Model: Cattleya 2	Date: 26-Feb-01	No.: RB023001

Subject: Main ROM upgrade for Cattleya2	Prepared by: H. Matsui
From: Technical Services Dept., GTS Division	

Classification:	☐ Troubleshooting	☐ Part information	☒ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom

Paper jams with the sorter stapler jogging function can occur under the following conditions:

1. When ST33 (20 bin S/S) is used with Cattleya 2 (B023).
   NOTE: If it is used for Cattleya 1(A257/A269), this will not occur.
2. When LT (11"X8 1/2") sideways is used when making 2 or more copies of an original.

Cause

The S/S main ROM software cannot compensate for the higher copy speed of Cattleya 2. The timing of the jogger function and paper feeding does not match that of Cattleya 2.

Solution

When installing the ST33 on Cattleya 2, replace the S/S main ROM with ver "G" or newer. The ROM version of the S/S main board can be viewed with copier SP7-801-005. The last digit (for example G) indicates the ROM version. Version G can also be used for Cattleya1. The part number of this new main ROM is A8315111.

Program upgrade in mass production
The main ROM upgrade (ver G) has been applied from the first January 2001 production run for each S/S. The cut-in serial numbers are as follows:
A831-17: H141130001 (see NOTE-1).
A831-26: 3T60110001 (see NOTE-2).
A831-55: L0551XXXXXX (see NOTE-3).

NOTE
1. "H14" is the prefix number. The 4th digit refers to the production year (1 = 2001). The 5th and 6th digits refer to the production month (13=January, 14=February, ..., 23=November, 24=December).

2. "3T6" is the prefix number. The 4th and 5th digits refer to the production month (01=January, 02=February,.....,11=November, 12=December). The 6th digit refers to the production year (1 = 2001).

3. "L055" is the prefix number, The 5th digit refers to the production year (1 = 2001) and the 6th and 7th digits refer to the production month (01=January, 02=February,.....,11=November, 12=December). Because there are currently no A831-55 models in production, there is no cut-in S/N at the moment. Please note that although the Cattleya 2 has no Lanier model at present, there are cases in which A831-55 is used with models other than Lanier.

For the A831-17 model, machines with the following S/N have already been upgraded at the factory:

H1402400031
H1402400050
H1402400054 to 57
H1402400059 to 63
H1402400068 to 69
H1402400076
H1402400090
H1402400117 to 154

<<Service parts>>
Service parts will be changed as follows:

S/S main board: A8315100 to A8315110 interchangeability: X/O
EPROM: A8315103 to A8135111 interchangeability: X/O

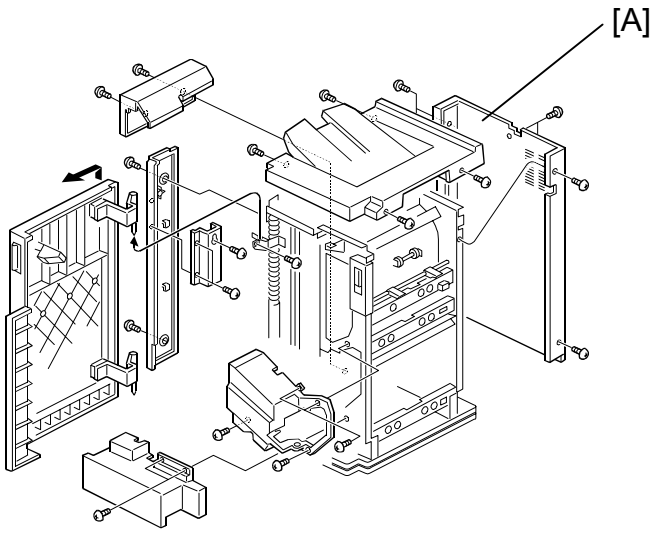
NOTE: The new main board and EPROM can also be used for the S/S which is installed on the Cattleya 1.

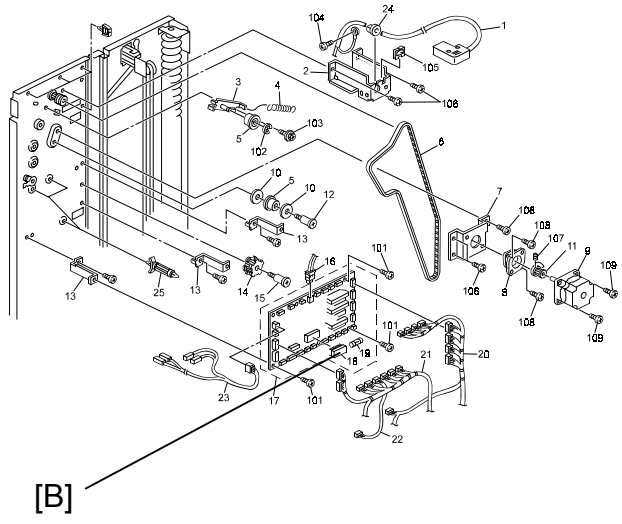
S/S main ROM replacement procedure

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

2. Replace the main ROM [B] with ver "G" or newer. The part number of this new main ROM is A8315111.

3. Confirm the ROM version with copier SP7-801-005. The last digit (for example G) indicates the ROM version.





Model: Cattleya2	Date: 18-May-01	No.: RB023002

Subject: Anti-static Brush & Transport Belt	Prepared by: H.K.
From: Technical Services Dept., GTS Division	

Classification:	☐ Troubleshooting	☒ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

SYMPTOM

It was found during production line tests that in duplex copy mode, the reverse side of the copy paper may sometimes stick to the upper plate when the paper passes through the transport belt unit.

CAUSE

A charged static electricity buildup on the transport belt surface repels the reverse side of the copy paper.

SOLUTION

Temporary solution on the production line

Two anti-static brushes have been attached to the transport left stay from the first production lot (B0233880, Parts Catalogue page. 77, index 1).

Final solution on the production line

The material of the transport belt has been changed from a non-conductive to a conductive one. The part number has been changed as follows:

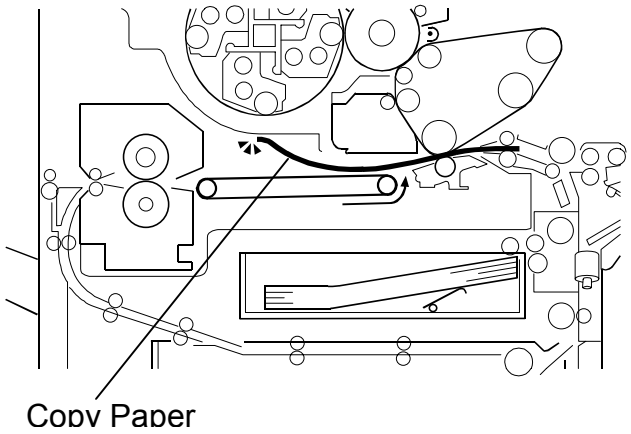
Old part number	New part number	Description	Q'ty	Int	Page	Index	Note
AA040023	AA040031	TRANSPORT BELT	2	X/O	71	8	

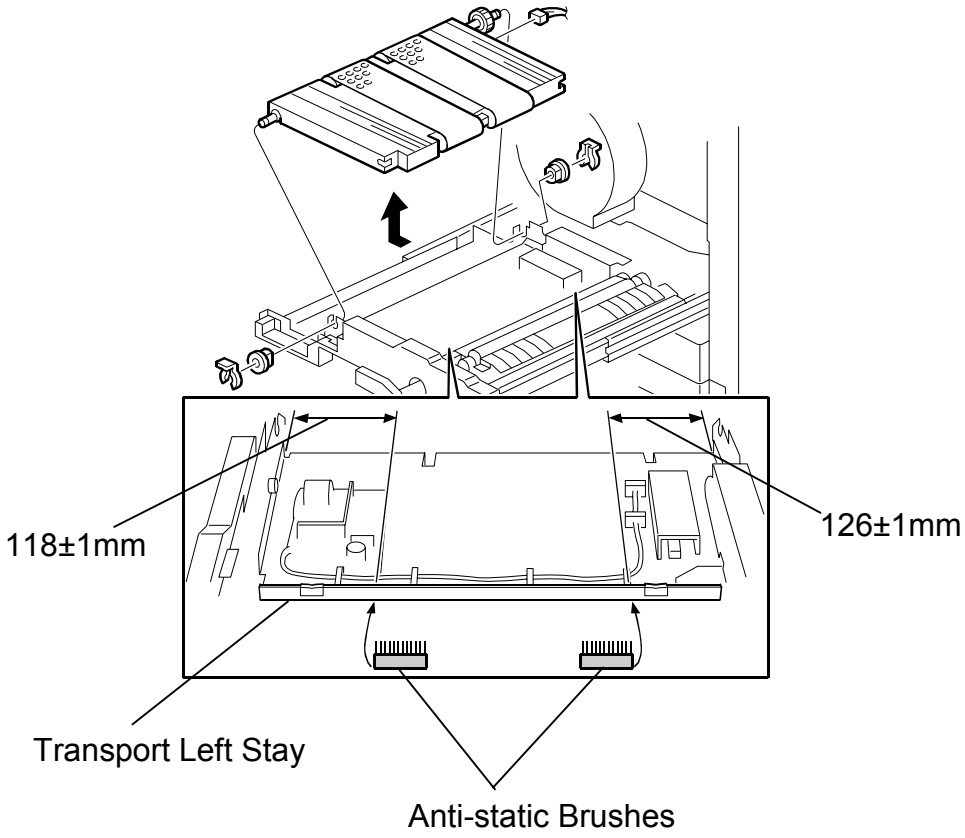
Cut-in serial numbers

B02315	H6310200001
B02317	H6310200051
B02319	H63103xxxxx
B02322	H6310200181
B02326	4G40210001
B02327	H6310200264
B02329	H6310300570

Remarks for machines produced before the above serial numbers:

If the old transport belt (AA040023) is replaced with the new part (AA040031) in machines before the modification, remove the two anti-static brushes from the machine. This is because the extra anti-static brushes can adversely affect copy quality in these older machines.





Model: Cattleya 2	Date: 24-May-01	No.: RB023003

Subject: Cattleya 2 Basic Tips	Prepared by: Tim. Okajima
From: Technical Services Dept., GTS Division	

Classification:			
	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Overview

This document is designed to allow field service representatives to do the following:

1. Easily access necessary troubleshooting and information very quickly
2. Customize maintenance programs for customers according to their needs and the machine performance levels / capabilities.

Please keep this document accessible whenever you are servicing the Cattleya 2 in the field. Later, this document will be updated based on your comments and other field information.

Note:

As the customize maintenance program is a new concept and this document is a trial version, we will not provide you with this kind of document for other models. If this will be accepted and useful in the field, we will consider developing it for other models.

Basic Tips for Cattleya 2

Contents

1st Issued on	May 15, 2001
Issued by	GTS, Ricoh Co. Ltd.

Summary

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1. Specifications & Adjustments

1-1. Blank Margin

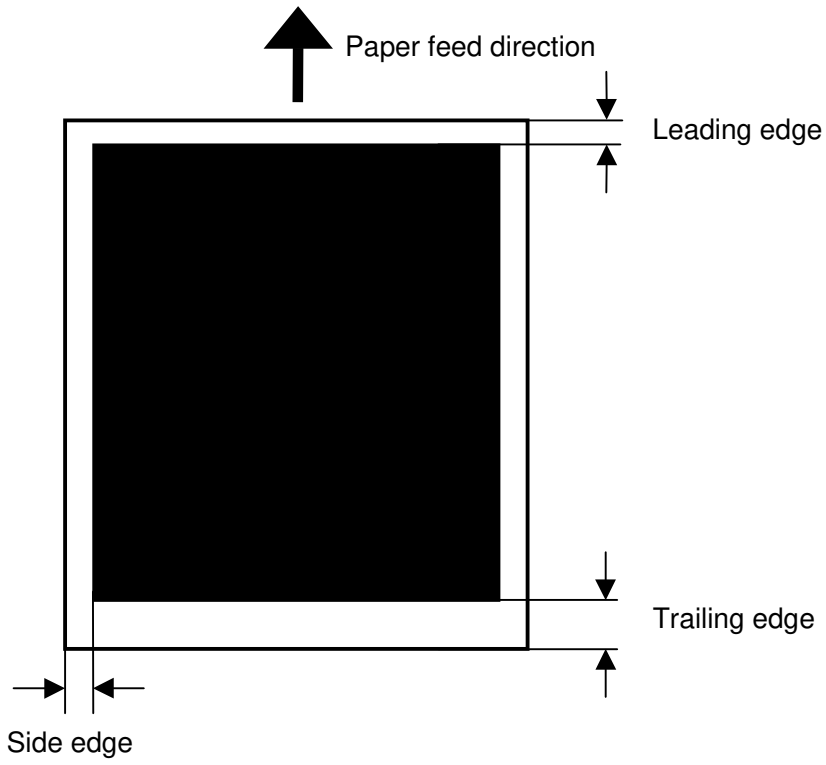
Definition

The blank margin at the leading edge is needed to help paper separate in the fusing unit and also assists the margin in trimming the effective image area. With the current laser copier technology, the leading edge margin must be created to prevent paper jams (not adjustable in the field).

Specification

Leading edge: 4mm ± 2mm
Trailing edge: 2mm ± 2mm (4mm ± 2mm in case of Thick 1 and 2 modes)*
Side edge: 2mm ± 2mm (maximum 4mm when sum both left and right side).

*Note: In both the Thick Mode 1 and 2, there is 4mm blank margin at the leading edge (predecessor model was 2mm). This is to eliminate blurred images which may occur at the trailing edge due to potential paper holding problems with the new paper transfer roller system.



Competitor Information

Cattleya 1:	Trailing edge in think mode: 2mm+-2mm; the others are same as those of the Cattleya 2.
Canon CLC1150:	Leading edge: 8mm
Xerox DC1250:	Trailing edge: 4mm, but smeared image can be seen at the trailing edge

Related SP modes

SP2XXX (Drum)

2	Mode Number		Function / [Setting]
101	Sub-scan/Main-scan margin adjustment		
	1	Sub-scan: Leading edge: Normal	Adjusts the margin perpendicular to the front edge. (Screen C, SP9-703) [–4.0 to 4.0 mm / **0** / 0.1 mm/step]
	2	Sub-scan: Leading edge: Thick 1	
	3	Sub-scan: Leading edge: Thick 2	
	4	Sub-scan: Leading edge: OHP	
	5	Sub-scan: Trailing edge: Normal	Adjusts the margin perpendicular to the back edge. (Screen C, SP9-703) [–3.0 to 10.0 mm / **0** / 0.1 mm/step]
	6	Sub-scan: Trailing edge: Thick 1	
	7	Sub-scan: Trailing edge : Thick 2	
	8	Sub-scan: Trailing edge: OHP	
	9	Main-scan: Leading edge	Adjust the leading margin (operator side). (Screen C, SP9-703) [–2.0 to 5.0 mm / **0** / 0.1 mm/step]
	10	Main-scan: Trailing edge	Adjusts the trailing margin. (Screen C, SP9-703) [–2.0 to 5.0 mm / **0** / 0.1 mm/step]
	11	Sub-scan: Auto 2nd side: Trailing edge of 1st side	Adjusts the trailing margin for the first side of duplex copies. (Screen C, SP9-703) [–3.0 to 10 mm / **0** / 0.1 mm/step]

1-2. Registration

Definition

The registration is determined by the paper start timing at the registration roller and the laser start timing, both of which can be adjusted by SP mode.

If you make the paper start timing earlier, the image is moved toward the trailing edge. Conversely, if you make it later, the image is moved toward the leading edge.

Note: If the timing is made too early or too late, this can cause a paper jam.

Specification

Leading edge registration

Margin of error with recommended paper:

0 ± 1.5mm (full size or reduction mode)

0 ± 1.5mm x M (Enlargement ratio: M)

Margin of error with *suggested paper weights *:*

0 ± 2.0mm (full size or reduction mode)

0 ± 2.0mm x M (Enlargement ratio: M)

Margin of error in Duplex mode with suggested paper weights:
(17g/m2-105g/m2)

0 ± 2.0mm (full size copy)

0 ± 2.0mm x M (Enlargement ratio: M)

Side to side registration

Margin of error with recommended paper and suggested paper weights:

1.5 ± 0.5 mm. < 4 mm total

Competitor Information

NA

* Suggested paper weights: Paper included in the original pool of design target paper weights, i.e. is expected to work well with the machine.

64g/m2 – 256g/m2 for Tray 2, 3, or LCT, 64g/m2 - 105g/m2 for Tray 1.

Related SP modes

SP1-XXX (Feed)

1	Mode Number/Name		Function / [Setting]
001	Leading Edge Registration		
	1	Normal paper	Adjusts the leading edge registration by changing the timing of the registration clutch. (Screen A, SP7-903) [+7 to –7 / **0.0** / 0.1 mm/step] **IAJ** *Specification: 4 ± 1 mm* *Thick paper 1 is listed as Thk on the screen.* *Thick paper 2 is listed as Super Thk.*
	2	OHP	
	3	Thick paper 1	
	4	Thick paper 2	
	5	Duplex	
	6	Second sheet, Half speed	
	7	Second sheet, 1/3rd speed	
002	Side-to-Side Registration		
	1	By-pass	Adjusts the side-to-side registration by changing the laser start position (main scan). (Screen A, SP1-236) [+9 to –9 / **0.0** / 0.1 mm/step] **IAJ** Specification: 1.5 ± 0.5 mm. < 4 mm total
	2	Tray 1	
	3	Tray 2	
	4	Tray 3	
	5	Tray 4	
	6	2nd side	
	7	LCT	

Troubleshooting

The crop mark positions on the 1st and 2nd faces do not match with duplex printing from the controller.

1. Make sure that both the leading edge and side to side registrations of the 1st side in Duplex printing are within specification. If they are not, adjust them using the SP modes described above.
2. Make duplex prints with crop marks and adjust the registration of the 2nd face using SP1-001-005 (Duplex) and SP 1-002-006.

1-3. Magnification

Definition

The margin of error for sub-scan magnification is twice as large as that of main scan magnification. This is because sub-scan magnification is affected by the variations in paper feed speed (paper feed motor), in contrast to the relatively high accuracy of the image processing unit (main scan mag.).

Specification

Margin of error:
Main Scan Direction: ± 0.5% or less
Sub Scan Direction: ± 1.0% or less

Competitor Information

NA

Related SP modes

SP2-XXX (Drum)

2	**Mode Number**		**Function / [Setting]**
112	Main scan magnification adjustment		
	1	Copy mode	DFU [0] (Screen D, SP9-703)
	2	Print mode	Adjusts the magnification along the main scan direction for printer mode (Screen D, SP9-703) [–1.0% to +1.0% / **0** / 0.1/step]
113	Sub-scan magnification adjustment		
	1	Copy mode	Adjusts the magnification along the sub-scan direction for copy mode (Screen D, SP9-703) [–1.0% to +1.0% / **0** / 0.1/step]
	2	Print mode	Adjusts the magnification along the sub-scan direction for printer mode (Screen D, SP9-703) [–1.0% to +1.0% / **0** / 0.1/step] *The screen displays "FsynchMagAdj PRINTER".*

Troubleshooting

NA

1-4. Banding

Definition

Lighter or darker bands appear perpendicular to the paper feed direction at a fixed interval. The possible causes are:

- Curves develop in the transfer belt (areas wrapped around rollers)
- Drum with areas already exposed to light
- Un-even development roller rotation speed

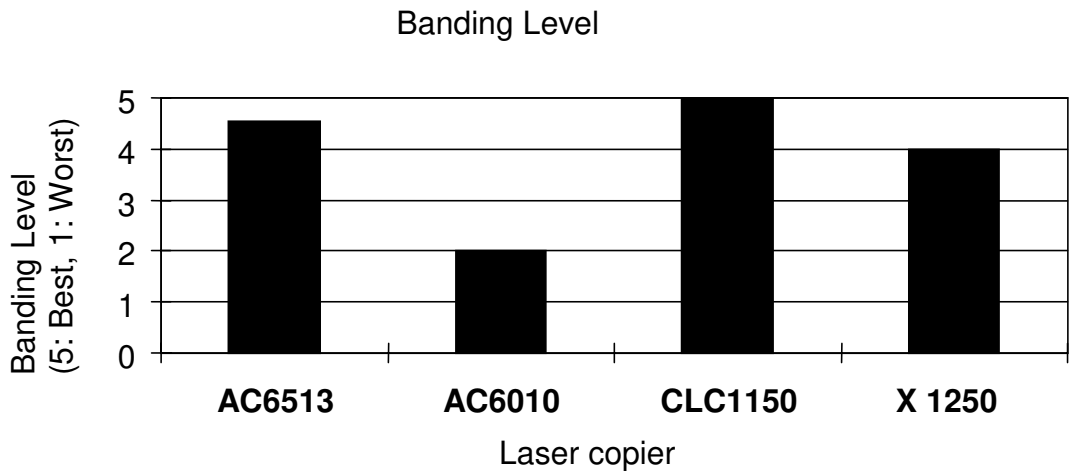
Specification

No specification is available for banding. In addition, it is not possible to completely eliminate banding with current laser printing technology. Please refer to the image sample section for the banding level.

Competitor Information

According to our research, the level of the banding on this machine in comparison with competitor models is as follows:

Related SP modes



NA

Related Information

Size of Rollers

Hot roller/Pressure roller:	60mm diameter, 187mm circumference
Drum: 90mm diameter,	283mm circumference

Troubleshooting

NA

1-5. Jitter

Definition

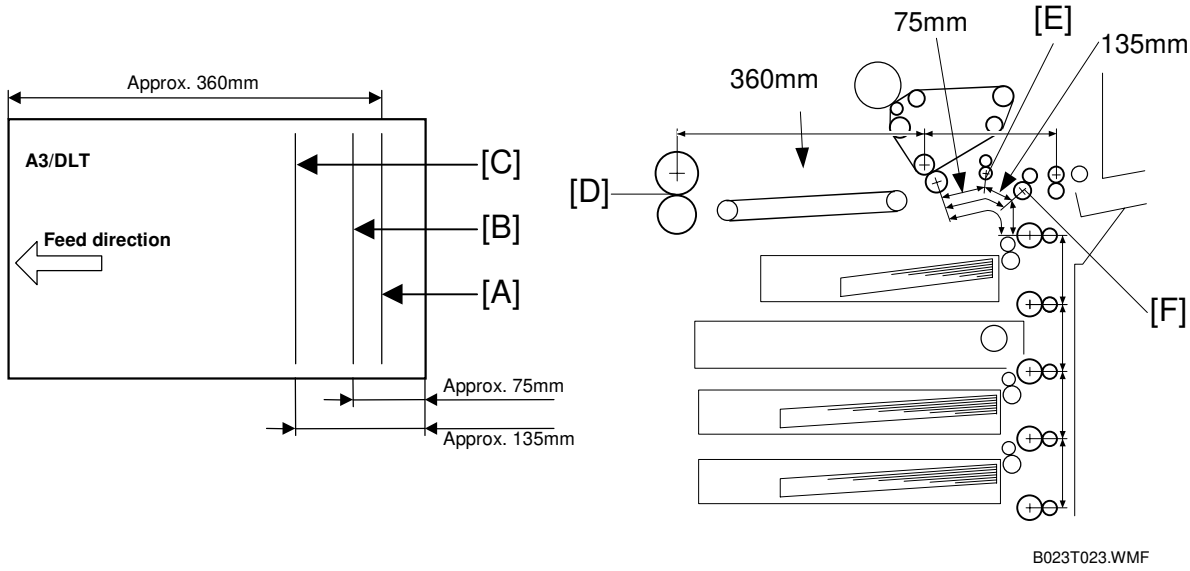
Dark or light bands perpendicular to the paper feed direction, as vibration in the machine is transmitted to the laser writing area. The Interval between bands varies, however the general location is usually fixed (e.g. 130mm from the trailing edge).

Specification

There is no specification available for jitter. It is extremely difficult to completely eliminate this symptom with current laser printing technology. Please refer to the image sample section for the jitter level.

Jitter in Thick or Extra Thick paper modes

If jitter appears in Thick or Extra Thick paper modes at the position shown in figure [A], [B] and [C], please confirm the following:



1) Jitter [A]: Approx. 360 mm from the leading edge
   - Possible cause: The leading edge does not enter the fusing nip [D] smoothly, and the paper impacts on some surrounding area, causing it to feel shock.
   - Check to see if the fusing entrance area components are properly alligned, and if the area is dirty at all.
2) Jitter [B]: Approx. 75 mm from the trailing edge
   - Possible cause: The shock felt by the paper when the trailing edge leaves the registration rollers [E].
   - Try adjusting the following SP modes:
     SP1-801-011 (Registration motor speed for thick paper)
     SP1-801-012 (Registration motor speed for extra thick paper)
     *Default: – 0.2, value range: –5.0 to +5.0, step 0.1
3) Jitter [C]: Approx. 135 mm from the trailing edge
   - Cause: The shock felt by the paper when the trailing edge leaves the paper feed rollers [F].
   - Try adjusting the following SP modes:
     SP1-801-005 (Paper feeding motor speed for thick paper)
     SP1-801-008 (Paper feeding motor speed for extra thick paper)
     *Default: –2.0, value range: –5.0 to +5.0, step 0.1

Competitor Information
N/A

References – Paper size

Paper	inch	mm	Paper	mm
Half Letter	5.5x8.5	134x208	A5	148x210
Letter	8.5x11	208x269	A4	210x297
Legal	8.5x14	208x343	B4	257x364
Ledger	11x17	269x416	A3	297x420
12x18	12x18	294x441	—	—
13x19	13x19	318x465	A3 Wide	318x465

Length from leading edge for possible jitter S: Sideways, L: Lengthwise

	HLT/LT S	LT L	DLT	12x18	13x19	A5/A4S	B4	A4 L	A3	S3 Wide
Fusing entrance	—	—	360	360	360	—	360	—	360	360
Registration Roller	138	227	350	371	395	140	294	227	350	395
Relay Roller	73	162	295	306	330	75	229	162	285	330

Length from trailing edge for possible jitter S: Sideways, L: Lengthwise

	HLT/LT S	LT L	DLT	12x18	13x19	A5/A4S	B4	A4 L	A3	S3 Wide
Fusing entrance	—	—	56	81	105	—	4	—	60	105
Registration Roller	70	70	70	70	70	70	70	70	70	70
Relay Roller	135	135	135	135	135	135	135	135	135	135

1-6. Hue / Density Consistency

Definition

Different hue bands appear in solid image areas perpendicular to the paper feed direction. The possible cause is a shift in the dot alignment or an uneven development roller speed.

Specification

No specification is available for hue change. In addition, this cannot be completely eliminated with current laser printing technology. Please refer to the image sample section for the hue change level.

Competitor Information

NA

Related SP modes

NA

Troubleshooting

NA

1-7. Thick Paper Handling

1-7-1. Overview

Thick paper handling is one of the sales points of the Cattleya series. Thick Mode (carried over from Cattleya1) has been enhanced, and Very Thick Mode has been newly added. These modes are able to handle the vast majority of thick paper types, however in some cases fine tuning of the fusing temperature may be required. Therefore, please read the following carefully and take the appropriate actions as listed at each occasion.

1-7-2. At Installation

1. Refer to the below box and follow the instructions if the customer in which the machine is about to be installed uses the listed type of paper in the most frequent manner.

> - The following papers have already been tested in Japan and it was confirmed that the fine tuning is NOT needed for the 3 types of paper:
> - Neusiedler Colour Copy White 250g/m2
> - Neusiedler Colour Copy White 200g/m2
> - Hammermille Color Copy Cover 80lb (216g/m2)
> - Regarding the Fedrigoni 200g/m2, we strongly recommend to perform the “3-4. Fine tuning #2” at the installation.

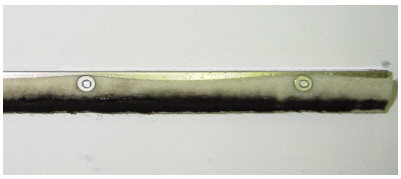
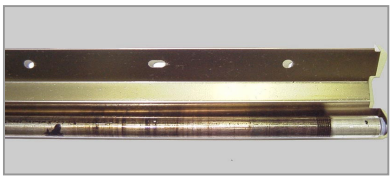
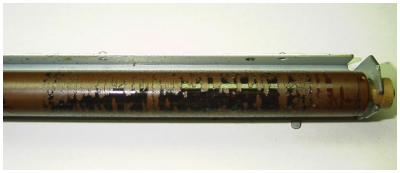
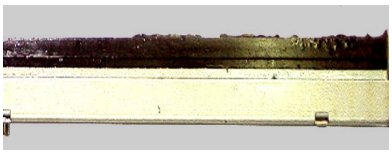
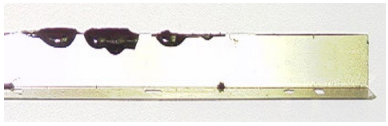
2. If not listed, a clear explanation to the customer is required on the different kind of paper modes available for this machine, and that they follow this setting sequence properly.

Paper Modes

Mode:	G/m2:	Lb. (Bond):	Feeding Speed:
Normal	64 to 105	17 to 28	245 mm/sec
OHP	—	—	122.5mm/sec
Thick	105 to 157	28 to 42	122.5mm/sec
Very Thick	157 to 256	42 to 68	70mm/sec

1-7-3. At First Visit After Installation (Approx. 40kD)

1. When making a first visit to the customer’s site since installation (It is probably 40kD since the installation for cleaning the fusing blade), check the condition of the parts listed in the following table. If their condition is similar to the pictures shown below, take a necessary action that is mentioned in the table.

Part Name	Part Number	Conditions	Action
Oil Supply Felt	A2574171		If the condition is same or comparable to the picture on the left, replace this part.
Pre-cleaning Roller	AE042049		Replace the roller if it is noticeably dirtier than the one shown in the picture on the left.
Hot Roller	AE010034	(no picture).	Replace if damaged.
Cleaning Roller	AE042044		Clean the part.
Hot roller blade	AE043031		Clean the part.
Scraper	A2574213		Clean the part.

3-2. With the exception of the pre-cleaning roller*, if you have the condition as shown in the table above (even if one of the parts in the table gets dirty), reduce the fusing temperature according to the following procedure described as “FINE TUNIG #1”. This is because in most of these cases are caused by the over-fusing, also known as “hot offset”.
*As the pre-cleaning roller becomes dirty under the normal operating, this should not be used to judge whether or not the fine-tuned adjustment is needed.

Figure: Example of the Hot offset image

3-3. Procedure – Fine Tuning #1

Set the fusing temperature as follows:

The Main firmware ver 1.082 or earlier:

SP1-105 - 002. Single side Hot Idling	195 → 190
005. Single side Hot OHP/Thick FC	180 → 168
006. Single side Hot OHP/Thick 1C	180 → 168
007. Single side Pressure Idling	160 → 155
010. Single side Press. OHP/Thick FC	155 → 143
011. Single side Press. OHP/Thick 1C	155 → 143
012. 2nd side Hot Idling	195 → 190
015. 2nd side Hot OHP/Thick FC	180 → 168
016. 2nd side Hot OHP/Thick 1C	180 → 168
017. 2nd side Pressure Idling	160 → 155
020. 2nd side pressure OHP/Thick FC	155 → 143
021. 2nd side pressure OHP/Thick 1C	155 → 143

The Main firmware ver 1.09 or later:

SP1-105 - 002. Single side Hot Idling	195 → 190
022* Single side Hot Thick2: FC	180 → 168
023* Single side Hot Thick2: 1C	180 → 168
007. Single side Pressure Idling	160 → 155
024* Single side Pressure.Thick2: FC	155 → 143
025* Single side Pressure. Thick2: 1C	155 → 143
012. 2nd side Hot Idling	195 → 190
026* 2nd side Hot Thick2.: FC	180 → 168
027* 2nd side Hot Thick2 : 1C	180 → 168
017 2nd side Pressure Idling	160 → 155
028* 2nd side pressure Thick2: FC	155 → 143
029* 2nd side pressure Thick2: 1C	155 → 143

*: Newly added SP modes from Main firmware v1.09.

Note:

- Decreasing the fusing temperature will not damage the machine, the only effect on copy quality will be uneven image density and/or uneven glossiness.
- When using main firmware ver 1.082 or earlier, the above temperature adjustment will affect not only Extra Thick Paper Mode (Thick 2) but also Thick Paper Mode (Thick 1) as well.
- As this is only a guideline to reducing hot offset, depending on the kind of paper, you may need to reduce the temperature more than the above figures. In which case, we suggest you do this by adjusting
  SP 1-105-2, 5, 6, 12, 15, 16. (main ver 1.082 or earlier)
  SP 1-105-2, 22, 23, 12, 26, 27 (main ver1.09 or later)

3-4. Procedure – Fine Tuning #2

Hot/Pressure Roller Temperature Setting for the Fedrigoni 200g/m2 paper commonly used in Italian market: Set the fusing temperature as follows:

The Main firmware ver 1.082 or earlier:

SP 1-105 -	002. Single side Hot Idling	195 → 180
	005. Single side Hot OHP/Thick FC	180 → 165
	006. Single side Hot OHP/Thick 1C	180 → 165
	007. Single side Pressure Idling	160 → 155
	010. Single side Press. OHP/Thick FC	155 → 143
	011. Single side Press. OHP/Thick 1C	155 → 143
	012. 2nd side Hot Idling	195 → 180
	015. 2nd side Hot OHP/Thick FC	180 → 165
	016. 2nd side Hot OHP/Thick 1C	180 → 165
	017. 2nd side Pressure Idling	160 → 155
	020. 2nd side pressure OHP/Thick FC	155 → 143
	021. 2nd side pressure OHP/Thick 1C	155 → 143

The Main firmware ver 1.09 or later:

SP 1-105 -	002. Single side Hot Idling	195 → 180
	022. Single side Hot Thick2: FC	180 → 165
	023. Single side Hot Thick2: 1C	180 → 165
	007. Single side Pressure Idling	160 → 155
	024. Single side Pressure.Thick2: FC	155 → 143
	025. Single side Pressure. Thick2: 1C	155 → 143
	012. 2nd side Hot Idling	195 → 180
	026. 2nd side Hot Thick2.: FC	180 → 165
	027. 2nd side Hot Thick2 : 1C	180 → 165
	017. 2nd side Pressure Idling	160 → 155
	028. 2nd side pressure Thick2: FC	155 → 143
	029. 2nd side pressure Thick2: 1C	155 → 143

2. Customized Maintenance Program (CMP)

2-1. Overview

The Standard Maintenance Program PM table in the Service Manual is designed to support a wide spectrum of customers, including copy shops (Print for Pay), graphic design firms, publishing companies as well as general office environments. Although this program is able to satisfy the needs of most of these customers, there are some high-demand professionals (e.g. copy shops) who constantly require the image quality to be top level with the high-coverage prints they make. This tends to increase the number of service calls.

To accommodate this, we would like to offer the **C**ustomized **M**aintenance **P**rogram, which is designed to consistently provide the high-demand customer with an image quality of Level B* or higher (see the table below for definitions). The **CMP** basically reduces the maintenance interval in order to keep the machine in a better condition than it would be under the **S**tandard **M**aintenance **P**rogram. We have carefully chosen only those parts that have a major effect on image quality and whose PM intervals could be reduced. This will allow for a reduction in the rising service costs.

Although we have specified reduced intervals for certain parts, the CMP is a guideline for field technicians. The actual time of replacement we leave to the technician's discretion.

Table: Definition of the Image quality levels:

Rating	Definition
Level A (Ideal)	The image quality is equivalent to that at installation.
Level B (Excellent)	Although not the same as at installation, still a very high level of image quality.
Level C (Good)	Some high-demand professionals (copy shops) may not be 100% satisfied.
Level D (Fair)	Most users would not be satisfied.
Level F (Poor)	Servicing required.

Note: The CMP was created based on the results of a 1.5 PM running test using 3 production units.

2-2. Know the machine capability

We made the print samples by using 3 production units. These samples show how the mage quality will be deteriorated during 1.5PM (120kD). Please see them carefully and know the machine capability.

Note: You can see the big color shift on the print samples in the binders. These were caused by the proto-type controller and its utility. So, please do not pay attention to the color shift.

You can find three binders as a set. They were made under the following conditions:

Binder Number	Thick paper usage ratio	Maintenance
#1	25%	Cleaned the hot roller blade at **40kD only** during 120kD run, no other maintenance was performed.
#2	25%	Cleaned the hot roller blade at **40kD only** during 120kD run, no other maintenance was performed.
#3	100%	Cleaned the hot roller blade at **20kD only** during 60kD run, no other maintenance was performed.

The following two items are the key to maintain the print quality in high level:

1. Glossiness (e.g. less streaks in paper feed direction and adequate glossiness)
2. Solid/halftone fill (e.g. less white streaks in paper feed direction, even and smooth solid/halftone fill))

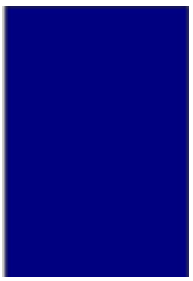
We used the five ranking (see the section 1) to evaluate the glossiness and solid/halftone fill of the print samples:

The print samples:

Woman with black background, TIF

EFI Sample Many Images, JPG

Graphic Test Image, PDF



Blue Solid, PPT

Side to Side, Illustrator

C-4, COPY

Glossiness for the #1 & #2 (25% Thick paper usage)

At 40kD, the hot roller blade was cleaned.

Paper	File / Original	Installation	25kD	50kD	73kD	94kD	117kD
Normal Paper	Woman with black back ground, TIF	A	C	B	C-D	C-D	D
	EFI sample many images, JPG	A	A	A	A-B	B	B
	Graphic test image, PDF	A	A	A	B	B	C
	Blue solid, PPT	A	B	B	C	C-D	D
	C-4, COPY	A	A	A	C	C-D	D
Thick Paper	EFI sample many images, JPG	A	B	A-B	C-D	C-D	D
	Graphic test image, PDF	A	A	A	C	C	C
	Blue solid, PPT	A	C	B	C	C	D
	C-4, COPY	A	B	A-B	B	C	C-D

Glossiness for the Machine #3 (100% Thick paper usage)

At 20kD, the hot roller blade was cleaned.

Paper	File / Original	Installation	13kD	23kD	33kD	42kD	52kD
Thick Paper	EFI sample many images, JPG	A	A	A	B	B	B
	Graphic test image, PDF	A	A	A	A-B	A-B	A-B
	Blue solid, PPT	A	A	B	B-C	B	B
	C-4, COPY	A	A	A	B	B	B

Solid/Halftone fill for #1 and #2 (25% Thick paper usage)

At 40kD, the hot roller blade was cleaned.

Paper	File / Original	Installation	25kD	50kD	73kD	94kD	117kD
Normal Paper	Woman with black back ground, TIF	A	A	A	A	B	B
	EFI sample many images, JPG	A	A	A	C-D	C	C
	Graphic test image, PDF	A	A	A	A	B	B
	Blue solid, PPT	A	B	B	D	D-E	D-E
	C-4, COPY	A	A	A	C	C	C
Thick Paper	EFI sample many images, JPG	A	A	A	A	B	B
	Graphic test image, PDF	A	A	A	A	B	B
	Blue solid, PPT	A	A	A	C	C	D
	C-4, COPY	A	A	A	A	B	B

Solid/Halftone fill for #3 (100% Thick paper usage)

At 20kD, the hot roller blade was cleaned.

Paper	File / Original	Installation	13kD	23kD	33kD	42kD	52kD
Thick Paper	EFI sample many images, JPG	A	A	B	B	C	C
	Graphic test image, PDF	A	A	B	B	C	C
	Blue solid, PPT	A	A-B	B	B-C	C	D
	C-4, COPY	A	A	B	B	C	C

2-3. How the CMP works

Glossiness

To maintain the image quality Level B or higher, we recommend the following maintenance program:

Description	Part #	SMP	*CMP*
Hot Roller	AE010034	80kD Replacement	**40kD Replacement**
Oil Supply Pad	A2574171	80kD Replacement	**40kD Replacement**
Cleaning Roller	AE042044	80kD Cleaning	**40kD Cleaning**
Scraper		80kD Cleaning	**40kD Cleaning**
Hot Roller Blade	AE043012	40kD Cleaning 80kD Replacement	**20kD Cleaning** **40kD Replacement**
Pressure Roller Blade	A2574187 (220V only)	320kD Replacement	**160kD Replacement**
Pre-cleaning Roller	AE042049	80kD Replacement	**40kD Replacement**

SMP: Standard Maintenance Program
CMP: Customized Maintenance Program

Solid / Halftone Fill

To maintain the image quality Level B or higher for the potion of the Solid / Halftone fill, we recommend the following maintenance program:

Description	Part #	SMP	***CMP***
Developer -K	—	60kD Replacement by PM counter	**34kD replacement by PM counter**
Developer- C, M, Y	—	48kD Replacement for each color	**27kD replacement for each color**
PCC Wire	AD020084	160kD Replacement	**80kD Replacement**
Drum Cleaning Blade	AD041050	100kD Replacement	**40kD Replacement**
Drum Lubricant Bar	A2573607	80kD Replacement	**40kD Replacement**
Drum Cleaning Brush	AD042043	100kD Replacement	**40kD Replacement**
Drum	B0239510	80kD Replacement	**40kD Replacement**
Drum Unit	—	80kD Cleaning	**40kD Cleaning**
Charge Corona Wire	AD020086	80kD Replacement	**40kD Replacement**
Charge Corona Grid	AD020085	100kD Replacement	**40kD Replacement**
Belt Cleaning Unit	—	80kD Cleaning	**40kD Cleaning**
ITB Cleaning Blade	A2576350	200kD Replacement	**100kD Replacement**
ITB Lubricant Bar	B0236350	200kD Replacement	**100kD Replacement**
ITB Lubricant Brush	B0236358	200kD Replacement	**100kD Replacement**
Transfer Belt	B0236050	80kD Replacement	**40kD Replacement**

2-4. Procedure

1. Get the following information:
   - How the print-out will be used at the customer site
     (for sell, for internal distribution, for graphic design check).
   - Customer's demand
   - Thick paper usage ratio
2. Discuss with the customer about the machine capability and suggest the CMP if you think that this program is needed the customer based on the information above.
3. Find the SMP / CMP table in the Appendix D.
   You can use this table whether the SMP or the CMP will be performed.

Note: The CMP in the Appendix D is a guideline for the customer whose application is approx. 75% or higher thick paper usage ratio and high demand on the image quality with the high-coverage prints they make.
Although we have specified reduced intervals for certain parts, the CMP is a guideline for field technicians. The actual time of replacement we leave to the technician's discretion.

Appendix A: Test patterns

Max ID:	ACC Pattern
Banding:	SP5-955-6 Solid 55 (K, C, M, Y, R, G, B, P)
Jitter:	SP5-955- 7, 1 dot 2x2, 180
Unevenness in Half tone:	SP5-955-7, 1 dot 2x2, 128
Hue change (mail scan):	SP5-955-6, Solid 110 (Purple, Green)
Color shift (sub scan):	SP4-417-8 (YMCK 16 gradation)
Line alignment:	SP5-955-14 Grid

Note: The test patterns for the banding, the jitter, the unevenness in the half tone, and the color shift, enhance those symptom to make the troubleshooting easily. And, the level of the symptom is way wroth compare to the symptom on the printing under the normal operation. This is because the dither of the test images are different from the dither on the usual copy./print mode.

Appendix B: SP Modes

SP Mode Types

The SP modes of this copier are divided into the following eight groups:

Screen Name	Group
Feed	Paper feed/transport/fusing
Drum	Drum unit
Process	Process control
Scanner	Scanner unit
Mode	Operating mode/system
Periphs	Peripherals
Log	Logged data
Special Mode	Others (special modes)

Service Program Mode tables

NOTE: 1) In the Function/[Setting] column:
- The related pop-up screen and SP7 function (if any) are in parenthesis after the function description,
- Comments are in italics.
- The “Setting” range is in brackets and the default “Setting” value is in bold.

2) Clearing the RAM resets SP and UP values to their defaults. It does not affect the serial number and main counter value, however.

3) **DFU** Designer or Factory Use only. Do not change these values.

4) **USM** This SP is ignored unless the user selects ‘Service Mode’ in UP mode.

5) **IAJ** See “Replacement and Adjustment - Copy Image Area Adjustments” for details.

6) **RA** See “Replacement and Adjustment” for details.

SP1-XXX (Feed)

1	Mode Number/Name		Function / [Setting]	
001	Leading Edge Registration			
	1	Normal paper	Adjusts the leading edge registration by changing the timing of the registration clutch. (Screen A, SP7-903) [+7 to –7 / **0.0** / 0.1 mm/step] **IAJ** *Specification: 4 ± 1 mm* *Thick paper 1 is listed as Thk on the screen.* *Thick paper 2 is listed as Super Thk.*	
	2	OHP		
	3	Thick paper 1		
	4	Thick paper 2		
	5	Duplex		
	6	Second sheet, Half speed		
	7	Second sheet, 1/3rd speed		
002	Side-to-Side Registration			
	1	By-pass	Adjusts the side-to-side registration by changing the starting position for the laser's main scan. (Screen A, SP1-236) [+9 to –9 / **0.0** / 0.1 mm/step] **IAJ** Specification: 1.5 ± 0.5 mm. < 4 mm total	
	2	Tray 1		
	3	Tray 2		
	4	Tray 3		
	5	Tray 4		
	6	2nd side		
	7	LCT		
003	Paper Feed Timing			
	1	Normal paper, by-pass	**[5.0]**	Adjusts the amount of paper buckle by changing the timing of the relay clutch. A positive setting creates more buckling. (Screen A, SP7-903) [+9 to –9 / 0.1 mm/step] +7 to –5 for by-pass: thick paper
	2	Tray paper feed	**[5.0]**	
	3	By-pass OHP	**[3.0]**	
	4	By-pass: Thick paper 1	**[1.5]**	
	5	2nd side	**[5.0]**	
	6	By-pass: Thick paper 2	**[–3.0]**	
	7	Tray: Thick paper 1	**[1.5]**	
	8	Tray: Thick paper 2	**[–3.0]**	
010	By-pass Up Time			
			Not used. **NOTE**: This SP is displayed and data can be input. However, this function is not available.	
101	Oil End Sensor			
			Turns the oil end sensor ON or OFF. (SP9-703) [**1 = ON**, 0 = OFF]	
104	Fusing Control			
			Selects the fusing temperature control mode. [**1 = ON/OFF control**, 0 = Phase control] *Phase control should be selected only if the user has a problem with the fluorescent lamps flickering. The main switch must be turned off and on when this setting is changed.*	
105	Hot/Pressure Roller Temperature Setting (Screen B) *This SP sets the temperature of the hot and pressure rollers in various modes.*			
	1	Single side: Hot: Reload	[100 to 200 / **185** / 1°C/step] Once the copier reaches this temperature, the ready light comes on and copies can be made. The temperature continues to increase until the ready state is reached.	
	2	Single side: Hot: Idling	[100 to 200 / **195** / 1°C/step] *Idling starts at 170°C. If the temperature is higher than 50°C when the power is turned on, idling is not executed*	
	3	Single side: Hot: Normal paper: FC	[100 to 200 / **180** / 1°C/step]	
	4	Single side: Hot: Normal paper : 1C	[100 to 200 / **170** / 1°C/step]	
	5	Single side: Hot: OHP/Thick paper: FC	[100 to 200 / **180** / 1°C/step]	

1	Mode Number/Name		Function / [Setting]
105	6	Single side: Hot: OHP/Thick paper: 1C	[100 to 200 / **180** / 1°C/step]
	7	Single side: Pressure: Idling	[100 to 200 / **160** / 1°C/step]
	8	Single side: Pressure: Normal paper: FC	[100 to 200 / **155** / 1°C/step]
	9	Single side: Pressure: Normal paper: 1C	[100 to 200 / **145** / 1°C/step]
	10	Single side: Pressure: OHP/Thick paper: FC	[100 to 200 / **155** / 1°C/step]
	11	Single side: Pressure: OHP/Thick paper: 1C	
	12	2nd side: Hot: Idling	[100 to 200 / **195** / 1°C/step]
	13	2nd side: Hot: Normal paper: FC	[100 to 200 / **180** / 1°C/step]
	14	2nd side: Hot: Normal paper: 1C	[100 to 200 / **170** / 1°C/step]
	15	2nd side: Hot: OHP/Thick paper: FC	[100 to 200 / **180** / 1°C/step]
	16	2nd side: Hot: OHP/Thick paper: 1C	
	17	2nd side: Pressure: Idling	[100 to 200 / **160** / 1°C/step]
	18	2nd side: Pressure: Normal paper: FC	[100 to 200 / **155** / 1°C/step]
	19	2nd side: Pressure: Normal paper: 1C	[100 to 200 / **145** / 1°C/step]
	20	2nd side: Pressure: OHP/Thick paper: FC	[100 to 200 / **155** / 1°C/step]
	21	2nd side: Pressure: OHP/Thick paper: 1C	
	22	Single side Hot Thick 2: FC	[100 to 200 / **180** / 1°C/step]
	23	Single side Hot Thick 2: 1C	[100 to 200 / **180** / 1°C/step]
	24	Single side Pressure: Thick 2: FC	[100 to 200 / **155** / 1°C/step]
	25	Single side Pressure, Thick 2: 1C	[100 to 200 / **155** / 1°C/step]
	26	2nd side Hot Idling	[100 to 200 / **180** / 1°C/step]
	27	2nd side Hot Thick 2: FC	[100 to 200 / **180** / 1°C/step]
	28	2nd side Hot Thick 2: 1C	[100 to 200 / **155** / 1°C/step]
	29	2nd side Pressure Thick 2: 1C	[100 to 200 / **155** / 1°C/step]
106	Fusing Temperature Display		
	1	Pressure roller	Displays the temperature of the pressure roller.
	2	Hot roller	Displays the temperature of the hot roller.
108	Fusing Unit Set		Disables fusing unit set detection. Keep at 0 for normal operation. [**0 = Detect**, 1 = Do not detect] - Procedure - Turn off the main switch. Remove the fusing unit. Keep the front door open and turn on the main switch. Access the SP mode and set the data to 1. Close the front cover.
109	Fusing Nip Band Check		
			Use to check the width of the fusing nip band. **RA**

1	Mode Number/Name		Function / [Setting]
112	Fusing Temperature Correction for Environment Temperature		
	1	High temperature	**DFU [0°C]**
	2	Low temperature	**DFU [5°C]**
801	Motor Speed Adjustment		
	1	Fusing motor: Normal speed	**DFU** [–5.0% to 5.0% / **0.0%** / 0.1%/step]
	2	Paper feed motor: Normal speed	**DFU** [–5.0% to 5.0% / **0.1%** / 0.1%/step]
	3	Drum motor: Normal speed	**DFU** [–3.0% to 3.0% / **0.0%** / 0.1%/step]
	4	Fusing motor: Half speed	**DFU** [–5.0% to 5.0% / **0.2%** / 0.1%/step]
	5	Paper feed motor: Half speed	**DFU** [–5.0% to 5.0% / **–2.0%** / 0.1%/step]
	6	Drum motor: Half speed	**DFU** [–3.0% to 3.0% / **0.2%** / 0.1%/step]
	7	Fusing motor: 1/3rd speed	**DFU** [–5.0% to 5.0% / **0.2%** / 0.1%/step]
	8	Paper feed motor: 1/3rd speed	**DFU** [–5.0% to 5.0% / **–0.2%** / 0.1%/step]
	9	Drum motor: 1/3rd speed	**DFU** [–3.0% to 3.0% / **0.2%** / 0.1%/step]
	10	Registration motor: Normal speed	**DFU** [–5.0% to 5.0% / **0.0%** / 0.1%/step]
	11	Registration motor: Half speed	**DFU** [–5.0% to 5.0% / **–0.2%** / 0.1%/step]
	12	Registration motor: 1/3rd speed	
	20	New motor/Old motor	**DFU** [0 to 1 / **0** /] 1: New motor 0: Old motor
901	Duplex Unit Side/End Fence Adjustment		
	1	Side fence	Adjusts the duplex side fence stop position. [–5.0 to 5.0 mm / **0** / 0.1 mm/step]
	2	End fence	Adjusts the duplex end fence stop position. [–5.0 to 5.0 mm / **0** / 0.1 mm/step]

SP2-XXX (Drum)

2	Mode Number		Function / [Setting]
10	MChgCrrnt		
	1	MChgCrrnt EnvLmt [g/m^3]	**DFU** [0.6 to 50.0 / **11.0** / 0.1]
	2	MChgCrrnt [μA]: EnvHigh	**DFU** [400 to 850 / **700** / 1.0]
	3	MChgCrrnt [μA]	**DFU** [400 to 850 / **560** / 1.0]
	5	MChgCrrnt [μA]: Half	**DFU** [400 to 850 / **0** / 1.0]
	6	MChgCrrnt [μA]: 1/3rd	
11	MchgFanONTime		
	1	Mchg FanONTime EnvLmt [g/m^3]	**DFU** [0.6 to 50.0 / **4.3** / 0.1]
	2	MchgFanONTime [min]	**DFU** [0.0 to 900.0 / **0.5** / 0.1]
	3	MChgFanONTime [min]: EnvLow	**DFU** [0.0 to 900.0 / **20.0** / 0.1]
101	Sub-scan/Main-scan margin adjustment		
	1	Sub-scan: Leading edge: Normal	Adjusts the margin along the front edge. (Screen C, SP9-703) [–4.0 to 4.0 mm / **0** / 0.1 mm/step]
	2	Sub-scan: Leading edge: Thick 1	
	3	Sub-scan: Leading edge: Thick 2	
	4	Sub-scan: Leading edge: OHP	
	5	Sub-scan: Trailing edge: Normal	Adjusts the margin along the back edge. (Screen C, SP9-703) [–3.0 to 10.0 mm / **0** / 0.1 mm/step]
	6	Sub-scan: Trailing edge: Thick 1	
	7	Sub-scan: Trailing edge : Thick 2	
	8	Sub-scan: Trailing edge: OHP	
	9	Main-scan: Leading edge	Adjust leading margin. (operator side). (Screen C, SP9-703) [–2.0 to 5.0 mm / **0** / 0.1 mm/step]
	10	Main-scan: Trailing edge	Adjusts the trailing margin. (Screen C, SP9-703) [–2.0 to 5.0 mm / **0** / 0.1 mm/step]
	11	Sub-scan: Auto 2nd side: Trailing edge of 1st side	Adjusts the trailing margin for the first side of duplex copies. (Screen C, SP9-703) [–3.0 to 10 mm / **0** / 0.1 mm/step]
111	Fax Print Gamma Parameter		
	000	Fax Print Gamma Parameter	**Japan Only** [0 to 255 / **192** / 1 per step]
112	Main scan magnification adjustment		
	1	Copy mode	DFU [0] (Screen D, SP9-703)
	2	Print mode	Adjusts the magnification in the main scan direction for printer mode. (Screen D, SP9-703) [–1.0% to +1.0% / **0** / 0.1/step]
113	Sub-scan magnification adjustment		
	1	Copy mode	Adjusts the magnification in the sub-scan direction for copy mode. (Screen D, SP9-703) [–1.0% to +1.0% / **0** / 0.1/step]
	2	Print mode	Adjusts the magnification in the sub-scan direction for printer mode. (Screen D, SP9-703) [–1.0% to +1.0% / **0** / 0.1/step] *The screen displays "FsynchMagAdj PRINTER".*

2	Mode Number		Function / [Setting]
207	Forced toner supply positioning		
	1	K	Moves the selected development unit to the development position and forces toner to be supplied in according to the setting in SP2-208. Press ON key to start after selecting the color.
	2	C	
	3	M	
	4	Y	
208	Forced toner supply cycle count		
	1	K	Sets the number of forced toner supply cycles. [1 to 50 / **10** / cycles] *The toner supply clutch turns on and off for 1 second. This cycle repeats a number of times equal to the value selected. (Approximately 0.5g of toner is supplied each cycle. Therefor, about 5g of toner is supplied using the default setting. This increases the toner density by about 0.7wt%.)*
	2	C	
	3	M	
	4	Y	
	5	Toner supply ratio: Fixed mode: K	Sets the toner supply ratio for each color in fixed mode. [0% to 100% / **5%** / 1%/step]
	6	Toner supply ratio: Fixed mode: C	
	7	Toner supply ratio: Fixed mode: M	
	8	Toner supply ratio: Fixed mode: Y	
	9	Toner supply method	Selects the toner supply method. 0 = Fixed supply 1 = Proportional control supply (with TD sensor output) **2 = Fuzzy control supply**
225	Developer initialization		
	1	Exe: K	Initializes the developer and performs a forced self check on the selected colors. Press the Execution key to start. The results are displayed on the operation panel. (Screen E) 0 = failure, 1 = success *The execution sequence is: Aging → Initial Vref check → Forced process control self-check.*
	2	Exe: C	
	3	Exe: M	
	4	Exe: Y	
	5	Exe: All	
	6	Exe: CMY	
301	ITB bias adjustment		
	1	4C: 1st color	DFU Adjusts the image transfer belt bias in standard speed mode for each transfer process (1C - 4C) and color mode selected. [5 to 50 μA / **22 μA** / 1 μA/step]
	2	4C: 2nd color	[5 to 50 μA / **25 μA** / 1 μA/step]
	3	4C: 3rd color	[5 to 50 μA / **27 μA** / 1 μA/step]
	4	4C: 4th color	[5 to 50 μA / **29 μA** / 1 μA/step]
	5	2C: 1st color	[5 to 50 μA / **22 μA** / 1 μA/step]
	6	2C: 2nd color	[5 to 50 μA / **25 μA** / 1 μA/step]
	7	3C: 1st color	[5 to 50 μA / **22 μA** / 1 μA/step]
	8	3C: 2nd color	[5 to 50 μA / **25 μA** / 1 μA/step]
	9	3C: 3rd color	[5 to 50 μA / **27 μA** / 1 μA/step]
	10	1C : 1st color	[5 to 50 μA / **22 μA** / 1 μA/step]
	11	Non-image areas	**DFU** Adjusts the image transfer belt bias for the non-image areas. [5 to 50 μA / **6 μA** / 1 μA/step]

2	Mode Number		Function / [Setting]
301	12	Half-speed	**DFU** Adjusts the image transfer belt bias for OHP/Thick paper modes (Half speed). Before transferring to the paper in these modes, the developed image on the transfer belt passes the drum to synchronize the registration. [5 to 50 μA / **6 μA** / 1 μA /step]
	24	V_D Bias correction ON/OFF	**DFU** Sets the correction mode to ON or OFF. If ON, the transfer belt bias for image area is corrected by V_D (process control potential table). [**0 = ON**, 1 = OFF]
	25	4C : 2nd side : 1st color	**DFU** Adjusts the image transfer belt bias for the second side copy in duplex mode for each transfer process (1C - 4C) and color mode selected. [5 to 50 μA / **22 μA** / 1 μA/step] [5 to 50 μA / **25 μA** / 1 μA/step] [5 to 50 μA / **27 μA** / 1 μA/step] [5 to 50 μA / **29 μA** / 1 μA/step] [5 to 50 μA / **22 μA** / 1 μA/step] [5 to 50 μA / **25 μA** / 1 μA/step] [5 to 50 μA / **22 μA** / 1 μA/step] [5 to 50 μA / **25 μA** / 1 μA/step] [5 to 50 μA / **27 μA** / 1 μA/step] [5 to 50 μA / **22 μA** / 1 μA/step] *These appear on the operation panel in the following format, "1st 4C-mode NrmlBack".*
	26	4C : 2nd side : 2nd color	
	27	4C : 2nd side : 3rd color	
	28	4C : 2nd side : 4th color	
	29	2C : 2nd side : 1st color	
	30	2C : 2nd side : 2nd color	
	31	3C : 2nd side : 1st color	
	32	3C : 2nd side : 2nd color	
	33	3C : 2nd side : 3rd color	
	34	1C : 2nd side : 1st color	
	35	Lubricant brush 1	**DFU** Adjusts the image transfer belt bias during lubricant brush cleaning mode. [5 to 50 μA / 6 μA / 1 μA/step] *These appear as "Q1_Brush CLN1" and "Q1_Brush CLN2"*
	36	Lubricant brush 2	
	37	1/3rd Speed	**DFU** [5.0 to 50.0 μA / 5.0 μA / 1 μA/step]
	40	V_D correction coefficient	**DFU** [0 to 2.5 / 1.0 / 0.01/step]
302	PTR bias - Humidity range threshold		
	1	Threshold 1	**DFU** Changes the thresholds for absolute humidity adjustment. TH1 TH2 TH3 TH4 | | | | Environment: LL L Normal H HH LL: Very low humidity [0.6 to 50 g/m^3 / 4.3 g/m^3 / 0.1] L : Low humidity [0.6 to 50 g/m^3 / 11.3 g/m^3/ 0.1] H : High humidity [0.6 to 50 g/m^3 / 18.0 g/m^3/ 0.1] HH: Very high humidity [0.6 to 50 g/m^3 / 24.0 g/m^3/ 0.1] *These appear as "EnvLmt [0]" through "EnvLmt [3]."*
	2	Threshold 2	
	3	Threshold 3	
	4	Threshold 4	

2	Mode Number		Function / [Setting]
310	PTR bias adjustment		
	1	Humidity range set-up	Specifies which humidity range is used for paper transfer bias. Change the value only if the humidity sensor fails. 0 = fixed humidity range (normal condition) **1 = changed by humidity sensor** 2 = fixed humidity range (LL) 3 = fixed humidity range (L) 4 = fixed humidity range (H) 5 = fixed humidity range (HH) *The screen displays "EnvChoise".*
	SP2-310-2 to SP2-310-29 adjust the PTR bias for the type of paper and the copy mode. *(Screen F, SP9-703)*		
	2	Image area: Normal: 1C	**DFU** [5 to 100 μA / **40 μA** / 1 μA /step]
	3	Image area: Normal: 2C	**DFU** [5 to 100 μA / **47 μA** / 1 μA /step]
	4	Image area: Normal: 3C	**DFU** [5 to 100 μA / **55 μA** / 1 μA /step]
	5	Image area: Normal: 4C	
	6	Image area: Thick 1: 1C	**DFU** [5 to 100 μA / **16 μA** / 1 μA /step]
	7	Image area: Thick 1: 2C	**DFU** [5 to 100 μA / **18 μA** / 1 μA /step]
	8	Image area: Thick 1: 3C	**DFU** [5 to 100 μA / **24 μA** / 1 μA /step]
	9	Image area: Thick 1: 4C	
	10	Image area: OHP:1C	
	11	Image area: OHP:2C	**DFU** [5 to 100 μA / **30 μA** / 1 μA /step]
	12	Image area: OHP:3C	**DFU** [5 to 100 μA / **36 μA** / 1 μA /step]
	13	Image area: OHP:4C	
	14	Image area: Thick 2: 1C	**DFU** [5 to 100 μA / **12 μA** / 1 μA /step]
	15	Image area: Thick 2: 2C	**DFU** [5 to 100 μA / **14 μA** / 1 μA /step]
	16	Image area: Thick 2: 3C	**DFU** [5 to 100 μA / **16 μA** / 1 μA /step]
	17	Image area: Thick 2: 4C	
	18	Image area: Normal: 2nd side: 1C	**DFU** [5 to 100 μA / **40 μA** / 1 μA /step]
	19	Image area: Normal: 2nd side: 2C	**DFU** [5 to 100 μA / **42 μA** / 1 μA /step]
	20	Image area: Normal: 2nd side: 3C	**DFU** [5 to 100 μA / **45 μA** / 1 μA /step]
	21	Image area: Normal: 2nd side: 4C	
	22	Image area: Thick 1: 2nd side: 1C	**DFU** [5 to 100 μA / **16 μA** / 1 μA /step]
	23	Image area: Thick 1: 2nd side: 2C	**DFU** [5 to 100 μA / **19 μA** / 1 μA /step]
	24	Image area: Thick 1: 2nd side: 3C	**DFU** [5 to 100 μA / **22 μA** / 1 μA /step]
	25	Image area: Thick 1: 2nd side: 4C	
	26	Image area: Thick 2: 2nd side: 1C	**DFU** [5 to 100 μA / **12 μA** / 1 μA /step]
	27	Image area: Thick 2: 2nd side: 2C	**DFU** [5 to 100 μA / **14 μA** / 1 μA /step]
	28	Image area: Thick 2: 2nd side: 3C	**DFU** [5 to 100 μA / **16 μA** / 1 μA /step]
	29	Image area: Thick 2: 2nd side: 4C	

