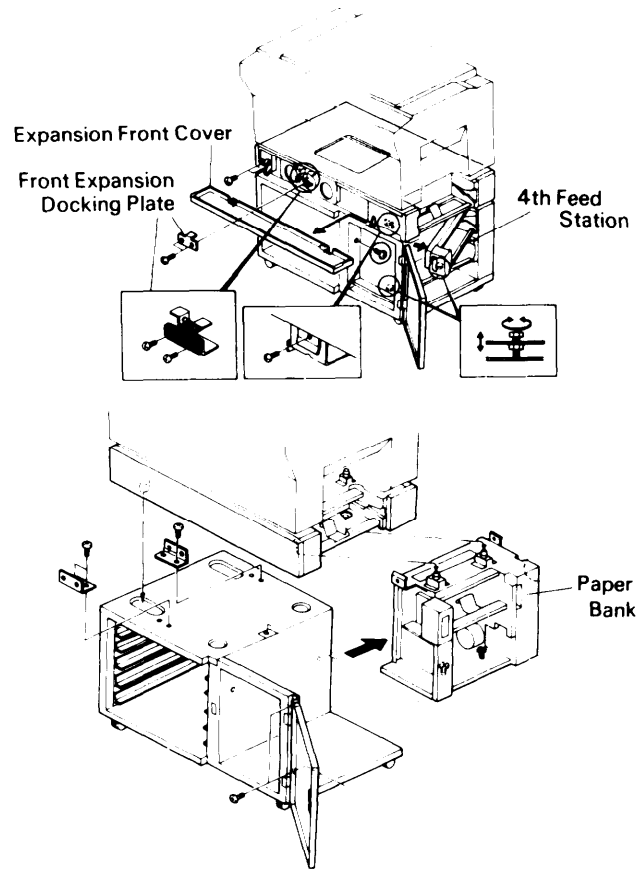
11. Remove the bank rear cover (2 screws).

12. Remove the screw securing the bank to the rear side of the system table.

13. Open the system table from door and swing out the 4th feed station.

14. Remove the screw securing the bank to the front side of the system table.

15. Remove the paper bank from the system table.



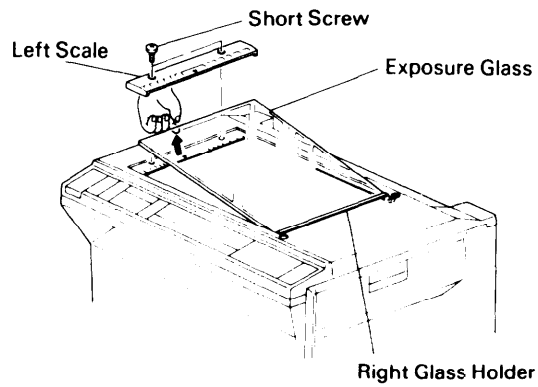
5-2. OPTICS

Exposure Glass Removal

1. Take off the left scale (2 short screws).

2. Grasp the left edge of the exposure glass and lift it up slightly. Slide the other edge out from under the right glass holder. Remove the exposure glass.

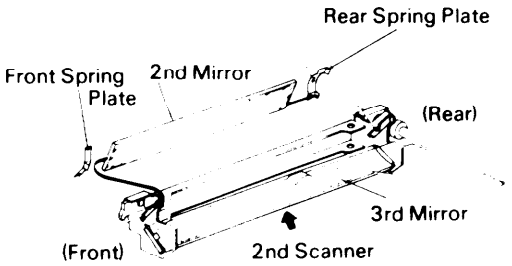
NOTE: When reinstalling the exposure glass:
- Make sure that the left edge of the glass is flush with the 2 tabs to the left on the scale plate.
- Make sure that the right glass holder firmly secures the exposure glass.



2nd Mirror Removal

NOTE: This procedure is usually performed in order to make cleaning the 3rd mirror easier.

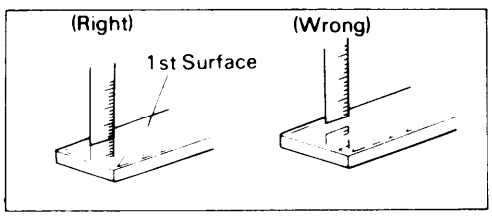
1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the 1st scanner 2/3 to the right by pushing it at the rear side.
4. Remove the front spring plate by depressing the top of the spring and moving the plate towards the front side of the machine.
5. Carefully pull the 2nd mirror towards the front side of the machine to remove the rear spring plate.
6. Lift the mirror out of the machine rear side first.
7. Clean mirrors with alcohol followed by water, and then dry.

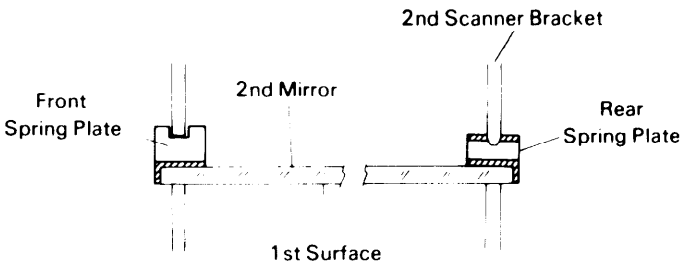


– To Reinstall –

8. Place the rear spring plate in place and hold it with your finger.
9. Insert the 2nd mirror into the front side plate cut out.
10. Insert the rear side of the mirror into the rear spring plate.
11. Locate the bottom of the front spring plate and rotate the top of the spring into position.

NOTE: Make sure that you install the mirrors with the 1st surface facing the lens as shown.



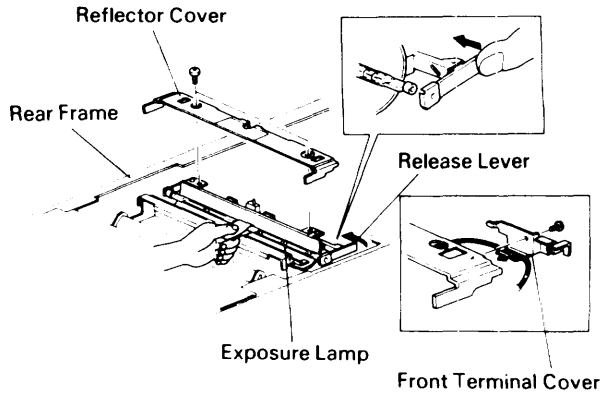


Exposure Lamp Replacement

1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the first scanner to the position where the rear frame is cut out.
4. Remove the front terminal cover (1 screw) and the reflector cover (2 screws).

   NOTE: Unhook the fiber optics cable from the reflector cover.
5. Wrap a strip of paper around the exposure lamp as shown.

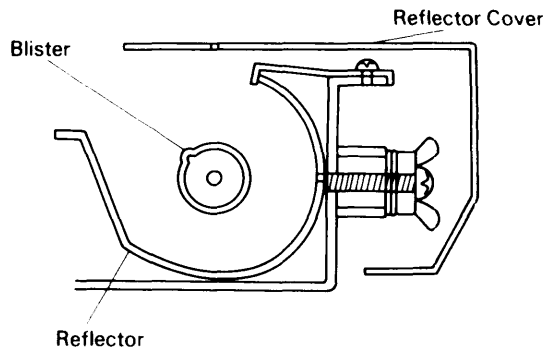
   CAUTION: Do not touch the reflector or the new exposure lamp with your bare hands. Use a strip of paper as shown. (Finger oil marks on the lamp or reflectors will be affected by the heat and will result in discoloration.)
6. Press the release lever on the front lamp terminal as shown as take out the lamp.



7. Install a new lamp using a strip of paper. (Set the rear terminal first.)

   NOTE: The blister on the lamp must point toward the mouth of the reflector as shown.
8. Reassemble the 1st scanner.

   NOTE: When reinstalling the front terminal cover, be careful not to damage the fiber optics cable.
9. Check the exposure lamp position, the light intensity and Auto ID Sensor. (See Exposure Lamp Position, Light Intensity and Auto ID Sensor Adjustments.)



Exposure Lamp Position

1. Remove the exposure glass. (See Exposure Glass Removed.)

2. Move the first scanner to the position where the rear frame is cut out.

3. Remove the front and rear terminal covers (1 screw each).

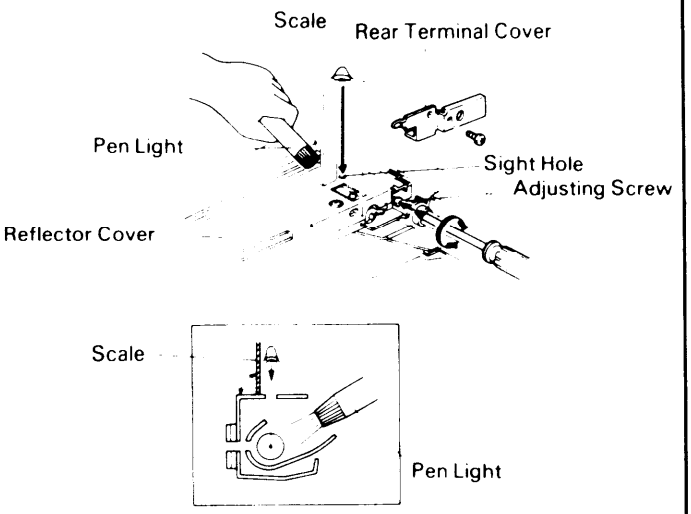
– Horizontal Adjustment –

4. Position a scale near the rear sight hole of the reflector cover to form right angle for viewing alignment as shown.

5. View the lamp filament through the sight hole in parallel with the scale. The filament should be directly beneath the sight hole.

   NOTE: If the filament cannot be seen easily, use a pen light to illuminate the exposure lamp.

6. To correct the position of the filament turn the adjusting screw.



7. Repeat the above steps from 4 to 6 with the front right hole.

– Vertical Adjustment –

8. Position a mirror beside the rear sight hole at a 45° angle as shown.

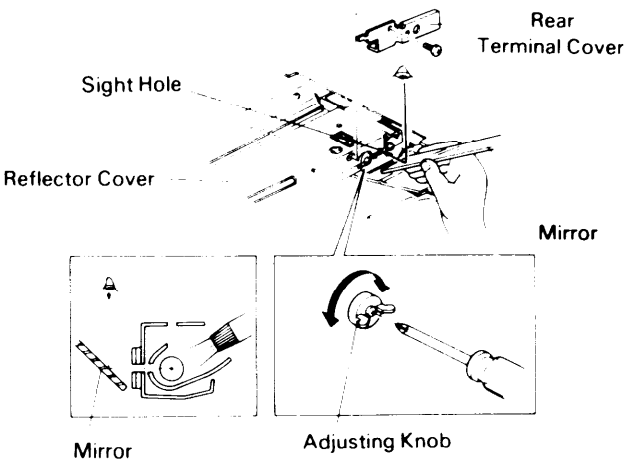
   NOTE: If you do not have a mirror, remove and use the 2nd mirror.

9. View the lamp filament through the sight hole reflected on the mirror. The filament should be level with the sight hole.

   NOTE: If the filament cannot be seen easily, use a pen light to illuminate the exposure lamp.

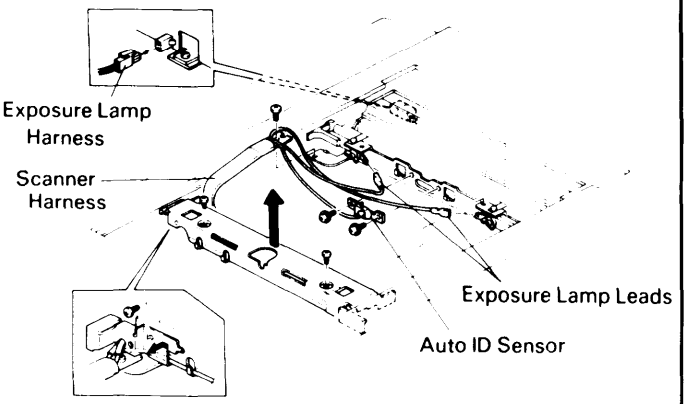
10. To correct the position of the filament, turn the adjusting knob.

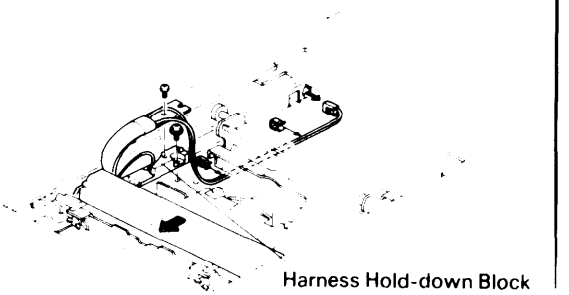
11. Repeat the above steps from 8 to 10 with the front sight hole.



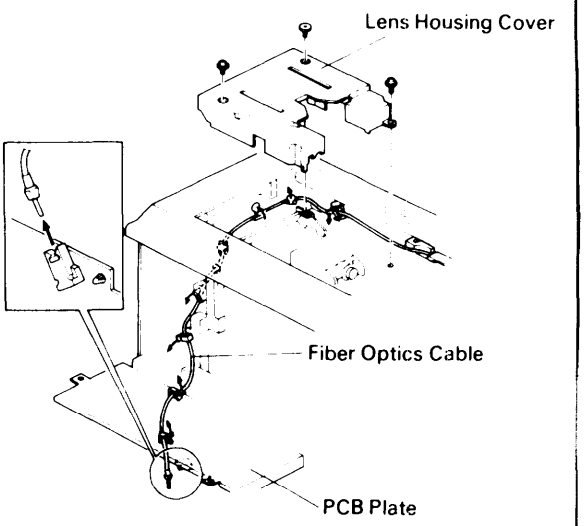
Auto ID Fiber Optics Cable Replacement

1. Remove the front cover (1 knob screw) and pull out the fusing unit about 1/2 way.
2. Remove the front inner cover (5 screws).
   NOTE: This cover should be removed from the top first.
3. Disconnect the exposure lamp harness (1 - 2p white connector).
4. Remove the exposure glass. (See Exposure Glass Removal section.)
5. Remove the front terminal cover (1 screw) and the reflector cover (2 screws).
   NOTE: Unhook the fiber optics cable from the reflector cover.
6. Remove the leads to the exposure lamp terminals.
7. Remove the auto ID sensor (2 screws).
8. Remove the scanner harness from the 1st scanner (1 screw).
9. Slide the scanner to the right and remove the female end of the exposure lamp power supply harness from the copier.
10. Remove the scanner harness from the harness hold-down block (1 screw).
11. Remove the fiber optics cable and hold down block from the optics area baseplate (1 screw) and release the fiber optics cable from the clamps.



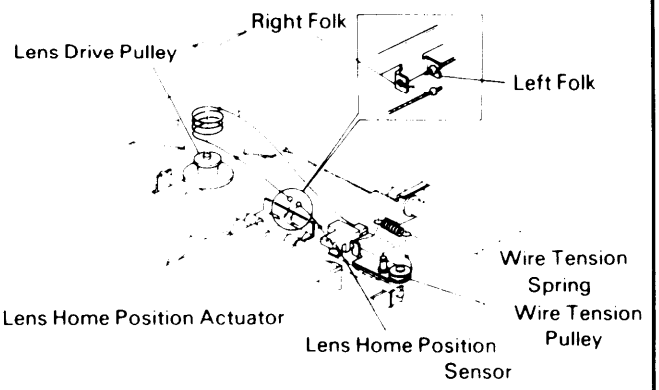


12. Slide the scanner to the left and remove the lens housing cover (3 screws).
13. Release the fiber optics cable from the clamps in the optics cavity.
14. Remove the copier rear cover (2 screws).
15. Disconnect the fiber optic cable from CN109 on the main board.
16. Lower the rear PCB plate (2 screws).
17. Pull the fiber optics cable into the optics cavity.
18. Replace the auto ID fiber optics cable.



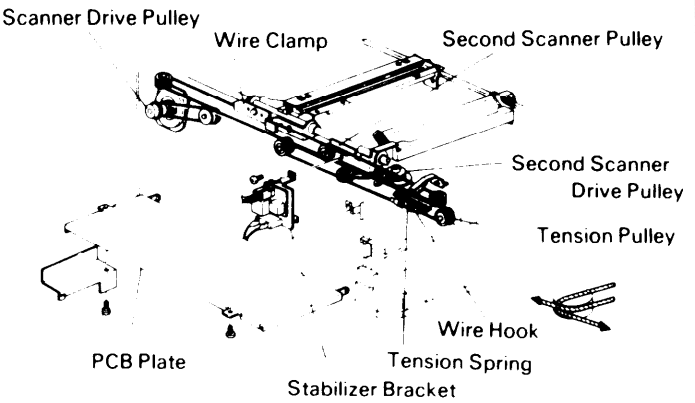
Lens Drive Wire Replacement

1. Turn off the main switch.
2. Remove the exposure glass. (See the Exposure Glass Removal section.)
3. Remove the lens housing cover (3 screws).
4. Remove the wire tension spring and remove the old wire.
5. Set the end bead in the left fork of the lens home position actuator.
6. Run the wire to the lens drive pulley and wrap the wire 3-1/2 times.
7. Run the wire under the lens home position sensor bracket.
8. Set the other end bead in the right fork of the lens home position actuator.
9. Set the wire loop in the wire tension pulley.
10. Push the wire tension pulley to the right and set the tension spring.
11. Move the lens manually and examine the lens drive wire. The wire should not overlap.



Scanner Drive Wire Replacement

1. Turn off the main switch.
2. Remove the platen cover, the mounting studs, and the upper cover.
3. Remove the left scale (2 short screws) and the exposure glass.
4. Remove the rear cover and lower the PCB plate (2 screws each).
5. Loosen the wire clamp screw.
6. Move the 2nd scanner to the return position.
7. Unhook the tension spring and take off the wire hook. Take out the old wire.



8. Remove the 2nd scanner drive pulley (1 Allen screw) by aligning the notch of the pulley disk with the 2nd scanner home position sensor.

9. Position the bead of the new wire on the groove of the 2nd scanner drive pulley and wrap the wire around the pulley with two and half turns as shown.

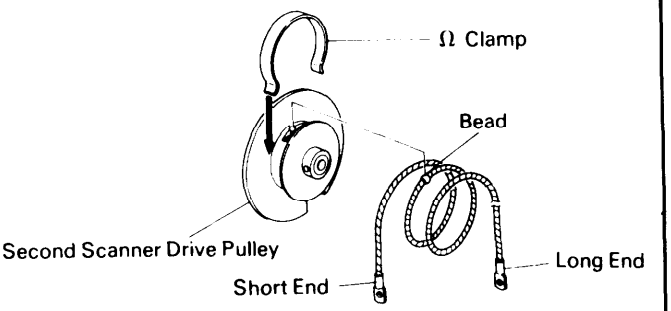
10. Secure the turns of the wire on the pulley with the Ω clamp (or with tape).

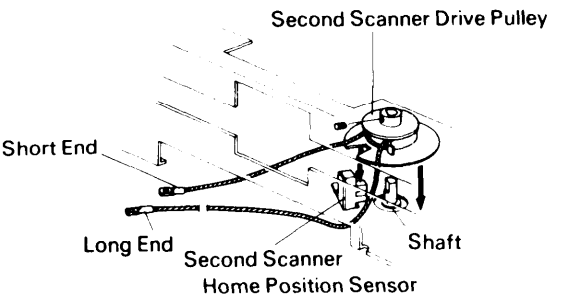
11. Set the 2nd scanner drive pulley on the drive motor shaft as shown and tighten the Allen screw on the flat side of the shaft.

    NOTE: * The end of the second scanner drive pulley should be flush with the end of the motor shaft.

    * The 2nd scanner home position sensor should be positioned between the short and long ends of the wire.

12. Remove the QL/PTL stabilizer PCB bracket (1 screw).

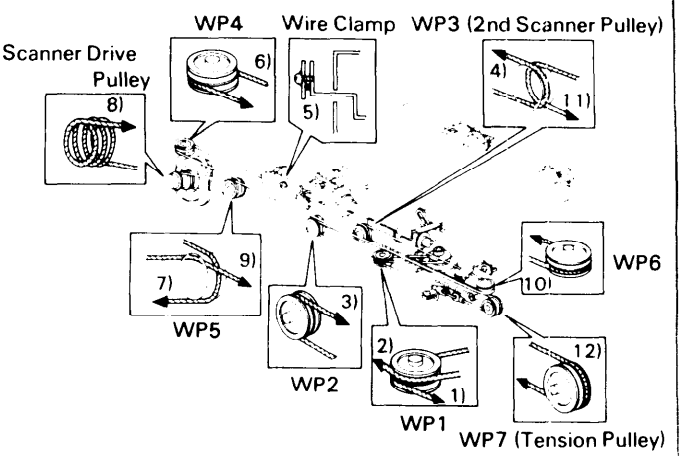




13. Run the scanner drive wire over the pulleys in the following order:

    1) Short end should be in lower track (WP1). (Tape the wire on the bracket.)
    2) Long end should be in the upper track (WP1).
    3) Outer track (WP2)
    4) Outer track (WP3)
    5) Lower side (Wire Clamp)
    6) Lower track (WP4)
    7) Inner track (WP5)
    8) Three and half turns from lower to upper (Scanner Drive Pulley)
    9) Outer track (WP5)
    10) Lower track (WP6)
    11) Inner track (WP3)
    12) Inner track (WP7)

14. Remove the tape and pull the ends of the wire together and join them with the wire hook.
15. Push the tension pulley to the right. Take the wire off of the pulleys in figures 2) (WP1) and 9) (WP5) of step 12, so that you can hook the tension spring easily.
16. Hook the tension spring and reposition the wire on the pulleys in steps 2) and 9).



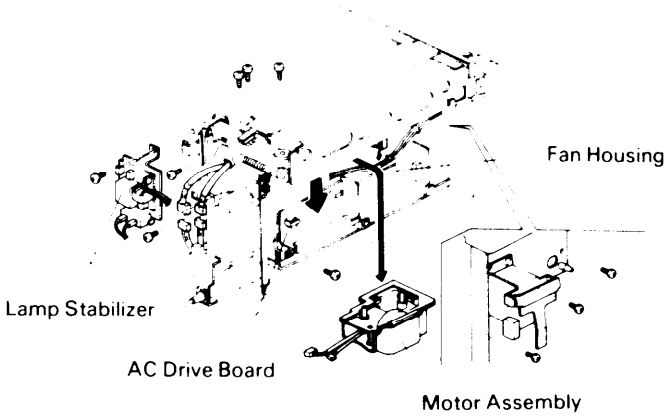
17. Remove the Ω clamp.

18. Rotate the scanner drive pulley and make sure that the scanner drive wire moves smoothly and there is no overlapping around the scanner drive pulley.

    NOTE: Step 18 is important! If overlapping of the scanner drive wire occurs, then the trail edge of A3 (11" x 17") copies may be reduced.

Lens Drive and 2nd Scanner Drive Motor Replacement

1. Remove the platen cover and the mounting studs.
2. Remove the upper cover.
3. Remove the rear cover and lower the PCB plate (2 screws each).
4. Disconnect the two connectors of the motors and remove the nylon clamp (1 screw).
5. Move the scanner to the return position and put the Ω clamp (or tape) on the 2nd scanner drive pulley.
6. Fix the pulley (WP1) with tape as shown. (See next page).
7. Loosen the Allen screw on the 2nd scanner drive pulley and align the notch of the disk with the 2nd scanner home position sensor.
8. Take off the 2nd scanner drive pulley from the motor shaft.
9. Open the front cover and take out the fusing unit (1 lock pin - orange).
10. Remove the front inner cover (5 screws).
11. Lower the fan housing (5 screws).
12. Remove the ac drive board (1 screw).



13. Tape the lens drive pulley as shown and remove (1 E-ring).

14. Take out the motor assembly (3 screws).

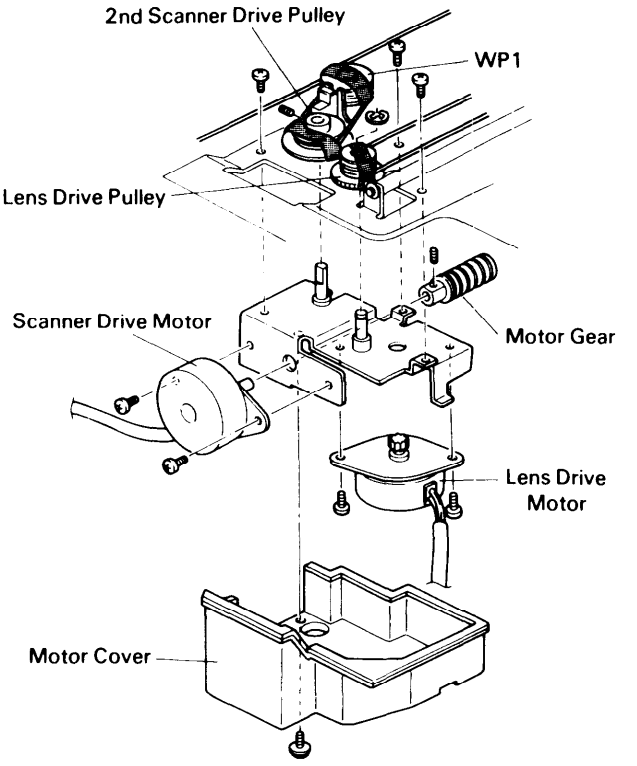
15. Remove the motor cover (1 screw) from the motor assembly.

16. Loosen the Allen screw of the motor gear on the motor shaft. Remove the motors from the assembly - lens drive motor and/or 2nd scanner drive motor - (2 screws each).

17. Install the new motor in the motor assembly.

CAUTION: * Make sure that the harnesses are properly positioned.

* When installing the motor gear, push the gear against the motor and then secure the Allen screw on the flat surface of the motor shaft.
* When installing the 2nd scanner motor, rotate the drive gear so that the flat side of the shaft faces the rear of the copier.

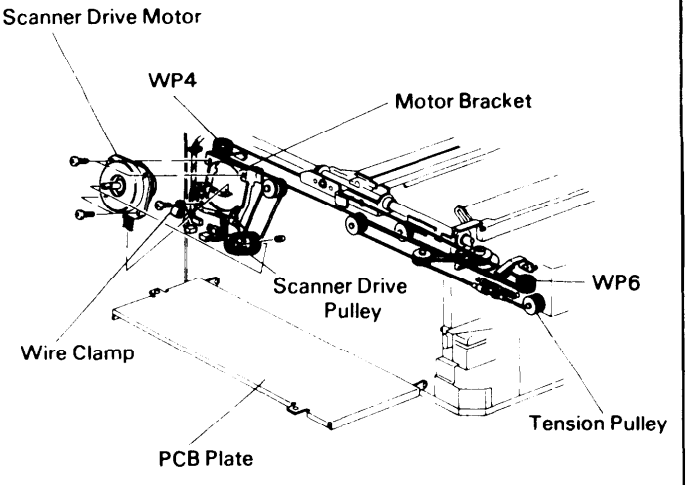


18. Reinstall the motor assembly and reassemble the copier.

CAUTION: When installing the 2nd scanner drive pulley, make sure that the notch of the 2nd scanner drive pulley faces the right rear corner of the copier.

Scanner Drive Motor Replacement

1. Turn off the main switch.
2. Remove the platen cover, the mounting studs, and the upper cover (8 screws).
3. Remove the left scale (2 short screws) and the exposure glass.
4. Remove the rear cover and lower the PCB plate (2 screws each).
5. Tape the scanner drive pulley and the WP4 and WP6 as shown.
6. Loosen the scanner drive pulley (2 Allen screws).
7. Remove the scanner drive pulley from the motor shaft by pushing the tension pulley to the left.
8. Remove the nylon wire clamp on the left side of the motor bracket.
9. Remove the scanner drive motor (4 screws and 2 connectors).



10. Install the new scanner drive motor and reassemble.

NOTE: a. When installing the scanner drive motor, make sure the angled face on the rear plate is facing up.

b. When installing the scanner drive pulley on the motor shaft:

* Make sure that one of the allen screws is secured squarely on the flat side of the motor shaft.

