

***Gestetner***® **RICOH**® **SAVIN**®



**A172/A199**  
**SERVICE MANUAL**

RICOH GROUP COMPANIES

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# LEGEND

PRODUCT CODE	COMPANY		
	GESTETNER	RICOH	SAVIN
A199	2606	Aficio 5106	SDC206
A172	2606E	Aficio 5206	SDC206E

## DOCUMENTATION HISTORY

REV. NO.	DATE	COMMENTS
*	9/96	Original Printing
1	1/97	Reprint\Interface C Parts Catalog added



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# **IMPORTANT SAFETY NOTICES**

## **PREVENTION OF PHYSICAL INJURY**

1. The wall outlet should be near the copier and easily accessible.
2. 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.
3. 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.
4. If the hot roller temperature is low when the main switch is turned on, the copier starts process control self check automatically. Keep hands away from the mechanical and the electrical components to avoid any injury.
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.
2. The RAM board on the main 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.

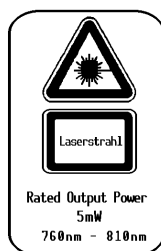
### DANGER

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

**DANGER:** 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:



## INTRODUCTION

The A172/A199 copier (product name: LILY) is based on **the A109 copier (DFC-ALPHA)**, the base copier.

This documentation gathers the A172/A199 differing points from the base copier that service personnel will need to maintain this copier. Therefore, this documentation should be treated as an insert to the base copier's service manual, although it has a separate binder. It should always be utilized along with the base copier's service manual.

**NOTE:** Please refer to page 1-9 for machine code/model number information.



OVERALL MACHINE INFORMATION		
	SORTER A322	
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DUAL JOB FEEDER A610		
SORTER A322		

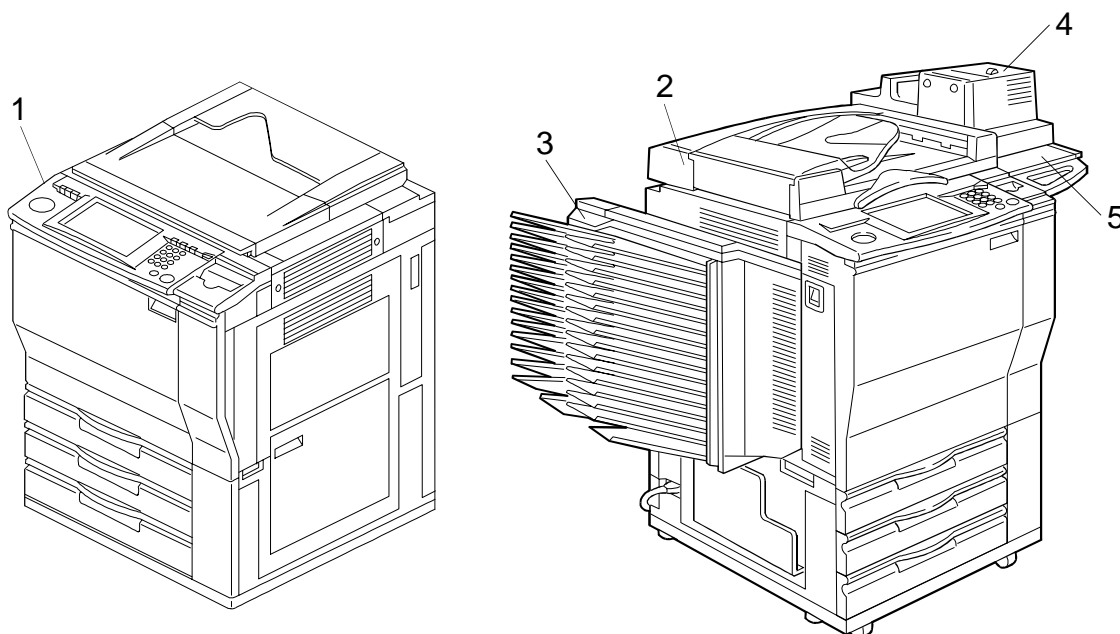
TAB POSITION 1
TAB POSITION 2
TAB POSITION 3
TAB POSITION 4
TAB POSITION 5
TAB POSITION 6
TAB POSITION 7
TAB POSITION 8



# **OVERALL MACHINE INFORMATION**



# 1. MACHINE CONFIGURATION



- Copier -

- Full System -

Item	Machine Code	Note	No.
Copier	A172 A199	<ul style="list-style-type: none"> <li>A172 is the edit version with a full color operation panel.</li> <li>A199 is the non-edit version with a black &amp; white operation panel.</li> <li>An English language ROM board is installed in -*17/29/10/22/15 machines.</li> <li>No language ROM board is installed in -27/26 machines.</li> </ul>	1
Dual Job Feeder	A610	<ul style="list-style-type: none"> <li>Common with A175/A176/A177/A191/A192 copiers.</li> </ul>	2
Sorter (15-bin)	A322	<ul style="list-style-type: none"> <li>A sorter adapter (A527) is required for installation.</li> </ul>	3
Film Projector Unit	A718	<ul style="list-style-type: none"> <li>A holder (A702-18) is required for installation.</li> </ul>	4
Holder	A702-18	<ul style="list-style-type: none"> <li>The holder can be installed independently as an original table.</li> </ul>	5
Language ROM board (for operation panel)	A654 (Not for US version)	<ul style="list-style-type: none"> <li>The following languages are available: English (A4), German, French, Italian, Spanish, (Universal).</li> </ul>	—

\*Note: -17 is for US version units.

Refer to page 1-9 for Machine Code / Model Number information



## 2. SPECIFICATIONS

### 2.1 SPECIFICATIONS

Specifications are subject to change without notice.

Configuration:	Console
Copy Process:	Dry electrostatic transfer system
Resolution:	400 dpi
Gradations:	256 gradations
Original Type:	Sheet/book, object
Original Size:	Maximum: A3 (lengthwise), 11" x 17" (lengthwise)
Original Alignment:	Rear-left corner
Copy Paper Weight:	<ul style="list-style-type: none"> <li>Paper Tray: 64 - 104.7 g/m<sup>2</sup> or 17 - 28 lb</li> <li>Bypass Feed Tray: 64 - 157 g/m<sup>2</sup> or 17 - 42 lb</li> </ul>

**NOTE:** With paper heavier than 104.7 g/m<sup>2</sup> or 28 lb, use the bypass feed tray and select Thick Paper mode.

Available Copy Paper Size:

Tray	Paper Direction	A4/A3 version	LT/DLT version
1st /2nd Tray	Lengthwise	A3, A4, 8 1/2" x 13" (F4), 8 1/4" x 13"	11" x 17" (DLT), 11" x 15", 10" x 14", 8 1/2" x 14" (LG), 8" x 13" (F), 8 1/2" x 11" (LT), 8" x 10 1/2", 8" x 10"
	Sideways	A4, A5	11" x 8 1/2" (LT), 8 1/2" x 5 1/2" (HLT)
3rd Tray	Lengthwise	A3, B4, A4, B5, A5, 11" x 17" (DLT), 11" x 15", 10" x 14", 8 1/2" x 14" (LG), 8 1/2" x 13" (F4), 8 1/4" x 13", 8" x 13" (F), 8 1/2" x 11" (LT), 8" x 10 1/2", 8" x 10", 5 1/2" x 8 1/2" (HLT)	
	Sideways	A4, B5, A5, 11" x 8 1/2" (LT), 8 1/2" x 5 1/2" (HLT)	
Bypass Feed Tray	Lengthwise	A3, B4, A4, B5, A5, B6, A6	11" x 17" (DLT), 10" x 14", 8 1/2" x 11" (LT), 8" x 13" (F), 5 1/2" x 8 1/2" (HLT)
	Sideways	A4, B5, A5, B6, 8 1/2" x 11"	8 1/2" x 11" (LT), 5 1/2" x 8 1/2" (HLT)
	Non-standard paper size	Horizontal direction: 148 - 432 mm or 5.8" - 17.0" Vertical direction: 100 - 297 mm or 3.9" - 11.7"	

Warm-up Time:	About 8 minutes (at 20°C or 68°F)
First Copy Time: (A4 or 8 1/2" x 11" sideways)	<ul style="list-style-type: none"> <li>• Full Color (4 scans): 15.5 seconds</li> <li>• Single Color: Black, Yellow, Magenta, Cyan: 8.8 seconds Red, Green, Blue, Orange, Light Green: 11.5 seconds.</li> </ul> <p><b>NOTE:</b> 1) When selecting OHP/Thick Paper modes, copying speed is reduced. 2) After changing some modes, the first copy time will take longer than usual.</p>
Copying Speed: (Standard modes)	<ul style="list-style-type: none"> <li>• Full Color (4 scans): A4 or 8 1/2" x 11" sideways: 6 copies/minute A3 or 11" x 17": 3 copies/minute</li> <li>• Single Color (Black, Yellow, Magenta, Cyan): A4 or 8 1/2" x 11" sideways: 31 copies/minute A3 or 11" x 17": 15 copies/minute</li> <li>• Single Color (Red, Green, Blue, Orange, Light Green): A4 or 8 1/2" x 11" sideways: 10 copies/minute A3 or 11" x 17": 5 copies/minute</li> </ul> <p><b>NOTE:</b> When selecting OHP/Thick Paper modes, copying speed is reduced.</p>
Non-reproduction Area:	<ul style="list-style-type: none"> <li>• Leading edge: <math>5 \pm 2</math> mm or <math>0.2" \pm 0.08"</math></li> <li>• Side: <math>2 \pm 2</math> mm or <math>0.08" \pm 0.08"</math>, Total less than 4 mm or 0.16"</li> <li>• Trailing edge: <math>2 \pm 2</math> mm or <math>0.08" \pm 0.08"</math></li> </ul>
Copy Number Input:	Number keys, 1 to 99
Automatic Reset:	1-minute standard setting; can also be set to 10 to 900 seconds in 1-second steps, or to no auto reset.
Paper Feed:	Paper Tray x 3 (500 sheets of paper each) Bypass Feed Tray (50 sheets of paper with paper lighter than $104.7 \text{ g/m}^2$ or 28 lb)

**Rev. 1/97**

Copy Tray Capacity:	100 sheets of paper
Toner Replenishment:	Bottle type (340g/bottle)
Toner Type:	Type "F" - all colors
Developer Type:	Type "F" - all colors
Reproduction Ratio:	<ul style="list-style-type: none"> <li>A4/A3 version: 25%, 50%, 65%, 71%, 75%, 82%, 93%, 100%, (Full Size), 115%, 122%, 141%, 200%, 400% + User ratio x 2</li> <li>LT/DLT version: 25%, 50%, 65%, 74%, 77%, 85%, 93%, 100%, (Full Size), 121%, 129%, 155%, 200%, 400%, + User ratio x 2</li> </ul>
Zoom:	From 25% to 400% in 1% steps
Power Source:	115 V 60 Hz, more than 12 A (for NA) 220 ~ 240 V 50/60 Hz, more than 7 A (for EU and AA)
Power Consumption: (Copier only)	<ul style="list-style-type: none"> <li>Maximum: less than 1.5 kW</li> <li>Warm-up: 1.40 kW</li> <li>Stand-by: 0.93 k W</li> <li>Copy Cycle: 1.20 kW</li> </ul>
Noise Emission	Sound pressure level (The measurements are made in accordance with ISO 7779 at the operator position.)

	<b>Copier only</b>
Stand-by	Less than 42 dB (A)
Copying	Less than 56 dB (A)

Sound power level (The measurements are made in accordance with ISO 7779.)

	<b>Copier only</b>
Stand-by	Less than 59 dB (A)
Copying	Less than 69 dB (A)

Dimensions (W x D x H):	<ul style="list-style-type: none"> <li>Copier Only: 692 x 713 x 1026 mm or 27.3" x 28.1" x 40.4"</li> <li>Full System*: 1499 x 713 x 1099 mm or 59.1" x 28.1" x 43.2"</li> </ul> <p>(* = Copier + Dual Job Feeder + Sorter + Holder)</p>
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Weight:

- Copier Only: 200 kg or 440.8 lb

Optional Equipment

- Dual Job Feeder
- Sorter
- Sorter Adapter
- Projector Unit
- Holder for Projector Unit
- Key Counter (procure locally)
- Interface Kit for Controller (Type C)

## 2.2 FUNCTIONS: BASIC MODEL VS EDIT MODEL

This machine comes in two versions. Refer to the following table for features available on your machine.

Functions		(A172) Edit type	(A199) Basic type
Copy Image Density Adjustment (Auto/Manual)		✓	✓
Auto Color Selection		✓	✓
Full Color		✓	✓
Back		✓	✓
Single Color		✓	✓
Twin Color		✓	✓
Original Image Type Selection		✓	✓
Paper Selection (Auto/Manual)		✓	✓
Reducing/ Enlarging	Preset R/E	✓	✓
	Zoom	✓	✓
	Size Magnification	✓	✓
	Directional Size Magnification	✓	✓
	Poster Mode	✓	✓
Shift/Book	Centering/Cornering	✓	✓
	Margin Adjustment	✓	✓
	Erase	✓	✓
	Single Copies	✓	✓
Color Creation	Color Conversion	✓	✓
	Color Erase	✓	✓
	Color Background	✓	✓
Image Creation	Outline	✓	✓
	Positive/Negative	✓	✓
	Shadow	✓	✓
	Mirror	✓	✓
	Slanted	✓	✓
	Image Repeat	✓	✓
	Image Overlay	✓	—
Color Adjustment/ Memory	User Color Memory	✓	✓
	Single Color Adjustment	✓	✓
	Color Balance Adjustment	✓	✓
	Color Balance Sample	✓	✓
	Image Adjustment	✓	✓
Area Editing		✓	—
Interrupt Copying		✓	✓
Recall		✓	✓
Auto Reduce/Enlarge		✓	✓
Bypass Feed Copying		✓	✓
Duplex Copying		✓	✓
Default Setting		✓	✓
User Tools		✓	✓
Display Color		Full color	Black & white



Note: A109 is the base unit, Ricoh Corp.  
model name - NC5006

## 2.3 NEWLY-ADDED OPERATING FEATURES

○: Available    ✕: Not Available



No.	Features	(A172/A199)	(A109)
1	Auto Image Density	Full Color & Black Copy	Single Color & Black Copy
2	Auto Color Calibration	○	✕
3	Duplex Copying	○	✕
4	Twin Color	○	✕
5	Single Color	80 (+1) colors	8 colors
6	User Color	48 colors	3 colors
7	Color Back ground	84 (+1) colors	13 colors
8	Paint	84 (+1) colors	13 colors
9	Color Line	○ (Edit type only)	✕
10	Frame Line	○ (Edit type only)	✕
11	Image Overlay	○ (Edit type only)	✕
12	Area Editing	See the next page	

1. Auto Image Density mode can be selected when in Full Color mode.
2. Auto Color Calibration can be performed by the user.
3. Using the by-pass feed tray, rear side copying is available.
4. Twin Color mode copies black parts in black and other parts in the selected color.
5. Single Color  
 (8 colors x 4 density levels) + (12 user colors x 4 density levels) + 1 scan color = 81 colors  
 \* scan color = Edit type only
6. User Color  
 12 colors x 4 density levels = 48 possible colors  
 The total percentages of the mixed colors must be 255% or less.
7. Color Background  
 (9 colors x 4 density levels) + (12 user colors x 4 density levels) + 1 scan color = 85 colors  
 \* scan color = Edit type only
8. Paint (Edit type only)  
 (9 colors x 4 density levels) + (12 user colors x 4 density levels) + 1 scan color = 85 colors  
 \* Scan color = Edit type only
9. Color Line (Edit type only)  
 In the Area Editing mode, designated lines can be colored.  
 Available colors: 85 colors = 81 Single colors + (Bk x 4 density levels)

## 10. Frame Line

In the Area Editing mode, the outlines of the designated areas can be colored.

## 11. Image Overlay

This function makes a copy merging images of two originals.

## 12. Area Editing mode

	<b>(A172)</b>	<b>(A109)</b>
Area Shape	Rectangle, Polygon, Right Angle Polygon, Closed Loop, Line	Rectangle, Polygon, Right Angle Polygon, Closed Loop
Number of Areas	Maximum: 500 points However, 1 area or line must be of 30 or fewer points.	Creative Editing: 6 Areas 1 area must be of 10 or fewer points Color Editing: 6 Groups Maximum 500 points
Method of Designating Areas	Editor Pen and Cursor	Cursor only
Canceling Areas	Not only single points but already closed areas can be cleared.	Only single points before closing the area can be cleared.
Maximum Number of Groups/Areas	15 Groups Up to 3 job patterns can be applied. Changing the color of one job pattern will not affect the original settings of the job pattern.	Creative Editing: 3 Areas Color Editing: 6 Groups When in Color Editing mode, up to 3 job patterns can be applied, Changing the color of one job pattern will not affect the original settings of the job pattern.
Storing the Area Editing job settings in Program Mode	Always available.	Not available in Creative Editing mode. Available in Color Editing mode.
Canceling Groups	Available. However, canceling a group will remove it from the total number of groups.	Not available.

**MEMO****Ricoh Corporation:**

<b>Copier Model Name:</b>		<b>Original Product Name:</b>		<b>Machine Code:</b>
NC5006	=	DFC-ALPHA (Model 0)	=	A109
Aficio Color 5106	=	Lily 1	=	A199
Aficio Color 5206	=	Lily 2	=	A172

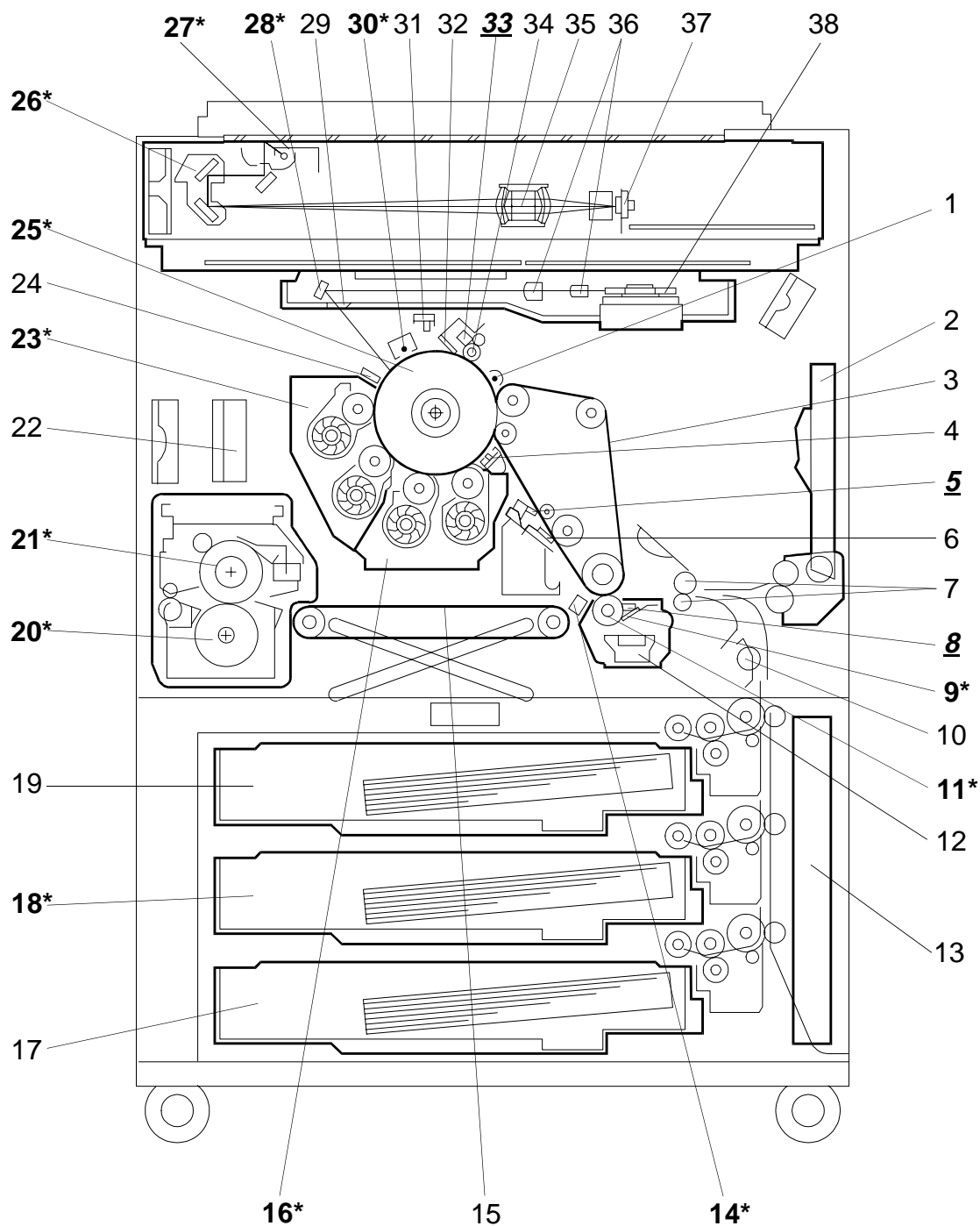
**Accessories:**

<b>Model name:</b>		<b>Type:</b>		<b>Machine Code:</b>
DF62	=	Dual Job Feeder	=	A610
CS250	=	15 Bin Sorter	=	A322
SPU 2	=	Film Projector Unit	=	A718
Adapter "J"	=	Sorter Adapter	=	A527
Holder "C"	=	Film Proj. Unit Holder	=	A702-18
Interface Type "C"	=	Interface Kit for Controller	=	A583

**MEMO:**



### 3. MECHANICAL COMPONENT LAYOUT



Units different from A109

***Bold Italic*** : Additional units

**Bold \*** : Modified units

1. Pre-cleaning Corona Unit
2. By-pass Feed Table
3. Transfer Belt
4. ID Sensor

**5. Belt Lubricant Bar**

6. Belt Cleaning Blade
7. Registration Rollers

**8. Roller Lubricant Bar**

**9. Transfer Roller Blade\***

10. Relay Roller

**11. Transfer Roller\***

12. Toner Catch Pan

13. Toner Collection Bottle

**14. Paper Discharge Plate\***

15. Transport Belt

**16. Magenta/Yellow Development Unit\***

17. 3rd Paper Tray

**18. 2nd Paper Tray\***

19. 1st Paper Tray

Deleted units from A109

- Lubricant brush

**20. Pressure Roller\***

**21. Hot Roller\***

22. Development Ozone Filter

**23. Black/Cyan Development Unit\***

24. Drum Potential Sensor

**25. OPC Drum\***

**26. 2nd Scanner\***

**27. 1st Scanner\***

**28. Drum Mirror\***

29. Toner Shield Glass

**30. Charge Corona Unit\***

31. Quenching Lamp

32. Drum Cleaning Blade

**33. Drum Lubricant Bar**

34. Cleaning Brush

35. Lens

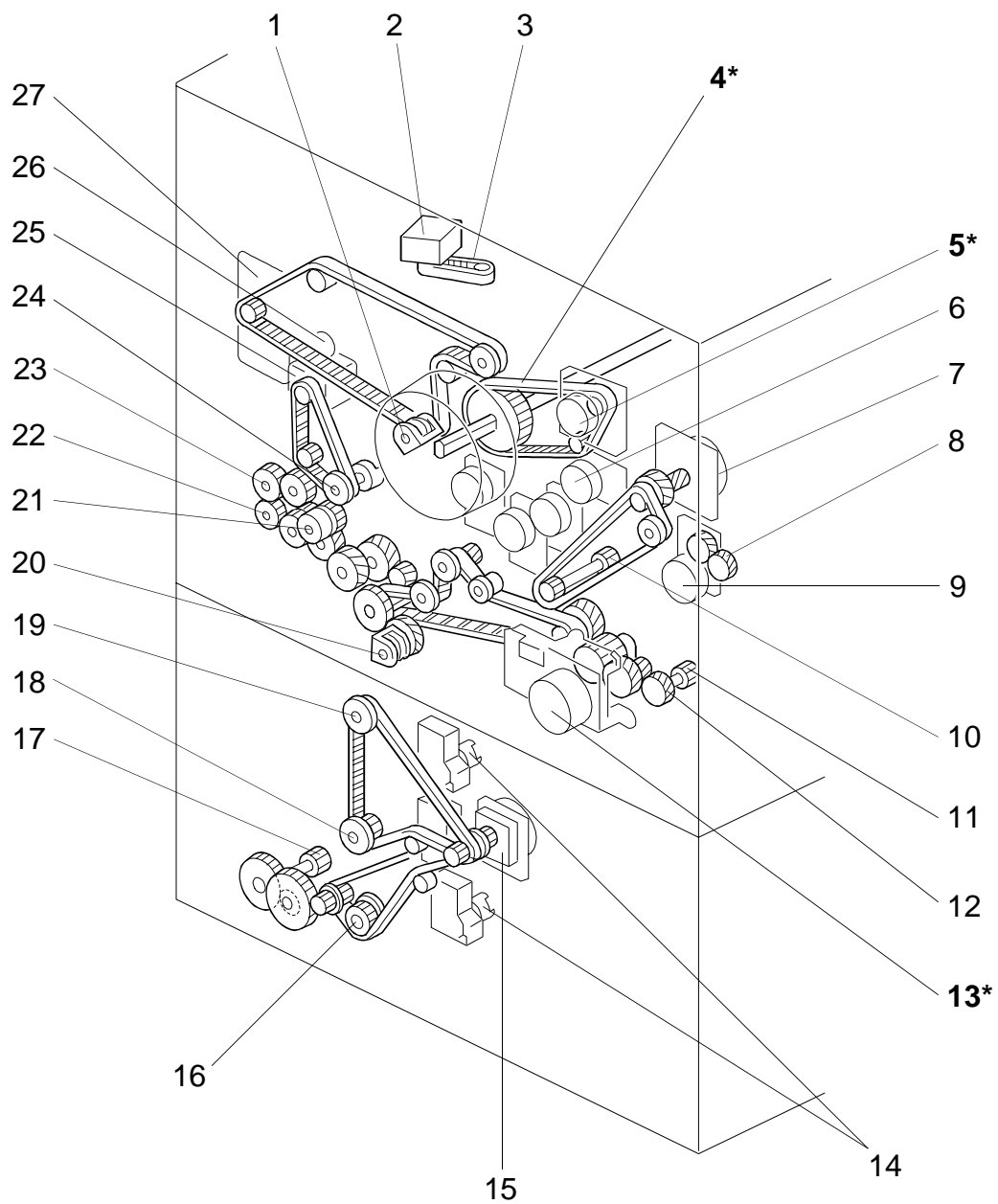
36. f-theta Lenses

37. CCD Board

38. Polygon Mirror

## 4. DRIVE LAYOUT

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Units different from A109

***Bold Italic*** : Additional units

**Bold\*** : Modified units

1. Transfer Belt Position Clutch
2. Scanner Motor
3. Scanner Drive Pulley
- 4. Drum Timing Belt\***
- 5. Drum Motor\***
6. Bk-Sleeve Motor
7. Color-Development Drive Motor
8. Bk-Development Drive Gear
9. Bk-Development Drive Motor
10. Color-Development Drive Gear
11. Transport Unit Drive Gear
12. Fusing Unit Drive Gear
- 13. Transport Motor\***
14. Tray Lift Motors
15. Paper Feed Motor
16. 3rd Paper Feed Drive Pulley
17. Toner Collection Tank Drive Gear
18. 2nd Paper Feed Drive Pulley
19. 1st Paper Feed Drive Pulley
20. Transfer Roller Position Clutch
21. Registration Clutch
22. Relay Roller Drive Gear
23. By-pass Feed Drive Gear
24. Transfer Belt Drive Pulley
25. Transfer Belt Motor
26. Lubricant Brush Clutch
27. Cleaning Motor

## 5. ELECTRICAL COMPONENT DESCRIPTIONS

Refer to the electrical component layout on the large sheet diagrams in the pocket at the end of this documentation for symbols and index numbers.

Symbol	Name	Function	Index No.
<b>Printed Circuit Boards</b>			
PCB1	DC power supply	Provides dc power.	20
PCB2	Lamp regulator	Provides dc power for the exposure lamp.	1
PCB3	AC drive	Provides ac power for the hot roller and pressure roller fusing lamps.	11
PCB4	High voltage supply - C/G	Supplies high voltage to the charge corona and grid plate.	12
PCB5	High voltage supply - B	Supplies high voltage to the Y/M/C/Bk sleeve rollers as development bias or to the OPC drum for drum potential sensor calibration.	26
PCB6	High voltage supply - T1/PCC/BR	Supplies high voltage to the belt bias roller, pre-cleaning corona, and cleaning bias roller.	13
PCB7	High voltage supply - T2	Supplies high voltage to the transfer roller.	17
PCB8	High voltage supply - D	Supplies high voltage to the paper discharge plate.	22
PCB9	Main control	Controls all copier functions both directly or through other control boards.	15
PCB10	Interface 1	Interfaces the input/output of electrical components with the main control board.	21
PCB11	Interface 2	Interfaces the input/output of electrical components with the main control board.	18
PCB12	Transfer belt motor drive	Controls the speed and direction of the transfer belt motor.	14
PCB13	Paper feed interface	Interfaces the input/output of electrical components in the paper supply unit with the main control board.	19
PCB14	Noise filter	Removes electrical noise.	23
PCB15	ID sensor	Detects the density of the ID sensor pattern.	127
PCB16	Operation panel	Controls the touch panel display and monitors the key matrix.	25
PCB17	Polygon motor drive	Controls the polygon motor speed.	8
PCB18	CCD	Converts the light reflected from the original into analog electrical signals for the three basic colors (R/G/B).	9
PCB19	Scanner control	Processes R/G/B video signals from the CCD board to be sent to the IPU board.	7
PCB20	Scanner drive	Interfaces the input/output electrical components in the optics cavity with the scanner control board.	3
PCB21	Image Discriminate	Used for anticounterfeiting.	6
PCB22	Display Editor interface	Interfaces the operation panel board with the IPU board (A172 copier only).	10

Symbol	Name	Function	Index No.
PCB23	Operation Panel Control	Controls the operation panel.	24
PCB24	IPU	Processes R/G/B video signals from the scanner control board and sends Y/M/C/Bk video signals to the LD unit.	2
PCB25	IPU interface	Changes the clock frequency of R/G/B video signals and also sends the synchronizing signal for the polygon motor.	4
PCB26	LD drive	Generates the laser beam for printing the latent image on the drum.	5
PCB27	Laser synchronizing detector	Detects the laser beam to control the start timing of main scan writing.	66
PCB28	Paper width detecting	Detects paper width in the by-pass feed table.	128
PCB29	Wire cleaner drive	Controls the corona wire cleaner operation.	16
<b>Motors</b>			
M1	Bk - Development drive	Drives the Bk dual mixing roller.	46
M2	C - Sleeve	Turns the C sleeve roller in both directions.	31
M3	M - Sleeve	Turns the M sleeve roller in both directions.	35
M4	Y - Sleeve	Turns the Y sleeve roller in both directions.	34
M5	Drum	Turns the drum.	28
M6	Bk - Sleeve	Turns the Bk - sleeve roller in both directions.	30
M7	Transport	Drives the transport unit, fusing unit, transfer roller, and transfer belt cleaning unit.	45
M8	Color - Development drive	Drives the Y/M/C dual mixing rollers simultaneously.	27
M9	Cleaning	Drives the drum cleaning brush, the lubricant brush, and the transfer belt release mechanism.	32
M10	Scanner	Drives the 1st and 2nd scanners.	29
M11	Transfer belt	Turns the transfer belt drive roller in both directions.	33
M12	Paper feed	Drives the paper feed sections and the cam gear for the toner collection bottle.	39
M13	Polygon	Turns the polygon mirror.	47
M14	Bk - Toner supply	Drives the Bk toner transport and agitation mechanism.	43
M15	C - Toner supply	Drives the C toner transport and agitation mechanism.	42
M16	M - Toner supply	Drives the M toner transport and agitation mechanism.	41
M17	Y - Toner supply	Drives the Y toner transport and agitation mechanism.	40
M18	1st tray lift	Lifts the 1st tray bottom plate.	36
M19	2nd tray lift	Lifts the 2nd tray bottom plate.	37
M20	3rd tray lift	Lifts the 3rd tray bottom plate.	38

Symbol	Name	Function	Index No.
M21	Wire cleaner	Drives the wire/grid cleaner	44
<b>Fan Motors</b>			
FM1	Fusing exhaust	Removes heat from around the fusing unit.	49
FM2	Charge inlet	Provides air flow around the drum charge section.	48
FM3	Inner cooling	Provides air flow around the toner tank and development units.	57
FM4	IPU cooling	Provides air flow around the IPU board.	52
FM5	Polygon motor cooling	Provides air flow around the polygon motor.	53
FM6/7	Transport	Sucks in air to attract copy paper to the transport belts.	55/54
FM8/9	Development exhaust	Removes air and heat from around the drum and development units.	58/59
FM10	Optics exhaust	Exhausts air from under the lens housing cover.	51
FM11	LD cooling	Provides air flow to the LD unit.	50
FM12/13	Optics cooling	Blows air into the optics cavity.	60/61
FM14	DC power supply cooling	Provides air flow to transformers and radiation plates on the dc power supply board.	56
<b>Sensors</b>			
S1	By-pass feed table	Detects whether the by-pass feed table is open or closed.	73
S2	Oil end	Detects whether the silicone oil tank is nearly empty or not.	91
S3	Exit	Detects misfeeds.	100
S4	Transfer belt position	Detects whether the transfer belt is in contact with the drum or not.	67
S5	Humidity	Detects humidity and temperature to calculate the absolute humidity.	88
S6	Drum potential	Detects the drum surface potential.	125
S7	M - Toner density	Detects the toner density in the M development unit.	97
S8	Y - Toner density	Detects the toner density in the Y development unit.	96
S9	Bk - Toner density	Detects the toner density in the Bk development unit.	101
S10	C - Toner density	Detects the toner density in the C development unit.	98
S11	Transport	Detects misfeeds.	95
S12	Registration	Detects the leading edge or trailing edge of the copy paper to control the rotation of the paper feed and registration rollers.	74
S13	Registration guide set	Detects whether the registration guide plate is set or not.	70

Symbol	Name	Function	Index No.
S14	Bk - Toner End	Detects the toner end condition of Bk toner.	94
S15	C - Toner End	Detects the toner end condition of C toner.	93
S16	M - Toner End	Detects the toner end condition of M toner.	92
S17	Y - Toner End	Detects the toner end condition of Y toner.	90
S18	Transfer roller position	Detects whether the transfer roller is in contact with the transfer belt or not.	72
S19	By-pass paper end	Detects whether there is paper on the by-pass feed table or not.	71
S20	By-pass length	Detects whether paper on the by-pass feed table is longer than A4 (Letter) sideways or not.	69
S21	Toner overflow	Detects whether the toner collection bottle is full or not.	86
S22	1st lift	Detects the height of the paper stack in the 1st paper tray to stop the 1st tray lift motor.	76
S23	2nd lift	Detects the height of the paper stack in the 2nd paper tray to stop the 2nd tray lift motor.	77
S24	3rd lift	Detects the height of the paper stack in the 3rd paper tray to stop the 3rd tray lift motor.	80
S25	1st paper end	Detects whether there is paper in the 1st paper tray or not.	89
S26	2nd paper end	Detects whether there is paper in the 2nd paper tray or not.	87
S27	3rd paper end	Detects whether there is paper in the 3rd paper tray or not.	84
S28	1st paper feed	Controls the 1st paper feed clutch off/on timing and the 1st pick-up solenoid off timing.	82
S29	2nd paper feed	Controls the 2nd paper feed clutch off/on timing and the 2nd pick-up solenoid off timing.	85
S30	3rd paper feed	Controls the 3rd paper feed clutch off/on timing and the 3rd pick-up solenoid off timing.	83
S31	Original length - 1	Detects original length.	65
S32	Original length - 2	Detects original length.	63
S33	Original width	Detects original width.	106
S34	Scanner unit lift	Detects whether the scanner unit is lifted or not.	64
S35	Platen cover position	Informs the CPU whether the platen cover is up or down (related to APS/ARE function).	62
S36	Scanner HP	Informs the CPU whether the 1st and 2nd scanners are at the home position or not.	107
<b>Switches</b>			
SW1/2/3/4	Front door safety	Cuts the ac power line through RA1 and detects whether the front door is open or not.	102/103/ 104/105



Symbol	Name	Function	Index No.
SW5/6	Vertical transport set	Cuts the ac power line through RA1 and detects whether the vertical transport guide is open or not.	78/79
SW7	Main	Provides power to the copier. When it is at the standby position, the electrical power is supplied only to the heaters (drum, optics anti-condensation, tray, transfer belt/roller).	99
SW8	2nd paper size	Detects the paper size for the 2nd paper tray and whether the tray is set or not.	75
SW9	3rd tray set	Detects whether the 3rd paper tray is set or not.	81
SW10	1st paper size	Detects the paper size for the 1st paper tray and whether the tray is set or not.	68
<b>Magnetic Clutches</b>			
MC2	Transfer belt position	Controls the touch and release operation of the transfer belt by using drive from the cleaning motor.	108
MC3	By-pass feed	Starts paper feed from the by-pass feed table.	111
MC4	Registration	Drives the registration rollers.	110
MC5	Transfer roller position	Controls the touch and release operation of the transfer roller unit by using drive from the transport motor.	109
MC6	1st feed	Starts paper feed from the 1st paper tray.	113
MC7	2nd feed	Starts paper feed from the 2nd paper tray.	114
MC8	3rd feed	Starts paper feed from the 3rd paper tray.	115
<b>Solenoids</b>			
SOL1	Cleaning entrance seal	Controls the touch and release operation of the cleaning entrance seal on the transfer belt cleaning unit.	122
SOL2	Lubricant bar	Controls the touch and release operation of the lubricant bar.	124
SOL3	Cleaning blade	Controls the touch and release operation of the belt cleaning blade.	123
SOL4	By-pass pick-up	Controls the up/down movement of the pick-up roller in the by-pass feed station.	112
SOL5	1st pick-up	Controls the up/down movement of the pick-up roller in the 1st feed station.	121
SOL6	2nd pick-up	Controls the up/down movement of the pick-up roller in the 2nd feed station.	119
SOL7	3rd pick-up	Controls the up/down movement of the pick-up roller in the 3rd feed station.	117
SOL8	1st separation roller	Controls the up/down movement of the separation roller in the 1st feed station.	120

Symbol	Name	Function	Index No.
SOL9	2nd separation roller	Controls the up/down movement of the separation roller in the 2nd feed station.	118
SOL10	3rd separation roller	Controls the up/down movement of the separation roller in the 3rd feed station.	116
<b>Lamps</b>			
L1	Fusing	Provides heat to the hot roller.	144
L2	Pressure	Provides heat to the pressure roller.	143
L3	Exposure	Applies high intensity light to the original for exposure.	129
L4	Quenching	Neutralizes any charge remaining on the drum surface after cleaning.	126
<b>Heaters</b>			
H1	Lower tray (option)	Turns on when the main switch is off to keep paper dry in the 3rd paper tray.	138
H2	Upper tray (option)	Turns on when the main switch is off to keep paper dry in the 1st and 2nd paper trays.	134
H3/H4	Transfer belt/roller	Turns on when the transfer roller thermoswitch detects 20C° or less to keep the resistance of the transfer roller at a constant level.	136/137
H5	Optics anti-condensation	Turns on when the main switch is off to prevent moisture from forming on the optics.	148
H6	Drum	Turns on when the main switch is off to prevent moisture from forming around the drum.	131
<b>Thermistors</b>			
TH1	Fusing	Monitors the temperature of the hot roller.	133
TH2	Pressure roller	Monitors the temperature of the pressure roller.	142
<b>Thermofuses</b>			
TF1	Fusing	Opens the fusing lamp circuit if the fusing unit overheats.	132
TF2	Pressure roller	Opens the pressure roller lamp circuit if the fusing unit overheats.	141
<b>Thermoswitches</b>			
TS1	Optics	Opens the exposure lamp circuit if the 1st scanner overheats.	130
TS2	Transfer belt/roller	Detects the temperature around the transfer roller in order to keep the resistance of the transfer roller at a constant level.	135

Symbol	Name	Function	Index No.
<b>Counters</b>			
CO1	Black total	Keeps track of the total number of scans for black development in both black and color copy modes.	145
CO2	Full color total	Keeps track of the total number of scans for Yellow, Magenta, and Cyan development in both single and full color copy modes.	146
<b>Others</b>			
CB1	Circuit breaker	Provides back-up high current protection for the electrical components.	139
NF1	Noise filter	Removes electrical noise.	140
CC1	Choke coil	Removes high frequency current.	147

## **DETAILED DESCRIPTIONS**



# 1. MAJOR DIFFERENCES FROM THE DFC-ALPHA (A109)

No.	Item	Contents	Details
Process Control			
1	Toner End Detection	The toner end detection software has been eliminated.	A toner end sensor has been added for each color. See 6.2 in section 2 for details.
2	Latent Image Control	The process control for latent image control has been modified.	See 2.1 in section 2 for details.
3	Toner Density Control	VCNT Correction has been modified.	See 2.2 in section 2 for details.
Around The Drum			
1	OPC Drum	The OPC drum layer material (Charge Transfer Layer: CTL) has changed.	To reduce ozone and NOx reaction with the drum (to prolong the lifetime of the drum).
2	Drum Charge Wire	The system has been changed from a double-wire to a single-wire scorotron.	See 3.1 in section 2 for details.
3	Drum Charge Wire/Grid Cleaning	Drum charge wire/grid cleaning has been newly added.	See 3.2 in section 2 for details.
4	Drum Cleaning	Drum lubrication has been newly added.	See 3.4 in section 2 for details.
		The cleaning brush has been changed from a looped-bristle type to a straight-bristle type.	To apply the lubricant evenly on the drum. See 3.4 in section 2 for details.
Optics			
1	Exposure Lamp	The number of exposure lamp's lighting points has increased from 7 to 9.	To decrease white bands on copies caused by the exposure lamp's lighting points.
2	Infra-red Filter	The thickness of the infra-red filter has increased from 0.8 mm to 1.0 mm.	To achieve better copy quality for originals containing infra-red radiance. (prevents black areas from becoming reddish)
3	2nd/3rd Mirrors	A heavier stabilizer has been installed on the 2nd/3rd mirrors.	To decrease scanner banding to achieve better results for auto letter/photo separation.
4	Exposure Glass	A more high-conductivity glass is used.	To decrease the possibility of the exposure glass becoming dirty with dust particles.
5	Reflectors	Reflectivity has increased because of surface improvements.	To decrease the temperature around the optics cavity due to less power to the exposure lamp.

No.	Item	Contents	Details
6	Optics Cooling Fan Filter	The filter material has changed. It is easier to replace the filter.	The air flow has improved to reduce temperature rises in the optics cavity. For replacement, see section 5 for details.
<b>Image Processing</b>			
1	RGB Filter	The RGB filter coefficient for each copy mode (letter/photo) has been changed.	To improve gradation and reproduction quality.
2	Color Correction	New matrixes and masking coefficients have been added to match the new copy modes.	See 4.4 in section 2 for details.
3	Image Separation IC	The image separation IC has been changed.	To reduce photo/letter image separation errors in auto detect mode.
<b>Laser Exposure</b>			
1	Drum Mirror	A heavier stabilizer has been installed on the Drum mirrors.	To reduce the occurrence of banding on copies.
<b>Development</b>			
1	Development Sleeve Roller	The sleeve rollers have been changed to a sand-blast type.	To eliminate the 1.25 mm horizontal lines in halftone image areas caused by the grooves on the sleeve roller.
<b>Toner Tank</b>			
1	Toner Tank	A toner end sensor has been added for each color.	See 6.2 in section 2 for details.
		The green lever has been eliminated.	See 6.2 in section 2 for details.
		A toner tank detection mechanism has been added. When the tank is pulled out, it is disconnected electrically from the main body.	See 6.2 in section 2 for details.
<b>Transfer Belt</b>			
1	Transfer Belt Bias	The number of threshold levels that decide transfer belt bias depending on environmental conditions has changed from 2 to 4.	See 7.1 in section 2 for details.
2	Transfer Belt Cleaning	The belt lubricant mechanism has changed to apply lubricant directly to the transfer belt.	To prevent partial blanking of lines (due to incomplete toner transfer) from appearing on copies. See 7.2 in section 2 for details.

No.	Item	Contents	Details
<b>Transfer Roller</b>			
1	Transfer Belt/Roller Heater	The transfer roller heater has been newly added to keep the temperature around the transfer roller unit at 20°C.	See 8.1 in section 2 for details.
2	Transfer Roller	The material of the transfer roller has been changed.	To improve transfer efficiency.
3	Transfer Roller Bias	The number of threshold levels that decide transfer roller bias depending on environmental conditions has been changed from 2 to 4.	See 8.2 in section 2 for details.
		Transfer roller bias settings for duplex copying have been newly added.	See 8.2 in section 2 for details.
4	Paper Discharge Plate	The installed angle of the paper discharge plate has changed.	To prevent toner scatter from appearing around solid areas in duplex mode. See 8.4 in section 2 for details.
5	Paper Discharge Plate Output	The output of the paper discharge plate changes depending on the copy paper.	See 8.4 in section 2 for details.
6	Transfer Roller Cleaning	The roller lubricant mechanism has been newly added.	See 8.3 in section 2 for details.
<b>Fusing Unit</b>			
1	Hot Roller	The material of the hot roller has been changed.	To make it suitable for duplex copying.
2	Pressure Roller	The material of the pressure roller has been changed.	To make it suitable for duplex copying.
3	Pressure Roller Cleaning	The pressure roller cleaning mechanism has been newly added.	See 9.1 in section 2 for details.
4	Ozone Filter	Has been eliminated	
<b>Paper Feed</b>			
1	2nd Paper Feed Station	The 2nd paper feed station has been changed to the universal tray type.	To meet customers' requests.
<b>Operation Panel</b>			
1	LCD (Liquid Crystal Display)	The LCD has been changed to a 640 x 480 dot type.  A172: Full Color Display A199: B/W Display	For easier operation and editing.

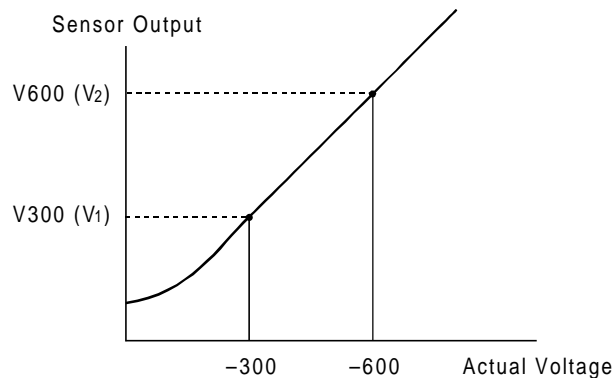
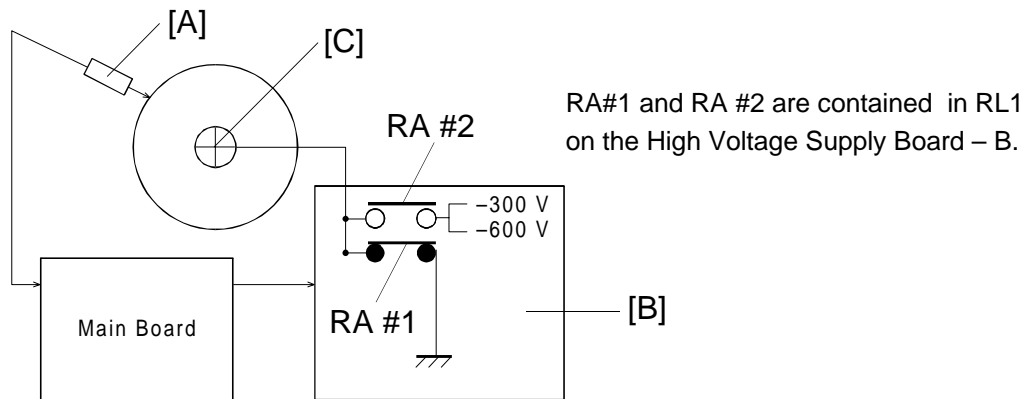


No.	Item	Contents	Details
2	Operation Panel Control	The operation panel control board has been newly added. The main control board no longer controls the operation panel.	—
3	Operation Panel Self Diagnostic Mode	The operation panel self diagnostics mode has been newly added.	For easier servicing of the machine.
<b>Others</b>			
1	Drum Drive	The drum drive mechanism has been changed from a series of gears to a timing belt system.	Banding on copies are reduced. See 3.3 in section 2 for details.
2	Copier Rear Frame	The thickness of the rear frame has changed from 1.6 mm to 2.0 mm	Banding on copies are reduced.
3	Fusing exhaust ozone filter	This filter has been eliminated.	Because the ozone amount has been decreased due to the new charge corona unit.
<b>Options</b>			
1	DJF (A610)	See the DJF section for details.	—
2	15-Bin Sorter (A322)	See the Sorter section for details.	—
3	Holder (A702-18)	The color of the exterior covers has been changed.	—
4	Film Projector Unit (A718)	See the Film Projector Unit section for details.	—

## 2. PROCESS CONTROL

### 2.1 LATENT IMAGE CONTROL

#### 2.1.1 DRUM POTENTIAL SENSOR CALIBRATION



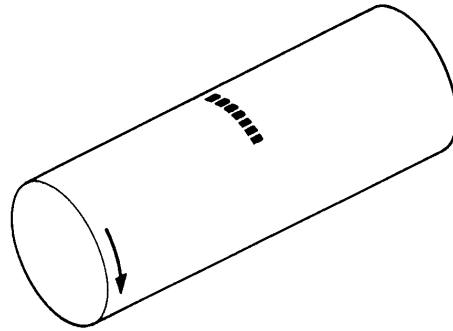
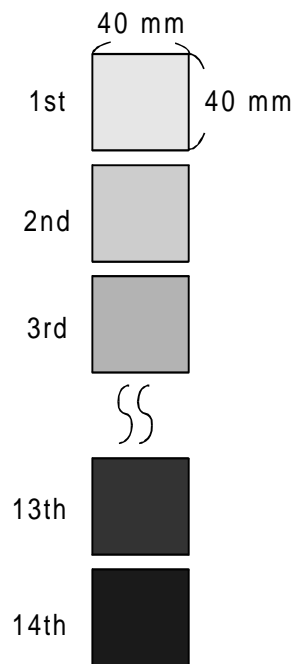
The drum potential sensor [A] output is calibrated during the process control self check.

The High Voltage Supply Board - B [B] has two relay contacts. Usually RA #1 grounds the drum. However, during the self check, the main CPU turns RA #2 on and RA #1 off and applies the test voltage to the drum shaft [C]. In this condition, the drum is isolated from the ground (floating).

By measuring the output of the drum potential sensor when  $-300\text{ V}$  ( $V_{300}$ ) or  $-600\text{ V}$  ( $V_{600}$ ) are applied to the drum, the sensor output is calibrated automatically. (The machine can now determine the actual drum potential from the potential sensor output.) Using  $-300$  and  $-600\text{ V}$  results in a more accurate calibration of the sensor, since the voltage applied to the supply board is much closer to the actual value, which is  $-450\text{ V}$  for VB (Development bias) during the process control self check.

## 2.1.2 GRADATION PATTERN DETECTION

LD Power Level

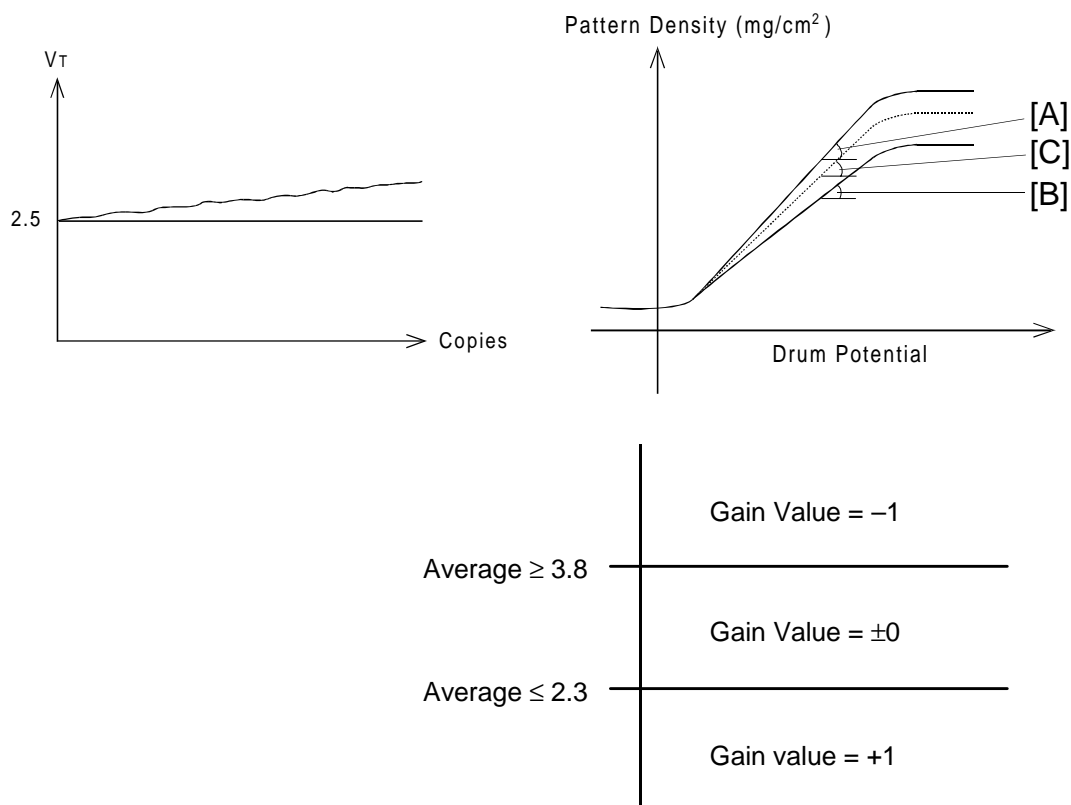


A latent image of a 14-grade gradation pattern is created for each color (Bk, C, M, Y) by changing the LD input current.

By creating 14 grades, the machine can achieve a more precise development gamma factor, resulting in a more reliable pointer control.

## 2.2 TONER DENSITY CONTROL

### 2.2.1 VCNT CORRECTION



Even if the toner concentration is constant, the toner density sensor output gradually increases after new developer is installed because of developer characteristics. Because of this, the machine believes that the amount of toner in the developer has reduced. This causes the machine to increase the toner concentration because the machine controls the toner concentration so that  $V_T$  stays constant.

To compensate for this, the VCNT gain is corrected by using the development gamma curve made from the 14-grade pattern during process control self check.

The present gamma curve [A] and the previous gamma curve [B] are compared, and the average [C] is calculated. As shown in the diagram, the gain is decreased by 1 when the average gradient is 3.8 or more. The maximum compensation value is -16.

Because of this new VCNT correction system, the VCNT correction previously performed every 200 copies is no longer necessary. Also, due to the use of the average value, over-reduction of the gain is avoided.

### **2.2.2 FORCED TONER CONSUMPTION MECHANISM**

For customers that mainly make copies other than full color copies, the toners other than the selected colors are not used. For these toners, the amount of toner inside the development unit will gradually increase every 50 copies, since toner agitation is performed at this interval, and some toner is added at this time (see section 6.1). If this condition continues, toner scattering and toner density control failure may occur.

To compensate for this, along with the transport screw gear modification, the machine checks the output of each TD sensor during the process control self check. If the machine detects  $V_{REF}-V_T \geq 0.3 \text{ V}$ , it determines that there is too much toner inside the development unit and makes a pattern across the whole width of the drum to forcibly consume some toner.

### **2.2.3 FORCED TONER SUPPLY MECHANISM**

When the machine makes consecutive copies that have a large portion of solid image areas, toner supply and agitation from the toner tank cannot keep up with the toner consumption speed, causing lighter copies, toner scatter, and related SC codes to appear.

To compensate for this, the output of each TD sensor is checked every copy. When the machine detects  $V_T-V_{REF} \geq 0.5 \text{ V}$  five times consecutively, it determines that the amount of toner in the development unit is low. At this moment, the copy job is interrupted, and toner is fed into the development unit forcibly. After forced supply, the machine resumes the copy job.

## 3. DRUM UNIT

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### 3.1 DRUM CHARGE

This copier uses a single corona wire scorotron system to charge the drum.

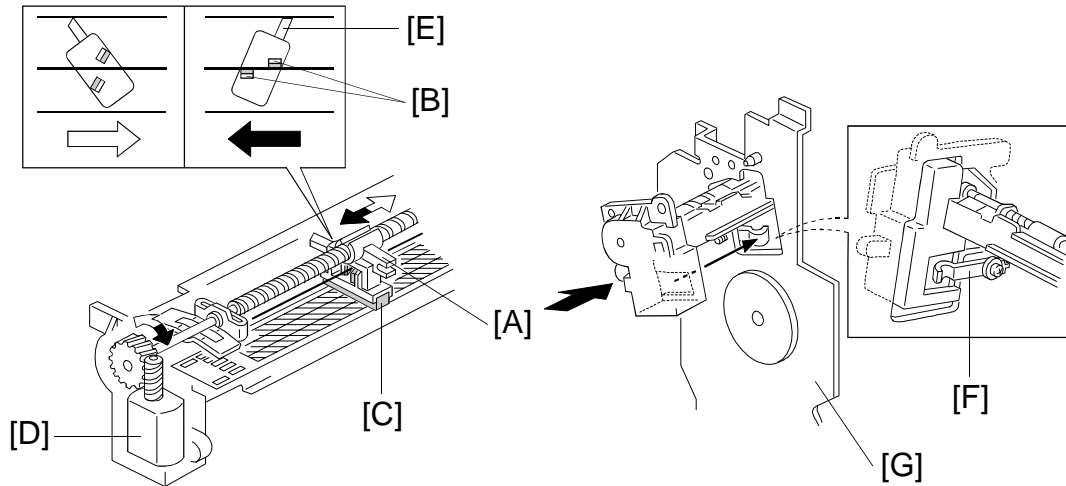
The corona wire applies a negative charge to the drum surface. The striped stainless steel grid plate makes the corona charge uniform and controls the negative charge on the drum surface to -650 V (standard) by applying a negative grid bias voltage.

The high voltage supply board –C/G gives a constant corona current (–450  $\mu$ A) to the corona wire, and controls the grid voltage (based on the results of process control) to maintain proper image density. Grid voltage is controlled to match changing factors such as a dirty grid plate, dirty charge corona casing, and OPC chargeability.

The use of the single wire scorotron system has the following advantages.

- The amount of corrosive gas (O<sub>3</sub>, NO<sub>x</sub>) is reduced due to the decrease in total current.
- The life time of the drum is increased due to the decrease in the amount of corrosive gas.
- Uneven charge problems are alleviated due to the increase of the amount of current per meter of the corona wire.

### 3.2 DRUM CHARGE CORONA WIRE/GRID CLEANING



The flow of air around the charge corona unit may deposit toner particles and paper dust on the corona wire or corona grid plate. These particles may interfere with charging and cause uneven charge on the drum.

The wire cleaner [A], which consists of the wire cleaner pads [B] and the grid plate sponge [C], automatically cleans the wire and the inside of the grid plate to prevent such problems from appearing.

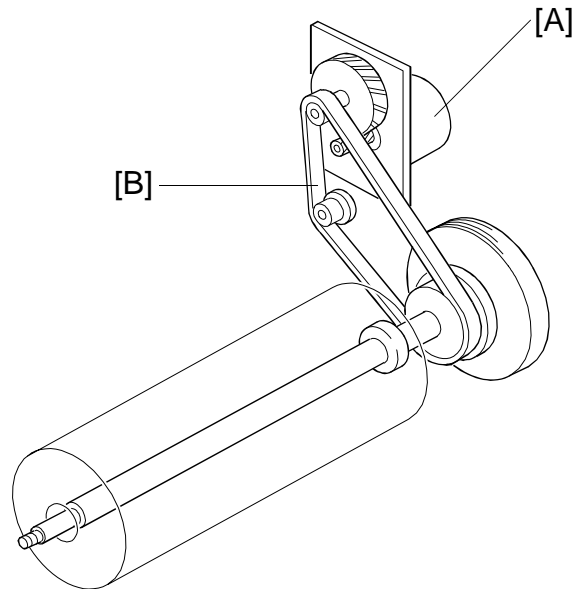
The wire cleaner is driven by a dc motor. Normally the cleaner is located at the front end (this is home position). Whenever the main switch is turned on while the hot roller temperature is below 80°C (before process control), the wire cleaner motor [D] turns on to bring the wire cleaner to the rear end of the corona unit and back to the home position. The corona wire and the inside of the grid plate are cleaned at the same time. This procedure can be manually performed with an SP mode as well (<2> SP Test, page 4).

When the cleaner moves from the home position to the rear position (the white arrow in the illustration), only the grid plate is cleaned since the grid plate sponge is always in contact. When coming back, the rib [E] on the cleaner is forced by the opening in the corona casing, and the wire cleaner pads contact the corona wire.

There are no home position or return position sensors. The wire cleaner drive board at the back of the machine monitors the current applied to the motor. When the wire cleaner reaches the end, it is stopped and the motor is locked. At this time, the current of the motor slightly increases and the drive board detects that it is time to rotate the motor in reverse.

Also, a grounding plate [F] is installed on the back side of the drum stay [G] to reduce the electrical noise generated from the cleaner motor.

### 3.3 DRIVE MECHANISM

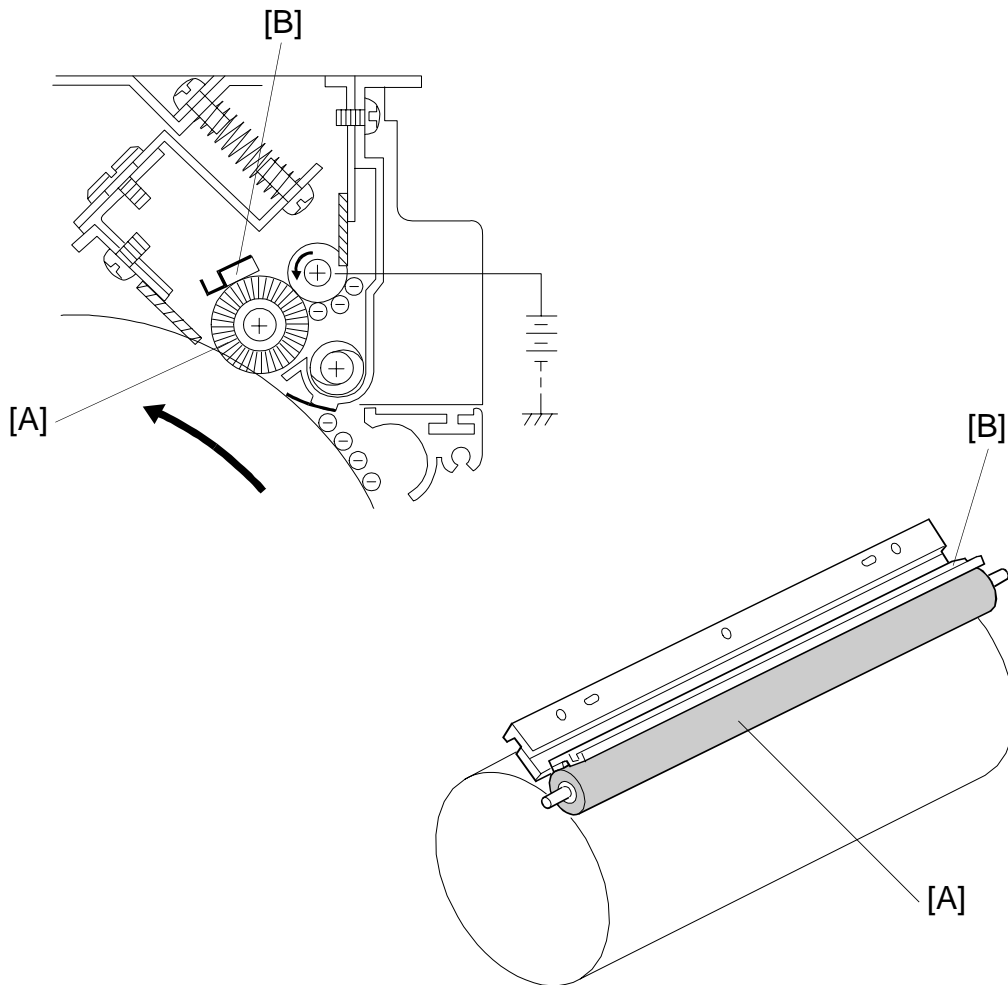


The drum is driven by the drum motor [A] through a timing belt [B].

By the use of a timing belt system, banding on copies are reduced due to the lower mechanical load.



### 3.4 DRUM LUBRICATION MECHANISM



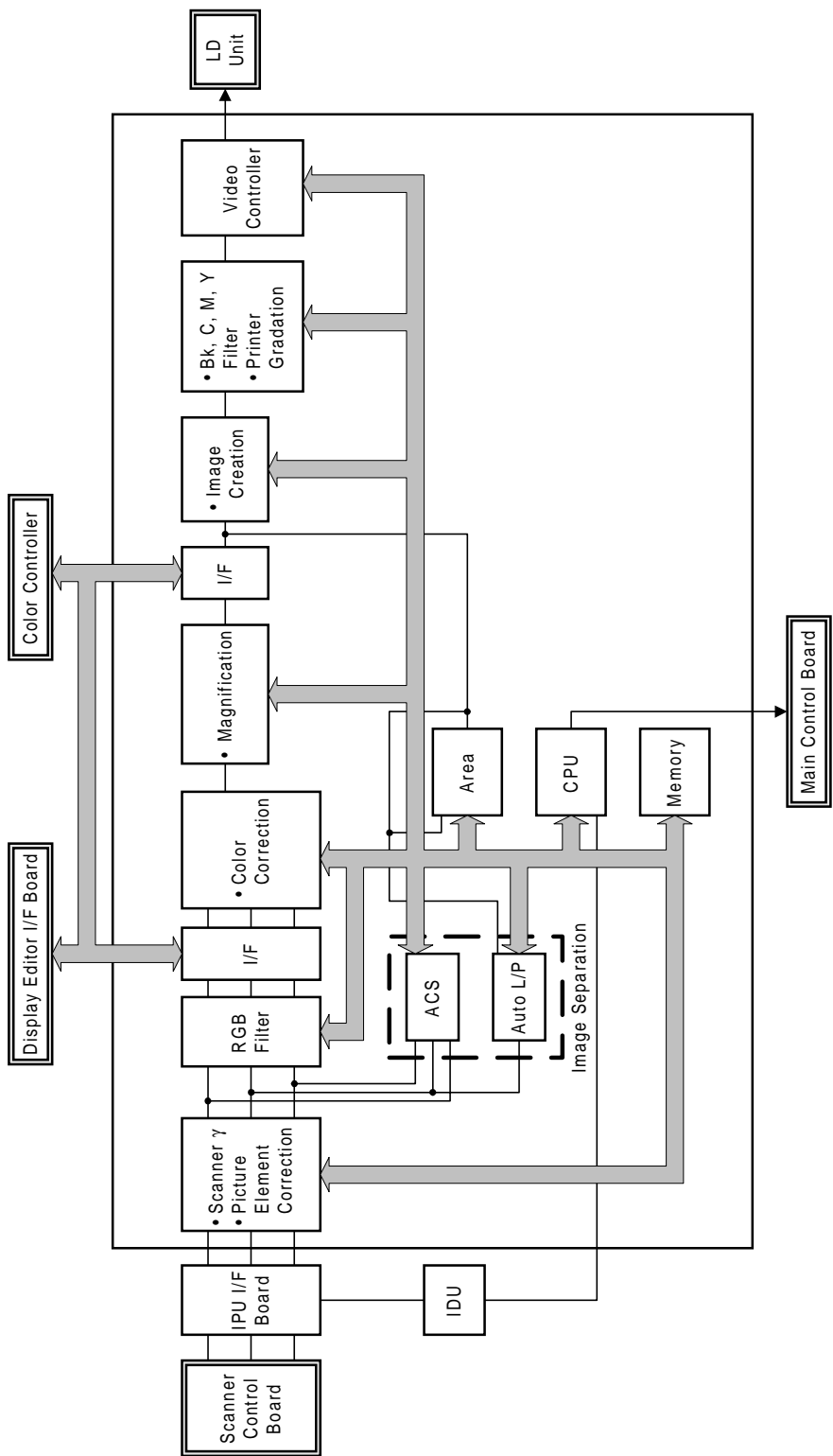
While the drum rotates, the cleaning brush [A] distributes lubricant from the drum lubricant bar [B] to the surface of the drum.

This mechanism improves the copy quality, especially for letter areas in full color mode, since it helps the toner transfer to the transfer belt. It also improves the efficiency of drum cleaning.

To apply the lubricant to the surface of the drum evenly, a straight-bristle type is used for the drum cleaning brush.

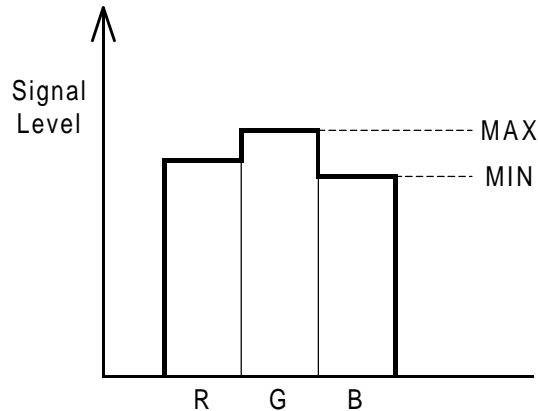
# 4. IMAGE PROCESSING

## 4.1 IPU SECTION BLOCK DIAGRAM



Detailed Descriptions

## 4.2 ACS (AUTO COLOR SELECTION)



\*MIN: Also known as "RGB Common Data"

In Auto Color Selection mode, the Black Copy mode or Full Color mode is automatically selected to match the original image. During the 1st scanning cycle, the latent image is developed with amount of black toner according to the corrected R/G/B video signals. If the original does not have any color area, the 2nd scanning is aborted, and the developed image is transferred from the transfer belt to copy paper. Then the black and white copy comes out. If the original has a color area, copying resumes in the full color copy mode (4 scans).

To recognize if the original has a color area or not, the R/G/B video signals are compared. If the maximum difference among R/G/B signal levels (MAX-MIN in the above diagram.) is within a certain range, the original is considered to be black and white.

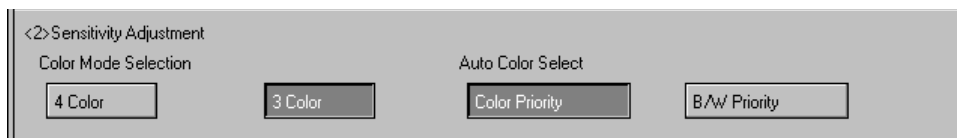
This range can be changed by the user.



Black: The range is wider

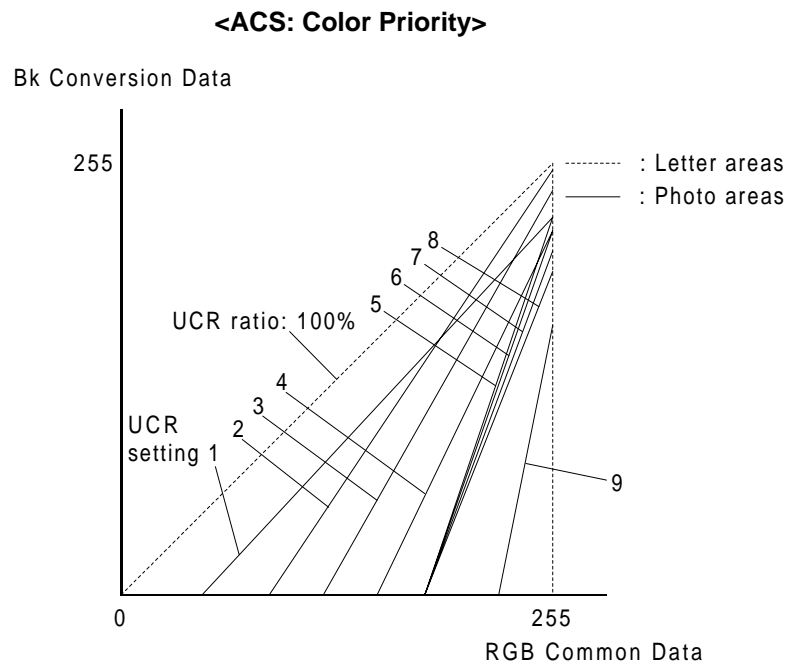
Color: The range is narrower

Also, the user can select either B/W Priority or Color Priority, to reproduce the B/W areas or Color areas well, when the ACS mode is selected.



\*Factory Setting = Color Priority

## When Color Priority is selected



### a) Letter areas

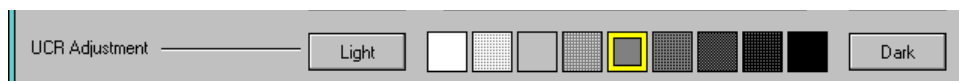
The UCR ratio is set to 100% to reproduce the letter areas well. Black toner is always used if RGB Common Data is greater than zero.

### b) Photo areas

In photo areas, black toner is not used until RGB Common Data reaches a certain value, which depends on the UCR adjustment setting (see below). This can be one of 9 settings as shown in the above illustration.

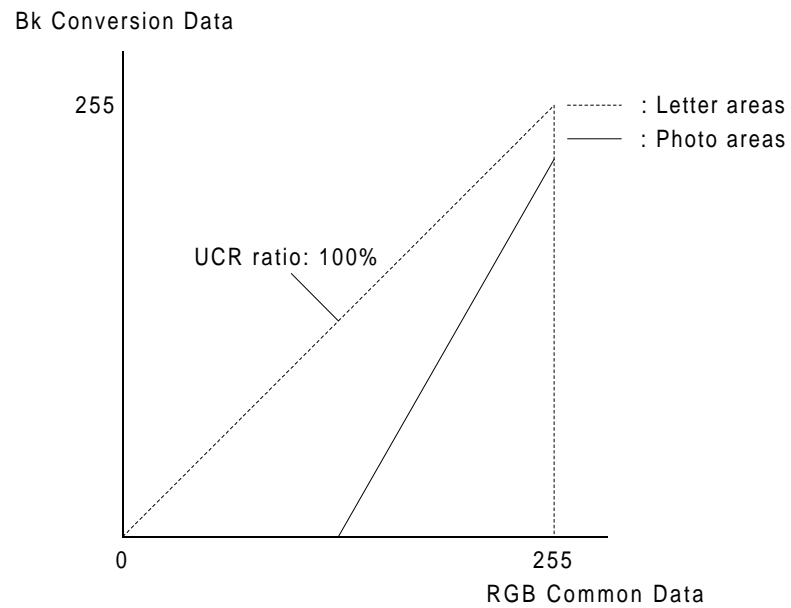
Also, the UCR ratio changes with image density. The steeper the gradient in the above graph, the faster the UCR ratio increases with image density (as RGB Common Data increases).

The UCR range for the photo areas can be changed over 9 levels by the user (Image Adjustment: UCR Adjustment) to get the best color reproduction.



## When B/W Priority is selected

### <ACS: B/W Priority>



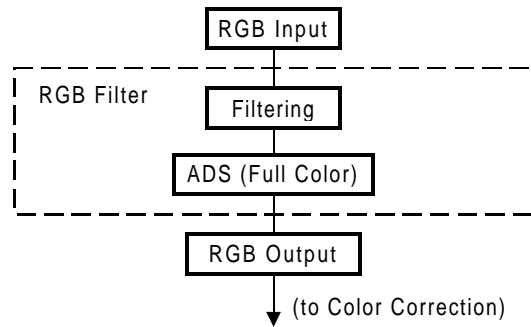
#### a) Letter areas

The UCR (Under Color Removal) ratio is set to 100% to reproduce the letter areas well.

#### b) Photo area

The UCR ratio is set to a higher value than for the Color Priority default setting (level 5), so that low image density areas of B/W originals can be reproduced well.

## 4.3 RGB FILTER

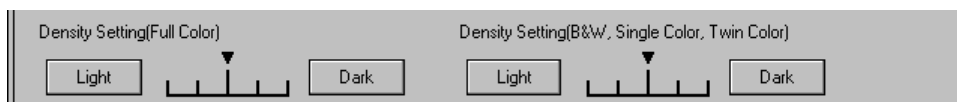


### 4.3.1 Filtering

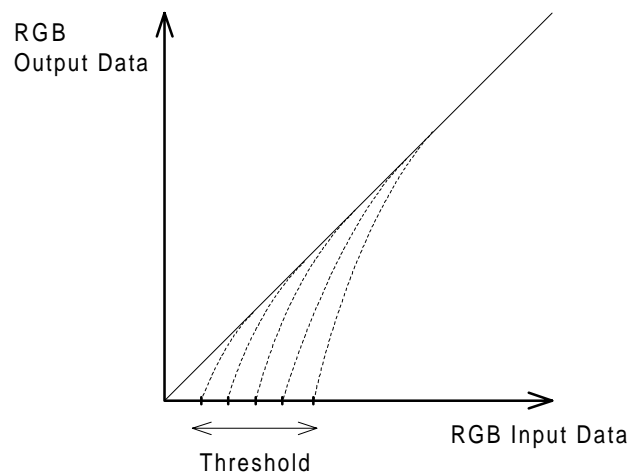
To improve the image reproduction, the appropriate filter coefficients are applied to the R/B/G video signals, depending on the selected image modes (letter/photo) or the result of Auto Letter/Photo separation.

### 4.3.2 Auto Image Density Control (Full Color)

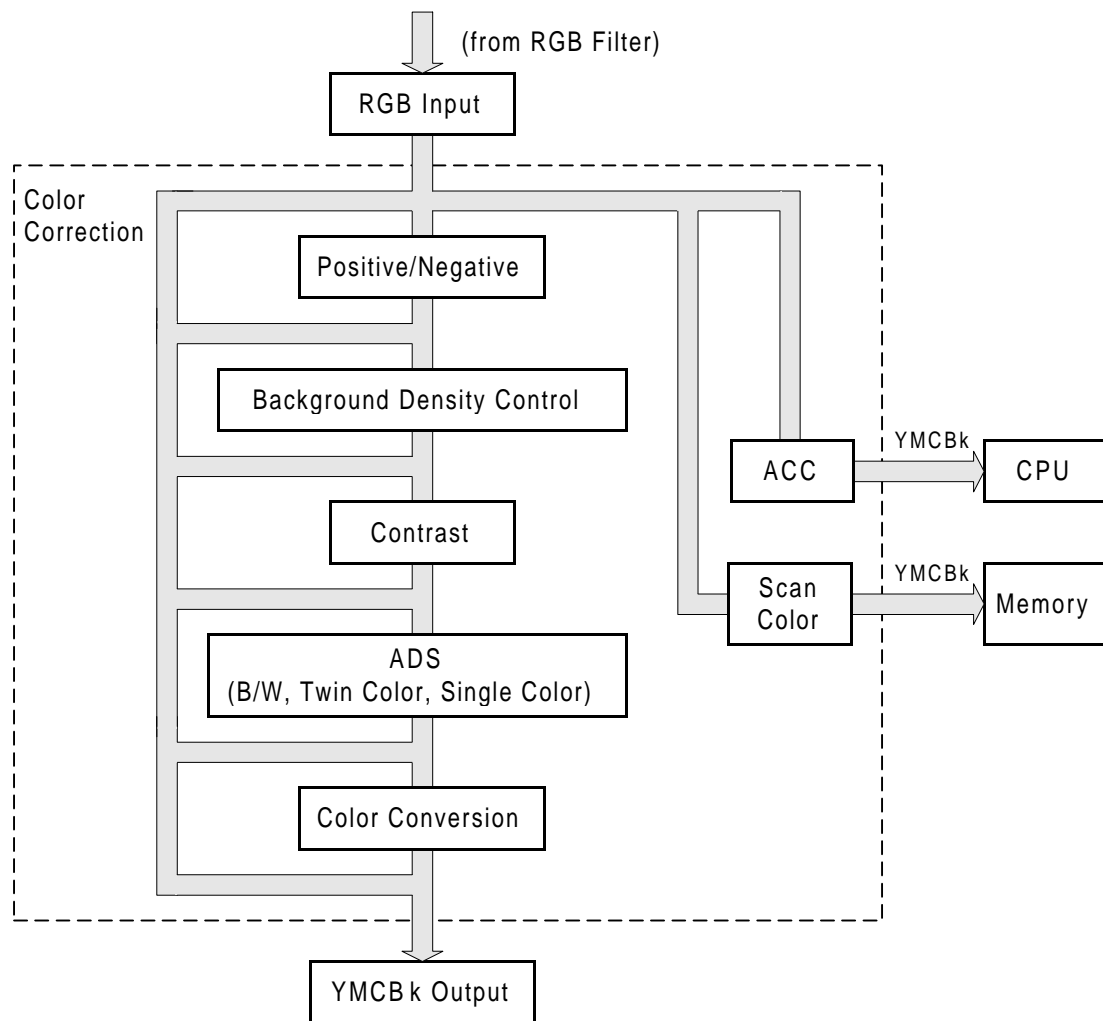
This mode prevents the background of an original from appearing on copies. The Auto Image Density Level can be changed using the User Tools. (There are 5 levels.)



When Full Color mode and Auto Image Density mode are selected, video signals corresponding to the background are detected and their output level is set to zero. The threshold for detecting the background can be changed over 5 levels using the User Tools.



## 4.4 COLOR CORRECTION



#### 4.4.1 Image Modes

RGB video signals are converted to YMCBk video signals using a color conversion table.

$$\begin{pmatrix} R \\ G \\ B \end{pmatrix} \longrightarrow (\text{Color Conversion Table}) \longrightarrow \begin{pmatrix} Y \\ M \\ C \\ Bk \end{pmatrix}$$

a) Printed Photo/Glossy Photo mode

A suitable color conversion table for Printed Photo or Glossy Photo mode is applied to improve the reproduction of such originals.

b) Copied Photo/Map mode

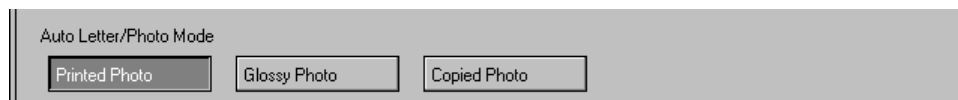
A suitable color conversion table for Copied Photo or Map mode is applied to improve the reproduction of such originals.

c) Auto Letter/Photo mode

At the factory setting, Printed Photo mode is applied for the photo areas detected by the Auto Letter/Photo mode.

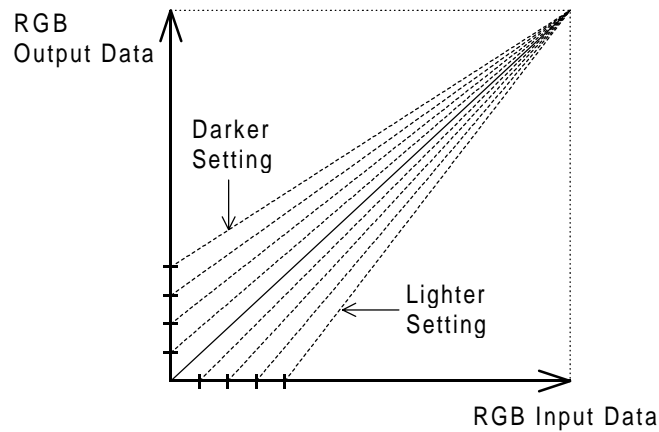
The user can change this setting so that either of the following modes will be applied for photo areas.

- Printed Photo mode
- Glossy Photo mode
- Copied Photo mode

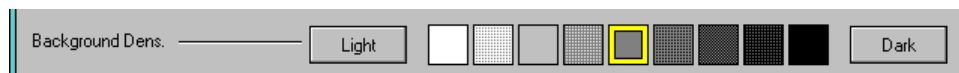




#### 4.4.2 Background Density Control



There are 9 levels of background density controls.



a) Lighter setting

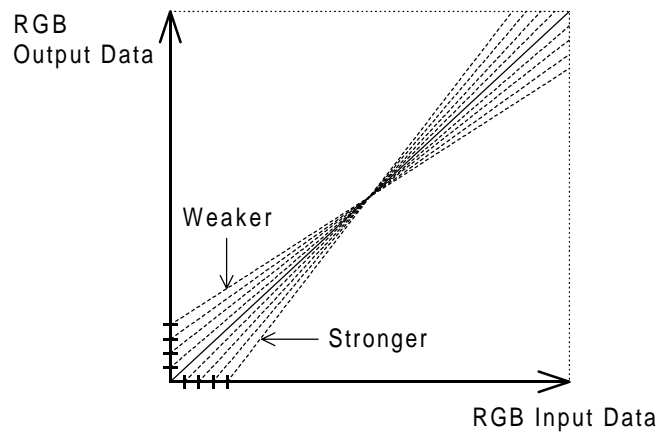
Small effect on the high image density areas, but the low image density areas are reproduced lighter or erased.

b) Darker setting

Small effect on the high image density areas, but the low image density areas are reproduced darker.

When combining the Full Color mode and Auto Image Density mode, the background density may be reproduced lighter or erased. To reproduce the color background well, it is necessary not to use Auto Image Density mode but to adjust the background density control to a darker setting.

### 4.4.3 Contrast



Contrast between light and dark areas of the image can be adjusted. There are over 9 levels.



a) Strong setting

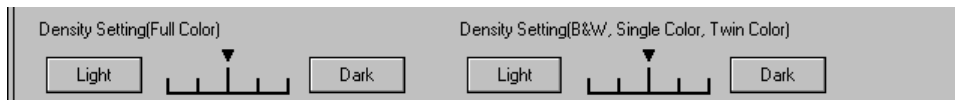
The density of the dark image areas is increased and the density of the light image areas is decreased.

b) Weaker setting

The density of the dark image areas is decreased and the density of the light image areas is increased.

#### 4.4.4 Auto Image Density Control (B/W, Twin Color, Single Color)

This mode prevents the background of an original from appearing on copies. The Auto Image Density Level can be changed using the User Tools. (There are 5 levels.)

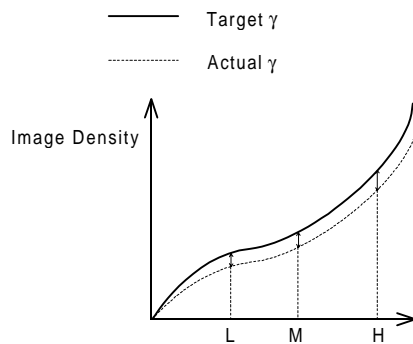
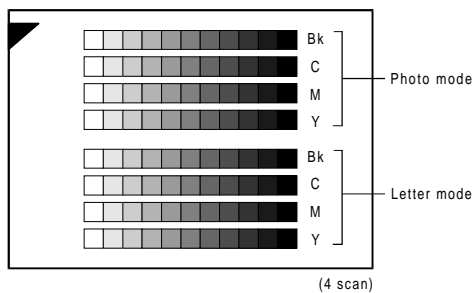


When B/W, Single Color, or Twin Color and Auto Image Density mode are selected, this function combines the Background Density Control and Contrast as shown in the following table.

ADS Level		Background Density Control	Contrast
↑ Dark	+2	-1	0
	+1	-1	+1
Standard	0	-1	+2
Light ↓	-1	-2	+2
	-2	-2	+3

## 4.5 ACC (AUTO COLOR CALIBRATION)

### Test Pattern



Detailed  
Descriptions

Auto Color Calibration can be performed using the User Tools.

A test pattern, including the patterns for Letter mode and Photo mode, will be printed first. The user then scans the test pattern. The resulting printer gamma curve depends on the results of scanning the test pattern.

There are adjustment tables for L, M, H, and ID MAX values stored in the machine. The machine applies these to approximate the actual curve to the target curve as closely as possible.

If needed, the printer gamma curve can be adjusted further manually in the SP mode. (See section 5, Color Balance Adjustment)

Also, a printer gamma setting can be stored in memory (temporarily or permanently) and curve can be recalled. When the ACC is performed, the current printer gamma setting will be automatically stored in the temporary memory, which can be recalled after the ACC is performed. (See Section 4, *Service Tables, SP Table*.)

## 4.6 YMCBk FILTER

In addition to the RGB filter, the most suitable software filter is applied to YMCBk video signals to improve the image reproduction.

- High Contrast filter (emphasizing edges)
- Smoothing filter

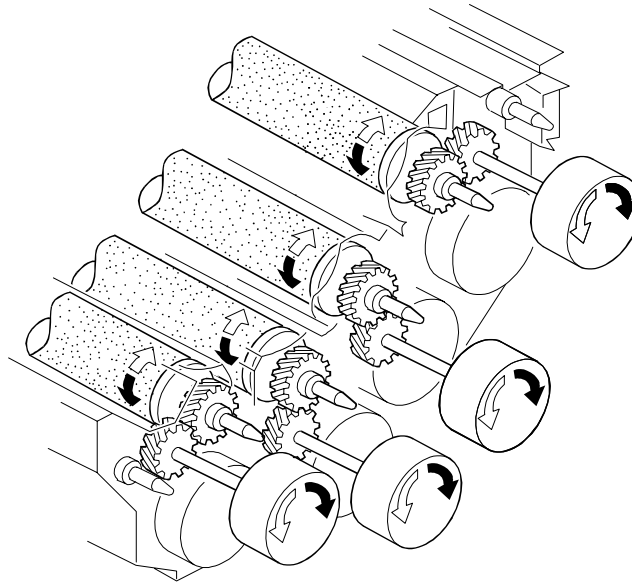
		Soft (Smoothing) ←			Standard	Sharp (Emphasizing Edges) →		
Setting		1	2	3	4	5	6	7
Applied Filter Table	Letter mode	1	2	3	4	5	6	7
	Photo mode	0	1	2	3	4	5	6

The filter can be selected by the user by adjusting the Sharp/Soft level (Image Adjustment).



## 5. DEVELOPMENT

### 5.1 DEVELOPMENT SLEEVE CLEANING

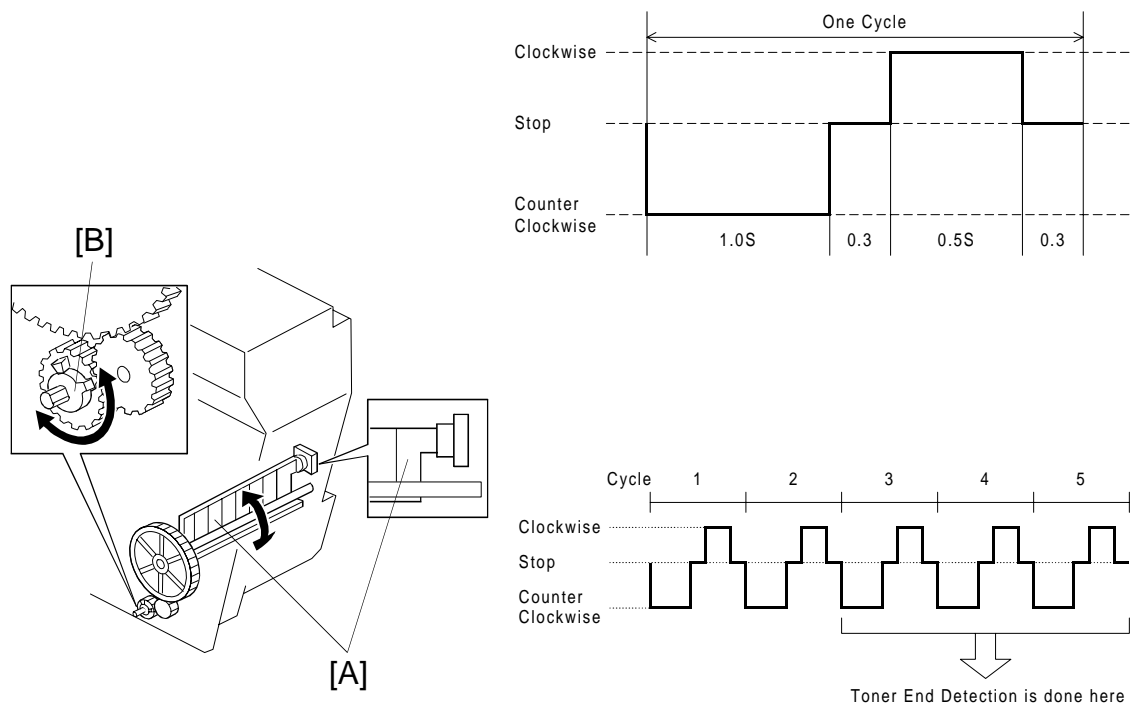


To achieve a faster CPM for black and white originals when copying 1 to 1 or using Auto Color Select (ACS) mode, the development sleeve cleaning mode previously performed for every original is now performed periodically.

For A4 or smaller size originals, a maximum of 40 black and white copies can be made without the machine stopping to perform development sleeve cleaning (20 copies for originals larger than A4 size). If a color original is detected in between when using ACS mode, the cleaning mode is executed, and the original counter will be reset. This setting can be changed with SP mode.

## 6. TONER TANK

### 6.1 TONER AGITATION



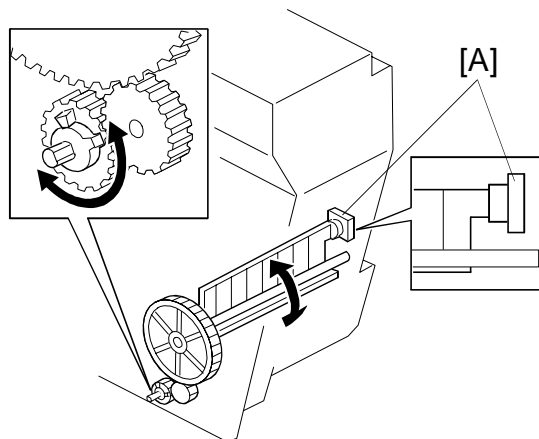
Under the following conditions, the toner agitator [A] inside each toner tank rotates to agitate the toner inside the toner tank.

- Whenever the main switch is turned on while the hot roller temperature is below 110°C.
- After a multi-copy job is completed and more than 50 copies have been made since the last toner agitation.
- When the optional ARDF is used, the machine stops the copy cycle after 150 copies have been made since the last toner agitation.
- When the toner tank is pushed in during a near toner end or toner end condition.

As shown above, one cycle of this agitation consists of rotating in both directions, and is performed for five consecutive cycles.

In order to prevent unnecessary toner from entering the development unit during agitation, the transport screw gear [B] has some play before rotation is transmitted to the transport screw.

## 6.2 TONER END DETECTION



Four toner end sensors [A] (which are piezoelectric) are installed on the toner tank to monitor the near end condition for each color toner. Toner end detection is performed during toner agitation, and the detection sequence is as follows.

### 1. Near Toner End Condition

The machine starts sampling the output of the toner end sensor every 0.1 second during the last three cycles of the toner agitation process (see the previous page). If a no toner condition is detected for 90% of the samples, the machine enters the near toner end condition.

### 2. Toner End Condition

When a near toner end condition is detected, a total of 30 copies can be made using the toner for which the near end condition was detected. After this, the machine enters the toner end condition and copying using that toner is disabled.

### 3. Toner End Recovery

When the front door is opened and the toner tank rails are pulled out and in, the machine starts to perform the toner end recovery procedure. The sequence and the recovery condition is the same as for the near toner end condition detection.

If the toner end condition is not cleared, copying using that particular color toner is disabled. This prevents the customer from clearing the near end or toner end condition by simply opening and closing the front cover or turning the main switch off and on.

The green lever which was previously installed to prevent toner from flowing into the development unit has been eliminated, due to the change in the toner end detection mechanism.



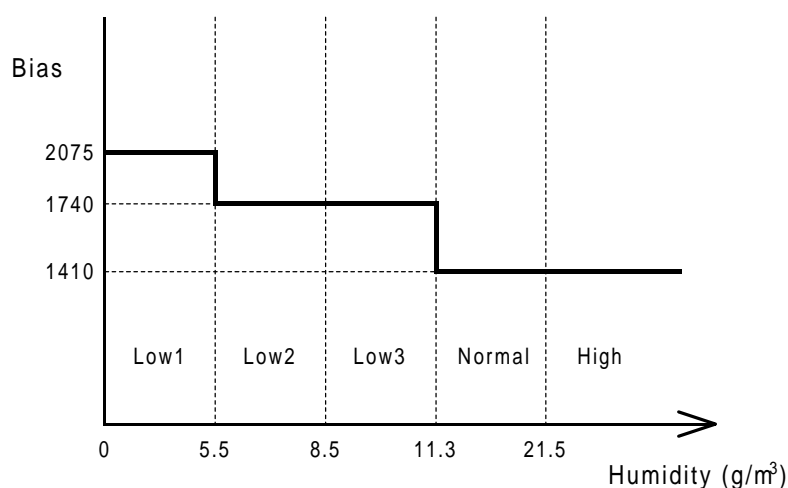
## 7. TRANSFER BELT UNIT

### 7.1 TRANSFER BELT BIAS

Transfer Belt Bias (Face Side: Normal Humidity)

		Copy Mode			
		1C	2C	3C	4C
Dev. Cycle	1st	1410	1410	1410	1410
	2nd		1490	1490	1490
	3rd			1575	1575
	4th				1660

Transfer Belt Bias Depending on Humidity Range (1C Mode: Face Side)

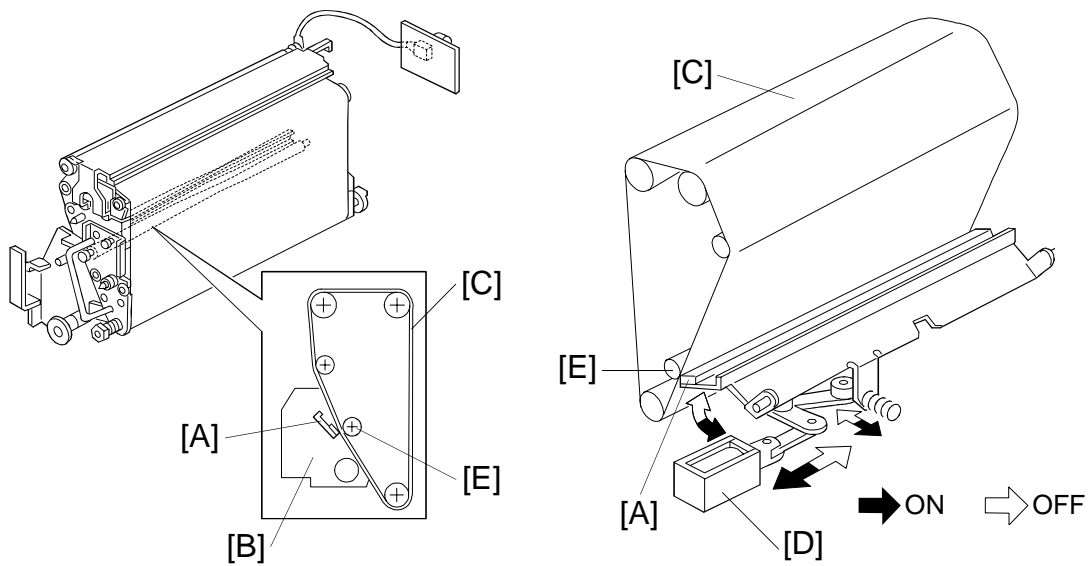


This machine changes the transfer belt bias voltage for every mode and every copy cycle.

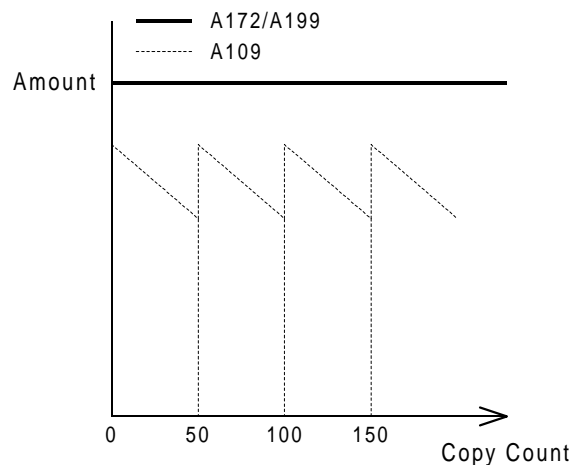
For 1C copy mode, which is more influenced by environmental conditions, the transfer belt bias output is divided into five ranges by four threshold values (as mentioned in the table above) and is determined by the output of the humidity sensor. Only three different bias settings are present as the factory setting for each environment.

The transfer belt bias voltage data can be monitored in the SP Adjustment Mode P-5 and 6. These data should not be changed. For more details, see the SP Mode Section.

## 7.2 TRANSFER BELT LUBRICATION



Detailed  
Descriptions



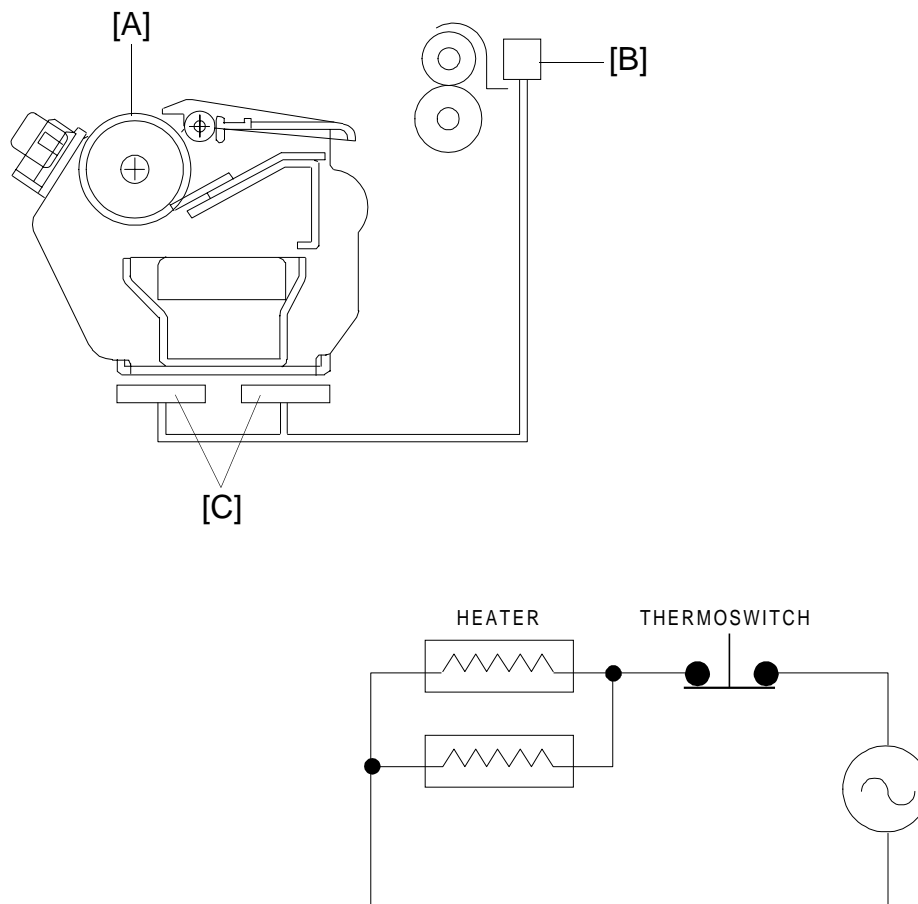
The transfer belt lubricant bar [A] on the transfer belt cleaning unit [B] applies lubricant directly to the transfer belt [C] after every copy.

The on/off movement of the transfer belt lubricant bar solenoid [D] which is synchronized with the belt cleaning mechanism, pushes the lubricant bar against the support roller [E] in the transfer belt unit.

Compared with the previous model, the amount of lubricant applied to the transfer belt will stay at a constant level for every copy cycle. Because of this, copy quality problems such as partial blanking of lines (due to incomplete toner transfer) can be reduced.

## 8. TRANSFER ROLLER UNIT

### 8.1 TRANSFER BELT/ROLLER HEATER CONTROL



The resistance of the transfer roller [A] changes with the environment. It is especially at low temperatures.

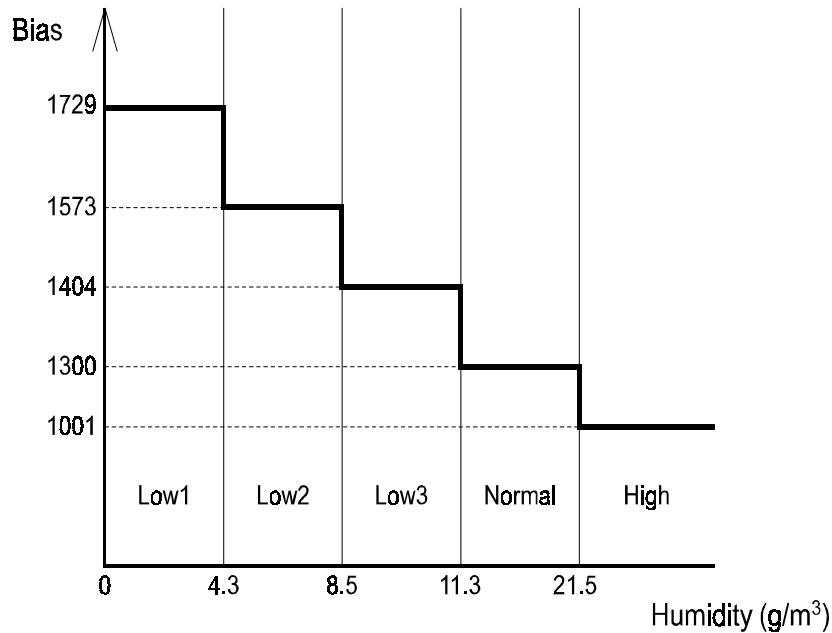
The transfer roller thermoswitch [B] detects the temperature around the transfer roller. To keep the resistance of the transfer roller at a constant level, when the detected temperature is 20°C or less, the transfer belt/roller heaters [C] turn on until the temperature rises above 20°C.

The heaters are not turned on/off by the main switch. The heaters operate whenever the copier power cord is plugged in.

## 8.2 TRANSFER ROLLER BIAS

Rev. 8/98

<Transfer Roller Bias Coefficient by Humidity Range (1C Mode: Face Side; Normal Paper)>



Transfer Roller Bias (Normal Humidity)

		Paper Mode					
		Normal Paper	Thick Paper	OHP: Sideways	OHP: Lengthwise	Normal: Back	Thick: Back
Dev. Cycle	1st	1300	1200	2150	2150	1300	1450
	2nd	1600	1450	2200	2200	1800	1750
	3rd	1900	1750	2500	2500	2100	2050
	4th (Photo)	1600	1450	2200	2200	1800	1750
	4th (Letter)	1600	1450	2200	2200	1800	1750

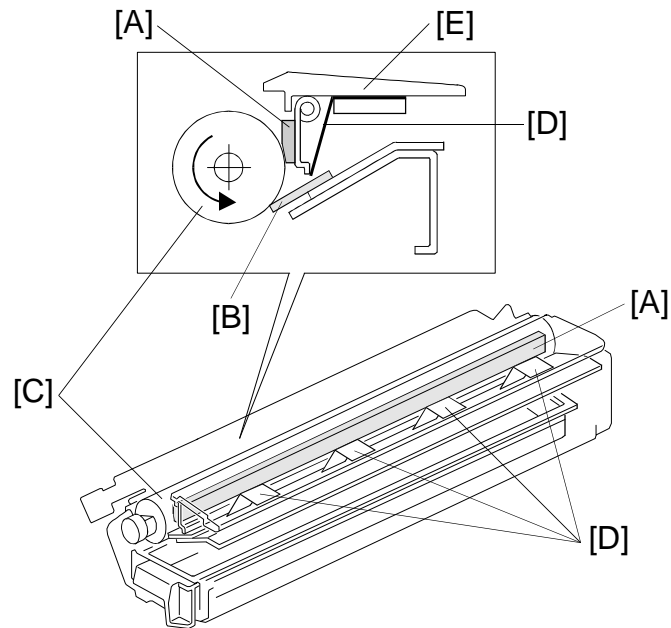
The transfer roller bias is determined by the output of the humidity sensor. It is divided into five humidity ranges by four thresholds, to compensate for changes in the humidity of surrounding areas to maintain constant copy quality.

The threshold is divided more towards the low humidity side, resulting in more sensitivity at the low humidity end. This enables more accurate shift of the transfer bias with small changes in the environment.

Also, the transfer roller bias is changed for each copy mode and the kind of copy paper currently used.

**NOTE:** All values shown on this page are in volts D.C.. values shown using SP mode <1> SP adjustments, pg 7, are in a data format.

### 8.3 TRANSFER ROLLER LUBRICATION

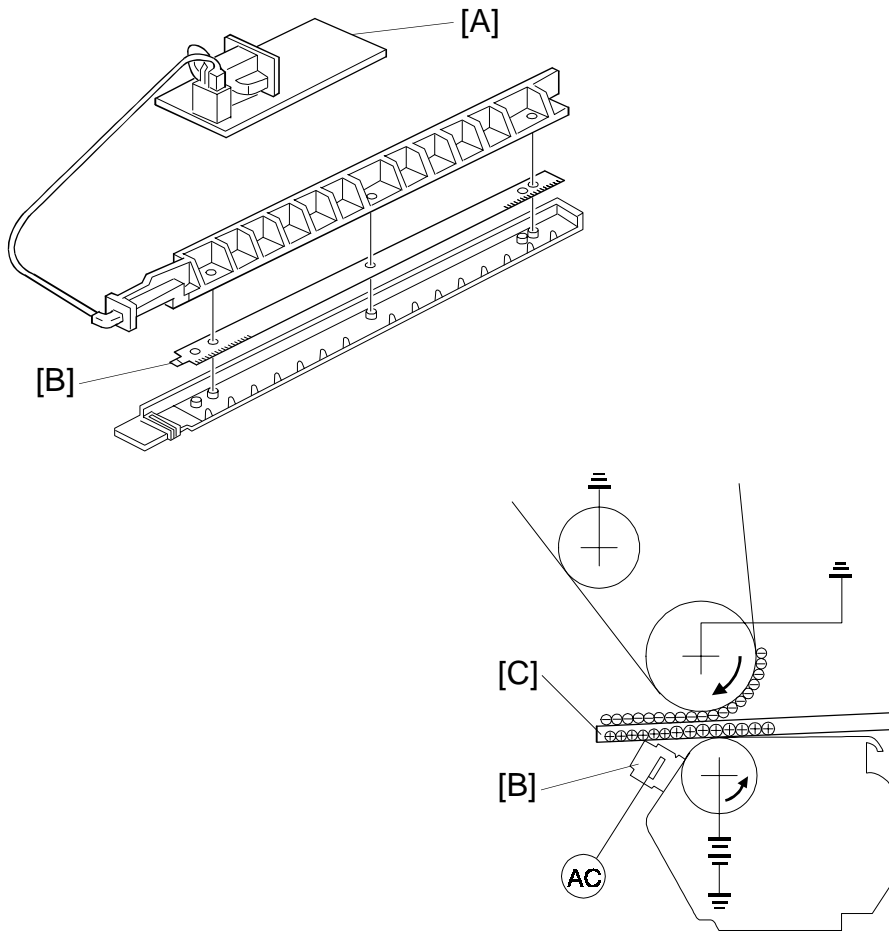


The transfer roller lubricant bar [A] above the cleaning blade [B] continuously applies lubricant directly to the transfer roller [C].

Four spring plates [D] under the transfer roller guide [E] press the lubricant bar against the transfer roller.

By applying lubricant, the cleaning efficiency of the transfer roller cleaning blade is increased, which prevents the back side of copies from becoming dirty with toner and paper dust.

## 8.4 PAPER DISCHARGE



**Discharge Plate Output**

Normal Paper	Thick Paper	Duplex: Face	Duplex: Back
4000 V	3500 V	4000 V	4000 V

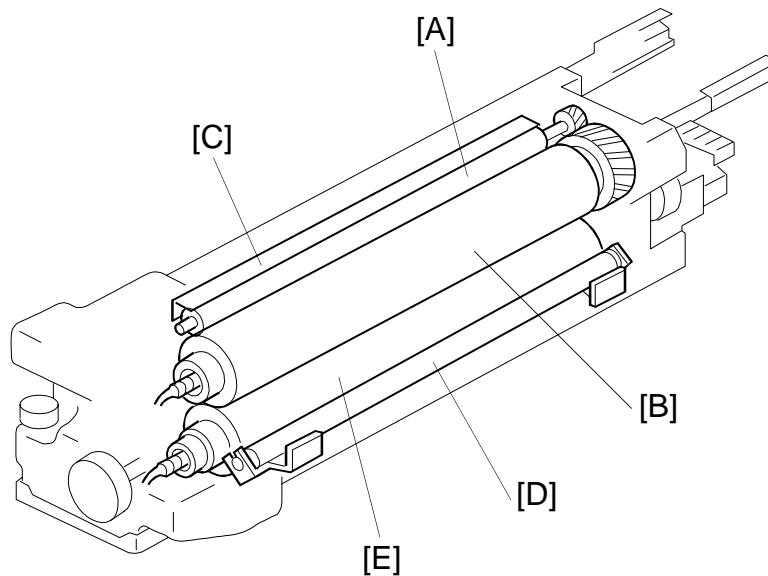
The high voltage supply board -D [A] applies ac voltage to the discharge plate [B]. The discharge plate removes any charge remaining on the paper [C] to separate the paper from the transfer belt.

To perform an accurate discharge, the output of the discharge plate differs with the copy mode or paper being used. For OHP mode, discharge is not performed because the OHP sheet separates from the transfer belt as a result of its stiffness.

## 9. FUSING UNIT

---

### 9.1 ROLLER CLEANING MECHANISM



The cleaning roller [A], which is always in contact with the hot roller [B], collects the toner and paper dust adhering to the surface of the hot roller. The collected matter is scraped off by a stainless steel blade [C].

The pressure roller cleaning roller [D], which is always in contact with the pressure roller [E], collects the toner and paper dust adhering to the surface of the pressure roller. The pressure roller cleaning roller is driven by physical contact with the pressure roller.

The pressure roller cleaning roller prevents poor copy quality in duplex mode (face side) and dirt on the back side of copies in normal mode. It also prevents horizontal lines from appearing on the back side when making OHP sheets.

## 9.2 FUSING TEMPERATURE CONTROL

Each rollers are controlled at the temperature shown in the table below.

	Stand-by	During Copying					
		Normal		OHP/Thick Paper		Manual Duplex (Back Side)	
		1C	2C, 3C, 4C	1C	2C, 3C, 4C	1C	2C, 3C, 4C
Hot Roller Temp.	180	160	170	170	170	Normal:160	Normal:170
						Thick Paper: 170	Thick Paper: 170
Pressure Roller Temp.	120	Hot Roller Temp. - 20				120	120



## 10. OPERATION PANEL

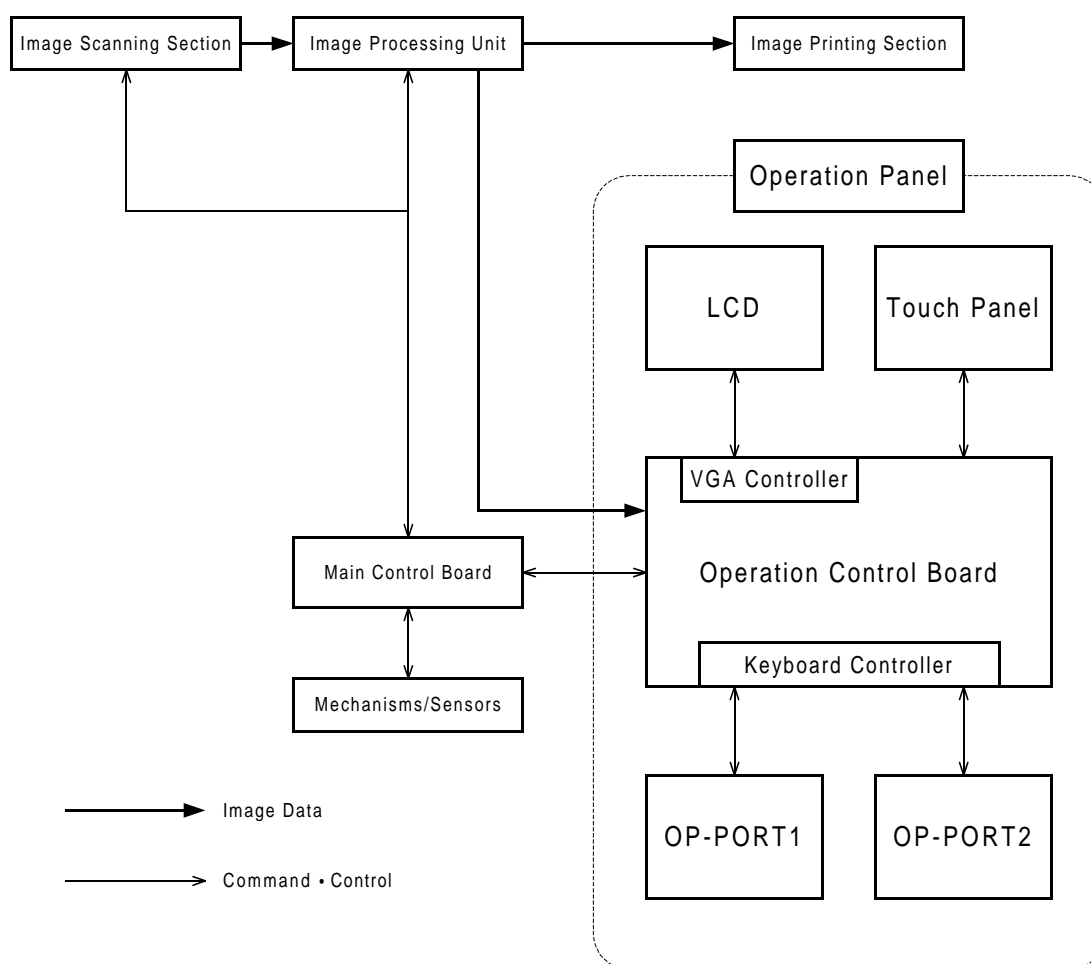
This operation panel has an LCD (640 x 480 dots). Most of the keys for functions are displayed on the LCD (Touch panel).

There are two versions of the LCD.

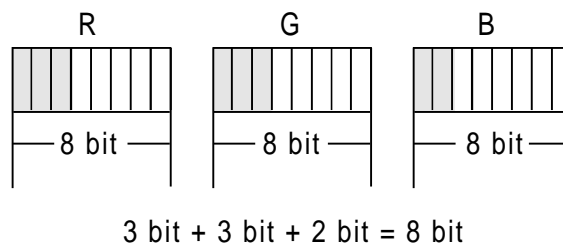
- Basic Model (A199): Black/White LCD
- Edit Model (A172): Full Color LCD + Editor Function

\*The scanned image will be displayed on the LCD in full color (256 colors in total).

