

***Gestetner* RICOH® SAVIN**



A133/A217
SERVICE MANUAL

RICOH GROUP COMPANIES

PN: RCFM0400

Gestetner[®]

RICOH[®]

savin[®]

A133/A217
SERVICE MANUAL

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***Gestetner* RICOH SAVIN**

A133

A217

**FIELD SERVICE
MANUAL**

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LEGEND

PRODUCT CODE	COMPANY		
	RICOH	SAVIN	GESTETNER
A133	Aficio 400	9940DP	2640E
A217	Aficio 500	9950DP	2850E

DOCUMENTATION HISTORY

REV. NO.	DATE	COMMENTS
*	6/96	Original Printing
1	11/97	A217 Addition
2	7/98	A612 Addition

IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main switch is turned off.
4. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
5. If the start key is pressed before the copier completes the warm-up period (Start key starts blinking red and green alternatively), keep hands away from the mechanical and the electrical components as the copier starts making copies as soon as the warm-up period is completed.
6. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

1. Never operate the copier without the ozone filters installed.
2. Always replace the ozone filters with the specified ones at the specified intervals.
3. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

CAUTION

2. The RAM board on the system control board has a lithium battery which can explode if replaced incorrectly. Replace the battery only with an identical one. The manufacturer recommends replacing the entire RAM board. Do not recharge or burn this battery. Used batteries must be handled in accordance with local regulations.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do not incinerate the toner bottle or the used toner. Toner dust may ignite suddenly when exposed to open flame.
2. Dispose of used toner, developer, and organic photoconductor according to local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.
4. When keeping used lithium batteries in order to dispose of them later, do not put more than 100 batteries per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

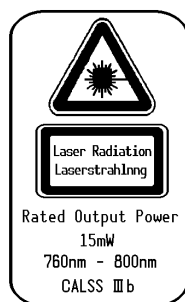
WARNING

Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

WARNING FOR LASER UNIT

WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKING:



For 115V version



For 230V version



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A195 Section 12 (Only available through A195 training)

FINISHER A612

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OVERALL MACHINE INFORMATION

1. SPECIFICATIONS

Configuration:	Desktop
Copy Process:	Dry electrostatic transfer system
Originals:	Sheet/Book
Original Size:	Maximum A3/11" x 17"
Copy Paper Size:	Maximum A3/11" x 17" (Paper tray) Minimum A5/8 1/2" x 5 1/2" sideways (Paper tray) A6/5 1/2" x 8 1/2" lengthwise (By-pass) LCT A4/11" x 8 1/2" sideways only
Duplex Copying:	Maximum A3/11" x 17" Minimum A5/8 1/2" x 5 1/2" sideways
Copy Paper Weight:	Paper tray: 60 ~ 105 g/m ² , 16 ~ 24 lb By-pass: 60 ~ 157 g/m ² , 16 ~ 42 lb LCT: 60 ~ 128 g/m ² , 16 ~ 34 lb Duplex copying: 64 ~ 105 g/m ² , 17 ~ 24 lb
Reproduction Ratios:	5 Enlargement and 7 Reduction

	A4/A3 Version	LT/DLT Version
Enlargement	400%	400%
	200%	200%
	141%	155%
	122%	129%
	115%	121%
Full size	100%	100%
Reduction	93%	93%
	87%	85%
	82%	77%
	71%	74%
	65%	65%
	50%	50%
	25%	25%

Zoom:	25% to 400% in 1% steps
Power Source:	120V/60Hz: More than 12 A (for North America)

220V ~ 240V/50Hz:
 More than 7 A (for Europe)
 220V ~ 240V/60Hz:
 More than 7 A (for Asia)

Power Consumption:

	Copier Only	Full System
Maximum	Less than 1.44 kW	Less than 1.44 kW
Copying	Less than 1.20 kW	Less than 1.20 kW
Warm-up	Less than 0.88 kW	Less than 0.90 kW
Stand-by	Less than 0.20 kW	Less than 0.22 kW

NOTE: 1) Full System: Copier + ADF + Paper Tray Unit + Finisher

Noise Emission:

	Copier Only	Full System
1. Sound Power Level		
Copying	66.0 dB(A)	69.0 dB(A)
Stand-by	40.0 dB(A)	40.0 dB(A)
2. Sound Pressure Level at the Operator Position		
Copying	54 dB(A)	59 dB(A)
Stand-by	25 dB(A)	25 dB(A)

NOTE: The above measurements are to be made in accordance with ISO 7779.

Full System: Copier + ADF + Paper Tray Unit + Finisher.

Dimensions (W x D x H): 880 x 655 x 602 mm (34.7" x 25.8" x 23.8")

Measurement Conditions

- 1) With by-pass feed table closed
- 2) With copy tray attached
- 3) With LCT cover closed
- 4) Without the 500-sheet copy tray

Weight: 95 kg (210 lb)

Copying Speed (copies/minute):

A4 sideways/ 11" x 8 1/2"	A3/11" x 17"	B4/8 1/2" x 14"
40	18	26

Warm-Up Time	Less than 140 seconds (20°C, 68°F)
First Copy Time:	Less than 5.2 s (from LCT)
Copy Number Input:	Ten-key pad, 1 to 999 (count up or count down)
Manual Image Density Selection:	7 steps
Automatic Reset:	30 s is the standard setting; it can be changed with a UP mode.

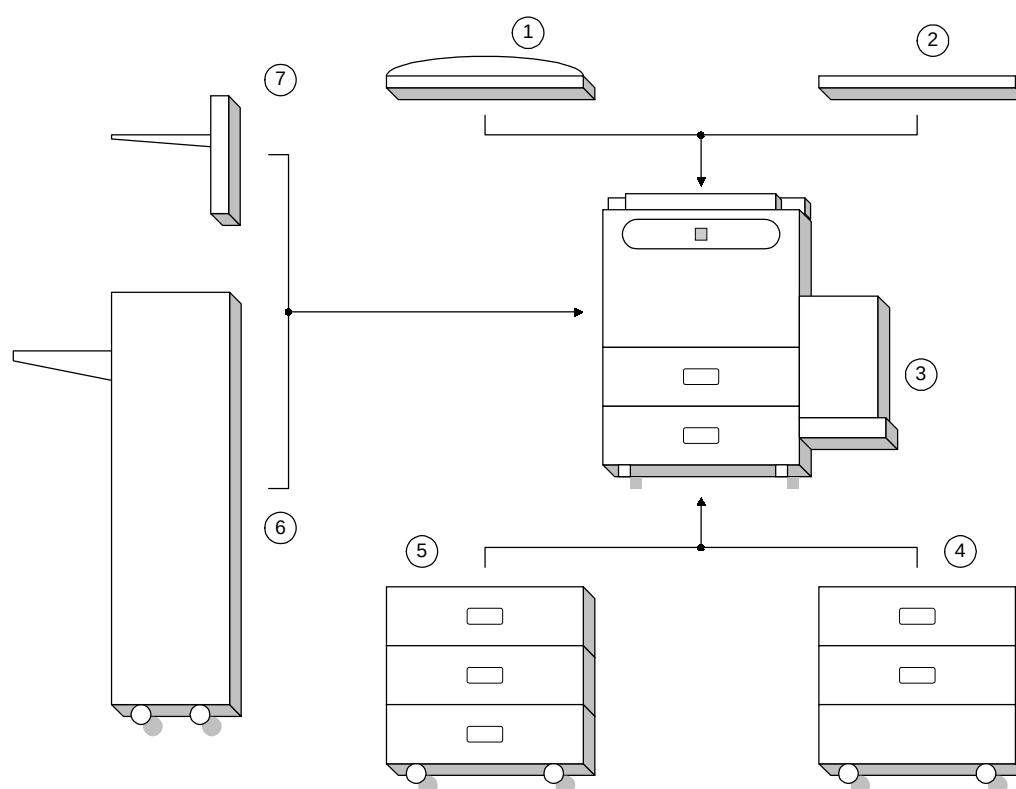
Copy Paper Capacity:

Paper Tray	By-pass Feed	LCT
About 500 sheets x1	About 40 sheets	About 1000 sheets

Hard Disk:	1 GB, Fast SCSI-2
Duplex Tray Capacity	A4/11" x 8 1/2": 50 sheets A3/11" x 17": 50 sheets (80 g/m ² , 20 lb paper) 30 sheets (81 ~ 105 g/m ² , 21.5 ~ 27.9 lb paper)
Toner Replenishment:	Cartridge exchange (700 g/cartridge)
Toner Yield:	20K copies (A4, 6% full black, ID Level 4*)
Developer	Type 2 (850 grams), Yeild: 360K copies*
Optional Equipment:	• Platen cover • Document feeder • Paper tray unit with two paper trays • Paper tray unit with three paper trays • Finisher • Key counter • Tray heater • Optical anti-condensation heater • Drum heater • 500-sheet receiving tray
Copy Tray Capacity	B4/8 1/2" x 14" ~ A4/8 1/2" x 11" 500 sheets A3\11" x 17" 200 sheets Less than B5/5 1/2" x 8 1/2": 200 sheets

COMPONENT LAYOUT AND DESCRIPTIONS

1. MACHINE CONFIGURATION

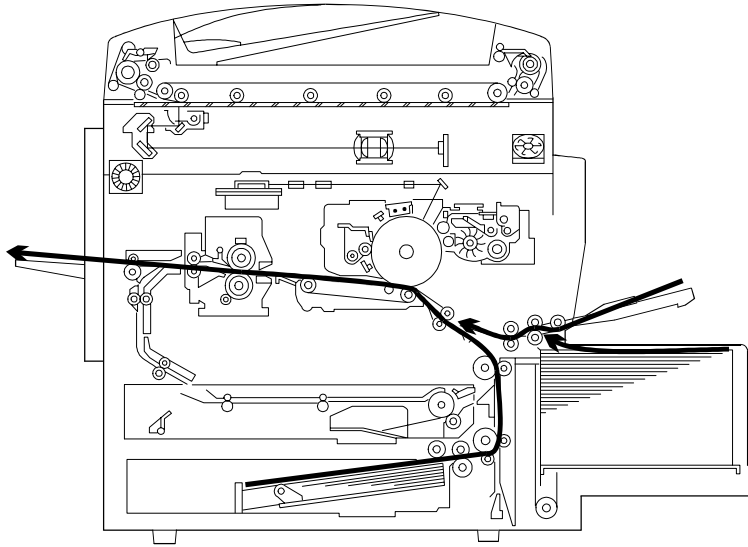


Component
Layout and
Descriptions

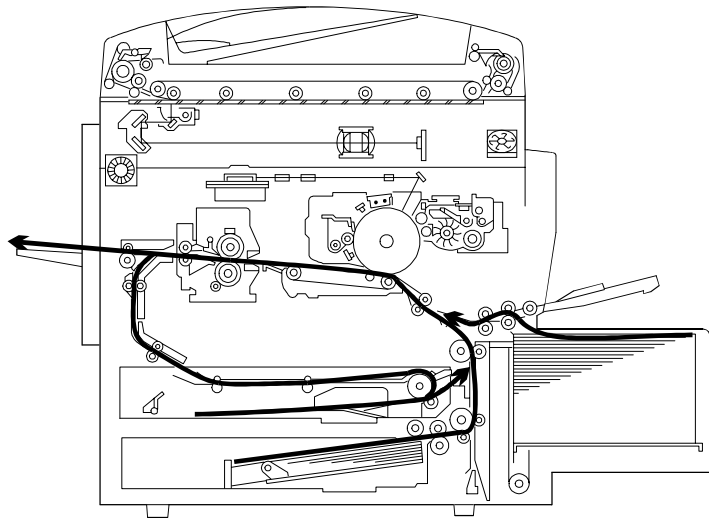
Item	Machine Code	No.
Copier	A133	3
ADF (Option)	A548 (DF61)	1
Paper Feed Unit (Option)	A549 (PS290)	5
	A550 (PS280)	4
Finisher (Option)	A612 (SR700)	6
500-sheet Receiving Tray (Option)	A615(Type D)	7
Platen Cover (Option)	A381 (Type 540)	2

2. PAPER PATH

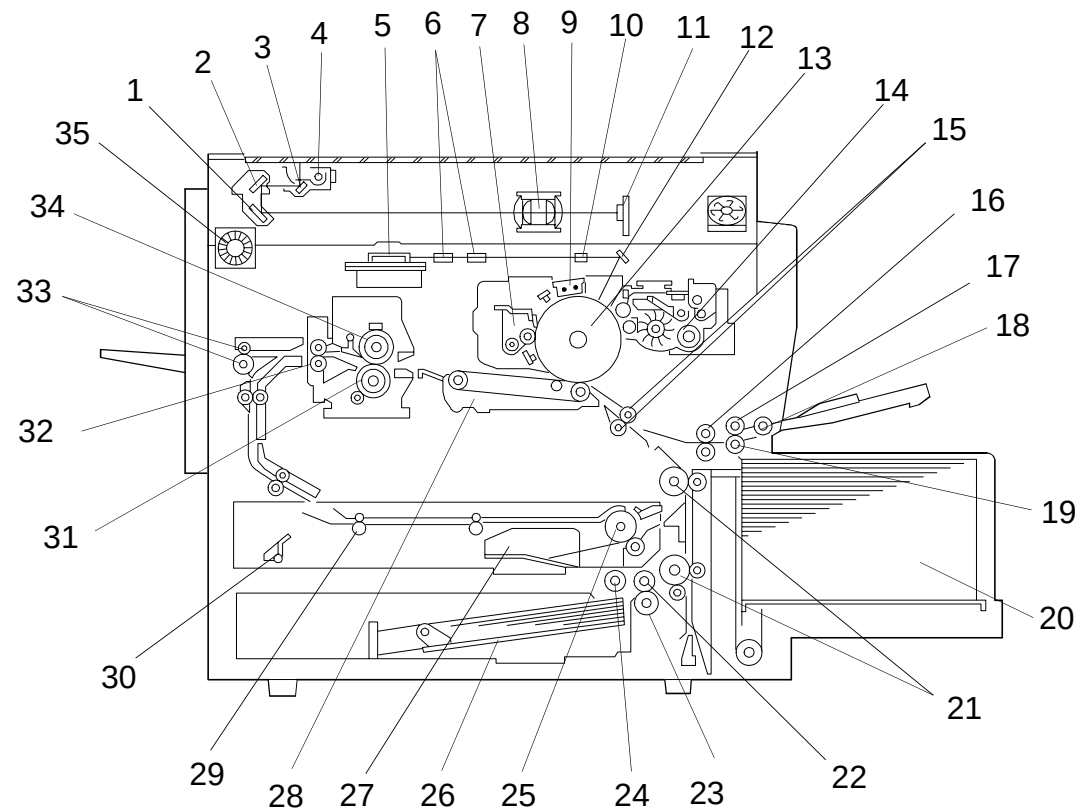
2.1 NORMAL COPYING



2.2 DUPLEX COPYING



3. MECHANICAL COMPONENT LAYOUT



Component
Layout and
Descriptions

1. 3rd. Mirror	22. Feed Roller
2. 2nd. Mirror	23. Separation Roller
3. 1st. Mirror	24. Pick-up Roller
4. Exposure Lamp	25. Duplex Feed Roller
5. Polygonal Mirror Motor	26. Bottom Plate
6. F θ Lenses	27. Side Jogger Fence
7. Cleaning Unit	28. Transfer Belt Unit
8. Lens	29. Entrance Rollers
9. Charge Corona Unit	30. End Jogger Fence
10. Barrel Toroidal Lens (BTL)	31. Pressure Roller
11. CCD	32. Fusing Exit Roller
12. Mirror	33. Exit Rollers
13. Drum	34. Hot Roller
14. Development Unit	35. Optics Exhaust Fan Motor
15. Registration Rollers	
16. By-pass Feed Relay Roller	
17. By-pass Feed Roller	
18. By-pass Pick-up Roller	
19. By-pass Separation Roller	
20. LCT	
21. Relay Rollers	

4. ELECTRICAL COMPONENT DESCRIPTIONS

Refer to the electrical component layout and the point-to-point diagram on the waterproof paper in the pocket for the locations of these components.

Symbol	Index No.	Description	Note
Printed Circuit Boards			
PCB1	90	SCU (System Control Unit)	Controls all copier functions, directly or through other control boards.
PCB2	89	AC Drive	Provides ac power to the exposure lamp and fusing lamps.
PCB3	92	DC Power Supply	Provides dc power.
PCB4	93	BCU (Base-Engine Control Unit)	Controls the mechanical parts of the printer.
PCB5	80	Charge High Voltage Supply	Supplies high voltage to the charge corona unit.
PCB6	85	High Voltage Control	Controls the high voltage boards and the quenching lamp.
PCB7	87	Operation Panel	Controls the touch panel display and LED matrix, and monitors the key matrix.
PCB8	79	Scanner Drive	Drives the scanner motor.
PCB9	81	EX-IPU (Extended Image Processing Unit)	Processes the video signal from the SBU and sends the video signal to the LD unit.
PCB10	84	SBU (Sensor Board Unit)	Contains the CCD, and outputs a video signal to the EX-IPU board.
PCB11	94	Lamp Stabilizer	Provides dc power for the exposure lamp.
PCB12	86	Laser Synchronization Detector - 1	Detects the laser beam at the start of the main scan.
PCB13	83	Laser Synchronization Detector - 2	Detects the laser beam at the end of the main scan.
PCB14	31	Transfer High Voltage	Supplies high voltage to the transfer belt.
PCB15	33	Development Bias Power Pack	Supplies high voltage to the development roller.
PCB16	40	Duplex Control	Controls the operation of the duplex tray.
PCB17	N/A	Liquid Crystal Display	Controls the guidance display and displays guidance for machine operation.
PCB18	51	LCT Interface	Interfaces the LCT control signal between the main board and the LCT.
PCB19	91	Relay Board	Switches ac power to either the dc drive board (if the main switch is on) or to the heaters (if the main switch is off).
PCB20	7	Laser Diode Drive	Controls the laser diode.
Motors			
M1	57	Main	Drives the main body components.
M2	66	Toner Bottle Drive	Rotates the toner bottle to supply toner to the toner supply unit.

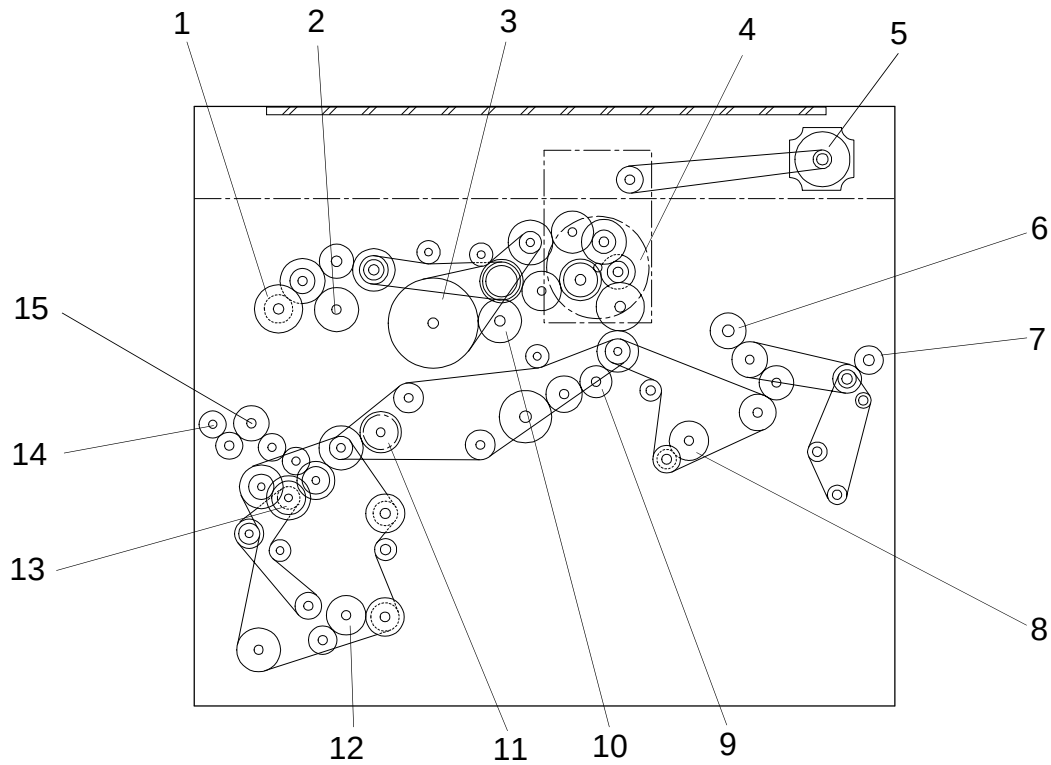
Symbol	Index No.	Description	Note
M3	73	Tray Lift	Raises the bottom plate in the paper tray.
M4	56	Polygonal Mirror	Turns the polygonal mirror.
M5	48	LCT Lift	Lifts up and lowers the LCT bottom plate.
M6	74	Optics Exhaust Fan	Removes heat from the optics unit.
M7	65	IPU Fan	Removes heat from the IPU board.
M8	78	Exhaust Fan	Removes heat from around the fusing unit.
M9	60	Ozone Fan	Removes ozone-laden air from inside the machine.
M10	55	Scanner Drive	Drives the 1st and 2nd scanners (dc stepper motor).
M11	36	Duplex Feed	Drives the feed roller and moves the bottom plate up and down.
M12	39	End Fence Jogger	Drives the end fence jogger to square the paper stack.
M13	38	Side Fence Jogger	Drives the side fence jogger to square the paper stack.
M14	75	DC Drive Board Fan	Removes heat from around the DC drive board.
M15	68	Charge Inlet Fan	Provides air flow around the charge corona unit section.
Sensors			
S1	13	By-pass Feed Paper Width	Informs the CPU what width paper is in the by-pass feed table.
S2	15	By-pass Feed Paper End	Informs the CPU that there is no paper in the by-pass tray.
S3	18	Tray Paper End	Informs the CPU when the paper tray runs out of paper.
S4	46	Upper Relay	Detects the leading edge of paper from the paper tray and duplex unit to determine the stop timing of the paper feed clutch and duplex feed motor. Also detects misfeeds.
S5	16	Tray Upper Limit	Detects the height of the paper stack in the paper tray to stop the upper tray lift motor.
S6	47	Lower Relay	Detects misfeeds.
S7	49	LCT Lower Limit	Sends a signal to the CPU to stop lowering the LCT bottom plate.
S8	50	LCT Paper End	Informs the CPU when the LCT runs out of paper.
S9	12	LCT Upper Limit	Signals the CPU to stop lifting the LCT bottom plate.
S10	19	Registration	Detects the leading edge of the copy paper to determine the stop timing of the paper feed clutch, and detects misfeeds.
S11	29	Image Density (ID)	Detects the density of various patterns on the drum during process control.
S12	30	Toner Density (TD)	Detects the amount of toner inside the development unit.

Symbol	Index No.	Description	Note
S13	1	Scanner HP	Inform the CPU when the 1st and 2nd scanners are at the home position.
S14	8	Original Length-1	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S15	9	Original Length-2	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S16	24	Fusing Exit	Detects misfeeds.
S17	6	Platen Cover	Inform the CPU whether the platen cover is up or down (related to APS/ARE functions). ARE: Auto Reduce and Enlarge
S18	32	Toner End	Instructs the CPU to add toner to the toner supply unit, and detects toner end conditions.
S19	28	Auto Response	Returns the operation panel display and exits from the energy saver mode.
S20	10	Transfer Belt Position	Inform the CPU of the current position of the transfer belt unit.
S21	2	Original Width	Detects the width of the original. This is one of the APS (Auto Paper Select) sensors.
S22	34	Duplex Paper End	Detects paper in the duplex tray.
S23	35	Duplex Turn	Detects the trailing edge of the copy paper to determine the jogging timing, and detects misfeeds.
S24	42	Duplex Entrance	Detects misfeeds.
S25	37	Side Fence Jogger HP	Detects the home position of the duplex side fence jogger.
S26	41	End Fence Jogger HP	Detects the home position of the duplex end fence jogger.
S27	23	Toner Overflow	Detects when the used toner collection bottle is full.
S28	14	By-pass Relay	Detects misfeeds.
Switches			
SW1	11	By-pass Feed Table	Detects whether the by-pass feed table is open or closed.
SW2	53	Tray Down	Sends a signal to the CPU to lower the LCT bottom plate.
SW3	20	Tray Paper Size	Determines what size of paper is in the paper tray.
SW4	54	LCT	Cuts the dc power line and detects whether the LCT is open or not.
SW5	52	LCT Cover	Cuts the dc power line of the LCT lift motor.
SW6	27	Main	Supplies power to the copier.
SW7	26	Front Cover Safety	Cuts the dc power line and detects whether the front cover is open or not.
Magnetic Clutches			
CL1	61	Toner Supply	Turns the toner supply roller to supply toner to the development unit.
CL2	59	Development	Drives the development roller.

Symbol	Index No.	Description	Note
CL3	76	Transfer Belt Lift	Controls the touch and release movement of the transfer belt unit.
CL4	58	Registration	Drives the registration rollers.
CL5	63	By-pass Feed	Starts paper feed from the by-pass feed table or LCT.
CL6	71	Relay	Drives the relay rollers.
CL7	72	Paper Feed	Starts paper feed from the paper tray.
CL8	62	By-pass Relay	Drives the by-pass relay rollers.
Solenoids			
SOL1	67	By-pass Pick-up	Drops the pick-up roller to the by-pass paper feed position. When paper is fed from the LCT, this solenoid assists SOL3.
SOL2	77	Junction Gate	Moves the junction gate to direct copies to the duplex tray or to the paper exit.
SOL3	64	LCT Pick-up	Drops the pick-up roller all the way down to the LCT paper feed position from the by-pass paper feed position.
SOL4	69	Pick-up	Controls the up/down movement of the pick-up roller in the paper tray.
SOL5	70	Separation	Controls the up/down movement of the separation roller at the paper tray feed station.
Lamps			
L1	3	Exposure	Applies high intensity light to the original for exposure.
L2	43	Fusing	Provides heat to the hot roller.
L3	88	Quenching	Neutralizes any charge remaining on the drum surface after cleaning.
Heaters			
H1	21	Drum (option)	Turns on when the main switch is off to prevent moisture from forming around the drum.
H2	5	Optics Anti-condensation (option)	Turns on when the main switch is off to prevent moisture from forming on the optics.
H3	22	Tray (option)	Turns on when the main switch is off to keep paper dry in the paper tray.
Thermistors			
TH1	45	Fusing	Monitors the temperature at the central area of the hot roller.
Thermofuses			
TF1	44	Fusing	Provides back-up overhear protection in the fusing unit.
Thermoswitch			
TS1	4	Exposure Lamp	Opens the exposure lamp circuit if the 1st scanner overheats.

Symbol	Index No.	Description	Note
Counters			
CO1	25	Total	Keeps track of the total number of copies made.
CO2	N/A	Key (option)	Used for control of authorized use. The copier will not operate until it is installed, when this option is enabled.
Others			
CB1	17	Circuit Breaker (220 ~ 240V machines only)	Provides back-up high current protection for electrical components.
HDD	82	Hard Disk Drive	Scanned image data is compressed and held here temporarily during copying; also holds user stamp data.

5. DRIVE LAYOUT



1. Toner Supply Clutch

2. Development Clutch

3. Drum Drive Pulley

4. Main Motor

5. Scanner Drive Motor

6. Fusing Drive Gear

7. Exit Drive Gear

8. Toner Collection Bottle Drive Gear

9. Transfer Belt Drive Gear

10. Cleaning Blade Drive Gear

11. Registration Clutch

12. Paper Feed Clutch

13. Relay Clutch

14. By-pass Feed Clutch

15. By-pass Relay Clutch

INSTALLATION PROCEDURE

1. INSTALLATION REQUIREMENTS

1.1 ENVIRONMENT

1. Temperature Range: 50°F ~ 86°F (10°C ~ 30°C)
2. Humidity Range: 15% ~ 90%
3. Ambient Illumination: Less than 1,500 lux (Do not expose to direct sunlight.)
4. Ventilation: 30 m³/hr/person
5. Ambient Dust: Less than 0.10 mg/m³ (2.7 x 10⁻⁶ oz/yd³)
6. If the place of installation is air-conditioned or heated, place the machine:
 - a) where it will not be subjected to sudden temperature changes.
 - b) where it will not be directly exposed to cool air from an air conditioner.
 - c) where it will not be directly exposed to heat from a heater.
7. Do not place the machine where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 feet) above sea level.
9. Place the copier on a strong and level base.
10. Do not place the machine where it may be subjected to strong vibration.

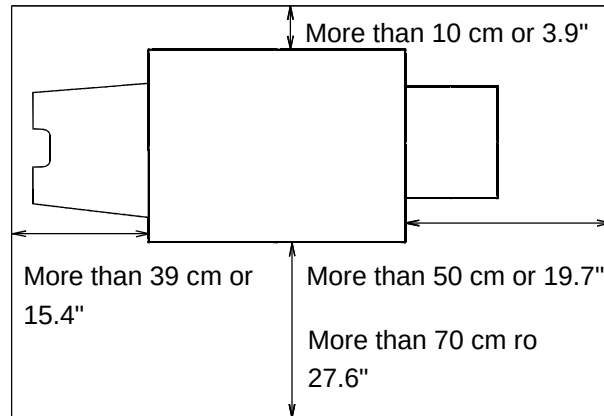
1.2 MACHINE LEVEL

1. Front to back: Within 5 mm (0.2") of level
2. Right to Left: Within 5 mm (0.2") of level

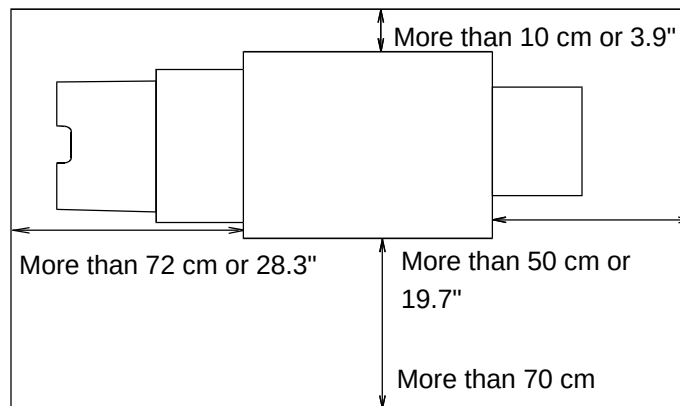
1.3 MINIMUM SPACE REQUIREMENTS

Place the copier near a power source, providing clearance as shown.

– Copier –



– Copier with the optional finisher–



1.4 POWER REQUIREMENTS

⚠ CAUTION

- A. Be sure to ground the machine.**
- B. Make sure the plug is firmly inserted in the outlet.**
- C. Avoid multi-wiring.**

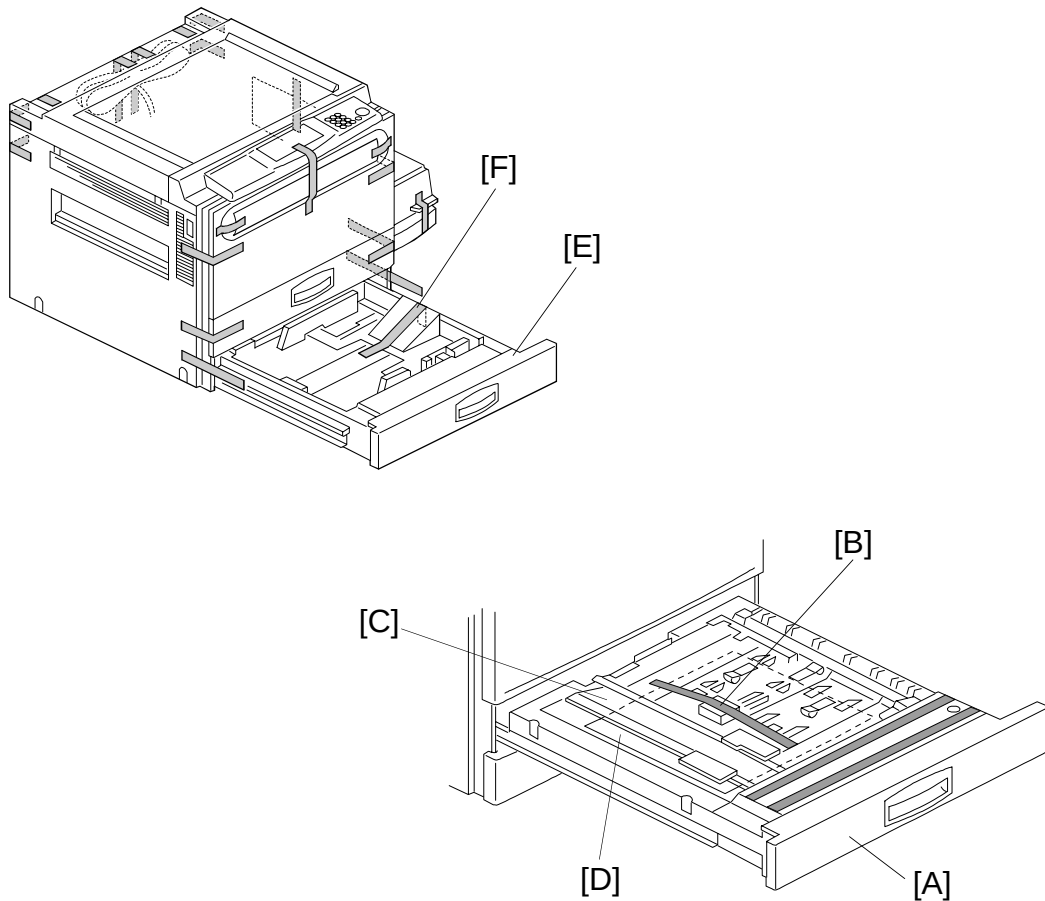
1. Input voltage level:
120V, 60Hz: More than 12A
2. Permissible voltage fluctuation: $\pm 10\%$
3. Do not set anything on the power cord.

2. COPIER INSTALLATION

2.1 ACCESSORY CHECK

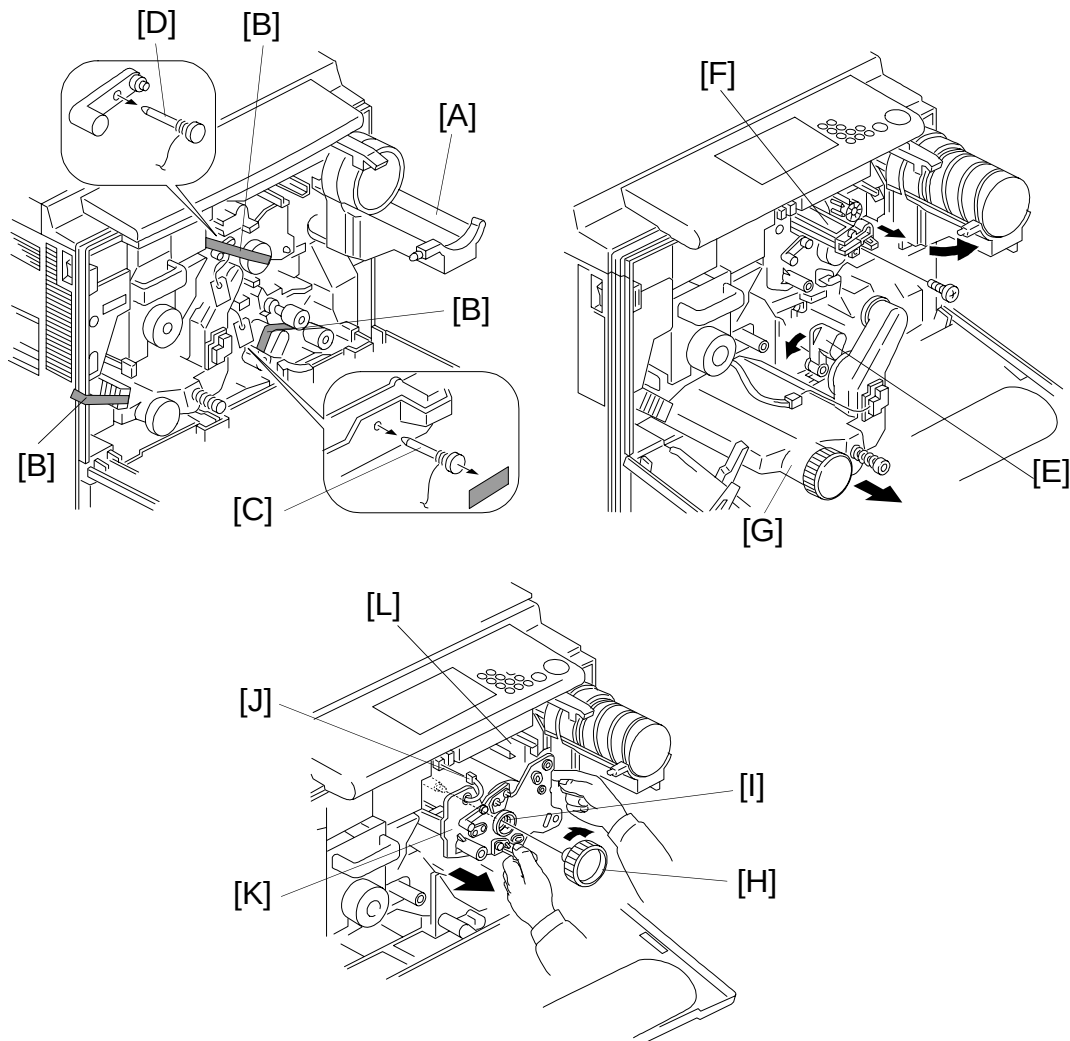
Check the quantity and condition of the accessories in the box against the following list:

Description	Qt'y
1. Paper Size Decal	1
2. Operating Instructions (except for -27 machines) ..	1
3. New Equipment Condition Report	1
4. User Survey Card (-17 machines only)	1

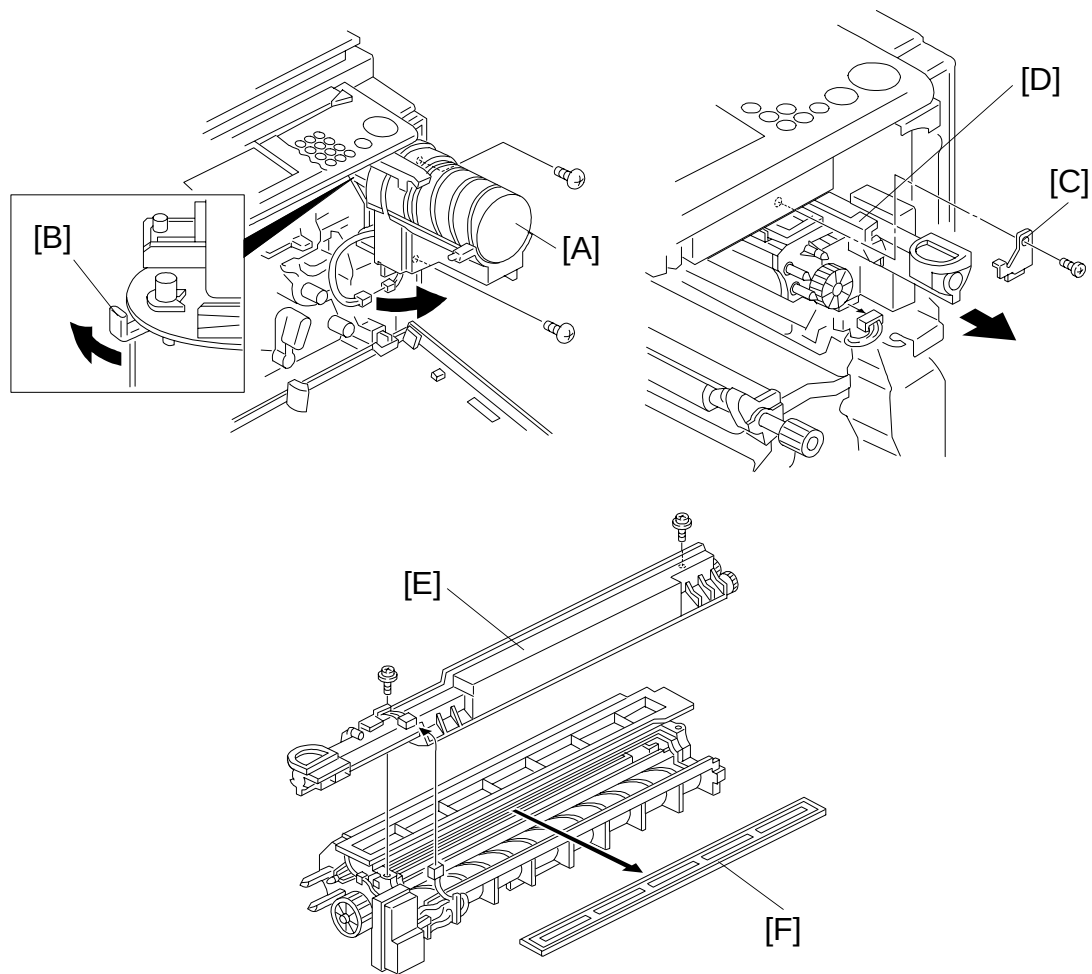


NOTE: 1) Keep the shipping retainers after installing the machine. They will be reused if the machine is moved to another location in the future.
 2) Never lift the machine by holding the LCT, or the LCT will break.

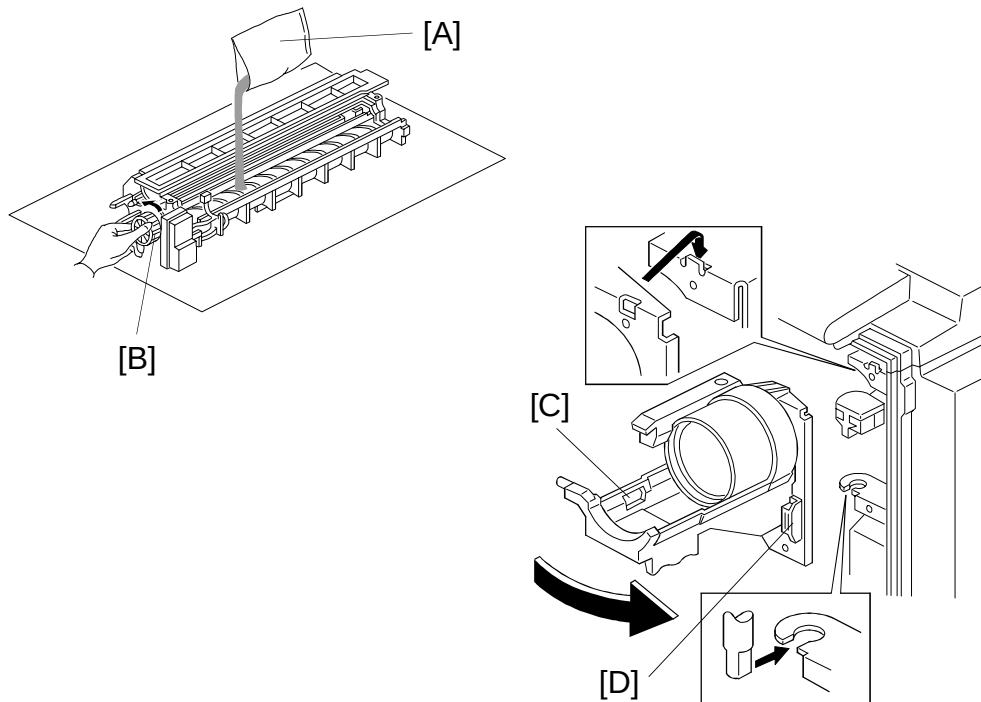
1. Remove the strips of tape.
2. Pull out the duplex tray [A] and remove the strips of tape.
3. Remove the guide roller stopper [B].
4. Open the lower duplex guide plate [C] and remove the sheets of paper [D] and the styrofoam.
5. Install the duplex tray in the machine.
6. Pull out the paper tray [E], and remove the strips of tape and the bottom plate stopper [F]. Then install the paper tray in the machine.



7. Open the front cover and swing out the toner bottle holder [A].
8. Remove the strips of tape [B].
9. Remove transfer belt release pin [C] and cleaning blade release pin [D].
NOTE: Put back pins [C] and [D] before transporting the machine to a new location.
10. Turn the "A1" lever [E] counterclockwise to lower the transfer belt unit.
11. Remove the charge corona unit [F] (1 screw).
12. Remove the toner collection bottle [G] (1 connector).
13. Remove the drum knob (turn clockwise) [H] and drum bushing [I].
14. Disconnect the ID sensor harness [J] and carefully slide out the drum unit [K] until the front guide plate releases from the positioning pins.
15. Move the development unit [L] to the right - away from the drum, then slide out the drum unit completely. Be careful not to scratch the Drum.



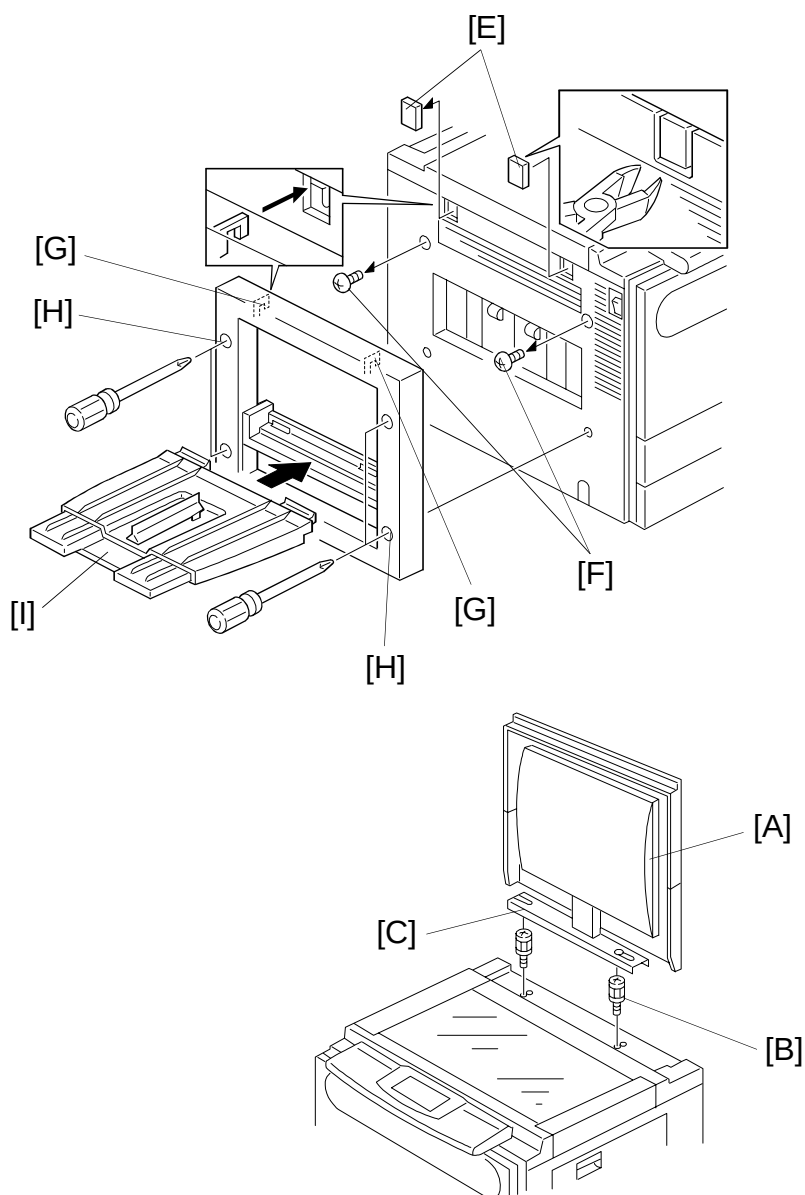
16. Remove the toner bottle holder [A] (2 screws, 1 connector).
17. Turn the shutter lever [B] of the toner bottle holder as shown to prevent toner from spilling.
18. Remove the development unit stopper [C] (1 screw).
19. Pull out the development unit [D] (1 connector). Be careful not to catch the wire harness on the frame screw, on the right side of the machine. Place the development unit on a clean sheet of paper.
20. Remove the toner supply unit [E] (2 screws, 1 connector) If necessary, remove the shipping tape from the front and back sides of the development unit.
21. Remove the development filter [F].



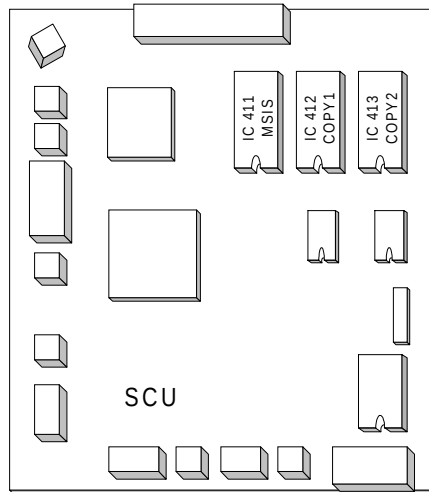
22. Pour about half a pack of developer [A] into the development unit. Then rotate the knob [B] as shown to distribute the developer evenly. Then pour in all the remaining developer and rotate the knob again.

NOTE: To prevent the developer from spilling, do not rotate the knob in the other direction.

23. Replace the dev. filter. Attach the toner supply unit to the dev. unit.
24. Install the development unit in the copier and put back the stopper ([C] that was removed in step 18).
- NOTE:** Be careful not to damage the bias wire on the frame screw.
25. Move the development unit to the right so that the development unit is away from the drum. Then install the drum unit. Do not scratch the drum.
26. Install the toner bottle holder, making sure that the toner bottle holder [C] and bracket [D] are at right angles as shown above. If not, swing the toner bottle holder out in the direction of the big arrow in the diagram.
27. Turn the "A1" lever clockwise to raise the transfer belt unit.
28. Install the charge corona unit. Do not scratch the OPC drum.
29. Install the toner collection bottle.
30. Install the toner bottle by following the instructions on the reverse side of the front cover.
31. Swing the toner bottle holder into its original position and close the front cover.



32. Install the 500-sheet copy tray if required:
 - 1) Remove caps [E] with wire cutters.
 - 2) First, remove the screws [F], and fit the hooks [G] on the copy tray unit into the openings. Then tighten the screws [H] that are built into the copy tray unit.
 - 3) Install the copy tray [I].
33. Install the optional platen cover [A] as shown if required:
 - 1) Install two stud screws [B] on the top cover.
 - 2) Position the platen cover bracket [C] on the stud screws and slide it to the left.



For USA models, proceed to step 37. Steps 34 through 36 are for the 220 ~ 240 V machine only.

34. Remove the rear cover.

35. Install the three ROMs which contain the language kit in the IC411, IC412, and IC413 sockets on the SCU board (the lower left PCB as viewed from the rear of the machine).

The "MSIS" ROM should be put in the IC411 socket.

The "COPY1" ROM should be put in the IC412 socket.

The "COPY2" ROM should be put in the IC413 socket.

NOTE: Do not bend the pins of the ROMs.

Do not install the ROMs the wrong way round.

36. Put the rear cover back on the machine.

37. Plug in the copier and turn on the main switch.

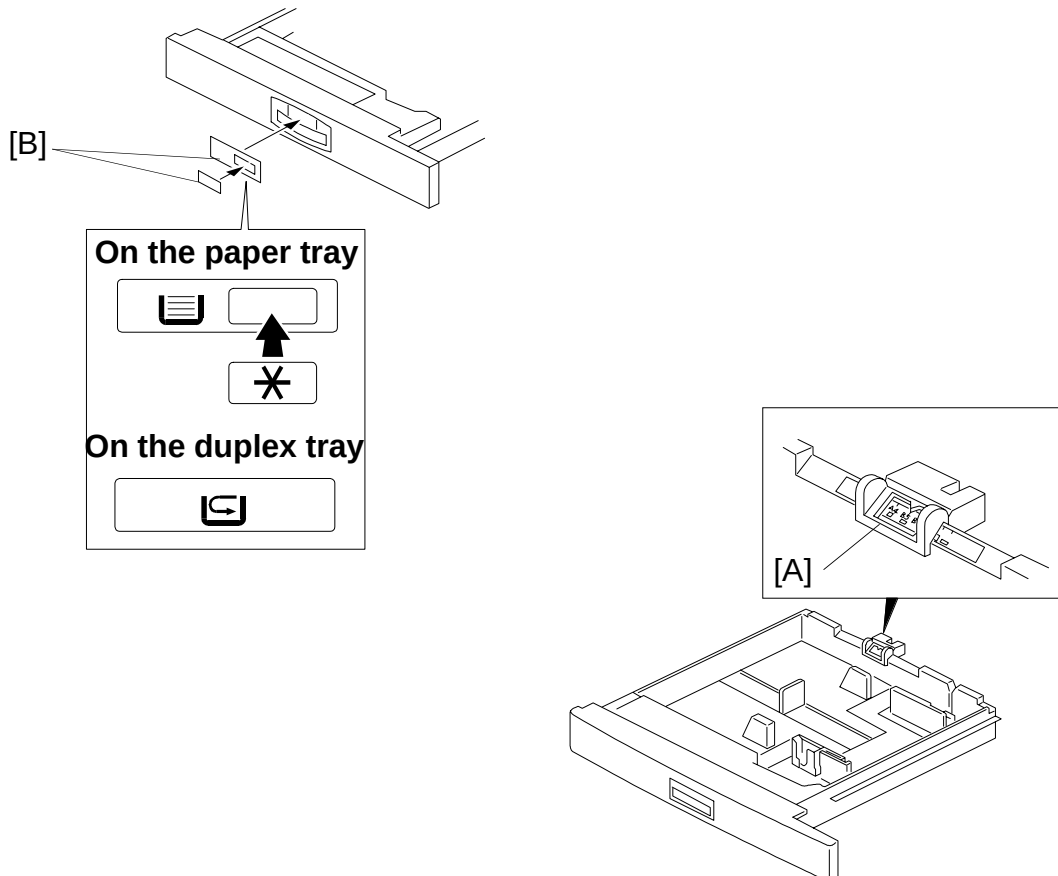
38. After the machine reaches the operation condition (the start button LED is green), enter SP mode as follows:

- 1) Press the "Clear Modes" key.
- 2) Enter "107" using the numeric keys.
- 3) Hold down the "Clear/Stop" key for more than 3 seconds.

39. Perform the TD sensor initial setting as follows:

- 1) Enter "2801" and press the "Enter" key.
- 2) Touch "Start" on the LCD.

NOTE: The machine will automatically stop when TD sensor initial setting is completed.



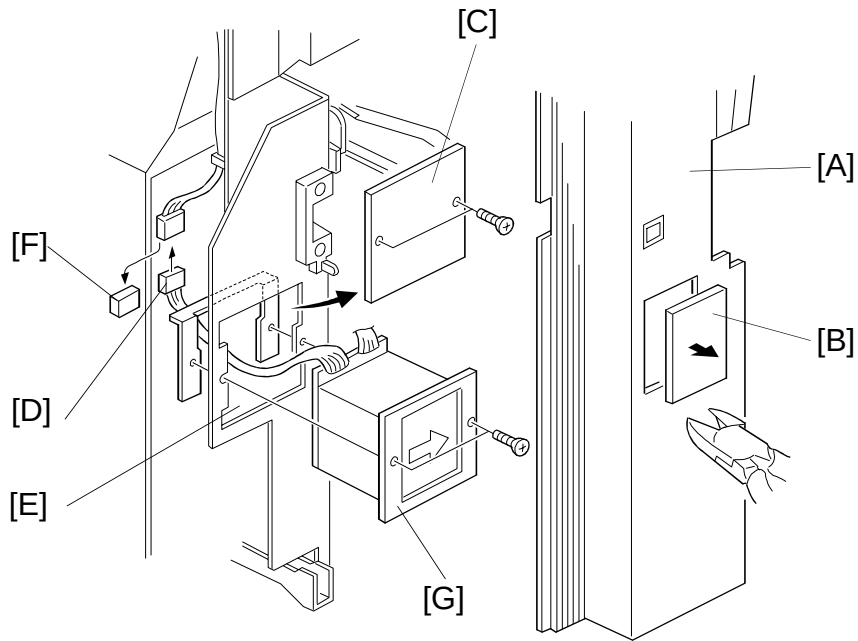
40. Perform the free run procedure as follows:
 - 1) Enter "5802" and press the "Enter" key.
 - 2) Touch "ON" on the LCD then touch "Copy Mode" on the LCD.
 - 3) Set the number of copies at 50.
 - 4) Close the platen cover or the ADF then press the "Start" key.
 - 5) After finishing the free run, touch "SP Mode" on the LCD.
 - 6) Touch "Quit" on the LCD to leave SP mode.
41. Pull out the paper tray and load paper into it (the paper size and orientation should be as specified by the customer).

NOTE: The side and rear fences should be properly positioned.
42. Select the appropriate paper size for the paper tray by sliding the paper size slider [A] into the correct position.

NOTE: A non-standard paper size can be selected with a UP mode (See the Paper Size Selection section).
43. **When the optional Paper Feed Unit is installed:** Enter the proper paper size for each paper tray using a UP mode. (See the Paper Size Selection section.)
44. Attach the appropriate paper size decals [B] to the paper trays. Also, attach the duplex decal to the duplex tray.

NOTE: Paper size decals are also used for the optional paper feed unit. Keep any remaining decals for use with the paper feed unit.
45. Check the copy quality and machine operation.

2.2 KEY COUNTER (OPTION)

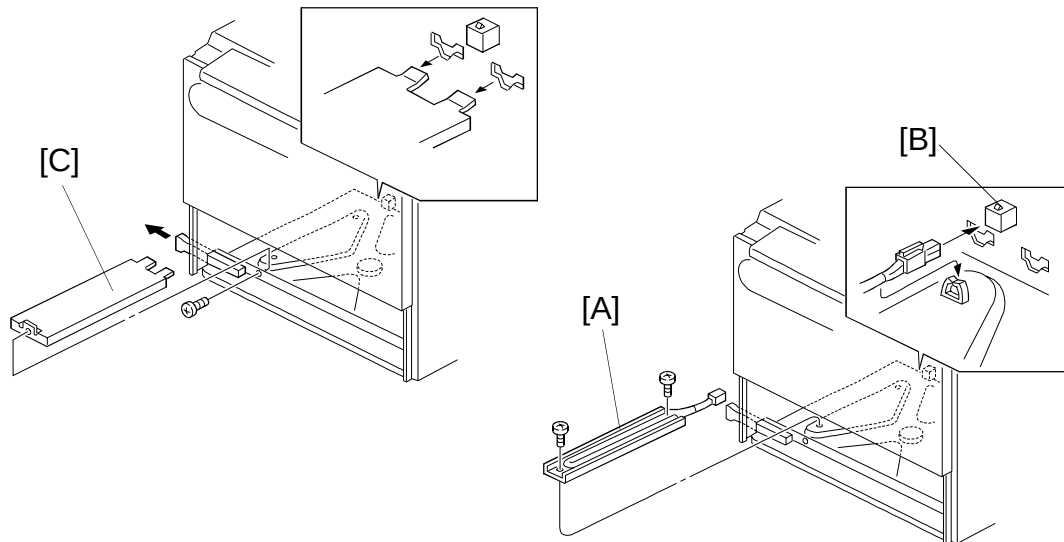


⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the right cover [A]. (See "Replacement and Adjustment - Outer Cover Removal".)
2. Remove the cap [B] with wire cutters.
3. Remove the key counter cover [C] (2 screws)
4. Pass the key counter holder connector [D] through the opening [E].
5. Disconnect the connector [F] and connect the key counter holder connector.
6. Mount the key counter holder [G] (2 screws).
7. Reassemble the machine and check the key counter's operation.

2.3 TRAY HEATER (OPTION)



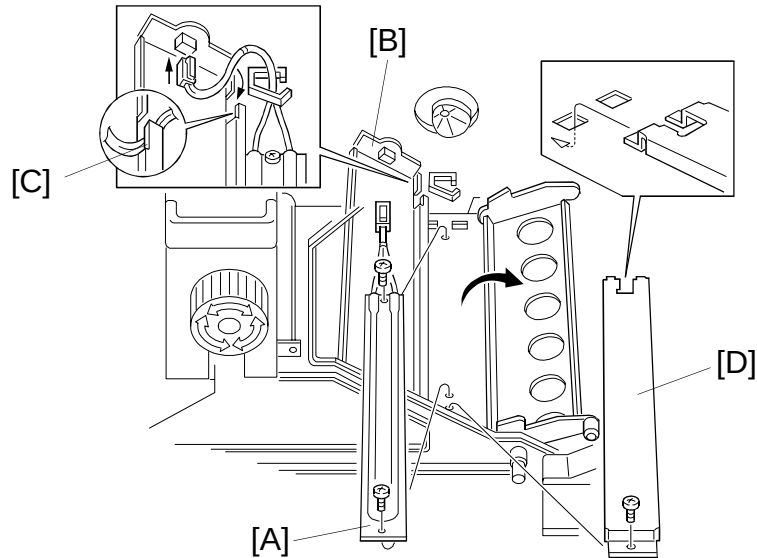
CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the duplex unit. (See "Replacement and Adjustment - Duplex Unit Removal".)
2. Remove the paper feed tray. (See "Replacement and Adjustment - Paper Feed Tray Removal".)
3. Install the tray heater [A] (2 screws).
4. Connect the connector of the heater to the copier's connector [B] which is mounted on the rear frame.
5. Fit the heater harness into the cable clamp.
6. Install the heater cover [C] (1 screw).
7. Reassemble the machine.
8. Check the printer side-to-side registration for the 1st paper feed station (SP1002-2) and the duplex unit (SP1002-1).

NOTE: Tell the customer that even when the copier's main switch is turned off, the copier power cord should be plugged in. Otherwise, the tray heater will not function.

2.4 DRUM HEATER (OPTION)



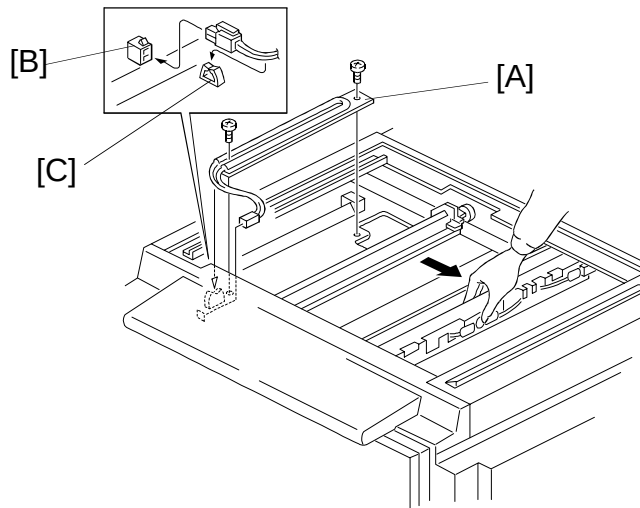
⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the transfer the belt unit. (See "Replacement and Adjustment - Transfer Belt Unit Removal".)
2. Move the "A1" lever clockwise.
3. Install the drum heater [A] (2 screws).
4. Connect the connector of the heater to the copier's connector [B] which is mounted on the rear frame.
5. Fit the heater harness into the cable clamp.
NOTE: Route the heater harness under the hook [C].
6. Install the heater cover [D] (1 screw).
7. Reassemble the machine.

NOTE: Tell the customer that even when the copier's main switch is turned off, the copier power cord should be plugged in. Otherwise, the drum heater will not function.

2.5 OPTICS ANTI-CONDENSATION HEATER (OPTION)



⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the exposure glass. (See "Replacement and Adjustment - Exposure Glass Removal".)
2. Move the 1st scanner to the center of the scanner unit.
3. Install the optics anti-condensation heater [A] (2 screws).
4. Connect the connector of the heater to the copier's connector [B] which is mounted on the front frame of the scanner unit.
5. Fit the harness into the clamber [C].
6. Reassemble the machine.

NOTE: Tell the customer that even when the copier's main switch is turned off, the copier power cord should be plugged in. Otherwise, the optics anti-condensation heater will not function.

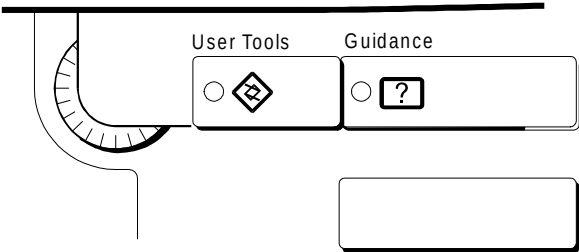
3. PAPER SIZE SELECTION

3.1 OPTIONAL PAPER FEED UNIT

The paper size for the paper feed unit can be selected with User Program mode.

You can select paper of the following sizes:

Metric version	Inch version
A3 □ , B4 □ , A4 □ □ , B5 □ □ 11" x 17" □ , 8 1/2" x 14" □ , 8 1/2" x 11" □ □ , 11" x 15" □ , 10" x 14" □ , 8" x 10 1/2" □ , 8" x 10" □ , 8" x 13" □ , 8 1/2" x 13" □ , 8 1/4" x 13" □	11" x 17" □ , 8 1/2" x 14" □ , 8 1/2" x 11" □ □ , 11" x 15" □ , 10" x 14" □ , 8" x 10 1/2" □ , 8" x 10" □ , A3 □ , B4 □ , A4 □ □ , 8" x 13" □ , 8 1/2" x 13" □ , 8 1/4" x 13" □



1. Press the User Tools key.
2. Touch the Basic Settings key.
3. Touch the Next key three times to reach the paper size setting menu.
4. Find the paper tray (2, 3, or 4) and touch the Change key. Select the new paper size by touching a key. Then touch the Exit key.
5. Press the User Tools key.

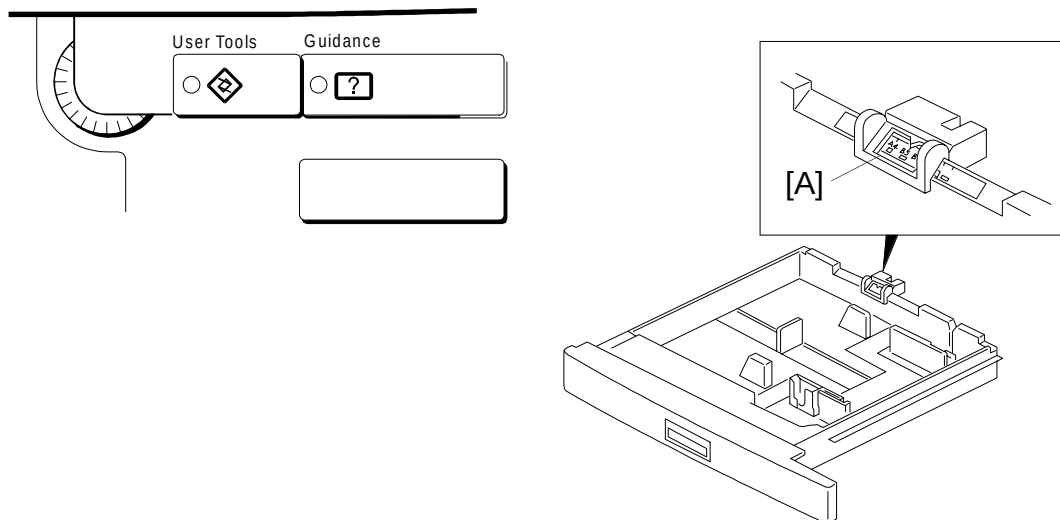
3.2 1ST TRAY - NON-STANDARD PAPER SIZE SELECTION

For the 1st tray, a wider range of paper sizes can be selected with User Program mode.

If a non-standard paper size is selected, the machine ignores the paper size set with the paper size slider.

You can select paper of the following sizes:

Metric version	Inch version
11" x 17" □, 8 1/2" x 14" □, 5 1/2" □ x 8 1/2" □, 8" x 10" □	11" x 15" □, 10" x 14" □, 8" x 10 1/2" □



1. Slide the paper size slider [A] on the paper tray into the "*" position.
2. Press the User Tools key.
3. Touch the Basic Setting key.
4. Touch the Next key three times to reach the paper setting menu.
5. In the Tray <*> Paper Size Setting menu, the present size setting is displayed. Touch the Change key. Select the new paper size by touching a key. Then, touch the Exit key.
6. Press the User Tools key.

3.3 1ST TRAY - F/F4 SIZE PAPER SELECTION

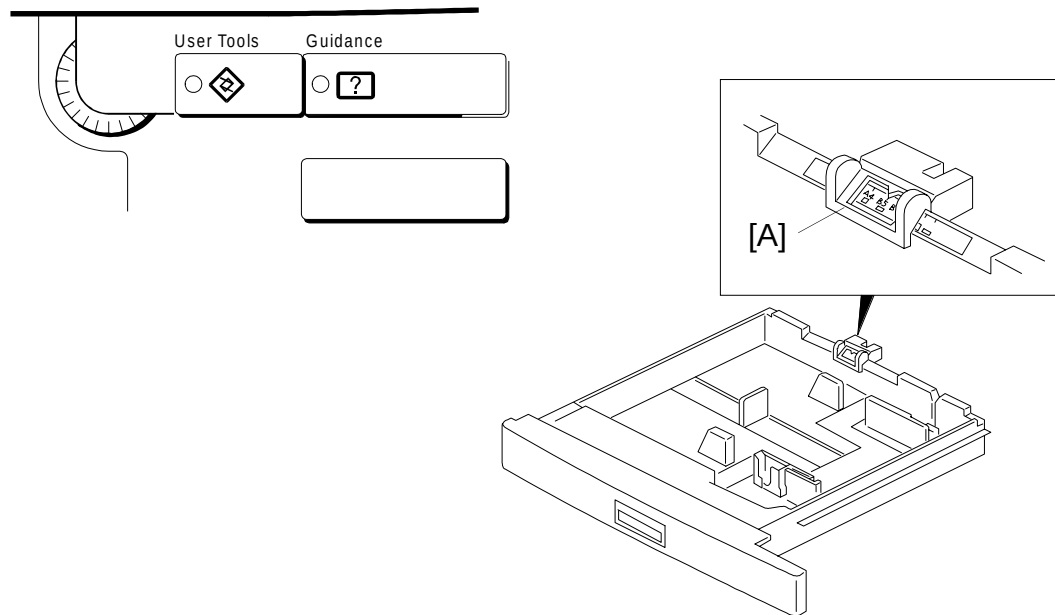
For the 1st tray, a wider range of F and F4 paper sizes can be selected with User Program mode.

You can select paper of the following sizes:

8" x 13"

8 1/4" x 13"

8 1/2" x 13"



1. Slide the paper size slider [A] on the paper tray into the "F/F4" position.
2. Press the User Tools key.
3. Touch the Basic Setting key.
4. Touch the Next key three times to reach the paper setting menu.
5. In the Tray <F/F4> Paper Size Setting menu, the present size setting is displayed. Touch the Change key. Select the new paper size by touching a key. Then, touch the Exit key.
6. Press the User Tools key.

SERVICE TABLES

1. SERVICE REMARKS

1.1 GENERAL CAUTION

Do not turn off the main switch while any of the electrical components are active. Doing so might cause damage to units such as the transfer belt, drum, and development unit when they are pulled out of or put back into the copier.

1.2 DRUM

The organic photoconductor (OPC) drum is more sensitive to light and ammonia gas than a selenium drum. Follow the cautions below when handling an OPC drum.

1. Never expose the drum to direct sunlight.
2. Never expose the drum to direct light of more than 1,000 Lux for more than a minute.
3. Never touch the drum surface with bare hands. When the drum surface is touched with a finger or becomes dirty, wipe it with a dry cloth or clean it with wet cotton. Wipe with a dry cloth after cleaning with wet cotton.
4. Never use alcohol to clean the drum; alcohol dissolves the drum surface.
5. Store the drum in a cool, dry place away from heat.
6. Take care not to scratch the drum as the drum layer is thin and is easily damaged.
7. Never expose the drum to corrosive gases such as ammonia gas.
8. Always keep the drum in the protective sheet when keeping the drum unit, or the drum itself, out of the copier. Doing so avoids exposing it to bright light or direct sunlight. This will protect the drum from light fatigue.
9. Before pulling out the drum unit, place a sheet of paper under the drum to catch any spilt toner.
10. Dispose of used drums in accordance with local regulations.

11. When installing a **new** drum in the drum unit, the following must be done.
 - a) Remove the protective sheet after securing the new drum to the drum unit.
 - b) Do the ID Sensor Initial Setting procedure (SP Test Mode 3001).
12. When the drum unit is removed, push the development unit to the right before re-installing the drum unit.

1.3 TRANSFER BELT UNIT

1. Replace the transfer belt every two PM cycles (240K copies) to avoid bad effects on the drum.
2. Never touch the transfer belt surface with bare hands.
3. Take care not to scratch the transfer belt as the surface is easily damaged.
4. Before installing the new transfer belt, clean all the rollers with a dry cloth to prevent the belt from slipping.

1.4 SCANNER UNIT

1. When installing the exposure glass, make sure that the white reference plate is facing down.
2. Clean the exposure glass with alcohol or glass cleaner to reduce the amount of static electricity on the glass surface.
3. Use a cotton pad with water or a blower brush to clean the mirrors and lens.
4. Do not bend or crease the exposure lamp flat cable.
5. Do not disassemble the lens unit. Doing so will throw the lens and the copy image out of focus.
6. Do not turn any of the CCD positioning screws. Doing so will throw the CCD out of position.

1.5 LASER UNIT

1. Do not loosen the screws that secure the LD drive board to the laser diode casing. Doing so would throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit, as they are adjusted in the factory.
3. The polygon mirror and F-theta lenses are very sensitive to dust. Never open the optical housing unit or remove the polygon mirror motor cover.
4. Do not touch the glass surface of the polygon mirror motor unit with bare hands.

1.6 CHARGE CORONA UNIT

1. Clean the charge corona wire with a dry cloth. Do not use sandpaper or a solvent.
2. Clean the charge corona casing with wet cotton and a dry cloth.
3. Clean the end blocks with a blower brush first to remove toner and paper dust. Then clean it with a dry cloth if any toner still remains on it.
4. Do not touch the corona wires with bare hands. Oil stains from fingers may cause uneven image density on copies.
5. Make sure that there is no foreign material (iron filings, etc.) on the casing.
6. To avoid uneven charge, do not bend or scratch the wire surface when installing new corona wires. Also be sure that the corona wires are correctly positioned in the grooves of the end blocks.
7. Clean the charge grid plate with a blower brush, water, then with a dry cloth. When doing so, be careful not to damage the grids by letting fibers attach to them.
8. Do not touch the charge grid plate with bare hands. Also, do not bend the charge grid plate or make any dent in it. Doing so may cause uneven charge.

1.7 DEVELOPMENT

1. Be careful not to nick or scratch the development rollers.
2. Place the development unit on a sheet of paper after removing it from the copier.
3. Never disassemble the development roller assembly. The position of the doctor plate is set with special tools and instruments at the factory to ensure the proper gap between the doctor blade and the development roller.

4. Clean the drive gears after removing used developer.
5. Dispose of used developer in accordance with local regulations.
6. When removing or installing the development unit, be careful not to damage the drum surface with the entrance seal on the development unit.
7. Never load different types of developer and toner into the development unit. Doing so will cause poor copy quality and toner scattering.
8. Immediately after installing new developer, the TD sensor initial setting procedure should be performed to avoid damage to the copier. Do not perform the TD sensor initial setting with used developer. Do not make any copies before doing the TD sensor initial setting.
9. When using a vacuum cleaner to clean the development unit casing, always ground the casing with your fingers to avoid damaging the toner density sensor with static electricity.
10. After replacing the TD sensor, do the TD sensor initial setting procedure (SP 2801).

1.8 DRUM CLEANING

1. Do not touch the cleaning brush with bare hands.
2. When servicing the cleaning section, be careful not to damage the edge of the cleaning blade.

1.9 FUSING UNIT

1. After installing the fusing thermistor, make sure that it is in contact with the hot roller and that it is movable.
2. Be careful not to damage the edges of the hot roller strippers or their tension springs.
3. Do not touch the fusing lamp and rollers with bare hands.
4. Make sure that the fusing lamp is positioned correctly and that it does not touch the inner surface of the hot roller.

1.10 PAPER FEED

1. Do not touch the surface of the pick-up, feed, and separation rollers.
2. The side fences and end fence of the paper tray must be positioned correctly to align with the actual paper size to avoid paper misfeeds.

1.11 USED TONER

1. The used toner tank should be emptied at every PM cycle, but we recommend checking the amount of used toner in the tank at every EM.
2. When reinstalling the used toner tank, make sure that the toner overflow sensor connector is inserted firmly.
3. Dispose of used toner in accordance with local regulations. Never throw toner into an open flame, for toner dust may ignite when exposed to open flame.

1.12 OTHERS

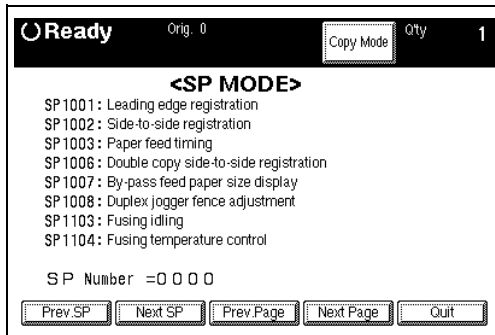
1. When carrying the copier, never lift it up by holding the LCT. Otherwise, the LCT will be broken. Hold the copier by the carrier handles in the bottom corners.
2. Do not move the copier while the main switch is on. The hard disk will be damaged. Stop the hard disk from spinning with SP 4911-4 before moving the machine.

2. SERVICE PROGRAM MODE

2.1 SERVICE PROGRAM MODE OPERATION

The service program (SP) mode is used to check electrical data, change modes, and adjust values.

2.1.1 Service Program Access Procedure



1) How to enter the SP mode

Press the following keys in sequence.



Hold the **C/** key for more than 3 seconds.

A menu of SP modes is displayed on the screen.

2) How to use an SP mode

Input the required SP mode number at the ten-key pad, then press Enter (#).

Also, you can scroll through the modes on the screen by pressing the "Prev. SP" or "Next SP" button.

To get to a Class 2 level, press the Enter key again. Then scroll through the Class 2 modes with "Prev. SP" or "Next SP".

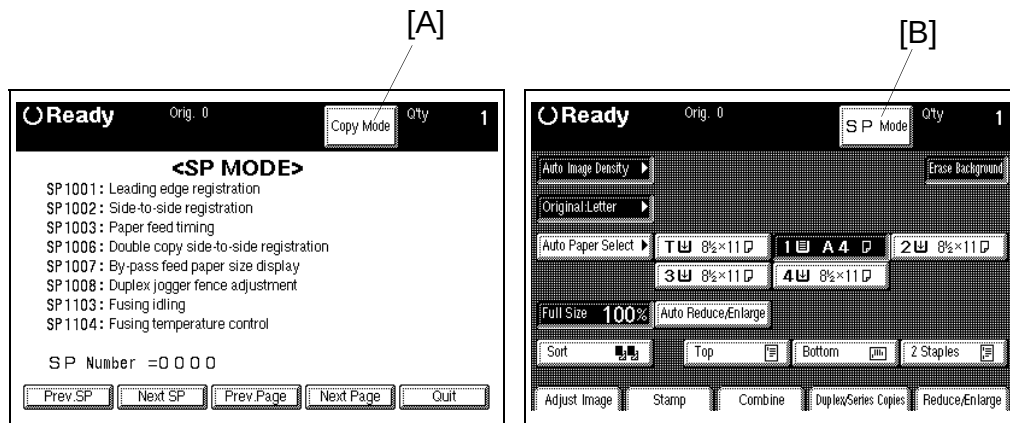
3) How to return to the main menu from within an SP mode

Press the **Stop/Reset** key.

4) How to leave SP mode

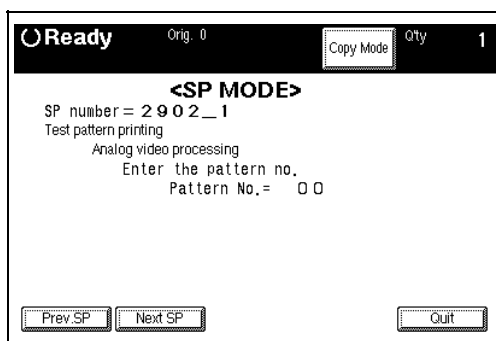
Touch the "Quit" button on the display.

2.1.2 Accessing Copy Mode from within an SP Mode



1. Touch "Copy Mode" [A] on the display. (This now changes to "SP Mode".)
2. Select the appropriate copy modes and make trial copies.
3. To return to the SP mode, touch "SP Mode" [B] on the display.

2.1.3 To Input a Value or Setting for an SP Mode



1. Input the value using the number keys, or for some SP modes, press the appropriate setting button on the screen.
2. If you used the number keys, now press the "Enter" key.
NOTE: If you forget to press the "Enter" key, the previous value remains.

2.2 SERVICE PROGRAM MODE TABLES

2.2.1 MAIN SP MODE TABLE

- NOTE:**
1. In the Function column, comments are in italics.
 2. In the Settings column, the default value is in bold letters.
 3. An asterisk " * " after the mode number means that this mode is stored in the NVRAM. If you do a RAM reset, all these SP modes will be reset to their factory settings.

Mode No.			Function	Settings
Class 1	Class 2			
1001 *		Leading Edge Registration	Adjusts the printing leading edge registration using Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
1002 *	1 *	Side-to-Side Registration (Duplex)	Adjusts the printing side-to-side registration from the duplex tray using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details on SP1002</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	2 *	Side-to-Side Registration (1st paper feed)	Adjusts the printing side-to-side registration from the 1st paper feed station using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	3 *	Side-to-Side Registration (2nd paper feed: Option PFU tray 1)	Adjusts the printing side-to-side registration from the 2nd paper feed station using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	4 *	Side-to-Side Registration (3rd paper feed: Option PFU tray 2)	Adjusts the printing side-to-side registration from the 3rd paper feed station using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	5 *	Side-to-Side Registration (4th paper feed: Option PFU tray 3 if present)	Adjusts the printing side-to-side registration from the 4th paper feed station using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm

Mode No.			Function	Settings
Class 1	Class 2			
1002 *	6 *	Side-to-Side Registration (By-pass feed)	Adjusts the printing side-to-side registration from the by-pass feed table using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -.</i> <i>The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	7 *	Side-to-Side Registration (LCT)	Adjusts the printing side-to-side registration from the LCT using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -.</i> <i>The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
1003 *	1 *	Paper Feed Timing (Paper Feed Trays)	Adjusts the relay clutch timing at registration. The relay clutch timing determines the amount of paper buckle at registration. (Increasing this setting leads to more buckling.)	+9 ~ -9 1 mm/step + 0 mm
	2 *	Paper Feed Timing (By-pass, LCT)		
1006 *		Double copy side-to-side registration	Adjusts the image position from the center line in double copy mode. <i>Use the ●/* key to toggle between + and -.</i> See "Replacement and Adjustment - Copy Image Adjustments" for details.	+9 ~ -9 1 mm/step + 0 mm
1007 *		By-pass Feed Paper Size Display	Displays the paper width sensor data for the by-pass feed table.	
1008 *	1 *	Duplex Jogger Fence Adjustment (Side Fence)	Adjusts the stop position of the side jogger fence span of the duplex unit. <i>Use the ●/* key to toggle between + and -.</i>	+4 ~ -4 0.5 mm/step + 0.0 mm
	2 *	Duplex Jogger Fence Adjustment (End Fence)	Adjusts the stop position of the end jogger fence span of the duplex unit. <i>Use the ●/* key to toggle between + and -.</i>	
1103 *		Fusing Idling	Selects whether fusing idling is done or not. <i>Normally disabled in this machine. However, if fusing is incomplete on the 1st and 2nd copies, switch it on. This may occur if the room is cold.</i>	On Off
1104 *		Fusing Temperature Control	Selects the fusing temperature control mode.	On/Off Phase
1105 *		Fusing Temperature Adjustment	Adjusts the fusing temperature.	170 ~ 200 1°C/step 185°C

Mode No.			Function	Settings
Class 1	Class 2			
1106		Fusing Temperature Display	Displays the fusing temperature.	
2001 *	1 *	Grid Voltage Adjustment (For copying)	Adjusts the voltage applied to the grid plate during copying.	600 ~ 1000 1 V/step 890 V
			<i>Do not adjust.</i>	
	2 *	Grid Voltage Adjustment (For ID sensor pattern)	Adjusts the voltage applied to the grid plate when making the ID sensor pattern.	600 ~ 1000 1 V/step 650 V
			<i>Do not adjust.</i>	
	5 *	Charge Corona Current Adjustment	Adjusts the current applied to the charge corona wire.	900 ~ 1300 1 μ A/step 1100 μA
			<i>Do not adjust.</i>	
2101 *	1 *	Leading Edge Erase Margin (Printing)	Adjusts the leading edge erase margin.	0.0 ~ 9.0 0.1 mm/step 3.0 mm
			<i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details on SP2101.</i>	
	2 *	Trailing Edge Erase Margin (Printing)	Adjusts the trailing edge erase margin.	0.0 ~ 9.0 0.1 mm/step 2.0 mm
			<i>The specification is 2 ± 2 mm.</i>	
	3 *	Left Side Edge Erase Margin (Printing)	Adjusts the left side erase margin.	0.0 ~ 9.0 0.1 mm/step 2.0 mm
			<i>The specification is 2 ± 1.5 mm.</i>	
	4 *	Right Side Edge Erase Margin (Printing)	Adjusts the right side erase margin.	0.0 ~ 9.0 0.1 mm/step 1.0 mm
			<i>The specification is $2^{+2.5}_{-1.5}$ mm.</i>	
2103 *		LD Power Adjustment	Adjusts the LD power.	-127 ~ +127 2.1 μ W/step +0
			<i>Do not change the value.</i>	
2201 *	1 *	Development Bias Adjustment (for copying)	Adjusts the development bias during copying.	200 ~ 700 1 V/step 550 V
			<i>This can be adjusted as a temporary measure if faint copies appear due to an ageing drum.</i>	
	2 *	Development Bias Adjustment (for ID sensor pattern)	Adjusts the development bias when making the ID sensor pattern.	200 ~ 700 1 V/step 310 V
			<i>This can be adjusted as a temporary measure if faint copies appear due to an ageing drum.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
2207		Forced Toner Supply	Forces the toner bottle to supply toner to the toner supply unit for 30 seconds. <i>Toner supply finishes automatically after 30 seconds. This process is not normally needed in the field for this model. At installation, doing the 50-page free run also supplies toner to the development unit.</i>	
2208 *	1 *	Toner Supply Mode	Selects the toner supply mode.	Detect Fixed
			<i>Use fixed supply mode only as a temporary measure if process control is not working.</i>	
	2 *	Toner Supply Ratio (Fixed Supply Mode)	Selects the toner supply ratio for Fixed Supply Mode.	6% 15% 30%
			<i>Use a higher value if the user tends to make lots of copies that have a high proportion of black.</i>	
2209 *		Toner Supply Rate (Detect Supply Mode)	Adjusts the toner supply rate for Detect Supply Mode.	50 ~ 200 1 mg/s / step 116 mg/s
			<i>Increasing this value reduces the toner supply clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black.</i>	
2210 *		ID Detection Interval	Changes the interval for making the ID sensor pattern (VSP/VSG detection).	10 ~ 200 1 copy/step 200 copies
			<i>Reducing the interval will also reduce the CPM. Do not adjust this.</i>	
2220 *		VTREF Manual Setting	Adjust the VTREF of the TD sensor.	1.50 ~ 3.00 0.01V/step 2.52V
			<i>Change this value after replacing the development unit with another one that already contains toner. For example, when using a development unit from another machine for test purposes, do the following: 1. Check the value of SP2220 in both the machine containing the test unit and the machine that you are going to move it to. 2. Install the test development unit, then input the VTREF for this unit into SP2220. 3. After the test, put back the old development unit, and change SP2220 back to the original value.</i>	
2223 *		VT Display	Displays the TD sensor output voltage.	

Mode No.			Function	Settings
Class 1	Class 2			
2301 *	1 *	Transfer Current Adjustment (1st side of the paper)	Adjusts the current applied to the transfer belt during copying on the 1st side of the paper. <i>If the user uses thicker paper, the current may have to be increased to ensure sufficient transfer of toner.</i>	10 ~ 60 1 μ A/step 32 μA
	2 *	Transfer Current Adjustment (2nd side of the paper)	Adjusts the current applied to the transfer belt during copying on the 2nd side of the paper. <i>See above.</i>	10 ~ 60 1 μ A/step 32 μA
	6 *	Transfer Current Adjustment (By-pass Feed)	Adjusts the current applied to the transfer belt during copying from the by-pass feed table. <i>See above; note that thicker paper can be fed from the bypass feed tray, so the factory setting is higher.</i>	10 ~ 60 1 μ A/step 48 μA
2801		TD Sensor Initial Setting	Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V. <i>Use this mode only after installing the machine, changing the TD sensor, or the adding new developer. This mode cannot be run until the machine has reached the Ready condition.</i>	
2803		Forced Charge Corona Wire Cleaning	Forces the charge corona wire cleaning motor to start cleaning. <i>This only works if the optional wire cleaning motor is installed.</i>	
2804 *	1 *	Charge Corona Wire Cleaning Enable/Disable	Determines whether to clean the charge corona wire every time interval set with SP 2804-2. <i>This only works if the optional wire cleaning motor is installed.</i>	
	2 *	Charge Corona Wire Cleaning Interval	Changes the interval for charge corona wire cleaning. <i>This only works if the optional wire cleaning motor is installed.</i>	100 ~ 10000 100 copies/step 2500 copies

Mode No.			Function	Settings
Class 1	Class 2			
2902	1	Test Pattern Printing (Analog Video Processing)	Prints the test patterns for analog video processing. See section 2.2.2 for how to print test patterns. 0. Not used 1. 16 gradations 2. 128-dot intervals 3. 64-dot intervals <i>This SP mode is useful for finding whether the SBU or EX-IPU failed. If the printout is OK, the SBU is defective. If the printout is not OK, the EX-IPU is defective.</i>	
	2	Test Pattern Printing (Digital Video Processing)	Prints the test patterns for digital video processing. See section 2.2.2 for how to print test patterns. 0. Not used 1. Vertical Stripes 2. Grayscale 3. Cross Pattern 4. Black Bands <i>This SP mode is useful for finding whether the printer or the EX-IPU failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.</i>	
	3	Test Pattern Printing (Printing)	Prints the printer test patterns. See section 2.2.2 for how to print test patterns. Example: 10. Trimming Area For the other test patterns, refer to section 2.2.2. <i>This SP mode is useful for finding the part that failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.</i>	
	6		Not Used. Do not change this value	
2905 *		LD PWM Laser Pulse Positioning	Selects the laser pulse positioning type that is used for test printouts and when in binary picture processing mode. <i>If SP 4904-1 is set to NO, this SP mode is ignored. The "center" setting will be used.</i>	2: Center 3. Left 4. Right 5. Concentrated
2906 *		TD Sensor Input Voltage	Use to input the TD sensor control voltage. Factory use only	4 ~ 10 0.1 V/step 8.0 V
2909 *		Main Scan Magnification	Adjusts the magnification in the main scan direction for the printer. <i>Use the •/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	- 2.54 ~ + 2.54 0.02 %/step + 0.00 %
2950 *		Side-to-Side Registration (Base)	Changes the printing start position. Factory use only	- 12.7 ~ + 12.7 0.1 mm/step + 0.0 mm
3001		ID Sensor Initial Setting	Performs the ID sensor initial setting. The ID sensor output for the bare area of the drum (VSG) is adjusted to $4.0 \pm 0.2V$. <i>This SP mode should be performed after replacing or cleaning the ID sensor or replacing the drum.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
3103 *		ID Sensor Output Display	Displays the current VSG and VSP output. <i>If the ID sensor does not detect the ID pattern, "VSP=5.0v/VSG=5.0v" is displayed.</i> <i>If the ID sensor does not detect the bare area of the drum, "VSP=0.0v/VSG=0.0v" is displayed.</i>	VSP=x.xxV VSG=x.xxV
4008 *		Sub Scan Magnification (Scanning)	Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. <i>Use the •/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	- 9.0 ~ + 9.0 0.1 %/step + 0.0 %
4010 *		Leading Edge Registration (Scanning)	Adjusts the leading edge registration for scanning. <i>(-): the image moves in the direction of the leading edge</i> <i>Use the •/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	- 9.0 ~ + 9.0 0.1 mm/step + 0.0 mm
4011 *		Side-to-Side Registration (Scanning)	Adjusts the side-to-side registration for scanning. <i>(-): the image disappears at the left side.</i> <i>(+): The image appears.</i> <i>Use the •/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	- 6 ~ + 6 0.1 mm/step + 0.0 mm
4012 *	1 *	Leading Edge Erase Margin (Scanning)	Adjusts the leading edge margin for scanning. <i>Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.</i>	0.0 ~ +9 0.1 mm/step 1.0 mm
	2 *	Trailing Edge Erase Margin (Scanning)	Adjusts the trailing edge margin for scanning. <i>See the comment for SP 4012-1.</i>	0.0 ~ 9 0.1 mm/step 0.5 mm
	3 *	Left Side Erase Margin (Scanning)	Adjusts the left side margin for scanning. <i>See the comment for SP 4012-1.</i>	0.0 ~ 9 0.1 mm/step 1.0 mm
	4 *	Right Side Erase Margin (Scanning)	Adjusts the right side margin for scanning. <i>See the comment for SP 4012-1.</i>	0.0 ~ 9 0.1 mm/step 0.5 mm
4013		Scanner Free Run	Performs a scanner free run with the exposure lamp off.	

Mode No.			Function	Settings
Class 1	Class 2			
4301		APS Sensor Output Display	Displays the size of an original placed on the exposure glass. <i>If A5 or 5 1/2" x 8 1/2" is displayed, check the current setting of SP 4303; depending on that SP mode setting, A5 or 5 1/2" x 8 1/2" may be displayed if the APS sensors cannot detect the paper size.</i>	
4303 *		APS Small Size Original Detection	Selects whether or not the copier determines that the original is A5/HLT size when the APS sensor does not detect the size. <i>If "A5 length / 5 1/2" x 8 1/2" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise or 5 1/2" x 8 1/2". If "Not detected" is selected, "Cannot detect original size" will be displayed.</i>	Not detected A5 length / 5 1/2"X8 1/2"
4428		Standard White Level Adjustment	Corrects the standard white level of the white plate. <i>This SP mode is for factory use only. Do not change the value.</i>	
4901 *	2 *	GA 1 Setting (GAIN 0)	The coefficient of the D/A converter for the standard AGC gain curve. <i>This SP mode is for factory use only. Do not change the value.</i>	0 ~ 255 1 /step 100
	5 *	GA 1 Setting (GAIN 1)	The coefficient of the D/A converter for the AGC gain curve at power on. <i>This SP mode is for factory use only. Do not change the value.</i>	0 ~ 255 1 /step 100
	8 *	GA 1 Setting (REF)	The coefficient of the D/A converter for the AGC gain curve for scanning the white plate. <i>This SP mode is for factory use only. Do not change the value.</i>	0 ~ 255 1 /step 100
	11 *	GA 1 Setting (Video Data Path)	Selects one of the following video data outputs, which will be used for printing. 0. After GA1 functions 1. Before auto shading processing 2. After black auto shading processing 3. After all auto shading processing (black and white)	
			<i>Do not change the value.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4903 *	1 *	GA 3 Setting (Filter Level)	Selects the strengths of the MTF and smoothing filters. bit 7, 6: Letter Mode (MTF) 00: Normal 01: Weak 10: Weaker 11: Weakest bit 5, 4: Generation Mode (MTF) 00: Normal 01: Weak 10: Weaker 11: Weakest bit 3: Not used Keep at "0" bit 2: Letter/Photo Mode (Smoothing) 0: Sharp 1: Smooth bit 1: Photo Mode (MTF) 0: Weak 1: Strong bit 0: Photo Mode (Smoothing) 0: Smooth 1: Sharp <i>Input the setting for all 8 bits at once as a decimal value. (e.g. To set the MTF filter strength of the the generation mode to 'weak', the input value should be 16 as shown below, assuming all other parameters are at the 'zero' setting. 00010000 → 16</i> <i>The type of filter used in Photo mode depends on the setting of SP4904-3.</i>	0 ~ 255 0
	2 *	GA 3 Setting (Filter Mode)	Selects the coefficients and strengths of the MTF filter and smoothing filter. Do not change the value.	0 ~ 16 1 /step 3
	3	Not used		
	4 *	GA 3 Setting (White Threshold)	Changes the threshold level for dot screen detection processing. Do not change the value.	0 ~ 255 1 /step 80
	5	GA3 Setting (Full Size)	Selects whether the copy image is always in the full size mode even if the magnification ratio has been changed. <i>This SP mode is used for checking the magnification function in the main scan direction, which is performed by the GA3 chip.</i>	0: Normal Operation 1: Always full size mode
	6	GA 3 Setting (Test Pattern Output)	Prints the test pattern for the GA3 or selects one of the following video data outputs for printing. 0. Normal 1. Test pattern print out 2. Skips the magnification processing. 3. Skips the filter processing 4. Skips the GA3 functions <i>This SP mode is used for checking the GA3 functions.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4903	7 *	GA 3 Setting (Main Shift High)	Changes the image shift amount for the main scan direction in magnification mode.	0 ~ 255 1 /step 0
	8 *	GA 3 Setting (Main Shift Low)	Do not change the values of 4903-7 and 4903-8.	
	9 *	GA 3 Setting (Switch Separation)	Changes the threshold ratio for auto text/photo separation processing. <i>This is used only in the Japanese model.</i>	25 ~ 255 1 %/step 170 %
4904 *	1 *	GA4 Setting (Laser Pulse Positioning)	Selects whether LD PWM laser pulse positioning feature is performed or not. <i>If "No" is selected, the copier always uses the "center" setting (pixels will always have a small separation).</i>	0: OFF 1: ON
	2 *	GA4 Setting (Photo Matrix)	Selects the matrix size for photo mode. 8 x 8 is only used if 4904-4 is set to "binary". Also, if 4904-4 is set to binary, 4904-2 will be ignored if the setting is other than 8 x 8. 6 x 6 (New) should be selected when a light original is used. 4 x 4 leads to a sharper image	0: 4 x 4 1: 6 x 6 2: 8 x 8 3: 6 x 6 (New)
	3 *	GA4 Setting (Filter Select in Photo Mode)	Selects either the MTF filter or the smoothing filter in Photo mode. <i>The strength of the MTF filter can be selected with SP4903-1, bit 1.</i> <i>The strength of the Smoothing filter can be selected with SP4903-1, bit 0.</i> <i>If you select the MTF filter, the image resolution is improved. However, the dot screen areas will be faint.</i>	0: MTF filter 1: Smoothing filter
	4 *	GA4 Setting (Binary Process Mode)	Selects whether binary picture processing mode is performed or not. <i>If YES is selected, all image processing modes are handled using binary picture processing mode.</i>	0: NO 1: YES
	6	GA4 Setting (Generation Mode)	Selects the line width correction type in the generation mode. <i>In generation mode, lines may bulge in the main scan direction. Adjust this SP mode until the result is satisfactory.</i>	0: Not corrected 1: Thin line-1 2: Thin line-2 3: Thick line
	7	GA4 Setting (Image Process mode in Letter/ Photo mode: Letter areas)	Selects the image processing mode used for Letter areas in Letter/Photo mode. 0: 1 x 1 dot processing 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing 3: Error diffusion with 2 x 1 dot processing <i>A larger value cases the image to became lighter.</i> <i>Only works if 4904-4 is at 0.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4904	8	GA4 Setting (Image Process mode in Letter/Photo mode: Photo Areas)	Selects the image processing mode used for photo areas in the Letter/Photo mode. 0: 1 x 1 dot processing 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing 3: Error diffusion with 2 x 1 dot processing <i>A smaller value causes the image to become more sharp in focus.</i> <i>Only works if 4904-4 is at 0.</i>	
	10	GA4 Setting (GA4 Test Data)	Prints the test pattern for the GA4 IC, to test the GA4 chip on the EX-IPU. 0: No Print 1: Gradation 2: Cross 3: Black bands	
	12 *	GA4 Setting (BK Thresh Level)	Changes the threshold level for binary picture processing mode. <i>A larger value causes the image to become lighter.</i>	0 ~ 255 1 /step 40
	13 *	GA4 Setting (Top point Level)	The value for pixels at an edge in binary picture processing mode. Do not change the value.	0 ~ 255 1 /step 128
	14 *	GA4 Setting (All Black Level)	The value for black areas in binary picture processing mode. Do not change the value.	0 ~ 255 1 /step 255
	16 *	GA4 Setting (Print Top Point Level)	The value for pixels at an edge in stamp mode. Do not change the value.	0 ~ 255 1 /step 128
	17 *	GA4 Setting (Print All Black Level)	The value for black areas in stamp mode. Do not change the value.	0 ~ 255 1 /step 255
	18 *	GA4 Setting (Dither Pattern)	Selects the dither pattern used in binary picture processing mode. Do not change the value.	0: 70-line 1: 95-line 2: 140-line 3: 180-line
	1	Path Setting (ASAP Video In)	These SP modes are used for design purposes only. Do not change the settings.	0
	2			
4907		GA4 Setting (Auto letter/photo separation)	Selects whether the auto letter/photo separation is performed in the Letter/Photo mode or not.	Disabled Enabled
			<i>Test purposes only</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4909	1	GA4 Setting (Pulse Width Modulation)	Decides the threshold level for selecting the type of pulse width modulation that is used. <i>Do not change the value.</i>	0 ~ 255 1 /step 0
	2	GA4 Setting (Line Width Correction 1 : White)	Decides the threshold value for a pixel to be white when line width correction type 1 is performed. <i>Do not change the value.</i>	0 ~ 255 1 /step 0
	3	GA4 Setting (Line Width Correction 1 : Black)	Decides the threshold value for a pixel to be black when line width correction type 1 is performed. <i>Do not change the value.</i>	0 ~ 255 1 /step 0
	4	GA4 Setting (Line Width Correction 2 : White)	Decides the threshold value for a pixel to be white when line width correction type 2 is performed. <i>Do not change the value.</i>	0 ~ 255 1 /step 0
	5	GA4 Setting (Line Width Correction 2 : Black)	Decides the threshold value for a pixel to be black when line width correction type 2 is performed. <i>Do not change the value.</i>	0 ~ 255 1 /step 0
	6	GA4 Setting (Error Diffusion Gamma)	Selects the gamma type for error diffusion. <i>Do not change the value.</i>	0 ~ 7 1 /step 0
	7	GA4 Setting (Edge Detection 1)	Decides the threshold value to calculate the difference value between the object pixel and the surrounding pixels. <i>Do not change the value.</i>	0 ~ 255 1 /step 0
	8	GA4 Setting (Edge Detection 2)	Decides the threshold value for detecting the edge area. <i>Do not change the value.</i>	0 ~ 255 1 /step 0
	17	GA4 Setting (Background Pattern Merge Method)	Selects whether an image which overlaps a background numbering pattern is converted from positive to negative or not. <i>This SP mode is used when a background numbering pattern is overlapping a solid black area.</i>	0: Not converted 1: Converted

Mode No.			Function	Settings
Class 1	Class 2			
4909	18	GA4 Setting (Stamp Pattern Merge Method)	Selects whether an image which overlaps a stamp pattern is converted from positive to negative or not. The settings 0 and 1 are the same as for 4909-17 above. The setting 2 means that the black level of the stamp (SP4904-17) is inverted (e.g. when the black level of the stamp is 200, the stamp pattern is printed at black level 55.) <i>This SP mode is used when a stamp pattern is overlapping a solid black area.</i>	0: Not converted 1: Converted 2: Inverted
	19	GA4 Setting (Data Path Selection 1)	<i>These SP modes are used for design purposes only. Do not change the settings.</i>	0
	20	GA4 Setting (Data Path Selection 2)	<i>These SP modes are used for design purposes only. Do not change the settings.</i>	0
4911	1	HDD Setting (Media Test)	Checks for bad sectors on the hard disk that develop during machine use. This takes 4 minutes. <i>This SP mode should be done when an abnormal image is printed. There is no need to do this at installation as the hard disk firmware already contains bad sector information, and damage is not likely during transportation. Bad sectors detected with this SP mode will be stored in the E²PROM on the EX-IPU board with the bad sector data copied across from the firmware.</i>	
	2	HDD Setting (Formatting)	Formats the hard disk. This takes 10 seconds.	
	3	HDD Setting (Spindle Control)	Decides the disk drive motor (spindle motor) stop timing. Yes: The hard disk stops in low power mode. The first copy after returning to standby will take longer. No: The hard disk keeps going in low power mode	
	4	HDD Setting (Head Retraction)	Press Enter to move the head of the hard disk away from the disk while the disk is turning. The head automatically moves back when a copy is made. <i>This SP should be performed when the machine will be moved without turning the main switch off.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4911	5	HDD Setting (Total Storage Capacity)	Input the total storage capacity of the hard disk at replacement. <i>In future, hard disks of various sizes may be available. In this case, use this SP mode when installing a new disk.</i>	
		HDD Setting (Bad Sector Information Reset)	Resets the bad sector information which is stored in the E ² PROM on the EX-IPU board. <i>This SP should be performed when the hard disk is replaced.</i>	
	7	HDD Setting (Bad Sector Display)	Displays the number of bad sectors there are on the hard disk.	
5019		LCT Paper Size Setting	Selects the paper size for the LCT. <i>When changing the setting, the position of the side fences for the LCT should be changed.</i>	A4 (230V machines) 8 1/2 X 11 (115V machines)
5104 *		A3/11"x17" Double Count	Specifies whether the counter is doubled for A3/11"x17" paper. <i>If "YES" is selected, the total counter and the current user code counter counts up twice when A3/11"x17" paper is used.</i>	No Yes
5106 *		ADS Level Selection	Selects the image density level that is used in ADS mode.	1 ~ 7 1 notch /step 4
5118 *		Disable Copying	Selects whether the copy function is disabled or not.	No Yes
5220 *		Auto Stamp Function	Selects whether the auto stamp function is enabled or not.	On (115V machine) Off (230V machine)
5305		Auto Off Mode	This SP mode is used only for 115V machines (Energy Star standardization). Selects whether the auto off timer setting is enabled or disabled <i>When "disabled" is selected, the auto off timer range will be wider than the default timer range. (In UP mode, the user will be able to select a time between 0 and 120 minutes.) If "0" is selected, the auto off timer function is disabled.</i>	Enabled Disabled
5501 *	1	PM Alarm	Selects whether the PM alarm is enabled or not.	Enabled Disabled
5501	2	PM Alarm Interval	Sets the PM interval, with an alarm. <i>When the setting is "0", this function is disabled.</i>	0 ~ 255 1k copies/step 120 k copies

Mode No.			Function	Settings
Class 1	Class 2			
5801		Memory All Clear	Resets all correction data for process control and all software counters. Also, returns all modes and adjustments to the default settings. See the "MEMORY ALL CLEAR" section for how to use this SP mode correctly. Normally, this SP mode should not be used. <i>It is used only after replacing the NVRAM, or when the copier malfunctions due to a damaged NVRAM.</i>	
5802		Free Run	Performs a free run. The scanner scans once and the printer prints for the number of copies requested. (Press "Copy Mode", then "Start")	
5803	1 ~ 9	Input Check	Displays the signals received from sensors and switches. See the "INPUT CHECK" section for details.	
5804		Output Check	Turns on the electrical components individually for test purposes. See the "OUTPUT CHECK" section for details.	
5807		Option Connection Check	Checks the connectors to the options.	
5811 *		Machine Serial Number	Use to input the machine serial number. <i>This serial number will be printed on the system parameter list.</i>	
5812 *		Service Telephone Number	Use this to input the telephone number of the service representative (this is displayed when a service call condition occurs.) <i>Press the "•/#" key to input a pause (—). Press the "Clear modes" key to delete the telephone number.</i>	
5902		Duplex Tray Capacity Limit for A3 Copies	Selects the total capacity of the duplex tray for A3 (11 x 17") paper. <i>If there are frequent jams at the duplex unit when using A3 paper, try setting this to 30.</i>	50 sheets 30 sheets

Mode No.			Function	Settings
Class 1	Class 2			
5920 *		Fusing Temp. Setting - Low Power Mode	Selects the fusing temperature that will be used in low power mode.	(115V ver.) 125 °C
			<i>If a low temperature is selected, it takes more time to reach the ready condition.</i>	100 °C (230V ver.) 170 °C 155 °C 125 °C 100 °C
5990	1	SP Mode Data Printing (All Data)	Prints all the system parameter lists. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 6 minutes.</i>	
	2	SP Mode Data Printing (SP Mode Data)	Prints the SP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 2 minutes.</i>	
	3	SP Mode Data Printing (UP Mode Data)	Prints the UP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 2 minutes.</i>	
	4	SP Mode Data Printing (Machine Status Data)	Prints the machine status history data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 2 minutes.</i>	
6006 *	1 *	ADF Side-to-Side Registration	Adjusts the printing side-to-side registration in the ADF mode.	-3 ~ +3 0.1 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -.</i>	
	2 *	ADF Leading Edge Registration (Simplex)	Adjusts the original stop position.	-3 ~ +3 0.1 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -.</i>	
	3 *	ADF Leading Edge Registration (Duplex-front)	Adjusts the original stop position against the original left scale in one-sided original mode.	-3 ~ +3 0.1 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -.</i>	
	4 *	ADF Leading Edge Registration (Duplex-rear)	Adjusts the original stop position against the original left scale in two-sided original mode.	-3 ~ +3 0.1 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -.</i>	
For details on the correct way to use SP 6006, see the ADF service manual.				



Mode No.			Function	Settings
Class 1	Class 2			
6009		ADF Free Run	Performs an ADF free run. <i>This is a general free run controlled from the copier. For more detailed free run modes, see the DF manual.</i>	
6105 *		Finisher Staple Position Adjustment	Adjusts the staple position when using the finisher. <i>Use the •/* key to toggle between + and -. One staple position: A larger value causes the staple position to shift inward. Two staple position: A larger value causes both staple positions to shift to the rear side of the machine.</i>	- 1~ +3.5 0.5 mm/step +0.0 mm
6107		Finisher Free Run	Performs a finisher free run (without stapler). <i>This is a general free run controlled from the copier. For more detailed free run modes, see the finisher manual.</i>	
7004			Japanese version only. Do not change this value.	
7804		PM Counter Reset	Resets the PM counter.	To see the current counter values, print the SP mode data lists (SP 5990).
7807		SC/Jam Counter Reset	Resets the SC and jam counters.	
7808		Resets Counters (except for the total counter)	Resets the following counters: On the data list, between "Total No of Org from ADF" and "Number of SCs: Others", and between "Counter from ADF" and "Staple Mode".	
7810		User Code Number Reset	Resets the user code numbers.	

Mode No.			Function	Settings
Class 1	Class 2			
7901	1	ROM/CPU Version (Operation Panel)	Displays the operation panel board ROM version.	
	2	ROM/CPU Version (MSIS)	Displays the ROM version for the MSIS on the SCU board.	
	3	ROM/CPU Version (Copy App.)	Displays the ROM version for the copy application on the SCU board.	
	4	ROM/CPU Version (BCU:68340)	Displays the CPU version for the fusing controller on the BCU board.	
	5	ROM/CPU Version (AC Power Control)	Displays the ROM version for AC power control on the AC drive board.	
	6	ROM/CPU Version (High Voltage)	Displays the ROM version for the high voltage control board.	
	7	ROM/CPU Version (EX-IPU)	Displays the ROM version for the EX-IPU board.	
	8	ROM/CPU Version (ADF)	Displays the ROM version for the ADF.	
	9	ROM/CPU Version (Paper Feed Unit)	Displays the ROM version for the paper feed unit.	
7901	10	ROM/CPU Version (Sorter/ Finisher)	Displays the ROM version for the sorter/finisher.	
	11	ROM/CPU Version (MSU)	Displays the ROM version for the memory unit on the EX-IPU board.	

2.2.2 TEST PATTERN PRINTING (SP 2902)

1. Access the SP mode which holds the test pattern that you need.
2. Touch the "Copy Mode" button on the display to access the copy mode display.
3. Select the required copy features such as paper size, image density, reduction.
4. Press the "Start" key on the operation panel.
5. After checking the test pattern, leave copy mode by touching the "SP Mode" button on the display.
6. Touch the "Quit" button to leave the SP mode.



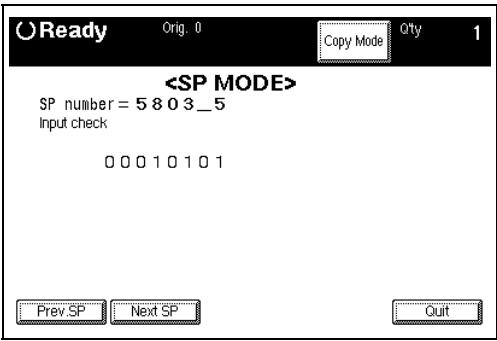
CAUTION

Before leaving the SP mode, return the setting of the SP mode to 0 (No Print). Otherwise, the user will get a test pattern whenever taking a copy.

Test Pattern Table for SP2902-3

No.	Test Pattern	No.	Test Pattern
0	No Print	16	32 Grayscales (Horizontal)
1	Vertical Lines (1 dot)	17	32 Grayscales (Vertical)
2	Horizontal Lines (1 dot)	18	32 Grayscales (Vert./Hor.)
3	Vertical Lines (2 dots)	19	32 Grayscales (V/H Overlay)
4	Horizontal Lines (2 dots)	20	64 Grayscales (Horizontal)
5	Grid Pattern (single dot)	21	64 Grayscales (Vertical)
6	Grid Pattern (double dots)	22	64 Grayscales (Vert./Hor.)
7	Alternating Dot Pattern	23	64 Grayscales (V/H Overlay)
8	Full Dot Pattern	24	128 Grayscales (Horizontal)
9	Black Band	25	128 Grayscales (Vertical)
10	Trimming Area	26	128 Grayscales (Vert./Hor.)
11	Argyle Pattern	27	128 Grayscales (Vert./Hor. Overlay)
12	16 Grayscales (Horizontal)	28	256 Grayscales (Horizontal)
13	16 Grayscales (Vertical)	29	256 Grayscales (Vertical)
14	16 Grayscales (Vert./Hor.)	30	256 Grayscales (Vert./Hor.)
15	16 Grayscales (Vert./Hor. Overlay)	31	256 Grayscales (Vert./Hor. Overlay)

2.2.3 INPUT CHECK (SP5803)



1. Access SP mode 5803.
2. Select the class 2 SP number which will access the switch or sensor you wish to check (see the table that follows this procedure).
3. Check the status of the sensor or switch.
NOTE: If you wish to change to another class 2 level, touch "Next SP" or "Prev. SP" on the display.
4. If you wish to check the signal during a copy cycle, enter copy mode from the SP mode, select the required copy modes, then press the Start key. After that, go back to the SP mode to check the signal.
5. The reading ("0" or "1") will be displayed. The meaning of the display is as follows.

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
0	0	0	0	0	0	0	0

Class 2 no.	bit no.	Description	Reading	
			0	1
1	7	Not used		
	6	LCT Paper End Sensor	Paper not detected	Paper detected
	5	Not used		
	4			
	3			
	2			
	1	Registration Sensor	Paper not detected	Paper detected
	0	Not used		

Class 2 no.	bit no.	Description	Reading	
			0	1
2	7	Not used		
	6	LCT Switch	LCT unit closed	LCT unit open
	5	Front Cover Safety Switch	Front cover closed	Front cover open
	4	Relay Sensor 3 (Option PFU)	Paper not detected	Paper detected
	3	Relay Sensor 2 (Option PFU)	Paper not detected	Paper detected
	2	Relay Sensor 1 (Option PFU)	Paper not detected	Paper detected
	1	By-pass Feed Paper End Sensor	Paper detected	Paper not detected
	0	By-pass Feed Table Switch	By-pass feed table closed	By-pass feed table open
3	7	Thermistor	Normal	Overheat
	6	Not used		
	5	Toner End Sensor	No toner	Toner present
	4	Toner Overflow Sensor	Bottle not full	Bottle full
	3	Not used		
	2	Transfer Belt Position Sensor	Transfer belt down	Transfer belt up
	1	Not used		
	0			
4	7	Not used		
	6			
	5	LCT Tray Down Switch	Switch not pressed	Switch pressed
	4	LCT Lower Limit Sensor	Bottom plate not at lower position	Bottom plate at lower position
	3	LCT Upper Limit Sensor	Paper not at high position	Paper at high position
	2	LCT Set Signal	Not connected	Connected
	1	LCT Cover Sensor	LCT cover closed	LCT cover open
	0	LCT/By-pass Relay Sensor	Paper not detected	Paper detected
5	7	DIP Switch 8 (BCU)	Not used	
	6	DIP Switch 7 (BCU)	Not used	
	5	DIP Switch 6 (BCU)	Version Setting (see Table 1)	
	4	DIP Switch 5 (BCU)	Version Setting (see Table 1)	
	3	DIP Switch 4 (BCU)	SC is enabled	SC is disabled
	2	DIP Switch 3 (BCU)	No duplex	Duplex
	1	DIP Switch 2 (BCU)	Black	Twin Color
	0	DIP Switch 1 (BCU)	25 CPM	40 CPM

Class 2 no.	bit no.	Description	Reading	
			0	1
6	7	Print start signal	Not activated	Activated
	6	Main Motor Lock signal	Not detected	Detected
	5	Ozone Fan Motor Lock signal	Not detected	Detected
	4	Exhaust Fan Motor Lock signal	Not detected	Detected
	3	By-pass Feed Table Paper Width Data	See Table 2	
	2			
	1			
	0			
7	7	Not Used		
	6	Upper Relay Sensor	Paper not detected	Paper detected
	5	Not Used		
	4			
	3			
	2			
	1			
	0			
8	7	Paper End Sensor	Paper detected	Paper not detected
	6	Lower Relay Sensor	Paper not detected	Paper detected
	5	Tray Upper Limit Sensor	Paper not at high position	Paper at high position
	4	Tray Paper Size Sensor - 5	Switch not pressed	Switch pressed
	3	Tray Paper Size Sensor - 4	Switch not pressed	Switch pressed
	2	Tray Paper Size Sensor - 3	Switch not pressed	Switch pressed
	1	Tray Paper Size Sensor - 2	Switch not pressed	Switch pressed
	0	Tray Paper Size Sensor - 1	Switch not pressed	Switch pressed
9	7	Duplex Unit Set Signal	Not detected	Detected
	6	Fusing Unit Set Signal	Not detected	Detected
	5	Fusing Exit Sensor	Paper not detected	Paper detected
	4	Duplex End Fence H.P Sensor	End fence not at home position	End fence at home position
	3	Duplex Side Fence H.P Sensor	Side fence not at home position	Side fence at home position
	2	Duplex Turn Sensor	Paper not detected	Paper detected
	1	Duplex Entrance Sensor	Paper not detected	Paper detected
	0	Duplex Paper End Sensor	Paper not detected	Paper detected

Table 1: Version Setting

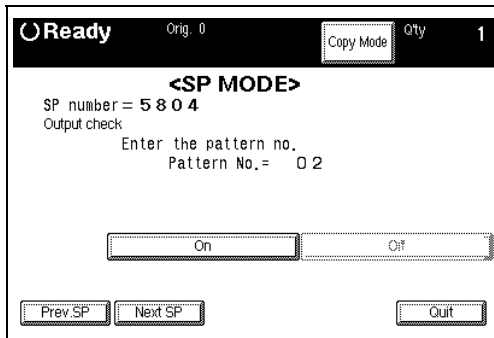
Class 2 no.	Bit 4	Bit 5	Version
5	0	0	Japanese version
	1	0	120V version
	0	1	230V version
	1	1	Not used

Table 2: By-pass Feed Table Paper Size Data

Class 2 no.	Bit 3	Bit 2	Bit 1	Bit 0	Paper Width
6	0	0	0	0	Post Card
	0	0	0	1	B6 Lengthwise
	0	0	1	0	B5 Lengthwise
	0	0	1	1	A5 Lengthwise / 5 1/2"
	0	1	0	0	B4 Lengthwise
	0	1	1	0	A4 Lengthwise / 8 1/2" / 8"
	1	0	0	0	A3 Lengthwise
	1	1	0	0	11" x 17"

1: Contact closed

2.2.4 OUTPUT CHECK (SP5804)



CAUTION

Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

1. Access SP mode 5804.
2. Selects the SP number that corresponds to the component you wish to check (see the table following this procedure), then press .
3. Touch "ON" on the display to check the function.
4. Touch "OFF" on the display to interrupt the function.
5. If you wish to check another component, do the following procedure.
 - 1). Press .
 - 2). Enter the new SP number for the component you wish to check next.
 - 3). Press .

- Output check table -

No.	Description	No.	Description
1	Not used	51	Transport Drive Motor (Optional Finisher)
2	Not used	52	Junction Gate Solenoid and Positioning Roller Solenoid (Optional Finisher)
3	Not used	53	Shift Tray Lift Motor (Optional Finisher)
4	Relay Clutch	54	Jogger Motor (Optional Finisher)
5	Registration Clutch	55	Stack Feed Out Motor
6	1st Paper Feed Clutch	56	Same as 55
7	1st Pick-up Solenoid		
8	Separation Solenoid	60	Duplex Motor (Forward)
9	Main Motor	61	Duplex Motor (Reverse)
10	Quenching Lamp	62	Side Jogger Motor (Duplex Tray)
11	Charge Corona & Grid Bias	63	End Jogger Motor (Duplex Tray)
12	Development Bias	64	Main Switch (Tests Auto Off Mode)
13	Transfer Belt Bias	65	Not used
14	Not used	66	Ozone Fan Motor
15	Not used	67	Cooling Fan Motor
16	Development Clutch	68	Exhaust Fan Motor
17	Toner Supply Clutch	69	Not used
18	Toner Bottle Drive Motor	70	Not used
19	Not used	71	Not used
20	Not used	72	Not used
21	ID Sensor	73	Not used
22	Transfer Belt Lift Clutch (Up)	74	Not used
23	Transfer Belt Lift Clutch (Down)	75	Corona Wire Cleaner
24	Junction Gate Solenoid	76	Charge Corona Bias
25	Not used	77	Grid Bias
26	1st Paper Feed CI (Optional PFU)	78	Not used
27	1st Pick-up Sol (Optional PFU)	79	Not used
28	1st Separation Sol (Optional PFU)	80	Not used
29	2nd Paper Feed CI (Optional PFU)	81	DF Feed Motor (Forward)
30	2nd Pick-up Sol (Optional PFU)	82	DF Feed Motor (Reverse)
31	2nd Separation Sol (Optional PFU)	83	DF Belt Motor (Forward)
32	Main Motor (Optional PFU)	84	DF Belt Motor (Reverse)
33	3rd Paper Feed CI (Optional PFU)	85	DF Feed Motor (Forward)
34	3rd Pick-up Sol (Optional PFU)	86	DF Solenoids (All solenoids)
35	3rd Separation Sol (Optional PFU)	87	DF LEDs
36	Relay Clutch (Optional PFU)	88	Not used
37	By-pass Feed Clutch	89	Not used
38	Not used	90	Not used
39	LCT/By-pass Pick-up Solenoid	91	Not used
40	LCT Pick-up Solenoid	92	Not used
41	LCT/By-pass Relay Clutch	93	Not used

2.2.5 SYSTEM PARAMETER AND DATA LISTS (SP5990)

1. Access SP mode 5990 and select the class 2 SP mode number corresponding to the list that you wish to print.
2. Touch the "Copy Mode" button on the display to access the copy mode display.
3. Select the paper size.
NOTE: A paper size larger than A4 or 8 1/2" x 11" should be selected.
4. Touch the "SP Mode" button then the "Print" button on the display.
5. Touch the "Copy Mode" button on the display.
6. Press the "Start" key on the operation panel to print the list.
7. After printing the list, leave copy mode by touching the "SP Mode" button on the display.
8. Touch the "Quit" button to leave the SP mode.

2.3 SP MODE AFTER REPLACEMENT AND CLEANING

The following table shows the necessary SP modes and their order of execution when the listed items are replaced or cleaned.

●: After replacement ○: After cleaning

No.	SP Mode No.	Item Description	Developer	TD Sensor	Drum	ID Sensor	Test Development Unit (with toner already in it)
1	2801	TD sensor initial setting (See the note below.)	●	●			
2	2220	VTREF manual setting					●
3	3001	ID sensor initial setting			●	● ○	

NOTE: TD sensor initial setting can only be performed after warming up the machine completely.

2.4 MEMORY ALL CLEAR (SP5801)

CAUTION

Memory All Clear mode resets all the settings that are stored in the NVRAM to the default settings. These settings are the correction data for process control and all the software counters.

Normally, this SP mode should not be performed, This procedure is required only after replacing the RAM board or when the copier malfunctions due to a damaged RAM board.

1. Print out all System Parameter Lists (SP mode 5990).
2. Enter SP mode 5801.
3. Hold the  key for more than 3 seconds.
4. Turn the main switch off and back on.
5. Perform the Touch Screen Adjustment procedure (see the "Touch Screen Adjustment" chapter in the Replacement and Adjustment section).
6. Do the printer and scanner registration and magnification adjustments (see section 12 of Replacement and Adjustment).
7. Enter the values which had been changed from the factory settings, referring to the system parameter list (the values which have an "*" mark next to them had been changed). In particular, the values for SP2220, SP3001, SP4901-2, SP4901-5, and SP4901-8 must be input.
8. Check the copy quality and the paper path, and do any necessary adjustments.

2.5 USER CODE FEATURE

For how to store User Codes, refer to the operating instructions below.

- ⇒
1. Press the user tools key.
 2. Touch the basic settings key.
 3. Go to page five, Set User Code(s); press Register (refer to illust. below).
 4. Key Operator Code (A); register a six digit key operator access code.
 5. Assign/Activate Key Operator Code (B); press Yes.
 6. User Code Register/Change/Delete (C); press Yes.
 7. Press register and input a six digit user code (up to twenty codes can be input). After registering codes, press the prev. menu key.
 8. User Code Mode (D); press Yes.
 9. Disconnect jumper behind the right inner cover.

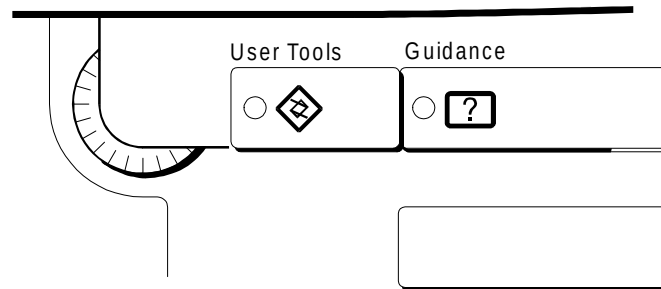
	Set User Code(s) Select Mode	Prev. Menu	
	 Check/Reset/Print Copy Counter	Yes	
C)	 User Code Registration/Change/Delete	Yes	
B)	 Assign/Activate Key Operator Code	No	Yes
A)	 Key Operator Code	Register	
		No	Yes
D)	 Set User Code Mode		

3. USER PROGRAM MODE

The user program (UP) mode is accessed by the key operators, and sales and service staff. This mode is used to input the copier's default settings.

3.1 How to Enter and Leave UP Mode

Press the User Tools button



3.2 UP Mode Table

Menu	
Basic Settings	Auto Response (Human) Sensor
	Operation Panel Beeper
	Copy Counter Display
	Set Date
	Set Time
	Auto Reset
	Low Power Timer
	Auto Off Timer
	Paper Type Display (for each tray)
	Tray 1 <*> Paper Size Setting
	Tray 1 <F/F4> Paper Size Setting
	Paper Size Setting (for tray 2,3, and 4 (Optional))
	Paper Tray Priority
	Original <F/F4> Size Setting
	ADF: Thin Paper Mode
	Auto Tray Switching
	Set User Code(s)

Menu		
Copy Features	Copy Modes	Auto Paper Select Priority
		Auto Image Density Priority
		Original Mode Priority
		Full Main Menu Display
		Duplex Mode Priority
		User Reproduction Ratio 1, 2
		Maximum Copy Quantity
		Original Beeper
	Adjust Image	Margin Adjust Front
		Margin Adjust Back
		Erase Border
		Erase Center
		Double Copies Separation Line
		Combine Originals Booklet Format
		Image Repeat Separation Line
	Stamp	Page Numbering Format
		P1,P2 1/5,2/5.... Format Position
		-1-,-2- Format Position
		Auto Stamping
		Stamp Layout
		Size
		Density
		Position
		User Stamp
		User Stamp Layout
		Size
		Density
		Position
		Date Position/Format
		Date Format
		Orientation
		Position Top Left
		Position Bottom Right
		Background Numbering Size
		Background Numbering Density
	Input/ Output	Duplex Remaining Copy Exit
		Combine Remaining Copy Exit
		SADF Auto Reset Timer
		Mixed Original Sizes
		ADF Auto Sort Mode
		Memory Full Auto Scan Restart
		Rotate Sort Auto Paper Continue

4. TEST POINTS/DIP SWITCHES/LEDS

4.1 DIP SWITCHES

BCU (Base Engine Control Unit): DIP SW201

No.	Function	ON	OFF
1	Copy Speed	200 mm/s	150 mm/s
2	Development Unit Type	Twin color (Japan only)	Mono color
3	Duplex Unit	Installed	Not installed
4	SC Generation	Disabled	Enabled
5	Destination	Off) Japan	Off) Europe
6		On) N.America	On) Not used
7	Not used		
8	Not used		

Do not change the settings of switches 1 to 4. They should be kept at the settings indicated in bold type in the above table.

SCU (System Control Unit): DIP SW401

No.	Function	ON	OFF
1,2	Not used		
3	Ricoh/OEM setting	OEM	Ricoh
4~8	Not used		

4.2 TEST POINTS

BCU (Base Engine Control Unit)

Number	Label	Monitored Signal
TP 208	(GND)	Ground

SCU (System Control Unit)

Number	Label	Monitored Signal
TP 402	(GND)	Ground

EX-IPU (Expanded - Image Processing Unit)

Number	Label	Monitored Signal
TP 1	(GND)	Ground
TP 2	(GND)	Ground
TP 5	(GND)	Ground
TP 25	(+ 5V)	+ 5V
TP 26	(GND)	Ground
TP 27	(- 12V)	- 12V
TP 28	(+ 24V)	+ 24V
TP 29	(+ 12V)	+ 12V
TP 40	(GND)	Ground
TP 43	(GND)	Ground

4.3 LEADS

BCU (Base Engine Control Unit)

Number	Monitored Signal
LED 201	Monitors the CPU (IC401). Usually, this LED is blinking.
LED 202	Monitors the sub CPU (IC213), fusing lamp control, and the +24V line condition. Usually, this LED is blinking. When the IC is not working properly, both LED201 and 202 are turned off. When there is an abnormal fusing lamp control condition or the +24V line is cut, this LED blinks faster than normal.

SCU (System Control Unit)

Number	Monitored Signal
LED 401	Monitors the MPU (IC401). Usually, this LED is blinking. If this LED is either always lit or always off, the MPU is not working properly.

Lamp Stabilizer

Number	Monitored Signal
LED 1	Lights when the exposure lamp turns on.

4.4 VARIABLE RESISTORS

EX-IPU (Expanded Image Processing Unit)

Number	Function
VR 1	Adjusts the differences between the odd white level and the even white level Do not adjust.
VR 2	Adjusts the original background erase level. Do not adjust.

5. PREVENTIVE MAINTENANCE SCHEDULE

5.1 PM TABLE

NOTE: The amounts mentioned as the PM interval indicate the number of copies.

Symbol key: C: Clean, R: Replace, L: Lubricate, I: Inspect

A133	EM	120K	240K	360K	NOTE
SCANNER/OPTICS					
Mirrors, Lens, Reflectors		C	C	C	Optics cloth or blower brush
Exposure Glass	C	C	C	C	Alcohol or glass cleaner
Exposure Lamp	I	I	I	I	Replace if necessary
Green Filter		C	C	C	Dry cloth
Scanner Guide Rails		C	C	C	Dry cloth
APS sensors		C	C	C	Blower brush
Lens Block Guide Rail		C	C	C	Dry cloth
Toner Shield Glass	C	C	C	C	Dry cloth
Dust Filter			R		
AROUND THE DRUM					
Corona Wires	C	R	R	R	Dry cloth
End Blocks and Casing	C	C	C	C	Water
Charge Grid	C	R	R	R	Water
ID Sensor	C	C	C	C	Blower brush or dry cloth After cleaning, do SP3001.
Quenching Lamp			C		Dry cloth
Pick-off Pawls		C	R	C	Dry cloth
DEVELOPMENT UNIT					
Development Drive Gears	I	I	I	I	Replace if necessary. Anyway, replace the drive gears every 480K.
Mold Gear		I	I	I	
Side Seal		I	I	I	
Development Filter		C	C	R	Vacuum cleaner
Entrance Seal	C	I	I	I	Dry cloth. Replace if necessary
Toner Supply Unit	C	C	C	C	Blower brush
Developer				R	Replace if necessary
Rear Sleeve		C	C	C	Dry cloth. See Note 2.
PAPER FEED (for each paper feed station)					
Pick-up, Feed, Separation Rollers (Paper tray)	C	C	R	C	Clean with water. Replace these rollers as a set.
Pick-up, Feed, Separation Rollers (LCT, By-pass feed)	C	C	R	C	Clean with water. Replace these rollers as a set.
Paper Dust			C		Dry cloth
Paper Feed Guide Plate		C	C	C	Alcohol
Relay rollers		C	C	C	Alcohol or water
Registration roller		C	C	C	Alcohol or water
Bottom Plate Pad (Paper tray, By-pass feed, LCT)	C	R	R	R	Water. Replace if necessary.

A133	EM	120K	240K	360K	NOTE
Registration Sensor		I	I	I	
CLEANING UNIT					
Drum Cleaning Blade		R	R	R	Spread setting powder. See "Drum Cleaning Blade Replacement".
Brush Roller			R		
Side Seal		C	C	C	Blower brush. Replace if necessary
Cleaning Entrance Seal		C	C	C	
Inside of the Cleaning Unit		C	C	C	Blower brush or vacuum cleaner
TRANSFER BELT UNIT					
Transfer Belt	C	I	R	I	Dry cloth. Replace if necessary
Transfer Belt Cleaning Blade	C	R	R	R	Dry cloth. Apply setting powder or toner after cleaning.
Rollers		I	C	I	Dry cloth. Replace if necessary
Transfer Entrance Guide Plate	C	C	C	C	Dry cloth
Transfer Guide Plate	C	C	C	C	Dry cloth
Used Toner Tank	I	C	C	C	Empty the tank.
FUSING UNIT					
Fusing Entrance and Exit Guide Plates		C	C	C	Suitable solvent - do not use water
Fusing Lamp		I	I	I	Replace if necessary
Hot Roller		R	R	R	
Pressure Roller		R	R	R	
Fusing Thermistor	C	I	I	I	Clean if necessary with a suitable solvent (not water)
Hot Roller Bushings		R	R	R	
Fusing Antistatic Brush		I	I	I	Replace if necessary
Cleaning Roller		C	C	C	Suitable solvent - not water
Cleaning Roller Bushings		C	C	C	Suitable solvent - not water. Replace if necessary
Hot Roller Strippers		C	R	C	Dry cloth
DUPLEX TRAY					
Clutch Spring		L	L	L	Mobil Temp 78. See Note 1.
Feed Roller		R	R	R	
Bottom Plate Pad		R	R	R	
Mylars		I	I	I	Replace if necessary
OTHERS					
Drive Belts			I		Replace if necessary

	EM	80K	160K	240K	NOTE
AUTO DOCUMENT FEEDER (for originals)					
Transport Belt	C	R	R	R	Belt cleaner
Friction Belt	C	R	R	R	Water
Feed Roller	C	R	R	R	Water

	EM	120K	240K	360K	NOTE
PAPER TRAY UNIT (A549/550)					
Pick-up, Feed, Separation Rollers	C	C	R	C	Water, Replace these rollers as a set.
Relay Rollers		C	C	C	Alcohol or water
Bottom Plate Pad	C	R	R	R	Water
Relay Clutch		I	I	I	Replace every 1500K copies.
Feed Clutch		I	I	I	Replace if necessary
Drive Belts		I	I	I	Replace if necessary

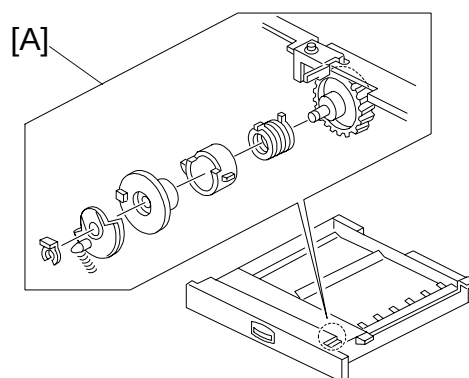
	EM	120K	240K	360K	NOTE
FINISHER (A612)					
Rollers	C	C	C	C	Water.
Bushings	I	I	I	I	Use Launa oil or equivalent.
Gears	I	I	I	I	Use Grease-501

NOTE 1.

Duplex Tray: Clutch Spring

Do the following every 120K.

Clean the clutch assembly [A]. Then lubricate the clutch spring with Mobil Temp 78.

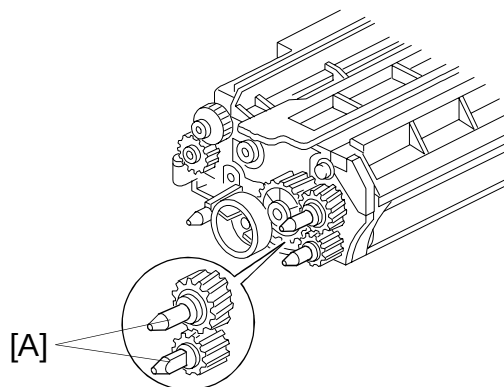


NOTE: 2.

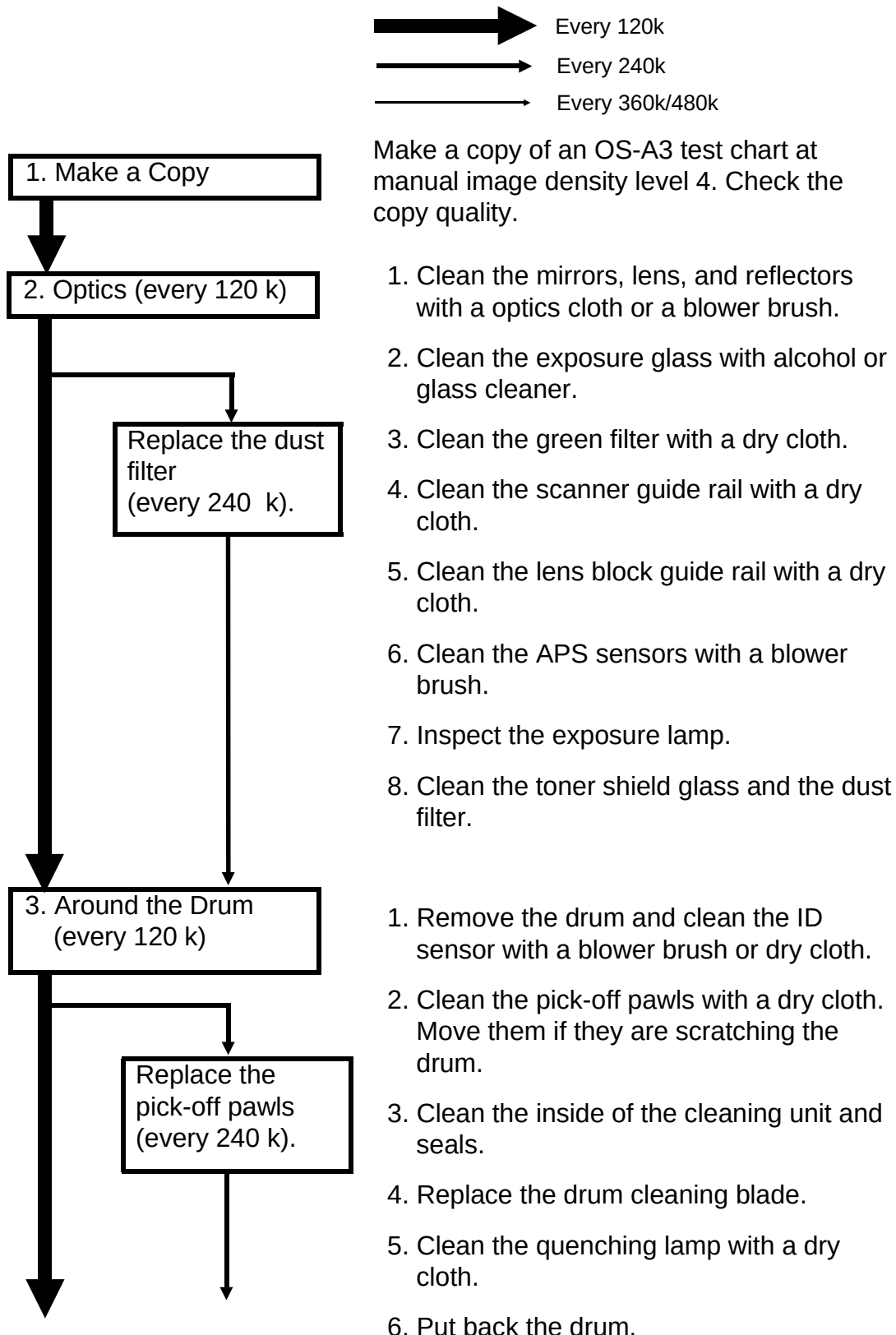
Development Unit: Rear Sleeve

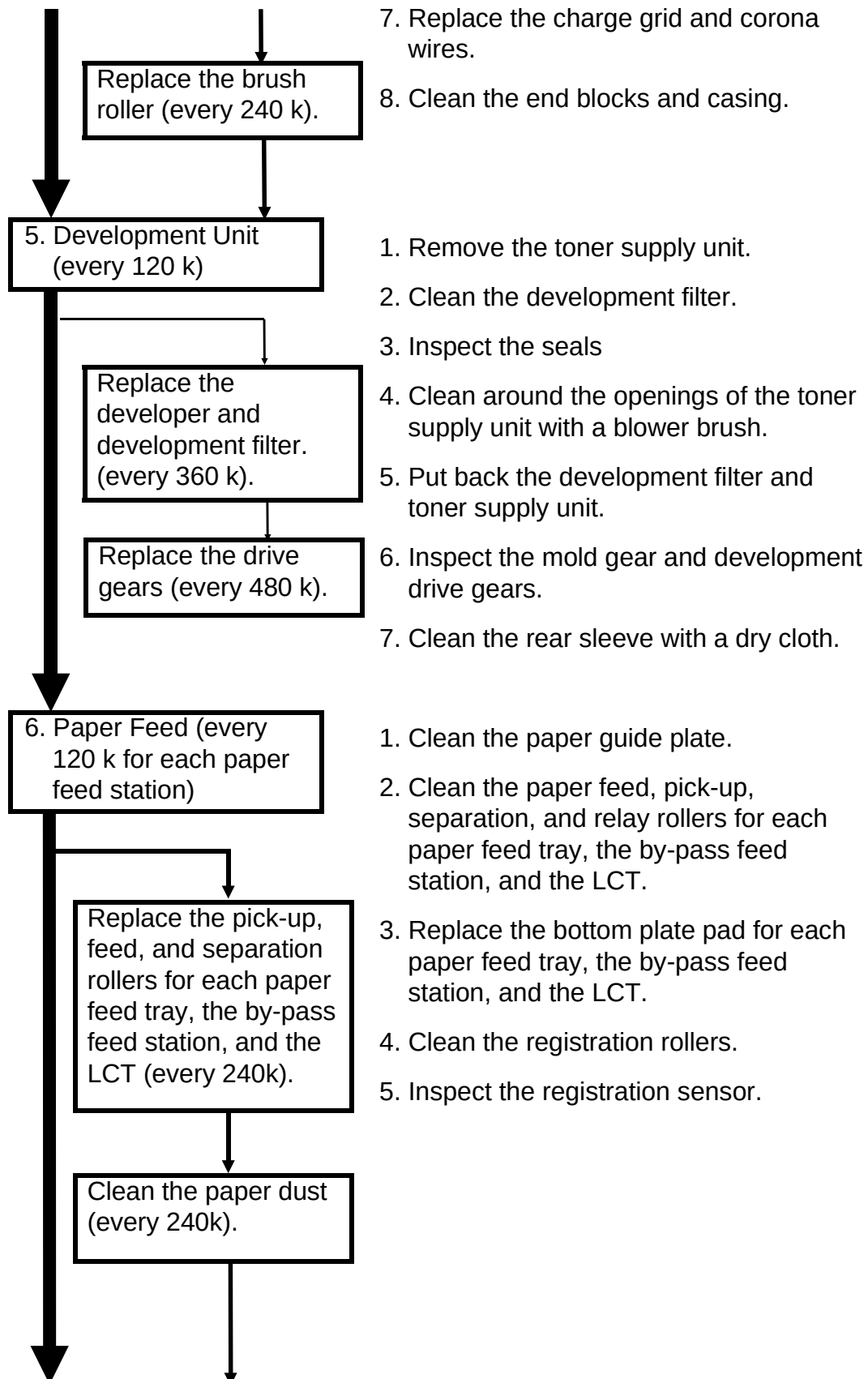
Do the following every 120K.

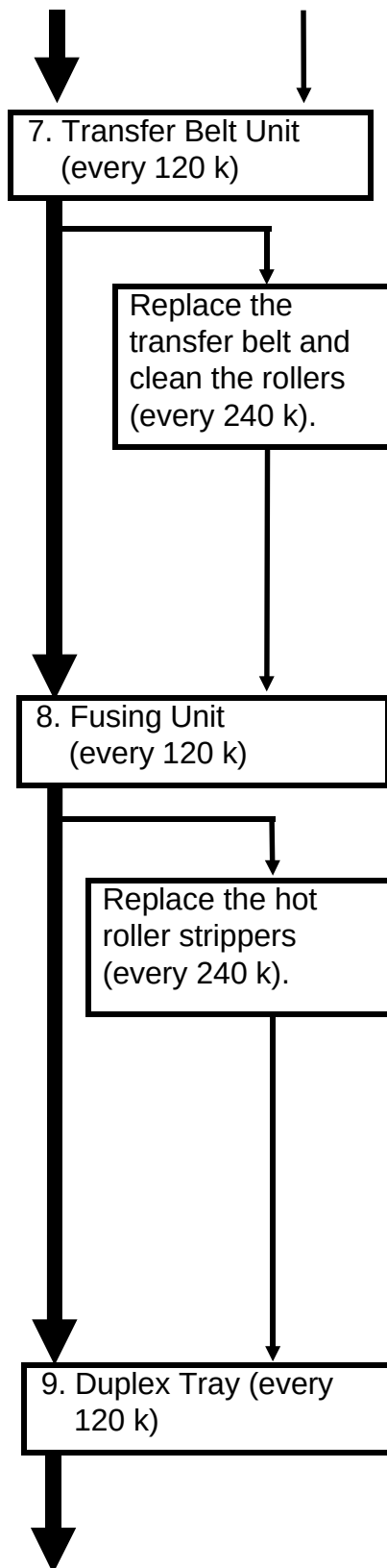
Clean the rear sleeve [A] with a dry cloth.



5.2 REGULAR PM PROCEDURE



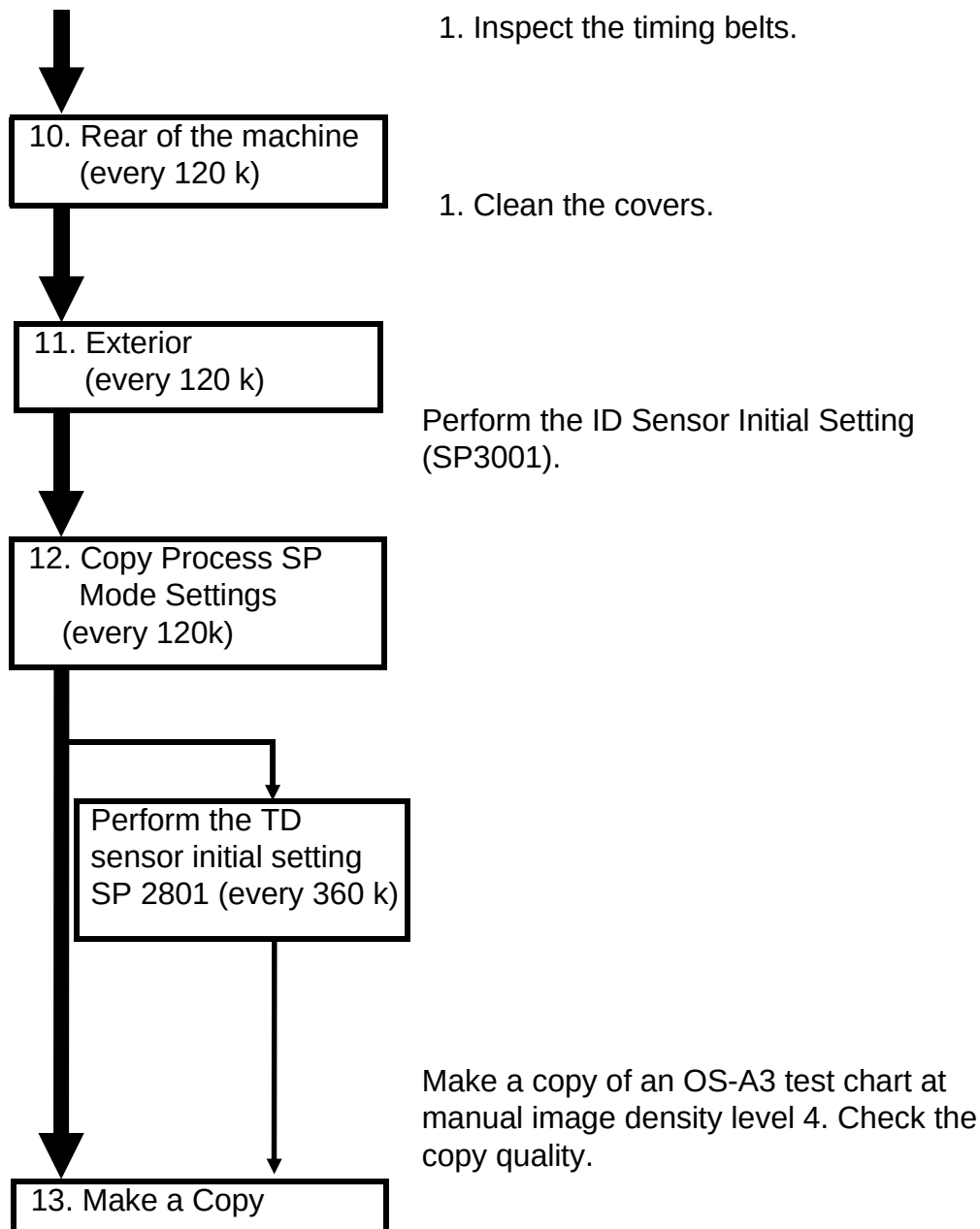




1. Remove the transfer belt.
2. Empty the used toner tank.
3. Replace the transfer belt cleaning blade.
4. Inspect the transfer belt and rollers.
5. Clean the transfer entrance guide plate and transfer guide plate.

1. Clean the entrance and exit guide plates
2. Inspect the thermistor, fusing lamp, hot and pressure roller bearings, antistatic brush, and cleaning roller bushings.
3. Clean the cleaning roller and cleaning roller bushings.
4. Replace the pressure roller, hot roller, and hot roller bushings.
5. Replace the hot roller strippers.

1. Inspect the mylars.
2. Replace the feed roller and the bottom plate pad.
3. Lubricate the clutch spring with Mobil Temp 78.



6. SPECIAL TOOLS AND LUBRICANTS

6.1 SPECIAL TOOLS AND LUBRICANTS

Part Number	Description	Q'ty
A006 9104	Scanner Positioning Pin (4 pcs/set)	1
5420 9516	Test Chart - OS-A3 (10 pcs/set)	1
5447 9078	Heat Resistant Grease - MT-78	1
5203 9501	Silicone Grease G-501	1
5420 9507	Digital Multimeter	1

6.2 SPECIAL PARTS

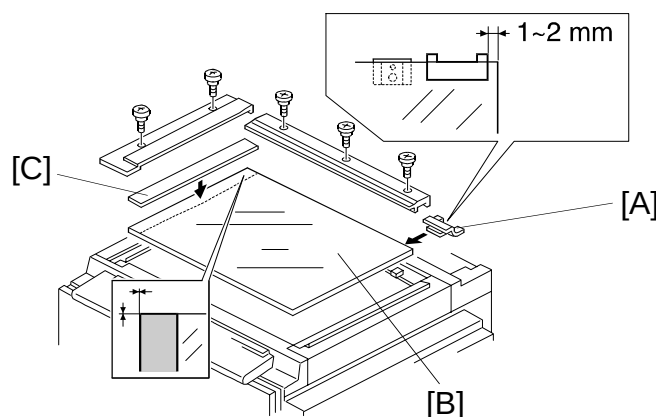
Part Number	Description	Q'ty
A1309011 (Note 1)	Charge Corona Unit with Cleaner	1
A1309005 (Note 2)	Exposure Glass with Electric Conductor Coating	1
A1309006 (Note 2)	Grounding Plate - Exposure Glass	1
AC060002 (Note 2)	White Plate	1

NOTE 1: This special part is used for machines which produce a high copy volume.

NOTE 2: These special parts are used when many original jams occur on the exposure glass using the ADF in low humidity conditions.

The installation procedure is as follows.

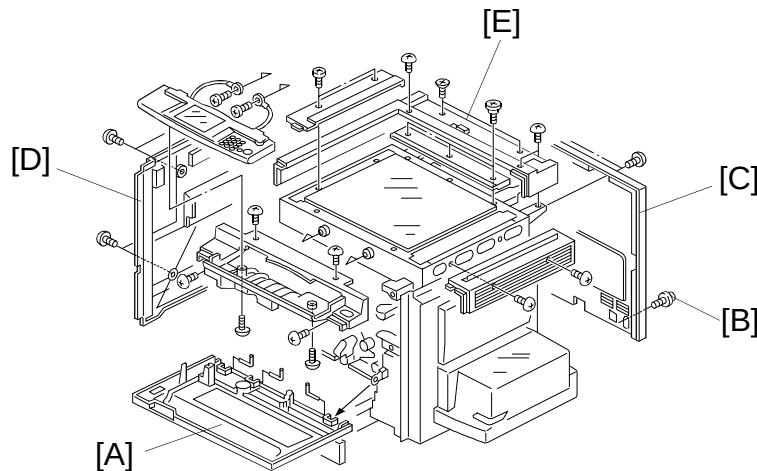
1. Remove the exposure glass.
2. Install the grounding plate [A] as shown.
3. Install the new exposure glass [B].
Note: The red mark should be placed at the rear left corner.
4. Stick the white plate [C] on the exposure glass as shown.
5. Reinstall the scales.



REPLACEMENT AND ADJUSTMENT

1. INNER AND OUTER COVERS

1.1 OUTER COVER REMOVAL



1.1.1 Front Cover

1. Open the front cover.
2. Remove the front cover [A] (3 pins).

1.1.2 Rear Cover

1. Loosen the 2 screws for the lower holes [B].
2. Remove the rear cover [C] (7 screws).

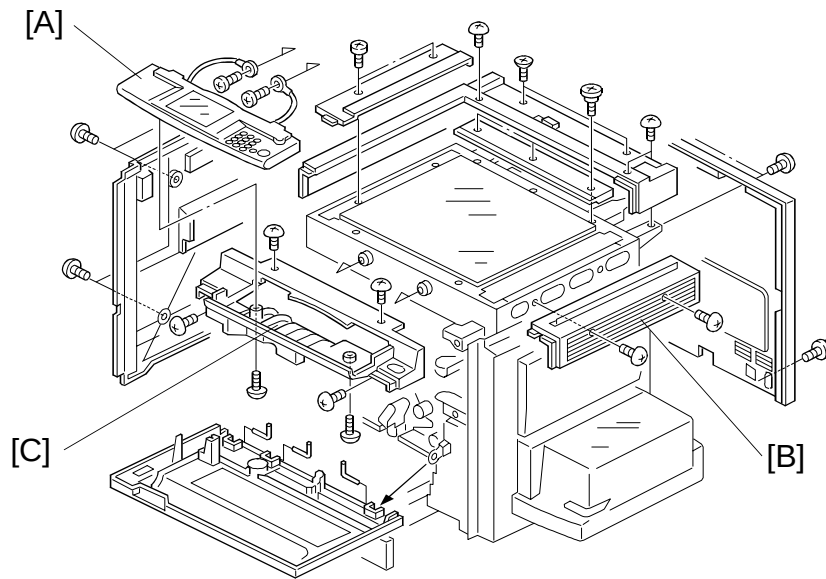
1.1.3 Left Cover

1. Remove the optional 500-sheet tray or finisher.
2. Open the front cover.
3. Slide out the duplex and paper feed trays.
4. Remove the left cover [D] (4 screws).

1.1.4 Top Cover

1. Remove the platen cover (see the Installation procedure) or DF (see the manual for the DF).
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Remove the top cover [E] (5 screws).

1.1.5 Operation Panel



1. Turn off the main switch and unplug the machine.
2. Open the front cover.
3. Swing out the toner bottle holder assembly.
4. Remove the operation panel [A] (4 screws, 3 connectors).

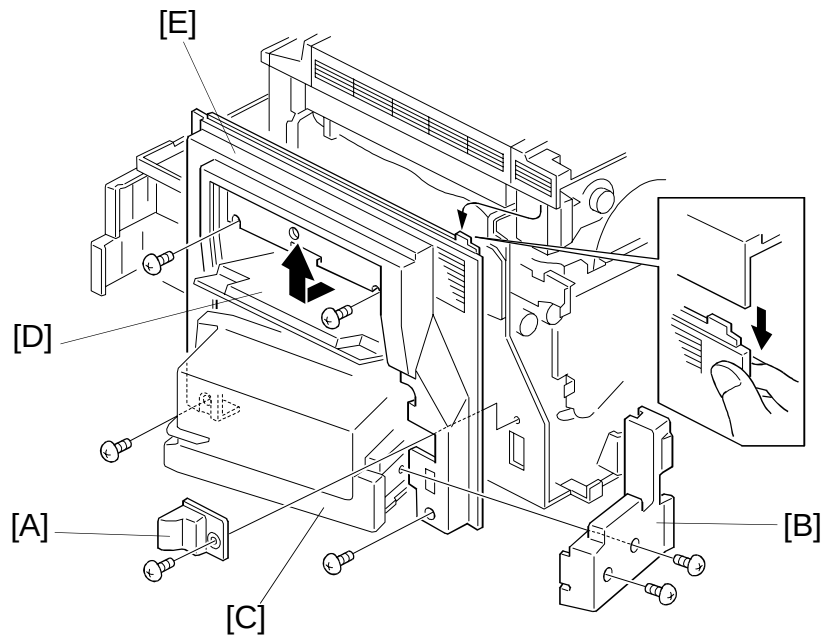
1.1.6 Right Upper Cover

1. Remove the right upper cover [B] (2 screws).

1.1.7 Front Upper Cover

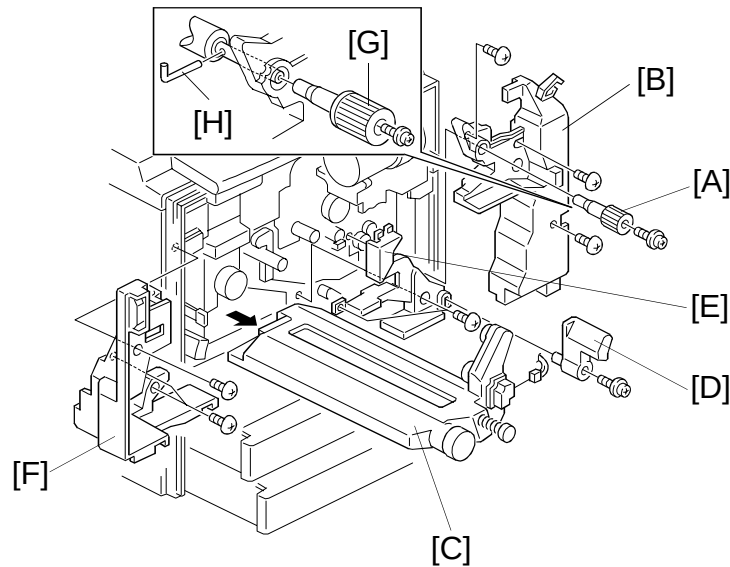
1. Open the front cover.
2. Remove the toner bottle holder assembly. (See Development Unit Removal.)
3. Remove the operation panel [A] (6 screws, 3 connectors).
4. Remove the left inner cover. (See Inner Cover Removal.)
5. Remove the front upper cover [C] (2 screws).

1.1.8 Right Cover



1. Open the front cover and pull out the paper tray and duplex.
2. Remove the LCT harness cover [A] (1 screw).
3. Remove the LCT rear cover [B] (2 screws).
4. Swing open the LCT [C] and open the by-pass feed table [D].
5. Remove the right cover [E] (5 screws).

1.2 INNER COVER REMOVAL



1.2.1 Right Inner Cover

1. Remove the front cover. (See Outer Cover Removal.)
2. Pull out the paper trays.
3. Remove the "A2" knob [A] (1 screw).
4. Remove the right inner cover [B] (3 screws).

NOTE: When removing the knob [G], insert an allen key [H] into the hole in the registration roller shaft as shown in the illustration.

