RICOH

Technical Bulletin No. RTB-001

SUBJECT: Additional information to TD check	DATE: 15 July, '92 PAGE: 1 of 5
PREPARED BY: I. Kakegawa CHECKED BY:	FROM: Copier Technical Support Section

CLASSIFICATION:

- ☐ Action Required
- ■ Revision of service manual
- ■ Troubleshooting
- ☐ Information only
- ☐ Retrofit Information
- ☐ Other

MODEL:
PDC-1E

This is additional information to TD check. (Refer to page 5-5 to 5-10)

1. Step 3, data input in SPD106 (Page 5-5)
   Whenever TD check is performed, always input the proper humidity data.
   If it is not changed although the humidity has changed, the pointer will not able to shift as required due to the pointer limit data. (Refer to page 2-7, #8)

2. In step 11, you must make a A3/11" x 17" copy using the C4 chart.
   This is to confirm that all four colors are developed properly.

   [Example] If the charge corona unit for cyan has not been set in position, a cyan solid image without any white copy margin will be made over the other colors. In this condition if the following steps are continued, cyan process data will be abnormal.

3. Step 12, TD and TGRD Data Sheet (Page 5-7)
   When filling in TGRD column based upon TGRD target data (SPD515 ~ 518), be sure to write the correct range as shown in page 5-7 of the service manual.
   If not, there is a possibility of making a mistake in plotting the data due to misunderstanding of the range. A typical mistake that we have seen is shown on the next page. Due to the TGRD column being filled in incorrectly, ΔTD was judged as "0" (OK). (Correct ΔTD is "–1".) As a result, cyan toner is controlled low, showing "low cyan image density."

[CYAN]

CORRECT

Since 4th detected TGRD data is out of OK range, TD data is changed from 9 to 8. Then, a 5th time.

ΔTD	TGRD	±α	1	2	3	4	5	6	7
+1	109 ~118	+30							
OK	104 ~108	+20							
OK	101 ~103	+15							
OK	89 ~100	+12							
OK	88	〉							
OK	83 ~ 87	-5							
OK	78 ~ 82	-10							
OK	73 ~ 77	-15					●		
OK	68 ~ 72	-20							
-1	48 ~ 67	-40	●	●	●	●			
TD (493)			9				8		
TGRD (523)			50	61	64	66	73		

[CYAN]

WRONG

Due to the TGRD column being incorrectly filled in, TGRD data from 1st to 4th checks are plotted in the wrong locations, resulting in no TD change.

ΔTD	TGRD	±α	1	2	3	4	5	6	7
+1	109 ~118	+30							
OK	104 ~108	+20							
OK	101 ~103	+15							
OK	89 ~100	+12							
OK	84 ~ 88	〉							
OK	79 ~ 83	-5							
OK	74 ~ 78	-10							
OK	69 ~ 73	-15							
OK	49 ~ 68	-20	●	●	●	●			
-1	Upto 48	-40							
TD (493)			9						
TGRD (523)			50	61	64	66			

To prevent this mistake, this sheet has been changed as shown below.
This new sheet is attached to the last page of this RTB. Keep it in your service manual.

[Black]

SPD515 data (TGRD Target) ●

ΔTD	TGRD Range	± Range	1	2	3	4	5	6	7	8	9	10
+1		+26 ~ +35										
OK		+21 ~ +25										
OK		+16 ~ +20										
OK		+11 ~ +15										
OK		+ 1 ~ +10										
OK	●	±0										
OK		– 5 ~ – 1										
OK		–10 ~ – 6										
OK		–15 ~ –11										
OK		–20 ~ –16										
-1		–40 ~ –21										
TD Data		(490)										
TGRD Detected Data		(520)										

4. Step 21, image density for each color using color patch (SPD 82--H)

1) After getting TGRD detected data into "OK" area (SPD520 ~ 523), set SPD82 to "H" to print 15 mm color patches using 7th LD power.

2) Make a test copy and check the following two points:
①. Image density of color patches in BK, M, Y, and C. (See the one on the left side which is 100% dots filling.)

②. Toner scattering around those patches.

STANDARD: Compared with the standard color patch sample of the 7th LD power enclosed in the manual, image density of each color on copy should be equal to or higher than the standard sample, but there shouldn't be any toner scattering around those patches.

3) If a patch is lighter than standard, or if it is too dark with toner scattering, the next steps should be done only for the abnormal color(s) depending upon the difference of ±α.

±α= [Last TGRD detected data (SPD 520 ~ 523)--TGRD target data (SPD 515 ~ 518)]

Last TGRD detected data - - -TGRD target data [(SPD520 ~ 523) - - -(SPD515 ~ 518)]	±α	Color patch is too dark. (ID is too high.)	Color patch is too light. (ID is too low.)
	↑ +16	1. ΔTD: +1 (Increase TD data by "1", using SPD490 ~ 493.) 2. Repeat steps #13 through #17two times, and plot TGRD detected data on a new check sheet.	1. Raise TGRD target data by +15 for BK and M or +20 for Y and C. (SPD515 ~ 518) 2. Repeat steps #13 through #17four times, and plot TGRD detected data on a new check sheet.
	+15 | --10	1. ΔTD: +1 (SPD490 ~ 493.) 2. Lower TGRD target data by -15 for BK and M or -20 for Y and C. (SPD515 ~ 518) 3. Repeat steps #13 through #17four times, and plot TGRD detected data on a new check sheet.	1. ΔTD: --1 (SPD490 ~ 493.) 2. Raise TGRD target data by +15 for BK and M +20 for Y and C. (SPD515 ~ 518) 3. Repeat steps #13 through #17four times, and plot TGRD detected data on a new check sheet.
	--11 ↓	1. Lower TGRD target data by -15 for BK and M or -20 for Y and C. (SPD515 ~ 518) 2. Repeat Step #13 through #17four times, and plot TGRD detected data on a new check sheet.	1. ΔTD: --1 (SPD490 ~ 493.) 2. Repeat steps #13 through #17two times, and plot TGRD detected data on a check new sheet.

NOTE1: The TD setting can be between 0 and 30. If there are no more steps to shift, change the ND setting by same value. (SPD495 ~ 498)

NOTE2: When TGRD target data is changed, the free run/self-check must be done four times. (A new check sheet is required.)

4) After repeating Step #13 through #17 two times (only when TD data is changed), or four times (when TGRD target data is changed.), check the color patches (7th LD power) again.

If it is too light or too dark, the next steps should be done only for the abnormal color(s) depending upon the difference of
[Last TGRD detected data (SPD520 ~ 523) -- TGRD new target data (SPD515 ~ 518)]

Last TGRD detected data - - - TGRD target data (SPD520 ~ 523) - - - (SPD515 ~ 518)		Color patch is too dark. (ID is too high.)	Color patch is too light. (ID is too low.)
	↑ +16	1. ΔTD: +1 (Increase TD data by "1", using SPD490 ~ 493.) 2. Repeat steps #13 through #17two times, and plot TGRD detected data on a check sheet.	1. Raise TGRD target data by +10. (SPD515 ~ 518) 2. Repeat steps #13 through #17four times, and plot TGRD detected data on a check sheet.
	+15 | --10	1. Lower TGRD target data by--10. (SPD515 ~ 518) 2. Repeat steps #13 through #17four times, and plot TGRD detected data on a check sheet.	
	--11 ↓	1. Lower TGRD target data by -15 for BK and M, -20 for Y and C from the present data. (SPD515 ~ 518) 2. Repeat steps #13 through #17four times, and plot TGRD detected data on a new check sheet.	1. ΔTD: --1 (SPD490 ~ 493.) 2. Repeat steps #13 through #17two times, and plot TGRD detected data on a check sheet.

RICOH

Technical Bulletin No. RTB-002

SUBJECT: Exposure lamp position	DATE: 15 July, '92 PAGE: 1 of 1
PREPARED BY: I. Kakegawa CHECKED BY:	FROM: Copier Technical Support Section

CLASSIFICATION:

- ☐ Action Required
- ■ Troubleshooting
- ☐ Retrofit Information
- ■ Revision of service manual
- ☐ Information only
- ☐ Other

MODEL:
PDC-1E

This is additional troubleshooting information for the exposure lamp experienced in Europe.

1. Additional information to the service manual, page 5-28, # 2

New

2. Set both lamp-heater assemblies in the scanner so that:
   - open parts face the center, and
   - two pins on the rear lamp terminal are <u>fully</u> inserted into the rear lamp receptacle.
     (There should be no gap between the rear receptacle and the rear end of the lamp.)

2. Troubleshooting

If the two pins on the rear lamp terminal are <u>not fully inserted</u>, the rear lamp terminal connection may be poor. Then, the inner surface of the lamp tube turns black on the rear side due to abnormal heat generation, resulting in low illumination on this area. In this case, the following will be observed:

1) The exposure lamp is turned on and off during scanning, because the lamp is just going to be open circuit.

2) Color tone on the rear side of the copy image is not the same as at other areas because of the dark lamp area. Under this condition, replace the exposure lamps.

