TOSHIBA

e-STUDIO2020AC
e-STUDIO2021AC
e-STUDIO2525AC
e-STUDIO3525AC
e-STUDIO5525AC

e-STUDIO2520AC
e-STUDIO2521AC
e-STUDIO3025AC
e-STUDIO4525AC
e-STUDIO6525AC

Think in color™

Satisfying Specific Customer Needs for Designed Image Quality

Imaging Manual
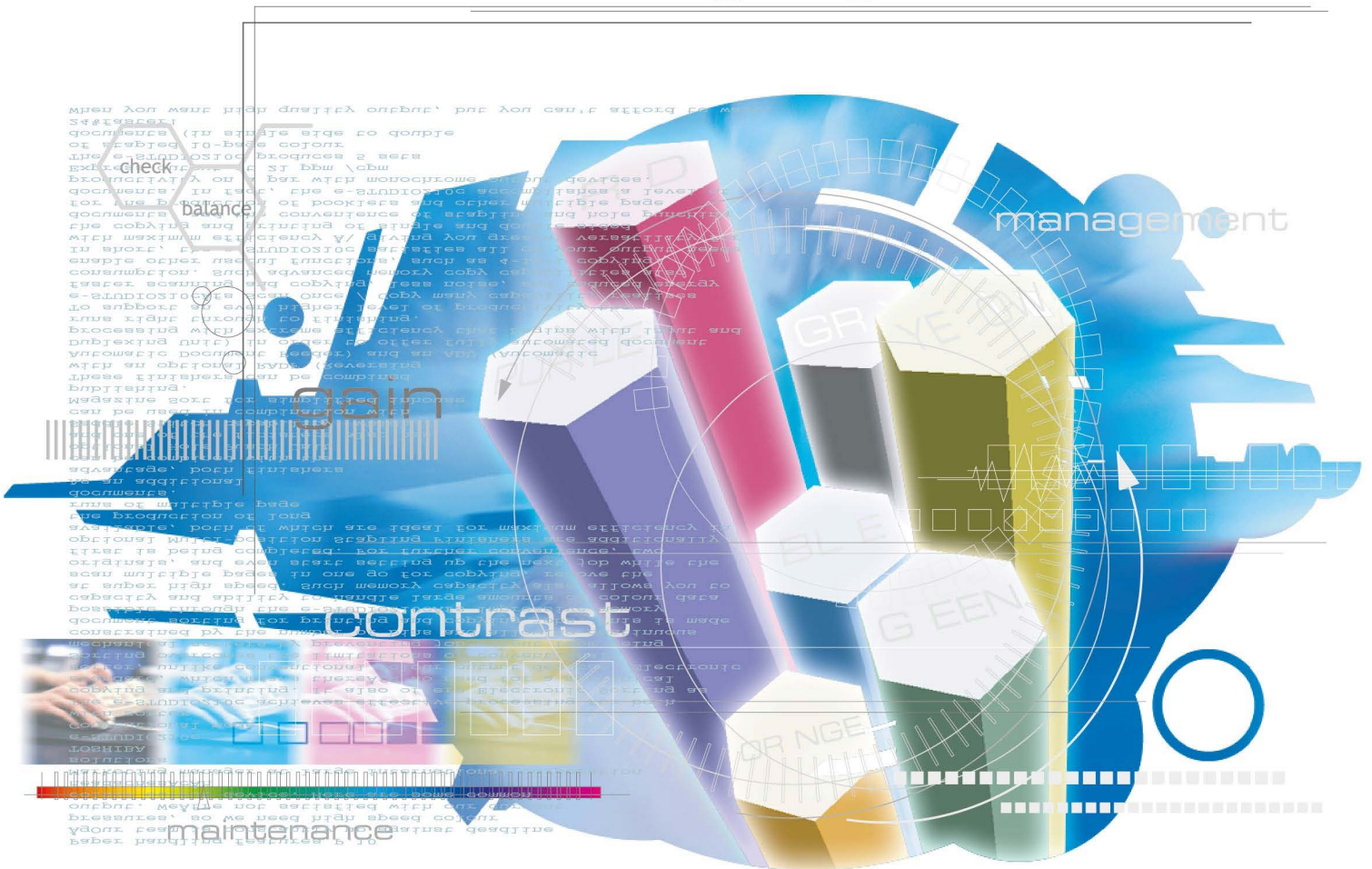
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Preface

This manual consists of requirements regarding image quality which have been raised from by users. Even if requirements seem similar, it is necessary to select the corresponding adjustment method in accordance with the situation. Perform the suitable adjustment with the consideration of the following conditions.

- Required range (perform the adjustment in a particular situation only or in entire situations)
- Original type and its content
- Paper type
- Number of printings in one day
- Type of OS and applications used, etc.

- Some adjustments can be performed by users as well as service technicians. Therefore, in this manual such has been shown as below.

Type	Person in charge
Adjustment of functions from the control panel	User (General user and administrator)
Adjustment with a printer driver	User (General user)
Adjustment using tools Adjustment by means of self-diagnostic codes	Service technician

* Depending on the management status of the MFP, some adjustments cannot be done by users (general users) even if adjustment by users is initially available.
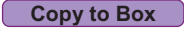
- For adjustments which will have an influence on all printing functions, perform them while carefully checking the impact in printing functions outside the target of the adjustment.

- When any self-diagnostic codes have been adjusted corresponding to a particular original, the image quality may not be the best suited status for others. Therefore, perform this while carefully considering the impact in other cases.

- This manual sometimes describes multiple adjustment items for one purpose. When a desired result cannot be obtained even if multiple adjustment items have been performed, reset them and reattempt the adjustment.

Precaution in Service

- For adjustments to be performed by means of the self-diagnostic code or which uses tools such as a driver is performed, the precautions in the Service Manual must be stringently followed. Such adjustments must be performed by a qualified service technician who has completed the service training course.

- The default values and the acceptable value ranges listed in this manual may differ from actual ones depending on the system firmware version. However, the recommended values remain the same.

Icons

The following icons used in this manual denote as below.

▮▯	:	• Copying: Available adjustments on copying in Black mode (excluding while [Image Smoothing] is set in the original mode) • Printing: Available adjustments on printing in Black mode • Scanning: Available adjustments on scanning in Black mode
▮▮▯	:	• Copying: Available adjustments on copying in Black mode while [Image Smoothing] is set in the original mode • Scanning: Available adjustments on scanning in Gray Scale mode
▮▮▮	:	• Copying: Available adjustment on copying in Full Color mode • Printing: Available adjustments on printing in Full Color mode • Scanning: Available adjustments on scanning in Full Color mode
PCL	:	Available adjustments on printing with a Windows PCL emulation printer driver
PS	:	Available adjustments on printing with a Windows PS emulation printer driver
Mac	:	Available adjustments on printing in with a Mac printer driver
Scan to Box	:	Available adjustments on an images stored in the e-Filing box by the scanning function (Scan to Box, Scan to File, Scan to E-mail, etc.)
Copy to Box	:	Available adjustments on an images stored in the e-Filing box by the copying function (Copy to Box)
Print to Box	:	Available adjustments on an images stored in the e-Filing box by the printing function (Print to Box)

Adjustment reflection range while selecting [Auto Color]

- The descriptions of "Full Color" and "Black" in this manual contain the result when an original is judged as full color or black-and-white while selecting [Auto Color].
- When an original is judged as full color or black-and-white while selecting [Auto Color] in the color mode, adjustments will be reflected only to the selectable modes for the original in [Auto Color].

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1. Copying, Printing, e-Filing Functions (Output from Box) General Adjustments

1.1 Adjustment Method

When image quality adjustment is required throughout the functions in this MFP, perform it by combining the following items in accordance with the use purposes.

Type	Purpose	[05]	[08]	IR
Automatic calibration	To optimize the density and color reproducibility	Y	-	Y
Image quality control	To optimize the image quality	Y	Y	-
2nd transfer bias offset adjustment	To adjust the density of entire images	Y	-	-

* IR: [Image Recovery] (control panel)

\<Notes\>
- Both the service technician and the user can perform the adjustments on the control panel.

1.1.1   Automatic calibration

You can optimize the density and color reproducibility. The optimization can also be performed for each paper type.

❑**Control Panel**

(1) Press [Image Recovery] on the Home screen.

(2) Press [Calibration].

(3) Select the paper type and press [OK].

  <Notes>
   • The paper type selection screen is not displayed by default. The adjustment result of the paper
     that is used to print a chart will be applied to all other media types.
   • To display the paper type selection screen on the touch panel, change the value of 08-9059 to "1".

(4) In the "Calibration" screen, press [Yes].

  <Tip>
   • Three charts for the calibration are printed out.

(5) Place the chart described in "chart A" on the original glass, and press the [START] button to scan
     the chart. Next, scan charts from "chart B" and "chart C" in this order.

  <Tip>
   • Place the printed chart face down on the original glass so that the two black rectangular marks are
     situated on the left side.
   • When the calibration is finished, the screen returns to the [Image Recovery] screen.

❏ **Self-diagnosis code**

Automatic gamma adjustment (Automatic calibration)

Color mode	Object	Paper type	Test print code	Adjustment code	
				Code	Subcode
Color/Black	Copy	All media types [*1]	05-4 or 05-200	05-7869	-
		Plain paper	05-200	05-7871	0
		Thick paper	05-202		1
		Recycled paper	05-204		2
		Thick paper 1	05-206		3
		Thick paper 2	05-208		4
		Thick paper 3 [*2]	05-210		5
		Thick paper 4 [*2]	05-212		6
		Special paper 1	05-214		7
		Special paper 2	05-216		8
		Special paper 3 [*2]	05-218		9
		Thin paper [*2]	05-220		10
	Print (600 dpi)	All media types [*1]	05-70	05-8008	-
		Plain paper	05-70	05-8004	0
		Thick paper	05-72		1
		Recycled paper	05-74		2
		Thick paper 1	05-76		3
		Thick paper 2	05-78		4
		Thick paper 3 [*2]	05-80		5
		Thick paper 4 [*2]	05-82		6
		Special paper 1	05-84		7
		Special paper 2	05-86		8
		Special paper 3 [*2]	05-88		9
		Thin paper [*2]	05-90		10
	Print (1200 dpi)	All media types [*1]	05-230	05-8009	-
		Plain paper	05-230	05-8005	0
		Thick paper	05-232		1
		Recycled paper	05-234		2
		Thick paper 1	05-236		3
		Thick paper 2	05-238		4
		Thick paper 3 [*2]	05-240		5
		Thick paper 4 [*2]	05-242		6
		Special paper 1	05-244		7
		Special paper 2	05-246		8
		Special paper 3 [*2]	05-248		9
		Thin paper [*2]	05-250		10

*1 The adjustment result will be applied to all media types. For example, when adjustment is performed by means of the chart printed on plain paper, its result will be applied to all other media types.

*2 This adjustment is available only for e-STUDIO2525AC/3025AC/3525AC/4525AC/5525AC/6525AC.

e-STUDIO2020AC/2520AC/2021AC/2521AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC (Ver01)

Paper type selection screen display/non-display

Object	Code	Recommended value	Acceptable value range	Default value
Copy/Print	08-9059	-	0: Not displayed 1: Displayed	0

<Tip>
- If you want to apply the adjustment result to all other media types with the paper type selection screen displayed, perform the adjustment by means of the self-diagnostic code.
- If you want to perform the adjustment for a particular paper type, print out a chart by selecting the desired paper type and use it for the adjustment.

1.1.2 Image quality control

You can optimize the image quality. The control that satisfies the use status and environment of this MFP can be made by adjusting the execution conditions.

❑ **Self-diagnosis code**

IQC (Image Quality Control) related self-diagnostic codes

Condition	Code	Control to be executed [1]		Contents
		Full mode	Short mode	
At code entry (Enforced performing)	05-2742	Yes		Performs IQC (full mode).
At power-ON	08-2492	(Yes)	Yes	Performs IQC at warm-up. (IQC mode can be selected.)
Humidity difference	08-2505	Yes		Performs IQC if there is a difference beyond the specified value between the humidity at printing and the one for the previous IQC. (When "1" (Enabled) is set in 08-2494)
Energy saving mode time	08-2507	(Yes)	Yes	Performs IQC if the MFP was in an energy saving state for a longer time than the specified value when the MFP is recovered from energy saving mode. (Select IQC mode to be performed by means of 08-2496.)
Accumulated print volume 1	08-2509	Yes		Performs IQC when the number of print pages after the previous IQC (full mode) has reached the specified value. (When "1" (Enabled) is set in 08-2498 for color printing) • When the number of print pages has reached the specified value during printing jobs, IQC will be performed after the jobs are finished.
Accumulated print volume 2 [2]	08-2497		Yes	Performs IQC when the number of print pages after the previous IQC (short mode) has reached the specified value. (When "1" (Enabled) is set in 08-2495) • When the number of print pages has reached the specified value during printing jobs, IQC will be performed after the jobs are finished.
Number of print interruption pages	08-9199		Yes	Stops printing jobs and performs IQC after the number of pages specified by this code has been printed, when the number of pages has reached the value specified in 08-2509 during printing jobs. (When "0" is set, printing is not interrupted.)

[1]: The correction accuracy for the full mode is high but it takes approx. 90 seconds. The short mode takes approx. 15 seconds but the correction accuracy is low. Moreover, the amount of toner used for the short mode is approx. one-quarter that of the full mode.

[2]: When IQC is performed in color printing, both the counters for Color mode and Black mode are reset. When IQC is performed in black-and-white printing, only the counter for Black mode is reset.

<Tip>
- IQC is performed when recovering from the toner empty status. When recovering from the K toner empty status during black-and-white printing, the short mode is performed. In other cases, the full mode is performed.

1.1.3　2nd transfer bias offset adjustment

You can adjust the density of entire images.

❑ **Self-diagnosis code**

2nd transfer bias offset adjustment

Color mode	Print side [1]	Code	Recommended value	Acceptable value range	Default value
Full Color	Front side	05-2934	4 to 16	0 to 20	10
	Back side	05-2935			
Black	Front side	05-2936			
	Back side	05-2937			

Subcode	Paper type
0	Plain paper
1	Thick paper 1
2	Thick paper 2
3	Thick paper 3 [2]
4	Transparency
5	Special paper 1
6	Special paper 2
7	Recycled paper
8	Thick paper 4 [2]
9	Thin paper [2]
10	Envelope
11	Special paper 3 [2]
28	Thick paper

[1] Front side: The print side in simplex printing. The print side that exits facing upward in duplex printing.
　　Back side: The print side that exits facing downward in duplex printing.
[2] This adjustment is available only for e-STUDIO2525AC/3025AC/3525AC/4525AC/5525AC/6525AC.

<Tip>
- In subcodes 16 to 25 of each code, user paper types 1 to 10 can be adjusted. (Acceptable value range: 0 to 20)
- Set a larger setting value when thick paper or paper with asperities on its surface is used. Set a smaller setting value when thin paper is used.
- After the adjustment, perform automatic calibration to the adjusted paper type.
  For details, refer to "1.1.1　Automatic calibration".

1.2   To Obtain Darker Images

Before adjustment	After adjustment
The image looks light and blurred.	The image looks darker and sharper.
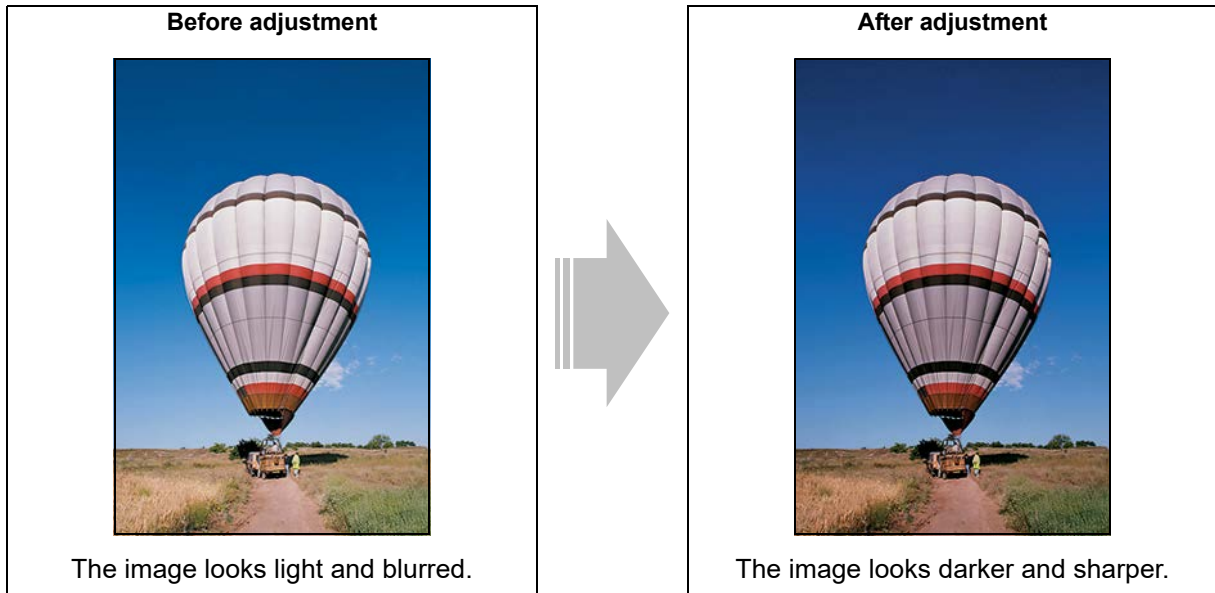
❑ Explanation

When an original containing photo images or gradational images is printed, the output image sometimes looks light and blurred. Perform this adjustment in order to make the image darker and sharper.

❑ Adjustment type

	Type	Function to be affected
a	Automatic calibration	All
b	2nd transfer bias offset adjustment	All
c	Replacement of consumables	All

<Notes>

• Be sure to perform the procedures in order from step a.

❑ Adjustment method

a. Automatic calibration

Perform automatic calibration for the Copying function and the Printing function.
For details, refer to "1.1.1 Automatic calibration".

b. 2nd transfer bias offset adjustment

Set a larger value.
For details, refer to "1.1.3 2nd transfer bias offset adjustment".

c. Replacement of consumables

Check the remaining life of the drum and the fuser unit. Replace them if necessary.

\<Tip\>

- When consumables are replaced, take proper action in accordance with the Service Manual.
- When the drum is replaced, perform image quality control and automatic calibration.

  For details about image quality control, refer to "1.1.2 Image quality control".

  For details about automatic calibration, refer to "1.1.1 Automatic calibration".

1.3   To Adjust Density on Solid Colored Images

When the density is decreased	When the density is increased
The solid colored area becomes lighter.	The solid colored area becomes darker.
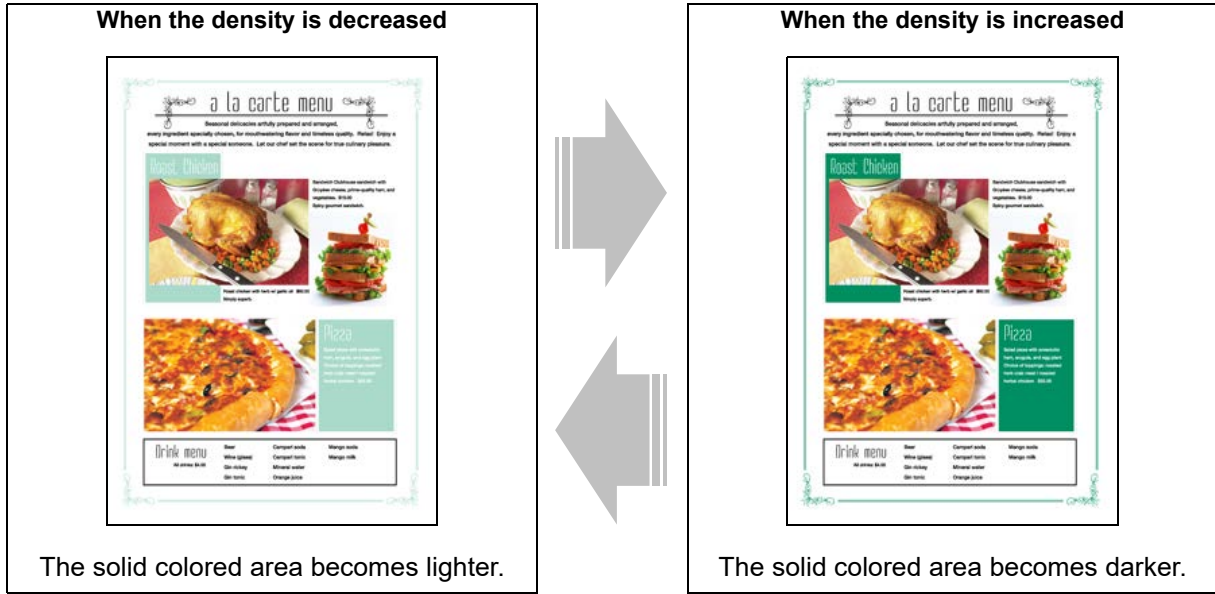
❑**Explanation**

Perform this adjustment in order to adjust the toner amount in the solid colored area in accordance with the paper type and the content of the original.

❑**Adjustment type**

	Type	Function to be affected
a	Image quality control (adjustment of the target value of the high density area)	All
b	Automatic calibration	All
c	Replacement of consumables	All
d	Image quality control (offsetting correction setting of contrast voltage)	All

<Notes>

• Be sure to perform the procedures in order from step a.

❏**Adjustment method**

a. Image quality control (adjustment of the target value of the high density area)

Set a larger or a smaller value.

Adjustment of the target value of the high density area

Object	Code	Subcode	Recommended value	Acceptable value range	Default value	
					e-STUDIO 2020AC/ 2520AC	e-STUDIO 2021AC/ 2521AC/ 2525AC/ 3025AC/ 3525AC/ 4525AC/ 5525AC/ 6525AC
Y (Yellow)	05-2662	0	The value should be within in a range of ± 50 from the default. To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	100 to 450	322	298
M (Magenta)		1			312	294
C (Cyan)		2			357	357
K (Black)		3			349	349

- Change the value in increments of 20.
- When the setting value is changed, perform image quality control. Then set the appropriate value while checking the image quality.
  For details about image quality control, refer to "1.1.2 Image quality control".

b. Automatic calibration

Perform automatic calibration for the Copying function and the Printing function for each paper type. For details, refer to "1.1.1 Automatic calibration".

c. Replacement of consumables

Check the remaining life of the drum, the developer material, and the transfer belt. Replace them if necessary.

<Tip>
- When consumables are replaced, take proper action in accordance with the Service Manual.
- When the drum is replaced, perform image quality control and automatic calibration.
  For details about image quality control, refer to "1.1.2 Image quality control".
  For details about automatic calibration, refer to "1.1.1 Automatic calibration".

d. Image quality control (offsetting correction setting of contrast potential)

Set a larger or a smaller value.

<Notes>

• The adjustment may cause an increase in the amount of toner used, toner scattering, diminished photo images or gradational images (less accurate reproducibility of halftones), darkened images and blurring of fine portions (decreased resolving power), lightened images, faint thin lines and shorten the life of the consumables. Therefore, carefully perform the adjustment.

Offsetting correction setting of contrast potential

• Plain paper, Thick paper, Recycled paper, Thick paper 1, Thick paper 2, Thick paper 3*, Thick paper 4*, and Thin paper*, except for Extra long size paper

Color mode	Code	Subcode	Object	Recommended value	Acceptable value range	Default value
Full Color/ Black	08-2513	0	Y	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 10	5
		1	M			
		2	C			
		3	K			

• Extra long size paper, Special paper 1, Special paper 2, Special paper 3*, Transparency (OHP film), Envelope

Color mode	Code	Subcode	Object	Recommended value	Acceptable value range	Default value
Full Color/ Black	08-2514	0	Y	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 10	5
		1	M			
		2	C			
		3	K			

* This adjustment is available only for e-STUDIO2525AC/3025AC/3525AC/4525AC/5525AC/6525AC.

• Change the value in increments of 1.
• When the setting value is changed, perform image quality control. Then set the appropriate value while checking the image quality.
  For details about image quality control, refer to "1.1.2 Image quality control".
• After this adjustment is carried out, be sure to perform automatic calibration.
  For details about automatic calibration, refer to "1.1.1 Automatic calibration".

1.4 To Achieve Image Quality Most Suitable for Paper Used (Eliminates Blur and Graininess from Images)

Before adjustment	After adjustment
The image looks grainy depending on the paper type.	A clear image most suitable for the paper type can be obtained.
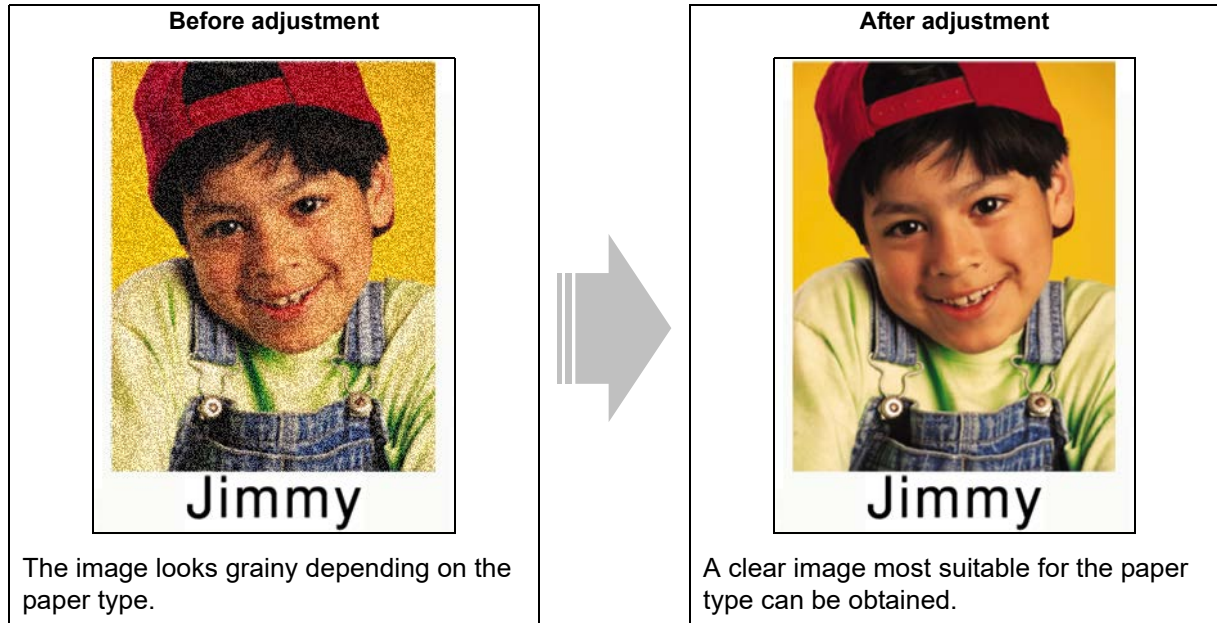
❑ **Explanation**

The image sometimes looks blurred or grainy depending on the paper type. Perform this adjustment in order to achieve the image quality most suitable for the paper used.

❑ **Adjustment type**

	Type	Function to be affected
a	2nd transfer bias offset adjustment	All
b	Adjusting the fusing temperature	All
c	Replacement of consumables	All

\<Notes\>
- Be sure to perform the procedures in order from step a.

❑ **Adjustment method**

a. 2nd transfer bias offset adjustment

Set a larger value.
For details, refer to "1.1.3 2nd transfer bias offset adjustment".

\<Tip\>
- If graininess has occurred in the high density area on plain paper other than the recommended one, select [Recycled Paper] as the paper type. This symptom may be reduced.
- If more adjustments are needed after changing the paper type to recycled paper, perform the 2nd transfer bias offset adjustment for recycled paper.

b. Adjusting the fusing temperature

If more adjustments are needed, reduce the setting value to lower the temperature of the fuser unit.

• e-STUDIO2020AC/2520AC/2021AC/2521AC

Color mode	Object		Code	Subcode	Recommended value	Acceptable value range	Default value
Black	Recycled paper	Center heater	08-5293	0	135 to 145	90 to 170	140
		Side heater	08-5294				
Color		Center heater	08-5293	1	140 to 150		145
		Side heater	08-5294				

• e-STUDIO2525AC/3025AC/3525AC

Color mode	Object		Code	Subcode	Recommended value	Acceptable value range	Default value
Black	Recycled paper	Center heater	08-5293	0	110 to 120	90 to 170	115
		Side heater	08-5294				
Color		Center heater	08-5293	1	120 to 130		125
		Side heater	08-5294				

• e-STUDIO4525AC

Color mode	Object		Code	Subcode	Recommended value	Acceptable value range	Default value
Black	Recycled paper	Center heater	08-5293	0	125 to 135	90 to 200	130
Color				1	135 to 145		140

• e-STUDIO5525AC/6525AC

Color mode	Object		Code	Subcode	Recommended value	Acceptable value range	Default value
Black	Recycled paper	Center heater	08-5293	0	135 to 145	90 to 200	140
Color				1	140 to 150		145

• Adjust to within the range of recommended values while carefully confirming that poor fusing does not occur.
• After this adjustment, be sure to perform automatic calibration.
For details about automatic calibration, refer to "1.1.1 Automatic calibration".

c. Replacement of consumables

Check the remaining life of the drum and the transfer belt. Replace them if necessary.

<Tip>
• When replacing consumables, return the setting values changed in a and b to their default values.
• When consumables are replaced, take proper action in accordance with the Service Manual.
• When the drum is replaced, perform image quality control and automatic calibration.
For details about image quality control, refer to "1.1.2 Image quality control".
For details about automatic calibration, refer to "1.1.1 Automatic calibration".

1.5 To Minimize Variations in Image Quality under Operating Conditions (Sets Optimized Settings in Image Quality Control)

Before adjustment

The image contrast varies depending on the date and time when printing is performed or the type of print job.

After adjustment

The image quality is constantly maintained.

❑**Explanation**

Variation in contrast may appear on images depending on the date and time when printing is performed or the type of print job. Perform this adjustment in order to maintain the image quality at a certain level in all cases.

<u>Adjustment type</u>

	Type	Function to be affected
a	IQC (Image Quality Control) (adjustment of related self-diagnostic codes)	All
b	Paper type	All
c	Replacement of consumables	All

❑**Adjustment method**

<u>a. IQC (Image Quality Control) (adjustment of related self-diagnostic codes)</u>

Stable image quality can be maintained by performing image quality control in accordance with the operation environment or the print condition.

	Object	Condition to adjust
E.g. 1	When the MFP is installed in a location where the varies widely	Humidity difference
E.g. 2	To maintain the image quality stability by reducing variations after returning from energy saving mode	Period of time the MFP is left unused in power saving mode At power-ON
E.g. 3	To optimize the image quality stability according to the number of output pages in a day or the type of original	Number of output pages after the previous IQC At power-ON

<Tip>
- It is recommended to set the value in consideration of users' requests and the total number of output pages in a day so that IQC (short mode) is performed two or three times a day.
- When the number of IQC performance times is increased, the amount of the toner used will become large. Therefore, change from the default should be minimized.
- When the reason to modify the IQC performance condition is removed due to a change in the installation location of the MFP, return the value to the default one promptly.

E.g. 1: When the MFP is installed in a location where the varies widely

(1) Change the humidity difference for performing IQC

Make this adjustment so that IQC is performed even if the difference between the humidity at printing and the one for the previous IQC is small.

When a smaller value is set, IQC tends to be performed.

Relative humidity difference setting

Code	Recommended value	Acceptable value range	Default value	Remarks
08-2505	1	0 to 6 (0% to 30%)	2	• An increase of 1 in the value makes the humidity difference, which is the IQC performance condition, become wider by 5%.

(2) Image quality control

Perform image quality control.

For details about image quality control, refer to "1.1.2 Image quality control".

E.g. 2: To maintain the image quality stability by reducing variations after returning from energy saving mode

(1) Change the energy saving mode time for performing IQC

Make this adjustment so that IQC is performed even if the period that the MFP was in energy saving mode is short.

When a smaller value is set, IQC tends to be performed.

Energy saving mode time setting

Code	Recommended value	Acceptable value range	Default value	Remarks
08-2507	1 to 14	0 to 15 0: 3 min., 1: 5 min., 2: 7 min., 3: 10 min., 4: 15 min., 5: 20 min., 6: 30 min., 7: 45 min., 8: 60 min., 9: 90 min., 10: 120 min., 11: 150 min., 12: 180 min., 13: 240 min., 14: 300 min., 15: 360 min.	15	• Select IQC mode to be performed by means of 08-2496.

<Tip>
- The mode of IQC performed when returning from energy saving mode can be changed.

  IQC mode change when returning from energy saving mode

Code	Recommended value	Acceptable value range	Default value
08- 2496	1 to 2	0 to 2 0: Disabled 1: Short mode 2: Full mode	1

•IQC will not be performed if shifting to energy saving mode is disabled.

(2) Image quality control

Perform image quality control.

For details about image quality control, refer to "1.1.2 Image quality control".

E.g. 3: To optimize the image quality stability according to the number of output pages in a day or the type of an original

(1) Change the number of output pages for performing IQC

Adjust the number of output pages to perform IQC or IQC mode in accordance with the number of output pages in a day or one time, the contents of the original and required image quality. When a smaller value is set, IQC tends to be performed.

Code	Recommended value	Acceptable value range	Default value	Remarks
08-2509	500 or more *	100 to 9999 (Unit: Page)	1000	• Full mode • This is performed when "1" (Enabled) is set in 08-2494 for color printing.
08-2497	50 or more *	0 to 500 (Unit: Page)	100	• Short mode • This is performed when "1" (Enabled) is set in 08-2495.
08-9199	50 or more *	0 to 9999 (Unit: Page)	e-STUDIO2020AC/2520AC: 500 e-STUDIO2021AC/2521AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC: 400	• Short mode • When "0" is set, printing is not interrupted.

* When a value smaller than 50 is set, the life of consumables such as the cleaning blade will become short.

• The purpose and the setting value for each code are as below.

Purpose	08-2509 Full mode	08-2497 Short mode	08-9199 Short mode (Print interruption)
Printing of business documents is large (default)	1000	100	e-STUDIO2020AC/2520AC: 500 e-STUDIO2021AC/2521AC/ 2525AC/3025AC/3525AC/ 4525AC/5525AC/6525AC: 400
To stabilize the density in continuous printing	1000	50	50
To stabilize the halftone density in photo images	250	100	250
To emphasize performance (reduces the number of short mode execution times)	1000	500	1000

(Unit: Page)

•When the number of IQC performance times is increased, the amount of toner used will become large.

•The full mode is performed if its execution timing conflicts with the short mode.

(2) Image quality control

Perform image quality control.

For details about image quality control, refer to "1.1.2 Image quality control".

b. Paper type

(1) Change the paper type to [Thick Paper 1].

For details on how to set the paper type, refer to the "Preparation of Paper".

(2) Change the value set for front surface bias offset (color) (05-2934-1) for Thick paper 1 to 2 to 4 (recommended value is 3).

(3) Perform automatic calibration for the Copying function and the Printing function.

For details, refer to "1.1.1 Automatic calibration".

<Notes>

The following situations occur by changing the paper type from plain paper to thick paper 1.

• Print speed slows down.

• The density level of the low/medium density area may change.

• The PM counter changes to counting double.

c. Replacement of consumables

Check the remaining life of the drum and the transfer belt. Replace them if necessary.

<Tip>

• When consumables are replaced, take proper action in accordance with the Service Manual.

• When the drum is replaced, perform image quality control and automatic calibration.

For details about image quality control, refer to "1.1.2 Image quality control".

For details about automatic calibration, refer to "1.1.1 Automatic calibration".

1.6   To Adjust Out-of-Registration Colors

Before adjustment	After adjustment
Paper feeding ➔	Paper feeding ➔
TOSHIBA	TOSHIBA
The text and background are misaligned or out of registration.	Text is aligned with the background and a clear image can be obtained.
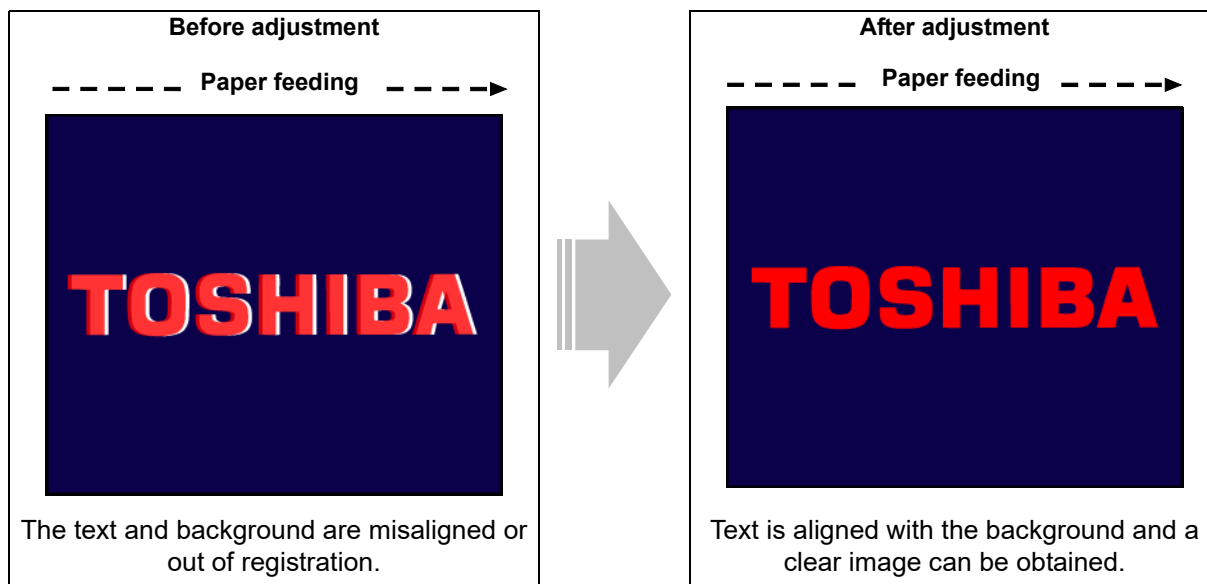
❑ **Explanation**

When text or thin lines are printed, out-of-registration of colors sometimes becomes conspicuous.

Perform this adjustment in order to print them out clearly by eliminating out-of-registration colors.

❑ **Adjustment method**

• For plain paper and thick paper, perform steps (1) to (4).

• For thick paper 1, 2 and 3, perform steps (1) to (10).

  <Tip>

  • For details on how to adjust out-of-registration colors, refer to the Service Manual, too.

(1) Make sure that no out-of-registration colors are visible on the original.

(2) Place paper to be adjusted in the drawer and select the paper type.
     For details on how to set the paper type, refer to the "Preparation of Paper".