### 10.1 OPERATION PANEL CONTROL BLOCK DIAGRAM



## 10.2 OPERATION CONTROL BOARD



	Resolution	Enlargement Ratio
<b>Full Size</b>	25 dpi	100%
<b>Enlarge 1</b>	50 dpi	200%
<b>Enlarge 2</b>	67 dpi	264%
<b>Enlarge 3</b>	100 dpi	400%
<b>Enlarge 4</b>	132 dpi	528%

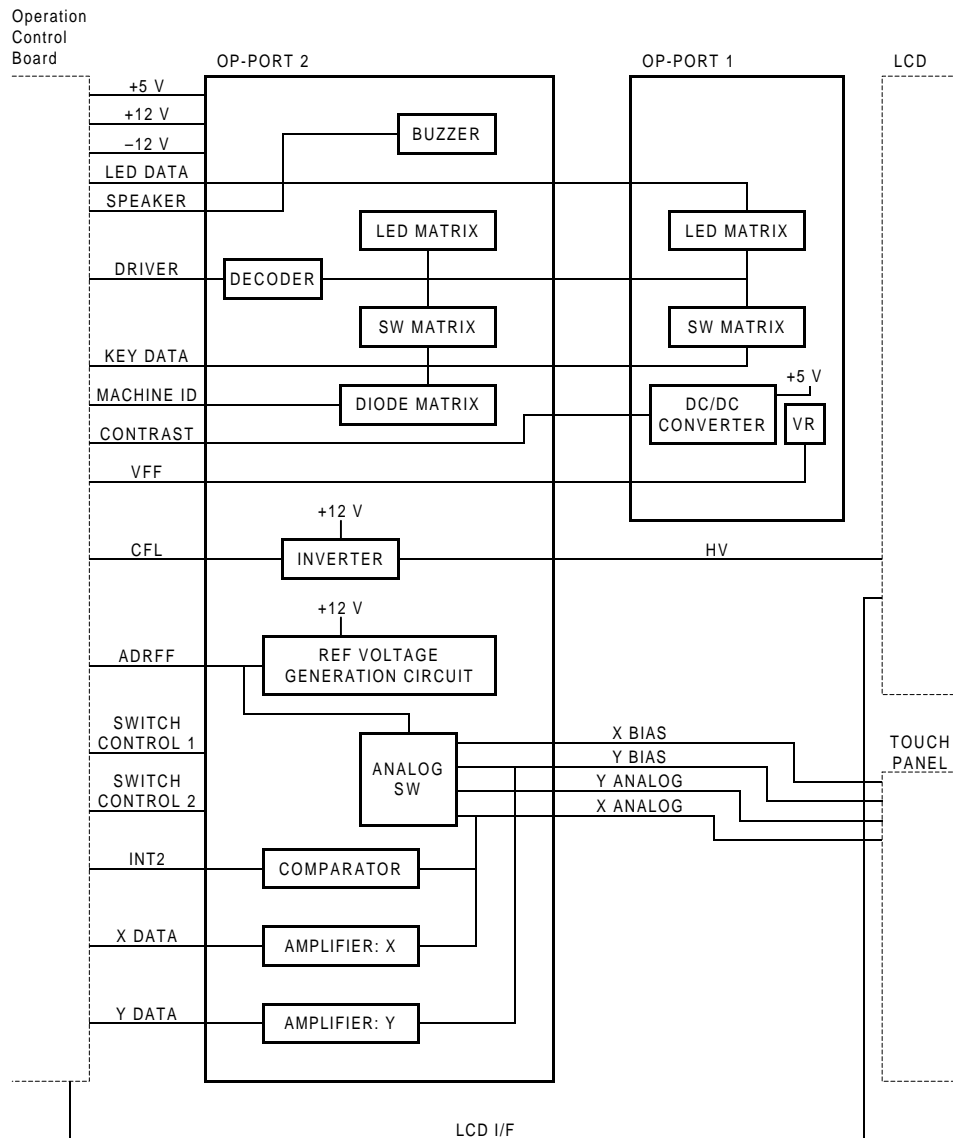
The Operation Control Board monitors the commands input by the user, and sends them to the Main Control Board. Also, the Operation Control Board controls the operation panel itself (Display Switching, and Display Control).

The data is sent as serial data through the optical fiber between the Operation Control Board and Main Control Board.

When in area editing mode, the Operation Control Board receives the area image data (RGB data: 8 bit) from the IPU and displays it in 256 colors on the large LCD.

As the Operation Control Board has a CPU, an Operation Panel Self-diagnostic Mode is available. (See Section 6, 3. Operation Panel Self-diagnostic Mode.)

## 10.3 OP-PORT



The OP-PORT 1 & 2 control the following:

1. Switches and LED Buzzer
2. Touch detection and Touch Point detection
3. Power Supply to the LCD
4. Contrast Adjustment
5. CFL (Cold Fluorescent Lamp) Power Supply inverter function

# **INSTALLATION**



# 1. INSTALLATION REQUIREMENTS

---

## 1.1 ENVIRONMENT

1. Temperature Range: 10°C to 32°C (50°F to 89°F)
2. Humidity Range: 15% to 90% RH
3. Ambient Illumination: Less than 2,000 lux (Do not expose to direct sunlight.)
4. Ventilation: Minimum space 20 m<sup>3</sup>.  
Room air should turn over at least 30 m<sup>3</sup>/hr/person
5. Ambient Dust: Less than 0.15 mg/m<sup>3</sup> ( $4 \times 10^{-6}$ ,  $4 \times 10^{-6}$ , Oz/yd<sup>3</sup>)
6. If the place of installation is air-conditioned or heated, do not place the machine
  - a) where it will be subjected to sudden temperature changes,
  - b) where it will be directly exposed to cool air from an air conditioner,
  - c) where it will be directly exposed to heat from a heater.
7. Do not place the machine where it will be exposed to corrosive gasses.
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 vibrations.

## 1.2 MACHINE LEVEL

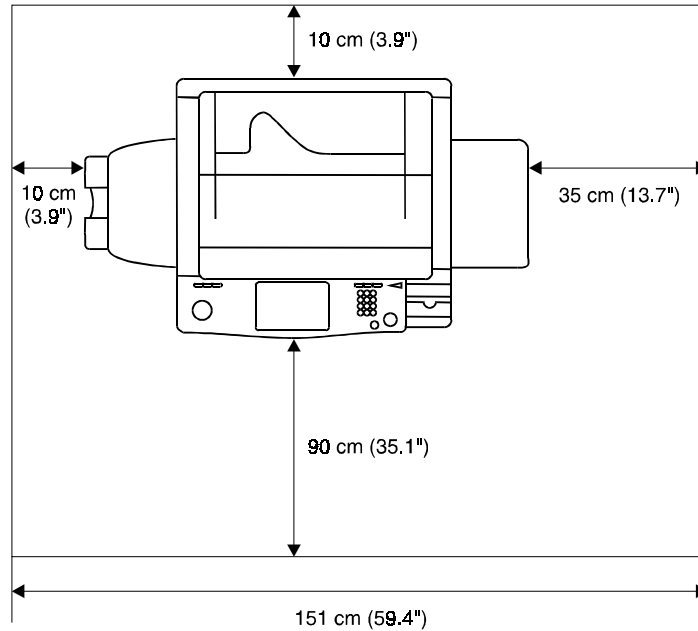
1. Front to back: Within 5 mm (0.2") of level
2. Right to left: Within 5 mm (0.2") of level

**NOTE:** The machine legs may be screwed up or down in order to level the machine. Set a carpenter's level on the exposure glass when you do this.

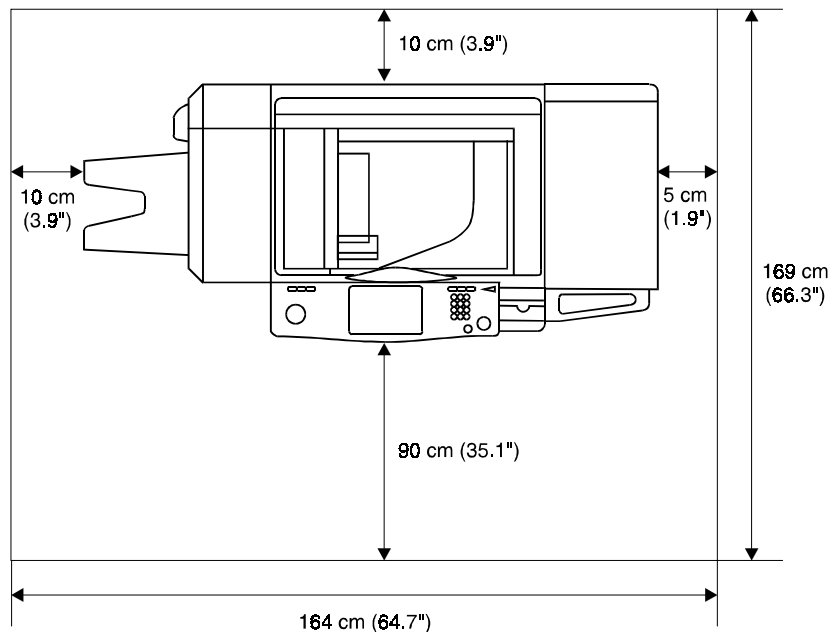
### 1.3 MINIMUM SPACE REQUIREMENTS

Place the copier near the power source, providing clearance as shown:

#### Copier only



#### Full system



**NOTE:** A space of at least 10 cm (3.9") at the rear of the machine is necessary for smooth air flow into the machine.

## 1.4 POWER REQUIREMENTS

1. Input voltage level:        115 V/60 Hz: More than 12 A  
                                      220 ~ 240 V, 50/60 Hz: More than 7 A
2. Permissible voltage fluctuation: 10%
3. Do not set anything on the power cord.

**NOTE:** a) Make sure the plug is firmly inserted in the outlet.  
          b) Avoid multi-wiring.  
          c) Outlet should be properly grounded.



## 2. COPIER (A172/A199)

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### 2.1 ACCESSORY CHECK

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

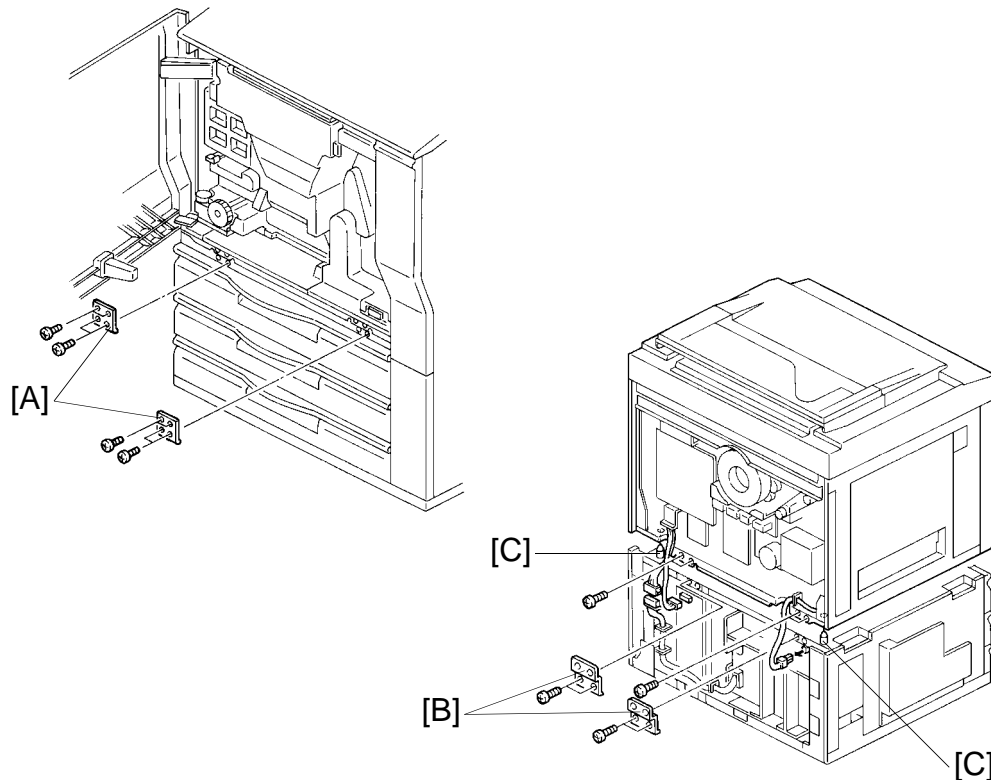
#### 2.1.1 Copier

1. Operating Instructions (except -27 machines) .....	1
2. NECR (-17, -27, and -29 machines only) .....	1
3. Editor Pen .....	1
4. Copy Tray.....	1
5. Operating Instructions Holder .....	1
6. Total Counter Resetting Tool .....	1
7. Leveling Shoe .....	4
8. Instructions Procedure Sheet.....	1
9. Philips Truss Head Screws M4 x 8 .....	2
10. Caution Decal - 4 Languages (-22, -26, -27 only).....	1

#### 2.1.2 Optional Holder (A702-18)

1. Base Bracket .....	1
2. Holder Cover .....	1
3. Front Cover .....	1
4. Lower Cover.....	1
5. Philips Pan Head Screws M4 X 6 .....	8
6. Philips Truss Head Screws M4 X 8 .....	3

## 2.2 COPIER SEPARATION



The machine can be separated into two units (the main frame and the paper supply unit). Separation of the machine will help the transportation to the customer's site.

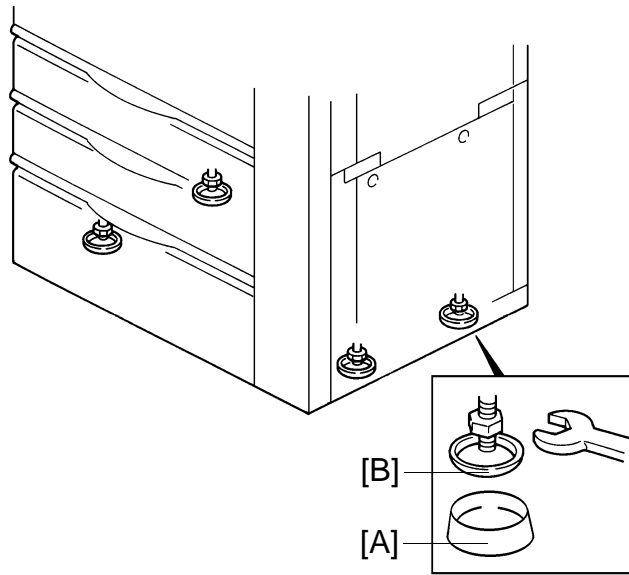
1. Open the front door and remove the front securing brackets [A] (4 screws each).
2. Remove both upper and lower rear covers (4 screws each).
3. Remove the rear securing brackets [B] (4 screws each).
4. Disconnect the connectors running between both units, and free them from the harness clamps.
5. Lift up the machine by using the handles.

**NOTE:** a) When lifting the machine, lift straight up.

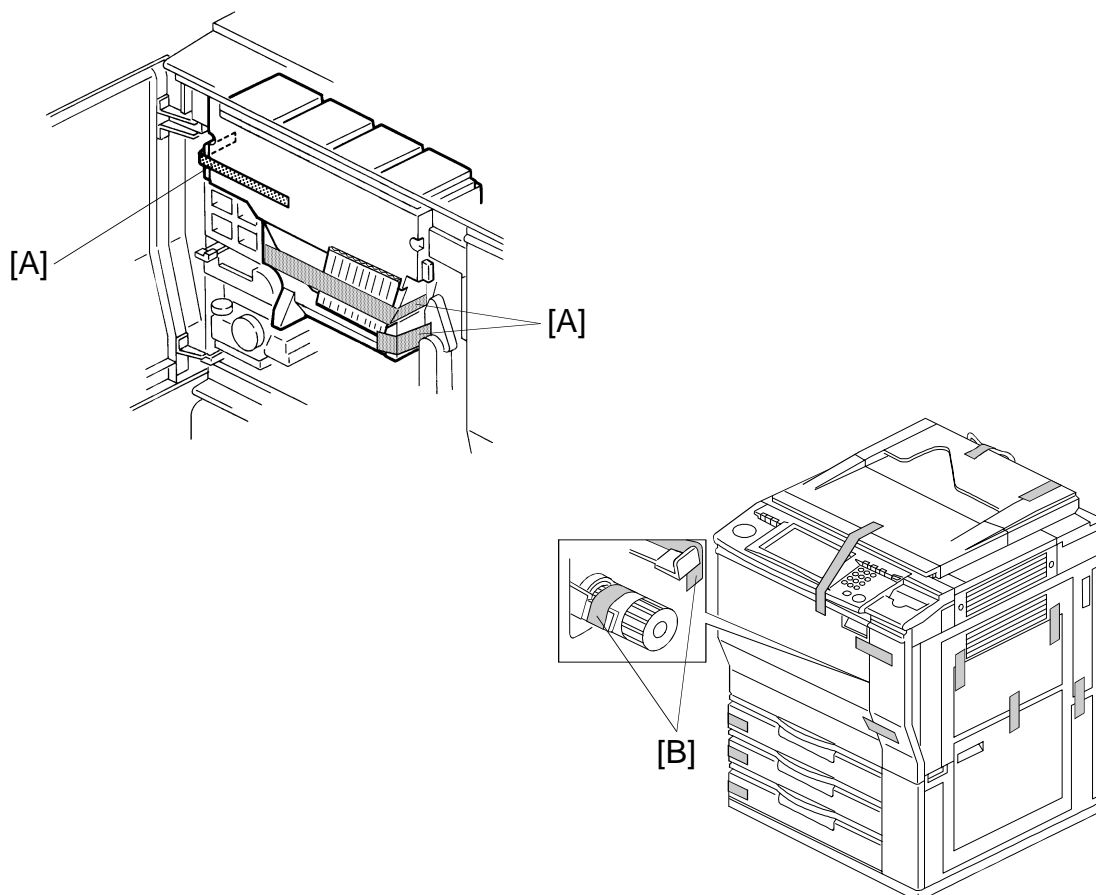
b) Positioning pins [C] are located at the rear. When attaching, make sure to clear the harnesses out of the way.

## 2.3 COPIER INSTALLATION PROCEDURE

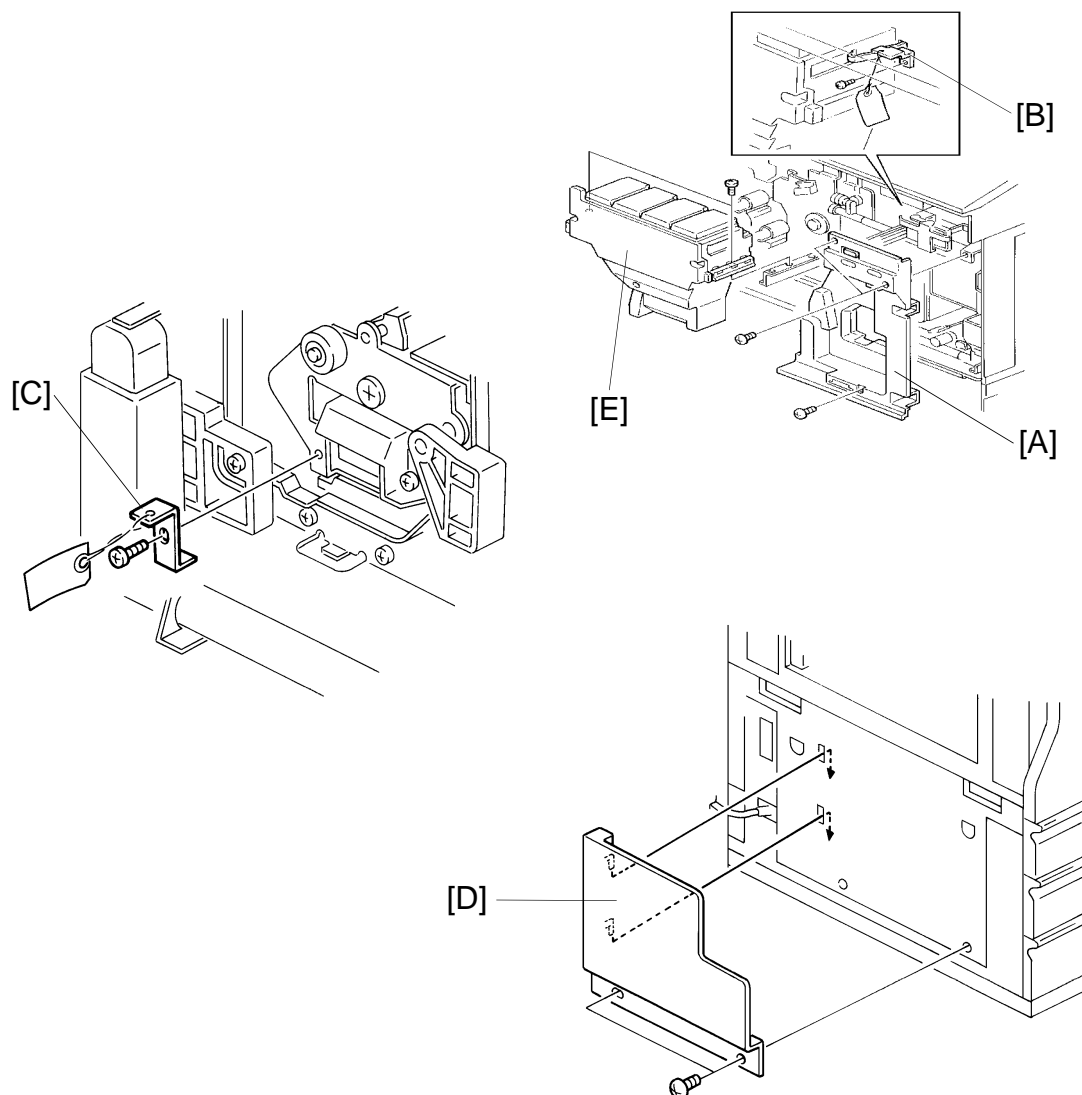
**NOTE:** Since the installation procedure is not packed with the copier as an accessory, always bring this manual with you.



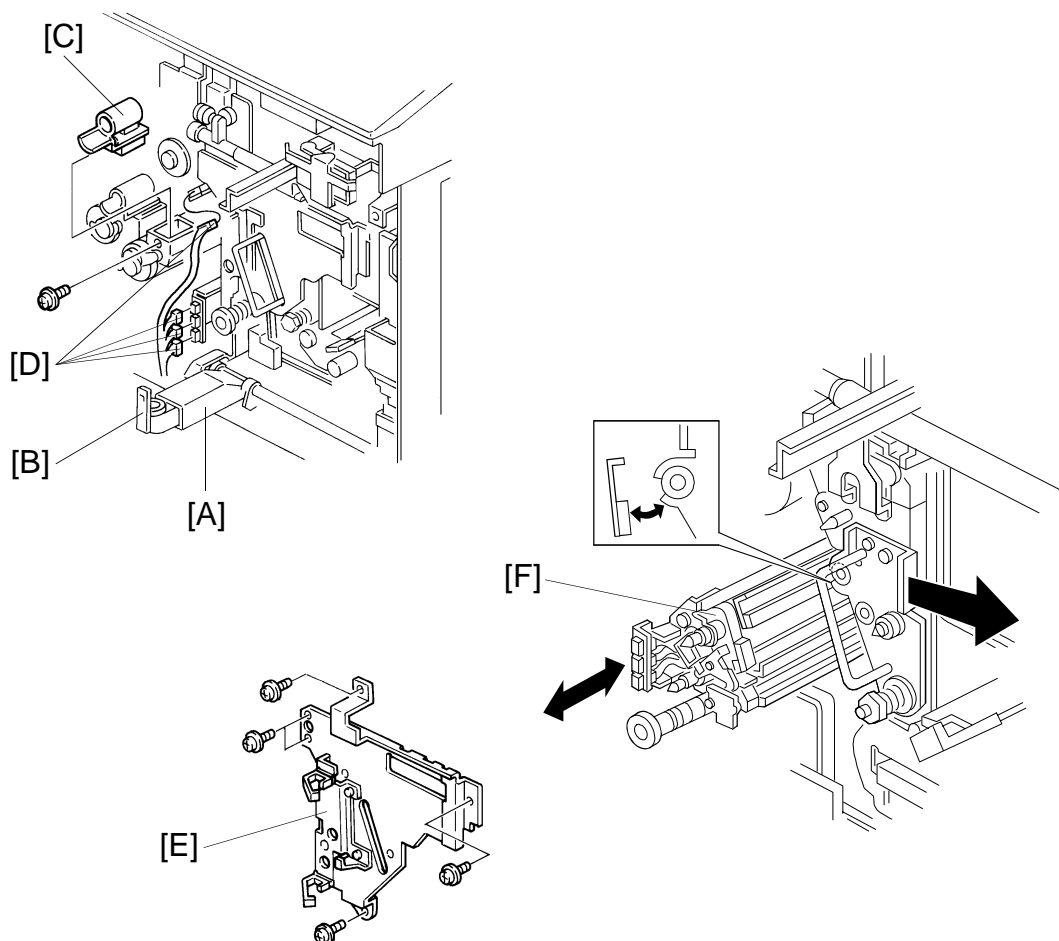
- NOTE:** a) Before performing the following installation procedure, be sure to plug in the copier power cord due to the change of material of the transfer roller. However, don't switch on yet. For detailed information about the new roller, see the Detailed Description section.
- b) Insert the leveling shoes [A] under the leveling feet [B], and level the machine if necessary. (The leveling feet can be screwed up or down.)
- c) Keep the factory setting data sheet under the operation panel for future use. We recommend making a copy to be kept at your office also.
- d) Before removing the drum protective sheet, always remove all the development units out of the copier.



1. Remove the tape strips.
2. Open the front doors then remove the tape strips [A] around the toner tank and the tapes [B] securing the registration guide plates (knobs B1 and B3).

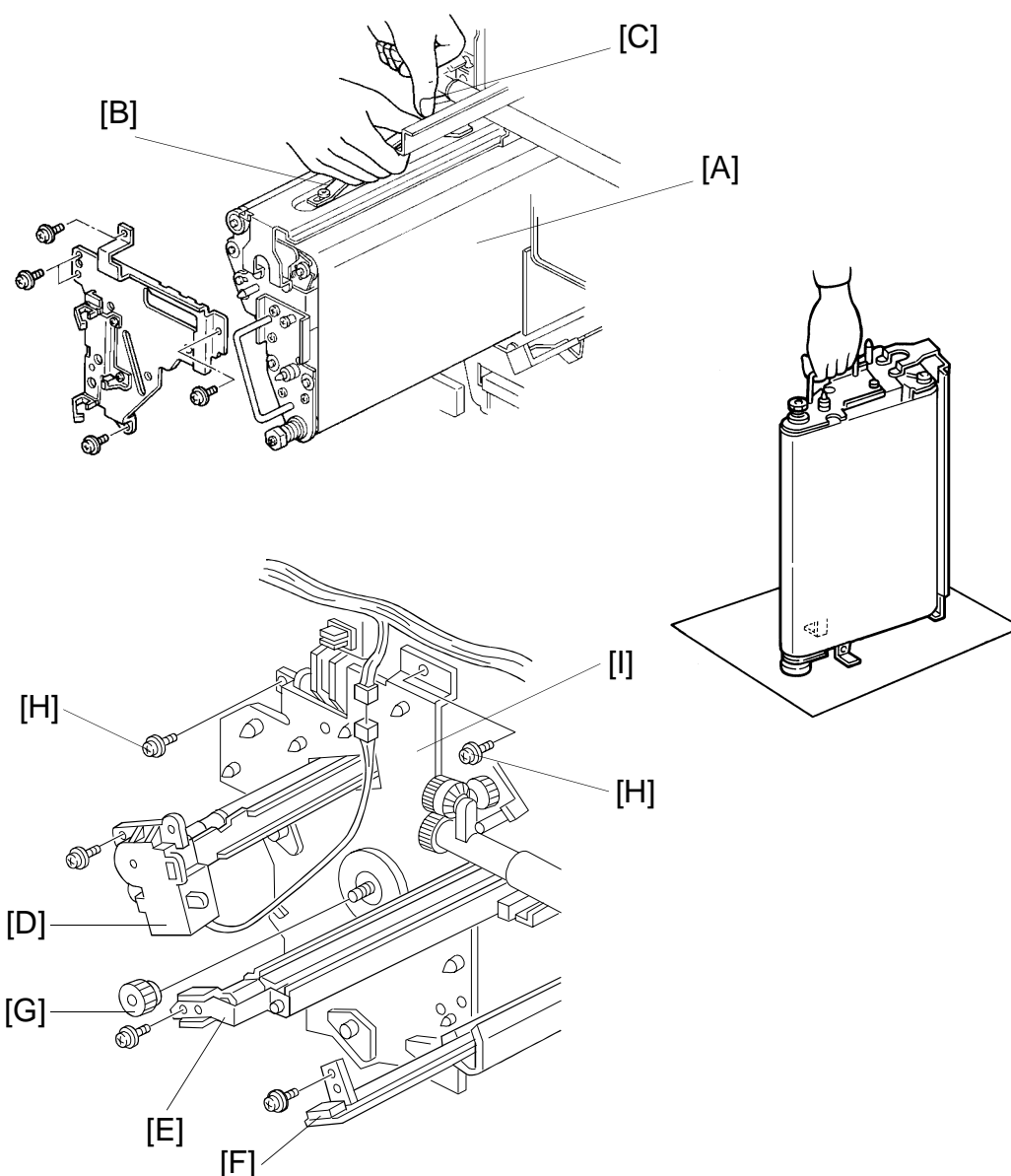


3. Remove the right inner cover [A] (3 screws) and the bracket [B] securing the toner tank to the front side plate (1 screw).
4. Remove the bracket [C] securing the transfer roller unit (1 screw).
5. Install the operating instruction holder [D] (2 truss screws [M4 x 8]).
6. Push and slide out the toner tank [E]. Then remove the toner tank (2 screws).



7. Lower the toner collection duct [A] (1 hook [B]).
8. Remove the yellow toner supply receptacle [C] (1 screw).
9. Disconnect the four connectors [D] and free them from the three harness clamps.
10. Remove the transfer belt stay [E] (5 screws).
11. Pull out and remove the transfer belt cleaning unit [F].

**NOTE:** To prevent the lubricant bar from being scratched, pull the handle of the transfer belt unit slightly to the right while you pull the transfer belt cleaning unit out.

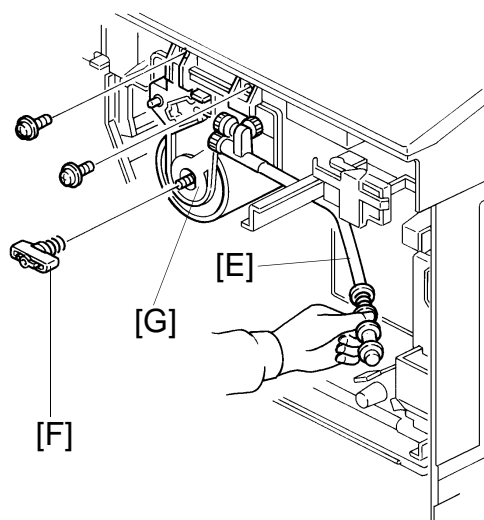
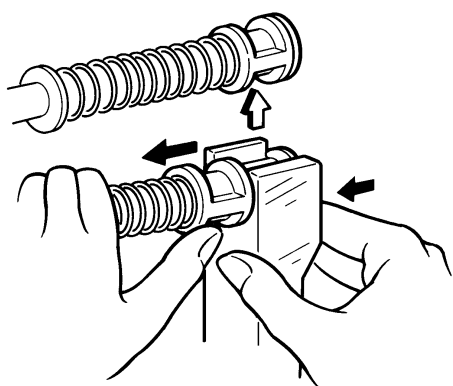
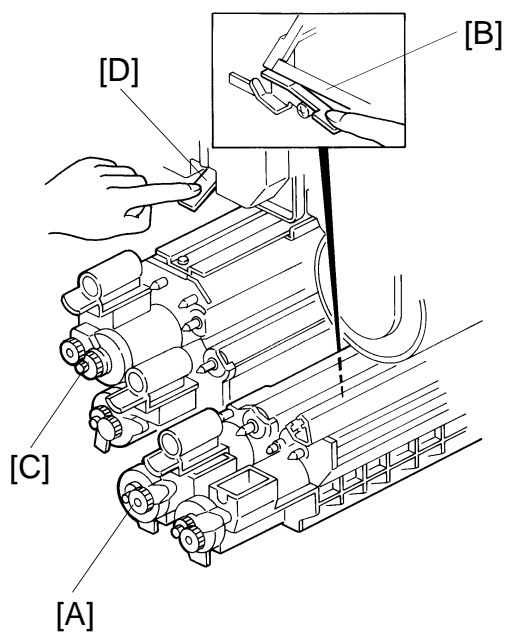


12. Carefully pull and remove the transfer belt unit [A]. (While holding the handle [B], release the lever [C])

**NOTE:** There are stands at the rear side of the transfer belt unit. After pulling out the unit out of the machine, stand the transfer belt unit as shown.

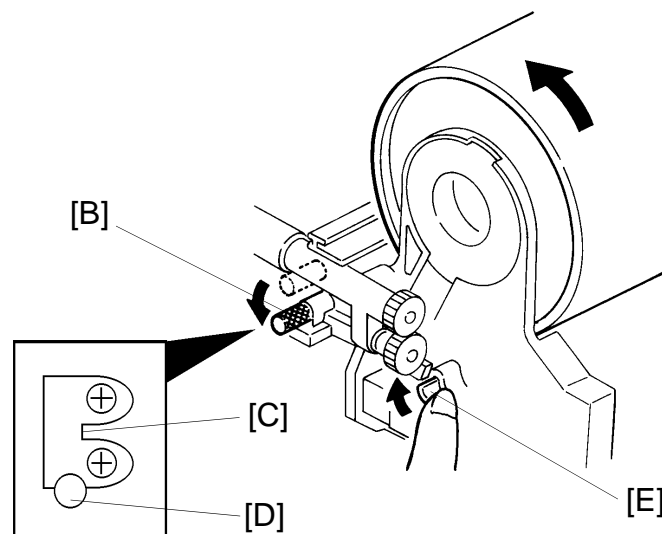
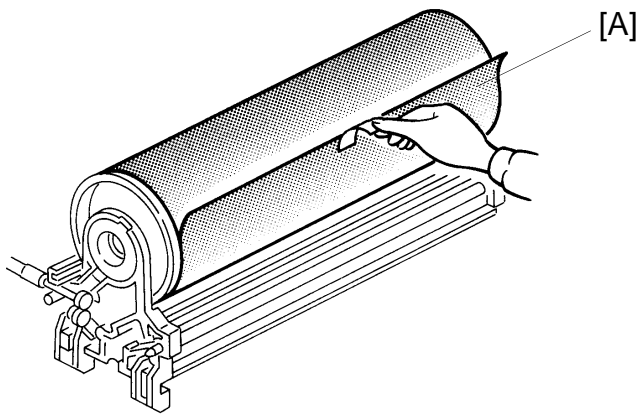
Do not touch the transfer belt surface with bare hands.

13. Remove the charge corona unit [D] (1 screw, 1 connector), PCC [E] (1 screw) and ID sensor board [F] (1 screw).
14. Remove the knob [G] and the two screws [H] and pull out all the development units slightly (2 ~ 3 cm) then remove the drum stay [I].



15. Remove the magenta/yellow development unit [A] (1 release lever [B]) and remove the black/cyan development unit [C] (1 release lever [D]).
16. Disconnect the drum's toner collection pipe [E] as shown.
17. Remove the knob screw [F] (counterclockwise) and pull out the quenching lamp.
18. Remove the drum unit [G] (2 screws).





19. Turn the drum unit over.

**NOTE:** Let the unit rest on it's casing.

20. Remove the drum protective sheet [A].

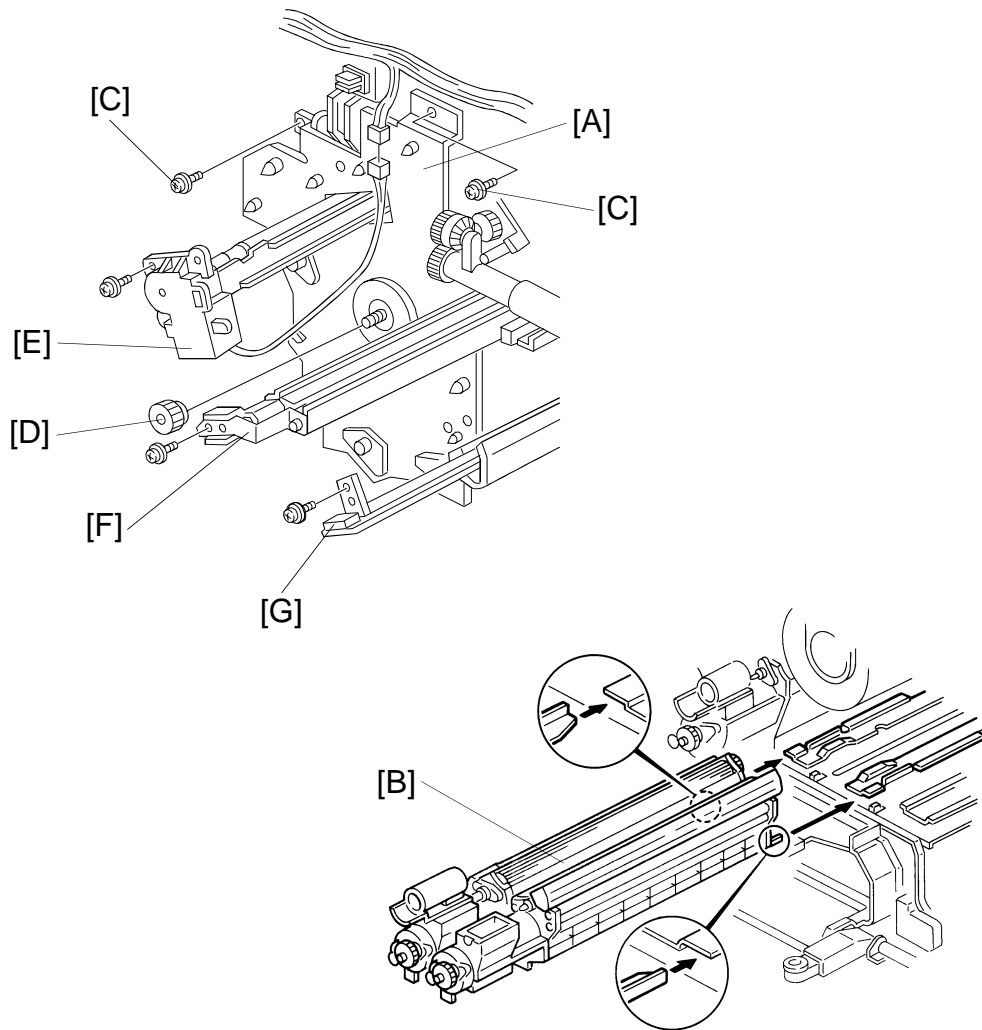
21. Loosen then move the knob [B]. (Move the knob from [C] to [D].)

- [C] position = No pressure applied
- [D] position = Pressure being applied

22. Tighten the knob [B] at the lower position [D].

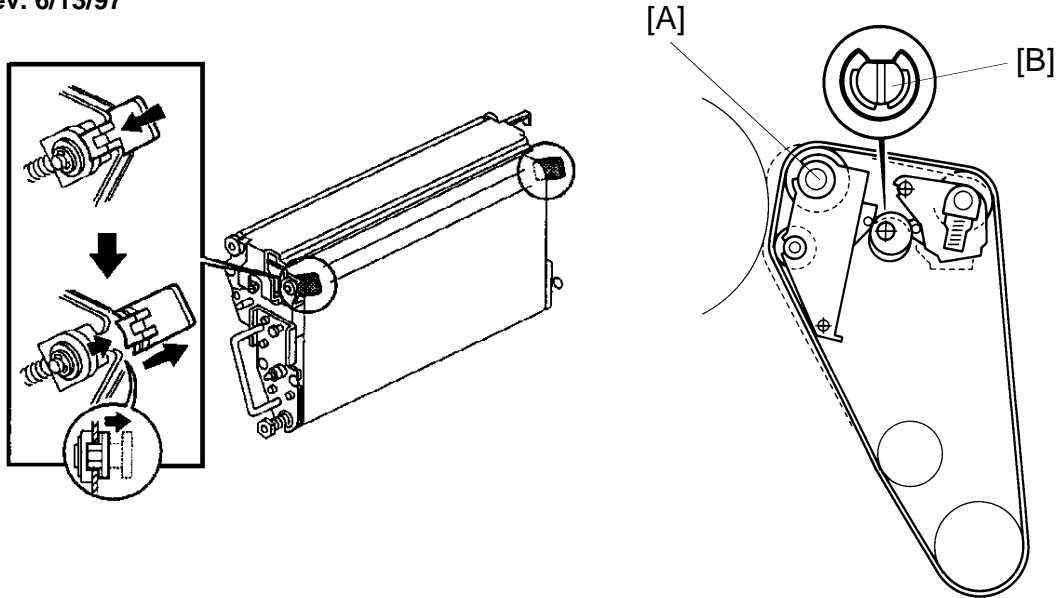
23. While pressing up the latch [E] to apply the cleaning blade pressure, rotate the drum counterclockwise 3 times to ensure that setting powder is evenly applied, as shown.

**NOTE:** Hold only the edge of the drum to rotate it (within 1 cm from the end).



24. Reinstall the following units or parts in the machine as follows.

- 1) Slide in the drum unit and secure it to the shaft with the knob screw.
- 2) Set the drum stay [A] in position and secure the drum unit (2 screws).
- 3) Remove the drum stay [A] and reinstall the quenching lamp, toner collection tube and development units.  
**NOTE:** When reinstalling the magenta/yellow development unit [B], make sure that the bottom plate fits the rails as shown.
- 4) Set the drum stay by securing the 2 screws [C] then the knob [D].
- 5) Reinstall the charge corona unit [E] (1 screw, 1 connector), PCC [F] (1 screw), and the ID sensor board [G] (1 screw).



**NOTE:** In order to release the tension of the transfer belt during transportation, the Transfer Belt Release Wedges are installed on the front and rear belt tension roller bearing holders. Please do not forget to remove the wedges at installation of the machine.

To remove the wedge, push the wedge toward the bearing holder and slide it inside slightly.

25. Confirm the belt bias roller [A] is in the release position (innermost position) as shown. If not, turn the shaft [B] with a flat head screwdriver until the belt bias roller comes to the release position.

**NOTE:** If the belt bias roller is not in the release position, it will touch the drum and damage it.

26. Re-install the following units or parts in the following order.

- 1) Transfer belt unit.
- 2) Transfer belt cleaning unit

**NOTE:** To prevent the lubricant bar from being scratched, pull the handle of the transfer belt unit slightly to the right while you re-install the transfer belt cleaning unit.

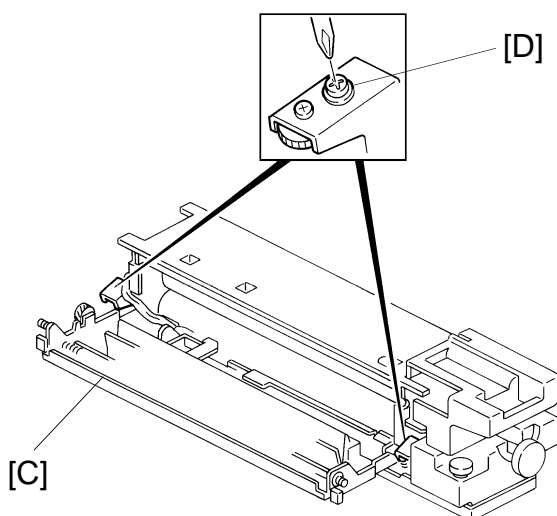
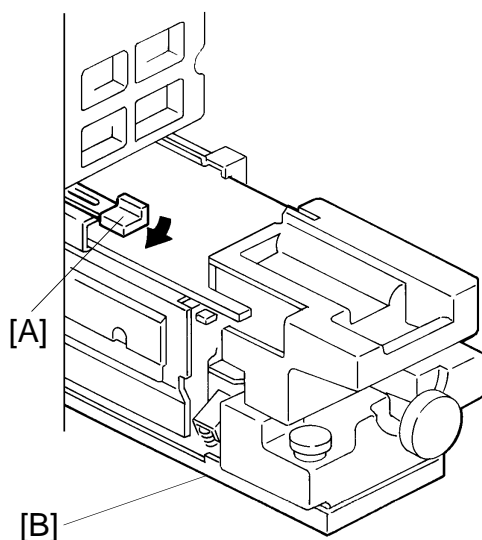
- 3) Transfer belt stay (5 screws)
- 4) Four connectors (6P white, 3P red, 3P white, 3P blue)

**NOTE:** The 2P white connector is not used.

- 5) Toner collection duct (1 hook)

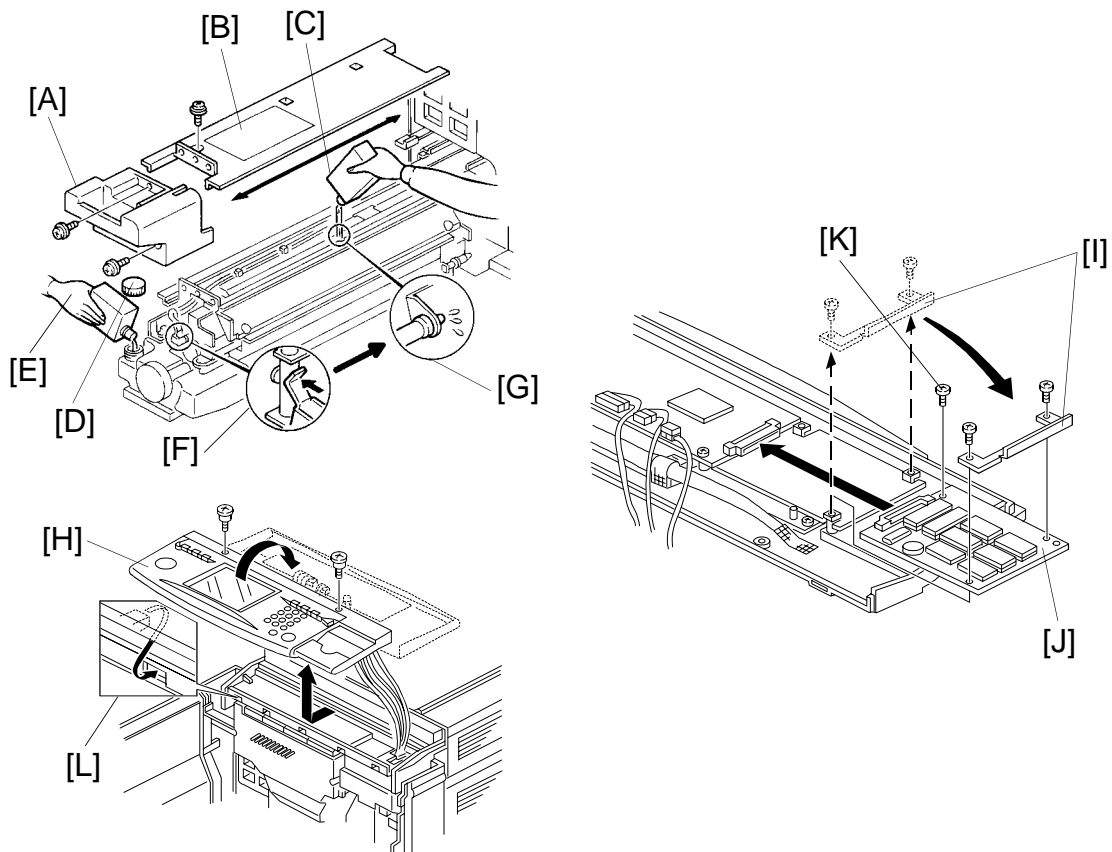
**⚠ CAUTION**

1. As the fusing unit may be hot, be careful when handling it.
2. Take care not to spill silicone oil on the floor. If silicone oil spills on the floor, immediately clean it with a silicone oil remover. Silicone oil is very slippery and can cause someone to slip and fall.



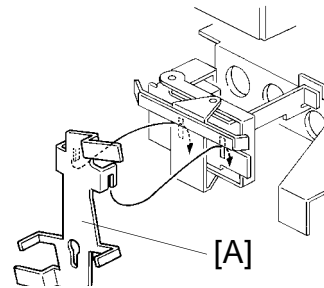
27. While releasing the lever [A], pull out the fusing unit [B].
28. Open the exit unit [C] (2 "D4" release levers).
29. Loosen the 2 black screws [D] until they move freely so that the fusing pressure is being applied.

**NOTE:** Do not turn the pressure adjustment screws which are located just beside the screws [D].

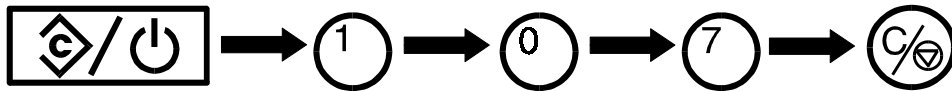


30. Remove the fusing handle cover [A] (2 screws) and the fusing top cover [B] (1 screw).
31. Prime the oil supply pad with silicone oil [C].
32. Remove the oil cap [D] and fill the tank with silicone oil to its max level [E].
33. Manually operate the oil pump lever [F] and confirm the proper operation of the silicon oil supply system [G].
34. Reset the covers, the exit unit, oil cap and the fusing unit.
35. For **-26 and -27** machines, perform the following language ROM installation procedures. For **-22** machines, perform if replacement to a language other than English is needed.
  - 1) Detach the operation panel [H] (2 screws). (Do not remove any connectors.) Gently place it face down on the platen cover.
  - 2) Remove the securing bracket [I] (2 screws).
  - 3) Install the requested language rom board [J] using the securing bracket and the accessory screw [K] as shown.
  - 4) Reinstall the operation panel, making sure that the panel is properly hooked in [L].

36. Locate the switch actuator [A] inside the right door and actuate the front safety switch.



37. Plug in the power cord and turn on the main switch.
38. Enter SP mode as follows.
- 1) Press the clear modes key.
  - 2) Wait for 2 or 3 seconds while the display returns to the initial screen.
  - 3) Enter "107" with the number keys.
  - 4) Hold down the clear/stop key for more than 3 seconds.



39. Touch the SP Test Mode key [B].

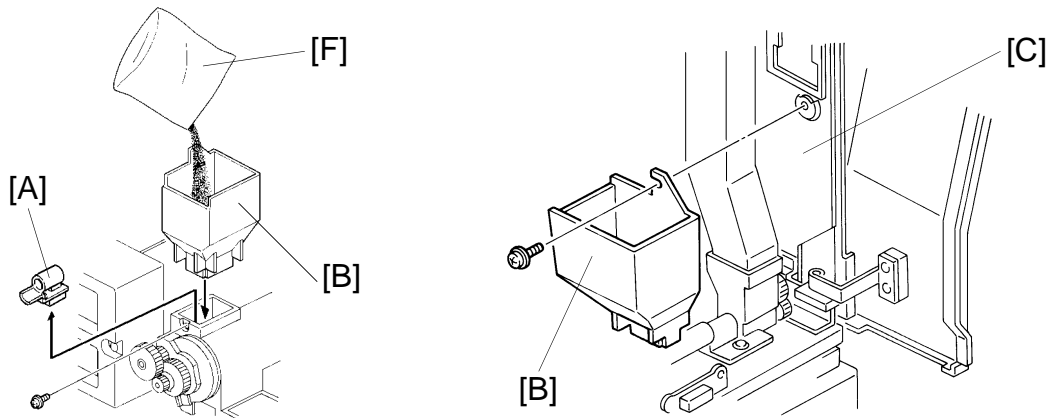
**NOTE:** Make sure to use the editor pen when touching the touch panel display.



40. Touch the Next key [C] to open page 4.

**NOTE:** Wait until the development unit drive stops, then start step 41.





41. Remove the black toner supply receptacle [A] (1 screw).

**NOTE:** Refer to the toner tank lid for the color of the development unit.

42. Remove the developer supply funnel [B] from the bracket [C] and clean the inner surface.

43. Set the developer supply funnel on the black development section as shown.

44. Touch the key [D], to enter the output mode.

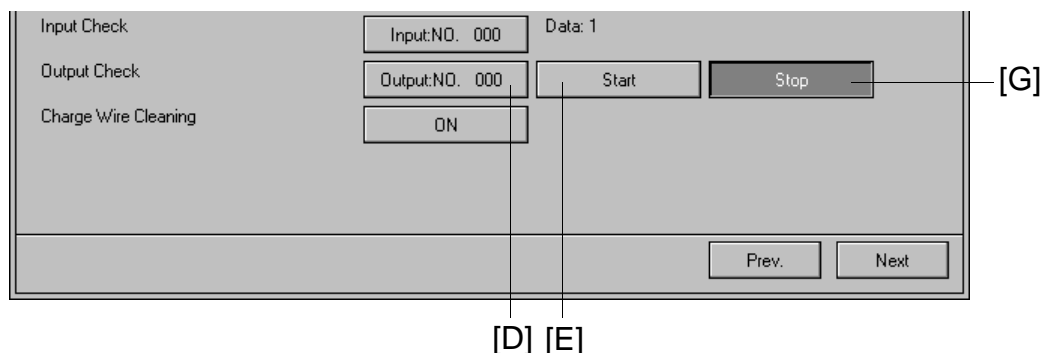
45. Enter "68" with the number keys, then touch the key [D] again to select test mode #68 "black development drive motor ON".

46. Touch the Start key [E].

47. Shake a pack of black developer [F] 20 times then pour it in.

48. 1 minute after pouring the developer, touch the stop key [G].

**NOTE:** Do not touch the stop key within 1 minute, otherwise, the developer will not be distributed evenly in the development unit.



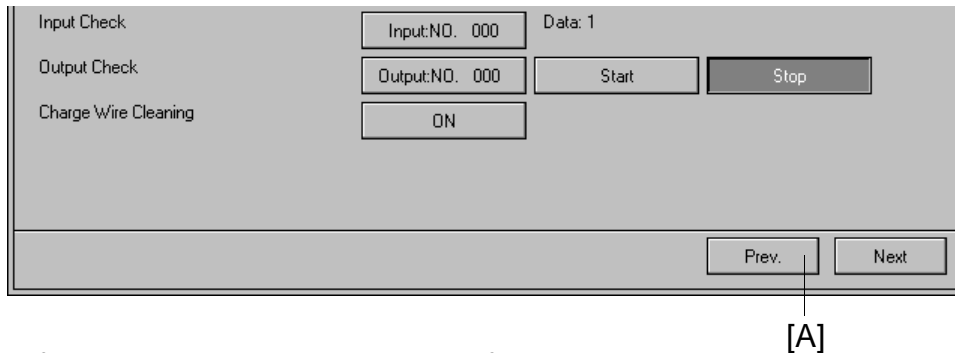
49. Remove the developer supply funnel, then install the toner supply receptacle.

50. Install the cyan, magenta and yellow developer in the same manner as black developer installation (step #40 to #49).

**NOTE:** To select the "color development drive motor ON" mode, enter "69" for color instead of 68 for black (refer to step #45).

51. Return the developer supply funnel to the original position.

52. Touch the Previous key [A] to open page 3.



53. Perform developer initial setting as follows.

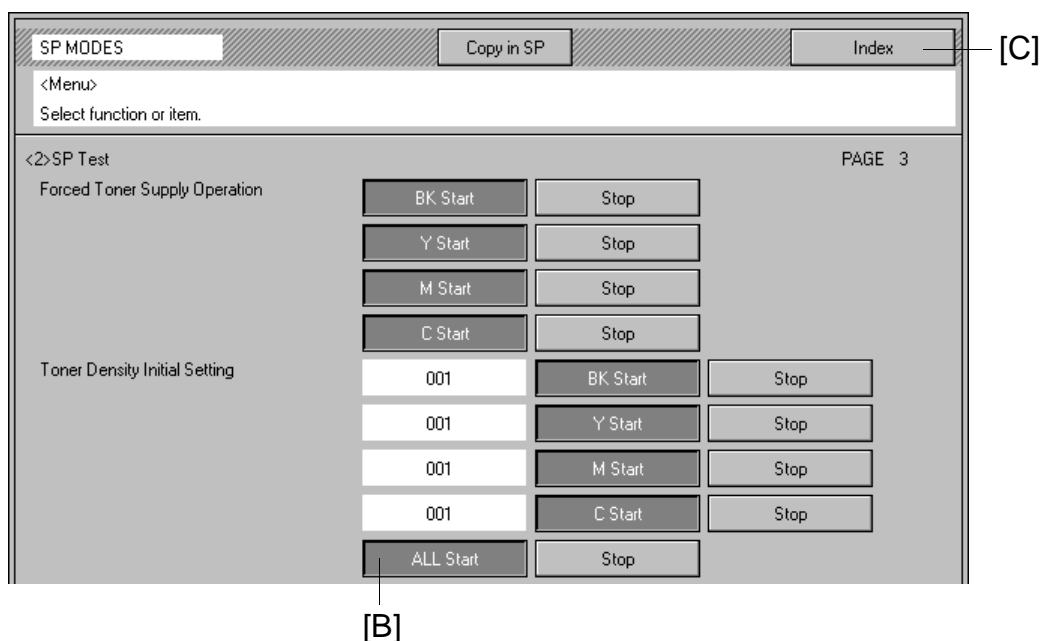
1) Confirm that the main charge corona, PCC, ID sensor boards are set correctly (1 screw each).

2) Confirm that the toner tank is not installed.

**NOTE:** If the toner tank is installed, toner is supplied during developer initial setting and the machine cannot figure out the proper toner concentration of the new developer.

3) Touch the All Start key [B] to start the developer initial setting. After the adjustment is completed, the machine stops automatically.

54. Touch the Index key [C].

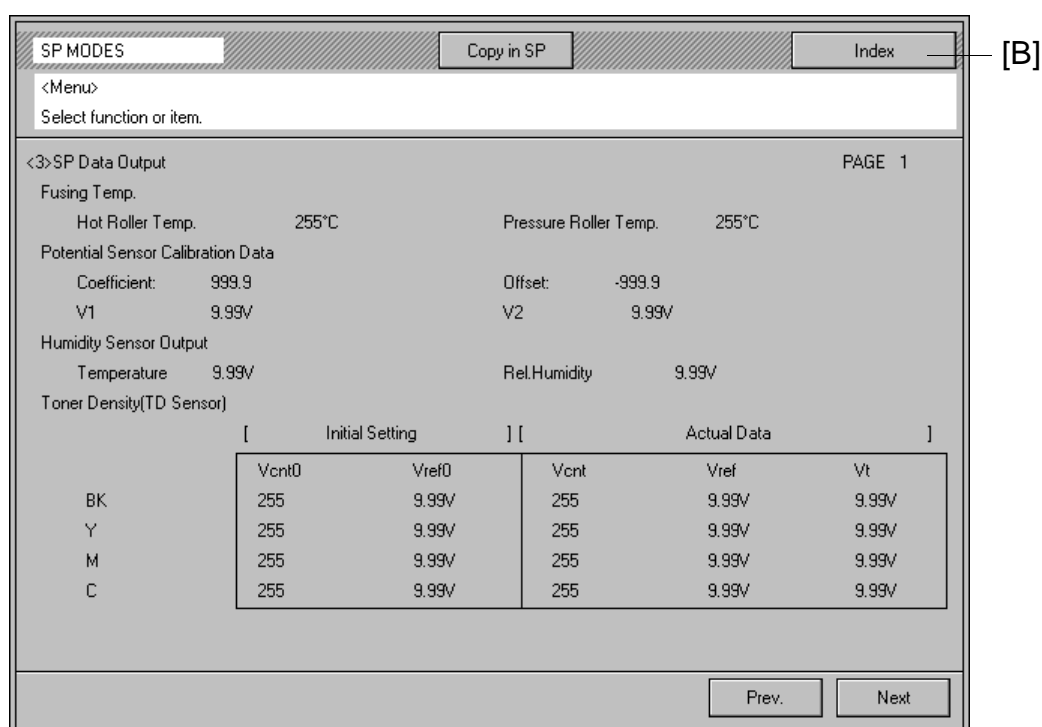


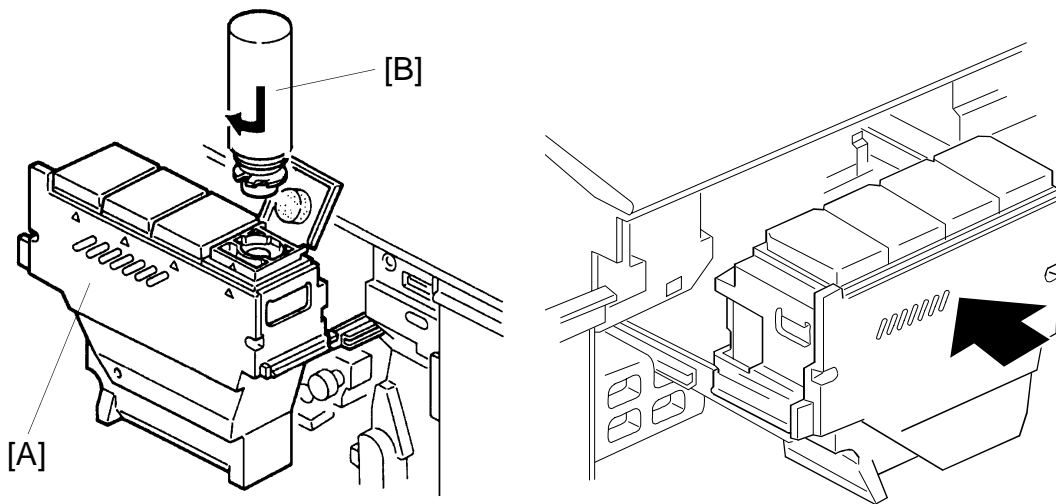


55. Touch the SP Data Output key [A].



56. Check whether  $V_T$  has the same values as  $V_{REF}$  for all colors (Bk, Y, M, C). If not, touch the Index key [B] then return to the test mode page 3 to perform developer initial setting (step 53) again.





57. Put the toner tank [A] on the Accuride rails (2 screws).

58. Add toner [B] for all colors.

- NOTE:**
- Read the instructions on the box for how to add toner.
  - Before reinstalling the toner tank, wait at least 30 seconds to let the toner settle.

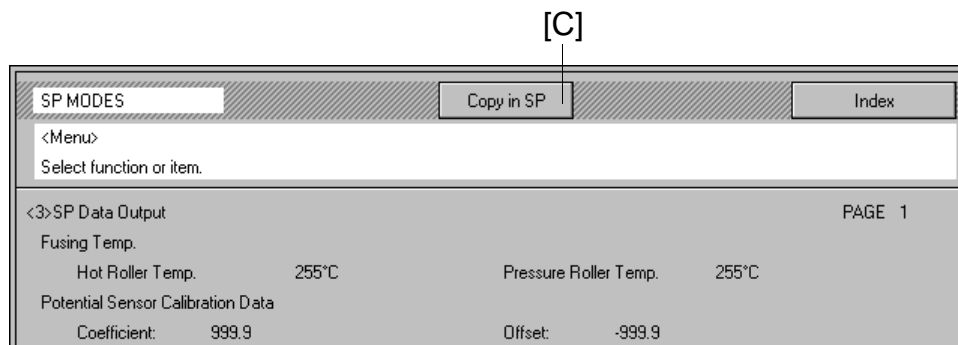
59. Slowly push the toner tank [A] in.

60. Close the front doors and install the copy tray.

61. Load A3 or 11" x 17" paper in the 3rd paper tray.

62. Place a C-4 test chart on the exposure glass.

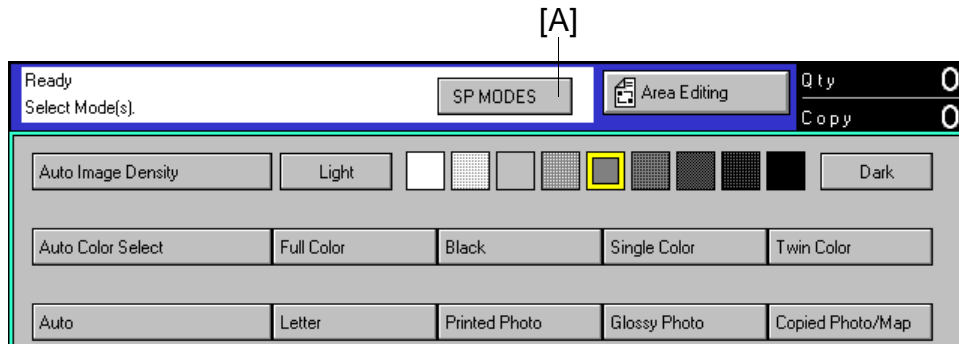
63. Touch the Copy In SP key [C] and make 20 full color copies using A3 or 11" x 17" size paper. (40 full color copies using A4 or 11" x 8 1/2" is also acceptable.)



64. **Wait 5 minutes** to ensure that no residual voltage remains on the drum.

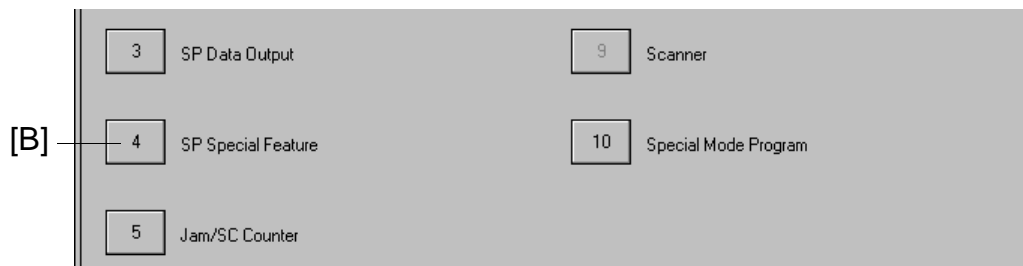
**NOTE:** The process control self check (step 67) must be performed when there is no residual voltage on the drum.

65. Touch the SP Mode key [A] to enter the SP mode.



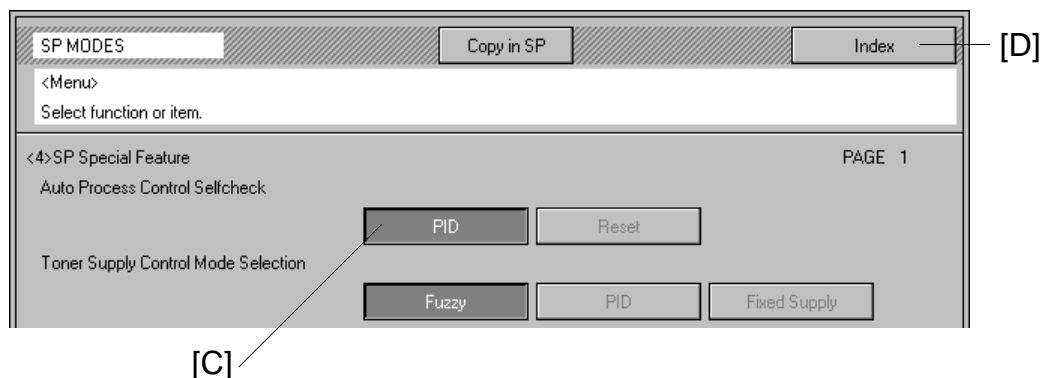
66. Touch the Index key.

67. Touch the SP Special Feature key [B].



68. Confirm that the PID key [C] is selected for the Process Control Mode Selection. If not, touch the PID key [C].

69. Touch the Index key [D].



70. Touch the SP Test Mode key [A].



71. Touch the Next key [B] to open page 4.

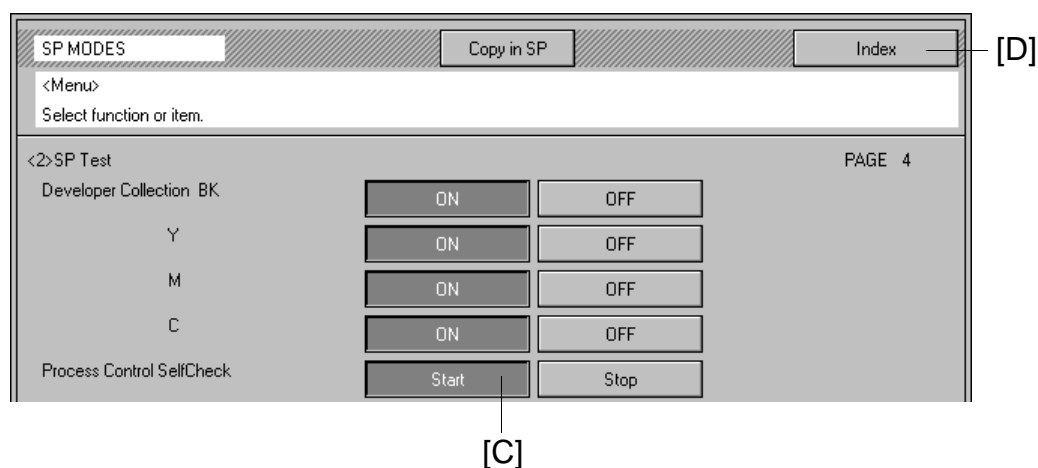


72. Touch the Process Control Self Check Start key [C]. After the self check is completed, the machine stops automatically.

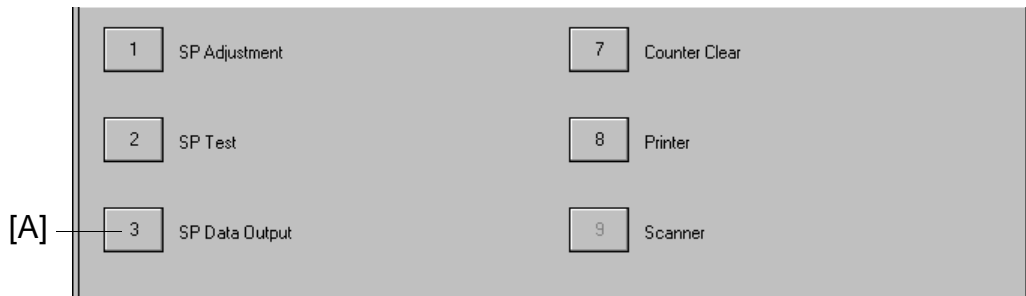
**⚠ CAUTION**

**While process control is taking place, do not touch the knob, drum stay, or drum shaft. These parts and the fly wheel carry a high electrical voltage during process control.**

73. Touch the Index key [D].



74. Touch the SP Data Output key [A].



75. Touch the Next key [B] and open page 3.

	Vcnt0	Vref0	Vcnt	Vref	Vt
BK	255	9.99V	255	9.99V	9.99V
Y	255	9.99V	255	9.99V	9.99V
M	255	9.99V	255	9.99V	9.99V
C	255	9.99V	255	9.99V	9.99V

At the bottom right of the table area are two buttons: 'Prev.' and 'Next' (highlighted by label [B]).

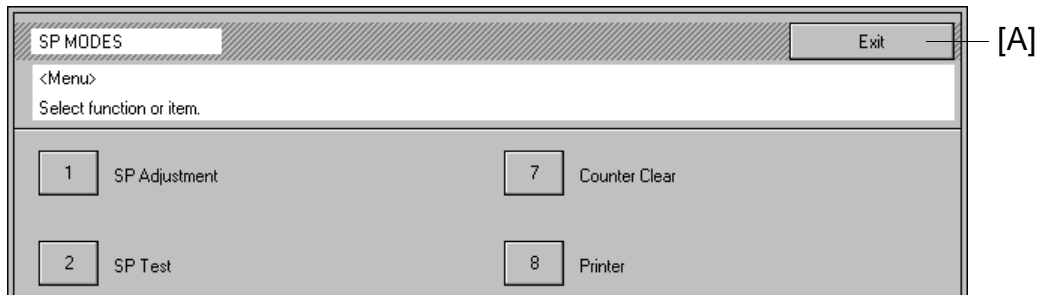
76. Check the VD and VL [C] for each color. If the difference between 'Target' and 'Actual' for any color exceeds 5, wait 5 minutes and go back to step 72 and perform the process control self check again.

77. Touch the Index key [D].

A screenshot of the 'SP MODES' menu. At the top right, the 'Index' button is highlighted by label [D]. Below the menu header, there is a section titled '<3>SP Data Output' and 'PAGE 3'. Underneath, it says 'Drum Potential Control Output'. A table follows with columns for color (BK, Y, M, C), measurement type (Target, Actual), and values for VD, VL, VB, Y, and VK. Labels [C] and [D] point to the 'Index' button and the table respectively.

		VD	VL	VB	Y	VK
BK	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----
Y	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----
M	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----
C	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----

78. Touch the Exit key [A].



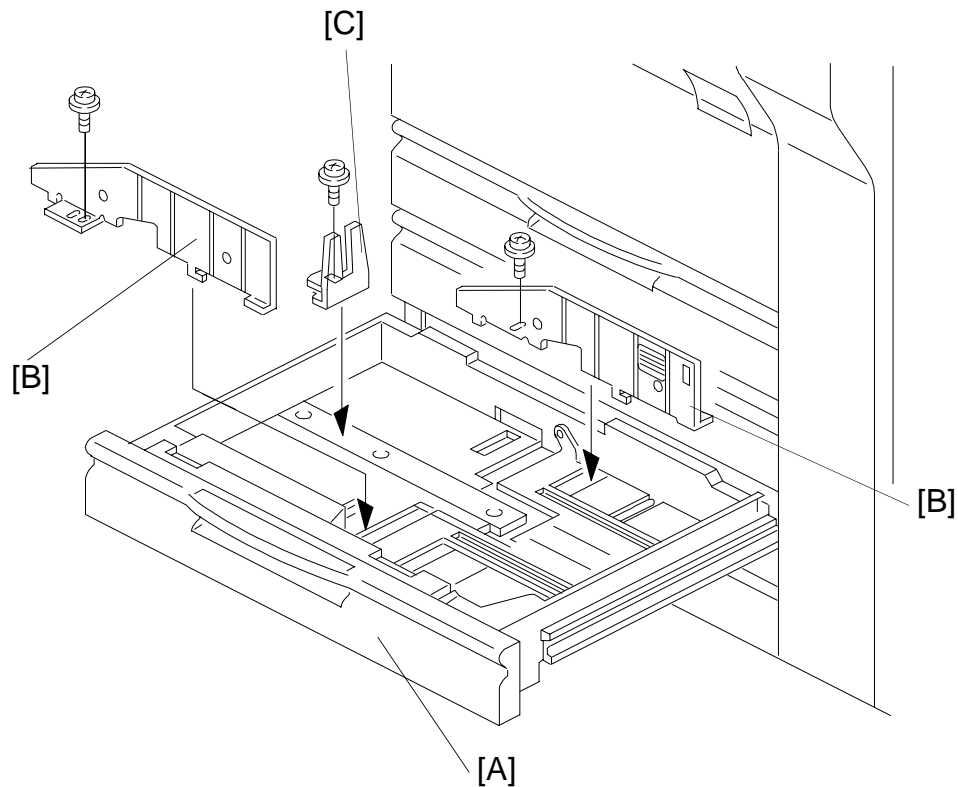
79. Turn off the main switch and place the accessory switch actuator in its original position.

80. Reinstall the right inner cover (3 screws) and turn on the main switch.

81. Copy the C-4 test chart in letter mode and printed photo mode.

82. Perform the ACC procedure. (See chapter 5.)

## 2.4 PAPER SIZE CHANGE

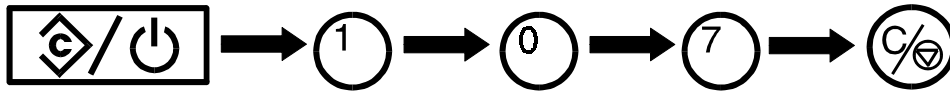


At the customer's request, change the paper size for the 3rd feed tray as follows.

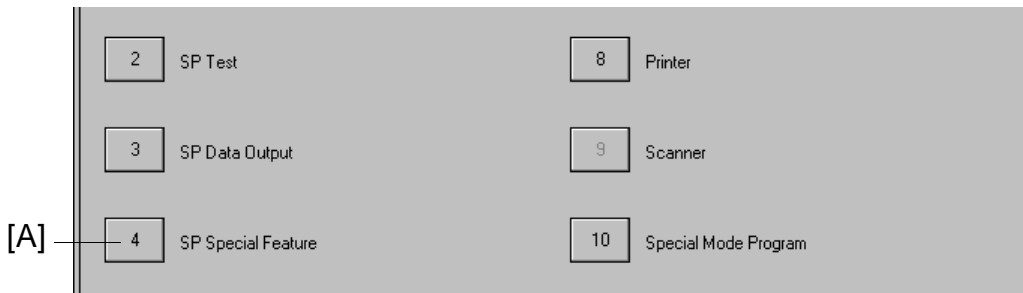
1. Slide out the paper feed tray [A].
2. Change the position of the front and the rear side fences [B] (1 screw each) and the end fence [C] (1 screw) to match the paper size.

3. Enter SP Mode as follows:

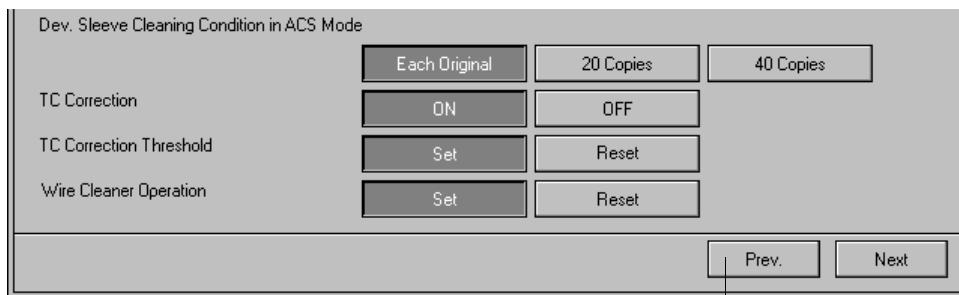
- 1) Press the clear modes key.
- 2) Wait for 2 or 3 seconds while the display returns to the initial screen.
- 3) Enter "107".
- 4) Hold down the clear/stop key for more than 3 seconds.



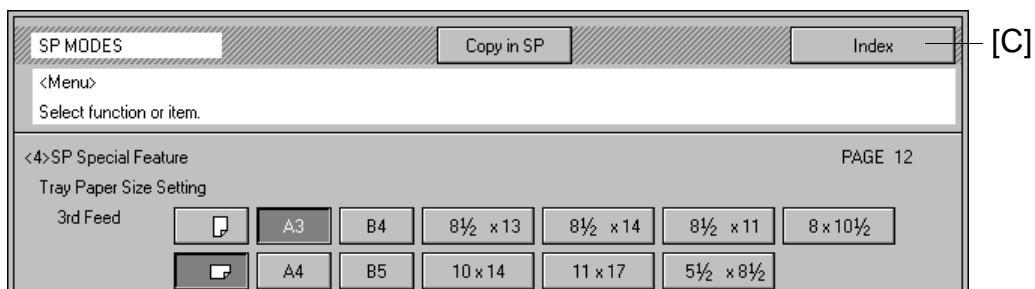
4. Touch the SP special feature key [A].



5. Touch the Previous key [B] to select the paper tray size setting mode (page 12).

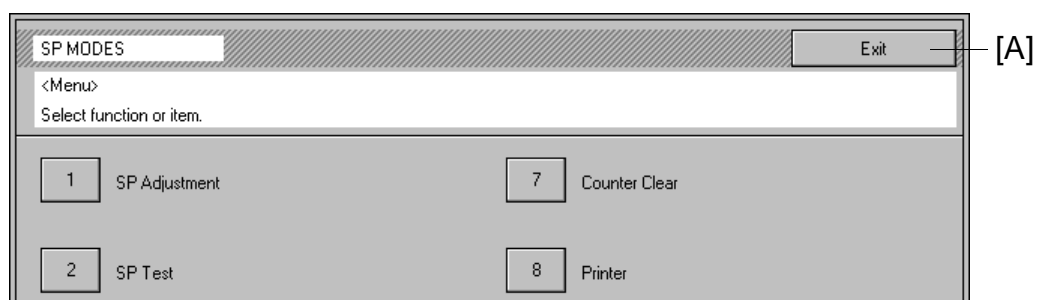


6. Touch the appropriate paper size key and direction key for the 3rd feed station. Then touch the Index key [C].



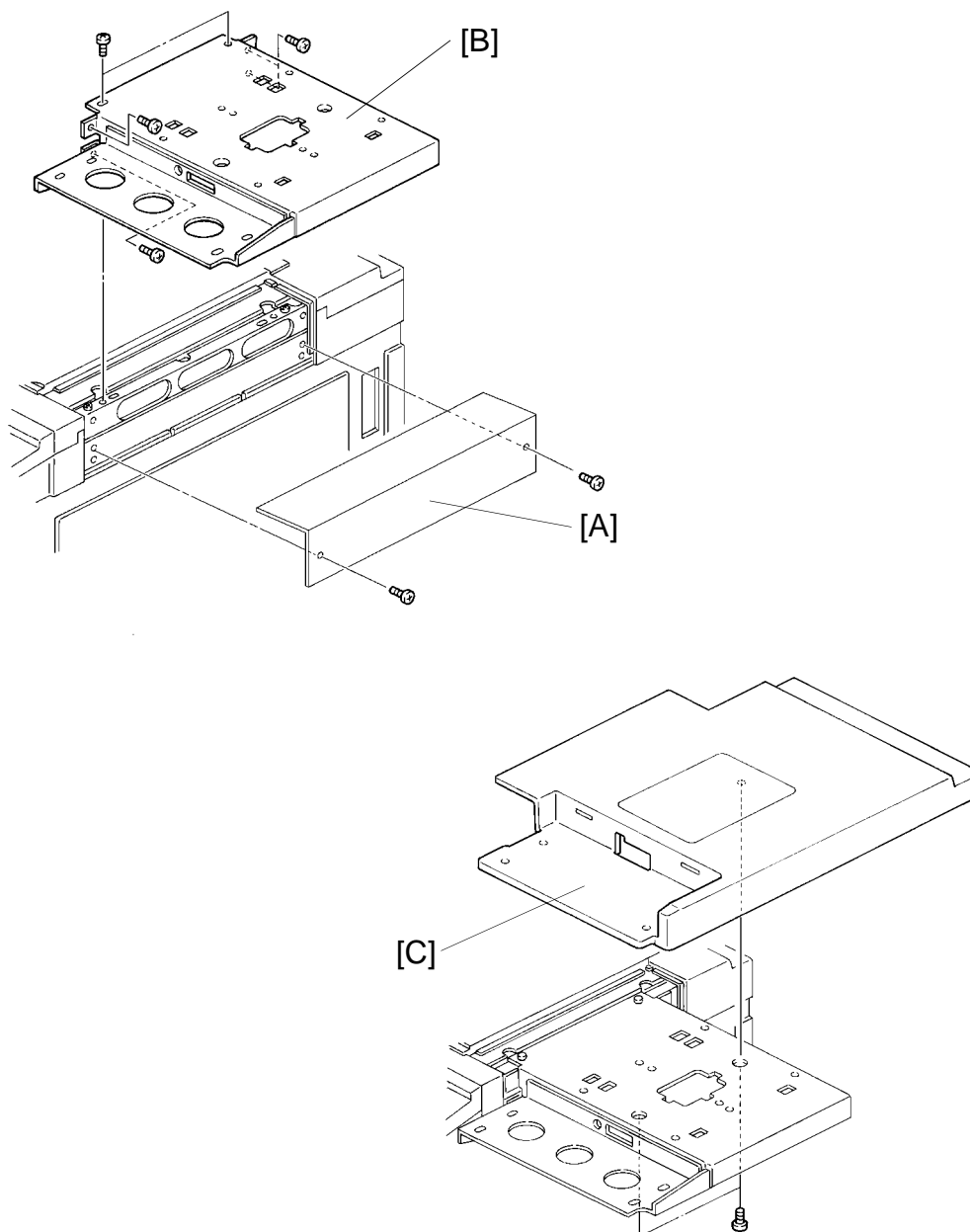


7. Touch the Exit key [A] to exit SP mode.

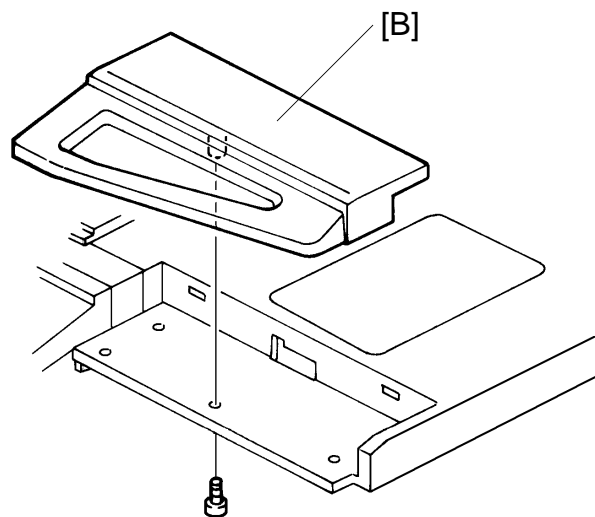
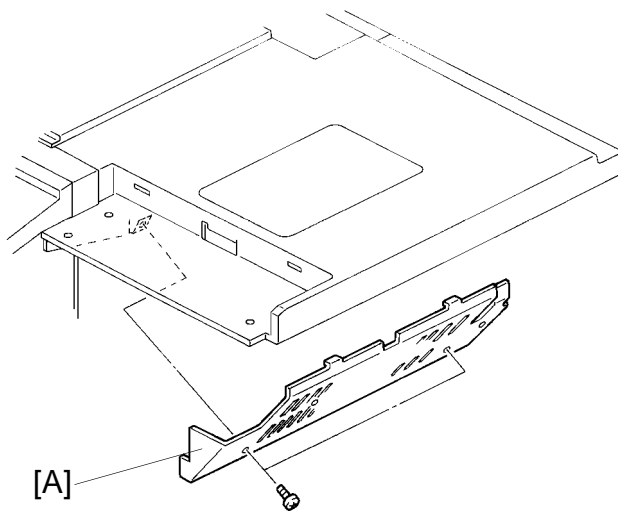


8. Check machine operation and copy quality.

## 2.5 OPTIONAL HOLDER (A702-18)



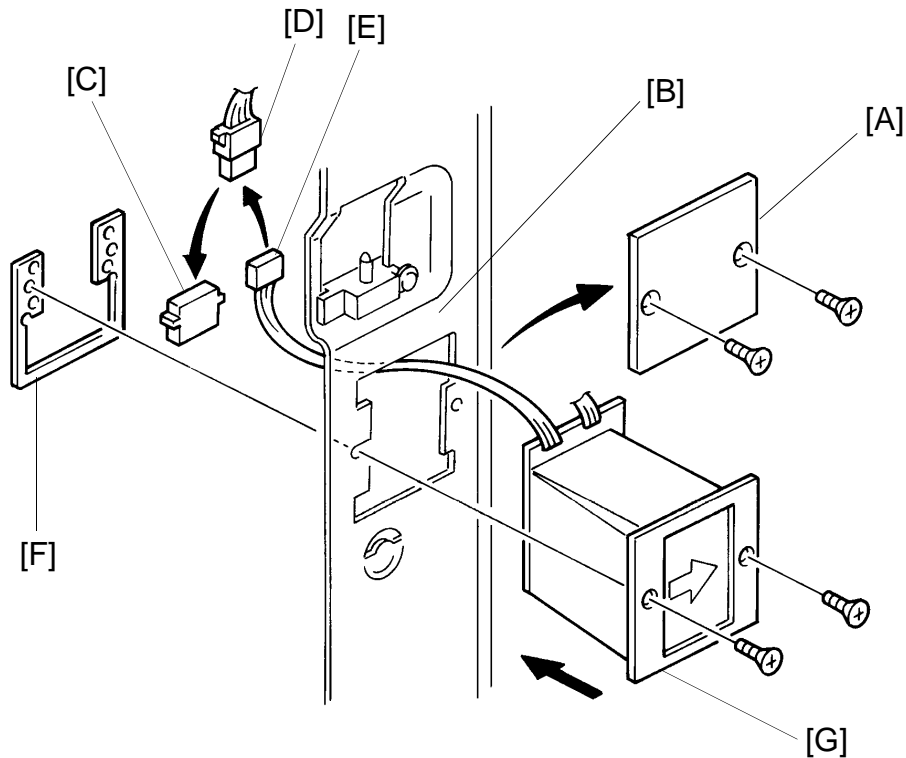
1. Remove the right upper cover [A] (2 screws).
2. Install the holder base bracket [B] (6 screws).
3. Install the holder cover [C] (2 screws).



4. Install the lower cover [A] (2 truss screws).

5. Install the front cover [B] (1 truss screw).

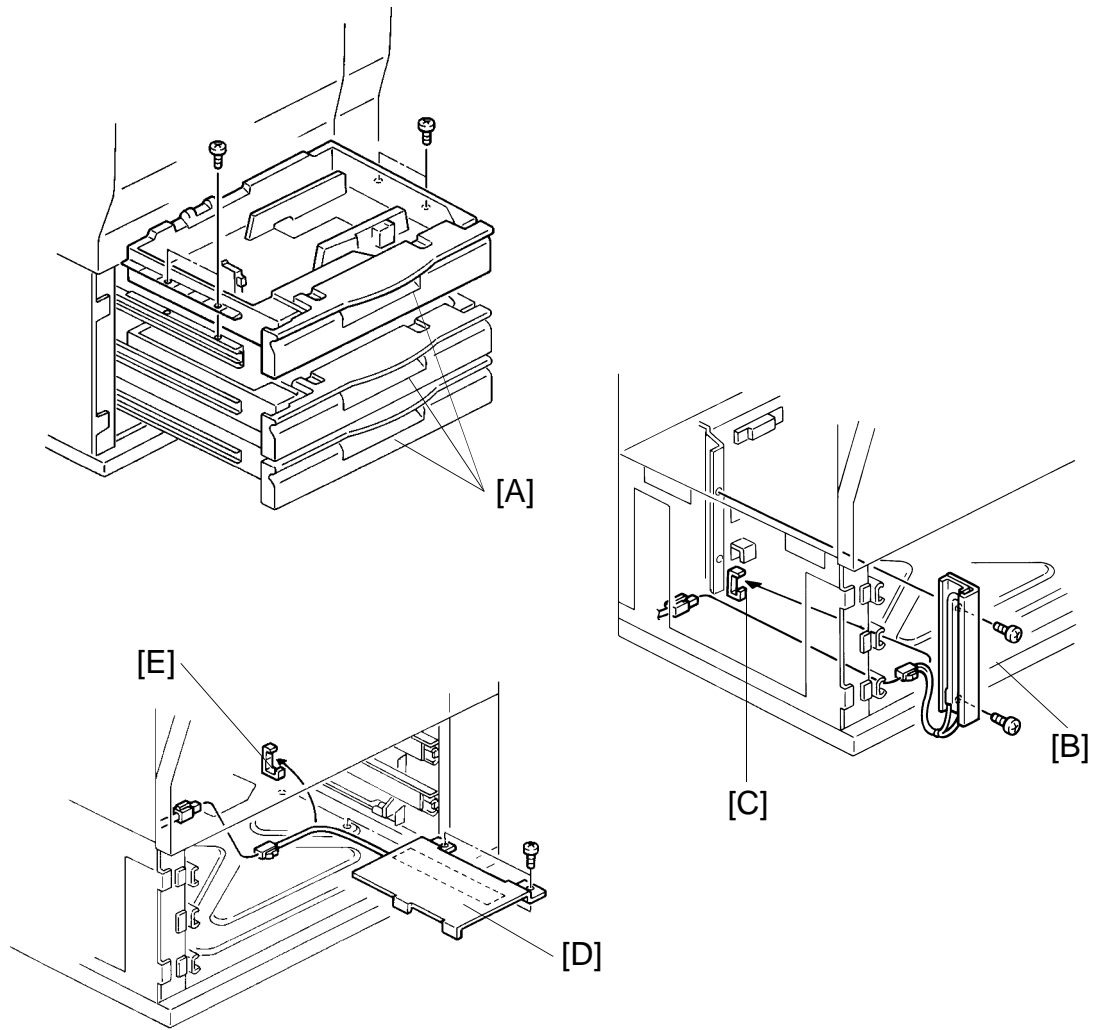
## 2.6 KEY COUNTER INSTALLATION



1. Remove the following parts. (Refer to Exterior And Inner Covers.)
  - Upper rear cover
  - Right inner cover
  - Upper right cover
2. Remove the key counter cover [A] (2 screws) from the key counter holder bracket [B].
3. Disconnect the short-circuit connector [C] from the key counter connector [D].
4. Couple the connector [D] with the key counter connector [E].
5. Hold the securing plate [F] on the inside of the key counter holder bracket and insert the key counter holder [G].
6. Align the screw holes in the securing plate with the mounting holes in the key counter holder and secure the key counter holder (2 screws).

**NOTE:** The securing plate has three different hole sizes. Use the holes that match those on the key counter holder that you are installing.
7. Reinstall all the covers and check the key counter operation.

## 2.7 UPPER AND LOWER TRAY HEATERS (OPTIONS)



**NOTE:** Both heaters are available as service parts.

1. Attach the heater to the bracket (2 M4 x 10 screws).
2. Pull out and remove all the paper feed trays [A] (4 screws each).
3. Install the upper tray heater assembly [B] (2 M4 x 8 screws).
4. Mount the harness in the clamp [C] and connect as shown.
5. Install the lower tray heater assembly [D] (2 M4 x 8 screws).
6. Mount the harness in the clamp [E] and connect as shown.
7. Reinstall the paper feed trays [A].

### 3. DUAL JOB FEEDER (A610)

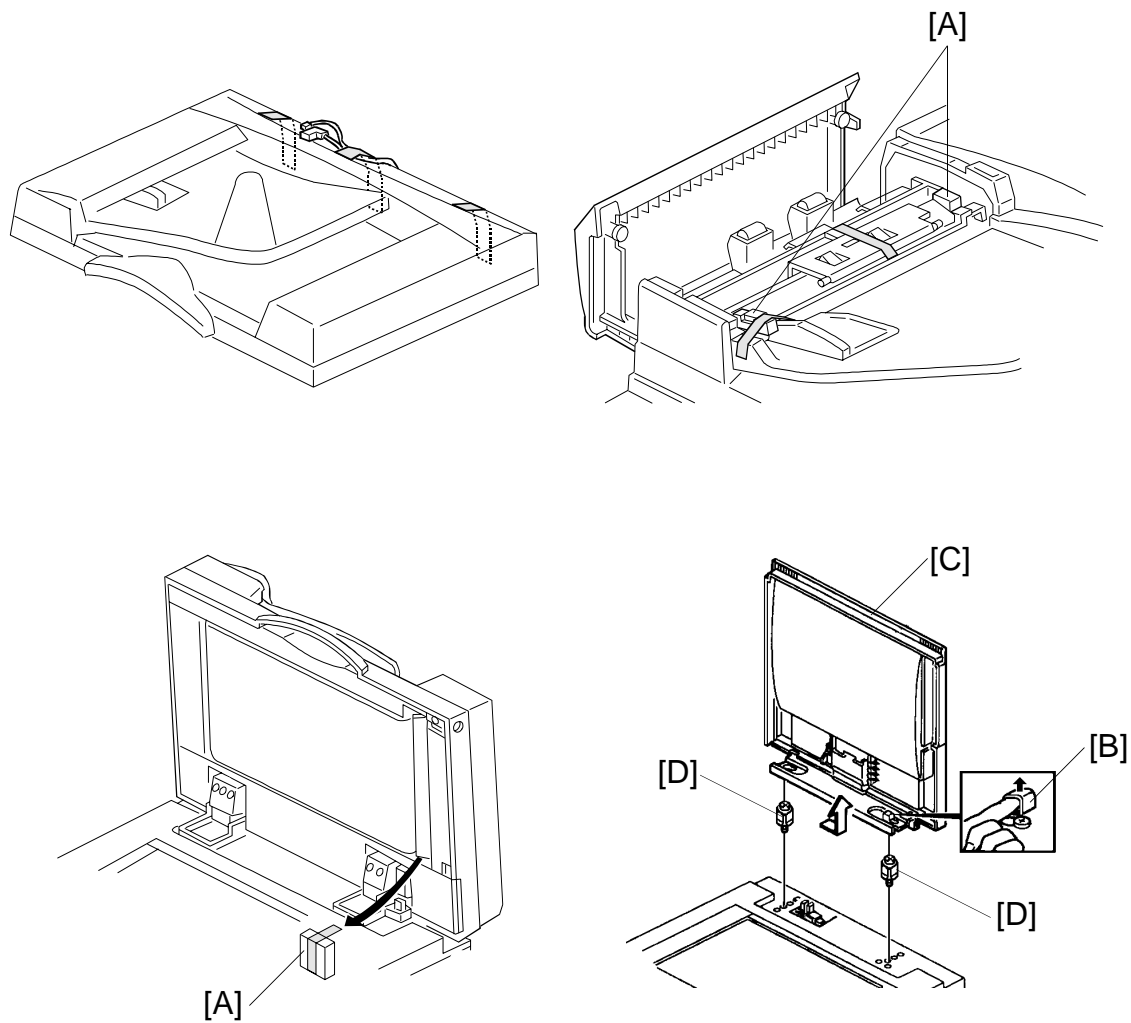
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#### 3.1 ACCESSORY CHECK

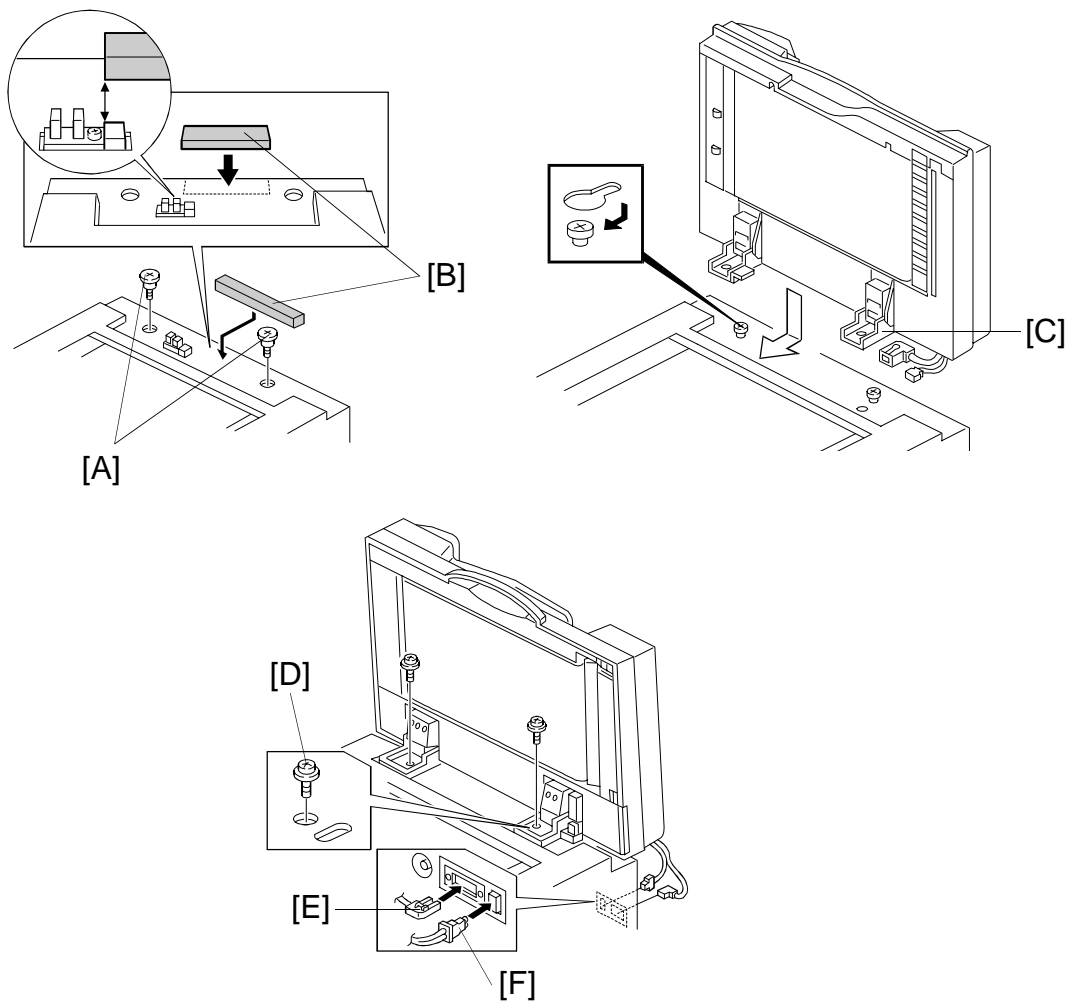
Check the accessories against the following list:

Description	Q'ty
1. Installation Procedure .....	1
2. NECR (-17, -27 only).....	1
3. Stepped Screw .....	2
4. Sponge Retainer .....	1
5. Philips Pan Head Screw with Washer - M5 x 10.....	2
6. Hinge Stopper Bracket .....	2
7. Philips Pan Head Screw - M4 x 6 .....	2
8. Feed-out Guide Mylar .....	1
9. Decal .....	1

## 3.2 INSTALLATION PROCEDURE

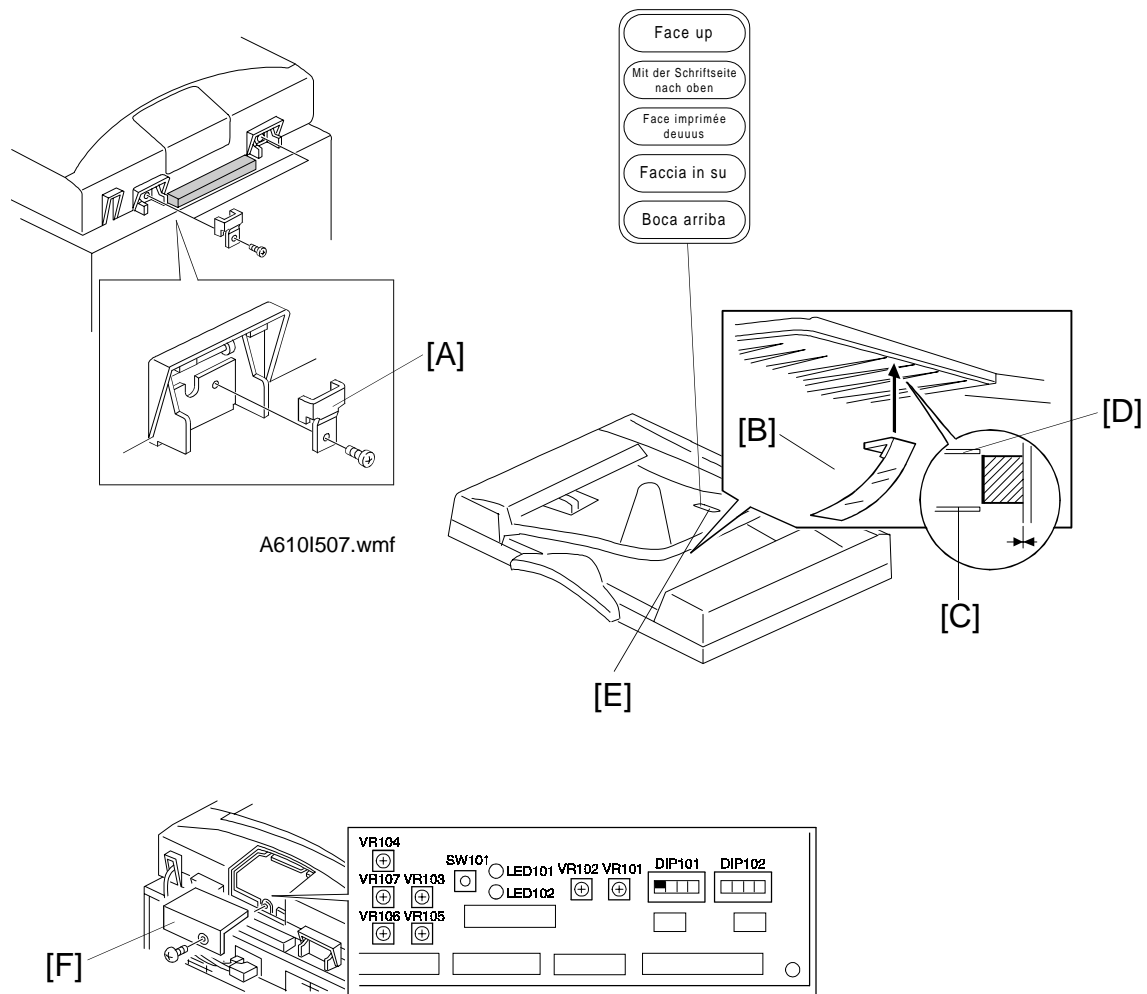


1. Remove the tape strips and the cushions [A] as shown.
2. While raising the lock plate [B], slide the platen cover [C] to the right and remove it.
3. Remove the platen cover mounting screws [D].



4. Install two stepped screws [A].
5. Attach the sponge retainer [B] to the top cover of the copier as shown.
6. Mount the DF on the copier by inserting the two stepped screws into the holes in the DF hinge [C], then slide the DF to the front, as shown.
7. Secure the DF to the copier by using the screw holes as shown (2 screws - M5 x 10 [D]).
8. Remove the small cap on the upper rear cover then connect the main connector [E] and the fiber optic cable connector [F].





9. Secure the hinge stopper bracket [A] as shown (2 screws - M4 x 6).
10. Attach the feed-out guide mylar [B] under the original table. Attach it between the 3rd [C] and 4th [D] ribs (counting from the rear).
11. Apply the appropriate decal at [E].
12. Remove the small cover [F] at the rear of the DF upper cover (1 screw), and turn on DIP SW101-1.
13. Plug in the copier and turn on the main switch.  
**NOTE:** The copier automatically recognizes that the DF has been installed.
14. Make copies using the DF and confirm the machine functions properly.
15. Explain to the customer that settings may now be changed, depending on the characteristics of each original.

## 4. SORTER (A322)

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### 4.1 ACCESSORY CHECK

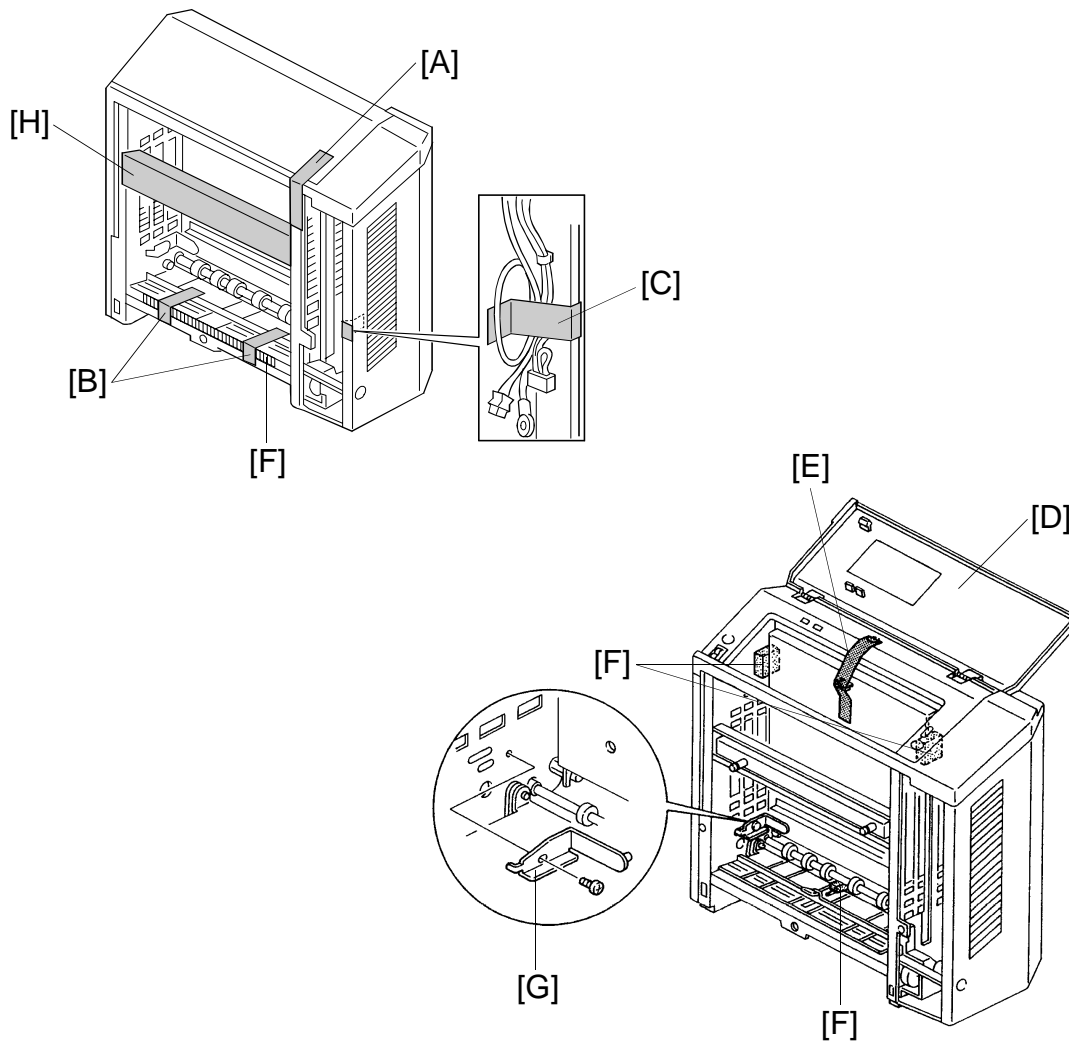
Check the accessories against the following list:

Description	Q'ty
1. Installation Procedure .....	1
2. NECR (-17 only).....	1
3. Stud.....	2
4. Knob Screw .....	2
5. Sorter Bin .....	15
6. Interrupt Bin.....	1
7. Grounding Screw .....	1

#### Sorter Adapter

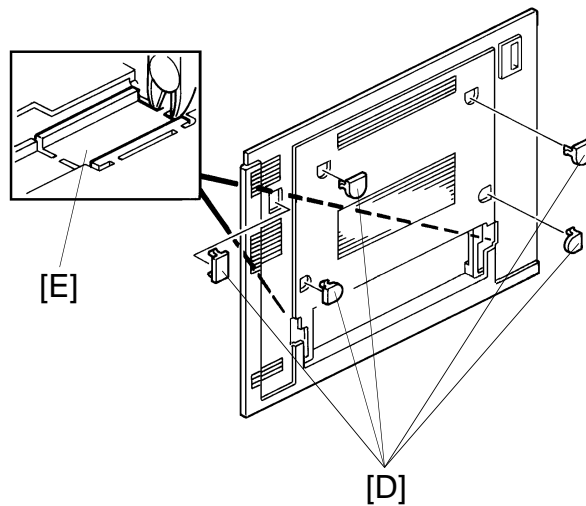
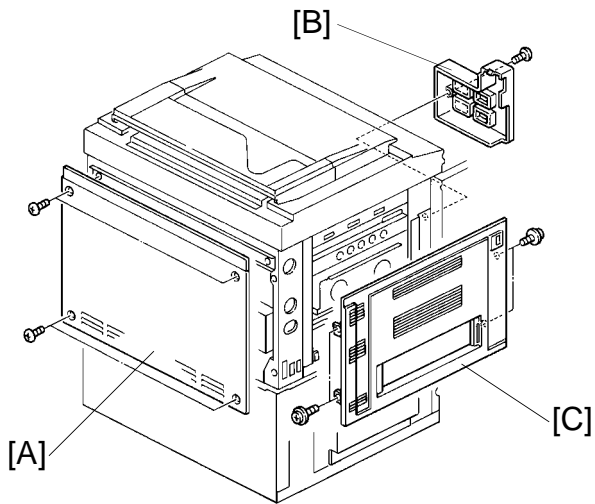
Description	Q'ty
1. Fan Motor Assembly .....	1
2. Air Outlet Plate .....	1
3. Harness Clamp .....	2
4. Relay Harness.....	1
5. Guide Plate Assembly.....	2
6. Philips Pan Head Screw - M4 x 6 .....	9

## 4.2 INSTALLATION PROCEDURE

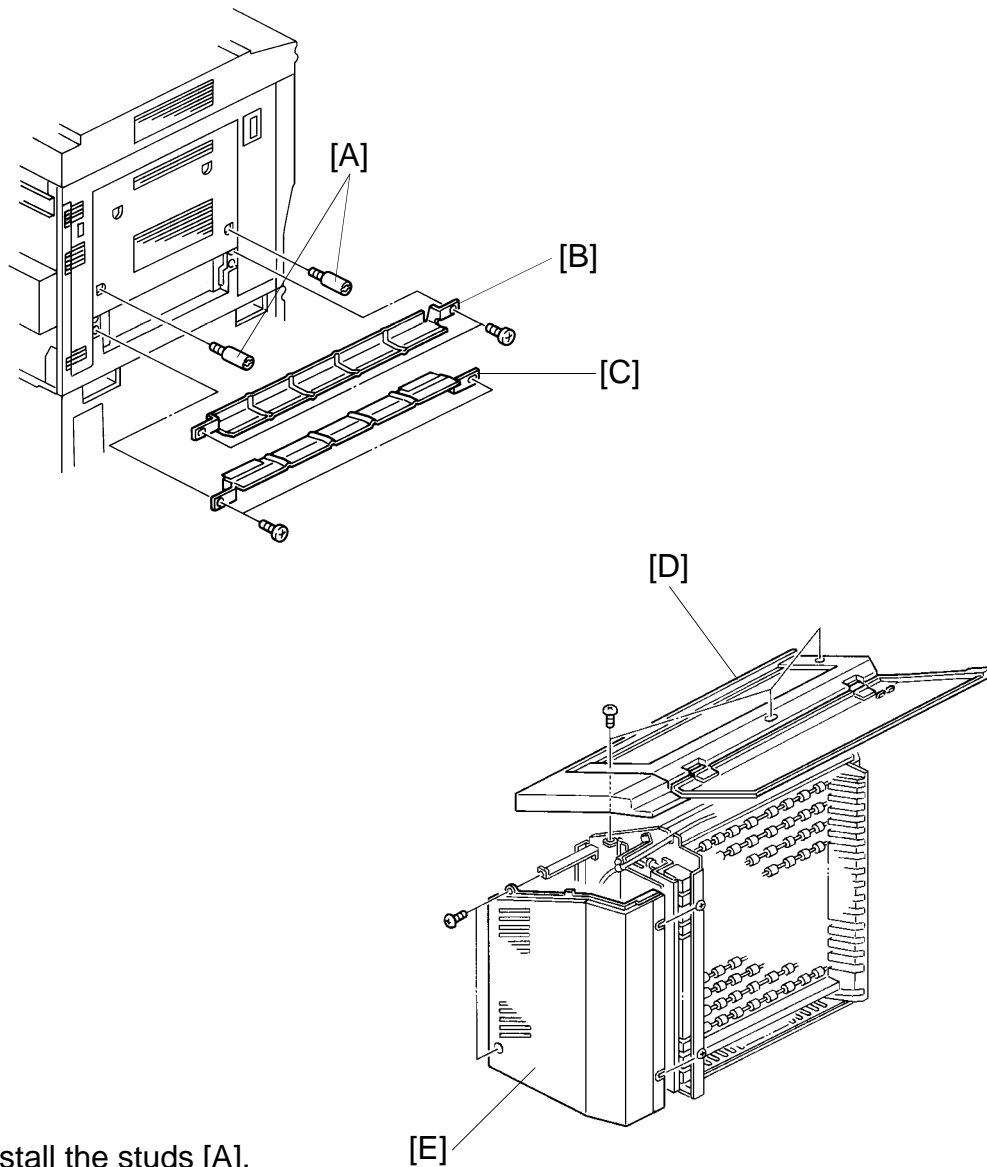


**NOTE:** To install this sorter on the A172/A199 copier, the A527 sorter adapter kit (option) is necessary.

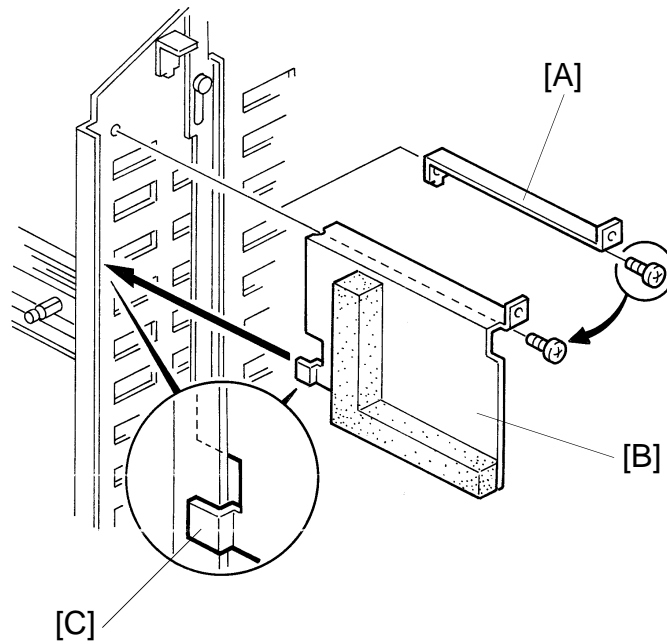
1. Remove four pieces of tape:
  - Sorter Top Cover [A] (1 pc)
  - Transport Guide [B] (2 pcs)
  - Sorter Harness [C] (1pc)
2. Open the top cover [D] and remove the following items:
  - Tape [E] (1 pc)
  - Cushion [F] (4 pcs)
  - Clamp [G] (1 pc) [1 screw]
  - Cardboard [H] (1 pc)



3. Remove the upper rear cover [A] (4 screws).
4. Open the front doors, then remove the left inner cover [B] (1 screw).
5. Remove the upper left cover [C] (4 screws).
6. Remove the 5 caps [D].
7. Remove the portion of the cover [E] with cutting pliers as shown.
8. Reinstall the upper left cover.