RICOH

Technical Bulletin No. RTB-003

SUBJECT: Key counter mode copy	DATE: 15 July, '92 PAGE: 1 of 1
PREPARED BY: I. Kakegawa CHECKED BY:	FROM: Copier Technical Support Section

CLASSIFICATION:
- ☐ Action Required
- ☐ Troubleshooting
- ☐ Retrofit Information
- ■ Revision of service manual
- ■ Information only
- ☐ Other

MODEL:
PDC-1E

To enable copy operation with the key counter, do the following:

1. Install the key counter receptacle.
2. Turn off SW100 on the sequence control board (rear side) to select key counter mode.
3. Then, depending upon the customer's request for key counter management, input the appropriate data (from 0 to 7) in SPD12. (See page 4-24)

   This is to decide in which color modes the key counter is incremented.

Data	Full Color	Single Color	Black
0 0 0	x	x	x
0 0 1	o	x	x
0 0 2	x	o	x
0 0 3	o	o	x
0 0 4	x	x	o
0 0 5	o	x	o
0 0 6	x	o	o
0 0 7	o	o	o

o: Count up
x: No count up

[Example] SPD12-001: The key counter shows the number of full color copies made.

SPD12-007: The key counter shows the total number of copies made in all three color modes.

NOTE: When key counter mode is selected by turning off SW100 on the sequence control board, **the key counter should be set for any copy operation** regardless of SPD12 data.

[Manual correction on page 4-24, SPD12]

o: Key counter required
x: No key counter required
Default: 0 0 7

⟶

o: Count up
x: No count up
Default: 0 0 0

RICOH

Technical Bulletin No. RTB-004

SUBJECT: Forced self check operation with new ROMs	DATE: 15 July, '92 PAGE: 1 of 3
PREPARED BY: I. Kakegawa CHECKED BY:	FROM: Copier Technical Support Section

CLASSIFICATION:		MODEL:
■ Action Required ☐ Troubleshooting ☐ Retrofit Information	☐ Revision of service manual ☐ Information only ☐ Other	PDC-1E

1. SPD-22, Forced self check operation

In order to perform the self check operation at a certain copy interval, the following two ROMs has been changed to "C" version.

P/N A0925507B ⟶ C (ROM on the sequence control board)

P/N A0925509B ⟶ C (ROM on the process board)

This modification will be applied from July,'92 production onward. By replacing old ROMs with these two new ROMs as a set, SPD-22 can be accessed.

SPD-22: Forced self check operation at a certain copy interval

0: No self check operation (Default)

1: Yes, at every 200 copies

2: Yes, at every 400 copies

3: Yes, at every 600 copies

4: Yes, at every 800 copies

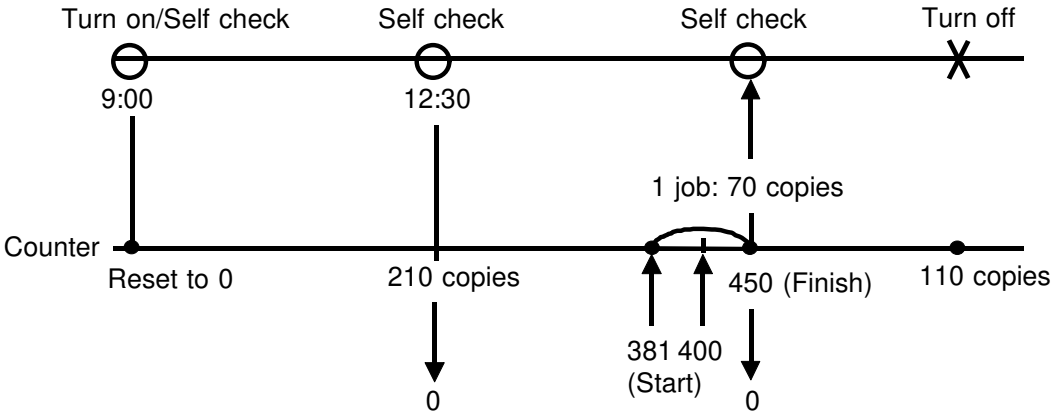
5: Yes, at every 1,000 copies

The default setting of SPD-22 is "0". If a data from 1 to 5 is selected, self check operation automatically starts just after the last copy of that copy job is fed out when the total copies made since the last self check becomes more than the set copy number.

The self check at around noon, set by SPD-21, is performed independently, regardless of the number of copies made since the last check.

By both morning and noon self checks, the copy counter for the next self check is reset to "0". However, it is not reset by just turning off and on the main switch.

[EXAMPLE] Conditions
1. SPD20-L: Noon self check on.
2. SPD21-120: 90 + 120 = 210 minutes, Noon check is done 3.5 hours after the main switch is turned on.
3. SPD22-2: Self check at every 400 copies.
4. In the morning, 210 copies are made.
5. In the afternoon, 560 copies are made.



2. Purpose

Under the following conditions, there is a possibility of a toner concentration problem, especially for magenta color.

1) Since the last self check, 800 to 1000 copies or more have been made.

2) The number of copies from one original (C/O), is rather high.

3) Low humidity.

If these conditions are met, magenta toner concentration becomes high. Then, by VSG detection, greater pointer data and ND data will be selected, lowering toner concentration. Due to long copy runs without self check, toner control target (VTC) can not be revised by TGRD detected data (ND and CD data). Then, low image density for high tone areas may happen due to too low toner concentration. Due to high C/O, DIF detection is not performed for long copy runs, resulting in no pointer shift even if humidity condition have been changing. Because of this, toner concentration becomes too high or too low against the latest humidity condition.

To avoid the toner concentration problem, perform the following action.

3. Action Taken

1) For machines from the July,'92 production with "C" version ROMs on both the sequence control board (P/N A0925507C) and the process control board (P/N A0925509C)

Set data "2" (400 copies) or "3" (600 copies) of SPD-22. Then, explain the self check operation at set copy intervals to customers, and ask them to wait for one or two minutes.

2) For machines upto the June,'92 with upto "B" version ROMs.

a) Manual self check
Set SPD30-H to perform a self check whenever the main switch is turned on. Ask the customer to turn off and on the main switch at every 400 to 600 copies or at any time the image density becomes too low or too high.

b) Automatic self check by new ROMs
If it is difficult for the customer to turn off and on the switch regularly, install the new ROMs as a set, and set SPD22 to 2 or 3.

NOTE: These two ROMs are 512 K.

RICOH

Technical Bulletin No. RTB-005

SUBJECT: Important parts to be cleared regularly	DATE: 15 July, '92 PAGE: 1 of 1
PREPARED BY: I. Kakegawa CHECKED BY:	FROM: Copier Technical Support Section

CLASSIFICATION:

- ■ Action Required
- ☐ Troubleshooting
- ☐ Retrofit Information
- ☐ Revision of service manual
- ☐ Information only
- ☐ Other

MODEL: PDC-1E

As explained in the PM table in the service manual (page 4-1 ~ 4-3), there are parts to be cleaned at every EM. Among these parts, the most important parts are as follows;

1. Grid plate

If the grid plate becomes dirty, the copy image is not even, especially for low to middle solid areas on originals. Then, vertical dark stripes are copied on such a solid area.

This is caused by a dirty grid plate. To prevent this, clean the grid plates at every EM visit.

Put them in water, wash them, and dry them.

NOTE: Do not fold them while washing.
Be sure that there is no fiber dust remaining on them.

2. Optical fiber array

If you have the impression that the copy image is less sharp or less crisp than at installation, try to clean the optical fiber array with a soft cloth. (Black stains will be removed.)

Clean the array at every EM with a soft cloth, and then discharge it by wiping with your clean finger.

RICOH

Technical Bulletin No. RTB-006

SUBJECT: V_{LL}/V_{LH} pattern on the reverse side of copy	DATE: 15 July,'92 PAGE: 1 of 1
PREPARED BY: I. Kakegawa CHECKED BY:	FROM: Copier Technical Support Section

CLASSIFICATION:

- ☐ Action Required
- ■ Troubleshooting
- ☐ Retrofit Information
- ☐ Revision of service manual
- ☐ Information only
- ☐ Other

MODEL:
PDC-1E

If V_{LL}/V_{LH} line pattern (10 mm x 10 mm, see page 2-17 of manual) is visible on the reverse side of copy paper, set SPD-11-H.

These line patterns used for DIF detection are developed just after the last copy of that copy job has been made. Then, they are checked by the ID sensor, and are transferred on the transport belt. Normally, the belt stops turning just before the patterns on the belt are cleaned. At the next copy job, they are cleaned.

However, if the machine is used less frequently due to low copy number, or is used under high temperature conditions, these pattern made at last copy job may not be cleaned completely. Then, they are put on the reverse side of the next copy paper.

SPD11 is to control belt cleaning time at the end of copy job.
If SPD11 data is changed to "H", the belt turns 2 seconds longer than usual to clean the pattern before the belt stops.

NOTE: For the machines with low copy volume used under high temperature conditions, set SP11 to "H". In this case, it takes 2 seconds longer for the machine to be back to "Ready" condition.

RICOH

Technical Bulletin No. RTB-007

SUBJECT: Parameter setting for AC Power Pack (Discharge)	DATE: July 15,1992 PAGE: 1 of 1
PREPARED BY: T. Okajima CHECKED BY:	FROM: Copier Technical Support Section

CLASSIFICATION:		MODEL: PDC-1E
■ Action Required ☐ Troubleshooting ☐ Retrofit Information	☐ Revision of service manual ☐ Information only ☐ Other	

1. Summary

The service manual describes that the data of SPD430 is "800" and SPD431 is "300" (SPD430: Transfer belt discharge voltage, SPD431: Separation corona voltage). However, these SPD's were adjusted at the factory to other parameters for stabilizing the output voltage of the power packs. So, to fix the parameter of these SPD, the power packs have been modified.