2	Mode Number		Function / [Setting]
310	SP2-310-30 to SP2-310-37 adjust the PTR bias used for the ID sensor pattern. (Screen F, SP9-703)		
	30	ID pattern: Normal: 1C	**DFU** [5 to 100 μA / **20 μA** / 1 μA /step]
	31	ID pattern: Normal: 2C	**DFU** [5 to 100 μA / **50 μA** / 1 μA /step] *30 – 33 labeled as "P:Nrml"*
	32	ID pattern: Normal: 3C	
	33	ID pattern: Normal: 4C	
	34	ID pattern: All others: 1C	**DFU** [5 to 100 μA / **12 μA** / 1 μA /step]
	35	ID pattern: All others: 2C	**DFU** [5 to 100 μA / **14 μA** / 1 μA /step] *34 – 37 labeled as "P:ElseNrml"*
	36	ID pattern: All others: 3C	
	37	ID pattern: All others: 4C	
	38	Lubricant brush (Belt cleaning mode)	**DFU** Adjusts the paper transfer roller bias during lubricant brush cleaning. (Screen F, SP9-703) [5 to 100 μA / **35 μA** / 1 μA /step]
311	1	Forced belt cleaning	Lubricates the image transfer roller. Press the ON key to start. *This mode may help alleviate partial blank areas or insufficient roller cleaning.*
313	PTR bias: Paper size correction		
	1	Normal: LT (S) or larger	**DFU** Corrects the PTR bias for the paper type and size. The paper transfer roller bias times the percentage selected in this SP mode is applied to the bias roller. (S = sideways, L = lengthwise) [50 to 500% / **100%** / 1%/step] (except for SP2-313-008) [50 to 500% / **200%** / 1%/step] (SP2-313-008)
	2	Normal: B4 or larger	
	3	Normal: A5 (L) or larger	
	4	Normal: Less than A5 (L)	
	5	Thick 1: LT (S) or larger	
	6	Thick 1: B4 or larger	
	7	Thick 1: A5 (L) or larger	
	8	Thick 1: Less than A5 (L)	
	9	OHP:LT (S) or larger	
	10	OHP:B4 or larger	
	11	OHP:A5 (L) or larger	
	12	OHP: Less than A5 (L)	
	13	Thick 2: LT (S) or larger	
	14	Thick 2: B4 or larger	
	15	Thick 2: A5 (L) or larger	
	16	Thick 2: Less than A5 (L)	
314	PTR bias: Leading edge correction		
	DFU Corrects the PTR bias for the paper leading edge area for the type of paper and copy mode. The paper transfer belt bias times the percentage selected in this SP mode is applied to the bias roller. (SP9-703)		
	1	Normal: 1C	[50 to 200% / **110%** / 1%/step]
	2	Normal: 2C	
	3	Normal: 3C	
	4	Normal: 4C	
	5	Thick 1: 1C	
	6	Thick 1: 2C	
	7	Thick 1: 3C	
	8	Thick 1: 4C	[50 to 200% / **79%** / 1%/step]
	9	OHP: 1C	[50 to 200% / **100%** / 1%/step]
	10	OHP: 2C	
	11	OHP: 3C	
	12	OHP: 4C	
	13	Thick 2: 1C	
	14	Thick 2: 2C	
	15	Thick 2: 3C	
	16	Thick 2: 4C	

2	Mode Number		Function / [Setting]
314	17	Normal: 2nd side: 1C	[50 to 200% / **100%** / 1%/step]
	18	Normal: 2nd side: 2C	
	19	Normal: 2nd side: 3C	
	20	Normal: 2nd side: 4C	
	21	Thick 1: 2nd side: 1C	
	22	Thick 1: 2nd side: 2C	
	23	Thick 1: 2nd side: 3C	
	24	Thick 1: 2nd side: 4C	[50 to 200% / **68%** / 1%/step]
	25	Thick 2: 2nd side: 1C	[50 to 200% / **100%** / 1%/step]
	26	Thick 2: 2nd side: 2C	
	27	Thick 2: 2nd side: 3C	
	28	Thick 2: 2nd side: 4C	
315	PTR bias: Trailing edge correction		
	DFU Corrects the PTR bias for the paper trailing edge based on the type of paper and copy mode. The paper transfer roller bias times the percentage selected in this SP mode is applied to the bias roller. (SP9-703)		
	1	Normal: 1C	[50 to 200% / **100%** / 1%/step]
	2	Normal: 2C	
	3	Normal: 3C	
	4	Normal: 4C	
	5	Thick 1: 1C	
	6	Thick 1: 2C	
	7	Thick 1: 3C	
	8	Thick 1: 4C	[50 to 200% / **79%** / 1%/step]
	9	OHP: 1C	[50 to 200% / **100%** / 1%/step]
	10	OHP: 2C	
	11	OHP: 3C	
	12	OHP: 4C	
	13	Thick 2: 1C	
	14	Thick 2: 2C	
	15	Thick 2: 3C	
	16	Thick 2: 4C	
	17	Normal: 2nd side: 1C	
	18	Normal: 2nd side: 2C	
	19	Normal: 2nd side: 3C	
	20	Normal: 2nd side: 4C	
	21	Thick 1: 2nd side: 1C	
	22	Thick 1: 2nd side: 2C	
	23	Thick 1: 2nd side: 3C	
	24	Thick 1: 2nd side: 4C	[50 to 200% / **68%** / 1%/step]
	25	Thick 2: 2nd side: 1C	[50 to 200% / **100%** / 1%/step]
	26	Thick 2: 2nd side: 2C	
	27	Thick 2: 2nd side: 3C	
	28	Thick 2: 2nd side: 4C	
316	PTR bias: Humidity correction		
	DFU Corrects the PTR bias for the humidity condition based on the type of paper and copy mode. The paper transfer belt bias times the percentage selected in this SP mode is applied. LL = Very low humidity, L = Low humidity, H = High humidity, HH = Very high humidity		
	1	LL: Normal : 1C	[50 to 200% / **100%** / 1%/step]
	2	LL: Normal: 4C	
	3	L: Normal: 1C	[50 to 200% / **120%** / 1%/step]
	4	L: Normal: 4C	[50 to 200% / **100%** / 1%/step]
	5	H: Normal: 1C	
	6	H: Normal: 4C	

2	Mode Number		Function / [Setting]
316	7	HH: Normal: 1C	[50 to 200% / **100%** / 1%/step]
	8	HH: Normal: 4C	
	9	LL: Thick 1: 1C	[50 to 200% / **125%** / 1%/step]
	10	LL: Thick 1: 4C	[50 to 200% / **108%** / 1%/step]
	11	L: Thick 1: 1C	[50 to 200% / **100%** / 1%/step]
	12	L: Thick 1: 4C	
	13	H: Thick 1: 1C	
	14	H: Thick 1: 4C	
	15	HH: Thick 1: 1C	
	16	HH: Thick 1: 4C	
	17	LL: OHP: 1C	[50 to 200% / **125%** / 1%/step]
	18	LL: OHP: 4C	[50 to 200% / **89%** / 1%/step]
	19	L: OHP: 1C	[50 to 200% / **100%** / 1%/step]
	20	L: OHP: 4C	
	21	H: OHP: 1C	[50 to 200% / **67%** / 1%/step]
	22	H: OHP: 4C	
	23	HH: OHP: 1C	
	24	HH: OHP: 4C	
	25	LL: Thick 2: 1C	[50 to 200% / **117%** / 1%/step]
	26	LL: Thick 2: 4C	50 to 200% / **113%** / 1%/step]
	27	L: Thick 2: 1C	50 to 200% / **100%** / 1%/step]
	28	L: Thick 2: 4C	
	29	H: Thick 2: 1C	
	30	H: Thick 2: 4C	
	31	HH: Thick 2: 1C	
	32	HH: Thick 2: 4C	[50 to 200% / **88%** / 1%/step]
	33	LL: Normal: 2nd side:1C	[50 to 200% / **100%** / 1%/step]
	34	LL: Normal: 2nd side: 4C	[50 to 200% / **130%** / 1%/step]
	35	L: Normal: 2nd side:1C	[50 to 200% / **100%** / 1%/step]
	36	L: Normal: 4C	
	37	H: Normal: 2nd side:1C	
	38	H: Normal: 2nd side:4C	
	39	HH: Normal: 2nd side: 1C	[50 to 200% / **75%** / 1%/step]
	40	HH: Normal : 2nd side: 4C	[50 to 200% / **89%** / 1%/step]
	41	LL: Thick 1: 2nd side: 1C	[50 to 200% / **125%** / 1%/step]
	42	LL: Thick 1: 2nd side: 4C	[50 to 200% / **155%** / 1%/step]
	43	L: Thick 1: 2nd side: 1C	[50 to 200% / **100%** / 1%/step]
	44	L: Thick 1: 2nd side: 4C	
	45	H: Thick 1: 2nd side: 1C	
	46	H: Thick 1: 2nd side: 4C	
	47	HH: Thick 1: 2nd side: 1C	
	48	HH: Thick 1: 2nd side: 4C	
	49	LL: Thick 2: 2nd-side: 1C	[50 to 200% / **167%** / 1%/step]
	50	LL: Thick 2: 2nd-side: 4C	[50 to 200% / **127%** / 1%/step]
	51	L: Thick 2: 2nd-side: 1C	[50 to 200% / **100%** / 1%/step]
	52	L: Thick 2: 2nd-side: 4C	
	53	H: Thick 2: 2nd-side: 1C	
	54	H: Thick 2: 2nd-side: 4C	
	55	HH: Thick 2: 2nd-side: 1C	[50 to 200% / **83%** / 1%/step]
	56	HH: Thick 2: 2nd-side: 4C	[50 to 200% / **88%** / 1%/step]

2	Mode Number		Function / [Setting]
402	Paper separation voltage adjustment: Image area		
	DFU Adjusts the separation voltage for the different copy modes.		
	1	Normal: 1C	[500 to 3000 V / **3000 V** / 1 V/step]
	2	Normal: 4C	
	3	Thick 1: 1C	[500 to 3000 V / **1000 V** / 1 V/step]
	4	Thick 1: 4C	
	5	OHP: 1C	
	6	OHP: 4C	
	7	Thick 2: 1C	
	8	Thick 2: 4C	
	9	Normal: 2nd side: 1C	[500 to 3000 V / **3000 V** / 1 V/step]
	10	Normal: 2nd side: 4C	
	11	Thick 1: 2nd side: 1C	[500 to 3000 V / **1000 V** / 1 V/step]
	12	Thick 1: 2nd side: 4C	
	13	Thick 2: 2nd side: 1C	
	14	Thick 2: 2nd side: 4C	
403	Paper separation voltage adjustment: Leading edge		
	1	Normal	**DFU** Adjusts the paper separation voltage for the paper leading edge. The voltage of the image area times the percentage selected in this mode is applied. [50 to 200% / **100%** / 1%/step]
	2	Thick 1	
	3	OHP	
	4	Thick 2	
	5	2nd side: Normal	
	6	2nd side: Thick 1	
	7	2nd side: Thick 2	
404	Paper Separation Voltage: Humidity correction		
	1	LL: Normal: 1C	**DFU** Corrects the paper separation voltage based on the humidity and copy mode. LL: Very low humidity L : Low humidity H : High humidity HH: Very high humidity [50 to 200% / **100%** / 1%/step]
	2	LL: Normal: 4C	
	3	L: Normal: 1C	
	4	L: Normal: 4C	
	5	H: Normal: 1C	
	6	H: Normal: 4C	
	7	HH: Normal: 1C	
	8	HH: Normal: 4C	
	9	LL: Thick 1: 1C	
	10	LL: Thick 1: 4C	
	11	L: Thick 1: 1C	
	12	L: Thick 1: 4C	
	13	H: Thick 1: 1C	
	14	H: Thick 1: 4C	
	15	HH: Thick 1: 1C	
	16	HH: Thick 1: 4C	
	17	LL: OHP: 1C	
	18	LL: OHP: 4C	
	19	L: OHP: 1C	
	20	L: OHP: 4C	
	21	H: OHP: 1C	
	22	H: OHP: 4C	
	23	HH: OHP: 1C	
	24	HH: OHP: 4C	
	25	LL: Thick 2: 1C	
	26	LL: Thick 2: 4C	
	27	L: Thick 2: 1C	
	28	L: Thick 2: 4C	
	29	H: Thick 2: 1C	

2	Mode Number		Function / [Setting]
404	30	H: Thick 2: 4C	**DFU** Corrects the paper separation voltage based on the humidity and copy mode. LL: Very low humidity L : Low humidity H : High humidity HH: Very high humidity [50 to 200% / **100%** / 1%/step]
	31	HH: Thick 2: 1C	
	32	HH: Thick 2: 4C	
	33	LL: Normal: 2nd side: 1C	
	34	LL: Normal: 2nd side: 4C	
	35	L: Normal: 2nd side: 1C	
	36	L: Normal: 2nd side: 4C	
	37	H: Normal: 2nd side: 1C	
	38	H: Normal: 2nd side: 4C	
	39	HH: Normal: 2nd side: 1C	
	40	HH: Normal: 2nd side: 4C	
	41	LL: Thick 1: 2nd side: 1C	
	42	LL: Thick 1 : 2nd side: 4C	
	43	L: Thick 1: 2nd side: 1C	
	44	L: Thick 1: 2nd side: 4C	
	45	H: Thick 1: 2nd side: 1C	
	46	H: Thick 1: 2nd side: 4C	
	47	HH: Thick 1: 2nd side: 1C	
	48	HH: Thick 1: 2nd side: 4C	
	49	LL: Thick 2: 2nd side: 1C	
	50	LL: Thick 2: 2nd side: 4C	
	51	L: Thick 2: 2nd side: 1C	
	52	L: Thick 2: 2nd side: 4C	
	53	H: Thick 2: 2nd side: 1C	
	54	H: Thick 2: 2nd side: 4C	
	55	HH: Thick 2: 2nd side: 1C	
	56	HH: Thick 2: 2nd side: 4C	
405	Paper separation voltage: AC Component ON/OFF		
	1	Normal - Normal: 1C	**DFU** Turns the paper separation ON or OFF for each mode. 0 = OFF 1 = ON Defaults: 2-405-001 to 042 = 1 2-405-043 to 050 = 0 2-405-051 to 052 = 1 2-405-053 to 064 = 0 2-405-065 to 066 = 1 2-405-067 to 070 = 0 LL: Very low humidity L : Low humidity H : High humidity HH: Very high humidity *For the second side, the operation panel uses the following format: "NRML B_NRML"*
	2	Normal - Normal: 4C	
	3	Normal - Thick 1: 1C	
	4	Normal - Thick 1: 4C	
	5	Normal - OHP: 1C	
	6	Normal - OHP: 4C	
	7	Normal - Thick 2: 1C	
	8	Normal - Thick2: 4C	
	9	Normal - Normal: 2nd side: 1C	
	10	Normal - Normal: 2nd side: 4C	
	11	Normal - Thick 1: 2nd side: 1C	
	12	Normal - Thick 1: 2nd side: 4C	
	13	Normal - Thick 2: 2nd side: 1C	
	14	Normal - Thick 2: 2nd side: 4C	
	15	LL: Normal: 1C	
	16	LL: Normal: 4C	
	17	LL: Thick 1: 1C	
	18	LL: Thick 1: 4C	
	19	LL: OHP: 1C	
	20	LL: OHP: 4C	
	21	LL: Thick 2: 1C	

2	Mode Number		Function / [Setting]
405	22	LL: Thick 2: 4C	**DFU** Turns the paper separation ON or OFF for each mode. 0 = OFF 1 = ON Defaults: 2-405-001 to 042 = 1 2-405-043 to 050 = 0 2-405-051 to 052 = 1 2-405-053 to 064 = 0 2-405-065 to 066 = 1 2-405-067 to 070 = 0 LL: Very low humidity L : Low humidity H : High humidity HH: Very high humidity *For the second side, the operation panel uses the following format: "NRML B_NRML"*
	23	LL: Normal: 2nd side: 1C	
	24	LL: Normal: 2nd side: 4C	
	25	LL: Thick 1: 2nd side: 1C	
	26	LL: Thick 1: 2nd side: 4C	
	27	LL: Thick 2: 2nd side: 1C	
	28	LL: Thick 2: 2nd side: 4C	
	29	L: Normal: 1C	
	30	L: Normal: 4C	
	31	L: Thick 1: 1C	
	32	L: Thick 1: 4C	
	33	L: OHP: 1C	
	34	L: OHP: 4C	
	35	L: Thick 2: 1C	
	36	L: Thick 2: 4C	
	37	L: Normal: 2nd side: 1C	
	38	L: Normal: 2nd side: 4C	
	39	L: Thick 1: 2nd side: 1C	
	40	L: Thick 1: 2nd side: 4C	
	41	L: Thick 2: 2nd side: 1C	
	42	L: Thick 2: 2nd side: 4C	
	43	H: Normal: 1C	
	44	H: Normal: 4C	
	45	H: Thick 1: 1C	
	46	H: Thick 1: 4C	
	47	H: OHP: 1C	
	48	H: OHP: 4C	
	49	H: Thick 2: 1C	
	50	H: Thick 2: 4C	
	51	H: Normal: 2nd side: 1C	
	52	H: Normal: 2nd side: 4C	
	53	H: Thick 1: 2nd side: 1C	
	54	H: Thick 1: 2nd side: 4C	
	55	H: Thick 2: 2nd side: 1C	
	56	H: Thick 2: 2nd side: 4C	
	57	H-H: Normal: 1C	
	58	H-H: Normal: 4C	
	59	H-H: Thick 1: 1C	
	60	H-H: Thick 1: 4C	
	61	H-H: OHP: 1C	
	62	H-H: OHP: 4C	
	63	H-H: Thick 2: 1C	
	64	H-H: Thick 2: 4C	
	65	H-H: Normal: 2nd side: 1C	
	66	H-H: Normal: 2nd side: 4C	
	67	H-H: Thick 1: 2nd side: 1C	
	68	H-H: Thick 1: 2nd side: 4C	
	69	H-H: Thick 2: 2nd side: 1C	
	70	H-H: Thick 2: 2nd side: 4C	
	101	Sep On Timing: Normal	[–50 to 50 / **0** / 1/step]
	102	Sep On Timing: Half	
	103	Sep On Timing: 1/3rd	
	104	Sep Off Timing: Normal	[–50 to 50 / **7** / 1/step]
	105	Sep Off Timing: Half	[–50 to 50 / **0** / 1/step]
	106	Sep Off timing: 1/3rd	

2	Mode Number		Function / [Setting]
601	ITB lubricant brush bias adjustment		
	SP2-601-001 to -008 adjust the bias for the image transfer belt's lubricant brush. The bias is applied after the image development is completed for each speed in 1C, 2C, and 4C modes.		
	1	Normal speed: 1C	**DFU** [0 to 1000 V / **450 V** / 1 V/step]
	2	Normal speed: 2C	**DFU** [0 to 1000 V / **50 V** / 1 V/step]
	3	Normal speed: 4C	**DFU** [0 to 1000 V / **250 V** / 1 V/step]
	4	Half speed: 1C	**DFU** [0 to 1000 V / **50 V** / 1 V/step]
	5	Half speed: 2C	
	6	Half speed: 4C	**DFU** [0 to 1000 V / **250 V** / 1 V/step]
	7	Normal speed: Others	**DFU** [0 to 1000 V / **100 V** / 1 V/step]
	8	Half speed: Others	
	SP2-601-009 to -025 shift the image transfer belt lubricant brush bias set by SP2-601-001 to 008 for each environment condition. LL = Low temp./low humidity conditions, HH = High temp./high humidity conditions *Listed on the operator panel using the following format "ENV_LL SPEED_STD 1C"*		
	9	Normal speed: LL: 1C	[–500 to 500 V / **–250 V** / 1 V/step]
	10	Normal speed: LL: 2C	[–500 to 500 V / **0 V** / 1 V/step]
	11	Normal speed: LL: 4C	[–500 to 500 V / **50 V** / 1 V/step]
	12	Half speed: LL: 1C	[–500 to 500 V / **0 V** / 1 V/step]
	13	Half speed: LL: 2C	
	14	Half speed: LL: 4C	[–500 to 500 V / **50 V** / 1 V/step]
	15	Normal speed: LL: Others	
	16	Half speed: LL: Others	
	17	Normal speed: HH: 1C	[–500 to 500 V / **0 V** / 1 V/step]
	18	Normal speed: HH: 2C	
	19	Normal speed: HH: 4C	
	20	Half speed: HH: 1C	
	21	Half speed: HH: 2C	
	22	Half speed: HH: 4C	
	23	Normal speed: HH: Others	
	24	Half speed: HH: Others	
	25	Lubricant brush (Belt cleaning mode)	[–500 to 500 V / **100 V** / 1 V/step] *Listed as "Q1_Brush CLN"*
	26	1/3rd speed: 1C	[–500 to 500 V / **50 V** / 1 V/step]
	27	1/3rd speed: 2C	
	28	1/3rd speed: 4C	[–500 to 500 V / **250 V** / 1 V/step]
	29	1/3rd speed: Others	[–500 to 500 V / **50 V** / 1 V/step]
	30	1/3rd speed: LL: 1C	[–500 to 500 V / **250 V** / 1 V/step]
	31	1/3rd speed: LL: 2C	
	32	1/3rd speed: LL: 4C	[–500 to 500 V / **50 V** / 1 V/step]
	33	1/3rd speed: LL: Others	[–500 to 500 V / **250 V** / 1 V/step]
	34	1/3rd speed: HH: 1C	[–500 to 500 V / **0 V** / 1 V/step]
	35	1/3rd speed: HH: 2C	
	36	1/3rd speed: HH: 4C	
	37	1/3rd speed: HH: Others	
	100	Image belt clean reset	[–50 to 5 / **0** / 1]
603	Voltage adjustment for the PTR discharge corona		
	DFU Adjusts the voltage for the paper separation belt discharge corona based on the type of paper and copy mode. Non transfer area = The voltage which is applied to the discharge corona after the trailing edge of paper passes it until next sheet of paper arrives.		
	1	Normal: 1C	[100 to 1500 V / **900 V** / 1 V/step]
	2	Normal: 2C	[100 to 1500 V / **1100 V** / 1 V/step]

2	Mode Number		Function / [Setting]
603	3	Normal: 3C	100 to 1500 V / **1100 V** / 1 V/step]
	4	Normal: 4C	
	5	Normal: Non transfer area	[100 to 1500 V / **800 V** / 1 V/step]
	6	Thick 1: 1C	[100 to 1500 V / **900 V** / 1 V/step]
	7	Thick 1: 2C	[100 to 1500 V / **1100 V** / 1 V/step]
	8	Thick 1: 3C	
	9	Thick 1: 4C	
	10	Thick 1: Non transfer area	[100 to 1500 V / **800 V** / 1 V/step]
	11	OHP: 1C	[100 to 1500 V / **900 V** / 1 V/step]
	12	OHP: 2C	[100 to 1500 V / **1100 V** / 1 V/step]
	13	OHP: 3C	
	14	OHP: 4C	
	15	OHP: Non transfer area	[100 to 1500 V / **800 V** / 1 V/step]
	16	Thick 2: 1C	[100 to 1500 V / **900 V** / 1 V/step]
	17	Thick 2: 2C	[100 to 1500 V / **1100 V** / 1 V/step]
	18	Thick 2: 3C	
	19	Thick 2: 4C	
	20	Thick 2: Non transfer area	[100 to 1500 V / **800 V** / 1 V/step]
	21	Lubricant brush (Belt cleaning mode)	[100 to 1500 V / **1100 V** / 1 V/step] *Labeled as "Q1_Brush CLN."*
604	PTR discharge corona voltage: Humidity correction		
	1	LL: Normal: 1C	**DFU** Adjusts the paper transfer belt discharge corona voltage based on the humidity and copy mode. [50 to 200% / **100%** / 1%/step] LL: Very low humidity L : Low humidity H : High humidity HH: Very high humidity
	2	LL: Normal: 4C	
	3	L: Normal: 1C	
	4	L: Normal: 4C	
	5	H: Normal: 1C	
	6	H: Normal: 4C	
	7	HH: Normal: 1C	
	8	HH: Normal: 4C	
	9	LL: Thick 1: 1C	
	10	LL: Thick 1: 4C	
	11	L: Thick 1: 1C	
	12	L: Thick 1: 4C	
	13	H: Thick 1: 1C	
	14	H: Thick 1: 4C	
	15	HH: Thick 1: 1C	
	16	HH: Thick 1: 4C	
	17	LL: OHP: 1C	
	18	LL: OHP: 4C	
	19	L: OHP: 1C	
	20	L: OHP: 4C	
	21	H: OHP: 1C	
	22	H: OHP: 4C	
	23	HH: OHP: 1C	
	24	HH: OHP: 4C	
	25	LL: Thick 2: 1C	
	26	LL: Thick 2: 4C	
	27	L: Thick 2: 1C	
	28	L: Thick 2: 4C	
	29	H: Thick 2: 1C	
	30	H: Thick 2: 4C	
	31	HH: Thick 2: 1C	
	32	HH: Thick 2: 4C	

2	Mode Number		Function / [Setting]
802	Forced corona wire/grid cleaning		Starts charge wire/grid cleaning. Press the ON key to perform the wire cleaning.
803	Corona wire/grid auto-cleaning		
	1	Power ON cleaning	Starts charge wire/grid cleaning after the main switch or operation switch is turned on and if the hot roller temperature is less than 100ºC. 0 = OFF **1 = ON** 2 = Cleaning takes place based on the interval set using SP2-803-002
	2	Counter setting *Listed as "cintvCHCln [kdev]"*	Tracks development cycles. Automatic wire/grid cleaning starts after a number of cycles equal to the value set in this SP. If there is a copy job in progress, cleaning starts after the job is completed. 0 = Disable the function [0 to 80 K / **0 K** / 1 K /step]
	3	Time setting *Listed as "tintvCHCln [hour]"*	Automatic wire/grid cleaning starts after a time period set by this SP. If there is a copy job in progress, cleaning starts after the job is completed. 0 = Disable the function [0 to 999 H / **0 H** / 1 H/step]
	4	FagingCHCln	**DFU** Corona wire/grid cleaning performed before the developer initialization (SP2-222). 0 = ON **1 = OFF**
912	Environment display		
	1	Temperature	Displays temperature detected.
	2	Relative humidity	Displays relative humidity detected.
	3	Absolute humidity	Displays absolute humidity calculated using the temperature and relative humidity.
	4	Humidity sensor selection	Selects the manufacture of the humidity sensor. **0**: Shinei, 1: TDK
913	Toner overflow detection setting		Turns the toner overflow sensor detection on or off. 0 = OFF **1 = ON**
951	Toner end detection setting		Turns the toner end sensors for all colors on or off. 1 = OFF **0 = ON** ***NOTE:*** *Make sure to reset the data to ON if it is set to OFF temporarily for servicing.*
953	Maximum toner supply ratio adjustment		
	1	K	Adjusts the maximum toner supply ration (upper limit) in the continuous supply mode. [0 to 100% / 100% / 1%/step] *Listed using the following format "MaxRtoBKTnAdd."*
	2	CMY	
955	Counting method for the toner end detection		Selects the method for counting the number of copies that can be made between toner near-end and toner end. **0** = Count the number of copies and monitor image coverage ratio (number of pixels). 1 = Number of copies If 0 is selected (default), at least 10 copies can be made. If 1 is selected, 10 copies can be made.

SP3-XXX (Process Control)

3	Mode Number/Name		Function / [Setting]
005	TD sensor initialization		
	1	Exe: K	Adjusts Vref for new developer. (Screen E) Do not make a copy with new developer before TD sensor initialization. This mode is required when the developer or TD sensor is replaced. Press the ON key to start.
	2	Exe: C	
	3	Exe: M	
	4	Exe: Y	
	5	Exe: All	
	6	Toner density initial setting result	Not used. **NOTE:** 1) This SP name is displayed however the results is not displayed. To see the TD sensor initialization result, enter SP3-960-000. 2) On the screen E, you can also see the result.
006	TD sensor: Vcnt (gain) setting		
	1	K	**DFU** Adjusts the TD sensor gain data. (SP9-703) [0 to 255 / **165** / 1] [0 to 255 / **175** / 1] [0 to 255 / **175** / 1] [0 to 255 / **175** / 1]
	2	C	
	3	M	
	4	Y	
007	TD sensor output display		
	1	K	Displays the TD sensor output. Output is in volts. Step = 0.01
	2	C	
	3	M	
	4	Y	
103	V_{SP} display		
	1	K	Displays V_{SP}. (ID sensor output for the sensor pattern.) (SP9-703) Output is in volts. Step = 0.01
	2	C	
	3	M	
	4	Y	
107	V_{SG} display		
	1	K	Displays V_{SG}. (ID sensor output for the bare drum.) (SP9-703) *Output is in volts. Step = 0.01*
	2	Color	
111	Residual voltage display		Displays the residual voltage (VR). The drum is charged and then exposed by full laser power. The voltage remaining on the drum (residual voltage) is used for process control. (SP9-703) *Output is in volts. Step = 1*
121	Development gamma		
	1	K	Displays the development gamma value. (SP9-703)
	2	C	
	3	M	
	4	Y	
122	V_K		
	1	K	Displays V_K (SP9-703)
	2	C	
	3	M	
	4	Y	
125	Process control		**DFU** Sets process control to ON or OFF. (SP9-703) **0 = ON**, 1 = OFF
126	Forced process control self check		The Self Check key is the top-left key on the screen (Screen E). Press the "Exe" key to start the check.
127	Process control gamma: Toner Max. M/A adjustment		
	1	K	**DFU** Adjusts the target of the maximum toner M/A used for the process control self check. [0.5 to 1.5 mg/cm^2 / **0.7 mg/cm^2** / 0.001]
	2	Color	

3	Mode Number/Name		Function / [Setting]
128	Toner density automatic adjustment		**DFU** Sets the toner density automatic adjustment to ON or OFF. If ON, the toner density is automatically adjusted during forced or initial automatic process control. **0 = ON,** 1 = OFF, 2 = All colors ON
129	ID sensor pattern: Toner Target (M/Aref)		
	1	Target: K	**DFU** Adjusts the target toner M/A for the ID sensor pattern for black toner. [0.1 to 1.5 mg/cm^2 / **0.3 mg/cm^2** / 0.001]
	2	Target: Color	**DFU** Adjusts the target toner M/A for the ID sensor pattern for color toner. [0.1 to 1.5 mg/cm^2 / **0.7 mg/cm^2** / 0.001]
	3	Correction: K	**DFU** Sets the correction value for the target set in 3-129-001 or 002. [–0.100 to 0.100 / **0.000** / 0.001]
	4	Correction: Color	
131	Toner Density: Forced toner supply counter		
	1	K counter	Tracks the usage of the forced toner supply mode during the process control self-check. Forced toner supply mode adds toner based on the development gamma calculated during the process control self check. These counters are automatically reset when the TD sensor initialization is performed.
	2	C counter	
	3	M counter	
	4	Y counter	
132	Toner Density: Forced toner consumption counter (mode 1)		
	1	K counter	Tracks the usage of the forced toner consumption mode during the process control self-check. Forced toner consumption mode removes excess toner based on the development gamma calculated during the process control self check. These counters are automatically reset when the TD sensor initialization is performed.
	2	C counter	
	3	M counter	
	4	Y counter	
133	Toner Density: Forced toner consumption counter (mode 2)		
	1	K counter	If the TD sensor output is more than 0.2 V lower than V_{REF}, Forced toner consumption creates a pattern across the whole width of the drum, consuming the excess toner. This mode continues until the TD rises above the 0.2 V limit. These counters track the usage of the forced toner consumption mode. They are automatically reset when the TD sensor initialization is performed.
	2	C counter	
	3	M counter	
	4	Y counter	
902	Selected pointer table display		
	1	K	**DFU** Displays the pointer table for V_D, V_B, and V_L used during the self-check. (SP9-703) [1 to 20 / 1]
	2	C	
	3	M	
	4	Y	
907	ID Sensor Pattern M/A Display		
	1	K	Displays the actual (current) toner M/A. (SP9-703)
	2	C	
	3	M	
	4	Y	
940	Vcnt: Correction steps		
	1	K	**DFU** Adjusts the correction steps for the Vcnt (gain). [0 to 255 / **5** / 1]
	2	C	
	3	M	
	4	Y	

3	Mode Number/Name		Function / [Setting]
941	Vcnt: Lower limit		
	1	VcontMin: K	**DFU** Sets the lower limit of the shift range of Vcnt (gain). [–128 to 0 / **–20** / 1]
	2	VcontMin: C	
	3	VcontMin: M	
	4	VcontMin: Y	
	5	TSInitVcontMin: K	[0 to 255 / **150** / 1]
	6	TSInitVcontMin: C	[0 to 255 / **160** / 1]
	7	TSInitVcontMin: M	
	8	TSInitVcontMin: Y	
942	Vcnt: Upper limit		
	1	VcontMax: K	**DFU** Sets the upper limit of the shift range of Vcnt (gain). (SP9-703) [0 to 128 / **20** / 1]
	2	VcontMax: C	
	3	VcontMax: M	
	4	VcontMax: Y	
	5	TSInitVcontMax: K	[0 to 255 / **180** / 1]
	6	TSInitVcontMax: C	[0 to 255 / **190** / 1]
	7	TSInitVcontMax: M	
	8	TSInitVcontMax: Y	
944	Vcnt: Display		
	1	K	Displays the Vcnt (gain) data. [0 to 255 / **165** / 1]
	2	C	[0 to 255 / **175** / 1]
	3	M	[0 to 255 / **165** / 1]
	4	Y	[0 to 255 / **165** / 1]
946	VREF: Correction steps (V)		
	1	K	**DFU** Adjusts the correction steps of VREF. (SP9-703) [0.00 to 5.00 / **0.05** / 0.01]
	2	C	
	3	M	
	4	Y	
947	VREF: Lower limit		
	1	K	**DFU** Sets the lower limit of the shift range of VREF. [0.00 to 5.00 / **1.50** / 0.01]
	2	C	
	3	M	
	4	Y	
948	VREF: Upper limit		
	1	K	**DFU** Sets the upper limit of the shift range of VREF. [0.00 to 5.00 / **3.50** / 0.01]
	2	C	
	3	M	
	4	Y	
949	VREF: Initial data display		
	1	K	Displays the VREF value detected during the TD sensor initialization. (SP9-703)
	2	C	
	3	M	
	4	Y	
950	VREF: Actual (current) data display		
	1	K	Displays the actual (current) VREF value. (SP9-703)
	2	C	
	3	M	
	4	Y	
960	TD sensor initialization result		Displays the result of TD sensor initialization. The result is displayed after DATA. For example, DATA: 1 = successful. (☛ 4.1.3) **NOTE:** MIN: 0, MAX: 999, SET DATA are also displayed, however these are for the factory use. You cannot input any data in the field.

3	Mode Number/Name		Function / [Setting]
964	Developer initialization result		Displays the result of the developer initialization. (Screen E, SP9-703)
972	Interval settings for the Timed process control self-check		
	1	Timed initial process control self-check interval setting-1 (Timer Z)	Sets the interval of the process control self-check based on time. (SP9-703) [0 to 240 H / **6 H** / 1 H] (H = hours) 0 = Disable the function
	2	Timed initial process control self-check interval setting-1 (Timer X)	The machine will perform the timed initial process control self-check X hours after the previous initial process control self-check. [0 to 240 H / **0 H** / 1 H] (H = hours) 0 = Disable the function
	3	Timed initial process control self-check interval setting-2 (Timer Y)	The machine will perform the timed initial process control self-check Y hours after the end of a job. [0 to 240 H / **0 H** / 1 H] (H = hours) 0 = Disable the function
973	Copy count interval adjustment for the process control self-check		Adjusts the interval of process control self-check based on the number of copies/prints. (SP9-703) [0 to 500 sheets / **150 sheets** / 1] 0 = Disable the function
974	Potential Control—Toner Max. M/A target		
	1	K	**DFU** Adjusts the target of the maximum toner M/A used for the potential control (normal copy process). [0.5 to 1.5 mg/cm^2 / **0.7 mg/cm^2** / 0.001]
	2	Color	
975	Self-check result		Displays the result of the self-check. (Screen E, SP9-703) 1 = success others = failure (See troubleshooting.)
977	Process Control Gamma: Interval setting (copies/prints)		**DFU** Under normal operation, the process control gama check (SP9-703) takes place immediately after the process control self-check. This SP allows the check to be run independently, based on the entered interval. [0 to 999 sheets / **0** / 1] 0 = Disable the function

SP4-XXX (Scanner Unit)

4	Mode Number/Name		Function / [Setting]
008	Scanner sub-scan magnification adjustment		**DFU** Adjusts the sub-scan magnification by changing the scanner motor speed. (SP7-903) [–0.9 to 0.9% / **0**% / 0.1%]
010	Scanner leading edge registration adjustment		Adjusts the leading edge registration by changing the laser exposure timing in sub-scan direction. (SP7-903) [–3.0 to 3.0 mm / **0 mm** / 0.1mm]
011	Scanner side-to-side registration adjustment		Adjusts the side-to-side registration by changing the laser exposure timing in main-scan direction. (SP7-903) [–2.5 to 2.5 mm / **0 mm** / 0.1mm]
012	Scanning blank margin adjustment		
	1	Rear	Sets a blank margin at each side. This helps prevent shadows caused by the gap between the edge of the paper and the scale. (Screen A) [0 to 3.0 mm / **0 mm** / 0.1mm]
	2	Front	
	3	Left	
	4	Right	
013	Scanner free run		
	1	Lamp ON	Runs the scanner with the exposure lamp ON or OFF. Press the ON or OFF key to start or stop.
	2	Lamp OFF	
205	**ADS level (B/W mode)**		Adjusts the background level in ADS/B&W copy mode. [0 to 50 / **18** / 1 step / N] Increasing: Background density becomes lighter. Decreasing: Background density becomes darker.
301	APS operation check: Size display		Displays the paper size detected by the original sensors. ☛ S/M 5.1.4 for details.
417	IPU test pattern selection		**0 = No pattern (normal copy operation mode)** 1 = Grid pattern 2 = Slanted Grid Pattern 3 = 256 gradation (Horizontal) 4 = 256 gradation (Vertical) 5 = Color patch 6 = RGB gray scale (16 gradation steps) 7 = YMCK-RGB 16 gradation 8 = YMCK 16 gradation 9 = YMCK 128 gradation 10 = No pattern 11 = Uneven check 12 = Banding check (1) 13 = Banding check (2) Set back to 0 when leaving the SP mode. (The data is not reset to the default automatically.)
426	RGB gain display		
	1	R: ODD	**DFU** Displays the gain value of the amplifiers on the scanner IPU. (SP7-903) [0 to 255 / **0** / 1]
	2	R: EVEN	
	3	G: ODD	
	4	G: EVEN	
	5	B: ODD	
	6	B: EVEN	
427	RGB reference setup		
	1	R: 0	**DFU** Sets or displays the reference voltage for the A/D converters on the scanner IPU for each RGB color. (SP7-903) 1 to 3 [0 to 255 / **116** / 1] 4 to 6 [0 to 255 / **148** / 1]
	2	G: 0	
	3	B: 0	
	4	R: 1	
	5	G: 1	
	6	B: 1	

4	Mode Number/Name		Function / [Setting]
435	White level adjustment		Adjusts the white level. Press the ON key to perform the adjustment.
440	**Saturation**		Adjusts the level of saturation. [0 to 5 / **3** / 1 step / N] 0: Linear 1: Highest 2: Low 3: Default 4: High 5: Higher
501	ACC target density level adjustment: Copy mode		
	1	Letter: K	**DFU** Adjusts the target density level of ACC for each mode and color in copy mode. (The adjustable range is 0 to 50; but the effective range is 0 to 10. Even when it is set to 50, it is the same level as for 10.) The middle of printer gamma is shifted by this SP. (SP7-904) [0 to 50 / **5** / 1]
	2	Letter: C	
	3	Letter: M	
	4	Letter: Y	
	5	Photo: K	
	6	Photo: C	
	7	Photo: M	
	8	Photo: Y	
502	ACC target density level adjustment: Print mode 1		
	1	Letter: K	**DFU** Adjusts the target density level of ACC for each mode and color in the print mode. (The adjustable range is 0 to 50; but the effective range is 0 to 10. Even when it is set to 50, it is the same level as for 10.) The middle of printer gamma is shifted by this SP. (SP7-904) [0 to 50 / **5** / 1]
	2	Letter: C	
	3	Letter: M	
	4	Letter: Y	
	5	Photo: K	
	6	Photo: C	
	7	Photo: M	
	8	Photo: Y	
503	ACC target density level adjustment: Print mode 2		
	1	Letter: K	**DFU** Adjusts the target density level of ACC for each mode and color in the print mode. (The adjustable range is 0 to 50; but the effective range is 0 to 10. Even when it is set to 50, it is the same level as for 10.) The middle of printer gamma is shifted by this SP. (SP7-904) [0 to 50 / **5** / 1]
	2	Letter: C	
	3	Letter: M	
	4	Letter: Y	
	5	Photo: K	
	6	Photo: C	
	7	Photo: M	
	8	Photo: Y	
505	ACC target level adjustment: Highlight area		
	1	K	**DFU** Adjusts scanner gamma for highlight areas. (Screen G, SP7-904) [–128 to 127 / **0 (FA)** / 1]
	2	C	
	3	M	
	4	Y	
506	ACC target level adjustment: Shadow area		
	1	K	**DFU** Adjusts scanner gamma for highlight areas. (Screen G, SP7-904) [–128 to 127 / **0 (FA)** / 1]
	2	C	
	3	M	
	4	Y	
507	ACC Process Control ON/OFF		Specifies whether the copy interval process control is performed during ACC. 0 = OFF 1 = ON (Printer ACC only) 2 = ON (Copy ACC only) **3 = ON** (Both Copy/Printer ACC) Change the data only when a user does not want to wait for a few minutes at ACC.
540	Printer vector correction		

4	Mode Number/Name		Function / [Setting]
	1	R: K	**DFU** Adjust the parameter of the 6 hues (R, Y, G, C, B, and M) and 4 colors (K, C, M, and Y) for the printer vector correction. Do not change the data in the field. [–128 to 127 / **0** / 1]
	2	R: C	
	3	R: M	
	4	R: Y	
	5	Y: K	
	6	Y: C	
	7	Y: M	
	8	Y: Y	
	9	G: K	
	10	G: C	
	11	G: M	
	12	G: Y	
	13	C: K	
	14	C: C	
	15	C: M	
	16	C: Y	
	17	B: K	
	18	B: C	
	19	B: M	
	20	B: Y	
	21	M: K	
	22	M: C	
	23	M: M	
	24	M: Y	
904	Scanner IPU board test		
	1	Scanner IPU board test 1	Performs the IPU board test 1. The test 1 program diagnoses problems with reading and writing to the ASIC register on the IPU board. Press the ON key to start. 0 = OK Others: Defective
	2	Scanner IPU board test 2	Performs the IPU board test 2. The test 2 program diagnoses problems with patterns generated from ASICs on the IPU board. Press the ON key to start. 0 = OK Others: Defective
905	**Dither selection**		**DFU** Selects the dither pattern for copying or for test print. [0 to 255 / **0** / 1 step / N] 0: Default setting Letter/Photo 1: RC-200-like dither (170 lines/inch) Photo 2: RC-210-like dither (2 bit mode) Photo 16: 1 x 1 dither (applied to whole image) Letter 32: 1 x 1 dither (applied only to letter/lines) Letter 64: 2 x 2 dither Photo 128: 2 x 2 dither (less than 33% reduction) Photo 255: 1 x 1 dither Letter/Photo **NOTE:** When you change the data from the default setting, copies are made by using the selected dither pattern.

4	Mode Number/Name		Function / [Setting]
907	LD control board: Test pattern selection		Selects the a test pattern. The analog video ASIC makes test patterns without any image data sent from CCD. **0 = No pattern** 1 = Black pattern 2 = White pattern 3 = 16 gradation pattern 4 = 4 dot grid pattern 5 = 2 dot grid pattern Set back to 0 when leaving the SP mode. (The data is not reset to the default automatically.)
909	Gamma adjustment: Copy: Photo, Single color: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the copy/letter mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
910	Gamma adjustment: Copy: Letter: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the copy/letter mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
911	Gamma adjustment: Copy: Letter: C		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for cyan in the copy/letter mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
912	Gamma adjustment: Copy: Letter: M		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for magenta in the copy/letter mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
913	Gamma adjustment: Copy: Letter: Y		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for yellow in the copy/letter mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	

4	Mode Number/Name		Function / [Setting]
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
914	Gamma adjustment: Copy: Letter, Single color: K		
	1	Offset – Highlight	Adjusts the offset data of the printer gamma for black in the copy/letter/single color mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
915	Gamma adjustment: Copy: Photo: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
916	Gamma adjustment: Copy: Photo: C		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for cyan in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
917	Gamma adjustment: Copy: Photo: M		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for magenta in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
918	Gamma adjustment: Copy: Photo: Y		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for yellow in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
919	Gamma adjustment: Printer: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	

4	Mode Number/Name		Function / [Setting]
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
920	Gamma adjustment: Printer: C		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for cyan in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
921	Gamma adjustment: Printer: M		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for magenta in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
922	Gamma adjustment: Printer: Y		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for yellow in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
932	Main scan dot position correction		
	1	R left	Corrects the left or right side alignment of the red or blue filter line on the CCD. (Screen I) [0 to 9 / **5** / 1]
	2	R right	
	3	B left	
	4	B right	
990	Scanner data access setting		
	1	Address	**DFU**
	2	Data	**DFU**

SP7-XXX (Logging Data)

7	Mode Number/Name		Function / [Setting]
008	Counter display setting		Selects which counters to display. 1 = counter based on developments 2 = counter based on copies/prints This data can only be set once. After it has been set, it cannot be changed through this SP mode. If this is set by mistake, please contact your key person. This setting is not cleared by the NV-RAM clear function. Development counter: Color XXXXX Black XXXXX Copies/Prints counter: Copy Printer Total Color XXXXX XXXXX XXXXX Black XXXXX XXXXX XXXXX
202	Developer counter		
	1	Total	Shows the development count—both the total and for each color. (Screen K)
	2	K	
	3	C	
	4	M	
	5	Y	
203 207 210	PM parts counter		Shows the development count for components from the Image Development, Cleaning and Fusing sections.(Screen K)
401	Total SC counter		Shows the total number of SC conditions detected.
402	Recent SC history		
	1	Latest	Shows the SC codes most recently detected in order. SCXXX - AAAA –BBBB XXX = SC code number AAAA = Counter of CMY BBBB = Counter of K Last 4 digits of the electrical counters are displayed.
	2	Latest–1	
	3	Latest–2	
	4	Latest–3	
	5	Latest–4	
	6	Latest–5	
	7	Latest–6	
	8	Latest–7	
	9	Latest–8	
	10	Latest–9	
502	Paper jam total counter		Shows the total number of paper jams.
503	Original jam total counter		Shows the total number of original jams.
504	Paper jam count at each location		
	1	By-pass	Shows the number of paper jam at each location.
	2	1st paper tray	
	3	2nd paper tray	
	4	3rd paper tray	
	5	4th paper tray	
	6	Duplex: Entrance	
	7	Duplex: Paper feed	
	8	Paper transport	
	9	Registration	
	10	Paper transfer	
	11	Fusing unit	
	12	Paper feed	
	13	Duplex: Turn guide	

7	Mode Number/Name		Function / [Setting]
504	14	Sorter	Shows the number of paper jam at each location.
	15	Staple jam	
	16	Proof	
505	Original Jam count at feed and exit		
	1	Original feed	Shows the number of original feed jams.
	2	Original exit	Shows the number of original exit jams.
801	ROM version display		
	1	Main	Shows the ROM versions
	2	Scanner IPU	
	3	IDU	
	4	ADF	
	5	Sorter	
	6	LCT	
803	PM counter		Shows the number of developments on the PM parts. (Screen K)
804	PM counter clear		Clears PM counters. Press the ON key to clear the counter. (Screen K)
807	SC/Jam counter clear		Clears the SC and Jam counters. Press the ON key to clear the counter.
808	Counter all clear		Clears all the counters except for PM, SC, and Jam counters. Press the ON key to clear the counter.
809	Print logging data		
	1	Logging data	Prints out logging data. Press the ON key to print. When selecting “003” (All logging data), “001” and “003” are automatically executed.
	2	SC/Jam counter	
	3	All logging data	
810	Copy counter clear: All		Clears the copy counter. Press the ON key to clear the counter.
816	Copy counter clear: Paper trays		Clears the copy counter of each paper tray. Press the ON key to clear the counter.
818	Developer counter clear		Clears the development unit counters for all or individual color. Press the ON key to clear the counter. (Screen K)
819	Copy counter clear: Paper size		Clears the copy counter counted for paper size. Press the ON key to clear the counter.
825	Total counter clear		Sets the total counter to 0. This mode is available only when the number shown by the counter is below 0.
826	MK1 error counter		Used in Japan only.
827	Clear MK1 error counter		Used in Japan only.
902	Data print: Non-default		Prints data values that have been changed from the default value. Press the ON key to print.
903	Data print: All		Prints all SP data. Press the ON key to print.
904	Printer gamma data print		
	1	Copy mode	Prints out the gamma data in the Copy mode.
	2	Printer mode	Prints out the gamma data in the Print mode.
905	PM counter print		Prints out the PM counter data. Press the Print key to print. (Screen K)
910 911	PM parts counter (PTR section)		Shows usage of components related to paper transfer belt and Duplex unit. Count is based on sheets of paper or developments. (Screen K)

SP8-XXX (Special Mode)

8	Mode Number/Name		Function / [Setting]
115	Fusing temperature SP1 Fusing temperature SP2 Fusing temperature SP3		Set the temperature of each condition for special operation modes.
	02	H: Standby (1st)	[–20 to 20°C / 0 / 1 step / N]
	03	H: Copy (1st) Norma FC	
	04	H: Copy (1st) Normal 1C	
	07	P: Standby (1st)	
	08	P: Copy (1st) Norma FC	
	09	P: Copy (1st) Normal 1C	
124 224 324	PTR AC ON/OFF SP1 PTR AC ON/OFF SP2 PTR AC ON/OFF SP3		Turns off or on the AC component applied to the paper separation. [0 or 1 / 1 / - / N] 0: OFF, 1: ON
130 230 330	PTR bias SP1 PTR bias SP2 PTR bias SP3		Specifies the paper transfer roller (PTR) bias settings for special operation modes.
	130		
	02	Normal [1C]	[5 to 100 μA / 25 / 1 step]
	04	Normal [3C]	[5 to 100 μA / 35 / 1 step]
	05	Normal [4C]	
	18	Normal [1C] (2nd)	[5 to 100 μA / 30 / 1 step]
	20	Normal [3C] (2nd)	[5 to 100 μA / 35 / 1 step]
	21	Normal [4C] (2nd)	
	230		
	02	Normal [1C]	[5 to 100 μA / 14 / 1 step]
	04	Normal [3C]	[5 to 100 μA / 18 / 1 step]
	05	Normal [4C]	
	18	Normal [1C] (2nd)	[5 to 100 μA / 14 / 1 step]
	20	Normal [3C] (2nd)	[5 to 100 μA / 20 / 1 step]
	21	Normal [4C] (2nd)	
	330		
	02	Normal [1C]	[5 to 100 μA / 25 / 1 step]
	05	Normal [4C]	[5 to 100 μA / 35 / 1 step]
	18	Normal [1C] (2nd)	[5 to 100 μA / 30 / 1 step]
	21	Normal [4C] (2nd)	[5 to 100 μA / 35 / 1 step]
134 234 334	PTR leading edge SP1 PTR leading edge SP2 PTR leading edge SP3		Specifies the correction value for the paper transfer roller (PTR) bias for the leading edge area depending on the paper type and mode for special operation modes.
	134		
	01	Normal [1C]	[5 to 200 μA / 110 / 1 step]
	03	Normal [3C]	
	04	Normal [4C]	
	17	Normal [1C] (2nd)	
	17	Normal [3C] (2nd)	
	20	Normal [4C] (2nd)	
	234		
	01	Normal [1C]	[5 to 200 μA / 100 / 1 step]
	03	Normal [3C]	
	04	Normal [4C]	
	17	Normal [1C] (2nd)	
	17	Normal [3C] (2nd)	
	20	Normal [4C] (2nd)	

8	Mode Number/Name		Function / [Setting]
134 234 334	334		
	01	Normal [1C]	[5 to 200 μA / 110 / 1 step]
	04	Normal [4C]	
	17	Normal [1C] (2nd)	
	20	Normal [4C] (2nd)	
135 235 335	PTR trailing edge SP1 PTR trailing edge SP2 PTR trailing edge SP3		Specifies the correction value for the paper transfer roller (PTR) bias for the trailing edge area depending on the paper type and mode for special operation modes.
	135		
	01	Normal [1C]	[5 to 200 μA / 90 / 1 step]
	03	Normal [3C]	
	04	Normal [4C]	
	17	Normal [1C] (2nd)	
	19	Normal [3C] (2nd)	
	20	Normal [4C] (2nd)	
	235		
	01	Normal [1C]	[5 to 200 μA / 100 / 1 step]
	03	Normal [3C]	
	04	Normal [4C]	
	17	Normal [1C] (2nd)	
	19	Normal [3C] (2nd)	
	20	Normal [4C] (2nd)	
	335		
	01	Normal [1C]	[5 to 200 μA / 90 / 1 step]
	04	Normal [4C]	
	17	Normal [1C] (2nd)	
	20	Normal [4C] (2nd)	
138 238 338	PTR discharge corona SP1 PTR discharge corona SP2 PTR discharge corona SP3		Adjust the voltage for the paper transfer roller (PTR) discharge corona based on the copy mode. Non transfer area = The voltage which is applied to the discharge corona after the trading edge of paper passes it until next sheet of paper arrives.
	138, 238		
	01	Normal [1C]	[5 to 1500 V / 900 / 1 step]
	03	Normal [3C]	[5 to 1500 V /1100 / 1 step]
	04	Normal [4C]	[5 to 1500 V / 1100 / 1 step]
	05	Normal (Non transfer area)	[5 to 1500 V / 800 / 1 step]
	338		
	01	Normal [1C]	[5 to 1500 V / 900 / 1 step]
	04	Normal [4C]	[5 to 1500 V /1100 / 1 step]
	05	Normal (Non transfer area)	[5 to 1500 V / 800 / 1 step]
140 240	Gamma adjustment: Copy: Letter: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the copy/letter mode. [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
141 241	Gamma adjustment: Copy: Letter: C		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for cyan in the copy/letter mode. [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	

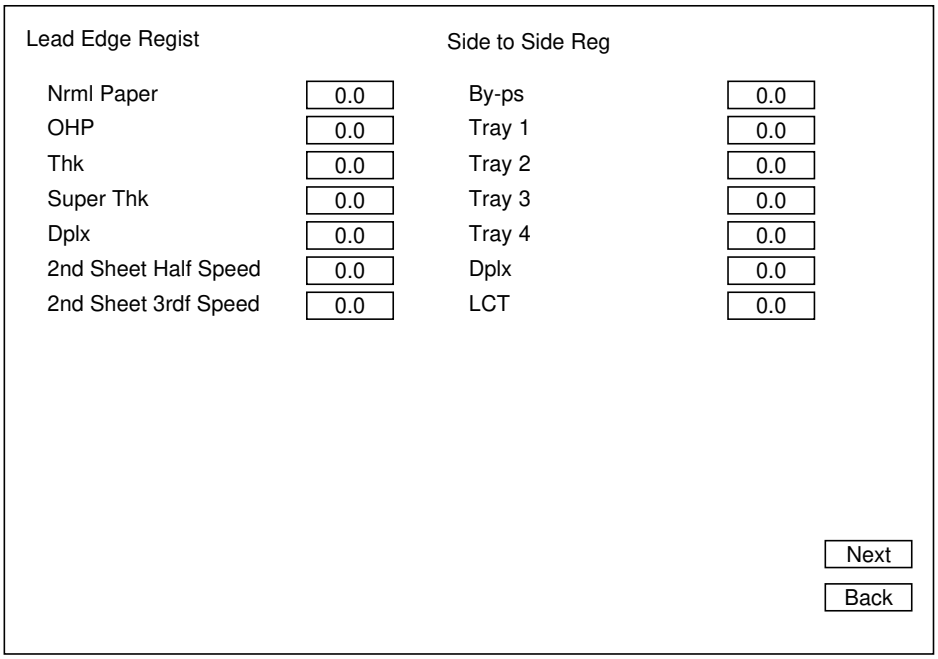
8	Mode Number/Name		Function / [Setting]
141 241	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
142 242	Gamma adjustment: Copy: Letter: M		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for magenta in the copy/letter mode. [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
143 243	Gamma adjustment: Copy: Letter: Y		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for yellow in the copy/letter mode. [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
144 244	Gamma adjustment: Copy: Letter, Single color: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the copy/letter/single color mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
145 245	Gamma adjustment: Copy: Photo: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
146 246	Gamma adjustment: Copy: Photo: C		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for cyan in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
147 247	Gamma adjustment: Copy: Photo: M		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for magenta in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	

8	Mode Number/Name		Function / [Setting]
147 247	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
148 248	Gamma adjustment: Copy: Photo: Y		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for yellow in the copy/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
149 249	Gamma adjustment: Copy: Photo, Single color: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the copy/letter/single color mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
340	Gamma adjustment: Printer: Letter: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
341	Gamma adjustment: Printer: Letter: C		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for cyan in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
342	Gamma adjustment: Printer: Letter: M		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for magenta in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
343	Gamma adjustment: Printer: Letter: Y		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for yellow in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	

8	Mode Number/Name		Function / [Setting]
343	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
344	Gamma adjustment: Printer: Photo: K		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for black in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
345	Gamma adjustment: Printer: Photo: C		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for cyan in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
346	Gamma adjustment: Printer: Photo: M		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for magenta in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	
347	Gamma adjustment: Printer: Photo: Y		
	1	Offset - Highlight	Adjusts the offset data of the printer gamma for yellow in the printer/photo mode. (Screen H, SP7-904) [0 to 30 / **15** / 1]
	2	Offset - Middle	
	3	Offset - Shadow	
	4	Offset - IDmax	
	5	Option - Highlight	**DFU** (SP7-904) [0 to 255 / **0** / 1]
	6	Option - Middle	
	7	Option - Shadow	
	8	Option - IDmax	

Pop-up Screen

SCREEN-A (1/2)



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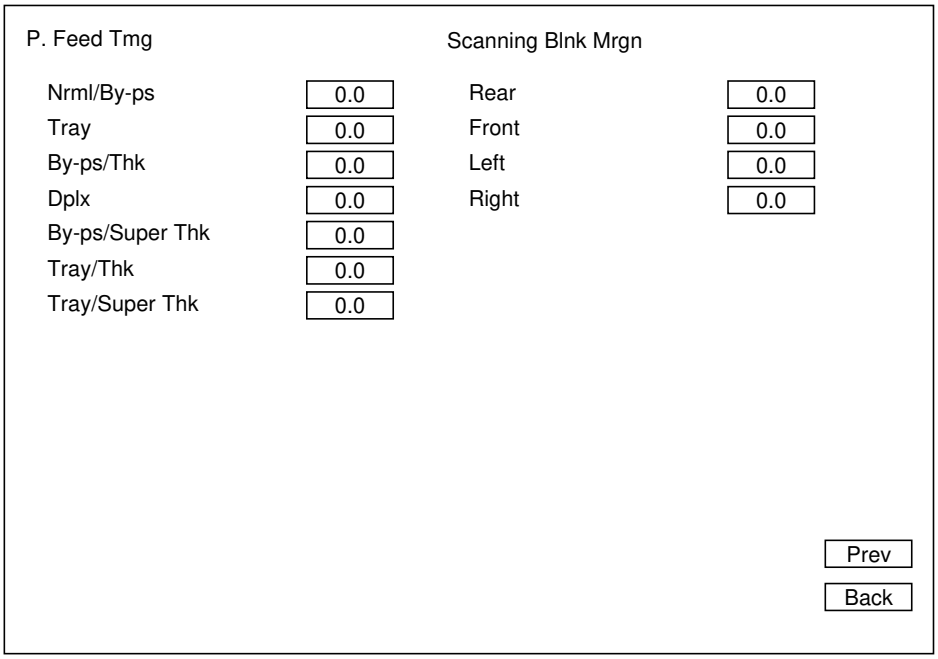
SCREEN-A (2/2)



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SCREEN-B

Hot Rllr Temp	Single		Dplx
Hot: Reload	183	Hot: Idling	193
Hot: Idling	193	Hot: Nrml: FC	178
Hot: Nrml: FC	178	Hot: Nrml: 1C	168
Hot: Nrml: 1C	168	Hot: OHP/Thk: FC	178
Hot: OHP/Thk: FC	178	Hot: OHP/Thk: 1C	178
Hot: OHP/Thk: 1C	178	Pressure: Idling	160
Pressure: Idling	160	Pressure: Nrml: FC	155
Pressure: Nrml: FC	155	Pressure: Nrml: 1C	145
Pressure: Nrml: 1C	145	Pressure: OHP/Thk: FC	155
Pressure: OHP/Thk: FC	155	Pressure: OHP/Thk: 1C	155
Pressure: OHP/Thk: 1C	155		

Back

B023S503.WMF

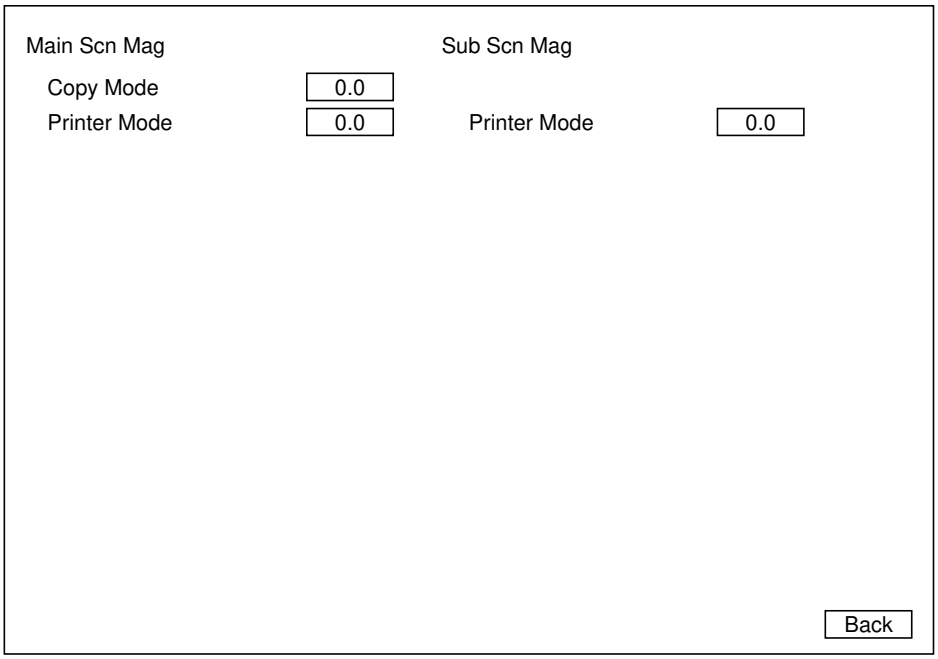
SCREEN-C

Lead Edge/SubScn		Trail/SubScn	
Nrml Paper	0.0	Nrml Pap Thk	0.0
Thk	0.0	Thk	0.0
Super Thk	0.0	Super ThOHP	0.0
OHP	0.0	OHP	0.0
		Auto Dplx: up	0.0
Main Scan			
Lead Edge	0.0		
Trail Edge	0.0		

Back

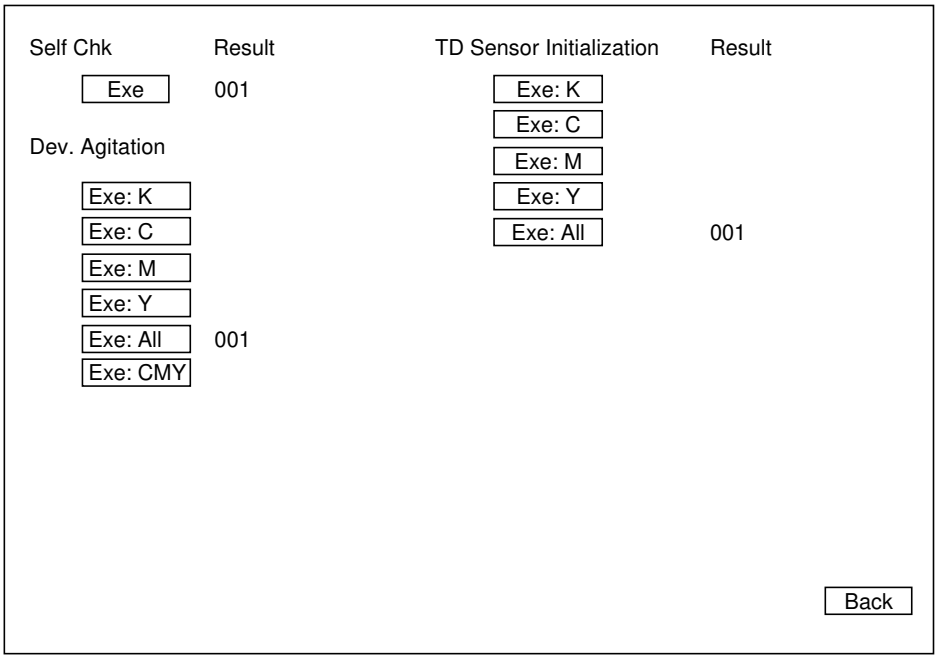
B023S504.WMF

SCREEN-D



B023S505.WMF

SCREEN-E



B023S506.WMF

SCREEN-F

Paper Transfer Bias

	Nrml Paper	Thk	OHP	SuperThk	Nrml:Back	Thk:Back	SpThk:Back
1C	25	14	16	16	30	14	16
2C	35	18	18	20	35	20	20
3C	35	18	18	20	35	20	20
4C	35	18	18	20	35	20	20