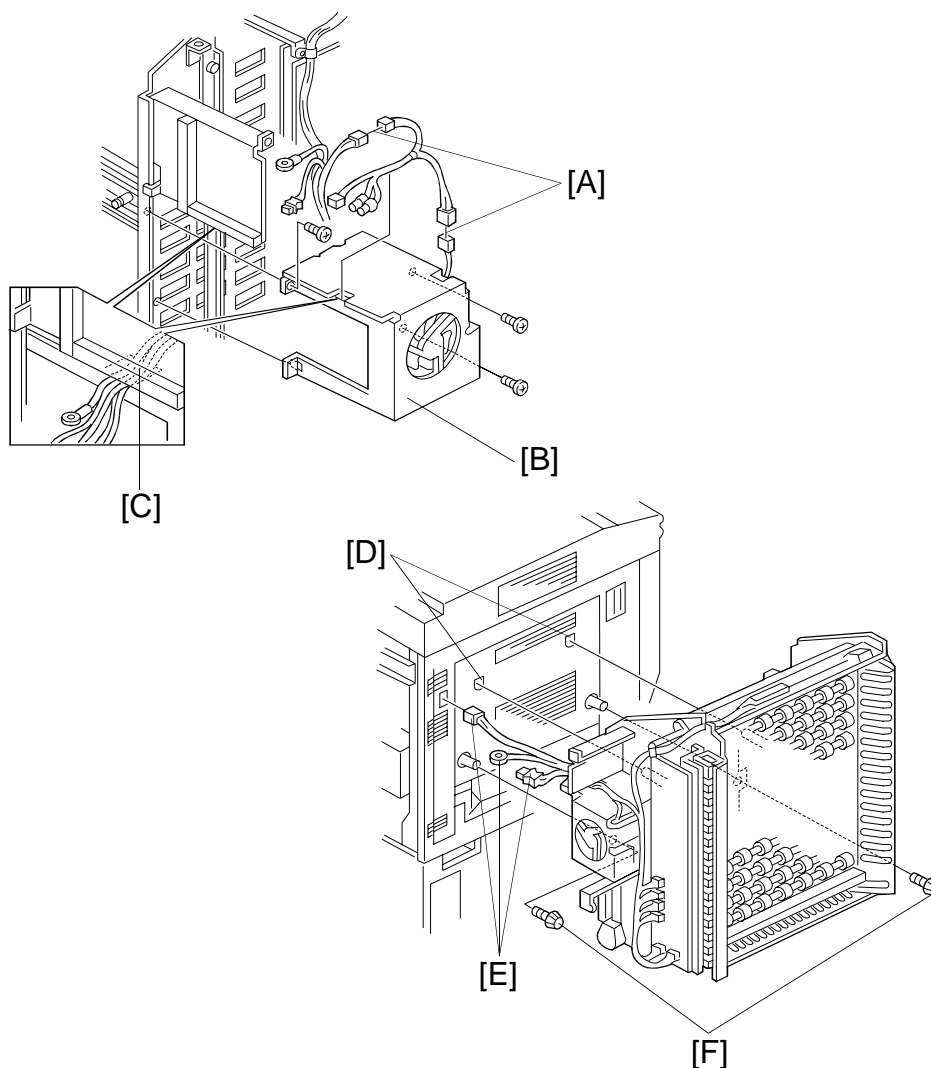


9. Install the studs [A].
10. Install the upper guide plate [B] (2 screws).
11. Install the lower guide plate [C] (2 screws).
12. Remove the sorter top cover [D] (3 screws).
13. Remove the sorter rear cover [E] (4 screws).
14. Remove the sorter front cover (2 screws).

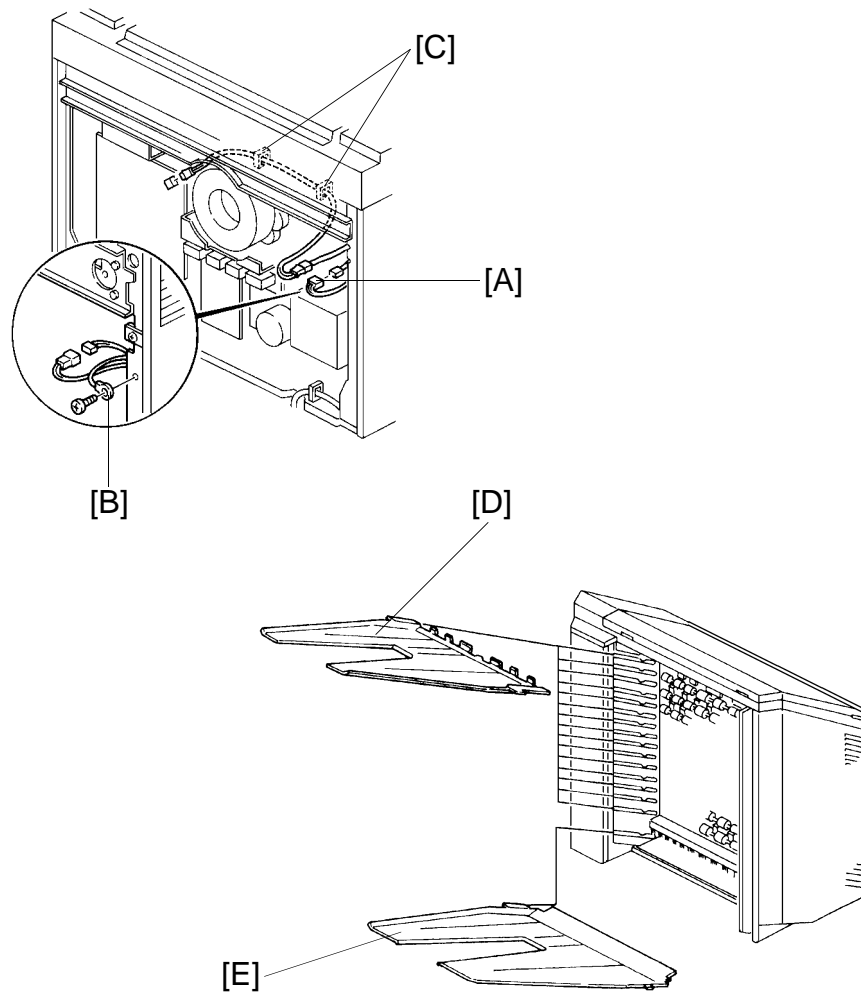


15. Remove the rear cover mounting bracket [A] (1 screw).
16. Install the air outlet plate [B] where the rear cover mounting bracket was previously installed (1 screw). Use the screw which was used for the rear cover mounting bracket.

**NOTE:** Make sure the air outlet plate hook [C] engages the sorter rear frame as shown.



17. Connect the accessory harness connectors [A] to the fan assembly connectors.
18. Install the fan assembly [B] on the sorter rear frame (3 screws and 1 connector).  
**NOTE:** Make sure to run the harness through the cutout [C] as shown.
19. Install the sorter into the mounting holes [D] on the copier while inserting the sorter harnesses [E] through the opening in the left cover (connect the 2 studs of the copier to the sorter).
20. Attach the sorter to the copier with two screws (2 knob screws [F]).



21. Remove the protective cover and secure the 4p connector [A].
22. Secure the grounding wire [B]\* (1 grounding screw with toothed washer).  
**NOTE\*:** For all models other than those intended for North America, the green wire is intended as a functional earth and should be connected as shown.
23. Install two wire clamps [C].
24. Connect the fiber optics connector to CN515 of the main control board.
25. Insert all 15 sorter bins [D].
26. Insert the interrupt bin [E].
27. Install all covers on the copier and the sorter.
28. Check machine operation.



## 5. FILM PROJECTOR (A718)

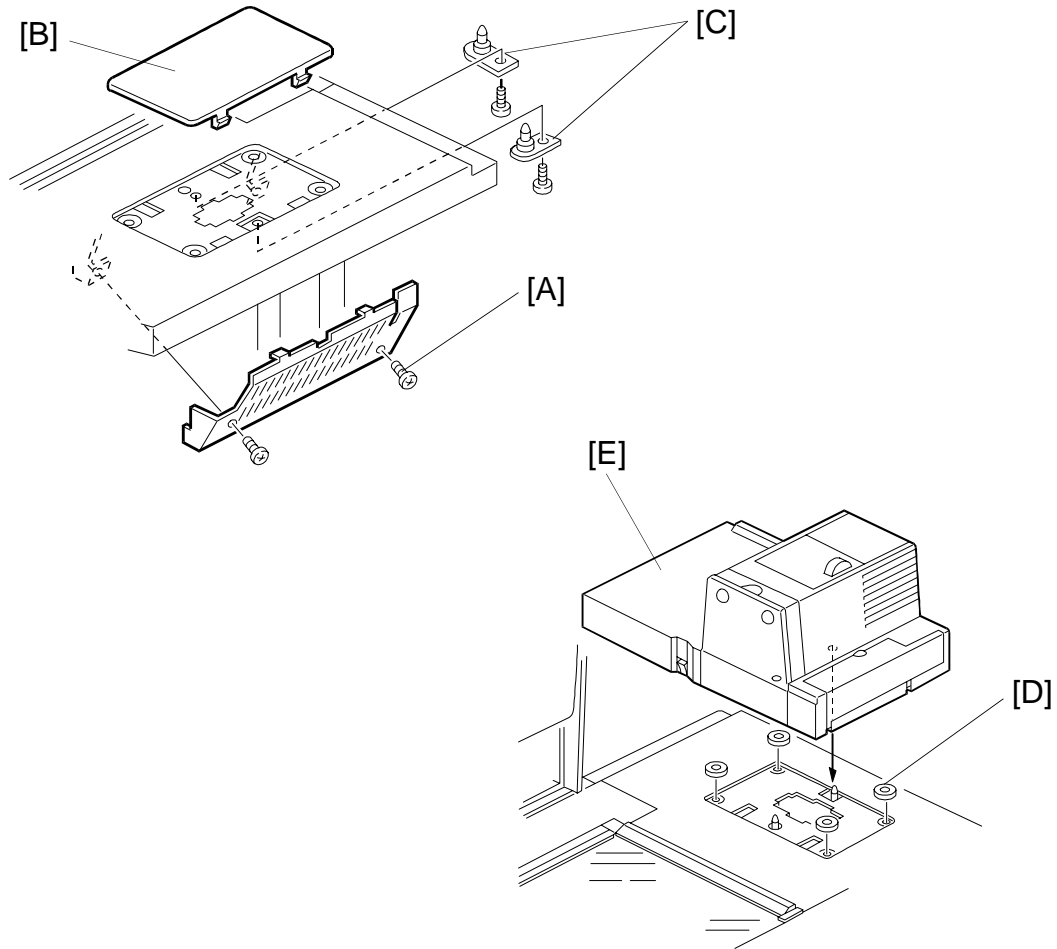
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### 5.1 ACCESSORY CHECK

Make sure that each accessory listed in the following table is in the box. Also check the condition of each item.

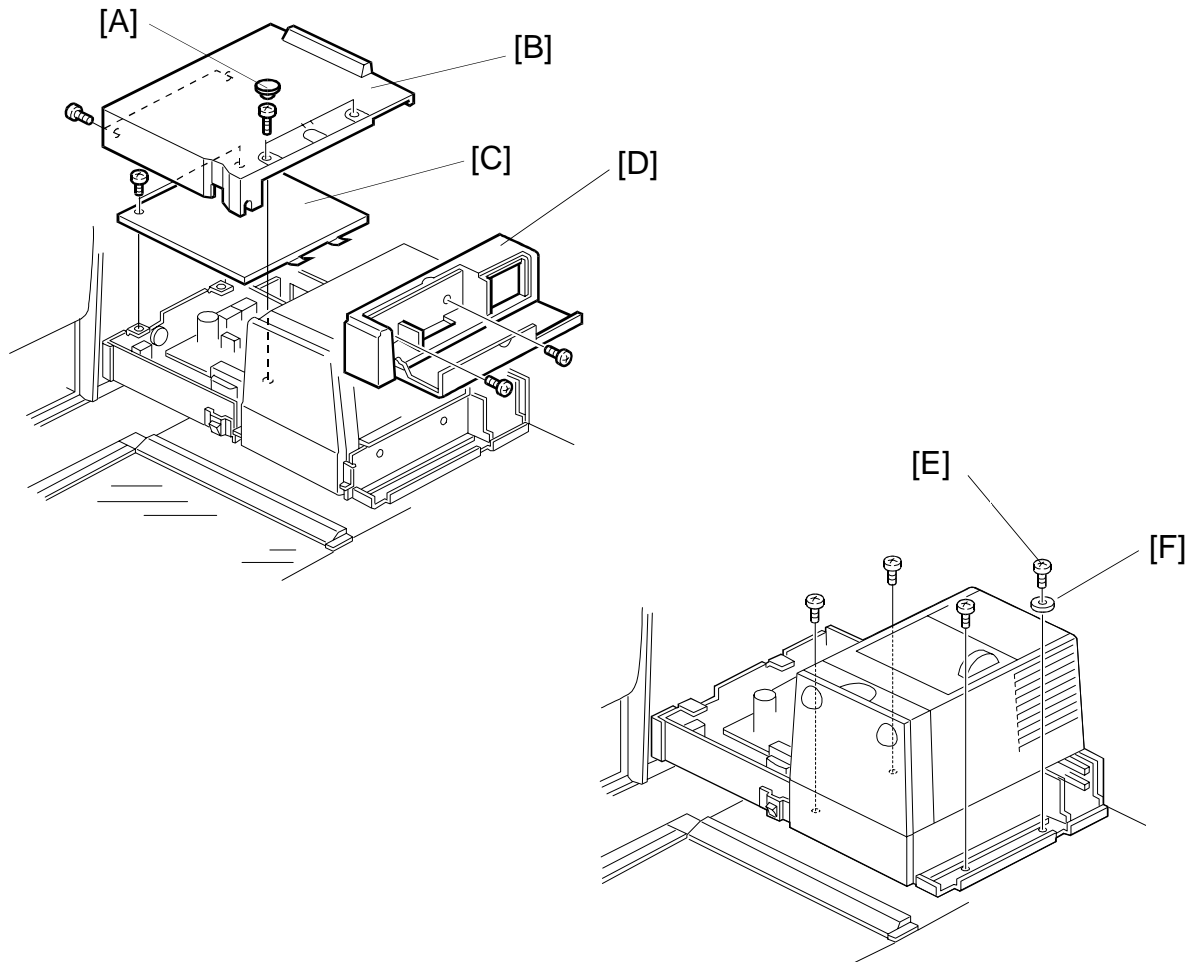
Description	Q'ty
1. Mirror Unit.....	1
2. Power Cord .....	1
3. Optical Fiber Cable .....	1
4. Film Strip Holder .....	1
5. Slide Holder.....	1
6. Glass Mount Holder .....	1
7. Base Film (FUJI, KODAK, AGFA).....	3
8. Slide Mount .....	1
9. Correction Filter (P, N) .....	2
10. Blower Brush .....	1
11. Projection Lamp .....	1
12. Film Position Sheet .....	2
13. Positioning Pin .....	2
14. Spacer .....	4
15. Philips Pan Head Screw - M4 x 8 .....	2
16. Philips Pan Head Screw - M4 x 12 .....	4
17. Spring Washer - M4 .....	1
18. Installation Procedure .....	1
19. NECR (-17, -27 only).....	1

## 5.2 INSTALLATION PROCEDURE



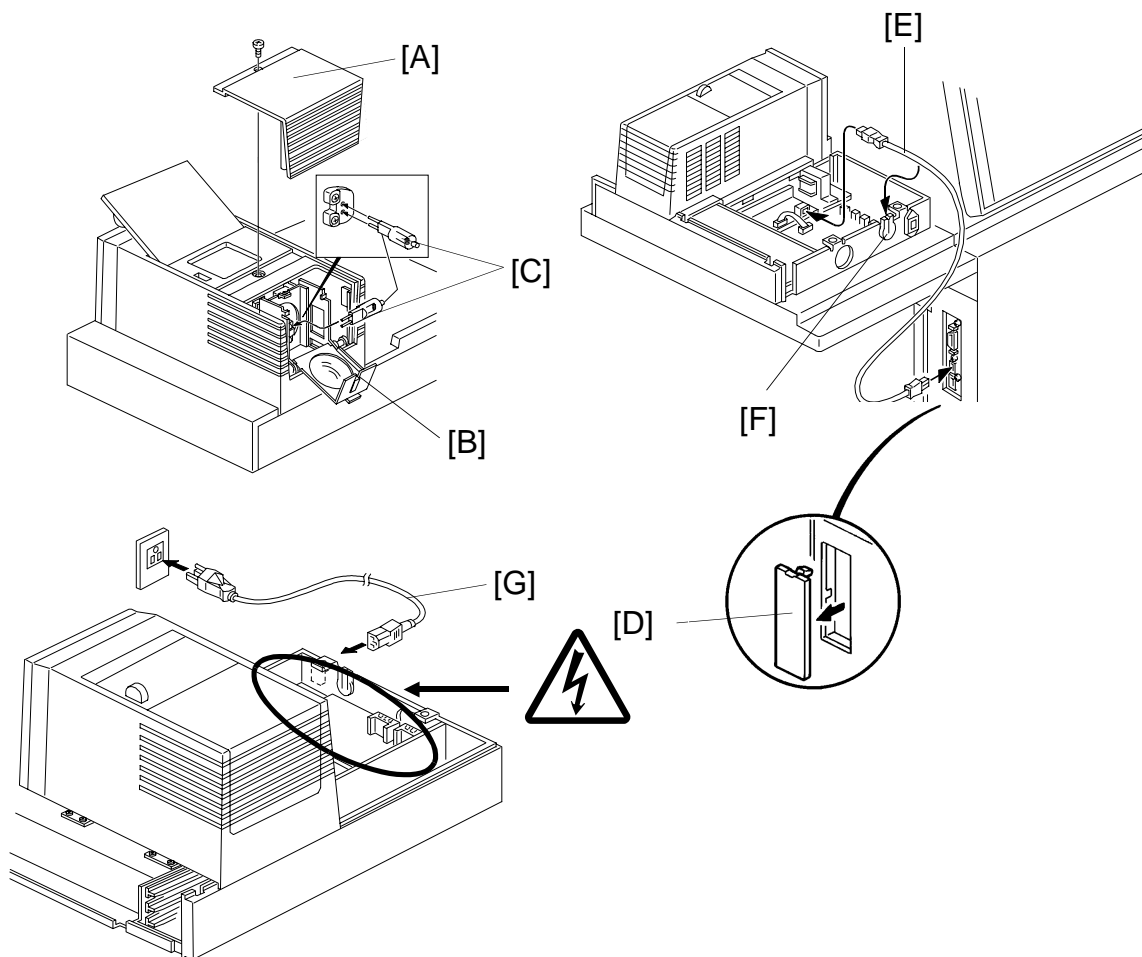
**NOTE:** Holder Type C (A702-18) must be installed before starting the following procedure.

1. Remove the lower cover [A] from the holder bracket (2 screws).
2. Remove the cover plate [B] from the holder.
3. Install two positioning pins [C] on the holder bracket as shown (2 screws - M4 x 8) and reinstall the lower cover.
4. Set four spacers [D] at the four corners on the hollow surface of the holder.
5. Place the projector unit [E] on the holder by aligning the holes of the projector base plate with the positioning pins.



6. Remove two rubber caps [A] and cover [B] (4 screws).
7. Remove the shield plate [C] (2 screws).
8. Open the front cover and remove the front cover assembly [D] (2 screws).
9. Attach the projector unit to the holder with screws (M4 x 12).

**NOTE:** When securing the screw [E], insert the spring washer [F] between the screw and the projector unit. This spring washer secures the grounding of the projector unit's frame.



10. Remove the lamp cover [A] (1 screw) and open the reflector cover [B]. Then, plug the projector lamp [C] into the socket. Then close the reflector cover.

**NOTE:** The projector lamp should be inserted horizontally until it stops.

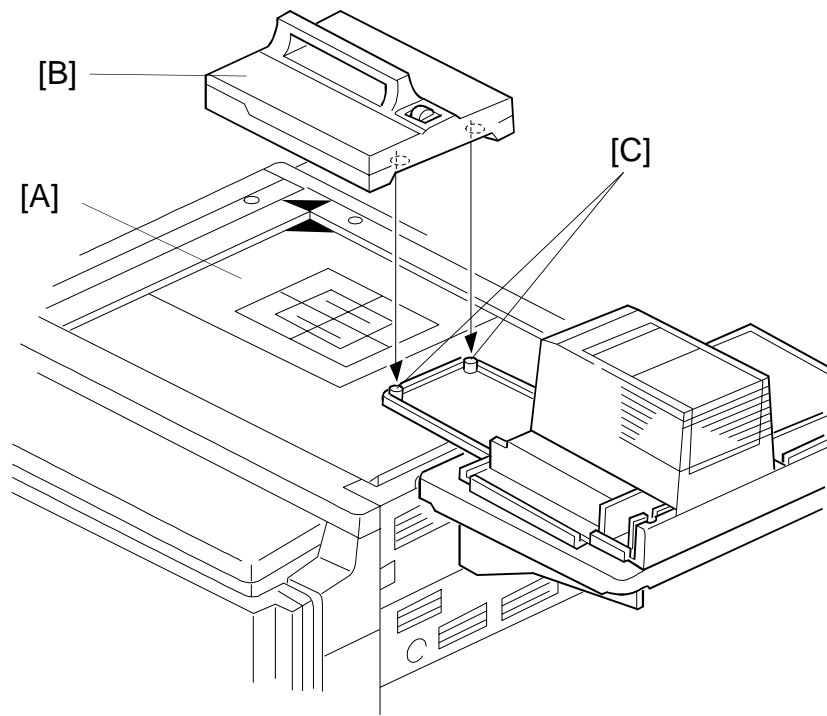
11. Remove the cap [D] from the upper right cover of the copier.

12. Run the optical fiber cable [E] between the projector control board (CN6) and the copier through the rubber bushing [F] as shown.

13. Connect the power cord [G] to the power inlet and plug it into the wall outlet.

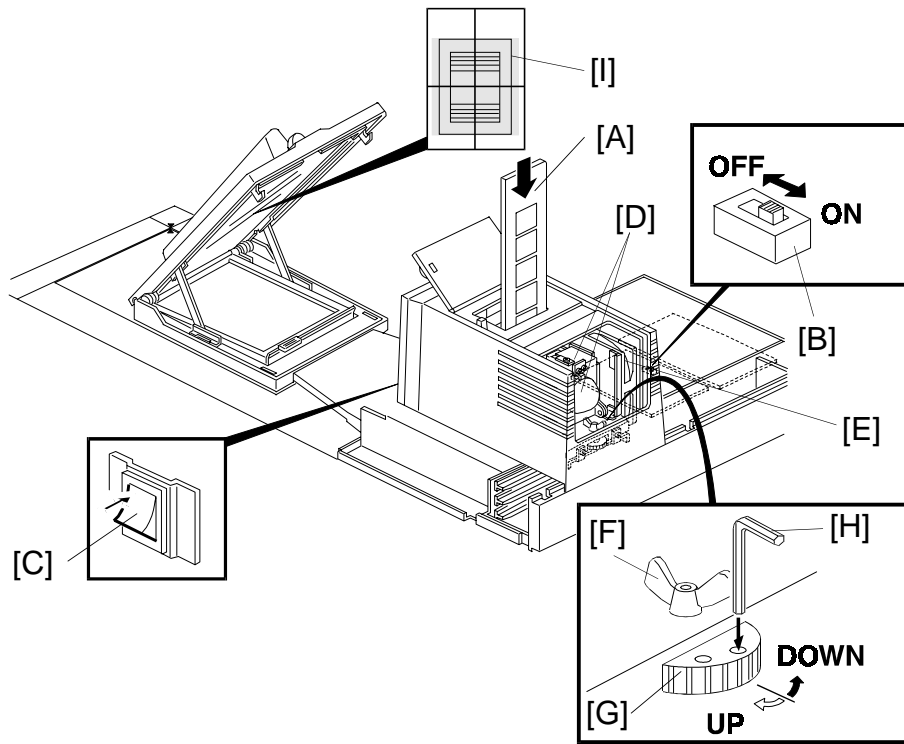
#### **⚠ WARNING**

After plugging the power cord into the wall outlet, do not touch the electrical components inside the projector unit other than the test switch used in steps 14-4) and -8). Otherwise, you might receive an electrical shock. ⚠



14. Adjust the height as follows.

- 1) Place the film position sheet [A] on the exposure glass, aligning it at the rear left corner.
- 2) Put the mirror unit [B] on the exposure glass by aligning the holes with the positioning pins [C] on the lens cover.



- 3) Insert the film strip holder [A] into the film projector unit at the base film setting position.

**NOTE:** Push the film strip holder gently to confirm that the film strip holder has been inserted correctly.

- 4) Turn on the test switch [B] on the projector control board and turn on the projector unit main switch [C].

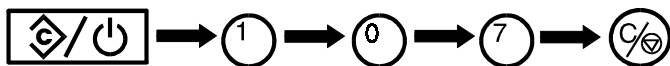
#### **⚠ CAUTION**

**The lamp housing and reflector [D] will become very hot. The lamp cooling fan [E] will start turning suddenly when the lamp housing temperature becomes high. Keep hands away from those components to avoid any injury.**

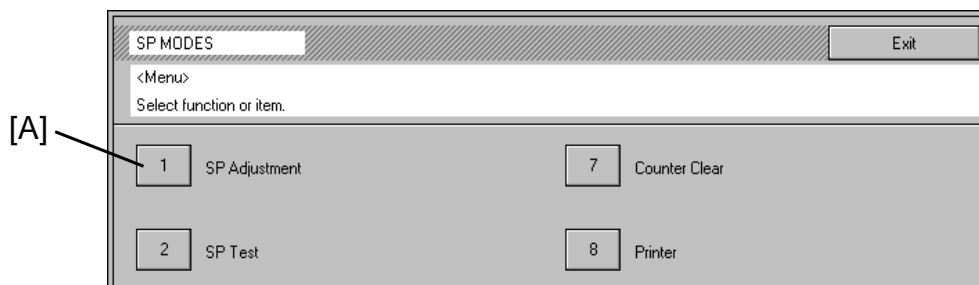
- 5) Loosen the wing nut [F].
- 6) Adjust the position of the projected light by turning the dial [G] with a hexagon wrench [H] until it is at the center of the 4" x 5" frame [I] which is reflected in the mirror unit.
- 7) Tighten the wing nut [F].
- 8) Turn off the projector main switch and the test switch.
- 9) Reinstall the lamp cover and other covers.

⇒ 10) Enter SP Mode as follows:

- 1) Press the clear modes key.
- 2) Wait for 2 or 3 seconds while the display returns to the initial screen.
- 3) Enter "107".
- 4) Hold down the clear/stop key for more than 3 seconds.

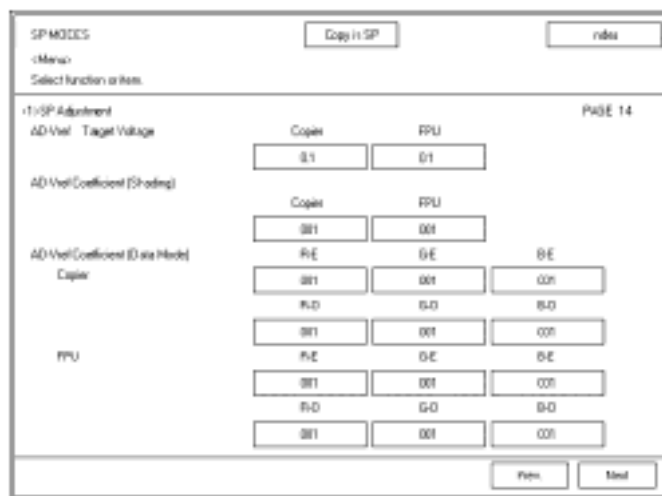


11) Touch the SP ADJUSTMENT feature key [A].



Open page 14 in SP Adjustments

Set AD-Vref Target Voltage for the FPU to a Value of 2.7.

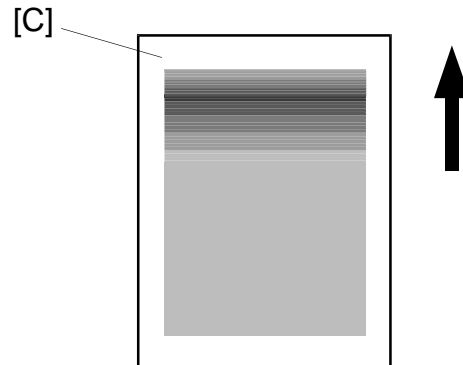
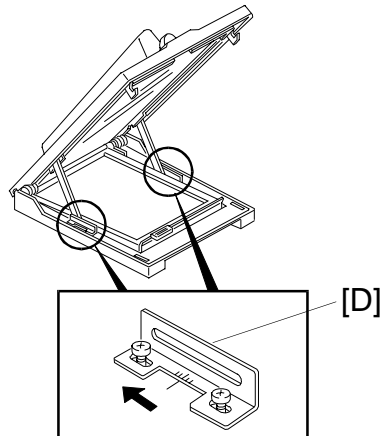
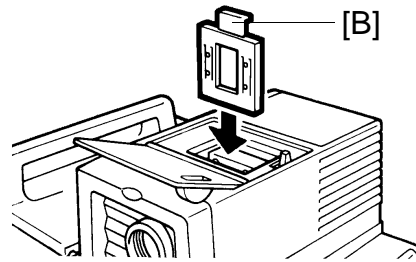
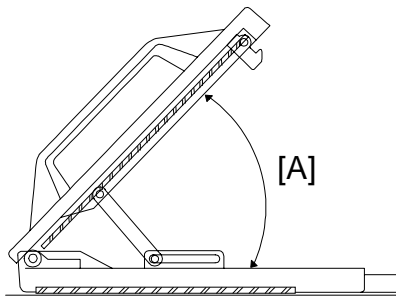


Set the AD-Vref Coefficient (Data Mode) for the FPU to the following Value.

R-E = 66	G-E = 60	B-E = 65
R-O = 66	G-O = 60	B-O = 65

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15. Adjust the angle [A] of the mirror unit as follows:

- 1) Turn on the copier main switch and wait for the ready condition.
- 2) Open the lens cover and position the mirror unit on the exposure glass.
- 3) Put the correction filter [B] for positive films in the filter slot.
- 4) Turn on the projector main switch and press the option key.
- 5) Perform shading using the positive 35 mm slides mode.
- 6) Put one of the orange base films in the slide holder and position it in the projector unit.
- 7) Make a copy of the orange film.
- 8) Check if the orange image is even or not. If the image is uneven, adjust the mirror angle as follows:

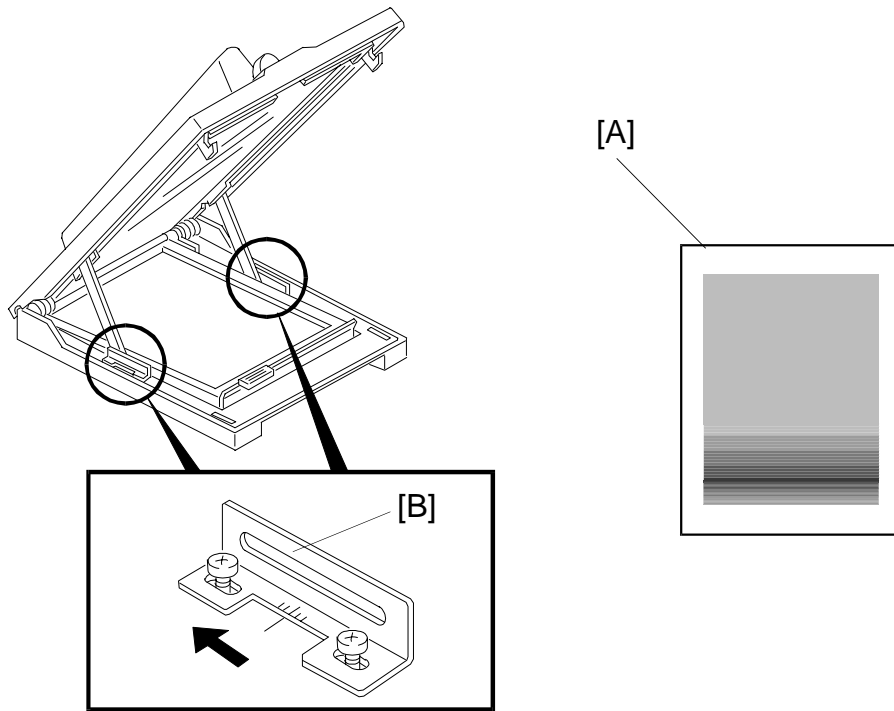
8-1) When the leading part is dark [C].

- a) Move the front and rear arm guides [D] to the left so that the mirror angle is increased (2 screws each).

**NOTE:** Position the arm guides at the same location at front and rear, using the ruler decals. This prevents the mirror from being twisted.

- b) Make a copy of the orange film.

- c) Repeat steps a) and b) until the orange image becomes even.



8-2) When the trailing part is dark [A].

- a) Move the front and rear arm guides [B] to the right so that the mirror angle is reduced (2 screws each).

**NOTE:** Position the arm guides at the same location at front and rear, using the ruler decals. This prevents the mirror from being twisted.

- b) Make a copy of the orange film.
- c) Repeat steps a) and b) until the orange image becomes even.

16. Check some copy images from positive or negative films.

## **6. CONTROLLER INTERFACE TYPE-C (A583-05)**

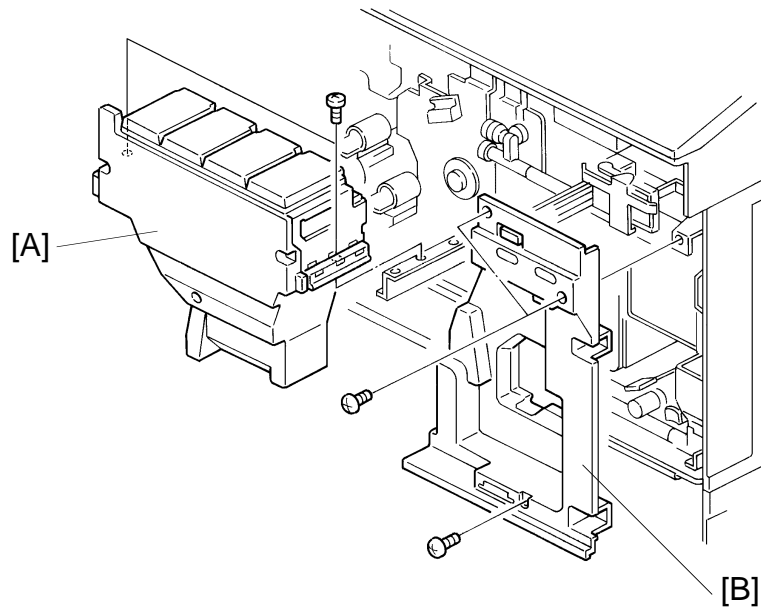
### **6.1 ACCESSORY CHECK**

Make sure that each accessory listed in the following table is in the box. Also check the condition of each item.

Description	Q'ty
1. Controller Interface Board .....	1
2. PTL.....	1
3. Controller Interface Harness .....	1
4. Fuse Harness .....	1
5. Stepped Screw - M3.....	1
6. Philips Pan Head Screw - M3 x 8 .....	1
7. Philips Pan Head Screw - M4 x 8 .....	6
8. Wire Saddle.....	2
9. Ferite Core .....	2
10. Fiber Optics Cable .....	1
11. PTL Relay Harness .....	1
12. Installation Procedure .....	1

## 6.2 INSTALLATION PROCEDURE

### 1. Remove the covers.

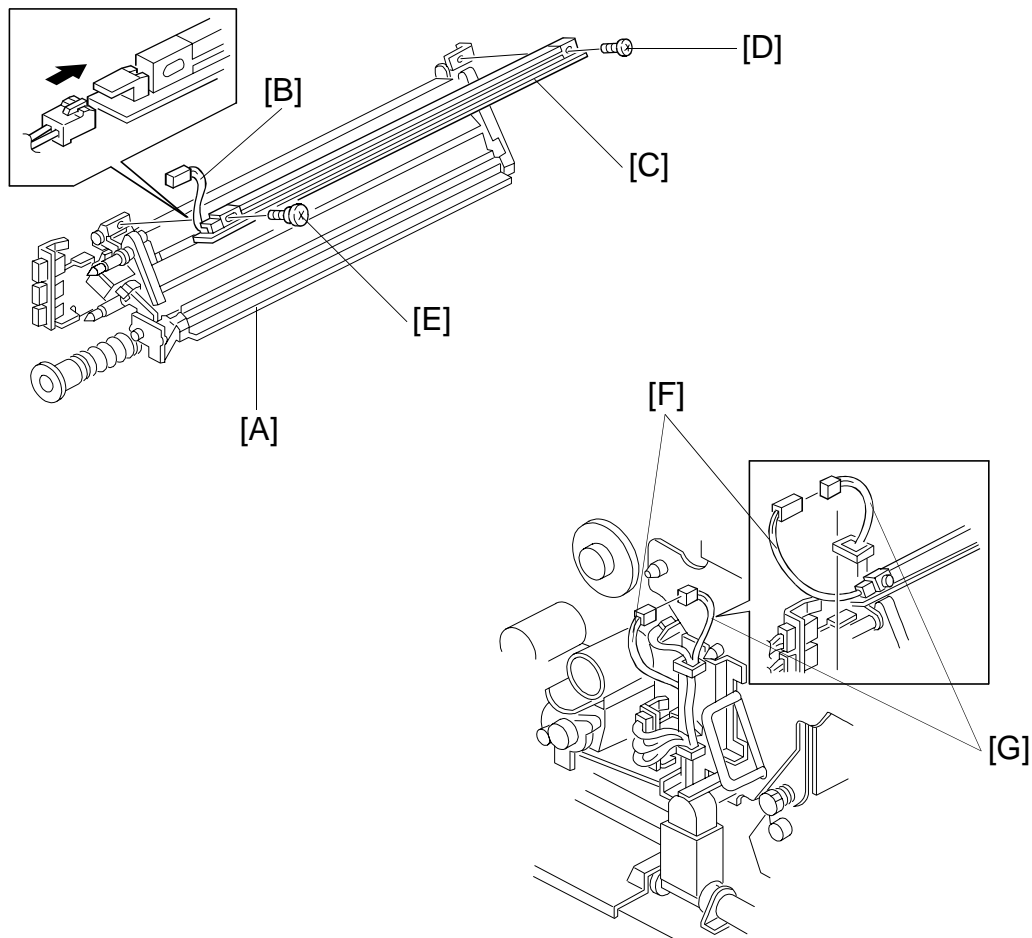


#### **⚠ CAUTION**

**Turn off the main switch and unplug the machine before starting the following procedure.**

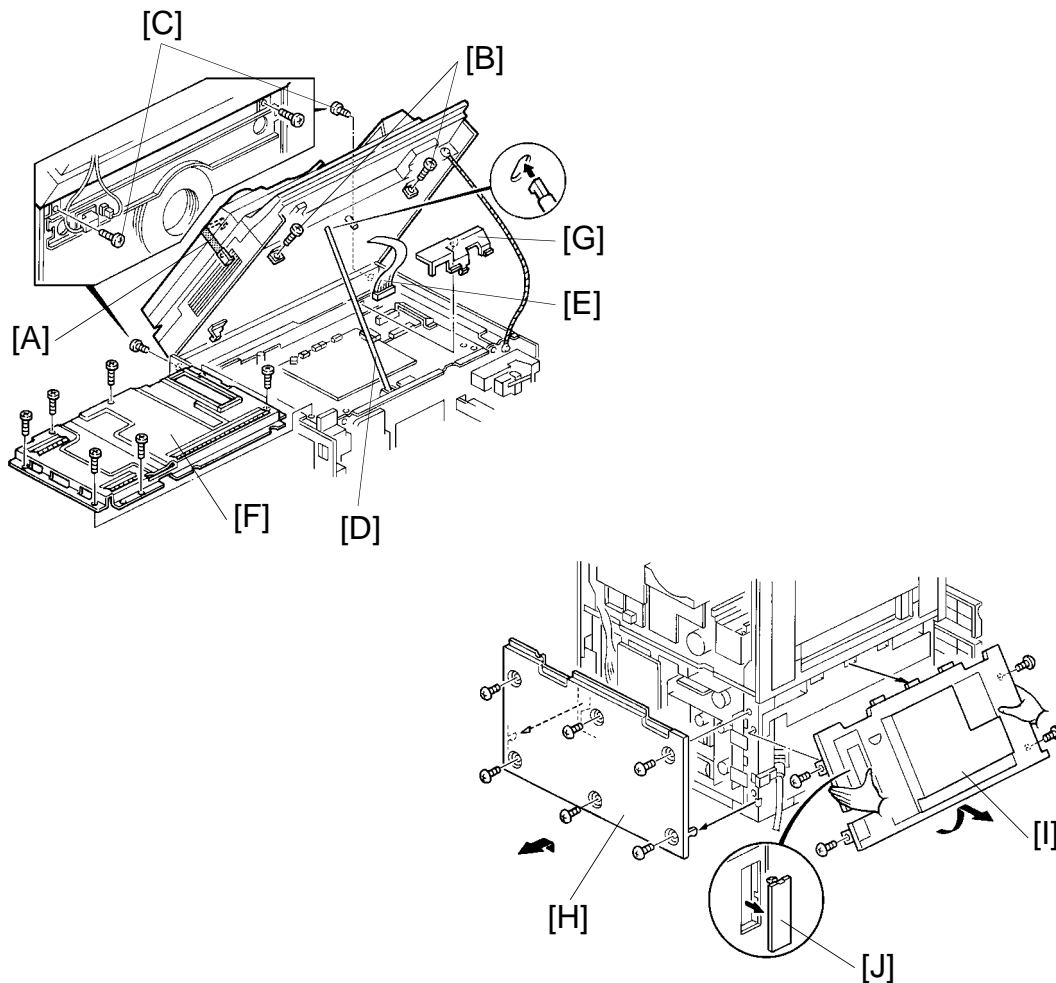
1. Open the front doors and remove the toner tank unit [A] (2 screws).
2. Remove the right inner cover [B] (3 screws).
3. Remove the upper rear cover (4 screws).
4. Remove the lower rear cover (4 screws).

## 2. Attach the PTL (Pre-Transfer Lamp) to the belt cleaning unit.

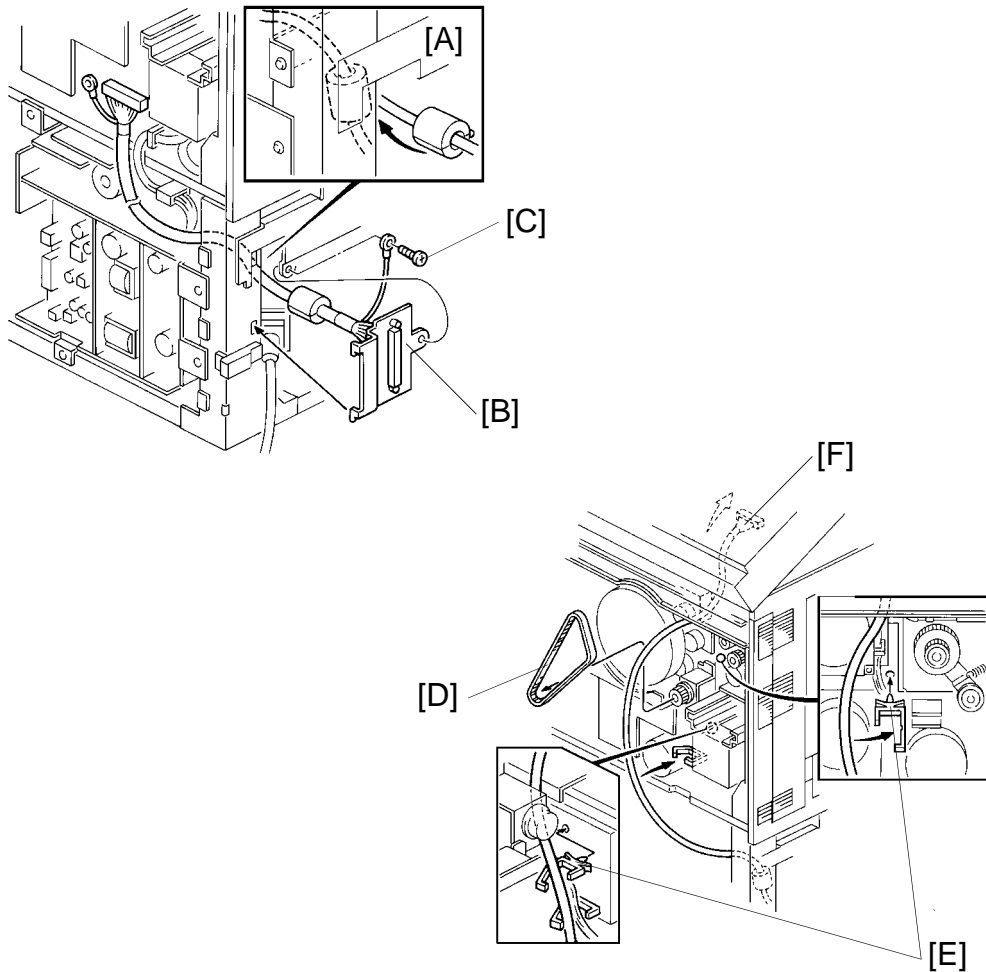


1. Lower the toner collection duct (1 hook).
2. Disconnect the three connectors and free them from the three harness clamps.
3. Remove the transfer belt stay (5 screws).
4. Remove the belt cleaning unit [A] by pulling it out.
5. Connect the PTL relay harness [B] (from the kit) to the PTL [C].
6. Attach the PTL [C] to the cleaning unit [A] (M3 x 8 [D] ,stepped screw - M3 [E]).
7. Reinstall the belt cleaning unit.
8. Reinstall the transfer belt stay (5 screws, 3 connectors and 3 clamps).
9. Connect the PTL relay harness [F] to the PTL harness [G] (from the copier).
10. Reinstall the toner collection duct (1 hook).

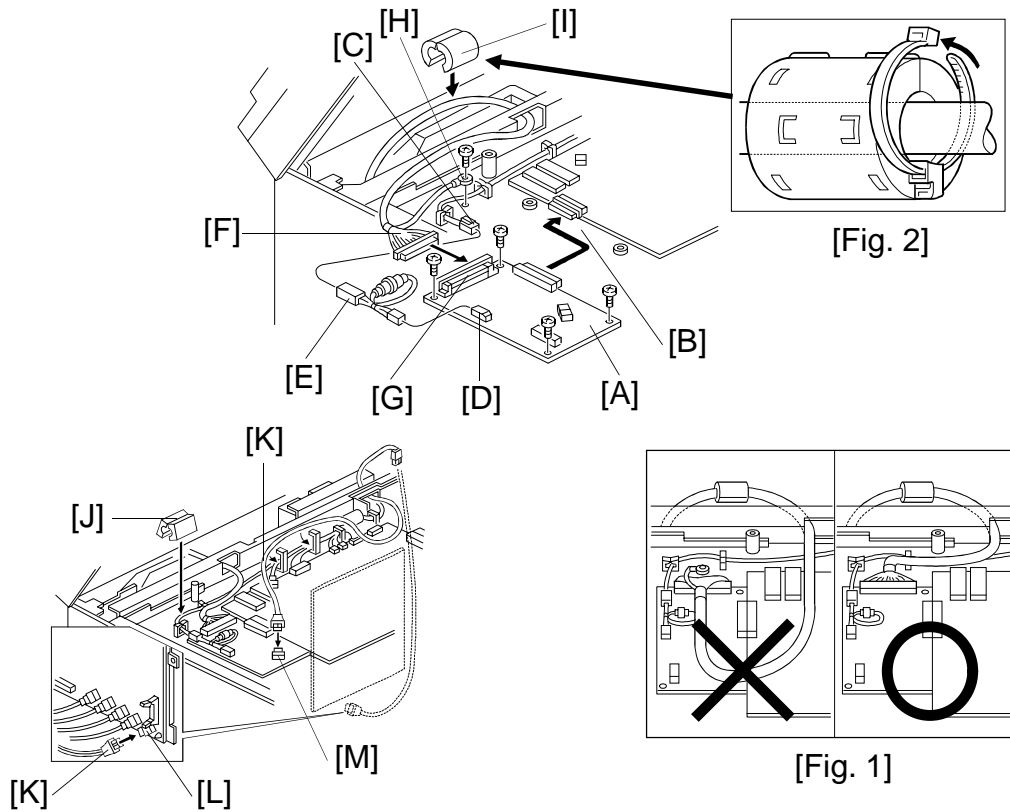
### 3. Install the interface board and harness.



1. If the DJF is equipped on the copier, remove the DJF from the scanner unit. NOTE: If the DJF is left attached to the scanner you must secure the scanner unit with the DJF fixing belt [A] as shown.
2. Remove the two fixing screws [B] at the front of the scanner unit.
3. Remove the two fixing screws [C] at the rear of the scanner unit.
4. Open the scanner unit and set the scanner support bar [D] as shown.
5. Disconnect the shielded flat cable [E] and remove the IPU board cover [F] (2 long and 5 short screws).
6. Remove the harness cover [G] from the right rear corner.
7. Remove the lower rear cover [H] (6 screws) and the lower left cover [I] (4 screws). Then remove the cap [J] from the lower left cover.



8. Route the harness above the left rail of the 1st tray [A] from the left side to the rear.
  9. Place the controller interface harness bracket [B] on the left side frame and secure it with the grounding wire (1 screw) [C].
  10. Remove the timing belt [D] and install the two harness clamps [E].
  11. Route the harness from the lower to the upper as shown [F].
- NOTE:** Route the harness behind the charge inlet fan duct.



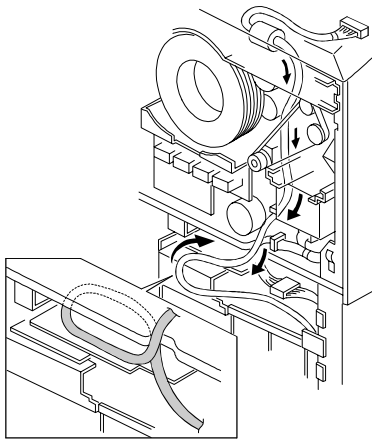
12. Install the controller interface board [A] by connecting it to CN308 [B] of the IPU board (4 screws).
13. Connect the white 2P connector [C] to CN301 [D] of the controller interface board via the fuse harness [E].
14. Connect the controller interface harness [F] to CN303 [G] of the controller interface board. Then secure the grounding wire [H] to the IPU board bracket (1 screw).
 

**NOTE:** 1. Do not route the harness over the board to prevent electromagnetic wave. (See [Fig. 1])

2. Make sure that the connectors are set properly. Otherwise, the copier might not achieve the ready condition or blank copies might be made.
15. Install the gray ferrite core [I] and the white ferrite core [J] as shown.
 

**NOTE:** Secure the gray ferrite core with the harness band as shown [Fig. 2].
16. Connect the fiber optics cable [K] to CN514 [L] on the main control board and route it to the IPU board area following other fiber cables.
17. Run the fiber optics cable through the harness clamps and connect it to CN304 [M] on the controller interface board.





18. Secure the interface harness with the three harness clamps and reinstall the timing belt as shown.

**NOTE:** Route the remaining part of the harness along the top of the AC/DC Drive Board as shown. Position the harness near by the rear side plate so that the harness won't touch any moving parts such as timing belts and motors.

19. Reassemble the machine.

#### **4. Connect to the Fiery and adjust the printer gamma.**

1. Connect the Fiery controller to the controller interface connector with the cable provided from EFI.
2. Adjust the  $\gamma$  correction data for printer (See Section 5) and check the controller function.

# **SERVICE TABLES**



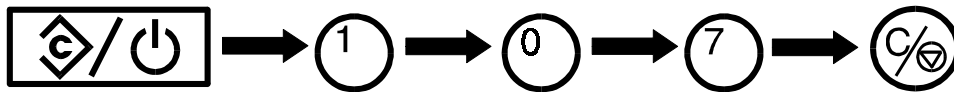
# 1. SERVICE PROGRAM MODE

## 1.1 SERVICE PROGRAM MODE OPERATION

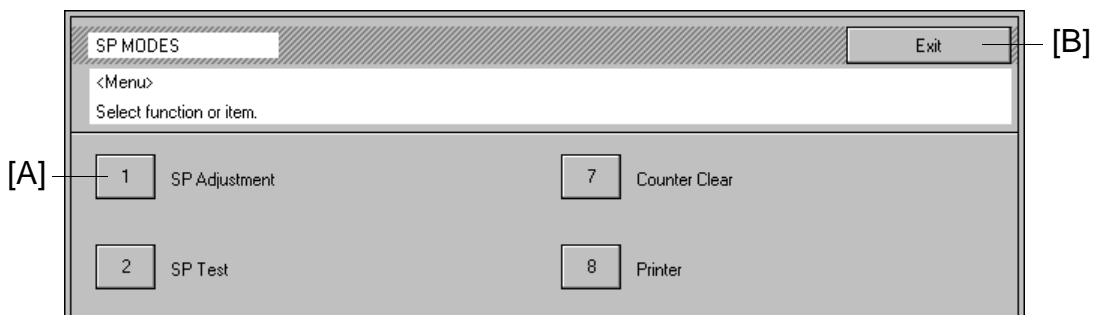
The service program (SP) mode is used to check electrical data, change modes, and adjust values.

### 1.1.1 Service Program Access Procedure

1. Press the clear modes key.
2. Enter "107".
3. Hold down the clear/stop key for more than 3 seconds until the service program index menu appears on the touch panel display.



4. Touch a number [A] on the display to access the desired function.  
This copier has 9 service program modes.

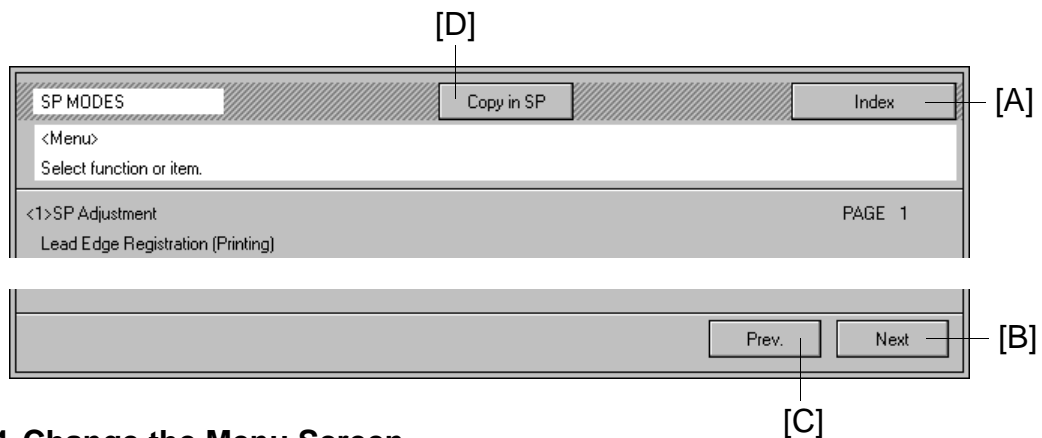


### 1.1.2 To Exit SP Mode

1. Touch the **Exit** key [B].

### 1.1.3 To Return to the Index Menu

1. Return to the index menu by touching **Index** [A] on the display.

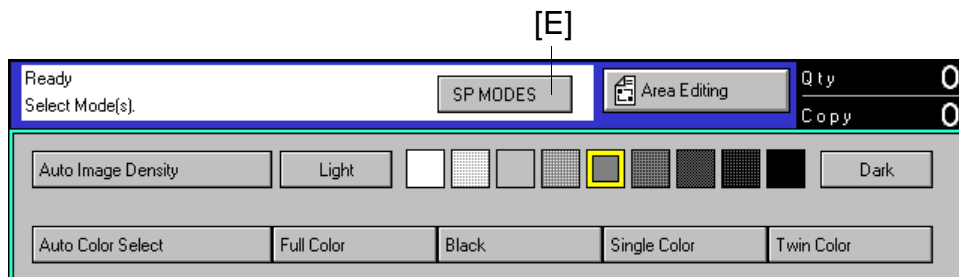


### 1.1.4 Change the Menu Screen

1. To move to the next page, touch **Next** [B].
2. To move to the previous page, touch **Prev.** [C].

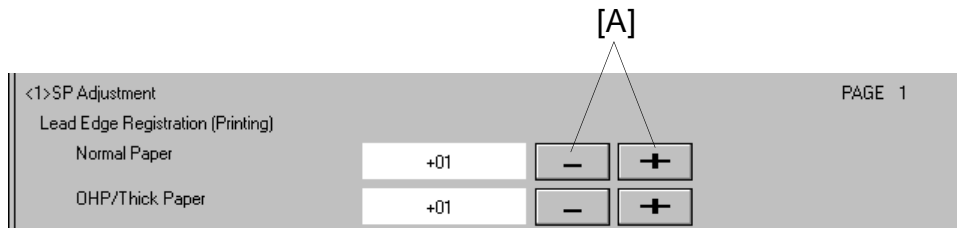
### 1.1.5 To Make a Copy While in SP Mode

1. Touch **Copy in SP** [D] to access "Copy in SP" mode. The LCD is as shown below.
2. Select the appropriate copy mode and make trial copies.
3. Return to the SP mode by pressing **SP mode** [E].

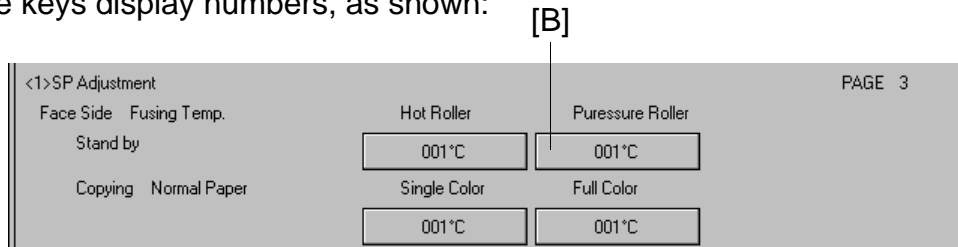


### 1.1.6 To Input Settings

If  and  keys [A] are displayed as shown, touch the  key or  key to change the setting. In this case, the default setting is 00.



If the keys display numbers, as shown:

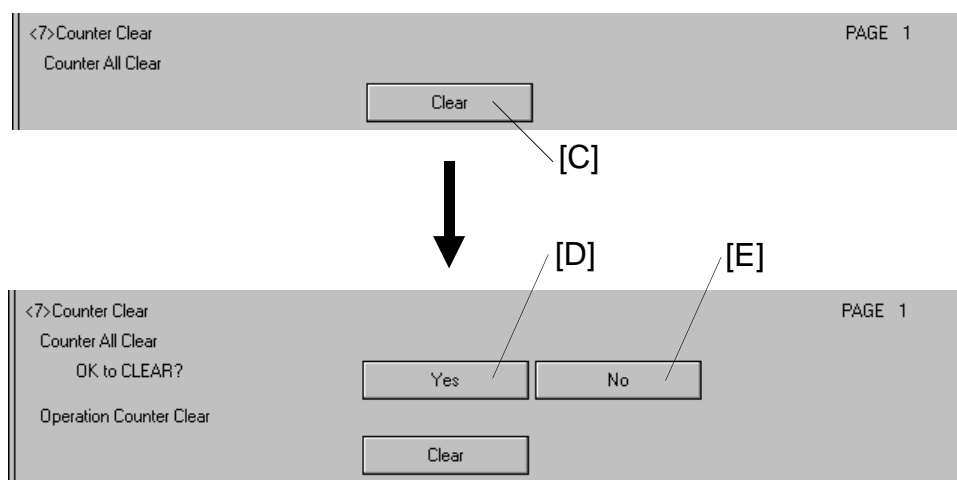


- 1) Touch the key [B]. Its color will change.
- 2) Input the setting with the numeric keys.
- 3) Touch the key [B] again to store the setting.

NOTE: If you forget to touch key [B] again, the setting will not be changed.

### 1.1.7 To Clear the Counters

1. Touch the clear key [C].
2. To clear the counter, touch the  key [D].  
To cancel without clearing the counter, touch the  key [E].



## 1.2 SERVICE PROGRAM MODE TABLE

- NOTE:**
- Shaded items should not be adjusted in the field.
  - Items written in bold italic letters are newly added service programs to the base copier (DFC-Alpha/A109).
  - The SP mode screens are sample ones. The values in these screens are not realistic.  
Refer to the Default in Note column or the factory data sheet coming with the machine for the realistic values.

### 1.2.1 [1] SP ADJUSTMENT

SP MODES		Copy in SP		Index	
<Menu> Select function or item.					
<1>SP Adjustment				PAGE 1	
Lead Edge Registration (Printing)					
Normal Paper	+01	-	+		
OHP/Thick Paper	+01	-	+		
DF Thin Original	+01	-	+		
DF 2-side Original	+01	-	+		
DF Thick Original	+01	-	+		
Transfer Belt Speed	+01	-	+		
Paper Feed Timing					
1st Paper Feed	+01	-	+		
2nd Paper Feed	+01	-	+		
3rd Paper Feed	+01	-	+		
				Prev.	Next

Page	Item	Function	Note
<1> -1	Lead Edge Registration (Printing)	<p>Shifts the vertical image position by changing the ON timing of the registration clutch. (0.5 mm/step)</p> <p>* Normal paper: Transfer belt speed = 180 mm/s</p> <p>* OHP/Thick Paper: Transfer belt speed = 90 mm/s</p> <p><b>* DF Thin Original:</b> <b>Adjusts the one-sided original's stop position without moving the original in reverse against the left scale.</b></p> <p><b>* DF 2-side Original:</b> <b>Adjusts the two-sided original's stop position against the left scale after inversion.</b></p> <p><b>* DF Thick Original:</b> <b>Adjusts the one-sided original's stop position after moving the original in reverse against the left scale.</b></p>	<p>Evaluate the width of the blank area at the leading edge of the test pattern image. (Use trimming area mode in test mode, page 2.)</p> <p>Adjustment standard: <math>0 \pm 2</math> mm (<math>2 \pm 2</math> mm in Trimming area mode)</p> <p>For the following adjustment, the dip switches of the DJF should be in the Normal position.</p> <p>Enter the standard copy screen by pressing the "Copy in SP" key, select a suitable mode, feed the original from the DJF original tray by pressing the "Start" key, then check the original stop position by opening the DJF.</p> <p>* DF Thin Original: 1-sided The thin original mode should be selected with user tools. [-]: Towards the left scale [+]: Away from the left scale</p> <p>* DF 2-side Original Duplex mode (2S Å 1S) should be selected for this adjustment. Overlap amount with the left scale: [-] Increase, [+] Decrease</p> <p>* DF Thick Original: The thick original mode should be selected with user tools. Overlap with the left scale: [-] Increase, [+] Decrease</p>
	Transfer Belt Speed	Changes the transfer belt rotation speed (0.19%/step)	Default: 0 <b>Do not change the setting in the field</b>
	Paper Feed Timing	Changes the paper feed clutch on time for each paper feed station to adjust the paper buckle at the registration rollers. (0.1 mm/step)	Adjustable range: -9.9 ~ 9.9 mm



SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<1>SP Adjustment		PAGE 2	
By-pass Feed	Normal Paper	+01	<input type="button" value="-"/> <input type="button" value="+"/>
	OHP/Thick Paper	+01	<input type="button" value="-"/> <input type="button" value="+"/>
	Thick 2nd Feed	+01	<input type="button" value="-"/> <input type="button" value="+"/>
Side to Side Registration (Printing)			
	1st Paper Feed	+0.1	<input type="button" value="-"/> <input type="button" value="+"/>
	2nd Paper Feed	+0.1	<input type="button" value="-"/> <input type="button" value="+"/>
	3rd Paper Feed	+0.1	<input type="button" value="-"/> <input type="button" value="+"/>
	By-pass Tray	+0.1	<input type="button" value="-"/> <input type="button" value="+"/>
DF Side to Side Registration		+01	<input type="button" value="-"/> <input type="button" value="+"/>
Fusing Temp. Control Mode		ON/OFF	Phase
Combine Original Distance		+01	<input type="button" value="-"/> <input type="button" value="+"/>
<div style="display: flex; justify-content: flex-end; gap: 10px;"> <input type="button" value="Prev."/> <input type="button" value="Next"/> </div>			

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<1>SP Adjustment		PAGE 3	
Face Side	Fusing Temp.	Hot Roller	Puressure Roller
	Stand by	001°C	001°C
Copying	Normal Paper	Single Color	Full Color
		001°C	001°C
Copying	OHP/Thick Paper	Single Color	Full Color
		001°C	001°C
Back Side	Fusing Temp.	Hot Roller	Puressure Roller
	Stand by	001°C	001°C
Copying	Normal Paper	Single Color	Full Color
		001°C	001°C
Copying	OHP/Thick Paper	Single Color	Full Color
		001°C	001°C
<div style="display: flex; justify-content: flex-end; gap: 10px;"> <input type="button" value="Prev."/> <input type="button" value="Next"/> </div>			

Page	Item	Function	Note
<1> -2	By-pass Feed	<p><b>* Normal Paper</b> and <b>* OHP/Thick Paper</b> Changes the by-pass feed clutch on time for each paper kind to adjust the paper buckle at the registration rollers. (0.1 mm/step)</p> <p><b>* Thick 2nd Feed</b> Adjusts the by-pass feed clutch ON timing for the 2nd time to ensure thick paper feeding from the registration rollers. <b>(20 msec./step)</b></p>	<p>For by-pass feed, there are adjustments for normal paper, OHP, and thick paper mode. Adjustable range: -9.9 ~ 9.9 mm</p> <p><b>Thick 2nd Feed</b> Default: 0 When the data is "0", the by-pass feed clutch turns on at the same time as the registration clutch. Increasing 1 step makes the on timing 20 msec. earlier. The off timing is fixed which is the same as the pick-up solenoid.</p>
	Side to Side Registration (Printing)	Adjusts the horizontal registration for the scanned image by adjusting the laser exposure start timing (0.1 mm/step)	Adjustable range: -9.9 ~ 9.9 mm
	<b>DF Side to Side Registration</b>	Adjusts the horizontal image position by changing the main scanning start position in DJF mode.	This adjustment should be done after the above adjustment "Side to Side Registration (Printing)" for each feeding station.
	Fusing Temp. Control Mode	Selects the fusing temperature control mode.	Default: ON/OFF control
	<b>Combined Original Distance</b>	Adjusts the distance between the two originals in Combine Originals mode.	Default: 0 Adjustment range: -15 ~ +15
<1> -3	Face Side Fusing Temp.	<p>Adjusts the target temperature of the hot roller and the pressure roller in stand-by mode.</p> <p>Adjusts the hot roller's target temperature for copying normal and OHP/Thick paper. This is for the single side copy mode.</p>	<p>Default: Stand-by Hot roller: 180°C Pressure roller: 120°C</p> <p>Copying normal paper Single color: 160°C Full color: 170°C</p> <p>Copying OHP/Thick paper Single color: 170°C Full color: 170°C</p>
	<b>Back Side Fusing Temp.</b>	<p>Adjusts the target temperature of the hot roller and the pressure roller in stand-by mode.</p> <p>Adjusts the hot roller's target temperature for copying normal and OHP/Thick paper. This is for the back side copy in the manual duplex mode.</p>	<p>Default: Stand-by Hot roller: 180°C Pressure roller: 120°C</p> <p>Copying normal paper Single color: 160°C Full color: 170°C</p> <p>Copying OHP/Thick paper Single color: 170°C Full color: 170°C</p>

SP MODES

Copy in SP

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<Menu>

Select function or item.

<1>SP Adjustment

PAGE 4

Setting for P-con OFF Mode

	VG	VB	LD
BK	-0650V	-0640V	010
Y	-0650V	-0640V	010
M	-0650V	-0640V	010
C	-0650V	-0640V	010

Toner Max. M/A Target

1.500

TC Correction Threshold

Lwr Limit	Target	Upr Limit
4.80	4.80	4.80

Prev.

Next

SP MODES

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<Menu>

Select function or item.

<1>SP Adjustment

PAGE 5

Transfer Belt Bias (Face Side : Normal Humidity)

	1C	2C	3C	4C
1st Color	0650V	0651V	0652V	0653V
2nd Color		0654V	0655V	0656V
3rd Color			0657V	0658V
4th Color				0659V

1C Mode Output Correction

Humidity Range	Low 1	Low 2	Low 3	High
	0650	0651	0652	0653

Prev.

Next

Page	Item	Function	Note
<1> -4	Setting P-con OFF Mode	Factory use only	<b>Do not adjust in the field.</b> Default:(for all the colors) VG: 650 V VB: 495 V ILD: 128
	<b>Toner Max. M/A Target</b>	Sets the maximum toner amount on the gradation patterns in the process control self check.	<b>Do not adjust in the field.</b> Default: 1.000 (= 1 mg/cm <sup>2</sup> )
	<b>TC Correction Threshold</b>	Sets the threshold for the Vcnt correction.	<b>Do not adjust in the field.</b> Default: Upper limit: 3.8 Target: 3.5 Lower limit: 2.3
<1> -5	Transfer Belt Bias (Face Side: Normal Humidity)	Adjusts the transfer belt bias voltage for each transfer process in single side copy mode with normal humidity.	<b>Do not adjust in the field.</b> Default: 1C: 1410 2C: 1490 3C: 1575 4C: 1660 Adjustable range: 50 ~ 4000 V
	<b>1C Mode Output Correction</b>	Adjusts the 1C transfer belt bias voltage for unusual humidity ranges. This is for single side copy mode.	<b>Do not adjust in the field.</b> Default: Low 1: 2075 Low 2: 1740 Low 3: 1740 High: 1410

SP MODES

Copy in SP

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<Menu>

Select function or item.

<1>SP Adjustment

PAGE 6

Transfer Belt Bias (Back Side : Normal Humidity)

	1C	2C	3C	4C
1st Color	0400V	0401V	0402V	0403V
2nd Color		0404V	0405V	0406V
3rd Color			0407V	0408V
4th Color				0409V

1C Mode Output Correction

Humidity Range	Low 1	Low 2	Low 3	High
	0500	0501	0502	0503

Humidity Range Threshold

	1	2	3	4
	0450	0451	0452	0453

Prev.

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SP MODES

Copy in SP

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<Menu>

Select function or item.

<1>SP Adjustment

PAGE 7

Transfer Roller Bias (Normal Humidity)

	Normal Paper	Thick Paper	OHP: S	OHP: L	NormalBack	Thick:Back
1C	0021V	0026V	0031V	0036V	0041V	0046V
2C	0022V	0027V	0032V	0037V	0042V	0047V
3C	0023V	0028V	0033V	0038V	0043V	0048V
4C(Letter)	0024V	0029V	0034V	0039V	0044V	0049V
4C(Photo)	0025V	0030V	0035V	0040V	0045V	0050V

Prev.

Next

Page	Item	Function	Note
<1> -6	<b>Transfer Belt Bias (Back Side: Normal Humidity)</b>	Adjusts the transfer belt bias voltage for each transfer process of the back side copy in the manual duplex mode with normal humidity.	<b>Do not adjust in the field.</b> Default: 1C: 1410 2C: 1490 3C: 1575 4C: 1660 Adjustable range: 50 ~ 4000 V
	<b>1C Mode Output Correction</b>	Adjusts the 1C transfer belt bias voltage for unusual humidity ranges. These are for the back side copy in the manual duplex mode.	<b>Do not adjust in the field.</b> Default: Low 1: 2075 Low 2: 1740 Low 3: 1740 High: 1410
	Humidity Range Threshold	Sets the threshold of the humidity ranges for the transfer belt bias and roller bias.	<b>Do not adjust in the field.</b> Default: 1: 43 2: 85 3: 113 4: 215
<1> -7	Transfer Roller Bias (Normal Humidity)	Adjusts the transfer roller bias voltage for each transfer process (1C ~ 4C) and the paper modes (Normal, Thick, OHP: S, OHP: L, Normal: Back, and Thick: Back).	<b>Do not adjust in the field.</b> Adjustable range: 500 ~ 4000 V Default: Normal Paper 1C: 1200 2C: 1500 3C: 1800 4C-L&P: 1500 Thick Paper 1C: 1100 2C: 1360 3C: 1640 4C-L&P: 1360 OHP: S&L 1C: 2020 2C: 2080 3C: 2370 4C-L&P: 2080 Normal: Back 1C: 1200 2C: 1700 3C: 1980 4C-L&P: 1700 Thick: Back 1C: 1360 2C: 1640 3C: 1930 4C-L&P: 1640

SP MODES

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<Menu>

Select function or item.

<1>SP Adjustment

PAGE 8

Transfer Roller Bias Coefficient By Humidity Range

		Normal Paper	Thick Paper	OHP: S	OHP: L	NormalBack	Thick:Back
Low 3	1C	001	009	017	025	033	041
	4C	002	010	018	026	034	042
Low 2	1C	003	011	019	027	035	043
	4C	004	012	020	028	036	044
Low 1	1C	005	013	021	029	037	045
	4C	006	014	022	030	038	046
High	1C	007	015	023	031	039	047
	4C	008	016	024	032	040	048

Prev.

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SP MODES

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<Menu>

Select function or item.

<1>SP Adjustment

PAGE 12

PPC

AC

0777V

DC

-077 $\mu$ A

Discharge Plate Output

	Normal Paper	Thick Paper	Dplx: Face	Dplx: Back
	0333V	0334V	0335V	0336V

Toner Sensor Gain

	BK	Y	M	C
	077	078	079	080

Toner Sensor Control Target

	BK	Y	M	C
	0.01V	0.01V	0.01V	0.01V

Prev.

Next

Page	Item	Function	Note
<1> -8	<b>Transfer Roller Bias Coefficient By Humidity Range</b>	Sets the coefficient (%) for the transfer roller bias (normal humidity) for other humidity ranges.	<b>Do not adjust in the field.</b> Adjustable range: 0 ~ 255
		Default: <b>Normal Paper</b> Low3 1C: 108 / 4C: 113 Low1 1C: 133 / 4C: 139 <b>Thick Paper</b> Low3 1C: 109 / 4C: 103 Low1 1C: 127 / 4C: 118 <b>OHP-S</b> Low3 1C: 98 / 4C: 97 Low1 1C: 98 / 4C: 95 <b>OHP-L</b> Low3 1C: 98 / 4C: 100 Low1 1C: 98 / 4C: 97 <b>Normal - Back</b> Low3 1C: 117 / 4C: 108 Low1 1C: 157 / 4C: 128 <b>Thick - Back</b> Low3 1C: 110 / 4C: 108 Low1 1C: 131 / 4C: 127	Low2 1C: 121 / 4C: 122 High 1C: 77 / 4C: 71 Low2 1C: 116 / 4C: 110 High 1C: 84 / 4C: 71 Low2 1C: 98 / 4C: 95 High 1C: 93 / 4C: 97 Low2 1C: 98 / 4C: 97 High 1C: 95 / 4C: 100 Low2 1C: 138 / 4C: 116 High 1C: 84 / 4C: 71 Low2 1C: 118 / 4C: 115 High 1C: 68 / 4C: 70
<1> -12	PCC	Selects the PCC ac (V) and dc ( $\mu$ A) output.	Default: AC: 3180 V DC: -40 mA Adjustable range: AC: 2800 ~ 3800 V DC: -10 ~ -140 mA
	<b>Discharge Plate Output</b>	Adjusts the output voltage of the discharge plate for each paper mode.	<b>Do not change the setting in the field.</b> Default: Normal paper: 4000 V Thick paper: 3500 V Duplex: Face: 4000 V Duplex: Back: 4000 V
	Toner Sensor Gain	Manually changes the TD sensor gain data (VCNT Gain) determined during the developer's initial setting.	<b>Do not adjust in the field.</b>
	Toner Sensor Control Target	Manually changes the target voltage of the TD sensor output (VREF) during the developer's initial setting.	Default: 2.5 V (Bk, Y, M, C) Adjustable range: 0 ~ 5.0 V <b>Do not adjust in the field.</b>



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<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<1>SP Adjustment		PAGE 13	
Blank Margin			
Main Scan Lead Edge	+0.1mm	-	+
Trail Edge	+0.1mm	-	+
Sub Scan Lead Edge	+0.1mm	-	+
Trail Edge	+0.1mm	-	+
Max BK Level Detection 1 Target			
001			
Max BK Level Detection 2 Target			
	R-E	G-E	B-E
	001	001	001
	R-O	G-O	B-O
	001	001	001
		Prev.	Next

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<1>SP Adjustment		PAGE 14	
AD-Vref Target Voltage			
	Copier	FPU	
	0.1	0.1	
AD-Vref Coefficient (Shading)			
	Copier	FPU	
	001	001	
AD-Vref Coefficient (Data Mode)			
	R-E	G-E	B-E
Copier	001	001	001
	R-O	G-O	B-O
	001	001	001
FPU			
	R-E	G-E	B-E
	001	001	001
	R-O	G-O	B-O
	001	001	001
		Prev.	Next

Page	Item	Function	Note
<1> -13	Blank Margin	Adjusts the width of the margins at the edges of the copy paper. <b>Main Scan Lead Edge:</b> Adjusts the margin at the right edge of the copy paper. <b>Main Scan Trail Edge:</b> Adjusts the margin at the left edge of the copy paper. <b>Sub Scan Lead Edge:</b> Adjusts the margin at the leading edge of the copy paper. <b>Sub Scan Trail Edge:</b> Adjusts the margin at the trailing edge of the copy paper.	Adjustable range: Right edge: -5 ~ 5 mm Left edge: -5 ~ 5 mm Lead edge: -5 ~ 5 mm Trailing edge: -5 ~ 5 mm
	Max Bk Level Detection 1 Target	Adjusts the black level target (DA1) for the AGC.	Default:8 <b>Do not adjust in the field.</b>
	Max Bk Level Detection 2 Target	Adjusts the black level target (DA2) for the AGC.	Default:4 (R-E, G-E, B-E, R-O, G-O, B-O) <b>Do not adjust in the field.</b>
<1> -14	AD-Vref Target Voltage	Selects the AD-VREF target voltage to set the exposure lamp voltage in the AGC.	Default: Copier: 2.7 FPU: 2.7 <b>Do not adjust in the field.</b>
	AD-Vref Coefficient (Shading)	Selects the AD-VREF coefficient to prevent the overflow of white shading data.	Default data: Copier: 110 SPU: 110 <b>Do not adjust in the field.</b>
	AD-Vref Coefficient (Data Mode)	Factory use only (Gray balance adjustment)	<b>Do not adjust in the field.</b>
	Copier AD-Vref Coefficient (Data Mode) FPU	Factory use only.	R-E = 66 G-E = 60 B-E = 65 R-O = 66 G-O = 60 B-O = 65



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<1>SP Adjustment

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Exposure Lamp Voltage	<div>01</div>	
Vertical Line Alignment	Left	Right
	<div>01</div>	<div>01</div>
Lead Edge Registration (Scanning)	<div>0555</div>	
Side to Side Registration (Scanning)	<div>001</div>	
Scanner Motor Current Adjustment	<div>+001</div>	<div>-</div> <div>+</div>
Sub Scan Magnification Fine Adjustment	<div>+01</div>	<div>-</div> <div>+</div>
SP Adjustment Print Out	<div>Print</div>	

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<1>SP Adjustment

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Other SP Adjustments

1	<div>00257</div>	11	<div>00257</div>
2	<div>00257</div>	12	<div>00257</div>
3	<div>00257</div>	13	<div>00257</div>
4	<div>00257</div>	14	<div>00257</div>
5	<div>00257</div>	15	<div>00257</div>
6	<div>00257</div>	16	<div>00257</div>
7	<div>00257</div>	17	<div>00257</div>
8	<div>00257</div>	18	<div>00257</div>
9	<div>00257</div>	19	<div>00257</div>
10	<div>00257</div>	20	<div>00257</div>

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Page	Item	Function	Note
<1> -15	Exposure Lamp Voltage	Adjusts the exposure lamp input voltage during factory adjustment. This does not influence the exposure lamp input voltage during copying.	Default: 70 V Adjustable range: 50 ~ 75 V <b>Do not adjust in the field.</b>
	Vertical Line Alignment	Adjusts the YMCBk vertical line alignment at the sides of copies caused by the CCD board being not positioned perpendicularly to the light axis.	If the image alignment at the left side is incorrect, change this data. If the image alignment at the right side is incorrect, change this data.
	Lead Edge Registration (Scanning)	Adjusts the vertical image position by changing the start time of image reading in the subscan direction.	Default: 75 Adjustable range: 0 ~ 4095 <b>Do not adjust in the field.</b>
	Side to Side Registration (Scanning)	Adjusts the horizontal image position by changing the start time of image reading in the main scan direction.	Default: 155 Adjustable range: 0 ~ 255 <b>Do not adjust in the field.</b>
	Scanner Motor Current Adjustment	Adjust the scanner motor speed by changing the scanner motor current.	Motor current adjustment Default: 100 Fine adjustment Default: 0 <b>Do not adjust in the field.</b>
	Sub Scan Magnification Fine Adjustment	Adjust the scanner motor speed by changing the scanner motor current.	Motor current adjustment Default: 100 Fine adjustment Default: 0 <b>Do not adjust in the field.</b>
	<b>SP Adjustment Print Out</b>	Prints out the SP adjustment data.	
<1> -16	<b>Other SP Adjustments</b>	Only #13 is effective. #13: Select the humidity sensor function ON or OFF.	#13 default: 0 0: Humidity sensor ON 1: Humidity sensor OFF

### 1.2.2 [2] SP Test

SP MODES	Copy in SP	Index
<Menu> Select function or item.		
<2>SP Test		PAGE 1
Test Pattern Condition		
Test Pattern Level	001	
		Prev. Next

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<2>SP Test		PAGE 2	
Gradation Scale Condition	Set	Reset	
Border Erase	Yes	No	
Pattern Selection			
Main Scan	16Grad.	32Grad.	
Sub Scan	16Grad.	32Grad.	
Patch Pattern	128Grad.	256Grad.	
Test Pattern Condition	Set	Reset	
Pattern Selection			
1 Dot Main Scan Lines	2 Dot Main Scan Lines	1 Dot Sub Scan Lines	2 Dot Sub Scan Lines
Double Dot Grid Pattern	Alternating Dot Pattern	Full Dot Pattern	Solid Band Pattern
Trimming Area			
Prev.		Next	

Page	Item	Function	Note
<2> -1	Test Pattern Condition	Adjusts the laser power for the test pattern density for the 256 grades.	Default: 255 This function effects the test patterns in the bottom part of SP <2>-2.
<2> -2	Gradation Scale Condition	Enables the gray scale printing. <b>*Border Erase</b> Enables the creation of the white margin between the different density gray scales. <b>*Pattern Selection</b> Selects the kind of gray scales.	Default: Reset <b>*Border Erase</b> Default: No <b>*Pattern Selection</b> Access the "Copy in SP" mode and press the Start key to print the gray scales.
	Test Pattern Condition	Enables test pattern printing. <b>*Pattern Selection</b> Selects the type of test pattern.	Default: Reset If both test pattern and gradation scale are enabled, only the gradation pattern is printed. <b>*Pattern Selection</b> Access the "Copy in SP" mode and press the start key to print the test pattern.
	Pattern Selection	Selects the type of test pattern.	Access the "Copy in SP" mode and press the start key to print the test pattern.

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<2>SP Test		PAGE 3	
Forced Toner Supply Operation	BK Start	Stop	
	Y Start	Stop	
	M Start	Stop	
	C Start	Stop	
Toner Density Initial Setting	001	BK Start	Stop
	001	Y Start	Stop
	001	M Start	Stop
	001	C Start	Stop
	ALL Start	Stop	
Belt Cleaning	Start	Stop	
		Prev.	Next

Page	Item	Function	Note
<2> -3	Forced Toner Supply Operation	Factory use only	<b>Do not use in the field.</b>
	Toner Density Initial Setting	Starts and stops the toner density sensor's initial setting. Indicates the gain data of each color TD sensor. Both toner supply reference values of the TD sensor and the TD sensor gain value are set automatically when developer is replaced.	Do not make a copy with new developer before the initial developer setting. Do this without the toner tank installed. This mode is required when new developer is installed or the TD sensor is replaced. This mode automatically stops when completed.
	Belt Cleaning	Performs the transfer belt cleaning.	This mode must be performed after replacing the transfer belt. Belt cleaning automatically stops after about 10 seconds.



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<Menu>

Select function or item.

<2>SP Test

PAGE 4

Developer Collection BK	ON	OFF	
Y	ON	OFF	
M	ON	OFF	
C	ON	OFF	
Process Control SelfCheck	Start	Stop	
Potential Sensor Calibration	Start	Stop	
Input Check	Input:NO. 000	Data: 1	
Output Check	Output:NO. 000	Start	Stop
Charge Wire Cleaning	ON		

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Next

Page	Item	Function	Note
<2> -4	Developer Collection Bk	Starts and stops the developer collection.	The Bk or color development drive motor rotates and the selected color sleeve motor rotates forwards and reverse alternatively.
	Process Control Self Check	Starts and stops the process control self check.	Perform this mode when the following parts are replaced (or cleaned) Drum potential sensor/drum/charge corona wire, charge corona grid, and casing/lamps around the drum/developer/RAM etc. This mode should be performed with a drum not used for more than 5 minutes. This mode automatically stops after completing.
	Potential Sensor Calibration	Starts and stops the drum potential sensor calibration.	This mode should be performed with a drum not used for more than 5 minutes. This mode automatically stops after completing.
	Input Check (Note 1:)	Checks if the sensors or switches are correctly activated and de-activated.	Status 0 --- de-activated Status 1 --- activated
	Output Check (Note 2:)	Checks if the motors, solenoids, clutches etc. activate and de-activate.	Access this mode as follows: 1. Touch the output mode key. 2. Enter the electrical component number by using the number keys on the operation panel. 3. Touch the output mode key. Touch the start key to activate and touch the stop key to de- activate the electrical component.
	<b>Charge Wire Cleaning</b>	Starts the charge corona wire/grid cleaning.	This mode automatically stops after completing. The forced process control self check must be done immediately after this.

**Note 1:** Refer to Input Check Mode Table on page 4-60.

**Note 2:** Refer to Output Check Mode on page 4-63.

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<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">             &lt;Menu&gt;              Select function or item.           </div>			
<2>SP Test		PAGE 5	
SC Detection OFF Mode	Set	Reset	
Jam Detection OFF Mode	Set	Reset	
Printer Free Run	ON	OFF	
System Free Run	ON	OFF	
Scanner Free Run	ON	OFF	
Auto Shading Mode    Data Selection			
BK/W/D	Black	White	Data
Through			
Prev.		Next	

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">             &lt;Menu&gt;              Select function or item.           </div>			
<2>SP Test		PAGE 6	
AGC Start	Lamp Voltage	01V	
DA1	DA2	LR	Stop
DA3	DA2"	AGC	
VR Adjustment Mode	ON	OFF	
APS Data Confirmation			
1st Detection	00011100111		
2nd Detection	00011100110		
Prev.		Next	

Page	Item	Function	Note
<2> -5	SC Detection OFF Mode	Disables the self-diagnostic function.	Default: Reset (enable)
	Jam Detection OFF Mode	Disables jam detection (ON check).	Default: Reset (enable)
	Printer Free Run	Starts printer free run mode.	Paper is not fed in this mode.
	System Free Run	Starts system free run mode.	Paper is not fed in this mode. When using the system free run, close the platen cover or place white paper on the exposure glass to avoid toner scattering inside the machine.
	Scanner Free Run	Starts scanner free run mode.	Paper is not fed in this mode.
	Auto Shading Mode Data Selection	Separately performs the shading compensation sequence.	Factory use only
<2> -6	AGC Start Lamp Voltage	Separately performs the auto gain control sequence.	Factory use only
	VR Adjustment Mode	Turns on the exposure lamp.	Factory use only
	APS Data Confirmation	Checks if the original size sensors are correctly activated or de-activated at the 1st and 2nd detection.	Status 0 --- de-activated Status 1 --- activated

### 1.2.3 [3] SP Data Output

SP MODES

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<Menu>  
Select function or item.

<3>SP Data Output

PAGE 1

Fusing Temp.

Hot Roller Temp. 255°C

Pressure Roller Temp. 255°C

Potential Sensor Calibration Data

Coefficient: 999.9

Offset: -999.9

V1 9.99V

V2 9.99V

Humidity Sensor Output

Temperature 9.99V

Rel.Humidity 9.99V

Toner Density(TD Sensor)

[ Initial Setting ] [ Actual Data ]

	Vcnt0	Vref0	Vcnt	Vref	Vt
BK	255	9.99V	255	9.99V	9.99V
Y	255	9.99V	255	9.99V	9.99V
M	255	9.99V	255	9.99V	9.99V
C	255	9.99V	255	9.99V	9.99V

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SP MODES

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<Menu>  
Select function or item.

<3>SP Data Output

PAGE 2

Drum Potential Data

	Y0	VK0	VR	TABLE
BK	9.99	-999.9	999V	01
Y	9.99	-999.9	999V	01
M	9.99	-999.9	999V	01
C	9.99	-999.9	999V	01

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Page	Item	Function	Note
<3> -1	Fusing Temp.	Indicates the hot roller/pressure roller temperature based on the output of the thermistors.	
	Potential Sensor Calibration Data	Indicates the potential sensor calibration data.	V1: Potential sensor output at a drum potential of 300 V V2: Potential sensor output at a drum potential of 600 V
	<b>Humidity Sensor Output</b>	Indicates the humidity sensor output for the temperature and relative humidity.	
	Toner Density (TD Sensor)	Indicates values (VT, VREF, VCNT) relating to each color toner density sensor.	
<3> -2	<b>Drum Potential Data</b>	Indicates the drum potential data and the pointer table number determined during the process control self check.	

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<3>SP Data Output

PAGE 3

Drum Potential Control Output

		VD	VL	VB	Y	VK
BK	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----
Y	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----
M	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----
C	Target	9999	999	9999	9.99	+99.9
	Actual	9999	999	9999	----	----

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<3>SP Data Output

PAGE 4

BK Level DA1 Setting

BK Level DA2 Setting

Max BK Level Detection Data after AGC

	R-E	G-E	B-E	R-O	G-O	B-O
BK Level DA1 Setting	001	001	001	001	001	001
BK Level DA2 Setting	001	001	001	001	001	001
Max BK Level Detection Data after AGC	001	001	001	001	001	001

Vref DA3 Setting

Auto Y Correction Data

	BK	Y	M	C
L	99	99	99	99
M	99	99	99	99
H	99	99	99	99

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Page	Item	Function	Note
<3> -3	Drum Potential Control Output	Indicates the target and actual data related to process control.	VD: charge potential VL: exposed drum potential VB: development bias $\gamma$ : development gamma VK: development reference data
<3> -4	Bk Level DA1 Setting	Displays DA1 settings.	Factory use only
	Bk Level DA2 Setting	Displays DA2 settings.	Factory use only
	Max Bk Level Detection Data after AGC	Displays DA2* settings.	Factory use only
	Vref DA3 Setting	Displays DA3 settings.	Factory use only
	Auto $\gamma$ Correction Data	Indicates the correction data decided in auto $\gamma$ correction.	Indication only



## 1.2.4 [4] SP Special Feature

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<Menu> Select function or item.				
<4>SP Special Feature		PAGE 1		
Auto Process Control Selfcheck				
	PID	Reset		
Toner Supply Control Mode Selection				
	Fuzzy	PID	Fixed Supply	
Transfer Bias Humidity Selection				
Low 1	Low 2	Low 3	Normal	High
Auto $\gamma$ Correction Mode				
	ON	OFF		
Dev. Sleeve Cleaning Condition in ACS Mode				
	Each Original	20 Copies	40 Copies	
TC Correction				
	ON	OFF		
TC Correction Threshold				
	Set	Reset		
Wire Cleaner Operation				
	Set	Reset		
		Prev.	Next	

Page	Item	Function	Note
<4> -1	Auto Process Control Self check	Factory use only	"PID" setting must be used.
	Toner Supply Control Mode Selection	Selects toner supply mode.	Default: Fuzzy "Fuzzy" setting must be used.
	<b>Transfer Bias Humidity Selection</b>	Selects the output voltage for the transfer belt and the transfer roller bias that are used if the humidity sensor is not working properly. Use the setting that best approximates the machine's location.	Default: Normal This function is effective under the following conditions: 1. Humidity sensor is not working well: • Output is 0. • Temperature output is over 49°C or below 2°C. • Humidity output is over 98% or below 2%. 2. Humidity sensor is disconnected. 3. Humidity sensor function is disabled: SP<1>P.16 Other SP #13=1
	Auto $\gamma$ Correction Mode	Enable or disable the auto $\gamma$ correction mode.	Default: ON
	<b>Dev. Sleeve Cleaning Condition in ACS Mode</b>	Selects the interval of the development sleeve cleaning mode in ACS&DJF mode and black mode	Default: 40 copies
	<b>TC Correction</b>	Selects the TC correction (Vcnt correction) on or off.	Default: ON <b>Do not change the setting in the field.</b>
	<b>TC Correction Threshold</b>	Selects to use or not to use the threshold set in the SP "<1>-4 TC Correction Threshold".	Default: Reset <b>Do not change the setting in the field.</b>
	<b>Wire Cleaner Operation</b>	Enables/disables the automatic charge corona wire/grid cleaning operation.	Default: Set (Enabled)

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<4>SP Special Feature

PAGE 2

Printer  $\gamma$  Correction Data Rough Adjustment =Letter=

	[ BK ]		[ Y ]		[ M ]		[ C ]	
	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L	01	01	01	01	01	01	01	01
M	01	01	01	01	01	01	01	01
H	01	01	01	01	01	01	01	01
IDMAX	01	01	01	01	01	01	01	01

$\gamma$  Correction Data Registration
 

Save current data as a back-up

Save in Temporary Memory

Save in Permanent Memory

Recall the backed-up data

Recall from Temporary Memory

Recall from Permanent Memory

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<4>SP Special Feature

PAGE 3

Printer  $\gamma$  Correction Data Rough Adjustment =Photo=

	[ BK ]		[ Y ]		[ M ]		[ C ]	
	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L	01	01	01	01	01	01	01	01
M	01	01	01	01	01	01	01	01
H	01	01	01	01	01	01	01	01
IDMAX	01	01	01	01	01	01	01	01

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Page	Item	Function	Note
<4> -2	Printer $\gamma$ Correction Data Rough Adjustment =Letter=	Adjusts image density for each color in letter mode. (Letter mode rough adjustment)	<b>Do not change the STEP data in the field.</b> See section 5, color balance adjustment.
	$\gamma$ Correction Data Registration	Saves or recalls the printer g correction data for Letter & Photo rough adjustment and Letter & Printed Photo fine adjustment in the temporary memory or the permanent memory. *Saves current data as back-up Saves the current printer g correction data in the memory. *Recalls the back-up data Recalls the printer g correction data from the memory.	Factory settings for the printer g correction are kept in permanent memory. <ul style="list-style-type: none"> <li>• To keep the factory settings, do not use "Save in Permanent Memory", as long as the data has not been corrupted.</li> <li>• The current settings will be saved in the temporary memory automatically after performing the ACC.</li> <li>• "Recall from Temporary Memory" can be used to undo the last ACC.</li> </ul>
<4> -3	Printer $\gamma$ Correction Data Rough Adjustment =Photo=	Adjusts image density for each color in photo mode. (Photo mode rough adjustment)	<b>Do not change the STEP data in the field.</b> See section 5, color balance adjustment.

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<4>SP Special Feature

PAGE 4

Printer

Y

Correction Data

Fine Adjustment

=Printed Photo=

	BK	Y	M	C
L	01	01	01	01
M	01	01	01	01
H	01	01	01	01
IDMAX	01	01	01	01

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<4>SP Special Feature

PAGE 5

Printer

Y

Correction Data

Fine Adjustment

=Glossy Photo=

	BK	Y	M	C
L	01	01	01	01
M	01	01	01	01
H	01	01	01	01
IDMAX	01	01	01	01

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<4>SP Special Feature

PAGE 6

Printer  $\gamma$  Correction Data

Fine Adjustment

=Letter=

	BK	Y	M	C
L	01	01	01	01
M	01	01	01	01
H	01	01	01	01
IDMAX	01	01	01	01

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Page	Item	Function	Note
<4> -4	Printer $\gamma$ Correction Data Fine Adjustment =Printed Photo=	Adjusts each color image density (Letter mode fine adjustment)	<b>Do not adjust in the field.</b> Default: 5 for all
<4> -5	<b>Printer <math>\gamma</math> Correction Data Fine Adjustment =Glossy Photo=</b>	Not used. (Indication only)	Default: 5 for all
<4> -6	Printer $\gamma$ Correction Data Fine Adjustment =Letter=	Adjusts each color image density (Letter mode fine adjustment)	<b>Do not change the data in the field.</b> Default: 5 for all

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<4>SP Special Feature

PAGE 7

Printer

Y

Correction Data

Fine Adjustment

=Copied Photo=

	BK	Y	M	C
L	01	01	01	01
M	01	01	01	01
H	01	01	01	01
IDMAX	01	01	01	01

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<4>SP Special Feature

PAGE 8

Printer

Y

Correction Data

Fine Adjustment

=Map=

	BK	Y	M	C
L	01	01	01	01
M	01	01	01	01
H	01	01	01	01
IDMAX	01	01	01	01

Scanner Y Correction Data

	R	G	B
	01	01	01

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Page	Item	Function	Note
<4> -7	<b>Printer <math>\gamma</math> Correction Data Fine Adjustment =Copied Photo=</b>	Not used. (Indication only)	Default: 5 for all
<4> -8	<b>Printer <math>\gamma</math> Correction Data Fine Adjustment =Map=</b>	Not used. (Indication only)	Default: 5 for all
	<b>Scanner <math>\gamma</math> Correction Data</b>	Not used. (Indication only)	Default: 75 for all









SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<4>SP Special Feature		PAGE 9	
Coin Lock Connection	<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">Type 1</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">Type 2</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">No</div>		
Key Card Count Timing	<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">Paper Feed</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">Paper Exit</div>		
Set User Code(s)	<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">ON</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">OFF</div>		
Count Up/Down	<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">UP</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">DOWN</div>		
A3/DLT Double Count	<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">ON</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">OFF</div>		
Service Telephone No.	<div style="display: inline-block; border: 1px solid black; padding: 2px 20px;">0188-33-8795</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">—</div>		
Length Unit	<div style="display: inline-block; border: 1px solid black; padding: 2px 10px;">mm</div> <div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-left: 10px;">inch</div>		
<div style="float: right; text-align: right;"> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div> </div>			

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<4>SP Special Feature		PAGE 10	
RDM Version			
System 1	A1727411		
System 2	A1727411		
Scanner 1	A1727411		
Scanner 2	A1727411		
IPU	A1727411		
Operation Panel	A1727411		
Transfer Belt	A1727411		
FPU	A1727411		
APL	A1727411		
<div style="float: right; text-align: right;"> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div> </div>			

Page	Item	Function	Note
<4> -9	<b>Coin Lock Connection</b>	Not used.	Default: No
	<b>Key Card Count Timing</b>	Not used.	Default: Paper Exit
	Set User Code(s)	Enables user code mode.	Default: OFF The key counter shorting connector should be disconnected to enable user code mode.
	<b>ADS Priority</b>	Not used.	
	Count Up/Down	Selects copy count up or down.	Default: UP
	A3/DLT Double Count	Counts twice when an A3 or 11" x 17" copy is made.	Defaults: OFF
	Service Telephone No.	Stores the service center telephone number. This telephone number is indicated on the LCD when a service call condition occurs or PM is required.	Entering procedure: 1. Touch <input type="text" value="0000000000000000"/> key. 2. Enter numbers by pressing the number keys. (touch <input type="text" value="-"/> to enter a hyphen). 3. Touch <input type="text" value="0000000000000000"/> key.
	<b>Length Unit</b>	Changes the length unit (mm or inches) for Shift, Erase, Size Mag. and Non Standard Original.	Default: inch (-10/15/17) mm (-22/26/27/29)
<4> -10	ROM Version	Indicates the ROM reference number, with suffix, on each PCB.	System 1: Main control IC1 System 2: Main control IC522 Scanner 1: Scanner control IC145 Scanner 2: Scanner control IC144 IPU: IC305 Operation Panel: IC1 Transfer Belt: Transfer belt motor drive IC609 FPU: --- APL: ---

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<4>SP Special Feature PM Counter		PAGE 11	
Set	<div style="border: 1px solid black; width: 100px; height: 20px; line-height: 20px; margin: 0 auto;">77777</div>		
Count	99999 <div style="border: 1px solid black; width: 100px; height: 20px; line-height: 20px; margin: 5px auto; text-align: center;">Clear</div>		
		<div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-right: 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div>	

SP MODES		Copy in SP	Index																					
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>																								
<4>SP Special Feature Tray Paper Size Setting		PAGE 12																						
3rd Feed	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 25px; height: 25px;"></td> <td style="width: 40px;">A3</td> <td style="width: 40px;">B4</td> <td style="width: 80px;">8½ x 13</td> <td style="width: 80px;">8½ x 14</td> <td style="width: 80px;">8½ x 11</td> <td style="width: 80px;">8 x 10½</td> </tr> <tr> <td style="width: 25px; height: 25px;"></td> <td>A4</td> <td>B5</td> <td>10 x 14</td> <td>11 x 17</td> <td>5½ x 8½</td> <td></td> </tr> <tr> <td></td> <td>A5</td> <td></td> <td>8¼ x 13</td> <td>11 x 15</td> <td>8 x 13</td> <td>8 x 10</td> </tr> </table>				A3	B4	8½ x 13	8½ x 14	8½ x 11	8 x 10½		A4	B5	10 x 14	11 x 17	5½ x 8½			A5		8¼ x 13	11 x 15	8 x 13	8 x 10
	A3	B4	8½ x 13	8½ x 14	8½ x 11	8 x 10½																		
	A4	B5	10 x 14	11 x 17	5½ x 8½																			
	A5		8¼ x 13	11 x 15	8 x 13	8 x 10																		
		<div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-right: 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div>																						

Page	Item	Function	Note
<4> -11	PM Counter	Selects the PM alarm interval after counter clear.	If you do not use the PM alarm, set this to "0". Default: 0
<4> -12	Tray Paper Size Setting	Selects the paper size and direction of the 3rd paper feed station.	

## 1.2.5 [5] Jam/SC Counter

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<5>Jam/SC Counter		PAGE 1	
Total SC	013		
SC300	1 1 1		
SC301	1 1 2		
SC302	1 1 3		
SC303	1 1 4		
SC304	1 1 5		
SC305	1 1 6		
SC306	1 1 7		
SC307	1 1 8		
SC308	1 1 9		
SC309	1 2 0		
SC310	1 2 1		
SC311	1 2 2		
		<div>↑</div> <div>↓</div>	
		Prev.	Next

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<5>Jam/SC Counter		PAGE 2	
Jam Counter			
Total Jams		0 0 0 0 1	
Registration (B)		0 0 0 0 2	
Transport (C)		0 0 0 0 2	
Fusing/Exit (D)		0 0 0 0 2	
Sorter (R)		0 0 0 0 2	
Vertical Transport (A)		0 0 0 0 2	
Paper Feed 1st Feed		0 0 0 0 3	
2nd Feed		0 0 0 0 3	
3rd Feed		0 0 0 0 3	
By-pass Feed		0 0 0 0 3	
Duplex: Face Side		0 0 0 0 3	
Duplex: Back Side		0 0 0 0 3	
ADF (P)		0 0 0 0 4	
		SC/Jam Counter Print Out <div>Print</div>	
		Prev.	Next

Page	Item	Function	Note
<5> -1	Total SC	Indicates the total number of service calls for each SC code.	See section 6 for details on each SC code. SCs that have not occurred at least once are not displayed.
<5> -2	Jam Counter	Indicates the total number of jams which have occurred in the copier and all peripherals.	
	<b>SC/Jam Count Print Out</b>	Prints out all the SC/Jam counters.	A4 sideways/11" x 8 1/2" or A3/11" x 17" paper should be loaded in the tray or the by-pass feed table.

## 1.2.6 [6] Operation Counter

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<6>Operation Counter		PAGE 1	
Original Counter			
TOTAL	111111		
FC	111111		
BK	111111		
Twin Color	111111		
SC	111111		
Copy Counter			
TOTAL	222222		
FC	222222		
BK	222222		
Twin Color	222222		
SC	222222		
		Prev.	Next

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<6>Operation Counter		PAGE 2	
Copies by Color Mode			
ACS	333333		
FC	333333		
BK	333333		
Twin Color	333333		
Single Color: Standard Color	333333		
Single Color: User Color	333333		
Single Color: Scan Color	333333		
Development Counter			
TOTAL	444444		
BK	444444		
Y	444444		
M	444444		
C	444444		
		Prev.	Next

SP MODES
Copy in SP
Index

<Menu>  
 Select function or item.

<6> Operation Counter
PAGE 3

**Original Mode**

Auto	555555
Printed Photo	555555
Glossy Photo	555555
Letter	555555
Copied Photo	555555
Map	555555

**Copies by Paper Size**

A3 (11 x 17)	666666
A4 (8½ x 11)	666666
A5 (5½ x 8½)	666666
B4	666666
B5	666666
Others	666666

Prev.
Next

Page	Item	Function	Note
<6>-1	Original Counter	Indicates the total number of originals that have been copied in each color mode.	
	Copy Counter	Indicates the total number of scans, broken down by copy mode.	Count up method is the same as that for mechanical counters. Twin Color and SC (Single Color) counters are not used.
<6>-2	<b>Copies by Color Mode</b>	Indicates the total number of copies, broken down by color mode.	
	Development Counter	Indicates the total number of developments which have occurred for each color since the last Counter All Clear or Operation Counter Clear was performed.	
<6>-3	Original Mode	Indicates the total number of copies broken down by original mode.	
	Copies by Paper Size	Indicates the total number of copies broken down by paper size.	



SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<6>Operation Counter		PAGE 4	
Copies by Paper Feed			
1st Feed	777777		
2nd Feed	777777		
3rd Feed	777777		
By-pass Feed Total	777777		
Normal: Face Side	777777		
Normal: Duplex: Back Side	777777		
Thick Paper	777777		
Thick: Face Side	777777		
Thick: Duplex: Back Side	777777		
OHP	777777		
Non-standard Paper	777777		
APS	888888		
<div style="display: flex; justify-content: flex-end; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div> </div>			

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<6>Operation Counter		PAGE 5	
Copies by Magnification			
Full Size	777777		
Reduce	777777		
Enlarge	777777		
AMS	777777		
Copies by Magnification Mode			
Size Mag.	777777		
Direct Mag.	777777		
Poster Mode	777777		
Non-standard Original	000000		
Operating Time	777777		
<div style="display: flex; justify-content: flex-end; gap: 10px;"> <div style="border: 1px solid black; padding: 2px 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div> </div>			

SP MODES
Copy in SP
Index

<Menu>  
 Select function or item.

<6>Operation Counter
PAGE 6

Shift
 

Center/Corner

777777

Margin Adj.

777777

Erase
 

Erase Center

777777

Erase Border

777777

Cent. / Bord.

777777

Single Copies
 

888888

Color Creation: Whole Image
 

Color Conv.

777777

Color Erase

777777

Clr Backgrnd

777777

Prev.

Next

Page	Item	Function	Note
<6> -4	Copies by Paper Feed	Indicates the total number of copies broken down by paper feed station.	
	APS	Indicates the total number of copies made in APS mode.	
<6> -5	Copies by Magnification	Indicates the total number of copies broken down by magnification range.	
	AMS	Indicates the total number of copies made in AMS mode.	
	<b>Non-standard Original</b>	Indicates the total number of non-standard originals.	
	Operating Time	Indicates the total operation time.	Unit: Hours
<6> -6	Shift	Indicates the total number of copies made in Centering/Cornering and Margin Adjustment modes.	
	Erase	Indicates the total number of copies broken down by erase mode.	
	Single Copies	Indicates the total number of copies made in Series copy mode.	

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<6>Operation Counter Image Creation		PAGE 7	
Outline Pos./Neg. Shadow Mirror Slanted (Image)Repeat Image Overlay	<div style="border: 1px solid black; padding: 5px; margin: 0 auto; width: 100px;">           777777            777777            777777            777777            777777            777777            777777         </div>		
<div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-right: 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div>			

SP MODES		Copy in SP	Index
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">           &lt;Menu&gt;            Select function or item.         </div>			
<6>Operation Counter Color / Image Adjustment		PAGE 8	
Color Balance Adj. Color Balance Sample Color Adjustment Sharp/Soft Contrast Background Dens. Pastel UCR Adjustment ACS Adjustment Letter / Photo Adjustment	<div style="border: 1px solid black; padding: 5px; margin: 0 auto; width: 100px;">           777777            777777            777777            777777            777777            777777            777777            777777            777777            777777         </div>		
Color Editing  ACC Repeat Number	<div style="border: 1px solid black; padding: 5px; margin: 0 auto; width: 100px;">           777777              777777         </div>		
<div style="display: inline-block; border: 1px solid black; padding: 2px 10px; margin-right: 10px;">Prev.</div> <div style="border: 1px solid black; padding: 2px 10px;">Next</div>			

Page	Item	Function	Note
<6> -7	Image Creation	Indicates the total number of copies made in image creation modes.	
<6> -8	Color Creation: Whole Image	Indicates the total number of copies broken down by color creation mode used for the whole copy image.	
	Color/Image Adjustment	Indicates the total number of copies made with color Image adjustment modes.	
	Color Editing	Indicates the total number of copies made with the area editing mode.	

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<6>Operation Counter		PAGE 9	
Shapes of Area			
Rectangle	777777		
R.A.Polygon	777777		
Polygon	777777		
Closed Loop	777777		
Line	777777		
Special Accessory			
Projector	888888		
DJF	888888		
Sorter	888888		
Printer	777777		
Scanner	777777		
		Prev.	Next

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<6>Operation Counter		PAGE 10	
Electronic Counter Setting			
FC Counter	0777777		
BK Counter	0888888		
Operation Counter Print Out			
<div style="border: 1px solid black; display: inline-block; padding: 5px 20px;">Print</div>			
		Prev.	Next

Page	Item	Function	Note
<6> -9	Area Shapes	Indicates the total number of editing areas broken down by area shape.	
	Special Accessory	Indicates the total number of copies for each peripheral.	
<6> -10	<b>Electronic Counter Setting</b>	Not used.	
	Operation Counter Print Out	Prints out all the operation counters.	A4 sideways/11" x 8 1/2" or A3/11" x 17" paper should be loaded in the tray or the by-pass feed table.

## 1.2.7 [7] Counter Clear

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<7>Counter Clear		PAGE 1	
Counter All Clear	Clear		
Operation Counter Clear	Clear		
		Prev.	Next

SP MODES		Copy in SP	Index
<Menu> Select function or item.			
<7>Counter Clear		PAGE 2	
Jam/SC Counter			
Jam/SC All Clear	Clear		
Jam Coounter Clear	Clear		
SC Counter Clear	Clear		
		Prev.	Next

Page	Item	Function	Note
<7> -1	Counter All Clear	Clears all counters	Procedure: 1. Touch the clear key. 2. The display asks Yes or No. If you are sure you want to clear, touch Yes. If you do not want to clear, touch No.
	Operation Counter Clear	Clears all operation counters	
<7> -2	Jam/SC Counter	Clears all jam and SC counters	
		Clears all jam counters	
		Clears all SC counters	



## 1.2.8 [8] Printer

SP MODES

Copy in SP

Index

<Menu>  
Select function or item.

<8>Printer

PAGE 1

Printer Y Correction Data Rough Adjustment =Halftone=

	[ BK ]		[ Y ]		[ M ]		[ C ]	
	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L	01	01	01	01	01	01	01	01
M	01	01	01	01	01	01	01	01
H	01	01	01	01	01	01	01	01
IDMAX	01	01	01	01	01	01	01	01

Y Correction Data Registration

Save current data as a back-up

Save in Temporary Memory

Recall the backed-up data

Recall from Temporary Memory

Recall the Default Data

Prev.

Next

SP MODES

Copy in SP

Index

<Menu>  
Select function or item.

<8>Printer

PAGE 2

Printer Y Correction Data Rough Adjustment =Contone=

	[ BK ]		[ Y ]		[ M ]		[ C ]	
	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L	01	01	01	01	01	01	01	01
M	01	01	01	01	01	01	01	01
H	01	01	01	01	01	01	01	01
IDMAX	01	01	01	01	01	01	01	01

Prev.

Next

Page	Item	Function	Note
<8> -1	Printer $\gamma$ Correction Dat. Rough Adjustment =Halftone=	Adjusts each color's image density. (Halftone mode rough adjustment)	<b>Do not change the STEP values in the field.</b>
	$\gamma$ <b>Correction Data Registration</b>	Saves or recalls the printer g correction data for Halftone & Contone rough adjustment and Halftone & Contone fine adjustment in the temporary memory or the permanent memory. <b>*Saves current data as back-up</b> Saves the current printer g correction data in the temporary memory. <b>*Recalls the back-up data</b> Recalls the printer g correction data from the memory.	The printer g correction for the printer function is not adjusted at the factory. The default data is kept in memory and this cannot be overwritten. <ul style="list-style-type: none"> <li>• The current settings will be saved in the temporary memory automatically after performing the ACC.</li> <li>• "Recall from Temporary Memory" can be used to undo the last ACC.</li> </ul>
<8> -2	Printer $\gamma$ Correction Dat. Rough Adjustment =Contone=	Adjusts each color's image density. (Contone mode rough adjustment)	<b>Do not change the STEP values in the field.</b>

SP MODES

Copy in SP

Index

<Menu>

Select function or item.

<8>Printer

PAGE 3

Printer Y Correction Data Fine Adjustment =Halftone=

	BK	Y	M	C
L	01	01	01	01
M	01	01	01	01
H	01	01	01	01
IDMAX	01	01	01	01

Prev.

Next

SP MODES

Copy in SP

Index

<Menu>

Select function or item.

<8>Printer

PAGE 4

Printer Y Correction Data Fine Adjustment =Contone=

	BK	Y	M	C
L	01	01	01	01
M	01	01	01	01
H	01	01	01	01
IDMAX	01	01	01	01

Prev.

Next

SP MODES

Copy in SP

Index

<Menu>

Select function or item.

<8>Printer

Printer: User Limitation

PAGE 5

ON

OFF

Prev.

Next

Page	Item	Function	Note
<8> -3	Printer $\gamma$ Correction Dat. Fine Adjustment =Halftone=	Adjusts each color image density. (Halftone mode fine adjustment)	<b>Do not adjust in the field.</b>
<8> -4	Printer $\gamma$ Correction Dat. Fine Adjustment =Contone=	Adjusts each color image density. (Contone mode fine adjustment)	<b>Do not adjust in the field.</b>
<8> -5	Printer: User Limitation	Limits users from the remote terminal.	Default: OFF <b>Do not change the setting when connected to the Fiery Controller.</b>

## 1.2.9 [10] Special Mode Program

SP MODES		Index
<Menu> Select function or item.		
<10>Special Mode Program		PAGE 1
Select desired function button. The setting will be overwritten.		
Copier Special Mode	Special Mode1	Special Mode2
Printer Special Mode	Special Mode3	



Rev. 1/10/97

Page	Item	Function	Note																				
<10> -1	<b>Copier Special Mode</b>	<p>Sets the following items for Copier Special Mode 1 and 2.</p> <p><b>&lt;1&gt;SP Adjustment</b></p> <p>-1: Lead Edge Registration (Printing)</p> <p>-1: Paper Feed Timing</p> <p>-2: Paper Feed Timing: By-pass</p> <p>-3: Face side Fusing Temp.</p> <p>-3: Back side Fusing Temp.</p> <p>-7: Transfer Roller Bias (Normal Humidity)</p> <p>-8: Transfer Roller Coefficient by Humidity Range</p> <p>*1 Change the setting from "0" to "4" for "Thick 2nd Feed" in SP &lt;1&gt;-2 By-pass Feed in order to ensure feeding of very thick paper in Special Mode 1.</p> <p><b>&lt;4&gt;SP Special Features</b></p> <p>-2: Printer g Correction Data Rough Adjustment =Letter=</p> <p>-3: Printer g Correction Data Rough Adjustment =Photo=</p> <p>-4: Printer g Correction Data Fine Adjustment =Printed Photo=</p> <p>-5: Printer g Correction Data Fine Adjustment =Glossy Photo=</p> <p>-6: Printer g Correction Data Fine Adjustment =Letter=</p> <p>*2 Printer γ correction data in this mode is independent from that in the standard mode. (ACC results will not be reflected.)</p>	<p>This special mode should be used for user's special application paper which does not have good copy quality with standard settings.</p> <p>"&lt;4&gt;-5: Printer g Correction Data Fine Adjustment = Glossy Photo=" is not effective (indication only).</p> <p>Special Mode 1 has the following default for very thick paper (about 200 g/m2):</p> <p>&lt;1&gt;-7: Transfer Roller Bias (Normal Humidity)</p> <p>Normal Paper</p> <table><tr><td>1C: 1200</td><td>2C: 1500</td></tr><tr><td>3C: 1800</td><td>4C-L&amp;P: 1500</td></tr></table> <p><b>Thick Paper</b></p> <table><tr><td><b>1C: 1360</b></td><td><b>2C: 1500</b></td></tr><tr><td><b>3C: 1800</b></td><td><b>4C-L&amp;P: 1500</b></td></tr></table> <p>OHP: S&amp;L</p> <table><tr><td>1C: 2020</td><td>2C: 2080</td></tr><tr><td>3C: 2370</td><td>4C-L&amp;P: 2080</td></tr></table> <p>Normal: Back</p> <table><tr><td>1C: 1200</td><td>2C: 1700</td></tr><tr><td>3C: 1980</td><td>4C-L&amp;P: 1700</td></tr></table> <p><b>Thick: Back</b></p> <table><tr><td><b>1C: 1600</b></td><td><b>2C: 1830</b></td></tr><tr><td><b>3C: 2130</b></td><td><b>4C-L&amp;P: 1830</b></td></tr></table>	1C: 1200	2C: 1500	3C: 1800	4C-L&P: 1500	<b>1C: 1360</b>	<b>2C: 1500</b>	<b>3C: 1800</b>	<b>4C-L&amp;P: 1500</b>	1C: 2020	2C: 2080	3C: 2370	4C-L&P: 2080	1C: 1200	2C: 1700	3C: 1980	4C-L&P: 1700	<b>1C: 1600</b>	<b>2C: 1830</b>	<b>3C: 2130</b>	<b>4C-L&amp;P: 1830</b>
	1C: 1200	2C: 1500																					
3C: 1800	4C-L&P: 1500																						
<b>1C: 1360</b>	<b>2C: 1500</b>																						
<b>3C: 1800</b>	<b>4C-L&amp;P: 1500</b>																						
1C: 2020	2C: 2080																						
3C: 2370	4C-L&P: 2080																						
1C: 1200	2C: 1700																						
3C: 1980	4C-L&P: 1700																						
<b>1C: 1600</b>	<b>2C: 1830</b>																						
<b>3C: 2130</b>	<b>4C-L&amp;P: 1830</b>																						
	<b>Printer Special Mode</b>	<p>Sets the following items for Printer Special Mode 3.</p> <p><b>&lt;1&gt;SP Adjustment</b></p> <p>-1: Lead Edge Registration (Printing)</p> <p>-1: Paper Feed Timing</p> <p>-2: Paper Feed Timing: By-pass</p> <p>-3: Face side Fusing Temp.</p> <p>-3: Back side Fusing Temp.</p> <p>-7: Transfer Roller Bias (Normal Humidity)</p> <p>-8: Transfer Roller Coefficient by Humidity Range</p>	<p>This special mode should be used for user's special application paper (Printer mode) which does not have good copy quality with standard settings.</p>																				

### 1.2.10 Input Check Mode Table

- NOTE:**
- Input numbers written in ***bold italic letters with an asterisk ("\*)*** are newly added items to the base copier (A109).
  - Underlined input number items are the same as the base copier (A109) but with a different input number.