(3) In the [05 ADJUSTMENT MODE] screen, select the drawer in which the paper to be adjusted is placed.

(4) Key in [4719] and press the [START] button.
     "Forced color registration control" is performed.

(5) Select the drawer in which A4 paper is placed.

(6) Key in [104] and press [TEST PRINT].
     Two sheets of the test print are printed.

(7) Using the test print with "Page 1" and "Page 2", check the status of out-of-registration colors.

Type A for out-of-registration colors

The paper feeding speed is faster than the transfer belt rotating speed.

The trailing edge of the patch is eliminated.

Page 1 — Page number

Leading edge

Paper feeding direction

Type B for out-of-registration colors

The paper feeding speed is slower than the transfer belt rotating speed.

The leading edge of the patch is eliminated.
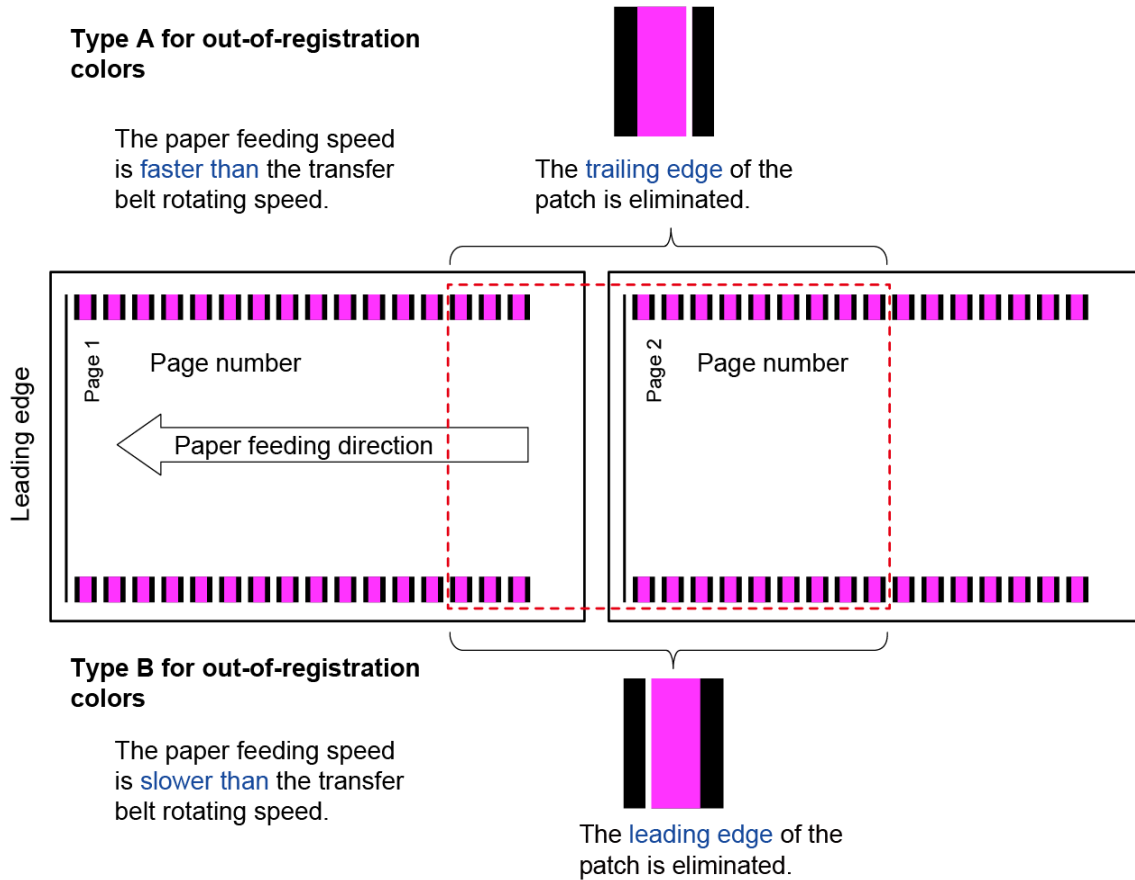
(8) Finely adjust the rotating speed of the fuser motor in accordance with the type of the out-of-registration colors.

Type of the out-of-registration colors	Code	Subcode	Recommended value	Acceptable value range	Default value
Type A	05-4529	1 to 2	123 to 127 (Set a value smaller than the specified one.)	0 to 255	128
Type B			129 to 133 (Set a value larger than the specified one.)		

The following table shows the explanation about the subcodes.

Subcode	Description
1	Thick paper 1 and 2
2	Thick paper 3

(9) Key in [104] and press [TEST PRINT].

(10) Using the test print with "Page 1" and "Page 2", check that the status of the out-of-registration colors has been improved in all the patches.

1.7 To Adjust Printing Positions on Front and Back Pages in Duplex Printing

❑**Explanation**

Perform this adjustment in order to adjust the printing positions on the front and back sides in duplex printing.

❑**Adjustment type**

Type		Function to be affected
a	Image dimensional adjustment at the printing section	All
b	Image tilting at the trailing edge adjustment	All
c	Image tilting at the leading and trailing edges adjustment	All

❑**Adjustment method**

a. Image dimensional adjustment at the printing section

If the position and size of images on the front and back sides differ, perform the adjustment so that the void around the paper is close to 4.2 ± 0 mm in accordance with "6.1.6 Image dimensional adjustment at the printing section" "Type 2: Void even adjustment method" in the Service Manual.

b. Image tilting at the trailing edge adjustment

If image tilting is generated at the trailing edge of the paper on both the front and rear sides, perform Height adjustment of the fuser unit guide rail.

e-STUDIO2020AC/2520AC/2021AC/2521AC

"6.12.5 Height adjustment of the fuser unit guide rail"

e-STUDIO2525AC/3025AC/3525AC/4525AC

"6.12.3 Height adjustment of the fuser unit guide rail"

e-STUDIO5525AC/6525AC

"6.18.3 Height adjustment of the fuser unit guide rail"
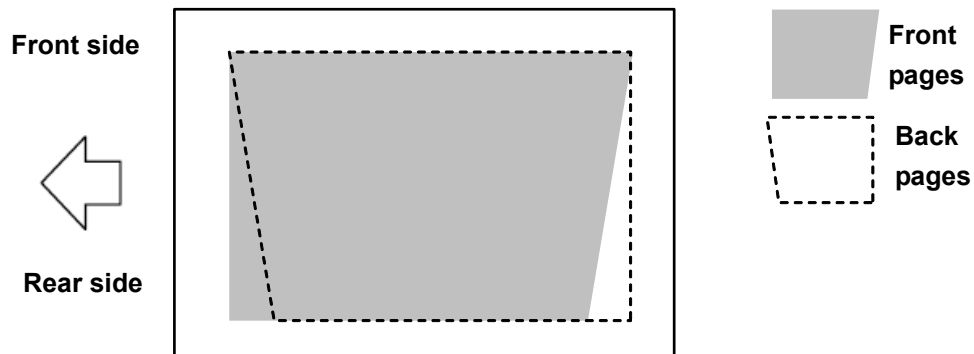
c. Image tilting at the leading and trailing edges adjustment

If image tilting is generated at the leading and trailing edges of the paper on both the front and rear sides, perform this adjustment.
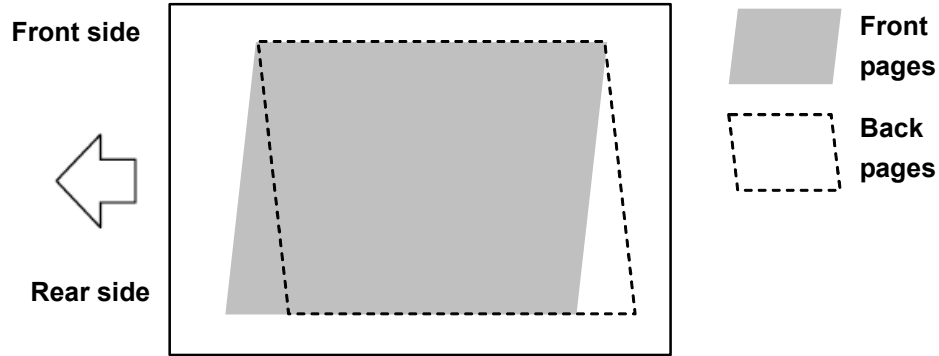
e-STUDIO2020AC/2520AC

Perform the adjustment for image tilting at the leading and trailing edges.

Code	Recommended value	Acceptable value range	Default value
05-4940	To shift the front side to the paper feeding direction: Set a value larger than 128. To shift the rear side to the paper feeding direction: Set a value smaller than 128.	54 to 202	128
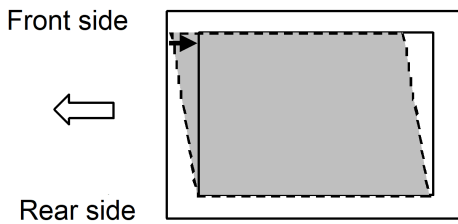
Set a larger value.
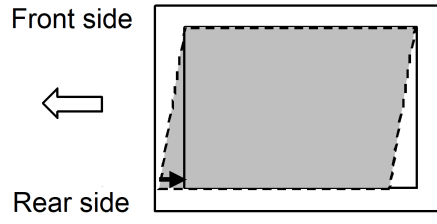
Set a smaller value.

\<Notes\>

• After this adjustment is carried out, be sure to perform 05-4719 (Forced color registration control of image control).

e-STUDIO2021AC/2521AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC

Adjust the installation position of the laser optical unit (LSU) by performing image tilting at the leading edge adjustment.

e-STUDIO2021AC/2521AC/2525AC/3025AC/3525AC/4525AC
"6.8.2 Image tilting at the leading edge adjustment"
e-STUDIO5525AC/6525AC
"6.14.2 Image tilting at the leading edge adjustment"

1.8   To correct density unevenness on the front side and rear side

❑ **Explanation**

Perform this adjustment to correct density unevenness on the front side and rear side of images.

❑ **Adjustment type**

	Type	Function to be affected
a	Automatic correction	All
b	Manual correction	All

<Notes>
- When the manual correction is performed after the automatic correction, its result is added to the manual correction.
- For a copying job, this is effective only when "1" (Enabled) is set for 08-8123.
- For a printing job, this is effective only when "1" (Enabled) is set for 08-8124.
- This is effective for printing (600 dpi) only.
- When this correction is performed, the density sometimes becomes lighter. To make the density darker, refer to "a. Image quality control (adjustment of the target value of the high density area)" in "1.3 To Adjust Density on Solid Colored Images".
- When any parts in the following units are replaced while this adjustment is enabled, perform FS-08-8002 (FR density difference correction clear).
    - Data writing section
    - Process unit (developer unit, cleaner)
    - Transfer unit (TBU, TRU)
    - Image quality control section
    - Fusing section

❑ **Adjustment method**

a.Automatic correction

[A]Control panel
(1) Press [Image Recovery] on the Home screen.
(2) Press [Density Unevenness Correction].
(3) Press [Correction], and then press [Yes].

<Tip>
- A chart for the calibration is printed out.

(4) Place the chart on the original glass.

<Tip>
- Place the printed chart face down on the original glass so that the two black rectangular marks are situated on the left side.
(5) Press the [START] button.

<Tip>

• When the calibration is finished, the screen returns to the [Image Recovery] screen.

[B] Self-diagnosis code

Density unevenness correction (Automatic correction)

Object	Test print code	Adjustment code
Copy/Print (600 dpi)	05-280	05-8129

<Tip>

• You can adjust the susceptibility of auto correction occurring.

Code	Recommended value	Acceptable value range	Default value
05-8548	1 to 2 When a larger value is set, correction tends to be made.	0 to 2	e-STUDIO2020AC/2520AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC: 1 e-STUDIO2021AC/2521AC: 2

b.Manual adjustment

[A] Self-Diagnostic Codes

Density unevenness correction (Manual adjustment)

Function	Item to be adjusted		Code	Sub code	Recommended value	Acceptable value	Default value
Copying*1	Y (Yellow)	Area 1	8500	0, 1, 2	To make the density darker: Set a larger value. To make the density lighter: Set a smaller value.	0 to 255	128
		Area 2	8501				
		Area 3	8502				
		Area 4	8503				
	M (Magenta)	Area 1	8504				
		Area 2	8505				
		Area 3	8506				
		Area 4	8507				
	C (Cyan)	Area 1	8508				
		Area 2	8509				
		Area 3	8510				
		Area 4	8511				
	K (Black)	Area 1	8512				
		Area 2	8513				
		Area 3	8514				
		Area 4	8515				
Printing (600 dpi)*2	Y (Yellow)	Area 1	8532				
		Area 2	8533				
		Area 3	8534				
		Area 4	8535				
	M (Magenta)	Area 1	8536				
		Area 2	8537				
		Area 3	8538				
		Area 4	8539				
	C (Cyan)	Area 1	8540				
		Area 2	8541				
		Area 3	8542				
		Area 4	8543				
	K (Black)	Area 1	8544				
		Area 2	8545				
		Area 3	8546				
		Area 4	8547				

*1 For a copying job, this is effective only when "1" (Enabled) is set for 08-8123.

*2 For a printing job, this is effective only when "1" (Enabled) is set for 08-8124.

The meaning of the sub code is as below.

Sub code	Density area to be adjusted
0	Low density
1	Medium density
2	High density

Area 1 to 4 correspond to 4 divisions in the front to rear direction of the image area. The relationship of the positions on the chart for auto correction are shown below.
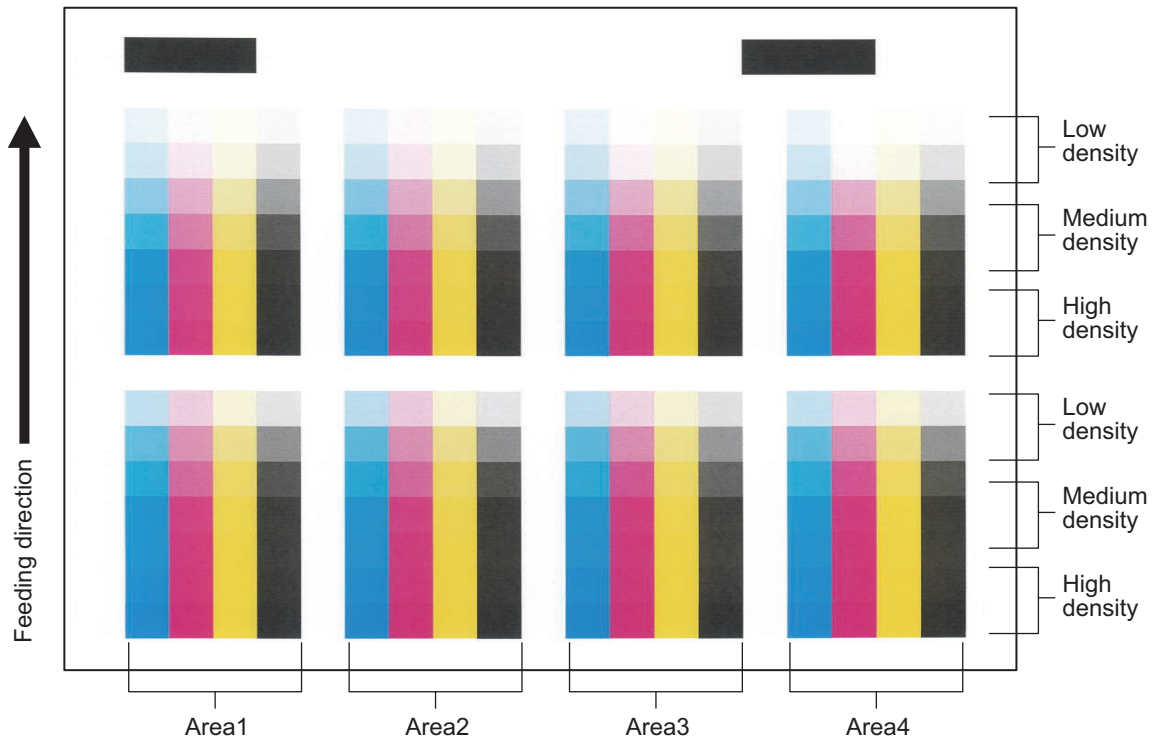
2. Copying Function Adjustments

2.1 Adjustment Method

When this MFP is used as a copier, perform the image adjustments by combining the following items in accordance with the use purposes.

Type	Purpose	[05]	[08]	CP	UF
Original mode	To perform copying with image quality suitable for the original	-	-	Y	Y
Density adjustment	To adjust the density of entire images	Y	-	Y	-
Background adjustment	To adjust the background density	Y	-	Y	-
Sharpness adjustment	To adjust the sharpness of the boundary of text and lines	Y	-	Y	-
Hue adjustment	To adjust the hue of entire images	Y	-	Y	-
Color balance adjustment	To adjust the density for each color	Y	-	Y	-
Saturation adjustment	To adjust the saturation of entire images	Y	-	Y	-
One touch adjustment	To adjust the image quality to the one registered in this MFP beforehand	Y	-	Y	-
Gamma balance adjustment	To adjust the density for each density area for black mode printing	Y	-	-	-
Gamma balance adjustment (Text)	To adjust the density for each density area of text	Y	-	-	-
Maximum text density adjustment	To adjust the maximum density of text	Y	-	-	-
Text/Photo reproduction level adjustment	To adjust the image quality of text or photos in order to closely match them with the original	Y	-	-	-
Black header density level adjustment	To adjust the density of bold black text	Y	-	-	-
Potential on white background / correction setting	To adjust the thickness of text	-	Y	-	-
ACS adjustment	To adjust the threshold to detect whether the scanned original is color or black-and-white in Auto Color mode	Y	-	-	Y
1st transfer bias offset adjustment	To adjust the saturation mainly for R (Red)	Y	-	-	-

* CP: [Copy] mode (control panel)
* UF: [User Functions] menu (control panel)

<Notes>

• Both the service technician and the user can perform the adjustments on the control panel.

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2.1.1　　Original mode

You can perform copying with the image quality suitable for the original.

❑ **Control panel**

(1) Press [Copy] on the Home screen. Press the [Basic] tab and [Original Mode] to select the original mode.
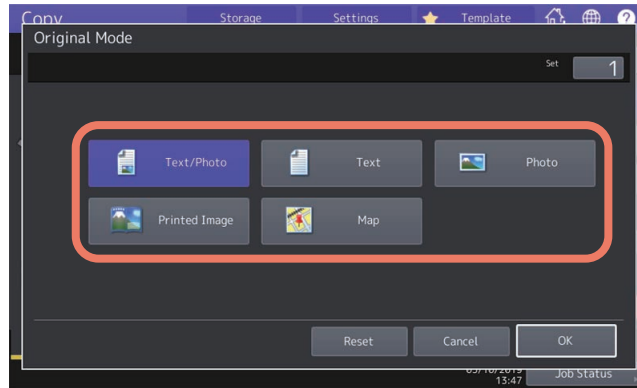
The available original mode setting differs depending on the color mode.

Original mode	Original mode	Suitable original	Color mode		
			Full Color	Auto Color Mono Color Twin Color Copy	Black
Text/Photo	• Satisfies the reproduction of both text and photographs	• Originals with text and photographs mixed • Originals printed by an MFP	Yes	Yes	Yes
Text	• Emphasizes the reproduction of text • Makes background fogging become difficult	• Originals with text only or with text and line art only	Yes	Yes	Yes
Printed Image	• Emphasizes the reproduction of printed photos	• Originals with photogravure	Yes	Yes	-
Photo	• Originals with regular photos on photographic printing paper	• Silver halide photos	Yes	-	-
Map	• Emphasizes the reproduction of small text and illustrations • Makes light colors easily reproducible	• CAD drawings	Yes	-	-

Original mode	Original mode	Suitable original	Full Color	Auto Color Mono Color Twin Color Copy	Black
				Color mode	
Photograph	• Emphasizes the reproduction of printed photos	• Originals with photogravure	-	-	Yes
Image Smoothing	• Satisfies the reproduction of both text and photographs	• Originals with text and photographs mixed (especially originals requiring higher reproducibility on photos)	-	-	Yes

<Tip>
- [Text/Photo] is set for the original mode as default in all color modes.
- You can change the default value of the original mode for each color mode using the following procedure.

(1)Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
(2)Press [Copy].
(3)By referring to the following setting, select the original mode to be set as the default for each color mode.

Setting	Applicable color mode
Original mode (Color)	Full Color, Mono Color, Twin Color Copy
Original mode (Black)	Black
Original mode (Auto Color)	Auto Color

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2-3

2.1.2 Density adjustment

You can adjust the density of entire images.

❏**Control panel**

(1) Press [Copy] on the Home screen. Press [◖] [◗] in the [Basic] tab to adjust the density.

   • The density will be adjusted automatically by pressing [Auto].
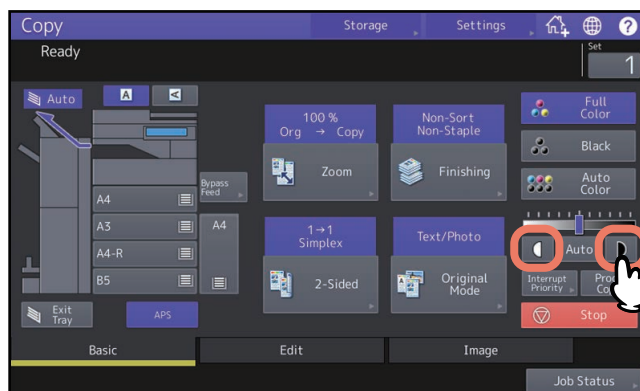
❑ **Self-diagnosis code**

[A] Density center value

When the manual density setting value is altered while it is set in the [Basic] tab on the control panel, the density of all the steps in the indicator is changed.

Item	Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Automatic density	Full Color	Text/Photo	05-7720	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
		Text	05-7721			
		Printed Image	05-7722			
		Photo	05-7723			
		Map	05-7724			
		Custom	05-7725			
		Red Seal Color	05-7726			
	Black	Text/Photo	05-7123			
		Text	05-7124			
		Photo	05-7125			
		Image Smoothing	05-7141			
		Custom	05-7137			
Manual density	Full Color	Text/Photo	05-7713			
		Text	05-7714			
		Printed Image	05-7715			
		Photo	05-7716			
		Map	05-7717			
		Custom	05-7718			
		Red Seal Color	05-7719			
	Black	Text/Photo	05-7114			
		Text	05-7115			
		Photo	05-7116			
		Image Smoothing	05-7138			
		Custom	05-7134			
	Drop Out Color		05-7160			

• One step in the indicator corresponds to "20" of the value in [05] code.

2.1.3   Background adjustment

You can adjust the density of the background.

❑ **Control panel**

Background adjustment

(1)Press [Copy] on the Home screen. Press [Background Adjustment] in the [Image] tab.

(2)Press [Light] or [Dark] to adjust the density and then press [OK].
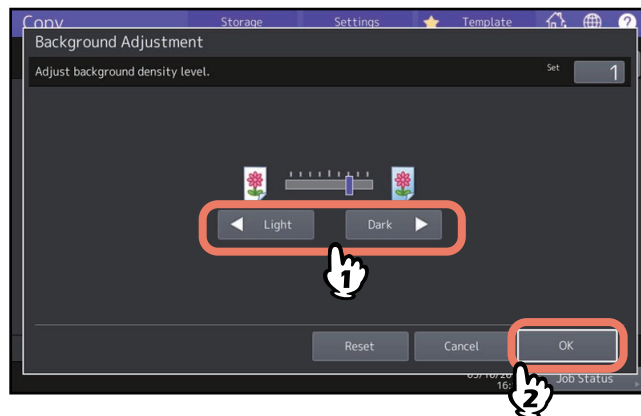
❑ **Self-diagnosis code**

[A] Background adjustment

The automatic density and manual density of the background can be adjusted as follows.

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-7656	To make the background density darker: Set a value larger than the default one. To make the background density lighter: Set a value smaller than the default one.	0 to 255	128
	Text	05-7657			
	Printed Image	05-7658			
	Photo	05-7659			
	Map	05-7660			
	Custom	05-7661			
	Red Seal Color	05-7662			
Mono Color	Text/Photo	05-7707			
	Text	05-7708			
	Printed Image	05-7709			
Twin Color Copy	Text/Photo	05-7710			
	Text	05-7711			
	Printed Image	05-7712			
Black	Text/Photo	05-7100 05-7086*			
	Text	05-7101			
	Photo	05-7102			
	Image Smoothing	05-7105			
	Custom	05-7106			
Drop Out Color		05-7107			

* Manual density only

- One step in the indicator corresponds to "25" of the value in [05] code.
- The value is the center value of [Background Adjustment]. When the value is changed, all the steps of the indicator are shifted accordingly.
- Change the value in increments of 10, while checking the image until the optimum value is obtained.
- If the color of the background is made darker, its color tone may be changed.

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[B] Range correction

In range correction, the background peak can be switched in "Fixed" or "Varied". When a darker density is set, that for the entire image will also become darker. However, there will be the following difference depending on the setting of the background peak.

• Fixed: A specified density is erased regardless of the background level of the original. Unevenness does not occur in the same images.

• Varied: The background is erased in accordance with the level of the original. Unevenness in the erasing of the background may occur depending on the pattern of the original.

This adjustment will have an effect only when copying in Black mode is performed by selecting the density manually.

Color mode	Item	Original mode	Code	Recommended value	Acceptable value range	Default value
Black	Manual density	Text/Photo	05-7286	-	0 to 1 0: Background peak - Fixed 1: Background peak - Varied	0
		Text	05-7287			1
		Custom	05-7237			0

2.1.4   Sharpness adjustment

You can adjust the sharpness of the boundary of text and lines.

❑ **Control panel**

Sharpness

(1) Press [Copy] on the Home screen. Press [Sharpness] in the [Image] tab.
(2) Press [Soft] or [Sharp] to adjust the sharpness and then press [OK].
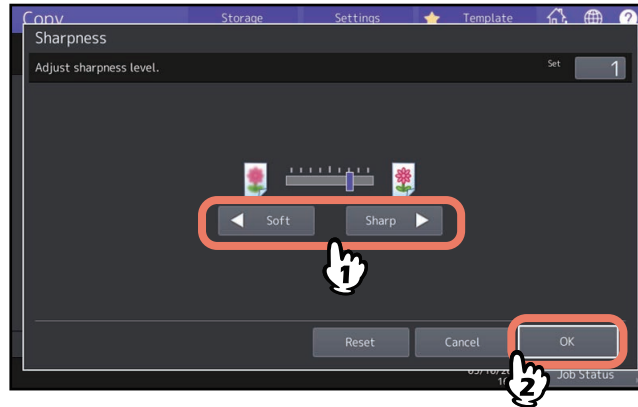
❑ **Self-diagnosis code**

Sharpness intensity

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-7796	To make the image softer or to minimize moiré: Set a value smaller than the default one. To make the image or thin lines sharper: Set a value larger than the default one.	0 to 255	128
	Text	05-7797			
	Printed Image	05-7798			
	Photo	05-7799			
	Map	05-7800			
	Custom	05-7795			
	Red Seal Color	05-7794			
Mono Color	Text/Photo	05-7801			
	Text	05-7802			
	Printed Image	05-7803			
Twin Color	Text/Photo	05-7804			
	Text	05-7805			
	Printed Image	05-7806			
Black	Text/Photo	05-7056			
	Text	05-7057			
	Photo	05-7058			
	Custom	05-7249			
	Image Smoothing	05-7061			
Drop Out Color		05-7062			

- One step in the indicator corresponds to "25" of the value in [05] code.
- The value is the center value of [Sharpness]. When the value is changed, all the steps of the indicator are shifted accordingly.
- The range of adjustment values that is valid for sharpness level change is from -100 to +100 of the setting value total of the [05] code and that of the indicator. Use the [05] code if more fine adjustment than the one performed from the touch panel is required or if a change of the center value is necessary.

  E.g.: When "103" is set (the value is decreased by 25 from the default)

  The adjustment value by decreasing -3 steps of the indicator is equal to "-100". (Formula: -25+(-25x3)=-100) Therefore, since the total of the adjustment value is within ±100, the sharpness will be altered. The adjustment value by decreasing -4 steps of the indicator is equal to "-125". (Formula: -25+(-25x4)=-125) Therefore, the total of the adjustment value exceeds ±100. The exceeded values (from "-100" to "-125") will become disabled. Therefore, the effective for -3 steps will be equal to that for -4 steps.

2.1.5 Hue adjustment

You can adjust the hue of entire images.

❑**Control panel**

Hue

(1)Press [Copy] on the Home screen. Press [Hue] in the [Image] tab.
(2)Adjust the hue of the entire image in section A and adjust the hue of each basic color in section B.
E.g.: Press [+] at R (Red). Then the hue of R (Red) is closely matched with that of Y (Yellow). Press [-] at R (Red). Then the color tone of R (Red) will be closely matched with that of M (Magenta).
(3)When adjustment of each option is finished, press [OK].

❑**Self-diagnosis code**

Hue fine adjustment

Color mode	Original mode	Code	Subcode	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-7665	0/1/2/3/4/5	-	0 to 255	128
	Text	05-7666				
	Printed Image	05-7667				
	Photo	05-7668				
	Map	05-7669				
	Custom	05-7670				
	Red Seal Color	05-7671				

The following table shows the explanation about the subcodes.

Subcode	Target hue area to adjust	Recommended value
0	For Red (R) adjustment	The larger the value, the darker the yellow becomes. The smaller the value, the darker the magenta becomes.
1	For Yellow (Y) adjustment	The larger the value, the darker the green becomes. The smaller the value, the darker the red becomes.
2	For Green (G) adjustment	The larger the value, the darker the cyan becomes. The smaller the value, the darker the yellow becomes
3	For Cyan (C) adjustment	The larger the value, the darker the blue becomes. The smaller the value, the darker the green becomes.
4	For Blue (B) adjustment	The larger the value, the darker the magenta becomes. The smaller the value, the darker the cyan becomes.
5	For Magenta (M) adjustment	The larger the value, the darker the red becomes. The smaller the value, the darker the blue becomes.

• Change the value in increments of 10, while checking the image until the optimum value is obtained.

2.1.6 Color balance adjustment

Adjust the density for each color.

❑ **Control panel**

[A] Color balance adjustment

Use this to adjust the YMCK balance.
 (1)Press [Copy] on the Home screen. Press [Color Balance] in the [Image] tab.
 (2)Select the color you want to adjust, perform an overall adjustment or one for each density area, and then press [OK].
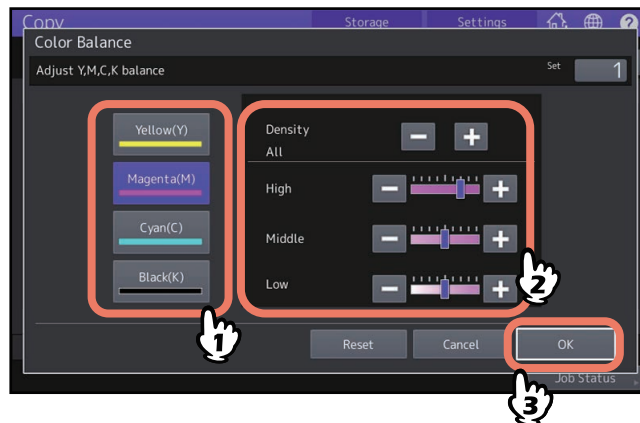
[B] RGB adjustment

Use this to adjust the RGB balance.
 (1)Press [Copy] on the Home screen. Press [RGB Adjustment] in the [Image] tab.
 (2)Adjust each option to obtain the desired color tone and press [OK].
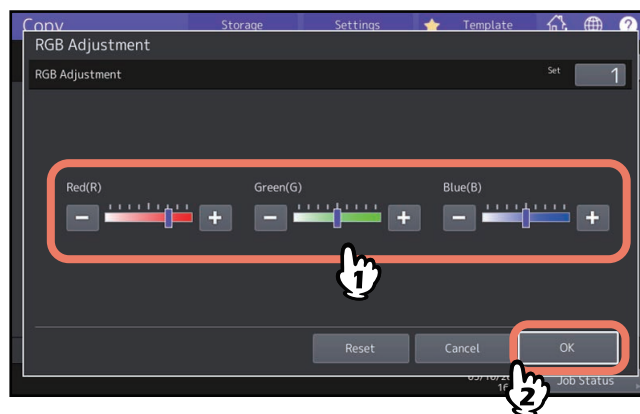
❑ **Self-diagnosis code**

Color balance adjustment

Color mode	Original mode	Object	Code	Subcode	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	Y (Yellow)	05-7960	0 / 1 / 2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
		M (Magenta)	05-7965				
		C (Cyan)	05-7970				
		K (Black)	05-7975				
	Text	Y (Yellow)	05-7961				
		M (Magenta)	05-7966				
		C (Cyan)	05-7971				
		K (Black)	05-7976				
	Printed Image	Y (Yellow)	05-7962				
		M (Magenta)	05-7967				
		C (Cyan)	05-7972				
		K (Black)	05-7977				
	Photo	Y (Yellow)	05-7963				
		M (Magenta)	05-7968				
		C (Cyan)	05-7973				
		K (Black)	05-7978				
	Map	Y (Yellow)	05-7964				
		M (Magenta)	05-7969				
		C (Cyan)	05-7974				
		K (Black)	05-7979				
	Custom	Y (Yellow)	05-7980				
		M (Magenta)	05-7981				
		C (Cyan)	05-7982				
		K (Black)	05-7983				
	Red Seal Color	Y (Yellow)	05-7984				
		M (Magenta)	05-7985				
		C (Cyan)	05-7986				
		K (Black)	05-7987				

The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	Low density area
1	Middle density area
2	High density area

- Change the value in increments of 10, while checking the image until the optimum value is obtained.
- One step in the indicator corresponds to "25" of the setting value in [05] code.

2.1.7　Saturation adjustment

You can adjust the saturation of entire images.

❑ **Control panel**

Saturation

(1)Press [Copy] on the Home screen. Press [Saturation] in the [Image] tab.
(2)Adjust the saturation and press [OK].
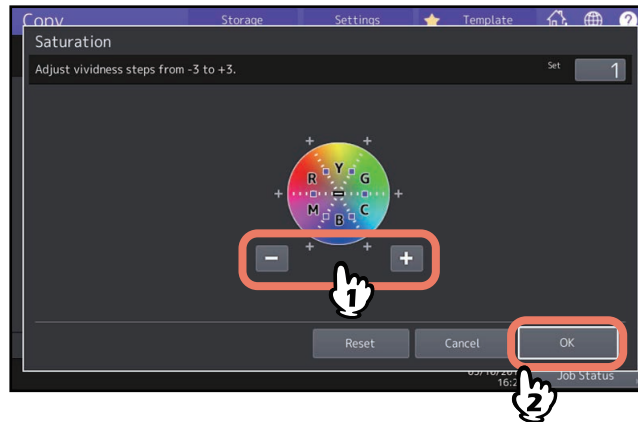
❑ **Self-diagnosis code**

Saturation fine adjustment

Color mode	Original mode	Code	Subcode	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-7675	0/1/2/3/4/5	To increase the saturation: Set a value larger than the default one. To decrease the saturation: Set a value smaller than the default one.	0 to 255	128
	Text	05-7676				
	Printed Image	05-7677				
	Photo	05-7678				
	Map	05-7679				
	Custom	05-7680				
	Red Seal Color	05-7681				

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The following table shows the explanation about the subcodes.

Subcode	Target hue area to adjust
0	For Red (R) adjustment
1	For Yellow (Y) adjustment
2	For Green (G) adjustment
3	For Cyan (C) adjustment
4	For Blue (B) adjustment
5	For Magenta (M) adjustment

• Change the value in increments of 15, while checking the image until the optimum value is obtained.

2.1.8　One touch adjustment

You can adjust the image quality to the one registered in this MFP beforehand.

❑**Control panel**

One touch adjustment

(1)Press [Copy] on the Home screen. Press [One Touch Adjustment] in the [Image] tab.
(2)Select the image quality from "Warm", "Cool", "Vivid", "Clear" and "Marker", which are already registered in this MFP, and press [OK].
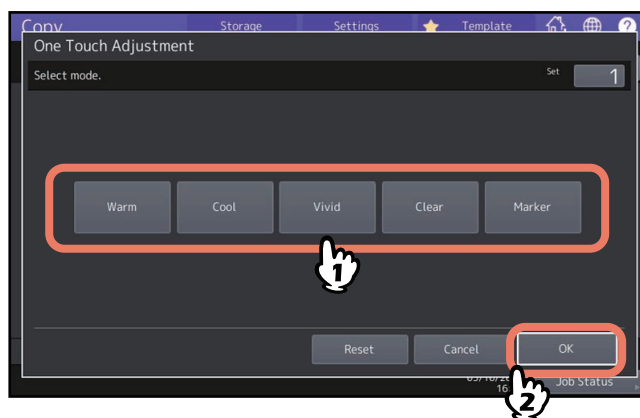
2.1.9   Gamma balance adjustment

You can adjust the density for each density area for black mode printing.

☐ **Self-diagnosis code**

Gamma balance adjustment

Color mode	Original mode	Code	Subcode	Recommended value	Acceptable value range	Default value
Black	Text/Photo	05-7190	0/1/2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
	Text	05-7191				
	Photo	05-7192				
	Image Smoothing	05-7193				
	Custom	05-7189				
Drop Out Color		05-7187				

The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	Low density area
1	Middle density area
2	High density area

- Change the value in increments of 20, while checking the image until the optimum value is obtained.
- Depending on the value, the density may exceed that of the adjacent density area.

2.1.10 Gamma balance adjustment (Text)

You can adjust the density for the text of each color in each density area.

Original mode	Object	Code	Subcode	Recommended value	Acceptable value range	Default value
Text/Photo	Y (Yellow)	05-7988	0/1/2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
	M (Magenta)	05-7989				
	C (Cyan)	05-7990				
	K (Black)	05-7991				
Custom	Y (Yellow)	05-7992				
	M (Magenta)	05-7993				
	C (Cyan)	05-7994				
	K (Black)	05-7995				

The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	Low density area
1	Middle density area
2	High density area

\<Notes\>
- Change the value in increments of 20, while checking the image until the optimum value is obtained.
- Depending on the value, the density may exceed that of the adjacent density area.

2.1.11　Maximum text density adjustment

You can adjust the maximum density of text.

❑**Self-diagnosis code**

<u>**Maximum text density adjustment**</u>

Object	Code	Recommended value	Acceptable value range	Default value
Y (Yellow)	05-7889	To make the density darker: Set a value larger than the default one.	0 to 10	5
M (Magenta)	05-7890			
C (Cyan)	05-7891			
K (Black)	05-7892	To make the density lighter: Set a value smaller than the default one.		