1.2.2 Middle Inner Cover

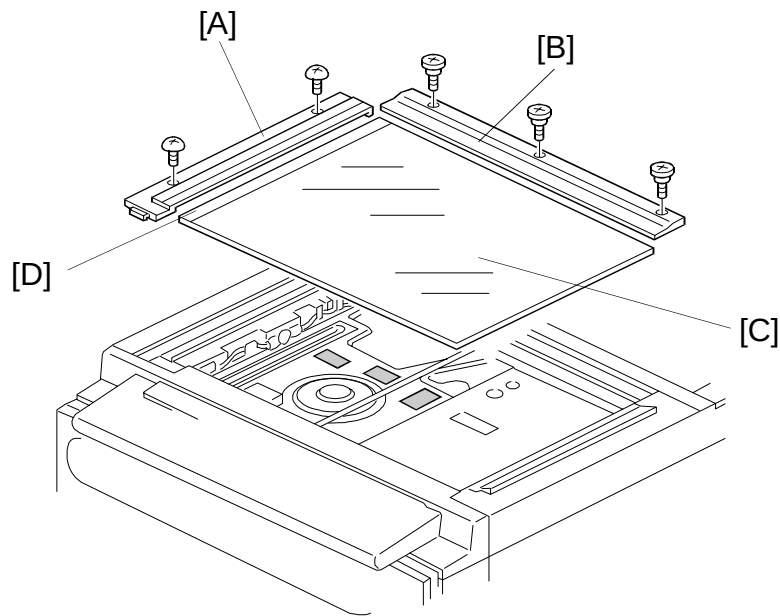
1. Open the front cover and pull out the paper trays.
2. Remove the toner collection bottle [C] (1 connector).
3. Remove the "A1" lever [D] (1 screw).
4. Remove the middle inner cover [E] (2 screws).

1.2.3 Left Inner Cover

1. Remove the front cover. (See Outer Cover Removal.)
2. Remove the toner collection bottle [C] (1 connector).
3. Remove the left inner cover [F] (3 screws).

2. SCANNER

2.1 EXPOSURE GLASS REMOVAL

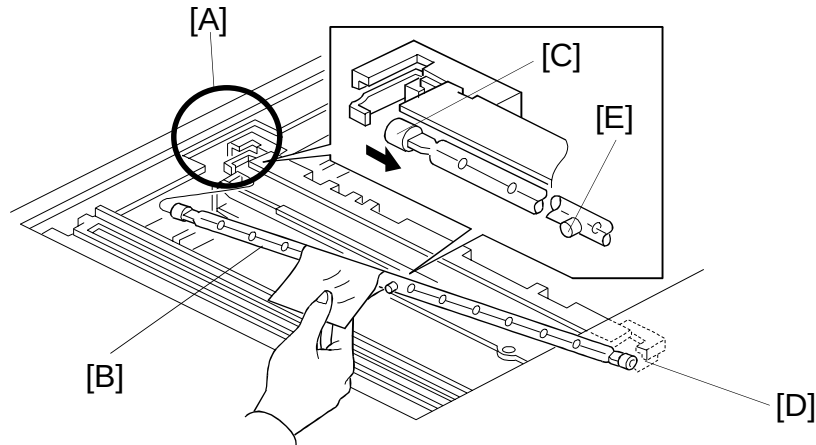


1. Turn off the main switch and unplug the machine.
2. Remove the left scale [A] (2 shoulder screws).
3. Remove the rear scale [B] (3 shoulder screws).
4. Remove the exposure glass [C].

NOTE: 1) Do not touch the exposure glass with dirty bare hands.

2) When installing the exposure glass, make sure that the white reference plate [D] is facing down.

2.2 EXPOSURE LAMP REPLACEMENT



NOTE: Do not touch the reflector or the new exposure lamp with your bare hands. Use a strip of paper as shown. (Oil marks on the edges of the lamps or reflectors will be affected by heat from the lamp and will cause discoloration.)

1. Turn off the main switch and unplug the machine.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the 1st scanner to the rear cutout position [A].
4. Place a strip of paper around the exposure lamp [B].
4. Release the exposure lamp by holding the lamp tab [C] and pushing it towards the front.

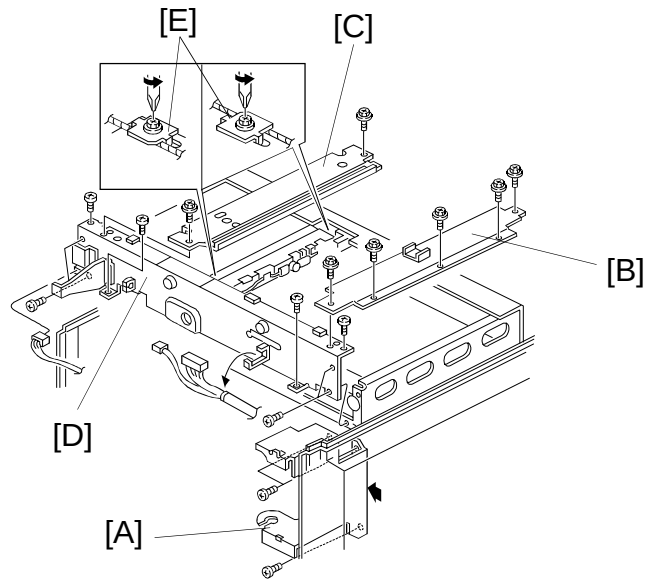
NOTE: Push the lamp tab very gently or the front terminal will be damaged.

5. Remove the exposure lamp.
6. Install a new lamp. Use a strip of paper to hold the lamp. Set the front terminal [D] first.

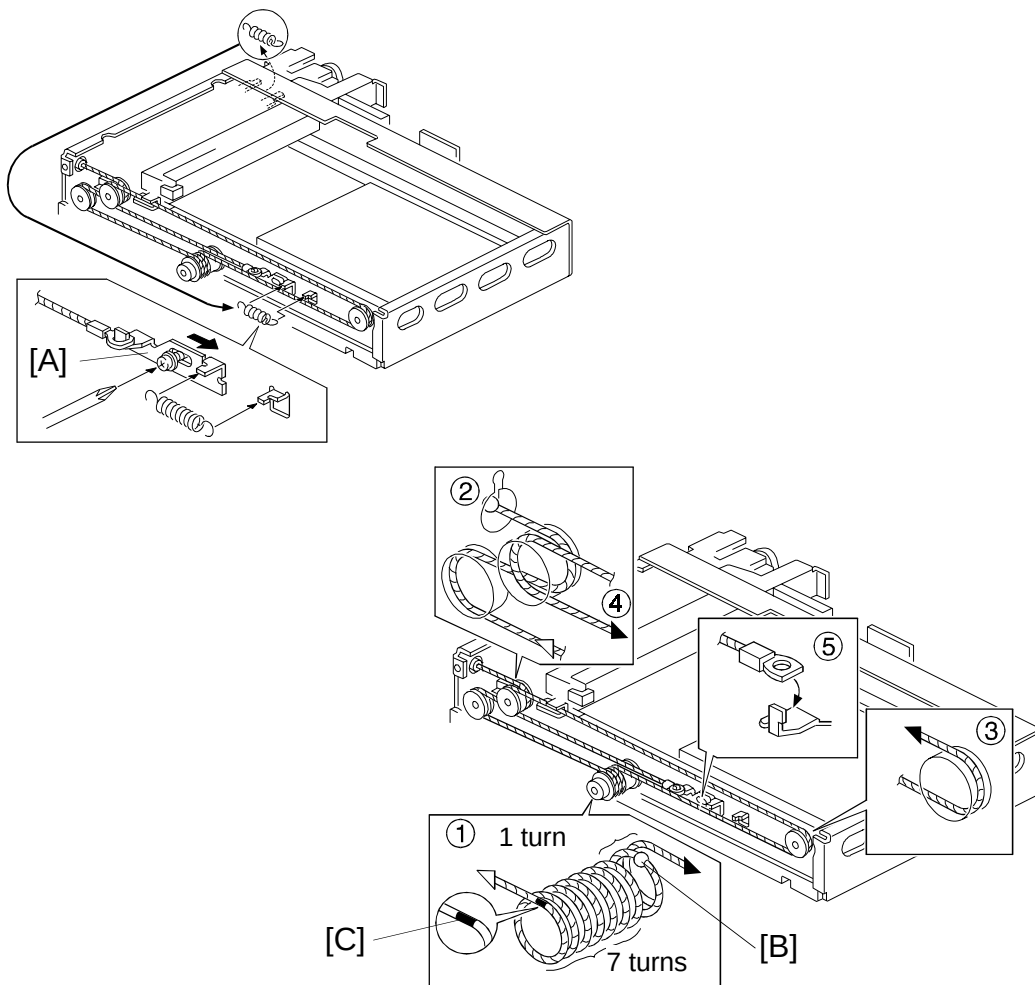
NOTE: 1) Make sure that the exposure lamp is properly positioned at the front and rear terminals.
2) Make sure that the glass bump [E] on the exposure lamp is away from the reflector.

2.3 SCANNER WIRE REPLACEMENT

2.3.1 Front Scanner Wire Replacement



1. Turn off the main switch and unplug the machine.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Remove the top, right upper, and front covers. (See Outer Cover Removal.)
4. Remove the right and left inner covers. (See Inner Cover Removal.)
5. Remove the toner bottle holder assembly. (See Development Unit Removal.)
NOTE: Close the shutter of the toner bottle unit.
6. Remove the operation panel assembly. (See Outer Cover Removal.)
7. Remove the front upper cover. (See Outer Cover Removal.)
8. Remove the toner bottle holder bracket [A].
9. Remove the upper right stay [B] (5 screws) and the upper left stay [C] (2 screws).
10. Remove the scanner home position sensor. (See Scanner Home Position Sensor Replacement.)
11. Remove the front frame of the scanner unit [D] (9 screws).
12. Release the front and rear wire clamps [E] of the 1st scanner (1 screw each).



13. Loosen the tension bracket [A].

14. Remove the old scanner wire.

15. Move the 1st scanner to the home position.

16. Put the center ball of the scanner wire [B] into the hole in the scanner drive pulley.

NOTE: The orientation of the scanner wire must be as follows:

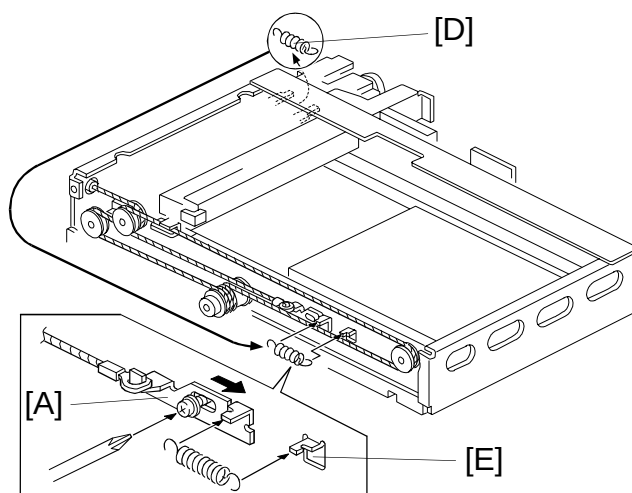
Left end of the scanner wire → ball.

Right end of the scanner wire → hook.

17. Wind the right side of the wire counterclockwise towards the rear side (1 turn) and the left side of the wire counterclockwise towards the front (7 turns) as shown.

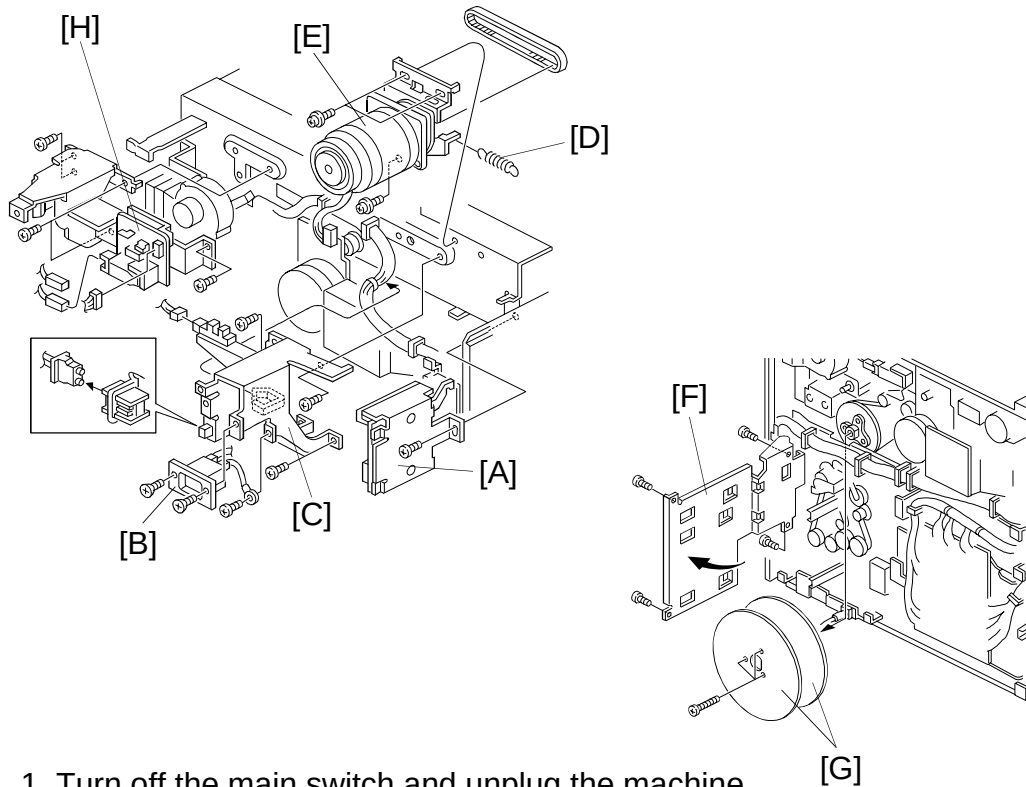
NOTE: The mark [C] on the wire will come to the position shown.

18. Run the scanner wire as shown.

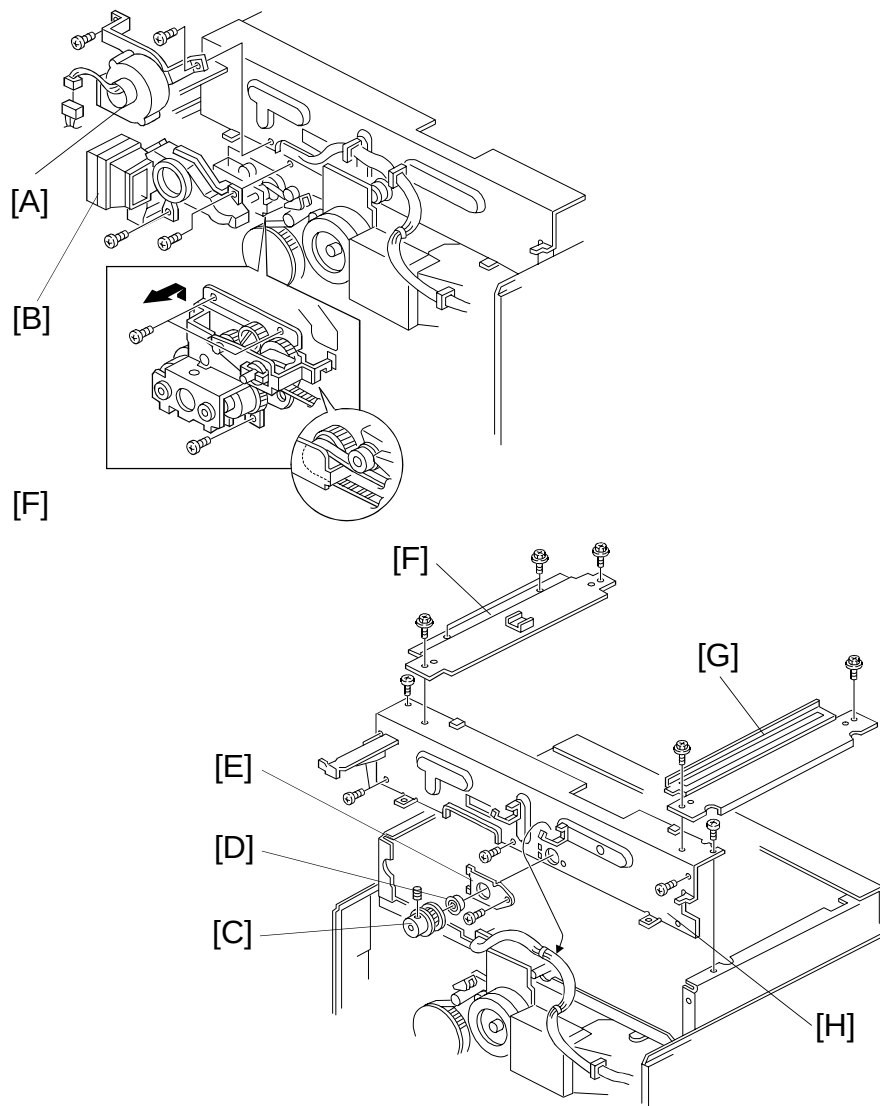


19. Secure the tension bracket [A] temporarily.
20. Remove the tension spring [D] of the scanner motor.
21. Hook the spring onto the tension bracket and spring hook [E].
22. Loosen the screw of the tension bracket and tighten it again.
23. Put the tension spring back on the scanner motor.
24. Adjust the scanner position. (See Scanner Position Adjustment.)
25. Do the copy image adjustments in section 12. (Check the printer settings first, then adjust the scanner registration and the sub-scan magnification.)

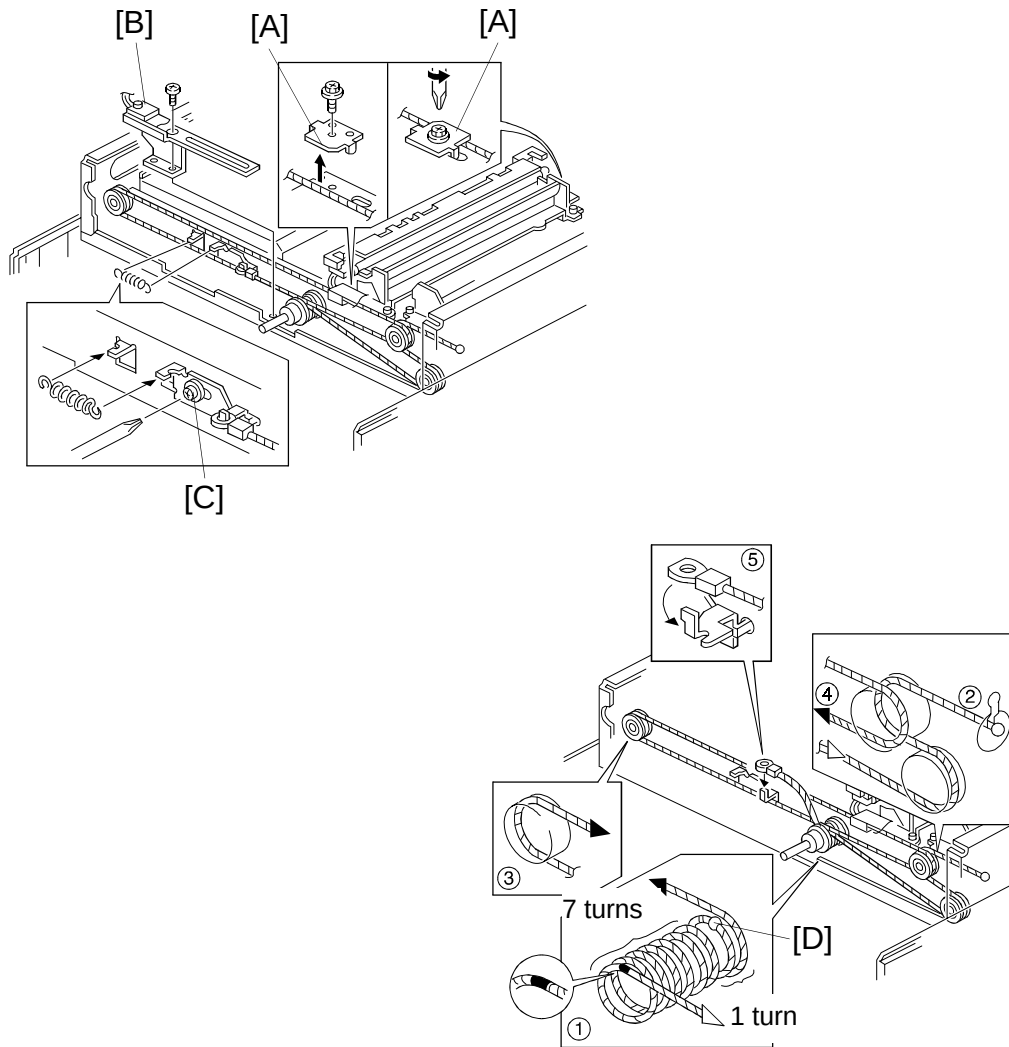
2.3.2 Rear Scanner Wire Replacement



1. Turn off the main switch and unplug the machine.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Remove the top, right upper, and rear covers. (See Outer Cover Removal.)
4. Remove the scanner drive board [A] (3 connectors, 1 screw).
5. Remove the DF connector [B] (2 screws, 1 grounding wire).
6. Remove the left DF bracket [C] (4 screws, 1 connector).
7. Remove the tension spring [D].
8. Remove the scanner motor [E] (3 screws) and its grounding wire (1 screw).
9. Remove the HDD unit. (See HDD Unit Replacement.)
10. Swing out the SCU board plate [F] (4 screws).
11. Remove the fly wheels [G] (3 screws).
12. Remove the right DF bracket and the charge high voltage supply board assembly [H] (5 screws, 2 connectors).

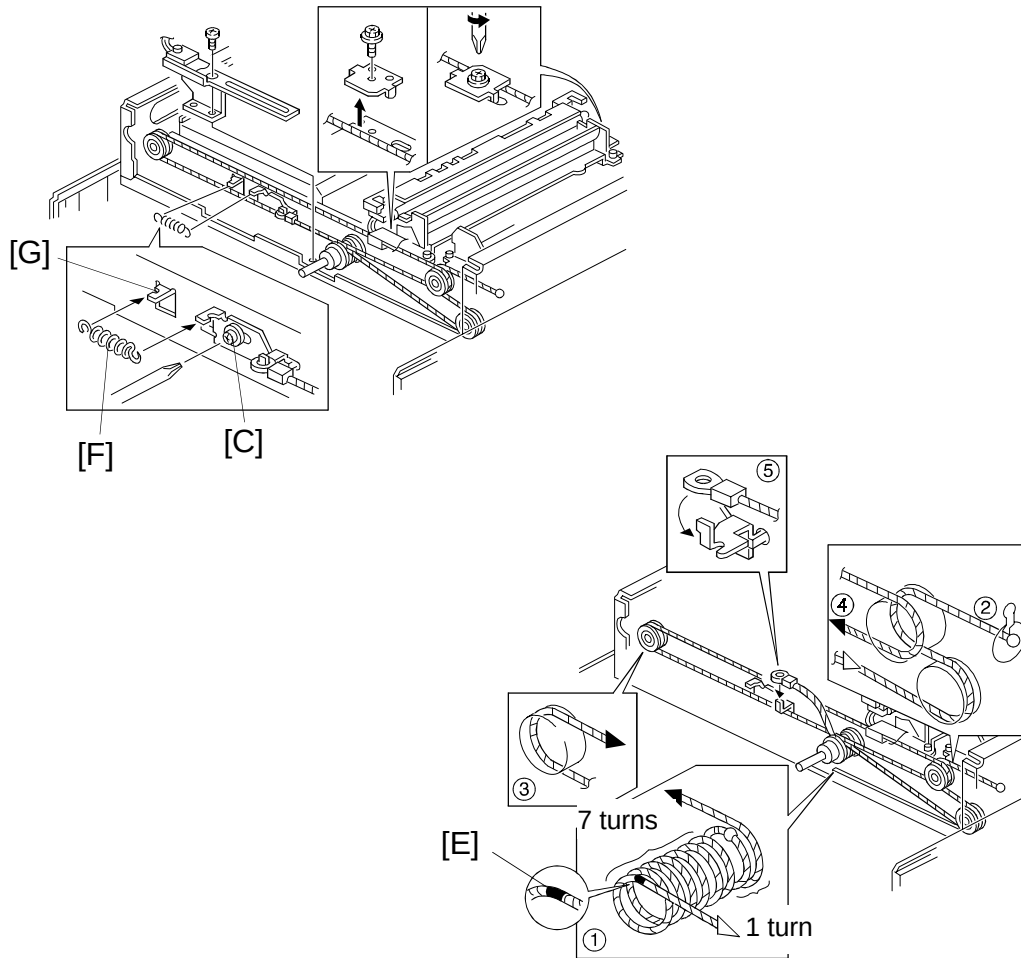


13. Remove the development drive clutch holder and the development drive clutch assembly. (See Development Drive Clutch and Toner Supply Clutch Replacement.)
14. Remove the ozone fan motor [A] (1 connector, 2 screws).
15. Remove the ozone fan motor duct [B] (2 screws).
16. Remove the scanner drive gear [C] (1 allen screw).
17. Remove the bushing [D] and holding bracket [E] (1 screw).
18. Remove the upper right stay [F] (5 screws) and the upper left stay [G] (2 screws).
19. Remove the rear frame of the scanner unit [H] (9 screws).



20. Release the rear and front wire clamps [A] of the 1st scanner (1 screw each).
21. Remove the terminal [B] of the flat cable (1 screw).
22. Loosen the tension bracket [C] and remove the old scanner wire.
23. Remove the old scanner wire.
24. Move the 1st scanner to the home position.
25. Put the center ball of the scanner wire [D] into the hole in the scanner drive pulley.

NOTE: The orientation of the scanner wire must be as follows:
 Right end of the scanner wire → ball.
 Left end of the scanner wire → hook.

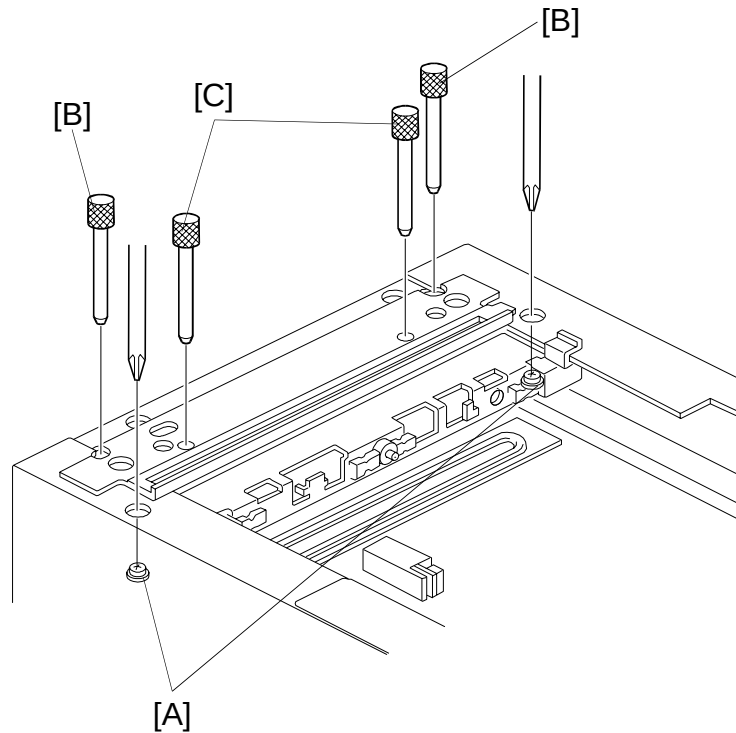


26. Wind the left side of the wire counterclockwise towards the front side (1 turn) and the right side of the wire counterclockwise towards the rear (7 turns) as shown.

NOTE: The mark [E] on the wire will come to the position shown.

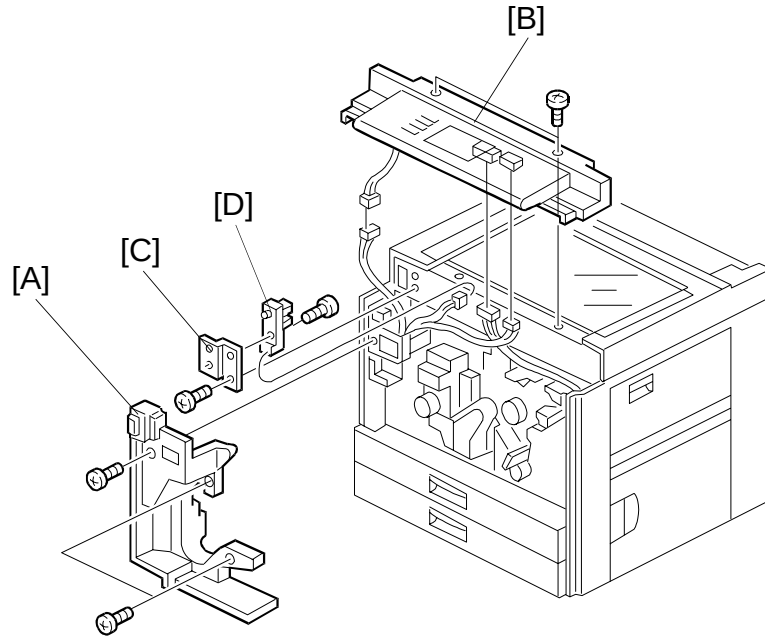
27. Run the scanner wire as shown.
28. Secure the tension bracket [C] temporarily.
29. Remove the tension spring [F] of the scanner motor.
30. Hook the spring onto the tension bracket and spring hook [G].
31. Loosen the screw of the tension bracket [C] and tighten it again.
32. Put the tension spring back on the scanner motor.
33. Adjust the scanner position. (See Scanner Position Adjustment.)
34. Do the copy image adjustments in section 12. (Check the printer settings first, then adjust the scanner registration and the sub-scan magnification.)

2.3.3 Scanner Position Adjustment



1. Move the 1st scanner to the home position.
2. If the scanner wire clamp screws [A] are not loose already, loosen them now.
3. Secure the 1st scanner with two pins [B] and the 2nd scanner with two pins [C].
NOTE: The four pins should drop in smoothly.
4. Secure the 1st scanner wire clamps [C] (1 screw each).
5. Take out the 4 pins.
6. Run the scanner with the scanner free run mode (SP4013) and check the scanner position using the 4 pins (repeat steps 1 and 2).

2.4 SCANNER HOME POSITION SENSOR REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the toner bottle holder assembly. (See Development Unit Removal.)
- NOTE :** Close the shutter of the toner collection bottle holder.
3. Remove the left inner cover [A] (3 screws).
4. Remove the operation panel assembly [B]. (See Outer Cover Removal.)
5. Remove the home position sensor bracket [C] (1 connector, 1 screw).
6. Replace the home position sensor [D] (1 screw).

2.5 SCANNER DRIVE MOTOR

See steps 1 to 8 of Rear Scanner Wire Replacement.

After replacing the motor, do the copy image adjustments in section 12.
(Check the printer settings first, then adjust the scanner registration and the sub-scan magnification.)

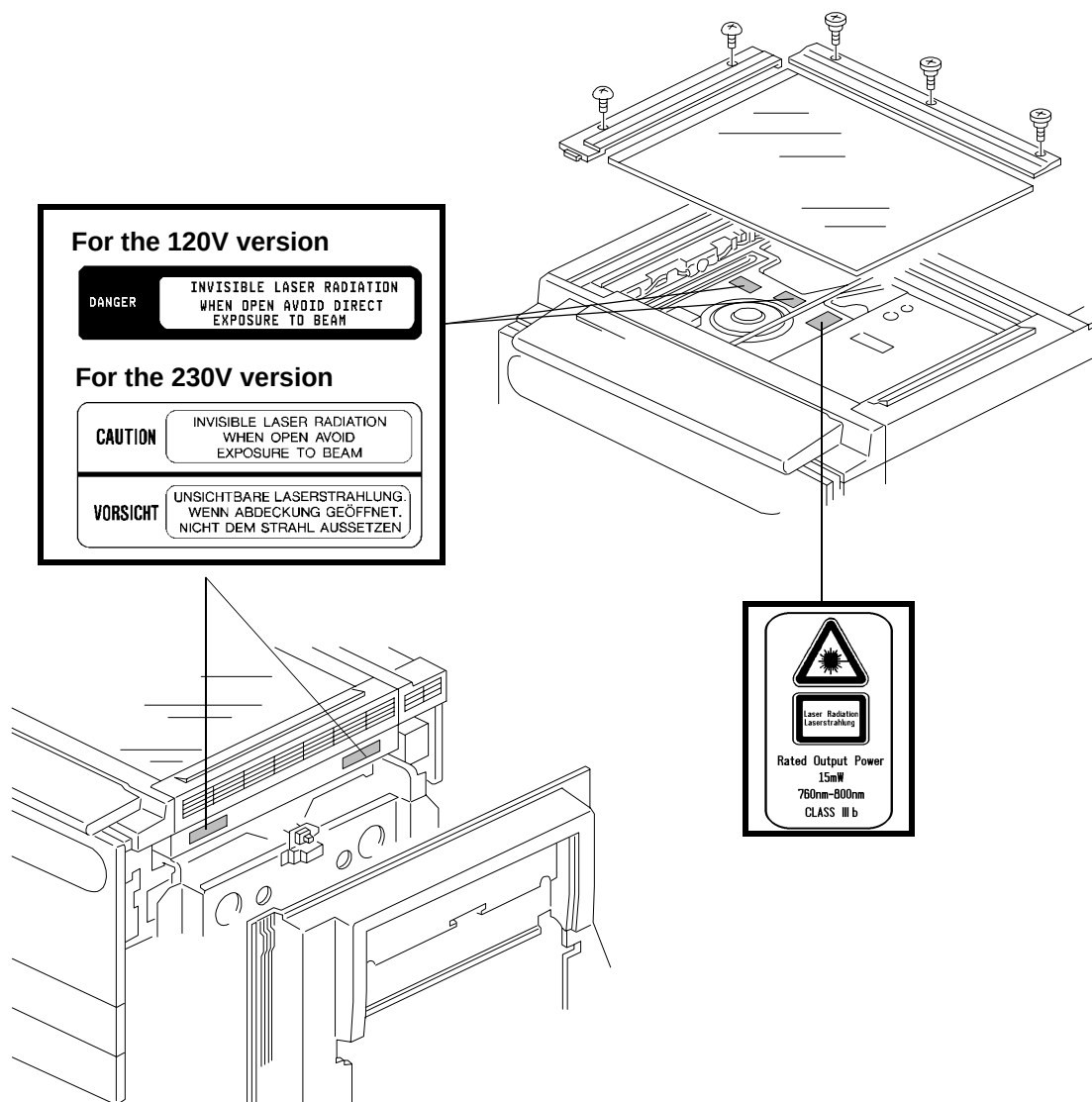
3. LASER EXPOSURE

WARNING

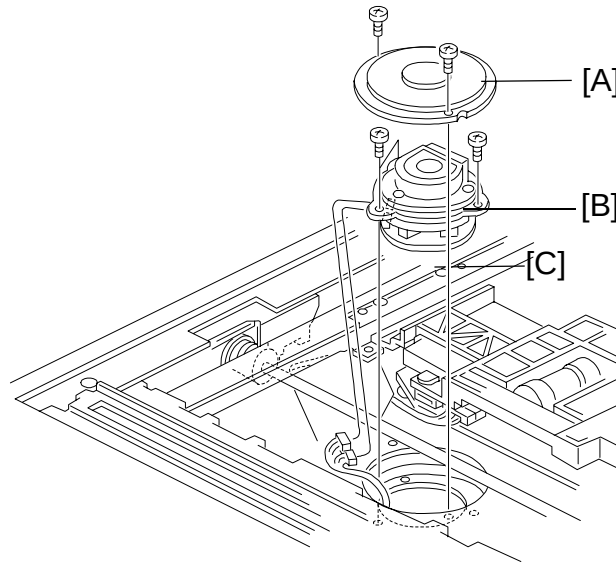
Turn off the main switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

- CAUTION DECALS -

Five caution decals are located in the laser section, as shown.



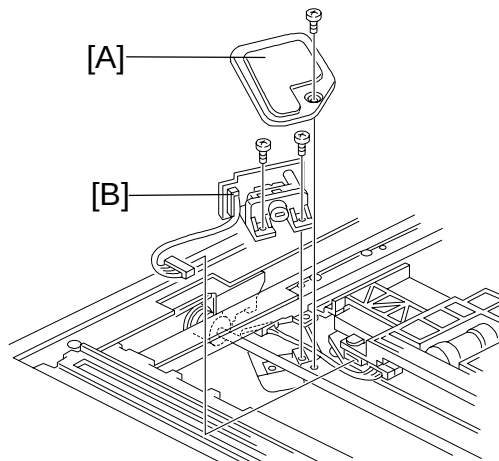
3.1 POLYGON MIRROR MOTOR REPLACEMENT



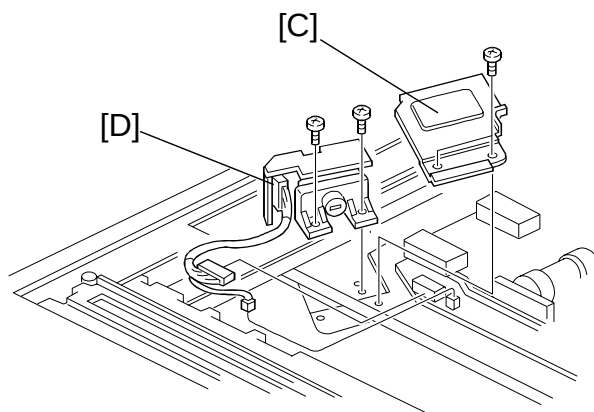
1. Turn off the main switch and unplug the machine.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Remove the polygon mirror motor cover [A] (2 screws).
4. Remove the polygon mirror motor [B] (3 screws, 2 connectors).

NOTE: 1) Do not touch the shield glass surface [C] on the polygon mirror motor.
2) Do not remove the cover of the polygon mirror. The polygon mirror is very sensitive to dust.
3) After putting back the motor, do the printer and main scan adjustments in section 12.

3.2 LD UNIT REPLACEMENT



For the 120V Version



For the 230 V Version

1. Turn off the main switch and unplug the machine.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Remove the SBU cover. (See EX-IPU Replacement.)

– 115 V machine –

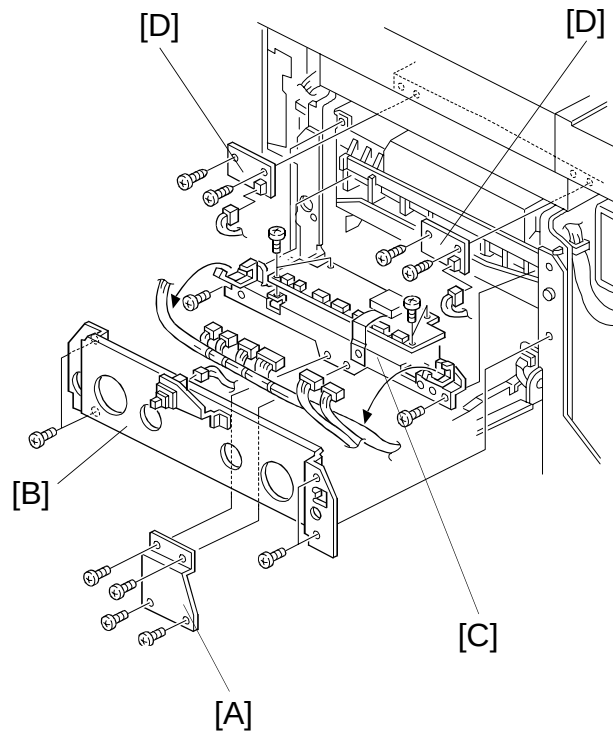
4. Remove the LD unit cover(s) [A] (1 screw).
5. Remove the LD unit [B] (2 screws, 1 connector).

– 230 V machine –

4. Remove the LD unit cover [C] (2 screws).
5. Remove the LD unit [D] (2 screws, 2 connectors)

NOTE: Do not adjust the variable resistors on the LD unit, as they are adjusted in the factory.

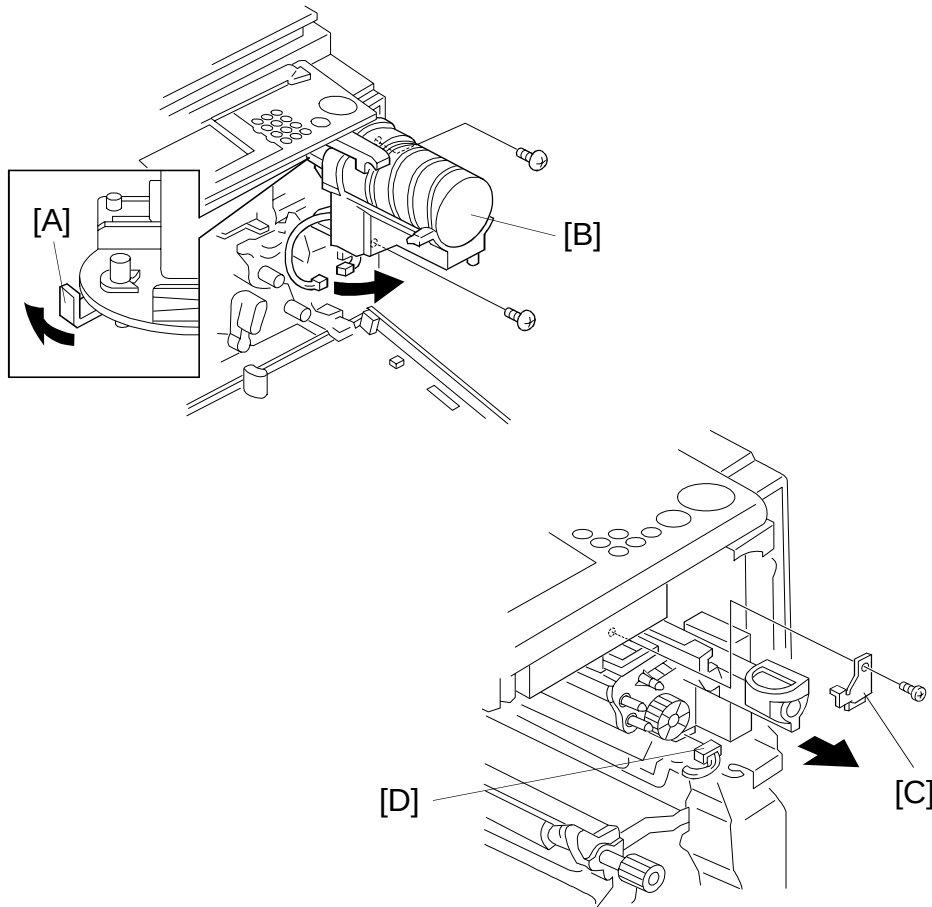
3.3 MAIN SCAN SYNCHRONIZATION DETECTOR BOARD REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Remove the right cover. (See Outer Cover Removal.)
4. Remove the lower grounding plated [A] (4 screws).
5. Remove the right stay [B] (4 screws, 1 connector).
6. Disconnect all connectors from the power pack.
7. Slide out the high voltage control board [C] (2 screws).
8. Remove the main scan synchronization detector boards [D] (2 screws each).

4. DEVELOPMENT AND TONER SUPPLY

4.1 DEVELOPMENT UNIT REMOVAL

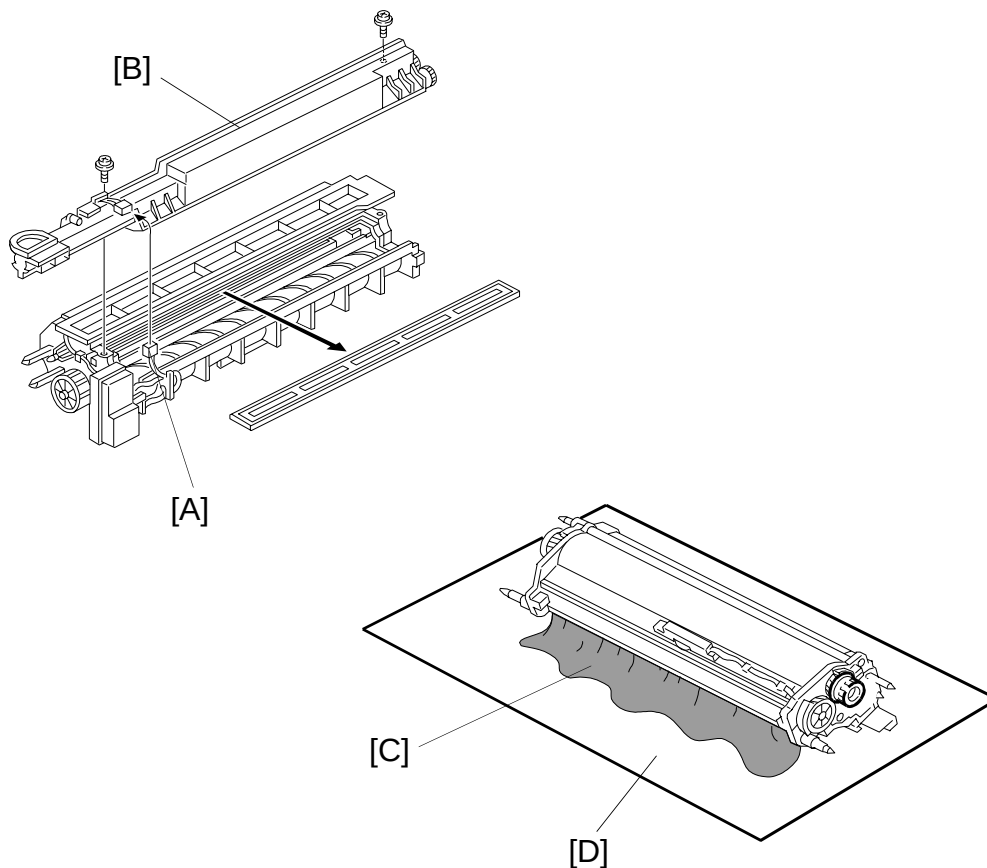


1. Turn off the main switch and unplug the machine.
2. Remove the drum unit. (See Drum Unit Removal.)
3. Push the shutter lever [A] of the toner bottle holder as shown.
4. Remove the toner bottle holder [B] (2 screws, 1 connector).
5. Remove the development unit stopper [C] (1 screw).
6. Disconnect the development unit connector [D].
7. Pull out the development unit.

NOTE: Be careful not to nick or scratch the development roller.

If you are temporarily installing a used development unit for test purposes, do SP2220 after installation (see SP 2220 in the SP mode tab for how to use this SP mode).

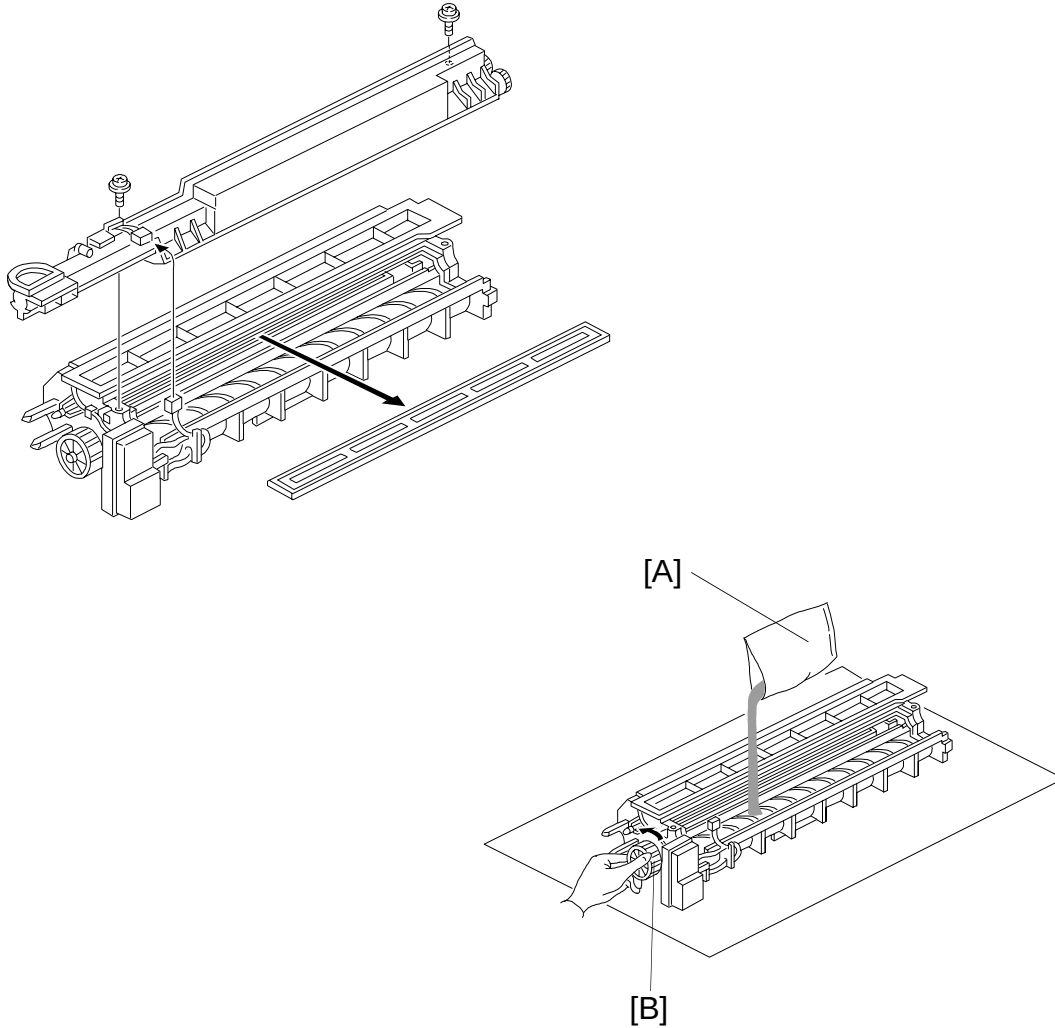
4.2 DEVELOPER REPLACEMENT



1. Take out the development unit and place it on a clean sheet (see Development Unit Removal).
2. Disconnect the connector [A] and separate the toner supply unit [B] from the development unit (2 screws).
3. Turn over the development unit and empty all the developer [C] onto the paper [D]. Make sure that no developer remains on the development roller or in the unit.

NOTE : 1) Dispose of the used developer in accordance with local regulations.

2) Be careful not to nick or scratch the development roller.



4. Pour about half a pack of developer [A] into the development unit. Then rotate counterclockwise the outer knob [B] as shown to distribute the developer evenly. Then pour in all the remaining developer and rotate the gears again.

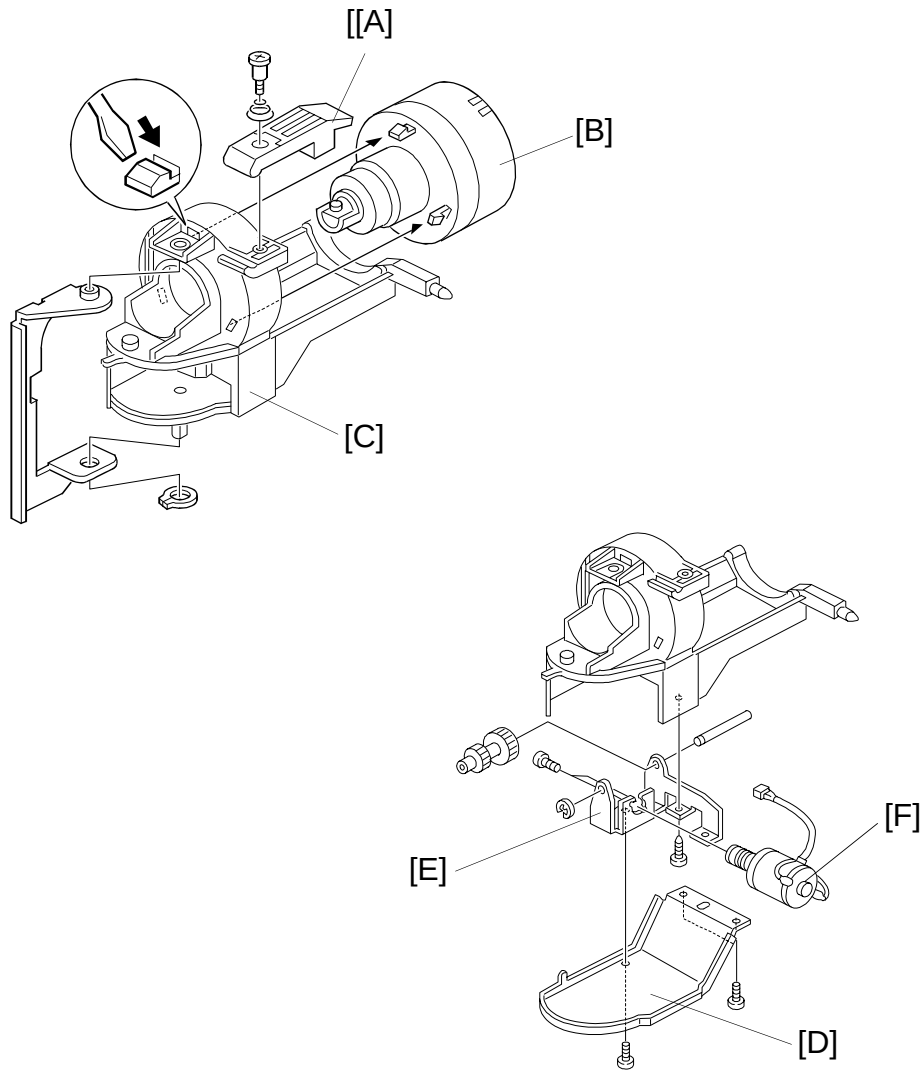
NOTE : Do not rotate the gears in the other direction, or developer will spill out.

5. Remount the toner supply unit on the development unit (2 screws) and reconnect the connector.
6. Install the development unit in the copier (1 stopper and 1 connector).
7. Turn on the main switch, make sure that the machine has warmed up, then do the TD sensor initial setting for new developer using SP2801.

NOTE : Do not perform the TD sensor initial setting before the machine is in the ready condition.

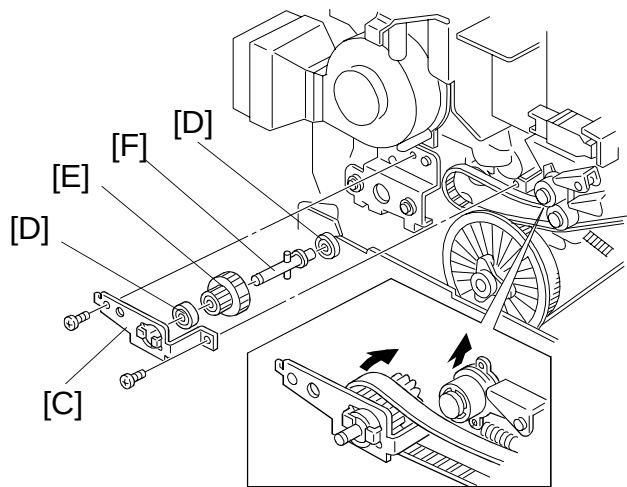
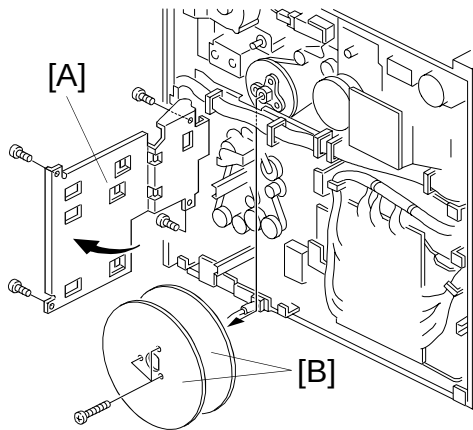
⚠ CAUTION:
Never make a copy with the new developer before completing the TD sensor initial setting (SP2801). Otherwise toner density control will be abnormal.

4.3 TONER SUPPLY MOTOR REPLACEMENT

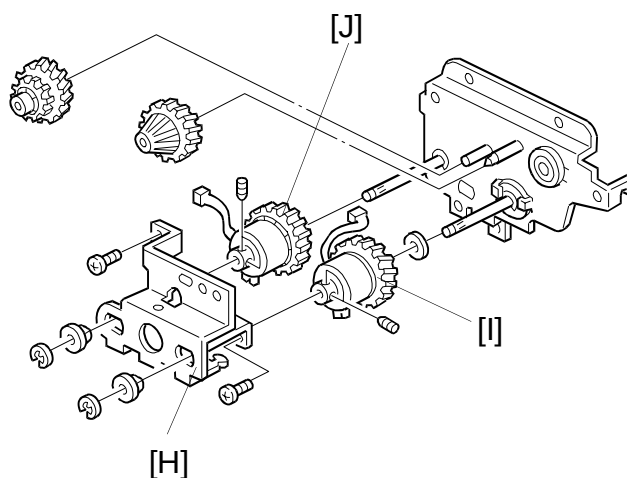
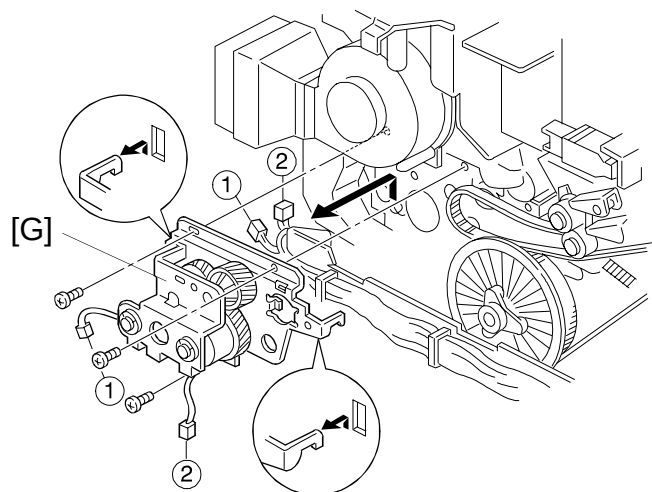


1. Turn off the main switch and unplug the machine.
2. Open the front cover.
3. Swing out the bottle holder and remove the toner bottle.
4. Remove the bottle holder from the copier (2 screws and 1 connector).
5. Remove the bottle locking lever [A] (1 shoulder screw and 1 spring).
6. Remove the bottle rotating cover [B] by releasing the three hooks.
7. Remove the hinge bracket [C] from the bottle holder (1 C-ring).
8. Remove the bottom cover [D] (3 screws).
9. Remove the toner supply motor bracket [E] (1 screw) and replace the toner supply motor [F] (1 E-ring and 1 gear shaft).

4.4 DEVELOPMENT DRIVE CLUTCH AND TONER SUPPLY CLUTCH REPLACEMENT



1. Turn off the main switch.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Swing out the SCU board plate [A] (4 screws).
4. Remove the fly wheels [B] (3 screws).
5. Remove the development unit drive gear holder [C] (2 screws).
6. Remove 2 bearings [D], 1 gear [E], and 1 shaft [F].
NOTE : The bearings drop easily.



7. Remove the clutch assembly [G] (2 connectors, 3 screws).
8. Remove the clutch assembly holder [H] (2 E-rings, 2 bushings, and 2 screws).
9. Replace the development drive clutch [I] or the toner supply clutch [J] (2 Allen screws).

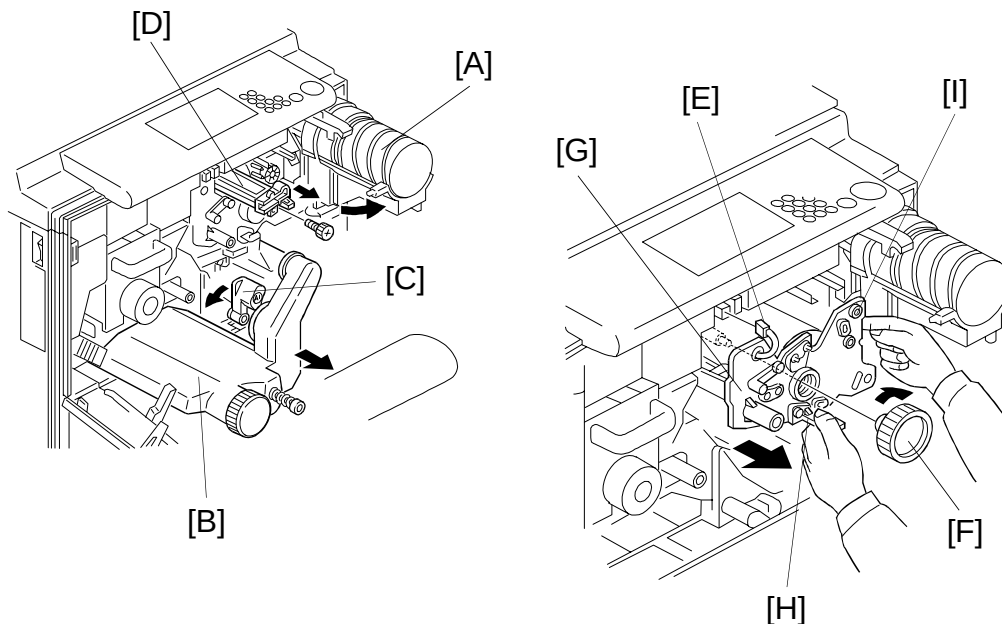
4.5 TD SENSOR REPLACEMENT

After replacing the TD sensor, do the TD sensor initial setting for new developer using SP2801.

See Developer Replacement for details.

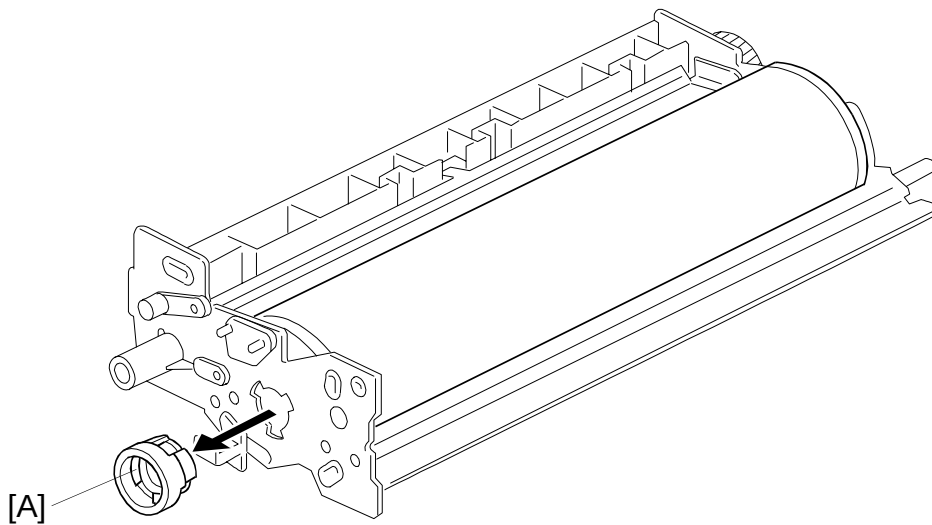
5. AROUND THE DRUM

5.1 DRUM UNIT REMOVAL



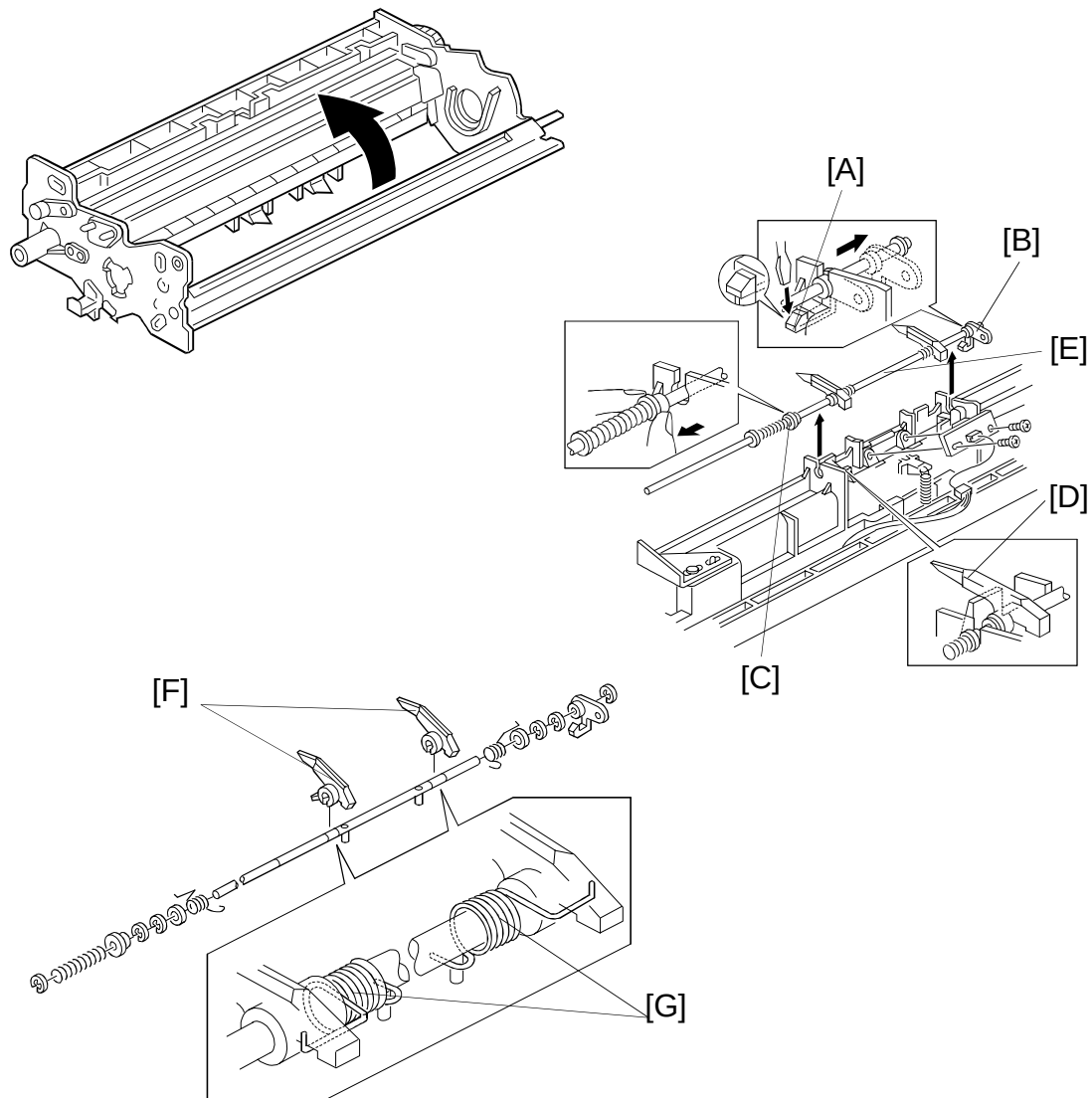
1. Turn off the main switch and unplug the machine.
 2. Open the front cover.
 3. Swing out the toner bottle holder [A].
 4. Remove the toner collection bottle [B] (1 connector).
 5. Turn the "A1" lever [C] counterclockwise to lower the transfer belt unit.
 6. Pull out the charge corona unit [D] (1 screw).
 7. Disconnect the connector [E] of the image density sensor.
 8. Turn the drum unit knob [F] clockwise and remove the knob.
 9. Pull out the drum unit [G] part of the way out while holding the knob [H] and the upper right corner [I] of the front side plate of the drum unit.
 10. Push the development unit to the right after the front side plate of the drum unit is released from the development roller shaft.
 11. Pull the drum unit all the way out.
- NOTE:** 1) Place the drum unit on a clean sheet of paper.
2) Do not touch the drum surface with bare hands.
3) Make sure that the image density sensor connector is connected when you put back the drum.

5.2 DRUM REPLACEMENT



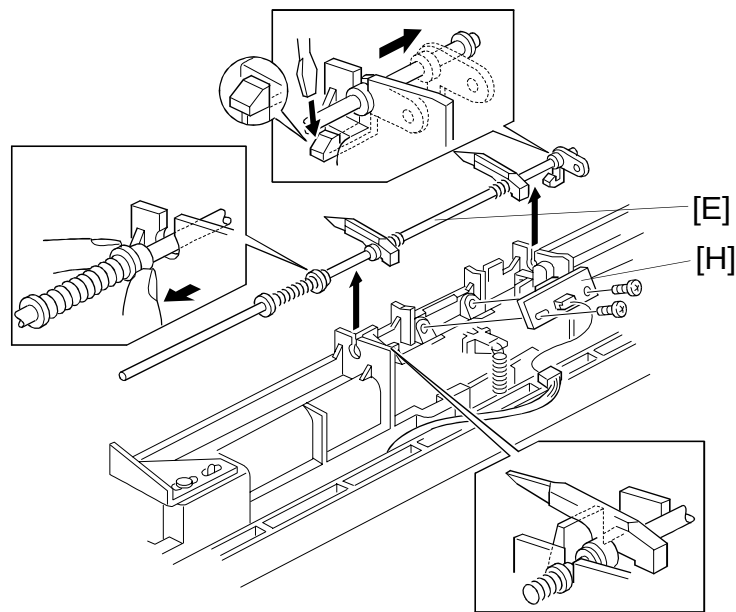
1. Remove the drum unit. (See Drum Unit Removal.)
 2. Put the drum unit on a clean sheet of paper. Cover it with another sheet to avoid light fatigue.
 3. Remove the front bearing [A].
 4. Remove the old drum.
 5. Install the new drum.
 6. Install the front bearing and remove the protective sheet.
 7. Reassemble the machine.
 8. Perform the ID sensor initial setting (SP3001).
- NOTE:** Do not touch the drum surface with bare hands.

5.3 PICK-OFF PAWL REPLACEMENT

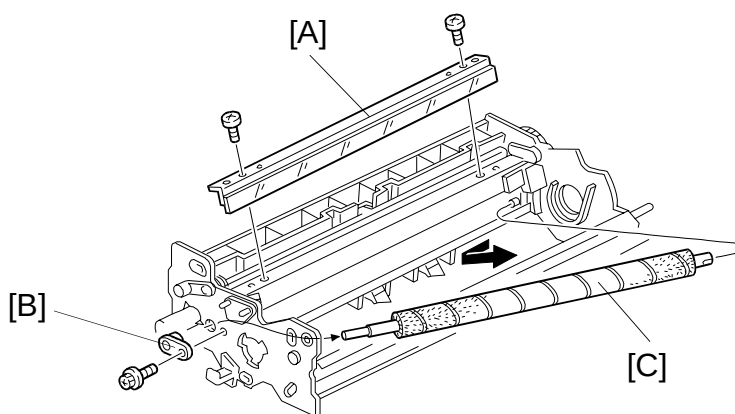


1. Remove the drum. (See Drum Replacement.)
2. Turn the drum unit upside-down.
3. Release the hook [A] and slide the rear bushing [B] to the rear.
4. Slide the front bushing [C] to the front and release it from the bracket.
NOTE: Be sure that the pawls [D] are positioned as shown when you put them back. Check that they move smoothly.
5. Lift the front side of the pick-off pawl shaft assembly [E] and replace the pick-off pawls [F].
NOTE: Be sure that the pressure spring [G] is positioned as shown.

5.4 ID SENSOR BOARD REPLACEMENT



1. Remove the pick-off pawls. (See Pick-off Pawl Replacement.)
2. Remove the pick-off pawl shaft assembly [E].
4. Replace the ID sensor board [H] (2 screws, 1 connector).
5. Reassemble the machine.
6. Do the ID sensor initial setting procedure (SP3001).



5.5 DRUM CLEANING BLADE REPLACEMENT

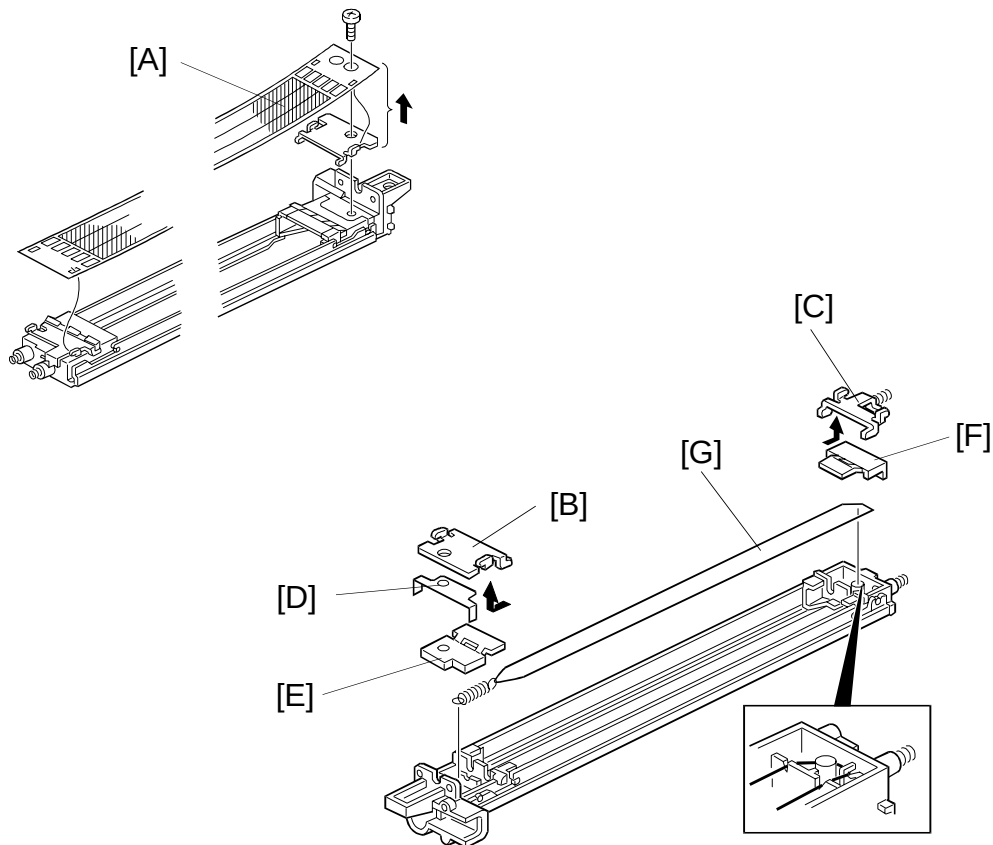
1. Remove the drum. (See Drum Replacement.)
2. Remove the old cleaning blade [A] (2 screws).
3. Install the new cleaning blade.

NOTE: 1) Check that there is no dust on the edge of the new cleaning blade.
2) When installing the new cleaning blade, be sure not to deform the sponge seals at both sides of the cleaning blade holder.

5.6 CLEANING BRUSH REPLACEMENT

1. Remove the drum. (See Drum Replacement.)
2. Remove the cleaning blade [A] (2 screws).
3. Remove the front bushing [B] of the cleaning brush (1 screw).
4. Move the cleaning brush [C] towards the front and release the rear shaft of the cleaning brush from the rear side plate.
5. Remove the old cleaning brush.
6. Install the new cleaning brush.

NOTE: 1) Clean the ID sensor after replacing the cleaning brush if necessary. If you clean the ID sensor, do the ID sensor initial setting procedure afterwards (SP3001).
2) Do not scratch or fold the entrance seal.
3) Do not touch the surface of the cleaning brush with your bare hands.



5.7 CHARGE CORONA GRID PLATE REPLACEMENT

1. Open the front cover.
2. Swing out the bottle holder.
3. Remove the charge corona unit. (See Drum Unit Removal.)
4. Replace the grid plate [A] (1 screw).

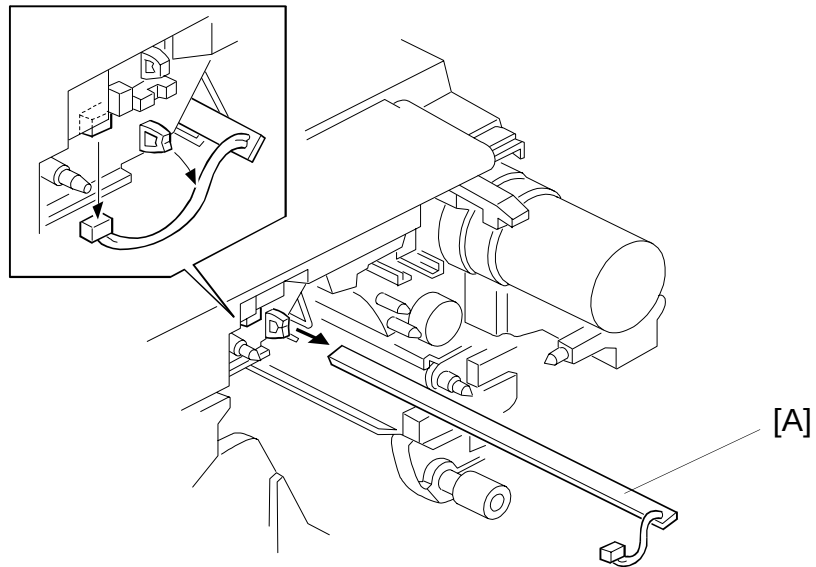
NOTE: Do not touch the grid plate with bare hands. Also, do not bend the grid plate or make any dent in it.

5.8 CORONA WIRE REPLACEMENT

1. Remove the grid plate. (See Grid Plate Replacement.)
2. Remove the front and rear grid plate holders [B, C].
3. Remove the connecting plate [D].
4. Remove the front and rear end block covers [E, F].
5. Replace the corona wire [G].

NOTE: Do not touch the corona wire with bare hands.

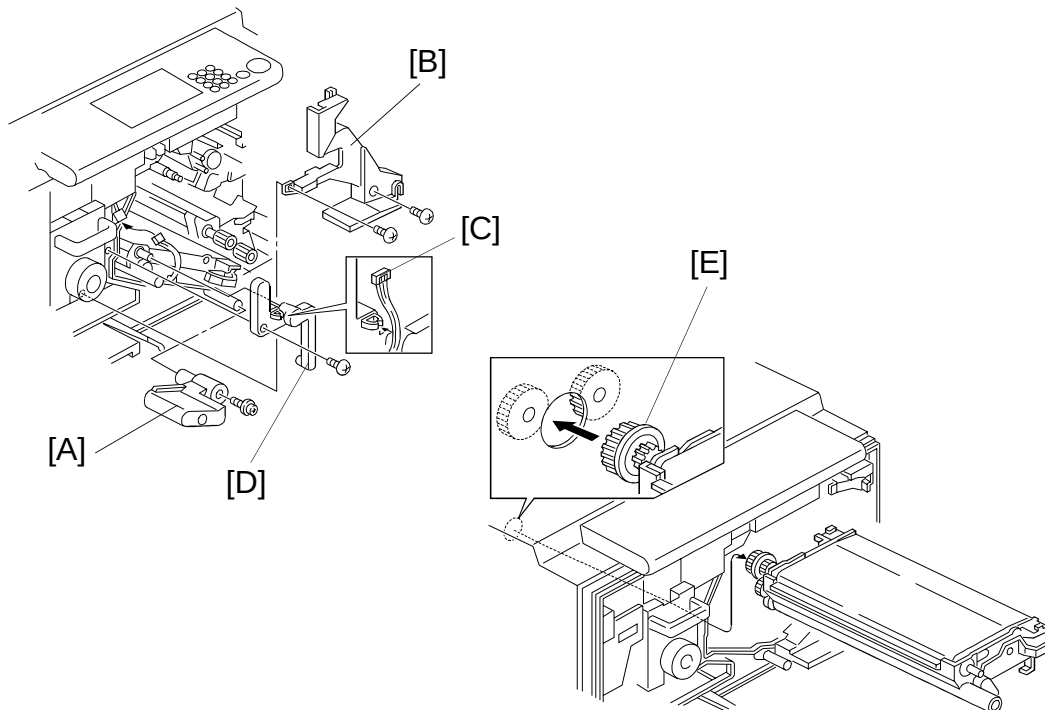
5.9 QUENCHING LAMP REPLACEMENT



1. Remove the drum unit. (See Drum Unit Removal.)
2. Replace the quenching lamp [A] (1 connector).

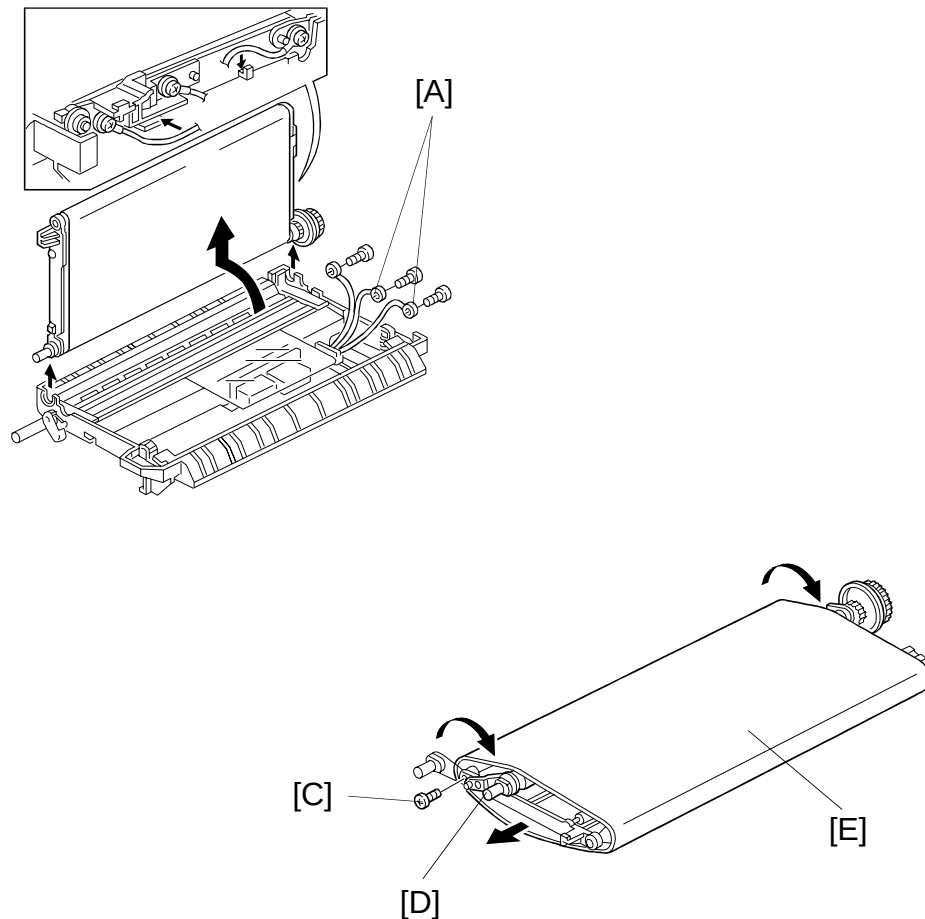
6. TRANSFER BELT UNIT

6.1 TRANSFER BELT UNIT REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the front cover. (See Outer Cover Removal.)
3. Swing out the toner bottle holder.
4. Turn the "A1" lever counterclockwise to lower the transfer belt unit.
5. Remove the drum unit, to prevent possible damage when the Transfer Belt is removed. (See Drum Unit Removal.)
6. Remove the "A1" lever [A] (1 screw).
7. Remove the middle inner cover [B] (2 screws).
8. Disconnect the four-pin connector [C] and release the harness from the clamp.
9. Remove the transfer belt positioning plate [D] (1 screw).
10. Remove the transfer belt unit.
NOTE: Never touch the surface of the transfer belt.
11. When reinstalling the transfer belt unit, align gear [E] with the opening in the machine's rear frame.

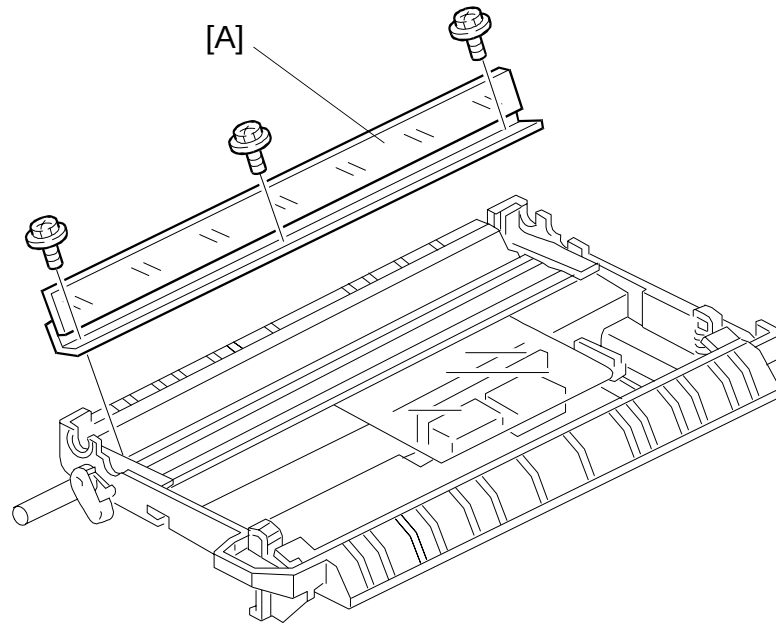
6.2 TRANSFER BELT REMOVAL



1. Turn off the main switch and unplug the machine.
2. Remove the transfer belt unit. (See Transfer Belt Unit Removal.)
3. Note the location of the three wire terminals [A]. Remove the three terminals [A] from the rear side plate of the transfer belt unit (3 screws).
4. Swing the transfer belt assembly [B] up by 90 degrees, then remove it.
NOTE: Never touch the transfer belt surface.
5. Remove a screw [C] at the front and turn the belt drive holder [D].
6. Replace the transfer belt [E].

NOTE: 1) Before installing the new transfer belt, clean all the rollers and shafts (dry cloth) to prevent the belt from slipping.
2) When reinstalling, to avoid damage to the transfer belt, manually turn the rollers and check that the new transfer belt is not running over the edge of any of the rollers.

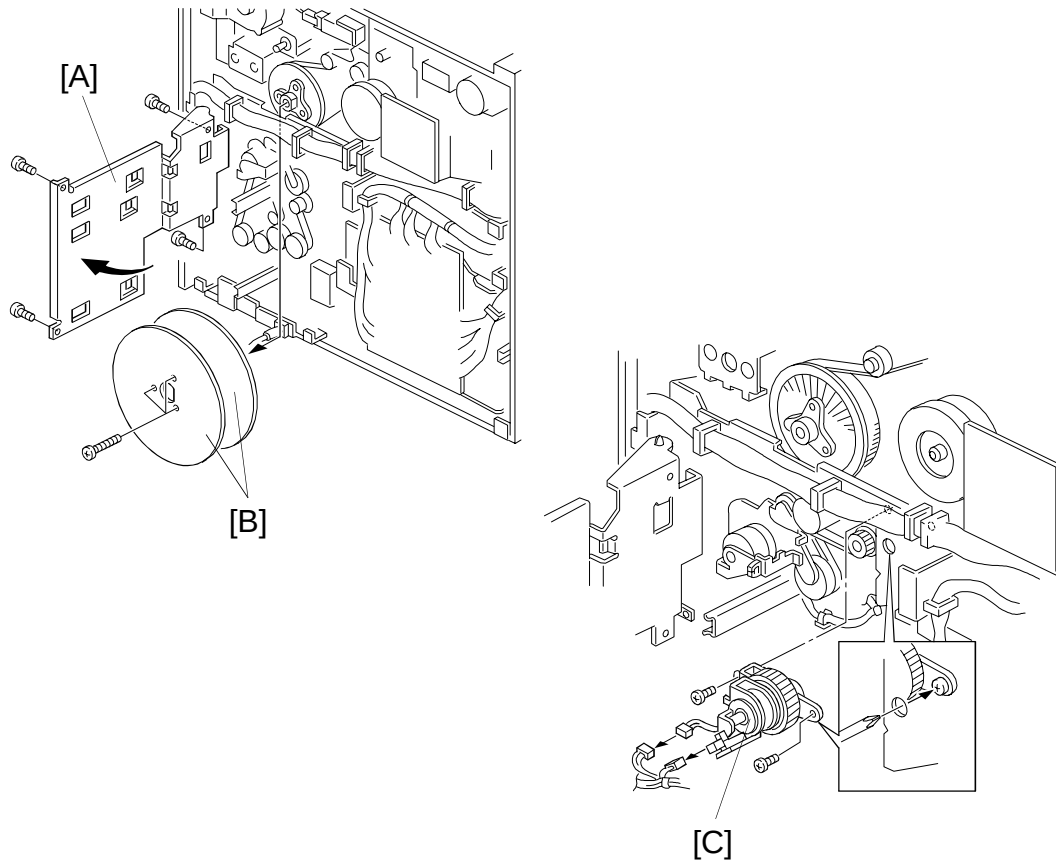
6.3 TRANSFER BELT CLEANING BLADE REPLACEMENT



1. Remove the transfer belt unit. (See Transfer Belt Unit Removal.)
2. Remove the transfer belt assembly. (See Transfer Belt Replacement.)
3. Put the transfer belt assembly on a clean sheet of paper.
4. Remove the cleaning blade [A] (3 screws).

NOTE: 1) Do not touch the edge of the new blade.
2) Check that there is no dust/no damage on the edge of the new cleaning blade.

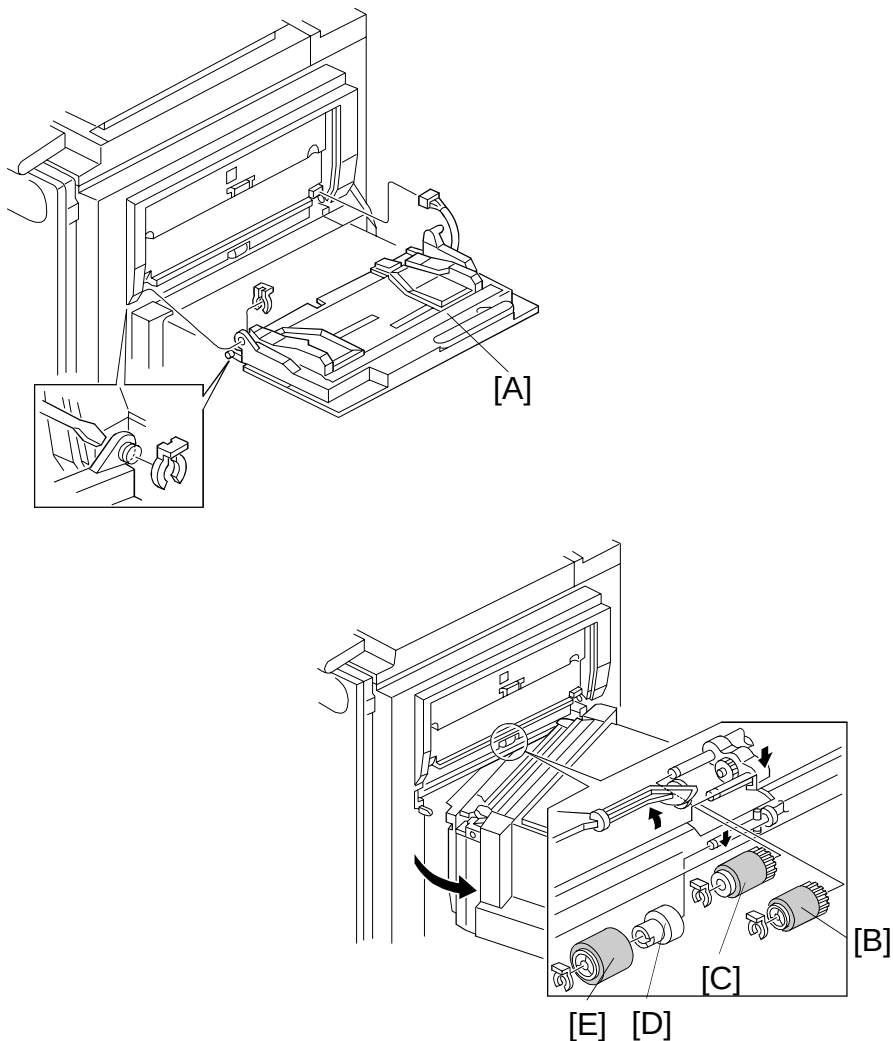
6.4 TRANSFER BELT LIFT CLUTCH



1. Turn off the main switch and unplug the machine.
2. Open the front cover.
3. Turn the lever "A1" clockwise.
4. Remove the rear cover. (See Outer Cover Removal.)
5. Swing out the SCU board plate [A] (4 screws).
6. Remove the fly wheels [B] (3 screws).
7. Replace the transfer belt lift clutch assembly [C] (2 connectors, 2 screws).

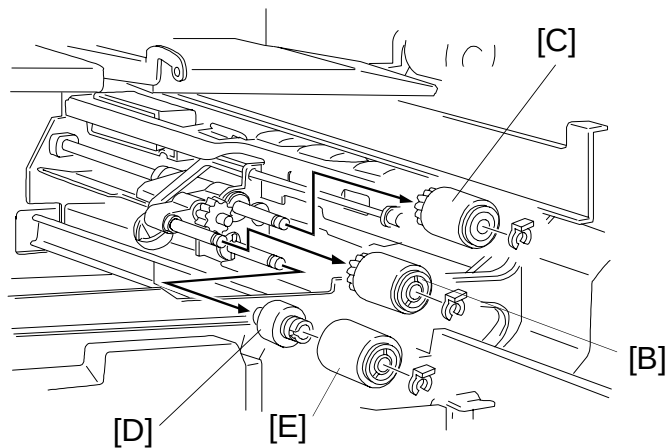
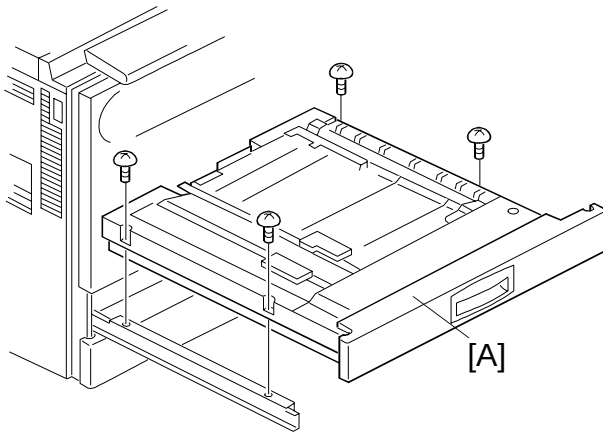
7. PAPER FEED

7.1 LCT PICK-UP, SEPARATION, AND FEED ROLLER REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the by-pass feed table [A] (1 clip, 1 connector).
3. Open the LCT unit.
4. Remove the pick-up roller [B], feed roller [C], torque limiter [D], and the separation roller [E] (1 clip each).

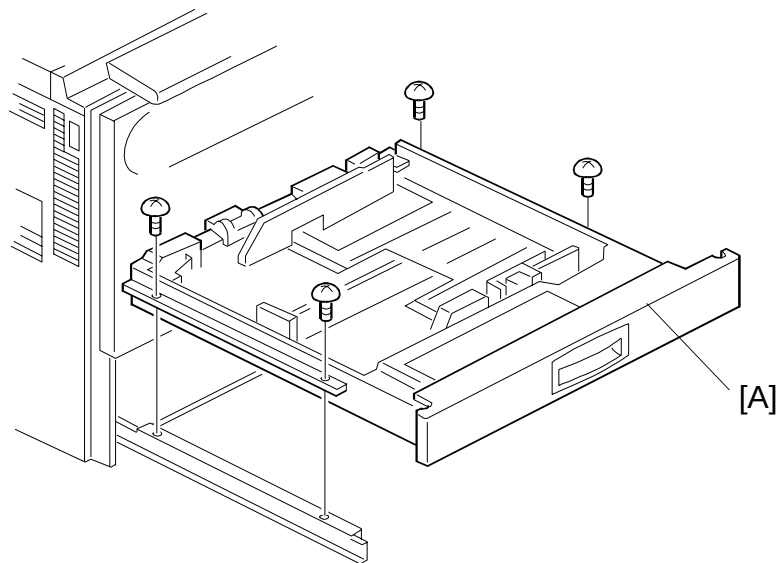
7.2 TRAY PICK-UP, SEPARATION, AND FEED ROLLER REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the duplex tray [A] (4 screws).
3. Remove the pick-up [B] and feed [C] rollers, torque limiter [D], and the separation roller [E] (1 clip each).

NOTE: After reinstalling the duplex tray, perform the printer side-to-side registration adjustment and the main scan magnification adjustment (see section 12).

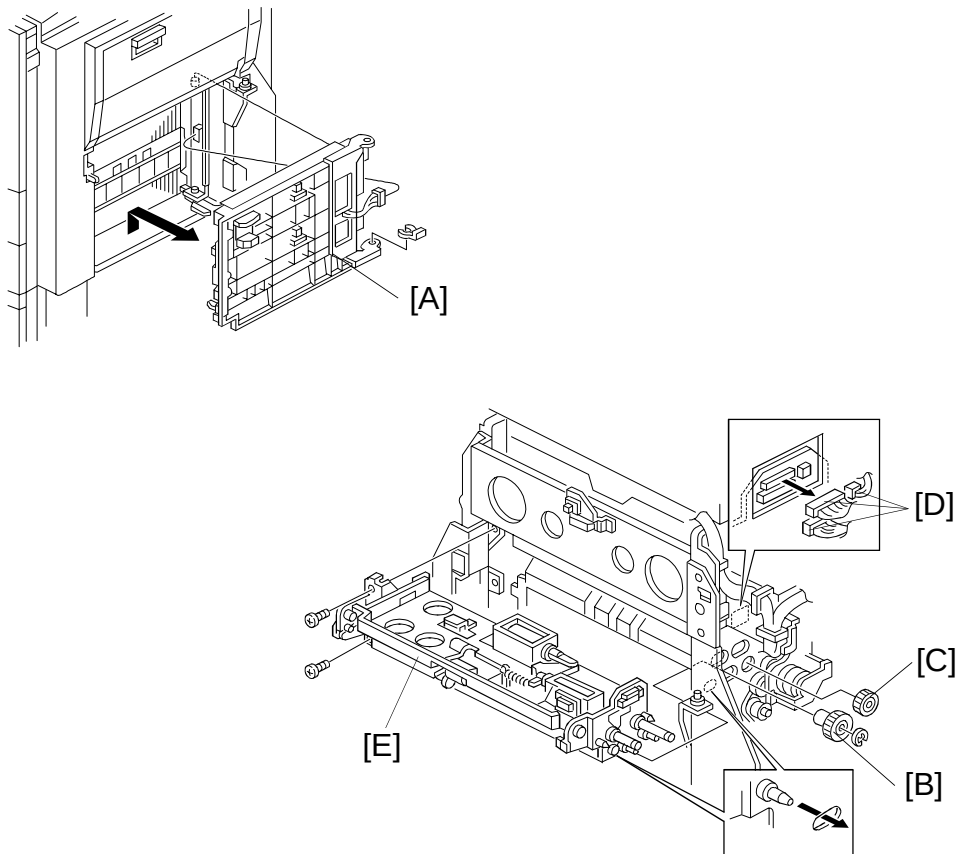
7.3 PAPER FEED TRAY REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the paper feed tray [A] (4 screws).

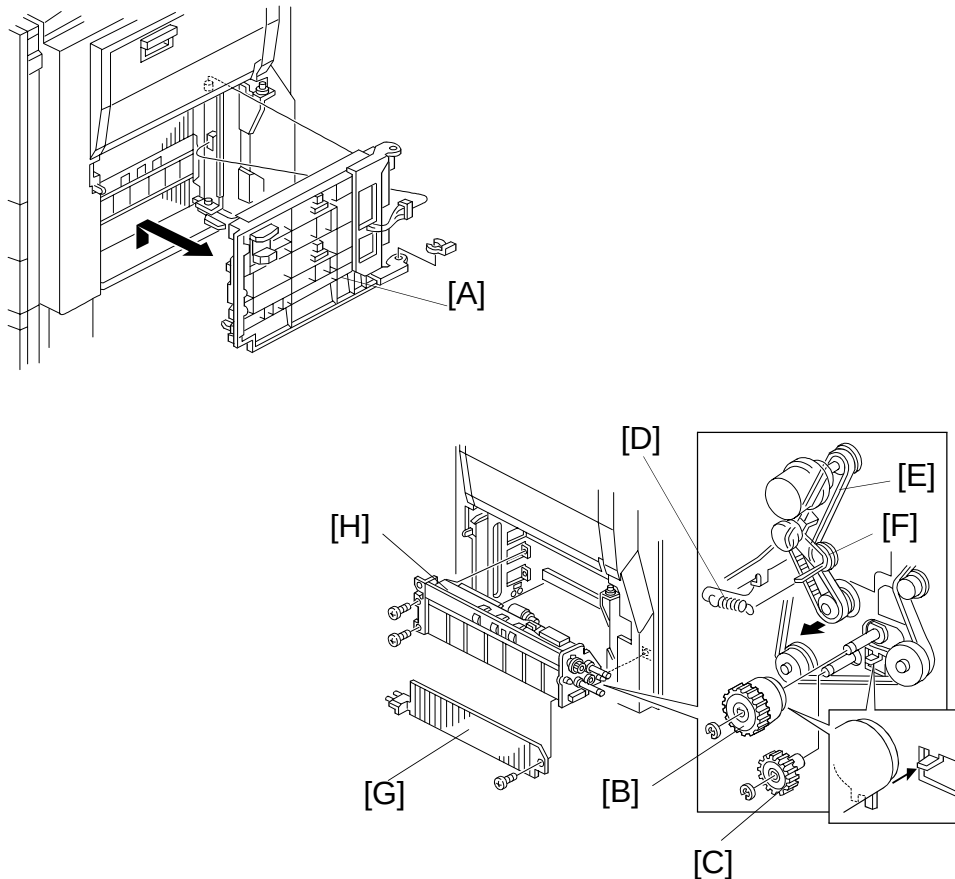
NOTE: After reinstalling the paper feed tray, perform the side-to-side registration adjustment and the main scan magnification adjustment (see section 12).

7.4 BYPASS PAPER FEED UNIT REMOVAL



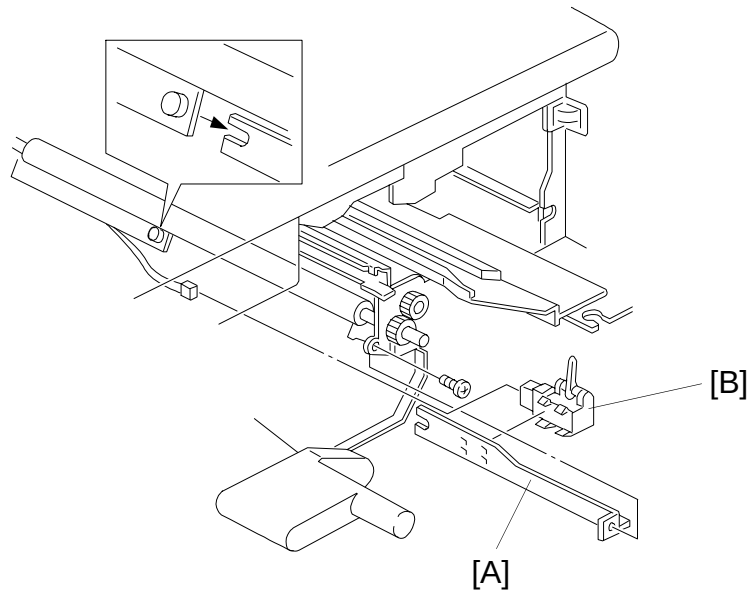
1. Turn off the main switch and unplug the machine.
2. Remove the LCT. (See LCT Unit Removal.)
3. Remove the vertical transport guide [A] (1 clip, 1 connector).
4. Remove the by-pass table. (See LCT Pick-up, Separation, and Feed Roller Replacement.)
5. Remove the right cover. (See Outer Cover Removal.)
6. Remove the SCU board, by-pass feed clutch, and by-pass relay clutch. (See By-pass Feed and By-pass Relay Clutch Replacement.)
7. Remove the separation roller drive gear [B] (1 E-ring).
8. Remove the relay gear [C].
9. Disconnect the connectors [D] (3 connectors).
10. Remove the by-pass paper feed unit [E] (2 screws).

7.5 TRAY PAPER FEED UNIT REMOVAL



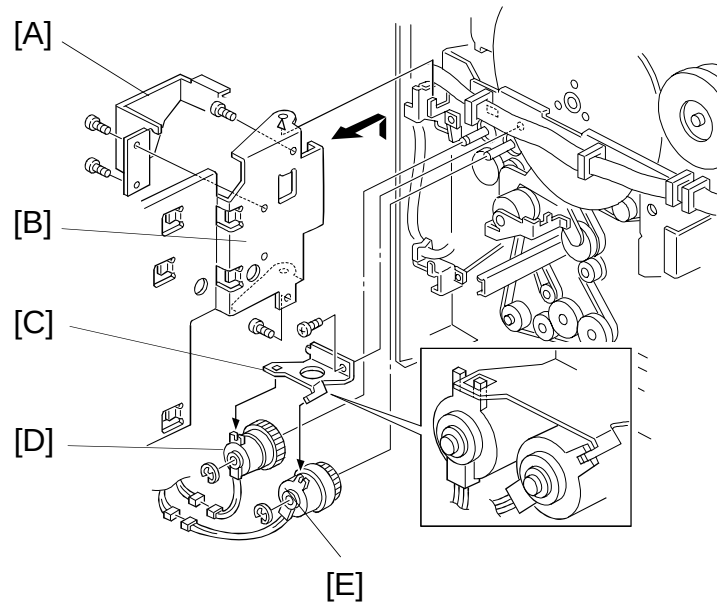
1. Turn off the main switch and unplug the machine.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Remove the LCT unit. (See LCT Unit Removal.)
4. Remove the vertical transport guide [A] (1 snap ring and 1 connector).
5. Remove the paper feed clutch [B]. (See Paper Feed Clutch Replacement.)
6. Remove the separation roller gear [C] (1 E-ring).
7. Remove the spring [D] and remove the timing belt [E] from the relay roller pulley [F].
8. Remove the small vertical transport guide plate [G] (1 screw).
10. Remove the paper feed unit [H] (2 screws, 1 connector).

7.6 REGISTRATION SENSOR REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the front cover. (See Outer Cover Removal.)
3. Remove the right inner cover. (See Inner Cover Removal.)
4. Remove the transfer belt assembly. (See Transfer Belt Unit Removal.)
5. Remove the registration sensor bracket [A] (1 screw, 1 connector).
6. Remove the registration sensor [B].

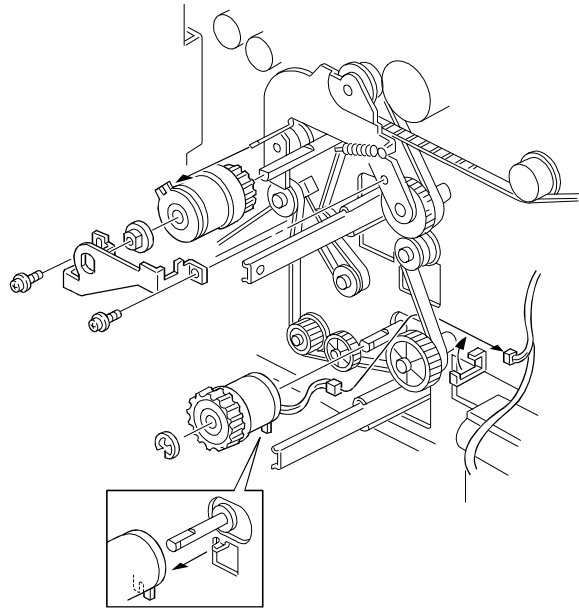
7.7 BY-PASS FEED AND BY-PASS RELAY CLUTCH REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the rear cover. (See Outer Cover Removal.)

– 230 V machine only for step 3 –

3. Remove the grounding plate bracket [A] (2 screws).
4. Remove the SCU board plate [B] (4 screws, all connectors).
5. Remove the clutch stopper [C] (1 screw).
6. Replace the by-pass feed [D] and by-pass relay clutches [E] (1 connector each, 1 E-ring each).



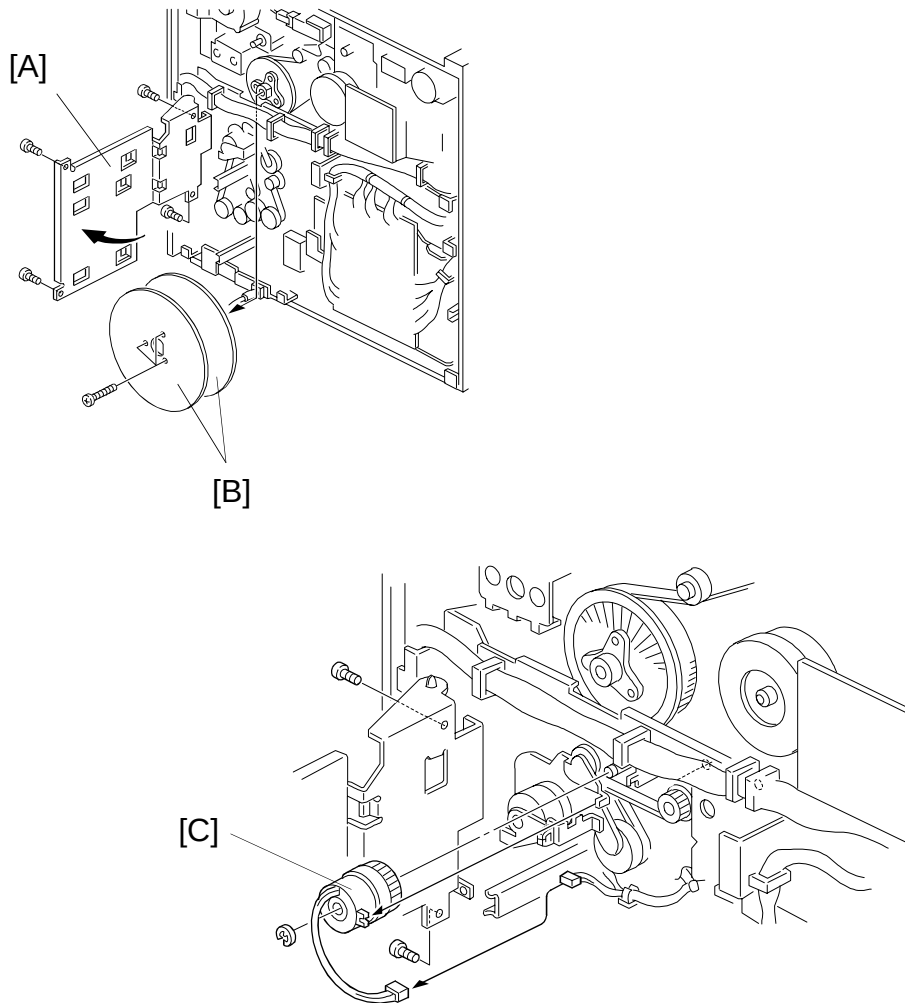
7.8 PAPER FEED CLUTCH REPLACEMENT

1. Turn off the main switch and unplug the machine.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Swing out the SCU board (4 screws).
4. Replace the paper feed clutch [A] (1 connector, 1 E-ring).

7.9 RELAY CLUTCH REPLACEMENT

1. Turn off the main switch and unplug the machine.
2. Remove the rear cover.
3. Swing out the SCU board (4 screws).
4. Remove the clutch holder [B] (2 screws).
5. Replace the relay clutch [C] (1 bushing, 1 connector).

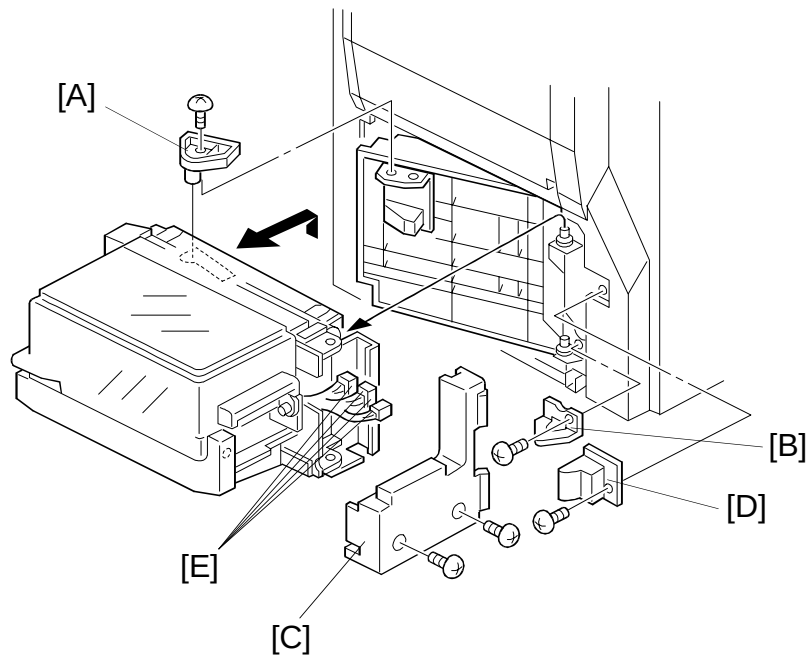
7.10 REGISTRATION CLUTCH REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Swing out the SCU board [A] (4 screws).
4. Remove the fly wheels [B] (3 screws).
5. Remove the registration clutch [C] (1 connector, 1 E-ring).

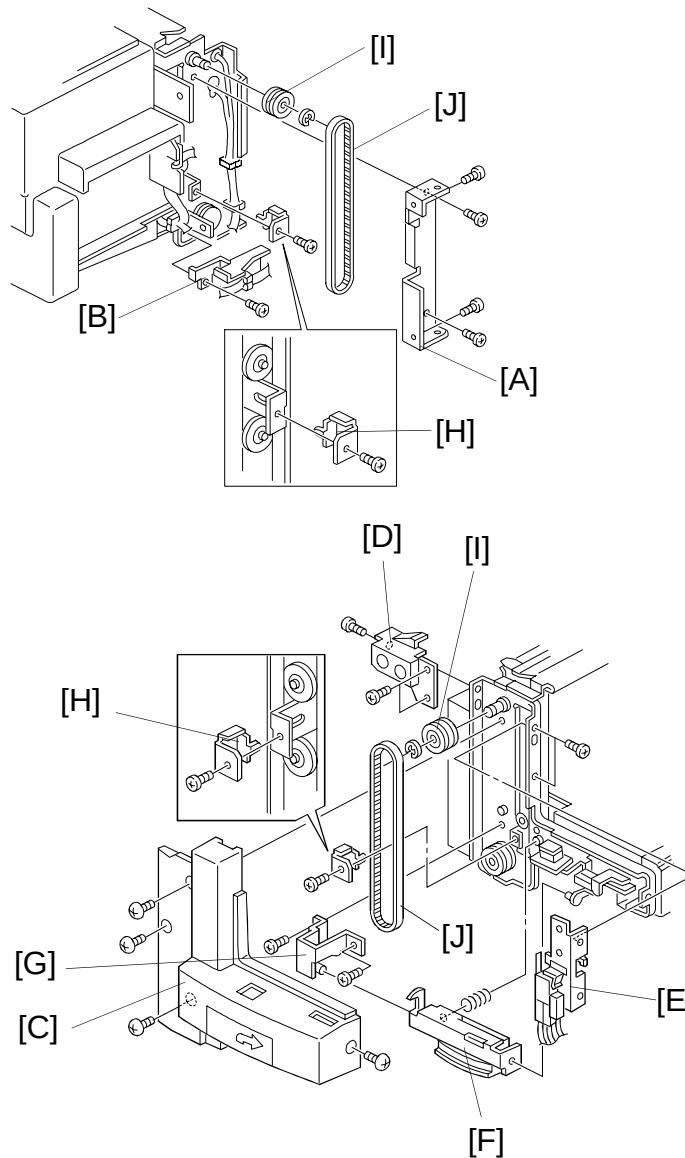
8. LCT UNIT

8.1 LCT UNIT REMOVAL



1. Turn off the main switch and unplug the machine.
2. Remove the rear cover (see Outer Cover Removal).
3. Open the LCT unit.
4. Remove the support guide [A] (1 screw).
5. Remove the harness cover [B] (1 screw).
6. Remove the LCT's rear cover [C] (2 screws).
7. Remove the stopper bracket [D] (1 screw).
8. Disconnect four connectors [E].
9. Remove the LCT.

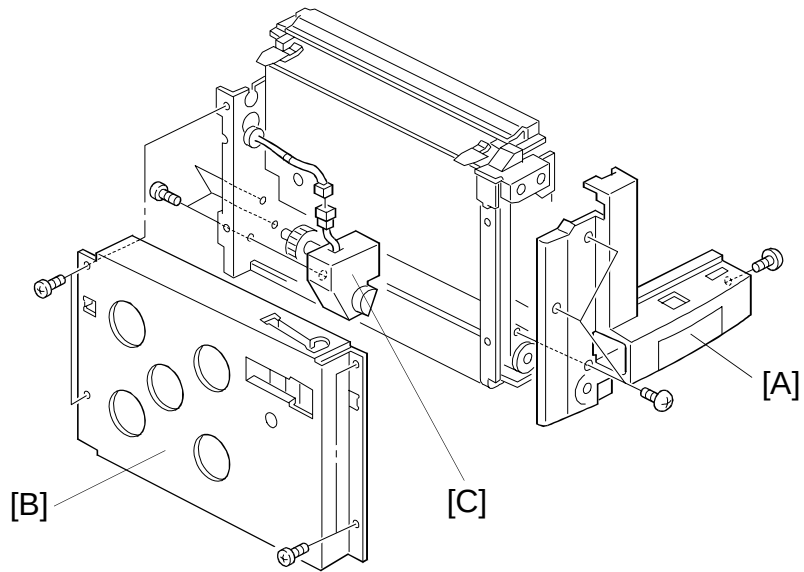
8.2 LCT DRIVE BELT REPLACEMENT



1. Remove the LCT unit (see LCT Unit Removal).
2. Remove the upper belt cover [A] (4 screws).
3. Remove the lower belt cover [B] (1 screw).
4. Remove the front cover [C] (4 screws).
5. Remove the front upper bracket with cover [D] (3 screws).
6. Remove the LCT switch [E] (2 screws, 1 connector)
7. Remove the grip holding bracket [F] and grip bracket [G] (2 screws).
8. Remove the belt stoppers [H] (1 screw each).
9. Remove the upper pulley [I] and LCT drive belt [J] (1 E-ring each).

NOTE: When reinstalling the belt stoppers, make sure that the LCT bottom plate is at the bottom.

8.3 LCT MOTOR REPLACEMENT



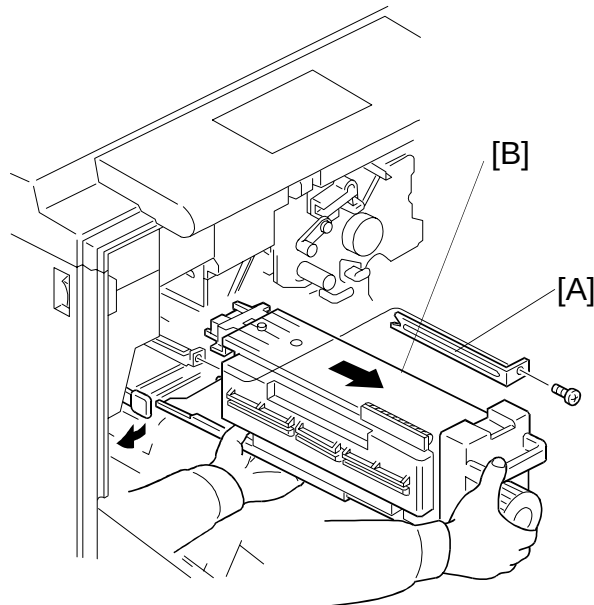
1. Remove the LCT. (See LCT Unit Removal.)
2. Remove the front cover [A] (4 screws).
3. Remove the left plate [B] (4 screws).
4. Remove the LCT motor [C] (3 screws, 1 connector).

9. FUSING

9.1 FUSING UNIT REMOVAL

CAUTION

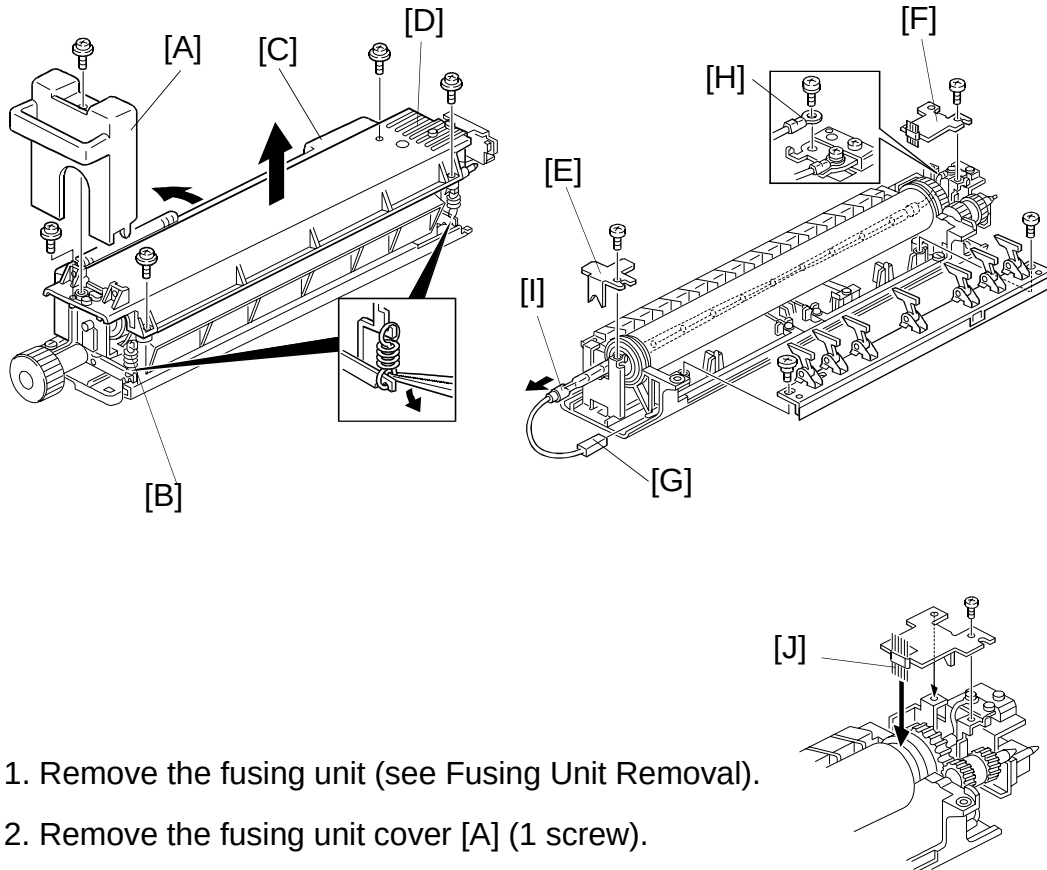
Allow time for the unit to cool before doing the following procedure.



1. Turn off the main switch and unplug the machine.
2. Open the front cover.
3. Remove the stopper bracket [A] (1 screw).
4. Hold the fusing unit cover [B] while pushing the release lever [C] to the left, and pull out the fusing unit until it stops.
5. Push the release lever again, and remove the fusing unit completely.

NOTE: Before completely removing the fusing unit, support the bottom of the fusing unit.

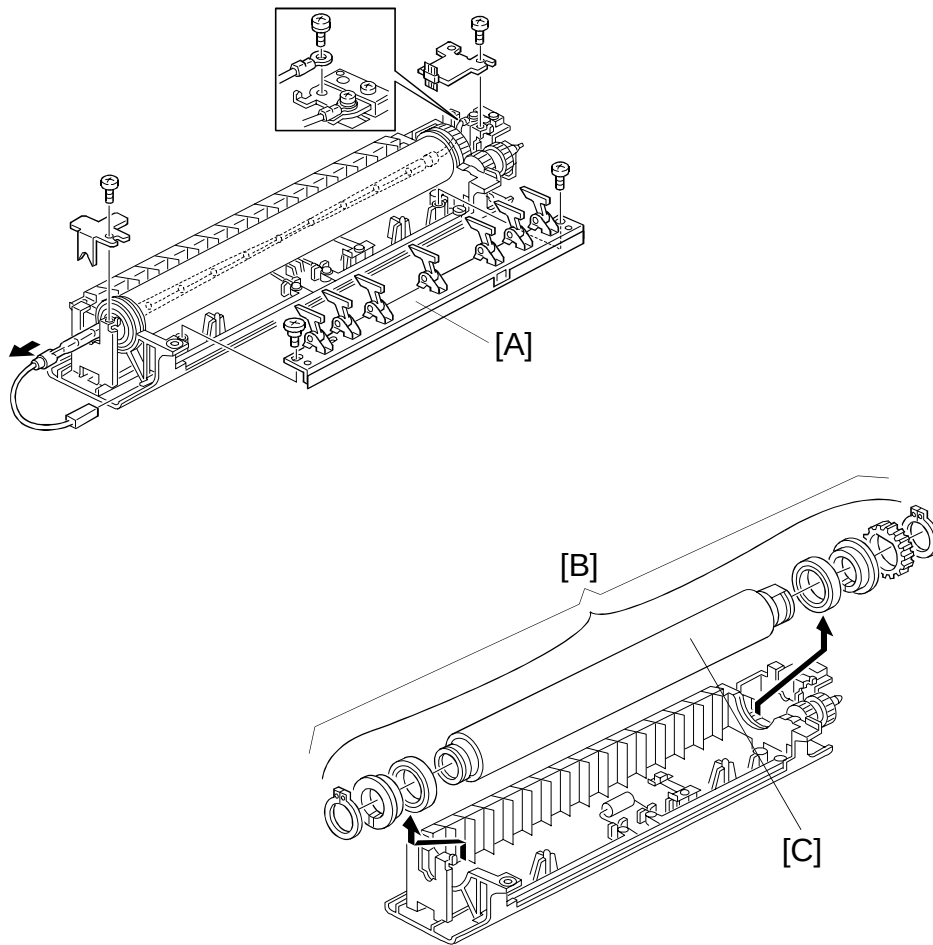
9.2 FUSING LAMP REPLACEMENT



1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (1 screw).
3. Remove the pressure springs [B].
4. Open the fusing exit cover [C] and remove the fusing upper unit [D] (4 screws).
5. Remove the front lamp holder [E] (1 screw).
6. Remove the rear lamp holder [F] (1 screw).
7. Disconnect the front lamp connector [G] and the rear lamp terminal [H] (1 screw).
8. Remove the lamp [I].
9. Install the new lamp.

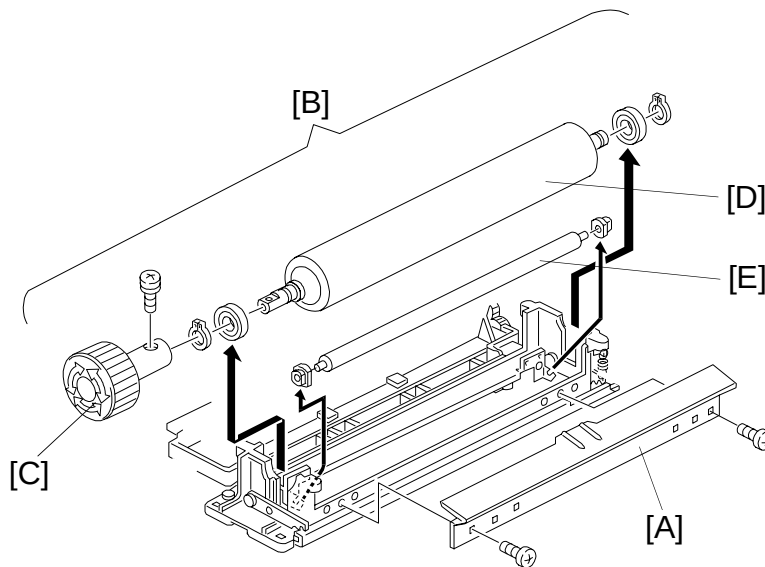
NOTE: 1) Do not touch the glass part of the fusing lamp with bare hands.
2) When reinstalling the rear lamp holder, make sure that the antistatic brush [J] contacts the hot roller and the pressure roller as shown.
3) The standard pressure spring position is at the upper position.

9.3 HOT ROLLER REPLACEMENT



1. Remove the fusing lamp (see Fusing Lamp Replacement).
 2. Remove the hot roller stripper pawl assembly [A] (1 screw, 1 step screw).
 3. Remove the hot roller assembly [B].
 4. Replace the hot roller [C] (2 C-rings, 1 gear, 2 bearings, 2 bushings).
- NOTE:** 1) Before installing the hot roller, peel off 3 cm (1 inch) from both ends of the protective sheet on the new one.
2) The standard pressure spring position is at the upper position.
3) Do not touch the surface of the rollers.
4) Be careful not to damage the surface of the hot roller.

9.4 PRESSURE ROLLER AND CLEANING ROLLER REPLACEMENT



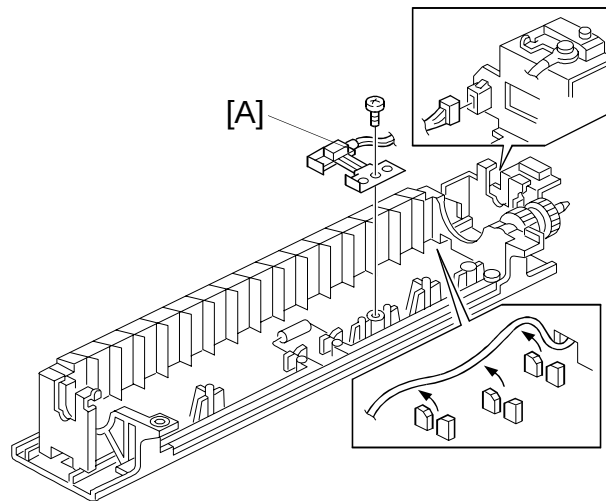
1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the pressure springs and remove the lower fusing unit (4 screws).
3. Remove the lower fusing entrance guide [A] (2 screws).
4. Remove the pressure roller assembly [B].
5. Remove the fusing knob [C].
6. Replace the pressure roller [D] (2 C-rings, 2 bearings).
7. Replace the cleaning roller [E] (2 bushings).

NOTE: 1) When reinstalling the fusing entrance guide, tighten the screws while pushing the guide plate up to the upper position (for standard or thin paper). For thick paper, let the entrance guide plate drop to the lowest position.

2) There are three screw holes on each side for securing the entrance guide. Normally, the outer screw hole on each side is used.

3) The standard pressure spring position is at the upper position.

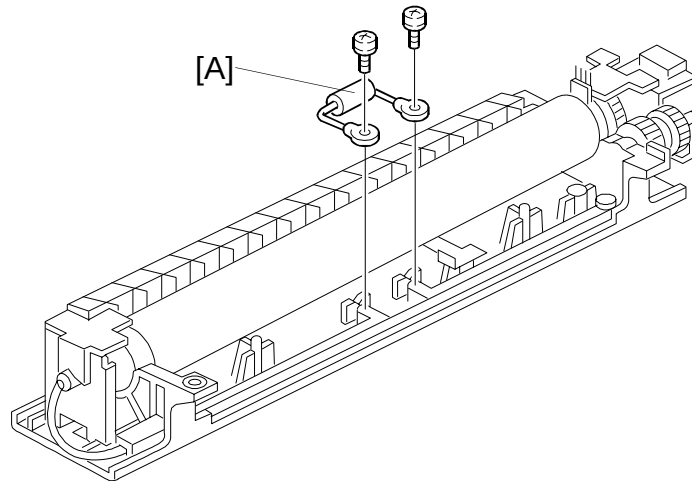
9.5 THERMISTOR REPLACEMENT



1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the hot roller assembly (see Hot Roller Replacement).
3. Remove the thermistor [A] (1 screw, 1 connector).

NOTE: 1) Do not touch the surface of the hot roller.
2) Be careful not to damage the surface of the hot roller.
3) The standard pressure spring position is at the upper position.

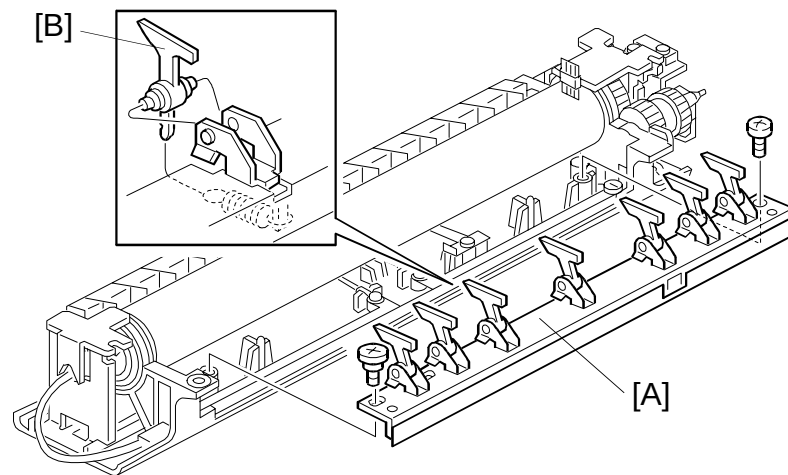
9.6 THERMOFUSE REPLACEMENT



1. Remove the fusing unit. (See Fusing Unit Removal.)
2. Remove the pressure springs and remove the upper fusing unit. (See Fusing Lamp Replacement.)
3. Remove the stripper pawl assembly. (See Hot Roller Replacement.)
4. Remove the thermofuse [A] (2 screws).

NOTE: 1) Do not touch the surface of the hot roller.
2) When replacing the thermofuse, make sure that you do not damage the hot roller.
3) The standard pressure spring position is at the upper position.

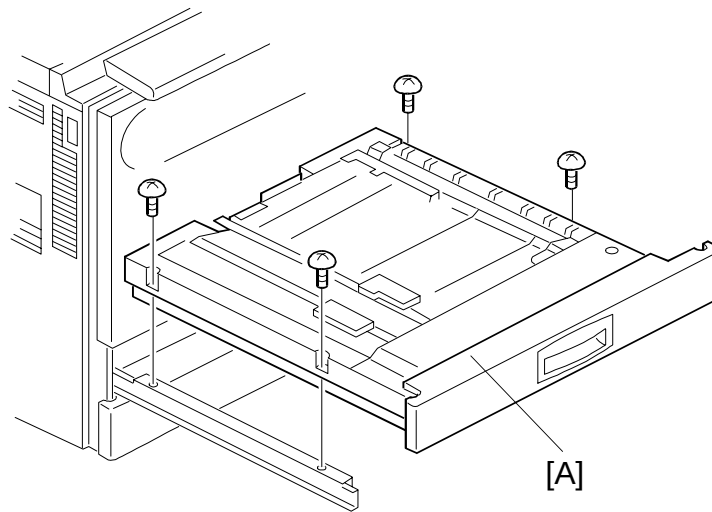
9.7 HOT ROLLER STRIPPER PAWL REPLACEMENT



1. Remove the fusing unit. (See Fusing Unit Removal.)
2. Remove the fusing unit cover and pressure springs. (See Fusing Lamp Replacement.)
3. Remove the fusing upper unit. (See Fusing Lamp Replacement.)
4. Remove the hot roller stripper pawl assembly [A] (1 screw, 1 step screw).
5. Replace the hot roller stripper pawls [B] (1 spring each).

10. DUPLEX UNIT

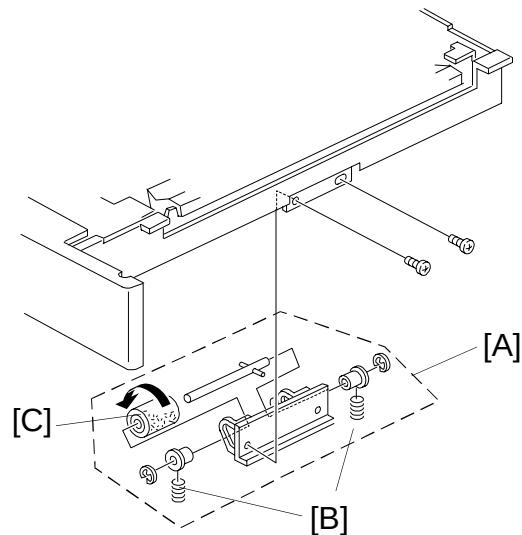
10.1 DUPLEX UNIT REMOVAL



1. Pull the duplex unit out.
2. Remove the duplex unit [A] (4 screws).

NOTE: After reinstalling the duplex unit, perform the side-to-side registration and main scan magnification adjustments (see section 12.)

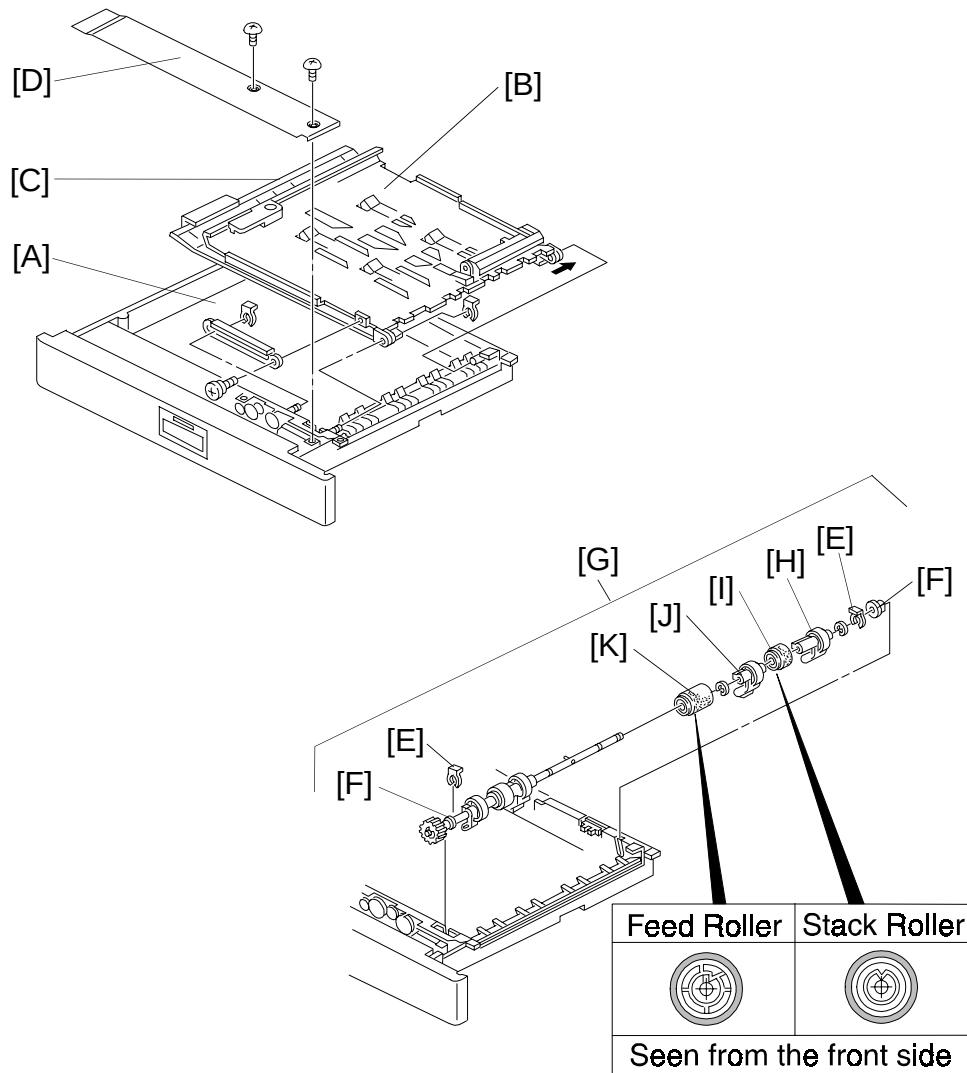
10.2 FRICTION ROLLER REPLACEMENT



1. Remove the duplex unit. (See Duplex Unit Removal.)
2. Remove the separation roller assembly [A] (2 screws).
3. Remove the springs [B].
4. Remove the friction roller [C] (2 E-rings, 2 bushings).

NOTE: This friction roller has a one-way clutch. Be sure to install the roller so that it rotates in the direction of the arrow (see the illustration).

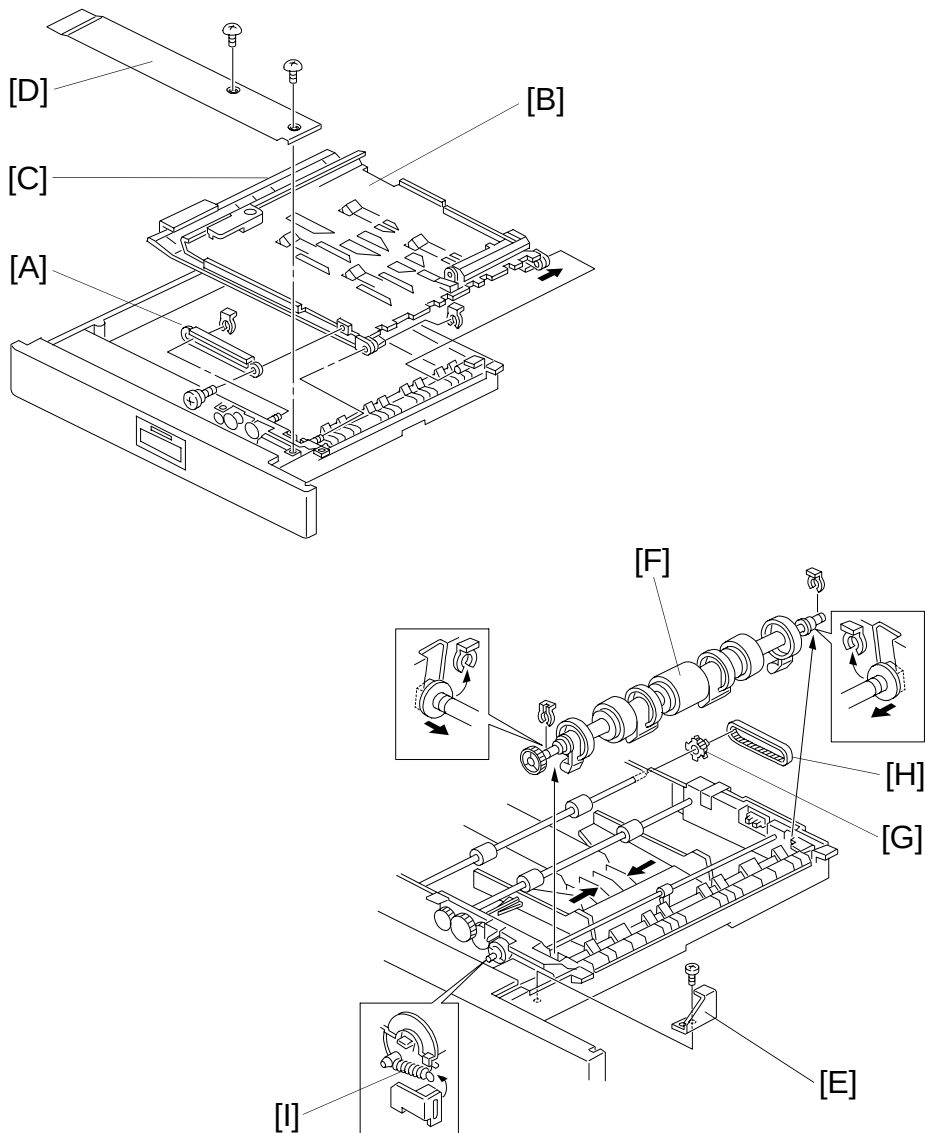
10.3 DUPLEX FEED ROLLER REPLACEMENT



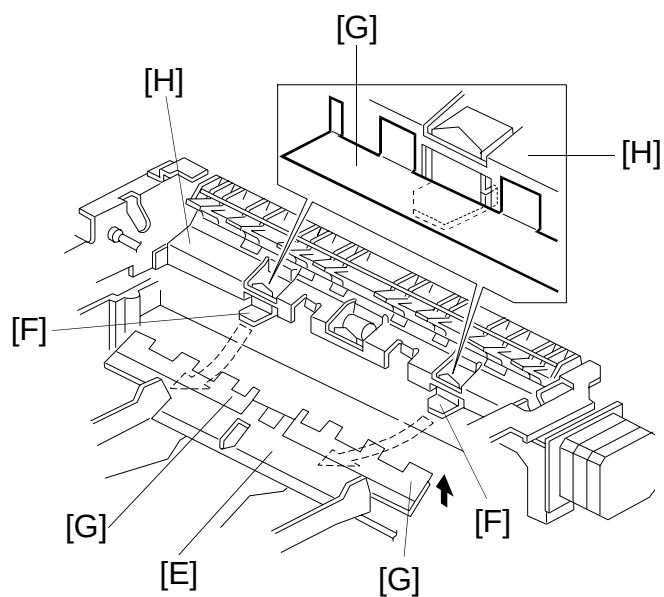
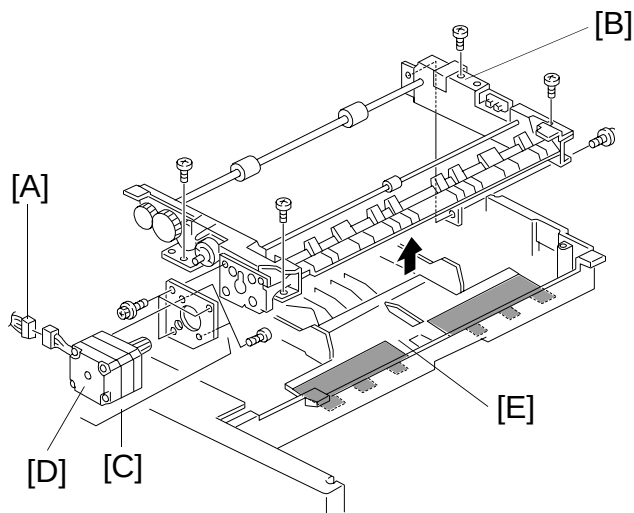
1. Pull out the duplex unit.
2. Remove the link bracket [A] (1 screw, 1 clip).
3. Remove the upper guide plate [B] and the lower guide plate [C] (1 clip).
4. Remove the inner cover [D] (2 screws).
5. Remove two snap rings [E].
6. Move the bushings [F] inward and remove the duplex feed roller assembly [G].
7. Remove the bushing [F], the paper flattener [H] (1 E-ring), the stack roller [I], the paper flattener [J], and the duplex feed roller [K].

NOTE: When installing the stack roller and the duplex feed roller, make sure that they are inserted in the correct orientation as shown.

10.4 DUPLEX FEED MOTOR REPLACEMENT



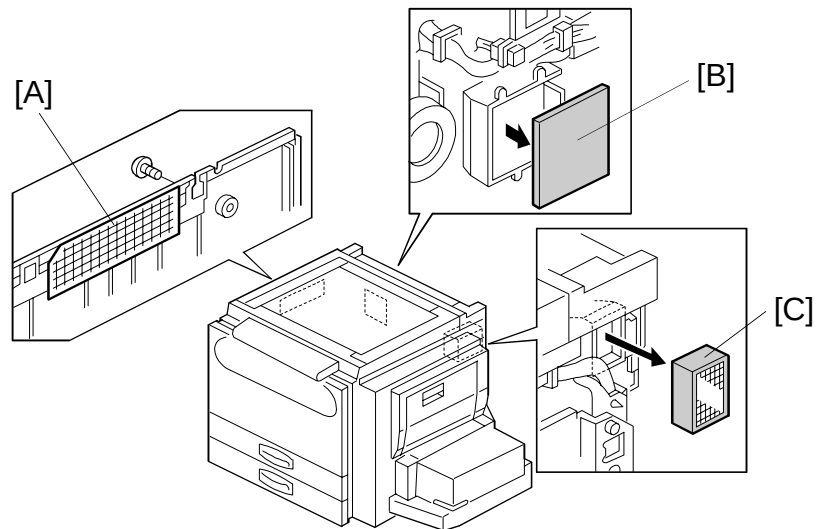
1. Remove the duplex unit (4 screws).
2. Remove the link bracket [A] (1 screw, 1 snap ring).
3. Remove the upper guide plate [B] and the lower guide plate [C] (1 snap ring).
4. Remove the inner cover [D] (1 screw).
5. Remove the inner cover bracket [E] (1 screw).
6. Remove the duplex feed roller assembly [F] (2 snap rings).
7. Remove the timing belt pulley [G] and remove the timing belt [H].
8. Remove the spring [I].



9. Disconnect the motor harness [A].
 10. Move the jogger fence inward and remove the paper feed assembly [B] (5 screws).
 11. Remove the duplex feed motor assembly [C] (3 screws).
 12. Replace the duplex feed motor [D] (2 screws).
- NOTE:** 1) When installing the paper feed assembly, make sure that the bottom plate [E] is on top of the bracket [F] as shown.
- 2) When installing the paper feed assembly, make sure that the mylars [G] on the bottom plate are on top of the guide plate [H] as shown.

11. OTHERS

11.1 FILTERS



11.1.1 Optics Dust Filter

1. Remove the left cover (see Outer Cover Removal).
2. Replace the optics dust filter [A].

11.1.2 Fusing Exhaust Fan Filter

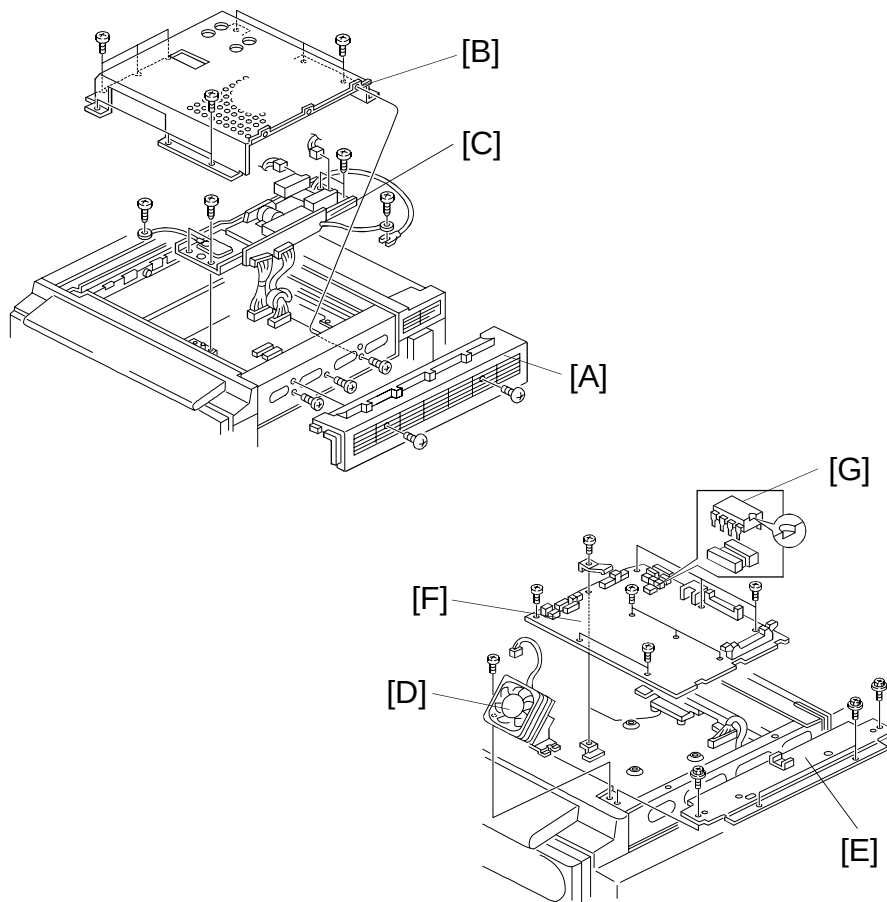
1. Remove the rear cover (see Outer Cover Removal).
2. Replace the fusing exhaust fan filter [B].

11.1.3 Ozone Filter

1. Remove the right cover (see Outer Cover Removal).
2. Replace the ozone filter [C].

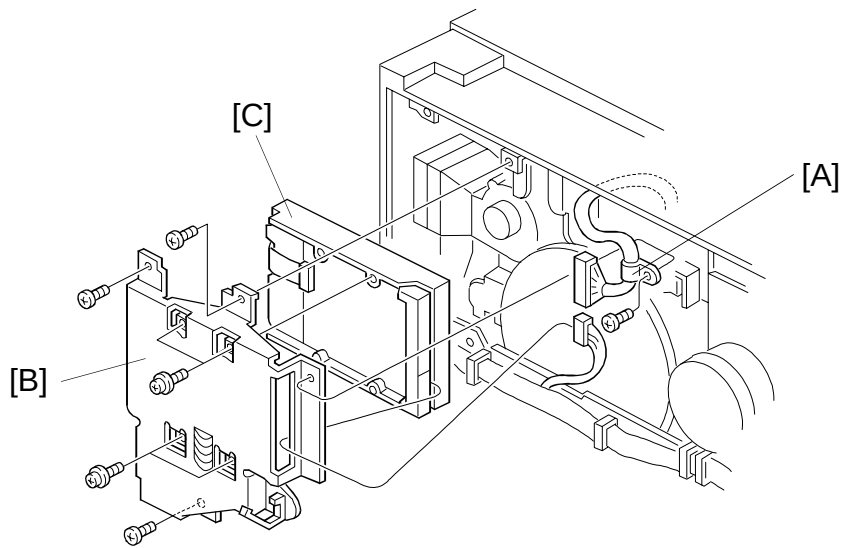
11.2 PCB REPLACEMENT

11.2.1 SBU Assembly/EX-IPU Replacement



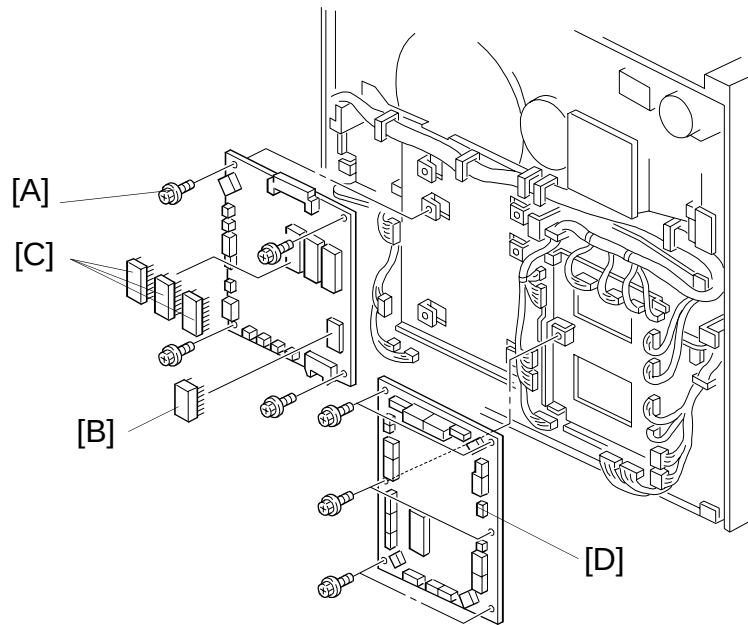
1. Turn off the main switch and unplug the machine.
2. Remove the exposure glass (see Exposure Glass Removal).
3. Remove the right upper cover [A] (2 screws).
4. Remove the SBU cover [B] (11 screws).
5. Remove the lens block/SBU assembly [C] (6 screws, 4 connectors).
6. Remove the IPU fan motor [D] (1 screw).
7. Remove the upper right stay [E] (4 screws).
8. Remove the EX-IPU [F] (all connectors, 9 screws, 1 grounding plate)
9. Remove the E² PROM (IC52) [G] from the old EX-IPU and install it on the new board. This contains the hard disk bad sector data.
10. After reassembly, do the scanner registration and sub scan magnification adjustments in section 12 (check the printer registration settings first).

11.2.2 HDD Unit Replacement



1. Turn off the main switch and unplug the machine.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Remove the wire clamp [A] (1 screw).
4. Remove the HDD unit assembly [B] (3 screws, 2 connectors).
5. Replace the HDD unit [C] (4 screws).

NOTE: 1) Reset the bad sector information (SP4911-6).
2) If the user has registered user stamps in the previous HDD unit, advise the user that they may need to register them again.



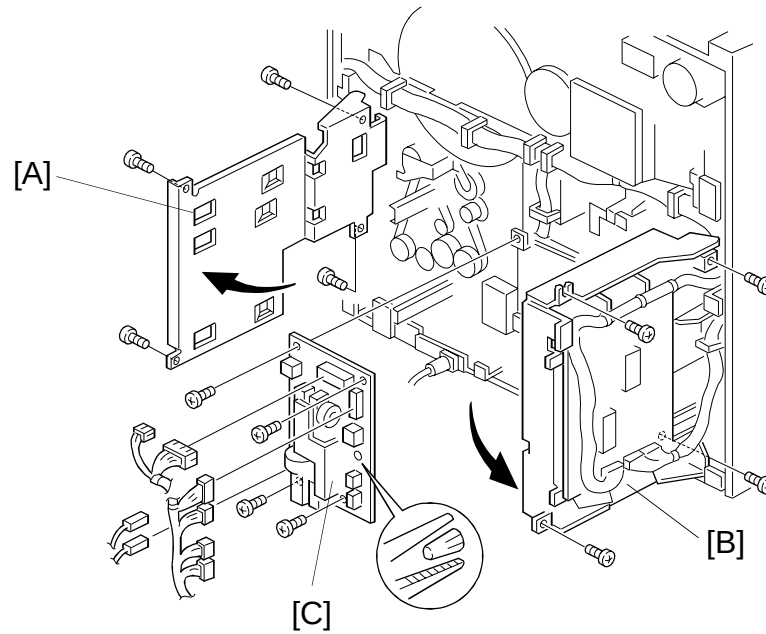
11.2.3 SCU Board Replacement

1. Turn off the main switch and unplug the machine.
2. Remove the rear cover (6 screws).
3. Replace the SCU board [A] (4 screws, all connectors).
4. Remove the NV RAM [B] from the old SCU board and install it on the new board.
5. Remove the ROMs [C] from the old SCU board and install them on the new board.
6. Make sure that the DIP switch settings on the new board are the same as those on the old board.

11.2.4 BCU Board Replacement

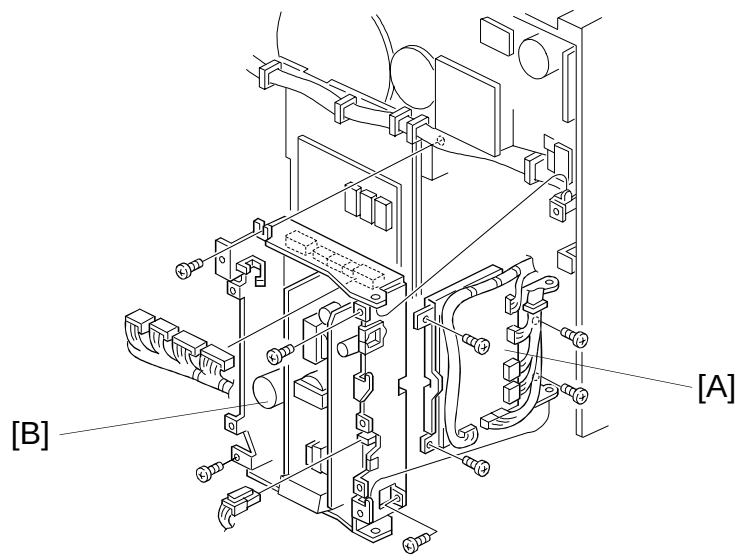
1. Turn off the main switch and unplug the machine.
2. Remove the rear cover (6 screws).
3. Replace the BCU board [D] (6 screws and all connectors).
4. Make sure that the DIP switch settings on the new board are the same as those on the old board.

11.2.5 AC Drive Board



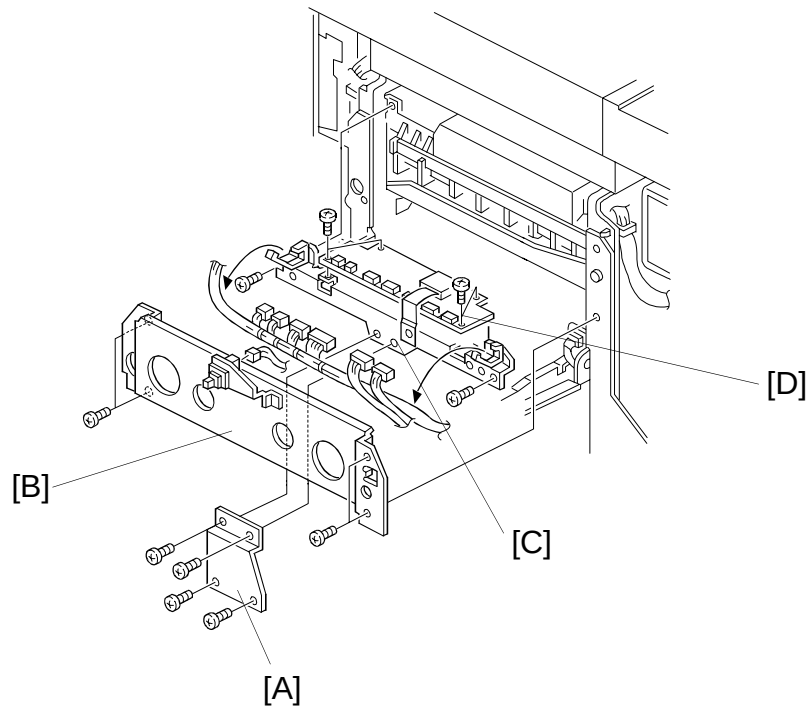
1. Turn off the main switch and unplug the machine.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Swing out the SCU board [A] (4 screws).
4. Swing out the dc power supply unit/BCU board [B] (4 screws).
5. Replace the ac drive board [C] (all connectors, 4 screws).