Input No.	Sensor/Switch/Signal	Status	
		0	1
1	Charge corona leak detection	Not detected	Detected
2	PCC leak detection	Not detected	Detected
3	Development bias leak detection	Not detected	Detected
4	Bk-Development drive motor lock detection	Not monitoring	Monitoring (Motor rotating)
5	Color-Development drive motor lock detection	Not monitoring	Monitoring (Motor rotating)
6	Drum motor lock detection	Not monitoring	Monitoring (Motor rotating)
7	Transport motor lock detection	Not monitoring	Monitoring (Motor rotating)
8	Cleaning motor lock detection	Not monitoring	Monitoring (Motor rotating)
9	Polygon motor lock detection	Not monitoring	Monitoring (Motor rotating)
10	Bk-Sleeve motor abnormal detection	Not monitoring	Monitoring (Motor rotating)
11	Y-Sleeve motor abnormal detection	Not monitoring	Monitoring (Motor rotating)
12	M-Sleeve motor abnormal detection	Not monitoring	Monitoring (Motor rotating)
13	C-Sleeve motor abnormal detection	Not monitoring	Monitoring (Motor rotating)
14	Paper feed motor lock detection	Not monitoring	Monitoring (Motor rotating)
15	Paper discharge leak detection	Not detected	Detected
16	By-pass feed table sensor	Closed	Open
17	Front door safety switches	Closed	Open
18	LD power supply OFF detection	Not detected	Detected
19	Vertical transport set switches	Closed	Open
<b>20*</b>	Bk - Toner end sensor	Not end	End
<b>21*</b>	Y - Toner end sensor	Not end	End
<b>22*</b>	M - Toner end sensor	Not end	End
<b>23*</b>	C - Toner end sensor	Not end	End
<u>24</u>	Toner overflow sensor	Not full	Full
<u>25</u>	Registration guide set sensor	Set	Not set
<u>26</u>	Oil end sensor	Not end	End

Input No.	Sensor/Switch/Signal	Status	
		0	1
<u>27</u>	By-pass paper end sensor	Paper detected	Paper not detected
<u>28</u>	1st paper end sensor	Paper detected	Paper not detected
<u>29</u>	2nd paper end sensor	Paper detected	Paper not detected
<u>30</u>	3rd paper end sensor	Paper detected	Paper not detected
<u>31</u>	Transfer belt position sensor	Release	Touch
<u>32</u>	Transfer roller position sensor	Release	Touch
<u>33</u>	1st lift sensor	Not lifted	Lifted
<u>34</u>	2nd lift sensor	Not lifted	Lifted
<u>35</u>	3rd lift sensor	Not lifted	Lifted
<u>36</u>	1st paper feed sensor	Paper not detected	Paper detected
<u>37</u>	2nd paper feed sensor	Paper not detected	Paper detected
<u>38</u>	3rd paper feed sensor	Paper not detected	Paper detected
<u>39</u>	Registration sensor	Paper not detected	Paper detected
<u>40</u>	Transport sensor	Paper not detected	Paper detected
<u>41</u>	Exit sensor	Paper not detected	Paper detected
<u>42</u>	1st paper size switch-1	Actuated	Not actuated
<u>43</u>	1st paper size switch-2	Actuated	Not actuated
<u>44</u>	1st paper size switch-3	Actuated	Not actuated
<u>45</u>	1st paper size switch-4	Actuated	Not actuated
<u>46</u>	1st paper size switch-5	Actuated	Not actuated
<b>47*</b>	2nd paper size switch-1	Actuated	Not actuated
<b>48*</b>	2nd paper size switch-2	Actuated	Not actuated
<b>49*</b>	2nd paper size switch-3	Actuated	Not actuated
<b>50*</b>	2nd paper size switch-4	Actuated	Not actuated
<b>51*</b>	2nd paper size switch-5	Actuated	Not actuated
<u>52</u>	By-pass paper size-1	Grounded (Low)	Not grounded (High)
<u>53</u>	By-pass paper size-2	Grounded (Low)	Not grounded (High)
<u>54</u>	By-pass paper size-3	Grounded (Low)	Not grounded (High)
<u>55</u>	By-pass paper size-4	Grounded (Low)	Not grounded (High)
<u>56</u>	3rd tray set switch	Not set	Set



Input No.	Sensor/Switch/Signal	Status	
		0	1
<u>57</u>	By-pass length sensor	Paper not detected	Paper detected
<u>58</u>	Sorter connection detection	Not connected	Connected
<b>59*</b>	Toner tank set detection	Set	Not set
<b>201*</b>	Scanner H.P. sensor	Not actuated	Actuated (at H.P.)
<b>202*</b>	Platen cover position sensor	Not actuated	Actuated (Closed)
<b>203*</b>	DF position sensor	Not actuated	Actuated (Closed)

### 1.2.11 Output Check Mode Table

- NOTE:**
- Output numbers written in ***bold italic letters with an asterisk*** ("***\****") are newly added items to the base copier (A109).
  - Underlined output number items are the same as the base copier but with a different output number (A109).

**NOTE:** The motors keep turning in this mode regardless of the upper or lower limit sensor signal. Do not keep the electrical component on for a long time, to prevent mechanical or electrical damage.

Output No.	Electrical Component
1	Charge corona with grid - Bk
2	Charge corona with grid - C
3	Charge corona with grid - M
4	Charge corona with grid - Y
5	Development bias - Bk
6	Development bias - C
7	Development bias - M
8	Development bias - Y
<b>9*</b>	Transfer belt bias - 1C
<b>10*</b>	Transfer belt bias - 2C / 1st color
<b>11*</b>	Transfer belt bias - 2C / 2nd color
<b>12*</b>	Transfer belt bias - 3C / 1st color
<b>13*</b>	Transfer belt bias - 3C / 2nd color
<b>14*</b>	Transfer belt bias - 3C / 3rd color
<u>15</u>	Transfer belt bias - 4C / 1st color
<u>16</u>	Transfer belt bias - 4C / 2nd color
<u>17</u>	Transfer belt bias - 4C / 3rd color
<u>18</u>	Transfer belt bias - 4C / 4th color
<b>19*</b>	Transfer belt bias (Back side) - 1C
<b>20*</b>	Transfer belt bias (Back side) - 2C / 1st color
<b>21*</b>	Transfer belt bias (Back side) - 2C / 2nd color
<b>22*</b>	Transfer belt bias (Back side) - 3C / 1st color
<b>23*</b>	Transfer belt bias (Back side) - 3C / 2nd color
<b>24*</b>	Transfer belt bias (Back side) - 3C / 3rd color
<b>25*</b>	Transfer belt bias (Back side) - 4C / 1st color
<b>26*</b>	Transfer belt bias (Back side) - 4C / 2nd color
<b>27*</b>	Transfer belt bias (Back side) - 4C / 3rd color
<b>28*</b>	Transfer belt bias (Back side) - 4C / 4th color
<u>29</u>	PCC
<u>30</u>	Drum cleaning bias (BR)
<u>31</u>	Transfer roller bias - Normal paper - 1C
<u>32</u>	Transfer roller bias - Normal paper - 2C
<u>33</u>	Transfer roller bias - Normal paper - 3C
<b>34*</b>	Transfer roller bias - Normal paper - 4C (Letter)

<b>Output No.</b>	<b>Electrical Component</b>
<b>35*</b>	Transfer roller bias - Normal paper - 4C (Photo)
<b>36*</b>	Transfer roller bias - OHP (Lengthwise) - 1C
<b>37*</b>	Transfer roller bias - OHP (Lengthwise) - 2C
<b>38*</b>	Transfer roller bias - OHP (Lengthwise) - 3C
<b>39*</b>	Transfer roller bias - OHP (Lengthwise) - 4C (Letter)
<b>40*</b>	Transfer roller bias - OHP (Lengthwise) - 4C (Photo)
<b>41</b>	Transfer roller bias - OHP (Sideways) - 1C
<b>42</b>	Transfer roller bias - OHP (Sideways) - 2C
<b>43</b>	Transfer roller bias - OHP (Sideways) - 3C
<b>44*</b>	Transfer roller bias - OHP (Sideways) - 4C (Letter)
<b>45*</b>	Transfer roller bias - OHP (Sideways) - 4C (Photo)
<b>46</b>	Transfer roller bias - Thick Paper - 1C
<b>47</b>	Transfer roller bias - Thick Paper - 2C
<b>48</b>	Transfer roller bias - Thick Paper - 3C
<b>49*</b>	Transfer roller bias - Thick Paper - 4C (Letter)
<b>50*</b>	Transfer roller bias - Thick Paper - 4C (Photo)
<b>51*</b>	Transfer roller bias - Normal Paper (Back side) - 1C
<b>52*</b>	Transfer roller bias - Normal Paper (Back side) - 2C
<b>53*</b>	Transfer roller bias - Normal Paper (Back side) - 3C
<b>54*</b>	Transfer roller bias - Normal Paper (Back side) - 4C (Letter)
<b>55*</b>	Transfer roller bias - Normal Paper (Back side) - 4C (Photo)
<b>56*</b>	Transfer roller bias - Thick Paper (Back side) - 1C
<b>57*</b>	Transfer roller bias - Thick Paper (Back side) - 2C
<b>58*</b>	Transfer roller bias - Thick Paper (Back side) - 3C
<b>59*</b>	Transfer roller bias - Thick Paper (Back side) - 4C (Letter)
<b>60*</b>	Transfer roller bias - Thick Paper (Back side) - 4C (Photo)
<b>61</b>	Discharge plate bias - Normal paper
<b>62*</b>	Discharge plate bias - OHP
<b>63*</b>	Discharge plate bias - Thick paper
<b>64*</b>	Discharge plate bias - Normal paper (Back side)
<b>65*</b>	Discharge plate bias - Thick paper (Back side)
<b>66</b>	Transfer belt motor (180 mm/sec)
<b>67</b>	Transfer belt motor (90mm/sec)
<b>68</b>	Bk-Development drive motor
<b>69</b>	Color development drive motor
<b>70</b>	Drum motor - Forward
<b>71</b>	Drum motor - Reverse
<b>72</b>	Cleaning motor
<b>73</b>	Polygon motor
<b>74</b>	Bk-Sleeve motor - Forward
<b>75</b>	Bk-Sleeve motor - Reverse
<b>76</b>	Y-Sleeve motor - Forward
<b>77</b>	Y-Sleeve motor - Reverse

Output No.	Electrical Component
<u>78</u>	M-Sleeve motor - Forward
<u>79</u>	M-Sleeve motor - Reverse
<u>80</u>	C-Sleeve motor - Forward
<u>81</u>	C-Sleeve motor - Reverse
<u>82</u>	Y-Toner supply motor - Forward
<u>83</u>	Y-Toner supply motor - Reverse
<u>84</u>	M-Toner supply motor - Forward
<u>85</u>	M-Toner supply motor - Reverse
<u>86</u>	C-Toner supply motor - Forward
<u>87</u>	C-Toner supply motor - Reverse
<u>88</u>	B- Toner supply motor - Forward
<u>89</u>	Bk-Toner supply motor - Reverse
<u>90</u>	1st lift motor - Forward
<u>91</u>	1st lift motor - Reverse
<u>92</u>	2nd lift motor - Forward
<u>93</u>	2nd lift motor - Reverse
<u>94</u>	3rd lift motor - Forward
<u>95</u>	3rd lift motor - Reverse
<u>96</u>	Paper feed motor
<u>97</u>	Transport motor (180 mm/sec)
<u>98</u>	Transport motor (90 mm/sec)
<u>99</u>	Transport fans
<u>100</u>	Development exhaust fan - Low
<u>101</u>	Development exhaust fan - High
<u>102</u>	Fusing exhaust fan - Low
<u>103</u>	Fusing exhaust fan - High
<u>104</u>	Charge inlet fan
<u>105</u>	LD cooling fan
<u>106</u>	Polygon motor cooling fan - Low
<u>107</u>	Polygon motor cooling fan - High
<b>108*</b>	IPU cooling fan
<b>109*</b>	Optics exhaust fan
<u>110</u>	Cleaning blade solenoid - Touch
<u>111</u>	Cleaning blade solenoid - Release
<b>112*</b>	Lubricant bar solenoid - Touch
<b>113*</b>	Lubricant bar solenoid - Release
<u>114</u>	Cleaning entrance seal solenoid - Touch
<u>115</u>	Cleaning entrance seal solenoid - Release
<u>116</u>	By-pass pick-up solenoid
<u>117</u>	1st pick-up solenoid
<u>118</u>	2nd pick-up solenoid
<u>119</u>	3rd pick-up solenoid
<u>120</u>	1st separation roller solenoid

Output No.	Electrical Component
<u>121</u>	2nd separation roller solenoid
<u>122</u>	3rd separation roller solenoid
<u>123</u>	Fusing heater - Hot roller
<u>124</u>	Fusing heater - Pressure roller
<u>125</u>	Anti-condensation heater relay (on noise filter board)
<u>126</u>	Main power relay
<u>127</u>	Potential sensor calibration relay (on H.V.S. Board – B)
<u>128</u>	Transfer belt position clutch
<u>129</u>	Transfer roller position clutch
<u>130</u>	Registration clutch
<u>131</u>	By-pass feed clutch
<u>132</u>	1st Feed clutch
<u>133</u>	2nd Feed clutch
<u>134</u>	3rd Feed clutch
<u>135</u>	Quenching lamp
<b>136*</b>	Pre-transfer lamp
<b>201*</b>	Optics cooling fan
<b>202*</b>	Scanner motor current OFF
<b>203*</b>	Exposure lamp ON

## 2. ADMINISTRATOR TOOLS

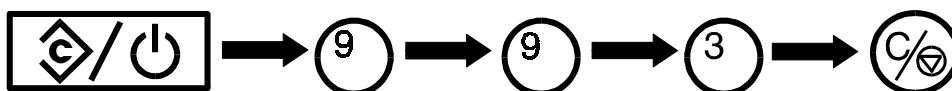
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### 2.1 ADMINISTRATOR TOOLS ACCESS PROCEDURE

This access procedure is for a key operator (copier's administrator), allowing to access the administrator tools.

The procedure is as follows:

1. Press the **Clear Modes/Stand-by** key.
2. Input "993" using the **Number** keys.
3. Hold down the **Clear/Stop** key for more than three seconds.



**NOTE:** This procedure is not described in the operating instructions.

The administrator tools contain the following settings:

**[1] Set Operation Modes**

Maximum copy number and Auto tray switching

**[2] Restrict Color Modes (User code will be required to use restricted modes.)**

Full Color / Black / Single Color / Twin color

**NOTE:** To enable "Restrict Color Modes", set SP mode "<4>-9 Set User Code(s)" to ON and remove the key counter shorting connector.

**[3] Set User Code(s)**

Register / Change / Delete

**[4] Check/Reset Specified Copy Counter**

**[5] Print All Copy Counters**

**[6] Reset All Copy Counters**

## 3. TEST POINTS/DIP SWITCHES/LEDs

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### 3.1 MAIN CONTROL BOARD

The function of the test points, DIP switches, and LEDs are the same as those of the base copier (A109).

### 3.2 IPU BOARD

#### 3.2.1 DIP switches

SW301-1:

Selects the accuracy level of synchronizing the video signal clock (18.6 MHz) with the laser synchronizing signal.

OFF: 1/4 clock      ON: 1/10 clock (**MUST BE ON**)

SW301-2:

Designer's use only (**MUST BE OFF**, otherwise the entire background appears dirty.)

SW301-3, 4, 5:

Used by designers for monitoring signals. (NORMALLY OFF)

#### 3.2.2 LEDs

LED 308:

Laser synchronizing signal monitor

LED309:

Monitor for the combination of SW301-3, 4, 5

## 4. PREVENTIVE MAINTENANCE SCHEDULE

### 4.1 PM TABLE

**NOTE:** The numbers mentioned for PM intervals indicate the number of *scans*.

Items written in *italic letters with an asterisk ("\*)* are different parts from the base copier (A109). Items in shaded columns are newly added parts.

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

ITEM	EM	40K	80K	120K	160K	200K	NOTE
<b>OPTICS</b>							
Platen Cover Sheet	C	C	C	C	C	C	Replace if necessary.
Exposure Glass	C	C	C	C	C	C	Alcohol or glass cleaner
Mirrors, Reflectors		C	C	C	C	C	Cotton pad with water, or blower brush
Lens, Correction Filter		C	C	C	C	C	Blower brush
<i>Exposure Lamp*</i>				R			
Scanner Guide Rails		C	C	C	C	C	Dry cloth
Original Size Sensors			C		C		Blower brush
<i>Optics Cooling Fan Filter*</i>		R	R	R	R	R	(NOTE 1)
<b>PAPER FEED (Main Body)</b>							
Registration Rollers		C	C	C	C	C	Alcohol
Relay Roller (Drive)		C	C	C	C	C	Alcohol
By-pass Pick-up Roller	C	C	C	C	C	R	Water
By-pass Paper Feed Roller	C	C	C	C	C	R	Water
By-pass Separation Roller	C	C	C	C	C	R	Water
By-pass Feed Pad			C		C		Alcohol or water
Paper Feed Guide Plate			C		C		Alcohol or water
Registration Sensor		C	C	C	C	C	Blower brush
<b>PAPER FEED (Paper Supply Unit)</b>							
Paper Guide Plate, Vertical Transport Plate			C		C		Alcohol or water
Pick-up Rollers	C	C	C	C	C	R	Water
Paper Feed Rollers	C	C	C	C	C	R	Water
Separation Rollers	C	C	C	C	C	R	Water
Vertical Transport Rollers			C		C		Alcohol
Vertical Transport Plate			C		C		Alcohol or water
Tray Bottom Plate Pad		C	C	C	C	C	Alcohol or water
<b>DEVELOPMENT</b>							
Developer (Y/M/C/Bk)			R		R		Y/M/C/Bk should be replaced all together.



ITEM	EM	40K	80K	120K	160K	200K	NOTE
Sleeve Roller Side Seals		C	C	C	C	C	Replace if damaged or wavy.
Development Unit Casing		C	C	C	C	C	Dry cloth or vacuum cleaner ( <b>ATTENTION 1</b> )
Development Drive Gears		C	C	C	C	C	Blower brush or vacuum cleaner
Toner Supply Receptacles, Toner Supply Joints		C	C	C	C	C	Dry cloth or vacuum cleaner
Toner Tank Cover, Toner Bottle Guides		C	C	C	C	C	Dry cloth or vacuum cleaner
Development Duct Lower Filter		C	C	C	C	C	Blower brush or vacuum cleaner Replace if necessary. ( <b>NOTE 1</b> )
Development Filter		R	R	R	R	R	( <b>NOTE 1</b> )
Development Ozone Filter		R	R	R	R	R	( <b>NOTE 1</b> )
Development Exhaust Fan Filters		R	R	R	R	R	( <b>NOTE 1</b> )
<b>AROUND THE DRUM</b>							
OPC Drum			R		R		or replace as necessary
<i>Charge Corona Wire*</i>	C	C	R	C	R	C	Clean with dry cloth.
<i>Charge Corona Grid*</i>	C	C	R	C	R	C	Blower brush, water, then dry cloth ( <b>ATTENTION 2</b> )
Corona Wire/Grid Cleaner		R	R	R	R	R	
Wire/Grid Cleaner Spiral Shaft		C	C	C	C	C	Wet cotton
Charge corona casing	C	C	C	C	C	C	Wet cotton and dry cloth
Charge corona end blocks	C	C	C	C	C	C	Dry cloth
Quenching Lamp	C	C	C	C	C	C	Dry cloth
Drum Potential Sensor		C	C	C	C	C	Blower brush and dry cloth
ID Sensor		C	C	C	C	C	Dry cloth
Charge Inlet Fan Filter		R	R	R	R	R	( <b>NOTE 1</b> )
<b>DRUM CLEANING</b>							
Cleaning Blade		R	R	R	R	R	Dust with setting powder after replacement or cleaning.
<i>Cleaning Brush*</i>		I	R	I	R	I	Inspect if the brush functions properly.
Bias Roller Blade		C	R	C	R	C	Dust with setting powder after replacement or cleaning.
Drum Lubricant Bar		R	R	R	R	R	Replace if damaged (holes, dents, or cracks).

ITEM	EM	40K	80K	120K	160K	200K	NOTE
Cleaning Bias Roller			C		C		Dry cloth or alcohol Dust with setting powder.
Cleaning Side Seals, Casing		C	C	C	C	C	Dry cloth
Cleaning Entrance Seal	I	C	C	C	C	C	Blower brush and dry cloth Replace if it is wavy.
PCC Wire	C	C	R	C	R	C	Dry cloth
PCC Casing	C	C	C	C	C	C	Water and dry cloth
PCC End Blocks	C	C	C	C	C	C	Dry cloth
<b>TRANSFER BELT / TRANSFER ROLLER</b>							
Transfer Belt		R	R	R	R	R	Perform Belt Cleaning (SP<2>-3) after replacement.
Transfer Belt Unit Rollers		C	C	C	C	C	Alcohol
Transfer Belt Release Cams		L	L	L	L	L	Silicone Grease G40M (NOTE 2)
Belt Bias Roller Shaft		L	L	L	L	L	Silicone Grease G40M (NOTE 2)
Transfer Roller	I	I	I	I	I	I	Replace if the surface is damaged.
Transfer Roller Shaft		L	L	L	L	L	Silicone Grease G40M (NOTE 3)
<i>Transfer Roller Blade*</i>			R		R		
Toner Catch Pan		C	C	C	C	C	Vacuum cleaner
Transfer Roller Entrance Seal		C	C	C	C	C	Dry cloth
<i>Paper Discharge Plate*</i>		R	R	R	R	R	
Roller Lubricant Bar		R	R	R	R	R	Replace if damaged (holes, dents, or cracks).
<b>TRANSFER BELT CLEANING</b>							
<i>Cleaning Blade*</i>		R	R	R	R	R	Dust with setting powder after replacement.
Cleaning Entrance Seal	I	C	C	C	C	C	Replace if damaged or wavy.
Cleaning Side Seals		C	C	C	C	C	Vacuum cleaner
Toner Catch Seals		C	C	C	C	C	Vacuum cleaner
Cleaning Unit Casing		C	C	C	C	C	Dry cloth
Belt Lubricant Bar		R	R	R	R	R	Replace if damaged (holes, dents, or cracks).
<b>FUSING UNIT</b>							
<i>Hot Roller*</i>		R	R	R	R	R	(NOTE 4)
Heat Isolating Bushing		L	L	L	L	L	Barrierta L55/2 (NOTE 4)

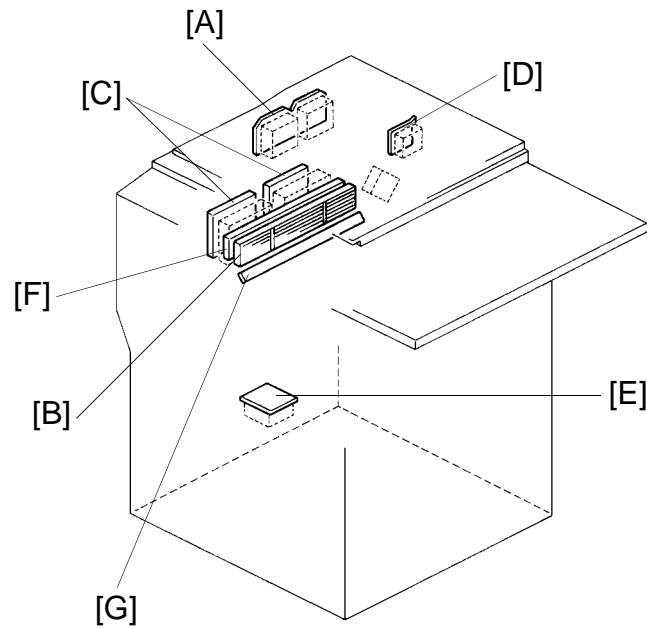
ITEM	EM	40K	80K	120K	160K	200K	NOTE
Hot Roller Ball Bearing		C	C	C	R	C	Clean with dry cloth. (NOTE 4)
Pressure Roller*, Pressure Roller Ball Bearing					R		Barrierta L55/2 (NOTE 5)
Oil Blade		C	R	C	R	C	Suitable solvent Apply silicone oil on the edge after cleaning or replacement.
Oil Supply Pad		R	R	R	R	R	
Oil Sump					C		Dry cloth and alcohol
Hot Roller Stripper		C	C	C	C	C	Suitable solvent Apply silicone oil on the top after cleaning.
Fusing Thermistor, Pressure Roller Thermistor		C	C	C	C	C	Suitable solvent Apply silicone oil on the surface after cleaning.
Oil Tank		I	C/L	I	C/L	C/L	Add silicone oil after removing paper dust with a pipette.
Fusing Drive Gears			L		L		Mobil Temp. 1 or 78 (NOTE 4)
Cleaning Roller, Cleaning Roller Scraper		C	C	C	C	C	Suitable solvent
Pressure Roller Cleaning Roller		C	C	C	C	C	Suitable solvent
<b>OTHERS</b>							
Transport Belts		C	C	C	C	C	Alcohol
Toner Collection Bottle	I	C	C	C	C	C	Clean at EM if necessary.
Inner Cooling Fan Filter		R	R	R	R	R	(NOTE 1)
<b>OPTIONAL EQUIPMENT</b>							
<b>SORTER (A511) (Number of Copies)</b>							
Transfer Rollers	C	C	C	C	C	C	Alcohol
Exit Rollers	C	C	C	C	C	C	Alcohol
Gears and Bushings	(L)	(L)	(L)	(L)	(L)	(L)	Lubricate if noisy.
<b>DUAL JOB FEEDER (A376) (Number of Originals)</b>							
ITEM	EM	48K	96K	144K	192K	240K	NOTE
Transport Belt	C	R	R	R	R	R	Belt cleaner Replace if necessary.
Pick-up Roller	C	C	C	C	C	C	Alcohol Replace if necessary.
Feed Roller	C	R	R	R	R	R	Alcohol Replace if necessary.

ITEM	EM	48K	96K	144K	192K	240K	NOTE
Separation Belts	C	R	R	R	R	R	Alcohol Replace if necessary.
Registration, Original width, and Feed-out Sensors	C	C	C	C	C	C	Blower brush

**ATTENTION**

1. When cleaning the development unit with a vacuum cleaner, always ground the casing with your fingers to avoid damaging the toner density sensor with static electricity.
2. When cleaning and drying the charge corona grid with cloth, be careful not to damage the grid by allowing fibers from the cloth to remain on the grid.

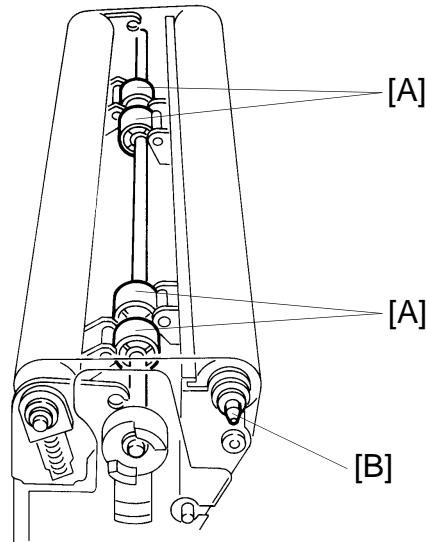
## NOTE 1: Filters



The locations of the filters which should be cleaned or replaced at PM are shown above.

1. Dust filters to be replaced at 40 K PM:
  - Optics cooling fan filter [A]
  - Development filter [B]
  - Development exhaust fan filters [C]
  - Charge inlet fan filter [D]
  - Inner cooling fan filter [E]
2. Ozone filters to be replaced at 40 K PM:
  - Development ozone filter [F]
3. Dust filter to be cleaned at 40 K PM:
  - Development duct lower filter [G]

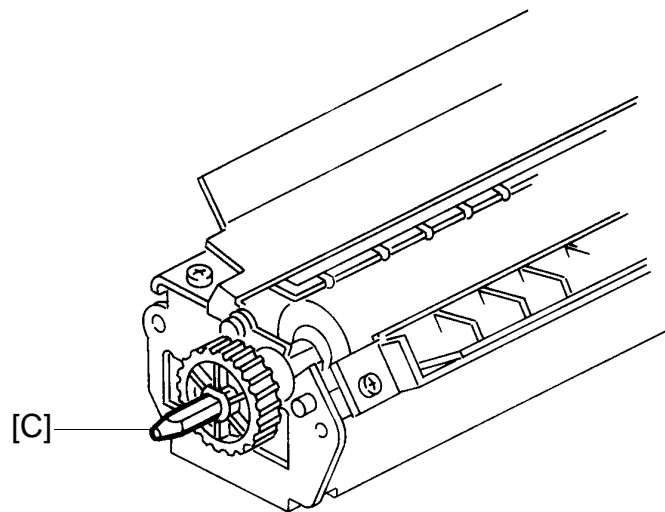
## NOTE 2: Transfer Belt Unit



The following parts should be lubricated with silicone grease G40M every 40K scans:

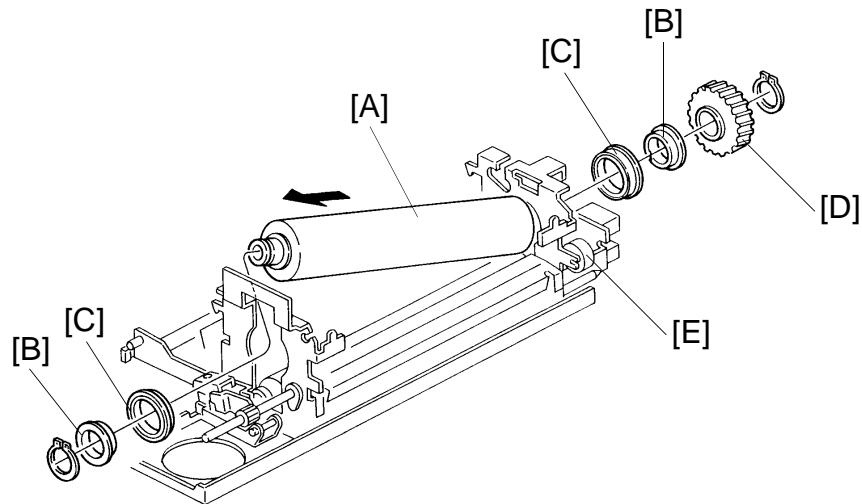
- Transfer belt release cams [A]
- Belt bias roller shaft [B] (only at the end)

## NOTE 3: Transfer Roller Unit



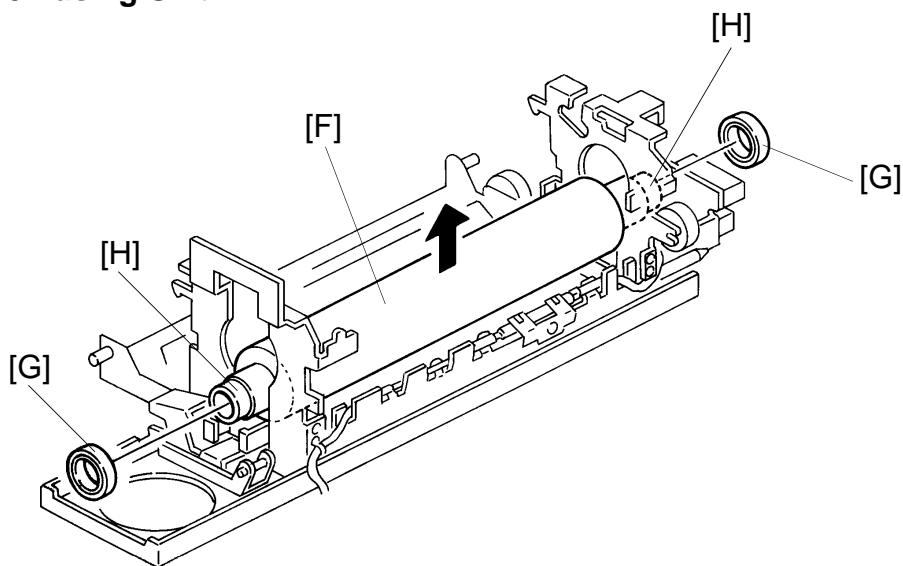
The end of the transfer roller shaft [C] should be lubricated with silicone grease G40M every 40 K scans.

#### NOTE 4: Fusing Unit 1



When replacing the hot roller [A] every 40 K scans, lubricate the inner and outer surface of the heat isolating bushings [B] with Barrierta L55/2. The ball bearings [C] for the hot roller should be cleaned with a dry cloth every 40 K scans and should be replaced every 160 K scans. The fusing drive gears [D, E] should be lubricated with Mobil Temp. 1 or 78 every 80 K scans.

#### NOTE: 5 Fusing Unit 2



When replacing the pressure roller [F] and its ball bearings [G] every 160 K scans, lubricate the roller shaft [H] and inner surface of the ball bearings with Barrierta L55/2.

# **REPLACEMENT AND ADJUSTMENT**





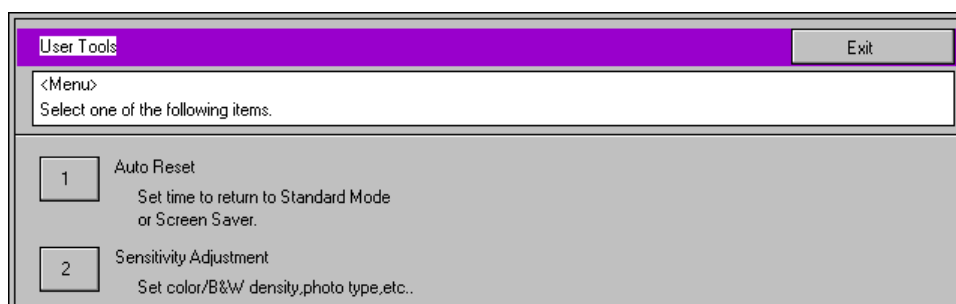
# 1. COLOR BALANCE ADJUSTMENT

## 1.1 AUTO COLOR CALIBRATION (ACC)

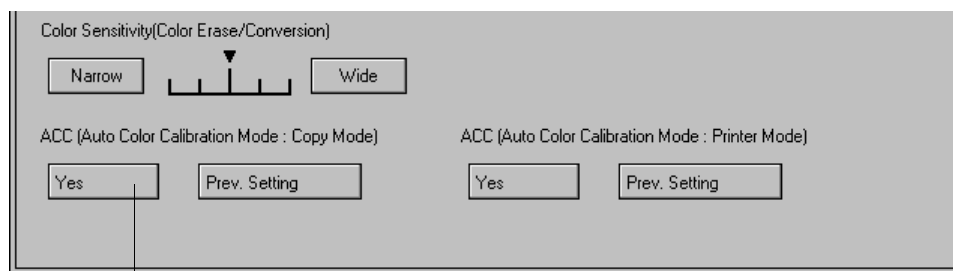
### 1.1.1 Calibration Procedure

Perform the Auto Color Calibration (ACC) at installation, every service call, or after replacing the drum or the developer.

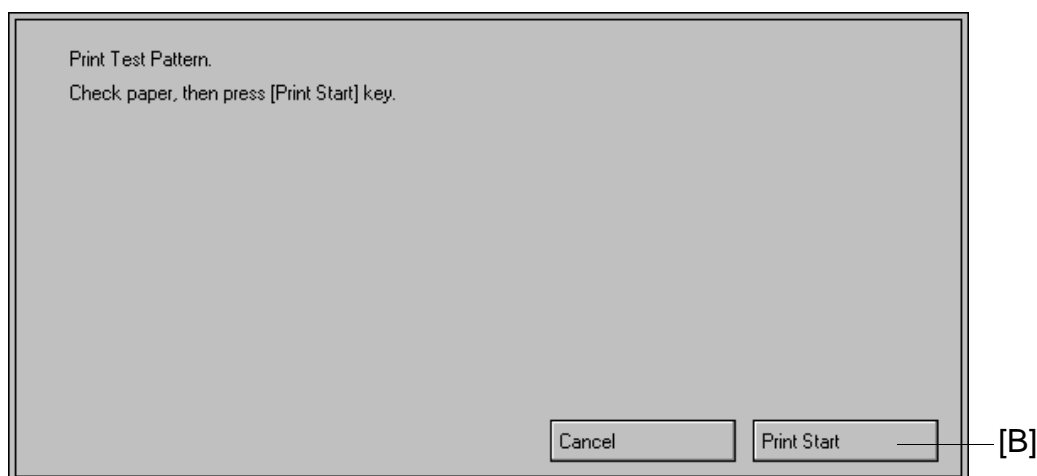
1. Press the **User Tool** key on the operation panel.
2. Select **No. 2: Sensitivity Adjustment**.



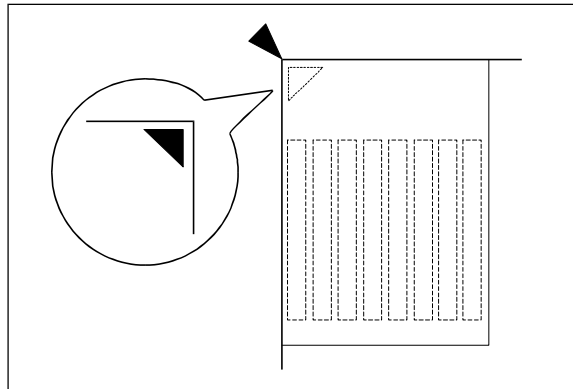
3. Press the Yes key [A].



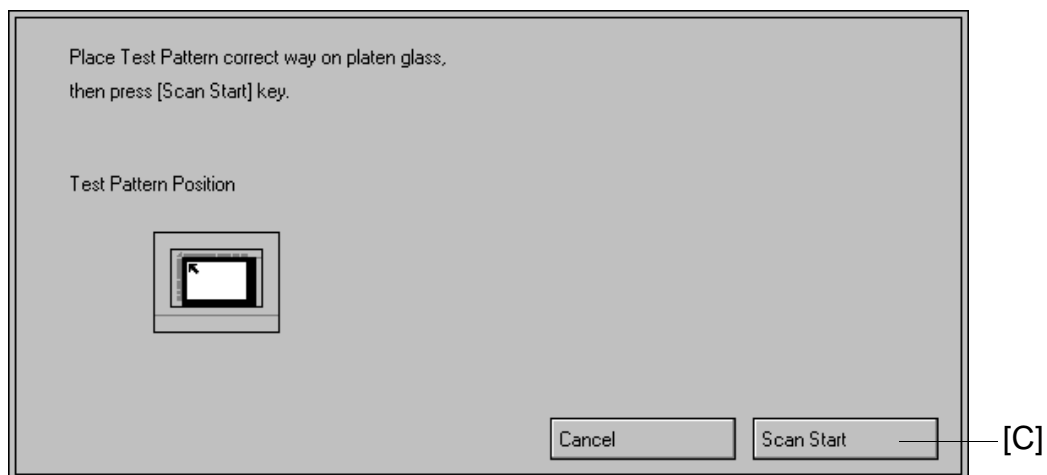
4. Press the **Print Start** key [B]. A test pattern will be printed.  
It will be printed on A4 or 8 1/2" x 11" sideways. If there is no paper of these sizes available, it will be printed on a larger size.



5. Place the test pattern on the exposure glass as shown in the illustration.  
If the copier is equipped with an optional dual job feeder, put the test pattern face-up on top of several sheets of white paper of the same size.  
Then place all the sheets face-down on the exposure glass.

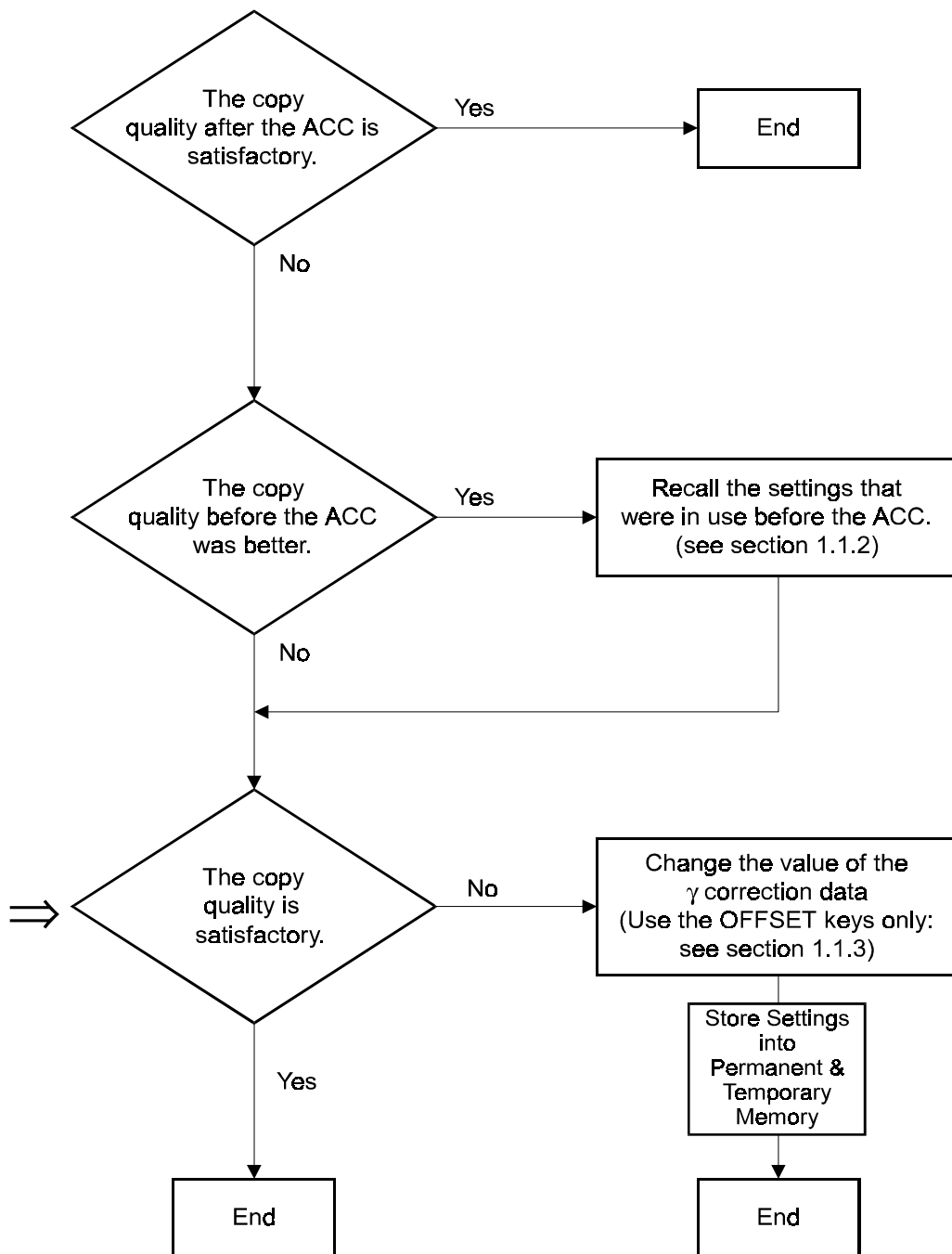


6. Press the **Scan Start [C]** key.  
The  $\gamma$  correction data will be automatically adjusted.



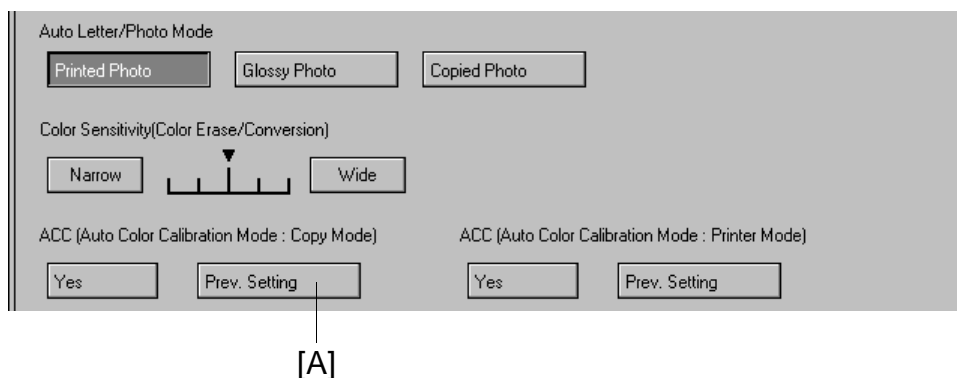
7. Make copies using the C-4 Test chart in letter mode and printed photo mode.  
8. Compare the copies made before the ACC (Auto Color Calibration) and after the ACC.

- If necessary, adjust the machine as shown in the following flow chart.

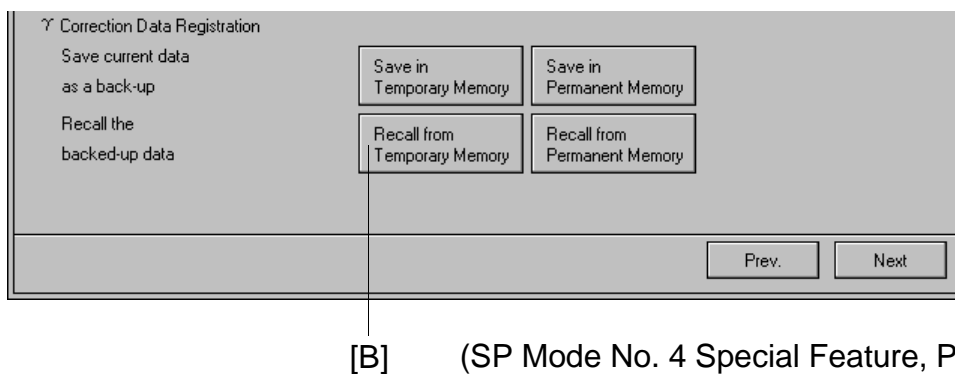


### 1.1.2 To recall the settings that were in use before the ACC

Touch the **Prev. Setting** [A] key.



(Also, from the SP mode, the previous settings can be recalled by touching the **Recall from Temporary Memory** [B] key.)



1.1.3 To change the value of the  $\gamma$  correction data

1. Enter the SP mode and touch **No. 4 SP Special Feature**.
2. Go to page 2 (letter mode) or page 3 (photo mode) and change the OFFSET values. (Refer to the tables on the next page.)

**NOTE:** Make sure Auto Image Density is **not** selected. ←

SP MODES		Copy in SP		Index					
<Menu> Select function or item.									
<4>SP Special Feature <span style="float:right">PAGE 2</span>									
Printer $\gamma$ Correction Data Rough Adjustment =Letter=									
		[ BK ]		[ Y ]		[ M ]		[ C ]	
		STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L		01	01	01	01	01	01	01	01
M		01	01	01	01	01	01	01	01
H		01	01	01	01	01	01	01	01
IDMAX		01	01	01	01	01	01	01	01

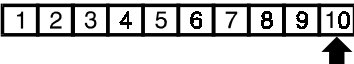
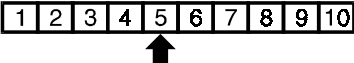
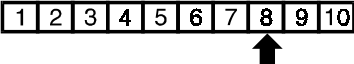
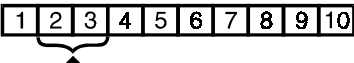
SP MODES		Copy in SP		Index					
<Menu> Select function or item.									
<4>SP Special Feature <span style="float:right">PAGE 3</span>									
Printer $\gamma$ Correction Data Rough Adjustment =Photo=									
		[ BK ]		[ Y ]		[ M ]		[ C ]	
		STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L		01	01	01	01	01	01	01	01
M		01	01	01	01	01	01	01	01
H		01	01	01	01	01	01	01	01
IDMAX		01	01	01	01	01	01	01	01

**NOTE:** Always adjust the color balance using the "OFFSET" keys only.  
Do not change the values in the "STEP" column.

3. To finish the operation, touch the **Index** [B] key to return to the SP mode menu. Touch the **Exit** key to exit the SP mode.
- To back up the current settings, refer to the information in chapter 4, "Service Tables".

⇒ **NOTE:** Make sure Auto Image Density is **not** selected.

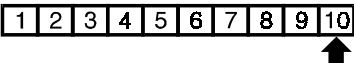
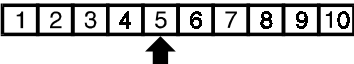
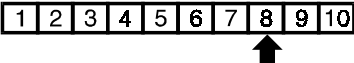
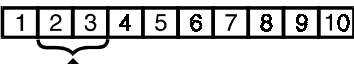
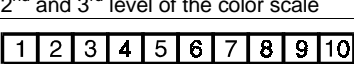
**— STANDARD COPY QUALITY IN LETTER MODE —**

Step No.	Key to Adjust	Level to Refer to on the C-4 Chart	Adjustment Standard
1	ID MAX for each color	 10 <sup>th</sup> level of the color scale	Adjust the ID of the 10 <sup>th</sup> level to the same value as the C-4 test chart.
2	MIDDLE ID for each color	 5 <sup>th</sup> level of the color scale	Adjust the ID of the 5 <sup>th</sup> level to the same value as the C-4 test chart.
3	HIGH ID for each color	 8 <sup>th</sup> level of the color scale	Adjust the ID of the 8 <sup>th</sup> level to the same value as the C-4 test chart.
4	LOW ID for each color	 2 <sup>nd</sup> and 3 <sup>rd</sup> level of the color scale	Adjust the ID so that the 2nd level is not visible, and the 3rd level is the same value as the C-4 test chart.

**NOTE:** If the customer tends to use the "3 COLOR" mode in the user tools frequently, perform the following color balance adjustment.

- 1) Enter the User Tools.
- 2) Open Sensitivity Adjustment "Color Mode" and select "3C".
- 3) Exit the User Tools and take a full color copy in the letter mode.
- 4) Adjust the black scale level 3 to 5 (LOW ID) by combining cyan, magenta, and yellow ID's to an acceptable shade of gray.

**— STANDARD COPY QUALITY IN PHOTO MODE —**

Step No.	Key to Adjust	Level to Refer to on the C-4 Chart	Adjustment Standard
1	ID MAX for each color	 10 <sup>th</sup> level of the color scale	Adjust the ID of the 10 <sup>th</sup> level to the same value as the C-4 test chart.
2	MIDDLE ID for each color	 5 <sup>th</sup> level of the color scale	Adjust the ID of the 5 <sup>th</sup> level to the same value as the C-4 test chart.
3	HIGH ID for each color	 8 <sup>th</sup> level of the color scale	Adjust the ID of the 8 <sup>th</sup> level to the same value as the C-4 test chart.
4	LOW ID for each color	 2 <sup>nd</sup> and 3 <sup>rd</sup> level of the color scale	Adjust the ID so that the 2nd level is slightly (just) visible and the 3rd level is the same as the C-4 test chart.
5	Low ID of Y, M, C	 3 <sup>rd</sup> , 4 <sup>th</sup> , and 5 <sup>th</sup> level of the <b>black</b> scale	The levels should be an acceptable shade of grey.

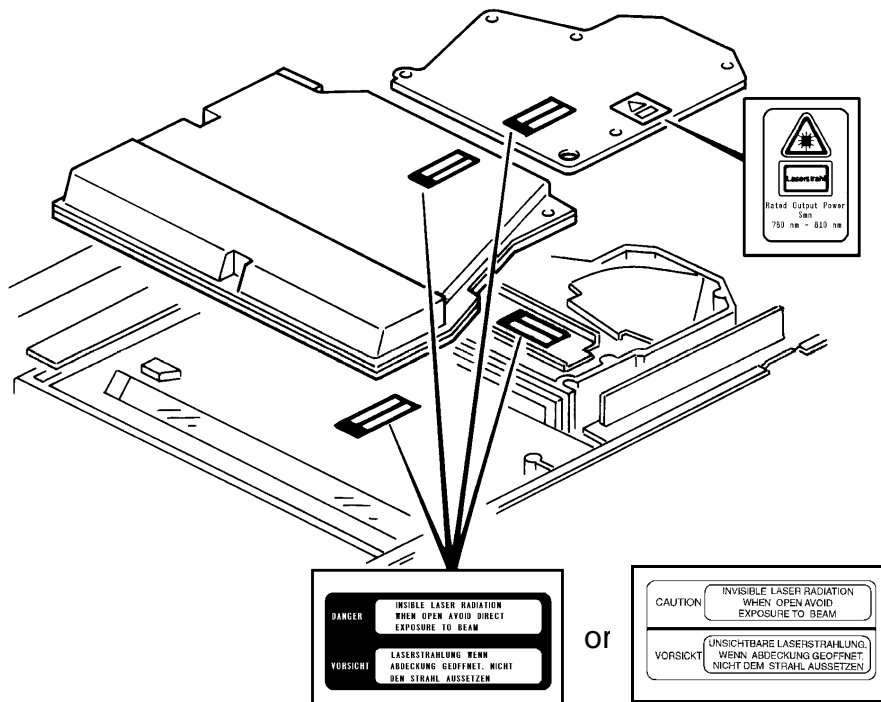
## 2. LASER UNIT

### 2.1 WARNING

#### DANGER

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 DECAL –

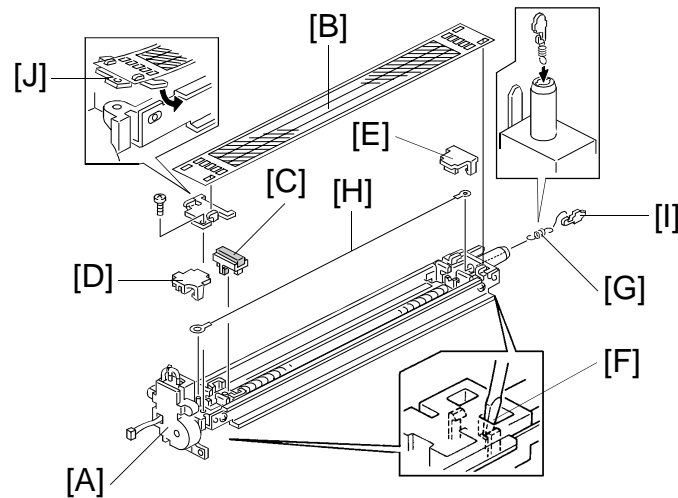


Five caution decals are located in the laser unit, as shown.



### 3. DRUM UNIT

#### 3.1 CHARGE CORONA WIRE AND WIRE CLEANER PAD REPLACEMENT

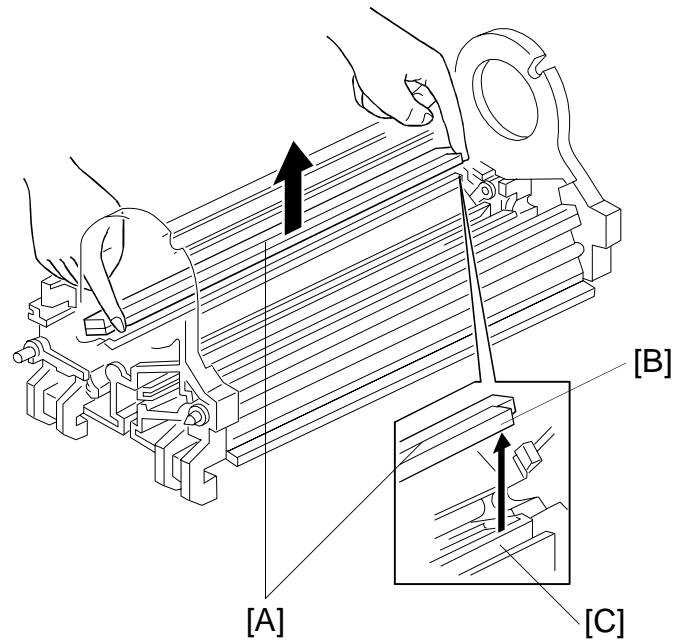


1. Take out the charge corona unit [A]. (See A109 Drum Unit Removal.)
2. Remove the grid plate [B] (1 screw).
3. Remove the wire cleaner [C].
4. Remove the front end block cover [D] and the rear end block cover [E] by using a small screwdriver at the rear of the unit as in [F].
5. Remove the terminal spring [G] and then remove the charge corona wire [H].

**NOTE:** When reinstalling, do the following.

- 1) Hook the spring [G] to the bias terminal [I].
  - 2) Install the two parts down through the hole as shown.
  - 3) Hook the corona wire [H] to the spring.
  - 4) Hook the other end of the wire [H].
  - 5) Snap in both end block covers [D], [E].
  - 6) Set the wire cleaner [C] so that the corona wire runs between the cleaner pads.
  - 7) Install the grid plate [B] using the holder bracket [J], making sure that the hooks lie under the casing as shown (1 screw).
6. If the grid plate, casing, or the corona wire were replaced or cleaned, perform the "Process Control Self Check" (SP Test Mode P-4).

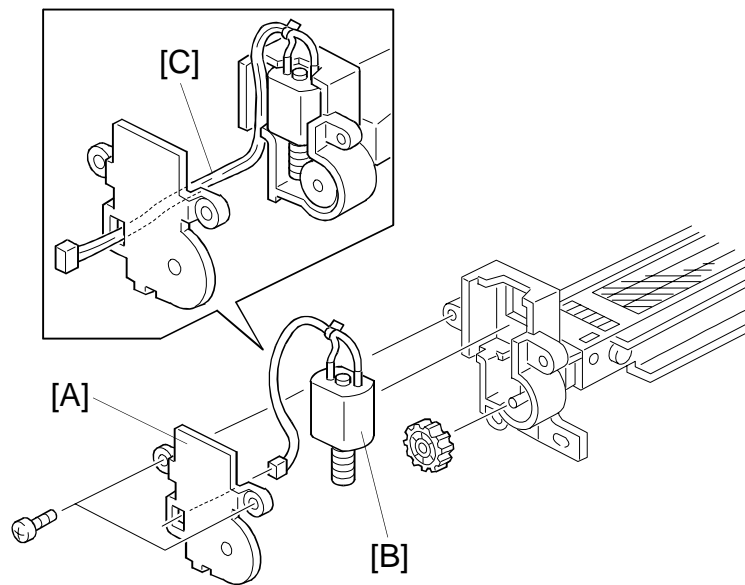
### 3.2 DRUM LUBRICANT BAR REPLACEMENT



1. Remove the cleaning brush. (See A109 Cleaning Brush Replacement.)
2. Remove the drum lubricant bar [A] as shown.

**NOTE:** When reinstalling make sure that the lubricant plate [B] lies over the unit frame [C] as shown.

### 3.3 WIRE CLEANER MOTOR REPLACEMENT



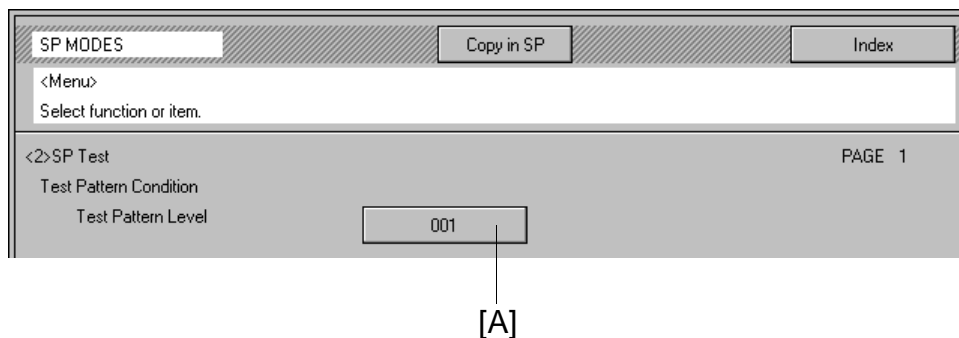
1. Remove the toner tank.
2. Remove the cleaner motor cover [A] (2 screws) and remove the wire cleaner motor [B].

**NOTE:** When reinstalling, route the harness [C] as shown.

### 3.4 INSTALLING A NEW DRUM

- NOTE:**
- The installation procedure for a new drum is the same as for the base copier (A109) except the following steps which come after turning on the main switch.
  - The steps from 3 to 12 are to apply lubricant to the new drum surface. These steps can all be replaced by just making 10 copies of the C-4 Test Chart on A3 (11"X17") paper.
  - If the developer is replaced together with the OPC drum, steps 3 to 12 are unnecessary because lubricant is applied to the drum surface during the developer initialization.

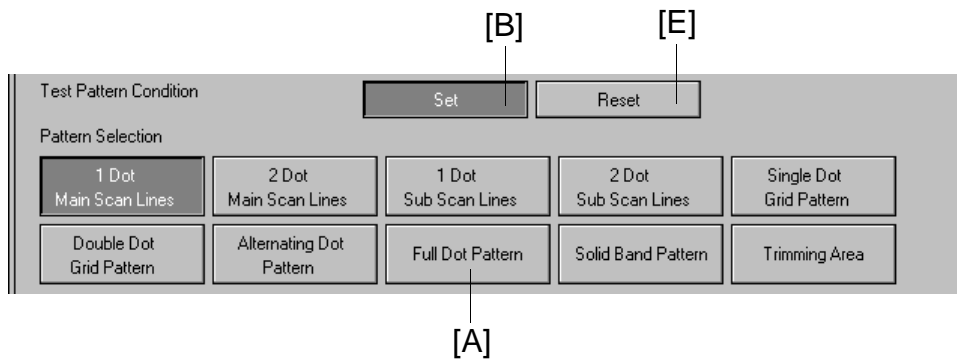
1. Replace the OPC drum with a new one and reassemble the copier.
2. Turn on the main switch.
3. Place a few sheets of A3 (11"X17") white paper and close the platen cover (DJF).
4. Enter the SP mode and open [2]SP Test, page 1.



5. Set the **Test Pattern Level [A]** to "30".

**NOTE:** If the test pattern level is too high, a lot of toner will be consumed and toner scattering will occur inside the machine.

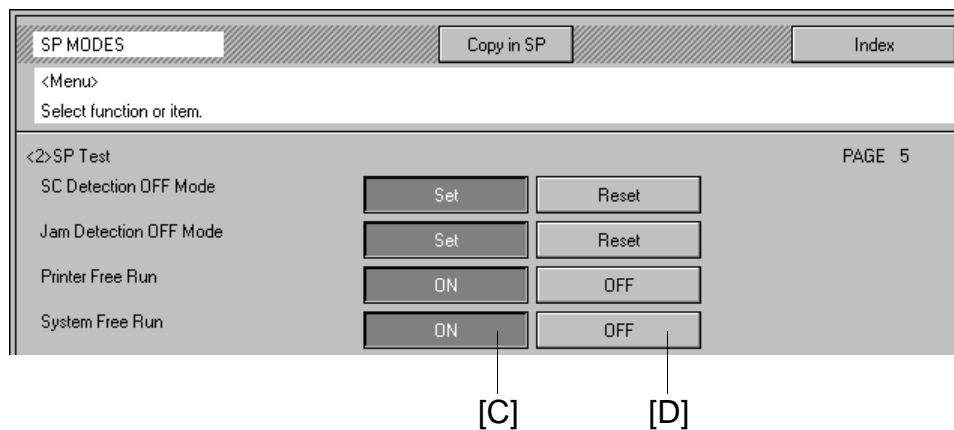
6. Open [2]SP Test, page 2.



7. Select "*Full Dot Pattern*" [A] in **Pattern selection** and select "*Set*" [B] in **Test Pattern Condition**.

8. Touch the "Copy in SP" key and select "*Black*" copy mode.

9. Touch the "SP MODES" key and open [2]SP Test, page 5.



10. Start the **Printer Free Run** by touching "*ON*" [C] and wait for 6 to 7 minutes.

11. Stop the Printer Free Run by touching "*OFF*" [D].

12. Open [2]SP Test, page 2 and select "*Reset*" [E] for **Test Pattern Condition**.

13. **Wait for 5 minutes** and open [2]SP Test, page 4.

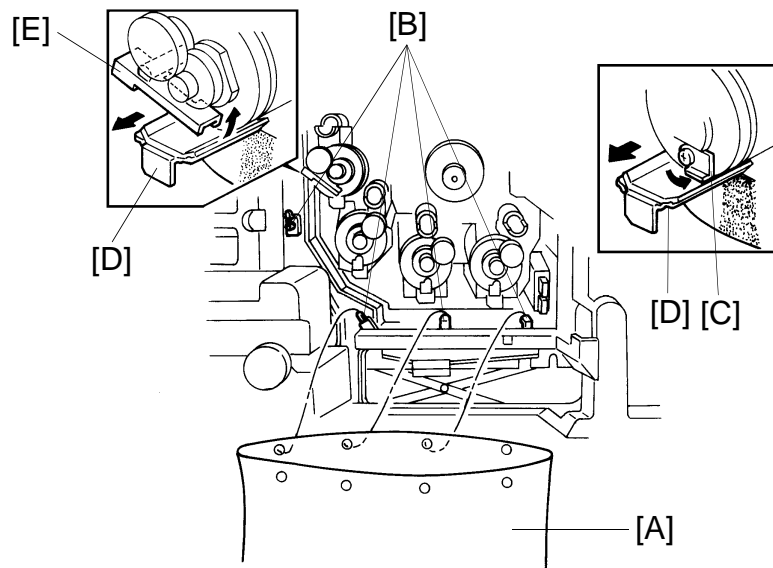
14. Perform **Process Control Selfcheck** by touching "*Start*".

15. Check the result of Process Control Selfcheck referring to the installation procedure and exit the SP mode.

16. Perform Auto Color Calibration.

## 4. DEVELOPMENT SECTION

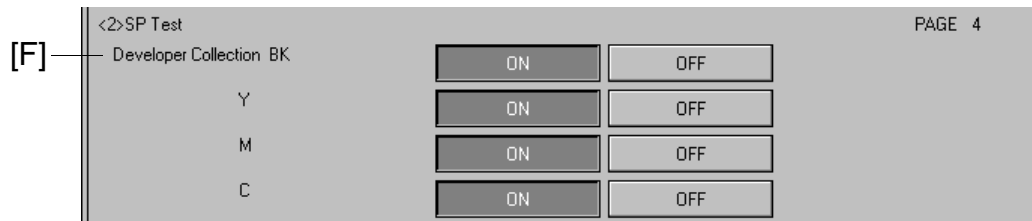
### 4.1 DEVELOPER COLLECTION



- NOTE:**
- The machine must be at the "READY" condition to perform the developer collection.
  - To maintain good color copy quality, developer replacement should be performed for all colors at the same time so that all the developers have similar characteristics.
  - For more detailed information concerning access to SP modes, refer to section 4 (Service Program Mode Operation).
  - Before performing this procedure, place old newspapers on the floor to keep the customer site clean.
  - Collect 2 developers per bag (black and cyan, magenta and yellow).

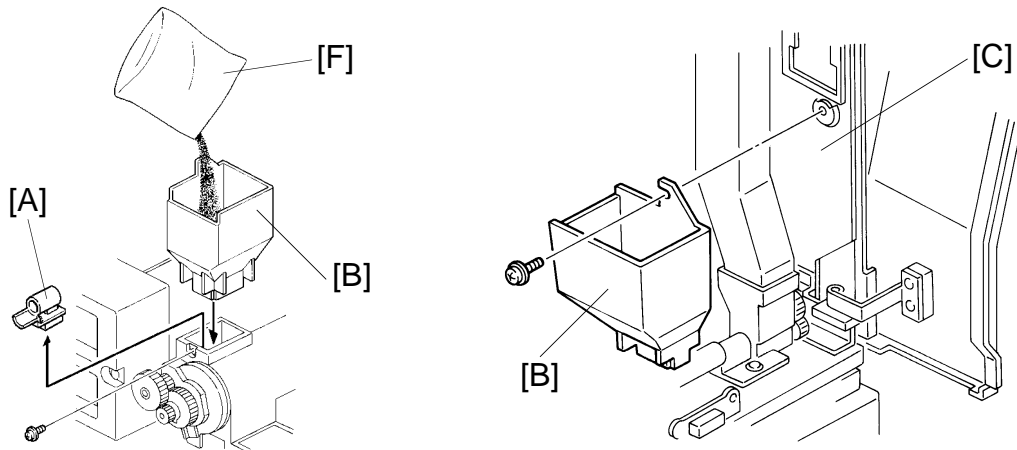
1. Open the front door and remove the toner tank unit (2 screws).
2. Place the developer collection bag [A] on the hooks [B] on the copier frame.
3. Turn on the front safety switch using the accessory switch actuator. Wait until the machine is at the 'READY' condition.
4. Swing over the stopper bracket [C] then pull the collection cover [D] of the desired development unit. Developer will fall into the bag.

**NOTE:** For black developer, shift the lever [E] instead of the stopper bracket [C].



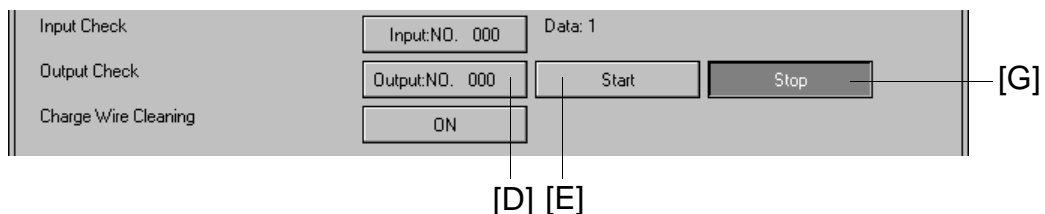
5. Enter SP mode and open SP Test Mode P-4 (Developer Collection) [F].
6. Press "ON" for the desired developer to be collected.  
**NOTE:** Support the developer bag [A] while performing this procedure.
7. Wait until the developer is collected completely (about 2 to 3 minutes) and press "OFF".
8. Perform the same procedure for the other developers.
9. Reinstall the collection cover [D].  
**NOTE:** For black developer, make sure to shift back the lever.

## 4.2 DEVELOPER INSTALLATION



1. From the Developer Collection procedure step number 9 condition, remove all the toner supply receptacles [A] (1 screw).
2. Remove the right inner cover. (See A109 Right Inner Cover Removal.)
3. Remove the developer supply funnel [B] from the bracket [C] and clean the inner surface.
4. Set the developer supply funnel on the black development section as shown.
5. Open SP Test Mode P-4 (Output Check).
6. Touch the key [D], to enter the output mode.
7. Enter "68" with the number keys, then touch the key [D] again to select test mode #68 "black development drive motor ON".
8. Touch the Start key [E].
9. Shake a pack of black developer [F] 20 times then pour it in.
10. 1 minute after pouring the developer, touch the stop key [G].

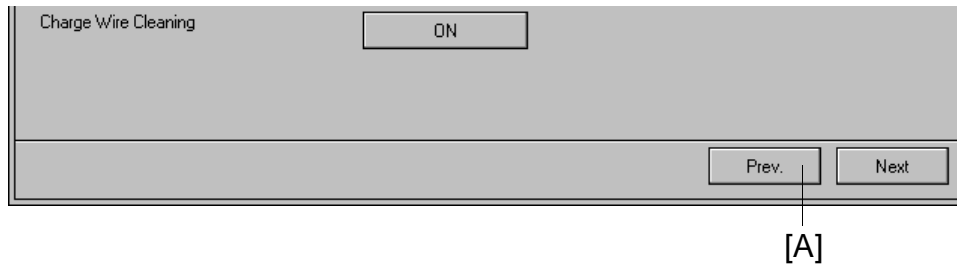
**NOTE:** Do not touch the stop key within 1 minute, otherwise, the developer will not be distributed evenly in the development unit.





11. Remove the developer supply funnel, then install the toner supply receptacle.
12. Install the cyan, magenta and yellow developer in the same manner as black developer installation (step #3 to #11).
 

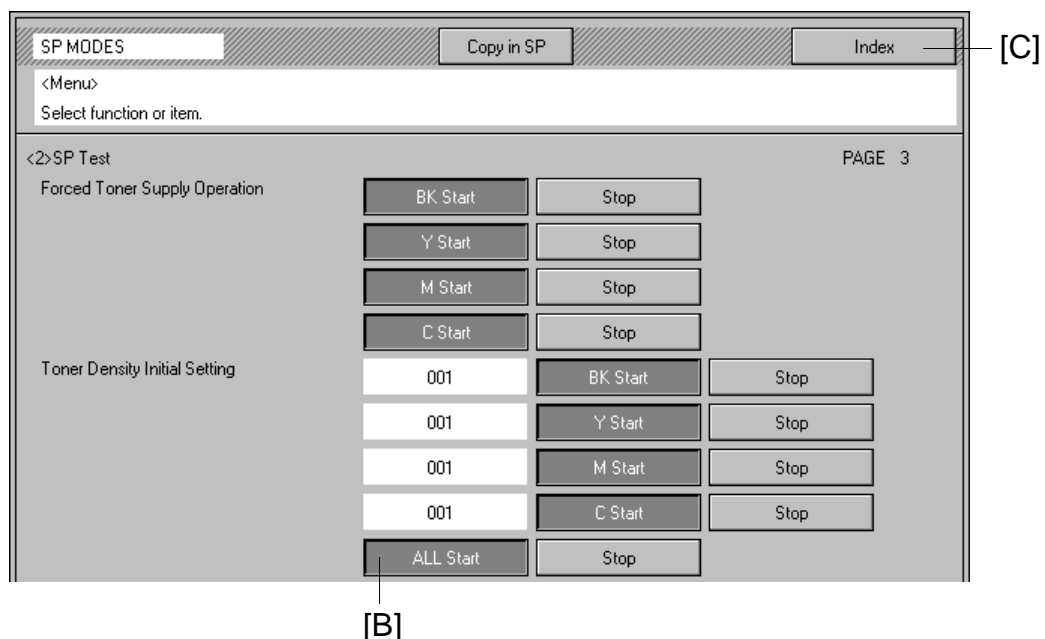
**NOTE:** To select the "color development drive motor ON" mode, enter "69" for color instead of 68 for black (refer to step #7).
13. Return the developer supply funnel to the original position.
14. Touch the Previous key [A] to open page 3.



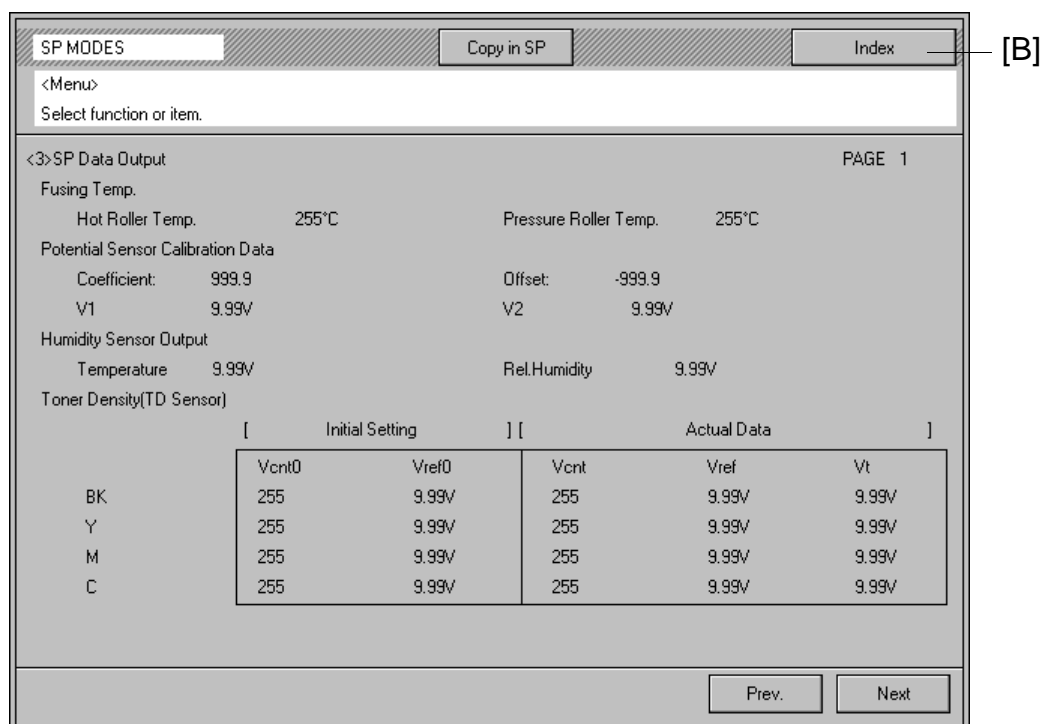
15. Perform the developer initial setting as follows.
  - 1) Confirm that the main charge corona, PCC, ID sensor boards are installed correctly (1 screw each).
  - 2) Confirm that the toner tank is not installed.

**NOTE:** If the toner tank is installed, toner is supplied during the developer initial setting and the machine cannot figure out the proper toner concentration of the new developer.

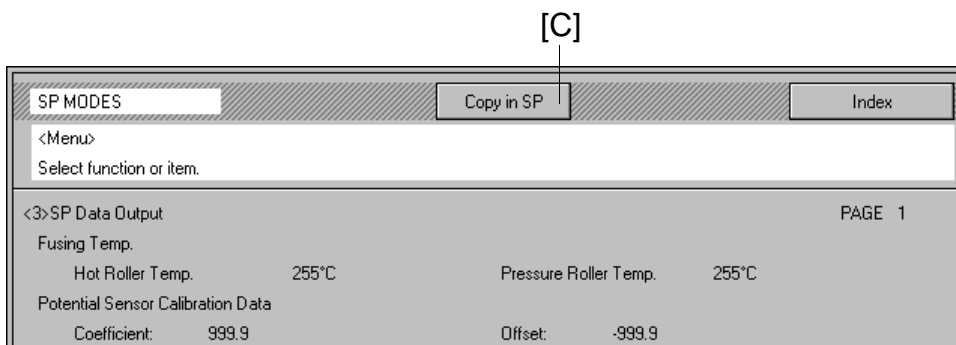
  - 3) Touch the All Start key [B] to start the developer initial setting. After the adjustment is completed, the machine stops automatically.
16. Touch the Index key [C].



17. Open SP Data Output P-1 (Toner Density).



18. Check that VT has the same values as Vref for all colors (Bk, Y, M, C). If not, touch the Index key [B] then return to the test mode page 3 to perform the developer initial setting (step 15) again.
19. Put the toner tank [A] on the Accuride rails (2 screws).
20. Close the front doors and install the copy tray.
21. Place a C-4 test chart on the exposure glass.
22. Touch the Copy In SP key [C] and make 20 full color copies using A3 or 11" x 17" size paper. (40 full color copies using A4 or 11" x 8 1/2" is also acceptable.)



23. **Wait 5 minutes** to ensure that no residual voltage remains on the drum.

**NOTE:** The process control self check (step 28) must be performed when there is no residual voltage on the drum.

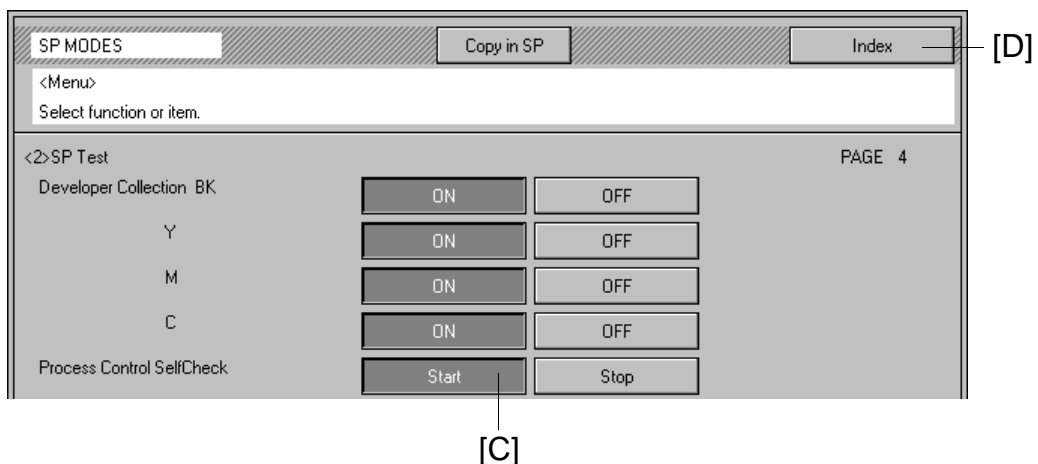


24. Open SP Special Feature P-1.

25. Confirm that the PID key [C] is selected for the Process Control Mode Selection. If not, touch the PID key [C].

26. Touch the Index key [D].

27. Open SP Test Mode P-4 (Process Control Self Check).



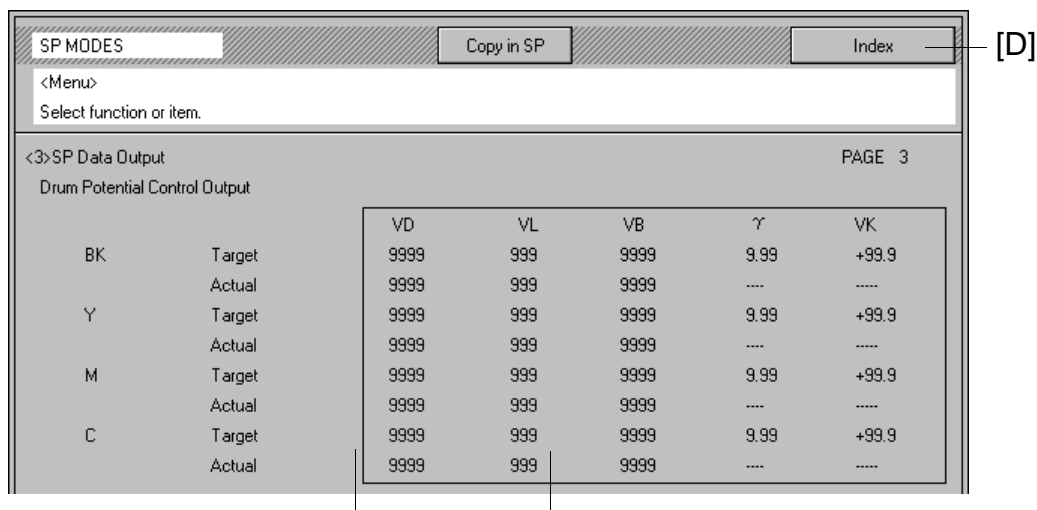
28. Touch the Process Control Self Check Start key [C]. After the self check is completed, the machine stops automatically.

**⚠ CAUTION**

**While process control is taking place, do not touch the knob, drum stay, or drum shaft. These parts and the fly wheel carry a high voltage during process control.**

29. Touch the Index key [D].

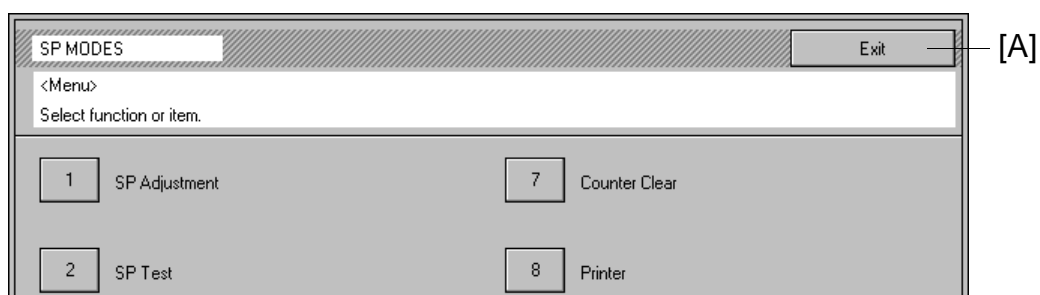
30. Open SP Data Output P-3 (Drum Potential Control Output).



31. Check VD and VL [C] for each color. If the difference between 'Target' and 'Actual' for any color exceeds 5, wait 5 minutes and go back to step 28 and perform the process control self check again.

32. Touch the Index key [D].

33. Touch the Exit key [A].



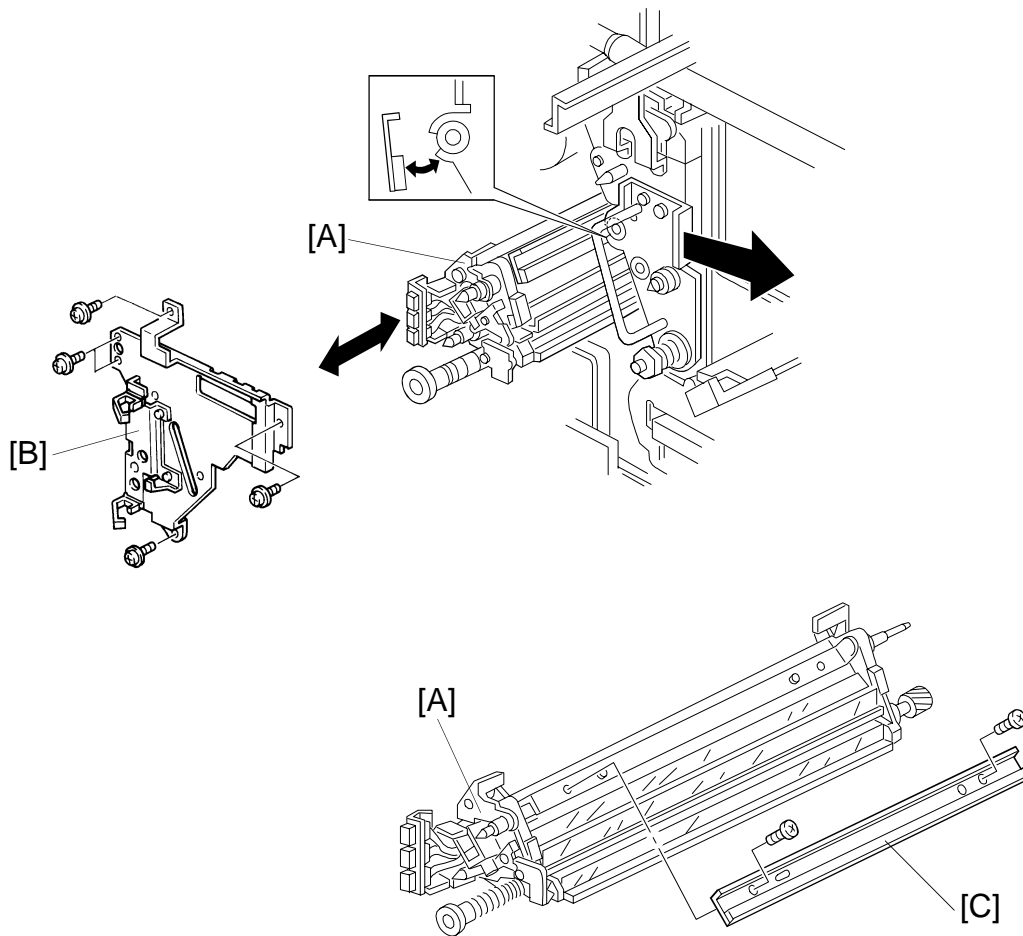
34. Turn off the main switch and place the accessory switch actuator in its original position.

35. Reinstall all parts.

36. Check the copy image and adjust the color balance if necessary.

## 5. TRANSFER BELT CLEANING UNIT

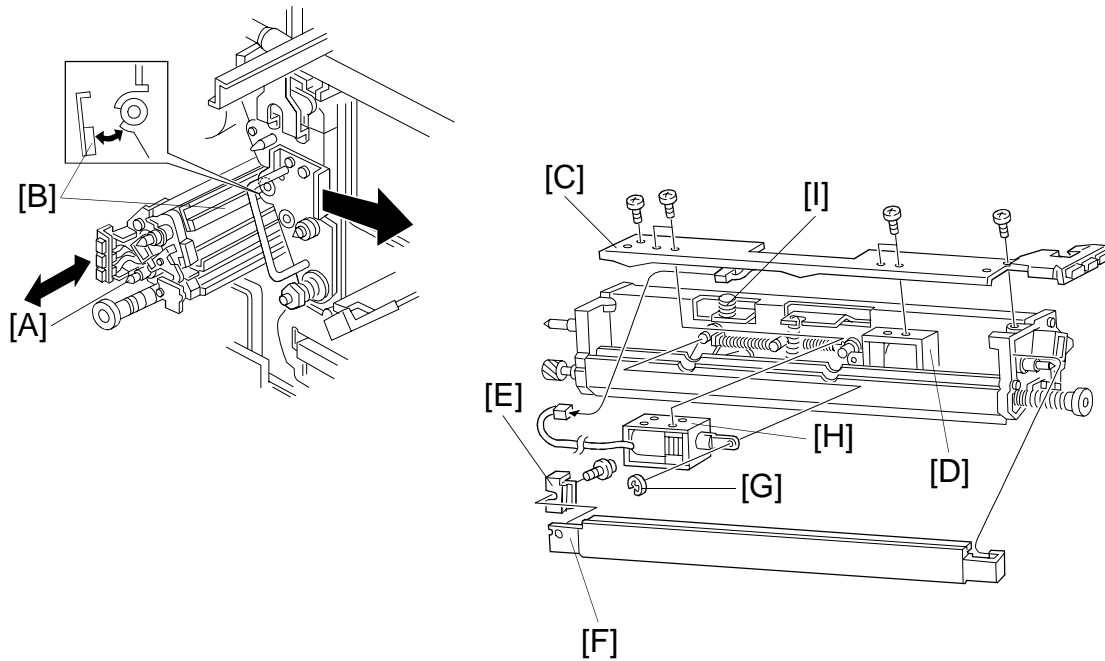
### 5.1 BELT LUBRICANT BAR REPLACEMENT



1. Remove the following parts and slide out the transfer belt cleaning unit [A]. (Refer to Section 3, Installation.)
  - Toner tank
  - Right inner cover
  - Yellow toner supply receptacle
  - Transfer belt stay [B].
2. Remove the belt lubricant bar [C] (2 screws).

**NOTE:** To prevent the belt lubricant bar [C] from being scratched, pull the handle of the transfer belt unit slightly to the right while you insert the transfer belt cleaning unit.

## 5.2 BELT LUBRICANT BAR SOLENOID REPLACEMENT



1. Remove the cleaning unit [A] and remove the lubricant bar [B]. (Refer to the Transfer Belt Lubricant Bar Replacement section.)

**NOTE:** To prevent the belt lubricant bar [B] from being scratched, pull the handle of the transfer belt unit slightly to the right while you pull the transfer belt cleaning unit out.

2. Remove the blade solenoid bracket [C] (2 screws).
3. Remove the blade solenoid [D] (2 screws).
4. Remove the base plate securing bracket [E] (1 screw) and remove the base plate [F].
5. Disconnect the lubricant bar solenoid connector.
6. Remove the lubricant bar solenoid plunger E-ring [G].
7. Remove the lubricant bar solenoid [H] (2 screws).

**NOTE:** When reinstalling, make sure of the following:

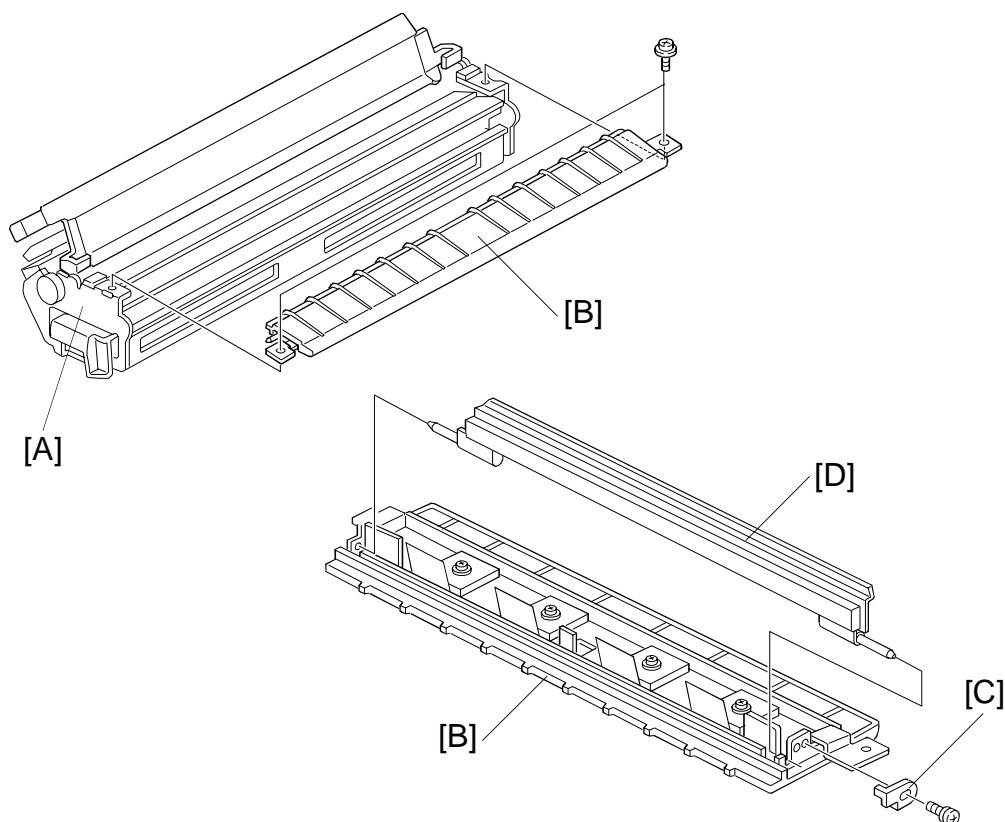
- Set the arm hole of the solenoid plunger on the pin first, then screw down the solenoid bracket.
- The belt lubricant bar solenoid's plunger must be in (the position for no contact with the transfer belt).
- The spring [I] must fit the projection on the blade solenoid bracket.

## 6. TRANSFER ROLLER UNIT

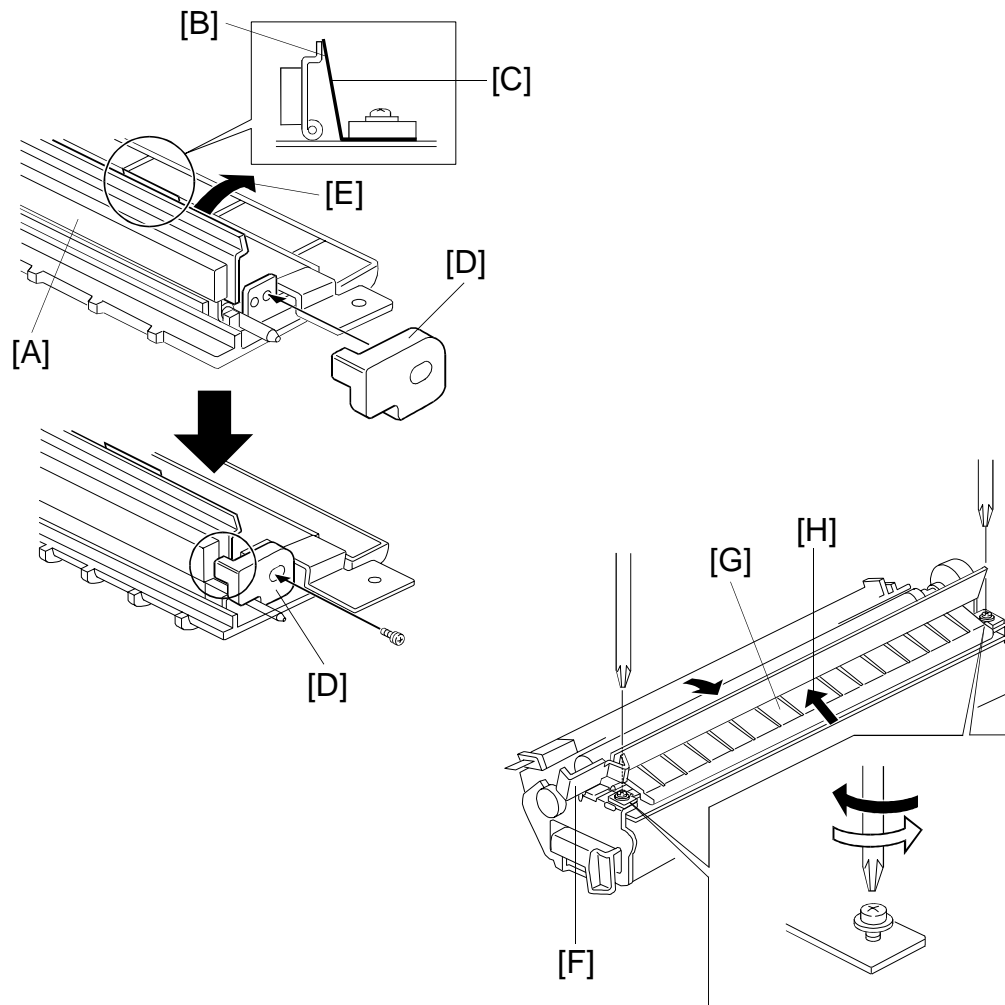
When completing machine assembly, after changing the **roller lubricant bar** and/or the **transfer roller**, perform steps 3 to 12 of "3.4 INSTALLING A NEW DRUM". This will cause the new lubricant bar to fully contact the roller and also applies the lubricant to the roller surface evenly.

- NOTE:** 1) If these steps have been done for a new drum, it is unnecessary to repeat them.
- 2) If the developer is replaced together with the roller lubricant bar and/or the transfer roller, the above steps are unnecessary. (Lubricant is applied to the transfer roller surface during the developer initialization.)
- 3) Note that "**Printer Free Run**" must be used at step 10 of "3.4 INSTALLING A NEW DRUM".

### 6.1 ROLLER LUBRICANT BAR REPLACEMENT



1. Remove the transfer roller unit [A]. (See A109 Transfer Roller Unit Removal).
2. Remove the transfer roller guide [B] (2 screws).
3. Remove the hook [C] (1 screw) and replace the roller lubricant bar [D].



**NOTE:** When installing, do the following.

- Handle the lubricant bar [A] gently. They break or crack easily.
- When resting the lubricant bar bracket [B] on the unit, make sure that the spring plate [C] is positioned as shown. (The spring plate should not be under the lubricant bar bracket.)
- To install the hook [D], press the lubricant bar bracket in the direction [E] as shown above.
- When reinstalling the lower guide [G], flip the upper guide [F] to the normal position. Do not push it in the direction indicated by the arrow [H]. Let the guide lie naturally in its position, then tighten the 2 screws.

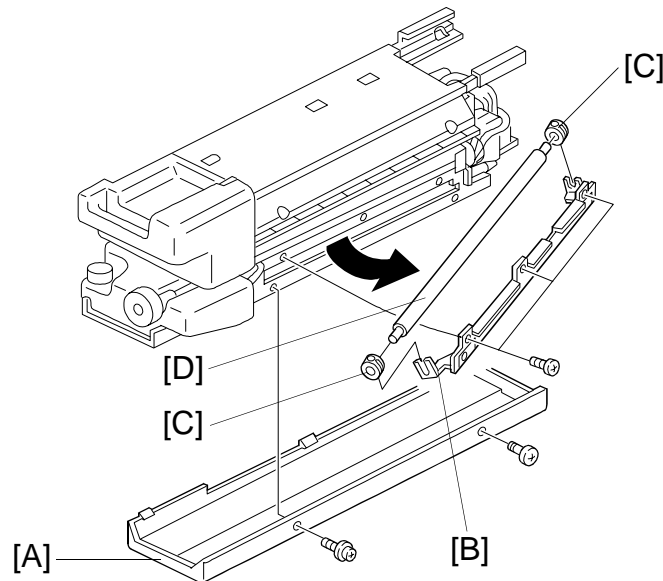


## 7. FUSING UNIT

### 7.1 PRESSURE ROLLER CLEANING ROLLER REPLACEMENT

#### CAUTION

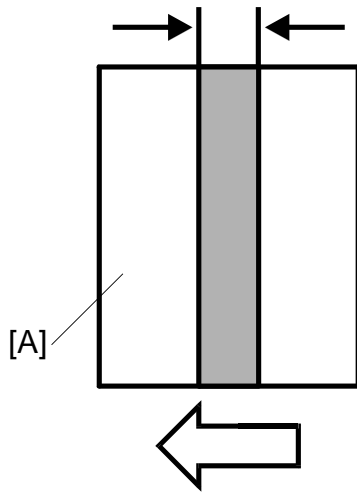
1. Be careful when handling the fusing unit. It is hot.
2. Take care not to spill silicone oil on the floor. If silicone oil spills on the floor, immediately clean it with a silicone oil remover. Silicone oil is very slippery and can cause someone to fall.



1. Remove the fusing unit from the machine. (See A109 Fusing Unit Removal.)
2. Remove the fusing lower cover [A] (2 screws).
3. Remove the cleaning roller support bracket [B] (3 screws).
4. Remove the bearings [C] and remove the pressure roller cleaning roller [D].

## 7.2 FUSING PRESSURE (NIP BAND WIDTH) CONFIRMATION

**NOTE:** Normally this adjustment is not needed in the field. (The standard factory settings are shown in the table below.)  
Perform the following procedures only when the problem is thought to be caused by an incorrect nip band width.



LOCATION	STANDARD
Center	$9.0 \pm 0.5$ mm (Confirmation reference)
Both Edges	$9.5 \pm 0.5$ mm

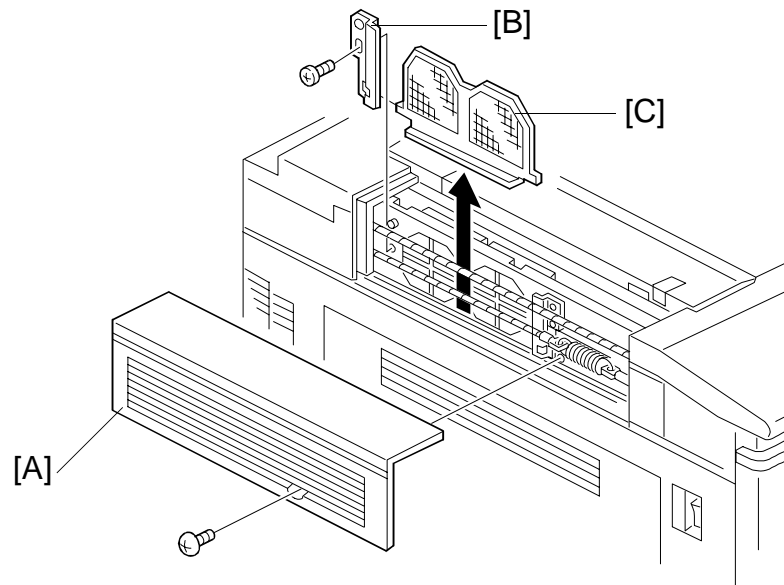
1. After warming up, turn off the main switch and pull out the fusing unit.
2. Pass an OHP sheet sideways [A] through the rollers to about the center position.
3. Wait 30 seconds, then remove the OHP sheet.
4. Measure the width of the the center area and both edges of the nip band.
5. If out of standard, adjust the pressure by using the spring screws located at both edges of the fusing unit. (Turning the screws clockwise will increase the nip band width.)

Confirm that the nip band width is within specification.

## 8. OTHERS

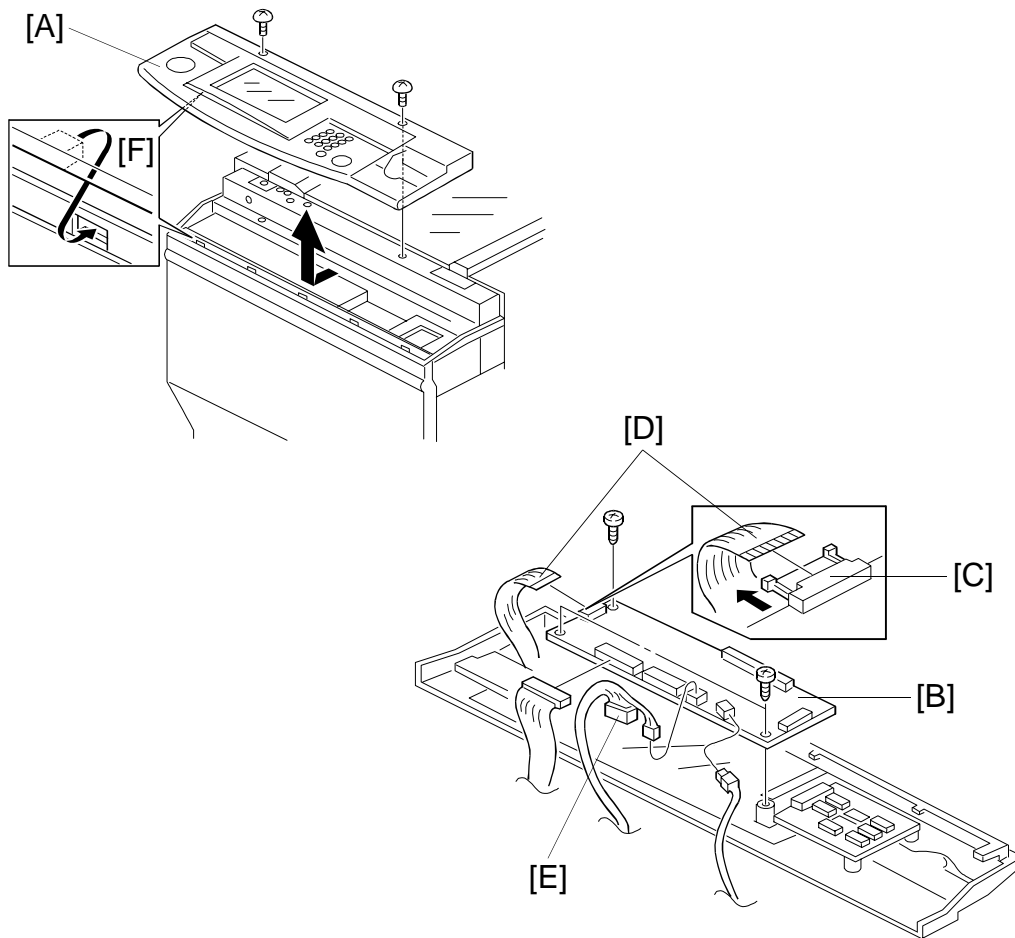
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### 8.1 OPTICS COOLING FAN FILTER REPLACEMENT



1. Remove the top left cover [A] (1 screw).
2. Remove the filter securing bracket [B] (1 screw).
3. Remove the optics cooling fan filter [C].

## 8.2 OPERATION PANEL CONTROL BOARD REPLACEMENT

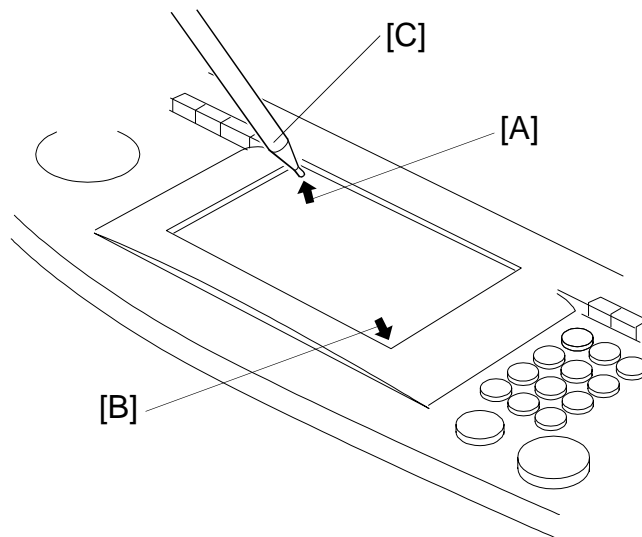
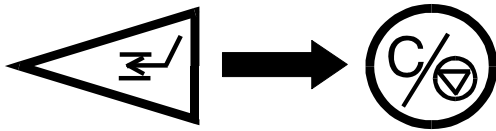


1. Remove the operation panel [A] (2 screws).
2. Disconnect the operation panel control board [B] connectors.  
(A172: 5 connectors, A199: 4 connectors).  
**NOTE:** • Pull out the connector catch [C] first, when disconnecting the flexible connector [D].  
Also when reinstalling, slide in the flexible connector when the connector catch is pulled out.  
• The connector [E] is for A172 only.
3. Remove the operation panel control board [B] (2 screws).  
**NOTE:** When reinstalling the operation panel, make sure that the panel is properly hooked in [F].

### 8.3 POINT ACCURACY ADJUSTMENT

When the touch panel sensing mechanism is not working properly, adjust it as follows:

1. Press the Interrupt key.
2. Hold down the Clear/Stop key for more than 3 seconds.



3. The graphic sensing adjustment screen will appear. Touch the upper left corner [A] then the lower right corner [B] of the panel using the editor pen [C].
4. Touch a few spots on the LCD touch panel, and confirm that the marker on the screen appears at exactly the same location as the pointed tip. If it does not, press the Clear/Stop key and repeat this procedure.
5. Press the Enter key to save the setting.
6. Press the Interrupt key to cancel the interrupt mode.

## 9. A172/A199 Fiery XJ System Printer $\gamma$ Adjustment Procedure

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### 9.1 Procedure

After you install the Interface Kit Type-C in the A172/A199 copiers, perform the following printer  $\gamma$  adjustment procedure.

**NOTE: 1** The printer gamma must be adjusted for both Fiery print mode settings (contone and halftone).

**NOTE: 2** The ACC procedure automatically adjusts both printer gamma settings (contone and halftone) at once. These printers modes can not be adjusted independently using ACC.

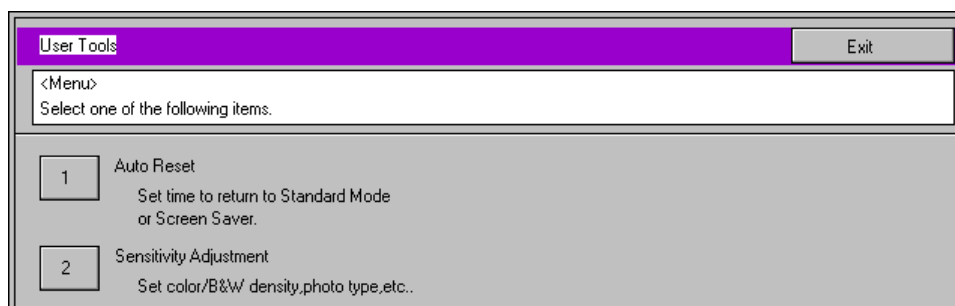
1. Connect the copier to the Fiery XJ with the cable provided.
2. Turn on the copier. When the copier is in standing by mode, turn on the Fiery XJ.

**NOTE:** Make sure that the copier is not in use and that the Fiery XJ screen displays "idle".

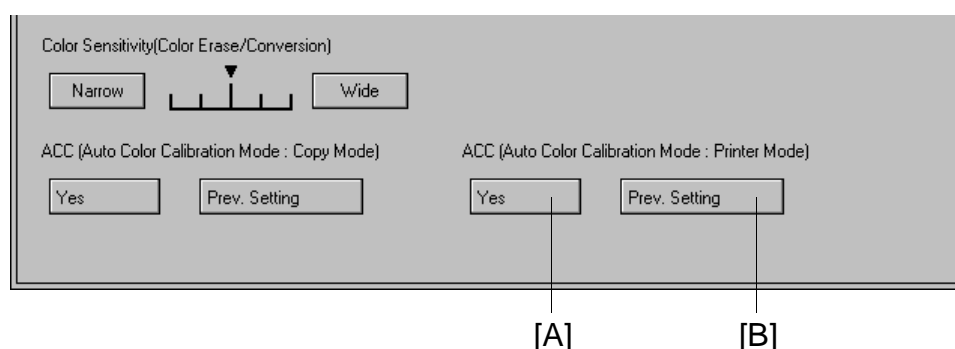
3. Print a Test Page to check the color balance and image density.
  - 1) At the idle screen, press the menu button of the Fiery XJ LCD once.
  - 2) Press the line selection button (to the right of "Print XJ Pages").
  - 3) Select Test Page from the submenu to print the Test Page (default: contone).
4. Compare the color scales on the Test Page just printed with the color scales on the reference Fiery XJ Test Page.  
Check that the various grades along the color scales are similar in density to those on the reference Test Page.
5. If the color scales on the Test Page are not acceptable, perform the Auto Color Calibration (ACC: Steps from 6 to 14).

6. Press the **User Tool** key on the operation panel.

7. Select **No. 2: Sensitivity Adjustment**.



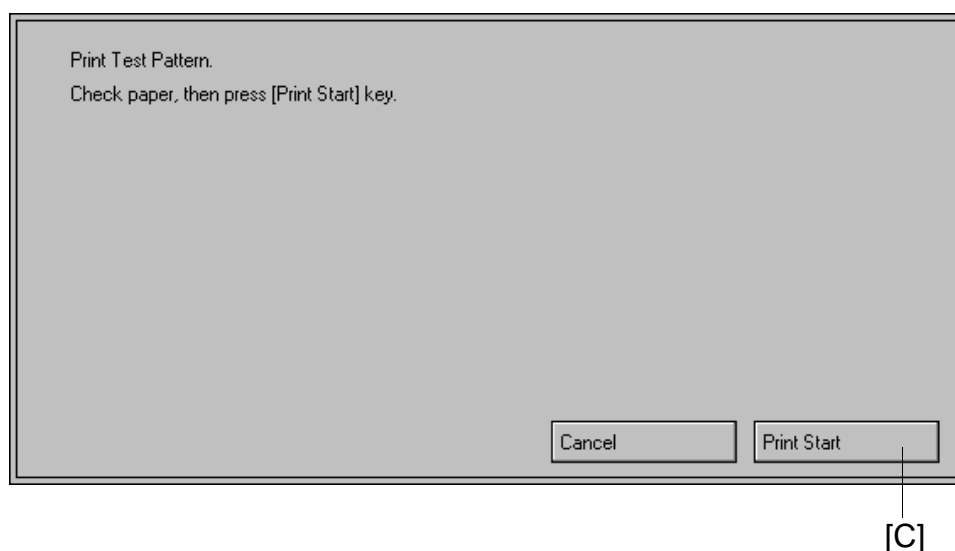
8. Press the **Yes** key [A]. If you want to recall the previous settings, press the **Prev. Setting** key [B].



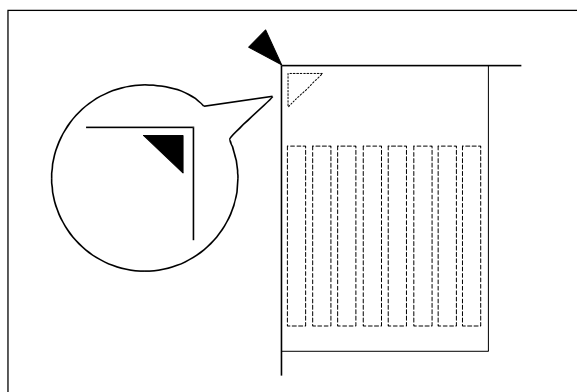
9. Press the **Print Start** key [C].

A test pattern will be printed.

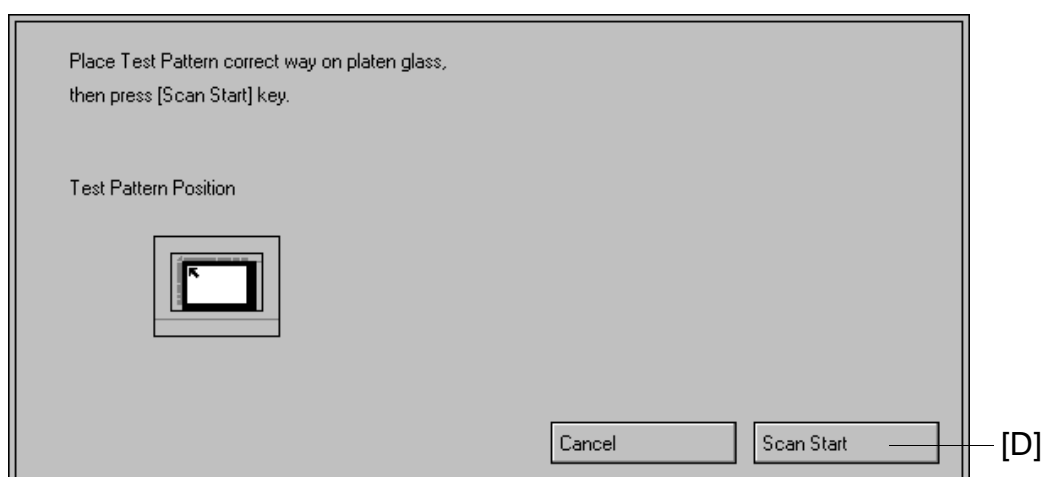
It will be printed on A4 or 8 1/2" x 11" sideways. If these sizes are not available, it will be printed on a larger size.



10. Place the test pattern on the exposure glass as shown in the illustration.  
If the copier is equipped with an optional dual job feeder, put the test pattern face-up on top of several sheets of white paper of the same size.  
Then place all the sheets face-down on the exposure glass.



11. Press the **Scan Start** [D] key.  
The  $\gamma$  correction data will be automatically adjusted.



12. Print out the test page.
13. Compare the printouts made before the ACC (Auto Color Calibration) and after the ACC.
14. If you want to recall the previous settings, perform steps 6 ~ 8 and in step 3 press the **Prev. Setting** key [B] instead of the **Yes** key.
15. If the output quality is still not satisfactory, change the value of the  $\gamma$  correction data for each mode as follows (contone/halftone).



## 9.2 To change the value of the $\gamma$ correction data.

1. Enter the SP mode and touch **No.8 SP Printer**.
2. On page 1 (Halftone mode) or page 2 (Contone mode), change the OFFSET values as follows.

### 9.2.1 For Letter Mode

In the "**=Halftone=**" screen (page 1) of the SP mode, adjust the 11th levels for the colors that need adjusting by changing only the **ID MAX** setting in the **OFFSET** column.

**NOTE:** The **ID MAX OFFSET** setting should be between 0 and 4.

Do not change the data in the **STEP** columns; these must remain at the default settings.

Do not change the **H**, **M**, or **L** settings in the **OFFSET** column. Such changes will have no effect on the printout, because the various colors in the H, M, and L ranges are produced by dithering (the laser is switched on and off to produce dither patterns).

SP MODES		Copy in SP		Index				
<Menu> Select function or item.								
<8>Printer <span style="float: right;">PAGE 1</span>								
Printer $\gamma$ Correction Data    Rough Adjustment    =Halftone=								
	[ BK ]		[ Y ]		[ M ]		[ C ]	
	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L	01	01	01	01	01	01	01	01
M	01	01	01	01	01	01	01	01
H	01	01	01	01	01	01	01	01
IDMAX	01	01	01	01	01	01	01	01

## 9.2.2 For Photo Mode

In the "**=Contone=**" screen (page 2), adjust the color scales by changing the  $\gamma$  data in the **OFFSET** columns for each color.

⇒ **Low:** Use to adjust levels 5 to 10 of the 100-step color scale in the middle of the Test Page.