	P: Nrml	P: ElseNrml
1C	20	12
2C	30	14
3C	30	14
4C	30	14

Back

B023S507.WMF

SCREEN-G

ACC Device Correction: HL

K	000
C	000
M	000
Y	000

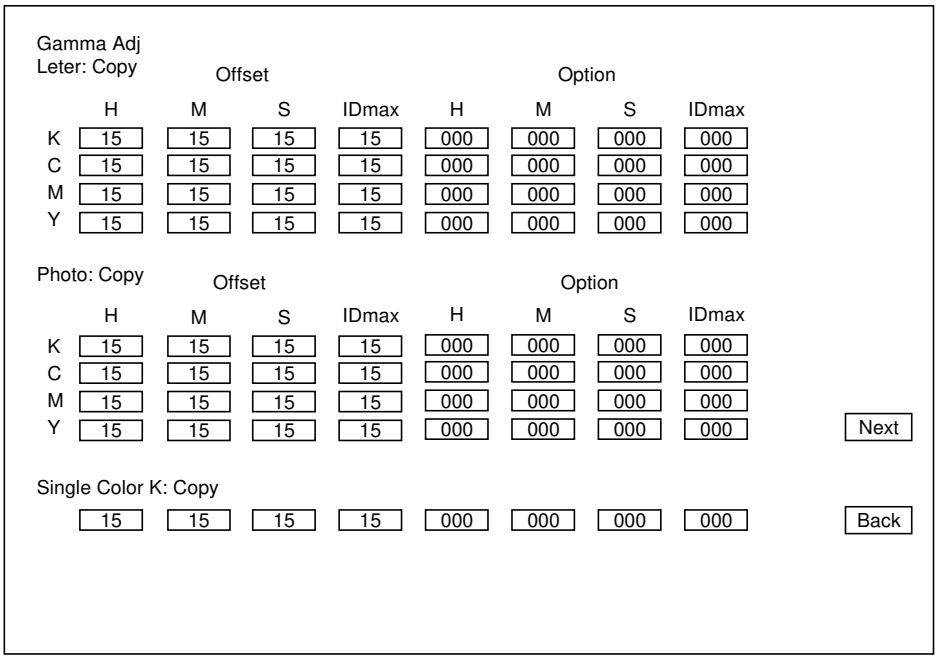
ACC Deveice Correction: Shadow

K	000
C	000
M	000
Y	000

Back

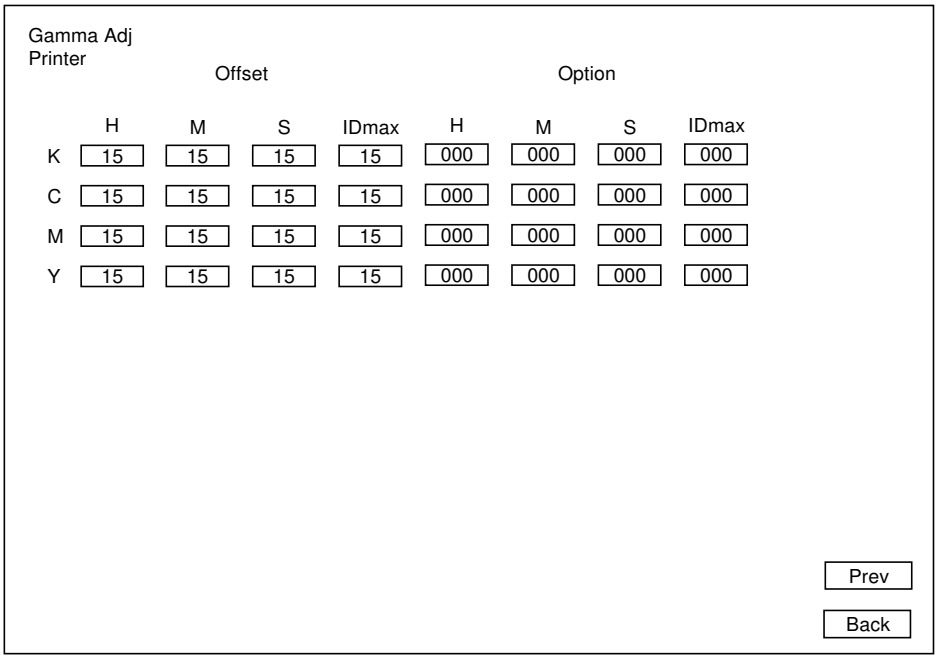
B023S508.WMF

SCREEN-H (1/2)



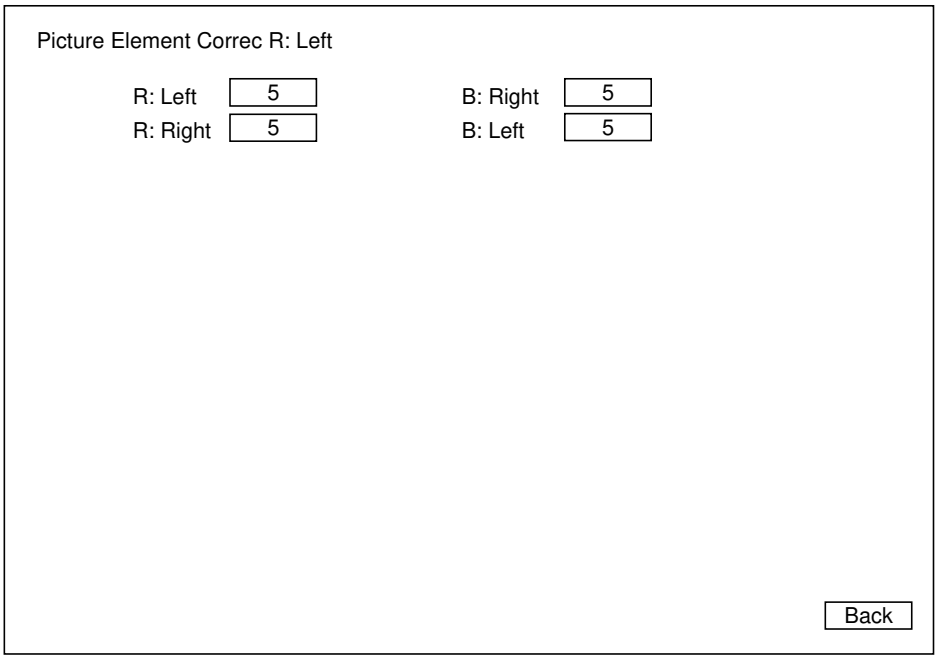
B023S509.WMF

SCREEN-H (2/2)



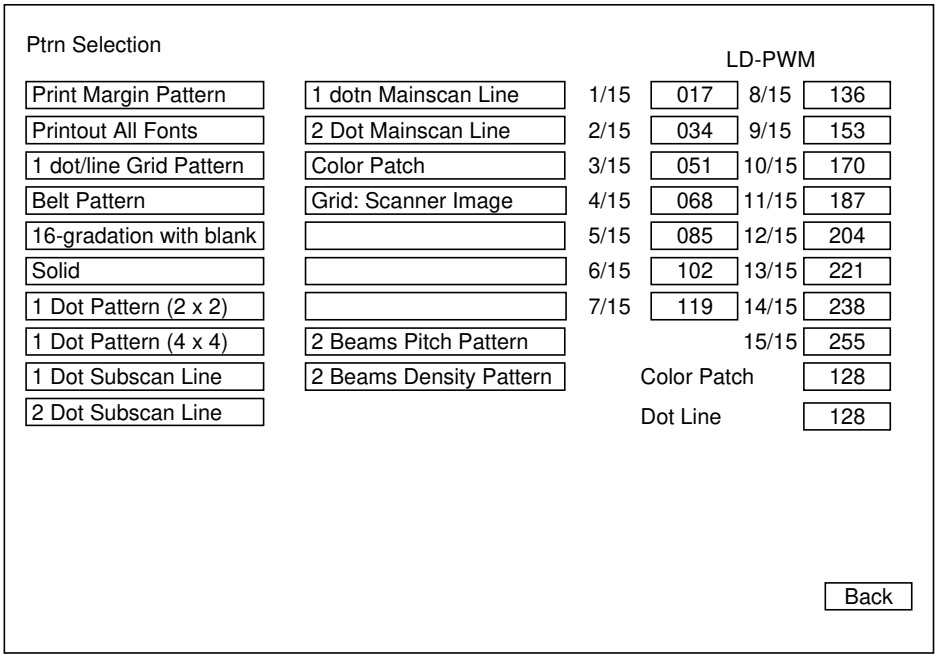
B023S510.WMF

SCREEN-I

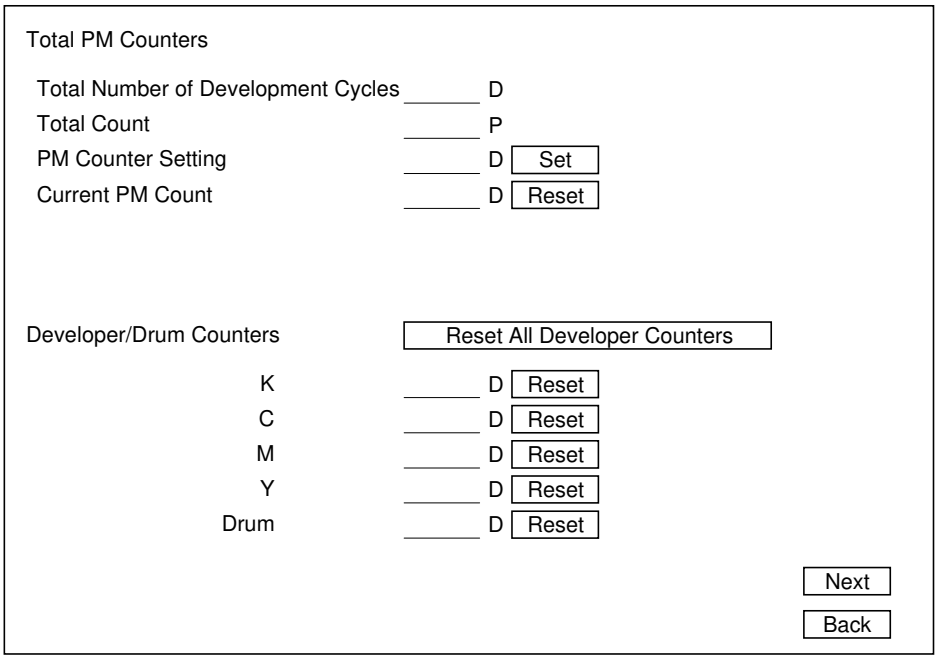


B023S511.WMF

SCREEN-J

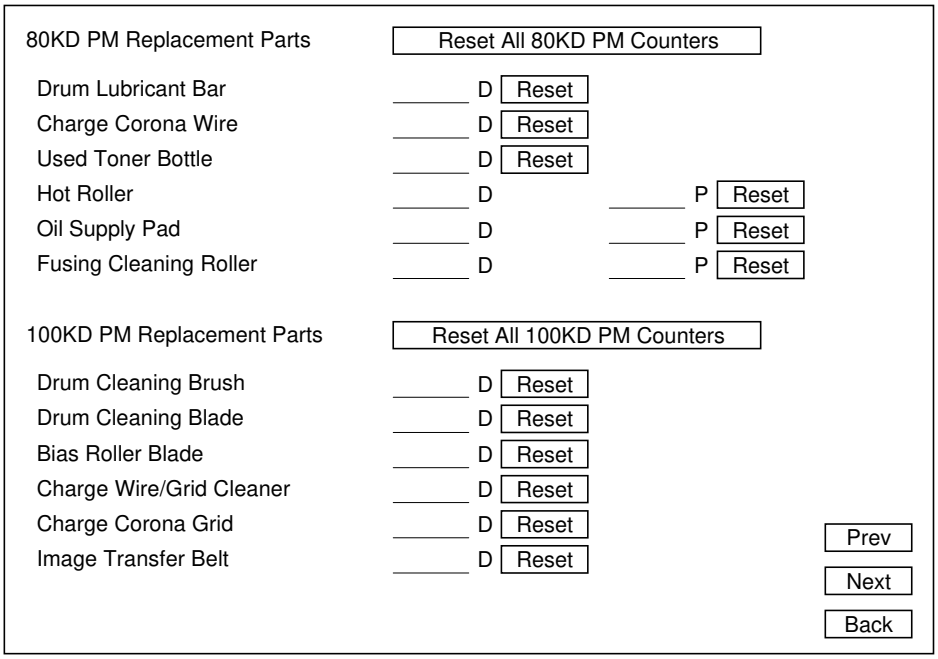


SCREEN-K (1/6)



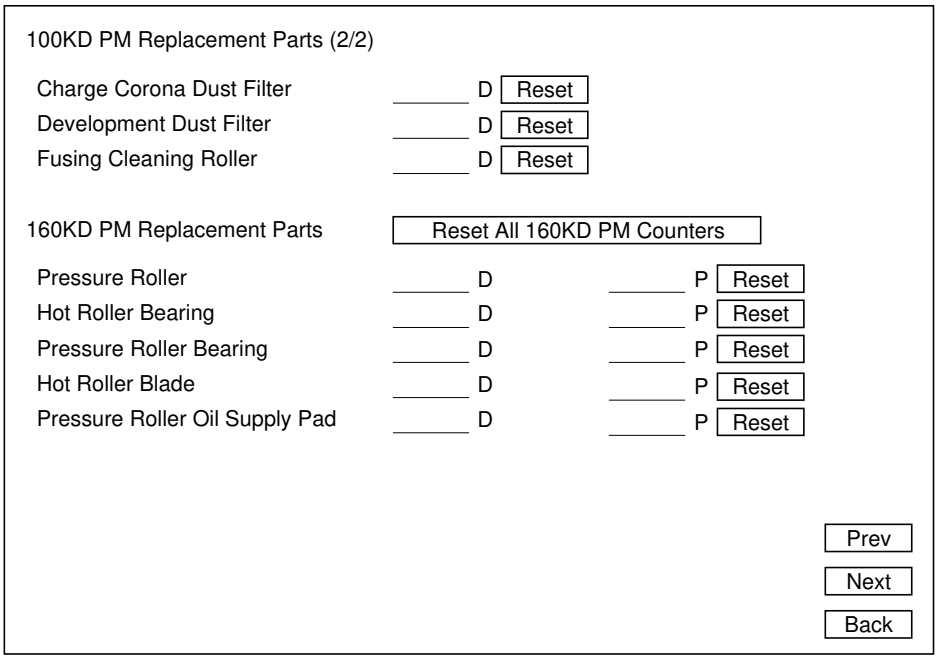
B023S512.WMF

SCREEN-K (2/6)



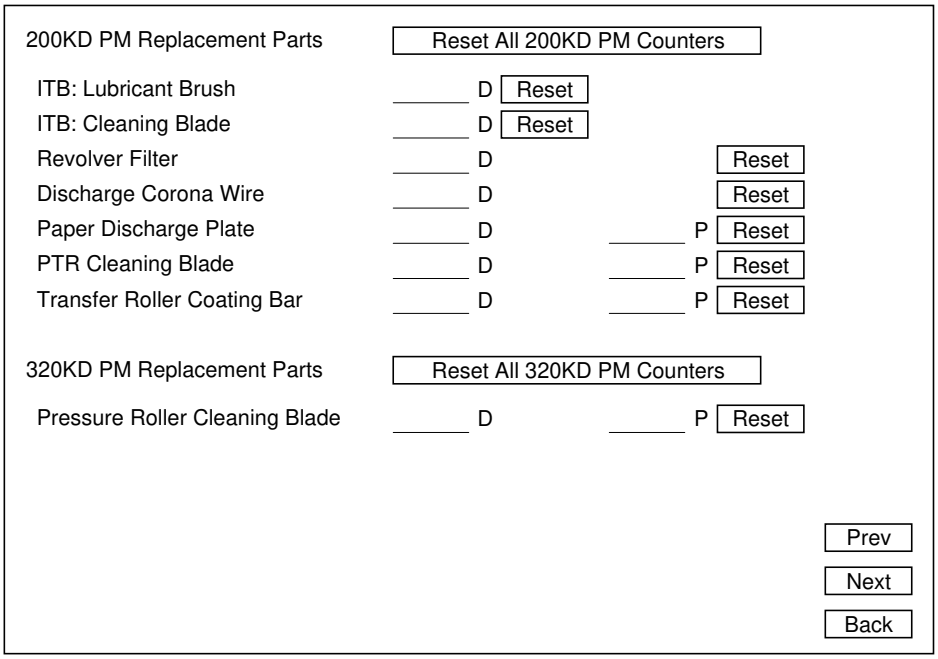
B023S513.WMF

SCREEN-K (3/6)



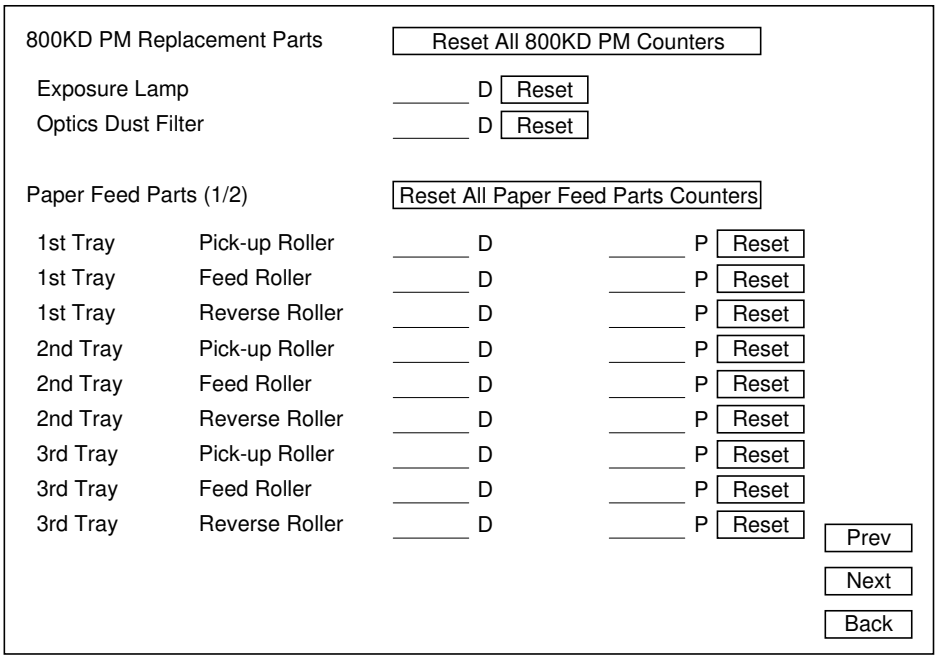
B023S514.WMF

SCREEN-K (4/6)



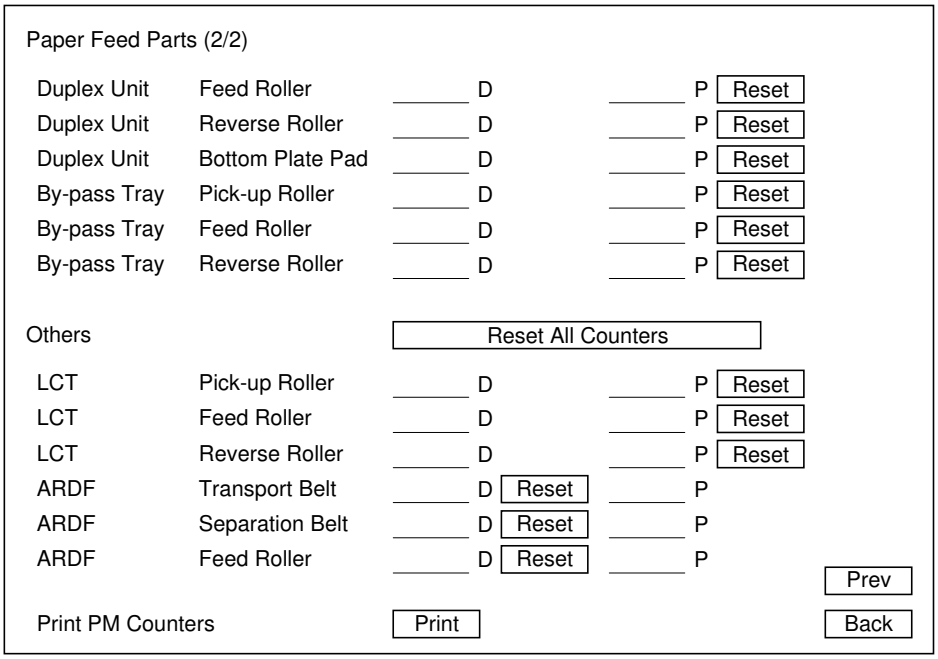
B023S515.WMF

SCREEN-K (5/6)



B023S516.WMF

SCREEN-K (6/6)



B023S517.WMF

SP4-301 APS Operation Check Details

The table below shows the relationship between the codes that are displayed when you run “Check APS Operation (Size Display)” in SP4-301 and the paper sizes.

Code	Paper Size
0	No Original
1	A0, Sideways
2	A1, Sideways
3	A2, Sideways
4	A3, Sideways
5	A4, Sideways
6	A5, Sideways
7	A6, Sideways
8	A7, Sideways
9	B0, Sideways
10	B1, Sideways
11	B2, Sideways
12	B3, Sideways
13	B4, Sideways
14	B5, Sideways
15	B6, Sideways
16	B7, Sideways
17	Double postcard, Sideways (200 mm x 148 mm)
18	Postcard, Sideways (A6)
19	Line slider 1, Sideways (210 mm x 170 mm)
20	Line slider 2, Sideways (300 mm x 250 mm)
21	Book card 1 (six-folded), Sideways (276 mm x 225 mm)
22	Book card 2 (six-folded), Sideways (300 mm x 250 mm)
23to31	Not used
32	17" x 11"
33	14" x 11"
34	15" x 10"
35	14" x 10"
36	14" x 8 1/2"
37	13" x 8 1/2"
38	11" x 8 1/2"
39	14" x 8 1/2"
40	13" x 8 1/2"
41	13" x 8"
42	10 1/2" x 8"
43	10" x 8"
44	8 1/2" x 5 1/2"
45to127	Not used
128	Unidentifiable size
129	A0, Lengthwise
130	A1, Lengthwise
131	A2, Lengthwise
132	A3, Lengthwise
133	A4, Lengthwise
134	A5, Lengthwise
135	A6, Lengthwise
136	A7, Lengthwise
137	B0, Lengthwise
138	B1, Lengthwise
139	B2, Lengthwise
140	B3, Lengthwise
141	B4, Lengthwise
142	B5, Lengthwise
143	B6, Lengthwise
144	B7, Lengthwise
145	Double postcard, Lengthwise (148 mm x 200 mm)
146	Postcard, Lengthwise (A6)
147	Line slider 1, Lengthwise (170 mm x 210 mm)
148	Line slider 2, Lengthwise (210 mm x 340 mm)
149	Book card 1 (six-folded), Lengthwise (225 mm x 276 mm)
150	Book card 2 (six-folded), Lengthwise (250 mm x 300 mm)
151to159	Not used
160	11" x 17"
161	11" x 14"
162	10" x 15"
163	10" x 14"
164	8 1/2" x 14"
165	8 1/2" x 13"
166	8 1/2" x 11"
167	8 1/4" x 14"
168	8 1/4" x 13"
169	8" x 13"
170	8" x 10 1/2"
171	8" x 10"
172	5 1/2" x 8 1/2"
173to191	Not used
192	FPU MAX SIZE (145 mm x 217.2 mm)
193	35 mm film S
194	35 mm film M
195	4" x 5"
196	60 mm x 45 mm
197	60 mm x 60 mm
198	60 mm x 70 mm
199	60 mm x 80 mm
200	60 mm x 90 mm

NOTE: The table shows the relationship between the registered code numbers and the available paper sizes. This does not mean that all of the above paper sizes can be recognized by APS. For the paper sizes that APS can recognize, see “Basic Specifications” and “Scanner” section descriptions.

Test Pattern

1. The data selected for the test pattern in the following SP modes will not be automatically reset to the default “000” when you exit the SP mode. Make sure you reset the data to “000” after the test is finished.

IPU Test Pattern (SP4-417)

3rd level	Description
000	No pattern
001	Grid pattern
002	Slanted grid pattern
003	256 gradation (Horizontal)
004	256 gradation (Vertical)
005	Color patch
006	RGB gray scale (16 gradation steps)
007	YMCK-RGB 16 gradation
008	YMCK 16 gradation
009	YMCK 128 gradation
010	No pattern
011	Uneven check
012	Banding check 1
013	Banding check 2

LD Control Board Test Pattern (SP4-907)

3rd level	Description
000	No pattern
001	Black pattern
002	White pattern
003	16 gradation pattern
004	4 dot grid pattern
005	2 dot grid pattern

SP5-803 Input Check

The table below lists the items of the main unit input check.

COPIER

No.	Sensor/Switch/Signal	Status	
		0	1
1	Drum motor: Motor OK signal	OK	NG
2	Fusing motor: Motor OK signal	OK	NG
3	Paper feed motor: Motor OK signal	NG	OK
4	ITB motor: Motor OK signal	OK	NG
5	PTR motor: Motor OK signal	OK	NG
6	Polygon motor: Motor OK signal	NG	OK
7	Wire cleaner motor: Motor OK signal	OK	NG
8	Drum peripheral component motor: Motor OK signal	OK	NG
9	Toner cartridge set sensor	Detected (Set)	Not detected
10	Toner end sensor	Detected (End)	Not detected
11	PTR contact/release sensor	Touch	Release (at H.P.)
12	ITB cleaning H.P. sensor	Release (at H.P.)	Touch
13	Toner overflow sensor	Not detected	Detected
14	1st paper tray upper limit sensor	Detected	Not detected
15	Not used	—	—
16	2nd paper tray upper limit sensor	Detected	Not detected
17	3rd paper tray upper limit sensor	Detected	Not detected
18	1st paper feed sensor	Detected (paper)	Not detected
19	Not used	—	—
20	2nd paper feed sensor	Detected (paper)	Not detected
21	3rd paper feed sensor	Detected (paper)	Not detected
22	Not used	—	—
23	1st paper end sensor	Not detected	Detected (End)
24	Not used	—	—
25	2nd paper end sensor	Not detected	Detected (End)
26	3rd paper end sensor	Not detected	Detected (End)
27	By-pass paper end sensor	Not detected	Detected (End)
28	2nd tray paper size switch - SW1	Actuated	Not actuated
29	2nd tray paper size switch - SW2	Actuated	Not actuated
30	2nd tray paper size switch - SW3	Actuated	Not actuated
31	2nd tray paper size switch - SW4	Actuated	Not actuated
32	2nd tray paper size switch - SW5	Actuated	Not actuated
33	3rd tray paper size switch - SW1	Actuated	Not actuated
34	3rd tray paper size switch - SW2	Actuated	Not actuated
35	3rd tray paper size switch - SW3	Actuated	Not actuated
36	3rd tray paper size switch - SW4	Actuated	Not actuated
37	3rd tray paper size switch - SW5	Actuated	Not actuated
38	By-pass paper width detection board - SW1	Actuated	Not actuated
39	By-pass paper width detection board - SW2	Actuated	Not actuated
40	By-pass paper width detection board - SW3	Actuated	Not actuated
41	By-pass paper width detection board - SW4	Actuated	Not actuated
42	By-pass paper length sensor	Not actuated	Actuated
43	1st paper height sensor	Actuated	Not actuated
44	Not used	—	—
45	2nd paper height sensor	Actuated	Not actuated
46	3rd paper height sensor	Actuated	Not actuated

No.	Sensor/Switch/Signal	Status	
		0	1
47	Not used	—	—
48	Not used	—	—
49	1 tray set switch	Actuated	Not actuated
50	Not used	—	—
51	By-pass table sensor	Open	Close
52	Registration sensor	Not detected	Detected (paper)
53	Duplex side fence H.P. sensor	Detected (H.P.)	Not detected
54	Duplex end fence H.P. sensor	Detected (H.P.)	Not detected
55	Duplex entrance sensor	Detected (paper)	Not detected
56	Duplex turn sensor	Not detected	Detected (paper)
57	Duplex paper end sensor	Not detected	Detected (End)
58	Duplex unit set detection	Detected (set)	Not detected
59	Paper exit sensor	Detected (paper)	Not detected
60	Oil end sensor	Detected (End)	Not detected
61	Duplex turn guide sensor	Detected (paper)	Not detected
62	Front door switch	Open	Close
63	Vertical transport door switch - SW1	Open	Close
64	Vertical transport door switch - SW2	Open	Close
65	Paper Exit door switch	Open	Close
66	PCC current leak detection	Detected (Leak)	Not detected
67	Paper separation corona current leak detection (D)	Detected (Leak)	Not detected
68	Charge corona current leak detection (C)	Detected (Leak)	Not detected
69	ITB lubricant brush current leak detection (Q1)	Detected (Leak)	Not detected
70	PTR discharge corona current leak detection (Q2)	Detected (Leak)	Not detected
71	Paper separation sensor	Not detected	Detected (paper)
72	Key counter OK detection	OK	NG
73	Key card OK detection (Used in Japan market only)	OK	NG
74	Total counter check 1	Not activated	Activated
75	Total counter check 2	Not activated	Activated
100	Scanner H.P. sensor	Not detected	Detected (H.P.)
101	Platen cover position sensor	Open	Close

LCT

Input No.	Sensor/Switch/Signal	Status	
		0	1
110	Tray cover switch	Close	Open
111	LCT set sensor	Close	Open
112	Lift sensor	Not detected	Detected (limit)
113	Lower limit sensor	Not detected	Detected (limit)
114	Relay sensor	Not detected	Detected (paper)
115	Paper end sensor	Not detected	Detected (paper end)

SORTER

Input No.	Sensor/Switch/Signal	Status	
		0	1
120	Entrance sensor	Not detected	Detected (paper)
121	Proof exit sensor	Not detected	Detected (paper)
122	Bin jam sensor (at entrance area of bins)	Not detected	Detected (paper)
123	Bin jam sensor (on the bins)	Not detected	Detected (paper)
124	Bin H.P. sensor	Not detected	Detected (H.P.)
125	Wheel sensor	Not detected	Detected (H.P.)
126	Bin: rear plate open sensor	Not detected	Detected (open)
127	Bin: rear plate close sensor	Not detected	Detected (close)
128	Jogger H.P. sensor	Not detected	Detected (H.P.)
129	Grip H.P. sensor	Not detected	Detected (H.P.)
130	Stapler unit H.P. sensor	Not detected	Detected (H.P.)
131	Stapler H.P. sensor	Not detected	Detected (H.P.)
132	Staple end switch	Not detected	Detected (End)
133	Paper sensor	Not detected	Detected (paper)
134	Door safety switch	Close	Open
135	Not used	—	—
136	Inverter sensor	Not detected	Detected (H.P.)
137	Grip unit H.P. sensor	Not detected	Detected (H.P.)
138	Cartridge set switch	Not detected	Detected (Set)
139	Staple unit set detection	Not detected	Detected (Set)
140	Staple unit pull-out position sensor	Detected (H.P.)	Not detected

ADF

Input No.	Sensor/Switch/Signal	Status	
		0	1
150	Original width sensor 3	Not activated	Activated
151	Original width sensor 2	Not activated	Activated
152	Original width sensor 1	Not activated	Activated
153	Registration sensor	Not detected	Detected (original)
154	Feed-out sensor	Not detected	Detected (original)
155	DF position sensor	Open	Close
156	ADF position sensor	Close	Open
157	Feed-in: cover open sensor	Open	Close
158	Feed-out: cover open sensor	Open	Close

SP5-804 Output Check

The table below lists the items of the main unit output check.

COPIER

No.	Electrical Component
1	Drum motor (standard speed, forward)
2	Drum motor (half speed, forward)
3	Drum motor (standard speed, reverse)
4	Not used
5	Fusing motor (standard speed)
6	Fusing motor (half speed)
7	Not used
8	Paper feed motor (standard speed)
9	Paper feed motor (half speed)
10	Not used
11	Drum peripheral component motor
12	Wire cleaner motor (forward)
13	Wire cleaner motor (reverse)
14	PCC
15	QL
16	Main charge corona & grid (C & G)
17	Development bias (AC)
18	Development bias (DC)
19	Development bias (AC + DC)
20	Drum cleaning brush bias (BR)
21	ID sensor LED
22	Development clutch
23	PTR shift clutch
24	Not used
25	Toner supply clutch
26	Revolver motor current (rotation)
27	Revolver motor current (development)
28	Revolver motor current (stand-by)
29	Revolver rotation (90o)
30	Not used
31	Not used
32	ITB motor (standard speed, forward)
33	ITB motor (half speed, forward)
34	ITB motor (standard, reverse)
35	ITB bias (T1)
36	ITB cleaning drive clutch
37	ITB cleaning shift clutch
38	ITB lubricant brush bias (Q1)
39	PTR motor (standard, forward)
40	PTR motor (half speed, forward)
41	PTR bias
42	PTR discharge (Q2)
43	Not used
44	Power relay (printer)
45	Hot roller fusing lamp
46	Pressure roller fusing lamp
47	Charge fan
48	Transport fan
49	Exhaust fan
50	Fusing fan (standard speed)
51	Fusing fan (half speed)
52	ID sensor fan
107	Not used

No.	Electrical Component
53	Not used
54	Development cooling fan (standard speed)
55	Development cooling fan (half speed)
56	Fusing fan (upper)
57	Not used
58	Paper feed drive clutch
59	By-pass feed clutch
60	Main by-pass pick-up solenoid
61	Sub by-pass pick-up solenoid
62	By-pass reverse roller solenoid
63	1st paper feed clutch
64	1st pick-up solenoid
65	1st reverse roller solenoid
66	Not used
67	Not used
68	Not used
69	2nd paper feed clutch
70	2nd pick-up solenoid
71	2nd reverse roller solenoid
72	3rd paper feed clutch
73	3rd pick-up solenoid
74	3rd reverse roller solenoid
75	1st tray lift motor (forward)
76	1st tray lift motor (reverse)
77	Not used
78	Not used
79	2nd tray lift motor (forward)
80	2nd tray lift motor (reverse)
81	3rd tray lift motor (forward)
82	3rd tray lift motor (reverse)
83	Registration motor (providing power)
84	Registration motor (standard speed)
85	Registration motor (half speed)
86	Not used
87	Not used
88	Junction gate solenoid
89	Duplex feed motor (forward)
90	Not used
91	Duplex feed motor (reverse)
92	Not used
93	Side fence jogger motor (forward)
94	Side fence jogger motor (reverse)
95	End fence jogger motor (forward)
96	End fence jogger motor (reverse)
97	Not used
100	Optics exhaust fan
101	Optics cooling fan 1
102	Optics cooling fan 2
103	IPU cooling fan
104	Scanner motor (provide power)
105	Exposure lamp
106	Power relay (scanner)

To activate the revolver motor 45 or 90 degree, No. 26 “Revolver motor current (rotation)” needs to be ON.

OPTIONS (SORTER, ADF)

No.	Electrical Component
120	Sorter: Transport motor (Proof mode)
121	Sorter: Transport motor (Sort mode)
122	Sorter: Exit motor
123	Sorter: Turn gate solenoid
124	Sorter: Bin Motor
125	Sorter: Bin rear plate motor
126	Sorter: Grip motor
127	Sorter: Grip shift motor
128	Sorter: Staple unit motor
129	Sorter: Stapler motor

No.	Electrical Component
130	Sorter: Reverse solenoid
131	Sorter: Jogger Motor
133	Same as 131
150	ADF: Feed-in motor (forward)
151	ADF: Feed-in motor (reverse)
152	ADF: Belt drive motor (forward)
153	ADF: Belt drive motor (reverse)
154	ADF: Feed-out motor
155	ADF: Inverter solenoid
156	ADF: Indicators ON

SP5-955 Printer Internal Pattern

5-955-018: Internal Pattern Types

The default values and printer internal patterns, which are generated in the LD control board, are listed below.

0: No pattern
1: Print margin pattern
2: Print out all fonts
3: 1 dot/line grid pattern
4: Belt pattern
5: 16-gradation with blank
6: Solid
7: 1 dot pattern (2x2)
8: 1 dot pattern (4x4)
9: 1 dot sub scan line
10: 2 dot sub scan line
11: 1 dot main scan line
12: 2 dot main scan line
13: Color patch
14: Grid scanner image
18: 2 beams pitch pattern
19: 2 beams density pattern

5-955-001 LOAD_PWM (dot, line):
Specifies the LD output level (determines the test pattern gradations for SP5-955-1 through -4, -6 through -14, and -18 through -19).

5-955-002 to 5-955-016 LD_PWM (16 gradations):
Specifies the LD output level (determines the output levels (gradations) of 16 grayscales in SP5-955-5, -16, and -17).

002: 1/15: 2nd level setting
•
•
016: 15/15: 16th level setting

5-955-17 LD_PWM (trailing edge color patch half tone):
Specifies the LD output level (determines the half-tone gradations of the trailing edge color patch in SP5-955-13).

Appendix C

Revised on May 15, 2001

The SC code table (Appendix-1) refers to SC code types. These types and the procedures to reset them are explained in the following table.

Type	Display Method	How to Reset
A	Fusing unit SCs displayed on the operation panel. The machine is disabled. The user cannot reset the SC.	Turn the main switch off then on before entering SP mode. Reset the SC (set SP5-810 to 1), then turn the main switch off then on again.
B	SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected.	Turn power off/on.
C	SCs that are not shown on the operation panel. They are internally logged.	Logging only
D	Turning the operation switch or main power switch off then on resets SCs Displayed on the operation panel. These are re-displayed if the error occurs again.	Turn the operation switch or main power switch off and on.

- All SCs are logged.
- To reset the SC related to the fusing unit, enter SP5-810-000 and set the value to 1. Then turn the main switch off and on.

SC CODE TABLE

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC101	Exposure lamp failure	- Timing & Condition - • The lamp output check signal (LAMPDET) is still HIGH 250 ms after the lamp turns on (the ON check is canceled if the lamp goes off within 250 ms). • The lamp output check signal is still LOW 30ms after the lamp turns off (the OFF check is canceled if the lamp turns on within 30 ms).	• Blown lamp • Blown thermostat • Blown fuse (FU301) • Defective lamp regulator • Poor connection • Defective harnesses • Defective AC drive board • Defective sub/main scanner IPU board			1. Visually check the lamp element or check both ends of the lamp terminals with a multi-meter. 2. Check the current at the ends of the thermostat terminals with a multi-meter. 3. Check if the connectors (CN1, CN2, and CN3) on the lamp regulator are properly connected. 4. Check the current through the 3 harnesses. 5. If 100Vac is provided from the AC drive board (check CN3-1 and 5 on the lamp regulator) replace the lamp regulator. 6. If 100Vac is not supplied at CN3, Replace the AC drive board. 7. Replace the sub scanner IPU board and/or main scanner IPU board [Signal Check] • LAMPDET: CN2-2 on the lamp regulator/ CN403-A10 on the sub scanner IPU board • LAMPTRIG: CN403-A9 on the sub scanner IPU board/CN2-3 on the lamp regulator	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC120	Scanner HP sensor does not turn on	- Timing & Condition - • The scanner H.P. sensor does not turn on when the scanner moves back to the home position or at the home position check. • The sensor output at CN403-A1 stays HIGH (5V).	• Scanner motor out of synchronization (drive error) • Poor connection of connectors • Defective scanner HP sensor • Defective sub/main scanner IPU board • Defective main control board	SC121		1. In SP 5-804-104, stop supplying the current to the scanner motor. Check the output signal from the scanner H.P. sensor in SP 5-803-100 by moving the scanner manually. (0: Not actuated; 1: Actuated - at H.P.) 2. If the result of step 1 is OK; 1) Check the tension of the timing belt. 2) Check if the pulley is firmly secured. 3) Check if the scanner wire is properly wired 4) Check the connection of CN700, CN701, and CN702 on the scanner motor drive board. 5) Check a current through the harnesses. 6) Replace the scanner motor drive board. 7) Replace the scanner motor. 3. If the result of step 1 is not OK; 1) Make sure the harness is properly connected. 2) Check a current through the harnesses. 3) Replace the sensor. 4) Replace the sub and/or main scanner IPU board(s). 5) Replace the main control board. [Signal Check] • Scanner HP: CN403-A1 on the sub scanner IPU board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC121	Scanner HP sensor does not turn off	- Timing & Condition - • The sensor does not turn off when the scanner moves to the home position after scanning an original. • The sensor output at CN403-A1 stays LOW (0V).	Same as SC120	SC120		Same as SC120.	D
SC130	Scanner start error	- Timing - • Scanning start • During scanner motor ON - Condition - • The scanning start signal is generated while the motor is moving. • Total number of steps calculated based on the signal from the stepping motor is out of range. • The H.P. sensor stays OFF when the scanner starts moving.	Same as SC120 or sequence error			Same as SC120 or Replace the sub and/or main scanner IPU board(s).	D
SC150	Scanner ROM mismatch	- Timing - After software installation or when the main switch is turned on - Condition - Main scanner IPU detects that the incorrect software is installed.	• An invalid IC card used (such as a different model IC card) • Main scanner IPU board was replaced.			Reinstall the correct IC card. Replace the main scanner IPU board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC170	Video processing error 1	- Timing - When the main switch is turned on (after auto gain control at scanner IPU board) - Condition - The black level corrected between the Odd and Even (O/E) of the CCD is outside the proper range.	• Poor connection of CCD flat cable • Defective Scanner IPU board • Defective CCD			1. Make sure the flat cable is firmly connected at CN501 and CN404 on the CCD board and main scanner IPU board. 2. Test the current through the flat cable. 3. Replace main scanner IPU board. 4. Replace CCD board as the lens unit assembly.	D
SC171	Video processing error 2	- Timing - When the main switch is turned on (after auto gain control at scanner IPU board) - Condition - The black level corrected is outside the proper range.	Same as SC170			Same as SC170.	D
SC172	Video processing error 3	- Timing - When the main switch is turned on (after auto gain control at scanner IPU board) - Condition - The white level corrected is outside the proper range.	• Poor connection of CCD harness • Dirty optics • Defective lamp regulator • Defective main scanner IPU board • Defective CCD			1. Check SP4-426-001 to 006 (RGB Gain). If their value is close to “255”, clean the optics section (exposure glass, white plate, mirrors, and lens). 2. Visually check that the exposure lamp turns on during warming-up after the main switch is turned on. If not, replace the lamp regulator. 3. Make sure the CCD flat cable is firmly connected at CN501 and CN404 on the CCD and scanner main IPU board. 4. Check the continuity of the flat cable. 5. Replace the main scanner IPU board. 6. Replace the CCD board and the lens unit.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC191	Bar code scan error	- Timing - When the main switch is turned on - Condition - The main scanner IPU board detects that the pattern of the bard code scanned in is not appropriate.	• Non-standard bar code label • Improper location of bar code • Dirty bar code • Defective main scanner IPU board • Defective main control board			1. Check if the bar code is damaged or scratched. 2. Clean the optics section such as mirrors and lens and bar code. 3. Check if the mirrors are properly set on the 1st and 2nd scanners. If the spring plate, which is fix the position of mirrors, is out of position, it causes the light axis to change. 4. Replace the main scanner IPU board. 5. Replace the main control board.	D
SC192	Bar code number mismatch	- Timing - When the main switch is turned on - Condition - The main control board detects that the bar code data scanned in does not match to the machine identification number stored in the RAM.	• Defective RAM board • Defective main scanner IPU board • Defective main control board			1. Check if the serial number stored in the RAM is correct. **NOTE:** Contacts your product specialist for the detailed procedure. 2. Replace the main scanner IPU board. 3. Replace the main control board.	D
SC193	IDU error	- Timing - When the main switch is turned on - Condition - The IDU runs a diagnostic at power-on. Any hardware errors are detected during the diagnostics.	• Defective IDU • Defective sub/main scanner IPU board			1. Perform the scanner IPU board test (SP4-904-001 and 002). If not OK, replace the main and/or scanner IPU board. SP4-904-001 or 002 0: OK 25 or 35: Replace sub scanner IPU board. Others: Replace main scanner IPU board. 2. Replace the IDU board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC195	Serial number error	- Timing - When the main switch is turned on - Condition - The serial number entered or stored in RAM is not correct.	• Improper serial number • RAM board is replaced. • Defective RAM			1. Check and re-enter the serial number properly. **NOTE:** Contacts your product specialist for the detailed procedure.	D
SC301	Charge current leak	- Timing - When the main charge is ON in the printing process or process control mode - Condition - The current leak is detected for 2 seconds.	• Charge corona unit not installed properly • Poor connection of harnesses • Defective high voltage supply board (C/G/B) • Defective I/O control board • Defective main control board.			1. Reinstall the charge corona unit properly or replace the charge corona unit. 2. Reconnect the connectors on the high voltage supply board (C/G/B), I/O control board, and main control board, or check the harnesses. 3. Check and clean the charge corona unit receptacle. 4. Replace the high voltage supply board (C/G/B). 5. Replace the I/O control board. 6. Replace the main control board. [Signal Check] • Leak detection: CN217-7 or TP120 on the I/O control board	D
SC302	Charge corona grid voltage error	- Timing - When the main charge grid is ON in the printing process or process control mode - Condition - The feedback voltage is 4.8V or higher, or PMW value is 50% or higher for 500msec continuously.	Same as SC301			Same as for SC301 [Signal Check] • Feedback signal: CN217-5, TP173, or CN211-A6 on the I/O control board or CN302-A4 or TP107 on the main control board • PWM: CN217-6 or TP140 on the I/O control board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC303	Charge cleaner motor error	- Timing - When the charge cleaner starts - Condition - • Over-current is detected for 10 seconds when the cleaner pads start moving from rear to front. • Over-current is still not detected 1 minute after the cleaner motor turns on.	• Poor connection • Defective cleaner motor • Cleaner pad locked • Defective I/O control board • Defective main control board			1. Make sure the connectors (CN861 & CN829) are firmly connected. 2. Make sure the charge corona unit is properly installed. 3. Clean the screw shaft if it is dirty. 4. See if the cleaner pad is mechanically locked. 5. Make sure the connector is firmly connected on the I/O control board (CN219). 6. Replace the I/O control board. 7. Replace the main control board.	D
SC320	Polygon motor error	- Condition - • The polygon motor rotation speed stays out of the range 22 seconds after the main switch is turned on. • The polygon motor rotation speed changes while the main power switch is ON. (Polygon motor should keep rotating with constant speed while the main switch is ON.)	• Poor connection • Defective polygon motor • Defective LD control board • Defective main scanner IPU board			1. Make sure the connector (CN602-5) on the LD control board is properly connected. 2. Test the current through the harness. 3. Replace the polygon motor. 4. Replace the LD control board. 5. Replace the main scanner IPU board. [Signal Check] • Motor OK: CN602-2 on the LD control board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC322	Laser synchronizing signal error	- Timing & Condition - While the polygon motor keeps running and LD is ON, the LD control board does not receive the laser synchronizing signal.	• Poor connection • Defective laser synchronizing detector board • Improper laser beam axis • Defective LD control board • Defective main control board • Defective optic housing unit			1. Make sure the connectors (CN3 & CN 602) are properly connected on the laser synchronizing detector board and LD control board 2. Remove and clean the synchronizing detector board. 3. Check if anything (such as the Barrel Toroidal lens label in the optic housing unit) interferes with the laser axis. 4. Replace the synchronizing detector board. 5. Make sure the harness connectors (CN1 & CN603) on the LD unit and LD control board are properly connected or check a current through the harness. 6. Make sure the connectors (CN604 & CN306) on the LD control board and main control board are properly connected or check the current through the harness. 7. Replace the LD control board. 8. Replace the main control board 9. Check the optical housing unit or replace it.	D
SC323	LD error	- Timing - During LD writing - Condition - LD control boards detects the over-current, or there is no feedback signal from LD unit.	• Poor connection • Defective LD unit • Defective LD control board • Defective main control board			1. Make sure the connectors (CN1 & CN603) on the LD unit and LD control board are properly connected. 2. Check the continuity of the harness. 3. Make sure the harness connectors (CN604 & CN306)on the LD control board and main control board are properly connected. 4. Replace the LD unit. 5. Replace the LD control board 6. Replace the main control board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC326	FGATE1 error	- Timing & Condition - The main control board does not receive the FGATE signal from the LD control board. This can occur after the Start key is pressed (the image transfer belt makes 3 revolutions) or at certain timing points during the copy cycle. - FAGTE signal - This signal is generated at the LD control board after the board receives the belt mark signal from the main control board. This signal is used to synchronize laser writes for the different colors.	• Belt mark detection error • Electrical noise • Poor connection of connectors • Defective LD control board • Defective Main control board			1. Clean the belt mark (located back side of the image transfer belt) or replace the belt if the belt mark is dirty or has peeled off. 2. Clean the belt mark detection sensor. 3. Clean the development units' bias terminals. 4. Make sure the harness connectors (CN605 & NC406) on the LD control board and main scanner IPU board are properly connected. 5. Make sure the harness connectors (CN604 & CN306) on the LD control board and main control board are properly connected. 6. Replace the LD control board. 7. Replace the main control board. [Signal Check] • FGATE: CN604-A2 or TP22 on LD control board / CN306-A9 on main control board • Belt mark: CN220-A12, TP106, or CN212-B11 on I/O control board / CN303-B1, TP108, or CN306-B2 on main control board /CN604-B9 or TP31 on LD control board If the machine is equipped with the controller, 1. Make sure the connectors (CN606 & CN101) on the LD control board and controller I/F board are properly installed. 2. Make sure the controller I/F board is properly connected. 3. Replace the interface board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC327	FGATE2 error	- Timing & Condition - In the double image mode, the main control board does not receive the FGATE signal from the LD control board. This can occur after the Start key is pressed (the image transfer belt makes 3 revolutions) or at certain timing points during the copy cycle.	Same as SC326	SC326		Same as SC326.	D
SC350	TD sensor communication error	- Timing - When the main switch is turned on, during printing process, or process control self-check - Condition - The main control board cannot communicate with the TD sensors	• Poor connection • Defective TD sensor interface boards 1 and/or 2 • Defective I/O control board • Defective main control board			1. Check if the connectors on the TD sensor interface board 1 (copier) and the main control board (CN353) are properly connected. 2. Make sure 5V and 12V are provided to the TD sensor interface board 1 from the main control board (CN353). 3. Check if the harnesses are damaged. 4. Make sure TD sensor interface boards 1 and 2 are properly installed. 5. Replace TD sensor interface board s1, 2, main control board, and/or the I/O control board.	D
SC351	TD Sensor Failure	- Timing - During the printing process or the process control self-check - Condition - The main control board does not receive the TD sensor output or receive wrong data 4 times continuously.	• Poor connection • Defective TD sensor • Defective TD sensor interface board 2 • Defective main control board			1. Make sure the connectors on the TD sensor interface board 2 (revolver) and the TD sensor and slip ring are properly connected. 2. Check if the harnesses is damaged. 3. Replace the TD sensor. 4. Replace the TD sensor interface board 2. 5. Replace the TD sensor interface board 1. 6. Replace the main control board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC360	Development bias error	- Timing - When the development DC bias turns ON during printing process or process control - Condition - The feedback voltage is 4.8V or higher, or PWM value becomes 80% or higher for 500 ms continuously.	• Poor connections • Dirty terminals • Defective high voltage supply (C/G/B) • Defective I/O control board • Defective main control board			1. Clean the development roller shaft (terminal). 2. Clean the bias terminal. 3. Replace the bias terminal if it does not move smoothly. 4. Make sure the connectors of high voltage supply cable and trigger lines are properly connected on the high voltage supply board (C/G/B), I/O control board, and main control board. 5. Replace the high voltage supply board (C/G/B) 6. Replace the I/O control board. 7. Replace the main control board. [Signal Check] • Feedback signal: CN217-2, TP171, or CN211-A5 on the I/O control board / CN302-A5 or TP111 on the main control board • PWM: CN217-3 or TP141 on the I/O control board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC361	Revolver HP sensor error	- Timing & Condition - The home position is not detected during 3 revolution of the revolver unit after the revolver motor turns on.	Poor connection of connector Dirty sensor Defective sensor Defective revolver motor Defective revolver drive board Defective I/O control board Defective main control board			1. Make sure the sensors are properly connected. 2. Replace the revolver H.P. sensor if the voltage at CN216-B5 on the I/O control board does not change when covering the sensor with a piece of paper. **NOTE:** Make sure that the revolver unit is locked in this step. 3. If the revolver unit does not rotate; 1) Replace the revolver motor. 2) Replace revolver motor drive board. 3) Replace the I/O control board. 4) Replace the main control board. [Signal Check] • Revolver H.P.: CN216-B5 or TP107 on the I/O control board	D
SC370	Abnormal TD sensor information (K)	- Timing - When communicating with TD sensors, during printing process, or process control self-check - Condition - TD sensor output exceeds 4.5V or drops below 0.5V.	• Poor connection • Dirty sensor surface • Defective TD sensor • Toner density is out of range • Not enough developer		3-007-001	1. Make sure the TD sensor is properly connected. 2. Check if the connectors on the TD sensor interface board 1 and the slip ring and the TD sensor interface board 2 are properly connected. 3. Clean the surface of the TD sensor. 4. Replace the TD sensor. If it becomes OK after the sensor is replaced, replace the developer of color related to the problem. If the problem is related to the toner density (too low or high), find the cause and fix it.	D
SC371	Abnormal TD sensor information (Y)	Same as SC370			3-007-004	Same as SC370	
SC372	Abnormal TD sensor information (C)	Same as SC370			3-007-002	Same as SC370	
SC373	Abnormal TD sensor information (M)	Same as SC370			3-007-003	Same as SC370	

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC385	ID sensor V_{SG} adjustment error	- Timing - During process control self check, the main control board detects an out-of-range V_{SG} signal from the ID sensor.	• Dirty ID sensor • Poor connection • Defective ID sensor • Poor cleaning of the OPC drum			1. Clean the ID sensor. 2. Make sure the sensor is properly connected. 3. Replace the ID sensor. 4. Check the drum cleaning unit. [Signal Check] • ID sensor LED: CN216-B7 or TP103 on I/O control board • ID sensor 1 (K): CN216-B8 or TP188 on I/O control board / TP115 on main control board. • ID sensor 2 (CMY): CN216-B9 or TP187 on the I/O control board / TP114 on the main control board.	D
SC387	Drum potential error	- Timing - During initial process control check or interval (number of copies) process control check - Condition - While the revolver unit returns to the home position, the following condition is detected. $V_D < V_G - 200V$ $V_D > V_G + 200V$	• Uneven charge • Deterioration of the drum • Defective potential sensor			1. Clean the charge unit or replace the charge wire and grid plate. 2. Reinstall the drum unit. 3. Check the drum counter (SP7-803) and replace the drum if necessary. 4. Replace the potential sensor.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC400	Image transfer belt bias error	- Timing - While the image transfer belt bias is ON - Condition - The feedback voltage is 4.8V or higher, or PWM value is 50% or higher for 500ms continuously.	• Poor connections • Defective high voltage supply board (T1/PCC/BR) • Defective I/O control board • Defective main control board			1. Make sure the high voltage cable and trigger lines are properly connected to the high voltage supply board, I/O control board, and main control board. 2. Replace the high voltage supply board (T1/PCC/BR). 3. Replace the I/O control board. 4. Replace the main control board. [Signal Check] • Feedback signal: CN209-9, TP264, or CN211-A4 on I/O control board / CN302-A6 or TP106 on main control board. • PWM: CN209-10 or TP272 on the I/O control board.	D
SC401	Locked image transfer belt motor	- Timing & Condition - • The feedback signal from the motor is still out of range 2 seconds after the trigger signal was sent. • The feedback signal goes out of range for 2 seconds while the trigger signal is ON.	• Defective image transfer belt motor • Defective image transfer belt motor drive board • Mechanical problem (drive transmission)			1. Make sure the connectors on the image transfer belt drive board (CN740 and 741) and I/O control board (CN220) are properly connected. 2. Check if the harnesses are damaged. 3. Replace the image transfer belt motor control board. 4. Replace image transfer belt motor. 5. See if anything has caused the belt motor's load to increase. [Signal Check] • Motor OK: CN220-A2 or TP153 on the I/O control board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC402	Current leak from the image transfer belt lubricant brush	- Timing & Condition - A current leak is detected more than 2 seconds.	• Defective high voltage supply board (Q1) • Defective I/O control board • Defective main control board			1. Make sure the terminal and high voltage supply board (Q1) are properly connected and that the harnesses are not damaged. 2. Clean the contacts. 3. Replace the high voltage supply board (Q1). 4. Replace the I/O control board. 5. Replace the main control board. [Signal Check] • Leak detection: CN215-B7 or TP137 on the I/O control board	D
SC410	Paper separation current leak	- Timing & Condition - When a current leak is detected for 2 seconds and the leak detection started 1 second after the paper separation corona turned on. This leak signal is monitored twice a second. If it is detected twice in a row, this SC is displayed.	• Discharge unit not properly installed • Broken corona wire • Defective high voltage supply board (D) • Defective I/O control board • Defective main control board			1. Make sure the discharge corona unit is properly installed. 2. If the discharge corona wire is broken, replace it. 3. Make sure the terminal and high voltage supply board (D) are properly connected and that the harnesses are not damaged. 4. Clean the contacts. 5. Replace the high voltage supply board (D). 6. Replace the I/O control board. 7. Replace the main control board. [Signal Check] • Leak detection: CN208-1 or TP276 on the I/O control board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC422	PCC leak	- Timing & Condition - When the current leak is detected for 2 seconds, and the leak detection started 1 second after the PCC turned on. This leak signal is monitored twice a second. If it is detected twice in a row, this SC is displayed.	• PCC unit not properly installed • Broken corona wire • Defective high voltage supply board (T1/PCC/BR) • Defective I/O control board • Defective main control board			1. Make sure the PCC unit is properly installed. 2. If the discharge corona wire is broken, replace it. 3. Make sure the terminal and high voltage supply board (T1/PCC/BR) are properly connected and that the harnesses are not damaged. 4. Clean the contacts. 5. Replace the high voltage supply board (T1/PCC/BR). 6. Replace the I/O control board. 7. Replace the main control board. [Signal Check] • Leak detection: CN209-6 or TP275 on the I/O control board	D
SC440	Drum motor error	- Timing & Condition - • The feedback signal from the motor is still out of range 1 second after the trigger signal was sent. • The feedback signal goes out of range for 2 seconds while the trigger signal is ON.	• Poor connection • Defective drum motor • Defective I/O control board • Defective main control board			1. See if the drum is locked in place by the cleaning blade. If it is, replace the cleaning blade. 2. Make sure that connector CN215 on the I/O control board is properly connected. 3. See if the drum motor works properly in SP5-804-001 to 003. If not, replace the drum motor. 4. Replace the I/O control board. 5. Replace the main control board. [Signal Check] • Motor OK: CN215-A7 or TP135 on the I/O control board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC441	Locked drum peripheral component motor	- Timing & Condition - • The feedback signal from the motor is still out of range 1 second after the trigger signal was sent. • The feedback signal goes out of range for 2 seconds while the trigger signal is ON.	• Defective motor • Defective motor dive board • Mechanical problem (drive transmission problem)			1. Make sure that connector CN220 on the I/O control board is properly connected. 2. Check for any mechanical problem by rotating the motor manually. 3. Replace the drum peripheral component motor. 4. Replace the I/O control board. 5. Replace the main control board. [Signal Check] • Motor OK: CN220-B9 or TP123 on the I/O control board	D
SC450	Paper transfer bias current error	- Timing - When the paper transfer bias turns on during printing process - Condition - The feedback voltage is 4.8V or higher, or the PWM value is 50% or higher for 500ms continuously.	• Defective high voltage supply board (T2) • Defective I/O control board • Defective main control board • If the paper transfer belt does not touch the image transfer belt and the paper transfer belt bias is ON			1. Make sure the paper transfer belt unit rises to touch the image transfer belt during the copy cycle. 2. Make sure the high voltage cable and trigger lines are properly connected to the high voltage supply board (T2), I/O control board, and main control board. 3. Replace the high voltage supply board (T2). 4. Replace the I/O control board. 5. Replace the main control board. [Signal Check] • Feedback signal: CN221-A1, TP172, or CN211-A3 on I/O control board / CN302-A7 or TP105 on the main control board • PWM: CN221-A2 or TP138 on the I/O control board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC452	Belt mark detection error	- Timing & Condition- The main control board does not receive the belt mark detection signal from the belt mark detection sensor.	• Dirty or damaged belt mark • Belt mark out of position • Defective sensor • Defective I/O control board • Defective main control board			1. Make sure the image transfer release lever is properly set. 2. Clean the belt mark. 3. Replace the transfer belt if the belt mark peels off or is damaged. 4. Clean the belt mark sensor. 5. Replace the belt mark detection sensor. 6. Replace the I/O control board. 7. Replace the main control board. [Signal Check] • Belt mark: CN220-A12, TP106, or CN212-B11 on the I/O control board / CN303-B1 or TP108 on the main control board.	D
SC457	Position error for the image transfer belt's cleaning unit	- Timing & Condition • When the belt cleaning section touches the image transfer belt, but the belt cleaning sensor signal remains LOW. • When the belt cleaning section releases from the image transfer belt, but the belt cleaning sensor remains HIGH.	• Dirty Sensor • Defective sensor • Defective belt cleaning shift clutch • Defective drum peripheral component motor • Defective I/O control board • Defective main control board			1. Pull out and re-insert the image transfer belt unit. 2. Clean the image transfer belt cleaning H.P. sensor. 3. Replace the sensor. (Input Check: 5-803-012) 4. Replace the belt cleaning shift clutch. (Output Check: SP5-804-036) 5. Replace the drum peripheral component motor. 6. Replace the I/O control board. 7. Replace the main control board. [Signal Check] • H.P.: CN219-B2 or TP108 on the I/O control board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC458	PTR pressure mechanism H.P. detection error	• When the PTR pressure mechanism does not stop its H.P. after 15 seconds from the PTR lift motor starts to return to its H.P. • H.P. detection sensor does not on within 7 seconds after the PTR pressure movement starts. • H.P. detection sensor does not off within 7 seconds after the PTR pressure release starts.	• Defective PTR lift motor • Defective H.P. sensor • Dirty H.P. sensor • Defective H.P. sensor feeler • Defective main control board			1. Make sure that sensor harness is properly connected. 2. Clean the sensor, replace it if necessary. 3. If the sensor feeler is broken, replace it. 4. Replace the PTR lift motor. 5. Replace main control board.	D
SC495	Humidity sensor - temperature detection error	- Timing & Condition - The humidity sensor's temperature output is higher than 2.75V or less than 0.25V.	• Poor connections • Defective humidity sensor • Defective I/O control board • Defective main control board			1. Make sure that connectors CN210, 211 & CN302 are properly connected to the I/O control board and the main control board. 2. Replace the humidity sensor. 3. Replace the I/O control board. 4. Replace the main control board. [Signal Check] • Temperature: CN210-1, TP247, or CN211-A9 on the I/O control board/CN302-A1 or TP112 on the main control board	C
SC496	Humidity sensor - humidity detection error	- Timing & Condition - The humidity sensor's humidity output is higher than 2V or less than 0.125V.	• Poor connections • Defective humidity sensor • Defective I/O control board • Defective main control board			1. Make sure that connectors CN210, 211 & CN302 are properly connected to the I/O control board and the main control board. 2. Replace the humidity sensor. 3. Replace the I/O control board. 4. Replace the main control board. [Signal Check] • Humidity: CN201-4, TP236, or CN211-A8 on the I/O control board/CN302-A2 or TP113 on the main control board	C