11.2.6 DC Power Supply Unit



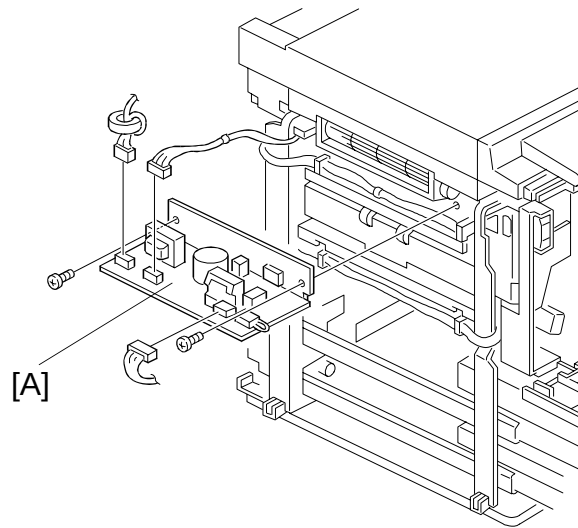
1. Turn off the main switch and unplug the power cable.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Remove the BCU board assembly [A] (all connectors, 4 screws).
4. Replace the dc power supply unit [B] (all connectors, 4 screws).

11.2.7 High Voltage Control Board

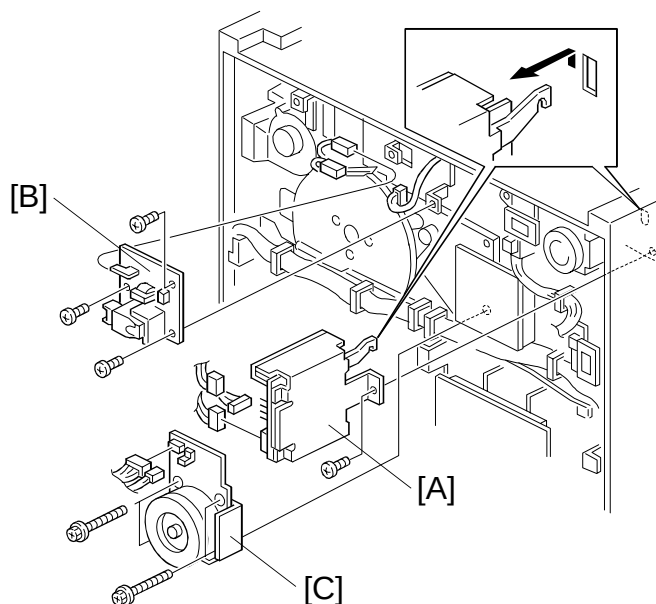


1. Turn off the main switch and unplug the machine.
2. Remove the right cover (See Outer Cover Removal).
3. Remove the lower grounding plate [A] (4 screws).
4. Remove the right stay [B] (1 connector, 4 screws).
5. Slide out the high voltage control board assembly [C] (all connectors, 2 screws).
6. Replace the high voltage control board [D] (4 screws).

11.2.8 Lamp Stabilizer



1. Turn off the main switch and unplug the power cable.
2. Remove the left cover (see Outer Cover Removal).
3. Replace the lamp stabilizer [A] (4 connectors, 2 screws).



11.2.9 Scanner Drive Board

1. Turn off the main switch and unplug the power cable.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Replace the scanner drive board [A] (all connectors, 1 screw).

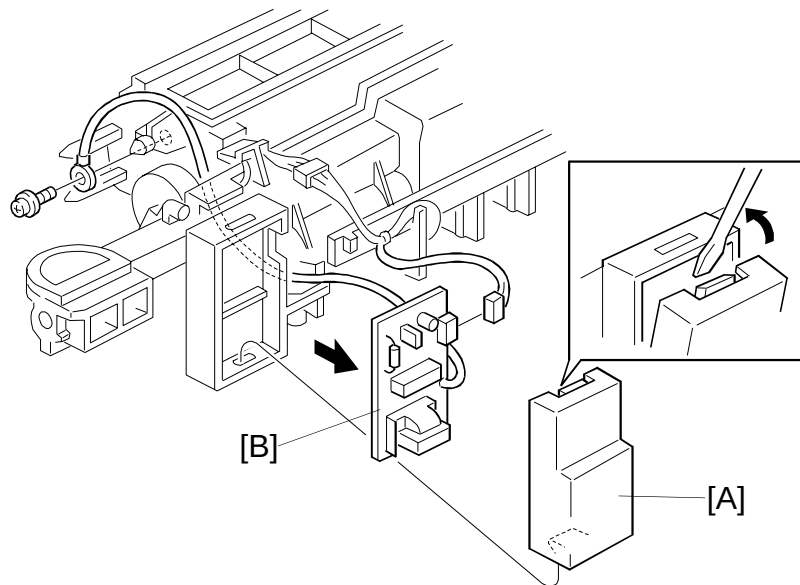
11.2.10 Charge High Voltage Supply Board

1. Turn off the main switch and unplug the power cable.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Replace the charge high voltage supply board [B] (3 connectors, 3 screws).

11.2.11 Main Motor

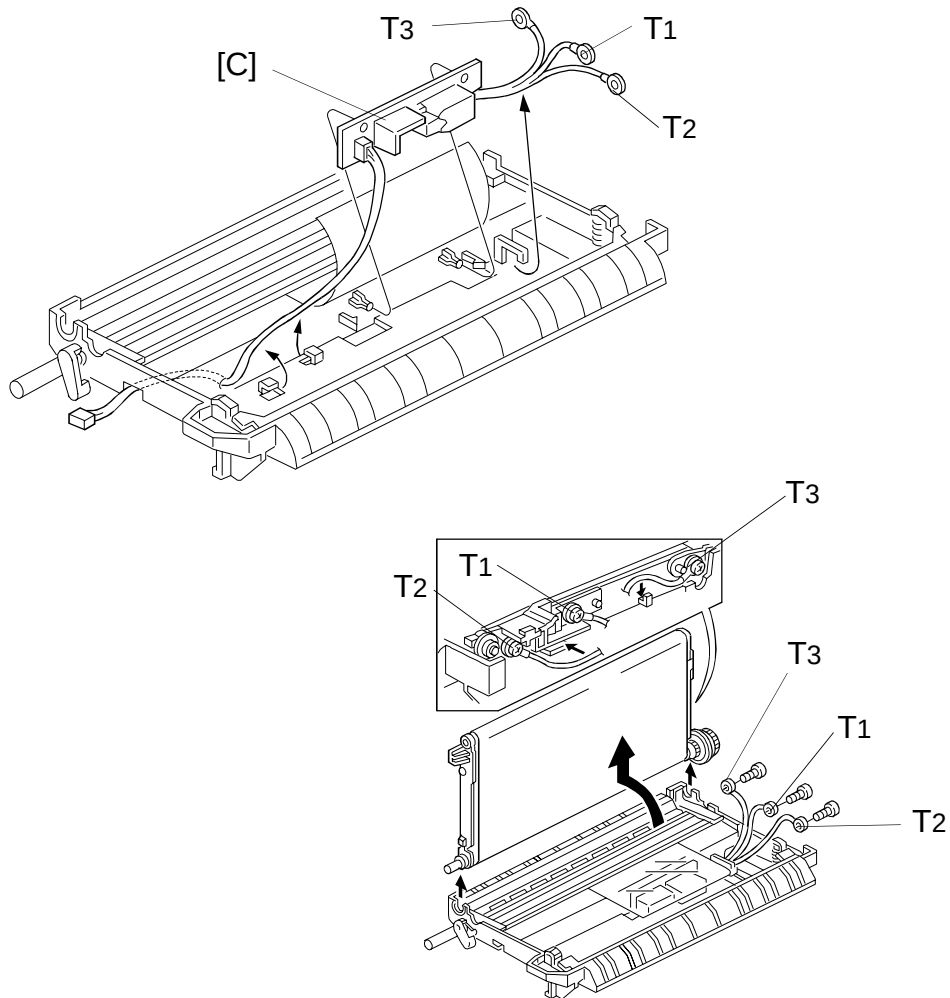
1. Turn off the main switch and unplug the power cable.
2. Remove the rear cover. (See Outer Cover Removal.)
3. Replace the main motor [C] (2 connectors, 4 screws).

11.2.12 Development Bias Power Pack



1. Turn off the main switch and unplug the power cable.
2. Remove the development unit (see Development Unit Removal).
3. Remove the cover [A] of the development bias power pack.
4. Replace the development bias power pack [B] (1 screw, 1 connector).

11.2.13 Transfer High Voltage Supply Board



1. Turn off the main switch and unplug the power cable.
2. Remove the transfer belt unit (see Transfer Belt Unit Replacement).
3. Remove the transfer belt assembly (see Transfer Belt Removal).
4. Replace the transfer high voltage board [C] (1 connector).

NOTE: Be sure that each wire [T1, T2, T3] is placed as shown.

12. COPY IMAGE ADJUSTMENT- PRINTING/ SCANNING

NOTE: 1) You need to perform these adjustment(s) after replacing any of the following parts:

Scanner Wire
 Lens Block/SBU Assembly
 Scanner Drive Motor
 Polygon Mirror Motor
 Paper Trays
 Duplex Tray
 Paper Side Fence
 Memory All Clear

2) For more details about accessing SP modes, refer to section 4.

12.1 Printing

NOTE: 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.

2) Use the Trimming Area Pattern (SP2902-3, No.10) to print the test pattern for the following procedures.

3) **BE SURE TO SET SP 2902-3 to 0 again after completing these printing adjustments.**

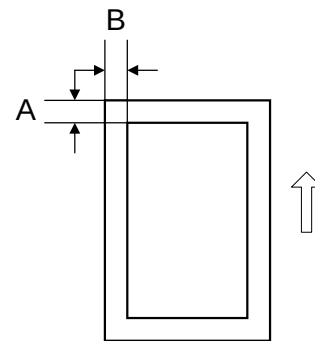
12.1.1 Registration - Leading Edge/Side-to-Side

1. Check the leading edge registration, and adjust it using SP1001.

The specification is: $3 \pm 2\text{mm}$

2. Check the side-to-side registration for each paper feed station, and adjust them using the following SP modes.

	SP mode	Specification
1st paper feed	SP1002-2	$2 \pm 1.5 \text{ mm}$
Duplex	SP1002-1	$2 \pm 1.5 \text{ mm}$
2nd paper feed (Optional PFU tray 1)	SP1002-3	$2 \pm 1.5 \text{ mm}$
3rd paper feed (Optional PFU tray 2)	SP1002-4	$2 \pm 1.5 \text{ mm}$
4th paper feed (Optional PFU tray 3)	SP1002-5	$2 \pm 1.5 \text{ mm}$
By-pass feed	SP1002-6	$2 \pm 1.5 \text{ mm}$
LCT	SP1002-7	$2 \pm 1.5 \text{ mm}$



A: Leading Edge Registration

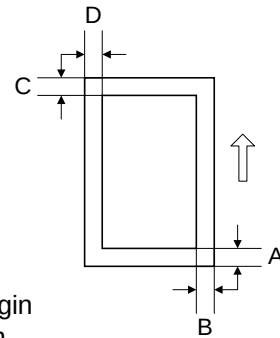
B: Side-to-side Registration

12.1.2 Blank Margins

NOTE: If the leading edge/side-to-side registration can not be adjusted within the specifications, adjust the leading/left side edge blank margin.

1. Check the trailing edge and right side edge blank margins, and adjust them using the following SP modes.

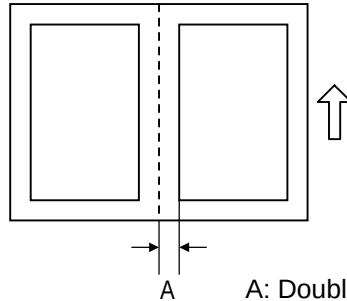
	SP mode	Specification
Trailing edge	SP2101-2	2±2 mm
Right side edge	SP2101-4	2 $\begin{smallmatrix} +2.5\text{mm} \\ -1.5\text{mm} \end{smallmatrix}$
Leading edge	SP2101-1	3±2 mm
Left side edge	SP2101-3	2±1.5 mm



A: Trailing Edge Blank Margin
 B: Right Side Edge Blank Margin
 C: Leading Edge Blank Margin
 D: Left Side Edge Blank Margin

12.1.3 Double Copy Side-to-side Registration

- NOTE:** 1) Perform this adjustment after completing the registration adjustment and the blank margin adjustment for single copies.
- 2) Select the double copies mode in the Adjust Image menu using the copy mode to print the test pattern.



A: Double Copy Side-to-side Registration

1. If you need to adjust the double copy side-to-side registration, use SP1006.

12.2 Scanning

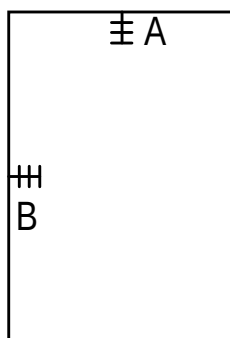
NOTE: 1) Perform or check the printing registration/side-to-side adjustment and the blank margin adjustment, before doing the following scanner adjustment.

2) Use an OS-A3 test chart to perform the following adjustments.

12.2.1 Registration: Platen Mode

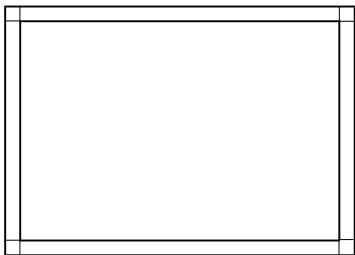
1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge and side-to-side registration, and adjust them using the following SP modes if necessary.

	SP mode
Leading edge	SP4010
Side-to-side	SP4011



A: Leading Edge Registration
B: Side-to-side Registration

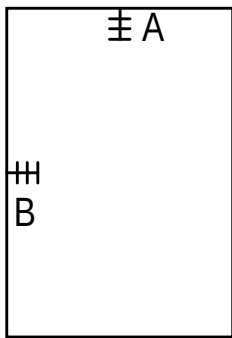
12.2.2 Registration: ADF



NOTE: Make a temporary test chart as shown above using A3/DLT paper.

- 1. Place the temporary test chart on the ADF and make a copy from one of the feed stations.
- 2. Check the registration, and adjust using the following SP modes if necessary. See the ADF manual for details on how to use these SP modes.

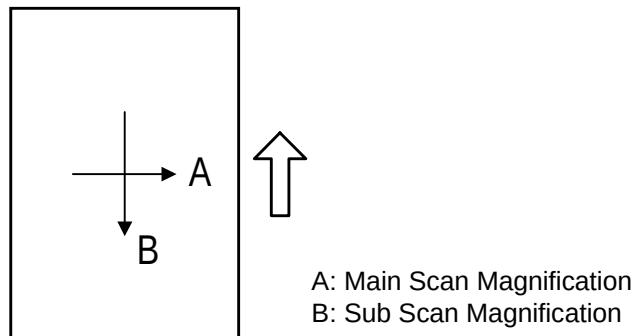
	SP mode
Side-to-side Registration	SP6006-1
Leading Edge Registration (Simplex)	SP6006-2
Leading Edge Registration (Duplex: front)	SP6006-3
Leading Edge Registration (Duplex: rear)	SP6006-4



A: Leading Edge Registration
B: Side-to-side Registration

12.3 Magnification

NOTE: Use an OS-A3 test chart to perform the following adjustments.



1. Place the test chart on the exposure glass and make a full size copy.
2. Check the Main Scan and Sub scan magnification ratios. The difference in magnification between the original and the copy should be less than:

+/-0.5% for Main scan

+/-1.0% for Sub-scan
3. If the either magnification is not within this standard, adjust it using the SP Modes shown below.
4. If the copy image is smaller than the original, increase the SP setting.
5. If the copy image is larger than the original, decrease the SP setting.

12.3.1 Main Scan Magnification

SP mode	
Main Scan Magnification	SP2909

12.3.2 Sub Scan Magnification

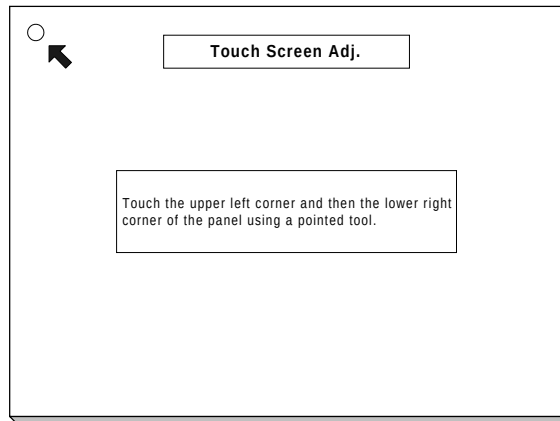
SP mode	
Sub Scan Magnification	SP4008

13. TOUCH SCREEN ADJUSTMENT

After doing a Memory All Clear or when the touch panel sensing mechanism is not working properly, adjust it as follows.

1. Press the following keys in sequence to enter the touch screen adjustment mode.

 **1** **9** **9** **3** **C/Ⓢ** x 5 **#**



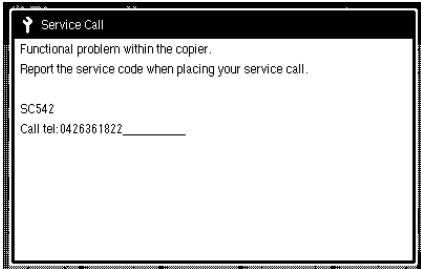
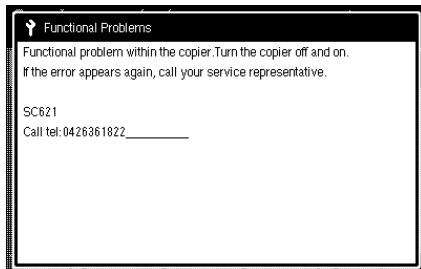
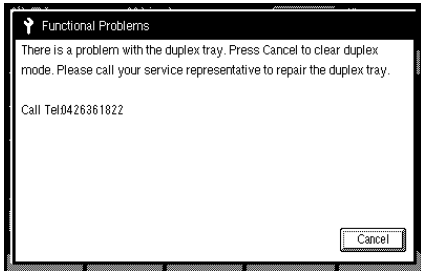
2. The graphic sensing adjustment screen will appear. Touch the upper left corner then the lower right corner of the panel using a pointed tool.
3. Touch a few spots on the LCD touch panel, and confirm that the marker (a small circle) appears on the screen at exactly the same location as the pointed tip. If it does not, touch "Clear" on the adjustment screen, and press the **#** key. Then repeat this procedure.
4. Touch "Enter" on the adjustment screen.
5. Turn the main switch off and back on to store the settings.

TROUBLESHOOTING

1. SERVICE CALL CONDITIONS

1.1 SUMMARY

There are 4 levels of service call conditions.

Level	Definition	Display
A	To prevent the machine from being damaged, the SC can only be reset by a service representative (see the note on the next page). The copier cannot be operated at all.	The SC display will not be canceled.  A screenshot of a 'Service Call' display screen. It shows the text: 'Service Call', 'Functional problem within the copier. Report the service code when placing your service call.', 'SC542', and 'Call tel: 0426361822' followed by a blank line for input.
B	The SC can be reset by turning the main switch off and on if the SC was caused by a sensor error.	 A screenshot of a 'Functional Problems' display screen. It shows the text: 'Functional Problems', 'Functional problem within the copier. Turn the copier off and on. If the error appears again, call your service representative.', 'SC621', and 'Call tel: 0426361822' followed by a blank line for input.
C	The copier can be operated as usual except for the unit related to the service call.	If the user selects a related function, this display appears.  A screenshot of a 'Functional Problems' display screen. It shows the text: 'Functional Problems', 'There is a problem with the duplex tray. Press Cancel to clear duplex mode. Please call your service representative to repair the duplex tray.', 'Call Tel: 0426361822', and a 'Cancel' button in the bottom right corner.
D	The SC counter is incremented. The copier can be operated as usual.	The SC will not be displayed.

- NOTE:**
- 1) If the problem is related to electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
 - 2) If the problem is related to motor lock, first check the mechanical load before replacing motors or sensors.
 - 3) To reset a Level A SC, enter SP mode then turn the main switch off and on.
 - 4) When a Level A or B SC occurs while in SP mode, the display does not indicate the SC number. You can recognize that there is an SC condition because no key input is possible.
If this occurs, check the SC number by turning the main switch off and on.

SC101: Lamp regulator error

-Definition- [A]

Detects lamp regulator malfunctions by monitoring the signal for both the exposure lamp on and off signals.

- Possible causes -

- Lamp regulator board defective
- Exposure lamp open
- Optics thermoswitch open
- EX-IPU board defective
- FU1 on the lamp stabilizer board is blown

SC120: Scanner home position error 1

-Definition- [B]

The scanner home position sensor does not detect the on condition during initialization or copying.

- Possible causes -

- Scanner home position sensor defective
- Scanner drive motor defective
- EX-IPU board defective
- FU 103

SC121: Scanner home position error 2

-Definition- [B]

The scanner home position sensor does not detect the off condition during initialization or copying.

- Possible causes -

- Scanner home position sensor defective
- Scanner drive motor defective
- EX-IPU board defective
- FU103 on dc power supply

SC190: EX-IPU board error 1

-Definition- [B]

An error is detected during the ASIC register check.

- Possible cause -

- EX-IPU board defective

SC191: EX-IPU board error 2

-Definition- [B]

The SRAM in the EX-IPU board is defective.

- Possible causes -

- EX-IPU board defective

SC302: Charge current leak

-Definition- [B]

A charge current leak signal is detected.

- Possible causes -

- Charge corona end block damaged
- Charge corona receptacle damaged
- Charge high voltage supply board defective

SC303: Charge wire cleaner error / Time out error for printer

NOTE: SC303 has been assigned as "Charge wire cleaner error" and again, by mistake, as "Time out error for printer."

If an optional charge corona wire cleaner has been installed, to determine which SC303 has occurred, turn the main switch off. After switching it on again, if SC303 still exists, it is the "charge wire cleaner error."

Charge wire cleaner error

The charge wire cleaner is detected over the image processing area.

- Possible causes -

- Charge wire cleaner drive motor defective
- Insufficient lubrication for the charge wire cleaner drive mechanism (G501 grease)

Time out error for printer

BCU cannot receive the printer ready signal from EX-IPU.

- Possible causes -

- BCU defective
- EX-IPU defective
- SCU defective

SC305: Time out error for memory**- Definition -**

BCU cannot receive the memory access ready signal from EX-IPU.

- Possible causes -

- BCU defective
- EX-IPU defective

SCU defective

SC320: Polygon motor error**-Definition- [B]**

The polygon motor does not reach its operating speed within 20 seconds after sending the polygon motor ON signal, or the motor speed does not decrease within 20 seconds after sending the polygon motor OFF signal.

- Possible causes -

- 24V line abnormal (blown fuse condition)
- Polygon motor defective
- Polygon motor driver defective
- Poor connection of the interface harness which connects the polygon motor driver and the EX-IPU board
- EX-IPU board defective
- FU103 on the DC power supply board is blown

SC321: No laser start signal (F-GATE error)**- Definition- [B]**

The laser start signal (F-GATE) is not sent within 20 seconds after the copy paper reaches the registration sensor.

- Possible causes -

- BCU board defective
- EX-IPU board defective
- Poor connection of the interface harness which connects the BCU board and the EX-IPU board.

SC322: Laser synchronization error 1**-Definition- [B]**

The laser synchronization signal can not be detected by the main scan synchronization detector board -1 just after the LD is turned on while the polygon mirror is rotating at operating speed.

- Possible causes -

- Poor connection of the interface harness which connects the laser synchronization detector board -1 and the EX-IPU board
- Laser synchronization detector board -1 out of position
- Laser synchronization detector board -1 defective
- EX-IPU board defective
- LD unit defective

SC323: LD drive current over

-Definition- [B]

The LD drive board applies more than 100 mA to the LD.

- Possible causes -

- LD unit defective (not enough power, due to aging)
- Poor connection of the interface harness which connects the LD unit and the EX-IPU board
- Temperature around the LD unit is too high

SC325: Laser synchronizing signal error 2

-Definition- [D]

The interval of the laser synchronizing signal detected by the main scan synchronization detector board -2 becomes outside the correctable range.

- Possible causes -

- Main scan synchronization detector board -2 defective
- Poor connection of the interface harness which connects the main scan synchronization detector board -2 and the EX-IPU board
- Main scan synchronization detector board -2 out of position
- EX-IPU board defective
- Polygon motor defective

SC350: ID sensor error

-Definition- [B]

1. Vsg falls out of the adjustment target (4 ± 0.2 V) during Vsg checking
2. Vsp>2.5V or Vsg<2.5V is detected twice consecutively during copying.

- Possible causes -

- ID sensor board defective
- Dirty ID sensor board
- BCU board defective
- High voltage control board defective

SC360: Hard disk drive error 1

-Definition- [B]

The EX-IPU board does not receive the response signal from the HDD.

- Possible causes -

- Poor connection of the interface harness which connects the EX-IPU board and the HDD.
- HDD power cord not connected properly.
- HDD defective
- SCSI controller on the EX-IPU defective.

SC361: Hard disk drive error 2

-Definition- [B]

The image data stored in the HDD cannot be output properly.

- Possible causes -

- EX-IPU board defective

SC390: TD sensor error

-Definition- [B]

1. TD sensor output voltage falls out of the adjustment target (2.5 ± 0.1 V) during the Vt check.
2. $V_t - V_{tref} > 0.6V$ is detected 10 consecutive times even though toner is detected by the toner end sensor.
3. $V_t < 0.5$ or $V_t > 4.0$ is detected.

- Possible causes -

- TD sensor abnormal
- BCU board defective

SC391: Development bias leak

-Definition- [B]

A development bias leak signal is detected.

- Possible causes -

- Sleeve roller receptacle damage
- Development bias power pack defective

SC392: Image stored address error

- Definition -

EX-IPU receives the image data output request signal for data that is not stored in memory

- Possible cause -

- SCU defective
- EX-IPU defective

SC401: Transfer belt error

-Definition- [B]

A transfer belt current leak signal is detected.

- Possible causes -

- Transfer high voltage supply board defective
- Transfer belt position sensor defective

SC405: Time out error for scanner

- Definition -

BCU does not receive the scanner access ready signal from EX-IPU

- Possible cause -

- BCU defective
- EX-IPU defective
- SCU defective

SC440: Main motor lock

-Definition- [B]

A main motor lock signal is detected for more than 2 seconds.

- Possible causes -

- Too much load on the drive mechanism
- Main motor defective

SC490: Ozone fan motor lock/Exhaust fan motor lock

-Definition- [B]

A fan motor lock signal is detected for more than 0.5 second from either fan.

- Possible causes -

- Ozone fan motor defective
- Exhaust fan motor defective
- Poor connection of the fan motor connector
- Something is stuck in the fan motor

SC501: Main body tray lift motor malfunction

SC502: Paper tray unit 1st tray lift motor malfunction

SC503: Paper tray unit 2nd tray lift motor malfunction

SC504: Paper tray unit 3rd tray lift motor malfunction

-Definition- [C]

- The paper upper limit sensor is not actuated after the tray lift motor has been on for 10 seconds.
- The pick-up roller solenoid does not contact the top sheet of paper.

- Possible causes -

- Upper limit sensor defective
- Tray lift motor defective
- Pick-up roller solenoid defective

SC506: Paper tray unit main motor lock (A549 optional paper tray unit only)

-Definition- [C]

- A paper tray unit motor lock signal is detected.
- A synchronization error is detected for 20 ms during rotation.

- Possible causes -

- Paper tray unit main motor defective
- Interface board defective
- Pick-up roller solenoid defective

SC507: LCT lift motor malfunction

-Definition- [C]

1. The LCT upper limit sensor is not actuated after the LCT lift motor has been on for 15.0 seconds.
2. The LCT lower limit sensor is not actuated after the LCT lift motor has been on for 15.0 seconds.
3. The LCT upper limit sensor is not actuated after the LCT lift motor has been on for 1.5 seconds to lift up paper during copying.
4. The LCT upper limit sensor stays actuated after the LCT lift motor has been on for 1.5 seconds to lower the LCT tray.
5. Both the LCT upper and lower limit sensors are actuated when the LCT lift motor starts to lift the LCT tray.
6. The LCT upper limit sensor is outputting an OFF signal when the LCT pick-up solenoid is OFF.

- Possible causes -

- LCT upper limit sensor defective
- LCT lower limit sensor defective
- LCT lift motor defective
- LCT interface board defective
- BCU board defective
- LCT cover switch defective

SC521: Duplex side fence drive motor error

-Definition- [C]

- The side fence jogger home position sensor remains de-actuated for 5.0 seconds when the jogger home position initialization procedure is performed.
- The side fence jogger home position sensor remains actuated for 0.5 second when moving away from home position.

- Possible causes -

- Side fence jogger home position sensor defective
- Side fence jogger motor defective
- Duplex control board defective

SC524: Duplex end fence drive motor error

-Definition- [C]

- The end fence jogger home position sensor remains de-actuated for 8.0 seconds when the jogger home position initialization procedure is performed.
- The end fence jogger home position sensor remains actuated for 0.5 second when moving away from home position.

- Possible causes -

- End fence jogger home position sensor defective
- End fence jogger motor defective
- Duplex control board defective

SC541: Fusing thermistor open

-Definition- [A]

The fusing temperature detected by the thermistor was below 7°C for 10 seconds.

- Possible cause -

- Fusing thermistor open
- Fusing lamp open
- Poor thermistor connection

SC542: Fusing temperature warm-up error

-Definition- [A]

The fusing temperature does not reach the fusing standby temperature within 135.0 seconds after the main switch is turned on.

- Possible causes -

- Fusing thermistor defective or out of position
- Fusing lamp open
- Fusing thermofuse open
- BCU board defective
- AC drive board defective

SC543: Fusing overhear error 1

-Definition- [A]

A fusing temperature of over 231°C is detected for 5 seconds by the fusing thermistor.

- Possible causes -

- Fusing thermistor defective
- BCU board defective
- AC drive board defective

SC545: Fusing overhear error 2

-Definition- [A]

The fusing lamp stays on at full power for 30.0 seconds while in the stand-by condition after warm-up is completed.

- Possible causes -

- Fusing thermistor out of position

SC546: Fusing ready temperature malfunction

-Definition- [A]

The fusing temperature goes 20 °C below or 20 °C over the stand-by temperature after warm-up is completed.

- Possible causes -

- Poor thermistor connection
- Poor connection of the sliding connector between the fusing unit and the rear of the machine

SC547: Zero cross signal malfunction

-Definition- [A]

Zero cross signals are not detected within a certain period.

- Possible causes -

- AC drive board defective
- BCU board defective

SC600: Communication error between SCU and operation panel

-Definition- [B]

The SCU board cannot communicate with the operation panel CPU properly.

- Possible causes -

- Poor connection
- SCU board defective
- Operation panel board defective

SC601: Communication error between BCU and EX-IPU

-Definition- [B]

The BCU board cannot communicate with the EX-IPU board properly.

- Possible causes -

- Poor connection of the interface harness which connects the BCU board and the EX-IPU board

SC602: Communication error between BCU and fusing control unit

-Definition- [B]

The BCU board cannot communicate with the fusing control unit properly.

- Possible causes -

- BCU board defective

SC604: Communication error between BCU and high voltage control board

-Definition- [B]

The BCU board cannot communicate with the high voltage control board properly.

- Possible causes -

- Poor connection of the interface harness which connects the BCU board and the high voltage control board.
- High voltage control board defective

SC605: Communication error between SCU and BCU

-Definition- [B]

The SCU board cannot communicate with the BCU board properly.

- Possible causes -

- Poor connection
- SCU board defective
- BCU board defective

SC620: Communication error between BCU and ARDF

-Definition- [B]

The BCU board cannot start communication with the ARDF properly.

- Possible causes -

- Poor connection
- BCU board defective
- DF main board defective

SC621: Communication error between BCU and finisher

-Definition- [B]

The BCU board cannot start communication with the finisher properly.

- Possible causes -

- Poor connection
- BCU board defective
- Finisher main control board defective

SC623: Communication error between BCU and paper tray unit

-Definition- [B]

The BCU board cannot start communication with the paper tray unit properly.

- Possible causes -

- Poor connection
- BCU board defective
- Paper tray unit defective

SC625: GA5 (GAFBTC) Error

- Definition -

The GA5 did not finish the data transfer to the memory in 20 seconds.

- Possible cause -

- EX-IPU defective
- Software problem

SC720: Finisher transport drive motor error

-Definition- [B]

An abnormal motor condition is detected from the finisher transport drive motor.

- Possible causes -

- Finisher transport drive motor defective
- Finisher main control board defective

SC721: Finisher tray lift/shift motor error

-Definition- [B]

An abnormal motor condition is detected from either the finisher tray lift or shift motor.

- Possible causes -

- Finisher tray lift motor defective
- Finisher tray shift motor defective
- Finisher main control board defective

SC722: Finisher jogger motor error

-Definition- [B]

- The finisher jogger home position sensor remains de-actuated for 800 ms when returning to home position.
- The finisher jogger home position sensor remains actuated for 100 ms when moving away from home position.

- Possible causes -

- Finisher jogger motor defective
- Finisher main control board defective

SC723: Finisher stack feed-out motor error

-Definition- [B]

An abnormal motor condition is detected from the finisher stack feed-out motor.

- Possible causes -

- Finisher stack feed-out motor defective
- Finisher main control board defective

SC724: Finisher staple drive/staple motor error

-Definition- [B]

An abnormal motor condition is detected from either the finisher staple drive or staple motor.

- Possible causes -

- Finisher staple drive motor defective
- Finisher staple motor defective
- Finisher main control board defective

SC900: Total counter error

-Definition- [B]

The total counter is not working properly.

- Possible causes -

- Total counter defective
- CN403 on the SCU board not connected properly

3. ELECTRICAL COMPONENT DEFECTS

Rev. 6/96

3.1 SENSORS

Component (Symbol)	CN	Condition	Symptom
By-pass Feed Paper Width (S1)	209-9~12 (BCU)	Open	The by-pass indicator does not turn on.
		Shorted	The CPU cannot detect the proper paper size.
By-pass Feed Paper End (S2)	209-7 (BCU)	Open	The Paper End indicator lights even if paper is placed on the by-pass feed table.
		Shorted	The Paper End indicator does not light even if there is no paper on the by-pass feed table.
Tray Paper End (S3)	213-A2 (BCU)	Open	The Paper End indicator lights even if paper is placed on the by-pass feed table.
		Shorted	The Paper End indicator does not light even if there is no paper on the by-pass feed table.
Upper Relay (S4)	214-B12 (BCU)	Open	The Check Paper Path indicator will light whenever a copy is made.
		Shorted	The Check Paper Path indicator lights even if there is no paper.
Tray Upper Limit (S5)	213-A8 (BCU)	Open	A related SC code will be displayed before the pick-up solenoid activates.
		Shorted	The tray bottom plate does not rise, and a related SC code will be displayed.
Lower Relay (S6)	214-B9 (BCU)	Open	The Check Paper Path indicator will light whenever a copy is made.
		Shorted	The Check Paper Path indicator lights even if there is no paper.
LCT Lower Limit (S7)	218-10 (BCU)	Open	The LCT bottom plate does not lower.
		Shorted	When the bottom plate is lowered, it locks at the lowest position.
LCT Paper End (S8)	223-2 (BCU)	Open	The Paper End indicator lights even if there is paper in the LCT.
		Shorted	The Paper End indicator does not light even if there is no paper.
LCT Upper Limit (S9)	217-5 (BCU)	Open	The bottom plate does not rise even if paper is placed in the LCT.
		Shorted	The bottom plate rises and locks at the upper position.
Registration (S10)	214-A2 (BCU)	Open	The Check Paper Path indicator will light whenever a copy is made.
		Shorted	The Check Paper Path indicator lights even if there is no paper.
Image Density (ID) (S11)	210-A8 (BCU)	Open	SC350 is displayed.
		Shorted	SC350 is displayed.
Toner Density (TD) (S12)	210-B3 (BCU)	Open	SC390 is displayed.
		Shorted	SC390 is displayed.

Trouble-
shooting

Component (Symbol)	CN	Condition	Symptom
Scanner HP (S13)	505-1 (EX-IPU)	Open	SC121 is displayed.
		Shorted	SC120 is displayed.
Original Length (S14)	516-6 (EX-IPU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Original Length-2 (S15)	516-3 (EX-IPU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Fusing Exit(S16)	210-B9 (BCU)	Open	The Check Paper Path indicator will light whenever a copy is made.
		Shorted	The Check Paper Path indicator lights even if there is no paper.
Platen Cover (S17)	516-2 (EX-IPU)	Open	APS and ARE do not function properly.
		Shorted	No symptom
Toner End (S18)	210-B6 (BCU)	Shorted	Toner is added even if there is a sufficient amount of toner inside the toner supply unit.
		Open	Toner is not supplied even if there is no toner inside the toner supply unit.
Auto Response (S19)	414-2 (SCU)	Open	The copier does not exit the "Energy Saver" mode even if an operator approaches the machine.
		Shorted	"Energy Saver" mode does not work.
Transfer Belt Position (S20)	211-A8 (BCU)	Open	No symptom
		Shorted	SC401 is displayed.
Original Width (S21)	505-6~8 (EX-IPU)	Open	The CPU cannot detect the original size properly. APS and ARE do not function correctly.
		Shorted	
Duplex Paper End (S22)	215-4 (BCU)	Open	"Copies Left In The Duplex Tray" is displayed or the Paper Jam Z indicator lights even if there is no paper in the duplex tray.
		Shorted	Only one rear side copy is made regardless of the quantity of copies required.
Duplex Turn (S23)	215-6 (BCU)	Open	The machine indicates that originals should be reset.
		Shorted	"Copies Left In The Duplex Tray" is displayed or the Paper Jam Z indicator lights even if there is no paper in the duplex tray.
Duplex Entrance (S24)	215-5 (BCU)	Open	"Copies Left In The Duplex Tray" is displayed or the Paper Jam Z indicator lights even if there is no paper in the duplex tray.
		Shorted	The Check Paper Path indicator lights even if there is no paper.
Side Fence Jogger HP (S25)	215-2 (BCU)	Open	SC521 is displayed.
		Shorted	SC521 is displayed.
End Fence Jogger HP (S26)	215-3 (BCU)	Open	SC524 is displayed.
		Shorted	SC524 is displayed.

Component (Symbol)	CN	Condition	Symptom
Toner Overflow (S27)	210-A4 (BCU)	Open	"Used Toner Bottle Nearly Full" is indicated, even if the bottle is not full.
		Shorted	Toner overflow cannot be detected even if the bottle is full.
By-pass Relay (S28)	217-8 (BCU)	Open	The Check Paper Path indicator will light whenever a copy is made.
		Shorted	The Check Paper Path indicator lights even if there is no paper.

3.2 SWITCHES

Component (Symbol)	CN	Condition	Symptom
By-pass Feed Table (SW1)	209-4 (BCU)	Open	By-pass feed cannot be selected.
		Shorted	The by-pass feed indicator is lit even if the by-pass feed table is closed.
Tray Down (SW2)	218-6 (BCU)	Open	The LCT bottom plate does not lower.
		Shorted	The LCT bottom plate lowers even if there is paper in the LCT.
Tray Paper Size (SW3)	213-B2~6 (BCU)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made.
		Shorted	
LCT (SW4)	218-3 (BCU)	Open	The LCT bottom plate lowers even if there is paper in the LCT.
		Shorted	The LCT bottom plate does not rise even if the cover is closed.
LCT Cover (SW5)	218-12 (BCU)	Open	SC507 is displayed or the LCT bottom plate does not rise or lower.
		Shorted	
Main (SW6)	—	Open	The copier does not turn on.
		Shorted	The copier does not turn off.
Front Cover Safety (SW7)	—	Shorted	"Doors/Covers Open" is not displayed even if the front cover is opened.
		Open	"Doors/Covers Open" is displayed even if the front cover is closed.

4. BLOWN FUSE CONDITIONS

Rev. 3/98



Fuse	Rating		Symptom when turning on the main switch
	115 V	220 ~ 240 V	
DC Power Supply Board			
FU101	8 A/125 V	6.3 A/250 V	No response.
FU102	8 A/125 V	8 A/125 V	"Close the indicated doors/covers" is displayed on the LCD.
FU103	6.3 A/125 V	6.3 A/125 V	SC120, SC121, or SC320 is displayed
FU104	6.3 A/125 V	6.3 A/125 V	"Close the indicated doors/covers" is displayed on the LCD.
Lamp Stabilizer Board			
FU1	5 A/125 V	3.15 A/250 V	SC101 is displayed.

5. BCU Board ROM History

The following is a history of the ROM modifications for the BCU Board

Note: Suffix F was not installed in any machines during production

Suffix D - E

Problem	Countermeasure
In the mixed copy mode, the original is fed from the ADF and the copying begins but the machine stops even though "Copying" is displayed.	Paper size detection timing was modified.
After the paper is stacked in the duplex unit, the paper is fed from this unit but the machine stops even though "Copying" is displayed.	Paper end sensor timing was modified.
In the SADF mode, if the number of sheets exceeds the amount that can be stapled, the paper in the staple tray is fed out. This causes a timing error and a jam occurs in the finisher as the next set of originals start copying.	The timing for the start of the copy process while the paper is fed out has been modified.
SC401 occurs as the copies are fed from the duplex unit	The lift timing for the transfer belt has been modified.
Proper adjustment of the stapler (SP6105) is not possible.	Modification of the SP6105 process.



Problem	Countermeasure
Duplex jam when duplex copies are made with A5 size paper. If the number of copies in one job is large, the copy image becomes lighter and SC401 occurs	The transportation speed for the A5 size paper has been modified. Make the transport speed (until the paper is stacked in the duplex unit) the same as that for A4 size paper. When the feedback voltage for the transfer belt power pack exceeds the standard voltage, the power pack monitor counter records the occurrence. When the number of incidents reaches 8, SC401 displays. The counter resets at the end of each job but it may reach 8 during longer copy runs. Due to this modification, the counter will now reset after each copy.

Suffix G - H



Problem.	Countermeasure
There was an error made during the upgrade to the suffix G version. It takes more time for the first copy to be made. (Paper fed 2-3 seconds after copy process is started.)	Software modified.

**AUTO REVERSE
DOCUMENT FEEDER**

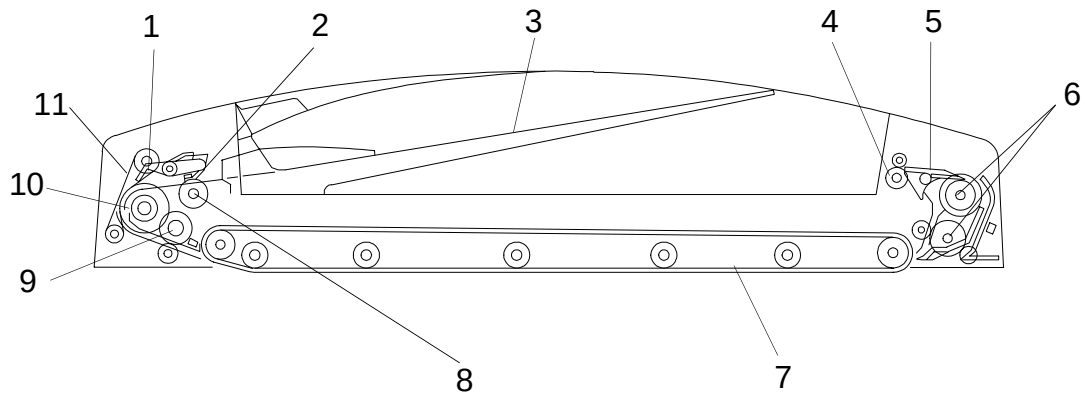
A548

1. SPECIFICATIONS

Original Size and Weight:	Thick original mode (default mode) Use this setting for normal paper types Maximum A3, 11" x 17" Minimum B6 (sideways), 5 1/2" x 8 1/2" Weight 52 ~ 128 g/m ² (14 ~ 34 lb) Thin original mode Maximum A3, 11" x 17" Minimum B6, 5 1/2" x 8 1/2" Weight 40 ~ 128 g/m ² (11 ~ 34 lb) Auto reverse mode Maximum A3, 11" x 17" Minimum B5, 5 1/2" x 8 1/2" Weight 52 ~ 105 (14 ~ 27 lb)
Original Feed:	Automatic feed - ADF mode Manual feed one by one - SADDF mode Auto Reverse Feed - ARDF mode
Original Table Capacity:	50 sheets at 80 g/m ² (21 lb)
Original Placement:	Face up, first sheet on top
Original Separation:	Feed Roller and Friction Belt
Original Transport:	One flat belt
Power Consumption:	45 W
Power Source:	24 V ± 10% from the copier, 1.8 A
Dimensions (W x D x H):	610 x 507 x 130 mm (24.0" x 20.0" x 5.1")
Weight:	Approximately 10.5 kg (23.2 lb)

2. COMPONENT LAYOUT

2.1 MECHANICAL COMPONENTS



1. Original Stopper

2. Press Lever

3. Original Table

4. Exit Rollers

5. Inverter Pawls

6. Inverter Rollers

7. Transport Belt

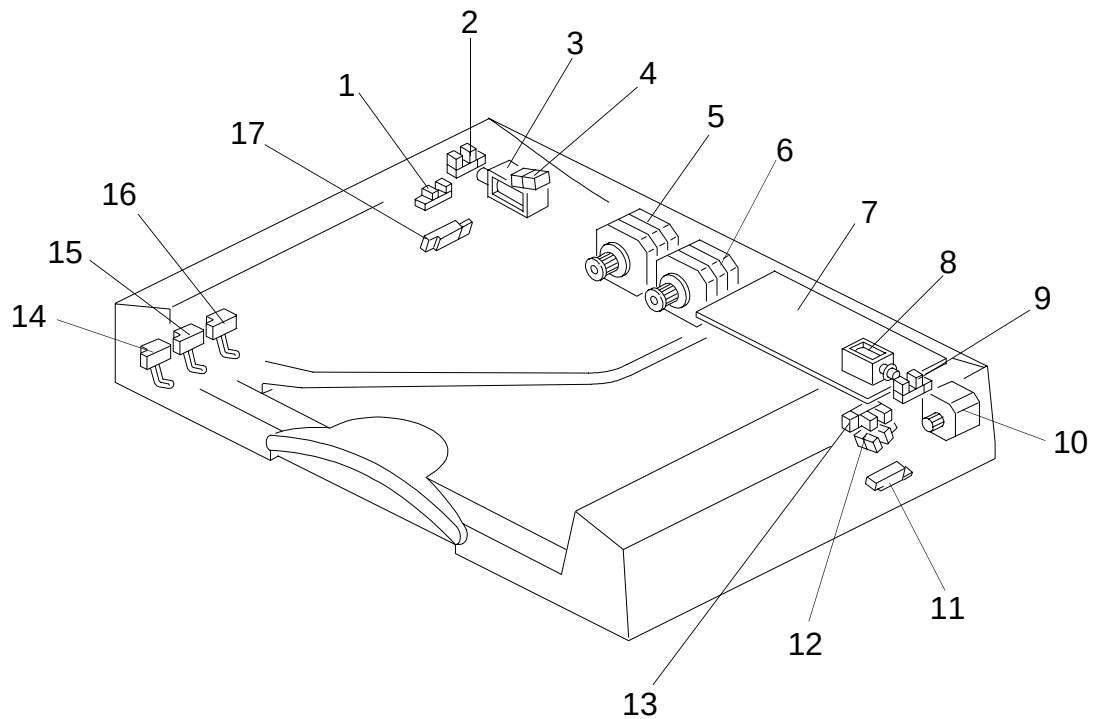
8. Pick-up Rollers

9. Pull-out Roller

10. Feed Roller

11. Friction Belt

2.2 ELECTRICAL COMPONENTS



1. Original Set Sensor	10. Feed-out Motor
2. Feed-in Cover Open Sensor	11. Feed-out Sensor
3. Stopper Solenoid	12. APS Start Sensor
4. Indicator Panel Lamps	13. DF Position Sensor
5. Feed-in Motor	14. Original Width Sensor - 1
6. Belt Drive Motor	15. Original Width Sensor - 2
7. DF Main Board	16. Original Width Sensor - 3
8. Inverter Solenoid	17. Registration Sensor
9. Feed-out Cover Open Sensor	

3. ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Feed-in	Drives the feed-in system (pick-up, feed and pull-out rollers, separation belt)	5
M2	Belt Drive	Drives the transport belt	6
M3	Feed-out	Drives the feed-out and the inverter systems	10
Sensors			
S1	Original Set	Detects whether originals have been placed on the original table	1
S2	Feed-in Cover Open	Informs whether the feed-in cover is open or not	2
S3	Feed-out Cover Open	Informs whether the feed-out cover is open or not	9
S4	Feed-out	Checks for original misfeeds and determines original stop timing when in auto-reverse mode	11
S5	APS Start	Informs the CPU that it is time to detect the original size (in platen mode)	12
S6	DF Position	Informs the CPU whether the DF is in the up or down position	13
S7	Original Width-1	Detects the width of the original	14
S8	Original Width-2	Detects the width of the original	15
S9	Original Width-3	Detects the width of the original	16
S10	Registration	Determines original stop timing and measures the length of the original	17
Solenoids			
SOL1	Stopper	Lifts the original stopper and lowers the feed-in lever to feed the set of originals to the feed roller	3
SOL2	Inverter	Energizes to invert the original when copying two-sided originals	8
PCB			
PCB1	DF Main Board	Controls all DF functions	7
Indicators (Lamps)			
L1	Ready	Informs the operator that the DF is in the down position.	4
L2	Auto	Informs the operator that the auto feed mode is available.	4

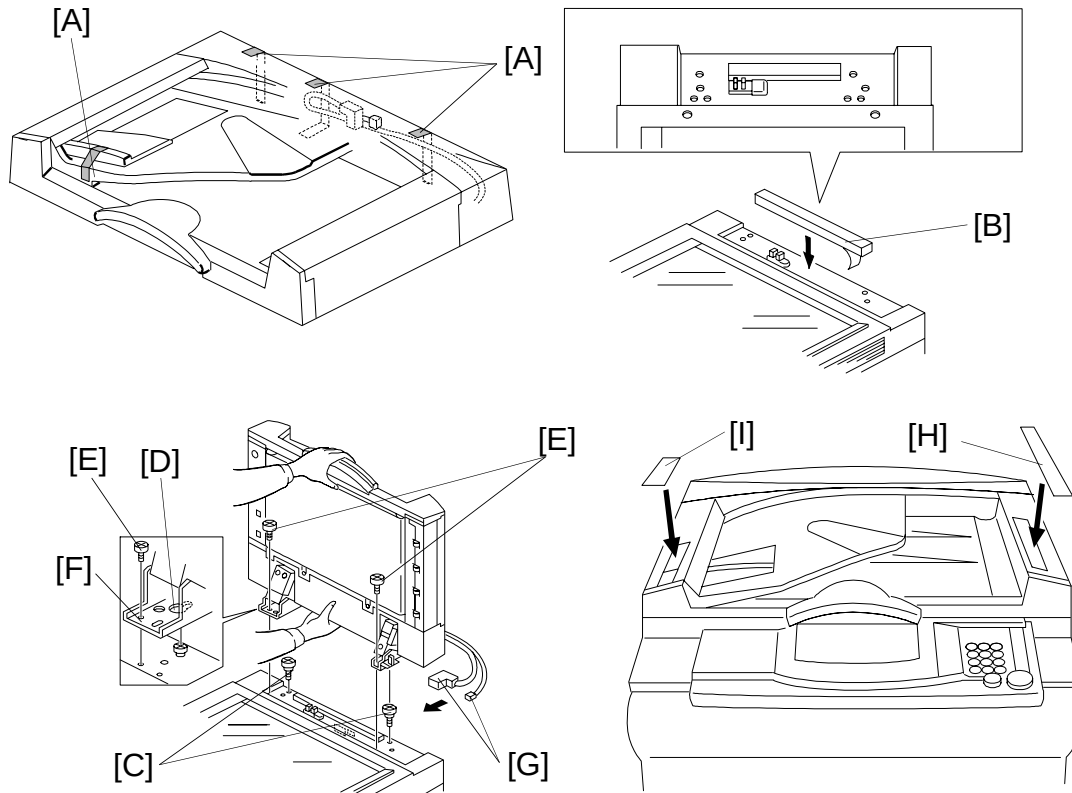
4. INSTALLATION

4.1 ACCESSORY CHECK

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

1. New Equipment Condition Report..... 1
2. Installation Procedure 1
3. Stud Screw 2
4. Philips Screw with Flat Washer – M4 x 10..... 2
5. Sponge Retainer 1

4.2 INSTALLATION PROCEDURE



⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape [A].
2. Attach the sponge retainer [B] to the top cover of the copier as shown.
3. Tighten the two stud screws [C].
4. Mount the ARDF by aligning the holes [D] in the ARDF and the stud screws [C], then slide the ARDF to the front as shown.
NOTE: When mounting the ARDF, hold it by hand as shown in the illustration. Holding it in another way may damage the ARDF.
5. Screw the two M4 x 10 screws [E] into the holes [F] and tighten them.
6. Connect the connectors [G] into the socket on the rear of the copier.
7. Attach the symbol explanation decal [H] and the combine originals explanation decal [I] to the ARDF as shown.

5. SERVICE TABLES

5.1 DIP SWITCHES

DPS 101				Function
1	2	3	4	
0	0	0	0	Normal setting
1	0	0	0	One-sided thin original mode free run with paper (35 cpm)
0	1	0	0	One-sided thick original mode (normal mode) free run with paper (35 cpm)
1	1	0	0	One-sided thick original mode (normal mode) free run without paper (35 cpm)
0	0	1	0	Two-sided mode free run with paper (35 cpm)
1	0	1	0	Two-sided mode free run without paper (35 cpm)
1	0	0	1	One-sided thin original mode free run with paper (25 cpm)
0	1	0	1	One-sided thick original mode (normal mode) free run with paper (25 cpm)
0	0	1	1	Two-sided mode free run with paper (25 cpm)
1	0	1	1	Not used
1	1	0	1	Solenoid test
0	1	1	0	Motor test
1	1	1	0	Combine two originals mode free run with paper
0	0	0	1	Not used
0	1	1	1	Not used
1	1	1	1	Indicators On

- NOTE:** a) Paper will automatically feed after 3 seconds when the "with paper" free run modes are selected.
- b) To prevent the friction belt from wearing, open the feed-in cover when performing the "without paper" free run modes.

To make a free run

1. Set up dip switches 1 to 4 for the required free run mode. The test begins automatically.
2. To stop the free run, put the dip switches back to 0.

5.2 VARIABLE RESISTORS

VR No.	Function
101	Adjusts the leading edge registration in one-sided thin original mode.
102	Adjusts the leading edge registration in two-sided original mode.

5.3 LED

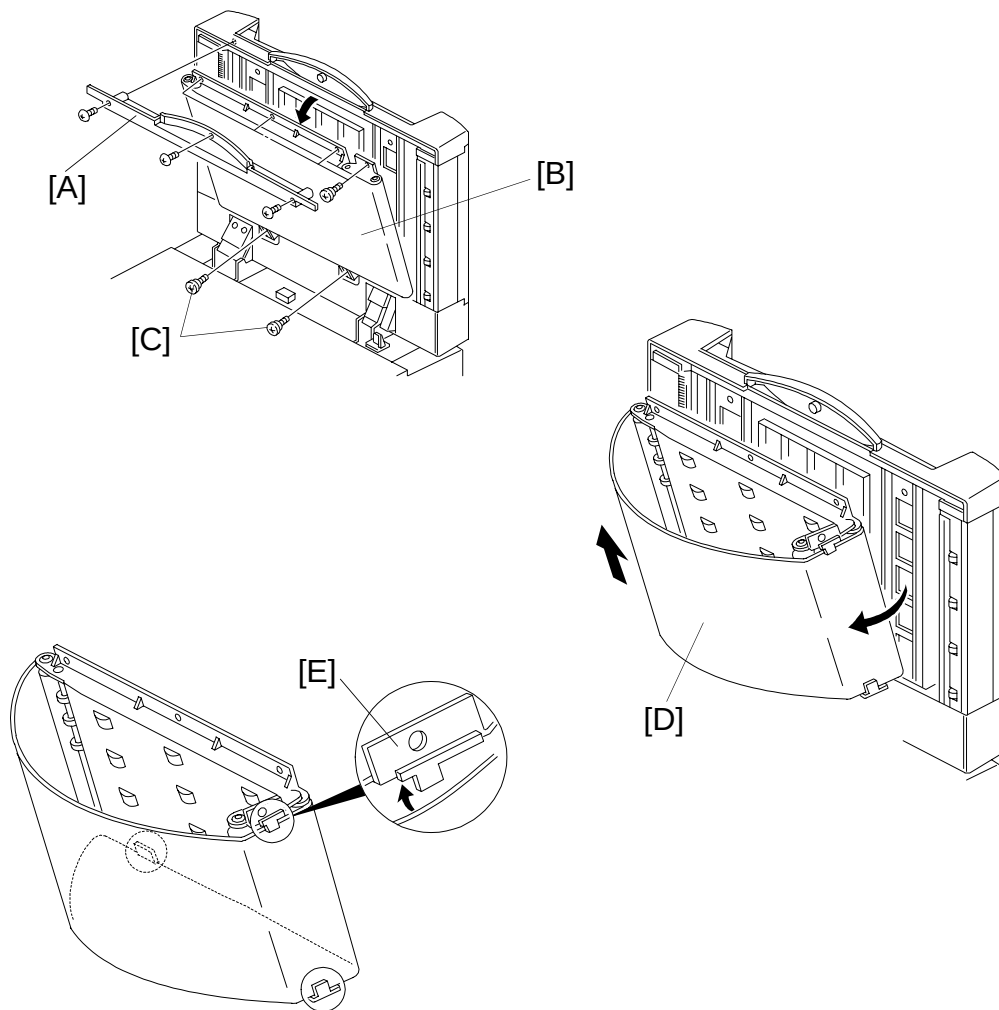
LED No.	Function
101	Monitors the communication with the copier.

5.4 FUSE

FUSE No.	Function
101	Protects the 24 V line.

6. REPLACEMENT AND ADJUSTMENT

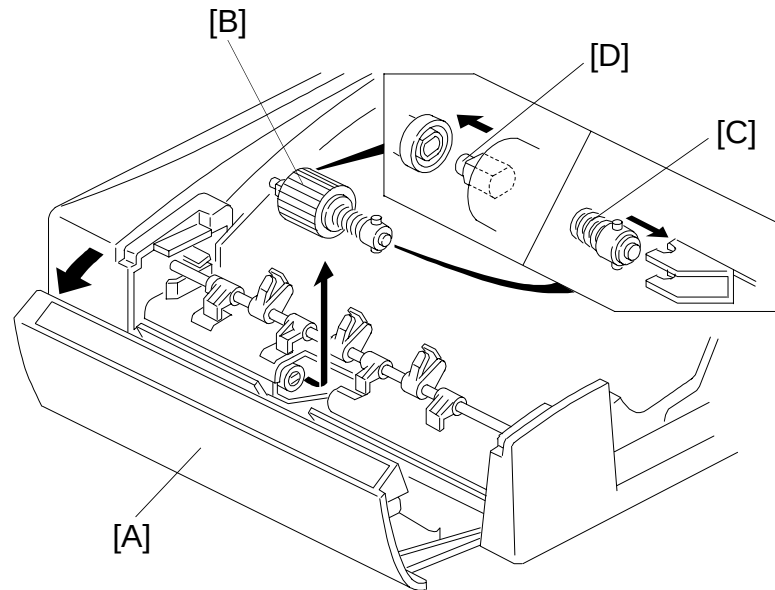
6.1 TRANSPORT BELT REPLACEMENT



1. Turn off the main switch and lift up the DF.
2. Remove the grip [A] (3 screws).
3. Remove the 6 screws securing the transport belt assembly [B].
NOTE: Remove the two lower screws [C] first.
4. Bend the transport belt assembly and pull out the transport belt [D] as shown.

NOTE: a) When installing the transport belt, make sure that the belt runs under the belt guide spacers [E].
b) When securing the transport belt assembly with the 6 screws, make sure to secure the four upper screws first.

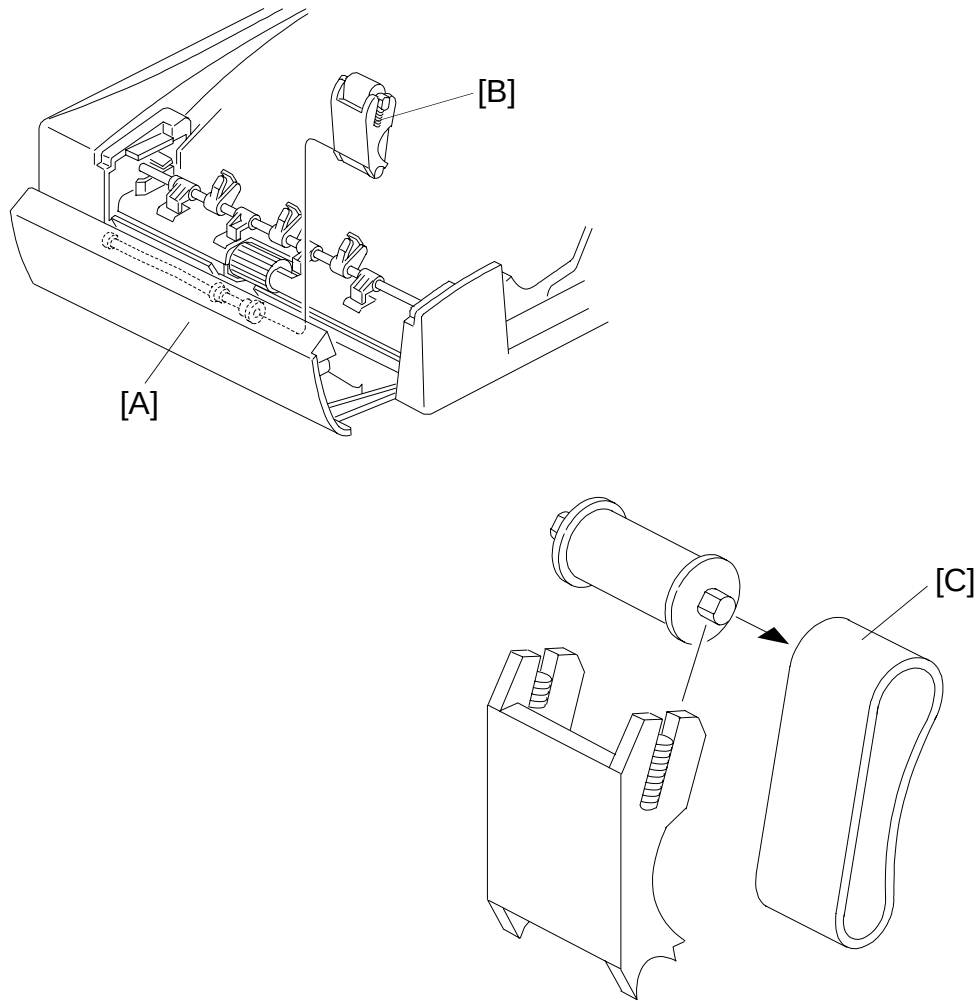
6.2 FEED ROLLER REPLACEMENT



1. Turn off the main switch and open the feed-in cover [A].
2. Remove the feed roller assembly [B] by pulling it towards the front.
3. Replace the feed roller.

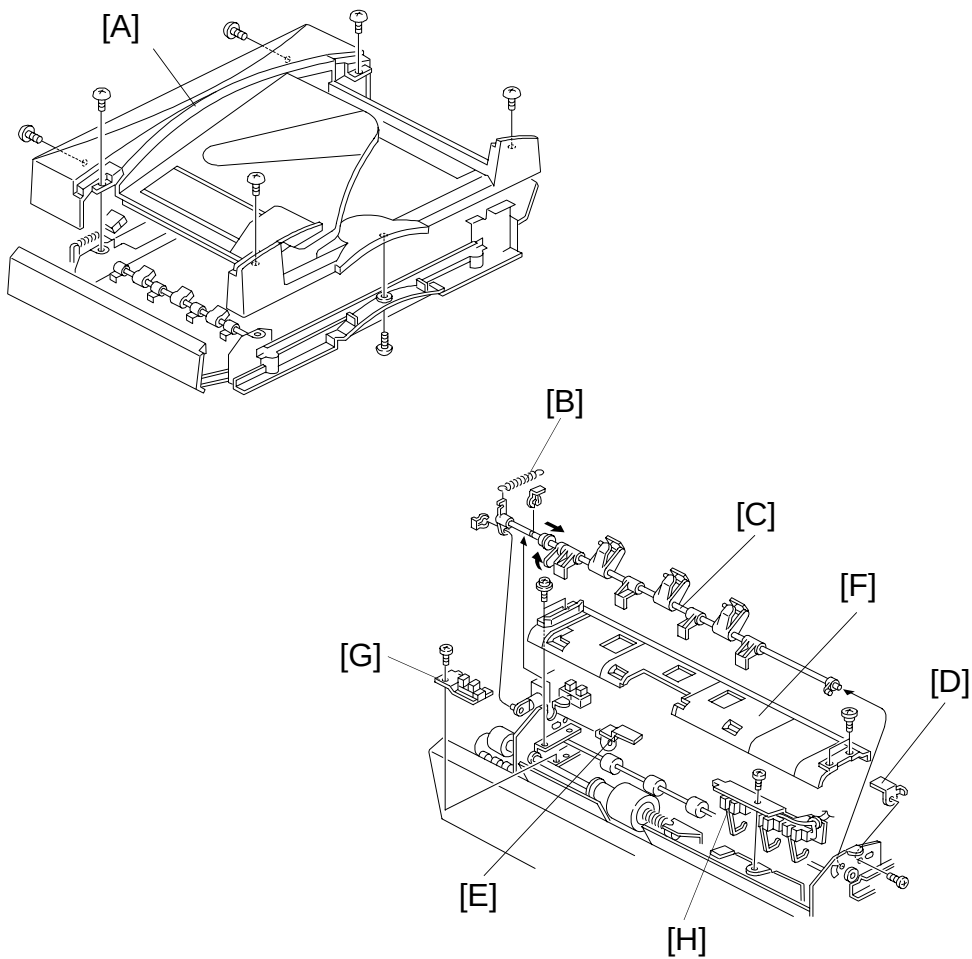
NOTE: When installing the feed roller assembly, make sure the pins [C, D] on both sides are fixed properly.

6.3 FRICTION BELT REPLACEMENT



1. Turn off the main switch and open the feed-in cover [A].
2. Gently pull up the friction belt assembly [B] and remove it from the shaft.
3. Replace the friction belt [C].

6.4 ORIGINAL SET AND ORIGINAL WIDTH SENSOR REPLACEMENT



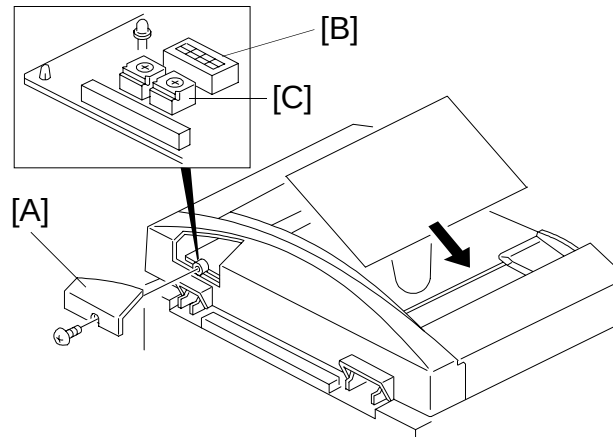
1. Turn off the main switch.
2. Remove the upper cover [A] (7 screws).
3. Remove the pick-up solenoid spring [B].
4. Remove the stopper/pressure lever shaft [C] (2 E-rings).
5. Remove both front [D] and rear [E] feed-in cover magnet catches (1 screw each).
6. Remove the feed-in guide plate [F] (4 screws).
7. Remove the original set sensor assembly [G] (1 screw).
8. Remove the original width sensor assembly [H] (1 screw).
9. Replace the required sensor.

6.5 VERTICAL REGISTRATION ADJUSTMENT

6.5.1 One-sided Thin Original Mode

Note:

- After replacing the DF main board, always do the Rough Adjustment using VR101 first. Then do the Fine Adjustment procedure.
- At other times, just do the Fine Adjustment procedure.
- After adjusting the vertical registration, be sure to turn off the dip switch.



- Rough Adjustment (Using VR101) -

1. Remove the small cover [A] at the rear of the DF upper cover (1 screw).
2. Turn on dip switch 101-1 [B].
3. Place a sheet of A4/8 1/2" x 11" sideways paper (64 g/m², 17 lb) on the original table. (The paper will feed automatically.)
4. After the original stops on the exposure glass, raise the DF carefully so that the original does not move.
5. Check that the gap between the trailing edge of the paper and the left original scale is 0 ± 2.5 mm.
6. If the gap is not within this specification, adjust the registration with VR101 [C]. (Turning VR101 counter-clockwise will increase the gap.)

- Fine Adjustment (Using a Copier SP Mode) -

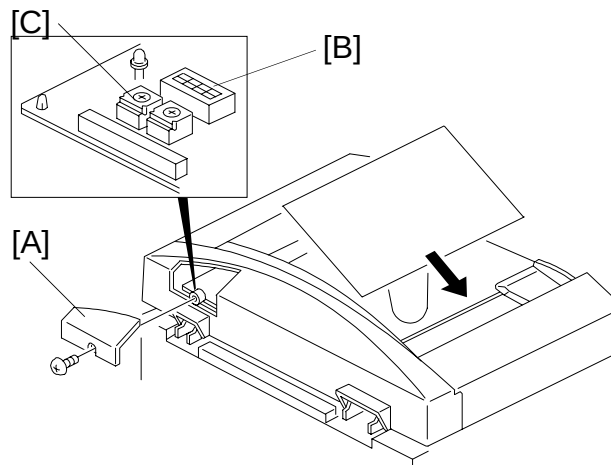
1. Perform steps 1 through 5 of the rough adjustment procedure.
2. If the gap is larger than 2.5 mm, adjust the registration with the copier SP mode for the DF Registration Adjustment in one-sided original mode. (Increasing the setting will increase the gap.)

6.5.2 Two-sided Original Mode

Note:

- After replacing the DF main board, always do the Rough Adjustment using VR102 first. Then do the Fine Adjustment procedure.

- At other times, just do the Fine Adjustment procedure.
- After adjusting the vertical registration, be sure to turn off the dip switch.



- Rough Adjustment (Using VR102) -

1. Remove the copier's left original scale (2 screws).
2. Remove the small cover [A] at the rear of the DF upper cover (1 screw).
3. Turn on dip switch 101-3 [B].
4. Place a sheet of A4/8 1/2" x 11" sideways paper (64 g/m², 17 lb) on the original table. (The paper will feed automatically.)
5. After the original stops on the exposure glass, raise the DF carefully so that the original does not move.
6. Check that the gap between the trailing edge of the paper and the left edge of the original rear scale is 10 ± 2 mm.
7. If the gap is not within this specification, adjust the registration with VR102 [C]. (Turning VR102 counter-clockwise will increase the gap.)

- Fine Adjustment (Using a Copier SP Mode) -

1. Perform steps 1 through 6 of the rough adjustment procedure.
2. If the gap is not within specification, adjust the registration with the copier SP mode for the DF Registration Adjustment in two-sided original mode. (Increasing the setting will increase the gap.)

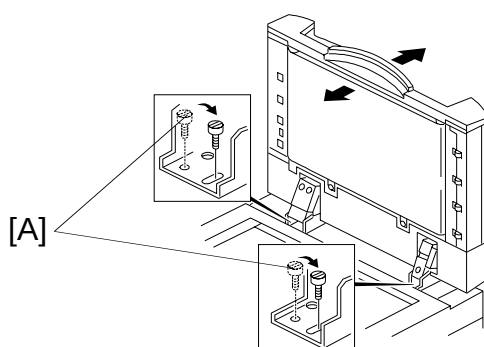
6.6 SIDE-TO-SIDE REGISTRATION (DF POSITIONING) ADJUSTMENT

Note:

- First, adjust the DF side-to-side registration using the copier SP mode for this (see Replacement and Adjustment - Side-to-side Registration Adjustment in the copier manual).
- Do the following adjustment only when the registration cannot be brought within the specification (0 ± 2 mm) using the above mentioned SP mode.

SPECIFICATION (Original position from the rear scale)

Thick (Normal) Paper Original Mode	3.5 ± 2 mm (3.5 ± 3 mm for B6 lengthwise)
Thin Original Mode	3.5 ± 2 mm
Two Sided Original Mode	3.5 ± 3 mm



1. Place a sheet of A4/8 1/2" x 11" sideways paper (64 g/m², 17 lb) on the original table and press the Print key.
2. After the original stops on the exposure glass, raise the DF carefully so that the original does not move.
3. Check if the gap between the rear edge of the paper and the rear original scale is within the specification listed above.
4. If it is out of specification, reposition the 2 screws [A] securing the DF hinge to the long screw hole as shown.
5. Repeat steps 1 to 3.
6. Secure the DF unit at the position where the gap falls within specification.
7. Check the copy quality and adjust the ADF side-to-side registration with the copier SP mode if it is not within the 0 ± 2 mm specification (see Replacement and Adjustment - Side-to-side Registration Adjustment in the copier manual).

PAPER TRAY UNIT

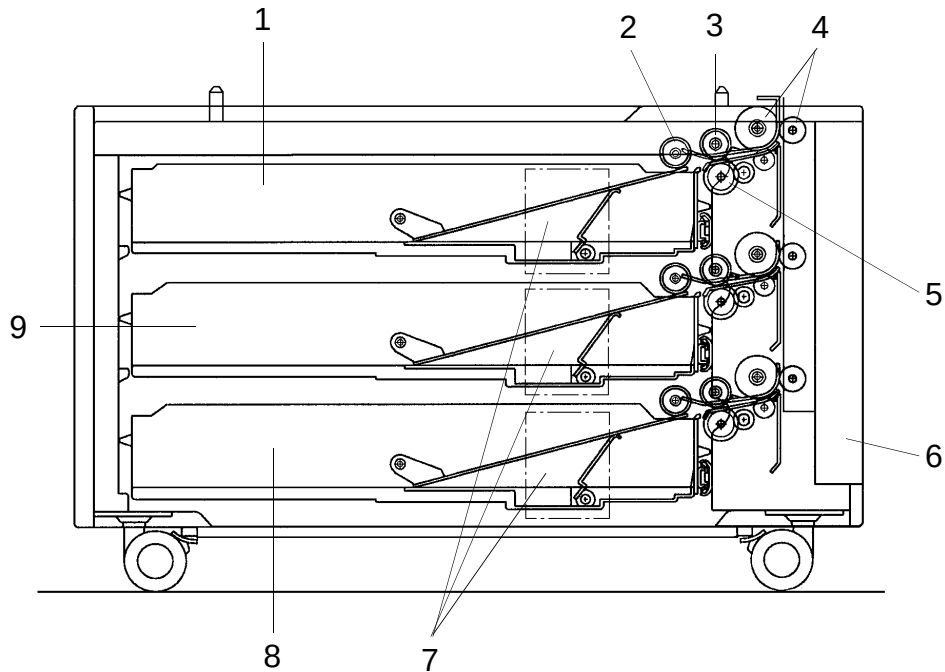
A550/A549

1. SPECIFICATIONS

Configuration:	Two-tray table or three-tray table
Copy Paper Size:	Maximum A3/11" X 17" Minimum B5/8 1/2" X 11"
Copy Paper Weight:	52 - 105 g/m ² , 14 - 28 lb
Copy Paper Capacity:	Approximately 500 sheets
Paper Feed Speed:	20 ~ 40 copies/minute (A4 / 8 1/2"X11" sideways)
Power Source:	DC 24V, 5V and AC 120V, 220~240V from the main machine
Power Consumption:	Maximum 110.5 W Average 50 W
Dimensions:	620 mm/24.4" (width) X 632 mm /24.9" (depth) X 390 mm/15.4" (height)
Weight:	Less than 36 kg/79.4 lb (Two-tray type) Less than 38 kg/83.8 lb (Three-tray type)

2. COMPONENT LAYOUT

2.1 MECHANICAL COMPONENT LAYOUT



1. Paper Tray 1

2. Pick-up Roller

3. Paper Feed Roller

4. Relay Rollers

5. Reverse Roller

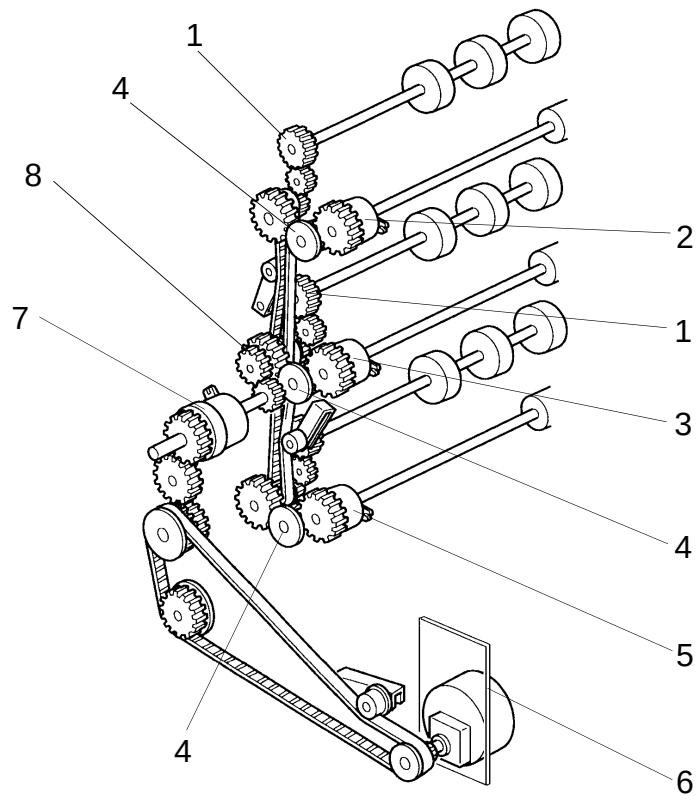
6. Lower Right Door

7. Paper Lift Motors

8. Paper Tray 3 (A549 model only)

9. Paper Tray 2

2.2 DRIVE LAYOUT



1. Vertical Transport Roller Gears	6. Main Motor
2. Paper Feed Clutch 1	7. Relay Clutch
3. Paper Feed Clutch 2	8. Timing Pulley
4. Separation Roller Gears	
5. Paper Feed Clutch 3	

2.3 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the point-to-point diagram (on waterproof paper).

Symbol	Index No.	Description	Note
Motors			
M1	5	Main	Drives all the components of the paper tray
M2	2	Tray lift 1	Raises the bottom plate in the paper tray
M3	30	Tray lift 2	
M4	29	Tray lift 3 (A549 only)	
Circuit board			
PCB1	1	Interface board	Controls the paper tray in response to signals from the copier
Sensors			
S1	7	Tray upper limit 1	Detects the top of the stack to stop the tray lift motor
S2	18	Tray upper limit 2	
S3	19	Tray upper limit 3 (A549 only)	
S4	25	Relay 1	Detects the leading edge of the paper as it leaves the tray to control pick-up solenoid and jam detection timing
S5	23	Relay 2	
S6	20	Relay 3	
S7	28	Paper end 1	Detects when the paper tray is empty
S8	24	Paper end 2	
S9	21	Paper end 3 (A549 only)	
Switches			
SW1	22	Tray cover	Detects whether the tray unit cover is open and cuts the 24 Vdc power if it is
SW2	3	Tray set 1	Detects whether the paper tray is in place
SW3	4	Tray set 2	
SW4	6	Tray set 3 (A549 only)	
Magnetic clutches			
CL1	9	Paper feed 1	Starts feeding paper from the tray
CL2	12	Paper feed 2	
CL3	15	Paper feed 3 (A549 only)	
CL4	11	Relay	Drives the rollers in the paper trays
Solenoids			
SOL1	8	Paper pick-up 1	Lifts/drops the pick-up roller
SOL2	13	Paper pick-up 2	
SOL3	16	Paper pick-up 3 (A549 only)	

Symbol	Index No.	Description	Note
SOL4	10	Separation 1	Lifts/drops the separation roller
SOL5	14	Separation 2	
SOL6	17	Separation 3	
Heaters			
H1	26	Tray (Option)	Turns on when the main switch is off to keep the paper in the trays dry
H2	27	Tray (Option)	

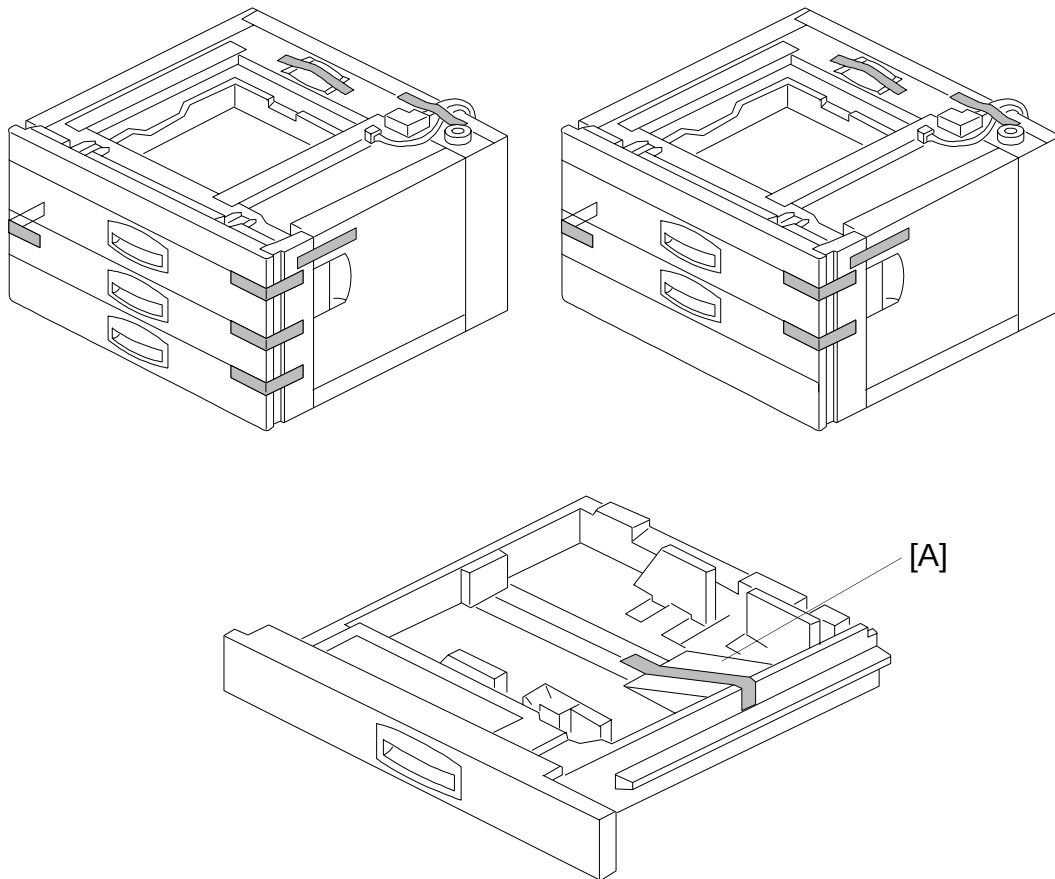
3. INSTALLATION

3.1 ACCESSORY CHECK

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

1. Right Support Bracket.....	1
2. Left Support Bracket	1
3. Joint Bracket	1
4. Shoulder Screw	1
5. Screw - M4 x 8	4
6. New Equipment Condition Report	1
7. Installation Procedure	1

3.2 INSTALLATION PROCEDURE



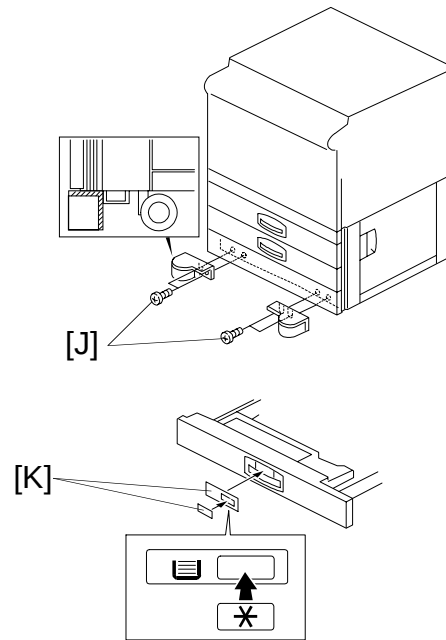
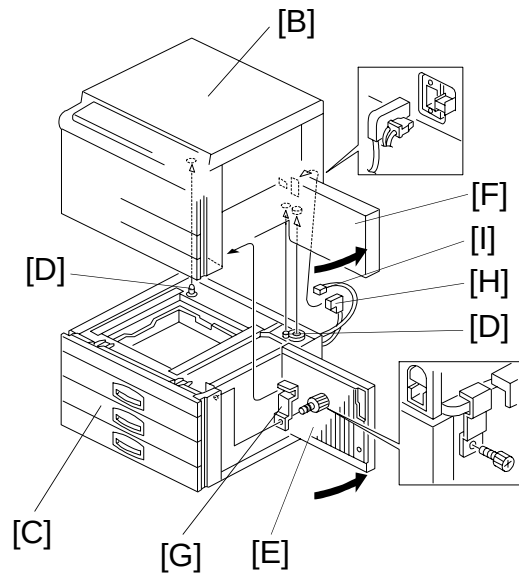
CAUTION

Unplug the copier power cord before starting the following procedure.

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

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

1. Remove the strips of tape.
2. Remove the bottom plate stopper [A].



For Copiers with an LCT: Do not lift the copier by holding the LCT unit.

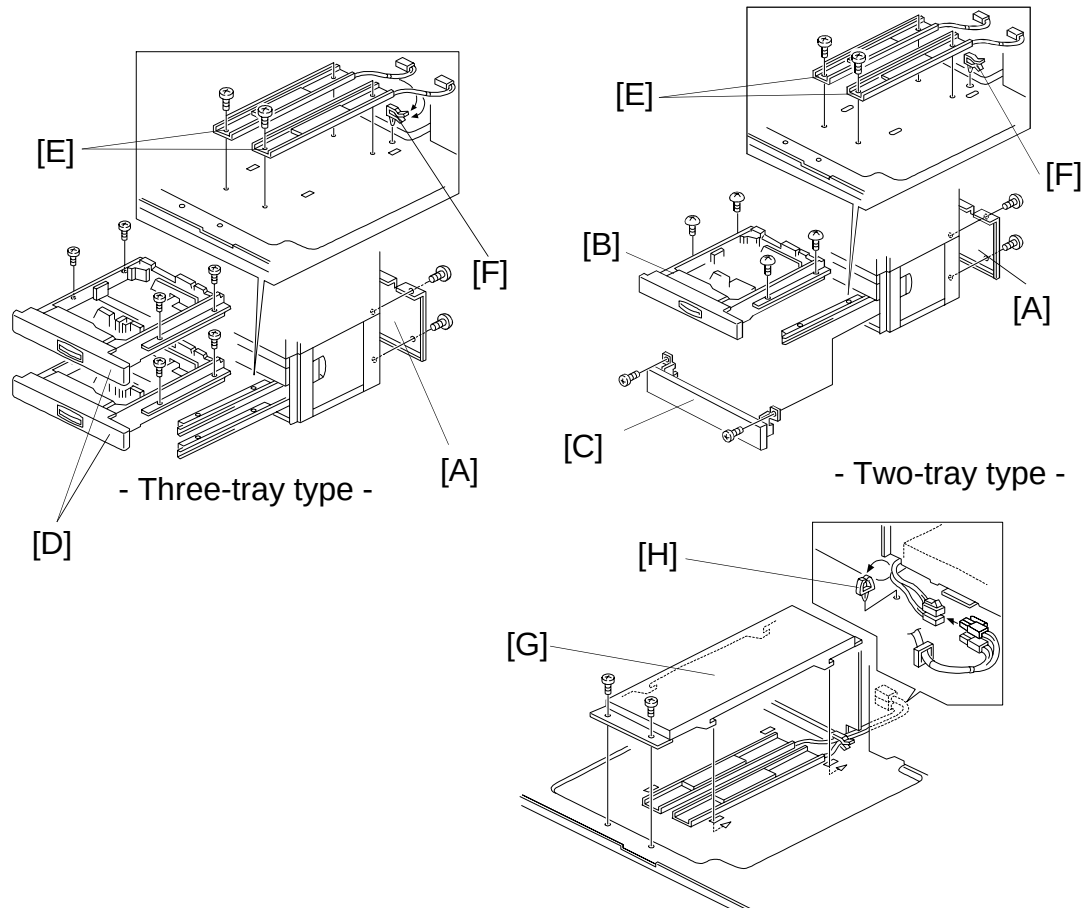
3. Set the copier [B] on the paper tray unit [C]. Align the 2 pins [D] on the paper tray unit with the holes in the base plate of the copier.
4. Open the lower door [E]. Also, open either the LCT [F] or the upper right door [F], whichever is present (depending on the type of copier).
5. Secure the copier to the paper tray unit with the joint bracket [G].
6. Connect the cable [H] and optic fiber [I].
7. Attach the support brackets [J] to the bottom of the paper tray unit as shown (4 screws).

⚠ CAUTION

If you do not do this, the machine may fall forwards if all the paper trays are pulled open.

8. Pull out the paper tray and load paper into it. (The paper size and direction for each tray should be designated by a customer.)
The side and rear fences should be properly positioned.
9. Turn on the main switch.
10. Enter the proper paper size for each paper tray by following the instructions in the copier's manual.
11. Attach the appropriate tray decals [K] which are included in the accessory box of the main copier.
12. Check the machine's operation and copy quality.

3.3 TRAY HEATER (OPTION)



1. Remove the rear cover [A] (4 screws).

2. **Two-tray type:** Remove the second paper tray [B] (4 screws) and the lower front cover [C] (2 screws).

Three-tray type: Remove the second and third paper feed trays [D] (4 screws each).

3. Install the tray heaters [E] (2 screws each).

4. Install the clamber [F] and clamp the heater harnesses.

5. Install the heater bracket [G] (2 screws).

6. Connect the heater harnesses.

7. Install the clamber [H] and clamp the heater harnesses.

NOTE: After replacing the paper tray, perform the side-to-side registration adjustment (see Removal and Adjustment in the manual for the copier).

4. SERVICE TABLES

4.1 DIP SWITCHES

DIP SW 101 (Free Run Mode)

1	2	3	4	5	6	7	Function
Off	-	-	-	-	-	-	Speed in the free run mode: 200 mm/s
On	-	-	-	-	-	-	Speed in the free run mode: 150 mm/s
-	On	Off	-	-	-	-	Bank type : 500 sheet type
-	Off	On	-	-	-	-	Bank type : 250 sheet type
-	-	-	Off	On	-	-	Normal Operation / Free Run Mode 1*: One-tray type
-	-	-	Off	On	-	-	Free Run Mode 2*: Paper feed tray 1 only
-	-	-	On	Off	-	-	Normal Operation / Free Run Mode 1*: Two-tray type
-	-	-	On	Off	-	-	Free Run Mode 2*: Paper feed tray 2 only
-	-	-	On	On	-	-	Normal Operation / Free Run Mode 1*: Three-tray type
-	-	-	On	On	-	-	Free Run Mode 2*: Paper feed tray 3 only
-	-	-	-	-	On	Off	Free Run Mode 2
-	-	-	-	-	On	On	Free Run Mode 1
-	-	-	-	-	Off	Off	Normal Operation

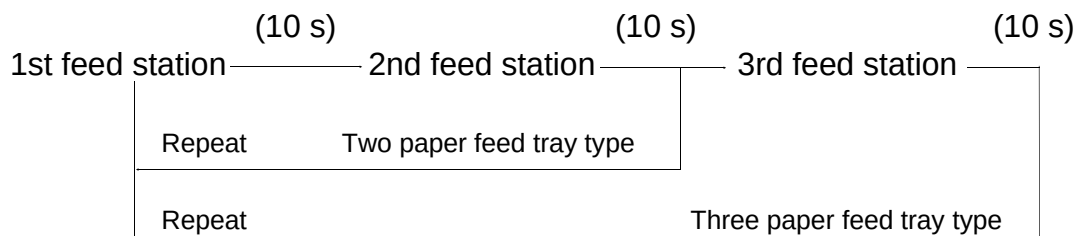
Do not touch dip switches 1 to 5. Switch 8 is not used.

How to do a free run

1. Select either mode 1 or mode 2 with dip switches 6 and 7.
2. Turn off the power, disconnect the optical cable, and turn on the power.
3. Press SW101 on the PCB to start the free run.
4. When you wish to stop the free run, press SW102 on the PCB and return the dip switches to their default settings.

Free Run Mode 1

The paper feed operation performs up to 20 times for each paper feed station.



Free Run Mode 2

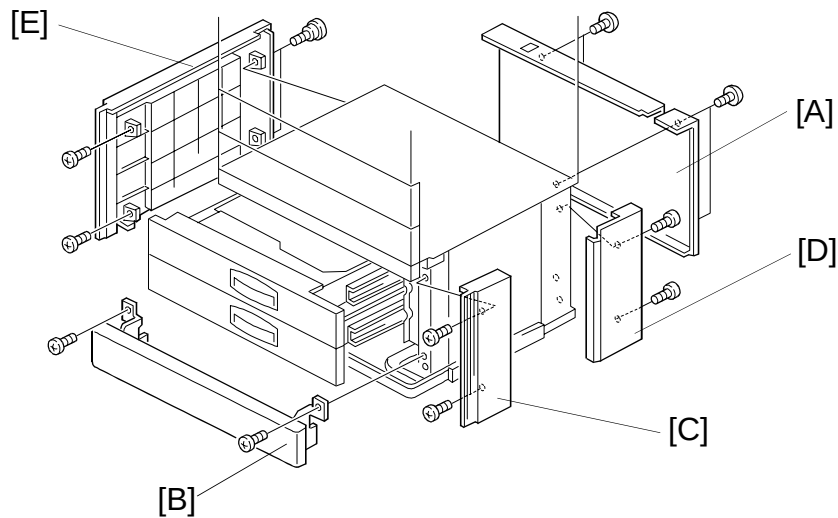
The paper feed operation runs for all paper feed stations at the same time.

4.2 TEST POINTS

NUMBER	FUNCTION
TP101	+ 5V
TP102	+ 24V
TP103	GND
TP104	TXD (Transmit signal)
TP105	RXD (Receive signal)
TP106	GND

5. REPLACEMENT AND ADJUSTMENT

5.1 EXTERIOR COVER REMOVAL



Rear Cover [A]: (2 screws)

Front Lower Cover [B]: [Two-tray type only]

1. Slide out the trays.
2. Remove the front lower cover (2 screws).

Right Front Cover [C]:

1. Remove the front lower cover [B].
2. Remove the right front cover (2 screws).

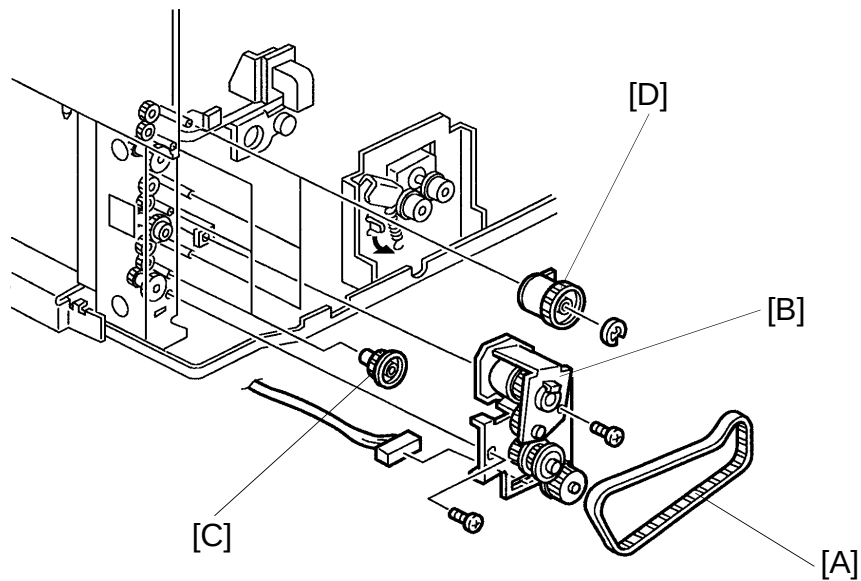
Right Rear Cover [D]:

1. Remove the rear cover [A] (4 screws).
2. Remove the right rear cover (2 screws).

Left Cover [E]:

1. Remove the rear cover [A].
2. Remove the front lower cover [B].
3. Remove the left cover (4 screws).

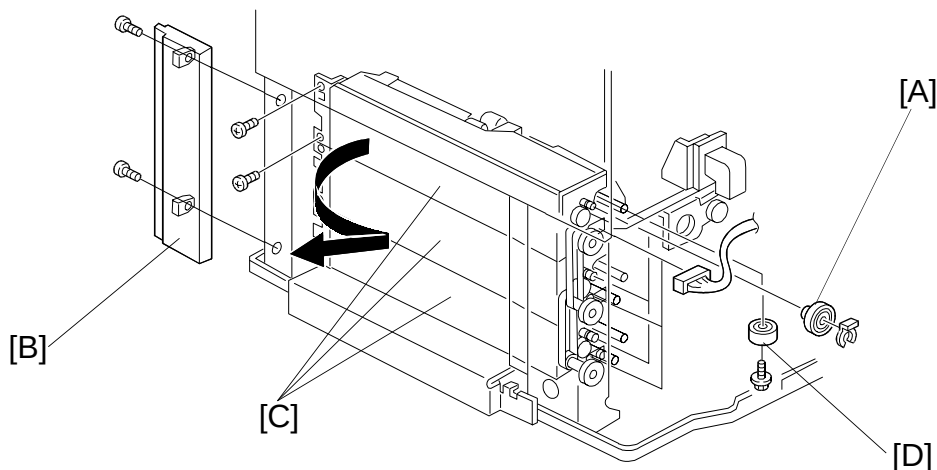
5.2 PAPER FEED CLUTCH REPLACEMENT



1. Remove the rear cover (see Exterior Cover Removal).
2. Remove the timing belt [A].
3. Remove the drive unit [B] (2 screws, 2 connectors).
4. Remove the separation roller gear [C].
5. Remove the paper feed clutch [D] (1 connector).

NOTE: When reinstalling the clutch, make sure that the clutch stopper groove engages the stopper bracket.

5.3 PAPER FEED UNIT REPLACEMENT



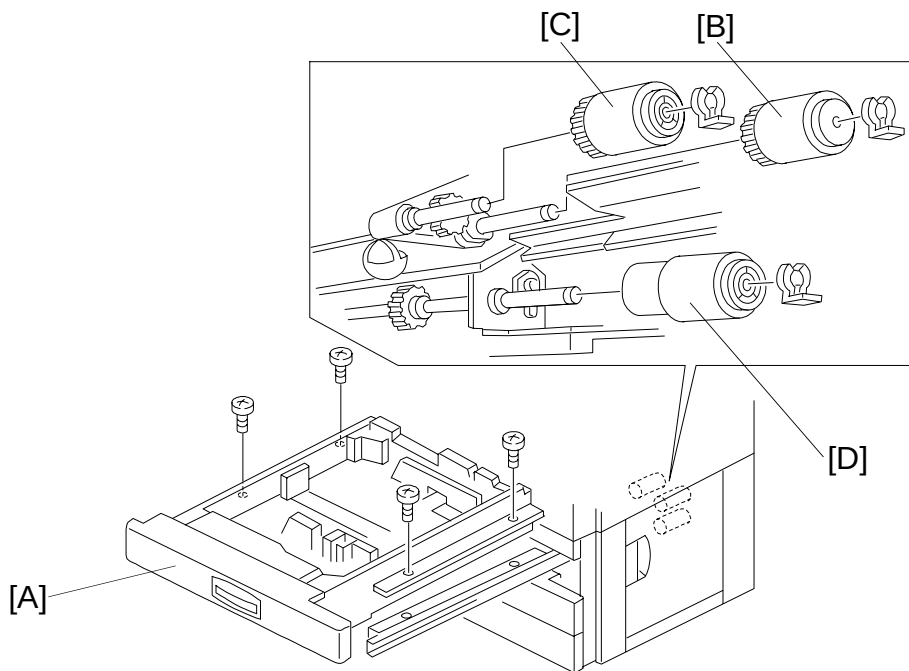
1. Remove the paper feed clutch (see Paper Feed Clutch Replacement).
2. Remove the paper feed roller gear [A].
3. Pull out all the trays.
4. **Two-tray type only:** Remove the front lower cover (see Exterior Cover Removal).
5. Remove the front right cover [B] (2 screws).
6. Remove the paper feed unit [C] (2 screws for each unit).

NOTE: When removing the paper feed unit, do the following.

- When removing the paper feed roller gear, remove the rubber foot [D].
- Remove the joint bracket.

After reinstalling the paper tray, perform the side-to side-registration adjustment (see Removal and Adjustment in the manual for the copier).

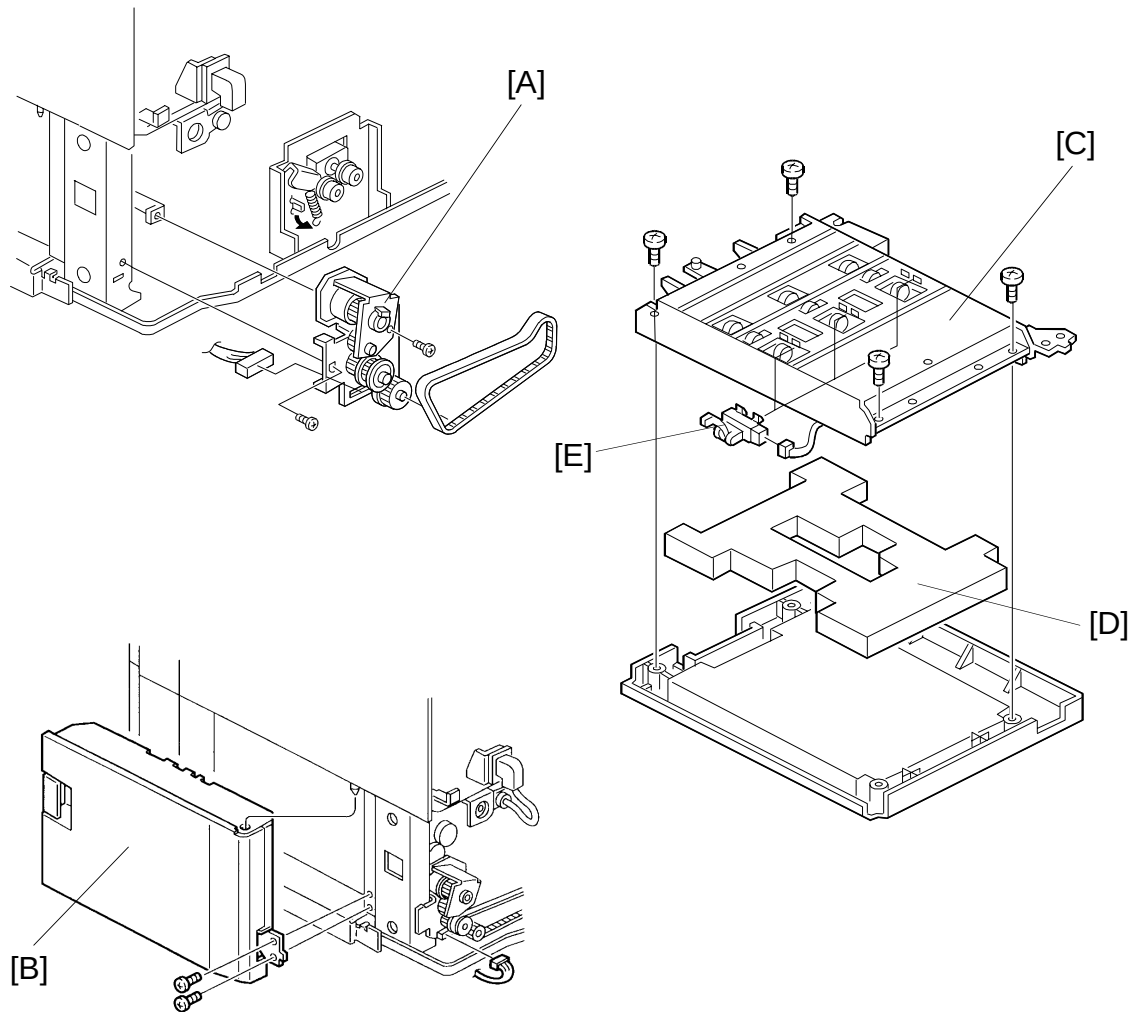
5.4 FEED ROLLER, PICK-UP ROLLER, AND REVERSE ROLLER REPLACEMENT



1. Remove the paper feed tray [A] (4 screws).
2. Remove the feed roller [B], pick-up roller [C], and reverse roller [D] (1 clip each).

NOTE: After reinstalling the paper tray, perform the side-to-side registration adjustment (see Removal and Adjustment in the manual for the copier).

5.5 RELAY SENSOR REPLACEMENT



1. Remove the rear cover (see Exterior Cover Removal).
2. Remove the right rear cover (see Exterior Cover Removal).
3. Remove the drive unit [A] (2 screws, 2 connectors).
4. Remove the vertical transport unit [B] (2 screws).
5. Remove the vertical transport guide [C] (4 screws).
6. Remove the sponge [D].
7. Remove the relay sensors [E] (1 connector each).

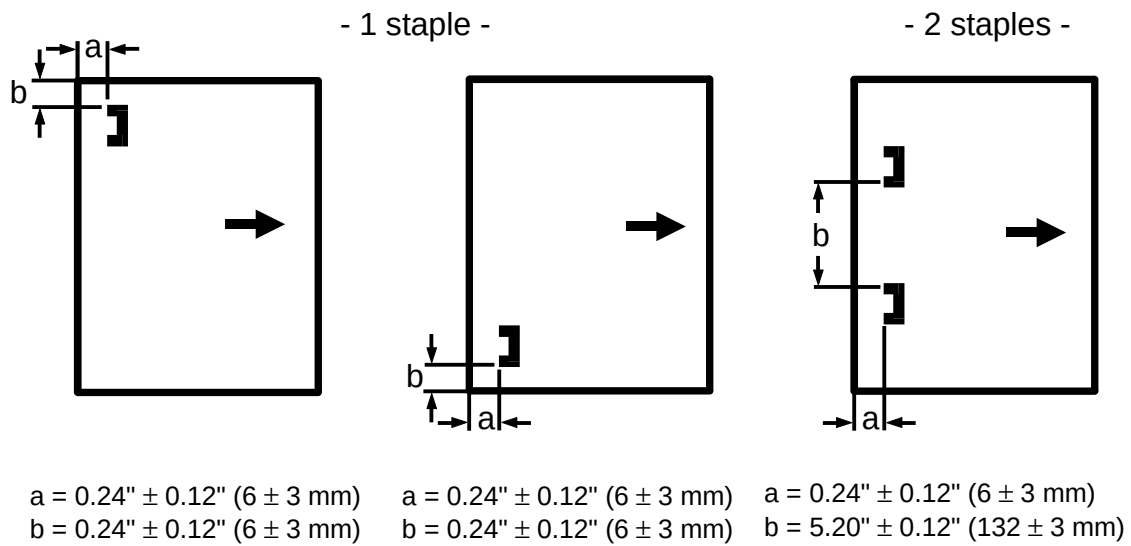
FINISHER
A612

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

Paper Size:	Standard copying/Stack mode Maximum: 11" x 17" /A3 Minimum: 5½" x 8½"/A5 Staple mode Maximum: 11" x 17" /A3 Minimum: 8.5" x 5.5"/B5 ⇐
Paper Weight:	Standard copying/Stack mode 14 ~ 42 lb/52 ~ 157 g/m ² Staple mode 17 ~ 21 lb/64 ~ 80 g/m ²
Paper Capacity:	1,500 sheets: 8½" x 11"/A4 or smaller size (20 lb/80 g/m ²) 1,000 sheets: 8½" x 14"/B4 or larger size (20 lb/80 g/m ²)
Stapler Capacity:	8½" x 11"/A4 or smaller size (20 lb/80 g/m ²): from 2 to 50 sheets 8½" x 14"/B4 or large size (20 lb/80 g/m ²): from 2 to 30 sheets
Staple Replenishment:	Cartridge exchange (5,000 staples/cartridge)
Power Source:	DC 24 V (from copier)
Power Consumption:	48 W (average)
Weight:	35 kg (77.2 lb)

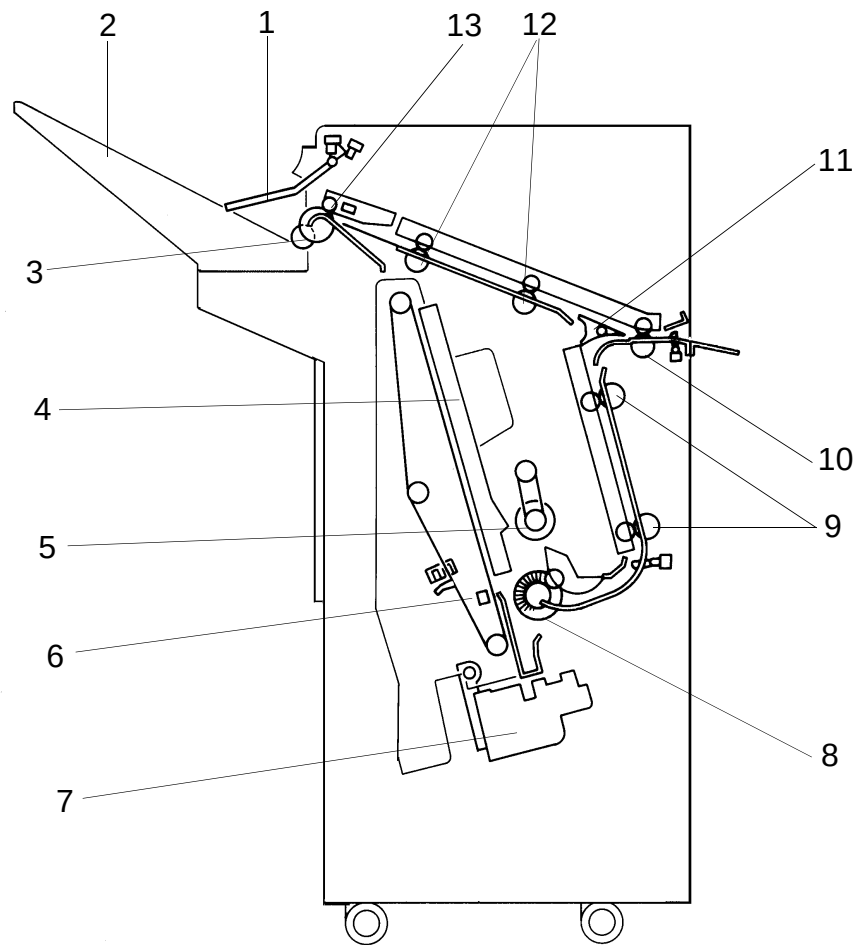
Stapling Position:



Dimensions:

26.5" x 20.5" x 37.5"
(671 mm x 514 mm x 950 mm)

1.2 MECHANICAL COMPONENT LAYOUT



1. Stack Height Sensor Feeler	8. Alignment Brush Roller
2. Shift Tray	9. Lower Transport Rollers
3. Shift Tray Positioning Roller	10. Entrance Rollers
4. Jogger Unit	11. Junction Gate
5. Positioning Roller	12. Upper Transport Rollers
6. Stack Feed-out Belt	13. Exit Rollers
7. Stapler Unit	

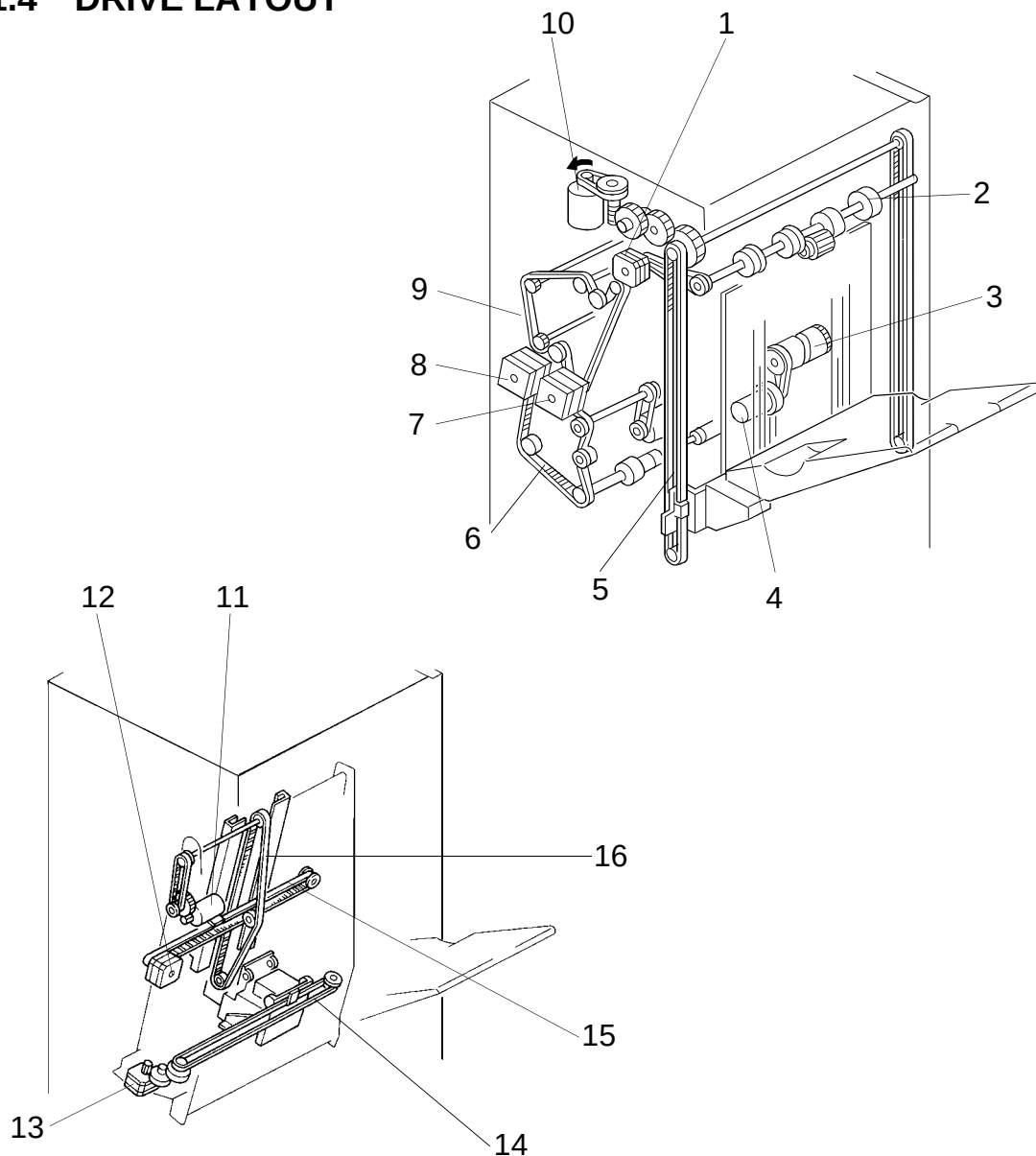
1.3 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the point-to-point diagram (on waterproof paper) for the index numbers.

Symbol	Name	Function	Index No.
Motors			
M1	Transport Drive	Drives the transport rollers.	21
M2	Shift Tray Lift	Moves the shift tray up or down.	25
M3	Exit Drive	Drives the exit roller and the shift tray positioning roller.	27
M4	Stack Feed-out	Drives the stack feed-out belt.	5
M5	Jogger	Moves the jogger fences.	19
M6	Stapler Drive	Moves the stapler unit.	17
M7	Shift	Moves the shift tray from side to side.	7
M8	Staple	Drives the staple hammer.	13
M9	Lower Transport Drive	Drives the transport rollers of the stapler section.	22
Sensors			
S1	Entrance	Detects copy paper entering the finisher.	26
S2	Jogger Unit Entrance	Detects copy paper entering the jogger unit.	24
S3	Jogger Unit Paper	Detects copy paper in the jogger unit.	8
S4	Stack Feed-out Belt HP	Detects the home position of the stack feed-out belt.	9
S5	Jogger HP	Detects the jogger home position.	18
S6	Exit	Detects misfeeds in the exit area.	3
S7	Stack Height 1	Detects copy paper stack height in staple mode.	2
S8	Stack Height 2	Detects copy paper stack height in sort/stack mode.	1
S9	Shift Tray Lower Limit	Detects the lower limit of the shift tray position.	15
S10	Staple Hammer HP	Detects the staple hammer home position.	14
S11	Shift Tray Half-Turn	Detects the side-to-side position of the shift tray.	6
S12	Stapler Unit HP	Detects the stapler unit home position.	10

Symbol	Name	Function	Index No.
Switches			
SW1	Front Door Safety	Cuts the dc power when the front door is opened.	28
SW2	Shift Tray Upper Limit	Cuts the power to the shift tray lift motor when the shift tray position is at its upper limit.	4
SW3	Cartridge Set	Detects whether a staple cartridge is installed.	12
SW4	Staple End	Detects staples in the cartridge.	11
Solenoids			
SOL1	Positioning Roller	Lowers the positioning roller in the jogger unit.	20
SOL2	Junction Gate	Drives the junction gate.	23
PCBs			
PCB1	Main Control	Controls overall finisher operation.	16

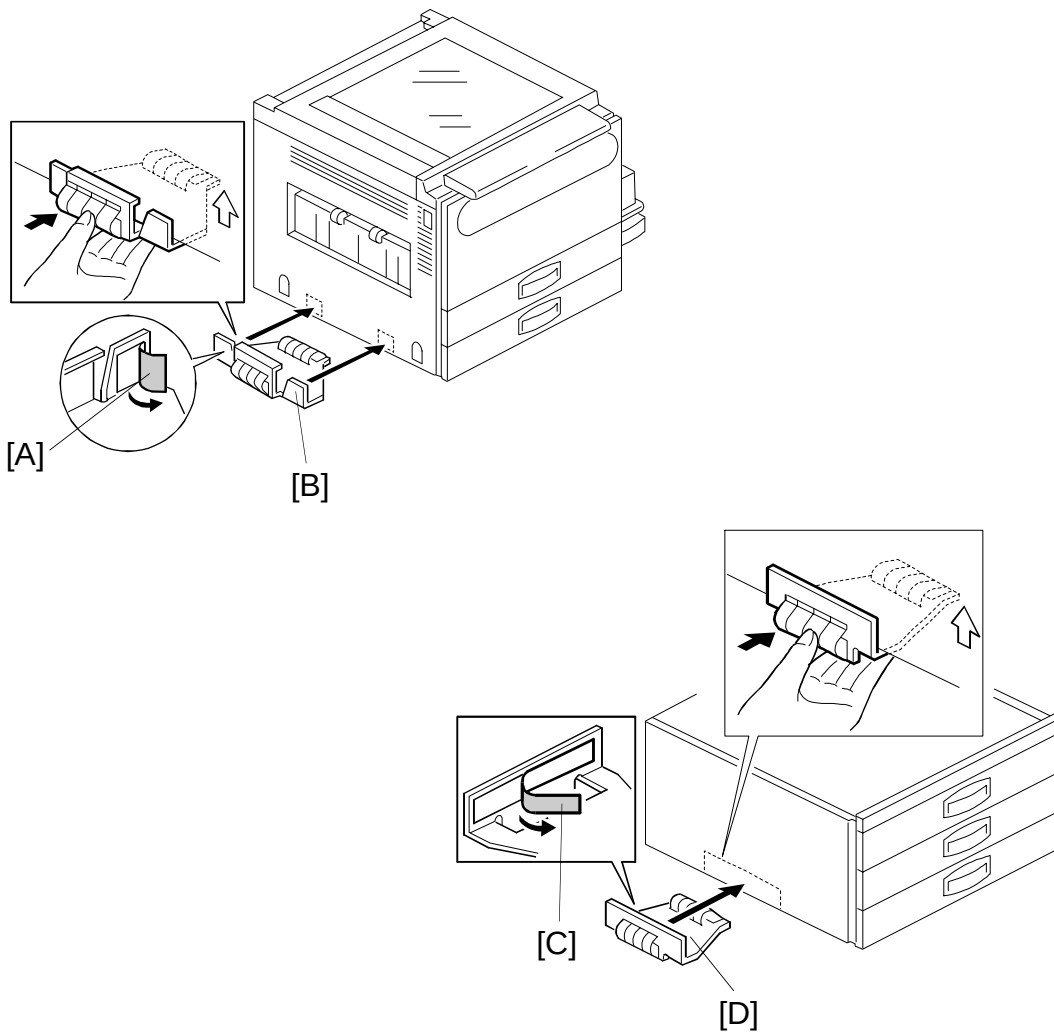
1.4 DRIVE LAYOUT



1. Exit Drive Motor (M3)
2. Exit Roller
3. Shift Cam
4. Shift Motor (M7)
5. Shift Tray Lift Belt
6. Lower Transport Drive Belt
7. Transport Drive Motor (M1)
8. Lower Transport Drive Motor (M9)

9. Upper Transport Drive Belt
10. Shift Tray Lift Motor (M2)
11. Stack Feed-out Motor (M4)
12. Jogger Motor (M5)
13. Stapler Drive Motor (M6)
14. Stapler Drive Belt
15. Jogger Drive Belt
16. Stack Feed-out Belt

2. INSTALLATION PROCEDURE

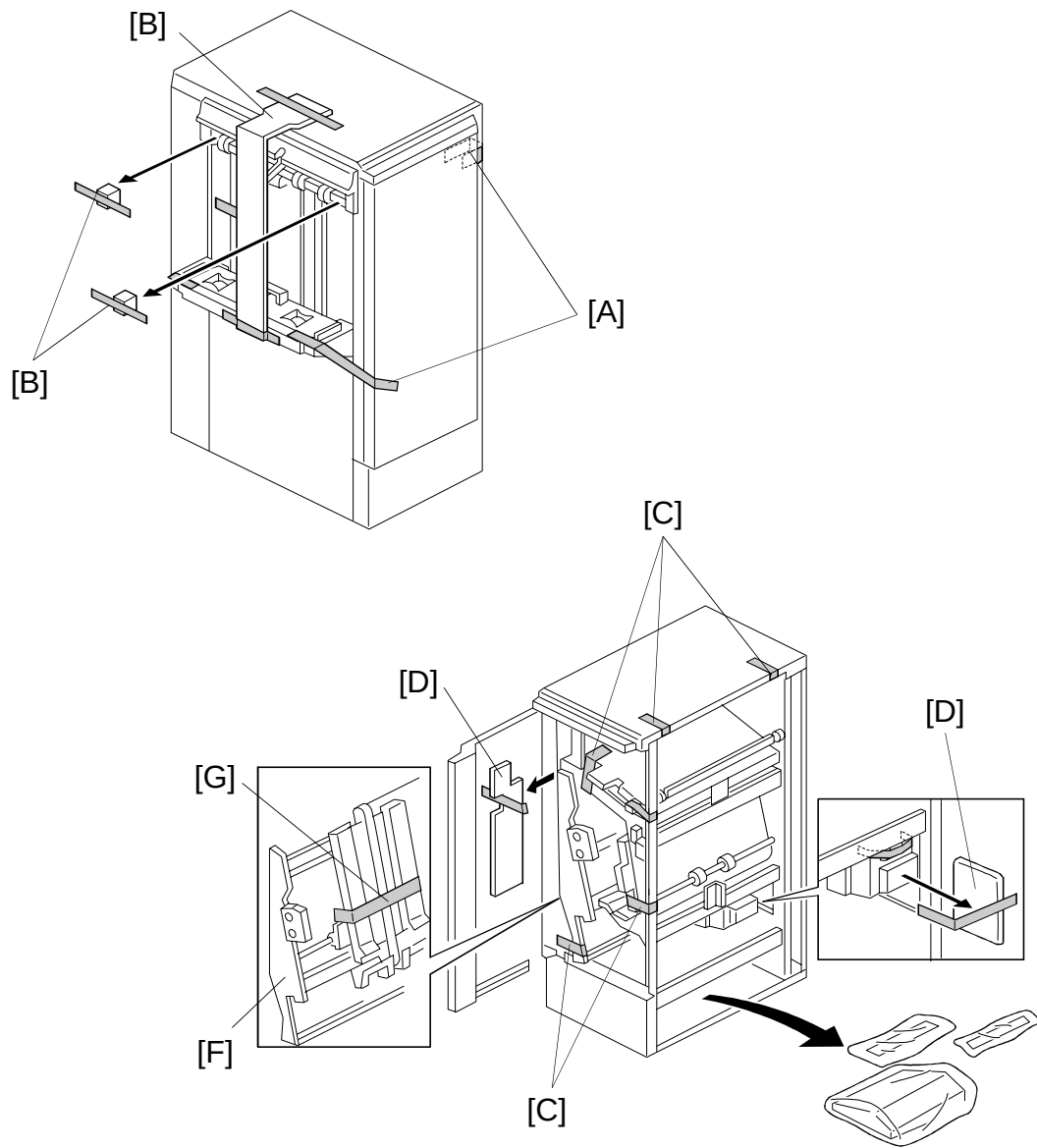


⚠ CAUTION

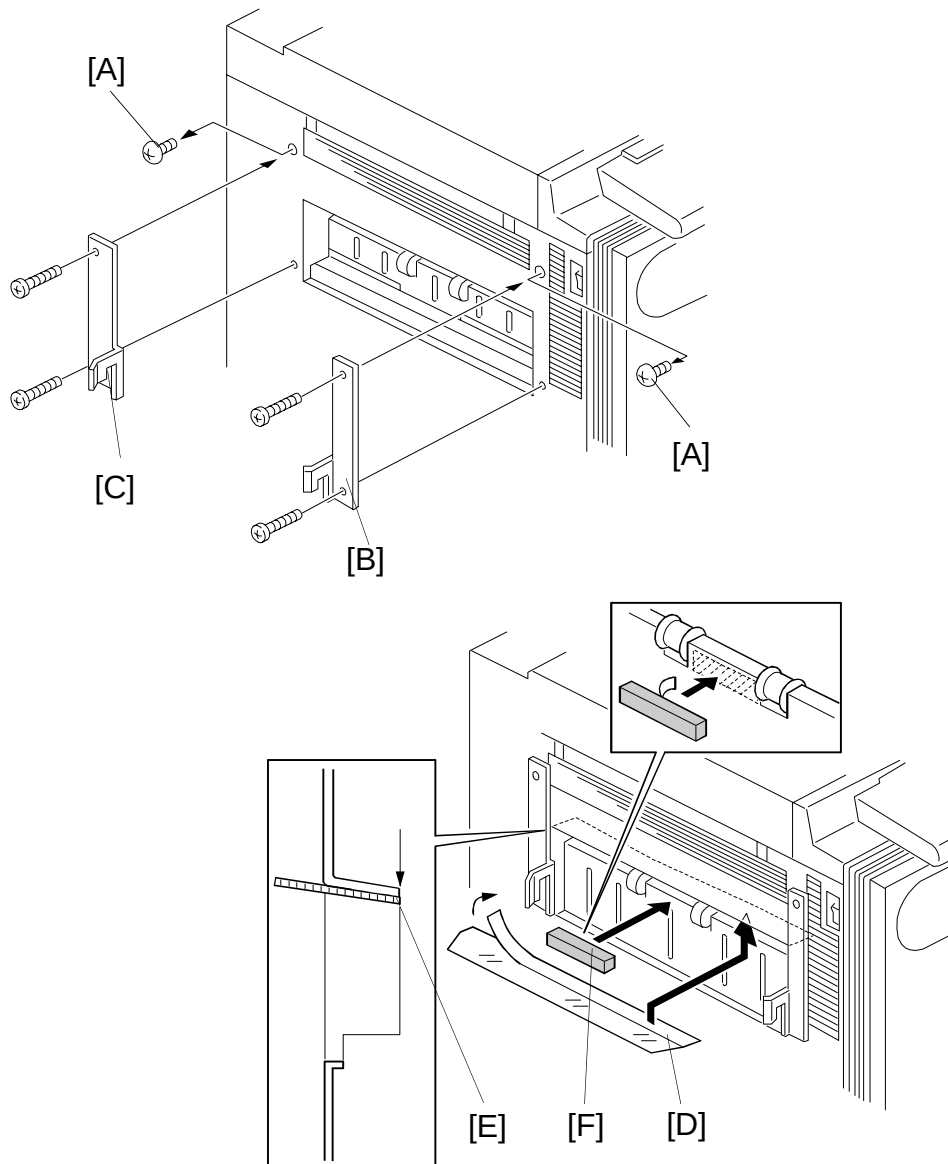
Unplug the power cord before beginning the following procedure.

In European countries only (step 1 ~ 4)

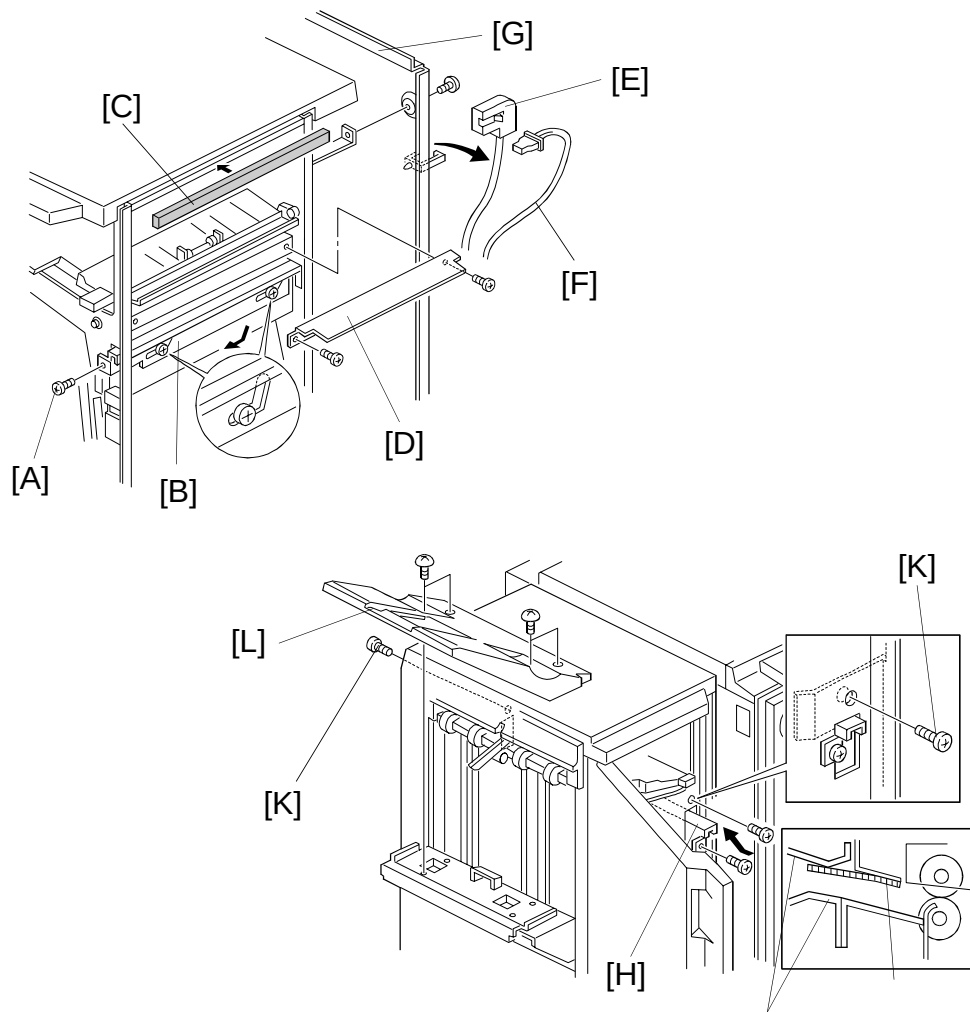
1. Peel off the backing [A] of the double sided tape affixed to the copier grounding plate [B].
2. Attach the copier grounding plate to the copier as shown.
3. Peel off the backing [C] of the double sided tape affixed to the PFU grounding plate [D].
4. Attach the PFU grounding plate to the paper feed unit as shown.



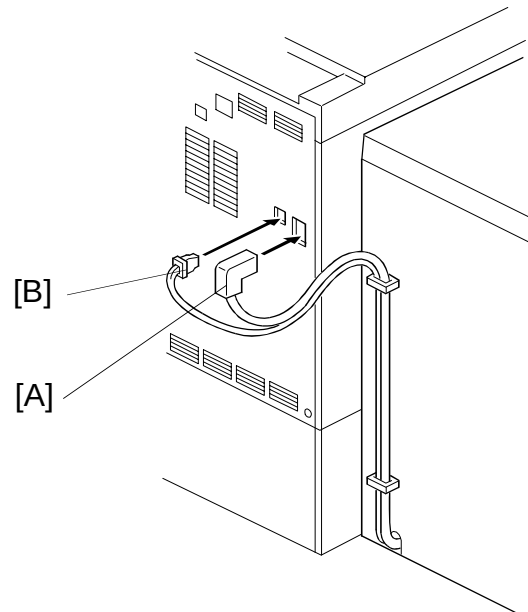
5. Remove the strips of tape [A] and the cushoins [B].
6. Open the front door and remove the strips of tape [C] and cushions [D].
7. Extend the staple unit [F].
8. Remove the strip of tape [G].



9. Remove the screws [A] from the left cover.
10. Install the front connecting bracket [B] (2 screws— M4 x 12) and the rear connecting bracket [C] (2 screws— M4 x 12).
11. Affix the mylar strip [D] to the copy exit area, as shown.
NOTE: Carefully align the edge of the cover [E] with the mylar gude.
12. Affix the cushion [F] to the lower exit plate, as shown.



13. Open the front door of the finisher and remove the screw [A], which secures the locking lever [B]. Then pull the locking lever (This causes the lever to move out and down).
14. Affix the cushion [C] on the metal stay (not on the cover) as shown.
15. Install the entrance guide plate [D] (2 screws -M4 x 6).
16. Open the two clamps; remove the cable [E] and the fiber optic cable [F].
17. Remove the rear cover [G] (6 screws).
18. Align and install the finisher to the connecting brackets. Lock them in place by raising the locking lever [H].
NOTE: Ensure the mylar strip [I] is located between the guides [J].
19. Secure the locking lever [H] (1 screw) and the finisher (2 screws [K]).
20. Install the shift tray [L] (4 screws – M4 x 8).



19. Reinstall the rear cover.
20. Connect the cable [A] and the fiber optic connector [B].
21. Plug in the copier.
22. Turn on the main switch and test the newly installed finisher's operation.

NOTE: The copier automatically recognizes that the finisher has been installed. The stapler will begin stapling after about 10 copies (This allows the first staple to come to the proper position in the cartridge).

3. SERVICE TABLES

3.1 TEST POINT TABLE (MAIN BOARD)

Number	Function
TP100	GND
TP101	5 V
TP102	24 V

3.2 FUSE TABLE

Number	Rated Current	Location
Fuse 100	5A	Main PCB

3.3 LED TABLE

LED No.	ON Status During Adjustment
LED100	Stack feed-out motor speed is normal.

***NOTE:** Adjust the speed of the stack feed-out motor by setting DIP SW 100/101 to Motor Test Mode (see below). Then adjust VR100. If the motor speed is either too high or too low, LED 100 will blink.

3.4 DIP SW TABLE

3.4.1 Factory Setting

DIP SW100				DIP SW101			
1	2	3	4	1	2	3	4
0	0	0	0	0	0	0	0

3.4.2 Motor Test Mode

DIP SW100				DIP SW101				Motor
1	2	3	4	1	2	3	4	
1	1	0	1	1	0	0	0	Stack Feed-out Motor

After setting DIP SW100, turn on switch 1 of DIP SW101 to start the stack feed-out motor. Turn off DIP SW101-1 to stop the motor.

3.4.3 Free Run Test Mode Without Paper

DIP SW100				DIP SW101				Test Type
1	2	3	4	1	2	3	4	
1	1	1	0	1	0	0	0	Shift tray mode
1	1	1	0	0	1	0	0	Staple mode - Top left
1	1	1	0	0	0	1	0	Staple mode - Bottom left
1	1	1	0	0	0	0	1	Staple mode - Top/Bottom left

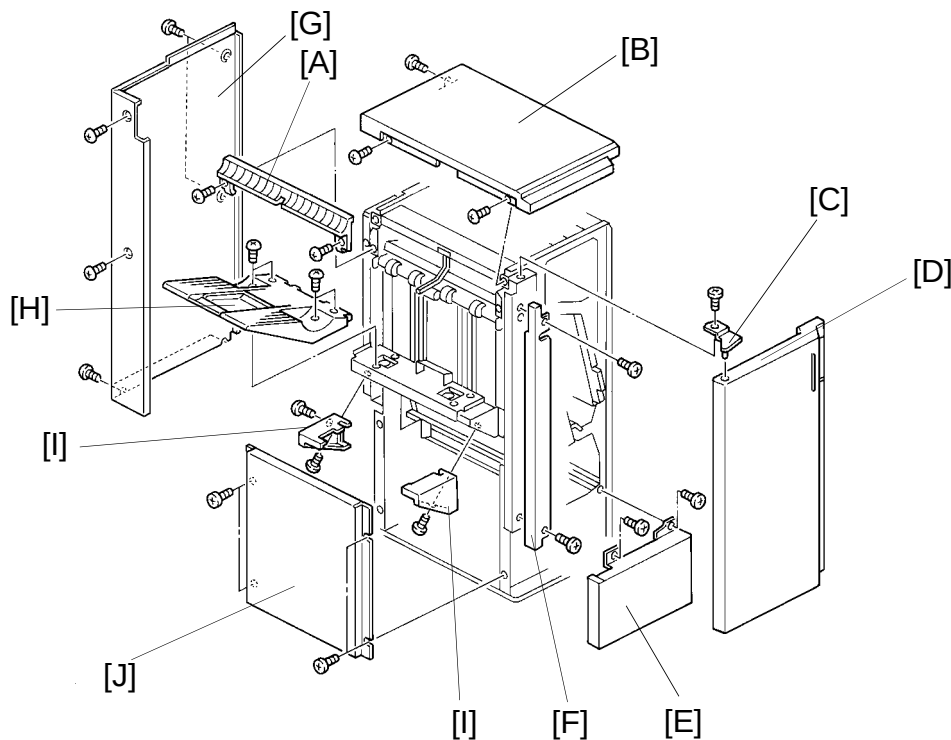
Start the free run test mode by changing DIP SW100 then DIP SW101 to select the required test as shown in the table.

In shift tray mode, the finisher works as if 10 sets of 5 LT pages are being sorted. The machine then initializes itself and repeats the operation.

In staple mode, the finisher works as if 5 sets of 5 LT pages are being stapled and delivered. The machine then initializes itself and repeats the operation.

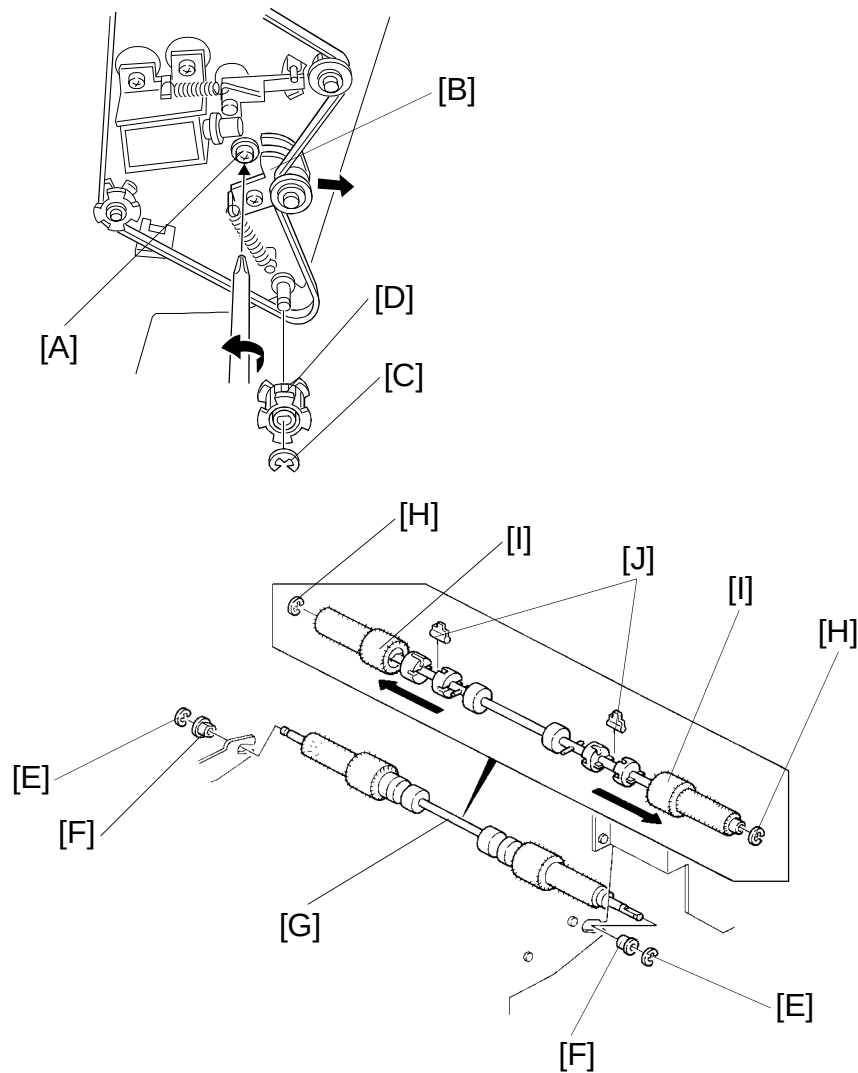
4. REPLACEMENT AND ADJUSTMENT

4.1 EXTERIOR REMOVAL



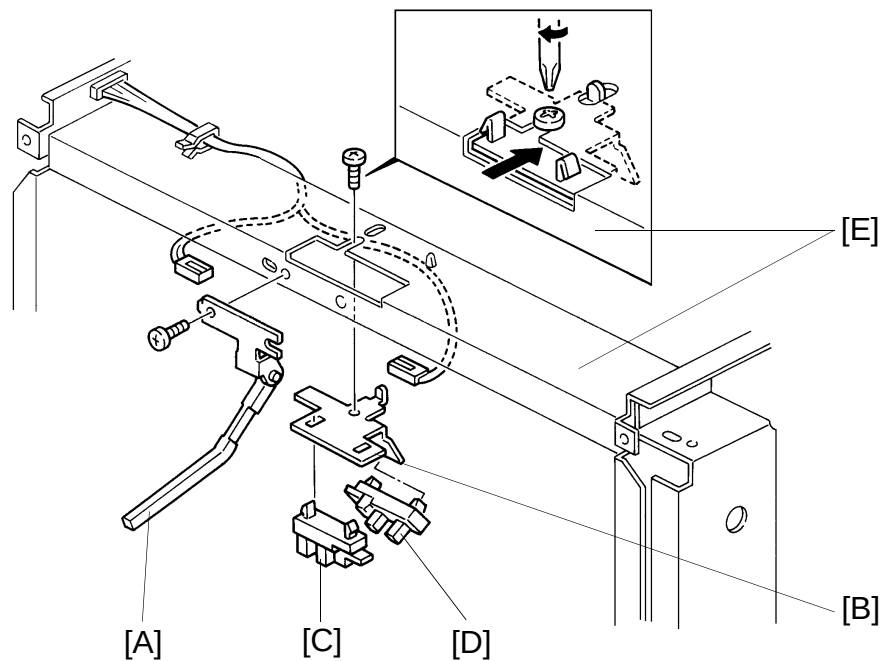
1. Remove the left upper cover [A] (2 screws).
2. Remove the upper cover [B] (3 screws).
3. Remove the upper door bracket [C] (1 screw) and remove the front door [D].
4. Remove the lower front cover [E] (2 screws).
5. Remove the front shift cover [F] (2 screws).
6. Remove the rear cover [G] (6 screws).
7. Remove the shift tray [H] (4 screws).
NOTE: The shift tray cannot be removed if it is at its uppermost position. Bring the shift tray down by manually turning the shift tray lift motor timing belt.
8. Remove the front and rear tray cover [I] (1 screw at the front, 2 screws at the rear).
9. Remove the left cover [J] (4 screws).

4.2 ALIGNMENT BRUSH ROLLER REPLACEMENT



1. Open the front door and slide out the jogger unit.
2. Remove the rear cover.
3. Loosen the screw [A] and flip the tension bracket [B] to release the tension of the lower transport drive belt.
4. Remove the E-ring [C], slide out the pulley [D], remove 2 E-rings [E], then remove 2 bushings [F].
NOTE: When reinstalling, the metal bushing goes at the front side.
5. Remove the alignment brush roller assembly [G].
6. Remove the 2 E-rings [H] and the brush rollers [I].
NOTE: Do not lose the link keys [J].

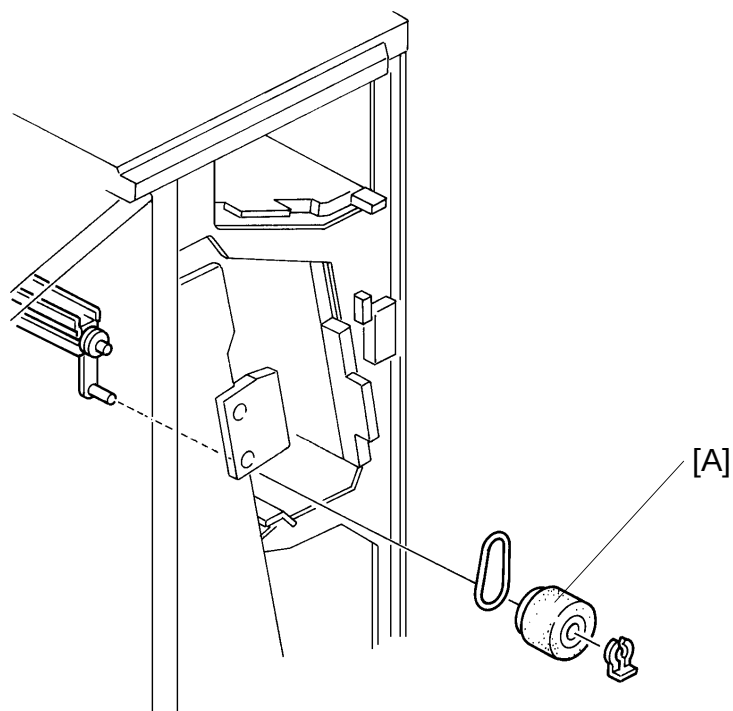
4.3 STACK HEIGHT SENSOR REPLACEMENT



1. Remove the upper cover.
2. Remove the stack height sensor actuator [A] (1 screw).
3. Remove the bracket [B] (1 screw, 2 connectors).
4. Replace stack height sensor 1 [C] and stack height sensor 2 [D].

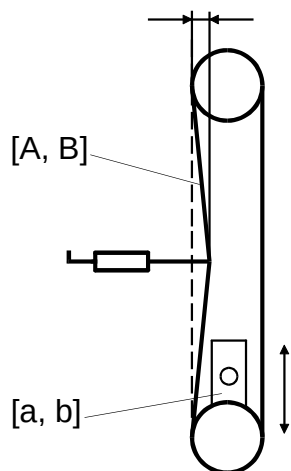
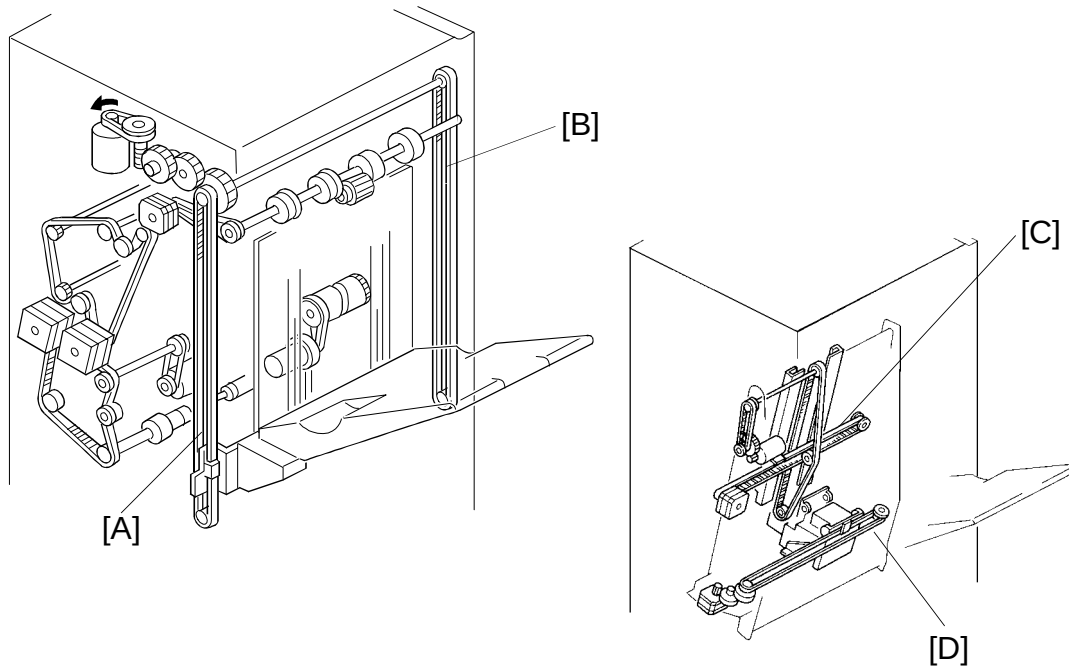
NOTE: When reinstalling the bracket [B], align the edge of the bracket with the stay [E].

4.4 POSITIONING ROLLER REPLACEMENT



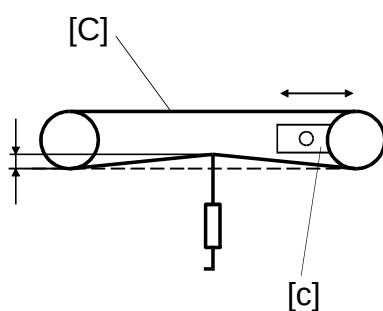
1. Open the front door and slide out the jogger unit.
2. Remove the positioning roller [A] (1 snap ring).

4.5 BELT TENSION ADJUSTMENT



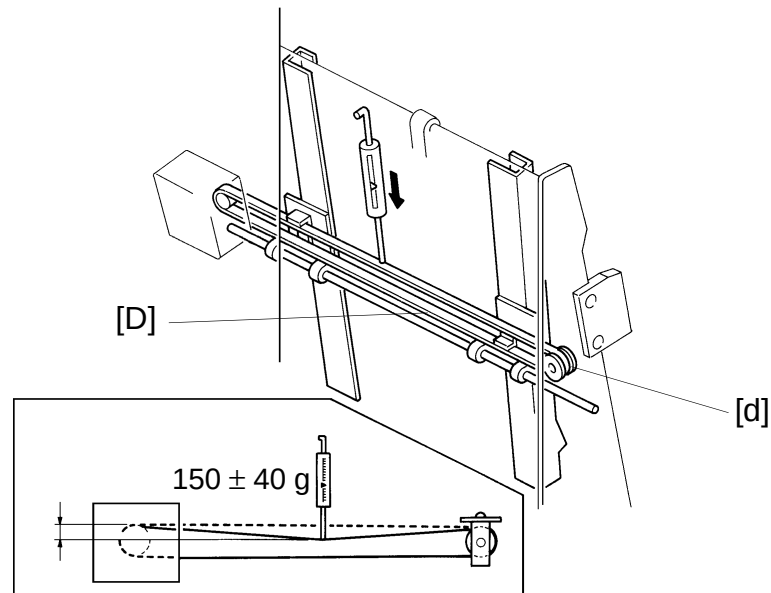
1. Remove the rear cover and adjust the tension of belt [A] with tightener [a]. Remove the left upper cover, the upper cover, the front door, the front shift cover and the lower front cover (2 screws). Adjust the belt [B] with tightener [b].

Standard: 6 mm deflection at 50 ± 20 g pressure.



2. Open the front door and slide out the jogger unit. Adjust the tension of belt [C] with tightener [c].

Standard: 8 mm deflection at 100 ± 30 g pressure.



3. Open the front door and slide out the jogger unit. Adjust the tension of belt [D] with tightener [d].

Standard: 8 mm deflection at 150 ± 40 g pressure.

4.6 STAPLER REPLACEMENT

1. Unplug connector.
2. Unscrew thumbscrew.
3. Remove stapler.

A217

SERVICE MANUAL

The A217 machine is based on the A133 copier.

Only the differences from the base copier are described in the following pages. Therefore, this documentation should be treated as an insert version of the base copier's service manual. It should always be utilized together with the base copier's service manual.

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

NOTE: Only items marked with * are different from the A133 copier.

Configuration:	Desktop
Copy Process:	Dry electrostatic transfer system
Originals:	Sheet/Book
Original Size:	Maximum A3/11" x 17"
Copy Paper Size:	Maximum A3/11" x 17" (Paper tray and By-pass tray) A5/8 1/2" x 5 1/2" sideways Paper tray Minimum A6/5 1/2" x 8 1/2" lengthwise (By-pass) LCT A4/11" x 8 1/2" sideways only
Duplex Copying:	Maximum A3/11" x 17" Minimum A5/8 1/2" x 5 1/2" sideways
Copy Paper Weight:	Paper tray: 60 ~ 105 g/m ² , 16 ~ 24 lb By-pass: 60 ~ 157 g/m ² , 16 ~ 42 lb LCT: 60 ~ 128 g/m ² , 16 ~ 34 lb Duplex copying: 64 ~ 105 g/m ² , 17 ~ 24 lb
* Reproduction Ratios:	5 Enlargement and 7 Reduction

	A4/A3 Version	LT/DLT Version
Enlargement	400%	400%
	200%	200%
	141%	155%
	122%	129%
	115%	121%
Full size	100%	100%
Reduction	93%	93%
	87%	85%
	82%	77%
	71%	74%
	65%	65%
	50%	50%
	35%	35%

- * Zoom: 32% to 400% in 1% steps
- Power Source: 120V/60Hz:
More than 12 A (for North America)
- 220V ~ 240V/50Hz:
More than 7 A (for Europe)
- 220V ~ 240V/60Hz:
More than 7 A (for Asia)

* Power Consumption:

	Copier Only	Full System
115 V Machine		
Maximum	Less than 1.44 Kw	Less than 1.44 Kw
Copying	Less than 1.30 Kw	Less than 1.35 Kw
Warm-up	Less than 1.05 Kw	Less than 1.07 Kw
Stand-by	Less than 0.22 Kw	Less than 0.24 Kw
230 V Machine		
Maximum	Less than 1.50 Kw	Less than 1.50 Kw
Copying	Less than 1.30 Kw	Less than 1.35 Kw
Warm-up	Less than 1.10 Kw	Less than 1.12 Kw
Stand-by	Less than 0.27 Kw	Less than 0.29 Kw

NOTE: Full System: Copier + ADF + Paper Tray Unit + Finisher

* Noise Emission:

	Copier Only	Full System
1. Sound Power Level		
Copying	67 Db(A)	69 Db(A)
Stand-by	40 Db(A)	41 Db(A)
2. Sound Pressure Level at the Operator Position		
Copying	53 Db(A)	59 Db(A)
Stand-by	28 Db(A)	28 Db(A)

NOTE: The above measurements are to be made in accordance with ISO 7779.

Full System: Copier + ADF + Paper Tray Unit + Finisher.

Dimensions (W x D x H): 880 x 655 x 602 mm (34.7" x 25.8" x 23.8")

Measurement Conditions

- 1) With by-pass feed table closed
- 2) With copy tray attached
- 3) With LCT cover closed
- 4) Without the 500-sheet copy tray

* Weight: 97 kg (214 lb)

* Copying Speed (copies/minute):

A4 sideways/ 11" x 8 1/2"	A3/11" x 17"	B4/8 1/2" x 14"
50 (US, France) 51 (EU, ASIA)	22	32

Warm-Up Time	Less than 140 seconds (20°C, 68°F)
*First Copy Time:	Less than 4.5 s (from LCT)
Copy Number Input:	Ten-key pad, 1 to 999 (count up or count down)
Manual Image Density Selection:	7 steps
Automatic Reset:	30 s is the standard setting; it can be changed with a UP mode.

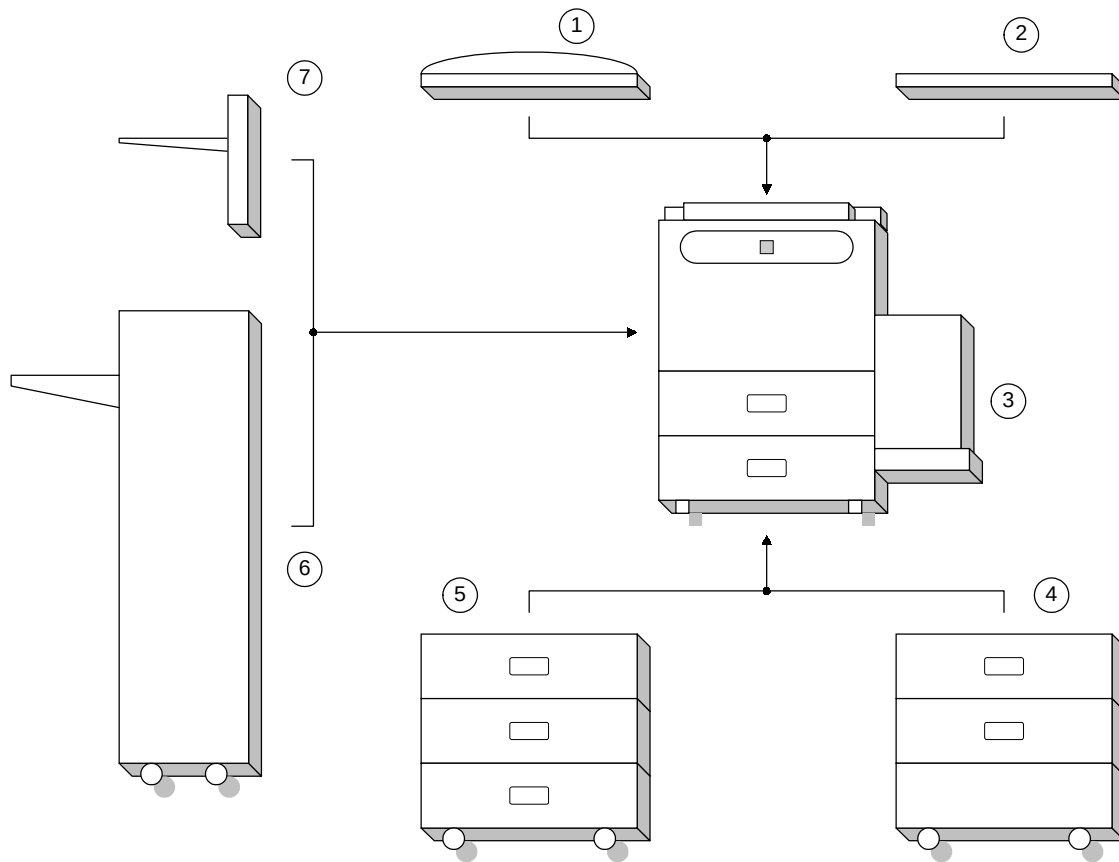
Copy Paper Capacity:

Paper Tray	By-pass Feed	LCT
About 500 sheets x1	About 40 sheets	About 1000 sheets

Hard Disk:	More than 1.0 GB, Fast SCSI-2						
Duplex Tray Capacity	A4/11" x 8 1/2": 50 sheets A3/11" x 17": 50 sheets (80 g/m ² , 20 lb paper) 30 sheets (81 ~ 105 g/m ² , 21.5 ~ 27.9 lb paper)						
Toner Replenishment:	Cartridge exchange (700 g/cartridge)						
Toner Yield:	20K copies (A4, 6% full black, ID Level 4)						
Optional Equipment:	• Platen cover • Document feeder • Paper tray unit with two paper trays • Paper tray unit with three paper trays • Finisher • Key counter • Tray heater • Optical anti-condensation heater • Drum heater • 500-sheet receiving tray						
Copy Tray Capacity	<table> <tr> <td>B4/8 1/2" x 14" ~ A4/8 1/2" x 11"</td><td>500 sheets</td></tr> <tr> <td>A3/11" x 17"</td><td>200 sheets</td></tr> <tr> <td>Less than B5/5 1/2" x 8 1/2":</td><td>200 sheets</td></tr> </table>	B4/8 1/2" x 14" ~ A4/8 1/2" x 11"	500 sheets	A3/11" x 17"	200 sheets	Less than B5/5 1/2" x 8 1/2":	200 sheets
B4/8 1/2" x 14" ~ A4/8 1/2" x 11"	500 sheets						
A3/11" x 17"	200 sheets						
Less than B5/5 1/2" x 8 1/2":	200 sheets						

1.2 MACHINE CONFIGURATION

Rev. 03/98



NOTE: Only items marked * are new items.

Item	Machine Code	No.
Copier	A217	3
*ADF (Option)	A663 (DF64)	1
Paper Feed Unit (Option)	A549 (PS290)	5
	A550 (PS280)	4
⇒ *Finisher (Option)	A612 (SR710)	6
500-sheet Receiving Tray (Option)	A615 (TYPE D)	7
Platen Cover (Option)	A381 (TYPE 540)	2

1.3 ELECTRICAL COMPONENT DESCRIPTIONS

Refer to the electrical component layout and the point-to-point diagram on the waterproof paper in the pocket for the locations of these components.

*: New or modified components.