**Middle:** Use to adjust levels 10 to 90.

**High:** Use to adjust levels 90 to 100.

**ID MAX:** Use to adjust the whole range, including level 100.  
Do not change this unless the whole range needs to be made brighter or darker. The adjustment is very sensitive, so it is best not to change the default settings.

**Do not change the  $\gamma$  data in the STEP column from the default settings.**

	[ BK ]		[ Y ]		[ M ]		[ C ]	
	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET	STEP	OFFSET
L	01	01	01	01	01	01	01	01
M	01	01	01	01	01	01	01	01
H	01	01	01	01	01	01	01	01
IDMAX	01	01	01	01	01	01	01	01

- To finish the operation, touch the **Index** [A] key to return to the SP mode menu. Touch the **Exit** key to exit the SP mode.

### To save the current data as a back-up

→ Press the **Save in Temporary Memory** key [A].

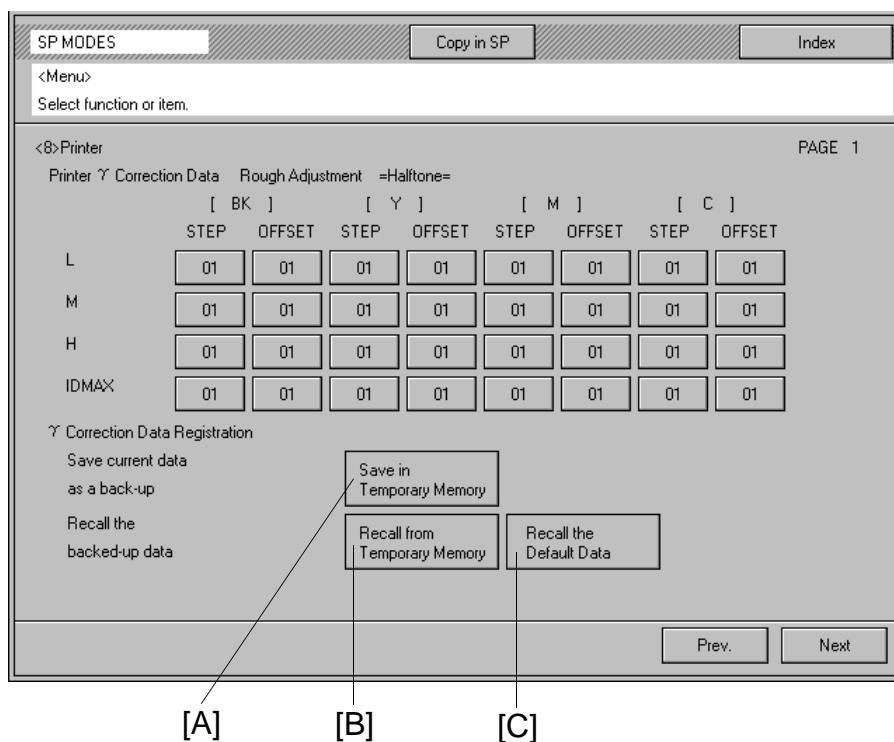
### To recall the data from the Temporary Memory, or to undo the last ACC

→ Press the **Recall from Temporary Memory** key [B].

**NOTE:** When the ACC is performed, the current printer gamma setting will be stored automatically in the Temporary Memory.

### To recall the default data

→ Press the **Recall the Default Data** key [C].



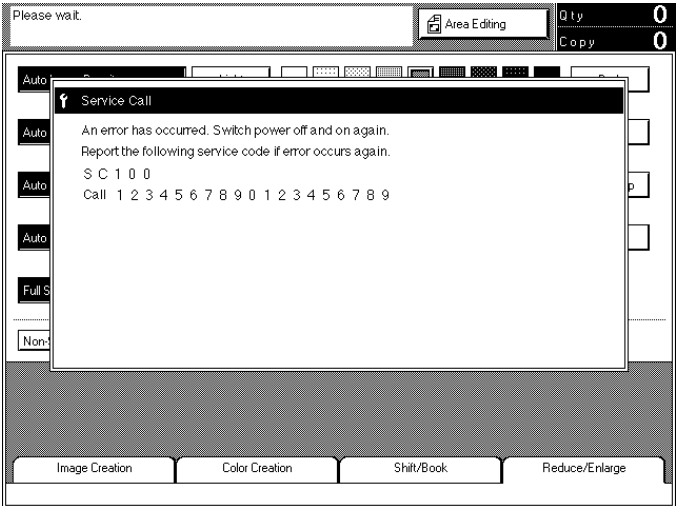
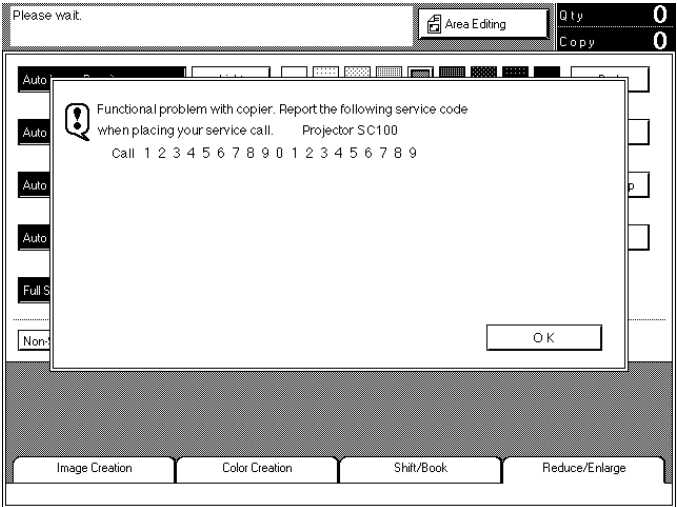
# **TROUBLESHOOTING**



# 1. SERVICE CALL CONDITIONS

## 1.1 SUMMARY

There are 4 levels of service call conditions.

Level	Definition	Display
A	The SC can only be reset by a service representative (see the notes on the next page) to prevent the machine from being damaged. The copier cannot be operated at all.	The SC display will not be canceled.
B	The SC can be reset by turning main switch off and on if the SC is caused by a misdetection.	
C	The copier can be operated as usual except for the unit related to the service call.	If the related function is selected, this display appears. 
D	Only 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 condition 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 and make some test copies.

## 1.2 SCANNING

### SC107: Lamp regulator malfunction

- Definition - [B]

The machine detects lamp regulator malfunctions by monitoring the signal for both the exposure lamp on and off conditions.

- Possible causes -

- Lamp regulator defective
- Exposure lamp open
- Optics thermoswitch open
- Scanner control board defective or poor connection

### SC120: Scanner HP sensor abnormal - Stays off

- Definition - [B]

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

- Possible causes -

- Scanner HP sensor defective
- Scanner motor defective or poor connection
- Scanner drive board defective or poor connection
- Scanner control board defective or poor connection
- Loose Allen screw on scanner drive pulleys
- DC power supply board defective (FU802)

### SC121: Scanner HP sensor abnormal - Stays on

- Definition - [B]

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

- Possible causes -

- Scanner HP sensor defective
- Scanner motor defective or poor connection
- Scanner drive board defective or poor connection
- Scanner control board defective or poor connection
- Loose Allen screw on scanner drive pulleys
- DC power supply board defective (FU802)



### **SC130: Scanner start abnormal**

- Definition - [B]

The scanner start signal is detected before the scanner returns to the home position.

- Possible causes -

- Scanner control board defective

### **SC170: Scanner DA1 abnormal**

- Definition - [B]

When performing the AGC, DA1 is not in the proper range.

- Possible causes -

- Poor connection between CCD board and scanner control board
- Scanner control board defective
- CCD board defective

### **SC171: Scanner DA2 abnormal**

- Definition - [B]

When performing the AGC, DA2 is not in the proper range.

- Possible causes -

- Poor connection between CCD board scanner control board
- Scanner control board defective
- CCD board defective

### **SC172: Scanner DA3 abnormal**

- Definition - [B]

When performing the AGC, DA3 is not in the proper range.

- Possible causes -

- Dirty white plate, reflectors, mirrors, or lens
- White plate on the exposure glass not properly positioned
- Exposure lamp deteriorated
- Scanner or mirrors not properly positioned
- Scanner control board defective
- CCD board defective

### SC173: Lamp regulator adjustment error

#### - Definition - [B]

When performing the AGC with the lamp voltage at 72 V, the CCD output does not exceed 1 V.

#### - Possible causes -

If the exposure lamp lights during AGC

- White plate on the exposure glass not properly positioned
- Dirty white plate, reflectors, mirrors, or lens
- Poor connection between lamp regulator and scanner drive board (CN105) or between scanner control board and scanner drive board (CN101)
- Exposure lamp deteriorated
- CCD board defective
- Scanner or mirrors not properly positioned
- Lamp regulator defective or poor connection (CN3)
- Scanner control board defective or poor connection (CN106)

If the exposure lamp does not light during AGC

- Poor connection between lamp regulator and scanner drive board (CN105) or between scanner control board and scanner drive board (CN101)
- No ac input to lamp regulator (CN1) → AC drive board or main power relay defective
- Lamp regulator defective or poor connection (CN3)
- Scanner control board defective or poor connection (CN106)

### SC174: Scanner DA2\* abnormal

#### - Definition - [B]

When performing the AGC, DA2\* is not in the proper range.

#### - Possible causes -

- Poor connection between CCD board and scanner control board
- Scanner control board defective
- CCD board defective

**SC191: Bar code scanning error****- Definition - [B]**

The bar code for the machine identification number cannot be detected when the AGC is performed after the main switch is turned on.

**- Possible causes -**

- The bar code label is dirty.
- Scanner mirrors are not in position

**SC192: Bar code number is different****- Definition - [B]**

The bar code number is not identical to the machine identification number stored in memory.

**- Possible causes -**

- Wrong machine identification number in memory
- Machine identification number is not entered in the new (replaced) RAM board
- RAM board defective
- Main control board defective

**SC193: IDU connection error****- Definition - [B]**

IDU connection cannot be detected.

**- Possible Causes -**

- IDU is disconnected
- IDU defective

**SC194: IDU detection error****- Definition - [B]**

IDU detection error

**- Possible Causes -**

- IDU defective

## 1.3 PRINTING

**SC302:** See AROUND THE DRUM

**SC303:** See AROUND THE DRUM

### **SC320: Polygon motor lock**

- Definition - [B]

The polygon motor lock signal is detected for more than 3 seconds.

- Possible causes -

- Polygon motor defective
- Polygon motor drive board defective
- Scanner control board defective

### **SC321: Transfer belt start signal error**

- Definition - [B]

The transfer belt start signal is not detected within 500 ms relative to the programmed timing.

- Possible causes -

- IPU board defective
- DIP SW301-1 on the IPU board is not ON

### **SC322: Laser synchronizing signal error**

- Definition - [B]

The intervals between laser synchronizing signals become over 1.2 times the normal interval.

- Possible causes -

- Laser synchronizing detector board defective
- Scanner control board defective
- Laser synchronizing detector board not properly positioned
- LD unit defective

### **SC323: LD drive current over**

- Definition - [B]

The LD drive board applies more than 100 mA to the LD for over 2.3 ms.

- Possible causes -

- LD unit defective

## **1.4 DEVELOPMENT**

### **SC341: Bk-development motor lock**

- Definition - [B]

The Bk-development motor lock signal is detected for more than 3 seconds.

- Possible causes -

- Bk-development motor defective or poor connection
- Too much load on the Bk-development section
- Interface board 1 defective or poor connection (CN708)
- Main control board defective

### **SC342: Bk-sleeve motor lock**

- Definition - [B]

The Bk-sleeve motor lock signal is detected for more than 3 seconds.

- Possible causes -

- Bk-sleeve motor defective or poor connection
- Too much load on the Bk-sleeve roller
- Interface board 1 defective or poor connection (CN708)
- Main control board defective

### **SC343: Y-sleeve motor lock**

- Definition - [B]

The Y-sleeve motor lock signal is detected for more than 3 seconds.

- Possible causes -

- Y-sleeve motor defective or poor connection
- Too much load on the Y-sleeve roller
- Interface board 2 defective or poor connection (CN806)
- Main control board defective

#### **SC344: M-sleeve motor lock**

- Definition - [B]

The M-sleeve motor lock signal is detected for more than 3 seconds.

- Possible causes -

- M-sleeve motor defective or poor connection
- Too much load on the M-sleeve roller
- Interface board 2 defective or poor connection (CN806)
- Main control board defective

#### **SC345: C-sleeve motor lock**

- Definition - [B]

The C-sleeve motor lock signal is detected for more than 3 seconds.

- Possible causes -

- C-sleeve motor defective or poor connection
- Too much load on the C-sleeve roller
- Interface board 2 defective or poor connection (CN806)
- Main control board defective

#### **SC346: Color-development motor lock**

- Definition - [B]

The Color-development motor lock signal is detected for more than 3 seconds.

- Possible causes -

- Color-development motor defective or poor connection
- Too much load on one of the C/M/Y-development sections
- Interface board 1 defective or poor connection (CN708)
- Main control board defective

**SC350: Bk-TD sensor initial setting error****SC351: Y-TD sensor initial setting error****SC352: M-TD sensor initial setting error****SC353: C-TD sensor initial setting error****- Definition - [B]**

TD sensor output (Vt) does not reach a value between 2.4 and 2.6 V when performing the toner density initial setting.

**- Possible causes -**

- TD sensor defective
- Main control board defective
- Developer not distributed evenly

**SC354: Bk-TD sensor gain adjustment error****SC355: Y-TD sensor gain adjustment error****SC356: M-TD sensor gain adjustment error****SC357: C-TD sensor gain adjustment error****- Definition - [B]**

When adjusting TD sensor gain during the toner density initial setting, Vcnt (output voltage) does not reach a value between 7 and 11 V.

**- Possible causes -**

- Main control board defective

**SC360: Development bias leak****- Definition - [B]**

The development bias leak signal is detected for more than 3 seconds.

**- Possible causes -**

- Sleeve roller receptacle damaged
- High voltage supply board - B defective

**SC370: Bk-TD sensor upper detection abnormal**

**SC371: Y-TD sensor upper detection abnormal**

**SC372: M-TD sensor upper detection abnormal**

**SC373: C-TD sensor upper detection abnormal**

- Definition - [B]

TD sensor output (Vt) exceeds 4.5 V during copy cycles.

- Possible causes -

- TD sensor defective
- Main control board defective
- Too much toner in the development unit (accidental)

**SC374: Bk-TD sensor lower detection abnormal**

**SC375: Y-TD sensor lower detection abnormal**

**SC376: M-TD sensor lower detection abnormal**

**SC377: C-TD sensor lower detection abnormal**

- Definition - [B]

TD sensor output (Vt) becomes lower than 0.5 V during copy cycles.

- Possible causes -

- TD sensor defective
- Main control board defective
- Toner supply system defective



## **1.5 AROUND THE DRUM**

### **SC302: Charge current leak**

- Definition - [B]

A charge current leak signal is detected for more than 3 seconds.

- Possible causes -

- Charge corona end block damaged
- Charge corona receptacle damaged
- High voltage supply board - C/G defective

### **SC303: Wire cleaner motor error**

- Definition - [B]

Over current signal is detected for more than 10 seconds, when the wire cleaner motor rotates.

- Possible causes -

- Wire cleaner motor defective
- Wire cleaner drive board defective
- Wire cleaner pad unit not properly positioned

### **SC380: Drum potential sensor calibration error**

- Definition - [D]

When performing the process control self-check, the drum potential sensor is not calibrated properly. The previous settings are used in this case. If there are no previous settings, the defaults are used.

- Possible causes -

- Drum potential sensor defective
- Interface board 1 defective
- Main control board defective
- High voltage supply board - B defective

### **SC381: Charge potential abnormal**

- Definition - [D]

When performing the process control self-check, the charge potential of the drum is not in the proper range.

- Possible causes -

- High voltage supply board- C/G defective
- Main control board defective

### **SC382: Vd adjustment error**

- Definition - [D]

When doing the process control self-check, VD does not come within 5 V of the target after 30 trials. The previous settings for VG, VB, and ILD are used in this case. If there are no previous settings, the defaults are used.

- Possible causes -

- High voltage supply board - C/G defective
- Main control board defective

### **SC383: VL adjustment error**

- Definition - [D]

When performing the process control self-check, VL does not come within 5 V of the target after 30 trials. The previous settings for VG, VB, and ILD are used in this case. If there are no previous settings, the defaults are used.

- Possible causes -

- LD drive board defective
- IPU board defective

### **SC384: LD exposure abnormal**

- Definition - [D]

When performing the process control self-check, the potentials on the 14-step gradation pattern do not come within the target range.

- Possible causes -

- LD drive board defective
- IPU board defective

### **SC390: ID sensor adjustment error**

- Definition - [D]

When performing the process control self-check, Vsg adjustment does not result in  $4.0 \pm 0.2$  V.

- Possible causes -

- ID sensor defective
- Main control board defective
- ID sensor too dirty

**SC422: PCC leak****- Definition - [B]**

A PCC leak signal is detected for more than 3 seconds.

**- Possible causes -**

- PCC end block damaged
- High voltage supply board - T1/PCC/BR defective

**SC440: Drum motor lock****- Definition - [B]**

The drum motor lock signal is detected for more than 3 seconds.

**- Possible causes -**

- Too much load on the drum drive mechanism
- Drum motor defective or poor connection
- Interface board 1 defective or poor connection (CN708)
- Main control board defective

## 1.6 TRANSFER BELT / ROLLER

### SC405: Transfer belt position abnormal

#### - Definition - [B]

The transfer belt is positioned to touch the drum in the following conditions:

Belt and drum cleaning completed after the main switch is turned on

Belt and drum cleaning completed after a paper jam is removed

Copy job completed

#### - Possible causes -

- Transfer belt position sensor defective
- Transfer belt position clutch defective
- Interface board 1 defective
- Main control board defective

### SC406: Transfer roller position abnormal

#### - Definition - [B]

The transfer roller is positioned to touch the transfer belt in the following conditions:

Belt and drum cleaning completed after the main switch is turned on

Belt and drum cleaning completed after a paper jam is removed

Copy job completed

#### - Possible causes -

- Transfer roller position sensor defective
- Transfer roller position clutch defective
- Interface board 2 defective
- Main control board defective

### SC411: Paper discharge leak

#### - Definition - [B]

A paper discharge leak signal is detected for more than 3 seconds.

#### - Possible causes -

- Paper discharge plate is touching a conductive foreign object
- High voltage supply board - D defective

**SC420: Cleaning motor lock****- Definition - [B]**

The cleaning motor lock signal is detected for more than 3 seconds.

**- Possible causes -**

- Cleaning motor defective or poor connection
- Interface board 1 defective or poor connection (CN710)
- Main control board defective

**SC422:** See AROUND THE DRUM

**SC440:** See AROUND THE DRUM

## 1.7 PAPER FEED

### SC500: Transport motor lock

- Definition - [B]

The transport motor lock signal is detected for more than 3 seconds.

- Possible causes -

- Too much load on the transport unit, fusing unit, transfer roller unit, or transfer belt cleaning unit
- Transport motor defective or poor connection
- Interface board 2 defective or poor connection (CN806)
- Main control board defective

### SC502: 1st tray lift motor abnormal

### SC503: 2nd tray lift motor abnormal

### SC504: 3rd tray lift motor abnormal

- Definition - [C]

The lift sensor is not activated within 10 seconds after the lift motor starts turning. The SC message for level C is displayed when this condition is detected twice.

- Possible causes -

- Lift sensor defective
- Tray lift motor defective or poor connection
- Paper feed interface board defective or poor connection (CN906)
- Main control board defective

### SC510: Paper feed motor abnormal

- Definition - [B]

The paper feed motor lock signal is detected for more than 3 seconds.

- Possible causes -

- Too much load on the paper feed mechanism
- Paper feed motor defective or poor connection
- Paper feed interface board defective or poor connection (CN910)
- Main control board defective

## **1.8 FUSING**

### **SC541: Fusing (hot roller) thermistor open**

- Definition - [A]

The output of the fusing (hot roller) thermistor goes to 5 V, corresponding to 0°C.

- Possible causes -

- Fusing (hot roller) thermistor open
- Fusing unit not installed
- Main control board defective

### **SC542: Fusing (hot roller) warm-up error**

- Definition - [A]

The fusing (hot roller) temperature does not reach the ready temperature within 12 minutes after the main switch is turned on.

- Possible causes -

- Fusing (hot roller) thermistor not in position
- Fusing (hot roller) lamp open
- Fusing (hot roller) thermistor defective
- Main control board defective

### **SC543: Fusing (hot roller) overheat**

- Definition - [A]

A fusing (hot roller) temperature of over 200°C is detected 5 times (within 5 seconds).

- Possible causes -

- Fusing (hot roller) thermistor defective
- AC drive board defective (triac)
- Main control board defective

#### **SC544: Fusing (hot roller) low temperature abnormal**

- Definition - [A]

A fusing (hot roller) temperature of below 90°C is detected 6 times (within 6 seconds) after warm-up is completed.

- Possible causes -

- Fusing (hot roller) thermistor defective
- AC drive board defective
- Main control board defective
- Fusing (hot roller) thermistor not in position
- Fusing (hot roller) lamp open

#### **SC545: Fusing (hot roller) ready temperature abnormal**

- Definition - [A]

Fusing (hot roller) temperature goes below the ready temperature (10°C below the control temperature) after warm-up is completed, and it does not reach the ready temperature within 6 minutes.

- Possible causes -

- Fusing (hot roller) thermistor defective
- AC drive board defective
- Main control board defective

#### **SC547: Fusing (hot roller) temperature does not increase**

- Definition - [A]

During warm-up, the fusing (hot roller) temperature does not increase when compared to the temperature 1 minute before.

- Possible causes -

- Fusing (hot roller) thermistor defective
- AC drive board defective
- Main control board defective



### **SC551: Pressure roller thermistor open**

- Definition - [A]

The output of the pressure roller thermistor goes to 5 V, corresponding to 0°C.

- Possible causes -

- Pressure roller thermistor open
- Main control board defective
- Fusing unit not installed

### **SC552: Pressure roller warm-up error**

- Definition - [A]

Pressure roller temperature does not reach the ready temperature within 12 minutes after the main switch is turned on.

- Possible causes -

- Pressure roller thermistor not in position
- Pressure roller lamp open
- Pressure roller thermistor defective
- Main control board defective

### **SC553: Pressure roller overheat**

- Definition - [A]

A pressure roller temperature of over 180°C is detected 5 times.

- Possible causes -

- Pressure roller thermistor defective
- AC drive board defective (triac)
- Main control board defective

#### **SC554: Pressure roller low temperature abnormal**

- Definition - [A]

A pressure roller temperature of below 70°C is detected 6 times after warm-up is completed.

- Possible causes -

- Pressure roller thermistor defective
- AC drive board defective
- Main control board defective
- Pressure roller thermistor not in position
- Pressure roller lamp open

#### **SC555: Pressure roller ready temperature abnormal**

- Definition - [A]

The pressure roller temperature goes below the ready temperature (10°C below the control temperature) after warm-up is completed, and does not reach the ready temperature within 6 minutes.

- Possible causes -

- Pressure roller thermistor defective
- AC drive board defective
- Main control board defective

#### **SC557: Pressure roller temperature does not increase**

- Definition - [A]

During warm-up, pressure roller temperature does not increase when compared to the temperature 1 minute before.

- Possible causes -

- Pressure roller thermistor defective
- AC drive board defective
- Main control board defective

#### **SC558: Zero cross signal abnormal**

- Definition - [A]

Zero cross signals are not detected within a certain period.

- Possible causes -

- Main control board defective

## **1.9 COMMUNICATION**

### **SC600: Communication error between main control and operation panel boards**

- Definition - [B]

The main CPU cannot communicate with the operation panel CPU properly.

- Possible causes -

- Poor connection between main control board and operation panel board
- Main board defective
- Operation panel defective

### **SC601: Communication error between main control and scanner control boards**

- Definition - [B]

The main CPU cannot communicate with the scanner control CPU properly.

- Possible causes -

- Poor connection between main control board and scanner control board (optical fiber cable)
- Optical fiber cable defective
- Main control board defective
- Scanner control board defective
- DC power supply board defective (no dc 5V input to scanner control board)

### **SC602: Communication error between main control and transfer belt motor drive boards**

- Definition - [B]

The main CPU does not receive the response signal from the transfer belt drive board after 3 tries.

- Possible causes -

- Poor connection between main control board and transfer belt drive board
- Main control board defective
- Transfer belt drive board defective

### **SC603: Communication error within main control board**

- Definition - [B]

The CPUs on the main control board cannot communicate properly with each other.

- Possible causes -

- Main control board defective

### **SC604: Serial signal error in main control board**

- Definition - [B]

Writing and reading serial signals for the DRAM produces discrepancies.

- Possible causes -

- Main control board defective

### **SC605: Communication error between main control and IPU boards**

- Definition - [B]

The main CPU cannot communicate with the IPU CPU properly.

- Possible causes -

- Poor connection between main control board and IPU board
- Main control board defective
- IPU board defective

### **SC622: Communication error between main control board and display editor I/F board**

- Definition - [C]

The main CPU cannot start communication with the editor I/F properly.

- Possible causes -

- Poor connection between main control board and the display editor I/F board
- Main control board defective
- Display editor I/F board defective

### **SC623: Communication error between main control board and projector unit**

- Definition - [B]

The main CPU cannot start communication with the projector unit properly.

- Possible causes -

- Poor connection between main control board and projector unit
- Main control board defective
- Option interface board defective
- Projector control board defective

## 1.10 OPTIONAL EQUIPMENT

### SC700: DJF feed-in motor abnormal

### SC701: DJF belt drive motor abnormal

### SC702: DJF feed out motor abnormal

#### - Definition - [D]

The encoder pulse is not detected by the DJF main board under each motor on condition. The first time, an original jam occurs. The second time, an SC is displayed.

#### - Possible causes -

- DJF feed-in motor defective
- DJF belt drive motor defective
- DJF feed out motor defective

### SC703: Size detection encoder pulse error

#### - Definition - [C]

The encoder pulse from the pull-out roller is not detected by the DJF main board. The first original jam will not display an SC. The second jam, however, will display an SC code.

#### - Possible causes -

- Pulse generator defective
- Original length detection error
- Original has slipped

### SC704: DJF friction belt motor abnormal

#### - Definition - [D]

The encoder pulse is not detected by the DJF main board under the friction belt motor on condition. The first original jam will not display an SC. The second jam, however, will display an SC code.

#### - Possible causes -

- Friction belt turn sensor defective
- Friction belt motor defective
- Pulse generator defective
- Some tension has been applied to the friction belt

**SC730: Sorter motor abnormal****- Definition - [B]**

The encoder pulse is not detected by the sorter control board for 200 ms after the sorter motor starts. A paper jam indication is displayed the first time. An SC is displayed the second time.

**- Possible causes -**

- Sorter motor defective

**SC790: Projector lamp does not turn on****- Definition - [C]**

The projector lamp does not turn on 100 ms after 10 V (or more) is applied to the lamp.

**- Possible causes -**

- Projector lamp open
- Thermofuse blown

**SC791: Projector lamp does not turn off****- Definition - [C]**

The projector lamp stays on when it should turn off.

**- Possible causes -**

- Projector lamp regulator defective

**SC792: Projector lamp overheat****- Definition - [C]**

The projector control board detects a lamp overheat condition through the thermistor.

**- Possible causes -**

- Projector lamp regulator defective
- Thermistor defective

## 1.11 OTHERS

### **SC900: Bk-total counter not on**

- Definition - [B]

The Bk-total counter does not turn on.

- Possible causes -

- Bk-total counter defective
- DC power supply board defective (FU803, FU804)

### **SC901: Bk-total counter not off**

- Definition - [B]

The Bk-total counter does not turn off.

- Possible causes -

- Bk-total counter defective

### **SC902: FC-total counter does not turn on**

### **SC903: FC-total counter does not turn off**

- Definition - [B]

The FC-total counter does not turn on or off.

- Possible causes -

- FC-total counter defective



## 1.12 ACC Control

**SC910: ACC Calculation Error (Letter Mode: Bk)**

**SC911: ACC Calculation Error (Letter Mode: C)**

**SC912: ACC Calculation Error (Letter Mode: M)**

**SC913: ACC Calculation Error (Letter Mode: Y)**

**SC914: ACC Calculation Error (Photo Mode: Bk)**

**SC915: ACC Calculation Error (Photo Mode: C)**

**SC916: ACC Calculation Error (Photo Mode: M)**

**SC917: ACC Calculation Error (Photo Mode: Y)**

- Definition - [D]

Even if the test pattern has been scanned in, the CPU on the IPU could not find the appropriate adjustment table to approximate the actual curve to the target gamma curve.

- Possible Causes -

- IPU defective

**SC920: ACC not performed (internal error)**

- Definition - [D]

Under any of the following conditions, the ACC will not performed.

- 1) Process Control self-check error, ID sensor error, Drum potential sensor error, Potential control error.
- 2) When an SC occurs while the ACC test pattern is printed.
- 3) When the TD sensor output ( $V_t$ ) value becomes lower than  $2.5 \pm 1.0$  V.

- Possible Causes -

- The actual printer gamma curve changed over a big range (caused by process control self-check).
- Main Control Board defective

## 2. BLOWN FUSE CONDITIONS

---

Fuse	Rating		Symptom (Main Switch: ON)
	110 - 120 V	220 – 240 V	
DC Power Supply Board			
FU801	8A/125 V	5 A/250 V	No response (Dead machine)
FU802	6.3 A/125 V		SC121 (Scanner HP sensor abnormal - stays on) or SC120 (Scanner HP sensor abnormal - stays off)
FU803	6.3 A/125 V		SC900 (Bk-total counter not on)
FU804	6.3 A/125 V		SC900 when the Start key is pressed, or misfeed occurs before registration when copy mode without black is selected.

### **3. OPERATION PANEL SELF-DIAGNOSTIC MODES**

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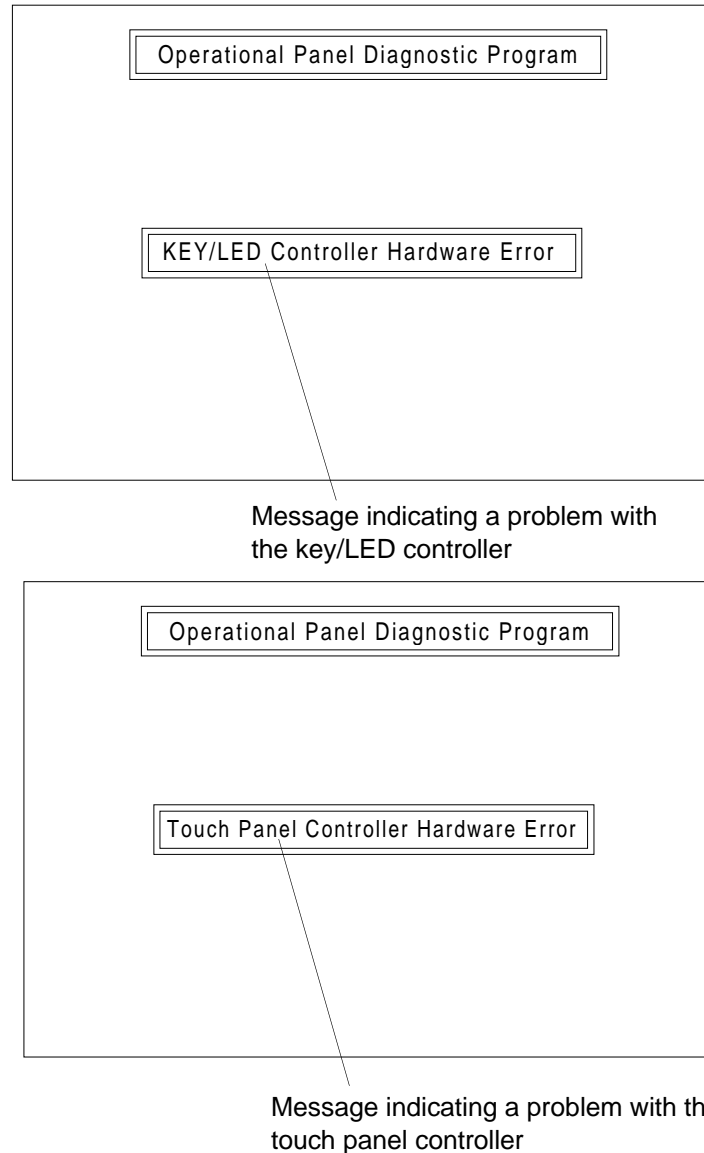
The machine can make a self-diagnosis on the operation panel (operation control unit).

#### **3.1 OPERATION PANEL SELF-DIAGNOSTIC TESTS**

The machine can perform the following tests on the operation control unit:

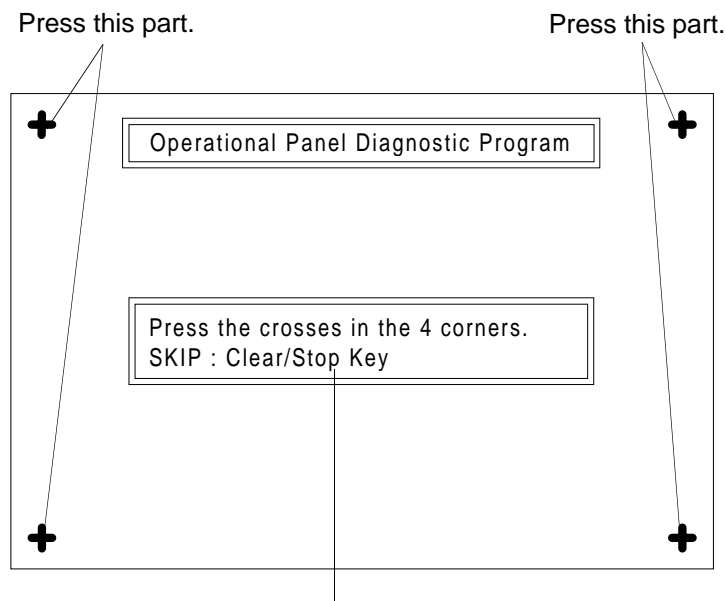
- Main RAM read/write test
- System ROM check sum test
- Video RAM read/write test
- VGA register test
- LCD pattern test
- Touch panel test
- LED/Conventional key test
- CMOS RAM test

## 3.2 STARTING THE OPERATIONAL DIAGNOSTIC PROGRAM



1. To start the operational diagnostic program, turn on the main switch while pressing the [Special Accessory Key] key, then press the [Start] key.
2. If there is an error before the main menu is displayed, the operation control unit system displays the error message as shown in the above diagrams. This error message indicates that something is wrong inside the operation control unit.  
If this error message appears, turn off the main switch to forcibly terminate the operational diagnostic program.

3. When you start the operational diagnostic program, the system displays the point accuracy calibration screen.



Message indicating an instruction to press the crosses in the four corners.

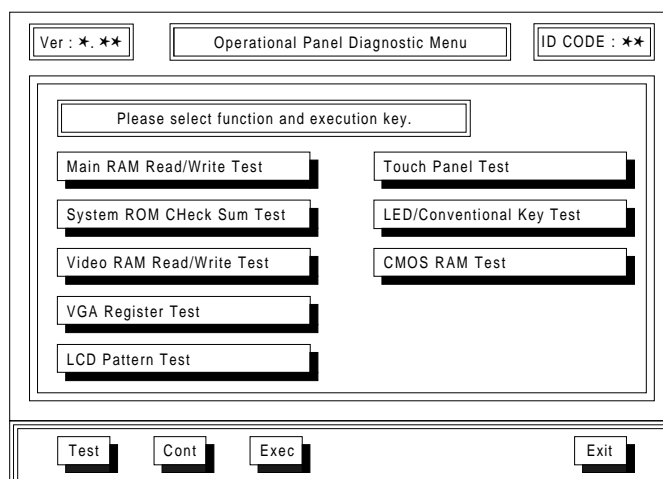
Pressing the Clear/Stop key skips the menu.

- a) If the point accuracy calibration is necessary, touch the crosses in the four corners with the editor pen. This enables the correct touch key operation in the subsequent self diagnostic program screen.

**NOTE:** You can press the crosses in any order.

This calibration is independent from the point accuracy of the standard operation panel screen.

- b) When the calibration is unnecessary, press the Clear/Stop key to go to the menu screen.



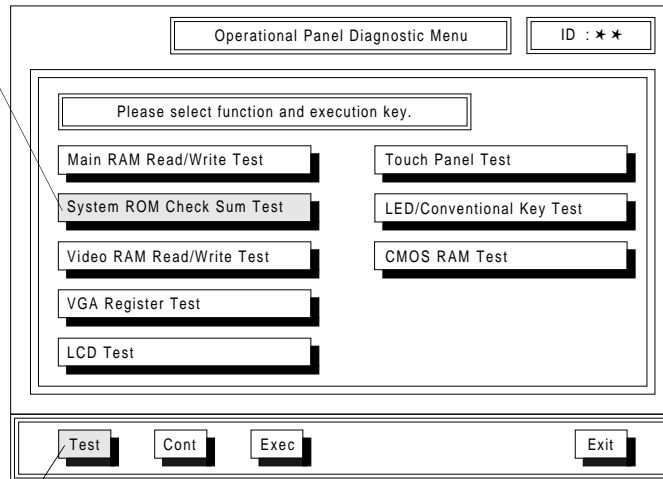
### 3.3 SELF-DIAGNOSTIC MODES

The following three self-diagnostic modes are available.

Usually, the test mode is the most convenient for self-diagnosis.

#### (1) Test mode

Reverse display indicating that the ROM check sum test is selected.



Pressing this key starts the self-diagnostic program in the test mode.

The self-diagnostic program in the test mode executes the selected test and all the subsequent tests.

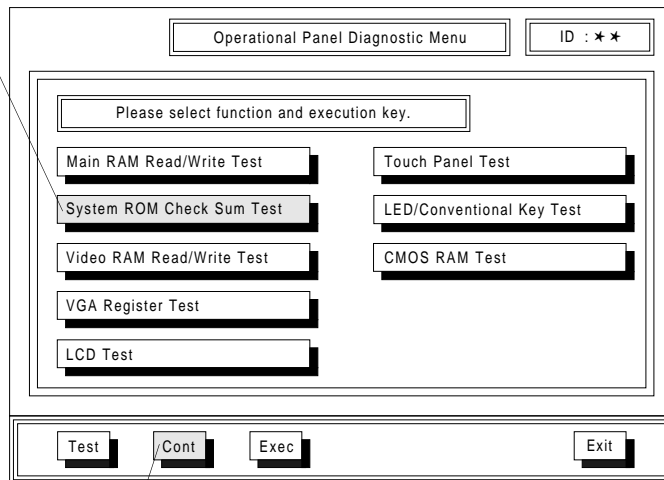
Note that the following tests involve the use of touch panel operation to start the tests:

- LCD pattern test
- Touch panel test
- LED/conventional key test
- CMOS RAM test

If it detects a problem, the self-diagnostic system stops executing the test and displays information about the problem.

## (2) Continuous mode

Reverse display indicating that the ROM check sum test is selected.



Pressing this key starts the selected test in the continuous mode.

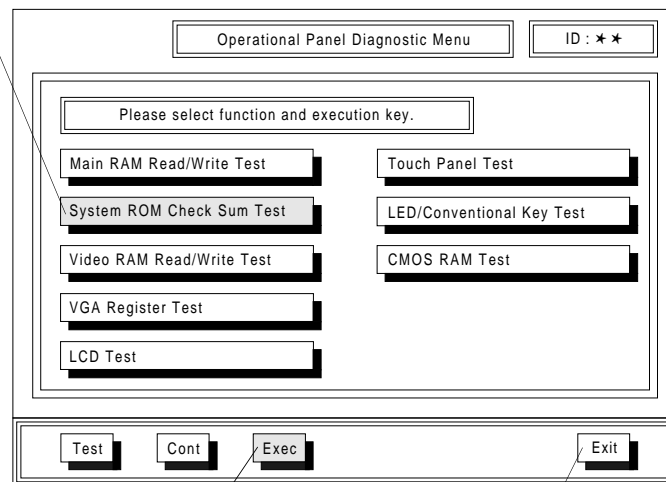
The self-diagnostic program in the continuous mode repeats the selected test without cessation. It displays the number of times it repeats the test. You can stop this test by using the End key. If a problem is detected, the machine stops the test and displays information about the problem. The self-diagnostic program does not support the continuous mode for the following tests:

- LCD pattern test
- Touch panel test
- LED/conventional key test
- CMOS RAM test

### (3) Execution mode

The self-diagnostic program in the execution mode executes the selected test once.

Reverse display indicating that the ROM check sum test is selected.



Pressing this key starts the selected test in the execution mode.

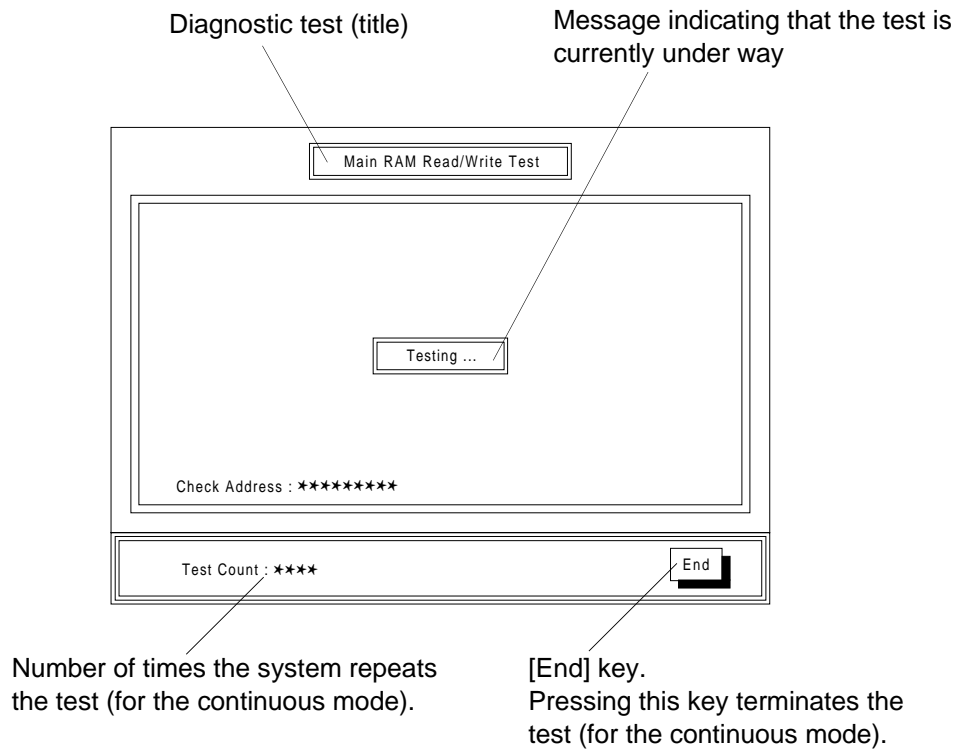
Pressing this key terminates the self-diagnostic program.



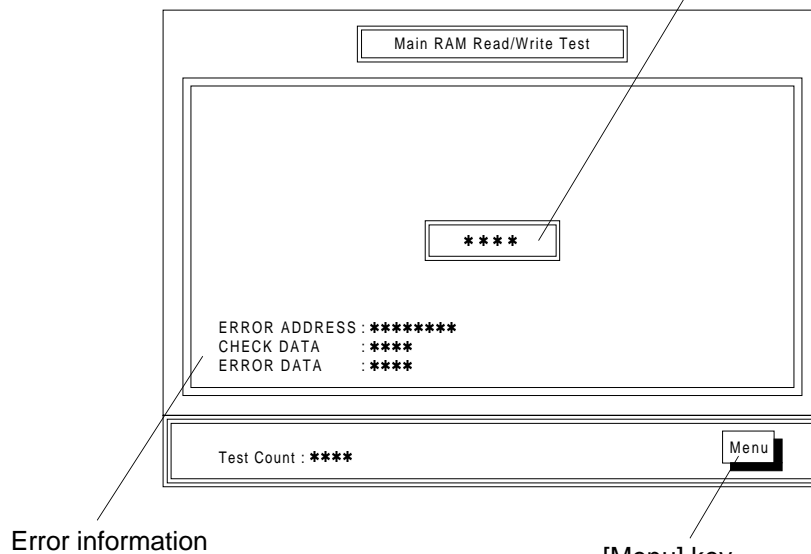
## 3.4 Details about Operation Panel Self-diagnosis

Select a test. Then, select a mode.

### 3.4.1 Main RAM read/write test



Test result message  
 If the test is a success, [Test successful] appears.  
 If it is not, [Test Failed] appears.



[Menu] key.  
 You must press this key to return to the menu screen.

### (i) Message after the test

- (a) If the test is successful:
  - [Test Successful] appears at the center of the screen.
- (b) If the test is unsuccessful:
  - [Test Failed] appears at the center of the screen.
  - Error information appears at the lower left-hand corner of the screen.

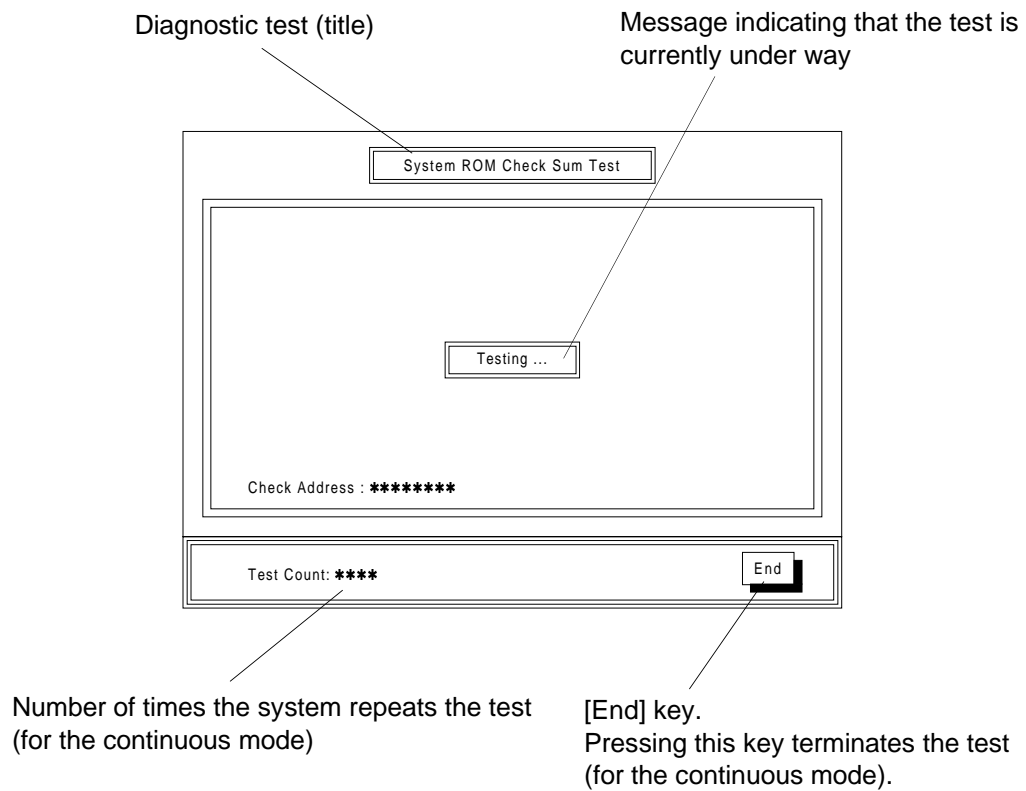
Remarks: Error information

Error address	Segment + Offset for an area of 1 MByte or less
Check data	Value written at test execution time
Error data	Value read from the same position that was written into

### (ii) Processing after the test

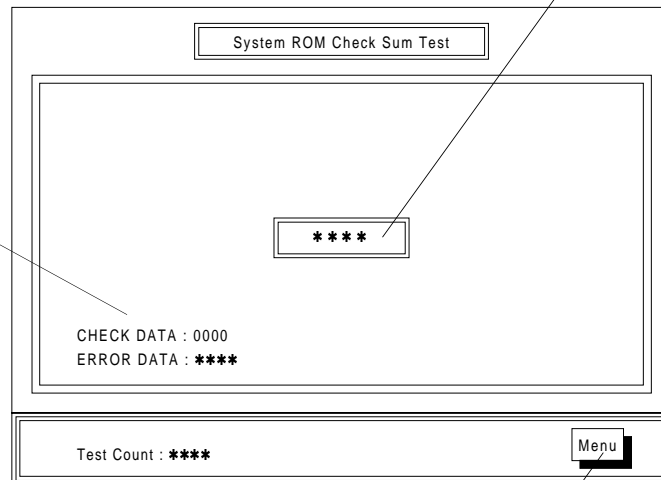
- (a) If the test is successful:
  - Test mode: The system executes the next test.
  - Continuous mode: The system repeats the same test.
  - Execution mode: The system displays [Menu].  
 You must press [Menu] to return to the menu screen.
- (b) If the test is unsuccessful:
  - The system displays the error information and [Menu].  
 You must press [Menu] to return to the menu screen.

### 3.4.2 System ROM check sum test



Test result message  
 If the test is a success, [Test successful]  
 appears.  
 If it is not, [Test Failed] appears.

Error information



[Menu] key.  
 You must press this key to return  
 to the menu screen.

### (i) Message after the test

- (a) If the test is successful:
- [Test Successful] appears at the center of the screen.
- (b) If the test is unsuccessful:
- [Test Failed] appears at the center of the screen.
  - Error information appears at the lower left-hand corner of the screen.

Remarks: Error information

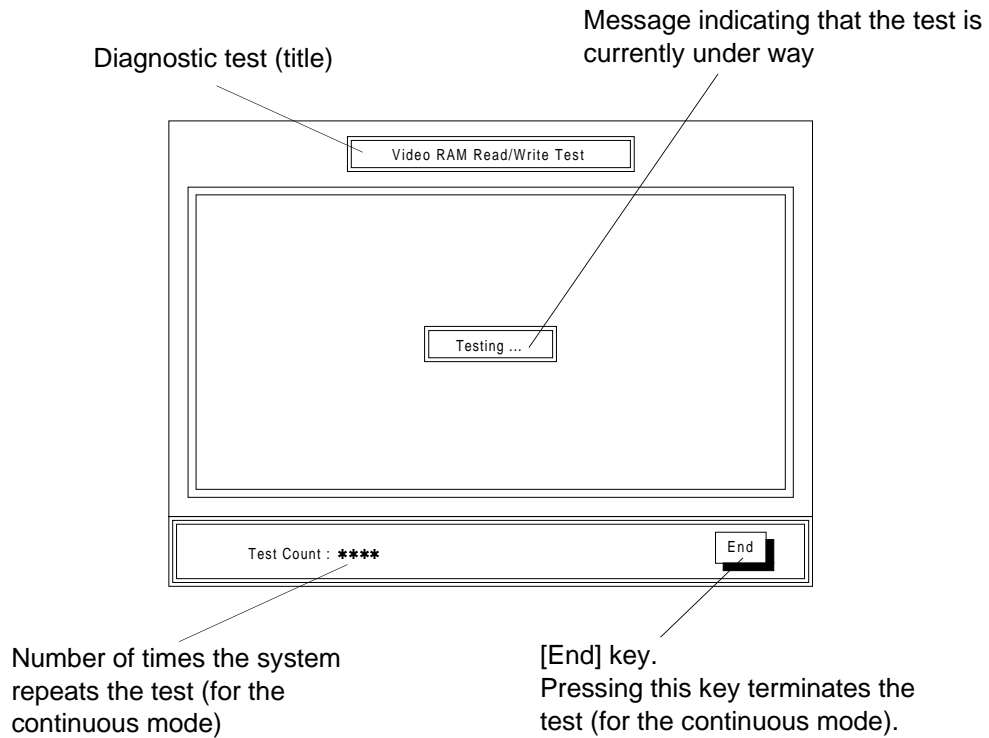
Check data	0000h is displayed because of 0 addition.
Error data	Result of adding data in word units

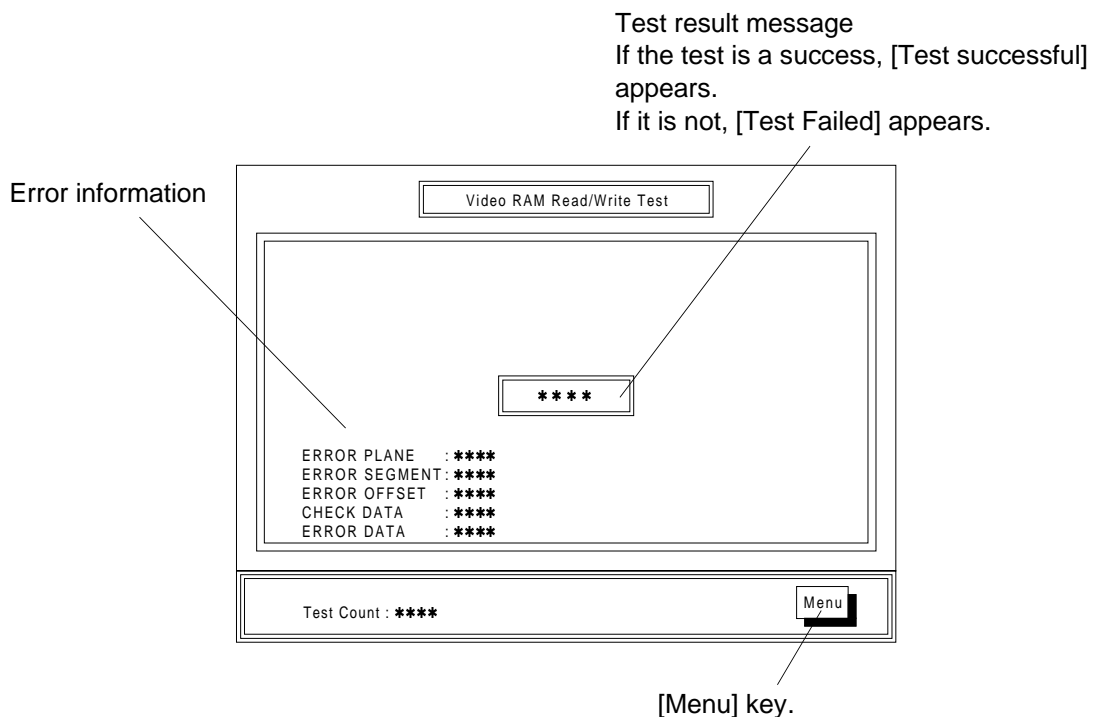
### (ii) Processing after the test

- (a) If the test is successful:
- Test mode: The system executes the next test.
  - Continuous mode: The system repeats the same test.
  - Execution mode: The system displays [Menu].  
 You must press [Menu] to return to the menu screen.
- (b) If the test is unsuccessful:
- The system displays the error message and [Menu].  
 You must press [Menu] to return to the menu screen.

### 3.4.3 Video RAM read/write test

**NOTE:** Vertical stripes (due to test data) appear on the LCD screen while the test is running. This should be considered normal.





[Menu] key.  
You must press this key to return to the menu screen.

### (i) Message after the test

- (a) If the test is successful:
- [Test Successful] appears at the center of the screen.
- (b) If the test is unsuccessful:
- [Test Failed] appears at the center of the screen.
  - Error information appears at the lower left-hand corner of the screen.

Remarks: Error information

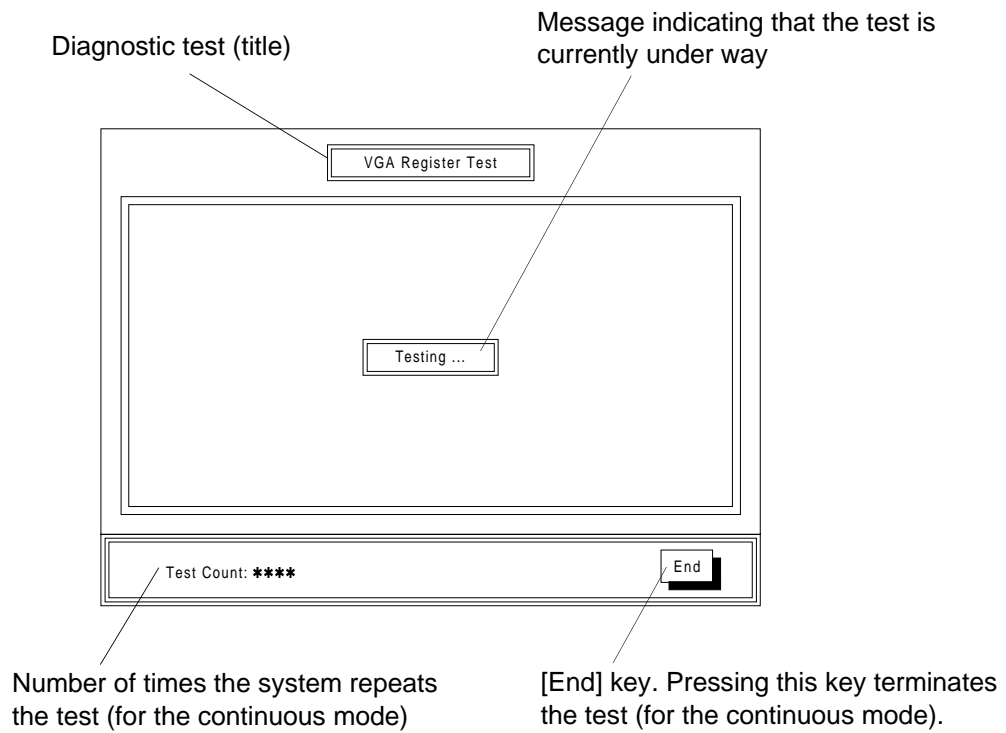
Error plane	Memory bank at switching time
Error segment	Segment (A000h or B000h) is displayed.
Error offset	A value from 0000h through FFFFh is displayed.
Check data	Value written at test execution time
Error data	Value read from the same position that was written into

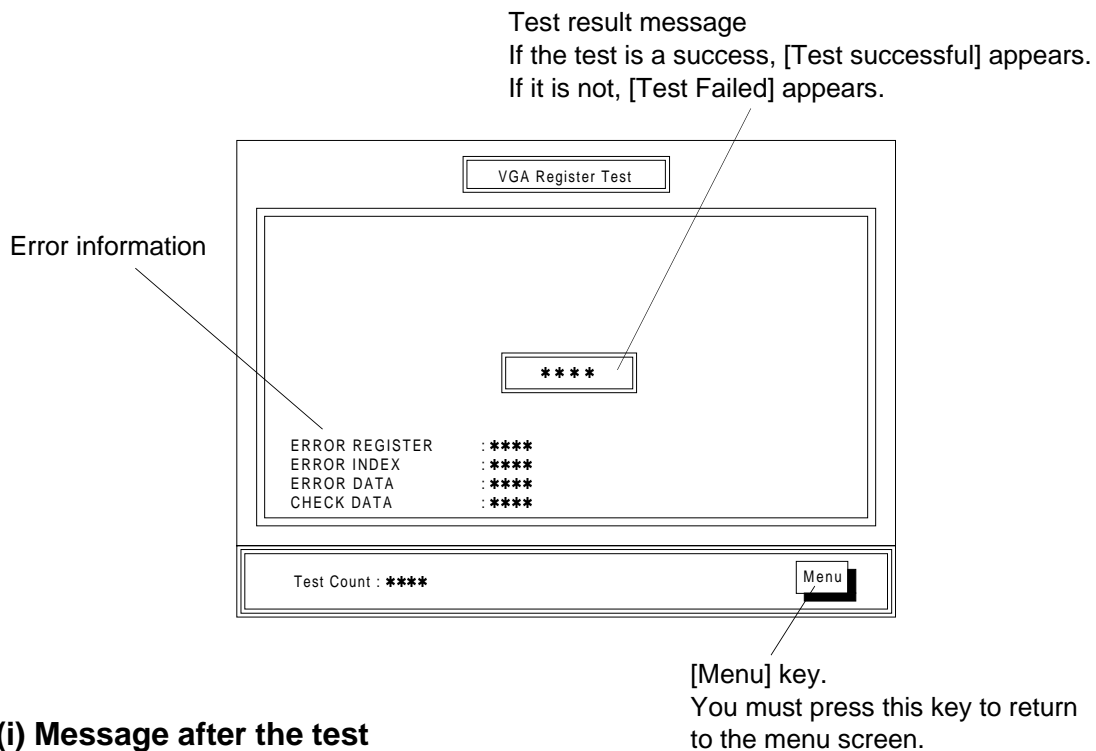
### (ii) Processing after the test

- (a) If the test is successful:
- Test mode: The system executes the next test.
  - Continuous mode: The system repeats the same test.
  - Execution mode: The system displays [Menu].  
You must press [Menu] to return to the menu screen.
- (b) If the test is unsuccessful:
- The system displays the error message and [Menu].  
You must press [Menu] to return to the menu screen.

### 3.4.4 VGA test

**NOTE:** The image on the LCD screen blurs for a moment while the test is running. This should be considered normal.





### (i) Message after the test

- (a) If the test is successful:
- [Test Successful] appears at the center of the screen.
- (b) If the test is unsuccessful:
- [Test Failed] appears at the center of the screen.
  - Error information appears at the lower left-hand corner of the screen.

Remarks: Error information

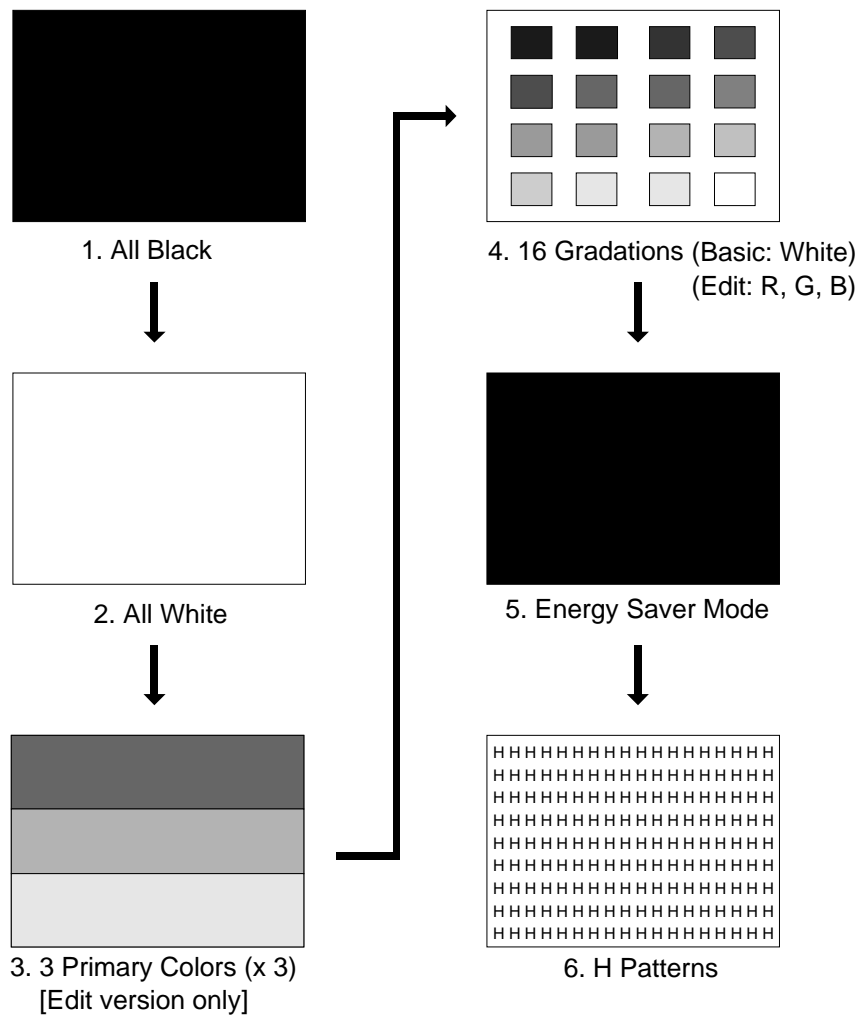
Error register	Register address is displayed.
Error index	Index for the register where an error occurred is displayed.
Check data	Value set in the register is displayed.
Error data	Read value is displayed.

### (ii) Processing after the test

- (a) If the test is successful:
- Test mode: The system executes the next test.
  - Continuous mode: The system repeats the same test.
  - Execution mode: The system displays [Menu].  
You must press [Menu] to return to the menu screen.
- (b) If the test is unsuccessful:
- The system displays the error message and [Menu].  
You must press [Menu] to return to the menu screen.

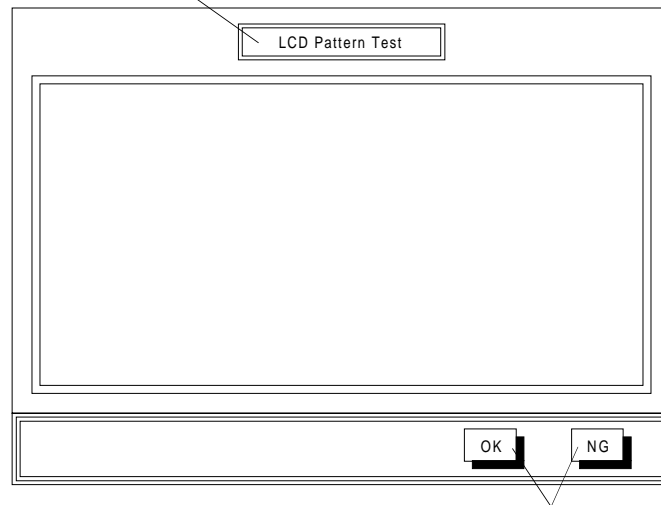


### 3.4.5 LCD pattern test



**(i) Press any point on the LCD to display the above patterns in order:**

Diagnostic test (title)



If the test is a success, press the [OK] key.  
If it is not, press the [NG] key.

## (ii) Processing after the test

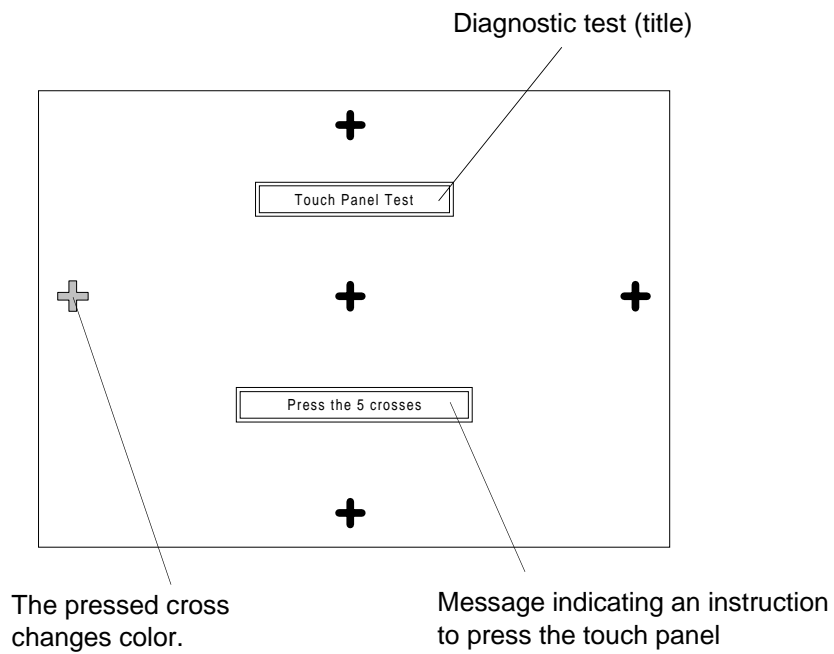
(a) If you press the [OK] area:

- Test mode: The system executes the next test.
- Execution mode: The system displays [Menu].  
You must press [Menu] to return to the menu screen.

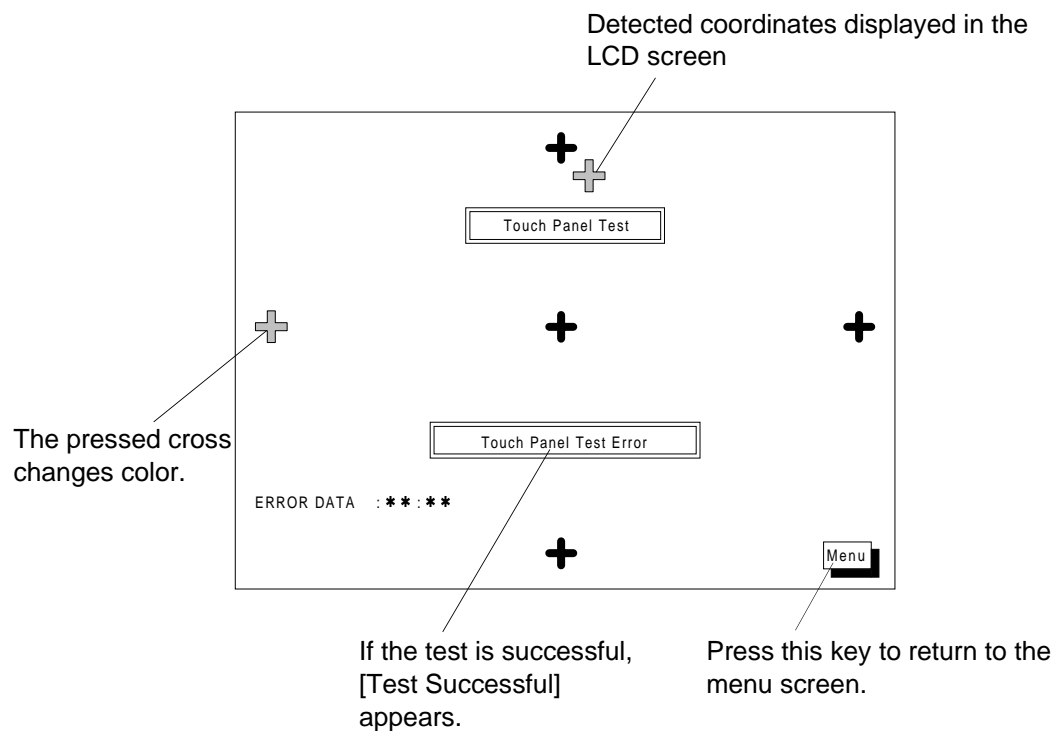
(b) If you press the [NG] area:

- The system displays [Menu].  
You must press [Menu] to return to the menu screen.

### 3.4.6 Touch panel test



**(i) Pressing a cross changes the color of the cross.**



## (ii) Message after the test

(a) If the test is successful:

- [Test Successful] appears at the center of the screen.

(b) If the test is unsuccessful:

- [Touch Panel Test Error] appears at the center of the screen.
- Error information appears at the lower left-hand corner of the screen.

Remarks: Error information is as follows.

- Error data (detected coordinates (X, Y))

## (iii) Processing after the test

(a) If the test is successful:

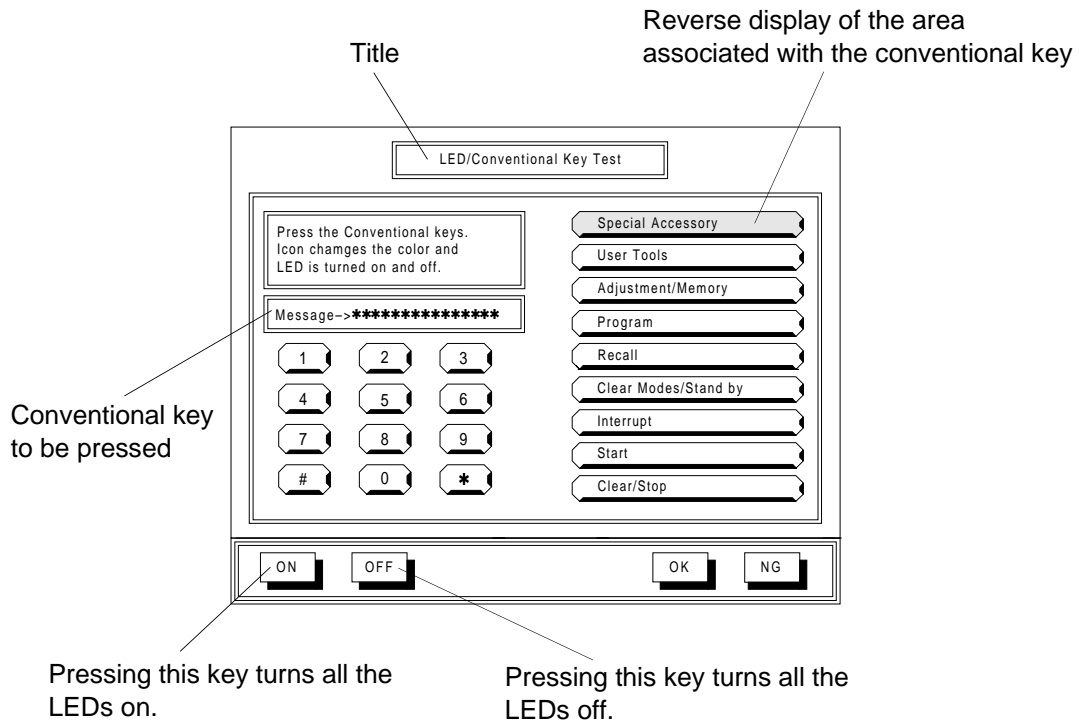
- Test mode: The system executes the next test.
- Execution mode: The system displays [Menu].

You must press [Menu] to return to the menu screen.

(b) If the test is unsuccessful:

- The system displays [Menu].
- You must press [Menu] to return to the menu screen.

### 3.4.7 LED/Conventional key test



**(i) Pressing a conventional key causes the events shown below.**

1. The buzzer sounds.
2. The associated LED lights (it goes out when you press the key again).
3. The associated LCD area changes color.

**(ii) Pressing a touch panel key also causes the event shown below.**

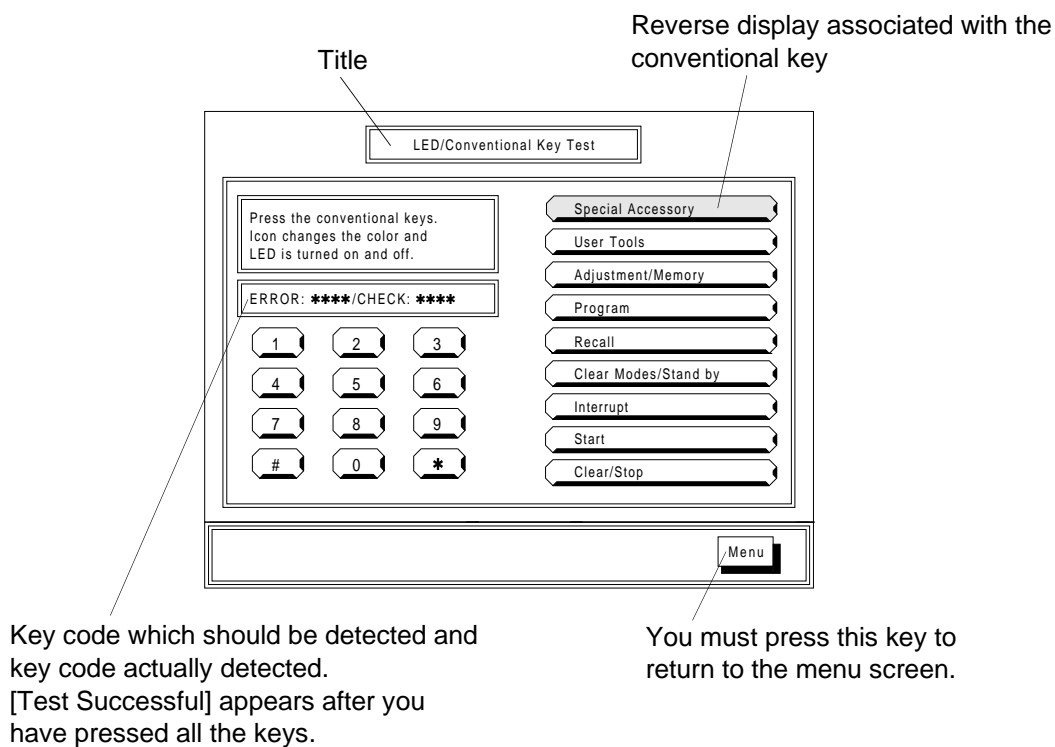
[ON]: Turns all the LEDs on.

[OFF]: Turns all the LEDs off.

[OK]: Terminates the test.

[NG]: Terminates the test.

**NOTE:** If you do not press the conventional key shown in the [MSG:] area, an error occurs. (Pressing the same key again will not cause an error.)



### (iii) Processing after the test:

#### (a) If the test is successful:

- The system displays [Test Successful] in the [MSG:] display area.
- Test mode: The system executes the next test.
- Execution mode: The system displays [Menu].

You must press [Menu] to return to the menu screen.

#### (b) If the test is unsuccessful:

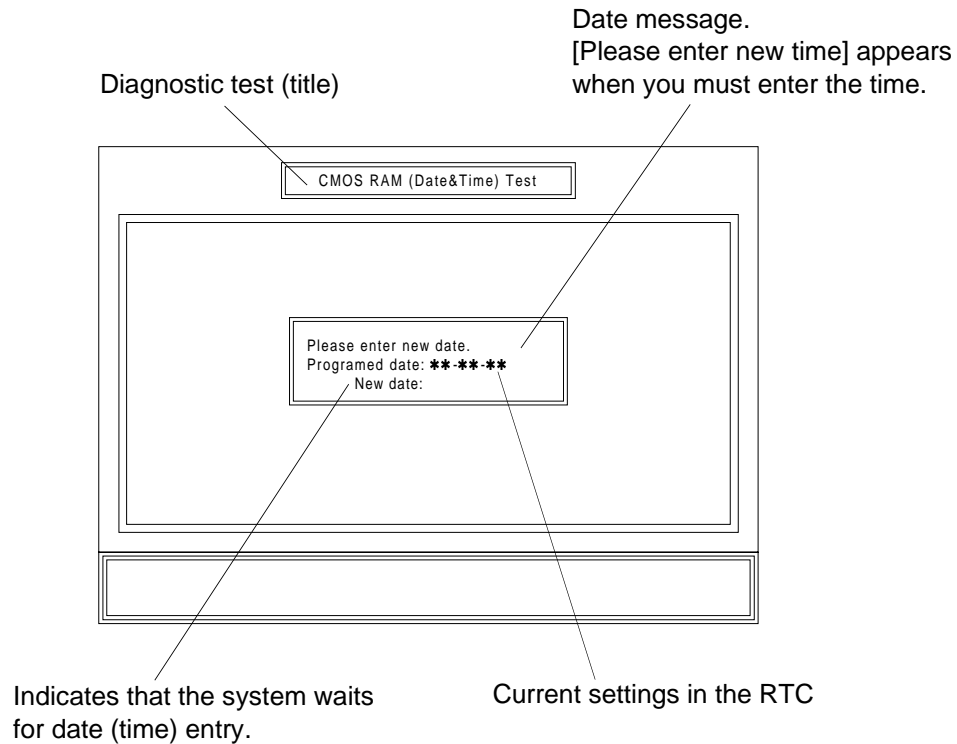
- The system displays error information in the [MSG:] display area.

Error information:

[MSG: \*\*\*\* (Key code to be checked): \*\*\*\* (Key code detected)]

The system displays [Menu] after the test. You must press [Menu] to return to the menu screen.

### 3.4.8 (8) CMOS RAM test



#### (i) Enter the date and time data with the Number keys (conventional keys).

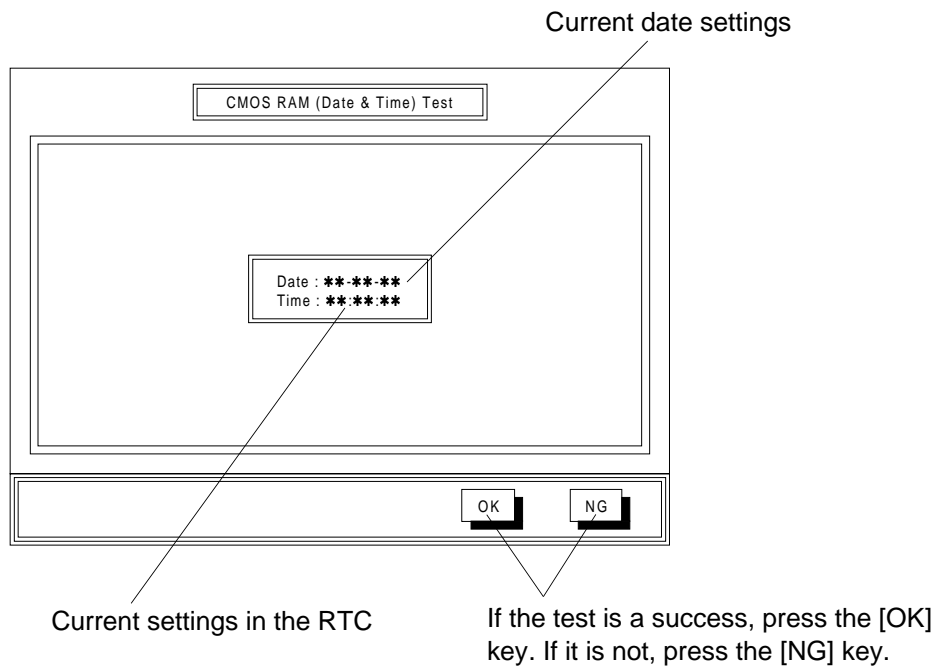
**NOTE:** You can re-enter data with the Clear/Stop key.

If entering the new date or time is unnecessary, press Start key to go to the next screen

#### **Example:**

Entering the date (December 31, 1999) and time (23:59:55).

1. The system displays [Please enter new date].
2. Press the keys in the following order: "9", "9", "1", "2", "3", "1", and Start
3. The machine displays [Please enter new time].
4. Press the keys in the following order: "2", "3", "6" (wrong entry), Clear/Stop, "2", "3", "5", "9", "5", "5", and Start
5. The machine displays the settings.



## (ii) Test execution

- If the clock operation is normal, press [OK].

## (iii) Processing after the test

The following shows what the system does after the test.

(a) If you press [OK]:

- Test mode: The system executes the next test.
- Execution mode: The system displays [Menu].  
You must press [Menu] to return to the menu screen.

(b) If you press [NG]:

- The system displays [Menu]. You must press [Menu] to return to the menu screen.

**NOTE:** The system does not support the continuous mode for the CMOS RAM test. It can only perform this test once in the execution or test mode.



## 4. PROBLEMS DETECTED AT TESTS AND SUSPECTED UNITS

---

### (1) Problems detected at initial startup (power-on)

Problem	Cause	Suspected unit
LCD shows nothing.	LCD drive voltage is abnormal.	Operation control unit Op-ports 1 and 2
	Back-light is too dark.	Op-ports 1 and 2
	Control signal to the LCD is abnormal.	Operation control unit
Diagnostic program is not started ("Please wait" is displayed).	Start key detection is abnormal.	Op-ports 1 and 2
		Operation control unit

### (2) Problems detected at initialization (point accuracy calibration)

Problem	Cause	Suspected unit
Pressing down on the touch panel does not provide reverse display.	Touch panel connector is defective.	Op-ports 1 and 2
	Analog voltage is not detected.	Op-ports 1 and 2
	Touch panel is defective.	Touch panel
	A/D detecting section is abnormal.	Operation control unit
	Detected data cannot be obtained.	Operation control unit
NVRAM abnormality message is displayed (when calibration is skipped).	Point accuracy data for back-up is cleared from NVRAM.	ROM board

### (3) Problems detected in self-diagnostic mode

Problem	Cause	Suspected unit
Display is abnormal.	LCD is defective.	LCD
	Specified plotting data cannot be written into video RAM.	Operation control unit
Menu cannot be selected.	Interrupt signal from the touch panel cannot be detected.	Operation control unit

#### (4) Problems detected at the main RAM test

Problem	Cause	Suspected unit
Error message is displayed (at address C00000h or less) when the test is finished.	Written data is different from read data.	Operation control unit
Error message is displayed (at address C00000h or less) when the test is finished.	Written data is different from read data.	ROM board

#### (5) Problems detected at the system RAM test

Problem	Cause	Suspected unit
Error message is displayed when the test is finished.	ROM board is defective.	ROM board

#### (6) Problems detected at the video RAM test

Problem	Cause	Suspected unit
Error message is displayed when the test is finished.	Video RAM is defective.	Operation control unit

#### (7) Problems detected at the VGA RAM test

Problem	Cause	Suspected unit
Error message is displayed when the test is finished.	VGA chip and peripheral buses are defective.	Operation control unit

#### (8) Problems detected at the LCD pattern test

Problem	Cause	Suspected unit
LCD test pattern is abnormal.	VGA chip and control signals to the LCD are abnormal.	Operation control unit
	LCD is defective (there are dots missing, etc.).	LCD
Back-light is out of control (always ON).	Inverter is defective.	Op-ports 1 and 2
	Back-light control signal is abnormal.	Operation control unit

### (9) Problems detected at the touch panel test

Problem	Cause	Suspected unit
LCD shows an error message.	Touch panel has low detection accuracy.	Op-ports 1 and 2

### (10) Problems detected at the LED/Conventional key test

Problem	Cause	Suspected unit
LCD shows an error message.	Abnormal signal is detected when a key is pressed.	Op-ports 1 and 2
Reverse display is not obtained although a key is pressed.	Signal line for key data is broken, or the switch is damaged.	Operation control unit
LED does not light.	LED is damaged.	Op-ports 1 and 2
	Control signal line from the LED controller to the LED is broken.	Operation control unit
Buzzer does not sound.	Piezoelectric buzzer is damaged.	Op-ports 1 and 2
	Control signal line is broken.	Op-ports 1 and 2
	Controller is abnormal.	Operation control unit

### (11) Problems detected at the CMOS RAM test

Problem	Cause	Suspected unit
Operation based on the date and time settings is abnormal.	CMOS RAM is abnormal.	Operation control unit
Time settings are cleared.	R.T.C. backup is abnormal.	Operation control unit

### (12) End processing

Problem	Cause	Suspected unit
[System will be reset] remains displayed.	The system cannot be reset.	Operation control unit

# **DUAL JOB FEEDER**

## **A610**



# 1. SPECIFICATIONS

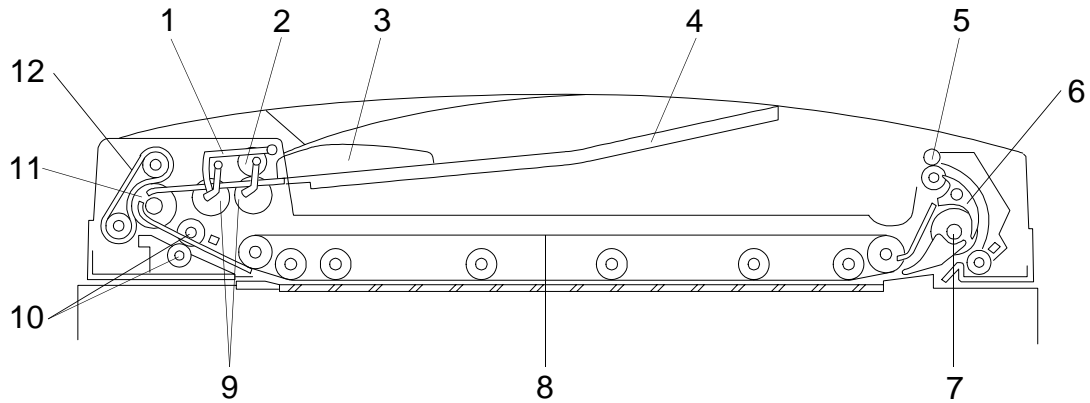
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Original Feed Mode:	Automatic document feed mode Automatic reverse document feed mode Semi-automatic document feed mode Combine 2 originals mode Mixed sized mode Preset mode
Original Size and Weight:	Thick original mode (default mode) Use this setting for normal paper types Maximum: A3, 11" x 17" Minimum: B6, 5 1/2" x 8 1/2" Weight: 52 ~ 128 g/m <sup>2</sup> (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 <sup>2</sup> (11-34 lb)  Auto reverse mode Maximum: A3, 11" x 17" Minimum: B6 (lengthwise) Weight: 52 ~ 105 g/m <sup>2</sup> (14-28 lb)  Combine two originals mode Maximum: A4 (sideways), 8 1/2" x 11" (sideways) Minimum: B5 (sideways), 5 1/2" x 8 1/2" (sideways) Weight: 52 ~ 128 g/m <sup>2</sup> (14-34 lb)  Mixed size Mode Maximum: A3, 11" x 17" Minimum: B5, 8 1/2" x 11" Weight: 52 ~ 80 g/m <sup>2</sup> (14-21 lb)
Original Table Capacity:	50 sheets at 80 g/m <sup>2</sup> (21 lb) (or stack height of less than 5 mm)
Original Standard Position:	Rear left
Original Separation:	Feed and friction belt
Original Transport:	One flat belt

Power Source:	DC24 V from the copier, 2.5 A (average)
Power Consumption:	70W
Dimensions (W x D x H):	680 x 522 x 133 mm (26.8" x 20.0" x 4.6")
Weight:	14.5 kg (32.0 lb)

## 2. COMPONENT LAYOUT

### 2.1 MECHANICAL COMPONENT LAYOUT



1. Original Stopper

2. Press Roller

3. Side Fence

4. Original Table

5. Exit Roller

6. Inverter Pawl

7. Inverter Roller

8. Transport Belt

9. Pick-up Rollers

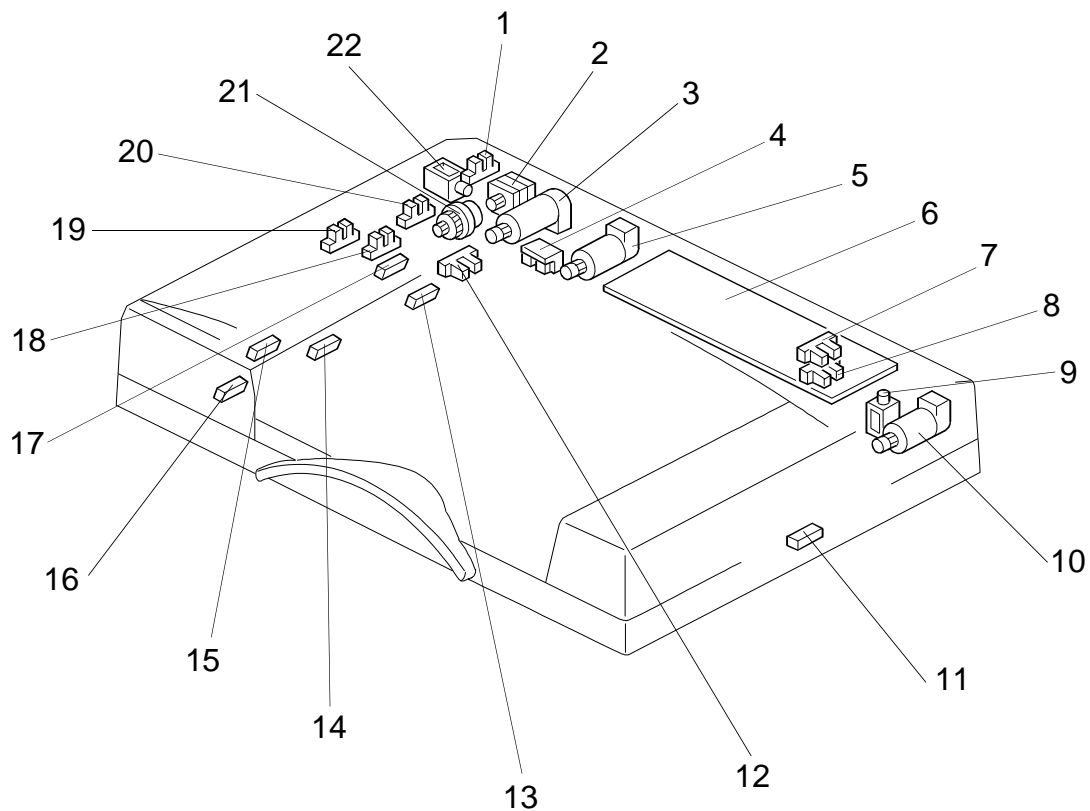
10. Pull-out Rollers

11. Feed Roller

12. Friction Belt



## 2.2 ELECTRICAL COMPONENT LAYOUT



- |                              |                               |
|------------------------------|-------------------------------|
| 1. Feed-in Cover Open Sensor | 12. Pulse Count Sensor        |
| 2. Friction Belt Motor       | 13. Registration-2 Sensor     |
| 3. Feed-in Motor             | 14. Original Width-1 Sensor   |
| 4. Indicator Panel Lamps     | 15. Original Width-2 Sensor   |
| 5. Belt Drive Motor          | 16. Original Width-3 Sensor   |
| 6. DF Main Board             | 17. Registration-1 Sensor     |
| 7. DF Position Sensor        | 18. Original Set Sensor       |
| 8. APS Start Sensor          | 19. Original Feed Sensor      |
| 9. Inverter Solenoid         | 20. Friction Belt Turn Sensor |
| 10. Feed-out Motor           | 21. Feed-in Clutch            |
| 11. Feed-out Sensor          | 22. Stopper Solenoid          |

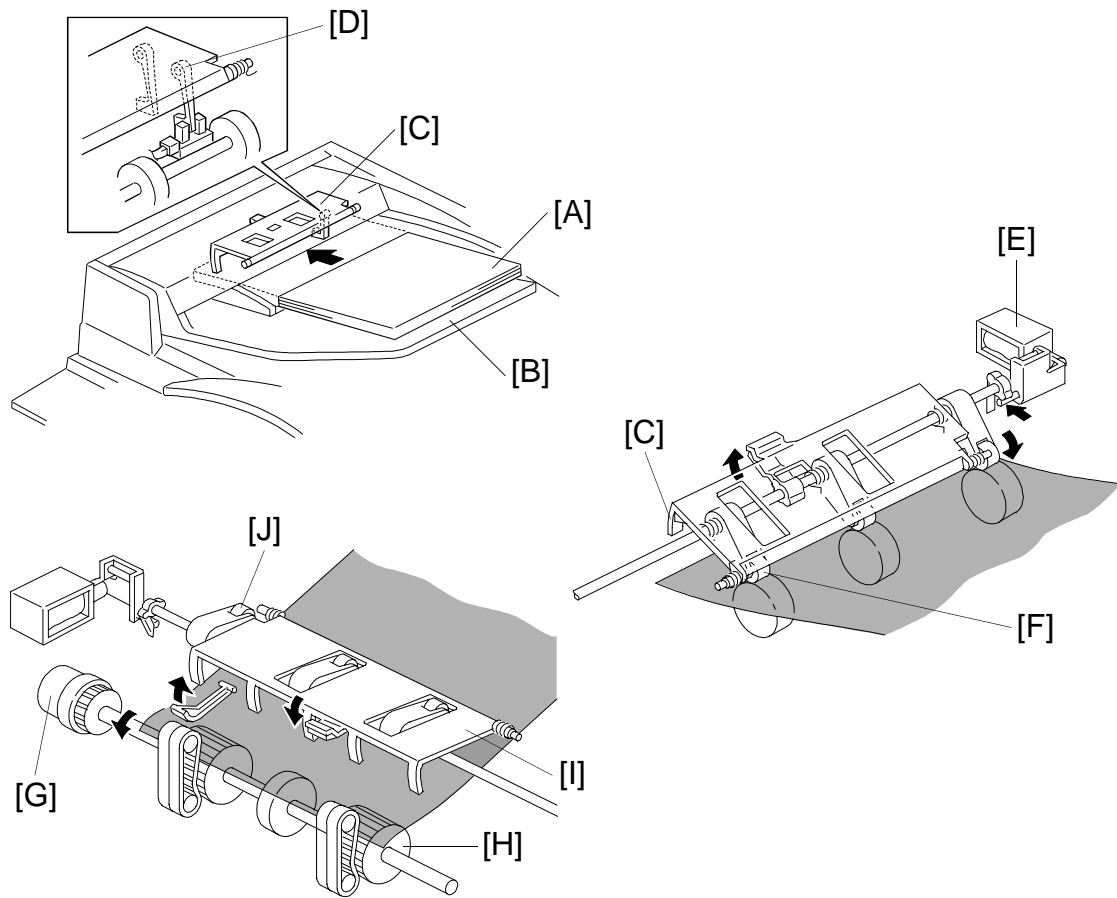
### 3. ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the point-to-point large size diagram for symbols and index numbers.

Symbol	Name	Function	Index No.
<b>Motors</b>			
M1	Friction Belt	Drives the friction belt.	2
M2	Feed-in	Drives the feed-in system (pick-up, feed, pull-out rollers)	3
M3	Belt Drive	Drives the transport belt.	5
M4	Feed-out	Drives the feed-out and the inverter system.	10
<b>Sensors</b>			
S1	Feed-in Cover Open	Detects whether or not the feed-in cover is open.	1
S2	DF Position	Informs the CPU whether the DJF is in the up or down position.	7
S3	APS Start	Informs the CPU when the DJF is being closed so that the original size sensors in the main body can check the original size (in platen mode).	8
S4	Feed-out	Checks for original misfeeds and sets original stop timing when in auto-reverse mode.	11
S5	Pulse Count	Counts the pulses generated by the pulse generator disc to determine the original length.	12
S6	Registration-2	Detects the leading edge of the original to turn off the feed-in clutch and to change the feed-in motor speed. Also detects the original length.	13
S7	Original Width-1	Detects the original width.	14
S8	Original Width-2	Detects the original width.	15
S9	Original Width-3	Detects the original width.	16
S10	Registration-1	Detects the original length and original jam by detecting the trailing edge of the original.	17
S11	Original Set	Detects if originals have been placed on the feed table.	18
S12	Original Feed	Detects if the originals have reached the feed roller or not.	19
S13	Friction Belt Turn	Counts the pulses generated by the pulse generator disk to monitor the friction belt motor.	20

Symbol	Name	Function	Index No.
<b>Solenoids</b>			
SOL1	Inverter	Inverts the original when copying two-sided originals.	9
SOL2	Stopper	Lifts the original stopper and lowers the press roller to feed the set of originals to the feed roller.	22
<b>PCBs</b>			
PCB1	DF Main Board	Controls all DJF functions.	6
<b>Magnetic Clutch</b>			
CL1	Feed-in	Transmits the feed-in motor drive to the pick-up, feed, and pull-out rollers.	21
<b>Indicator Lamps</b>			
L1	Ready	Informs the operator that the DJF is in the down position.	4
	Auto	Informs the operator that the auto feed mode is available.	

## 4. ORIGINAL PICK-UP MECHANISM



When an original [A] is placed on the original table [B], the leading edge is stopped by the stopper [C], and the feeler [D] is pushed out of the original set sensor. The Insert Original indicator light goes out and the DJF informs the copier's CPU that the originals have been placed on the original table.

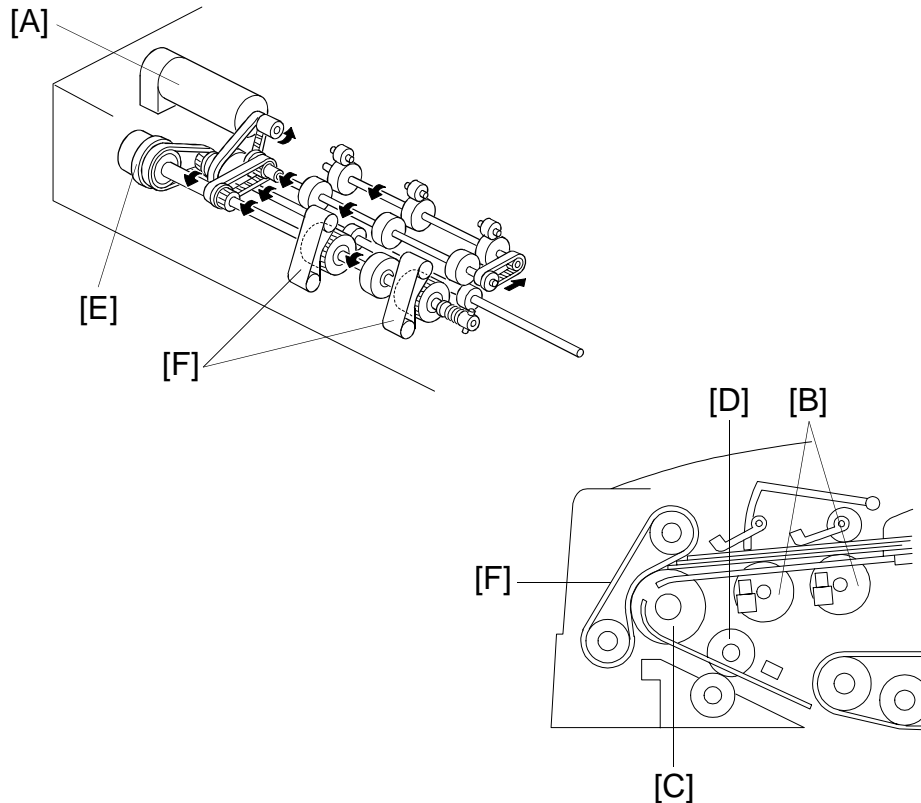
When the Start key is pressed, the copier's CPU sends the feed-in signal to the DJF. On receipt of this signal, the stopper solenoid [E] activates to raise the stopper, which allows the originals to be fed in, and to lower the press rollers [F] to press the originals against the pick-up rollers, as shown.

The feed-in clutch [G] also activates when the DJF receives the feed-in signal. 200 ms after the feed-in clutch activates, the feed-in motor feeds all originals to the feed roller [H].

When the originals reach the feed roller, the stopper solenoid de-activates to lower the original stopper [I] and to lift up the press rollers [J].

## 5. SEPARATION AND FEED MECHANISM

---



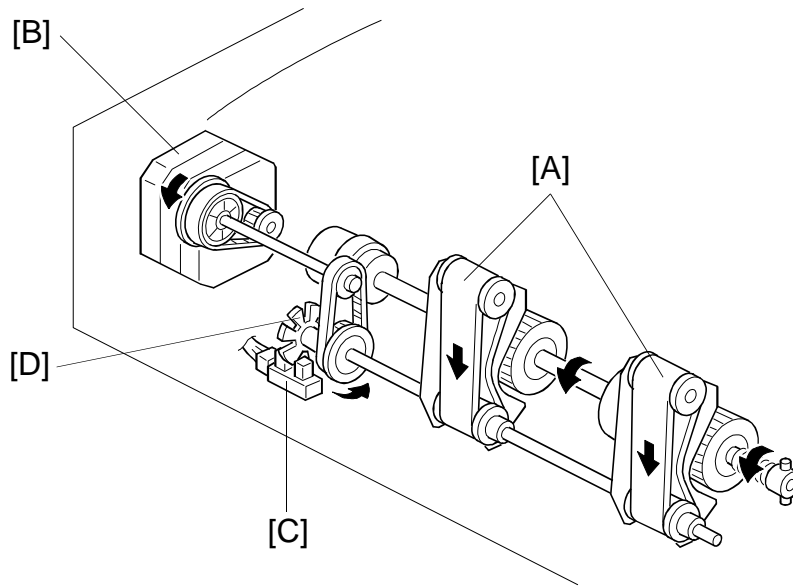
Drive from the feed-in motor [A] is transmitted to the pick-up [B], feed [C], and pull-out rollers [D], through the feed-in clutch [E], as shown. The feed roller and the friction belts [F] are used to feed and separate the originals.

Original feed starts when the feed roller starts turning to advance the bottom original of the stack. The feed roller moves the original past the separation belt because the driving force of the feed roller is greater than the resistance of the friction belt. The friction belt prevents multiple feeds because the resistance of the friction belt is greater than the friction between original sheets. At this time, the feed-in motor rotates slowly to ensure proper feed and separation of the original.

When the leading edge of the original activates registration sensor-2 [G], the feed-in clutch turns off and the motor rotates more quickly. To reduce mechanical load, only the pull-out rollers are driven to feed the original to the exposure glass.

To prepare the next original, it is separated in the same manner as explained above, and stopped when the leading edge is detected by the registration sensor-2 [G]. When it is time to feed this sheet to the exposure glass, the feed-in motor rotates at high speed.

## 6. FRICTION BELT DRIVE MECHANISM



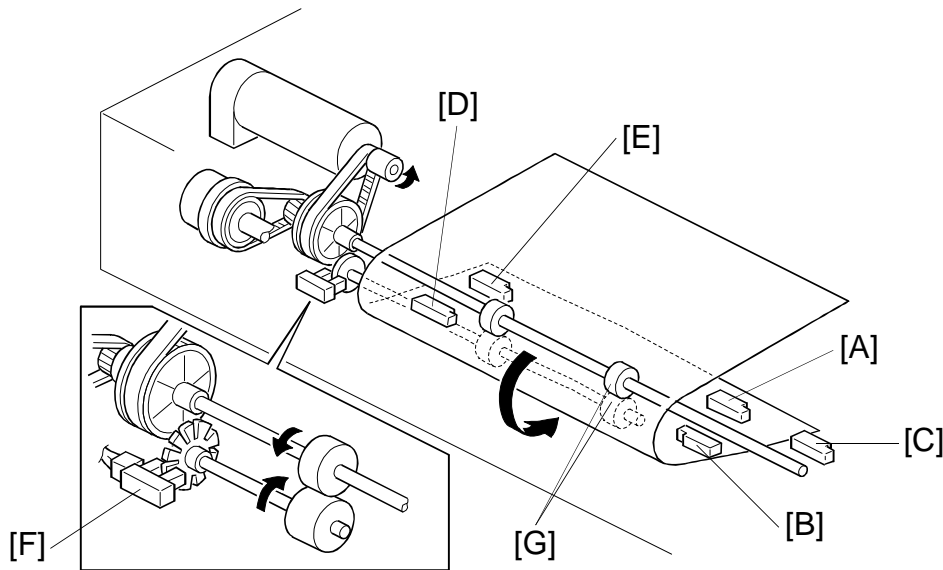
The friction belts [A] are driven by the friction belt drive motor [B] through timing belts, as shown.

When the Start key is pressed, the friction belts are not rotated (the motor is electrically ON but the motor does not turn as the voltage is too low; see the timing chart in section 13.1). As the leading edge of the original activates the registration sensor-2, the friction belts rotate in the reverse direction to reverse out the next original from in between the friction belts and feed rollers. This results in less of a chance for originals to be damaged or become dirty. Also, the area of the friction belt that contacts the feed roller or the original changes, to prevent multiple feeding.

The friction belt turn sensor [C] counts the pulses generated by the pulse generator disk [D] on the friction belt shaft. The sensor detects friction belt motor error conditions.

## 7. ORIGINAL SIZE DETECTION

---



The DJF detects original width through the on/off combination of the three original width sensors-1 [A], -2 [B], -3 [C]. It also detects the original length with the registration sensors-1 [D], -2 [E] and the pulse count sensor [F].

The DJF CPU counts the pulses between registration sensor-2 [E] on timing, and registration sensor-1 [D] off timing. Based on this pulse count, the CPU determines the original length.

The reasons for using two registration sensors are:

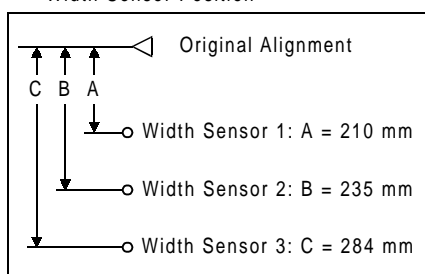
- 1) Registration sensor-2 [E] is used to stop the pre-fed original, which waits until the previous original is fed out. For precise control, the original stop position must be after the pull-out rollers [G]. Therefore, registration sensor-2 is placed after the pull-out rollers.
- 2) Registration sensor-1 [D] checks the trailing edge of the original. This check is used to place the original in the correct position on the exposure glass. Because this is a fast feeding mechanism, some distance is required between the sensor and the original scale. If sensor-2 was used to detect the stop timing, there would not be enough time to stop the original at the correct place. Therefore, registration sensor-1 is used for this; it is placed 34.9 mm before sensor-2.

(The diagram at the start of section 8-1 shows the position of the sensors with respect to the rollers.)

Width Sensor			Upper: Original Size Lower: Threshold Level for Each Size (Pulse Count)
1	2	3	
○	○	○	<div><div>A4S</div><div>A3</div><div>231 mm (78)</div></div>
○	○	×	<div><div>B5S</div><div>LTS</div><div>B4</div><div>11" x 15"</div><div>A3</div><div>201 mm (68)</div><div>236 mm (80)</div><div>377 mm (136)</div><div>399 mm (145)</div></div>
○	×	×	<div><div>B6S</div><div>A5S</div><div>B6 L</div><div>A5 L</div><div>B5 L</div><div>LT L</div><div>A4 L</div><div>B4</div><div>A3</div><div>143 mm (44)</div><div>166 mm (54)</div><div>201 mm (68)</div><div>231 mm (78)</div><div>271 mm (95)</div><div>294 mm (103)</div><div>316 mm (115)</div><div>387 mm (140)</div></div>
or			
×	×	×	

○: Paper Present  
 ×: No Paper  
 S: Sideways  
 L: Lengthwise

Width Sensor Position

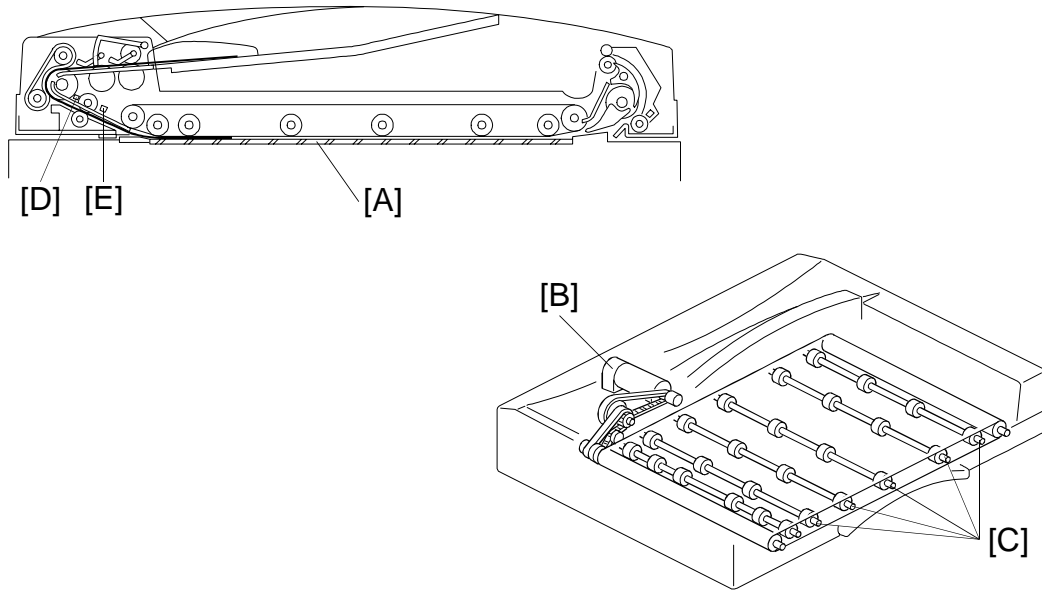


The original size is determined by the combination of the detected original width and length as shown above. Note that when only width sensor 1 detect that paper is preset, or if all width sensors are off, the original size is detected only by the pulse count sensor data.



## 8. TRANSPORT MECHANISM

### 8.1 BASIC OPERATION



The transport belt [A] is driven by an independent motor called the belt drive motor [B]. The belt drive motor starts rotating soon after the copier sends an original feed-in signal. Inside the transport belt are five pressure roller shafts [C], which achieve the proper amount of pressure between the belt and the original.

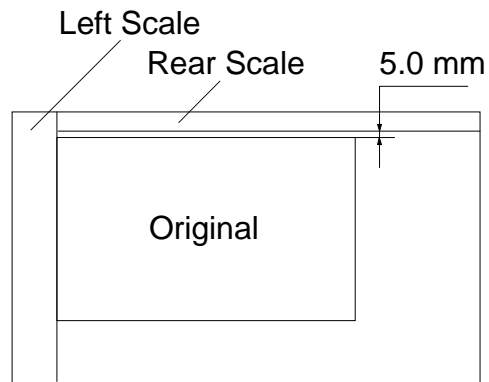
When the leading edge of the original reaches the exposure glass, the original is transported by the transport belt (the belt drive motor turns on 200 ms after the start key is pressed).

When the trailing edge of the original passes through registration sensor-1 [D], the feed-in motor turns off. When the trailing edge of the original passes through registration sensor-2 [E], the belt drive motor gradually decreases its speed to stop the original at the proper place on the exposure glass.

100 ms after the belt drive motor turns off, the feed-in motor turns on until the next original activates registration sensor-2 [E], the next original waits until the first original copy job is complete. This operation reduces the original feed in time.

When the scanner reaches the return position, the copier's CPU sends the feed-out and feed-in signals to the DJF CPU, and the feed-in motor is activated again to change the original.

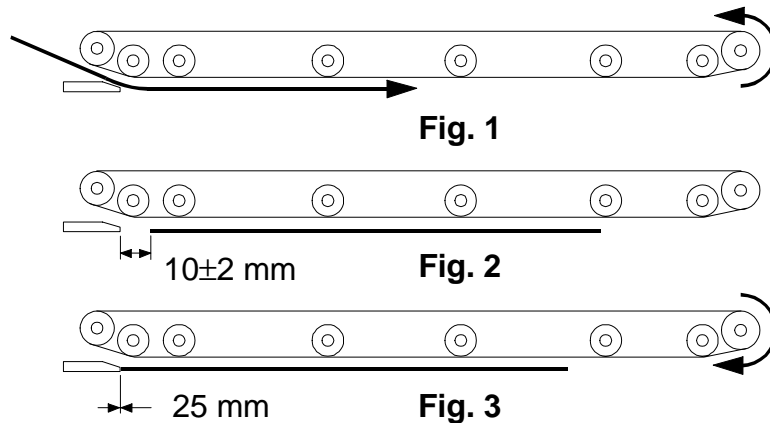
If the original is smaller than A4 sideways, the original just copied is transported to the right side of the exposure glass then waits until the next original copy job is completed. Then the previous original is delivered. This operation also reduces the original feed-in time.



Since the copier's original alignment position is at the left rear corner (not in the center), the originals fed from the DJF must also be at this position. But if the original was to be fed along the rear scale, original skews, jams or wrinkling, may occur.

To prevent such problems, the original transfer position is set to 5.0 mm away from the rear scale as shown. The correction for this 5.0 mm gap is compensated for by the base copier's optics unit.

## 8.2 THIN/THICK ORIGINAL MODES



This document feeder has two different ways of stopping originals on the exposure glass at the correct position. They are thin original mode and thick original mode. The user can select the desired settings to match the type of original being used.

### 1. Thick Original Mode

When thick original mode is selected, the belt drive motor remains energized to carry the original approximately 10 mm past the left scale (Figures 1 and 2). Then, the belt drive motor pauses and reverses to feed the original back against the original scale for about 25 mm (Fig. 3). This forces the original against the left scale and thus aligns the trailing edge of the original with the scale.

Thick original mode is selected at the factory.

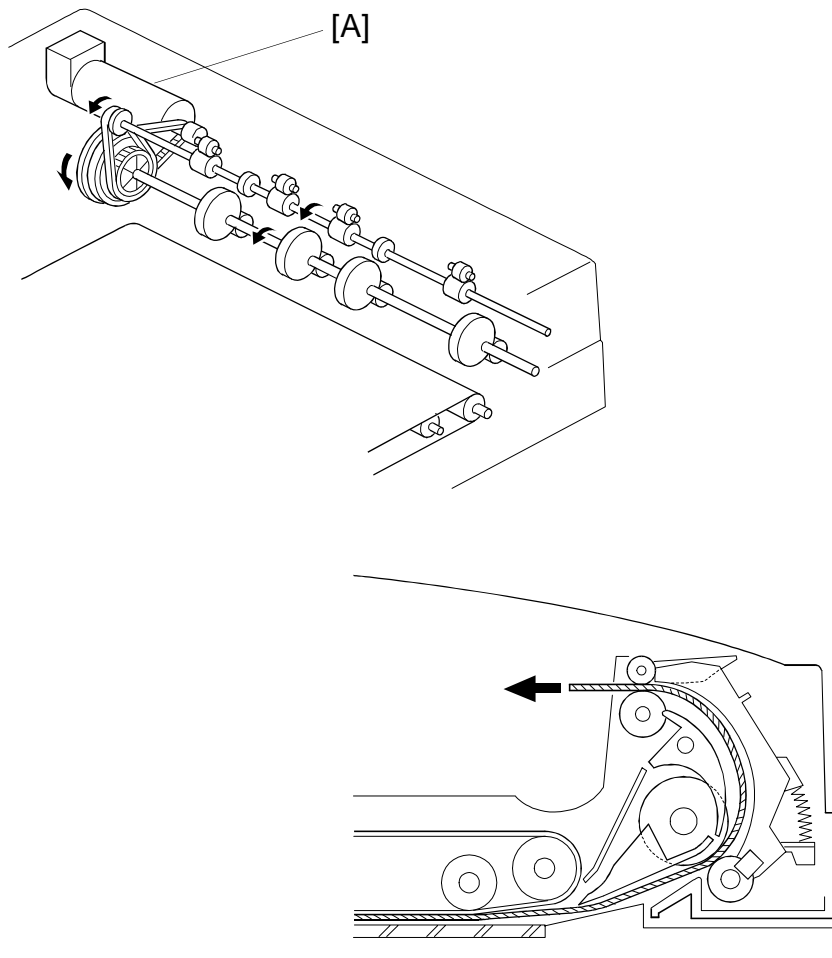
### 2. Thin Original Mode

To protect originals from being damaged by the movements of the transfer belt, thin original mode can be selected. The original is stopped at the correct position on the exposure glass based on an encoder pulse count. The belt drive motor stops shortly after the original trailing edge passes registration sensor-2. (Exact timing depends on registration adjustment.)

The feed amount for both modes can be adjusted.

For more details, refer to the "Replacement and Adjustment" section.