* The scanner drive pulley should be flush with the end of the motor shaft.

11. Examine the scanner drive wire for proper installation.

5-3. DEVELOPMENT AND TONER SUPPLY

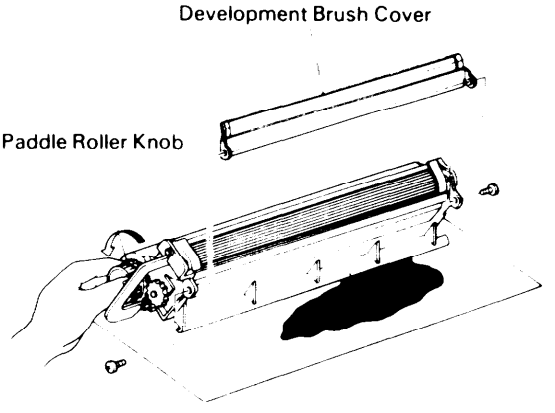
Developer Replacement

CAUTION: * Be careful not to bend the bias terminal.

* Be careful not to damage the upper brush seal.

* After removing used developer, clean the drive gears and end magnets.

1. Take out the development unit and remove the toner tank (2 screws).
2. Remove the development brush cover (2 screws) and clean it.
3. Set the development unit on a large sheet of paper with the unit's inlet facing downward.
4. Turn the paddle roller knob counterclockwise. The developer will fall out onto the paper.
5. Hold the unit at an angle and dump out the developer that has collected at the ends of the development unit.
6. Repeat the above steps until you have removed all of the developer.
7. Clean the development end magnets.
8. Turn the unit right side up and pour in one bottle (1 kg).



9. Put the used developer into the empty bottle or disposal bag and dispose it according to the local regulations.

10. Reassemble the toner tank (2 screws) and replace the development unit.

Image Density Sensor Removal

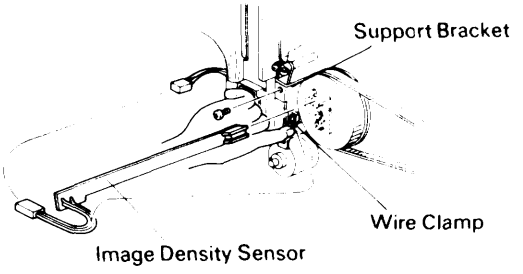
1. Remove the copier rear cover (3 screws) and lower the PCB plate (2 screws).

2. Remove the wires from the wire clamp on the support bracket.

3. Move the support bracket (1 screw).

4. Slide out the image density sensor (1 connector).

5. Clean and replace the sensor.



CAUTION: * When sliding in the ID sensor board, make sure that the board is properly located on the rails.

* When reinstalling the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.

* The support bracket is responsible for holding the ID and registration sensors in place, make sure it is correctly positioned.

Image Density Sensor Check and Adjustment

NOTE: ID sensor adjustment is required in the following cases:

- When the ID sensor board is replaced.
- When the main board is replaced.
- When the drum has been replaced and Vsg is out of standard.
- When a problem with toner supply occurs and checking ID sensor shows the Vsg to be out of standard.

ADJUSTMENT STANDARD: +4 ± 0.2V

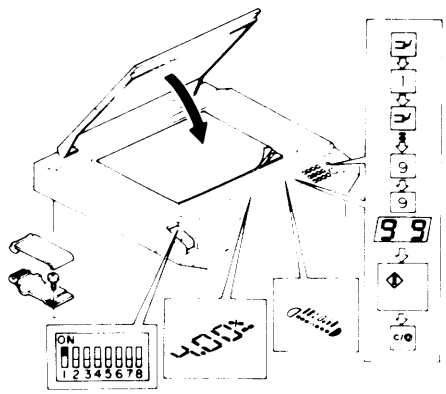
METHOD A – USING THE CPU

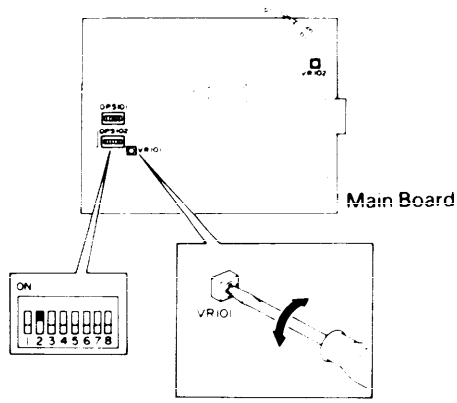
1. Clean the following parts:
   - Image density sensor
   - Optics (Mirrors, reflectors, lens, and toner shield glass)
   - Charge corona wire with dry cloth
   - Erase lamp unit
   - PTL and QL filters

2. Place 2 or 3 sheets of A3 (11" x 17") on the exposure glass and lower the platen cover.
3. Remove the rear cover (3 screws).
4. Confirm that the main switch is off and turn on Dip switch 201-1 under the instruction cards on the operation panel and 102-2 on the main board

   NOTE: Toner supply amount should be set at 15%.

5. Actuate the rear safety switch (115V machines only).
6. Turn on the machine and allow it to warm up.
7. Press the ⇒ key, then 1, then the ⇒ key on the operation panel.
8. Enter 99 into the copy counter.
9. Press the start key to show Vsp in the reduction ratio indicator.
10. Press and hold the # key to display Vsg in the reduction ratio indicator.





11. With Vsg being displayed, adjust VR101 on the main board to +4 volts ± 0.2 volts.

    NOTE: * VR101 clockwise = increase voltage
    VR101 counterclockwise = decrease voltage

12. Press the C/S key to stop the copier.

13. Turn off the main switch and turn off Dip switch 201-1 and 102-2.

    METHOD B — WITH A DIGITAL MULTIMETER

    Follow steps 1 - 3 of method A (using the CPU)

14. Confirm that the main switch is off and turn on Dip switches 102-2 and 101-7 on the main board. Reset the toner supply amount to the proper one.

15. Hook up the multimeter leads as follows:

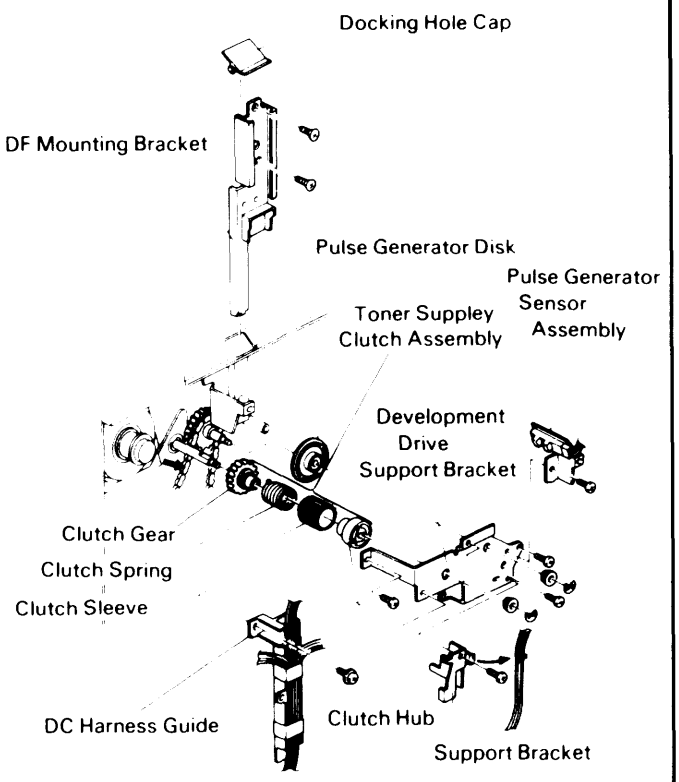
    Red to TP105
    Black to TP112 (Ground) and select the 20 volt dc setting.

16. Turn on the main switch and adjust VR101 to +4 volts ± 0.2 volts.

17. Turn off the main switch, turn off Dip switch 101-7 and reassemble.

Toner Supply Clutch Disassembly

1. Remove the rear cover(3 screws).
2. Lower the PCB plate (2 screws).
3. Remove the platen cover or the Document Feeder.
4. Remove the right ADF docking hole cap (if installed).
5. Remove the right DF mounting bracket through the docking hole (2 flathead screws).
6. Remove the pulse generator assembly (1 screw).
7. Release the PTL wires from the wire clamp and remove the support bracket (1 screw).
8. Remove the screw securing the dc harness guide to the development drive support bracket.
9. Disconnect the bias line from the bias terminal.
10. Remove the development drive support bracket (3 screws, 2E-rings and 2 bushings).
11. Remove the pulse generator disk.
12. Remove the toner supply clutch assembly from the drive shaft while pushing the main drive chain to the right (1 allen screw).



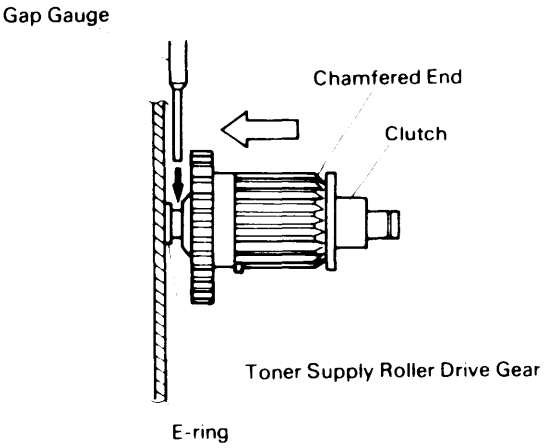
13. Disassemble the toner supply clutch.

14. Clean the clutch hub, spring and gear. Then, lightly grease the spring with Mobil Temp 78.

NOTE: * When reassembling, make sure that the chamfered end of the clutch sleeve is to the outside. Also, make sure the right angle projection the inside notch of the sleeve.

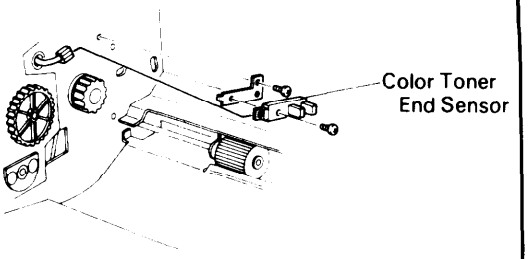
* When securing the Allen screw of the clutch hub, insert a 0.1mm gap gauge between the E-ring and the toner supply roller drive gear as shown in the figure.

* When reinstalling the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.



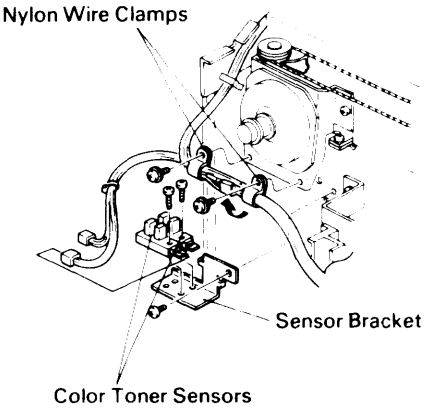
Color Toner End Sensor Replacement

1. Turn off the main switch and remove the following parts:
   - Development unit
   - Charge corona unit (1 screw)
   - Drum stay (1 screw and 1 knob)
   - Cleaning unit
   - Drum flange and drum - should be covered with a shielding sleeve
   - Toner shield glass
2. Remove the color toner end sensor (1 screw and 1 connector). When reinstalling the color toner end sensor, insert the aligning pin on the rear of the sensor into the proper hole on the copier rear plate before installing.
3. Reinstall the above parts.



Color Toner Sensor Replacement

1. Remove the rear cover (3 screws) and lower the PCB plate.
2. Remove the two nylon wire clamps on the motor bracket (1 screw each).
3. Remove the color toner sensor bracket (1 screw).
4. Replace the color toner sensors (1 screw and 1 connector each).
5. Reassemble.

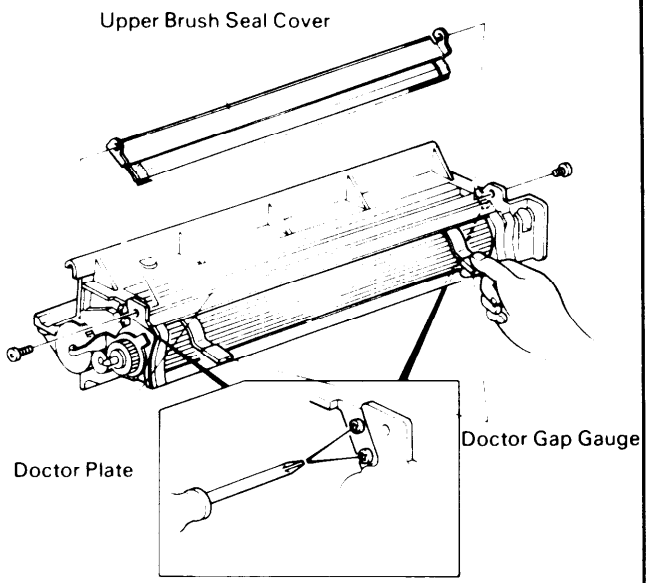


Doctor Gap Adjustment

NOTE: This adjustment is done only when the doctor blade has either been removed or replaced.

1. Remove the upper brush seal cover (2 screws).
2. Turn the development roller sleeve in the opposite direction of normal operation to drop the developer into the development tank.
3. Loosen the doctor plate (4 screws).
4. Clean the development roller and insert the DG (Doctor Gap) shims near both ends of the development roller between the doctor blade.
5. Press on the doctor plate and tighten the screws.
6. Pull the shims to the lower sleeve and remove them.

   NOTE: Do not scratch the seal with the shims.
7. Reassemble the development unit.

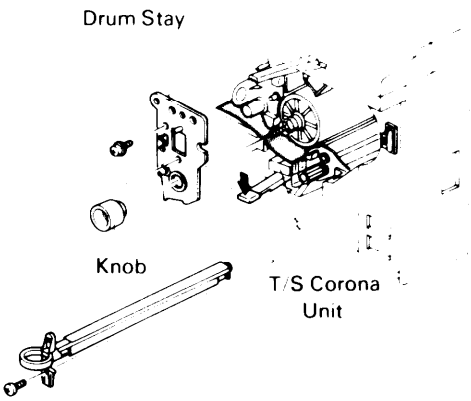


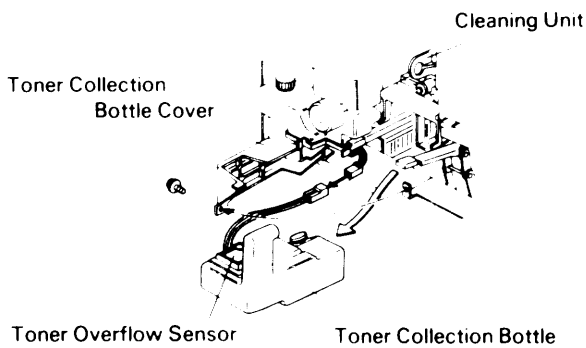
5-4. CLEANING

Cleaning Unit Removal

1. Remove the development unit.
2. Lower the T/S corona unit.
3. Remove the charge corona unit (1 screw) and the drum stay (1 knob and 1 screw).
   NOTE: The drum stay knob has a reverse thread.
4. Swing the toner collection bottle cover to the left (1 screw).
5. Disconnect the toner collection bottle sensor (1 connector).
6. Remove the toner collection bottle.
7. Slide out the cleaning unit.

   CAUTION: Be sure the pick-off pawls are kept away from the drum when removing the cleaning unit or serious drum damage will result.



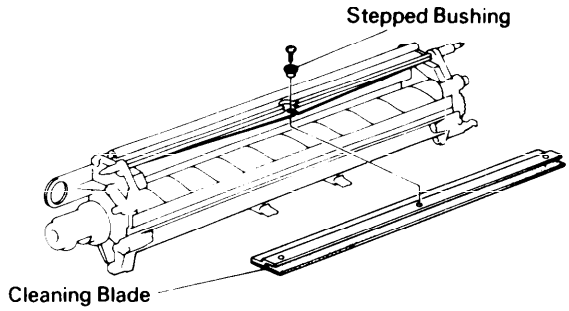


Cleaning Blade Replacement

1. Take out the cleaning unit. (See Cleaning Unit Removal section.)
2. Remove the cleaning blade (1 screw).
3. Dust the edge of the new cleaning blade with setting powder.
4. Install the new cleaning blade.

CAUTION: * Be careful not to touch the edge of the new blade.

* After installing the blade, make sure that the blade swivels.

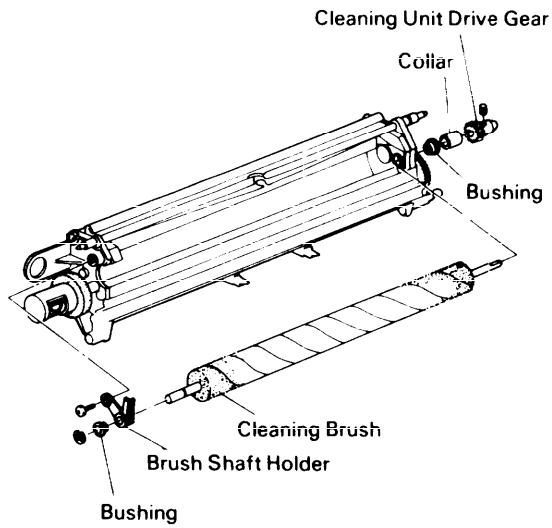


Cleaning Brush Replacement

1. Remove the cleaning unit drive gear (1 Allen screw), the collar, and the bushing from the rear end of the cleaning brush shaft.
2. Remove the bushing from the front end (1 E-ring).
3. Take out the cleaning brush with the brush shaft holder (1 screw).
4. Take the brush shaft holder off the front end.
5. Dust the new brush with setting powder.

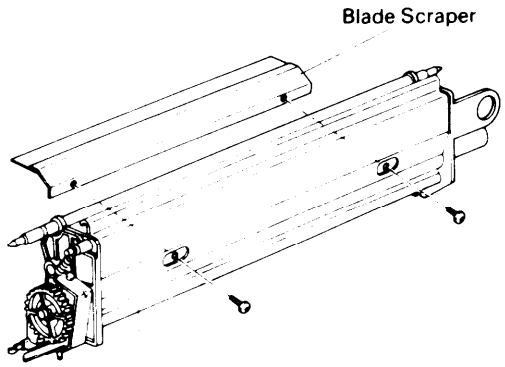
NOTE: Do not touch the new brush; handle only the shaft.

6. Install the new cleaning brush and reassemble the unit.



Blade Scraper Replacement

1. Remove the cleaning blade. (See Cleaning Blade Replacement.)
2. Remove the cleaning brush. (See Cleaning Blade Replacement.)
3. Take out the blade scraper (2 screws).
4. Clean the inside of the cleaning unit, and install a new blade scraper.

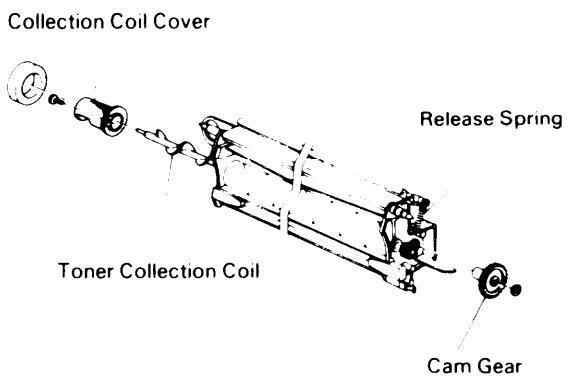


Cleaning Unit

Toner Collection Coil Replacement

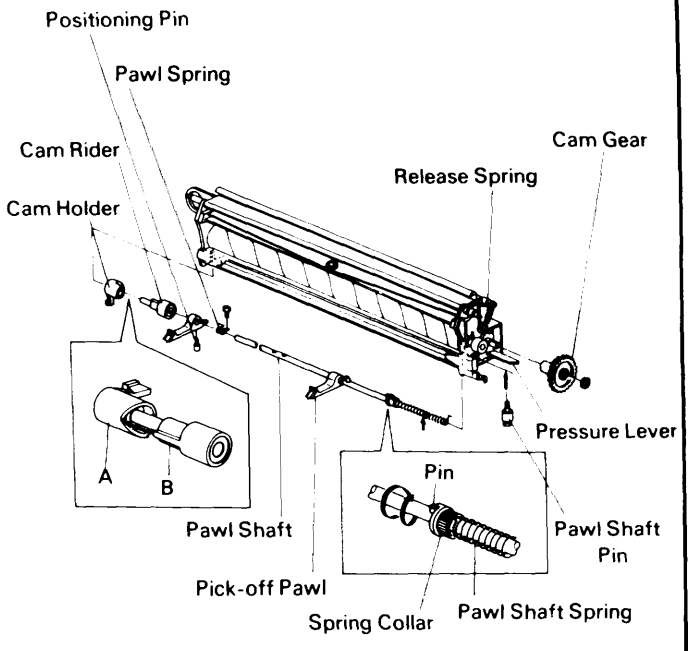
1. Remove the collection coil gear from the toner collection coil shaft (1 E-ring).
2. Remove the bottle joint seal and the toner collection coil cover (1 screw).
3. Slide out the toner collection coil from the front side of the cleaning unit.

   CAUTION: Toner will fall out when the coil is pulled.
4. Clean the inside of the unit and install a new toner collection coil.



Pick-off Pawl Replacement

1. Remove the collection coil (1 E-ring).
2. Remove the pawl shaft pin from the pawl shaft.
3. Push the pawl shaft to the rear and slide off the cam holder from the front side plate.
4. Take out the whole pawl shaft assembly.
5. Slide off the cam holder and cam rider.
6. Slide off the front pick-off pawl (1 positioning pin) and the front pawl spring (1 screw).
7. Slide off the rear pick-off pawl (1 positioning pin).
8. Set new pick-off pawls on the shaft and position them with the positioning pins and pawl springs.



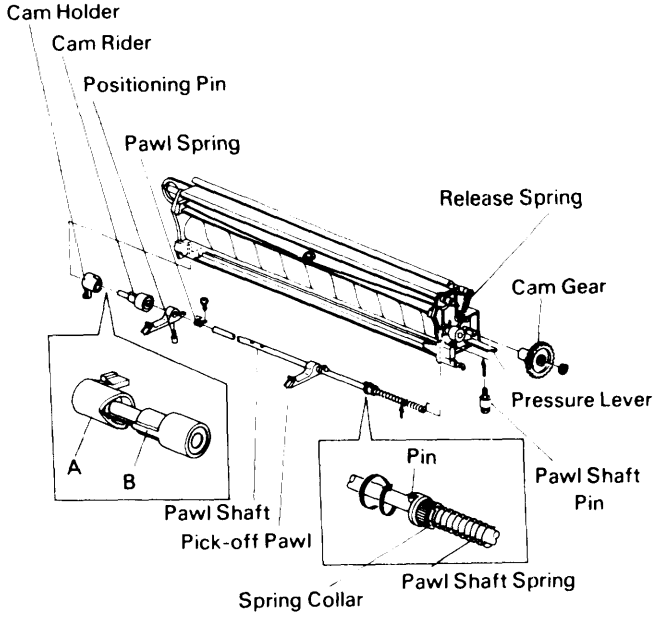
9. Assemble the pawl shaft ass'y and set it on the cleaning unit sliding in the rear end of shaft to the rear side plate.

   NOTE: * When installing the cam holder and the cam rider, align A with B as shown in the figure.
   * Make sure that the spring end is in the small hole on the rear side plate.

10. Install the pawl shaft pin.
11. Push the spring collar to the rear and rotate it with one turn as shown in the figure. Then set the collar on the pin.

    NOTE: Make sure that the end of the spring is correctly positioned in the groove of the collar.

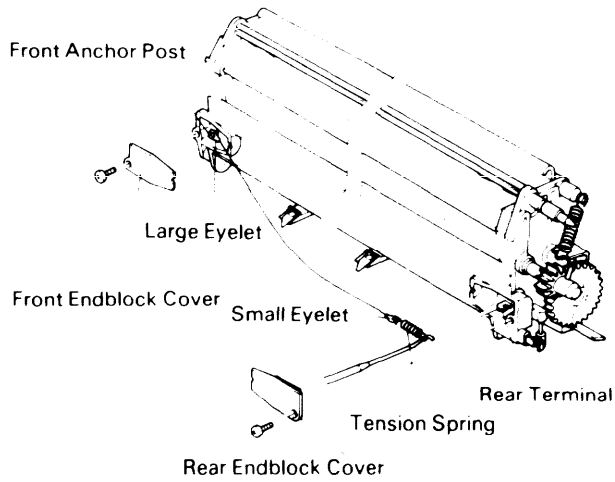
12. Reassemble the cleaning unit.



PCC Wire Replacement

CAUTION: * Do not handle the new corona wire with your bare hands. Oil on the wire will cause uneven charge on the drum.
* Do not rub the corona wires with rough material (sandpaper etc.) because the corona wire is carbon coated.

1. Remove the front and rear endblock covers (1 screw each).
2. Unhook the tension spring and take off the old corona wire.
3. Clean the endblocks, the covers, and the corona casing.
   CAUTION: Be careful not to injure your hand on the pick-off pawls.
4. Hook the large eyelet of the new corona wire to the front anchor post.
5. Hook the tension spring to the small eyelet and then hook it to the rear terminal.
6. Install the endblock covers.

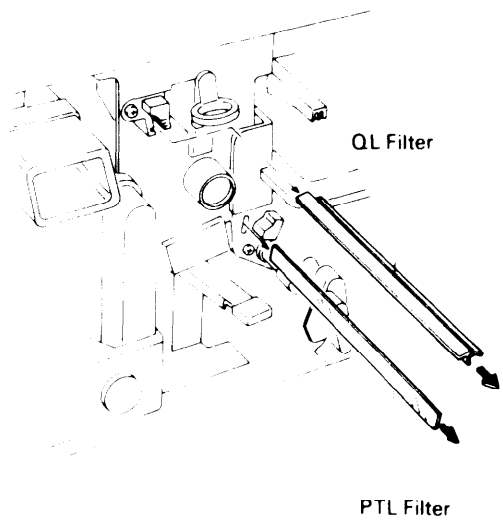


5-5. QUENCHING

PTL and QL Filter Removal

1. Open the copier front cover.
2. Slide out the PTL filter and the QL filter as shown and clean them with a dry cloth.

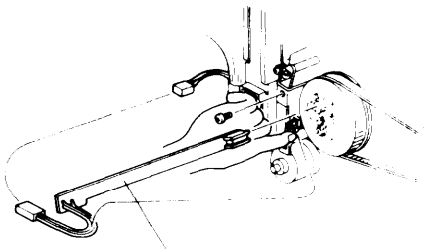
   NOTE: When installing the QL filter, make sure that the filter is inserted as shown in the figure to the right.

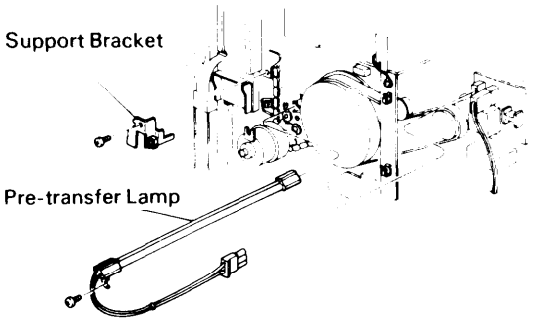


Pre-Transfer Lamp Replacement

1. Remove the copier rear cover and lower the PCB plate (2 screws each).
2. Remove the wires from the wire clamp on the support bracket.
3. Move the support bracket (1 screw).
4. Slide out the image density sensor (1 connector).
5. Remove the support bracket as shown.
6. Slide out the pre-transfer lamp (1 screw and 1 connector) and replace it with a new pre-transfer lamp.
7. Position the support bracket.
8. Clean and replace the image density sensor.
9. Reassemble.