- Change the value in increments of 1, while checking the image until the optimum value is obtained.
- This adjustment is effective when [Text/Photo] or [Text] is selected. (This includes when [Text/Photo] or [Text] is selected as the base mode for [Custom].)
- This adjustment will apply only to portions recognized as text for both [Text/Photo] and [Text].
- Only K color can be adjusted in [Text].

2.1.12 Text/Photo reproduction level adjustment

You can adjust the image quality of text or photos in order to closely match them with the original.

❑ **Self-diagnosis code**

<u>Text/Photo reproduction level adjustment</u>

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-7840	Default: 0, 5 Photo-oriented: 1 to 4 Text-oriented: 6 to 9	0 to 9	0
	Custom (Base mode: Text/Photo)	05-7841			
	Red Seal Color	05-7842			

• When a smaller value is set, the photo area will become smooth, but the text will be blurred. Moreover, when a larger value is set, lighter text can be reproduced clearly; however, grainy images may occur in the photo area.
• Change the value in increments of 1, while checking the image until the optimum value is obtained.

2.1.13 Black header density level adjustment

You can adjust the density of bold black text.

❑ **Self-diagnosis code**

Black header density level adjustment

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-7811	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 8	0 *
	Text	05-7812			
	Custom	05-7816			
	Red Seal Color	05-7817			

* The default value "0" is equivalent to the following value being set. Therefore, set a larger or smaller value than the following one when adjusting.

Original mode	Setting value	Original mode	Setting value
Text/Photo	4	Printed Image	
Text	5	Photo	3
Red Seal Color	4	Map	

• For Custom, set the value corresponding to the base original mode.

2.1.14 Potential on white background / correction setting

You can make the text lines thicker and clearer or thinner and finer.

- This adjustment can be made applicable to all colors by selecting the corresponding subcode. However, entering the same setting value for all the subcodes unless otherwise required is recommended.

❑ **Self-diagnosis code**

Potential on white background / correction setting

Paper type	Code	Subcode	Object	Recommended value	Acceptable value range	Default value
Plain paper, Recycled paper, Thick paper, Thin paper*	08-2548	0	Y	To make the text lines thicker and clearer: Set a value smaller than the default one. To make the text lines thinner and finer: Set a value larger than the default one.	0 to 12	6
		1	M			
		2	C			
		3	K			
Thick paper 1, Thick paper 2, Thick paper 3*, Thick paper 4*, Special paper 1, Special paper 2, Special paper 3*, Transparency (OHP film), Envelope	08-2549	0	Y			
		1	M			
		2	C			
		3	K			

* This adjustment is available only for e-STUDIO2525AC/3025AC/3525AC/4525AC/5525AC/ 6525AC.

<Notes>
- Change the value in increments of 1, while checking the image until the optimum value is obtained.
- After the setting is changed, perform automatic calibration.
  For details, refer to "1.1.1 Automatic calibration".

❑ **Caution after the adjustment**

- In some consumption conditions for consumables, background fogging or a decrease in the amount of developer material (carrier streaks) may occur. Therefore, carefully perform the adjustment while checking the image.
- If adjustment is performed for a certain color only, it may cause an extra increase or decrease in the amount of toner used for that color compared with that for other colors, or it may create a difference in the reproducibility of halftones.

2.1.15 ACS adjustment

You can adjust the threshold to detect whether the scanned original is color or black-and-white in Auto Color mode.

❑ **Control panel**

ACS adjustment

(1)Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
(2)Press [Copy].
(3)Change the threshold with the "ACS Adjustment" indicator. If you move the indicator to the left, the original will tend to be judged as a black-and-white original. If you move it to the right, the original will tend to be judged as a color original.

• The relation between the position of the "ACS Adjustment" indicator and the judgment result is shown below. In the actual adjustment, the threshold varies depending on the shape and size of the original or the density level of the original image. Therefore, use the table below only as a reference.

Position of indicator	Adjustment value	No. of stamps	No. of red characters
0	+230	Approx. 10 judged as color	Approx. 100
1	+190	Approx. 5 judged as color	Approx. 60
2	+150	Approx. 3 judged as color	Approx. 40
3	+90	Approx. 2 judged as color	Approx. 20
4	+40	Approx. 1 judged as color	Approx. 10
5	0	Approx. 1/2 judged as color	Approx. 6
6	-20	Approx. 1/2 judged as black	4 or more

• Indicator position: "0" in the table above denotes the left end of the indicator (the original is judged as most likely to be black-and-white) and "6" denotes the right end of the indicator (the original is judged as most likely to be color).
• Adjustment value: Setting value of 05-7630
• Number of stamps: The diameter of the standard "stamp" is approx. from 8 to 12 mm. In this field the number of stamps on the chart and its judgment result are described.
• Number of red characters: The size of the standard "red character" is approx. 10.5 pt. In this field the number of the red characters entered and its judgment result are described.

❑ **Self-diagnosis code**

[A] Threshold for ACS adjustment

You can adjust the reference (amount of color in an original) in order to judge whether the original is full color or black-and-white.

Color mode	Code	Recommended value	Acceptable value range	Default value
Auto Color	05-7630	To make the original tend to be judged as a black-and-white one: Set a larger value. To make the original tend to be judged as a full color one: Set a smaller value.	0 to 255	70

• Change the value in increments of 20, while checking the image until the optimum value is obtained.

[B] Void amount for ACS adjustment

You can adjust the void amount of the image area to be used for the judgment.

Items	Code	Subcode	Recommended value	Acceptable value range	Default value
When Image Repeat is not used	05-7616	1	Set a value smaller than 200.	0 to 255	200
When Image Repeat is used		3			0

• The values of "24 steps" correspond to 1 mm of the image area.
• If too small a value is set, stains on the edge of the original may be judged as images and thus the desired result may not be obtained.
• Note that the adjustment results are also reflected in the scanning function.

2.1.16　1st transfer bias offset adjustment

You can make the density for the C and K colors lighter so that Red (R) becomes more vivid.

❑**Self-diagnosis code**

Code	Subcode	Object	Paper type	Recommended value	Acceptable value range	Default value
05-2905	2	C	Thin paper, Plain paper, Recycled paper, Thick paper	2 to 5	0 to 10	5
	3	K				
	8	C	Thick paper 1, Thick paper 2, Thick paper 3, Special paper 1, Special paper 2, Transparency, Envelope			
	9	K				

<Notes>
- Perform this only when the saturation for R (Red) is insufficient.
- Never change the values for M (Magenta) and Y (Yellow), otherwise it may cause a loss in the MFP performance, including degradation in image quality.
- The adjustment may cause an extreme decrease in the density of G (Green), B (Blue) and K (Black). Therefore, carefully perform the adjustment while checking the image.
- Unless this adjustment changes the density of R (Red), return the values to the default one.
- This will affect all of the density area for all outputs for copying, printing and faxing. Therefore, pay special attention when changing the value.

2.2   To Make Copies Suitable for Original

❑**Explanation**

You can make copies with the best suitable image quality by selecting the color mode and original mode that are appropriate for originals.

❑**Adjustment type**

	Type	Function to be affected
a	Color mode selection	Copy
b	Original mode selection	Copy

❑**Adjustment method**

a. Color mode selection

Select the color mode corresponding to the color of originals.

Color mode	Description	Full-color original	Black-and-white original
Auto Color	Automatically judges the type of each color on originals. Full-color originals are copied in Full Color mode and black-and-white originals are copied in Black mode.	Yes	Yes
Full Color	Originals are copied in Full Color mode.	Yes	-
Black	Originals are copied in Black mode.	-	Yes
Mono Color	Use this to copy originals in a single color except black.	-	Yes
Twin Color Copy (Twin Color Selectable)	The black area and those areas for other than black in the originals are copied in 2 specified colors.	Yes *	-
Twin Color Copy (Red&Black)	The red area in the originals is copied in red and those for other than red are copied in black-and-white.	Yes *	-

* An original which uses fewer colors or in which black is mostly used

b. Original mode selection

Select the original mode corresponding to original features, such as text only, including photos and using lots of thin lines.

For details, refer to "2.1.1 Original mode".

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2.3 To Copy Text Clearly (To Eliminate Faint or Blurred Text)

Before adjustment	After adjustment
When a light print image is copied, text looks blurred.	Both illustrations and text look darker and sharper.

❑**Explanation**

Perform this adjustment in order to copy an original containing light text and illustration images to make them darker and sharper or to copy high density color text to make it lighter.

2.3.1　To copy text or lines to make them darker and sharper in Black mode

❑ **Object**
- Black-and-white original (including a one that is judged as a black-and-white original by means of Auto Color mode)

<Tip>
- If you want to copy light text written by a pencil or similar to make it darker and sharper, perform the following adjustment, too.
  2.7　To Make Pale Area of Original Look Darker and Sharper (Improves Highlight Reproducibility)

❑ **Adjustment type**

Type		Function to be affected
a	Density adjustment	Copy
b	Sharpness adjustment	Copy
c	Original mode	Copy
d	Blurred/faint text adjustment	Copy
e	Gamma balance adjustment	Copy
f	Potential on white background / correction setting	All

❑ **Adjustment method**

a. Density adjustment

Darken the density of Black mode.
For details, refer to "2.1.2　Density adjustment".

b. Sharpness adjustment

Increase the sharpness intensity of Black mode.
For details, refer to "2.1.4　Sharpness adjustment".

c. Original mode

Select [Text].
For details, refer to "2.1.1　Original mode".

d. Blurred/faint text adjustment

Set a smaller value.

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Black	Text/Photo	05-7097	To make text and thin lines thicker: Set a value smaller than the default one. To make text and thin lines thinner: Set a value larger than the default one.	0 to 4	2
	Text	05-7098			
	Custom	05-7252			

• Change the value in increments of 1, while checking the image until the optimum value is obtained.

<Notes>

• Note that if too small a setting value is set, the life of the supplies may be shortened.

e. Gamma balance adjustment

Set a larger value for the middle or high density area.

For details, refer to "2.1.9 Gamma balance adjustment".

f. Potential on white background / correction setting

Set a smaller setting value for K color.

<Notes>

• Before performing this adjustment, reset all the settings performed in a to e.

For details, refer to "2.1.14 Potential on white background / correction setting".

2.3.2   To copy text or lines to make them darker and sharper in Full Color mode

❑ **Object**

• Full color original (including one which is judged as a full color original by means of Auto Color mode)

❑ **Adjustment type**

	Type	Function to be affected
a	Density adjustment	Copy
b	Gamma balance adjustment (Text)	Copy
c	Sharpness adjustment	Copy
d	Text/Photo reproduction level adjustment	Copy
e	Maximum text density adjustment	Copy
f	Original mode	Copy
g	Potential on white background / correction setting	All

❑ **Adjustment method**

a. Density adjustment

Darken the density of Full Color mode.

For details, refer to "2.1.2 Density adjustment".

b. Gamma balance adjustment (Text)

Darken the density of high density area for each color.

For details, refer to "2.1.10 Gamma balance adjustment (Text)".

c. Sharpness adjustment

Increase the sharpness intensity of Full Color mode.

For details, refer to "2.1.4 Sharpness adjustment".

d. Text/Photo reproduction level adjustment

Set a larger value in the original mode to use.

For details, refer to "2.1.12 Text/Photo reproduction level adjustment".

e. Maximum text density adjustment

Increase the maximum density of text for each color.

For details, refer to "2.1.11 Maximum text density adjustment".

f. Original mode

Select [Text].

For details, refer to "2.1.1 Original mode".

g. Potential on white background / correction setting

Set a smaller value for each color.

\<Notes\>

- Before performing this adjustment, reset all the settings performed in a to f.
  For details, refer to "2.1.14 Potential on white background / correction setting".

2.4   To Closely Match Color Tone of Original

Before adjustment

↓ Copy

The copy image looks yellowish, compared with the original.

After adjustment

↓ Copy

The color tone of the copy image is closely matched with that of the original.
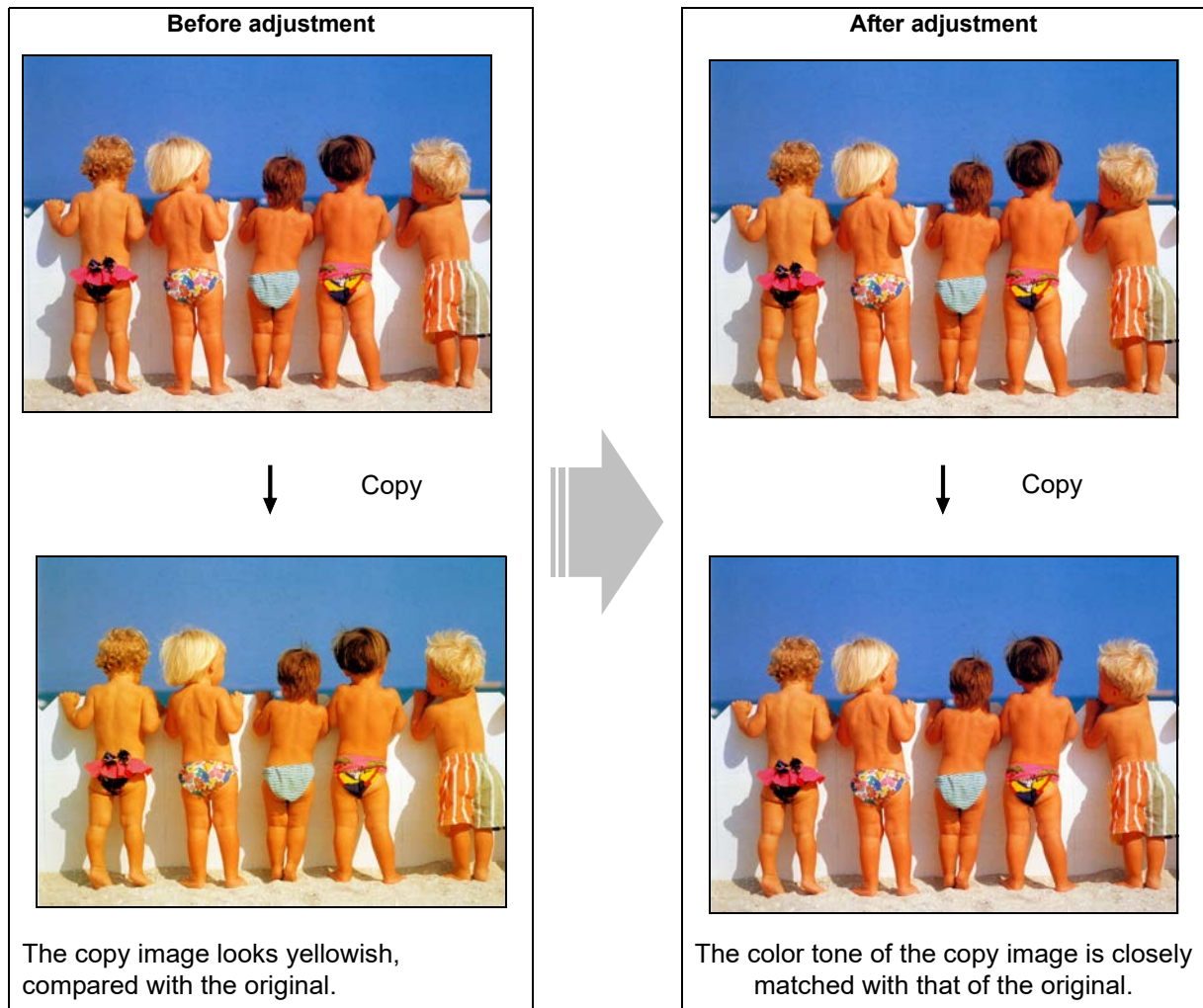
❑**Explanation**

This MFP performs the control to make the copy image closely matched with that of the original. However, depending on the colors of the original, the copy image sometimes looks different from the original. Perform this adjustment in order to make the color tone of the copy image closely match that of the original.

<Notes>
- If the adjustment is performed to make the copy density darker, offset failure may occur when the high density color original is copied in Photo mode. Therefore, carefully perform the adjustment while checking the image.

❑**Adjustment type**

	Type	Function to be affected
a	Automatic calibration	Copy
b	Color balance adjustment	Copy
c	Hue adjustment	Copy

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❑**Adjustment method**

a. Automatic calibration

Correct variations in the image density.

For details, refer to "1.1.1 Automatic calibration".

b. Color balance adjustment

Adjust the density for each color.

For details, refer to "2.1.6 Color balance adjustment".

c. Hue adjustment

Adjust the hue of entire images.

For details, refer to "2.1.5 Hue adjustment".

2.5 To Improve Reproducibility of Gray

Before adjustment	After adjustment
Another color (M) is blended in the gray area.	No undesired color is blended and a clear image can be obtained.
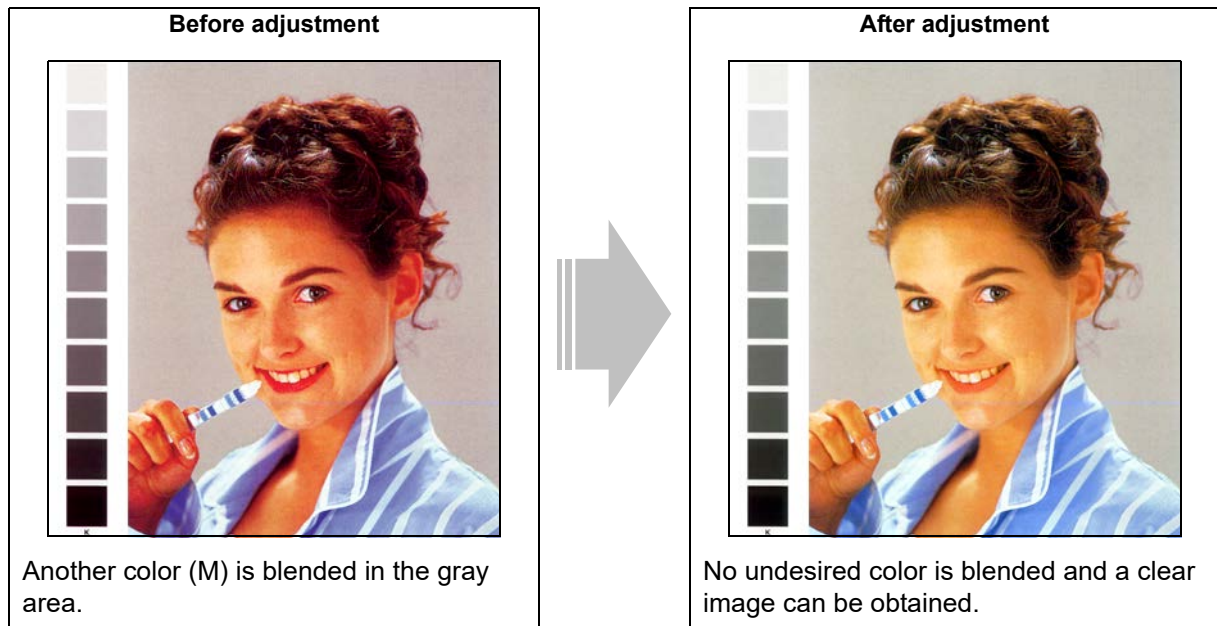
❑ **Explanation**

When an original containing gray is copied, another color may be blended in the gray area and it becomes muddy as a result. Perform this adjustment in order to avoid this problem or to obtain an achromatic color.

❑ **Adjustment type**

	Type	Function to be affected
a	Automatic calibration	Copy
b	Color balance adjustment	Copy
c	Color reproduction selection ([Custom])	Copy

❑ **Adjustment method**

a. Automatic calibration

    Correct variations in the image density.

    For details, refer to "1.1.1 Automatic calibration".

b. Color balance adjustment

    Adjust the density for each color.

    For details, refer to "2.1.6 Color balance adjustment".

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c. Color reproduction selection ([Custom])

When the value of [Custom] of the color reproduction selection is altered, you can change the reproducibility of gray.
 (1)Select "1" (Base mode: Text/Photo) to enable Custom mode for full color.
 (2)Change the setting value to "3" (The gray tone becomes a more bluish one.) for the color
     reproduction selection for Custom mode.

For details, refer to "2.29.2 To use Custom mode in Full Color mode".

2.6   To Copy in Vivid Colors

Before adjustment	After adjustment
When a copy is made without any adjustments, the vividness is insufficient in the image.	The image is obtained in vivid colors.

❑ **Explanation**

Perform this adjustment in order to obtain an image in vivid colors.

❑ **Adjustment type**

Type		Function to be affected
a	One touch adjustment	Copy
b	Saturation adjustment	Copy
c	Color balance adjustment	Copy
d	1st transfer bias offset adjustment	All

❑ **Adjustment method**

a. One touch adjustment

Select [Vivid].

For details, refer to "2.1.8 One touch adjustment".

<Notes>

- If the result of this adjustment is insufficient, reset this setting and perform another adjustment.

b. Saturation adjustment

Adjust the saturation of entire images.

For details, refer to "2.1.7 Saturation adjustment".

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c. Color balance adjustment

Adjust the density for each color.

For details, refer to "2.1.6 Color balance adjustment".

d. 1st transfer bias offset adjustment

Lighten the density for the C and K colors.

• Perform this only when the saturation for R (Red) is insufficient.

For details, refer to "2.1.16 1st transfer bias offset adjustment".

2.7 To Make Pale Area of Original Look Darker and Sharper (Improves Highlight Reproducibility)

Before adjustment	After adjustment
The splashing area (highlight) is blurred.	A clear copy image of the splashing area can be obtained.

❑ **Explanation**

Perform this adjustment in order to copy the pale area (highlight) of the original to make it darker and sharper.

❑ **Adjustment type**

	Type	Function to be affected
a	Background adjustment	Copy
b	Density adjustment	Copy
c	Color balance adjustment (for Full Color mode)	Copy
d	Gamma balance adjustment (for Black mode)	Copy
e	Color reproduction selection ([Custom])	Copy

❑ **Adjustment method**

a. Background adjustment

Darken the density of the background.

For details, refer to "2.1.3 Background adjustment".

b. Density adjustment

Darken the density.

For details, refer to "2.1.2 Density adjustment".

c. Color balance adjustment (for Full Color mode)

Darken the density of halftones for each color.

For details, refer to "2.1.6 Color balance adjustment".

d. Gamma balance adjustment (for Black mode)

Darken the density of halftones.

For details, refer to "2.1.9 Gamma balance adjustment".

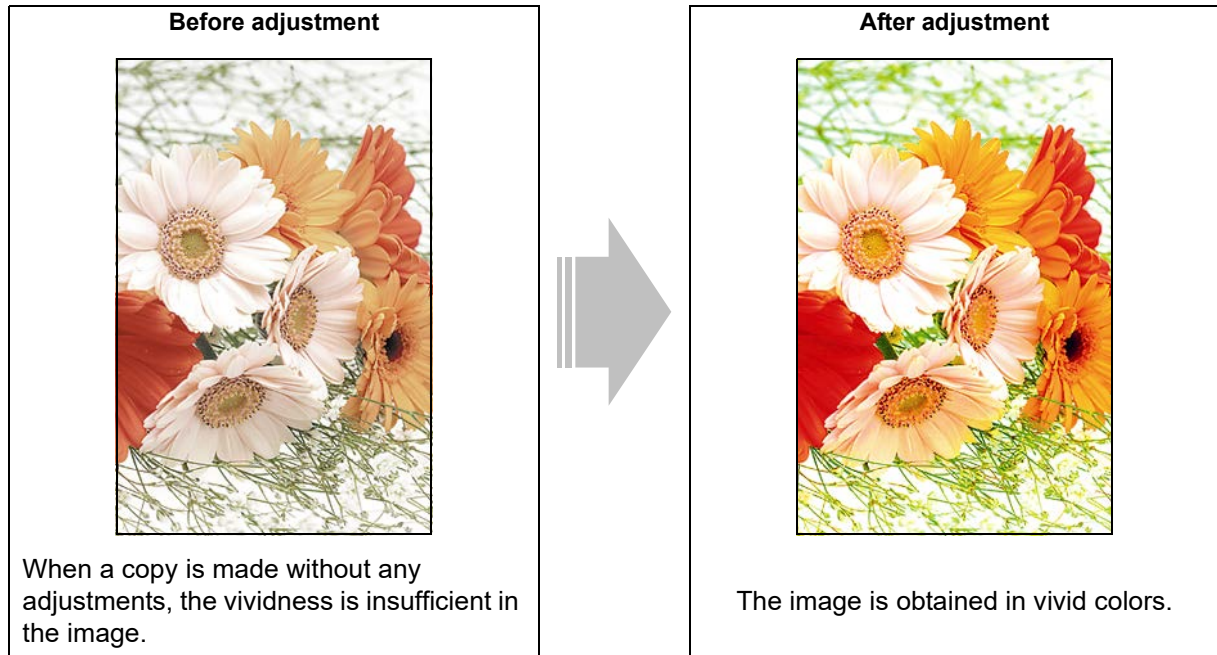### e. Color reproduction selection ([Custom])

When the value of [Custom] of the color reproduction selection is altered, you can change the reproducibility of the highlight.

 (1)Select "1" (Base mode: Text/Photo) to enable Custom mode for full color.

 (2)Change the setting value to "4" (The highlight reproduction becomes more emphasized than the one specified in the setting value "0".) for the color reproduction selection for Custom mode.

For details, refer to "2.29.2 To use Custom mode in Full Color mode".

2.8 To Eliminate Background Color / To Copy Dark Text by Eliminating Fog around It

Before adjustment	After adjustment
The background color of the original is also copied, so no clear contrast is made between the background and images.	The background color is eliminated, allowing clear contrast between the background and images.

❏**Explanation**

If an original with a dark-colored paper is copied, its background color is also reproduced, and no clear contrast is made between the background and the images as a result. Perform this adjustment in order to make a clear contrast between the background and the images by eliminating the background color or making it white.

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2.8.1 To adjust the image quality in Black mode

❑ **Adjustment type**

Type		Function to be affected
a	Background adjustment	Copy
b	Gamma balance adjustment	Copy

❑ **Adjustment method**

a. Background adjustment

Lighten the density of the background.

For details, refer to "2.1.3 Background adjustment".

b. Gamma balance adjustment

Lighten the density of halftones.

For details, refer to "2.1.9 Gamma balance adjustment".

2.8.2 To adjust the image quality in Full Color mode

❑ **Adjustment type**

Type		Function to be affected
a	Density adjustment	Copy
b	Background adjustment	Copy
c	Color balance adjustment	Copy

❑ **Adjustment method**

a. Density adjustment

Select [Auto].

For details, refer to "2.1.2 Density adjustment".

b. Background adjustment

Lighten the density of the background.

For details, refer to "2.1.3 Background adjustment".

c. Color balance adjustment

Lighten the density of halftones for each color.

For details, refer to "2.1.6 Color balance adjustment".

2.9 To Avoid Copying Image Seen through Back of Page Printed on Thin Paper

Original printed on thin paper (front)	Original printed on thin paper (back)

Before adjustment	After adjustment

When a double-sided original printed on thin paper is copied, the image is seen through.

Even when a double-sided original printed on thin paper is copied, the image is not seen through any more.

❏ **Explanation**

When a double-sided original printed on thin paper, such as a brochure and leaflet, is copied, images seen through the back of the page are also copied. Perform this adjustment in order to avoid this problem.

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2.9.1 To adjust the image quality in Black mode

❑ **Adjustment type**

	Type	Function to be affected
a	Background adjustment	Copy
b	Gamma balance adjustment	Copy

❑ **Adjustment method**

a. Background adjustment

Lighten the density of the background.

For details, refer to "2.1.3 Background adjustment".

b. Gamma balance adjustment

Lighten the density of halftones.

For details, refer to "2.1.9 Gamma balance adjustment".

2.9.2 To adjust the image quality in Full Color mode

❑ **Adjustment type**

	Type	Function to be affected
a	Density adjustment	Copy
b	Background adjustment	Copy
c	Color balance adjustment	Copy

❑ **Adjustment method**

a. Density adjustment

Select [Auto].

For details, refer to "2.1.2 Density adjustment".

b. Background adjustment

Lighten the density of the background.
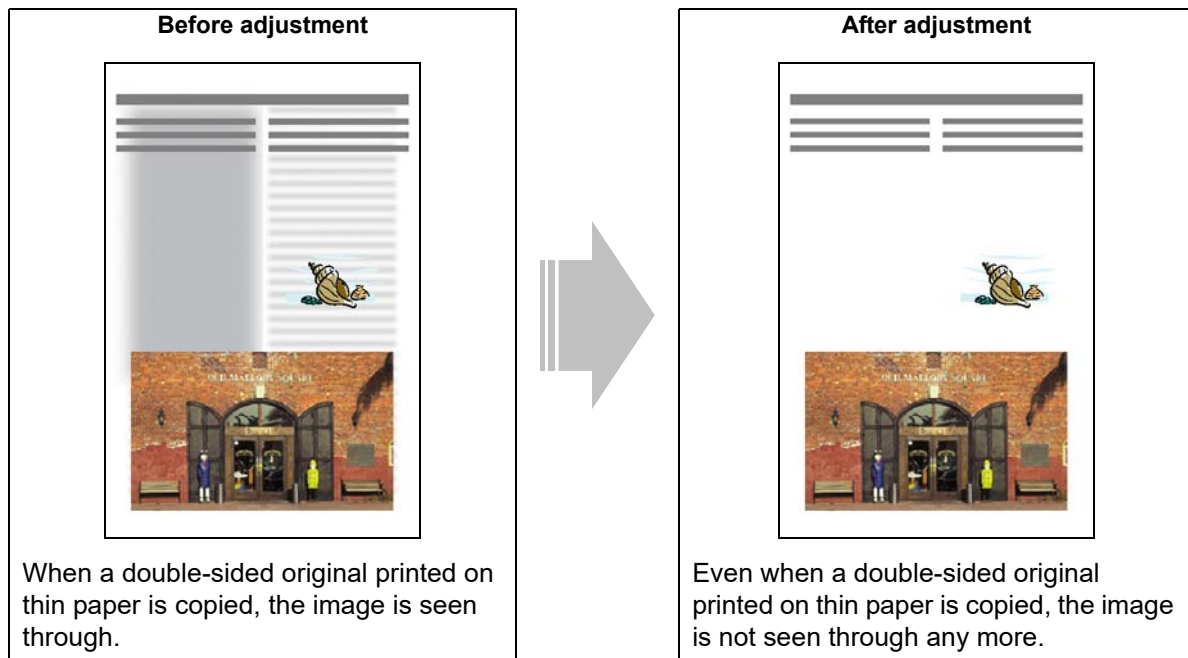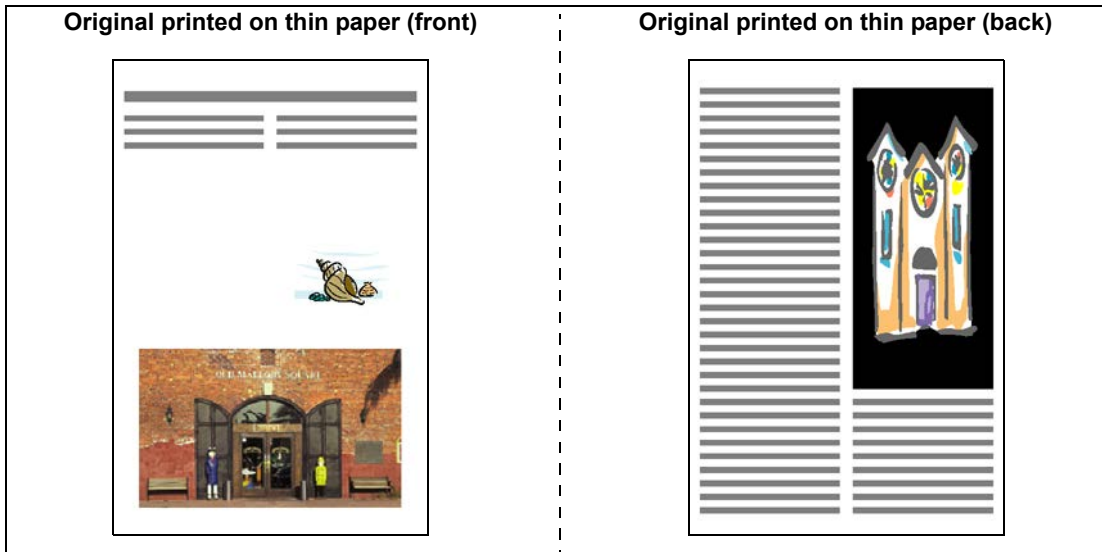
For details, refer to "2.1.3 Background adjustment".

c. Color balance adjustment

Lighten the density of halftones for each color.

For details, refer to "2.1.6 Color balance adjustment".

2.10　To Eliminate Moiré

Before adjustment	After adjustment
Moiré occurs on the photo image.	Moiré is eliminated and a clear image is obtained.

❑Explanation

When an original containing photo images or gradational images (halftones) is copied, moiré sometimes has occurred. Perform this adjustment in order to avoid this problem.

❑Adjustment type

	Type	Function to be affected
a	Original mode	Copy
b	Sharpness adjustment	Copy

❑Adjustment method

a. Original mode

Change the original mode as below.
- For Black mode: [Photo]
- For Full Color mode / Auto Color mode: [Printed Image]

For details, refer to "2.1.1　Original mode".

b. Sharpness adjustment

Decrease the sharpness intensity.
For details, refer to "2.1.4　Sharpness adjustment".

<Notes>
- When adjustment is performed to minimize moiré, the text reproducibility may decrease.

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2.11   To Copy Sharply (Enhances Sharpness)

Before adjustment	After adjustment
The image looks light and blurred.	The edges are enhanced and the image becomes sharper.

❑ Explanation

Perform this adjustment in order to obtain a sharper image when a light or blurred original is copied.

❑ Adjustment type

Type		Function to be affected
a	One touch adjustment	Copy
b	Sharpness adjustment	Copy

Adjustment method

a. One touch adjustment

Select [Clear].

For details, refer to "2.1.8 One touch adjustment".

<Notes>

• If the result of this adjustment is insufficient, reset this setting and perform another adjustment.

b. Sharpness adjustment

Increase the sharpness intensity.

For details, refer to "2.1.4 Sharpness adjustment".

<Notes>

• When an adjustment is performed to increase the sharpness intensity, moiré may occur.

2.12   To Make Photo Edges Look Softer

Before adjustment	After adjustment
The edges (contours) of the image are highly visible.	The edges look soft.
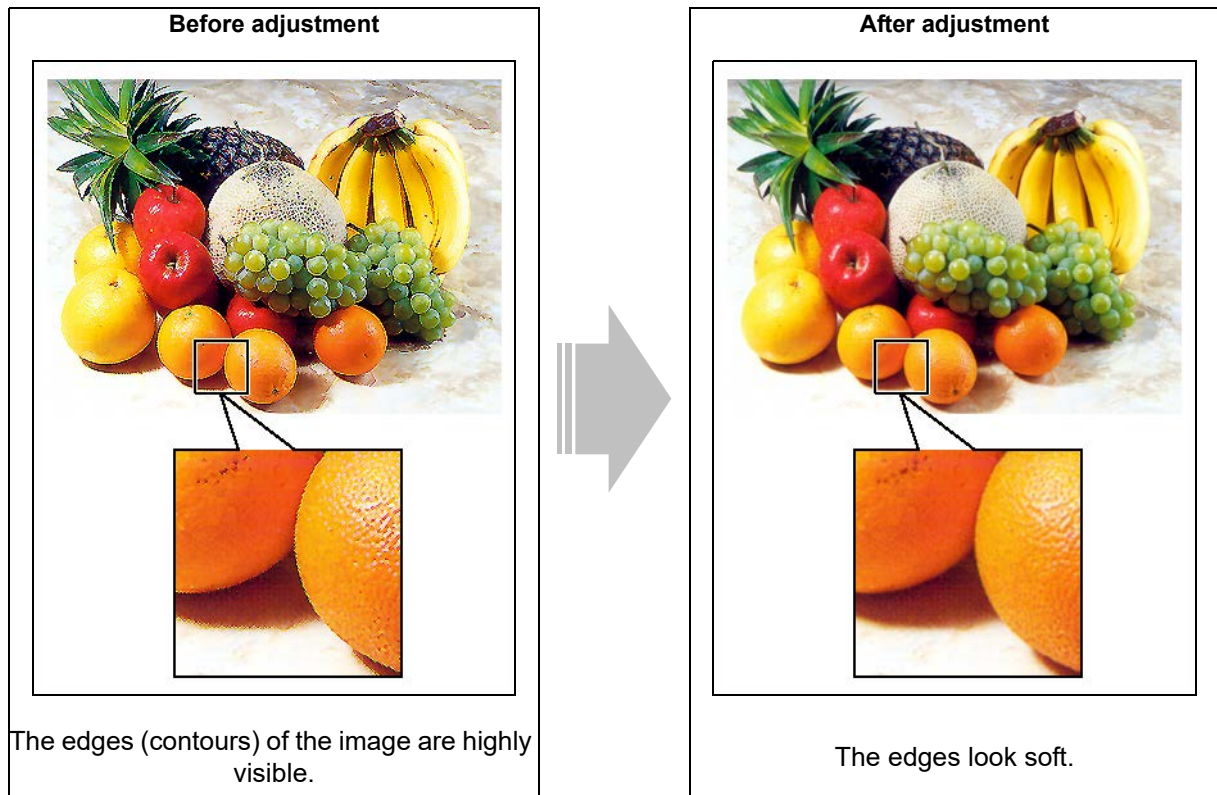
❑**Explanation**

When a photo image is copied, the contours or edges of the image sometimes become highly visible.
Perform this adjustment in order to avoid this problem.

❑**Adjustment type**

	Type	Function to be affected
a	Original mode	Copy
b	Sharpness adjustment	Copy
c	Maximum text density adjustment	Copy
d	Text/Photo reproduction level adjustment	Copy

❑**Adjustment method**

a. Original mode

Change the original mode as below.
 • For Black mode: [Photo]
 • For Full Color mode / Auto Color mode: [Printed Image]

For details, refer to "2.1.1 Original mode".