## 9. ORIGINAL FEED-OUT MECHANISM

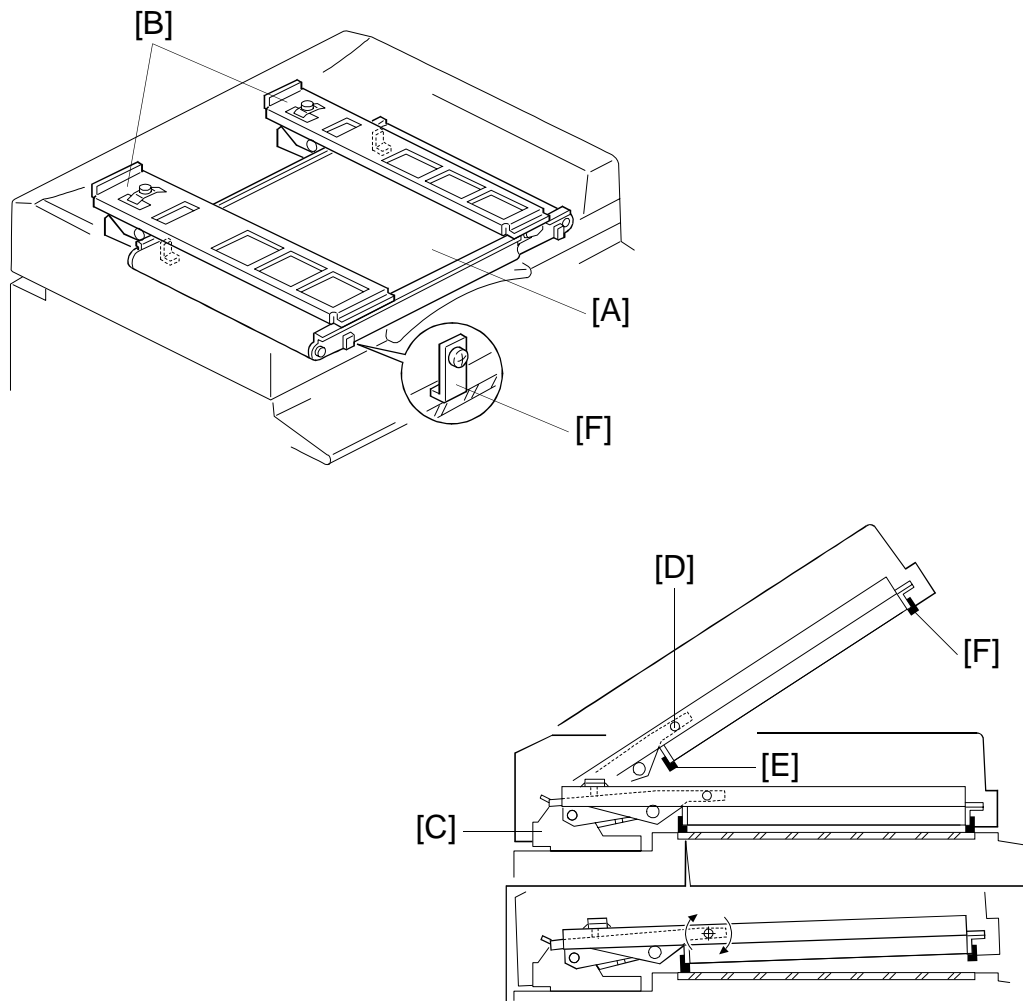


When the scanner reaches the return position, the copier's CPU sends the feed-out signal to the DJF CPU.

When the DJF receives the feed-out signal, the belt drive and feed-out motors [A] turn on.

The feed-out sensor [B] installed in the feed-out section counts the number of pulses to calculate how long the feed-out motor must stay on to feed the original out of the machine properly. Also, the motor rotates at low speed for the last 50 mm of the detected trailing edge to improve stacking efficiency.

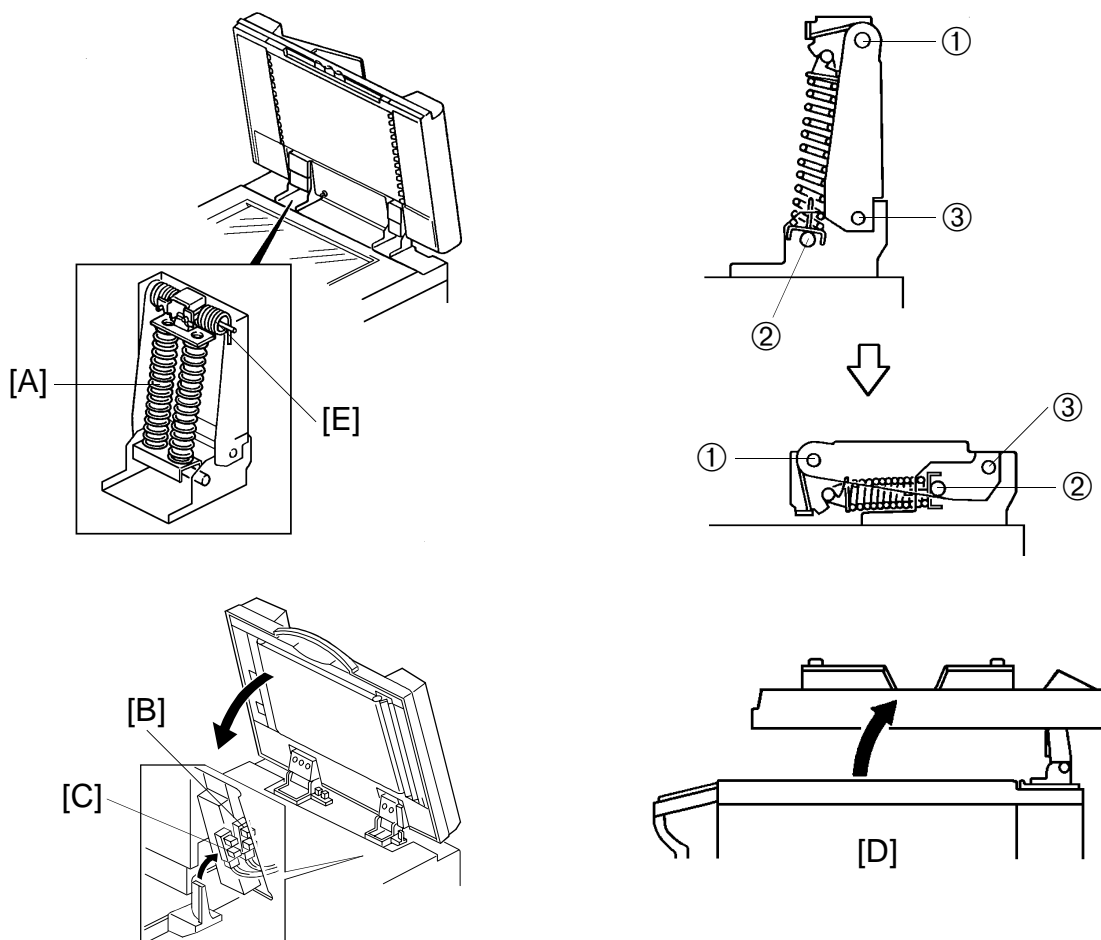
## 10. TRANSPORT BELT LEVELING MECHANISM



The transport belt [A] and the two support arms [B] are formed as one unit, (made of aluminum). This results in a more flexible structure than the monocoque type (in which the cover carries all of the stress), and the gap between the transport belt and the original can easily be kept precise during belt transport.

On the support arm linked with the DJF hinge [C], there is a fulcrum [D] to support the DJF. When the DJF is being closed and the rear stopper [E] contacts the base copier first, the DJF rotates about the fulcrum, rotates and the front stopper [F] will also contact the base copier to level the belt with the exposure glass.

## 11. LIFT MECHANISM



When the DJF is opened, the lift springs [A] provide enough force to ensure that the DJF does not fall onto the exposure glass. When the DJF is closed, points "①", "②", and "③" are positioned as shown and no upward force is provided to the DJF.

The position sensor [B] is actuated when the DJF is closed. The copier then shifts to the document feeder mode. The position sensor also serves as the reset switch for DJF misfeeds.

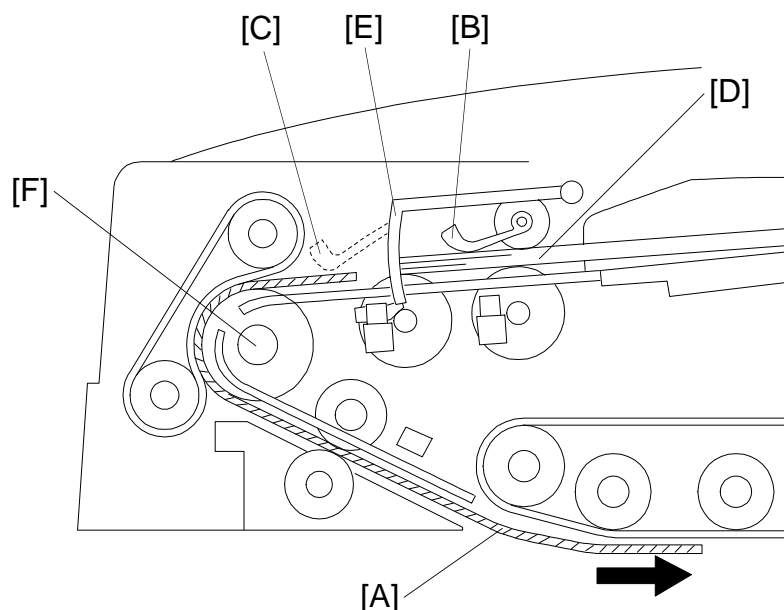
After the cover is closed, the APS start sensor [C], which is below the DF position sensor, informs the base copier CPU that original size sensors in the main body can check the original size for the platen mode.

When a book or thick original (maximum thickness 60 mm) is copied, the DJF acts as a cover for the original as shown in the diagram [D]. The position sensor is turned off during this condition, so the DJF does not function. The tension of spring [E] returns the DJF to the normal condition after copying a thick original.

## 12. SPECIAL FEATURES

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### 12.1 PRESET MODE

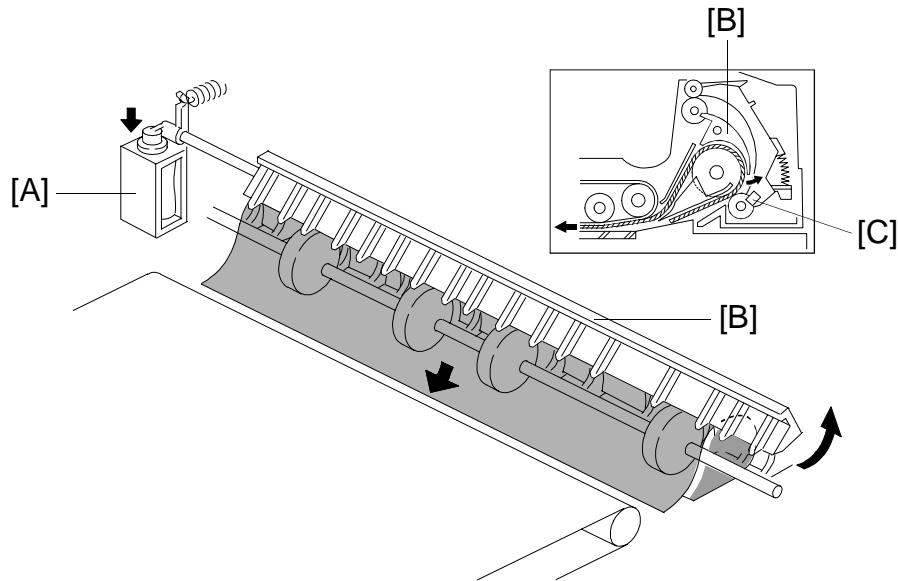


Two sets of originals for independent copy jobs can be set on the original tray at the same time.

While the first set of originals [A] remains on the original tray, both the original set sensor feeler [B] and original feed sensor feeler [C] are lifted out of their sensors. A second set of originals [D] can be placed in the feeder on top of the first set, as far as the original stopper [E]. In this case, when the first set of originals are all fed-in, the original set sensor feeler is still lifted out of the sensor, but the original feed sensor has dropped into the sensor. Therefore, the copier's CPU recognizes that the first job is completed.

If the second job is already preset, the second set of originals is automatically fed to the feed roller [F] and fed one-by-one into the machine in the same manner as the first set of originals.

## 12.2 TWO-SIDED ORIGINAL FEED (AUTO REVERSE) MODE



Unlike for one-sided original feed, the back side of the original must be copied first to keep the originals and copies in the correct order.

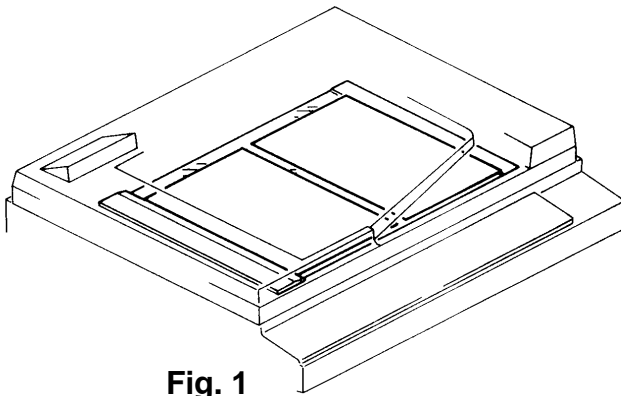
During original feed-in, the sequence is the same as for one-sided feed; however, the belt drive motor continues rotating until the original reaches the inverter section. The DJF CPU also energizes the feed-out motor and the inverter solenoid [A] for a short time to lift the inverter pawls [B].

After the inverter mechanism inverts the original (10 pulses after the feed-out sensor [C] activates), the belt drive motor reverses and the original is fed towards the original scale. It is stopped at the correct position on the exposure glass, and the DJF CPU sends the copy start signal.

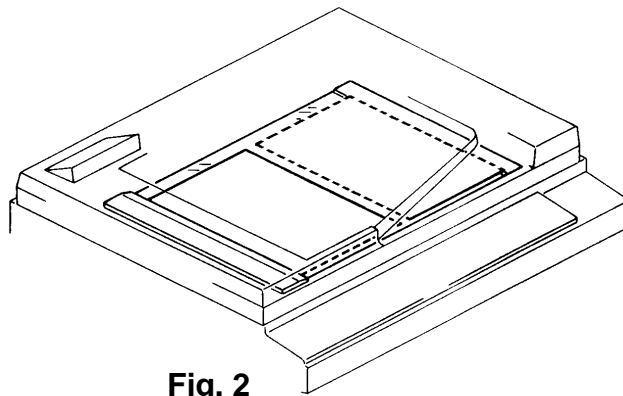
When the scanner reaches the return position, the copier's CPU sends the invert original signal to the DJF CPU in order to make a copy of the front side. The original is inverted in the same way as for the back side, as explained above.



## 12.3 COMBINE TWO ORIGINALS MODE



**Fig. 1**



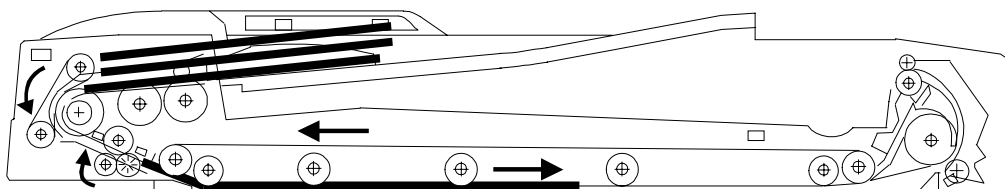
**Fig. 2**

### **- Overview -**

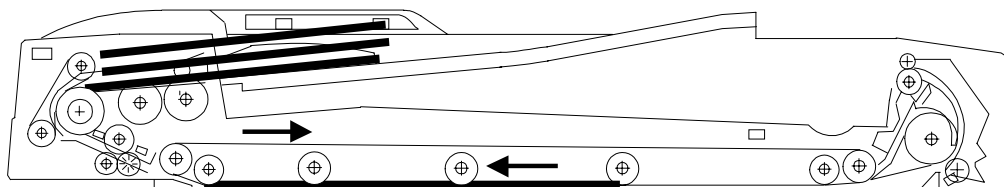
Two originals are fed onto the exposure glass at once in the combine two originals mode as shown in figure 1. This allows copying two originals onto one sheet of paper automatically either in the full size mode or in reduction mode.

If an odd number of originals is placed on the original table, the first original is placed on the exposure glass as shown in figure 2.

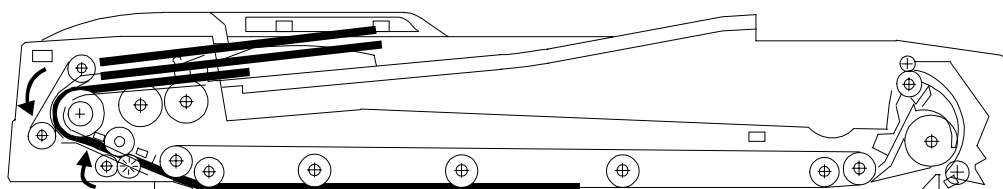
In this mode, only one-sided originals can be used, and Auto Paper Select (APS) and Auto Reduce/Enlarge modes cannot be used.



**Figure 1**



**Figure 2**



**Figure 3**

### - Operation -

The DF operates in the combine two originals mode as follows:

#### **Figure 1**

The first original is fed in the same manner as in one-sided original mode. When registration sensor-2 detects the trailing edge of the first original, the feed-in and the belt drive motors stop once and the feed-in clutch turns on again to prepare to feed in the second original.

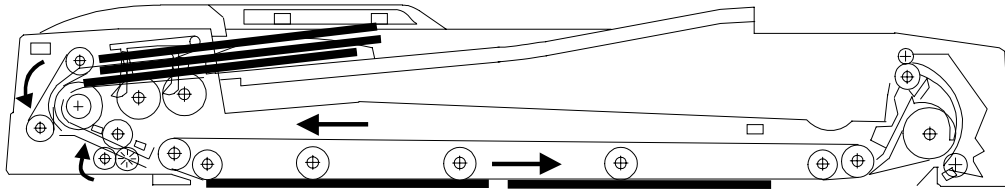
#### **Figure 2**

As soon as the feed-in and the belt drive motor turn off, the belt drive motor starts rotating in reverse to align the first original against the original scale. Then the belt drive motor turns off.

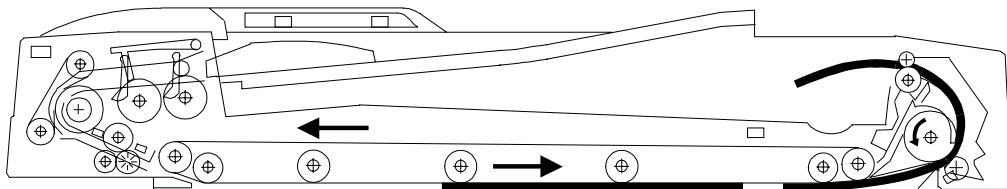
#### **Figure 3**

50 ms after the feed-in motor turns off, the feed-in motor turns on again at a lower speed (372 mm/) to feed the second original.

A few pulses (0 ~ 14 pulses: depending on the settings of DIP switches 102-1 to 4) after the registration sensor-2 is activated by the leading edge of the second original, the feed-in motor and the feed-in clutch turn off.



**Figure 4**



**Figure 5**

**Figure 4**

Soon after the feed-in motor turns off, both the feed-in and the belt drive motors turn on again at the lower speed (372 mm/s).

After registration sensor-2 detects the trailing edge of the second original, the feed-in and the belt drive motors turn off and gradually the belt drive speed reduces to stop the original at the proper place on the exposure glass.

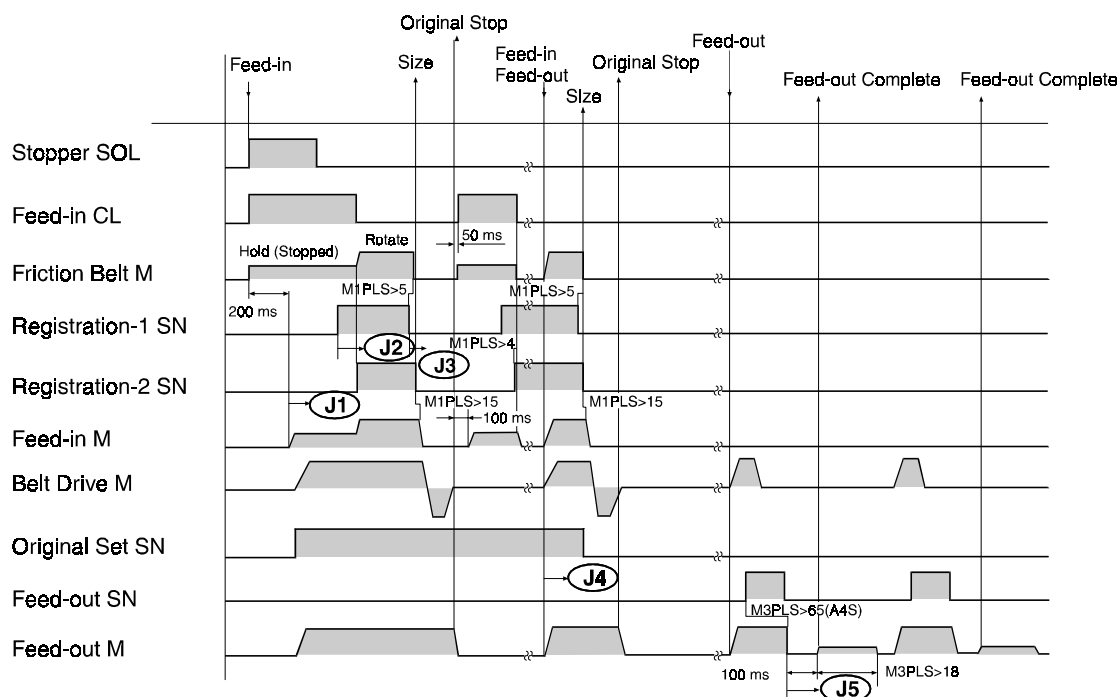
**Figure 5**

After these originals have been copied, the belt drive motor and the feed-out motor turn on to feed out the originals. 50 mm before the trailing edge of the first original de-activates the feed-out sensor, both the belt drive and the feed-out motor rotate at the lower speed to improve original stacking.

48 pulses later, the belt drive motor turns off and 60 pulses after the feed-out sensor detects the trailing edge of the second original, the feed-out motor turns off.

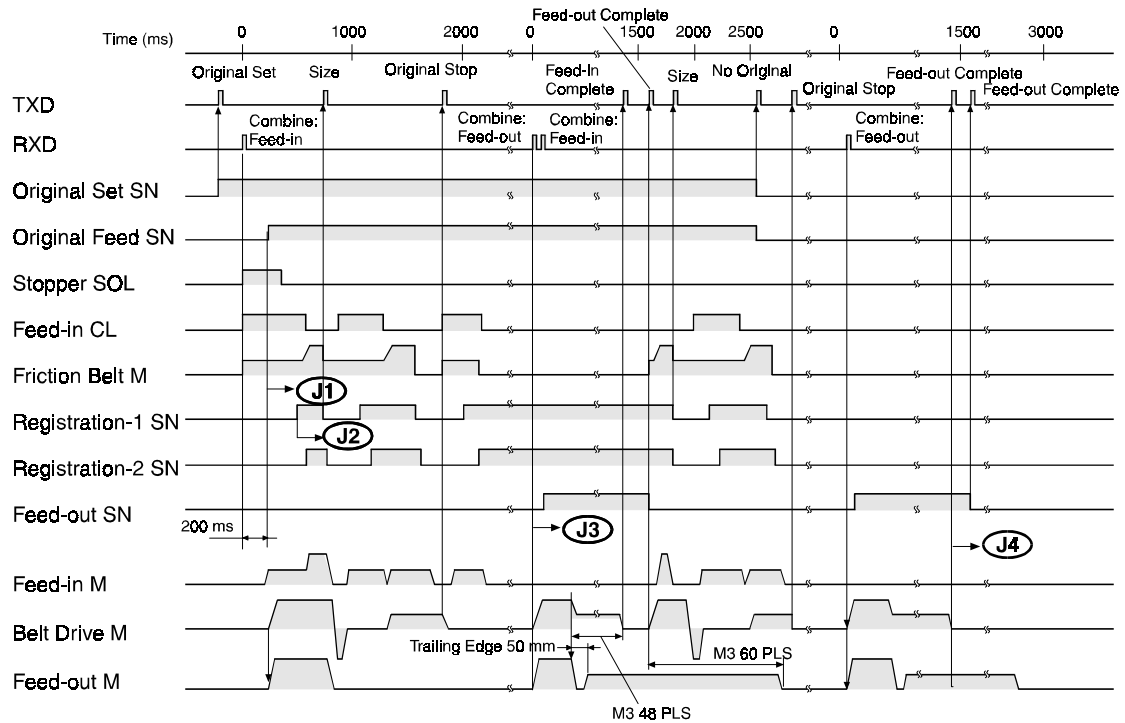
# 13. TIMING CHARTS WITH ORIGINAL MISFEED DETECTION

## 13.1 A4 SIDEWAYS: ONE-SIDED, TWO ORIGINALS



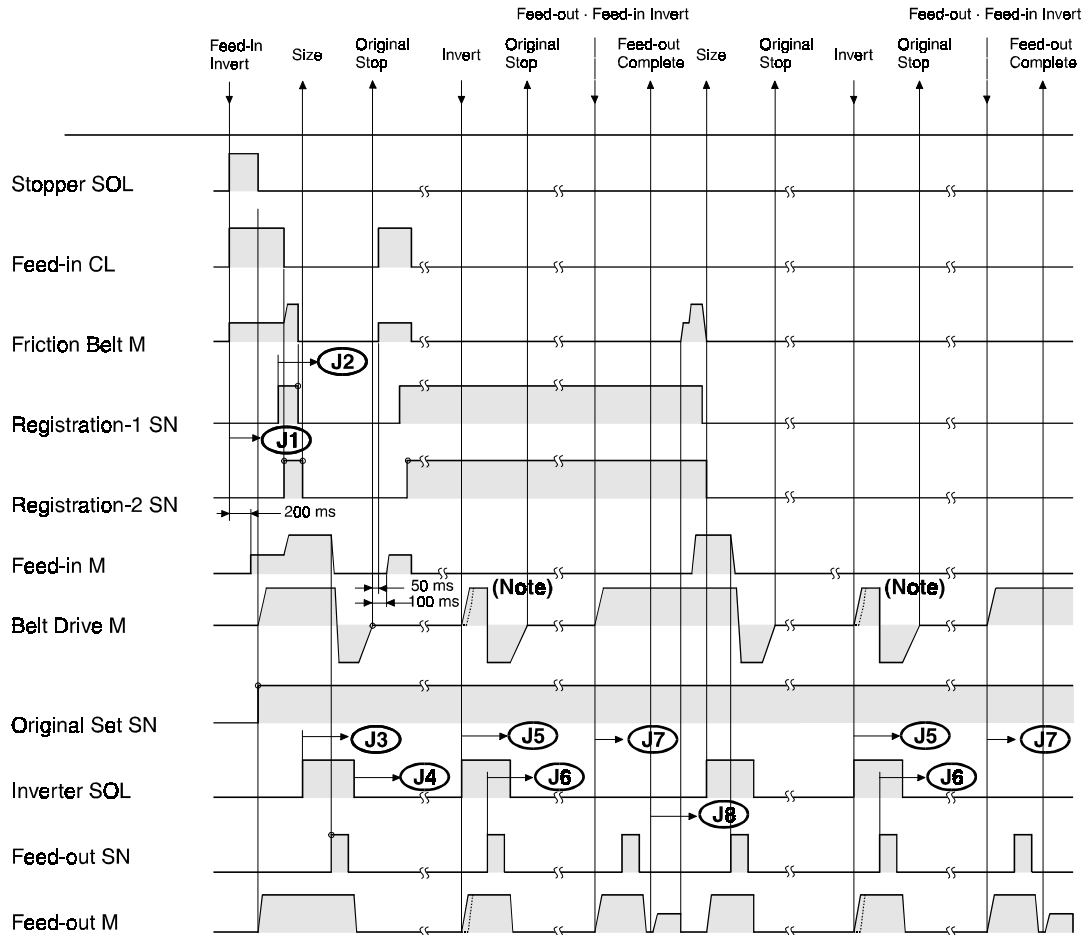
- J1** : Registration-1 sensor does not activate within 150 pulses after the feed-in motor starts turning.
- J2** : Registration-1 sensor does not de-activate within 200 pulses.
- J3** : The current paper size data is 40 mm longer or 80 mm shorter than the previous original size data (this check is disabled in the mixed size original mode).
- J4** : Feed-out sensor does not activate within 125 pulses after the feed-out motor starts turning.
- J5** : Feed-out sensor does not de-activate within 30 pulses after the feed out motor starts turning.

## 13.2 COMBINE TWO ORIGINALS MODE



- J1** : Registration-1 sensor does not activate within 150 pulses after the feed-in motor starts turning.
- J2** : Registration-1 sensor does not de-activate within 200 pulses.
- J3** : Feed-out sensor does not activate within 125 pulses after the feed-out motor starts turning.
- J4** : Feed-out sensor does not de-activate within 150 pulses after the feed-out motor starts turning.

### 13.3 A4 SIDEWAYS: TWO-SIDED, TWO ORIGINALS



- J1** : Registration-1 sensor does not activate within 150 pulses after the feed-in motor starts turning.
- J2** : Registration-1 sensor does not de-activate within 200 pulses.
- J3** : Feed-out sensor does not activate within 130 pulses after the feed-out motor start turning.
- J4** : Feed-out sensor does not de-activate within 200 pulses.
- J5** : Feed-out sensor does not activate within 130 pulses after the feed-out motor start turning.
- J6** : Feed-out sensor does not de-activate within 200 pulses after the feed-out motor starts turning.
- J7** : Feed-out sensor does not activate within 125 pulses after the feed-out motor starts turning.
- J8** : Feed-out sensor does not de-activate within 30 pulses after the feed-out motor starts turning.

**Note:** Motor ON timing will be delayed for 50 ms when an A3/DTL original is fed.

## 14. SERVICE TABLES

### 14.1 DIP SWITCHES AND SWITCH

0: OFF 1: ON ↓ : Push

Modes	DPS101				DPS102				SW	Function
	1	2	3	4	1	2	3	4	101	
Motor Tests (Speed Adj.)	1	1	0	1	1	0	0	0	—	Feed-in motor (M2) activates (High Speed)
					1	0	0	1	—	Feed-in motor (M2) activates (Low Speed)
					0	1	0	0	—	Belt drive motor (M3) activates
					0	0	1	0	—	Feed-out motor (M4) activates (High Speed)
					0	0	1	1	—	Feed-out motor (M4) activates (Low Speed)
Friction Belt Free Run	1	1	1	0	1	0	0	0	↓	Friction belt motor (M1) activates (Reverse)
					1	0	0	1	↓	Friction belt motor (M1) activates (Forward)
					1	0	0	—	↓	Push SW101 to feed the page in. Push it again to feed the sheet out.
MC, SOL Tests	0	0	1	1	1	0	0	0	—	Stopper solenoid (SOL2) activates
					0	1	0	0	—	Not used
					0	0	1	0	—	Feed-in clutch (CL1) activates
					0	0	0	1	—	Inverter solenoid (SOL1) activates
Original Feed Tests	0	1	0	1	0	0	0	0	↓	Feeds the original in and out (thick / one-sided)
					0	0	0	1	↓	Feeds the original in and out (thin / one-sided)
					1	0	0	0	↓	Feeds the original in and out (thick / two-sided)
					1	0	0	1	↓	Feeds the original in and out (thin / two-sided)
					0	0	1	0	↓	Feeds the original in and out (low speed / thick / one-sided)
					0	0	1	1	↓	Feeds the original in and out (low speed / thin / one-sided)
					1	0	1	0	↓	Feeds the original in and out (low speed / thick / two-sided)
					1	0	1	1	↓	Feeds the original in and out (low speed / thin / two-sided)
					0	1	0	0	↓	Feeds the original in and out (pasted original mode)
					1	1	1	0	↓	Feeds the original in and out (combine original mode)

Modes	DPS101				DPS102				SW	Function
	1	2	3	4	1	2	3	4	101	
Free Run Mode	1	0	0	1	0	0	0	0	↓	Thick / one-sided original mode
					0	0	0	1	↓	Thin / one-sided original mode
					1	0	0	0	↓	Thick / two-sided original mode
					1	0	0	1	↓	Thin / two-sided original mode
					0	1	0	0	↓	Thick / mixed size original mode
					0	1	0	1	↓	Thin / mixed size original mode
					0	0	1	0	↓	Low speed / thick / one-sided
					0	0	1	1	↓	Low speed / thin / one-sided
					1	0	1	0	↓	Low speed / thick / two-sided
					1	0	1	1	↓	Low speed / thin / two-sided
					1	1	1	0	↓	Combine two originals mode
LED	1	1	1	1	0	0	0	0	—	Turns on the indicator lamp (L1)
Standard Operation	1	0	0	0	0	0	0	0	—	Standard setting for A172/A199
	0	0	0	0	0	0	0	0	—	Standard setting for A175/A176/A177/A191/A192

## 14.2 VARIABLE RESISTORS

VR No.	FUNCTION
101	Adjusts the registration in one-sided original mode
102	Adjusts the registration in two-sided original mode
103	Adjusts the feed-in motor (M2) speed (high speed)
104	Adjusts the feed-in motor (M2) speed (low speed)
105	Adjusts the belt drive motor (M3) speed
106	Adjusts the feed-out motor (M4) speed (low speed)
107	Adjusts the feed-out motor (M4) speed (high speed)

## 14.3 LEDs

These LEDs monitor motor speed. Use in conjunction with VRs 103 - 107.

LED 101	LED 102	FUNCTION
ON	ON	Correct speed, if they stay on for more than 10 s
ON	OFF	The motor is too fast
OFF	ON	The motor is too slow

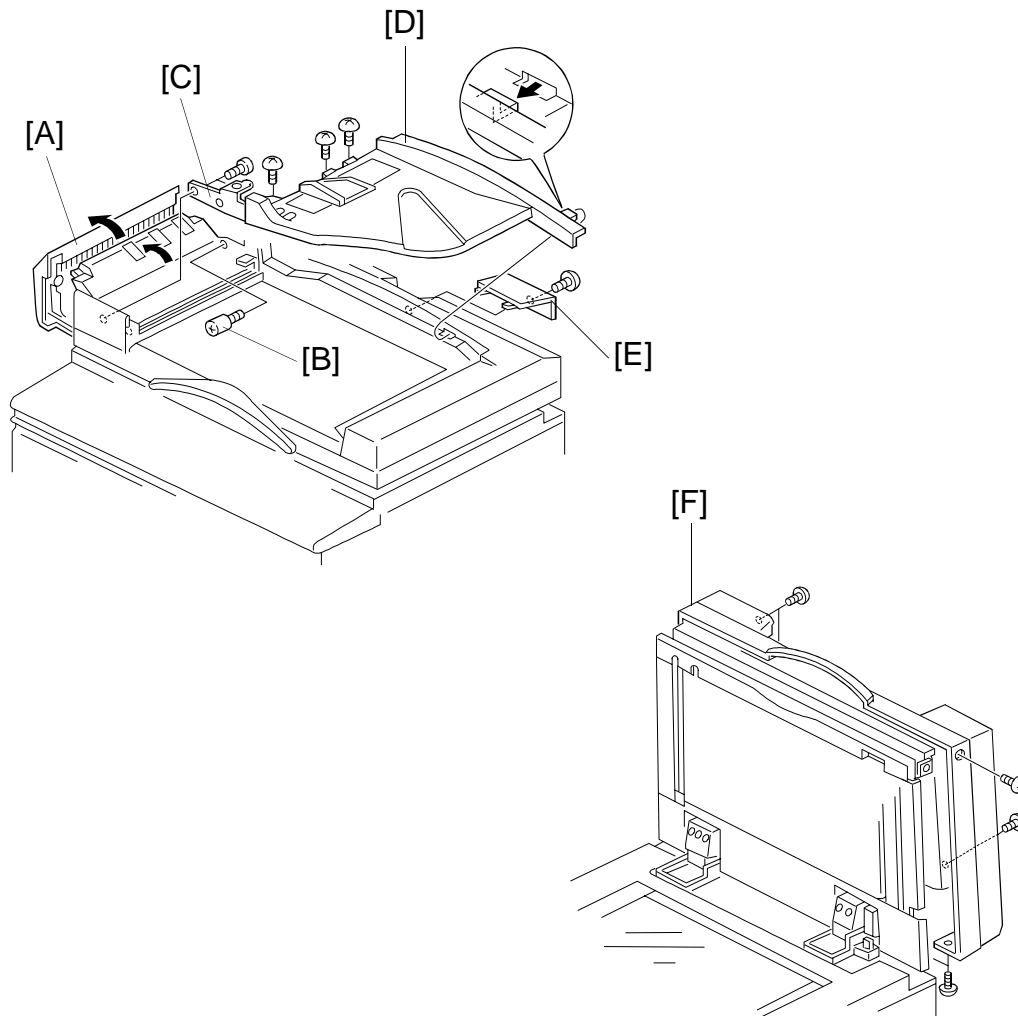
## 14.4 FUSE

Fuse No.	FUNCTION
101	Protects all voltage lines (5 V, 12 V, 24 V)



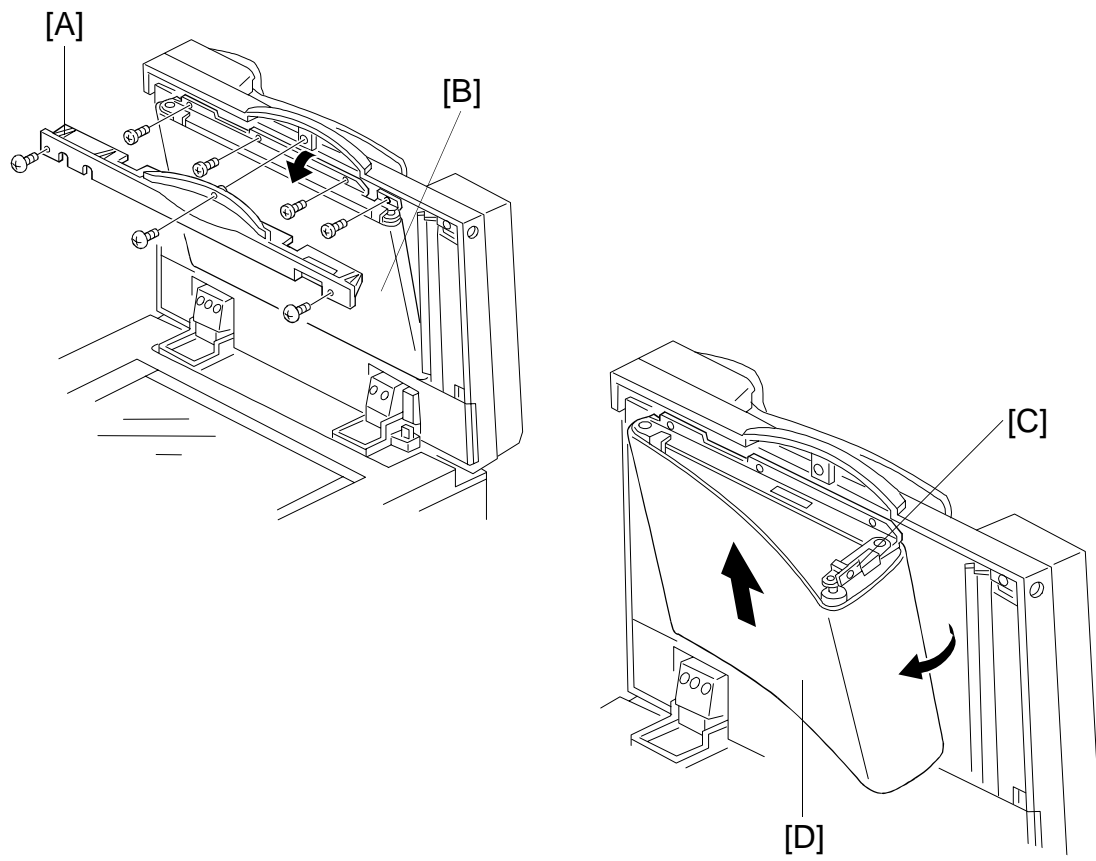
## 15. REPLACEMENTS AND ADJUSTMENTS

### 15.1 UPPER COVER REMOVAL



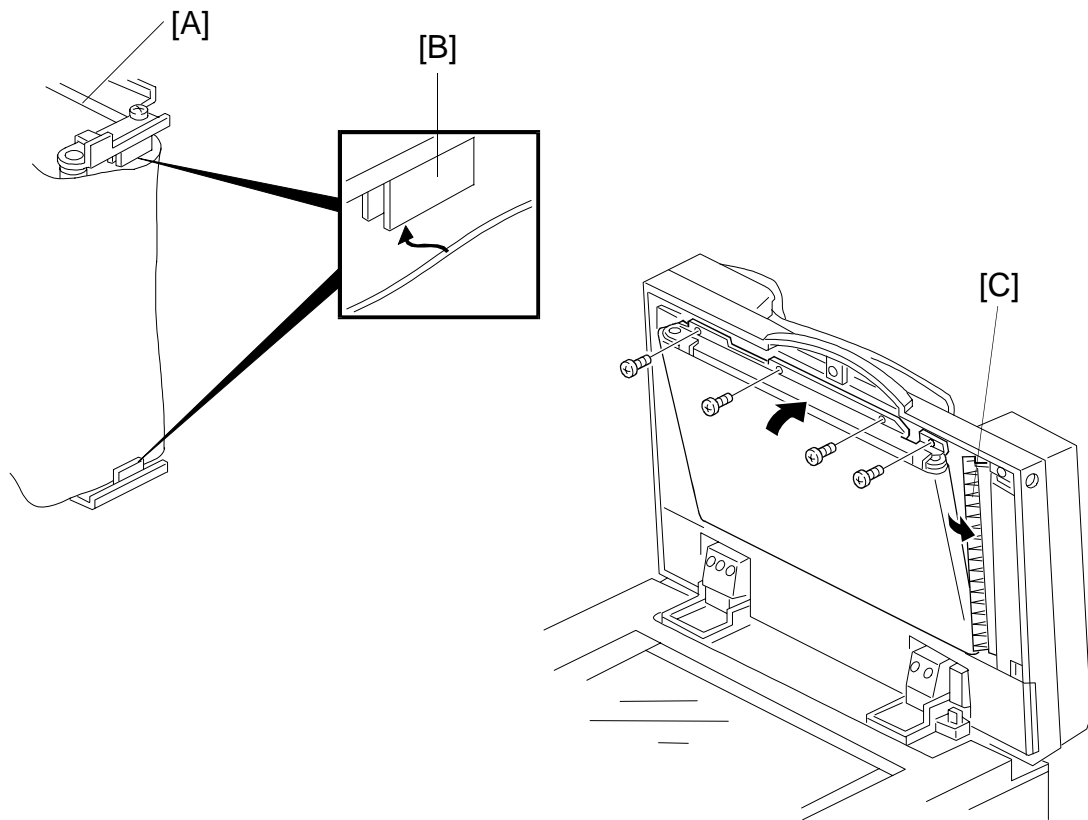
1. Turn off the main switch and open the feed-in cover [A].
2. Remove the stopper screw [B].
3. Remove the 2 screws securing the table bracket [C].
4. Remove the original table [D] (3 screws).  
**NOTE:** Do not loosen the 2 screws securing the original table to the table bracket.
5. Remove the small cover [E] at the rear side of the upper DJF cover (1 screw).
6. Remove the upper cover [F] (6 screws).

## 15.2 TRANSPORT BELT REPLACEMENT



**NOTE:** Never use alcohol to clean the transport belt. The coating will be damaged.

1. Turn off the main switch and lift up the DJF.
2. Remove the front cover [A] (3 screws).
3. Remove the 4 screws securing the transport belt guide assembly [B].
4. Fold the stay [C] as shown.
5. Remove the transport belt [D].



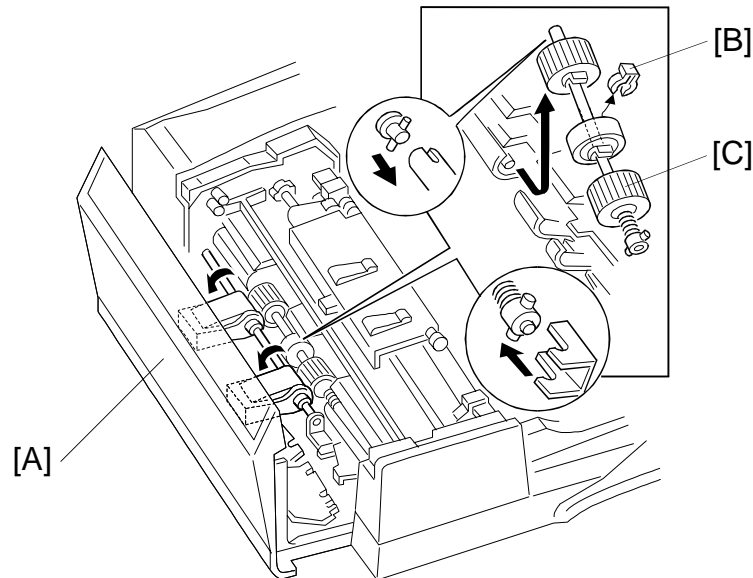
6. Install the new belt on the belt guide assembly [A].

**NOTE:** When installing the new belt, set the belt between the belt guides [B].

7. While opening the original guide [C], carefully install the belt guide assembly on the DJF (4 screws), making sure that the mylars on the feed-in unit side are not damaged.

8. Reinstall the machine and check the machine operation.

## 15.3 FEED ROLLER REPLACEMENT

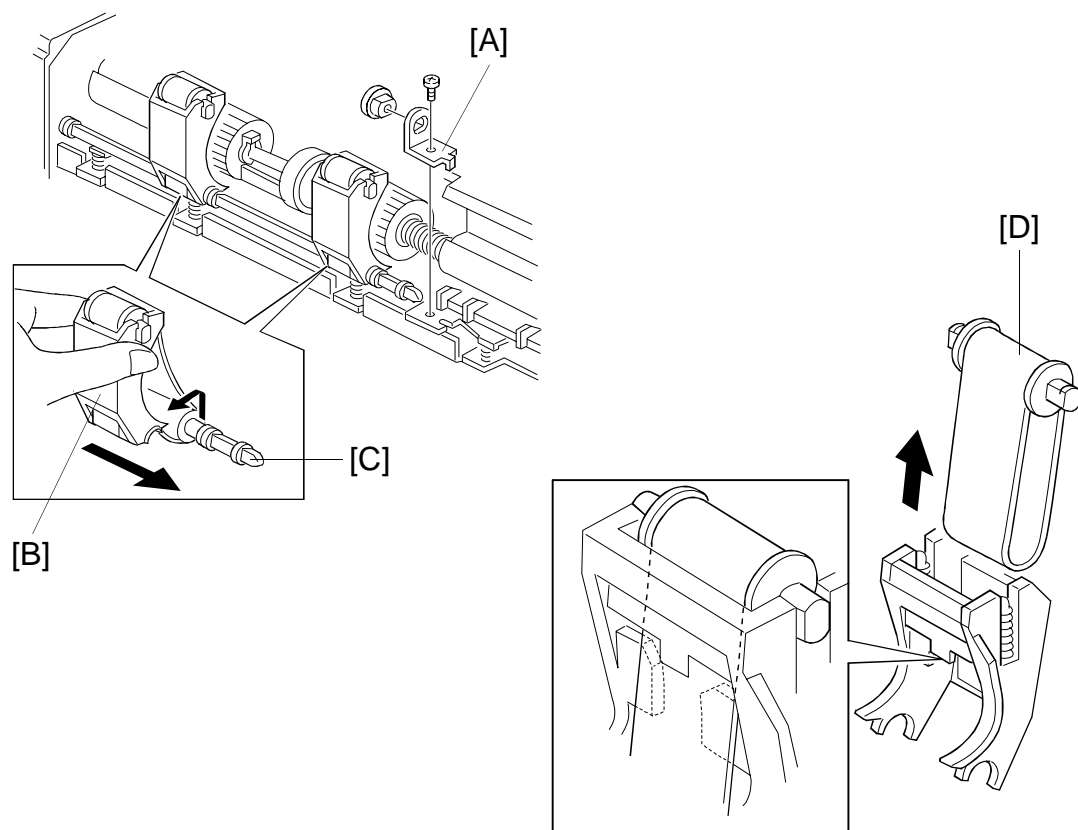


1. Turn off the main switch and open the feed cover [A].
2. Remove the snap ring [B].
3. Push the feed roller shaft to the front, then remove the roller assembly [C] as shown.
4. Remove the 4 snap rings, then replace the feed rollers.

**NOTE:** When reinstalling the feed rollers, be sure that the one-way bearing (silver color) is located at the front side (the roller must rotate only counter-clockwise when the shaft is fixed).

Do not touch the rollers with bare hands.

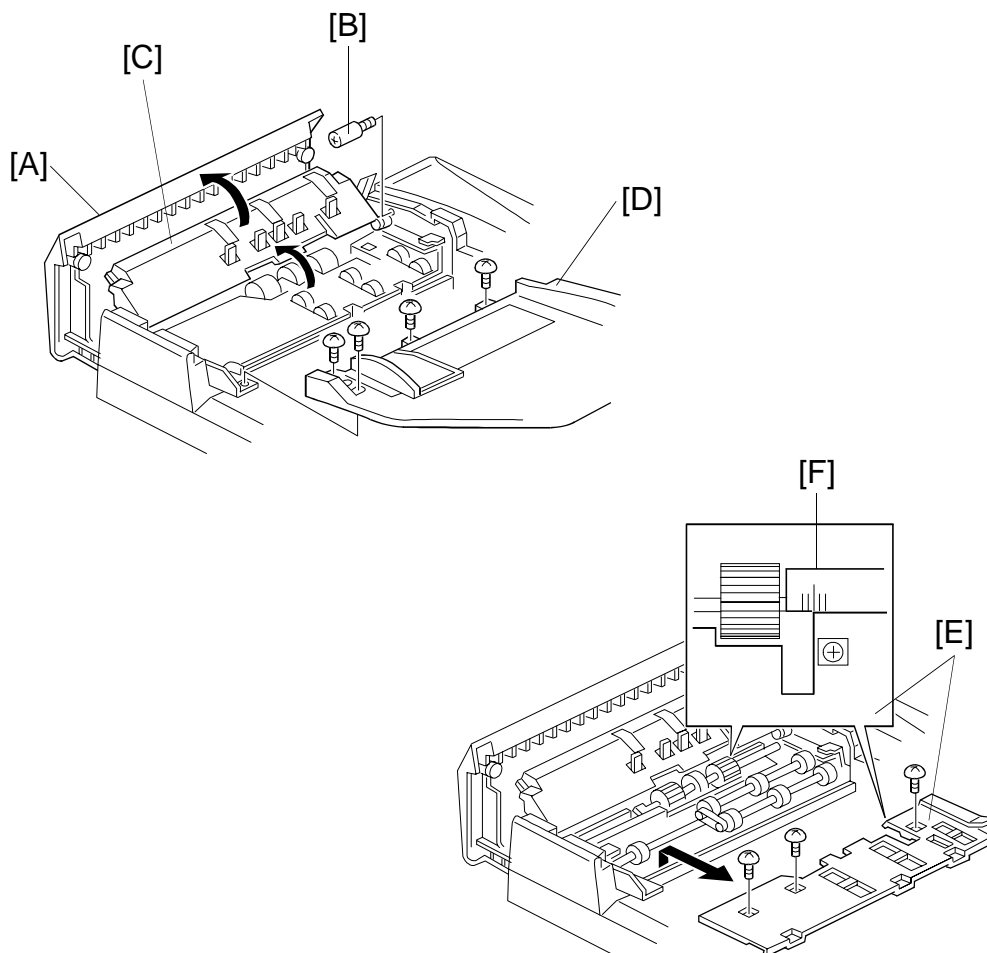
## 15.4 FRICTION BELT REPLACEMENT



1. Turn off the main switch and open the feed cover.
2. Remove the shaft receiving bracket [A] (1 screw).
3. Gently pull up the friction belt assembly [B] and remove it from the drive shaft [C].
4. Replace the friction belts [D].

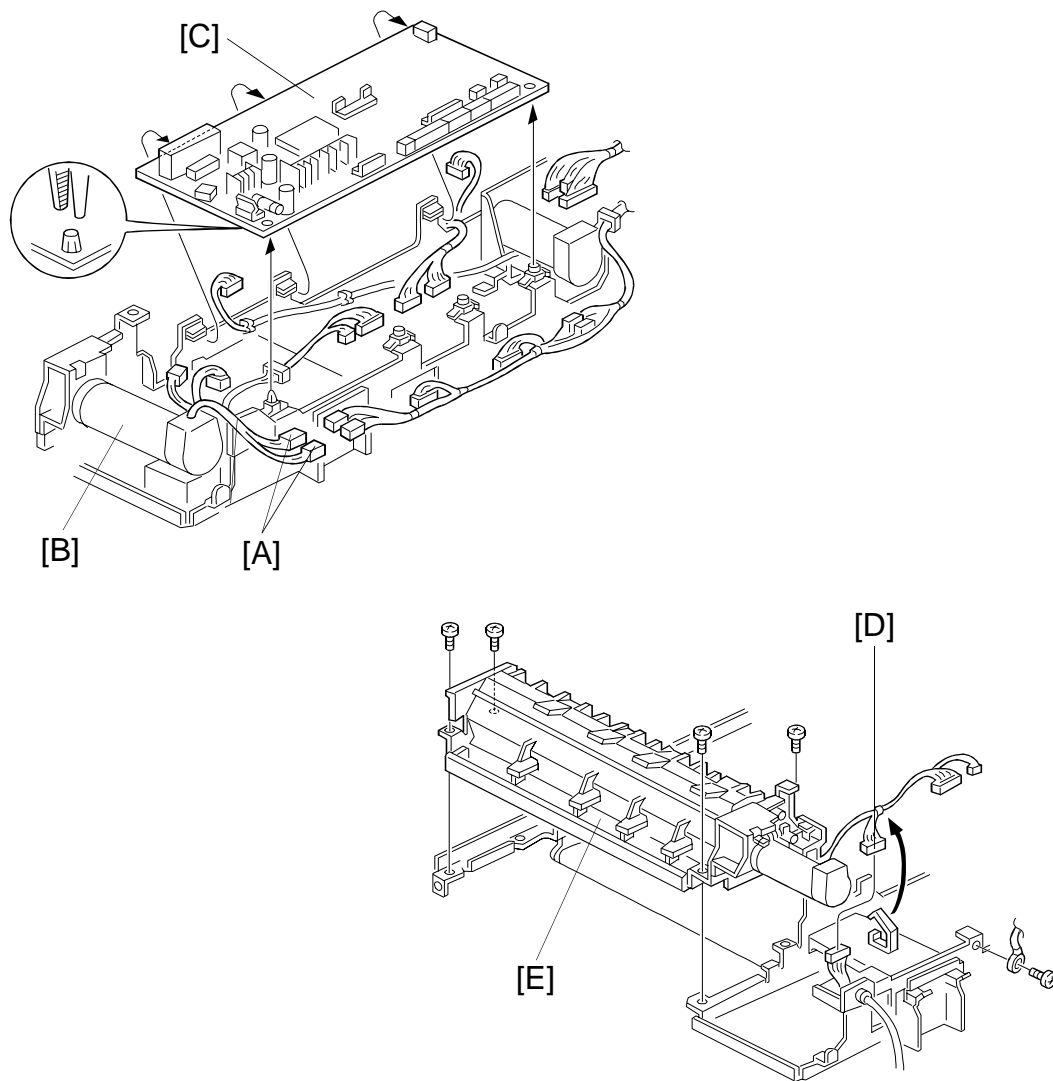
**NOTE:** Use alcohol to clean the friction belts.  
Do not touch the belts with bare hands.

## 15.5 ORIGINAL SET/FEED, REGISTRATION-1/-2, AND ORIGINAL WIDTH-1/-2/-3 SENSOR REPLACEMENT



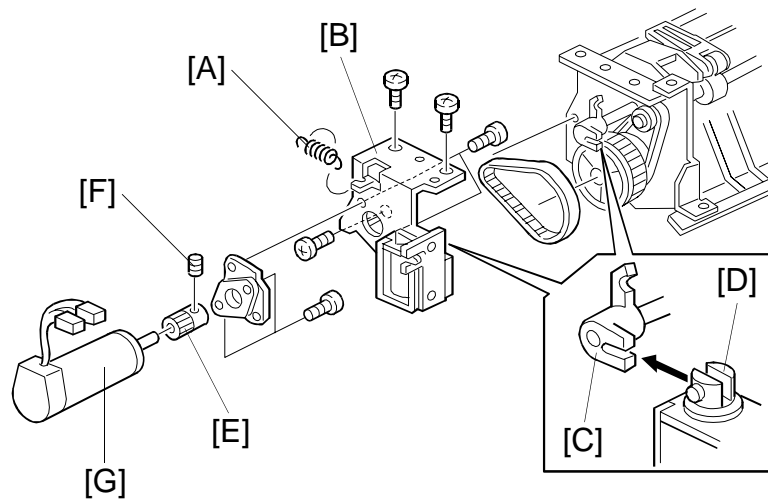
1. Turn off the main switch and open the feed cover [A].
2. Remove the stopper screw [B] and open the original stopper [C].
3. Remove the original table [D] (5 screws).
4. Remember the location of the original guide [E] against the guide plate [F] as shown. This is to keep the same original side-to-side registration after re-installation.
5. Remove the original guide (3 screws).
6. Replace the required sensor.
7. After this replacement, adjust the side-to side original registration if necessary.

## 15.6 FEED-OUT UNIT REMOVAL



1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal)
2. Disconnect the 4P and 2P connectors [A] of the feed-out motor [B].
3. Disconnect all the connectors and remove the DJF main board [C].
4. Disconnect the APS start/DJF position sensor connector [D].
5. Remove the feed-out unit [E] (4 screws and 1 grounding screw).

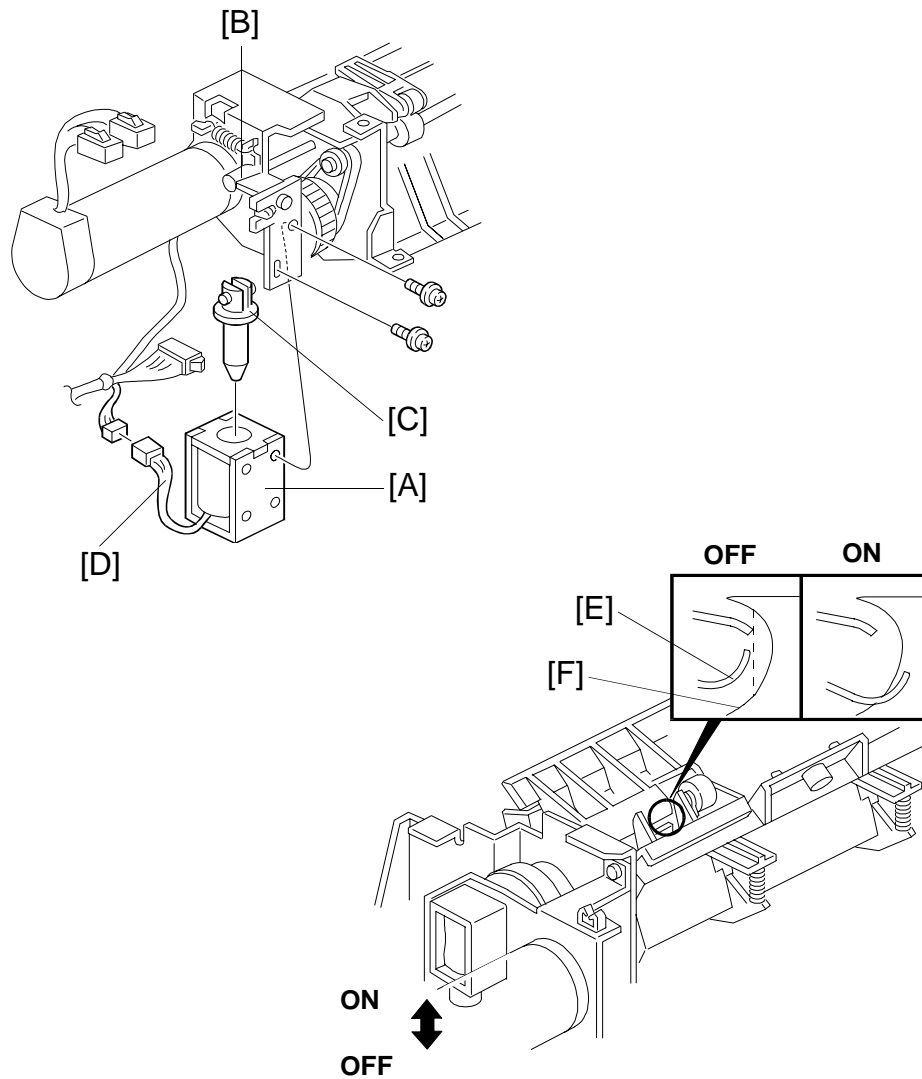
## 15.7 FEED-OUT MOTOR REPLACEMENT



1. Remove the feed-out unit. (Refer to Feed-out Unit Removal.)
2. Remove the spring [A].
3. Remove the bracket [B] with the feed-out motor from the feed-out unit (3 screws).  
**NOTE:** When reinstalling the bracket, be sure to set the arm [C] on the plunger pin [D].
4. Remove the pulley [E] (1 Allen screw [F]).
5. Remove the feed-out motor [G] (4 screws).



## 15.8 INVERTER SOLENOID REMOVAL AND ADJUSTMENT



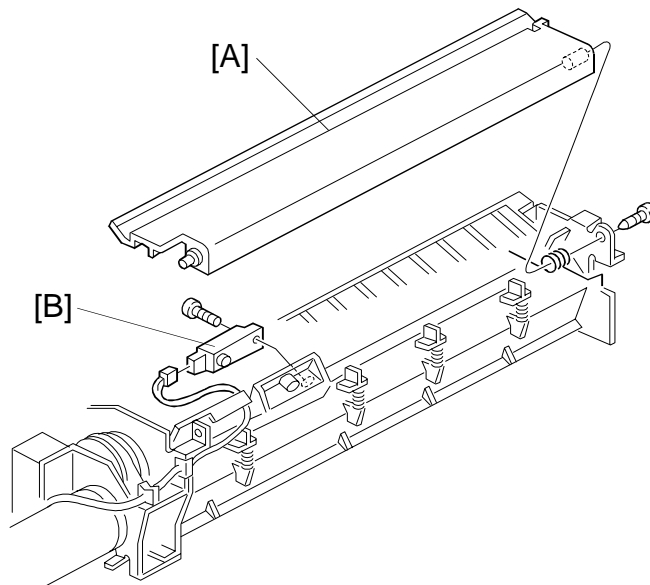
1. Remove the feed-out unit. (Refer to Feed-out Unit Removal.)

2. Remove the inverter solenoid [A] (2 screws).

**NOTE:** When installing the inverter solenoid, check the following:

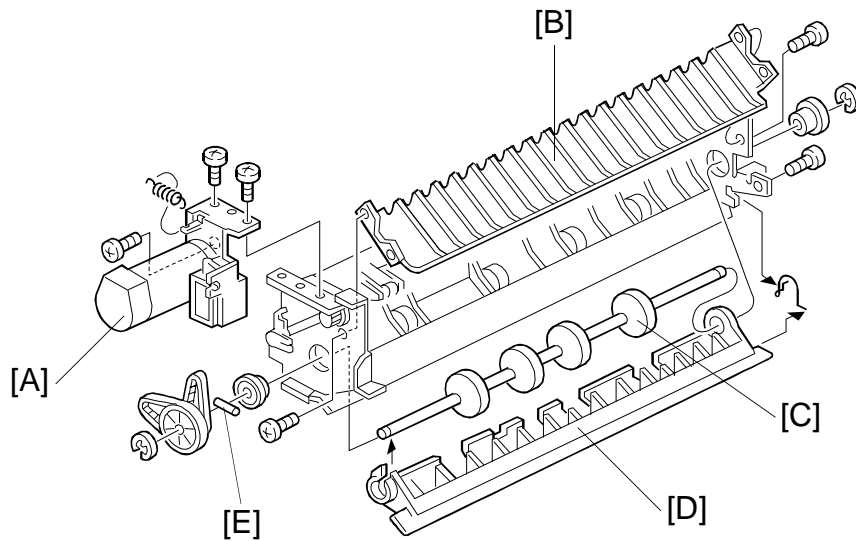
- 1) The arm [B] must be set on the plunger pin [C].
- 2) The inverter solenoid connector harness [D] should be facing the outside of the unit as shown.
- 3) Manually push the plunger and check that it works smoothly.
- 4) When the inverter solenoid does not activate (OFF), the inverter guide [E] must be inside the outer inverter guide [F], and when the inverter solenoid activates (ON), the inverter guide must be outside the outer inverter guide, as shown.

## 15.9 FEED-OUT SENSOR REPLACEMENT



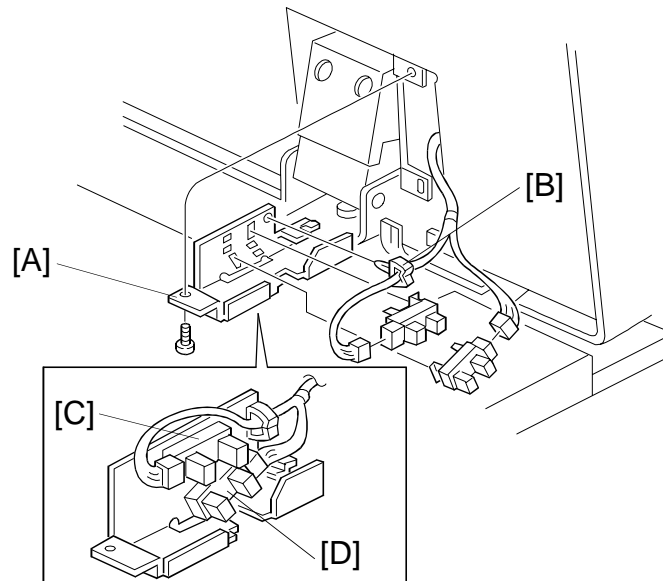
1. Turn off the main switch and remove the feed-out unit. (Refer to Feed-out Unit Removal.)
2. Remove the right cover [A] (1 screw).
3. Replace the feed-out sensor [B] (1 screw and 1 connector).

## 15.10 INVERTER ROLLER REPLACEMENT



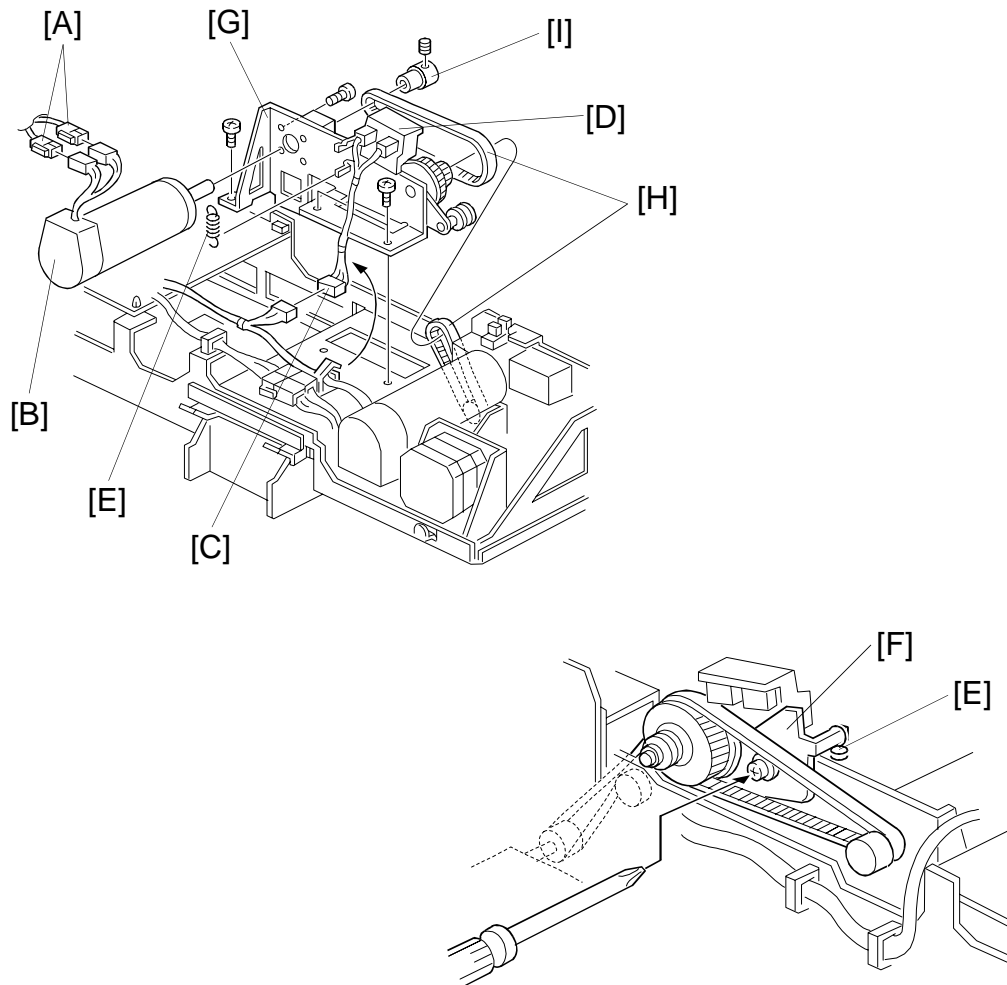
1. Turn off the main switch and remove the feed-out unit. (Refer to Feed-out Unit Removal.)
2. Remove the feed-out motor [A]. (Refer to Feed-out Motor Removal.)
3. Remove the exit guide [B] (3 screws).
4. Remove the inverter roller [C] with the inverter guide [D] (2 E-rings, 1 pulley, 1 pin [E], and 2 bushings).
5. Replace the inverter roller.

## 15.11 DF POSITION/APS START SENSOR REPLACEMENT



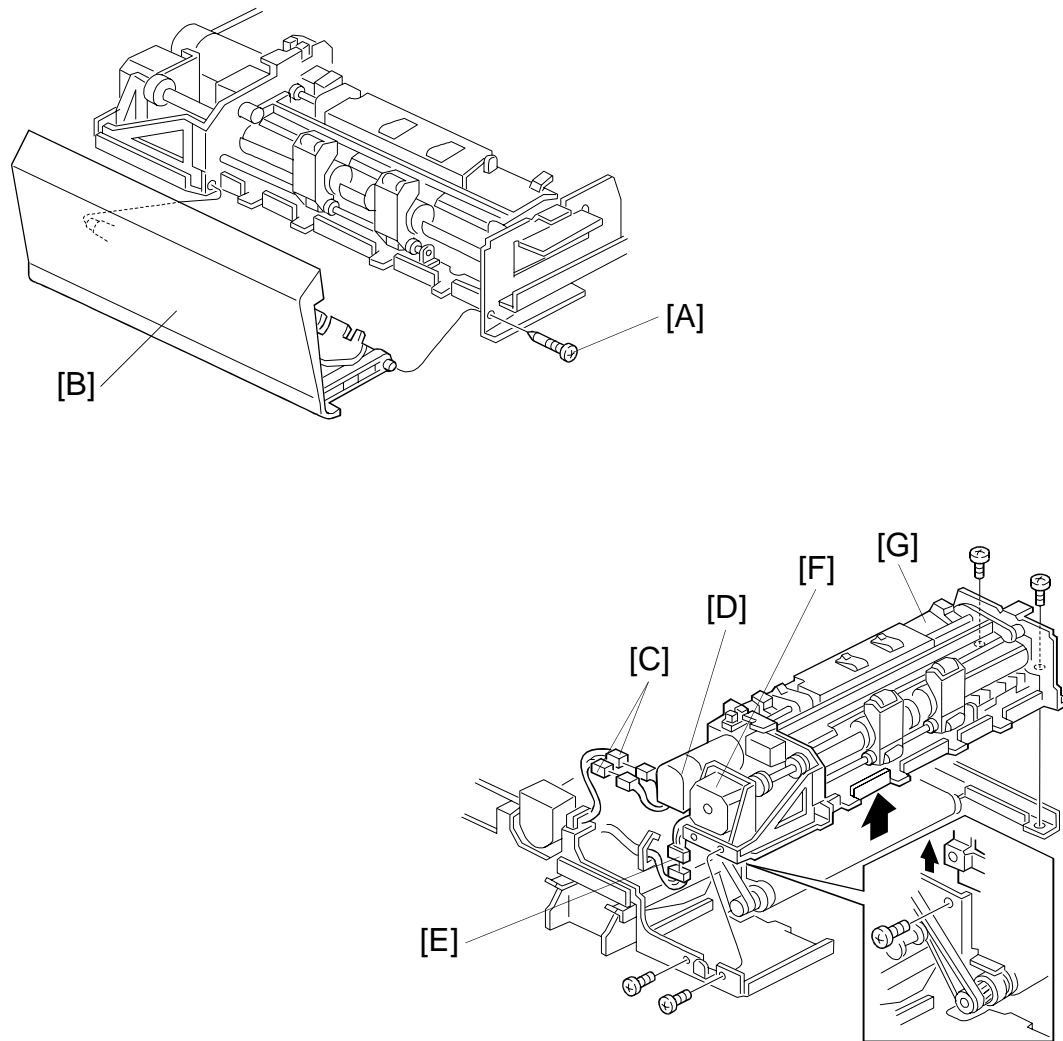
1. Turn off the main switch and lift up the DF.
2. Remove the sensor bracket [A] (1 screw).
3. Remove the harness clamp [B] and replace the DF position sensor [C] or the APS start sensor [D] (1 connector each).

## 15.12 BELT DRIVE MOTOR REPLACEMENT



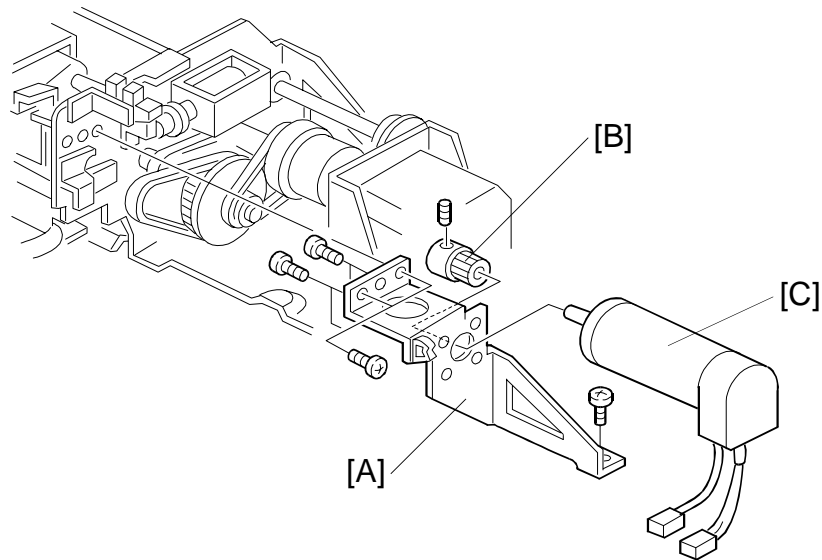
1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Disconnect the 2 connectors [A] of the belt drive motor [B].
3. Disconnect the connector [C] of the indicator panel [D] as shown.
4. Remove the tension spring [E] and loosen the tension bracket [F] as shown.
5. Remove the belt drive motor bracket [G] (3 screws), making sure not to damage the 2 timing belts [H].
6. Remove the drive pulley [I] (1 Allen screw) then replace the belt drive motor (4 screws).

## 15.13 FEED-IN UNIT REMOVAL



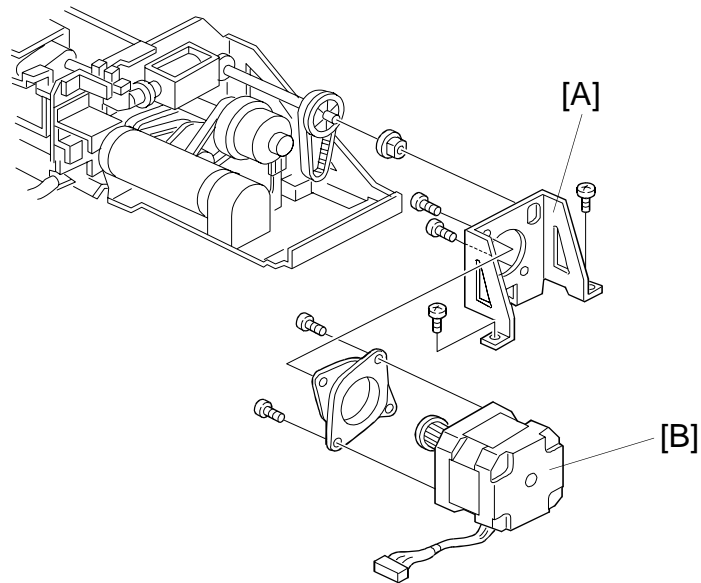
1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the screw [A], then remove the feed cover [B].
3. Disconnect the 2 connectors [C] of the feed-in motor [D].
4. Disconnect the connector [E] of the friction belt motor [F].
5. Disconnect CN104, 105, 108, 109, 110, and 111 on the DJF main board.
6. Disconnect the connector of the indicator panel as well.
7. Remove the feed-in unit [G] (5 screws).

## 15.14 FEED-IN MOTOR REPLACEMENT



1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the feed-in motor bracket [A] (3 screws), making sure not to damage the timing belt.
3. Remove the drive pulley [B] (1 Allen screw), then replace the feed-in motor [C] (4 screws).

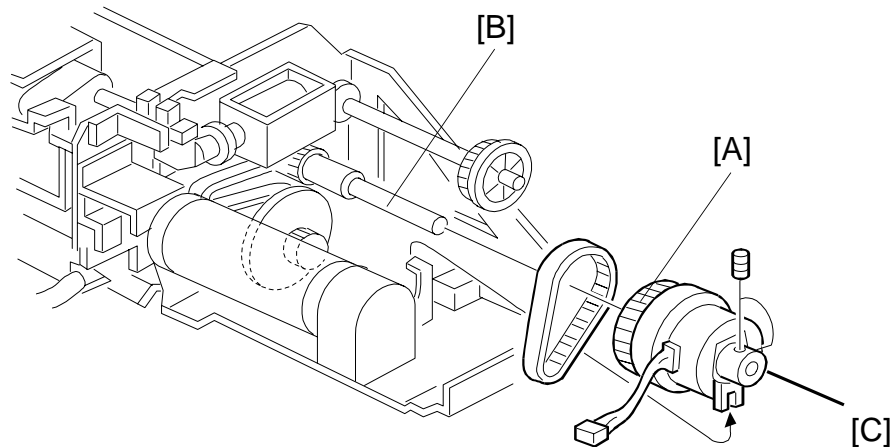
## 15.15 FRICTION BELT MOTOR REPLACEMENT



1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the friction belt motor bracket [A] (2 screws), making sure not to damage the timing belt.
3. Replace the friction belt motor [B] (4 screws).



## 15.16 FEED-IN CLUTCH REPLACEMENT

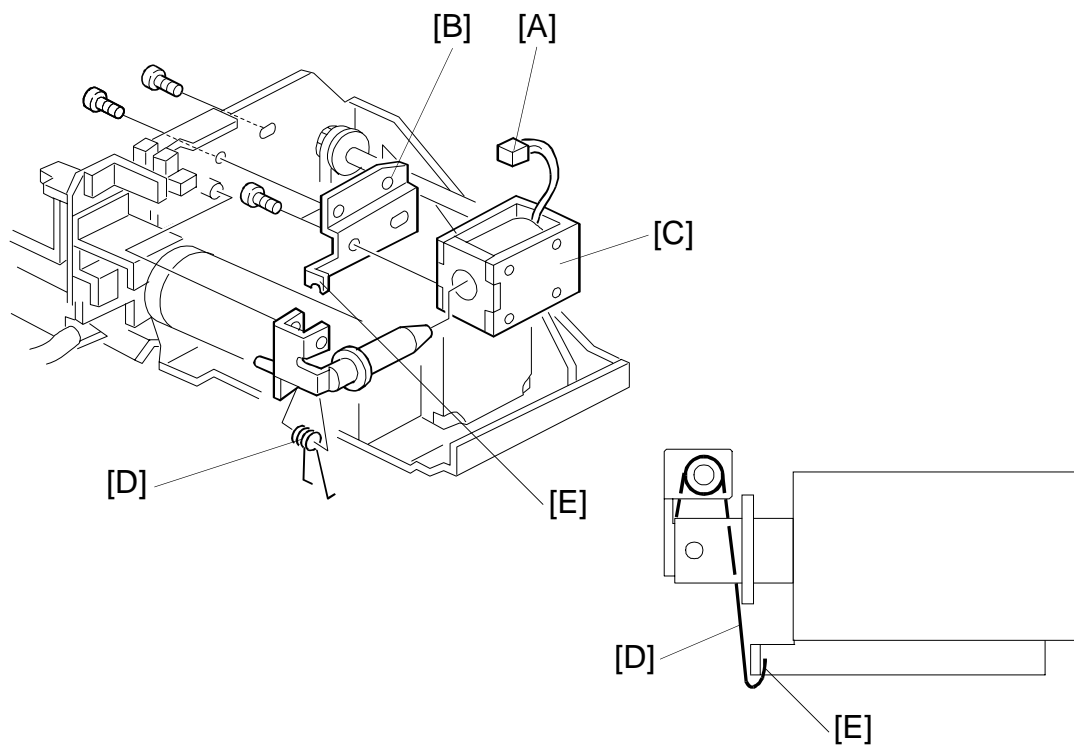


1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Remove the friction belt motor. (Refer to Friction Belt Motor Replacement.)
3. Replace the feed-in clutch [A] (2 Allen screws).

**NOTE:** When reinstalling, make sure of the following.

- 1) The clutch stopper groove must engage the clutch stopper.
- 2) The end of the clutch stopper [C] must be flush with the head of the shaft.

## 15.17 STOPPER SOLENOID REPLACEMENT



1. Turn off the main switch and remove the upper cover. (Refer to Upper Cover Removal.)
2. Disconnect the connector [A] of the stopper solenoid.
3. Open the feed-in cover and the original stopper.
4. Remove the bracket [B] with the stopper solenoid (2 screws and 1 E-ring.)
5. Remove the stopper solenoid [C] (2 screws).

**NOTE:** When installing the stopper solenoid, pay attention to the following points:

- 1) The spring [D] must be correctly hooked onto the stopper [E], as shown.
- 2) Manually pull the stopper solenoid plunger to confirm that the press rollers firmly contact the pick-up rollers. When the pick-up rollers are manually rotated, the press rollers also rotate. If not, adjust the stopper solenoid position.

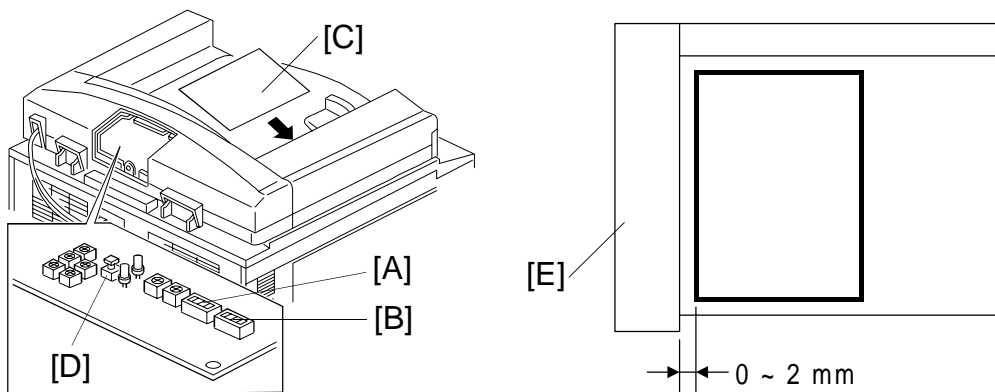
## 15.18 VERTICAL REGISTRATION ADJUSTMENT

### 15.18.1 One-sided Thin Original Mode

Perform this adjustment for machines having problems using the Thick Original Mode as well.

The original stopping position in thick original mode depends on the setting of this adjustment. (For details, refer to Detailed Descriptions.)

- NOTE:**
- 1) After replacing the DJF main board, always perform the adjustment using VR101 on the DJF main board.
  - 2) At other times, adjust with either the base copier SP mode or VR101. Both procedures will move the original stopping position.
  - 3) After finishing the adjustment, be sure to turn off the dip switches.



#### – Using VR101 –

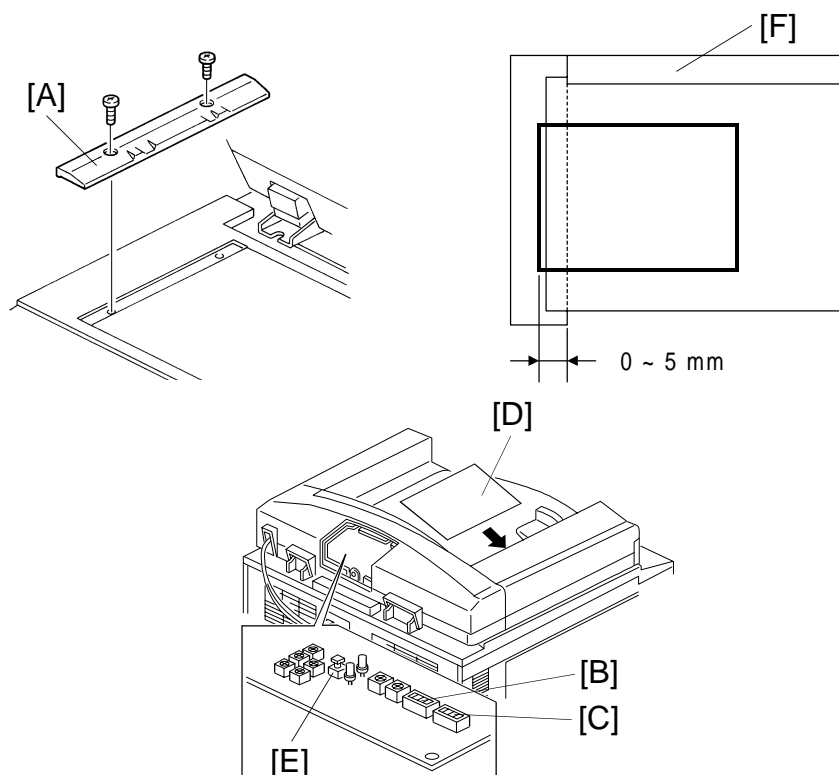
1. Remove the small cover at the rear of the DJF upper cover (1 screw).
2. Turn on dip switch 101-2 and -4 [A].
3. Turn on dip switch 102-4 [B].
4. Place a sheet of A4/8 1/2" x 11" sideways paper [C] (64 g/m<sup>2</sup>, 17 lb) on the original table.
5. Press switch 101 [D]. (Paper will be fed to the exposure glass.)
6. Raise the DJF carefully so that the original does not move.
7. Check that the gap between the trailing edge of paper and the left original scale [E] is  $0 \pm 2.0$  mm.
8. If the gap is not within this specification, adjust registration with VR101. (Looking from the front, turning VR101 counter-clockwise will decrease the gap.)
9. Return the user settings to their defaults, if you have changed any.

## – Using The Copier SP Mode –

- NOTE:**
- 1) When performing this adjustment, always make test copies with the "Copy In SP" mode. If you do not, the adjustment will not be performed properly.
  - 2) Make sure that the DJF dip switches are returned to the standard setting of the base copier, if you have performed the adjustments using the DJF main board.
  - 3) Make sure that the "Thin Mode" is selected with the customer settings of the base copier.

1. Turn the copier main switch off and on to initialize the machine.
2. Enter the copier SP mode, and open the DJF Registration Adjustment page.
3. Place a sheet of A4/8 1/2" x 11" sideways paper (64 g/m<sup>2</sup>, 17 lb) on the original table, and press the Copy In SP key.  
To save toner, select BLACK and A4, then press the Start key.
4. After the original stops on the exposure glass, raise the DJF carefully so that the original does not move.
5. Check that the gap between the trailing edge of paper and the left original scale is  $0 \pm 2.0$  mm.
6. If the gap is not within this specification, adjust registration by pressing the  $\oplus$  and  $\ominus$  keys of the thin mode inside the SP mode. The original paper stopping position will change accordingly. (If you press  $\ominus$ , the gap will decrease.)
7. Return the user settings to their defaults, if you have changed any.

### 15.18.2 Two-sided Original Mode



- NOTE:** 1) After replacing the DJF main board, always perform the adjustment using VR102 on the DJF main board.
- 2) At other times, adjust with either the base copier SP mode or VR102. Both procedures will move the original stopping position.
- 3) After finishing the adjustment, be sure to turn off the dip switches.

#### – Using VR102 –




1. Remove the copier's left original scale [A] (2 screws).
2. Remove the small cover at the rear of the DJF upper cover (1 screw).
3. Turn on dip switch 101-2 and -4 [B].
4. Turn on dip switch 102-1 and -4 [C].
5. Place a sheet of A4/8 1/2" x 11" sideways paper [D] (64 g/m<sup>2</sup>, 17 lb) on the original table.
6. Press switch 101 [E]. (Paper will be fed to the exposure glass.)
7. Raise the DJF carefully so that the original does not move.
8. Check that the distance between the trailing edge of the paper and the left edge of the rear original scale [F] is between 0 ~ 5 mm.
9. If the distance is not within this specification, adjust the registration with VR102. (Looking from the front, turning VR102 counter-clockwise will feed the paper more towards the left.)

## – Using the Copier SP Mode –

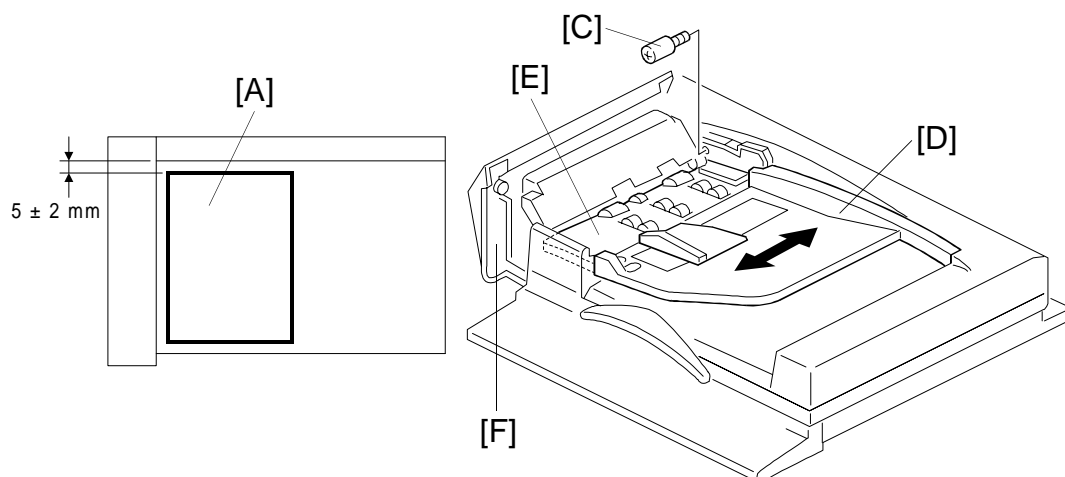
- NOTE:** 1) When performing this adjustment, always make test copies using the "Copy In SP" mode. If you do not, the adjustment will not be performed properly.
- 2) Make sure that the DJF dip switches are returned to the standard setting of the base copier, if you have performed the adjustments using the DJF main board.

1. Remove the copier's left original scale (2 screws).
2. Turn off and on the copier main switch to initialize the machine.
3. Enter the copier SP mode, and open the DJF Registration Adjustment page.
4. Place a sheet of A4/8 1/2" x 11" sideways paper (64 g/m<sup>2</sup>, 17 lb) on the original table, and press the Copy In SP key.

Select the two-sided original mode to invert the original paper. Also to save toner, select BLACK and A4 size paper. Then press the Start key.

5. After the original stops on the exposure glass, raise the DJF carefully so that the original does not move.
6. Check that the distance between the trailing edge of the paper and the left edge of the rear original scale is between 15 ~ 20 mm.
7. If the distance is not within this specification, adjust the registration by pressing the  and  keys of the two-sided mode inside the SP mode. The original paper stopping position will change accordingly. (If you press , the original will be fed more towards the left.)

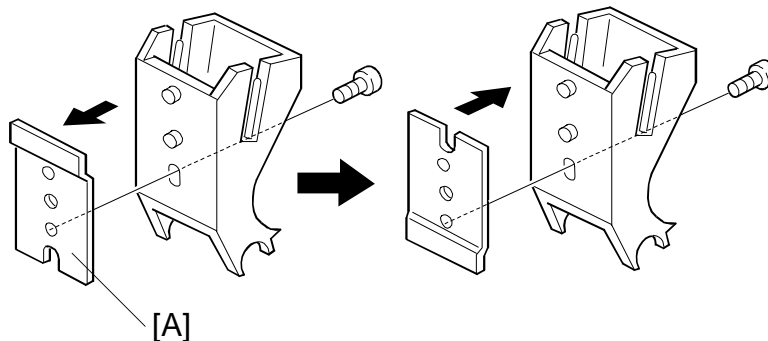
## 15.19 SIDE-TO-SIDE REGISTRATION ADJUSTMENT



1. Place a sheet of A4/8 1/2" x 11" sideways paper [A] (64 g/m<sup>2</sup>, 17 lb) on the original table and press the Start key.
2. Check the side-to-side registration comparing the original paper and the copied paper.
3. If the side-to-side registration is not within  $0 \pm 2$  mm, enter the SP mode and perform the following steps:
  - 1) Open the DJF Side To Side Registration Adjustment page.
  - 2) Change the setting with the  $\oplus$  and  $\ominus$  keys to meet the above specification. (The original stopping position will not change.)  
Note that the direction of the image shift will differ for each base copier.
4. If it is still out of specification, leave SP mode and perform the following original table positioning adjustment:
  - 1) Place a sheet of A4/8 1/2" x 11" sideways paper [A] (64 g/m<sup>2</sup>, 17 lb) on the original table and press the Start key.
  - 2) After the original stops on the exposure glass, gently raise the DJF so that the original does not move.
  - 3) Check if the gap between the rear edge of the paper and the original rear scale is  $5 \pm 2$  mm.
  - 4) If the gap is not within specification, remove the stopper screw [C], loosen the 8 screws securing the original table [D] and the original guide [E] and shift the original table and the original guide position accordingly.

**NOTE:** Before putting an original on the original table again, open and close the feed unit cover [F].

## 15.20 PREVENTING THE REAR SIDE OF ORIGINALS FROM BECOMING DIRTY



**NOTE:** Perform the following adjustment only when needed (if the friction belt needs to be changed but there is no spare friction belt available). However, after this adjustment, thick originals are likely to be misfed, so it is best to avoid this adjustment if the customer says that thick originals will be used.

1. Remove the friction belt assembly. (Refer to Friction Belt Replacement.)
2. Remove the adjusting plate [A] and re-install it as shown (the belt folds about 1 degree) or remove the adjusting plate (the belt folds about 2 degrees).





**SORTER**  
**A322**



# 1. SPECIFICATION

---

Paper Size for Bins:	Maximum: A3 (lengthwise) or 11" x 17" (lengthwise) Minimum: A5 (sideways) or 5 1/2" x 8 1/2" (sideways and lengthwise)
Copy Paper Weight:	50 - 90 g/m <sup>2</sup> or 14 - 24 lb
Number of Bins:	15 bins + interruption bin (total 16 bins)
Bin Capacity:	Sort mode: 50 sheets/bin (A4 or 8 1/2" x 11") Stack mode: 40 sheets/bin (A4 or 8 1/2" x 11")
Top Bin Capacity:	150 sheets (A4 or 8 1/2" x 11")
Print Bin Capacity:	40 sheets/bin (80 g/m <sup>2</sup> or 20 lb)
Interrupt Bin Capacity:	100 sheets (A4 or 8 1/2" x 11")
Power Source:	DC 24V from the copier
Power Consumption:	0.03 kW
Dimensions (W x D x H):	499 x 535 x 600 mm 19.6" x 21.1" x 23.6"
Weight:	22 kg, 48.5 lb
Interface Requirement:	A sorter adapter is needed.

## 2. MAJOR DIFFERENCES FROM THE BASE COPIER'S SORTER (A511)

---

- The number of bins has been changed. (Requests from the field.)

Sorter for This Machine	Sorter for Base Copier
15 bins + interruption bin	10 bins + interruption bin + print bin

- The exterior color has been changed. (New corporate identity color)

Refer to the A109 Service Manual, A511 (CS210) section for details.

# **FILM PROJECTOR UNIT**

## **A718**



# 1. SPECIFICATION

---

- Acceptable Film Types:
- Type: Positive film/Negative film
  - Size: 35 mm - Approx. 140 x 210 mm  
       Others: 45 x 60 mm, 60 x 60 mm,  
               60 x 70 mm, 60 x 80 mm,  
               60 x 90 mm, 4" x 5"  
               Max: 142 x 210 mm or 5.6" x 8.2"
  - Mount: Yes (Up to 5 frames can be set in the film holder.)
  - Strip: Yes (A series of 6 frames can be set in the film holder.)

Focusing: Fixed/Manual

- Effective Film Area:
- 35 mm: Approx. 21.5 x 33.0 mm
  - Other Sizes: Full Size

- Projection Ratio
- 35 mm: Approx. x 6
  - Other Sizes: x 1

- Copy Image Size
- 35 mm mount: 120.8 x 192.7 mm
  - 35 mm strip: 129.3 x 198.6 mm
  - Other Sizes: Full Size

All the reproduction features of the copier are available.

Power Source: 115 V 60 Hz, more than 1.0 A  
 220 ~ 240 V 50/60 Hz, more than 0.6 A

Power Consumption: Maximum: less than 185 VA

Dimensions (W x D x H): Projector: 300 x 442 x 212 mm  
 11.8" x 17.4" x 8.35"

Mirror Unit: 298 x 232 x 50 mm  
 11.73" x 9.13" x 1.97"

Weight: Less than 15kg or 31.9 lb

Remarks: The holder is required for installation.



## 2. MAJOR DIFFERENCES FROM THE BASE COPIER'S FILM PROJECTOR (A998)

---

Enhancements for this FPU	Purpose
The projector lamp light intensity has been increased.	To improve the reproduction.
The material of the transparent parts of the film strip/slide holders have been changed.	To improve the holders concerning attracting dust particles, and reduce the appearance of Newton ring patterns on copies.
The material of the guard unit has been changed.	To reduce the attraction of dust particles to the guard unit.
The height of the guard unit when placed on the exposure glass has been changed.	To flatten a curled original (positive film) on the exposure glass more effectively.
The height adjustment procedure has been changed.	For easier servicing of the machine.

- The exterior color has been changed. (New corporate identity color)

Refer to the A109 Service Manual A988 (SPU2) section for details

# **CONTROLLER INTERFACE**

## **A583**



## 1. SPECIFICATION

---

Refer to the Fiery Controller Service Manual for the Type A Controller.

## 2. MAJOR DIFFERENCES FROM THE BASE COPIER'S CONTROLLER TYPE A (A583)

---

- Harness for PTL
- ROMs
- The name "Controller Interface Type C" is not referred to as a kit as was the "Controller Interface Kit Type A".

Refer to the A109 Service Manual, "Controller Interface Kit Type-A" for details.

## 3. PARTS CATALOG

---

- Refer to the following pages.



# **TECHNICAL SERVICE BULLETINS**



BULLETIN NUMBER: AFICIO 5106/5206 - 001

10/18/96

APPLICABLE MODEL: AFICIO 5106/5206

**SUBJECT: AUTO COLOR CALIBRATION (ACC) PROCEDURE****GENERAL:**

This bulletin is being published to provide a greater understanding of the Auto Color Calibration (ACC) procedure. The following points must be understood prior to performing an ACC procedure:

1. Adjustment of ACC changes gamma settings.
2. ACC is intended to provide a "rough" adjustment or a "starting point" for the color calibration process.
3. ACC is designed to allow a customer to set gamma settings to "reasonably acceptable" standards, however, manual adjustment of gamma settings by a Service Representative will provide optimal copy quality.
4. In some cases, when copy quality is determined to be acceptable by the customer, ACC is not required and should not be performed. If ACC is performed after manual adjustment of gamma settings, the Service Representative settings will be lost if the previous settings are not selected through ACC. Therefore, always save the Service Representative gamma settings in Permanent memory as a back-up. For more information on Permanent and Temporary Memory, refer to the Service Manual, page 4-33 (under NOTE).
5. The gamma settings stored in Permanent Memory for Printer Mode can not be changed. However, the gamma settings stored in Permanent Memory for Glass-top Copy Mode can be changed.
6. ACC may not be required after a PM call.
7. The use of dry copy paper (<25% humidity) may result in "blasting" around text. If "blasting" around text occurs, install fresh paper of greater than 25% humidity.

**AUTO COLOR CALIBRATION (ACC) PROCEDURE:**

**NOTE:** *Because the reflectivity of the copy paper can affect the ACC results, it is recommended that you use Hammermill, Color Copy Paper (long grain, PhotoWhite).*

*As mentioned in the Service Manual (Note: (a), page 3-6), be sure to plug the power cord in with the Main Switch in the "OFF" position at machine installation. This will energize the Transfer Roller Heater and allow the internal temperature of the machine to stabilize. It may be necessary to have the Transfer Roller Heater energized for 2 to 3 hours (depending on how cold an environment the machine has been in).*

Continued...

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## Glass-top Copy Mode Calibration

1. Place the C4 test chart on the glass, select 11 X 17 inch paper, select Photo Mode, and change Auto Image Density to Manual Image Density. Enter User Tool No. 2 and set values to factory default and press "Copy".
2. Check the copy quality.
3. If acceptable, do **not** proceed with ACC procedure.
4. If unacceptable, set copy sample aside and perform the ACC procedure as follows.
5. Select User Tool No. 2 - Sensitivity Adjustment (Auto Color Calibration ACC: Copy Mode).
6. Print out Test Pattern from copier.
7. Place Test Pattern on the glass and press "Scan Start".
8. Copier gamma settings will be automatically adjusted.
9. Place the C4 Test Chart (A0929503A) on the glass and press "Copy".
10. Compare the output to the original and also to the first copy sample (produced in step 1.).
11. Manually adjust the gamma settings to fine tune the copier if needed. Save settings in Permanent Memory (Service Manual, page 5-3).

**NOTE:** *The values stored in Permanent Memory will not be affected by subsequent ACC procedures.*

## Fiery XJ System Printer Gamma Adjustment Procedure

1. Attach the Fiery to the copier.
2. Run Fiery setup and select R2 under the Printer Setup / Printer Model selection.
3. Write down the factory default gamma settings. These values are **not** on the factory data sheet provided with the copier.

**NOTE:** *If the Fiery has been previously installed, remove the calibration from the Fiery. Removing any previously stored calibration prepares the system to accept a new calibration. If installing for the first time, no calibration will be in the Fiery.*

4. Print out the Fiery XJ Test Page by pressing the Menu Button on the XJ, then press the Print Pages Button, then press the Test Page Button.
5. If acceptable, do **not** proceed with ACC procedure.
6. If unacceptable, set the printer sample aside and perform the ACC procedure as follows.
7. Select User Tool No. 2 - Sensitivity Adjustment (Auto Color Calibration ACC: Printer Mode).
8. Print out Test Pattern from the copier.

Continued...

9. Place Test Pattern on glass and press "Scan Start" (be sure to align the arrows on the glass correctly).
10. Printer gamma settings will be automatically adjusted.
11. Print out the Fiery XJ Test Page and compare the outputs.
12. If you have the X-RITE DTP 32 densitometer, continue with step 14. If not, refer to the Service Manual, page 5-32, to adjust the gamma settings manually. Refer to page 6-1 of the Fiery User Manual for calibration procedure.
13. Print the Fiery Test Page and compare.
14. Start the Macintosh or PC and launch the Fiery Print Calibrator, version 3.0.
15. Select Fiery XJ R2 from the list of servers and click "Connect".
16. Click "Target". A list of device targets will appear. From this list, select R2 and click "OK".
17. From the "Server" menu at the top of the screen, select "Print Patch Page". The copier will now print a series of CMYK patches.
18. From the "Measurements" menu, select "Densitometer".
19. At this time, "None" will be selected. Click on "None" and select "Modem" or "Parallel Port", (depending on which port the densitometer is connected to).
20. Click "Start" and follow the directions in the "Status" box on the computer screen and the LCD read-out on the densitometer.
21. After reading all CMYK strips, the status box reads "Measurements Read Successfully".
22. Click : "Accept".
23. Click "Test". Make sure "Calibrator Test Page" is selected, then click on "Print".
24. The system will now generate a comparison page with calibrated & non-calibrated images, side by side.
25. From the "Server" menu select "Remove Calibration". This removes any previously stored calibration and prepares the system to accept new calibration.
26. Click "Apply Calibration" if the comparison page calibrated image is acceptable. Otherwise, manually adjust printer gamma settings or refer to **Standard Fiery Print Calibration Targets** below.
27. You may check calibration status by selecting "Calibration Status" from the Server menu. Refer to the Fiery XJ user guide for more information regarding editing calibration curves.
28. When you are done, select "Quit" from the File menu.

### **Standard Fiery Print Calibration Targets:**

A list of preliminary target numbers are listed on page 4. This list will be updated and re-issued as better results are obtained.

Continued...

## Standard Fiery Print Calibration Targets

Modify the linear target that is supplied with version 3.0 software to the following numbers:

5106HJ\_r2-Edit Calibration

Input:      Output:

View Channels

☒ Cyan   ☒ Magenta   ☒ Yellow   ☒ Black

View Curves

☒ Target/Measured   ☐ Custom

☒ Target   ☐ Measured

Maximum Density

C:  M:  Y:  K:

Lightness/Darkness

Apply setting to:

☒ Brightness:

☐ Dot Gain

☒ North American

Gain at 50%  %

☐ European

Gain at 40% is  %

And at 80% is  %

Save Target...

### FIELD SERVICE MANUAL - INSERT:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 2 sets of replacement pages.

### PAGES:

The revised areas have been highlighted by an arrow ⇒

- 5-3 Updated Information
- 5-5 Updated Information
- 5-6 Updated Information
- 5-33 Updated Information

BULLETIN NUMBER: 5106/5206 - 002

01/16/97

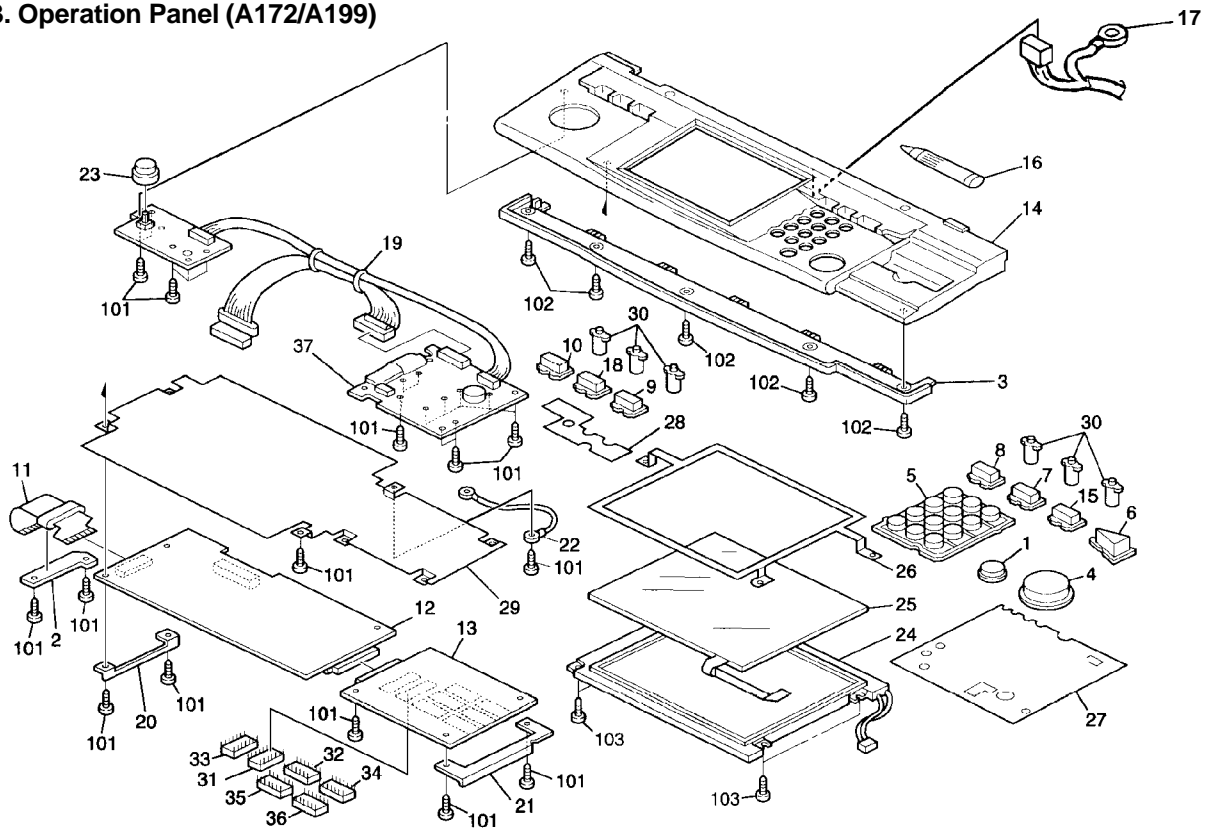
APPLICABLE MODEL: AFICIO COLOR 5106/5206

## SUBJECT: PARTS CATALOG CORRECTIONS

### GENERAL:

The following Parts Catalog Corrections are being issued for all AFICIO COLOR 5106/5206 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

### 3. Operation Panel (A172/A199)



16

Add the illustration of the Operation Panel Harness - IPU 1 (item #17) to page 16 of the Parts Catalog.

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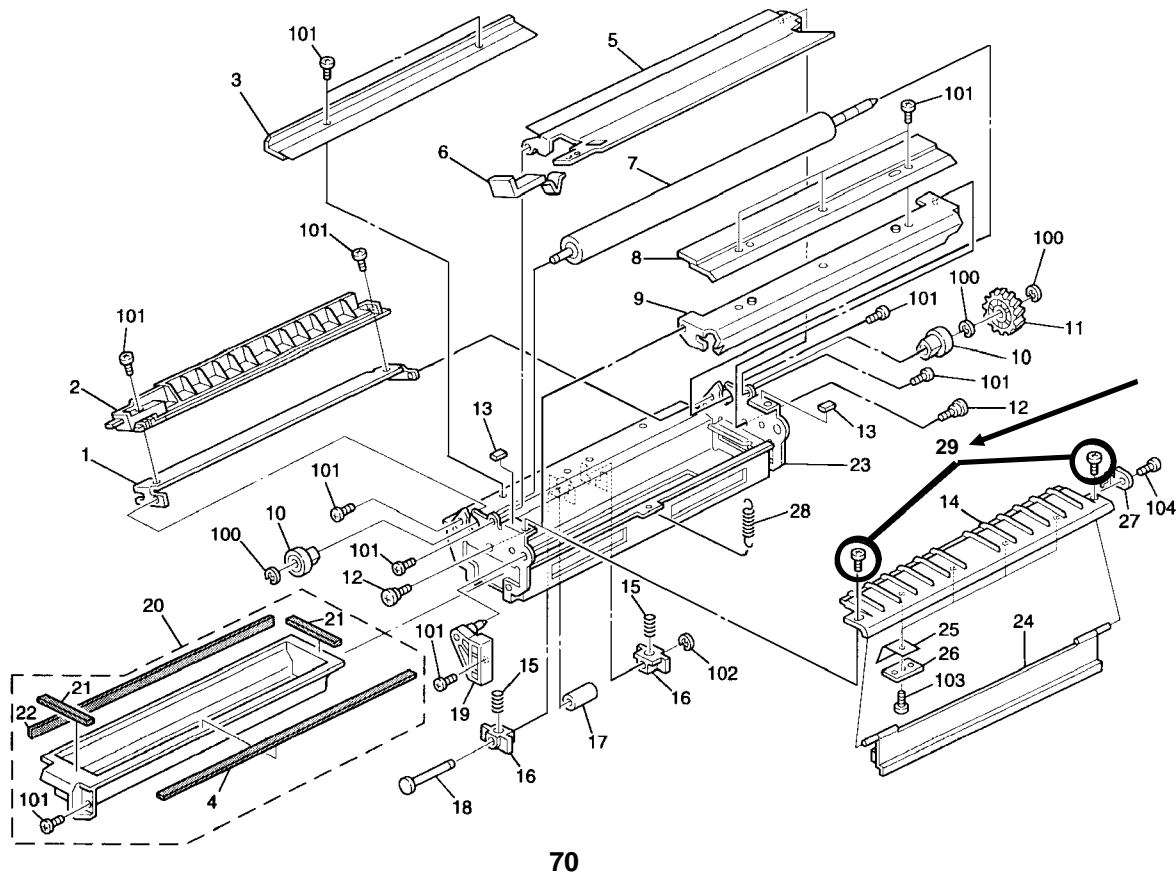
☐ F S M

☒ PARTS

☐ OTHER

Continued...

30. Transfer Roller Unit (A172/A199)



Add the index number of the Stepped Screws (Item #29) on page 70 of the Parts Catalog as shown above.

Correct/add the following part numbers:

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1725339	A1725639	Operation Panel Harness - DC	1 → 1	25	10
A1726200	A1726201	Transfer Roller	1 → 1	71	7
A1725392	A1725692	Operation Panel Harness - IPU 1 (A172)	1 → 1	17	17
	AA143741	Stepped Screw	0 → 2	71	29*

\* DENOTES NEW ITEM

**BULLETIN NUMBER: 5106/5206 - 003**

**01/16/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

**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:**

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- 1-6 Updated Information
- 4-31 Updated Information
- 4-59 Updated Information
- 4-70 Updated Information
- 5-12 Updated Information
- 5-22 Updated Information
- 9-1 Updated Information

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☐ PARTS

☐ OTHER

**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 004**

**04/14/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

**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:**

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- 3-49a Updated Information
- 4-15 Updated Information

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**BULLETIN NUMBER: AFICIO 5106/5206 - 005**

**05/06/97**

**APPLICABLE MODEL: AFICIO 5106/5206**

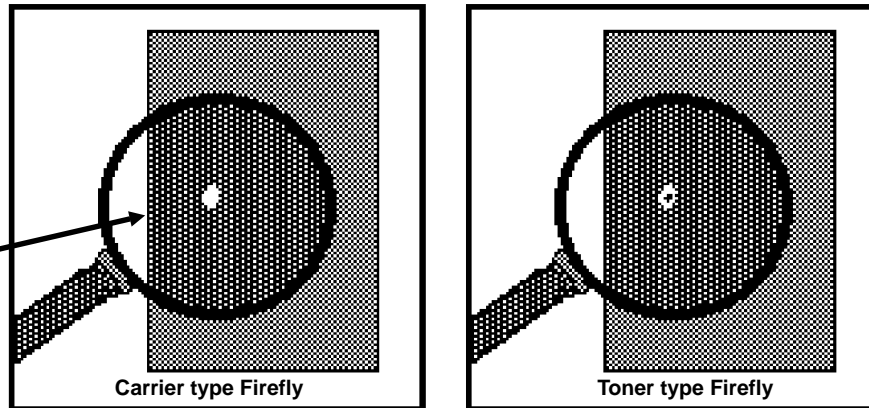
**SUBJECT: FIREFLIES**

**SYMPTOM:**

In solid areas, small circular void areas occur, sometimes accompanied by a small dot of toner and/or carrier in the center.

**CAUSE:**

There are two causes, fireflies caused by weak carrier particles and fireflies caused by soft toner blocks (see illustrations below).



**SOLUTION:**

1. FIREFLIES CAUSED BY CARRIER - Some carrier particles may have weak charge characteristics, making them more likely to be transferred to the drum.

**NOTE:** *Weak carrier particles can exist in new or used developer*

The following procedure adjusts the Development Bias and Charge Grid to remove weak carrier particles from the development unit:

1. Enter SP Mode, select <2> SP Test page 1 and enter 255 for the Test Pattern Level.
2. Press The Next Key to turn to page 2 and select the Full Dot Test Pattern.
3. Enter "Copy in SP Mode".
4. Produce a Full Dot Test Pattern for each toner color (CMYK) on 11 X 17 inch paper to determine which color(s) has the firefly problem.
5. Go back into SP mode.

Continued...



6. Select <1> SP Adjustment, press next and turn to page 15.

7. Select Print for SP Adjustment Print Out.

**NOTE:** *This will print an SP Adjustments sheet.*

8. Refer to item 1. Potential Output on the SP Adjustments sheet (see example).

1. P o t e n t i a l O u t p u t				
VD	VL	VB	r	VK
Bk				
t : 527	156	414	3. 65	+13
a : 526	159	414	3. 80	-7 .

Example: Black is exhibiting carrier type fireflies. Circle the target for VB.

**Example: Sp Adjustments Print Out**

9. Under the VB column, circle the Target value for the effected color(s).

**NOTE:** *t : = target*

10. Press the Previous Key until you are on SP Adjustment page 4. (P-con OFF Mode).

11. Add 200 volts to the VB data that was circled.

12. Enter this new value (VB on SP Adjustments sheet + -200) in the VB setting for the effected color(s).

**NOTE:** *If VB is -400 on the Adjustment sheet adding the -200 in the step above will equal -600*

13. Then add 155 volts to the VB data that was circled.

14. Enter this new value (VB on SP Adjustments sheet + 155) in the VG setting for the colors exhibiting fireflies.

15. Go to SP Special Features page 1, Auto Process Control Self Check and select Reset.

16. Enter "Copy in SP Mode".

17. Make (10) 11 x 17 inch copies of the effected color(s) of the 255 Full Dot Test Pattern.

**NOTE:** *1: If the Print Key turns red during this step, do not turn the machine "OFF" ; it may be adding toner.  
2: This step removes weak carrier from the Development Unit.*

18. Go to Sp Adjustments page 1 and set Auto Process Control Self Check to PID.

19. Go to SP Test Mode page 2 to reset the test pattern condition. This turns "OFF" the Test Pattern.

20. Enter SP Data Output page 1 and view the VT data

21. Select the "Copy in SP Mode" and make (10) 11 x 17 copies of the C-4 Test Chart in Full Color Mode.

Continued...

22. During the copy cycle go back into SP mode and check that the VT data is the same as  $V_{ref} \pm .2$  volts for colors exhibiting fireflies.

23. Continue to run copies until  $V_{ref}$  is within  $\pm .2$  volts, then stop the copy process.

24. Enter SP Adjustment page 4. (P-con OFF Mode).

25. Subtract 100 volts from VB and VG (new value from step 12 & 14) for the colors exhibiting fireflies.

**NOTE:** *If VB is -400, subtracting -100 will equal -300*

26. Go to SP Special Features page 1, Auto Process Control Self Check and select Reset.

27. Enter SP Mode, select <2> SP Test page 1 and enter 255 for the Test Pattern Level.

28. Press The Next Key to turn to page 2 and select the Full Dot Test Pattern.

29. Enter "Copy in SP Mode".

30. Produce a Full Dot Test Pattern for each toner color (CMYK) on 11 X 17 inch paper of the color(s) exhibiting fireflies.