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC500	Fusing motor error	- Timing & Condition - • The feedback signal from the motor is still out of range 1 second after the trigger signal was sent. • The feedback signal goes out of range for 2 seconds while the trigger signal is ON.	• Poor connections • Defective fusing motor • Defective I/O control board • Defective main control board			1. Make sure that connector CN218 is properly connected to the I/O control board. 2. Replace the fusing motor. (Output check: SP 5-804-005) 3. Replace the I/O control board. 4. Replace the main control board. 5. Check for anything that might overload the fusing unit drive. [Signal Check] • Motor OK: CN218-7 or TP104 on the I/O control board	D
SC501	1st paper tray error	- Timing & Condition - • The upper limit sensor stays HIGH when the pick-up solenoid turns off. • The upper limit sensor stays LOW 1.5 seconds after the tray bottom plate begins to lower. • The upper limit sensor stays HIGH 10 seconds after the tray bottom plate starts to rise. • The upper limit sensor stays HIGH 3 seconds after the tray bottom plate starts to rise again.	• Pick-up solenoid spring has come off • Defective upper limit sensor • Defective tray bottom plate • Defective tray lift motor • Defective I/O control board • Defective main control board	SC502 SC503	SC504	1. See if the spring of pick-up solenoid has come off. 2. Make sure the sensor harness is properly connected. 3. Clean the sensor, replace it if necessary (Input Check: SP5-803-014 to 017). 4. If the tray bottom lever is broken, replace it. 5. Pull out the paper tray and make sure the tray lift motor works properly (Output Check: SP5-804-75 to 82) 6. Replace the I/O control board. 7. Replace the main control board. [Signal Check] • Limit sensor H.P.: CN224-A8 or TP215 on the I/O control board	B
SC502	2nd paper tray error	Not used				Not used	B
SC503	3rd paper tray error	Same as SC501		SC501 SC502	SC504	Same as SC501 [Signal Check] • Limit sensor H.P.: CN226-A8 or TP282 on the I/O control board	B

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC504	4th paper tray error	Same as SC501		SC501 SC502	SC503	Same as SC501 [Signal Check] • Limit sensor H.P.: CN226-B8 or TP280 on the I/O control board	B
SC505	LCT: Upper limit detection error	- Timing & Condition - While the paper tray is being lifted, the upper limit sensor does not activate within 2.5 seconds after the paper end sensor activates.	• Poor connections • Defective paper end sensor • Paper is not properly loaded in the LCT • Paper is curled			1. Open the LCT cover and reload the paper properly. 2. Make sure the paper end sensor is properly connected. 3. Replace the paper end sensor.	B
SC506	By-pass feed table upper limit detection error	• When the by-pass feed table upper limit is not detected after 6.5 seconds or more from the by-pass feed table lift motor starts lift up.	• Defective by-pass table upper limit sensor • Dirty by-pass table upper limit sensor • Defective by-pass lift motor • Defective I/O control board			1. Make sure that sensor harness is properly connected. 2. Clean sensor, replace it if neccesary. 3. Replace by-pass lift motor. 4. Replace I/O control board.	D
SC507	By-pass feed table lower limit detection error	• When the by-pass feed table lower limit is not detected after 6.5 seconds or more from the by-pass feed table lift motor starts lift down.	• Defective by-pass table lower limit sensor • Dirty by-pass table lower limit sensor • Defective by-pass lift motor • Defective I/O control board			1. Make sure that sensor harness is properly connected. 2. Clean sensor, replace it if necessary. 3. Replace by-pass lift motor. 4. Replace I/O control board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC510	Paper feed motor error	- Timing & Condition - • The feedback signal from the motor is still out of range 1 second after the trigger signal was sent. • The feedback signal goes out of range for 2 seconds while the trigger signal is ON.	• Poor connections • Defective paper feed motor • Defective I/O control board • Defective main control board • Mechanical overload			1. Make sure it is properly connected to the I/O control board (CN230). 2. Replace the paper feed motor. (Output check: SP5-804-008 to 009) 3. Replace the I/O control board. 4. Replace the main control board. 5. Check the feed unit drive section for anything that might cause an overload. [Signal Check] • Motor OK: CN230-A1 or TP269 on the I/O control board	D
SC522	Duplex side fence jogger--H.P. error	- Timing & Condition - • The home position is still detected a few seconds after the side fence leaves the home position. • The home position is not detected 12 seconds after the side fence moves back into the home position.	• Duplex unit not installed properly • Excessive load • Poor connections • Defective side fence motor • Defective I/O control board	SC524		1. Pull out and re-insert the duplex unit. 2. Check that connector CN488 is properly connected to the duplex control board. 3. Check for anything that might cause the motor to overload. 4. Replace the side fence motor (Output Check: SP5-804 093 and 094). 5. Replace the I/O control board. [Signal Check] • Duplex Side Fence H.P.: CN207-B6 or TP293 on the I/O control board	B
SC524	Duplex end fence jogger--H.P. error	- Timing & Condition - • The home position is still detected a few seconds after the end fence leaves the home position. • The home position is not detected 24 seconds after the end fence moves back into the home position.	• Duplex unit not installed properly • Excessive load • Poor connections • Defective end fence motor • Defective I/O control board	SC522		1. Pull out and re-insert the duplex unit. 2. Check that connector CN484 is properly connected to the duplex control board. 3. Check for anything that might cause the motor to overload. 4. Replace the end fence motor (Output Check: SP5-804 095 and 096). 5. Replace the I/O control board. [Signal Check] • Duplex End Fence H.P.: CN207-B7 or TP288 on the I/O control board	B

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC541	Hot roller thermistor open	- Timing - Checked second when the fusing unit is installed - Condition - The hot roller thermistor output is approximately 5V (0°C) for 6 seconds in a row.	• Fusing unit not installed properly • Poor connections • Defective thermistor • Defective I/O control board • Defective main control board			1. Make sure the fusing unit is properly installed. 2. Make sure the thermistor is properly connected. 3. Replace the thermistor if it is deformed. 4. Measure the thermistor's resistance. If it is open, replace it. (Refer to the attached Temperature/ Resistance Conversion Reference Table.) 5. Replace the I/O control board. 6. Replace the main control board. [Signal Check] • Thermistor: CN214-A4, TP234, or CN211-B1 on I/O control board/CN302-B9 or TP117 on the main control board.	A
SC542	Hot roller warm-up error	- Timing & Condition - The hot roller thermistor does not register the ready temperature within 12 minutes of the main switch being turned on.	• Poor connections • Blown hot roller fusing lamp • Opened hot roller thermofuse • Power fluctuations • Defective main control board • Defective I/O control board • Defective AC drive board			1. Make sure the following are properly connected: • Hot roller fusing lamp • CN303 on the main control board • CN212 and CN229 on the I/O control board • CN7 on the AC drive board 2. Replace the hot roller fusing lamp if it is blown. 3. Replace the hot roller thermofuse if it is opened. 4. Check for power fluctuations from the outlet. 5. Test the main control board, I/O control board, or AC drive board by checking the trigger signal at each pin. [Signal Check] • Hot roller fusing trigger: CN303-B6 on main control board/CN212-B6, TP248, or CN229-5 on the I/O control board/CN7-6 on the AC drive board.	A

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC543	Overheating hot roller fusing lamp	- Timing - Checked once a second when the fusing lamp is installed. - Condition - The hot roller thermistor output is lower than 0.3V (220°C) for 3 seconds in a row.	• Fusing unit not installed properly • Poor connections • Defective thermistor • Defective I/O control board • Defective main control board • Defective AC drive board			1. Make sure the fusing unit is installed properly. 2. Make sure the thermistor is properly connected. 3. Replace the thermistor if it is deformed. 4. Measure the thermistor's resistance. If it is open, replace it. (Refer to the attached Temperature/ Resistance Conversion Reference Table.) 5. Test the main control board, I/O control board, or AC drive board by checking output from the thermistor and the trigger signal at each pin. [Signal Check] • Thermistor: CN214-A4, TP234, or CN211-B1 on the I/O control board/CN302-B9 or TP117 on the main control board. • Hot roller fusing trigger: CN303-B6 on the main control board/CN212-B6, TP248, or CN229-5 on the I/O control board/CN7-6 on the AC drive board.	A
SC544	Hot roller fusing lamp–low temperature reading	- Timing - Checked every second after warm-up is complete. - Condition - The hot roller thermistor output is higher than 3V (87°C) for 8 seconds in a row.	Same as SC543			Same as SC543	A

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC545	Abnormal hot roller ready temperature	- Timing - Checked every second after the ready temperature is reached. - Condition - If the temperature drops below the ready temperature and does not rise again within 7 minutes.	Same as SC543			Same as SC543	A
SC547	Hot roller temperature does not increase	- Timing - Checked every second, starting two minutes after the main switch is turned on and ending when the hot roller reaches the ready temperature. - Condition - Over one minute, the fusing roller temperature does not increase by more than 3°C.	Poor connections • Blown hot roller fusing lamp • Opened hot roller thermofuse • Defective main control board • Defective I/O control board • Defective AC drive board			1. Make sure the following are connected properly: • Hot roller fusing lamp • CN303 on the main control board • CN212 and CN229 on the I/O control board • CN7 on the AC drive board 2. Replace the hot roller fusing lamp if it is blown. 3. Replace the hot roller thermofuse if it is opened. 4. Test the main control board, I/O control board, or AC drive board by checking the trigger signal at each pin. [Signal Check] • Hot roller fusing trigger: CN303-B6 on the main control board/CN212-B6, TP248, or CN229-5 on the I/O control board/CN7-6 on the AC drive board.	A

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC551	Pressure roller thermistor open	- Timing - Checked every second when the fusing unit is installed. - Condition - The pressure roller thermistor output is approximately 5V (0°C) for 6 seconds in a row.	• Fusing unit not installed properly • Poor connections • Defective thermistor • Defective I/O control board • Defective main control board			1. Make sure the fusing unit is properly installed. 2. Make sure the thermistor is properly connected. 3. Replace the thermistor if it is deformed. 4. Measure the thermistor's resistance. If it is open, replace it. (Refer to the attached Temperature/Resistance Conversion Reference Table.) 5. Replace the I/O control board. 6. Replace the main control board. [Signal Check] • Thermistor: CN214-A9, TP232, or CN211-B2 on the I/O control board/CN302-B8 or TP118 on the main control board.	A
SC552	Pressure roller warm-up error	- Timing & Condition - The pressure roller thermistor does not register the ready temperature within 12 minutes of turning on the main switch.	• Poor connections • Blown pressure roller fusing lamp • Pressure roller thermofuse opened • Blown fuse • Power fluctuation • Defective main control board • Defective I/O control board • Defective AC drive board			1. Make sure the following are connected properly: • Pressure roller fusing lamp • CN303 on the main control board • CN212 and CN229 on the I/O control board • CN7 on the AC drive board 2. Replace the hot roller fusing lamp if it is blown. 3. Replace the hot roller thermofuse if it is opened. 4. Check for power fluctuations from the outlet. 5. Test the main control board, I/O control board, or AC drive board by checking the trigger signal at each pin. [Signal Check] • Pressure roller fusing trigger: CN303-B7 on the main control board/CN212-B5, TP240, or CN229-4 on the I/O control board/CN7-7 on the AC drive board.	A

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC553	Overheating pressure roller	- Timing - Checked every second when the fusing unit is installed. - Condition - The pressure roller thermistor output is lower than 0.3V (220°C) for 3 seconds in a row.	• Fusing unit not installed properly • Poor connections • Defective thermistor • Defective I/O control board • Defective main control board • Defective AC drive board			1. Make sure the fusing unit is properly installed. 2. Make sure the thermistor is properly connected. 3. Replace the thermistor if it is deformed. 4. Measure the resistance across the thermistor. If it is open, replace it. (Refer to the attached Temperature/Resistance Conversion Reference Table.) 5. Test the main control board, I/O control board, or AC drive board by checking the output from the thermistor and the trigger signal at each pin. [Signal Check] • Thermistor: CN214-A9, TP232, or CN211-B2 on the I/O control board/CN302-B8 or TP118 on the main control board. • Pressure roller fusing trigger: CN303-B7 on the main control board/CN212-B5, TP240, or CN229-4 on the I/O control board/CN7-7 on the AC drive board.	A
SC554	Pressure roller–low temperature readings	- Timing - Checked every second after the warm-up is completed - Condition - The pressure roller thermistor output is higher than 3V (87°C) for 8 seconds in a row.	Same as SC553			Same as SC553	A

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC555	Abnormal pressure roller ready temperature	- Timing - Checked every second after the temperature reaches the ready condition - Condition - The pressure roller thermistor output does not reach the ready temperature within 7 minutes.	Same as SC553			Same as SC553	A
SC557	Pressure roller temperature does not increase	- Timing - Checked every second, starting two minutes after the main switch is turned on and ending when the ready temperature is reached. - Condition - For one minute, the pressure roller temperature does not increase by more than 3°C .	• Poor connections • Blown pressure roller fusing lamp • Opened pressure roller thermofuse • Defective main control board • Defective I/O control board • Defective AC drive board			1. Make sure the following are connected properly: 2. Pressure roller fusing lamp 3. CN303 on the main control board 4. CN212 and CN229 on the I/O control board 5. CN7 on the AC drive board 6. Replace the pressure roller fusing lamp if it is blown. 7. Replace the hot roller thermofuse if it is opened. 8. Test the main control board, I/O control board, or AC drive board by checking the trigger signal at each pin. [Signal Check] • Pressure roller fusing trigger: CN303-B7 on the main control board/CN212-B5, TP240, or CNCN229-4 on the I/O control board/ CN7-7 on the AC drive board.	A

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC558	Abnormal zero cross signal	- Timing & Condition - Zero cross signals generated within certain period do not reach a predetermined target value.	• Poor connections • Blown fuse • Defective AC drive board • Defective main control board • Defective I/O control board			1. Make sure the following are connected properly: • CN212 and CN229 on the I/O control board • CN303 on the main control board • CN7 on the AC drive board 2. Check the current through the signal lines in the above harnesses. 3. Replace the fuse (FU101) if it is blown. 4. Test the AC drive board, I/O control board, or main control board by checking the signal line at each pin. [Signal Check] • Zero cross: CN7-5 on the AC drive board/ CN229-6, TP216, or CN212-B8 on the I/O control board/CN303-B4 or TP120 on the main control board	A
SC601	Scanner IPU communication error	- Timing & Condition - After the main control board communicates successfully with the scanner IPU board once, and a communication error is detected.	• Poor connections • Defective sub/main scanner IPU board • Defective main control board			1. Check that connectors CN355 and CN407 are properly connected on the sub control board and scanner IPU board. 2. Replace the sub and/or main scanner IPU board. 3. Replace the main control board.	D
SC604	IDU communication error	- Timing & Condition - No response is received from the IDU within 200 ms after the scanner IP board sends a command signal. (this must occur three times before the error is displayed).	• Poor connection between the IDU and scanner control boards • Defective IDU board • Defective sub/main scanner IPU board			1. Make sure the IDU board is properly connected to the sub scanner IPU board. 2. Replace the IDU board. 3. Replace the scanner sub and/or main IPU board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC620	ADF communication error	- Timing & Condition - After the main control board communicates successfully with the ARDF once, and a communication error is detected.	• Poor connection or damaged optical-fiber cable • Defective ARDF main board • Defective main control board			1. Make sure the optical-fiber cable is properly connected to the ADF main board and the main control board. 2. Check for damage to the cable. 3. Replace the ARDF main board. 4. Replace the main control board.	D
SC621	Sorter communication error	- Timing - When the main switch is turned on or while Sorter is running - Condition - The main control board detects a communication error with the Sorter main board.	• Poor connection or damaged optical-fiber cable • Defective Sorter main board • Defective main control board			1. Make sure the optical-fiber cable is properly connected to the Sorter main board and main control board. 2. Check for damage to the cable. 3. Replace the sorter main board. 4. Replace the main control board.	D
SC626	LCT communication error	- Timing - When the main switch is turned on or while LCT is running - Condition - The main control board detects a communication error with the LCT main board.	• Poor connection or damaged harness • Defective I/F board RDS/LCT • Defective LCT main board • Defective main control board			1. Make sure the harness is properly connected to the main control board, I/F board RDS/LCT, and the LCT main board. 2. Check for damage to the harness. 3. Replace the I/F board RDS/LCT. 4. Replace the LCT main board. 5. Replace the main control board.	B
SC630	RDS communication error	- Timing & Condition - The main control board receives no response from RDS when accessing it. Even when this error is detected, the copier does not show the SC code and this SC code is not logged. (the copier is still functional)	• Poor connections. • Damaged harness or optical-fiber cable. • Defective line adapter • Defective I/F board RDS/LCT • Defective main control board			1. Make sure the harness and optical-fiber cable are connected properly to the I/F board RDS/LCT and the main control board. 2. Check for damage to the harness or optical-fiber cable. 3. Check and/or change the line adapter settings. 4. Replace the line adapter. 5. Replace the I/F board RDS/LCT. 6. Replace the scanner IPU board.	

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC690	Application selection error	- Timing & Condition - When the main CPU communicates with CPUs on other PCBs, but the main CPU does not receive response from the others.	• Scanner IPU firmware upgrade • Poor connections • Defective main scanner IPU board • Defective main control board • Defective TD sensor I/F board 1 • Main board options			• This SC code will be displayed when the scanner IPU firmware is changed. Turn off the main switch and disconnect the IC card. Then turn on the main switch. 1. Check the connectors on the main control board, sub scanner IPU board, TD sensor I/F board 1, and the main board for each option. 2. Replace the defective board(s).	B
SC720	Sorter: Main motor error	- Timing & Condition - • The pulse signal output does not change 300 ms after the sorter is turned on. • The pulse signal output does not change 100 ms during operation.	• Poor connections • Defective main motor			• Check the connection. • Replace the main motor, if necessary.	D
SC721	Sorter: Bin motor error	- Timing & Condition - The signal from the wheel sensor does not change as expected. When this error is detected twice, this SC code is displayed.	• Poor connections • Defective sensor • Defective motor • Bin position error • Defective main board			1. Make sure the wheel H.P. sensor and bin motor are properly connected. 2. Replace the wheel sensor (Input check: SP5-803-124/125). 3. See if the bins are properly positioned. 4. Replace the bin motor (Output check: SP5-804-124). 5. Replace the main board.	D
SC722	Sorter: Jogger motor error	- Timing & Condition - The jogger H.P. sensor does not activate as expected. When this error is detected twice, this SC code is displayed.	• Poor connections • Defective jogger H.P. sensor • Defective jogger motor • Defective main board			1. Make sure the jogger H.P. sensor and jogger motor are properly connected. 2. Replace the jogger H.P. sensor. (Input check: SP5-803-128) 3. Replace the jogger motor. (Output check: SP5-804-131) 4. Replace the main board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC724	Sorter: Grip motor error	- Timing & Condition - The grip H.P. sensor does not activate as expected. When this error is detected twice, this SC code is displayed.	• Poor connections. • Defective grip H.P. sensor/grip unit H.P. sensor • Defective grip motor • Defective main board			1. Make sure the grip H.P. sensor, grip unit H.P. sensor, and grip motor are properly connected. 2. Replace the sensor(s). (Input check: SP5-803-129/137) 3. Replace the grip motor. (Output check: SP5-804-127) 4. Replace the main board.	D
SC725	Sorter: Stapler motor error	- Timing & Condition - The stapler H.P. sensor does not activate as expected. When this error is detected twice, this SC code is displayed.	• Staple jam • Excessive sheets of paper stapled • Poor connections • Defective stapler H.P. sensor • Defective staple motor • Defective main board			1. Remove any staple jams. 2. Instruct the user on how many sheets may be stapled safely. 3. Make sure the staple H.P. sensor and staple unit motor are properly connected. 4. Replace the stapler H.P. sensor. (Input check: SP5-803-131) 5. Replace the stapler motor. (Output check: SP5-804-129) 6. Replace the main board.	D
SC726	Sorter: End release motor error	- Timing & Condition - The bin end open or close sensor does not activate as expected. When this error detected twice, this SC code is displayed.	• Poor connections. • Defective bin end open or close sensor • Defective end release motor • Defective main board			1. Make sure the bin end open and close sensors and end release motor are properly connected. 2. Replace the bin end open or close sensor. (Input check: SP5-803-126/127) 3. Replace the end release motor. (Output check: SP5-804-125) 4. Replace the main board.	D
SC727	Grip shift motor error	- Timing & Condition - The grip H.P. sensor does not activate as expected. When this error is detected twice, this SC code is displayed.	• Poor connections. • Defective grip H.P. sensor • Defective grip shift motor • Defective main board			1. Make sure the grip H.P. sensor and grip shift motor are properly connected. 2. Replace the grip H.P. sensor. (Input check: SP5-803-129) 3. Replace the grip shift motor. (Output check: SP5-804-126) 4. Replace the main board.	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC731	Sorter: Staple unit motor error	- Timing & Condition - The staple unit H.P. sensor does not activate as expected. When this error is detected twice, this SC code is displayed.	• Poor connections. • Defective staple unit H.P. sensor • Defective grip shift motor • Defective main board			1. Make sure the staple unit H.P. sensor and staple unit motor are properly connected. 2. Replace the staple unit motor H.P. sensor. (Input check: SP5-803-130) 3. Replace the staple unit motor. (Output check: SP5-804-128) 4. Replace the main board.	D
SC741	LCT: Main motor error	- Timing & Condition - LCT main motor speed is out of range for more than 0.5 seconds a rotation.	• Poor connections • Defective LCT main motor • Defective LCT main board			1. Make sure it is properly connected. 2. Replace the LCT main motor.	D
SC742	LCT: Tray lift error	- Timing & Condition - • The upper limit sensor does not activate within 18 seconds of the lift motor being turned on (in UP direction), when the main switch is turned on, or when the LCT cover is closed. • The lower limit sensor does not activate within 18 seconds of the lift motor being turned on (in DOWN direction), when paper runs out (paper end), or when the Down key is pressed.	• Poor connections • Defective lift motor • Defective upper limit sensor • Defective pick-up solenoid • Defective LCT main board			1. Make sure the lift motor, upper limit sensor, and pick-up solenoid are properly connected. 2. Replace the lift motor. 3. Replace the upper limit sensor. 4. Replace the pick-up solenoid. 5. Replace the LCT main board.	D
SC901	Upper total counter error (Black)	- Timing & Condition - • Feedback signal stays LOW when the main switch is turned on. • Feedback signal stays LOW just before the trigger signal goes ON. • Feedback signal stays HIGH just before the trigger signal goes OFF.	• Poor connections • Defective counter			1. Make sure the counter is connected properly. 2. Replace the total counter. [Signal Check] • Trigger line: CN230-B8 on the I/O control board • Counter OK signal: TP227 on the I/O control Board	D

SC No.	Item	Detection Conditions	Possible Causes	Related SC	Related SP	Troubleshooting Procedure	Type
SC902	Lower total counter error (Color)	Same as SC901				Same as SC901 [Signal Check] • Trigger line: CN230-B10 on the I/O control board • Counter OK signal: TP228 on the I/O control board	D

Temperature/Resistance Conversion Reference Table

Relationship between the fusing thermistor resistances and temperatures

Temperature	Lower-limit Value	Standard Value	Upper-limit Value
0	211.7	329.3	398.9
10	166.8	198.9	236.9
20	105.4	123.7	145.1
30	68.4	79.11	91.44
40	45.45	51.86	59.14
50	30.88	34.78	39.16
60	21.4	23.833	26.51
70	15.12	16.64	18.3
80	10.87	11.83	12.88
90	7.935	8.554	9.216
100	5.881	6.281	6.703
110	4.42	4.678	4.948
120	3.365	3.531	3.703
130	2.593	2.699	2.807
140	2.021	2.087	2.154
150	1.592	1.632	1.672
160	1.249	1.289	1.33
170	0.9849	1.0228	1.068
180	0.7912	0.8276	0.8652
190	0.6834	0.6719	0.7067
200	0.5184	0.5499	0.5818

Appendix D

Customized Maintenance Program Work Sheet

Issued on May 8, 2001

I: Inspect L: Lubricate R: Replace C: Clean
A: Adjust

Unit	Description	SMP Expected Maintenance Interval	CMP Expected Maintenance Interval	Total Counter (Developments) / Date / /	/	/	/	/	/	/	/	
Scanner unit	1st, 2nd, 3rd mirrors and Reflector	C: 80kD	C: 80kD									Wipe with a silicone cloth or optics cleaning paper.
	Optical filter	C: 80kD	C: 80kD									Clean with a blower brush.
	Original sensor	C: 80kD	C: 80kD									Wipe with a dry cloth.
	Slide rail	C: 80kD	C: 80kD									Clean with a blower brush
	Exposure glass	C: 80kD C: EM	C: 80kD C: EM									Wipe with a dry cloth moistened with alcohol or water.
	Platen cover	C: 80kD C: EM	C: 80kD C: EM									Wipe with a dry cloth moistened with water, then with a dry cloth.
	Exposure lamp	R: 800kD (240k scan)	R: 800kD (240k scan)									
	Optics dust filter	R: 800kD	R: 800kD									
Transport Unit	Transport belt	C: 200kD	C: 200kD									
Development unit	Toner shield glass	C: 80kD	C: 80kD									Wipe with a dry optics cleaning cloth (A0129111).
	Development unit toner hopper	C: 80kD	C: 80kD									Wipe with a dry cloth or vacuum-clean.
	Toner catcher	C: 80kD	C: 80kD									Wipe with a dry cloth or vacuum-clean.
	Toner cartridge unit	C: 80kD	C: 80kD									Wipe with a dry cloth or vacuum-clean.
	Developer (K)	R: 60kD	**R: 34kD**									Developer life is 60 kD. (See PM counter SP7-803) Replace K, C, M, Y at the same time.
	Developer (C, M, Y)	R: 48kD	**R: 27kD**									Developer life is 48 kD for each color. (See PM counter SP 7-803) Replace K, C, M, Y at the same time.
	Development unit (including covers and gears)	C: 80kD	C: 80kD									Cover: Wipe with a dry cloth. Gears: Clean with a blower brush.
Development unit	Side seal, seal	I: 80kD	I: 80kD									Visually check. Replace if cracks, warps, or breakages are found.
	Toner set sensor	C: 80kD	C: 80kD									Clean with a blower brush, then wipe with a dry cloth.
	Toner end sensor	C: 80kD	C: 80kD									Clean with a blower brush, then wipe with a dry cloth.
	Revolver filter	R: 80kD	R: 80kD									Wipe with a dry cloth (should be free of oil or foreign matter).
	Bias terminal	C: 80kD	C: 80kD									Wipe with a dry cloth (should be free of oil or foreign matter).
Drum peripheral components	PCC casing and end block	C: 80kD C: EM	C: 80kD C: EM									Wipe with a damp cloth. Then wipe with a dry cloth.
	PCC wire	C: 80kD R: 160kD	**R: 80kD**									
	Cleaning blade	R: 100kD	**R: 40kD**									Apply setting powder when replacing.
	Lubricant bar	R: 80kD	**R: 40kD**									Replace if chips or creases are found.
	Cleaning brush	R: 100kD	**R: 40kD**									
	Bias roller blade	R: 100kD	R: 100kD									
	Bias roller terminal	L: 80kD	L: 80kD									Apply a small amount of KS660 silicone grease.
	Cleaning unit, entrance Mylar, and side seal	C: 80kD C: EM	C: 80kD C: EM									Clean with a blower brush, then wipe with a dry cloth.
	Drum	R: 80kD	**R: 40kD**									Apply setting powder when replacing.
	Drum unit (including QL and potential sensor)	C: 80kD	**C: 40kD**									Wipe with a dry cloth.
	Revolver drawer (including ID sensor and carrier catcher)	C: 80kD I: EM	C: 80kD I: EM									Wipe with a dry cloth.
	Charge corona unit casing and end blocks	C: 80kD C: EM	C: 80kD C: EM									Wipe with a dry cloth.
	Charge corona wire	R: 80kD C: EM	**R: 40kD**									Wipe with a damp cloth, then with a dry cloth.
	Charge corona grid	C: 80kD R: 100kD C: EM	**R: 40kD**									Wipe with a damp cloth, then with a dry cloth.
	Wire cleaner pad	R: 100kD	R: 100kD									
	Charge corona filter	R: 100kD	R: 100kD									

Appendix D

I: Inspect L: Lubricate R: Replace C: Clean
A: Adjust

Unit	Description	SMP Expected Maintenance Interval	CMP Expected Maintenance Interval	Total Counter (Developments) / Date / /	/	/	/	/	/	/	/	
Image transfer unit	**Belt cleaning unit (toner hopper, entrance seal, and side seal)**	C: 80kD C: EM	**C: 40kD**									Wipe with a dry cloth or vacuum-clean.
	ITB Cleaning blade	R: 200kD	**R: 100kD**									During replacement, apply setting powder to the transfer belt.
	ITB Lubricant bar	R: 200kD	**R: 100kD**									Replace if chips or creases are found.
	ITB Lubricant brush	R: 200kD	**R: 100kD**									Clean with a vacuum cleaner if it is found to be too dirty during inspection.
	Transfer belt mark sensor	C: 80kD	C: 80kD									Clean with a blower brush, then wipe with a dry cloth.
	Apply grease to bias terminal, grounding terminal	L: 80kD	L: 80kD									Apply a small amount of KS660 grease.
	Transfer belt unit (with inner rollers)	C: 80kD	C: 80kD									Wipe with a dry cloth moistened with alcohol, then with a dry cotton cloth.
	Transfer belt	R: 80kD	**R: 40kD**									Apply setting powder when replacing.
Paper transfer unit	Transfer roller coating bar	R:200kD	R:200kD									
	PTR: Cleaning blade	R: 200kD	R: 200kD									
	Paper discharge plate	R: 80kD C: EM	R: 80kD C: EM									
	Paper transfer section	C: 200kD	C: 200kD									Wipe with a dry cloth.
Fusing unit	**Hot roller**	R: 80kD	**R: 40kD**									
	Hot roller oil supply pad	R: 80kD	**R: 40kD**									
	Pressure roller	R: 160kD	R: 160kD									
	Hot roller bearing	R: 160kD	R: 160kD									
	Pressure roller bearing	R: 160kD	R: 160kD									
	Apply grease to heat insulating bushing	L: 80kD	L: 80kD									Wipe with a dry cloth, then apply grease (Barrierta A2579300).
	Apply grease to fusing drive/fusing gears	L: 80kD	L: 80kD									Apply Mobile Temp 1.
	Fusing/pressure thermistors	C: 80kD	C: 80kD									Clean with suitable solvent, then apply silicone oil to the contact surface.
	Fusing/pressure cleaning rollers	C: 80kD C: EM	**C: 40kD**									Clean with suitable solvent.
	Scraper	C: 80kD	**C: 40kD**									Clean with suitable solvent.
	Hot roller blade	C: 40kD R: 80kD	**C: 20kD** **R: 40kD**									Clean with a dry cloth while taking care not to damage the edge.
	Pressure roller blade	R: 320kD	R: 320kD									-22, -26, -27, -29 copier only
	Pressure roller oil supply pad	R: 160kD	R: 160kD									-22, -26, -27, -29 copier only
	Oil pan	C: 160kD	C: 160kD									Clean with a dry cloth, then wipe with a dry cloth moistened with alcohol.
	Silicone oil	L: 80kD I: EM	L: 80kD I: EM									Any precipitates in the oil tank should be removed. Then, lubricate silicone oil.
	Pre-cleaning roller	R: 80kD C: EM	**R: 40kD**									Wipe with a damp cloth, then with a dry cloth. Separation pawls clean every PM.
	Separation pawl	C: 80kD C: EM	**C: 40kD**									Clean with a dray cloth.
Paper feed unit	Paper pick-up rollers, paper feed rollers, reverse rollers	C: 200kD	C: 200kD									Wipe with a damp cloth, then with a dry cloth.
	By-pass pick-up roller, by-pass feed roller, by-pass reverse roller	C: 200kD	C: 200kD									Wipe with a dry cloth moistened with alcohol or water.
	Registration rollers	I: 80kD	I: 80kD									Wipe with a dry cloth moistened with alcohol or water.
	Registration sensor: vertical transport sensor	C: 80kD	C: 80kD									Clean with a blower brush, then wipe with a dry cloth.
	Relay rollers	C: 160kD	C: 160kD									Wipe with a dry cloth moistened with alcohol or water.
Paper feed unit	Registration guide plate	C: 160kD	C: 160kD									Wipe with a dry cloth moistened with alcohol or water.
	Vertical transport guide plate	C: 160kD	C: 160kD									Wipe with a dry cloth moistened with alcohol or water.
	Vertical transport rollers	C: 160kD	C: 160kD									Wipe with a dry cloth moistened with alcohol or water.
	Paper dust mylar	C: 80kD C: EM	C: 80kD C: EM									
Others	Used toner tank	C: 80kD I: EM	C: 80kD I: EM									Collect used toner, then wipe the containers with a dry cloth, or replace the used toner tank.
	Exhaust dust filter	R: 100kD	R: 100kD									
	Fusing unit filter	R: 100kD	R: 100kD									

Appendix D

I: Inspect L: Lubricate R: Replace C: Clean
A: Adjust

Unit	Description	SMP Expected Maintenance Interval	CMP Expected Maintenance Interval	Total Counter (Developments) / Date / /	/	/	/	/	/	/	/	
Duplex unit	Reverse roller	C: 80kD	C: 80kD									Wipe with a damp cloth, then with a dry cloth.
	Paper feed roller	C: 80kD	C: 80kD									Wipe with a damp cloth, then with a dry cloth.
	Duplex bottom plate pad	C: 80kD	C: 80kD									Wipe with a dry cloth.
	Bottom plate lifting-up torque limiter	L: 400kD	L: 400kD									Apply Mobile Temp 1. Lubricate at 400 kD
	Duplex unit	C: 80kD	C: 80kD									Wipe with a dry cloth.

Model: Cattleya2	Date: 04-Jun-01	No.: RB023004

Subject: Troubleshooting for the TD sensor gain value upper limit error 4* (1:K, 2:Y, 3:C, 4:M, for *)	Prepared by: H. Matsui
From: Technical Services Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom

All four of the following symptoms/conditions occur ***together:***

1. TD sensor gain value upper limit error: Value 4∗ (1:K, 2:Y, 3:C, 4:M, for ∗) is displayed for the TD sensor initialization results (See Notes 1 and 3 below).
2. The copy/print image density is too light.
3. Actual Vref value (SP3-950-∗, 001:K, 002:C, 003:M, 004:Y, for ∗) is 1.35 or lower.
4. Selected pointer table value (SP3-902-∗, 001:K, 002:C, 003:M, 004:Y, for ∗) is 16 or greater.

NOTES:

1. SP3-960-000 displays the TD sensor initialization results.

2. The troubleshooting procedure below is basically only for cases where all 4 of the above occur. If the procedure is done without all 4 symptoms occurring, unexpected errors can occur.

3. As an example, if only #1 above occurs, (value 4∗ (1:K, 2:Y, 3:C, 4:M, for ∗) displayed for TD sensor initialization results [SP3-960-000 or SP3-005-006]), the new gain value will be canceled, and the previous gain value will be maintained. There is usually no need to take action in this case, as the machine can still be used normally.

   Important: Do not repeat the initialization without replacing the developer for that color. Otherwise, another error may occur (see Service Manual, pg. 4-5 for details).

Cause:

For some reason, the developer Q/M is slightly higher than usual (but still within specification).

Action in the field

1. For the machines with main firmware version 1.082 or earlier, change the TD sensor initial gain upper limits (SP3-942-∗, 005:K, 006:C, 007:M, 008:Y, for ∗) for all colors according to the following table:

SP3-942 TD sensor initial gain upper limits

SP Mode No.	Item	Upper limit			Range
		Current value	→	Change to this value	Range
SP3-942-005	TD sensor initial gain upper limit (K)	180	→	200	100-300
SP3-942-006	TD sensor initial gain upper limit (C)	190	→	210	100-300
SP3-942-007	TD sensor initial gain upper limit (M)	190	→	210	100-300
SP3-942-008	TD sensor initial gain upper limit (Y)	190	→	210	100-300

NOTE: The above change is not required for machines with main firmware version 1.09 or newer, as the default value has already been changed.

2. Replace the developer for the color(s) that displayed 4∗ (1:K, 2:Y, 3:C, 4:M, for ∗).

3. Perform TD sensor initialization for the color(s) that you just replaced.

NOTE: Do not perform TD sensor initialization for a toner color without replacing the developer for that color.

Model: Cattleya2	Date: 20-Jun-01	No.: RB023005

Subject: White spots (fireflies) in half tone areas in thick paper 2 mode.	Prepared by: H. Matsui
From: Technical Services Dept., GTS Division	

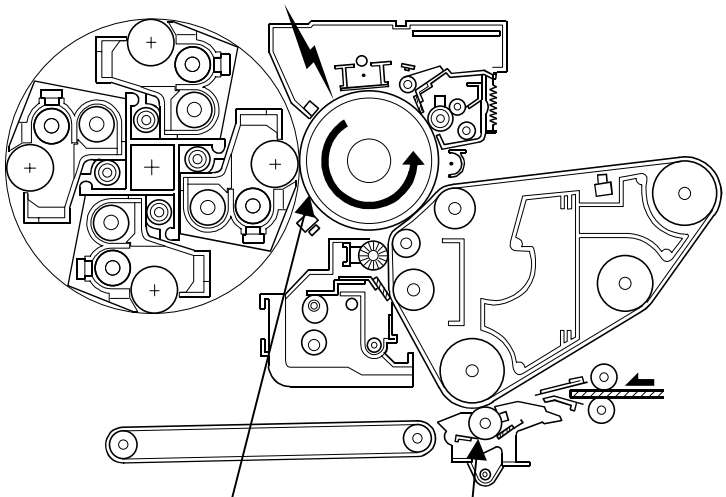
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

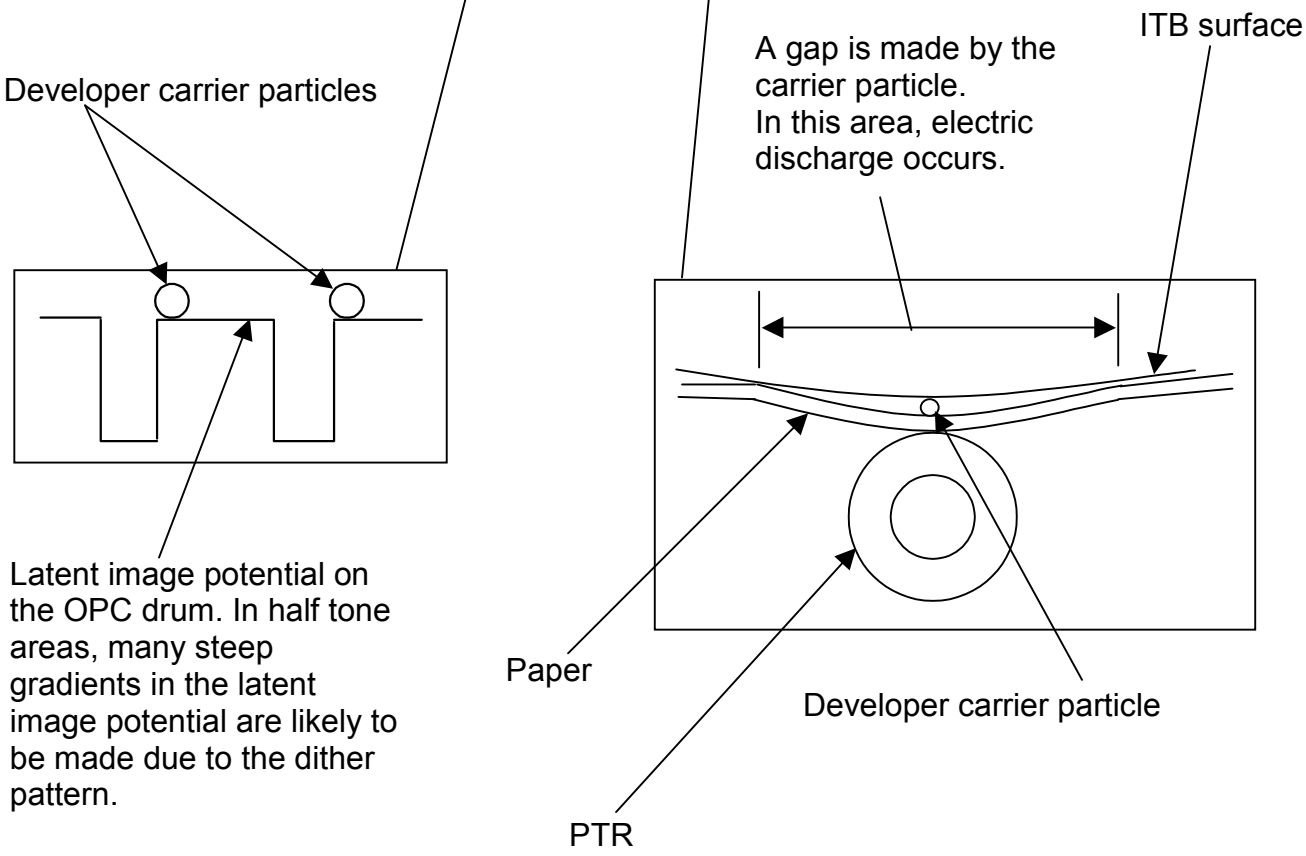
Symptom:

White spots (firefly spots) in half tone areas in the “Thick paper 2” (Extra thick paper) mode.

Cause:

In half tone areas, there are places where the latent image potential gradient is steep (gradient edges). These gradient edges are due to the rapid changes in greyscale caused by the dither patterns used in half tone areas. During development, the carrier particles are likely to be attracted to these edges in the latent image. The attracted carrier particles are transported to the surface of the ITB. Where a carrier particle exists on the surface of the ITB, a gap is made between the ITB and the paper. This gap becomes big especially with extra thick paper (Thick paper 2), because of its stiffness. Under this condition, electric discharge occurs. This electric discharge causes excessive paper transfer current, which leads to white spots (firefly spots) on the paper. (See the diagrams on the next page).




Developer carrier particles
A gap is made by the carrier particle.
In this area, electric discharge occurs.
ITB surface
Latent image potential on the OPC drum. In half tone areas, many steep gradients in the latent image potential are likely to be made due to the dither pattern.
Paper
Developer carrier particle
PTR

Action in the field:

To reduce the excessive paper transfer current caused by the electric discharge, change the paper transfer current with SP mode as follows:

PTR bias adjustment SP

SP Mode No.	Item	Current value	→	Value to be changed
SP2-310-016	PTR bias adjustment: Image area: Thick 2:3C	20	→	16
SP2-310-017	PTR bias adjustment: Image area: Thick 2:4C	20	→	16
SP2-316-030	PTR bias: Humidity correction: H: Thick 2: 4C	114	→	100

NOTE:

1. This troubleshooting reduces the number of white spots that appear in half tone image areas with extra thick paper (Thick paper 2) mode. However, the white spots do not completely go away. The number of white spots will be reduced to within the specification written in the service launching guide.
2. If you reduce the SP2-310-016 and 017 settings to less than the above recommended values, some side effects (for example, insufficient paper transfer in solid areas) may occur. If you find it necessary to reduce the SP settings to less than the above recommended values, please check the image quality by trial and error. However, do not reduce the values to less than 14.
3. This troubleshooting information is not for Cattleya 1, but only for Cattleya 2. This is because the paper transfer systems of the Cattleya1 (PTB) and the Cattleya 2 (PTR) are different.

Model: Cattleya2	Date: 26-Jun-01	No.: RB023006

Subject: Electrical Component Layout	Prepared by: M. Tsuyuki
From: Technical Services Dept., GTS Division	

Classification:			
	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☒ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Please add the electrical component layout (below) to the Cattleya2 service manual.

ELECTRICAL COMPONENT LAYOUT (B023) 1/2

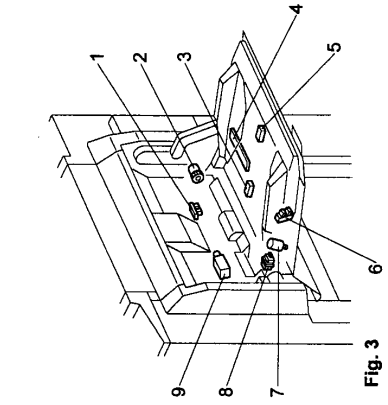


Fig. 3

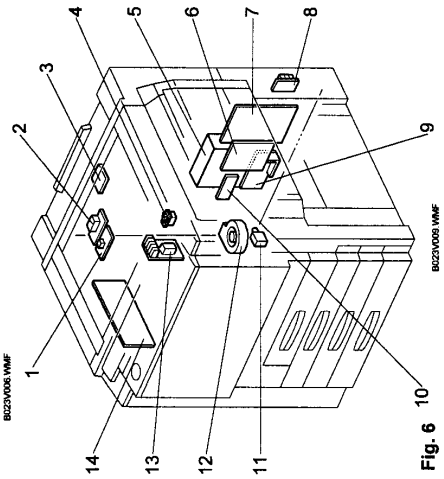


Fig. 6

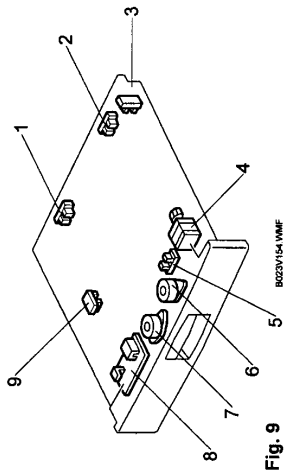


Fig. 9

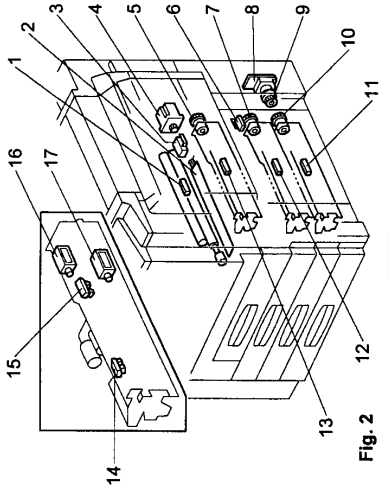


Fig. 2

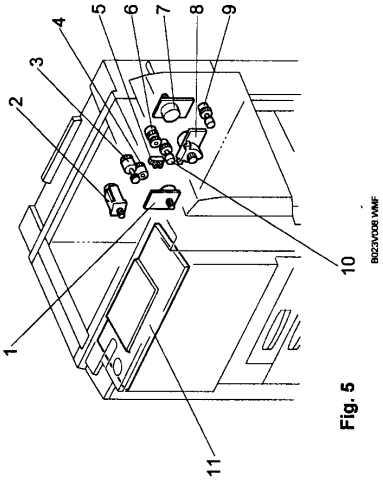


Fig. 5

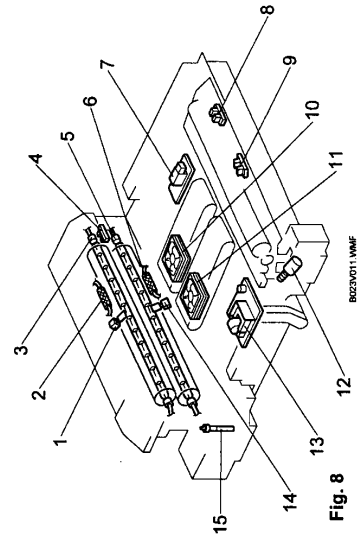


Fig. 8

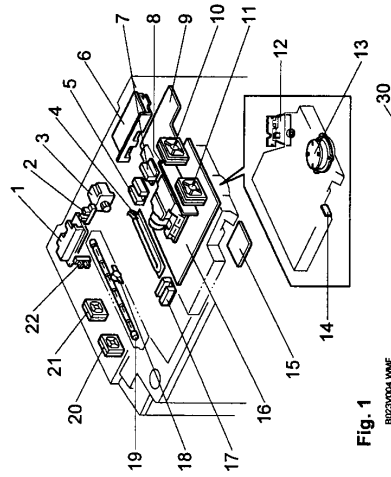


Fig. 1

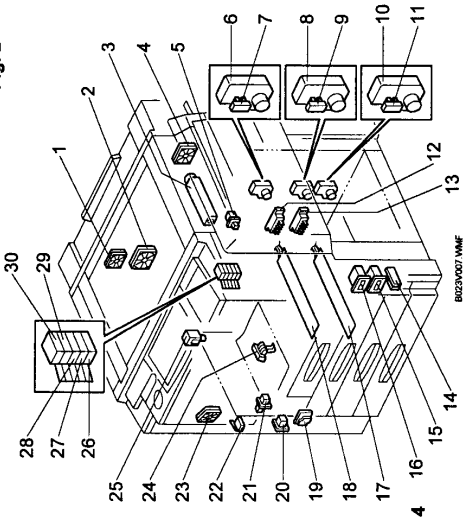


Fig. 4

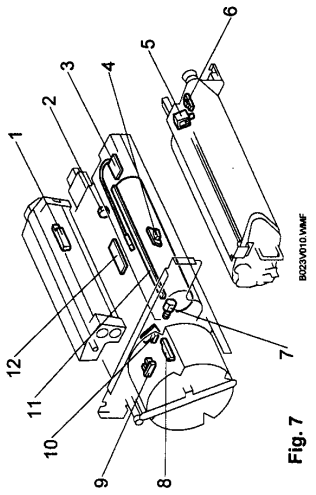


Fig. 7

ELECTRICAL COMPONENT LAYOUT (B023) 2/2

Symbol	Name	P-to-P	Index No.
Sensors			
S1	Paper Eit	1-B1	8-4
S2	Oil End	1-B1	8-15
S3	Original Length 3,4	1-G5	1-5
S4	Platen Cover Position	1-G5	1-2
S5	Scanner H.P.	1-H5	1-22
S6	Original Width 1,2	1-G8	1-17
S7	Original Length 5	1-H8	1-7
S8	TD - Y	1-C10	7-1
S9	TD - K	1-C11	7-1
S10	TD - M	1-C11	7-1
S11	TD - C	1-C11	7-1
S12	Toner End	2-A2	7-8
S13	Toner Cartridge Set	2-A3	7-10
S14	Revolver H.P.	2-A3	7-9
S15	ID	2-A3	7-4
S16	ITB Cleaning H.P.	2-A3	5-5
S17	Drum Potential	2-A4	7-3
S18	Registration	2-A5	2-1
S19	Humidity	2-A7	4-14
S20	Toner Overflow	2-A9	4-19
S21	Paper Exit Door	2-A10	4-21
S22	Duplex Turn Gate	2-A10	4-24
S23	1st Paper Height	2-A10	4-7
S24	2nd Paper Height	2-A10	4-9
S25	3rd Paper Height	2-A10	4-11
S27	1st Paper Feed	2-D3	2-13
S8	By-pass Table Lower Limit	2-D3	3-6
S29	By-pass Table	2-D3	3-8
S30	By-pass Table Upper Limit	2-D3	3-1
S31	2nd Paper Feed	2-F3	2-12
S32	3rd Paper Feed	2-F3	2-11
S33	Belt Mark Detection	2-G3	7-6
S34	PTR H.P.	2-E5	8-8
S35	Paper Transfer Cam H.P.	2-E5	8-9
S36	Duplex Side Fence H.P.	2-E8	9-5
S37	Duplex End Fence H.P.	2-E8	9-9
S38	Duplex Paper End	2-E9	9-3
S39	Duplex Entrance	2-E9	9-1
S40	Duplex Turn	2-E9	9-2
S41	1st Paper End	2-D10	2-14
S42	1st Upper Limit	2-D10	2-15
S43	2nd Paper End	2-F10	2-14
S44	2nd Upper Limit	2-F10	2-15
S45	3rd Paper End	2-G10	2-14
S46	3rd Upper Limit	2-G10	2-15
Lamps			
L1	Quenching	2-A4	7-11
L2	Exposure	1-G4	1-19
L3	Hot Roller Fusing	1-C1	8-3
L4	Pressure Roller Fusing	1-D1	8-5
Thermistors			
1	Hot Roller	1-B1	8-1
2	Pressure Roller	1-C1	8-14

Symbol	Name	P-to-P	Index No.
Switches			
SW1	1st Tray Paper Set	2-A8	4-5
SW2	2nd Tray Paper Size	2-A8	4-12
SW3	3rd Tray Paper Size	2-A9	4-13
SW4	Front Door 4	2-A6	4-30
SW5	Front Door 5	2-A6	4-28
SW6	Front Door 6	2-A6	4-29
SW7	Paper Exit Door	2-A6	2-22
SW8	By-pass Feed Unit	2-A5	2-3
SW9	Front Door 2	1-H11	4-26
SW10	Front Door 3	1-H11	4-27
SW11	Vertical Transport Door	2-F3	2-6
SW12	Main	1-F1	4-20
SW13	Heater	1-E1	6-4
Motors			
M1	1st Tray Lift	2-E10	4-6
M2	2nd Tray Lift	2-G10	4-8
M3	3rd Tray Lift	2-H10	4-10
M4	Paper Feed	2-A8	2-8
M5	Drum	2-A5	5-7
M6	Drum Peripheral Component	2-H3	5-8
M7	Wire Cleaner	2-A4	7-7
M8	Fusing Transport	2-A11	5-1
M9	Polygon	1-H11	1-13
M10	By-pass Table Lift	2-E3	3-7
M11	PTR Pressure	2-E5	8-12
STM1	Registration	2-A6	2-4
STM2	Revolver	2-E4	5-2
STM3	Scanner	1-F4	1-3
STM4	Duplex Feed	2-E7	9-4
STM5	Side Fence Jogger	2-E8	9-6
STM6	End Fence Jogger	2-E8	9-7
FM1	ID Sensor Fan	2-A4	4-4
FM2	Charge Fan	2-A4	4-3
FM3	Development Cooling Fan (Front)	2-E6	4-23
FM5	Exhaust Fan	2-A9	6-12
FM6	Transport Fan (Rear)	2-E5	8-10
FM7	Transport Fan (Front)	2-E5	8-11
FM8	Fusing Fan (Upper)	2-E7	4-1
FM9	Fusing Fan (Bottom)	2-E6	4-2
FM12	Optics Exhaust Fan (Rear)	1-G8	1-10
FM13	Optics Exhaust Fan (Front)	1-G8	1-11
FM14	Optics Cooling Fan (Front)	1-H8	1-20
FM15	Optics Cooling Fan (Rear)	1-H8	1-21
Clutches			
MC1	1st Feed	2-D10	2-5
MC3	2nd Feed	2-G10	2-7
MC4	3rd Feed	2-H10	2-10
MC5	By-pass Feed Unit	2-E3	3-2
MC6	Toner Supply	2-E6	5-4
MC7	Development	2-E6	5-3
MC8	ITB Cleanig Drive	2-E6	5-6
MC9	ITB Cleaning Shaft	2-E6	5-10
MC10	PTR Pressure Release	2-G3	5-9
MC11	Paper Feed Drive	2-A7	2-9

Symbol	Name	P-to-P	Index No.
PCBs			
PCB1	I/O Control	2-C2, F4, 1-A7	6-7
PCB2	PSU	1-F3	6-5
PCB3	I/F (RDS/LCT)	1-C6	6-8
PCB4	Main Control	2-G4, 1-B8	6-14
PCB5	TD Sensor I/F 1	1-B9	6-3
PCB6	Slip Ring	1-B10	7-2
PCB7	TD Sensor I/F 2	1-B11	7-12
PCB8	Operation Panel	1-D10	5-11
PCB9	Scanner Motor Drive	1-F5	1-1
PCB10	Lamp Regurator	1-G5	1-6
PCB11	Scanner IPU	1-H7	1-16
PCB12	LD Drive	1-E10	1-12
PCB13	LD Control	1-E10, 2-G4	1-9
PCB14	Polygon Motor Drive	1-H11	1-15
PCB15	CCD	1-F8	1-8
PCB16	AC Drive	1-D3	6-9
PCB18	Revolver Motor Drive	2-E4	6-13
PCB19	High Voltage Supply - T2	2-E4	8-7
PCB20	High Voltage Supply - D	2-E4	8-13
PCB21	High Voltage Supply - Q1	2-E7	6-10
PCB22	High Voltage Supply - T1/PCC/BR	2-B1	6-6
PCB23	High Voltage Supply - CG	2-B2	6-2
PCB24	High Voltage Supply - B	2-B2	6-1
PCB25	Laser Syncronaizing Detector	1-H11	1-14
PCB26	By-pass Paper Width Detection	2-E3	3-4
PCB27	By-pass Paper Length	2-E3	3-5
PCB28	By-pass Paper End Sensor	2-F3	3-3
PCB29	Duplex Control	2-D8	9-8
Solenoids			
SOL1	1st Reverse Roller	2-D10	2-17
SOL2	1st Pick-up	2-D10	2-16
SOL3	2nd Reverse Roller	2-F10	2-17
SOL4	2nd Pick-up	2-F10	2-16
SOL5	3rd Reverse Roller	2-H10	2-17
SOL6	3rd Pick-up	2-G10	2-16
SOL7	By-pass Pick-up	2-E3	3-9
SOL8	Junction Gate	2-E3	4-25
SOL9	ITB Pressure Release	2-G3	7-5
Heaters			
H1	Paper Tray 1	1-D1	4-18
H2	Paper Tray 2	1-D1	4-17
H3	Paper Transfer	1-D1	2-2
H4	Optics Anti-condensation	1-E1	1-4
Counters			
CO1	Total 1	2-A7	4-16
CO2	Total 2	2-A7	4-15
CO3	Key (Option)	2-A7	-
Thermofuse			
TF1	Pressure Roller	1-C1	8-6
TF2	Hot Roller	1-C1	8-2
Others			
TS1	Thermostat	1-G4	1-18
CB	Circuit Breaker	1-F1	6-11

Model: Cattleya2	Date: 05-Jul-01	No.: RB023007

Subject: Point to Point Circuit Diagram	Prepared by: M. Tsuyuki
From: Technical Services Dept., GTS Division	

Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☒ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Please correct the point-to-point diagram as follows.

Location	Incorrect	Correct
1-C1	Hot Roller Fusing Lamp	Hot Roller Fusing Lamp **(L3)**
1-C1	Hot Roller Thermofuse	**Pressure** Roller Thermofuse
1-D1	Pressure Roller Fusing Lamp	Pressure Roller Fusing Lamp **(L4)**
1-F1	Main Switch	Main Switch **(SW12)**
1-G4	Exposure Lamp	Exposure Lamp **(L2)**
1-G4	Thermostat	Thermostat **(TS1)**
1-H11	Polygon Motor (MT12)	Polygon Motor **(M12**)
1-H11	Front Door Switch 2,3	Front Door Switch **2 (SW9)** [T1-T7]
1-H11	Front Door Switch 2,3	Front Door Switch **3 (SW10)** [T2-T8]
2-A5	Drum Motor (MT6)	Drum Motor **(M6)**
2-A6	Front Door Switch (SW4)	Front Door Switch **4** (SW4)
2-A6	Front Door Switch (SW6)	Front Door Switch **6** (SW6)
2-A6	Front Door Switch (SW5)	Front Door Switch **5** (SW5)
2-A7	Paper Feed Drive Clutch (CL11)	Paper Feed Drive Clutch **(MC11)**
2-A8	Paper Feed Motor (MT5)	Paper Feed Motor **(M5)**
2-A9	Charge Fan	**Exhaust Fan**
2-A11	Fusing Transport Motor (MT11)	Fusing Transport Motor **(M11)**
2-C2	I/O Control Board (PCB17)	I/O Control Board **(PCB1)**
2-C9	Charge Fan	**Exhaust Fan**
2-D3	2nd paper Feed Sensor (S26)	**Not Used**
2-E5	Transport Fan (Front) (F7)	Transport Fan (Front) **(FM7)**
2-F3	Vertical Transport Door Switch	Vertical Transport Door Switch **(SW11)**
2-H3	Drum Peripheral Component Motor (MT7)	Drum Peripheral Component Motor **(M7)**

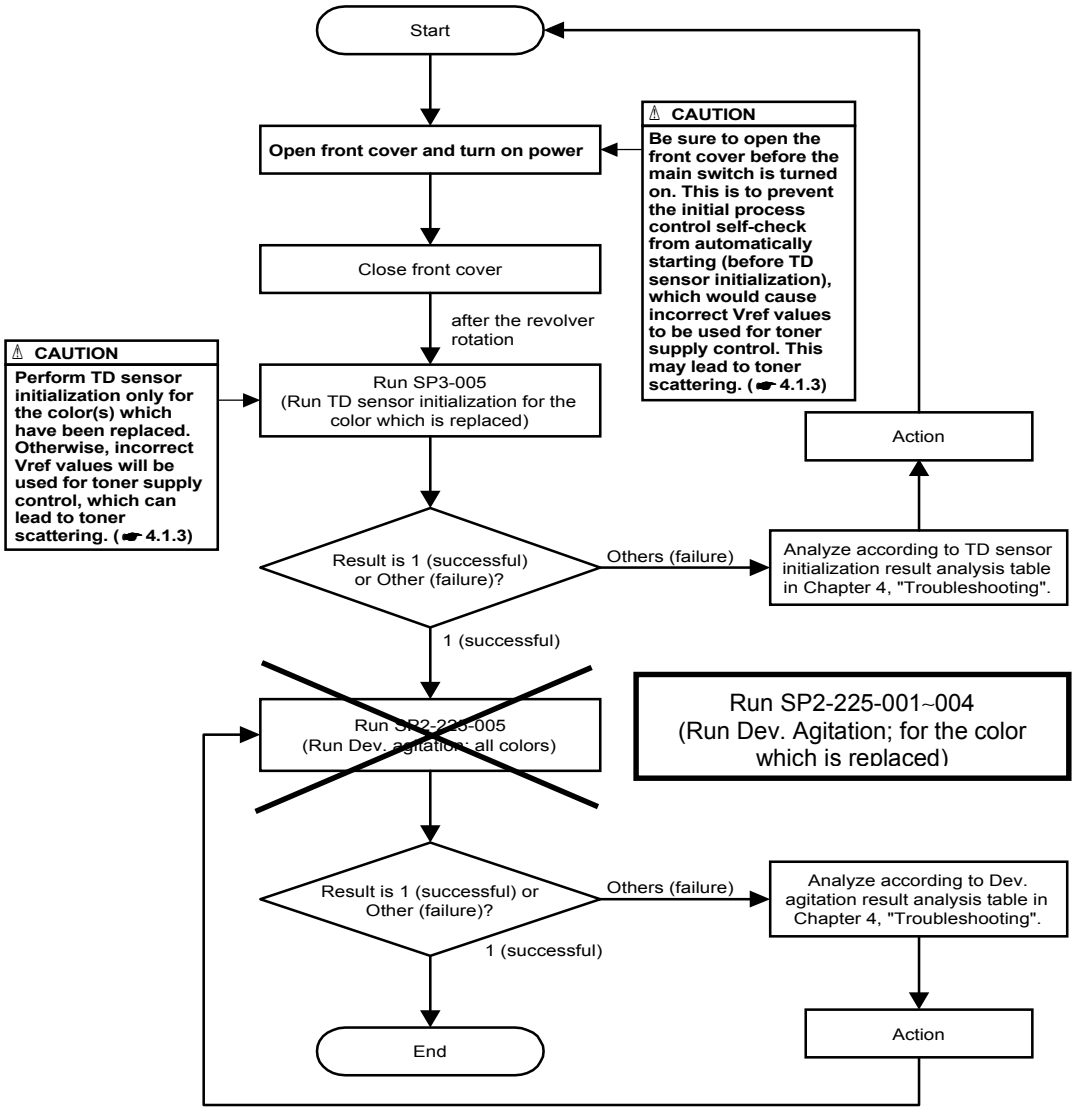
Model: Cattleya2	Date: 24-Jul-01	No.: RB023008

Subject: Service manual correction: Developer initialization	Prepared by: H. Matsui
From: Technical Services Dept., GTS Division	

Classification:			
	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other (Service manual correction)		

Please correct the Developer Initialization flow chart on page 3-55 as shown below (1 box).

Note:
This correction should only be applied to the Developer Initialization workflow for Developer Replacement on page 3-55. The flowchart for machine installation on page 1-19 should be left as is.



Model: Cattleya2	Date: 27-Jul-01	No.: RB023009

Subject: Troubleshooting for blurred image on text or trailing edges of solid areas	Prepared by: H. Matsui
From: Technical Services Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
Toner dusting is visible at the trailing edges of text characters and solid images (Photo and Text/Photo modes).

Cause:
This can often occur just following developer replacement, when the chargeability of the toner particles has not yet stabilized (more so in low temp/low humidity environments). The present image transfer current (T1) for the ITB is not suitable for these toner particles, causing too many of them to be transferred onto the paper.

Action in the field
Upgrade the main firmware to ver 1.09 or newer.

Most of the relevant SP modes will automatically be changed to their new, ideal settings after the upgrade. However, there are some that must be changed manually. These are listed in Table 2 below.

Please also carefully read the Notes listed at the end of this RTB.

Version 1.09 – Modified Items

A. Calculation method for the image transfer current (T1):

- With ver 1.082 and earlier, the image transfer current (T1) was defined as follows:
T1 = T1 standard value (SP2-301-001~040).

- From ver 1.09 or newer, it is defined as:

T1 = T1 standard value + T1 environment correction + T1 1st page correction

B. Increase in some T1 standard values, new SP modes (Tables 1-4 below):

In addition to the increase in T1 standard values of exiting SP modes, new SP modes have been added for T1 environment correction and T1 1st page correction.

T1 Standard Value Increase

The default values (T1 standard values) of the existing SP modes listed below have been increased.