AC Power Pack - Discharge : AZ310013 → AZ310013A → AZ310014

Two AC Discharge Power Packs are used in one machine. These parts are identical, one is used for the transfer belt discharge, and the other is used for the separation corona. When you replace the power pack with a new one, or when the parameter of SPD430 or SPD431 is erased for some reason and some problems occur, refer to the following section:

2. Details

1) Possible problem

If the following parameter is bigger than the specified one;
SPD430 (Transfer belt discharge) - no problem but waste of power,
SPD431 (Separation corona voltage) - void image, toner scattering on the copy,
If the following parameter is lower than the specified one;
SPD430 - remained image, poor transfer of Bk image,
SPD431 - poor paper separation,

2) Parameter setting

If the problem above occurs, check the parameters of SPD430 and SPD431 refering to the table.

According to our records, P/N AZ310013 and P/N AZ310013A do not exist as service parts. When you replace the power pack with a new one (P/N AZ310014), set the parameter for **SPD430 at 780**, and the parameter for **SPD431 at 280** for any machine.

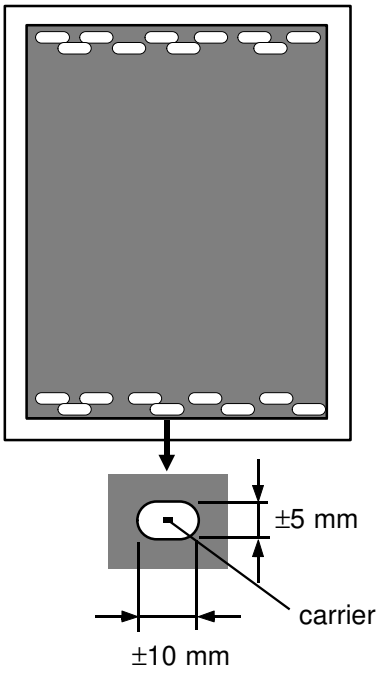
Note: If you have a P/N AZ310013(A), please inform us. We will send you the P/N AZ310014 instead.

Serial number		AC Power Pack -		
A092 - 22	092 - 27	Discharge	SPD 430	SPD 431
First production ~	First production ~	P/N AZ310013	800	300
No production	A3012030001 ~	P/N AZ310013A	570	135
4302040001 ~	A3012030011 ~	P/N AZ310013A	570	050
4362040006 ~	A3012050001 ~	P/N AZ310014	780	280

RICOH	Technical Bulletin	No. RTB-008
SUBJECT: Discolored spots on color background		DATE:Sep. 15, '92 PAGE:1 of 2
PREPARED BY: T. Okajima CHECKED BY:	FROM: Copier Technical Support Section	
CLASSIFICATION: ■ Action Required ☐ Troubleshooting ☐ Retrofit Information	☐ Revision of service manual ☐ Information only ☐ Other	MODEL: PDC-1E

To prevent discolored spots due to the carrier, install the following two ROM's as a set:

- One new ROM on the sequence control board (512K): P/N A0925507D (Check sum: E1E8)
- One new ROM on the process control board (256K): P/N A0925509C (Check sum: DF8F)



[Symptom]

- After the self check operation both in the morning and around noon, discolored spots are obsorbed at the leading and the trailing parts of the copy image for about initial ten copies. After making ten copies, these spots will gradually disappear.
- When you touch these spots on the copy with your fingers, you can feel the carrier. Due to carrier particles, toner around the carrier particle can not be transferred from the OPC drum to the copy paper, resulting in discolored spots.

[Cause]

Due to a software error of the sequence control ROM, the "OFF" timing of development bias was a little early compared to that of drum charge during the self check run. This causes carrier to drop from the development unit onto the mylar of the cleaning unit.

Since this mylar moves up and down while paper is passing through the image transfer section, the carrier on the mylar will drop on the initial ten copies from the mylar.

This symptom will be worse when the pointer data (SPD110~113) is over 20. Because the drum charge becomes so high that a greater amount of carrier will be dropped.

[Action taken]

1. Clean the carrier dropped from the development units onto:
   - The bracket located just under the black development unit.
   - The mylar on the black, magenta, and yellow cleaning units.
   - The black plastic parts located just under the rear half of each development unit.
2. Clean each cleaning unit.
3. Replace two ROM's with the following new ones on both the sequence control board and the process control board.

   1) One new sequence control ROM (512K): P/N A0925507D (Check sum: E1E8)

   2) One new process control ROM (256K): P/N A0925509C (Check sum: DF8F)

   - For the July '92 production and some of the June '92 production, A0925509C has been installed at the factory. (see below.) For these machines, install only A0925507D.
   - Using the above ROM's, SPD22 (forced self check operation at a certain copy interval) can be operational as explained in RTB-004.
   - P/N A0925509C was explained as 512K by mistake in RTB-004.
     It was 256K.

[Cut-in serial number]

The above action is required for all machines up to the July '92 production.

ROM's	Purpose	Ricoh A092-17	Gestetner A092-22	Ricoh A092-27
A0925507C and A0925509C	To enable SPD22 (explained by RTB-004).	No production.	Two June '92 production [#4302060001] [#4302060002] All July production [#4302070001~] onward.	Four June production machines. [#A3012060001 [#A3012060008 [#A3012060011 [#A3012060012 All July production [#A3012060001~] onward.
A0925507D and A0925509C	To prevent discolored spots (explained by this RTB).	From the first production in August '92.	From August '92 production.	From August '92 production.

RICOH	Technical Bulletin	No. RTB-009
SUBJECT: EPROM Software History		DATE: Aug. 31, '93 PAGE: 1 of 8
PREPARED BY: T. Okajima CHECKED BY:	FROM: Copier Technical Support Section	
CLASSIFICATION: ❑ Action Required ❑ Troubleshooting ❑ Retrofit Information	❑ Revision of service manual ■ information only ❑ Other	MODEL: PDC-I E

1. Summary

This bulletin describes the EPROM history of the PDC-1E model.

In total, 13 ROMs are used for one machine. When the software is modified, combinations of the modified ROMs will be changed as required. Since these modifications can be very complicated, we made the ROM modification chart appended to this RTB. In this chart, you will find symbols like "①". This is the modification reference number. These numbers match the explanations below.

2. Modification Contents

① Abnormal copy image

Problem

When pressing the clear stop key while pre-scanning, an abnormal copy may be printed out.

Cause

Software error

Solution

Correct the software of the EPROMs on the operation panel board, the sequence control board, and the process control board.

Operation Panel Board:	A0925517 ➜ A
	A0925518 ➜ A
	A0925513 ➜ A
	A0925514 ➜ A
Sequence Control Board	A0925507 ➜ A
Process Control Board	A0925509 ➜ A

Cut-in serial number

The new EPROMs have been used from the January 1992 production run.

② Problems in the editor mode and the slide projection mode

Editor mode

Problems

The white key cannot be used.
When selecting one of the original types (Letter, Photo, Letter/Photo), another type is sometimes selected by error.
When entering the editor mode just after turning on the main switch, the mode clear key cannot be used.

Cause

Software error

Solution

Correct the software errors of the EPROMs on the operation panel board.

Slide projector mode

Problem

When selecting the photo mode, the Photo/Letter mode is sometimes selected instead.

In auto magnification mode, an unsuitable magnification ratio is selected.

Key is locked.

Cause

Software error

Solution

Correct the software of the EPROMs on the operation panel board.

Operation Panel Board	A0925515 ➜ A
	A0925516 ➜ A
	A0925517A ➜ B
	A0925518A ➜ B
	A0925513A ➜ B
	A0925514A ➜ B

Cut-in serial number

New EPROMs have been used from the March 1992 production run.

③ Parameter settings for SPD430 (Transfer belt discharge voltage) and SPD431 (Separation corona voltage)

Problem

The output voltages of the transfer belt discharge and the separation corona voltage are controlled by the parameters of SPD430 and SPD431. Direct voltages are used for the parameters on the old ROMs. However, when the power pack lot was changed, these parameters had to be changed at the factory. See RTB-007.

Solution

To standardize the parameters of SPD430 and SPD431, the control method has been changed from a direct voltage parameter to a duty parameter. The duty parameter can control the output voltage of the power packs with more accuracy. Also, the power packs have been modified to match the duty control. The part number of the power pack has been changed from #AZ310013 to #AZ310014. Several combinations of power pack and the ROM version exist in the field and the parameter is different for each combination. Keep the parameter as shown in the table below.

Cut-in Serial Number	RICOH	First production~	**A3012030001-**	**A3012030011-**	**A3012050001-**
	NRG	First production~	**No production**	**4302040001-**	**4302040006 -**
AC Power Pack		AZ310013	**AZ310013A (Type 1)**[*1]	**AZ310013A (Type 2)**[*1]	AZ310014
Process Control ROM (A0925509A)		**SPD430: 800** SPD431 **:300**	**This combination does not exist in the field.**		
Process Control ROM (A0925509B)		**SPD430: 700** SPD431 **:200**	**SPD430: 570** SPD431 **:135**	SPD430: **570** SPD431 **:050**	SPD430: **780** SPD431 **:280**
Process Control ROM (A0925509C)					

***1: There are 2 types of the AC Power Pack for part no. AZ310013A (Type 1 and Type 2). The characteristics of each type changed because each was manufactured in a different lot. This resulted in a change of output of the separation corona voltage (SPD431).**

NOTE:
As there is only the AC Power Pack (#AZ310014) in the field as a service part, set the parameters SPD430 to 780 and SPD431 to 280 when the AC power pack is replaced.