31. Verify if fireflies have been reduced to an acceptable level.

32. If fireflies have been reduced to an acceptable level, Set VB to 495 and set VG to 650 then proceed to step 33.

**NOTE:** *If no good, go to step 37.*

33. Go to Sp Adjustments page 1 and set Auto Process Control Self Check to PID.

34. Produce a Full Dot Test Pattern for each toner color (CMYK) on 11 X 17 paper of the color(s) exhibiting Fireflies.

**NOTE:** *If not acceptable, go to step 37. If acceptable, proceed to step 35.*

35. Go to SP Test Mode page 2 to reset the test pattern condition

36. **END.**

37. If not acceptable, Enter SP Adjustments, page 5 and add 200 volts to the current setting for Transfer Belt Bias face side.

38. Go to Sp Adjustments page 1 and set Auto Process Control Self Check to PID.

39. Make a copy, if still unacceptable add 200 volts to the current setting for Transfer Belt Bias face side.

**NOTE:** *Do not add more than 400 volts.*

40. If still unacceptable, go to step 15 and repeat the process.

Continued...

2. **FIREFLIES CAUSED BY SOFT TONER BLOCKS** - If the temperature inside the Development Unit becomes too high, toner melts into small blocks which are then transferred to the paper. Soft toner blocks can also occur during storage of the Developer.

Soft Toner Block Dispersion Procedure:

**NOTE:** *This procedure is also effective for improving copy quality in a low humidity environment.*

1. Confirm that the following SP modes are set to factory data:

- SP Special Features, page 1-Transfer Bias Humidity set to Normal
- SP Adjustments, page 5 - Transfer Belt Bias 1C:1410, 2C:1490, 3C:1575, 4C:1660
- SP Adjustments, page 7 - Transfer Roller Bias 1C:1200, 2C:1500, 3C:1800, 4C:1500

**NOTE:** *These values may vary on each unit. See the factory data sheet.*

2. Increase the Transfer Belt Bias (SP Adjustments, page 5) by 300 for 1C, 2C, 3C, and 4C.

Example: 1C: 1410 → 1710                      2C: 1490 → 1790  
                    3C: 1575 → 1875                      4C: 1660 → 1960

3. Increase the Transfer Roller Bias (SP Adjustments, page 7) by 300 for 4C. Make a full color copy from a C-4 test chart. Example: 4C: 1230 → 1530.

4. Make a full color copy from the C-4 test chart. If you see poor transfer in the color patches on the C-4 test chart, increase the Transfer Roller Bias (SP Adjustments, page 7) by 100 for 4C. Otherwise, go to step 6.

5. Make a full color copy from C-4 test chart. If you see the poor transfer in the color patches on the C-4 test chart, increase the Transfer Roller Bias (SP Adjustments, page 7) by 100 for 4C again. At this point, you have added a total of 500 on 4C. Go to step 6.

**NOTE:** *We do not recommend increasing more than 500V. This may cause white void lines in half tone images in the horizontal direction.*

6. Increase the Transfer Roller Bias (SP Adjustments, page 7) by 300 for 1C.

7. Make a Black copy of the C-4 test chart. If you see poor transfer on the C-4 test chart, increase the Transfer Roller Bias (SP Adjustments, page 7) by 100 for 1C. Otherwise, go to step 9.

8. Make a Black copy of the C-4 test chart. If you see poor transfer on the C-4 test chart, increase the Transfer Roller Bias (SP Adjustments, page 7) by 100 for 1C again. At this point, you have added a total of 500 on 1C. Go to step 9.

**NOTE:** *We do not recommend increasing more than 500V. This may cause white void lines in half tone images in the horizontal direction.*

9. Referring to the face on the C-4 test chart, if, in Auto Mode, you see a strong edge between the hair and forehead, go to step 10. **If not, END.**

10. Increase the gamma data of Black in Photo (SP Special Features, page 3). Adjust the gamma data by checking the copy quality. You may need to increase L, M, H, and ID Max. Especially, you may need to change the data in L.

Continued...

11. Decrease the setting by one or two notches from the center of the UCR adjustment in the User Tools.

**NOTE:** *UCR adjustment in User Tools is retained even if the main switch is turned "OFF".*

12. Check the copy quality in normal mode and, if applicable, confirm proper operation of OHP and/or Thick Paper mode(s).

13. **END.**

**The following Service Tips assist in preventing Soft Toner Blocks**

- Before adding new developer, thoroughly vacuum and clean the entire Development Unit with a soft dry cloth, to remove any hardened or compressed toner.

**NOTE:** *When vacuuming, ground the development unit case or remove the TD sensor (this prevents damage to the TD sensor).*

- Before adding new developer, be sure to shake the developer bag at least 20 times, to break up any soft toner blocks that may have occurred during the storage of the Developer.
- Replace all filters at the appropriate PM interval.
- Ensure the proper operation of all fans. If a sorter is connected be sure to check that the sorter exhaust fan is operating.
- If the Toner Hopper is not completely pushed to the appropriate position or the Tank Unit Stopper is broken, the Toner Exit Tube of the Toner Hopper may not be properly engaged with the Development Unit. In this case, toner is not supplied properly to the Development Unit. When the Toner Hopper transport coil rotates, it compresses toner around the tube resulting in the formation of soft toner blocks. Therefore, ensure that the Toner Hopper is set correctly.

**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 006**

**06/13/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

**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:**

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- 3-14 Additional Information (**Transfer Belt Unit**)
- 3-49 Updated Information

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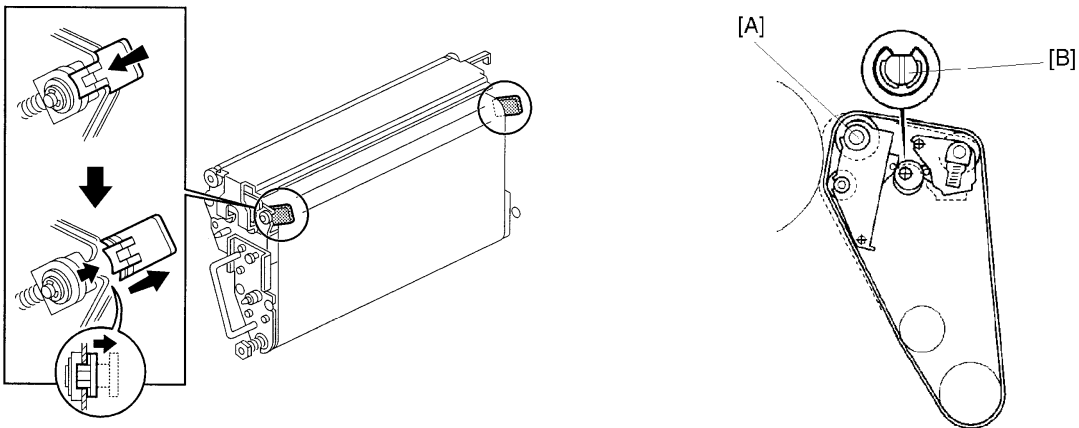
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**Note:** In order to release the tension of the transfer belt during transportation, the Transfer Belt Release Wedges are installed on the front and rear belt tension roller bearing holders. Please do not forget to remove the wedges at installation of the machine.

To remove the wedge, push the wedge toward the bearing holder and slide it inside slightly.

25. Confirm the belt bias roller [A] is in the release position (innermost position) as shown. If not, turn the shaft [B] with a flat head screwdriver until the belt bias roller comes to the release position.

**NOTE:** If the belt bias roller is not in the release position, it will touch the drum and damage it.

26. Re-install the following units or parts in the following order.

- 1) Transfer belt unit.

- 2) Transfer belt cleaning unit

**NOTE:** To prevent the lubricant bar from being scratched, pull the handle of the transfer belt unit slightly to the right while you re-install the transfer belt cleaning unit.

- 3) Transfer belt stay (5 screws)

- 4) Four connectors (6P white, 3P red, 3P white, 3P blue)

**NOTE:** The 2P white connector is not used.

- 5) Toner collection duct (1 hook)

**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 007**

**06/13/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

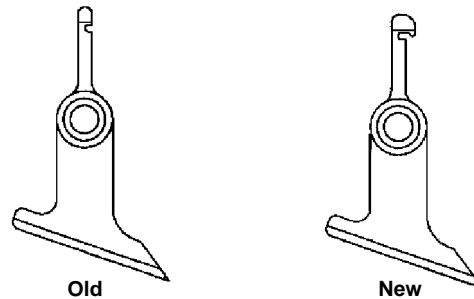
## SUBJECT: PARTS CATALOG UPDATES

### GENERAL:

The following Parts Updates are being issued for all Aficio Color 5106/5206 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

#### ● Update No. 1 -

**HOT ROLLER STRIPPER** - To prevent the spring from coming unhooked, the hook part of the Hot Roller Stripper has been extended.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AE044016	AE044023	Hot Roller Stripper	6	1	79	9

### UNITS AFFECTED:

All Aficio Color 5106/5206 copiers manufactured after Serial Number A7137020001 & A7127010001 will have the new Hot Roller Stripper installed during production.

- **Update No. 2 -** TONER END SENSOR - The Toner End Sensor has been modified to improve reliability.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AW230009	AW230012	Toner End Sensor	4	1	55	25

### UNITS AFFECTED:

All Aficio Color 5106/5206 copiers manufactured after Serial Number A7136100001 & A7126100001 will have new the Toner End Sensor installed during production.

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**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 008**

**06/13/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206 / FIERY XJ 170 SERIES**

**SUBJECT: UPDATED COLOR FILE TARGETS r2.1**

## GENERAL:

Ricoh Corporation and EFI have developed an update to the XJ print server Target for the Aficio 5106 / 5206 color copiers. The updated color file targets, (referred to as **r2.1**), improve the print output color quality of the copier when calibrating with either the EFI Print Calibrator (utilizing the Xrite DTP-32 Densitometer) or Calibrating from the copier glass.

## NOTE:

The updated color file targets are supplied on CD ROM with new release XJ+ version Print servers. The CD contains files for both Macintosh and PC environments:

## ORDERING PROCEDURE:

1. To access and download the update file from the Ricoh Web site type the following:

WWW.RICOH.COM

Select the Fiery Software area

Down load the r2\_1.Sit.HQX for Mac

Down load the 21readme.txt & r21crd.zip

r21goal.zip & r21off97.zip & r21w\_41.zip for PC

**NOTE:** *These files use PKZIP for PCs and STUFFIT Expander for Macintosh for decompression of the files. Please read fully and follow in detail the README.TXT file.*

2. To obtain the r2.1 Update CD ROM (A7245321) at no charge, please complete and fax the attached form to (201) 882-3960 (attn. Image Processing Department). The order quantity will be checked against actual XJ Sales Ship quantity. Please order only what you need.

**NOTE:** *The CD ROM is available at no charge, however your dealership is responsible for shipping costs.*

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**SUBJECT:    UPDATED COLOR FILE TARGETS(r2.1)**

Fax this entire page in "DETAIL" mode ATTN: Technical Services - Image Processing Department

Fax Number: 201-882-3960

Each serial number given will represent a request for one (1) r2.1 CD ROM Update (A7245321)

XJ Serial Number (s)			
1		6	
2		7	
3		8	
4		9	
5		10	

All serial number information will be verified before shipment is made.

**PLEASE TYPE OR PRINT CLEARLY.**

<b>DEALER NAME:</b>		
<b>ADDRESS:</b>		
<b>CITY:</b>	<b>STATE:</b>	<b>ZIP CODE:</b>
<b>ATTENTION:</b>	<b>PHONE # :</b>	
<b>DEALER ACCOUNT NUMBER:</b>		

**NOTE:**    *A shipping charge will be billed to your dealership.*

BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 009 REISSUE ★

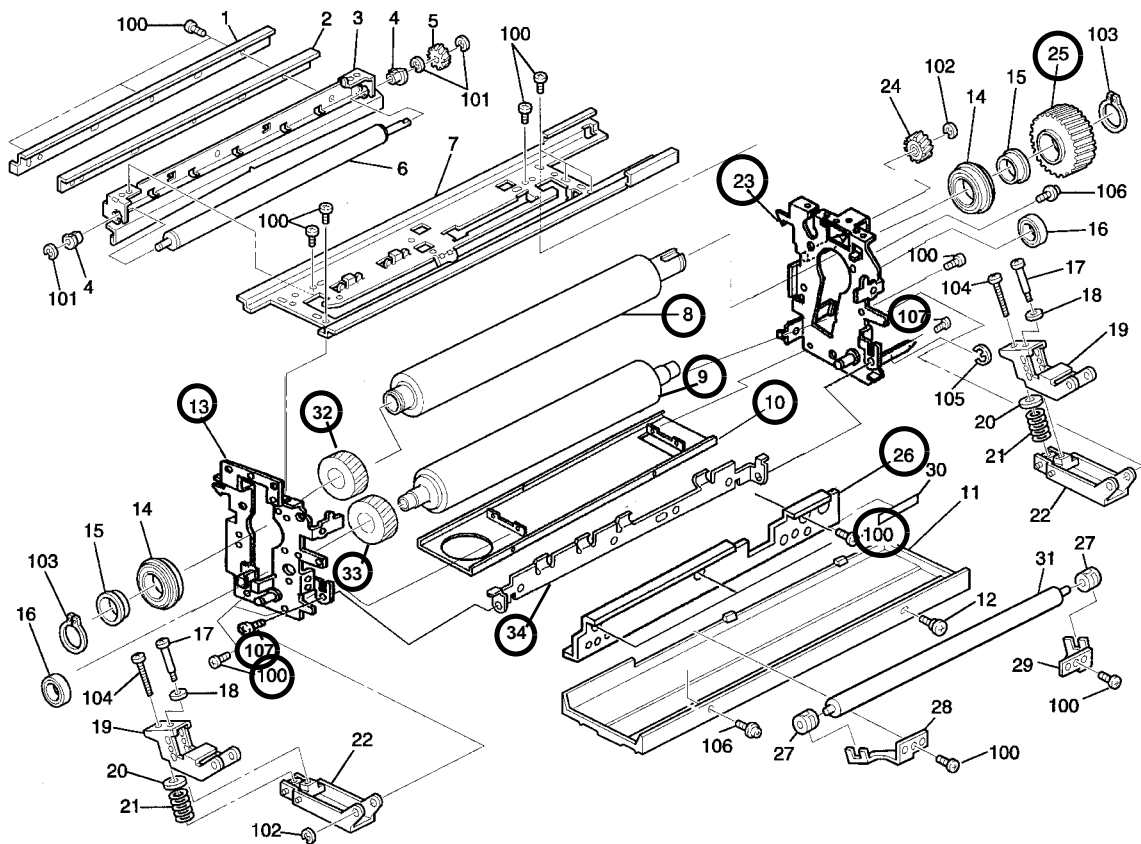
06/19/97

APPLICABLE MODEL: AFICIO COLOR 5106/5206

## SUBJECT: PARTS CATALOG UPDATES

### ● Update No. 1 -

To standardize parts with other markets the following parts are being updated for all Aficio Color 5106/5206 Parts Catalogs.



★ NOTE: The Hot Roller and Pressure Roller can be replaced individually.

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					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AB013818		Gear 61z	1-0	3/S	85	25
	AB014067	Gear 62z	0-1	3/S	85	25
	AB014063	Hot Roller Gear 60z	0-1	3/S	85	32
	AB014064	Pressure Roller Gear - 60z	0-1	3/S	85	33
★ AE010012	AE010018	Hot Roller	1-1	1	85	8
★ AE020056	AE020076	Pressure Roller	1-1	1	85	9
	03140060B	Philips Pan Head Screw M4 x 6	n-n+2	3/S	85	100
	09514005W	Philips Screw with Flat Washer M4 x5	0-2	3/S	85	107

**\*DENOTE:** *Must be replaced as a set when (AB014067) Gear 62z is replaced*

#### UNITS AFFECTED:

All Aficio Color 5106/5206 copiers manufactured after Serial Number A7137020001 & A7127020001 will have the Gear 62z, Hot Roller Gear 60z, Pressure Roller Gear 60z, Hot Roller, Pressure Roller, Philips Pan Head Screw M4x6, Philips Screw with Flat Washer M4x5 installed during production.

#### ● Update No.2 -

To standardize parts with other markets the following parts are being updated for all Aficio Color 5106/5206 Parts Catalogs. To implement the Pressure Roller Drive Gear, the Front and Rear Side Plates, Fusing Right Stay, and Fusing Right Lower Stay have been modified. The Thermofuse Stay-Lower is a newly added part. The new and old parts are not individually interchangeable. replace only as a set.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1094100	A1724100	Front Side Plate - Fusing	1-1	3/S	85	13
A1094130	A1724130	Rear Side Plate - Fusing	1-1	3/S	85	23
A1724171	A1724174	Right Stay - Fusing	1-1	3/S	85	26
A1094180	A1724181	Right Lower Stay - Fusing	1-1	3/S	85	10
	A1724194	Stay Thermofuse Lower	1-1	3/S	85	34
	03140060B	Philips Pan Head Screw M4 x 6	n-n+2	3/S	85	100

#### UNITS AFFECTED:

All Aficio Color 5106/5206 copiers manufactured after Serial Number A7136110001 & A71216110001 will have the Fusing Front Side Plate, Rear Side Plate, Right Stay, Right Lower Stay, Thermofuse Lower Stay, Philips Pan Head Screw M4x6 installed during production.

**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 010**

**07/29/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

**SUBJECT: PARTS CATALOG UPDATES**

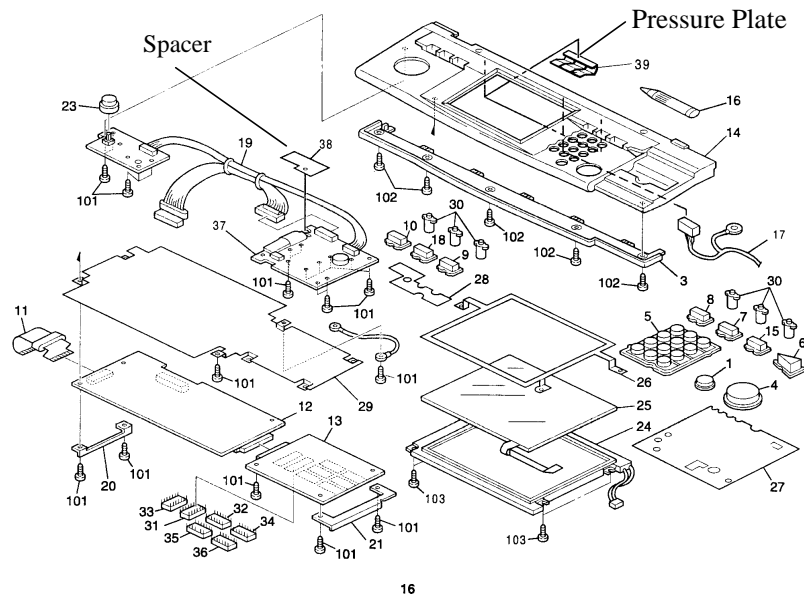
**GENERAL:**

The following Parts Updates are being issued for all Aficio Color 5106/5206 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

- **UPDATE NO. 1 - PARTS CATALOG ADDITIONS -** Add the following parts to your Parts Catalog:

NEW PART NO.	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A1721508	Spacer	1	17	38
A1727349	Pressure Plate	2	17	39
A1094642	Clutch Bracket - Lubricant Brush	1	87	30

**3. Operation Panel ( A172/A199 )**



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Continued...

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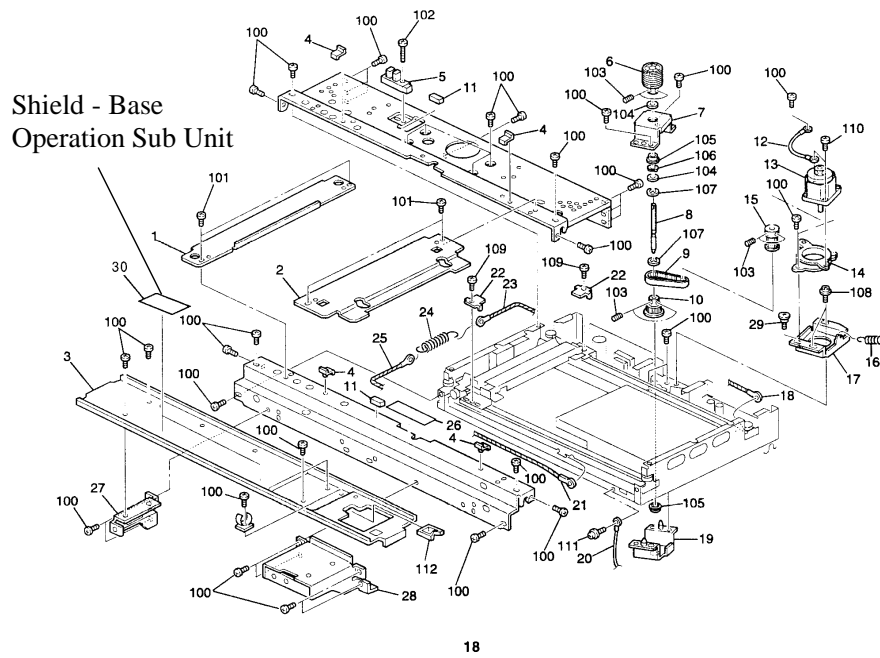
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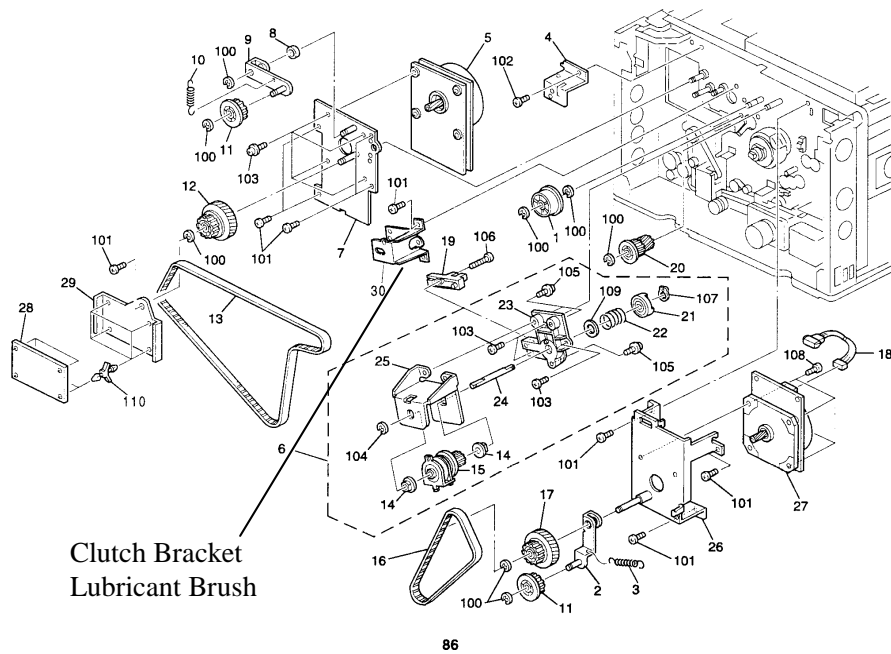
■ PARTS

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#### 4. Optics Section 1 (A172/A199 )



#### 38. Drive Section 1( A172/A199 )



Continued...

- **UPDATE NO. 2 -** SEPARATION ROLLER STAY - Due to part standardization, the following parts have been changed. Also, since the location of the position sensor bracket on which the Separation Roller Stay is installed has been moved 5mm toward the rear, the 3 parts listed below must be replaced at the same time. The old parts are not available.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0966303	A1766303	Separation Roller Stay	3-3	3	43	20
A0966338	A1766338	Separation Guide	3-3	3	43	3
A0966337	A1766337	Paper Feed Guide	3-3	3	41	14

**NOTE:** The interchange ability is "0" as a set.

#### UNITS AFFECTED:

All Aficio Color 5106/5206 copiers manufactured after Serial Number A7137020001 and A7126120001 respectively will have the new style Separation Roller Stay, etc... installed during production.

- **UPDATE NO. 3 -** PRESSURE SPRING - The nip band width adjustment standard has been changed from  $9.5 \pm 0.5\text{mm}$  to  $9.25 \pm 0.25\text{mm}$  to minimize the possibility of Mimuzu. To facilitate this adjustment, the Pressure Spring has been changed.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AA063355	AA063562	Pressure Spring	2-2	1	85	21

#### UNITS AFFECTED:

All Aficio Color 5106/5206 copiers manufactured after Serial Number A7136110001 and A7126110001 respectively will have the new style Pressure Spring installed during production.

#### INTERCHANGEABILITY CHART:

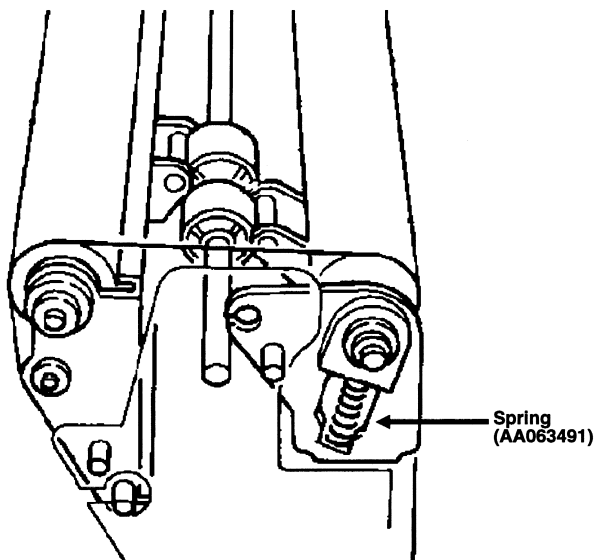
0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts 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 COLOR 5106/5206 - 011****08/29/97****APPLICABLE MODEL: AFICIO COLOR 5106/5206****SUBJECT: TRANSFER BELT SLIPPING****SYMPTOM:**

Mis-alignment of colors in the sub-scan direction.

**CAUSE:**

The Pressure Spring (AA063491) have become weak, allowing the Transfer Belt to slip.

**SOLUTION:**

Replace Both springs (AA063491)

**Temporary CounterMeasure:**

Carefully stretch the springs so they exert more pressure.

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**BULLETIN NUMBER:** AFICIO Color 5106/5206 - 012

**10/17/97**

**APPLICABLE MODEL:** AFICIO Color 5106/5206

## SUBJECT: MAGENTA BANDING

### SYMPTOM:

Magenta Banding.

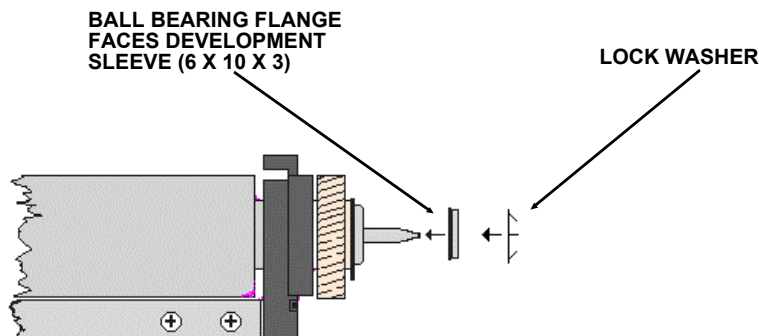
### CAUSE:

Insufficient conductivity of development bias between the Development Sleeve and its shaft.

### SOLUTION:

A bearing must be added to the rear of the development sleeve shaft. The flange of the bearing should face in toward the development sleeve. A lock washer has been added to insure the ball bearing does not fall off during maintenance.

**Note:** The new Development Sleeve is used for the Magenta Development unit only. The Development Sleeve number for the Yellow Development Unit remains the same. The recommended bearing contains conductive grease to ensure proper electrical conductivity. Do not substitute any other parts for those listed below.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY.	PAGE	ITEM
A1723214		Development Sleeve-M/Y	2-1	63	1
	A17233213	Development Sleeve-No.3	1	63	1
	08053496	Ball Bearing 6X10X3	1	63	109
	H0014219	Lock Washer	1	63	30

#### UNITS AFFECTED:

All Aficio Color 5106/5206 Copiers manufactured after Serial Number A7137060001 and A7127070001 respectively will have the new parts installed.

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**BULLETIN NUMBER:** AFICIO COLOR 5106/5206 - 012 REISSUE ★

**11/17/97**

**APPLICABLE MODEL:** AFICIO COLOR 5106/5206:

**SUBJECT:** MAGENTA BANDING

**SYMPTOM:**

Magenta Banding.

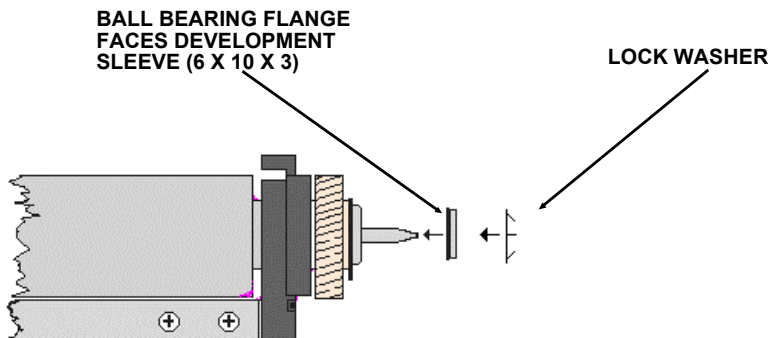
**CAUSE:**

Insufficient conductivity of development bias between the Development Sleeve and its shaft.

**SOLUTION:**

A bearing must be added to the rear of the development sleeve shaft. The flange of the bearing should face in toward the development sleeve. A lock washer has been added to ensure the ball bearing does not fall off during maintenance.

**Note:** *The new Development Sleeve is used for the Magenta Development unit only. The Development Sleeve number for the Yellow Development Unit remains the same. The recommended bearing contains conductive grease to ensure proper electrical conductivity. Do not substitute any other parts for those listed below.*



				REFERENCE	
OLD PART NUMBER	NEW PART NUMBER	DESCRIPTION	QTY.	PAGE	ITEM
A17233214		Development Sleeve-M/Y	1-0	63	1
	A1723213	Development Sleeve-No.3 Magenta	0 -1	63	1
	08053496	Ball Bearing 6X10X3	1	63	109
	H0014219	Lock Washer	1	63	30

**UNITS AFFECTED:**

All Aficio Color 5106/5206 Copiers manufactured after Serial Number A7137060001 and A7127070001 respectively will have new parts installed.

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**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 013**

**10/31/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

**SUBJECT: PARTS CATALOG CORRECTION**

**GENERAL:**

The following Parts Catalog Correction is being issued for all Aficio Color 5106/5206 Parts Catalogs. This information should be incorporated into all existing Parts Catalog documentation.

Correct your Parts Catalog as follows:

	Part Number	Description	Index	Page
<b>Incorrect</b>	08053449	Ball Bearing - M12 X 24 X 6	104	67
<b>Correct</b>	08053496	Ball Bearing - 6 X 10 X 3	104	67

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**BULLETIN NUMBER:** AFICIO COLOR 5106/5206 - 014

**12/15/97**

**APPLICABLE MODEL:** AFICIO COLOR 5106/5206

**SUBJECT: FUSER MAINTENANCE FOR SPECIAL THROUGHPUT MATERIALS**

## SERVICE NOTES

Before new machines (out of box) are initially powered "ON" and/or whenever fuser service is required, the following procedure must be performed to ensure the highest possible performance.

1. While releasing the lever [A], pull out the fusing unit [B].
2. Open the exit unit [C] (by releasing the 2 "D4" levers).
3. Loosen the 2 black screws [D] so that the fusing pressure is applied.

**NOTE:** Do not turn the pressure adjustment screws [P] which are located just beside the screws [D]

4. Remove the fusing handle cover [E] (2 screws) and the fusing top cover [F] (1 screw).
5. Prime the oil supply pad with silicone fuser oil [G] (generously).

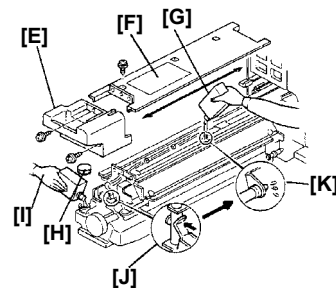
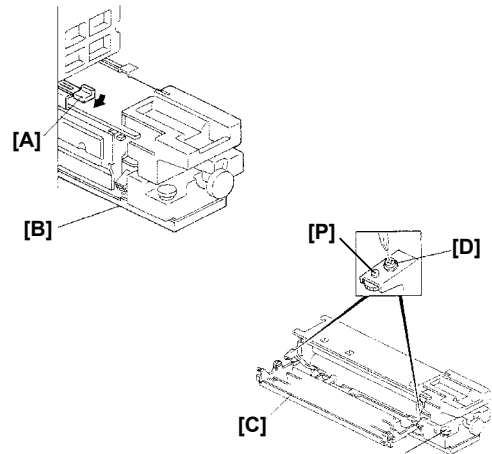
6. Using a lint free cloth, coat the hot roller and pressure roller with silicone oil.

7. Using the same cloth, wipe down the stripper fingers, oil blade and hot roller cleaning roller with silicone oil.

8. Remove the oil cap [H] and fill the tank with silicone oil to its maximum level [I].

9. Manually operate the oil pump lever [J] and confirm the proper operation of the silicone oil supply system [K].

10. Reset the covers, the exit unit, oil cap and fusing unit.



Whenever Visual Communications Mirror Image SS-500 (Formally Magic Touch®SS-500) Transfer Material or Teslin™ Polyester Substrate is fed through the Aficio 5106/5206, the silicon oil will become milky white, i.e contaminated. Additional Preventive Maintenance is necessary to ensure the reliability of the fuser rollers (see page 2).

**NOTE:** For more information regarding throughput material, refer to Facts Line # 153(C).

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In addition to the regular PM schedule, the following procedure must be performed every 20,000 scans or 5,000 copies. This procedure is mandatory regardless of the percentage of job mix (throughput material & paper). If the additional maintenance is not performed, fuser damage will occur.

- Replace the oil supply pad P/N AE045015.
- Remove and discard of the silicon oil in accordance will local regulations.
- Replace the oil tank P/N AA031008 or thoroughly clean the oil tank with clean silicon fuser oil and a lint free cloth.
- Replace the oil blade P/N AE041002
- Clean the hot roller, pressure roller, cleaning roller, oil supply tube, oil pump, stripper fingers and oil sump with a lint free cloth and clean silicon fuser oil.
- Clean the exit rollers with alcohol or a suitable roller cleaner.
- Add new silicon fuser oil.

**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 015**

**12/22/97**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

**SUBJECT: BLANKING ON TRAILING EDGE**

**SYMPTOM:**

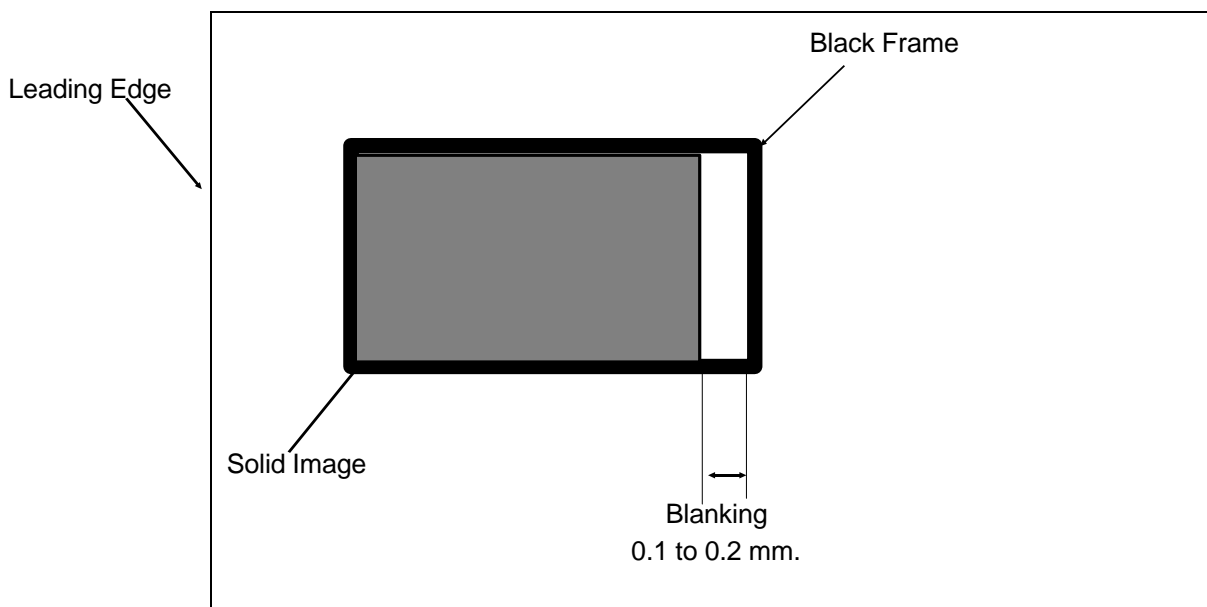
Blanking occurs on the trailing edge of a solid area image when there is a black frame. The problem does not happen with the grid pattern from the copier. The width of the blanking is about 0.1 to 0.2 mm.

**CAUSE:**

On machines in which the relative difference between the OPC drum and the transfer belt speed is quite large, the electrostatic absorption at the time of belt transfer causes partial shifting of the image. The difference in the position shift of the grid pattern and the controller image is probably a result of direct contact area difference between the OPC drum and the belt of the toner image.

**SOLUTION:**

1. Adjust the tension of the Transfer Belt timing and the drum drive timing belt.
2. SP Adjustment: P. 1: Transfer Belt Speed Adjustment (Default: 0). Increase the setting by +1~+2.
3. Check the copy quality.



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**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 016****12/22/97****APPLICABLE MODEL: AFICIO COLOR 5106/5206****SUBJECT: JAGGED IMAGE IN PRINTER MODE****SYMPTOM:**

Printed Characters have Jagged Outline in Printer Mode. The problem does not occur when printing in Letter Mode.

**CAUSE:**

High image density. In photo mode, 2x1 dot dither processing is applied to all images including text. If the copier's image density output is high (dark), it will be adjusted by the 2x1 dot dithering process, resulting in jagged image. The problem is noticeable especially when calibrating targets with low IDmax.

**SOLUTION:**

Lower the copier's image density using the following procedure.

1. Open SP Mode 8-4 Printer  $\gamma$  Correction Data , Fine Adjustment =Contone= .  
Check IDmax of the color showing jagged image..
2. Open SP Mode 1-4 Toner Max M/A Target.  
Input 0.800 if the IDmax checked above is 4.  
Input 0.700 if the IDmax checked above is 3 or below.
3. Wait 5 minutes. Open SP Mode 2-4 and perform Process Control Self Check.
4. Open SP Mode 3-2 and confirm that the pointer table is not 00.

*Note: If pointer table is 00, it means that the machine has selected the default pointer table because the Toner Max M/A Target is too low. Try using a higher Toner Max M/A Target.*

5. Perform printer ACC.
6. Check print quality and if not satisfactory, go back to step 1.

*Note : For SP Mode 1-4 Toner Max M/A Target, you may input lower value than those described above, but please make sure that the selected pointer table is not at 00.*

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**BULLETIN NUMBER:** AFICIO COLOR 5106/5206 - 017

**12/22/97**

**APPLICABLE MODEL:** AFICIO COLOR 5106/5206

## SUBJECT: CYAN TONER SCATTERING IN PRINTER MODE

### SYMPTOM:

Cyan toner scattered around the text and the edge of solid images in print mode.

### CAUSE:

The PTL light (red light) is blocked by cyan toner. The electrical potential of the image area does not drop while the potential on the bare drum surface drops. As a result, some toner is attracted to the bare drum surface. See below figure (VD drops to bare drum potential level but VL does not drop to the same level because the PTL light is blocked by cyan toner.)

The problem is evident when the amount of toner on the drum (M/A) is large. The problem is seen only in the print mode since the maximum amount of toner on the drum is higher compared to that of the copy mode. Compared to the NC5006, the 5106 has a higher M/A for cyan. This causes the level of cyan toner scattering to become worse than the NC5006

### SOLUTION:

1. The PTL has been changed to emit stronger light.
2. The ACC target for the printer mode has been modified to decrease the maximum amount of toner on the drum. (IPU ROM revision G)



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY.	PAGE	ITEM
A0305243	A3995243	PTL Lamp	1		

### UNITS AFFECTED:

All AFICIO COLOR 5106/5206 copiers manufactured after Serial Number A7137030001 and A7127030001 respectively will have the new PTL Lamp installed during production.

**NOTE:** This problem can be eliminated by disconnecting the PTL, but in this case, magenta toner blasting in 2C mode may occur. This is because the intention of the PTL is to cause a little cyan toner scattering which will repel the scattered magenta toner.

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**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 018****12/22/97****APPLICABLE MODEL: AFICIO COLOR 5106/5206****SUBJECT: LOW HUMIDITY EFFECT ON TONER DENSITY****SYMPTOM:**

SC 374/377 and/or over toning.

Under low humidity condition's usually during the winter, the toner density rises quickly after developer replacement (within 1K copies) and causes dirty background. This is particularly noticeable with black and cyan.

**CAUSE:**

The charge on the developer over time drops, and it is necessary to change the Vcnt if the developer gamma surpasses a certain value. This is to prevent the image density from increasing. However, the charge for this type of toner has a tendency to plummet in high-temperature/low-humidity environments, so this problem occurs more frequently indoors during the winter. Since the Vcnt cannot keep up with the speed with which the charge drops, the image density rises over short periods of time.

**SOLUTION:**

1. Replace the developer (all colors).
2. Follow the developer replacement procedure according to the FSM.
3. Access SP Mode; SP Adjustment: P. 16: Other SP Adjustment and set NO1 from 00000 to 00001.

The above SP Mode enables the Vcnt Correction by number of scans for the toner density control. When this correction is turned on, the Vcnt decreases by -1 every 100 scans and ends after 600 scans/-6. However, for cyan the correction is only up to 500 scans/-5.

**Note**

1. It does not matter when the Vcnt is turned on after the developer has been changed. The result will be the same if it is done within 100 scans after toner density sensor initial setting.
2. At the time of toner density sensor initial setting, the correction counter is reset to 0.
3. If the Vcnt correction is turned on without developer replacement, there is the possibility that the image density will gradually become lighter.
4. In a high-humidity environment, there is a possibility of over-correction (low toner density leads to low image density) so please turn Vcnt correction off.

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□ S M

□ PARTS

□ OTHER



**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 019****1/20/98****APPLICABLE MODEL: AFICIO COLOR 5106/5206****SUBJECT: SORTER ROLLER MARK****SYMPTOM:**

After installation of the Sorter, roller marks may appear on the backside of the copy during testing. This problem cannot be solved by cleaning the rollers and will disappear after approximately 1K copies.

**CAUSE:**

Sometimes the speed of the copier and the sorter are not the same.

**SOLUTION:**

1. Remove the rear cover of the sorter.
2. Turn ON switch 2 of DPS100 and adjust VR101 until LED102 is lit. Then slowly turn VR101 clock-wise until LED102 is not lit. Now turn VR101 clockwise one notch.
3. Turn OFF switch 2 of DPS100 and perform a copy run test. Check for the roller marks. If the marks are still present, turn VR101 one more notch clockwise.

**NOTE:**

1. *It is not necessary to adjust the high motor speed.*
2. *Since the reaction time of LED102 in response to the rotation of the VR is slow, wait 2~3 seconds before checking to see if it is lit.*
3. *If the motor makes a strange noise as it rotates, this may lead to unstable control. If this happens, turn VR101 counterclockwise to its original position.*

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□ OTHER

**BULLETIN NUMBER: AFICIO COLOR 5106/5206 – 019 REISSUE ★****02/10/98****APPLICABLE MODEL: AFICIO COLOR 5106/5206****SUBJECT: SORTER ROLLER MARK****SYMPTOM:**

After installation of the Sorter, roller marks may appear on the backside of the copy during testing. This problem cannot be solved by cleaning the rollers and will disappear after approximately 1K copies.

**CAUSE:**

Sometimes the speed of the copier and the sorter are not the same.

**SOLUTION:**

1. Remove the rear cover of the sorter.
2. Turn ON switch 2 of DPS100 and adjust VR101 until LED102 is lit. Then slowly turn VR101 clock-wise until LED102 is not lit. Now turn VR101 clockwise one notch.
3. Turn OFF switch 2 of DPS100 and perform a copy run test. Check for the roller marks. If the marks are still present, turn VR101 one more notch clockwise.

**NOTE:**

1. *It is not necessary to adjust the high motor speed.*
2. *Since the reaction time of LED102 in response to the rotation of the VR is slow, wait 2~3 seconds before checking to see if it is lit.*
3. *If the motor makes a strange noise as it rotates, this may lead to unstable control. If this happens, turn VR101 counterclockwise to its original position.*

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□ S M

□ PARTS

□ OTHER

**BULLETIN NUMBER: AFICIO COLOR 5106/5206 - 020**

**01/29/98**

**APPLICABLE MODEL: AFICIO COLOR 5106/5206**

**SUBJECT: SC321 USING FIERY**

**SYMPTOM:**

Intermittent SC321 codes only when in Printer Mode (using Fiery).

**CAUSE:**

Electrical noise interfering with the Transfer Belt Start Signal.

**SOLUTION:**

Improved software timing tolerance to avoid electrical interference.

**FIELD COUNTERMEASURE:**

Install "F" version software on the Main Board of the Aficio Color 5106/5206.

**PRODUCTION COUNTERMEASURE:**

The "F" version software is installed during production.  
Serial number cut in not available at time of publication.

**ROM ORDERING PROCEDURE:**

The "F" version software (ROM Kit - A172ROMF) is available in limited quantities, only for machines exhibiting this symptom. Fax the attached form to Technical Services or download a Hex file for local programming via the Ricoh Technical Services BBS. The filename is 5206321F.EXE. Refer to Service News and Information No.147 regarding questions on the Ricoh Technical Services BBS.

**NOTE:** ROM Kit - A172ROMF contains 3 ROMs, A1725114F (IC 1), A1725115F (IC 2), and A1725129F (IC 522).

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COPY QUALITY



MECHANICAL



ELECTRICAL



PAPER PATH



S M



PARTS



OTHER

Continued...

**Tech Service Bulletin No. Aficio Color 5106/5206 – 020**  
**Page 2 of 2**

Fax this entire page in "DETAIL" mode ATTN.: Technical Services - Copier

Fax Number: 973-882-3960

Each serial number given will represent a request for one (1) ROM Kit - A172ROMF.

**NOTE:** *The ROMs will be available at no charge from Technical Services for 90 days (until April 30, 1998).*

*These ROMs will be available through NSP after the above date.*

Serial Number (s)			
1		6	
2		7	
3		8	
4		9	
5		10	

All serial number information will be verified before shipment is made.

**NOTE:** *Ricoh will not issue additional ROMs to locations that do not return the old ROMs.*

**NOTE:** Old ROMs must be returned within five (5) days to:

**Ricoh Corporation**  
**155 Passaic Avenue**  
**Fairfield, NJ 07004**  
**Attn.: Technical Services – Copier**

**PLEASE TYPE OR PRINT CLEARLY.**

DEALER NAME:		
ADDRESS:		
CITY:	STATE:	ZIP CODE:
ATTENTION:	PHONE #:	
DEALER ACCOUNT NUMBER:		

**BULLETIN NUMBER:** AFICIO COLOR 5106/5206 - 021

**02/20/98**

**APPLICABLE MODEL:** AFICIO COLOR 5106/5206

**SUBJECT:** SEPARATION – TORQUE LIMITTER

**GENERAL:**

The following Parts Corrections are being issued for all Aficio Color 5106/5206 Parts Catalogs.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A0976000	A0602617	Separation Torque Limitter	1	45	26

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☒ PARTS  
☐ OTHER

ISSUED ON: November 15, '96

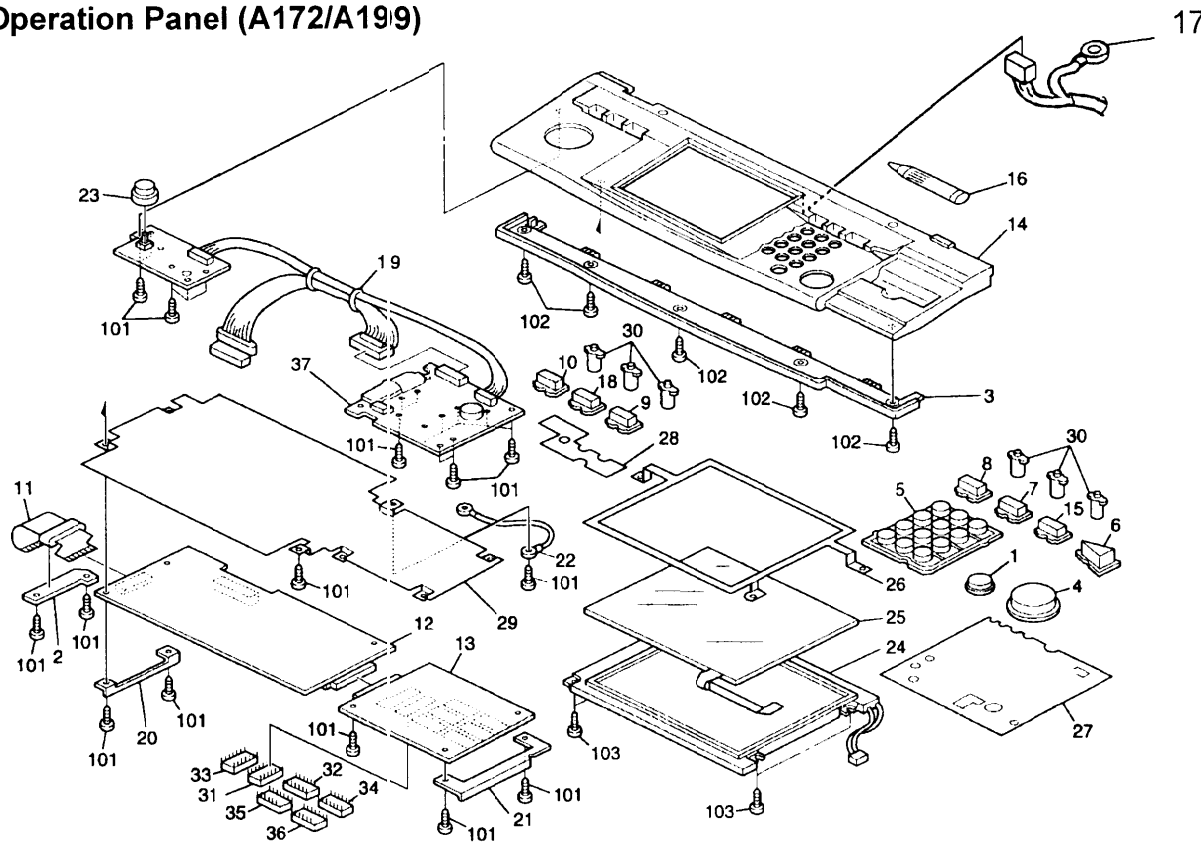
<b>Model</b>	SDC206/206E	<b>Model</b>	<b>Date of Modification</b>	<b>Serial Number</b>
<b>Modified Article</b>	Parts Catalog			
<b>Reason for Modification</b>	Parts Catalog Correction			

Please correct your parts catalog as follows.

Old P/N	New P/N	Description	Q'ty Used	Destination	Parts Catalog	
					Index No.	Page
A1725339	A1725639	Operation Panel Harness - DC	1 → 1	ALL	10	25
A1726200	A1726201	Transfer Roller	1 → 1	ALL	7	71
A1725392	A1725692	Operation Panel Harness - IPU 1 (A172)	1 → 1	A172 only	17	17
	AA143741	Stepped Screw	0 → 2	ALL	29	71

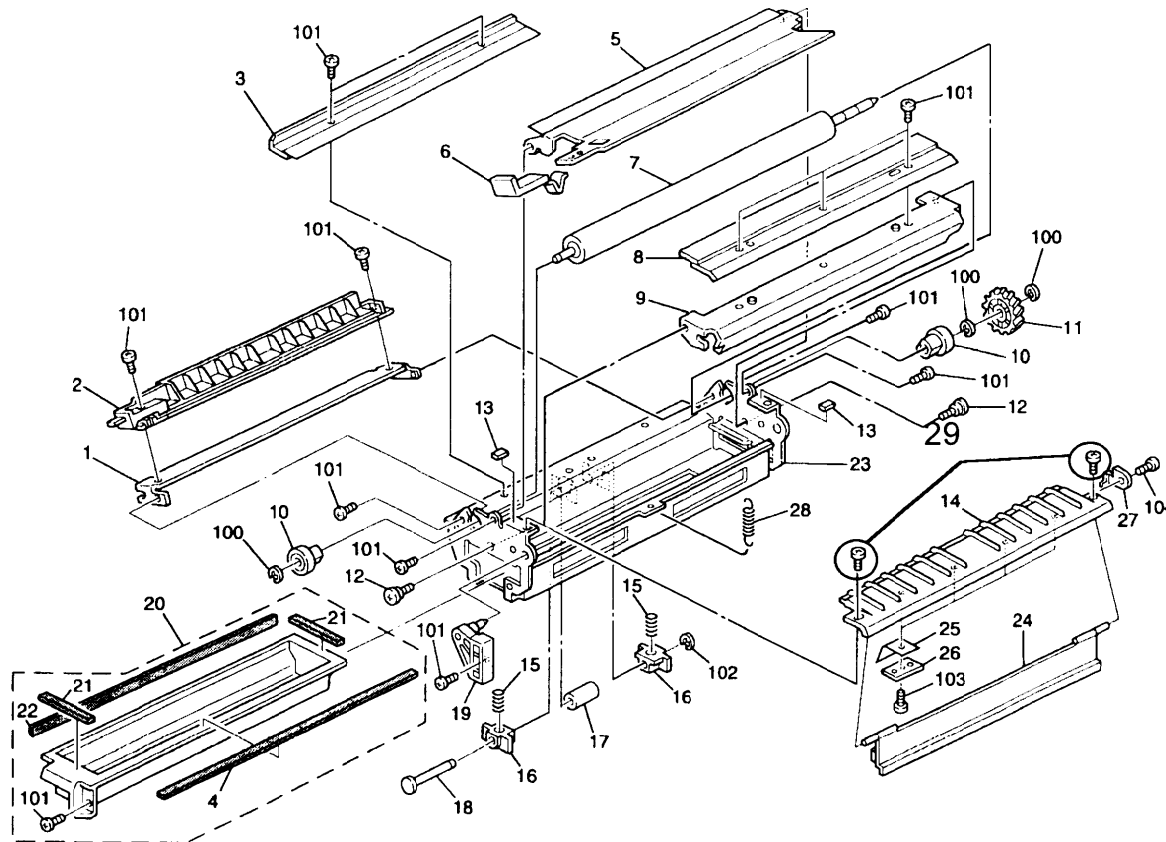
**DETAILS OF MODIFICATION**

Please add the drawing of A1725692 Operation Panel Harness - IPU 1 on your parts catalog

**3. Operation Panel (A172/A199)**

**DETAILS OF MODIFICATION**

Please correct the index number in your parts catalog as follows.

**30. Transfer Roller Unit (A172/A199)**



Model: SDC206/SDC206E		Date: October 28, 1997	No: SDC206/SDC206E - 002
Modified Article: Magenta Development Sleeve		Serial Number: SDC206 5A9706000 1 SDC206E 5A87060001	
Reason for Modification:	<input type="checkbox"/> Parts catalog correction <input type="checkbox"/> Vendor change <input type="checkbox"/> To meet standards <input type="checkbox"/> To facilitate assembly <input type="checkbox"/> To improve reliability <input type="checkbox"/> Part standardization <input type="checkbox"/> Other		

To ensure the conductivity of the development bias to the development sleeve, a Ball Bearing 6x10x3 has been installed on the rear shaft of the Development Sleeve for Magenta. A Lock Washer has been also installed to secure the ball bearing. The ball bearing and the lock washer are available as separate service parts.

The new development sleeve is used for the magenta development unit only and the development sleeve for the yellow development unit remains the same.

Old part number	New part number	Description	Qty	Int	Destination	Page	Index
A1723214		Development Sleeve-M/Y	2-l	x/		63	1
	AI72321 3	Development Sleeve-no.3	O-l	/o		63	1
	08053496	Ball Bearing 6x10x3	O-l			63	109
	HO014219	Lock Washer	O-l			63	30



# Field Engineering Bulletin Digital Color

## TECHNICAL OPERATIONS

BULLETIN NO. SDC206 / SDC206E-001 DATE 9/30/96

Subject: MAJOR DIFFERENCES vs THE SC106

<input type="checkbox"/> Copy Quality <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input checked="" type="checkbox"/> Technical Information <input type="checkbox"/> General Information	<b>Model - Product / Serial Numbers Affected</b>  SDC 206 / SDC206E     	Modification Schedule: <input type="checkbox"/> <b>Mandatory</b> <input type="checkbox"/> Scheduled Visit <input type="checkbox"/> Next Call <input type="checkbox"/> Next P M <input type="checkbox"/> As Necessary Install Time
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The SDC206 & SDC206E are the latest additions to the Savin family of digital color copiers. Appearance wise, these two models resemble the SC106, however numerous design and technical changes have been implemented to enhance copy quality and improve reliability.

The attached pages provide an overview of the major technical differences found in the SDC206 / SDC206E in comparison to the SC106. The details column indicates the page to refer to in the technical manual.

The additional technical documentation that is currently available for the SDC206 / SDC206E is:

Technical Manual\* (12 -707)  
Parts Catalog (12-708)  
Service Management Guide (mailed to each service location)

*Please note that the Technical Manual is intended as supplement to the existing SC706 Technical Manual. The SDC206 / SDC206E Technical Manual provides only information that is unique to these two new copiers. All other information that is common to both model lines can be found in the SC706 Technical Manual.*

## MAJOR DIFFERENCES

No.	Item	Contents	Details
<b>Process Control</b>			
1	Toner End Detection	The toner end detection software has been eliminated. --	A toner end sensor has been added for each color. See 6.2 in section 2 for details.
2	Latent Image Control	The process control for latent image control has been modified.	See 2.1 in section 2 for details.
3	Toner Density Control	VCNT Correction has been modified.	See 2.2 in section 2 for details.
<b>Around The Drum</b>			
1	OPC Drum	The OPC drum layer material (Charge Transfer Layer: CTL) has changed.	To reduce ozone and NOx reaction with the drum (to prolong the lifetime of the drum).
2	Drum Charge Wire	The system has been changed from a double-wire to a single-wire scorotron.	See 3.1 in section 2 for details.
3	Drum Charge Wire/Grid Cleaning	Drum charge wire/grid cleaning has been newly added.	See 3.2 in section 2 for details.
4	Drum Cleaning	Drum lubrication has been newly added.  The cleaning brush has been changed from a looped-bristle type to a straight-bristle type.	See 3.4 in section 2 for details.  To apply the lubricant evenly on the drum. See 3.4 in section 2 for details.
<b>Optics</b>			
1	Exposure Lamp	The number of exposure lamp's lighting points has increased from 7 to 9.	To decrease white bands on copies caused by the exposure lamp's lighting points.
2	Infra-red Filter	The thickness of the infra-red filter has increased from 0.8 mm to 1.0 mm.	To achieve better copy quality for originals containing infra-red radiance. (prevents black areas from becoming reddish)
3	2nd/3rd Mirrors	A heavier stabilizer has been installed on the 2nd/3rd mirrors.	To decrease scanner banding to achieve better results for auto letter/photo at i o n .
4	Exposure Glass	A more high-conductivity glass is used.	To decrease the possibility of the exposure glass becoming dirty with dust particles.
5	Reflectors	Reflectivity has increased because of surface improvements.	To decrease the temperature around the optics cavity due to less power to the exposure lamp.

No.	Item	Contents	Details
6	Optics Cooling Fan Filter	The filter material has changed. It is easier to replace the filter.	The air flow has improved to reduce temperature rises in the optics cavity. For replacement, see section 5 for details.
<b>Image Processing</b>			
1	RGB Filter	The RGB filter coefficient for each copy mode (letter/photo) has been changed.	To improve gradation and reproduction quality.
2	Color Correction	New matrixes and masking coefficients have been added to match the new copy modes.	See 4.4 in section 2 for details.
3	Image Separation IC	The image separation IC has been changed.	To reduce photo/letter image separation errors in auto detect mode.
<b>Laser Exposure</b>			
1	Drum Mirror	A heavier stabilizer has been installed on the Drum mirrors.	To reduce the occurrence of banding on copies.
<b>Development</b>			
	Development Sleeve Roller	The sleeve rollers have been changed to a sand-blast type.	To eliminate the 1.25 mm horizontal lines in halftone image areas caused by the grooves on the sleeve roller.
<b>Toner Tank</b>			
	Toner Tank	A toner end sensor has been added for each color.	See 6.2 in section 2 for details.
		The green lever has been eliminated.	See 6.2 in section 2 for details.
		A toner tank detection mechanism has been added. When the tank is pulled out, it is disconnected electrically from the main body.	See 6.2 in section 2 for details.
<b>Transfer Belt</b>			
1	Transfer Belt Bias	The number of threshold levels that decide transfer belt bias depending on environmental conditions has changed from 2 to 4.	See 7.1 in section 2 for details.
2	Transfer Belt Cleaning	The belt lubricant mechanism has changed to apply lubricant directly to the transfer belt.	To prevent partial blanking of lines (due to incomplete toner transfer) from appearing on copies. See 7.2 in section 2 for details.

FEB# SDC206 / SDC206E-001  
SUBJECT: MAJOR DIFFERENCES VS THE SC1 06

No.	Item	Contents	Details
<b>Transfer Roller</b>			
1	Transfer Belt/Roller Heater	The transfer roller heater has been newly added to keep the temperature around the transfer roller unit at 20°C.	See 8.1 in section 2 for details.
2	Transfer Roller	The material of the transfer roller has been changed.	To improve transfer efficiency.
3	Transfer Roller Bias	The number of threshold levels that decide transfer roller bias depending on environmental conditions has been changed from 2 to 4.	See 8.2 in section 2 for details.
		Transfer roller bias settings for duplex copying have been newly added.	See 8.2 in section 2 for details.
4	Paper Discharge Plate	The installed angle of the paper discharge plate has changed.	To prevent toner scatter from appearing around solid areas in duplex mode. See 8.4 in section 2 for details.
5	Paper Discharge Plate output	The output of the paper discharge plate changes depending on the copy paper.	See 8.4 in section 2 for details.
6	Transfer Roller Cleaning	The roller lubricant mechanism has been newly added.	See 8.3 in section 2 for details.
<b>Fusing Unit</b>			
1	Hot Roller	The material of the hot roller has been changed.	To make it suitable for duplex copying.
2	Pressure Roller	The material of the pressure roller has been changed.	To make it suitable for duplex copying.
3	Pressure Roller Cleaning	The pressure roller cleaning mechanism has been newly added.	See 9.1 in section 2 for details.
<b>Paper Feed</b>			
1	2nd Paper Feed Station	The 2nd paper feed station has been changed to the universal tray type.	To meet customers' requests
<b>Operation Panel</b>			
1	LCD (Liquid Crystal Display)	The LCD has been changed to a 640 x 480 dot type.  SDC206E (A172): Full Color Display SDC206 (A1 99): B/W Display	For easier operation and editing.

FEB# SDC206 / SDC206E-001  
SUBJECT: MAJOR DIFFERENCES VS THE SC106

No.	Item	Contents	Details	..
2	Operation Panel Control	The operation panel control board has been newly added. The main control board no longer controls the operation panel.	—	
3	Operation Panel Self Diagnostic Mode	The operation panel self diagnostics mode has been newly added.	For easier servicing of the machine.	
<b>Others</b>				
1	Drum Drive	The drum drive mechanism has been changed from a series of gears to a timing belt system.	Banding on copies are reduced. See 3.3 in section 2 for details.	
2	Copier Rear Frame	The thickness of the rear frame has changed from 1.6 mm to 2.0 mm	Banding on copies are reduced.	
3	Fusing exhaust ozone filter	This filter has been eliminated.	Because the ozone amount has been decreased due to the new charge corona unit	
<b>Options</b>				
1	DJF (A610)	See the DJF section for details.	—	
2	15-Bin Sorter (A322)	See the Sorter section for details.	—	
3	Holder (A702-18)	The color of the exterior covers has been changed.	—	
4	Film Projector Unit (A718)	See the Film Projector Unit section for details.	—	

Subject: AUTO COLOR CALIBRATION (ACC) PROCEDURE

<input type="checkbox"/> Copy Quality <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input checked="" type="checkbox"/> Technical Information <input type="checkbox"/> General Information	<b>Model - Product / Serial Numbers Affected</b>  SDC206 / SDC206E	Modification Schedule: <input checked="" type="checkbox"/> <b>Mandatory</b> <input type="checkbox"/> Scheduled Visit <input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary Install Time
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### GENERAL:

This bulletin is being published to provide a greater understanding of the Auto Color Calibration (ACC) procedure. The following points must be understood prior to performing an ACC procedure:

1. Adjustment of ACC changes gamma settings.
2. ACC is intended to provide a "rough" adjustment or a "starting point" for the color calibration process.
3. ACC is designed to allow a customer to automatically set gamma settings to a "reasonably acceptable" level, however, manual adjustment of gamma settings by a Service Representative will provide optimal copy quality.
4. In some cases, when copy quality is determined to be acceptable by the customer, ACC **is not required** and should not be performed. If ACC is performed after manual adjustment of gamma settings, the Service Representative settings will be lost if the previous settings are not selected through ACC. Therefore, always save the Service Representative gamma settings in Permanent memory as a back-up. For more information on Permanent and Temporary Memory, refer to the SDC206/206E Technical Manual, page 4-33 (under NOTE).
5. The gamma settings stored in Permanent Memory for Printer Mode cannot be changed. However, the gamma settings stored in Permanent Memory for Glass-top Copy Mode can be changed.
6. ACC may not be required after a PM call.
7. The use of dry copy paper (<25% humidity) may result in "blasting" around text. If "blasting" around text occurs, install fresh paper of greater than 25% humidity.

## **AUTO COLOR CALIBRATION (ACC) PROCEDURE:**

*NOTE: Because the reflectivity of the copy paper can affect the ACC results, it is recommended that Hammermill, Color Copy Paper (long grain, Photo White) be utilized to print the A CC test pattern.*

As mentioned in the Technical Manual (Note: (a), page 3-6), be sure to plug the power cord in with the Main Switch in the "OFF" position at machine installation. This will energize the Transfer Roller Heater and allow the internal temperature of the machine to stabilize. It may be necessary to have the Transfer Roller Heater energized for 2 to 3 hours (depending on how cold an environment the machine has been in).

### **Glass-top Copy Mode Calibration**

1. Place the C4 Test Chart (A0929503A) on the glass, select 11 X 17 inch paper, select Photo Mode, and change Auto Image Density to Manual Image Density. Enter User Tool No. 2 and set values to factory default and press "Copy".
2. Check the copy quality.
3. If acceptable, do **not** perform an ACC procedure.
4. If unacceptable, set copy sample aside and perform the ACC procedure as follows.
5. Select User Tool No. 2 - Sensitivity Adjustment (Auto Color Calibration ACC: Copy Mode).
6. Print out the ACC Test Pattern from copier.
7. Place the ACC Test Pattern on the glass and press "Scan Start". (Be sure to align the arrows on the glass correctly.)
8. Copier gamma settings will be automatically adjusted.
9. Place the C4 Test Chart on the glass and press "Copy".
10. Compare the output to the original and also to the first copy sample (produced in step 1).
11. Manually adjust the gamma settings to fine tune the copier if needed. Save settings in Permanent Memory (Technical Manual, page 5-3).

*NOTE: The values stored in Permanent Memory will not be affected by subsequent ACC procedures.*



## Fiery XJ System Printer Gamma Adjustment Procedure

1. Attach the Fiery to the copier.
2. Run Fiery setup and select R2 under the Printer Setup / Printer Model selection.
3. Write down the factory default gamma settings. These values are **not** on the factory data sheet provided with the copier.

*NOTE: If the Fiery has been previous/y installed, remove the calibration from the Fiery. Removing any previously stored calibration prepares the system to accept a new calibration. If installing for the first time, no calibration will be in the Fiery.*

4. Print out the Fiery XJ Test Page by pressing the Menu Button on the XJ, then press the Print Pages Button, then press the Test Page Button.
5. If acceptable, do **not** perform an ACC procedure.
6. If unacceptable, set the printer sample aside and perform the ACC procedure as follows.
7. Select User Tool No. 2 - Sensitivity Adjustment (Auto Color Calibration ACC: Printer Mode).
8. Print out the ACC Test Pattern from the copier.
9. Place the ACC Test Pattern on glass and press "Scan Start" (be sure to align the arrows on the glass correctly).
10. Printer gamma settings will be automatically adjusted.
11. Print out the Fiery XJ Test Page and compare the outputs.
12. If you have the X-RITE DTP 32 densitometer, continue with step 14. If not, refer to the Technical Manual, page 5-32, to adjust the gamma settings manually. Refer to page 6-I of the Fiery User Manual for calibration procedure.
13. Print the Fiery Test Page and compare.
14. Start the Macintosh or PC and launch the Fiery Print Calibrator, version 3.0.
15. Select Fiery XJ R2 from the list of servers and click "Connect".
16. Click "Target". A list of device targets will appear. From this list, select R2 and click "OK".
17. From the "Server" menu at the top of the screen, select "Print Patch Page". The copier will now print a series of CMYK patches,
18. From the "Measurements" menu, select "Densitometer".

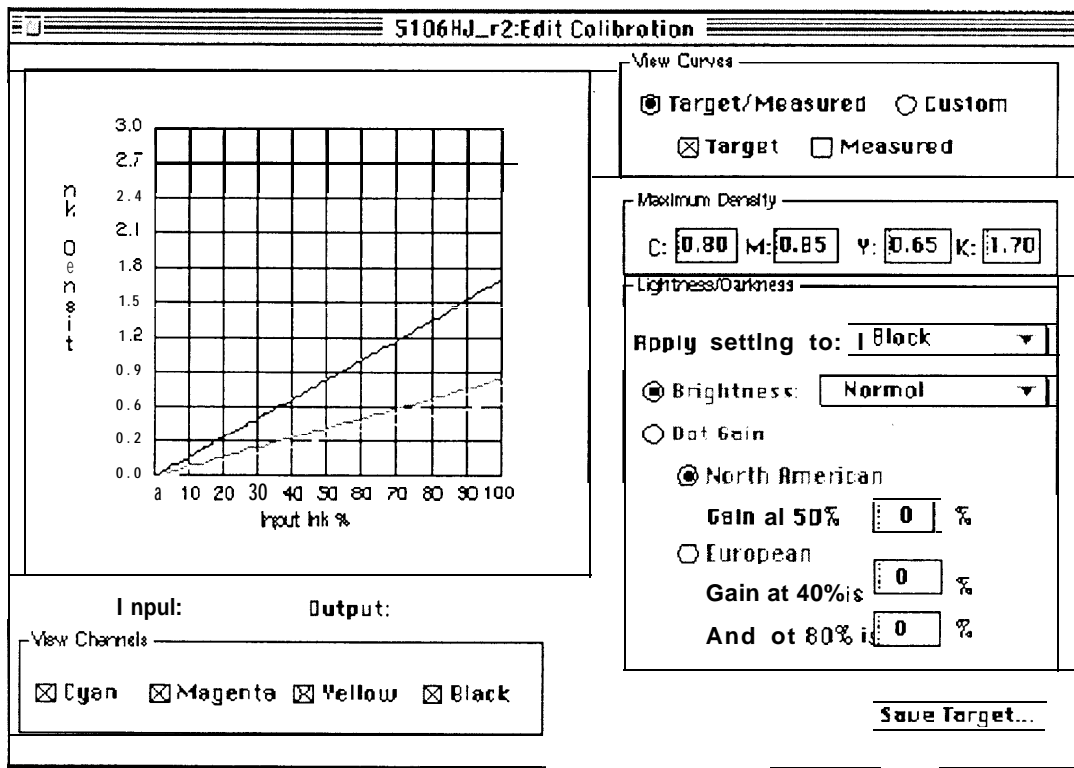
19. At this time, "None" will be selected. Click on "None" and select "Modem" or "Parallel Port", (depending on which port the densitometer is connected to).
20. Click "Start" and follow the directions in the "Status" box on the computer screen and the LCD read-out on the densitometer.
21. After reading all CMYK strips, the status box reads "Measurements Read Successfully".
22. Click "Accept".
23. Click "Test". Make sure "Calibrator Test Page" is selected, then click on "Print".
24. The system will now generate a comparison page with calibrated & non-calibrated images, side by side.
25. From the "Server" menu select "Remove Calibration". This removes any previously stored calibration and prepares the system to accept new calibration.
26. Click "Apply Calibration" if the comparison page calibrated image is acceptable. Otherwise, manually adjust printer gamma settings or refer to **Standard Fiery Print Calibration Targets** provided on page 4.
27. You may check calibration status by selecting "Calibration Status" from the Server menu. Refer to the Fiery XJ user guide for more information regarding editing calibration curves.
28. When you are done, select "Quit" from the File menu.

#### **Standard Fiery Print Calibration Targets:**

A list of preliminary target numbers are listed on page 5. These targets may be updated and re-issued as better results are obtained.

### Standard Fiery Print Calibration Targets

Modify the linear target that is supplied with version 3.0 software to the following numbers:





# Field Engineering Bulletin Copier Series

## TECHNICAL OPERATIONS

BULLETIN NO. SDC206-003    DATE 1 1/15/96

Subject: Installation Procedure

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Copy Quality<br><input type="checkbox"/> Electrical<br><input type="checkbox"/> Mechanical<br><input type="checkbox"/> Modification<br><input type="checkbox"/> Safety Information<br><input checked="" type="checkbox"/> Technical Information<br><input type="checkbox"/> General Information | <b>Model - Product I Serial Numbers Affected</b><br><br>SDC206/SDC206E | <b>Modification Schedule</b><br><input type="checkbox"/> Mandatory<br><input type="checkbox"/> Scheduled Visit<br><input type="checkbox"/> Next Call<br><input type="checkbox"/> Next PM<br><input type="checkbox"/> As Necessary<br>Install Time |
|--|--|---|



SDC206/SDC206E installation procedures, which are not provided with the copier, differ slightly from that of the SC106. This coupled with the fact that numerous SP modes and adjustments also differ, make it **imperative** that a Technical Manual be available when installing and servicing a SDC206/SDC206E.



# Field Engineering Bulletin

## Digital Color Series

### TECHNICAL OPERATIONS

SC106 - 004

BULLETIN NO. **SDC206** - 004 DATE: **8/15/97**

Subject: MAGENTA BANDING

- ☐ Copy Quality
- ☐ Electrical
- ☐ Mechanical
- ☐ Modification
- ☐ Safety Information
- ☒ Technical Information
- ☐ General Information

#### Model - Product/Serial Numbers Affected

SC106

SDC206

#### Modification Schedule

- ☐ Mandatory
- ☐ Scheduled Visit
- ☐ Next Call
- ☐ Next PM
- ☐ As Necessary
- Install Time

#### Symptom:

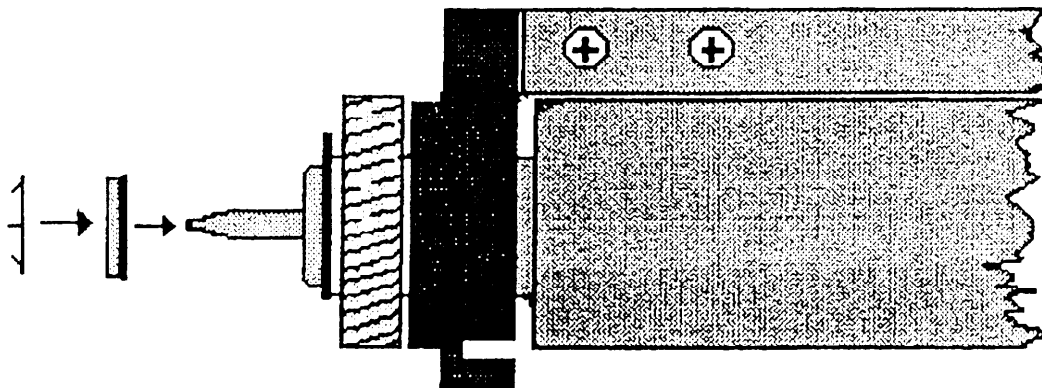
intermittent / Random magenta banding across full color copy (front to rear). This banding is most noticeable in blue or gray image areas.

#### Cause:

Bias voltage applied to the magenta development roller is not consistent due to poor conductivity between the shaft and the roller bearing / bushing.

#### Solution:

Install a **conductive** Bearing 6 x 10 x 3 (P/N 08053496), flange side in, and Lock Washer (P/N H0014219), tabs out, onto the rear of the magenta development roller shaft. This effectively creates two points of bias contact / conductivity.



**Note:** This countermeasure was scheduled to be implemented beginning with July 1997 production. Additional details will be reflected in a Parts Modification Bulletin.

#### SAWN CORPORATION

Technical Service Operations --333 Ludlow Street, Stamford, Connecticut 06904 --(203) 967-5000



# Field Engineering Bulletin

## Digital Color Series

### TECHNICAL OPERATIONS

BULLETIN NO: **SDC206/E – 005** DATE: **10122197**

**Subject: FIREFLY SPOTS– UNSTABLE CARRIER**

<input checked="" type="checkbox"/> Copy Quality	<b>Model - Product/Serial Numbers Affected</b>	<b>Modification Schedule</b>
<input type="checkbox"/> Electrical	SDC206	<input type="checkbox"/> Mandatory
<input type="checkbox"/> Mechanical	SDC206/E	<input type="checkbox"/> Scheduled Visit
<input type="checkbox"/> Modification		<input type="checkbox"/> Next Call
<input type="checkbox"/> Safety Information		<input type="checkbox"/> Next PM
<input type="checkbox"/> Technical Information		<input type="checkbox"/> As Necessary
<input type="checkbox"/> General Information		Install Time

#### Problem

Firefly spots (light spots) in the solid or halftone image area.

#### Cause

Unstable carrier particles attracted to the drum surface block prevent proper toner transfer to the transfer belt.

#### Note

A Similar image symptom may occur when condensed toner is attracted to the drum surface. The condensed toner appears in the center of the light spot. The cause of this symptom is different and is not corrected with the following procedure.

#### Solution

Follow the steps below to remove the unstable carrier in the developer.

1. Open SP mode 2-2 Test Pattern Condition. Set the test pattern condition and select full dot pattern.
2. Make an 11 xl 7" single color copy(s) using the color(s) which has light spots.
3. Open SP mode 3-3 Drum Potential Control Output and note VB actual data of the color which has light spots.
4. Open SP mode I-4 Voltage Setting for P-con Reset Mode and input VB actual data + 200 to the VB for color(s) which has light spots. Input VB actual data + 355 to the VG of the color(s) which has light spots.

Example: If VB actual is –300V, input -500V to the VB and –655V to the VG.

5. Open SP mode 4-I Auto Process Control Selfcheck and select reset.

6. Make 10 11 x1 7" single color copies with the color(s) which has light spots.
7. Open SP mode 4-I Auto Process Control Selfcheck and select PID. Open SP mode 2-2 Test Pattern Condition, and reset the test pattern condition.
8. Open SP mode 3-I Toner Density. Make 10 11x17" full color copies while observing the Vt of the color(s) which has light spots. When the Vt is within  $\pm 0.2$  of Vref, cancel the remaining copies.
9. Open SP mode 1-4 Setting for P-con Off Mode and lower VB and VG settings by 100 for the color(s) which has light spots.
10. Open SP mode 4-I Auto Process Control Selfcheck and select reset.
11. Open SP mode 2-2 Test Pattern Condition, set the test pattern condition and select full dot pattern.
12. Make an 11x17" single color copy(s) using the color(s) which has light spots. If copy quality is improved to acceptable level, open SP mode I-4 Setting for P-con Off Mode and return VB and VG to default settings.
13. Open SP mode 4-I Auto Process Control Selfcheck and select PID. Make one 11x17" single color copy with the color(s) which has light spots. Open SP mode 2-2 Test Pattern Condition, and reset the test pattern condition.
14. If some light spots are still remaining on the copy made at step 12, open SP mode I-5 Transfer Belt Bias and increase transfer belt bias by 200. ( Transfer Belt bias can be increased further, but not by more than 400.)
15. If the copy quality is not acceptable with the sample made at step 12, repeat the procedure from step 4.



# Field Engineering Bulletin

## Digital Color Series

### TECHNICAL OPERATIONS

BULLETIN NO: SDC206/206E - 006 DATE: 10/22/97

#### Subject: HIGH TONER DENSITY IN LOW HUMIDITY ENVIRONMENT

<input checked="" type="checkbox"/> Copy Quality	<b>Model - Product/Serial Numbers Affected</b>	<b>Modification Schedule</b>
<input type="checkbox"/> Electrical	SDC206	<input type="checkbox"/> Mandatory
<input type="checkbox"/> Mechanical	SDC206/E	<input type="checkbox"/> Scheduled Visit
<input type="checkbox"/> Modification		<input type="checkbox"/> Next Call
<input type="checkbox"/> Safety Information		<input type="checkbox"/> Next PM
<input type="checkbox"/> Technical Information		<input type="checkbox"/> As Necessary
<input type="checkbox"/> General Information		Install Time

#### Symptom:

Under low humidity condition such as during the winter, the toner density increases quickly within 1 K copies after developer replacement. This results in high image density and possible dirty background. This is particularly noticeable with black and cyan.

#### Cause:

Due to the drop in the charge of the developer over time, it is necessary to change the Vcnt if the developer gamma surpasses a certain value to prevent the image density from increasing. However, the charge for this type of toner has a tendency to decrease in high-temperature/low-humidity environments, therefore the symptom occurs more frequently during the winter. Since the Vcnt cannot keep up with the speed with which the charge drops, the image density rises over short periods of time.

#### Solution:

1. Replace the developer (all colors).
2. Adjust the toner density sensor initial setting until the image density is correct.
3. Access SP Mode; SP Adjustment: P. 16: Other SP Adjustment and set NO. 1 from 00000 to 00001.

#### Reason for Alteration

The above SP Mode turns on the Vcnt (Correction by number of scans) for the toner density control. When this correction is turned on, the Vcnt decreases by -1 every 100 scans and ends after 600 scans/-6. However, for cyan the correction is only up to 500 scans/-5. All colors are controlled separately.

#### Note

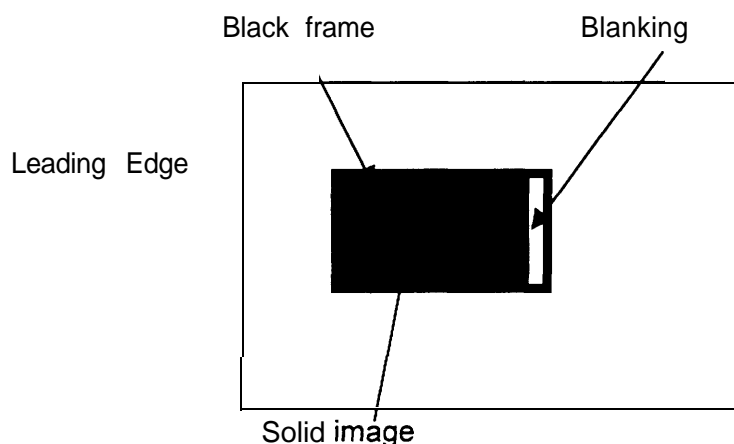
1. It does not matter when the Vcnt is turned on after the developer has been changed. The result will be the same if it is done within 100 scans after toner density sensor initial setting.
2. At the time of toner density sensor initial setting, the correction counter is reset to 0.
3. If the Vcnt correction is turned on without developer replacement, there is the possibility that the image density will gradually become lighter.
4. In a high-humidity environment, there is a possibility of over-correction (low toner density leads to low image density), therefore turn this Vcnt correction off.



<b>Subject: BLANKING AT THE TRAILING EDGE OF SOLID IMAGE</b>		
<input type="checkbox"/> Copy Quality <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input type="checkbox"/> Technical Information <input checked="" type="checkbox"/> General Information	<b>Model - Product/Serial Numbers Affected</b>	<b>Modification Schedule</b>
	SDC206	<input type="checkbox"/> Mandatory <input type="checkbox"/> Scheduled Visit <input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary
	SDC206/E	Install Time

### Symptom

Blanking occurs on the trailing edge of a solid-area image when there is a black frame. The problem does not happen with the grid pattern from the copier. The width of the blanking is about 0.1 to 0.2 mm.



### Cause

On machines in which the relative difference between the OPC drum and the transfer belt speed is quite large, the electrostatic absorption at the time of belt transfer causes partial shifting of the image. The difference in the position shift of the grid pattern and the controller image is probably a result of the direct contact area difference between the OPC drum and the transfer belt of the toner image.

### Solution

1. Adjust the tension of the transfer belt timing belt and the drum drive timing belt.
2. SP Adjustment: P. 1: Transfer Belt Speed Adjustment (Default: 0)  
Increase the setting by +1~+2.
3. Check the copy quality.



# Field Engineering Bulletin

## Digital Color Series

### TECHNICAL OPERATIONS

BULLETIN NO: SDC206E - 008 DATE: 10/28/97

**Subject: JAGGED IMAGE IN PRINTER MODE**

<input type="checkbox"/> Copy Quality	<b>Model - Product/Serial Numbers Affected</b>	<b>Modification Schedule</b>
<input type="checkbox"/> Electrical		
EI Mechanical	SDC206	<input type="checkbox"/> Mandatory
cl Modification	SDC206/E	<input type="checkbox"/> Scheduled Visit
cl Safety Information		<input type="checkbox"/> Next Call
cl Technical Information		<input type="checkbox"/> Next PM
EI General Information		<input type="checkbox"/> As Necessary
		Install Time

#### Symptom:

The outline of characters is not well defined (jagged) in printer mode. This symptom does not occur with the prints made in letter mode.

#### Cause:

In photo mode, 2x1 dot dither processing is applied to all images including text. If the copier's condition is tending to output high (dark) image density, it will be adjusted by 2x1 dot dither processing, resulting in jagged image. The symptom is most noticeable especially when calibration targets with low IDmax is used.

#### Solution:

Lower the copier's image density by the following procedure

1. Open SP Mode 8-4 Printer  $\gamma$  Correction Data Fine Adjustment =Contone=. Check IDmax of the color showing jagged image.
2. Open SP Mode I-4 Toner Max M/A Target. Input 0.800 if the IDmax checked above is 4. Input 0.700 if the IDmax checked above is 3 or below.
3. Wait 5 minutes. Open SP Mode 2-4 and perform Process Control Self Check.
4. Open SP Mode 3-2 and confirm that the pointer table is not 00.

**Note:** If pointer table is 00, it means that the machine selected default pointer table since Toner Max M/A Target is lowered too much. Try with higher Toner Max M/A Target.

5. Perform printer ACC.
6. Check print quality and if not satisfactory, go back to step 1.

**Note:** For SP Mode 1-4 Toner Max M/A Target, you may input lower value than those described above, however ensure that the selected pointer table is not 00.

## Modification of Software for Easier Adjustment

With the current main board ROM, the SP Mode I-4 Toner Max M/A Target adjusts the M/A target for all colors at the same time. The ROM will be modified to make this adjustment independent for each color. With the new software, the toner maximum M/A target for each color is allocated in the SP Mode as follows.

Black	SP Mode I-4 Toner Max M/A Target (same as now)
Cyan	SP Mode 1-16 Other SP Mode No.1 5
Magenta	SP Mode 1-16 Other SP Mode No.16
Yellow	SP Mode 1-16 Other SP Mode No.17



# Field Engineering Bulletin

## Digital Color Series

### TECHNICAL OPERATIONS

BULLETIN NO: SDC206/E - 009 DATE: 10/28/97

**Subject: SORTER ROLLER MARK**

<input checked="" type="checkbox"/> Copy Quality <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input type="checkbox"/> Technical Information <input type="checkbox"/> General Information	Model - Product/Serial Numbers Affected	Modification Schedule
	SDC206	<input type="checkbox"/> Mandatory <input type="checkbox"/> Scheduled Visit
	SDC206/E	<input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary Install Time

#### Symptom:

After installation of the sorter, roller marks may appear on the back of the copy during the copy run test. This problem cannot be solved by cleaning the rollers but will disappear after approximately 1 K copies.

#### Cause:

The line velocity of the copier and the sorter sometimes do not match.

#### Solution:

1. Remove the rear cover of the sorter.
2. Turn on #2 of the DPSIOO and adjust the VR101 until LED102 illuminates. Then slowly turn the VRIOI clockwise until LED102 turns off. Now turn the VRIOI clockwise one notch.
3. Turn off #2 of the DPSIOO and perform another copy run test. Check for the roller marks. If the marks remain, turn the VRIOI an additional notch clockwise.

#### Note

1. It is not necessary to adjust the high motor speed.
2. Since the reaction time of the LED102 in response to the rotation of the VR is slow, wait for 2-3 seconds before checking to see if it is illuminated.
3. If the motor make an unusual noise as it rotates, this may lead to unstable control. If this happens, turn the VRIOI counterclockwise to the original position.



# Field Engineering Bulletin

## Digital Color Series

TECHNICAL OPERATIONS

SDC206 - 010

SC106 - 004

BULLETIN NO. ~~SDC206 - 004~~ DATE: 8/15/97

Subject: **MAGENTA BANDING**

<input type="checkbox"/> Copy Quality	<b>Model - Product/Serial Numbers Affected</b>	<b>Modification Schedule</b>	
<input type="checkbox"/> Electrical		<input type="checkbox"/> Mandatory	
<input type="checkbox"/> Mechanical		<input type="checkbox"/> Scheduled Visit	
<input type="checkbox"/> Modification		<input type="checkbox"/> Next Call	
<input type="checkbox"/> Safety Information	SC1 06	<input type="checkbox"/> Next PM	
<input checked="" type="checkbox"/> Technical Information	SDC206	<input type="checkbox"/> As Necessary	
<input type="checkbox"/> General Information		Install Time	

### Symptom:

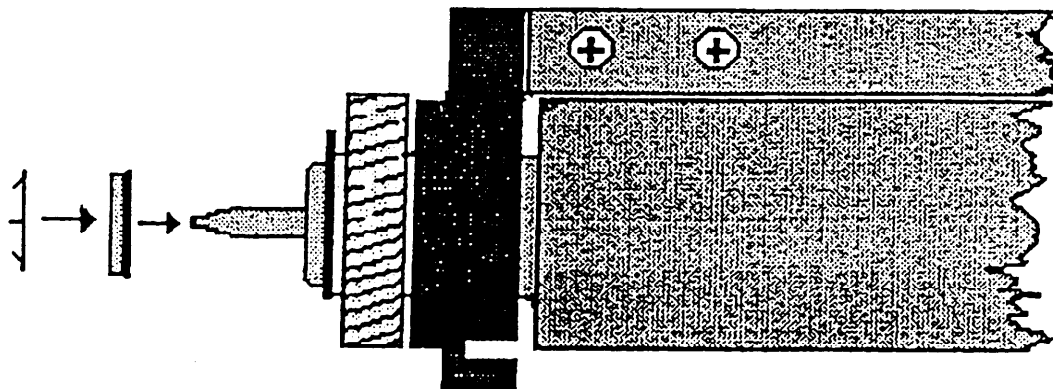
Intermittent / Random magenta banding across full color copy (front to rear). This banding is most noticeable in blue or gray image areas.

### Cause:

Bias voltage applied to the magenta development roller is not consistent due to poor conductivity between the shaft and the roller bearing / bushing.

### Solution:

Install a **conductive** Bearing 6 x 10 x 3 (P/N 08053496), flange side in, and Lock Washer (P/N H0014219), tabs out, onto the rear of the magenta development roller shaft. This effectively creates two points of bias contact / conductivity.



**Note:** countermeasure was scheduled to be implemented beginning with July 1997 production. Additional details will be reflected in a Parts Modification Bulletin.

**Subject: Cyan Toner Blasting in Printer Mode**

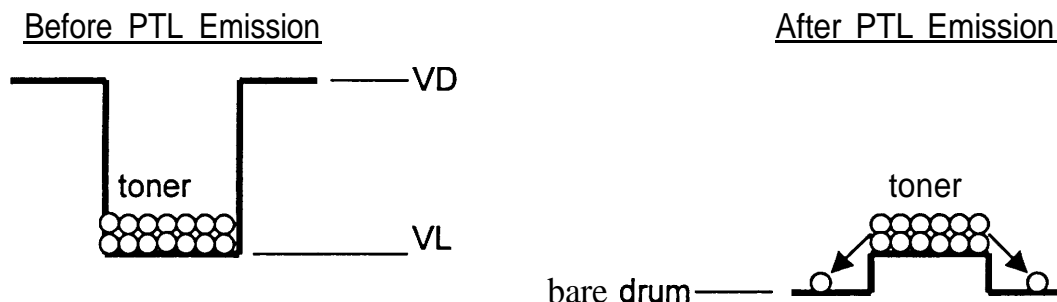
<input type="checkbox"/> Copy Quality <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input type="checkbox"/> Technical Information <input checked="" type="checkbox"/> General Information	Model - Product/Serial Numbers Affected		Modification Schedule <input type="checkbox"/> Mandatory <input type="checkbox"/> Scheduled Visit <input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary Install Time _____
	SDC206	5A97030001	
	SDC206/E	5A87030001	

### Symptom

Cyan toner scattered ("blasting") around the text and edge of solid image in printer mode.

### Cause

The PTL light (red light) is blocked by the cyan toner. The electrical potential of the image area does not drop while potential on the bare drum surface drops. As a result, some toner is attracted to the bare drum surface. See below figure.



VD drops to the bare drum potential level, however VL does not drop to the same level since the PTL light is blocked by cyan toner.

The symptom is most evident when amount of toner on the drum (M/A) is large. The symptom is seen only in the printer mode since the maximum amount of toner on the drum is higher compared to that of the copy mode.

Compared to the SC106, the SDC206/E has a higher M/A for cyan. This results in a higher level of Cyan Toner scattering.

### **Countermeasure**

1. The PTL has been changed to emit stronger light.

Part Number A0305243 → A3995243

2. The ACC target for the printer mode has been modified to decrease the maximum amount of toner on the drum. (IPU ROM revision G)

### **Symptom:**

This symptom can be eliminated by disconnecting the PTL, however the side effect may be magenta toner blasting in 2C mode. This is because the purpose of the PTL is to cause minor cyan toner Scattering which will repel the scattered magenta toner.

**E****C****S****EC NICAL PERA I NS**ULLE IN N : SDC206/E - 012 A E: 1/20/98

<b>S : NIP AN I</b>		
<input type="checkbox"/> Copy Quality  <input type="checkbox"/> Electrical <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input checked="" type="checkbox"/> Technical Information <input type="checkbox"/> General Information	<b>M P /S N</b>	<b>Modification Schedule</b>  <input type="checkbox"/> Mandatory <input type="checkbox"/> Scheduled Visit <input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary Install Time _____
	<b>A</b>	

The nip band width of the fusing unit has been changed to minimize the possibility of wavy image and/or wrinkled copy.

Location	New Standard	Old Standard
Both Edges (20mm from the edges)	9.25±0.25mm	9.5±0.5mm
Center (confirmation reference)	9.0±2.5mm	9.0±0.5mm

To facilitate this adjustment during production, the pressure spring has been changed to a weaker type. To distinguish the new and the old spring, the color has been changed from black to silver.

Old part number	New part number	Description	Qty	Int	Destination	Page	Index
AA063355	AA063562	Pressure Spring	2-2	X/O		85	21

It is not necessary to readjust the nip band width of the machines in the field. In cases where nip band width is suspect, please check according to the new standard and adjust as necessary. However, it may not be possible to achieve the new adjustment standard with the old pressure spring. In this case, replacement with the new type spring and adjustment confirmation is required.

The weaker new type spring was implemented in production beginning with the following S/N's:

SDC206 - 5A96110001  
SDC206 / E - 5A86110001

**S C****P 1 1**



**E****C****S****EC NICAL PERA I NS****BULLETIN : SDC206/E – 013    A E: 2/20/98**

<b>S        :    SC 21        EN USIN        IER</b>		
<input type="checkbox"/> Copy Quality  <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input checked="" type="checkbox"/> Technical Information <input type="checkbox"/> General Information	<b>M        P        /S        N</b> <b>A</b>	<b>Modification Schedule</b>  <input type="checkbox"/> Mandatory <input type="checkbox"/> Scheduled Visit <input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary Install Time _____
	SDC206	
	SDC206/E	

**S MP    M:**

Intermittent SC321 codes only during Printer Mode (using Fiery).

**CAUSE:**

The Transfer Belt Start Signal is interrupted / influenced by electrical noise.

**S LU I N:**

The tolerance of the software timing has been improved against electrical noise / interference. This is accomplished through the following Main Board ROMs:

IC1 = A1725114F  
IC2 = A1725115F  
IC522 = A1725129F

This "F" version software, which is packaged as a kit (P/N A172ROMF), is available in limited quantities, only for machines exhibiting the indicated symptom. Complete and fax the form on page 2 of this bulletin to Technical Services.

**N** : The "F" version software has been implemented into production units, however S/N cut-in information is unavailable at this time.

<b>Model: SDC206/E</b>	<b>Date: February 20, 1998</b>	<b>No: SDC206/E - 013</b>
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Fax this entire page in "DETAIL" mode ATTN.: Technical Services – Copier

Fax Number: 973-882-3960

Each serial number given will represent a request for one (1) ROM Kit – A172ROMF.

**N E: The ROMs will be available at no charge from Technical Services until April 30, 1998.**

**SERIAL NUMBER S**

1		6	
2		7	
3		8	
4		9	
5		10	

All serial number information will be verified before shipment is made.

**N E: S R M R M**

**N E: R R M 5 :**

**R C  
155 P A  
N 0700  
A : S C**

**PLEASE PRINT REPEL**

BRANCH / DEALER NAME:		
ADDRESS:		
CITY:	STATE:	ZIP CODE:
ATTENTION:	PHONE #	
DEALER ACCOUNT NUMBER:		

<b>Model: SDC206/E</b>	<b>Date: February 20, 1998</b>	<b>No: SDC206/E - 013</b>
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E

C

S

EC NICAL PERA I NS

ULLE IN N : S C206 01 A E: /1 /9

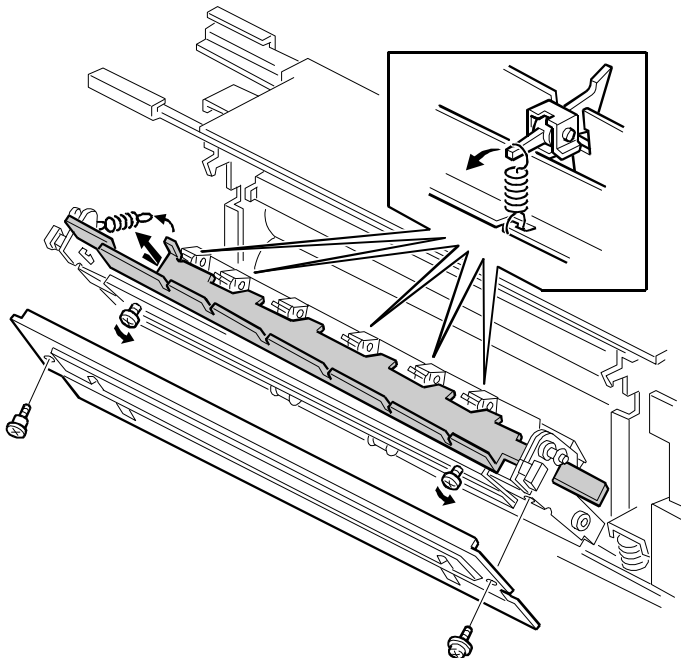
S : R LLER AMA E		
<input type="checkbox"/> Copy Quality  <input type="checkbox"/> Electrical <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Modification <input type="checkbox"/> Safety Information <input checked="" type="checkbox"/> Technical Information <input type="checkbox"/> General Information	M P /S N	Modification Schedule
	A	
	SDC206	<input type="checkbox"/> Mandatory <input type="checkbox"/> Scheduled Visit
	SDC206E	<input type="checkbox"/> Next Call <input type="checkbox"/> Next PM <input type="checkbox"/> As Necessary Install Time _____

The following modification has been made to the fusing unit to reduce hot roller damage by the stripper pawls when paper jam occurs in the fusing unit. These improvements were made from October '97 production machines. For cut-in serial number, please refer to the Parts Modification Bulletin.

## S R S

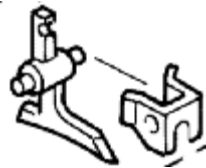
The slider hot roller stripper has been modified to prevent the stripper from being pushed too hard into the hot roller by jammed paper. The part number has been changed from A1094204 to A1724205.

When replacing the slider with a new part, loosen the two screws and remove the hot roller stripper springs as shown in the below figure. Apply some grease on the slider to the area where it contacts with the front and rear frame of the paper exit unit.



## **S**

Stripper holders are newly added to prevent hot roller stripper from coming off of its bracket by jammed paper.



Part Number A1724203

<b>Model: SDC206/SDC206E</b>	<b>Date: April 14, 1998</b>	<b>No: SDC206/E - 014</b>
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**S     C**

**P     2     2**

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Technical Service Operations – P.O. Box 10270, Stamford, Connecticut 06904 --- (203) 967-5000

**BULLETIN NUMBER: A172/A199 – 001****04/23/98****APPLICABLE MODEL:****GESTETNER 2606/2606E****RICOH Aficio Color 5106/5206****SAVIN SDC206E/SDC206**

The chart listed below shows the Last Bulletin Number issued for the A172/A199 series.

Bulletin Cross Reference	
Ricoh Group Companies	Last Bulletin No.
Gestetner	001
Ricoh	021
Savin	015

**SUBJECT: OPERATION PANEL / OPTICS SECTION****GENERAL:**

The following parts corrections are being issued for all A172/A199 Parts Catalogs.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1721480	A1727357	Operation Panel Lower Cover	1	17	3
A1721471	A1721474	Sheet OP-2	1	17	27
A1721496	A1721499	Sheet	1	17	29

			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1721471	Cap	4	17	40
A1091874	Rear Scanner Bracket (115V)	1	17	31

			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1721503	LCD Harness (A172)	1	17	11
A1721533	LCD Harness (A199)	1	17	11
A1727380	SCU Harness	1	17	19

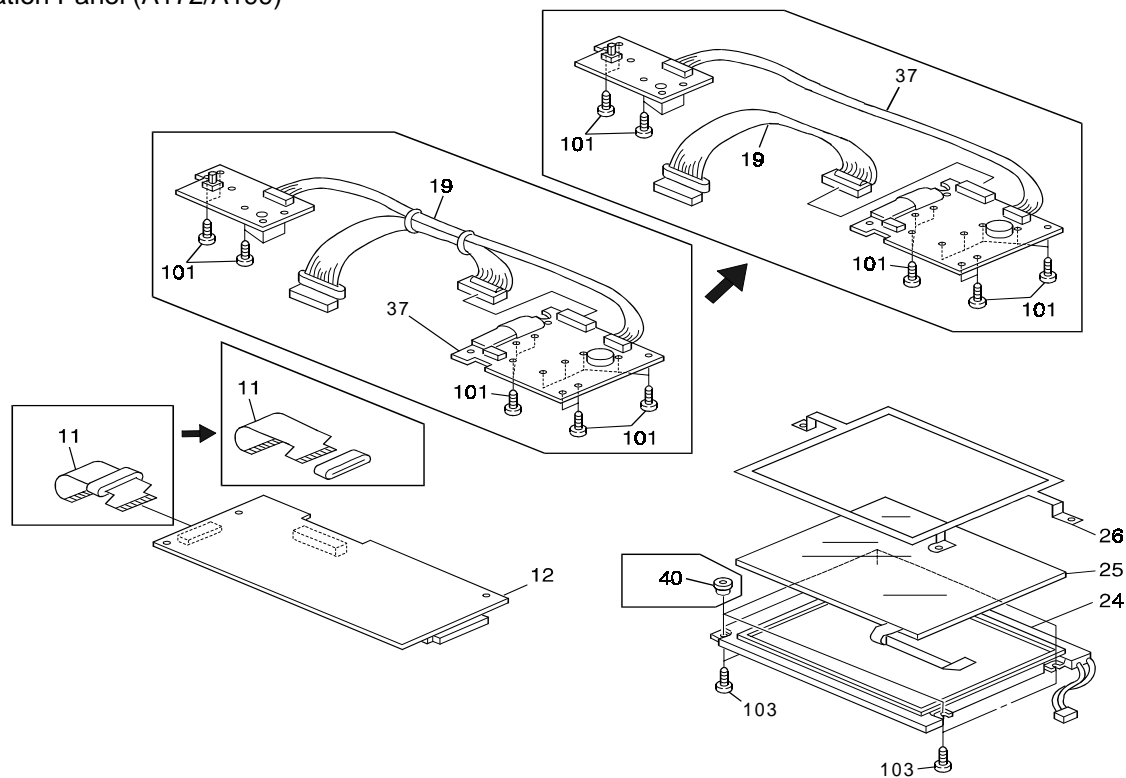
**NOTE:** The LCD Harnesses for the A172/A199 are without a Ferrite Core.  
The SCU Harness is separated from Item 37

Note: This copy intended as master original for reproduction of additional bulletins.

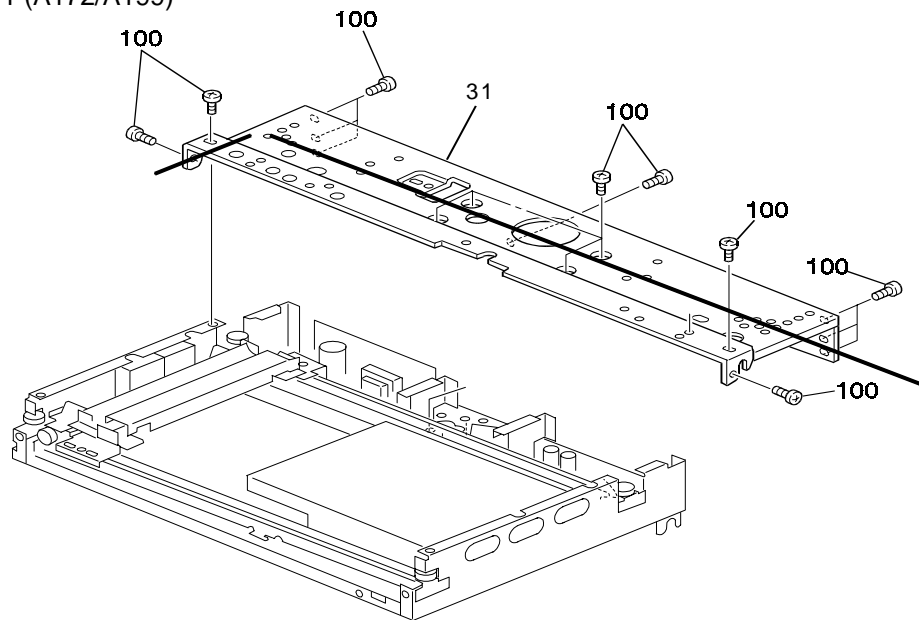


Continued...

Operation Panel (A172/A199)



Optics Section 1 (A172/A199)





**BULLETIN NUMBER: A172/A199 - 002****04/23/98****APPLICABLE MODEL:****GESTETNER 2606/2606E****RICOH Aficio Color 5106/5206****SAVIN SDC206E/SDC206****SUBJECT: IPU MODIFICATION****GENERAL:**

To improve noise suppression the following components have been changed. The part number of the IPU Board has also been changed. The following Parts Corrections are being issued for all A172/A199 Parts Catalogs.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1725242	A1725252	IPU Board	1 - 1		27	7
16303472		Resistor 4.7kohm 1/10w	51 - 50	1	121	176
	16303821	Resistor 820ohm 1/10w (R325)	0 - 1		121	197
		Resistor 6.8kohm 1/16w	1 - 0		121	187
	16343301	Resistor 3.3kohm 1/16w (R326)	0 - 1		121	198
	16061072	Capacitor 100pF 10V	1 - 0		121	199

**UNITS AFFECTED:**

All copiers manufactured after the Serial Number listed below will have the new style Parts installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2606	AB4711XXXX
Gestetner 2606e	AB6711XXXX
Savin SDC206	5A9711XXXX
Savin SDC206E	5A8711XXXX
Ricoh Aficio Color 5106	A7137110001
Ricoh Aficio Color 5206	A7127110001

**INTERCHANGEABILITY CHART:**

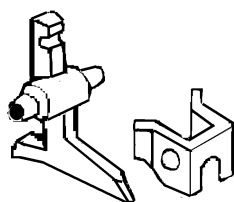
0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts 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 intended as master original for reproduction of additional bulletins.

**PARTS**

**BULLETIN NUMBER: A172/ A199 - 003**
**04/23/98**
**APPLICABLE MODEL:**
**GESTETNER 2606/2606E**
**RICOH Aficio Color 5106/5206**
**SAVIN SDC206E/SDC206**
**SUBJECT: HOT ROLLER DAMAGE**
**GENERAL:**

To prevent jammed paper from damaging the Hot Roller, the Slider Hot Roller Strippers have been modified and Stripper Holders have been added. The following Parts Corrections are being issued for all A172/A199 Parts Catalogs.


**STRIPPER HOLDER**

**PARTS**

Note: This copy intended as master original for reproduction of additional bulletins.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1094204	A1724205	Slider Hot Roller Stripper	1-1	1	79	5
	A1724203	Stripper Holder	0-6		63	1

**NOTE:** We recommend you replace both pieces as a set (i.e.: The Slider Hot Roller Stripper and the Stripper Holder)

**UNITS AFFECTED:**

All copiers manufactured after the Serial Number listed below, will have the new style parts installed during production.

MODEL	SERIAL NUMBER
Gestetner 2606	AB4711XXXX
Gestetner 2606E	AB6711XXXX
Ricoh Aficio Color 5106	A7137100001
Ricoh Aficio Color 5206	A7127110001
Savin SDC206E	5A8711XXXX
Savin SDC206	5A9711XXXX

**BULLETIN NUMBER:** A172/A199 - 004

**05/14/98**

**APPLICABLE MODEL:**

**GESTETNER – 2606E/2606**

**RICOH – Aficio Color 5206/5106**

**SAVIN – SDC206E/SCD206**

**SUBJECT: CYAN TONER SCATTERING IN PRINTER MODE**

**SYMPTOM:**

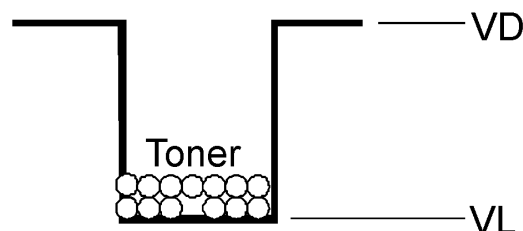
Cyan toner scattered around the text and the edge of solid images in print mode.

**CAUSE:**

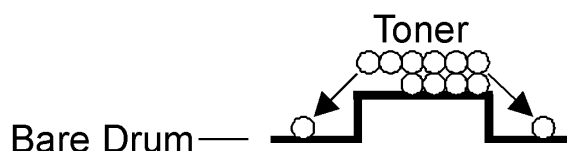
The Pre Transfer Lamp (PTL), which emits red light, is blocked by cyan toner. The electrical potential of the image area does not drop while the potential on the bare drum surface drops. Therefore, some toner is attracted to the bare drum surface. VD drops to the bare drum potential level, however VL does not drop to the same level because the PTL light is blocked by cyan toner (See figure below). The symptom is exhibited when the amount of toner on the drum, Mass Area (M/A), is too large. The symptom is seen only in the print mode since the maximum amount of toner on the drum is higher compared to that of the copy mode.

Note: The A109 has a higher M/A for cyan, therefore the level of cyan toner scattering in the A109 is less than what may be encountered with the A172/A199.

Before PTL Emission



After PTL Emission



**SOLUTION:**

1. The PTL has been changed to emit a stronger red light.
2. The ACC target for the printer mode has been modified to decrease the maximum amount of toner on the drum. The IPU ROM revision G (file name 5206IP1G.exe), can be downloaded through the BBS system.

**NOTE:** For more information about the Ricoh Technical Services BBS, order the Guide To Operation (P/N BBS00001) through normal NSPC Channels.

Continued...



The following part correction are be issued for all Controller Interface Type C (A583) Parts Catalog Sections.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A0305243	A3995243	PTL Lamp	1	3	5

#### UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style PTL Lamp installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2606E	AB67030001
Gestetner 2606	AB4703XXXX
Ricoh Aficio Color 5106	A7137030001
Ricoh Aficio Color 5206	A7127030001
Savin SDC206E	5A87030001
Savin SDC206	5A97030001

**NOTE:** Disconnecting the PTL can eliminate the cyan toner scattering symptom, however magenta toner blasting in 2C mode may occur. This is because the intention of the PTL is to cause minor cyan toner scattering, which will repel the scattered magenta toner.

**BULLETIN NUMBER: A172/A199 - 005**
**05/28/98**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO COLOR 5206/5106**
**SAVIN – SDC206E/SDC206**
**SUBJECT: PAPER EXIT SENSOR**
**GENERAL:**

The Photointerrupter used for the Paper Exit Sensor has been modified to prevent breakage. The new Sensor has the connector affixed to the Sensor PCB by cement. The following part update is being issued for all A172 and A199 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	QTY	INT	PAGE	ITEM
AW020056	A1725420	Photointerrupter	1→1	1	79	25

**UNITS AFFECTED:**

All copiers manufactured after the Serial Numbers listed below will have the new style Photointerrupter installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2606E	AB68020001
Gestetner 2606	AB48020001
Ricoh 5206	A7128020001
Ricoh 5106	A7138010001
Savin SDC206E	5A88010001
Savin SDC206	5A98010001

**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: A172/A199 - 006****06/23/98****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – AFICIO COLOR 5206/5106****SAVIN – SDC206E/SDC206****SUBJECT: COLOR MIS-REGISTRATION****SYMPTOM:**

The copy produced has vertical mis-alignment of colors in the sub-scan direction.

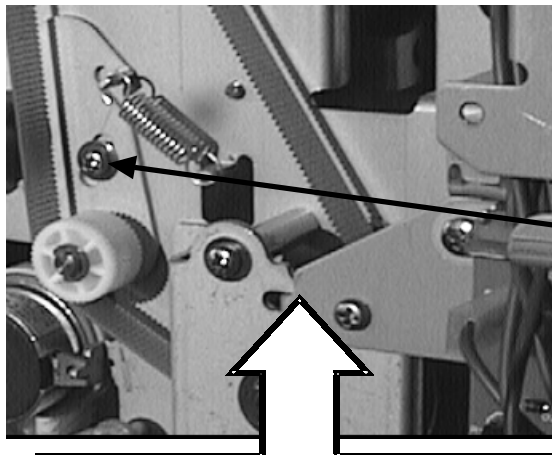
**CAUSE:**

1. The Drive Belt tension is mis-adjusted.
2. The Set Screw for the Transfer Belt Gear is loose.
3. The Pressure Springs (AA063491) have become weak, allowing the Transfer Belt to slip.

**SOLUTION:**

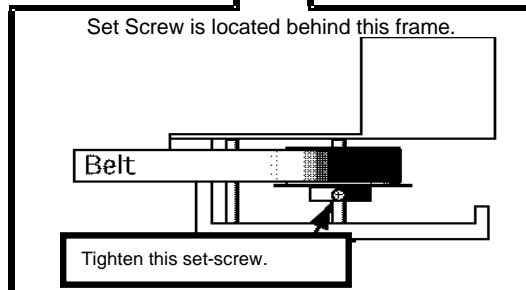
Perform the following steps:

1.



Loosen then tighten this screw to correct the Transfer Drive Belt tension. Replace the Belt if it shows signs of wear.

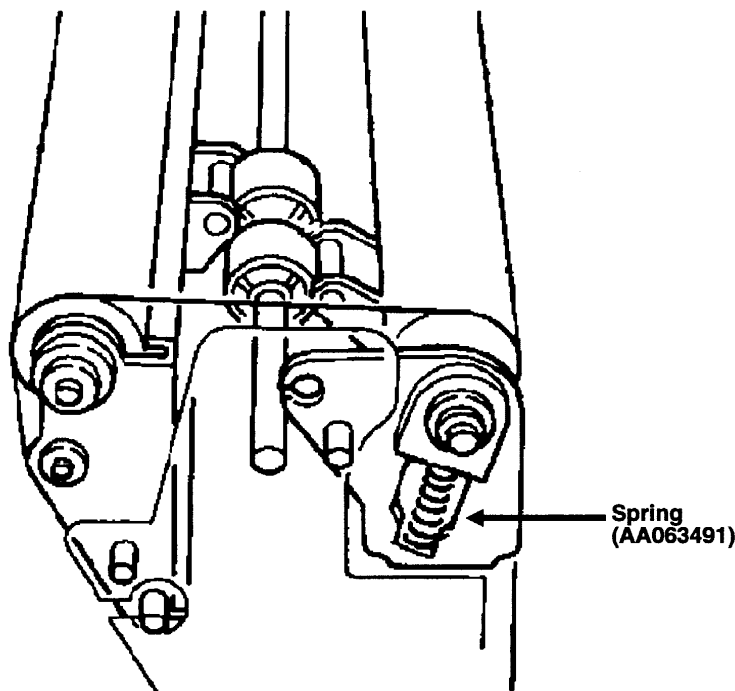
2.



Continued...



3. Replace the Front and Rear Pressure Springs (AA063491)



			REFERENCE	
PART NO.	DESCRIPTION	QTY	PAGE	ITEM
AA063491	Pressure Spring	2	69	21

**TEMPORARY COUNTERMEASURE:**

Carefully stretch the Pressure Springs so they apply more pressure.

**BULLETIN NUMBER: A172/A199 - 007**
**06/25/98**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO COLOR 5206/5106**
**SAVIN – SDC206E/SDC206**
**SUBJECT: LUBRICANT BAR & RELEASE SOLENOID**
**GENERAL:**

The following Parts updates are being issued for all A172 and A199 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	QTY	INT	PAGE	ITEM
A1726305	A2426305	Lubricant Bar	1→1	0	75	35
A1723602	A2423602	Lubricant Bar	1→1	0	51	29
A0966315	A1766315	Release Solenoid	1→1	0	43	11

**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: A172/A199 - 008****07/07/98****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – AFICIO 5206/5106****SAVIN – SDC206E/SDC206****SUBJECT: IMPROVED TONER****GENERAL:**

This bulletin explains about the new Type “J” toner for A172 and A199 copiers. Also provided are the necessary actions to be taken when the old type toner is switched to the new type toner.

**NOTE:** *More detailed information regarding the availability of this product will be announced in the near future.*

**1. Purpose of the new toner**

The chargeability has been stabilized to minimize toner scattering inside the machine and to maintain image density (reduce density fluctuation).