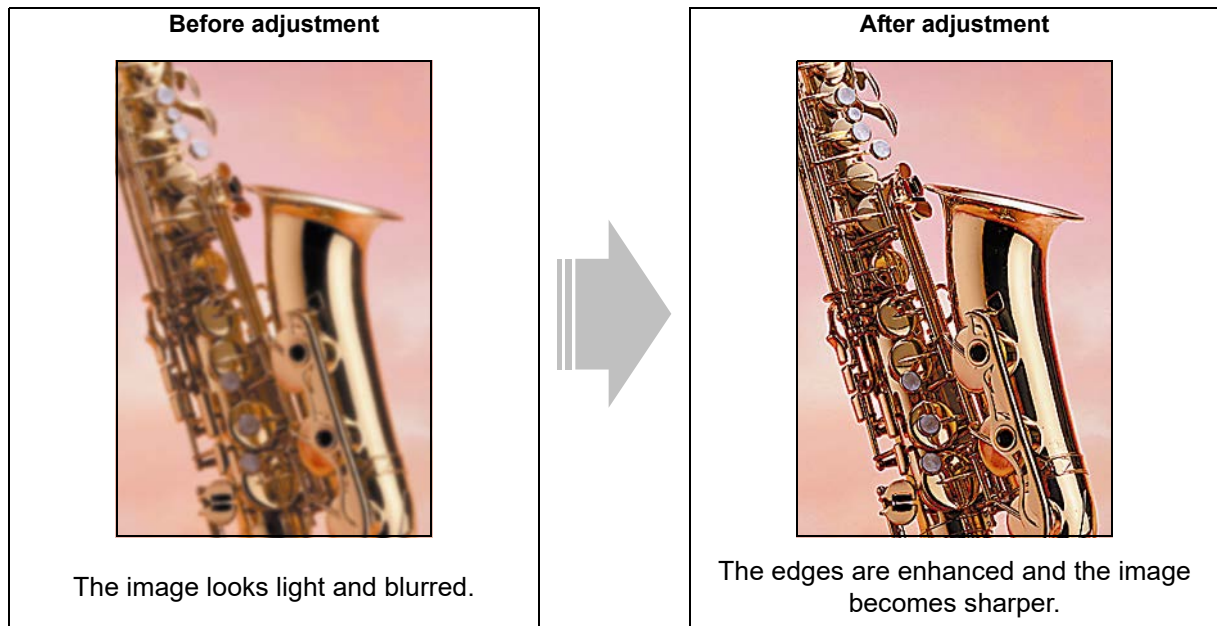　　e-STUDIO2020AC/2520AC/2021AC/2521AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC (Ver01)

b. Sharpness adjustment

Decrease the sharpness intensity.

For details, refer to "2.1.4 Sharpness adjustment".

c. Maximum text density adjustment

Decrease the maximum density of text for each color.

For details, refer to "2.1.11 Maximum text density adjustment".

d. Text/Photo reproduction level adjustment

Set a smaller setting value in the original mode to use.

For details, refer to "2.1.12 Text/Photo reproduction level adjustment".

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2.13 To Make Solid Filled Bold Text (Logo) Highly Colored

Before adjustment	After adjustment
The solid filled graph is not highly colored enough.	The solid filled graph becomes highly colored and sharper.

❑ **Explanation**

Solid filled bold text, such as a logo, is sometimes not highly colored in the copy. Perform this adjustment in order to make the solid filled image more highly colored.

<Notes>

• This adjustment will have an effect only on copying in Full Color mode.

2.13.1 To adjust the image quality of a black logo

❑ **Adjustment type**

	Type	Function to be affected
a	Out-of-registration colors adjustment	Copy
b	Color mode and original mode	Copy
c	Black header density level adjustment	Copy
d	Color balance adjustment	Copy

❑ **Adjustment method**

a. Out-of-registration colors adjustment

Perform out-of-registration colors adjustment.
For details, refer to "1.6 To Adjust Out-of-Registration Colors".

b. Color mode and original mode

Change the color mode to Full Color mode. Moreover, select [Text] for the original mode.
For details, refer to "2.1.1 Original mode".

c. Black header density level adjustment

Set a larger value.
For details, refer to "2.1.13 Black header density level adjustment".

d. Color balance adjustment

Adjust the density of the K color.

For details, refer to "2.1.6 Color balance adjustment".

2.13.2   To adjust the image quality of a colored logo

❏**Adjustment type**

Type		Function to be affected
a	Color balance adjustment	Copy

❏**Adjustment method**

a. Color balance adjustment

Adjust the density for each color.

For details, refer to "2.1.6 Color balance adjustment".

2.14   To Sharply Contrast the Hues of Highlighters on the Copy

Before adjustment

After adjustment

↓ Copy

↓ Copy

The hues of highlighters are not accurately reproduced. The areas marked with 2 different colored highlighters are reproduced in the same hue. They are indistinguishable.

The areas marked with 2 different colored highlighters are accurately reproduced and distinguishable on the copy.

❑**Explanation**

When an original containing text or areas marked with highlighters is copied, the highlighted parts become different colors than the original. The inks of highlighters are special. Therefore, their colors cannot be accurately reproduced. Perform this adjustment if you want to make copies that can differentiate and reproduce the colors of similar highlighters, such as yellow and green.

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❑ **Adjustment type**

	Type	Function to be affected
a	One touch adjustment	All
b	Marker color adjustment	All
c	Color balance adjustment	All

❑ **Adjustment method**

a. One touch adjustment

Select [Marker].

For details, refer to "2.1.8 One touch adjustment".

<Notes>

• If the result of this adjustment is insufficient, unselect "Marker", and then perform other adjustments.

b. Marker color adjustment

The color of the one touch adjustment [MARKER] can be adjusted.

Color mode	Code	Sub code	Meaning of the sub code	Recommended value	Acceptable value	Default value
Full color	05-7850	0	Y (Yellow)	-	0 to 6	3
		1	M (Magenta)			
		2	C (Cyan)			
		3	R (Red)			
		4	G (Green)			
		5	B (Blue)			

<Notes>

• Change the setting value by 1 step while checking the image to set the most appropriate value.
• When a value larger than the default is set, the hue of the selected color is moved to the [+] direction in the figure below. When a value smaller than the default is set, the hue of the selected color is moved to the [-] direction.
(For example, when "6" is set for R (Red), its color will be close to that for Y (Yellow). When "0" is set for R Red), its color will be close to that for M (Magenta).)

c. Color balance adjustment

Adjust the density for each color.

For details, refer to "2.1.6 Color balance adjustment".

<Notes>

- The adjustment also causes variations in the colors of areas (including photo images and text) other than those marked with highlighters. Therefore, carefully perform the adjustment, while checking the copy image.

2.15 To Obtain Good Color Tone on Thick Paper

Before adjustment	After adjustment
The copy image looks light on thick paper.	The copy image looks darker and sharper even on thick paper.
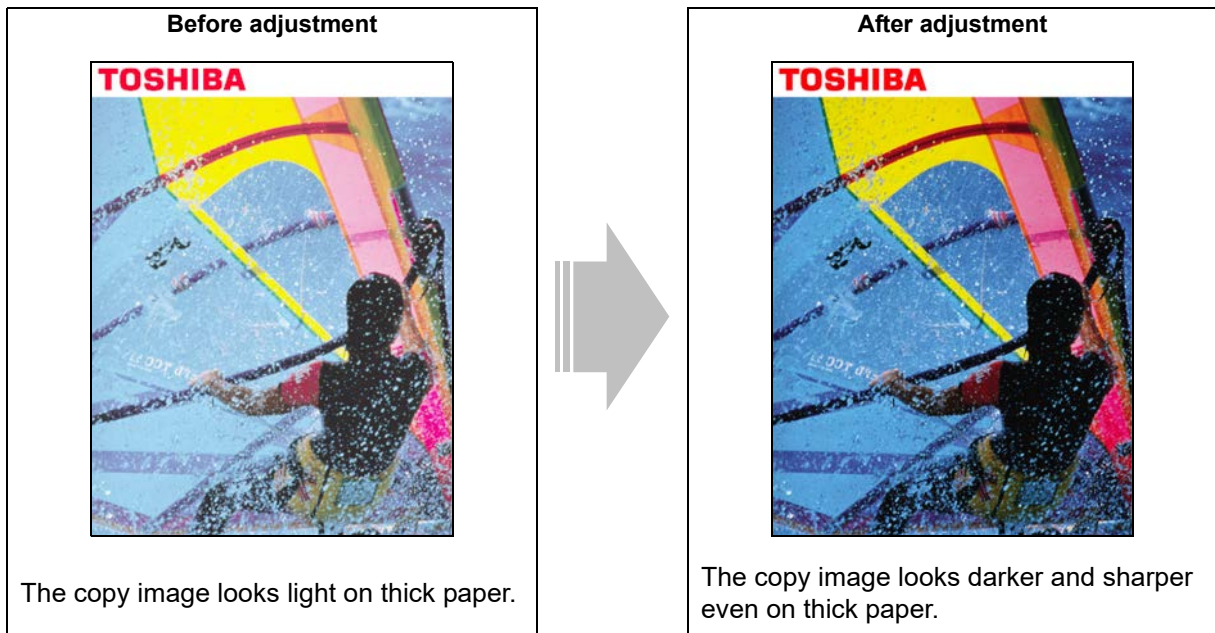
❑ **Explanation**

Perform this adjustment when the image quality looks light by copying on thick paper.

❑ **Adjustment type**

Type		Function to be affected
a	Automatic calibration	Copy
b	Color balance adjustment	Copy

❑ **Adjustment method**

a. Automatic calibration

Correct variations in the image density for each paper type.

For details, refer to "1.1.1 Automatic calibration".

b. Color balance adjustment

Adjust the density for each color.

For details, refer to "2.1.6 Color balance adjustment".

2.16 To Obtain Smooth Gray-Scale Photo Images

Before adjustment	After adjustment
The halftones are not reproduced accurately.	The halftones are reproduced better.
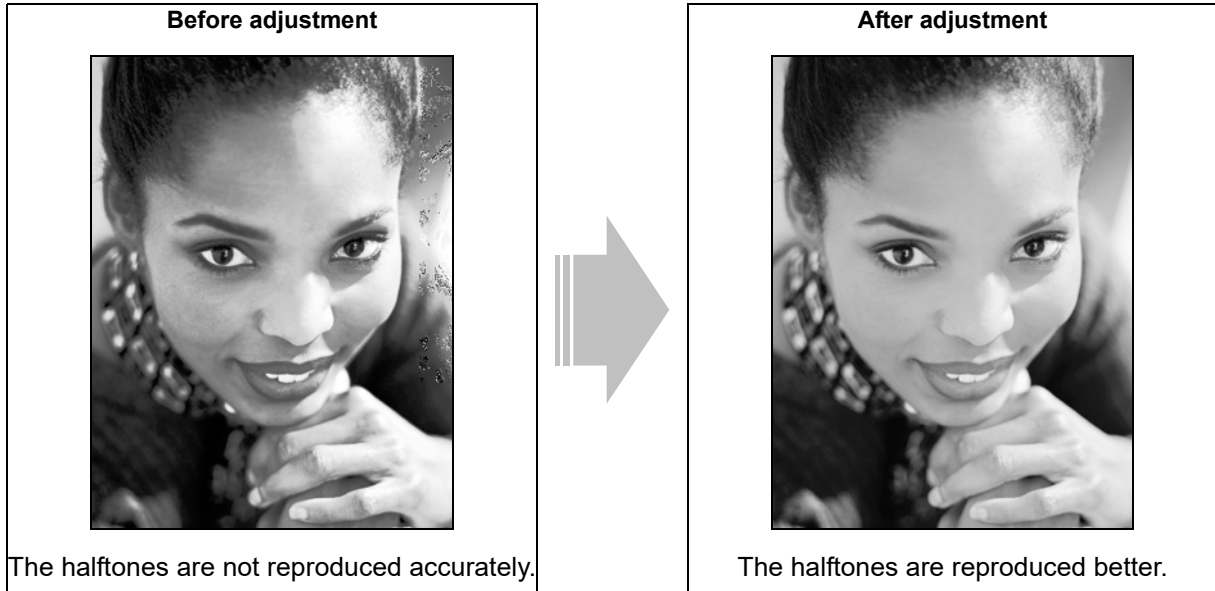
❑**Explanation**

Perform this adjustment in order to reproduce the halftones better when a photo image or gradational image is copied in Black mode.

❑**Adjustment type**

Type		Function to be affected
a	Original mode	Copy

❑**Adjustment method**

a. Original mode

Change the original mode to [Photo] or [Image Smoothing].
For details, refer to "2.1.1 Original mode".

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2.17 To Change Threshold in Auto Color Mode (Changes threshold between Full Color Mode and Black Mode)
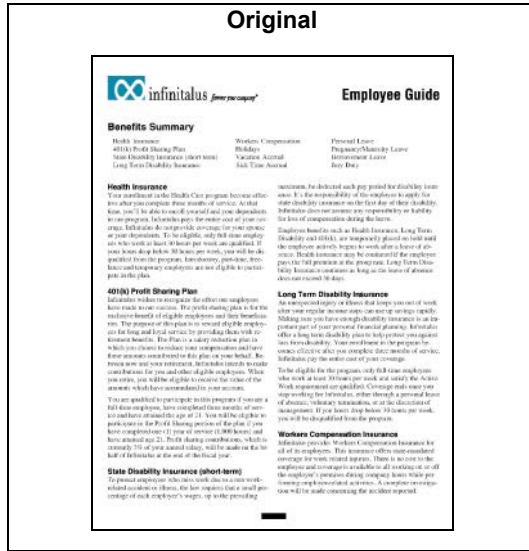
Original

Copied in Auto Color mode

Before adjustment
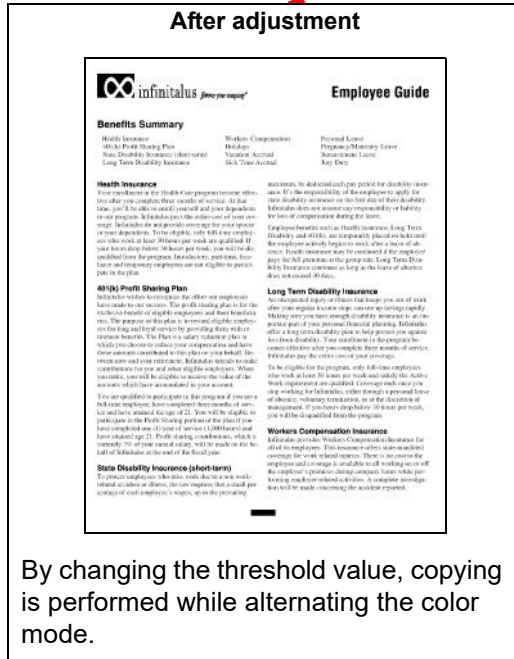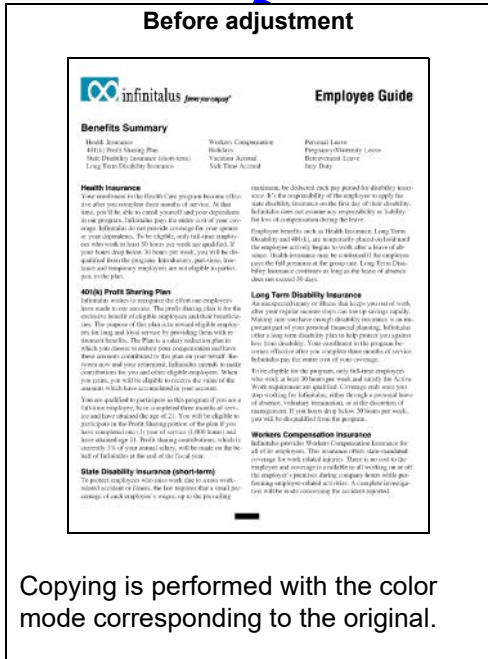
Copying is performed with the color mode corresponding to the original.

After adjustment

By changing the threshold value, copying is performed while alternating the color mode.

❑ **Explanation**

When Auto Color mode is selected, an original is automatically determined, whether it is a colored or black-and-white, and then is copied with the color mode, Full Color or Black, corresponding to the determined condition. Perform this adjustment if the threshold between the full color original and the black-and-white one needs to be changed.

❑ **Adjustment type**

Type		Function to be affected
a	ACS adjustment	Copy, Scan

❑ **Adjustment method**

a. ACS adjustment

You can adjust the threshold to detect whether the scanned original is color or black-and-white in Auto Color mode.

For details, refer to "2.1.15 ACS adjustment".

- When a non-standard sized original is copied, an area outside the original (or the original cover) may also be scanned. This may prevent the original size from being accurately detected. If the original cover is soiled, the type of original cannot be accurately detected. Therefore, instruct the user to clean the original cover on a routine basis (once a week).
- After the threshold in Auto Color mode is adjusted, based on a particular type of original, other types of originals may not be correctly detected. Therefore, carefully perform the adjustment while checking whether any type of original is correctly detected.
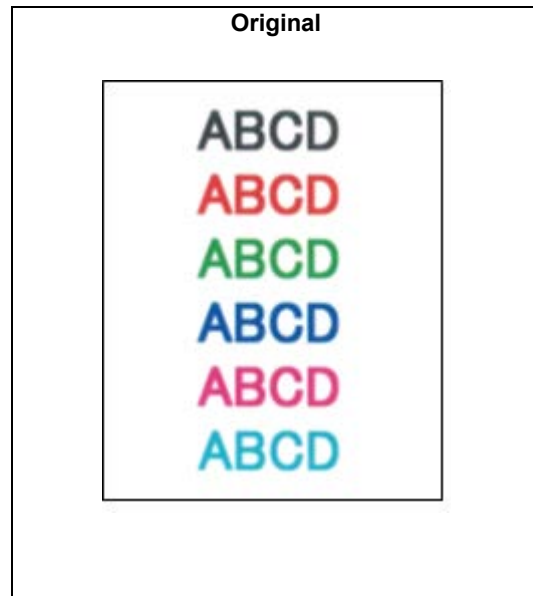
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2.18 To Copy in Two Colors

Original

ABCD
ABCD
ABCD
ABCD
ABCD
ABCD

[Red&Black]

ABCD
ABCD
ABCD
ABCD
ABCD
ABCD

Colors other than black are reproduced in gray.

[Twin Color Selectable]

ABCD
ABCD
ABCD
ABCD
ABCD
ABCD

The black color is reproduced in black and the others are in blue.

ABCD
ABCD
ABCD
ABCD
ABCD
ABCD

The black color is reproduced in green and the others are in magenta.

❑**Explanation**

When you use the twin color copying function, a color original can be copied in two colors only. Use this adjustment to enhance only the necessary colors.
The type of twin color copying is shown as below.

Type	Detail
[Twin Color Selectable]	The black area and those areas for other than black in the originals are copied in 2 specified colors.
[Red&Black]	The red area in the originals is copied in red and those for other than red are copied in black-and-white.

Twin color copy can be operated from the control panel.

(1) Press [Copy] on the Home screen. Press [Twin Color Copy] in the [Image] tab.

(2) Select the type of twin color copy.

(3) [Twin Color Selectable]: Press [Twin Color Selectable] and then [Change Black To] or [Second Color] to select the color to use.
[Red&Black]: Press [Red&Black].

2.18.1 To adjust the boundary of colors

Before adjustment

[Red&Black]

Since the blue color is reproduced by red, the boundary of the blue and red areas in the graph cannot be distinguished.

After adjustment

[Red&Black]

Since the blue color is reproduced by black, the boundary of the blue and red areas in the graph can be distinguished.

❑ **Explanation**

Perform this adjustment in order to arrange how to express the boundary of colors in an original by two colors and to reduce blending of undesired colors.

❑ **Adjustment type**

	Type	Function to be affected
a	Red-and-black range adjustment *	Copy
b	Twin color copy black area adjustment	Copy

*[Red&Black] only

❑ **Adjustment method**

a. Red-and-black range adjustment

    (1) Press [Adjust] in the Red&Black screen.

        For details to display [Red&Black], refer to "2.18 To Copy in Two Colors".

    (2) Press [<] or [>] for Range Adjustment in order to adjust the boundary between red and black.

       • [<] "Red": The black area decreases and the red area increases.

       • [>] "Black": The black area increases and the red area decreases.

b. Twin color copy black area adjustment

    Adjust the boundary between black and other colors.

    • [Twin Color Selectable]: The larger the setting value, the wider the area that is to be reproduced by the color selected in [Change Black To] becomes. The smaller the setting value, the wider the area that is to be reproduced by the color selected in [Second Color] becomes.

    • [Red&Black]: The larger the setting value, the wider the area to be reproduced in black becomes. The smaller the setting value, the larger the area to be reproduced in red becomes.

Color mode	Object	Code	Subcode	Recommended value	Acceptable value range	Default value
Twin Color Copy	[Twin Color Selectable]	05-7641	0/1/2	-	0 to 255	128
	[Red&Black]	05-7642				

    The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	High density area
1	Middle density area
2	Low density area

2.18.2 To adjust the color tone of twin color copying

[Twin Color Selectable]

Before adjustment	After adjustment
ABCD ABCD ABCD ABCD	ABCD ABCD ABCD ABCD

[Red&Black]

Before adjustment	After adjustment
ABCD ABCD ABCD ABCD	ABCD ABCD ABCD ABCD
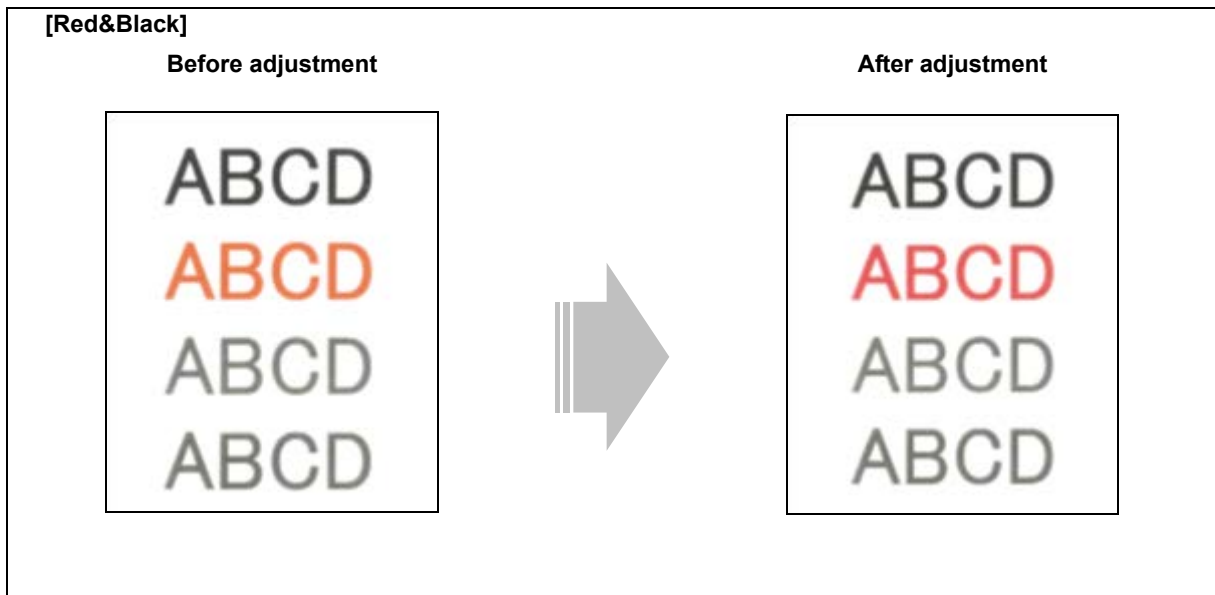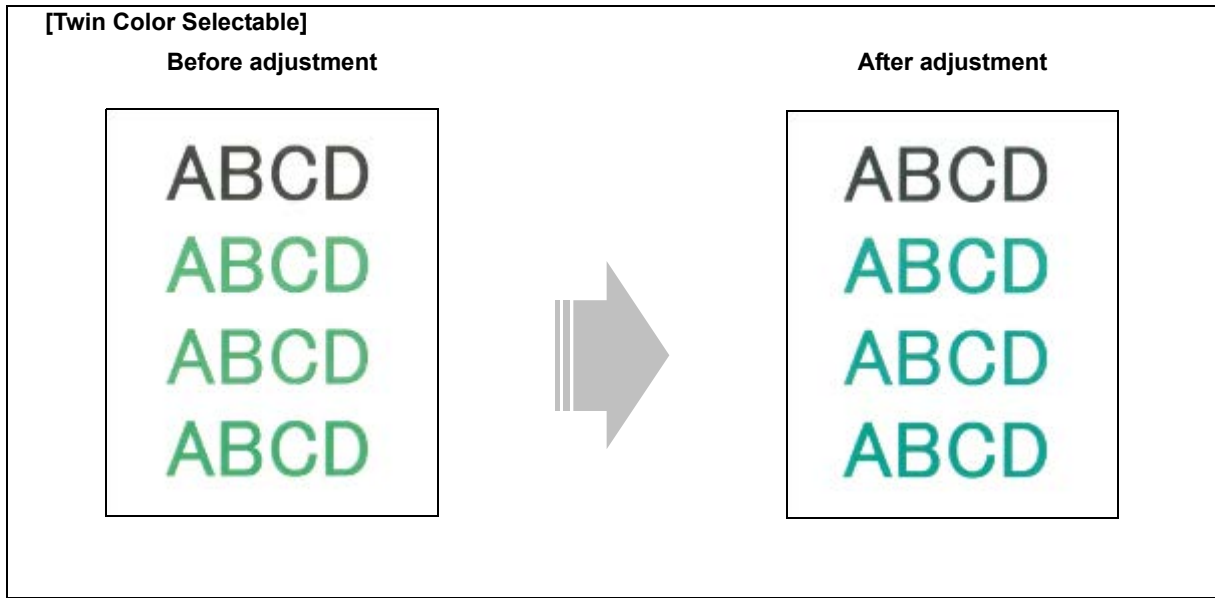
❑**Explanation**

When black and another color are selected as a combination for twin color copying, the color tone for color other than black can be adjusted.

❑**Adjustment type**

	Type	Function to be affected
a	Color tone adjustment [(Twin Color Selectable)] Red adjustment ([Red&Black])	Copy
b	Color tone adjustment	Copy

❏ **Adjustment method**

a. Color tone adjustment [(Twin Color Selectable)] / Red adjustment ([Red&Black])

Color tone adjustment [(Twin Color Selectable)]: Press [Adjust] in the Twin Color Selectable screen.
Press [+] or [-] for the color to adjust its tone.
- Press [+] to enhance the color tone or [-] to decrease it.
- Press [Detail] in the Adjust screen to adjust each color on every density.

Red adjustment ([Red&Black]): Press [Adjust] in the Red&Black screen. Press [+] or [-] for Y
(Yellow) or M (Magenta) to adjust its tone.
- To increase the red tone: Press [-] to decrease yellow and [+] to enhance magenta.
- To decrease the red tone: Press [+] to enhance yellow and [-] to decrease magenta.
- Press [Detail] in the Adjust screen to adjust each color on every density.

b. Color tone adjustment

The color tone for twin color copying can be adjusted by means of the self-diagnosis code, too.

❏ **Adjustment method**

Color mode	Item to be adjusted	Code	Sub code	Recommended value	Acceptable value	Default value
Twin color, Mono color	Magenta	05-7644	0, 1, 2, 3	To make the density darker: Set a larger value. To make the density lighter: Set a smaller value.	0 to 255	128
	Yellow	05-7645				
	Yellow green*	05-7646				
	Cyan	05-7647				
	Pink*	05-7648				
	Red	05-7649				
	Orange*	05-7650				
	Green	05-7651				
	Blue	05-7652				
	Purple*	05-7653				

* This is selectable in mono color copying.

The following table shows the explanation about the subcodes.

Subcode	Description
0	Y (Yellow)
1	M (Magenta)
2	C (Cyan)
3	K (Black)

<Notes>
- Note that the adjustment results are also reflected in the mono color copying.
- If the value is too large, the density becomes too dark and the reproducibility of gradations in the high density area may become blurred and degraded.
- When all the subcodes for each color are set to "0", the specified color becomes white.

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2.19   To Adjust Image Quality Scanned from DF

	Before adjustment	After adjustment
	Scanning an original placed on the original glass	Scanning an original placed on the original glass
	Scanning an original fed from the DF	Scanning an original fed from the DF
	The reproducibility of the background may vary depending on how to scan an original.	The gap in the reproducibility of the background is reduced.
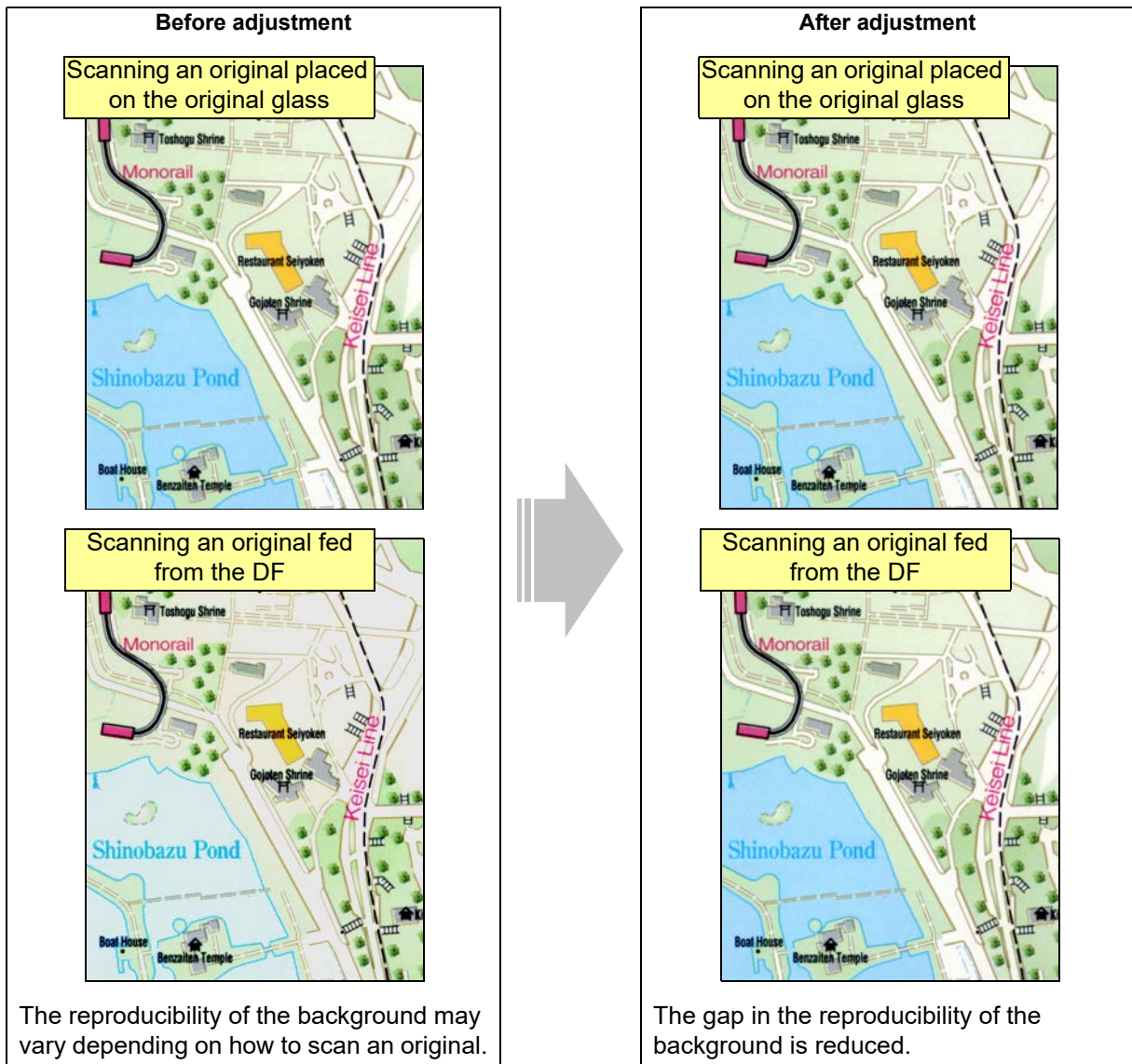
❏**Explanation**

Perform this adjustment if the reproducibility of the background when scanning from the DF differs from that of the original glass.

❏**Adjustment type**

	Type	Function to be affected
a	Background offset adjustment (DF)	Copy, Scan, Fax
b	Background offset adjustment on the back side of paper (DSDF)	Copy, Scan, Fax

❑ Adjustment method

a. Background offset adjustment (DF)

Adjust the reproducibility of the background when an original is scanned by the DF.

When the RADF is used, the backgrounds of both sides are adjusted, and when the DSDF is used, the background of the front side is adjusted.

Color mode	Code	Recommended value	Acceptable value range	Default value
Full Color	05-7026	To make the density of the background darker: Set a value larger than the default one.	0 to 255	128
Black	05-7025	To make the density of the background lighter: Set a value smaller than the default one.		

\<Tip\>

• Change the value in increments of 20, while checking the image until the optimum value is obtained.

• Note that the adjustment results are also reflected in the scanning function.

b. Background offset adjustment on the back side of paper (DSDF)

If the reproducibility of the background on the front and back sides in the DSDF varies, adjust the reproducibility of the background on the back side.

Color mode	Code	Recommended value	Acceptable value range	Default value
Full Color	05-7024	To make the density of the background darker: Set a value larger than the default one.	0 to 255	128
Black	05-7023	To make the density of the background lighter: Set a value smaller than the default one.		

\<Tip\>

• Change the value in increments of 20, while checking the image until the optimum value is obtained.

• Note that the adjustment results are also reflected in the scanning function.

2.20 To Copy While Erasing Shadow Outside of Image

Before adjustment	After adjustment
When originals such as books are copied, an area outside of the image is copied like a shadow because the original cover is not fully closed.	The shadow is erased.
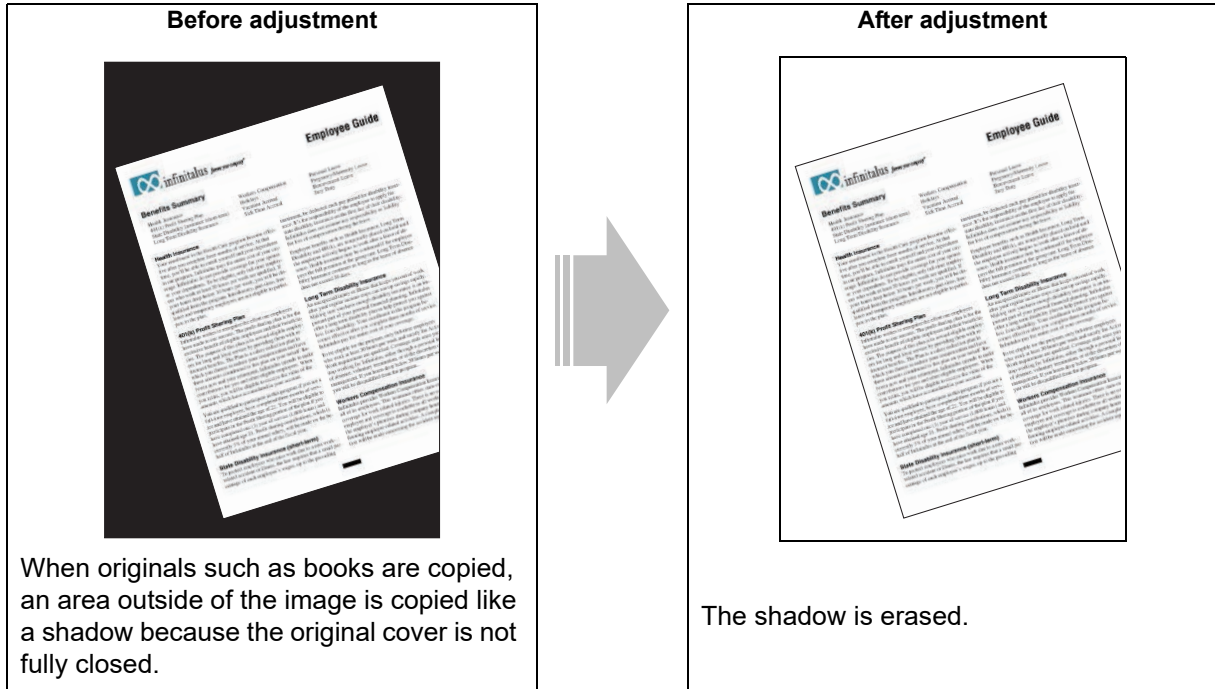
❑ Explanation

When originals such as books are copied by placing them on the original glass, an area outside of the image is copied like a shadow because the original cover is not fully closed. Perform this adjustment in order to avoid copying areas outside of the image.

<Notes>

The Outside Erase function may not be operated correctly under the following conditions.

- When making copies in a bright room, leaving the DF or the platen cover open (Exterior light has caused the areas outside the original to become bright.)
- When the original has extremely dark areas (The extremely dark areas are wrongly detected as areas not belonging to the original and are then erased.)
- In case of special originals (e.g. A three-dimensional object, an original with black edges, the edges of an opened book)

❑ Adjustment type

Type		Function to be affected
a	Outside Erase function	Copy

❑ **Adjustment method**

a. Outside Erase function

      (1)Press [Copy] on the home screen. Press [Outside Erase] in the [Edit] tab.

      (2)Change the border between the original and areas not belonging to the original by pressing either [+] or [-] as required.

          • When you adjust to the [+] side, the area to be detected as that not belonging to the original is increased. When you adjust to the [-] side, the area to be detected as that not belonging to the original is decreased.

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2.21 To Avoid Copying Blank Pages of Originals Scanned by DF

Before adjustment	After adjustment
When the original is scanned by the DF, blank pages included in the original are also copied.	The blank pages are omitted.
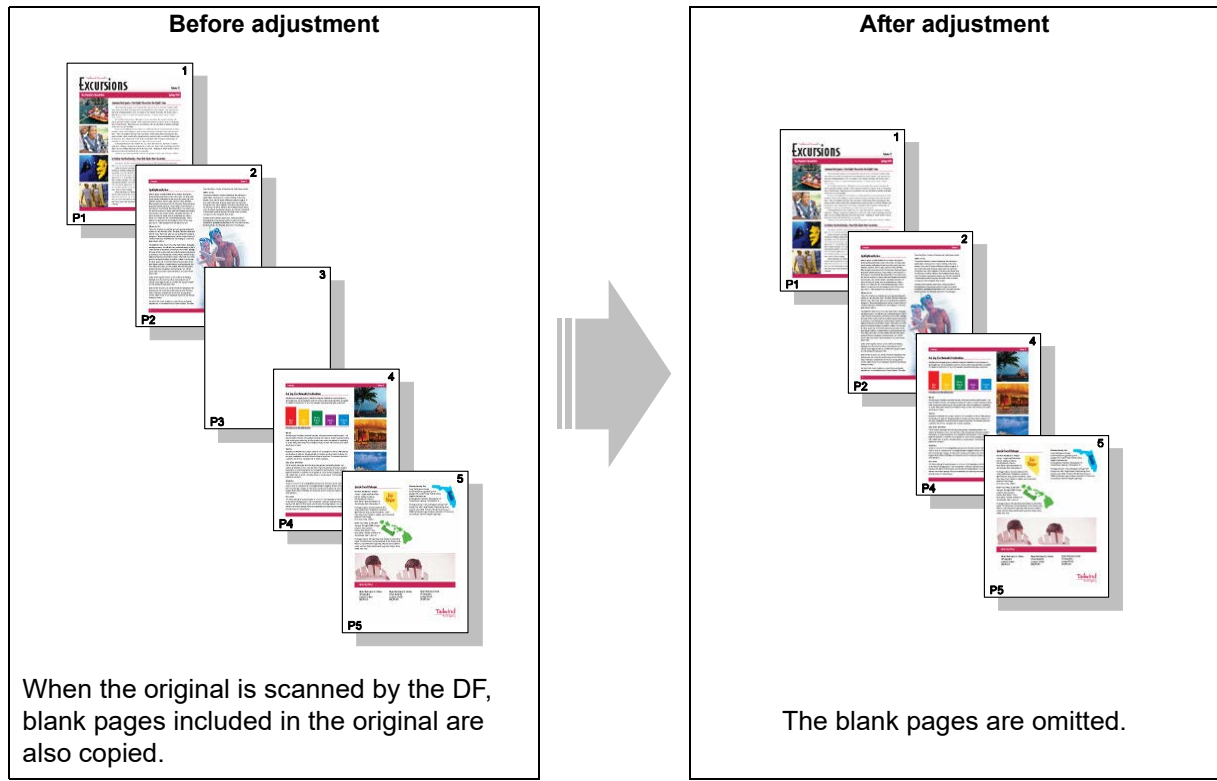
❑ **Explanation**

Perform this adjustment in order to perform copying while omitting the blank pages automatically.