- Table 1: The following values are automatically updated with the software upgrade:

SP Mode No.	Item	Old default value	→	New default value
SP2-301-010	ITB bias adjustment: 1C: 1st color	22	→	32
SP2-301-034	ITB bias adjustment: 1C: 2nd side: 1st color	22	→	32
SP2-310-021	PTR bias adjustment: Image area: Normal: 2nd side: 4C	45	→	55
SP2-316-001	PTR bias: Humidity correction: LL: Normal: 1C	100	→	150
SP2-316-033	PTR bias: Humidity correction: LL: Normal: 2nd side: 1C	100	→	150
SP2-316-034	PTR bias: Humidity correction: LL: Normal: 2nd side 4C	100	→	118
SP2-316-036	PTR bias: Humidity correction: L: Normal: 2nd side 4C	100	→	118
SP2-316-038	PTR bias: Humidity correction: H: Normal: 2nd side 4C	100	→	82
SP2-316-040	PTR bias: Humidity correction: HH: Normal: 4C	100	→	82

Note: It is not necessary for the above SP modes to be at their old defaults before upgrading. Regardless of their values beforehand, they will automatically be changed to their new defaults through the upgrade to v1.09.

- Table 2: The following default values must be manually input after the upgrade:

SP Mode No.	Item	→	Default settings
SP2-301-001	ITB bias adjustment: 4C: 1st color	→	22
SP2-301-002	ITB bias adjustment: 4C: 2nd color	→	25
SP2-301-003	ITB bias adjustment: 4C: 3rd color	→	27
SP2-301-004	ITB bias adjustment: 4C: 4th color	→	29
SP2-301-025	ITB bias adjustment: 4C: 2nd side: 1st color	→	22
SP2-301-026	ITB bias adjustment: 4C: 2nd side: 2nd color	→	25
SP2-301-027	ITB bias adjustment: 4C: 2nd side: 3rd color	→	27
SP2-301-028	ITB bias adjustment: 4C: 2nd side: 4th color	→	29

T1 Environment Correction

- Table 3: The *T1 environment correction* is determined by the following newly added SP modes:

2	Mode Number		[Setting]
301	51	1C: 1st side: environment: LL	[-20 to 20µA / **0µA** / 1µA / step]
	52	1C: 1st side: environment: L	[-20 to 20µA / **0µA** / 1µA / step]
	53	1C: 1st side: environment: H	[-20 to 20µA / **-10µA** / 1µA / step]
	54	1C: 1st side: environment: HH	[-20 to 20µA / **-10µA** / 1µA / step]
	55	2 ~ 4C: 1st side: environment: LL	[-20 to 20µA / **0µA** / 1µA / step]
	56	2 ~ 4C: 1st side: environment: L	[-20 to 20µA / **0µA** / 1µA / step]
	57	2 ~ 4C: 1st side: environment: H	[-20 to 20µA / **0µA** / 1µA / step]
	58	2 ~ 4C: 1st side: environment: HH	[-20 to 20µA / **0µA** / 1µA / step]
	59	1C: 2nd side: environment: LL	[-20 to 20µA / **0µA** / 1µA / step]
	60	1C: 2nd side: environment: L	[-20 to 20µA / **0µA** / 1µA / step]
	61	1C: 2nd side: environment: H	[-20 to 20µA / **-10µA** / 1µA / step]
	62	1C: 2nd side: environment: HH	[-20 to 20µA / **-10µA** / 1µA / step]
	63	2 ~ 4C: 2nd side: environment: LL	[-20 to 20µA / **0µA** / 1µA / step]
	64	2 ~ 4C: 2nd side: environment: L	[-20 to 20µA / **0µA** / 1µA / step]
	65	2 ~ 4C: 2nd side: environment: H	[-20 to 20µA / **0µA** / 1µA / step]
	66	2 ~ 4C: 2nd side: environment: HH	[-20 to 20µA / **0µA** / 1µA / step]
	67	Normal speed: non image area: environment: LL	[-20 to 20µA / **0µA** / 1µA / step]
	68	Normal speed: non image area: environment: L	[-20 to 20µA / **0µA** / 1µA / step]
	69	Normal speed: non image area: environment: H	[-20 to 20µA / **0µA** / 1µA / step]
	70	Normal speed: non image area: environment: HH	[-20 to 20µA / **0µA** / 1µA / step]
	71	Half speed: non image area: environment: LL	[-20 to 20µA / **0µA** / 1µA / step]
	72	Half speed: non image area: environment: L	[-20 to 20µA / **0µA** / 1µA / step]
	73	Half speed: non image area: environment: H	[-20 to 20µA / **0µA** / 1µA / step]
	74	Half speed: non image area: environment: HH	[-20 to 20µA / **0µA** / 1µA / step]
	75	1/3rd speed: non image area: environment: LL	[-20 to 20µA / **0µA** / 1µA / step]
	76	1/3rd speed: non image area: environment: L	[-20 to 20µA / **0µA** / 1µA / step]
	77	1/3rd speed: non image area: environment: H	[-20 to 20µA / **0µA** / 1µA / step]
	78	1/3rd speed: non image area: environment: HH	[-20 to 20µA / **0µA** / 1µA / step]

T1 1st Page Correction

- Table 4: The *T1 1st page correction* is determined by the following newly added SP modes:

2	Mode Number		[Setting]
301	81	1C: 1st side: 1st page: LL	[-20 to 20µA / **0µA** / 1µA / step]
	82	1C: 1st side: 1st page: L	[-20 to 20µA / **0µA** / 1µA / step]
	83	1C: 1st side: 1st page: Normal	[-20 to 20µA / **0µA** / 1µA / step]
	84	1C: 1st side: 1st page: H	[-20 to 20µA / **0µA** / 1µA / step]
	85	1C: 1st side: 1st page: HH	[-20 to 20µA / **0µA** / 1µA / step]
	86	4C: 1st side: 1st page: LL	[-20 to 20µA / **10µA** / 1µA / step]
	87	4C: 1st side: 1st page: L	[-20 to 20µA / **10µA** / 1µA / step]
	88	4C: 1st side: 1st page: Normal	[-20 to 20µA / **10µA** / 1µA / step]
	89	4C: 1st side: 1st page: H	[-20 to 20µA / **0µA** / 1µA / step]
	90	4C: 1st side: 1st page: HH	[-20 to 20µA / **0µA** / 1µA / step]
	91	1C: 2nd side: 1st page: LL	[-20 to 20µA / **0µA** / 1µA / step]
	92	1C: 2nd side: 1st page: L	[-20 to 20µA / **0µA** / 1µA / step]
	93	1C: 2nd side: 1st page: Normal	[-20 to 20µA / **0µA** / 1µA / step]
	94	1C: 2nd side: 1st page: H	[-20 to 20µA / **0µA** / 1µA / step]
	95	1C: 2nd side: 1st page: HH	[-20 to 20µA / **0µA** / 1µA / step]
	96	4C: 2nd side: 1st page: LL	[-20 to 20µA / **10µA** / 1µA / step]
	97	4C: 2nd side: 1st page: L	[-20 to 20µA / **10µA** / 1µA / step]
	98	4C: 2nd side: 1st page: Normal	[-20 to 20µA / **10µA** / 1µA / step]
	99	4C: 2nd side: 1st page: H	[-20 to 20µA / **0µA** / 1µA / step]
	100	4C: 2nd side: 1st page: HH	[-20 to 20µA / **0µA** / 1µA / step]

Notes:

1. As shown in Table 3 above, a default T1 environment correction of -10**μA** is only applied to the following four SP modes:

   SP2-301-053: 1C: 1st side: environment: H
   SP2-301-054: 1C: 1st side: environment: HH
   SP2-301-061: 1C: 2nd side: environment: H
   SP2-301-062: 1C: 2nd side: environment: HH

   This is actually to cancel out the effect of the 10**μA** increase in the default value of SP2-301-010 (ITB bias adjustment: 1C: 1st color) and SP2-301-034 (ITB bias adjustment: 1C: 2nd side: 1st color). Design tests showed that with these four conditions, a net environmental correction was not necessary.

   *Important: ***The settings of the other SP modes listed in Table 3 should never be changed, as this can cause side-effects to occur.***

2. As shown in Table 4 above, a default T1 1st page correction of +10**μA** is only applied to the following six SP modes:

   SP2-301-086: 4C: 1st side: 1st page: LL
   SP2-301-087: 4C: 1st side: 1st page: L
   SP2-301-088: 4C: 1st side: 1st page: Normal
   SP2-301-096: 4C: 2nd side: 1st page: LL
   SP2-301-097: 4C: 2nd side: 1st page: L
   SP2-301-098: 4C: 2nd side: 1st page: Normal

   Design tests showed that a net T1 1st page correction was only necessary for these six conditions listed above.

   *Important: ***The settings of the other SP modes listed in Table 4 should never be changed, as this can cause side-effects to occur.***

3. If you cannot see any noticeable improvement after upgrading to v1.09 or newer, the following SP modes can be used to minimize the symptoms (default: 10):

   SP2-301-086: 4C: 1st side: 1st page: LL
   SP2-301-087: 4C: 1st side: 1st page: L
   SP2-301-088: 4C: 1st side: 1st page: Normal
   SP2-301-096: 4C: 2nd side: 1st page: LL
   SP2-301-097: 4C: 2nd side: 1st page: L
   SP2-301-098: 4C: 2nd side: 1st page: Normal

   *Important: ***The SP modes listed above should never be set to a value over 20, as this can cause side-effects such as poor paper transfer to occur.***

Model: Cattleya2	Date: 06-Sep-01	No.: RB023010

Subject: Paper feed clutch slippage	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
The paper is not fed correctly from the feed tray and does not reach the registration rollers within a certain amount of time, causing a paper feed jam.

This has a tendency to occur just after installation.

Cause:
In some cases following installation, there is insufficient friction between the plates of the Paper Feed Magnetic Clutch (AX200100), causing the plates to slip, even if the signal for magnetic clutch engaging is being properly sent and received.

Troubleshooting procedure:
Through testing, we have found that this plate-to-plate friction can be restored to target levels by performing approximately 200 on/off sequences for magnetic plate engaging. Please do the following if this symptom should occur:

1. Pull out the paper tray(s) where the paper mis-feed has occurred. This will force the tray bottom plate down.

2. Enter SP5-804-008 (output check for “Paper feed motor standard speed”), then press “ON”.

3. Use the “Next” button to access SP5-804-058 (Paper feed drive clutch), then press “ON”.

4. Press “Next” and turn on the Reverse Roller Solenoid for the paper tray(s) that have shown this symptom.
   SP5-804-065 for the 1st tray
   SP5-804-071 for the 2nd tray
   SP5-804-074 for the 3rd tray

5. Using the “Next” or “Prev” buttons, select the output check SP for the paper tray that has shown this symptom. Perform the on-off in these SP modes about 200 times.
   SP5-804-063 for the 1st tray
   SP5-804-069 for the 2nd tray
   SP5-804-072 for the 3rd tray

6. Use the “Next” or “Prev” buttons to return to SP5-804-065, 071 or 074 and turn off the Reverse Roller Solenoid for the paper tray(s) from Step 4.

7. Use the “Next” or “Prev” buttons to return to SP5-804-058 (Paper Feed Drive Clutch), then press “OFF”.

8. Use the “Next” or “Prev” buttons to return to SP5-804-008 (Paper Feed Motor Standard Speed), then press “OFF”.

9. Exit SP mode and confirm whether or not the paper jam occurs. If it still occurs, perform steps 1 through 8 again (up to a maximum of 3 times).

NOTE: If the jam still occurs after trying the procedure 3 times, the signals may not be reaching the board properly, so please check all board/cable connections and make any necessary replacements.

Model: Cattleya2	Date: 11-Oct-01	No.: RB023011

Subject: By-pass Feed Jam	Prepared by: M. Tsuyuki
From: Technical Services Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

SYMPTOM

A by-pass feed jam may occur after repeated bypass feeds.

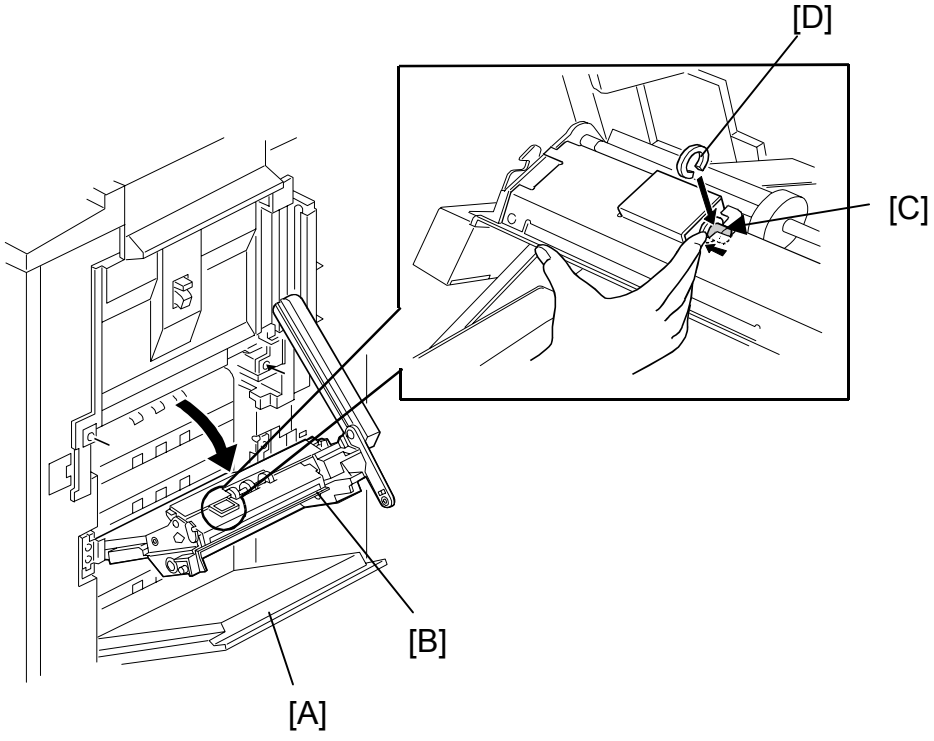
CAUSE

The plastic washer of the pick-up solenoid was missing, causing the plunger to be attracted in the opposite direction by its residual magnetic field and locked in place. The plastic washer normally prevents this attraction.

SOLUTION

Add the plastic washer as follows.

1. Open the by-pass table [A].
2. Open the by-pass feed unit [B].
3. Push in the plunger [C] of the pick-up solenoid until it stops (as shown).
4. Attach the plastic washer [D].



MACHINES

The following are the machines that may not contain the plastic washer:

B023-15: H6310600021 - H6310600030 (10 units)
B023-17: H6310600031 - H6310600096 (66 units)
B023-22: H6310600140 - H6310600168 (29 units)

We will be sending out plastic washers in the following quantities:
RE: 40 pcs
RC: 100 pcs

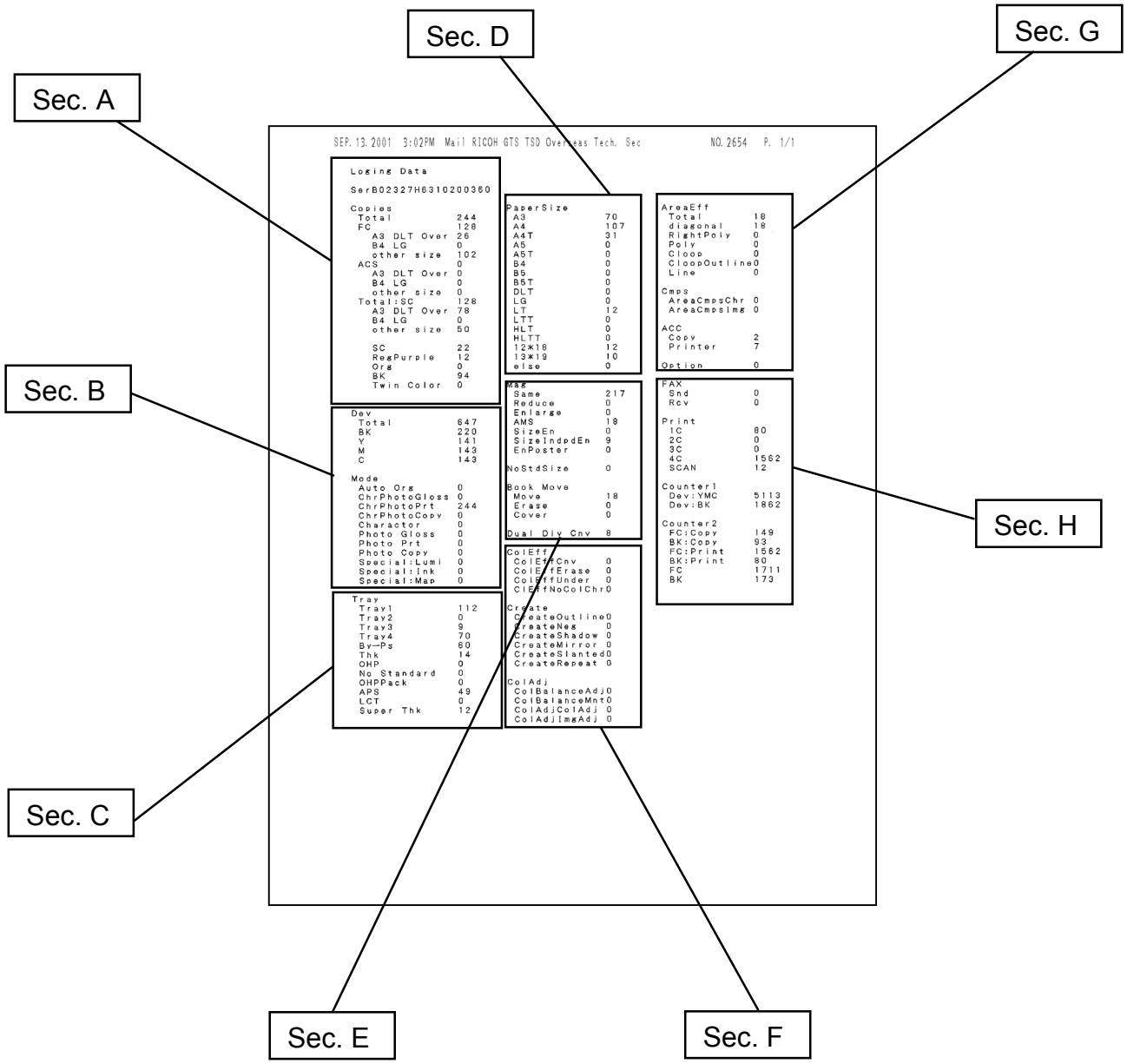
Model: Cattleya2	Date: 12-Oct-01	No.: RB023012

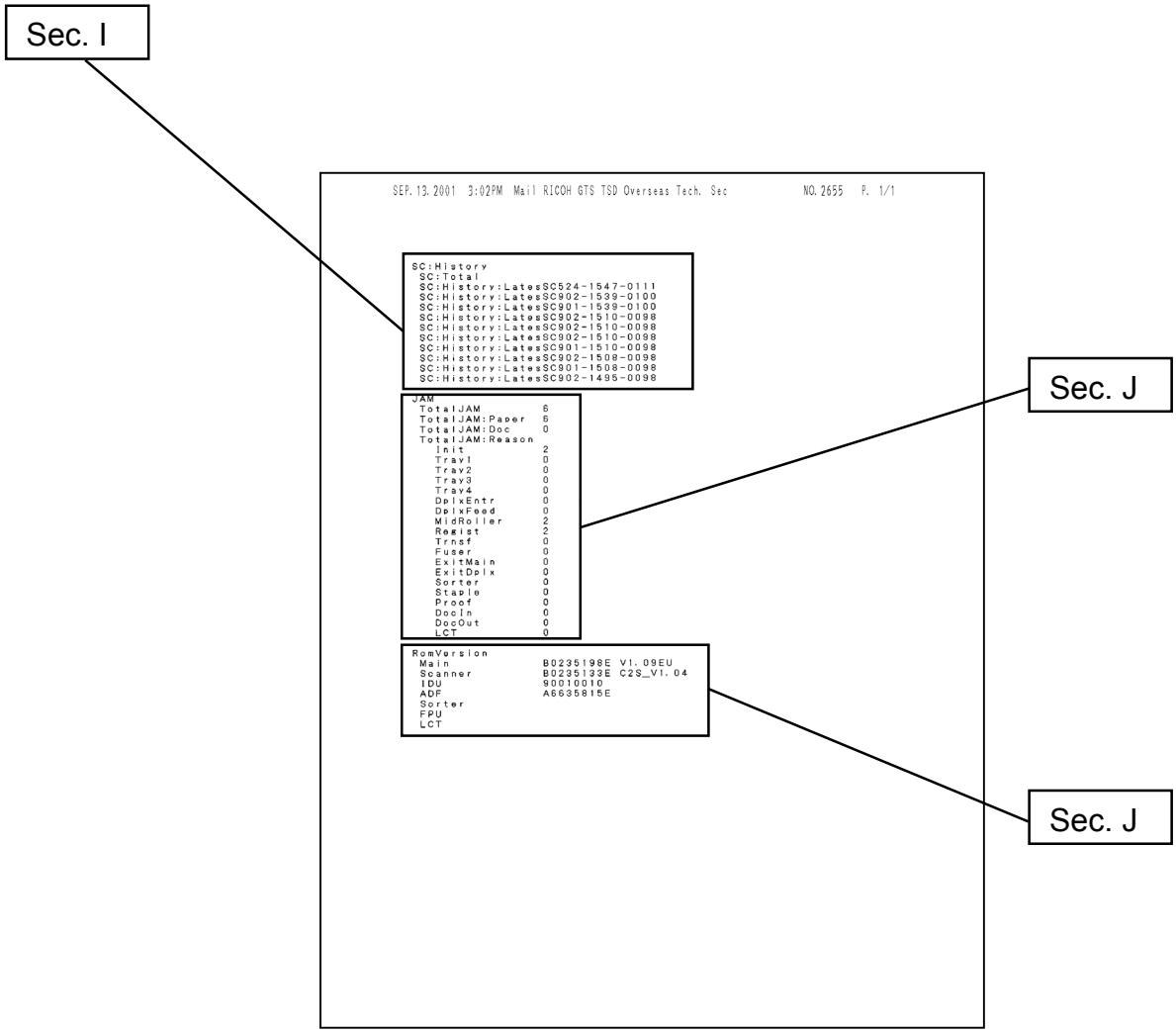
Subject: How to read the Logging Data Sheet	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

Classification:			
	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other (Technical Information)		

This RTB has been issued to clarify the abbreviations on the SP7-809-003 Logging Data Sheet. Wherever possible, these abbreviations will be revised on the data sheet for the next model.

Please refer to the following sections for the individual explanations:




Sec. I
SEP. 13. 2001 3:02PM Mail RICOH GTS TSD Overseas Tech. Sec NO. 2655 P. 1/1
SC:History
SC:Total
SC:History:LatestSC524-1547-0111
SC:History:LatestSC902-1539-0100
SC:History:LatestSC901-1539-0100
SC:History:LatestSC902-1510-0098
SC:History:LatestSC902-1510-0098
SC:History:LatestSC902-1510-0098
SC:History:LatestSC901-1510-0098
SC:History:LatestSC902-1508-0098
SC:History:LatestSC901-1508-0098
SC:History:LatestSC902-1495-0098
JAM
TotalJAM 6
TotalJAM:Paper 6
TotalJAM:Doc 0
TotalJAM:Reason
Init 2
Tray1 0
Tray2 0
Tray3 0
Tray4 0
DplxEntr 0
DplxFeed 0
MidRoller 2
Regist 2
Trnsf 0
Fuser 0
ExitMain 0
ExitDplx 0
Sorter 0
Staple 0
Proof 0
DocIn 0
DocOut 0
LCT 0
Sec. J
RomVersion
Main B0235198E V1.09EU
Scanner B0235133E C2S_V1.04
IDU 90010010
ADF A6635815E
Sorter
FPU
LCT
Sec. J

Sec. A

Logging Data
(Misspelling)

Machine serial number

Number of
copies (sheet)

Number of copies
taken in the Full Color
Mode

Paper sizes larger
than A3/DLT

Number of copies
taken in the Auto
Color Select Mode

Number of copies taken in
Single Color Mode (Single
Color + User Color + Scanned
Color + B&W + Twin Color) by
paper size.

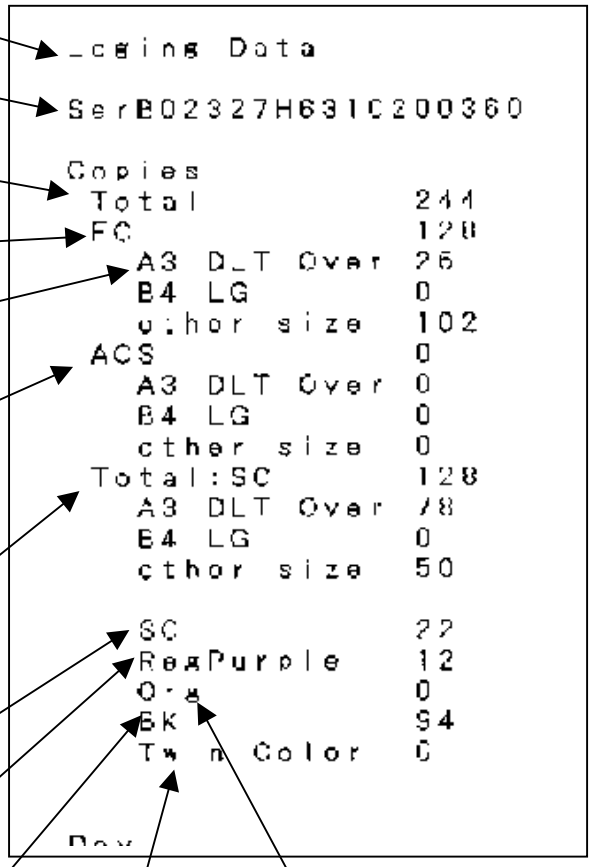
Number of copies
taken in Single Color
Mode.

Number of User Color
copies

Number of B/W copies

Number of Twin Color
copies

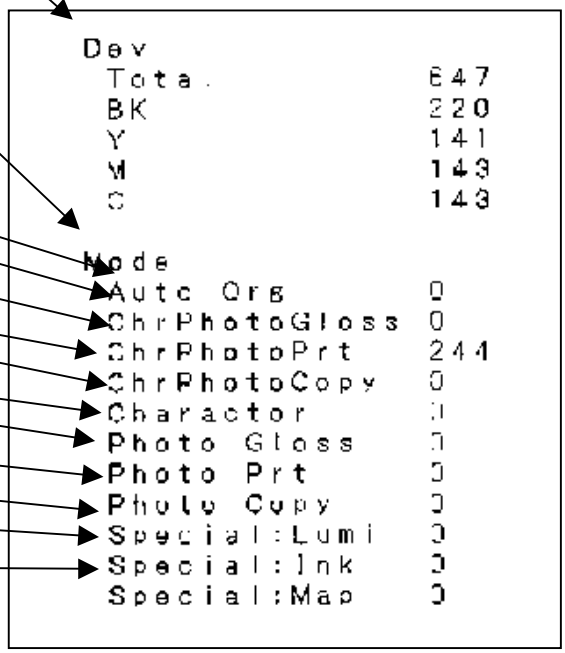
Number of
Scanned Color
copies



Sec. B

Number of developments

Number of copies (sheets) by selected original type



Selected Original Image Type	
Auto Original Type	
Text/Photo	Glossy Photo
	Press Print
	2nd Generation
Text	
Photo	Glossy Photo
	Press Print
	2nd Generation
Special Original	Highlight Pen
	Inkjet Output
	Map

Sec. C

Number of copies (sheets) fed from each paper tray

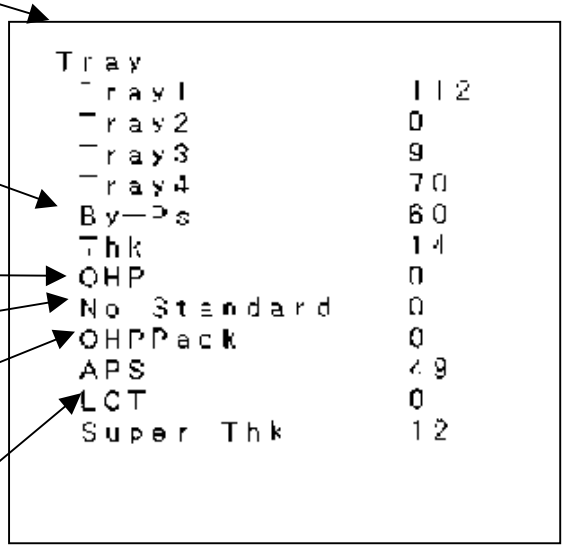
Thick Paper fed from By-pass tray. (see **NOTE** below)

Custom Size Paper fed from By-pass tray

OHP Slip Sheet fed from By-pass tray

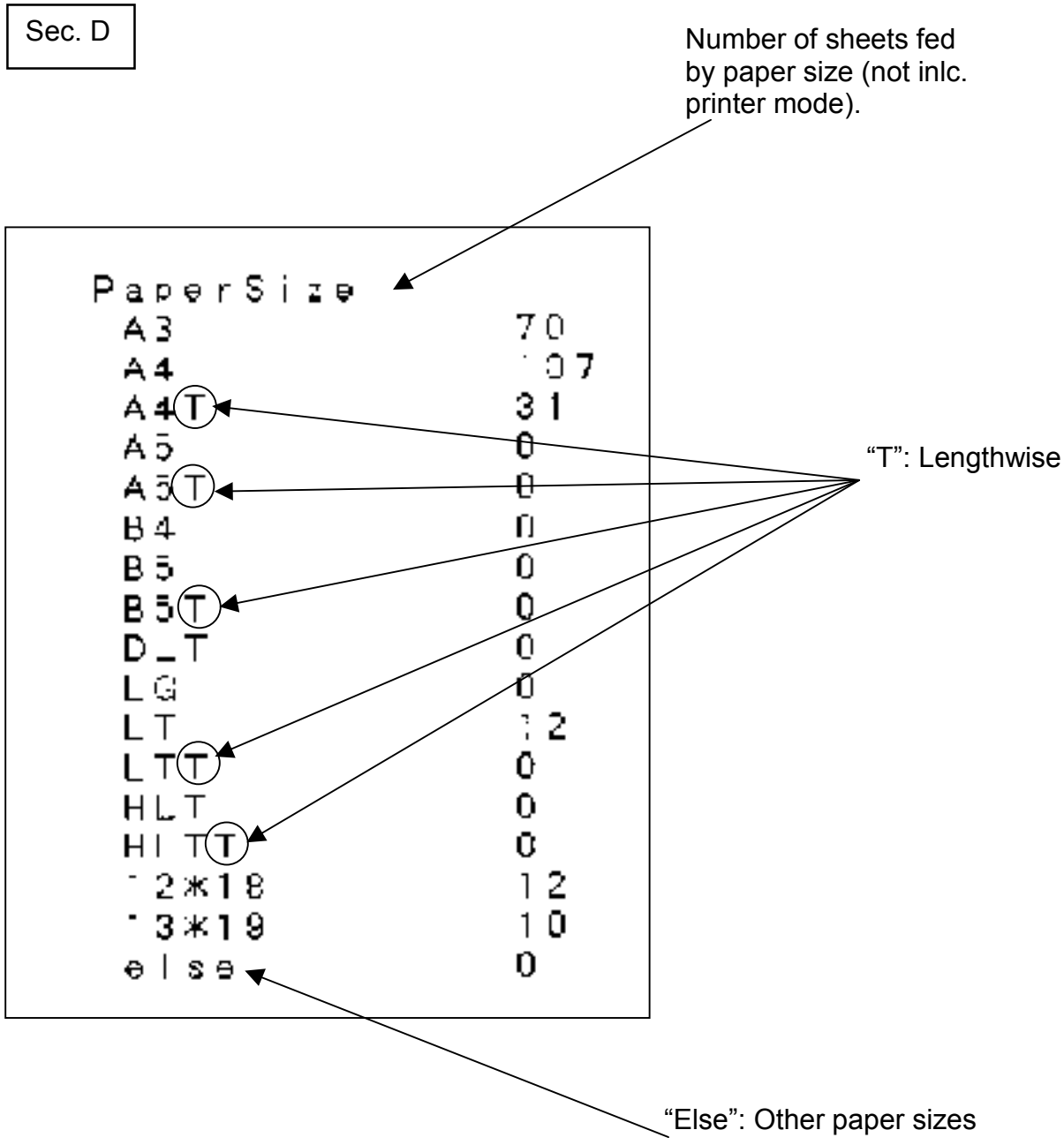
Auto Paper Select mode

Extra Thick paper fed from By-pass tray. (see **NOTE** below)

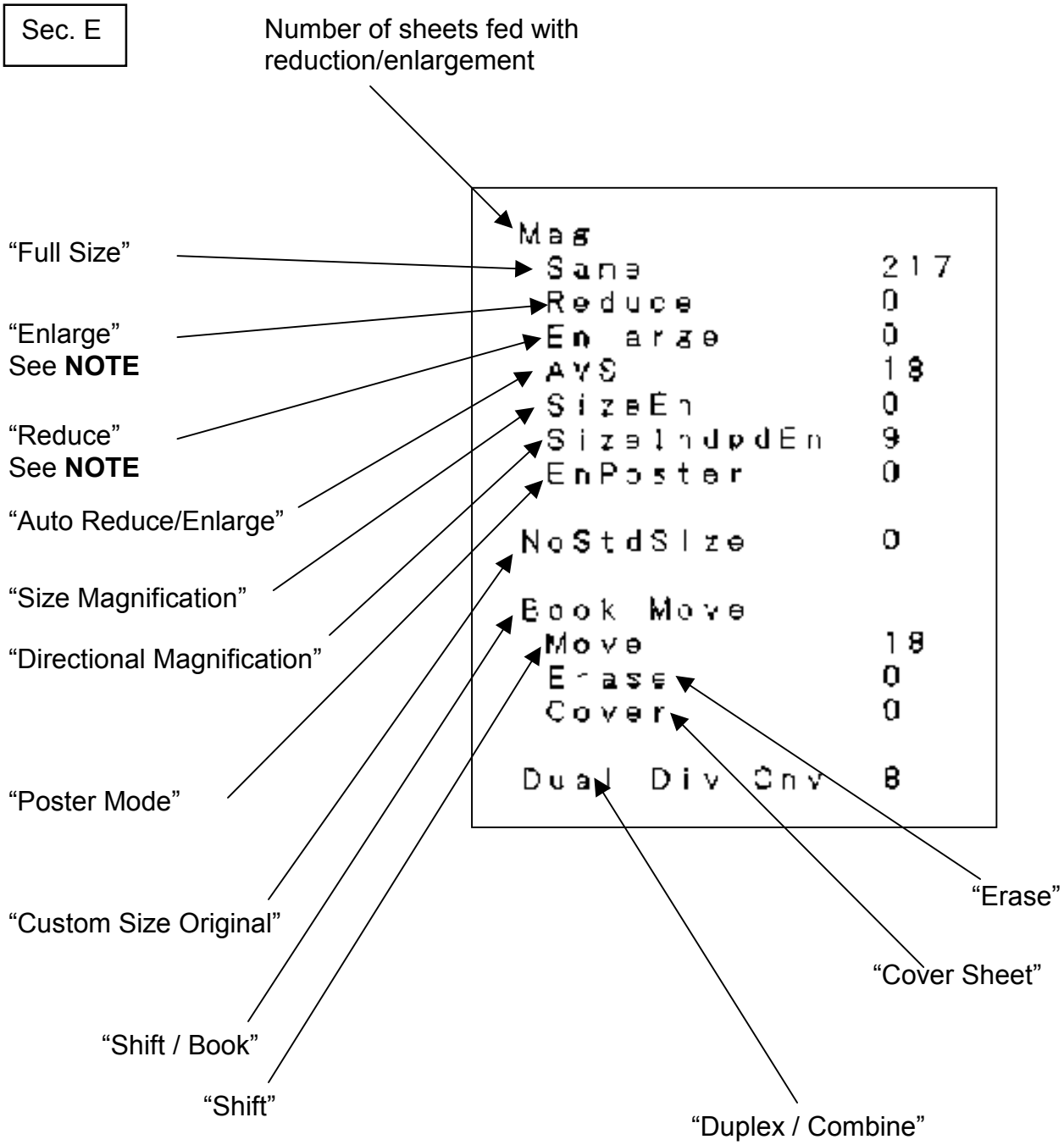


NOTE: Separate counters for Thick and Extra Thick sheets fed from the Bypass Tray were created because the Cattleya2 can also feed these 2 types from regular paper trays.

Sec. D

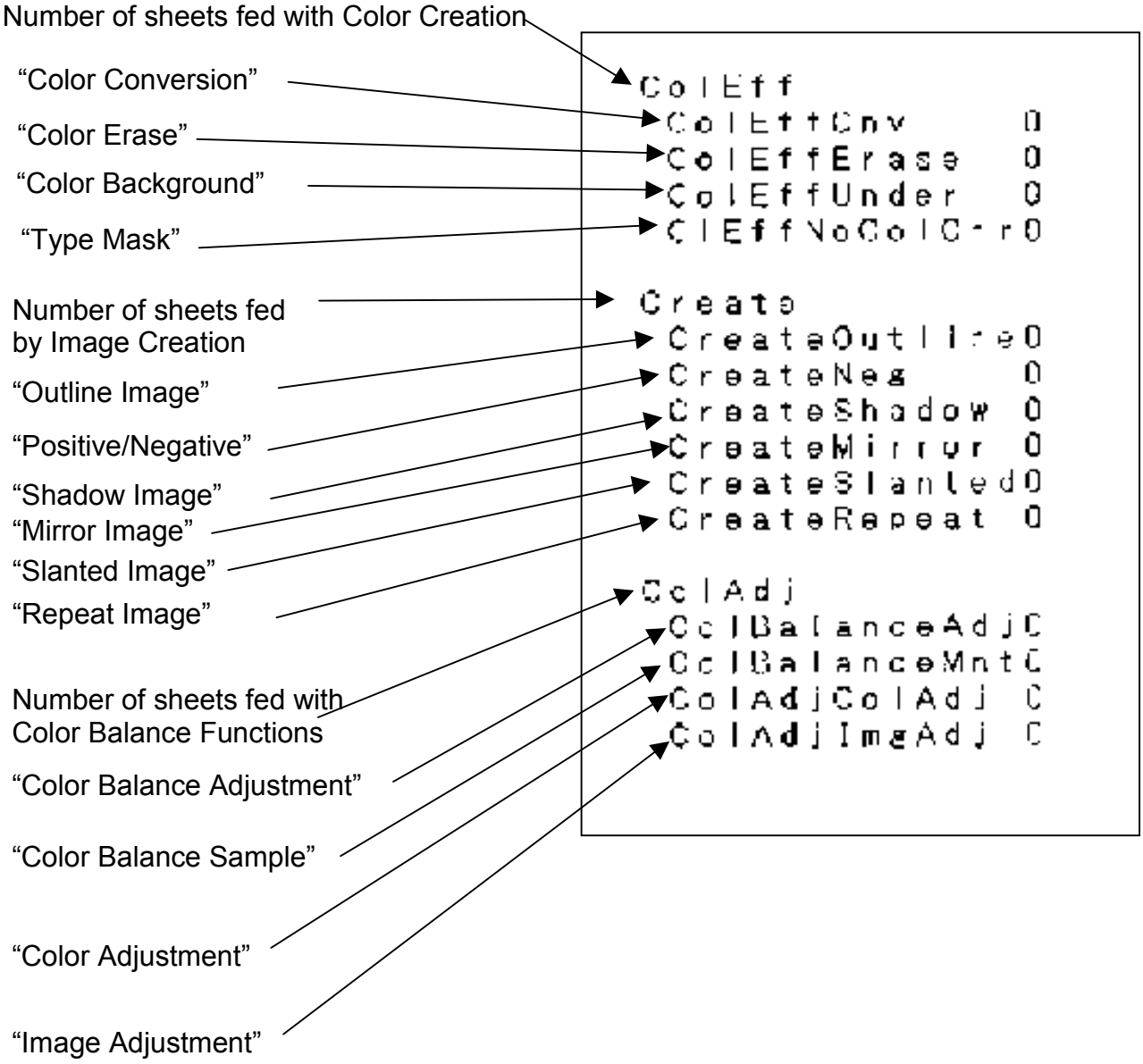

Number of sheets fed by paper size (not inlc. printer mode).
"T": Lengthwise
"Else": Other paper sizes

Sec. E

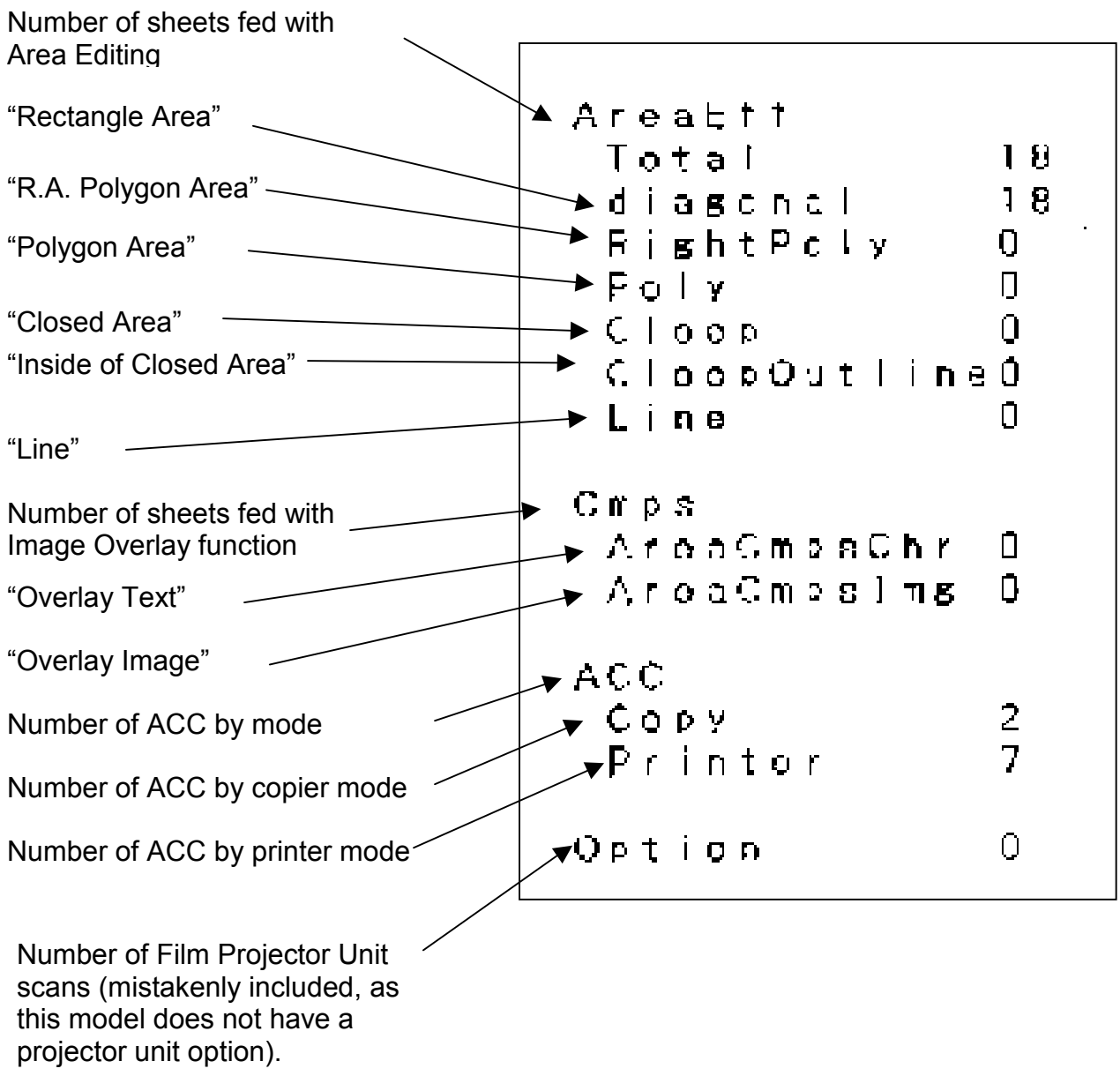


NOTE:
The "Reduce" and "Enlarge" titles were reversed on the logging data sheet. This error will be corrected in the near future.

Sec. F


Number of sheets fed with Color Creation
"Color Conversion"
"Color Erase"
"Color Background"
"Type Mask"
Number of sheets fed by Image Creation
"Outline Image"
"Positive/Negative"
"Shadow Image"
"Mirror Image"
"Slanted Image"
"Repeat Image"
Number of sheets fed with Color Balance Functions
"Color Balance Adjustment"
"Color Balance Sample"
"Color Adjustment"
"Image Adjustment"
ColEff
ColEffConv 0
ColEffErase 0
ColEffUnder 0
ColEffNoColor 0
Create
CreateOutline 0
CreateNeg 0
CreateShadow 0
CreateMirror 0
CreateSlanted 0
CreateRepeat 0
ColAdj
ColBalanceAdj 0
ColBalanceMnt 0
ColAdjColAdj 0
ColAdjImgAdj 0

Sec. G


Number of sheets fed with Area Editing
"Rectangle Area"
"R.A. Polygon Area"
"Polygon Area"
"Closed Area"
"Inside of Closed Area"
"Line"
Number of sheets fed with Image Overlay function
"Overlay Text"
"Overlay Image"
Number of ACC by mode
Number of ACC by copier mode
Number of ACC by printer mode
Number of Film Projector Unit scans (mistakenly included, as this model does not have a projector unit option).
Area
Total 10
diagonal 10
RightPoly 0
Poly 0
Cloop 0
CloopOutline 0
Line 0
Comps
AreaCmanChr 0
AreaCmaging 0
ACC
Copy 2
Printer 7
Option 0

Sec. H

(only used for Japanese model).

Number of sheets fed in printer mode by color mode

Number of scanned images with printer controller

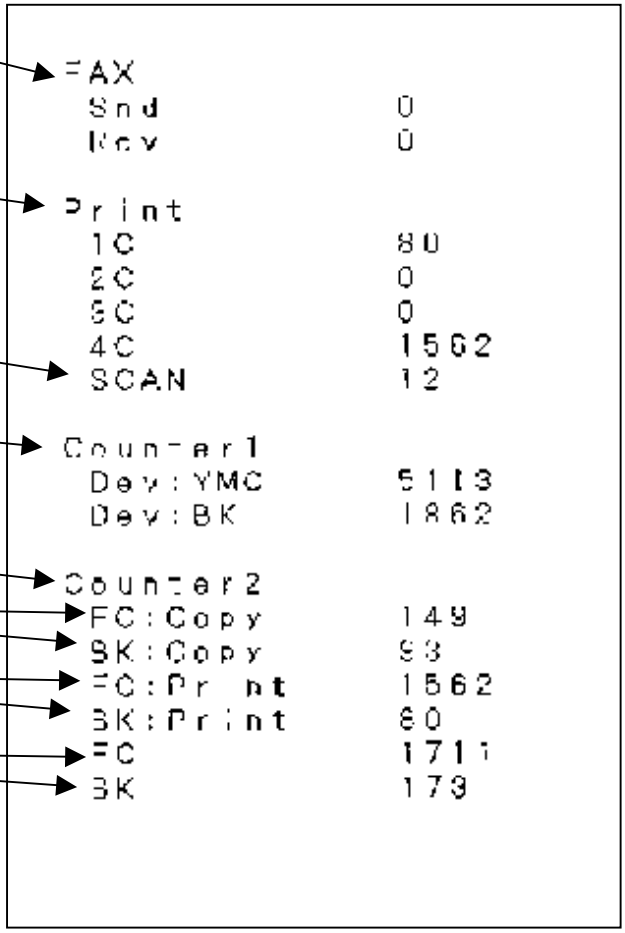
Development counters

Copier/Printer (sheet) counter s

Copier mode

Printer mode

Totals



Sec. I

Total number of SC displays.
(see **NOTE** to the right).

NOTE:
This number is displayed from Main Board firmware ver 1.103.

10 most recent SC displays

SC number displayed

Last 4 digits of FC counter when SC displayed

Last 4 digits of K counter when SC displayed

Sec. J

Total number of paper jams

Total number of copy paper jams

Total number of original paper jams

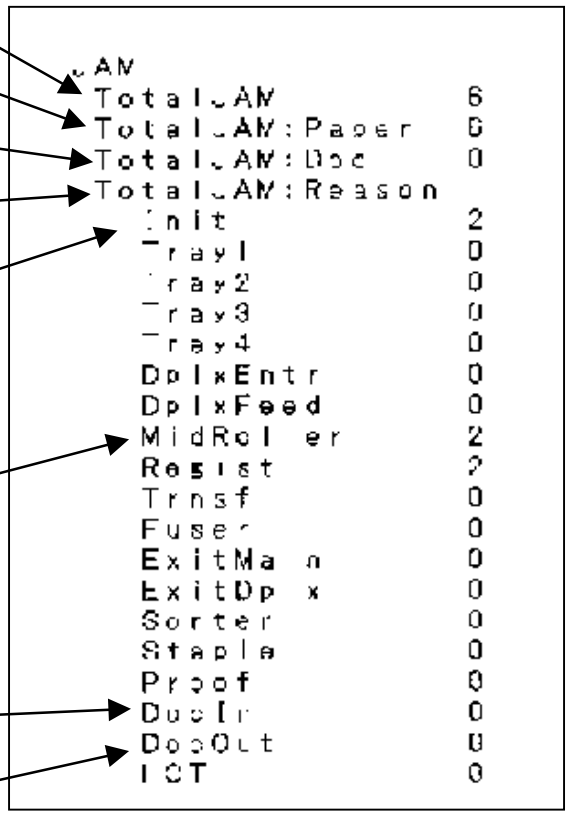
Total number of paper jams by detection area

Number of times paper jam condition remains when main SW is tuned ON.

Vertical Transport Roller

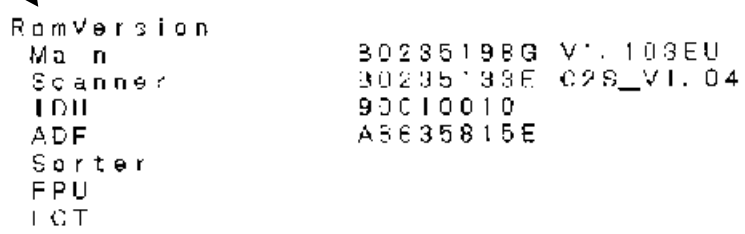
Jam at ARDF entrance area.

Jam at the ARDF exit area.



Sec. K

ROM version



Model: Cattleya2	Date: 12-Oct-01	No.: RB023013

Subject: Exposure lamp stays on without any SC	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

Classification:	☐ Troubleshooting	☐ Part information	☒ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
The Exposure Lamp stays on but no SC occurs. In the worst case, the left hand scale could begin to deform, but it did **NOT** ignite or emit smoke.

Cause:
The root cause is still unknown at present, however one potential cause for the lamp staying on is a short circuit in the Exposure Lamp Harness. In this condition, an FGATE signal error occurs following the bar code reading at power on. Although the firmware contained failsafe error codes like SC101 and SC326, it was not able to detect that the lamp was still on in some cases.

Solution / Troubleshooting:
Upgrade the SIPU firmware to **ver 1.05 or newer** (Program File Name: B0235133F).

Additional failsafe measures have been added to this version, which will allow the machine to detect unexpected FGATE signal errors and turn off the lamp.

NOTE:
1. This symptom has a very low occurrence rate (less than 0.1%), however please be sure to perform the firmware upgrade described above. Note that the upgrade can be performed at the next service visit.

2. Even if the exposure lamp stays on, the optics cooling fans also remain moving, which means that the temperature around the lamp did not exceed 90°C. As mentioned above, plastic mold parts begin to deform at around 90°C, but do **NOT** ignite or emit smoke.

   In addition, even in the extremely unlikely case that the fans do not remain on and the temperature increases, the lamp's thermo-fuse would melt at 140°C and the lamp would shut off. Also, even at 140°C, the melted plastic parts do **NOT** ignite or emit smoke.

Model: Cattleya2	Date: 23-Oct-01	No.: RB023014

Subject: Paper jam in duplex mode	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

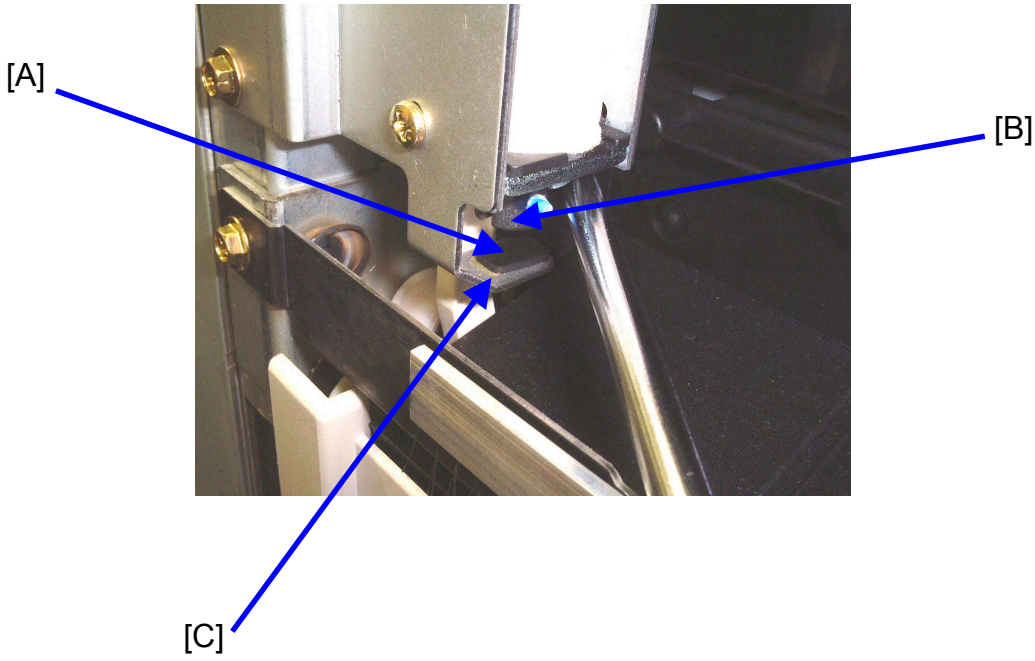
Symptom:
Paper jam in duplex mode only.

Cause:
The duplex junction gate solenoid (AX120059) does not function correctly.

The shock-absorbent rubber plate [A] peels off the bracket (see the attached picture). After the plate comes off, the core of the solenoid [B] sticks to the solenoid bracket [C] (B0234463) because of magnetic attraction. Under this condition, the junction gate does not function correctly even though the solenoid is turned on.

Troubleshooting procedure:
Replace the solenoid bracket (B0234463), which includes the shock-absorbent rubber plate.

NOTE:
1. The rubber plate does not exist as a separate service part.
2. The bracket P/N mentioned above (B0234463) is the new number from a recent modification made to this part (see MB MB023010).



Model: Cattleya2	Date: 30-Oct-01	No.: RB023015

Subject: Noise from the drive section	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

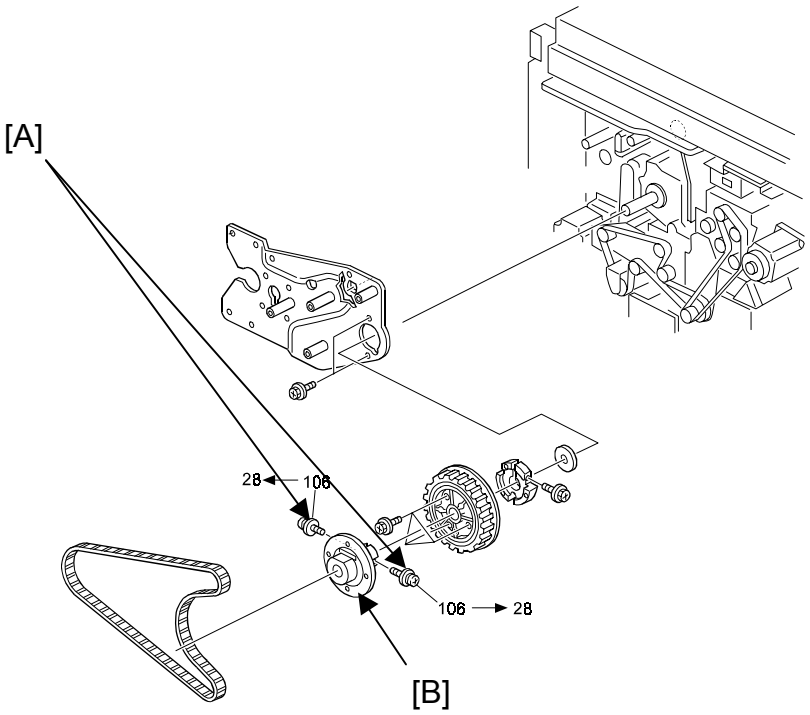
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
Abnormal noise from the drive section just after the Start Key is pressed or a print job is started.

Cause:
The securing screws [A] for the Flywheel Supporter [B] come loose.
If the machine is used under this condition, the Flywheel Supporter and screws will contact one another and generate noise. In some cases, this causes the screws to break.

Action in the Field:
At the next service visit, replace the Flywheel Supporter securing screws with the modified ones announced in MB023016 (P/N B0231100). The new screw is a double-pitch type to ensure that it remains properly fixed in place.

Replacing the screws in advance will prevent any Drum Shaft replacements, as the broken parts of the screws would get inside if they were not replaced.



Model: Cattleya2	Date: 31-Oct-01	No.: RB023016

Subject: Paper jam before the registration roller	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

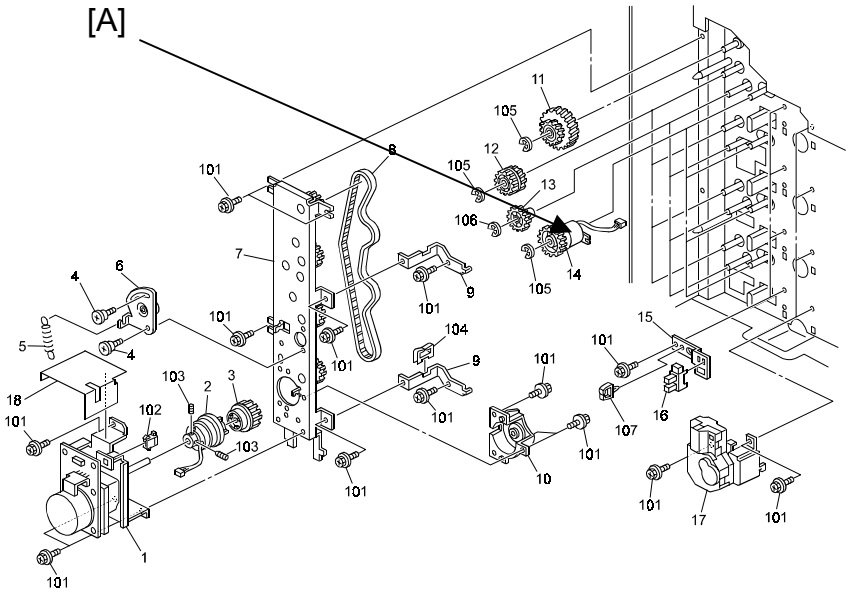
Symptom:
The paper is not fed correctly from the feed tray and does not reach the registration rollers within a certain amount of time, causing a paper feed jam.

This has a tendency to occur just after installation.

Cause:
For the magnetic clutch used in the machines, which were produced before the cut-in serial numbers described in the MB#MB023021, there is insufficient friction between the plates of the old type paper feed magnetic clutch [A] (AX200100), causing the plates to slip, even if the signal for magnetic engaging is being properly sent and received.

Troubleshooting procedure:
At first, apply the troubleshooting procedure written in RTB#RB023010 issued on September 6. 2001. If you cannot solve the problem with this procedure, replace the paper feed magnetic clutch with the modified new type (AX200245).

NOTE: Replacing the magnetic clutch takes more time than performing the procedure written in RTB#RB023010. We recommend you to try RTB#RB023010 before replacing the magnetic clutch.



Reissued: 12-Nov-01

Model: Cattleya2	Date: 30-Oct-01	No.: RB023015a

RTB Reissue

The information from page 2 has been added.

Subject: Noise from the drive section			Prepared by: H.Matsui
From: Technical Services Dept., GTS Division			
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:

Abnormal noise from the drive section just after the Start Key is pressed or a print job is started.

Cause:

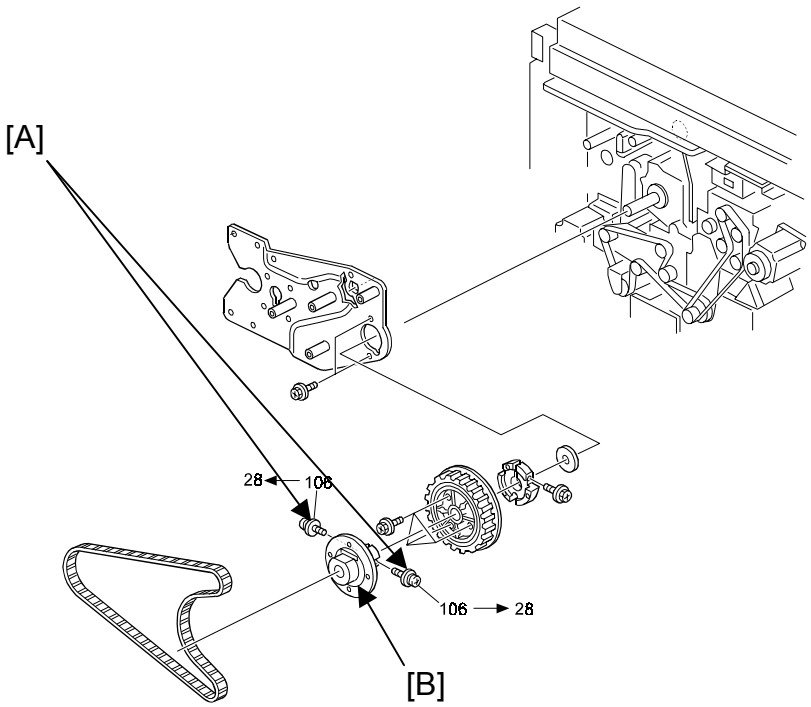
The securing screws [A] for the Flywheel Supporter [B] come loose.
If the machine is used under this condition, the Flywheel Supporter and screws will contact one another and generate noise. In some cases, this causes the screws to break.

Action in the Field:

Replace the Flywheel Supporter securing screws at the next service visit with the modified ones announced in MB023016 (P/N B0231100). The new screw is a double-pitched type to ensure it stays properly fixed in place.

Please see the *Replacement Procedure* on the next page, and the cut-in S/N listed on the last page of this RTB.

Note: Replacing the screws beforehand will prevent any Drum Shaft replacements, as the broken parts of the screws would get inside.



Model: Cattleya2	Date: 30-Oct-01	No.: RB023015a

Detailed Replacement Procedure:

1. First note the difference between the old screw [A] (09544012B) and the new double-pitched screw [B] (B0231100).

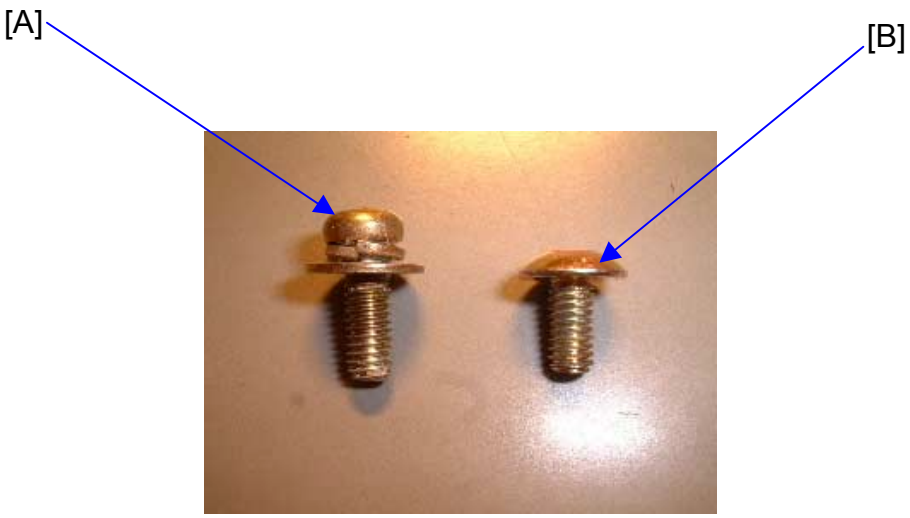


Fig-1

2. Remove the Flywheel Supporter along with its (old) screws. Then rotate the drum shaft [C] until the screw hole [D] is visible as shown in Fig-2.