**2. Necessary action when replacing the developer**

For units which have the Vcnt Correction by number of scans switched “On” to compensate for decrease in chargeability (See AFICIO COLOR 5106/5206 – 018 issued 12/22/97 or Savin FEB SDC206/206E-006 issued 10/22/97), the image density may become lower with the new toner since chargeability will be stabilized.

Depending on the type of toner in the toner tank, and the setting of the Vcnt Correction by number of scans, one of the following actions will be required when replacing the developer. The Vcnt Correction by number of scans can be switched “Off” by SP Adjustment P.16 Other Adjustment No.1. The default setting is “Off” (data in SP Mode : 00000).

- a) When installing a new machine using new toner, do not switch “On” the Vcnt Correction by number of scans.
- b) When all the toner in the toner tank unit is new type, check the Vcnt Correction by number of scans and switch “Off” if it is “On”.
- c) When all the toner in the toner tank unit is old type, do not change the setting of Vcnt Correction by number of scans.
- d) When the toner in the toner tank unit is some new type mixed with some old type, do not change the setting of Vcnt Correction by number of scans.
- e) When type of toner in the toner tank unit is unknown, do not change the setting of Vcnt Correction by number of scans.

Continued...



### **3. Troubleshooting procedure for insufficient ID max (or excessive ID max)**

As the new Type “J” toner replaces the old Type “F” toner in the developer, the history of the Vcnt Correction for the old toner remains, therefore the toner density correction may be slightly excessive and result in toner density slightly less than that originally with the old toner. (The opposite may occur if the toner is switched from new type to old type.)

In most cases, a change in image density can be corrected by performing ACC or Printer Calibration, however it may cause a service call depending on the customer.

If insufficient ID max (or excessive ID max) is encountered and the cause is identified as the switching of toner from old type to new type (or from new type to old type) perform the procedure outlined below:

#### **Insufficient ID max**

1. Check the following items.
  - 1.1. The image density remains light, even if the ACC or Calibration is performed.
  - 1.2. Process Control Self-check is set (SP Special Feature page1 Auto Process Control Self-check set to PID), and has been successful. If the Self-check has not been successful, find and correct the cause.
  - 1.3. Vt (TD Sensor Output) does not vary greatly from the Vref (judgement standard  $|Vt - Vref| \leq 0.2V$ ) If Vt varies greatly from Vref, make copies of the C4 test chart until Vt falls within an acceptable standard.
  - 1.4. TC Correction Threshold (SP Special Feature page1) is reset.
  - 1.5. The density of the ACC Pattern 10<sup>th</sup> level is equally as low. (There is no need to run the ACC.)
  - 1.6. Even if the IDmax and the Shadow setting in the printer gamma Correction are adjusted, the image density remains light.
2. If the Vcnt Correction is on (SP Adjustment page 16 No. 1: 00001), switch it “Off” (00000).
3. Change the Vref for the colors with low density from the current Vref - 0.35V. (See Note \*1)  
(On SP Adjustment page 12, input Vref - 0.35 for the Toner Sensor Control Target.)
4. After inputting the value, confirm that the setting has been changed by looking at the SP Data Output for page 1 on the display. (See Note \*2)
5. After the adjustment, watch the Vt on the SP Data Output page1 display and make copies of the C-4 test chart (A3/FC mode, approx. 10 copies) until the Vt stabilizes at  $|Vref - Vt| \leq 0.2V$ . (See Note \*3)
6. If the ID max is still insufficient, set SP Adjustments page 4, Toner Max M/A target(s) to 1.3.
7. If necessary, perform the ACC and the Printer Gamma Adjustment.

#### **Excessive ID max**

1. Check the following items.
  - 1.1. Even if the ACC or Calibration is done, the image density remains dark.
  - 1.2. Process Control Self-check is set, and has been successful. If the Self-check has not been successful, find and correct the cause.
  - 1.3. The TD Sensor Output Vt does not vary greatly from the Vref. (Standard  $|Vt - Vref| \leq 0.2V$ ) If Vt varies greatly from Vref, make copies of C4 test chart until Vt falls within an acceptable standard.
  - 1.4. The density of the ACC Pattern 10<sup>th</sup> level is equally as dark. (There is no need to run the ACC.)
  - 1.5. Even if the IDmax and the Shadow setting in the printer gamma Correction are adjusted, the image density remains dark.
2. Change the Vref for the colors with high density from the current Vref + 0.35V. (On SP Adjustment P. 12, input Vref + 0.35V for the Toner Sensor Control Target.) (See Note \*1)
3. After inputting the value, confirm that the setting has changed by looking at the SP Data Output Page 1 on the display. (See Note \*2)
4. For the affected colors, make five A3 sky shot copies (ten copies for A4). (See Note \*3)
5. After the adjustment, watch the Vt on the SP Data Output P.1 display and make copies of the C-4 chart (A3/FC mode, approx. 10 copies) until the Vt stabilizes at  $|Vref - Vt| \leq 0.2V$ .
6. Wait 5 minutes, then perform the process control Self-check.
7. If necessary, perform the ACC and the Printer Gamma Adjustment.

Continued...

**NOTES:**

- (\*1) If the input value is the same as the Toner Sensor Control Target, raise or lower the input value by 0.01V. (If the value input is the same as that indicated, then the adjustment is not recognized.)
- (\*2) The value displayed may be 0.01~0.02 V less than that input. If the Vref value is lower than 2.15V or higher than 2.85V, it will automatically be adjusted to 2.15V (lower level) or 2.85V (higher level) after copies have been made.
- (\*3) The machine may enter the forced toner supply mode when copies are being made but please wait until it finishes.

**Remarks**

- (1) In cases when the machine condition is poor (such as process control does not succeed or the developer gamma is more than 5), replace the developer and follow the “Necessary action when replacing the developer” procedure reflected in this bulletin.
- (2) For machines connected to a controller, perform Calibration as necessary.
- (3) If the toner max M/A target (SP Adjustment page 4) is changed, reset it to the default setting (1.0 mg/cm<sup>2</sup>) before performing any of the provided procedures.

**4. Identification of new toner**

Company	Toner Name
Ricoh	Ricoh Color Toner Type J Black
	Ricoh Color Toner Type J Yellow
	Ricoh Color Toner Type J Magenta
	Ricoh Color Toner Type J Cyan
Savin / Gestetner	SVN SC106/SDC206 BLK Type J
	SVN SC106/SDC206 YLW Type J
	SVN SC106/SDC206 MAG Type J
	SVN SC106/SDC206 CYN Type J

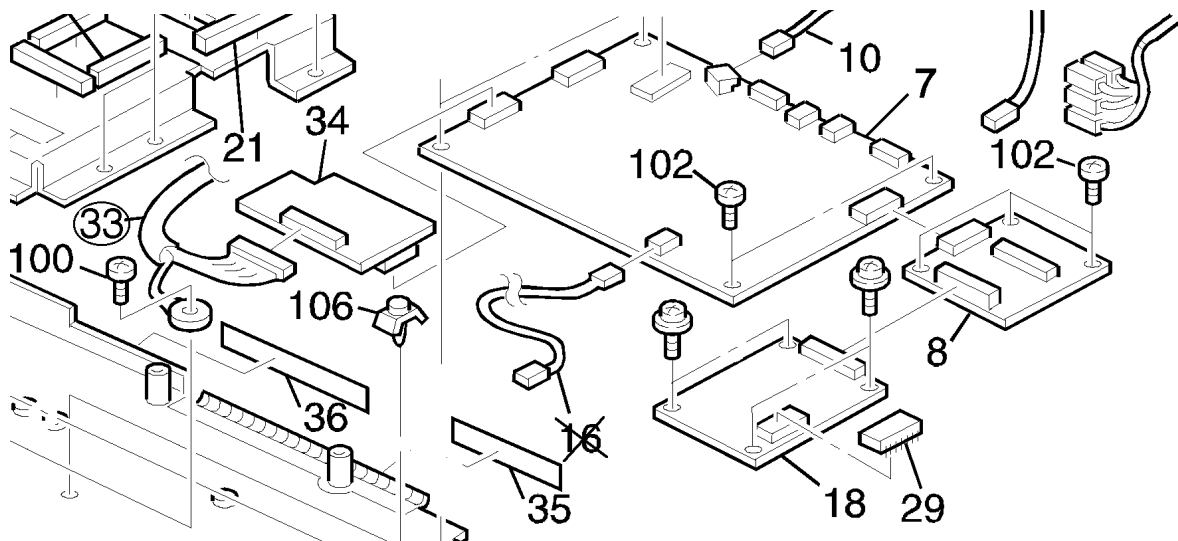
The new Type toner “J” was implemented for Savin beginning with the April, 98 production, however the cartridge graphics and product codes were not changed until the June production. The April and May productions which is the Type “J” toner, is identified / differentiated with a red lot number printed on the cartridge carton. See the following chart for details on toner identification:

Gestetner/Savin TONER PRODUCT CODE				Ricoh TONER PRODUCT CODES		
Toner Color	Type “F” Current	Type “J” (April/May) Red Lot #	Type “J” June and onward	Type “F” Current	Type “J” (April/May) Red Lot #	Type “J” June and onward
Black	5221	5221	5242	889755	889755	887813
Yellow	5222	5222	5243	889756	889756	887814
Magenta	5223	5223	5244	889757	889757	887815
Cyan	5224	5224	5245	889758	889758	887816

**BULLETIN NUMBER: A172/A199 - 009**
**07/22/98**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO COLOR 5206/5106**
**SAVIN – SDC206E/SDC206**
**SUBJECT: OPERATION PANEL HARNESS – IPU 2 / IPU HARNESS**
**GENERAL:**

The Operation Panel Harness – IPU 2 was incorrectly indexed as number 16 and should be 33. The IPU Harness was indexed 33 and should have been number 16. Please note that the IPU Harness (revised index 16) has been discontinued. The IPU Harness had been used in production to facilitate adjustment.

The following parts corrections are being issued for all A172 and A199 Parts Catalogs.



PART NUMBER	DESCRIPTION	QTY	REFERENCE		
			PAGE	WRONG ITEM	CORRECT ITEM
A1725393	Operation Panel Harness – IPU 2	1	27	16	33
A1725326	IPU Harness	1→0	27	33	16 *

\* The IPU Harness (Item 16) has been discontinued.

Note: This copy is intended as a master original for reproduction of additional bulletins.



■ PARTS

**BULLETIN NUMBER: A172/A199 - 010**
**07/22/98**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO COLOR 5206/5106**
**SAVIN – SDC206E/SDC206**
**SUBJECT: IPU BOARD ROM**
**GENERAL:**

The IPU Board ROM has been modified. The following is a description of the changes to the ROM.

The Dither Processing method for Printer Mode has been modified to improve jagged image (the outline of characters is not straight) and reproduction of fine straight lines in the sub scan direction.

Current Dither Processing in Printer Mode

In Printer Mode, 2 x 1 dot Dither Processing is always used. This Dither Processing was originally designed to attach more importance to gradation than resolution. It evaluates the video signal level of the two pixels next to each other and converts the data as follows:

	Original Data	Printed Data
Video data in the left pixel	Any	Doubled data is printed
Video data in the right pixel	Data ≤ 128	No data is printed
	Data > 128	(Data – 128) x 2 is printed

**NOTE:** Maximum printed data is 255.

With the current Dither Processing method, it is possible that the data in the right pixels are lost, resulting in a jagged image or fine lines in the sub scan direction are not reproduced.

New Dither Processing in Printer Mode

With the new IPU ROM, Dither Processing in Printer Mode has been changed as follows:

	Original Data	Printed Data
Video data in the left pixel	Data ≤ 32	Doubled data is printed
	Data > 32	Original data + 32
Video data in the right pixel	Data ≤ 32	No data is printed
	Data > 32	Original data – 32 is printed

**NOTE:** Maximum printed data is 255.



■ PARTS

Note: This copy is intended as a master original for reproduction of additional bulletins.

Continued...

**Example**

Video data before Dither Processing

120	115	110	118	125	130	
125	118	113	120	130	135	
128	120	117	123	132	139	

Video data after current Dither Processing

240	0	220	0	250	4	
250	0	226	0	255	14	
255	0	234	0	255	22	

Video data after new Dither Processing

152	83	142	86	157	98	
157	86	145	88	162	103	
160	88	149	91	164	107	

The following part update is being issued for all A172 and A199 Parts Catalogs.

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1725207G	A1725207H	IC – UVEPROM 4M X16 120NS	-	121	12

The IPU Board ROM revision H (file name 5206IP1H.EXE) can be downloaded through the Ricoh Technical Services BBS.

**NOTE:** For more information about the Ricoh Technical Services BBS, order the Guide to Operation (P/N BBS00001) through normal NSPC channels.

**UNITS AFFECTED:**

All copiers manufactured after the Serial Numbers listed below will have the new style IPU Board ROM installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2606E	AB6805xxxx
Gestetner 2606	AB4805xxxx
Ricoh Aficio Color 5206	A712804xxxx
Ricoh Aficio Color 5106	A713805xxxx
Savin SDC206E	5A88040001
Savin SDC206	5A9805xxxx

**BULLETIN NUMBER: A172/A199 - 011****07/27/98****APPLICABLE MODEL:****GESTETNER - 2606E/2606****RICOH - AFICIO COLOR 5206/5106****SAVIN - SDC206E/SDC206****SUBJECT: SC321 USING FIERY & MISFEEDS FROM BYPASS****SYMPTOM:**

1. Intermittent SC321 codes only when in Printer Mode (using Fiery).
2. Paper is misfed from bypass table with A3 paper, ACS mode, and second side of duplex copy.

**CAUSE:**

1. Electrical noise interfering with the Transfer Belt start signal.
2. The paper buckle at the Registration Rollers becomes smaller due to the stiffness of paper. During this period, the copy paper fed from the bypass table waits to start. This means that if stiff paper waits longer at the Registration Rollers, the buckle will become smaller.

The problem occurs only with the ACS mode, bypass feed, A3 paper and second side of duplex copy, for the following reasons:

1. ACS mode and bypass feed  
In the ACS mode, copy paper starts to be fed toward the Registration Rollers when the development process starts. This is because the paper from the bypass table must meet the earlier registration start timing of black and white copy. The waiting time for paper at registration for a full color copy is longer than that for a black and white copy.
2. Paper  
The development time with A3 paper is longer than with A4 paper side ways.  
This means that the waiting time for A3 paper is longer than that of A4 paper.
3. Second Side of Duplex Copy  
When the second side is copied, the paper has already passed the fusing section. The paper with silicone oil from the fusing section makes the friction between the feed and reverse roller less. This means that the paper slips between the two rollers easier than the paper without silicone oil.

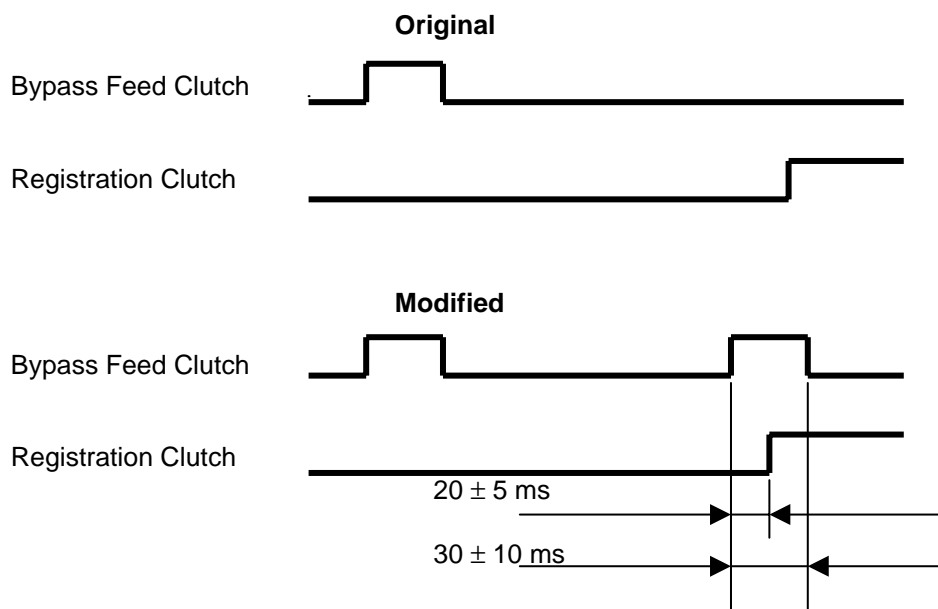
**SOLUTION:**

1. Improved software timing tolerance to avoid electrical interference.
2. The software has been changed as shown in the diagrams below. These changes ensure that paper is fed through the Registration Rollers even if the paper buckle is small.

**FIRMWARE**

Note: This copy is intended as a master original  
for reproduction of additional bulletins.

Continued...



## GENERAL:

The following parts updates are being issued for all A172 and A199 Parts Catalogs.

					REFERENCE	
PART NO.	DESCRIPTION	OLD SUFFIX	NEW SUFFIX	QTY	PAGE	ITEM
A1725114	IC Main Control 10	E	F	1	99	27
A1725115	IC Main Control 20	E	F	1	99	28
A1725129	IC Main Control 30	E	F	1	99	4

The IC Main Control ROM's revision F (file name 5206321F.EXE) can be downloaded through the Ricoh Technical Services BBS. These ROM's can also be ordered through normal NSPC channels.

**NOTE:** For more information about the Ricoh Technical Services BBS, order the Guide to Operation (P/N BBS00001) through normal NSPC channels.

## UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new style IC Main Control ROM's installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2602E	AB68030001
Gestetner 2606	AB48030001
Ricoh Aficio Color 5206	A7128030001
Ricoh Aficio Color 5106	A7138020001
Savin SDC206E	5A88020001
Savin SDC206	5A98030001



**BULLETIN NUMBER: A172/A199 - 012**

**08/13/98**

**APPLICABLE MODEL:**

**GESTETNER – 2606E/2606**  
**RICOH – AFICIO COLOR 5206/5106**  
**SAVIN – SDC206E/SDC206**

**SUBJECT: BANDING TROUBLESHOOTING GUIDE**

**Scope:**

This Technical Service Bulletin was designed to assist in quick identification and resolution of operator to non-operator direction banding. This Technical Service Bulletin is divided into 3 sections. See below:

1. **Random Banding:** Bands can appear in random areas of the copy/print and can be random widths.
2. **Fixed Banding:** Band will appear only in one specific area measured from the lead edge of the copy/print.
3. **Pitch Banding:** Bands appear on the entire length of the copy/print and are the same width and the same distance apart.

**RANDOM BANDING:**

**Possible Causes**

1. Discharge Rollers in Transfer Belt Unit is not grounded.
2. Poor Drum Ground.
3. Transfer Belt receptacle (AD021103) random HV leak.
4. Transfer Roller receptacle (AD021095) Random HV leak.
5. Transfer belt drive coupling is loose.
6. Transfer belt drive coupling.
7. The inside of the Transfer Belt is dirty.
8. Dirty Transfer Unit Drive Rollers.
9. Improper timing pulley tension (AB030445).
10. The timing pulley is binding.
11. The Tightener Bracket is bent.
12. Transfer Roller Bias is improperly set.
13. The Transfer Roller is worn.

**Possible Solutions**

1. Replace Bushings (AA084044) or Ball Bearings (08053482). Check resistance from Discharge Roller to frame.
2. Reform internal Drum Ground Contacts/Replace Drum Shaft Holder (A1094653).
3. \*Insufficient or too much conductive grease/receptacle failure.
4. \*Insufficient or too much conductive grease/receptacle failure.
5. Tighten the set screw on the Transfer Belt Unit drive coupling.
6. Spring-loaded area is bound and not engaging properly.
7. Clean the inside of the Transfer Belt.
8. Clean Transfer Belt Unit Drive Rollers.
9. Loosen then tighten the pulley set screw. (allows the spring to set the tension)
10. Lube timing pulley (AB030445) or replace.
11. Replace the Tightener Bracket (A1094676).
12. Set Transfer Roller voltage as per factory data sheet.
13. Replace the Transfer Roller (A1096200).

**\* NOTE:** Do not put conductive grease in the receptacles.

Only put a small amount of conductive grease on the end of the Transfer Rollers/Sleeve Rollers.

Continued...



**Fixed Banding:**

**Possible Causes**

1. 270 mm from the lead edge.
2. 320 mm from the lead edge.

**Possible Solutions**

1. Replace the gear 80z Drum Drive Gear (AB013912).
2. Replace the Transfer Belt Drive Motor.

**Pitch Banding:**

**Possible Causes**

1. 0.8 mm
2. 0.9 ~1.25
3. 1.4 mm
4. 1.9 mm
5. 15 mm
6. 20 mm
7. 30 mm
8. 375 mm

**Possible Solutions**

1. Laser Path Mirror (A1092131) vibration.
2. OPC Cleaning Unit vibration, possible solutions below:  
Replace A1093647 - gear 16/17z worn  
Replace A1093616 – gear 16z worn  
Replace A1093646 – gear 16z worn  
Replace A1093615 – Cleaning Brush Bushing worn
3. Correct the Transfer drive timing belt tension.
4. Replace the Bias Roller Idle gear (A1093616).
5. Gear 80z Drum Drive Gear (AB013912).
6. Cleaning Brush Rotation problem.
7. Replace the Gear 80z Drum Drive Gear (AB013912).
8. Replace the OPC drum.

**APPLICABLE MODEL:**

**GESTETNER – 2606E/2606**  
**RICOH – AFICIO COLOR 5206/5106**  
**SAVIN – SDC206E/SDC206**

**SUBJECT: BANDING TROUBLESHOOTING GUIDE**

**Scope:**

This Technical Service Bulletin was designed to assist in quick identification and resolution of operator to non-operator direction banding. This Technical Service Bulletin is divided into 3 sections. See below:

1. **Random Banding:** Bands can appear in random areas of the copy/print and can be random widths.
2. **Fixed Banding:** Band will appear only in one specific area measured from the lead edge of the copy/print.
3. **Pitch Banding:** Bands appear on the entire length of the copy/print and are the same width and the same distance apart.

**RANDOM BANDING:**

**Possible Causes**

1. Discharge Rollers in Transfer Belt Unit is not grounded.
2. Poor Drum Ground.
3. Transfer Belt receptacle (AD021103) random HV leak.
4. Transfer Roller receptacle (AD021095) Random HV leak.
5. Transfer belt drive coupling is loose.
6. Transfer belt drive coupling.
7. The inside of the Transfer Belt is dirty.
8. Dirty Transfer Unit Drive Rollers.
9. Improper timing pulley tension (AB030445).
10. The timing pulley is binding.
11. The Tightener Bracket is bent.
12. Transfer Roller Bias is improperly set.
13. The Transfer Roller is worn.

**Possible Solutions**

1. Replace Bushings (AA084044) or Ball Bearings (08053482). Check resistance from Discharge Roller to frame.
2. Reform internal Drum Ground Contacts/Replace Drum Shaft Holder (A1094653).
3. \*Insufficient or too much conductive grease/receptacle failure.
4. \*Insufficient or too much conductive grease/receptacle failure.
5. Tighten the set screw on the Transfer Belt Unit drive coupling.
6. Spring-loaded area is bound and not engaging properly.
7. Clean the inside of the Transfer Belt.
8. Clean Transfer Belt Unit Drive Rollers.
9. Loosen then tighten the pulley set screw. (allows the spring to set the tension)
10. Lube timing pulley (AB030445) or replace.
11. Replace the Tightener Bracket (A1094676).
12. Set Transfer Roller voltage as per factory data sheet.
13. Replace the Transfer Roller (A1096200).

**\* NOTE:** Do not put conductive grease in the receptacles.

*Only put a small amount of conductive grease on the end of the Transfer Rollers/Sleeve Rollers.*

Continued...

Note: This copy is intended as a master original for reproduction of additional bulletins.



■ COPY QUALITY

**Fixed Banding:**

**Possible Causes**

1. 270 mm from the lead edge.
2. 320 mm from the lead edge.

**Possible Solutions**

- ★ 1. Replace the gear 112Z Drum Drive Gear (AB030527).
2. Replace the Transfer Belt Drive Motor.

**Pitch Banding:**

**Possible Causes**

1. 0.8 mm
2. 0.9 ~1.25
3. 1.4 mm
4. 1.9 mm
5. 15 mm
6. 20 mm
7. 30 mm
8. 375 mm

**Possible Solutions**

1. Laser Path Mirror (A1092131) vibration.
2. OPC Cleaning Unit vibration, possible solutions below:  
Replace A1093647 – gear 16/17Z worn  
Replace A1093616 – gear 16Z worn  
Replace A1093646 – gear 16Z worn  
Replace A1093615 – Cleaning Brush Bushing worn
3. Correct the Transfer drive timing belt tension.
4. Replace the Bias Roller Idle gear (A1093616).
- ★ 5. Gear 112z Drum Drive Gear (AB030527).
6. Cleaning Brush Rotation problem.
- ★ 7. Replace the Gear 112Z Drum Drive Gear (AB030527).
8. Replace the OPC drum.

**BULLETIN NUMBER: A172/A199 - 013****08/27/98****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – AFICIO COLOR 5206/5106****SAVIN – SDC206E/SDC206****SUBJECT: COPY QUALITY LEAD TO TRAIL EDGE LINES****SYMPTOM:**

Lines lead to trail edge on the copy.

**CAUSE:**

Normal wear of mechanical parts.

**SOLUTION:****COMMON CAUSES IDENTIFIED VIA THE HOTLINE:**

Inspect the following parts for wear and replace or adjust if necessary:

1. Drum Lubricant Bar.
2. Transfer Belt Lubricant Bar.
3. Transfer roller Lubricant Bar.
4. Transfer Roller Cleaning Blade.
5. Transfer Belt Cleaning Blade.
6. Transfer Roller.
7. Drum Cleaning Blade.
8. Drum.
9. Transfer Belt Lubricant Bar Solenoid tension excessive.
10. Transfer Belt Cleaning Unit Lower Mylar Linkage is binding.

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■ COPY QUALITY

**BULLETIN NUMBER: A172/A199 - 014****08/27/98****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – AFICIO COLOR 5206/5106****SAVIN – SDC206E/SDC206****SUBJECT: OPERATION PANEL DISPLAYS METRIC SIZES****SYMPTOM:**

Operation panel displays metric paper sizes.

**CAUSE:**

The Length Unit has been improperly set.

**SOLUTION:**

1. Enter Service Program Modes.
2. Select SP Special Features, Page (9) Nine.
3. Change the length Unit setting from millimeters to inches.
4. Turn the machine "Off" and then "On".

**Note:** This copy is intended as a master original  
for reproduction of additional bulletins.



■ **ELECTRICAL**

**BULLETIN NUMBER: A172/A199 - 015**

**08/27/98**

**APPLICABLE MODEL:**

**GESTETNER – 2606E/2606**

**RICOH – AFICIO COLOR 5206/5106**

**SAVIN – SDC206E/SDC206**

**SUBJECT: OPC DRUM LINES**

**SYMPTOM:**

Premature Drum and / or Drum Cleaning Blade wear.  
Copy Quality Symptom: Lines lead to trial edge on the copy.

**CAUSE:**

Incorrect drum cleaning blade and / or OPC Drum installed.

Due to differences in OPC and Cleaning Blade materials used in the A109 and A172/A199 machines, the following parts numbers should only be used with the corresponding model machines.

**SOLUTION:**

**A109 machines only use: Drum P/N A1099510 with  
Cleaning Blade P/N A1093598 & Cleaning Brush P/N A1093603.**

**A172/A199 machines only use: Drum P/N A1729510 with  
Cleaning Blade A1723598 & Cleaning Brush P/N A1723601.**

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■ COPY QUALITY

**BULLETIN NUMBER: A172/A199 - 016****09/25/98****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – AFICIO COLOR 5206/5106****SAVIN – SDC206E/SDC206****SUBJECT: A172/A199 SERVICE TIPS****SCOPE:**

In our continuing effort to assist field technicians in resolving service-related issues, TSC is providing the attached A172/A199 Service Tips.

This information will assist you to quickly isolate possible causes of copy quality related service calls and as a result decrease unnecessary parts replacement.

The data / measurements provided are not factory Specifications, but reflect the average voltage measured on several test units.

The Service Tips are divided into the following sections:

- Checking Drum Ground
- Confirming Charge Current
- Confirming Charge Grid Voltage
- Charge Grid PWM Check Procedure
- Development Check Points
- Confirming Development Bias Voltage
- Transfer Belt Area
- Confirming Transfer Belt Bias Voltage
- Confirming Transfer Roller Bias Voltage
- Paper Feed Check Points
- Fusing Unit Check Points

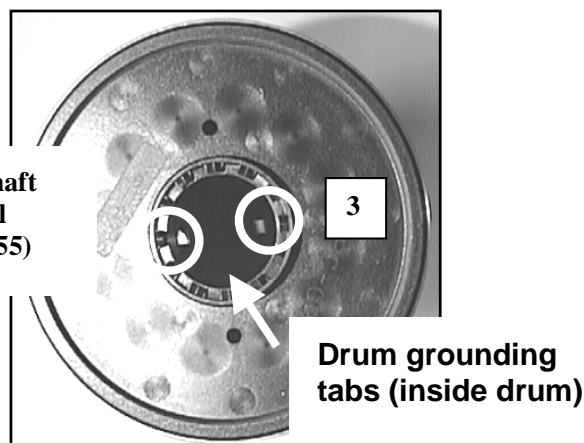
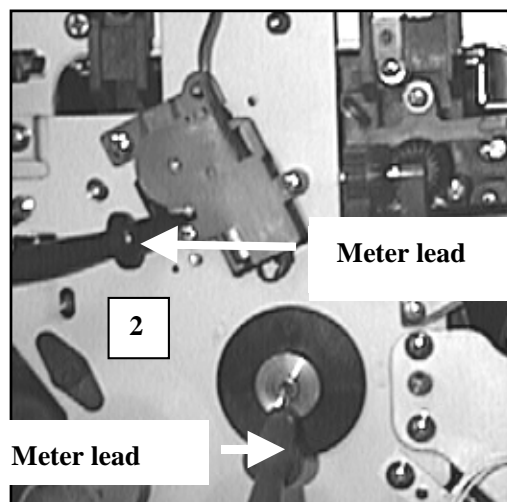
**MECHANICAL****ELECTRICAL****COPY QUALITY**

Note: This copy is intended as a master original  
for reproduction of additional bulletins.

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## • Checking Drum Ground



1. **Confirm that the Drum Shaft is grounded:** Set your meter to the 200VDC Scale and check if there is voltage present on the Drum Shaft during a copy cycle. A normal reading is less than .5 VDC.
2. If you are reading more than .5 volts at the Drum Shaft, then take a voltage reading at CN BP (#4 above) on the High Voltage Supply Board – B. If this reading is more than .5 volts, then replace the High Voltage Supply Board – B. If this reading is less than .5 volts then check and or replace the Drum Shaft Holder and or the Drum Shaft Terminal.
3. **Confirm that the drum is grounded to the Drum Shaft:** Set your meter to the 20 $\Omega$  Scale and check resistance between the drum shaft and the edge of the drum (exposed metal). A normal reading is 5 $\Omega$  or less. If this reading is more than 5 $\Omega$  then clean and or reform the Drum Grounding tabs (#3 above).

**NOTE1:** To avoid copy quality symptoms, check that the drum is properly grounded every other PM.

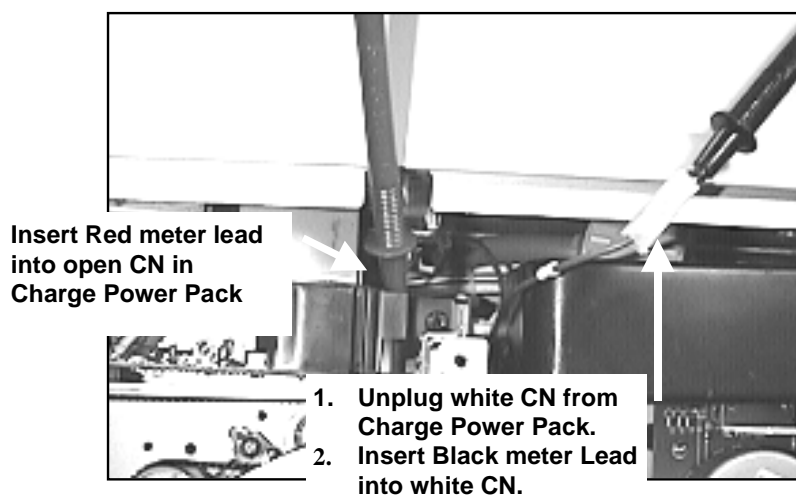
**NOTE2:** To avoid copy quality symptoms, make sure you replace the drum lubricant bar (A1723602) at 40k scans.

Continued...

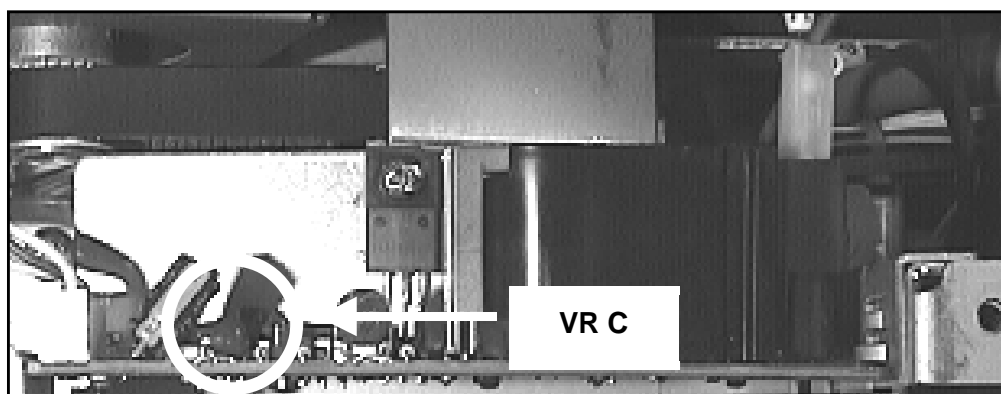
## • Confirming Charge Current



1. Set up a meter to read current and connect it in series as pictured below.



2. Make one single color (Black) copy and observe that the meter indicates approximately 450 $\mu$  amps. (700 $\mu$  amps. for A109 machine)
3. If adjustment is required, adjust VR C as pictured below:



If the adjustment cannot be achieved, replace the following:

1. DC Power Pack - C\G - AZ300042.
2. Charge Corona Unit - AD004087.
3. Charge Corona Receptacle - A1092300.

Continued...

• **Confirming Charge Grid Voltage**



**CAUTION HIGH VOLTAGE ! Use caution when working in this area**

Do not touch the meter, meter leads, or allow the leads to touch frame ground

- 1. Enter SP Mode Special Features, page 1
- 2. Turn Process control OFF, by selecting RESET, under Auto Process Control Self Check as illustrated below:

SP MODES	Copy in SP	Index
<Menu> Select function or item		
<4> SP Special Feature Auto Process Control self check		
<div>SELECT RESET</div>		
<div>PIDReset</div>		

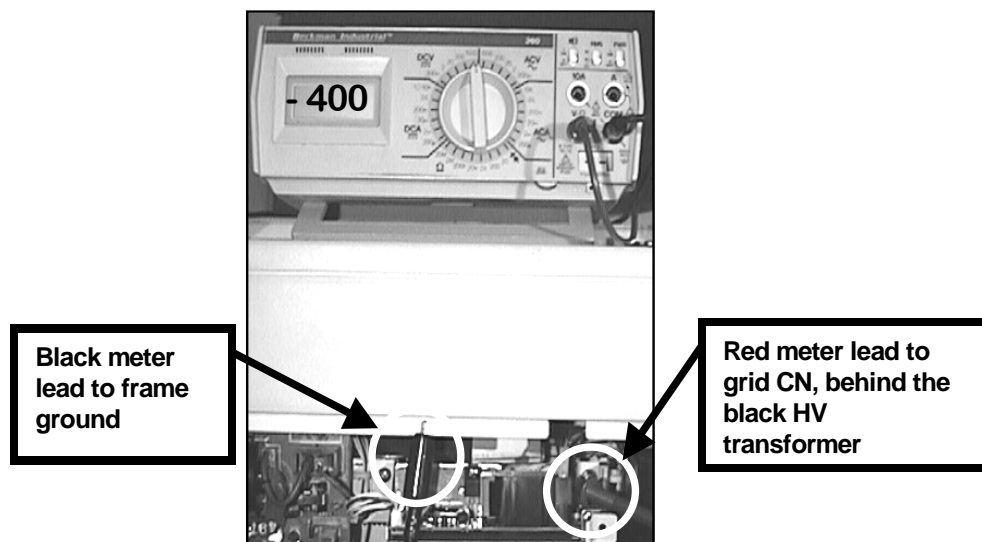
- 3. Enter SP Mode Adjustment page 4 Setting for P-con OFF Mode. Note the original setting of BK under the VG column, then set it to -400 volts as illustrated below:

**NOTE:** Setting VG to a level other than -400, can cause an incorrect adjustment.

SP MODES	Copy in SP	Index
<Menu> Select function or item		
<1> SP Adjustment Setting for P-con OFF Mode		
	VG	VB
BK	-400	
Y		
M		

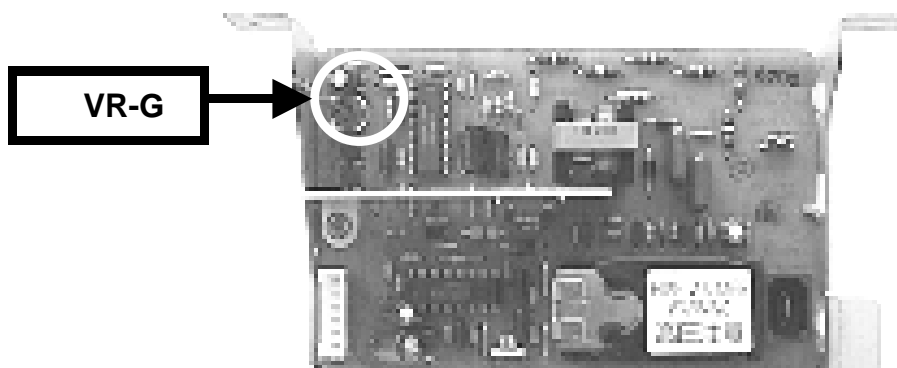
Adjust BK to - 400 volts

4. Connect a meter, black lead to frame ground, red lead to the grid connector on the C/G Power Pack. Set the meter to read DC voltage greater than 400 volts as pictured:



5. Make a single color (black) copy and observe that the meter indicates -400 volts.
6. If adjustment is required, adjust VR G on the C/G Power Pack as pictured below.

**NOTE:** It is necessary to slightly / reposition the C/G Power Pack to adjust this VR.

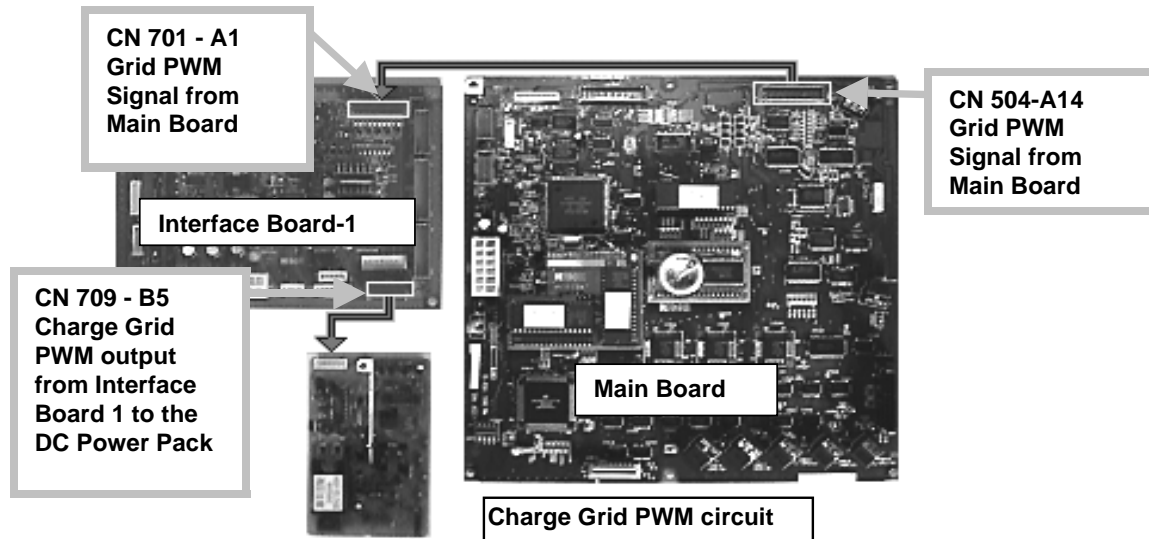


When adjustment is complete, reset all SP modes to previous settings (Auto Process Control to “PID” & VG for Black to original setting).

**NOTE:** If the adjustment cannot be achieved, leave the SP setting as specified on the first page of this procedure (confirming charge grid) and proceed to the next page for checking the Grid PWM signal.

Continued...

## • Charge Grid PWM Check Procedure



**NOTE:** Before proceeding with these checks, confirm that the SP Modes are set as specified on page 4 of 17 and set your meter to greater than 5VDC.

1. Check CN 504 - A14, on the Main Board for approximately 5.02 volts while making a single color (black) copy. If the voltage is not within this range, replace the Main Board. If this check is normal, proceed to the next step.
2. Check CN 701 - A1, on Interface Board - 1 while making a single color (black) copy. Confirm that the voltage level is approximately the same voltage as above (5.02VDC). If the voltage is not within this range, replace or repair the harness between the Main Board and Interface Board - 1. If this check is normal, proceed to the next step.
3. Check CN 709 - B5 on Interface Board - 1 while making a single color (black) copy confirm that the voltage level is approximately the same voltage as above (5.02VDC). If the voltage is not within this range, replace Interface Board - 1

**NOTE:** -400 to -800 is provided to illustrate PWM range

VG Set To	PWM at CN 504 - A14 CN 701 - B5 CN 709 - B5
-400	5.02
-500	4.13
-600	3.29
-700	2.46
-800	1.62

**NOTE:** If one of the components above is found defective, replace the part then confirm Charge Grid voltage by following the procedure on page 4 of 17 and page 5 of 17 (Confirming Charge Grid).

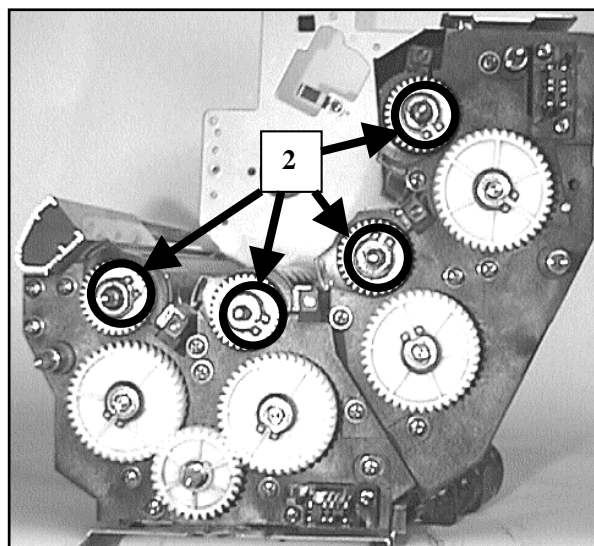
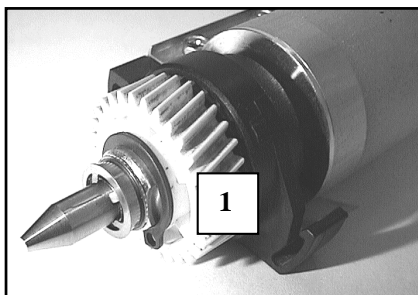
When adjustment is complete, reset all SP modes to previous settings (Auto Process Control to "PID" & VG for Black to original setting).

If the indicated voltage cannot be achieved, replace the following parts:

1. DC Power Pack - C\G - AZ300042.
2. Charge Corona Unit - AD004087.
3. Charge Corona Receptacle - A1092300.

Continued...

## ● Development Check Points



1. **Magenta Banding** – Install the Ball Bearing 6x10x3 (08053496) as shown, on the magenta sleeve roller bias pin.
2. **Poor copy quality** - Apply conductive grease KS660 SHIN-ETSU (G0049668) to the sleeve Roller bias pins. Do not apply the conductive grease into the HV receptacles.
3. **When vacuuming the Development Units** – Hold the development unit casing to avoid damaging the TD sensors. Do this or remove the sensors.
4. **To avoid damaging the TD sensors** - Ensure that all filters are replaced at the recommended PM interval. Clogged filters cause the temperature to increase around the TD sensors and can result in erratic TD sensor operation.

Continued...

• **Confirming Development Bias Voltage**



- 1. Enter SP Mode Special Features, page 1.
- 2. Turn Process control OFF, by selecting RESET, for Process Control Self Check as illustrated below:

SP MODES	Copy in SP	Index
<Menu> Select function or item		
<4> SP Special Feature Auto Process Control Self check		PAGE
PID	Reset	

An arrow points from a box labeled "Select reset" to the "Reset" button.

- 3. Enter SP Mode Adjustment page 4 Setting for P-con OFF Mode.

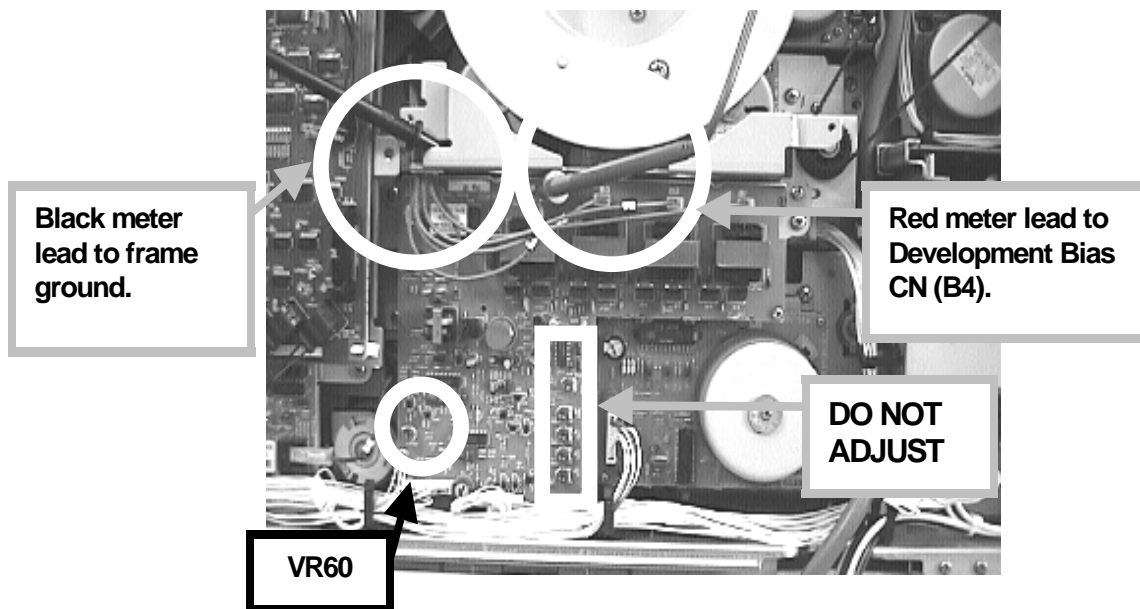
**NOTE:** The original setting of BK under the VB column, then set it to -400 volts as illustrated below:

SP MODES	Copy in SP	Index	
<Menu> Select function or item			
<1> SP Adjustment Setting for P-con OFF Mode		PAGE 4	
	VG	VB	LD
BK	xxx	-400	xxx
Y	xxx	xxx	xxx
M	xxx	xxx	xxx
C	xxx	xxx	xxx

An arrow points from a box labeled "Adjust to - 400 volts" to the "-400" value in the VB column for BK.

Continued...

1. Connect a meter as pictured and set it to read greater than 400 volts DC voltage.
2. Make a single color (black) copy and observe that your meter indicates -400 volts.
3. If adjustment is required, adjust VR60.



**NOTE: When Adjustment Is Complete, Reset All SP Modes To Previous Settings.**

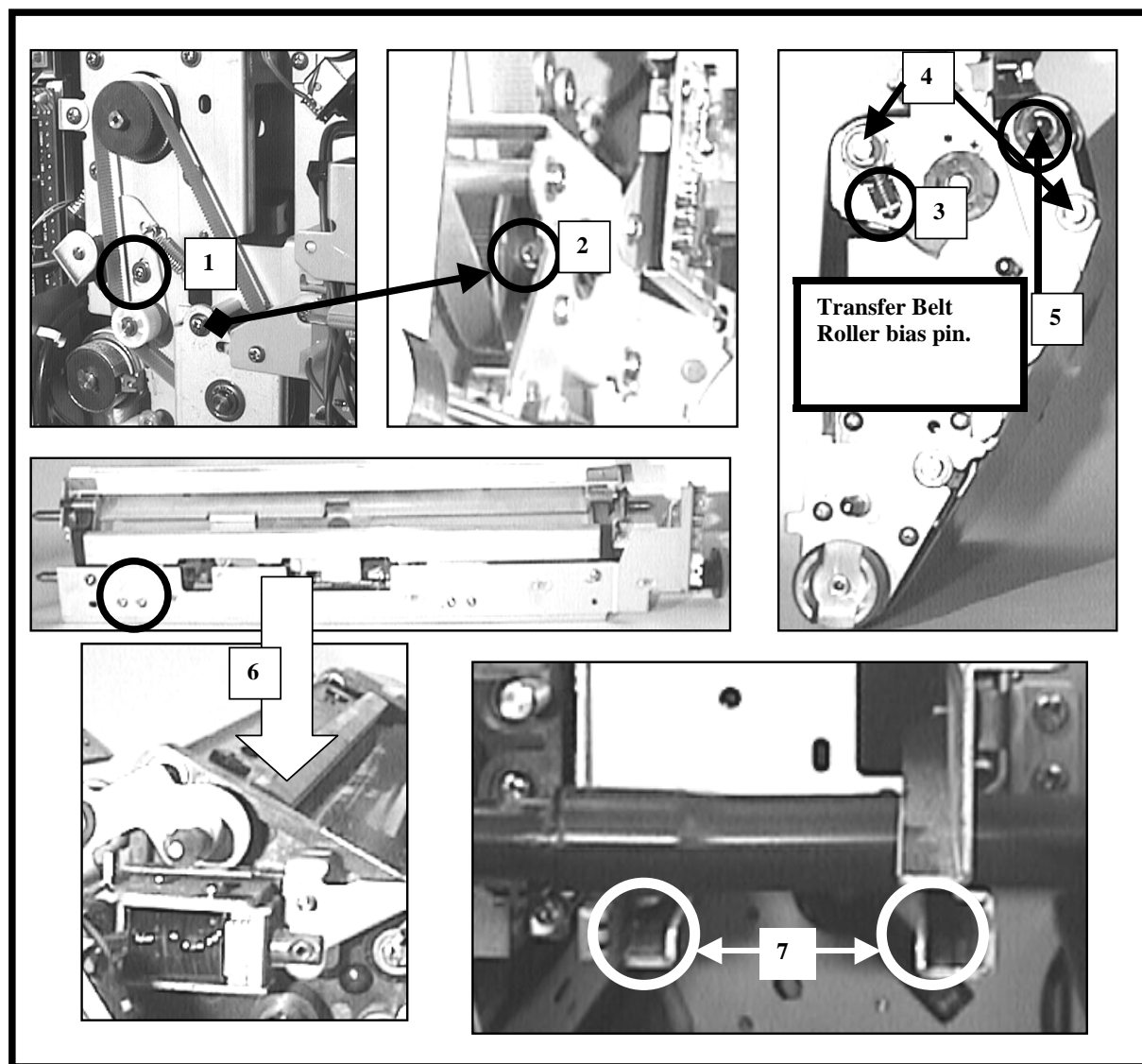
If adjustment cannot be achieved, the following are possible causes:

- High Voltage Supply - B
- Development Bias Terminal - C
- Development Bias Terminal - M
- Development Bias Terminal - Y
- Development Bias Terminal - K
- Interface Board - 2
- Main Control board

Continued...



## • Transfer Belt Area



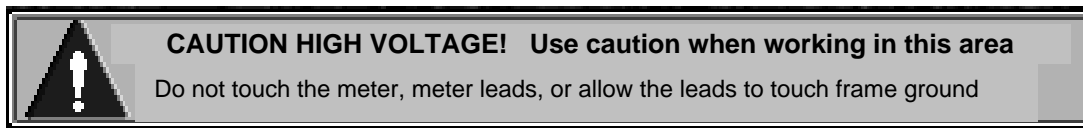
1. **Improper Color Alignments** – Loosen then tighten the circled screw to ensure that the Transfer Unit Drive Belt is properly tensioned.
2. **Improper Color Alignments** – Ensure that the Phillips head set screw is tight.
3. **Improper Color Alignments** – Replace the springs (AA063491) to ensure that the Transfer belt does not slip. See TSB - 011 for more information.
4. Ensure that the discharge rollers are grounded to the Transfer Belt Unit frame. If not, replace the bushings (AA084044) and / or the bearings (08053482).
5. Apply conductive grease KS660 SHIN-ETSU (G0049668) to the Transfer Belt Roller bias pin (T1).

**NOTE:** Also apply this grease to the Transfer Roller bias pin (T2).

6. **“Field Fix” For Premature Transfer Belt Failure** – Adjust the OFF position of the Lubricant Bar by using the circled screws. Confirm that the top edge of the Lubricant Bar is aligned with the top edge of the front frame of the Transfer Belt Cleaning Unit (black plastic).
7. **Random Indentations On The Transfer Belt** – Check these rails for burrs. Metal filings may fall from this area. Apply Teflon tape if the surface is rough.

Continued...

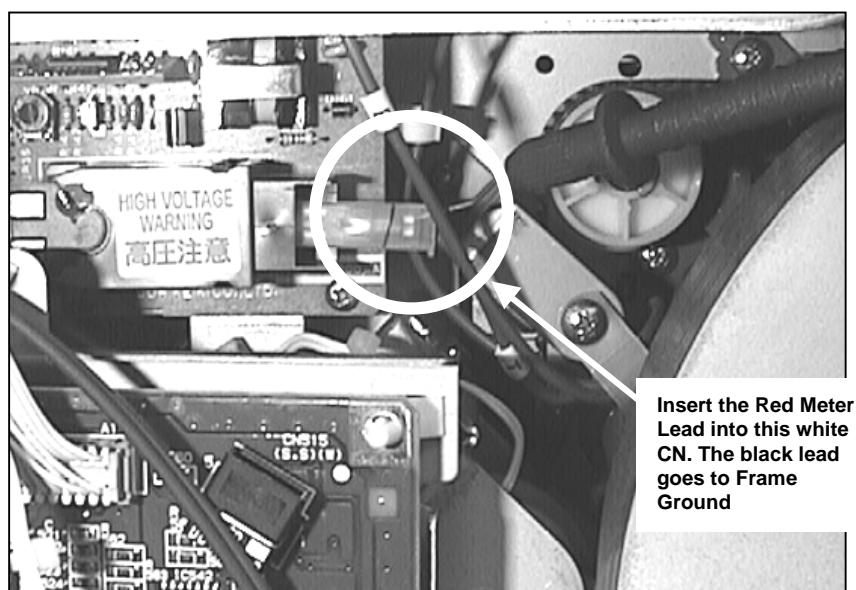
## • Confirming Transfer Belt Bias Voltage - (T1)



Enter SP Adjustments page 5, note the original setting for 1C First Color, then set 1C First Color to 1430V (default value) as illustrated below:

SP	Copy in SP	Index
<Menu> Select function or item		
<1> SP Adjustment Transfer Belt Bias (Face Side: Normal Humidity)		PAGE 5
1 <sup>st</sup> color	1430V	Adjust to 1430V

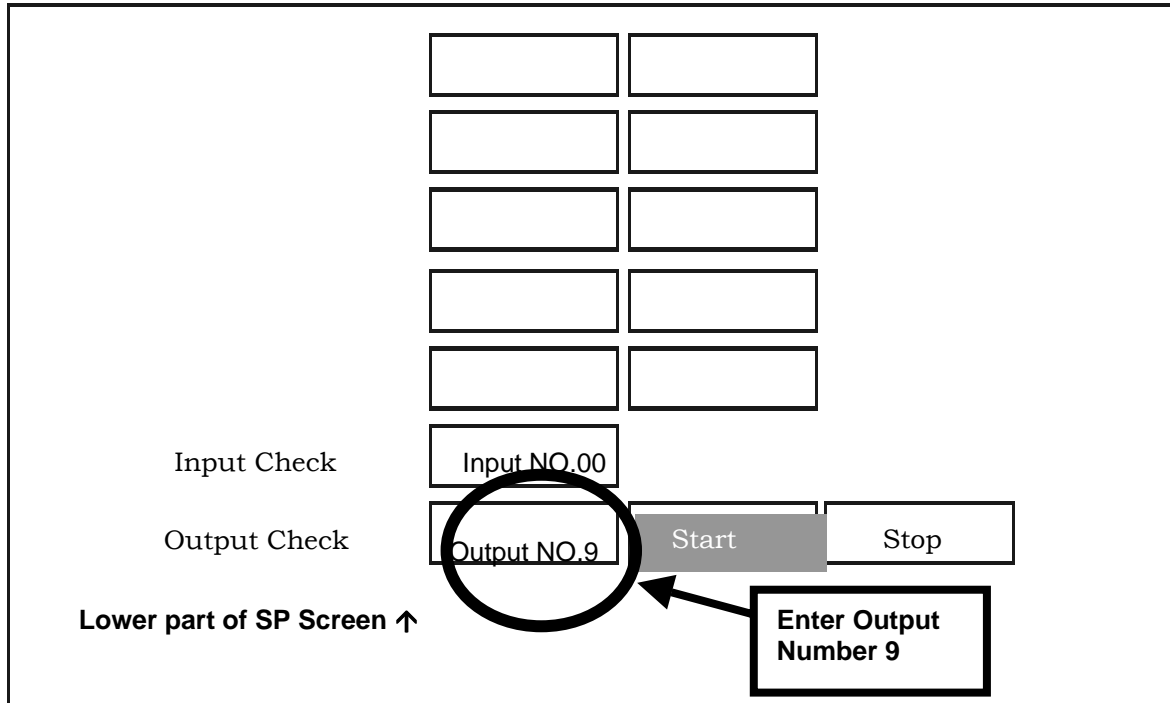
Connect a meter as pictured below:



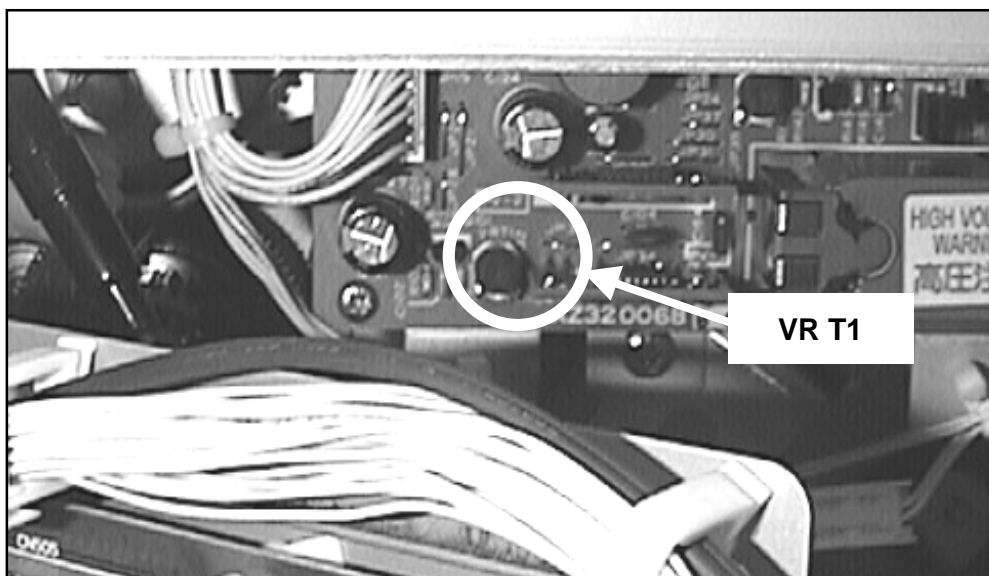
Continued...

Enter SP Adjustments, page 16 (other SP adjustments). Go to adjustment 13 and change the data to 1. This disables the Humidity Sensor. For more information, refer to the Service Manual page 4-17.

Enter SP Test Mode page 4, select Output Mode and enter output number 9, then select Start as illustrated below:

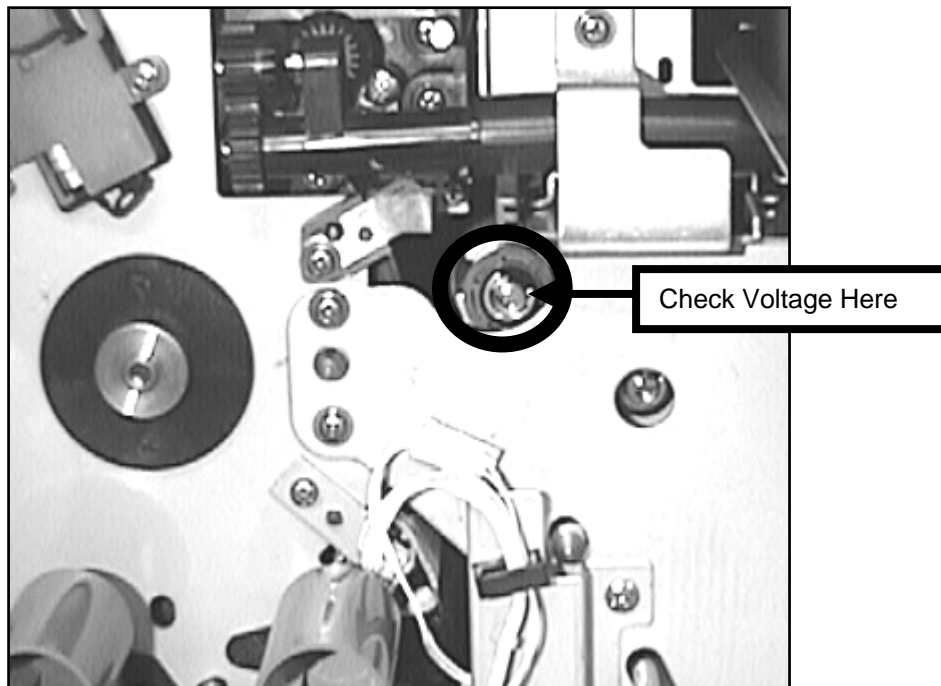


Monitor the meter reading. Under normal conditions, the meter should indicate 1348 VDC. If the voltage is not within this range, then adjust VR T1 on the High Voltage Supply Board T1/Pcc/BR. If adjusting VR T1 does not correct the output voltage, then replace the High Voltage Supply Board T1/Pcc/BR. This is a normal reading because this voltage is set at the factory using a High Voltage Probe. When a High Voltage Probe is used and SP Adjustments page 5, 1C First Color is set to 1430 (default), then the actual output voltage is 1430VDC.



Continued...

**NOTE:** *Confirm that the voltage at the front of the Transfer Belt Roller is the same (1348VDC). See below*



If the voltage is different or erratic as compared to the first check, replace the Transfer Belt Receptacle - AD021103 and apply conductive grease KS660 SHIN-ETSU (G0049668) to the T2 bias voltage pin.

**Return all SP modes to their original settings.**

Continued...

• **Confirming Transfer Roller Bias - (T2)**

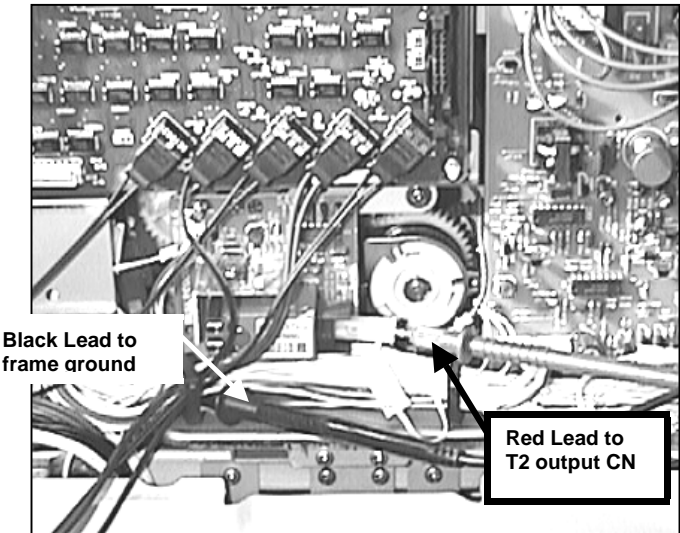


**CAUTION HIGH VOLTAGE ! Use caution when working in this area**  
Do not touch the meter, meter leads, or allow the leads to touch frame ground

Enter SP Adjustments page 7, note the original setting for 1C Normal Paper then, and set 1C Normal Paper to 1220V as illustrated below:

SP MODES		Copy in SP		Index
<Menu> Select function or item				
<1> SP Adjustment Transfer Roller Bias (normal humidity)				PAGE 7
Normal Paper		Set to 1220		
1C	1220	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx
	xxx	xxx	xxx	xxx

Connect a meter as pictured below:



Continued...

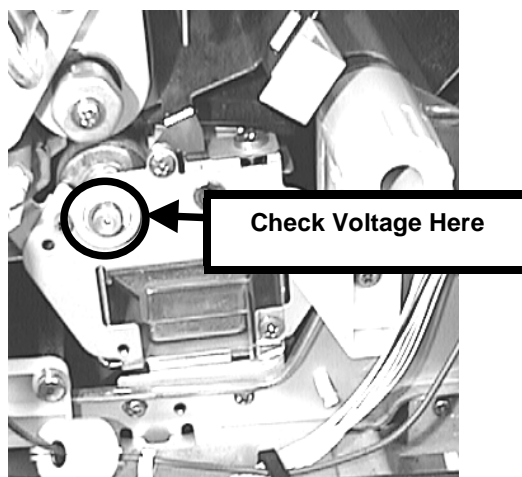
Enter SP Adjustments, page 16 (other SP adjustments). Go to adjustment 13 and change the data to 1. This disables the Humidity Sensor. For more information, refer to the SM page 4-17.

Enter SP Test Mode page 4, select Output Mode and enter output number 31. Then select start as illustrated below:

<2> SP Test		PAGE 4	
	xxx	xxx	
	xxx	xxx	
	xxx	xxx	
	xxx	xxx	
	xxx	xxx	
Input Check	Input NO.00		
Output check	Output NO.31	Start	Stop
Lower part of SP Screen ↑		Enter Output Number 31	

Monitor the meter reading. If adjustment is necessary, adjust VR 1 on the T2 High Voltage Supply Board until the meter reads 1220VDC.

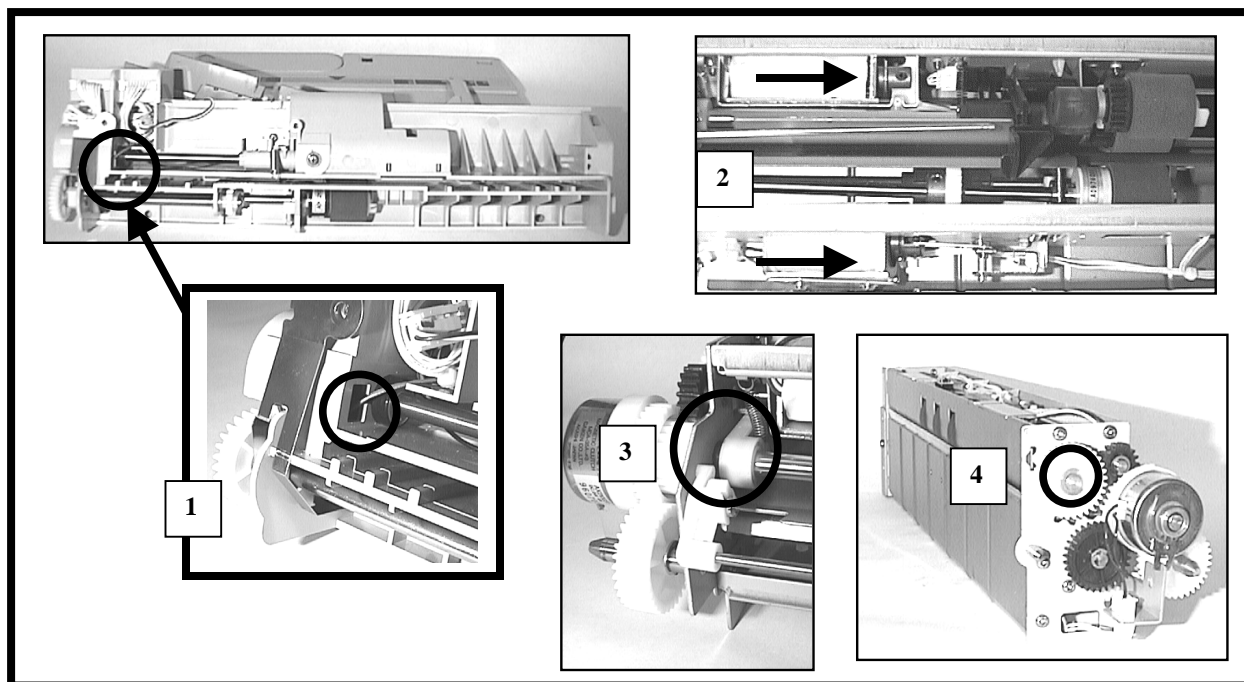
**NOTE:** Confirm that the voltage at the front of the Transfer Roller is the same (1220VDC).  
If different or erratic, replace the Transfer Roller Receptacle (AD021095) and apply conductive grease KS660 SHIN-ETSU (G0049668) to the T2 bias voltage pin.



**Return all SP modes to their original settings.**

Continued...

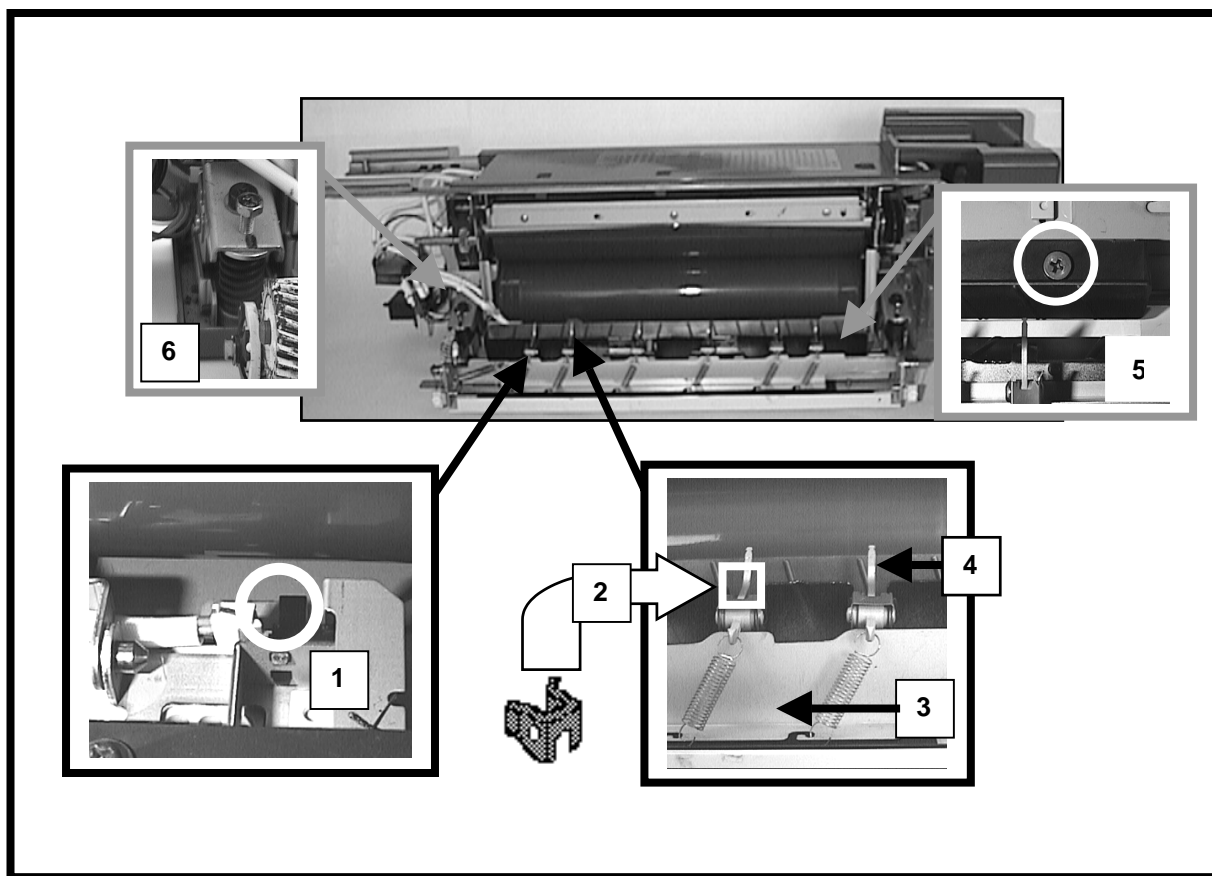
## • Paper Feed Checkpoints



1. **Bypass Jams** - Replace the Bushing 6x18x5mm (AA083003). This contains a one way bearing.
2. **Paper Feed Jamming** - Pick up and Separation Solenoids and linkage - ensure smooth movement.
3. **Paper Feed Jamming** - Replace the Feed Roller Lever (A0966353) with one way bearing. Use Scotchbrite Pad™ to remove the glazed surface of the feed shaft.
4. **Paper Feed Jamming** - Replace the Gear-32Z (AB013777). This contains a one way bearing.

Continued...

## • Fusing Unit



Replace as a set

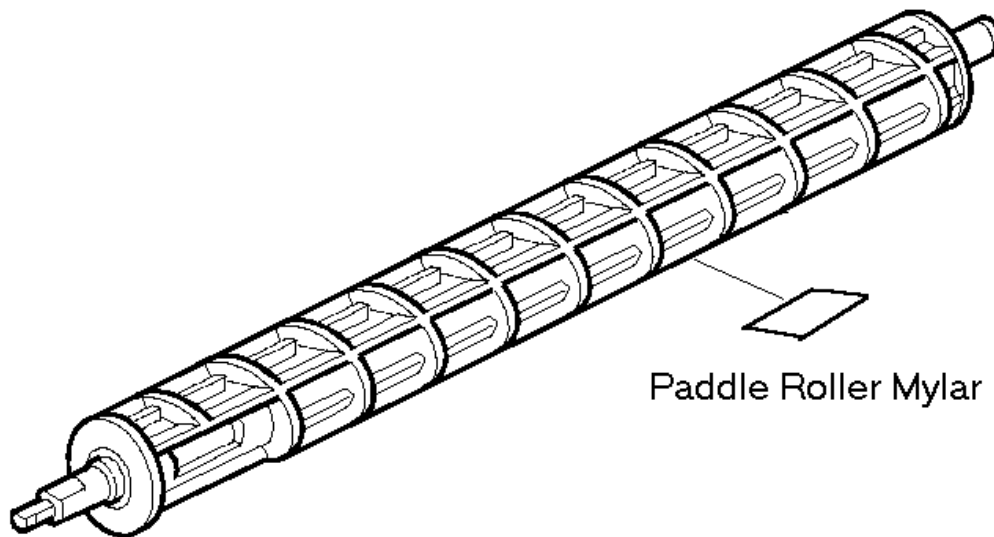
1. **New Type Exit Sensor (A1725420)**: Addresses solder joint failure and False “C” jams.
2. **New Style Stripper Holder (A1724203)**: Prevents the strippers from becoming dislodged.
3. **New Style Hot Roller Stripper Slider (A1724205)**: This modified part prevents the strippers from damaging the Hot Roller.
4. **New Style Hot Roller Stripper (AE044023)**: Also prevents the strippers from becoming dislodged.
5. **“Field Fix” For Exit Jams**: If the exit guide warps from heat, replace this shoulder screw with a normal screw to secure it in a straight position, until you can replace the guide.
6. **To Prevent The Possibility Of Poor Fusing (Mimizu)**: Install new style Pressure Springs (AA063562) and adjust the nip band width to  $9.25 \pm 0.25\text{mm}$ .

- Recommended throughput material (special paper stocks) – See RICOH FACTSLINE # 153.
- Additional fuser maintenance when using special stocks – Refer to RICOH TSB 5106/5206-14.



**BULLETIN NUMBER: A172/A199 – 017**
**09/30/98**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO COLOR 5206/5106**
**SAVIN – SDC206E/SDC206**
**SUBJECT: MIXING PADDLE ROLLER**
**GENERAL:**

The Mixing Paddle Roller – B/C has been standardized with the Mixing Paddle Roller – M/Y. This was done to prevent a SC374 or SC377 from occurring due to insufficient mixing of the developer around the Toner Density Sensor. The Mixing Paddle Roller M/Y uses a longer Mixing Paddle Roller Mylar than the Mixing Paddle Roller –B/C, therefore optimum mixing is achieved. The Mylar for the Mixing Paddle Roller is now available as a service part in case a problem is found in the field. The following parts updates are being issued for all A172 and A199 Parts Catalogs.



**NOTE:** The Paddle Roller Mylar (A1093174) can be installed on Mixing Paddle Roller – B/C (A1093066) by adhering the Paddle Roller Mylar over the existing Mylar.

					REFERENCE			
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE		ITEM	
A1093066		Mixing Paddle Roller – B/C	2→0	-	59	61	9	17
	A1093067	Mixing Paddle Roller – M/Y	2→4	3	59	61	9	17
	A1093174	Paddle Roller Mylar	1	-	59		39	
			1	-	60		30	
			1	-	63		31	
			1	-	65		35	

Continued...



## **UNITS AFFECTED:**

All copiers manufactured after the Serial Numbers listed below will only have the Mixing Paddle Roller –M/Y type installed during production.

<b>MODEL NAME</b>	<b>SERIAL NUMBER</b>
Gestetner 2606E	AB67070001
Gestetner 2606	AB4807xxxx
Ricoh Aficio Color 5206	A7127070001
Ricoh Aficio Color 5106	A7137070001
Savin SDC206E	5A87070001
Savin SDC206	5A97070001

## **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: A199/A172 - 018**

**10/13/98**

**APPLICABLE MODEL:**

**GESTETNER - 2606E**

**RICOH - AFICIO 5602**

**SAVIN - SDC206E**

**SUBJECT: OPERATION PANEL BOARD-COLOR (A172)**

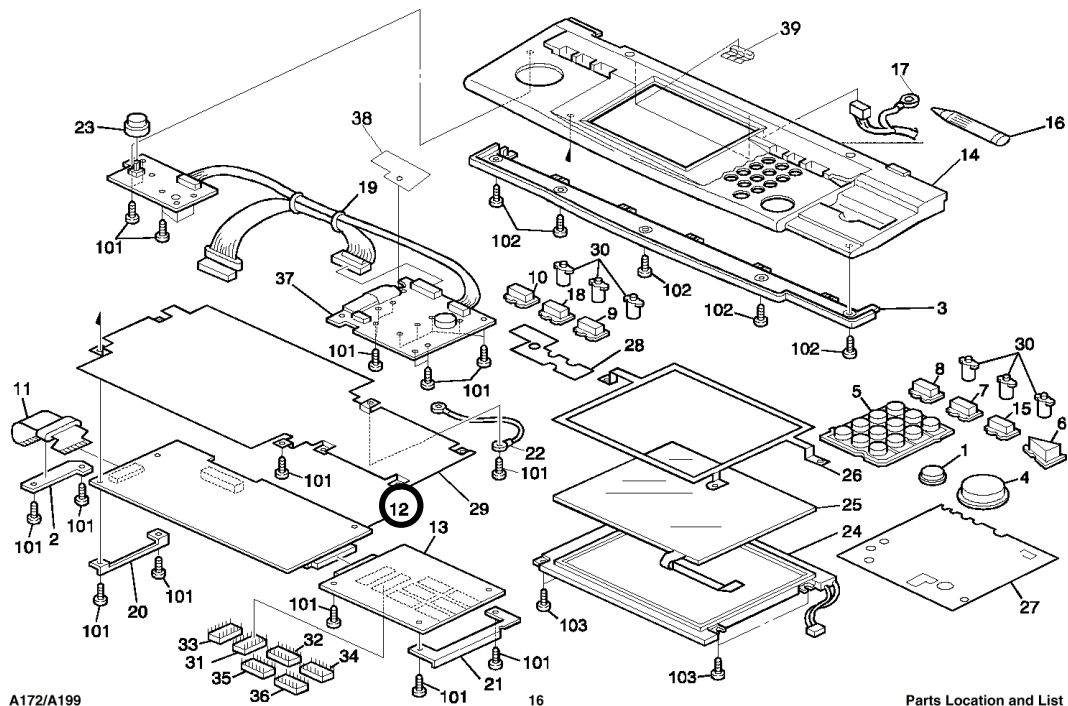
**GENERAL:**

To facilitate assembly, the printed circuit board has been modified to eliminate jumper wires. The following Parts Corrections are being issued for all A172 Parts Catalogs.

Note: This copy is intended as a master original for reproduction of additional bulletins.



PARTS



						REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM	
A1721554	A1727406	Operation Panel Board – Color (A172)	1 – 1	0	17	12	

**BULLETIN NUMBER: A172/A199 - 019****01/06/99****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – AFICIO COLOR 5206/5106****SAVIN – SDC206E/SDC206****SUBJECT: FLASHING “PLEASE WAIT” CONDITION****SYMPTOM:**

Operation Panel flashes “Please Wait”.

**CAUSE:**

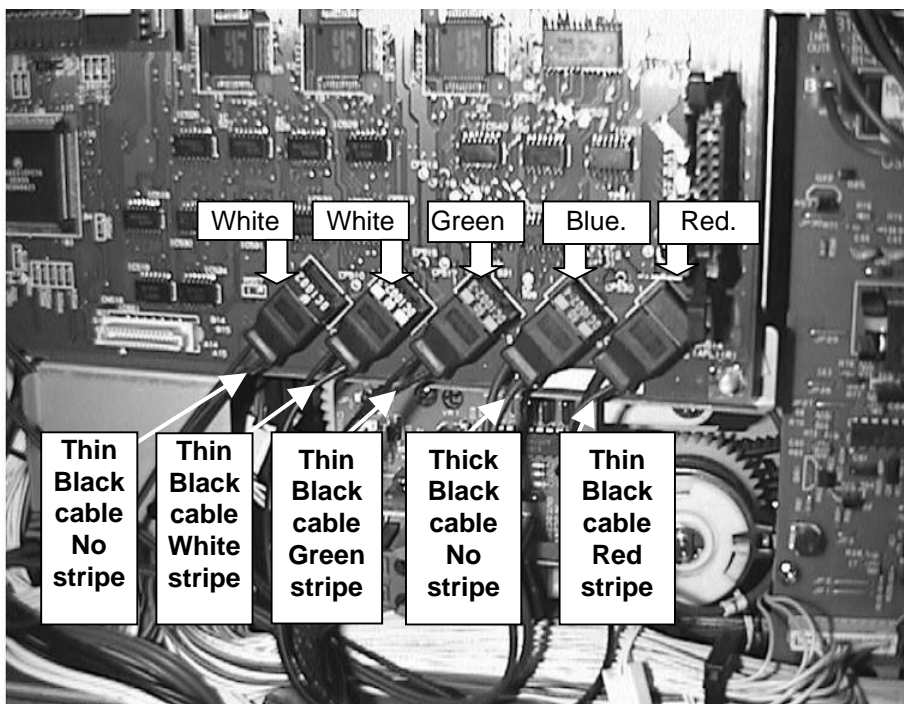
The Fiber Optics Cables on the Main Board are connected in the incorrect order.

**SOLUTION:**

Connect the Cables in the correct order as pictured below.

**ELECTRICAL**

Note: This copy is intended as a master original  
for reproduction of additional bulletins.



**BULLETIN NUMBER: A172/A199 – 020****01/19/99****APPLICABLE MODEL:****GESTETNER – 2606/2606E****RICOH – AFICIO 5106/5206****SAVIN – SDC 206/SDC206E****SUBJECT: LIGHT COPIES****SYMPTOM:**

Light copies especially in high image density or poor solid fill areas after Developer replacement (can occur from around 1K to a few thousand scans). One or more of the following conditions may be observed in this period.

1. Development gamma (SP Data Output page 3) may be high (around four or more).
2. Vcnt compensation value (difference between Vcnt0 and Vcnt on SP Data Output page1) is large.
3. Vt is not too different from Vref and does not look abnormal.
4. Vk is high (around 15V or more).

**CAUSE:**

During the “Process Control Self Check”, depending on the ID sensor characteristics, the OPC Drum, and other related parts, determines how Vmin is detected. The Development Gamma is calculated high. The high Development Gamma increases the Vcnt compensation value, so after each “Process Control Self Check”, the image density decreases.

**SOLUTION:**

Turn off the Vcnt correction system and manually input fixed Vcnt compensation value. The optimum fixed Vcnt compensation value is 6.

**PROCEDURE:**

1. If you had previously adjusted Vref (SP Data Output page 1), return it to Vref0.
2. If Toner Max M/A Target (SP Adjustment page four and page 16) was adjusted previously, return it to default (1.000), wait 5 minutes and perform the “Process Control Self Check”.  
**Note: After all the procedures in this TSB are finished, check the copy quality and adjust Toner Max M/A Target if necessary.**
3. If the Vcnt correction by number of scans is on, turn it off.  
(Open SP Adjustment page 16 and if data in No.1 is 00001, input 00000.)
4. Turn off the Vcnt correction by development gamma.  
(Open SP Special Feature page 1 and turn off the TC Correction.)
5. Manually input Vcnt compensation value. The data to input is Vcnt data at Developer Initial Setting minus six.  
Open SP Data Output page 1 and record Vcnt0 for each color. Open SP Adjustment page12 and input Vcnt0 – six for each color into the Toner Sensor Gain data.

Continued...

Note: This copy is intended as a master original  
for reproduction of additional bulletins.

**COPY QUALITY**

## PROCEDURE CONTINUED:

6. While checking the Vt on the SP Data Output page 1, make copies of the C4 test chart (FC mode) until the Vt stabilizes at  $|V_{ref} - V_t| \leq 0.2V$ .
7. Wait 5 minutes, then perform the "Process Control Self Check".
8. If necessary, perform the ACC and the printer gamma adjustment.

**NOTE:** *When replacing the Developer for a machine with the above troubleshooting settings entered, do not change the setting for the Vcnt correction (keep the Vcnt corrections off). However, do not set the Vcnt compensation value manually. The Vcnt compensation value returns to 0 (no correction) when the Developer initial setting is performed. If Vcnt compensation value is lowered after Developer initial setting, image density will be too light.*

**BULLETIN NUMBER: A172/A199 – 020 REISSUE ★**

**05/11/99**

**APPLICABLE MODEL:**

**GESTETNER – 2606/2606E**

**RICOH – AFICIO 5106/5206**

**SAVIN – SDC206/SDC206E**

**SUBJECT: LIGHT COPIES**

**SYMPTOM:**

- ★ Light copy quality in high image density areas or poor solid fill at around 1K to a few thousand scans after developer replacement. One or more of the following may be observed.
1. Development gamma (SP Data Output page 3) is high (around 4 or more).
  2. Vcnt compensation value (difference between Vcnt0 and Vcnt on SP Data Output page1) is large.
  3. Vt is not so different from Vref and does not look abnormal.
  4. Vk is high (around 15V or more).

**CAUSE:**

Depending on the characteristics of the ID sensor, the OPC drum, and other related components, the Process Control Self Check may detect that development gamma (as detected by the ID sensor) is too high. This in turn may cause an increase of the Vcnt compensation values. An increase in Vcnt compensation values can result in light copies.

**SOLUTION:**

So that the Vcnt correction system can not over compensate, turn off the Vcnt correction system and manually input a fixed Vcnt compensation value.

**PROCEDURE:**

1. If you have previously adjusted Vref (SP Data Output page 1) return it to the Vref0 values for BK,Y,M,C.

SP MODES Copy in SP Index

<Menu>  
Select function or item.

<3>SP Data Output PAGE 1

Fusing Temp.  
Hot Roller Temp. 255°C Pressure Roller Temp. 255°C

Potential Sensor Calibration Data  
Coefficient: 999.9 Offset: -999.9  
V1 9.99V V2 9.99V

Humidity Sensor Output  
Temperature 9.99V Rel.Humidity 9.99V

Toner Density(TD Sensor)

	Initial Setting		Actual Data		
	Vcnt0	Vref0	Vcnt	Vref	Vt
BK	255	9.99V	255	9.99V	9.99V
Y	255	9.99V	255	9.99V	9.99V
M	255	9.99V	255	9.99V	9.99V
C	255	9.99V	255	9.99V	9.99V

Prev. Next

Record these Vref0 values of BK, Y, M, and C.

Continued...



PROCEDURE continued

Enter the Vref0 values that you recorded for BK, Y, M, and C into SP Adjustments Pg. 12 as illustrated below:

Toner Sensor Control Target = Vref

BK	Y	M	C
2.50	2.50	2.50	2.50

2. If Toner Max M/A Target (SP Adjustment page 4) was previously adjusted, return it to the default value (1.000). Wait 5 minutes and perform the process control self check.

**NOTE:** After all the procedures in this bulletin are finished, check the copy quality and adjust Toner Max M/A Target if necessary. Increasing the value raises the toner density.

3. Turn off Vcnt by number of scans: If the Vcnt correction by number of scans is on, turn it off. (Open SP Adjustment page 16 and if the data in No.1 is 00001, set it to 00000.)

4. Turn off the Vcnt correction by development gamma. (Open SP Special Feature page 1 and set TC Correction to OFF.)

5. Manually input the Vcnt compensation value according to the following steps.

- Open SP Data Output page 1 and record Vcnt0 for each color.
- Open SP Adjustment page 12 and input Vcnt minus six for each color into the Toner Sensor Gain Data.

SP MODES

Copy in SP

Index

<Menu>  
Select function or item.

<3>SP Data Output

PAGE 1

Fusing Temp.

Hot Roller Temp. 255°C

Pressure Roller Temp. 255°C

Potential Sensor Calibration Data

Coefficient: 999.9

Offset: -999.9

V1 9.99V

V2 9.99V

Humidity Sensor Output

Temperature 9.99V

Rel.Humidity 9.99V

Toner Density(TD Sensor)

[ Initial Setting ] [ Actual Data ]

	Vcnt0	Vref0	Vcnt	Vref	Vt
BK	255	9.99V	255	9.99V	9.99V
Y	255	9.99V	255	9.99V	9.99V
M	255	9.99V	255	9.99V	9.99V
C	255	9.99V	255	9.99V	9.99V

Prev.

Next

Enter the Vcnt0 values that you recorded (minus six) for BK,Y,M,C into SP Adjustment page 12 as illustrated on the next page.



## PROCEDURE continued

Toner Sensor Gain = Vcnt

BK	Y	M	C
174	164	166	164

6. While checking the Vt in SP Data Output page 1, make copies of the C4 test chart (11x17/FC mode) until the Vt stabilizes at  $|V_{ref} - V_t| \leq 0.2V$ .
7. Wait 5 minutes, then perform the process control self check.
8. If necessary, perform the ACC and the printer gamma adjustment.

**NOTE:** When you replace developer on a machine that you have performed this procedure on, do not change the setting for the Vcnt correction (keep the Vcnt correction off), and do not set the Vcnt compensation value manually. The Vcnt compensation value returns to 0 (no correction) when developer initial setting is performed. If Vcnt compensation value is lowered after developer initial setting, image density will be too light. **When replacing developers it is important to remember to set Vref to 2.50 for all colors for initialization.**

## PRODUCTION MACHINES:

This procedure has not been performed on production machines. The troubleshooting procedure described in this bulletin is to be performed only when the symptom for light copies is found in the field.

**BULLETIN NUMBER: A172/A199 - 021****01/19/99****APPLICABLE MODEL:****GESTETNER – 2606/2606E****RICOH – AFICIO COLOR 5106/5206****SAVIN – SDC206/SDC206E****SUBJECT: PARTS CATALOG CORRECTION****GENERAL:**

Due to part standardization, the following Parts Update is being issued for all A172/A199 Parts Catalogs.

						REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT		PAGE	ITEM
AB013318	AB014126	Gear – 17Z	1 –1	0		85	24

**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.		

**UNITS AFFECTED:**

All copiers manufactured after the Serial Numbers listed below will have the new style Gear – 17Z installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2606E	AB6808xxxx
Gestetner 2606	AB4808xxxx
Ricoh Aficio Color 5206	A712808xxxx
Ricoh Aficio Color 5106	A7138080001
Savin SDC206E	5A8808xxxx
Savin SDC206	5A98080001



**BULLETIN NUMBER: A172/A199 - 022**
**03/19/99**
**APPLICABLE MODEL:**
**GESTETNER – 2606E**
**RICOH – AFICIO COLOR 5206**
**SAVIN – SDC206E**
**SUBJECT: OPERATION PANEL DISPLAY - COLOR**
**GENERAL:**

Due to a vender change, the Operation Panel Color Display for the A172 machines will have new part numbers. The following Parts Corrections are being issued for all A172 Parts Catalogs.

Note: This copy is intended as a master original for reproduction of additional bulletins.



■ PARTS

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1727301	A1727311	Operation Panel Ass'y-LT	1-1	0	17	*
AX300004	A1721577	LCD Display - Color	1-1	3	17	24
A1721503	A1721578	LCD Harness	1-1	3	17	11
A1721500	A1721531	Operation Key Board - Color	1-1	3	17	37
A1721471	A1721469	Cap	1-1	3	17	40
A1727406	A1727407	Operation Panel Board - Color	1-1	1	17	12
A1727357	A1727371	Operation Panel Lower Cover	1-1	1	17	3

**NOTES:**

- The new and the old Operation Panel Assembly are interchangeable (0).
- The new LCD Display – Color is not interchangeable with the old part (interchangeability 3). When replacing the old LCD display with a new part, it is necessary to replace the following parts at the same time (interchangeability 0 as a set).  
**LCD Harness**  
**Operation Key Board – Color**  
**Cap**  
**Operation Panel Board – Color.**
- The old parts of the following items will remain available as service parts.  
**LCD Harness**  
**Cap**
- The old parts of the following items will be available only until stock runs out.  
**Operation Key Board – Color**  
**LCD Display – Color**

Continued...

**UNITS AFFECTED:**

All copiers manufactured after the Serial Numbers listed below will have the new style Operation Panel installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2606E	AB6810XXXX
Ricoh Aficio Color 5206	A712810XXXX
Savin SDC206E	5A8810XXXX

**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:** A172/A199 - 023

**04/14/99**

**APPLICABLE MODEL:**

**GESTETNER - 2606E**

**RICOH - AFICIO COLOR 5206**

**SAVIN - SDC206E**

**SUBJECT: SERVICE MANUAL - INSERT**

**GENERAL:**

The Service Manual page listed below must be replaced with the page supplied. Each bulletin package contains 1 set of replacement pages.

**PAGES:**

The revised area has been highlighted by an arrow ⇒.

- 1-7 Updated Information

**Note:** This copy is intended as a master of original for reproduction of additional bulletins.



## 2.3 NEWLY-ADDED OPERATING FEATURES

○: Available    ✕: Not Available



No.	Features	(A172/A199)	(A109)
1	Auto Image Density	Full Color & Black Copy	Single Color & Black Copy
2	Auto Color Calibration	○	✕
3	Duplex Copying	○	✕
4	Twin Color	○	✕
5	Single Color	80 (+1) colors	8 colors
6	User Color	48 colors	3 colors
7	Color Back ground	84 (+1) colors	13 colors
8	Paint	84 (+1) colors	13 colors
9	Color Line	○ (Edit type only)	✕
10	Frame Line	○ (Edit type only)	✕
11	Image Overlay	○ (Edit type only)	✕
12	Area Editing	See the next page	

1. Auto Image Density mode can be selected when in Full Color mode.
2. Auto Color Calibration can be performed by the user.
3. Using the by-pass feed tray, rear side copying is available.
4. Twin Color mode copies black parts in black and other parts in the selected color.
5. Single Color  
 (8 colors x 4 density levels) + (12 user colors x 4 density levels) + 1 scan color = 81 colors  
 \* scan color = Edit type only
6. User Color  
 12 colors x 4 density levels = 48 possible colors  
 The total percentages of the mixed colors must be 255% or less.
7. Color Background  
 (9 colors x 4 density levels) + (12 user colors x 4 density levels) + 1 scan color = 85 colors  
 \* scan color = Edit type only
8. Paint (Edit type only)  
 (9 colors x 4 density levels) + (12 user colors x 4 density levels) + 1 scan color = 85 colors  
 \* Scan color = Edit type only
9. Color Line (Edit type only)  
 In the Area Editing mode, designated lines can be colored.  
 Available colors: 85 colors = 81 Single colors + (Bk x 4 density levels)

**BULLETIN NUMBER: A172/A199 - 024****05/03/99****APPLICABLE MODEL:****GESTETNER – 2606/2606E****RICOH – AFICIO COLOR 5106/5206****SAVIN – SDC206/ SDC206E****SUBJECT: BELT DRIVE ROLLER****GENERAL:**

To prevent the mis-registration of colors, the material of the belt drive roller has been changed. The new roller has higher friction to prevent slipping of the belt after the Transfer Belt Switchback operation. The following Parts Update is being issued for all A172/A199 Parts Catalogs.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1096063	A1096062	Belt Drive Roller	1	1	67	14

**UNITS AFFECTED:**

All copiers manufactured after the Serial Numbers listed below will have the new style Belt Drive Roller installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner 2606e	AB69010001
Gestetner 2606	AB49010001
Ricoh Aficio Color 5206	A7128120001
Ricoh Aficio Color 5106	A7138120001
Savin SDC206	5A98120001
Savin SDC206E	5A88120001

**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: A172/A199 - 025****09/08/99****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – Aficio Color 5206/5106****SAVIN – SDC206E/SDC206****SUBJECT: MAIN BOARD ROM REVISION J****GENERAL:** The Main Board ROM's have been modified as follows.

A1725114G ➡ A1725114J

A1725115G ➡ A1725115J

A1725129G ➡ A1725129J

**NOTE:** Revisions "H" and "I" do not exist.

The software modification has been made to solve the following four problems.

**PROBLEM 1:** An operation counter error occurs when upgrading the Main Board ROM's from revision D or older to revisions E, F, or G.**CAUSE:** The address to store operation counter data was incorrect.**SOLUTION:** An additional program has been installed to shift the operation counter data to the new address when replacing the Main Board ROM's.**NOTE:** When installing the ROM revisions "J" on a machine, which has the ROM revisions "D" or older, the following procedure is necessary to shift the operation counter data to the new address. The following procedure is not necessary when replacing ROM revisions "E" or newer.

1. Turn off the Main Switch and replace the old ROMs (revision D or older) with the ROM revision J.
2. Turn on the Dip-Switch no. 2 on the Main Board.
3. Turn on the Main Switch.
4. Turn off the Main Switch after the "Please Wait" screen has disappeared and the normal screen is displayed on the Operation Panel.
5. Turn off the Dip-Switch no. 2 on the Main Control Board.

Note: This copy is intended as a master original  
for reproduction of additional bulletins.

**SOFTWARE**

Continued...



**PROBLEM 2:** A dirty background is produced on copies with the Main Board ROM revisions E, F, and G.

**CAUSE:** A programming error is causing a 300-msec time delay on the Cleaning Blade for the Transfer Belt.

**SOLUTION:** The Transfer Belt Cleaning Blade timing program has been corrected.

**NOTE:** *This problem does not exist with the Main Board ROM revisions D or older.*

**PROBLEM 3:** A blurred image is produced while making a black and white copy in ACS mode with Main Board ROM revisions E, F, and G.

**CAUSE:** A programming error is causing a 300-msec time delay on the Transfer Roller.

**SOLUTION:** A software modification has been made to correct the timing of the Transfer Roller.

**NOTE:** *This problem does not exist with the Main Board ROM revisions D or older.*

**PROBLEM 4:** A blank margin in the main scan direction when making a copy in single color black mode using a special program in User Tool. This problem occurs after a print job is sent to the copier.

**CAUSE:** The timing program to send data to the IPU was incorrect.

**SOLUTION:** The timing program has been corrected.

**NOTE:** *This problem does not exist with the Main Board ROM revisions D or older.*

The Main Board ROMs revision J (A172MA3J.EXE) can be downloaded through the Ricoh Technical Services FTP Site <http://tsc.ricohcorp.com>.

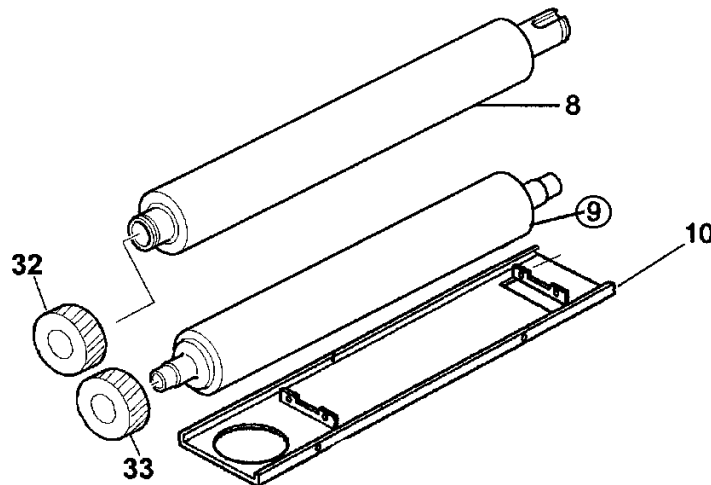
## UNITS AFFECTED:

All copiers manufactured after the Serial Numbers listed below will have the new Main Board ROM modifications during production.

MODEL NAME	SERIAL NUMBER
Gestetner Model 2606	AB4901XXXX
Gestetner Model 2606e	AB69030001
Ricoh Aficio Color 5106	A7139010001
Ricoh Aficio Color 5206	A7129010001
Savin Model SDC206	5A99010001
Savin Model SDC206E	5A89010001

**BULLETIN NUMBER: A172/A199 - 026**
**10/05/99**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO 5206/5106**
**SAVIN – SDC206E/206**
**SUBJECT: PRESSURE ROLLER**
**GENERAL:**

The material of the Pressure Roller has been standardized with other Pressure Rollers. The following part update is being issued for all A172 and A199 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
AE020076	AE020088	Pressure Roller	1	0		85	9

**UNITS AFFECTED:**

A172 and A199 Serial Number cut-ins 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: A172/A199 - 027**
**02/02/2000**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO COLOR 5206/5106**
**SAVIN – SDC206E/206**
**SUBJECT: PAPER JAMS IN FUSING UNIT**
**SYMPTOM:**

Paper jams in the Fusing Unit when making continuous single color copies.

**CAUSE:**

A sufficient amount of Silicone Oil is **not** being maintained on the Hot Roller when making continuous single color copies.

**SOLUTION:**

The Oil Supply Bracket and the Spring Plate – Oil Supply Pad have been modified to apply Silicone Oil to the edge of the Oil Supply Pad. This modification will maintain a sufficient amount of Silicone Oil on the Hot Roller when oil consumption is high, such as the making of continuous single color copies.

**GENERAL:**

The following parts updates are being issued for all A172 and A199 Parts Catalogs. Please update your Parts Catalogs with the following information.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A1094161	A1724161	Spring Plate – Oil Supply Pad	1	1	81	13
A1094162	A1724162	Oil Supply Bracket	1	3	81	15

**UNITS AFFECTED:**

Available as 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.		



MECHANICAL

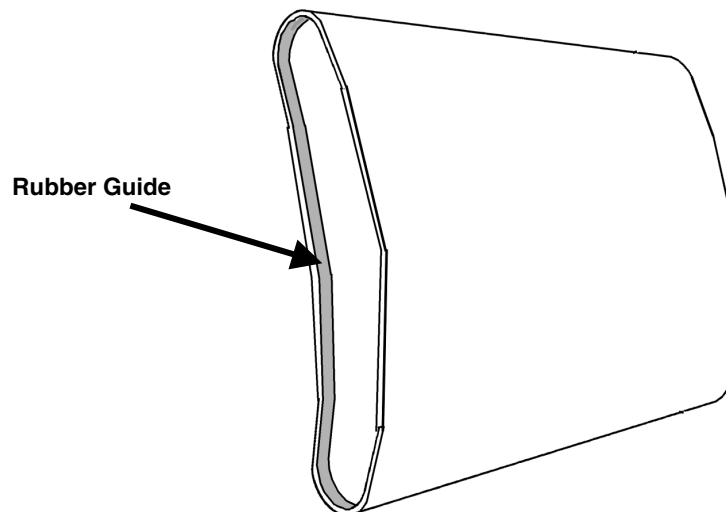


PARTS

Note: This copy is intended as a master original for reproduction of additional bulletins.

**BULLETIN NUMBER: A172/A199 - 028**
**04/28/2000**
**APPLICABLE MODEL:**
**GESTETNER – 2606E/2606**
**RICOH – AFICIO COLOR5206/5106**
**SAVIN – SDC206E/SDC206**
**SUBJECT: TRANSFER BELT**
**GENERAL:**

Customers that make mostly black and white copies may cause the rubber guide to peel off the Transfer Belt. The Transfer Belt has been modified to strengthen the adhesion of the rubber guide. The following part correction is being issued for all A172 and A199 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	QTY	INT	PAGE	ITEM
A1096130	A1726130	Transfer Belt	1-1	0	67	15

**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: A172/A199 – 029**

**12/11/2000**

**APPLICABLE MODEL:**

**GESTETNER – 2606E/2606**

**RICOH – AFICIO COLOR 5206/5106**

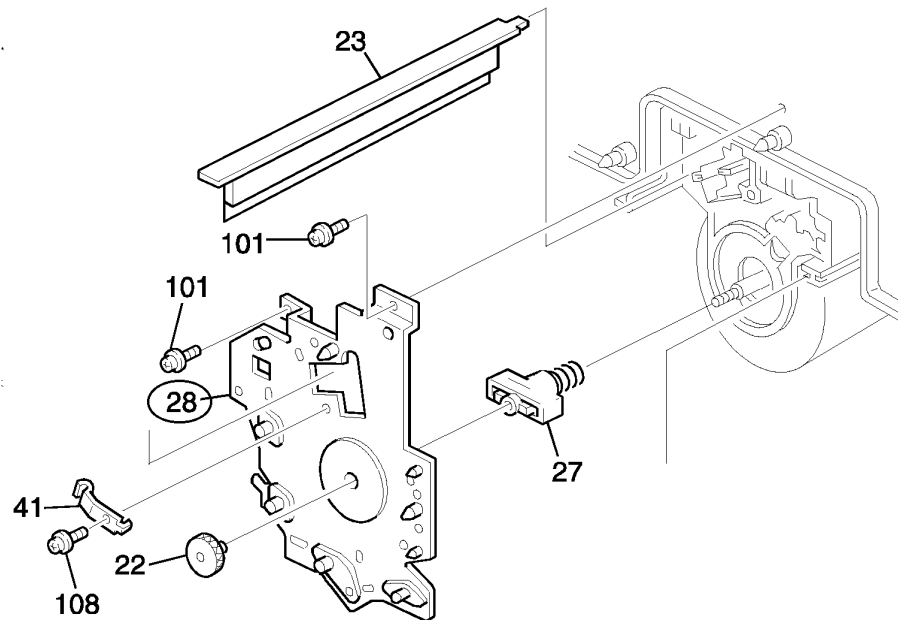
**SAVIN – SDC206E/206**

**SUBJECT: PARTS CATALOG CORRECTIONS & UPDATES**

**GENERAL:**

The following parts corrections and updates are being issued for all A172/A199 Parts Catalogs.

- **CORRECTION 1: Drum Flange Cover** – The part number for the Drum Flange Cover was listed incorrectly. Please correct your Parts Catalog with the following information.

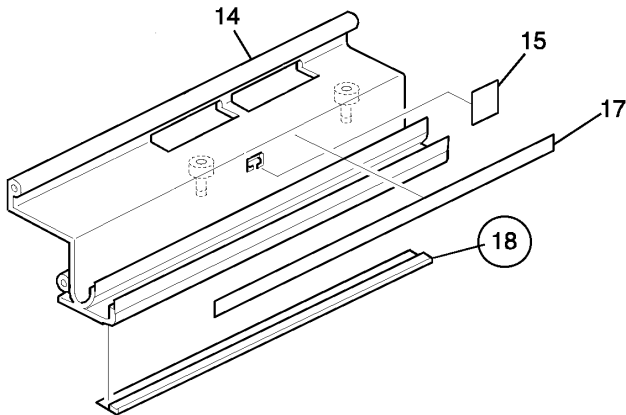


				REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1091132	A1727661	Drum Flange Cover	1	49	28

Continued...

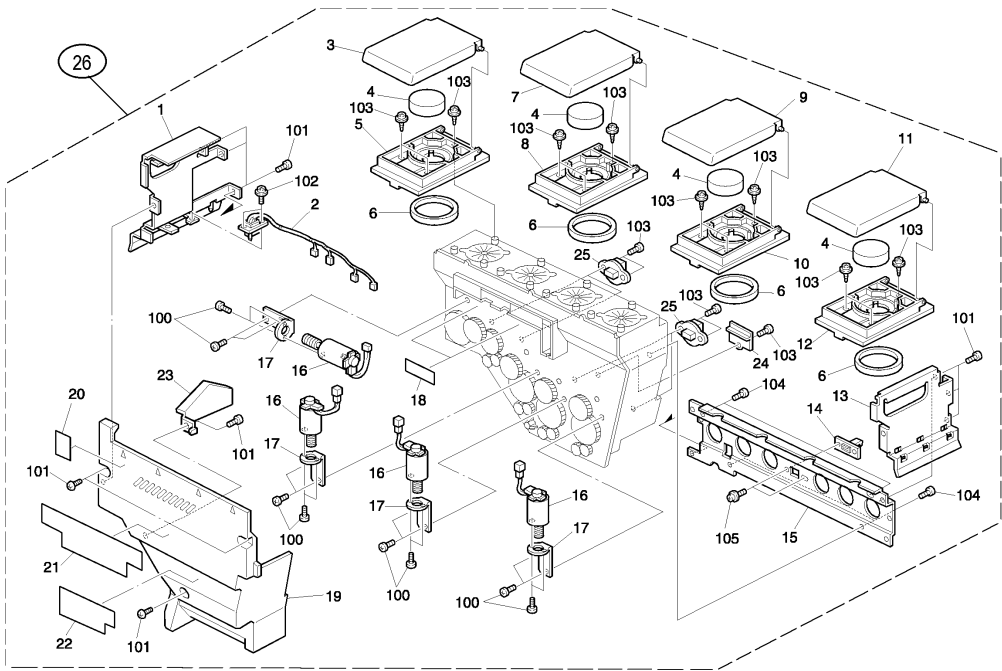


- **CORRECTION 2: Entrance Seal Belt Cleaning Unit** – The part number for the Entrance Seal Belt Cleaning Unit was listed incorrectly. Please correct your Parts Catalog with the following information.



				REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A1099504	A1096365	Entrance Seal Belt Cleaning Unit	1	75	18

- **UPDATE 1: Toner Tank Unit** – Please add the Toner Tank Unit part number to your Parts Catalog. Please update your Parts Catalog with the following information.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A1723042	Toner Tank Unit	1	55	26 *

\* Denotes new item number.

**BULLETIN NUMBER: A172/A199 – 030****07/16/2001****APPLICABLE MODEL:****GESTETNER – 2606E/2606****RICOH – AFICIO 5206/5106****SAVIN – SDC206E/206****SUBJECT: DIRTY BACKGROUND****SYMPTOM:**

- Yellow or orange dirty background in leading edge area of the copy
- Magenta dirty background in trailing edge area of the copy.
- Toner film on the drum.

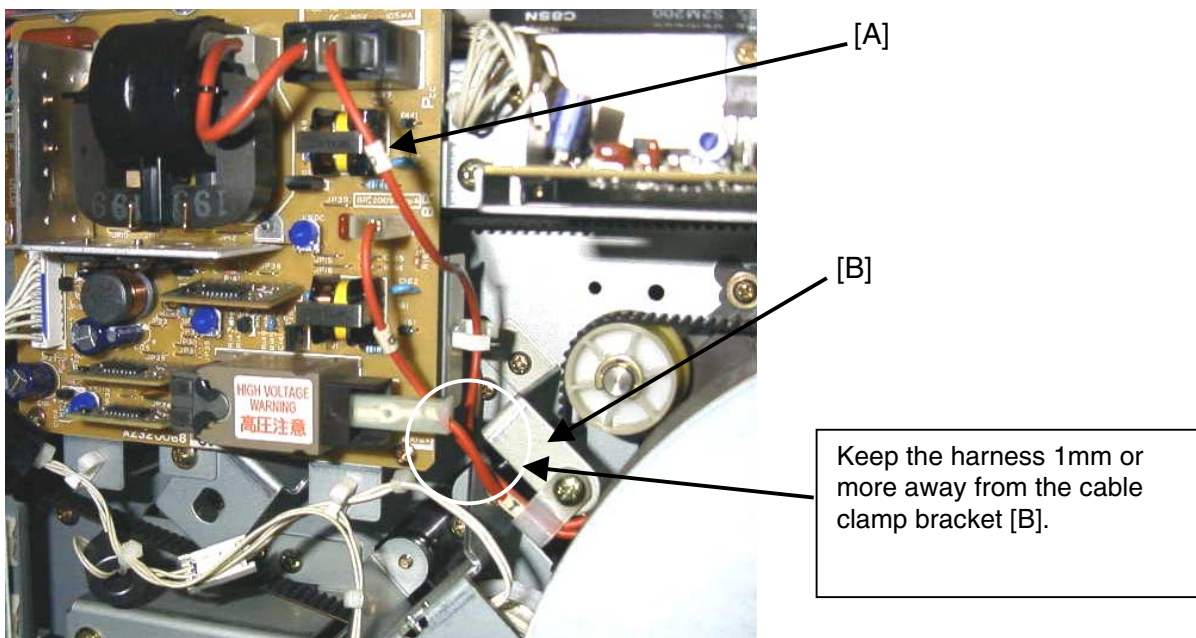
**CAUSE:**

A high-voltage leak can occur if the harness [A] that runs between the power supply and PCC (pre-cleaning corona) wire touches the cable clamp bracket [B]. Although at first the leak is very minimal, over time this causes the electrical load on the harness to increase, which damages the harness and increases the leakage. In many cases, the point where the voltage leak occurs may appear white.

This leak can then affect the PCC, which markedly decreases the efficiency of the drum-cleaning unit. In addition, the charge applied across the drum will not be uniform, leading to density variations in the developed image that do not appear on the original.

**SOLUTION:**

Check to see if the PCC high-voltage harness is touching the cable clamp bracket [B]. If it is, position the harness at least 1mm away from the clamp as shown:



Note: This copy is intended as a master original for reproduction of additional bulletins.



■ COPY QUALITY

**BULLETIN NUMBER: A172/A199 – 031**

**09/05/2001**

**APPLICABLE MODEL:**

**GESTETNER – 2606E/2606**

**RICOH – AFICIO 5206/5106**

**SAVIN – SDC206E/SDC206**

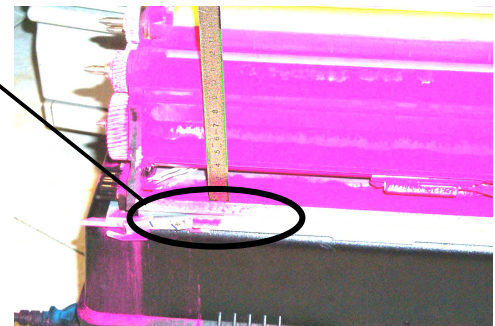
**SUBJECT: MAGENTA TONER SCATTERING**

**SYMPTOMS:**

- Excessive Magenta toner scattering inside the machine.
- Magenta dirty background on copy/print images.

**CAUSES:**

1. Decrease in developer chargeability.
2. Q/M of the developer gets too low.
3. Toner wt% inside the developer is too high (approx. 7%).



**SOLUTION:**

1. The purpose of this procedure is to minimize magenta scattering without replacing the developer.
2. This procedure is only for machines, which exhibit **excessive** Magenta toner scattering conditions. This procedure should be limited to machines with excessive scattering to avoid unnecessary side effects such as low image density.

**Preparation:**

1. Clean the inside of the machine using a vacuum.
2. Clean the area around the development unit using a vacuum.
3. Check if the exhaust fan motors (left side of machine) are blocked with toner. If they are, clean the motors and their dust filters.

Step #	Procedure	Technical background
1	Pull out the toner tank unit.	This prevents toner from entering the development unit.
2	Enter PAGE 12 of "SP Adjustment". Change the current value of the "Toner Sensor Gain" for Magenta by – 9. For example, if the current value is 182, then change it to 173 (182-9=173). See the <b>NOTE</b> written below this table.	This keeps the toner concentration low (approx. 4.5wt%).

**NOTE:**

Never reduce the Toner Sensor Gain value by more than –9. Doing so can cause side effects such as low image density

Continued...

Note: This copy is intended as a master original for reproduction of additional bulletins.



COPY QUALITY



3	Press the "Copy in SP" button to enter the operating display.	Performing forced toner consumption with several solid image copies helps achieve the desired toner density.
4	Make 13 A4/LT sideways or 6 A3/DLT skyshot copies (full solid image copy) in 1C/Magenta mode by opening the platen cover. <b>NOTE:</b> Never make more than above number of copies.	
5	Close the platen cover.	Making blank copies agitates the toner in the development unit.
6	Make 5 A4/LT sideways or 3 A3/DLT blank copies in 1C/Magenta mode without any originals on the exposure glass. <b>NOTE:</b> Never make more than above number of copies.	
7	Reinstall the toner tank unit into the machine.	
8	Make 10 copies of a C-4 test chart on A3/DLT paper.	This stabilizes the toner concentration.
9	Wait 5 minutes, then perform Forced Process Control Self Check.	ACC calibrates the image by adjusting image-processing parameters.
10	Perform ACC.	

Never perform this procedure for any color other than Magenta. This can also cause side effects to occur.

SP MODES

Copy in SP

Index

<Menu>

Select function or item.

<1>SP Adjustment

PCC

AC

3200V

DC

-060μA

Discharge Plate Output

Normal Paper

Thick Paper

Dplx: Face

Dplx: Back

4000V

3500V

4000V

4000V

Toner Sensor Gain

BK

Y

M

C

198

184

182

187

Toner Sensor Control Target

BK

Y

M

C

2.50V

2.50V

2.50V

2.50V

Prev.

Next

Decrease the *current value* by -9.  
e.g. 182 → 173.