In this adjustment, the following originals can also be omitted.

- The back side of an original with dark images on its front side (the dark images can be seen through the back side) or an original with light color
- An original with only 2 or 3 letters.

<Tip>
- Colored paper is not judged as a blank page.
- The level to be judged as a blank page can be adjusted.
- Note that the adjustment results for c. and d. are also reflected to the scanning function.

❑ **Adjustment type**

	Type	Function to be affected
a	Omit Blank Page function	Copy
b	Omit Blank Page threshold adjustment	Copy
c	Blank page threshold adjustment	Copy, Scan
d	Blank page threshold void amount adjustment	Copy, Scan

❑**Adjustment method**

a. Omit Blank Page function

Enable [Omit Blank Page].

(1)Press [Copy] on the home screen. Press [Omit Blank Page] in the [Edit] tab.

b. Omit Blank Page threshold adjustment

Adjust the blank page threshold.

(1)Press [User Functions -User-] on the Home screen. Press [Copy] and then [Omit Blank Page Adjustment].

(2)Change the border of the blank page by pressing either [+] or [-] as required.
- When you adjust to the [+] side, the scanned originals tend to be detected as blank pages. When you adjust to the [-] side, the scanned originals tend not to be detected as blank pages.

c. Blank page threshold adjustment

Adjust the blank page threshold.

Code	Recommended value	Acceptable value range	Default value
05-7618	To make the original tends to be judged as a blank page: Set a value larger than the default one. To make the original does not tend to be judged as a blank page: Set a value smaller than the default one.	0 to 255	128

- Change the value in increments of 15, while checking if proper originals are judged as a blank page until the optimum value is obtained.
- Note that the adjustment results are also reflected in the scanning function.

d. Blank page threshold void amount adjustment

Adjust the void amount of the image area to be used for the blank page judgment.
- Perform this adjustment in order to obtain the blank page judgment properly of an original with an image located only on the edge of the paper.

Items	Code	Subcode	Recommended value	Acceptable value range	Default value
When Image Repeat is not used	05-7616	0	Set a value smaller than 200.	0 to 255	200
When Image Repeat is used		2			

- The values of "24 steps" correspond to 1 mm of the image area.
- If too small a value is set, shadows and stains on the edge of the original may be judged as images and thus the desired result may not be obtained.
- Note that the adjustment results are also reflected in the scanning function.

2.22　To Obtain Image in Even Density Level

Before adjustment	After adjustment

When [Auto] is pressed for the copy density, the density of the entire image becomes uneven.

When the density level is set manually, the density of the entire image becomes even.

❑**Explanation**

Perform this adjustment to reduce the unevenness that has appeared on the background when an original with it is copied.

❑ **Adjustment type**

Type		Function to be affected
a	Density adjustment	Copy
b	Background adjustment	Copy

❑ **Adjustment method**

a. Density adjustment

(1)Set the density level manually.

(2)Press [◖] to make the density lighter.
    For details, refer to "2.1.2 Density adjustment".

b. Background adjustment

Lighten the density of the background.
For details, refer to "2.1.3 Background adjustment".

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2.23 To Improve Reproducibility of Red Seal Color

Before adjustment	After adjustment
TOSHIBA	TOSHIBA
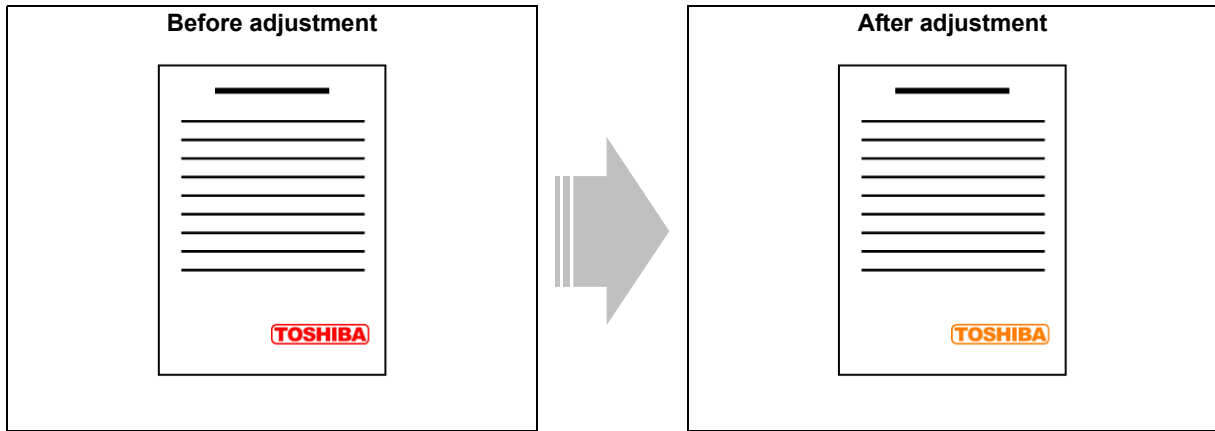
❑ **Explanation**

The reproducibility of red seal color can be improved by using [Red Seal Color] in the original mode.

Perform this adjustment in order to display Red Seal Color mode.

❑ **Adjustment type**

Type		Function to be affected
a	Display setting of Red Seal Color mode	Copy

❑ **Adjustment method**

a. Display setting of Red Seal Color mode

Color mode	Code	Recommended value	Acceptable value range	Default value
Full Color	08-7610	0: Display setting OFF 1: Display setting ON	0 to 1	0

• [Red Seal Color] is added to the original mode for Full Color mode.

• For details, refer to "2.1.1 Original mode".

2.24　To Reduce Streaks in Scanning

Before adjustment	After adjustment
<- Paper feeding direction	<- Paper feeding direction
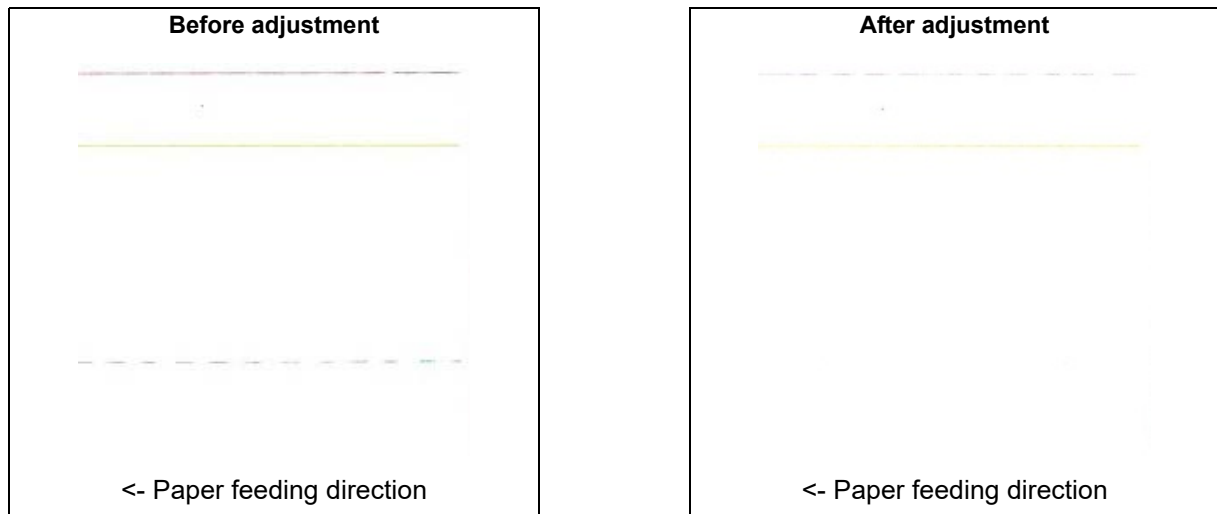
❑**Explanation**

Streaks sometimes occur during copying or scanning. Perform this adjustment in order to lower this problem.

❑**Adjustment type**

Type		Function to be affected
a	DF original glass cleaning	Copy, Scan (When using the DF)
b	Scanning streak reduction	Copy, Scan
c	Scanning streak reduction level setting	Copy, Scan

❑**Adjustment method**

a. DF original glass cleaning

Clean the DF original glass (the elongated glass at the left of the original glass) with a soft and dry cloth or a well-squeezed soft cloth.
• Do not use liquids other than water (such as alcohol, organic solvents or neutral detergent).

b. Scanning streak reduction

Enables Scanning streak reduction.

<Notes>
• To reduce the streaks that occur when scanning or copying from the original glass, you need to execute streak detection execution so the positions of the streaks are recorded in the MFP. Execute User Functions - Setting item (Admin) - General - Scanning streak reduction - Streak detection execution, and then scan a white sheet of A4 or LT size paper so the MFP can record the positions of the streaks.
• If you want to constantly reduce scanning streaks, then execute User Functions - Setting item (Admin) - General - Scanning streak reduction - and turn on Scanning streak reduction.

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c. Streak correction level setting

Set the reduction level (low, medium, high) for when the original glass and DF are used, respectively. You can also adjust the effect of when the reduction level is changed.

When RADF is installed

Item to be adjusted	Code	Sub code	Recommended value	Acceptable value	Default value
When scanning by placing an original on the original glass	05-7623	0	100 to 156 To make the streak correction intensity higher: Set a larger value. To make the streak correction intensity lower: Set a smaller value.	0 to 255	0
When using the DF for scanning		1			

When DSDF installed

Item to be adjusted	Code	Sub code	Recommended value	Acceptable value	Default value
When scanning by placing an original on the original glass	05-7623	0	100 to 156 To make the streak correction intensity higher: Set a larger value. To make the streak correction intensity lower: Set a smaller value.	0 to 255	0
When using the DF for scanning (front side)		1			
When using the DF for scanning (back side)		2			

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2.25 Color Reproduction of Back Side Differs from that for Front Side in DSDF Scanning

❑ **Explanation**

Perform this adjustment when the color reproduction between the front and back sides differs in DSDF scanning.

❑ **Adjustment method**

(1) Perform automatic calibration.
For details, refer to "1.1.1 Automatic calibration".

(2) Select [05 ADJUSTMENT Mode]. Enter [50] and press [TEST PRINT] to print a pattern for adjustment.
 • For details, refer to the Service Manual.

(3) Perform 05-7021 to adjust for Color mode. Scan the front and then the back side of the pattern printed in step (2).

 • Front side: Place the original with its printed side up. Set the pattern on the DSDF while its side with 2 black quadrilaterals comes to the leading edge and press [OK].
 • Back side: Place the printed side face down. Set the pattern on the DSDF while its side with 2 black quadrilaterals comes to the leading edge and press [OK].

Calibration
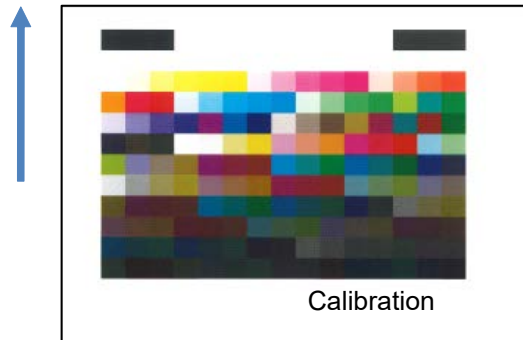
<Tip>
 • When an error has occurred, check the following items.
   - The surface of the original has been placed correctly.
   - The 2 black quadrilaterals have come to the leading edge properly.
   - The guides on the DSDF are set correctly aligned to the paper size.
 • When colored paper is used for the pattern, calibration may not be performed properly.
 • Note that the adjustment results are also reflected in the scanning and fax functions.

2.26 To Improve Gradation Reproducibility of Dark Portions in Photos

Before adjustment

After adjustment
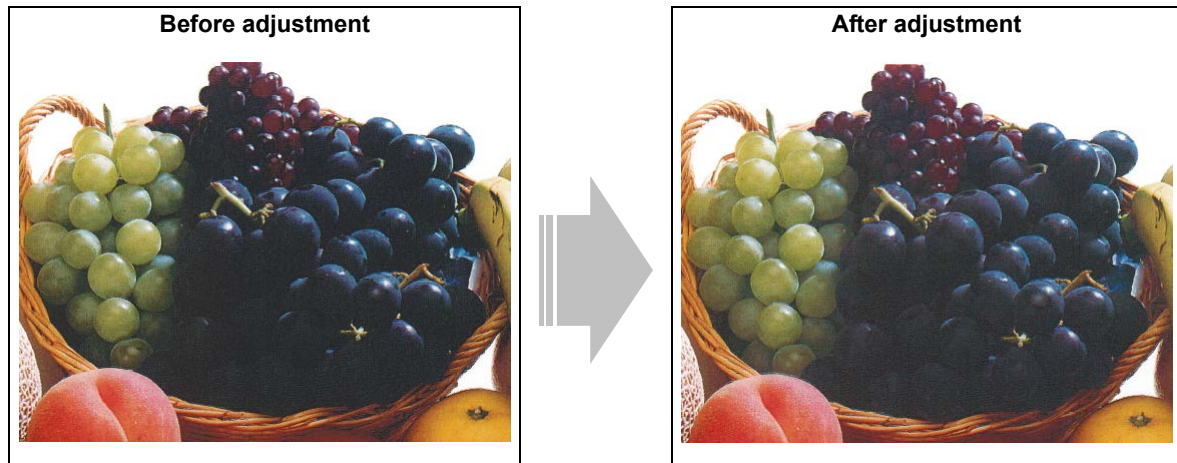
❑**Explanation**

Perform this adjustment in order to improve the gradation reproducibility of dark portions in photos, but not to affect the entire image.

❑**Adjustment type**

	Type	Function to be affected
a	Original mode	Copy
b	Black header density level adjustment	Copy

❑**Adjustment method**

a. Original mode

Select [Printed Image] for the original mode. When reproducibility in text is also enhasized, select [Map].
For details, refer to "2.1.1 Original mode".

b. Black header density level adjustment

Set a smaller value.
For details, refer to "2.1.13 Black header density level adjustment".

2.27 To Improve Color Reproducibility of Dark-color Text

Before adjustment	After adjustment
The reproducibility of the color text copied with the default setting cannot satisfy the image quality.	Text will be reproduced with the color which is closest to the original one.
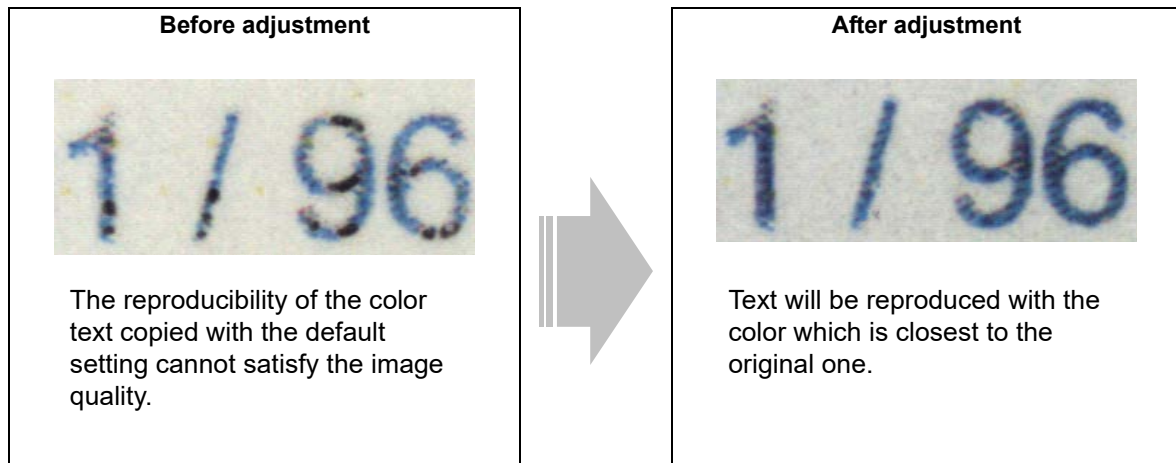
❑ **Explanation**

When copying is attempted and dark-color text such as navy blue has become black, perform this adjustment.

❑ **Adjustment type**

	Type	Function to be affected
a	Reproducibility of black and color text	Copy
b	Gamma balance adjustment (Text)	Copy

• Perform b only when the reproducibility of black and color text is insufficient even if a has been carried out.

❑ **Adjustment method**

a. Reproducibility of black and color text

Color mode	Original mode	Code	Subcode	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-7843	0	0: Black text priority 1: Color text priority	0 to 1	0
	Text		1			
	Map		2			
	Custom		3			
	Red seal color		4			

b. Gamma balance adjustment (Text)

Adjust the color tone of text.

For details, refer to "2.1.10 Gamma balance adjustment (Text)".

2.28   To Make Copy by Removing all Colors other than Black

Original

ABCDEFG

1 2 3 4 5

1. Abcdef ghijklmn ☑

2. Opqrstuvw xyz abcd ☐

3. Efghijk lmnop qrstuvwxyzabc defgh ijklmnopq

WXYZ

Normal Black mode copying

ABCDEFG

1 2 3 4 5

1. Abcdef ghijklmn ☑

2. Opqrstuvw xyz abcd ☐

3. Efghijk lmnop qrstuvwxyzabc defgh ijklmnopq

WXYZ

Colors other than black are reproduced in gray.

When the Drop Out Color option is enabled

ABCDEFG

1 2 3 4 5

1. Abcdef ghijklmn ✓

2. Opqrstuvw xyz abcd

3. Efghijk lmnop qrstuvwxyzabc defgh ijklmnopq

WXYZ

Colors other than black are not reproduced.

Original

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRST
UVWXYZ
abcdefghijklmnopqrstuvwxyz

good

Normal Black mode copying

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRST
UVWXYZ
abcdefghijklmnopqrstuvwxyz

good

Colors other than black are reproduced
in gray.

When the Drop Out Color option is enabled

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRST
UVWXYZ
abcdefghijklmnopqrstuvwxyz

Colors other than black are not
reproduced.

❑**Explanation**

Perform this adjustment when a color original (*) including black text is copied by removing all colors
other than black. The removal level of gray-like colors (mixed-color gray) such as navy blue can also be
adjusted.

 * Color original: A colored mark sheet original with notes added in a black pencil as well as a black-and-
   white original with notes added with a color pen.
 • When this function is used, a color original will be copied in black-and-white.

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• When a larger value is set (gray-like colors tend to be removed), a light gray (achromatic color) will also be easily removed.

❏ **Adjustment type**

	Type	Function to be affected
a	Drop Out Color	Copy
b	Drop Out Color adjustment	Copy

❏ **Adjustment method**

a. Drop Out Color

(1)Press [Copy] on the Home screen. Press [Black] of the color mode in the [Basic] tab.
(2)Press [Drop Out Color] in the [Image] tab.
(3)Press [+] or [-] to change the removal level of gray-like colors (mixed-color gray).
　　• Pressing [+] makes gray-like colors tend to be removed. Pressing [-] makes gray-like colors tend to remain.

b. Drop Out Color adjustment

Adjust the removal level of gray-like colors more finely.

Color mode	Code	Recommended value	Acceptable value range	Default value
Black	05-7066	To make gray-like colors in an original tend to be removed: Set a value larger than the default one. To make gray-like colors in an original tend to remain: Set a value smaller than the default one.	20 to 80	50

• One step in the indicator corresponds to "10" of the value in [05] code.

2.29 To Program Frequently Used Copy Settings (Uses Custom Mode)

❑ **Explanation**

You can add a new original mode adjusted to be able to satisfy the user's particular requests regarding image quality as Custom mode, for Color and Black modes respectively.

It is recommended to register a set of copy settings as Custom mode if users frequently copy special types of originals or if users are not satisfied with the image quality of the existing original modes.

2.29.1 To use Custom mode in Black mode

❑ **Adjustment method**

(1) Enable Custom mode.

Custom mode is not displayed on the touch panel by the default. When the original mode used as the base mode is selected, Custom mode is displayed on the touch panel and can be used.

Color mode	Code	Acceptable value range	Default value	Description of parameters
Black	08-7034	0 to 2	0	0: Not displayed 1: Text/Photo base 2: Text base

(2) Perform image quality adjustment of Custom mode.

Color mode	Code	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Black	05-7106	Background adjustment	0 to 255	128	The larger the value, the darker the background becomes. The smaller the value, the lighter the background becomes.	2.1.3
	05-7134	Density adjustment (Manual adjustment)	0 to 255	128	The larger the value, the darker the image becomes.	2.1.2
	05-7137	Density adjustment (Automatic density adjustment)	0 to 255	128	The larger the value, the darker the image becomes.	2.1.2
	05-7189	Gamma balance adjustment	0 to 255	128	The larger the value, the darker the target density area becomes.	2.1.9

Color mode	Code	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Black	05-7237	Range correction adjustment (Manual density adjustment)	0 to 1	1	0: Background peak - Fixed (A background will remain when its density on an original is dark.) 1: Background peak - Varied (A background will not remain when its density on an original is dark.)	2.1.2
	05-7249	Sharpness adjustment	0 to 255	128	When a larger value is set, the sharper the image becomes. When a smaller value is set, the softer the image becomes. Moreover, the less moiré appears.	2.1.4
	05-7252	Blurred/faint text adjustment	0 to 4	2	When a larger value is set, text and lines become thinner (faint in text will be suppressed). When a smaller value is set, text and lines become thicker (blurring in the text will be suppressed).	2.3.1

2.29.2 To use Custom mode in Full Color mode

❑ **Adjustment method**

(1) Enable Custom mode.
Custom mode is not displayed on the touch panel by the default. When the original mode used as the base mode is selected, Custom mode is displayed on the touch panel and can be used.

Color mode	Code	Acceptable value range	Default value	Description of parameters
Full Color	08-7614	0 to 5	0	0: Not displayed
				1: Text/Photo base
				2: Text base
				3: Printed Image base
				4: Photo base
				5: Map base

(2) Change the value of color reproduction selection.
In Custom mode for Full Color mode, the color reproducibility can be selected in accordance with the base set in the original mode.

Color mode	Code	Acceptable value range	Default value	Description of parameters
Full Color	05-7690	0 to 4	0	0: Same as Text/Photo, Printed Image, Text, Map (Text priority) mode
				1: Same as Photo mode
				2: Same as Red Seal Color mode
				3: The gray level becomes a more bluish one than the one specified in the setting value "0".
				4: The highlight reproduction becomes more emphasized than the one specified in the setting value "0".

• The level of the highlight reproducibility will become higher in the order of the setting value 0 < 1 < 4. In addition, if the setting value "1" is set, not only the highlight reproduction is changed but also the entire color tone is altered.

(3) Perform image quality adjustment of Custom mode.

Color mode	Code	Subcode	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Full Color	05-7661	-	Background adjustment	0 to 255	128	The larger the value, the darker the background becomes. The smaller the value, the lighter the background becomes.	2.1.3
	05-7670	0	Fine adjustment of hue (Red)	0 to 255	128	The larger the value, the darker the yellow becomes. The smaller the value, the darker the magenta becomes.	2.1.5

Color mode	Code	Subcode	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Full Color	05-7670	1	Fine adjustment of hue (Yellow)	0 to 255	128	The larger the value, the darker the green becomes. The smaller the value, the darker the red becomes.	2.1.5
		2	Fine adjustment of hue (Green)	0 to 255	128	The larger the value, the darker the cyan becomes. The smaller the value, the darker the yellow becomes	
		3	Fine adjustment of hue (Cyan)	0 to 255	128	The larger the value, the darker the blue becomes. The smaller the value, the darker the green becomes.	
		4	Fine adjustment of hue (Blue)	0 to 255	128	The larger the value, the darker the magenta becomes. The smaller the value, the darker the cyan becomes.	
		5	Fine adjustment of hue (Magenta)	0 to 255	128	The larger the value, the darker the red becomes. The smaller the value, the darker the blue becomes.	
	05-7680	0	Fine adjustment of saturation (Red)	0 to 255	128	The larger the value, the higher the saturation becomes. The smaller the value, the lower the saturation becomes.	2.1.7
		1	Fine adjustment of saturation (Yellow)	0 to 255	128	The larger the value, the higher the saturation becomes. The smaller the value, the lower the saturation becomes.	
		2	Fine adjustment of saturation (Green)	0 to 255	128	The larger the value, the higher the saturation becomes. The smaller the value, the lower the saturation becomes.	
		3	Fine adjustment of saturation (Cyan)	0 to 255	128	The larger the value, the higher the saturation becomes. The smaller the value, the lower the saturation becomes.	
		4	Fine adjustment of saturation (Blue)	0 to 255	128	The larger the value, the higher the saturation becomes. The smaller the value, the lower the saturation becomes.	

Color mode	Code	Subcode	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Full Color	05-7680	5	Fine adjustment of saturation (Magenta)	0 to 255	128	The larger the value, the higher the saturation becomes. The smaller the value, the lower the saturation becomes.	2.1.7
	05-7718	-	Density adjustment (Manual adjustment (Center value))	0 to 255	128	The larger the value, the darker the image becomes.	2.1.2
	05-7725	-	Density adjustment (Automatic density adjustment)	0 to 255	128	The larger the value, the darker the image becomes.	2.1.2
	05-7795	-	Sharpness adjustment	0 to 255	128	The larger the value, the sharper the image becomes. The smaller the value, the softer the image becomes. Moreover, the less moiré appears.	2.1.4
	05-7816	-	Black header density level adjustment	0 to 8	0	The larger the value, the darker the header becomes. The smaller the value, the lighter the header becomes.	2.1.13
	05-7841	-	Text/Photo reproduction level adjustment	0 to 9	0	1 to 4: Photo-oriented 0, 5: Default 6 to 9: Text priority • Text is blurred if the value is too small. Noise increases in the photo area if the value is too large.	2.1.12
	05-7843	3	Reproducibility of black and color text	0 to 1	0	0: Black text priority 1: Color text	2.27
	05-7980	0/1/2	Color balance adjustment (Y)	0 to 255	128	The larger the value, the darker the target color and density area become.	2.1.6
	05-7981	0/1/2	Color balance adjustment (M)	0 to 255	128	The larger the value, the darker the target color and density area become.	

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Color mode	Code	Subcode	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Full Color	05-7982	0/1/2	Color balance adjustment (C)	0 to 255	128	The larger the value, the darker the target color and density area become.	2.1.6
	05-7983	0/1/2	Color balance adjustment (K)	0 to 255	128	The larger the value, the darker the target color and density area become.	
	05-7992	0/1/2	Text gamma balance adjustment (Y)	0 to 255	128	The larger the value, the darker thin lines and thin text become. The smaller the value, the lighter thin lines and thin text become.	2.3.2
	05-7993	0/1/2	Text gamma balance adjustment (M)	0 to 255	128	The larger the value, the darker thin lines and thin text become. The smaller the value, the lighter thin lines and thin text become.	
	05-7994	0/1/2	Text gamma balance adjustment (C)	0 to 255	128	The larger the value, the darker thin lines and thin text become. The smaller the value, the lighter thin lines and thin text become.	
	05-7995	0/1/2	Text gamma balance adjustment (K)	0 to 255	128	The larger the value, the darker thin lines and thin text become. The smaller the value, the lighter thin lines and thin text become.	

3. Printing Function Adjustments

3.1 Adjustment Method

When this MFP is used as a printer, perform image adjustments by combining the following items in accordance with the usage purposes.

Type	Purpose	[05]	[08]	PD	UF
Gamma balance adjustment	To adjust the density for each density area for black mode printing	Y	-	-	-
PureBlack/PureGray adjustment	To make uniform the gray color tone between image elements	Y	-	Y	-
Background adjustment	To adjust the background density	Y	-	Y	-
Sharpness adjustment	To adjust the sharpness of the boundary of text and lines	Y	-	Y	-
Color balance adjustment	To adjust the density for each color	Y	-	Y	-
Thin line / text density adjustment	To adjust the density of thin lines and text	Y	-	-	-
Graphic line width adjustment	To adjust the thickness of thin lines	Y	-	Y	-
Blurred text in black adjustment	To adjust the thickness of black text	Y	-	-	-
Toner used amount adjustment	To adjust the toner used amount of more than 3 colors overlaid	Y	-	-	-
Halftone adjustment (when changing per user)	To adjust the halftone roughness	-	-	Y	-
Halftone adjustment (when changing all print jobs)	To adjust the halftone roughness	-	Y	-	Y
LED subline light-emitting time adjustment	To adjust the dot size	-	Y	-	-
Resolution	To change the resolution at printing	-	-	Y	-
Halftone applicable range adjustment	To adjust the halftone applicable range	Y	-	-	-

* PD: Printer driver

* UF: [User Functions] menu (control panel)

<Notes>
- Both the service technician and the user can perform adjustments to the printer driver and the control panel.

3.1.1   Gamma balance adjustment

You can adjust the density for each density area for black mode printing.

❑ **Self-diagnosis code**
In order to make the halftones darker in black mode printing, set a larger value for the subcode 0 or 1.

Gamma balance adjustment

PDL (Resolution)	Halftone	Object	Code	Subcode	Recommended value	Acceptable value range	Default value
PS (600dpi)	Smooth	Text, Graphic & Image	05-7315	0/1/2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
	Detail	Text, Graphic & Image	05-7316	0/1/2			
	Auto	Text	05-7360	0/1/2			
		Graphic	05-7361	0/1/2			
		Image	05-7362	0/1/2			
PS (1200dpi)	Smooth	Text, Graphic & Image	05-7309	0/1/2			
	Detail	Text, Graphic & Image	05-7310	0/1/2			
	Auto	Text	05-7357	0/1/2			
		Graphic	05-7358	0/1/2			
		Image	05-7359	0/1/2			
PCL (600dpi)	Smooth	Text, Graphic & Image	05-7317	0/1/2			
	Detail	Text, Graphic & Image	05-7318	0/1/2			
	Auto	Text	05-7363	0/1/2			
		Graphic	05-7364	0/1/2			
		Image	05-7365	0/1/2			

The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	Low density area
1	Middle density area
2	High density area

• Change the value in increments of 10, while checking the image until the optimum value is obtained.

• Adjust PS for Mac.

❑ Caution after the adjustment

Nothing in particular

3.1.2　　PureBlack/PureGray adjustment

You can make the gray color tone between image elements uniform.
In image data, black and gray are made by overlaying 4 toner colors. Therefore, the used toner amount will become large and thus text and lines are sometimes smudged. This symptom can be suppressed by carrying out black or gray printing using only K toner.

❑**Printer driver**

▮▮ Change the setting of "Apply to" for "Pure Gray" in the printer driver. (Selecting [Pure Gray] allows gray areas to always be reproduced using only K toner without changing the color tone of the color areas.)

 • This adjustment will have an effect only on printing files created by a general application, such as Microsoft Office. This will have no effect on printing files created by graphics applications (e.g. Illustrator) or DTP applications (e.g. QuarkXPress), or on printing PDF files created on such applications.

For Windows

PCL   PS   * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
In the [Basic] tab, select the "Pure Gray", and change the "Apply to" setting.
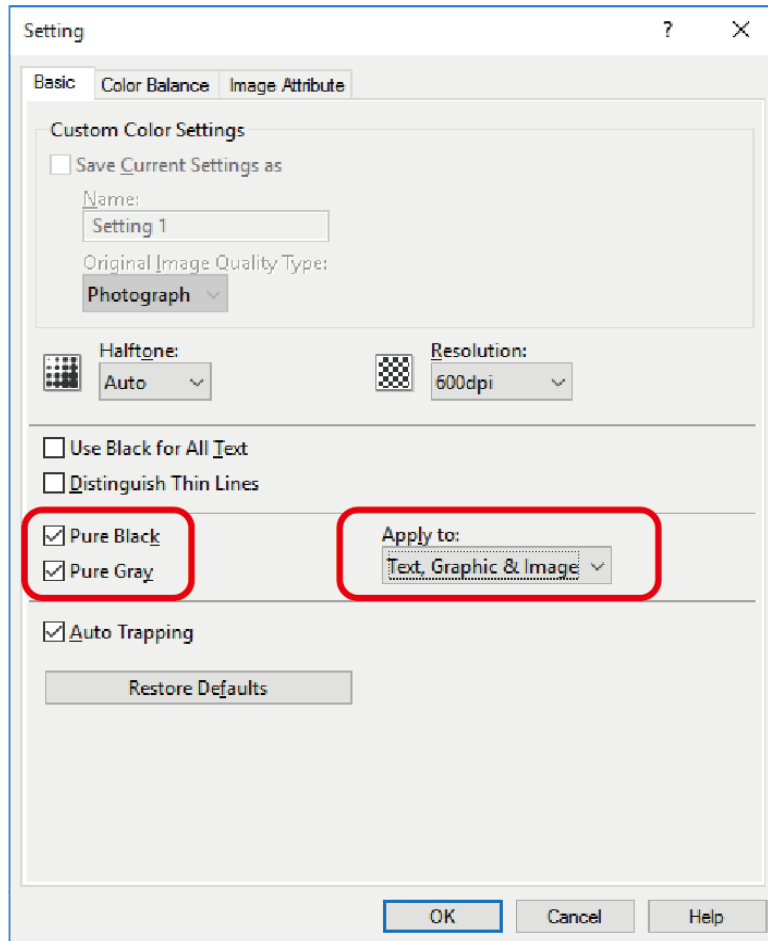
For Mac

Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 1]. Change the setting in the Pure Black and Gray option.
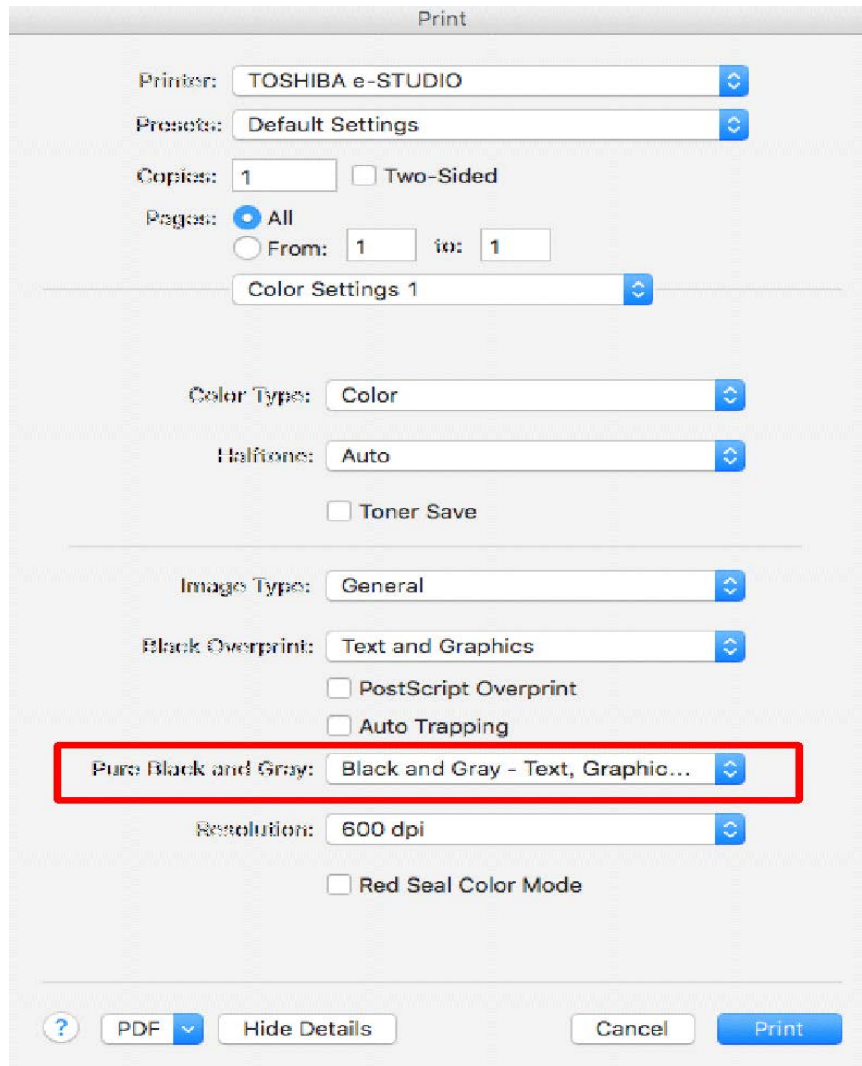
The following shows the various settings and how they apply to the various objects when printing black or gray.

	Apply to/Black and Gray Print Methods			
	Auto	**Text**	**Text & Graphic**	**Text, Graphic & Image**
Text	Black (K toner)	Black (K toner)	Black (K toner)	Black (K toner)
Graphic	Black (K toner)	Color (YMCK toners)	Black (K toner)	Black (K toner)
Image	Color (YMCK toners)	Color (YMCK toners)	Color (YMCK toners)	Black (K toner)

- The above table shows the sample combinations for when [General] is set in [Image Quality Type]. When [Auto] is selected, application areas are automatically specified according to the type set in [Image Quality Type].

❑ **Self-diagnosis code**

You can also change the range of the color to be printed in only K toner.

PureBlack/PureGray threshold value adjustment

PDL	Object	Code	Subcode	Recommended value	Acceptable value range	Default value
Full Color (PS)	Text	05-8252	0/1/2/3/4	When a larger value is set, the colors which are not close to black and gray become printed with only K toner. When a smaller value is set, the colors which are close to black and gray become printed with only K toner.	1 to 255	8/8/8/8/8
	Graphic	05-8253	0/1/2/3/4			1/1/1/8/1
	Image	05-8254	0/1/2/3/4			1/1/1/8/1
Full Color (PCL)	Text	05-8210	0/1/2/3			8/8/8/8
	Graphic	05-8211	0/1/2/3			1/1/1/8
	Image	05-8212	0/1/2/3			1/1/1/8
Twin Color	Text	05-8213	-			8
	Graphic	05-8214				1
	Image	05-8215				1

Subcode	Image Quality Type
0	General
1	Photograph
2	Presentation
3	Line Art
4	Advanced

When "Auto" is set for "Apply to", the objects targeted for PureBlack/PureGray can be changed by the following self-diagnostic codes.