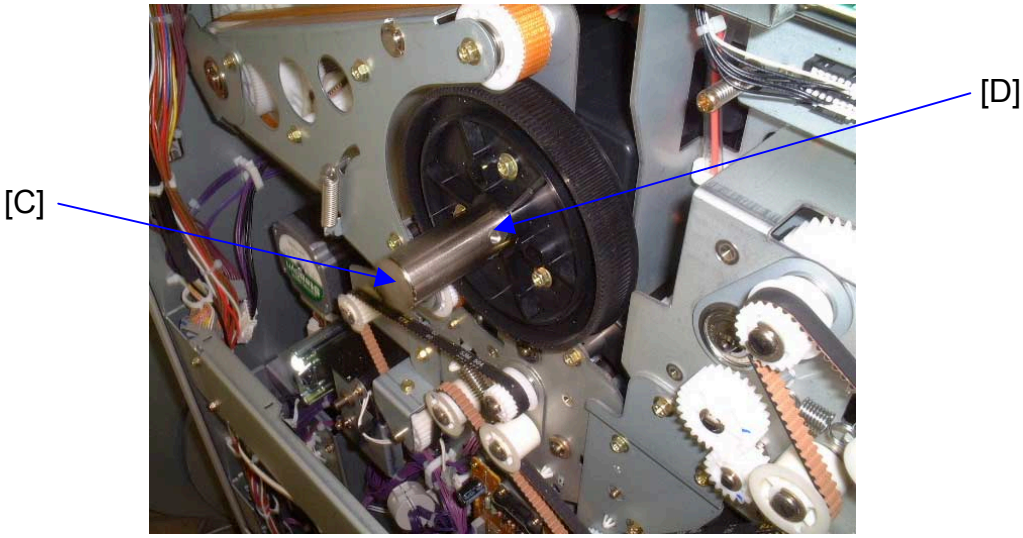


Fig-2

Model: Cattleya2	Date: 30-Oct-01	No.: RB023015a

3. Mount the Flywheel Supporter onto the drum shaft.

NOTE: The Flywheel Supporter has two screw holes, one smaller than the other. Be sure to insert the Flywheel Supporter with the smaller hole [E] in the orientation shown below.

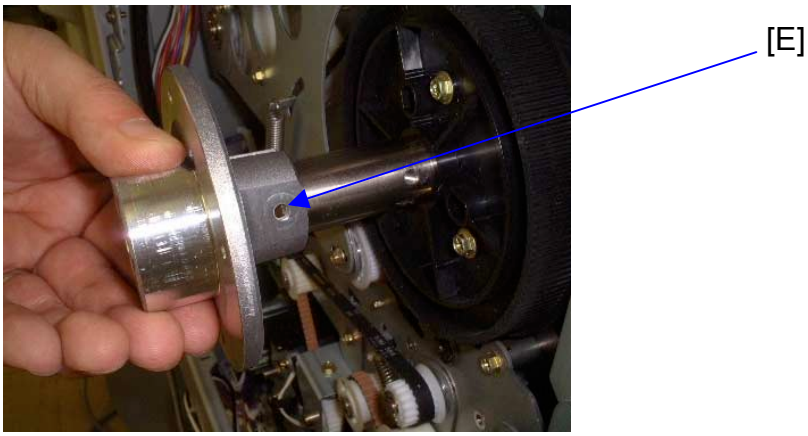


Fig-3

Model: Cattleya2	Date: 30-Oct-01	No.: RB023015a

4. Insert and tighten the first new Flywheel Supporter screw as shown in Fig-4.

NOTE:
1. The screwdriver must be perpendicular to the screw, or the threading inside the drum shaft screw hole will be damaged.
2. Be sure to tighten the screw enough so that the underside of the screw head [F] is tightly flush against the surface of the Flywheel Supporter (Fig-5).

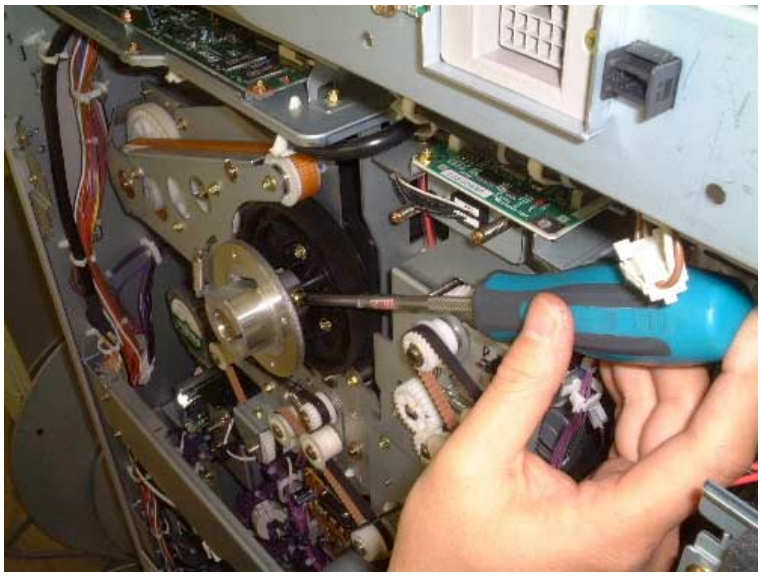


Fig-4

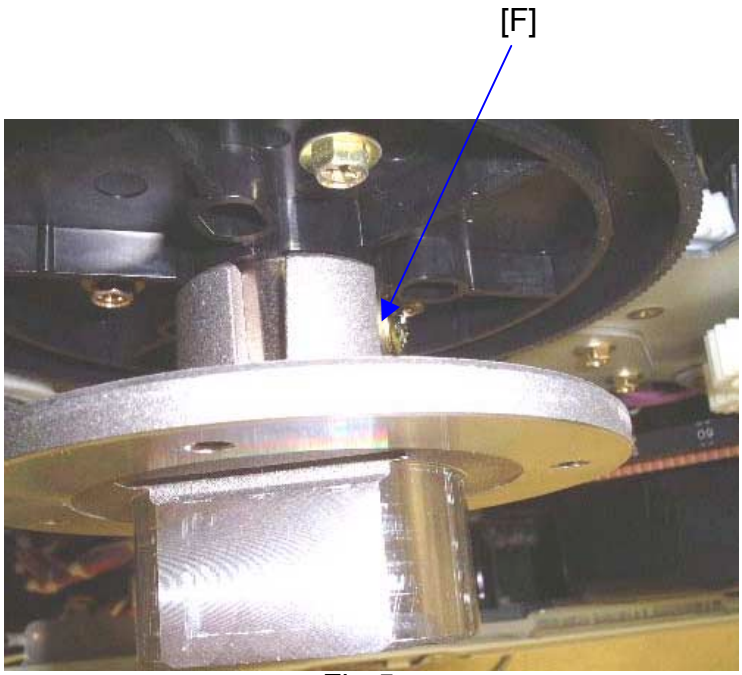


Fig-5

5. Rotate the Flywheel Supporter [G] clockwise, then tighten the other new screw as shown in Fig-6.

NOTE (same as Step 4 above):
1. The screwdriver must be perpendicular to the screw, or the threading inside the drum shaft screw hole will be damaged.
2. Be sure to tighten the screw enough so that the underside of the screw head [H] is tightly flush against the surface of the Flywheel Supporter (Fig-7).

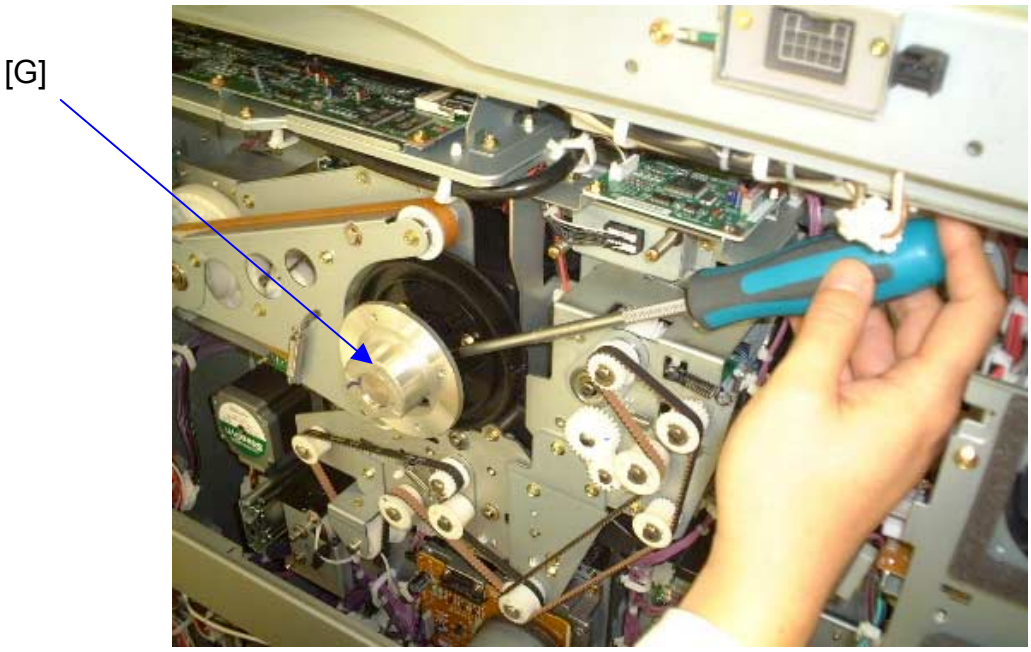


Fig-6

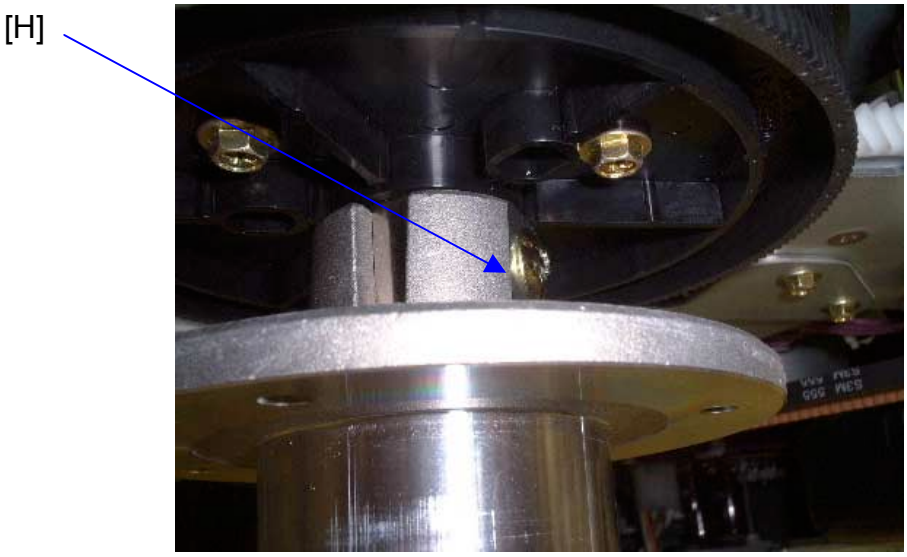


Fig-7

Model: Cattleya2	Date: 30-Oct-01	No.: RB023015a

6. Check to see if there is any “play” between the drum shaft and the Flywheel Supporter as shown in Fig-8. If there is, re-check to see if the screws have been properly tightened in place.

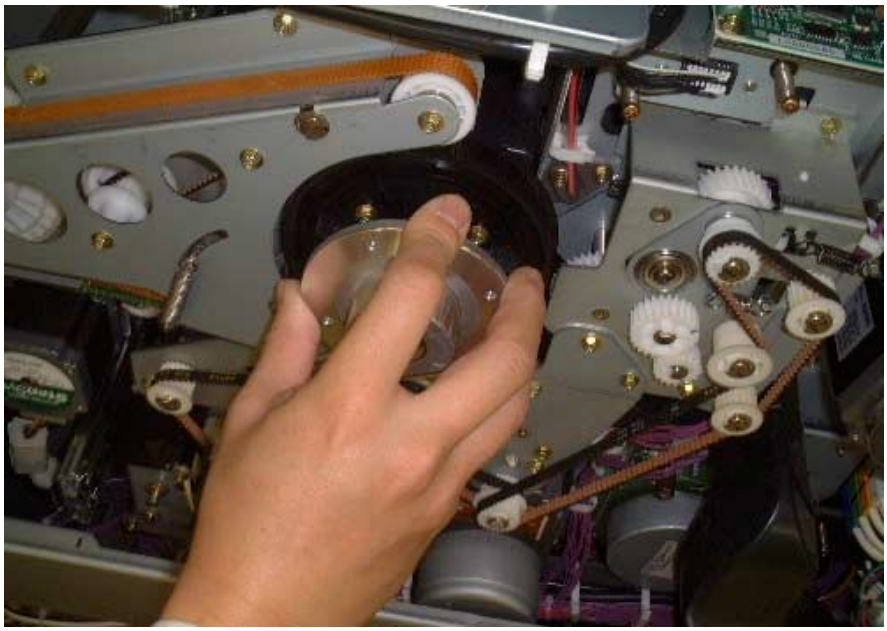


Fig-8

Cut-in Serial Numbers:

Model	V/Hz	Destination	Code	Serial Number
Savin SDC413 Gestetner CS213	120V/60Hz	USA, Canada	B023-15	H6311000001
Aficio Color 6513	120V/60Hz	USA, Canada	B023-17	H6310900156
Aficio Color 6513	110V/60Hz	Taiwan	B023-19	H63110xxxxx
Nashuatec CS513d Gestetner CS213d Rex Rotary CS813d	220-240V/50Hz	Europe, etc.	B023-22	H6310900403
Infotec 7513	220-240V/50Hz	Europe, etc.	B023-26	4G4101xxxxx
Aficio Color 6513	220-240V/50Hz	Europe, Middle East, etc.	B023-27	H6310900482
Aficio Color 6513	220-240V/50Hz,60Hz	Asia	B023-29	H6311000578

Model: Cattleya2	Date: 16-Nov-01	No.: RB023017

Subject: Hot rollre damage by the separation pawls.	Prepared by: H. Matsui
From: Technical Services Dept., GTS Division	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
Separation pawls damage the fusing unit hot roller.

Cause:
The hot roller is damaged when the following occurs:

1. An accordion jam occurs inside the fusing unit.
2. Following this, the operator tries to remove the jammed paper by rotating the Fusing Unit knob counterclockwise (paper feed direction) without opening the fusing paper exit unit.

The jammed paper pushes the separation pawls up, which in turn damages the surface of the hot roller.

Action in the field
1. Upgrade the main firmware to ver 1.12 or newer (see the next page).
2. Please advise operators on the correct D jam recovery procedure, as follows:

D Jam Recovery Procedure:

1-1. Pull out the lower drawer unit completely.

1-2. Open the fusing paper exit unit by pulling on the D2 handle.

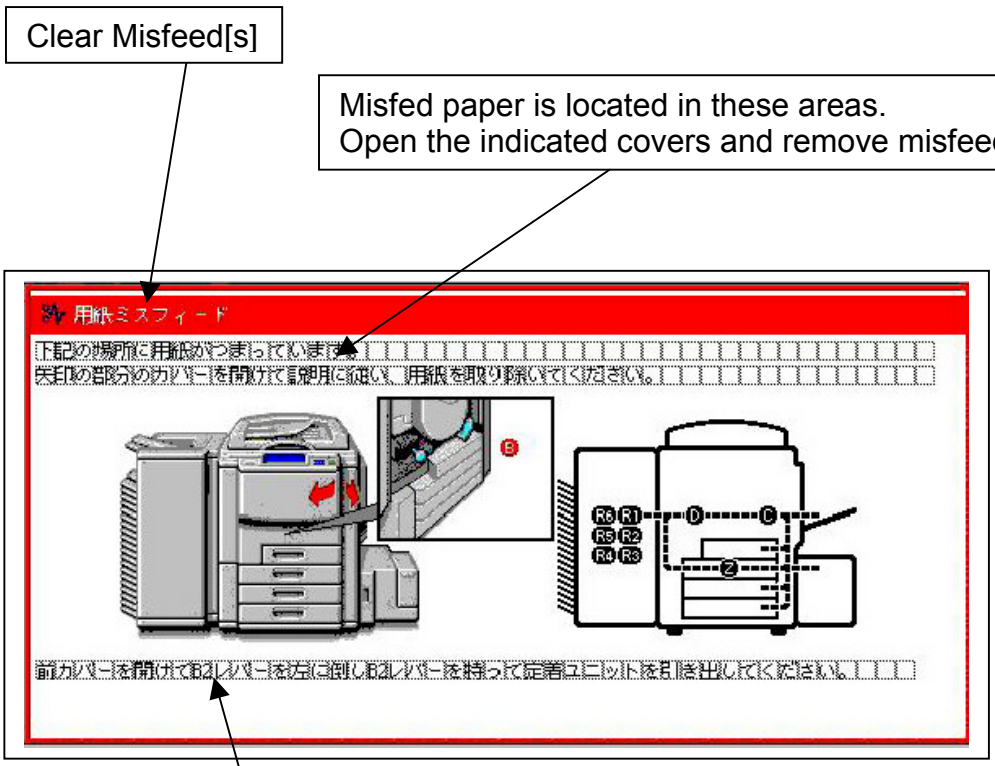
1-3. Remove the jammed paper inside the fusing unit.

Version 1.12 – Modified Items

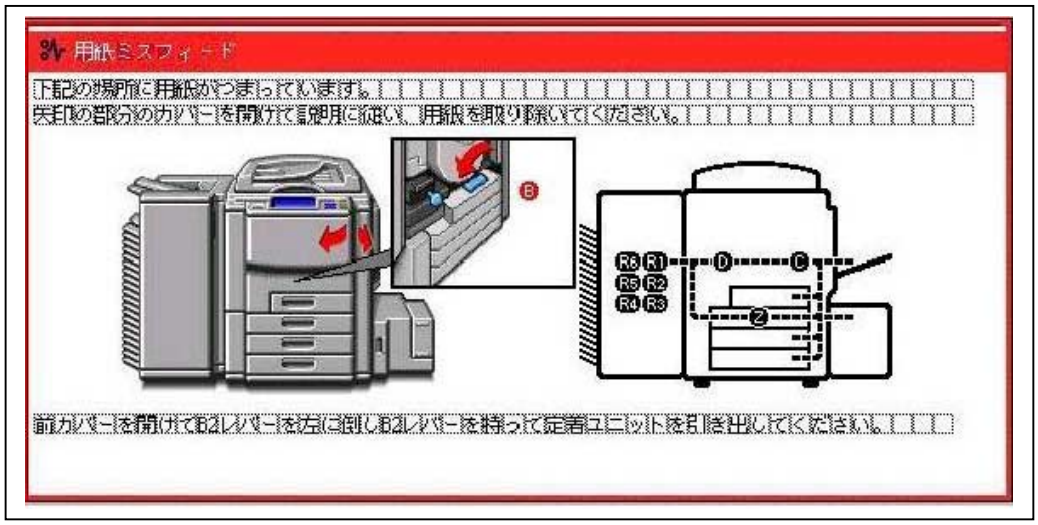
From main firmware ver 1.12, animated instructions will be displayed on the operation panel when a D jam occurs, demonstrating the correct way to remove jammed paper from the D area.

The animation consists of Pictures 1 through 8 below, customized for each display language.

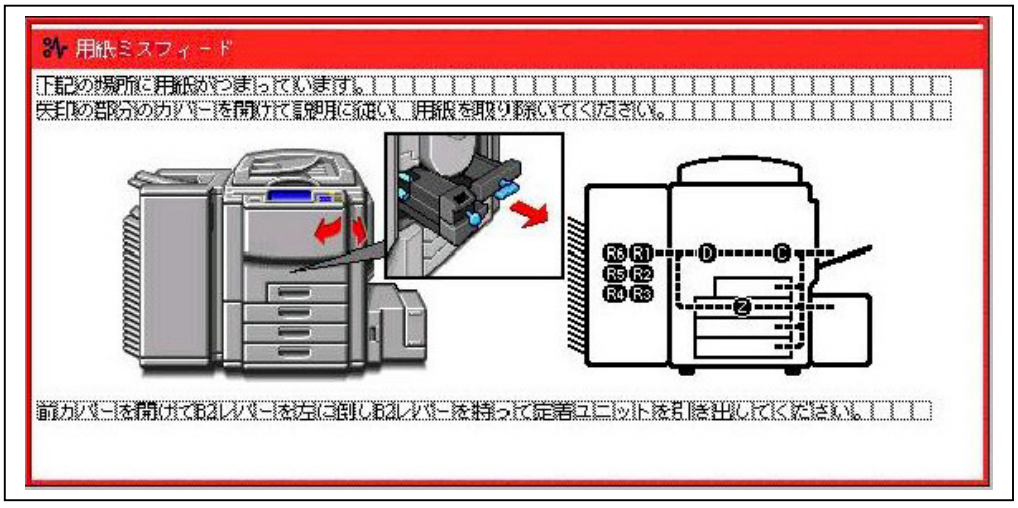
Picture -1



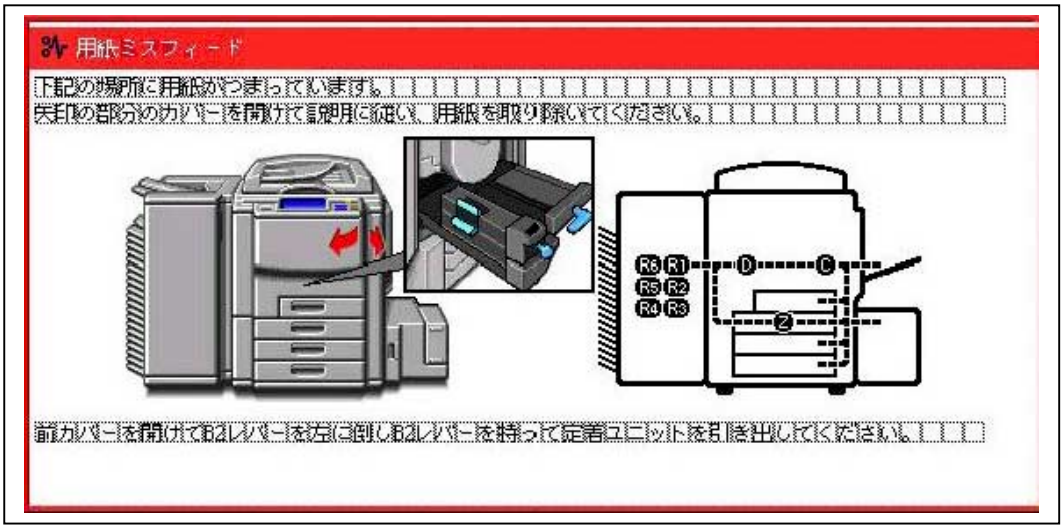
Picture -2



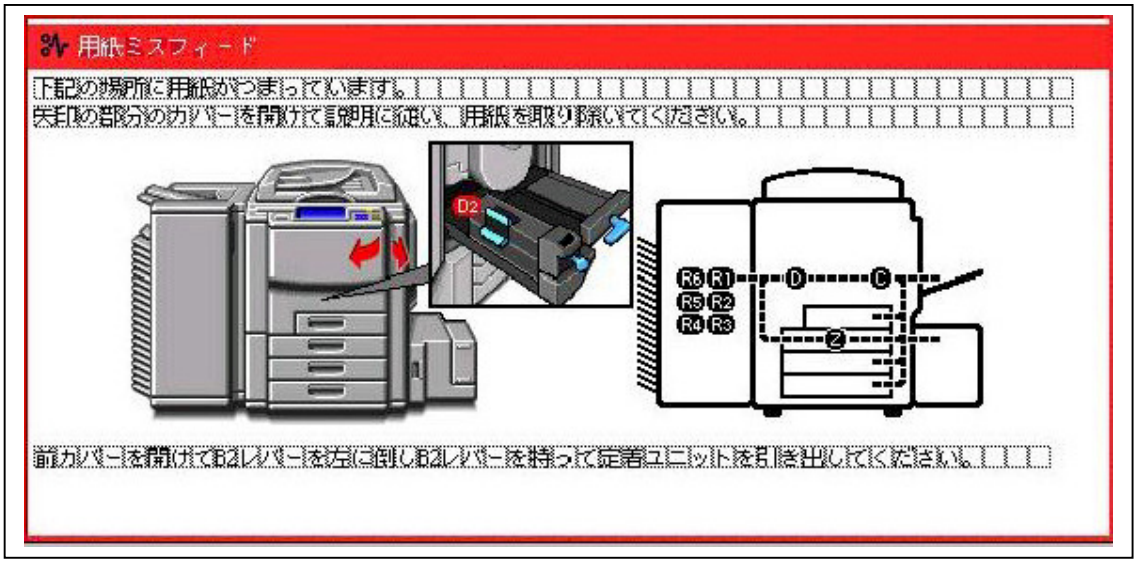
Picture -3



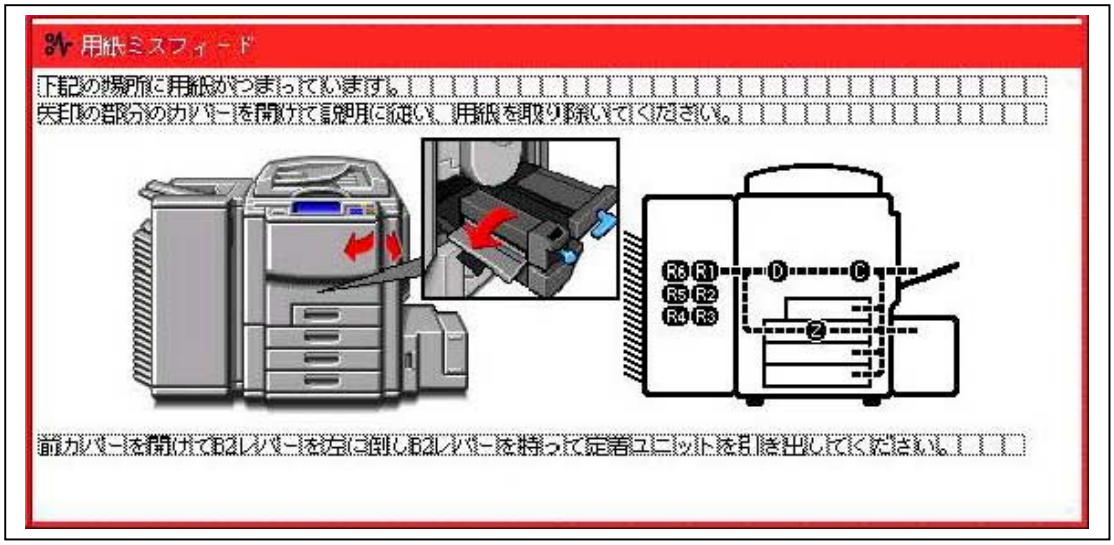
Picture -4



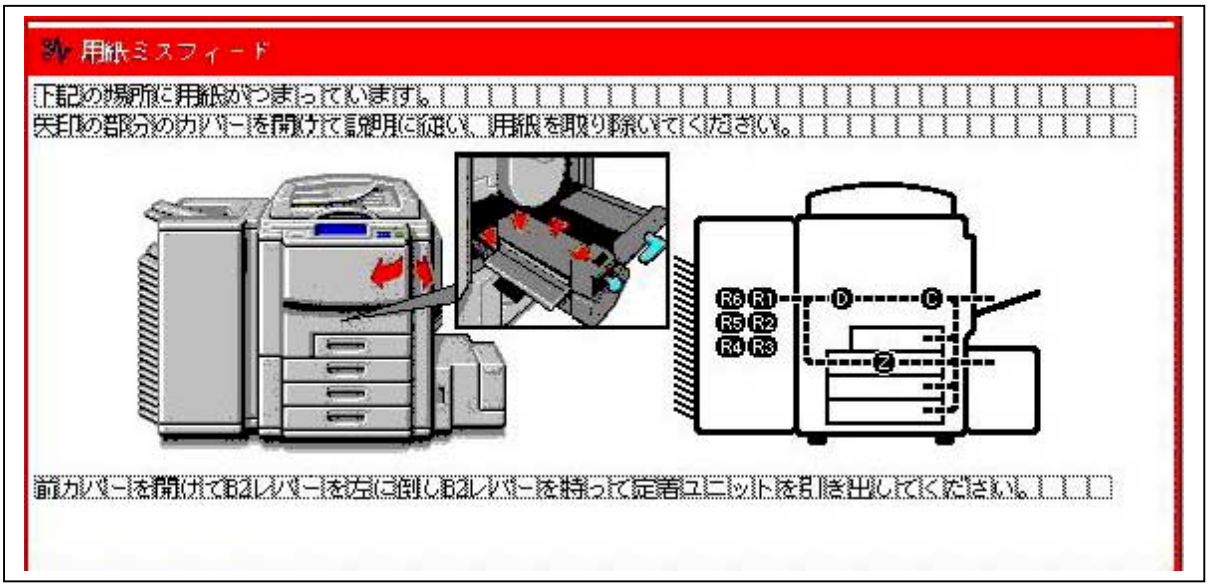
Picture -5



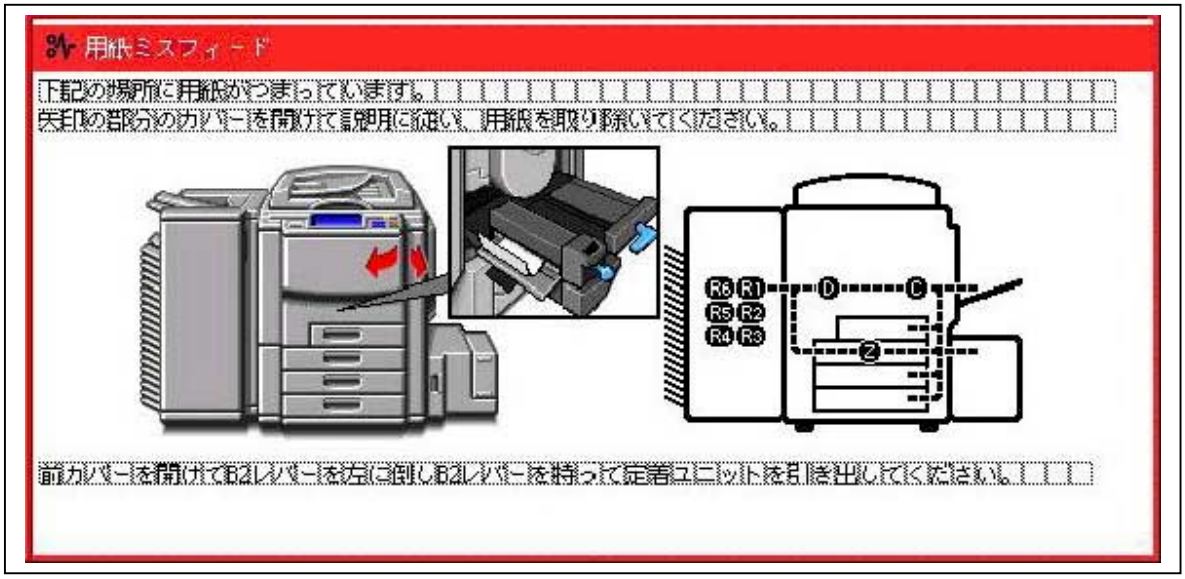
Picture -6



Picture -7



Picture -8


用紙ミスフィード
下記の場所に用紙がつまっています。
矢印の部分のカバーを開けて説明に従い、用紙を取り除いてください。
R6 R1
R5 R2
R4 R3
D
C
2
前カバーを開けて右2レバーを左に倒し右2レバーを持って定着ユニットを引き出してください。

Reissued: 11-Apr-03

Model: Cattleya2	Date: 30-Nov-01	No.: RB023018a

RTB Reissue

The information in ***bold italics*** has been corrected or added.

Subject: Printer ACC and some color adjustment tips		Prepared by: H.Matsui	
From: 1st Tech. Support Sec. Service Support Dept.			
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

According to recent tests, we have found that performing the printer ACC can result in image density slightly lower than target. In addition to the individual procedures, this document also includes additional related technical tips.

Please read the following carefully.

1. Printer ACC

1-1. Summary

** For machines on which the printer ACC has been performed:*
In cases where the Max ID of the printer output is unsatisfactory to you or your customers, we recommend performing (once) procedure 1-2 below: *Restoring the Printer ACC Settings to Factory Default*. Then, as your periodic calibrations, perform the Fiery Auto Calibration or Fiery DTP 32. This may help to increase the Max ID level.

** For machines on which the printer ACC has not yet been performed:*
No adjustment is necessary.

** For cases in which this is unclear:*
You will be able to check this with Step 3 in procedure 1-2 below.

1-2. Restoring the Printer ACC Settings to Factory Default

1. Perform the Printer ACC (print out the test sheet and scan it).
2. Access SP5-610-004 (ACC Factory setting – Recall) and press "ON".

   Note: It is important to perform the **Printer** ACC in Step 1, as SP5-610-004 only applies to the most recently performed ACC (e.g., if the copier ACC was performed last time, the copier ACC will be restored to the factory default).

3. Access SP4-948-001, 4-949-001, 4-950-001 and 4-951-001. If the values are "**0**", this means that the Printer ACC is at the factory default settings.

Model: Cattleya2	Date: 30-Nov-01	No.: RB023018a

Note: As SP4-948, 949, 950, and 951 are hidden SP modes, they are not listed in the Service Manual. In order to access them, you will need to directly input the SP numbers with the 10-key pad.

Factory defaults:
SP 4-948-001 (Printer ACC Gamma: K) ➔ "0"
SP 4-949-001 (Printer ACC Gamma: C) ➔ "0"
SP 4-950-001 (Printer ACC Gamma: M) ➔ "0"
SP 4-951-001 (Printer ACC Gamma: Y) ➔ "0"

Note: If these values are still at "16" after this procedure, turn the main switch off and on and perform the procedure again. Also, the titles of these SP modes appear differently on the display than listed above, but this can be ignored.

2. Side-to-Side Density Adjustment (Highlight Areas)

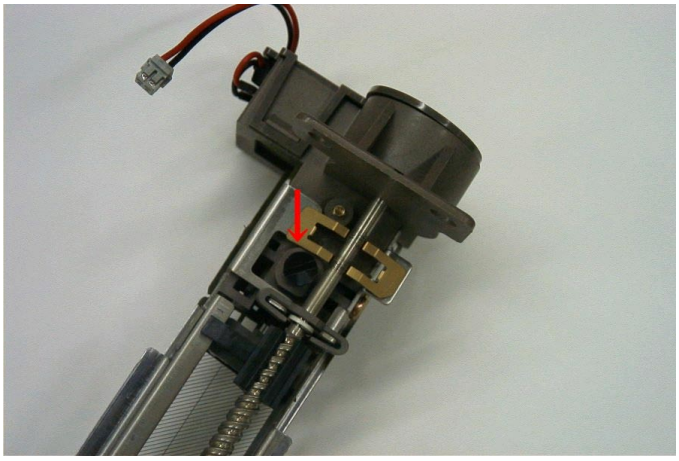
Note: There are limitations in the machine's adjustment accuracy. If you are not sure about these limitations, please consult your service support staff.

1. Clean the toner shield glass, charge corona wire, and grid.
2. Turn the plastic screw shown in the picture below to change the height of the charge corona wire (at the operator side).

Turning clockwise ➔ The corona wire moves ***closer to*** the grid.
➔ **Density at the operator side decreases.**

Turning counter-clockwise ➔ The corona wire moves ***away from*** the grid.
➔ **Density at the operator side increases.**

Tip: Try turning the screw 180 degrees once, then check the density. Then, if needed, turn it another 180 degrees. Be sure to remember how many times you have turned the screw in case you need to adjust the height back to its original position.



Model: Cattleya2	Date: 30-Nov-01	No.: RB023018a

3. Perform "Forced Process Control Self Check" (SP3-126). This is to equalize the ID across the drum as much as possible after the screw adjustment.

4. If there is still a large difference in density between the operator and non-operator sides, replace the OPC drum.

5. Side-to-Side Density Adjustment (Shadow Areas)

- *Perform the following if all colors in shadow areas show the same tendency with side-to-side density (for example, the density in shadow areas at the operator side for all colors is darker than at the non-operator side).*

Note: There are limitations in the machine's adjustment accuracy. If you are not sure about these limitations, please consult your service support staff.

1. Clean the toner shield glass, charge corona wire, and grid.
2. Remove the image transfer belt and re-install it in the reverse orientation (i.e. switch the operator/non-operator sides).

- *However if only certain color(s) in shadow areas show uneven side-to-side density:*

Replace the Development Units of these color(s).

4. Increasing the Density – Operator

- *When turning on the machine first thing in the morning:*

After the copier reaches Ready status, it is best to wait at least 10 minutes before making copies or prints. This will allow the interior of the machine to get warmer and produce the best results. If the machine is used right away, you may get copies and prints with slightly lower image density.

- *During the day, once the machine has been running for a while:*

1. If time allows, turn off the machine (main switch) for about an hour.
2. Then, when you turn it on again, the machine will automatically perform a self-check and adjust the image density accordingly.

5. Increasing the Density – Service Representative

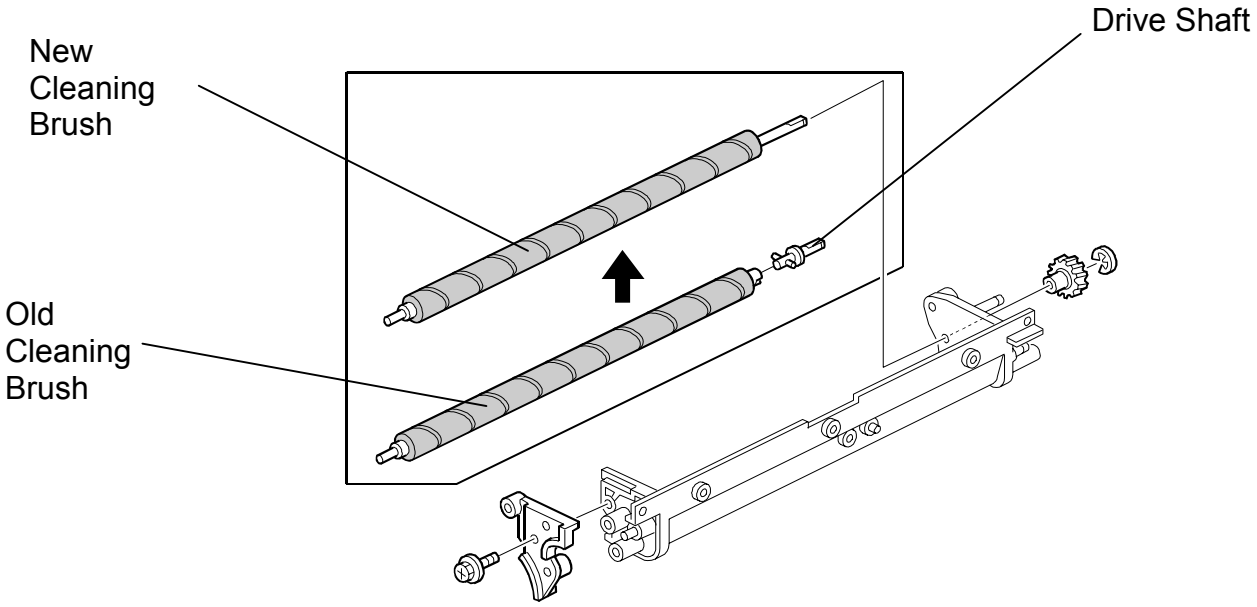
1. Perform **SP 3-126** (Forced Process Control Check).
2. If this has no effect, perform **SP 2-225-005** (Developer Initialization for all colors).
3. If neither of these two has any effect, replace the developer for the colors that show low density.
4. Clean the fusing unit (esp. hot roller blade), **regardless of whether Steps 1-3 were successful**.
5. If the image density is still low, replace the fusing roller.

Model: Cattleya2	Date: 31-Jan-02	No.: RB023019

Subject: New Drum cleaning brush replacement procedure	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

Classification:	☐ Troubleshooting	☒ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

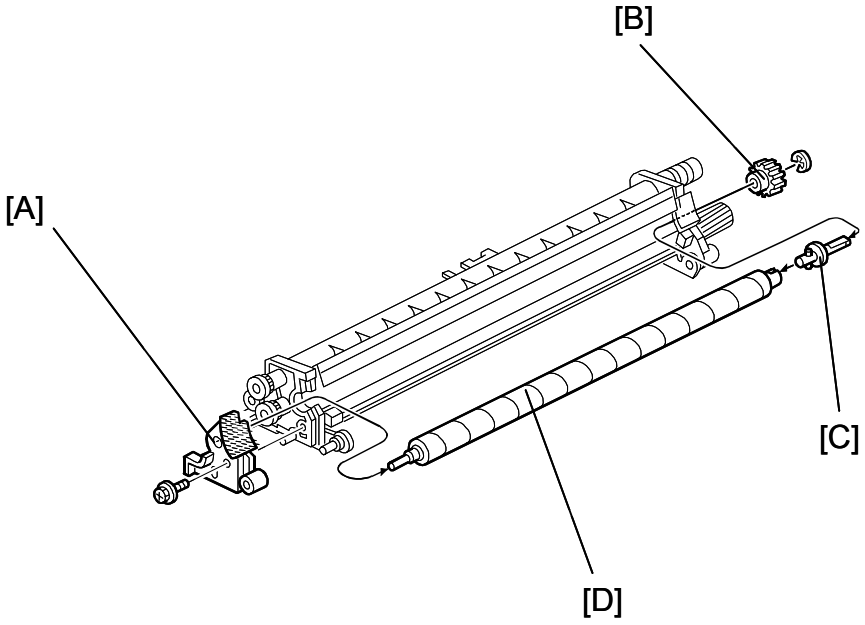
As announced in MB #MB023030, the Drum Cleaning Brush has been changed to include the Drive Shaft (illustration below). This RTB contains the PM replacement procedure of the Drum Cleaning Brush for the machine, whose S/N is before the cut-in S/N of this modification.



Model: Cattleya2	Date: 31-Jan-02	No.: RB023019

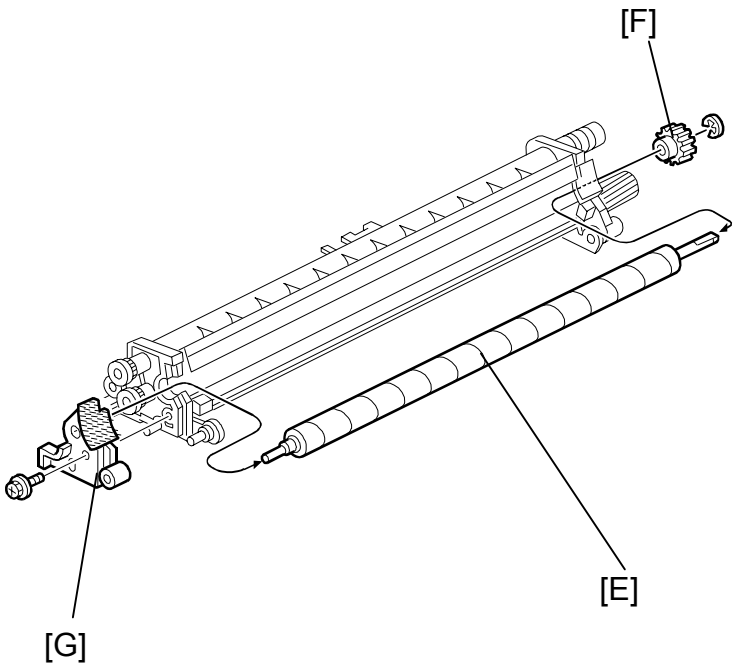
Drum Cleaning Brush replacement procedure (PM visit):

1. Remove the Bush Holder [A] (1 screw).
2. Remove the Brush Gear [B] (1 E-ring).
3. Remove the Drive Shaft [C].
4. Remove the old Drum Cleaning Brush [D].



5. Attach the new Cleaning Brush [E]
6. Re-install the Cleaning Brush Gear [F] (1 e-ring).
7. Re-install the Brush Holder [G] (1 screw).

NOTE: The Drive Shaft [C] is no longer required.



Model: Cattleya2	Date: 22-Feb-02	No.: RB023020

Subject: Exposure lamp stays on during the copier functioning	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

Classification:	☐ Troubleshooting	☐ Part information	☒ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

The following RTB has been released to maximize the effectiveness of the field countermeasure announced in RTB #RB023013, because a new potential cause for the symptom has been found.

Symptom:
The Exposure Lamp stays on while the copier is functioning. In the worst case, the left hand scale could begin to deform, but it will **NOT** ignite or emit smoke.

Cause:
As previously informed in RTB #RB023013, the root cause is still unknown at present. However, another potential cause is electrical noise during a copy job, which interferes with the Scanner IPU board harnesses.

Countermeasure:
In addition to the release of Scanner IPU ver1.05 (previously announced), the following new firmware has been released.

Main firmware ver1.13:

- If any SC related to the Scanner IPU or IDU communication errors (SC601 or SC604) is detected, the AC power supply to the scanner lamp regulator will be cut.

Scanner IPU firmware ver1.06:

- A timer has been added. If the exposure lamp stays on more than 90 seconds, SC101 will be displayed and the copier will be stopped.
- If any SC errors related to exposure lamp control (SC101, SC120, SC121, SC130, SC150, SC170, SC171, SC193) are detected, the exposure lamp Off signal will be sent to the main control board.

Action in the Field:

This symptom still has a very low occurrence rate (less than 0.1%), however please be sure to perform the firmware upgrade described above at the next service visit.

1. Upgrade the Main firmware to **ver 1.13 or newer.**
2. Upgrade the Scanner IPU firmware to **ver 1.06 or newer.**

The above firmware can be used in combination without any problems. In addition, although there are also no problems when updating separately, we strongly recommend updating these two together as a set, to maximize the effectiveness of the countermeasure.

NOTE:

1. Even if the exposure lamp stays on, the Optics cooling fans also remain turning, which means that the temperature around the lamp would not exceed 90°C. As mentioned above, plastic mold parts begin to deform at around 90°C, but do **NOT** ignite or emit smoke.
2. In addition, even in the extremely unlikely case that the fans do not remain on and the temperature increases, the lamp's thermo-fuse would melt at 140°C and the lamp would shut off. Also, even at 140°C, the melted plastic parts do **NOT** ignite or emit smoke.

Model: Cattleya2	Date: 18-Mar-02	No.: RB023021

Subject: SC547	Prepared by: H.Matsui
From: Technical Services Dept., GTS Division	

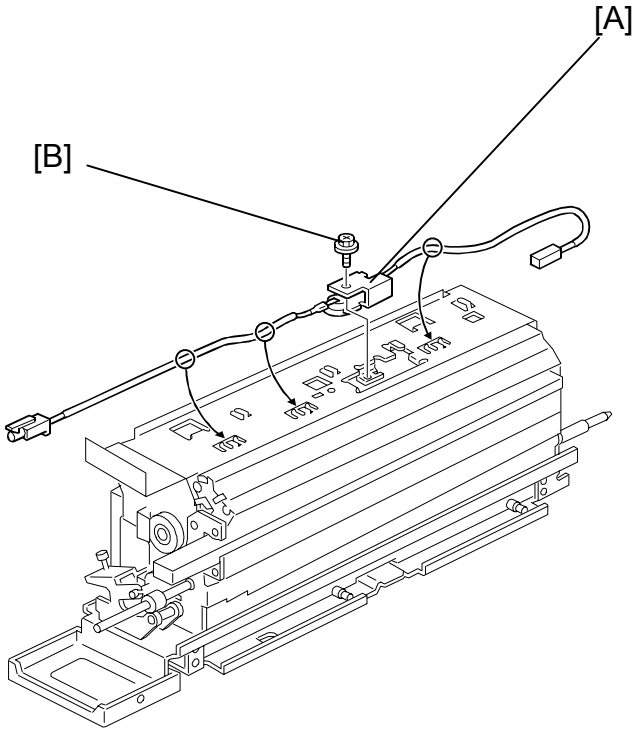
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
SC547 is displayed.

Cause:
The thermofuse (P/N B0234162) opened prematurely. The tolerance margin in the thermofuse material was insufficient under some particular conditions.

Troubleshooting :
Replace the fusing unit thermofuse with the fusing unit thermostat [A] (P/N B0234170) in machines before the cut-in S/N in MB #MB023035. Use the existing screw [B] to mount the thermostat.

NOTE:
For machines that contain the modification in MB #MB023035, it is not necessary to replace the related harnesses and grounding screws listed in the MB. This is because these harnesses and screws are only to increase the latitude slightly further, i.e. installing the new thermostat is effective enough for this symptom.



Model: Cattleya2	Date: 25-Apr-02	No.: RB023022

Subject: New type D2 handle for fusing unit	Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.	

Classification:			
	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other (Improve the usability)		

The following RTB has been released to announce a field modification for maximizing usability, which should be applied in addition to the action from RTB RB023017 (minimizing hot roller damage from separation pawls).

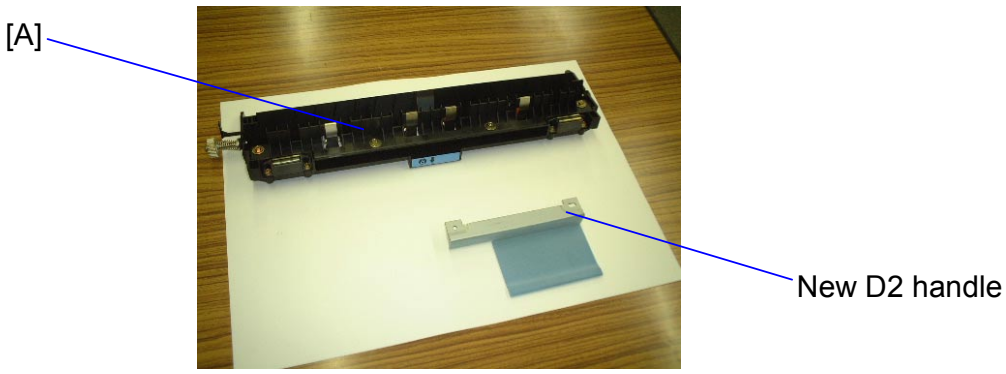
Since the current D2 handle on the fusing unit is difficult to find for some users, and its small size and shape make it difficult to overcome the magnetic lock, the handle has been enlarged and made more visible.

Action:

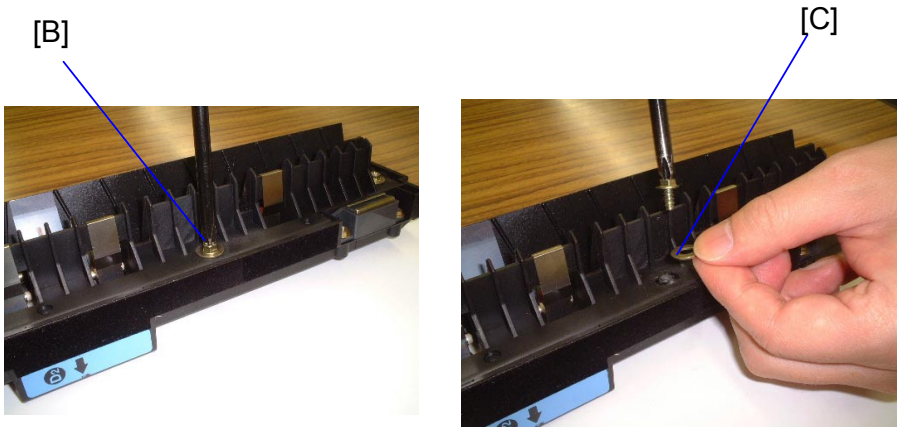
Attach the new D2 handle (P/N B0234157) to the fusing unit.

Procedure:

1. Remove the paper exit unit [A] from the fusing unit (1 snap ring).
   Note: The snap ring will be used again in Step 5.

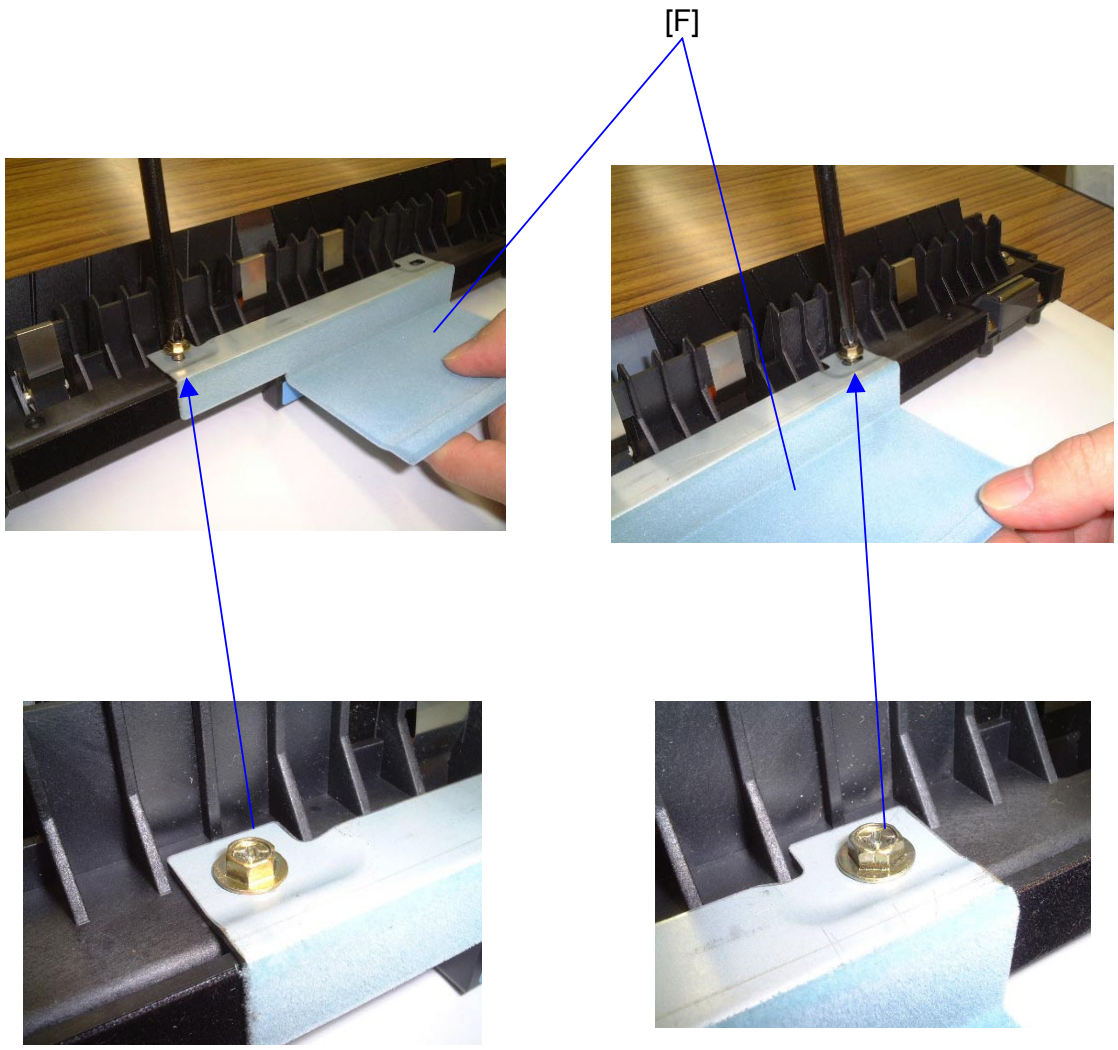


2. Remove the screw [B] and washer [C].
   Note: This screw will be used again in Step 4, however the washer is not needed to attach the new D2 handle.



3. Remove the screw [D] and washer [E].
Note: This screw will also be used again in Step 4 (washer not needed).

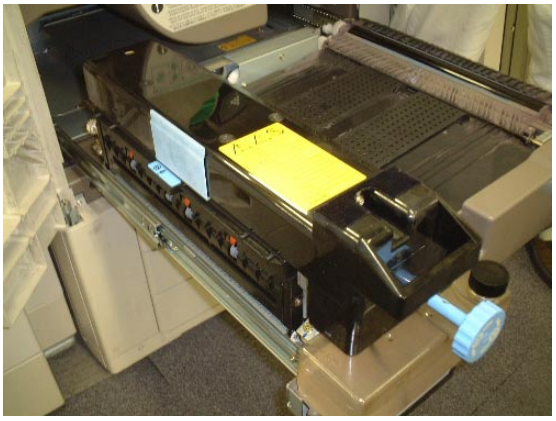
4. Attach the new D2 handle [F] as shown (2 screws removed above).



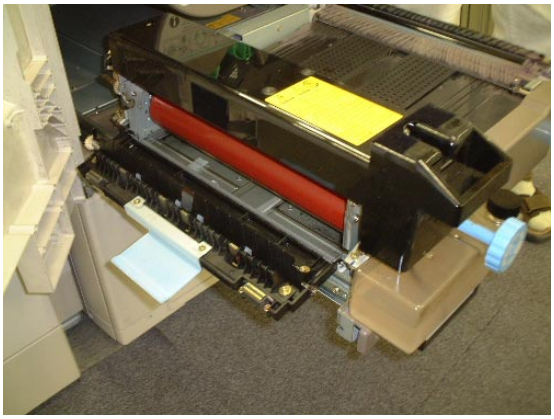
Note: As stated above, washers should not be used for the new handle. This is because they would prevent the paper exit unit from closing correctly.

5. Remount the paper exit unit onto the fusing unit (1 snap ring), then close the paper exit unit.

Reference: Fusing unit with the new D2 handle.



(with paper exit unit closed)



(with paper exit unit open)

Model: Cattleya2	Date: 7-May-02	No.: RB023023

Subject: Color difference when selecting OHP from by-pass	Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
Transparencies fed from the Bypass tray with a setting of “OHP” show color differences or uneven image density.

Cause:
The default settings for the paper transfer bias SP modes were not suitable for feeding transparencies.

Troubleshooting:
1. Change all 6 SP modes below to the values in *recommended series #1*, then check the OHP copy/print quality.
2. If this is not successful, change all 6 modes to the values in *recommended series #2* and check the OHP copy/print quality again.
3. If these 2 steps are not successful, try the values in *recommended series #3* and confirm the OHP copy/print quality.

SP Mode No.	Item		Rec. series #1	Rec. series #2	Rec. series #3
2-310-011	PTR bias adjustment	Image area OHP 2C	22	23	24
2-310-012		Image area OHP 3C	22	23	24
2-310-013		Image area OHP 4C	22	23	24
2-316-018	PTR bias humidity correction	LL OHP 4C	82	83	83
2-316-020		L OHP 4C	82	83	83
2-313-011	PTR bias paper size correction	OHP A5 (L) or larger	156	153	150

Permanent Solution:
The default settings for these SP modes will be changed in the near future.

Technical background
The PTR bias current is determined by the following three factors:

1. PTR bias Adjustment value (basic value)
2. PTR bias humidity correction value
3. PTR bias paper size correction value

Tests demonstrate that the combinations shown in the table above are most effective against this symptom.

Model: Cattleya2	Date: 12-Jun-02	No.: RB023024

Subject: Service manual correction	Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.	

Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other ( )		

Please add the following description to your SC tables, which was missing from the Cattleya2 Service Manual.

SC456

Item: PTR Unit Set Error

Detection Conditions:
Timing & Conditions:
PTR home position sensor does not turn ON even when the PTR lift clutch turns ON.
PTR home position sensor does not turn OFF even when the PTR lift clutch turns OFF.

Possible Causes:
Defective PTR lift clutch
Defective paper feed motor
Defective PTR home position sensor
Defective I/O control board
Defective main control board

Related SC: (none)

Related SP:
SP5-804-008/009, SP5-804-023, SP5-803-011

Troubleshooting Procedure:
Make sure the fusing/transfer drawer is properly shut.
Make sure the PTR lift clutch joint is properly engaged.
Replace the PTR home position sensor.
Replace the PTR lift clutch.
Replace the drum peripheral component motor.
Replace the I/O control board.
Replace the main control board.

Reissued: 23-Jan-03

Model: Cattleya2	Date: 24-Jul-02	No.: RB023025a

RTB Reissue

The information in ***bold italics*** has been added.

Subject: ITB rubber bands peeling off			Prepared by: H.Matsui
From: Technical Services Sec. Service Planning Dept.			
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:

Following ITB replacement, the rubber positioning seals around the inside edge of the belt peel off at about 1-2 kD, causing SC326 or SC452.

Cause:

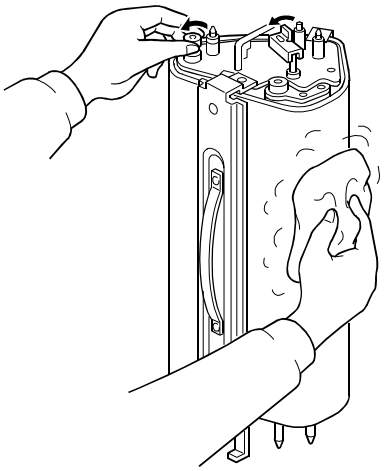
An insufficient amount of setting powder is applied to the ITB, causing the belt to catch the blade and bend it backwards. The blade then pushes against a different area of the belt (one with no roller underneath), causing the belt to bend inward and the positioning seals to contact the Grounding Plate. The seals are then peeled off at their “joint” areas.

Troubleshooting:

1. Please be sure to apply **a sufficient amount** of setting powder to the entire surface of the belt at replacement. As a reference, the picture below shows the belt after a sufficient amount has been applied.

   Note: When in doubt, it is better to apply slightly more powder than less.

2. For machines before the cut-in serial numbers mentioned in MB #MB023058, in addition to the above, replace the Brush Roller Ground Plate with the new type.



Reissued: 20-Oct-03

Model: Cattleya2	Date: 20-Aug-02	No.: RB023026a

RTB Correction

The items in bold italics have been corrected or added.

Subject: Final developed color copy or print.			Prepared by: H.Matsui
From: 2nd Tech. Support Sec. Service Support Dept.			
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:

1. Only the final developed color (Magenta in Copier mode / Black in Printer mode) is copied or printed on paper.
2. SC456 is displayed just after the main switch is turned ON ***(See RTB#RB023024)***.
3. The above phenomenon appears intermittently.

Cause:

The PTR lift clutch overruns due to the PTR lift clutch error. If the PTR lift clutch has overrun, the PTR incorrectly remains in contact with the ITB. As a result, the PTR cleans the transferred image on the ITB except for the last developed color copy or print. If this phenomenon occurs just after the main switch is turned ON, SC456 will be displayed.

Troubleshooting:

Replace the PTR lift clutch (call out #1 on page ***103*** of parts catalog) with new type (***See NOTE***).

NOTE:

See related MB (#MB023069) and RTB (#RB023033a).

Model: Cattleya2	Date: 9-Sep-02	No.: RB023027

Subject: Fusing oil streaks on copies	Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

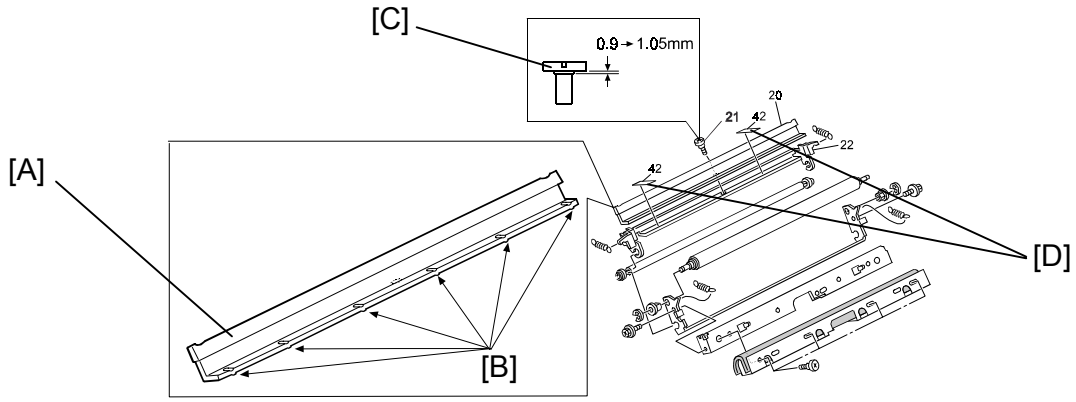
Symptom:
1. Fusing oil drops on copies, sometimes streaking.
2. Too much fusing oil accumulates in the oil pan.

Cause:
The pivoting movement of the Fusing Oil Blade (Parts Catalog, pg. 80, #20) is sometimes not uniform, allowing excessive oil to drop though the gap between the blade and Hot Roller. The oil then spills onto the copy surface or into the oil pan.

Troubleshooting:
Replace the following parts as a set.

1. Remove the Fusing Oil Blade (P/N # AE043012, Parts Catalog pg. 80, #20), and install the new type [A] (**P/N #AE043013**). This new blade has 6 small convex parts [B], which will optimize the movement of the blade.
2. Remove the Stepped Screw (P/N #AA143516, Parts Catalog pg. 80, #21), and install the new type [C] (**P/N #AA143527**). The stepped portion of the new screw is 1.05mm long (previously 0.9mm), which will make it easier for the blade to move.