Symbol	Index No.	Description	Note
Printed Circuit Boards			
PCB1	90	SCU (System Control Unit)	Controls all copier functions both directly or through other control boards.
PCB2	89	AC Drive	Provides ac power to the exposure lamp and fusing lamps.
PCB3	92	DC Power Supply	Provides dc power.
PCB4	93	BCU	Controls the mechanical parts of the printer.
PCB5	80	Charge High Voltage Supply	Supplies high voltage to the charge corona unit.
PCB6	85	High Voltage Control	Controls the high voltage boards and the quenching lamp.
PCB7	87	Operation Panel	Controls the touch panel display and LED matrix, and monitors the key matrix.
PCB8	79	Scanner Drive	Drives the scanner motor.
PCB9	81	EX-IPU (Extended Image Processing Unit)	Processes the video signal from the SBU and sends the video signal to the LD unit.
PCB10	84	SBU (Sensor Board Unit)	Contains the CCD, and outputs a video signal to the EX-IPU board.
PCB11	94	Lamp Stabilizer	Provides dc power for the exposure lamp.
PCB12	86	Main Scan Synchronization Detector – 1	Detects the laser beam at the start of the main scan.
PCB13	83	Main Scan Synchronization Detector – 2	Detects the laser beam at the end of the main scan.
PCB14	31	Transfer High Voltage	Supplies high voltage to the transfer belt.
PCB15	33	Development Bias Power Pack	Supplies high voltage to the development roller.
PCB16	40	Duplex Control	Controls the operation of the duplex tray.
PCB17	N/A	Liquid Crystal Display	Controls the guidance display and displays guidance for machine operation.
PCB18	51	LCT Interface	Interfaces the LCT control signal between the main board and the LCT.
PCB19	91	Relay Board	Switches ac power to either the dc drive board (if the main switch is on) or to the heaters (if the main switch is off).
PCB20	7	Laser Diode Drive	Controls the laser diode.

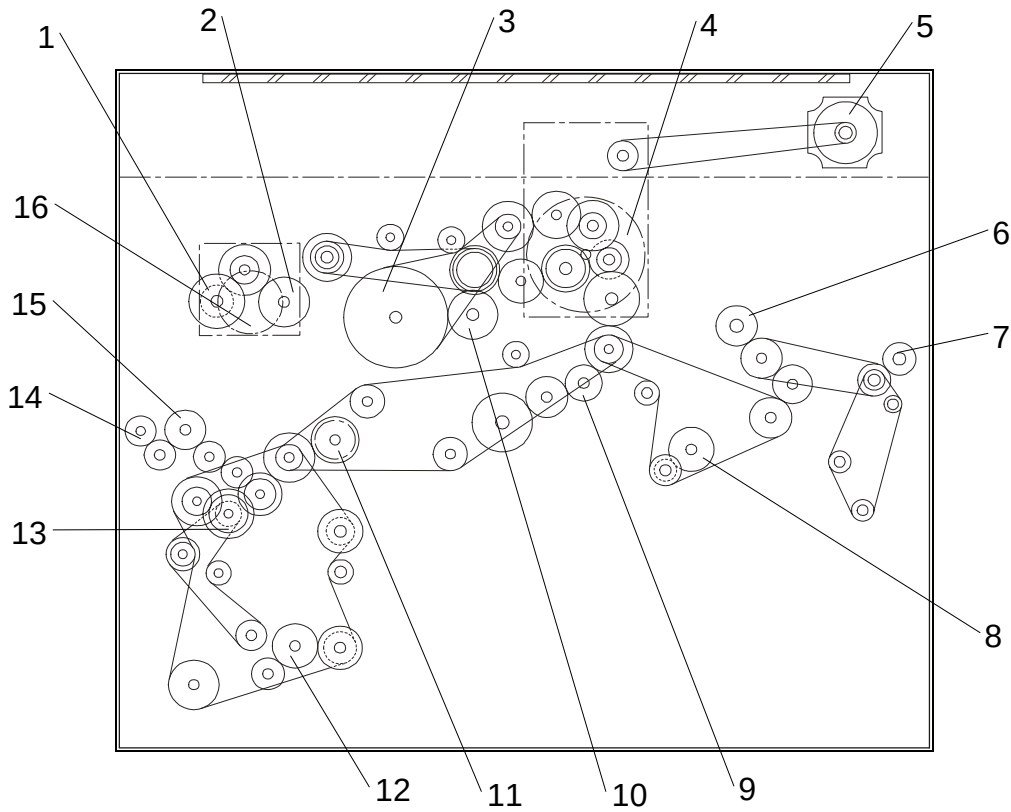
Symbol	Index No.	Description	Note
Motors			
M1	57	Main	Drives the main body components.
M2	66	Toner Bottle Drive	Rotates the toner bottle to supply toner to the toner supply unit.
M3	73	Tray Lift	Raises the bottom plate in the paper tray.
M4	56	Polygonal Mirror	Turns the polygonal mirror.
M5	48	LCT Lift	Lifts up and lowers the LCT bottom plate.
M6	74	Optics Exhaust Fan	Removes heat from the optics unit.
M7	65	IPU Fan	Removes heat from the IPU board.
M8	78	Exhaust Fan	Removes heat from around the fusing unit.
M9	60	Ozone Fan	Removes ozone-laden air from inside the machine.
M10	55	Scanner Drive	Drives the 1 st and 2 nd scanners (dc stepper motor).
M11	36	Duplex Feed	Drives the feed roller and moves the bottom plate up and down.
M12	39	End Fence Jogger	Drives the end fence jogger to square the paper stack.
M13	38	Side Fence Jogger	Drives the side fence jogger to square the paper stack.
M14	75	DC Drive Board Fan	Removes heat from around the DC drive board.
M15	68	Charge Inlet Fan	Provides air flow around the charge corona unit section.
* M16	59	Development Drive	Drives the development unit.
Sensors			
S1	13	By-pass Feed Paper Width	Informs the CPU what width paper is in the by-pass feed table.
S2	15	By-pass Feed Paper End	Informs the CPU that there is no paper in the by-pass tray.
S3	18	Tray Paper End	Informs the CPU when the paper tray runs out of paper.
S4	46	Upper Relay	Detects the leading edge of paper from the paper tray and duplex unit to determine the stop timing of the paper feed clutch and duplex feed motor. Also detects misfeeds.
S5	16	Tray Upper Limit	Detects the height of the paper stack in the paper tray to stop the upper tray lift motor.
S6	47	Lower Relay	Detects misfeeds.
S7	49	LCT Lower Limit	Sends a signal to the CPU to stop lowering the LCT bottom plate.

Symbol	Index No.	Description	Note
S8	50	LCT Paper End	Inform the CPU when the LCT runs out of paper.
S9	12	LCT Upper Limit	Signals the CPU to stop lifting the LCT bottom plate.
S10	19	Registration	Detects the leading edge of the copy paper to determine the stop timing of the paper feed clutch, and detects misfeeds.
S11	29	Image Density (ID)	Detects the density of various patterns on the drum during process control.
S12	30	Toner Density (TD)	Detects the amount of toner inside the development unit.
S13	1	Scanner HP	Inform the CPU when the 1st and 2nd scanners are at the home position.
S14	8	Original Length-1	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S15	9	Original Length-2	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S16	24	Fusing Exit	Detects misfeeds.
S17	6	Platen Cover	Inform the CPU whether the platen cover is up or down (related to APS/ARE functions). ARE: Auto Reduce and Enlarge
S18	32	Toner End	Instructs the CPU to add toner to the toner supply unit, and detects toner end conditions.
S19	28	Auto Response	Returns the operation panel display and exits from the energy saver mode.
S20	10	Transfer Belt Position	Inform the CPU of the current position of the transfer belt unit.
S21	2	Original Width	Detects the width of the original. This is one of the APS (Auto Paper Select) sensors.
S22	34	Duplex Paper End	Detects paper in the duplex tray.
S23	35	Duplex Turn	Detects the trailing edge of the copy paper to determine the jogging timing, and detects misfeeds.
S24	42	Duplex Entrance	Detects misfeeds.
S25	37	Side Fence Jogger HP	Detects the home position of the duplex side fence jogger.
S26	41	End Fence Jogger HP	Detects the home position of the duplex end fence jogger.
S27	23	Toner Overflow	Detects when the used toner collection bottle is full.
S28	14	By-pass Relay	Detects misfeeds.

Symbol	Index No.	Description	Note
Switches			
SW1	11	By-pass Feed Table	Detects whether the by-pass feed table is open or closed.
SW2	53	Tray Down	Sends a signal to the CPU to lower the LCT bottom plate.
SW3	20	Tray Paper Size	Determines what size of paper is in the paper tray.
SW4	54	LCT	Cuts the dc power line and detects whether the LCT is open or not.
SW5	52	LCT Cover	Cuts the dc power line of the LCT lift motor.
SW6	27	Main	Supplies power to the copier.
SW7	26	Front Cover Safety	Cuts the dc power line and detects whether the front cover is open or not.
Magnetic Clutches			
CL1	61	Toner Supply	Turns the toner supply roller to supply toner to the development unit.
* CL2		Not used	
CL3	76	Transfer Belt Lift	Controls the touch and release movement of the transfer belt unit.
CL4	58	Registration	Drives the registration rollers.
CL5	63	By-pass Feed	Starts paper feed from the by-pass feed table or LCT.
CL6	71	Relay	Drives the relay rollers.
CL7	72	Paper Feed	Starts paper feed from the paper tray.
CL8	62	By-pass Relay	Drives the by-pass relay rollers.
Solenoids			
SOL1	67	By-pass Pick-up	Drops the pick-up roller to the by-pass paper feed position. When paper is fed from the LCT, this solenoid assists SOL3.
SOL2	77	Junction Gate	Moves the junction gate to direct copies to the duplex tray or to the paper exit.
SOL3	64	LCT Pick-up	Drops the pick-up roller all the way down to the LCT paper feed position from the by-pass paper feed position.
SOL4	69	Pick-up	Controls the up/down movement of the pick-up roller in the paper tray.
SOL5	70	Separation	Controls the up/down movement of the separation roller at the paper tray feed station.

Symbol	Index No.	Description	Note
Lamps			
L1	3	Exposure	Applies high intensity light to the original for exposure.
L2	43	Fusing	Provides heat to the hot roller.
L3	88	Quenching	Neutralizes any charge remaining on the drum surface after cleaning.
Heaters			
H1	21	Drum (option)	Turns on when the main switch is off to prevent moisture from forming around the drum.
H2	5	Optics Anti-condensation (option)	Turns on when the main switch is off to prevent moisture from forming on the optics.
H3	22	Tray (option)	Turns on when the main switch is off to keep paper dry in the paper tray.
Thermistors			
TH1	45	Fusing	Monitors the temperature at the central area of the hot roller.
Thermofuses			
TF1	44	Fusing	Provides back-up overhear protection in the fusing unit.
Thermoswitch			
TS1	4	Exposure Lamp	Opens the exposure lamp circuit if the 1st scanner overheats.
Counters			
CO1	25	Total	Keeps track of the total number of copies made.
CO2	N/A	Key (option)	Used for control of authorized use. The copier will not operate until it is installed, when this option is enabled.
Others			
CB1	17	Circuit Breaker (220 ~ 240V machines only)	Provides back-up high current protection for electrical components.
HDD	82	Hard Disk Drive	Scanned image data is compressed and held here temporarily during copying; also holds user stamp data.

1.4 DRIVE LAYOUT



The development drive mechanism has been changed. (See Drive Mechanism for more information.)

*: New or modified components.

1. Toner Supply Clutch	9. Transfer Belt Drive Gear
* 2. Development Gear	10. Cleaning Blade Drive Gear
3. Drum Drive Pulley	11. Registration Clutch
4. Main Motor	12. Paper Feed Clutch
5. Scanner Drive Gear	13. Relay Clutch
6. Fusing Drive Gear	14. By-pass Feed Clutch
7. Exit Drive Gear	15. By-pass Relay Relay Clutch
8. Toner Collection Bottle Drive Gear	* 16. Development Drive Motor

2. DIFFERENCES FROM THE A133 MACHINE

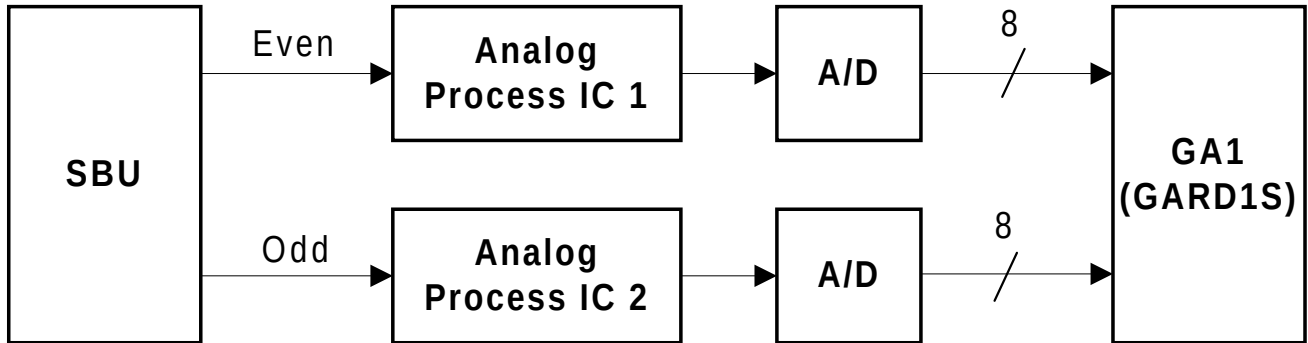
Unit	Item	Details		Main Reasons
		A133	A217	
Scanner	Scanner speed	200 mm/s	250 mm/s	Increased CPM
	Scanner lamp	75V 200W	75V 140W	High sensitivity CCD
Image Processing	Analog Process IC	1 pc	2 pcs	Faster image processing
Laser Exposure	Laser power on the OPC surface	1.3 mW	1.66 mW	Increased CPM
	Polygon motor rotation speed	31,496 rpm	39,370 rpm	Increased CPM
Toner Supply	Operation	---	When opening the toner supply unit over 60 degrees, the toner supply unit automatically opens out to 90 degrees.	To facilitate toner bottle replacement.
Paper Tray	Side fence	---	Secured with screws	To prevent image skew
	Housing	---	A pawl has been added	To remove jammed paper in the machine when the tray is drawn out.
Fusing Unit	Material of the housing	Plastic	Metal	Increased fusing pressure
	Fusing lamp	790W	930W	Increased CPM
Development Unit	Development Drive	Main Motor Drive	Development Drive Motor	Reduce Main Motor Torque

A217 Copier

3. IMAGE PROCESSING

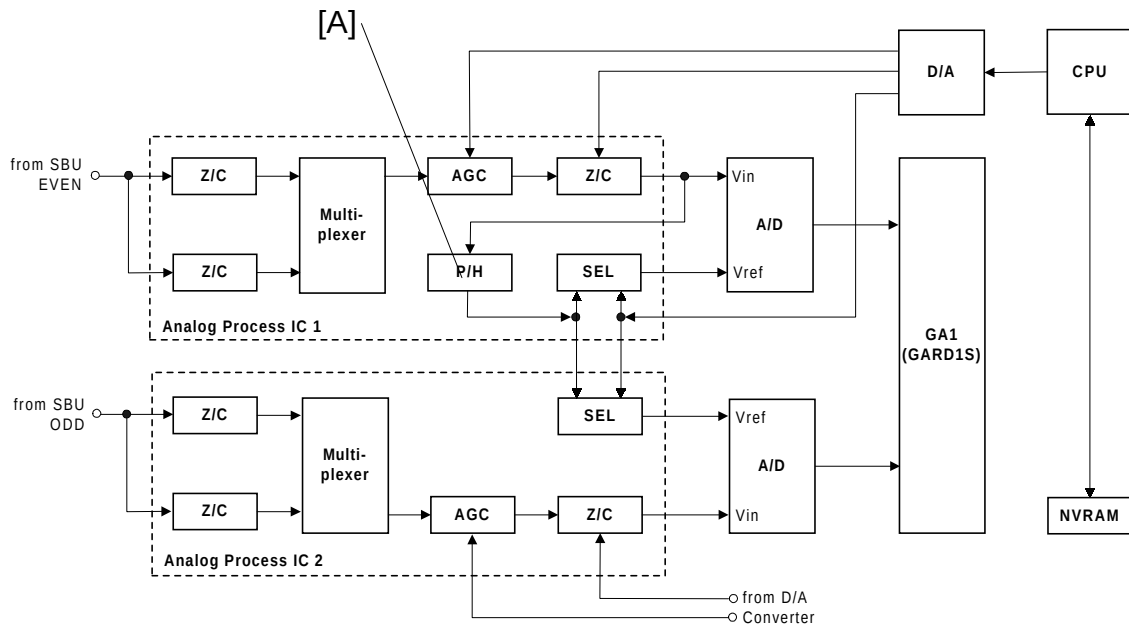
3.1 EX-IPU

3.1.1 OVERVIEW



Analog signals for odd and even pixels from the SBU undergo analog processing and A/D conversion individually, then these signals go to GA1. This is to speed up the image processing.

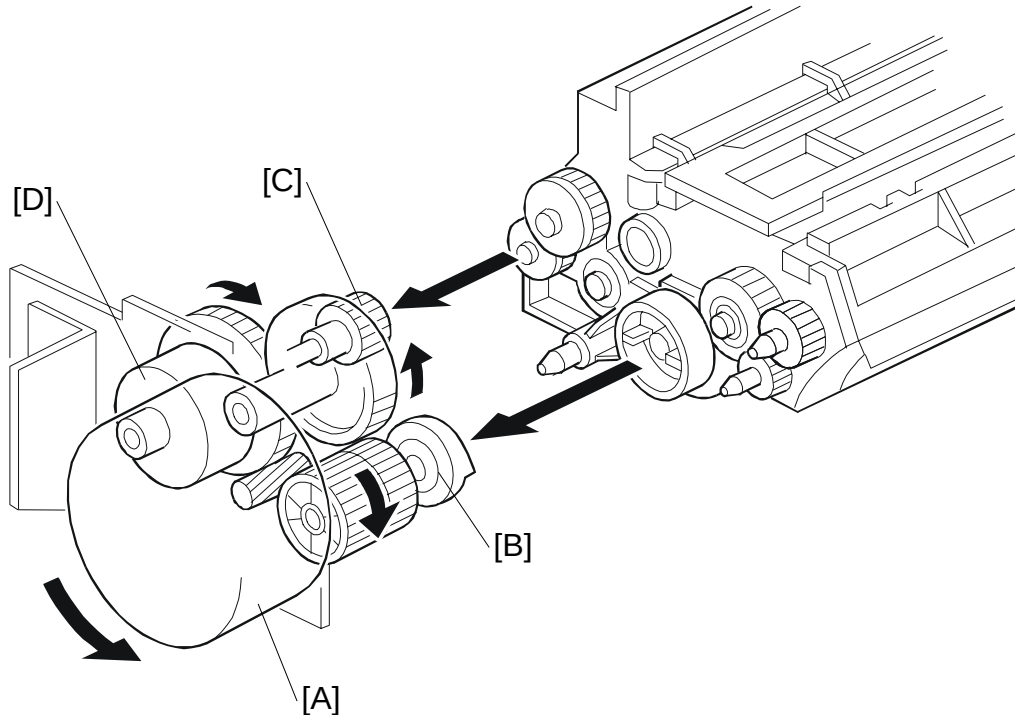
3.1.3 AUTO IMAGE DENSITY (ADS)



This function is the same as in the A133 machine. However, in this machine, the CPU detects the peak white level only for even pixels using the P/H (Peak Hold) circuit [A]. This data will be used for the odd pixels.

4. DEVELOPMENT

4.1 DEVELOPMENT DRIVE MECHANISM



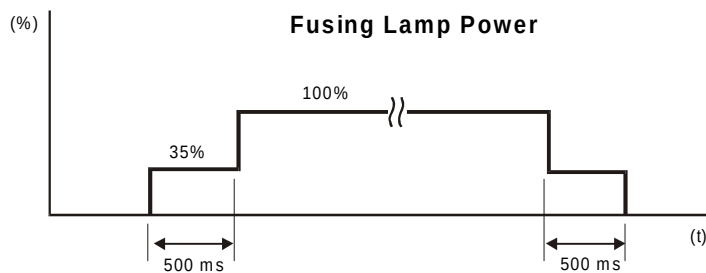
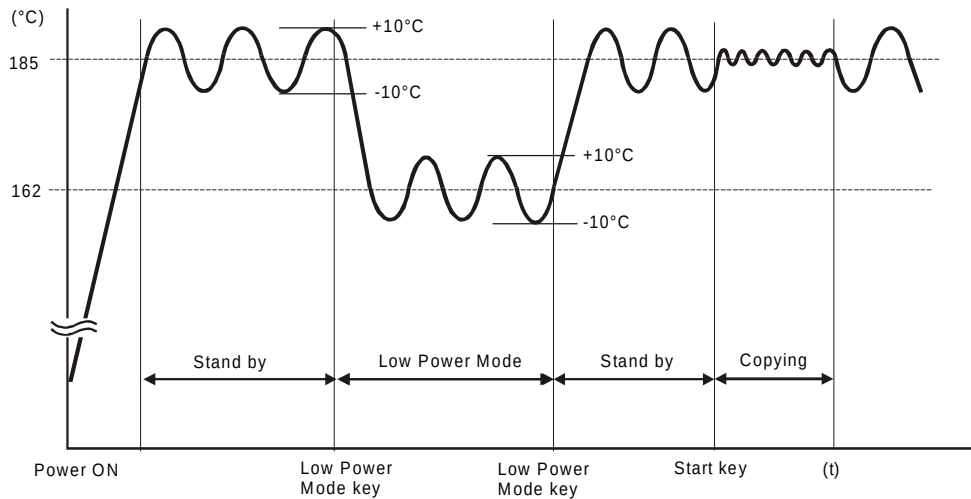
In the A133 machine, the main motor drives the development roller and the toner supply roller. However, in this machine, the development drive motor [A] drives the development drive gear [B], which drives the gears in the development unit and the toner supply roller, which is driven by the gear [C] when the toner supply clutch [D] activates.

This reduces the main motor torque.

5. IMAGE FUSING

5.1 FUSING TEMPERATURE CONTROL

5.1.1 OVERVIEW



5.1.2 ON/OFF CONTROL

NOTE: The following explanation is for the 230V machine only.

To prevent the power supply from the inlet from fluctuating when the fusing lamp turns on, this machine controls the fusing temperature as follows.

1. When the fusing lamp turns on, 35% of the ac power is applied to the lamp for 500 ms, then full ac power is applied. In the fusing lamp off condition, ac power is reduced to 35% for 500 ms, then cut.
2. When not copying, the BCU (Base-Engine Control Unit) keeps the fusing temperature at the appropriate fusing temperature $\pm 10^{\circ}\text{C}$. This reduces the number of times the fusing lamp switches on/off.

6. ENERGY SAVER AND ENERGY STAR

The energy star and energy saver functions are the same as for the A133 machine. The programming modes for these energy saver functions are as follows.

- 115V machine -

Mode	Method	Selectable values	Default	Unit/Step
Auto off timer	UP mode	10 ~ 240 min	60 min	10 min
Low power timer	UP mode	1 ~ 240 min	15 min	1 min
Recovery time from the low power mode	SP mode 5920	10 s (175°C) 20 s (162°C) 30 s (150°C)	20 s (162°C)	
Duplex priority	UP mode	1 sided to 1 sided 1 sided to 2 sided 2 sided to 2 sided	1 sided to 2 sided	
Auto off mode	SP mode 5303	Enabled Disabled	Enabled	

- 230V machine -

Mode	Method	Selectable values	Default	Unit/Step
Auto off timer	This function only works in 115V machines.			
Low power timer	UP mode	1 ~ 15 min	10 min	1 min
Recovery time from the low power mode	SP mode 5920	10 s (175°C) 20 s (162°C) 30 s (150°C)	20 s (162°C)	
Duplex priority	UP mode	1 sided to 1 sided 1 sided to 2 sided 2 sided to 2 sided	1 sided to 1 sided	
Auto off mode	This function only works in 115V machines.			

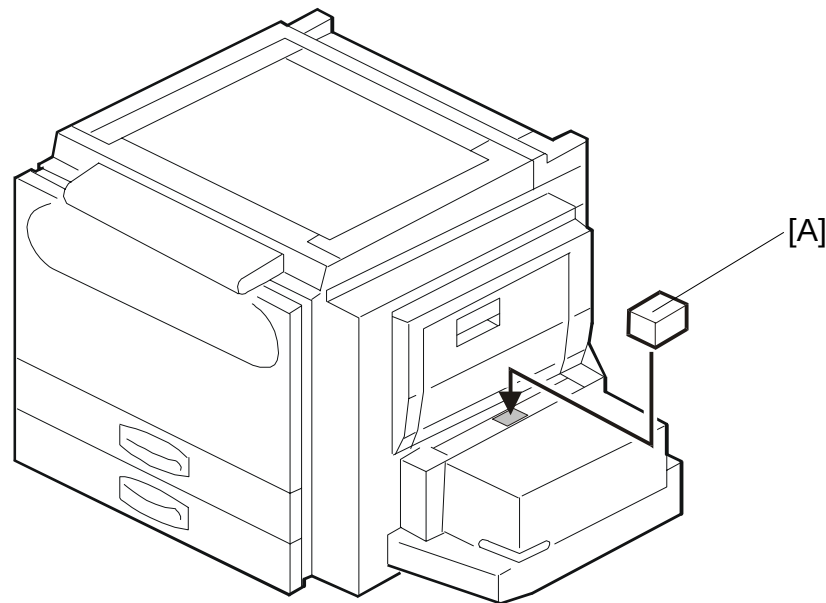
UP Mode: USER Program Mode

SP Mode Service Program Mode

7. INSTALLATION PROCEDURE

The installation procedure of this machine is completely the same as for the A133 machine except for the followings.

1. Do the following step after step 31 of the installation procedure for the A133 machine.



32. Attach the sponge [A] to the LCT as shown above illustration.
2. When the machine is installed in France, do the following step after step 35 of the installation procedure for the A133 machine.

- France Only

36. Change switch. 8 of DIP SW 201 on the BCU to "ON".

8. SERVICE TABLES

8.1 SP MODE

NOTE: 1) Items marked “#” are new or modified items.
 2) In the Function column, comments are in italics.
 3) In the Settings column, the default value is in bold letters.
 4) An asterisk “*” after the mode number means that this mode is stored in the NVRAM. If you do a RAM reset, all these SP modes will be reset to their factory settings.

Mode No.			Function	Settings
Class 1	Class 2			
1001 *		Leading Edge Registration	Adjusts the printing leading edge registration using Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -. The specification is 3 ±2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	
1002 *	1 *	Side-to-Side Registration (Duplex)	Adjusts the printing side-to-side registration from the duplex tray using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -. The specification is 2 ±1.5 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details on SP1002</i>	
	2 *	Side-to-Side Registration (1st paper feed)	Adjusts the printing side-to-side registration from the 1st paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -. The specification is 2 ±1.5 mm.</i>	
	3 *	Side-to-Side Registration (2nd paper feed: Option PFU tray 1)	Adjusts the printing side-to-side registration from the 2nd paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm

Mode No.			Function	Settings
Class 1	Class 2			
1002 *			Use the ●/* key to toggle between + and -. The specification is 2 ±1.5 mm.	
	4 *	Side-to-Side Registration (3rd paper feed: Option PFU tray 2 if present)	Adjusts the printing side-to-side registration from the 3rd paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -. The specification is 2 ±1.5 mm.	
	5 *	Side-to-Side Registration (4th paper feed: Option PFU tray 3 if present)	Adjusts the printing side-to-side registration from the 4th paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -. The specification is 2 ±1.5 mm.	
	6 *	Side-to-Side Registration (By-pass feed)	Adjusts the printing side-to-side registration from the by-pass feed table using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -. The specification is 2 ±1.5 mm.	
	7 *	Side-to-Side Registration (LCT)	Adjusts the printing side-to-side registration from the LCT using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -. The specification is 2 ±1.5 mm.	
1003 *	1 *	Paper Feed Timing (Paper Feed Trays)	Adjusts the relay clutch timing at registration. The relay clutch timing determines the amount of paper buckle at registration. (An increased setting leads to more buckling.)	+9 ~ -9 1 mm/step + 0 mm
	2 *	Paper Feed Timing (By-pass, LCT)		
1006 *		Double copy side-to-side registration	Adjusts the image position from the center line in double copy mode.	+9 ~ -9 1 mm/step + 0 mm

Mode No.			Function	Settings
Class 1	Class 2			
			<i>Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	
1007		By-pass Feed Paper Size Display	Displays the paper width sensor data for the by-pass feed table.	
1008 *	1 *	Duplex Jogger Fence Adjustment (Side Fence)	Adjusts the stop position of the side jogger fence span of the duplex unit.	+4 ~ -4 0.5 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -.</i>	
	2 *	Duplex Jogger Fence Adjustment (End Fence)	Adjusts the stop position of the end jogger fence span of the duplex unit.	+4 ~ -4 0.5 mm/step + 0.0 mm
			<i>Use the ●/* key to toggle between + and -.</i>	
1103 *		Fusing Idling	Selects whether fusing idling is done or not.	On Off
			<i>Normally disabled in this machine. However, if fusing is incomplete on the 1st and 2nd copies, switch it on. This may occur if the room is cold.</i>	
1104 *		Fusing Temperature Control	Selects the fusing temperature control mode.	On/Off Phase
1105 *		Fusing Temperature Adjustment	Adjusts the fusing temperature.	170 ~ 200 1°C/step 185°C
1106		Fusing Temperature Display	Displays the fusing temperature.	
# 1900		By-pass Feed 8.5" Width	Selects the paper length of the 8.5" width paper.	X11" (8.5"x11") X14" (8.5"x14")
			<i>This SP is 115V version only</i>	
2001 *	1 *	Grid Voltage Adjustment (For copying)	Adjusts the voltage applied to the grid plate during copying.	600 ~ 1000 1 V/step 940 V
			<i>Do not adjust.</i>	
	2 *	Grid Voltage Adjustment (For ID sensor pattern)	Adjusts the voltage applied to the grid plate when making the ID sensor pattern.	600 ~ 1000 1 V/step 650 V
			<i>Do not adjust.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
	5 *	Charge Corona Current Adjustment	Adjusts the current applied to the charge corona wire. Do not adjust.	900 ~ 1300 1 μ A/step 1100 μA
2101 *	1 *	Leading Edge Erase Margin (Printing)	Adjusts the leading edge erase margin. <i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details on SP2101.</i>	0.0 ~ 9.0 0.1 mm/step 3.0 mm
2101 *	2 *	Trailing Edge Erase Margin (Printing)	Adjusts the trailing edge erase margin. <i>The specification is 2 ± 2 mm.</i>	0.0 ~ 9.0 0.1 mm/step 2.0 mm
	3 *	Left Side Edge Erase Margin (Printing)	Adjusts the left side erase margin. <i>The specification is 2 ± 1.5 mm.</i>	0.0 ~ 9.0 0.1 mm/step 2.0 mm
	4 *	Right Side Edge Erase Margin (Printing)	Adjusts the right side erase margin. The specification is $2 + 2.5$ mm. - 1.5	0.0 ~ 9.0 0.1 mm/step 2.0 mm
2103 *		LD Power Adjustment	Adjusts the LD power. Do not change the value.	-127 ~ +127 2.1 μ W/step +0
2201 *	1 *	Development Bias Adjustment (for copying)	Adjusts the development bias during copying. <i>This can be adjusted as a temporary measure if faint copies appear due to an aging drum.</i>	200 ~ 700 1 V/step 550 V
	2 *	Development Bias Adjustment (for ID sensor pattern)	Adjusts the development bias when making the ID sensor pattern. <i>This can be adjusted as a temporary measure if faint copies appear due to an aging drum.</i>	200 ~ 700 1 V/step 310 V

Mode No.			Function	Settings
Class 1	Class 2			
2207		Forced Toner Supply	Forces the toner bottle to supply toner to the toner supply unit for 30 seconds.	
			<i>Toner supply finishes automatically after 30 seconds. This process is not normally needed in the field for this model. At installation, doing the 50-page free run also supplies toner to the development unit.</i>	
2208 *	1 *	Toner Supply Mode	Selects the toner supply mode.	Detect Fixed
			<i>Use fixed supply mode only as a temporary measure if process control is not working.</i>	
	2 *	Toner Supply Ratio (Fixed Supply Mode)	Selects the toner supply ratio for Fixed Supply Mode.	6% 15% 30%
			<i>Use a higher value if the user tends to make lots of copies that have a high proportion of black.</i>	
2209 *		Toner Supply Rate (Detect Supply Mode)	Adjusts the toner supply rate for Detect Supply Mode.	50 ~ 200 1 mg/s / step 116 mg/s
			<i>Increasing this value reduces the toner supply clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black.</i>	
2210 *		ID Detection Interval	Changes the interval for making the ID sensor pattern (VSP/VSG detection).	10 ~ 200 1 copy/step 200 copies
			<i>Reducing the interval will also reduce the CPM. Do not adjust this.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
2220 *		VTREF Manual Setting	Adjust the VTREF of the TD sensor. <i>Change this value after replacing the development unit with another one that already contains toner. For example, when using a development unit from another machine for test purposes, do the following:</i> 1. Check the value of SP2220 in both the machine containing the test unit and the machine that you are going to move it to. 2. Install the test development unit, then input the VTREF for this unit into SP2220. 3. After the test, put back the old development unit, and change SP2220 back to the original value.	1.50 ~ 3.00 0.01V/step 2.52V
2223 *		VT Display	Displays the TD sensor output voltage.	
2301 *	1 *	Transfer Current Adjustment (1st side of the paper)	Adjusts the current applied to the transfer belt during copying on the 1st side of the paper. <i>If the user uses thicker paper, the current may have to be increased to ensure sufficient transfer of toner.</i>	10 ~ 60 1 μ A/step 40 μA
		Transfer Current Adjustment (2nd side of the paper)	Adjusts the current applied to the transfer belt during copying on the 2nd side of the paper.	
	2 *	Transfer Current Adjustment (2nd side of the paper)	Adjusts the current applied to the transfer belt during copying on the 2nd side of the paper.	10 ~ 60 1 μ A/step 40 μA
			<i>See above.</i>	
2301 *	6 *	Transfer Current Adjustment (By-pass Feed)	Adjusts the current applied to the transfer belt during copying from the by-pass feed table. <i>See above; note that thicker paper can be fed from the bypass feed tray, so the factory setting is higher.</i>	10 ~ 60 1 μ A/step 60 μA
2801		TD Sensor Initial Setting	Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V.	

Mode No.			Function	Settings
Class 1	Class 2			
2801			<i>Use this mode only after installing the machine, changing the TD sensor, or the adding new developer.</i>	
2803		Forced Charge Corona Wire Cleaning	Forces the charge corona wire cleaning motor to start cleaning. <i>This only works if the optional wire cleaning motor is installed.</i>	
2804 *	1 *	Charge Corona Wire Cleaning Enable/Disable	Determines whether to clean the charge corona wire every time interval set with SP 2804-2. <i>This only works if the optional wire cleaning motor is installed.</i>	Enabled Disabled
	2 *	Charge Corona Wire Cleaning Interval	Changes the interval for charge corona wire cleaning. <i>This only works if the optional wire cleaning motor is installed.</i>	100 ~ 10000 100 copies/step 2500 copies
2902	1	Test Pattern Printing (Analog Video Processing)	Prints the test patterns for analog video processing. See section 4 2.2.2 for how to print test patterns. 0. Not used 1. 16 gradations 2. 128-dot intervals 3. 64-dot intervals <i>This SP mode is useful for finding whether the SBU or EX-IPU failed. If the printout is OK, the SBU is defective. If the printout is not OK, the EX-IPU is defective.</i>	
	2	Test Pattern Printing (Digital Video Processing)	Prints the test patterns for digital video processing. See section 2.2.2 for how to print test patterns. 0. Not used 1. Vertical Stripes 2. Grayscale 3. Cross Pattern 4. Black Bands 5. 300 dpi 6. 600 dpi <i>This SP mode is useful for finding whether the printer or the EX-IPU failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.</i>	
2902	3	Test Pattern Printing (Printing)	Prints the printer test patterns. See section 4.2.2.2 for how to print test patterns. Example: 10. Trimming Area For the other test patterns, refer to section 4.2.2.2. <i>This SP mode is useful for finding the part that failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
2902	7	Test Pattern Printing (GA5)	Prints the test pattern for the GA5 (IC for image compression) 0: Not used 1: Print out	
2905 *		LD PWM Laser Pulse Positioning	Selects the laser pulse positioning type that is used for test printouts and when in binary picture processing mode.	2: Center 3. Left 4. Right 5. Concentrated
			<i>If SP 4904-1 is set to NO, this SP mode is ignored. The "center" setting will be used.</i>	
2906 *		TD Sensor Input Voltage	Use to input the TD sensor control voltage.	4 ~ 10 0.1 V/step 8.0 V
			Factory use only	
2909 *		Main Scan Magnification	Adjusts the magnification in the main scan direction for the printer.	- 2.54~+ 2.54 0.02 %/step + 0.00 %
			<i>Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	
2950 *		Side-to-Side Registration (Base)	Changes the printing start position.	- 12.7~+ 12.7 0.1 mm/step + 0.0 mm
			Factory use only	
3001		ID Sensor Initial Setting	Performs the ID sensor initial setting. The ID sensor output for the bare area of the drum (VSG) is adjusted to $4.0 \pm 0.2V$.	
			<i>This SP mode should be performed after replacing or cleaning the ID sensor or replacing the drum.</i>	
3103 *		ID Sensor Output Display	Displays the current VSG and VSP output.	VSP= X.XXV VSG= X.XXV
			<i>If the ID sensor does not detect the ID pattern, "VSP=5.0v/VSG=5.0v" is displayed.</i> <i>If the ID sensor does not detect the bare area of the drum, "VSP=0.0v/VSG=0.0v" is displayed.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4008 *		Sub Scan Magnification (Scanning)	Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed.	- 9.0 ~ + 9.0 0.1 %/step + 0.0 %
			<i>Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	
4010 *		Leading Edge Registration (Scanning)	Adjusts the leading edge registration for scanning.	- 9.0 ~ + 9.0 0.1 mm/step + 0.0 mm
			<i>(-): the image moves in the direction of the leading edge Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	
4011 *		Side-to Side Registration (Scanning)	Adjusts the side-to-side registration for scanning.	- 9.0 ~ + 9.0 0.1 mm/step + 0.0 mm
			<i>(-): the image disappears at the left side. (+): The image appears. Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i>	
4012 *	1 *	Leading Edge Erase Margin (Scanning)	Adjusts the leading edge margin for scanning.	0.0 ~ 0.9 0.1 mm/step 1.0 mm
			<i>Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.</i>	
	2 *	Trailing Edge Erase Margin (Scanning)	Adjusts the trailing edge margin for scanning.	0.0 ~ 0.9 0.1 mm/step 0.5 mm
			<i>See the comment for SP 4012-1.</i>	
	3 *	Left Side Erase Margin (Scanning)	Adjusts the left side margin for scanning.	0.0 ~ 0.9 0.1 mm/step 1.0 mm
			<i>See the comment for SP 4012-1.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4012 *	4 *	Right Side Erase Margin (Scanning)	Adjusts the right side margin for scanning.	0.0 ~ 0.9 0.1 mm/step 0.5 mm
			<i>See the comment for SP 4012-1.</i>	
4013		Scanner Free Run	Performs a scanner free run with the exposure lamp off.	
4301		APS Sensor Output Display	Displays the size of an original placed on the exposure glass.	
			<i>If A5 or 51/2" x 81/2" is displayed, check the current setting of SP 4303; depending on that SP mode setting, A5 or 51/2" x 81/2" may be displayed if the APS sensors cannot detect the paper size.</i>	
4303 *		APS Small Size Original Detection	Selects whether or not the copier determines that the original is A5/HLT size when the APS sensor does not detect the size.	Not detected A5 length / 51/2" X81/2"
			<i>If "A5 length / 51/2" x 81/2" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise or 51/2" x 81/2". If "Not detected" is selected, "Cannot detect original size" will be displayed.</i>	
4428		Standard White Level Adjustment	Corrects the standard white level of the white plate.	
			<i>This SP mode is for factory use only. Do not change the value.</i>	
# 4901 *	1 *	GA 1 Setting (L-GAIN1)	The value of the standard AGC gain for the analog processing IC 1 after automatic white level adjustment in the factory.	0 ~ 255 1 /step 65
			<i>This SP mode is for factory use only. Do not change the value.</i>	
	2 *	GA 1 Setting (L-GAIN2)	The value of the standard AGC gain for the analog processing IC 2 after automatic white level adjustment in the factory.	0 ~ 255 1 /step 65
			<i>This SP mode is for factory use only. Do not change the value.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
# 4901 *	3 *	GA 1 Setting (W-GAIN1)	The value of the standard AGC gain for the analog processing IC 1 when the main switch is turned on.	0 ~ 255 1 /step 65
			Do not change the value.	
	4 *	GA 1 Setting (W-GAIN2)	The value of the standard AGC gain for the analog processing IC 2 when the main switch is turned on.	0 ~ 255 1 /step 65
			Do not change the value.	
	5 *	GA 1 Setting (B-GAIN 1)	The value of the black level for the analog processing IC 1.	0 ~ 255 1 /step 40
			Do not change the value.	
	6 *	GA 1 Setting (B-GAIN2)	The value of the black level for the analog processing IC 2.	0 ~ 255 1 /step 40
			Do not change the value.	
	7 *	GA 1 Setting (REF)	The value of the standard AGC gain for scanning the white plate.	0 ~ 255 1 /step 170
			Do not change the value.	
4903 *	1 *	GA 3 Setting (Filter Level)	Selects the strengths of the MTF and smoothing filters. bit 7, 6: Letter Mode (MTF) 00: Normal 01: Weak 10: Weaker 11: Weakest bit 5, 4: Generation Mode (MTF) 00: Normal 01: Weak 10: Weaker 11: Weakest bit 3: Not used Keep at "0" bit 2: Letter/Photo Mode (Smoothing) 0: Sharp 1: Smooth bit 1: Photo Mode (MTF) 0: Weak 1: Strong bit 0: Photo Mode (Smoothing) 0: Smooth 1: Sharp	0 ~ 255 0

Mode No.			Function	Settings
Class 1	Class 2			
4903*			Input the setting for all 8 bits at once as a decimal value. (e.g. To set the MTF filter strength of the generation mode to 'weak', the input value should be 16 as shown below, assuming all other parameters are at the 'zero' setting. 00010000 → 16 The type of filter used in Photo mode depends on the setting of SP4904-3.	
	2 *	GA 3 Setting (Filter Mode)	Selects the coefficients and strengths of the MTF filter and smoothing filter. Do not change the value.	0 ~ 16 1 /step 3
	3	Not used		
	4 *	GA 3 Setting (White Threshold)	Changes the threshold level for dot screen detection processing. Do not change the value.	0 ~ 255 1 /step 80
	5 *	GA3 Setting (Full Size)	Selects whether the copy image is always in the full size mode even if the magnification ratio has been changed. <i>This SP mode is used for checking the magnification function in the main scan direction, which is performed by the GA3 chip.</i>	0: Normal Operation 1: Always full size mode
	6	GA 3 Setting (Test Pattern Output)	Prints the test pattern for the GA3 or selects one of the following video data outputs for printing. 0. Normal 1. Test pattern print out 2. Skips the magnification processing. 3. Skips the filter processing 4. Skips the GA3 functions <i>This SP mode is used for checking the GA3 functions.</i>	
	7 *	GA 3 Setting (Main Shift High)	Changes the image shift amount for the main scan direction in magnification mode.	0 ~ 255 1 /step 0
	8 *	GA 3 Setting (Main Shift Low)	Do not change the values of 4903-7 and 4903-8.	

Mode No.			Function	Settings
Class 1	Class 2			
4903*	9 *	GA 3 Setting (Switch Separation)	Changes the threshold ratio for auto text/photo separation processing.	25 ~ 255 1 %/step 170 %
			<i>This is used only in the Japanese model.</i>	
4904 *	1 *	GA4 Setting (Laser Pulse Positioning)	Selects whether LD PWM laser pulse positioning feature is performed or not.	0: OFF 1: ON
			<i>If "OFF" is selected, the copier always uses the "center" setting (pixels will always have a small separation).</i>	
	2 *	GA4 Setting (Photo Matrix)	Selects the matrix size for photo mode.	0: 4 x 4 1: 6 x 6 2: 8 x 8 3: 6 x 6 (New)
			● 8 x 8 is only used if 4904-4 is set to "binary". Also, if 4904-4 is set to binary, 4904-2 will be ignored if the setting is other than 8 x 8. ● 6 x 6 (New) should be selected when a light original is used. ● 4 x 4 leads to a sharper image.	
4904 *	3 *	GA4 Setting (Filter Select in Photo Mode)	Selects either the MTF filter or the smoothing filter in Photo mode.	0: MTF filter 1: Smoothing filter
			<i>The strength of the MTF filter can be selected with SP4903-1, bit 1. The strength of the Smoothing filter can be selected with SP4903-1, bit 0. If you select the MTF filter, the image resolution is improved. However, the dot screen areas will be faint.</i>	
	4 *	GA4 Setting (Binary Process Mode)	Selects whether binary picture processing mode is performed or not.	0: NO 1: YES
			<i>If "YES" is selected, all image processing modes are handled using binary picture processing mode.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
	6 *	GA4 Setting (Generation Mode)	Selects the line width correction type in the generation mode.	0: Not corrected 1: Thin line-1 2: Thin line-2 3: Thick line
			In generation mode, lines may bulge in the main scan direction. Adjust this SP mode until the result is satisfactory.	
	7 *	GA4 Setting (Image Process mode in Letter/ Photo mode: Letter areas)	Selects the image processing mode used for Letter areas in Letter/Photo mode. 0: 1 x 1 dot processing 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing 3: Error diffusion with 2 x 1 dot processing	
			<i>A larger value causes the image to become lighter. Only works if 4904-4 is at 0.</i>	
	8 *	GA4 Setting (Image Process mode in Letter/Photo mode: Photo Areas)	Selects the image processing mode used for photo areas in the Letter/Photo mode. 0: 1 x 1 dot processing 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing 3: Error diffusion with 2 x 1 dot processing	
			<i>A smaller value causes the image to become more sharp in focus. Only works if 4904-4 is at 0.</i>	
4904 *	10	GA4 Setting (GA4 Test Data)	Prints the test pattern for the GA4 IC, to test the GA4 chip on the EX-IPU. 0: No Print 1: Gradation 2: Cross 3: Black bands	
	12 *	GA4 Setting (BK Thresh Level)	Changes the threshold level for binary picture processing mode.	0 ~ 255 1 /step 40
			<i>A larger value causes the image to become lighter.</i>	
	13 *	GA4 Setting (Top point Level)	The value for pixels at an edge in binary picture processing mode.	0 ~ 255 1 /step 128
			Do not change the value.	

Mode No.			Function	Settings
Class 1	Class 2			
4904*	14 *	GA4 Setting (All Black Level)	The value for black areas in binary picture processing mode. Do not change the value.	0 ~ 255 1 /step 255
	16 *	GA4 Setting (Print Top Point Level)	The value for pixels at an edge in stamp mode. Do not change the value.	0 ~ 255 1 /step 128
	17 *	GA4 Setting (Print All Black Level)	The value for black areas in stamp mode. Do not change the value.	0 ~ 255 1 /step 255
	18 *	GA4 Setting (Dither Pattern)	Selects the dither pattern used in binary picture processing mode. Do not change the value.	0: 70-line 1: 95-line 2: 140-line 3: 180-line
4905	1	Path setting (MSU video in)	Do not change the value	0
4907 *		GA4 Setting (Auto letter/photo separation)	Selects whether the auto letter/photo separation is performed in the Letter/Photo mode or not. Test purposes only	Disabled Enabled
4909 *	1 *	GA4 Setting (Pulse Width Modulation)	Decides the threshold level for selecting the type of pulse width modulation that is used. Do not change the value.	0 ~ 255 1 /step 32
	2 *	GA4 Setting (Line Width Correction 1 : White)	Decides the threshold value for a pixel to be white when line width correction type 1 is performed. Do not change the value.	0 ~ 255 1 /step 48
	3 *	GA4 Setting (Line Width Correction 1 : Black)	Decides the threshold value for a pixel to be black when line width correction type 1 is performed. Do not change the value.	0 ~ 255 1 /step 208
4909 *	4 *	GA4 Setting (Line Width Correction 2 : White)	Decides the threshold value for a pixel to be white when line width correction type 2 is performed. Do not change the value.	0 ~ 255 1 /step 60
	5 *	GA4 Setting (Line Width Correction 2 : Black)	Decides the threshold value for a pixel to be black when line width correction type 2 is performed. Do not change the value.	0 ~ 255 1 /step 192

Mode No.			Function	Settings
Class 1	Class 2			
4909 *	6 *	GA4 Setting (Error Diffusion Gamma)	Selects the gamma type for error diffusion.	0 ~ 7 1 /step 0
			<i>Do not change the value.</i>	
	7 *	GA4 Setting (Edge Detection 1)	Decides the threshold value to calculate the difference value between the object pixel and the surrounding pixels.	0 ~ 255 1 /step 16
			<i>Do not change the value.</i>	
	8 *	GA4 Setting (Edge Detection 2)	Decides the threshold value for detecting the edge area.	0 ~ 255 1 /step 128
			<i>Do not change the value.</i>	
	17 *	GA4 Setting (Background Pattern Merge Method)	Selects whether an image which overlaps a background numbering pattern is converted from positive to negative or not.	0: Not converted 1: Converted
			<i>This SP mode is used when a background numbering pattern is overlapping a solid black area.</i>	
	18 *	GA4 Setting (Stamp Pattern Merge Method)	Selects whether an image which overlaps a stamp pattern is converted from positive to negative or not. The settings 0 and 1 are the same as for 4909-17 above. The setting 2 means that the black level of the stamp (SP4904-17) is inverted (e.g. when the black level of the stamp is 200, the stamp pattern is printed at black level 55.)	0: Not converted 1: Converted 2: Inverted
			<i>This SP mode is used when a stamp pattern is overlapping a solid black area.</i>	
	19	GA4 Setting (Data Path Selection 1)	<i>These SP modes are used for design purposes only. Do not change the settings.</i>	0
	20	GA4 Setting (Data Path Selection 2)	<i>These SP modes are used for design purposes only. Do not change the settings.</i>	0

Mode No.			Function	Settings
Class 1	Class 2			
4911	1	HDD Setting (Media Test)	Checks for bad sectors on the hard disk that develop during machine use. This takes 4 minutes.	
			<i>This SP mode should be done when an abnormal image is printed. There is no need to do this at installation as the hard disk firmware already contains bad sector information, and damage is not likely during transportation. Bad sectors detected with this SP mode will be stored in the E²PROM on the EX-IPU board with the bad sector data copied across from the firmware.</i>	
	2	HDD Setting (Formatting)	Formats the hard disk. This takes 8 minutes. Do not turn off the main switch during this process.	
	3	HDD Setting (Spindle Control)	Decides the disk drive motor (spindle motor) stop timing. Yes: The hard disk stops in low power mode. The first copy after returning to standby will take longer. No: The hard disk keeps going in low power mode	
	4	HDD Setting (Head Retraction)	Press Enter to move the head of the hard disk away from the disk while the disk is turning. The head automatically moves back when a copy is made.	
			<i>This SP should be performed when the machine will be moved without turning the main switch off.</i>	
	5	HDD Setting (Total Storage Capacity)	Input the total storage capacity of the hard disk at replacement.	
			<i>In future, hard disks of various sizes may be available. In this case, use this SP mode when installing a new disk.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
4911	6	HDD Setting (Bad Sector Information Reset)	Resets the bad sector information which is stored in the E ² PROM on the EX-IPU board.	
			<i>This SP should be performed when the hard disk is replaced.</i>	
	7	HDD Setting (Bad Sector Display)	Displays the number of bad sectors there are on the hard disk.	
5019		LCT Paper Size Setting	Selects the paper size for the LCT.	A4 (230V machines) 8 1/2" X 11" (115V machines)
			<i>When changing the setting, the position of the side fences for the LCT should be changed.</i>	
5104 *		A3/11"x17" Double Count	Specifies whether the counter is doubled for A3/11"x17" paper.	No Yes
			<i>If "YES" is selected, the total counter and the current user code counter counts up twice when A3/11"x17" paper is used.</i>	
5106 *		ADS Level Selection	Selects the image density level that is used in ADS mode.	1 ~ 7 1 notch /step 4
5118 *		Disable Copying	Selects whether the copy function is disabled or not.	No Yes
5220 *		Auto Stamp Function	Selects whether the auto stamp function is enabled or not.	On (115V machine) Off (230V machine)
5305		Auto Off Mode	This SP mode is used only for 115V machines (Energy Star standardization). Selects whether the auto off timer setting is enabled or disabled	Enabled Disabled
			<i>When "disabled" is selected, the auto off timer range will be wider than the default timer range. (In UP mode, the user will be able to select a time between 0 and 120 minutes.) If "0" is selected, the auto off timer function is disabled.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
5501 *	1	PM Alarm	Selects whether the PM alarm is enabled or not.	Enabled Disabled
	2	PM Alarm Interval	Sets the PM interval, with an alarm.	0 ~ 255 1k copies/step 120 k copies
			When the setting is "0", this function is disabled.	
5801		Memory All Clear	Resets all correction data for process control and all software counters. Also, returns all modes and adjustments to the default settings. See the "MEMORY ALL CLEAR" section for how to use this SP mode correctly. <i>Normally, this SP mode should not be used.</i> <i>It is used only after replacing the NVRAM, or when the copier malfunctions due to a damaged NVRAM.</i>	
5802		Free Run	Performs a free run. The scanner scans once and the printer prints for the number of copies requested.	
5803	1 ~ 9	Input Check	Displays the signals received from sensors and switches. See the "INPUT CHECK" section for details.	
5804		Output Check	Turns on the electrical components individually for test purposes. See the "OUTPUT CHECK" section for details.	
5807		Option Connection Check	Checks the connectors to the options.	
5811 *		Machine Serial Number	Use to input the machine serial number. <i>This serial number will be printed on the system parameter list.</i>	
5812 *		Service Telephone Number	Use this to input the telephone number of the service representative (this is displayed when a service call condition occurs.) <i>Press the "●/#" key to input a pause (—).</i> <i>Press the "Clear modes" key to delete the telephone number.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
5902		Duplex Tray Capacity Limit except for A3/DLT Copies	Selects the total capacity of the duplex tray except for A3/DLT size paper.	50 sheets 30 sheets
			<i>If there are frequent jams at the duplex unit when using A3 paper, try setting this to 30. For A3/DLT size paper, the total capacity is always 30 sheets.</i>	
# 5903		Max. Copies for Image Rotation	Selects the maximum sets of copies for image rotation in the APS made when the original set at lengthwise direction.	0 ~ 999 1 sheet/step 0 sheet
			<i>When input more the number of the sets of copies than the SP value, the machine automatically rotate the image from lengthwise direction to sideways direction. Value "0" means the image always rotates. Value "999" means enabling this function.</i>	
#5920 *		Fusing Temp. Setting - Low Power Mode	Selects the fusing temperature that will be used in low power mode.	175°C 162°C 150°C
			<i>If a low temperature is selected, it takes more time to reach the ready condition.</i>	
5990	1	SP Mode Data Printing (All Data)	Prints all the system parameter lists. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 6 minutes.</i>	
	2	SP Mode Data Printing (SP Mode Data)	Prints the SP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 2 minutes.</i>	
	3	SP Mode Data Printing (UP Mode Data)	Prints the UP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 2 minutes.</i>	
	4	SP Mode Data Printing (Machine Status Data)	Prints the machine status history data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.	
			<i>Printing takes 2 minutes.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
6006 *	1 *	ADF Side-to-Side Registration	Adjusts the printing side-to-side registration in the ADF mode.	-3 ~ +3 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -.	
6006 *	2 *	ADF Leading Edge Registration (Simplex)	Adjusts the original stop position.	-3 ~ +3 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -.	
	3 *	ADF Leading Edge Registration (Duplex-front)	Adjusts the original stop position against the original left scale in one-sided original mode.	-3 ~ +3 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -.	
	4 *	ADF Leading Edge Registration (Duplex-rear)	Adjusts the original stop position against the original left scale in two-sided original mode.	-3 ~ +3 0.1 mm/step + 0.0 mm
			Use the ●/* key to toggle between + and -.	
For details on the correct way to use SP 6006, see the ADF service manual.				
6009		ADF Free Run	Performs an ADF free run.	
			This is a general free run controlled from the copier. For more detailed free run modes, see the DF manual.	
6105 *		Finisher Staple Position Adjustment	Adjusts the staple position when using the finisher.	- 1~ +3.5 0.5 mm/step +0.0 mm
			Use the ●/* key to toggle between + and -. One staple position: A larger value causes the staple position to shift inward. Two staple position: A larger value causes both staple positions to shift to the rear side of the machine.	
6107		Finisher Free Run	Performs a finisher free run (without stapler).	
			This is a general free run controlled from the copier. For more detailed free run modes, see the finisher manual.	

Mode No.			Function	Settings
Class 1	Class 2			
7004		Total Copy Counter Reset	Japanese version only. Do not change this value.	
7804		PM Counter Reset	Resets the PM counter.	To see the current counter values, print the SP mode data lists (SP 5990).
7807		SC/Jam Counter Reset	Resets the SC and jam counters.	
7808		Resets Counters (except for the total counter)	Resets the following counters: On the data list, between "Total No of Org from ADF" and "Number of SCs: Others", and between "Counter from ADF" and "Staple Mode".	
7810		User Code Number Reset	Resets the user code numbers.	
7901	1	ROM/CPU Version (Operation Panel)	Displays the operation panel board ROM version.	
	2	ROM/CPU Version (MSIS)	Displays the ROM version for the MSIS on the SCU board.	
	3	ROM/CPU Version (Copy App.)	Displays the ROM version for the copy application on the SCU board.	
	4	ROM/CPU Version (BCU:68340)	Displays the CPU version for the fusing controller on the BCU board.	
	5	ROM/CPU Version (AC Power Control)	Displays the ROM version for AC power control on the AC drive board.	
	6	ROM/CPU Version (High Voltage)	Displays the ROM version for the high voltage control board.	
	7	ROM/CPU Version (EX-IPU)	Displays the ROM version for the EX-IPU board.	
	8	ROM/CPU Version (ADF)	Displays the ROM version for the ADF.	
	9	ROM/CPU Version (Paper Feed Unit)	Displays the ROM version for the paper feed unit.	
	10	ROM/CPU Version (Sorter/Finisher)	Displays the ROM version for the sorter/finisher.	

8.2 OUTPUT CHECK TABLE (SP5804)

NOTE: Items marked “#” are new or modified items.

No.	Description	No.	Description
1	Not used	45	Not used
2	Not used	46	Not used
3	Not used	47	Not used
4	Relay Clutch	48	Not used
5	Registration Clutch	49	Not used
6	Paper Feed Clutch	50	Not used
7	Pick-up Solenoid	51	Transport Drive Motor (Op. Finisher)
8	Separation Solenoid	52	Junction Gate Sol. (Op. Finisher)
9	Main Motor	53	Shift Tray Lift Motor (Op. Finisher)
10	Quenching Lamp	54	Jogger Motor (Op. Finisher)
11	Charge Corona and Grid Bias	55	Not used
12	Development Bias	56	Staple Motor (Op. Finisher)
13	Transfer Belt Bias	57	Not used
14	Not used	58	Not used
15	Not used	59	Not used
# 16	Development Drive Motor	60	Duplex Motor (Forward)
17	Toner Supply Motor	61	Duplex Motor (Reverse)
18	Toner Bottle Drive Motor	62	Side Jogger Motor (Duplex tray)
19	Not used	63	End Jogger Motor (Duplex tray)
20	Not used	64	Main Switch (Test auto off mode)
21	ID Sensor	65	Not used
22	Transfer Belt Lift Clutch (Up)	66	Ozone Fan Motor
23	Transfer Belt Lift Clutch (Down)	67	Cooling Fan Motor
24	Junction Gate Solenoid	68	Exhaust Fan Motor
25	Not used	69	Not used
26	1 st Paper Feed Cl. (Optional PFU)	70	Not used
27	1 st Pick-up Sol. (Optional PFU)	71	Not used
28	1 st Separation Sol. (Optional PFU)	72	Not used
29	2 nd Paper Feed Cl. (Optional PFU)	73	Not used
30	2 nd Pick-up Sol. (Optional PFU)	74	Not used
31	2 nd Separation Sol. (Optional PFU)	75	Corona Wire Cleaner (Option)
32	Main Motor (Optional PFU)	76	Charge Corona Bias
33	3 rd Paper Feed Cl. (Optional PFU)	77	Grid Bias
34	3 rd Pick-up Sol. (Optional PFU)	78	Not used
35	3 rd Separation Sol. (Optional PFU)	79	Not used
36	Relay Clutch (Optional PFU)	80	Not used
37	By-pass Feed Clutch	81	DF Feed-in Motor (Forward)
38	Not used	82	DF Feed-in Motor (Reverse)
39	LCT Pick-up Solenoid	83	DF Belt Motor (Forward)
40	LCT/By-pass Pick-up Solenoid	84	DF Belt Motor (Reverse)
41	LCT/By-pass Relay Clutch	85	DF Feed-out Motor (Forward)
42	Not used	86	DF Solenoid
43	Not used	87	DF LEDs
44	Not used	88	Not used

8.3 TEST POINTS/DIP SWITCHES/LEDS

8.3.1 DIP SWITCHES

BCU (Base Engine Control Unit): DIP SW201

No.	Function	ON	OFF
1	Copy Speed	200 mm/s	250 mm/s
2	Development Unit Type	Twin color	Mono color
	Duplex Unit	Installed	Not installed
4	SC Generation	Disabled	Enabled
5	Destination	Off Japan On N. America	Off Europe On Not used
6		Off Off	On On
7	Not used	Keep at “ OFF ”	
8	CPM	50 cpm (A4 size)	51 cpm (A4 size)

Do not change the setting of switches 1 ~ 4, and 7. They should be kept at the setting indicated in bold type in the above table.

SCU (System Control Unit): DIP SW401

No.	Function	ON	OFF
1~8	Not Used		

They should be kept at the “OFF” position.

8.3.2 TEST POINTS

BCU, SCU, and EX-IPU

There are no test points on these boards.

8.3.3 LEDS

Same as those of the A133 machine.

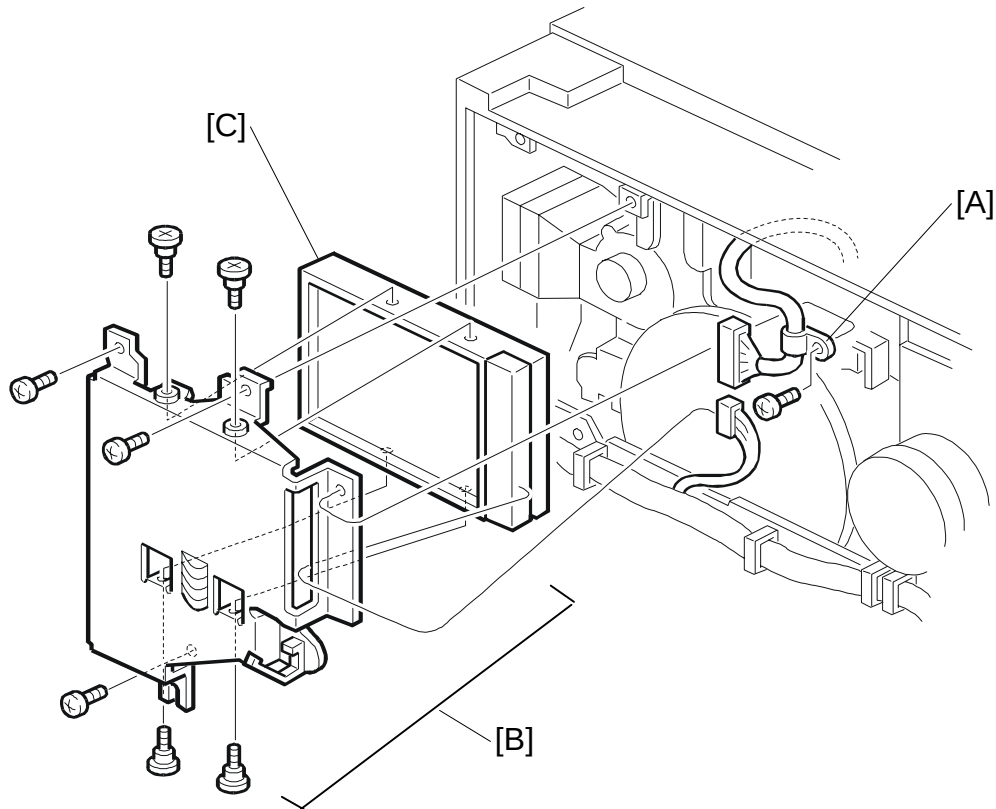
8.3.4 VARIABLE RESISTORS

EX-IPU

There are no variable resistors.

9. REPLACEMENT AND ADJUSTMENT

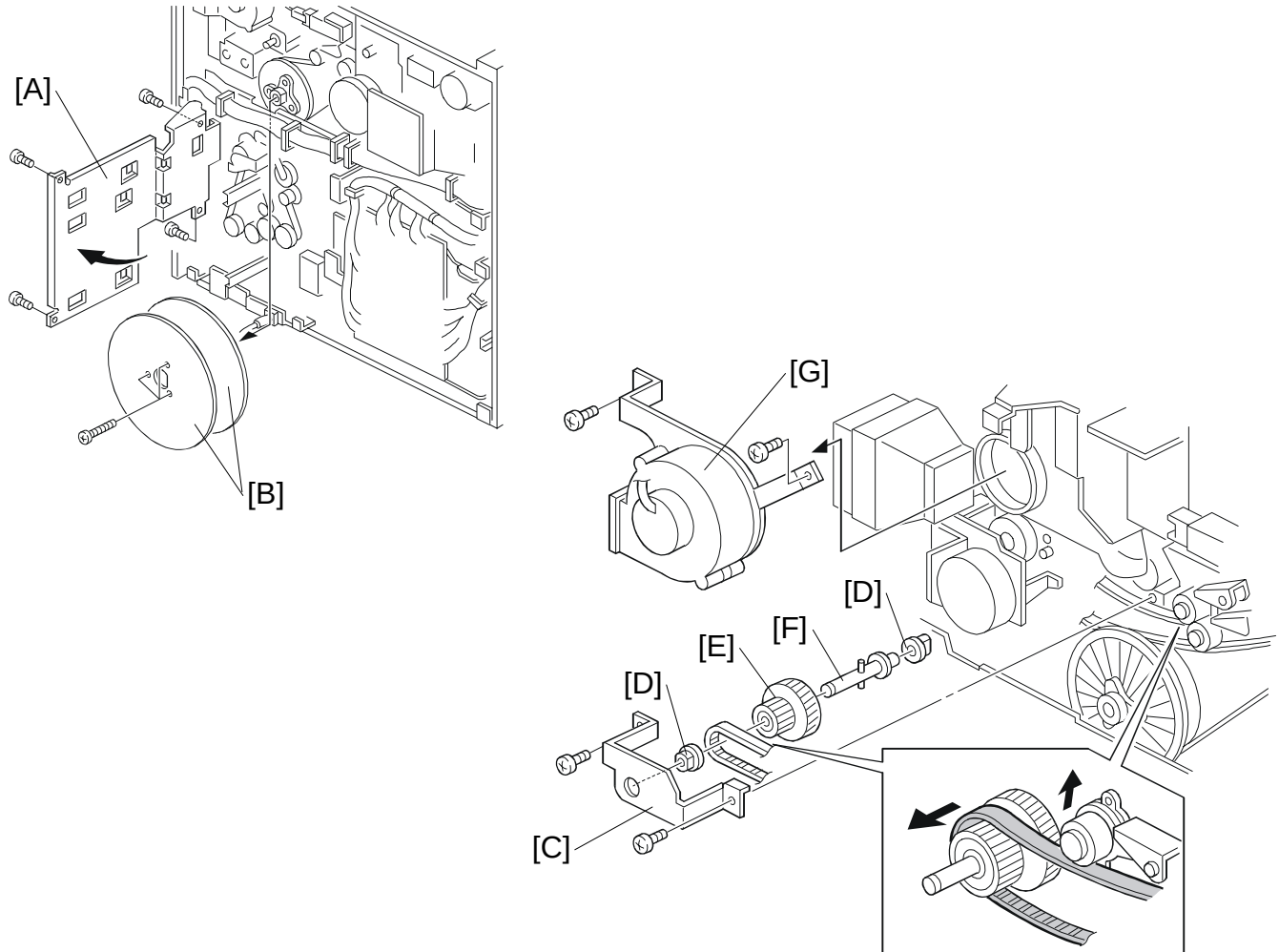
9.1 HDD UNIT REPLACEMENT



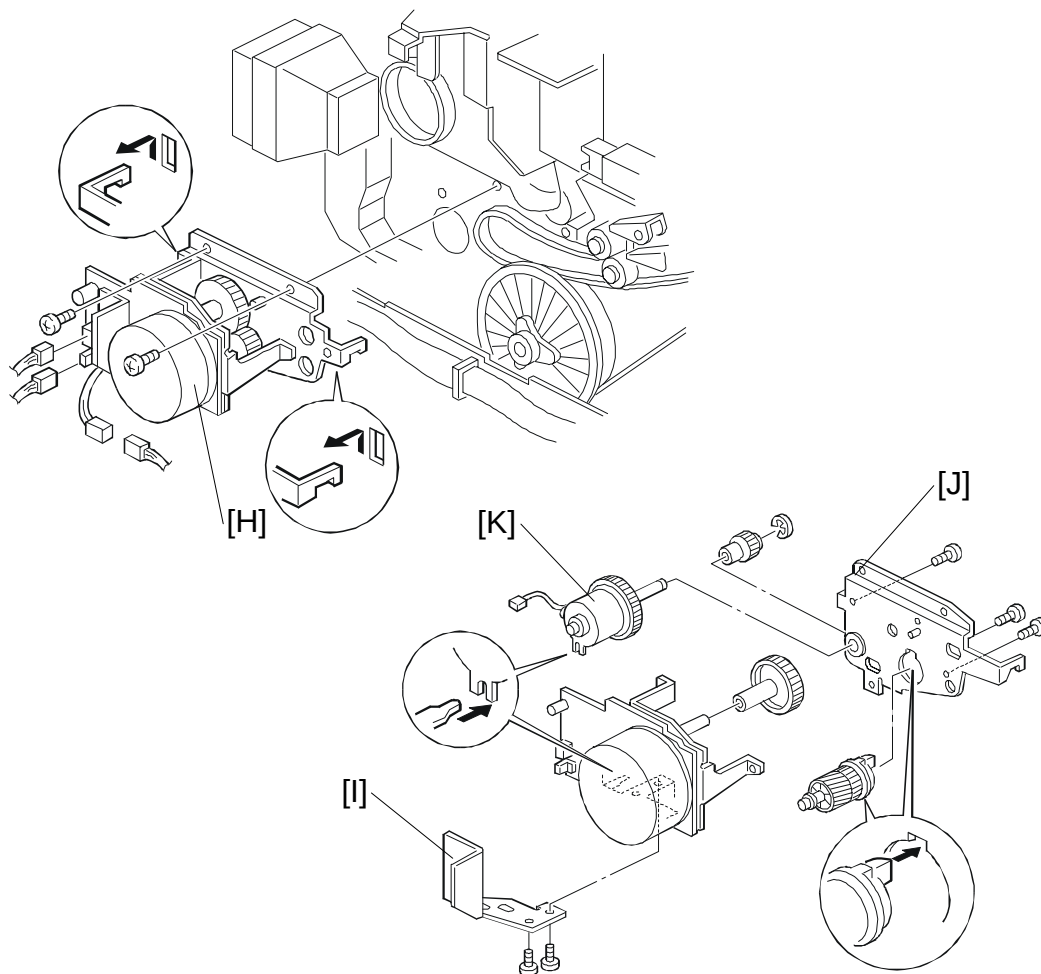
1. Turn off the main switch and unplug the machine
2. Remove the rear cover.
3. Remove the wire clamp [A] (1 screw).
4. Remove the HDD unit assembly [B] (3 screws, 2 connectors).
5. Replace the HDD unit [C] (4 screws).

NOTE: 1) Reset the bad sector information (SP4911-6)
2) If the user has registered user stamps in the previous HDD unit, advise the user that they may need to register them again.

9.2 DEVELOPMENT MOTOR & TONER SUPPLY CLUTCH REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the rear cover.
3. Remove the HDD unit (see HDD unit replacement).
4. Swing out the SCU board plate [A] (4 screws).
5. Remove the fly wheels [B] (3 screws).
6. Remove the drive gear holder [C] (2 screws).
7. Remove 2 bushings [D], 1 gear [E], and 1 shaft [F].
NOTE: The bushings drop easily.
8. Remove the fan motor [G] (2 screws, 1 connector).

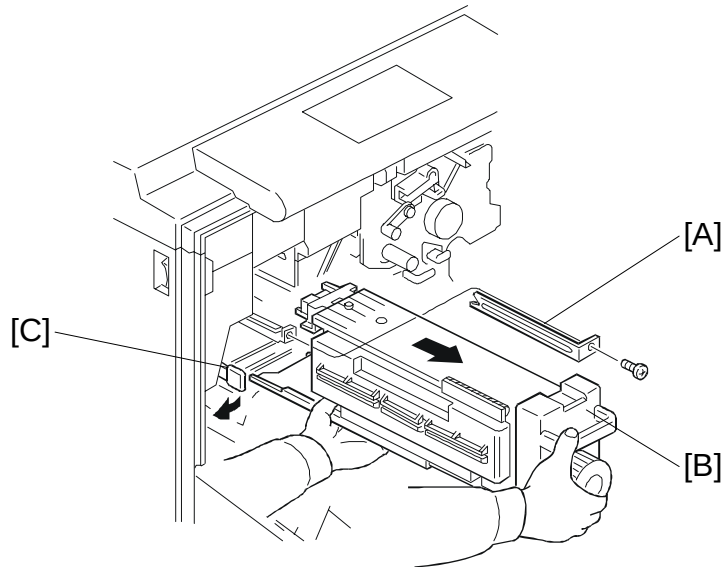


9. Remove the development drive motor assembly [H] (3 screws, 3 connectors).
10. Remove the gear cover [I] (2 screws).
11. Remove the development drive holder [J] (1 E-ring, 3 screws).
12. Replace the toner supply clutch [K] (2 allen screws).

9.3 FUSING UNIT REMOVAL

CAUTION

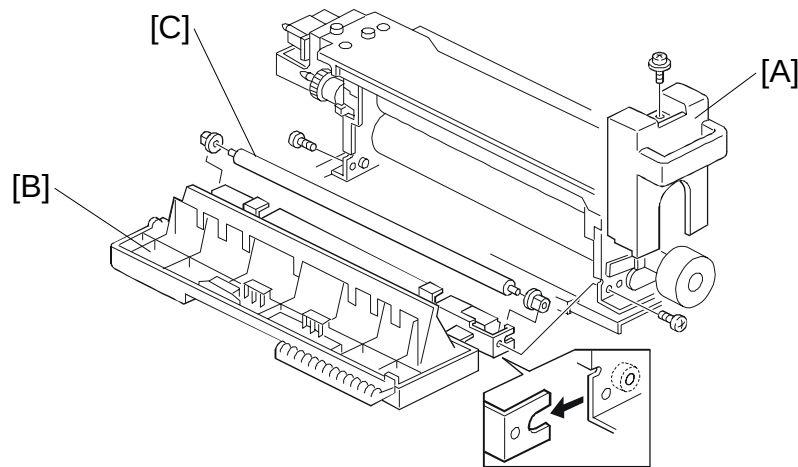
Allow time for the unit to cool before doing the following procedure.



1. Turn off the main switch and unplug the machine.
2. Open the front cover.
3. Remove the stopper bracket [A] (1 screw).
4. Hold the fusing unit cover [B] while pushing the release lever [C] to the left, and pull out the fusing unit until it stops.
5. Push the release lever again, and remove the fusing unit completely.

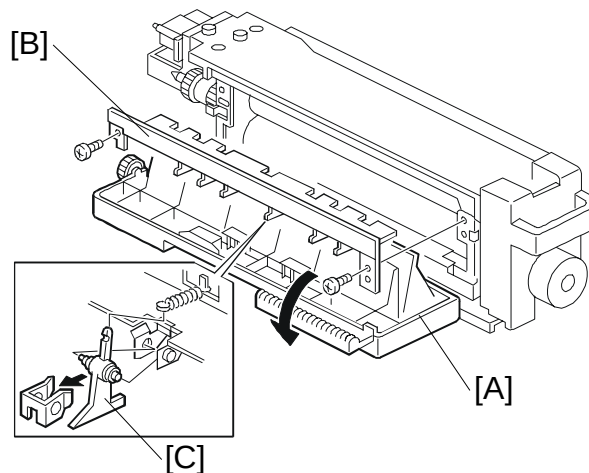
NOTE: Before completely removing the fusing unit, support the bottom of the fusing unit.

9.4 CLEANING ROLLER REPLACEMENT



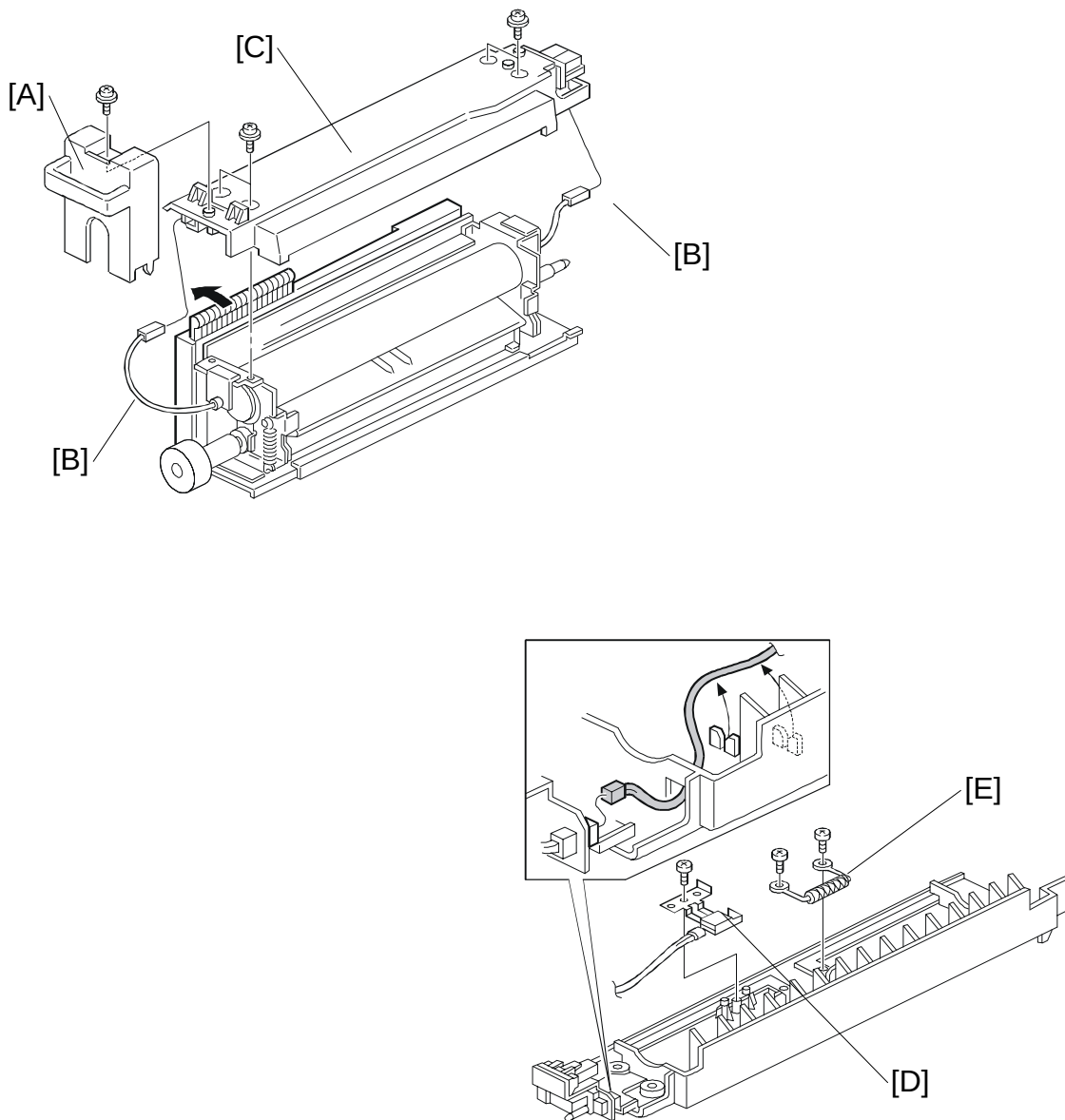
1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (1 screw).
3. Open the fusing exit cover [B], then remove the fusing exit cover/cleaning roller assembly (2 screws).
4. Remove the cleaning roller [C]

9.5 HOT ROLLER STRIPPER PAWL REMOVAL



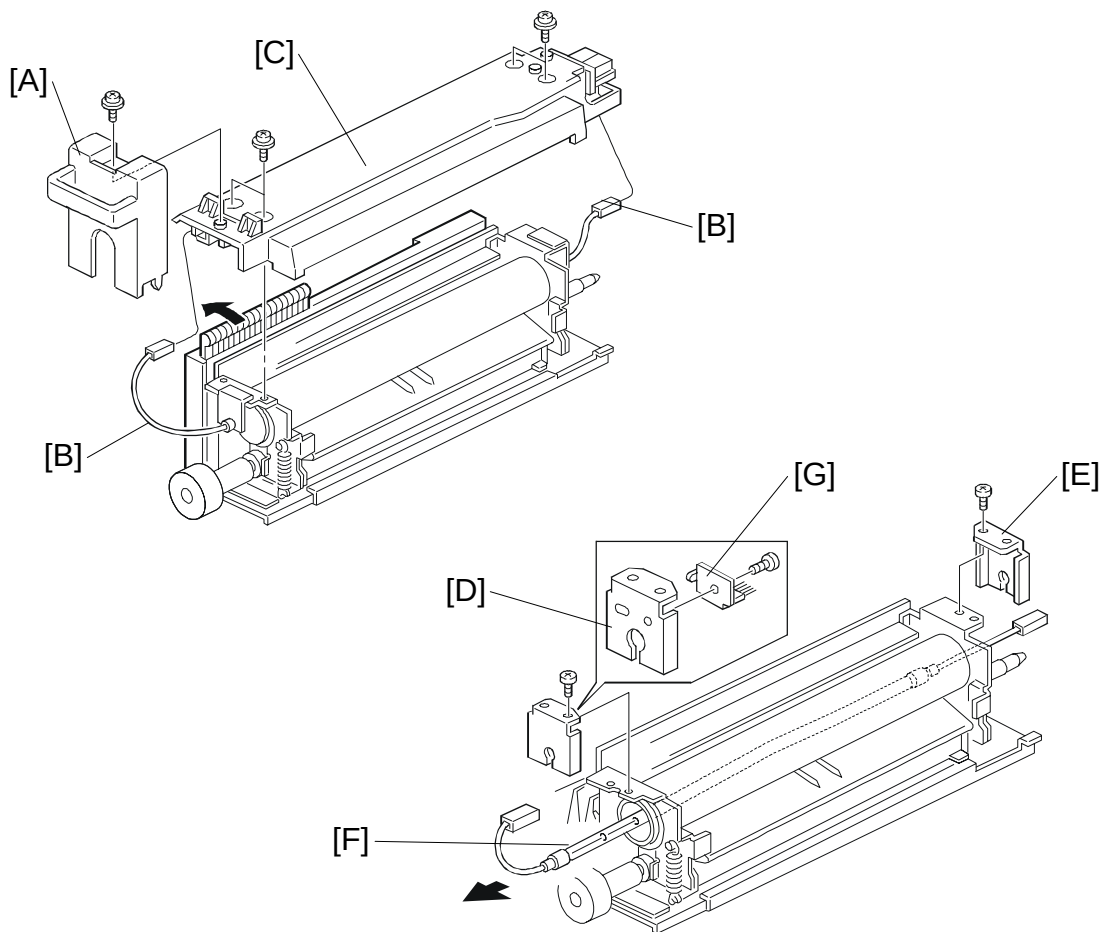
1. Remove the fusing unit (see Fusing Unit Removal).
2. Open the fusing exit cover [A].
3. Remove the hot roller stripper pawl bracket [B] (2 screws).
4. Remove the hot roller stripper pawls [C] (1 bracket, and 1 spring each).

9.6 THERMISTOR AND THERMOFUSE REPLACEMENT



1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (1 screw).
3. Disconnect the fusing lamp harnesses [B].
4. Remove the fusing upper cover [C] (4 screws).
5. Remove the thermistor [D] (1 screw, 1 connector).
6. Remove the thermofuse [E] (2 screws).

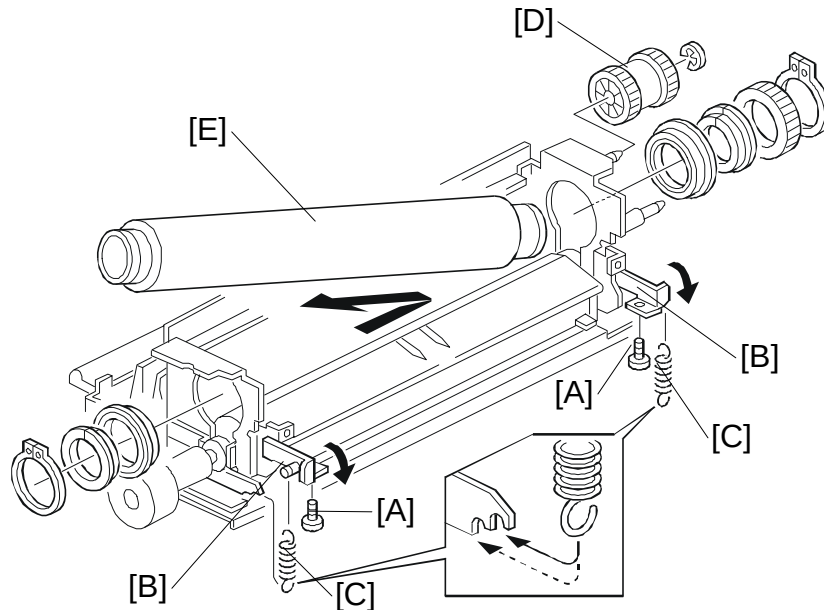
9.7 FUSING LAMP REPLACEMENT



1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (1 screw).
3. Disconnect the fusing lamp harnesses [B].
4. Remove the fusing upper cover [C] (4 screws).
5. Remove the front lamp holder [D] (1 screw).
6. Remove the rear lamp holder [E] (1 screw).
7. Remove the fusing lamp [F]

NOTE: 1) Do not touch the glass part of the fusing lamp with bare hands.
 2) When reinstalling the front lamp holder, make sure that the antistatic brush [G] contacts the hot roller.

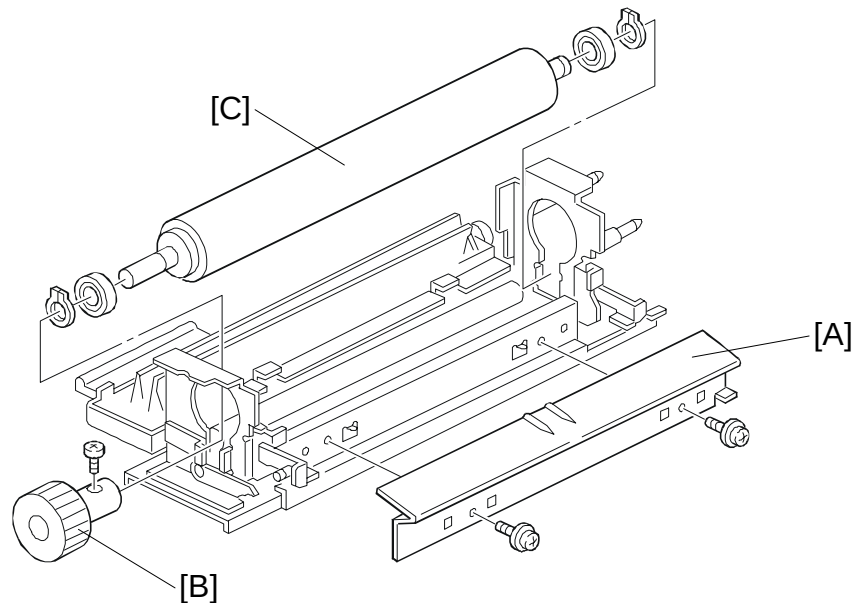
9.8 HOT ROLLER REPLACEMENT



1. Remove the fusing lamp (see Fusing Lamp Replacement).
2. Remove the hot roller stripper pawl bracket (see the Hot Roller Stripper Pawl Removal).
3. Remove the screws [A] and swing down the pressure levers [B], then remove the pressure springs [C].
4. Remove the gear [D] (1 E-ring).
5. Remove the hot roller [E] (2 C-rings, 1 gear, 2 bushings, 2 bearings).

NOTE: 1) Before installing the hot roller, peel off 3 mm (1 inch) from both ends of the protective sheet on the new one.
2) The standard pressure spring position is at the upper position.
3) Do not touch the surface of the roller.
4) Be careful not to damage the surface of the hot roller.

9.9 PRESSURE ROLLER REPLACEMENT



1. Remove the hot roller (see Hot Roller Replacement)
2. Remove the lower fusing entrance guide [A] (2 screws).
3. Remove the fusing knob [B] (1 screw).
4. Remove the pressure roller [C] (2 C-rings, 2 bearings).

NOTE: 1) When reinstalling the lower fusing entrance guide, tighten the screws using the middle hole on each side (this is the lowest fusing guide position).

2) The standard pressure spring position is at the upper position.

10. SERVICE CALL CONDITION

10.1 SC CODE DESCRIPTIONS

The following A133 SC codes have been re-assigned.

NOTE: The meanings of these new SC codes are exactly the same as the previous SC codes.

A133 machine		A217 machine
SC Code	Description	SC Code
SC303	Charge wire cleaner error	SC363
SC305	Time out error for memory	SC364
SC329	Image stored address error	SC365
SC405	Time out error for scanner	SC192
SC623	Communication error between BCU and paper tray unit	SC624
SC625	FTBC (GA5) error	SC362

AUTO REVERSE DOCUMENT FEEDER A663

The A663 ARDF is based on the A548 ARDF.

Only the differences from the A548 are described in the following pages.
Refer to the A548 ARDF section inside the A133 copier service manual for other information.

1. SPECIFICATIONS

* The specifications are the same as for the A548 ARDF.

Original Size and Weight:	Thick original mode (default mode)	
	Use this setting for normal paper types	
	Maximum	A3, 11" x 17"
	Minimum	B6, 5 1/2" x 8 1/2"
	Weight	52 ~ 128 g/m ² (14 ~ 34 lb)
	Thin original mode	
	Maximum	A3, 11" x 17"
	Minimum	B6 (sideways), 5 1/2" x 8 1/2"
	Weight	40 ~ 128 g/m ² (11 ~ 34 lb)
	Auto reverse mode	
Original Table Capacity:	Maximum	A3, 11" x 17"
	Minimum	B5, 5 1/2" x 8 1/2"
	Weight	52 ~ 105 (14 ~ 27 lb)
	Original Feed: Automatic feed - ADF mode	
	Manual feed one by one - SADF mode	
	Auto Reverse Feed - ARDF mode	
	50 sheets at 80 g/m ² (21 lb)	
	Face up, first sheet on top	
	Feed Roller and Friction Belt	
	One flat belt	
Original Placement:	45 W	
Original Separation:	24 V ± 10% from the copier, 1.8 A	
Original Transport:	610 x 507 x 130 mm (24.0" x 20.0" x 5.1")	
Power Consumption:	Approximately 10.5 kg (23.2 lb)	
Power Source:		
Dimensions (W x D x H):		
Weight:		

ARDF
DF64 (A663)

2. DIFFERENCES FROM THE A548 ARDF

	A663	A548
1-to-1 Copying Speed Capability	40 cpm (A4/LT sideways)	35 cpm (A4/LT sideways)
Original Transport Speed	555 mm/s	505 mm/s
Time Needed for Original Replacement (A4 sideways)	590 ms (thin original mode) 690 ms (thick original mode)	620 ms (thin original mode) 720 ms (thick original mode)

FINISHER A612

The SR710 A612 is based on the SR700 A612 Finisher.

Only the differences from the SR700 are described in the following pages.
Refer to the SR700 Finisher A612 section inside the A133 copier service manual for other information.

1. SPECIFICATIONS

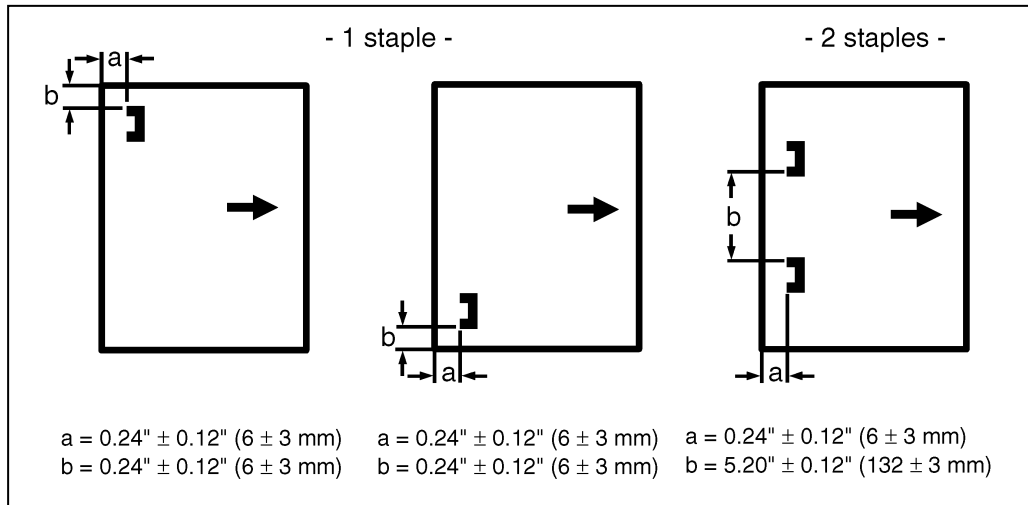
Paper Size:	Standard copying/Stack mode Maximum: 11" x 17" /A3 Minimum: 5 1/2" x 8 1/2"/A5 Staple mode Maximum: 11" x 17" /A3 Minimum: 8.5" x 5.5"/B5
Paper Weight:	Standard copying/Stack mode 14 ~ 42 lb/52 ~ 157 g/m 2 Staple mode 17 ~ 21 lb/64 ~ 80 g/m 2
Paper Capacity:	1,500 sheets: 8 1/2" x 11"/A4 or smaller size (20 lb/80 g/m 2) 1,000 sheets: 8 1/2" x 14"/B4 or larger size (20 lb/80 g/m 2)
Stapler Capacity:	8 1/2" x 11"/A4 or smaller size (20 lb/80 g/m 2): from 2 to 50 sheets 8 1/2" x 14"/B4 or large size (20 lb/80 g/m 2): from 2 to 30 sheets
Staple Replenishment:	Cartridge exchange (5,000 staples/cartridge)
Power Source:	DC 24 V (from copier)
Power Consumption:	48 W (average)
Weight:	35 kg (77.2 lb.)



☐ Specifications are subject to change without notice.

SPECIFICATIONS

Stapling Position:



Dimensions:

26.5" x 20.5" x 37.5"
(671 mm x 514 mm x 950 mm)

1.1 DIFFERENCES FROM THE A612 FINISHER

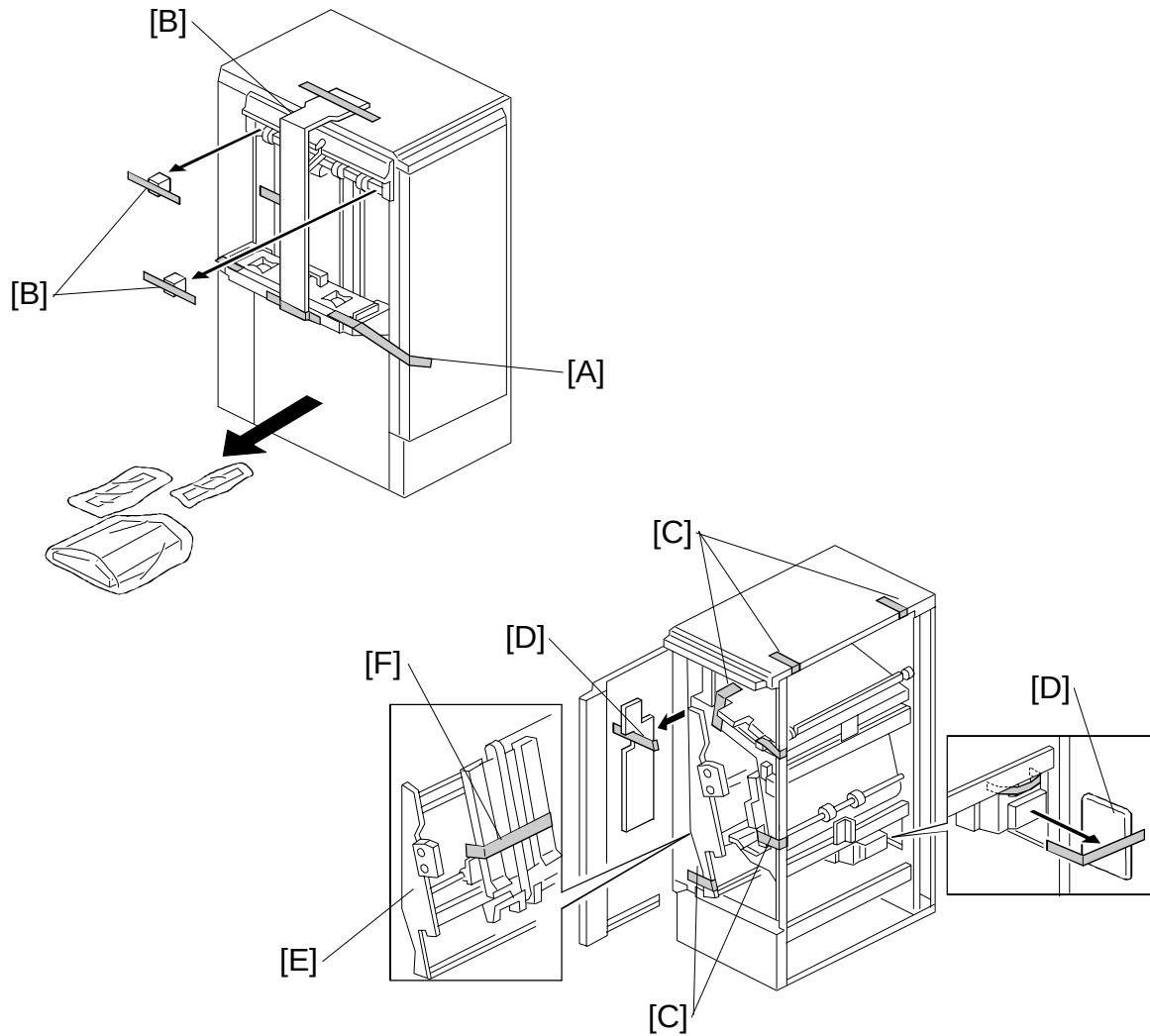
	A612 (SR700)	A612 (SR710)
Increased in paper speed at the entrance of the unit.	200mm/s	250mm/s
Two Grounding Plates are no longer necessary for the install of the unit.	Grounding Plates (P/N A6665455)	Grounding Plates are removed due to European Radiation Standard Class of the A217 from class B to class A.

The following table shows the parts differences between the SR700 (A612) and the SR710 (A612).

SR700	SR710	Description	Qty	Page	Index
A6665455	---	Grounding Plate (SR700)	1	7	21
A6125955	---	Grounding Plate - Bank (SR700)	1	7	22
A6125110	A6125120	Main Control Board	1	23	2
A5662101		Stepping Motor - DC 6.3W	1	23	22
	A6122102		1	23	31
A6125651	A6125661	IC - AM27C256-15DC	1	23	3

Finisher
A612

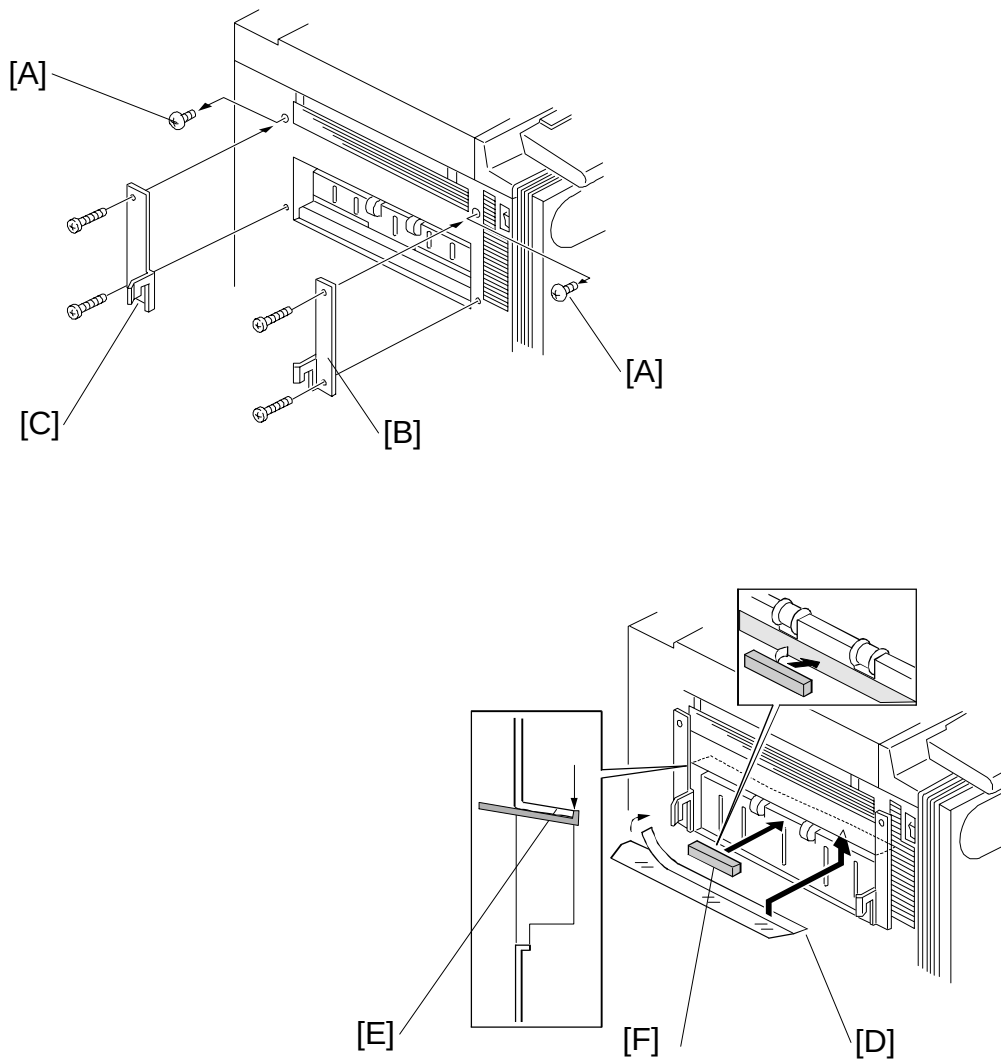
2. INSTALLATION



⚠ CAUTION

Unplug the power cord before beginning the following procedure.

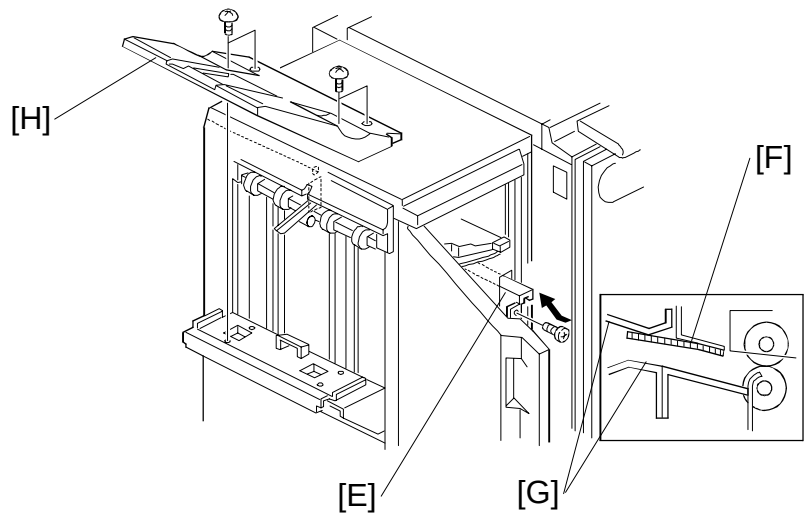
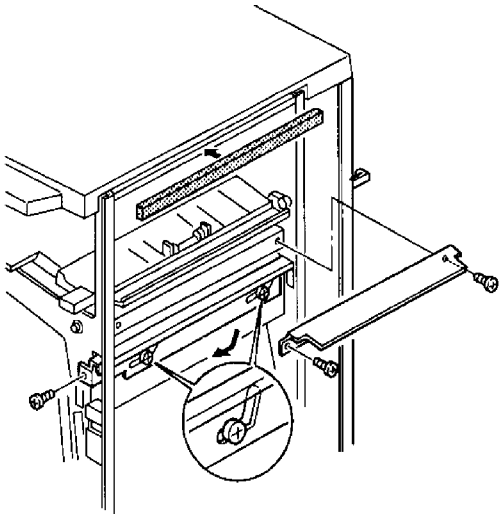
1. Remove the strip of tape [A] and the cushions [B].
2. Open the front door and remove the strips of tape [C] and cushions [D].
3. Pullout the staple unit [E].
4. Remove the strip of tape [F].



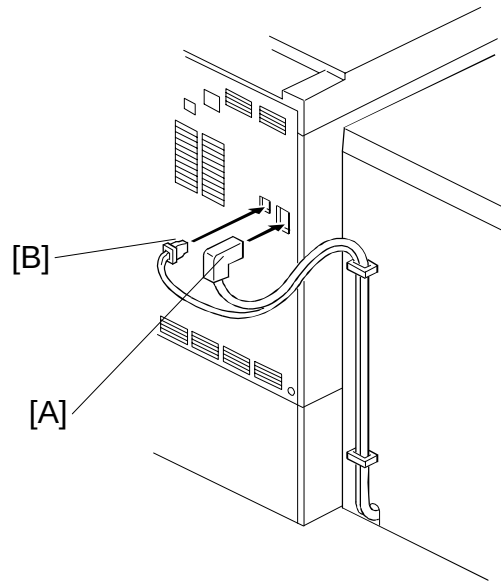
Finisher
A612

5. Remove the screws [A] from the left cover.
6. Install the front connecting bracket [B] (2 screws— M4 x 12) and the rear connecting bracket [C] (2 screws— M4 x 12).
7. Affix the mylar strip [D] to the copy exit area, as shown.
NOTE: Carefully align the edge of the cover [E] with the mylar guide.
8. Affix the cushion [F] to the lower exit plate, as shown.

INSTALLATION



9. Open the front door of the finisher and remove the screw [A], which secures the locking lever [B]. Then pull the locking lever (This causes the lever to move out and down).
 10. Affix the cushion [C] on the metal stay (not on the cover) as shown.
 11. Install the entrance guide plate [D] (2 screws -M4 x 6).
 12. Align and install the finisher on the connecting brackets. Lock them in place by raising the locking lever [E].
- NOTE:** Ensure that the mylar strip [F] is located between the guides [G].
13. Install the shift tray [H] (4 screws — M4 x 8).



Finisher
A612

14. Reinstall the rear cover.
 15. Connect the cable [A] and the fiber optic connector [B].
 16. Plug in the copier.
 17. Turn on the main switch and test the newly installed finisher's operation.
- NOTE:** The copier automatically recognizes that the finisher has been installed. The stapler will begin stapling after about 10 copies (This allows the first staple to come to the proper position in the cartridge).

Gestetner **RICOH** **SAVIN**

A649 PRINTER CONTROLLER TYPE 401

A650 POSTSCRIPT 2 KIT TYPE3 401

A651 SCANNER KIT TYPE 401

A732 ETHERNET NIC TYPE 401

A733 TOKEN RING NIC TYPE 401

SERVICE MANUAL

RICOH GROUP COMPANIES

Gestetner[®]

RICOH[®]

SAVIN[®]

A649 PRINTER CONTROLLER TYPE 401

A650 POSTSCRIPT 2 KIT TYPE3 401

A651 SCANNER KIT TYPE 401

A732 ETHERNET NIC TYPE 401

A733 TOKEN RING NIC TYPE 401

SERVICE MANUAL

RICOH GROUP COMPANIES

LEGEND

PRODUCT CODE	COMPANY		
	RICOH	SAVIN	GESTETNER
A195	(Aficio 401)	9940 DPC	-

PRODUCT CODE	COMPANY	
	NASHUATEC	RICOH CANADA
A195	-	Aficio 401

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SECTION 1

**OVERALL
MACHINE INFORMATION**

1. INTRODUCTION

The A195 base engine contains an interface for the A195 multi-function controller. The A195 multi-function controller adds printer and/or scanner functions.

In addition to the original copy functions of the A195 base engine, the A195 can print image files received from a host computer, and supports SCSI scanning (optional). The printer supports the PCL5E and optional PostScript printer languages. Host printer data can be received at the standard parallel, serial, or optional network port.

An IDE hard disk drive is standard, to provide storage for temporary print data as well as other functions.

The controller board has 2 DRAM SIMM slots for additional RAM modules. Up to 64 MB (32MB x 2) of memory can be installed to improve the printer performance. The base memory is 8 MB, so there is a maximum total of 72 MB.

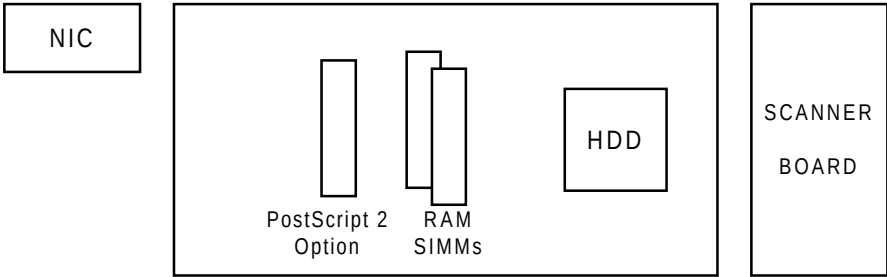
Images can be printed at 300, 400, or 600 dpi. The engine supports a maximum print speed of 40 pages per minute when printing at 300 dpi, which is the same speed as copying at 400 dpi.

2. MULTI-FUNCTION SPECIFICATIONS

Copying Resolution	400 x 400 dpi
Printing Resolution	300 x 300 dpi, (400 x 400 dpi)* ¹ , 600 x 600 dpi
Scanning Resolution	100 to 1600 dpi
Gray Scale	256 levels
Printing Emulation	Main Controller Board: PCL5e Optional PS board: PostScript Level 2
Print Speed	Maximum: 40 pages per minute (300/400 dpi) Maximum: 20 pages per minute (600 dpi)
Printer Resident Fonts	45 scaleable typefaces in 14 typeface families (35 Intellifont and 10 TrueType format fonts) 6 bitmapped typefaces in the Line Printer typeface family
Host Interface for Printing	Bi-directional Parallel Interface x1 RS-232C x1 Optional Network Interface (Ethernet or Token Ring)
Host Interface for Scanning	Optional SCSI2 Interface
RAM Capacity	8 MB (Standard) 2 DRAM SIMM Slots (Up to 64 MB) Maximum Total: Up to 72 MB

*1: PS2 Only

3. BOARD CONFIGURATION



Item	Machine Code
• Main Controller Board (Including HDD)	A649-(Printer Controller Type 401)
• PostScript 2 Option	A650-(PostScript 2 Kit Type 401)
• Scanner Option	A651-(Scanner Kit Type 401)
• Network Interface Card	A732-For Ethernet (NIC401-E) A733-For Token Ring (NIC401-TR)
• RAM SIMM Option	Obtain from local vendor The DRAM SIMM sockets accept modules of 8M, 16M, or 32M. You can add up to a maximum of 64M of additional DRAM to the system.

SIMM Specifications:
72 pins
70 ns or faster access speed
8, 16 or 32 MB capacity
Any parity setting is OK.

4. SOFTWARE

4.1 PRINTER DRIVER

- PCL5e Printer Driver for Windows 3.1/ 95
- PS2 Printer Driver for Windows 3.1/ 95/ Macintosh

4.2 SCANNER DRIVER

- ISIS
Pixview..... Windows 3.1/ 95
ISIS Driver 16 bit/ 32 bit
- Twain
Scan Work Windows 3.1/ 95
Twain Driver..... Windows 3.1/ 95

4.3 NETWORK UTILITY

- Flash Update Utilities
- TES Utilities

5. PRINTING OUTPUT

5.1 TRAY AND BIN FUNCTIONALITY

5.1.1 500-sheet Tray

- Face-up
- Normal and Reverse Order
- Duplex (First side up)
- Document and Group Sort
- Separation sheets

5.1.2 Finisher

- Face-up
- Normal and Reverse Order
- Duplex (First side up)
- Document and Group Sort
- Staggered Job Separation
- Stapling

NOTE: When Normal Order is selected, stapling is not available.

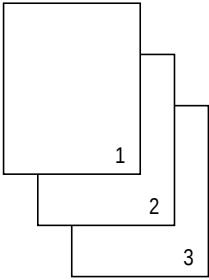
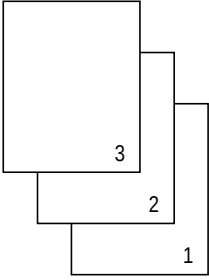
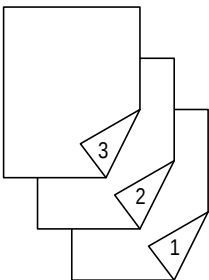
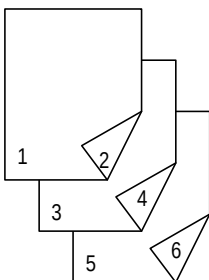
5.1.3 3-bin Sorter - This Option is not available in all markets.

- Face-up and Face-down
- Normal and Reverse Order
- Duplex (First side up)
- Document and Group Sort
- Staggered Job Separation/Separation sheets

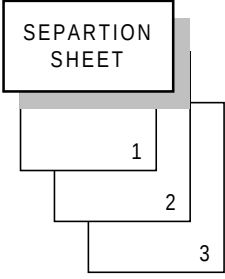
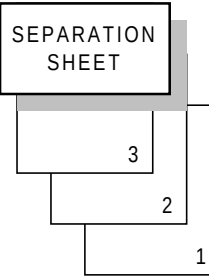
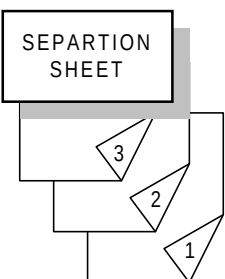
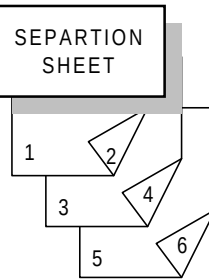
NOTE: The job separation type depends on which bin is selected.
If the first bin is selected, staggered job separation is available.
If the second or third bin is selected, separations sheets are available.
In both cases, job separation must be switched on.

5.2 OUTPUT CAPABILITY

5.2.1 Single Copy

Reverse order print	Normal order print	Normal order print at 3-bin sorter (face down)	Duplex print
			

5.2.2 Single Copy with Job Separation Sheet (not used the jogger feature)

Reverse order print	Normal order print	Normal order print at 3-bin sorter (face down)	Duplex print
			

5.2.3 Multiple Copies

Document Sort Reverse order print	Group Sort Normal order print	Group Sort Normal order print at 3-bin sorter (face down)	Duplex print

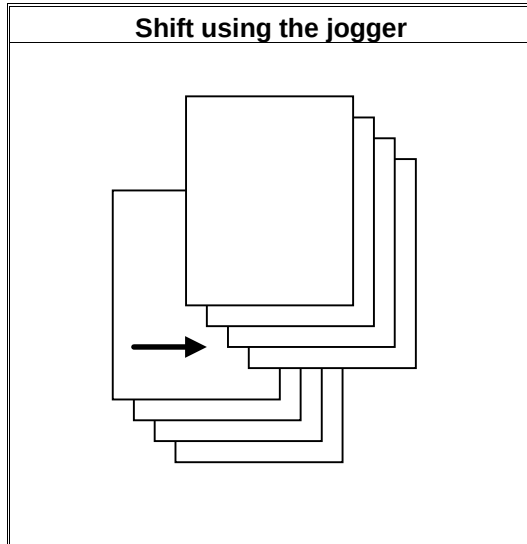
5.2.4 Multiple copies with Job Separation Sheet

Document Sort Reverse order print	Normal order print	Group Sort Normal order print at 3-bin sorter (face down)	Duplex print

NOTE: In job separation mode (single copy or multiple copy)without the jogger feature, a separation sheet will be inserted only if the same paper size but opposite orientation exists.

5.2.5 Job Separation Using the Jogger Feature

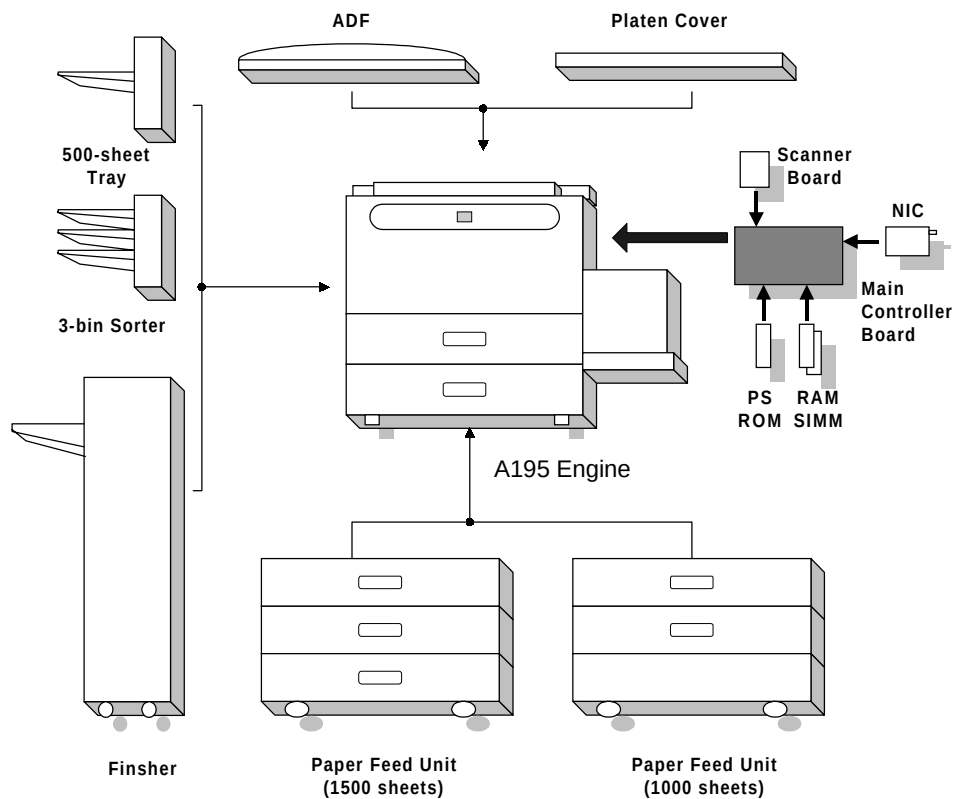
- 1-bin Finisher
- 3-bin Sorter (1st bin only)



SECTION 2

DETAILED SECTION DESCRIPTIONS

1. OUTLINE



Detailed
Descriptions

The main controller board is located between the host PC (locally or over a network) and the A195 engine, and performs the following functions.

- Management of Multifunction Operations
- Printer Interface
- Scanner Interface
- Machine Interface
- Data Buffer
- PCL/PostScript Interpreter

1.1 MANAGEMENT OF MULTIFUNCTION OPERATIONS

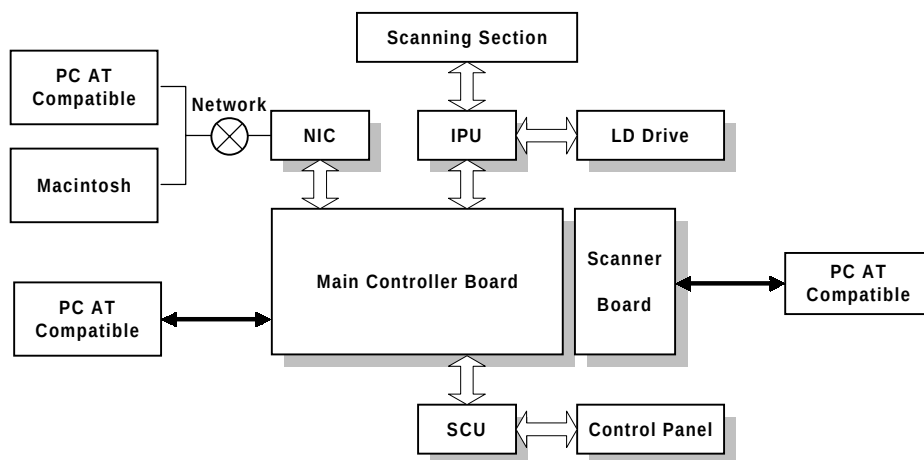
The A195 controller may operate in four different modes: share mode, printer priority mode, printer only mode, and scanner only mode. These modes are selectable at the A195 operation panel.

1.2 PRINTER INTERFACE

The A195 has three types of printing interfaces to receive image data and device control commands from the host PC.

These interfaces can also send A195 status information (such as printer status, error conditions, the paper size loaded in trays) to the host PC, depending on host PC and interface configuration.

- Parallel Interface x1
 - 1) IEEE1284 Compliant Bi-directional Parallel Interface, or
 - 2) PC-Compatible Parallel Printer Interface
- Serial Interface [RS-232C x1]
- Optional Network Interface (Ethernet or Token Ring)
 - 1) Ethernet NIC Type 401 10Base 2/T (IPX/SPX, TCP/IP, EtherTalk)
 - 2) TokenRing NIC Type 401 4 Mbps, 16 Mbps (IPX/SPX, TCP/IP)



The A195 controller can automatically switch between printer ports to receive data and commands.

It can also examine the personality of the page description language (PCL or PS) automatically, if it is not specified by a special function command (PJL command) at the start of the data from the PC.

1.2.1 Parallel Interfaces

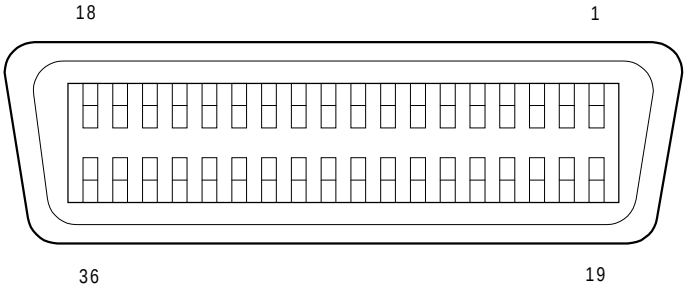
Overview

The A195 operation panel uses the following parallel interface configuration parameters.

- **Personality** [Auto/PCL/PS]
When Auto is selected, the page description language the A195 controller will use for the print job is switched automatically depending on the input data coming through the parallel port. If the PCL or PS button is selected, the page description language the A195 controller will use for the print job is fixed to the specified language.
- **Bi-direction** [On/Off]
When this setting is On, two-way communications between the controller and host machine are active.
- **I/O Time-out** [5 to 300 s]
This is the time interval for determining when to end an incomplete print job and poll the next port in the polling sequence.

Detailed
Descriptions

OUTLINE



The connector is a 36 pin D-SUB Centronics connector (female).

The bi-directional parallel interface on the controller works in 3 modes; compatible, compatible with nibble, and ECP modes (these modes are standardized by IEEE 1284).

Compatible with nibble and ECP are bidirectional modes, allowing feedback of status data from the A195 to the host PC.

SIGNAL PIN	SIGNAL NAME		
	COMPATIBLE (I/O)	NIBBLE (I/O)	ECP (I/O)
1	/STROBE (I)	/STROBE (I)	HostClk (I)
2-9	DATA1-8 (I)	NOT USED	DATA1-8 (I/O)
10	/ACK (O)	PtrClk (O)	PeriphClk (O)
11	BUSY (O)	PtrBusy (O)	PeriphAck (O)
12	PE (O)	AckDataReq (O)	/AckReverse (O)
13	SELECT (O)	Xflag (O)	Xflag (O)
14	/AUTOFEED (I)	HostBusy (I)	HostAck (I)
15	NC		
16	GND		
17	CHASSIS GND		
18	NC		
19-30	GND		
31	/INIT (I)	/INIT (I)	/ReverseRequest (I)
32	/ERROR (O)	DataAvail (O)	/PeriphRequest (O)
33	GND		
34	NC		
35	+5V		
36	/SELECTION (I)	1284Active (I)	1284Active (I)

1.2.2 IEEE1284 Compliant Parallel Interface

The Ricoh A195 controller is compliant with the IEEE 1284 Standard, supporting Compatibility, Nibble, ECP, Device ID, and Negotiation.

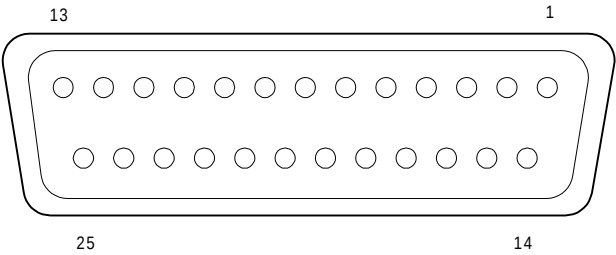
1.2.3 Serial Interface

The A195 operation panel uses the following serial interface configuration parameters.

- Personality
- Baud Rate
1200, 2400, 4800, 9600, 19200, or 38400.
- Parity, Handshake, DTR Polarity, Stop Bits, Data Bits, I/O Time-out

OUTLINE

RS-232C Interface



A 25 pin D-SUB female connector (ISO 2110)

PIN NO.	SIGNAL NAME	DESCRIPTION
1	GND	Ground
2	STXD (RD-232)	Serial transmit data
3	SRXD (RD-232)	Serial receive data
4	+10V	
6	SDSR (DSR)	Data set ready
7	GND	Ground
20	SDTR (DTR)	Data terminal ready

1.2.4 Optional Network Interface

When an optional Network Interface Card is installed in the A195 controller, the printing data, printer status and/or commands can be sent through the network interface.

Two types of network interface card have been provided for the A195 controller.

- 1) Ethernet NIC Type 401 10Base 2/T (IPX/SPX, TCP/IP, EtherTalk)
- 2) TokenRing NIC Type 401 4 Mbps, 16 Mbps (IPX/SPX, TCP/IP)

1.3 SCANNER INTERFACE

An optional SCSI-2 interface is available for A195 scanner functions.

SCSI commands are available at any time for scanning, if the A195 is in scanner mode.

The A195 controller can deliver a sustained data transfer rate of 2.5 Mb/second during the data phase of a read command.

High density 50-pin SCSI pin designations

CODE	SIGNAL	PIN
GND	Signal Ground	1
GND	Signal Ground	2
GND	Signal Ground	3
GND	Signal Ground	4
GND	Signal Ground	5
GND	Signal Ground	6
GND	Signal Ground	7
GND	Signal Ground	8
GND	Signal Ground	9
GND	Signal Ground	10
GND	Signal Ground	11
RESERVED	Reserved	12
(N/C)	(Not Connected)	13
RESERVED	Reserved	14
GND	Signal Ground	15
GND	Signal Ground	16
GND	Signal Ground	17
GND	Signal Ground	18
GND	Signal Ground	19
GND	Signal Ground	20
GND	Signal Ground	21
GND	Signal Ground	22
GND	Signal Ground	23
GND	Signal Ground	24
GND	Signal Ground	25
DB	Data	26
DB	Data	27
DB	Data	28
DB	Data	29
DB	Data	30
DB	Data	31
DB	Data	32
DB	Data	33
DB	Data	34
GND	Signal Ground	35
GND	Signal Ground	36

OUTLINE

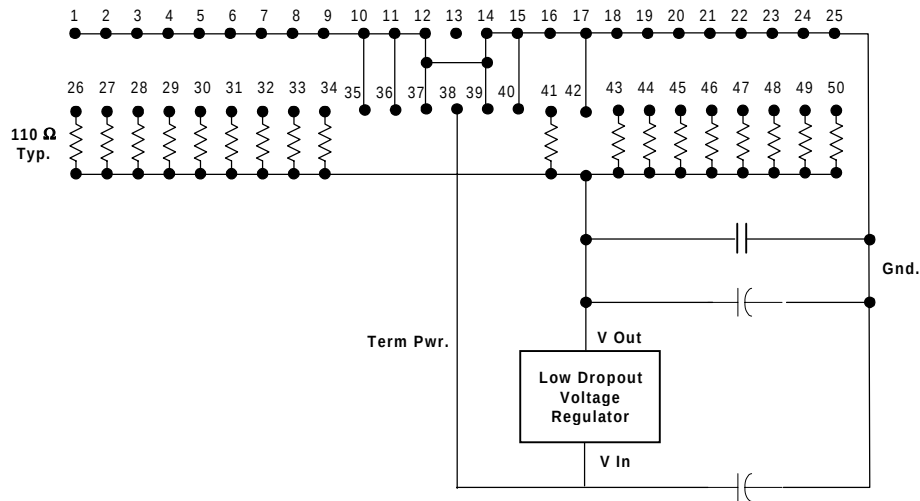
CODE	SIGNAL	PIN
RESERVED	Reserved	37
TERMPWR	Term Power	38
RESERVED	Reserved	39
GND	Signal Ground	40
-ATN	Attention	41
GND	Signal Ground	42
-BSY	Busy	43
-ACK	Acknowledge	44
-RST	Reset	45
-MSG	Message	46
-SEL	Select Out	47
-C/D	Control/Data	48
-REQ	Request	49
-I/O	Input/Output	50

SCSI Terminator Specifications

COMPONENT	SPECIFICATION
Cable Single-Ended Active high density 50-pin Scanner Terminator plug	SCSI-2, high density narrow terminator with internal shield, all plastic cover, low profile with spring latches

A terminator is supplied with the scanner installation kit.

Active terminator



1.4 HARD DISK

The machine is provided with an IDE hard disk.

The following features use the hard disk:

- PostScript
- Input spooler
- Reverse Order Output

The hard disk is used to spool, print input data, and store image data as required for reverse order output or duplexing.

1.4.1 Partitioning

The hard disk partitioning is used as follows:

- Permanent Partition: not used
- Temporary Partition: used for storage of data that is not maintained across power cycles. This partition contains files for the input spooler and reverse order printing. This partition is reformatted during system initialization following a printer reset or power cycle, or by an explicit command received from the A195 operation panel.
- PostScript Partition: used exclusively by the PostScript option. This separate partition allows PostScript to format its disk as required by the PostScript command programs without affecting the other disk partitions.

1.4.2 Capacity

The following lists the space allocated to each partition by the disk drive:

Partition	Percentage
Permanent	10%
Temporary	80%
PostScript	10%

1.5 VIDEO INTERFACE

The A195 controller sends the video data to the laser driver unit through the EX-IPU, and directly drives the laser diode.

2. FEATURES

2.1 MULTI-FUNCTION OPERATION

2.1.1 Share Mode

Overview

Share mode allows copying, printing, and scanning. If there is no printing or scanning function being performed, the control panel shows the copier screen and copying functions are allowed.

Entering Printer Mode

The A195 control panel may transition to the printer screen in two different ways.

- When input from any of the external I/O ports,(parallel, serial, or network interface) is processed and requires the usage of engine resources, the printer controller requests control of the print engine.
- The user may also initiate the display of the printer control panel by pressing the scanner/printer button. If a copy job is in progress the job will complete before the control panel changes to the printer screen.

Note that even if the control panel shows the copier screen the printer may be online. The online/off-line status is indicated by the online LED. Whenever the printer is online it is capable of receiving incoming print data.

When the Printer/Scanner key is pushed or the SCU receives an MF (multi-function) mode transition request from the A195 Controller, the A195 will shift to MF mode and the SCU will display the MF mode screen. However, it is impossible to shift to MF mode in the following cases.

During a copying operation

In Interrupt Copy mode

During an error condition at the engine side (SC occurrence, jam, etc.)

While setting an SP (Service Program) or UP (Utility Program) mode

Otherwise, the On Line LED blinks when the A195 Controller is initializing, and this LED is turned on when the A195 Controller becomes available.

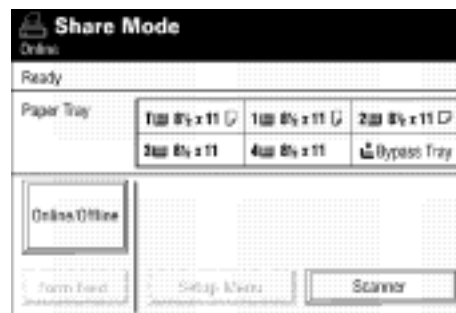
Operation Panel



Copy Mode Screen



Share Mode Screen



Return to Copy Mode

When the printer screen is displayed on the control panel, the user can return to the copier functions by pressing the Copy button. At this time, the printer controller will finish the current scanner or printer job, and then release the engine resources. Any remaining jobs in the printer controller pipeline will remain queued until the printer controller regains control.

Interrupt Copying

If while printing, an interrupt copy request is made, the data flow out of the interpreter to the video is halted at a suitable page boundary.

When the current page being printed in the engine has exited to the appropriate output bin, the copy job can proceed. When the copy job is finished, the interpreter will continue where it left off and finish the print job.

Host data input continues to be spooled during copying. When the interrupt copy is complete the print job will resume printing from where it left off.

If a duplex job is in progress when an interrupt copy takes place, the pages in the duplex bin will remain there. The interrupt copy job is not allowed to use the duplexer.

Scanner Jobs

In order to initiate a scanning job, the control panel must already be displaying the printer share. The scanner soft button is pressed to request a scanner job. When the current print job is complete, the scanner job may be initiated from the host PC.

While the scanner mode screen is displayed the printer is off-line.

2.1.2 Printer Only Mode

In this mode, only printing is allowed. If the user presses the copy or interrupt copy key, an error beep will sound. Scanning functionality is not available.

2.1.3 Scanner Only Mode

In this mode, only scanning is allowed. If the copy or interrupt copy button is pressed, an error beep will sound. During scanner only mode, the printer is offline.

Detailed
Descriptions

2.1.4 Printer Priority Mode

This mode works the same as multi-function mode except that interrupt copying is not allowed.

2.2 PCL5E PRINTING

The A195 controller provides PCL5E compatibility conforming to the PCL5 Technical Reference Manual.

The ROM resident font data contains PCL5E font data, consisting of 45 scaleable typefaces in 14 typeface families (35 Intellifont format and 10 TrueType format fonts). In addition, 6 bit mapped typefaces in the Line Printer typeface family are available. The bitmapped fonts are created for 300 dpi, and scaled for 600 dpi as necessary.

The Transparent Font Manager (TFM) is compatible with HP downloadable and scaleable soft-font formats.

2.3 POSTSCRIPT PRINTING

The A195 controller supports Adobe PostScript Level II, as defined in the PostScript Language Reference Manual and the PostScript Language Reference Manual Supplement for Version 2015.

Downloading of PostScript Type 1 fonts is supported. PostScript includes a rasterizer for TrueType fonts which allow TrueType fonts to be downloaded as soft fonts. No resident TrueType fonts are supported. (Note: PostScript TrueType fonts and PCL5E TrueType fonts are accessible by the respective personalities).

2.4 SCANNER OPERATION

Memory Requirements

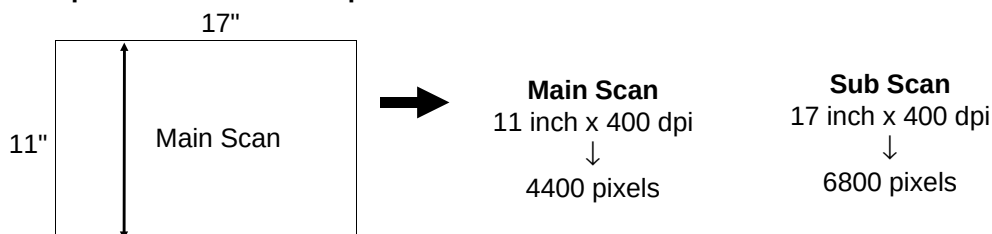
The host PC determines the amount of free memory available for scanning at any time. The amount of free memory sets a limit on the maximum number of pixels which may be imaged. Since the entire image is scanned into memory before any data is sent to the host, there must be enough available memory to contain the entire image. For example, an 8 1/2 x 11 inch page at 400 dpi contains $8.5 \times 11 \times 400 \times 400 = 14,960,000$ pixels. In black and white mode, 8 pixels are stored per byte, requiring $14,960,000/8 = 1,870,000$ bytes of free memory. In grayscale mode, one pixel is stored per byte, thus 8 times as much free memory is required.

The amount of free memory available for scanning depends on the printer mode. The maximum amount of memory is available for scanning when the printer is in the scanning only mode. In all other modes, memory is shared with the printer languages. The amount of free memory will vary greatly when memory is shared as memory is allocated and de-allocated for fonts and the internal working storage requirements of the active languages.

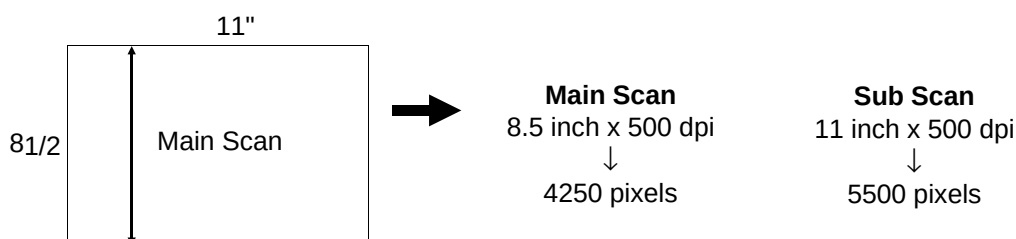
Pixel Limitation

Because of the EX-IPU capability, this scanner can scan up to 4672 pixels in the main scan, and 6803 pixels in the subscan.

Example: DLT size at 400 dpi



Example: LT size at 500 dpi



FEATURES

The following tables show the paper sizes that can be scanned at various resolutions.

The values show the amount of free memory on the controller board that is required to scan the image. (More free memory is available in Scanner Only mode.)

Black/White				Unit = MB				
Paper Size	Resolution							
	100	200	400	600	800	1000	1200	1600
A3	0.3	1.0	3.8					
A4	0.2	0.5	1.9					
A5	0.1	0.3	1.0	2.2	3.8			
A6	0.1	0.2	0.5	1.1	1.9			
A7	0.1	0.1	0.2	0.5	0.9	1.4	1.9	3.5
LG	0.2	0.6	2.4					
LT	0.2	0.5	1.9					
HLT	0.1	0.3	1.0	2.1	3.7			
Photo 4x6	0.1	0.1	0.5	1.1	2.0			
Photo 3x5	0.1	0.1	0.3	0.7	1.2	1.9	2.7	

Gray Scale				Unit = MB				
Paper Size	Resolution							
	100	200	400	600	800	1000	1200	1600
A3	1.9	7.6	31.0					
A4	1.0	3.8	15.5					
A5	0.5	1.9	7.6	17.0	30.9			
A6	0.3	1.0	3.8	8.7	15.4			
A7	0.1	0.4	1.7	3.9	6.9	10.8	15.5	27.6
LG	1.2	4.7	18.7					
LT	1.0	3.7	14.7					
HLT	0.5	1.9	7.4	16.8	29.6			
Photo 4x6	0.3	1.0	3.9	8.6	15.3			
Photo 3x5	0.2	0.6	2.4	5.4	9.6	15.0	21.6	

 Paper size in the shaded areas cannot be scanned.

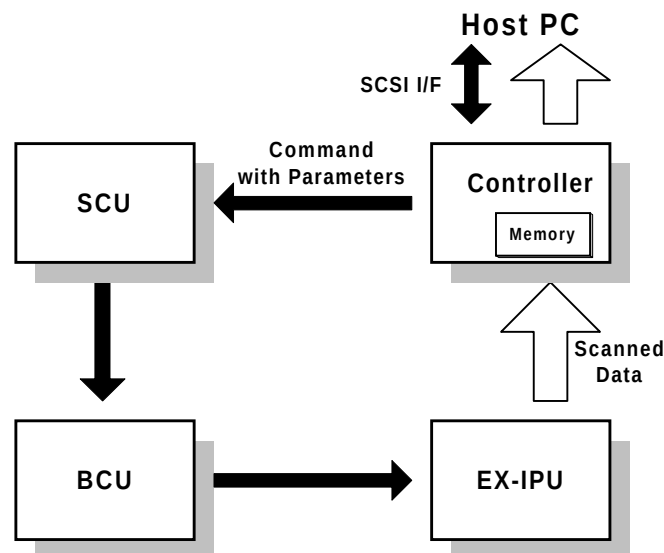
Entering a Scanner Session

A scanner session may be initiated in scanner only mode, or during multi function mode or printer priority mode at a job boundary. Scanning is initiated by an operation at the control panel. Once the scanner session has been initiated at the control panel, everything is driven from the SCSI host via SCSI commands.

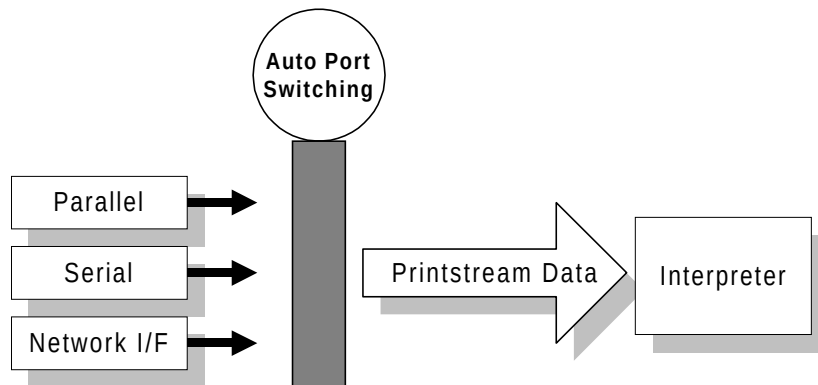
Ending a Scanner Session

Upon completion of a scanner operation, the user terminates scanner mode using the control panel. If the A195 controller is in multi-function mode or printer priority mode, and no SCSI commands are received within a time-out period, SCSI mode will be exited automatically.

2.4.1 Scanner Command/Data Flow



2.5 AUTO-PORT SWITCHING



The A195 controller supports "auto-switching" between all active inputs.

At any instant in time, there is a current active port, and all of the other ports are in a blocked condition. When the current active port stops receiving data from a host computer, the port time-out becomes active.

If more data is not received from the host for the user specified port time-out, the machine monitors all ports, and any port with data can become active on a "first come first serve" basis.

Each port can have a different port time-out value, selectable by the user.

2.6 AUTOMATIC PRINTER LANGUAGE SWITCHING

The A195 controller can change the page description language (PCL or PostScript) for the print job automatically, if the personality setting is "Auto".

2.6.1 Printer Language Switching Methods

The following methods are shown in order of priority in which the A195 controller performs printer language switching.

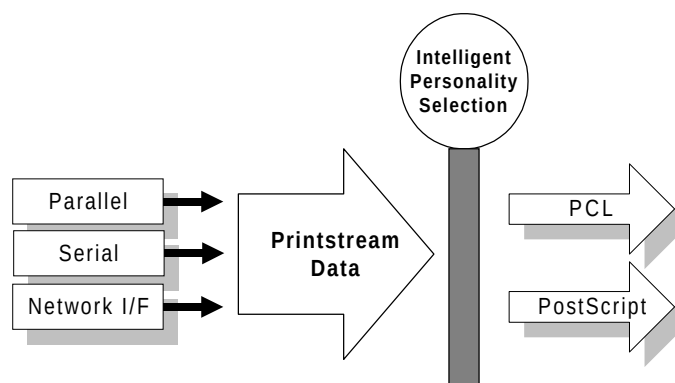
1. Using the particular PJI ENTER command
2. Using intelligent personality selection
3. Default for the system (PCL)

2.6.2 PJI Entry Commands

PJI functions as a job control language where commands are inserted in the print stream. One of its capabilities is to provide explicit selection of a particular personality.

2.6.3 Intelligent Personality Selection

When performing intelligent personality selection, the A195 controller may scan up to 512 bytes of the printer-stream data to make its decision. If the A195 controller cannot decide after scanning 512 bytes, then it resorts to the next highest priority selection method available.



2.7 POWER-UP SELF DIAGNOSTICS

When the A195 controller board powers up it performs a self diagnostic sequence of tests.

First, the on board DRAM is checked, then the presence of any add-in DRAM SIMM is determined, and is checked. The on-board flash ROM is checked next, then the presence of add-in ROM SIMM is determined, and the add-in ROM SIMM is checked.

The presence of the HDD is determined. The HDD is examined to see if it has previously been partitioned. During scanner only mode, the printer is offline.

After these tests are completed, the A195 controller MF software modules initialize thier individual modules, including I/O channels.

Four LEDs located on the main controller board are used to display the progress of the self test and to display any errors that have occurred.

2.8 NETWORK

The A195 can receive print jobs over a network.

The network interface card (NIC) takes up one user slot on the network, and is treated as a printer server.

2.8.1 Flash Memory Software Upgrade

The printer server software is in Flash Memory on the NIC and can be upgraded in one of the following ways.

1. Remote Downloading Software via TFTP (refer to the Network Printer Manager manuals)
2. The DOS Flash Update Utility.

3. PAGE IMAGE DATA HANDLING

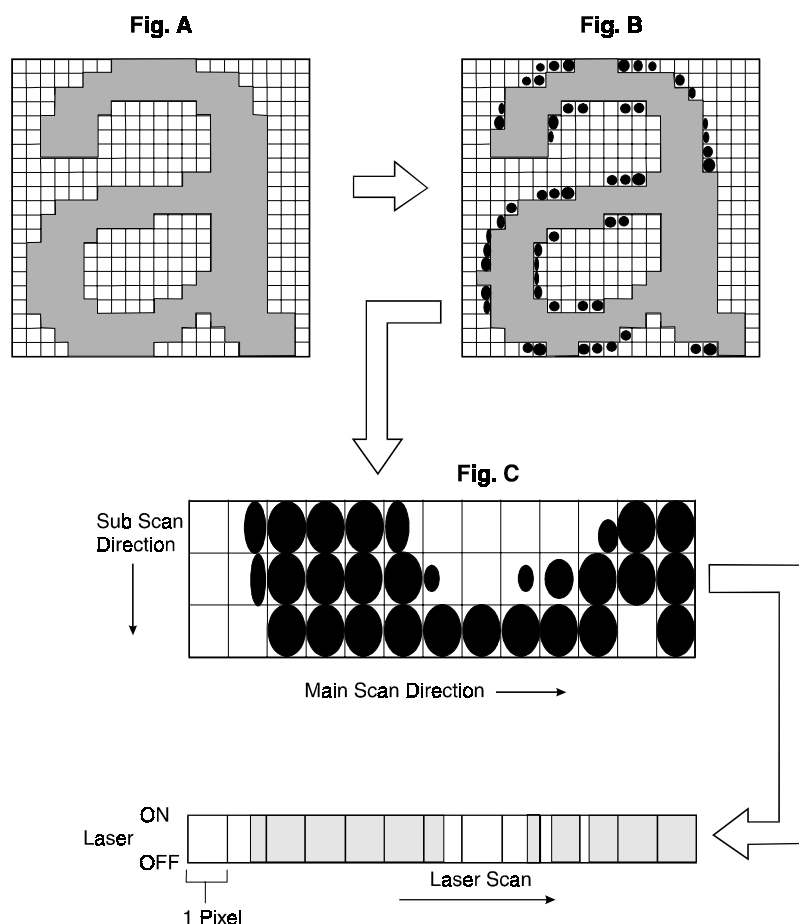
3.1 HARD DISK USAGE FOR PAGE IMAGING

This page image data is compressed to reduce the size required for the disk data, and more importantly, to provide faster retrieval speeds for page image data. The A195 compresses the data by 4 to 10 times.

3.2 EDGE SMOOTHING PROCESSOR

In the A195 controller, video data from the A7 is enhanced by the edge smoothing processor.

The Edge Smoothing Processor converts 1-bit monochrome video data into multi-bit grayscale video data, using a smoothing algorithm.



The video data from the A7's Print Engine Video Controller generates the jagged outline on images as shown in the above left illustration. The edge smoothing processor smoothes the jagged outline.

4. PRINT OUTPUT

4.1 SIMPLEX PRINTING

Simplex printing is available in normal and reverse order.

4.1.1 Normal Order Printing

In normal order printing, the pages are printed in the order in which they are received. This is the fastest mode, as the data is not stored to the hard disk before printing.

Normal order printing is available with all output options. If multiple copies are requested, multiple copies of the first page are printed, then multiple copies of the second page are printed and so on.

4.1.2 Reverse Order Printing

In reverse order printing, the entire job is buffered to the hard disk drive; the last page is printed first, then second to last, and so on. The output is face up with page number one on top.

Reverse order printing is available with all options. If multiple copies are requested, the copies are always sorted. The entire document will be retrieved from the hard disk and printed in reverse order for each copy. If job separation is on, the copies will be separated.

4.2 DUPLEX PRINTING

4.2.1 Overview

Duplex printing is available with all output bin options.

Duplex printing is available in two binding methods.

- Short-edge binding refers to horizontal binding across the short edge of the paper. Short-edge binding will produce a sheet where the top margin is on opposite edges for the sheet for the front and back sides of the page.
- Long-edge binding refers to vertical binding along the long edge of the paper. Long-edge binding has the effect of the top margin being on the same edge of the sheet for both the front and back sides of a page.

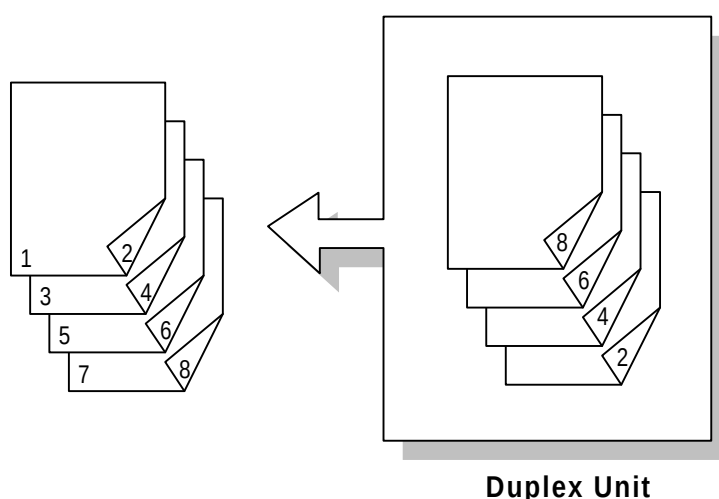
Duplex printing is not available for all paper sizes. Refer to the specifications section of the base copier manual for the paper sizes that can be duplexed. If a job specifies duplex but the paper size to be used is not usable in the duplex tray, the job will be printed simplex reverse order.

All pages routed to the duplex bin must be the same size. If the page size changes during a duplex job, a new collation set is started. The copy count for a collation set within a duplex job is the copy count of the back side of the last page (print stream order) within that collation set.

4.2.2 Page Output Order

In duplex printing with a single copy, the output is face up with the first page on top. An eight-page job is printed as follows; 'HDD' means 'hard disk drive'.

- 1) Page #1 is imaged and stored in the HDD
- 2) Page #2 is imaged and stored in the HDD
- 3) Page #2 is printed to the duplex tray
- 4) Page #3 is imaged and stored in the HDD
- 5) Page #4 is imaged and stored in the HDD
- 6) Page #4 is printed to the duplex tray
- 7) Page #5 is imaged and stored in the HDD
- 8) Page #6 is imaged and stored in the HDD
- 9) Page #6 is printed to the duplex tray
- 10) Page #7 is imaged and stored in the HDD
- 11) Page #8 is imaged and stored in the HDD
- 12) Page #8 is printed to the duplex tray
- 13) Page #7 is retrieved from the HDD and printed from the duplex tray
- 14) Page #5 is retrieved from the HDD and printed from the duplex tray
- 15) Page #3 is retrieved from the HDD and printed from the duplex tray
- 16) Page #1 is retrieved from the HDD and printed from the duplex tray



If there are more than 100 sheets in the original, the first 100 sheets (50 duplex-printed pages) are printed as above, then the next 100 sheets are processed. Each set of 100 sheets forms a collation set as described above.

If multiple copies are requested, the steps above are executed for the first copy. The following copies are printed as described below.

- 1) Page #2 is retrieved from the HDD and printed to the duplex tray
- 2) Page #4 is retrieved from the HDD and printed to the duplex tray
- 3) Page #6 is retrieved from the HDD and printed to the duplex tray
- 4) Page #8 is retrieved from the HDD and printed to the duplex tray
- 5) Page #7 is retrieved from the HDD and printed from the duplex tray
- 6) Page #5 is retrieved from the HDD and printed from the duplex tray
- 7) Page #3 is retrieved from the HDD and printed from the duplex tray
- 8) Page #1 is retrieved from the HDD and printed from the duplex tray

If job separation is on, the copies are separated.

4.3 JOB SEPARATION

The type of job separation depends on the type of output bin installed and the collation set concept built in to the A195 control software. Job separation sheets are inserted or staggered job separation is performed as described below. The usage of different bins for different functions, as described below, takes place irrespective of whether the SEPARATION parameter is on or off. The default value of SEPARATION is off.

If the standard output tray is installed, a separation sheet is inserted at the end of each collation set, and after each copy in a set of sorted copies.

If the finisher bin is installed, a separation sheet is inserted at the end of each collation set, and after each copy in a set of sorted copies.

If the 3-bin sorter is installed, the top bin will be used for copier jobs as a default, and the middle bin will be used for printer jobs. Job separation within a bin for the top bin will be staggered job separation, and a separation sheet will be used in the two lower bins.

A separation sheet is a piece of paper of the same size as the previous print job but of opposite orientation. If no sheet of opposite orientation is available in the printer, no separation sheet is inserted between jobs.

4.4 STAPLING

4.4.1 Overview

Stapling is only available when the 1-bin finisher is installed, and when the output order is REVERSE or DUPLEX.

The stapler can accommodate up to 50 sheets.

Stapling can only be performed on certain paper sizes.

Stapling should not be performed on jobs from the manual tray.

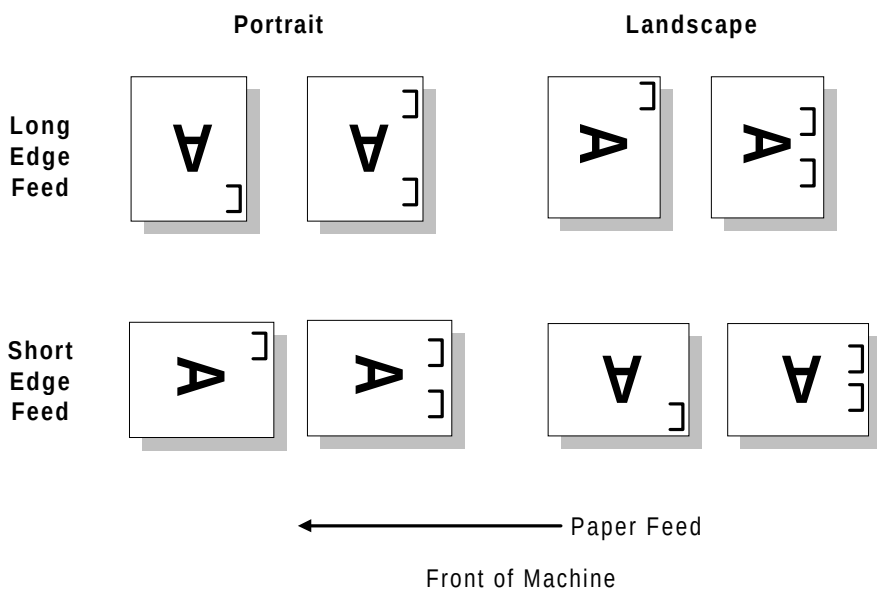
4.4.2 Stapling Modes

There are four stapling modes: one-staple portrait or landscape, and two-staples portrait or landscape.

If one-staple is selected, the staple appears in the top left hand corner of the paper for portrait or landscape modes. If two staple is selected, two staples are inserted along the left edge or top edge of the image.

The printer controller will rotate all pages within a job that is being stapled as shown in the diagram below. As different pages within a job can have different orientations, the staple position will not necessarily reflect the diagrams below for all pages.

If a duplex document is stapled, the diagrams below apply to the odd-numbered sheets. The back side of the sheet will be oriented with respect to the front side of the sheet according to the BINDING parameter selected by the user.



4.5 JAM RECOVERY

4.5.1 Overview

If the jam recovery feature is on and a paper jam occurs, the controller will reprint all pages for which a sheet out indication has not been received from the engine. The necessary pages are retrieved from the hard disk drive and reprinted.

Jam recovery can be turned on and off from the control panel. If the JAMRECOVERY item in the Configuration Menu is on, the data for the page will be retained until the page exits the printer. This guarantees that all paper jams are recoverable. Due to the requirement to save all print data to disk if JAMRECOVERY is on, printer performance may be lower when JAMRECOVERY is on for normal order printing.

If jam recovery is off, pages will not be reprinted in the case of a paper jam.

4.5.2 Jam Recovery for a Duplex Job

For a jam during a duplex operation, the pages not yet issued to the output bin should be reprinted.

Before automatic jam recovery begins, the user must remove the jammed sheets and the stacked sheets in the duplex bin.

4.5.3 Jam Recovery for a Stapling Job

For a jam during a stapling operation, only the pages not yet issued to the stapling stack should be reprinted.

Before automatic jam recovery begins, the user must remove the jammed sheets. The user must also remove the sheets stacked in the stapling stack but they should be kept as printed pages.

4.6 AUTO TRAY SWITCH

If Auto Tray Switch = ON

If the paper runs out in the middle of a job, the input trays are searched for another tray which has paper of the same size and orientation. When this is found, the machine uses the other input tray until all the correct size paper has run out.

If all the correct size paper runs out in the middle of a job, the message "No Paper. Add xx paper to Tray x." will appear. (xx: print paper size, x: the tray the last sheet was fed from.)

In this case,

- 1) If the user touches the "Reset" button, the print job will be canceled.
- 2) If the correct size of paper is added to one of the trays which are set to the correct paper size, the machine restarts the print job automatically, feeding the paper from that tray.
- 3) If the user touches the "Continue" button without adding the correct size paper, the print job will be continued; feeding the paper from the specified tray even if the fed paper size does not match the print size.
- 4) If the user touches the "Continue" button but there is no paper in any trays, "No Paper. Add xx Paper to Tray x." will appear again. (xx: print paper size, x: the tray the last sheet was fed from.)

Auto Tray Switch = OFF

If the paper runs out in the middle of a job, the message "No Paper. Add xx Paper to Tray x." will appear. (xx: print paper size, x: the tray the sheet was fed from.)

In this case,

- 1) If the user touches the "Reset" button, the print job will be canceled.
- 2) If the correct size of paper is added to the tray, the machine restarts the print job automatically.
- 3) If the user touches the "Continue" button after adding the incorrect size of paper, the print job will be continued, feeding the paper from the specified tray even if the fed paper size does not match the print size.
- 4) If the user touches the "Continue" button without adding any paper to the tray, "No Paper. Add xx Paper to Tray x." will appear again. (xx: print paper size, x: the tray the last sheet was just fed from.)