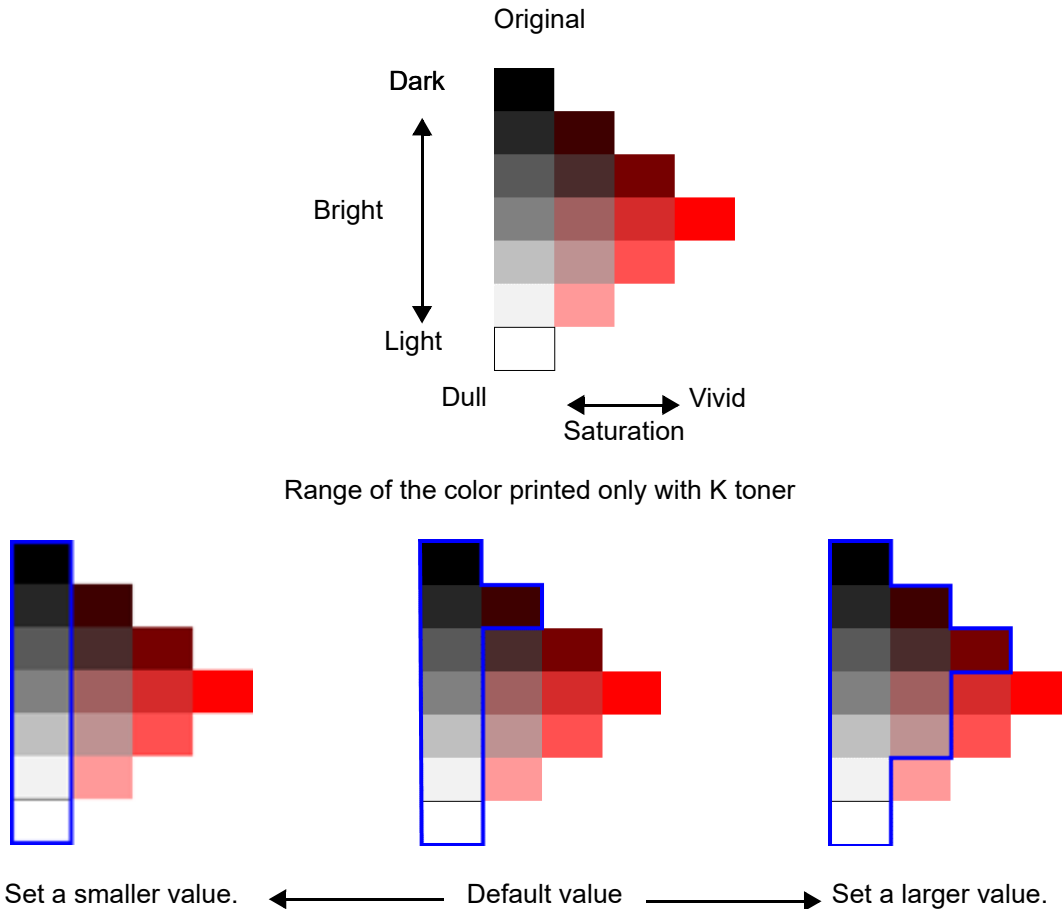**Objects targeted for PureBlack/PureGray**

PDL	Item to be adjusted			Code	Subcode	Recommended value	Acceptable value range	Default value
PCL	PureGray	Text	General	05-8220	0	0: Not targeted 1: Targeted	0 to 1	1
			Photographic		1			0
			Presentation		2			1
			Line art		3			1
		Graphic	General	05-8221	0			1
			Photographic		1			0
			Presentation		2			1
			Line art		3			1
		Image	General	05-8222	0			0
			Photographic		1			0
			Presentation		2			0
			Line art		3			0
	PureBlack	Text	General	05-8223	0			1
			Photographic		1			1
			Presentation		2			1
			Line art		3			1
		Graphic	General	05-8224	0			1
			Photographic		1			0
			Presentation		2			1
			Line art		3			1
		Image	General	05-8225	0			0
			Photographic		1			0
			Presentation		2			0
			Line art		3			0

<Notes>
- If you use the settings of the self-diagnostic codes instead of a printer driver setting, set "1" in the priority settings of PureBlack/PureGray below.
- If you set "1" for the priority settings of PureBlack/PureGray, then changes to the self-diagnostic codes above are applied to all users, even if the MFP is administered by user authentication.

Priority settings for PureBlack/PureGray

PDL	Item to be adjusted	Code	Subcode	Recommended value	Acceptable value range	Default value
PCL	PureBlack	05-8219	0	0: Priority to printer driver 1: Priority to self diagnostic values	0 to 1	0
	PureGray		1			

Original

Dark

Bright

Light

Dull ← → Vivid

Saturation

Range of the color printed only with K toner

Set a smaller value. ← Default value → Set a larger value.

Since the larger the value is, the wider the area to be printed only with K toner becomes, photo areas with colors that are close to black may be treated as black when [Text, Graphic & Image] is selected for Apply to in the printer driver setting menu. Therefore, carefully perform the adjustment while checking the image.

If black lines created by the graphic are still reproduced in 4 colors even after this adjustment has been performed, this may be created with Image. In such a case, change the settings of the application (*) and reattempt printing.

 *When Illustrator is used, select [File] > [Document Setting] > [Custom] and then set the value to [Vector] in the Rasterization and Vector Balance option.

❑ Caution after the adjustment

When the [Pure Gray] check box is selected and the setting for the Apply to option is changed to [Text, Graphic & Image], images are sometimes made by two types of black which use the 4 color toners and only K toner (uneven color). In such a case, select the [Pure Black] check box but not the [Pure Gray] check box. Then check the images.

When [Text, Graphic & Image] is selected for the Apply to option 	When the [Pure Black] check box is selected but not the [Pure Gray] check box

3.1.3 Background adjustment

You can adjust the density of the background. You can increase the density of light color areas without changing that or dark color areas.

❑ **Printer driver**

For Windows

PCL   PS   * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab. Change the setting of the Background Adjustment option in the [Image Attribute] tab.
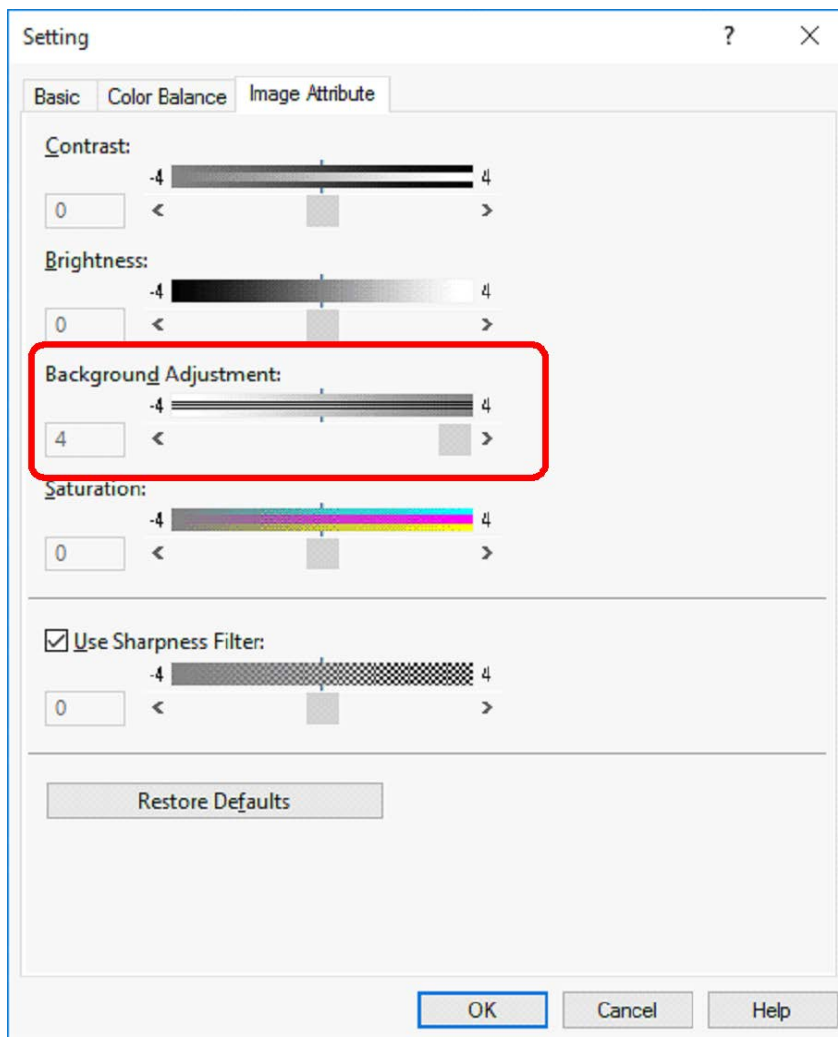
❑ **Self-diagnosis code**

Background adjustment

Resolution	Halftone	Color mode	Code	Subcode	Recommended value	Acceptable value range	Default value
600 dpi	Auto/Smooth	Color	05-8010	0/1	To make the background density darker: Set a value larger than the default one. To make the background density lighter: Set a value smaller than the default one.	0 to 255	128
		Twin Color	05-8011				
		Black	05-8012				
	Auto/Detail	Color	05-8013				
		Twin Color	05-8014				
		Black	05-8015				
1200dpi	Auto/Smooth	Color	05-8016	-			
		Black	05-8018				
	Auto/Detail	Color	05-8017				
		Black	05-8019				

Subcode	PDL
0	PS
1	PCL

The following are the halftone to be applied to each object by selecting "Auto" in "Halftone". Be aware of the range of application while performing adjustments.

Apply to	Auto				Black	Twin color
	General	Photographic	Presentation	Line art		
Text	Detail	Detail	Detail	Detail	Detail	Detail
Graphic	Smooth	Smooth	Smooth	Detail	Smooth	Smooth
Image	Smooth	Smooth	Smooth	Detail	Smooth	Smooth

❑ **Caution after the adjustment**

Nothing in particular

3.1.4 Sharpness adjustment

You can adjust the sharpness of the boundary of text and lines. You can enhance the boundaries of text, lines and photos to make images appear clear. Moreover, jaggies (steps on the outline of lines) can also be suppressed.

❑**Printer driver**

▮▮▮ Change the setting of the Use Sharpness Filter option in the printer driver.

For Windows

`PCL` `PS` * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab. Change the setting of the Use Sharpness Filter option in the [Image Attribute] tab.
- Setting "4" provides the sharpest print image.
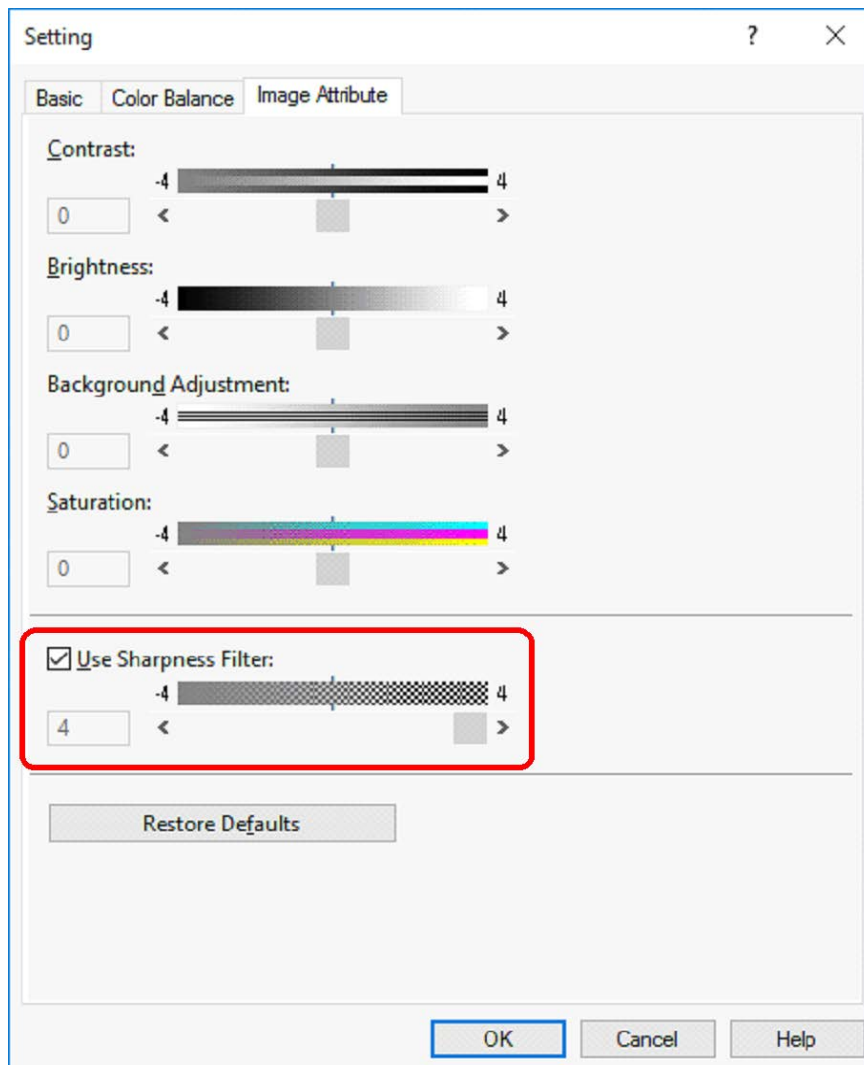
- Sharpness adjustment is not available when 1200 dpi is selected for the PS printer driver.

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For Mac

`Mac` * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 2]. Select the [Use Sharpness Filter] check box and change the setting of the Sharpness option.

• Setting "4" provides the sharpest print image.
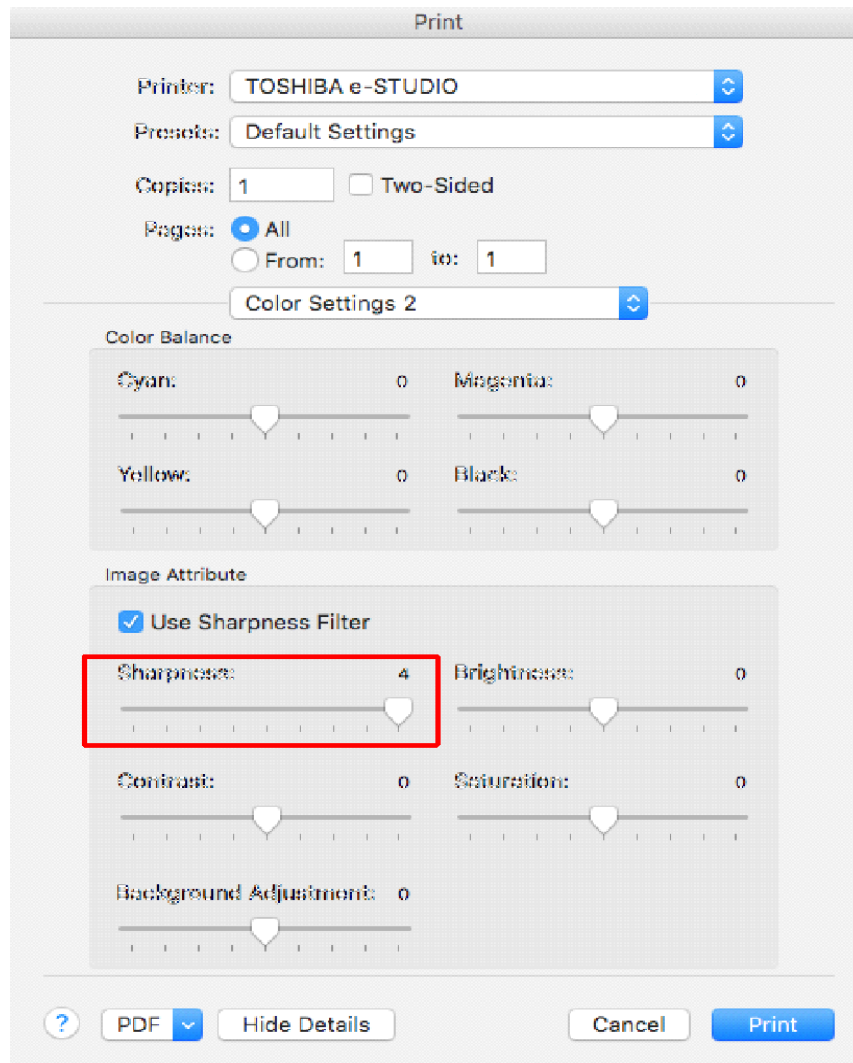
❑ **Self-diagnosis code**

To enhance thin lines and small-size text, perform the following adjustments.

Sharpness adjustment

Color mode	Image Quality Type	Code	Subcode	Recommended value	Acceptable value range	Default value
Full Color	General[*2]	05-8110	0/1/2	To make the image softer or to minimize moiré: Set a smaller value. To make the image or thin lines sharper: Set a larger value. To turn off sharpness: Set 0.	0 to 255	128/128/128
	Photograph	05-8111				128/0/128
	Presentation	05-8112				128/0/128
	Line Art[*2]	05-8113				128/128/128
	Red Seal Color[*2]	05-8109				128/128/128
	e-Filing[*3]	05-8107	-			128
Twin Color	-	05-8108	0/1/2			128/0/128
Black		05-8118[*1]				128/128/128
	e-Filing[*3]	05-8120	-			128

The following table shows the explanation about the subcodes.

Subcode	Object
0	Text
1	Graphic
2	Image

*1: When "1" is set for 05-7322, the meaning of the subcode is changed as below.

Subcode	Object
0	Text, Others
1	Thin line
2	Image

*2: When "1" is set for 05-8102, the meaning of the subcode is changed as below.

Subcode	Object
0	Text, Others
1	Thin line
2	Image

*3: The adjustment is reflected for printing documents saved by scan-to-box only.

- Change the value in increments of 10, while checking the image until the optimum value is obtained.
- The value "25" corresponds to one step in the sharpness adjustment in the printer driver.

  <Notes>
  - If too large a value is set, small text may be blurred.
  - If "0" is set, the image quality will not be changed even if the sharpness has been adjusted in the printer driver.

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The range to make thin lines and small text emphasized can also be changed.

Jaggies on thick lines can be suppressed by applying thin line adjustment to Graphic and increasing the sharpness setting level in the printer driver.

Thin line enhancement switchover

Color mode	PDL	Resolution	Code	Subcode	Recommended value	Acceptable value range	Default value
Full Color	PS	600 dpi	05-8102	0	0	0 to 1 0: Applied to all the contents of Image, Graphic and Text 1: Sharpness is applied to Image, small text for Text/thin lines of Graphic, and other objects	1
	PCL			1			
Black	PS	600 dpi	05-7322	0			
	PCL			1			

• When "0" is set, white voids on the boundary of colors may become conspicuous.

Prevention setting of white voids resulting from the sharpness adjustment

Setting the sharpness adjustment high makes white voids more likely to occur. You can reduce white voids by using the following code.

Color mode	Resolution	Code	Subcode	Recommended value	Acceptable value range	Default value
Full color, Black	600dpi	05-8114	0/1/2	Prevents white voids resulting from the sharpness adjustment. 0: Disabled 1: Enabled	0 to 1	0

The meaning of the sub code is as below.

Subcode	Object to be adjusted
0	Text
1	Graphics
2	Image

❑**Caution after the adjustment**

Nothing in particular

3.1.5   Color balance adjustment

You can adjust the color tone and density of printing as well as the reproducibility of halftones.

❑**Printer driver**

▐▐▐ Change the setting of the options in the [Color Balance] tab in the printer driver.

For Windows

PCL   PS   * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
Change the setting in the All Colors option or the Each Color option in the [Color Balance] tab.
• Change the value in increments by 4 steps first. Then change the value while checking the image until the optimum value is obtained.
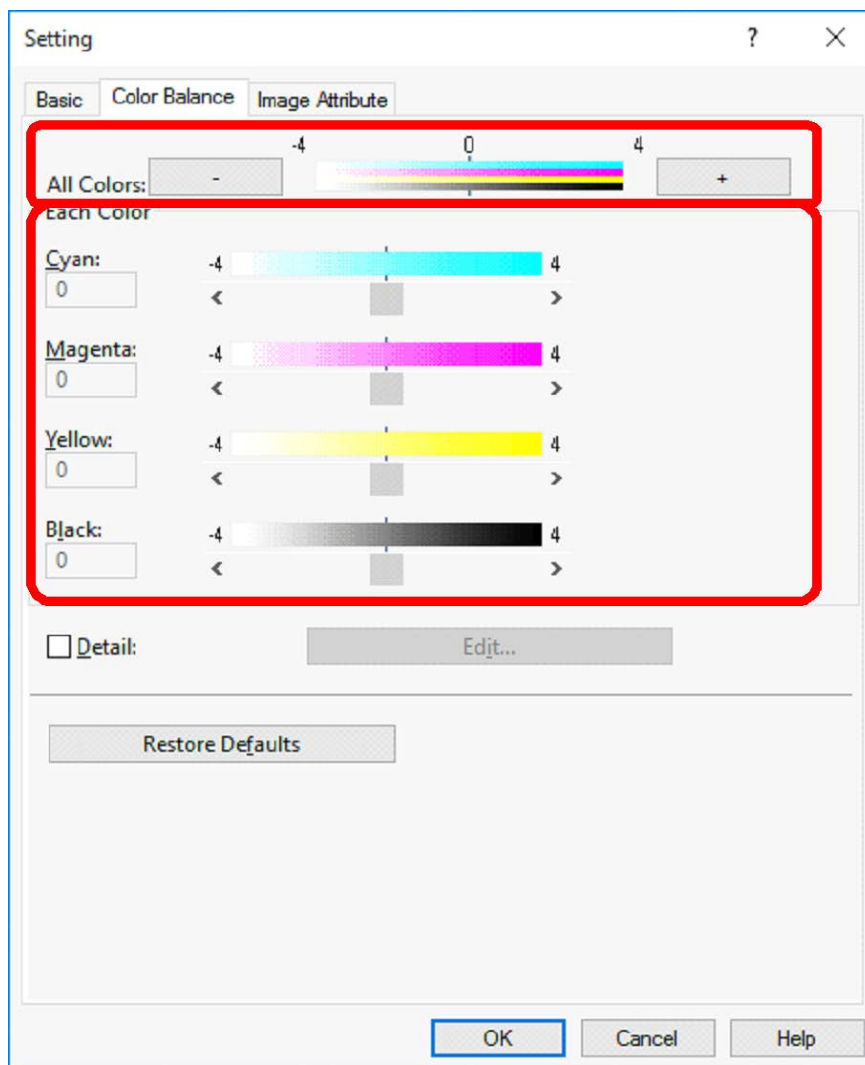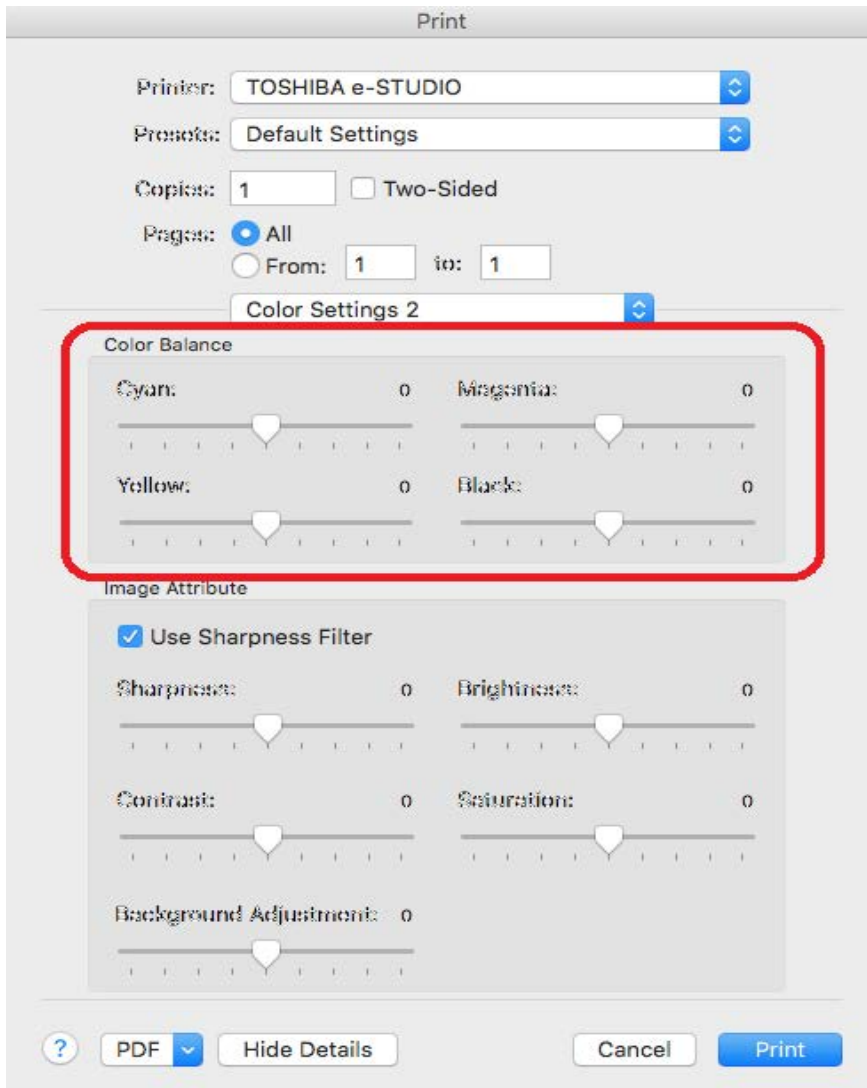
For Mac

Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 2]. Change the setting of the Color Balance option.

• Change the value in increments by 4 steps first. Then change the value while checking the image until the optimum value is obtained.

❏ **Self-diagnosis code**

Color balance adjustment

PDL (Resolution)	Halftone	Object	Color to adjust	Code	Subcode	Recommended value	Acceptable value range	Default value
PS (600dpi)	Smooth	Text, Graphic and Image	Y	05-8050	0/1/2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0-255	128
			M	05-8051	0/1/2			
			C	05-8052	0/1/2			
			K	05-8053	0/1/2			
	Detail	Text, Graphic and Image	Y	05-8054	0/1/2			
			M	05-8055	0/1/2			
			C	05-8056	0/1/2			
			K	05-8057	0/1/2			
	Auto	Text	Y	05-8256	0/1/2			
			M	05-8257	0/1/2			
			C	05-8258	0/1/2			
			K	05-8259	0/1/2			
		Graphic	Y	05-8260	0/1/2			
			M	05-8261	0/1/2			
			C	05-8262	0/1/2			
			K	05-8263	0/1/2			
		Image	Y	05-8264	0/1/2			
			M	05-8265	0/1/2			
			C	05-8266	0/1/2			
			K	05-8267	0/1/2			
PS (1200dpi)	Smooth	Text, Graphic and Image	Y	05-8268	0/1/2			
			M	05-8269	0/1/2			
			C	05-8270	0/1/2			
			K	05-8271	0/1/2			
	Detail	Text, Graphic and Image	Y	05-8272	0/1/2			
			M	05-8273	0/1/2			
			C	05-8274	0/1/2			
			K	05-8275	0/1/2			
	Auto	Text	Y	05-8164	0/1/2			
			M	05-8165	0/1/2			
			C	05-8166	0/1/2			
			K	05-8167	0/1/2			
		Graphic	Y	05-8168	0/1/2			
			M	05-8169	0/1/2			
			C	05-8170	0/1/2			
			K	05-8171	0/1/2			
		Image	Y	05-8172	0/1/2			
			M	05-8173	0/1/2			
			C	05-8174	0/1/2			
			K	05-8175	0/1/2			

PDL (Resolution)	Halftone	Object	Color to adjust	Code	Subcode	Recommended value	Acceptable value range	Default value
PCL (600dpi)	Smooth	Text, Graphic and Image	Y	05-8058	0/1/2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0-255	128
			M	05-8059	0/1/2			
			C	05-8060	0/1/2			
			K	05-8061	0/1/2			
	Detail	Text, Graphic and Image	Y	05-8062	0/1/2			
			M	05-8063	0/1/2			
			C	05-8064	0/1/2			
			K	05-8065	0/1/2			
	Auto	Text	Y	05-8276	0/1/2			
			M	05-8277	0/1/2			
			C	05-8278	0/1/2			
			K	05-8279	0/1/2			
		Graphic	Y	05-8280	0/1/2			
			M	05-8281	0/1/2			
			C	05-8282	0/1/2			
			K	05-8283	0/1/2			
		Image	Y	05-8284	0/1/2			
			M	05-8285	0/1/2			
			C	05-8286	0/1/2			
			K	05-8287	0/1/2			

The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	Low density area
1	Middle density area
2	High density area

- The Halftone option refers to how halftones are printed. Two options are available: [Smooth] which is intended to improve the reproducibility of gradation and [Detail] which is intended to print halftones in detail (with the high frequency).
  The Halftone option to be applied in printing can be selected from among the Halftone option in the printer driver (Windows) or in the print dialog box (Mac).
  The halftone which will be applied to images by the default setting ([Auto]) of the Halftone option is as below.

Apply to	Auto/Color				Black	Twin Color
	General	Photograph	Presentation	Line Art		
Text	Detail	Detail	Detail	Detail	Detail	Detail
Graphic (illustration, line, etc.)	Smooth	Smooth	Smooth	Detail	Smooth	Smooth
Image (Photograph, etc.)	Smooth	Smooth	Smooth	Detail	Smooth	Smooth

\<Notes\>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printing function by connecting to the MFP. After the adjustment, the changed values will be applied to all printouts for the Image Quality Type and Halftone options. Carefully perform the adjustment, being aware that the image quality for all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ **Caution after the adjustment**

Nothing in particular

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3.1.6　Thin line / text density adjustment

You can suppress jaggies by increasing the density of thin lines and small text.
For 600 dpi, the density for a thin line for Text and for Graphic can be increased by the following codes.
・When adjusting Black mode, confirm that "1" is set for 05-7322.
・When adjusting Full Color mode, confirm that "1" is set for 05-8102.

❑**Self-diagnosis code**

Thin line / text density adjustment

Color mode	PDL (Resolution)	Image Quality Type	Code	Subcode	Recommended value	Acceptable value range	Default value
Black	PS (600 dpi)	-	05-7340	-	Set a value larger than the default one.	0 to 8 The larger the value, the darker the thin line or small text becomes.	0
	PCL (600 dpi)	-	05-7341	-			
Full Color	PS (600 dpi)	General	05-8130	0			
		Line Art		3			
	PCL (600 dpi)	General	05-8131	0			
		Line Art		3			

For 1200 dpi, the density for the line for Graphic can be increased by the following code.

Color mode	PDL (Resolution)	Image Quality Type	Code	Subcode	Recommended value	Acceptable value range	Default value
Black	PS (1200 dpi)	-	05-8242	0	Set a value larger than the default one.	0 to 5 The larger the value, the darker the line becomes.	3
Full Color				1	Set a value larger than the default one.		1

In addition, for 1200 dpi, the density for the line of the density range to be increased can be set by the following code.

Color mode	PDL (Resolution)	Code	Subcode		Recommended value	Acceptable value range	Default value
Black	PS (1200 dpi)	05-8243	0	Adjustment range lower limit	-	0 to 255 When the lower limit value is decreased, lines with a lighter color will become the target for the adjustment. When the upper limit value is increased, lines with a darker color will become the target for the adjustment.	1
			1	Adjustment range upper limit	-		200
Full Color			2	Adjustment range lower limit	-		1
			3	Adjustment range upper limit	-		255

<Notes>
- When the value is increased while a 3D object such as Word Art in Microsoft Office is printed at 1200 dpi, the boundary may become darker.

❑**Caution after the adjustment**
Nothing in particular

3.1.7   Graphic line width adjustment

You can clearly print thin lines.

❑**Printer driver**

▌▊▊ Select the [Distinguish Thin Line] check box in the printer driver.

For Windows

PCL   PS

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
Select the [Distinguish Thin Lines] check box in the [Basic] tab.
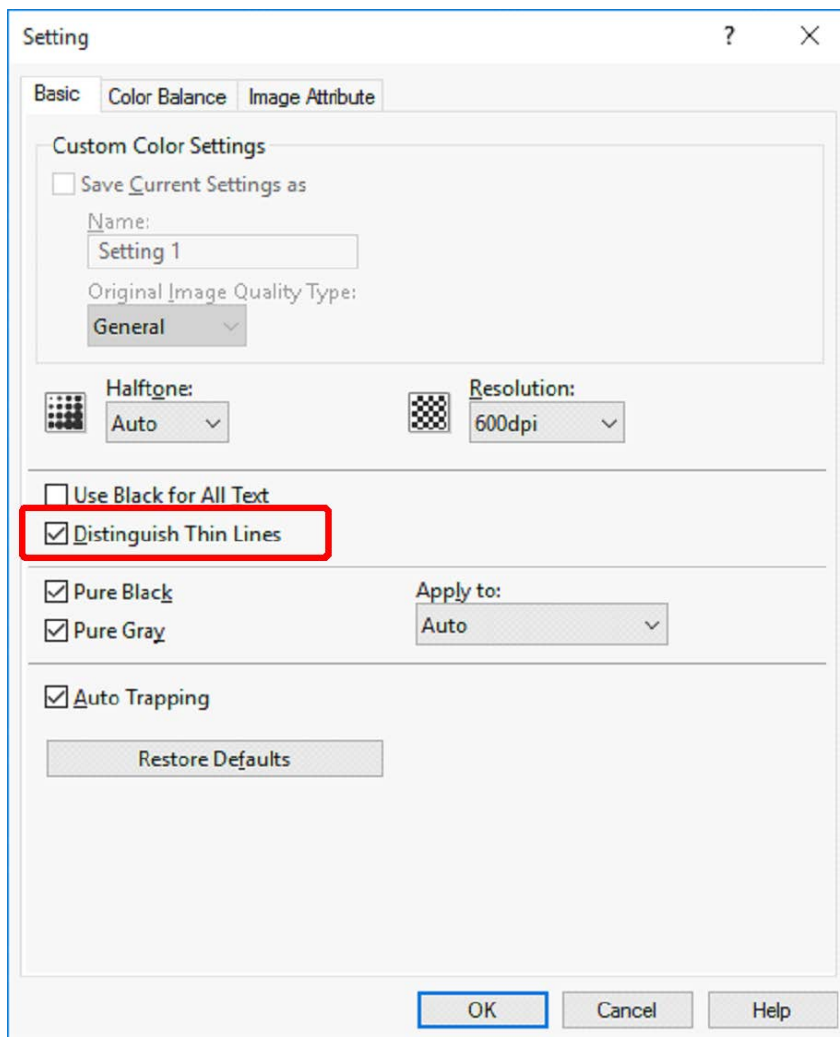
For Mac

Mac

Open the print dialog box and select [Print Mode]. Select the [Distinguish thin lines] check box.

After the value is changed, perform printing and check the image quality.

❑**Self-diagnosis code**

You can make thin lines thicker with the following codes when the [Distinguish Thin Line] check box is selected.

Graphic line width minimum value adjustment

Resolution	Color mode	Code	Recommended value	Acceptable value range	Default value
600 dpi	Common for Color and Black	05-8240	Set a value larger than the default one.	1 to 9	2
1200dpi	Common for Color and Black	05-8241	Set a value larger than the default one.	1 to 9	2

• The unit of the value is the number of dots (line thickness). Lines thinner than the value will become thicker as specified.
• Set the value while checking the image until the optimum value is obtained.

❑**Caution after the adjustment**

Nothing in particular

3.1.8 Blurred text in black adjustment

You can suppress blur in black text and black thin lines (such as a barcode).

▌▐▌ Change the values in [05 ADJUSTMENT MODE] to adjust blurred black text and black thin lines.
- The setting codes to be changed differ between the adjustment of the image quality in full color and twin color mode printing, and that for black mode printing. Select the adjustment procedure corresponding to the original type to be printed.

▐▌ **To adjust image quality in full color or twin color mode printing**

([Auto], [Color] or [Twin Color] is selected in the Color option in a PCL or PS printer driver. Or [Auto], [Color] or [Twin Color] is selected in the Color Type option on Macintosh.)

- The Color option is available in the [Basic] tab in the PCL and PS printer drivers. The Color Type option is available in [Color Settings 1] in the print dialog box on Macintosh.

<Notes>
- This adjustment is available only when the resolution is 600 dpi.

❑ **Self-diagnosis code**

Adjust blurred black text and black thin lines.

Blurred text in black adjustment

Resolution	Color	PDL	Code	Recommended value	Acceptable value range	Default value	
						e-STUDIO 2020AC/ 2520AC	e-STUDIO 2021AC/ 2521AC/ 2525AC/ 3025AC/ 3525AC/ 4525AC/ 5525AC/ 6525AC
600 dpi	Color	PS	05-8121	When a value larger than the default one is set, black text or black thin lines are thinly printed.	e-STUDIO2020AC/ 2520AC: 0 to 6 e-STUDIO2021AC/ 2521AC/2525AC/ 3025AC/3525AC/ 4525AC/5525AC/ 6525AC: 0 to 9	2	2
		PCL	05-8122				5
	Twin Color	PS	05-8124				2
		PCL	05-8125				5

▌ **To adjust image quality in black mode printing**

([Black] is selected in the Color option in a PCL or PS printer driver. Or [Mono] is selected in the Color Type option on Macintosh.)

- The Color option is available in the [Basic] tab in the PCL and PS printer drivers. The Color Type option is available in [Color Settings 1] in the print dialog box on Macintosh.

❏ **Self-diagnosis code**

Adjust blurred black text and black thin lines.

Blurred text in black adjustment

Resolution	Color	PDL	Code	Recommended value	Acceptable value range	Default value	
						e-STUDIO 2020AC/ 2520AC	e-STUDIO 2021AC/ 2521AC/ 2525AC/ 3025AC/ 3525AC/ 4525AC/ 5525AC/ 6525AC
600dpi	Black	PS	05-7325	When a value larger than the default one is set, black text or black thin lines are thinly printed.	e-STUDIO2020AC/ 2520AC: 0 to 6 e-STUDIO2021AC/ 2521AC/2525AC/ 3025AC/3525AC/ 4525AC/5525AC/ 6525AC: 0 to 9	2	2
		PCL	05-7326				5
1200dpi	Black	PS	05-7305		0~9	5	5

❏ **Caution after the adjustment**

Because faint black text or black thin lines may occur, perform the adjustment while checking the image.