④ SP mode problem

Problem

- When entering ON in SP62 (Copy Modes Counter Clear), the SPU counter is not cleared.

. The default of SP33 (Auto Cassette Shift) is set to ON by error. This should be OFF.

Cause

Software error

Solution

Correct the software as follows: SPU counter is cleared bv SP62.
The default of SP33 is set to OFF.

System Control Board: A0925525A ➜ B
A0925526A ➜ B

Cut-in Serial Number

The New EPROMs have been used from the May 1992 production run.

⑤ Forced self check operation (SPD-22)

This modification is described in RTB-004 (PDC-1E). To stabilize the toner concentration for high copy volume customers, two self-checks a day are not enough, especially for magenta color. So, we added a self-check for a certain copy interval.

SPD-22 : Forced self-check operation

0 : No (Default)
Self-check is performed only depending on SPD-20, SPD21, and SPD-30.
1: Yes, at every 200 copies
2: Yes, at every 400 copies
3: Yes, at every 600 copies
4: Yes, at every 800 copies
5: Yes, at every 1000 copies

Sequence Control Board: A0925507B ➜ C
Process Control Board: A0925509B ➜ C

Cut-in Serial Number

The New EPROMs have been used from the July 1992 production run.

⑥ Discolored spots on color background

This modification is described in RTB-008 (PDC-1E).

Problem

After the self-check operation both in the morning and around noon, discolored spots are observed at the leading and the trailing parts of the copy image for about the first ten copies. After making ten copies, these spots will gradually disappear. These spots are made by carrier.

Cause

Software error. See RTB-008.

Solution

Correct the software as follows:

Sequence Control Board A0925507B → C

Cut-in Serial Number

The New EPROMs have been used from the July 1992 production run.

⑦ Three language messages (Swedish, Norwegian, Danish) added on the 220-240V version model

Select one of the setting in the table below to display the language you want

A4 version	
Language	DSW 1 2 3 4
Swedish	0 1 1 0
Norwegian	1 1 1 0
Danish	0 0 0 1

The EPROMs on the operation panel board have been modified as follows:

Operation Panel Board
A0925515A → B
A0925516A → B
A0925517B → C
A0925518B → C
A0925513B → C
A0925514B → C

Cut-in Serial Number

The New EPROMs have been used from the August 1992 production run.

⑧ A3 double count problem

Problem

A3 double count mode can be set by SP45. When an A3 copy is made, the total counter is incremented by two. However, if the main switch is turned off and on, the setting of SP45 is returned to off, so that even if another A3 copy is made, the total counter is incremented by only one.

Cause

Software error

Solution

Correct the software of the EPROMs on the operation panel board and the sequence control board as follows:

Operation Panel B.:
A0925515B → D
A0925516B → D
A0925517C → E
A0925518C → E
A0925513C → E
A0925514C → E

Sequence Control B.: A0925507D → E
Process Control B.: A0925509C → D

Suffix C (A0925515 and A0925516) and suffix D (A0925517, A0925518, A0925513, and A0925514) are not used on the production run.

Cut-in Serial Number

New EPROMs have been used on the production run from November 1992 and the following machines:

A092-27: September production: (10 units) A301209-0013, 0014, 0016, 0020, 0021, 0022, 0023, -0024, 0036, 0030

October production: (10 units) A301210-0022, 0023, 0024, 0025, 0026, 0028, 0030 -0031, 0033, 0034

A092-22: October production: 430210-0015 to 0023, (9 units)

A092-17: September production: All

For the field machines, we sent the replacement EPROMs to you.

⑨ Service logging data printed wrong position

Problem

Service logging data is printed at the wrong position on the copy paper. All data is shifted to one side.

Cause

Software error

Solution

Correct the software of the EPROMs on the system control board.

System Control Board	A0925525B ➜ C
	A0925526B ➜ C
	A0925527A ➜ B
	A0925528A ➜ B

Cut-in Serial Number

New EPROMs have been used from the November 1992 production run.

⑩ Abnormal Copy Image on SPU or Editor mode

Problem

When selecting the designated area with the editor board and using the centering mode, the imaae is not exactlv centered.
When using the image repeating mode with the slide projector, a smeared image appears on the copy.

Cause

Software error

Solution

The software in the EPROMs on the system control board has been corrected.

System Control Board	A0925525C ➜ D
	A0925526C ➜ D
	A0925527B ➜ C
	A0925528B ➜ C

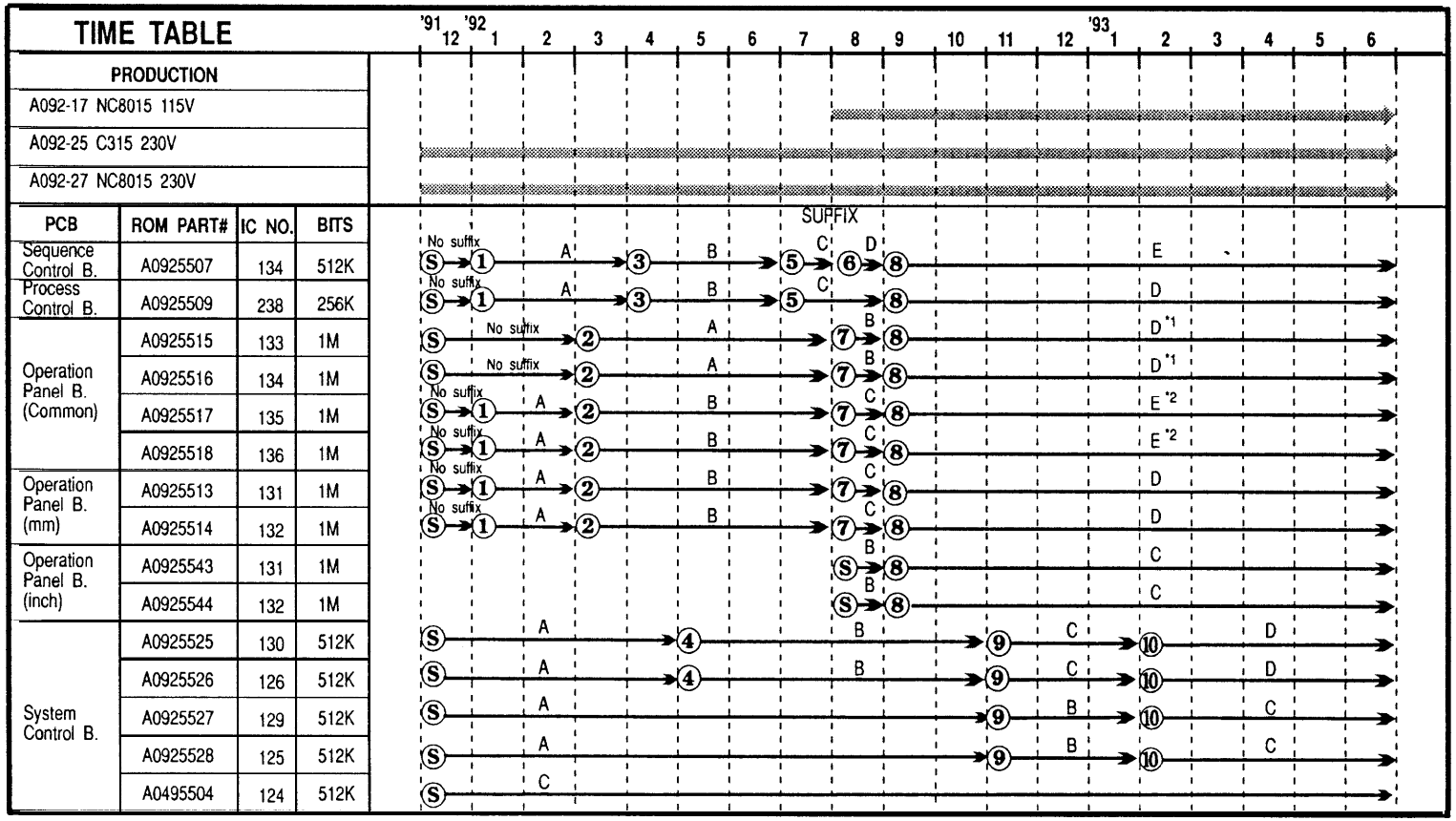
Cut-in Serial Number

The new EPROMs have been used from February 1993 production run.