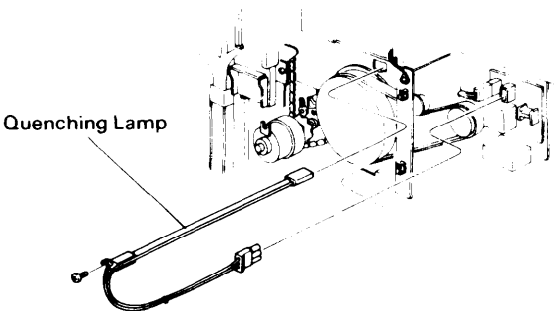
CAUTION: * When installing the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.
* The support bracket is responsible for holding the ID and registration sensors in place, make sure it is correctly positioned.





Quenching Lamp Replacement

1. Remove the rear cover (2 screws).
2. Lower the PCB plate (2 screws).
3. Disconnect the QL connector at the lamp stabilizer and unclamp the wires.
4. Slide out the quenching lamp (1 screw).
5. Install the new quenching lamp.



5-6. PAPER FEED

Manual Feed Table Removal

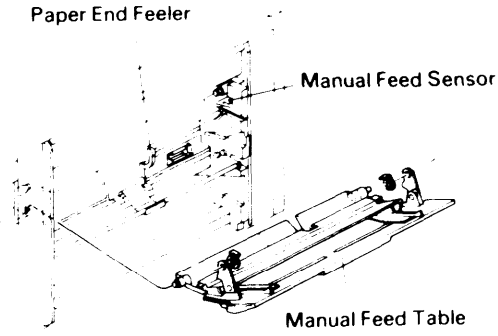
1. Remove the upper manual feed table hinge from the copier (1 snap ring each side).

   CAUTION: Be careful not to damage the manual feed sensor.

2. Slide the lower manual feed table hinge pins up their respective grooves to remove the table.

   CAUTION: Be careful not to damage the paper end feeler.

   NOTE: When reinstalling, slide the manual feed table hinge pins down the grooves.



Feed Rollers and Friction Pad Replacement

For 1st feed station only:

1. Remove the manual feed table (See procedure for manual feed table replacement).

2. Remove the upper front guide plate (2 screws).

Common Procedure for Feed Roller and Friction Pad Replacement:

1. Remove the feed roller and hub (1 snap ring).

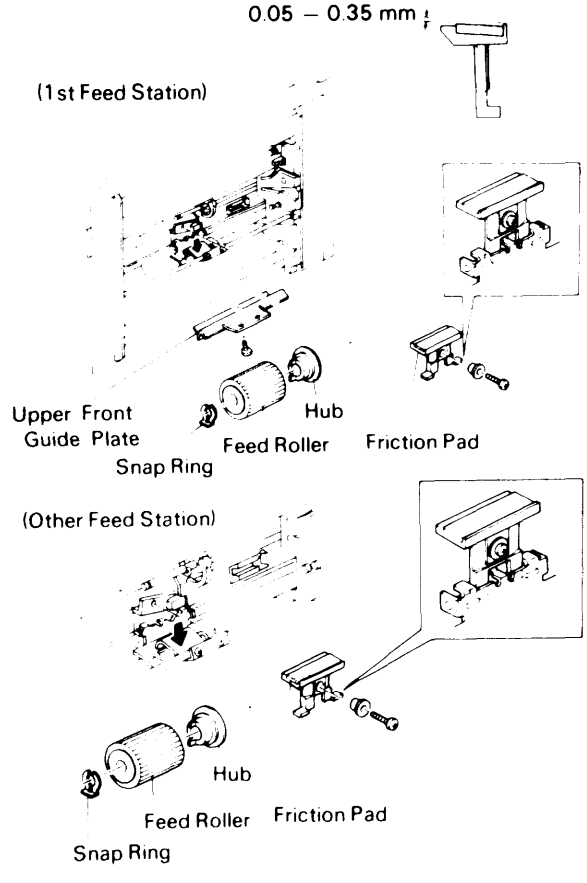
2. Press down on the cassette arm and remove the friction pad holder (1 screwand 1 collar washer).

3. Strip the old friction pad off.

4. Install the new friction pad.

   NOTE: a. Do not touch the pad surface with your oily fingers.

   b. Check that the friction pad is 0.05 to 0.35 mm below the surface of the front lip.



5. Grease the friction pad bracket swivel point with Mobil Temp 78.

6. Reinstall the friction pad bracket (1 screw and 1 collar washer) while holding the cassette arm down.

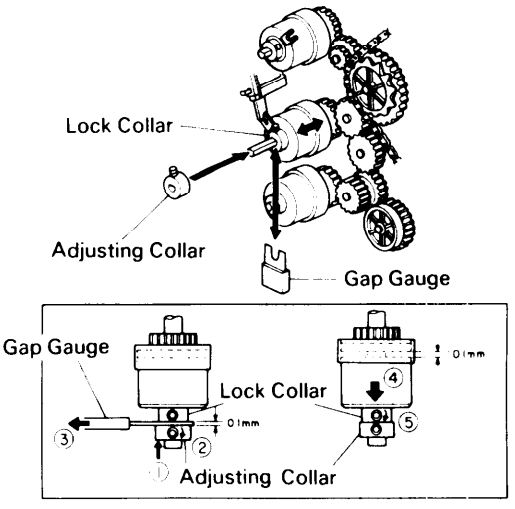
   NOTE: Be sure the legs of the friction pad bracket are positioned under the spring loaded pad positioning mechanism.

7. Reinstall the feed roller and hub (1 snap ring).

Feed Clutch Adjustment

ADJUSTMENT STANDARD: 0.1 mm (0.004")

1. Remove the rear cover (2 screws).
2. Take the adjusting collar off the relay roller shaft (1 Allen screw).
3. Loosen the screw in the lock collar on the clutch which is to be adjusted (1 Allen screw).
4. Place the adjusting collar next to the lock collar on the clutch shaft.
5. Position a 0.1 mm gap gauge (Part number 52059101) between the two collars.
6. Push the collars and the thickness gauge back until the clutch presses against the rear plate. Tighten the Allen screw in the adjusting collar.
7. Remove the thickness gauge and move the lock collar against the adjusting collar. Tighten the Allen screw in the lock collar.



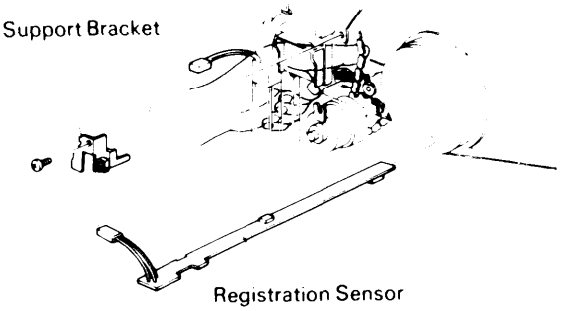
1. Push
2. Tighten
3. Remove Gap Gauge
4. Pull
5. Tighten

Registration Sensor Replacement

1. Remove the rear cover (3 screws) and lower the PCB plate (2 screws).
2. Move the support bracket (1 screw).
3. Slide out the registration sensor (1 connector).

NOTE: When removing the registration sensor, move the main drive chain to the right of the PCB cut-out.

CAUTION:
* When sliding in the registration sensor board, make sure that the board is properly located on the rails.
* When reinstalling the support bracket, make sure that the bracket is properly engaged with the groove of the registration clutch stopper.
* The support bracket is responsible for holding the ID and registration sensors in place, make sure it is correctly positioned.

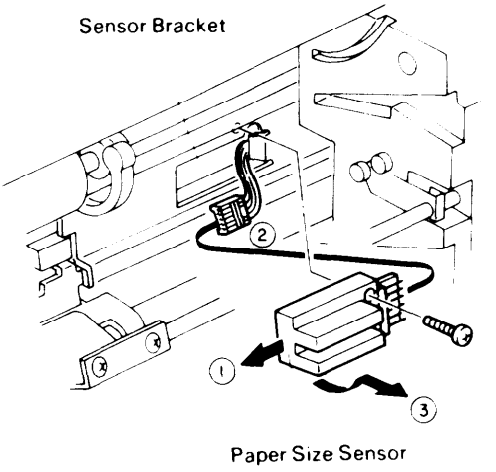


Paper Size Sensor Replacement

NOTE: The following procedure is common for all the feeding stations.

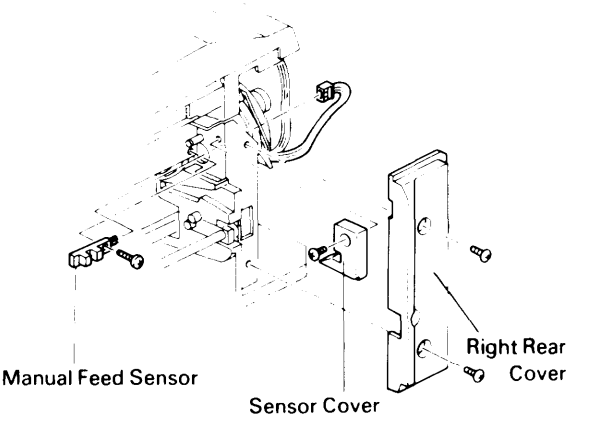
1. Remove the paper size sensor from the sensor bracket (1 screw and 1 connector).

NOTE: When reinstalling a new sensor;
* Position the projection of the sensor in the hole of the sensor bracket.
* Do not over tighten the screw.



Manual Feed Sensor Replacement

1. Remove the manual feed table. (See "Manual Feed Table Removal".)
2. Remove the rear cover (3 screws) and lower the PCB plate (2 screws).
3. Remove the right rear cover (2 screws).
4. Remove the sensor cover (1 screw).
5. Remove the manual feed sensor (1 screw, 1 connector).
6. Install a new sensor.

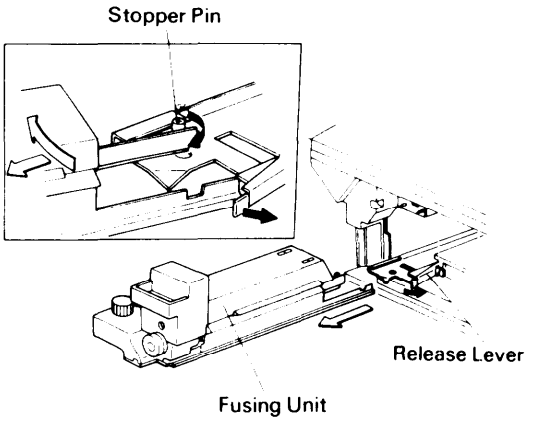


5-7. FUSING

Fusing Unit Removal

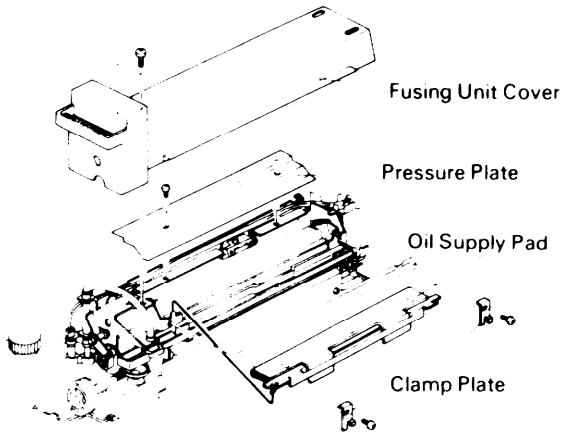
1. Remove the front cover (1 knob screw).
2. Push the fusing unit release lever to the right.
3. Pull out the fusing unit until it is fully extended.
4. Push the fusing unit release lever to the right, move the fusing unit to the left to disengage the stopper pin, and remove the unit from the copier.

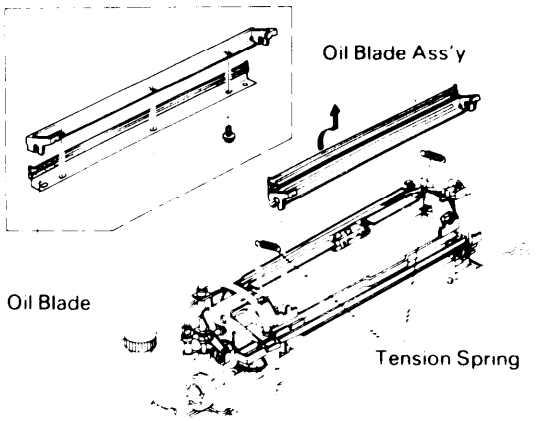
   NOTE: Keep the fusing unit in an upright position so that silicone oil does not spill.



Oil Blade Replacement

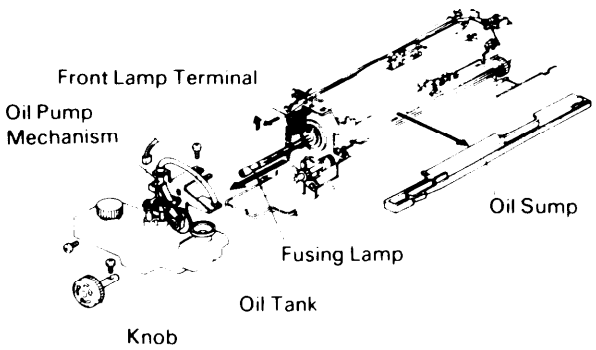
1. Remove the fusing unit. (See Fusing Unit Removal.)
2. Remove the fusing unit cover (2 screws).
3. Remove the pressure plate (2 screws).
4. Remove the oil supply pad (2 screws and 2 clamp plates).
5. Unhook the two tension springs.
6. Turn and remove the oil blade assembly.
7. Remove all screws (3) from the oil blade assembly and remove the blade.
8. Reassemble the new oil blade.

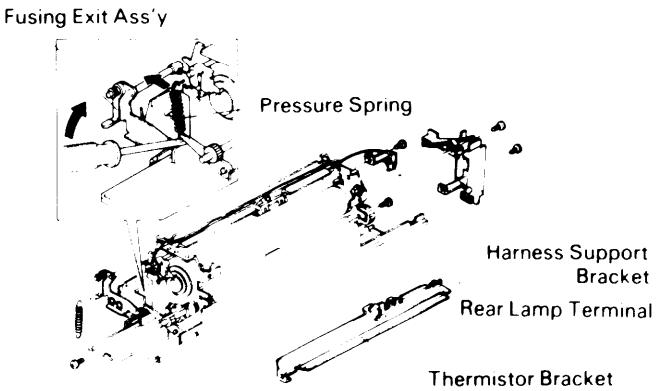




Hot Roller Replacement

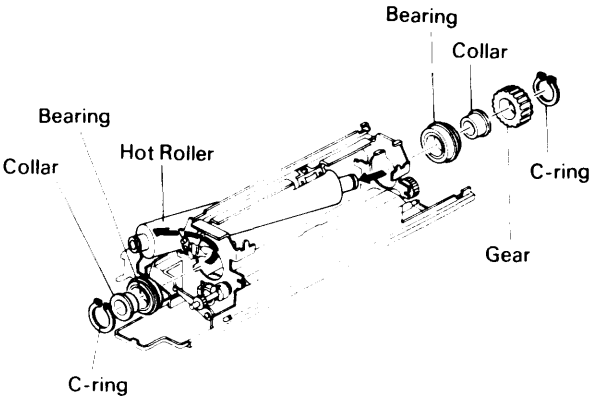
1. Remove the oil blade. (See Oil Blade replacement section.)
2. Remove any excess oil from the oil sump area and remove the oil sump.
3. Remove the fusing unit knob (1 screw).
4. Remove the oil pump mechanism with the oil tank (2 screws and 1 connector).
5. Rotate the front lamp terminal and remove the fusing lamp.
   CAUTION: Do not touch the actual lamp with your hands because finger oil marks may damage the lamp.
6. Swing down the fusing exit assembly and unhook the pressure springs.
7. Remove the harness support bracket (2 screws and 2 hooks).
8. Remove the thermistor bracket (2 screws).
9. Remove the rear lamp terminal (1 screw and 1 hook).





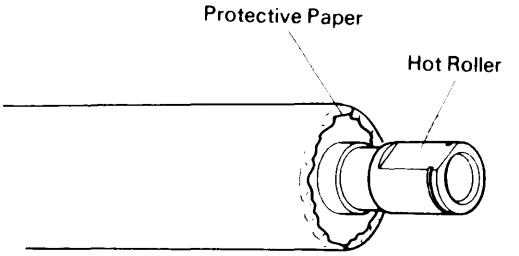
10. Remove the hot roller gear and bearings and collars from both ends of the hot roller (1 C-ring each).

11. Slide the hot roller slightly to the rear and remove the hot roller as shown.



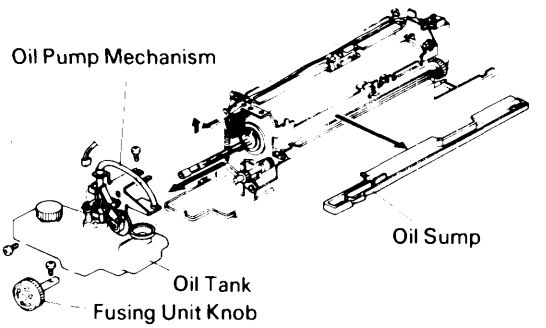
12. Tear the protective paper from the ends of a new hot roller and install it.

13. After the new hot roller is installed, remove the protective paper.
    NOTE: When reinstalling the fusing lamp, make sure it does not touch the inside of the hot roller.

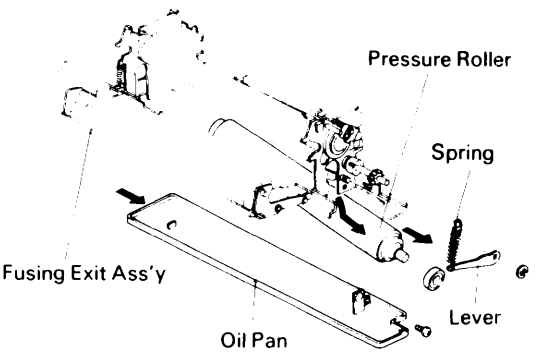


Pressure Roller Replacement

1. Remove the fusing unit and cover (2 screws).
2. Remove the fusing unit knob (1 screw).
3. Remove any excess oil from the oil sump.
4. Remove the oil pump mechanism with the oil tank (2 screws and 1 connector).



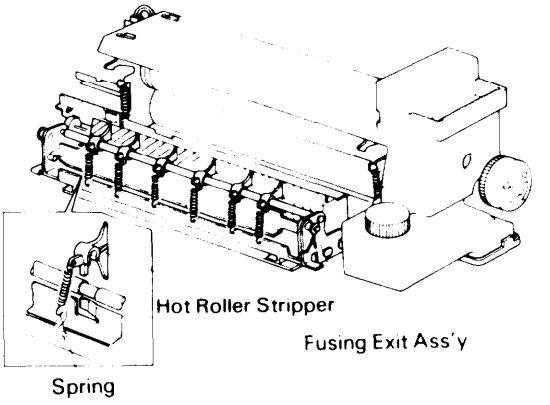
5. Open and remove the fusing exit assembly (1 E-ring and 1 connector).
6. Remove the oil pan (4 screws and 4 hooks).
7. Remove the front pressure spring.
8. Remove the front pressure lever (1 E-ring).
9. Lift up the upper part of the fusing unit and remove the pressure roller.
10. Install the bearings on the new pressure roller.



Hot Roller Stripper Replacement

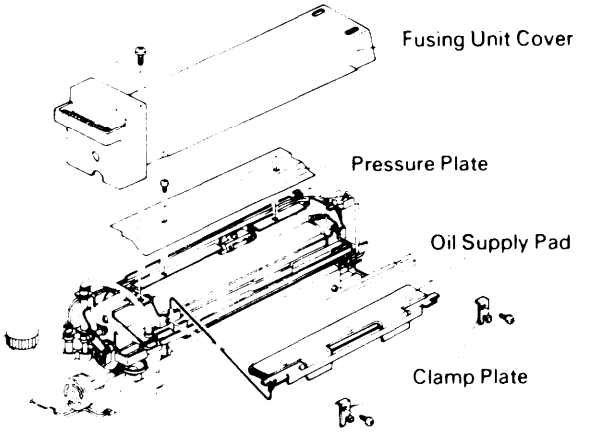
1. Pull out the fusing unit and open the fusing exit assembly.
2. Unhook the springs and remove the hot roller strippers.
3. Install new strippers and connect the springs.

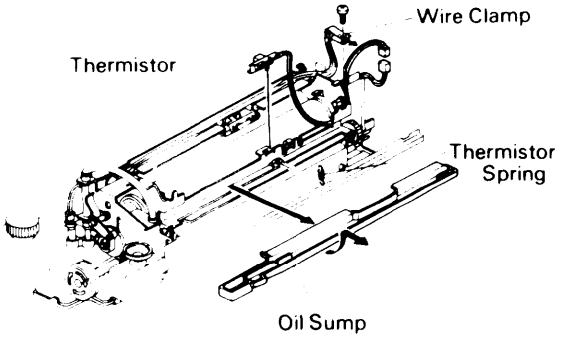
   NOTE: It is best to replace strippers and springs as a set.



Thermistor Replacement

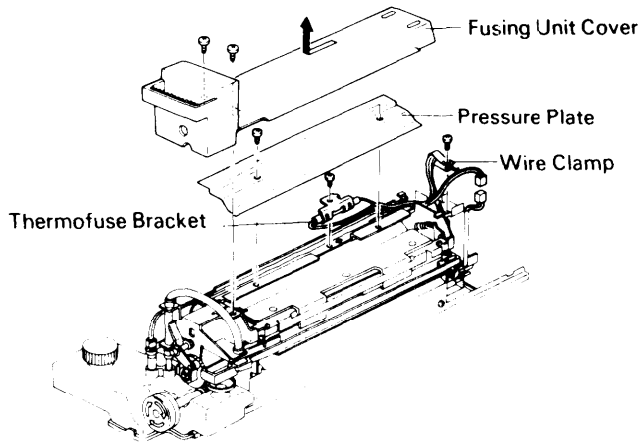
1. Remove the fusing unit.
2. Remove the fusing unit cover (2 screws).
3. Remove the pressure plate (2 screws).
4. Remove the oil supply pad (2 screws and 2 clamp plates).
5. Remove any excess oil from the oil sump and remove the oil sump.
6. Unhook the thermistor spring.
7. Remove the thermistor wire from the metal wire clamp (1 screw) and remove the thermistor (1 connector).
8. Replace the contact thermistor and reassemble.





Thermofuse Replacement

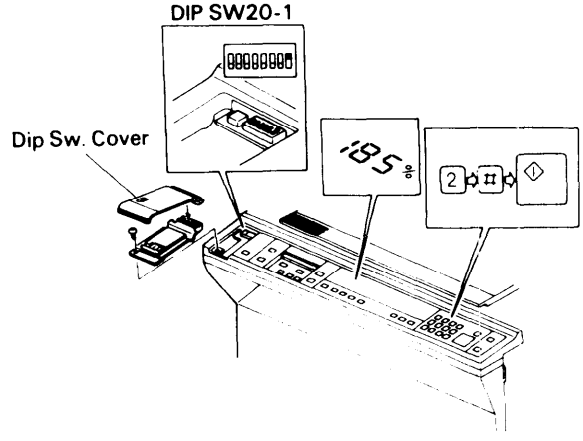
1. Repeat steps 1 to 3 of Thermistor Replacement.
2. Remove the thermofuse bracket (1 screw).
3. Remove the thermofuse wire from the metal wire clamp (1 screw).
4. Disconnect the thermofuse (1 connector) and install the new thermofuse.
   NOTE: Be sure the thermofuse wire is properly dressed.



Checking Hot Roller Temperature

– With Monitor Display –

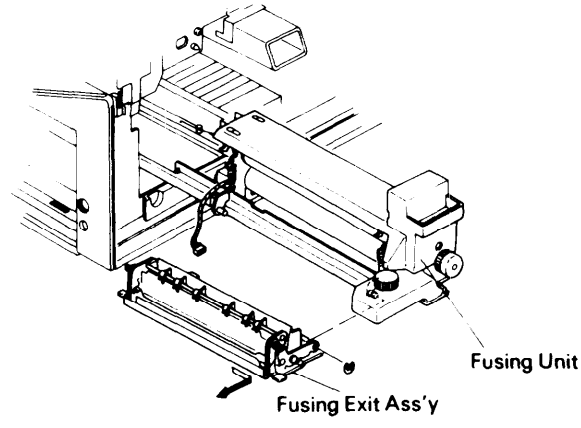
1. Turn off the main switch.
2. Remove the Dip switch cover on the left side of the operation panel (1 screw).
3. Turn on Dip switch 201-8.
4. Turn on the main switch.
5. Press 2, then the # key. The hot roller temperature will be displayed in the magnification ratio indicator.



– With Digital Surface Thermometer –

NOTE: The duplex unit (if installed) must be removed to perform this check.

1. Remove the fusing unit.
2. Remove the fusing exit assembly (1 E-ring and 1 connector).
3. Return the fusing unit to its original position inside the copier.
4. Actuate the front cover safety switch.