3.1.9 Toner used amount adjustment

You can suppress the problem of the toner coming off dark lines created by overlapping of the 4 color toners when printing on paper with a rough surface.

☐ **Self-diagnosis code**

[**PCL**] [**PS**] [**Mac**] * This adjustment will have an effect only on Auto or Color mode printing.

Select [05 ADJUSTMENT MODE] and change the setting value for [8070]/[8071] or [8089]/[8090] to a smaller one, so that the limit value of the maximum toner adhering amount will become small.
- Adjust the value for [05] code corresponding to the print option to be applied (Paper type and Halftone).
- Printing on Mac is performed in PostScript.

Resolution	Halftone	Code	Subcode		Recommended value	Acceptable value range	Default value
			e-STUDIO 2020AC/ 2520AC/ 2021AC/ 2521AC	e-STUDIO 2525AC/ 3025AC/ 3525AC/ 4525AC/ 5525AC/ 6525AC			
600 dpi	Smooth	05-8071	0 to 4/7/8/ 11/12	0 to 12	Set a value smaller than the default.	0 to 255	Thin paper 98 Other paper types 128
	Detail	05-8070					
1200 dpi	Smooth	05-8090					
	Detail	05-8089					

- Set the value in increments of approximately 30, while checking the printouts until the optimum value is obtained.

Subcode	Paper type
0	Plain paper
1	Thick paper
2	Recycled paper
3	Thick paper 1
4	Thick paper 2
5	Thick paper 3*
6	Thick paper 4*
7	Special paper 1
8	Special paper 2
9	Special paper 3*
10	Thin paper*
11	Envelope
12	Transparency (OHP film)

* e-STUDIO2525AC/3025AC/3525AC/4525AC/5525AC/6525AC only

❑ Caution after the adjustment

The adjustment may cause dark areas such as shadows in photo images to look unnaturally faint.

Therefore, carefully perform the adjustment while checking the image.
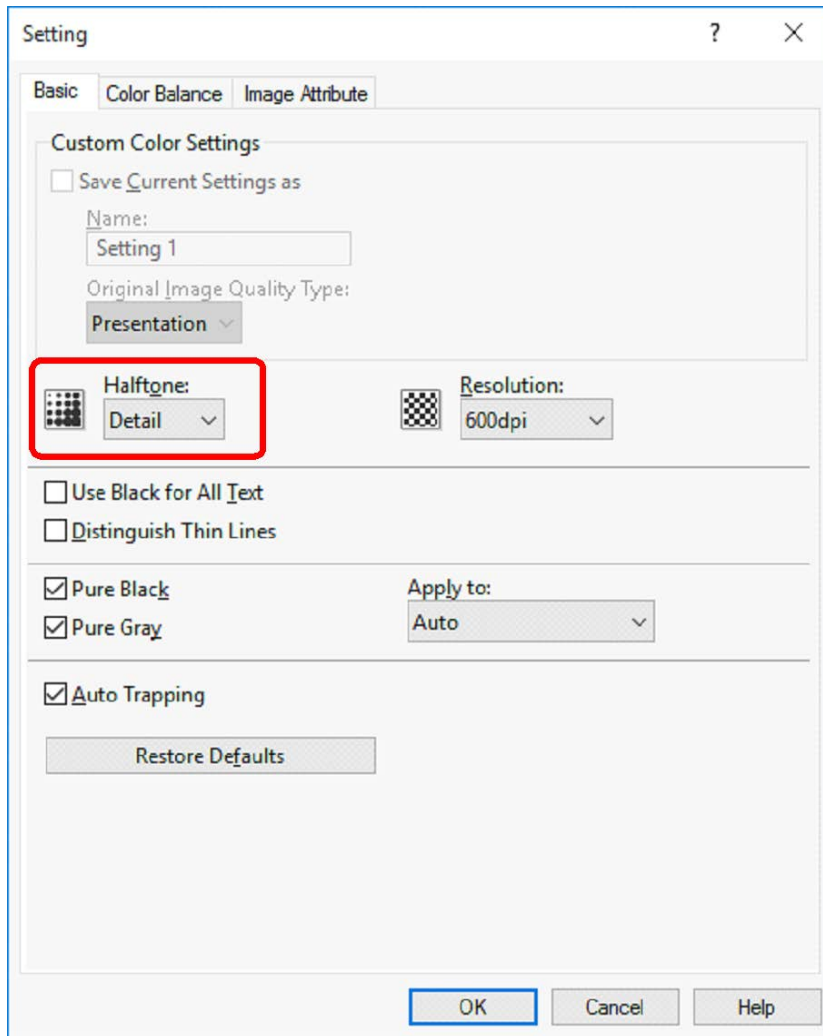
3.1.10   Halftone adjustment (when changing per user)

You can reduce jaggies by selecting [Detail] in the Halftone option.
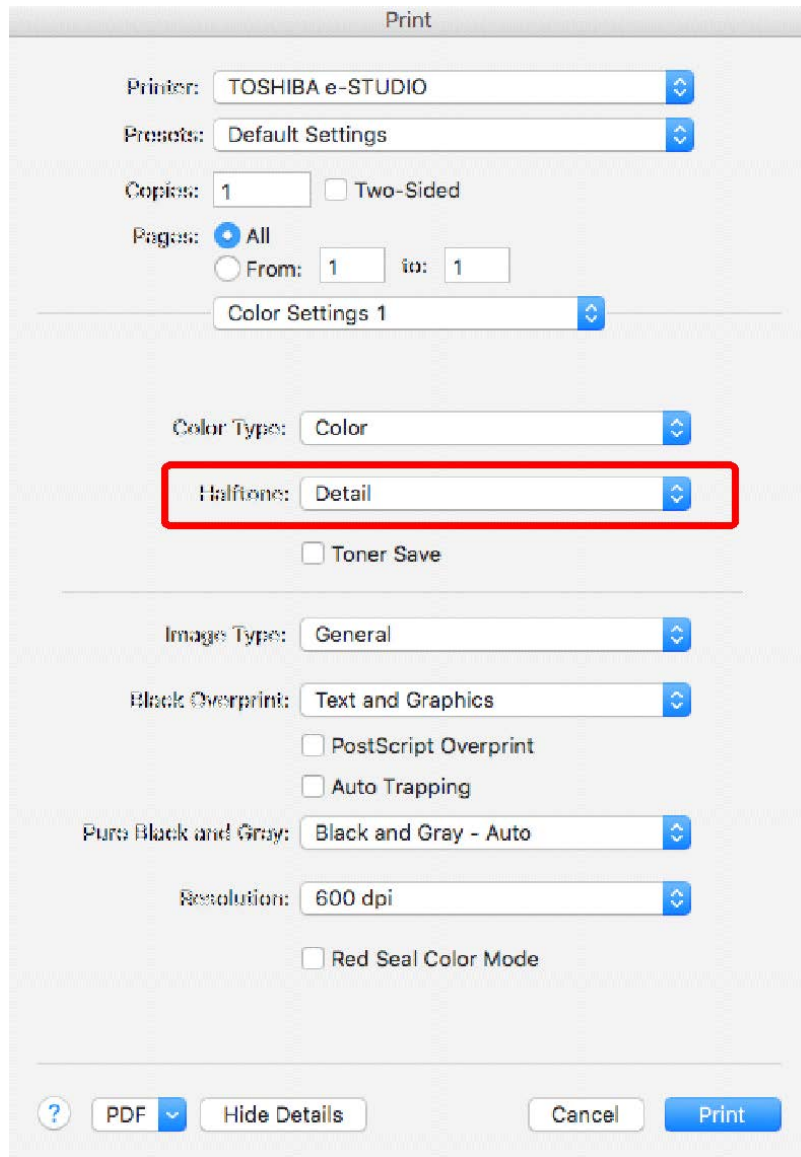
❑**Printer driver**

For Windows

PCL   PS

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
Select [Detail] in the Halftone option in the [Basic] tab.

For Mac

Open the print dialog box and select [Color Settings 1]. Select [Detail] in the Halftone option.

3.1.11　Halftone adjustment (when changing all print jobs)

You can enhance the gradation reproducibility of photos or graphics or reduce jitteriness by changing the setting of the Halftone option.
 • This adjustment will affect all the print jobs.

❑ **Control panel**

🖿 Change the roughness of images in 600 dpi printing.

Use the following steps to change the value.
(1)Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
(2)Press [Admin].
(3)Key in the 6 to 64-digit administrator password and press [OK].
(4)Press [General].
(5)Press [Smoothness of Print].
(6)Press [Low].

<Notes>
 • This setting is applied to print jobs with 600 dpi. Set this to color and black printing, respectively.

When the setting is changed, a confirmation screen, asking whether to perform automatic calibration (automatic gamma adjustment) is displayed. Be sure to press [OK] to carry it out.
For details, refer to "1.1.1　Automatic calibration".

❑ **Self-diagnosis code**

Screen switchover

Color mode	Code	Default value		Setting value	Description	Remarks
		e-STUDIO 2020AC/ 2520AC	e-STUDIO 2021AC/ 2521AC/ 2525AC/ 3025AC/ 3525AC/ 4525AC/ 5525AC/ 6525AC			
Full color / Twin color 600 dpi	08-8110	0	0	0	Fine (priority to gradation reproducibility of photo and graphic)	*1
				1	Rough (priority to stability of the image quality)	
	08-8111	0	1	0	Reduces unevenness of the printed image (reducing of the unevenness density of the uniform color)	*2
				1	Reduces jitteriness reduced (reducing of the jitteriness of the uniform color)	
	08-8112	0	1	0	Standard	*3
				1	Reduces white voids occurred on the text and boundary whose color is the same type of the background. (low)	
				2	Reduces white voids occurred on the text and boundary whose color is the same type of the background. (High)	
				3	Reduces white voids occurred on the text and boundary whose color is the same type of the background. (middle)	
Black 600 dpi	08-7310	0	0	0	Fine (priority to gradation reproducibility of photo and graphic)	*1
				1	Rough (priority to stability of the image quality)	
	08-7314	0	1	0	Standard	*4
				1	Reduces white voids occurred on the text and boundary whose color is the same type of the background. (low)	
				2	Reduces white voids occurred on the text and boundary whose color is the same type of the background. (High)	
				3	Reduces white voids occurred on the text and boundary whose color is the same type of the background. (middle)	

*1 This is linked to the setting of [Smoothness Of Print] on the control panel.

*2 This is available when 08-8110-1 is "1".

*3 This is available when 08-8110-1 is "0".

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*4 This is available when 08-7310-1 is "0".

<Notes>
- When the setting is changed, be sure to perform automatic gamma adjustment.
For details, refer to "1.1.1 Automatic calibration".

❑ **Caution after the adjustment**

If the setting is changed to a fine halftone, jitteriness or unevenness density tends to occur. Therefore, check the image and then switch the setting if necessary.

3.1.12 Pulse width adjustment

You can adjust smudged text in black.
- When the setting value is changed, be sure to perform automatic gamma adjustment.
- This will affect all of the density area. Therefore, pay special attention when changing the value.

❑ **e-STUDIO2020AC/2520AC**

Color mode	Resolution	Code	Subcode	Subcode description	Recommended value	Acceptable value range	Default value
Full color / Black	600 dpi	08-2620	0	Standard speed (Y)	Set a smaller value to make lines thinner.	2 to 92	70
			1	Standard speed (M)			
			2	Standard speed (C)			
			3	Standard speed (K)			
	1200 dpi	08-2622	0	Standard speed (Y)			
			1	Standard speed (M)			
			2	Standard speed (C)			
			3	Standard speed (K)			

- Set the same value for the standard speed and decelerating.
- When the value is changed, the images to be copied or faxed will be affected.

❑ **e-STUDIO2021AC/2521AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC**

Color mode	Code	Subcode	Subcode description	Recommended value	Acceptable value range	Default value
Full color / Black	05-4837	0	Low density area (K)	Set a smaller value to make lines thinner. (The value 50 or more is recommended.)	0 to 255	60
		1	High density area (K)			85
		2	Low density area (Y)			60
		3	High density area (Y)			85
		4	Low density area (M)			60
		5	High density area (M)			85
		6	Low density area (C)			60
		7	High density area (C)			85

- When the value is changed, the images to be copied or faxed will be affected.

❑ **Caution after the adjustment**
Nothing in particular

3.1.13 Resolution

You can adjust the resolution for printing.
 • The features for each resolution are as below.
   1200 dpi: Originals containing lots of thin lines and text (CAD drawings, etc.) and images containing lots of lines (graphs, etc.)
   600 dpi: Originals in which priority is to be given to the color or gradation when printing (photographs, design drawings, etc.)
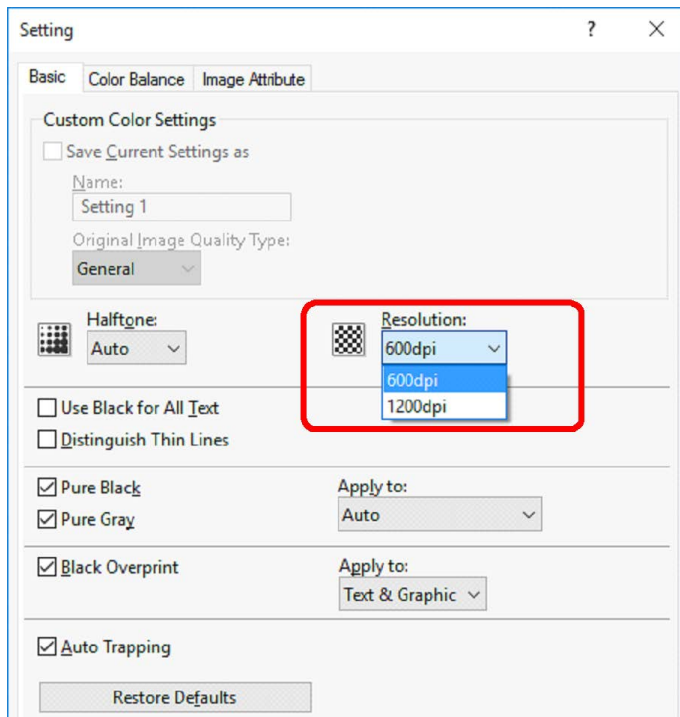
   <Notes>
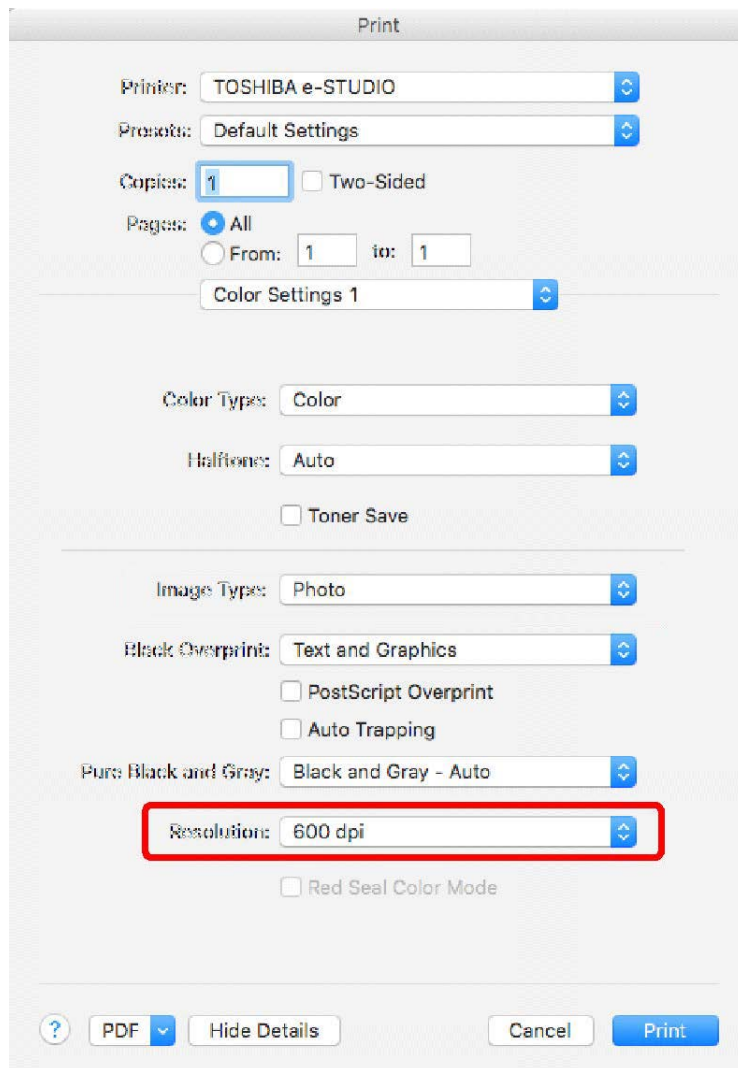   • [1200dpi] is selectable only for a PS printer driver.

❑**Printer driver**

   <u>**For Windows**</u>

   Press [Settings]. Change the setting of the Resolution option in the [Basic] tab.

For Mac

Open the print dialog box and select [Color Settings 2]. Change the setting of the Resolution option.

3.1.14   Halftone applicable range adjustment

You can change the type of halftone to be applied to each object.
They are applied when you select "Auto" in the halftone settings in the printer driver.

Resolution	Color mode	Original type	Item to be adjusted	Code	Sub code	Recommended value	Acceptable value	Default value
1200 dpi	Full color	General	Text	05-8192	0	-	1 to 2 1: Detail 2: High definition	1
			Graphic		1	-	0 to 1	0
			Image		2	-	0: Smooth 1: Detail	0
		Photographic	Text	05-8193	0	-	1 to 2 1: Detail 2: High definition	1
			Graphic		1	-	0 to 1	0
			Image		0	-	0: Smooth 1: Detail	0
		Presentation	Text	05-8194	1	-	1 to 2 1: Detail 2: High definition	1
			Graphic		2	-	0 to 1	0
			Image		0	-	0: Smooth 1: Detail	0
		Line art	Text	05-8195	0	-	1 to 2 1: Detail 2: High definition	1
			Graphic		1	-	0 to 1	1
			Image		2	-	0: Smooth 1: Detail	1
	Twin color	-	Text	05-8196	0	-	1 to 2 1: Detail 2: High definition	1
			Graphic		1	-	0 to 1	0
			Image		2	-	0: Smooth 1: Detail	0
	Black	-	Text	05-7382	0	-	1 to 2 1: Detail 2: High definition	1
			Graphic		1	-	0 to 1	0
			Image		2	-	0: Smooth 1: Detail	0
600 dpi	Full color / Black	-	Text	05-7383	0	-	0 to 1	1
			Graphic		1	-	0: Smooth	0
			Image		2	-	1: Detail	0

Types of halftone	Properties
Smooth	Prioritizes tones. It is effective for reproducing photos and gradation, etc.
Detail	Prioritizes reproduction of text. It is effective for suppressing jaggies on edges, and for fineness over smoothing.
High definition	Prioritizes reproduction of thin lines and fine text. It is effective for reproducing thin lines, fine text, and thin lines, and for intricacy over detail.

• After the setting of the Halftone option has been changed, perform automatic calibration.
   For details, refer to "1.1.1 Automatic calibration".
• When the halftone setting for Graphic is changed, stepped gaps or discoloration tend to occur in areas where colors have gradated smoothly.

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3.1.15 Brightness adjustment

Perform this adjustment in order to carry out printing by easily adjusting the brightness.

❏ Printer driver

Change the setting of the Brightness option in the printer driver.

> **<Tip>**
> • The brightness adjustment does not reflect in black text (CMY = 100%, K = 100% or RGB = 0%).

For Windows

PCL PS

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab. Change the setting of the Brightness option in the [Image Attribute] tab.
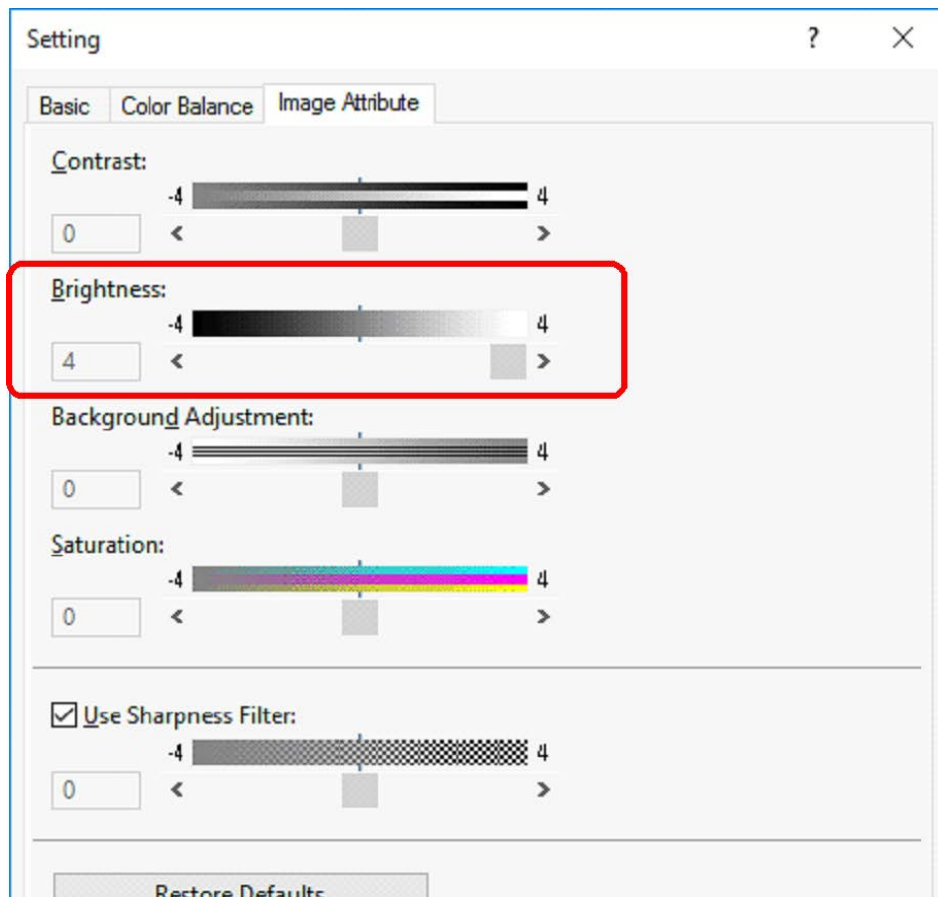
For Mac

Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 2]. Change the setting of the Brightness option.
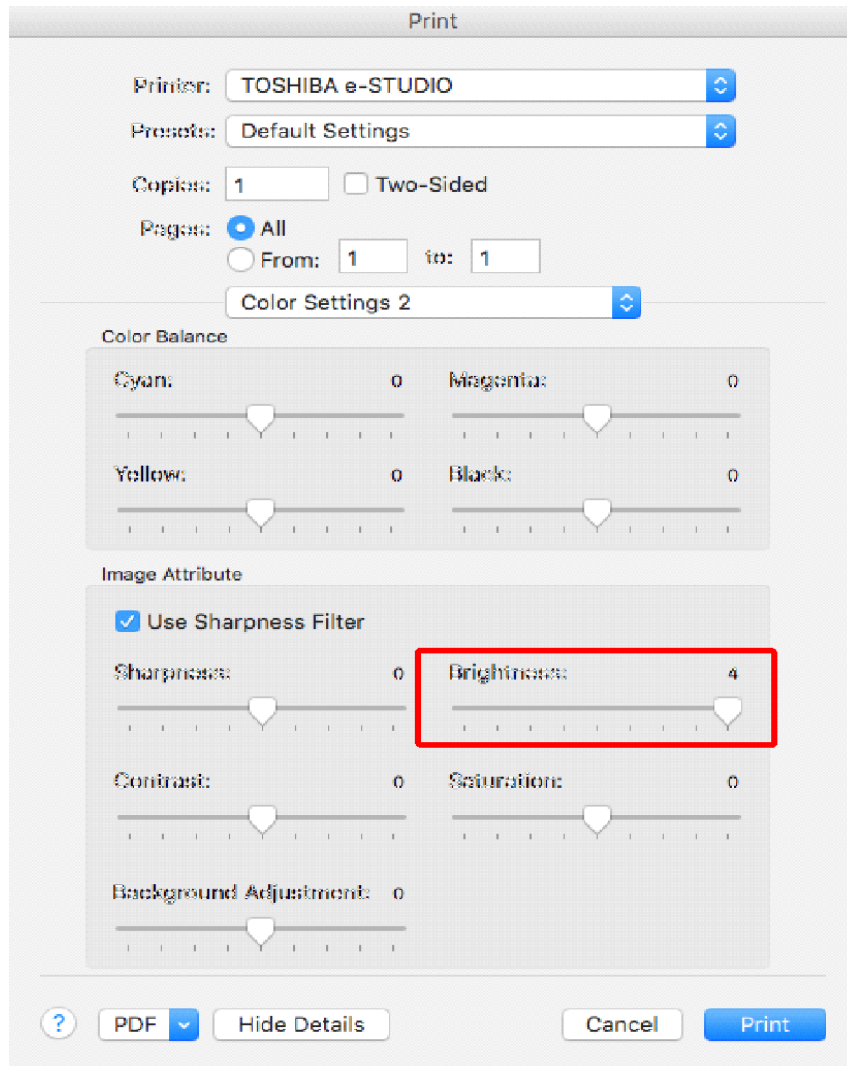
❑ **Caution after the adjustment**

Nothing in particular

3.1.16   Restrictions on printing functions

When this MFP is used as a printer, available printing features differ depending on the settings of the color mode and resolution. The following table shows the relationship between the settings of the color mode and resolution and the available printing features.

Printing features	600 dpi			1200 dpi (PS only)		
	Auto/Color	Twin Color	Black	Auto/Color	Twin Color	Black
Image Quality Type						
General	Yes	-	-	Yes	-	-
Photograph	Yes	-	-	-	-	-
Presentation	Yes	-	-	-	-	-
Line Art	Yes	-	-	Yes	-	-
Advanced	Yes	-	-	Yes	-	-
Image Quality - Basic						
Halftone	Yes	Yes	Yes	Yes	-	Yes
Use Black for All Text	Yes	Yes	Yes	Yes	-	Yes
Pure Black	Yes	-	-	Yes	-	-
Pure Gray	Yes	-	-	Yes	-	-
Black Over Print	Yes [*1]	-	-	Yes	-	-
PostScript Over Print	Yes [*1]	-	-	Yes [*1]	-	-
Distinguish Thin Lines	Yes	Yes	Yes	Yes	-	Yes
Image Quality						
Color Balance	Yes	Yes	Yes [*2]	Yes	-	Yes [*2]
Contrast	Yes	Yes	Yes	Yes	-	Yes
Brightness	Yes	Yes	Yes	Yes	-	Yes
Background adjustment	Yes	Yes	Yes	Yes	-	Yes
Saturation	Yes	-	-	Yes	-	-
Sharpness	Yes	Yes	Yes	-	-	-
Auto Trapping	Yes	Yes	-	-	-	-
Others						
Toner Save	Yes	Yes	Yes	Yes	-	Yes
Toner Limit	Yes	Yes	Yes	Yes	-	Yes
Calibration	Yes	Yes	Yes	Yes	-	Yes

*1: Applicable only to PS printer drivers

*2: Applicable only to black (K toner)

3.2　To Make Printing Suitable for Original

❑ Explanation

You can obtain clearer printing results by selecting a printer driver or the image quality type suitable for an original.

\<Tip\>
- If you use the installer's "Recommended installation", only the Universal Printer 2 is installed. Therefore, it is necessary to install any other printer drivers separately, if they need to be used.

❑ Adjustment type

Type		Function to be affected
a	Printer driver	Print
b	Color mode	Print
c	Image Quality Type	Print
d	Resolution	Print

❑ Adjustment method

a. Printer driver

Select the printer driver suitable for the print data.
- For details on how to install the printer driver, refer to the "Installation".
- For details on how to select the printer driver, refer to the "Print".
- The features for each printer driver are as below.

Printer driver	Features
Universal Printer 2 driver	This is a printer driver that contains both PCL and PS. It can be widely used for printing Microsoft Office applications. It is suitable to print RGB data for color originals.
Universal PS printer driver	This printer driver is suitable to perform printing from applications in compliance with PostScript used for DTP operations. This is suitable to print both RGB data and CMYK data for color originals.

PCL   PS   Mac

b. Color mode

Perform printing with a color mode suitable for the original.

• The printer driver automatically judges the color mode of the original. Due to this, full-color originals are printed in Color mode and black-and-white originals are printed in Black mode. You can also select the color mode manually.

Color	Description
Full Color	Prints all pages in Full Color mode.
Black	Prints all pages in Black mode.
Auto Color	Automatically judges the type of each color on originals. Full-color originals are printed in Full Color mode and black-and-white originals are printed in Black mode.
Twin Color	Performs printing in black and the specified color.

c. Image Quality Type

Select the image quality type suitable for the original.

<Tip>

• This adjustment will have an effect only when files created by general applications, such as Microsoft Office, are printed by PostScript (PS, Mac).
• This will have no effect on printing files created by graphics applications (e.g. Illustrator) or DTP applications (e.g. QuarkXPress), or on printing PDF files with CMYK colors created on these applications. In a Windows PS driver, this will have an effect by deselecting the [Use PostScript Passthrough] check box in the PostScript Setting option in the [Others] tab. (This is not available in a Mac printer driver.) In this case, the color tone may be changed and the image quality may be diminished depending on the type of file.

For Windows

| PCL | PS | * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver and then change the setting in the Image Quality Type option in the [Image Quality] tab.
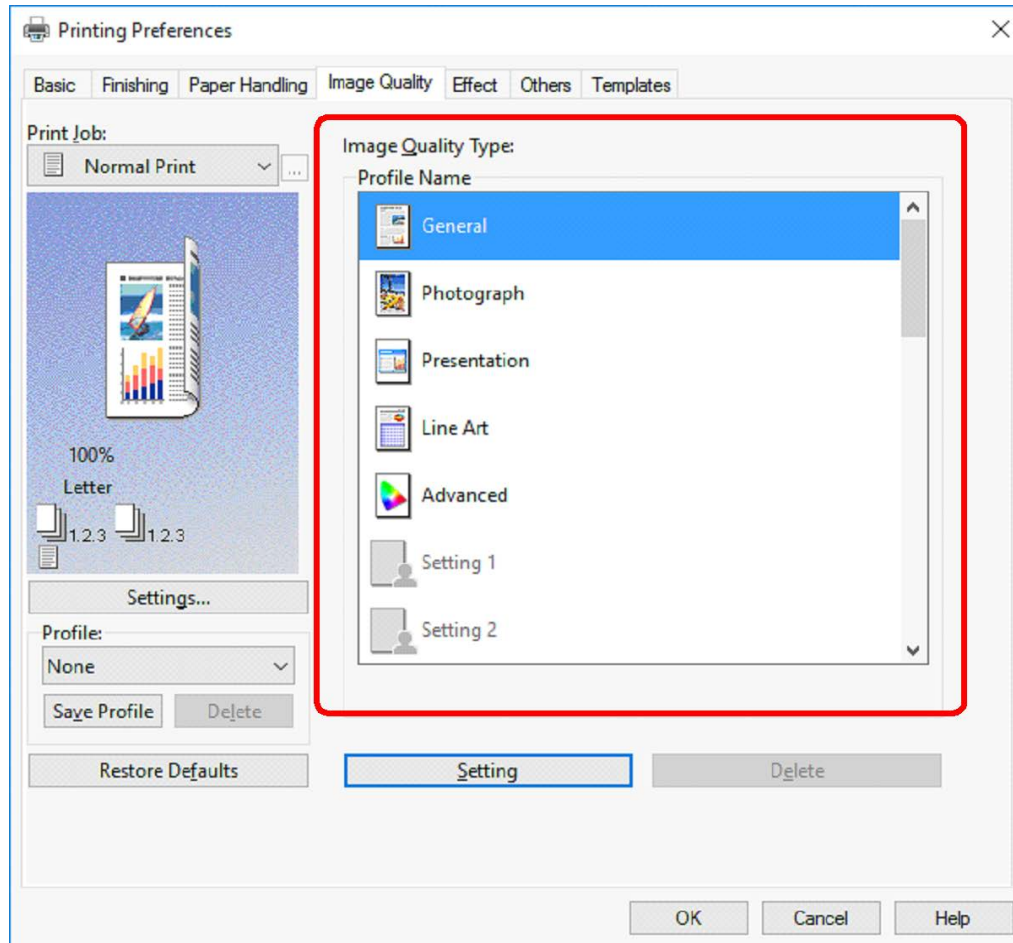
For Mac

Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 1]. Change the setting of the Image Type option.
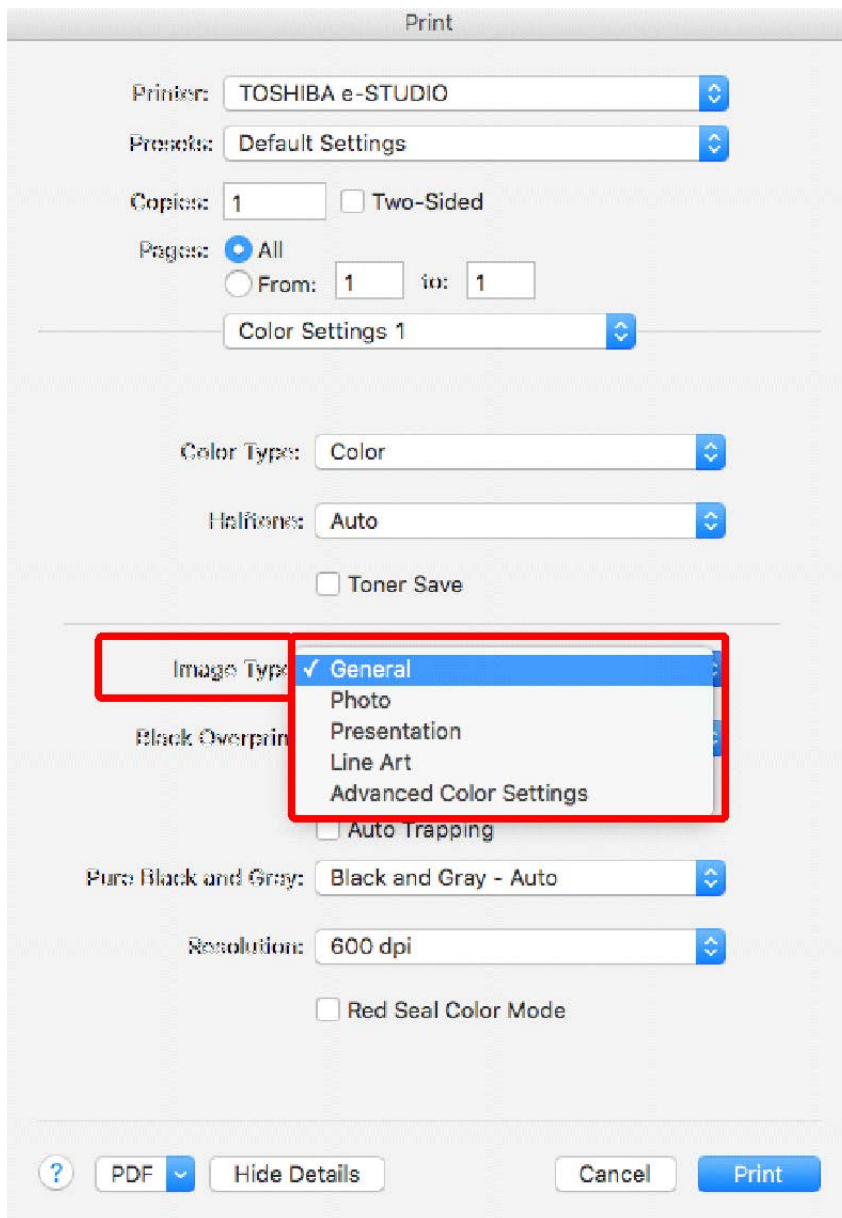
• The features for each image quality type are as below.

Features for each image quality type

Color mode	Image Quality Type	Features	Suitable original	Suitability			
				Text	Photograph	Graphic	Line
Full Color	General	Text, photographs and graphics are printed clearly in a balanced manner.	• Contains text, photos and graphics	Better	Better	Normal	Normal
	Photograph	Priority is given to the reproducibility of photos. Printing can be made in a similar color tone to a monitor with sRGB specified.	• Photograph	Bad	Best	Bad	Bad
	Presentation	Priority is given to the reproducibility of the color saturation. The text and graphics in the image are printed darker and sharper with a vivid color tone. The evenness density may be decreased below the "Standard" one.	• Presentation originals • POP	Best	Bad	Best	Normal
	Line Art	Priority is given to the reproducibility of thin lines. Thin lines can be printed clearly by using a fine screen and a darker color tone. This is also suitable for printing photos. The evenness density may be decreased below the "Standard" one.	• CAD Drawings • Barcodes • POP • Contains text, photos and graphics	Best	Normal	Better	Best
	Advanced	Printing is performed in Advanced mode.	• Originals or photos contain text, photos and graphics	Better	Best	Normal	Normal
Twin Color	-	Text, photographs and graphics are printed clearly in a balanced manner.	• Contains text, photos and graphics	Better	Better	Normal	Normal
Black	-	Text, photographs and graphics are printed clearly in a balanced manner.	• Contains text, photos and graphics	Better	Better	Normal	Normal

• For details on how to use, refer to "3.13 To Use ICC Profile".

PS

d. Resolution

Change the resolution.

For details, refer to "3.1.13 Resolution".