3. Latest Version EPROMs, as of August 1993

PCB	IC No.	Part No.	Latest Suffix	Check -sum	Bits	Recommended EPROM Type
Sequence Control B.	134	A0925507	E	E664	512K	AMD:AM27C512-155DC Fujitsu:MBM27C512-20
Process Control B.	238	A0925509	D	E5F7	256K	Intel:D27256 AMD:AM27C256-155DC AMD:AM27C256-205DC Hitachi: HN27C256G-25
Operation Panel B. (Common)	133	A0925515	D	EA55	1M	Intel:D27C010-150V10 AMD:AM27C010-155DC Fujitsu: MBM27C1001-15
	134	A0925516	D	286A		
	135	A0925517	E	687C		
	136	A0925518	E	E494		
Operation Panel B. (mm) .	131	A0925513	D	83AA		
	132	A0925514	D	8E7E		
Operation Panel B. (inch)	131	A0925543	C	A41E		
	132	A0925544	C	E449		
System Control B.	130	A0925525	D	C4A2	512K	Intel:D27512J-2 AMD:AM27C512-155DC Fujitsu: MBM27C512-20
	126	A0925526	D	204C		
	129	A0925527	C	ABA7		
	125	A0925528	C	06B3		
	124	A0495504	C	EF04		

TIME TABLE



PRODUCTION
A092-17 NC8015 115V
A092-25 C315 230V
A092-27 NC8015 230V

PCB	ROM PART#	IC NO.	BITS
Sequence Control B.	A0925507	134	512K
Process Control B.	A0925509	238	256K
Operation Panel B. (Common)	A0925515	133	1M
	A0925516	134	1M
	A0925517	135	1M
	A0925518	136	1M
Operation Panel B. (mm)	A0925513	131	1M
	A0925514	132	1M
Operation Panel B. (inch)	A0925543	131	1M
	A0925544	132	1M
System Control B.	A0925525	130	512K
	A0925526	126	512K
	A0925527	129	512K
	A0925528	125	512K
	A0495504	124	512K

- 1: Suffix C was not applied on the production run.
- 2: Suffix D was not applied on the production run.

Ⓢ: Production run start.

① — ⑩: Modification reference number. See the modification contents by referring to these numbers.

RICOH

Technical Bulletin No. RTB-010

SUBJECT: Blurred copy problem on editor board	DATE: Dec.31,'93 PAGE: 1 of 3
PREPARED BY: T. Okajima CHECKED BY:	FROM: Technical Support Group

CLASSIFICATION:

- ■ Action Required
- ☐ Trouble shooting
- ☐ Retrofit Information
- ☐ Revision of service manual
- ☐ Information only
- ☐ Other

MODEL:
PDC-1E (Editor Board)

1. Problem

When making copies with the PDC-1E using the editor board, blurred images might appear on copies.

2. Cause

This problem occurs due to the deformed pressure pads (mirror surface). The deformed pad cannot press an original completely and there is a gap between the original and the exposure glass. The focal depth of the scanner is only 0.25mm. If this gap is 0.25mm or wider, an image in that part will be blurred.

The present pressure pad is made of polypropylen, which starts to deform from about 79°C (174.2°F) or higher. We suppose that the editor board suffers temperatures of 79°C or higher during transportation.

The pressure pad of the platen cover for the PDC-1E is the same as that of the editor board. However, the pressure pad of the platen cover does not have the deformation problem because during transportation, the pressure pad is on the exposure glass which is flat. Even under high temperature (higher than 79°C) it will not be deformed by the exposure glass.

3. Countermeasure

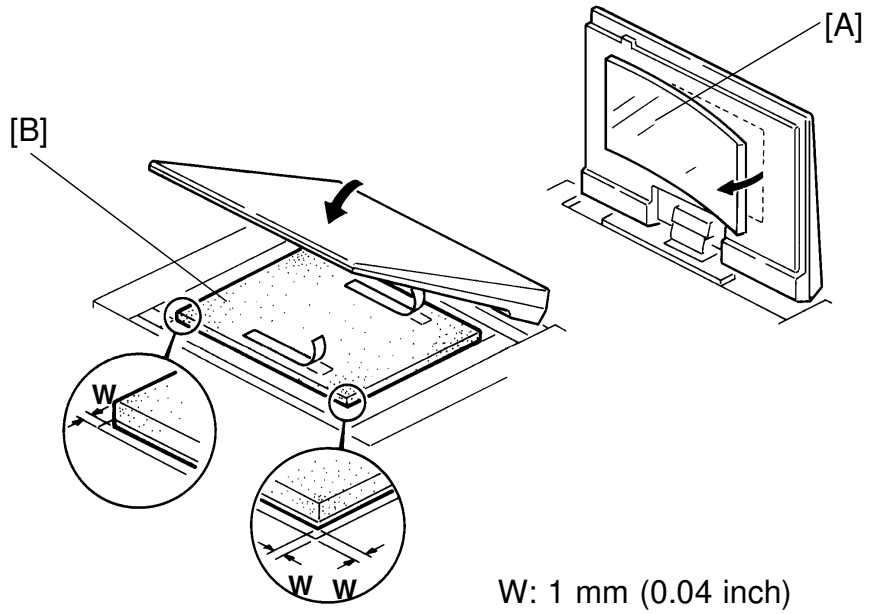
3-1. Material

We have changed the material of the pressure pad from polypropylen to polycarbonate which does not deform at temperatures under 130°C (266°F).

3-2. Part number for the new pressure pad

Old Part Number	New Part Number	Description
A0491576	**A0921594** This part number will be available as a service part in February 1994.	Original Pressure Pad

3-3. Modification procedure for the field machine



W: 1 mm (0.04 inch)

1. Remove the pressure pad [A] from the editor board.

NOTE: As some adhesive tape or sponge might remain on the editor board, make sure to check and remove everything.

2. Put the new pressure pad [B] as shown in the illustration.
   Make a **1mm (0.04 inch)** space between the front scale and the front edge of the pressure pad, and between the right scale and the right side of the pressure pad.

3. Peel off the cover from the two adhesive tapes, close the editor board and press the editor board by hand. Especially, press the part directly above the tapes.

4. Confirm that there is no blurred image on the copy.

3-4. Cut-in Serial Number

Machine Code	Cut-in Serial Number
A988-17	From Oct. 1993 production run (#A3223100001–) and #A3223080001, 06, 19, 20, #A3223090001, 03
A988-25	From Oct. 1993 production run (#4293100001–)
A988-27	From Oct. 1993 production run (#A3223100001–) and #A3223070047, 50, 51, 52

4. Others

We do not recommend that you modify the editor board when it is not on the copier, it is very difficult to adjust the position for setting the pressure pad. You might have matching problems when the editor board is docked to the copier (e.g.. the pressure pad falls on the scale or the space between the edge of the pressure pad and the scale is much larger).

RICOH Technical Bulletin No. RTB-011

SUBJECT: 1st and 2nd synchronizing mirrors installation procedure	DATE: Aug. 31, '94 PAGE: 1 of 3
PREPARED BY: S. Orita CHECKED BY:	FROM: 2nd Technical Support Section

CLASSIFICATION:

- ☐ Action Required
- ■ Troubleshooting
- ☐ Retrofit Information
- ■ Revision of service manual
- ☐ Information only
- ☐ Other

MODEL: PDC-1E

During transportation, one or more of the 1st and 2nd synchronizing mirrors for black, magenta, yellow, and cyan sometimes dislodges from the laser unit frame due to insufficient adhesive.
As a result, the following service codes are displayed:

For black ..... SC640 and SC710
For magenta ..... SC640 and SC711
For yellow ..... SC640 and SC712
For cyan ..... SC640 and SC713

Previously, this could be corrected only by replacing the laser unit assembly, which is quite expensive.

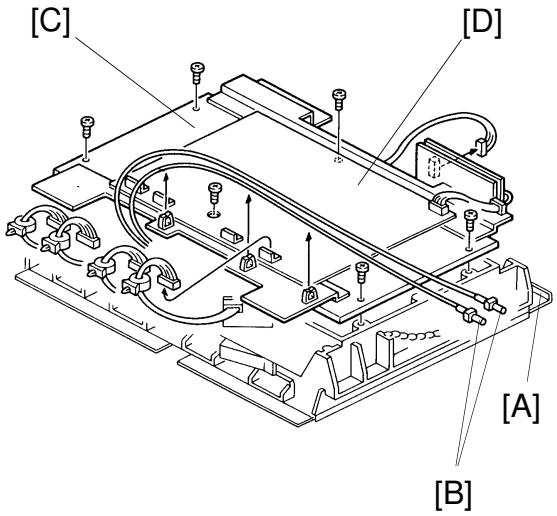
To reduce the service cost and meet the field requests, the 1st and 2nd synchronizing mirrors have been registered as service parts as follows:

1st synchronizing mirror (for black, magenta, cyan and yellow) ..... **P/N A0492128**

2nd synchronizing mirror (for black, magenta, cyan and yellow)..... **P/N A0492130**

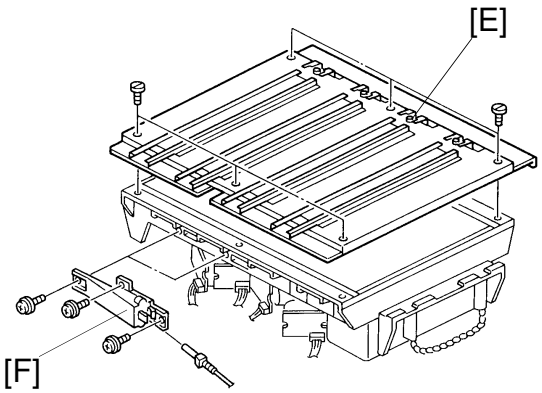
The installation procedure for the 1st and 2nd synchronizing mirrors are as follows:

1. Remove the laser unit from the copier (See the service manual pages 5-39 and 5-40.)
2. Place the laser unit [A] on a flat table.
3. Remove the fiber optics cables [B] from the clamps.
4. Remove the upper cover [C] with LD control board [D] of the laser unit. (6 screws and 5 connectors)