SECTION 7

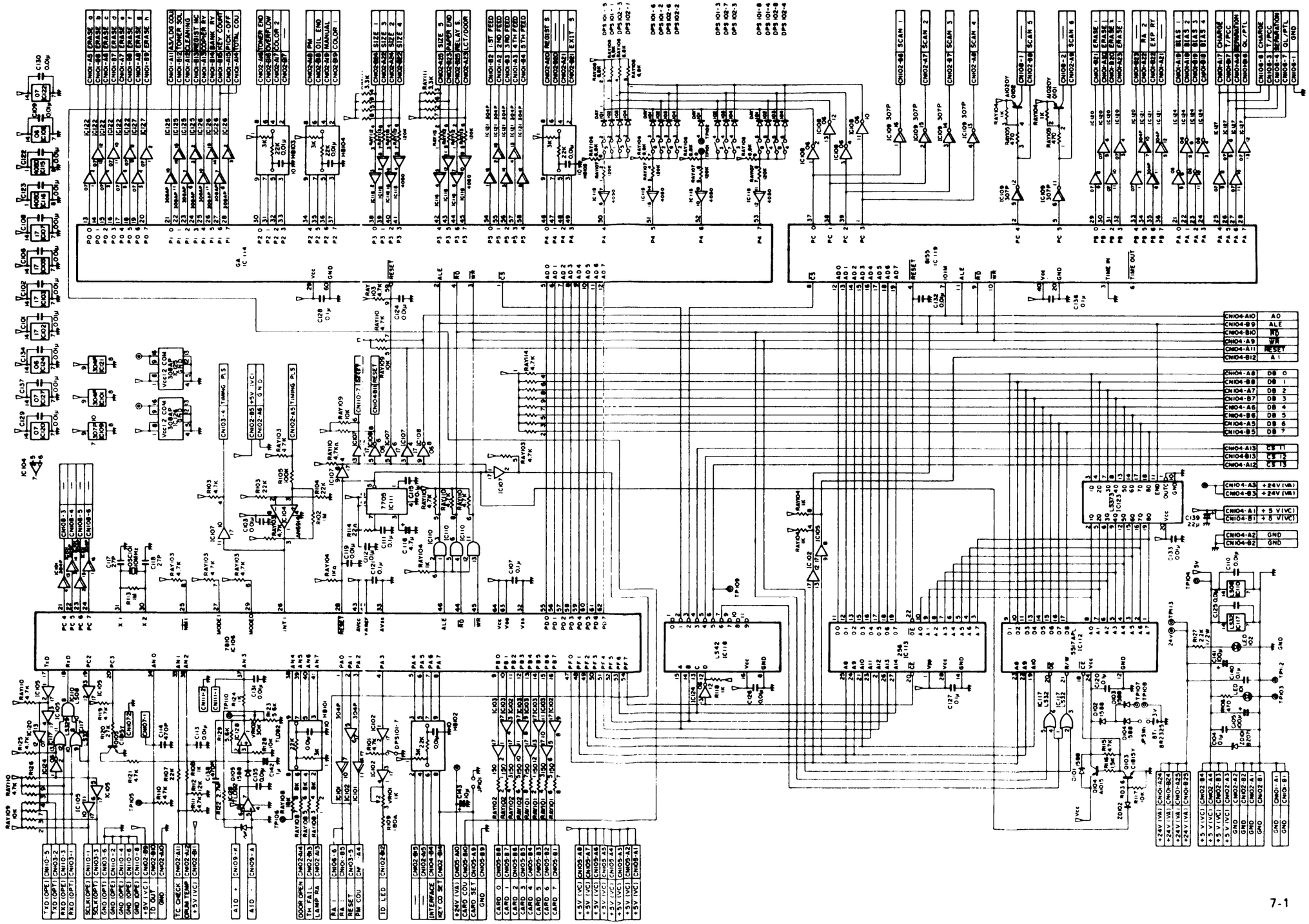
ELECTRICAL DATA

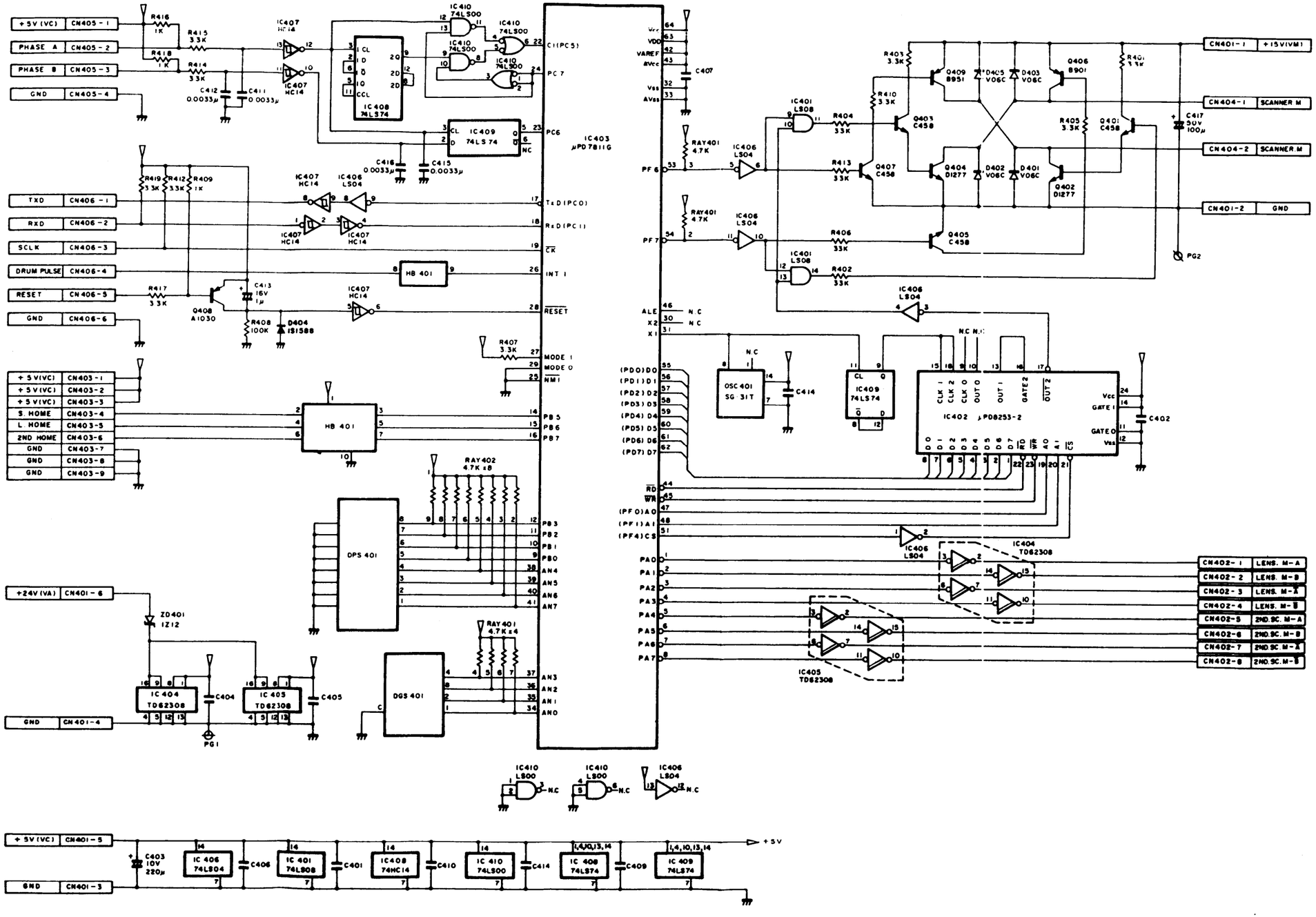
7. ELECTRICAL DATA

7-1A. Electrical Data 7-1A
7-1. Schematics 7-1
7-2. Timing Chart 7-7
7-3. PCB Pattern 7-11

7-1. Schematics

1. Main Board



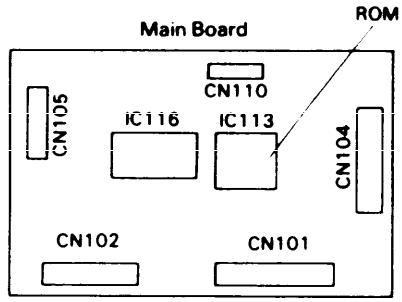

+5V (VC) CN405-1
PHASE A CN405-2
PHASE B CN405-3
GND CN405-4
TXD CN406-1
RXD CN406-2
SCLK CN406-3
DRUM PULSE CN406-4
RESET CN406-5
GND CN406-6
+5V(VC) CN403-1
+5V(VC) CN403-2
+5V(VC) CN403-3
S. HOME CN403-4
L. HOME CN403-5
2ND HOME CN403-6
GND CN403-7
GND CN403-8
GND CN403-9
+24V(VA) CN401-6
GND CN401-4
+5V(VC) CN401-5
GND CN401-3
CN401-1 +15V(VM)
CN404-1 SCANNER M
CN404-2 SCANNER M
CN401-2 GND
CN402-1 LENS. M-A
CN402-2 LENS. M-B
CN402-3 LENS. M-A
CN402-4 LENS. M-B
CN402-5 2ND.SC. M-A
CN402-6 2ND.SC. M-B
CN402-7 2ND.SC. M-A
CN402-8 2ND.SC. M-B
IC403 μPD7811G
IC408 74LS74
IC409 74LS74
IC402 μPD8253-2
OSC401 SG-31T
HB401
DPS401
DGS401
RAY401 4.7K
RAY402 4.7K x8
RAY401 4.7K x4
IC404 TD62308
IC405 TD62308
IC406 LS04
IC407 HC14
IC410 74LS00
IC401 LS08
Q401 C458
Q402 D1277
Q403 C458
Q404 D1277
Q405 C458
Q406 8901
Q407 C458
Q408 A1030
Q409 8951
D401 V06C
D402 V06C
D403 V06C
D404 1S1588
ZD401 1Z12
PG1
PG2

7-1A. Electrical Data

Brief explanation is given here how to use FT5010 electrical data.
The different point is as follows:

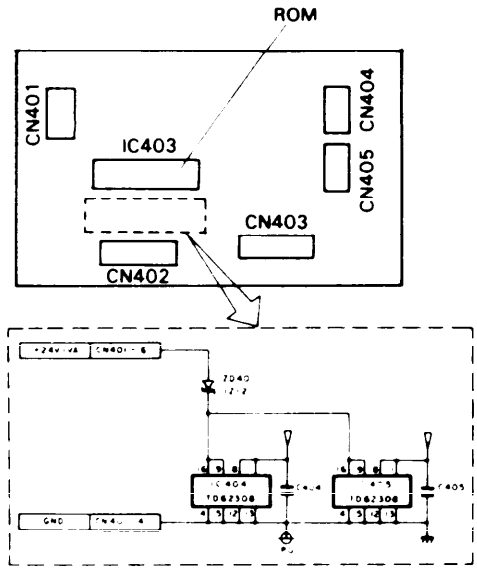
1. Main Board
   Different ROM is used in FT5000.

MODEL	FT5010	FT5000
ROM	P/N 5215XXXX	P/N A004XXXX

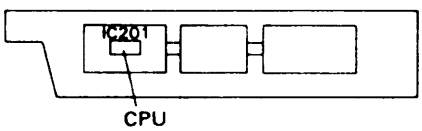


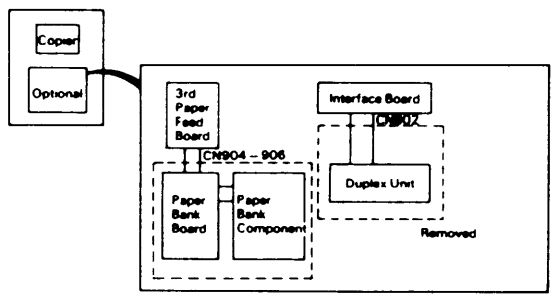
2. Optics Board
   Different ROM is used in FT5000.
   Five discrete components are removed from board used in FT5010.

MODEL	FT5010	FT5000
Discrete components	IC404 IC405 ZD401 C404 C405	Removed
IC403 ROM	5215XXXX	A004XXXX



3. Operation Panel Board
   Different CPU is used in FT5000.

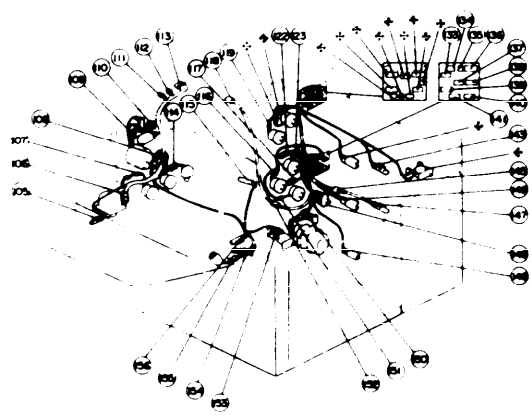




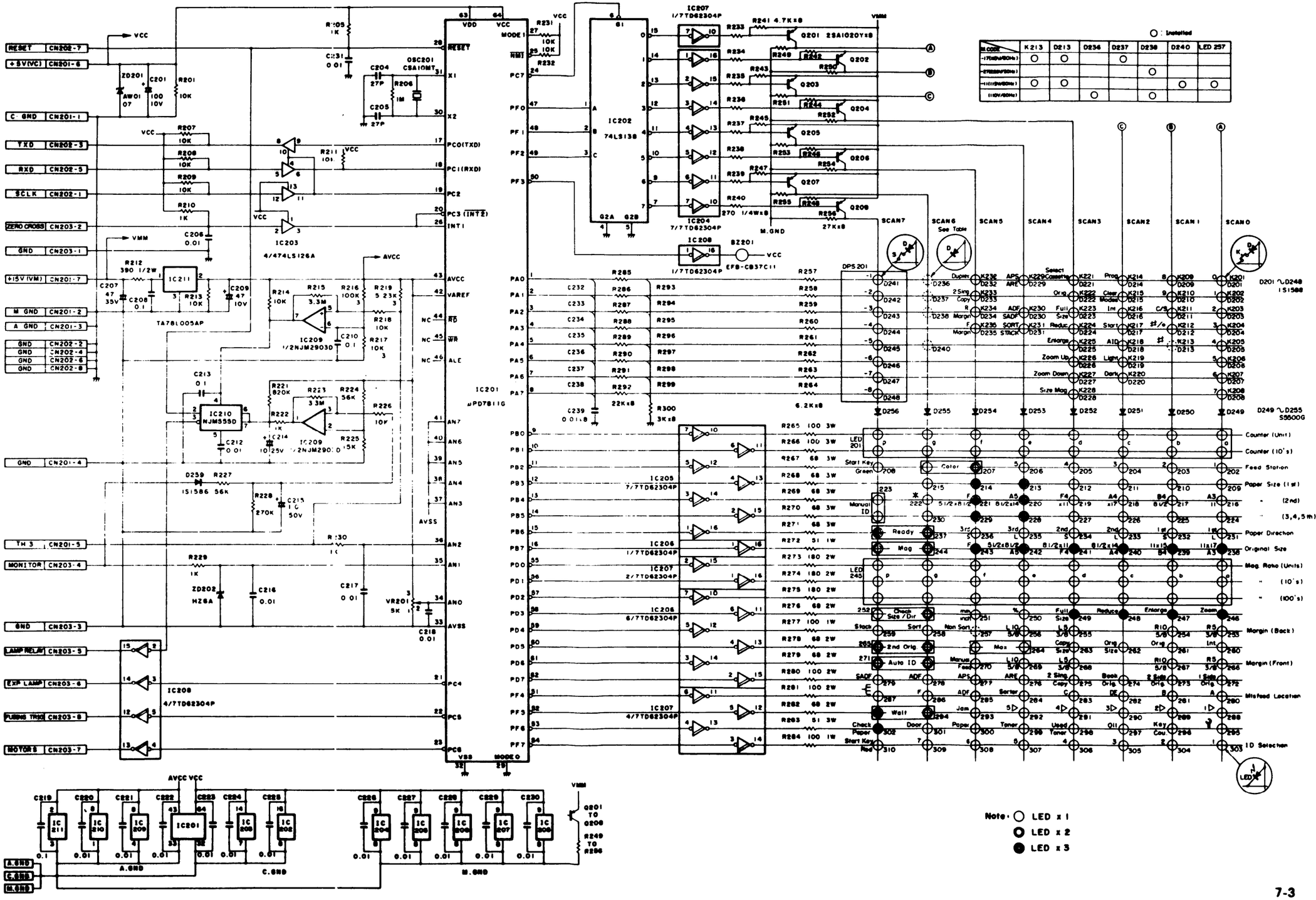
4. Point to Point/Connector Layout
   In FT5000 Copier, following two unit can not be used. Therefore, it is required to disregard these two unit indicated on the P to P diagram. As well as P to P related connectors should be disregarded on the FT5000 connector layout.

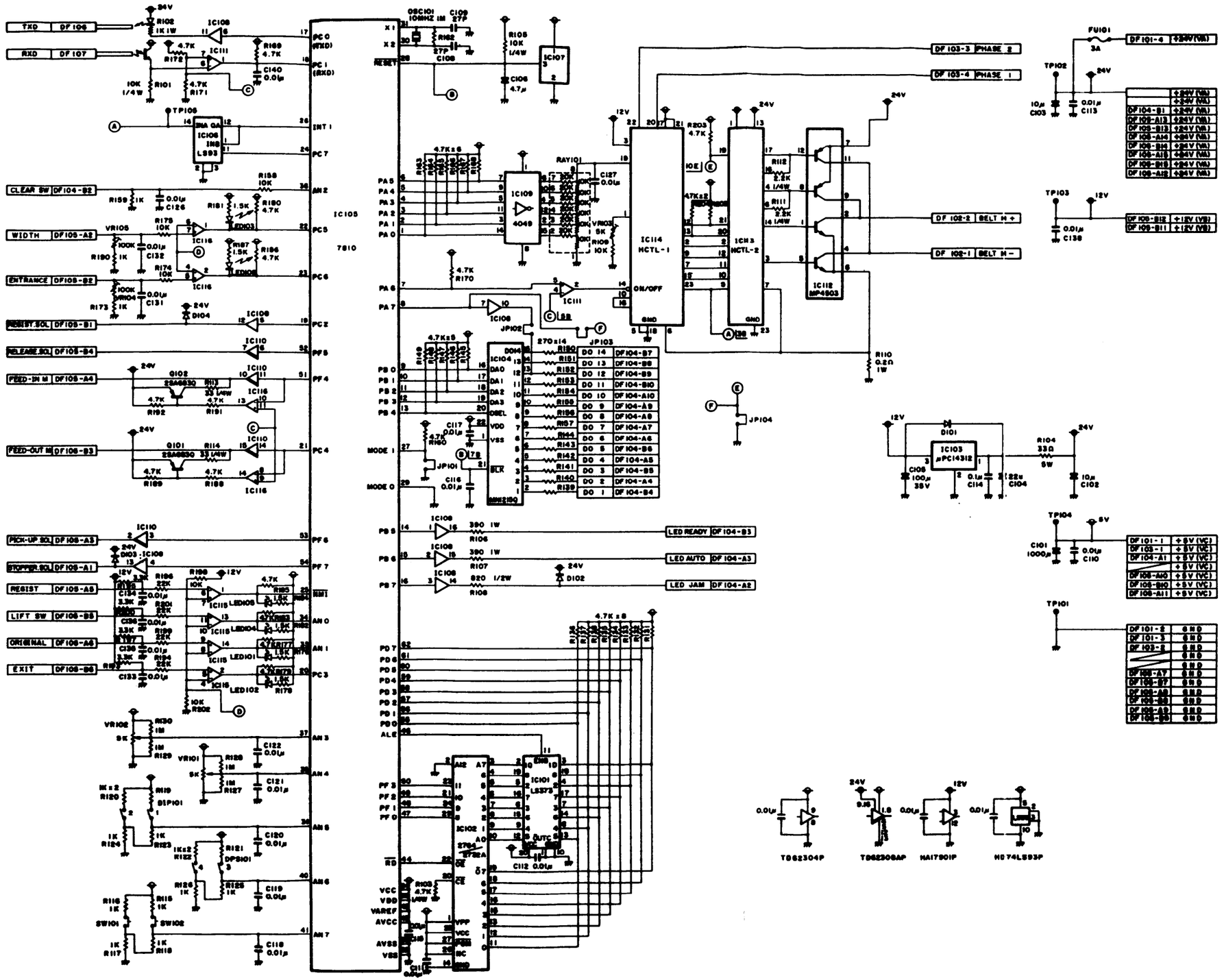
	FT5010	FT5000
Duplex Unit	Connector-CN802 (Interface Board)	Removed
Paper Bank Unit	CN904 – CN906 (3rd Paper Feed Board)	Removed

Removed (+ except 120,121,124 – 132,142,144)

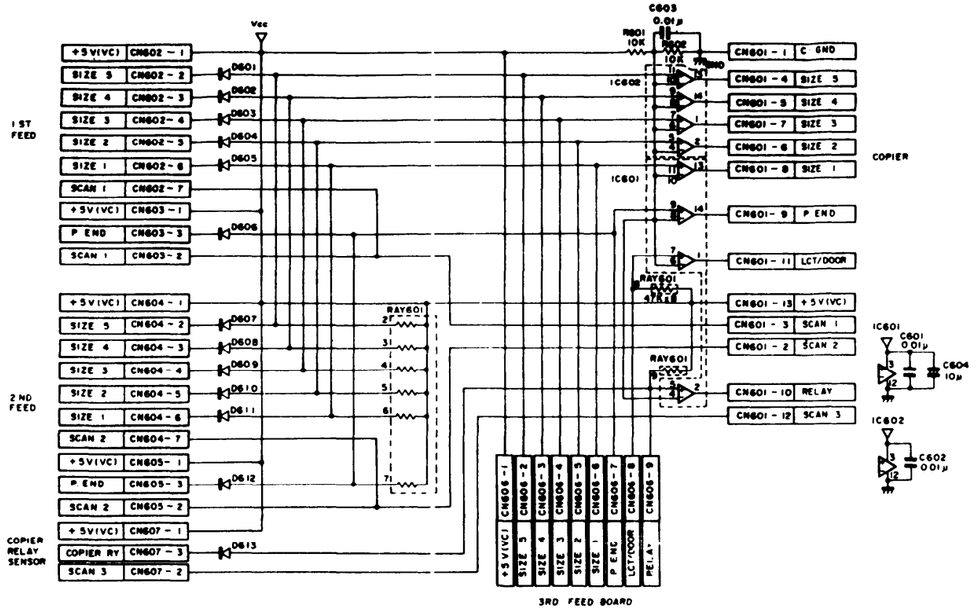


3. Operation Panel Board

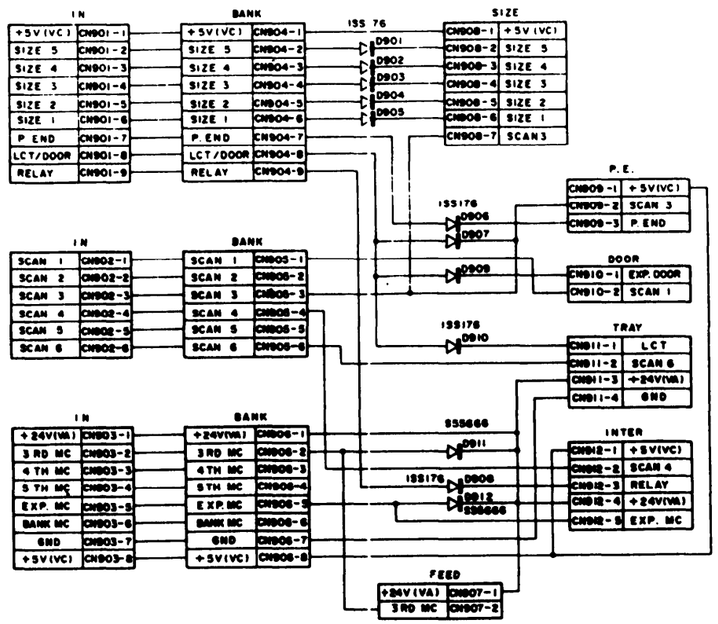



TXD DF106
RXD DF107
CLEAR SW DF104-B2
WIDTH DF105-A2
ENTRANCE DF105-B2
REGIST. SOL DF105-B1
RELEASE SOL DF105-B4
FEED-IN M DF105-A4
FEED-OUT M DF106-B3
PICK-UP SOL DF105-A3
STOPPER SOL DF105-A1
REGIST DF105-A5
LIFT SW DF105-B5
ORIGINAL DF105-A6
EXIT DF105-B6
IC105 7810
IC109 4049
IC114 HCTL-1
IC113 HCTL-2
IC112 MP4903
IC104 MM5290
IC103 μPC14312
IC101 LS373
IC102 27256
DF103-3 PHASE 2
DF103-4 PHASE 1
DF102-2 BELT M +
DF102-1 BELT M -
LED READY DF104-B3
LED AUTO DF104-A3
LED JAM DF104-A2
TP102
TP103
TP104
TP101
FU101 3A
TD62304P
TD62308AP
HA17901P
HD74LS93P