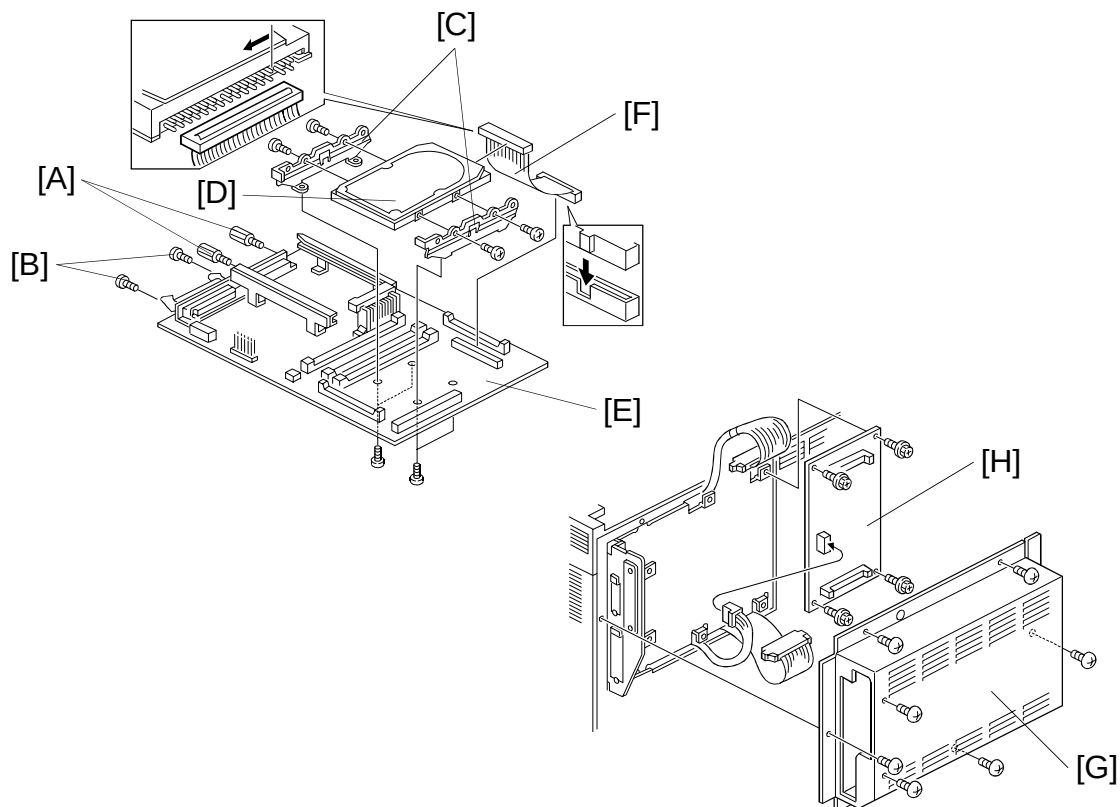
SECTION 3

INSTALLATION

1. MAIN CONTROLLER BOARD

Machine Code: A649
(Printer Controller Type 401)

1.1 INSTALLATION PROCEDURE



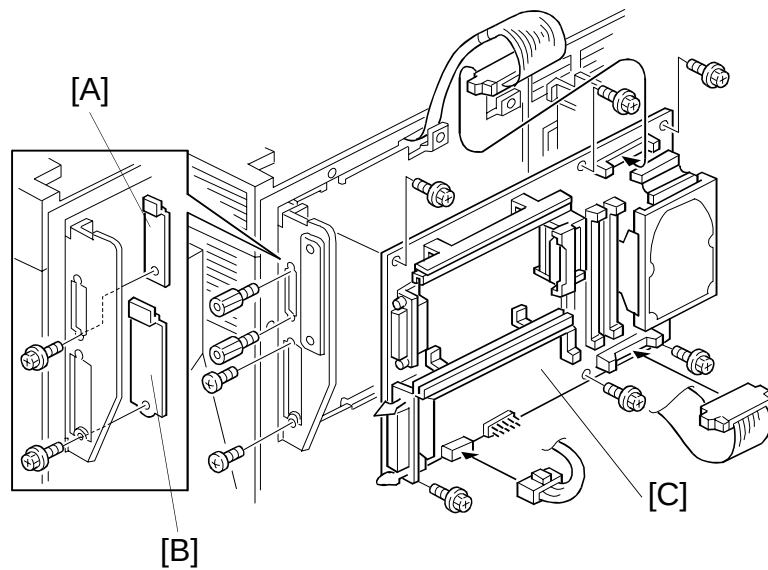
Installation

⚠ CAUTION

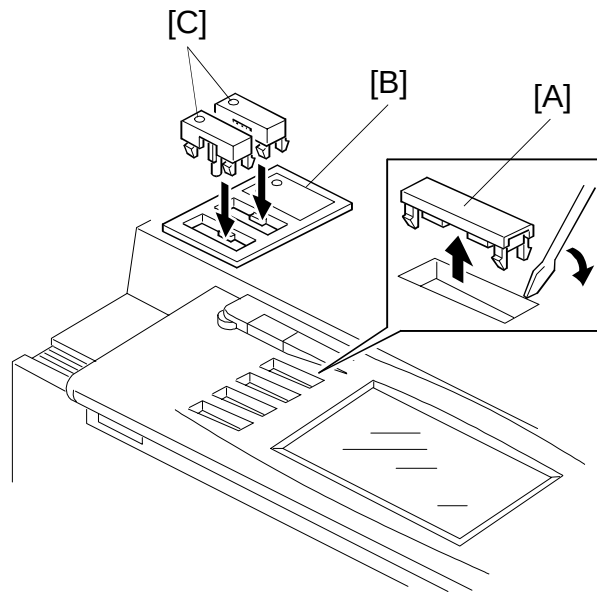
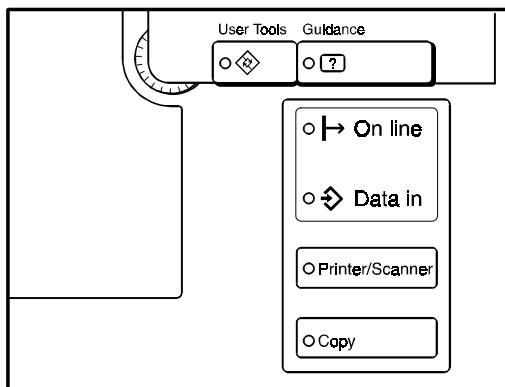
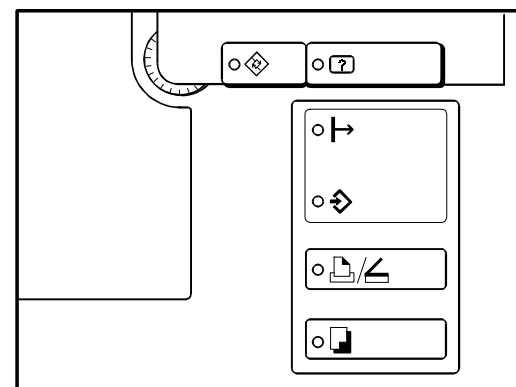
Unplug the copier power cord before starting the following procedure.

1. Remove the hexagonal head screws [A] (2 screws) and the screw [B] (2 screws) from the main controller board.
2. Attach the HDD brackets [C] to the HDD [D] (4 screws).
3. Mount the hard disk on the main controller board [E] (4 screws).
4. Connect both ends of the harness [F].
NOTE: Be sure the connector is placed as shown.
5. Remove the controller board cover [G] (7 screws).
6. Remove the dummy board [H] (4 screws, 3 connectors).

MAIN CONTROLLER BOARD



7. Remove the serial connector cover [A] and parallel connector cover [B] (1 screw each).
 8. Install the main controller board [C] on the machine (8 screws, 2 hexagonal screws, 3 connectors).
 9. Put the controller board cover back on the machine (7 screws).
- NOTE:** The controller board drops easily.

**–For the 120 V Version–****–For the 230 V Version–**

10. Remove all key top covers [A] (4 covers).

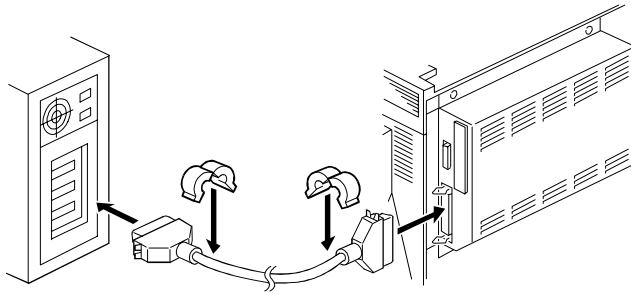
11. Install the key top holder [B].

12. Install the key tops [C] (2 key tops).

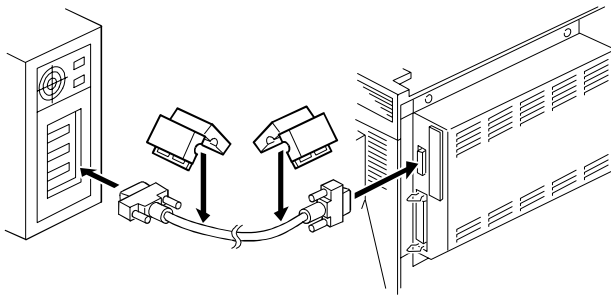
NOTE: Be sure the key tops are placed as shown.

MAIN CONTROLLER BOARD

For a parallel cable



For a serial cable



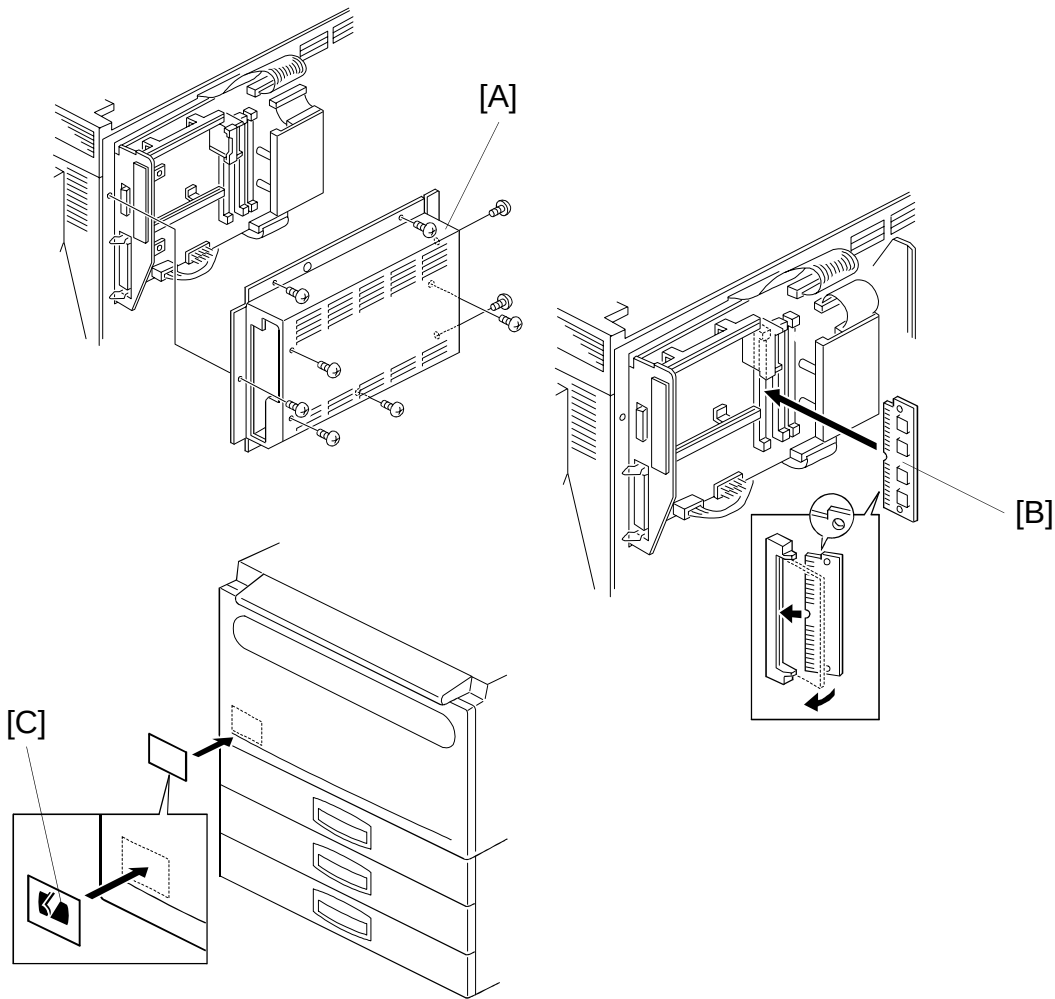
13. Attach the ferrite cores to both ends of the printer interface cable as shown.

NOTE: Be sure to use the ferrite core type shown.

2. POSTSCRIPT 2 KIT

Machine Code: A650
(PostScript 2 Kit Type 401)

2.1 INSTALLATION PROCEDURE



Installation

⚠ CAUTION

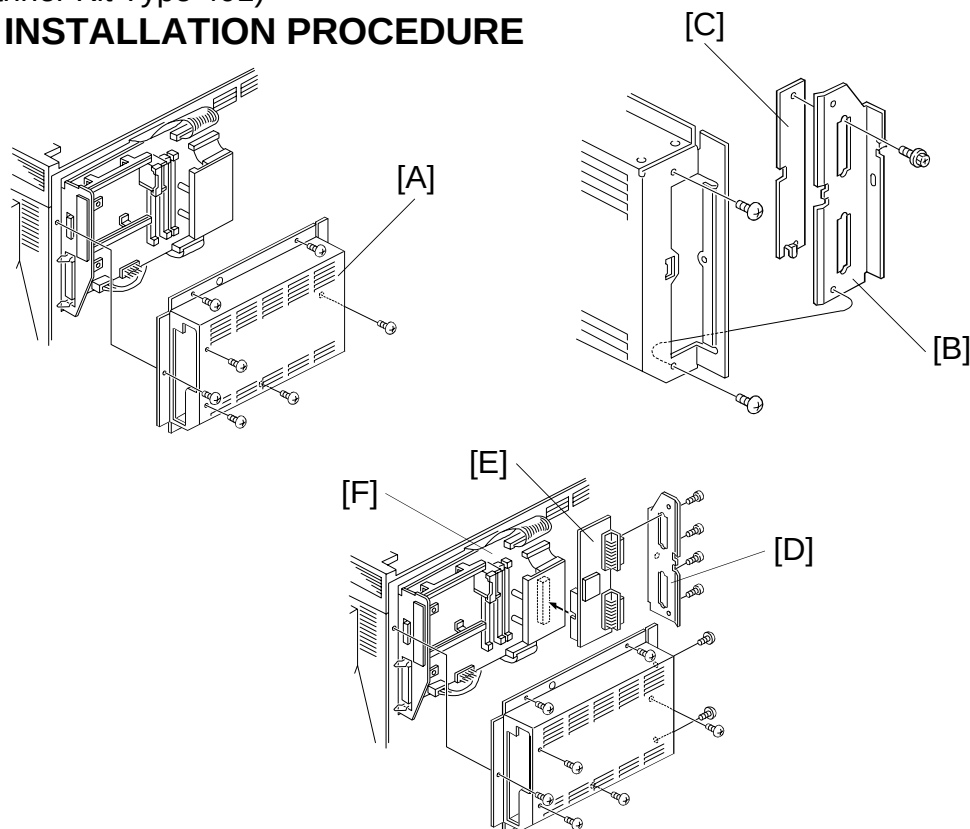
Unplug the copier power cord before starting the following procedure.

1. Remove the controller board cover [A] (7 screws).
2. Install the postscript ROM board [B] as shown.
3. Put the controller board cover back on the machine (7 screws).
4. Attach the PostScript decal [C] on the front cover as shown.

3. SCANNER KIT

Machine Code: A651
(Scanner Kit Type 401)

3.1 INSTALLATION PROCEDURE

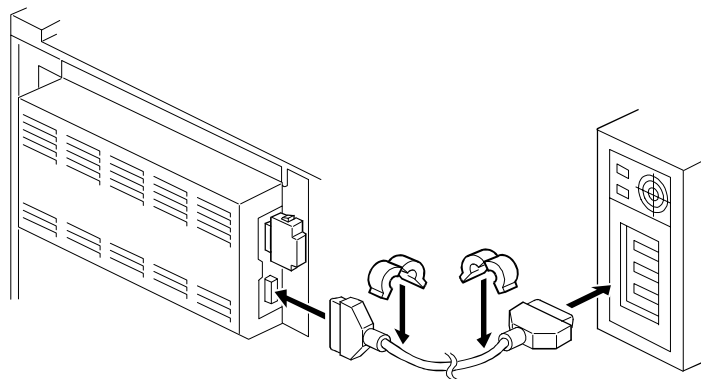
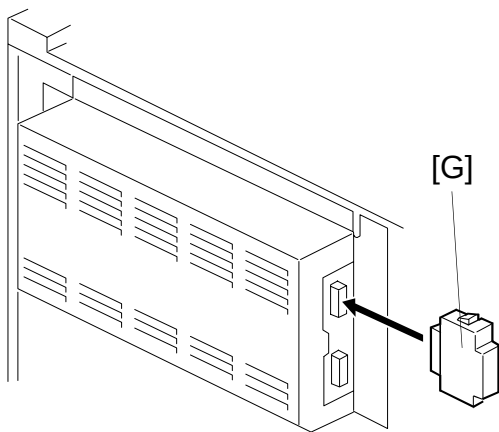


NOTE: For ease of installation, the scanner board should be installed after installation of the other optional board(s) (main controller board, PS ROM board, RAM SIMM), but before installing the NIC.

⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the controller board cover [A] (7 screws).
2. Remove the SCSI connector bracket [B] (2 screws) and the SCSI connector cover [C] (1 screw).
3. Install the SCSI connector bracket [D] on the scanner board [E] with 4 screws.
4. Mount the scanner board [E] on the main controller board [F] (1 connector).
5. Put the controller board cover back on the machine (9 screws).

**Installation**

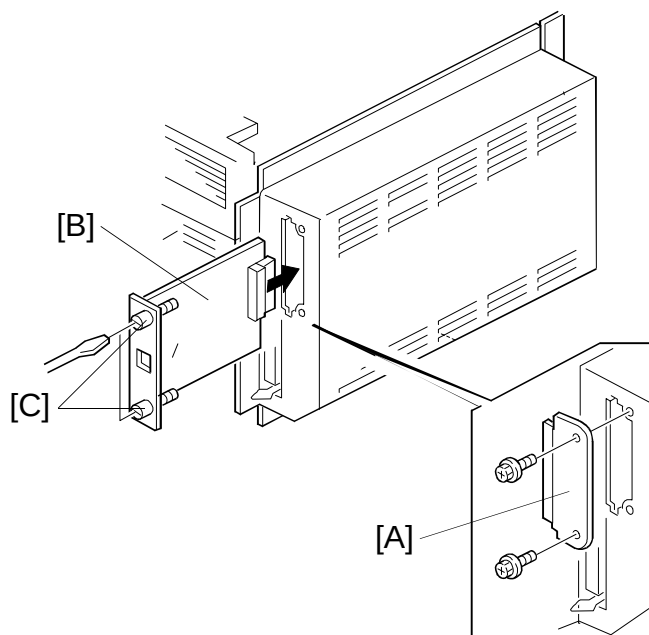
6. Plug in the SCSI terminator [G].
7. Attach the ferrite cores to both end of the SCSI cable as shown after the user connects the cable.

4. NETWORK INTERFACE CARD

Machine Code: A732 - For Ethernet (NIC401-E)

Machine Code: A733 - For Token Ring (NIC401-TR)

4.1 INSTALLATION PROCEDURE



NOTE: For ease of installation, the NIC should be installed after installing other optional board(s) (main controller board, PS board, RAM SIMM, scanner board).

⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

Before installing the card, do the following:

- Write down the MAC address and the serial number of the card (see the User's Guide for Printer Servers, page 2-1).
- Token Ring cards only: Set the speed jumper to match the customer's network (see the User's Guide for Printer Servers, page 2-2).

1. Remove the NIC cover [A] (2 screws).
2. Install the network interface card [B].
3. Tighten the screws [C].

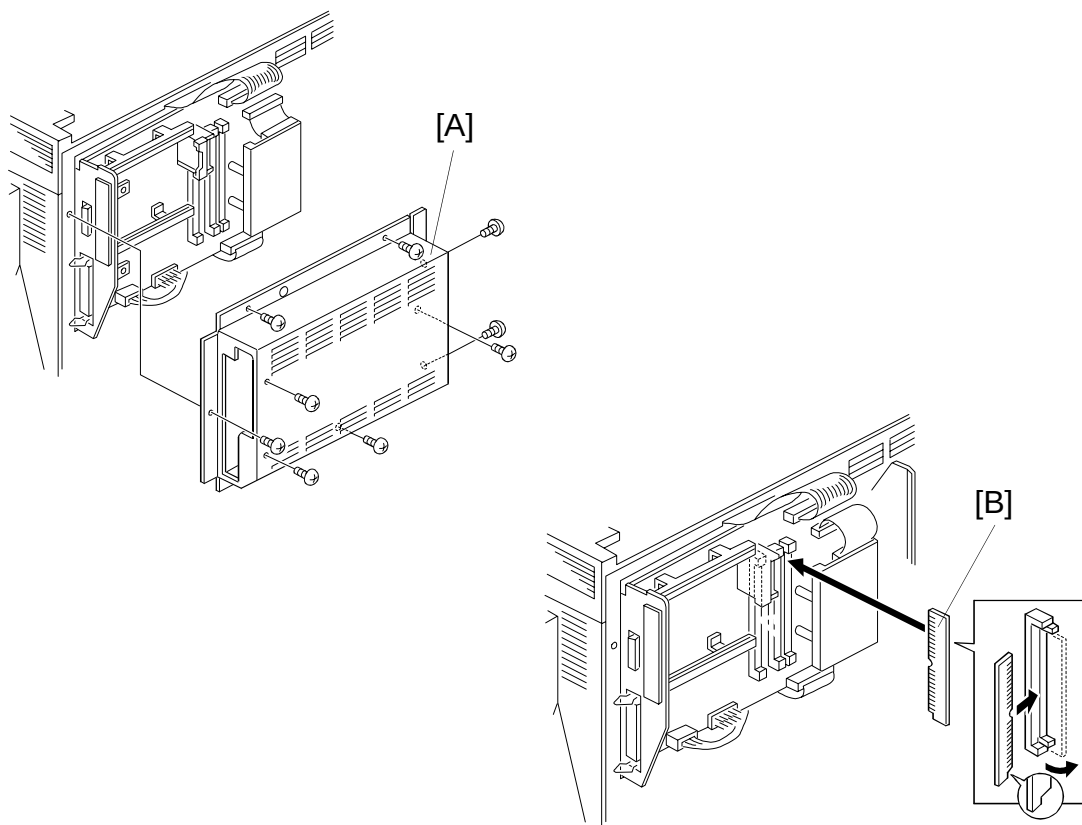
5. RAM SIMM OPTION

5.1 REQUIRED SPECIFICATION CHECK

Before installing the DRAM SIMM, confirm that it satisfies the requirements below.

Number of pins:	72 pins
Access speed:	70 ns or faster
Capacity:	8, 16, or 32 MB
Parity:	Any OK

5.2 INSTALLATION PROCEDURE



⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the controller board cover [A] (7 screws).
2. Install the RAM SIMM board(s) [B] as shown.
3. Put the controller board cover back on the machine (7 screws).

6. CONNECTING THE INTERFACE CABLES

6.1 PARALLEL INTERFACE

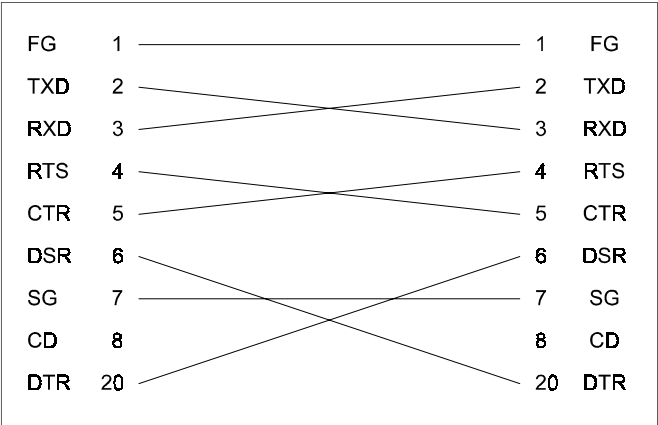
A bi-directional parallel cable is required to connect the printer controller to a host PC parallel port.

6.2 SERIAL INTERFACE

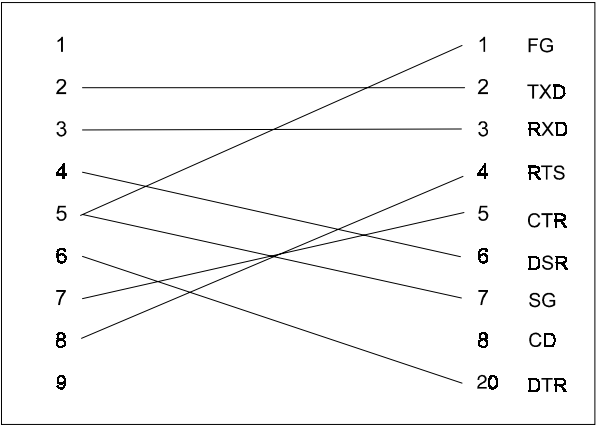
An RS-232C cross cable is required to connect the printer controller to a host PC serial port.

The figure below shows the wiring diagram of the RS-232C cross cable.

PC Side [20 pin connector]



PC Side [9 pin connector]



6.3 NETWORK INTERFACE

A network cable (Ethernet 10 Base T cable, 10 Base 2 cable, or TokenRing) is required to connect the Network Interface Card to the computer network.

After hardware setup, the network setup should be done by the user.

The setup procedure is described in the NIC manuals.

6.4 SCSI INTERFACE

The SCSI connection is a standard SCSI interface and requires a high density 50-pin SCSI cable and a SCSI port available on the host computer. In addition, you must provide and connect a SCSI terminator plug to one of the SCSI ports on the scanner board of the A195, if the A195 is at the end of the SCSI bus line.

NOTE: Before SCSI cable connection, the A195 should be set with the appropriate SCSI ID using the SCSI ID Setting screen.

CAUTION

Before plugging in the SCSI cable, make sure that both the machine and host computer are turned off.

1. Plug one end of the high density 50-pin SCSI cable into one SCSI port on the scanner board of the A195.
2. Plug the other end of the SCSI cable into the SCSI port on the host computer or other peripheral.
3. Plug the SCSI terminator into the other SCSI port on the scanner board of the A195, if the A195 is at the end of the SCSI bus line.

NOTE: 1) Advise the user to locate the A195 at the end of the SCSI line, and plug the SCSI terminator into the end of the SCSI bus line.

2) If the A195 is not located at the end of the SCSI line, the SCSI device at the end of the SCSI bus line has to be turned on to supply the SCSI termination power for the A195.

4. Attach the ferrite cores to both ends of the SCSI cable.

NOTE: The SCSI cable is not supplied with the scanner kit.

7. CONFIGURATION PARAMETER SETTINGS

The configuration parameters can be set through the control panel by the user.

NOTE: For the control panel settings, refer to the user manual.

PCL Menu

- Orientation
- Form Length
- Font Source
- Font Number
- Point Size
- Pitch
- Symbol Set
- Reset to Save

PostScript Menu (**Note:** This menu will appear if a PS board is installed.)

- Printer Errors

Feeder Menu

- Page Size
- Input Tray
- Auto Tray Change
- Bypass Tray Time-out
- Output
- Staple
- Separation
- Binding

Parallel Menu

- Personality
- Bidirection

Serial Menu

Personality
Baud Rate
Parity
Handshake
DTR Polarity
Stop Bits
Data Bits
I/O Time-out

Network Menu (Note: This menu will appear if an NIC is installed.)

I/O Time-out

Configuration Menu

Resolution
Copies
Jam Recovery
Auto Continue
Spooling
Smoothing
Mode
SCSI ID (**Note:** This menu item will appear if a scanner board is installed.)

8. CHECKING THE CONNECTIONS

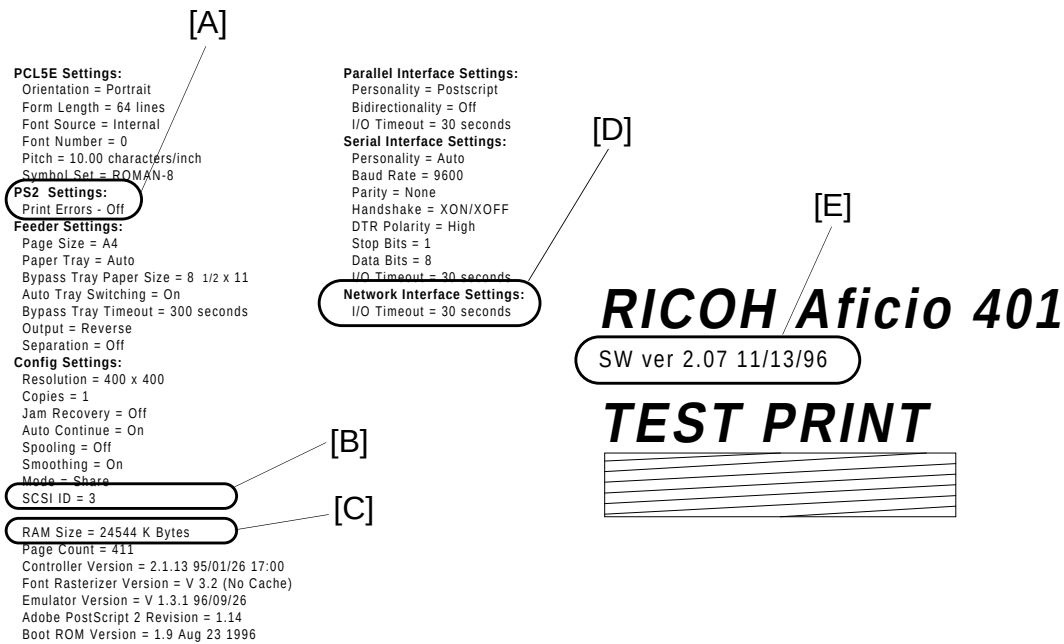
8.1 CONNECTION BETWEEN MAIN CONTROLLER BOARD (and related options; PostScript ROM, Scanner Board, RAM SIMM, NIC) AND THE COPIER ENGINE

1. Plug in the power cord and turn on the main switch.
2. Press the Printer/Scanner button to enter the printer/scanner mode.
3. Press the Online/Off-line button to enter off-line mode.
4. Press the Setup Menu button to enter the setup menu screen.
5. Press the Test Menu to enter the test menu screen.
6. Press the Print button to print out the Print Self Test.

NOTE: For more detailed information about the control panel settings, refer to the user manual.

The self test page is like the following.

[illegible]



Check the following:

- For the main controller board, confirm that the machine prints the test page.
- For the PostScript option, confirm that the self test page includes "PS2 Settings" [A] in the Setting Menu.
- For the scanner option, confirm that the self test page includes "Config. Settings - SCSI ID" [B] in the setting menu.
- For the RAM SIMM, confirm that "RAM Size" [C] printed on the self test page shows the size of the module just installed, plus 8 Mbytes.
- For the NIC, confirm that the self test page includes "Network Interface Settings-I/O Timeout" [D] in the setting Menu.
- For the system software version, check "SW ver XXX" [E].

If any problem occurs in the above checks, reinstall the printer controller and other options, then set up the machine again and test again.

8.2 Connection Between Main Controller Board and related the Network Interface Card

There are three ways to check the connection between the main controller board and the network interface card.

- To check that the self test page includes "Network Interface Setting".
- To check "Network Interface Settings:" in the Setting Menu on the Self Test Page.
- To print out the Network Interface Configuration Sheet with the network information.

8.2.1 Printing the Network Interface Configuration Sheet

NOTE: Before printing the Network Interface Configuration Sheet, the A195 printer should be available (e.g., in the printer mode).

1. Remove the LAN cable from the NIC of the A195.
2. Turn on the main switch.
3. Switch to the printer menu, and keep the machine on line.
4. Within approximately 2 minutes, the configuration sheet will be printed automatically.

NOTE: If the A195 does not print the Network Interface Configuration Sheet, you can check the Network Menu through the Setting Menu.

If any problem occurs during the above steps, reinstall the printer controller and other options, then set the machine up again and test again.

SECTION 4
SERVICE TABLES

1. SERVICE REMARKS

GENERAL CAUTION

Do not turn off the machine or switch the controller off-line when the data LED is blinking or is lit, or the data which has been sent to the controller will be lost. If you need to do this, ask the customer for consent.

GENERAL NOTE

If the machine can print the self test page to record the previous customer settings, do this before starting any service operation.

1.1 HARD DISK DRIVE

Like the HDD for a PC, the HDD is very sensitive to vibration. Avoid any vibration.

1.2 HARD DISK FORMATTING/REPLACEMENT

The maintenance menu has utilities to format the PCL or PS area of the disk.

If the hard disk is formatted or replaced, the stored data (macros) will be erased.

If you need to do this, ask the customer for consent.

After this operation, advise the customer to store data again, if necessary.

1.3 BOARDS, RAM SIMM, ROM SIMM

The Controller Board, scanner board, ROM SIMM, and RAM SIMM are very sensitive to static electricity. Keep these parts away from static electricity.

1.4 REPLACING THE CONTROLLER BOARD

If you replace the controller, the previous settings will not remain.

The settings should be stored again by the customer.

If you need to replace the board, ask the customer for consent.

1.5 DOWNLOADING SYSTEM SOFTWARE

System software can be downloaded from a PC via the parallel port. (See Section 2.3 "Download New System Software")

If you do this, all the settings will be reset to the factory defaults.

1.6 RESET MENU

There are reset menus (menu reset, system reset) under the Reset Menu in the Setup Menu on the A195 operation panel.

If you do a reset, all or some settings will be reset to the factory defaults.

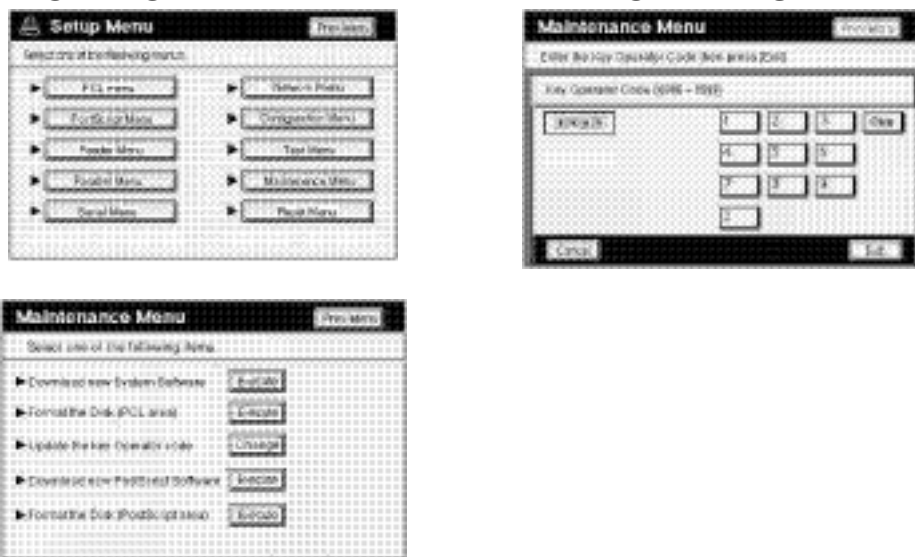
2. MAINTENANCE MENU

2.1 INTRODUCTION

The Maintenance Menu is used to perform the following controller maintenance functions.

- 1) Download New System Software
- 2) Download New PostScript Software
- 3) Format the Disk (PCL area)
- 4) Format the Disk (PostScript area)
- 5) Update the Key Operator Code

2.2 HOW TO ENTER THE MAINTENANCE MENU



1. Plug in the power cord and turn on the main switch.
2. Press the Printer/Scanner button to enter the printer/scanner mode.
3. Press the Online/Off-line button to enter Off-line mode.
4. Press the Setup Menu button to enter the setup menu screen.
5. Press the Maintenance Menu button to enter the Key Operator Code screen.
6. Enter the Key Operator Code to enter the maintenance menu screen.
The Key Operator Code for a service engineer is "2463".
Then, press the "Exit" button.
7. Select the maintenance item.

2.3 DOWNLOAD NEW SYSTEM SOFTWARE

Download New System Software is used to update the controller system software from the personal computer through the parallel cable.

2.3.1 Preparation

- Provide the DOS based computer with a parallel port (LPT1 is used by default)

NOTE: MS-DOS or PC-DOS is required on the PC.

- Provide a standard parallel cable to connect the computer to the A195.
- Provide new system software to download from the computer
- Provide the FCOPY program. (command file)
(This program file should be provided with the updated software.)

2.3.2 How to download new system software

NOTE: Before doing this, remove all printer/network cables from the A195.

1. Check that the parallel cable is properly connected to the downloading computer.
2. Turn on the A195, then turn on the computer.
3. Check the location of FCOPY.EXE on the computer. If it is not on the computer, copy it into a separate directory.
4. Copy the new system software file to the computer's hard disk, in the same directory as the FCOPY.EXE File.
5. Check the name of the printer port to which the parallel cable is connected (LPT1, LPT2, or other).
6. After the DOS prompt appears, change to the directory where the FCOPY.EXE command file is stored (if necessary).
7. On the A195, enter the Maintenance Menu through the control panel. Refer to the "How to enter the Maintenance Menu" (previous section).
8. On the A195, press the "Execute" button in the "Download new system software" screen. The control panel displays the following message:
"Are you sure you want to Download New System Software?"
If the computer is ready to upload the software, press the "Yes" button.

9. On the computer, type the following at the DOS prompt in the directory where FCOPY.EXE is:

FCOPY (space)[Path]File name(space)[Port Name]

Example:

c:\FCOPY 201r.img [LPTx]

If you use LPT1, it is not necessary to include LPT1 in the command line.

However, if LPT1 is already in use, input another parallel port name here, such as LPT2.

CAUTION

**Interrupting this procedure, may cause unrecoverable errors. Do not press any key or turn off the machine until the A195 LCD displays the message: "System Flash Download is successful
Power machine off and then on to restart".
This confirms that the software download was successful .**

10. Press the "Enter" key on the computer

The A195 control panel displays the following message during software downloading.

"Downloading New System Software"

The computer displays the following:

"c:\FCOPY 201r.img" (the name of the image file may be different)

Please wait.

Downloading new software.

*****"

The computer will show what percentage of the download is completed. The number will stop changing at 99% and the PC will display these messages:

"Check control panel.

Confirm successful downloading.

c:\"

Within approximately 5 minutes, A195 LCD panel will display the message: .

"System Flash Download is successful

Power machine off and then on to restart."

NOTE: Depending on the PC configuration, the time to complete downloading software may differ.

11. After confirming a successful download, turn off and restart the machine.

12. Print out the Print Self Test to check the software version. (Refer to the Checking the Connections Section.)

NOTE: If the job cannot be completed, it may be necessary to change the LPT configuration.

2.4 DOWNLOAD NEW POSTSCRIPT SOFTWARE

Download New PostScript Software is used to update the PostScript software from the personal computer through the parallel cable.

2.4.1 Preparation

- Provide the DOS based computer with a parallel port (LPT1 is used by default).

NOTE: MS-DOS or PC-DOS is required on the PC.

- Provide a standard parallel cable to connect the computer to the A195.
- Provide new PostScript software to download from the computer.
- Provide the SCOPY program (command file).

2.4.2 How to download new PostScript software

NOTE: Before doing this, remove all printer/network cables from the A195.

1. Check that the parallel cable is properly connected to the downloading computer.
2. Turn on the A195, then turn on the computer.
3. Copy the new PostScript software file to the computer's hard disk.
4. Check the location of SCOPY.EXE on the computer.
5. Check the name of the printer port to which the parallel cable is connected (LPT1, LPT2...).
6. After the DOS prompt is displayed on the computer, change to the directory where the SCOPY.EXE command is located (if necessary).
7. On the A195, enter the Maintenance Menu through the control panel. Refer to the "How to enter the Maintenance Menu" section.
8. On the A195, press the "Execute" button in the "Download New PostScript software" screen. The control panel displays the following message:
"Are you sure you want to Download New PostScript Software?"
If the computer is ready to upload the software, press the "Yes" button.

9. Type the following at the DOS prompt in the directory where SCOPY.EXE is.

SCOPY(space)[Path]File name(space)[Port Name]

Example:

c:\SCOPY mf3.img [LPTx]

If you use LPT1, it is not necessary to include LPT1 in the command line.

However, if LPT1 is already in use, input another parallel port name here, such as LPT2.

10. Press the "Enter" key on the computer

- The A195 control panel displays the following message during software downloading.

"Downloading New System Software"

The computer displays the following:

[e.g.]

c:\SCOPY mf3.img

Please wait.

Downloading new software.

Check control panel.

Confirm successful downloading.

c:\

CAUTION

Do not press any key or turn off the machine before confirming that the software download was successful on the A195 control panel (i.e., until the following message is displayed).

Within approximately 5 minutes, the displayed message will be changed to the following message on the A195 control panel automatically.

"PostScript Flash Download is successful.

Power machine off and then on to restart."

NOTE: Depending on the PC configuration, the time to complete downloading software may differ.

11. After confirming that the download was successful, turn off and restart the machine.
12. Print out the Print Self Test to check the software version. (Refer to the Checking the Connections Section.)

NOTE: If the job cannot be completed, it may be necessary to change the LPT configuration.

2.5 FORMAT THE DISK (PCL AREA)

This menu is used to format the PCL area on the hard disk (this is also known as the Permanent area).

2.5.1 Operation

NOTE: Before doing this, remove all printer/network cables from the A195.

1. Turn on the A195.
2. Enter the Maintenance Menu through the control panel.
Refer to the "How to enter the Maintenance Menu" section.
3. Press the "Execute" button in the "Format the Disk (PCL area)" screen.
The control panel displays the following message:
"Are you sure you want to Format the Disk (PCL area)?"
Press the "Yes" button.
Then, the A195 control panel displays the following message during formatting.
"Formatting the Disk (PCL area)"
After formatting, the displayed message will be changed to the following message automatically.
"Formatting the Disk (PCL area) was successful."
Power machine off and then on to restart."

CAUTION

Do not press any key or turn off the machine before confirming that formatting was successful (i.e., until the above message is displayed).

4. After confirming that formatting was successful, turn off and restart the machine.

2.6 FORMAT THE DISK (POSTSCRIPT AREA)

This menu is used to format the PostScript area of the hard disk.

If the hard disk is formatted, the stored data (downloaded fonts, macros) will be erased. So if you need to do this, ask the customer for consent.

After this operation, advise the customer to store their data again, if necessary.

2.6.1 Operation

NOTE: Before doing this, remove all printer/network cable from the A195.

1. Turn on the A195.
2. Enter the Maintenance Menu through the control panel.
Refer to the "How to enter the Maintenance Menu" section.
3. Press the "Execute" button in the "Format the Disk (PostScript)" screen.
The control panel displays the following message:
"Are you sure you want to Format the Disk (PostScript)?"
Press the "Yes" button.
Then, the A195 control panel displays the following message during formatting.
"Formatting the Disk (PostScript)"
The displayed message will be changed to the following message automatically.
"Formatting the Disk (PostScript) was successful."
Power machine off and then on to restart."

CAUTION

Do not press any key or turn off the machine before confirming that formatting was successful (i.e., until the above message is displayed).

4. After confirming that formatting was successful, turn off and restart the machine.

2.7 UPDATE THE KEY OPERATOR CODE

If the key operator code must be changed, use this menu item. The key operator code cannot be changed by the user.

When the operator intends to change the key operator code, it can be done by entering the old and new key operator codes at the ten-key pad. Both soft keys and hard keys are effective. The key operator code can be any four digits from 0 to 9. (The key operator code for a service man is "2463")

2.7.1 Operation

1. Turn on the A195.
2. Enter the Maintenance Menu through the control panel.
Refer to the "How to enter the Maintenance Menu" section.
3. Press the "Execute" button in the "Update the Key Operator Code" screen.
4. The current key operator code enter screen appears.
5. Enter the current key operator code, then press the Exit button.
If the entered key operator code is correct, the New Key Operator Code input screen appears. If an incorrect key operator code was entered, the alert window appears.
6. Enter the new key operator code. Do not use "2463".
Then push Exit. The key operator code confirmation screen appears.
7. Enter the new key operation code again to confirm your input.
Then push Exit.

3. RESET MENU

3.1 INTRODUCTION

The Reset Menu is used to perform the following functions for controller maintenance.

- 1) Printer Reset
- 2) Menu Reset
- 3) System Reset

3.2 HOW TO ACCESS THE RESET MENU

1. Plug in the power cord and turn on the main switch.
2. Press the Printer/Scanner button to enter the printer/scanner mode.
3. Press the Online/Off-line button to enter Off-line mode.
4. Press the Setup Menu button to enter the setup menu screen.
5. Press the Reset Menu.

NOTE: This menu is not protected by any key operator code. Any user can do this operation.

3.3 PRINTER RESET

Printer Reset cancels any print jobs being processed and returns the machine to the initial power-on state, but does not delete the spooled print jobs (except for the job currently in progress). Reset Printer does not change the menu settings.

3.4 MENU RESET

Menu Reset cancels most menu settings and returns them to their factory settings.

The following menu fields are not returned to the factory defaults.

- Manual Size
- Bidirection
- Baud Rate
- Parity
- Handshake
- DTR Polarity
- Stop Bits
- Data Bits
- SCSI ID

3.5 SYSTEM RESET

All Reset functions are performed.

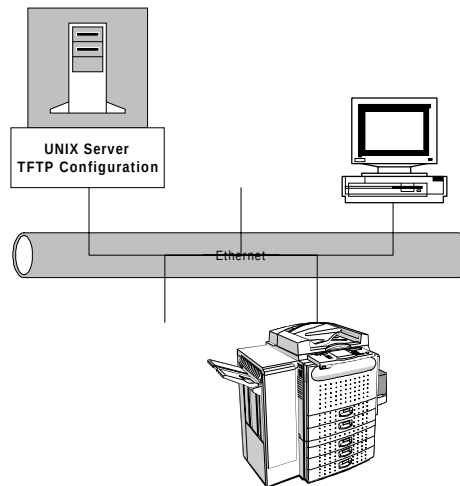
Menu Reset cancels any menu settings and returns them to their factory settings.

Page count and user password are not restored to zero with System Reset.

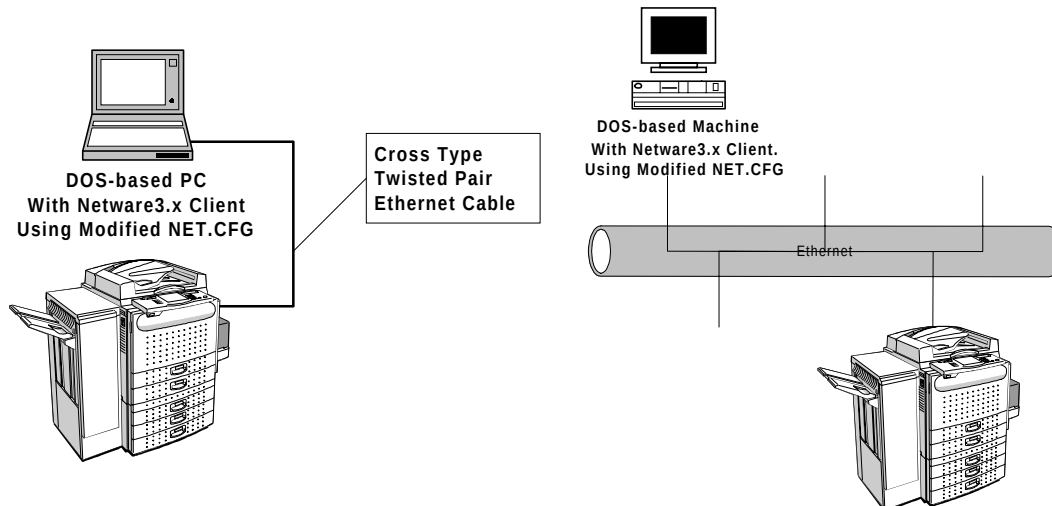
4. NETWORK INTERFACE CARD SOFTWARE UPGRADE

The printer server software in the Flash Memory can be upgraded using one of the following ways.

- Remote Downloading Software via TFTP. (Refer to the Network Printer Manager manuals.)



- The DOS Flash Update Utility.



4.1 DOS FLASH UPDATE UTILITY

4.1.1 Overview

The printer server software upgrade can be performed through the DOS Flash Update Utility. Anyone doing this must have a good understanding of DOS commands and needs to be familiar with the Network Interface Card documentation.

If more than one printer server requires upgrading, a DOS batch file may be created to prevent re-entering commands for each printer server. See your DOS manual for help with batch files.

4.1.2 Outline of the Procedure

Preparing your Portable PC

1. Install Novell Netware 3.x on your portable PC. This will cause the net.cfg file to be automatically created.
NOTE: Netware 4.x will not do this.
2. Make a backup copy of the net.cfg file and rename it (e.g., netcfg.bak).
3. Modify the net.cfg file to match the NIC installed in your portable PC, as explained in sections 4.2 and 4.3.
NOTE: The net.cfg files modified for this process cannot be used for logging on to a Netware server. They are only good for connecting to an A195.
4. Install the Flash Update Utility as explained in section 4.4.
5. Copy the latest A195 software (system/PostScript) version to the c:\download directory.

Using the Update Utility

There are two ways to do this.

- At the customer's site
- At the service center

CAUTION

Do not perform this operation using a PC belonging to the user, and do not connect your PC to the user's network. Otherwise, you may cause problems with the user's network configuration.

- Upgrade at the Customer's Site -

1. Connect your portable PC directly to the A195's NIC using an Ethernet Cross-type Twisted Pair Cable. Do not hook up your portable to the user's network (see the above Caution).
2. Run the Flash Update Utility (see section 4.6). This copies the new software from your portable to the A195.

- Upgrade at the Service Center -

1. If you set up a network at your service center, you can bring the user's A195 NIC and install it in the A195 on your network.
2. Connect your portable PC to the network (a normal network cable can be used; there is no need to use a cross-cable).

NOTE: The PC you use to run the Flash Update Utility must be on the same physical wire as the printer server. No bridges or routers are allowed between the PC running the Flash Update Utility and the printer server.

3. Run the Flash Update Utility (see section 4.6). This copies the new software from your portable to the A195.

4.2 MODIFYING NET.CFG

The net.cfg file must be modified before the Flash Update Utility can function. This utility only works under DOS; do not use Windows 3.1/95.

CAUTION

Make a backup copy of the NET.CFG file before proceeding.

4.3 SAMPLE NET.CFG

4.3.1 Overview

Typical NET.CFG files are presented on the following pages. Your NET.CFG file will be somewhat different, but Emulex (the NIC manufacturer) recommends following one of the samples whenever possible. Required entries are in italic type.

The NET.CFG file requires certain entries to support the MOP Protocol. They are presented below.

1. During initialization, the Flash Update Utility (the protocol stack) checks the NET.CFG file for its main section header.
2. A main section heading for the MOP protocol is labeled "PROTOCOL" and must be on the left margin of the display screen.
3. The "PROTOCOL" entry is followed by the name of the protocol stack MOP.
4. The Flash Update Utility will search for a "BIND" configuration entry.
5. Under the main section heading for the Link Driver, the ETHERNET_II Frame type must be enabled. This is done with the entry "FRAME ETHERNET_II".
6. Under the Main Section Heading for the Link Driver, the following must appear:
 Protocol ID and frame type for the MOP (Dump/Load) Protocol
 Protocol ID for the MOPRC (Remote Console) Protocol
7. The protocol identification and frame types for the MOP are:
 MOP, Dump/Load, Ethernet Standard frame type II
 MOPRC, Remote Console, Ethernet Standard frame type I

4.3.2 SMC EtherCard Elite16C Ultra Ethernet Card

LINK SUPPORT

BUFFERS 6 1600

LINK DRIVER smc8000

FRAME ETHERNET_II MSB

FRAME ETHERNET_802.3 MSB

PROTOCOL IPX 0 ETHERNET_802.3 (binds IPX to frame)

PROTOCOL MOP 6001 ETHERNET_II

PROTOCOL MOPRC 6002 ETHERNET_II

PROTOCOL MOP

BIND #1

Netware DOS Requester

:
:

these dots represent entries unique to your site)

:
:

Service
Tables

4.3.3 2. 3Com 3C503 Etherlink II TCP Ethernet Card

LINK SUPPORT

BUFFERS 6 1600

LINK DRIVER 3C503

PORT 300

mem d800

INT 5

; CONNECTOR DIX

; *the odipkt driver talks ethernet_ii*

FRAME ETHERNET_II MSB

; the ipxodi driver needs 802.3

FRAME ETHERNET_802.3 MSB

NETWORK INTERFACE CARD SOFTWARE UPGRADE

PROTOCOL IPX 0 ETHERNET_802.3 (binds IPX to frame)

PROTOCOL MOP 6001 ETHERNET_II

PROTOCOL MOPRC 6002 ETHERNET_II

PROTOCOL MOP

BIND #1

Netware DOS Requester

:

(these dots represent entries unique to your site)

:

4.3.4 3. 3Com 3C509B-COMBO Ethernet Card

;This section is for configuration of linkwatch manageable end nodes.

;

Protocol DME

BIND #1

; replace with your specific information for LinkWatch.

USER_NAME "Your Name"

NODE_NAME "Your Node Name"

NODE_LOCATION "Your Node Location"

; set password according to your network administrator's instructions.

; NODE_PASSWORD "ABCDEFGH"

PHONE_NUMBER "Your Phone Number"

NOTES "Miscellaneous text"

NOTES "and more text"

LINK DRIVER 3C5X9

; PORT 300

FRAME ETHERNET_II

```

FRAME ETHERNET_802.3
; FRAME ETHERNET_802.2 MSB
; FRAME ETHERNET_SNAP
PROTOCOL IPX 0 ETHERNET_802.3
PROTOCOL MOP 6001 ETHERNET_II
PROTOCOL MOPRC 6002 ETHERNET_II
;
; =====
; port [index] STARTING_PORT COUNT
; This setting is only required when there is two
; adapters in the workstation.
;
; All adapter specific parameters are read from the adapter.
;
; mem [index] MEMORY_WINDOW (Optional)
; If parameter not present in protocol.ini, driver auto selects a
; a free 4K memory window. Released after initialization of card.
; If specified, forces driver to use this address to map card's
; CIS memory during driver initialization. Window is released
; after driver finishes initializing card or fails to find card.
; Use 0xC000 - 0xEF00 in steps of 0x100
;
; NOTE: frame ethernet_802.3
; *****This is a version 4.X DOS ODI driver. The default
; frame type is 802.2, but you may be using 802.3.
;
; =====
PROTOCOL MOP

```


NETWORK INTERFACE CARD SOFTWARE UPGRADE

BIND #1

Netware DOS Requester

⋮

4.3.5 Novell NE2000PLUS-3 Ethernet Card

LINK SUPPORT

BUFFERS 6 1600

link driver ne2000

Int 5

Port 300

FRAME ETHERNET_II

Frame Ethernet_802.2

PROTOCOL IPX e0 ETHERNET_802.2 (binds IPX to frame)

PROTOCOL MOP 6001 ETHERNET_II

PROTOCOL MOPRC 6002 ETHERNET_II

PROTOCOL MOP

BIND #1

Netware DOS Requester

⋮

4.3.6 Intel Express Ethernet Card

LINK SUPPORT

BUFFERS 6 1600

LINK DRIVER EXP16ODI

PORT 300

mem d800

INT 5

; the odipkt driver talks ethernet_ii

FRAME ETHERNET_II MSB

; the ipxodi driver needs 802.3

FRAME ETHERNET_802.3 MSB

PROTOCOL IPX 0 ETHERNET_802.3 (binds IPX to frame)

PROTOCOL MOP 6001 ETHERNET_II

PROTOCOL MOPRC 6002 ETHERNET_II

PROTOCOL MOP

BIND #1

Netware DOS Requester

:
:
:

4.4 INSTALLING THE FLASH UPDATE UTILITY

1. Create a subdirectory:
C:\md download
This command creates a subdirectory called "download".
2. Insert the floppy disk
Drive "A" is assumed; if a different drive is used, type the appropriate letter in the next step.
3. Copy the files to the designated drive by entering:
Copy A:\utils\fwupdate *.* C:\download
4. Enter:
C:\cd download
C:\download> install
This installs the Flash Update Utility.

4.5 BEFORE RUNNING THE FLASH UPDATE UTILITY

Read the following section before executing the Flash Update Utility. Choose between defaults, paths, and changes.

4.5.1 AVAILABLE SWITCHES

- /b Boot Target Server and exit program, no load
- /c Remote Console Connection to target server
Type CTRL-D to exit RCF
- /d Change path from default directory for load file
- /o Output execution information to the specified log file
- /f Netload Target Server and update Flash with load file
- /h Display this Help Screen
- /l Netload Target Server
- /n Name of file to be loaded without the extension
- /pl Printer Server Login Password, default = "access"
- /pm Maintenance Password (RCF Connection), defaults to disabled.
- /pp Printer Server Privilege Password, default = "system"

4.5.2 SWITCH SUMMARY

Switches may be entered in any order. Parameters associated with a switch must follow the switch characters with no intervening spaces. Selections from the table in the preceding paragraph are described in detail below.

b

This switch causes the target printer server to be booted. No change occurs in the printer server settings and the printer server's Flash memory is not updated by the Flash Update Utility. This is a reboot only.

Switch format: /b

c

This switch causes a Remote Console Facility (RCF) connection to be made with the target printer server. After the connection is made, the "#" prompt is displayed. Enter the printer server remote login password (default is access). If the maintenance password has been changed in the printer server, an error will result unless the maintenance password switch (/pm) is also entered on the command line.

Switch format: /c

d

The default path for the load file is "c:\download". If the load file is in another directory, this switch permits a change of path.

Switch format: /d***path***

path

Enter the new path for the load file if it has been changed from the default.

o

This switch causes a log file to be kept during execution. If the specified file does not exist, one is created and the execution information is written to it. If the file exists, the information is appended to the file. This allows the log to grow with multiple executions, such as from a batch file.

Switch format: /o[***path***]***filenam.ext***

path

The path to the location of the log file.

filenam.ext

Log file name.

f

This switch causes the printer server to perform a DECNet load and Flash update. The printer server is defined for a DECNet load. If the load filename switch is also entered on the command line, the file name for a DECNet load is defined. The printer server is rebooted so the DECNet load will take place. Upon completion of the load, the Flash Update Utility exits to DOS. The printer server will perform a Flash update at the completion of the load independent of the Flash Update Utility.

Switch format: /f

h

This switch causes the help screen to be displayed.

Switch format: /h

l

This switch causes the printer server to perform a DECNet load. The server is rebooted and upon completion of the load the Flash Update Utility exits to DOS.

Switch format: /l

n

This switch is used to enter a load file name different from the default NIC name. The file name is limited to 8 characters without an extension, which is assumed to be ".sys".

Switch format: /n***file_name***

pl

The default printer server remote login password is "access". If the default password is still in use, the switch is not needed. If the login password has been changed, this switch must be used with the /l or /f switches to allow the utility to login to the server.

Switch format: /pl***password***

pm

The maintenance password is disabled by default. If the maintenance password has been changed, the switch must be used when the /l, /f, or /c switches are entered. The maintenance password consists of 1 to 16 hexadecimal characters.

Switch format: /pm***password***

pp

The default privilege password is "system". If this password has been changed, this switch must be entered when the /l or /f switches are used.

Switch format: /pp***password***

4.6 RUNNING THE DOS FLASH UPDATE UTILITY

4.6.1 COMMAND SYNTAX

To run the Flash Update Utility, type the following:

```
c:\download> flashup mac_add[/switch]
```

mac_add Enter the Ethernet or MAC address.

switch Switches may be combined if the correct syntax is applied.

4.6.2 SAMPLE SWITCH APPLICATIONS

In each of these sample applications, the flashup command causes the printer server to perform a netload, and the MAC address remains the same: 00-00-c9-03-80-a5.

1. Enter

```
C:\download> flashup 00-00-c9-03-80-a5 /f /nCPF518NB
```

f This switch causes the printer server to perform a DECNet load and flash update.

n This switch is used to enter a load file name different from the default NIC name (in this case, the filename is CPF518NB).
The file name is limited to 8 characters without an extension, which is assumed to be ".sys".

NOTE: The spaces after the MAC address and after /f are necessary.

2. Press Enter

3. Wait until the DOS prompt is displayed.

4. Wait for 3 more minutes.

CAUTION

Do not turn off the machine soon after data transfer from the PC wait about 3 minutes after data transfer completed (after returning to the DOS prompt) to allow complete software replacement inside of the NIC memory area.

5. Reboot the NIC (either switch the machine off/on, or use the Network Printer manager).

SECTION 5

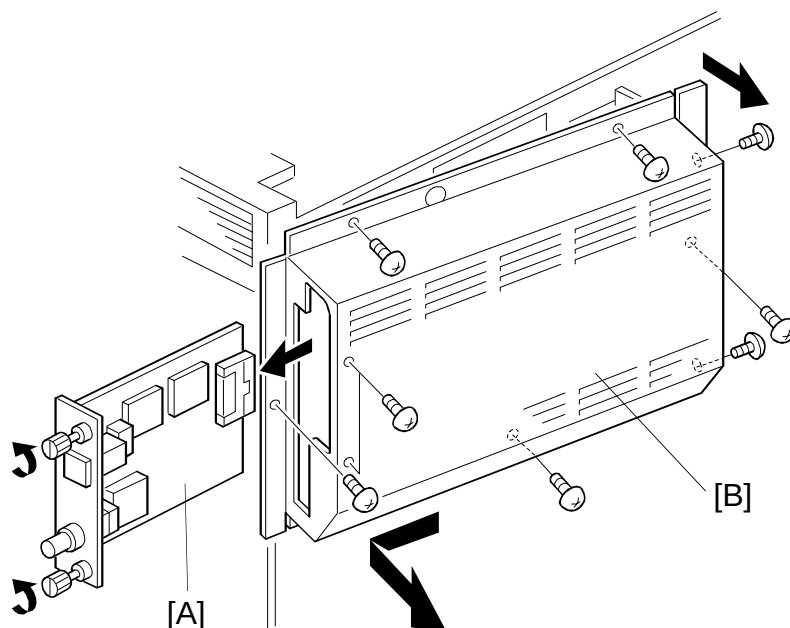
**REPLACEMENT AND
ADJUSTMENT**

1. CONTROLLER BOARD COVER REMOVAL

⚠ CAUTION

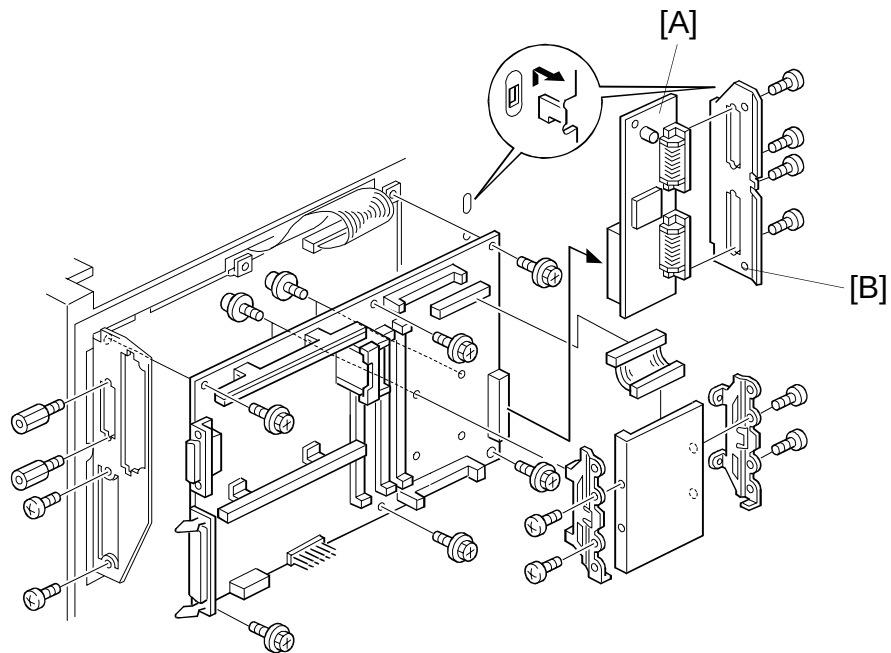
Unplug the copier power cord before starting the following procedure.

NOTE: This procedure assumes that all optional boards are installed (including scanner board and NIC).



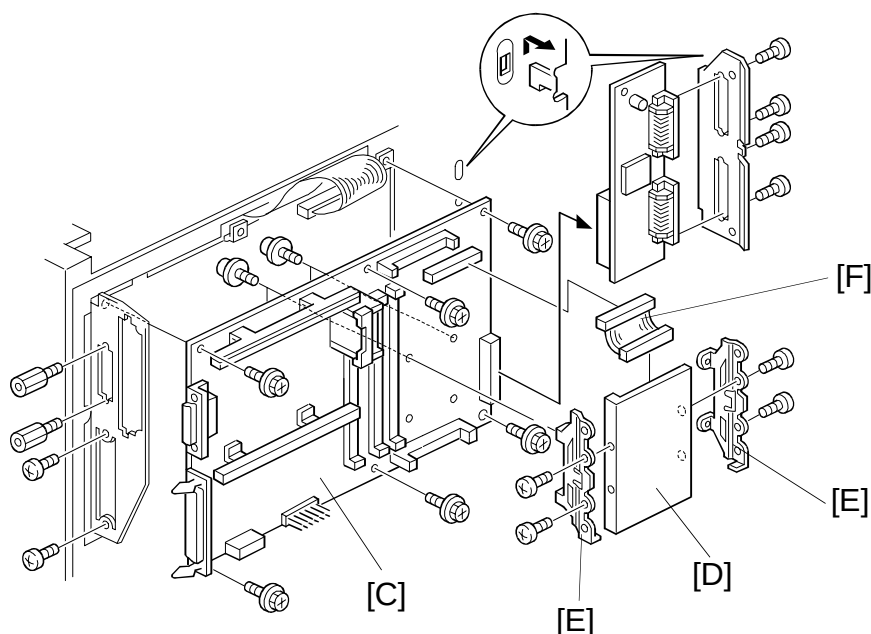
1. Unplug all cables (Parallel, Serial, SCSI) and the SCSI terminator.
2. Remove the NIC [A] (2 screws).
3. Remove the controller cover [B] (9 screws).

2. SCANNER BOARD REMOVAL



1. Remove the controller board cover (see Controller Board Cover Removal).
2. Dismount the scanner board from the main controller board [A] (1 connector).
3. Remove the SCSI connector bracket [B] (4 screws).

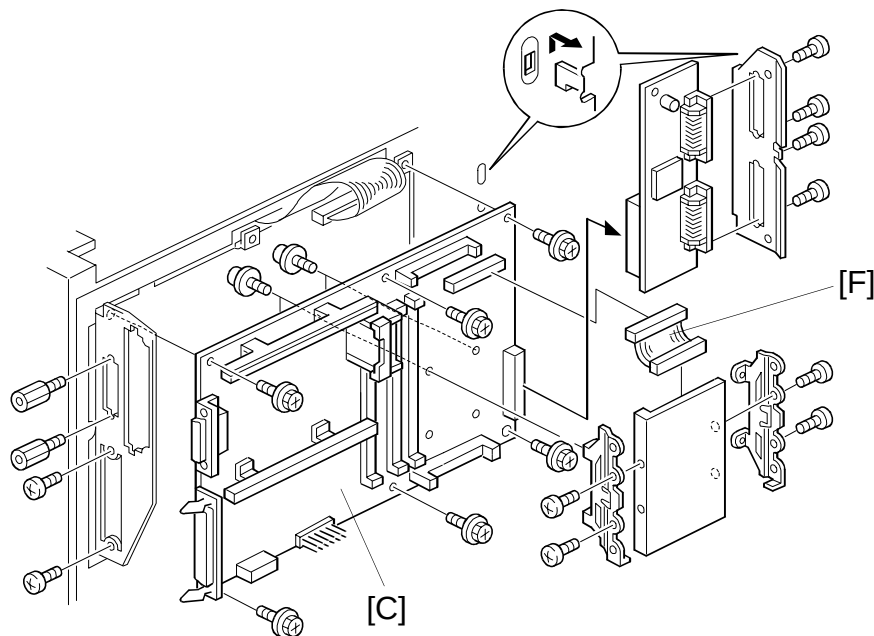
3. HDD REMOVAL



1. Remove the controller board cover (see Controller Board Cover Removal).
2. Dismount the scanner board from the main controller board (see Scanner Board Removal).
3. Remove the main controller board [C] with HDD (3 connectors, 10 screws). Remove the RAM SIMM and PostScript ROM options if they are installed. (See the respective removal procedures.)
4. Dismount the HDD [D] with bracket from the main controller board (4 screws).
5. Remove the bracket [E] (4 screws).
6. Remove the IDE cable [F]. Note: See Main Controller Board Installation in Section 3, for IDE Cable Installation.

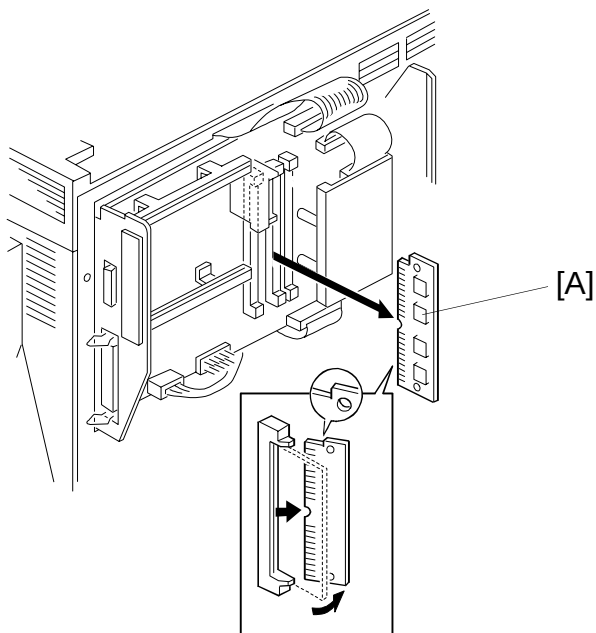
Replacement
Adjustment

4. MAIN CONTROLLER BOARD REMOVAL



1. Remove the controller board cover (see Controller Board Cover Removal).
2. Dismount the scanner board from the main controller board (see Scanner Board Removal).
3. Remove the main controller board [C] with HDD (3 connectors, 10 screws).
4. Remove the HDD (see HDD Removal).
6. Remove the IDE cable [F].

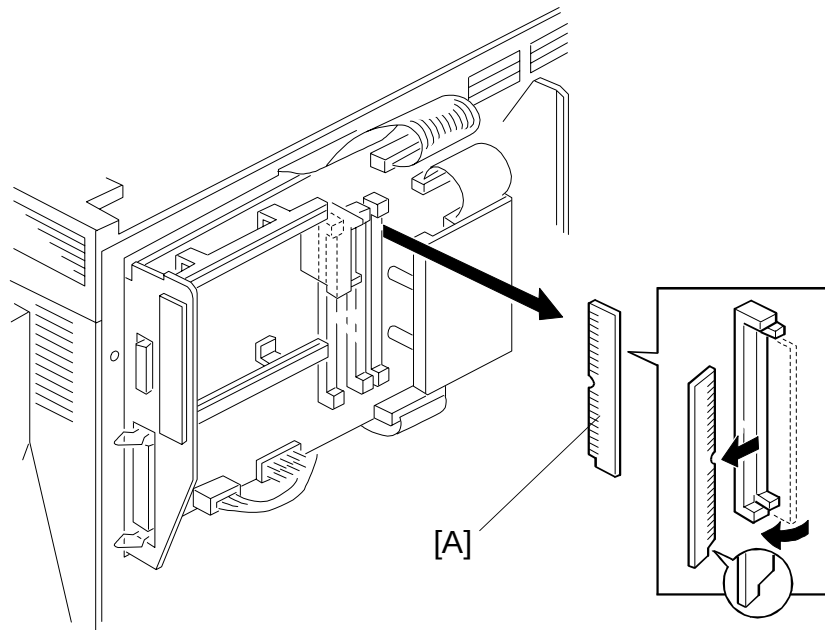
5. POSTSCRIPT ROM BOARD REMOVAL



1. Remove the controller board cover (see Controller Board Cover Removal).
2. Hold the SIMM stopper on both sides and release the PostScript ROM.
3. Remove the PostScript ROM [A]

Replacement
Adjustment

6. RAM SIMM BOARD REMOVAL



1. Remove the controller board cover (see Controller Board Cover Removal).
2. Hold the SIMM stopper on both sides and release the RAM SIMM.
3. Remove the RAM SIMM Board [A]

SECTION 6

TROUBLESHOOTING

1. TROUBLESHOOTING

1.1 GENERAL

To solve a problem, you need to classify the cause of the problem into one of the following groups.

1. Machine Operation
 - 1) Setup Menu Setting Error
 - 2) Paper Handling Error (Paper Size, Paper Tray Selection, others)
 - 3) Operation Error related to Connecting Cables/Terminator
2. PC Operation
 - 1) Application Setting Error
 - 2) Driver Setting Error
 - 3) Network Setting Error at the PC side
3. Network Operation
 - 1) A195 NIC Setting Error
 - 2) Network Configuration Setting Error (File Server, Print Server, others)
4. Hardware
 - 1) Hardware Error in the A195 engine
 - 2) Hardware Error in the controller (or the related options)
 - 3) Hardware Error in the Connection Environment (Cables, Hub, Terminator, PC, others)
5. Software
 - 1) Controller, PostScript, NIC Software Bug
 - 2) Driver Software Bug
 - 3) Application Software Bug

You need to provide the following information before troubleshooting each case.

1. Self Test Page and print sample
2. Application Configuration and Print Sample/Scanned Sample File (Including Software versions)
3. Error Code/Error Message/Error Status
4. Print Sample and Occurrence Conditions
5. Operating Conditions and Environment

1.2 MESSAGES/STATUS INDICATION

The A195 controller has two methods of indicating the status information.

1. In the printer/scanner mode, the A195 controller provides an operation panel message. These are listed in the "Error Messages" section.
2. After initialization of the controller, the A195 controller indicates the status using the LEDs on the main controller board. See section 1.4 of this chapter

1.3 ERROR MESSAGES

The A195 message list includes call service errors.

The following error messages might need assistance from service.

1.3.1 Controller Error

Possible Cause

- The main controller board is defective.
- The HDD is defective.

Action:

1. Check the connection between the HDD and the main controller board.
2. Check the connection of the cables between the A195 engine and main controller board.
3. Check the LEDs on the main controller board.
If it is a disk test error, go to step 4.
 - If it is another fatal error code of one of the main controller board components below, go to step 5.
 - Main controller board components: Boot ROM, Onboard RAM, Shared Memory, FCI Chip, Compression Chip, Font ROM
4. Replace the HDD.
5. Replace the main controller board.

1.3.2 Controller Disk Error**Possible Cause**

- The main controller board is defective.
- The HDD has a bad area.
- The HDD is defective.

Action:

1. Check the connection between the HDD and the main controller board.
2. Check the connection of the cables between the A195 engine and main controller board.
3. Try to duplicate the same error after turning the machine off and back on.
If this error message disappears, check the Printer Controller Disk Error Log, using the system parameter report (SP5990).
4. If the problem re-appears at power up, or if the log shows the same problem repeatedly, replace the HDD.
5. If the problem still remains, replace the main controller board.

1.3.3 Print Overrun Error

Possible Cause

- A complex page is printed.
- The RAM SIMM board is defective.
- The controller board is defective.

Action:

1. Check the memory capacity.
 - If the RAM size does not match the installed RAM SIMM board size, go to step 4.
2. Try to print out with the printer only mode using the same file.
 - If the print out is successful, add a RAM SIMM board depending on the users configuration.
3. Try to print out with the added RAM.
4. Check the LEDs on the main controller board.
 - If it is a DRAM SIMM test error, do the following.
5. Replace the RAM SIMM board.
6. If the DRAM SIMM test error still remains, replace the main controller board.

1.3.4 Memory Overflow

Possible Cause

- A complex page is printed.
- The RAM SIMM board is defective.
- The controller board is defective.

Action:

1. Check the memory capacity.
 - If the RAM size does not match the installed RAM SIMM board size, go to step 4.
2. Try to print out with the printer only mode using the same file.
 - If the print out is successful, add a RAM SIMM board depending on the users configuration.
3. Try to print out with the added RAM.
4. Check the LEDs on the main controller board. (See section 1.4 in this chapter).
 - If it is a DRAM SIMM test error, do the following.
5. Replace the RAM SIMM board.
6. If the DRAM SIMM test error still remains, replace the main controller board.

1.3.5 <Tray> failure has occurred**Definition:**

The paper tray which was feeding paper broke.

If the main controller receives any paper tray error from the A195 engine during paper feeding, this message will be displayed.

Actions:

1. Shift the mode to the copier menu.
2. Check the condition of the copier trays.

1.3.6 No Exit from Initializing the controller**Definition:**

The On-Line LED is blinking, and/or "Initializing the controller. Please wait." is displayed all the time.

The A195 controller cannot be shifted On-Line, as the A195 controller cannot complete the initialization.

Possible Cause:

- The SCSI I/F is not terminated correctly.
- The HDD is defective.
- The scanner board defective
- The main controller board is defective.

Action:

1. Check the terminator of the SCSI I/F, if the scanner board is installed.
 - If the SCSI I/F is not terminated, plug in the SCSI terminator.
 - If the SCSI Device at end of the SCSI bus is not turned on, turn it on to supply the termination electrical power.
2. Check the connection between the HDD and the main controller board.
3. Check the connection of the cables between the A195 engine and main controller board.
4. Check the connection between the scanner board and the main controller board.
5. Check the LEDs on the main controller board. (See section 1.4 in this chapter.)
 - If it is a disk test error go to step 6.
 - If it is another fatal error code of a main controller board component, listed below, go to step 8.
Main controller board components: Boot ROM, Onboard RAM, Shared Memory, FCI Chip, Compression Chip, Font ROM.
6. Replace the HDD.
7. Replace the scanner board.
8. Replace the main controller board.

1.4 DIAGNOSTIC LEDS

1.4.1 Self Diagnostics

When the A195 controller board powers on, it performs a self diagnostic sequence of tests.

Test Items :

- Boot ROM Checksum
- On Board RAM Area Test
- DRAM SIMM Test
- On-Board Shared Memory Test
- FCI Chip Register Test
- Compression Chip Test
- Font ROM Checksum
- Disk Test
- Network Port Test
- SCSI Port Test
- PostScript ROM Checksum

Four LEDs located on the main controller board are used to display the progress of the self test and to display any errors that have occurred.

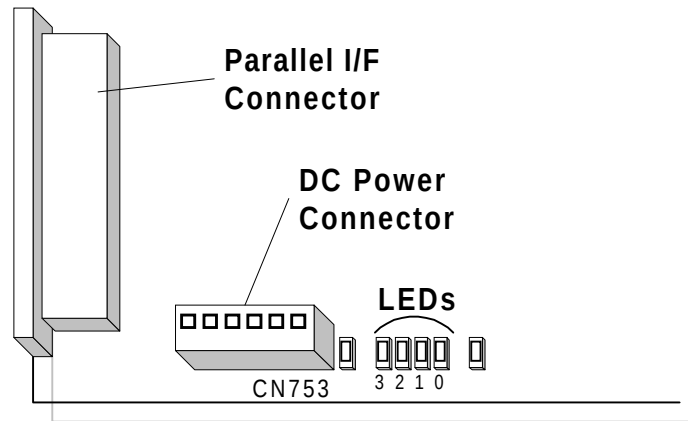
1.4.2 Diagnostic LEDs Codes

Several types of codes are indicated by the LEDs on the controller board.

Fatal Error Codes
Initial Image Loading
Non-Fatal Errors
Other Codes

- NOTE:**
- 1) When multiple failures exist (for example no NIC or scanner card) only the highest priority (lowest number) code is displayed.
 - 2) The DRAM SIMM error will only be displayed when a SIMM is detected and the memory test fails. An empty DRAM SIMM socket is not an error. If the DRAM SIMM test fails, the memory is disabled and operation continues using only the onboard DRAM.
 - 3) The Flash SIMM error will only be displayed when a SIMM is detected, and the checksum test fails. A programmed SIMM in the socket is not an error.
 - 4) If the onboard flash ROM contents are invalid, the flash download routine is started automatically to allow the initial image to be loaded without the use of a monitor board.
 - 5) The LED test code (all LEDs on) is displayed for a brief period following power-up.

1.4.3 LED Code Table



The LEDs are located near DC Power Connector (CN753) on the main controller board. The middle four LEDs (0 to 3) are used for the diagnostic status indication.

LEDs				Hex.	Description
#3	#2	#1	#0		
OFF	OFF	OFF	OFF	0x0	All tests passed
OFF	OFF	OFF	ON	0x1	BootROM checksum error
OFF	OFF	ON	OFF	0x2	On-board RAM test failed
OFF	OFF	ON	ON	0x3	Shared memory test failed
OFF	ON	OFF	OFF	0x4	FCI chip register test failed
OFF	ON	OFF	ON	0x5	Compression chip test failed
OFF	ON	ON	OFF	0x6	Font ROM checksum error
OFF	ON	ON	ON	0x7	Onboard flash cchecksum error (O/S), download waiting
ON	OFF	OFF	OFF	0x8	Flash download started
ON	OFF	OFF	ON	0x9	Flash download complete, programming flash
ON	OFF	ON	OFF	0xa	DRAM SIMM test failed
ON	OFF	ON	ON	0xb	Disk test failed
ON	ON	OFF	OFF	0xc	Network Port Test Failed
ON	ON	OFF	ON	0xd	SCSI test failed
ON	ON	ON	OFF	0xe	FLASH SIMM (Postscript) checksum error
ON	ON	ON	ON	0xf	LED test

2. ERROR HANDLING AND MANUAL TRAY OPERATION

2.1 ERROR SUSPENSION SCREEN

If an error has occurred in the A195 and operator intervention is required, the error suspension screen is displayed on the control panel, and the machine enters offline mode.

This screen has two buttons, Reset and Continue.

2.2 AUTO-CONTINUE

The configuration menu has an item called AUTO-CONTINUE.

If an error has occurred in the A195 and operator intervention is required at the printer side, then the error suspension screen is displayed on the control panel, and the machine enters offline mode.

Then, if AUTO-CONTINUE is ON, and there is no operator response within the auto-continue time-out period (30 seconds), the A195 will go back online (just like when the Continue button is pressed), and the job will be resumed automatically.

This function is very important in a multi-function network printer like the A195.

2.3 BYPASS TRAY TIME-OUT

When a print job selects the manual tray, the A195 displays "Please open the Bypass Tray" on the control panel.

If the bypass tray is not opened within the specified time-out period, the print job will be canceled.

The default is 300 seconds (5 minutes). The possible range is from 5 seconds to 300 seconds.

3. ERROR MESSAGES

The messages used by the copier application are not included in the following tables. See the troubleshooting section of the base machine for copier error messages.

3.1 PRINTER ERRORS

Error Message	Type	Description	Action	Auto-Continue
Controller error(01). Please call for service. Tel:##### Press [Copy] key to leave this mode.	Alert window	A diagnostic error occurred at power-on.	The controller has a hardware problem . The user has to call a technician. If the user presses the [COPY] key, then the copier application can be used.	No
Controller error(02). Please call for service. Tel:##### Press [Copy] key to leave this mode.	Alert window	An exception error has occurred in the controller.	The controller has a software or hardware problem. If this error has occurred many times, the user has to call service. If the user presses the [COPY] key, then the copier applicaiton is available.	
Controller disk error. Please call for service. Tel:#####	Error suspension	A disk error occurred during printing.	If the machine is powered off then powered back on, the printer will attempt to use the disk as usual. If this error occurs again, this error suspension screen will be displayed again. If this error has occurred many times, the user has to call a technician to repair the disk. At the time, the printer is still off-line. However, the user can use the copier application by pressing the COPY key.	No

ERROR MESSAGES

Error Message	Type	Description	Action	Auto-Continue
Serial communication error. Please set up communication parameters again.	Error suspension	A serial communication error occurred during printing.	The user has to check the serial communication settings. The user needs to press the RESET button to cancel the print job. [Reset] The print job is canceled. If some paper is remaining in the machine, the paper is discharged automatically.	No
Ethernet failure. Network communication is not available.	Error suspension	This error occurs only at power-up time when an installed network card fails to correctly establish communication with the network. Note If a network card is installed but not plugged into a network connection, no error will occur. When the network card fails to initialize, the printer will go on line and operate normally. Note that this can take several minutes.	The user has to check the network settings. [Continue] If the user presses the CONTINUE button, the printer operation will continue without network capability.	No
Token Ring failure. Network communication is not available.	Error suspension	This error occurs only at power-up time when an installed network card fails to correctly establish communication with the network. Note If a network card is installed but not plugged into a network connection, no error will occur. When the network card fails to initialize, the printer will go on line and operate normally. Note that this can take several minutes.	The user has to check the network settings. [Continue] If the user presses the CONTINUE button, the printer operation will continue without network capability.	No

Error Message	Type	Description	Action	Auto-Continue
Print over-run error	Error suspension	A print overrun has occurred on a file that is being printed in banding mode. When the printer is in banding mode, a complex page may not have enough time to image a band while the engine is printing the previous band.	Only part of the data on the page will print, and the print job is suspended. [Continue] If the user presses this button, the print job will resume. To print the image correctly, the user has to add more memory to the machine, or reduce the resolution of the image and resend the job. [Reset] The print job is canceled. If some paper is remaining in the machine, the paper is discharged automatically.	Yes
Memory overflow	Error suspension	A memory overflow occurred during printing. The language has sent a file too complex to interpret in the available memory.	[Continue] If the user presses this button, the printing will resume. However, only a part of the data on that page will print, and subsequent pages will continue to print. To print the print job correctly, the user has to add more memory to the machine. [Reset] The print job is canceled. If some paper is remaining in the machine, the paper is discharged automatically.	Yes

ERROR MESSAGES

Error Message	Type	Description	Action	Auto-Continue
The spooling area of the disk is full. Press Continue to resume printing. The current print job will be split.	Error suspension	A disk full error has occurred in the spooling area during printing. The spooling area of the disk contains both spooling data and page image data if reverse order and duplex printing are used. Whenever this area becomes more than a certain amount full, spooling is turned off automatically. At this point, the user does not receive any error message. This allows spooling to only take up a certain amount of the area, leaving most of the room available for page image data.	[Continue] The current collation is ended, and the pages that are already on the disk are printed, including any multiple copies of these pages. A new collation set is then started with the new input data. So, the print job is not completed in the desired order. [Reset] The print job is canceled. If some paper is remaining in the machine, the paper is discharged automatically.	No
The PostScript area of the disk is full	Error suspension	A disk full error has occurred in the PostScript area during printing.	[RESET] Once this area is full, there is no reasonable way to continue with the current job. After the user has confirmed this error, the user should select the RESET button. Once the job is RESET, the user should delete data from the area prior to resending the job.	No
The PCL area of the disk is full	Error suspension	A disk full error has occurred in the PCL partition during printing.	[RESET] Once this area is full, there is no reasonable way to continue with the current job. After the user has confirmed this error, the user should select the RESET button. Once the job is RESET, the user should delete data from the area prior to resending the job.	No

Error Message	Type	Description	Action	Auto-Continue
Add Staples	Message	The staples have almost run out.	The user has to add staples. This is only a warning message, so the print job will be continued.	No
No paper. Add <size> paper <tray>	Error suspension	There is no specified paper in the specified input tray. Note This error does not occur if auto tray change is enabled and there is some paper of the same size and direction in another input tray; printing will continue from that tray.	The user has to put the specified paper in the specified tray. After that, printing will resume automatically. [Continue] If the user presses this button without putting any paper in the specified tray and if auto tray change is enabled, paper of an incorrect size will be pulled from another tray, and printing will resume. If auto tray change is not enabled, the error suspension screen is displayed again. If the user puts paper of a different size in the specified tray, the printing will continue this incorrect paper size. [Reset] The print job is canceled. If some paper is remaining in the machine, this paper is discharged automatically.	No
Check tray. Set the <Tray> correctly.	Error suspension	The tray which is used by the print job is open.	The user has to close specified tray (this includes the duplex tray). After that, printing will resume automatically.	No

ERROR MESSAGES

Error Message	Type	Description	Action	Auto-Continue
<Tray> failure has occurred. Please call for service. Tel: #####	Alert window	The tray has broken.	The user has to call a technician. However, if the machine is turned off and on, a print job which does not use the tray can print. Then, the broken tray information will be displayed on the control panel as an icon or error message.	No
The shift tray is full. Remove the copies.	Error suspension	A bin overflow has occurred in the 1-bin finisher.	The user has to remove the paper from the 1-bin finisher, and printing will resume automatically.	No
Printing is interrupted. Press [Continue], or press [Reset] to cancel the current job.	Error suspend	A paper jam has occurred, and after the paper jam has been removed by the user, this error suspend screen is displayed.	The user can select the following operations after the paper jam. [RESET] The print job is canceled. [CONTINUE] If jam recovery is off, the rest of the print job will be flushed and the next print job that was not involved in the jam in any way will start to print. If jam recovery is on, then jam recovery will be started.	
Remove the paper in the staple unit.	Alert window	When a paper jam has occurred during printing, if there is paper in staple unit, this alert window is displayed.	The user has to remove the paper in the staple unit.	No
Remove the paper in duplex tray.	Alert window	When a paper jam has occurred during printing, if there are the remained papers in duplex tray, this alert window is displayed.	The user has to remove the paper in the duplex tray.	No

3.2 MANUAL TRAY OPERATION MESSAGES

Error Message	Type	Description	Action	Auto-Continue
Please open the Bypass Tray	Error suspension	When a manual feed job is selected and the manual tray is not opened, this message is displayed on the panel.	This error suspension screen has no buttons. The user has to open the bypass tray on the machine. If the bypass tray is not opened within a time-out period, the manual feed job will be canceled. The time-out is called the Bypass Tray Time-out and is settable at the control panel.	No
No paper. Add <size> paper to Bypass Tray Note: <size> includes paper size and orientation.	Error suspension	After a manual tray job is selected and the manual tray is opened, or paper ran out during printing, this message is displayed on the panel.	If the user puts the specified paper in the bypass tray, the machine loads the paper automatically and the job will be resumed. [Reset] The print job is canceled. If some paper is remaining in the machine, the paper is discharged automatically.	No
Please close the Bypass Tray	Error suspension	After a manual tray feed job is finished, when an "LCT feed page" command is encountered and if the manual tray is opened, this message is displayed on the panel.	The error suspension screen has no buttons. The user has to close the bypass tray. If the bypass tray is NOT closed, the next print job is not printed until closing the bypass tray.	No

3.3 ENGINE WARNING LEVEL ERROR MESSAGES

The following errors are only warnings. Even if one of these errors has occurred, printing and scanning are possible.

Error Message	Type	Description	Action	Level
Toner is almost used up.	Message	Toner has almost run out.	----	Warning
The used toner bottle is nearly full.	Message	The used toner tank is nearly full.	----	Warning
Warming up. Please wait.	Message	The engine is warming up.	The user has to wait until the engine is ready.	Warning
Duplex tray failure has occurred.	Message	The duplex tray has a mechanical problem.	The user has to call service to repair the duplex tray.	Warning

3.4 ENGINE ALERT LEVEL ERROR MESSAGES

Engine alert level error messages are displayed by the system alert window in the same way as for the copier.

These errors include the following.

- Toner End
- Used Toner Bottle Full
- Cover Open (Front door, ADF, Sorter)
- Engine Fatal Error (call for service)
- Jam (ADF, Engine, Sorter)

3.5 MISCELLANEOUS ERROR MESSAGES

The following errors are indigenous to a multi-function engine.

When the active application is changed from the copier application to the printer application, or the start-up application is the printer/scanner application, one of the following error messages may be displayed on the screen.

If there are copies left in the duplex tray, one of the following alert messages is displayed on the control panel.

Error Message	Type	Description	Action
There are copies left in the duplex tray. Pull out the duplex tray and remove the copies.	Alert Window	There are copies left in the duplex tray at power-on	This alert window is displayed.
There are copies left in the staple unit. Open the duplex tray and remove the copies.	Alert Window	There are copies left in the staple unit at power-on	This alert window is displayed.
Copies left in the duplex tray are exiting.	Alert Window	If there are copies left in the duplex tray and these copies are being discharged by the machine automatically, this alert window is displayed.	-----
There are copies left in the duplex tray. Press OK to exit the copies in the duplex tray.	Alert Window	When the machine shifts to Printer/Scanner mode from copier mode, if there are copies left in the duplex tray, this alert window is displayed.	The user has to press the OK button or remove the copies in the duplex tray.
Original is left on exposure glass.	Alert Window	In scanner mode, if there is paper on the exposure glass and paper is placed in the ADF, this alert window is displayed.	The user has to remove the paper on the exposure glass or the paper in the ADF.

A195

(Only available through A195 training)

***Gestetner* RICOH SAVIN**

A195

**FIELD SERVICE
MANUAL**

LEGEND

PRODUCT CODE	COMPANY		
	RICOH	SAVIN	GESTETNER
A195	Aficio 401	9940 DPC	-
A649	Printer Controler		
A650	Postscript 2 Kit		
A651	Scanner Kit		
A732	Ethernet NIC		
A733	Token Ring NIC		

DOCUMENTATION HISTORY

REV. DATE	DATE	COMMENT
*	10/97	Original Printing

IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main switch is turned off.
4. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
5. If the start key is pressed before the copier completes the warm-up period (Start key starts blinking red and green alternatively), keep hands away from the mechanical and the electrical components as the copier starts making copies as soon as the warm-up period is completed.
6. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

1. Never operate the copier without the ozone filters installed.
2. Always replace the ozone filters with the specified ones at the specified intervals.
3. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

CAUTION

2. The RAM board on the system control board has a lithium battery which can explode if replaced incorrectly. Replace the battery only with an identical one. The manufacturer recommends replacing the entire RAM board. Do not recharge or burn this battery. Used batteries must be handled in accordance with local regulations.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

- 1. Do not incinerate the toner bottle or the used toner. Toner dust may ignite suddenly when exposed to open flame.
- 2. Dispose of used toner, developer, and organic photoconductor according to local regulations. (These are non-toxic supplies.)
- 3. Dispose of replaced parts in accordance with local regulations.
- 4. When keeping used lithium batteries in order to dispose of them later, do not put more than 100 batteries per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

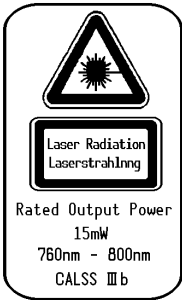
**WARNING**

Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

**WARNING FOR LASER UNIT**

WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKING:



Rated Output Power
15mW
780nm - 800nm
CLASS IIIb

For 115V version

DANGER

INVISIBLE LASER RADIATION
WHEN OPEN AVOID DIRECT
EXPOSURE TO BEAM

For 230V version

CAUTION

INVISIBLE LASER RADIATION
WHEN OPEN AVOID
EXPOSURE TO BEAM

VORSICHT

UNSICHTBARE LASERSTRAHLUNG.
WENN ABDECKUNG GEÖFFNET,
NICHT DEM STRAHL AUSSETZEN

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A195 (AFICIO 401) COPIER

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A195 COPIER

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(A195) Aficio 401

Service Manual

– *Insert Version* –

The A195 machine is based on the A133 Copier.

Only the differences from the base copier are described in the following pages. Therefore, this documentation should be treated as an insert version of the base copier's service manual, although it has a separate binder. It should always be utilized together with the base copier's service manual.

1. SPECIFICATIONS

NOTE: Only items marked with * are different from the A133 copier.

Configuration:	Desktop
Copy Process:	Dry electrostatic transfer system
Originals:	Sheet/Book
Original Size:	Maximum A3/11" x 17"
Copy Paper Size:	Maximum A3/11" x 17" (Paper tray) Minimum A5/8 1/2" x 5 1/2" sideways (Paper tray) A6/5 1/2" x 8 1/2" lengthwise (By-pass) LCT A4/11" x 8 1/2" sideways only
Duplex Copying:	Maximum A3/11" x 17" Minimum A5/8 1/2" x 5 1/2" sideways
Copy Paper Weight:	Paper tray: 60 ~ 105 g/m ² , 16 ~ 24 lb By-pass: 60 ~ 157 g/m ² , 16 ~ 42 lb LCT: 60 ~ 128 g/m ² , 16 ~ 34 lb Duplex copying: 64 ~ 105 g/m ² , 17 ~ 24 lb
Reproduction Ratios:	5 Enlargement and 7 Reduction

	A4/A3 Version	LT/DLT Version
Enlargement	400%	400%
	200%	200%
	141%	155%
	122%	129%
	115%	121%
Full size	100%	100%
Reduction	93%	93%
	87%	85%
	82%	77%
	71%	74%
	65%	65%
	50%	50%
	25%	25%

SPECIFICATIONS

Zoom: 25% to 400% in 1% steps

Power Source: 120V/60Hz:
More than 12 A (for North America)
220V ~ 240V/50Hz:
More than 7 A (for Europe)
220V ~ 240V/60Hz:
More than 7 A (for Asia)

Power Consumption:

	Copier Only	Full System
Maximum	Less than 1.44 kW	Less than 1.44 kW
Copying	Less than 1.20 kW	Less than 1.20 kW
Warm-up	Less than 0.88 kW	Less than 0.90 kW
Stand-by	Less than 0.20 kW	Less than 0.22 kW

NOTE: 1) Full System: Copier + ADF + Paper Tray Unit + Finisher

Noise Emission:

	Copier Only	Full System
1. Sound Power Level		
Copying	66.0 dB(A)	69.0 dB(A)
Stand-by	40.0 dB(A)	40.0 dB(A)
2. Sound Pressure Level at the Operator Position		
Copying	54 dB(A)	59 dB(A)
Stand-by	25 dB(A)	25 dB(A)

NOTE: The above measurements are to be made in accordance with ISO 7779.

Full System: Copier + ADF + Paper Tray Unit + Finisher.

Dimensions (W x D x H): 880 x 655 x 602 mm (34.7" x 25.8" x 23.8")

Measurement Conditions

- 1) With by-pass feed table closed
- 2) With copy tray attached
- 3) With LCT cover closed
- 4) Without the 500-sheet copy tray

Weight: 95 kg (210 lb)

Copying Speed (copies/minute):

A4 sideways/ 11" x 8 1/2"	A3/11" x 17"	B4/8 1/2" x 14"
40	18	26

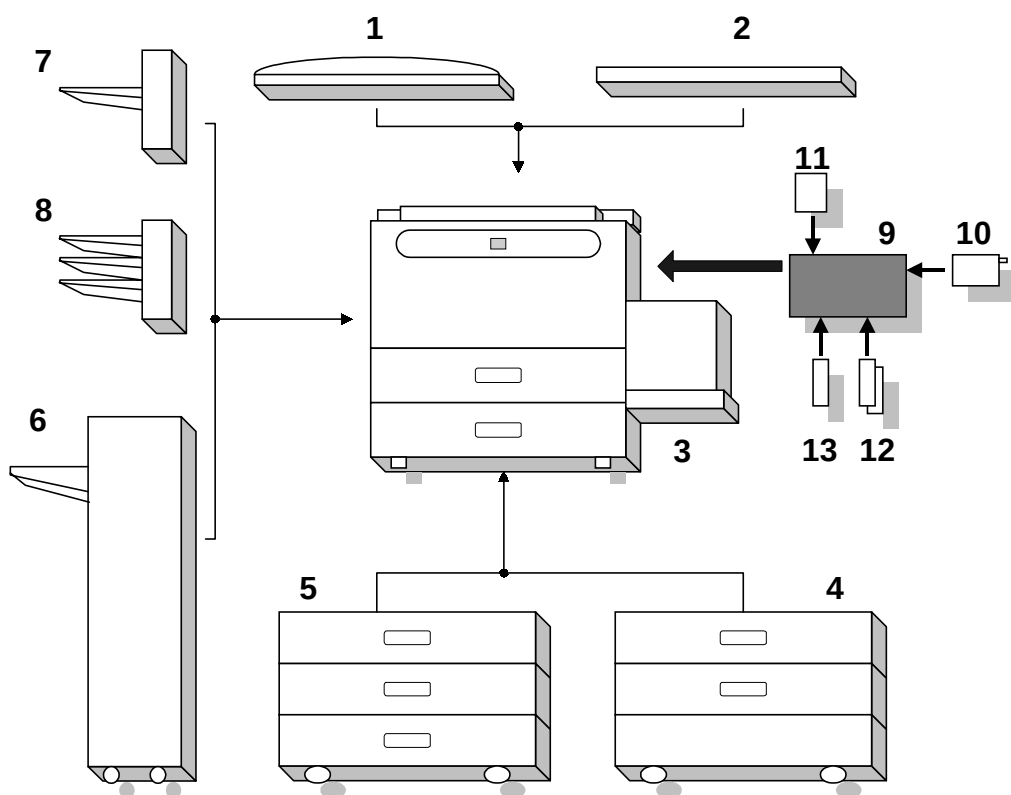
Warm-Up Time	Less than 140 seconds (20°C, 68°F)
First Copy Time:	Less than 5.2 s (from LCT)
Copy Number Input:	Ten-key pad, 1 to 999 (count up or count down)
Manual Image Density Selection:	7 steps
Automatic Reset:	30 s is the standard setting; it can be changed with a UP mode.

Copy Paper Capacity:

Paper Tray	By-pass Feed	LCT
About 500 sheets x1	About 40 sheets	About 1000 sheets

Hard Disk:	1.7 GB, Fast SCSI-2
Duplex Tray Capacity	A4/11" x 8 1/2": 50 sheets A3/11" x 17": 50 sheets (80 g/m ² , 20 lb paper) 30 sheets (81 ~ 105 g/m ² , 21.5 ~ 27.9 lb paper)
Toner Replenishment:	Cartridge exchange (700 g/cartridge)
Toner (type 10D) Yield:	20K copies (A4, 6% full black, ID Level 4)
* Optional Equipment:	• Platen cover • Document feeder • Paper tray unit with two paper trays • Paper tray unit with three paper trays • Finisher • Key counter • Tray heater • Optical anti-condensation heater • Drum heater • 500-sheet receiving tray • 3-bin Sorter (not available in all markets) • Main Controller Board • Network Interface Card • Scanner Board • PostScript ROM SIMM • RAM SIMM
Copy Tray Capacity	B4/8 1/2" x 14" ~ A4/8 1/2" x 11" 500 sheets A3/11" x 17" 200 sheets Less than B5/5 1/2" x 8 1/2": 200 sheets

2. MACHINE CONFIGURATION



NOTE: Only items marked * are new items.

Item	Machine Code	No.
Copier	A195	3
ADF (Option)	A548	1
Paper Feed Unit (Option)	A549	5
	A550	4
Finisher (Option)	A612	6
500-sheet Receiving Tray (Option)	A615	7
Platen Cover (Option)	A381	2
* 3-bin Sorter (Option)	A566	8
* Main Controller Board (Option)	A649	9
* Network Interface Card (Option)	A732 (For Ethernet)	10
	A733 (For Token Ring)	
* Scanner Board (Option)	A651	11
* PostScript ROM SIMM (Option)	A650	12
* RAM SIMM (Option)	—	13

Not all options are not available in all markets.

3. ELECTRICAL COMPONENT DESCRIPTIONS

Refer to the electrical component layout and the point-to-point diagram on the waterproof paper in the pocket for the locations of these components.

*: New or modified components.

Symbol	Index No.	Description	Note
Printed Circuit Boards			
PCB1	90	SCU	Controls all copier functions directly or through other control boards.
PCB2	89	AC Drive	Provides ac power to the exposure lamp and fusing lamps.
PCB3	92	DC Power Supply	Provides dc power.
PCB4	93	BCU	Controls the mechanical parts of the printer.
PCB5	80	Charge High Voltage Supply	Supplies high voltage to the charge corona unit.
PCB6	85	High Voltage Control	Controls the high voltage boards and the quenching lamp.
PCB7	87	Operation Panel	Controls the touch panel display and LED matrix, and monitors the key matrix.
PCB8	95	Scanner Drive	Drives the scanner motor.
PCB9	81	EX-IPU	Processes the video signal from the SBU and sends the video signal to the LD unit.
PCB10	84	SBU	Contains the CCD, and outputs a video signal to the EX-IPU board.
PCB11	94	Lamp Stabilizer	Provides dc power for the exposure lamp.
PCB12	86	Main Scan Synchronization Detector - 1	Detects the laser beam at the start of the main scan.
PCB13	83	Main Scan Synchronization Detector - 2	Detects the laser beam at the end of the main scan.
PCB14	31	Transfer High Voltage	Supplies high voltage to the transfer belt.
PCB15	33	Development Bias Power Pack	Supplies high voltage to the development roller.
PCB16	40	Duplex Control	Controls the operation of the duplex tray.
PCB17	N/A	Liquid Crystal Display	Controls the guidance display and displays guidance for machine operation.
PCB18	51	LCT Interface	Interfaces the LCT control signal between the main board and the LCT.
PCB19	91	Relay Board	Switches ac power to either the dc drive board (if the main switch is on) or to the heaters (if the main switch is off).
PCB20	7	Laser Diode Drive	Controls the laser diode.
* PCB21	96	Extension Board	Transfers control signals between the SCU and the dummy board.

ELECTRICAL COMPONENT DESCRIPTIONS

Symbol	Index No.	Description	Note
* PCB22	79	Dummy Board	Installed to connect the SCU and EX-IPU and other cables when the main controller board is not present.
Motors			
M1	57	Main	Drives the main body components.
M2	66	Toner Bottle Drive	Rotates the toner bottle to supply toner to the toner supply unit.
M3	73	Tray Lift	Raises the bottom plate in the paper tray.
M4	56	Polygonal Mirror	Turns the polygonal mirror.
M5	48	LCT Lift	Lifts up and lowers the LCT bottom plate.
M6	74	Optics Exhaust Fan	Removes heat from the optics unit.
M7	65	IPU Fan	Removes heat from the IPU board.
M8	78	Exhaust Fan	Removes heat from around the fusing unit.
M9	60	Ozone Fan	Removes ozone-laden air from inside the machine.
M10	55	Scanner Drive	Drives the 1st and 2nd scanners (dc stepper motor).
M11	36	Duplex Feed	Drives the feed roller and moves the bottom plate up and down.
M12	39	End Fence Jogger	Drives the end fence jogger to square the paper stack.
M13	38	Side Fence Jogger	Drives the side fence jogger to square the paper stack.
M14	75	DC Drive Board Fan	Removes heat from around the DC drive board.
M15	68	Charge Inlet Fan	Provides air flow around the charge corona unit section.
* M16	59	Development Drive	Drives the development unit.
Sensors			
S1	13	By-pass Feed Paper Width	Informs the CPU what width paper is in the by-pass feed table.
S2	15	By-pass Feed Paper End	Informs the CPU that there is no paper in the by-pass tray.
S3	18	Tray Paper End	Informs the CPU when the paper tray runs out of paper.
S4	46	Upper Relay	Detects the leading edge of paper from the paper tray and duplex unit to determine the stop timing of the paper feed clutch and duplex feed motor. Also detects misfeeds.
S5	16	Tray Upper Limit	Detects the height of the paper stack in the paper tray to stop the upper tray lift motor.
S6	47	Lower Relay	Detects misfeeds.
S7	49	LCT Lower Limit	Sends a signal to the CPU to stop lowering the LCT bottom plate.
S8	50	LCT Paper End	Informs the CPU when the LCT runs out of paper.

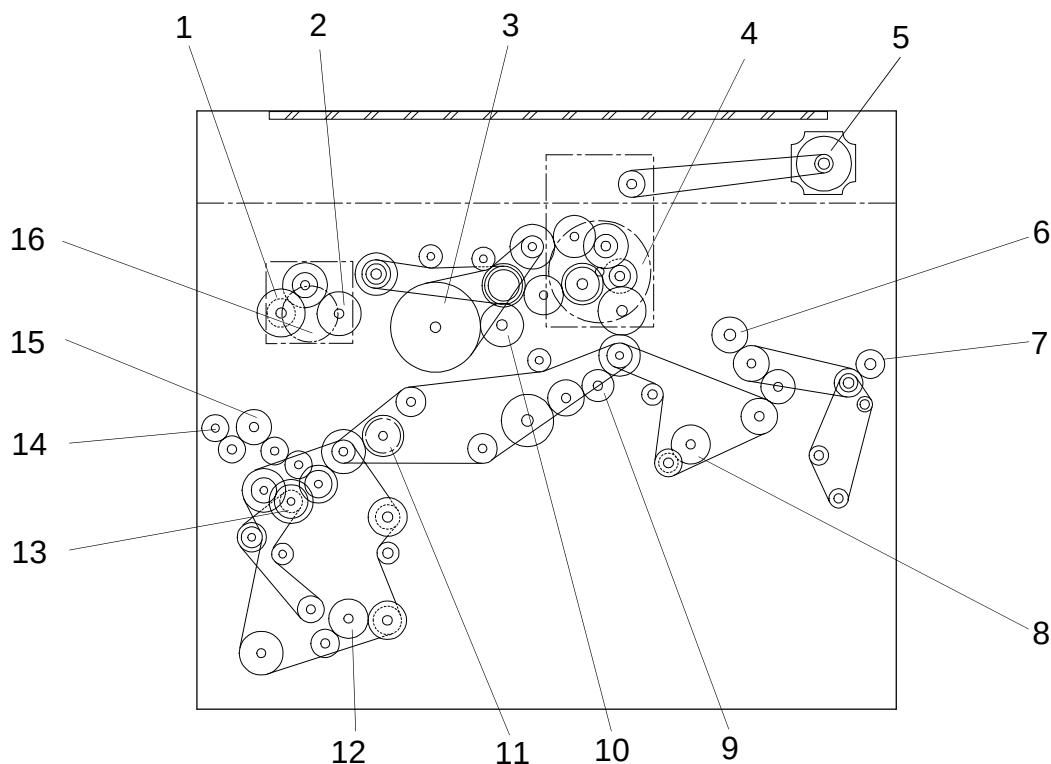
Symbol	Index No.	Description	Note
S9	12	LCT Upper Limit	Signals the CPU to stop lifting the LCT bottom plate.
S10	19	Registration	Detects the leading edge of the copy paper to determine the stop timing of the paper feed clutch, and detects misfeeds.
S11	29	Image Density (ID)	Detects the density of various patterns on the drum during process control.
S12	30	Toner Density (TD)	Detects the amount of toner inside the development unit.
S13	1	Scanner HP	Informs the CPU when the 1st and 2nd scanners are at the home position.
S14	8	Original Length-1	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S15	9	Original Length-2	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S16	24	Fusing Exit	Detects misfeeds.
S17	6	Platen Cover	Informs the CPU whether the platen cover is up or down (related to APS/ARE functions). ARE: Auto Reduce and Enlarge
S18	32	Toner End	Instructs the CPU to add toner to the toner supply unit, and detects toner end conditions.
S19	28	Auto Response	Returns the operation panel display and exits from the energy saver mode.
S20	10	Transfer Belt Position	Informs the CPU of the current position of the transfer belt unit.
S21	2	Original Width	Detects the width of the original. This is one of the APS (Auto Paper Select) sensors.
S22	34	Duplex Paper End	Detects paper in the duplex tray.
S23	35	Duplex Turn	Detects the trailing edge of the copy paper to determine the jogging timing, and detects misfeeds.
S24	42	Duplex Entrance	Detects misfeeds.
S25	37	Side Fence Jogger HP	Detects the home position of the duplex side fence jogger.
S26	41	End Fence Jogger HP	Detects the home position of the duplex end fence jogger.
S27	23	Toner Overflow	Detects when the used toner collection bottle is full.
S28	14	By-pass Relay	Detects misfeeds.
Switches			
SW1	11	By-pass Feed Table	Detects whether the by-pass feed table is open or closed.
SW2	53	Tray Down	Sends a signal to the CPU to lower the LCT bottom plate.
SW3	20	Tray Paper Size	Determines what size of paper is in the paper tray.
SW4	54	LCT	Cuts the dc power line and detects whether the LCT is open or not.

ELECTRICAL COMPONENT DESCRIPTIONS

Symbol	Index No.	Description	Note
SW5	52	LCT Cover	Cuts the dc power line of the LCT lift motor.
SW6	27	Main	Supplies power to the copier.
SW7	26	Front Cover Safety	Cuts the dc power line and detects whether the front cover is open or not.
Magnetic Clutches			
CL1	61	Toner Supply	Turns the toner supply roller to supply toner to the development unit.
* CL2		Not used	
CL3	76	Transfer Belt Lift	Controls the touch and release movement of the transfer belt unit.
CL4	58	Registration	Drives the registration rollers.
CL5	63	By-pass Feed	Starts paper feed from the by-pass feed table or LCT.
CL6	71	Relay	Drives the relay rollers.
CL7	72	Paper Feed	Starts paper feed from the paper tray.
CL8	62	By-pass Relay	Drives the by-pass relay rollers.
Solenoids			
SOL1	67	By-pass Pick-up	Drops the pick-up roller to the by-pass paper feed position. When paper is fed from the LCT, this solenoid assists SOL3.
SOL2	77	Junction Gate	Moves the junction gate to direct copies to the duplex tray or to the paper exit.
SOL3	64	LCT Pick-up	Drops the pick-up roller all the way down to the LCT paper feed position from the by-pass paper feed position.
SOL4	69	Pick-up	Controls the up/down movement of the pick-up roller in the paper tray.
SOL5	70	Separation	Controls the up/down movement of the separation roller at the paper tray feed station.
Lamps			
L1	3	Exposure	Applies high intensity light to the original for exposure.
L2	43	Fusing	Provides heat to the hot roller.
L3	88	Quenching	Neutralizes any charge remaining on the drum surface after cleaning.
Heaters			
H1	21	Drum (option)	Turns on when the main switch is off to prevent moisture from forming around the drum.
H2	5	Optics Anti-condensation (option)	Turns on when the main switch is off to prevent moisture from forming on the optics.
H3	22	Tray (option)	Turns on when the main switch is off to keep paper dry in the paper tray.

Symbol	Index No.	Description	Note
Thermistors			
TH1	45	Fusing	Monitors the temperature at the central area of the hot roller.
Thermofuses			
TF1	44	Fusing	Provides back-up overhear protection in the fusing unit.
Thermoswitch			
TS1	4	Exposure Lamp	Opens the exposure lamp circuit if the 1st scanner overheats.
Counters			
CO1	25	Total	Keeps track of the total number of copies made.
CO2	N/A	Key (option)	Used for control of authorized use. The copier will not operate until it is installed, when this option is enabled.
Others			
CB1	17	Circuit Breaker (220 ~ 240V machines only)	Provides back-up high current protection for electrical components.
HDD	82	Hard Disk Drive	Scanned image data is compressed and held here temporarily during copying; also holds user stamp data.

4. DRIVE LAYOUT



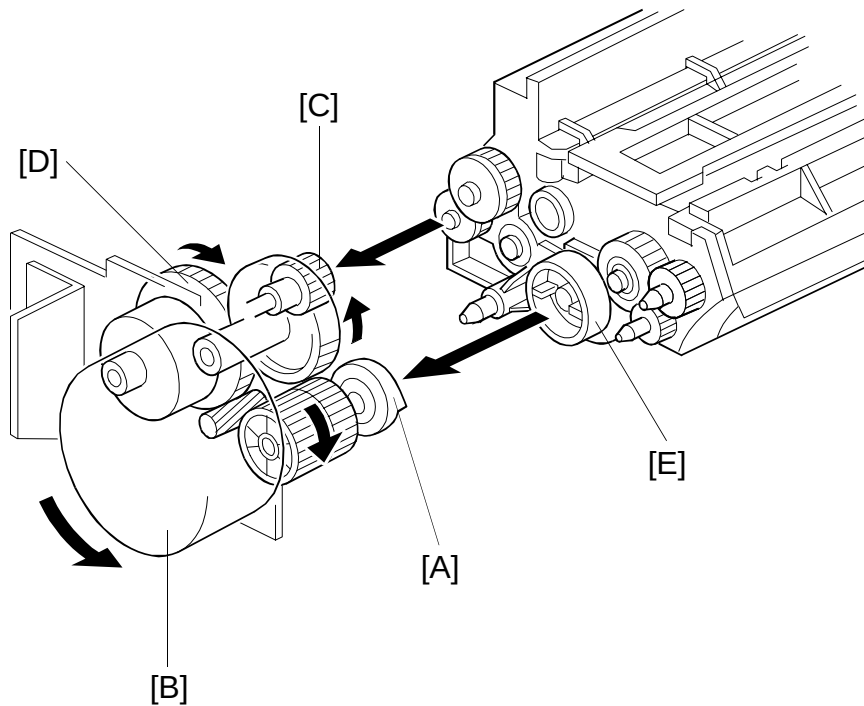
The development drive mechanism has been changed. (See Drive Mechanism for more information.)

*: New or modified components.

1. Toner Supply Clutch	9. Transfer Belt Drive Gear
* 2. Development Gear	10. Cleaning Blade Drive Gear
3. Drum Drive Pulley	11. Registration Clutch
4. Main Motor	12. Paper Feed Clutch
5. Scanner Drive Motor	13. Relay Clutch
6. Fusing Drive Gear	14. By-pass Feed Clutch
7. Exit Drive Gear	15. By-pass Relay Clutch
8. Toner Collection Bottle Drive Gear	*16. Development Drive Motor

5. DRIVE MECHANISM

5.1 Development Drive Mechanism



The development drive motor [B] rotates the development drive gear [A], which drives the gears in the development unit.

The gears in the toner supply unit are driven by the toner supply roller drive gear [C] when the toner supply clutch [D] activates.

All gears in the development unit are helical gears. These gears are quieter than normal gears. The teeth of the development drive gear are chamfered so they engage smoothly with the development roller gear [E] when the unit is installed.

The main motor speed at 600 dpi is half that at 300/400 dpi. However, the development motor speed is the same regardless of the resolution (300/400/600 dpi). Only the main motor changes speed to produce the different dpi resolutions, because this development unit mechanism is independent.

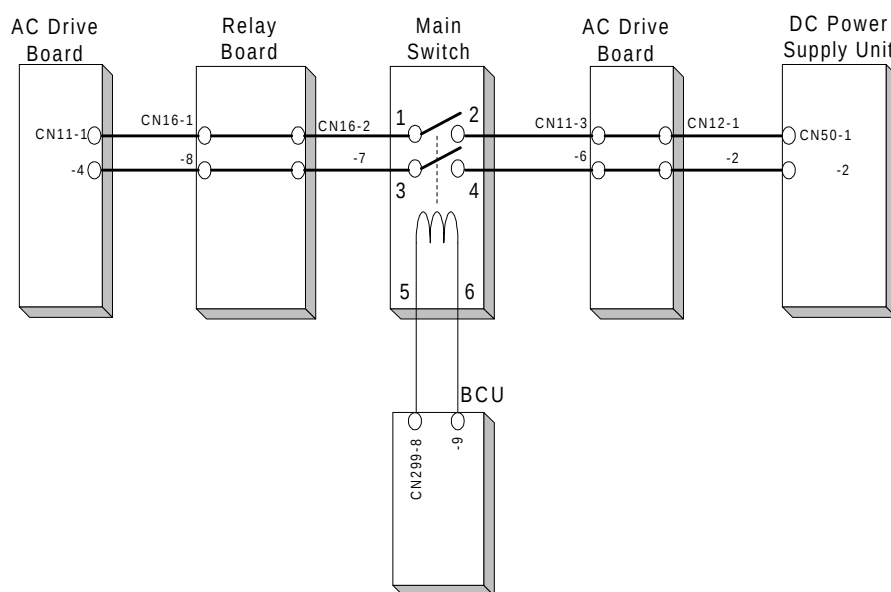
6. ENERGY STAR

6.1 Auto OFF Mode

When the main controller board is not installed

When the Auto OFF timer expires (the default is 60 minutes), the machine cuts all power to the copier. The Auto OFF timer can be programmed with UP mode. The power is re-supplied when the main switch is turned back on. The longer the machine has been off, the longer it will take to return to a ready condition.

To automatically turn off the machine, a new type of main switch with an incorporated coil is used. When the CPU drops CN299-9 from +24 to 0, the main switch contacts are opened. The wiring diagram and connector layout are shown below.



When the main controller board is installed

If the main controller board is installed, the Auto OFF mode is disabled by the main controller board. This is because with the main board installed, the machine can work as a network printer, and Auto Off Mode must be disabled in a network printer.

7. Product Name and Device Name

7.1 Overview

The product name is used as a response when the host machine inquires using the PostScript for Macintosh.

The device name is used for the SCSI device name on the SCSI bus.

Also, the product name will be used for the demo page from this machine.

This information is stored in the SCU.

The product name or device name is forwarded to the host PC through the main controller, depending on the type of data requested from the host PC.

7.2 PROGRAMMING MODE

The following table shows the programming mode for the production name and device name.

Mode	Method	Entry	Brand Name	Product Name	Device Name	
					Vender ID	Product ID
OEM Code Setting	SP 5818	0	Ricoh	Ricoh Aficio 401	Ricoh	Aficio 401
		1	NRG	NRG D440/2840/3240	NRG	D440/2840/3240
		2	Not used			
		3	Savin	Savin 9940DPC	Savin	9940DPC
		4	Not used			
		5	Infotec	infotec 5402 MF	infotec	5402MF
		6	Lanier	Lanier 5040 MFD	Lanier	5040MFD

NOTE: This only needs to be registered if the NVRAM on the SCU is defective.

8. SERVICE PROGRAM MODE TABLES

NOTE: Items marked with * are new or modified items.

8.1 MAIN SP MODE TABLE

NOTE: 1. In the Function column, comments are in italics.
 2. In the Settings column, the default value is in bold letters.
 3. An asterisk " * " after the mode number means that this mode is stored in the NVRAM. If you do a RAM reset, all these SP modes will be reset to their factory settings.

Mode No.			Function	Settings
Class 1	Class 2			
1001 *		Leading Edge Registration	Adjusts the printing leading edge registration using Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Image Adjustments" in the A133 service manual for details.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
1002 *	1 *	Side-to-Side Registration (Duplex)	Adjusts the printing side-to-side registration from the duplex tray using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment - Copy Image Adjustments" in the A133 service manual for details on SP1002</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	2 *	Side-to-Side Registration (1st paper feed)	Adjusts the printing side-to-side registration from the 1st paper feed station using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	3 *	Side-to-Side Registration (2nd paper feed: Option PFU tray 1)	Adjusts the printing side-to-side registration from the 2nd paper feed station using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm
	4 *	Side-to-Side Registration (3rd paper feed: Option PFU tray 2)	Adjusts the printing side-to-side registration from the 3rd paper feed station using the Trimming Area Pattern (SP2902-3, No.10). <i>Use the ●/* key to toggle between + and -. The specification is 2 ± 1.5 mm.</i>	+9 ~ -9 0.1 mm/step + 0.0 mm

Mode No.		Function	Settings
Class 1	Class 2		
1002*	5 *	Side-to-Side Registration (4th paper feed: Option PFU tray 3 if present)	+9 ~ -9 0.1 mm/step + 0.0 mm
		<i>Use the ●/* key to toggle between + and -. The specification is 2±1.5 mm.</i>	
	6 *	Side-to-Side Registration (By-pass feed)	+9 ~ -9 0.1 mm/step + 0.0 mm
		<i>Use the ●/* key to toggle between + and -. The specification is 2±1.5 mm.</i>	
	7 *	Side-to-Side Registration (LCT)	+9 ~ -9 0.1 mm/step + 0.0 mm
		<i>Use the ●/* key to toggle between + and -. The specification is 2±1.5 mm.</i>	
1003 *	1 *	Paper Feed Timing (Paper Feed Trays)	+9 ~ -9 1 mm/step + 0 mm
	2 *	Paper Feed Timing (By-pass, LCT)	
1006 *		Double copy side-to-side registration	+9 ~ -9 1 mm/step + 0 mm
1007 *		By-pass Feed Paper Size Display	
1008 *	1 *	Duplex Jogger Fence Adjustment (Side Fence)	+4 ~ -4 0.5 mm/step + 0.0 mm
	2 *	Duplex Jogger Fence Adjustment (End Fence)	+4 ~ -4 0.5 mm/step + 0.0 mm
1103 *		Fusing Idling	On Off
		<i>Normally disabled in this machine. However, if fusing is incomplete on the 1st and 2nd copies, switch it on. This may occur if the room is cold.</i>	

SERVICE PROGRAM MODE TABLES

Mode No.		Function	Settings
Class 1	Class 2		
1104 *		Fusing Temperature Control	On/Off Phase
1105 *		Fusing Temperature Adjustment	170 ~ 200 1°C/step 185°C
1106		Fusing Temperature Display	
2001 *	1 *	Grid Voltage Adjustment (For copying)	Adjusts the voltage applied to the grid plate during copying. <i>Do not adjust.</i>
			600 ~ 1000 1 V/step 890 V
	2 *	Grid Voltage Adjustment (For ID sensor pattern)	Adjusts the voltage applied to the grid plate when making the ID sensor pattern. <i>Do not adjust.</i>
			600 ~ 1000 1 V/step 650 V
	5 *	Charge Corona Current Adjustment	Adjusts the current applied to the charge corona wire. <i>Do not adjust.</i>
			900 ~ 1300 1 µA/step 1100 µA
2101 *	1 *	Leading Edge Erase Margin (Printing)	Adjusts the leading edge erase margin. <i>The specification is 3 ± 2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details on SP2101.</i>
			0.0 ~ 9.0 0.1 mm/step 3.0 mm
	2 *	Trailing Edge Erase Margin (Printing)	Adjusts the trailing edge erase margin. <i>The specification is 2 ± 2 mm.</i>
			0.0 ~ 9.0 0.1 mm/step 2.0 mm
	3 *	Left Side Edge Erase Margin (Printing)	Adjusts the left side erase margin. <i>The specification is 2 ± 1.5 mm.</i>
			0.0 ~ 9.0 0.1 mm/step 2.0 mm
	4 *	Right Side Edge Erase Margin (Printing)	Adjusts the right side erase margin. <i>The specification is 2^{+2.5}_{-1.5} mm.</i>
			0.0 ~ 9.0 0.1 mm/step 1.0 mm
2103 *		LD Power Adjustment	Adjusts the LD power. <i>Do not change the value.</i>
			-127 ~ +127 2.1 µW/step +0

Mode No.			Function	Settings
Class 1	Class 2			
2201 *	1 *	Development Bias Adjustment (for copying)	Adjusts the development bias during copying.	200 ~ 700 1 V/step 550 V
			<i>This can be adjusted as a temporary measure if faint copies appear due to an aging drum.</i>	
	2 *	Development Bias Adjustment (for ID sensor pattern)	Adjusts the development bias when making the ID sensor pattern.	200 ~ 700 1 V/step 310 V
			<i>This can be adjusted as a temporary measure if faint copies appear due to an ageing drum.</i>	
2207		Forced Toner Supply	Forces the toner bottle to supply toner to the toner supply unit for 30 seconds.	
			<i>Toner supply finishes automatically after 30 seconds. This process is not normally needed in the field for this model. At installation, doing the 50-page free run also supplies toner to the development unit.</i>	
2208 *	1 *	Toner Supply Mode	Selects the toner supply mode.	Detect Fixed
			<i>Use fixed supply mode only as a temporary measure if process control is not working.</i>	
	2 *	Toner Supply Ratio (Fixed Supply Mode)	Selects the toner supply ratio for Fixed Supply Mode.	6% 15% 30%
			<i>Use a higher value if the user tends to make lots of copies that have a high proportion of black.</i>	
2209 *		Toner Supply Rate (Detect Supply Mode)	Adjusts the toner supply rate for Detect Supply Mode.	50 ~ 200 1 mg/s / step 116 mg/s
			<i>Increasing this value reduces the toner supply clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black.</i>	
2210 *		ID Detection Interval	Changes the interval for making the ID sensor pattern (VSP/VSG detection).	10 ~ 200 1 copy/step 200 copies
			<i>Reducing the interval will also reduce the CPM. Do not adjust this.</i>	

SERVICE PROGRAM MODE TABLES

Mode No.		Function	Settings
Class 1	Class 2		
2220 *		VTREF Manual Setting Adjust the VTREF of the TD sensor. <i>Change this value after replacing the development unit with another one that already contains toner.</i> <i>For example, when using a development unit from another machine for test purposes, do the following:</i> 1. Check the value of SP2220 in both the machine containing the test unit and the machine that you are going to move it to. 2. Install the test development unit, then input the VTREF for this unit into SP2220. 3. After the test, put back the old development unit, and change SP2220 back to the original value.	1.50 ~ 3.00 0.01V/step 2.52V
2223 *		VT Display Displays the TD sensor output voltage.	
2301 *	1 *	Transfer Current Adjustment (1st side of the paper) Adjusts the current applied to the transfer belt during copying on the 1st side of the paper. <i>If the user uses thicker paper, the current may have to be increased to ensure sufficient transfer of toner.</i>	10 ~ 60 1 μ A/step 32 μA
	2 *	Transfer Current Adjustment (2nd side of the paper) Adjusts the current applied to the transfer belt during copying on the 2nd side of the paper. <i>See above.</i>	10 ~ 60 1 μ A/step 32 μA
	6 *	Transfer Current Adjustment (By-pass Feed) Adjusts the current applied to the transfer belt during copying from the by-pass feed table. <i>See above; note that thicker paper can be fed from the bypass feed tray, so the factory setting is higher.</i>	10 ~ 60 1 μ A/step 48 μA
2801		TD Sensor Initial Setting Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V. <i>Use this mode only after installing the machine, changing the TD sensor, or the adding new developer.</i>	
2803		Forced Charge Corona Wire Cleaning Forces the charge corona wire cleaning motor to start cleaning. <i>This only works if the optional wire cleaning motor is installed.</i>	

Mode No.		Function	Settings
Class 1	Class 2		
2804 *	1 *	Charge Corona Wire Cleaning Enable/Disable	Determines whether to clean the charge corona wire every time interval set with SP 2804-2. <i>This only works if the optional wire cleaning motor is installed.</i>
		Charge Corona Wire Cleaning Interval	Changes the interval for charge corona wire cleaning. <i>This only works if the optional wire cleaning motor is installed.</i>
	2 *		100 ~ 10000 100 copies/step 2500 copies
2902	1	Test Pattern Printing (Analog Video Processing)	Prints the test patterns for analog video processing. See section 2.2.2 for how to print test patterns. 0. Not used 1. 16 gradations 2. 128-dot intervals 3. 64-dot intervals <i>This SP mode is useful for finding whether the SBU or EX-IPU failed. If the printout is OK, the SBU is defective. If the printout is not OK, the EX-IPU is defective.</i>
	* 2	Test Pattern Printing (Digital Video Processing)	Prints the test patterns for digital video processing. See section 2.2.2 in the A133 service manual for how to print test patterns. 0. Not used 1. Vertical Stripes 2. Grayscales 3. Cross Pattern 4. Black Bands * 5. 300 dpi * 6. 600 dpi <i>This SP mode is useful for finding whether the printer or the EX-IPU failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.</i>
	3	Test Pattern Printing (Printing)	Prints the printer test patterns. See section 2.2.2 in the A133 service manual for how to print test patterns. Example: 10. Trimming Area For the other test patterns, refer to section 2.2.2. <i>This SP mode is useful for finding the part that failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.</i>
	7	Test Pattern Printing (GA5)	Prints the test pattern for the GA5 (IC for the image compression) 0. Not used 1. Print out
2905 *		LD PWM Laser Pulse Positioning	Selects the laser pulse positioning type that is used for test printouts and when in binary picture processing mode. <i>If SP 4904-1 is set to NO, this SP mode is ignored. The "center" setting will be used.</i> 2: Center 3. Left 4. Right 5. Concentrated
2906 *		TD Sensor Input Voltage	Use to input the TD sensor control voltage. Factory use only 4 ~ 10 0.1 V/step 8.0 V
2909 *		Main Scan Magnification	Adjusts the magnification in the main scan direction for the printer. <i>Use the •/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.</i> - 2.54 ~ + 2.54 0.02 %/step + 0.00 %

SERVICE PROGRAM MODE TABLES

Mode No.			Function	Settings
Class 1	Class 2			
2950 *		Side-to-Side Registration (Base)	Changes the printing start position. Factory use only	- 12.7 ~ + 12.7 0.1 mm/step + 0.0 mm
3001		ID Sensor Initial Setting	Performs the ID sensor initial setting. The ID sensor output for the bare area of the drum (VSG) is adjusted to $4.0 \pm 0.2V$. <i>This SP mode should be performed after replacing or cleaning the ID sensor or replacing the drum.</i>	
3103 *		ID Sensor Output Display	Displays the current VSG and VSP output. <i>If the ID sensor does not detect the ID pattern, "VSP=5.0v/VSG=5.0v" is displayed. If the ID sensor does not detect the bare area of the drum, "VSP=0.0v/VSG=0.0v" is displayed.</i>	VSP=x.xxV VSG=x.xxV
4008 *		Sub Scan Magnification (Scanning)	Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. <i>Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" in the A133 service manual for details.</i>	- 9.0 ~ + 9.0 0.1 %/step + 0.0 %
4010 *		Leading Edge Registration (Scanning)	Adjusts the leading edge registration for scanning. <i>(-): the image moves in the direction of the leading edge Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" in the A133 service manual for details.</i>	- 9.0 ~ + 9.0 0.1 mm/step + 0.0 mm
4011 *		Side-to Side Registration (Scanning)	Adjusts the side-to-side registration for scanning. <i>(-): the image disappears at the left side. (+): The image appears. Use the ●/* key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" in the A133 service manual for details.</i>	- 6.0 ~ + 6.0 0.1 mm/step + 0.0 mm

Mode No.			Function	Settings
Class 1	Class 2			
4012 *	1 *	Leading Edge Erase Margin (Scanning)	Adjusts the leading edge margin for scanning. <i>Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.</i>	0.0 ~ 0.9 0.1 mm/step 1.0 mm
		Trailing Edge Erase Margin (Scanning)	Adjusts the trailing edge margin for scanning. <i>See the comment for SP 4012-1.</i>	0.0 ~ 0.9 0.1 mm/step 0.5 mm
	3 *	Left Side Erase Margin (Scanning)	Adjusts the left side margin for scanning. <i>See the comment for SP 4012-1.</i>	0.0 ~ 0.9 0.1 mm/step 1.0 mm
		Right Side Erase Margin (Scanning)	Adjusts the right side margin for scanning. <i>See the comment for SP 4012-1.</i>	0.0 ~ 0.9 0.1 mm/step 0.5 mm
4013		Scanner Free Run	Performs a scanner free run with the exposure lamp off.	
4301		APS Sensor Output Display	Displays the size of an original placed on the exposure glass. <i>If A5 or 5 1/2" x 8 1/2" is displayed, check the current setting of SP 4303; depending on that SP mode setting, A5 or 5 1/2" x 8 1/2" may be displayed if the APS sensors cannot detect the paper size.</i>	
4303 *		APS Small Size Original Detection	Selects whether or not the copier determines that the original is A5/HLT size when the APS sensor does not detect the size. <i>If "A5 length / 5 1/2" x 8 1/2" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise or 5 1/2" x 8 1/2". If "Not detected" is selected, "Cannot detect original size" will be displayed.</i>	Not detected A5 length / 5 1/2" X 8 1/2"
4428		Standard White Level Adjustment	Corrects the standard white level of the white plate. <i>This SP mode is for factory use only. Do not change the value.</i>	

SERVICE PROGRAM MODE TABLES

Mode No.			Function	Settings
Class 1	Class 2			
4901 *	2 *	GA 1 Setting (GAIN 0)	The coefficient of the D/A converter for the standard AGC gain curve. <i>This SP mode is for factory use only. Do not change the value.</i>	0 ~ 255 1 /step 100
		GA 1 Setting (GAIN 1)	The coefficient of the D/A converter for the AGC gain curve at power on. <i>This SP mode is for factory use only. Do not change the value.</i>	0 ~ 255 1 /step 100
	8 *	GA 1 Setting (REF)	The coefficient of the D/A converter for the AGC gain curve for scanning the white plate. <i>This SP mode is for factory use only. Do not change the value.</i>	0 ~ 255 1 /step 100
		GA 1 Setting (Video Data Path)	Selects one of the following video data outputs, which will be used for printing. 0. After GA1 functions 1. Before auto shading processing 2. After black auto shading processing 3. After all auto shading processing (black and white) <i>Do not change the value.</i>	

Mode No.		Function	Settings
Class 1	Class 2		
4903 *	1 *	GA 3 Setting (Filter Level)	0 ~ 255 0
		Selects the strengths of the MTF and smoothing filters. bit 7, 6: Letter Mode (MTF) 00: Normal 01: Weak 10: Weaker 11: Weakest bit 5, 4: Generation Mode (MTF) 00: Normal 01: Weak 10: Weaker 11: Weakest bit 3: Not used Keep at "0" bit 2: Letter/Photo Mode (Smoothing) 0: Sharp 1: Smooth bit 1: Photo Mode (MTF) 0: Weak 1: Strong bit 0: Photo Mode (Smoothing) 0: Smooth 1: Sharp	
		<i>Input the setting for all 8 bits at once as a decimal value.</i> (e.g. To set the MTF filter strength of the the generation mode to 'weak', the input value should be 16 as shown below, assuming all other parameters are at the 'zero' setting. 00010000 → 16	
		<i>The type of filter used in Photo mode depends on the setting of SP4904-3.</i>	
		GA 3 Setting (Filter Mode)	0 ~ 16 1 /step 3
		2 *	Do not change the value.
	3	Not used	
	4 *	GA 3 Setting (White Threshold)	0 ~ 255 1 /step 80
		Do not change the value.	
	5	GA3 Setting (Full Size)	Selects whether the copy image is always in the full size mode even if the magnification ratio has been changed. 0: Normal Operation 1: Always full size mode <i>This SP mode is used for checking the magnification function in the main scan direction, which is performed by the GA3 chip.</i>
	6	GA 3 Setting (Test Pattern Output)	Prints the test pattern for the GA3 or selects one of the following video data outputs for printing. 0. Normal 1. Test pattern print out 2. Skips the magnification processing. 3. Skips the filter processing 4. Skips the GA3 functions
			<i>This SP mode is used for checking the GA3 functions.</i>

SERVICE PROGRAM MODE TABLES

Mode No.		Function	Settings
Class 1	Class 2		
4903	7 *	GA 3 Setting (Main Shift High)	0 ~ 255 1 /step 0
	8 *	GA 3 Setting (Main Shift Low)	
	9 *	GA 3 Setting (Switch Separation)	25 ~ 255 1 %/step 170 %
4904 *	1 *	GA4 Setting (Laser Pulse Positioning)	0: OFF 1: ON
	2 *	GA4 Setting (Photo Matrix)	0: 4 x 4 1: 6 x 6 2: 8 x 8 3: 6 x 6 (New)
	3 *	GA4 Setting (Filter Select in Photo Mode)	0: MTF filter 1: Smoothing filter
	4 *	GA4 Setting (Binary Process Mode)	0: NO 1: YES
	6	GA4 Setting (Generation Mode)	0: Not corrected 1: Thin line-1 2: Thin line-2 3: Thick line
	7	GA4 Setting (Image Process mode in Letter/ Photo mode: Letter areas)	0: 1 x 1 dot processing 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing 3: Error diffusion with 2 x 1 dot processing A larger value cases the image to became lighter. Only works if 4904-4 is at 0.

Mode No.		Function	Settings
Class 1	Class 2		
4904	8	GA4 Setting (Image Process mode in Letter/Photo mode: Photo Areas)	Selects the image processing mode used for photo areas in the Letter/Photo mode. 0: 1 x 1 dot processing 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing 3: Error diffusion with 2 x 1 dot processing <i>A smaller value causes the image to become more sharp in focus. Only works if 4904-4 is at 0.</i>
	10	GA4 Setting (GA4 Test Data)	Prints the test pattern for the GA4 IC, to test the GA4 chip on the EX-IPU. 0: No Print 1: Gradation 2: Cross 3: Black bands
	12 *	GA4 Setting (BK Thresh Level)	Changes the threshold level for binary picture processing mode. <i>A larger value causes the image to become lighter.</i> 0 ~ 255 1 /step 40
	13 *	GA4 Setting (Top point Level)	The value for pixels at an edge in binary picture processing mode. Do not change the value. 0 ~ 255 1 /step 128
4905	14 *	GA4 Setting (All Black Level)	The value for black areas in binary picture processing mode. Do not change the value. 0 ~ 255 1 /step 255
	16 *	GA4 Setting (Print Top Point Level)	The value for pixels at an edge in stamp mode. Do not change the value. 0 ~ 255 1 /step 128
	17 *	GA4 Setting (Print All Black Level)	The value for black areas in stamp mode. Do not change the value. 0 ~ 255 1 /step 255
4907	18 *	GA4 Setting (Dither Pattern)	Selects the dither pattern used in binary picture processing mode. Do not change the value. 0: 70-line 1: 95-line 2: 140-line 3: 180-line
4905	1	Path setting (MSU video in)	Do not change the value
	* 2	Path Setting (ASAP Video In)	Use to check the external ASAP video interface with the dummy board. See the "External ASAP Video I/F Test" section for details. Before this test is performed, the main controller should be replaced with the dummy board 0: Normal 1: Test
4907		GA4 Setting (Auto letter/photo separation)	Selects whether the auto letter/photo separation is performed in the Letter/Photo mode or not. Disabled Enabled
			<i>Test purposes only</i>

SERVICE PROGRAM MODE TABLES

Mode No.		Function	Settings
Class 1	Class 2		
4909	1	GA4 Setting (Pulse Width Modulation) <i>Decides the threshold level for selecting the type of pulse width modulation that is used.</i> Do not change the value.	0 ~ 255 1 /step 32
	2	GA4 Setting (Line Width Correction 1 : White) <i>Decides the threshold value for a pixel to be white when line width correction type 1 is performed.</i> Do not change the value.	0 ~ 255 1 /step 48
	3	GA4 Setting (Line Width Correction 1 : Black) <i>Decides the threshold value for a pixel to be black when line width correction type 1 is performed.</i> Do not change the value.	0 ~ 255 1 /step 208
	4	GA4 Setting (Line Width Correction 2 : White) <i>Decides the threshold value for a pixel to be white when line width correction type 2 is performed.</i> Do not change the value.	0 ~ 255 1 /step 60
	5	GA4 Setting (Line Width Correction 2 : Black) <i>Decides the threshold value for a pixel to be black when line width correction type 2 is performed.</i> Do not change the value.	0 ~ 255 1 /step 192
	6	GA4 Setting (Error Diffusion Gamma) <i>Selects the gamma type for error diffusion.</i> Do not change the value.	0 ~ 7 1 /step 0
	7	GA4 Setting (Edge Detection 1) <i>Decides the threshold value to calculate the difference value between the object pixel and the surrounding pixels.</i> Do not change the value.	0 ~ 255 1 /step 16
	8	GA4 Setting (Edge Detection 2) <i>Decides the threshold value for detecting the edge area.</i> Do not change the value.	0 ~ 255 1 /step 128
	17	GA4 Setting (Background Pattern Merge Method) <i>Selects whether an image which overlaps a background numbering pattern is converted from positive to negative or not.</i> <i>This SP mode is used when a background numbering pattern is overlapping a solid black area.</i>	0: Not converted 1: Converted

Mode No.		Function	Settings
Class 1	Class 2		
4909	18	GA4 Setting (Stamp Pattern Merge Method)	0: Not converted 1: Converted 2: Inverted
		Selects whether an image which overlaps a stamp pattern is converted from positive to negative or not. The settings 0 and 1 are the same as for 4909-17 above. The setting 2 means that the black level of the stamp (SP4904-17) is inverted (e.g. when the black level of the stamp is 200, the stamp pattern is printed at black level 55.) <i>This SP mode is used when a stamp pattern is overlapping a solid black area.</i>	
	19	GA4 Setting (Data Path Selection 1)	0 <i>These SP modes are used for design purposes only. Do not change the settings.</i>
	20	GA4 Setting (Data Path Selection 2)	0 <i>These SP modes are used for design purposes only. Do not change the settings.</i>
4911	1	HDD Setting (Media Test)	
		Checks for bad sectors on the hard disk that develop during machine use. This takes 4 minutes. <i>This SP mode should be done when an abnormal image is printed. There is no need to do this at installation as the hard disk firmware already contains bad sector information, and damage is not likely during transportation. Bad sectors detected with this SP mode will be stored in the E²PROM on the EX-IPU board with the bad sector data copied across from the firmware.</i>	
	2	HDD Setting (Formatting)	Formats the hard disk. This takes 8 minutes. Do not turn off the main switch during this performance.
	3	HDD Setting (Spindle Control)	Decides the disk drive motor (spindle motor) stop timing. Yes: The hard disk stops in low power mode. The first copy after returning to standby will take longer. No: The hard disk keeps going in low power mode
	4	HDD Setting (Head Retraction)	Press Enter to move the head of the hard disk away from the disk while the disk is turning. The head automatically moves back when a copy is made. <i>This SP should be performed when the machine will be moved without turning the main switch off.</i>

SERVICE PROGRAM MODE TABLES

Mode No.		Function	Settings
Class 1	Class 2		
4911	5	HDD Setting (Total Storage Capacity)	Input the total storage capacity of the hard disk at replacement. <i>In future, hard disks of various sizes may be available. In this case, use this SP mode when installing a new disk.</i>
		HDD Setting (Bad Sector Information Reset)	Resets the bad sector information which is stored in the E ² PROM on the EX-IPU board. <i>This SP should be performed when the hard disk is replaced.</i>
	7	HDD Setting (Bad Sector Display)	Displays the number of bad sectors there are on the hard disk.
5019		LCT Paper Size Setting	Selects the paper size for the LCT. <i>When changing the setting, the position of the side fences for the LCT should be changed.</i> A4 (230V machines) 8 1/2" X 11" (115V machines)
5104 *		A3/11"x17" Double Count	Specifies whether the counter is doubled for A3/11"x17" paper. <i>If "YES" is selected, the total counter and the current user code counter counts up twice when A3/11"x17" paper is used.</i> No Yes
5106 *		ADS Level Selection	Selects the image density level that is used in ADS mode. 1 ~ 7 1 notch /step 4
5118 *		Disable Copying	Selects whether the copy function is disabled or not. No Yes
5220 *		Auto Stamp Function	Selects whether the auto stamp function is enabled or not. On (115V machine) Off (230V machine)
5305		Auto Off Mode	This SP mode is used only for 115V machines (Energy Star standardization). Selects whether the auto off timer setting is enabled or disabled <i>When "disabled" is selected, the auto off timer range will be wider than the default timer range. (In UP mode, the user will be able to select a time between 0 and 120 minutes.) If "0" is selected, the auto off timer function is disabled.</i> Enabled Disabled
5501 *	1	PM Alarm	Selects whether the PM alarm is enabled or not. Enabled Disabled
5501	2	PM Alarm Interval	Sets the PM interval, with an alarm. <i>When the setting is "0", this function is disabled.</i> 0 ~ 255 1k copies/step 120 k copies

Mode No.		Function	Settings
Class 1	Class 2		
5801		Memory All Clear Resets all correction data for process control and all software counters. Also, returns all modes and adjustments to the default settings. See the "MEMORY ALL CLEAR" section for how to use this SP mode correctly. <i>Normally, this SP mode should not be used.</i> <i>It is used only after replacing the NVRAM, or when the copier malfunctions due to a damaged NVRAM.</i>	
5802		Free Run Performs a free run. The scanner scans once and the printer prints for the number of copies requested.	
5803	1 ~ 9	Input Check Displays the signals received from sensors and switches. See the "INPUT CHECK" section for details.	
5804		Output Check Turns on the electrical components individually for test purposes. See the "OUTPUT CHECK" section for details.	
5807		Option Connection Check Checks the connectors to the options.	
5811 *		Machine Serial Number Use to input the machine serial number. <i>This serial number will be printed on the system parameter list.</i>	
5812 *		Service Telephone Number Use this to input the telephone number of the service representative (this is displayed when a service call condition occurs.) <i>Press the "•/#" key to input a pause (—). Press the "Clear modes" key to delete the telephone number.</i>	
* 5818*		OEM Code Setting Select the production name and the device name for Windows95 Plug and Play, PostScript for Macintosh, or the SCSI Device name. The production name and device name is registered in the NV RAM on the SCU in the factory. If the NV RAM is defective, these names should be registered using this SP mode.	0: Ricoh Aficio 401 1: NRG D440/2840/3240 2: Not Used 3: Savin 9940DPC 4: Not Used 5: Infotec 5402MF 6: Lanier 5040MFD

SERVICE PROGRAM MODE TABLES

Mode No.		Function	Settings
Class 1	Class 2		
5902		Duplex Tray Capacity Limit for A3 Copies <i>Selects the total capacity of the duplex tray for A3 paper.</i> <i>If there are frequent jams at the duplex unit when using A3 paper, try setting this to 30.</i>	50 sheets 30 sheets
5920 *		Fusing Temp. Setting - Low Power Mode <i>Selects the fusing temperature that will be used in low power mode.</i> <i>If a low temperature is selected, it takes more time to reach the ready condition.</i>	(115V ver.) 125 °C 100 °C (230V ver.) 170 °C 155 °C 125 °C 100 °C
* 5945		Option Bus Interface Check <i>Check the optional bus interface with the dummy board from the SCU through the extension board.</i> <i>Before this test is performed, the main controller should be replaced with the dummy board.</i> <i>See the "OPTIONAL BUS INTERFACE CHECK" section for details.</i>	
* 5946		Printer Controller Disk Error Log Clear <i>To clear the error log of the controller disk. See the "PRINTER CONTROLLER ERROR LOG" section for details.</i>	
5990	1	SP Mode Data Printing (All Data) <i>Prints all the system parameter lists. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.</i> <i>Printing takes 6 minutes.</i>	
	2	SP Mode Data Printing (SP Mode Data) <i>Prints the SP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.</i> <i>Printing takes 2 minutes.</i>	
	3	SP Mode Data Printing (UP Mode Data) <i>Prints the UP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.</i> <i>Printing takes 2 minutes.</i>	
	4	SP Mode Data Printing (Machine Status Data) <i>Prints the machine status history data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists.</i> <i>Printing takes 2 minutes.</i>	

Mode No.			Function	Settings
Class 1	Class 2			
6006 *	1 *	ADF Side-to-Side Registration	Adjusts the printing side-to-side registration in the ADF mode. <i>Use the ●/* key to toggle between + and -.</i>	-3 ~ +3 0.1 mm/step + 0.0 mm
		ADF Leading Edge Registration (Simplex)	Adjusts the original stop position. <i>Use the ●/* key to toggle between + and -.</i>	-3 ~ +3 0.1 mm/step + 0.0 mm
	3 *	ADF Leading Edge Registration (Duplex-front)	Adjusts the original stop position against the original left scale in one-sided original mode. <i>Use the ●/* key to toggle between + and -.</i>	-3 ~ +3 0.1 mm/step + 0.0 mm
		ADF Leading Edge Registration (Duplex-rear)	Adjusts the original stop position against the original left scale in two-sided original mode. <i>Use the ●/* key to toggle between + and -.</i>	-3 ~ +3 0.1 mm/step + 0.0 mm
	For details on the correct way to use SP 6006, see the ADF service manual.			
	6009	ADF Free Run	Performs an ADF free run. <i>This is a general free run controlled from the copier. For more detailed free run modes, see the DF manual.</i>	
		Finisher Staple Position Adjustment	Adjusts the staple position when using the finisher. <i>Use the ●/* key to toggle between + and -.</i> One staple position: A larger value causes the staple position to shift inward. Two staple position: A larger value causes both staple positions to shift to the rear side of the machine.	- 1~ +3.5 0.5 mm/step +0.0 mm
	6107	Finisher Free Run	Performs a finisher free run (without stapler). <i>This is a general free run controlled from the copier. For more detailed free run modes, see the finisher manual.</i>	
7004	Total Copy Counter Reset	Japanese version only. Do not change this value.		
7804	PM Counter Reset	Resets the PM counter.	To see the current counter values, print the SP mode data lists (SP 5990).	
7807	SC/Jam Counter Reset	Resets the SC and jam counters.		
7808	Resets Counters (except for the total counter)	Resets the following counters: On the data list, between "Total No of Org from ADF" and "Number of SCs: Others", and between "Counter from ADF" and "Staple Mode".		
7810	User Code Number Reset	Resets the user code numbers.		

SERVICE PROGRAM MODE TABLES

Mode No.		Function	Settings
Class 1	Class 2		
7901	1	ROM/CPU Version (Operation Panel)	Displays the operation panel board ROM version.
	2	ROM/CPU Version (MSIS)	Displays the ROM version for the MSIS on the SCU board.
	3	ROM/CPU Version (Copy App.)	Displays the ROM version for the copy application on the SCU board.
	4	ROM/CPU Version (BCU:68340)	Displays the CPU version for the fusing controller on the BCU board.
	5	ROM/CPU Version (AC Power Control)	Displays the ROM version for AC power control on the AC drive board.
	6	ROM/CPU Version (High Voltage)	Displays the ROM version for the high voltage control board.
	7	ROM/CPU Version (EX-IPU)	Displays the ROM version for the EX-IPU board.
	8	ROM/CPU Version (ADF)	Displays the ROM version for the ADF.
	9	ROM/CPU Version (Paper Feed Unit)	Displays the ROM version for the paper feed unit.
7901	10	ROM/CPU Version (Sorter/ Finisher)	Displays the ROM version for the sorter/finisher.
	11	ROM/CPU Version (MSU)	Displays the ROM version for the memory unit on the EX-IPU board.

8.2 TEST PATTERN PRINTING (SP 2902)

1. Access the SP mode which holds the test pattern that you need.
2. Touch the "Copy Mode" button on the display to access the copy mode display.
3. Select the required copy features such as paper size, image density, reduction.
4. Press the "Start" key on the operation panel.
5. After checking the test pattern, leave copy mode by touching the "SP Mode" button on the display.
6. Touch the "Quit" button to leave the SP mode.

CAUTION

Before leaving the SP mode, return the setting of the SP mode to 0 (No Print). Otherwise, the user will get a test pattern whenever taking a copy.

* **NOTE:** The 600 dpi printed pattern (2902-2-6) will have a black area and a white area. This is normal for the 600 dpi test pattern.

Test Pattern Table for SP2902-3

No.	Test Pattern	No.	Test Pattern
0	No Print	16	32 Grayscales (Horizontal)
1	Vertical Lines (1 dot)	17	32 Grayscales (Vertical)
2	Horizontal Lines (1 dot)	18	32 Grayscales (Vert./Hor.)
3	Vertical Lines (2 dots)	19	32 Grayscales (V/H Overlay)
4	Horizontal Lines (2 dots)	20	64 Grayscales (Horizontal)
5	Grid Pattern (single dot)	21	64 Grayscales (Vertical)
6	Grid Pattern (double dots)	22	64 Grayscales (Vert./Hor.)
7	Alternating Dot Pattern	23	64 Grayscales (V/H Overlay)
8	Full Dot Pattern	24	128 Grayscales (Horizontal)
9	Black Band	25	128 Grayscales (Vertical)
10	Trimming Area	26	128 Grayscales (Vert./Hor.)
11	Argyle Pattern	27	128 Grayscales (Vert./Hor. Overlay)
12	16 Grayscales (Horizontal)	28	256 Grayscales (Horizontal)
13	16 Grayscales (Vertical)	29	256 Grayscales (Vertical)
14	16 Grayscales (Vert./Hor.)	30	256 Grayscales (Vert./Hor.)
15	16 Grayscales (Vert./Hor. Overlay)	31	256 Grayscales (Vert./Hor. Overlay)

8.3 External ASAP Video I/F Test (SP4905-2)

This tests the video data interface between the dummy board and the IPU board. If the printout from the test is no good, the interface between the IPU and the dummy board is defective.

1. Replace the main controller with the dummy board.

CAUTION
Do not perform this test with the main controller board.

2. Access SP mode and select the SP number 4905, item number 2.
3. Enter the path setting number 1, press the # key.
4. Touch the "Copy Mode" button on the display to access the copy mode display.
5. Place the test chart on the exposure glass and make a copy.
6. Check the printout. If it is no good, the IPU - dummy board interface is defective.
7. After checking, leave copy mode by touching the "SP Mode" button on the display.
8. Change the path setting number back to zero.
9. Touch the "Quit" button to leave the SP mode.

CAUTION
Before leaving the SP mode, return the setting of the SP mode to 0 (normal).

8.4 Option Bus Interface Check (SP5945)

1. Replace the main controller with the dummy board.

CAUTION

Do not perform this test with the main controller board in the machine.

2. Access SP mode and select SP mode 5945.
3. Touch the "Start" button on the display.
4. The status of the test result will be shown on the display.
5. Touch the "Quit" button to leave the SP mode.

- Test result display -

1	No Error	
2	Err2	/ XBS16 Assert Error
3	Err3	+12 V Power Source Error
4	Err4	/ XBE2 Assert Error
5	Err5	/ XBE1 Assert Error
6	Err6	/ XBE0 Assert Error
7	Err7	Upper Address Error
8	Err8	Low Address Error
9	Err9	Data Write Error

8.5 Printer Controller Disk Error Log (SP5990 to Print, SP5946 to Clear)

The Printer Controller Disk Error Log is used to determine whether a disk error is fatal or not.

Use this for reference when deciding whether HDD replacement is needed.

To print to the printer controller disk error log:

1. Print the log data (SP5990-1/4).
Refer to the "SYSTEM PARAMETER AND DATA LIST" section for the printing procedure.
2. Check the PRINTER DISK ERROR log section on the last page of the printed System Parameter Report as shown in PRINTER DISK ERROR below.
3. After printing this list, leave copy mode by touching the "SP Mode" button on the display.
4. Touch the "Quit" button to leave SP mode.

PRINTER DISK ERROR

Reset Date.....DDMMYY
Total Counter xxx
1st.....DDMMYY
2nd.....DDMMYY
3rd.....DDMMYY
4th.....DDMMYY
5th.....DDMMYY

This error log records the dates of the last five errors. If errors with the same symptom occur frequently, change the hard disk.

The number of the total counter shows the total page number after the error log was last reset.

To clear the error log.

1. Access SP mode 5946.
2. Touch "Yes" on the display to clear the error log.
The last five error logs will be cleared, and the total counter will be reset to 0.
The Reset Date will be set to the current date.

9. MEMORY ALL CLEAR (SP5801)

NOTE: The step marked * is a new step.

 CAUTION

Memory All Clear mode resets all the settings that are stored in the NVRAM to the default settings. These settings are the correction data for process control and all the software counters.

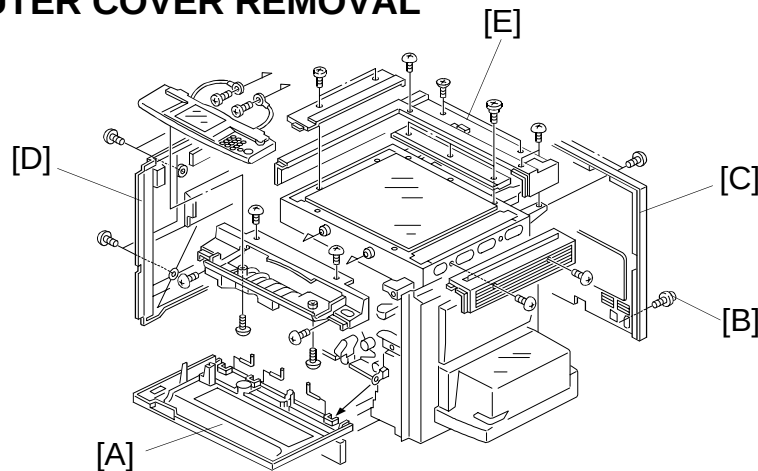
Normally, this SP mode should not be performed, This procedure is required only after replacing the NVRAM or when the copier malfunctions due to a damaged NVRAM.

1. Print out all System Parameter Lists (SP mode 5990).
2. Enter SP mode 5801.
3. Hold the  key for more than 3 seconds.
4. Turn the main switch off and back on.
5. Perform the Touch Screen Adjustment procedure (see the "Touch Screen Adjustment" chapter in the Replacement and Adjustment section).
6. Do the printer and scanner registration and magnification adjustments (see section 12 of "Replacement and Adjustment").
7. Enter the values which had been changed from the factory settings, referring to the system parameter list (the values which have an "*" mark next to them had been changed). In particular, the values for SP2220, SP3001, SP4901-2, SP4901-5, and SP4901-8 must be input.
- *8. Enter the setting of the OEM code (the value is set using SP5818).

NOTE: This step is not necessary for the Ricoh Aficio 401, only for OEM machines.
9. Check the copy quality and the paper path, and do any necessary adjustments.

10. INNER AND OUTER COVERS

10.1 OUTER COVER REMOVAL



10.1.1 Front Cover

1. Open the front cover.
2. Remove the front cover [A] (3 pins).

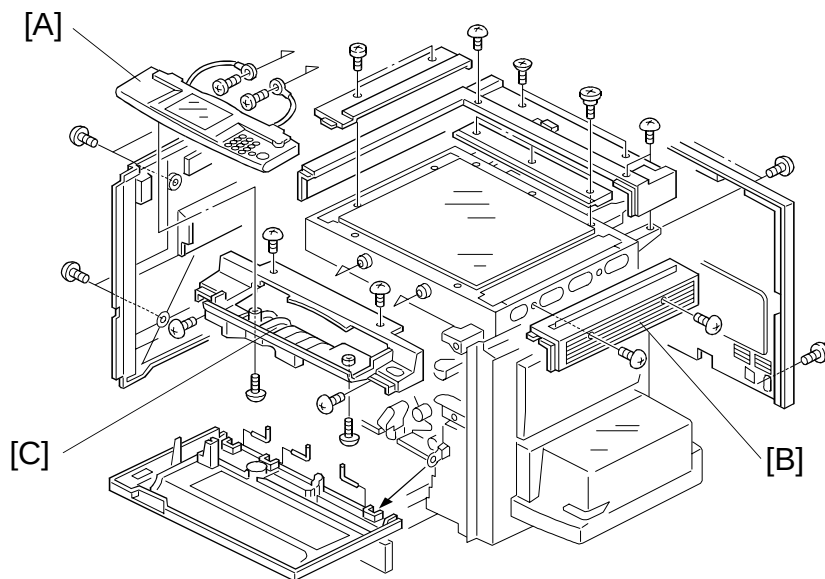
10.1.2 Left Cover

1. Remove the optional 500-sheet tray or finisher.
2. Open the front cover.
3. Slide out the duplex and paper feed trays.
4. Remove the left cover [D] (4 screws).

10.1.3 Top Cover

1. Remove the platen cover (see the Installation procedure) or DF (see the manual for the DF).
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Remove the top cover [E] (5 screws).

10.1.4 Operation Panel



1. Turn off the main switch and unplug the machine.
2. Open the front cover.
3. Swing out the toner bottle holder assembly.
4. Remove the operation panel [A] (4 screws, 3 connectors).