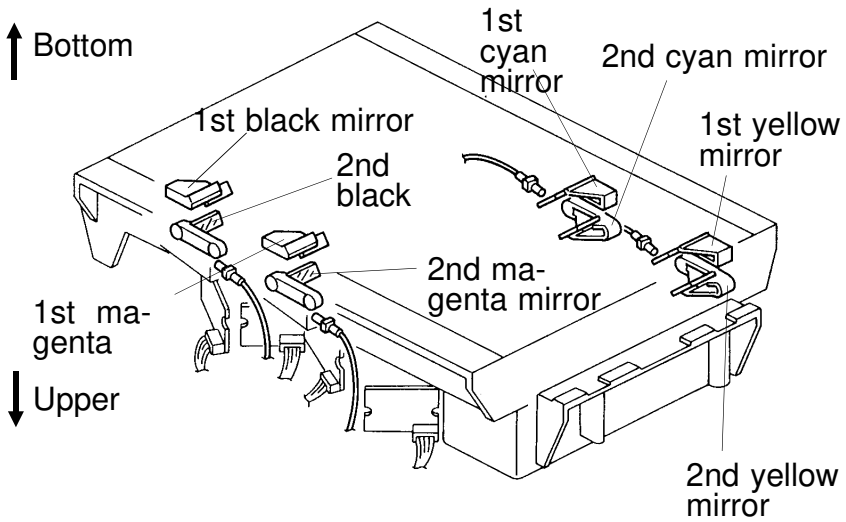
5. Reverse the laser unit and carefully place it on the table.

6. Remove the bottom cover [E] of the laser unit (6 screws).



7. Confirm the location of each synchronizing mirror and confirm which mirror should be removed.

8. Remove the fiber cable bracket [F] corresponding to the position of the mirror to be removed. (3 screws)

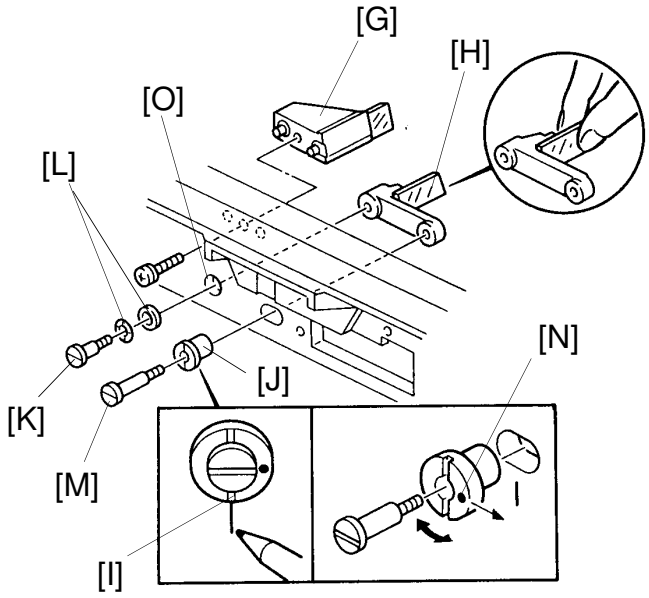


- 1st synchronizing mirror [G] -

9. Remove the 1st synchronizing mirror. (1 screw)
10. Reassemble the machine.

- 2nd synchronizing mirror [H] -

9. Before removing the 2nd synchronizing mirror, mark the groove position [I] of the adjusting cam [J].
10. Remove the 2nd synchronizing mirror. (1 short screw [K], 2 washers [L], 1 long screw [M], and adjusting cam [J])
11. When installing the 2nd synchronizing mirror, at first, fix the mirror by the short screw and washers while holding the mirror. Then, install the long screw and adjusting cam.



Note: Make sure that the groove [I] of the adjusting cam matches the mark made in step 9, and the dot [N] on the cam is on the opposite side from the short screw hole [O].

12. Reassemble the machine.
13. Check the copy quality. If an SC code is displayed or a synchronizing problem occurs, adjust the mirror position by turning the adjusting cam [J].

RICOH Technical Bulletin No. RTB-012

SUBJECT: Hot Roller and Pressure Roller Changes	DATE: Nov. 15, '94 PAGE: 1 of 10
PREPARED BY: S. Orita CHECKED BY:	FROM: 2nd Technical Support Section

CLASSIFICATION:

- ■ Action Required
- ■ Troubleshooting
- ☐ Retrofit Information
- ☐ Revision of service manual
- ☐ Information only
- ☐ Other

MODEL:

PDC-1E

To increase the expected life time of the hot roller, we have had a new hot roller and pressure roller installed since the first production of the PDC-10E.

The PDC-1E is no longer produced, so, these new hot roller and pressure roller are available as service parts.

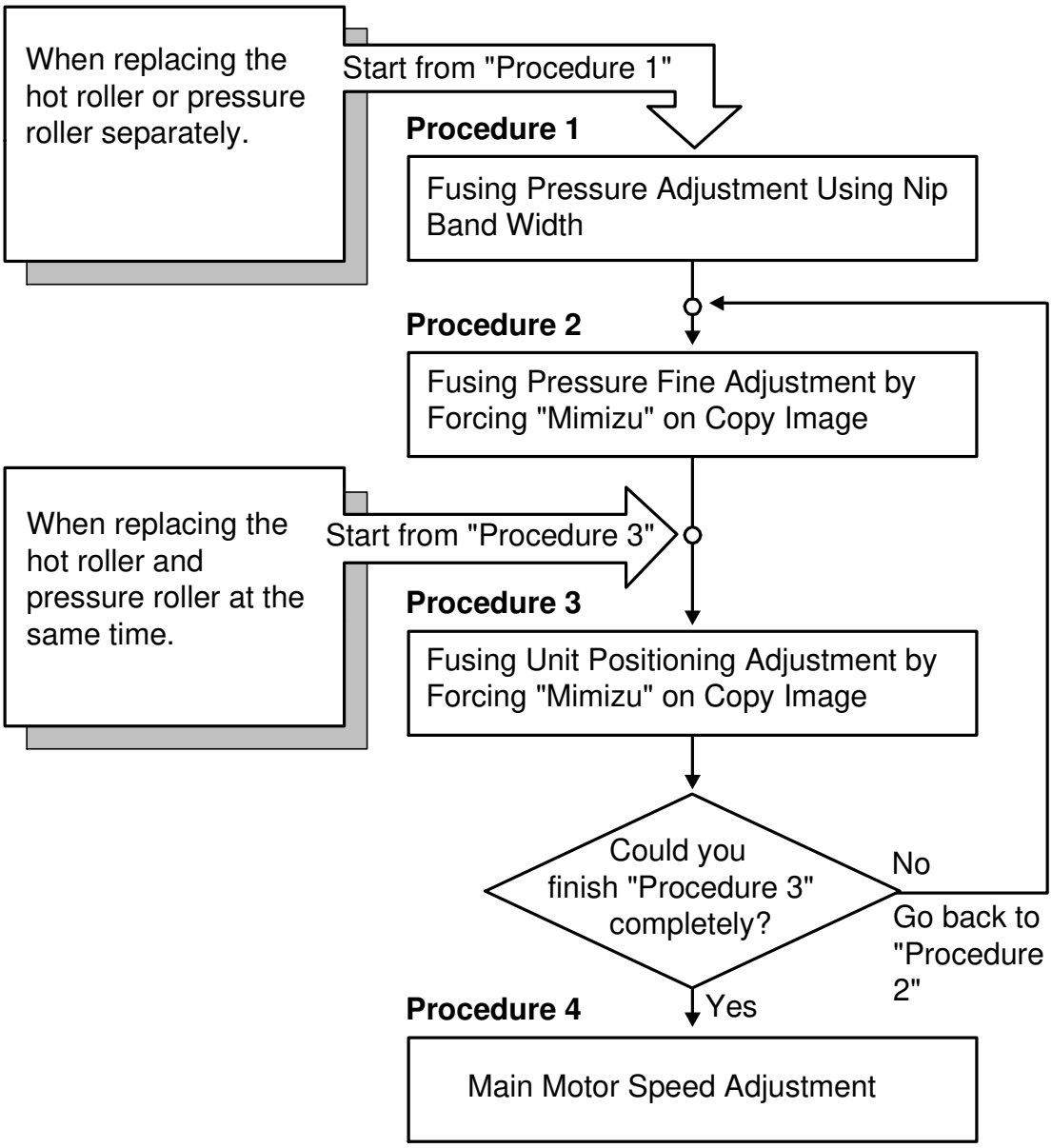
Detailed information for these changes is as follows:

Old P/N	New P/N	Description	Modified Point
AE010005	AE010008	Hot Roller	The hardness of the rubber has been decreased. The diameter has been changed from 44.7 mm to 44.5 mm.
AE020018	AE020043	Pressure Roller	The hardness of the rubber has been increased.

When replacing the hot roller and/or pressure roller, the following procedure is required.

NOTE: We recommend replacing the hot roller and pressure roller at the same time in order to increase the expected life time of the hot roller.