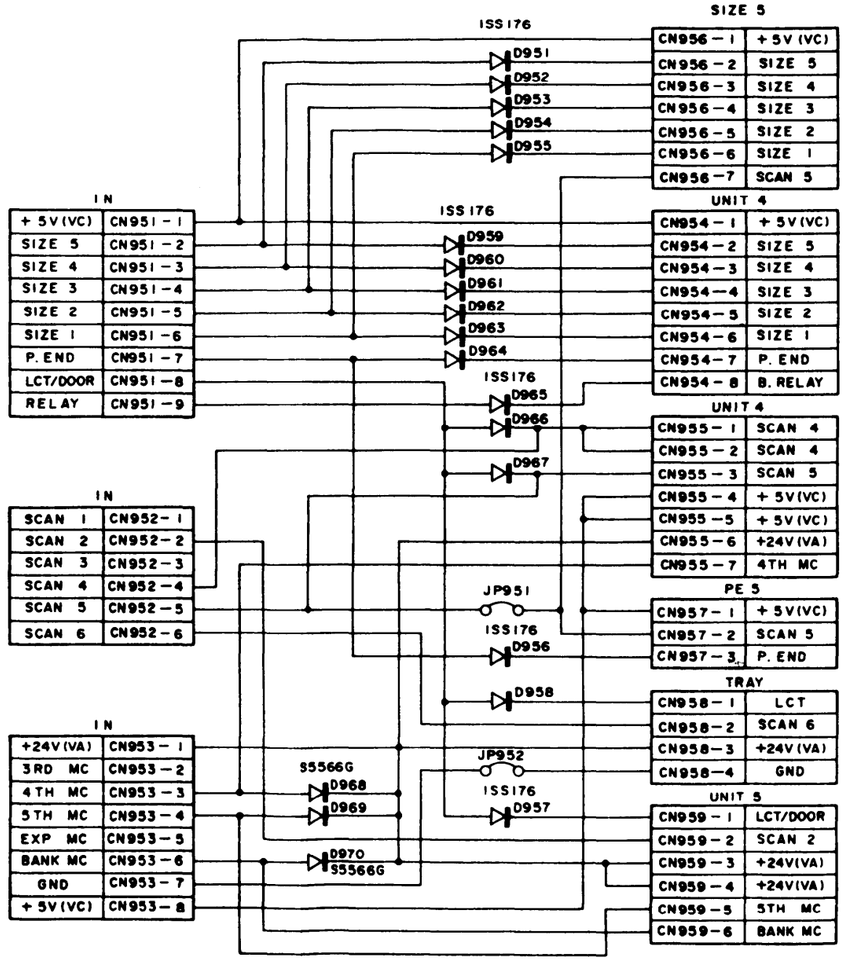
5. Paper Feed Board



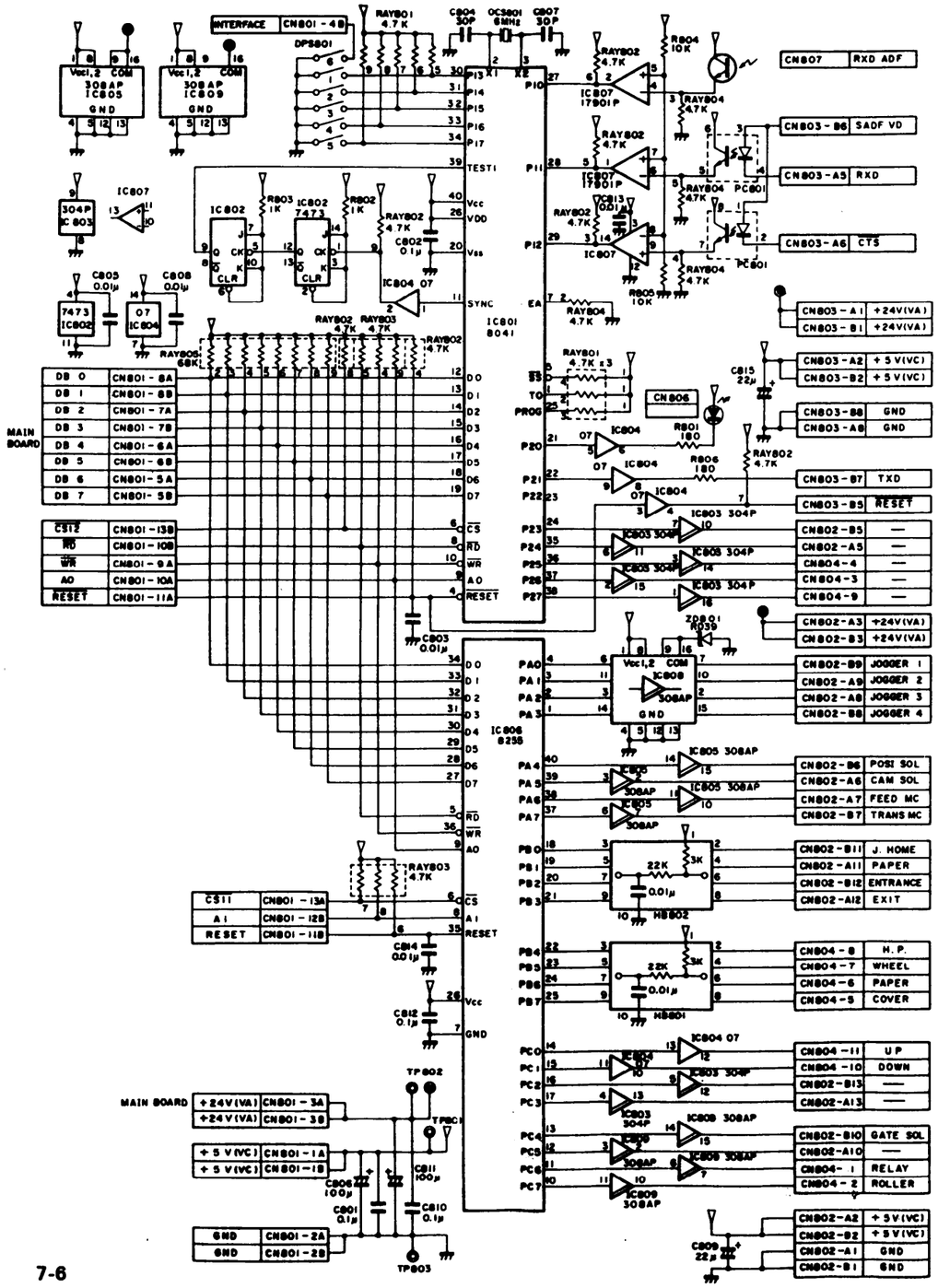
6. 3rd Paper Feed Board



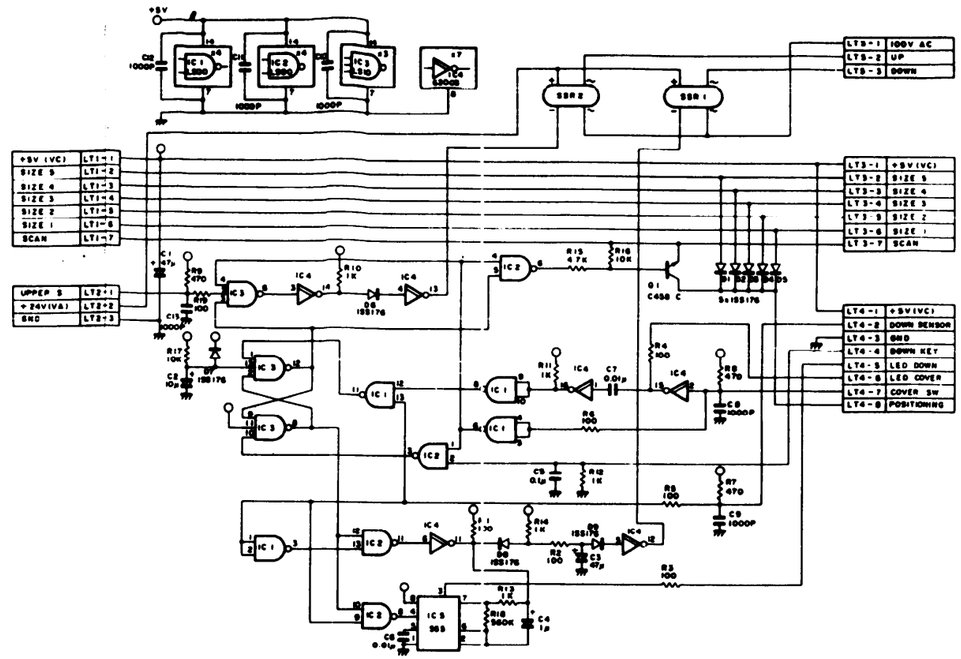
7. Paper Bank Board



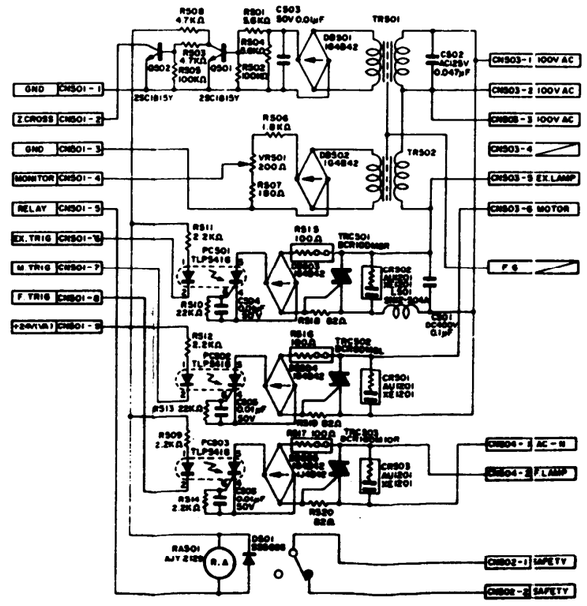
8. Interface Board



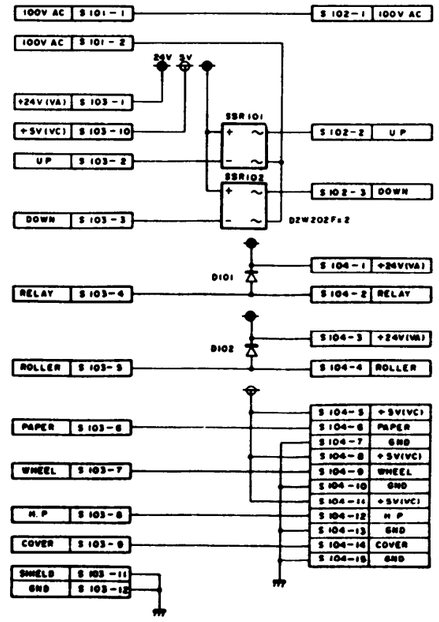
9. LCT Board



10. AC Drive Board

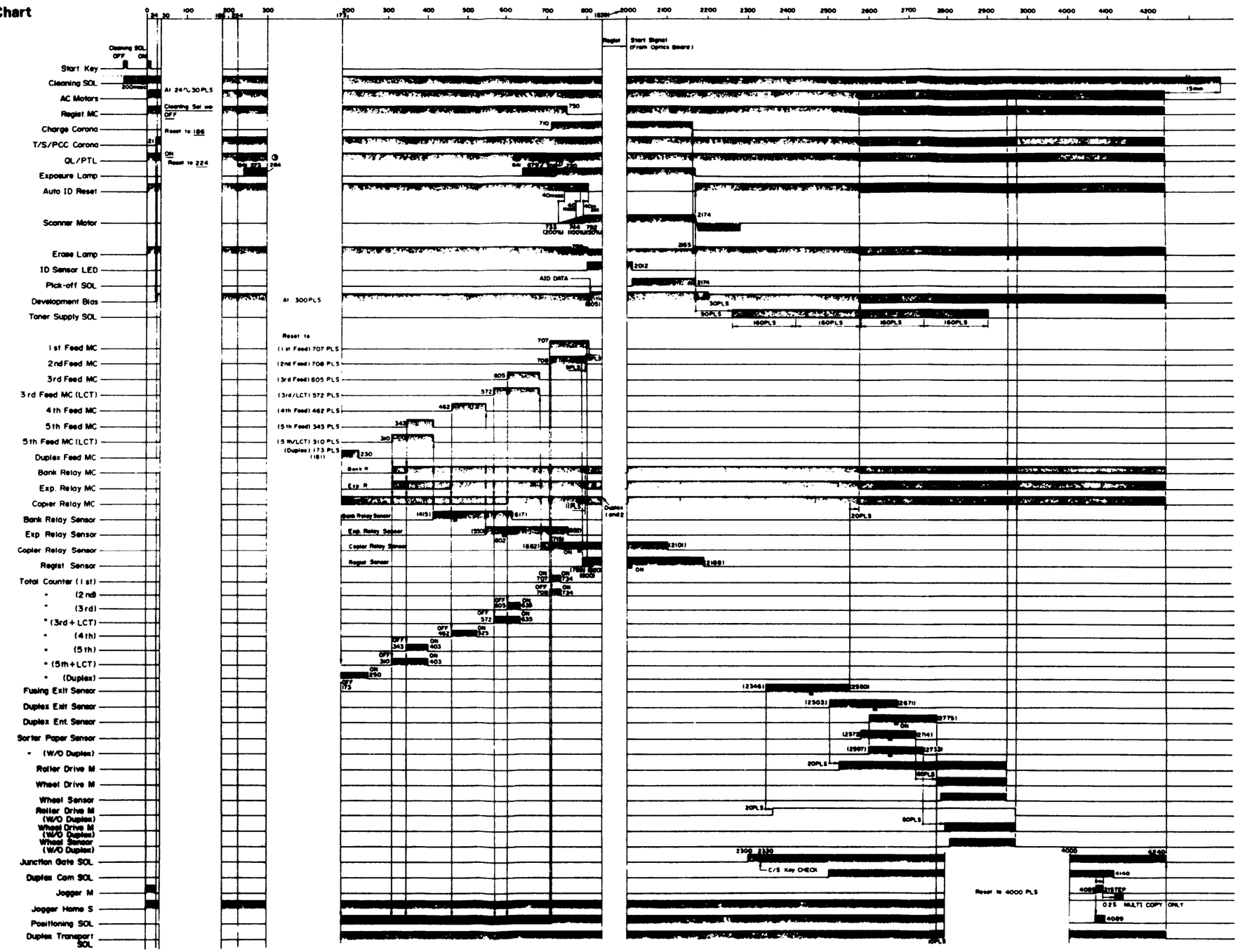


11. Sorter Control Board



7-2. Timing Chart

1. Copier Timing Chart



(A4 SIDEWISE SINGLE COPYING)

1 PLS = 5.75 ms
1 STEP = 4 ms

1. Timing Table

Paper Size	Charge OFF Exp. Lamp ON	Exp. Lamp OFF	Next Paper Feed	CPM	Relay MC Condition at A 0: OFF 1: ON	
					Bank Relay	Expansion Relay
MANUAL	2377 pls	2386 pls	603 pls	17	0	0
A3	2366 pls	2375 pls	603 pls	17	0	0
B4	2312 pls	2321 pls	514 pls	20	0	0
A4	2165 pls	2174 pls	344 pls	30	1	1
A4R	2249 pls	2257 pls	448 pls	23	1	0
B5	2139 pls	2147 pls	323 pls	32	1	1
B5R	2209 pls	2219 pls	397 pls	26	1	0
A5	2106 pls	2115 pls	323 pls	32	1	1
A5R	2165 pls	2174 pls	344 pls	30	1	1
B6	2088 pls	2098 pls	323 pls	32	1	1
B6R	2139 pls	2149 pls	323 pls	32	1	1
11" x 17"	2375 pls	2386 pls	603 pls	17	0	0
11" x 8-1/2"	2171 pls	2180 pls	344 pls	30	1	1
11" x 15"	2328 pls	2337 pls	540 pls	19	0	0
10" x 14"	2304 pls	2313 pls	514 pls	20	1	0
8-1/2" x 14"	2304 pls	2313 pls	514 pls	20	1	0
8-1/2" x 13"	2280 pls	2289 pls	514 pls	20	1	0
8-1/2" x 11"	2232 pls	2240 pls	448 pls	23	1	0
8-1/2" x 5-1/2"	2098 pls	2107 pls	323 pls	32	1	1
8-1/4" x 14"	2304 pls	2313 pls	514 pls	20	1	0
8" x 13"	2280 pls	2289 pls	514 pls	20	1	0
8" x 10-1/2"	2218 pls	2228 pls	429 pls	24	1	0
8" x 10"	2207 pls	2216 pls	397 pls	26	1	0
5-1/2" x 8-1/2"	2171 pls	2180 pls	344 pls	30	1	1

↑ After Previous Feed Timing (Pulses)

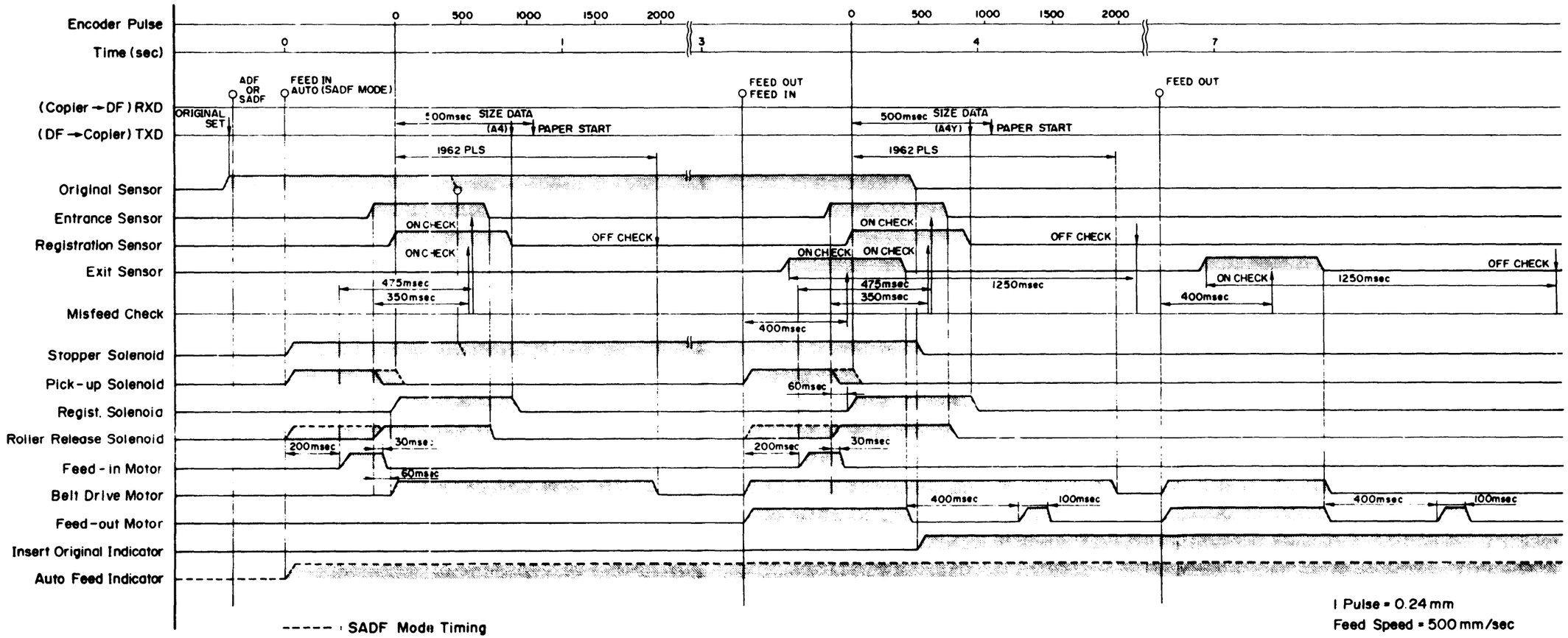
2. Scanner Start Timing

Reproduction Ratio (%)	Scanner Start (pls)
191 – 200	733
182 – 190	738
173 – 181	741
164 – 172	745
156 – 163	749
142 – 155	753
130 – 141	759
123 – 129	763
116 – 122	766
101 – 115	769
94 – 100	774
88 – 93	776
86 – 87	778
83 – 85	779
78 – 82	780
72 – 77	782
66 – 71	784
62 – 65	786
51 – 61	789
50	792

3. Exposure Lamp ON Timing

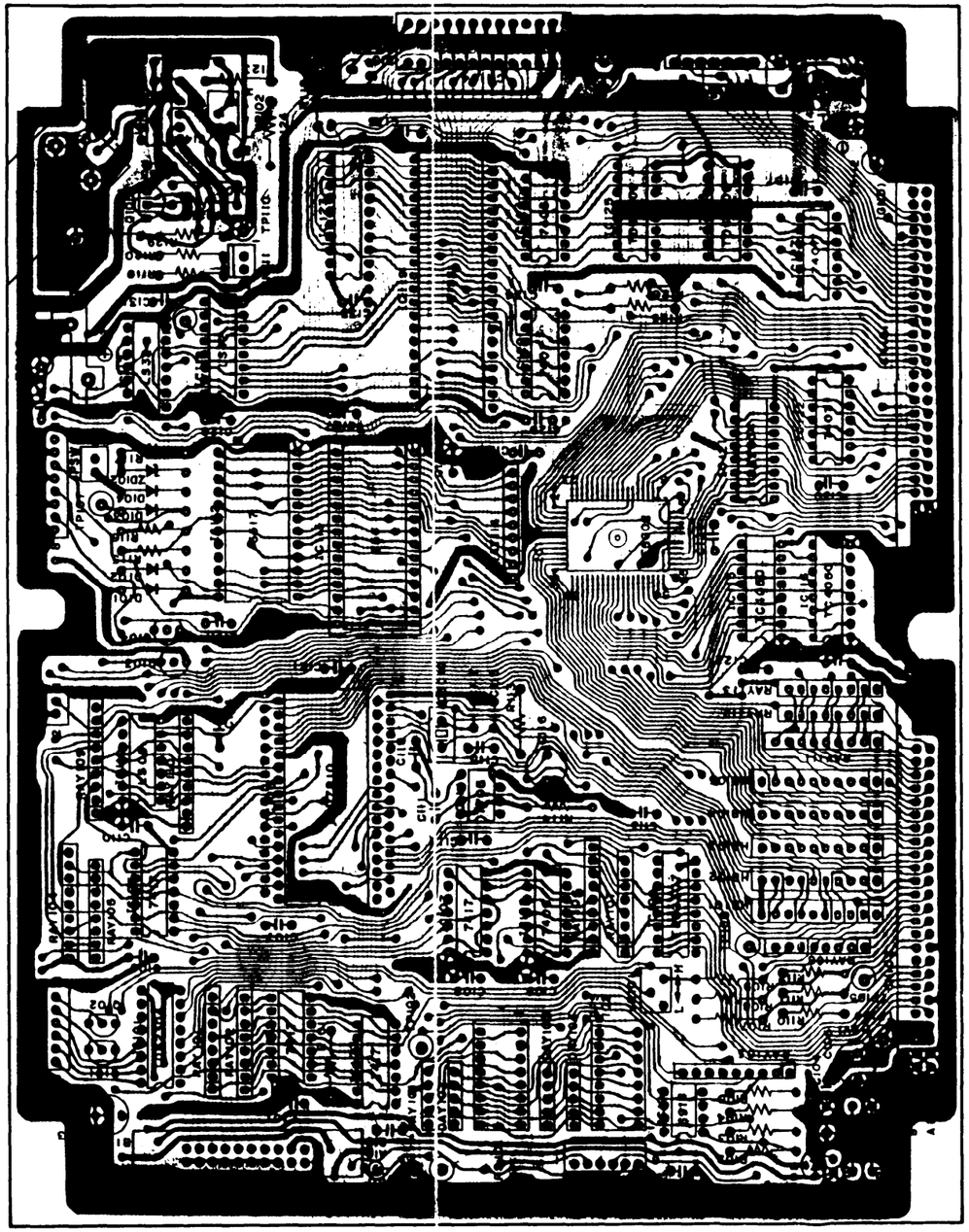
Paper Feed Station	Mode	Copy Start when Motor is ON		Copy Start when Motor is ON	
		ID Sensing	Normal	ID Sensing	Normal
1st and 2nd (1st Copy Only)	AID Sensing	① 241 pls	① 241 pls	③ 284 pls	③ 284 pls
	Normal	② 273 pls	⑦ 708 pls	⑦ 708 pls	⑧ 720 pls
Others	AID Sensing	④ 641 pls	④ 641 pls	⑥ 690 pls	⑥ 690 pls
	Normal	⑤ 679 pls	⑦ 708 pls	⑦ 708 pls	⑧ 720 pls