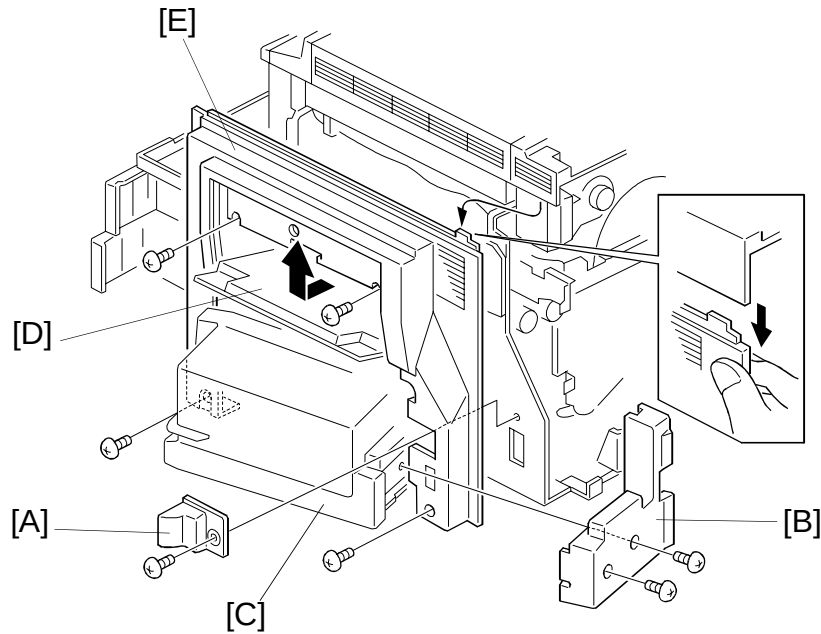
10.1.5 Right Upper Cover

1. Remove the right upper cover [B] (2 screws).

10.1.6 Front Upper Cover

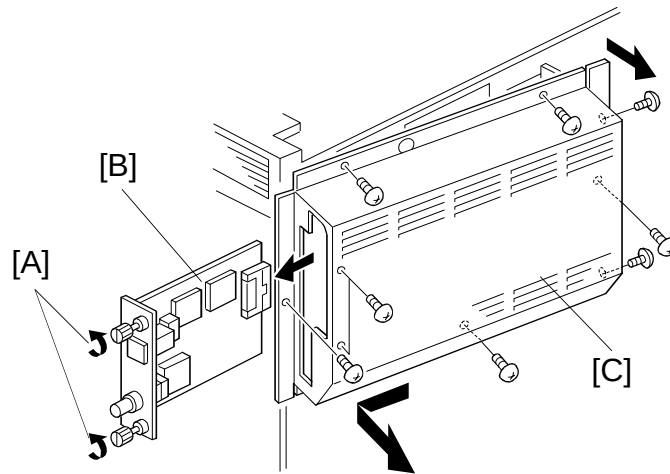
1. Open the front cover.
2. Remove the toner bottle holder assembly. (See Development Unit Removal.)
3. Remove the operation panel [A] (6 screws, 3 connectors).
4. Remove the left inner cover. (See Inner Cover Removal.)
5. Remove the front upper cover [C] (2 screws).

10.1.7 Right Cover



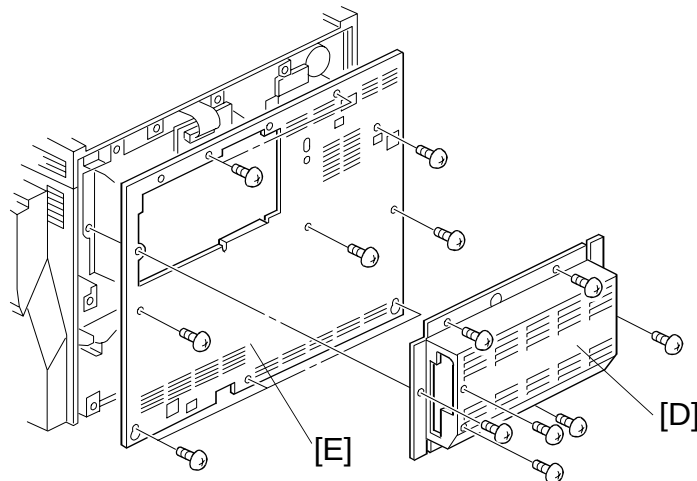
1. Open the front cover and pull out the paper tray and duplex.
2. Remove the LCT harness cover [A] (1 screw).
3. Remove the LCT rear cover [B] (2 screws).
4. Swing open the LCT [C] and open the by-pass feed table [D].
5. Remove the right cover [E] (4 screws).

10.1.8 Controller Board Cover



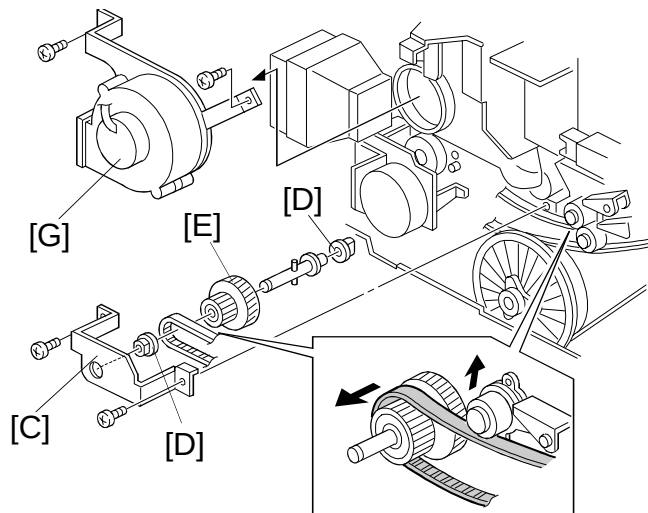
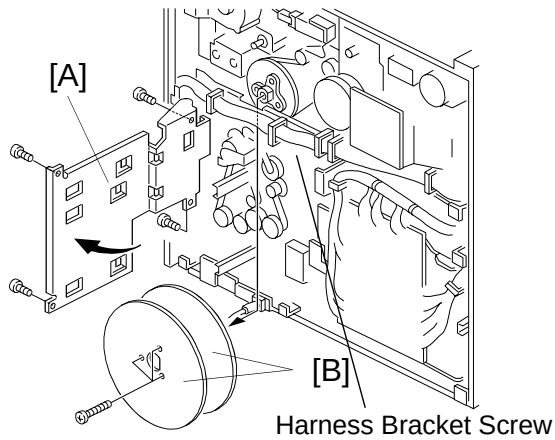
1. Loosen the 2 screws [A] of the optional NIC.
2. Remove the optional NIC [B].
3. Remove the controller board cover [C] (9 screws).

10.1.9 Rear Cover



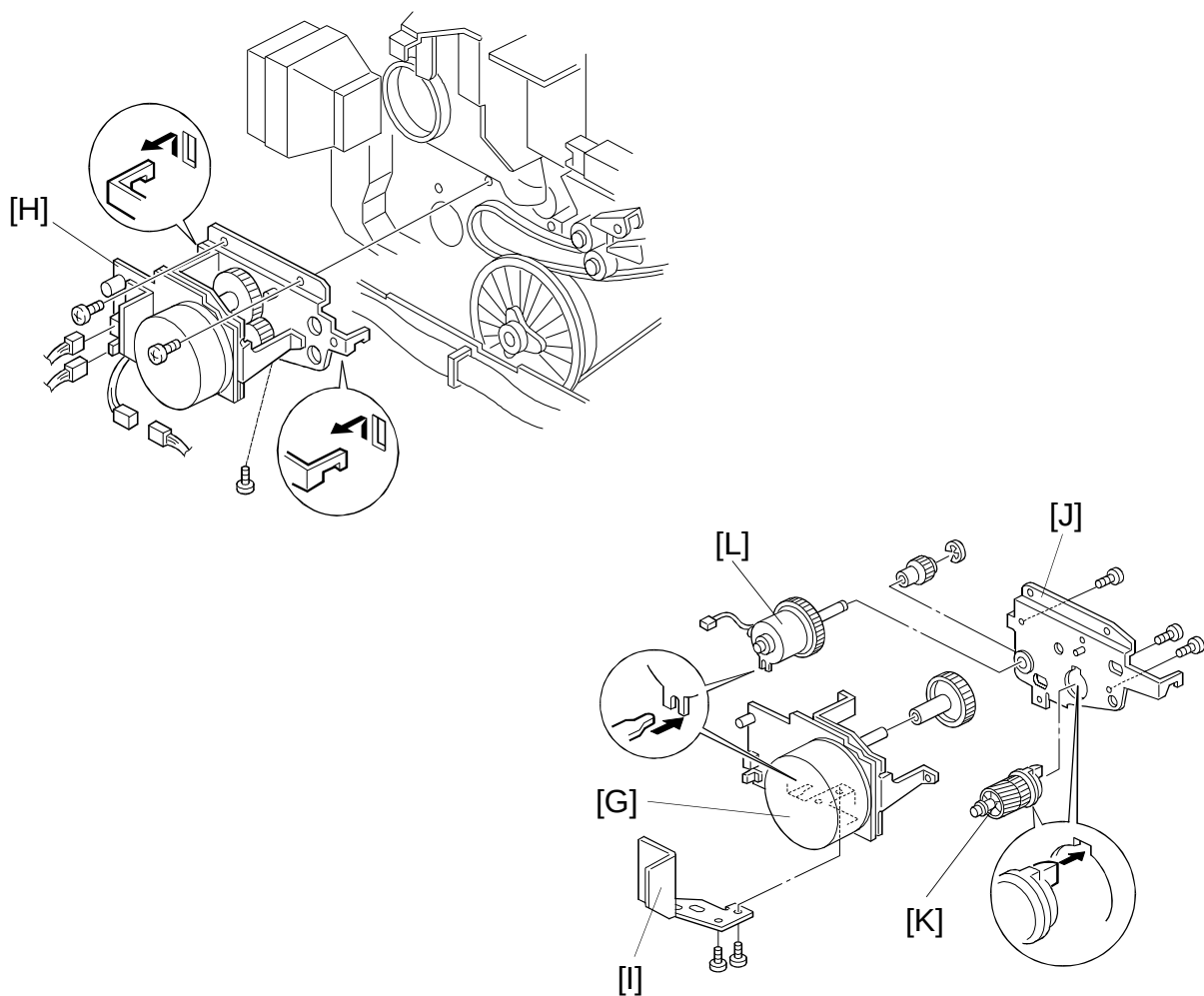
1. Remove the controller board cover [D]. (See Controller Board Cover Removal.)
2. Remove the optional scanner board (See Scanner Board Removal).
3. Remove the rear cover [E] (9 screws).

10.2 DEVELOPMENT DRIVE MOTOR AND TONER SUPPLY CLUTCH REPLACEMENT



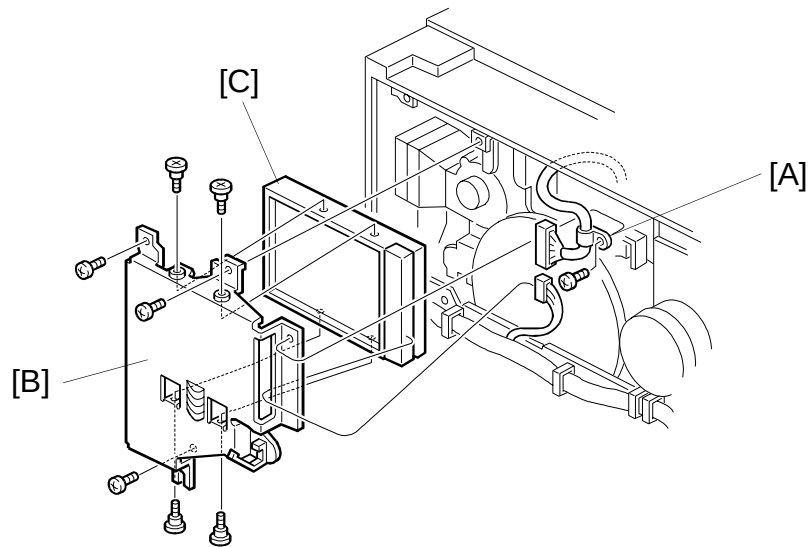
1. Turn off the main switch.
2. Remove the rear cover and Controller Board Cover. (See Cover Removal.)
3. Remove the controller board and controller board bracket (See Controller Board Bracket Replacement)
4. Remove the SCSI HDD Unit (See HDD unit Replacement)
5. Swing out the SCU board plate [A] (4 screws). Remove the Harness bracket (1 screw, 2 clamps).
6. Remove the fly wheels [B] (3 screws).
7. Remove the drive gear holder [C] (2 screws).
8. Remove 2 bushings [D] (don't drop bushings), 1 gear [E], and 1 shaft [F].

INNER AND OUTER COVERS



9. Remove the fan motor [G]. (2 screw, 1 connector.)
 10. Remove the development drive motor assembly [H] (3 connectors, 3 screws).
- Note: Disconnect the toner supply clutch at the intermediate connector, in front of the assembly, as shown above.
11. Remove the gear cover [I] (2 screws).
 12. Remove the development drive holder [J] (1 E-rings, 3 screws).
 13. Replace the development drive gear [K] or the toner supply clutch [L] (2 Allen screws).

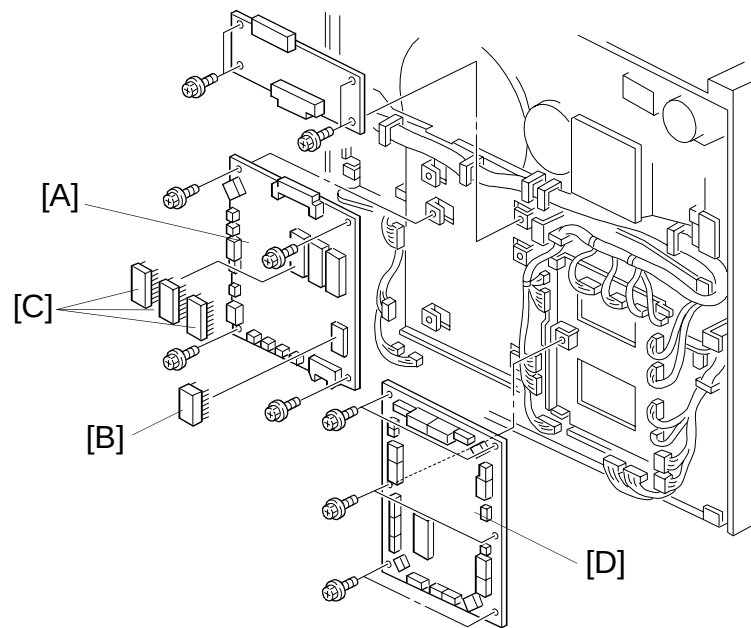
10.3 HDD Unit Replacement



1. Turn off the main switch and unplug the machine. Remove the Rear Cover and Controller Board Cover (see Cover Removal procedures).
2. Remove the main controller board and controller board bracket. (See Main Controller Board Bracket Removal.)
3. Remove the wire clamp [A] (1 screw).
4. Remove the HDD unit assembly [B] (3 screws, 2 connectors, 1 clamp).
5. Replace the HDD unit [C] (4 screws).

NOTE: 1) Reset the bad sector information (SP4911-6).

2) If the user has registered user stamps in the previous HDD unit, advise the user that they may need to register them again.



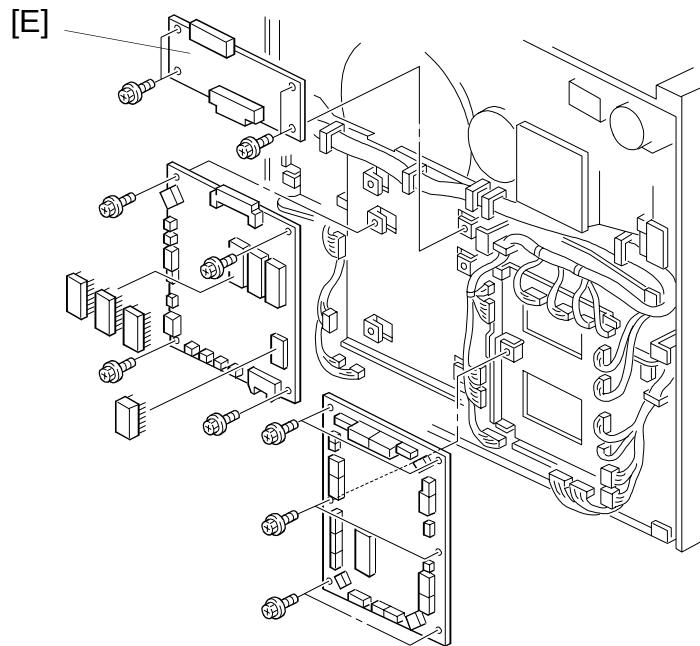
10.4 SCU BOARD REPLACEMENT

1. Turn off the main switch and unplug the machine.
2. Remove the rear cover (See Outer Cover Removal).
3. Replace the SCU board [A] (4 screws, all connectors).
4. Remove the NV RAM [B] from the old SCU board and install it on the new board.
5. Remove the ROMs [C] from the old SCU board and install them on the new board.
6. Make sure that the DIP switch settings on the new board are the same as those on the old board.

10.5 BCU BOARD REPLACEMENT

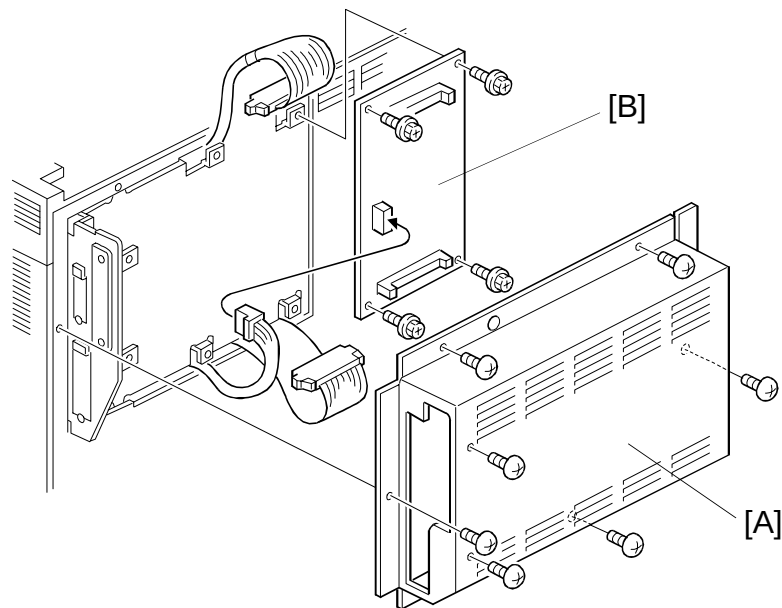
1. Turn off the main switch and unplug the machine.
2. Remove the rear cover (See Outer Cover Removal).
3. Replace the BCU board [D] (6 screws and all connectors).
4. Make sure that the DIP switch settings on the new board are the same as those on the old board.

10.6 EXTENSION BOARD REPLACEMENT



1. Turn off the main switch and unplug the machine.
2. Remove the rear cover (See Outer Cover Removal).
3. Remove the extension board [E] (2 connector, 4 screws).

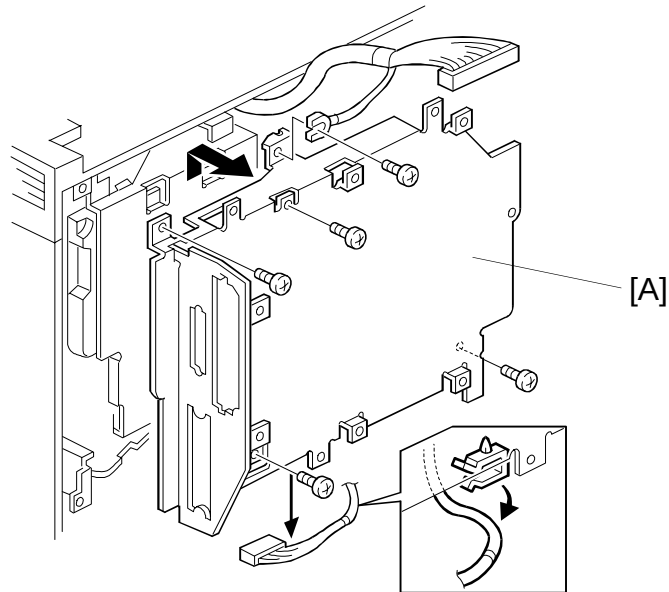
10.7 DUMMY BOARD REPLACEMENT



1. Remove the controller board cover [A] (See Outer cover Removal).
2. Remove the dummy board [B] (3 connectors, 4 screws)

NOTE: If the main controller has been installed, the dummy board is not there.

10.8 CONTROLLER BOARD BRACKET REPLACEMENT



1. Remove the controller board cover (See Outer Cover Removal).
2. Remove the main controller board and optional boards (See the SP3 controller manual), or remove the dummy board (See Dummy Board Removal).
3. Remove the rear cover (See Outer Cover Removal).
4. Remove the main controller board bracket [A] (1 clamp, 5 screws)

TECHNICAL SERVICE BULLETINS

BULLETIN NUMBER: AFICIO 400 - 001

09/04/96

APPLICABLE MODEL: AFICIO 400

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

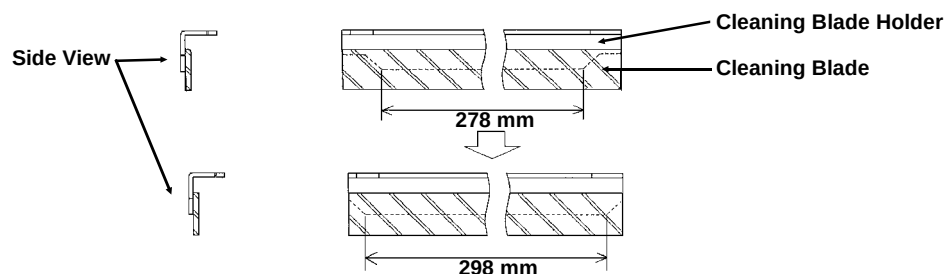
The following Parts Updates are being issued for all Aficio 400 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

● UPDATE NO. 1 - PARTS CATALOG CORRECTION - Correct your Parts Catalog as follows:

1. Correct the following Part Number:
2. The illustration of the 2nd Toner set on the Misfeed Removal Sheet has been removed. The Aficio 400 doesn't have a second development unit.

				REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1349011	A1309011	Charge Corona Unit with Cleaner	1	103	6
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1341385	A1336124	Misfeed Removal Sheet	1	11	28

- ### ● UPDATE NO. 2 - TRANSFER BELT CLEANING BLADE - It was determined that dirty edges could appear on the back side of wide copy paper due to the length of the Transfer Cleaning Blade Holder. To prevent this from occurring, the length of the Transfer Cleaning Blade Holder has been increased from 278 mm to 298 mm.



INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

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■ PARTS

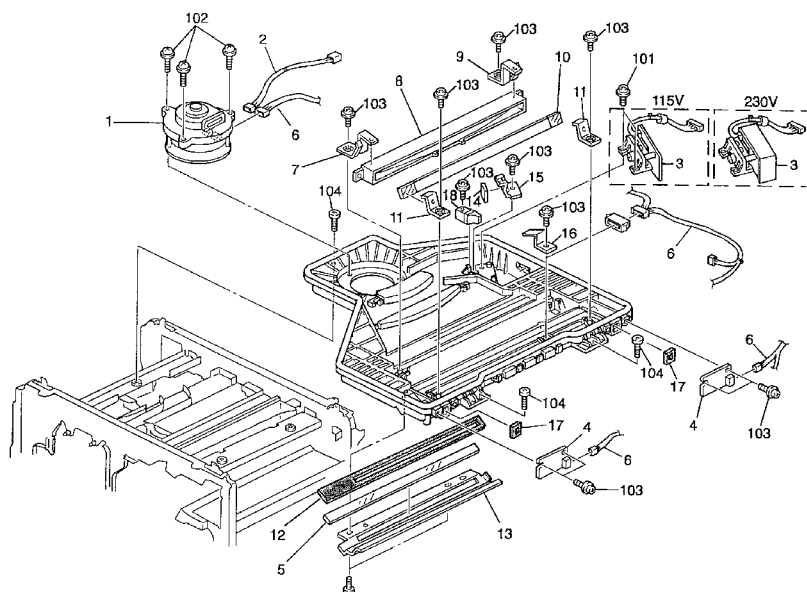
□ OTHER

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1343940	A1343945	Cleaning Blade - Transfer Belt	1 → 1	1	53	29

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3916050001 will have the new style Transfer Cleaning Blade Holder installed during production.

- **UPDATE NO. 3 -** LASER SECTION - To increase the durability of the Mirror Brackets and LD Guide Harness, the following parts have been changed.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1342073	A1342088	Right Btl Bracket	1 → 1	3	39	7
A1342074	A1342089	Left Btl Bracket	1 → 1	3	39	9
A1342071	A1342069	Bracket - 1st Mirror	2 → 2	3	39	11
A1337165	A1337166	Guide Harness LD (230V)	1 → 1	3	39	18
	08025232	Tapping Screw - M3 X 8	n → n+5		39	103

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3916050001 will have the new parts listed above installed during production.

BULLETIN NUMBER: AFICIO 400 - 002

12/03/96

APPLICABLE MODEL: AFICIO 400

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow⇒

- 4-13 Updated Information
- 4-14 Updated Information
- 4-24 Updated Information
- 4-47 Updated Information
- 6-3 Updated Information
- 6-4 Updated Information
- 6-6 Updated Information
- 6-7 Updated Information
- 6-18 Updated Information
- 9-1 Updated Information

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☐ OTHER

BULLETIN NUMBER: AFICIO 400 - 003

3/13/97

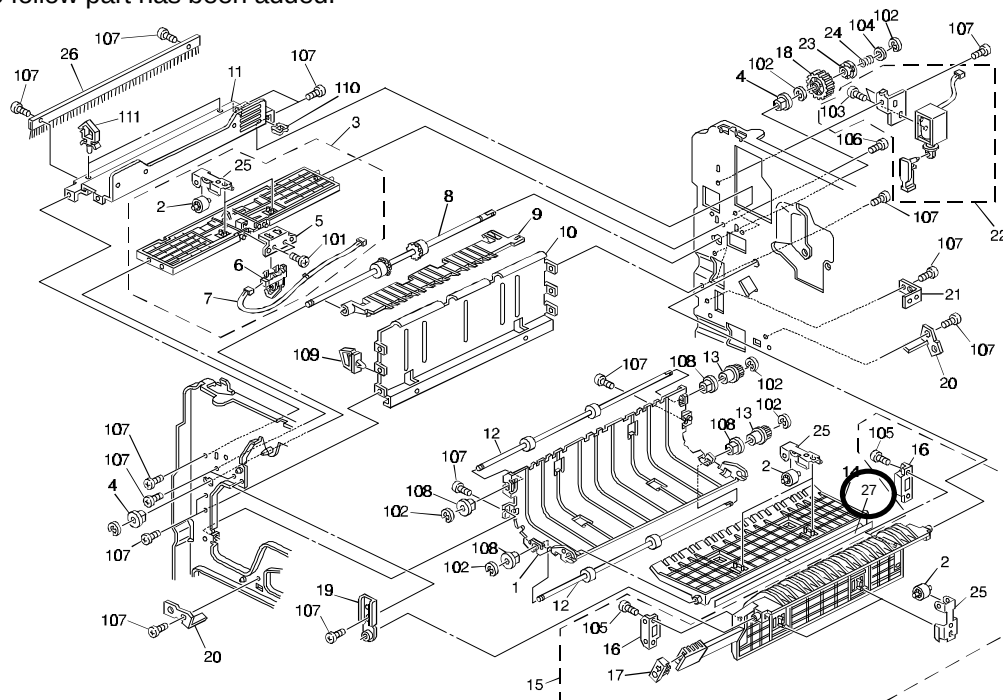
APPLICABLE MODEL: AFICIO 400

SUBJECT: PARTS CATALOG CORRECTIONS

GENERAL:

The following Parts Catalog Corrections are being issued for all AFICIO 400 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

1. The follow part has been added.



			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A1344466	Seal - Turn Guide	1	59	27*

* DENOTES NEW ITEM

2. Correct the following Part Number and Description.

				REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	INCORRECT DESCRIPTION	CORRECT DESCRIPTION	PAGE	ITEM
A1337238		Decal - Toner Collection Bottle		41	21
	A1337236		Toner Collection Bottle		

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☐ OTHER

BULLETIN NUMBER: AFICIO 400 - 004

03/13/97

APPLICABLE MODEL: AFICIO 400

SUBJECT: SETTING USER CODE MODE

GENERAL:

The instructions for setting the User Codes found on page 4-35 of the Field Service Manual are incorrect. Follow the steps below to properly set the User Codes.

1. Press the User Tools key.
2. Touch the Basic Settings key.
3. Go to page five, Set User Code(s); press Register (refer to illustration below).
4. Key Operator Code (A); register a six digit key operator access code.
5. Assign/Activate Key Operator Code (B); press Yes.
6. User Code Register/Change/Delete (C); press Yes.
7. Press Register and input a six digit User Code (up to twenty codes can be input). After registering codes, press the Prev. Menu key.
8. User Code Mode (D); press Yes.
9. Disconnect jumper behind the right inner cover.

	Set User Code(s)	Prev. Menu	
	Select Mode		
	▶ Check/Reset/Print/Print Copy Counter	Yes	
C)	▶ User Code Register/Change/Delete	Yes	
B)	▶ Assign/Activate Key Operator Code	No	Yes
A)	▶ Key Operator Code	Register	
		No	Yes
D)	▶ Set User Code Mode		

FIELD SERVICE MANUAL - INSERT

PAGES:

The revised areas have been highlighted by an arrow ⇒

BULLETIN NUMBER: AFICIO 400 - 005**05/06/97****APPLICABLE MODEL: AFICIO 400****SUBJECT: SOFTWARE MODIFICATION****SYMPTOM 1:**

SC490 (Ozone Fan Motor Lock/Exhaust Fan Motor Lock).

CAUSE:

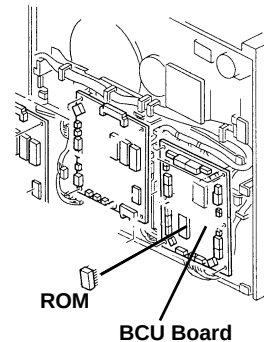
While in stand-by mode, the Fan Motor runs on a 5Hz duty cycle. The charge current applied for the Fan Motor capacitors (through BCU PCB IC224) leads to the gradual deterioration and breakdown of IC224.

PRODUCTION COUNTERMEASURE:

The Fan Motor capacitors, C307 and C308 have been changed from 4.7 uF to 0.47 uF to prevent damage to IC224. Also, the software has been modified so that the duty cycle of the Fan Motor is reduced from 5Hz to 1Hz. This will reduce the charge cycles for capacitors C307 and C308 to prevent damage to IC224.

ROM REPLACEMENT PROCEDURE

1. Turn "OFF" the Main Switch.
2. Remove the Rear Cover (6 screws).
3. Replace the ROM on the BCU Board.

**UNITS AFFECTED:**

All Aficio 400 copiers manufactured after Serial Number A3916100001 will have the updated capacitors installed during production.

FIELD COUNTERMEASURE:

Replace the BCU PCB ROM with part number A1335104D (or higher).

NOTE: *If the ROM is replaced, replacement of the capacitors mentioned in the Production Countermeasure is not necessary.*

SYMPTOM 2:

Abnormal images; partially blank copies, dirty background, SC320, SC321, or SC322.

CAUSE:

IC55 of the EX-IPU PCB is defective. Defective IC55 lot numbers are 6DH4P, 6EH4Q, and 6FH4R.

Continued...

SOLUTION:

Replace the EX-IPU PCB.

UNITS AFFECTED:

All Aficio 400 copiers manufactured between Serial Numbers A3916060001 and A3916080200 are susceptible to SYMPTOM 2.

SYMPTOM 3:

The machine stops after an original is fed to the glass. "Copying" is displayed on the Touch Screen.

NOTE: *This symptom occurs intermittently when using the DF with Mixed Original Sizes turned "ON"*

CAUSE:

If the machine is used with the Mixed Original Sizes set to "ON", the copy cycle is as follows.
Original Feed > Original Size Detection > Paper Feed Tray Selection > Copy Start > Original Exit.
The copy command is randomly sent from the SCU PCB to the BCU PCB and is stored in the BCU PCB. If the BCU PCB receives the copy command for the next original as the previous original is discharged by the machine, the machine will stop even though "Copying" is displayed.

SOLUTION:

Install the updated ROM (A1335104E) on the BCU PCB.

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3917010001 will have the E version ROM installed on the BCU PCB during production.

ORDERING PROCEDURES:

1. For machines experiencing SYMPTOM 1 and/or SYMPTOM 3:
Obtain the updated ROM (A1335104E) at no charge by completing and faxing the attached form to Technical Services. After 90 days, the ROM update will be available through normal NSPC channels or by downloading a Hex file for local programming via the Ricoh Technical Services BBS (refer to Service News and Information No.147).
2. For machines experiencing SYMPTOM 2:
Ricoh will automatically ship one (1) modified EX-IPU PCB for all affected Aficio 400 copiers based on Ricoh's Equipment Shipped records.
This is a mandatory upgrade to be completed at the next EM or PM call performed.
The EX-IPU Boards must be returned to Ricoh within 90 days of receipt or July 1st, 1997, (whichever comes first), or you will be billed the full dealer price of the EX-IPU Board.

NOTE: The updated ROM (A1335104E) is included with the EX-IPU exchange.

SUMMARY		
Symptom:	Aficio 400 Serial Number Range	Upgrade
1.	A3916080200 ~ A3916100001	Modified BCU Board ROM
2.	A3916060001 ~ A3916080200	Modified EX-IPU (includes ROM)
3.	before A3917010001	Modified BCU Board ROM

Continued...

SUBJECT: SOFTWARE MODIFICATION

Fax this entire page in "DETAIL" mode ATTN: Technical Services - Copier

Fax Number: (201) 882-3960.

Each serial number given will represent a request for one (1) Updated ROM (A1135104E).

Serial Number (s)	
1	
2	
3	
4	
5	

All serial number information will be verified before shipment is made.

NOTE: *This ROM update will be available at no charge for a period of 90 days (from date of publication). After 90 days, the ROM update will be available through normal NSPC channels or by downloading a Hex file for local programming via the Ricoh Technical Services BBS (refer to Service News and Information No.147).*

UNITS AFFECTED:

All Aficio 400 copiers manufactured prior to Serial Number A3917010001 will require the updated (E version) BCU PCB ROM. However, the updated ROM (A1335104E) is included with the EX-IPU exchange (see SYMPTOM: 2 for more information).

NOTE: *Old ROM's must be returned within five (5) days to:*

*Ricoh Corporation
155 Passaic Ave
Fairfield, New Jersey 07004
Attention: Technical Services - Copier*

PLEASE TYPE OR PRINT CLEARLY.

DEALER NAME:		
ADDRESS:		
CITY:	STATE:	ZIP CODE:
ATTENTION:	PHONE # :	
DEALER ACCOUNT NUMBER:		

BULLETIN NUMBER: AFICIO 400 - 006

05/06/97

APPLICABLE MODEL: AFICIO 400

SUBJECT: PART CATALOG CORRECTIONS

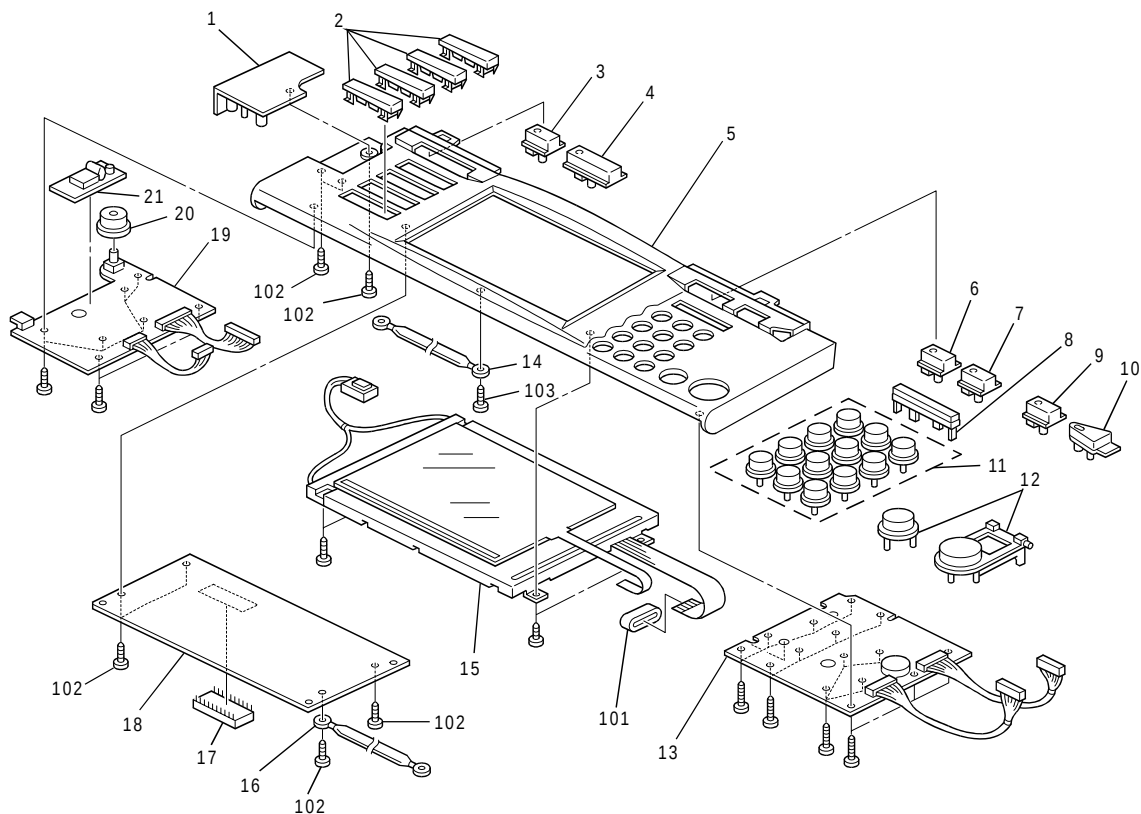
GENERAL:

The following Parts corrects are being issued for all Aficio 400 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

1. The part number for the Hinge Bracket has been changed.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1337392	A1556201	Hinge Bracket	1	25	8

2. The component parts of the Operation Panel have been registered as service parts.



Continued...

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			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1341553	Cover - Option	1	11B	1
A1341543	Cap - Option	4	11B	2
A1341538	Key Top - User Tools	1	11B	3
A1341533	Key Top - Guidance	1	11B	4
A1337124	Operation Panel Case	1	11B	5
A1341523	Key Top - Program	1	11B	6
A1341518	Key Top - Job Recall	1	11B	7
A1341558	Cap - Application	1	11B	8
A1341515	Key Top - Clear Mode	1	11B	9
A1341511	Key Top - Interrupt	1	11B	10
A1341506	Key Top - 10 Key	1	11B	11
A1341507	Key Top - Start/Stop	1	11B	12
A1345156	PCB - 10 Key	1	11B	13
A1336120	Grounding Wire - 270 mm	1	11B	14
A1345149	Touch Panel	1	11B	15
A1345153	Grounding Wire - Op. Panel	1	11B	16
A1337731	IC - UVEPROM 4M X 16 150ns	1	11B	17
A1337704	Operation Panel Board	1	11B	18
A1345157	PCB - Option	1	11B	19
A1341548	Dial	1	11B	20
A1345152	Inverter Board	1	11B	21
16070747	FPC Core - FPC-25-12		11B	101
08025232	Tapping Screw - M3 X 8		11B	102
03530060F	Tapping Screw - M3 X 6		11B	103

PARTS CATALOG - INSERT

The Parts Catalog page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

- 11A Additional Information
- 11B Additional Information

BULLETIN NUMBER: AFICIO 400 - 007**05/06/97****APPLICABLE MODEL: AFICIO 400****SUBJECT: EXHAUST AIR FILTER****SYMPTOM:**

Exhaust air from the fusing unit becomes more perceptible when making a large, continuous copy run.

CAUSE:

This problem is particularly noticeable in the following conditions:

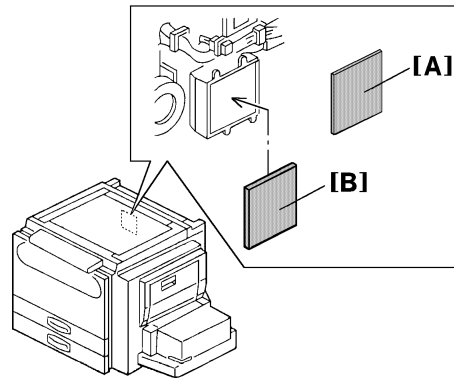
- When the machine is set up in a small room with poor ventilation
- When many continuous copy runs are made
- When continuous copies are made of originals with high image density areas

SOLUTION:

1. Install the new style Exhaust Air Filter (A1309014) which has been newly registered as a service part.

PROCEDURE:

- Remove the rear cover.
- Remove the Fusing Exhaust Fan Filter [A].
- Install the Exhaust Air Filter [B].
- Re-install the rear cover.



2. Adjust the fusing temperature by using SP1105. Lowering the fusing temperature will decrease the amount of gas present and thus reduce the odor. If the paper used is 20 lbs. or less, set the fusing temperature to 175. If the paper used is greater than 20 lbs., set the temperature to 175, make a copy and then check the fusing quality of the toner. If the fusing is poor, set the temperature to 180 and then recheck the fusing quality. If there is still a problem with the fusing quality, set the temperature to 185.
3. Use SP2201-1 to lower the development bias voltage to decrease toner supply. By lowering the development bias voltage, the toner amount is decreased, leading to a reduction in the odor. Set the voltage to 500V, 450V and 400V while making copies at each adjustment. If the user does not find the copy quality of any of the samples to be acceptable, set the voltage to the default level of 550V.
4. If possible, move the machine to into a room with better ventilation.

BULLETIN NUMBER: AFICIO 400 - 008

06/13/97

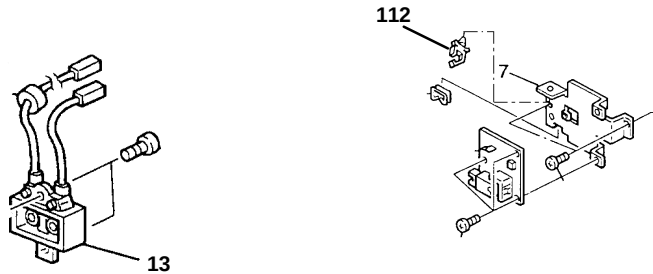
APPLICABLE MODEL: AFICIO 400

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued for all Aficio 400 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

- **Update No. 1 -** PARTS CATALOG CORRECTION / ADDITION - To prevent the harness of the Charge Receptacle coming from in contact with the Fly Wheel. The length of harness has been changed and a harness clamp has been added.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AD021109	AD021121	Receptacle - Charger	1	1	83	13
	11050310	Clamp-LWS-1S (VO)	1		73	112

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3916060001 will have the Charge Receptacle and Clamp installed during production.

- **Update No. 2 -** PARTS CATALOG CORRECTION / ADDITION - To improve reliability the material of the Gear and Timing pulley has been change.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AB013871	AB014006	Gear - 40Z	1	1	69	16
AB017340	AB017430	Timing Pulley - 30 / 35 / 257	1	1	69	17

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3916060001 will have the Gear - 40Z & Timing Pulley -30/35/257 installed during production.

Continued...

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- **Update No. 3 -** PARTS CATALOG CORRECTION / ADDITION - Make the following correction/addition to your Aficio 400 parts catalog.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1333251	A1556207	Top Cover Hinge	1	25	4
A1337392	A1556201	LCT Hinge Bracket	1	25	8

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: AFICIO 400 - 009

06/13/97

APPLICABLE MODEL: AFICIO 400

SUBJECT: VIBRATING PLATE

SYMPTOM:

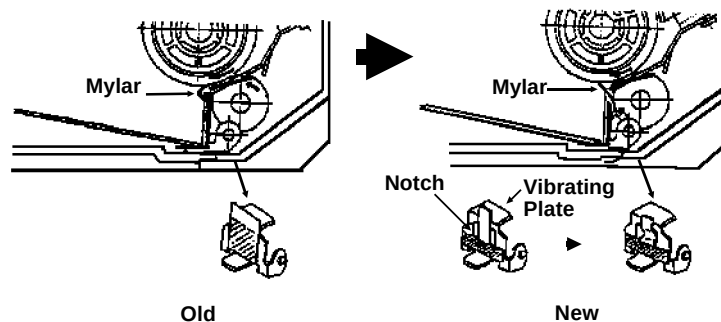
Paper jamming at the duplex entrance or at the duplex exit.

CAUSE:

The wearing of the mylars on top of the Vibrating Plate.

SOLUTION:

As the paper is being stacked, the mylar bends at a 90° angle in the direction of the stack. The mylar also bends at 90° in the opposite direction when the paper is fed. The mylar eventually breaks after continually being bent back and forth. Since the life of the mylar is shortened when the duplex unit is used often, a notch has been added in the Vibrating Plate and the shape of the mylar has been modified. Also, the thickness of the mylar has been increased from 0.125 mm to 0.188 mm and the width has been decreased from 18 mm to 6 mm. As a result of the modification, the mylar will now flex into the notch when it moves, enabling a smoother transition as the mylar bends back and forth.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1344658	A1544623	Vibrating Plate	1	1	63	26

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3917020001 will have the Vibrating Plate installed during production.

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BULLETIN NUMBER: AFICIO 400 - 010

08/29/97

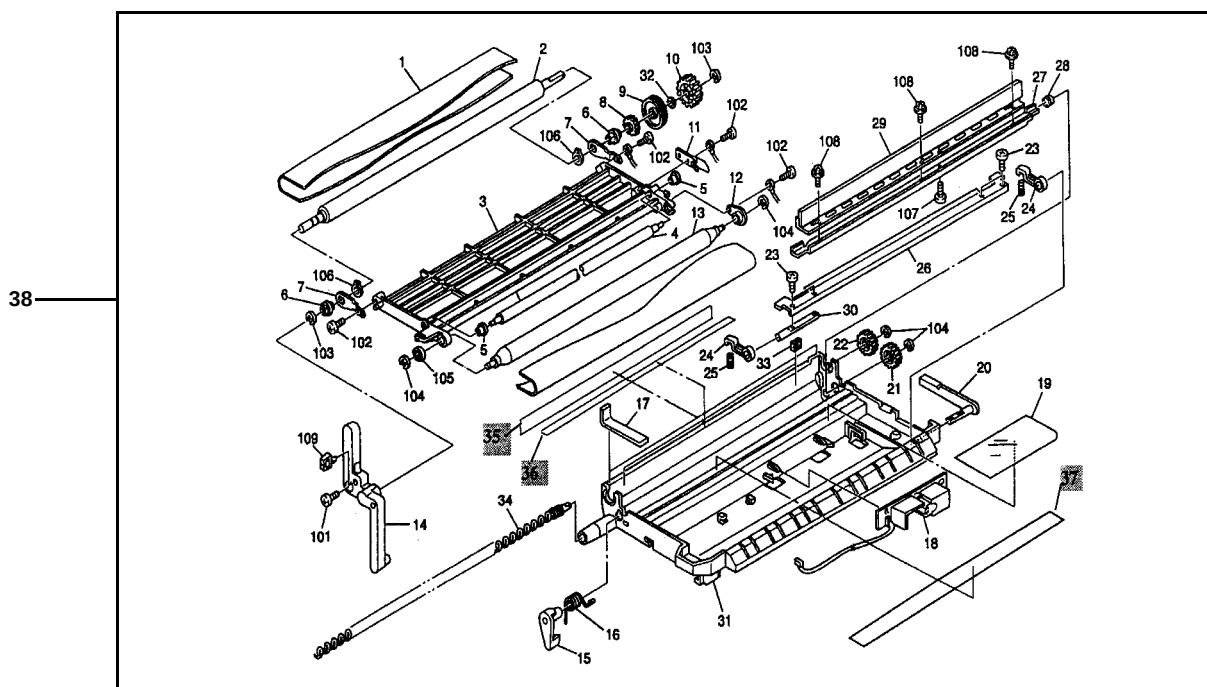
APPLICABLE MODEL: AFICIO 400

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued for all Aficio 400 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

- **UPDATE NO. 1 - TRANSFER UNIT** - The following parts have been added as service parts. Add the following parts to your Parts Catalog:



NEW PART NO.	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A1343920	Mylar Transfer Entrance	1	53	35
A1343921	Tape 5 X 319	1	53	36
A1343910	Mylar Transfer Exit	1	53	37
A1343800	Transfer Unit	1	53	38

Continued...

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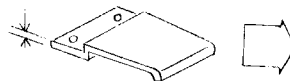
☐ OTHER

● **UPDATE NO. 2 - PARTS CATALOG CORRECTION** - Correct your Parts Catalog as follows:

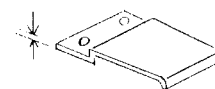
				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1337148	Delete	Spring Plate - Lens Block	0	35	19
A1337145	Delete	Spring Plate - Scanner Rail	0	35	20
A1337913	Delete	Grounding Wire - Lens Block 2	0	35	21
A1337912	Delete	Grounding Wire - Lens Block 1	0	35	22
A1337149	A1341697	Lens Block Supporter	2	37	5
A1337146	Delete	Spring Plate - Rear Scanner Rail	0	37	27

● **UPDATE NO. 3 - BOTTOM LIFT LEVER/SHAFT** - To facilitate production, the following parts have been changed.

1. Bottom Lift Lever - The thickness has been changed from 1.6mm to 1.2mm.

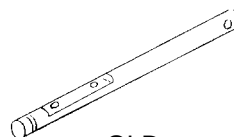


OLD

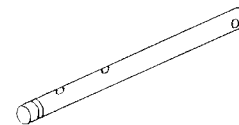


NEW

2. Bottom Lift Shaft - The old style Shaft had a section cutaway where the Bottom Lift Lever is attached. The cutaway section has been removed.



OLD



NEW

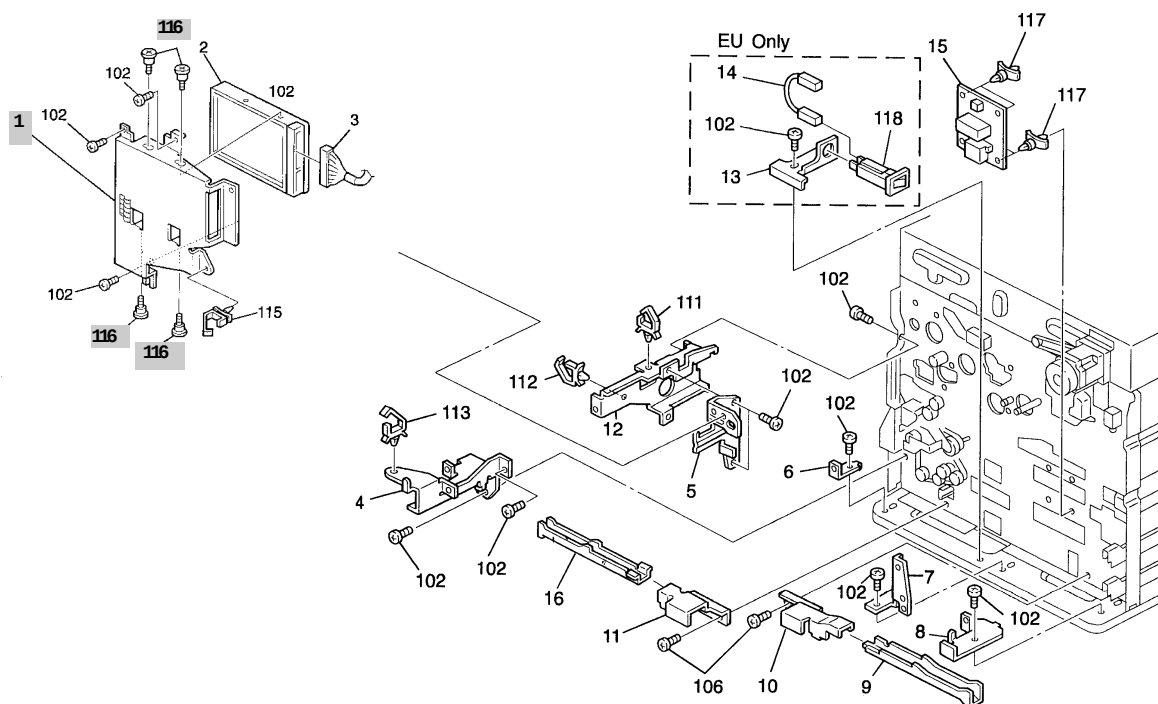
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1342967	A2042972	Bottom Lift Lever	1	3	15	16
A1342966	A2042971	Bottom Lift Shaft	1	3	15	17

Continued...

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3916100001 will have the new style Bottom Lift Lever and Shaft installed during production.

- **UPDATE NO. 4 -** HARD DISK DRIVE BRACKET - To prevent vibration to the Hard Disk, the shape of the Bracket -HDD has been changed and four (4) shock absorbers have been added.



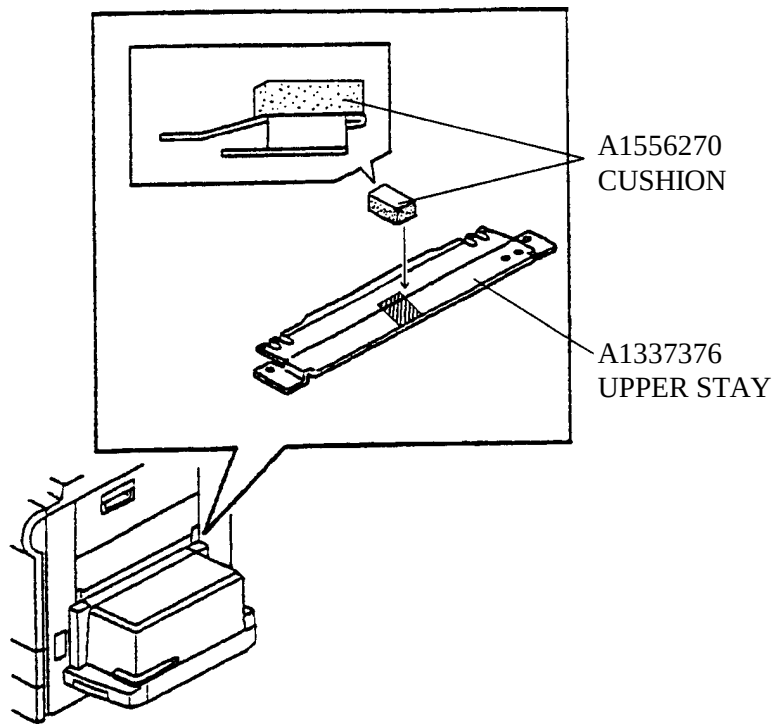
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1337883	A1337798	Bracket - HDD	1	1	79	1
08010153	AA143499	Stepped Screw - HDD	4	2	79	116

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3916120001 will have the new style Bracket installed during production.

Continued...

- **UPDATE NO. 5** - CUSHION - A Cushion has been added to the list of Accessories. The Cushion prevents paper from entering the gap between the LCT cover and the By-pass Feed Cover when paper is placed on top of the LCT cover.



			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1556270	Cushion	1	25	35*

* DENOTES NEW ITEM

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3917030001 will have the new Cushion installed during production.

RICOH TECHNICAL SERVICE BULLETIN

CUSTOMER SERVICE GROUP

BULLETIN NUMBER: AFICIO 400 - 011

10/17/97

APPLICABLE MODEL: AFICIO 400

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow⇒

• Vi	Table of Contents	BCU Board ROM History
• 6-20	Updated Information	BCU Board ROM History

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☐ OTHER

11.2.10 Charge High Voltage Supply Board	5-69
11.2.11 Main Motor.	5-69
11.2.12 Development Bias Power Pack	5-70
11.2.13 Transfer High Voltage Supply Board	5-71
12. COPY IMAGE ADJUSTMENT- PRINTING/SCANNING	5-72
12.1 Printing	5-72
12.1.1 Registration - Leading Edge/Side-to-Side	5-72
12.1.2 Blank Margins	5-73
12.1.3 Double Copy Side-to-side Registration	5-73
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12.2.2 Registration: ADF	5-75
12.3 Magnification	5-76
12.3.1 Main Scan Magnification.	5-76
12.3.2 Sub Scan Magnification	5-76
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TROUBLESHOOTING

1. SERVICE CALL CONDITIONS.	6-1
1.1 SUMMARY	6-1
2. SC CODE DESCRIPTIONS.	6-3
3. ELECTRICAL COMPONENT DEFECTS	6-17
3.1 SENSORS.	6-17
3.2 SWITCHES.	6-19
4. BLOWN FUSE CONDITIONS	6-20
⇒ 5. BCU Board History.	6-20

AUTO REVERSE DOCUMENT FEEDER (A548)

1. SPECIFICATIONS.	7-1
2. COMPONENT LAYOUT	7-2
2.1 MECHANICAL COMPONENTS.	7-2
2.2 ELECTRICAL COMPONENTS.	7-3
3. ELECTRICAL COMPONENT DESCRIPTION	7-4

4. BLOWN FUSE CONDITIONS

Rev. 10/97

Fuse	Rating		Symptom when turning on the main switch
	115 V	220 ~ 240 V	
DC Power Supply Board			
FU101	8 A/125 V	6.3 A/250 V	No response.
FU102	8 A/125 V	8 A/125 V	"Close the indicated doors/covers" is displayed on the LCD.
FU103	6.3 A/125 V	6.3 A/125 V	SC320 is displayed.
FU104	6.3 A/125 V	6.3 A/125 V	"Close the indicated doors/covers" is displayed on the LCD.
Lamp Stabilizer Board			
FU1	5 A/125 V	3.15 A/250 V	SC101 is displayed.



5. BCU Board ROM History

The following is a history of the ROM modifications for the BCU Board

Note: Suffix F was not installed in any machines during production

Suffix D - E

Problem	Countermeasure
In the mixed copy mode, the original is fed from the ADF and the copying begins but the machine stops even though "Copying" is displayed.	Paper size detection timing was modified.
After the paper is stacked in the duplex unit, the paper is fed from this unit but the machine stops even though "Copying" is displayed.	Paper end sensor timing was modified.
In the SADP mode, if the number of sheets exceeds the amount that can be stapled, the paper in the staple tray is fed out. This causes a timing error and a jam occurs in the finisher as the next set of originals start copying.	The timing for the start of the copy process while the paper is fed out has been modified.
SC401 occurs as the copies are fed from the duplex unit	The lift timing for the transfer belt has been modified.
Proper adjustment of the stapler (SP6105) is not possible.	Modification of the SP6105 process.
When paper is fed from the ADF and split copies are made, a jam occurs in the ADF. After the jam is reset, the size of the next copy made is incorrect.	When the ADF was opened, the original size was detected. A modification was made so that the original size is also detected when copying resumes after the jam is reset.



Problem	Countermeasure
Duplex jam when duplex copies are made with A5 size paper. If the number of copies in one job is large, the copy image becomes lighter and SC401 occurs	The transportation speed for the A5 size paper has been modified. Make the transport speed (until the paper is stacked in the duplex unit) the same as that for A4 size paper. When the feedback voltage for the transfer belt power pack exceeds the standard voltage, the power pack monitor counter records the occurrence. When the number of incidents reaches 8, SC401 displays. The counter resets at the end of each job but it may reach 8 during longer copy runs. Due to this modification, the counter will now reset after each copy.

Suffix G - H



Problem.	Countermeasure
There was an error made during the upgrade to the suffix G version. It takes more time for the first copy to be made. (Paper fed 2-3 seconds after copy process is started.)	Software modified.

BULLETIN NUMBER: AFICIO 400 - 012**10/17/97****APPLICABLE MODEL: AFICIO 400****SUBJECT: POLYGON MIRROR MOTOR****SYMPTOM:**

Partially Blank Copies.

CAUSE:

The circuits in the Polygon Mirror Motor are disrupted by electrical noise.

SOLUTION:

To improve reliability the material of the magnet on the Polygon Mirror Motor has been changed.

To prevent partially blank copies, a noise filter has been added to the clock circuit on the Polygon Mirror Motor Drive Board.

Note: This copy intended as master of original for reproduction of additional bulletins.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY.	INT	PAGE	ITEM
AX060100	AX060148	Polygon Mirror Motor	1	1	39	1

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3917030661 will have the new Polygon Mirror Motor installed during production.

INTERCHANGE ABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured at the S/N cut-in or previously modified, use the new part numbers individually.		

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RICOH TECHNICAL SERVICE BULLETIN

CUSTOMER SERVICE GROUP

BULLETIN NUMBER: AFICIO 400 - 013

10/17/97

APPLICABLE MODEL: AFICIO 400

SUBJECT: FUSING ENTRANCE GUIDE

SYMPTOM:

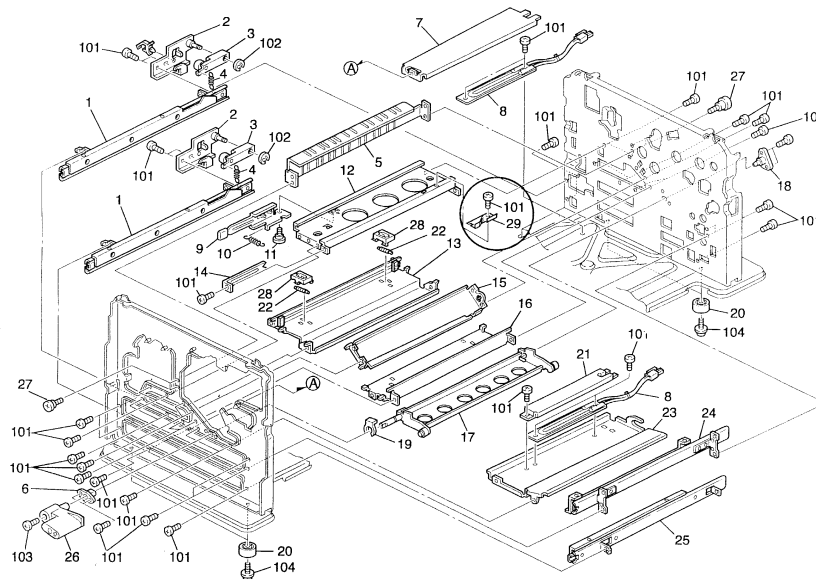
The paper gets creased

CAUSE:

The Fusing Entrance Guide is deformed.

SOLUTION:

The material of the Fusing Entrance Guide has been changed from plastic mold to metal to prevent the paper from bending. As a result of using metal in the Fusing Entrance Guide, the friction caused by the paper may cause static electricity. A Grounding Brush and a Screw have been added to eliminate the static electricity.



					REFERENCE	
NEW PART NO.	DESCRIPTION	QTY.	INT		PAGE	ITEM
A1534355	Grounding Brush	1	-		81	29
04340060B	Pan Head Self-Tapping Screw M4x6	1	-		81	101

Continued...

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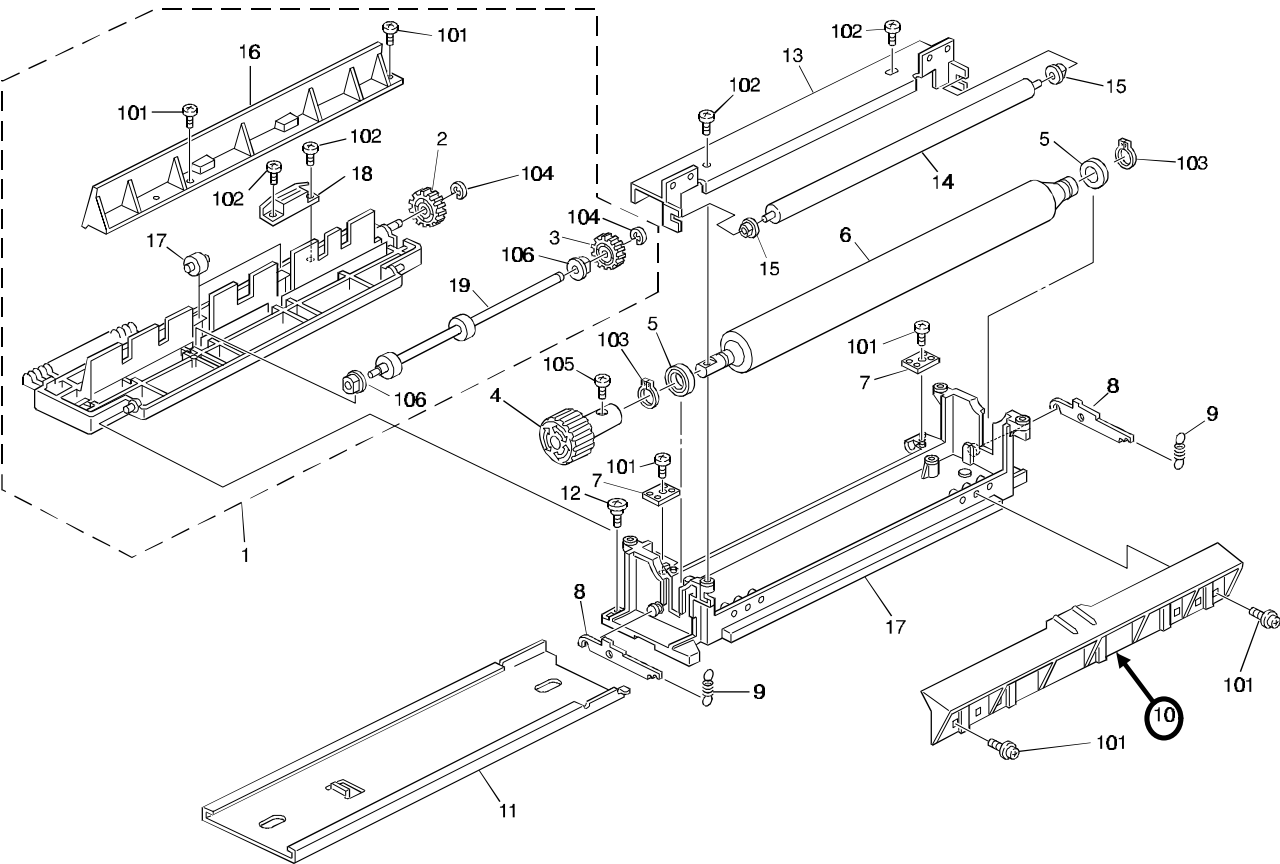
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☐ S M

☒ PARTS

☐ OTHER



OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY.	INT	PAGE	ITEM
A1344195	A2174197	Fusing Entrance Guide	1	1	57	10

UNITS AFFECTED:

All Aficio 400 copiers manufactured after Serial Number A3916060001 will have the new style Fusing Entrance Guide, Grounding Brush and Pan Head Self-Tapping Screw M4x6 installed during production.

INTERCHANGE ABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured at the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: AFICIO 400 - 014

10/17/97

APPLICABLE MODEL: AFICIO 400

SUBJECT: ROM MODIFICATION FOR THE EX-IPU BOARD

SYMPTOM:

1. The 1.7 GB hard disk will not properly format.
2. SC190 displayed when there is a hard disk spindle control error.
3. When four originals in one copy is set in the duplex mode, the 4th original jams in the ADF and the data for the first 3 are erased.

CAUSE:

1. The hard disk does not read the bad sector information sent to it by the EX-IPU.
2. Missetting of the error indication.

SOLUTION:

Modified ROM on the EX-IPU Board from A1337876A to A1337876B.

1. Hard disk will now be able to read bad sector information.
2. The error indication has been changed to SC360.
3. After replacing the EX-IPU ROM reformat the Hard Disk with the following procedure.

Note: If a Service Code is indicated, switch BCU Dip Switch 201-4 to ON which will disable SC generation.

- a. Perform the media test using SP4911-1.
- b. Use SP4911-7 to confirm the number of bad sectors.
- c. If the number of bad sectors is 51, or greater, replace the hard disk.
but If the number of bad sectors is 50 or less, use SP4911-2 to format the hard disk.
- d. If you replace the hard disk, use SP4911-6 to reset the bad sector information.

Continued...

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Since the EX-IPU board can only detect up to 51 bad sectors on the hard disk, even if only 51 sectors are indicated, it is possible that the actual number exceeds this.

If there are no bad sectors on the disk, the reformatting process takes approximately 8 minutes. However, if bad sectors are found, the hard disk will transfer the data to other sectors on the disk, thus increasing the time necessary for the format.

For example, if there are 51 bad sectors the whole process will take about 30 minutes. If there are more than 51 bad sectors, the hard disk will first transfer the data for the first 51 bad sectors before the EX-IPU board attempts to locate the additional bad sectors after which the reformatting begins. In addition, if a large number of bad sectors were found, more time will be required to reformat as the processing speed will drop when accessing the reformatted sectors.

If the number of replacement sectors is large, an SC361 may occur. Therefore, we suggest that the hard disk be replaced if the number of bad sectors found using SP4911-7 is more than 51.

				REFERENCE	
OLD PART NUMBER	NEW PART NUMBER	DESCRIPTION	QTY.	PAGE	ITEM
A1337876A	A1337876B	IC-UVEEPROM 2MX8 100NS	1	97	4

UNITS AFFECTED:

All Aficio 400 Copiers manufactured after Serial Number A3917060001 will have the the new style IC-UVEEPROM2MX8, 100NS installed during production.

RICOH TECHNICAL SERVICE BULLETIN

CUSTOMER SERVICE GROUP

BULLETIN NUMBER: AFICIO 400 - 015

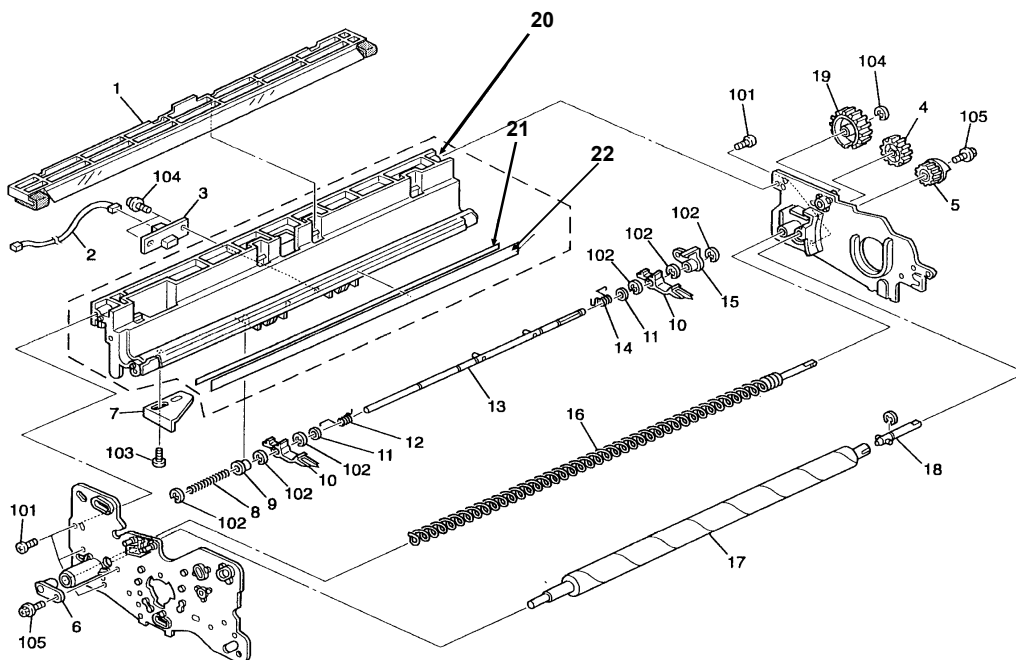
10/17/97

APPLICABLE MODEL: AFICIO 400

SUBJECT: CLEANING UNIT

GENERAL:

The following Parts are being made available as service parts. This information should be incorporated into all existing Aficio 400 Parts Catalog documentation.



NEW PART NO.	DESCRIPTION	QTY.	PAGE	ITEM
A1342292	Casing Cleaning	1	51	20
A1342263	Entrance Seal- Tap	1	51	21
AD047017	Entrance Seal-Cleaning	1	51	22

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BULLETIN NUMBER: AFICIO 400/401/500 - 016

02/26/98

APPLICABLE MODEL: AFICIO 400/401/500

SUBJECT: UNEVEN LIGHT COPIES AND OR INTERMITTENT BLACK IMAGE

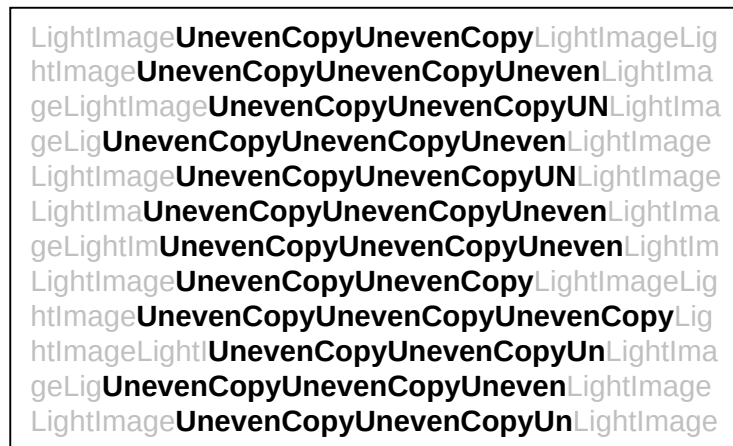
SCOPE:

Uneven density or light copies are normally a generic symptom of all copiers. This bulletin addresses light and uneven copies related to the Laser Housing Lenses. Before attempting the following procedures, please identify the units affected to be certain you are not troubleshooting the wrong cause.

SYMPTOM:

1. Uneven Light Copies. The Light Image is more noticeable on the Operator and Non-operator's sides.
2. Intermittently, an almost entirely Black Image appears in the copy or internal test patterns. Only 21mm of the Operator's side are visible and there are no edge erase borders

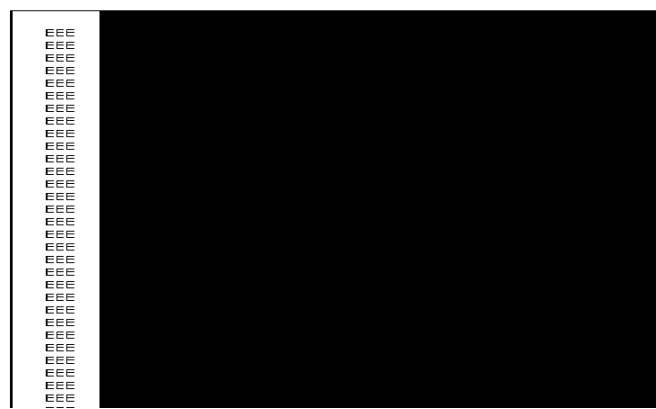
Lead Edge of Copy



SYMPTOM 1

Lighter Image Uneven Copy Lighter Image

Lead Edge of Copy



SYMPTOM 2

21 mm

Continued...

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☐ OTHER

CAUSE:

A film is coating the F-theta and Barrel Toroidal Lenses. The source of this film occurred during the manufacturing process of the Lens Housing. Initially this film is transparent and becomes opaque as the temperature in the Lens Housing increases, during normal copying. This reduces the Laser intensity reaching the OPC surface causing Light Copies. The laser intensity may be reduced to the point of generating a Second Laser Sync Detection Error (SC325) causing Black Copies.

SOLUTION:

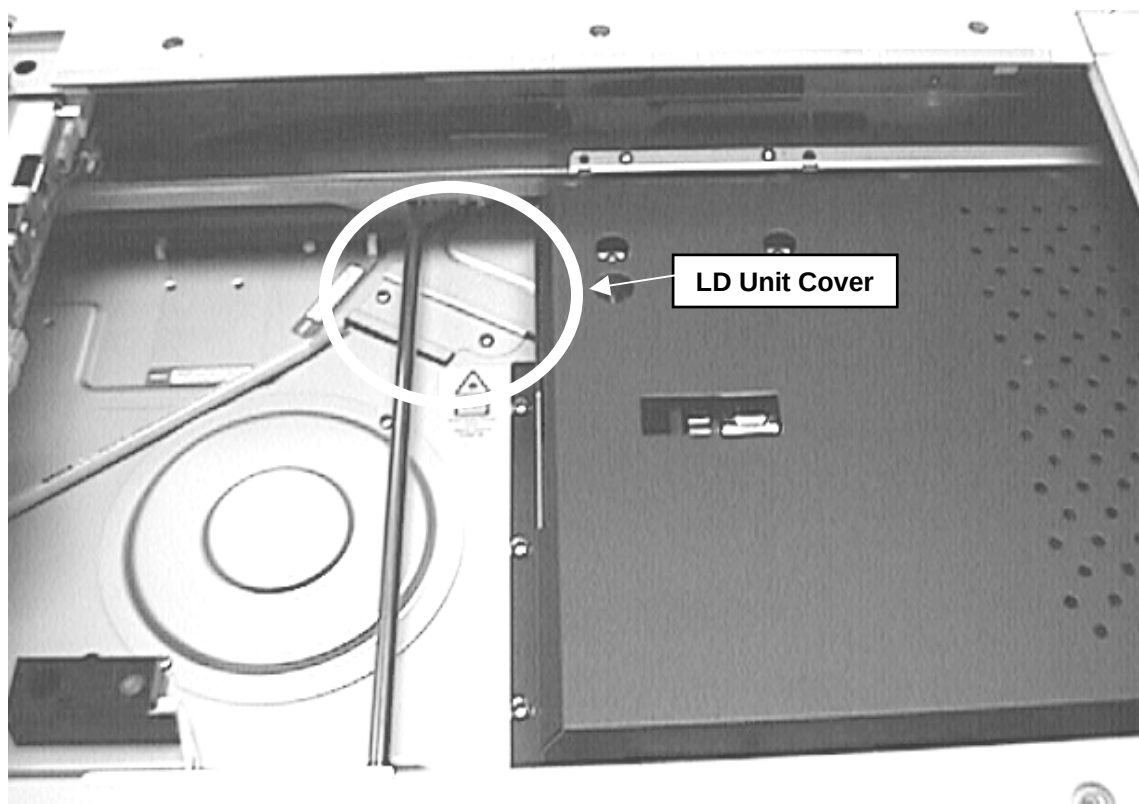
PRODUCTION COUNTERMEASURE:

A process improvement step was added to the manufacturing of the Lens Housing.

UNIT IDENTIFICATION:

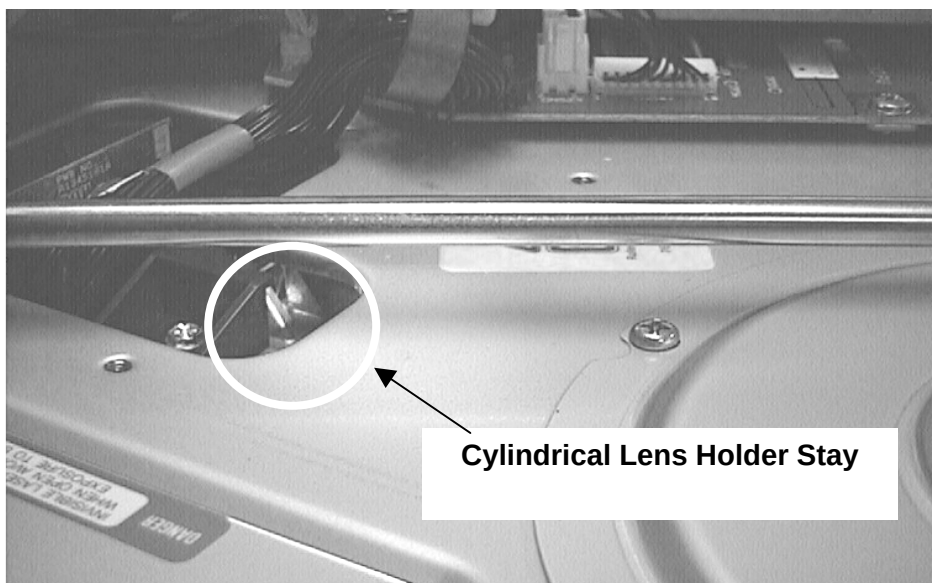
To determine the possible affected units, perform a visual inspection using the following procedure.

1. First remove the LD Unit Cover (P/N A1337159).

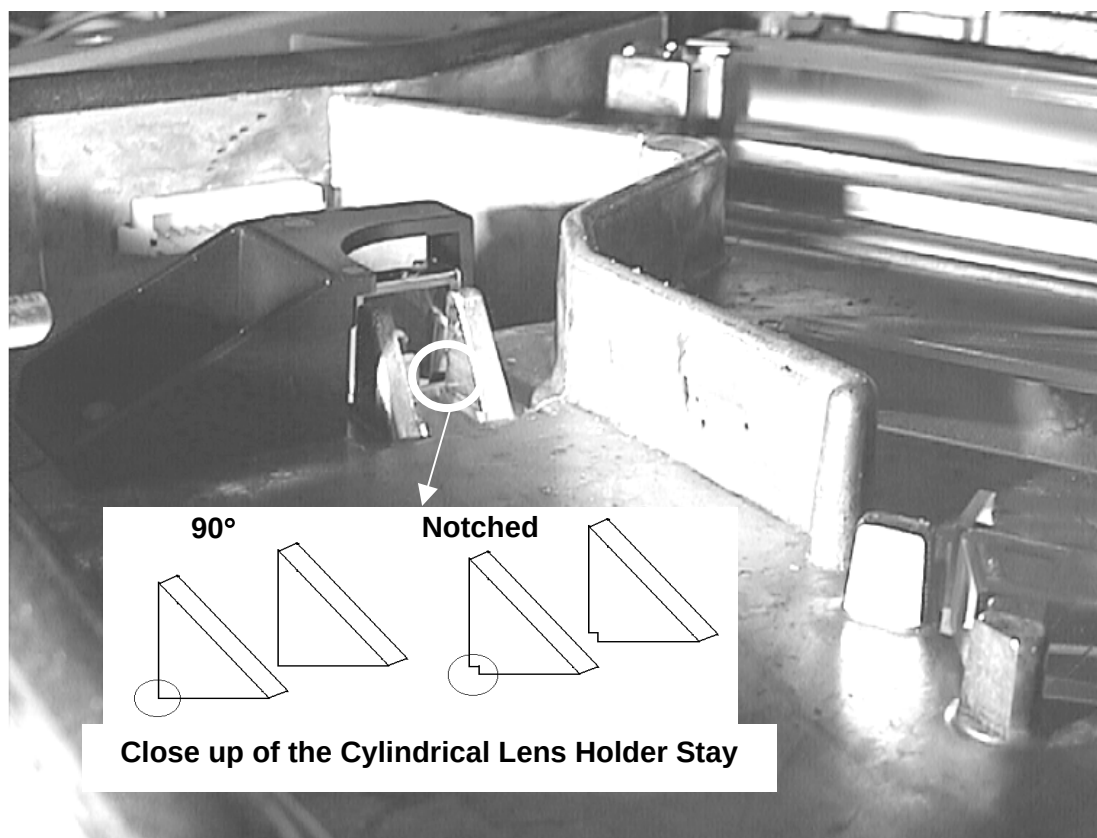


Continued...

2. Locate the Cylindrical Lens Holder Stay that is part of the aluminum Lens Housing (Reference the Laser Section of the Parts Catalog) and the illustration below.



3. Determine if the stay has a 90-degree angle or a Notch at the base of the Cylindrical Lens Holder Stay.



NOTE: Only stays with a 90-degree angle and exhibiting either of the symptoms above have to be cleaned. Cylindrical Lens Holder Stays with a notch are not affected.

Continued...

FIELD COUNTERMEASURE:

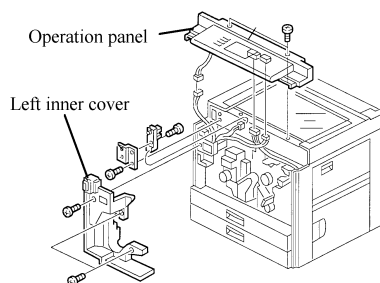
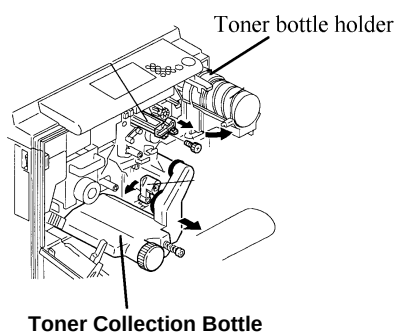
Clean the F-theta, Barrel Toroidal Lenses and the Drum Mirror using 99% Isopropyl Alcohol and soft lint free cloth. Follow the cleaning procedure outlined below.

Aficio 400/401/500 Lens Cleaning Procedure

1. Turn off the power and unplug the machine from the power source.
2. Remove the finisher or sorter from the main unit.
3. Remove the platen cover or ADF from the main unit.
4. Remove the front cover. (3 pins)
5. Pull out the duplex unit and 1st paper tray.
6. Remove the rear and left covers from the main unit.

Front of the Main Unit

1. Remove the toner bottle holder. (2 screws, 2P connector)
2. Take out the toner collection bottle. (1 connector)
3. Remove the left inner cover. (3 screws)
4. Remove the operation panel. (4 screws)
5. Remove the operation panel optics fiber and signal line from the clamps on the frame in front of the scanner.

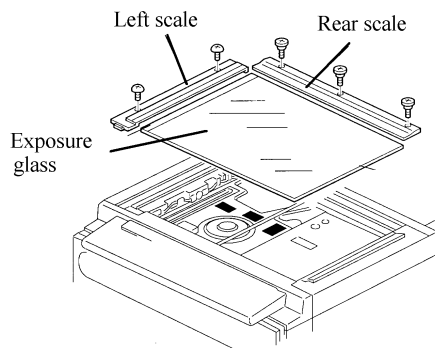
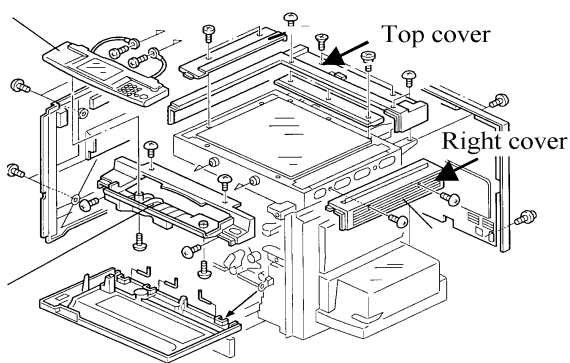


6. Remove the connectors for the anti-condensation heater. (Option)
7. Remove the counter bracket from the front frame of the main unit. (2 screws, 1 connector)
8. From the scanner unit, unhook the 4 connectors (red harnesses) connected to the interlock switch.
Note: When reconnecting the connectors, be sure that these are set according to the colors.
9. Take the harness that has been disconnected (2 red ones) and remove it from the front of the main unit, the front side panel (2 places) and the edge saddle.
10. Remove the auto response sensor harness on the operation panel from the clamp on the frame in front of the scanner.
11. Pull the toner shield glass from the front side of the main unit.

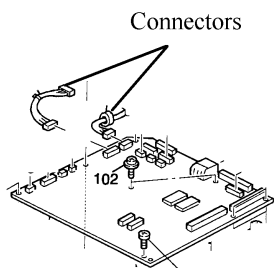
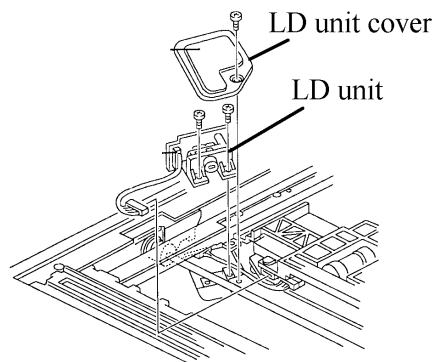
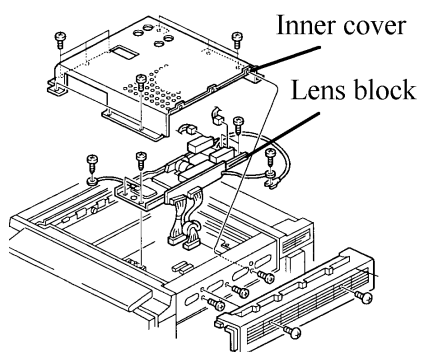
Continued...

Top Part of the Scanner Unit

1. Remove the top cover and right cover from the scanner unit. (5 screws)
2. Remove the left scale, rear scale and the exposure glass. (5 screws)
3. Remove the inner cover of the scanner unit. (11 screws)



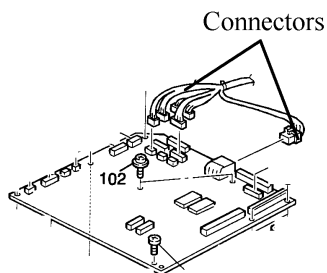
4. Remove the lens block. (6 screws, 4 connectors)
5. Remove the LD unit cover and take off the LD unit. (4 screws, 2 connectors)
6. Unhook the EX-IPU connectors from the optical housing



Continued...

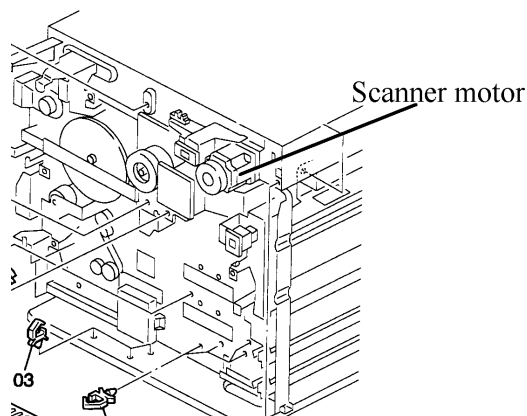
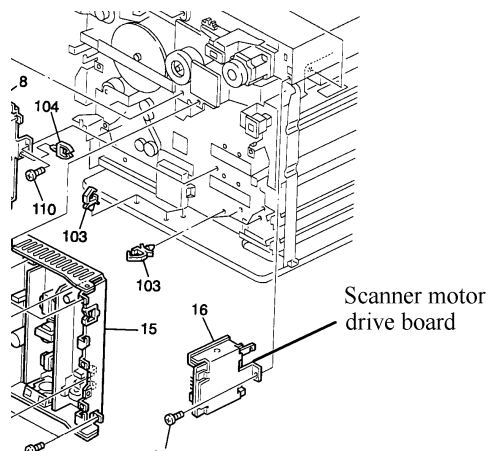
Behind the Main Unit

1. Remove 3 connectors on the controller board and remove the controller bracket. (3 screws)
2. Remove the 2 connectors on the hard disk.
3. Remove the hard disk. (4 screws)
4. Remove the fly-wheel. (3 screws)
5. Remove a 6P connector and 2 connectors on the power pack, then unhook that harness from the clamps.
6. Remove the power pack along with the bracket. (2 screws)
7. Remove the left side (rear view) of the ARDF bracket. (4 screws)
8. Remove the exhaust fan motor from the frame. (1 connector, 2 screws)



9. Open the lid (cover) of the ozone fan duct.
10. From the scanner back frame, remove all of the 5 connectors connected to the EX-IPU.
Pull out the scanner back frame harness and unhook it from the three clamps.
11. Remove the right side (rear view) of the ARDF bracket. (4 screws)
12. Remove the scanner motor control board along with the bracket. (1 screw)
13. Remove the spring between the scanner motor bracket and the scanner back frame.
14. Remove the scanner motor along with the bracket. (bracket: 3 screws, grounding wire: 1 screw)
15. Remove the scanner motor timing belt.

Note: When reinstalling the scanner motor, be sure that the timing belt does not get caught on the pulley flange. Also, when attaching the bracket to the scanner back frame, be sure that the tension for the timing belt has already been set using the spring.



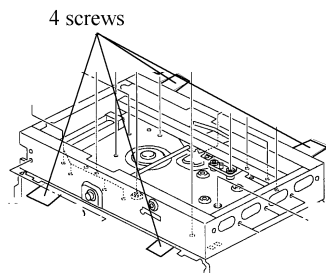
Continued...

Main Unit-Left Side

1. Remove the relay connector 2P connected from the scanner base to the lamp regulator.

Scanner Unit Removal

1. Remove the 4 screws that affix the scanner to the main unit.
2. Remove the clamp and connector.
3. Lift the scanner unit up to remove it.

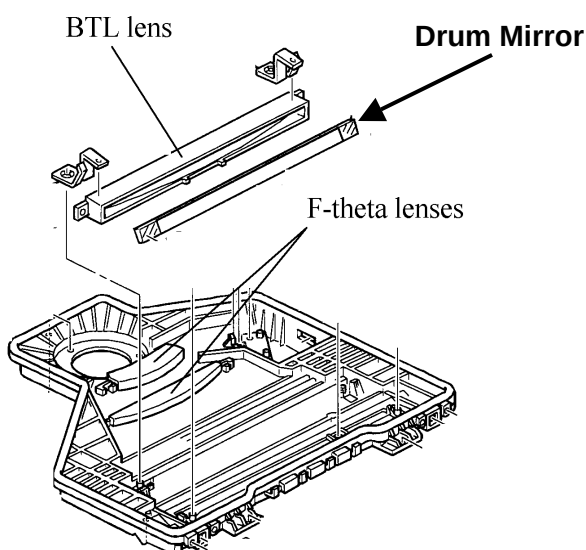


NOTE: When re-installing the scanner unit, caution must be used not to pinch any wires. Special care should be taken at all four corners of the scanner unit

Cleaning procedures for the F-theta, BTL Drum Mirror lenses

Note: When cleaning, only 99% Isopropyl Alcohol can be used.

1. Wipe the inner surface of the housing with 99% Isopropyl Alcohol. Wipe the surfaces of the F-theta, BTL lenses and Drum Mirror with a non-streaking type of 99% Isopropyl Alcohol, and then wipe them dry.



Continued...

UNITS AFFECTED:

Aficio 400/401/500 Serial Number cut-in not available at time of publication.

PROBLEM TRACKING:

Ricoh's Technical Support Department is actively tracking this issue. Please complete the attached log and forward to:

Ricoh Technical Support Department
Attn: Copier – Technical Support
155 Passaic Avenue
Fairfield, NJ 07004
Fax: (973) 882-3960

PROBLEM TRACKING FORM

F-Theta Lens Cleaning Record

Dealership:_____ **Contact:**_____

Address: _____ **Phone #:** _____

NOTE: *This information is required to facilitate tracking the effectiveness of the cleaning countermeasure. Please include the System Parameter list from machines that were resolved by cleaning the F-Theta Lenses. Additionally, please include the before and after copy samples (at the center setting in manual exposure) that demonstrate the problem and solution.*

This grid was developed to permit the collection of several machines prior to submitting to Ricoh TSD.

[illegible]

BULLETIN NUMBER: AFICIO 400/401/500 - 017

03/04/98

APPLICABLE MODEL: AFICIO 401

SUBJECT: POSTSCRIPT 2 KIT TYPE 401 (EDP 361026)

SCOPE: Testing conducted by Ricoh Electronics INC. has identified a programming error with a limited quantity of PostScript 2 Kits (Type 401). In an effort to minimize the impact of this deficiency on our service organization, RICOH CORPORATION has developed a mechanism to replace the suspect PostScript 2 Kits.

SYMPTOM:

The Aficio 401 Controller does not recognize PostScript 2 Kit Installed. (Type 401)

CAUSE:

PostScript 2 Kits incorrectly programmed during production.

SOLUTION:

Replace the PostScript 2 Kit **(EDP 361026)**.

RETURN PROCESS:

RICOH CORPORATION has established an assertive program for the return of all new PostScript 2 Kits. The program is simple but requires the cooperation of each location to ensure a smooth and efficient flow.

GETTING STARTED:

First identify the quantity of PostScript 2 Kits (Type 401) in your inventory and list the serial numbers on the attached Material Return Authorization Form (MRA). The serial number (8 digits) can be found on the PostScript Kit Packaging and also silk screened on the PostScript circuit board.

RETURN AUTHORIZATION:

Fax the completed form to **714-566-2658** to obtain a Material Return Authorization number (MRA).

REPLACEMENT POSTSCRIPT 2 KITS:

Ricoh Electronics INC. will contact your location by fax with the MRA and automatically ship replacement PostScript 2 Kits based on the count submitted on the attached MRA Form.

Note: This copy intended as master of original
for reproduction of additional bulletins.

☐ COPY QUALITY

☐ MECHANICAL

☒ ELECTRICAL

☐ PAPER PATH

☐ S M

☐ PARTS

☒ OTHER

Continued...

FINAL RETURNS:

Package all PostScript 2 Kits for return to the address provided. Ricoh Electronics INC. will maintain a balance between what was shipped as replacements and what was actually returned. Include a copy of the MRA Form inside and outside of the return package.

RETURN TO:

Ricoh Electronics INC.
Attn: Mr. Ali Ghalandar / OMG QA
1100 Valencia Ave
Tustin CA 92870

BILLING:

To facilitate transportation, Ricoh Corporation will suspend the billing of the replacement PostScript 2 Kits for 14 days from the shipping date. If the quantity of returns differs from the quantity shipped, or the returns are not received within 14 days, Ricoh will charge your location the normal cost for PostScript 2 Kits.

IDENTIFICATION:

Installation of the PostScript 2 Kit is the only method available to determine the functionality of the kit. Regarding current field installed units, a technician can quickly identify a working PostScript 2 Kit by accessing the Aficio 401 "Test Menu." The menu will indicate "Print PS Fonts and PostScript Demonstration" if the PostScript 2 Kit is working properly. These Kits do not need to be returned to Ricoh Electronics INC. Any PostScript Kits not currently installed should be returned in accordance with this program.

UNIT'S AFFECTED:

All PostScript 2 Kits shipped prior to March 1, 1998.

DEADLINE:

This program expires on 4/15/98.

Continued...

MRA FORM
PostScript 2 Kit, Type 401

MRA #

INSTRUCTIONS:

Fill in the serial numbers for each PostScript 2 Kit (EDP 361026) and fax the form to **714-566-2658**. Upon receipt of your MRA#, return each PostScript 2 Kit Type 401 to the address listed below:

Ricoh Electronics, INC.
Attn: Mr. Ali Ghalandar / OMG QA
1100 Valencia Ave
Tustin, CA. 92870
714-566-2658

Material Return Authorization

Post Script 2 Kit Type 401

Dealership: _____

Contact:

Ship to Address:_____

Main Phone #

Fax Phone #:

[illegible]

BULLETIN NUMBER: AFICIO 400/401/500 - 018

03/31/98

APPLICABLE MODEL: AFICIO 500

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual page(s) listed below must be replaced with the pages(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒

- 10-4 Updated Information (Field Service Manual Correction)

Note: This copy intended as master original
for reproduction of additional bulletins.

☐ COPY QUALITY

☐ MECHANICAL

☐ ELECTRICAL

☐ PAPER PATH

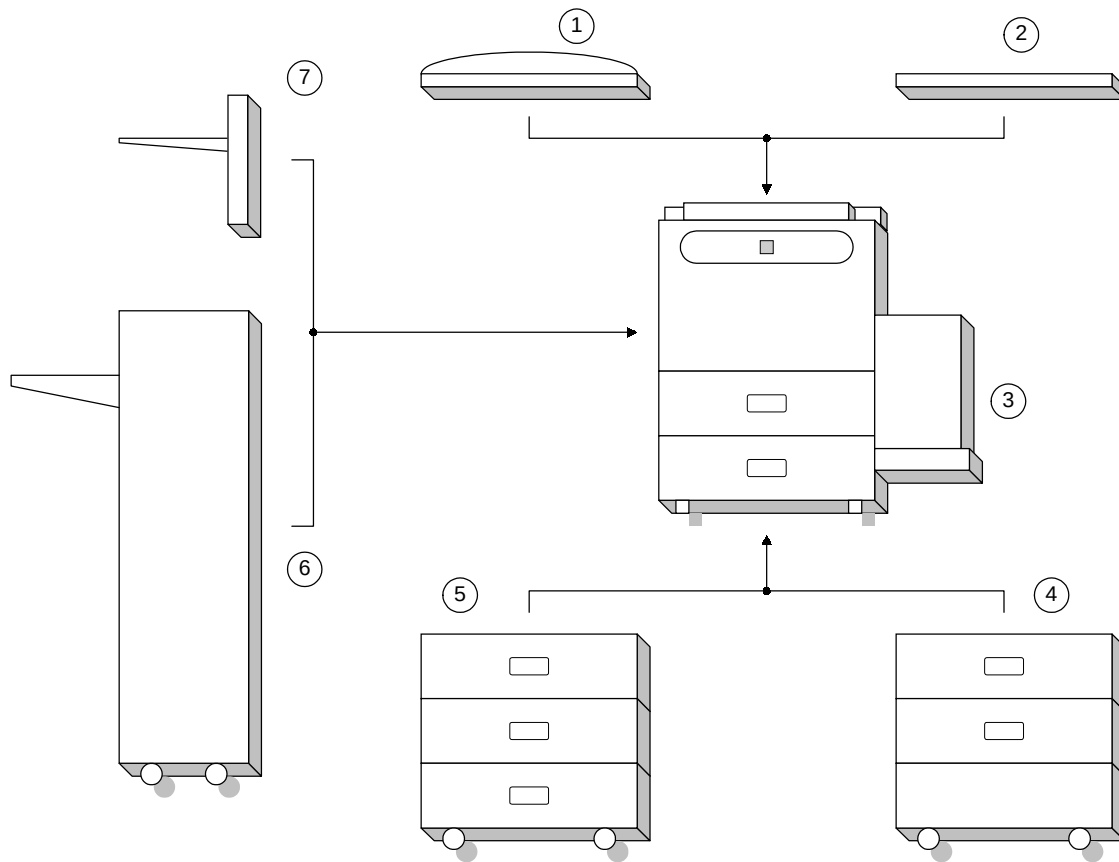
☒ S M

☐ PARTS

☐ OTHER

1.2 MACHINE CONFIGURATION

Rev. 03/98



NOTE: Only items marked * are new items.

Item	Machine Code	No.
Copier	A217	3
*ADF (Option)	A663 (DF64)	1
Paper Feed Unit (Option)	A549 (PS290)	5
	A550 (PS280)	4
⇒ *Finisher (Option)	A612 (SR710)	6
500-sheet Receiving Tray (Option)	A615 (TYPE D)	7
Platen Cover (Option)	A381 (TYPE 540)	2

BULLETIN NUMBER: AFICIO 400/401/500 - 019

04/08/98

APPLICABLE MODEL: AFICIO 400/401/500

SUBJECT: AFICIO 400/401/500 USER CODE MODE

Aficio 400 Number of User Codes available:

- 20 User Codes Standard.
- 250 User Codes available by ordering Part Number: **400250UC**

NOTE:

1. This upgrade is for the Aficio 400 only.
2. After installing the ROMS on the SCU PCB it may be necessary to adjust Touch Screen sensitivity and paper sizes.

Aficio 401 Number of User Codes available:

- 20 User Codes Standard.
- No upgrade available.

Aficio 500 Number of User Codes available:

- 250 User Codes Standard.
- No upgrade available.

☐ COPY QUALITY

☐ MECHANICAL

☐ ELECTRICAL

☐ PAPER PATH

☐ S M

☐ PARTS

☒ OTHER

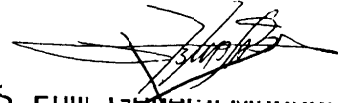
ISSUED ON: November 30, '96

Model	Finisher for AD3 <u>9940DP</u>	Volt/Hz	Date of Modification	Serial Number
Modified Article		No serial number cut-in information		
Reason for Modification	Parts catalog correction			

The following should be corrected. Please correct your part catalog.

Old Part Number	New Part Number	Description	Qty	Index No.	Page
A6392322		Entrance Guide	1	19	7
	<u>A6122329</u>	Guide Mylar	1	19	7

for


 S. Fujii, General Manager
 2nd. Field Information Dept. OAC.

ISSUED ON: November 30, '96

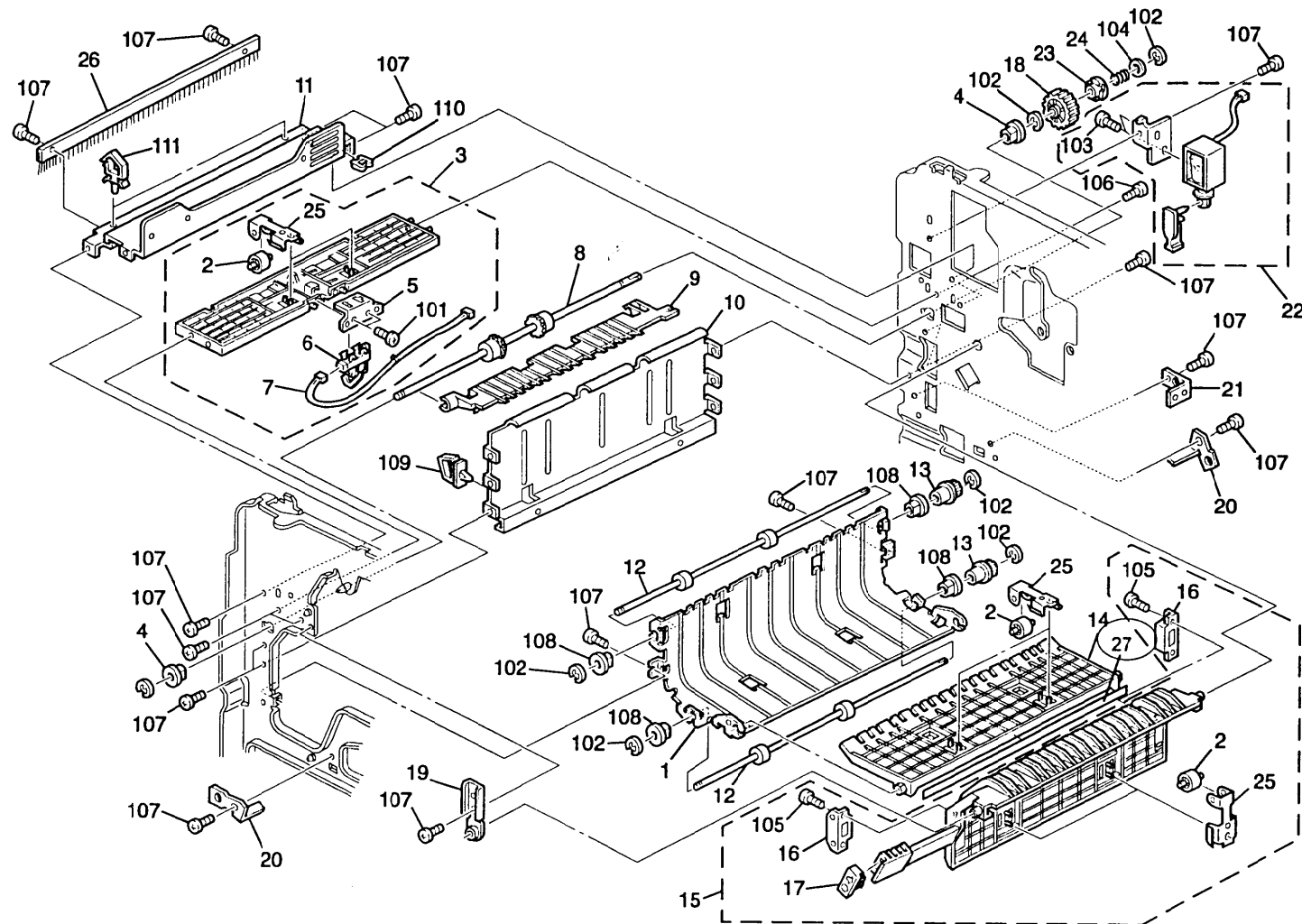
Model	~~AD3~~ 9940 DP	Volt/Hz	Date of Modification	Serial Number
Modified Article		No serial number cut-in information		
Reason for Modification	Parts catalog correction			

The following should be corrected. Please correct your part catalog.

Old Part Number	New Part Number	Description	Q'ty	Index No.	Page
A1337238		Decal - Toner Collection Bottle	1	21	41
	A1337236	Toner Collection Bottle	1	21	41

1. The following part has been added (refer to the attached illustration).

Old Part Number	New Part Number	Description	Q'ty	Index No.	Page
	A1344466	Seal - Turn Guide	1	27	59



for

S. Fujii, General Manager
2nd. Field Information Dept. QAC

[illegible]

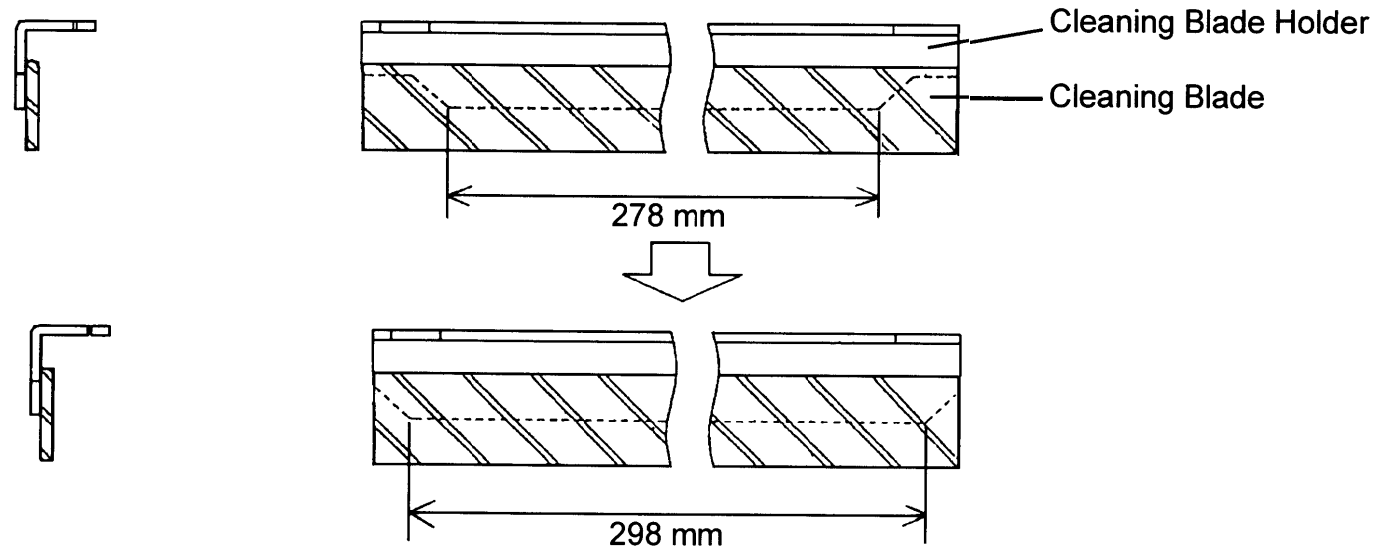
Rank: A : Replace with new parts immediately. B : Replace with new parts at time of repair. C : Replace with new parts at time of overhaul.

Interchangeability:

- (1) When old and new parts are not mutually interchangeable, use additional parts or an assembly part as indicated in "Parts needed for replacement by new part" to install the new part.
- (2) The mark to the left of the slash indicates whether the old part can be used in the new machine, and the mark to the right indicates whether the new part can be used in the old machine. x = Not interchangeable o = Interchangeable

DETAILS OF MODIFICATION

In the laboratory test, it was found that there were dirty edges on the back side of the paper when wide paper was used. The length of cleaning blade holder was 278 mm, but the cleaning was insufficient for a range outside 278 mm. The length of the cleaning blade holder was changed from 278 mm to 298 mm.



Model		9940DP					Model	Date of Modification	Serial Number	
Modified Article		Laser Section					9940DP		3A76050001	
Reason for Modification		To increase the durability of the Mirror Brackets and Guide Harness LD (230V)								
Draw No.	Old Parts No.	New Parts No.	Description	Rank	Q'ty Used Old→New	Inter-change-ability	Parts needed for replacement by new part		Parts Catalog	
							Part No.	Description	No.	Page
	A134 2073	A134 2088	Right Btl Bracket		1 → 1	X/X			7	39
		0802 5232	Tapping Screw - M3 x 8		0 → 1				103	39
	A134 2074	A134 2089	Left Btl Bracket		1 → 1	X/X			9	39
		0802 5232	Tapping Screw - M3 x 8		0 → 1				103	39
	A134 2071	A134 2069	Bracket - 1st Mirror		2 → 2	X/X			11	39
		0802 5232	Tapping Screw - M3 x 8		0 → 2				103	39
	A133 7165	A133 7166	Guide Harness LD (230V)		1 → 1	X/X			18	39
		0802 5232	Tapping Screw - M3 x 8		0 → 1				103	39

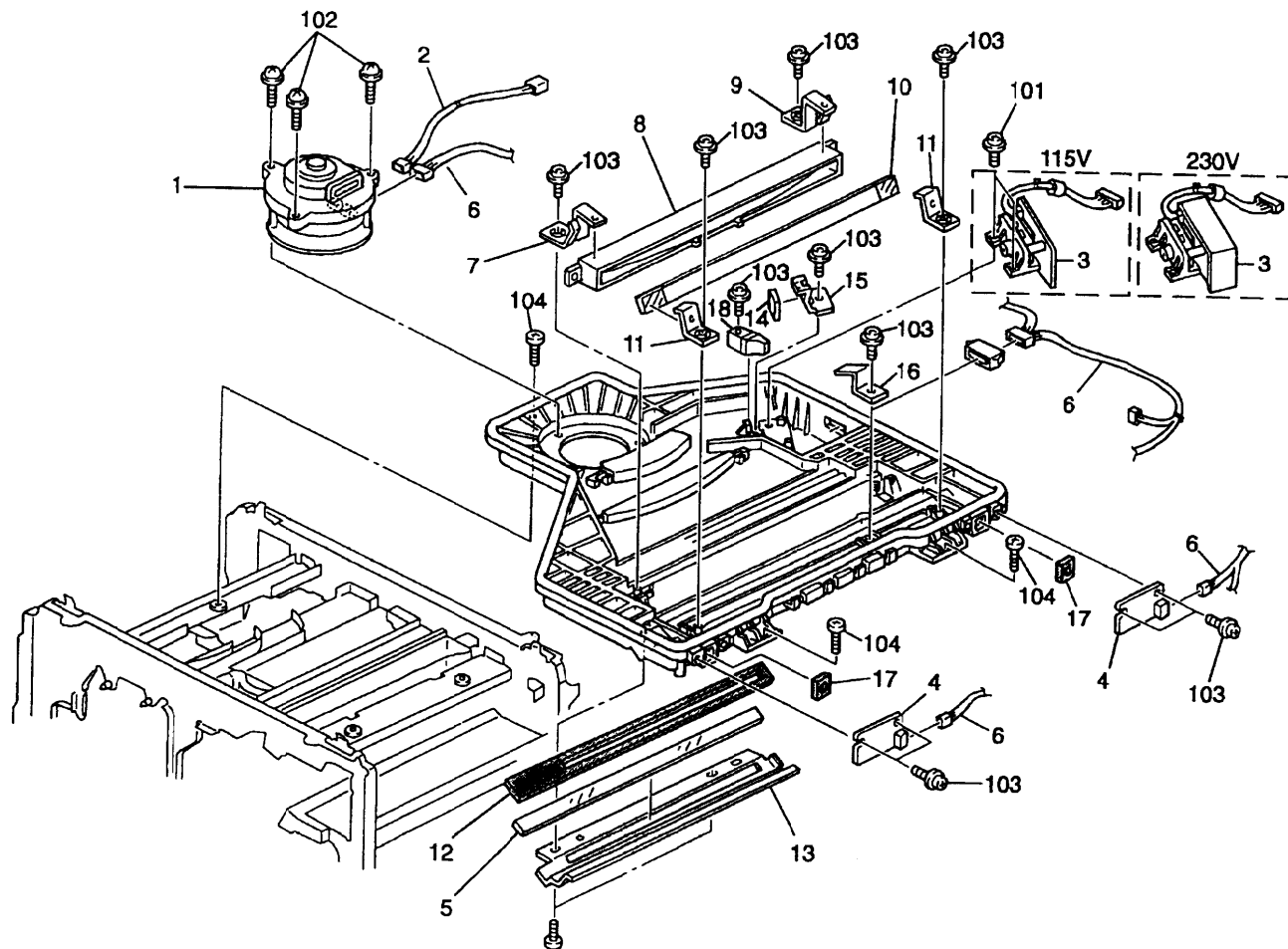
Rank: A : Replace with new parts immediately. B : Replace with new parts at time of repair. C : Replace with new parts at time of overhaul.

Interchangeability:

(1) When old and new parts are not mutually interchangeable, use additional parts or an assembly part as indicated in "Parts needed for replacement by new part" to install the new part.

(2) The mark to the left of the slash indicates whether the old part can be used in the new machine, and the mark to the right indicates whether the new part can be used in the old machine. x = Not interchangeable o = Interchangeable

DETAILS OF MODIFICATION



ISSUED ON: July 23, '96

Model	9940DP Finisher	Model	Date of Modification	Serial Number
Modified Article	Parts Catalog			
Reason for Modification	Parts Catalog Correction			

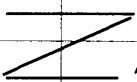
Please correct your parts catalog as follows.

Incorrect P/N	Correct P/N	Description	Parts Catalog	
			Index No.	Page
A379 4711	A608 4711	Decal Misfed Removal	20	7



Model	9940DP	Volt/Hz	Date of Modification	Serial Number
Modified Article		No serial number cut-in information		
Reason for Modification	Parts catalog correction			

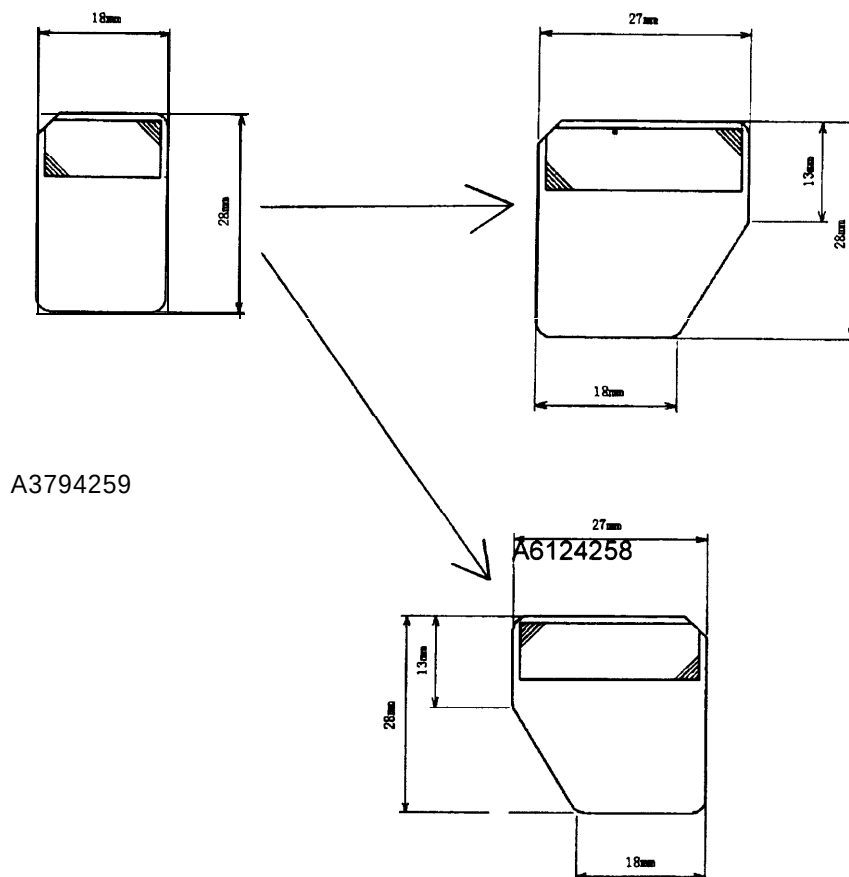
The following should be corrected. Please correct your part catalog.

Old Part Number	New Part Number	Description	Q'ty	Index No.	Page
A6392322		Entrance Guide	1	19	7
		A6122329 Guide Mylar	1	19	7

Model: 9940DP Finisher		Date: September 22, 1997	No: 9940 - 006
Modified Article: Positioning Fence Mylar		Serial Number: 3A86070001	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☐ Part standardization ☐ Other		

The shape of the mylar on the Positioning Fence has been changed to improve paper stacking reliability

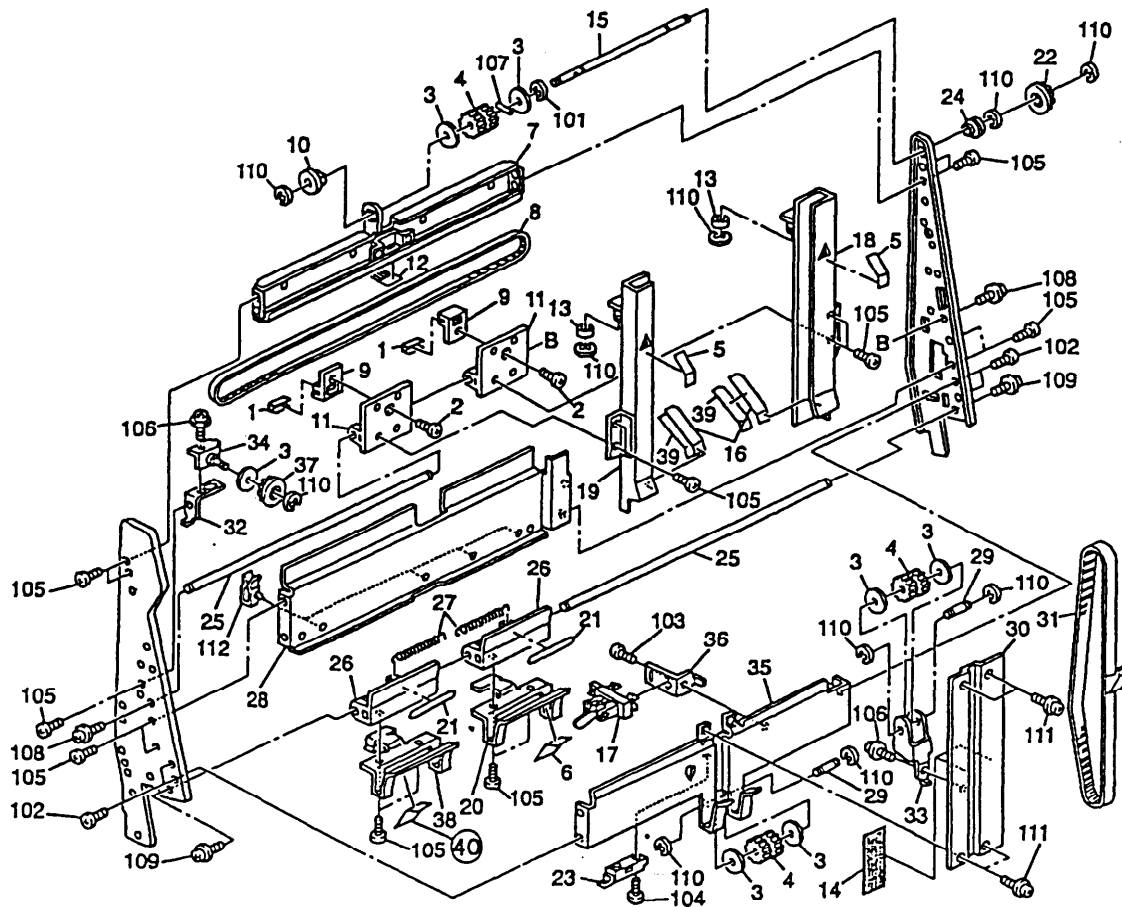
Old part number	New part Number	Description	Qty	Int	Page	Index	Note
A3794259	A6124258	Positioning Fence Mylar : Rear	1	X/O	13	6	
A3794259	A6124259	Positioning Fence Mylar : Front	1	X/O	13	40	



Model: 9940DP Finisher

Date: September 18, 1997

(No: 9940 - 006



Model: 9940DP

Date: September 22, 1997

No: 9940DP - 007

Modified Article: Fusing Entrance Guide

Serial Number: 3A7606000 1

Reason for
Modification:

☐ Parts catalog correction

☐ Vendor change

☐ To meet standards

☐ To facilitate assembly

☒ To improve reliability

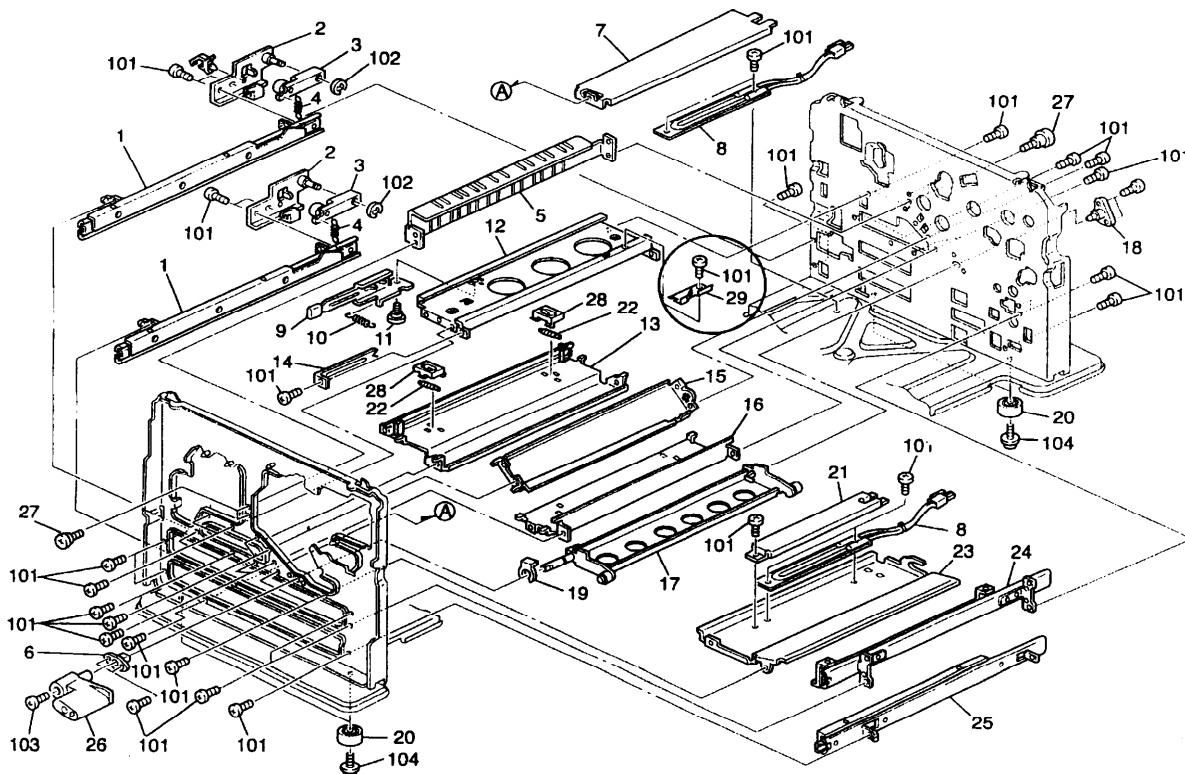
☐ Part standardization

☐ Other

To prevent creased copies, the material used for the Fusing Entrance Guide has been changed from plastic mold to metal.

As a result of the use of metal in the Fusing Entrance Guide, the friction caused by the paper may lead to static electricity. A Grounding Brush and a Screw have been added to eliminate this static electricity.

Old part number	New part number	Description	Qty	Int	Page	Index	Note
A1344195	A2174197	Fusing Entrance Guide	1	x / o	57	10	
	A1534355	Grounding Brush	1	—	81	29	
	04340060B	Pan Head Self – Tapping Screw- M4 X 6	1	—	81	101	



Model: 9940DP

Date: September 21, 1997

No: 9940 - 008

Modified Article: Cleaning Unit

Serial Number:

Reason for
Modification:

☐ Parts catalog correction

☐ Vendor change

☐ To meet standards

☐ To facilitate assembly

☐ To improve reliability

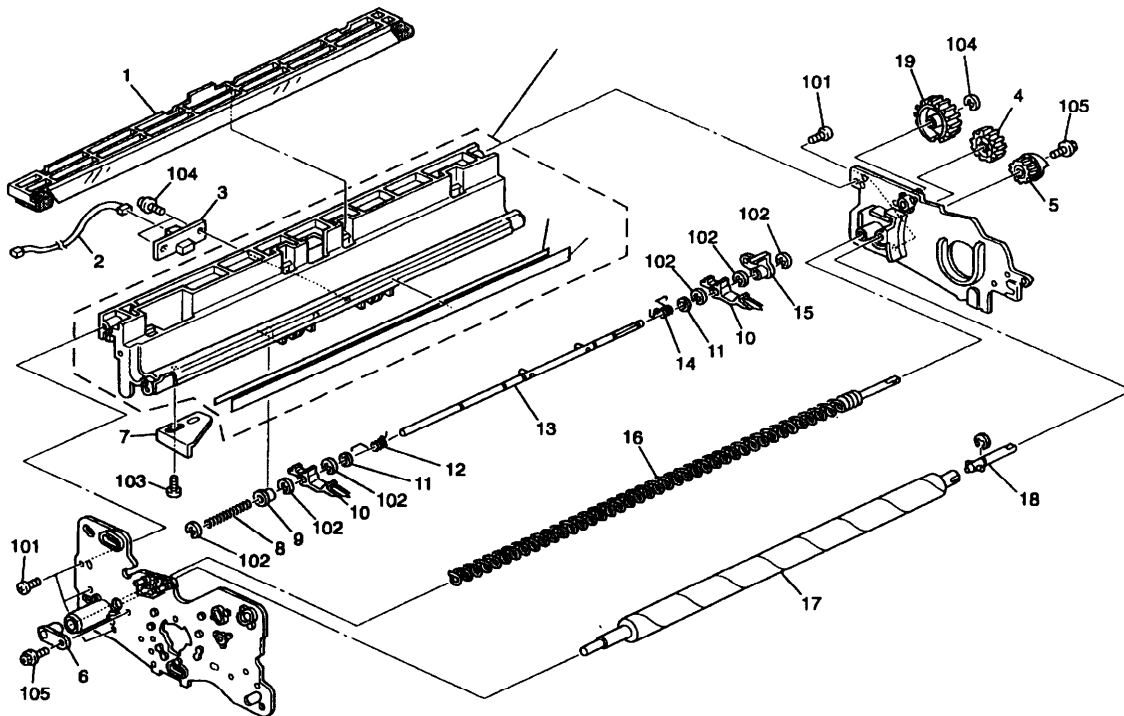
☐ Part standardization

☐ Other

The following parts have been added as service parts.

Please add these to your Parts Catalog.

Old part number	New part number	Description	Qty	Int	Page	Index	Note
	Al 342292	Casing Cleaning	1		50	20	
	Al342263	Entrance Seal- Tape	1		50	21	
	AD0470 17	Entrance Seal-Cleaning	1		50	22	



Model: 9940DP		Date: September 21, 1997	No: 9940 - 009
Modified Article: Development Unit		Serial Number:	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly reliability ☐ To improve ☒ Part standardization ☐ Other		

The part number has been changed for part standardization.

Old part Number	New part number	Description	Qty	Int	Page	Index	Note
A1343051	A2173050	Development Unit	1	o/o	45	16	

Original
no
distribution

Model: 9940DP		Date: September 21, 1997	No: 9940 - 010
Modified Article: Polygon Mirror Motor		Serial Number: 3A7704000 1	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☒ To improve reliability ☐ To facilitate assembly ☐ Other		

1. To improve reliability, the material of magnet on the Polygon Motor has been changed.
2. To prevent partially blank copies, a noise filter has been added to the clock circuit on the Polygon Motor Drive Board.

Symptom

Partially blank copies

Cause

When the circuits in the Polygon Motor are stable, the scanner motor ready signal is ON, but in the event that the noise circuits do not operate properly, the scanner motor ready signal may be turned **OFF**.

Countermeasure

A noise filter has been added to the clock input circuit on the Polygon Motor Drive Board

Old part number	New part number	Description	Qty	Int	Page	Index	Note
AX060100	AX060148	Polygon Mirror Motor	1	X/O	39	1	

copy

Model: 9940DP		Date: September 22, 1997	No: 9940 - 011
Modified Article: Harness - LSD		Serial Number: 3A76	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☒ Part standardization ☐ Other		

The part number has been changed for part standardization.

Old part number	New part Number	Description	Qty	Int	Page	Index	Note
A1345391	A2 175392	Harness – LSD	1	o/o	39	6	

Model: Finisher for 9940DP		Date: September 17, 1997	No: 9940-012
Modified Article: Grounding Plate- Copier		Serial Number:	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☒ Part standardization ☐ Other		

The part number has been changed for part standardization.

Old part number	New part number	Description	Qty	Int	Page	Index	Note
A61 25951	A6665455	Grounding Plate- Copier	1	O/O	7	21	



Modification Bulletin

PAGE: 1/1

Model: 9940DP Finisher

Date: October 28, 1997

No: 9940 - 014

Modified Article: Position Roller Shaft

Serial Number:

Reason for
Modification:

- ☐ Parts catalog correction ☐ Vendor change ☐ To meet standards
☐ To facilitate assembly ☐ To improve reliability
☐ Part standardization ☐ Other

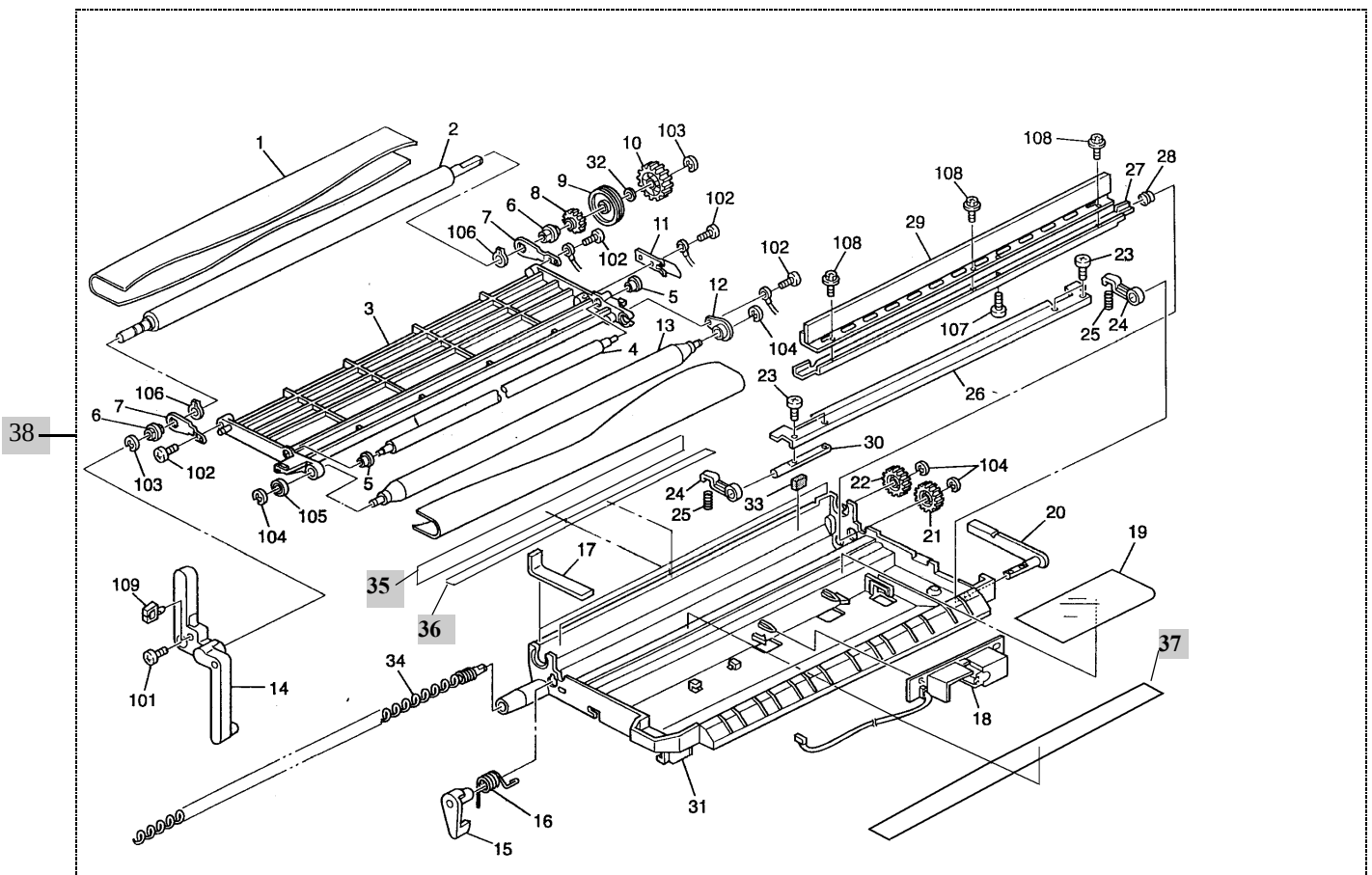
Old part number	New part Number	Description	Qty	Int	Page	Index
A3003854	A6 1228 15	Position Roller Shaft	1		17	2

Model: 9940DP		Date: December 5, 1997	No: 9940 - 015
Modified Article: TRANSFER UNIT		Serial Number:	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☐ Part standardization ☒ Other		

The following parts have been added as service parts.

Please add these to your parts catalog.

Old part number	New part number	Description	Qty	Int	Page	Index	Note
	A1343920	Mylar Transfer Entrance	1		53	35	
	A1343921	Tape 5X319	1		53	36	
	A1343910	Mylar Transfer Exit	1		53	37	
	A1343800	Transfer Unit	1		53	38	



Model: 9940DP		Date: December 5, 1997	No: 9940 - 016
Modified Article: PARTS CATALOG		Serial Number:	
Reason for Modification:	☒ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☐ Part standardization ☐ Other		

The following parts should be corrected in your parts catalog.

Old part number	New part number	Description	Qty	Int	Page	Index	Note
A1337148	Delete	Spring Plate-Lens Block	0		35	19	
A1337145	Delete	Spring Plate-Scanner Rail	0		35	20	
A1337913	Delete	Grounding Wire-Lens Block 2	0		35	21	
A1337912	Delete	Grounding Wire-Lens Block 1	0		35	22	
A1337149	A1341697	Lens Block Supporter	2		37	5	
A1337146	Delete	Spring Plate-Rear Scanner Rail	0		37	27	



Modification Bulletin

PAGE: 1/1

Model: 9940DP		Date: December 5, 1997	No: 9940 - 017
Modified Article: POSITION ROLLER SHAFT		Serial Number:	
Reason for Modification:	☒ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☐ Part standardization ☐ Other		

Please correct your parts catalog as follows.

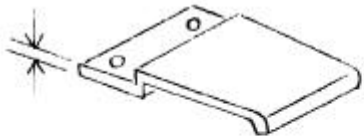
Old part number	New part number	Description	Qty	Int	Page	Index	Note
A3003856	A6122815	Positioning Roller Shaft	1		17	2	

Model: 9940DP		Date: December 5, 1997	No: 9940 - 018
Modified Article: BOTTOM LIFT LEVER		Serial Number: 3A76100001	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☐ Part standardization ☒ Other		

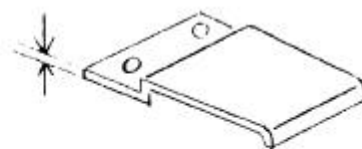
The following parts have been changed for cost reduction.

1. Bottom Lift Lever

Thickness changed from 1.6mm to 1.2mm.



OLD

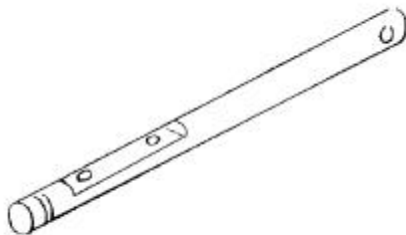


NEW

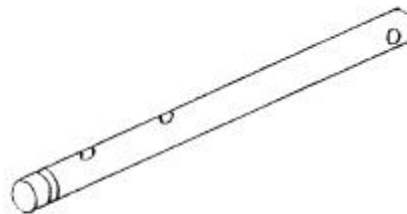
2. Bottom Lift Shaft

Old shaft had a section cutaway where bottom lift lever is attached.

New shaft does not have a section cutaway where bottom lift lever is attached.



OLD



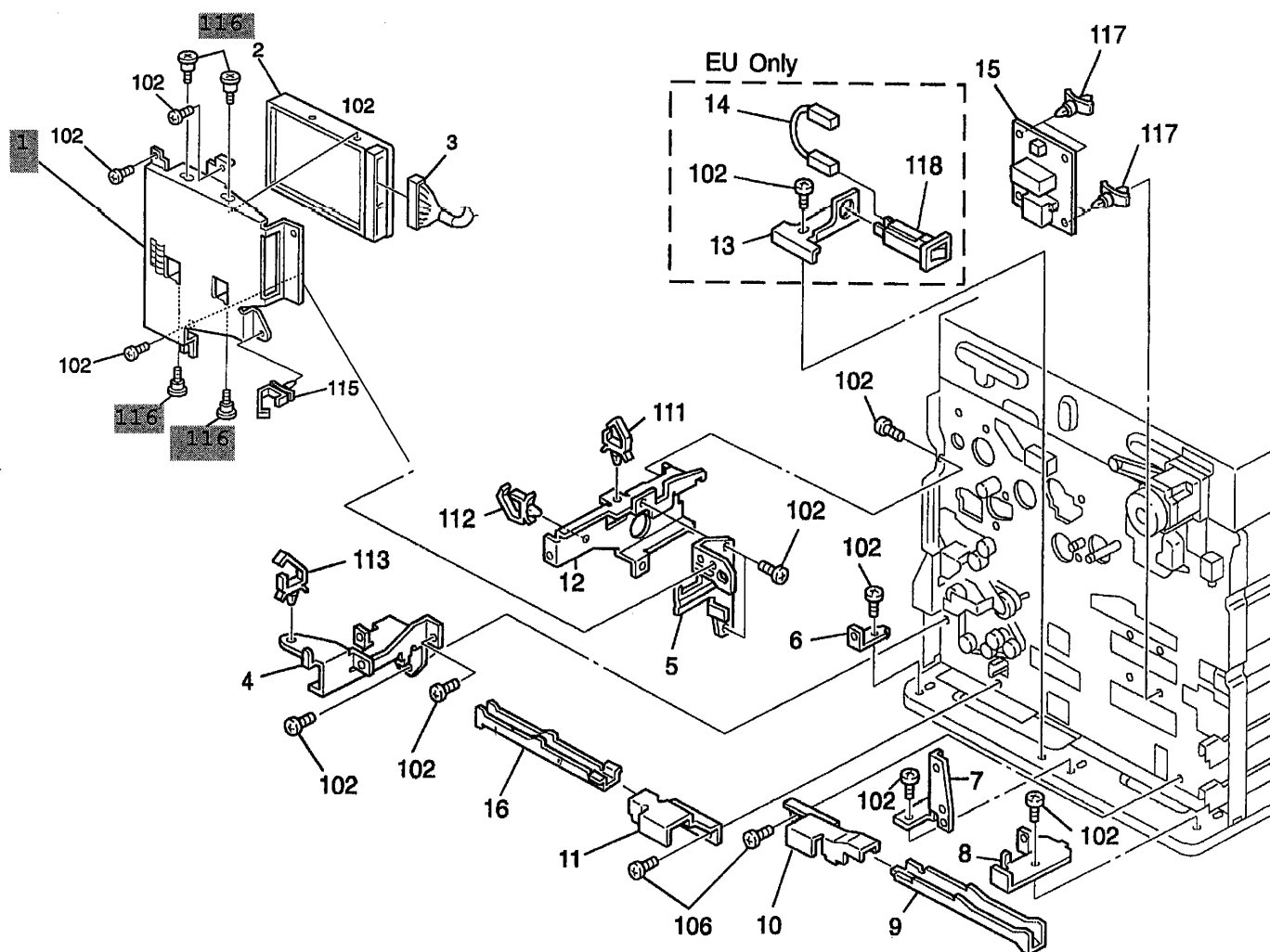
NEW

The parts are interchangeable as a set only.

Old part number	New part number	Description	Qty	Int	Page	Index	Note
A1342967	A2042972	Bottom Lift Lever	1	x/x	15	16	
A1342966	A2042971	Bottom Lift Shaft	1	x/x	15	17	

Model: 9940DP		Date: December 5, 1997	No: 9940 - 019
Modified Article: BRACKET-HDD		Serial Number: 3A76120001	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☒ To improve reliability ☐ Part standardization ☐ Other		

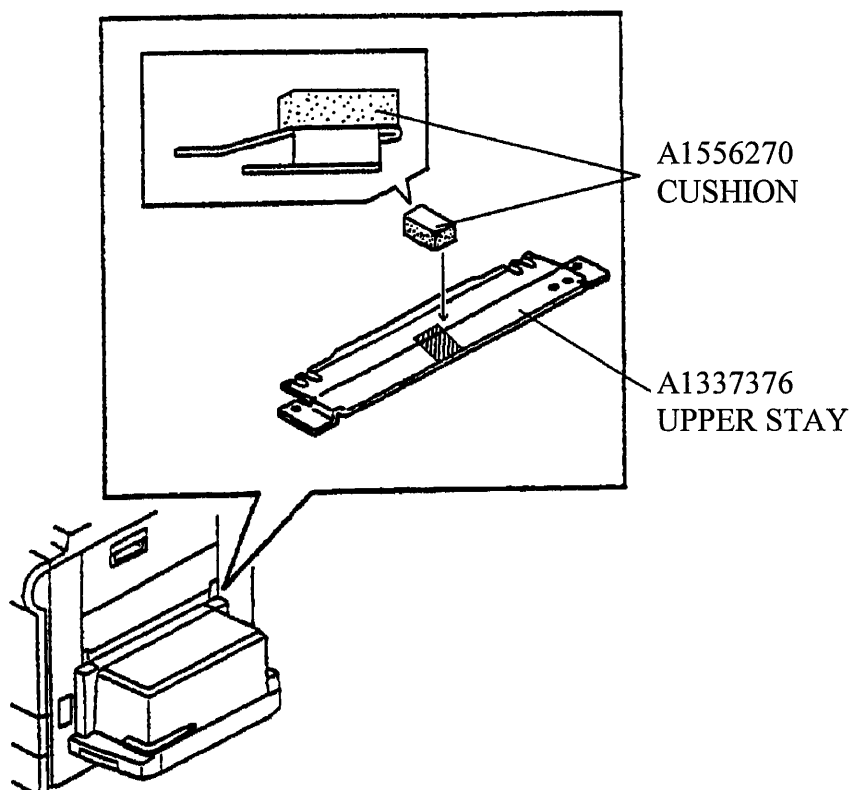
To prevent vibration of the Hard Disk, the shape of Bracket - HDD has been changed and four shock absorbers have been added.



Model: 9940DP		Date: December 5, 1997	No: 9940 - 020
Modified Article: CUSHION		Serial Number: 3A77030001	
Reason for Modification:	☐ Parts catalog correction	☐ Vendor change	☐ To meet standards
	☐ To facilitate assembly	☐ To improve reliability	
	☐ Part standardization	☒ Other	

Old part number	New part number	Description	Qty	Int	Page	Index	Note
	A1556270	Cushion	1				

A cushion has been added to the LCT upper stay to prevent paper from entering the gap between the LCT cover and the By-Pass Feed Cover when paper is placed on top of the LCT cover.



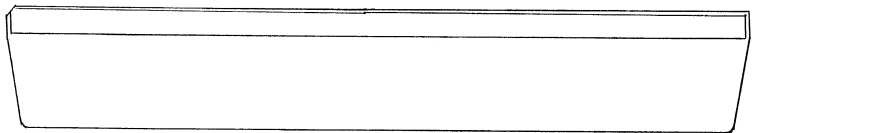
Model: 9940DP FINISHER		Date: February 27, 1998	No: 9940 - 021
Modified Article: ENTRANCE GUIDE		Serial Number:	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☐ Part standardization ☒ Other		

Reason for Modification

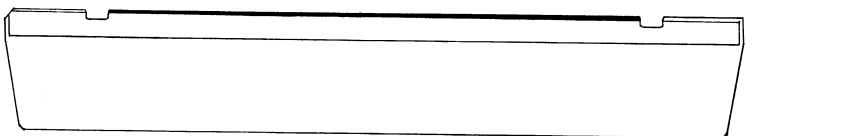
When the Entrance Guide is installed in the Main Frame, it came in contact with the heads of some screws in the Main Frame, causing installation problems.

Details of the Modification

Two parts of the Entrance Guide have been cut away to prevent this part from coming in contact with screws in the Main Frame during installation.



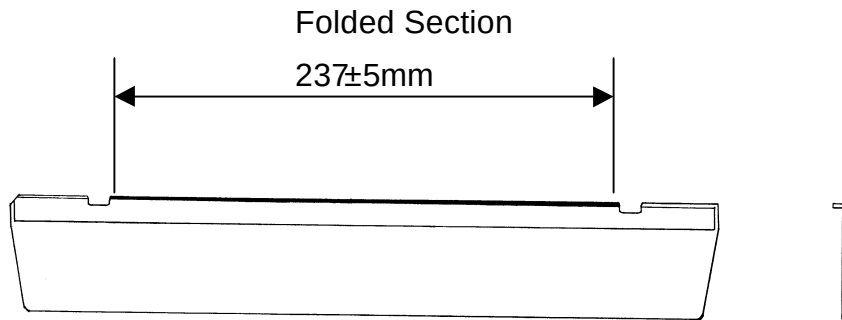
Original Entrance Guide – P/N A6122329



Interim Entrance Guide – P/N A6122331

Note: This modification was implemented on the June~September 97 production run units.
The Entrance Guide was modified again from the September 97 production run.

Old part number	New part Number	Description	Qty	Int	Page	Index	Note
A6122329	A6122331	Entrance Guide	1	O/O	7	19	



New Entrance Guide– P/N A6122333

Old Part Number	New Part Number	Description	Qty	Int	Page	Index	Note
A6122329	A6122333	Entrance Guide	1	X/O	7	19	

Model: 9940DP		Date: March 26, 1998	No: 9940DP - 022
Modified Article: VIBRATING PLATE		Serial Number: 3A77080001	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☒ To improve reliability ☐ Part standardization ☐ Other		

To increase the durability of the Vibrating Plate Mylar in the Duplex Unit, the shape of the Vibrating Plate has been changed.

The mylar should move as shown in Figure 1, but after repeated use of the 50-sheet stack mode in the duplex unit, the mylar may curl as shown in Figure 2. If the mylar becomes deformed as shown in Figure 2, then its movement will resemble that shown in Figure 3. If this movement is repeated, then section A of the mylar will be damaged.

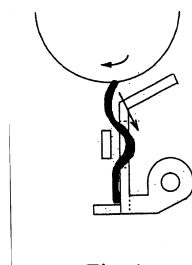


Fig. 1

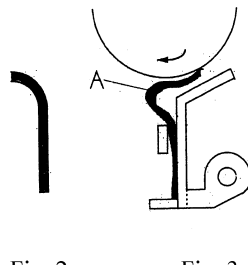


Fig. 2

Fig. 3

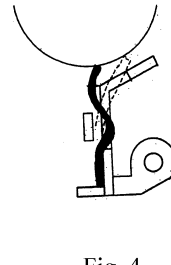
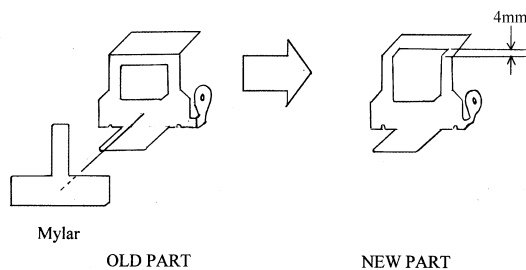


Fig. 4



C

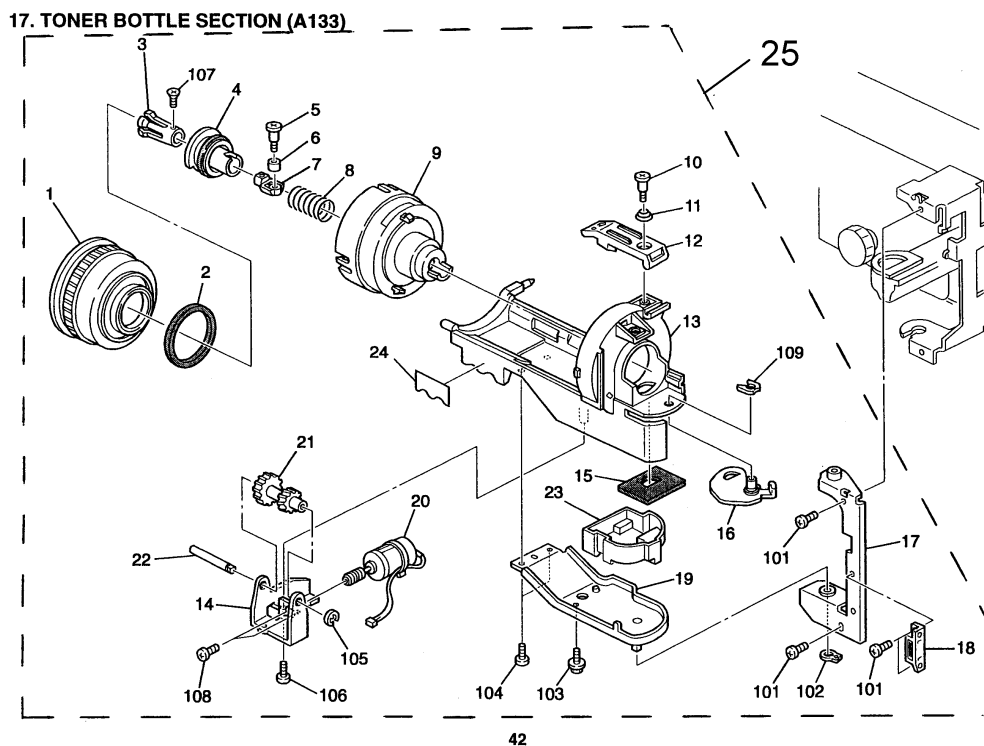
To prevent the mylar from curling, the shape of the bracket has been changed to ensure that the mylar moves and bends as shown in Figure 4.

Old part number	New part Number	Description	Qty	Int	Page	Index	Note
A1544623	A1544626	VIBRATING PLATE	2	1	63	26	

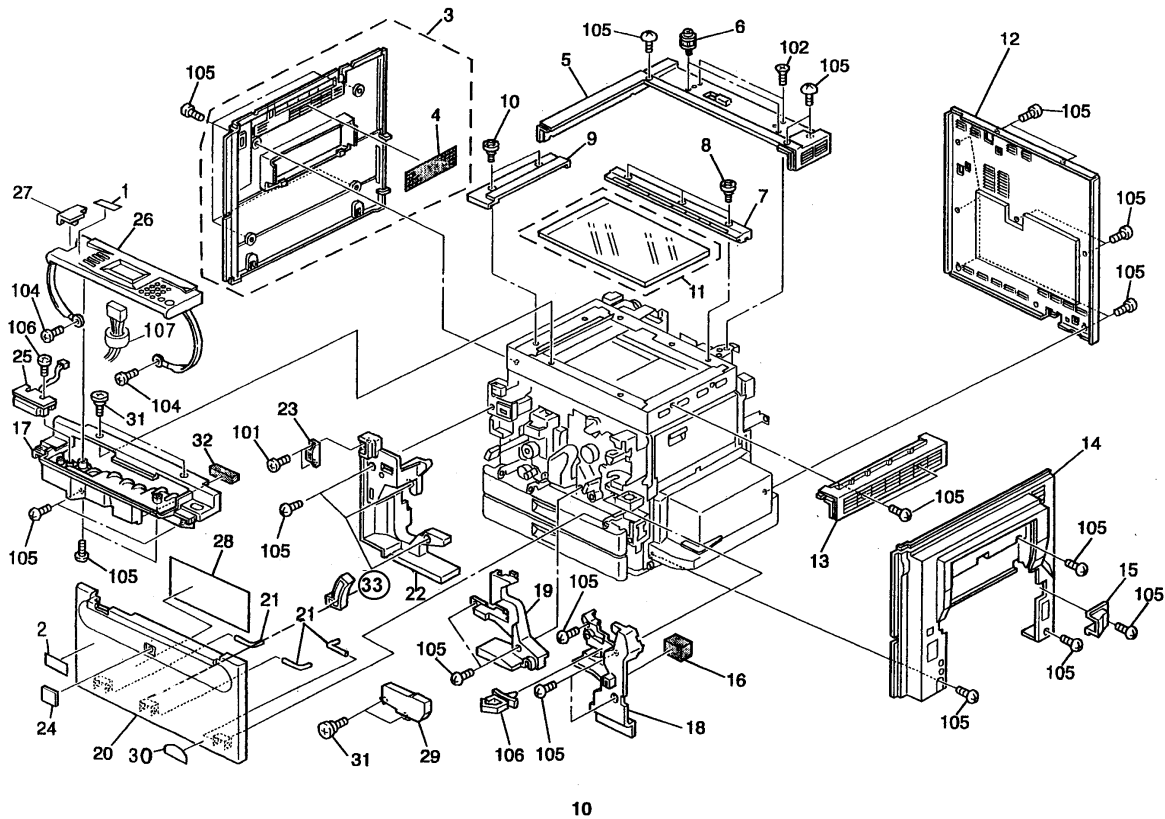
Model: 9940DP		Date: March 26, 1998	No: 9940 – 023
Modified Article: BOTTOM HOLDER ASSEMBLY & CAP-FRONT COVER			Serial Number:
Reason for	☐ Parts catalog correction	☒ Vendor change	☐ To meet standards
Modification:	☐ To facilitate assembly	☐ To improve reliability	
	☐ Part standardization	☐ Other	

The following parts have been added as service parts.

Old part number	New part number	Description	Qty	Int	Page	Index	Note
	A1333152	Bottle Holder Assembly (OEM)	1		43	25	
	A1341384	Cap-Front Cover	1		11	33	



1. EXTERIOR (A133)



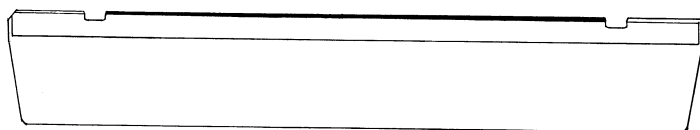
Model: 9950DP Finisher		Date: February 27, 1998	No: 9950DP – 001
Modified Article: ENTRANCE GUIDE		Serial Number: 9A87100001	
Reason for Modification:	☐ Parts catalog correction ☐ Vendor change ☐ To meet standards ☐ To facilitate assembly ☐ To improve reliability ☐ Part standardization ☒ Other		

R M

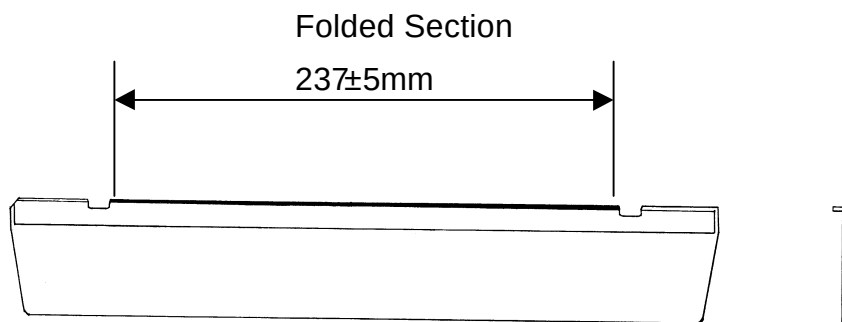
The Entrance Guide bends easily, so it is difficult to install on the main frame.

D M

To increase the strength of the Entrance Guide (mylar), the edges have been folded.



Old Entrance Guide



New Entrance Guide

Old part number	New part Number	Description	Qty	Int	Page	Index	Note
A6122329	A6122333	Entrance Guide	1	X/O	7	19	

TECHNICAL OPERATIONS

BULLETIN NO. 9940-001 DATE 7/23/96

Subject: SOFTWARE CHANGE ON THE SCU BOARD

☐ Copy Quality ☐ Electrical ☐ Mechanical ☐ Modification ☐ Safety Information ☒ Technical Information ☐ General Information	Model - Product / Serial Numbers Affected	Modification Schedule:
		☐ Mandatory
		☐ Scheduled Visit
		☐ Next Call
		☐ Next PM
		☐ As Necessary
		Install Time _____

The 9940DP has changed to resolve the following problems.

Problem :

1) SP 4907

Because of problem with software, the auto/ photo separation only works when the SP4907 mode is set to NO. This should be the other way around.

2) SP 4909

All of the setting in the SP mode 4909 are "0", which produces improper images. As such, they should be reset in the following manner.

Mode number	Setting
AP 4909 - 1	32
- 2	48
- 3	208
- 4	60
- 5	192
- 6	0
- 7	16
- 8	128

Countermeasures:

Starting from June Production, the software has been modified. When in the SP mode 4907, the auto letter / photo separation mode will work when the setting is YES. Also as a result of this modification, the default values for SP4909 1-8 have been corrected.

For the machines manufactured before June, Please take following temporary countermeasures: When using the SP 4907, please set the machine on NO to use the auto letter/ photo separation mode and vice versa. Also, please set the default values for the SP4909 as indicated above.

When you replace the new ROMs, the data for the SP Mode are reset to the default values. The data for the SP Mode should be reset back to what they were before the ROM was replaced.