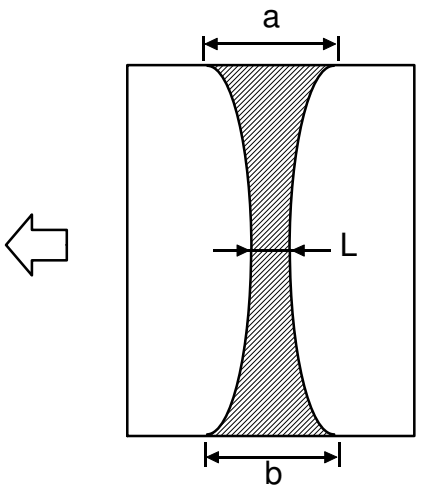
Fusing Unit Adjustment Flow Chart

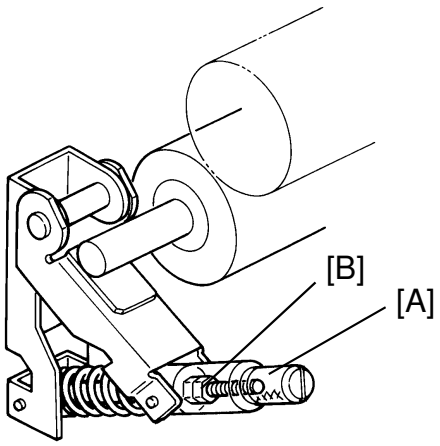


1. Procedure 1

Fusing Pressure Adjustment Using Nip Band Width

Adjustment Standard:
- 7.6 ± 0.4 mm (center of nip band width; L)
- Less than 0.2 mm (difference between a and b)





1. Prepare Folex OHP sheet Type 100.
2. Place a white paper (A3/11" x 17") on the exposure grass and perform free run (SP1) for 3 minutes.
3. As soon as the print key becomes green, pull out the transfer belt unit and open the fusing exit cover.
4. Insert an OHP sheet into the center of the fusing unit by turning the fusing knob manually and wait 15 seconds to make the nip band on the OHP sheet.
5. Turn the fusing roller 90 degrees and then wait for 15 seconds. Repeat this step two more times and exit the OHP sheet. You should now have four nip bands on the OHP sheet.
6. Measure the width L, a, and b. Average each parameter and confirm that they are within specification. If they are not, go to step 7. If OK, this adjustment is finished.
7. Remove the slotted-screws [A] (at both side) and adjust the fusing pressure by turning nuts [B].

   - Turning the nut clockwise to reduce the fusing pressure
   - Turning the nut counterclockwise to increase the fusing pressure

2. Procedure 2

Fusing Pressure Fine Adjustment by Forcing "Mimizu" on Copy Image

1. Loosen the screws [A]
2. Turn the adjustment cam [B] which points to the scale (±0) on the bracket [C] as shown in figure 1.

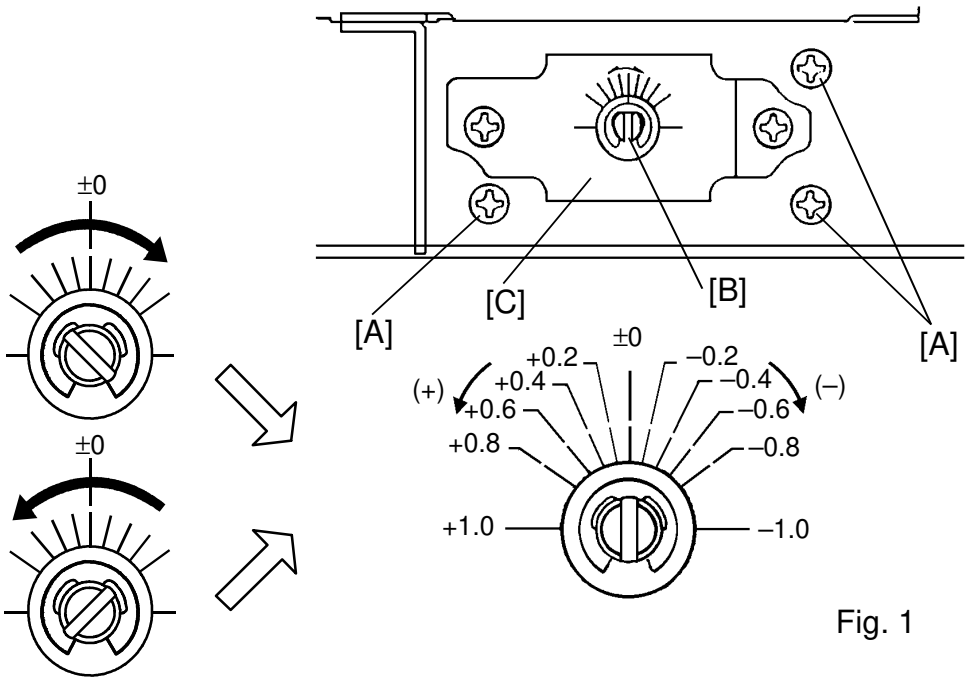


Fig. 1

3. Force "Mimizu" on the copy image as follows:
   - Set **SPD#51** to **003** (1 horizontal line for every main scans)
   - Set **SPD#52** to **003** (Full length pattern of paper)
   - Set SPD#720 to 007 (Main motor speed fine adjustment)
   - Set 11" x 17"/A3 size paper in the cassette and make 5 copies continuously.

NOTE: If "Mimizu" pattern does not appear on the copy image, increase the main motor speed by setting SPD#720 to 008 or higher.
When making copies, use the same paper as the customer uses.

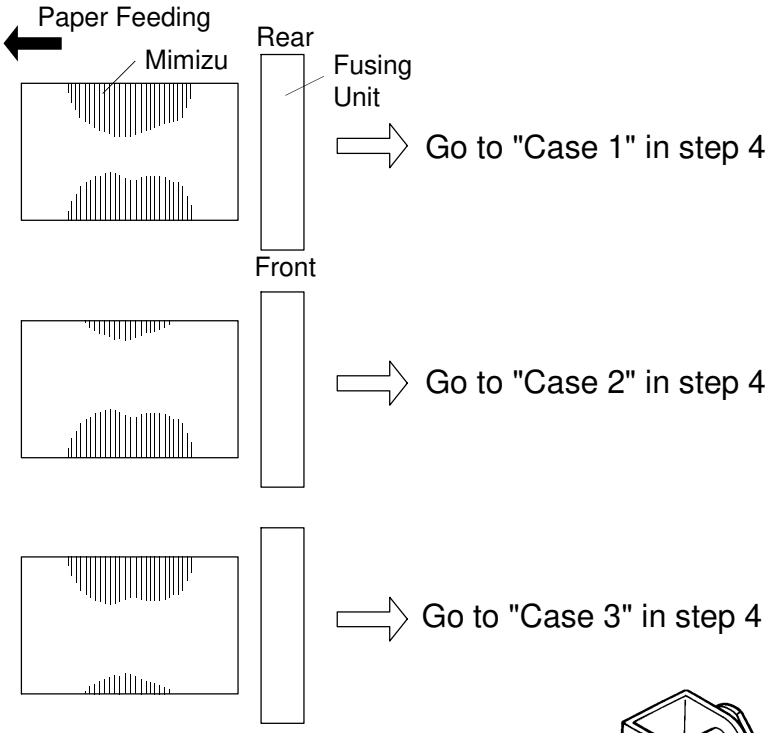


Figure 2

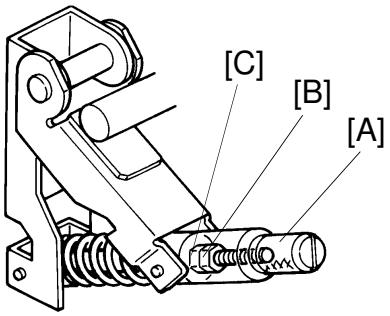


Figure 3

4. Confirm the location and size of the "Mimizu" patterns on the copy image. Then do the appropriate procedure (Case 1, Case 2, or Case 3). See Figure 2.

Case 1 The "Mimizu" pattern toward the front of the fusing unit is almost same size as that toward the rear of the fusing unit.

- Go to **"Procedure 3"**

Case 2 The "Mimizu" pattern toward the front of the fusing unit is bigger than that toward the rear.

1) Remove the slotted - screw [A] and the nut [B] at the **front of the fusing unit**.
2) Turn the nut [C] at the front of the fusing unit 90 degrees clockwise.
3) Make 5 copies continuously.

4) Confirm the location and size of the "Mimizu" patterns. Is the "Mimizu" pattern toward the front the same size as that toward the rear?

- Yes: Go to **procedure 3**.
- If not, do the appropriate procedure as follows until the "Mimizu" pattern toward the front is the same size as that toward the rear:
- No, the "Mimizu" pattern towards the front of the fusing unit is bigger than that toward the rear:
  Turn "the nut [C] at the front of the fusing unit"
  45 degrees ~ 90 degrees clockwise.
- No, the "Mimizu" pattern towards the front of the fusing unit is smaller than that toward the rear:
  Turn "the nut [C] at the front of the fusing unit"
  45 degrees ~ 90 degrees counterclockwise.
- Go to **procedure 3**.

Case 3 The "Mimizu" pattern towards the rear of the fusing unit is bigger than that of the front.

1) Remove the slotted screw [A] and the nut [B] at the **rear of the fusing unit**. See Figure 3 in the previous page.
2) Turn the nut [C] at the rear of the fusing unit 90 degrees clockwise.
3) Make 5 copies continuously.
4) Confirm the location and size of the "Mimizu" patterns on the copy image. Is the "Mimizu" pattern toward the rear the same size as that toward the front?