2. DF Timing Chart

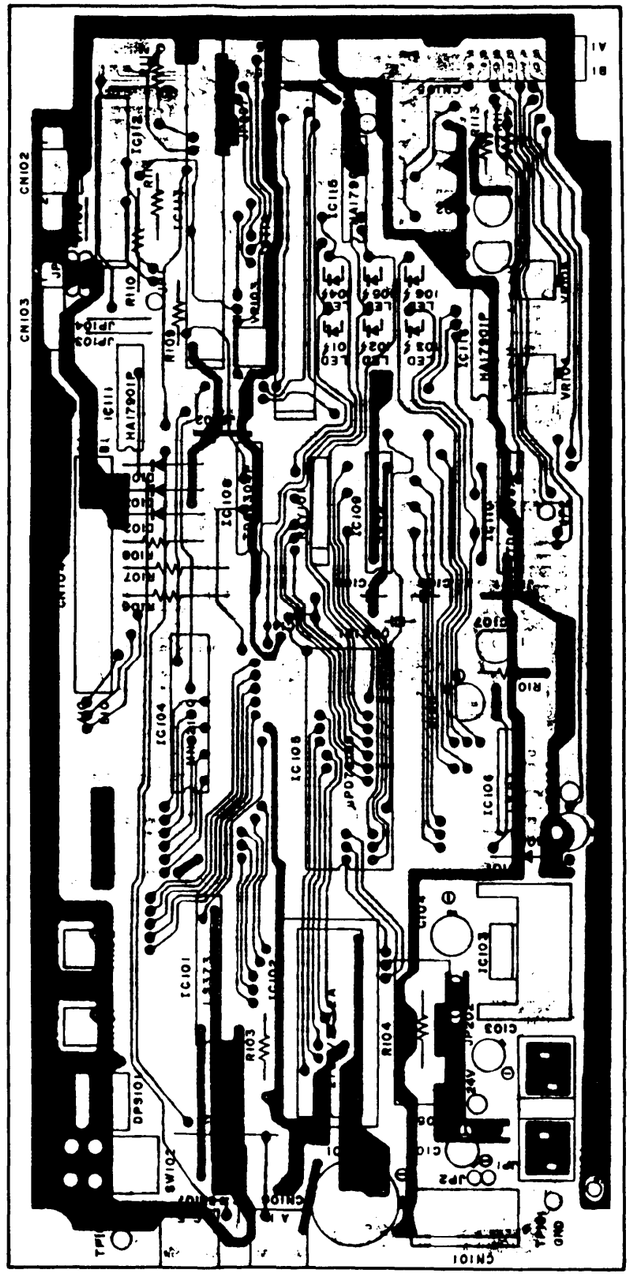


7-3. PCB Pattern

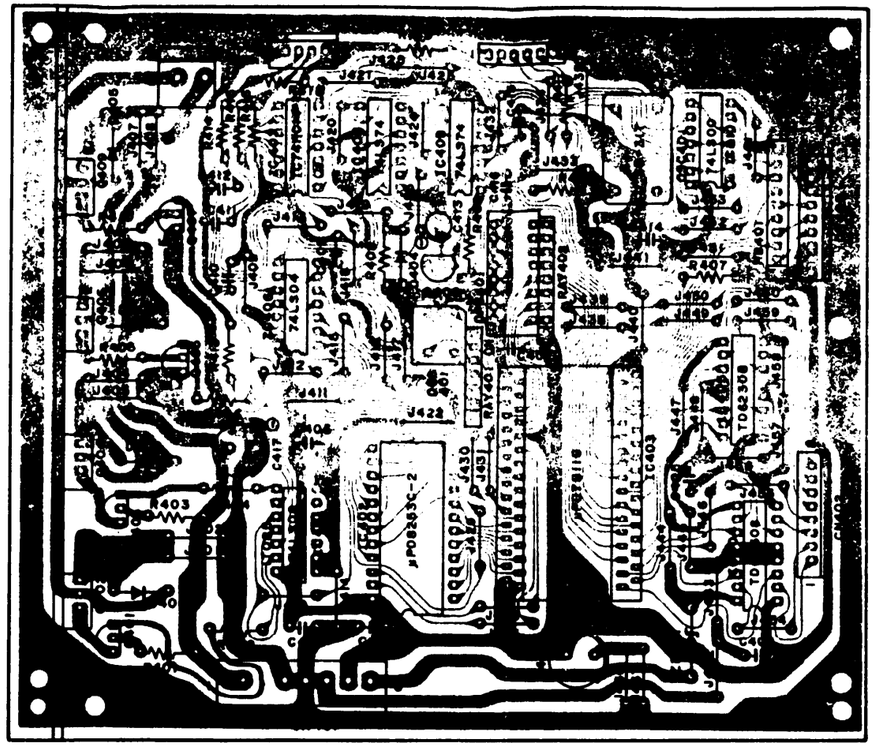
1. Main Board



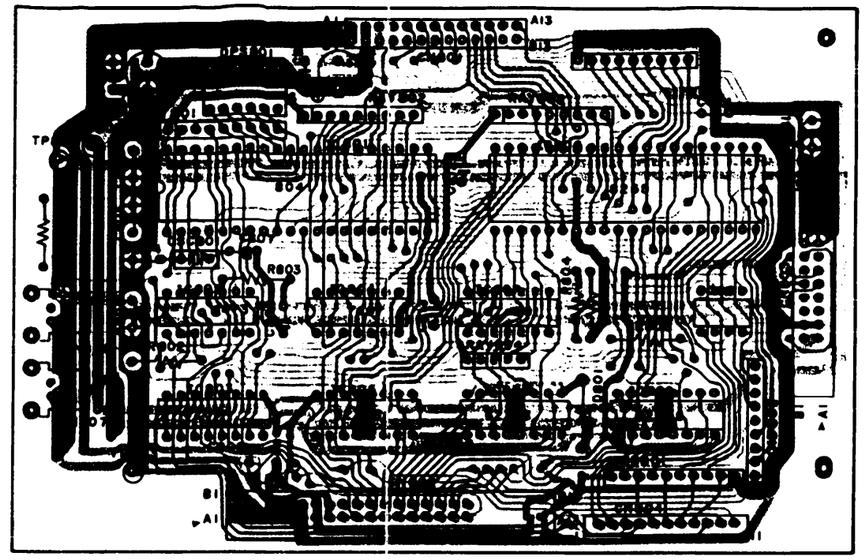
2. DF Main Board



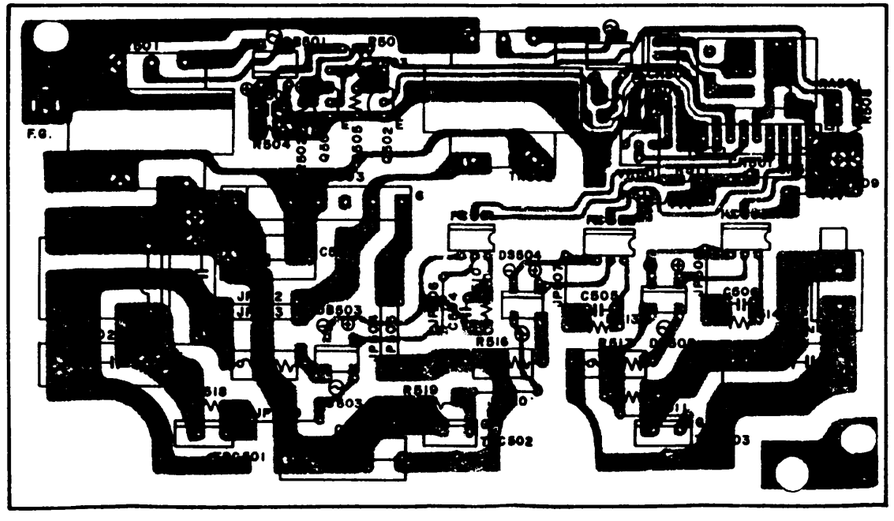
3. Optics Board



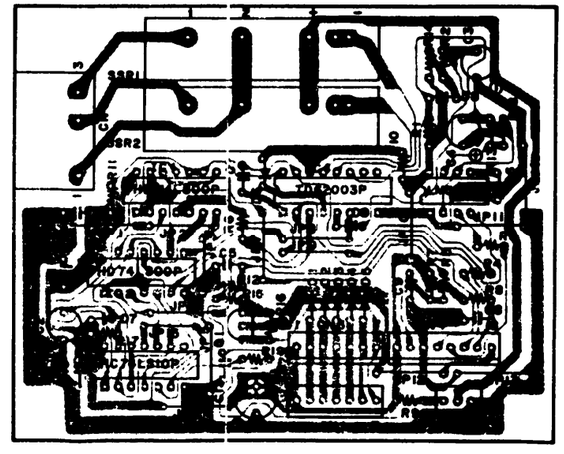
5. Interface Board



4. AC Drive Board

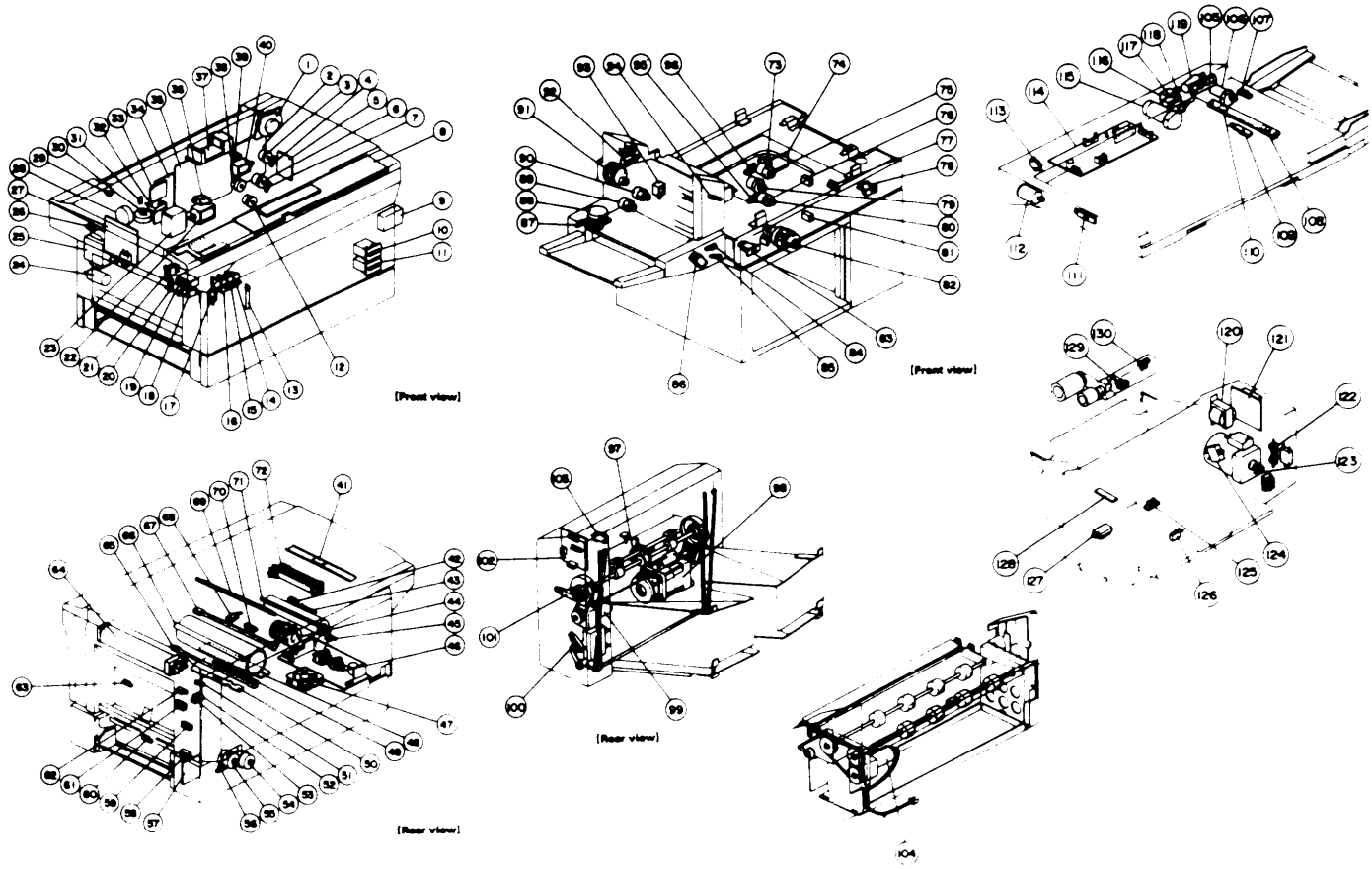


6. LCT Board



POINT TO POINT

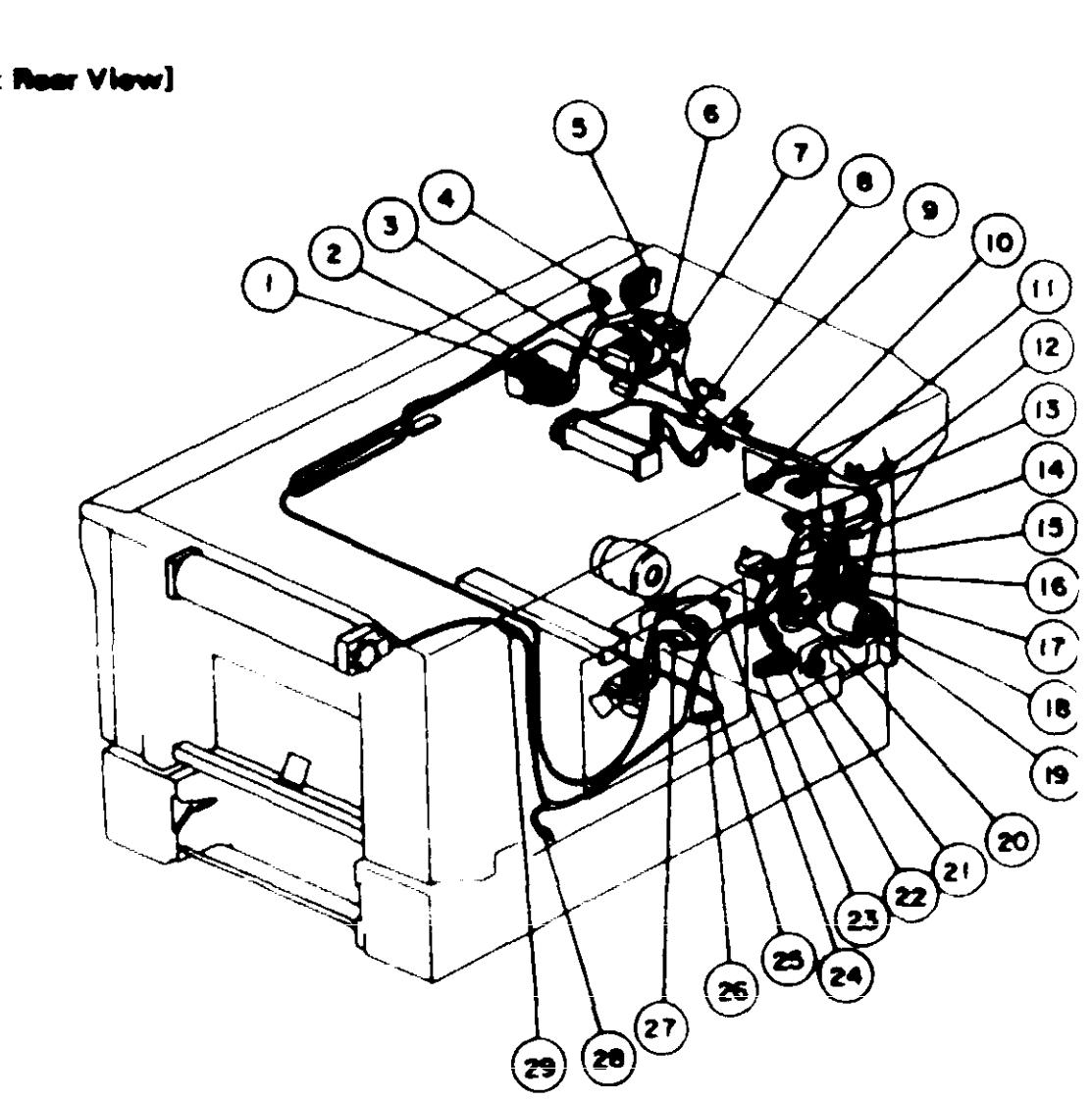
ELECTRICAL COMPONENT LAYOUT



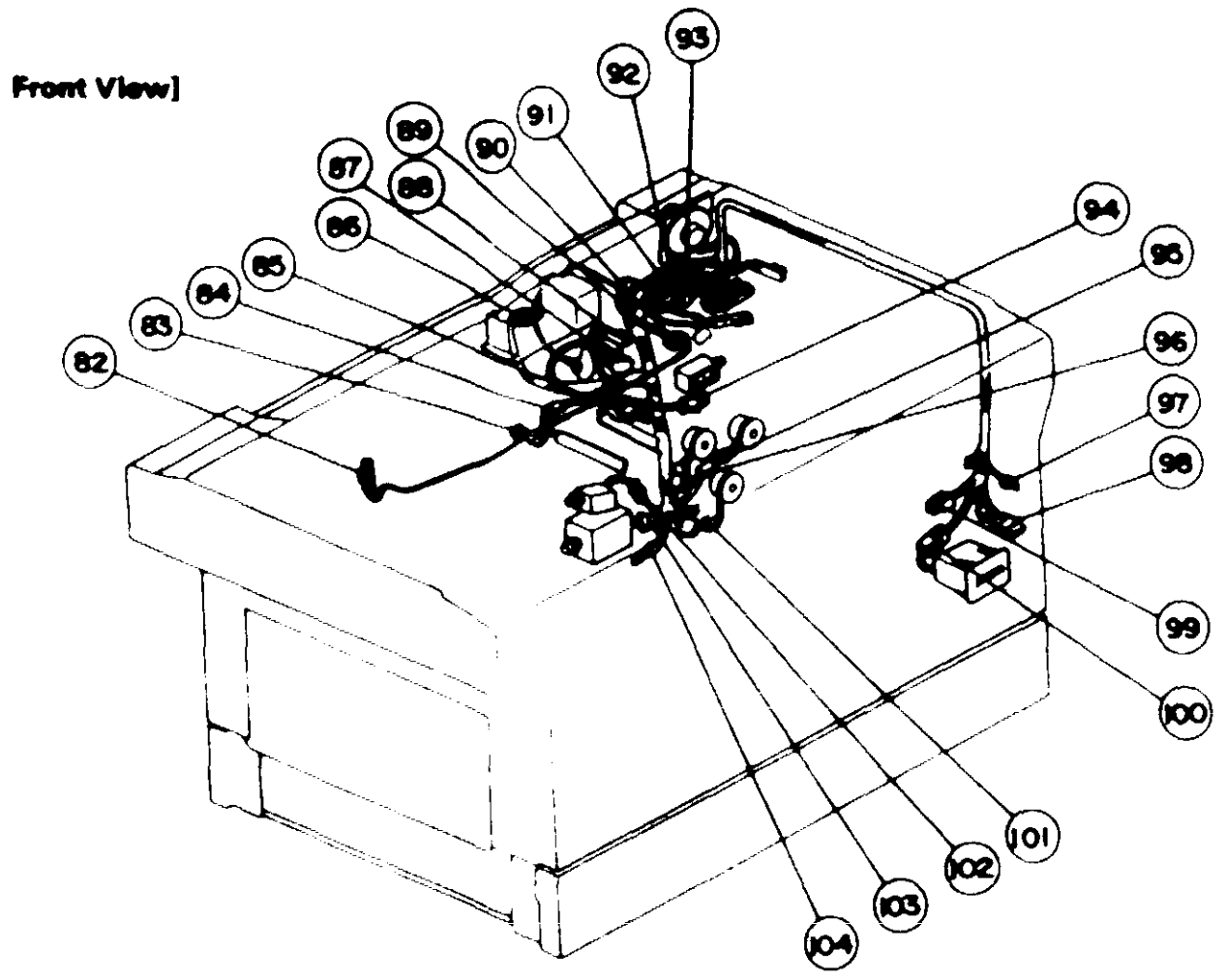
1	M-7	Scanner Motor
2	PCB-2	Optics PCB
3	MC-2	1st Paper Feed MC
4	S-14	1st Paper End Sensor
5	PCB-4	Paper Feed PCB
6	MC-3	2nd Paper Feed MC
7	S-16	2nd Paper End Sensor
8	PCB-3	Operation Panel PCB
9	CO-3	Key Counter
10	CO-1	Total Counter
11	CO-2	A3 11" x 17" Counter
12	MC-7	Copier Relay MC
13	S-3	Oil End Sensor
14	SW-4	Door Safety (Dc-PP)
15	SW-3	Door Safety (Ac-2)
16	SW-2	Door Safety (Ac-1)
17	SW-5	Door Safety (Dc-RA)
18	RA-2	Exhaust Fan Relay
19	RA-1	Ac Power Relay
20	R	Exhaust Fan Resistor
21	SW-1	Main Switch
22	Sol-1	Cleaning Solenoid
23	P-1	Power Pack - T/S/PCC
24	NF	Noise filter
25	MT	Main Transformer
26	CB-1	Circuit Breaker
26	F-1	AC Fuse (220 V)
27	PCB-8	AC Drive PCB
28	M-8	Lens Motor
29	S-10	Scanner Home Sensor
30	M-9	Second Scanner Motor
31	S-12	Second Scanner Sensor
32	C	Main Motor Capacitor
33	P-3	Lamp Stabilizer
34	PCB-7	Interface PCB
35	PCB-1	Main PCB
36	Sol-2	Pick-off Solenoid
37	P-2	Power Pack - C/B
38	MC-1	Registration MC
39	S-1	Pulse Generator
40	Sol-3	Toner Supply Solenoid
41	H-2	Anticondensation Heater
42	TH-3	Fusing Thermistor
43	TF	Thermofuse
44	M-1	Main Motor
45	S-2	Paper Exit Sensor
46	PSU	Power Supply Unit
47	M-4	Vacuum Fan Motor52
48	H-1	Drum Heater
49	S-30	Image Density Sensor
50	S-6	Registration Sensor
51	S-5	Toner End Sensor
52	S-8	Color Toner Sensor 1
53	S-9	Color Toner Sensor 2
54	MC-8	Expansion Relay MC
55	MC-4	3rd Paper Feed MC
56	S-18	3rd Paper End Sensor
57	PCB-5	Third Paper Feed PCB
58	S-17	3rd Paper Size Sensor
59	S-15	2nd Paper Size Sensor
60	S-24	Expansion Relay Sensor
61	S-13	1st Paper Size Sensor
62	S-7	Manual Feed Sensor
63	S-23	Copier Relay Sensor
64	M-3	Cooling Blower Motor
65	L-5	Pre-transfer Lamp
66	L-3	Erase Lamp
67	L-4	Quenching Lamp
68	S-4	Toner Overflow Sensor
69	L-1	Exposure Lamp
70	S-11	Lens Home Sensor
71	L-2	Fusing Lamp
72	M-2	Exhaust Blower Motor
73	SW-7	Paper Bank Switch
74	PCB-6	Paper Bank PCB
75	MC-5	4th Paper Feed MC
76	S-19	4th Paper Size Sensor
77	S-25	Paper Bank Relay Sensor
78	SW-8	Expansion Unit
79	MC-9	Paper Bank Relay MC
80	MC-6	5th Paper Feed MC
81	S-21	5th Paper Size Sensor
82	M-6	Paper Bank Motor
83	SW-6	Duplex Door Switch
84	S-29	Duplex Entrance Sensor
85	S-28	Duplex Paper Sensor
86	Sol-5	Positioning Roller Solenoid
87	S-26	Jogger Home Sensor
88	M-10	Jogger Motor
89	MC-10	Duplex Feed MC
90	MC-11	Duplex Transport MC
91	M-5	Duplex Motor
92	Sol-4	Junction Gate Solenoid
93	Sol-6	Cam Clutch Solenoid
94	S-27	Duplex Exit Sensor
95	S-22	5th Paper End Sensor
96	S-20	4th Paper End Sensor
97	S-31	Paper Sensor
98	M-11	Wheel Drive Motor
99	M-12	Roller Drive Motor
100	S-32	Home Position Sensor
101	S-33	Wheel Sensor
102	PCB-9	Sorter Control PCB
103	SW-9	Cover Safety Switch
104	M-13	Relay Drive Motor
105	PCB-10	Indicator PCB
106	M-14	Feed-in Motor
107	S-34	Feed-in Sensor
108	S-35	Paper Entrance Sensor
109	S-37	Registration Sensor
110	S-36	Original Width Sensor
111	S-38	Exit Sensor
112	M-15	Feed-out Motor
113	SW-10	Lift Switch
114	PCB-11	DF Main PCB
115	M-16	Belt Drive Motor
116	Sol-7	Pick-up Solenoid
117	Sol-8	Registration Solenoid
118	Sol-9	Roller Release Solenoid
119	Sol-10	Stopper Solenoid
120	T-2	LCT Transformer
121	PCB-12	Tray PCB
122	F-2	LCT ac Fuse (220 V)
122	CB-2	LCT Circuit Breaker (115 V)
123	M-17	LCT Motor
124	SW-11	LCT Safety Switch
125	S-39	Tray Down Sensor
126	SW-12	Positioning Switch
127	S-40	LCT Paper Size Sensor
128	PCB-13	LCT Operation Panel
129	S-41	Tray Paper End Sensor
130	S-42	Tray Upper Limit Sensor

CONNECTOR LAYOUT

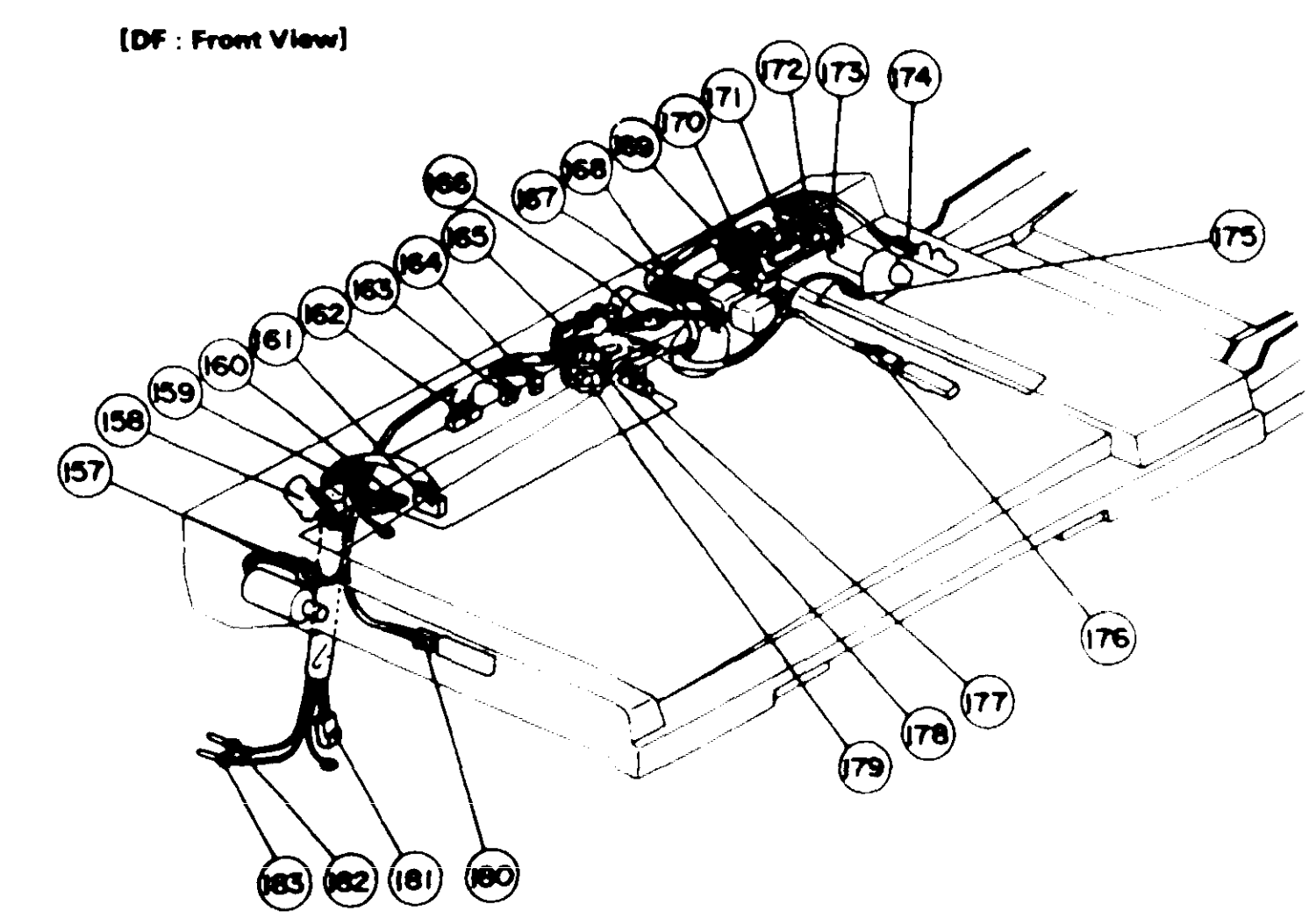
[AC : Rear View]



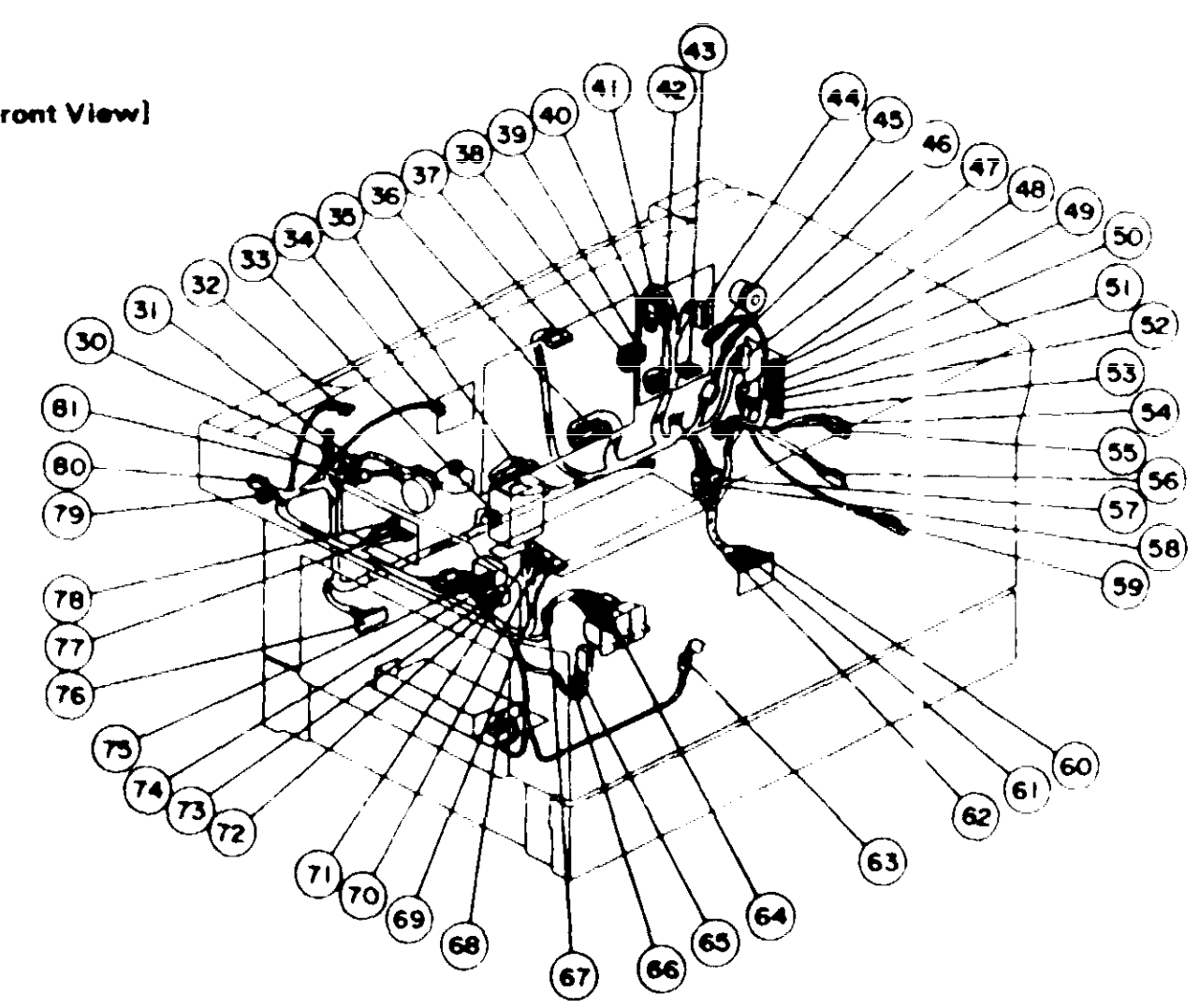
[DC-2 : Front View]



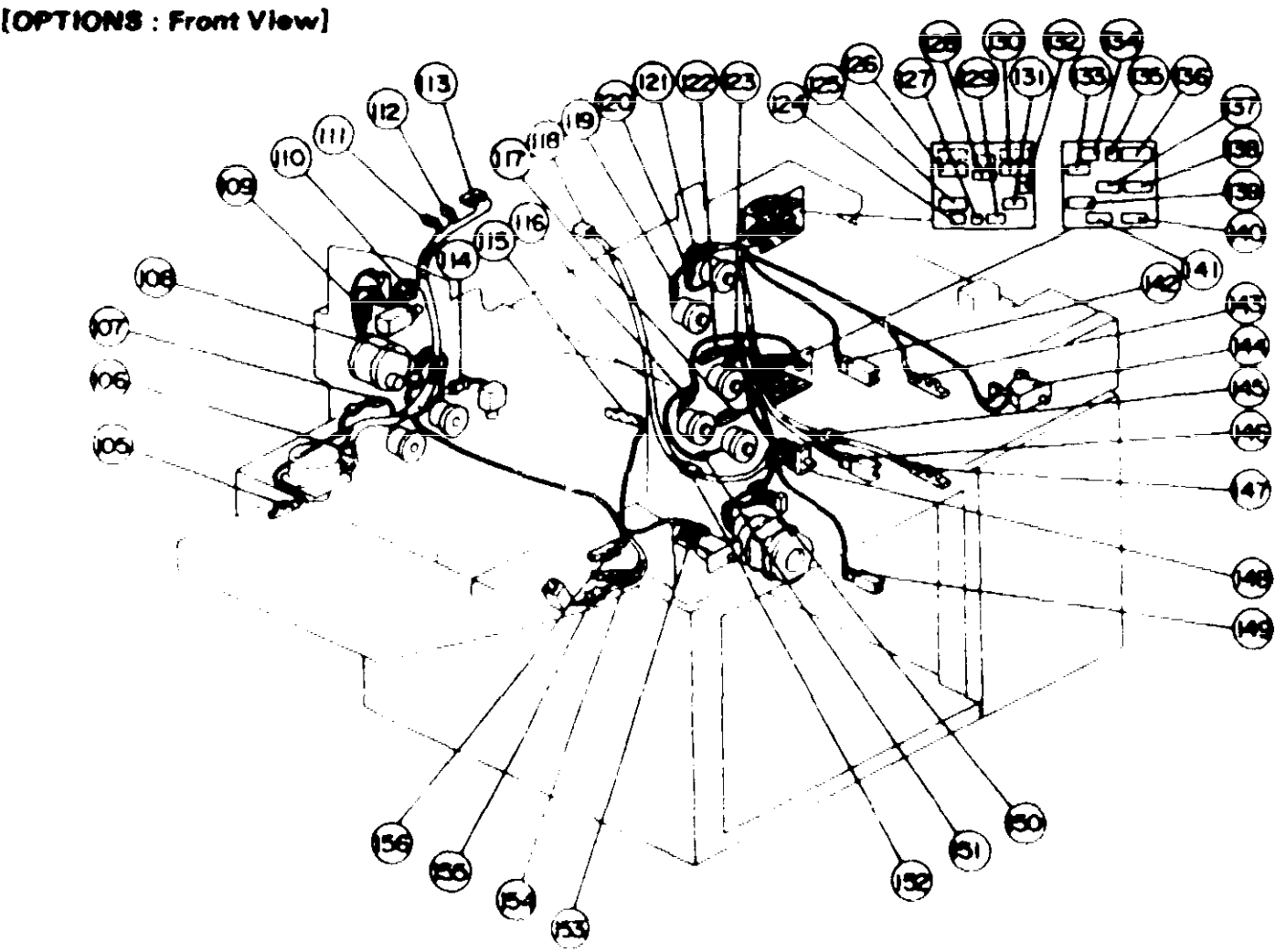
[DF : Front View]