NOTE:
1. See related MBs **#MB023022** and **#MB023027a** for modification details.
2. When installing the new blade (AE043013), remove the Holder Seals [D] (if present) from the Blade Holder, as these are not needed with the new blade.
3. The AE043012 blade can still be used on the Cattleya1 (A257/A269 copier), as the symptom does not occur on the Cattleya1 due to its slower Hot Roller rotation.



Model: Cattleya2	Date: 7-Nov-02	No.: RB023028

Subject: Main Firmware Modification History	Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.	

Classification:

- ☐ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☒ Other ( )

Modification history of the main board firmware.

(For NA Model)

B0235197	File Name	Version	C.SUM	Production
B	B0235197B.bin	1.051	C614	December 2000 Production
C	B0235197C.bin	1.073	F6EE	March 2001 Production
D	B0235197D.bin	1.082	346A	April 2001 Production
E	B0235197E.bin	1.09	DC1A	May 2001 Production
F	Not Exist			
G	B0235197G.bin	1.103	FE1D	August 2001 Production
H	B0235197H.bin	1.115	722B	September 2001 Production
I	Not Exist			
J	B0235197J.bin	1.12	C956	November 2001 Production
K	B0235197K.bin	1.13	84F2	February 2002 Production
L	B0235197L.bin	1.14	F52C	September 2002 Production

(For European Model)

B0235198	File Name	Version	C.SUM	Production
B	B0235198B.bin	1.051	D1B0	December 2000 Production
C	B0235198C.bin	1.073	A0F8	March 2001 Production
D	B0235198D.bin	1.082	51C0	April 2001 Production
E	B0235198E.bin	1.09	520F	May 2001 Production
F	Not Exist			
G	B0235198G.bin	1.103	2F40	August 2001 Production
H	B0235198H.bin	1.115	858F	September 2001 Production
I	Not Exist			
J	B0235198J.bin	1.12	A43D	November 2001 Production
K	B0235198K.bin	1.13	6ACF	February 2002 Production
L	B0235198L.bin	1.14	3060	September 2002 Production

(For European 2nd Language)

B0235181	File Name	Version	C.SUM
-	B0235181.bin	1.082	36A4
A	B0235181A.bin	1.09	F1A9
C	B0235181C.bin	1.115	D91B
D	B0235181D.bin	1.12	0C47
E	B0235181E.bin	1.13	56E6
F	B0235181F.bin	1.14	5A19

(For European 3rd Language)

B0235182	File Name	Version	C.SUM
-	B0235182.bin	1.082	A9BB
A	B0235182A.bin	1.09	4A69
C	B0235182C.bin	1.115	ECCF
D	B0235182D.bin	1.12	8722
E	B0235182E.bin	1.13	96D1
F	B0235182F.bin	1.14	57E0

(For European 4th Language)

B0235183	File Name	Version	C.SUM
-	B0235183.bin	1.082	8CA9
A	B0235183A.bin	1.09	5588
C	B0235183C.bin	1.115	8250
D	B0235183D.bin	1.12	2588
E	B0235183E.bin	1.13	418D
F	B0235183F.bin	1.14	8FE2

(For Taiwan Language)

B0235199	File Name	Version	C.SUM	Production
A	B0235199A.bin	1.082	1D0C	April 2001 Production
B	B0235199B.bin	1.09	A279	May 2001 Production
C	Not Exist			
D	B0235199D.bin	1.103	67C7	August 2001 Production
E	B0235199E.bin	1.115	1E40	September 2001 Production
F	B0235199F.bin	1.12	989E	November 2001 Production
G	B0235199G.bin	1.13	FB64	February 2002 Production
H	B0235199H.bin	1.14	CD76	September 2002 Production

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
RDS (Remote Diagnostic System) supported from ver1.073.	C	C	-	-	-	-
<<The following languages are supported from ver1.082>> 1.082EU2: Spanish, Dutch, Swedish, Danish 1.082EU3: Norwegian, Portuguese, Polish, Czech 1.082EU4: US English, Russian 1.082TWN: UK English, Traditional Chinese	D	D	-	-	-	A
The following SP modes for fine-tuning of the fusing temperature have been newly added. SP1-105-022 : Single side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-023 : Single side: Hot:Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-024 : Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-025 : Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] SP1-105-026 : 2nd side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-027 : 2nd side: Hot: Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-028 : Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-029 : Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] The detailed procedure for the above will be announced separately in the Cattelya2 Basic Tips. .	E	E	A	A	A	B

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP modes have been newly added to minimize toner scattering at the trailing edge of solid images. These SP modes are for ITB bias adjustment. SP2-301-051 to 078 SP2-301-081 to 100 See RTB#RB023009 for the detailed procedures.	E	E	A	A	A	B
Corrected software bug The Program key operation freezes when: 1. The program key button is pressed while the by-pass tray is open and the by-pass tray setting window is displayed. 2. The by-pass tray is closed before the program key setting window is closed.	E	E	A	A	A	B
During initialization, the TD sensor is initialized first, then the developer. During initialization, developer initialization results (displayed w/SP3-964) from the previous initialization are reset to "0" after the current TD sensor initialization is done. This is to avoid failures that may occur if developer initialization is not done after TD sensor initialization. In other words, if the dev. initialization results are “0" after TD sensor initialization, developer initialization has not been done yet. In which case, it is necessary to perform dev. initialization for the color(s) which have been replaced.	E	E	A	A	A	B
Corrected software bug The drum counter in SP7-803 is not reset to "0" when the "Reset All Developer Counters" button is pressed.	E	E	A	A	A	B

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP defaults have been changed: SP3-942-005 TD sensor initial gain upper limit: K from180 to 200 SP3-942-006 TD sensor initial gain upper limit: C from 190 to 210 SP3-942-007 TD sensor initial gain upper limit: M from190 to 210 SP3-942-008 TD sensor initial gain upper limit: Y from 190 to 210 This is to minimize TD sensor initialization upper limit errors (displayed value: 4 ✱)". NOTE: 1: K, 2: Y, 3: C, and 4: M are displayed for the respective colors for items identified by "✱" in the "Displayed value" column of the table.	E	E	A	A	A	B
The following SP defaults have been changed (same information released in RTB #RB023005). From this firmware version, these SP defaults will be automatically changed for troubleshooting for white spots (fireflies) in halftone areas in Thick paper mode. SP2-310-016 from 20 to 16 SP2-310-017 from 20 to 16 SP2-316-030 from 114 to 100	G	G	-	-	-	D
When the by-pass feed table is opened, the following messages will be displayed on the operation panel, to prevent machine failures due to operator errors: "Do not use ink-jet printer paper to prevent failure." "When using the bypass tray for the printer, make sure you select the paper type at the PC."	G	G	-	-	-	D

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
When copying/printing from the bypass onto thick paper, lightning marks occur after the tray is refilled and the job resumes.	H	H	C	C	C	E
When printing with a controller and selecting more than 10 copies, the 10th copy (and every 10th copy) will print a 25-30mm blue band at the leading edge from operator to non-operator side.	H	H	C	C	C	E
Animated guidance display for paper jam recovery appears on the operation panel when a D2 jam occurs. This new guidance instructs the operator to remove the jammed paper from the D2 area by continuous operation as follows: 1-1. Pull out the lower drawer unit completely. 1-2. Open the fusing paper exit unit by holding the D2 lever 1-3. Pull out the jammed paper from the inside of the fusing unit. In addition, the following guidance message is displayed under the animation: “Open front cover, pull lever B2 down and out, then open D2 cover to expose Fusing Unit.”	J	J	D	D	D	F
To improve reliability against skewing in auto duplex mode, the default settings of the following SP modes have been changed: Duplex Unit Side/End Fence Adjustment SP1-901-001 Side fence stop position: from 0 to 1 SP1-901-002 End fence stop position: from 0 to 1	J	J	D	D	D	F
To improve reliability of paper transfer timing in normal paper mode, the default setting of the following SP mode has been changed: SP1-801-010 Registration motor: Normal speed: from 0.0 to 0.3	K	K	E	E	E	G
To further ensure that the exposure lamp does not remain on too long, if any SC related to the Scanner IPU communication error or IDU communication error (SC601 or SC604) is detected, the AC power supply to the scanner lamp regulator will be cut.	K	K	E	E	E	G

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The default value of the paper transfer bias for OHP/2C, 3C and 4C has been changed. This change is to prevent a color difference when selecting OHP / Thick Paper Mode printing with transparencies. The following SP default values have been changed: PTR bias adjustment: SP2-310-011 :Image area OHP: 2C from19 to 22 SP2-310-012: Image area OHP: 3C from20 to 22 SP2-310-013: Image area OHP: 4C from20 to 22 PTR bias: paper size correction: SP2-313-010: OHP: B4 or larger from100 to 128 SP2-313-011: OHP: A5L or larger from100 to 156 SP2-313-012: OHP: Less than A5L from100 to 182 PTR bias: Humidity correction SP2-316-018: LL OHP: 4C from80 to 82 SP2-316-020: L OHP: 4C from80 to 82 SP2-316-022: H OHP: 4C from120 to 105 SP2-316-024: HH OHP: 4C from120 to 105	L	L	F	F	F	H
Vref lower limit for the ID sensor pattern used for Detecting Vsp for Toner Supply Control (See service manual page 6-22) has been changed. This software change also applies to the charge corona bias value and timing of the ID sensor pattern used for the Detecting Vsp for Toner Supply Control in A3++ copying/printing. These changes are to make it more difficult for dirty background to occur during continuous A3++copying/printing.	L	L	F	F	F	H

Model: Cattleya2	Date: 7-Nov-02	No.: RB023029

Subject: SIPU Firmware Modification History	Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.	

Classification:

- ☐ Troubleshooting
- ☐ Part information
- ☐ Action required
- ☐ Mechanical
- ☐ Electrical
- ☐ Service manual revision
- ☐ Paper path
- ☐ Transmit/receive
- ☐ Retrofit information
- ☒ Other ( )

Modification history of the Scanner IPU board firmware.

(For all destinations)

B0235133	File Name	Version	C.SUM	Production
B	B0235133B.bin	1.01	F6AF	December 2000 Production
C	B0235133C.bin	1.02	472C	April 2001 Production
D	B0235133D.bin	1.03	397D	May 2001 Production
E	B0235133E.bin	1.04	983F	June 2001 Production
F	B0235133F.bin	1.05	5F68	October 2001 Production
G	B0235133G.bin	1.06	3A0E	February 2002 Production
H	B0235133H.bin	1.07	F6A7	August 2002 Production

Model: Cattleya2	Date: 7-Nov-02	No.: RB023029

Symptom Corrected	All
Sensitivity of ACS mode increased from ver1.02.	C
The printer gamma table for single color mode has been improved to achieve better copy quality in single color mode with the area editing function.	D
The function of SP4-303-000 (APS minimum size setting) has been changed as follows. SP4-303-000 = 0: If an A5-lengthwise/HLT-lengthwise or smaller original is placed on the exposure glass, the machine does not detect the paper size and displays "Cannot detect the paper size, please select a paper tray". SP4-303-000 = 1: If an A5-lengthwise/ HLT-lengthwise or smaller original is placed on the exposure glass, the machine automatically selects the paper tray in which A5-lengthwise/HLT-lengthwise paper is loaded. NOTE: With v1.03 or earlier, this setting can be changed, but it does not function as described above.	E
A failsafe program has been added for exposure lamp off control, and an exposure lamp off judgment signal (after the end of bar code reading) has also been added. This is to ensure the lamp does not stay on too long.	F
The following have been to further ensure the exposure lamp does not remain on longer than it should: 1. Timer function added: If the exposure lamp stays on more than 90 seconds, SC101 will be displayed and the copier will stop. 2. If any SC related to exposure lamp control is detected (SC101, SC120, SC121, SC130, SC150, SC170, SC171, SC193), the exposure lamp off signal will be sent to the main control board.	G
To improve the reliability of bar code reading, the SIPU program has been modified, and the bar code data reading area in the field memory has been made more precise. This is to ensure that SC191 does not occur due to a barcode misread just after the main switch is turned on.	H

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

RTB Reissue

The following is the modification history of the Main Board firmware.

Subject: Main Firmware Modification History			Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.			
Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other ( )		

(For NA Model)

B0235197	File Name	Version	C.SUM	Production
B	B0235197B.bin	1.051	C614	December 2000 Production
C	B0235197C.bin	1.073	F6EE	March 2001 Production
D	B0235197D.bin	1.082	346A	April 2001 Production
E	B0235197E.bin	1.09	DC1A	May 2001 Production
F	Not Exist			
G	B0235197G.bin	1.103	FE1D	August 2001 Production
H	B0235197H.bin	1.115	722B	September 2001 Production
I	Not Exist			
J	B0235197J.bin	1.12	C956	November 2001 Production
K	B0235197K.bin	1.13	84F2	February 2002 Production
L	B0235197L.bin	1.14	F52C	September 2002 Production
M	B0235197M.bin	1.15	F11D	December 2002 Production

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

(For European Model)

B0235198	File Name	Version	C.SUM	Production
B	B0235198B.bin	1.051	D1B0	December 2000 Production
C	B0235198C.bin	1.073	A0F8	March 2001 Production
D	B0235198D.bin	1.082	51C0	April 2001 Production
E	B0235198E.bin	1.09	520F	May 2001 Production
F	Not Exist			
G	B0235198G.bin	1.103	2F40	August 2001 Production
H	B0235198H.bin	1.115	858F	September 2001 Production
I	Not Exist			
J	B0235198J.bin	1.12	A43D	November 2001 Production
K	B0235198K.bin	1.13	6ACF	February 2002 Production
L	B0235198L.bin	1.14	3060	September 2002 Production
M	B0235198M.bin	1.15	434C	December 2002 Production

(For European 2nd Language)

B0235181	File Name	Version	C.SUM
-	B0235181.bin	1.082	36A4
A	B0235181A.bin	1.09	F1A9
C	B0235181C.bin	1.115	D91B
D	B0235181D.bin	1.12	0C47
E	B0235181E.bin	1.13	56E6
F	B0235181F.bin	1.14	5A19
G	B0235181G.bin	1.15	B919

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

(For European 3rd Language)

B0235182	File Name	Version	C.SUM
-	B0235182.bin	1.082	A9BB
A	B0235182A.bin	1.09	4A69
C	B0235182C.bin	1.115	ECCF
D	B0235182D.bin	1.12	8722
E	B0235182E.bin	1.13	96D1
F	B0235182F.bin	1.14	57E0
G	B0235182G.bin	1.15	823F

(For European 4th Language)

B0235183	File Name	Version	C.SUM
-	B0235183.bin	1.082	8CA9
A	B0235183A.bin	1.09	5588
C	B0235183C.bin	1.115	8250
D	B0235183D.bin	1.12	2588
E	B0235183E.bin	1.13	418D
F	B0235183F.bin	1.14	8FE2
G	B0235183G.bin	1.15	1B92

(For Taiwan Language)

B0235199	File Name	Version	C.SUM	Production
A	B0235199A.bin	1.082	1D0C	April 2001 Production
B	B0235199B.bin	1.09	A279	May 2001 Production
C	Not Exist			
D	B0235199D.bin	1.103	67C7	August 2001 Production
E	B0235199E.bin	1.115	1E40	September 2001 Production
F	B0235199F.bin	1.12	989E	November 2001 Production
G	B0235199G.bin	1.13	FB64	February 2002 Production
H	B0235199H.bin	1.14	CD76	September 2002 Production
J	B0235199J.bin	1.15	0478	December 2002 Production

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
1. RDS (Remote Diagnostic System) supported from ver1.073.	C	C	-	-	-	-
<<The following languages are supported from ver1.082>> 1.082EU2: Spanish, Dutch, Swedish, Danish 1.082EU3: Norwegian, Portuguese, Polish, Czech 1.082EU4: US English, Russian 1.082TWN: UK English, Traditional Chinese	D	D	-	-	-	A
The following SP modes for fine-tuning the fusing temperature have been newly added. SP1-105-022: Single side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-023: Single side: Hot:Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-024: Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-025: Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] SP1-105-026: 2nd side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-027: 2nd side: Hot: Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-028: Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-029: Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] The detailed procedure for the above will be announced separately in the Cattelya2 Basic Tips. .	E	E	A	A	A	B

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP modes have been newly added to minimize toner scattering at the trailing edge of solid images. These SP modes are for ITB bias adjustment. SP2-301-051 to 078 SP2-301-081 to 100 See RTB#RB023009 for the detailed procedures.	E	E	A	A	A	B
[Corrected software bug] The Program key operation freezes when: 1. The program key button is pressed while the by-pass tray is open and the by-pass tray setting window is displayed. 2. The by-pass tray is closed before the program key setting window is closed.	E	E	A	A	A	B
Developer initialization results (displayed w/SP3-964) are reset to "0" after the TD sensor initialization is performed. This is to avoid failures that may occur if developer initialization is not performed after TD sensor initialization. In other words, if the dev. initialization results are “0" after TD sensor initialization, developer initialization has not been performed yet. In which case, it is necessary to perform dev. initialization for the color(s) which have been replaced.	E	E	A	A	A	B
[Corrected software bug] Drum counter in SP7-803 is not reset to "0" when the "Reset All Developer Counters" button is pressed.	E	E	A	A	A	B

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP defaults have been changed: SP3-942-005 TD sensor initial gain upper limit: K from180 to 200 SP3-942-006 TD sensor initial gain upper limit: C from 190 to 210 SP3-942-007 TD sensor initial gain upper limit: M from190 to 210 SP3-942-008 TD sensor initial gain upper limit: Y from 190 to 210 This is to minimize TD sensor initialization upper limit errors (displayed value: 4 ✱)". NOTE: 1: K, 2: Y, 3: C, and 4: M are displayed for the respective colors for items identified by "✱" in the "Displayed value" column of the table.	E	E	A	A	A	B
The following SP defaults have been changed (same information released in RTB #RB023005). From this firmware version, these SP defaults will be automatically changed for troubleshooting for white spots (fireflies) in halftone areas in Thick paper mode. SP2-310-016 from 20 to 16 SP2-310-017 from 20 to 16 SP2-316-030 from 114 to 100	G	G	-	-	-	D
When the by-pass feed table is opened, the following messages will be displayed on the operation panel, to prevent machine failures due to operator errors: "Do not use ink-jet printer paper to prevent failure." "When using the bypass tray for the printer, make sure you select the paper type at the PC."	G	G	-	-	-	D

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
When copying/printing from the bypass onto thick paper, lightning marks occur after the tray is refilled and the job resumes.	H	H	C	C	C	E
Printing with a controller when selecting more then 10 copies, the 10th copy (and every 10th copy) will print a 25-30mm blue band at the leading edge from operator to non-operator side.	H	H	C	C	C	E
Animated guidance display for paper jam recovery appears on the operation panel when a D2 jam occurs. This new guidance instructs the operator to remove the jammed paper from the D2 area by continuous operation as follows: 1-1. Pull out the lower drawer unit completely. 1-2. Open the fusing paper exit unit by holding the D2 lever 1-3. Pull out the jammed paper from the inside of the fusing unit. In addition, following guidance message is displayed under the animation: “Open front cover, pull lever B2 down and out, then open D2 cover to expose Fusing Unit.”	J	J	D	D	D	F
To improve reliability against the skewing in auto duplex mode, the default settings of the following SP modes have been changed: Duplex Unit Side/End Fence Adjustment SP1-901-001 Side fence stop position: from 0 to 1 SP1-901-002 End fence stop position: from 0 to 1	J	J	D	D	D	F
To improve reliability of paper transfer timing in normal paper mode, the default setting of the following SP mode has been changed: SP1-801-010 Registration motor: Normal speed: from 0.0 to 0.3	K	K	E	E	E	G
To further ensure that the exposure lamp does not remain on too long, if any SC related to the Scanner IPU communication error or IDU communication error (SC601 or SC604) is detected, the AC power supply to the scanner lamp regulator will be cut.	K	K	E	E	E	G

Reissued: 5-Dec-02

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028a

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The default value of the paper transfer bias for OHP/2C, 3C and 4C has been changed. This change is to prevent a color difference when selecting OHP / Thick Paper Mode printing with transparencies. The following SP default values have been changed: PTR bias adjustment: SP2-310-011 :Image area OHP: 2C from19 to 22 SP2-310-012: Image area OHP: 3C from20 to 22 SP2-310-013: Image area OHP: 4C from20 to 22 PTR bias: paper size correction: SP2-313-010: OHP: B4 or larger from100 to 128 SP2-313-011: OHP: A5L or larger from100 to 156 SP2-313-012: OHP: Less than A5L from100 to 182 PTR bias: Humidity correction SP2-316-018: LL OHP: 4C from80 to 82 SP2-316-020: L OHP: 4C from80 to 82 SP2-316-022: H OHP: 4C from120 to 105 SP2-316-024: HH OHP: 4C from120 to 105	L	L	F	F	F	H
Vref lower limit for the ID sensor pattern used for Detecting Vsp for Toner Supply Control (See service manual page 6-22) has been changed. This software change also applies to the main charger bias value and timing of the ID sensor pattern used for the Detecting Vsp for Toner Supply Control in A3++ copying/printing. These changes are to make it more difficult for dirty background to occur during continuous A3++copying/printing.	L	L	F	F	F	H
To ensure that jammed paper is properly removed, the software has been modified so that C and D jams cannot be cleared unless the fusing/transfer drawer unit is pulled out then pushed back in. If this is not done, the condition will remain even after the power is turned off/on.	M	M	G	G	G	J

Model: Cattleya2	Date: 13-Dec-02	No.: RB023030

Subject: Color is varying on every page	Prepared by: H.Matsui
From: Technical Services sec. Service Planning Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

IMPORTANT NOTICE:
If color variations are reported from the field, please consult the color product specialist in your area to determine if any of the following cases apply, and then perform the appropriate troubleshooting below.

Case 1: THE LEVEL OF COLOR VARIATION IS **OUT OF** MACHINE TARGET

Symptom:
1. A3/DLT: Color variations are noticeable within the same page.
2. A4/LT sideways: Color variations are noticeable when comparing odd pages to even pages, e.g. pp. 1, 3, 5 show a different color than pp. 2, 4, 6.

Note: The above can be seen in both Copier and Printer modes.

Cause:
1. The Image Transfer Belt (ITB) was not mounted on the ITB Unit in the correct position at PM replacement.
2. The ITB Unit frame was placed upright on the floor during servicing, and was bent when it fell over.

Troubleshooting:
1. Remove the ITB Unit, reinstall the belt, and then rotate the belt approximately 10 times. Then, reinstall the ITB Unit in the machine and take 10 A3/DLT test copies in FC mode (the rotation and test copies are to ensure that the belt aligns into the proper position). Lastly, take a few additional copies and check the quality.
2. If there is no improvement, replace the ITB Unit with a new one.

Case 2: THE LEVEL OF COLOR VARIATION IS **WITHIN** MACHINE TARGET

Important Notice:
Since the color variation is within machine target, and because there is variation among the ITB and LD Units themselves, the following troubleshooting will not produce a major improvement, even if parts are adjusted or replaced. Please use the following as an alternative if this variation level is still not acceptable to the customer.

Also, in some cases, replacement of the LD and ITB Units can cause the color variation to get worse. If this occurs, restore the original ITB Unit (and then LD Unit if necessary) to the machine.

Symptom:
1. A3/DLT: Color variations are noticeable when comparing page 1 to all other pages, especially in halftone areas, i.e. there is virtually no color difference between pg. 2 and all pages following.
2. A4/LT sideways: Color variations are noticeable when comparing pages 1 and 2 to all other pages, especially in halftone areas, i.e. there is virtually no color difference between pg. 3 and all pages following.

Cause:
1. The ITB shifts during rotation due to slightly poor interaction between the ITB and PTR Units, which can occur if the dimensions of either component are within but near specification tolerance limits.
2. Slight power fluctuations in the two laser diodes.

Troubleshooting:
1. First, try replacing the ITB Unit. As mentioned in the troubleshooting for Case 1 above, before installing the unit, rotate the belt approximately 10 times. Then take 10 A3/DLT test copies in FC mode and check the image quality.
2. If there is not enough improvement, replace the LD Unit with a new one (P/C pg. 44, #6). Please note that it is **NOT** necessary to replace the entire Optical Housing Assembly (P/C pg. 44, #1).

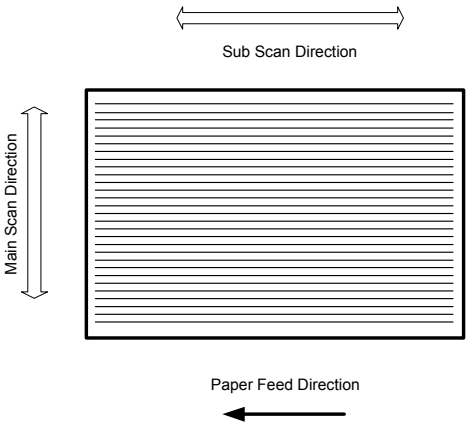
Case 3: THE LEVEL OF COLOR VARIATION IS **WITHIN** MACHINE TARGET

Symptom:
Color variation is noticeable in **TEXT** dither pattern areas in **PRINTER MODE only.**

Cause:
There is a certain amount of shifting (within specification) of the dots along the sub scan direction.

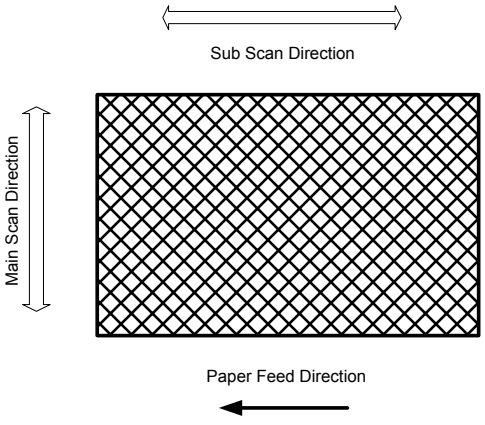
Troubleshooting:
In Printer mode, use the PHOTO dither pattern. Dot shifting along the sub scan direction is least visible with this pattern.

Note: The following are simplified sketches of the dither patterns used for each mode.



Text/Photo, Photo and Text dither pattern (Copier)

Photo dither pattern (Printer)



Text dither pattern (Printer)

Model: Cattleya2	Date: 20-Jan-03	No.: RB023031

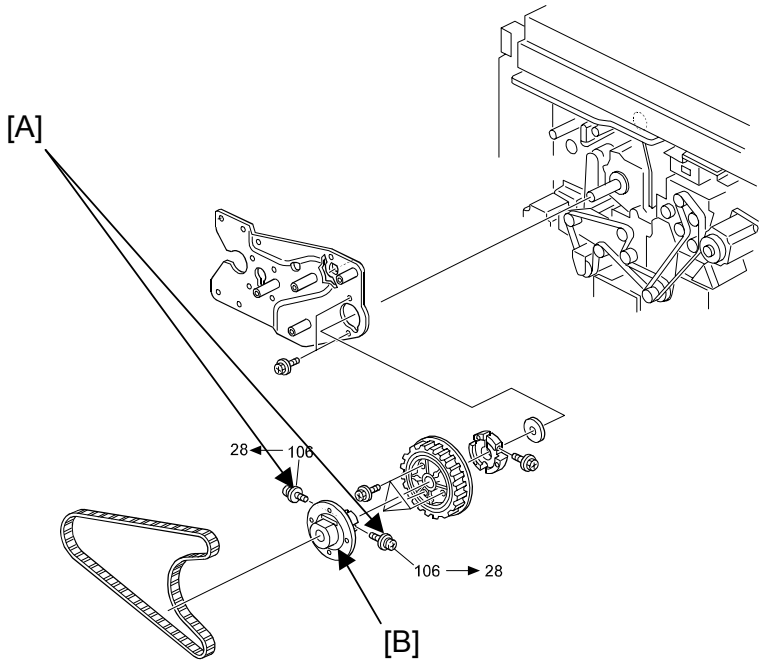
Subject: Breakage of flywheel supporter screws.	Prepared by: H.Matsui
From: Technical Services Sec. Service Planning Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom:
Even when the solution mentioned in RTB #RB023015a and MB #MB023016 is applied, noise is generated in the drive section just after the Start Key is pressed or a print job is started. If the machine is used under this condition, the flywheel supporter securing screws [A] come loose and break. The drum shaft then needs to be replaced, as the broken pieces of the screws can get inside.

Cause:
The securing screws [A] for the Flywheel Supporter [B] were not tightened completely.

Action in the Field:
Confirm whether the securing screws [A] have been tightened completely at the next service visit and tighten if necessary (procedure on the next page).



Model: Cattleya2	Date: 20-Jan-03	No.: RB023031

Confirmation Procedure:

1. Turn OFF the machine main power.
2. Remove the ARDF (4 screws, 2 connectors).
3. Remove the left cover, rear right cover and rear stay to access the flywheel.

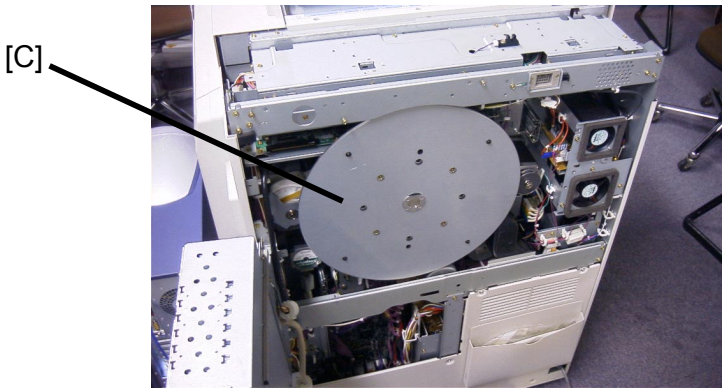


Fig-1

4. Rotate the flywheel [C] clockwise until the flat-cut portion [D] faces up, as shown below.

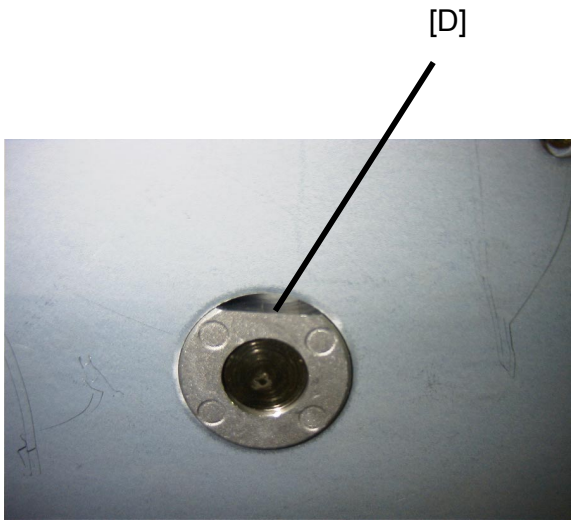


Fig-2

Model: Cattleya2	Date: 20-Jan-03	No.: RB023031

5. Move the flywheel in directions [E] and [F] to check for any play along these directions.
NOTE: If there is no play, this means that the flywheel is properly secured, and the following adjustment procedure is unnecessary.

Fig-3

Model: Cattleya2	Date: 20-Jan-03	No.: RB023031

6. If play does exist along these directions, remove the flywheel and then fully tighten the two flywheel supporter screws (one on each side), without removing the screws.

NOTE:

1. The screwdriver must be perpendicular to the screw, or the threading inside the drum shaft screw hole will be damaged.
2. Be sure to tighten the screw enough so that the underside of the screw head [G] is tightly flush against the surface of the Flywheel Supporter (Fig-5).

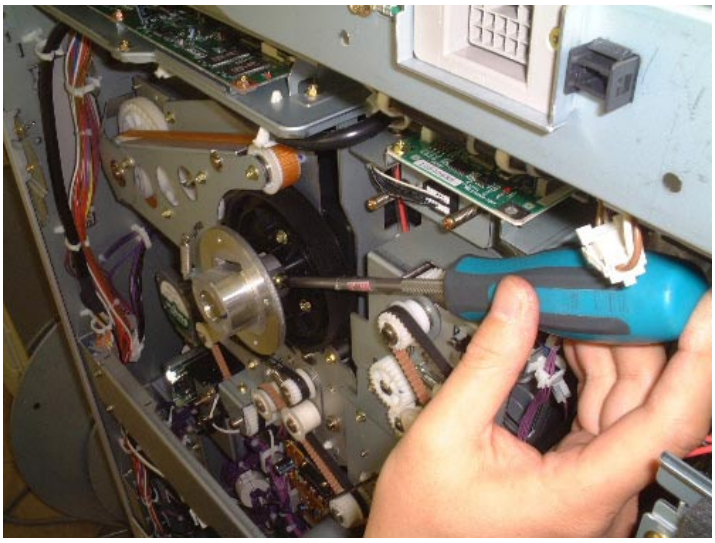


Fig-4

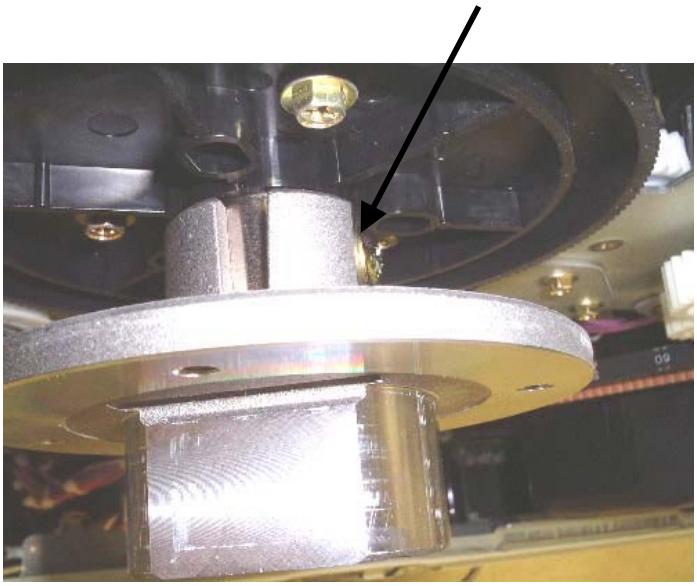


Fig-5

Model: Cattleya2	Date: 20-Jan-03	No.: RB023031

7. Check to see if there is any play between the drum shaft and the flywheel supporter, as shown in Fig-8. If there is, re-check to see if the screws have been properly tightened in place.

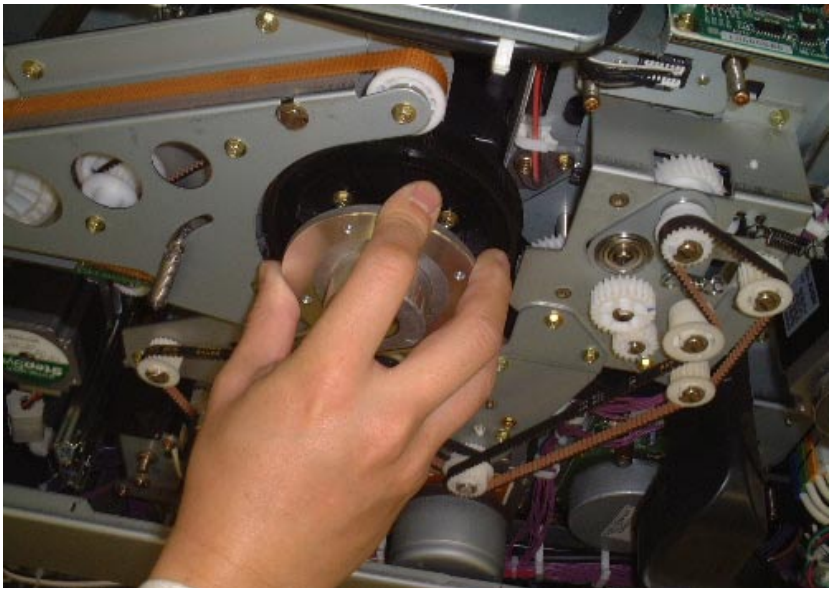


Fig-8

8. After reinstalling the flywheel on the flywheel supporter, repeat from Step 4 above to check for any play in the flywheel. If there is no play, reinstall all parts removed in this procedure.

Model: Cattleya2	Date: 5-Feb-03	No.: RB023032

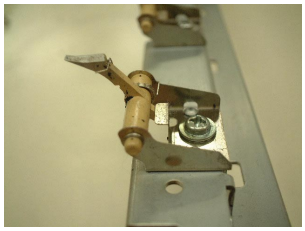
Subject: Hot roller is damaged by strippers	Prepared by: H.Matsui
From: Technical Services Sec. Service Planning Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

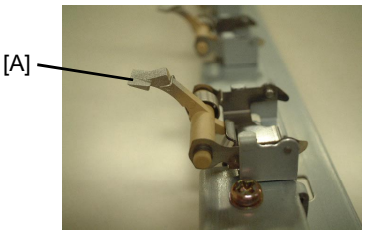
Symptom:
Separation pawls damage the fusing unit hot roller **on machines produced before the cut-in serial numbers listed below**.

Cause:
When an accordion jam occurs inside the fusing unit, the jammed paper pushes the separation pawls up, which in turn damages the surface of the hot roller.

Solution:

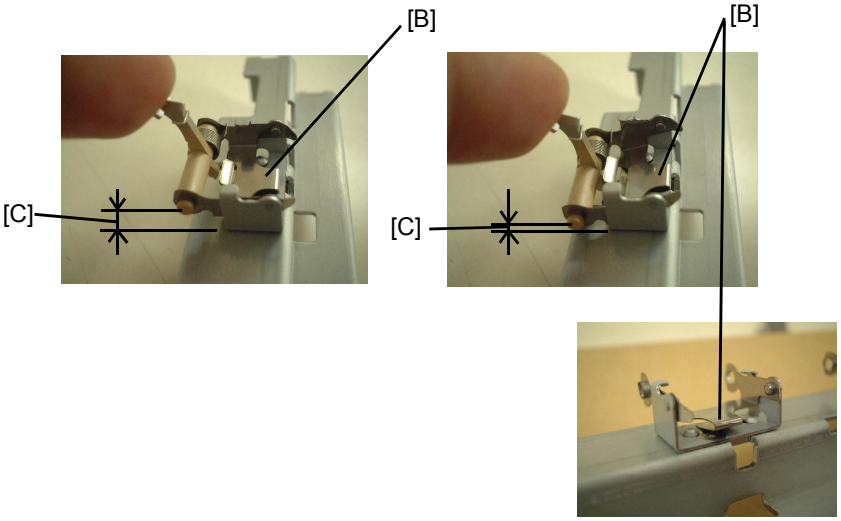


Old type

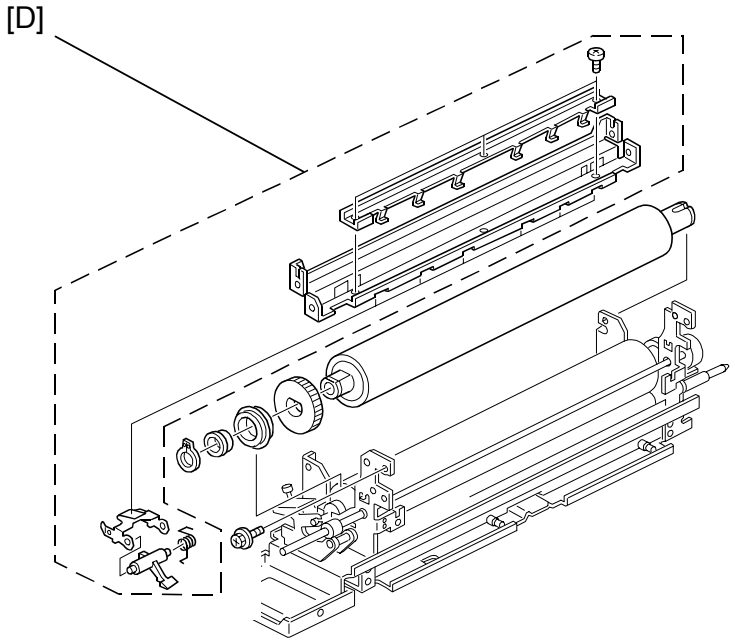


New type

1. The stripper edge [A] has been widened, preventing damage to the hot roller from contact with this edge.
2. The stripper holder [B] has been newly designed as a plate-spring type, which allows the stripper to pull away from the roller when an accordion jam occurs. This ensures that the stripper will not damage the hot roller surface (max/min gaps shown by distance [C] below).



Action in the field:
Replace the Stripper Pawl Stay Assembly [D] with the new type mentioned in MB #MB023060.



<< Cut-in Serial Numbers>>

RCL (Japan) Production

Model	V/Hz	Destination	Code	Serial Number
Lanier 5813	120V/60Hz	USA, Canada	B023-14	H6321100003
Savin SDC413 Gestetner CS213	120V/60Hz	USA, Canada	B023-15	H6321200042
Aficio Color 6513	120V/60Hz	USA, Canada	B023-17	H6321200053
Aficio Color 6513	110V/60Hz	Taiwan	B023-19	H63212xxxx
Nashuatec CS513d Gestetner CS213d Rex Rotary CS813d	220-240V/50Hz	Europe, etc.	B023-22	H6321100083
Lanier 5813	220-240V/50Hz,60Hz	Europe, etc.	B023-24	H63212xxxx
Infotec 7513	220-240V/50Hz	Europe, etc.	B023-26	4G41220001
Aficio Color 6513	220-240V/50Hz	Europe, Middle East, etc.	B023-27	H6321200243
Aficio Color 6513	220V/60Hz	Korea	B023-28	H63212xxxx
Aficio Color 6513	220-240V/50Hz,60Hz	Asia	B023-29	H6321200310

Reissued: 19-Mar-03

Model: General RTB	Date: 4-Feb-03	No.: RGene013b

RTB Reissue

The items in ***bold italics*** have been corrected or updated.

Subject: Service remarks at installation			Prepared by: T. Itoh
From: Technical Service Sec. Service Planning Dept.			
Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other (Specification change)		

Please note the following change in counter specification. Although a production line modification will not be applied to some products, the action described in *4. Important Notes for Installation* below must be taken for **all products** at installation.

Overview:

Electronic counters will now be set to **0** when released from the factory, instead of being set to a negative value.

Background:

Previously, counters were set to a negative value when shipped from the factory, and later set to "0" at installation, following installation test copies/prints. However this may cause confusion among some customers as to why the counter value at the commencement of the contract is "0", even though some installation test copies have already been made.

Details:

1. Specification Change

	Specification
Current	• The initial value of the electrical counter is **negative** when products are shipped from the factory. **Note:** After making test samples at installation, the negative counter value can be set to "0" with SP mode.
New	• The initial value of the electrical counter is **"0"** when products are shipped from the factory. **Note:** After making test samples at installation, the (positive) counter value cannot be set back to "0" with SP mode.

2. Firmware Modification

Due to the counter modification, SP5-849 has also been changed as follows for products that have this SP mode (listed below).

	SP mode name:	Specification:
Current	Counter Clear Day	• When the electrical counter is changed **from a negative value to 0**, the machine recognizes this as the counter clear day and stores this date in the NVRAM.
New	Installation Date	• When the electrical counter **reaches a value of 20**, the machine recognizes this as the installation date and stores this date in the NVRAM.

NOTE: The following products have SP5-849. The new firmware for these products has not yet been released. However the release notes for each will clearly mention the new firmware version.

New products: Bellini-C2, Adonis C3
Current products: Martini C1, Model-U C1

3. Schedule for the Counter Modification

The following is the current schedule for when the counter modification will be applied. Please note that there are some models to which the change will not be applied (marked as "---"), due to production schedules, production lot quantities and sales figures.

NOTE: The actual cut-in months that have been confirmed appear in the "Cut-in production month" column below. This RTB will be reissued when these dates have been confirmed for the remaining products.

(1) New products

Product Name	Product Code	Target cut-in production month	Cut-in production month
Bellini C2	B070	2003.03	***April '03 production***
Adonis C3	B079/82	2003.03	First mass production lot
Model J-P2	G080	2003.03	***March '03 production***
Model J-P2 CF	G367	2003.03	***March '03 production***
Model AR- P1	G081/92	2003.03	***March '03 production***
Model K-C1a	B120	2003.03	***March '03 production***

Model: General RTB	Date: 4-Feb-03	No.: RGene013b

(2) Current products

Product Name	Product Code	Target cut-in production month	Cut-in production month
Digital B&W Copiers			
Bellini C1	A294	---	***---***
Martini C1	B064/65	2003.03	***April '03 production (see Note)***
Model M-C2b	B098	2003.03	***March '03 production***
Adonis C2	B003/04/06/07	---	***---***
Russian C2	B022/27/31	2003.03	February ***'03*** production
Model K-C1	B039/40/43	2003.03	***March '03 production***
Stella C1	B044/45/46/49	2003.03	***March '03 production***
Digital WF Copiers			
Dolphin	B010	2003.03	***March '03 production***
Analog Copiers			
All products	-	---	***---***
J2SS-C3	***B047/48***	***(See Note)***	***March '03 production***
Whale	***A174***		***March '03 production***
Color Copiers			
Model I2	B018	---	***---***
Model L2	B017	---	***---***
Model C2	B023	2003.02	February ***'03*** production
Model U-C1	B051/52	2003.03	***April '03 production***
Color Printers			
Model J-P1	G060	---	***---***
Model J-P1 CF	G570	---	***---***
Model U-P1	G071	2003.03	***March '03 production***
Pomelo P3	G063	2003.03	***March '03 production***

NOTE: The counter change will be applied as a running change to production units only. For machines already shipped out or in the field, please be sure to take the action described below in Section 4.

NOTE: ***For Martini-C1 mainframes assembled in Japan, the counter change will be applied from the first unit of April '03 production. For mainframes assembled at REI, the change will be applied midway through April production. These cut-in serial numbers will be announced as soon as they have been confirmed.***

NOTE: ***The change will also be applied to analog models J2SS-C3 and Whale, as production will continue for a while. However, as these models use only mechanical counters, the initial value when shipped from the factory will be 1 or 2 (not 0), following the 1 or 2 factory test copies.***

Model: General RTB	Date: 4-Feb-03	No.: RGene013b

4. Important Notes for Machine Installation – All Products

Please be sure to perform the following at machine installation:

1. If the product is from before the counter modification, i.e. the counter is at a negative value, be sure to set the counter value to 0 **first**, then make the installation test samples.

Digital products	Set the electrical counter to 0 with SP mode.
Analog products	Set the mechanical counter to 0 with a reset key (tool).

2. If the product is modified, i.e. the counter is already at 0 (or above 0 following pre-installation at a service depot), simply make the installation test samples.

3. After completing the installation, make sure to **record the counter value**. This is very important, as this value will be used for billing with Meter Click contracts. Also, inform the customer of the value along with the reason why the counter does not start from "0".

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

RTB Reissue

The following is the modification history of the Main Board firmware.

Subject: Main Firmware Modification History	Prepared by: H.Matsui
From: Technical Services Sec. Service Planning Dept.	

Classification:			
	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other ( )		

(For NA Model)

B0235197	File Name	Version	C.SUM	Production
B	B0235197B.bin	1.051	C614	December 2000 Production
C	B0235197C.bin	1.073	F6EE	March 2001 Production
D	B0235197D.bin	1.082	346A	April 2001 Production
E	B0235197E.bin	1.09	DC1A	May 2001 Production
F	Not Exist			
G	B0235197G.bin	1.103	FE1D	August 2001 Production
H	B0235197H.bin	1.115	722B	September 2001 Production
I	Not Exist			
J	B0235197J.bin	1.12	C956	November 2001 Production
K	B0235197K.bin	1.13	84F2	February 2002 Production
L	B0235197L.bin	1.14	F52C	September 2002 Production
M	B0235197M.bin	1.15	F11D	December 2002 Production
N	B0235197N.bin	1.16	F603	March 2003 Production

Reissued: 17-Mar-03

Model: Cattleya2	Date : 7-Nov-02	No.: RB023028b

(For European Model)

B0235198	File Name	Version	C.SUM	Production
B	B0235198B.bin	1.051	D1B0	December 2000 Production
C	B0235198C.bin	1.073	A0F8	March 2001 Production
D	B0235198D.bin	1.082	51C0	April 2001 Production
E	B0235198E.bin	1.09	520F	May 2001 Production
F	Not Exist			
G	B0235198G.bin	1.103	2F40	August 2001 Production
H	B0235198H.bin	1.115	858F	September 2001 Production
I	Not Exist			
J	B0235198J.bin	1.12	A43D	November 2001 Production
K	B0235198K.bin	1.13	6ACF	February 2002 Production
L	B0235198L.bin	1.14	3060	September 2002 Production
M	B0235198M.bin	1.15	434C	December 2002 Production
N	B0235198N.bin	1.16	9C17	March 2003 Production

(For European 2nd Language)

B0235181	File Name	Version	C.SUM
-	B0235181.bin	1.082	36A4
A	B0235181A.bin	1.09	F1A9
C	B0235181C.bin	1.115	D91B
D	B0235181D.bin	1.12	0C47
E	B0235181E.bin	1.13	56E6
F	B0235181F.bin	1.14	5A19
G	B0235181G.bin	1.15	B919
H	B0235181H.bin	1.16	30EE

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

(For European 3rd Language)

B0235182	File Name	Version	C.SUM
- A	B0235182.bin B0235182A.bin	1.082 1.09	A9BB 4A69
C	B0235182C.bin	1.115	ECCF
D	B0235182D.bin	1.12	8722
E	B0235182E.bin	1.13	96D1
F	B0235182F.bin	1.14	57E0
G	B0235182G.bin	1.15	823F
H	B0235182H.bin	1.16	91AC

(For European 4th Language)

B0235183	File Name	Version	C.SUM
-	B0235183.bin	1.082	8CA9
A	B0235183A.bin	1.09	5588
C	B0235183C.bin	1.115	8250
D	B0235183D.bin	1.12	2588
E	B0235183E.bin	1.13	418D
F	B0235183F.bin	1.14	8FE2
G	B0235183G.bin	1.15	1B92
H	B0235183H.bin	1.16	0142

(For Taiwan Language)

B0235199	File Name	Version	C.SUM	Production
A	B0235199A.bin	1.082	1D0C	April 2001 Production
B	B0235199B.bin	1.09	A279	May 2001 Production
C	Not Exist			
D	B0235199D.bin	1.103	67C7	August 2001 Production
E	B0235199E.bin	1.115	1E40	September 2001 Production
F	B0235199F.bin	1.12	989E	November 2001 Production
G	B0235199G.bin	1.13	FB64	February 2002 Production
H	B0235199H.bin	1.14	CD76	September 2002 Production
J	B0235199J.bin	1.15	0478	December 2002 Production
K	B0235199K.bin	1.16	C1F8	March 2003 Production

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
1. RDS (Remote Diagnostic System) supported from ver1.073.	C	C	-	-	-	-
<<The following languages are supported from ver1.082>> 1.082EU2: Spanish, Dutch, Swedish, Danish 1.082EU3: Norwegian, Portuguese, Polish, Czech 1.082EU4: US English, Russian 1.082TWN: UK English, Traditional Chinese	D	D	-	-	-	A
The following SP modes for fine-tuning of the fusing temperature have been newly added. SP1-105-022 : Single side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-023 : Single side: Hot:Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-024 : Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-025 : Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] SP1-105-026 : 2nd side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-027 : 2nd side: Hot: Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-028 : Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-029 : Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] The detailed procedure for the above will be announced separately in the Cattelya2 Basic Tips. .	E	E	A	A	A	B

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP modes have been newly added to minimize toner scattering at the trailing edge of solid images. These SP modes are for ITB bias adjustment. SP2-301-051 to 078 SP2-301-081 to 100 See RTB#RB023009 for the detailed procedures.	E	E	A	A	A	B
[Corrected software bug] The Program key operation freezes when: 1. The program key button is pressed while the by-pass tray is open and the by-pass tray setting window is displayed. 2. The by-pass tray is closed before the program key setting window is closed.	E	E	A	A	A	B
Developer initialization results (displayed w/SP3-964) are reset to "0" after the TD sensor initialization is performed. This is to avoid failures that may occur if developer initialization is not performed after TD sensor initialization. In other words, if the dev. initialization results are “0" after TD sensor initialization, developer initialization has not been performed yet. In which case, it is necessary to perform dev. initialization for the color(s) which have been replaced.	E	E	A	A	A	B
[Corrected software bug] Drum counter in SP7-803 is not reset to "0" when the "Reset All Developer Counters" button is pressed.	E	E	A	A	A	B

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP defaults have been changed: SP3-942-005 TD sensor initial gain upper limit: K from180 to 200 SP3-942-006 TD sensor initial gain upper limit: C from 190 to 210 SP3-942-007 TD sensor initial gain upper limit: M from190 to 210 SP3-942-008 TD sensor initial gain upper limit: Y from 190 to 210 This is to minimize TD sensor initialization upper limit errors (displayed value: 4 ✱)". NOTE: 1: K, 2: Y, 3: C, and 4: M are displayed for the respective colors for items identified by "✱" in the "Displayed value" column of the table.	E	E	A	A	A	B
The following SP defaults have been changed (same information released in RTB #RB023005). From this firmware version, these SP defaults will be automatically changed for troubleshooting for white spots (fireflies) in halftone areas in Thick paper mode. SP2-310-016 from 20 to 16 SP2-310-017 from 20 to 16 SP2-316-030 from 114 to 100	G	G	-	-	-	D
When the by-pass feed table is opened, the following messages will be displayed on the operation panel, to prevent machine failures due to operator errors: "Do not use ink-jet printer paper to prevent failure." "When using the bypass tray for the printer, make sure you select the paper type at the PC."	G	G	-	-	-	D

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
When copying/printing from the bypass onto thick paper, lightning marks occur after the tray is refilled and the job resumes.	H	H	C	C	C	E
Printing with a controller when selecting more then 10 copies, the 10th copy (and every 10th copy) will print a 25-30mm blue band at the leading edge from operator to non-operator side.	H	H	C	C	C	E
Animated guidance display for paper jam recovery appears on the operation panel when a D2 jam occurs. This new guidance instructs the operator to remove the jammed paper from the D2 area by continuous operation as follows: 1-1. Pull out the lower drawer unit completely. 1-2. Open the fusing paper exit unit by holding the D2 lever 1-3. Pull out the jammed paper from the inside of the fusing unit. In addition, following guidance message is displayed under the animation: “Open front cover, pull lever B2 down and out, then open D2 cover to expose Fusing Unit.”	J	J	D	D	D	F
To improve reliability against the skewing in auto duplex mode, the default settings of the following SP modes have been changed: Duplex Unit Side/End Fence Adjustment SP1-901-001 Side fence stop position: from 0 to 1 SP1-901-002 End fence stop position: from 0 to 1	J	J	D	D	D	F
To improve reliability of paper transfer timing in normal paper mode, the default setting of the following SP mode has been changed: SP1-801-010 Registration motor: Normal speed: from 0.0 to 0.3	K	K	E	E	E	G
To further ensure that the exposure lamp does not remain on too long, if any SC related to the Scanner IPU communication error or IDU communication error (SC601 or SC604) is detected, the AC power supply to the scanner lamp regulator will be cut.	K	K	E	E	E	G

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The default value of the paper transfer bias for OHP/2C, 3C and 4C has been changed. This change is to prevent a color difference when selecting OHP / Thick Paper Mode printing with transparencies. The following SP default values have been changed: PTR bias adjustment: SP2-310-011 :Image area OHP: 2C from19 to 22 SP2-310-012: Image area OHP: 3C from20 to 22 SP2-310-013: Image area OHP: 4C from20 to 22 PTR bias: paper size correction: SP2-313-010: OHP: B4 or larger from100 to 128 SP2-313-011: OHP: A5L or larger from100 to 156 SP2-313-012: OHP: Less than A5L from100 to 182 PTR bias: Humidity correction SP2-316-018: LL OHP: 4C from80 to 82 SP2-316-020: L OHP: 4C from80 to 82 SP2-316-022: H OHP: 4C from120 to 105 SP2-316-024: HH OHP: 4C from120 to 105	L	L	F	F	F	H
Vref lower limit for the ID sensor pattern used for Detecting Vsp for Toner Supply Control (See service manual page 6-22) has been changed. This software change also applies to the main charger bias value and timing of the ID sensor pattern used for the Detecting Vsp for Toner Supply Control in A3++ copying/printing. These changes are to make it more difficult for dirty background to occur during continuous A3++copying/printing.	L	L	F	F	F	H
To ensure that jammed paper is properly removed, the software has been modified so that C and D jams cannot be cleared unless the fusing/transfer drawer unit is pulled out then pushed back in. If this is not done, the condition will remain even after the power is turned off/on.	M	M	G	G	G	J

Reissued: 17-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028b

To improve the reliability of toner supply control for copying/printing onto 13" x 19" paper, the process timing for generating the Vsp ID sensor pattern has been changed. Specifically, the timing of revolver rotation, development clutch on/off, and development AC bias on/off timing while generating the pattern have been changed.	N	N	H	H	H	K
To improve the reliability of toner supply control for copying/printing onto sizes smaller than B5 sideways (257mm x 182mm), the process timing for generating the Vsp ID sensor pattern has been changed.	N	N	H	H	H	K

Reissued: 26-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023029a

RTB Reissue

The items in bold italics have been added.

Subject: SIPU Firmware Modification History			Prepared by: H.Matsui
From: Technical Services Sec. Service Planning Dept.			
Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other ( )		

The following is the modification history for the Scanner IPU board firmware.

(For all destinations)

B0235133	File Name	Version	C.SUM	Production
B	B0235133B.bin	1.01	F6AF	December 2000 Production
C	B0235133C.bin	1.02	472C	April 2001 Production
D	B0235133D.bin	1.03	397D	May 2001 Production
E	B0235133E.bin	1.04	983F	June 2001 Production
F	B0235133F.bin	1.05	5F68	October 2001 Production
G	B0235133G.bin	1.06	3A0E	February 2002 Production
H	B0235133H.bin	1.07	F6A7	August 2002 Production
I	(no release)			
J	***B0235133J.bin***	***1.08***	***8E89***	***April 2003 Production***

Reissued: 26-Mar-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023029a

Symptom Corrected	All
Sensitivity of ACS mode increased from ver1.02.	C
Printer gamma table for single color mode has been improved to achieve better copy quality in single color mode with the area editing function.	D
The function of SP4-303-000 (APS minimum size setting) has been changed as follows. SP4-303-000 = 0: If an A5-lengthwise/HLT-lengthwise or smaller original is placed on the exposure glass, the machine does not detect the paper size and displays "Cannot detect the paper size, please select a paper tray". SP4-303-000 = 1: If an A5-lengthwise/ HLT-lengthwise or smaller original is placed on the exposure glass, the machine automatically selects the paper tray in which A5-lengthwise/HLT-lengthwise paper is loaded. NOTE: With v1.03 or earlier, this setting can be changed, but it does not function as described above.	E
A failsafe program has been added for the exposure lamp off control, and an exposure lamp off judgment signal (after the end of bar code reading) has also been added. This is to further the lamp does not stay on too long.	F
The following have been to further ensure the exposure lamp does not remain on longer than it should: 1. Timer function added: If the exposure lamp stays on more than 90 seconds, SC101 will be displayed and the copier will stop. 2. If any SC related to the exposure lamp control is detected (SC101, SC120, SC121, SC130, SC150, SC170, SC171, SC193), the exposure lamp off signal will be sent to the main control board.	G
To improve the reliability of bar code reading, the SIPU program has been modified, and the bar code data reading area in the field memory has been made more precise. This is to ensure that SC191 does not occur due to a barcode misread just after the main switch is turned on.	H
Scanner motor drive control changed to improve the reproduction of diagonal lines near the leading edge (copier mode), by minimizing the effects of vibration during scanning.	***J***

Reissued: 20-Oct-03

Model: Cattleya2	Date: 8-May-03	No.: RB023033a

RTB Correction
The items in bold italics have been corrected or added.

Subject: SC456 or missing color			Prepared by: H.Matsui
From: 2nd Tech. Support Sec. Service Support Dept.			
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

The following troubleshooting has been issued as additional information to RTB ***#RB023026a.***

SYMPTOM

1. Only the toner color developed last (i.e. magenta in Copier mode, black in Printer mode) correctly appears on the output. All other colors are missing or smudged.
2. SC456 is displayed.

CAUSE

Only symptom #1 occurs: Case A
The ITB cleaning unit shift clutch overruns (P/C pg.100, #16), causing the ITB cleaning blade to remain in contact with the ITB and remove all toner colors transferred to the belt except for the last (magenta in Copier mode, black in Printer mode).

Symptoms #1 or #2 or both occur: Case B
1. The PTR joint (P/C pg. 74, #37) does not couple correctly.
2. The PTR pressure cams slip (P/C pg. 74, #40).
3. The PTR lift clutch overruns (P/C pg. 102, #1).

When symptom #1 occurs, the PTR remains in contact with the ITB, removing all toner colors from the belt before they are transferred to the paper, except for the last.

Model: Cattleya2	Date: 8-May-03	No.: RB023033a

Troubleshooting:

1. How to distinguish between cases A and B

Open the front cover and remove the revolver cover (P/C pg. 14, #8). Take full color copies or prints and check the movements of the ITB cleaning blade and the PTR during the job.

Case A: The ITB cleaning blade remains in contact with the ITB during image transfer (drum to ITB) of all colors except the last.

Case B: The PTR lifts up and remains in contact with the ITB during image transfer (before actual transfer to the paper) of all colors except the last.

2. Action.

Case A: Replace the ITB cleaning unit shift clutch (P/C pg. 100, #16) with the new type (***P/N AX210087***). Refer to MB ***#MB023069***.

Case B: Perform the check procedure described in the following table and take actions for each of the suspected causes.

Important: Once the SC occurs in case B, do not pull out the drawer unit, as the procedure below is only effective when the unit has not been pulled out following the SC.

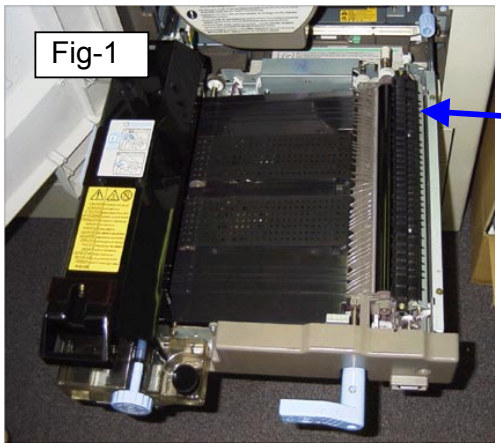
Model: Cattleya2	Date: 8-May-03	No.: RB023033a

Checking Items (in order): / Suspected Causes and Action	*1*	*2*	*3*
	Make sure the drawer unit <u>has not been pulled out yet</u> before performing this step.	***Make sure to <u>pull out the drawer unit</u> before performing this step.***	***Make sure to <u>keep the drawer unit open</u> for this step as well.***
	Remove the rear right cover (P/C pg. 12, #26). Check the orientation of the flat-cut portion of the clutch shaft (P/C pg. 102, #7). See Fig. 4-7 below.	Remove the rear right cover (P/C pg. 12, #26). Check the orientation of the flat-cut portion of the clutch shaft (P/C pg. 102, #7). See Fig. 4-7 below.	Check if the positions of the PTR home position sensor (P/C pg. 76, #13) and feeler (P/C pg. 74, #26) are correct. See Fig. 1-3 below.
Combination 1 **See <<1>> below**	OK (Fig. 4, 5)	OK (Fig. 4, 5)	**Abnormal** (Fig. 3)
Combination 2 **See <<2>> below**	**Abnormal** (Fig. 6, 7)	OK (Fig. 4, 5)	**Abnormal** (Fig. 3)
Combination 3 **See <<3>> below**	**Abnormal** (Fig. 6, 7)	**Abnormal** (Fig. 6, 7)	**Abnormal** (Fig. 3)

Suspected Causes and Action.

	Suspected Cause	Action
<<1>>	PTR lift joint (P/C pg. 74, #37) does not couple correctly.	Replace the PTR joint with the new type (P/N B0234620). See MB023061.
<<2>>	Paper transfer cam overruns (P/C pg. 74, #40).	Clean the paper transfer cam with alcohol. See Fig 8-10 below.
<<3>>	PTR lift clutch slips (P/C pg. 102, #1).	Replace the PTR lift clutch with the new type (***P/N AX210087***). See ***MB023069***.

Model: Cattleya2	Date: 8-May-03	No.: RB023033a



Location of PTR home position sensor and feeler.

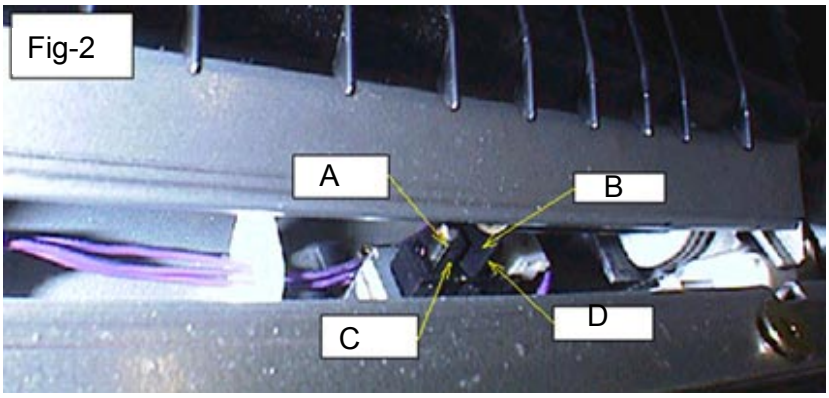


Fig-2: **Normal**.
A: Sensor
B: Feeler
Sensor edge [C] and feeler edge [D] are parallel.