- Yes: Go to **procedure 3**.
- If not, do the appropriate procedure as follows **until** the "Mimizu" pattern toward the front is the same size as that toward rear:
- No, the "Mimizu" pattern toward the rear is bigger than that toward the front:
  Turn the nut [C] at the rear 45 degrees ~ 90 degrees clockwise.
- No, the "Mimizu" pattern toward the rear is smaller than that toward the front:
  Turn the nut [C] at the rear 45 degrees ~ 90 degrees counterclockwise.
- Go to **procedure 3**.

3. Procedure 3

Fusing Unit Positioning Adjustment by Forcing "Mimizu" on the Copy Image

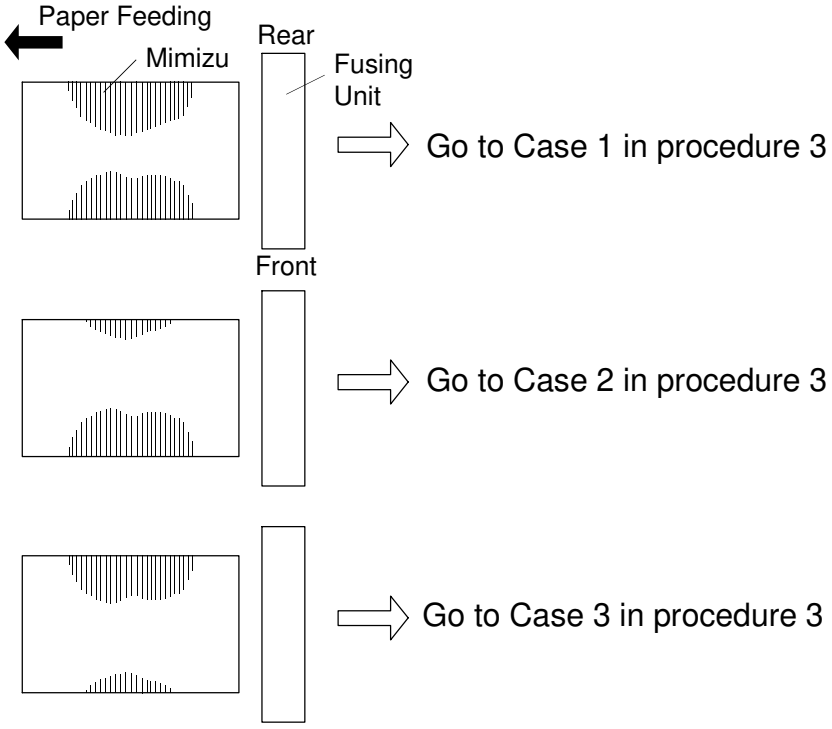
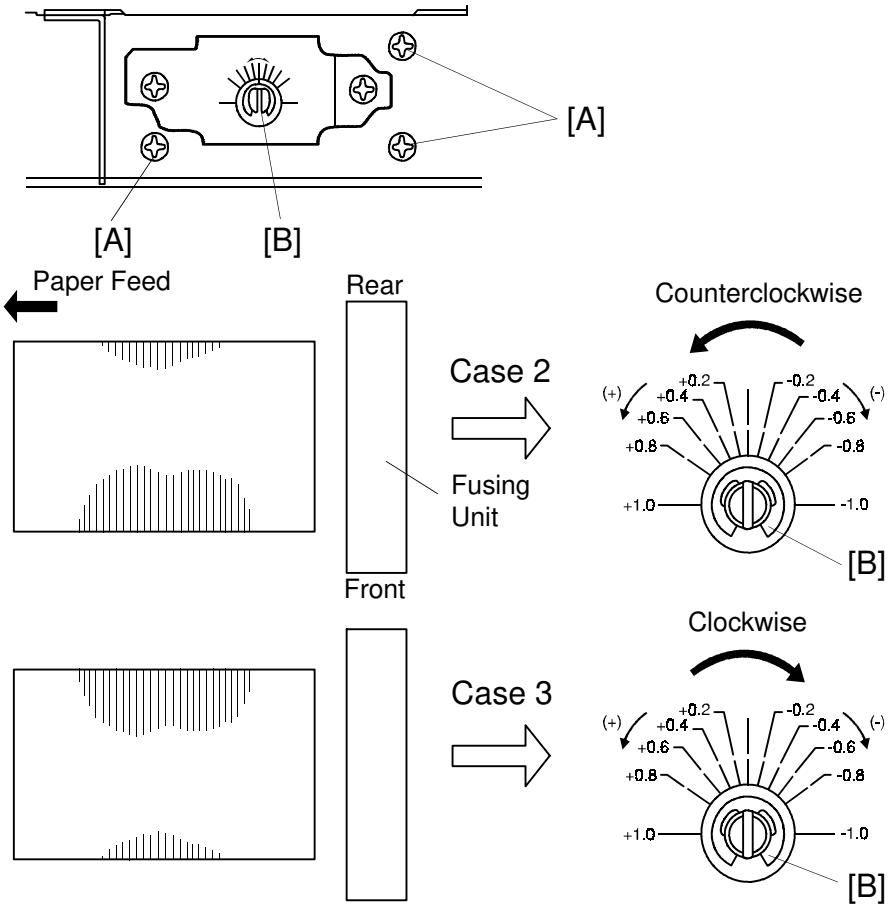


Figure 1

1. Force the "Mimizu" pattern on the copy image as follows:
   - Set SPD#51 to 003 (1 horizontal line for every main scans)
   - Set SPD#52 to 003 (Full length pattern of paper)
   - Set SPD#720 to 007 (Main motor speed fine adjustment)
   - Set 11" x 17"/A3 size paper in the cassette and make 5 copies continuously.

NOTE: If the "Mimizu" pattern does not appear on the copy image, increase the main motor speed by setting SPD#720 to 008 or higher. When making copies, use the same paper as the customer uses.

2. Confirm location and size of the "Mimizu" patterns on the copy image. Refer to figure 1, and choose the necessary procedure from the following:



Case 1 The "Mimizu" pattern toward the front of the fusing unit is almost same size as that toward the rear.

1) Decrease the data of SPD#720 (Main motor speed) by 1.
2) Make 5 copies continuously.
3) Repeat step 1 until the "Mimizu" pattern on the copy image **just disappears**.

Case 2 The "Mimizu" pattern toward the front of the fusing unit is bigger than the "Mimizu" pattern toward the rear.

1) Loosen the screws [A].
2) Turn the adjustment cam [B] counterclockwise to equalize the "Mimizu" patterns toward the front and the rear.
3) Decrease the data of SPD#720 (Main Motor Speed) by 1.
4) Make 5 copies continuously.
5) Repeat step 3 until the "Mimizu" pattern on the copy image **just disappears**.

Case 3 The "Mimizu" pattern toward the rear of the fusing unit is bigger than the "Mimizu" pattern toward the front.

1) Loosen the screws [A].
2) Turn the adjustment cam [B] clockwise to equalize the "Mimizu" patterns toward the front and the rear.
3) Decrease the data of SPD#720 (Main Motor Speed) by 1.
4) Make 5 copies continuously.
5) Repeat step 3 until the "Mimizu" patterns on the copy image **just disappears**.

Procedure 4

Main Motor Speed Adjustment

Necessary tool: flash light

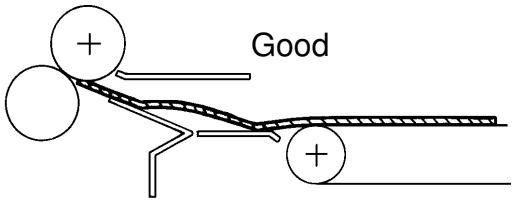


Fig. 1

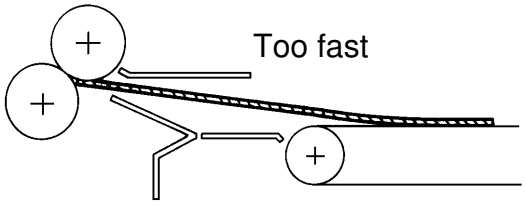


Fig. 2

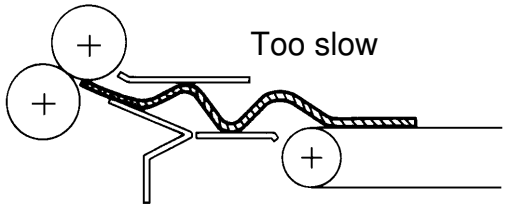


Fig. 3

1. Read the data of SPD#720 (Main motor speed)

2. Set SPD#720 (Main motor speed) to the new data according to the following:
   a) When replacing the hot roller or pressure roller separately:
      Decrease the data of SPD#720 by one.
      Example) Current data 006 → New data 005

   b) When replacing the hot roller and pressure roller at the same time:
      Decrease the data of SPD#720 by two.
      Example) Current data 006 → New data 004

NOTE: Make sure that the data of SPD # 720 is three or higher before decreasing the data. If the data is less than three, go back to **procedure 2**.

3. Observe the paper condition when the paper is pulled by the fusing rollers. If the paper is pulled strongly by the fusing rollers (figure 2), lower the speed of the fusing rollers by choosing a lower setting for SPD#720. If the paper buckles (figure 3), increase the speed of the fusing rollers by choosing a higher setting for SPD#720.

NOTE: In the case of figure 3, the copy image is scraped by the upper paper guide.

4. Set SPD#51 and #52 as follows:
   SPD#51 to 007
   SPD#52 to 000.