TECHNICAL OPERATIONS

BULLETIN NO. 9940-002 DATE 7/23/96

Subject: MANUAL CORRECTION

☐ Copy Quality ☐ Electrical ☐ Mechanical ☐ Modification ☐ Safety Information ☒ Technical Information ☐ General Information	Model - Product I Serial Numbers Affected	Modification Schedule:
		☐ Mandatory
		☐ Scheduled Visit
		☐ Next Call
		☐ Next PM
		☐ As Necessary
		Install Time _____

We found the following incorrect information in the technical manual for the 9940DP.
Please correct your manual.

1. SP Mode

SP number	Wrong	Correct
SP 4907 (GA4 Setting: Auto letter/photo separation)	Disabled Enabled	No Yes
SP7004 (Total Copy Counter Reset)	Resets or changes the initial electrical counter	Japanese version only. Do not change the value.
SP2902-6 Test Pattern Printing: Image memory)	Prints the test pattern for the memory unit. 0: Not used 1: Horizontal Stripes	Not Used. Do not change the value.

2. Special parts, on page 4-47

Wrong part number	Correct part number	Description
AI 349011	A1309011	Charge Corona Unit with Cleaner

3. SC Codes

The following SC codes have been added.

SC303: Time out error for printer

NOTE:

This SC303 has already been assigned as "Charge wire cleaner error". However, this SC code has been assigned again by mistake. Now, two SC303s exist.

If an optional charge corona wire cleaner has been installed, to determine which SC303 has occurred, turn the main switch off. After switching it on again, if SC303 still exists, it is the "charge wire cleaner error."

- Definition -

The BCU cannot receive the printer ready signal from the EX-IPU

- Possible cause -

BCU defective

EX-I PU defective

SCU defective

SC305: Time out error for memory

- Definition -

The BCU cannot receive the memory access ready signal from the EX-IPU

- Possible cause -

BCU defective

EX-I PU defective

SCU defective

SC392: Image storage address error

- Definition -

The EX-IPU receives an image data output request signal for data that is not stored in memory

- Possible cause -

SCU defective

EX-I PU defective

TECHNICAL OPERATIONS

BULLETIN NO. 9940-003 DATE 11/15/96

Subject: Revisions to the Field Service Manual Service Code Section (6)

☐ Copy Quality ☐ Electrical ☐ Mechanical ☐ Modification ☐ Safety Information ☒ Technical Information ☐ General Information	Model - Product / Serial Numbers Affected	Modification Schedule.
	9940DP	☐ Mandatory ☐ Scheduled Visit ☐ Next Call ☐ Next PM ☐ As Necessary Install Time

Revisions include the following:

SC190: EX-IPU board error 1

Definition-[B]:

- An error is detected during theASIC register check.

Possible cause:

- EX-IPU board defective

SC1 91: EX-IPU board error 2

Definition-[B]:

- The SRAM in the EX-IPU board is defective.

Possible cause:

- EX-IPU board defective

SC302: Charge current leak

Definition-[B]:

- A charge current leak signal is detected.

Possible causes:

- Charge corona end block damaged
- Charge corona receptacle damaged
- Charge high voltage supply board defective

SC303: Charge wire cleaner error

Definition [B]:

- The charge wire cleaner is detected over the image processing area.

Possible causes:

- Charge wire cleaner drive motor defective

-

SC305: Time out error for memory

Definition:

- BCU cannot receive the memory access ready signal from EX-IPU.

Possible causes:

- BCU defective

-

- SCU defective

SC323: LD drive current over

Definition:

- The LD drive board applies more than 100mA

Possible causes:

- LD unit defective (not enough power, due to aging)
- Poor connection of the interface harness which connects the LD unit and the EX-IPU board

-

SC325: Laser synchronizing signal error 2

Definition-[D]:

- The interval of the laser synchronizing signal detected by the main scan synchronization detector board -2 becomes outside the correctable range.

Possible causes:

-

- Poor connection of the interface harness which connects the main scan synchronization detector board -2 and the EX-IPU board

- Main scan synchronization detector board -2 out of position

-

- Polygon motor defective

SC392: Image stored address error

Definition:

- data output request signal for data that is not stored in memory.

Possible causes:

- SCU defective
- EX-IPU defective

SC350: ID sensor error

Definition [B]:

- Vsg falls out of the adjustment target ($\pm 0.2V$) during Vsg checking.
- Vsp>2.5V or Vsg<2.5V is detected twice consecutively during copying.

Possible causes:

- ID sensor board defective
- Dirty ID sensor board
- BCU board defective
- High voltage control board defective

SC605: Communication error between SCU and BCU

Definition:

- The SCU board cannot communicate with the BCU board properly.

Possible causes:

- Poor connection
- SCU board defective
- BCU board defective

SC620: Communication error between BCU and ARDF

Definition:

- The BCU board cannot start communication with the ARDF properly.

Possible causes:

- Poor connection
- BCU board defective
- DF main board defective

SC621: Communication error between BCU and finisher

Definition:

-The BCU board cannot start communication with the finisher properly.

Possible causes:

- Poor connection
- BCU board defective
- Finisher main control board defective

SC623: Communication error between BCU and paper tray unit

Definition:

-The BCU board cannot start communication with the paper tray unit properly

Possible causes:

- Poor connection
- BCU board defective
- Paper tray unit defective

SC625: GA5 (GAFBTC) Error

Definition:

-The GA5 did not finish the data transfer to the memory in 20 seconds.

Possible cause:

- EX-IPU defective
- Software problem



Field Engineering Bulletin

Digital Series

TECHNICAL OPERATIONS

BULLETIN NO. 9940-004 DATE 4/18/97

Subject: EX-IPU PCB and BCU PCB ROM

Copy Quality	Model - Product/Serial Numbers Affected	Mandatory Scheduled Visit
Electrical	9940DP	
Modification		
Safety Information		
General Information		Next PM As Necessary

- 1) Symptom:** a) Abnormal images when copying or printing- partially blank or dirty background.
b) SC320, 321, and / or 322 is displayed after power on.

Cause: Failing or defective IC 55 on the EX-IPU PCB. Suspect IC55 lot numbers are 6DHP4, 6EH4Q, and 6FH4R.

Solution: Replace the EX-IPU PCB (P/N A1337870).

Units Affected/Susceptible: 3A76060001 **thru** 3A76060025
3A76070001 thru 3A76070060
3A76080001 **thru** 3A76080103

- 2) Symptom:** SC490 - Ozone Fan Motor / Exhaust Fan Motor Lock

Cause: While in stand-by mode, the Fan Motor operates on a 5Hz cycle. The current applied to the Fan Motor capacitors (through EX-IPU PCB IC224) gradually deteriorates and breaks down the 16224.

Solution: Beginning with October 96 production (S/N3A76100001 and above) the Fan Motor capacitors, C307 and C308 on the EX-IPU PCB, have been changed from 4.7 μ f to 0.47 μ f. The software (ROM) on the BCU PCB has also been modified/ upgraded to P/N A1335104D to reduce the duty cycle of the Fan Motor from 5Hz to 1Hz.

Units Affected: All units produced before October 7996 (S/N 3A7609xxxx and below).

Note: If the BCU PCB ROM is P/N A13351 04D or E, replacement of the capacitors indicated as the production countermeasure is not necessary.

- 3) Symptom:** a) After an original is fed to the glass, the copier stops and displays "Copying in Progress". This symptom may occur intermittently on copiers equipped with a Finisher when using the DF with the Mixed Original Sizes feature enable/ "on".
- b) During duplex mode, copies are continuously fed into the duplex tray. None of the copies are fed out and the duplex tray eventually overfills and misfeeds.

Cause: Software / ROM.

Solution: Install an "E" level ROM (P/NA1335104E) on the BCU PCB.

Units affected: All units produced prior to January 1997 (S/N3A7612xxxx and below).

Program / Procedure:

A. For affected units indicated in Symptom 1 & 2- Savin will automatically ship one (1) EX-IPU PCB for each unit received based on Savin Ship To records. An "E" level ROM (P/N A13351 04E) will be included with each EX-IPU PCB.

/Note: This mandatory upgrade and automatic shipment of the EX-IPU PC5 and ROM is to be regarded / considered as an exchange program. The replaced PCB and ROM, with the original packing list, must be returned within sixty (60) days to:

***Savin Corporation
7670 Oakbrook Drive - Suite 350
Norcross, Ga 30093***

Locations that do not return the PCB and the ROM within this 60 day timeframe (by 6/27/97) will be billed, at Dealer List Price, for these two components.

B. For units exhibiting Symptom # 3: The "E" level ROM is available at no charge from Technical Operations. Please complete the request form on page 3 of this FEB and return fax to the Atlanta Training Center at 770-446-5801. Please note that this no charge ROM upgrade program will only be in effect for 60 days from the issue date of this FEB(6/27/97).

SUMMARY

Symptom	S/N Range	Upgrade / Action
1	3A76060001 thru 3A76080103	EX-IPU PCB with BCU "E" ROM
2	3A76080104 thru 3A7609xxxx	BCU ROM - Level "D" or "E"
3	3A7612xxxx and below	BCU ROM - Level "E"

9940 BCU ROM "E" Level ROM Upgrade (P/A1335104E)

Please note that this no charge ROM upgrade program will only be in effect for 60 days from the issue date of this FEB(6/27/97).

Dealer / Branch: _____

Contact: _____

Address: _____

City / State / Zip: _____

Phone / Fax##: _____

Dealer Account # _____

S/Ns(3A7612xxxx and below):

Note: It is imperative that the replaced ROMs be returned within five (5) days to:

Savin Corporation
1670 Oakbrook Drive - Suite 350
Norcross, Ga 30093

Return fax this page to the Atlanta Training Center at 770-446-5801 by 6/27/97.



Field Engineering Bulletin

Digital Series

TECHNICAL OPERATIONS

BULLETIN NO.: 9940DP - 005 DATE: 8/15/97

Subject: USER CODE ROM SET – P/N **400250UC**

☐ Copy Quality	Model - Product/Serial Numbers Affected	Modification Schedule
☐ Electrical	9940DP	☐ Mandatory
☐ Mechanical		☐ Scheduled Visit
☐ Modification		☐ Next Call
☐ Safety Information		☐ Next PM
☐ Technical Information		☐ As Necessary
☐ General Information		install Time

Requests from the field for additional user codes has resulted in a SCU ROM set that increases the number of user codes from 25 to 250.

The three (3) ROM set (IC411, IC412, and IC413 on the SCU PCB), is available from the Spare Parts Ordering Center under P/N 400250UC.

Please note that these ROMs are considered “special application”, therefore they have not been implemented into production units.

SAWN CORPORATION

Technical Service Operations --333 Ludlow Street, Stamford, Connecticut 06904 --(203) 967-5000

TECHNICAL OPERATIONS

BULLETIN NO: 9940DP – 006 DATE: 10/28/97

Subject: SERVICE MANUAL CORRECTION– LCT SPONGE

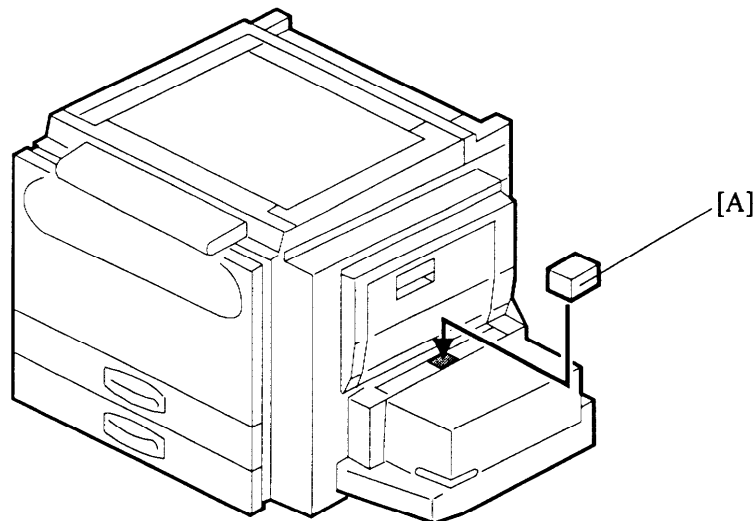
☐ Copy Quality ☐ Electrical ☐ Mechanical ☐ Modification ☐ Safety Information ☐ Technical information ☒ General Information	Model - Product/Serial Numbers Affected	Modification Schedule
	9940DP	☐ Mandatory ☐ Scheduled Visit
		☐ Next Call ☐ Next PM
		☐ As Necessary Install Time

Insert the following step, after step 31 of the 9940DP installation procedure.

The sponge [A] is provided to prevent paper from entering the gap between the LCT cover and the by-pass tray cover, when paper is put on the LCT cover.

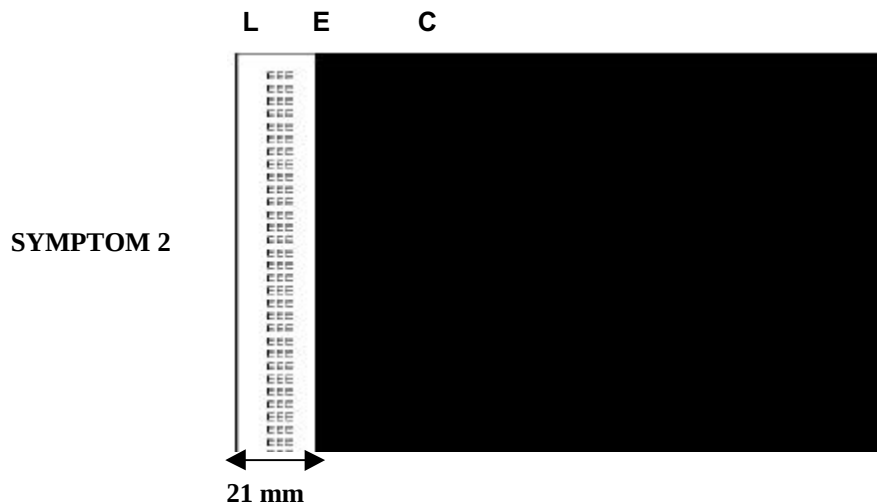
Please adhere the sponge [A] to the upper stay on the LCT as shown below.

- Installation Step after Step31



A21 71524.CDR

- Intermittently, an almost entirely Black Image appears in the copy or internal test patterns. Only 21mm of the Operator's side are visible and there are no edge erase borders.



CAUSE:

A film is coating the F-theta and Barrel/Toroidal Lenses. The source of this film occurred during the manufacturing/cleaning process of the Lens Housing. Initially this film is transparent and becomes opaque as the temperature in the Lens Housing increases, during normal copying. This reduces the Laser intensity reaching the OPC surface causing Light Copies. The laser intensity may be reduced to the point of generating a Second Laser Sync Detection Error (SC325) causing Black Copies.

S L U I N:

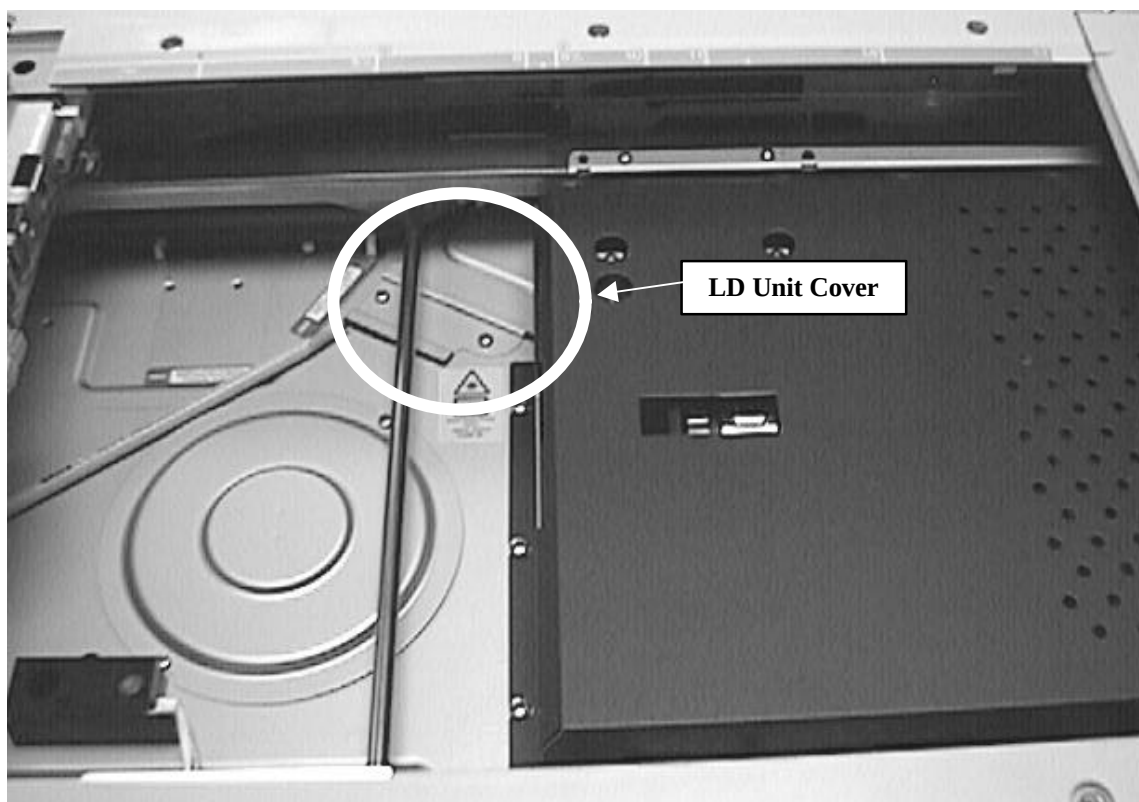
PR DUC I N C UN ERMEASURE:

A process improvement step was added to the manufacturing process of the Lens Housing.

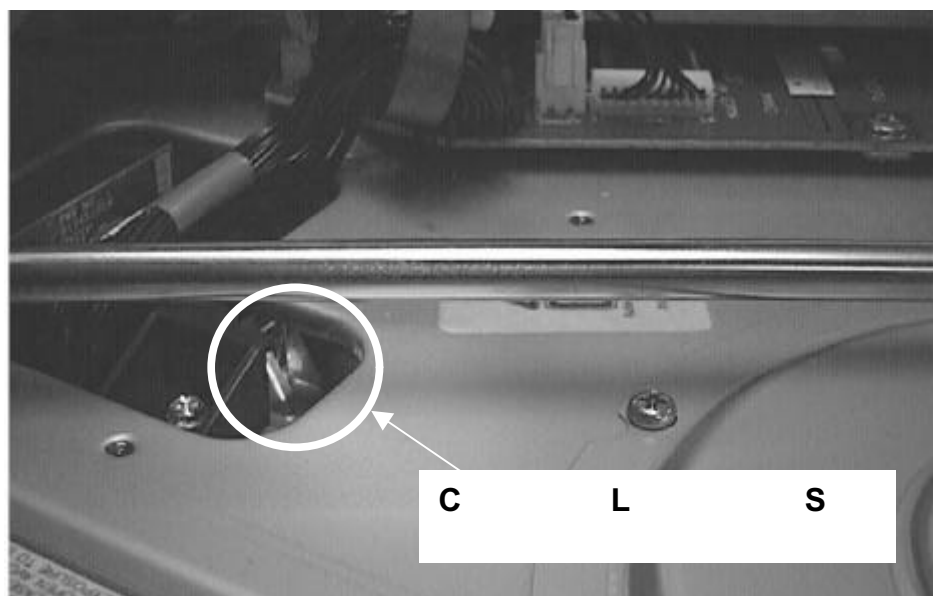
UNI IDENTIFICATION:

To determine the possible affected units, perform a visual inspection using the following procedure.

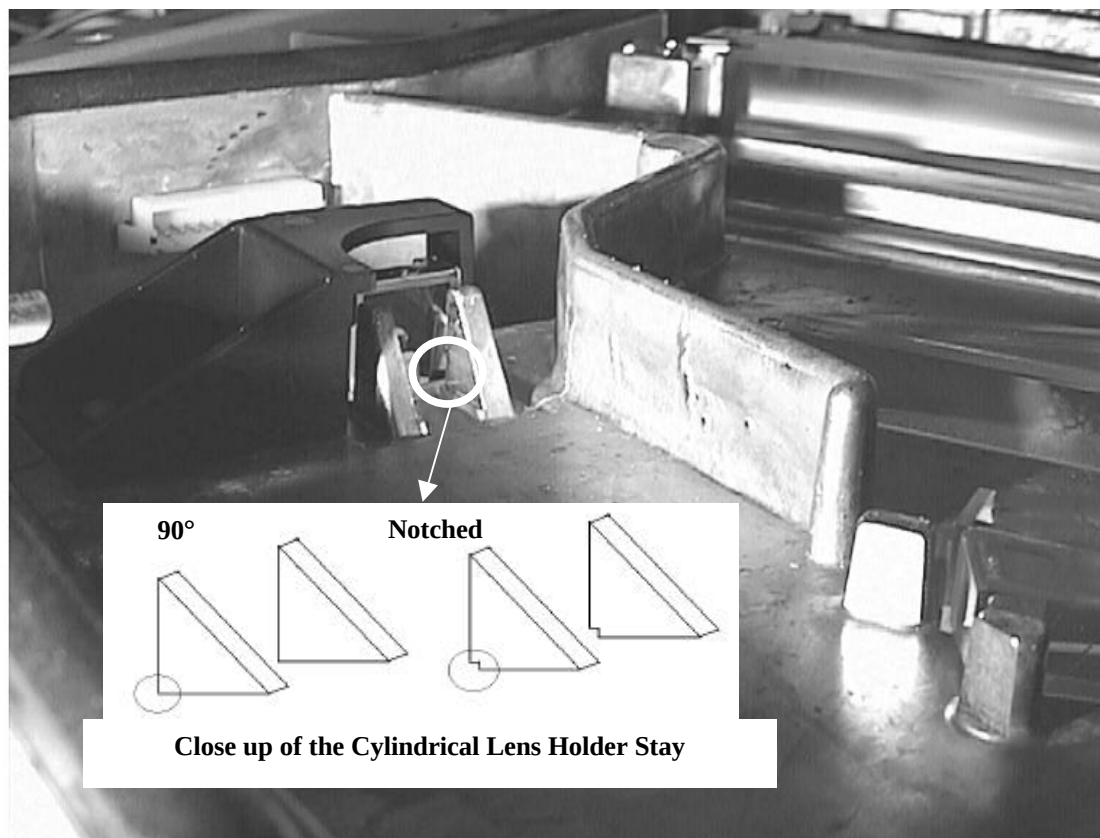
1. First remove the LD Unit Cover (P/N A1337159) [A].



2. Locate the Cylindrical Lens Holder Stay [B] that is part of the aluminum Lens Housing (Reference the Laser Section of the Parts Catalog).



3. Determine if the stay has a 90-degree angle or a Notch at the base of the Cylindrical Lens Holder Stay.



N E: Only stays with a 90-degree angle and exhibiting either of the symptoms above have to be cleaned. Cylindrical Lens Holder Stays with a notch are not affected.

S C

FIELD C UNERMEASURE:

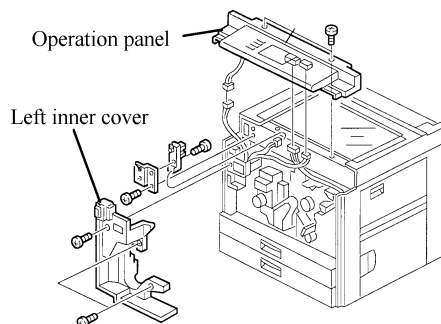
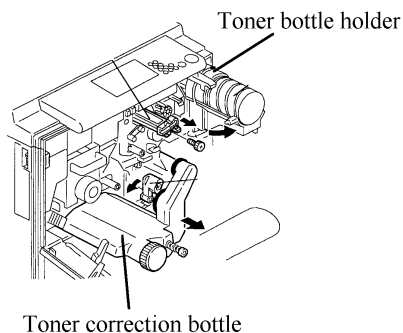
Clean the F-theta, Barrel/Toroidal Lenses and the Drum Mirror using 99% Isopropyl Alcohol and soft lint free cloth. Follow the cleaning procedure outlined below.

40DP / 40DPC / 0DP L C P

1. Turn off the power and unplug the machine from the power source.
2. Remove the finisher or sorter from the main unit.
3. Remove the platen cover or ADF from the main unit.
4. Remove the front cover. (3 pins)
5. Pull out the duplex unit and 1st paper tray.
6. Remove the rear and left covers from the main unit.

Front of the Main Unit

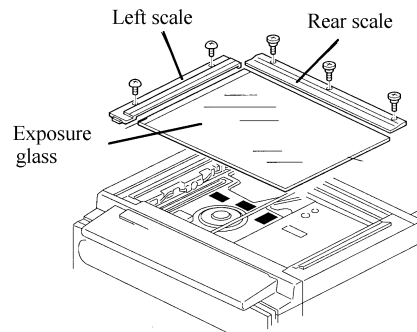
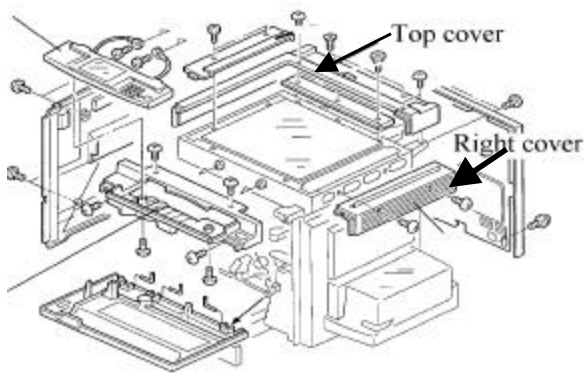
1. Remove the toner bottleholder. (2 screws, 2P connector)
2. Take out the toner collection bottle. (1 connector)
3. Remove the left inner cover. (3 screws)
4. Remove the operation panel. (4 screws)
5. Remove the operation panel optics fiber and signal line from the clamps on the frame in front of the scanner.



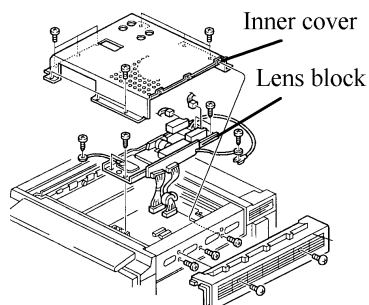
6. Remove the connectors for the anti-condensation heater.(Option)
7. Remove the counter bracket from the front frame of the main unit. (2 screws, 1 connector)
8. From the scanner unit, unhook the 4 connectors (red harnesses) connected to the interlock switch.
Note: When reconnecting the connectors, be sure that these are set according to the colors.
9. Take the harness that has been disconnected (2 red ones) and remove it from the front of the main unit, the front side panel (2 places) and the edge saddle.
10. Remove the auto response sensor harness on the operation panel from the clamp on the frame in front of the scanner.
11. Pull the toner shield glass from the front side of the main unit.

Top Part of the Scanner Unit

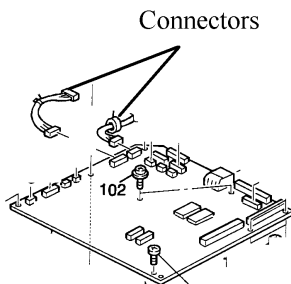
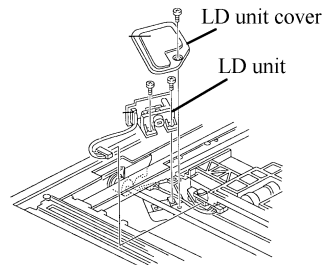
1. Remove the top cover and right cover from the scanner unit(5 screws)
2. Remove the left scale, rear scale and the exposure glass(5 screws)



3. Remove the inner cover of the scanner unit. (11 screws)
4. Remove the lens block(6 screws, 4 connectors)
5. Remove the LD unit cover and remove the LD unit.(4 screws, 2 connectors)
6. Unhook the EX-IPU connectors from the optical housing

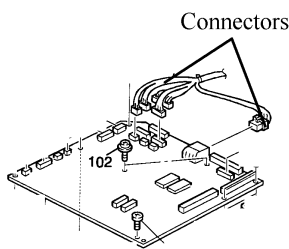


A133R587.wmf



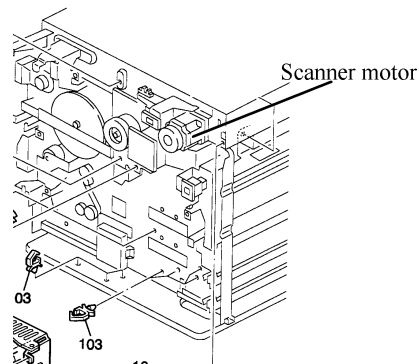
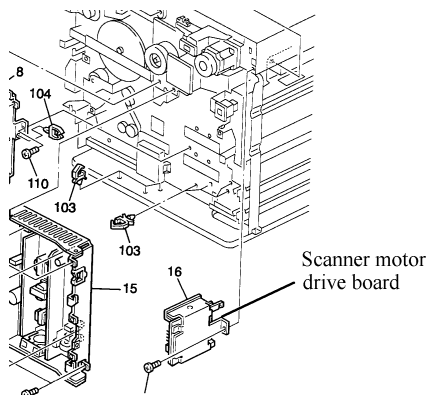
Behind the Main Unit

1. Remove 3 connectors on the controller board and remove the controller bracket. (3 screws)
2. Remove the 2 connectors on the hard disk.
3. Remove the hard disk. (4 screws)
4. Remove the fly-wheel. (3 screws)
5. Remove a 6P connector and 2 connectors on the power pack then unhook that harness from the clamps.
6. Remove the power pack along with the bracket. (2 screws)
7. Remove the left side (rear view) of the ARDF bracket. (4 screws)
8. Remove the exhaust fan motor from the frame. 1 connector, 2 screws)



9. Open the lid (cover) of the ozone fan duct.
10. From the scanner back frame, remove all of the 5 connectors connected to the EXIPU.
Pull out the scanner back frame harness and unhook it from the three clamps.
11. Remove the right side (rear view) of the ARDF bracket. (4 screws)
12. Remove the scanner motor control board along with the bracket. (1 screw)
13. Remove the spring between the scanner motor bracket and the scanner back frame.
14. Remove the scanner motor along with the bracket. (bracket: 3 screws, grounding wire: 1 screw)
15. Remove the scanner motor timing belt.

Note: When reinstalling the scanner motor, be sure that the timing belt does not get caught on the pulley flange. Also, when attaching the bracket to the scanner back frame, be sure that the tension for the timing belt has already been set using the spring.

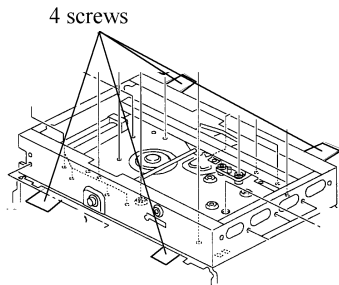


M U L S

1. Remove the 2P relayconnector connected from the scanner base to the lamp regulator.

S U R

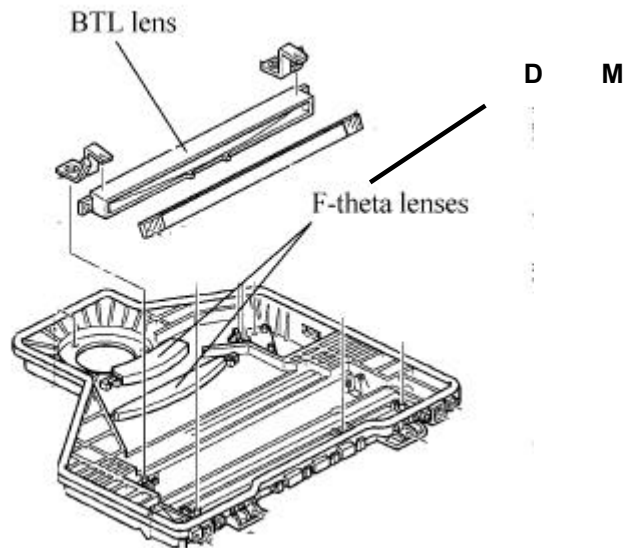
1. Remove the 4 screws that affix the scanner to the main unit.
2. Remove the clamp and connector.
3. Lift the scanner unit up to remove it.



NOTE: When re-installing the scanner unit, caution must be used not to pinch any wires. Special care should be taken at all four corners of the scanner unit

C F L D M
N : I

1. Wipe the inner surface of the housing with 99% Isopropyl Alcohol.
Wipe the surfaces of the Ftheta, BTL lenses and Drum Mirror with a non-streaking type of 99% Isopropyl Alcohol, and then wipe them dry.



UNI S AFFEC ED:

9940DP / 9940DPC / 9950DP Serial Number cut-ins not available at time of publication.

PR LEM RAC IN :

Savin's Technical Support Department is actively tracking this issue. Please complete the attached log and forward to:

Savin – Technical Operations
333 Ludlow Street
Stamford, CT 06904
Fax: (203) 967-5460

TECHNICAL OPERATIONS

BULLETIN NO: 9940DP – 007 **DATE:** 12/5/97

Subject: BLANK BANDS

☒ Copy Quality

☐ Electrical

☐ Mechanical

☐ Modification

☐ Safety Information

☐ Technical Information

☐ General Information

Model - Product/Serial Numbers Affected

9940DP

Modification Schedule

☐ Mandatory

☐ Scheduled Visit

☐ Next Call

☐ Next PM

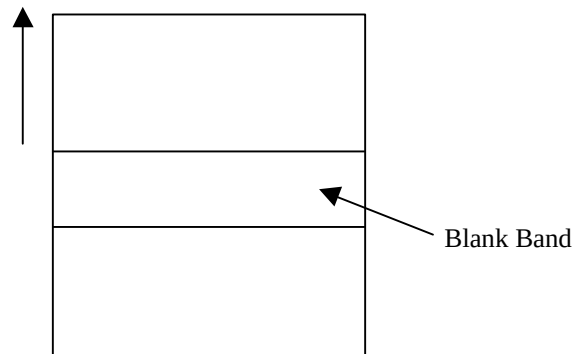
☐ As Necessary

Install Time _____

SYMPTOM

Blank bands on copy

Feeding Direction



CAUSE

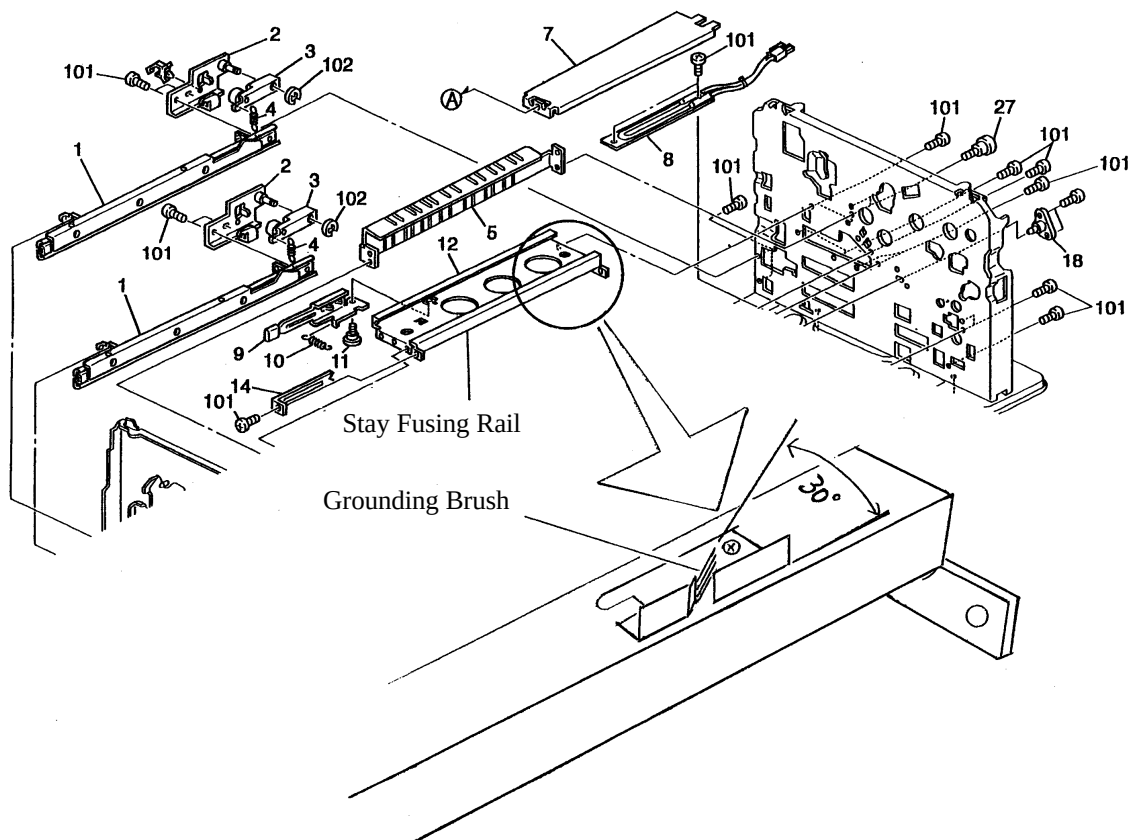
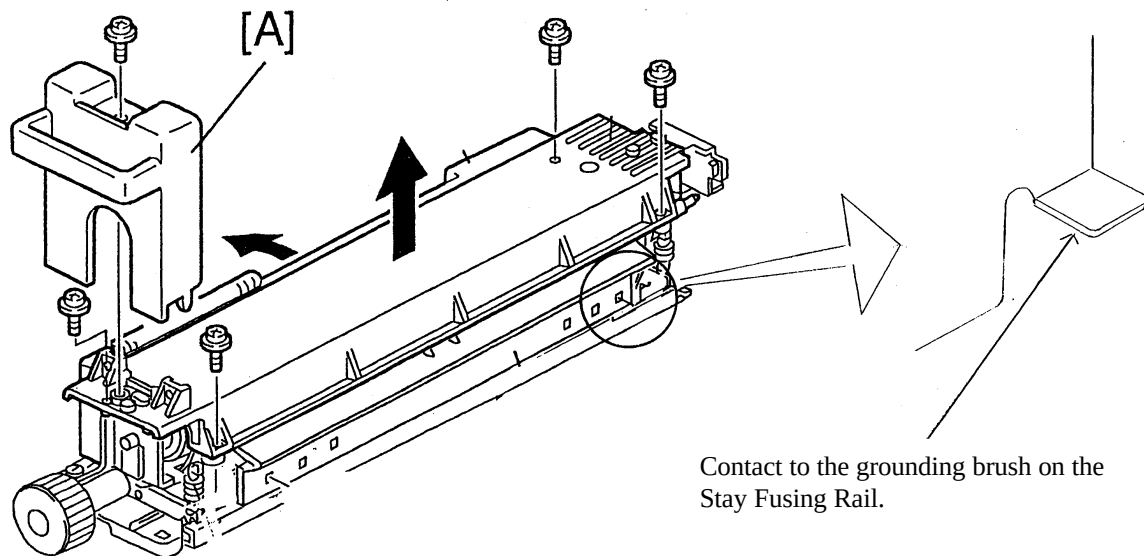
Poor contact between the Entrance Guide Plate of the Fusing Guide Plate and the Grounding Brush. Static electricity built up on the Entrance Guide Plate eventually discharges and creates electrical noise.

SOLUTION

If blank bands appear, check the electrical resistance levels of the Entrance Guide Plate and the Stay Fusing Rail. There should be physical and electrical contact between these parts, resulting in an electrical resistance of zero. If there is no conductance, (infinite or high resistance), please check the following.

(see page 2 for illustration).

1. Check to see if the Grounding Brush is deformed.
2. The Grounding Brush is bent at a 30° angle. To improve contact between the parts, adjust the angle to 40°.





Field Engineering Bulletin Digital Series

TECHNICAL OPERATIONS

BULLETIN NO: 9940DP – 008 DATE: 12/5/97

Subject: FINISHER MAIN CONTROL BOARD ROM HISTORY

☐ Copy Quality

☐ Electrical

☐ Mechanical

☐ Modification

☐ Safety Information

☐ Technical Information

☒ General Information

Model - Product/Serial Numbers Affected

9940DP

Modification Schedule

☐ Mandatory

☐ Scheduled Visit

☐ Next Call

☐ Next PM

☐ As Necessary

Install Time _____

The following reflects the ROM history of the Finisher Main Control Board.

The part number of the modified ROM is A6125651. Suffix D has been implemented beginning with April 1997 production.

Suffix A-B

Problem	Countermeasure
When sorting 10 copies, the tray shifts as the last sheet is fed out and results in a change in the stack position.	The shift timing of the tray has been modified.
With B5 size paper, R1 jams occur as the 3 rd sheet enters the finisher. With smaller paper sizes, the 3 rd sheet may enter the Finisher transport path. This results in an R1 jam.	Modification made so that a jam will not be detected even if the 3 rd sheet enters the Finisher transport path.

Suffix B-C

Problem	Countermeasure
If the main switch is turned ON when the Exit Tray is full, the machine remains in the Wait mode after the initialization process has been completed.	A Ready signal will now also be sent from the Finisher to the Main Unit when the Exit Tray is full.

Model: **9940DP - 008**

Subject: **FINISHER MAIN CONTROL BOARD ROM HISTORY**

Suffix C-D

Problem	Countermeasure
If the power is turned ON when the Exit Tray is lowered, a jam may be indicated. If the power is turned ON when the Exit Tray is lowered, the Exit Tray will be raised until the Stack Height Sensor detects it. If the Stack Height Sensor does not detect the Exit Tray within 11 seconds after it has started to rise, a jam occurs.	A jam will now be detected 21 seconds after the Exit Tray has started to rise.



Field Engineering Bulletin

9000 Series

TECHNICAL OPERATIONS

BULLETIN NO: 9940DP – 009 DATE: 2/23/98

Subject: ROM UPDATE SCU AND BCU

☐ Copy Quality

☒ Electrical

☐ Mechanical

☐ Modification

☐ Safety Information

☒ Technical Information

☐ General Information

**Model - Product/Serial Numbers
Affected**

9940DP

Modification Schedule

☐ Mandatory

☐ Scheduled Visit

☐ Next Call

☐ Next PM

☐ As Necessary

Install Time _____

New ROM's for the SCU boards are now available to address the following issues.

These ROM's have been implemented in production machines beginning in June, 1997.

Issue	Software Countermeasure
If copies are made with Auto Magnification Set + Staple + Mixed Copy, all copies will be made with the same magnification level as that of the first original.	Software modified
The Enlargement/Reduction key cannot be used while waiting for the second side when making duplex copies.	Software modified
Energy Star – Auto Shut-off is 120 min. max.	The maximum for Low Power Timer and Auto Shut-Off has been increased to 240 minutes.
No double count for 11x17 paper with the key counter.	Double count is now possible with the key counter
Legal size paper cannot be used in the By-Pass tray without first being programmed. Failure to do so results in a paper jam.	SP mode 1900 has been added. When the side fence for the By-Pass tray is set to 8 1/2", letter and legal size can be selected.

To enable all of the above functions, the BCU Board ROM (P/N A1335104H) and the SCU Board ROM's (set of 3, P/N AF400ES) must be replaced as a set.

NOTE: The three SCU Board ROM's in this set does not include the 250 User Code Capability.
(See FEB# 9940DP – 005).



Field Engineering Bulletin Digital Series

TECHNICAL OPERATIONS

BULLETIN NO: 9940DP - 010 DATE: 2/27/98

Subject: TRANSFER BELT CLEANING BLADE

☐ Copy Quality

☐ Electrical

☒ Mechanical

☐ Modification

☐ Safety Information

☒ Technical Information

☒ General Information

Model - Product/Serial Numbers Affected

9940DP

Modification Schedule

☐ Mandatory

☐ Scheduled Visit

☐ Next Call

☐ Next PM

☐ As Necessary

Install Time _____

Symptom:

Partially blank copies and/or noise.

Cause:

The transfer belt moves to the front or rear of the transport assembly due to uneven and/or excess cleaning blade pressure. This abnormal pressure is the result of excess glue being used during the assembly of the blade to the bracket.

Solution:

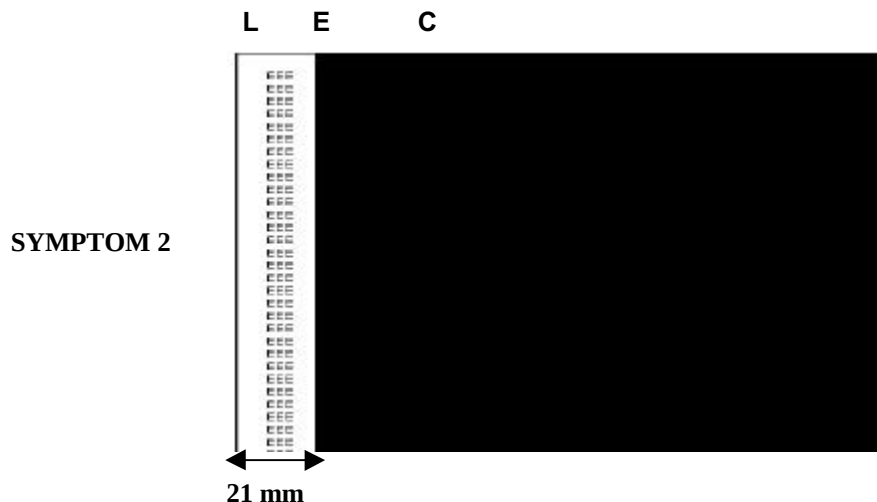
A modification has been made so that the amount of glue that is squeezed out from under the blade has been reduced from less than 1.0mm to 0.5mm.

The amount of glue applied has been controlled / limited beginning with July 97' production units.



ULLE IN N : 0DP 002 DA E: 3/23/

- Intermittently, an almost entirely Black Image appears in the copy or internal test patterns. Only 21mm of the Operator's side are visible and there are no edge erase borders.



CAUSE:

A film is coating the F-theta and Barrel/Toroidal Lenses. The source of this film occurred during the manufacturing/cleaning process of the Lens Housing. Initially this film is transparent and becomes opaque as the temperature in the Lens Housing increases, during normal copying. This reduces the Laser intensity reaching the OPC surface causing Light Copies. The laser intensity may be reduced to the point of generating a Second Laser Sync Detection Error (SC325) causing Black Copies.

S L U I N:

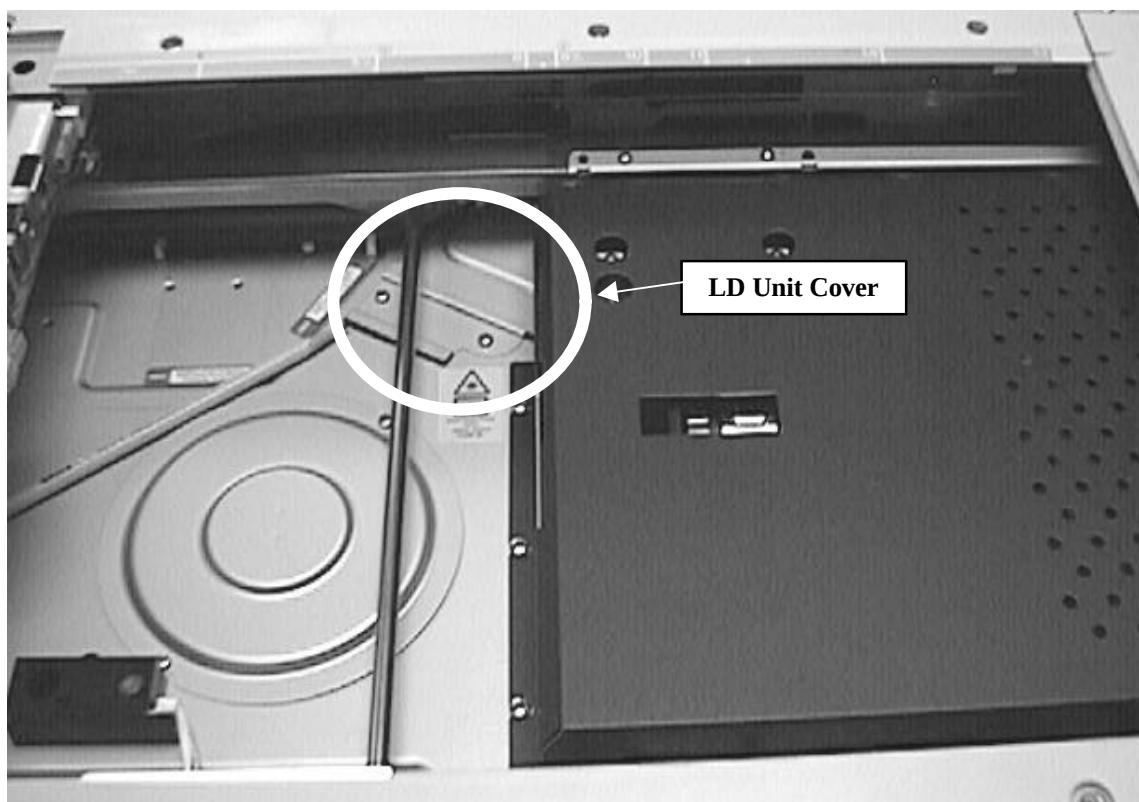
PR DUC I N C UN ERMEASURE:

A process improvement step was added to the manufacturing process of the Lens Housing.

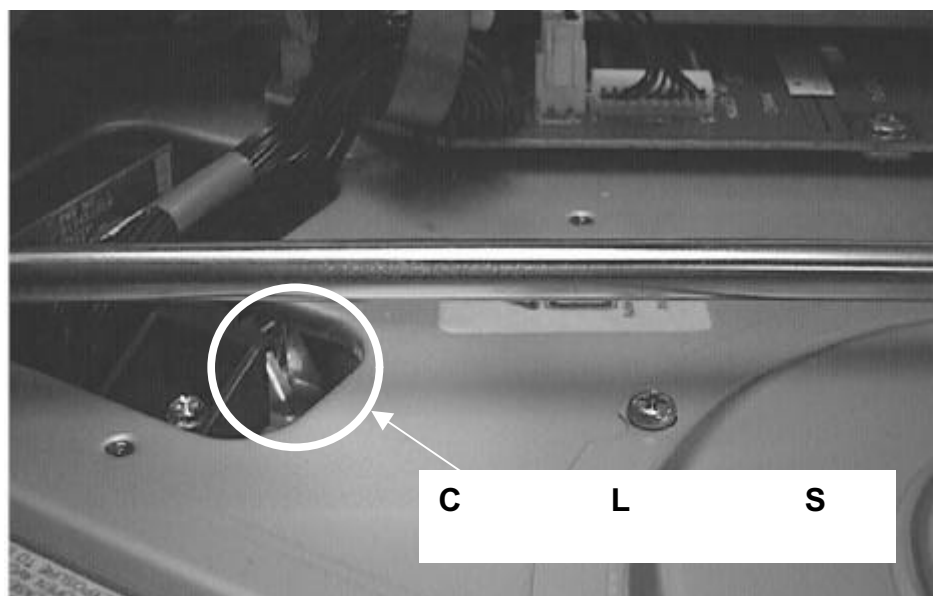
UNI IDENTIFICATION:

To determine the possible affected units, perform a visual inspection using the following procedure.

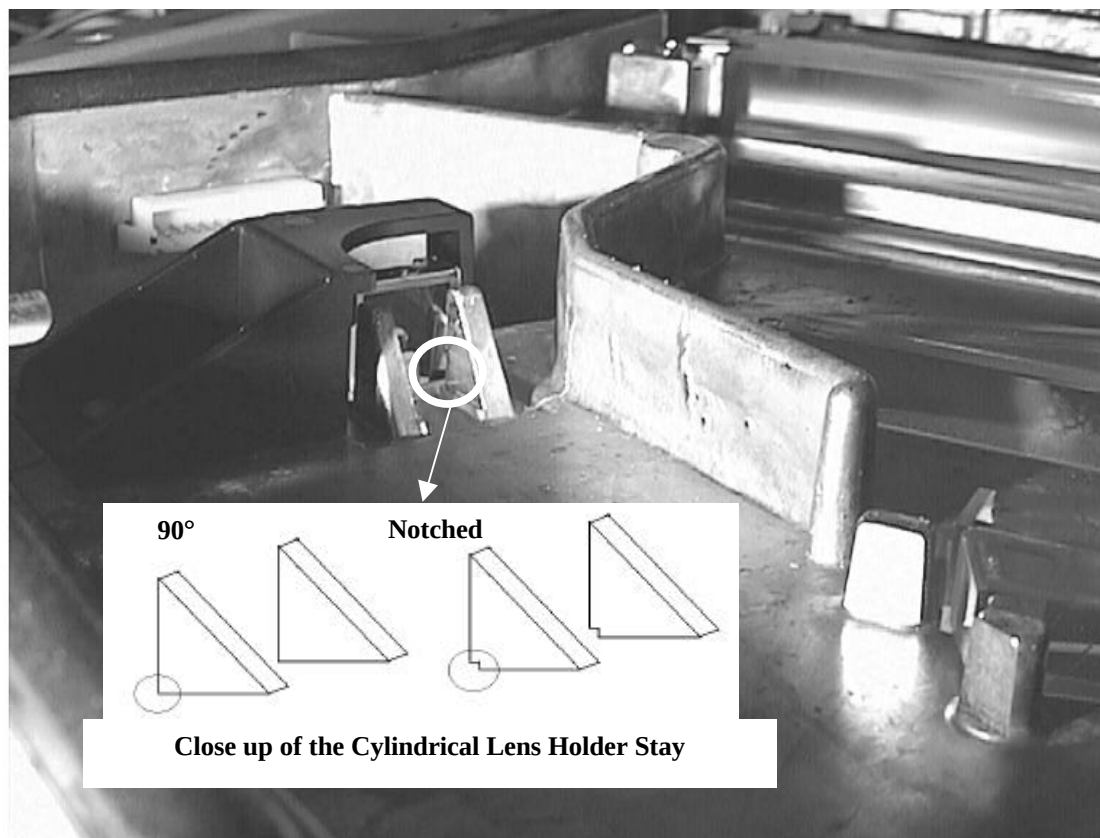
1. First remove the LD Unit Cover (P/N A1337159) [A].



2. Locate the Cylindrical Lens Holder Stay [B] that is part of the aluminum Lens Housing (Reference the Laser Section of the Parts Catalog).



3. Determine if the stay has a 90-degree angle or a Notch at the base of the Cylindrical Lens Holder Stay.



N E: Only stays with a 90-degree angle and exhibiting either of the symptoms above have to be cleaned. Cylindrical Lens Holder Stays with a notch are not affected.

S C

FIELD C UNERMEASURE:

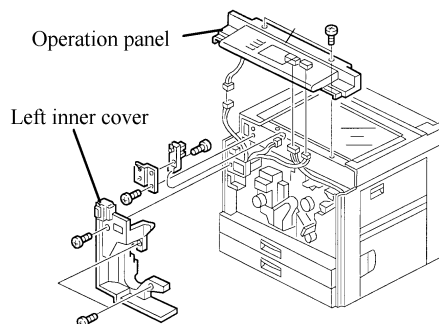
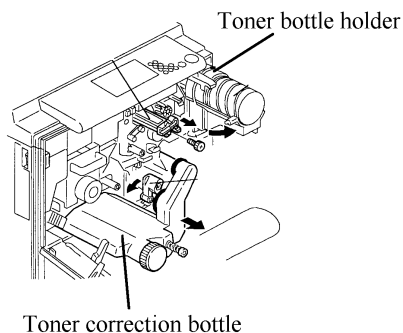
Clean the F-theta, Barrel/Toroidal Lenses and the Drum Mirror using 99% Isopropyl Alcohol and soft lint free cloth. Follow the cleaning procedure outlined below.

40DP / 40DPC / 0DP L C P

1. Turn off the power and unplug the machine from the power source.
2. Remove the finisher or sorter from the main unit.
3. Remove the platen cover or ADF from the main unit.
4. Remove the front cover. (3 pins)
5. Pull out the duplex unit and 1st paper tray.
6. Remove the rear and left covers from the main unit.

Front of the Main Unit

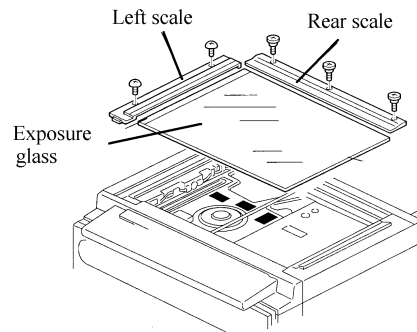
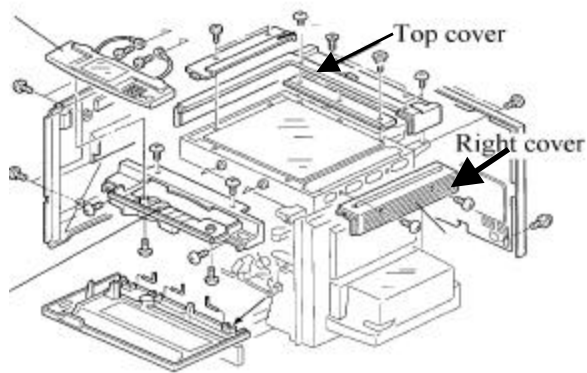
1. Remove the toner bottleholder. (2 screws, 2P connector)
2. Take out the toner collection bottle. (1 connector)
3. Remove the left inner cover. (3 screws)
4. Remove the operation panel. (4 screws)
5. Remove the operation panel optics fiber and signal line from the clamps on the frame in front of the scanner.



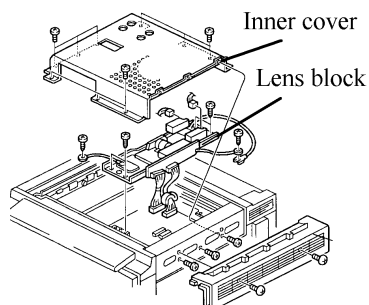
6. Remove the connectors for the anti-condensation heater.(Option)
7. Remove the counter bracket from the front frame of the main unit. (2 screws, 1 connector)
8. From the scanner unit, unhook the 4 connectors (red harnesses) connected to the interlock switch.
Note: When reconnecting the connectors, be sure that these are set according to the colors.
9. Take the harness that has been disconnected (2 red ones) and remove it from the front of the main unit, the front side panel (2 places) and the edge saddle.
10. Remove the auto response sensor harness on the operation panel from the clamp on the frame in front of the scanner.
11. Pull the toner shield glass from the front side of the main unit.

Top Part of the Scanner Unit

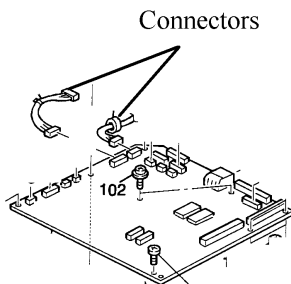
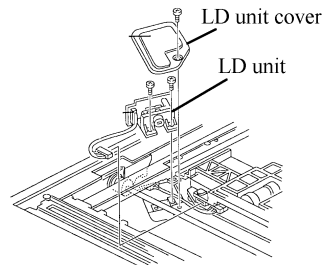
1. Remove the top cover and right cover from the scanner unit(5 screws)
2. Remove the left scale, rear scale and the exposure glass(5 screws)



3. Remove the inner cover of the scanner unit. (11 screws)
4. Remove the lens block(6 screws, 4 connectors)
5. Remove the LD unit cover and remove the LD unit.(4 screws, 2 connectors)
6. Unhook the EX-IPU connectors from the optical housing

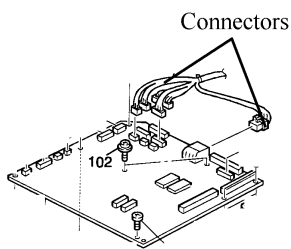


A133R587.wmf



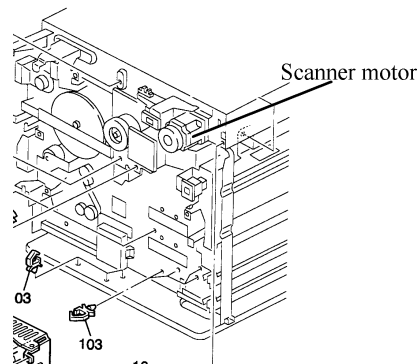
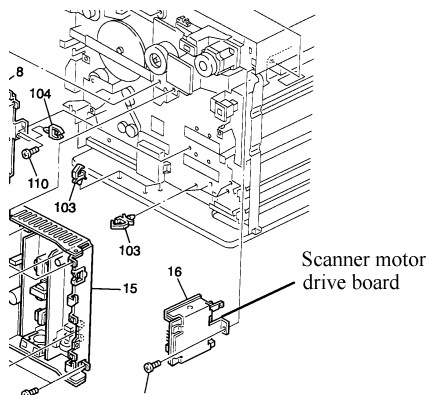
Behind the Main Unit

1. Remove 3 connectors on the controller board and remove the controller bracket. (3 screws)
2. Remove the 2 connectors on the hard disk.
3. Remove the hard disk. (4 screws)
4. Remove the fly-wheel. (3 screws)
5. Remove a 6P connector and 2 connectors on the power pack then unhook that harness from the clamps.
6. Remove the power pack along with the bracket. (2 screws)
7. Remove the left side (rear view) of the ARDF bracket. (4 screws)
8. Remove the exhaust fan motor from the frame. 1 connector, 2 screws)



9. Open the lid (cover) of the ozone fan duct.
10. From the scanner back frame, remove all of the 5 connectors connected to the EXIPU.
Pull out the scanner back frame harness and unhook it from the three clamps.
11. Remove the right side (rear view) of the ARDF bracket. (4 screws)
12. Remove the scanner motor control board along with the bracket. (1 screw)
13. Remove the spring between the scanner motor bracket and the scanner back frame.
14. Remove the scanner motor along with the bracket. (bracket: 3 screws, grounding wire: 1 screw)
15. Remove the scanner motor timing belt.

Note: When reinstalling the scanner motor, be sure that the timing belt does not get caught on the pulley flange. Also, when attaching the bracket to the scanner back frame, be sure that the tension for the timing belt has already been set using the spring.

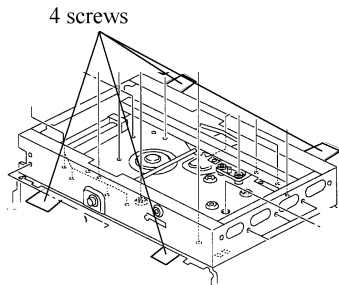


M U L S

1. Remove the 2P relayconnector connected from the scanner base to the lamp regulator.

S U R

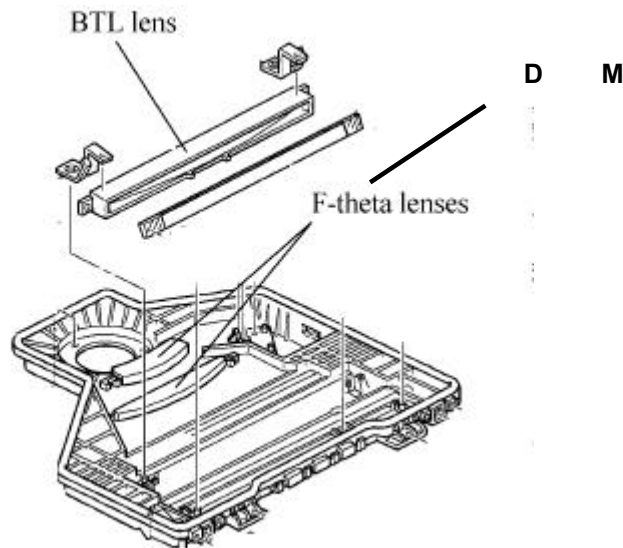
1. Remove the 4 screws that affix the scanner to the main unit.
2. Remove the clamp and connector.
3. Lift the scanner unit up to remove it.



NOTE: When re-installing the scanner unit, caution must be used not to pinch any wires. Special care should be taken at all four corners of the scanner unit

C F L D M
N : I

1. Wipe the inner surface of the housing with 99% Isopropyl Alcohol.
Wipe the surfaces of the Ftheta, BTL lenses and Drum Mirror with a non-streaking type of 99% Isopropyl Alcohol, and then wipe them dry.



UNI S AFFEC ED:

9940DP / 9940DPC / 9950DP Serial Number cut-ins not available at time of publication.

PR LEM RAC IN :

Savin's Technical Support Department is actively tracking this issue. Please complete the attached log and forward to:

Savin – Technical Operations
333 Ludlow Street
Stamford, CT 06904
Fax: (203) 967-5460



Field Engineering Bulletin

Digital Copier Series

TECHNICAL OPERATIONS

BULLETIN NO: 9940DPC – 001 DATE: 1/28/98

Subject: SC101

☐ Copy Quality

☐ Electrical

☒ Mechanical

☐ Modification

☐ Safety Information

☒ Technical Information

☐ General Information

Model - Product/Serial Numbers Affected

9940DPC

Modification Schedule

☐ Mandatory

☐ Scheduled Visit

☐ Next Call

☐ Next PM

☐ As Necessary

Install Time _____

Symptom

With a Finisher installed, aSC101 occurs if large quantities of copies are made right after power up.

Cause

If the Entrance Guide is not installed in the proper position, a gap may develop between the Cover and the Main Frame through which the heat and humidity generated by the paper may enter and lead to a condition of high temperature/high humidity around the lamp stabilizer.

Solution

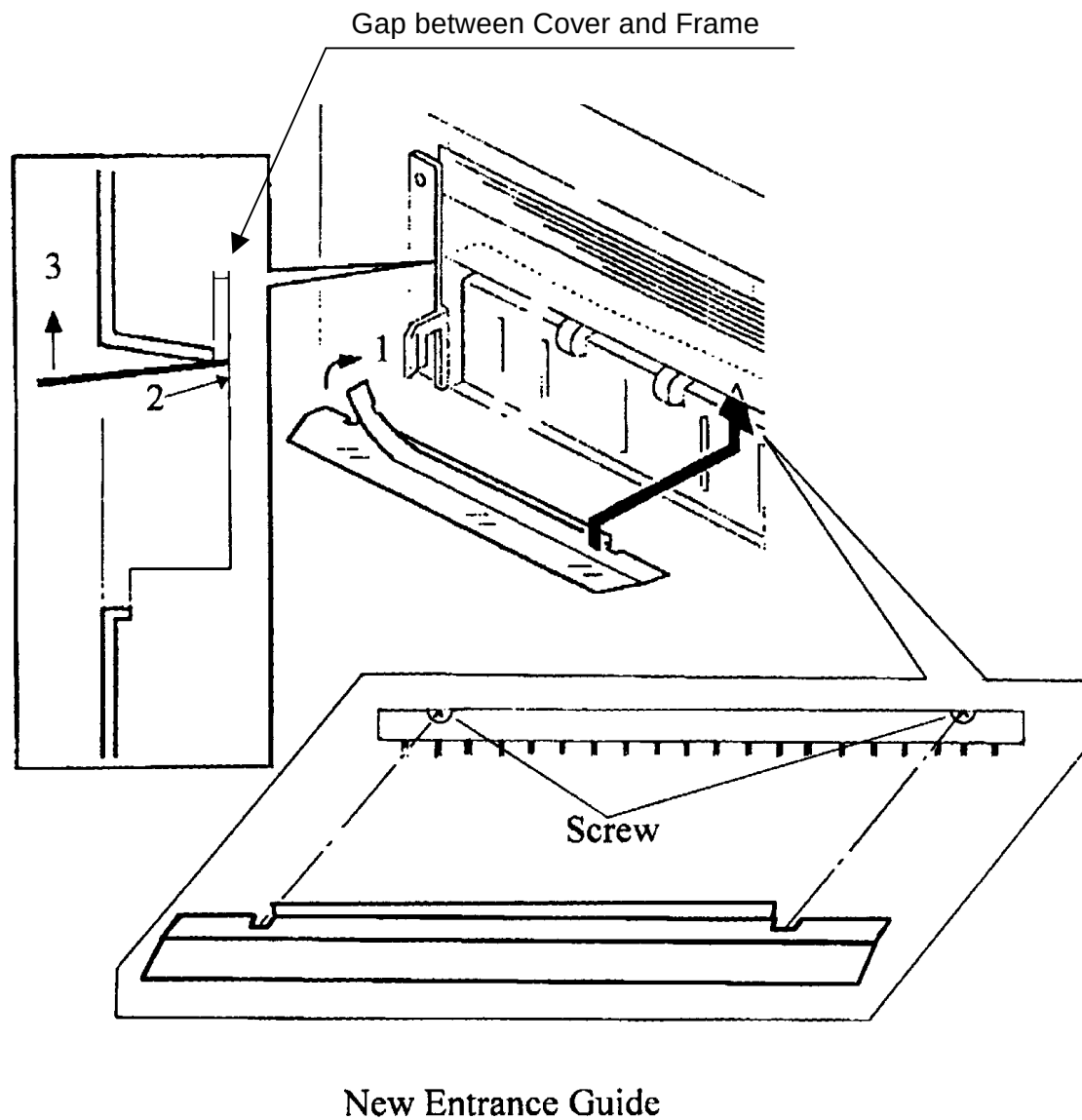
During the set-up of a Finisher manufactured after May 1997, please install the Entrance Guide in a manner that will prevent a gap from existing between the Cover and the Main Frame. Please refer to the attached for this procedure.

In the event of SC101 on a Finisher manufactured before April 1997, please replace the Entrance Guide with P/N A6122333.

Note: Please refer to the parts modification bulletin for additional details.

Entrance Guide Installation Procedure

- Peel off the tape seal for the Entrance Guide
- Place the Entrance Guide on the Main Frame.
- Attach the Entrance Guide to the Cover





Field Engineering Bulletin

Digital Color Series

TECHNICAL OPERATIONS

BULLETIN NO: 9940DPC – 002 DATE: 1/20/98

Subject: BCU ROM MODIFICATION

☐ Copy Quality

☐ Electrical

☐ Mechanical

☐ Modification

☐ Safety Information

☒ Technical Information

☐ General Information

Model - Product/Serial Numbers Affected

9940DPC

Modification Schedule

☐ Mandatory

☐ Scheduled Visit

☐ Next Call

☐ Next PM

☒ As Necessary

Install Time _____

This bulletin describes the software modification for the BCU board.

The new software version has been included in the 9940DPC machines from September production.

Problem	Countermeasure
Legal size paper (8 1/2" x 14") cannot be used in the by-pass tray.	SP mode 1900 has been added. When the side fence of the by-pass tray is set to 8 1/2", letter (11") or legal (14") size can be selected.

NOTE: To enable this function, the threeROMs (Copy1, MSIS, MF-Shell) on the SCU board should each be the latest version. All three ROMs must be replaced as a set.

BCU ROM and Board Part Number:

ROM: BCU	BCU Board
A1955104C	A1957728C



40DP 011 40DPC 003

S : UNEVEN LI C PIES AND / R IN ERMI EN LAC IMA E

SC PE:

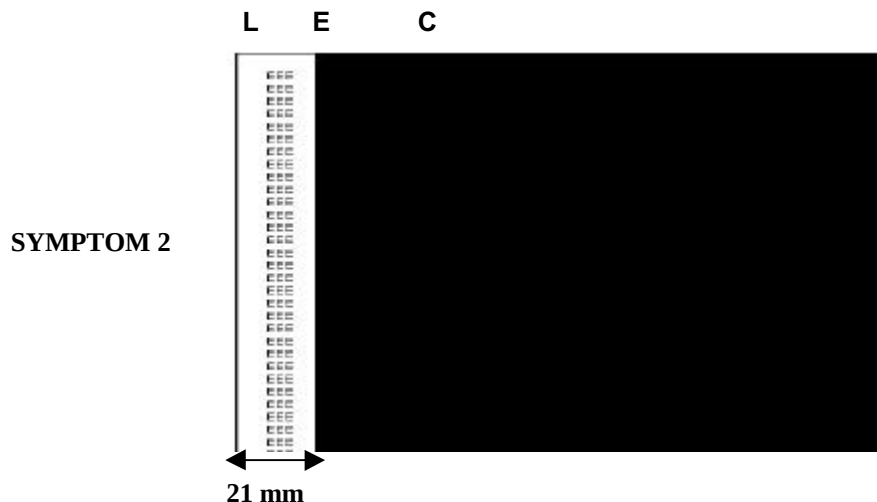
S MP M:

- # L E C

LightImageUnevenCopyUnevenCopyLightImageLig
htImageUnevenCopyUnevenCopyUnevenLightImag
eLightImageUnevenCopyUnevenCopyUNLightIma
geLigUnevenCopyUnevenCopyUnevenLightImage
LightImageUnevenCopyUnevenCopyUNLightImag
eLightImaUnevenCopyUnevenCopyUnevenLightIn
ageLightImUnevenCopyUnevenCopyUnevenLightI
mLightImageUnevenCopyUnevenCopyLightImageL
ightImageUnevenCopyUnevenCopyUnevenCopyLi
ghtImageLightUnevenCopyUnevenCopyUnLightI
mageLigUnevenCopyUnevenCopyUnevenLightIma
geLightImageUnevenCopyUnevenCopyUnLightIma

Lighter Image

- Intermittently, an almost entirely Black Image appears in the copy or internal test patterns. Only 21mm of the Operator's side are visible and there are no edge erase borders.



CAUSE:

A film is coating the F-theta and Barrel/Toroidal Lenses. The source of this film occurred during the manufacturing/cleaning process of the Lens Housing. Initially this film is transparent and becomes opaque as the temperature in the Lens Housing increases, during normal copying. This reduces the Laser intensity reaching the OPC surface causing Light Copies. The laser intensity may be reduced to the point of generating a Second Laser Sync Detection Error (SC325) causing Black Copies.

S L U I N:

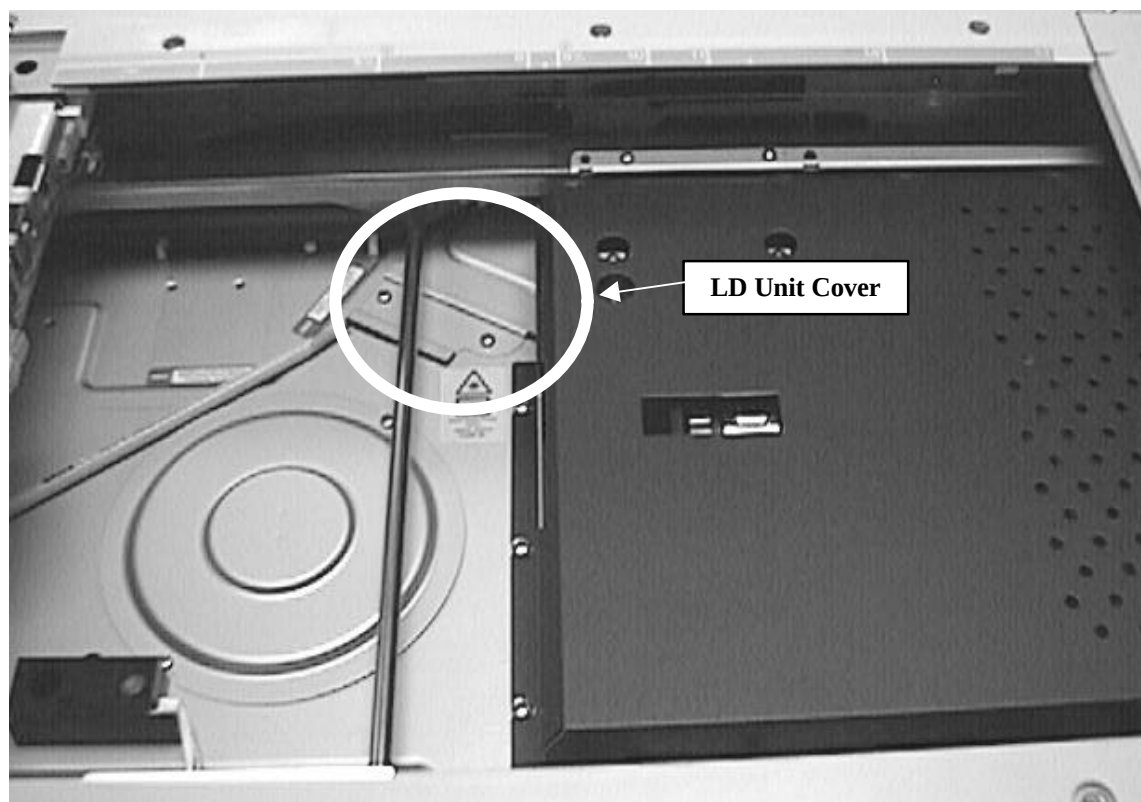
PR DUC I N C UN ERMEASURE:

A process improvement step was added to the manufacturing process of the Lens Housing.

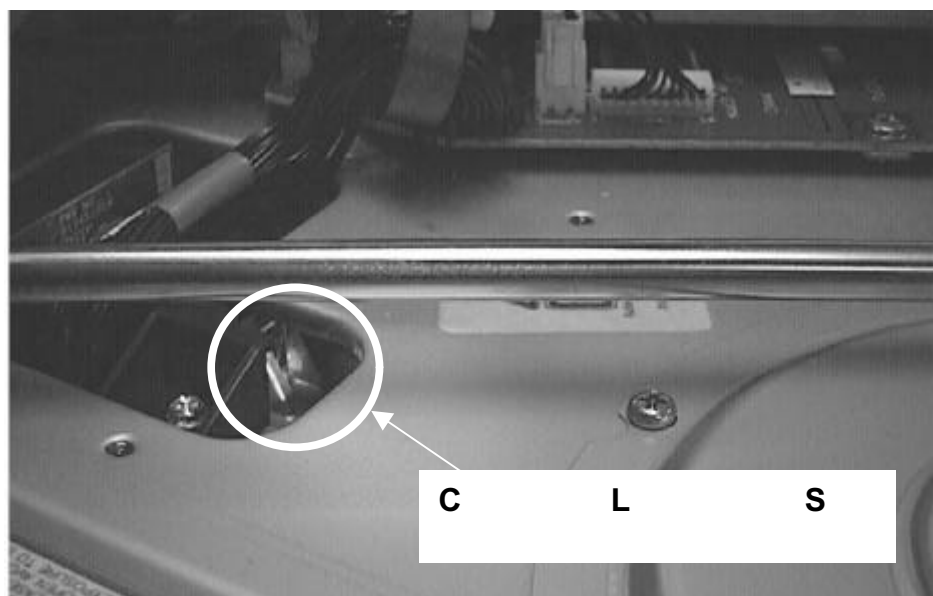
UNI IDENTIFICATION:

To determine the possible affected units, perform a visual inspection using the following procedure.

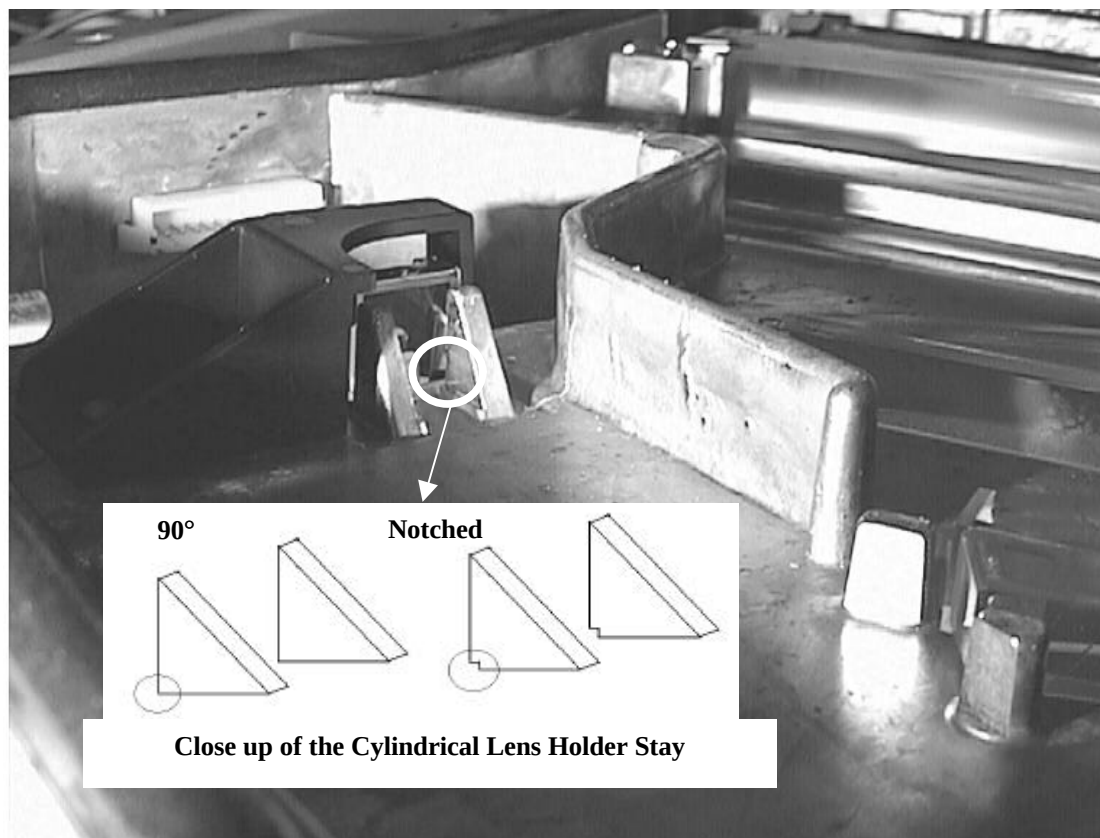
1. First remove the LD Unit Cover (P/N A1337159) [A].



2. Locate the Cylindrical Lens Holder Stay [B] that is part of the aluminum Lens Housing (Reference the Laser Section of the Parts Catalog).



3. Determine if the stay has a 90-degree angle or a Notch at the base of the Cylindrical Lens Holder Stay.



N E: Only stays with a 90-degree angle and exhibiting either of the symptoms above have to be cleaned. Cylindrical Lens Holder Stays with a notch are not affected.

S C

FIELD C UN ERMEASURE:

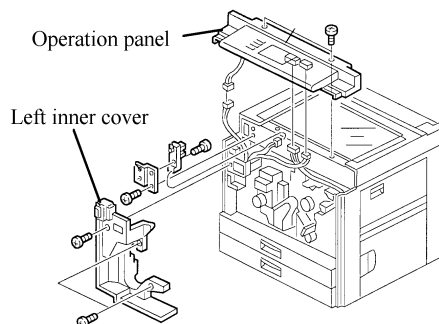
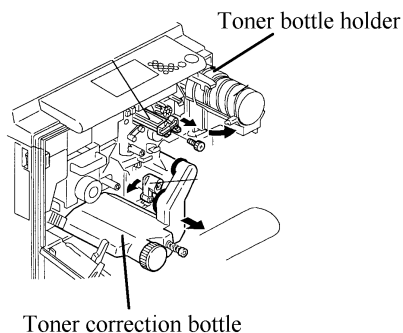
Clean the F-theta, Barrel/Toroidal Lenses and the Drum Mirror using 99% Isopropyl Alcohol and soft lint free cloth. Follow the cleaning procedure outlined below.

40DP / 40DPC / 0DP L C P

1. Turn off the power and unplug the machine from the power source.
2. Remove the finisher or sorter from the main unit.
3. Remove the platen cover or ADF from the main unit.
4. Remove the front cover. (3 pins)
5. Pull out the duplex unit and 1st paper tray.
6. Remove the rear and left covers from the main unit.

Front of the Main Unit

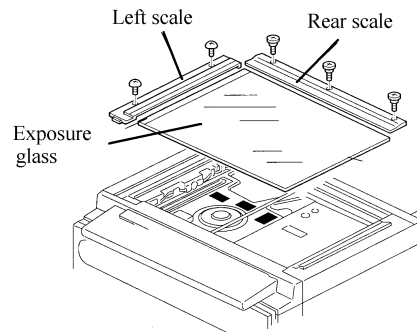
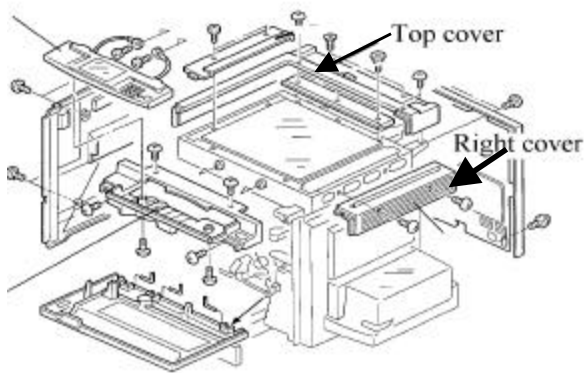
1. Remove the toner bottleholder. (2 screws, 2P connector)
2. Take out the toner collection bottle. (1 connector)
3. Remove the left inner cover. (3 screws)
4. Remove the operation panel. (4 screws)
5. Remove the operation panel optics fiber and signal line from the clamps on the frame in front of the scanner.



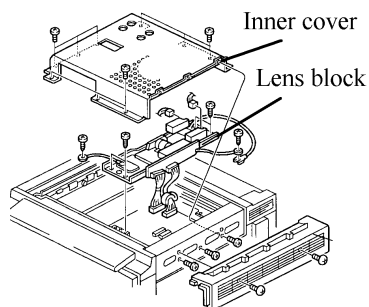
6. Remove the connectors for the anti-condensation heater.(Option)
7. Remove the counter bracket from the front frame of the main unit. (2 screws, 1 connector)
8. From the scanner unit, unhook the 4 connectors (red harnesses) connected to the interlock switch.
Note: When reconnecting the connectors, be sure that these are set according to the colors.
9. Take the harness that has been disconnected (2 red ones) and remove it from the front of the main unit, the front side panel (2 places) and the edge saddle.
10. Remove the auto response sensor harness on the operation panel from the clamp on the frame in front of the scanner.
11. Pull the toner shield glass from the front side of the main unit.

Top Part of the Scanner Unit

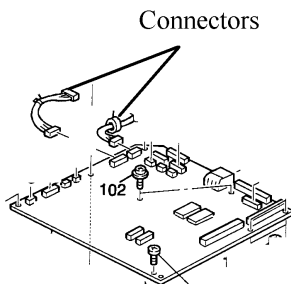
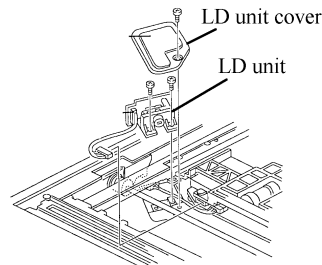
1. Remove the top cover and right cover from the scanner unit(5 screws)
2. Remove the left scale, rear scale and the exposure glass(5 screws)



3. Remove the inner cover of the scanner unit. (11 screws)
4. Remove the lens block(6 screws, 4 connectors)
5. Remove the LD unit cover and remove the LD unit.(4 screws, 2 connectors)
6. Unhook the EX-IPU connectors from the optical housing

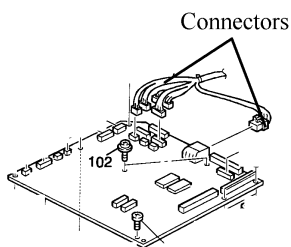


A133R587.wmf



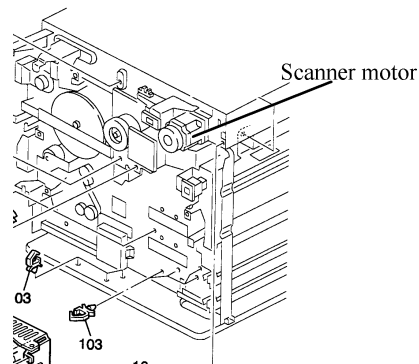
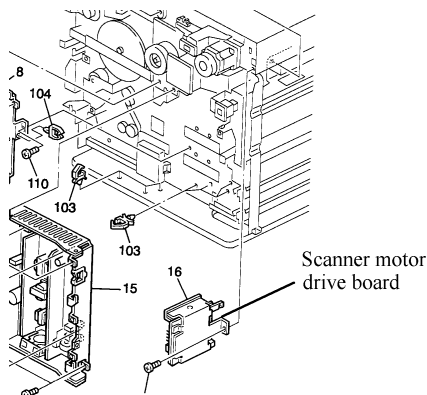
Behind the Main Unit

1. Remove 3 connectors on the controller board and remove the controller bracket. (3 screws)
2. Remove the 2 connectors on the hard disk.
3. Remove the hard disk. (4 screws)
4. Remove the fly-wheel. (3 screws)
5. Remove a 6P connector and 2 connectors on the power pack then unhook that harness from the clamps.
6. Remove the power pack along with the bracket. (2 screws)
7. Remove the left side (rear view) of the ARDF bracket. (4 screws)
8. Remove the exhaust fan motor from the frame. 1 connector, 2 screws)



9. Open the lid (cover) of the ozone fan duct.
10. From the scanner back frame, remove all of the 5 connectors connected to the EXIPU.
Pull out the scanner back frame harness and unhook it from the three clamps.
11. Remove the right side (rear view) of the ARDF bracket. (4 screws)
12. Remove the scanner motor control board along with the bracket. (1 screw)
13. Remove the spring between the scanner motor bracket and the scanner back frame.
14. Remove the scanner motor along with the bracket. (bracket: 3 screws, grounding wire: 1 screw)
15. Remove the scanner motor timing belt.

Note: When reinstalling the scanner motor, be sure that the timing belt does not get caught on the pulley flange. Also, when attaching the bracket to the scanner back frame, be sure that the tension for the timing belt has already been set using the spring.

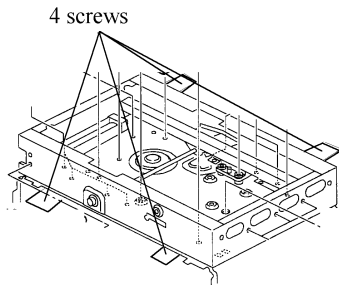


M U L S

1. Remove the 2P relayconnector connected from the scanner base to the lamp regulator.

S U R

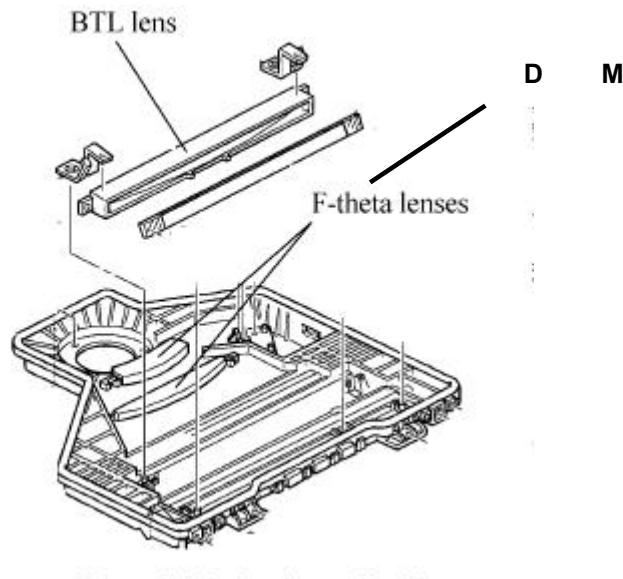
1. Remove the 4 screws that affix the scanner to the main unit.
2. Remove the clamp and connector.
3. Lift the scanner unit up to remove it.



NOTE: When re-installing the scanner unit, caution must be used not to pinch any wires. Special care should be taken at all four corners of the scanner unit

C	F	L D	M
N :	I		

1. Wipe the inner surface of the housing with 99% Isopropyl Alcohol.
Wipe the surfaces of the Ftheta, BTL lenses and Drum Mirror with a non-streaking type of 99% Isopropyl Alcohol, and then wipe them dry.

**S C**

UNI S AFFEC ED:

9940DP / 9940DPC / 9950DP Serial Number cut-ins not available at time of publication.

PR LEM RAC IN :

Savin's Technical Support Department is actively tracking this issue. Please complete the attached log and forward to:

Savin – Technical Operations
333 Ludlow Street
Stamford, CT 06904
Fax: (203) 967-5460



Field Engineering Bulletin

Digital Color Series

TECHNICAL OPERATIONS

BULLETIN NO: **9940DPC - 004** DATE: **4/13/98**

Subject: POSTSCRIPT 2 KIT TYPE 401 (EDP 361026)

☐ Copy Quality	Model - Product/Serial Numbers Affected	Modification Schedule
☐ Electrical	9940DPC	☐ Mandatory
☐ Mechanical		☐ Scheduled Visit
☐ Modification		☐ Next Call
☐ Safety Information		☐ Next PM
☒ Technical Information		☐ As Necessary
☐ General Information		Install Time _____

SCOPE: Testing conducted by Ricoh Electronics INC. has identified a programming error with a limited quantity of PostScript 2 Kits (Type 401). In an effort to minimize the impact of this deficiency on your service organization, Savin Corporation has developed a mechanism to replace the suspect PostScript 2 Kits.

SYMPTOM:

The 9940DPC Controller does not recognize PostScript 2 Kit Installed (Type 401).

CAUSE:

PostScript 2 Kits incorrectly programmed during production.

SOLUTION:

Replace the PostScript 2 Kit (EDP 361026).

RETURN PROCESS:

Savin Corporation has established an assertive program for the return of all new PostScript 2 Kits. The program is simple but requires the cooperation of each location to ensure a smooth and efficient flow.

GETTING STARTED:

First identify the quantity of PostScript 2 Kits (Type 401) in your inventory and list the serial numbers on the attached Material Return Authorization Form (MRA). The serial number (8 digits) can be found on the PostScript Kit Packaging and is also silk screened on the PostScript circuit board.

RETURN AUTHORIZATION:

Fax the completed form to 714-566-2658 to obtain a Material Return Authorization number (MRA).

Model: 9940DPC	Date: January 30, 1998	No: 9940DPC - 004

REPLACEMENT POSTSCRIPT 2 KITS:

Ricoh Electronics INC. will contact your location by fax with the MRA and automatically ship replacement PostScript 2 Kits based on the count submitted on the attached MRA Form.

FINAL RETURNS:

Package all PostScript 2 Kits for return to the address provided. Ricoh Electronics INC. will maintain a balance between what was shipped as replacements and what was actually returned. Include a copy of the MRA Form inside and outside of the return package.

RETURN TO: Ricoh Electronics INC.

Attn: Mr. Ali Ghalandar / OMG QA
1100 Valencia Ave
Tustin, CA 92870

BILLING:

To facilitate transportation, Savin Corporation will suspend the billing of the replacement PostScript 2 Kits for 14 days from the shipping date. If the quantity of returns differs from the quantity shipped, or the returns are not received within 14 days, Savin will charge your location the normal cost for PostScript 2 Kits.

IDENTIFICATION:

Installation of the PostScript 2 Kit is the only method available to determine the functionality of the kit. Regarding current field installed units a technician can quickly identify a working PostScript 2 Kit by accessing the 9940DPC "Test Menu." The menu will indicate "Print PS Fonts and PostScript Demonstration" if the PostScript 2 Kit is working properly. These Kits do not need to be returned to Ricoh Electronics INC. Any PostScript Kits not currently installed should be returned in accordance with this program.

UNIT S AFFECTED:

All PostScript 2 Kits shipped prior to March 1, 1998.

DEADLINE:

This program expires on 4/29/98.

Model: 3650	Date: January 30, 1998	No: F - 130

Last Page Chart per hard copy.



FINISH

TECHNICAL PERFORMANCES

BULLETIN : 9950DP – 001 DATE: 1/28/98

S : SC101		
☐ Copy Quality ☐ Electrical ☒ Mechanical ☐ Modification ☐ Safety Information ☒ Technical Information ☐ General Information	M P /S N A	Modification Schedule
	9940DPC	☐ Mandatory ☐ Scheduled Visit
		☐ Next Call ☐ Next PM
		☐ As Necessary Install Time _____

S

With a Finisher installed, aSC101 occurs if large quantities of copies are made right after power up.

C

If the Entrance Guide is not installed in the proper position, a gap may develop between the Cover and the Main Frame through which the heat and humidity generated by the paper may enter and lead to a condition of high temperature/high humidity around the lamp stabilizer.

S

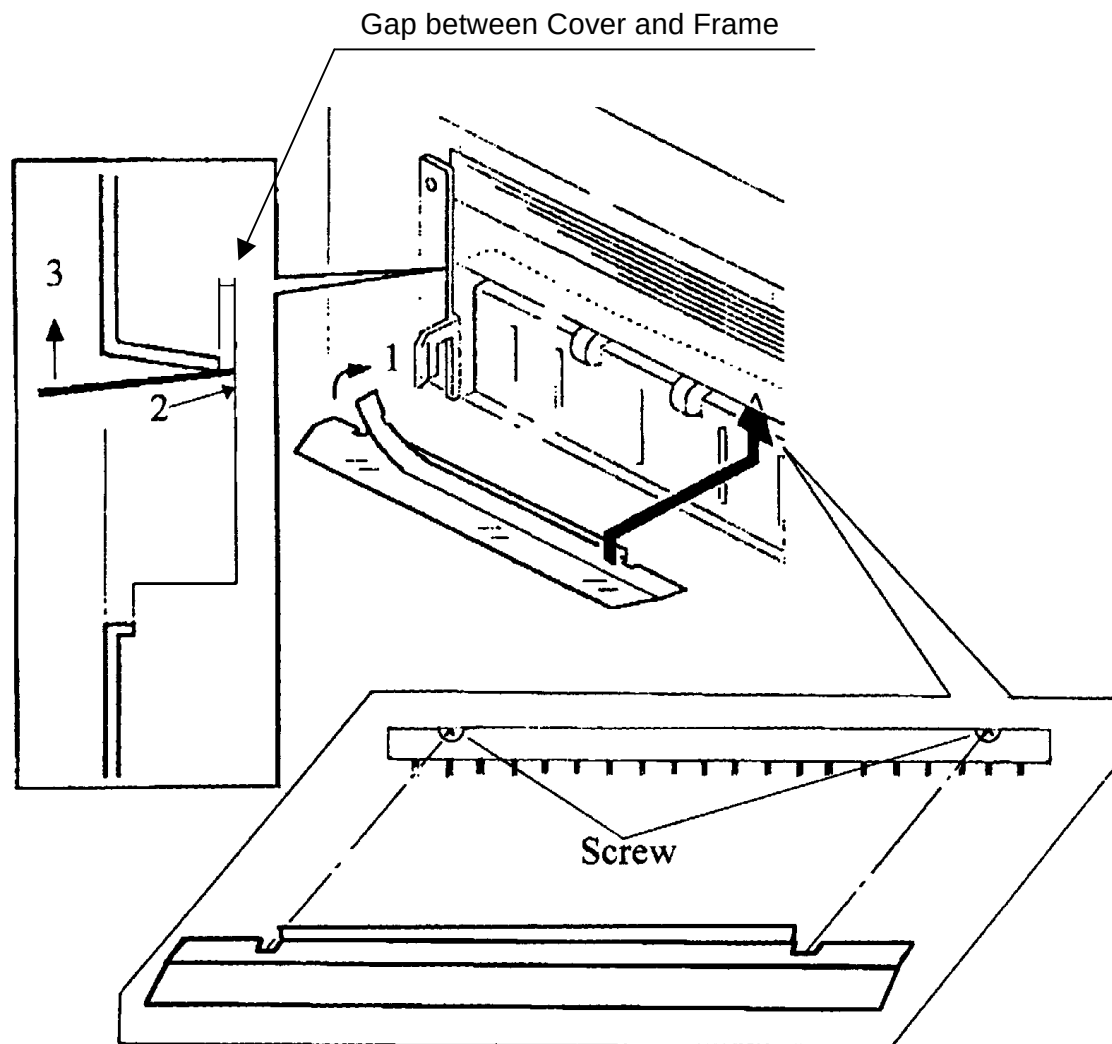
During the set-up of a Finisher manufactured after May 1997, please install the Entrance Guide in a manner that will prevent a gap from existing between the Cover and the Main Frame. Please refer to the attached for this procedure.

In the event of SC101 on a Finisher manufactured before April 1997, please replace the Entrance Guide with P/N A6122333.

Note: Please refer to the parts modification bulletin for additional details.

Entrance Guide Installation Procedure

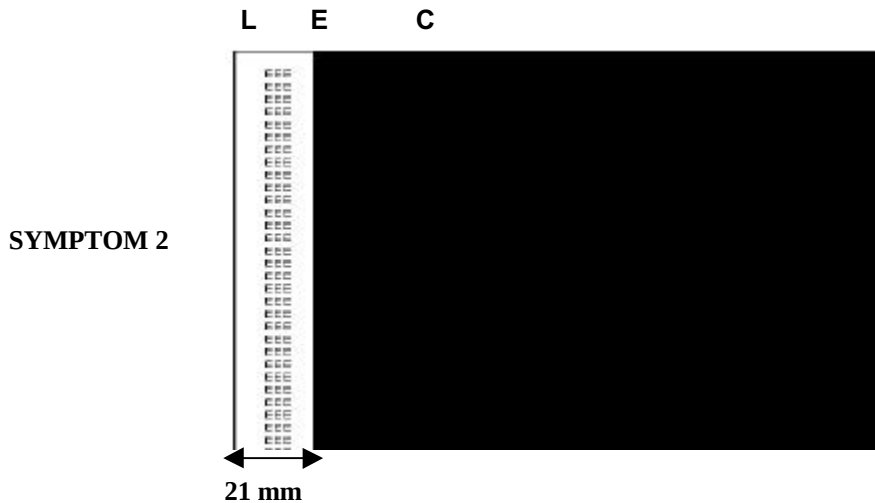
- Peel off the tape seal for the Entrance Guide
- Place the Entrance Guide on the Main Frame.
- Attach the Entrance Guide to the Cover





ULLE IN N : 0DP 002 DA E: 3/23/

- Intermittently, an almost entirely Black Image appears in the copy or internal test patterns. Only 21mm of the Operator's side are visible and there are no edge erase borders.



CAUSE:

A film is coating the F-theta and Barrel/Toroidal Lenses. The source of this film occurred during the manufacturing/cleaning process of the Lens Housing. Initially this film is transparent and becomes opaque as the temperature in the Lens Housing increases, during normal copying. This reduces the Laser intensity reaching the OPC surface causing Light Copies. The laser intensity may be reduced to the point of generating a Second Laser Sync Detection Error (SC325) causing Black Copies.

S L U I N:

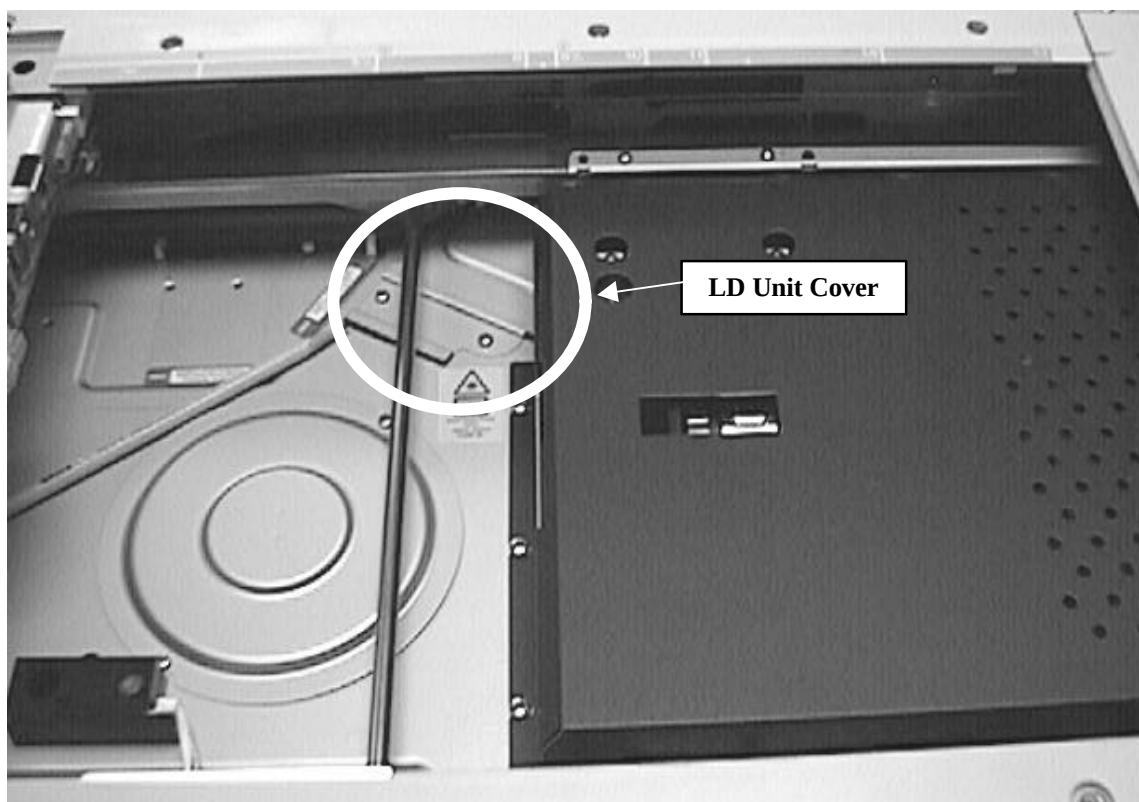
PR DUC I N C UN ERMEASURE:

A process improvement step was added to the manufacturing process of the Lens Housing.

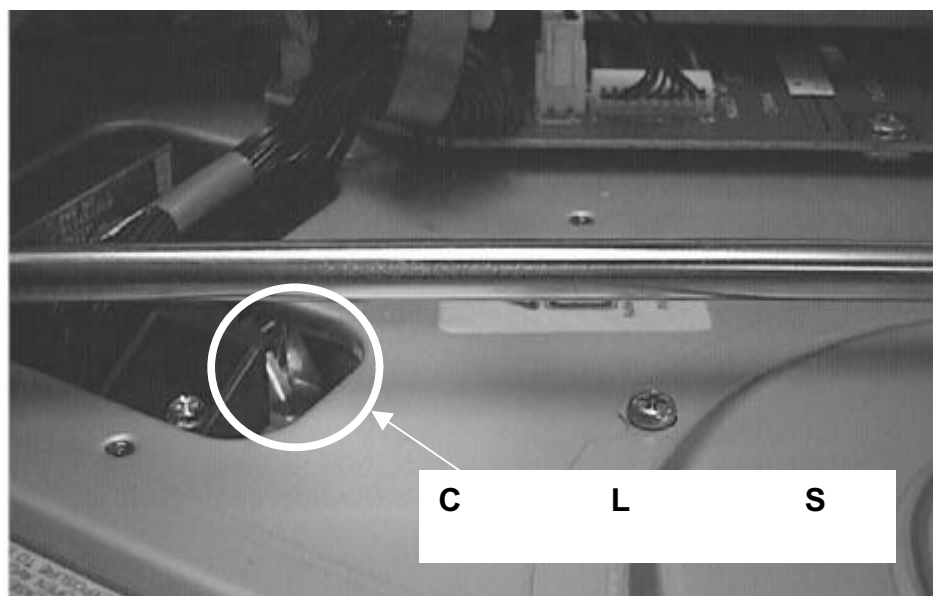
UNI IDENTIFICATION:

To determine the possible affected units, perform a visual inspection using the following procedure.

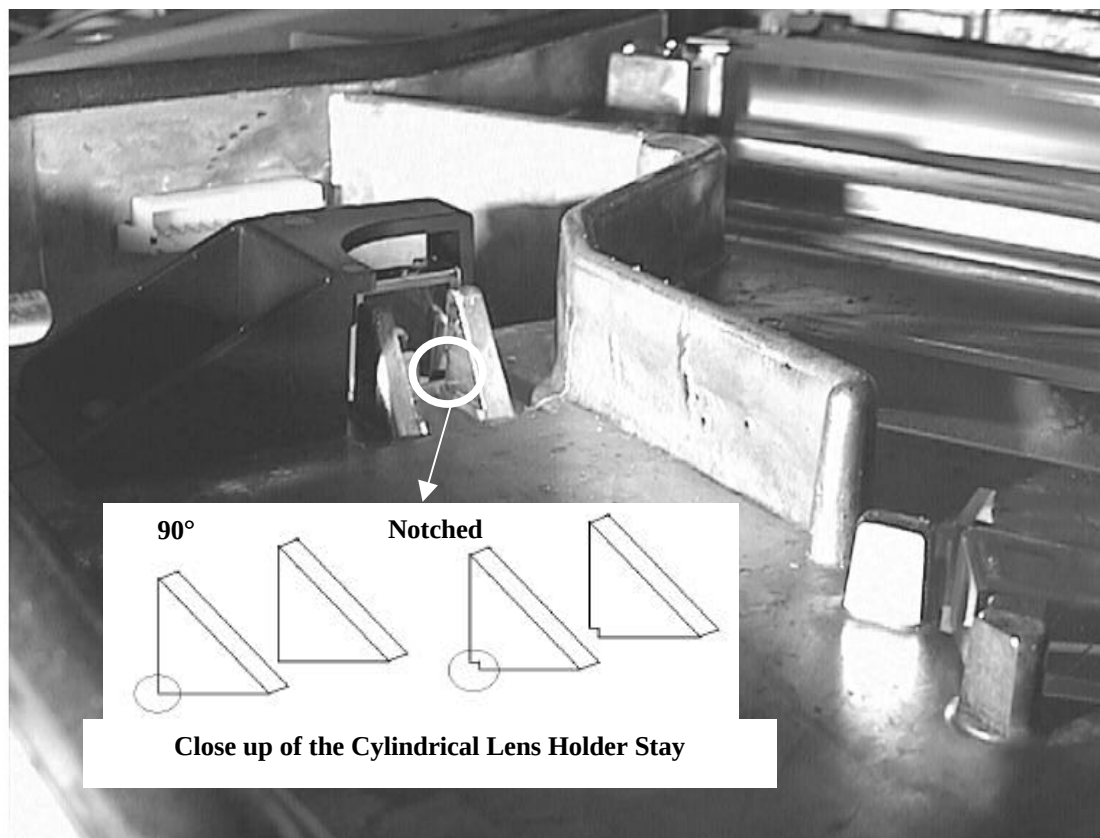
1. First remove the LD Unit Cover (P/N A1337159) [A].



2. Locate the Cylindrical Lens Holder Stay [B] that is part of the aluminum Lens Housing (Reference the Laser Section of the Parts Catalog).



3. Determine if the stay has a 90-degree angle or a Notch at the base of the Cylindrical Lens Holder Stay.



N E: Only stays with a 90-degree angle and exhibiting either of the symptoms above have to be cleaned. Cylindrical Lens Holder Stays with a notch are not affected.

S C

FIELD C UNERMEASURE:

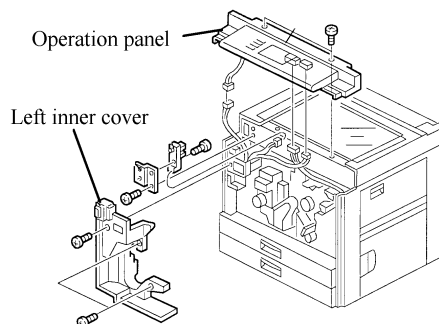
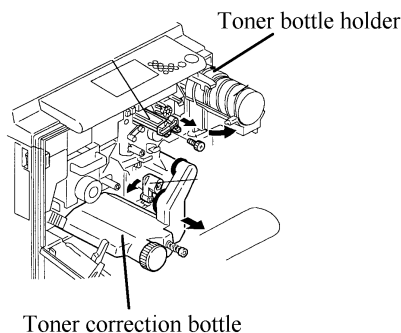
Clean the F-theta, Barrel/Toroidal Lenses and the Drum Mirror using 99% Isopropyl Alcohol and soft lint free cloth. Follow the cleaning procedure outlined below.

40DP / 40DPC / 0DP L C P

1. Turn off the power and unplug the machine from the power source.
2. Remove the finisher or sorter from the main unit.
3. Remove the platen cover or ADF from the main unit.
4. Remove the front cover. (3 pins)
5. Pull out the duplex unit and 1st paper tray.
6. Remove the rear and left covers from the main unit.

Front of the Main Unit

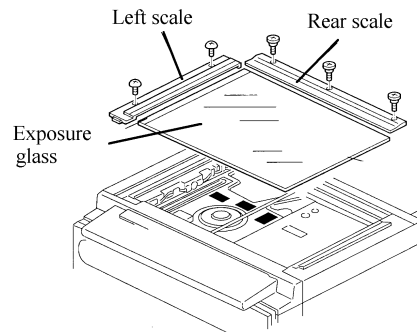
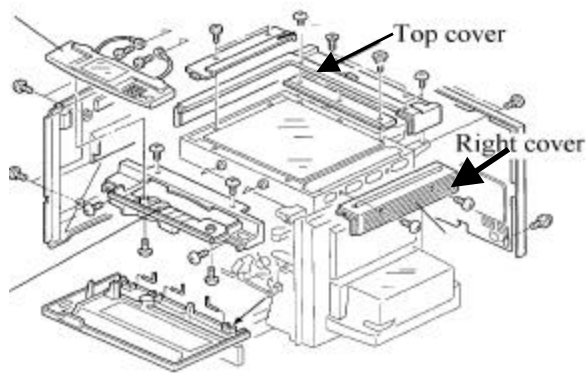
1. Remove the toner bottleholder. (2 screws, 2P connector)
2. Take out the toner collection bottle. (1 connector)
3. Remove the left inner cover. (3 screws)
4. Remove the operation panel. (4 screws)
5. Remove the operation panel optics fiber and signal line from the clamps on the frame in front of the scanner.



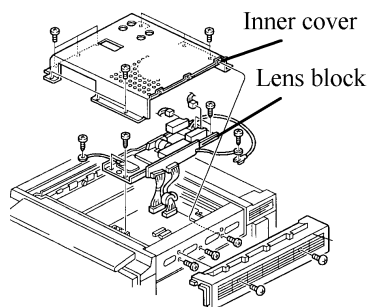
6. Remove the connectors for the anti-condensation heater.(Option)
7. Remove the counter bracket from the front frame of the main unit. (2 screws, 1 connector)
8. From the scanner unit, unhook the 4 connectors (red harnesses) connected to the interlock switch.
Note: When reconnecting the connectors, be sure that these are set according to the colors.
9. Take the harness that has been disconnected (2 red ones) and remove it from the front of the main unit, the front side panel (2 places) and the edge saddle.
10. Remove the auto response sensor harness on the operation panel from the clamp on the frame in front of the scanner.
11. Pull the toner shield glass from the front side of the main unit.

Top Part of the Scanner Unit

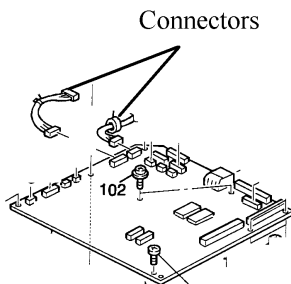
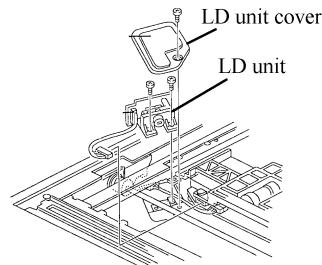
1. Remove the top cover and right cover from the scanner unit(5 screws)
2. Remove the left scale, rear scale and the exposure glass(5 screws)



3. Remove the inner cover of the scanner unit. (11 screws)
4. Remove the lens block(6 screws, 4 connectors)
5. Remove the LD unit cover and remove the LD unit.(4 screws, 2 connectors)
6. Unhook the EX-IPU connectors from the optical housing

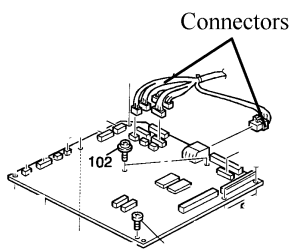


A133R587.wmf



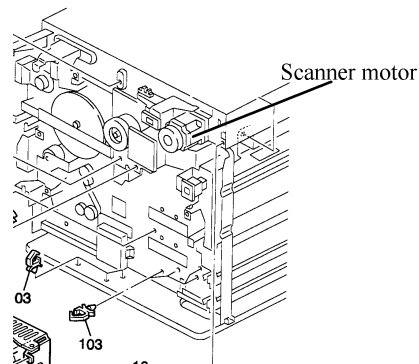
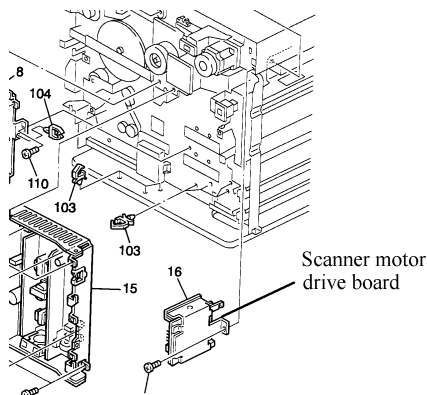
Behind the Main Unit

1. Remove 3 connectors on the controller board and remove the controller bracket. (3 screws)
2. Remove the 2 connectors on the hard disk.
3. Remove the hard disk. (4 screws)
4. Remove the fly-wheel. (3 screws)
5. Remove a 6P connector and 2 connectors on the power pack then unhook that harness from the clamps.
6. Remove the power pack along with the bracket. (2 screws)
7. Remove the left side (rear view) of the ARDF bracket. (4 screws)
8. Remove the exhaust fan motor from the frame. 1 connector, 2 screws)



9. Open the lid (cover) of the ozone fan duct.
10. From the scanner back frame, remove all of the 5 connectors connected to the EXIPU.
Pull out the scanner back frame harness and unhook it from the three clamps.
11. Remove the right side (rear view) of the ARDF bracket. (4 screws)
12. Remove the scanner motor control board along with the bracket. (1 screw)
13. Remove the spring between the scanner motor bracket and the scanner back frame.
14. Remove the scanner motor along with the bracket. (bracket: 3 screws, grounding wire: 1 screw)
15. Remove the scanner motor timing belt.

Note: When reinstalling the scanner motor, be sure that the timing belt does not get caught on the pulley flange. Also, when attaching the bracket to the scanner back frame, be sure that the tension for the timing belt has already been set using the spring.

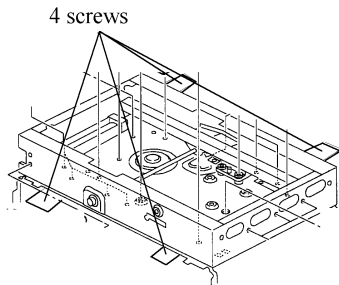


M U L S

1. Remove the 2P relayconnector connected from the scanner base to the lamp regulator.

S U R

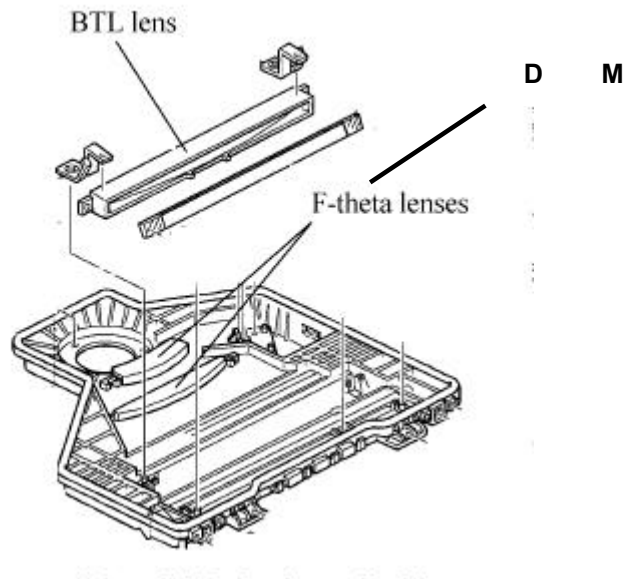
1. Remove the 4 screws that affix the scanner to the main unit.
2. Remove the clamp and connector.
3. Lift the scanner unit up to remove it.



NOTE: When re-installing the scanner unit, caution must be used not to pinch any wires. Special care should be taken at all four corners of the scanner unit

C F L D M
N : I

1. Wipe the inner surface of the housing with 99% Isopropyl Alcohol.
Wipe the surfaces of the Ftheta, BTL lenses and Drum Mirror with a non-streaking type of 99%isopropyl Alcohol, and then wipe them dry.



Model: 9940DP / 9940DPC / 9950DP	Date: March 13, 1998	No: 9940DP – 011, 9940DPC – 003 9950DP - 002

UNI S AFFEC ED:

9940DP / 9940DPC / 9950DP Serial Number cut-ins not available at time of publication.

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Savin – Technical Operations
333 Ludlow Street
Stamford, CT 06904
Fax: (203) 967-5460

Customer Services

issued By: John Molyneux, Director of Customer Services

October, 1996

Page 1 of 6

2640e/D3640 Digital Copier Technical Bulletin/#1

GESTETNER 2640e AND NASHUATEC 03640 PRODUCT INTRODUCTION

The 2640e/D3640 launch package includes supply data, start-up parts kit, preventative maintenance and training information.

Although utilizing a similar frame to the 3535, the 2640e/D3640 Digital Copier features a unique method of processing images.

Formal training must be scheduled for the 2640e/D3640 copier. Certification is based on completion of the formal training. A service manual (P/C 4300691) can be ordered which includes parts and accessories.

2640e/D3640 SUPPLY DATA

<u>DESCRIPTION</u>	<u>PRODUCT CODE</u>	<u>YIELD</u>
2640e/D3640 Copier	2291640	
Surge Protector	8400324	
DF61 ARDF	2960840	
Platen Cover Type 540	2960845	
PS280 Paper Tray Unit (2 x 500)	2960841	
PS290	2960839	
SR700 Finisher	2960865	
	2960866	
DRUM OPC	2300640	240,000 Copies
Developer - Black 850g	2960907	360,000 Copies/Bag
Toner - Black 700g	2960904	20,000 Copies/Cartridge
Staple Kit	2960695	5,000 Staples/Cartridge
Service & Parts Manual	4300691	

<u>HEADQUARTERS</u>		<u>BRANCH</u>	<u>DEALERS</u>	
			<u>GESTETNER</u>	<u>NASHUATEC</u>
☐ ACCT/FINANCE	☐ DISTRIBUTION	☐ TECH SERV. MGR.	☒ COPIER	☒ COPIER
☐ ADMINISTRATION	☒ MARKETING	☒ TECH SERV. REP	☐ COPYPRINTER	☐ COPYPRINTER
☒ CUSTOMER SERVICES	☐ MIS	☒ SALES MGR.	☐ DUPLICATOR	☐ DUPLICATOR
☒ DEALER DIVISION	☒ SENIOR MGMT.	☐ SALES REP	☐ FACSIMILE	☐ FACSIMILE
		☒ TELEMARKETING MGR.	☐ ANCILLARY	☐ ANCILLARY
		☐ TELEMARKETING REP	☐ ALL	☐ ALL

Gestetner
nashuatec

PREVENTATIVE MAINTENANCE SCHEDULE

NOTE: The amounts mentioned as the PM interval indicate the number of copies.

Symbol key: C: Clean, R: Replace, L: Lubricate, I: Inspect

	EM	120K	240K	360K	NOTE
SCANNER/OPTICS					
Mirrors, Lens, Reflectors		C	C	C	Optics cloth or blower brush
Exposure Glass	C	C	C	C	Alcohol or glass cleaner
Exposure Lamp	I	I	I	I	Replace if necessary
Green Filter		C	C	C	Dry cloth
Scanner Guide Rails		C	C	C	Dry cloth
APS sensors		C	C	C	Blower brush
Lens Block Guide Rail		C	C	C	Dry cloth
Toner Shield Glass	C	C	C	C	Dry cloth
Dust Filter			R		
AROUND THE DRUM					
Corona Wires	c		R R	R	Dry cloth
End Blocks and Casing	c	c	c	C	Water
Charge Grid	c	R	R	R	Water
ID Sensor	c	c	c	c	Blower brush or dry cloth After cleaning, do SP3001.
Quenching Lamp			C		Dry cloth
Pick-off Pawls		C	R	C	Dry cloth
DEVELOPMENT UNIT					
Development Drive Gears	I	I	I	I	Replace if necessary. Anyway, replace the drive gears every 480K.
Mold Gear		I	I	I	
Side Seal		I	I	I	
Development Filter		C	C	R	Vacuum cleaner
Entrance Seal	C	I	I	I	Dry cloth. Replace if necessary
Toner Supply Unit	c	c	c	C	Blower brush
Developer				R	Replace if necessary
Rear Sleeve		c	c	c	Dry cloth. See Note 2.
PAPER FEED (for each paper feed station)					
Pick-up, Feed, Separation Rollers (Paper tray)	C	C	R	C	Clean with water. Replace these rollers as a set.
Pick-up, Feed, Separation Rollers (LCT, By-pass feed)	C	C	R	C	Clean with water. Replace these rollers as a set.
Paper Dust			C		Dry cloth
Paper Feed Guide Plate		c	c	C	Alcohol
Relay rollers		c	c	C	Alcohol or water
Registration roller		c	c	C	Alcohol or water
Bottom Plate Pad (Paper tray, By-pass feed, LCT)	C		R R	R	Water. Replace if necessary.

	EM	120K	240K	360K	NOTE
Registration Sensor		I	I	I	
CLEANING UNIT					
Drum Cleaning Blade		R	R	R	Spread setting powder. See "Drum Cleaning Blade Replacement".
Brush Roller			R		
Side Seal		C	C	C	Blower brush. Replace if necessary
Cleaning Entrance Seal		C	C	C	
Inside of the Cleaning Unit		C	C	C	Blower brush or vacuum cleaner
TRANSFER BELT UNIT					
Transfer Belt	C	I	R	I	Dry cloth. Replace if necessary
Transfer Belt Cleaning Blade	C	R	R	R	Dry cloth. Apply setting powder or toner after cleaning.
Rollers		I	C	I	Dry cloth. Replace if necessary
Transfer Entrance Guide Plate	C	C	C	C	Dry cloth
Transfer Guide Plate	C	C	C	C	Dry cloth
Used Toner Tank	I	C	C	C	Empty the tank.
FUSING UNIT					
Fusing Entrance and Exit Guide Plates		C	C	C	Suitable solvent - do not use water
Fusing Lamp		I	I	I	Replace if necessary
Hot Roller		R	R	R	
Pressure Roller		R	R	R	
Fusing Thermistor	C	I	I	I	Clean if necessary with a suitable solvent (not water)
Hot Roller Bushings		R	R	R	
Fusing Antistatic Brush		I	I	I	Replace if necessary
Cleaning Roller		C	C	C	Suitable solvent - not water
Cleaning Roller Bushings		C	C	C	Suitable solvent - not water. Replace if necessary
Hot Roller Strippers		C	R	C	Dry cloth
DUPLEX TRAY					
Clutch Spring		L	L	L	Mobil Temp 78. See Note 1.
Feed Roller		R	R	R	
Bottom Plate Pad		R	R	R	
Mylars		I	I	I	Replace if necessary
OTHERS					
Drive Belts			I		Replace if necessary

	EM	80K	160K	240K	NOTE
AUTO DOCUMENT FEEDER (for originals)					
Transport Belt	C	R	R	R	Belt cleaner
Friction Belt	C	R	R	R	Water
Feed Roller	C	R	R	R	Water

	EM	120K	240K	360K	NOTE
PAPER TRAY UNIT (A549/550)					
Pick-up, Feed, Separation Rollers	C	C	R	C	Water, Replace these rollers as a set.
Relay Rollers		C	C	C	Alcohol or water
Bottom Plate Pad	C	R	R	R	Water
Relay Clutch		I	I	I	Replace every 1500K copies.
Feed Clutch		I	I	I	Replace if necessary
Drive Belts		I	I	I	Replace if necessary

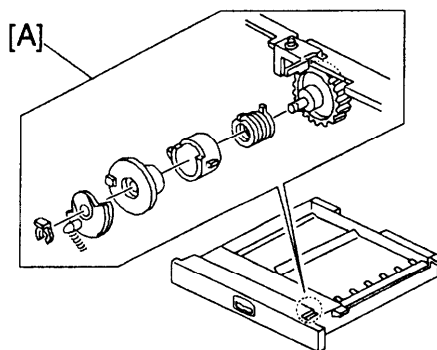
	EM	120K	240K	360K	NOTE
FINISHER (A612)					
Rollers	C	C	C	C	Water.
Bushings	I	I	I	I	Use Launa oil or equivalent.
Gears	I	I	I	I	Use Grease-501

NOTE 1.

Duplex Tray: Clutch Spring

Do the following every 120K.

Clean the clutch assembly [A]. Then lubricate the clutch spring with Mobil Temp 78.

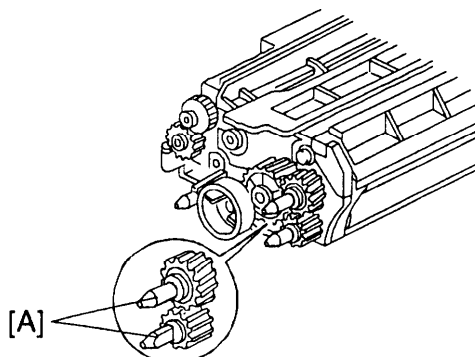


NOTE: 2.

Development Unit: Rear Sleeve

Do the following every 120K.

Clean the rear sleeve [A] with a dry cloth.



START-UP PARTS KIT

The Start-Up Parts Kit is provided to ensure the dealer has an adequate level of replacement parts to support the dealer's initial machine inventory.

Gestetner requires each dealer carrying the 2640e/D3640 to purchase at least one Start-Up Parts Kit.

NOTE: THE KIT MUST BE PURCHASED IN ITS ENTIRETY IN ORDER TO RECEIVE THE 10% DISCOUNT.

GESTETNER DEALER START-UP PARTSKIT ORDER FORM

And Application for 10% Discount

Submit your start-up parts order to the address below for processing and to receive your 10% discount.

Part kits must be purchased in thier entirety in order to recieve discount

Gestetner Corporation
599 West Putnam Avenue
P.O. Box 2656
Greenwich, CT 06836-2656

Attention: Customer Service- Parts Discount

Ordered by:	_____	Ship To:	_____
	_____		_____
Phone No.:	_____	Phone No.	_____
Authorized Signature:	_____	Order No.:	_____
Date of Order:	_____	Ship Via:	_____

2640e/D3640 START-UP PARTS KIT

Quantity	Description	Product Code	Part Number	Retail Price*	Dealer Net Price**	Net Price	Discount cost
	2640e/D3640 + B11 Start Up Part	9910004	XXXXXXXXXX	0.00	0.00	0.00	0.00
	Terminal Plate - Bias Roller	7220535	AI 343860	1.04	0.52	0.47	0.47
1	Cleaning Roller	7220510	AD042029	71.18	35.59	32.03	32.03
	Cleaning Blade	8492013	AI532277	49.12	24.56	22.10	22.10
1	Development Filter	7220528	AI 343090	20.88	10.44	9.40	9.40
1	Cleaning Blade-Transfer Belt	7220530	A1343940	8.23	4.12	3.70	3.70
1	Cushion-Wire	7220501	AA161119	1.98	0.99	0.89	0.89
2	Drum Pick-off Pawls	7220509	AD025020	4.55	2.28	2.05	4.10
	Torque Limiter (Bypass)	8491861	A0976000	31.75	15.88	14.29	14.29
1	Pick-up Roller (LCT)	7220511	AF03003 1	20.88	10.44	9.40	9.40
1	Separation Roller (LCT)	7220513	AF032031	18.31	9.16	8.24	8.24
	Feed Roller (LCT)	7220512	AF03 103 1	26.73	13.37	12.03	12.03
	Bottom Plate Pad	8800329	AF013014	1.56	0.78	0.70	0.70
	Pick-up Feed Roller	8800345	AF030025	9.59	4.80	4.32	4.32
	Paper Feed Roller	8800347	AF03 1029	13.50	6.75	6.08	6.08
	Separation Roller	8800349	AF032027	6.44	3.22	2.90	2.90
	Feed Roller (Duplex)	8800330	AF031024	17.56	8.78	7.90	7.90
	Separation Roller (Duplex)	8800347	AF03 1029	13.50	6.75	6.08	6.08
2	Stack Roller (Duplex)	8490744	AF020317	12.24	6.12	5.51	11.02
	Transfer Belt	8800332	AI 343850	278.81	139.41	125.46	125.46
1	Hot Roller	7220502	AE011036	213.35	106.68	96.01	96.01
5	Hot Roller Stripper	8800327	AE044013	5.43	2.72	2.44	12.22
	Thermistor (Fusing)	722053 1	AI 345266	7.17	3.59	3.23	3.23
	Thermofuse (Fusing)	7220532	AI345265	2.81	1.41	1.26	1.26
1	Pressure Roller	7220503	AE020055	180.87	90.44	81.39	81.39
2	Bushing (Hot Roller 30x42x27)	7220533	AE030021	7.01	3.51	3.15	6.31
2	Ball Bearing (Pressure Roller)	8800341	AE030022	11.73	5.87	5.28	10.56
2	Bushing (Hot Roller 25x30x9)	7220534	AE0320 18	1.22	0.61	0.55	1.10
1	Dust Filter-Vacuum Fan	7220505	AAO 12078	3.28	1.64	1.48	1.48
1	Ozone Filter	7220506	AA010083	250.67	150.40	135.36	135.36
	Dust Filter-Exhaust Fan	7220507	AAO1 2077	3.28	1.64	1.48	1.48
1	Dust Filter	7220508	AAO 12079	13.05	6.53	5.87	5.87
TOTAL							\$637.34

• Dealers may resell at prices of their own choosing.

• • Prices subject to change without notice.

August 96

Date Received:	_____	_____
Approved By:	_____	Date: _____

Customer Services

Issued By: John Molyneux, Director of Customer Services

October, 1996
Page 1 of 7

2640e/D3640 Copier Technical Bulletin/#2

GESTETNER 2640e/NASHUATEC D3640 MATERIAL SAFETY DATA SHEETS

Attached are the Material Safety Data Sheets for the Gestetner 2640e/Nashuatec D3640 toner, developer and drum.

Please keep these MSDS sheets on file. If you need to obtain additional copies, they can be retrieved from our "Fast Fax" information retrieval system. The document numbers are below:

DOCUMENT NAME

DOCUMENT NUMBER

2640e/D3640 Black Toner	12960904
2640e/D3640 Black Developer	12960907
2640e/D3640 Drum	12300640

HEADQUARTERS		BRANCH		DEALERS	
				GESTETNER	NASHUATEC
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☐ DEALER DIVISION	☒ SENIOR MGMT.	☐ SALES REP	☐ FACSIMILE	☐ FACSIMILE	☐ FACSIMILE
		☒ TELEMARKETING MGR.	☐ ANCILLARY	☐ ANCILLARY	☐ ANCILLARY
		☐ TELEMARKETING REP	☐ ALL	☐ ALL	☐ ALL

Gestetner
nashuatec

PRODUCT CODE 2960904

Page #1

Ricoh Corporation
MATERIAL SAFETY DATA SHEET

09/17/96

Section I. General Information

MSDS Identifier Code **GESTETNER 2640e/NASHUATEC D3640**

Identity: **BLACK TONER**

Manufacturer's Name and Address:
Ricoh Corporation
5 Dedrick Place
West Caldwell, NJ 07006

Distributor's Name and Address:
Gestetner Corporation
103B Fairview Park Drive
Elmsford, NY 10523

Emergency Telephone Number: (800) 336-6737

Telephone Number for Information: **(914) 347-7749**

Synonyms & Common Names: Nashuatec 3640/Gestetner 2640e Toner, Toner

Uses: Nashuatec 3640, Gestetner 2640e

Chemical Formula: Mixture

Registry numbers

CAS Number: 0-00-0

RTECS Number: N/App

Date Prepared: 07/25/95 Filed/Prepared By: Ricoh CQA\EA Division

Section II. Hazardous Ingredients/Identity Information

Composition

Component	%	CAS #	OSHA Pel	ACGIH TLV
Polyester/Styrene-acrylic grafted resin	84.00	149367-98-6	N/App	N/App
*Carbon Black	09.00	1333-86-4	3.5mg/m3	3.5mg/m3
Wax (4% made up of two wax substances)	04.00	8015-86-g	N/App	N/App
Wax		8016-60-2	N/App	N/App
Dye	03.00	31714-55-3	N/App	N/App

*Carbon Black is listed on the IARC Mono-graph and the Massachusetts Substance List. The IARC has evaluated the evidence for the carcinogenicity of Carbon Black as inadequate to determine a carcinogenic risk for humans.

All components of this mixture comply with the United States TSCA.

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Ricoh Corporation'
MATERIAL SAFETY DATA SHEET

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Exposure Limits (TLV/PEL)

OSHA: See data above
NIOSH: Not applicable
ACGIH: See data above
State: Not applicable
Other: None

Section III. Physical/Chemical Characteristics

Boiling Point: Not applicable Specific Gravity: 0.30
Vapor Pressure: Not applicable % Volatile by Volume: Not applicable
Melting Point: No data Vapor Density (Air=1): Not applicable
Evaporation Rate (n-BuAc=1): Not applicable

Solubility in Water: Negligible: less than 0.1%

Appearance and Odor: Black powder with slight plastic odor

Section IV. Fire and Explosion Hazard Data

Flash Point and Method: Not applicable

Explosive Limits: LEL N/App UEL N/App
Comments: Not applicable

Extinguishing Media: Foam, water spray(fog), dry chemicals or carbon dioxide may be suitable.

Special Fire-Fighting Procedures: No special fire-fighting procedure is necessary.

Unusual Fire and Explosion Hazards: Will not occur

Section V. Reactivity Data

Stability: Stable
Conditions to Avoid: Not applicable

Incompatibility (Materials to Avoid) : Not applicable

Hazardous Decomposition or Byproducts: Carbon monoxide and other decomposition products in the case of incomplete combustion.

Hazardous Polymerization: Will not Occur
Conditions to Avoid: Not applicable

Section VI. Health and Hazard Data

Routes of Entry: Inhalation, eyes, ingestion

Health Hazards of Short-Term exposure (Acute)

Eyes: May cause temporary eye discomfort.

Skin: No skin irritation

Inhalation: Gasping

Ingestion: Greater than 5g/kg bodyweight

Health Hazards of Long-Term exposure (Chronic): A Xerox sponsored chronic inhalation study in rats using a special test toner revealed there were no lung changes at all in the lowest exposure level (1mg/m³), the most relevant level to potential human exposures. A very slight degree of fibrosis was observed at the middle exposure level (4mg/m³), while a slight degree of fibrosis was noted at the highest exposure level (16mg/m³) in all animals. These findings are attributed to "Lung Overloading", a generic response to excessive amounts of any dust retained in the lungs for a prolonged interval. The special test toner was ten times more respirable than commercially available toner to comply with EPA testing protocol and would not function properly in xerographic equipment.

Carcinogenicity: See Section II (Carbon Black)

NTP? NO IARC Monographs? Yes OSHA Regulated? No

Signs and Symptoms of Exposure: None under normal conditions of use.

Medical Conditions Generally Aggravated by Exposure: Will not occur

Emergency and First Aid Procedures

First Aid

Eyes: Try to remove with eye drops or flush with water. If unsuccessful, get medical attention.

Skin: Wash thoroughly with soap and water,

Inhalation: Remove from exposure

Ingestion: Dilute stomach content with several glasses of water.

Additional Information: Ames test result: negative

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Ricoh Corporation
MATERIAL SAFETY DATA SHEET

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----- Section VII. Precautions for Safe Handling and Use -----m-e-----

Steps to be Taken in Case Material is Released or Spilled: If spilled, sweep up using an approved toner vacuum cleaner with a .5 micron filter or smaller such as the Atrix AAA Toner Vacuum (Ricoh EDP Code: 342MIU). Use of a vacuum cleaner not rated for toner particulate could be a potential fire hazard and/or result in personal injury.
Remove residue with soap and water.

Waste Disposal Method: Used toner should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Do not incinerate loose or spilled toner. (See Section IV). Disposal regulations vary from locality to locality, therefore, consult your local office of the EPA to determine proper method of disposal.

Precautions to Be Taken in Handling and Storing: Cleanse skin thoroughly after contact, before breaks and meals, and at the end of work periods. Keep out of reach of children.

Other Precautions: Do not handle in areas where wind blows. Flying powder may enter eyes. Minimize inhalation of dust.

----- Section VIII. Control Measures -----

Respiratory Protection: None required under normal conditions of use.

Ventilation

Local Exhaust: None required under normal conditions of use.

Special: None needed

Mechanical (general): Adequate ventilation

Other: None needed

Protective Gloves: None required under normal conditions of use.

Eye Protection: None required under normal conditions of use.

Other Protective Clothing or Equipment: None needed

Work and Hygienic Practices: Minimize breathing dust. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of work periods.

PRODUCT CODE2960907

Page #1

Ricoh Corporation
MATERIAL SAFETY DATA SHEET

09/17/96

Section I. General Information

MSDS Identifier Code **GESTETNER 2640e/NASHUATEC D3640**

Identity: **BLACK DEVELOPER**

Manufacturer's Name and Address:
Ricoh Corporation
5 Dedrick Place
West Caldwell, NJ 07006

Distributor's Name and Address:
Gestetner Corporation
103B Fairview Park Drive
Elmsford, NY 10523

Emergency Telephone Number: (800) 336-6737

Telephone Number for Information: **(9 14) 347-7749**

Synonyms & Common Names: Nashuatec 3640/Gestetner 2640e Developer, Developer

Uses: Nashuatec 3640, Gestetner 2640e

Chemical Formula: Mixture

Registry numbers

CAS Number: 0-00-0

RTECS Number: N/App

Date Prepared: 07/25/95 Filed/Prepared By: Ricoh CQA\EA Division

Section II. Hazardous Ingredients/Identity Information

Composition

Component	%	CAS #	OSHA Pel	ACGIH TLV
Iron Oxide	97.00	1317-61-9	N/App	N/App
Polyester/Styrene-acrylic grafted resin	<3.00	149367-98-6	N/App	N/App
*Carbon Black	<3.00	1333-86-4	3.5mg/m3	3.5mg/m3
Wax (<3% made up of two wax substances)	<3.00	8015-86-g	N/App	N/App
Wax		8016-60-2	N/App	N/App
Dye	<3.00	31714-55-3	N/App	N/App

*Carbon Black is listed on the Massachusetts Substance List. Carbon Black is listed on the IARC Monograph. The IARC has evaluated the evidence for the carcinogenicity of Carbon Black as inadequate to determine a carcinogenic risk for humans.

THIS PRODUCT IS NON-HAZARDOUS

All components of this mixture comply with
the United States TSCA.

- -
- -

Exposure Limits (TLV/PEL)

OSHA : See data above
NIOSH: Not applicable
ACGIH: See data above
State: Not applicable
Other: None

Section III. Physical/Chemical Characteristics

Boiling Point: Not applicable Specific Gravity: 2.1
Vapor Pressure: Not applicable % Volatile by Volume: Not applicable
Melting Point: No data Vapor Density (Air=1): Not applicable
Evaporation Rate (n-BuAc=1): Not applicable

Solubility in Water: Negligible: less than 0.1%

Appearance and Odor: Black powder, slight plastic odor

Section IV. Fire and Explosion Hazard Data

Flash Point and Method: Not applicable

Explosive Limits: LEL N/App UEL N/App
Comments: Not applicable

Extinguishing Media: Foam, water spray(fog), dry chemicals or carbon dioxide
may be suitable.

Special Fire-Fighting Procedures: No special fire-fighting procedure is
necessary.

Unusual Fire and Explosion Hazards: Airborne dispersal of most finely divided
organic powders such as developer may form an explosive mixture. Do not
incinerate loose or spilled developer.

Section V. Reactivity Data

Stability: Stable

Conditions to Avoid: Not applicable

Incompatibility (Materials to Avoid): Not applicable

Hazardous Decomposition or Byproducts: Carbon monoxide and other decomposition
products in the case of incomplete combustion.

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Ricoh Corporation
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Hazardous Polymerization: Will not Occur
Conditions to Avoid: Not applicable

Section VI. Health and Hazard Data

Routes of Entry: Eyes, skin, inhalation

Health Hazards of Short-Term exposure (Acute)

Eyes: May cause temporary eye discomfort.

Skin: Non-irritant. No corrosive or irritating effects are expected from intended use as a developer.

Inhalation: Gasping

Ingestion: Acute oral toxicity: greater than 5g/kg bodyweight

Health Hazards of Long-Term exposure (Chronic): Not applicable

Carcinogenicity: See Section II

NTP? No IARC Monographs? Yes OSHA Regulated? No

Signs and Symptoms of Exposure: None under normal conditions of use.

Medical Conditions Generally Aggravated by Exposure: Will not occur

Emergency and First Aid Procedures

First Aid

Eyes: Try to remove with eye drops or flush with water. If unsuccessful, get medical attention.

Skin: Wash thoroughly with soap and water.

Inhalation: Remove from exposure.

Ingestion: Dilute stomach contents with several glasses of water.

Additional Information: Ames test result: negative

Section VII. Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: If spilled, sweep up using an approved toner vacuum cleaner with a .5 micron filter or smaller such as the Atrix AAA Toner Vacuum Cleaner (Ricoh EDP Code: 342MIU). Use of a vacuum cleaner not rated for toner particulate could be a potential fire hazard and/or result in personal injury. Remove residue with soap and water.

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Ricoh Corporation
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Waste Disposal Method: Used developer should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Disposal regulations vary from locality to locality, therefore, consult your local office of the EPA to determine proper method of disposal. Do not incinerate loose or spilled developer. (See Section IV).

Precautions to Be Taken in Handling and Storing: Store in a cool, dry place. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of work periods. Keep out of reach of children.

Other Precautions: Do not handle in areas where wind blows. Flying powder may enter eyes. Minimize inhalation of dust.

Section VIII. Control Measures

Respiratory Protection: None needed under normal conditions of use.

Ventilation

Local Exhaust: None needed

Special: None needed

Mechanical (general): Adequate ventilation

Other: None needed

Protective Gloves: None needed under normal conditions of use.

Eye Protection: None needed under normal conditions of use.

Other Protective Clothing or Equipment: None needed

Work and Hygienic Practices: Cleanse skin thoroughly after contact, before breaks and meals, and at the end of work periods. Keep out of reach of children.

PRODUCT CODE 2300640

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Ricoh Corporation
MATERIAL SAFETY DATA SHEET

09/18/96

Section I. General Information

MSDS Identifier Code **GESTETNER 2640e/NASHUATEC D3640**

Identity: **OPC DRUM**

Manufacturer's Name and Address:
Ricoh Corporation
5 Dedrick Place
West Caldwell, NJ 07006

Distributor's Name and Address:
Gestetner Corporation
103B Fairview Park Drive
Elmsford, NY 10523

Emergency Telephone Number: (800) 336-6737

Telephone Number for Information: **(914) 347-7749**

Synonyms & Common Names: Nashuatec 3640/Gestetner 2640e OPC, OPC

Uses: Nashuatec 3640, Gestetner 2640e

Chemical Formula: Mixture

Registry numbers

CAS Number: 0-00-0

RTECS Number: N/App

Date Prepared: 07/25/95 Filed/Prepared By: Ricoh CQA\EA Division

Section II. Hazardous Ingredients/Identity Information

Composition

Component	%	CAS #	OSHA Pel	ACGIH TLV
Stilben Derivative	0.5%	89114-91-0	N/App	N/App
Polycarbonate	0.7%	25135-52-8	N/App	N/App
Titanium Dioxide	0.3%	13463-67-7	10mg/m3	10mg/m3
Organic Pigment	0.1%	84809-01-8	N/App	N/App
Al Substrate	98.4%	7429-90-5	N/App	N/App

None of the ingredients are listed on the latest NTP Annual Report, IARC Monograph, or OSHA Listing as carcinogens.
Titanium Dioxide is listed as nuisance dust.

Based on the definition of an article as defined by 29 CFR 1910.1200, this product is among those items which are dependent upon their shape and design during end use

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Ricoh Corporation
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and do not release or otherwise result in exposure to a hazardous chemical under normal conditions of use. Therefore, it is exempt from CAS# disclosure.

THIS PRODUCT IS NON-HAZARDOUS

Exposure Limits (TLV/PEL)

OSHA : Titanium dioxide
NIOSH: Not applicable
ACGIH: Titanium dioxide
State: Not applicable
Other: None

----- Section III. Physical/Chemical Characteristics -----

Boiling Point: Not applicable Specific Gravity: N/App
Vapor Pressure: Not applicable % Volatile by Volume: Not applicable
Melting Point: Not applicable Vapor Density (Air=1): Not applicable
Evaporation Rate (n-BuAc=1): Not applicable

Solubility in Water: Negligible: less than 0.1%

Appearance and Odor: Dark green drum, no odor

----- Section IV. Fire and Explosion Hazard Data -----

Flash Point and Method: Not applicable

Explosive Limits: LEL N/App UEL N/App
Comments: Not applicable

Extinguishing Media: Water, foam or dry chemicals may be suitable.

Special Fire-Fighting Procedures: No special fire-fighting procedure is necessary.

Unusual Fire and Explosion Hazards: None

----- Section V. Reactivity Data -----

Stability: Stable

Conditions to Avoid: Not applicable

Incompatibility (Materials to Avoid): None

Hazardous Decomposition or Byproducts: Carbon monoxide and other decomposition

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Ricoh Corporation
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products in the case of incomplete combustion.

Hazardous Polymerization: Will not Occur
Conditions to Avoid: Not applicable

Section VI. Health and Hazard Data

Routes of Entry: Not applicable

Health Hazards of Short-Term exposure (Acute)

Eyes: Not applicable

Skin: No corroding or irritating effects are expected from usual use as a photosensitive drum.

Inhalation: Not applicable

Ingestion: Not applicable

Health Hazards of Long-Term exposure (Chronic): Not applicable

Carcinogenicity: Not applicable

NTP? No IARC Monographs? No OSHA Regulated? No

Signs and Symptoms of Exposure: None under normal conditions of use.

Medical Conditions Generally Aggravated by Exposure: Will not occur

Emergency and First Aid Procedures

First Aid

Eyes: Not applicable

Skin: Wash with soap and water.

Inhalation: Not applicable

Ingestion: Not applicable

Additional Information: Ames test result: negative (main ingredients)

Section VII. Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: Not applicable

Waste Disposal Method: Used OPC drum should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Disposal regulations vary from locality to locality, therefore, consult your

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Ricoh Corporation
MATERIAL SAFETY DATA SHEET

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local office of the EPA to determine proper method of disposal.

Precautions to Be Taken in Handling and Storing: Store in a cool, dry place.
Keep out of reach of children. Keep from contact with oxidizing materials.

Other Precautions: None

Section VIII. Control Measures

Respiratory Protection: None required under normal conditions of use.

Ventilation

Local Exhaust: None required under normal conditions of use.

Special: None

Mechanical (general): Adequate ventilation

Other: None

Protective Gloves: None required under normal conditions of use.

Eye Protection: None required under normal conditions of use.

Other Protective Clothing or Equipment: None

Work and Hygienic Practices: Cleanse skin thoroughly after contact, before
breaks and meals, and at the end of work periods.

Customer Services

Issued By: Joe Cyruik, Manager, Service Support & Planning

August, 1997
Page 1 of 2

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HARD DISK DRIVE

In the event of a hard disk failure, the following procedure should be tried before replacing the part.

SYMPTOM

SC360, SC361

CAUSE

Hard disk drive failure

SOLUTION

Format the hard disk by using SP491 I-2 in the Service Program Mode. If unable to run SP491 I-2, see alternate procedure 1.

Note: The capacity of the hard disk has been changed from 1.0 GB

1.7 GB hard disk. As a result of the change to the 1.7 GB hard disk, the ROM on the EX-IPU board was modified. Cut-in serial number for the 1.7 GB drive affects machines with serial numbers 9326110001 and above.

1.0 GB hard disk approximately 8 minutes. but 1.7 GB hard disk, it

CAUTION: If the Main Switch is turned OFF during the formatting process of the hard disk, an SC360 error will occur when the Main Switch is turned ON. Do not turn off the Main Switch while formatting the hard disk.

HEADQUARTERS		BRANCH		DEALERS	
				Gestetner	Nashuatec
ACCT/FINANCE	DISTRIBUTION	TECH.SERV.MNGR	COPIER	COPIER	
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CUSTOMER SERVICES	MIS	SALES MNGR.	DUPLICATOR	DUPLICATOR	
DEALER DIVISION	SENIOR MANAGEMENT	SALES REP.	FACSIMILE	FACSIMILE	
		TELEMARKT. MNGR	ANCILLARY	ANCILLARY	
		TELEMRKT. REP.	ALL	ALL	

Gestetner
nashuatec

Alternate Procedure 1

In the event of a hard disk failure, the following procedures should be taken before replacing the hard drive. If a service code is displayed, and the Service Program Mode cannot be used even if the Main Switch is ON, follow the instructions below:

- 1) With the power turned OFF, turn ON the Dip Switch 4 on the BCU Board.
- 2) Turn the power ON.
- 3) Perform the hard disk drive setting in SP491 I-2.
- 4) After completion of the step above, turn the power OFF and then switch the Dip Switch 4 on the BCU Board back OFF. If the steps above cannot be completed, the hard disk must be replaced.

<u>Old Part Number</u>	<u>New Part Number</u>	<u>Product Code</u>	<u>Description</u>	<u>Compatibility</u>
AI 337884	AI 337885	7220524	HDO 1.7GB	X/X
AI 337890	A1337870	7220525	EX-IPU Board	X/O
A 1337896	A 1337876	7220554	IC-UVERROM 2MBx8 100ns	X/O

NOTE 1: When changing from a 1.0 GB hard disk to a 1.7 GB hard disk (A1337885), you must change the EX-IPU Board ROM to the A1337876 (IC 39).

NOTE 2: The new EX-IPU ROM (A1337876) is compatible with both the 1.0 GB and 1.7GB hard drives.

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VIBRATING PLATE

SYMPTOM:

Paper jamming at the duplex entrance or at the duplex exit.

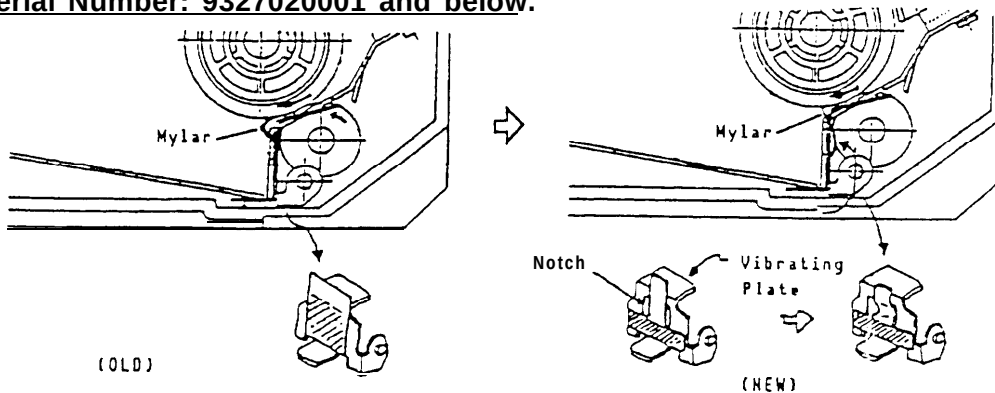
CAUSE:

Wearing of the mylars on top of the Vibrating Plate (P/N AI 344658).

COUNTER-MEASURE:

The shapes of the Vibrating Plate and the mylar have been modified to extend the lifetime of this part. As the paper is being stacked, the mylar bends at an angle of 90 degrees in the direction of the stack. The mylar also bends 90 degrees in the opposite direction when the paper is fed. The mylar eventually breaks after continually being bent back and forth. Since the lifetime of the mylar is shortened when the duplex unit is used often, a notch has been put in the Vibrating Plate and the shape of the mylar has been modified to prevent a recurrence of this problem. Also, the thickness of the mylar has been increased from 0.125mm to 0.188mm and the width has been decreased from 18mm to 6mm (see diagram below). As a result of this modification, the mylar will now slip into the notch when it moves, enabling a smoother transition as the mylar bends back and forth.

Affected Serial Number: 9327020001 and below.



PART NUMBER	PRODUCT CODE	DESCRIPTION	COMPATABILITY	LIST PRICE	DEALER PRICE*
AI 344658	7220564	Vibrating Plate	x/o	\$ 2.16	\$1.27

*Dealers may resell at prices of their own choosing.

HEADQUARTERS		BRANCH	DEALERS	
ACCT/FINANCE	DISTRIBUTION	TECH.SERV.MNGR	Gestetner	Nashuatec
ADMINISTRATION	MARKETING	TECH.SERV.REP.	COPIER	COPIER
CUSTOMER SERVICES	MIS	SALES MNGR.	COPYPRINTER	COPYPRINTER
DEALER DIVISION	SENIOR MANAGEMENT	SALES REP.	DUPLICATOR	DUPLICATOR
		TELEMARKT. MNGR	FACSIMILE	FACSIMILE
		TELEMRKT. REP.	ANCILLARY	ANCILLARY
			ALL	ALL

Gestetner
nashuatec

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RECEPTACLE CHARGER

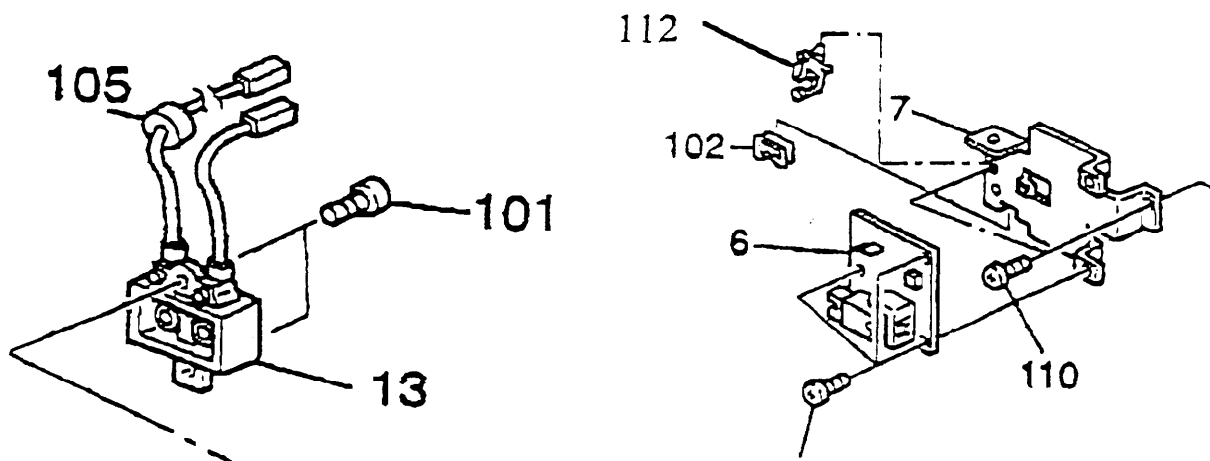
SYMPTOM:

Receptacle Charger coming in contact with fly wheel.

COUNTER-MEASURE:

The length of the harness has been changed and a harness clamp added.

Affected Serial Number: 9326080001 and below.



<u>OLD NUMBER</u>	<u>NEW PART NUMBER</u>	<u>PRODUCT CODE</u>	<u>DESCRIPTION</u>	<u>COMPATABILITY</u>	<u>LIST PRICE</u>	<u>DEALER PRICE*</u>
AD021 109	AD021 121	7220557	Receptacle - Charger	X/O	20.67	12.16
-----	11050310	7111475	Clamp-LWS-I S (VO)		.37	.22

*Dealers may resell at prices of their own choosing.

"Parts availability starting July '97

HEADQUARTERS		BRANCH		DEALERS	
CCT/FINANCE	DISTRIBUTION	TECH.SERV.MNGR	COPIER	Gestetner	Nashuatec
ADMINISTRATION	MARKETING	TECH.SERV.REP	COPYPRINTER		
CUSTOMER SERVICES	MIS	SALES.MNGR	DUPLICATOR		
DEALER DIVISION	SENIOR MANAGEMENT	SALES.REP.	FACSIMILE		
		TELEMARKT.MNGR	ANCILLARY		
		TELEMRKT.REP	ALL		

Customer Services

Issued By: Joe Cyrulik, Manager, Service Support & Planning

August, 1997
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PARTS CATALOG CORRECTIONS

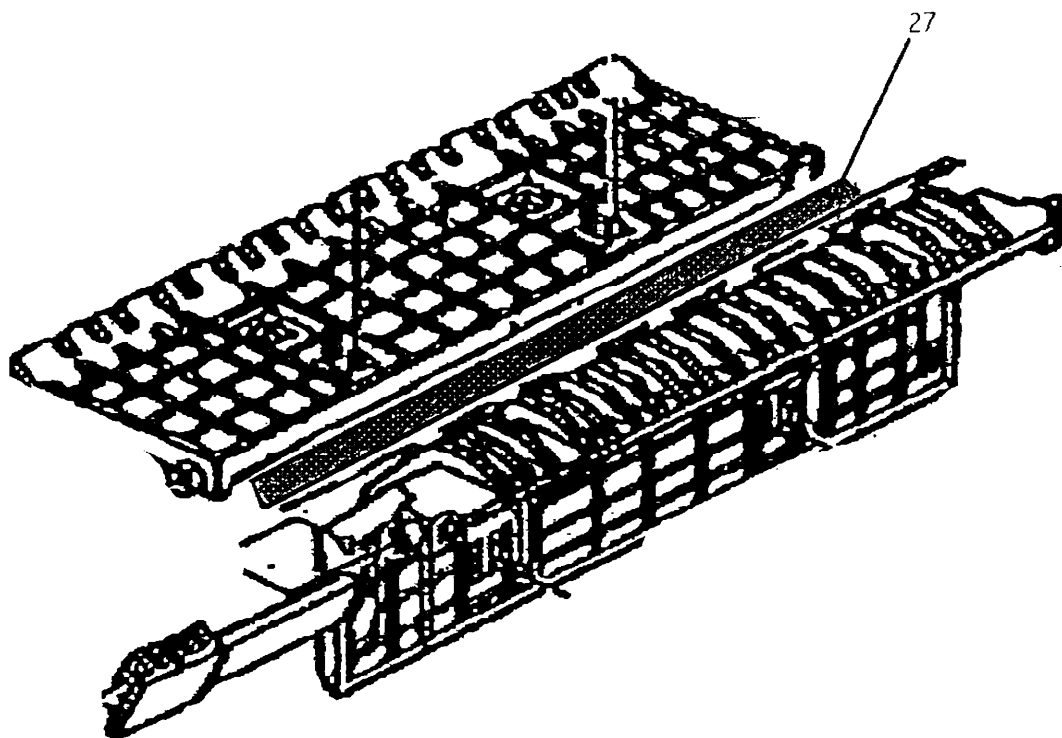
following parts updates are for the Gestetner 2640e and Nashuatec 03640 Parts Catalog and should be incorporated into the parts documentation.