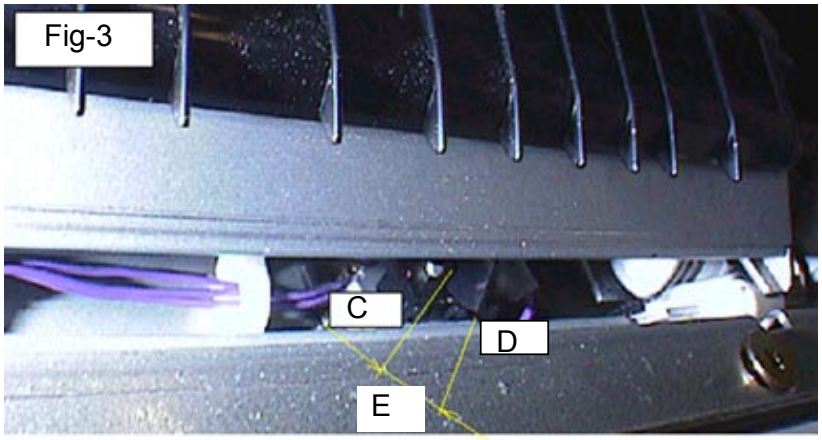


Fig-3: **Abnormal**.
Sensor edge [C] and feeler edge [D] are not parallel [E].

Model: Cattleya2	Date: 8-May-03	No.: RB023033a

Fig-4

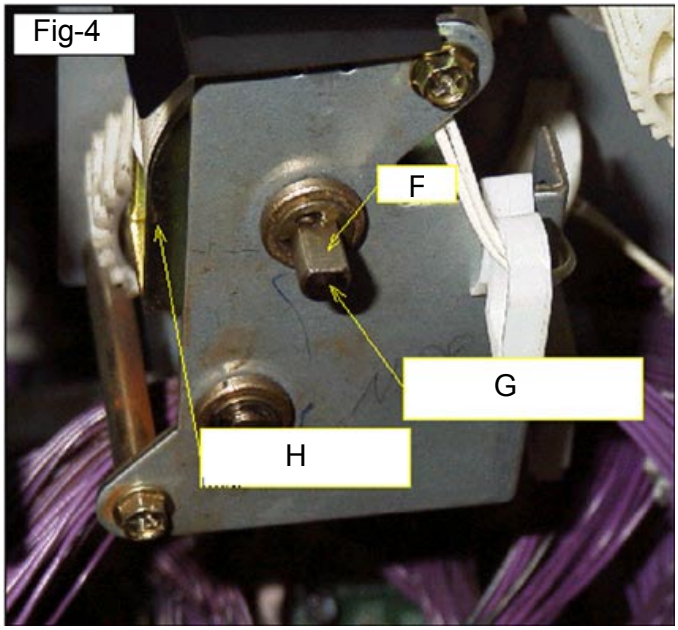


Fig-4: **Normal**

F: Flat-cut portion of clutch shaft.
G: Clutch shaft.
H: PTR lift clutch

The flat-cut portion of the clutch shaft is **horizontal** (facing up).

Fig-5

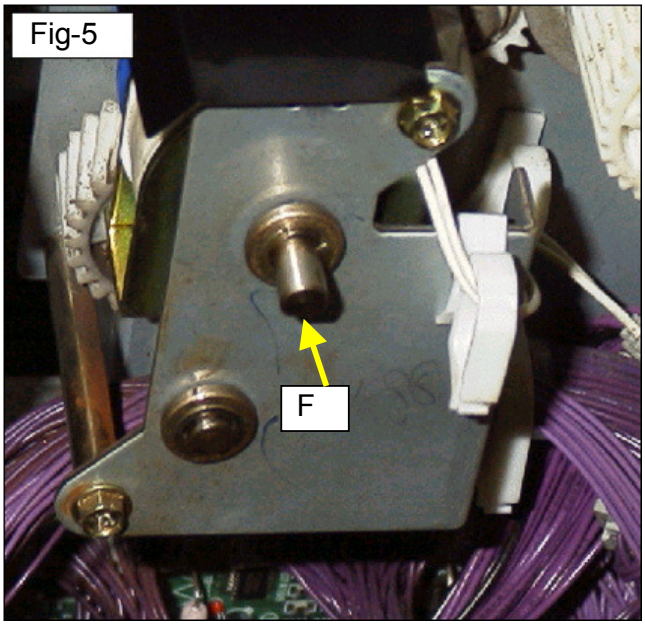


Fig-5: **Normal**

The flat-cut portion of the clutch shaft [F] is **horizontal** (facing down).

Model: Cattleya2	Date: 8-May-03	No.: RB023033a

Fig-6

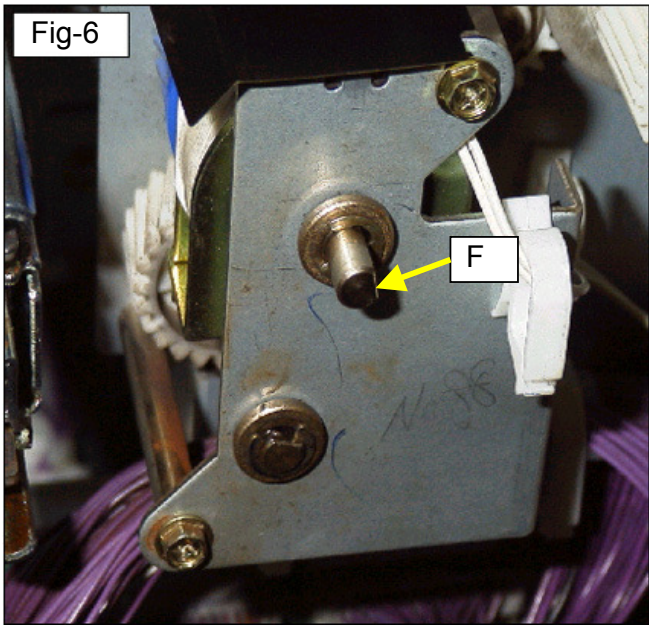
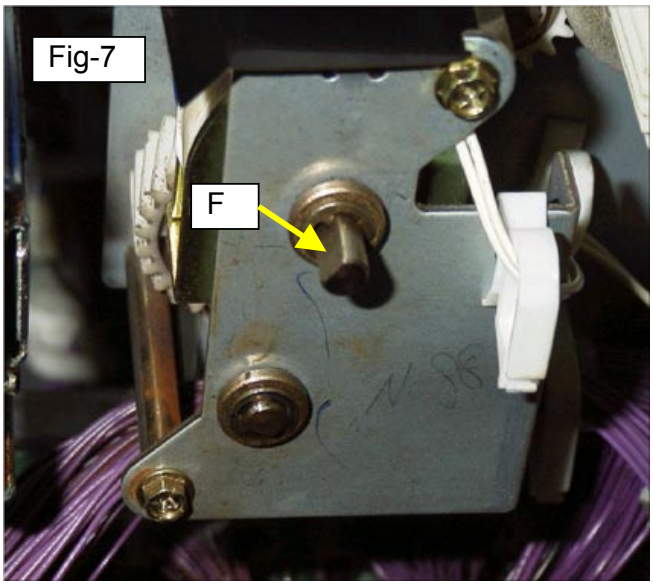


Fig-6 and 7: **Abnormal**

The flat-cut portion of the clutch shaft [F] is more than 10 degrees from horizontal.

Fig-7



Model: Cattleya2	Date: 8-May-03	No.: RB023033a

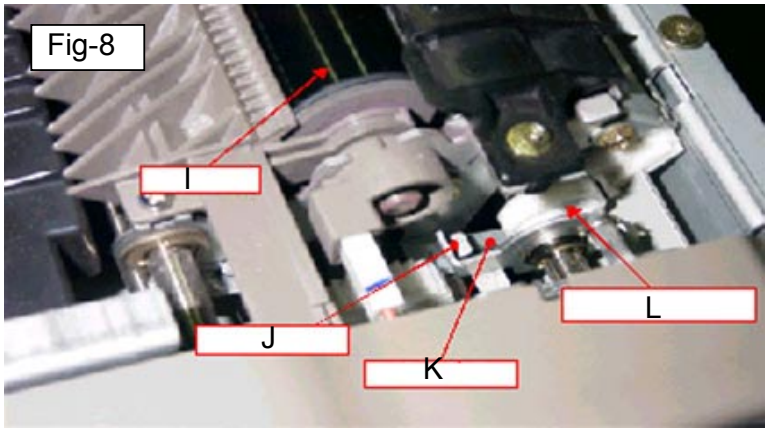


Fig-8

I: Paper transfer roller (PTR).
J: Pressure arm
K: Pressure arm contact surface
L: Paper transfer cam

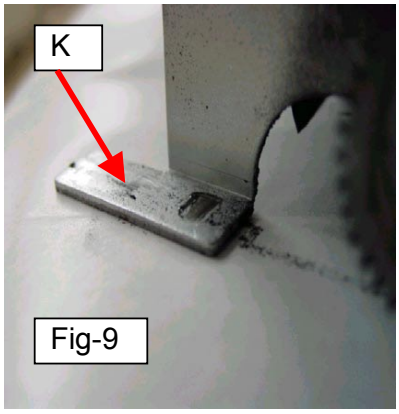
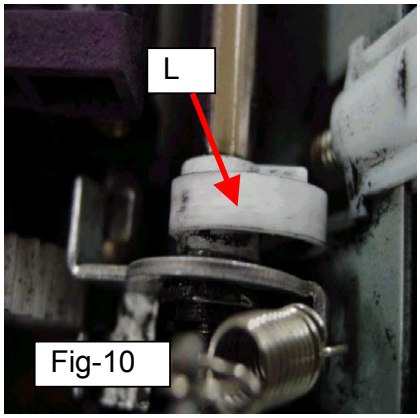


Fig-9, 10

Clean the pressure arm contact surface [K] and paper transfer cam [L] (both front and rear sides) with alcohol.



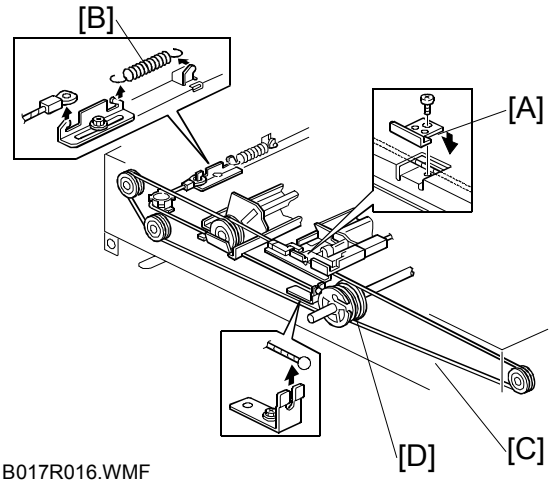
Model: Cattleya2	Date: 2-Jul-03	No.: RB023034

Subject: Scanner wire replacement	Prepared by: H.Matsui
From: 1st Tech. Support Sec. Service Support Dept.	

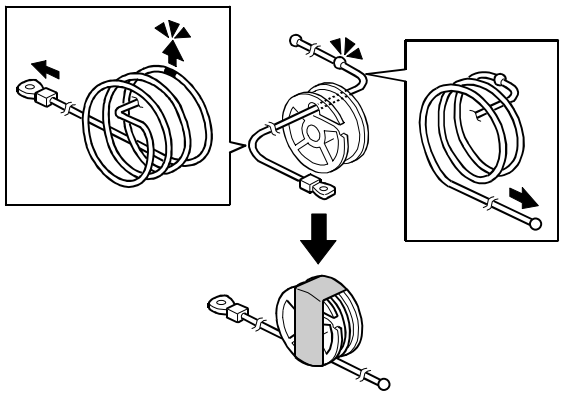
Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☒ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Please apply the following corrections to your Service Manuals.

P3-23 to 3-24: **Replace** with the following procedure (from Step 4).

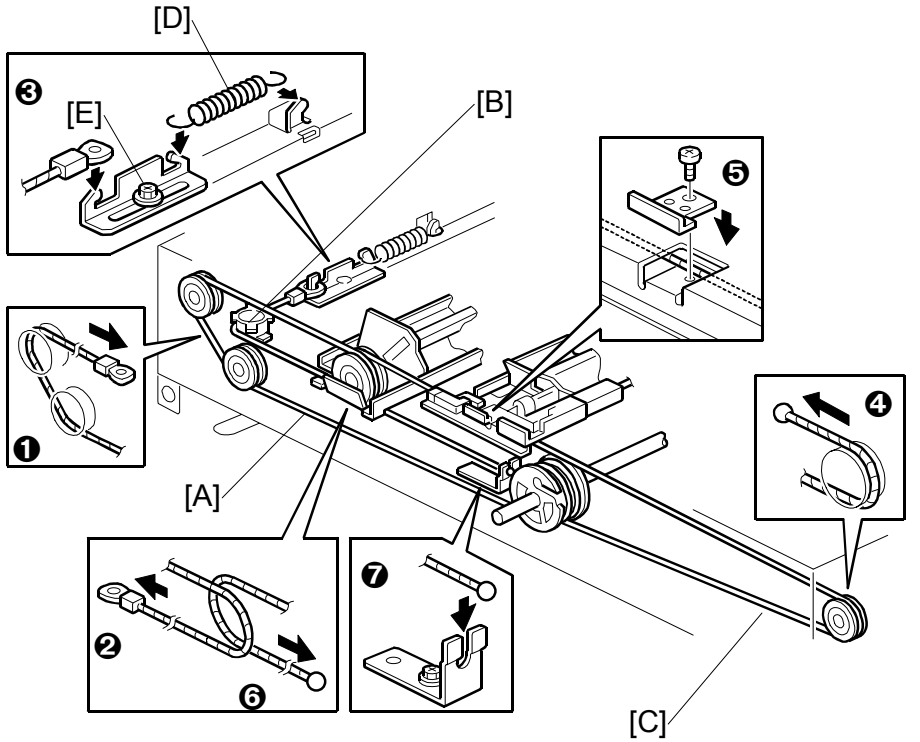


B017R016.WMF



B017R001.WMF

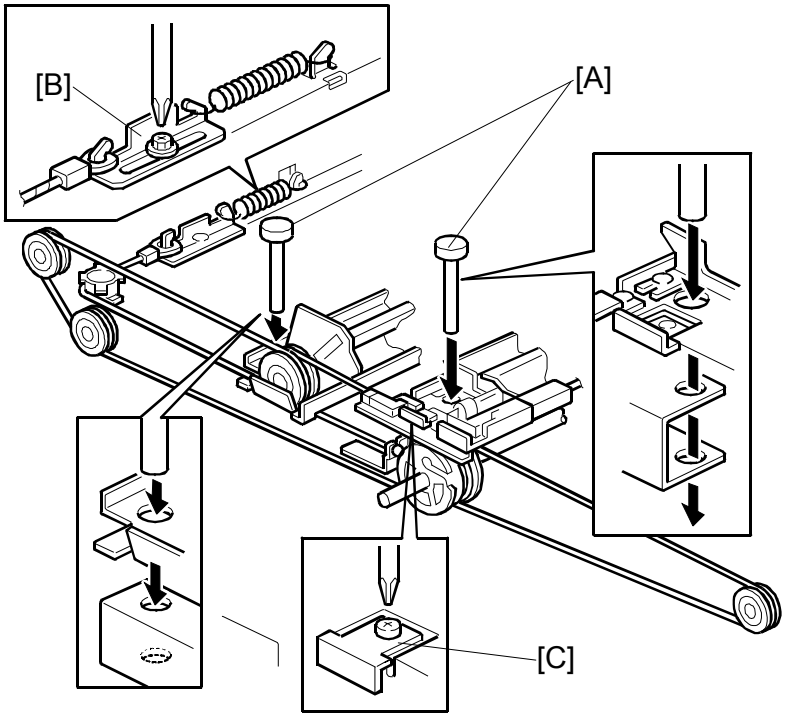
4. Remove the wire clamp [A] and release the wire tension spring [B] (1 screw each). Then remove the wire clamp on the side the wire is not going to be replaced.
5. Remove the scanner wire [C].
6. Remove the Allen screw from the wire pulley [D].
7. Route the new scanner wire.
   Be sure to thread the wire on the pulley the correct way, as described below. One end of the wire has a ball attached to it, and the other end has a ring.
   1) Lead the wire through the pulley hole and set the ball located at the middle of the wire in the groove on the pulley.
   2) Wind the wire the required number of turns and secure it with tape, as shown in the drawing.



B017R002.WMF

3) Route the end of the wire [A] that has the hook through the pulleys as shown (❶, ❷ and [B]), then hook the ring onto the wire tension bracket (❸).
4) Route the end of the wire [C] that has the ball through the pulleys as shown (❹, ❺, and ❻), then hook the ball onto the bracket (❼).

8. Hook the spring [D] onto the wire tension bracket [E].



B017R004.WMF

9. Temporarily lock the first and second carriages on the scanner into position using the scanner locking pins [A] (2 on each side).
   NOTE: The correct scanner securing position is such that the scanner locking pins can slide out smoothly.
10. Secure the wire tension bracket [B] and the wire with the scanner wire clamp [C] (1 screw each).
11. Remove the scanner locking pins.
12. After applying tension to the wire by executing a scanner free run (SP mode 4-013-001), reset the scanner locking pins. If the pins do not fit into the holes properly, loosen and reset the scanner wire clamp.

Model: Cattleya2	Date: 3-Sep-03	No.: RB023035

Subject: NV-RAM replacement procedure	Prepared by: H.Matsui
From: 1st Tech. Support Sec. Service Support Dept.	

Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☒ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

NV-RAM Replacement Procedure Revision

The replacement procedure on pg. 3-93 of the Service Manual has been revised as follows (bold areas).

Replacing the NV-RAM

Make sure you have the factory settings that come with the copier before beginning the following procedure.

1. Use the SP7-902 mode to output the SP mode values that have been modified from their default value.
2. Set the main power switch OFF and unplug the power cord.
3. Replace the NV-RAM (IC115) on the main board.
4. Reassemble the machine.
5. **Open the front cover, then turn ON the machine main power.**
   NOTE:
   - **Be sure to leave the front cover open until Step 13 has been completed. This is to prevent the machine from starting the initial process control self-check.**
   - **A four-digit SC may appear at this time (SC4xxx) and remain displayed until the RAM clear is performed in Step 8 below. However, please ignore this SC and continue with the procedure.**
6. **Perform Touch Panel Calibration (see pg. 3-94).**
7. **SC195 (Serial number error) appears on the display. Then, enter the machine serial number in the factory set mode (consult with your manager for details).**
   NOTE: Sometimes, SC195 does not appear while the four-digit SC remains displayed. Even in this case, enter the machine serial numbers in the factory set mode.
8. Perform SP5-801 (RAM clear) to reset SP and UP values to their defaults**.**
9. **Turn the main power OFF/ON and confirm that no SC is displayed.**
10. **Perform Touch Panel Calibration again.**
11. **Set SP7-008-000 (Counter display setting) to the appropriate value:**
    - **1: Developments counter value**
    - **2: Copies/Prints counter value**

    NOTE: If this SP is not set to a value of 1 or 2, the abnormal value in the SP (e.g. 102, 65) will prevent the electrical counter panel button from functioning.

12. **Perform SP7-808 (Counter all clear).**
    NOTE: If this is not performed, the counters will take on abnormal values. See logging data sheet (SP7-809-003) to confirm.

13. **Perform SP7-825 to reset the electrical counter values to 0, unless you are using P/N A2579590 or newer (NV-RAM Zero Counter), in which case this step is unnecessary.**
    NOTE:
    - **If this step is not performed for previous NV-RAMs (negative counters), the mechanical counter will not increment.**
    - **See MB023066 for the 0-counter modification P/N change.**

14. **Use the electrical counter panel button to confirm that all electrical counters have been successfully set to 0.**
15. Enter SP mode changes you output in step (1).
16. Perform the auto color calibration procedure.
17. If the image needs adjustment after being subject to auto color calibration, calibrate the target using the SP4-501/502/503 modes.

Model: Cattleya2	Date: 28-Nov-03	No.: RB023036

Subject: SC37X (SC370, SC371, SC372, SC373)	Prepared by: H.Matsui
From: 2nd Tech. Support Sec Service Support Dept.	

Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

Symptom
SC37X (SC370, SC371, SC372, SC373) is displayed during machine operation.

Cause
1. The TD sensor does not detect the toner concentration in the developer correctly
   - TD sensor does not generate an output signal
   - TD sensor output level is outside the standard range
   - Abnormal rotation of the revolver unit
     - Abnormal conductivity between the TD sensor and PCB

     Note: The ID of the copy image is neither too dark nor too light.
2. The toner supply mechanism is not functioning correctly
   - Toner-supply related SP modes set to incorrect values

     Note: The ID of the copy is too dark or too light.
3. The developer itself is abnormal in some way.
4. Problem with the TD sensor itself.

Troubleshooting
Described on the following pages.

Troubleshooting

Note:

1. When checking the TD sensor output in the procedure below, **be sure to use the SP value displayed on the LCD** (NOT the value on the SP data sheet) **when the SC occurs**. This is because the value may have changed by the time the **SP** report is printed out.
2. Even when the checkpoint procedures below refer you to another section, for an additional check or to perform an action, please be sure and **return to complete every item in Checkpoint Procedures #1-3, in the order listed.**

Checkpoint Procedure #1

Check to see if the toner concentration in developer is too high or too low.

A. Check the TD sensor output while SC37X is being displayed

1. Check the display values for SP3-007-001 to 004 (TD sensor output display).

   - If these values are 4.0V or higher, the toner concentration is **too low**.
     ➔**Go to the B1/B2 check.**
   - If these values are 0.5V or less, the toner concentration is **too high**.

2. Take 5 blank copies onto A3/DLT paper. Then, check the values for SP3-007-001 to 004 once again.

   - If the values are still 0.5V or less, the concentration is still **too high**.
     ➔**Go to the B1/B2 check.**

   - Take several additional sets of 5 blank copies. If the SP values remain at 0.5V or less:
     ➔**Go to Action #3 or Action #6.**

   - If however the SP values from these additional sets change drastically each time, the actual toner concentration in developer is **not abnormally high**.
     ➔**Go to Action #3**

B1. Compare the values of SP3-950-001 to 004 (Vref: actual current data display) with those of SP3-007-001 to 004 before the blank copies were made.

- If the SP3-950-001 to 004 values are at least 0.5V greater than those of SP3-007-001 to 004, the most likely cause is an over-supply of toner.

➔**Go to Action #2**

B2. Clear the SC and check the image density on the actual copy

1. If the values for SP3-007-001 to 004 (TD sensor output display) are 0.5V or less, the toner concentration in the developer is too high, causing the ID of the actual copy to be too dark.

➔**Go to Action #2**

2. If these values are 4.5V or higher, the toner concentration in developer is too low, causing the ID of the actual copy to be too light.

➔**Go to Action #1**

Checkpoint Procedure #2:

Check if the copy image shows missing toner colors or faint images (light-to-dark graduated ID across the copy).

- If the copy image shows either of these:

➔**Go to Action #4**

Checkpoint Procedure #3:

Check to see if the amount of developer inside the development unit is too low.

- If the amount of developer inside the development unit is too low:

➔**Go to Action #5**

Action

Action #1
Toner concentration in the developer is too low

- Make sure SP2-951 (Toner End Detection Setting) is set to **0 (ON)**, and if it is not, change the SP to this value.
  Note: This SP should always be kept at **0**, except in cases where it is temporarily set to 1 for servicing purposes.
- If this does not solve the symptom, this indicates a problem with the toner supply mechanism (toner hopper clutch or its harness), therefore please replace the toner hopper clutch (P/C pg. 98, #20).

Action #2
Toner concentration in the developer is too high

Action #2-1: Toner supply mechanism check
1. Make 5 blank copies on A3/DLT paper.
2. If the toner hopper cam (Parts Catalog, pg. 48, #2) continually rotates while the blank copies are being made, this indicates a possible problem with the toner hopper clutch (P/C pg. 98, #20), therefore replace the clutch.

Action #2-2: SP mode setting check
If SP2-208-009 (Toner Supply Method) is at **0**, and SP2-208-005 to 008 (Toner Supply Ratio: Fixed Mode) are all at a value of **6 or greater**, the toner concentration in the developer will be too high, therefore set:
- SP2-208-009 to **2 (Fuzzy control supply),** and
- SP2-208-005 to 008 to **5**

Action #3
Toner concentration in the developer is NOT abnormally high.

Action #3-1: Interface turn ring check
If the interface turn ring (P/C pg. 60, #12) is damaged in any way or not secured correctly, replace it.

Action #3-2: TD sensor signal communication check
1. Check the electrical conductivity between the TD sensor and CN770 on the Revolver Control Board (P/C pg. 114, #29).
2. If the electrical conductivity is abnormal, please try replacing the following parts **in the order listed below:**
   1. Rotating Ring Harness (P/C pg. 60, #24) **and**
   2. Density Sensor Harness (P/C pg. 114, #33), **together as a set**.

If the symptom still occurs, continue with the following replacements, one by one and check the results each time:

3. Interface Turn Ring (P/C pg. 60, #12).
4. Connecting Rev. Assy (P/C pg. 60, #16).
5. Revolver Control Board (P/C pg. 114, #29).

Action #4
Missing toner colors or faint images (light-to-dark graduated ID across copy).

1. If the revolver stop position during image development is not the same as the development unit replacement position, which can cause the image symptoms described above, check the gear on the developer stepper motor (P/C pg. 104, #20).
2. If the gear appears to be damaged in any way, replace the development stepper motor.

Action #5
Amount of developer inside the development unit is too low

Replace the developer.

Action #6
Problem with the TD sensor causes the output to remain the same.

Replace the TD sensor.

Reissued: 3-Dec-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028c

RTB Reissue

The following is the modification history of the Main Board firmware.

Subject: Main Firmware Modification History			Prepared by: H.Matsui
From: 2nd Tech Support Sec. Service Support Dept.			
Classification:	☐ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☒ Other ( )		

(For NA Model)

B0235197	File Name	Version	C.SUM	Production
B	B0235197B.bin	1.051	C614	December 2000 Production
C	B0235197C.bin	1.073	F6EE	March 2001 Production
D	B0235197D.bin	1.082	346A	April 2001 Production
E	B0235197E.bin	1.09	DC1A	May 2001 Production
F	Not Exist			
G	B0235197G.bin	1.103	FE1D	August 2001 Production
H	B0235197H.bin	1.115	722B	September 2001 Production
I	Not Exist			
J	B0235197J.bin	1.12	C956	November 2001 Production
K	B0235197K.bin	1.13	84F2	February 2002 Production
L	B0235197L.bin	1.14	F52C	September 2002 Production
M	B0235197M.bin	1.15	F11D	December 2002 Production
N	B0235197N.bin	1.16	F603	March 2003 Production
P	***B0235197P.bin***	***1.17***	***8976***	***December 2003 Production***

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(For European Model)

B0235198	File Name	Version	C.SUM	Production
B	B0235198B.bin	1.051	D1B0	December 2000 Production
C	B0235198C.bin	1.073	A0F8	March 2001 Production
D	B0235198D.bin	1.082	51C0	April 2001 Production
E	B0235198E.bin	1.09	520F	May 2001 Production
F	Not Exist			
G	B0235198G.bin	1.103	2F40	August 2001 Production
H	B0235198H.bin	1.115	858F	September 2001 Production
I	Not Exist			
J	B0235198J.bin	1.12	A43D	November 2001 Production
K	B0235198K.bin	1.13	6ACF	February 2002 Production
L	B0235198L.bin	1.14	3060	September 2002 Production
M	B0235198M.bin	1.15	434C	December 2002 Production
N	B0235198N.bin	1.16	9C17	March 2003 Production
P	B0235198P.bin	1.17	D492	December 2003 Production

(For European 2nd Language)

B0235181	File Name	Version	C.SUM
-	B0235181.bin	1.082	36A4
A	B0235181A.bin	1.09	F1A9
C	B0235181C.bin	1.115	D91B
D	B0235181D.bin	1.12	0C47
E	B0235181E.bin	1.13	56E6
F	B0235181F.bin	1.14	5A19
G	B0235181G.bin	1.15	B919
H	B0235181H.bin	1.16	30EE
J	B0235181J.bin	1.17	BD4A

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(For European 3rd Language)

B0235182	File Name	Version	C.SUM
-	B0235182.bin	1.082	A9BB
A	B0235182A.bin	1.09	4A69
C	B0235182C.bin	1.115	ECCF
D	B0235182D.bin	1.12	8722
E	B0235182E.bin	1.13	96D1
F	B0235182F.bin	1.14	57E0
G	B0235182G.bin	1.15	823F
H	B0235182H.bin	1.16	91AC
J	B0235182J.bin	1.17	A137

(For European 4th Language)

B0235183	File Name	Version	C.SUM
-	B0235183.bin	1.082	8CA9
A	B0235183A.bin	1.09	5588
C	B0235183C.bin	1.115	8250
D	B0235183D.bin	1.12	2588
E	B0235183E.bin	1.13	418D
F	B0235183F.bin	1.14	8FE2
G	B0235183G.bin	1.15	1B92
H	B0235183H.bin	1.16	0142
J	B0235183J.bin	1.17	0BF9

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028c

(For Taiwan Language)

B0235199	File Name	Version	C.SUM	Production
A	B0235199A.bin	1.082	1D0C	April 2001 Production
B	B0235199B.bin	1.09	A279	May 2001 Production
C	Not Exist			
D	B0235199D.bin	1.103	67C7	August 2001 Production
E	B0235199E.bin	1.115	1E40	September 2001 Production
F	B0235199F.bin	1.12	989E	November 2001 Production
G	B0235199G.bin	1.13	FB64	February 2002 Production
H	B0235199H.bin	1.14	CD76	September 2002 Production
J	B0235199J.bin	1.15	0478	December 2002 Production
K	B0235199K.bin	1.16	C1F8	March 2003 Production
L	B0235199L.bin	1.17	1442	December 2003 Production

Reissued: 3-Dec-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028c

Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
1. RDS (Remote Diagnostic System) supported from ver1.073.	C	C	-	-	-	-
<<The following languages are supported from ver1.082>> 1.082EU2: Spanish, Dutch, Swedish, Danish 1.082EU3: Norwegian, Portuguese, Polish, Czech 1.082EU4: US English, Russian 1.082TWN: UK English, Traditional Chinese	D	D	-	-	-	A
The following SP modes for fine-tuning of the fusing temperature have been newly added. SP1-105-022 : Single side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-023 : Single side: Hot:Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-024 : Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-025 : Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] SP1-105-026 : 2nd side: Hot:Thick2: FC [100 to 200 / **180** / 1 degrees / step] SP1-105-027 : 2nd side: Hot: Thick2: 1C [100 to 200 / **180** / 1 degrees / step] SP1-105-028 : Single side: Pressure:Thick2: FC [100 to 200 / **155** / 1 degrees / step] SP1-105-029 : Single side: Pressure:Thick2: 1C [100 to 200 / **155** / 1 degrees / step] The detailed procedure for the above will be announced separately in the Cattelya2 Basic Tips. .	E	E	A	A	A	B

Reissued: 3-Dec-03

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Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP modes have been newly added to minimize toner scattering at the trailing edge of solid images. These SP modes are for ITB bias adjustment. SP2-301-051 to 078 SP2-301-081 to 100 See RTB#RB023009 for the detailed procedures.	E	E	A	A	A	B
[Corrected software bug] The Program key operation freezes when: 1. The program key button is pressed while the by-pass tray is open and the by-pass tray setting window is displayed. 2. The by-pass tray is closed before the program key setting window is closed.	E	E	A	A	A	B
Developer initialization results (displayed w/SP3-964) are reset to "0" after the TD sensor initialization is performed. This is to avoid failures that may occur if developer initialization is not performed after TD sensor initialization. In other words, if the dev. initialization results are “0" after TD sensor initialization, developer initialization has not been performed yet. In which case, it is necessary to perform dev. initialization for the color(s) which have been replaced.	E	E	A	A	A	B
[Corrected software bug] Drum counter in SP7-803 is not reset to "0" when the "Reset All Developer Counters" button is pressed.	E	E	A	A	A	B

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Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The following SP defaults have been changed: SP3-942-005 TD sensor initial gain upper limit: K from180 to 200 SP3-942-006 TD sensor initial gain upper limit: C from 190 to 210 SP3-942-007 TD sensor initial gain upper limit: M from190 to 210 SP3-942-008 TD sensor initial gain upper limit: Y from 190 to 210 This is to minimize TD sensor initialization upper limit errors (displayed value: 4 ✱)". NOTE: 1: K, 2: Y, 3: C, and 4: M are displayed for the respective colors for items identified by "✱" in the "Displayed value" column of the table.	E	E	A	A	A	B
The following SP defaults have been changed (same information released in RTB #RB023005). From this firmware version, these SP defaults will be automatically changed for troubleshooting for white spots (fireflies) in halftone areas in Thick paper mode. SP2-310-016 from 20 to 16 SP2-310-017 from 20 to 16 SP2-316-030 from 114 to 100	G	G	-	-	-	D
When the by-pass feed table is opened, the following messages will be displayed on the operation panel, to prevent machine failures due to operator errors: "Do not use ink-jet printer paper to prevent failure." "When using the bypass tray for the printer, make sure you select the paper type at the PC."	G	G	-	-	-	D

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Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
When copying/printing from the bypass onto thick paper, lightning marks occur after the tray is refilled and the job resumes.	H	H	C	C	C	E
Printing with a controller when selecting more then 10 copies, the 10th copy (and every 10th copy) will print a 25-30mm blue band at the leading edge from operator to non-operator side.	H	H	C	C	C	E
Animated guidance display for paper jam recovery appears on the operation panel when a D2 jam occurs. This new guidance instructs the operator to remove the jammed paper from the D2 area by continuous operation as follows: 1-1. Pull out the lower drawer unit completely. 1-2. Open the fusing paper exit unit by holding the D2 lever 1-3. Pull out the jammed paper from the inside of the fusing unit. In addition, following guidance message is displayed under the animation: “Open front cover, pull lever B2 down and out, then open D2 cover to expose Fusing Unit.”	J	J	D	D	D	F
To improve reliability against the skewing in auto duplex mode, the default settings of the following SP modes have been changed: Duplex Unit Side/End Fence Adjustment SP1-901-001 Side fence stop position: from 0 to 1 SP1-901-002 End fence stop position: from 0 to 1	J	J	D	D	D	F
To improve reliability of paper transfer timing in normal paper mode, the default setting of the following SP mode has been changed: SP1-801-010 Registration motor: Normal speed: from 0.0 to 0.3	K	K	E	E	E	G
To further ensure that the exposure lamp does not remain on too long, if any SC related to the Scanner IPU communication error or IDU communication error (SC601 or SC604) is detected, the AC power supply to the scanner lamp regulator will be cut.	K	K	E	E	E	G

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Symptom Corrected	NA	EU	EU2	EU3	EU4	TWN
The default value of the paper transfer bias for OHP/2C, 3C and 4C has been changed. This change is to prevent a color difference when selecting OHP / Thick Paper Mode printing with transparencies. The following SP default values have been changed: PTR bias adjustment: SP2-310-011 :Image area OHP: 2C from19 to 22 SP2-310-012: Image area OHP: 3C from20 to 22 SP2-310-013: Image area OHP: 4C from20 to 22 PTR bias: paper size correction: SP2-313-010: OHP: B4 or larger from100 to 128 SP2-313-011: OHP: A5L or larger from100 to 156 SP2-313-012: OHP: Less than A5L from100 to 182 PTR bias: Humidity correction SP2-316-018: LL OHP: 4C from80 to 82 SP2-316-020: L OHP: 4C from80 to 82 SP2-316-022: H OHP: 4C from120 to 105 SP2-316-024: HH OHP: 4C from120 to 105	L	L	F	F	F	H
Vref lower limit for the ID sensor pattern used for Detecting Vsp for Toner Supply Control (See service manual page 6-22) has been changed. This software change also applies to the main charger bias value and timing of the ID sensor pattern used for the Detecting Vsp for Toner Supply Control in A3++ copying/printing. These changes are to make it more difficult for dirty background to occur during continuous A3++copying/printing.	L	L	F	F	F	H
To ensure that jammed paper is properly removed, the software has been modified so that C and D jams cannot be cleared unless the fusing/transfer drawer unit is pulled out then pushed back in. If this is not done, the condition will remain even after the power is turned off/on.	M	M	G	G	G	J

Reissued: 3-Dec-03

Model: Cattleya2	Date: 7-Nov-02	No.: RB023028c

To improve the reliability of toner supply control for copying/printing onto 13" X 19" paper, the process timing for generating the Vsp ID sensor pattern has been changed. Specifically, the timing of revolver rotation, development clutch on/off and the development AC bias on/off timing while generating the pattern have been changed.	N	N	H	H	H	K
To improve the reliability of toner supply control for copying/printing onto sizes smaller than B5 sideways (257mm X 182mm), the process timing for generating the Vsp ID sensor pattern has been changed.	N	N	H	H	H	K
Software modified to further improve fusing lamp control reliability for the first print job made after process control self-check is performed while the machine is in Energy Saver Mode.	***P***	***P***	***J***	***J***	***J***	***L***

Reissued: 15-Jun-04

Model: Cattleya2	Date: 8-May-03	No.: RB023033b

RTB Correction
The items in ***bold italics*** have been corrected or added.

Subject: SC456 or missing color			Prepared by: H.Matsui
From: 2nd Tech. Support Sec. Service Support Dept.			
Classification:	☒ Troubleshooting	☐ Part information	☐ Action required
	☐ Mechanical	☐ Electrical	☐ Service manual revision
	☐ Paper path	☐ Transmit/receive	☐ Retrofit information
	☐ Other ( )		

This bulletin has been reissued to add information for the cam overrun stopper (also see MB #MB023075).

The following troubleshooting has been issued as additional information to RTB **#RB023026a.**

SYMPTOM

1. Only the toner color developed last (i.e. magenta in Copier mode, black in Printer mode) correctly appears on the output. All other colors are missing or smudged.
2. SC456 is displayed.

CAUSE

Only symptom #1 occurs: Case A
The ITB cleaning unit shift clutch overruns (P/C pg.100, #16), causing the ITB cleaning blade to remain in contact with the ITB and remove all toner colors transferred to the belt except for the last (magenta in Copier mode, black in Printer mode).

Symptoms #1 or #2 or both occur: Case B
1. The PTR joint (P/C pg. 74, #37) does not couple correctly.
2. The PTR pressure cams slip (P/C pg. 74, #40).
3. The PTR lift clutch overruns (P/C pg. 102, #1).

When symptom #1 occurs, the PTR remains in contact with the ITB, removing all toner colors from the belt before they are transferred to the paper, except for the last.

Model: Cattleya2	Date: 8-May-03	No.: RB023033b

Troubleshooting:

1. How to distinguish between cases A and B

Open the front cover and remove the revolver cover (P/C pg. 14, #8). Take full color copies or prints and check the movements of the ITB cleaning blade and the PTR during the job.

Case A: The ITB cleaning blade remains in contact with the ITB during image transfer (drum to ITB) of all colors except the last.

Case B: The PTR lifts up and remains in contact with the ITB during image transfer (before actual transfer to the paper) of all colors except the last.

2. Action.

Case A: Replace the ITB cleaning unit shift clutch (P/C pg. 100, #16) with the new type (**P/N AX210087**). Refer to MB **#MB023069**.

Case B: Perform the check procedure described in the following table and take actions for each of the suspected causes.

Important: Once the SC occurs in case B, do not pull out the drawer unit, because the procedure below is only effective when the unit has not been pulled out following the SC.

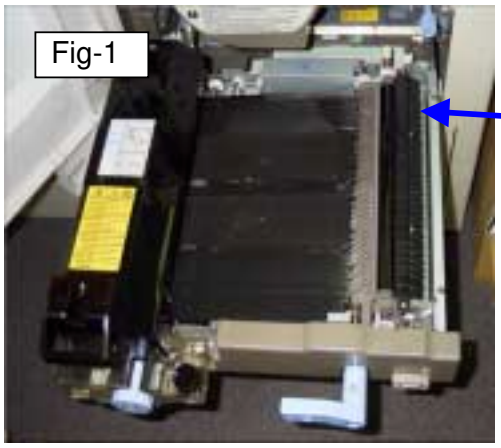
Model: Cattleya2	Date: 8-May-03	No.: RB023033b

Checking Items (in order): / Suspected Causes and Action	*1*	*2*	*3*
	Make sure the drawer unit <u>has not been pulled out yet</u> before performing this step. Remove the rear right cover (P/C pg. 12, #26). Check the orientation of the flat-cut portion of the clutch shaft (P/C pg. 102, #7). See Fig. 4-7 below.	**Make sure to <u>pull out the drawer unit</u> before performing this step**. Remove the rear right cover (P/C pg. 12, #26). Check the orientation of the flat-cut portion of the clutch shaft (P/C pg. 102, #7). See Fig. 4-7 below.	**Make sure to <u>keep the drawer unit open</u> for this step as well.** Check if the positions of the PTR home position sensor (P/C pg. 76, #13) and feeler (P/C pg. 74, #26) are correct. See Fig. 1-3 below.
Combination: 1 **See <<1>> below**	OK (Fig. 4, 5)	OK (Fig. 4, 5)	**Abnormal** (Fig. 3)
Combination: 2 **See <<2>> below**	**Abnormal** (Fig. 6, 7)	OK (Fig. 4, 5)	**Abnormal** (Fig. 3)
Combination: 3 **See <<3>> below**	**Abnormal** (Fig. 6, 7)	**Abnormal** (Fig. 6, 7)	**Abnormal** (Fig. 3)

Suspected Causes and Action.

	Suspected Cause	Action
<<1>>	PTR lift joint (P/C pg. 74, #37) does not couple correctly.	Replace the PTR joint with the new type (P/N B0234620). See MB023061.
<<2>>	Paper transfer cam overruns (P/C pg. 74, #40).	1. Clean the paper transfer cam with alcohol. See Fig 8-10 below. ***2. Attach the Cam Overrun Stopper (P/N B0233960) to the Lower Drawer Unit. Note: See the installation procedure at the end of this RTB.***
<<3>>	PTR lift clutch slips (P/C pg. 102, #1).	Replace the PTR lift clutch with the new type (P/N AX210087). See MB023069.

Model: Cattleya2	Date: 8-May-03	No.: RB023033b



Location of PTR home position sensor and feeler.

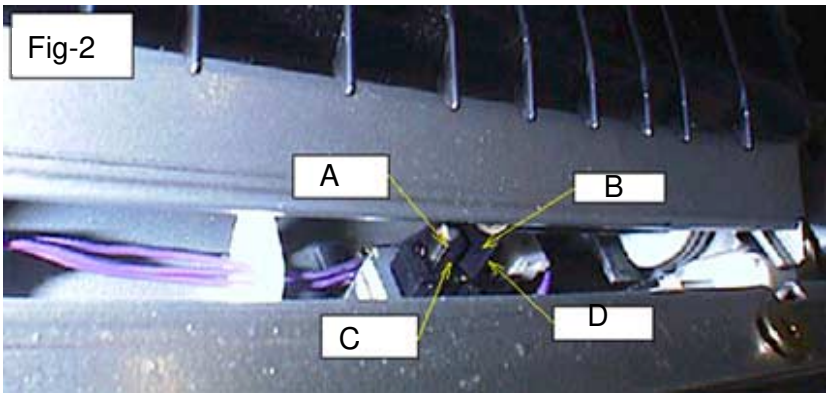


Fig-2: **Normal**.
A: Sensor
B: Feeler
Sensor edge [C] and feeler edge [D] are parallel.

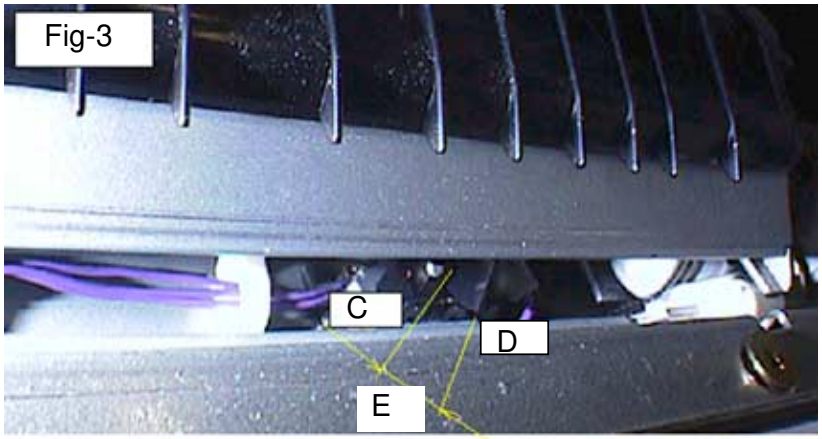


Fig-3: **Abnormal**.
Sensor edge [C] and feeler edge [D] are not parallel [E].

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Fig-4

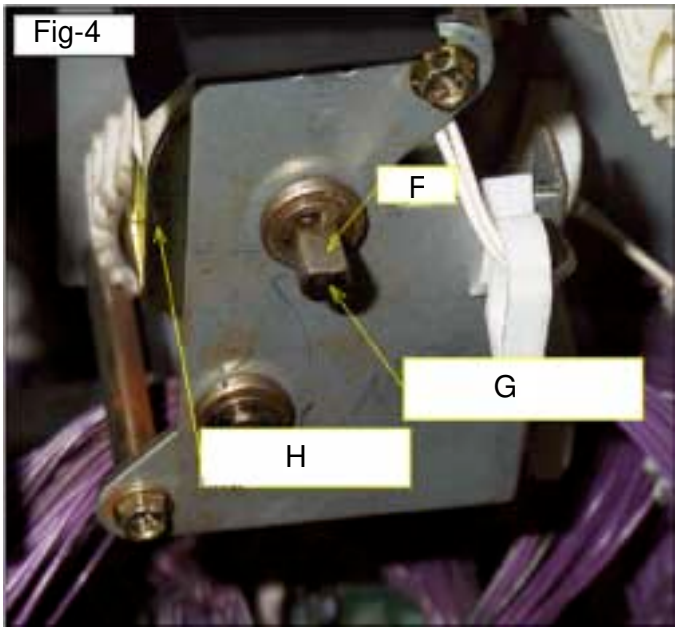

Fig-4: **Normal**

F: Flat-cut portion of clutch shaft.
G: Clutch shaft.
H: PTR lift clutch

The flat-cut portion of the clutch shaft is **horizontal** (facing up).

Fig-5

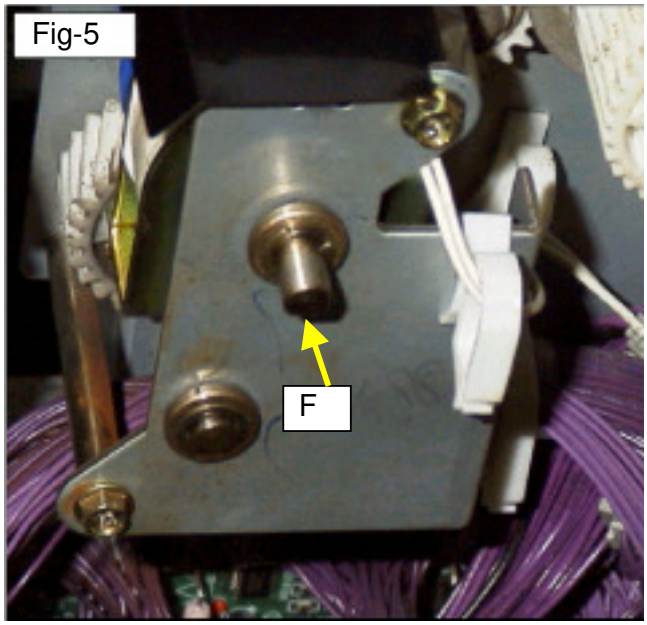

Fig-5: **Normal**

The flat-cut portion of the clutch shaft [F] is **horizontal** (facing down).

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Fig-6

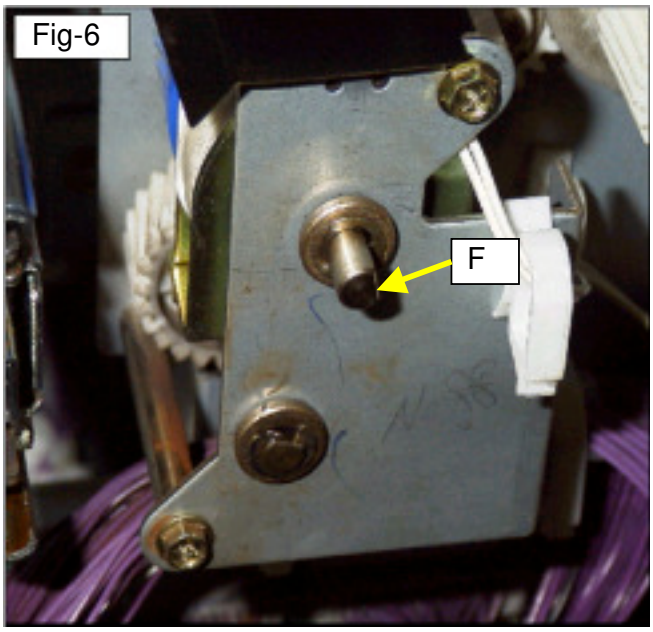
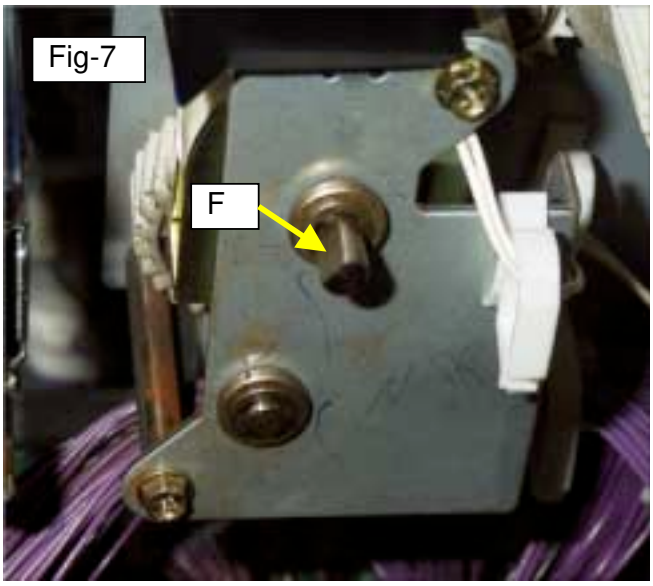


Fig-6 and 7: **Abnormal**

The flat-cut portion of the clutch shaft [F] is more than 10 degrees from horizontal.

Fig-7



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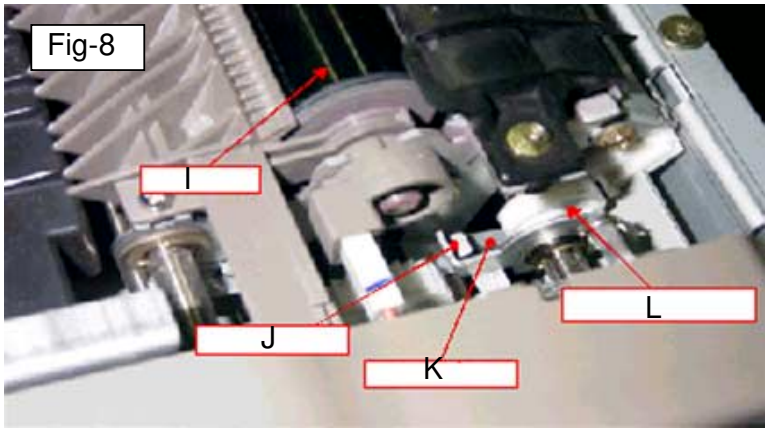


Fig-8

I: Paper transfer roller (PTR).
J: Pressure arm
K: Pressure arm contact surface.
L: Paper transfer cam

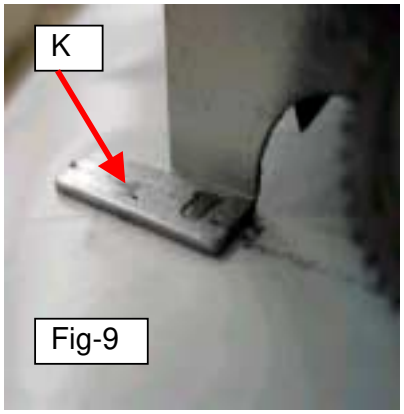
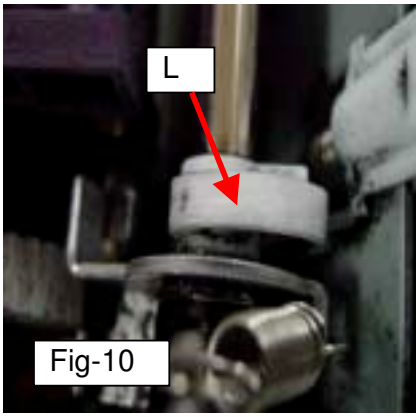


Fig-9, 10

Clean the pressure arm contact surface [K] and paper transfer cam [L] (both front and rear sides) with alcohol.



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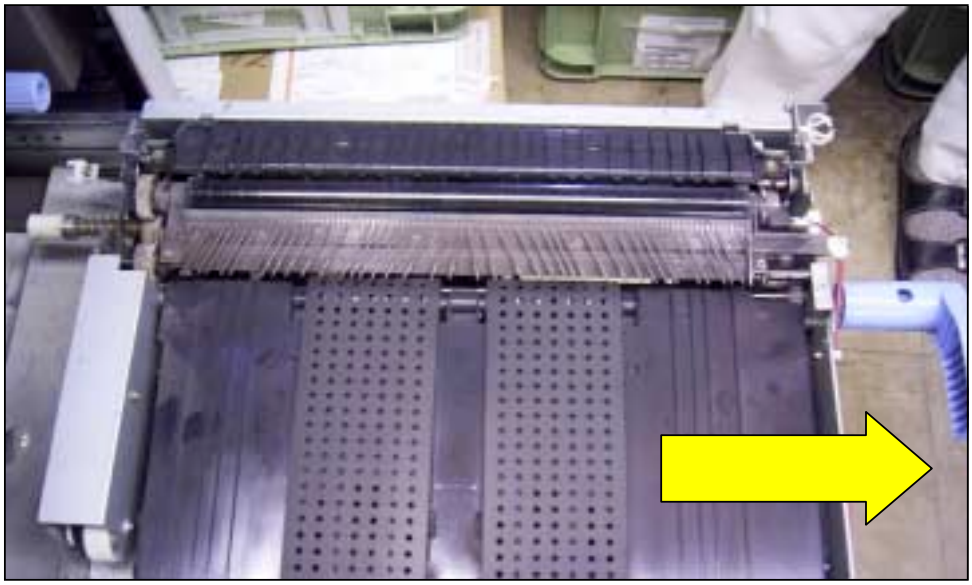
Installation Procedure for the Cam Overrun Stopper

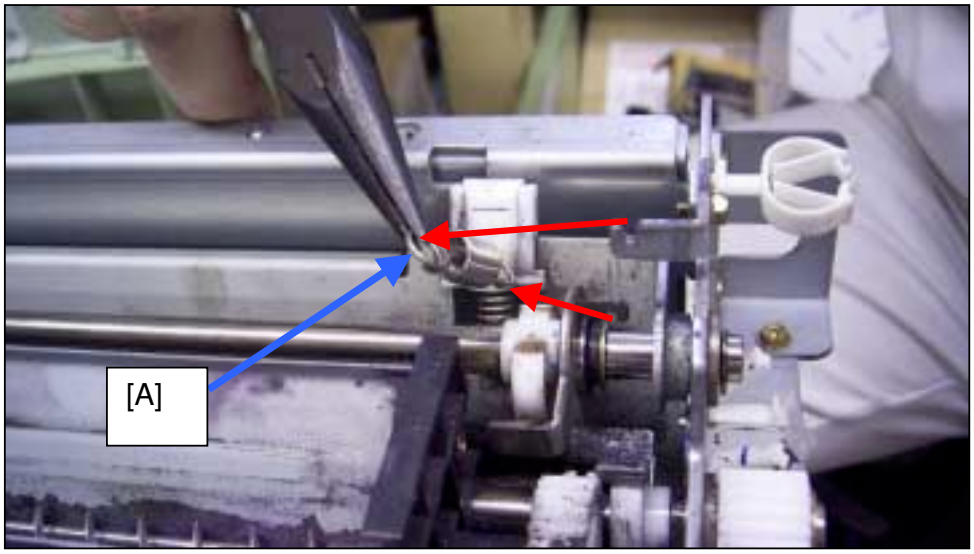
Note: See related MB: #MB023075.

1. Pull out the Lower Drawer Unit.



2. Remove the PTR unit.

3. Remove the spring [A] at the front side of the Lower Drawer Unit.



4. Remove the spring [B] at the rear side of the Lower Drawer Unit as well.

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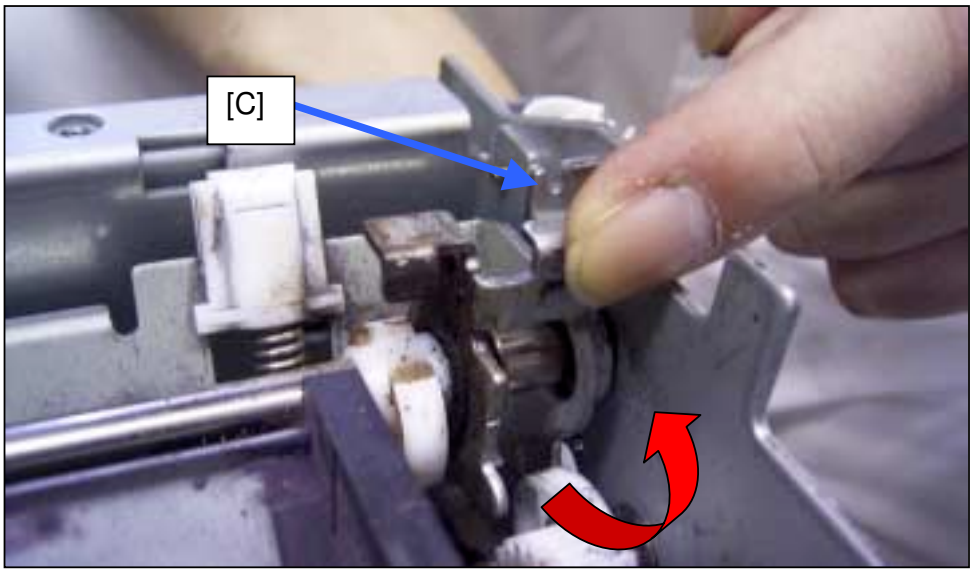
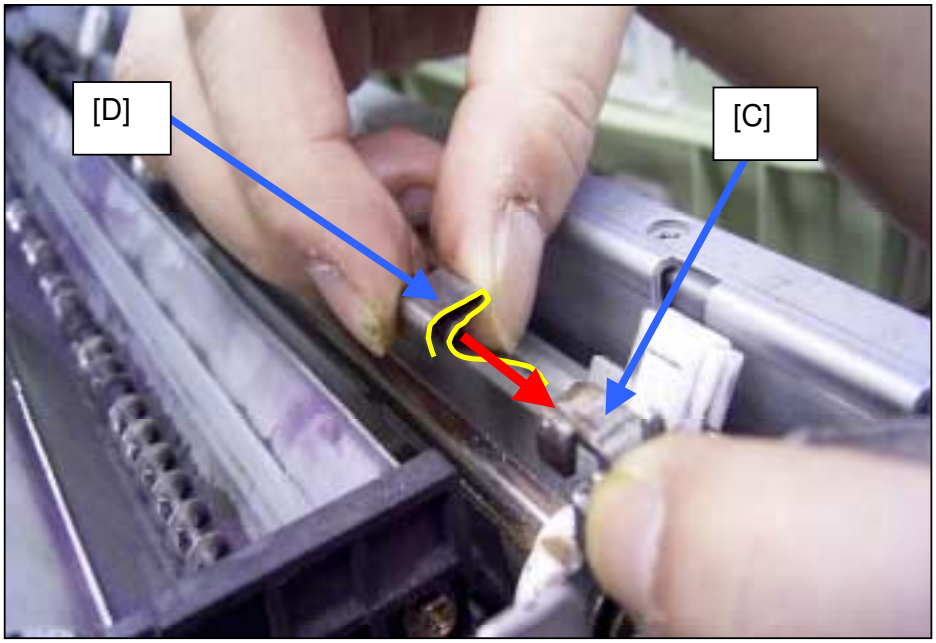
5. Raise the lever [C] as shown.



6. Attach the Cam Overrun Stopper [D] onto the portion of the lever shown [C].
Note: The stopper should fit over this portion, as shown in the next photo.



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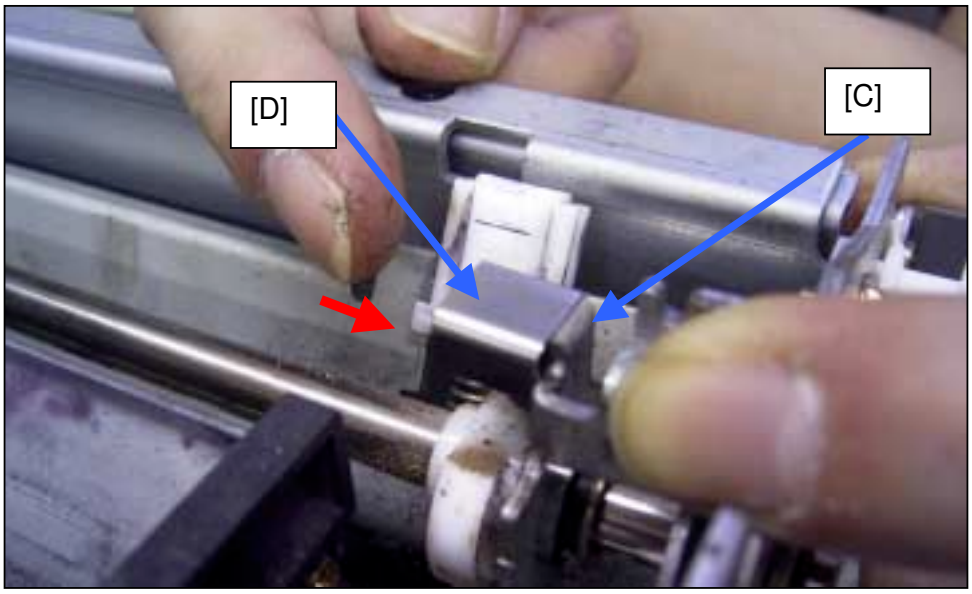
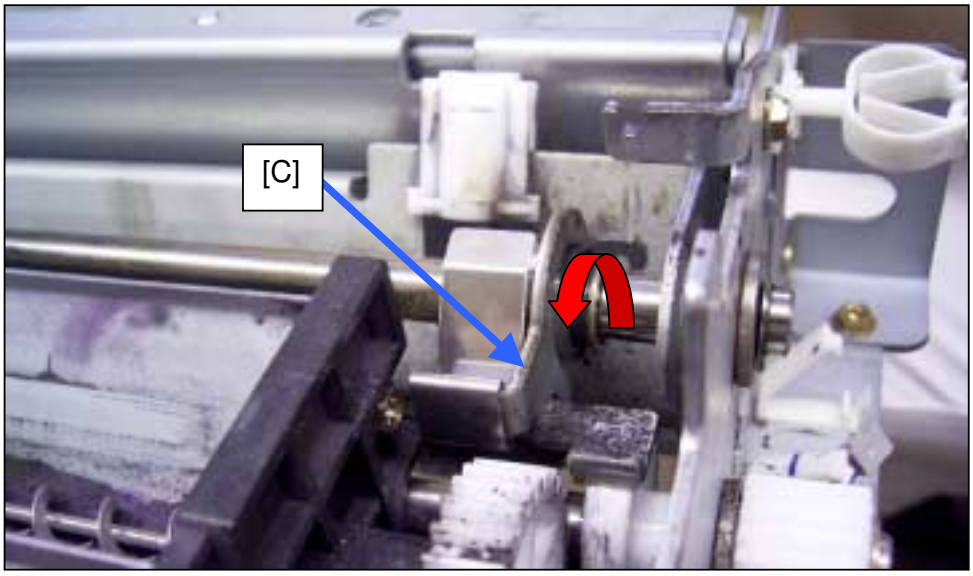
7. Slide the Cam Overrun Stopper [D] over the portion of the lever [C] in the direction shown as far as it will go. Following this, attach the other stopper to the rear side of the Lower Drawer Unit in the same way.



8. Push the lever [C] back down to its original position (both front and rear sides).



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9. Reattach the spring [A] removed in Steps 3 and 4 above (both front and rear sides).