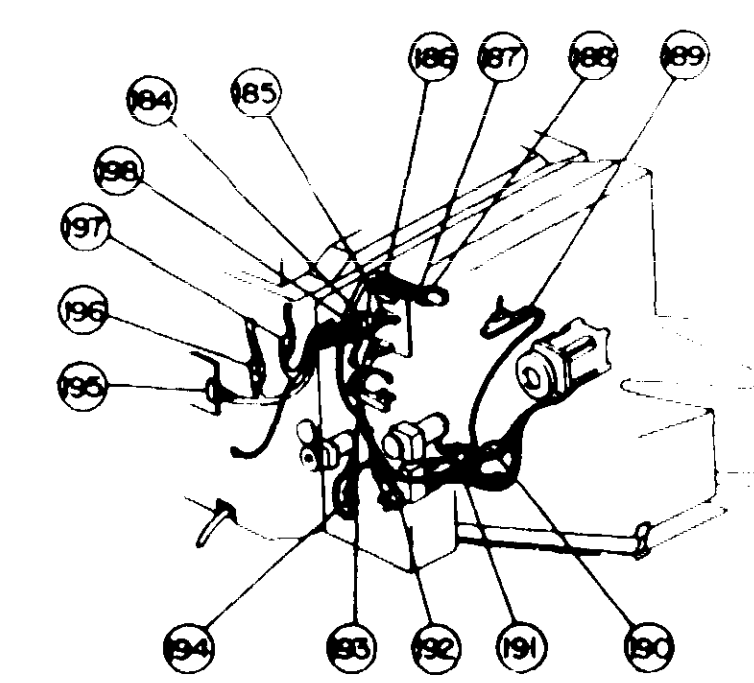
[DC-1 : Front View]



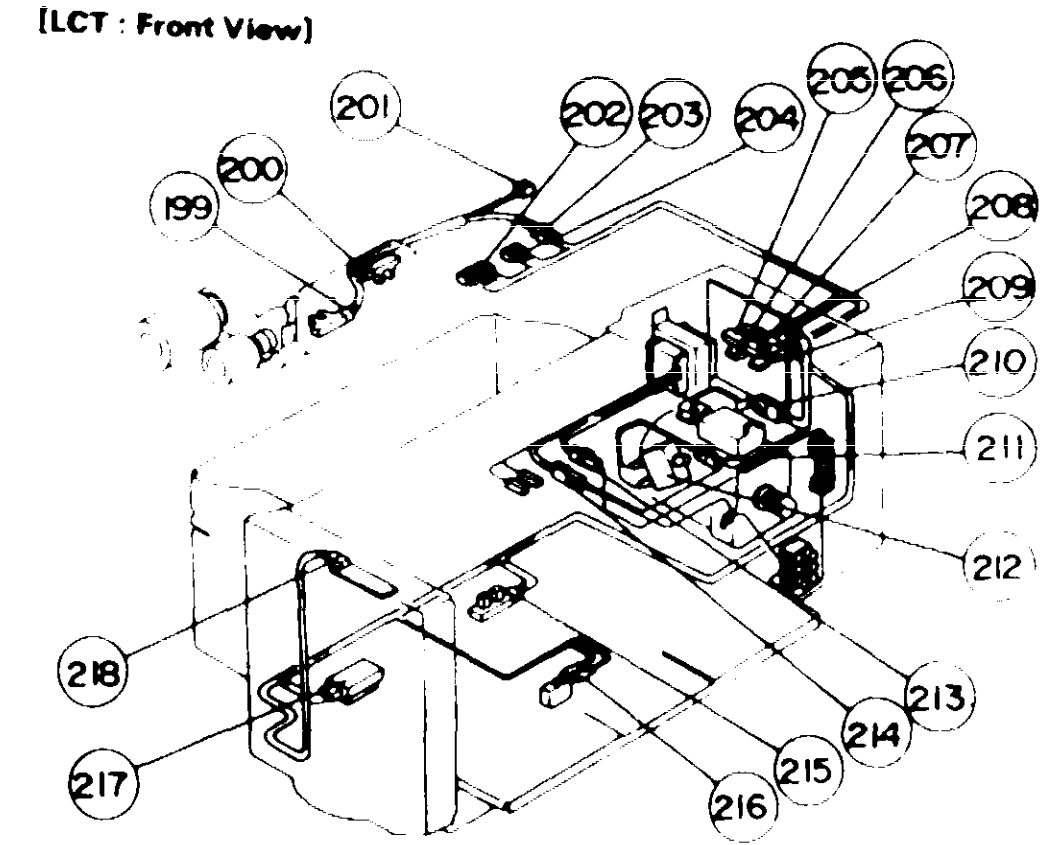
[OPTIONS : Front View]



[Sorter : Rear View]



[LCT : Front View]



CONNECTOR LAYOUT

Index

No	CN No	Component	P to P	Type
1	SW3	Door Safety (ac 1)	E3	
2	SW2	Door Safety (ac 2)	E3	
3	RA1	Main Relay	E2	
4	CN60	Exposure Lamp	E1	2P/W
5	SW1	Main Switch	E4	
6	CN59	Door Safety SW	E3	4P/W
7	CN70	RA2	E2	2P/B
8	CN58	Exhaust Blower	E2	2P/W
9	CN62	Blower Resistor	E2	2P/R
10	CN604	ac Drive Board	D1	2P/W
11	CN603	ac Drive Board	D1	7P/W
12	CN56	Anticondensation Heater	E4	2P/W
13	CN53	Sorter ac Harness	E6	2P/R
14	T18	Main Motor Capacitor	E1	-/W
15	T17	Main Motor Capacitor	E1	-/W
16	CN52	Duplex	C8	2P/W
17	CN65	100V ac (Not Used)	E5	2P/R
18	T1	Noise Filter	E4	-/W
19	T2	Noise Filter	E4	-/W
20	CN54	Main Transformer	E4	4P/W
21	CN1	Power Supply Unit	E3	4P/W
22	CN61	Fusing Lamp	E1	2P/W
23	CN14	Fusing Unit	E1	12P/B
24	CN108	Main Board (ADS)	A3	1P/
25	CN63	Main Motor	E1	3P/W
26	CN66	Drum Heater	E4	2P/W
27	CN64	Vacuum Fan	E2	2P/R
28	CN69	Paper Bank	C8	2P/W
29	CN67	Cooling Blower	E2	2P/W
30	CN10	Duplex	D3	2P/Y
31	CN12	2nd Scanner Motor	C2	8P/W
32	CN5	Scanner Home Sensor	C2	3P/W
33	CN16	Power Pack - T S/PCC	D3	5P/W
34	CN9	Lamp Stabilizer	D2	4P/R
35	CN101	Main Board	A2 A4 D4	50P/B
36	CN102	Main Board	A2 A4 B4 D4	50P/B
37	CN110	Main Board	A1	8P/W
38	CN103	Main Board	A2	6P/W
39	CN408	Optics Board	B2	6P/W
40	CN405	Optics Board	B2	4P/W
41	CN404	Optics Board	B2	2P/W
42	CN403	Optics Board	C2/D2	8P/W
43	CN402	Optics Board	C2/D2	8P/w
44	CN401	Optics Board	D2	6P/W
45	CN77	1st Paper End	B2	3P/B
46	CN38	1st Feed MC	B2	2P/W
47	CN801	Paper Feed Board	A3/B3	13P/W
48	CN807	Paper Feed Board	B3	3P/R
~~49~~	~~CN802~~	~~Paper Feed Board~~	~~B3~~	~~7P/W~~
50	CN803	Paper Feed Board	B3	3P/W
51	CN806	Paper Feed Board	A3 B3	9P/W
52	CN804	Paper Feed Board	A3	7P/Y
53	CN805	Paper Feed Board	B3	3P/Y
54	CN78	2nd Paper End	B3	3P/B
55	CN75	1st Paper Size Sensor	A2	7P/W
56	CN76	2nd Paper Size Sensor	A3	7P/W
57	CN37	Expansion Interface	A4	8P/W
58	CN36	Expansion Interface	A3/A4	8P/W
59	CN79	Copier Relay Sensor	B3	3P/W
60	CN801	3rd Paper Feed Board	A4-B4	9P/W
61	CN802	3rd Paper Feed Board	A4	8P/G
62	CN803	3rd Paper Feed Board	A5	8P/B
63	CN3	Toner Overflow Sensor	D3	3P/W
64	SW4	Door Safety (dc/ppl)	D2	
65	TS2	SW5	D3	/W
66	TS1	SW5	D3	/W
67	CN4	SW4	D2	4P/W
68	CN2	Power Supply Unit	F3	10P/W
69	CN203	Operation Panel Board	C1	8P/W
70	CN202	Operation Panel Board	B1	8P/R
71	CN201	Operation Panel Board	C1	7P/W
72	TS5	RA2	D3	/2
73	TS6	RA2	D3	/2
74	TS3	RA1	D3	/W
75	TS4	RA1	D3	/W
76	CN14	Fusing Unit	D3 E1	12P/B
77	CN601	ac Drive Board	C1	8P/W
78	CN602	ac Drive Board	D1	2P/W
79	CN8	Sorter dc Harness	D6	4P/W
80	CN7	DF dc Harness	E6	4P/W
81	CN13	Lens Motor	D2	8P/Y
82	CN94	2nd Scanner Home	C2	3P/W
83	CN95	Lens Home Sensor	D2	3P/W
84	CN26	ID Sensor	C3	3P/W
85	CN27	Registration Sensor	B2	3P/Y
86	CN22	Power Pack - C/B	C2/D2	10P/W
87	CN21	Erase Lamp	C2	18P/B
88	CN23	Pulse Generator	B2	3P/W
89	CN25	Toner End Sensor	C3	3P/W
90	CN24	Optics Sensor	C2/D2	8P/W
91	CN31	Manual Feed/Color Sensors	A2/B2/C2/C3	10P/W
92	CN49	Encoder	B2	4P/W
93	CN48	Scanner Motor	B2	2P/W
94	CN28	Toner Supply SOL	C3/D3	2P/G
95	CN20	2nd Feed MC	B3	2P/W
96	CN19	Registration MC	B2	2P/G
97	CN32	A3/11"x17" Counter	B3	2P/W
98	CN34	Key Counter	B3	4P/W
99	CN35	PM counter	B3	4P/W
100	CN33	Total Counter	B3	4P/W
101	CN39	Copier Relay MC	B3	2P/R
102	CN18	Pick-off SOL	C3/D3	2P/G
103	CN17	Cleaning SOL	C3/D3	2P/W
104	CN47	Oil End By-pass	D3	2P/
105	DU10	Jogger Home Sensor	B5	3P/W
106	DU9	Jogger Motor	C5	6P/W
107	DU8	Duplex Feed MC	C5	2P/W
108	DU7	Duplex Transport MC	C5	2P/Y
109	DU2	Duplex Motor	C5	2P/W
110	DU4	Junction Gate SOL	C5	2P/B
111	CN52	Duplex	C8	2P/W
112	CN10	Duplex	D3	2P/Y
113	CN802	Interface Board	B4 C4	26P/B
114	DU5	Duplex Tray SOL	B5	2P/B
115	DU11	Duplex Exit Sensor	C4	3P/C
116	CN91	Bank Relay MC	B7	2P/R
117	CN89	5th Paper End	B6	3P/B
118	CN69	Bank ac Harness	C8	2P/W
119	CN84	Expansion Relay MC	B6	2P/R
120	CN82	3rd Feed MC	B6	2P/W
121	CN81	3rd Paper End	B6	3P/B
122	CN86	4th Paper End	B6	3P/B
123	CN87	4th Feed MC	B6	2P/W
124	CN809	3rd Paper Feed Board	B4	3P/R
125	CN808	3rd Paper Feed Board	B4	7P/W
126	CN804	3rd Paper Feed Board	B5	8P/W
127	CN810	3rd Paper Feed Board	B5	2P/Y
128	CN805	3rd Paper Feed Board	A5	8P/G
129	CN811	3rd Paper Feed Board	A5	4P/W
130	CN806	3rd Paper Feed Board	A5	8P/B
131	CN812	3rd Paper Feed Board	B6	5P/R
132	CN807	3rd Paper Feed Board	B5	2P/W
133	CN969	Paper Bank Board	B7	6P/Y
134	CN968	Paper Bank Board	B6	4P/W
135	CN967	Paper Bank Board	B6 B7	3P/R
136	CN966	Paper Bank Board	B6	7P/W
137	CN962	Paper Bank Board	A6	8P/G
138	CN961	Paper Bank Board	B6	8P/W
139	CN963	Paper Bank Board	A6	8P/B
140	CN964	Paper Bank Board	B6	8P/Y
141	CN965	Paper Bank Board	B6	7P/Y
142	CN80	3rd Paper Size Sensor	B4	7P/W
143	CN83	Expansion Relay Sensor	B6	3P/W
144	SW8	Expansion Door Safety	B6	
145	CN93	Bank Relay Sensor	B7	3P/R
146	CN85	4th Paper Size Sensor	B6	7P/W
147	CN92	Bank Relay Sensor	B7	3P/W
148	SW7	Bank Safety	B6 B7	
149	CN88	5th Paper Size Sensor	B6	7P/W
150	CN71	Paper Bank Motor	B6	2P/W
151	CN90	5th Feed MC	B6	2P/W
152	CN72	Bank ac Harness	C8	7P/W
153	SW6	Duplex Safety	D6 D3	
154	DU14	Duplex Paper Sensor	C5	3P/B
155	DU15	Positioning Roller SOL	C5	2P/W
156	DU13	Entrance Sensor	C5	3P/W
157	DF213	Feed-out Motor	D8	2P/G
158	SW10	Lift Switch	E6	
159	DF107	DF Interface Harness	E6	1P/B
160	DF108	DF Interface Harness	E6	1P/T
161	DF101	DF Main Board	E6	5P/W
162	DF104	DF Main Board	C8	20P/B
163	DF103	DF Main Board	D8	4P/W
164	DF102	DF Main Board	D8	2P/W
165	DF211	Belt Drive Motor	D8	2P/W
166	DF212	Motor Encoder	D8	4P/W
167	DF210	Registration SOL	C8	3P/R
168	DF208	Roller Release SOL	D8	2P/R
169	DF209	Pick-up SOL	C8	2P/W
170	DF207	Stopper SOL	C8	3P/W
171	DF201	Indicator Board	C7	15P/W
172	DF202	Indicator Board	C7	8P/W
173	DF206	Feed-in Motor	C8	2P/W
174	DF205	Original Sensor	C8	3P/W
175	DF204	Original Size Entrance Sensor	C8	4P/W
176	DF203	Registration Sensor	D8	3P/W
177	DF105	DF Main Board	D8	30P/B
178	DF216	Registration Sensor	D8	3P/W
179	DF217	Original Size/Entrance Sensor	C8	4P/W
180	DF214	Exit Sensor	D8	3P/W
181	CN7	DF dc Harness	E6	4P/W
182	CN807	Main Board	D4	1P/B
183	CN808	Main Board	D4	1P/T
184	S101	Sorter Control Board	D6	2P/W
185	S103	Sorter Control Board	D4 D5	12P/R
186	S104	Sorter Control Board	D6	15P/W
187	S2	Cover Safety Switch (SW8)	D4	
188	S1	Cover Safety Switch (SW9)	D4	
189	S118	Paper Sensor	D4	3P/W
190	S117	Wheel Drive Motor	D5	3P/W
191	S115	Roller Drive Motor	D5	2P/W
192	S113	Home Position Sensor	D5	3P/W
193	S111	Wheel Sensor	D4	3P/W
194	S114	Relay Drive Motor	D5	2P/W
195	CN804	Sorter Interface Harness	D4	11P/W
196	CN8	Sorter dc Harness	D6	4P/W
197	CN53	Sorter ac Harness	E6	2P/R
198	S102	Sorter Control Board	D6	3P/W
199	LT14	Upper Limit Sensor	A6	3P/W
200	LT15	Tray Paper Sensor	A7	3P/B
201	LT12	Tray Paper End Sensor	B7	3P/R
202	LT11	Tray Interface Harness	B6	7P/W
203	LT13	Upper Limit Sensor	A6	3P/W
204	LT10	Tray Interface Harness	A5 B6	4P/W
205	LT4	Tray Board	A6	8P/W
206	LT2	Tray Board	A6	3P/R
207	LT3	Tray Board	A6 A7	7P/W
208	LT5	Tray Board	A7	4P/W
209	LT1	Tray Board	A6	7P/R
210	LT6	Tray Drive Motor	A7	3P/W
211	LT9	Cover Safety Switch	A7	2P/R
212	SW11	Cover Safety Switch	A7	
213	LT8	Transformer	A7	1P/W
214	LT7	Transformer	A7	2P/W
215	LT17	Down Sensor	A6	3P/W
216	SW12	Positioning Switch	A6	
217	LT16	Tray Paper Size Sensor	A6 A7	7P/W
218	LT18	Tray Operation Board	A6	4P/W

CONNECTOR LAYOUT

CN No	P to P	Type	Index No
CN1	E3	4P/W	21
CN2	E3	10P/W	68
CN3	D3	3P/W	63
CN4	D2	4P/W	67
CN5	C2	3P/W	32
CN7	E6	4P/W	80/181
CN8	D6	4P/W	79/196
CN9	D2	4P/R	34
CN10	D3	2P/Y	30/112
CN12	C2	8P/W	31
CN13	D2	8P/Y	81
CN14	D3/E1	12P/B	23/76
CN16	D3	5P/W	33
CN17	C3/D3	2P/W	103
CN18	C3/D3	2P/G	102
CN19	B2	2P/G	96
CN20	B3	2P/W	95
CN21	C2	18P/B	87
CN22	C2/D2	10P/W	86
CN23	B2	3P/W	88
CN24	C2/D2	8P/W	90
CN25	C3	3P/W	89
CN26	C3	3P/W	84
CN27	B2	3P/Y	85
CN28	C3/D3	2P/C	94
CN31	A2/B2 C2/C3	10P/W	91
CN32	B3	2P/W	97
CN33	B3	4P/W	100
CN34	B3	4P/W	98
CN35	B3	4P/W	99
CN36	A3 A4	8P/W	58
CN37	A4	8P/W	57
CN38	B2	2P/W	46
CN39	B3	2P/R	101
CN47	D3	2P/	104
CN48	B2	2P/W	93
CN49	B2	4P/W	92
CN52	C8	2P/W	16/111
CN53	E6	2P/R	13/197
CN54	E4	4P/W	20
CN56	E4	2P/W	12
CN58	E2	2P/W	8
CN59	E3	4P/W	6
CN60	E1	2P/W	4
CN61	F1	2P/W	22
CN62	E2	2P/R	9
CN63	E1	3P/W	25
CN64	E2	2P/R	27
CN66	E4	2P/W	26
CN65	E5	2P/R	17
CN67	E2	2P/W	29
CN69	C8	2P/W	28/118
CN70	E2	2P/B	7
CN71	B6	2P/W	150
CN72	C8	2P/W	152
CN75	A2	7P/W	55
CN76	A3	7P/W	56
CN77	B2	3P/B	45
CN78	B3	3P/B	54
CN79	B3	3P/W	59
CN80	B4	7P/W	142
CN81	B6	3P/B	121
CN82	B6	2P/W	120
CN83	B6	3P/W	143
CN84	B6	2P/R	119
CN85	B6	7P/W	146
CN86	B6	3P/B	122
CN87	B6	2P/W	123
CN88	B6	7P/W	149
CN89	B6	3P/B	117
CN90	B6	2P/W	151
CN91	B7	2P/R	116
CN92	B7	3P/W	147
CN93	B7	3P/R	145
CN94	C2	3P/W	82
CN95	D2	3P/W	83
CN101	A2 A4 D4	50P/B	35
CN102	A2 A4 B4 D4	50P/B	36
CN103	A2	6P/W	38
CN108	A3	1P	24
CN110	A1	8P/W	37
CN201	C1	7P/W	71
CN202	B1	8P/R	70
CN203	C1	8P/W	69
CN401	D2	6P/W	44
CN402	C2/D2	8P/w	43
CN403	C2/D2	8P/W	42
CN404	B2	2P/W	41
CN405	B2	4P/W	40
CN408	B2	6P/W	39
CN601	C1	8P/W	77
CN602	D1	2P/W	78
CN603	D1	7P/W	11
CN604	D1	2P/W	10
CN801	A3/B3	13P/W	47
CN802	B3	7P/W	48
CN803	B3	3P/W	50
CN804	A3	7P/Y	52
CN805	B3	3P/Y	53
CN806	A3 B3	9P/W	51
CN807	B3	3P/R	48
CN802	B4 C4	26P/B	113
CN804	D4	11P/W	195
CN808	D4	1P/T	183
CN807	D4	1P/R	182
~~CN801~~	~~A4 B4~~	9P/W	60
CN802	A4	8P/G	61
CN803	A5	8P/R	62
CN804	B5	8P/W	126
CN805	A5	8P/	128
CN806	A5	8P/B	130
CN807	B5	2P/W	132
CN808	B4	7P/W	125
CN809	B4	3P/R	124
CN810	B5	2P/Y	127
CN811	A5	4P/W	129
CN812	B6	5P/R	131
CN961	B6	8P/W	138
CN962	A6	8P/G	137
CN963	A6	8P/B	139
CN964	B6	8P/Y	140
CN965	B6	7P/Y	141
CN966	B6	7P/W	136
CN967	B6 B7	3P/R	135
CN968	B6	4P/W	134
CN969	B7	6P/Y	133
DF101	E6	5P/W	161
DF102	D8	2P/W	164
DF103	D8	4P/W	163
DF104	C8	20P/B	162
DF105	D8	30P/B	177
DF108	E6	1P/T	160
DF107	E6	1P/B	159
DF201	C7	15P/W	171
DF202	C7	8P/W	172
DF203	D8	3P/W	176
DF204	C8	4P/W	175
DF205	C8	3P/W	174
DF206	C8	2P/W	173
DF207	C8	3P/W	170
DF208	D8	2P/R	168
DF209	C8	2P/W	169
DF210	C8	3P/R	167
DF211	D8	2P/W	165
DF212	D8	4P/W	166
DF213	D8	2P/G	157
DF214	D8	3P/W	180
DF216	D8	3P/W	178
DF217	C8	4P/W	179
DU2	C5	2P/W	109
DU4	C5	2P/B	110
DU5	B5	2P/B	114
DU7	C5	2P/Y	108
DU8	C5	2P/W	107
DU9	C5	6P/W	106
DU10	B5	3P/W	105
DU11	C4	3P/C	115
DU13	C5	3P/W	156
DU14	C5	3P/B	154
DU15	C5	2P/W	155
LT1	A6	7P/R	209
LT2	A6	3P/R	206
LT3	A6 A7	7P/W	207
LT4	A6	8P/W	205
LT5	A7	4P/W	208
LT6	A7	3P/W	210
LT7	A7	2P/W	214
LT8	A7	1P/W	213
LT9	A7	2P/R	211
LT11	B6	7P/W	202
LT12	B7	3P/R	201
LT13	A6	3P/W	203
LT14	A6	3P/W	199
LT15	A7	3P/B	200
LT16	A6 A7	7P/W	217
LT17	A6	3P/W	215
LT18	A6	4P/W	218
LT10	A5 B6	4P/W	204
RA1	E2		3
S1	D4		188
S2	D4		187
S101	D6	2P/W	184
S102	D6	3P/W	198
S103	D4 D5	12P/R	185
S104	D6	15P/W	186
S111	D4	3P/W	193
S113	D5	3P/W	192
S114	D5	2P/W	194
S115	D5	2P/W	191
S118	D4	3P/W	189
S117	D5	3P/W	190
SW1	E4		5
SW2	E3		2
SW3	E3		1
SW4	D2		64
SW6	D6/D3		153
SW7	B6/B7		148
SW8	B6		144
SW10	E6		158
SW11	A7		212
SW12	A6		216
T1	E4	-/W	18
T2	E4	-/W	19
T17	E1	-/W	15
T18	E1	-/W	14
TS1	D3	-/W	66
TS2	D3	-/W	65
TS3	D3	-/W	74
TS4	D3	-/W	75
TS5	D3	/	72
TS6	D3	/	73

TEST PINS

Main Board

TP101	Clear RAM data (user program)
TP102	"
TP103	GND
TP104	+5 V (VC)
TP105	ID sensor output
TP106	(factory use)
TP107	+ aux battery (3 V)
TP108	− aux battery (0 V)
TP109	(factory use)
TP110	Auto ID input
TP112	GND
TP113	+24 V (VA)

Interface Board

TP801	+5 V (VC)
TP802	+24 V (VA)
TP803	GND

DF Main Board

TP101	GND
TP102	+24 V (VA)
TP103	+12 V (Power for motor control IC)
TP104	+5 V (VC)
TP105	Belt drive motor encoder pulse (t = 0.24 ms)

VR List

Main Board

VR101	ID sensor adjustment (Vsg = +4.0 ± 0.2 V)
VR102	AID input adjustment (+3.0 ± 0.06 V)

Optics Board

DGS401	Registration adjustment (0 ± 2 mm) (1mm/step)

Operation Panel Board

VR201	Exposure lamp voltage adjustment (max. +79 V at Level 4)

DF Main Board

VR101	Registration adjustment (0 ± 2.5 mm : DF only)
VR103	Belt drive motor speed adjustment (2500 rpm ± 30 rpm)
VR104	Original entrance sensor output (IC116-5 > +8 V : with paper) (IC116-5 < +4 V : without paper)
VR105	Original width sensor output (IC116-7 > +8 V : with paper) (IC116-7 < +4 V : without paper)

LED List

Main Board

LED101	+5 V (VC)
LED102	+24 V (VA)

DF Main Board

LED101	Original sensor
LED102	Exit sensor
LED103	Original width sensor
LED104	Lift switch
LED105	Registration sensor
LED106	Original entrance sensor

DIP SW TABLE

Main Board

DIP SW	Normal	Function
101-1	OFF	Free Run
-2	OFF	Jam Detection Disable
-3	OFF	Fusing Idling
-4	OFF	Color Toner Darker
-5	OFF	Feed Station Priority (ON: 1st, OFF: LCT)
-6	OFF	Auto Cassette Shift Disable
-7	OFF	ID Sensor LED ON
-8	OFF	ID Control Mode Priority (ON: Manual, OFF: Auto)
102-1	OFF	Toner Supply Mode (ON: Fixed, OFF: Detect)
-2	OFF	Monitor (See Note 1)
-3	ON	Toner Supply Amount (Note 2)
-4	OFF	Toner Supply Amount (Note 2)
-5	OFF	Image Density Adjustment
-6	ON	Image Density Adjustment (See Note 3)
-7	OFF	Bias Change (+90V: Image Lighter)
-8	OFF	Not Used

Optics Board

DIP SW	Normal	Function
401-1	OFF	Optics Free Run
-2	- - -	Magnification Adjustment
-3	- - -	Magnification Adjustment
-4	- - -	Magnification Adjustment (0.2%/Step)
-5	- - -	Lead Edge Margin Adjustment
-6	- - -	Lead Edge Margin Adjustment
-7	- - -	Lead Edge Margin Adjustment (0.8mm/Step)
-8	OFF	Not Used

Operation Panel

DIP SW	Normal	Function
201-1	OFF	Drum Conditioning
-2	OFF	Auto Reset Disable
-3	OFF	Auto Reset Time Select (ON: 3 min., OFF: 1 min.)
-4	OFF	Copy Counter Count UP/Down (ON: Down, OFF: UP)
-5	OFF	Maximum Reproduction Ratio (ON: 200%, OFF: 155%)
-6	OFF	Beeper Sound Disable
-7	OFF	All Indicators ON
-8	OFF	Monitor (See Note 4)

DF Main Board

DIP SW 101				Function
−1	−2	−3	−4	
ON	OFF	OFF	OFF	Normal Mode
ON	OFF	OFF	ON	Free Run
ON	ON	OFF	ON	Belt Speed Adjustment (VR103)
ON	ON	ON	ON	All Indicators ON

Interface Board

DIP SW	Normal	Function
801-1	OFF	Duplex Mode
-2	OFF	10 Bin Sorter
-3	OFF	20 Bin Sorter
-4	OFF	DF Mode Priority (ON: SADF, OFF: ADF)
-5	OFF	Duplex Feed Start Timing (According to Decal)
-6	OFF	APS and AR/E Function Enable in ADF Mode