<u>Wrong P/N</u>	<u>Correct P/N</u>	<u>Description</u>	<u>Qty</u>	<u>Index No.</u>	<u>Page No.</u>
AI34901 1	A130901 1	Charge Corona Unit with Cleaner	1	6	103
<u>Old P/N</u>	<u>New P/N</u>	<u>Description</u>	<u>Qty</u>	<u>Index No.</u>	<u>Page No.</u>
AI341385	A1336124	Misfeed Removal Sheet	1	28	11
A 1337392	AI556201	Hinge Bracket	1	8	25
<u>Old P/N</u>	<u>New P/N</u>	<u>Description</u>	<u>Qty</u>	<u>Index No.</u>	<u>Page No.</u>
AI 343940	AI 343945	Cleaning Blade Transfer Belt	1	29	53
<u>Old P/N</u>	<u>New P/N</u>	<u>Description</u>	<u>Qty</u>	<u>Index No.</u>	<u>Page No.</u>
AI337238	-----	Decal - Toner Collection Bottle	1	22	41
-----	A 1337236	Toner Collection Bottle Ass'y	1	21	41
A1333251	AI 556207	Top Cover Hinge	1	4	25
AA132174	AA132133	Spacer - M8	1	30	71
AB013871	AB014006	Gear - 40Z	1	16	69
AB01 7340	AB01 7430	Timing Pulley - 30/35/257	1	17	69
-----	AI344466	Seal - Turn Guide (New Item) (See Attached Diagram)	1	27	59

Note: Please update your parts manual to ensure proper parts ordering.

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		TELEMRKT. R.E.P.	(ALL)	ALL

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PLEASE NOTE THAT THE OLD PARTS AND THE NEW PARTS FOR THE
2640e/D3640 COPIER ARE NOT INTERCHANGEABLE AND THEREFORE THE OLD
PARTS CANNOT BE USED ON NEW MACHINES.

INFORMATION ONLY

August, 1997
Page 1 of 3

2640e/D3640 Copier Technical Bulletin/#7

SERVICE MANUAL CORRECTIONS

The following parts of the service manual have been corrected. In an effort to maintain the highest quality of service to the field, updating the service manuals to reflect these corrections will provide a more accurate and less time consuming effort to resolve many issues.

1. Copier installation, Step 38, page 3-9

Wrong:

After the machine reaches the operation condition (the start button LED is green), . . .

Correct:

After finishing warming-up (after the main motor stops), . . .

Reason:

The manual mentions "the start button LED is green", but in accordance with the installation procedure, no paper has been loaded at this point.

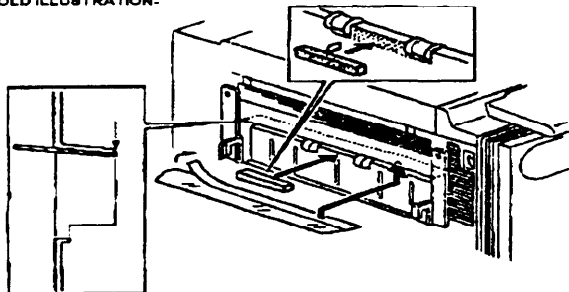
2. Finisher installation, Step 12, page 18

The illustration (no. A6 12 1504.wmf) has been changed as follows.

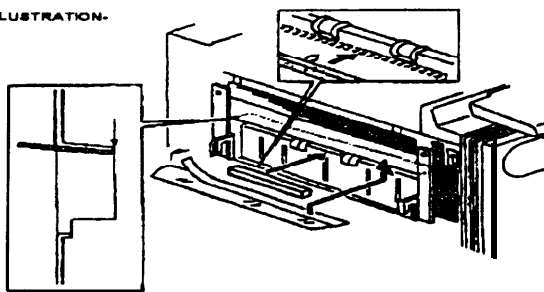
Reason:

Actually, the cushion cannot be affixed as shown in the original illustration.

-OLD ILLUSTRATION-



-NEW ILLUSTRATION-



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		TELEMPKT.REP	ALL		

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We found the following incorrect information in the service manual. Please make the necessary corrections to your service manual.

3. SP Mode

SP 4807 (GA4 Setting: Auto letter/photo separation)	Disabled Enabled	No YES
SP 7004 (Total Copy Counter Reset)	Resets or changes the initial electrical counter	Japanese version only. Do not change the value.
SP 2902-6 Test Pattern Printing (Image Memory)	Prints the test pattern for the memory unit. 0:Not used 1:Horizontal stripes	Prints last image in memory. Do not change the value.

4. Special parts, on page 4-47

Wrong part number	Correct part number	Description
A134901 1	A130901 1	Charge Corona Unit With Cleaner

5. SC Codes

The following SC codes have been added.

SC303: Time out error for printer

NOTE: This SC303 has already been assigned as “Charge wire cleaner error”. However, this SC code has been assigned again by mistake. Now, two SC 303s exist. If an optional charge wire cleaner has been installed, to determine which SC 303 has occurred, turn the main switch off. After switching it on again, if SC 303 still exists, it is the “charge wire cleaner error”.

- Definition -

The BCU cannot receive the printer ready signal from the EX-IPU

- Possible cause -

BCU defective
EX-IPU defective
SCU defective

SC 305: Time out error for memory

- Definition -

The BCU cannot receive the memory access ready signal from the EX-IPU

- Possible cause -

BCU defective
EX-IPU defective
SC U defective

SC 392: Image stored address error

- Definition -

The EX-IPU receives an image data output request signal for data that is not stored in memory

- Possible cause -

SCU defective

EX-IPU defective

SC 405: Time out error for scanner

- Definition -

The BCU does not receive the scanner access ready signal from the EX-IPU

- Possible cause -

BCU defective

EX-IPU defective

SCU defective

SC 625: GA5 (GAFBTC) error

- Definition -

The GA5 did not finish the data transfer to the memory within 20 seconds

- Possible cause -

EX-IPU defective

Software defective

Customer Services

Issued By: Joe Cyrulik, Manager, Service Support & Planning

APPROXIMATE ONLY

September, 1997
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2640e/D3640 Copier Technical Bulletin/#8

OPERATION PANEL PARTS BREAKDOWN

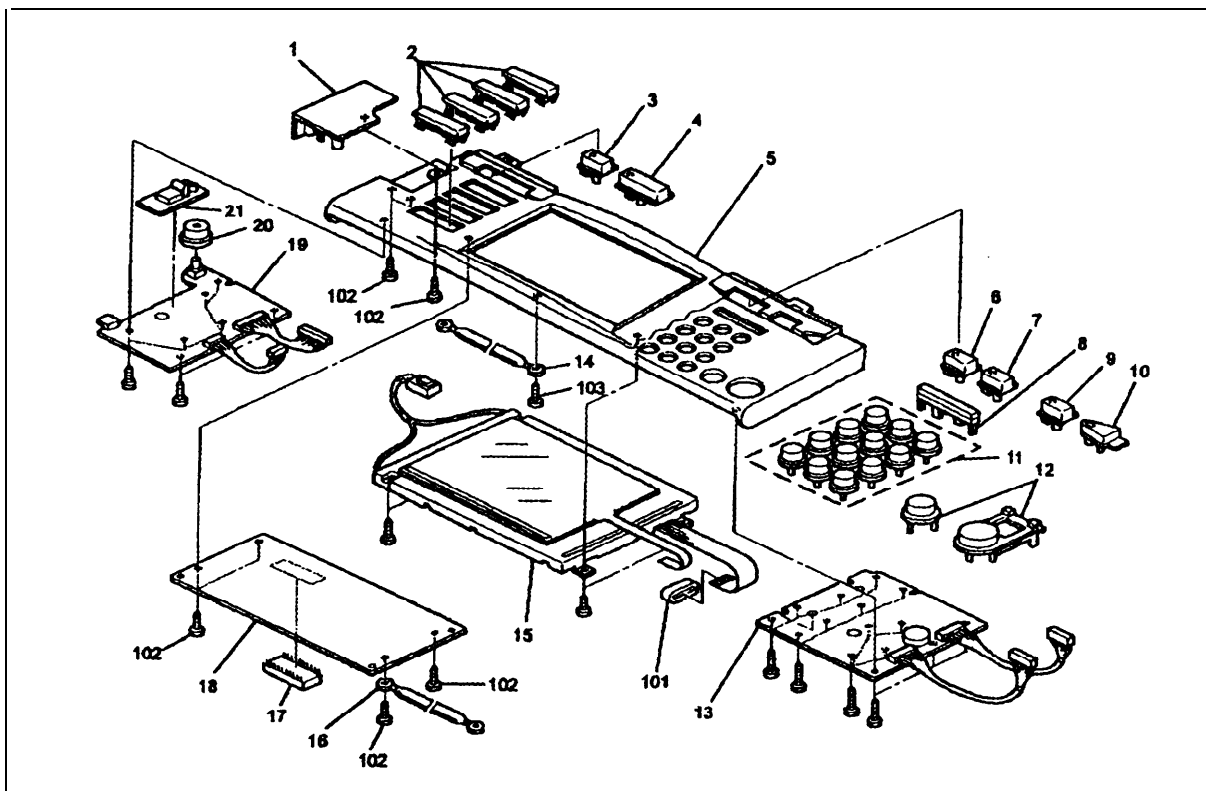
The following are the component parts for the 2640e/D3640 operation panel:

<u>index</u>	<u>Part Number</u>	<u>Product</u>	<u>Description</u>	<u>Qty</u>	<u>List</u>	<u>*Dealer</u>
<u>No.</u>		<u>Code</u>			<u>Price</u>	<u>Price</u>
1	A1341553	72206 10	Cover - Option	1	35.50	20.88
2	A1341543	7220575	Cap - Option	4	2.24	1.32
3	A1341538	7220576	Key Top - user Tools	1	2.24	1.32
4	A1341533	7220606	Key Top - Guidance	1	5.80	3.41
5	A1337124	7220607	Operation Panel Case (LT)	1	143.31	84.30
6	A1341523	7220573	Key Top - Program	1	1.86	1.09
7	A1341518	7220574	Key Top - Job Recall	1	2.24	1.32
8	A1341558	7220608	Cap - Application	1	3.94	2.32
9	A1341515	7220609	Key Top - Clear Mode	1	2.63	1.55
10	A134151 1	7220571	Key Top - Interrupt	1	2.24	1.32
11	A1341506	7220572	Key Top - 10 Key	1	2.24	1.32
12	A1341507	7220577	Key Top - Start/Stop	1	2.24	1.32
13	A1345156	7220565	PCB - 10 Key	1	134.79	79.29
14	A1336120	7220570	Grounding Wire - 270mm	1	19.70	11.59
15	A1345149	7220561	Touch Panel	1	745.72	438.65
16	A1345153	7220559	Grounding Wire - Op. Panel	1	20.18	11.87
17	A1337731	7220560	IC - UVEPROM 4MX16 150ns	1	90.90	53.47
18	A 1337704	0911343	Operation Panel Board	1	969.00	569.99
19	A1345157	7220566	PCB - Option	1	134.79	79.29
20	A1341548	7220578	Dial	1	1.52	.89
21	A1345152	7220579	Inverter Board	1	35.15	20.68
101	16070747	7220617	FPC Core - FPC-25-12	-	4.84	2.85
102	08025232	7220556	Tapping Screw - M3X8	-	1.00	.59
103	03530060F	7220555	Tapping Screw - M3X6	-	1.41	.83

*Dealers may resell at prices of their own choosing.

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		TELEMRKT. REP.	ALL	ALL	

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Troubleshooting

August, 1997
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2640e/D3640 Copier Technical Bulletin/#9

New Exhaust Air Filter

Problem

When making long continuous runs, exhaust air from the fusing unit may become perceptible.

Cause

This problem is particularly noticeable in the conditions listed below.

1. When the machine is set up in a small room with poor ventilation.
2. Many long continuous copy runs are made.
3. Continuous copies are made of originals with images containing a high percentage of black areas.

Countermeasure

Please try the measures listed below.

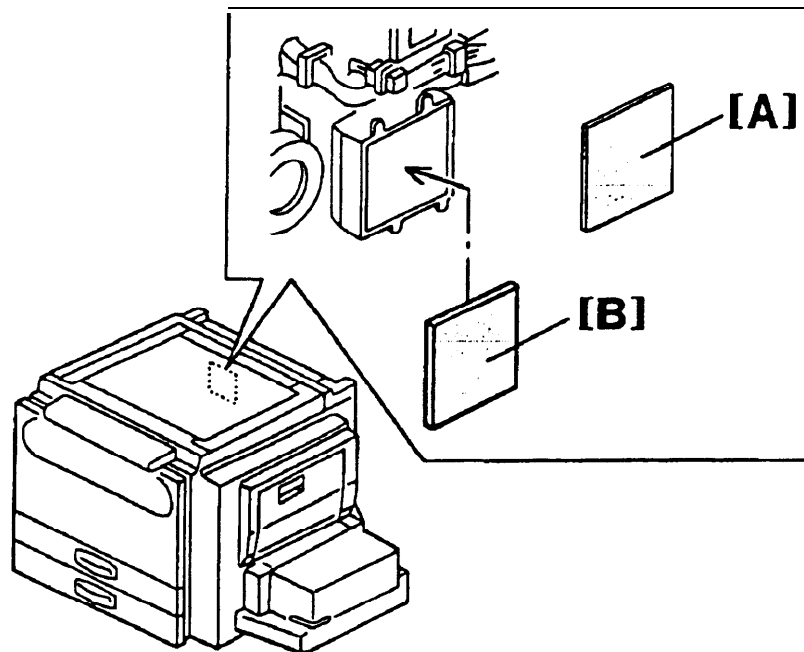
- A. Install an exhaust air filter (A1309014) which has been newly registered as a service part according to the attached installation procedure.
- B. Adjust the fusing temperature by using SP 1105. Lowering the fusing temperature will decrease the amount of silicon vapors present and thus reduce any odor. If the paper used is 20lbs. Or less, please set the fusing temperature to **175°C**. If the paper used is greater than **20lbs.**, set the temperature to **175°C**, make a copy and then check the fusing quality of the toner. If the fusing is poor, set the temperature to **180°C** and then recheck the fusing quality. If there is still a problem with the fusing quality, set the temperature back to the default setting of **185°C**.

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DEALER DIVISION	SENIOR MANAGEMENT	SALES REP.	FACSIMILE	FACSIMILE	FACSIMILE
		TELEMARKT. MNGR	ANCILLARY	ANCILLARY	ANCILLARY
		TELEMRKT. REP.	ALL	ALL	ALL

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- C. Use SP 2201-I to lower the development bias voltage to decrease toner supply. By lowering the development bias voltage, the toner amount is decreased, leading to a reduction in the odor. Set the voltage to **-500V**, **-450V** and **-400V** while making copies at each adjustment. Show the copy samples to the **enduser** and have the **enduser** select the acceptable copy quality. If the **enduser** does not find the copy samples to be acceptable, set the voltage back to the default setting **-550V**.
- D. If possible, move the machine into a room with better ventilation.

Installation of New Exhaust Air Filter

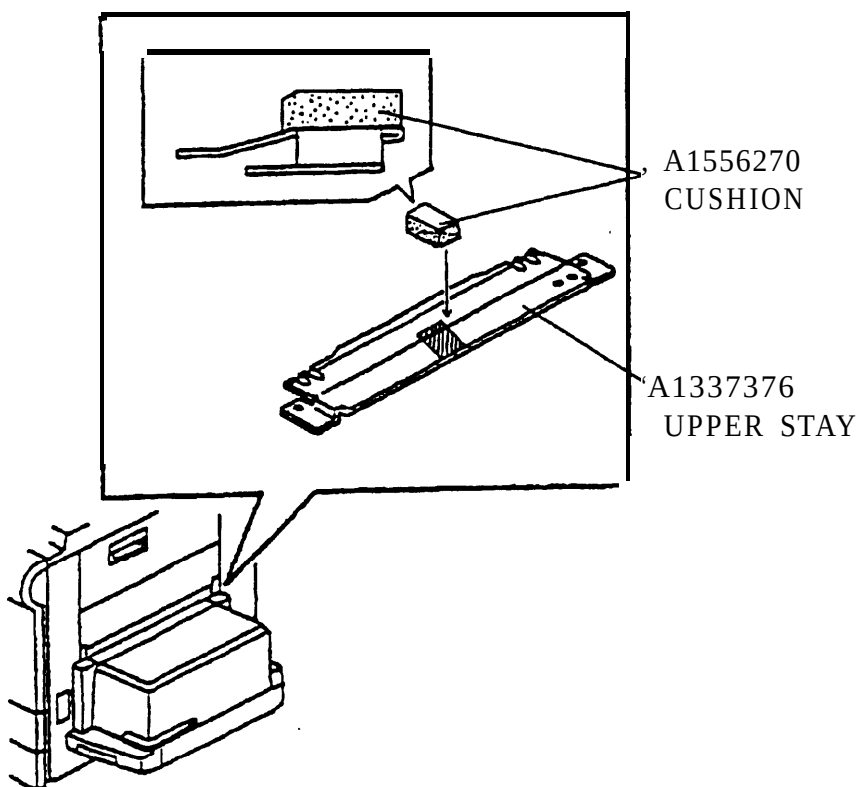


1. Remove the rear cover.
2. Remove the existing fusing exhaust air filter [A].
3. Install the new exhaust air filter [B].
4. Put back the rear cover.

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CUSHION

A cushion has been added to the accessories as it prevents paper from entering the gap between the LCT Cover and the By-Pass Feed Cover when paper is put on the LCT Cover



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		TELEMRKT. REP.	ALL	ALL

Customer Services

Issued By: Joe Cyrulik, Manager, Service Support 8 Planning

September, 1997
Page 1 of 2

2640e/D3640 Copier Technical Bulletin/#1 1

SCU BOARD ROM MODIFICATION

The ROM for the SCU Board has been modified as follows:

PROBLEM	COUNTER-MEASURE
If copies are made with Auto Magnification Set + Staple + Mixed Copy, all copies will be made with the same magnification level as that of the first original.	Modified Software.
The enlargement/reduction key cannot be used while waiting for the second side when making duplex copies.	Modified Software.
Modification of Energy Star specifications.	The maximum for the Auto-Reset and the Low Power Timer has been set to 240 minutes.
No double count for 11"x17" size paper with the Key Counter.	The double count is now possible with the Key Counter.
Legal size paper cannot be used in the by-pass tray.	*SP Mode SP1900 was added. When the side fence for the by-pass tray is set to 8-1/2", letter and legal size paper can be selected.

***NOTE: To enable this function, the three ROM's for the SCU Board (Copy 1, Copy 2, MSIS) and the BCU Board ROM (P/N A1335104H) must be replaced at the same time.**

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		TELEMARKT. MNGR	ANCILLARY	ANCILLARY	
		TELEMRKT. REP.	ALL	ALL	

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When replacing the three ROM's, please replace them with the applicable combination shown below.

<u>PART NUMBER</u>	<u>PRODUCT CODE</u>	<u>DESCRIPTION</u>	<u>LIST PRICE</u>	<u>DEALER PRICE*</u>
AF400ES	7220625	THREE ROM SET ROM - Copy 1 ROM - Copy 2 ROM - MSIS	\$133.67	\$78.63
A1335104	0911316	BCU ROM H	\$44.56	\$26.21

*Dealers may resell at prices of their own choosing.

BULLETIN NUMBER: A133/A195/A217 - 001

04/23/98

APPLICABLE MODEL:
GESTETNER - 2640E
RICOH - AFICIO 400
SAVIN - 9940DP

The chart listed below shows the Last Bulletin Number issued for the A133/A195/A217 series.

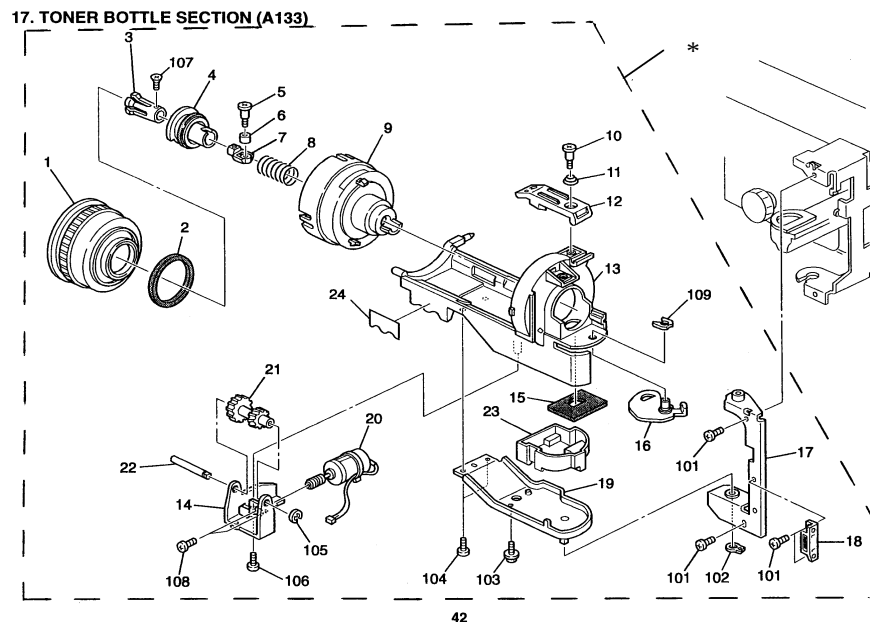
Bulletin Cross Reference	
Ricoh Group Companies	Last Bulletin No.
Gestetner	025
Ricoh	019
Savin 9940DP	011
Savin 9940DPC	004
Savin 9950DP	002

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued for all A133 Parts Catalogs.

- **UPDATE 1:** BOTTLE HOLDER ASSEMBLY- The Toner Bottle Holder is now being offered as an assembly. See * item in figure below.



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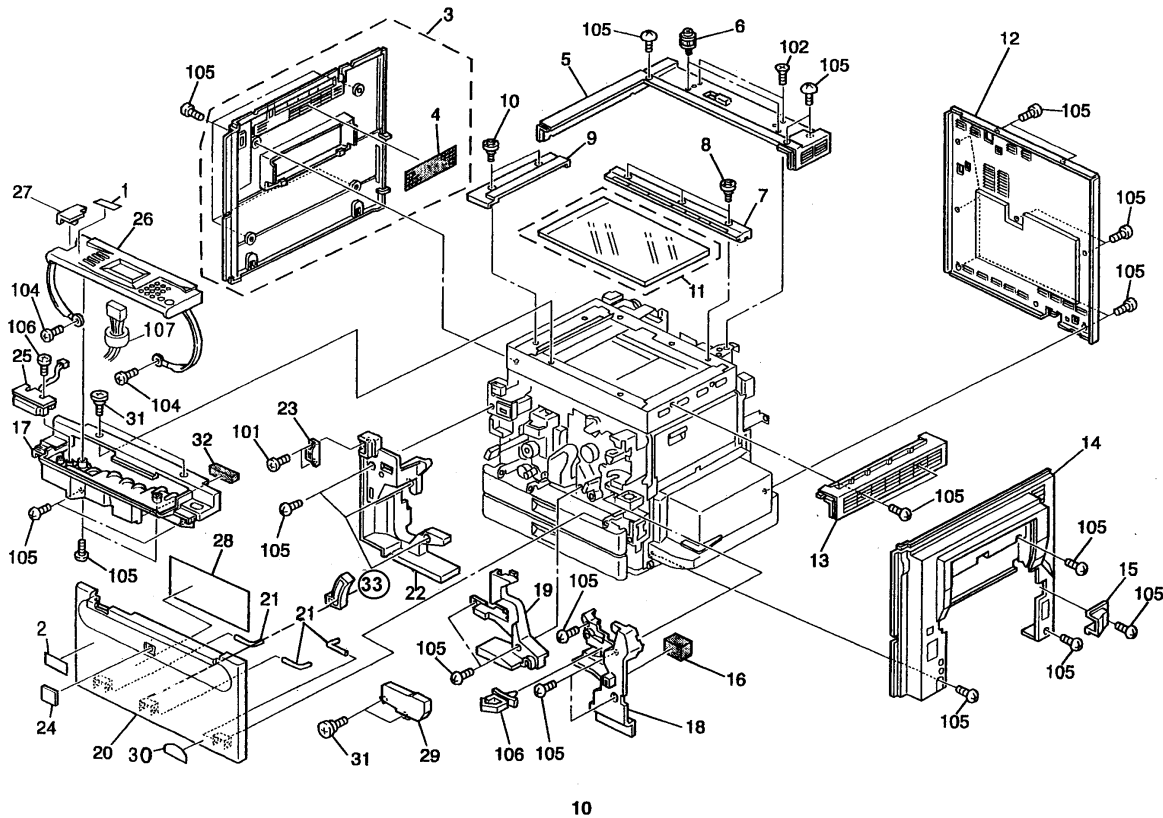
NEW PART NO.	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A1333150	Bottle Holder Assembly (RIC – 115V)	1	43	*
A1333152	Bottle Holder Assembly (OEM)	1	43	*
A1343150	Bottle Holder Assembly (RIC – 230V)	1	43	*

Continued...



- **UPDATE 2:** EXTERIOR- The Front Cover Cap Is now being offered as a part. See item 33 in figure below.

1. EXTERIOR (A133)



			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1341384	Cap- Front Cover	1	11	33

BULLETIN NUMBER: A133/A195/A217 - 002**04/23/98****APPLICABLE MODEL:****GESTETNER – 2640E/3240/2850E****RICOH – AFICIO 400/401/500****SAVIN – 9940DP/9940DPC/9500DP****SUBJECT: SC101****SYMPTOM:**

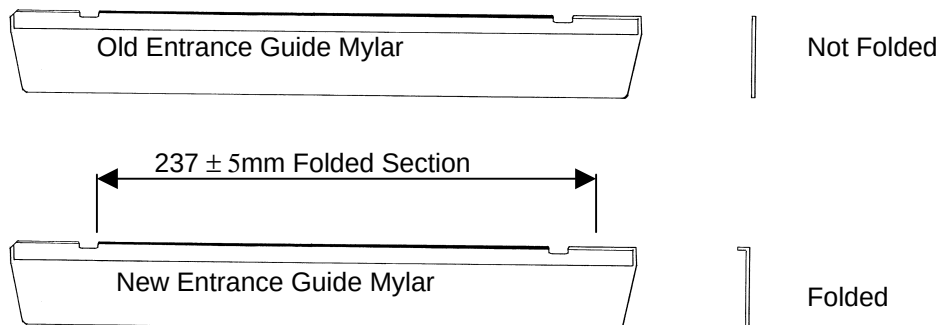
For units with the finisher installed, if a large number of copies are made right after power on, a SC101 may occur.

CAUSE:

If the Entrance Guide Mylar is not installed in the proper position, a gap may develop between the cover and the Main Frame. Heat and humidity carried by the paper will move through this gap. If this occurs right after power on, the lamp stabilizer will warm up very quickly and this may lead to condensation around the lamp stabilizer. The condensation may cause a SC101 to occur.

SOLUTION:

To correct this problem a new Entrance Guide is available with mylar attached to the guide. To increase the strength of the Entrance Guide Mylar, the edges have been folded.



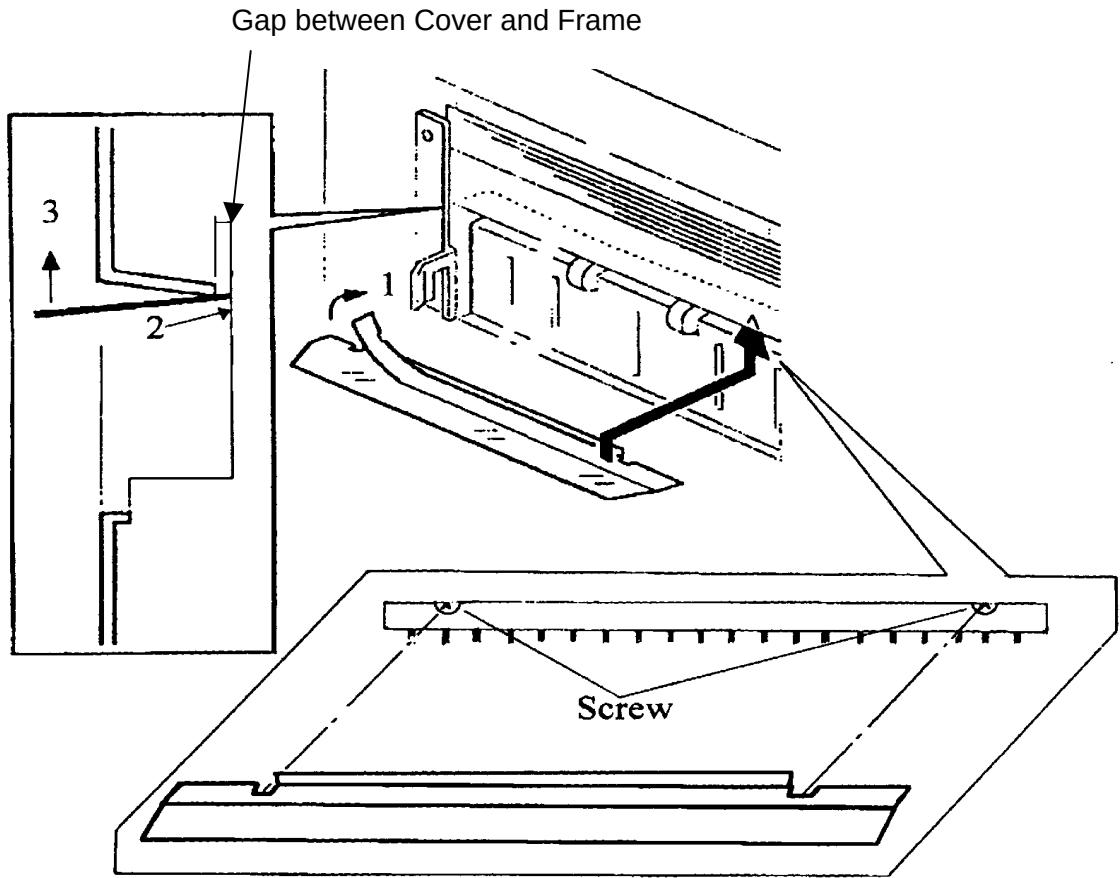
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**PARTS**

Continued...

To attach the entrance guide film, follow the procedure below:

- 1. Peel the tape off the Entrance Guide Mylar.
- 2. Place the Entrance Guide Mylar on the Main Frame.
- 3. Attach the Entrance Guide Mylar to the Cover.



New Entrance Guide

The following Parts Updates are being issued for all A612 Parts Catalog sections.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A6122331	A6122333	Entrance Guide	1	1	5	19

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or units previously modified, use the new individual part numbers.		

BULLETIN NUMBER: A133/A195/A217 - 003

04/23/98

APPLICABLE MODEL:

GESTETNER - 2640E

RICOH - AFICIO 400

SAVIN - 9940DP

SUBJECT: VIBRATING PLATE MYLAR DAMAGE

SYMPTOM:

Mylar damage on the Vibrating Plate may occur after repeated use of the 50-sheet stack mode in the duplex unit.

CAUSE:

The mylar should move as shown in Figure 1, however after repeated use of the 50-sheet stack mode in the duplex unit, the mylar may curl as shown in Figure 2. If the mylar becomes deformed as shown in Figure 2, then its movement will resemble that shown in Figure 3. If this movement is repeated, then section A of the mylar will be damaged.

SOLUTION:

To increase the durability of the Vibrating Plate Mylar in the Duplex Unit, the shape of the Vibrating Plate has been changed. To prevent the mylar from curling, the shape of the bracket has been changed so that the mylar will bend as shown in Figure 4 below.

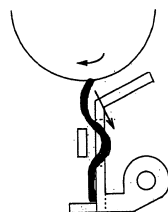


Fig. 1



Fig. 2

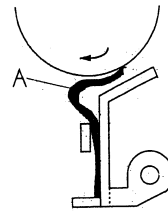


Fig. 3

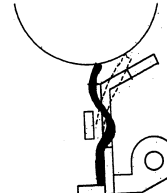
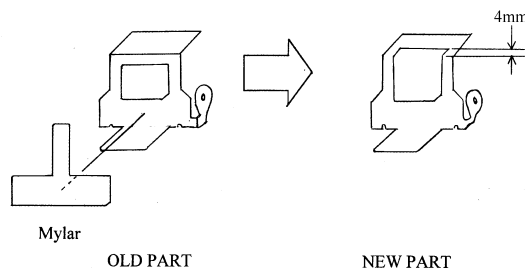


Fig. 4



Continued...

GENERAL:

The following Part Update is being issued for all A133 Parts Catalogs.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1544623	A1544626	Vibrating Plate	2	1	63	26

UNITS AFFECTED:

All copiers manufactured after the Serial Number listed below, will have the new style Vibrating Plate installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2640E	9327080001
Ricoh Aficio 400	A3917080001
Savin 9940DP	3A77080001

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or units previously modified, use the new individual part numbers.		

BULLETIN NUMBER: A133/A195/A217 - 004**05/20/98****APPLICABLE MODEL:****GESTETNER - 3240****RICOH - AFICIO 401****SAVIN - 9940DPC****SUBJECT: CONTROLLER ERROR****SYMPTOM:**

The message "**Controller Error**" is displayed on the Operation Panel. Also, LED's D2, D3, D5 and D6 are lit or just LED D6 is lit on the Controller Board (Item 6).

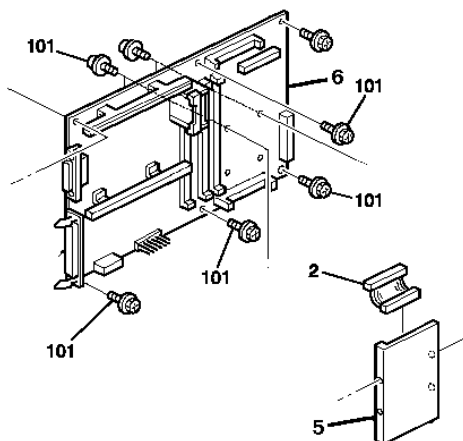
CAUSE:

The symptom is caused by a poor connection of the Harness (Item 2) which connects between the Controller Board (Item 6) and the Hard Disk (Item 5). The Hard Disk Test cannot be executed. The symptom must be solved before testing can continue.

SOLUTION:

The following checks should be made to correct this problem:

1. Check the connector pins on the Hard Drive (Item 5) and the Controller Board (Item 6). Ensure that none of these pins are deformed. If deformed pins are found, try to repair or reform. If the pins cannot be corrected, replace the faulty component.
2. Check the connector for foreign material. If any foreign material is found clean the connector. If the material cannot be removed, replace the connector.
3. Reset the Harness (Item 2). When inserting the Harness into the connector, verify that enough force is supplied to ensure that the Harness is completely plugged in.

**ELECTRICAL**

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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A133/A195/A217 - 005

05/28/98

APPLICABLE MODEL:

GESTETNER – 2640E/3240/2850E

RICOH – AFICIO 400/401/500

SAVIN – 9940DP/9940DPC/9950DP

SUBJECT: DEVELOPMENT UNIT BUSHING

GENERAL:

The part listed below was omitted from the Parts Catalog item list. The following part update is being issued for all A133, A195 and A217 Parts Catalogs.



PARTS

PART NO.	DESCRIPTION	QTY	REFERENCE	
			PAGE	NEW ITEM
AA080200	Bushing – 6x12x11	2	47	19

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BULLETIN NUMBER: A133/A195/A217 - 006**07/01/98****APPLICABLE MODEL:****GESTETNER – 2640E/3240/2850E****RICOH – AFICIO 400/401/500****SAVIN – 9940DP/9940DPC/9950DP****SUBJECT: DUPLEX JAMS****SYMPTOM:**

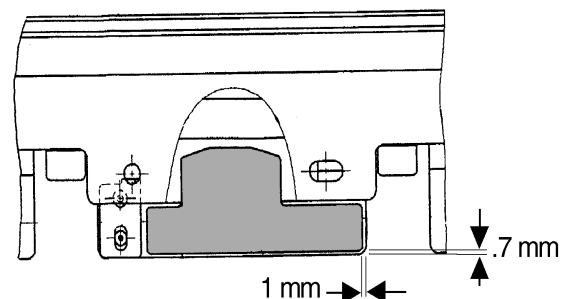
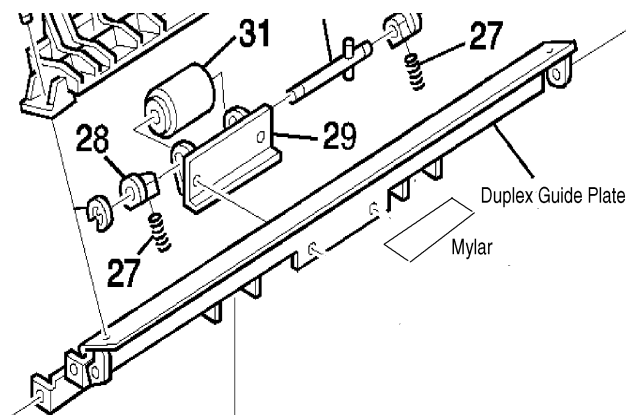
1. During paper feed from the Duplex Unit, the leading edge of the paper is bent and/or a paper feed jam occurs.
2. During stacking of paper in the Duplex Unit, a feed-in jam occurs.

CAUSE:

1. Paper feed jam (Leading edge bent, not feeding, or short feeding)
 - The Duplex Guide Plate Mylar (Flip Mylar) is not positioned properly.
 - The position of the spring setting of the Spring Clutch (Bottom Plate Lift Clutch) is not set properly.
 - New style Spring Clutch is not installed.
2. Feed-in Jams
 - The condition of the Mylar on the Vibrating Plate Ass'y is either bent or damaged.
 - The Upper Guide Plate, Lower Guide Plate (A1344740) or Duplex Unit are deformed.
 - Insufficient grease on the Spring Clutch.

SOLUTION:

1. Paper feed jam (Leading edge bent, not feeding, or short feeding)
 - Check to see if the Duplex Guide Plate Mylar (A1344670) is positioned properly. If it is bent or out of position replace the Duplex Guide Plate Mylar. To check, rotate the Feed Roller by hand. If it makes a clicking sound and is positioned properly then the Mylar is acceptable. When replacing the Mylar, position the Mylar as shown in the figure below. See Adjustment Specification Figure. If the Duplex Guide Plate is deformed, replace the Duplex Guide Plate (A1344662).



Adjustment Specification Figure.

Continued...

Note: This copy is intended as a master original for reproduction of additional bulletins.



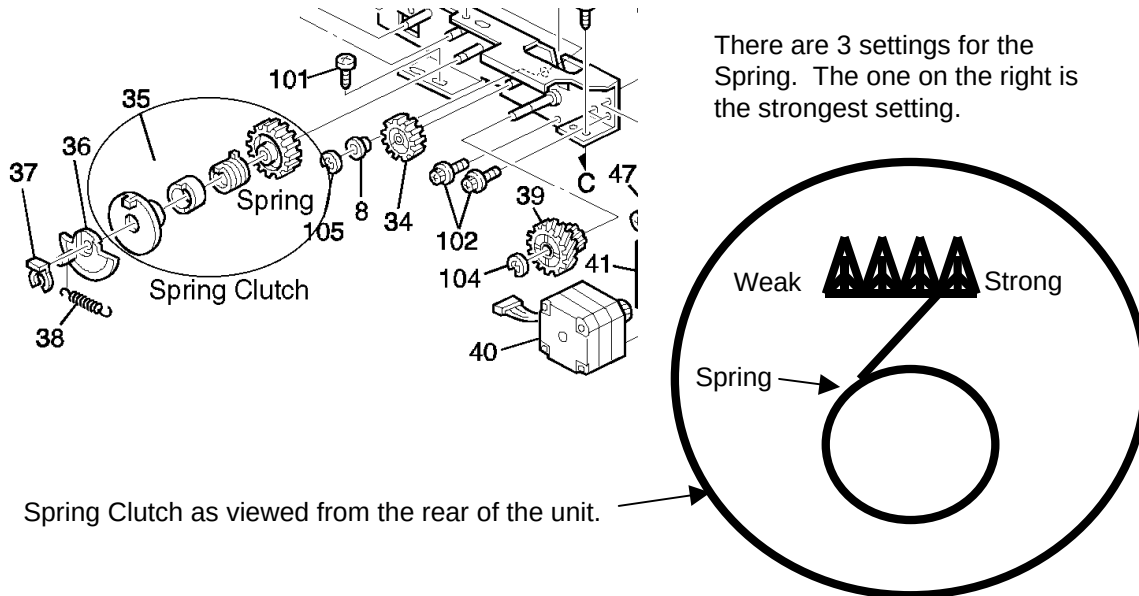
MECHANICAL



PARTS

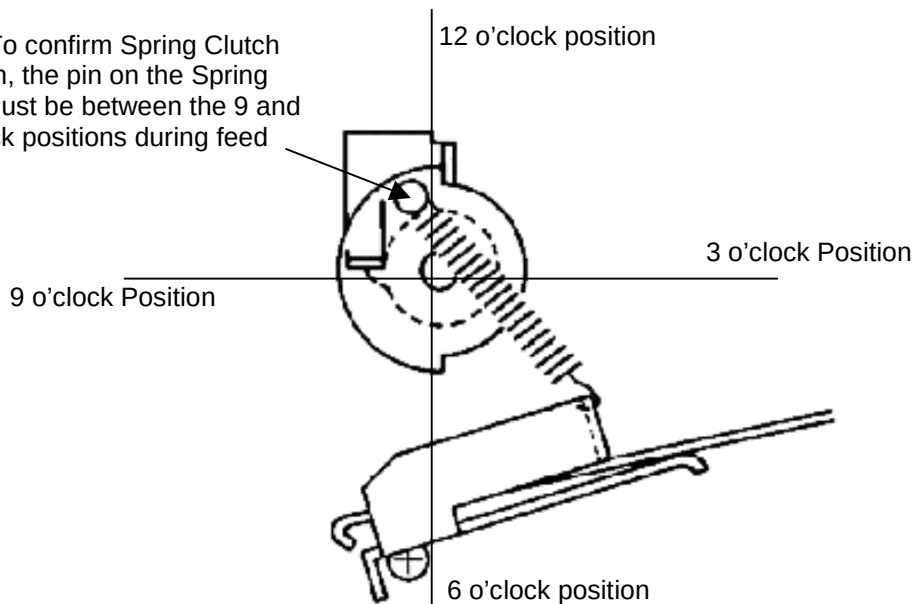
- If installing the Mylar and/or Duplex Guide Plate does not correct the symptom, change the position of the spring setting on the Spring Clutch to increase the upward pressure to the Bottom Plate. The stronger the setting, the more effective it is.

NOTE: If the upward pressure on the Bottom Plate is insufficient, “No Feed” or “Short Feed” paper jams may occur.



- If changing the spring pressure does not correct the symptom, replace the Spring Clutch (AB040015) with the modified Spring Clutch (AB040017).

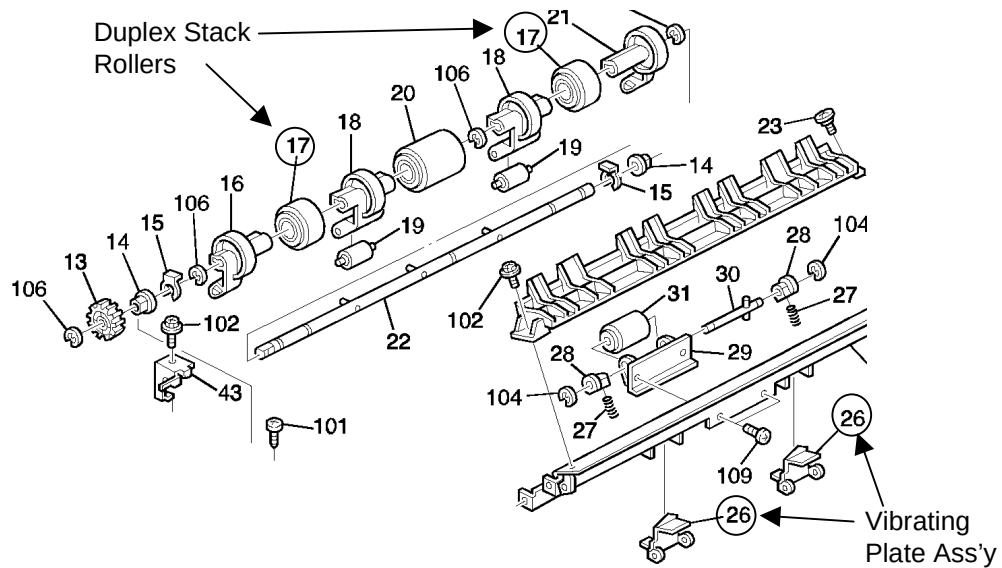
NOTE: To confirm Spring Clutch operation, the pin on the Spring Clutch must be between the 9 and 12 o'clock positions during feed out.



2. Feed-in Jams

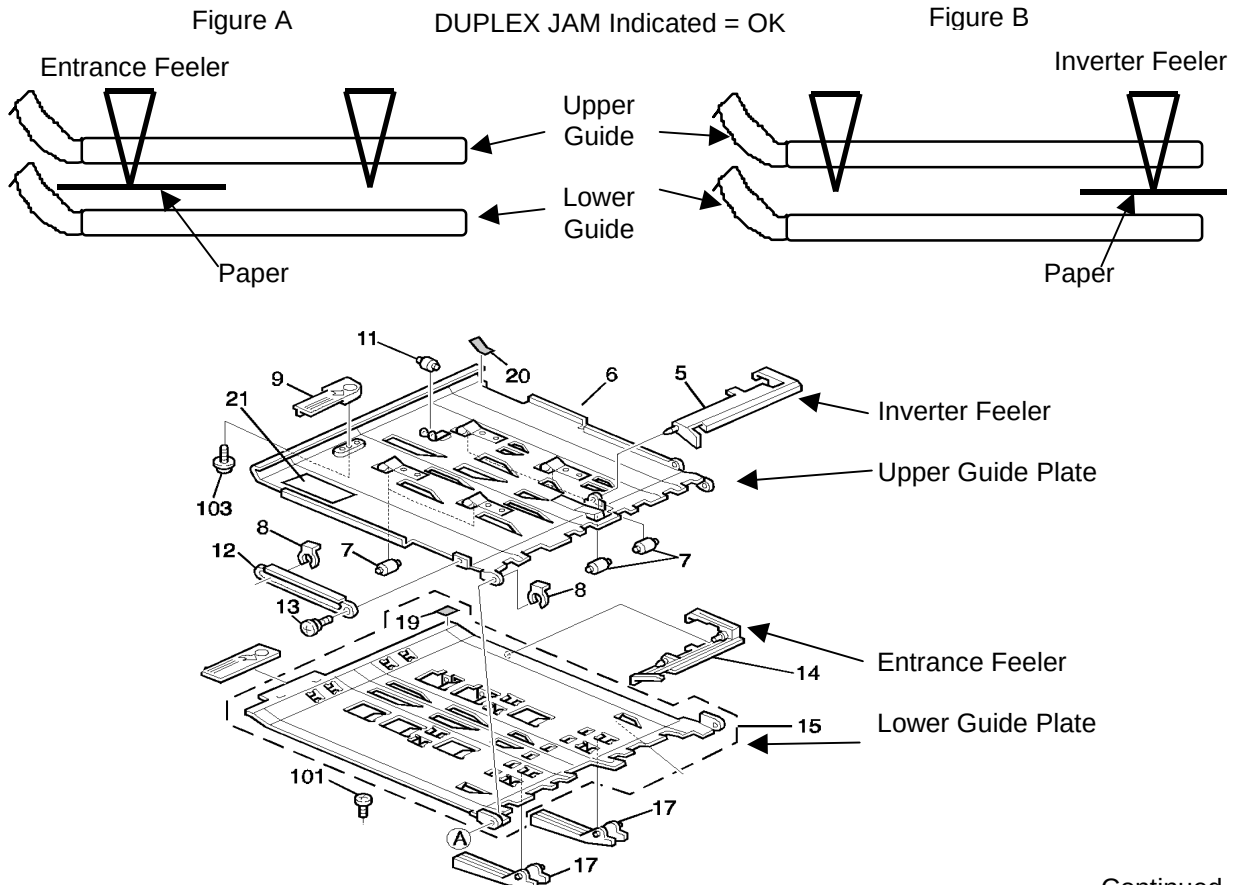
- Check the condition of the Mylar on the Vibrating Plate Ass'y. If it is bent or damaged, replace the Vibrating Plate Ass'y (A1544626). See Figure on next page.

NOTE: If the Mylar is bent or damaged, jams may occur.



- Check to see if the Upper Guide Plate or the Lower Guide Plate are deformed. To check, pull out the Duplex Unit, place paper between the Upper Guide Plate and the Lower Guide Plate as shown below in Figure A. Then insert the Duplex Unit and note whether or not a DUPLEX JAM is indicated. If a jam is indicated, these parts are acceptable. Next move the paper from the Entrance Feeler to the Inverter Feeler (Duplex Turn Sensor) and perform the same check as above. See Figure B below. If deformed, replace the deformed part.

NOTE: Please inform customers to pull the Duplex Unit all the way out to remove paper when a jam occurs. If the Duplex Unit is only pulled out partially, the Upper Guide Plate and the Lower Guide Plate may be deformed.



Continued...

- Verify that sufficient grease is on the Spring Clutch. Lack of grease may result in Feed-in jams. Grease should be added at the 120K PM interval visit. Use Mobil Temp 78 Grease.

3. Other Causes

- Turn Sensor / Actuator binding.
- Jogger (End and Side Fence) Span Adjustment (SP 1008-1 and SP 1008-2).
- Bottom Plate warped.
- Copier Main Board or Duplex Main Board.
- Copier Relay Sensor.
- Duplex Motor.

BULLETIN NUMBER: A133/A195/A217 - 007

07/08/98

APPLICABLE MODEL:

GESTETNER - 3240

RICOH - AFICIO 401

SAVIN - 9940DPC

SUBJECT: VIBRATING PLATE MYLAR DAMAGE

SYMPTOM:

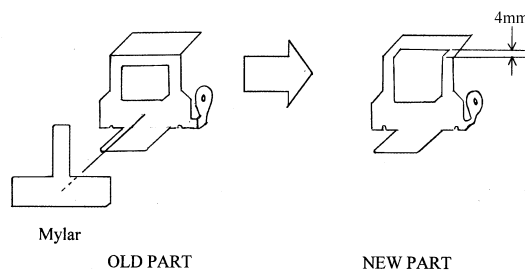
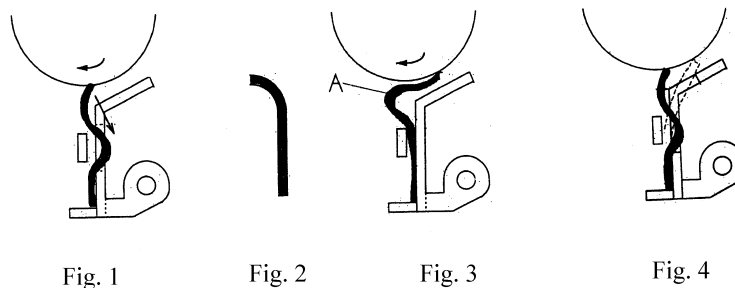
Damage on the Vibrating Plate Mylar may occur after repeated use of the 50-sheet stack mode in the Duplex Unit.

CAUSE:

The Mylar should move as shown in Figure 1, however after repeated use of the 50-sheet stack mode in the Duplex Unit, the Mylar may curl as shown in Figure 2. If the Mylar becomes deformed as shown in Figure 2, then its movement will resemble that shown in Figure 3. If this movement is repeated, then section A of the Mylar will be damaged.

SOLUTION:

To increase the durability of the Vibrating Plate Mylar in the Duplex Unit, the shape of the Vibrating Plate has been changed. To prevent the Mylar from curling, the shape of the bracket has been changed so that the Mylar will bend as shown in Figure 4 below.



Continued...



■ PARTS



■ MECHANICAL

GENERAL:

The following part update is being issued for all A195 Parts Catalogs.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1544623	A1544626	Vibrating Plate	2	1	65	26

UNITS AFFECTED:

All copiers manufactured after the Serial Number listed below, will have the new style Vibrating Plate installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 3240	AG97120001
Ricoh Aficio 401	A7207100001
Savin 9940DPC	6A97100001

INTERCHANGEABILITY CHART:

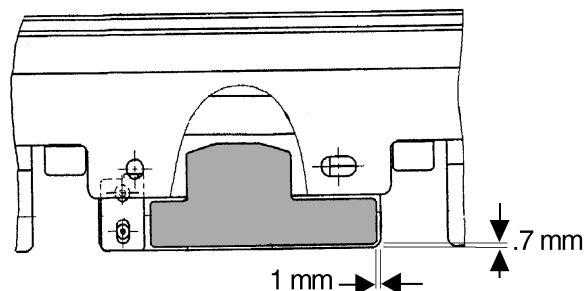
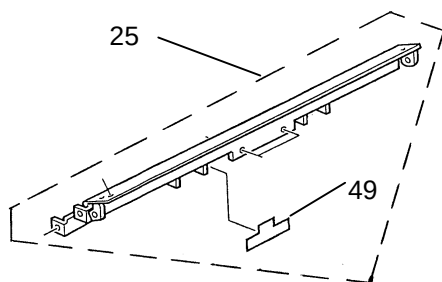
0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or units previously modified, use the new individual part numbers.		

BULLETIN NUMBER: A133/A195/A217 - 008
07/08/98
APPLICABLE MODEL:
GESTETNER – 2640E/3240/2850E
RICOH – AFICIO 400/401/500
SAVIN – 9940DP/9940DPC/9950DP
SUBJECT: PARTS CATALOG UPDATES
GENERAL:

The following parts updates are being issued for all A133, A195 and A217 Parts Catalogs.

● UPDATE 1:

DUPLEX GUIDE MYLAR – Please add the following part to your parts catalog. Please follow the installation diagram below when installing the Duplex Guide Mylar.



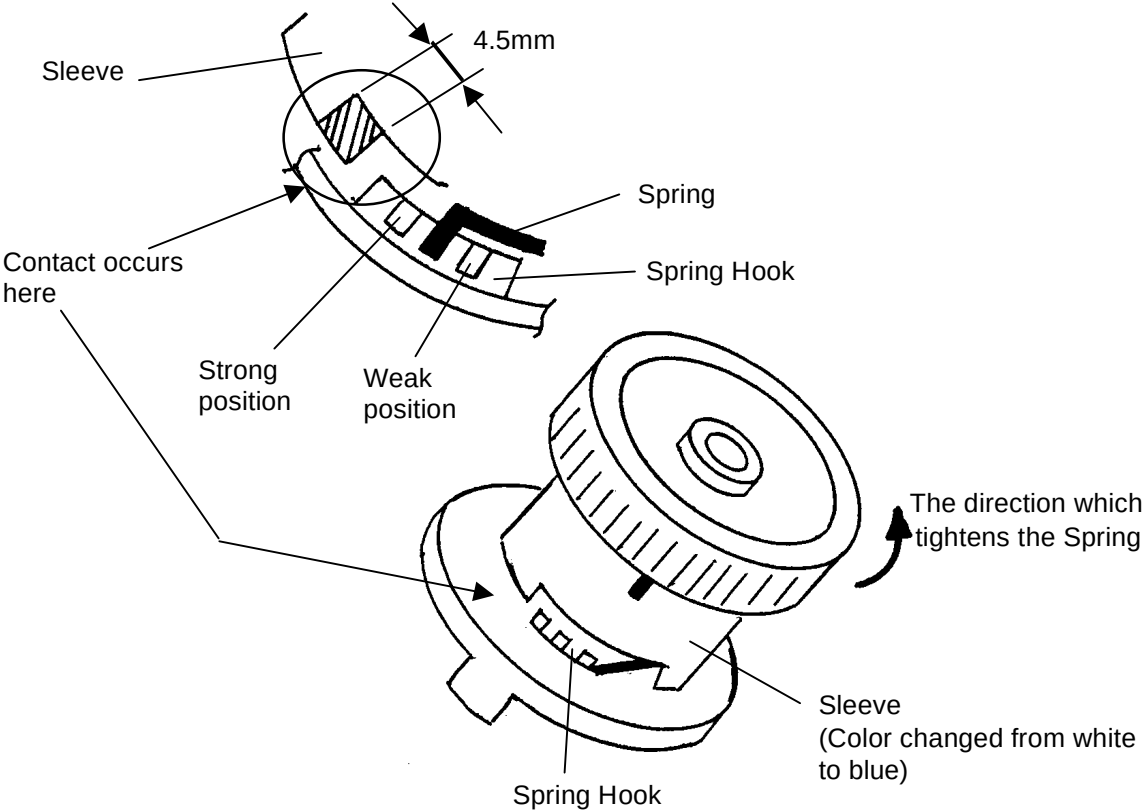
NEW PART NUMBER	DESCRIPTION	QTY	REFERENCE		
			PAGE		ITEM
			A133	A195/A217	
A1344670	Duplex Guide Mylar	1	63	65	49 *

* Denotes new Item Number.

● UPDATE 2:

SPRING CLUTCH – TRAY BOTTOM PLATE – To improve “No-Feed Jams” from the Duplex Unit due to insufficient pressure from the Bottom Plate, the shape of the Sleeve has been changed. The insufficient pressure occurs when the Clutch turns in the direction which tightens the Spring. This causes the Sleeve to contact the Spring Hook. The Spring cannot turn completely, therefore the Bottom Plate cannot be lifted to the highest position. To prevent the Sleeve from hitting the Spring Hook, a portion of the Sleeve has been cut by 4.5mm, as shown in the diagram on the following page. To distinguish the old style from the new style Clutch, the color of the Sleeve has been changed from white to blue.

Continued...



OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					PAGE		ITEM
					A133	A195/ A213	
AB040015	AB040017	Spring Clutch – Tray Bottom Plate	1	1	63	65	35

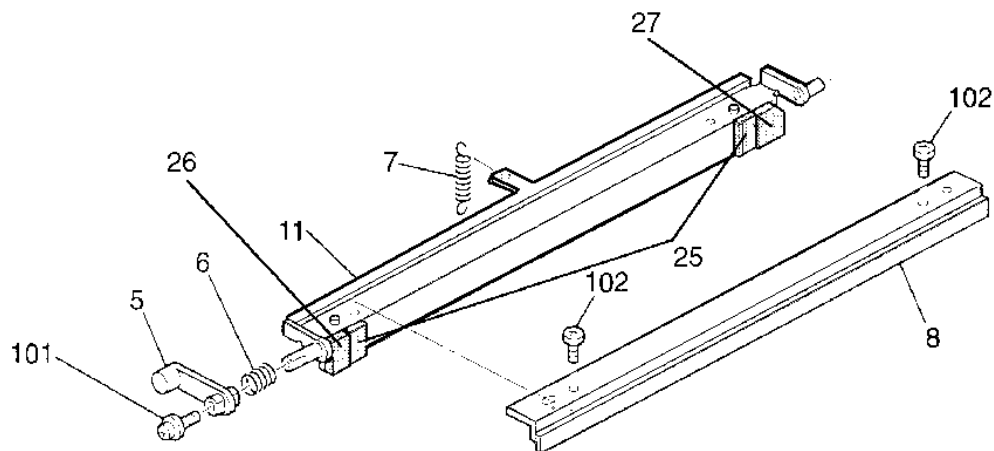
UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style Spring Clutch installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2640E	9328030001
Gestetner 3240	AG98030001
Gestetner 2850E	AN3805xxxx
Ricoh Aficio 400	A391804xxxx
Ricoh Aficio 401	A7208030001
Ricoh Aficio 500	A7608030001
Savin 9940DP	3A78030001
Savin 9940DPC	6A68040001
Savin 9950DP	9A78030001

Continued...

- **UPDATE 3:** CLEANING BLADE SEALS– Please add the following parts to your parts catalog. These have been added as service parts only.



NEW PART NUMBER	DESCRIPTION	QTY	REFERENCE			
			PAGE		ITEM	
			A133	A195/A217		
AA151809	Rear Seal	2	49	51	25 *	
AA151807	Shield – Blade Front	1	49	51	26 *	
AA151782	Shield – Blade Rear	1	49	51	27 *	

* Denotes new Item Number.

- **UPDATE 4:** THERMISTOR– To standardize with new models, the following part has been changed.

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE			
					PAGE		ITEM	
					A133	A195/A217	A133/A195	A217
A1345266	A1344071	Thermistor	1	0	55	57	9	5

Continued...

UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style Thermistor installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2640E	9328020001
Gestetner 3240	AG98020001
Gestetner 2850E	AN38020001
Ricoh Aficio 400	A391804xxxx
Ricoh Aficio 401	A7208010217
Ricoh Aficio 500	A7608020001
Savin 9940DP	3A78020001
Savin 9940DPC	6A68020001
Savin 9950DP	9A78020001

● UPDATE 5:

HARD DISK– The Hard Disk has been changed because the production was discontinued. The capacity of the Hard Disk has been changed from 1.7 GB to 1.05 GB. Since the capacity of the Hard Disk used by this copier is only 1.0 GB, it is not necessary to change any SP modes or ROMs.

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					PAGE		ITEM
					A133	A195/A213	
A1337885	A1337892	Hard Disk 1.05 GB	1	0	79	81	2

UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style Hard Disk installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2640E	9327110001
Gestetner 3240	AG97120001
Gestetner 2850E	AN37110001
Ricoh Aficio 400	A3917110001
Ricoh Aficio 401	A7207110001
Ricoh Aficio 500	A7607110001
Savin 9940DP	3A77110001
Savin 9940DPC	6A67110001
Savin 9950DP	9A77110001

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: A133/A195/A217 - 009

07/22/98

APPLICABLE MODEL:

GESTETNER – 2640E

RICOH – AFICIO 400

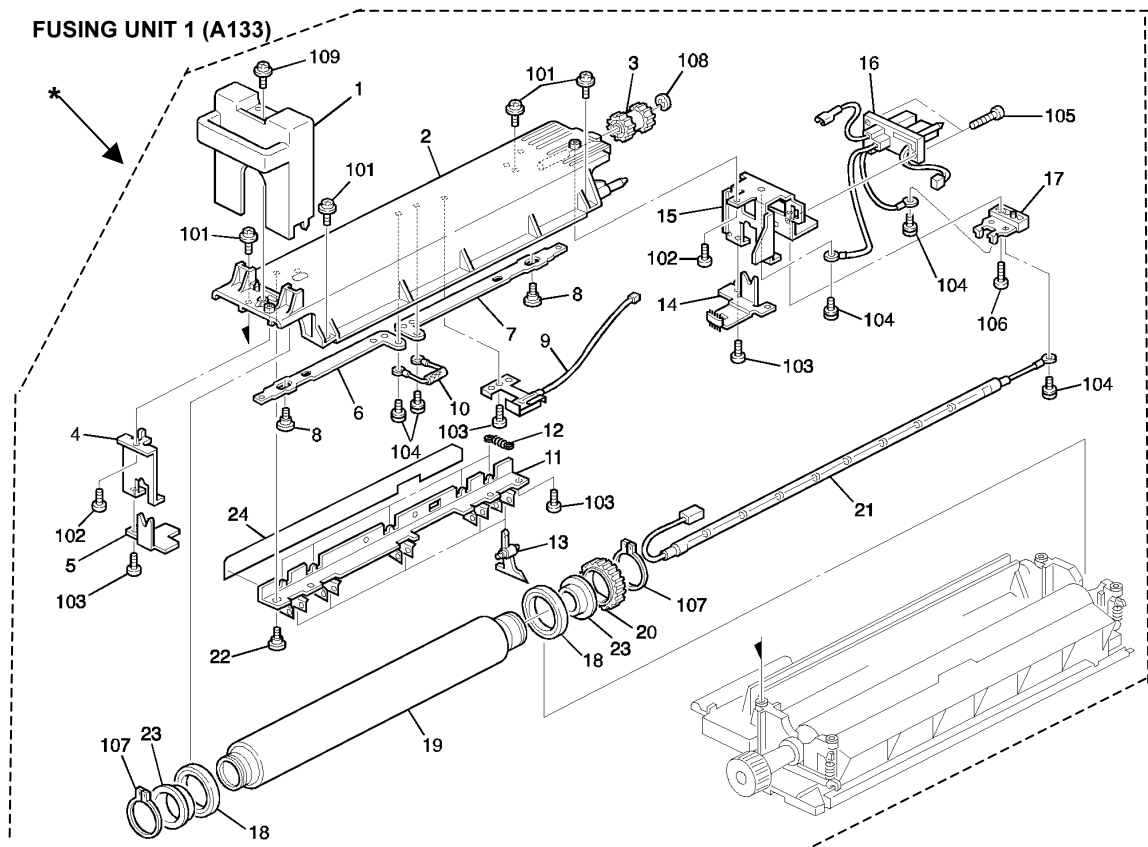
SAVIN – 9940DP

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all A133 Parts Catalogs.

- **UPDATE 1:** FUSING UNIT – The Fusing Unit is now available as a service part. Please update your Parts Catalog with the following changes.



NEW PART NUMBER	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A1337501	Fusing Unit – 115 V	1	55	*
A1337506	Fusing Unit – 230 V	1	55	*

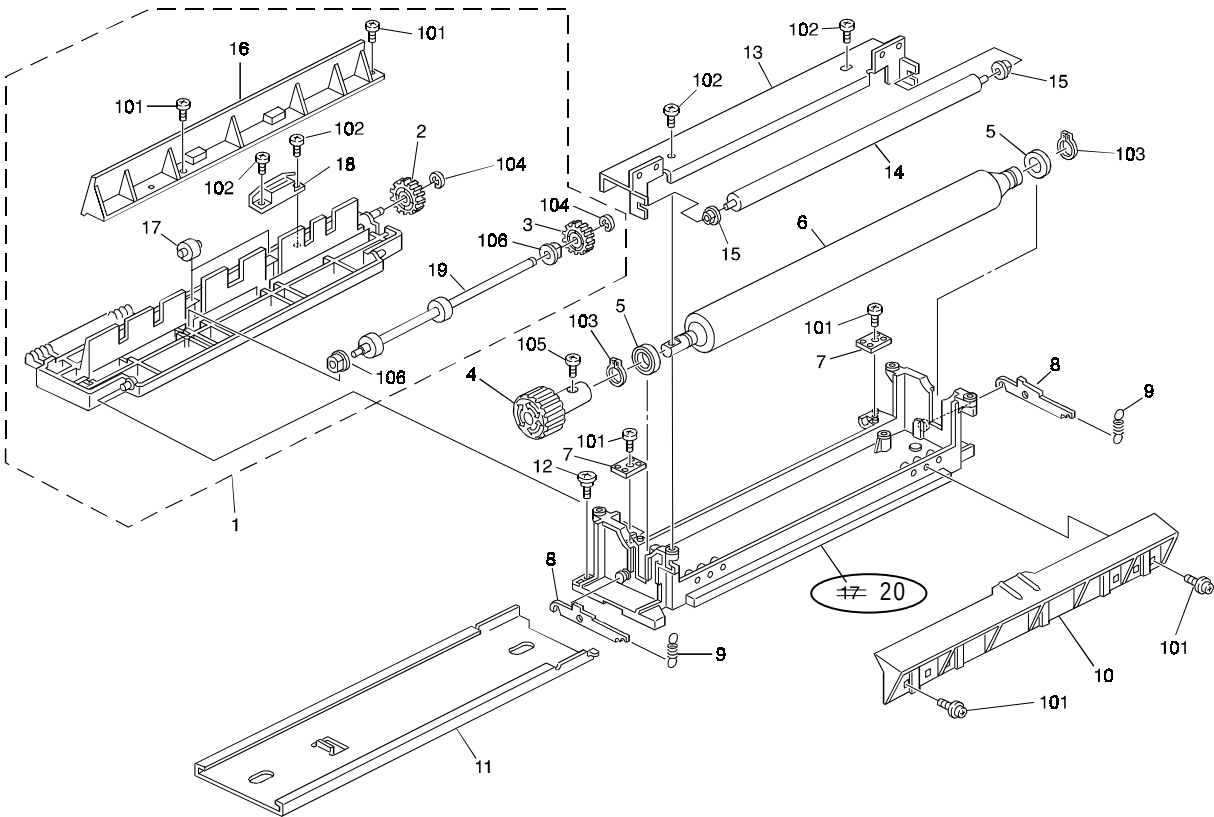
Continued...



- UPDATE 2
- BRACKET TONER HOLDER – The Bracket – Toner Holder was updated. Please update your Parts Catalog with the following change.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1343164	A2173163	Bracket – Toner Holder	1	43	17

- UPDATE 3
- FUSING FRAME – The illustration for the Fusing Frame was incorrectly indexed as number 17 and should be 20. Please update your Parts Catalog with the following change.



			REFERENCE		
PART NUMBER	DESCRIPTION	QTY	PAGE	ILLUSTRATION ITEM	
				OLD	NEW
A1344151	Fusing Frame	1	57	17	20 *

* The illustration item number has been corrected.

BULLETIN NUMBER: A133/A195/A217 – 010

07/22/98

APPLICABLE MODEL:

GESTETNER – 3240

RICOH – AFICIO 401

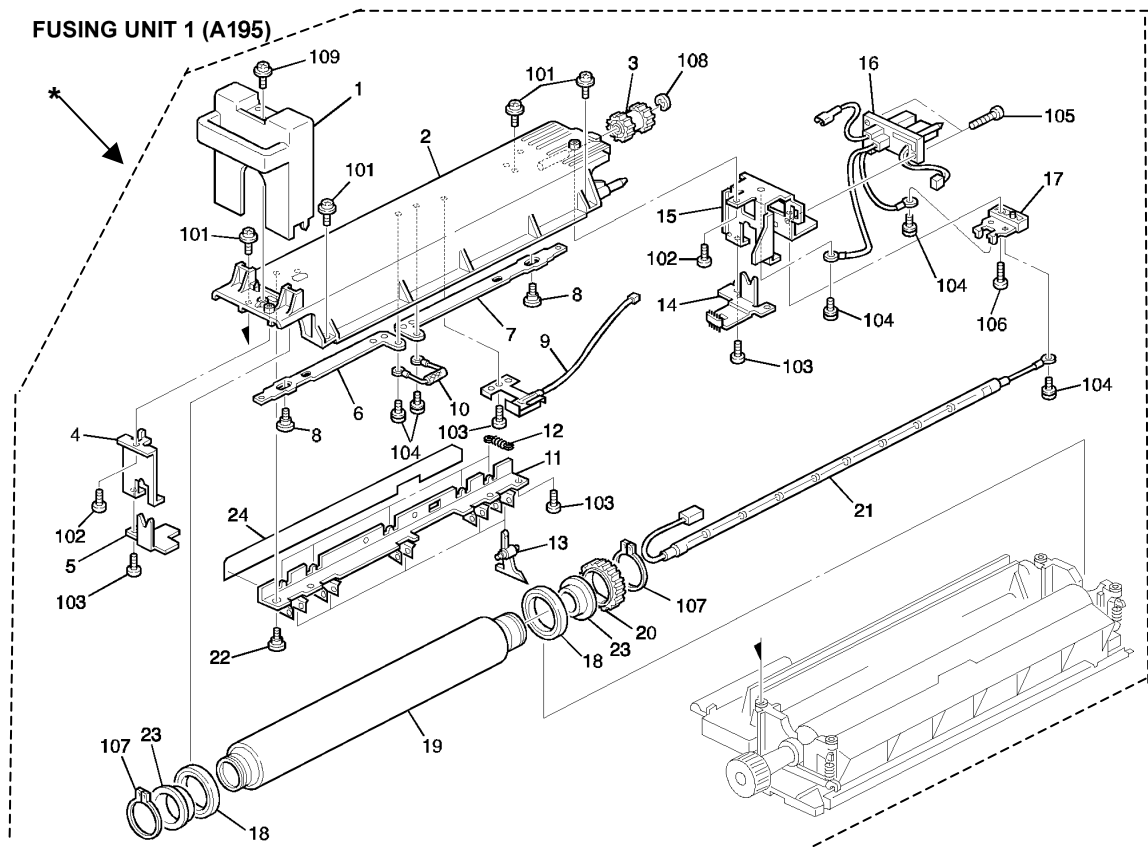
SAVIN – 9940DPC

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all A195 Parts Catalogs.

- **UPDATE 1:** FUSING UNIT – The Fusing Unit is now available as a service part. Please update your Parts Catalog with the following changes.



NEW PART NUMBER	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A1337501	Fusing Unit – 115 V	1	57	*
A1337506	Fusing Unit – 230 V	1	57	*

Continued...



- **UPDATE 2** BRACKET TONER HOLDER – The Bracket – Toner Holder was updated. Please update your Parts Catalog with the following change.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1343164	A2173163	Bracket – Toner Holder	1	45	17

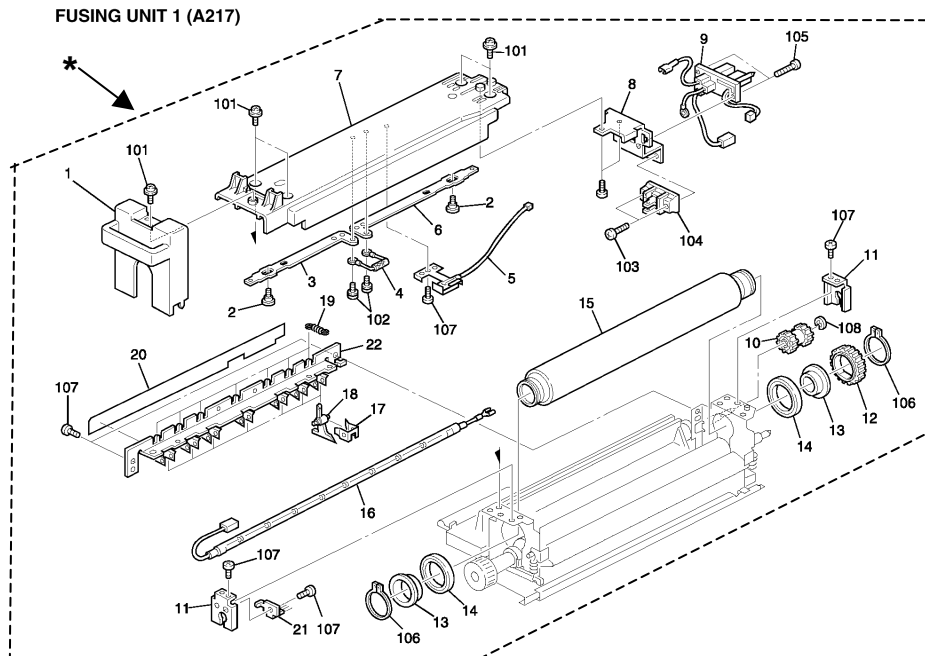
- **UPDATE 3** SCANNER BOARD – The Scanner Board was updated. Please update your Parts Catalog with the following change.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A6515100	A6515110	Scanner Board	1	91	1

BULLETIN NUMBER: A133/A195/A217 - 011
07/22/98
APPLICABLE MODEL:
GESTETNER – 2850E
RICOH – AFICIO 500
SAVIN – 9950DP
SUBJECT: FUSING UNIT & BRACKET – TONER HOLDER
GENERAL:

The following parts updates are being issued for all A217 Parts Catalogs.

- **UPDATE 1:** FUSING UNIT – The Fusing Unit is now available as a service part. Please update your Parts Catalog with the following changes.



			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A2177105	Fusing Unit – 115 V	1	57	*
A2177405	Fusing Unit – 230 V	1	57	*

- **UPDATE 2** BRACKET TONER HOLDER – The Bracket – Toner Holder was updated. Please update your Parts Catalog with the following change.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1343164	A2173163	Bracket – Toner Holder	1	45	17

Note: This copy is intended as a master original for reproduction of additional bulletins.



■ PARTS

BULLETIN NUMBER: A133/A195/A217 - 012

07/27/97

APPLICABLE MODEL:

GESTETNER 2640E/3240/2850E

RICOH AFICIO 400/401/500

SAVIN 9940DP/9940DPC/9950DP

SUBJECT: SERVICE MANUAL - INSERT

GENERAL:

The Service Manual page(s) listed below must be replaced with the pages(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

• Viii~x	Updated Pages Table of Contents
• Tab Index Page	Updated Page of Tab Index
• 13-1~13-7	Service Manual Insert Section 13 (Finisher A612)

Note: This copy is intended as a master original
for reproduction of additional bulletins.



**SERVICE
MANUAL**

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A195 Section 12 (Only available through A195 training)

FINISHER A612

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FINISHER A612

The SR710 A612 is based on the SR700 A612 Finisher.

Only the differences from the SR700 are described in the following pages.
Refer to the SR700 Finisher A612 section inside the A133 copier service manual for other information.

1. SPECIFICATIONS

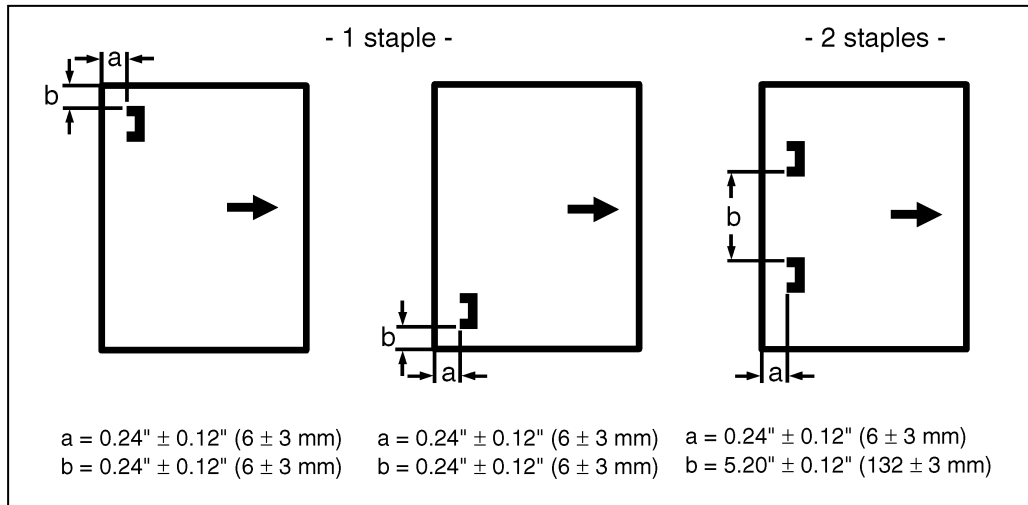
Paper Size:	Standard copying/Stack mode Maximum: 11" x 17" /A3 Minimum: 5 1/2" x 8 1/2"/A5 Staple mode Maximum: 11" x 17" /A3 Minimum: 8.5" x 5.5"/B5
Paper Weight:	Standard copying/Stack mode 14 ~ 42 lb/52 ~ 157 g/m ² Staple mode 17 ~ 21 lb/64 ~ 80 g/m ²
Paper Capacity:	1,500 sheets: 8 1/2" x 11"/A4 or smaller size (20 lb/80 g/m ²) 1,000 sheets: 8 1/2" x 14"/B4 or larger size (20 lb/80 g/m ²)
Stapler Capacity:	8 1/2" x 11"/A4 or smaller size (20 lb/80 g/m ²): from 2 to 50 sheets 8 1/2" x 14"/B4 or large size (20 lb/80 g/m ²): from 2 to 30 sheets
Staple Replenishment:	Cartridge exchange (5,000 staples/cartridge)
Power Source:	DC 24 V (from copier)
Power Consumption:	48 W (average)
Weight:	35 kg (77.2 lb.)

Finisher
A612

☐ Specifications are subject to change without notice.

SPECIFICATIONS

Stapling Position:



Dimensions:

26.5" x 20.5" x 37.5"
(671 mm x 514 mm x 950 mm)

1.1 DIFFERENCES FROM THE A612 FINISHER

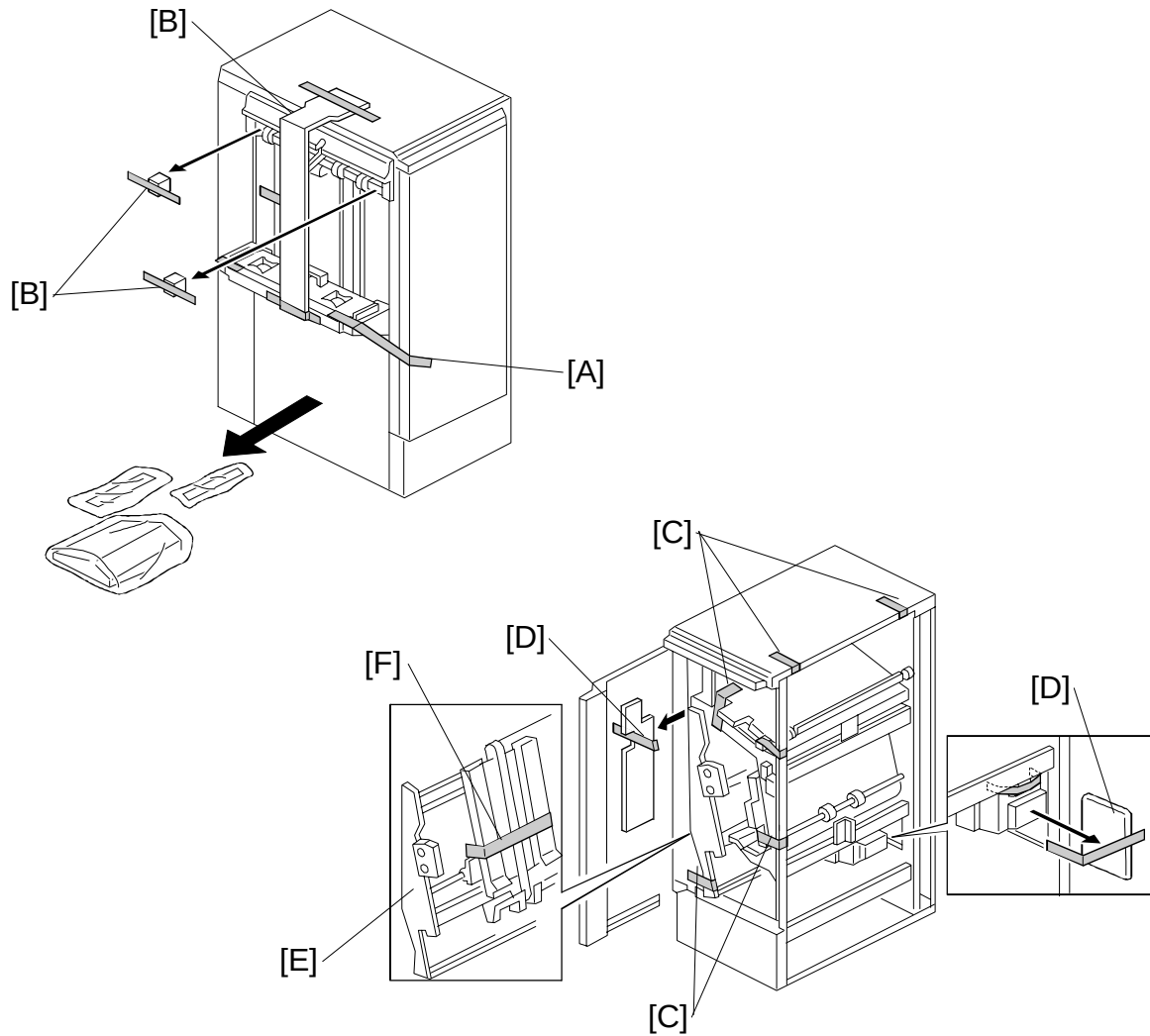
	A612 (SR700)	A612 (SR710)
Increased in paper speed at the entrance of the unit.	200mm/s	250mm/s
Two Grounding Plates are no longer necessary for the install of the unit.	Grounding Plates (P/N A6665455)	Grounding Plates are removed due to European Radiation Standard Class of the A217 from class B to class A.

The following table shows the parts differences between the SR700 (A612) and the SR710 (A612).

SR700	SR710	Description	Qty	Page	Index
A6665455	---	Grounding Plate (SR700)	1	7	21
A6125955	---	Grounding Plate - Bank (SR700)	1	7	22
A6125110	A6125120	Main Control Board	1	23	2
A5662101		Stepping Motor - DC 6.3W	1	23	22
	A6122102		1	23	31
A6125651	A6125661	IC - AM27C256-15DC	1	23	3

Finisher
A612

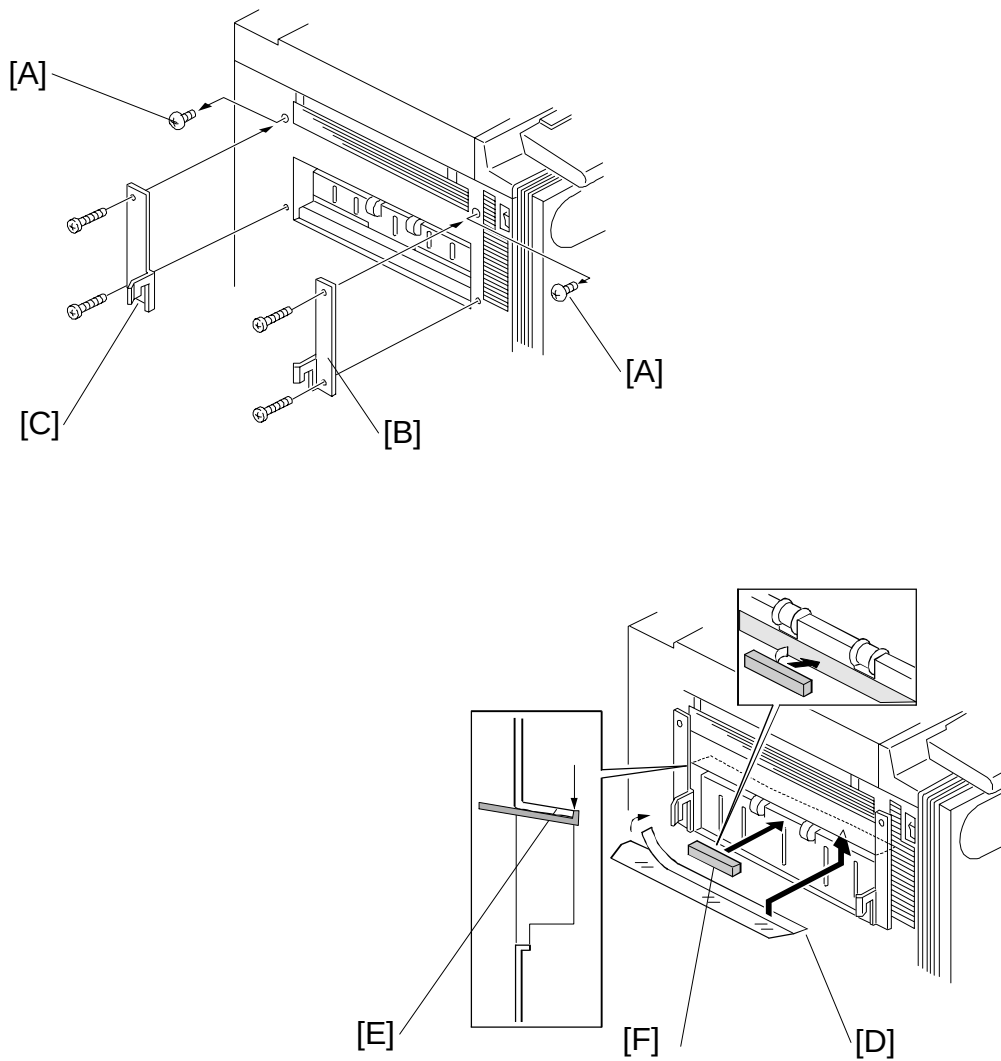
2. INSTALLATION



⚠ CAUTION

Unplug the power cord before beginning the following procedure.

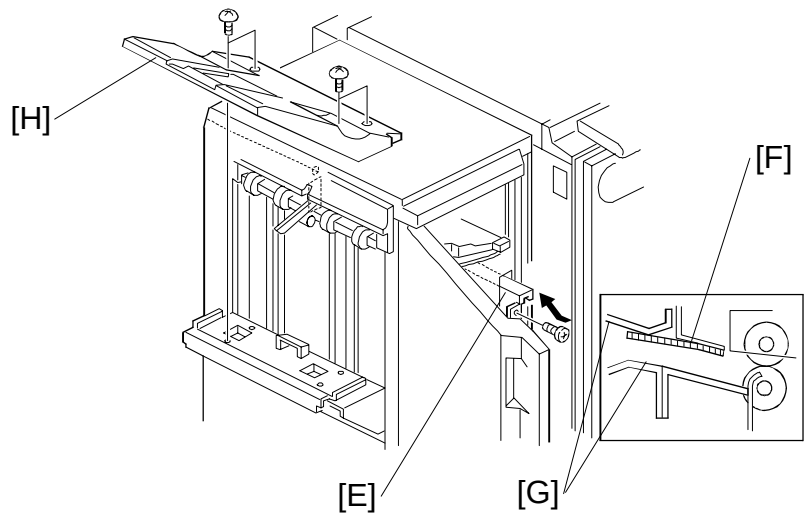
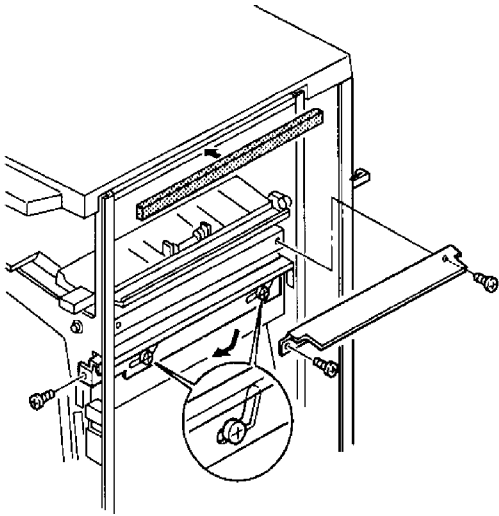
1. Remove the strip of tape [A] and the cushions [B].
2. Open the front door and remove the strips of tape [C] and cushions [D].
3. Pullout the staple unit [E].
4. Remove the strip of tape [F].



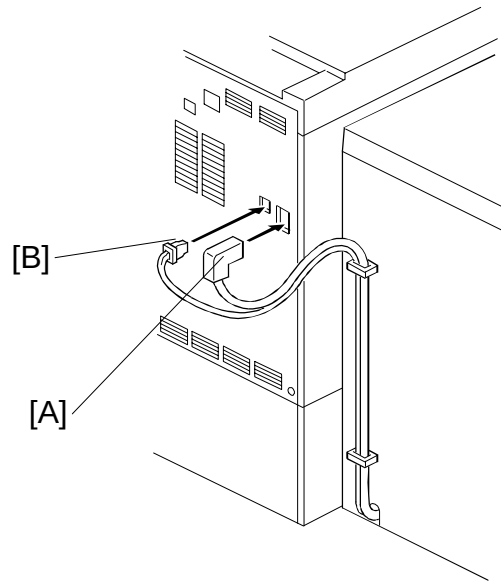
Finisher
A612

5. Remove the screws [A] from the left cover.
6. Install the front connecting bracket [B] (2 screws— M4 x 12) and the rear connecting bracket [C] (2 screws— M4 x 12).
7. Affix the mylar strip [D] to the copy exit area, as shown.
NOTE: Carefully align the edge of the cover [E] with the mylar guide.
8. Affix the cushion [F] to the lower exit plate, as shown.

INSTALLATION



9. Open the front door of the finisher and remove the screw [A], which secures the locking lever [B]. Then pull the locking lever (This causes the lever to move out and down).
 10. Affix the cushion [C] on the metal stay (not on the cover) as shown.
 11. Install the entrance guide plate [D] (2 screws -M4 x 6).
 12. Align and install the finisher on the connecting brackets. Lock them in place by raising the locking lever [E].
- NOTE:** Ensure that the mylar strip [F] is located between the guides [G].
13. Install the shift tray [H] (4 screws — M4 x 8).



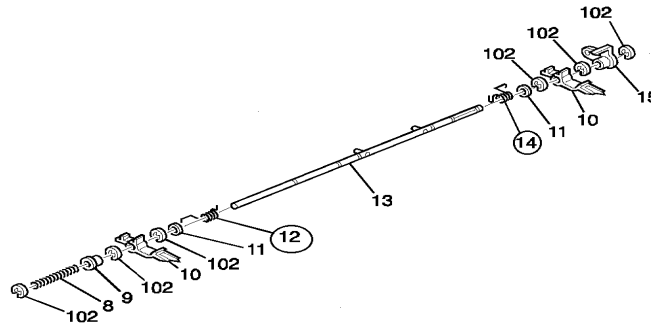
Finisher
A612

14. Reinstall the rear cover.
 15. Connect the cable [A] and the fiber optic connector [B].
 16. Plug in the copier.
 17. Turn on the main switch and test the newly installed finisher's operation.
- NOTE:** The copier automatically recognizes that the finisher has been installed. The stapler will begin stapling after about 10 copies (This allows the first staple to come to the proper position in the cartridge).

BULLETIN NUMBER: A133/A195/A217 - 013
01/11/99
APPLICABLE MODEL:
GESTETNER – 2640E/3240/2850E
RICOH – AFICIO 400/401/500
SAVIN – 9940DP/9940DPC/9950DP
SUBJECT: PARTS CATALOG UPDATES
GENERAL:

The following parts updates are being issued for all A133/A195/A217 Parts Catalogs.

- UPDATE 1:** **PRESSURE SPRING** – To reduce the wear on the Drum caused by the Pick-off Pawls, the pressure applied to the Pick-off Pawls by the Pressure Springs has been reduced. New style Pressure Springs are available. To differentiate new style parts from old style parts, the new parts are colored black. Please update your Parts Catalog with the new style Pressure Springs part number.



OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					PAGE		ITEM
					A133	A217/ A195	
AA066250	AA066311	Pressure Spring	1	1	51	53	12
AA066251	AA066312	Pressure Spring	1	1	51	53	14

UNITS AFFECTED:

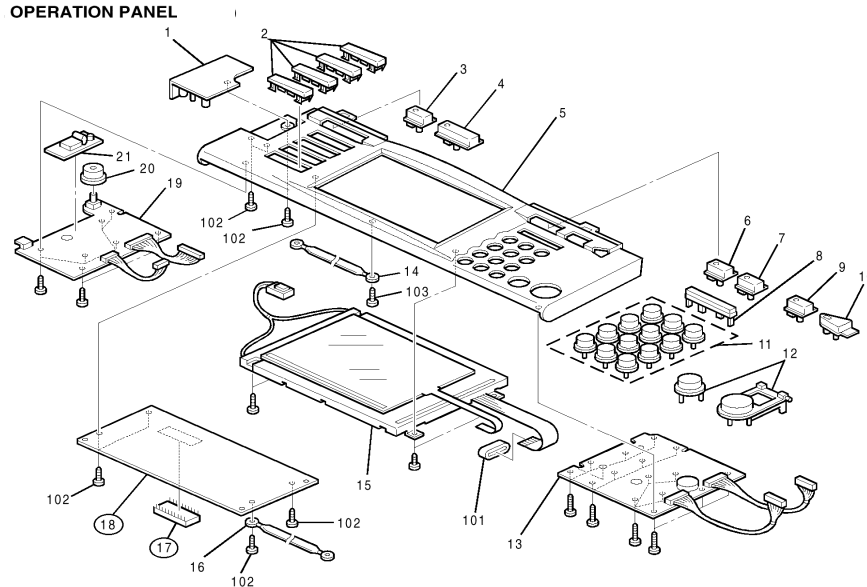
All copiers manufactured after the Serial Numbers listed below will have the new style Pressure Springs installed during production.

MODEL NAME		SERIAL NUMBER
Gestetner	2640E	August 98 production
Gestetner	2850E	AN38070001
Gestetner	3240	AG98070001
Ricoh	Aficio 400	August 98 production
Ricoh	Aficio 401	A7208060890
Ricoh	Aficio 500	A7608070001
Savin	9940DPC	6A68070001
Savin	9940DP	August 98 production
Savin	9950DP	9A78070001

Continued...



- UPDATE 2:**
OPERATION PANEL ROM – Images on the Touch Screen would appear blurred because of the background pattern used. Small letters or letters close together may appear blurred. The Operation ROM has been modified so that the background pattern will not cause small letters or letters grouped together to appear blurred. Please update your Parts Catalogs with the new style Operation Panel ROM and Operation Panel Board part numbers.



OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE			
					PAGE			ITEM
					A133	A195	A217	
A1337704	A1337770	Operation Panel Board	1	1	11-B	15		18
A1337731	A1337747	ROM : Operation Panel	1	1	11-B	15		17
A2177730	A2177770	Operation Panel Board	1	1			15	18
A2177731	A2177747	ROM : Operation Panel	1	1			15	17

UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style Operation Panel ROM installed during production.

MODEL NAME		SERIAL NUMBER
Gestetner	2640E	June Production
Gestetner	2850E	AN38070001
Gestetner	3240	AG98060001
Ricoh Aficio	400	A3918060001
Ricoh Aficio	401	A7208060001
Ricoh Aficio	500	A7608060001
Savin	9940DP	June Production
Savin	9940DPC	6A68060001
Savin	9950DP	9A78060001

The (A133, A195) Operation Panel ROM (file name A133op1.EXE) and the (A217) Operation Panel ROM (file name A217op1.EXE) can be downloaded through the Ricoh Technical Services FTP Site.

NOTE: For more information about the Ricoh Technical Services FTP Site, order the "TECHNOLOGY SOLUTION CENTER (TSC) FTP INTERNET SITE" (Refer to Service News and Information number 428) through normal NSPC channels.

BULLETIN NUMBER: A133/A195/A217 - 014
11/06/98
APPLICABLE MODEL:
GESTETNER – 3240
RICOH – AFICIO 401
SAVIN – 9940DPC
SUBJECT: PARTS CATALOG UPDATES
GENERAL:

The following parts updates are being issued for all A195 Parts Catalogs.

- UPDATE 1:** **PRINTER CONTROLLER BOARD** – Since the PostScript ROM is no longer in production, a substitute is now available. At the factory the PostScript Board is installed onto the Printer Controller Board and the data is written into the firmware. However, in order to write the firmware onto the new ROM, the firmware of the boot ROM for the Printer Controller was modified. This modification is to the Boot ROM and not the Printer Controller ROM. To differentiate the new Controller Board from the old style board, the part numbers have been changed. Please update your A195 Parts Catalog with the new part number.

						REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT		PAGE	ITEM
A6495100	A6495400	Printer Controller Board	1	0		89	6

NOTE: This change implemented from Lot No. 84020001.

- UPDATE 2:** **POSTSCRIPT BOARD** – Since the PostScript ROM is no longer in production, a substitute is now available. At the factory the PostScript Board is installed onto the Printer Controller Board and the data is written into the firmware. However, in order to write the firmware onto the new ROM, the firmware of the boot ROM for the Printer Controller was modified. This modification is to the Boot ROM and not the Printer Controller ROM. To differentiate the new Controller Board from the old style board, the part numbers have been changed. Please update your A195 Parts Catalog with the new EDP part number.

					REFERENCE	
EDP PART NO.		DESCRIPTION	QTY	INT	PAGE	ITEM
EDP361026		PostScript Board	1	0	91	3

NOTE: This change implemented from Lot No. 87022156.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Note: This copy is intended as a master original for reproduction of additional bulletins.



PARTS

BULLETIN NUMBER: A133/A195/A217 - 015
11/06/98
APPLICABLE MODEL:
GESTETNER – 2640E/3240/2850E
RICOH – AFICIO 400/401/500
SAVIN – 9940DP/9940DPC/9950DP
SUBJECT: MAIN SWITCH
GENERAL:

The use of a neutral cleaner on the Main Switch may weaken the switch and result in improper operation. To prevent this possibility, a new style Main Switch with different materials has been implemented. The following part update is being issued for all A133, A195 and A217 Parts Catalogs.

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					PAGE		ITEM
					A133	A195/ A217	
12042421	12042467	Main Switch	1	0	77	79	113

UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style Main Switch installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2640E	NA
Gestetner 3240	AG98060001
Gestetner 2850E	AN38070001
Ricoh AFICIO 400	NA
Ricoh AFICIO 401	A7208050001
Ricoh AFICIO 500	A7608060001
Savin 9940DP	NA
Savin 9940DPC	6A68050001
Savin 9950DP	9A78060001

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Note: This copy is intended as a master original for reproduction of additional bulletins.



PARTS

BULLETIN NUMBER: A133/A195/A217 - 016

04/06/99

APPLICABLE MODEL:

GESTETNER - 2640E/3240

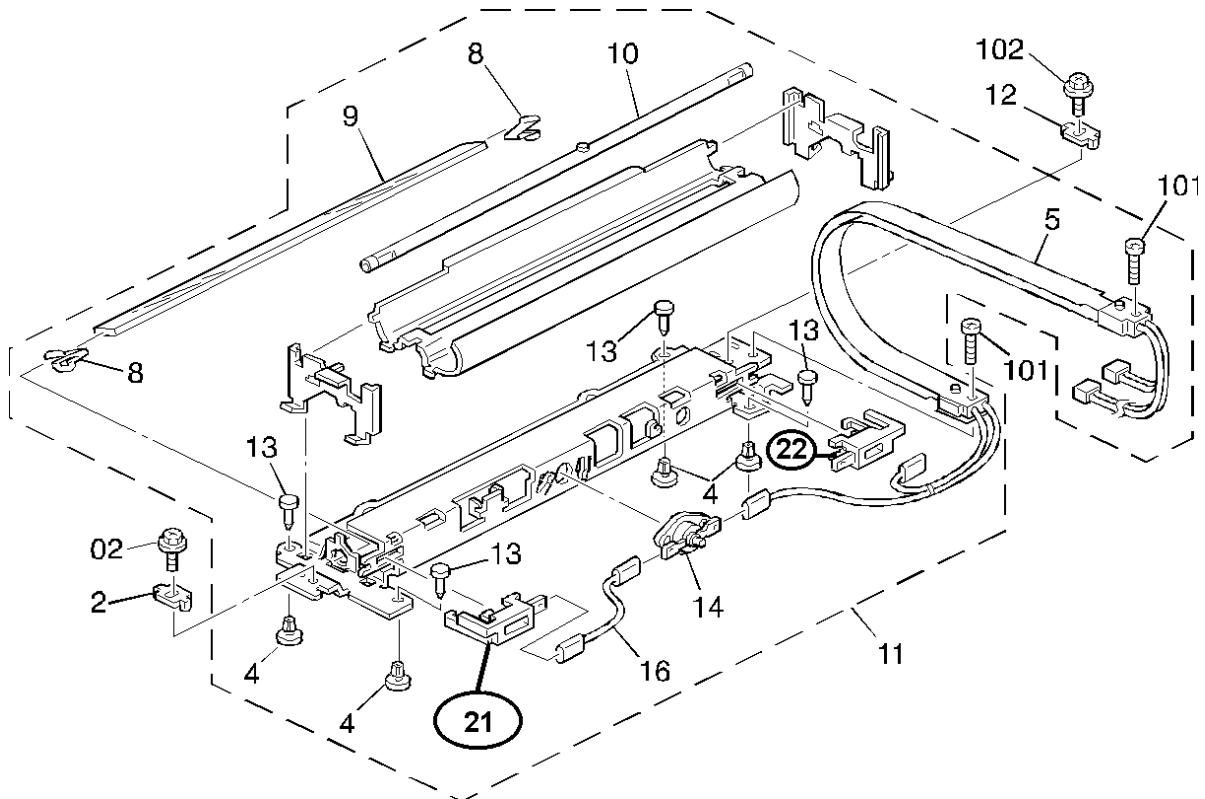
RICOH - AFICIO 400/401

SAVIN - 9940DP/9940DPC

SUBJECT: 1ST SCANNER TERMINALS

GENERAL:

Please update your Parts Catalog with the following changes. The following Part updates are being issued for all A133 Parts Catalogs.



Note: This copy is intended as a master original for reproduction of additional bulletins.



PARTS

NEW PART NO.	DESCRIPTION	QTY	REFERENCE		
			PAGE		ITEM
			A133	A195	
A1341771	Front Terminal	1	33	35	21 *
A1341773	Rear Terminal	1	33	35	22 *

* Denotes new item number.

BULLETIN NUMBER: A133/A195/A217 – 017**05/03/99****APPLICABLE MODEL:****GESTETNER – 2640B/3240****RICOH – AFICIO 400/401****SAVIN – 9940 DP/9940DPC****SUBJECT: OZONE FILTER****GENERAL:**

The following Parts Corrections are being issued for all A133/A195 Parts Catalogs.
Due to Parts Standardization with the A217.

**PARTS**

Note: This copy is intended as a master original
for reproduction of additional bulletins.

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					PAGE		ITEM
					A133	A195	
AA010083	AA010098	Ozone Filter – 64x45x30	1	0	75	77	5

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: A133/A195/A217 - 018

05/03/99

APPLICABLE MODEL:

GESTETNER - 2640E

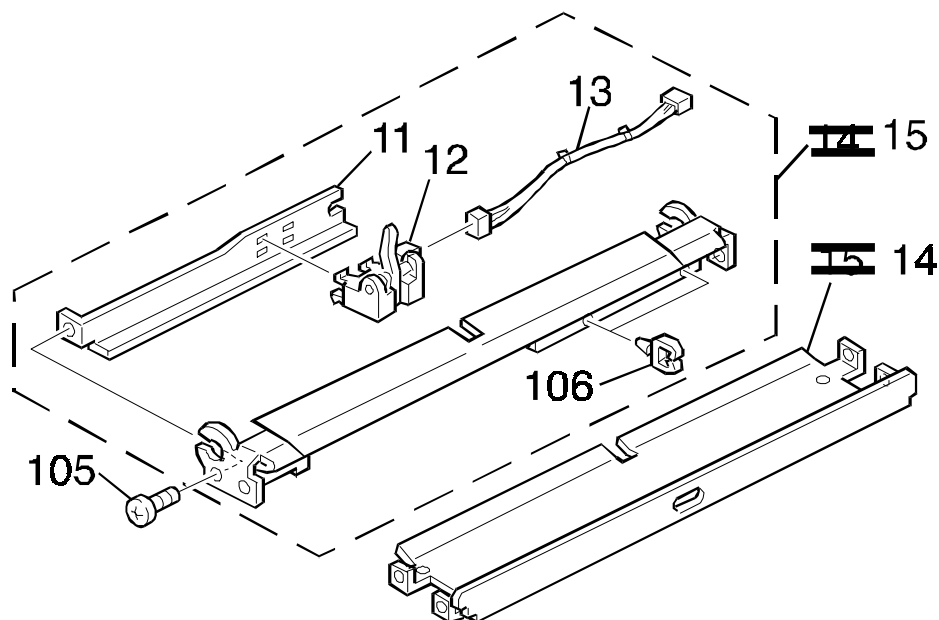
RICOH - Aficio 400

SAVIN - 9940 DP

SUBJECT: PAPER REGISTRATION

GENERAL:

The index number 14 and 15 are inverted. The part for the Lower Registration Guide was change at the same time. The following Parts Corrections are being issued for all A133 Parts Catalogs.



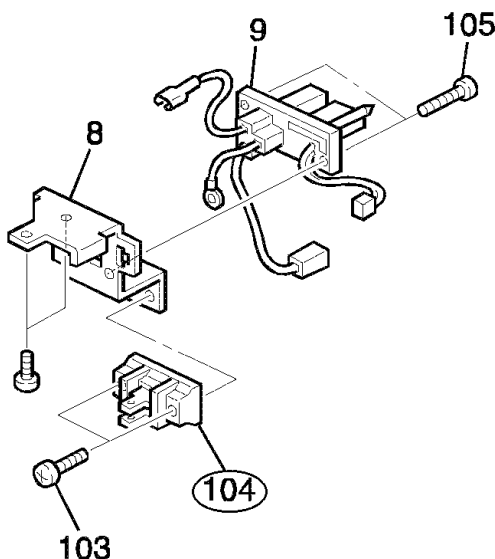
PARTS

Note: This copy is intended as a master original for reproduction of additional bulletins.

			REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	PAGE	ITEM
A1342558	----	Upper Guide Plate - Registration	30	15
A1342553	A1342552	Lower Registration Guide	30	14

BULLETIN NUMBER: A133/A195/A217 - 019
05/11/99
APPLICABLE MODEL:
GESTETNER -2850E
RICOH - AFICIO 500
SAVIN - 9950DP
SUBJECT: TERMINAL
GENERAL:

The following part update is being issued for all A217 Parts Catalogs. Please update your Parts Catalog with the following change.



						REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT		PAGE	ITEM
11010475	A2174085	Terminal	1	0		57	104

UNITS AFFECTED:

A217 Serial Number cut-in not available at time of publication.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: A133/A195/A217 - 020**05/28/99****APPLICABLE MODEL:****GESTETNER - 2640E****RICOH - N/A****SAVIN - N/A****SUBJECT: MODEL NAME PLATE****GENERAL:**

The following Parts Correction is being issued for all A133 Parts Catalogs.

**■ PARTS**

Note: This copy is intended as a master original
for reproduction of additional bulletins.

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	REFERENCE	
				PAGE	ITEM
A1536406	A1337075	Model Name Plate - Ges	1	11	2
				101	10
A1536406	A1337077	Model Name Plate - Nashua	1	11	2
				101	10

BULLETIN NUMBER: A133/A195/A217 - 021**06/07/99****APPLICABLE MODEL: - A133/A195****GESTETNER - 2640E/3240****RICOH - AFICIO 400/401****SAVIN - 9940DP/9940DPC****SUBJECT: POLYGON MIRROR MOTOR****SYMPTOM:**

- Service Code 320
- Partially Blank Copies

CAUSE:

1. The magnets in the Polygon Mirror Motor may become loose and may eventually dislodge.
2. The circuits in the Polygon Mirror Motor are disrupted by electrical noise.

SOLUTION:

To improve reliability the material of the magnet on the Polygon Mirror Motor has been changed.

To prevent partially blank copies, a noise filter has been added to the clock circuit on the Polygon Mirror Motor Drive Board.

**ELECTRICAL**

Note: This copy is intended as a master original
for reproduction of additional bulletins.

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					Page		ITEM
					A133	A195	
AX060100	AX060148	Polygon Mirror Motor	1	1	39	41	1

UNITS AFFECTED:

All A133 copiers manufactured after the Serial Numbers listed below will have the new style Polygon Mirror Motors installed during production. A195 Serial Number cut-in, not available at time of publication.

MODEL NAME	SERIAL NUMBER
Gestetner 2640E	9327030069
Gestetner 3240	NA
Ricoh Aficio 400	A3917030661
Ricoh Aficio 401	NA
Savin 9940DP	3A77040001
Savin 9940DPC	NA

BULLETIN NUMBER: A133/A195/A217 - 022**06/07/99****APPLICABLE MODEL:****GESTETNER – 2640E/3240/2850E****RICOH – Aficio 400/401/500****SAVIN – 9940DP/9940DPC/9950DP****SUBJECT: INTERMITTENT SERVICE CODES****SYMPTOM:**

- SC 303, 305, 392, 625
- Partial blank copies
- Erratic copy output

CAUSE:

- Electrical noise

SOLUTION:

Follow the steps below to reduce or eliminate electrical noise within the machine.

1. Wall Outlet

- Input voltage level; 120v, 60Hz, more than 12 Amps
- Permissible voltage fluctuation: $\pm 10\%$
- Ensure the machine is properly grounded.
- Avoid multi wiring.
- Install a line filter.

2. Inspect the Fuser Grounding Brushes:

- Located between the Hot and Press Rollers at the non-operator side of the machine (P/N A1344103).
- Also on the rear frame of the Fusing Rail contacting the un-coated portion of the Fuser Entrance Guide (P/N A1534355). If these brushes are not making contact, or missing filaments; reform or replace as necessary.

3. Polygon Mirror Motor:

- Add two Ferrite Cores (P/N 16070478) to CN571 of the Polygon Mirror Motor Harness. Apply the cores to the data lines as close to the motor as possible.

4. Transfer Belt Assembly:

- Inspect/replace the Transfer Belt for Pinholes or excessive wear. If the Transfer Belt is replaced, use only the appropriate belt for these models (P/N A1343850).
- Clean the Transfer Bias Contact.
- Inspect/tighten the Transfer Power Pack ground wires.

5. XF Gate Signal:

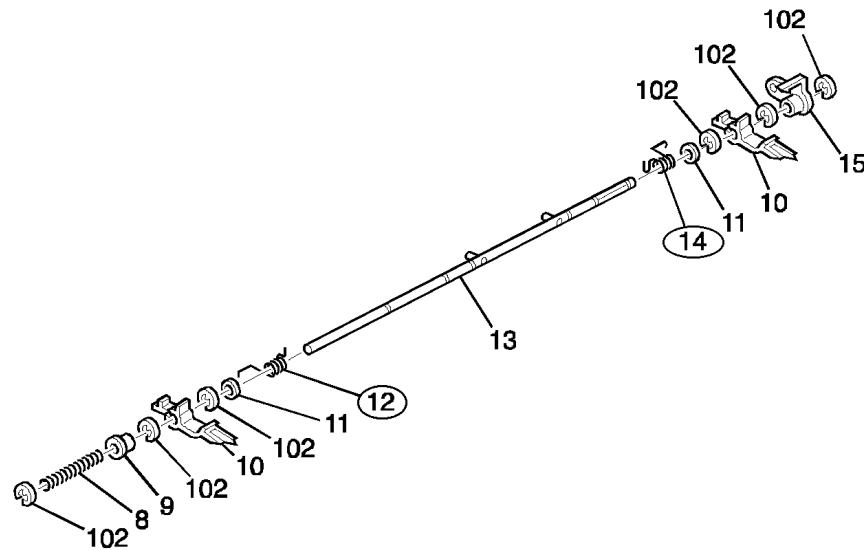
- Isolate the Grey harness carrying the XF Gate signal between the EX-IPU PCB CN515 and BCU PCB CN206 from the rest of the Main DC Harness. Add two Ferrite Cores (P/N 16070478) to the harness once it has been isolated. Place one Ferrite Core close to the EX-IPU PCB and the other close to the BCU PCB.

Note: This copy is intended as a master original
for reproduction of additional bulletins.

**ELECTRICAL**

BULLETIN NUMBER: A133/A195/A217 - 023
07/06/99
APPLICABLE MODEL:
GESTETNER – 2640E/3240/2850E
RICOH – AFICIO 400/401/500
SAVIN – 9940DP/9940DPC/9950DP
SUBJECT: PICK-OFF PAWL PRESSURE SPRINGS
GENERAL:

To reduce the wear on the Drum caused by the Pick-off Pawls, the tension of the Pressure Springs have been changed from 98 mN to 40 mN. To distinguish the old style part from the new style part, the old part was black while the new style part is silver. The following parts updates are being issued for all A133 Parts Catalogs. Please update your Parts Catalogs with the following information.


PARTS

Note: This copy is intended as a master original for reproduction of additional bulletins.

							REFERENCE
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE		ITEM
					A133	A195/A217	
AA036311	AA066323	Pressure Spring: Front	1	1	51	53	12
AA036312	AA066324	Pressure Spring: Rear	1	1	51	53	14

UNITS AFFECTED:

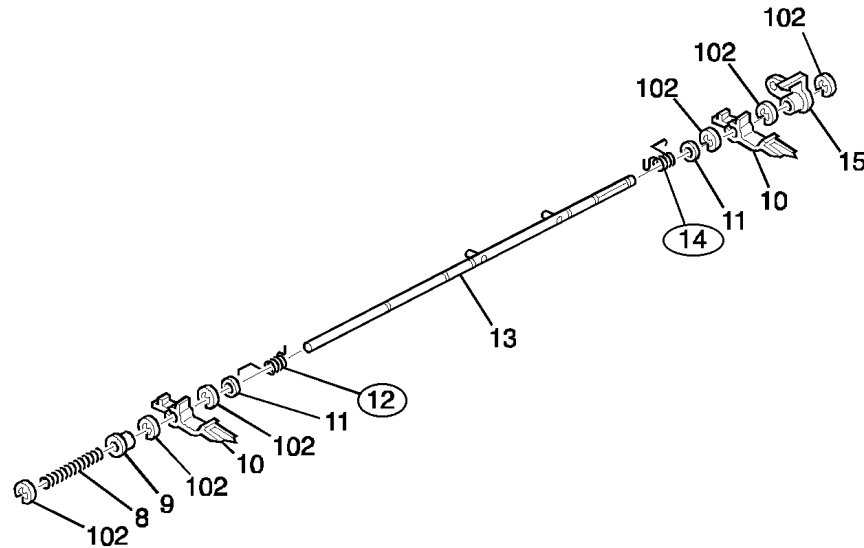
Service parts only.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: A133/A195/A217 – 023 REISSUE ★
07/09/99
APPLICABLE MODEL:
GESTETNER – 2640E/3240/2850E
RICOH – AFICIO 400/401/500
SAVIN – 9940DP/9940DPC/9950DP
SUBJECT: PICK-OFF PAWL PRESSURE SPRINGS
GENERAL:

To reduce the wear on the Drum caused by the Pick-off Pawls, the tension of the Pressure Springs have been changed from 98 mN to 40 mN. To distinguish the old style part from the new style part, the old part was black while the new style part is silver. The following parts updates are being issued for all A133 Parts Catalogs. Please update your Parts Catalogs with the following information.



							REFERENCE
★ OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE		ITEM
					A133	A195/A217	
AA066311	AA066323	Pressure Spring: Front	1	1	51	53	12
AA066312	AA066324	Pressure Spring: Rear	1	1	51	53	14

UNITS AFFECTED:

Service parts only.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		



BULLETIN NUMBER: A133/A195/A217 - 024
07/09/99
APPLICABLE MODEL:
GESTETNER – 2640E/3240/2850E
RICOH – AFICIO 400/401/500
SAVIN – 9940DP/9940DPC/9950DP
SUBJECT: DUPLEX FEED OUT JAMS
SYMPTOM:

After paper has been stacked in the Duplex Unit, a duplex feed out jam may occur as the paper is fed out of the Duplex Unit.

CAUSE:

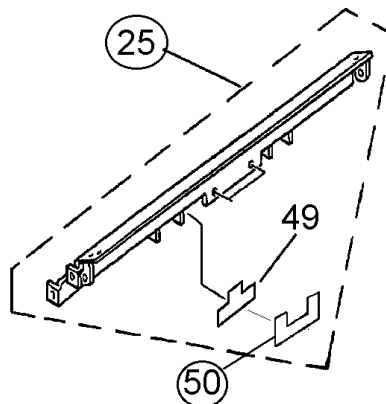
The Duplex Guide Mylar on the Duplex Guide Plate slips downward causing the Duplex Guide Mylar to be at the incorrect height.

SOLUTION:

To prevent feed out jams in the Duplex Unit, a Reinforcement Mylar has been added. Please follow the directions in the PROCEDURE section of this bulletin for Reinforcement Mylar installation instructions.

GENERAL:

The following part updates are being issued for all A133, A195 and A217 Parts Catalogs. Please update your Parts Catalog with the following information.



OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					PAGE		ITEM
					A133	A195/A217	
A1344662	A2174517	Duplex Guide Plate	1	1	63	65	25
	A2174695	Reinforcement Mylar	1	3	63	65	50 *

* Denotes new item.

Continued...



MECHANICAL

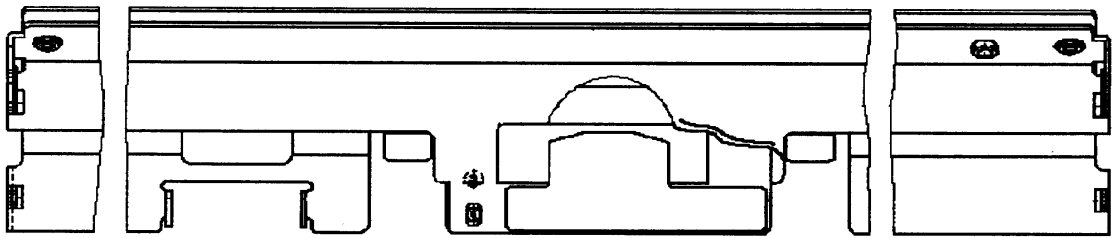


PARTS

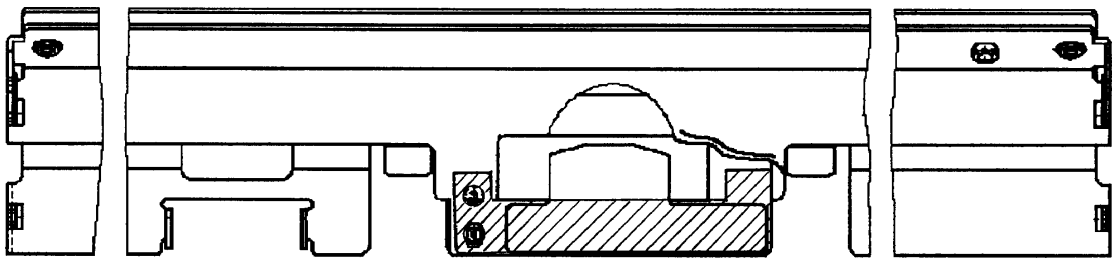
PROCEDURE:

NOTE: 1. If Duplex Guide Mylar has slipped down, replace and properly position the Duplex Guide Mylar.
See Bulletin, A133/A195/A217 - 008 Update 1 for installation diagram of Duplex Guide Mylar.
2. If the Reinforcement Mylar is not properly attached, the effectiveness of this modification is adversely affected.

1. Before attaching the Reinforcement Mylar, clean the Guide Plate with alcohol.



2. After the Guide Plate has completely dried, align the bottom edge of the Guide Plate with the bottom of the Reinforcement Mylar.



Note:

- Make sure that the Reinforcement Mylar does not protrude beyond the edges of the Guide Plate.
- Make sure that there are no air bubbles under the Reinforcement Mylar.
- After attaching the Reinforcement Mylar, press down hard on the Reinforcement Mylar to make sure that it is firmly affixed.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: A133/A195/A217 - 025

09/08/99

APPLICABLE MODEL:

GESTETNER - 2640E/2850E/3240

RICOH - AFICIO 400/401/500

SAVIN - 9940DP/9940DPC/9950DP

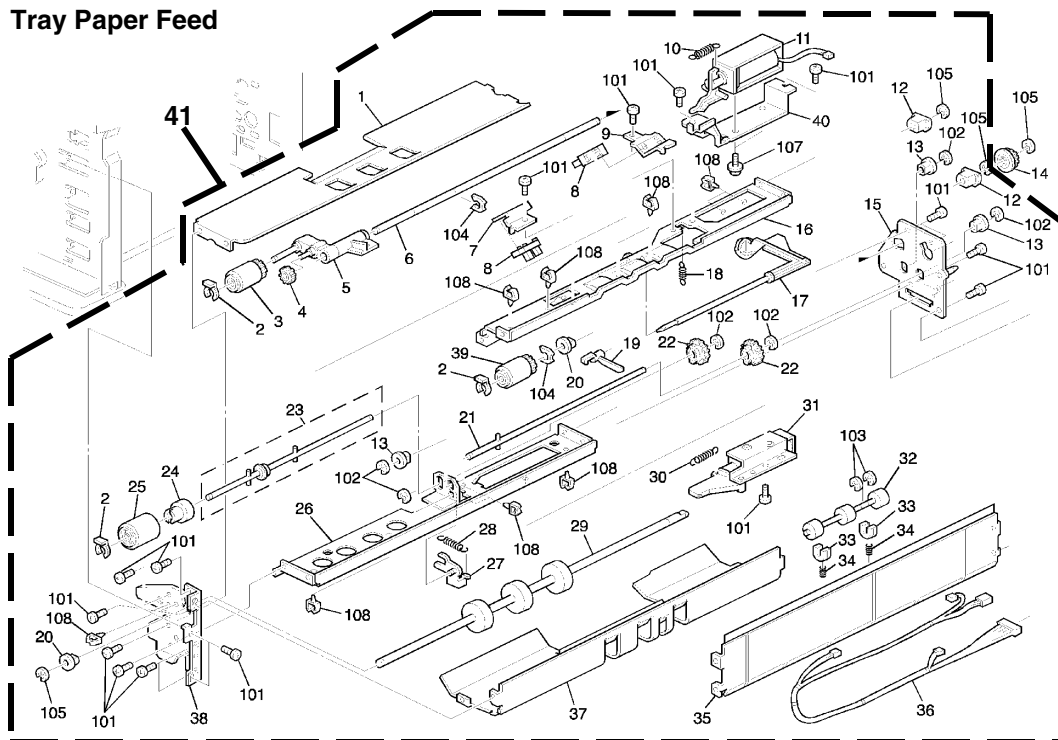
SUBJECT: PAPER FEED UNIT - LOWER

GENERAL:

The following Part has been added for all A133, A195, and A217 Parts Catalogs. Please update your Parts Catalogs with the information listed below.

NEW PART NO.	DESCRIPTION	QTY	REFERENCE			
			A133		A195/A217	
			PAGE	ITEM	PAGE	ITEM
A1342750	Paper Feed Unit- Lower	1	17	41*	--	--
A1342750	Paper Feed Unit- Lower	1	--	--	19	41*
A1342750	Paper Feed Unit- Lower	1	--	--	19	41*

* Denotes New Item



BULLETIN NUMBER: A133/A195/A217 - 026

11/05/99

APPLICABLE MODEL:

GESTETNER - 2640E/3240/2850E

RICOH - AFICIO 400/401/500

SAVIN - 9940DP/9940DPC/9950DP

SUBJECT: DUPLEX TRAY ASSEMBLY

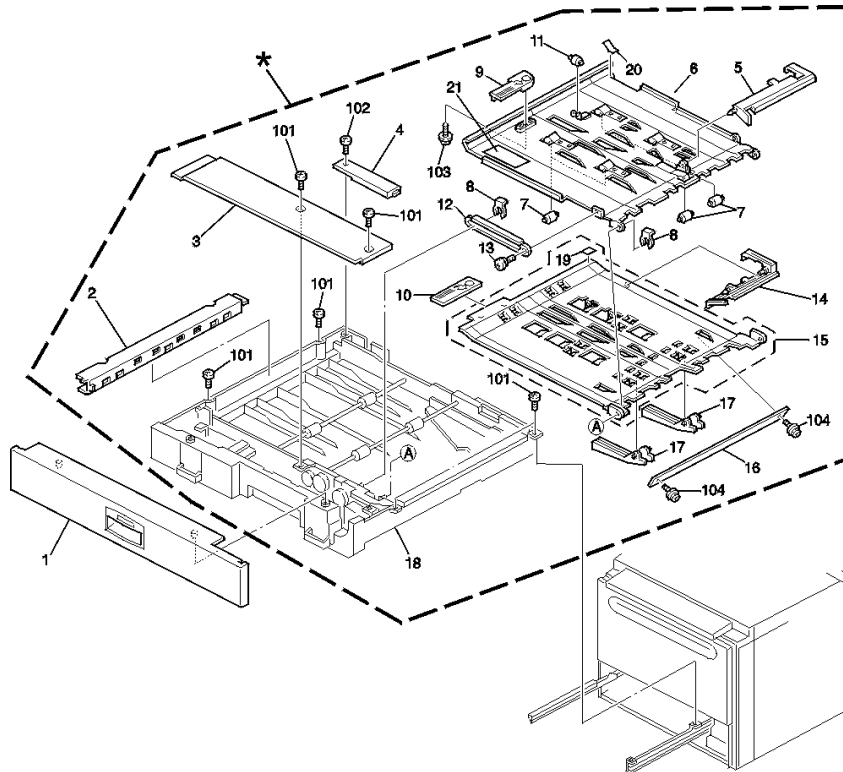
GENERAL:

The following Parts Catalog addition is being issued for all A133, A195, and A217 Parts Catalogs.

Note: This copy is intended as a master original for reproduction of additional bulletins.



PARTS



NEW PART NUMBER	DESCRIPTION	QTY	REFERENCE		
			PAGE		ITEM
			A133	A195/A217	
A1564610	Duplex Tray Ass'y	0-1	60	62	*

BULLETIN NUMBER: A133/A195/A217 - 027**11/05/99****APPLICABLE MODEL:****GESTETNER – 2640E/3240/2850E****RICOH – AFICIO 400/401/500****SAVIN – 9940DP/9940DPC/9950DP****SUBJECT: POOR COPY QUALITY****SYMPTOMS:**

- Gray or light copies
- Lines lead to trail edge
- Background on copies (internal test patterns appear normal)

CAUSE:

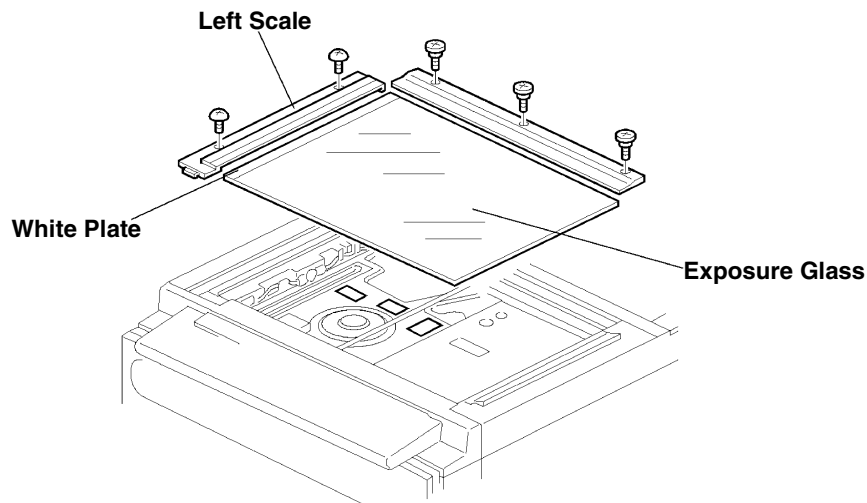
Exposure Glass installed incorrectly.

SOLUTION:

Remove the Left Scale and confirm that the White Plate attached to the Exposure Glass is facing down.

After Reinstalling the Exposure Glass turn the Main Switch “OFF”, then back “ON”.

NOTE: Do not perform SP 4428; as stated in the Field Service Manual this SP Mode is intended for factory use only. If this SP Mode is performed the NV RAM will require replacement.

**MECHANICAL****COPY QUALITY**

Note: This copy is intended as a master original for reproduction of additional bulletins.

BULLETIN NUMBER: A133/A195/A217 - 028

11/17/99

APPLICABLE MODEL:

GESTETNER – 2640E

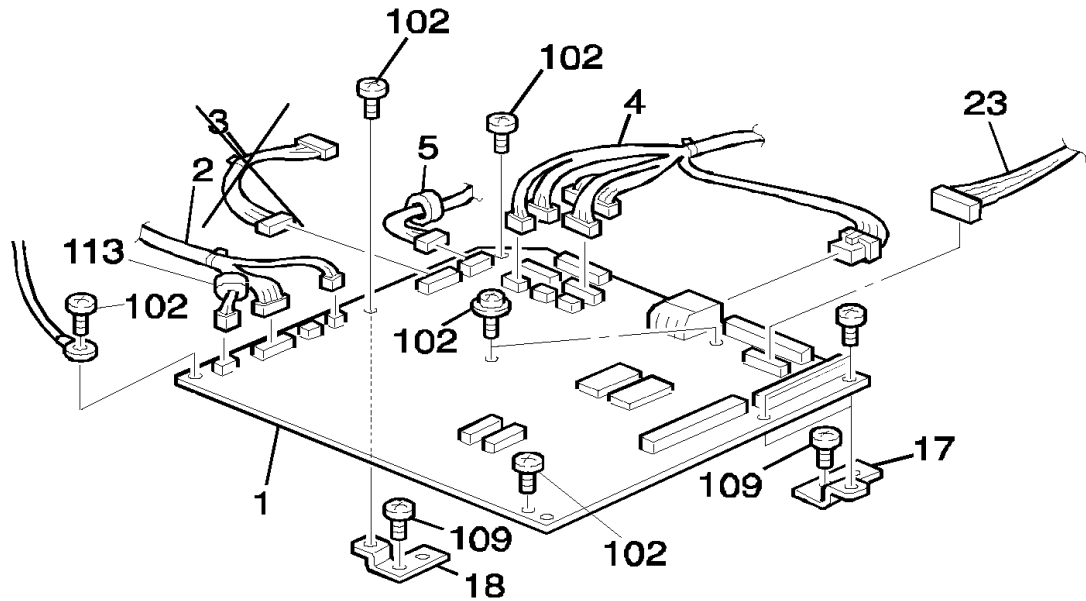
RICOH – AFICIO 400

SAVIN – 9940DP

SUBJECT: HARNESS AND LD UNIT

GENERAL:

Please delete, the Harness – LD Unit (115V) (P/N A1345396), item 3 on page 35 and in the corresponding illustration on page 34. The Harness – LD Unit is included in an assembly on page 39. That assembly is comprised of the Harness – LD , a Relay Connector and Harness-LSD on page 39, as item 6 (P/N A2175392). The following parts corrections are being issued for all A133 Parts Catalogs. Please update your Parts Catalogs with the following information.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1345396	Delete	Harness – LD Unit (115V)	1→0	35	3

NOTE: The illustration on page 38 does show the harness connected to the LD Unit. The harness is not included with the part numbers A1342085 or A1337173. The part number for the LD Unit Harness is included with item 5 on page 35 (A1345396 and A1337774).

BULLETIN NUMBER: A133/A195/A217 - 029

11/17/99

APPLICABLE MODEL:

GESTETNER – 3240

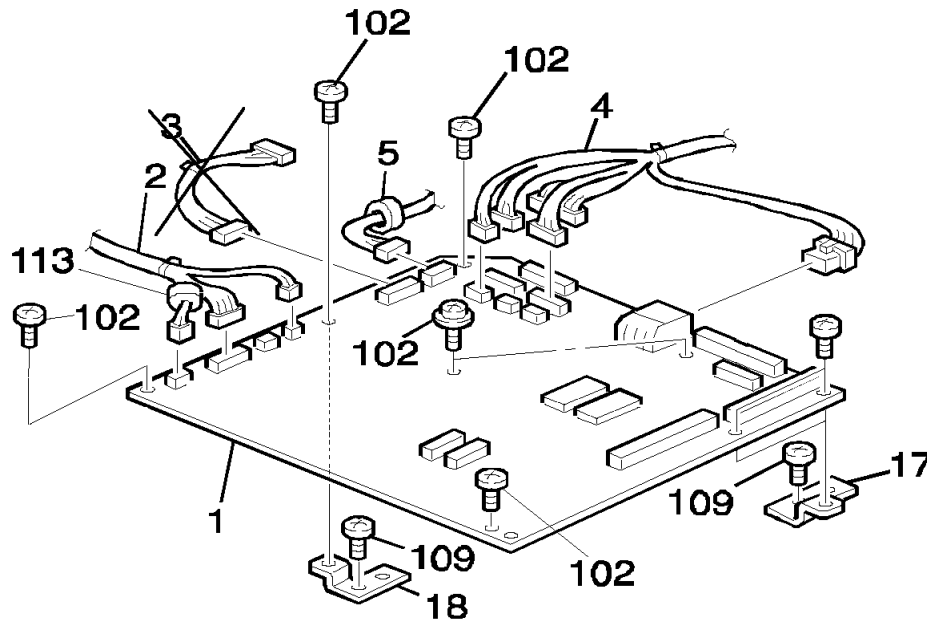
RICOH – AFICIO 401

SAVIN – 9940DPC

SUBJECT: HARNESS AND LD UNIT

GENERAL:

Please delete, the Harness – LD Unit (115V)(P/N A1345396), item 3 on page 37 and in the corresponding illustration on page 36. The Harness – LD Unit is included in an assembly on page 41. That assembly is comprised of the Harness – LD , a Relay Connector and Harness-LSD on page 41, as item 6 (P/N A2175392). The following parts corrections are being issued for all A195 Parts Catalogs. Please update your Parts Catalogs with the following information.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1345396	Delete	Harness – LD Unit (115V)	1→0	37	3

NOTE: The illustration on page 40 does show the harness connected to the LD Unit. The harness is not included with the part numbers A1342085 or A1337173. The part number for the LD Unit Harness is included with item 5 on page 37 (A1345396 and A1337774).

BULLETIN NUMBER: A133/A195/A217 - 030

11/17/99

APPLICABLE MODEL:

GESTETNER - 2850E

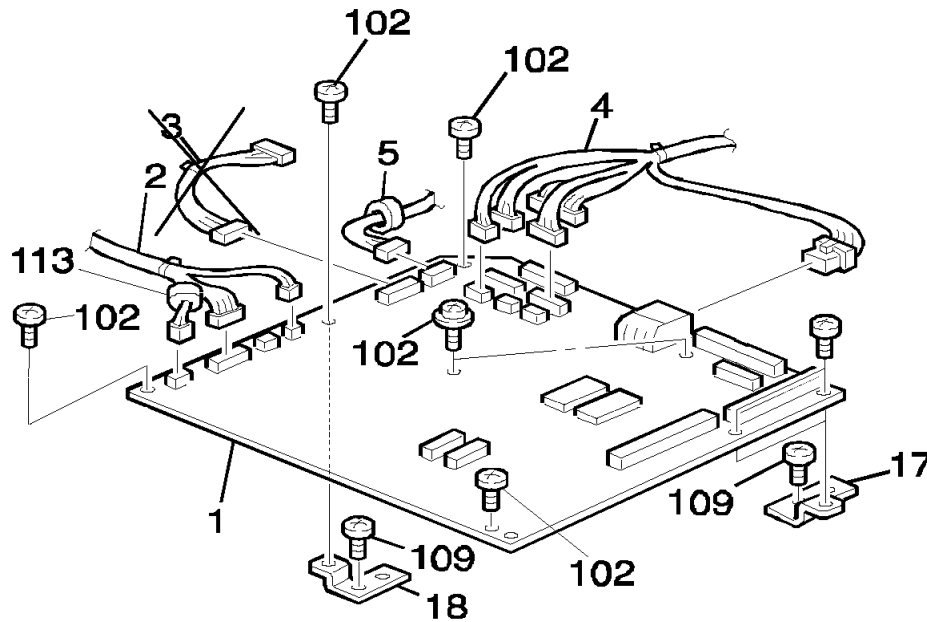
RICOH - AFICIO 500

SAVIN - 9950DP

SUBJECT: HARNESS AND LD UNIT

GENERAL:

Please delete, the Harness - Polygon Mirror (P/N A2175392), item 3 on page 37 and in the corresponding illustration on page 36. The Harness - Polygon Mirror is included in an assembly on page 41. That assembly is comprised of the Harness - Polygon Mirror, a Relay Connector and Harness-LSD on page 41, as item 6 (P/N A2175392). The following parts corrections are being issued for all A217 Parts Catalogs. Please update your Parts Catalogs with the following information.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A2175392	Delete	Harness - Polygon Mirror	1→0	37	3

NOTE: The illustration on page 40 does show the harness connected to the LD Unit. The harness is not included with the part number A2172085. The part number for the LD Unit Harness is included with item 5 on page 37 (A1337774).

Note: This copy is intended as a master original for reproduction of additional bulletins.



■ PARTS

BULLETIN NUMBER: A133/A195/A217 - 031

11/22/99

APPLICABLE MODEL:

GESTETNER – 3240

RICOH – AFICIO 401

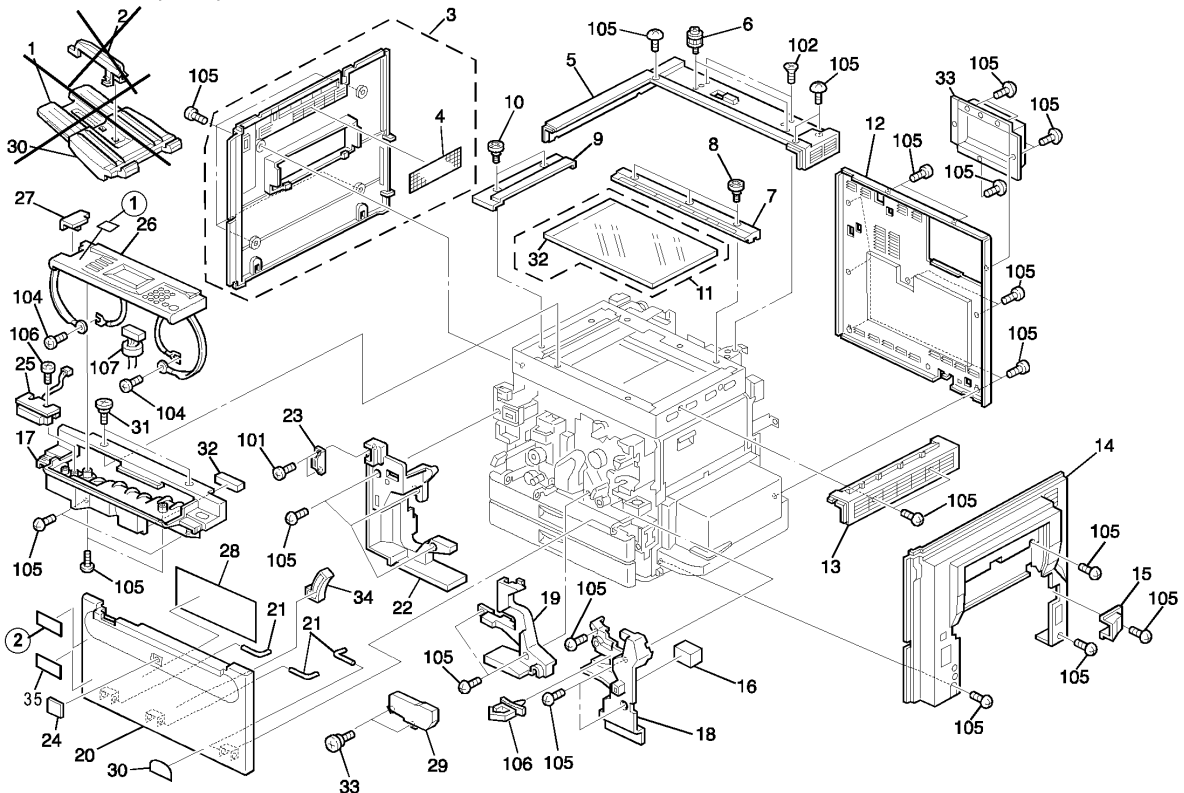
SAVIN – 9940DPC

SUBJECT: PARTS CATALOG ILLUSTRATION UPDATES

GENERAL:

The Copy Tray Slide (Item No. 1), Copy Tray Guide (Item No. 2) and Copy Tray (Item No. 30) should be deleted from the illustration on page 10. Please add the illustrations for the Decal – Keytop Cover (NRG-EU) as Item No. 1 and Decal – Cover Panel as Item No. 2 on page 10. See the illustration below. The following illustration updates are being issued for all A195 Parts Catalogs. Please update your Parts Catalogs with the following information.

1. EXTERIOR (A195)



PART NUMBER	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A1536409	Decal – Keytop Cover (NRG-EU)	1	11	1
C2252867	Decal – Cover – Panel – Nashua	1	11	2
C2252866	Decal – Cover – Panel – REX	1	11	2



BULLETIN NUMBER: A133/A195/A217 - 032

12/14/99

APPLICABLE MODEL:
GESTETNER - 2850E
RICOH - AFICIO 500
SAVIN - 9950DP

SUBJECT: BRACKET – ORIGINAL SIZE SENSOR

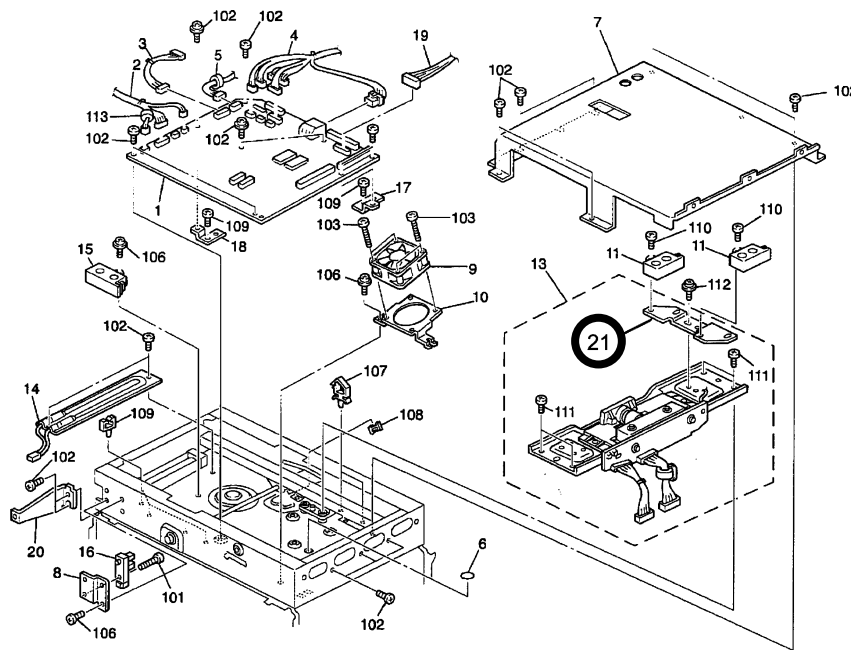
GENERAL:

The Original Size Sensor Bracket has been registered as a service part.
The following Part Correction is being issued for all A217 Parts Catalogs.

Note: This copy is intended as a master original for reproduction of additional bulletins.



■ PARTS



			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A1301828	Bracket – Original Size Sensor	1	37	21

BULLETIN NUMBER: A133/A195/A217 - 033

01/24/2000

APPLICABLE MODEL:

GESTETNER – 2640E/2640E/2850E

RICOH – AFICIO 400/401/500

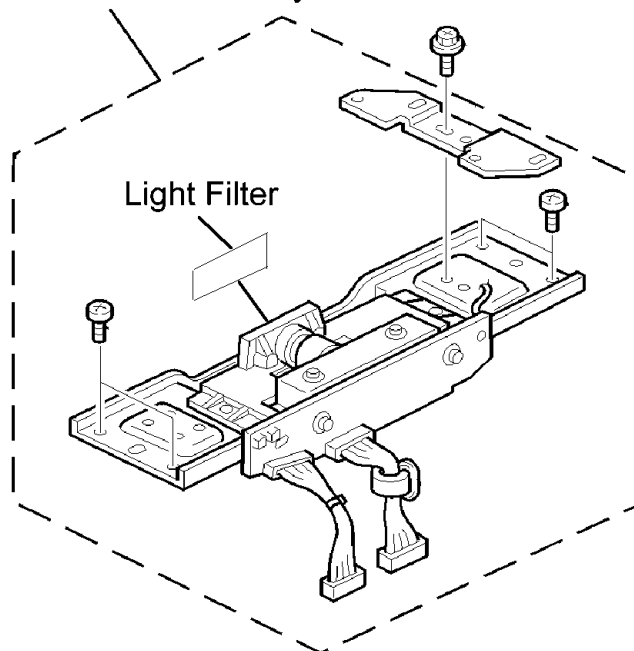
SAVIN – 9940DP/9940DPC/9950DP

SUBJECT: LIGHT FILTER – G530/G533

GENERAL:

The Light Filter – G530/G533 has been added to the A133, A195 and A217 Parts Catalogs. The following part update is being issued for all A133, A195 and A217 Parts Catalogs. Please update your Parts Catalogs with the following information.

Lens Block Assembly



Note: This copy is intended as a master original for reproduction of additional bulletins.



PARTS

PART NUMBER	DESCRIPTION	QTY	REFERENCE				
			PAGE		ITEM		
			A133	A195/A217	A133	A195	A217
AA011041	Light Filter – G530/G533	1	35	37	24 *	26 *	22 *

* Denotes new item number.

BULLETIN NUMBER: A133/A195/A217 – 034**02/22/2000****APPLICABLE MODEL:****GESTETNER – 2640E****RICOH – AFICIO 400****SAVIN – 9940DP**

The following is the same information that was recently issued under an erroneous bulletin number (A133/A195/A217-Draft – 047). Please ignore that bulletin and consider this its replacement.

SUBJECT: PARTS CATALOG CORRECTION

The part number for IC201 of the BCU Board has been changed because production has been discontinued.

The following Parts correction is being issued for all A133 Parts Catalogs.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
14081085	14081278	IC : L6220	1	0	91	139

UNITS AFFECTED:

A133 Serial Number cut-in was not available at time of publication.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Note: This copy is intended as a master original
for reproduction of additional bulletins.



■ PARTS

BULLETIN NUMBER: A133/A195/A217 - 035

02/02/2000

APPLICABLE MODEL:

GESTETNER - 2640E/2640E

RICOH - AFICIO 400/401

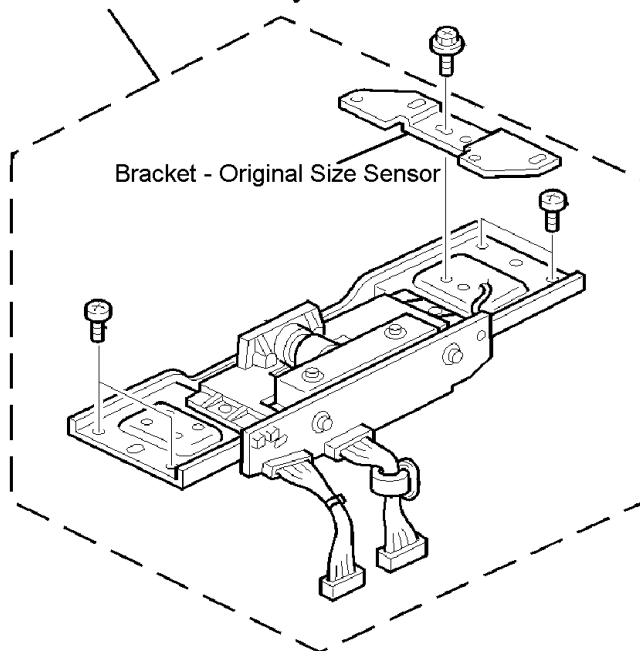
SAVIN - 9940DP/9940DPC

SUBJECT: BRACKET - ORIGINAL SIZE SENSOR

GENERAL:

The Bracket- Original Size Sensor has been added to the A133 and A195 Parts Catalogs. The following part update is being issued for all A133 and A195 Parts Catalogs. Please update your Parts Catalogs with the following information.

Lens Block Assembly



Note: This copy is intended as a master original for reproduction of additional bulletins.



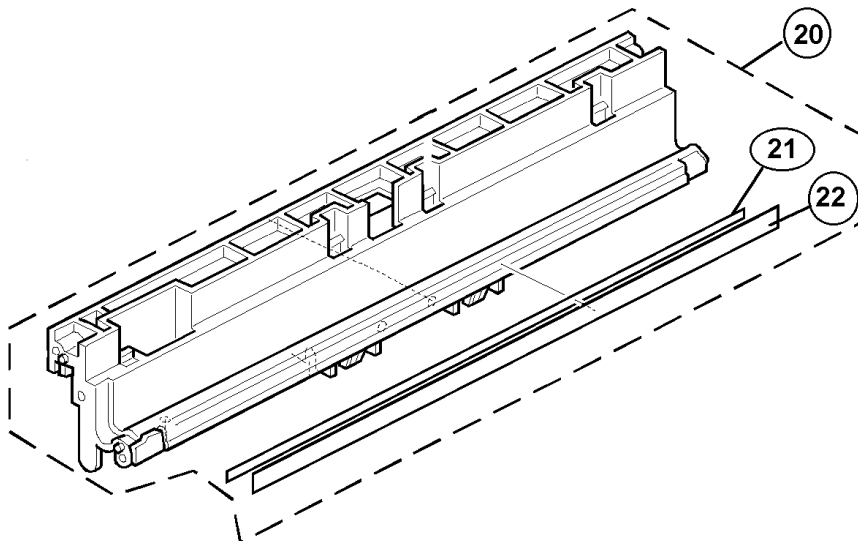
PARTS

A133 and A195			REFERENCE		
PART NUMBER	DESCRIPTION	QTY	PAGE		ITEM
			A133	A195	
A1301828	Bracket - Original Size Sensor	1	35	37	27 *

* Denotes new item number.

BULLETIN NUMBER: A133/A195/A217 - 036
02/18/2000
APPLICABLE MODEL:
GESTETNER – 2640E/3240
RICOH – AFICIO 400/401
SAVIN – 9940DP/9940DPC
SUBJECT: CLEANING UNIT
GENERAL:

The following parts have been added as service parts to the Cleaning Unit. The following parts updates are being issued for all A133 and A195 Parts Catalogs. Please update your Parts Catalogs with the following information.



PART NUMBER	DESCRIPTION	QTY	REFERENCE		
			PAGE		ITEM
			A133	A195	
A1342292	Case – Cleaning	1	51	53	20 *
A1342263	Entrance Seal - Tape	1	51	53	21 *
AD047017	Entrance Seal - Cleaning	1	51	53	22 *

* Denotes new item number.

UNITS AFFECTED:

The above parts are service parts only.



BULLETIN NUMBER: A133/A195/A217 - 037

06/29/2000

APPLICABLE MODEL:

GESTETNER – 2640E/3240

RICOH – AFICIO 400/401

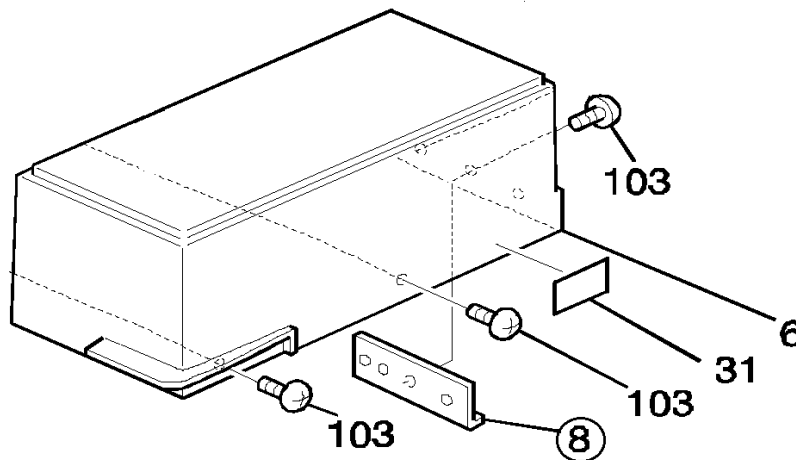
SAVIN – 9940DP/9940DPC

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

Due to receiving a high number of calls to the Hotline, the following information is being issued. The following parts updates are being issued for all A133 and A195 Parts Catalogs.

- **UPDATE 1:** **Hinge Bracket** – The part number for the Hinge Bracket has been changed. Please update your A133 and A195 Parts Catalogs with the following information.

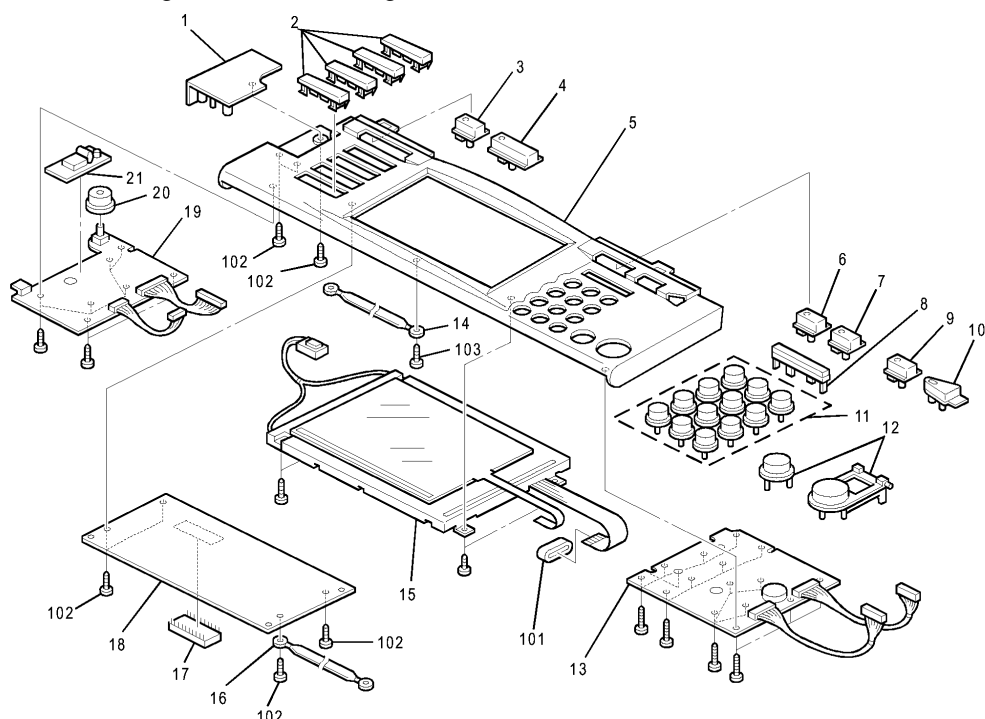


OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	REFERENCE		
				PAGE		ITEM
				A133	A195	
A1337392	A1556170	Hinge Bracket	1	25	27	8

Continued...



- **UPDATE 2:** **Operation Panel** – The component parts of the Operation Panel have been registered as Service Parts. Please update your A133 and A195 Parts Catalogs with the following information.



PART NUMBER	DESCRIPTION	QTY	REFERENCE		
			PAGE		ITEM
			A133	A195	
A1341553	Cover – Option	1	11B	15	1
A1341543	Cap – Option	4	11B	15	2
A1341538	Key Top – User Tools	1	11B	15	3
A1341533	Key Top – Guidance	1	11B	15	4
A1337124	Operation Panel Case	1	11B	15	5
A1341523	Key Top – Program	1	11B	15	6
A1341518	Key Top – Job Recall	1	11B	15	7
A1341558	Cap - Application	1	11B	15	8
A1341515	Key Top – Clear Mode	1	11B	15	9
A1341511	Key Top – Interrupt	1	11B	15	10
A1341506	Ket Top – 10 Key	1	11B	15	11
A1341507	Key Top – Start/Stop	1	11B	15	12
A1345156	PCB – 10 Key	1	11B	15	13
A1336120	Grounding Wire – 270 mm	1	11B	15	14
A1345149	Touch Panel	1	11B	15	15
A1345153	Grounding Wire – Op. Panel	1	11B	15	16
A1337747	IC – UVEPROM 4M x 16 150 ns	1	11B	15	17
A1337770	Operation Panel Board	1	11B	15	18
A1345157	PCB – Option	1	11B	15	19
A1341548	Dial	1	11B	15	20
A1345152	Inverter Board	1	11B	15	21
16070747	FPC Core – FPC-25-12	-	11B	15	101
08025232	Tapping Screw – M3 x 8	-	11B	15	102
03530060F	Tapping Screw – M3 x 6	-	11B	15	103

BULLETIN NUMBER: A133/A195/A217 – 038
11/17/2000
APPLICABLE MODEL:
GESTETNER – 2640E/3240
RICOH – AFICIO 400/401
SAVIN – 9940DP/9940DPC
SUBJECT: SC321
SYMPTOM:

An SC321 occurs intermittently.

CAUSE:

An SC321 which occurs rarely, is generated when the Video signal is changed from printer output to copy output in Duplex Mode and electrical noise from the Video ASIC activates the FGATE signal.

SOLUTION:

Upgrade the EX-IPU ROM (P/N A1337876) to version C.

The EX-IPU ROM revision C (file name A133EX1C.EXE) can be downloaded through the Technology Solution Center FTP Site <http://tsc.ricohcorp.com>.

NOTE: Refer to Facts Line Bulletin # FL002 for more information about the FTP Internet Web Site.

NOTE: Refer to PUB(C) - 023.

GENERAL:

The following part update is being issued for all A133/A195 Parts Catalogs.

						REFERENCE	
PART NUMBER	OLD REV.	NEW REV.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1337876	B	C	IC – UVEPROM 2Mx8 100nS	1	0	97	4

UNITS AFFECTED:

A133/A195 Serial Number cut-in not available at time of publication.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		



■ ELECTRICAL



■ PARTS

Note: This copy is intended as a master original for reproduction of additional bulletins.

BULLETIN NUMBER: A649 - 001**06/23/98****APPLICABLE MODEL:****GESTETNER – 3240 HDD CONTROLLER for 3240****RICOH – AFICIO 401 HDD CONTROLLER for AFICIO 401****SAVIN – 9940DPC HDD CONTROLLER for 9940DPC****SUBJECT: HDD CONTROLLER PARTS CHANGES****GENERAL:**

The following parts updates are being issued for all A649 Parts Catalogs Section.

**PARTS**

Note: This copy is intended as a master original
for reproduction of additional bulletins.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
G6905723	H5157119	HDD – MK0803MAT	1	0	89	5
A6491805	A6491804	Ferrite Core – TFC23-11-14	1	-	91	5
A6495202	A6495240	IC – MBM29F040A	1	0	109	3
A6495218	A6495217	IC- IDT74FCT244CTS0	1	-	109	12

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: A650 - 001**03/19/99****APPLICABLE MODEL:****GESTETNER – PostScript Board for 3240****RICOH – PostScript Board for Aficio 401****SAVIN – PostScript Board for 9940DP****SUBJECT: NEW TYPE POSTSCRIPT BOARD****■ PARTS****GENERAL:**

Due to parts standardization the following part number has been changed.
The following Parts Correction is being issued for all A650 Parts Catalog Sections.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A6505100	A6505400	PostScript Board	1	0	91	3

UNITS AFFECTED:

Serial Number cut-in not available at time of publication.

Note: This copy is intended as a master original
for reproduction of additional bulletins.