Note 1: DIP SW 101-2

Monitor	1	2	3	Hold Down
Vsp	= ◢	1	= ◢	
Vsg	= ◢	1	= ◢	#
Bias Voltage	= ◢	1	= ◢	0
ID Sensor Input	= ◢	2	= ◢	
Auto ID Data	= ◢	3	= ◢	
Auto ID Input	= ◢	4	= ◢	
Drum Temperature	= ◢	5	= ◢	

Note 2: DIP SW 102-3,4

102-3	102-4	Detect Mode	Fixed Mode
OFF	OFF	15%	3.5%
ON	OFF	30%	7%
OFF	ON	45%	10.5%
ON	ON	60%	14%

Note 3: DIP SW 102-5,6

102-5	102-6	Image Density
OFF	OFF	Light (Less Toner)
ON	OFF	Lighter (Least Toner)
OFF	ON	Normal
ON	ON	Dark (More Toner)

Note 4: DIP SW 201-8

Monitor	10 key	Recall key
Exposure Lamp Voltage	1	#
Fusing Temperature	2	#
Exposure Lamp ON/OFF (ON/OFF by Start key)	4	#

SELF DIAGNOSTIC CODES

Code	Problem
11	Exposure Lamp Malfunction
12	Lamp Relay Open
21	Scanner Home Position Not ON
22	Scanner Home Position Not OFF
23	No Registration Start Signal
24	No Home Position Signal
25	Scanner Motor Failure
28	Lens Home Position Not ON
29	Lens Home Position Not OFF
2A	2nd Scanner Home Position Not ON
2b	2nd Scanner Home Position Not OFF
2C	High Frequency Encoder Output
2d	Low Frequency Encoder Output
2E	No Encoder Pulse
31	Drum Thermistor Blown
52	Thermofuse Blown
53	Fusing Thermistor Blown
54	Ready Signal Not ON
55	Fusing Overheat
61	Pulse Generator Malfunction
81	Jogger Home Position Not ON
82	Jogger Home Position Not OFF
91	Total Counter Malfunction
93	Optics/Main Board Interface Malfunction
94	Operation Panel/Main Board Interface Malfunction

SECTION 8

P.M. TABLE

PREVENTIVE MAINTENANCE SCHEDULE
RICOH FT5000 / 5010 / 5520 / DF34 / DF38 / DF39 / RT14 / RT15 / AD100 / AD110 / CS2050 / CS2070

Preventive Maintenance Service Key CK = Check LUB = Lubricate ADJ = Adjust CLN = Clean REPL = Replace

1 Corona Units

		IM	60K	120K	SPECIAL NOTES
A	CORONA WIRES	CK/CLN	REPL	REPL	PG 5-80 CLEAN WITH ALCOHOL AND SOFT CLOTH
B	END BLOCKS AND CASINGS	CLN	CLN		PG 5-80 CLEAN WITH SOFT DRY CLOTH
C	WIRE CLEANER		REPL		PG 5-80

2 Optics

		IM	60K	120K	SPECIAL NOTES
A	MIRRORS LENS REFLECTORS TONER SHIELD GLASS ID SENSOR PATTERN	CLN	CLN		CLEAN WITH SOFT CLOTH ALCOHOL THEN WATER
B	EXPOSURE LAMP			REPL	PG 5-17 CHECK LAMP POSITION ADJUSTMENT DO NOT TOUCH WITH FINGERS CLEAN WITH ALCOHOL THEN WATER
C	EXPOSURE GLASS	CLN	CLN		CLEAN WITH ALCOHOL THEN WATER
D	SCANNER GUIDE ROD AND PLATE		CLN/LUB		LUBRICATE WITH LAUNA OR EQUIVALENT OIL
E	GUIDE ROD FELT		LUB		LUBRICATE WITH LAUNA OR EQUIVALENT OIL
F	LENS DRIVE SCREW SHAFT		CLN		CLEAN WITH DRY CLOTH **DO NOT** LUBRICATE
G	ADS CABLE ENDS	CLN	CLN	CLN	CLEAN WITH SOFT CLOTH

3 Development Unit

		IM	60K	120K	SPECIAL NOTES
A	DEVELOPER		REPL		PG 5-32 DISPOSE OF DEVELOPER IN ACCORDANCE WITH LOCAL REGULATIONS
B	SEALS		CLN		VACUUM
C	DEVELOPMENT UNIT GUIDE	CLN	CLN		CLEAN WITH SOFT DRY CLOTH
D	TONER SUPPLY CLUTCH			CLN/LUB	PG 5-39 LUBRICATE WITH MOBIL TEMP 78
E	DEVELOPMENT ROLLER GEAR		CLN/LUB	CLN/LUB	RICOH G-501 GREASE
F	DEVELOPMENT DRIVE GEAR			CLN/LUB	MOBIL TEMP 78
G	FILTER CASING	CLN	CLN	CLN	VACUUM

4 Cleaning Unit

		IM	60K	120K	SPECIAL NOTES
A	CLEANING BRUSH		REPL	REPL	PG 5-46 DUST WITH SETTING POWDER
B	CLEANING SEALS		CLN		VACUUM
C	CLEANING UNIT HOUSING		CLN		VACUUM THOROUGHLY
D	PICK-OFF PAWLS	CLN	CLN		PG 5-49 REPLACE IF NECESSARY
E	BLADE SCRAPER		CLN		PG 5-47 REPLACE IF NECESSARY
F	CLEANING BLADE				SEE MISCELLANEOUS
G	TONER COLLECTION BOTTLE	CLN	CLN		
H	CLEANING COIL GEAR		LUB		RICOH G-501 GREASE

5. Paper Transport

		IM	60K	120K	SPECIAL NOTES
A	PAPER FEED ROLLER	CLN		REPL	PG 5-56 CLEAN WITH WATER
B	FRICTION PAD	CLN		REPL	PG 5-56 CLEAN WITH WATER
C	PAPER FEED GUIDE PLATE		CLN		CLEAN WITH SOFT DRY CLOTH
D	REGISTRATION SENSOR		CLN		PG 5-59 CLEAN WITH SOFT CLOTH OR BLOWER BRUSH
E	CASSETTE BOTTOM PLATE PAD		CLN		CLEAN WITH ALCOHOL AND WATER
F	TRANSPORT BELT		CLN		CLEAN WITH ALCOHOL AND WATER
G	FRICTION PAD BRACKET SWIVEL		CLN/LUB		MOBIL TEMP 78
H	PAPER FEED CLUTCH/REG. CLUTCH			CLN	CLEAN WITH ALCOHOL
I	PAPER FEED GEARS			CLN/LUB	RICOH G-501 GREASE

6. Fusing Unit

		IM	60K	120K	SPECIAL NOTES
A	HOT ROLLER		CLN	REPL	PG 5-64 BE CAREFUL NOT TO DAMAGE THERMISTOR
B	PRESSURE ROLLER		CLN	REPL	PG 5-66 CHECK PRESSURE SPRING ADJUSTMENT PG 5-7-6
C	STRIPPER PAWLS	CLN	CLN		PG 5-67 REPLACE IF NECESSARY
D	OIL SUPPLY PAD		REPL		PG 5-63 PRIME WITH SILICONE OIL
E	OIL BLADE		CLN	REPL	PG 5-63 AFTER CLEANING OR REPLACEMENT PRIME WITH SILICONE OIL
F	OIL SUMP		CLN		
G	FUSING ENTRANCE AND EXIT GUIDE		CLN		CLEAN WITH ALCOHOL OR WATER
H	OIL TANK		CLN	CLN	REMOVE PAPER CLAY WITH PIPETTE
I	HOT ROLLER GEAR AND FUSING DRIVE GEAR			LUB	MOBIL TEMP 78
J	EXIT ROLLERS AND BUSHINGS		CLN/LUB	CLN/LUB	MOBIL TEMP 78

7 Miscellaneous

		IM	60K	120K	SPECIAL NOTES
A	DRUM AND CLEANING BLADE		CK/CLN	CK/CLN	PG 5-45 REPLACE AS NECESSARY AS A SET AND DUST WITH SETTING POWDER (SUGGESTED RICOH DRUM CARE PROCEDURE)
B	ERASE LAMP UNIT		CLN	CLN	CLEAN WITH SOFT DRY CLOTH
C	LAMP FILTERS	CLN	CLN	CLN	PG 5-52 CLEAN WITH SOFT DRY CLOTH
D	DEVELOPMENT DRIVE GEAR		LUB	LUB	RICOH G-501 GREASE
E	MAIN DRIVE CHAIN			LUB	LUBRICATE WITH LAUNA OR EQUIVALENT OIL
F	BUSHINGS			CLN/LUB	LUBRICATE WITH LAUNA OR EQUIVALENT OIL
G	IMAGE DENSITY SENSOR	CK/CLN	CK/CLN	CK/CLN	PG 5-34 & 35 CLEAN WITH SOFT DRY CLOTH OR BLOWER BRUSH ADJUST IF NECESSARY
H	PLASTIC GEARS			LUB	RICOH G-501 GREASE

CONTINUED

8. AD100 / AD110

	IM	60K	120K	180K	240K	SPECIAL NOTES
A. POSITIONING ROLLER BELT					REPL	PG. 5-100 CLEAN WITH WATER
B. POSITIONING ROLLER	CLN	CLN	CLN	CLN	CLN	PG. 5-100
C. DUPLEX CAM CLUTCH			LUB		LUB	PG. 5-9-3 LUBRICATE WITH MOBIL TEMP 78
D. DUPLEX FEED ROLLER	CLN				REPL	PG. 5-101 CLEAN WITH WATER
E. DUPLEX FRICTION PAD	CLN				REPL	PG. 5-101
F. DUPLEX FEED AND TRANSPORT CLUTCH			CLN		CLN	CLEAN WITH ALCOHOL
G. DUPLEX TRANSPORT AND DRIVE CHAIN				LUB		RICOH G-501 GREASE

9. DF 34 / DF38 / DF39

	IM	60K	120K	SPECIAL NOTES
A. BELT	CLN	CLN		CLEAN WITH RICOH BELT CLEANER
B. PICK-UP ROLLER	CLN	CLN		CLEAN WITH WATER
C. FEED ROLLER	CLN	CLN		CLEAN WITH WATER
D. FRICTION ROLLER	CLN	CLN		CLEAN WITH WATER
E. SENSORS	CLN	CLN		CLEAN WITH SOFT DRY CLOTH OR BLOWER BRUSH

10. RT14 / RT15

	IM	60K	120K	SPECIAL NOTES
A. PICK-UP ROLLER	CLN		REPL	CLEAN WITH WATER
B. PICK-UP DRIVE BELT		CK	CK	

11. CS2050 / CS2070

	IM	60K	120K	180K	SPECIAL NOTES
A. EXIT ROLLERS	CLN	CLN	CLN		CLEAN WITH WATER
B. ROLLER DRIVE BELT				REPL	
C. SLOT LINERS				LUB	
D. TRANSFER WHEELS				LUB	

12. Final Check

A. MACHINE OPERATION (ALL MODES)
B. COPY QUALITY
C. REGISTRATION (MACHINE AND D.F.) PG. 5-79 AND 5-124

13. P.M. Completion

A. INSTALL ALL COVERS AND CLEAN EXTERIOR OF COPIER
B. UPDATE P.M. LABEL
C. COMPLETE INFORMATION BELOW

CUSTOMER NAME _____ DATE _____

CUSTOMER ADDRESS _____

_____

MACHINE SERIAL NO. _____ METER READING _____

TECHNICAL REPRESENTATIVE _____

CUSTOMER'S SIGNATURE _____

SECTION 9

ADJUSTMENT TABLES

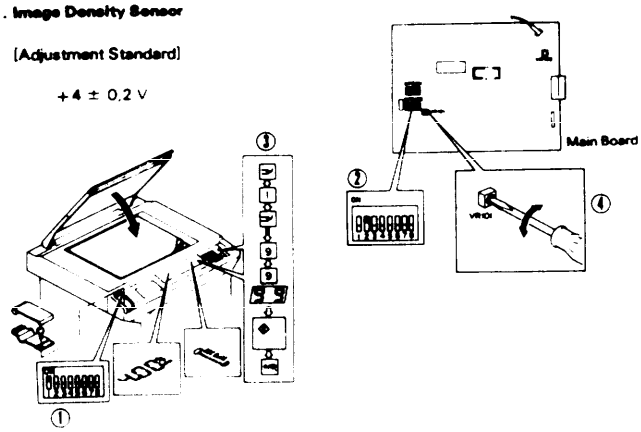
ADJUSTMENT TABLE

Copier

1. Image Density Sensor

[Adjustment Standard]

+4 ± 0.2 V

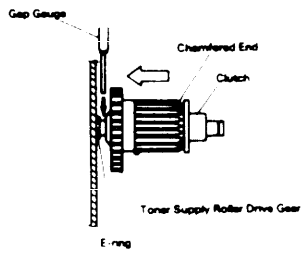


2. Toner Supply Clutch

[Adjustment Standard]

0.1 mm (0.004")

Use gap gauge (P/N 52059101)
Lubricate with Mobil Temp 78 (P/N 54479078)

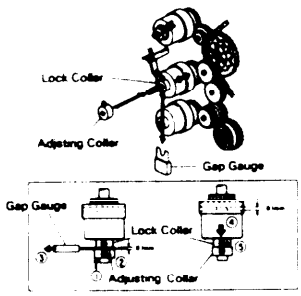


3. Feed Clutches

[Adjustment Standard]

0.1 mm (0.004")

Use gap gauge (P/N 52059101)

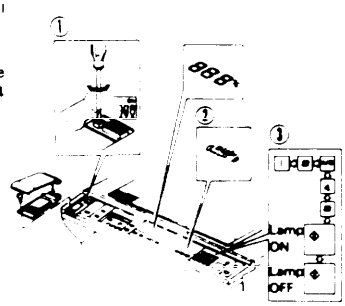


1. Push
2. Tighten
3. Remove Gap Gauge
4. Pull
5. Tighten

4. Light Intensity

[Adjustment Standard]
Level 2 of the gray scale on the OS-A3 chart should be slightly visible on the copy when the density control is set at the 4th level

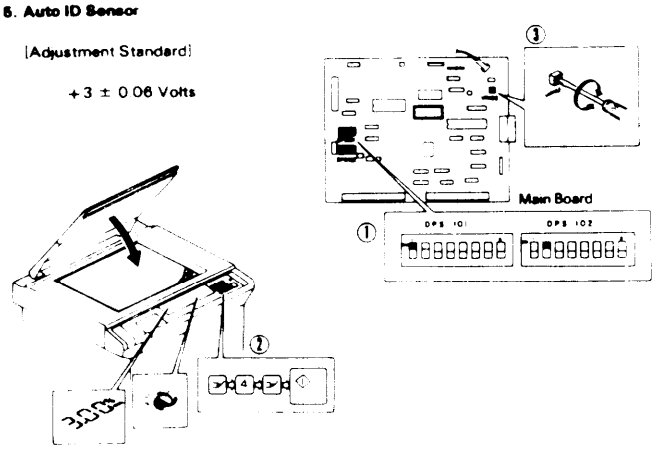
Check the lamp voltage through the CPU. The voltage at the ID level 4 should not be more than 7.9 V



5. Auto ID Sensor

[Adjustment Standard]

+3 ± 0.06 Volts

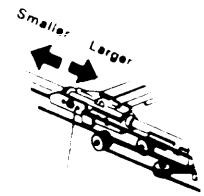


6. Horizontal Magnification

[Adjustment Standard]

± 0.5% (Full Size)

Position the wire clamp position and check copy image
Repeat until correct



7. Vertical Magnification

[Adjustment Standard]

± 1%

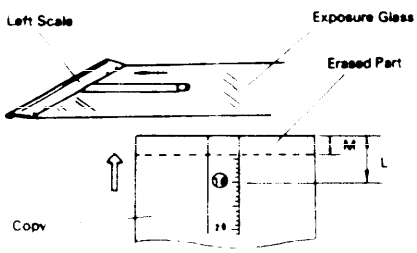
Use DIP SW401-2, 3 and 4

8. Lead Edge Blank Margin

[Adjustment Standard]

M = 3.5 ± 2.5 mm

Use DIP SW401-5, 6 and 7

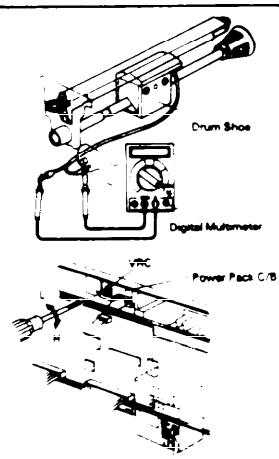


9. Charge Corona Current

[Optimum Adjusting Value]

+48.8 ± 0.4 μA

(Turn on SW8 on the switching board.)



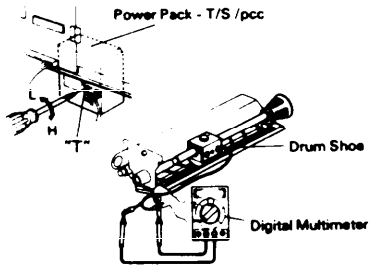
ADJUSTMENT TABLE

10. Transfer Corona Current

[Optimum Adjusting Value]

+20.0 ± 0.5 μA

(Turn on SW3 on the switching board.)

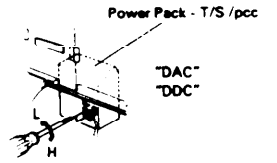


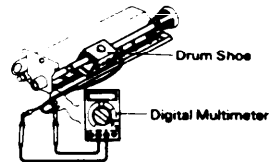
11. Separation Corona Current

[Optimum Adjusting Value]

ac 42.9 ± 1.5 μA
dc −3.5 ± 0.9 μA

(Turn on SW4 on the switching board.)





Duplex

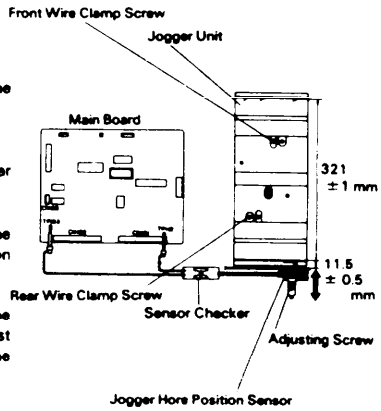
12. Jogger Home Position

1) Position the rear jogger fence 11.5 ± 0.5 mm from the jogger rear plate

2) Position the front jogger fence 321 ± 1 mm from the rear jogger fence

3) Move the sensor toward the actuator plate until the LED on the sensor checker turns off.

4) Move the sensor away from the actuator plate until the LED just lights. At this point tighten the adjusting screw.



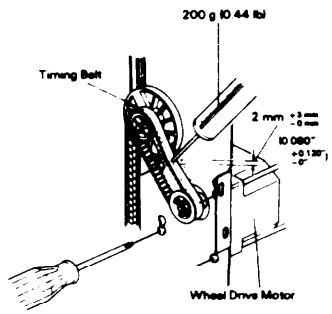
Sorter

13. Timing Belt Tension

[Adjustment Standard]

2mm $^{+3\ mm}_{-0\ mm}$ (0.080" $^{+0.120"}_{-0"}$)

Deflection at 200 g (0.44 lb) pressure



DF

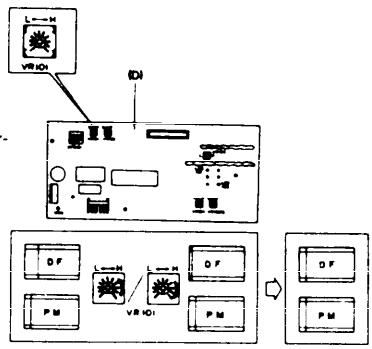
14. Lead Edge Registration

[Adjustment Standard]

PM > DF: Turn VR101 Clockwise

PM < DF: Turn VR101 Counter-clockwise

Note: PM = Platen Mode
DF = DF Mode

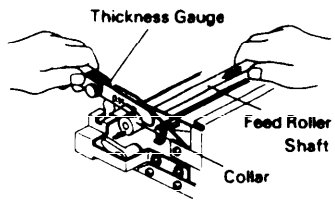


15. Feed Roller Position

[Adjustment Standard]

0.15 mm (0.060")

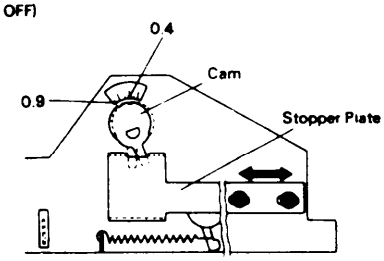
Use a thickness gauge.



16. Stopper Plate Positioning

[Adjustment Standard]

0.4 mm (Release Sol. ON)
0.9 ± 0.1mm (Release Sol. OFF)



17. DF Belt Drive Motor Speed

[Adjustment Standard]

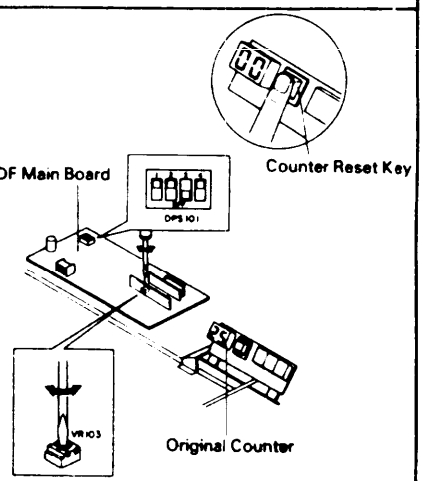
2500 ± 30 rpm

(Example)

Motor Speed = 2500 rpm

Counter reset key pressed
: 00 displayed

Counter reset key not pressed
: 25 displayed



TEST PINS

Main Board

TP101	Clear RAM data (user program)
TP102	〃
TP103	GND
TP104	+ 5 V (VC)
TP105	ID sensor output
TP106	(factory use)
TP107	+ aux battery (3 V)
TP108	− aux battery (0 V)
TP109	(factory use)
TP110	Auto ID input
TP112	GND
TP113	+ 24 V (VA)

Interface Board

TP801	+ 5 V (VC)
TP802	+ 24 V (VA)
TP803	GND

DF Main Board

TP101	GND
TP102	+ 24 V (VA)
TP103	+ 12 V (Power for motor control IC)
TP104	+ 5 V (VC)
TP105	Belt drive motor encoder pulse (t = 0.24 ms)

VR List

Main Board

VR101	ID sensor adjustment (Vsg = + 4.0 ± 0.2 V)
VR102	AID input adjustment (+ 3.0 ± 0.06 V)

Optics Board

DGS401	Registration adjustment (0 ± 2 mm) (1 mm/step)

Operation Panel Board

VR201	Exposure lamp voltage adjustment (max. + 7.9 V at Level 4)

DF Main Board

VR101	Registration adjustment (0 ± 2.5 mm DF only)
VR103	Belt drive motor speed adjustment (2500 rpm ± 30 rpm)
VR104	Original entrance sensor output (IC116-5 > + 8 V with paper) (IC116-5 < + 4 V without paper)
VR105	Original width sensor output (IC116-7 > + 8 V with paper) (IC116-7 < + 4 V without paper)

LED List

Main Board

LED101	+ 5 V (VC)
LED102	+ 24 V (VA)

DF Main Board

LED101	Original sensor
LED102	Exit sensor
LED103	Original width sensor
LED104	Lift switch
LED105	Registration sensor
LED106	Original entrance sensor

DIP SW TABLE

Main Board

DIP SW	Normal	Function
101-1	OFF	Free Run
-2	OFF	Jam Detection Disable
-3	OFF	Fusing Idling
-4	OFF	Color Toner Darker
-5	OFF	Feed Station Priority (ON: 1st, OFF: LCT)
-6	OFF	Auto Cassette Shift Disable
-7	OFF	ID Sensor LED ON
-8	OFF	ID Control Mode Priority (ON: Manual, OFF: Auto)
102-1	OFF	Toner Supply Mode (ON: Fixed, OFF: Detect)
-2	OFF	Monitor (See Note 1)
-3	ON	Toner Supply Amount (Note 2)
-4	OFF	Toner Supply Amount (Note 2)
-5	OFF	Image Density Adjustment
-6	ON	Image Density Adjustment (See Note 3)
-7	OFF	Bias Change (+ 90V: Image Lighter)
-8	OFF	Not Used

Optics Board

DIP SW	Normal	Function
401-1	OFF	Optics Free Run
-2	- - -	Magnification Adjustment
-3	- - -	Magnification Adjustment
-4	- - -	Magnification Adjustment (0.2%/Step)
-5	- - -	Lead Edge Margin Adjustment
-6	- - -	Lead Edge Margin Adjustment
-7	- - -	Lead Edge Margin Adjustment (0.8mm/Step)
-8	OFF	Not Used

Operation Panel

DIP SW	Normal	Function
201-1	OFF	Drum Conditioning
-2	OFF	Auto Reset Disable
-3	OFF	Auto Reset Time Select (ON: 3 min., OFF: 1 min.)
-4	OFF	Copy Counter Count UP/Down (ON: Down, OFF: UP)
-5	OFF	Maximum Reproduction Ratio (ON: 200%, OFF: 155%)
-6	OFF	Beeper Sound Disable
-7	OFF	All Indicators ON
-8	OFF	Monitor (See Note 4)

DF Main Board

DIP SW 101				Function
-1	-2	-3	-4	
ON	OFF	OFF	OFF	Normal Mode
ON	OFF	OFF	ON	Free Run
ON	ON	OFF	ON	Belt Speed Adjustment (VR103)
ON	ON	ON	ON	All Indicators ON

Interface Board

DIP SW	Normal	Function
801-1	OFF	Duplex Mode
-2	OFF	10 Bin Sorter
-3	OFF	20 Bin Sorter
-4	OFF	DF Mode Priority (ON: SADF, OFF: ADF)
5	OFF	Duplex Feed Start Timing (According to Decal)
6	OFF	APS and AR/E Function Enable in ADF Mode

Note 1 DIP SW 101-2

Monitor	1	2	3	Hold Down
Vsp	▬◢	1	▬◢	
Vsg	▬◢	1	▬◢	#
Bias Voltage	▬◢	1	▬◢	0
ID Sensor Input	▬◢	2	▬◢	
Auto ID Data	▬◢	3	▬◢	
Auto ID Input	▬◢	4	▬◢	
Drum Temperature	▬◢	5	▬◢	

Note 2 DIP SW 102-3,4

102-3	102-4	Detect Mode	Fixed Mode
OFF	OFF	15%	3.5%
ON	OFF	30%	7%
OFF	ON	45%	10.5%
ON	ON	60%	14%

Note 3 DIP SW 102-5,6

102-5	102-6	Image Density
OFF	OFF	Light (Less Toner)
ON	OFF	Lighter (Least Toner)
OFF	ON	Normal
ON	ON	Dark (More Toner)

Note 4 DIP SW 201-8

Monitor	10 key	Recall key
Exposure Lamp Voltage	1	#
Fusing Temperature	2	#
Exposure Lamp ON/OFF (ON/OFF by Start key)	4	#

SELF DIAGNOSTIC CODES

Code	Problem
11	Exposure Lamp Malfunction
12	Lamp Relay Open
21	Scanner Home Position Not ON
22	Scanner Home Position Not OFF
23	No Registration Start Signal
24	No Home Position Signal
25	Scanner Motor Failure
28	Lens Home Position Not ON
29	Lens Home Position Not OFF
2A	2nd Scanner Home Position Not ON
2b	2nd Scanner Home Position Not OFF
2C	High Frequency Encoder Output
2d	Low Frequency Encoder Output
2E	No Encoder Pulse
31	Drum Thermistor Blown
52	Thermofuse Blown
53	Fusing Thermistor Blown
54	Ready Signal Not ON
55	Fusing Overheat
61	Pulse Generator Malfunction
81	Jogger Home Position Not ON
82	Jogger Home Position Not OFF
91	Total Counter Malfunction
93	Optics/Main Board Interface Malfunction
94	Operation Panel/Main Board Interface Malfunction