❑ **Caution after the adjustment**

Nothing in particular

3.3 To Maintain Steady Color Tone

3.3.1 To Maintain a steady color tone on plain paper
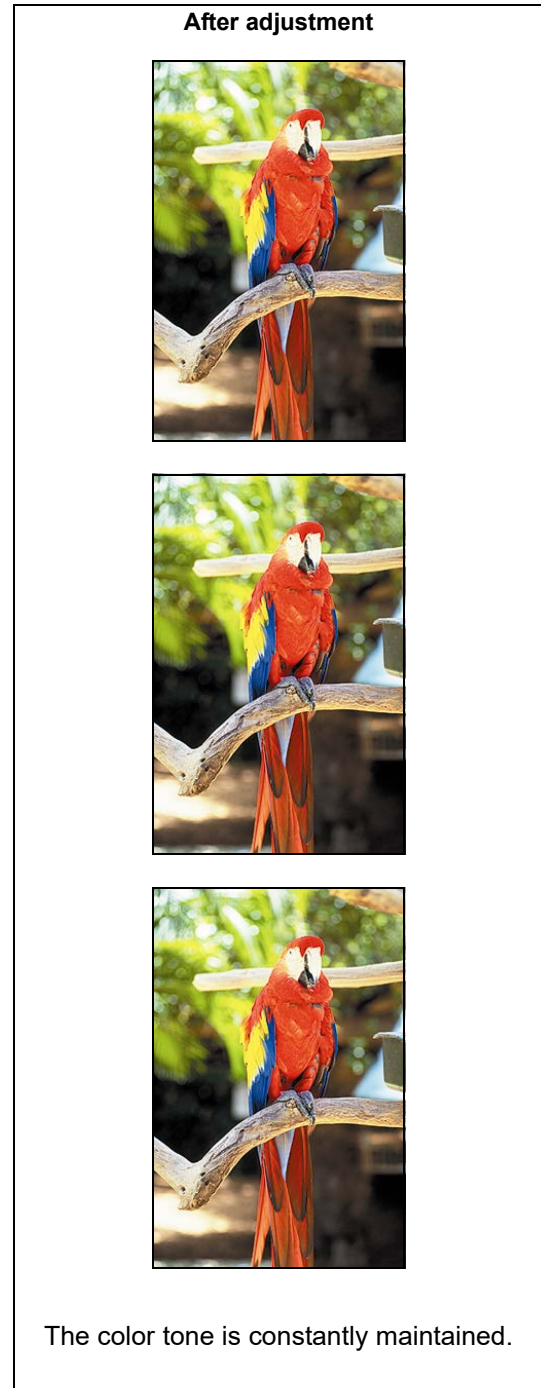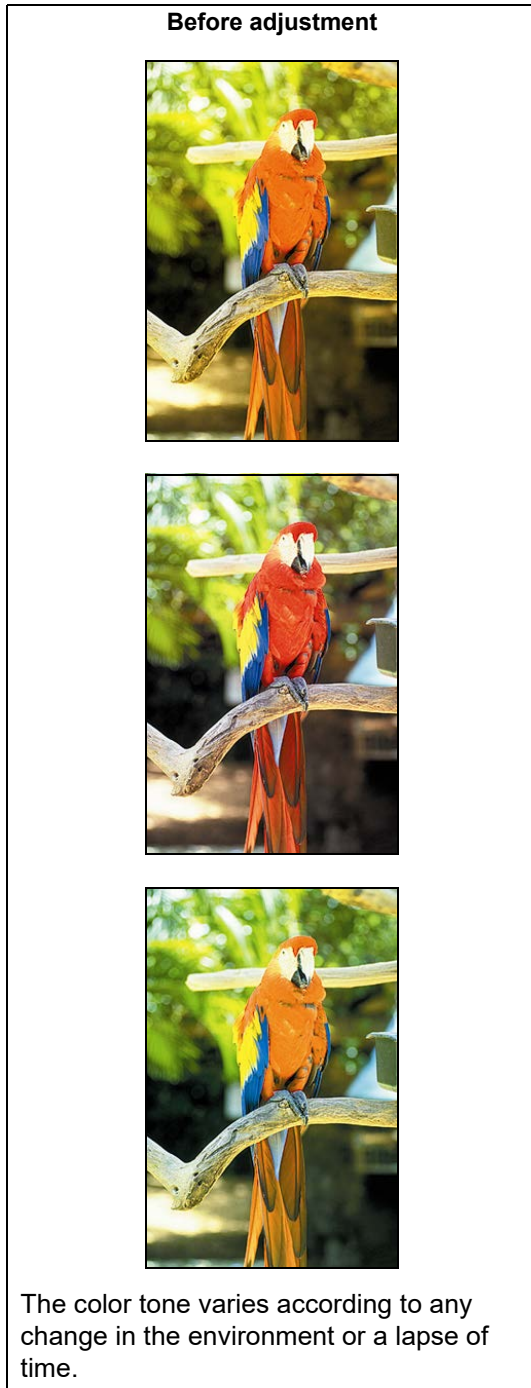
Before adjustment

The color tone varies according to any change in the environment or a lapse of time.

After adjustment

The color tone is constantly maintained.

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❑**Explanation**

The color tone varies according to any change in the environment, replacement of consumables and so forth. Perform this adjustment periodically in order to constantly maintain a steady color tone in printouts.

❑**Adjustment type**

Type		Function to be affected
a	Automatic calibration	Print

❑**Adjustment method**

PCL   PS   Mac

a. Automatic calibration

Perform automatic calibration for 600 dpi and 1200 dpi respectively to correct variations in image density.
For details, refer to "1.1.1 Automatic calibration".

❑**Caution after the adjustment**

Nothing in particular

3.3.2 To maintain a steady color tone on thick paper or special paper
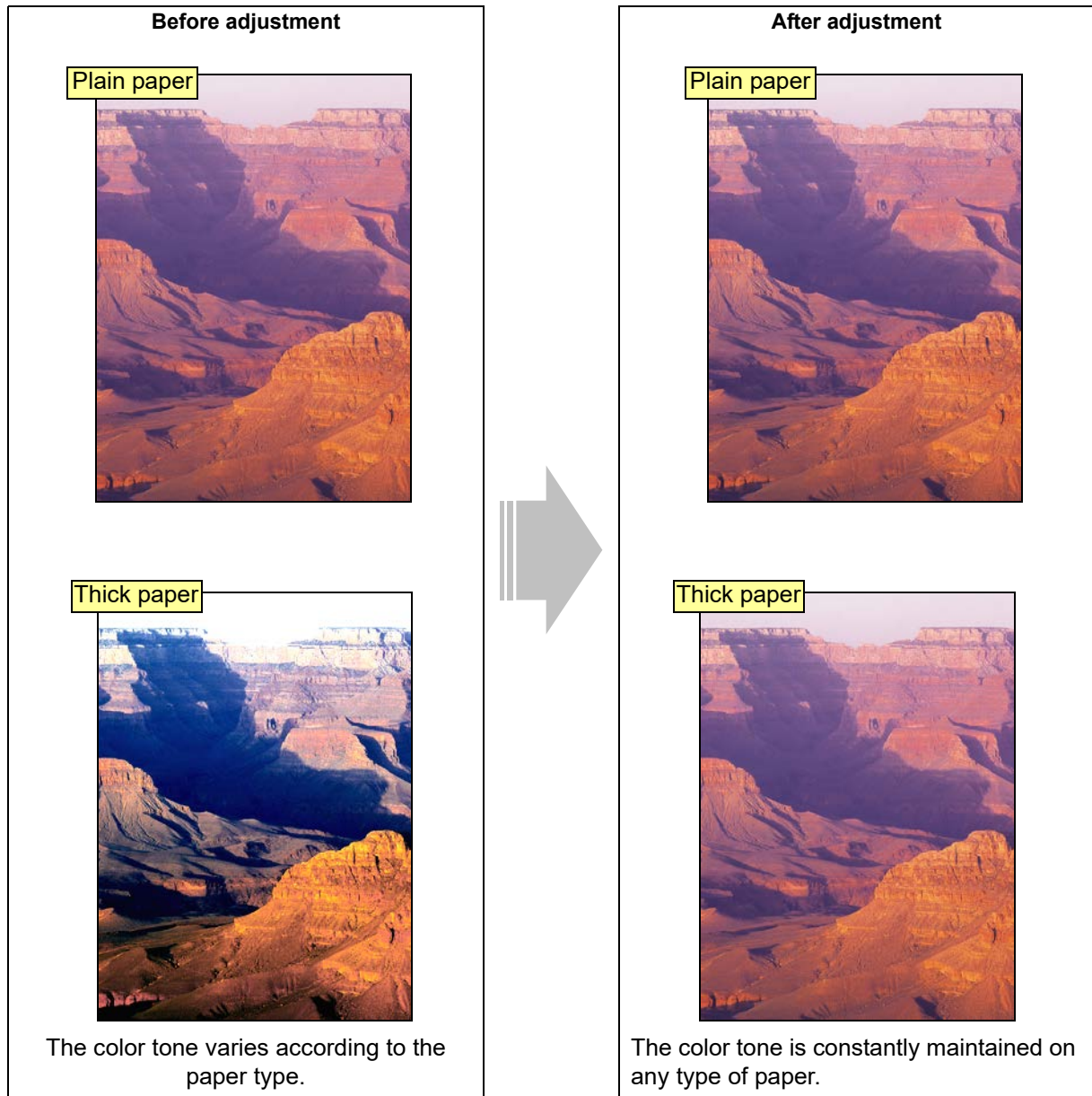
Before adjustment

Plain paper

Thick paper

The color tone varies according to the paper type.

After adjustment

Plain paper

Thick paper

The color tone is constantly maintained on any type of paper.

❑ **Explanation**

The color tone varies according to any change in the environment, replacement of consumables and so forth. Moreover, the amount of change varies significantly according to the paper type. Perform this adjustment periodically corresponding to the paper type in order to maintain a steady color tone constantly on any type of paper.

❑ **Adjustment type**

Type		Function to be affected
a	Automatic calibration	Print

❑ **Adjustment method**

PCL　　PS　　**Mac**

▮▯▮ a. Automatic calibration

Perform automatic calibration for 600 dpi and 1200 dpi by using the paper to be adjusted.

For details, refer to "1.1.1 Automatic calibration".

❑ **Caution after the adjustment**

Nothing in particular

3.4   To Adjust Colors

❑**Explanation**

Perform this adjustment in order to adjust the color reproducibility of printouts.

・Refer to the procedure corresponding to the purposes.

3.4.1   To adjust color tone and density

Before adjustment
The natural color tone is obtained.

After adjustment
The desired color tone is obtained. (E.g.: When yellowness is enhanced)
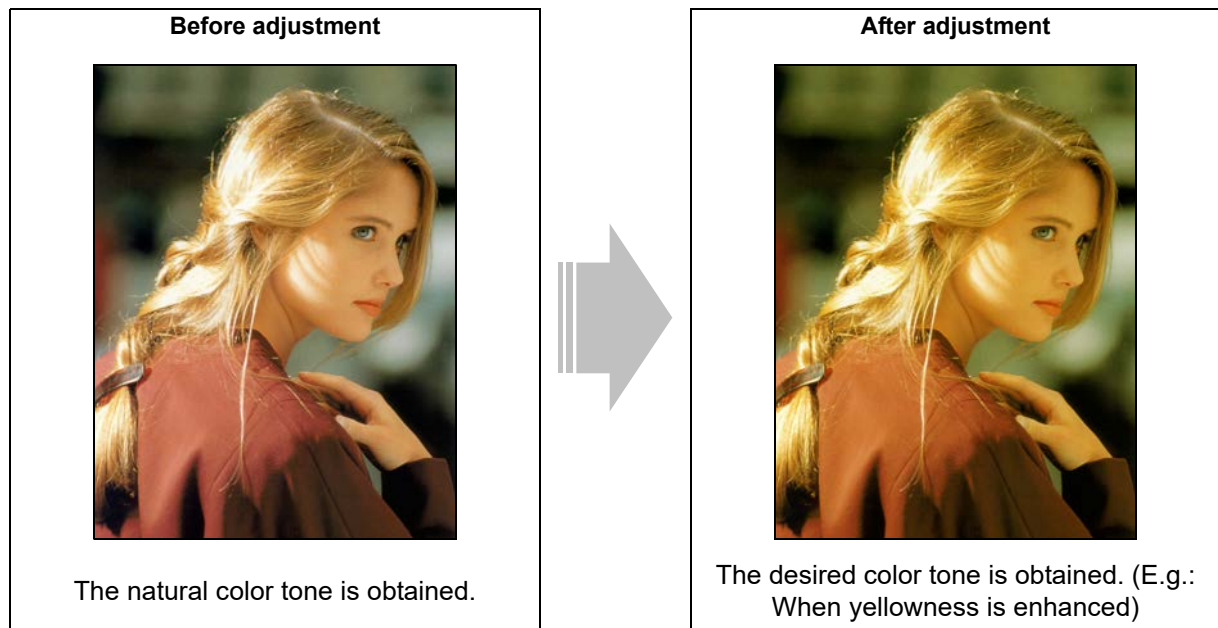
❑**Explanation**

Perform this adjustment in order to change the color tone or darkness of printouts and reproducibility of halftones in accordance with the content of the originals or the user's requirements.

❑**Adjustment type**

Type		Function to be affected
a	Color balance adjustment	Print
b	Brightness adjustment	Print

❑**Adjustment method**

a. Color balance adjustment

For details, refer to "3.1.5 Color balance adjustment".

b. Brightness adjustment

For details, refer to "3.1.15 Brightness adjustment".

❑**Caution after the adjustment**

Nothing in particular

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3.4.2   To closely match the color tone on the monitor

As viewed on the monitor

Before adjustment	After adjustment

The color tone as viewed on the monitor looks different from the printout.

The color tone of the printout is closely matched with the one on the monitor.
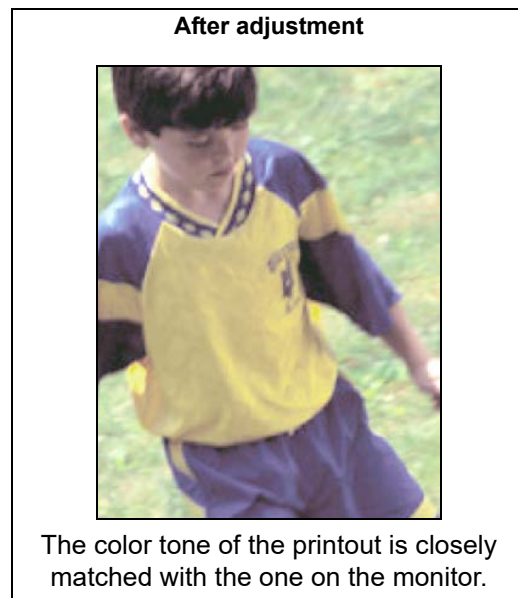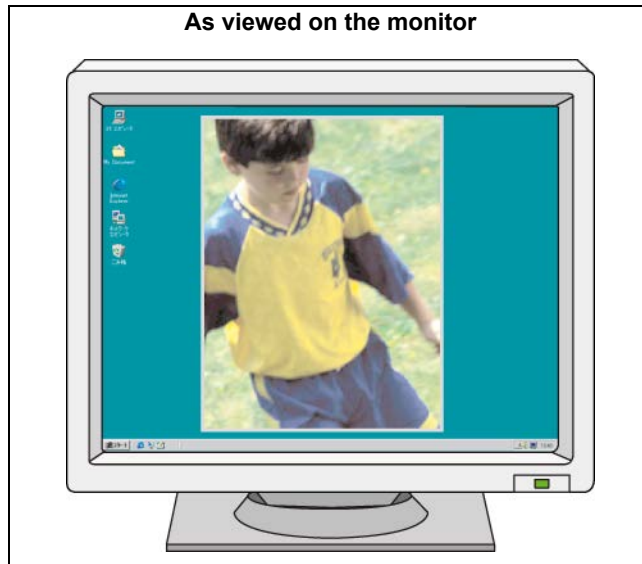
❑**Explanation**

The color tone setting of printouts is initially specified so that they are printed while providing the maximum saturation within the range of colors reproducible in printing. In general, colors, that can be reproduced, vary depending on whether they are reproduced in the printout or on the monitor (or depending on whether they are reproduced in "ink" or with "light"). Consequently, the color tone on printouts cannot be perfectly matched with that on the monitor. Perform this adjustment in order to closely match the color tone on the monitor.

- This adjustment will be effective in closely matching the color tone in printouts with that on the monitor, if the sRGB is selected as a color space. Therefore, note that it may not be matched with the color tone on the monitor that does not support sRGB or if a color space other than sRGB is selected.

❑Adjustment type

Type		Function to be affected
a	Image Quality Type	Print

❑Adjustment method

▊▊ a. Image Quality Type

Select [Photograph] in the Image Quality Type option.

<Tip>
- This adjustment will have an effect only when files created by general applications, such as Microsoft Office, are printed by PostScript (PS, Mac).
- This will have no effect on printing files created by graphics applications (e.g. Illustrator) or DTP applications (e.g. QuarkXPress), or on printing PDF files with CMYK colors created on these applications. In a Windows PS driver, this will have an effect by deselecting the [Use PostScript Passthrough] check box in the PostScript Setting option in the [Others] tab. (This is not available in a Mac printer driver.) In this case, the color tone may be changed and the image quality may be diminished depending on the type of file.

For Windows

<u>PCL</u> <u>PS</u> * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver. Select [Photograph] in the Image Quality Type option in the [Image Quality] tab.
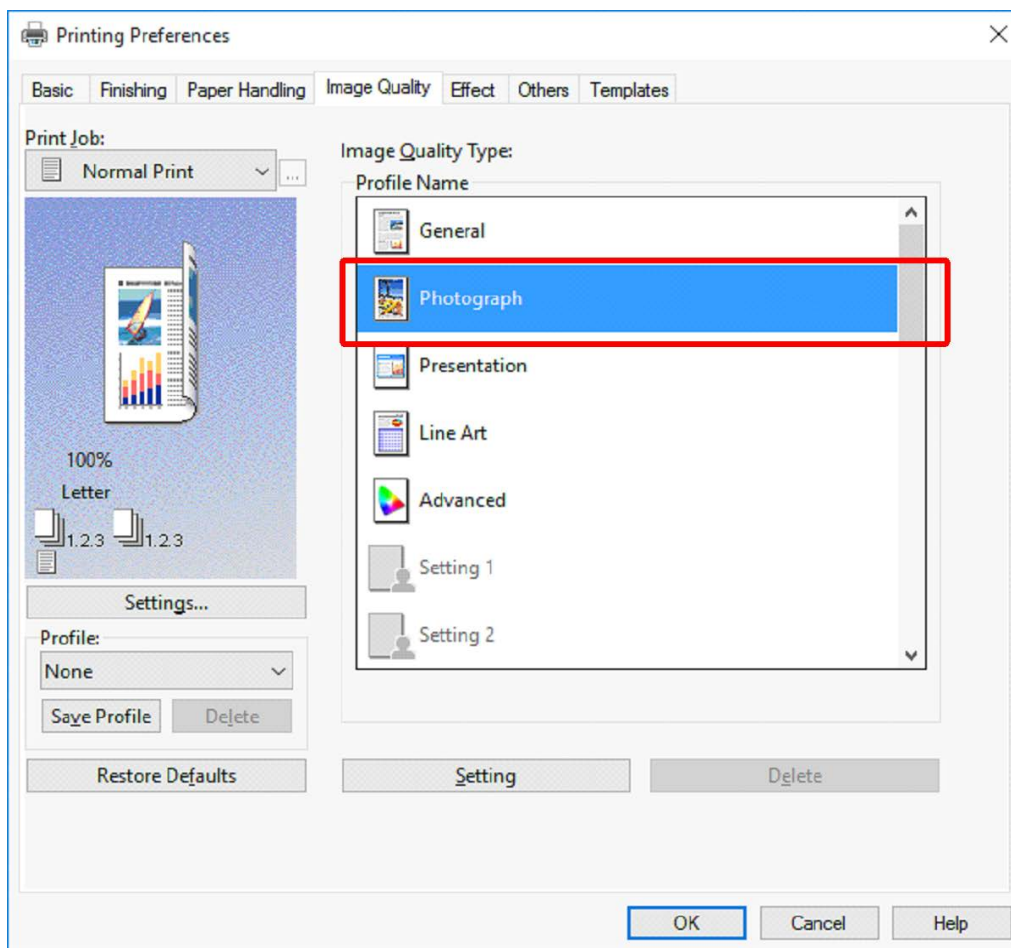
For Mac

`Mac` * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 1]. Select [Photo] in the Image Type option.
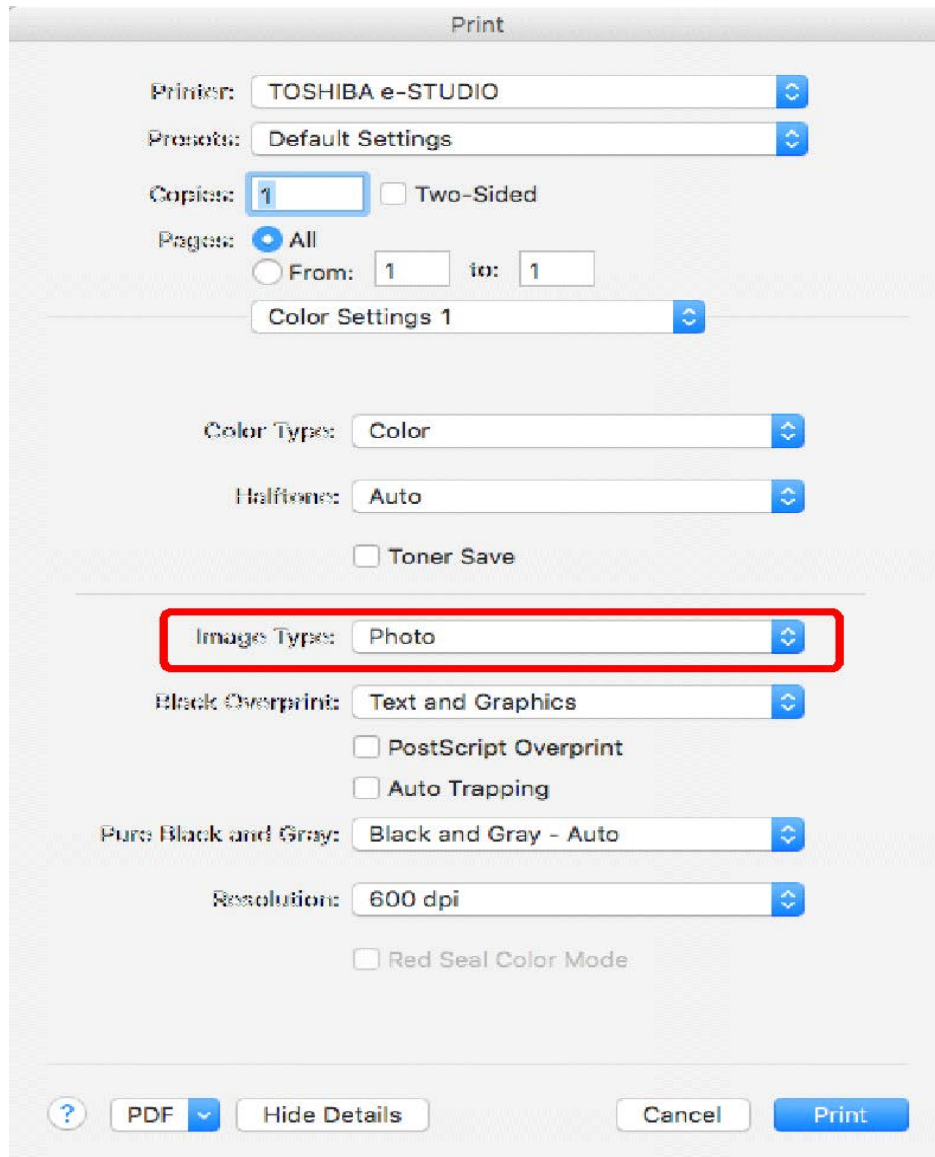
❑ **Caution after the adjustment**
Nothing in particular

❑ **Remarks**
- In order to obtain the maximum effectiveness of this adjustment, sRGB must be set in the color space of the monitor. Therefore, if the monitor does not support sRGB or if color management cannot be performed, the effectiveness of the adjustment may be insufficient.
- In general, the range of colors reproducible in toner colors is narrower than those on the monitor. Therefore, it is impossible to reproduce color saturation closely matching the true colors, as viewed on the monitor.

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3.4.3 To maintain a uniform gray color tone (Maintains consistency in gray among text, photos and graphics)
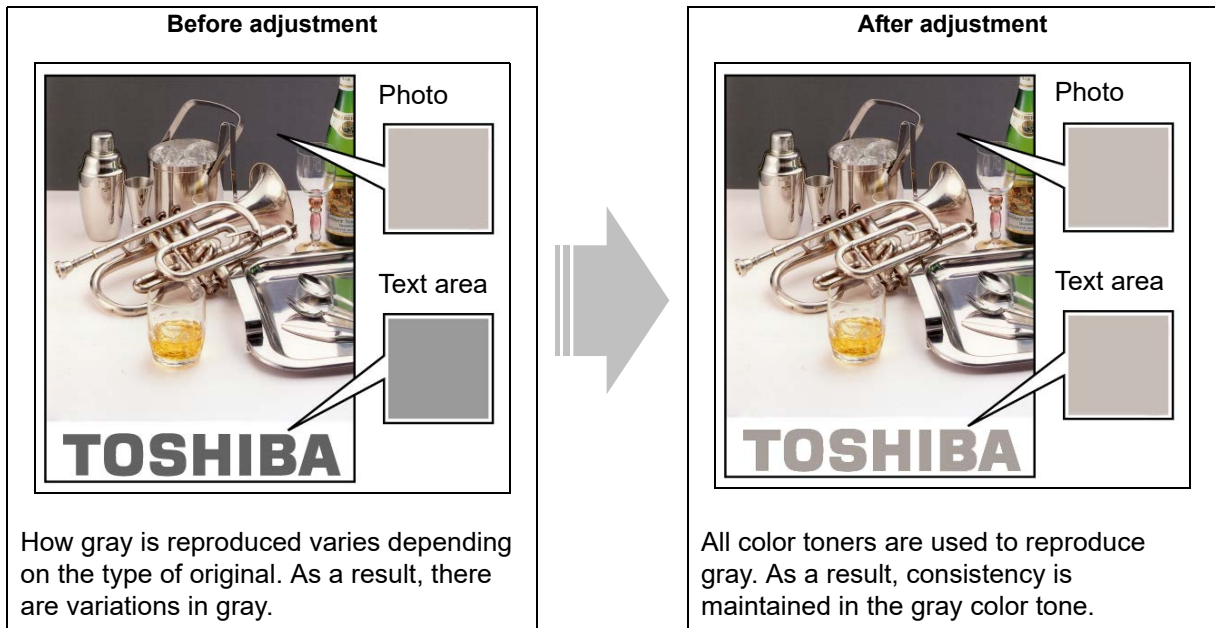
Before adjustment	After adjustment
Photo / Text area	Photo / Text area
How gray is reproduced varies depending on the type of original. As a result, there are variations in gray.	All color toners are used to reproduce gray. As a result, consistency is maintained in the gray color tone.

❑ **Explanation**

For printing, only K toner is usually used to reproduce gray areas of drawing data, lines and text. On the other hand, all color toners (C, M, Y and K) are used to reproduce gray areas of image data, such as BMP, GIF, JPEG and TIFF. This provides a deeper gray in printouts. Perform this adjustment in order to maintain consistency in the gray color tone between drawing data and image data.

❑ **Adjustment type**

	Type	Function to be affected
a	Gray color tone unification	Print
b	PureBlack/PureGray adjustment	Print

❑ **Adjustment method**

a. Gray color tone unification

Deselect the [Pure Gray] check box in the printer driver.
Deselecting [Pure Gray] allows gray areas to always be reproduced using all color toners (C, M, Y and K) without changing the color tone of the color areas.
- This adjustment will have an effect only when files created by general applications, such as Microsoft Office, are printed by PostScript (PS, Mac).
- This will have no effect on printing files created by graphics applications (e.g. Illustrator) or DTP applications (e.g. QuarkXPress), or on printing PDF files with CMYK colors created on these applications.

For Windows

PCL   **PS**   * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
Deselect the [Pure Gray] check box in the [Basic] tab.
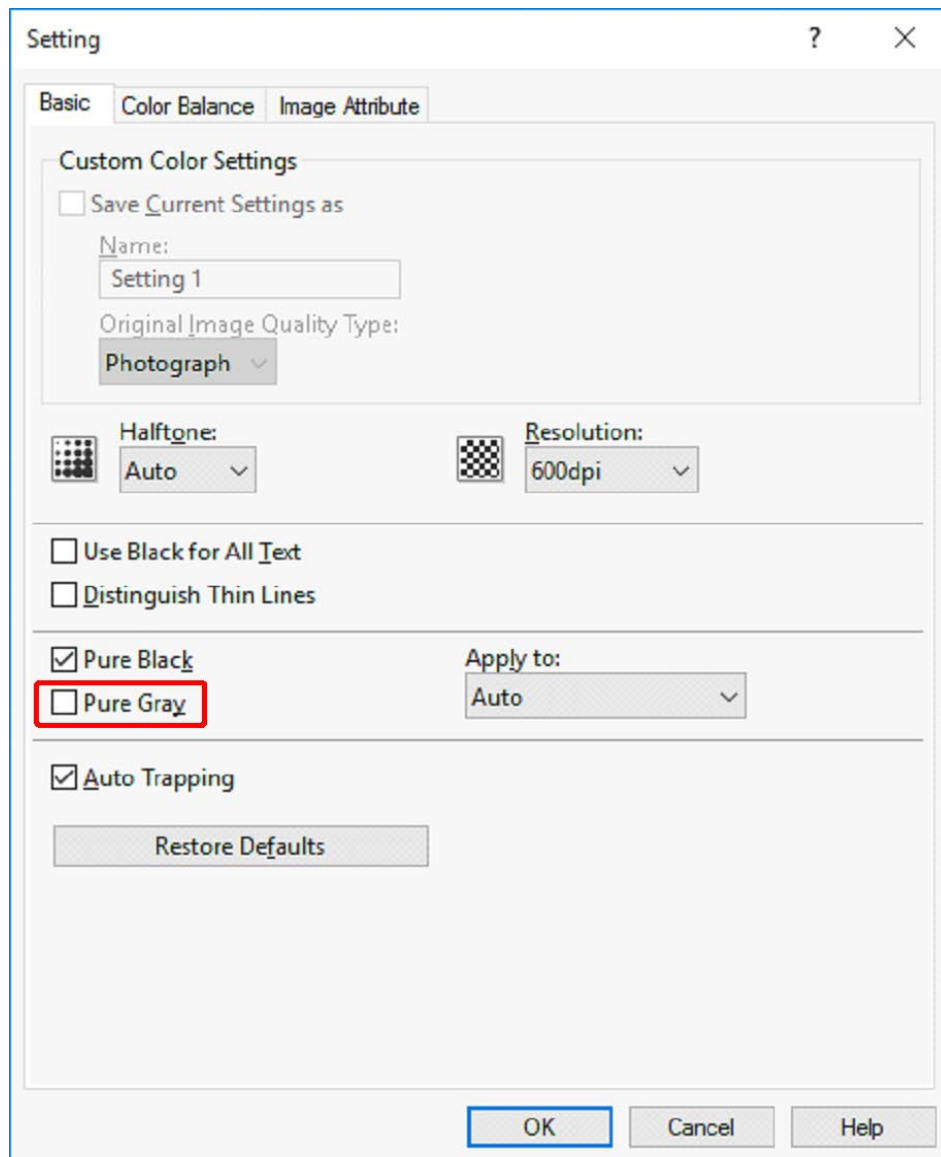
For Mac

Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 1]. Select [Black - Auto] in the Pure Black and Gray option.
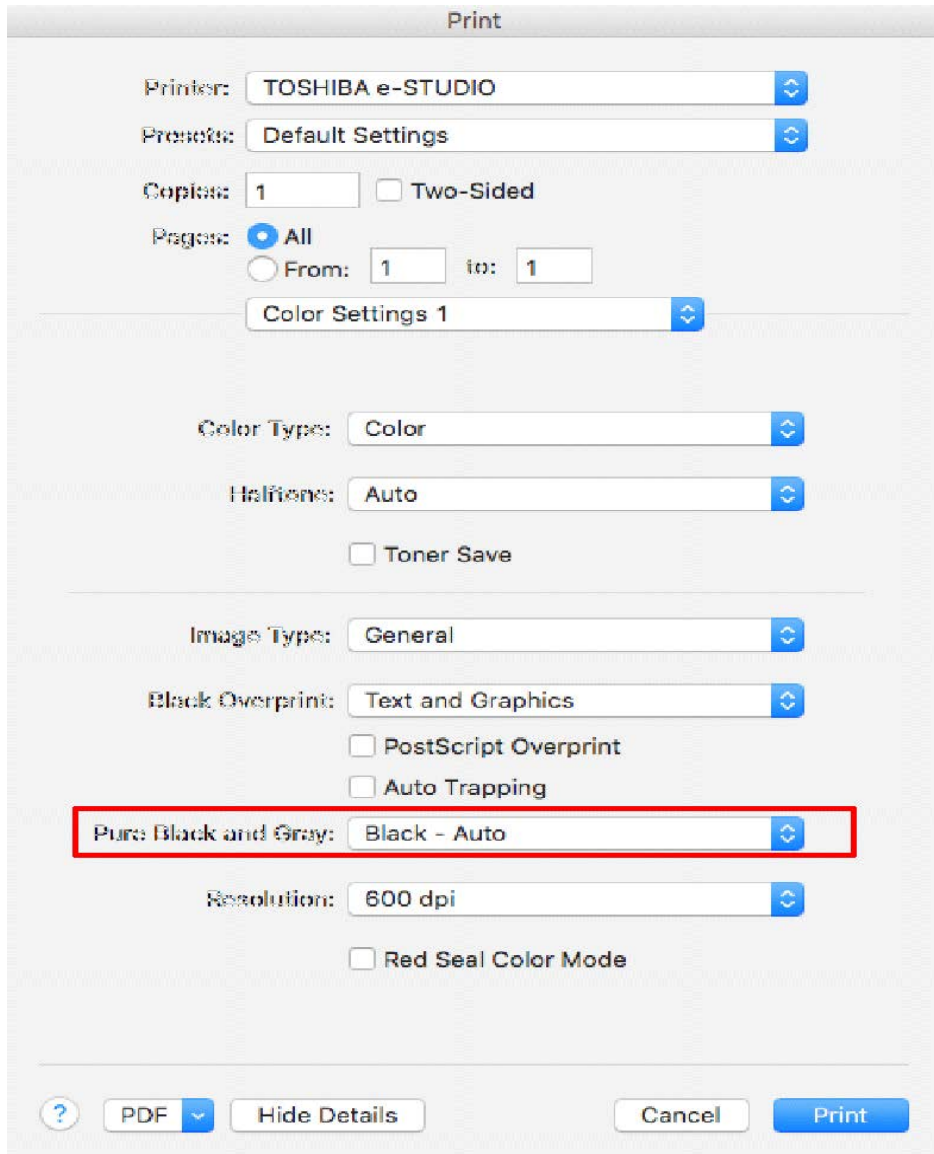
b. PureBlack/PureGray adjustment

Deselect the [Pure Gray] check box in the printer driver.

For details about PureBlack/PureGray adjustment, refer to "3.1.2 PureBlack/PureGray adjustment".

❑ Caution after the adjustment

Gray areas are always reproduced using all color toners (C, M, Y and K). As a result, undesired colors may look blended, depending on the image. Therefore, carefully perform the adjustment while checking the image.

3.4.4 To use only K toner to reproduce gray areas (Reproduces black-andwhite photos or gradational images using K toner only)
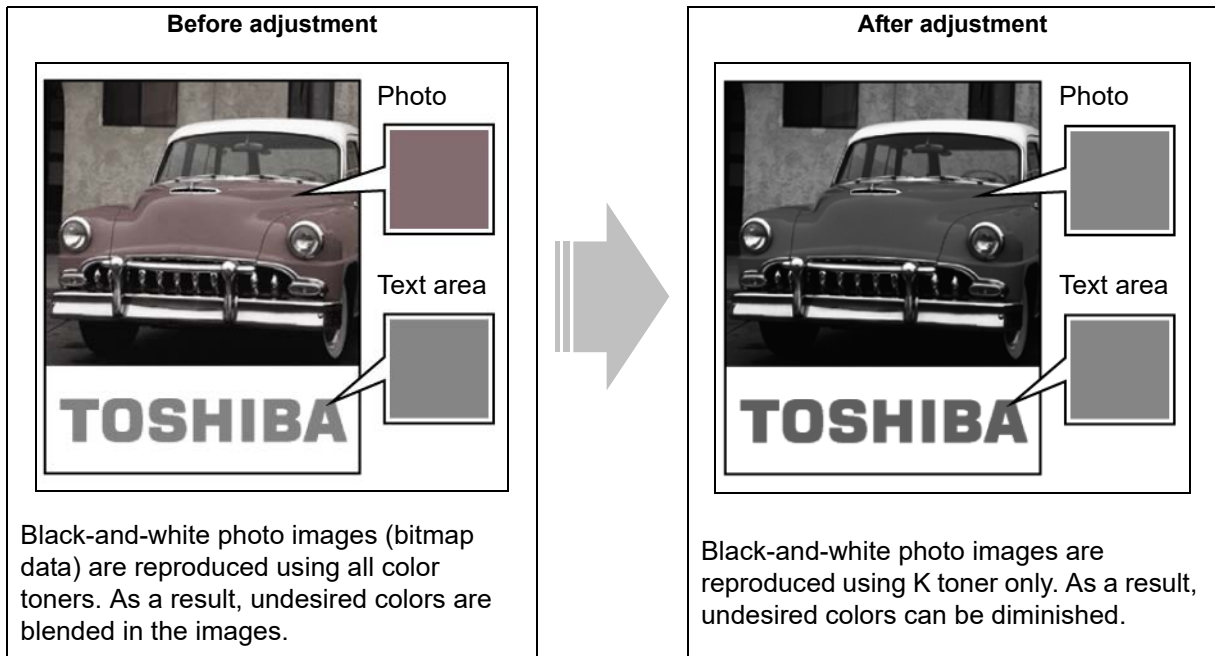
Before adjustment	After adjustment

Photo

Text area

TOSHIBA

Black-and-white photo images (bitmap data) are reproduced using all color toners. As a result, undesired colors are blended in the images.

Photo

Text area

TOSHIBA

Black-and-white photo images are reproduced using K toner only. As a result, undesired colors can be diminished.

❑ **Explanation**

For printing, only K toner is usually used to reproduce gray areas of drawing data, lines and text. On the other hand, all color toners (C, M, Y and K) are used to reproduce gray areas of image data, such as BMP, GIF, JPEG and TIFF. This provides a deeper gray in printouts.

The following are examples when image data are reproduced using C, M, Y and K toners.

• A gray-scale or black-and-white photo image is pasted in photo editing software such as Imaging and Paint Shop Pro, in Internet Explorer, word-processing or spreadsheet software.

• A semi-transparent gray color or gradient of gray is used in the Format AutoShape dialog box in Microsoft Office. (The gray area printed out as raster data in the same manner as a photo image is reproduced using C, M and Y toners, or C, M, Y and K toners.)

Perform this adjustment in order to reproduce gray areas as described above while using K toner only.

❑ **Adjustment type**

Type		Function to be affected
a	PureBlack/PureGray adjustment	Print

❑ **Adjustment method**

a. PureBlack/PureGray adjustment

By adjusting PureBlack/PureGray, you can adjust the reproduced range to use just black toner, even for black and white photographs.

For details, refer to "3.1.2 PureBlack/PureGray adjustment".

❑ **Caution after the adjustment**

Nothing in particular

3.4.5　To easily adjust the overall brightness
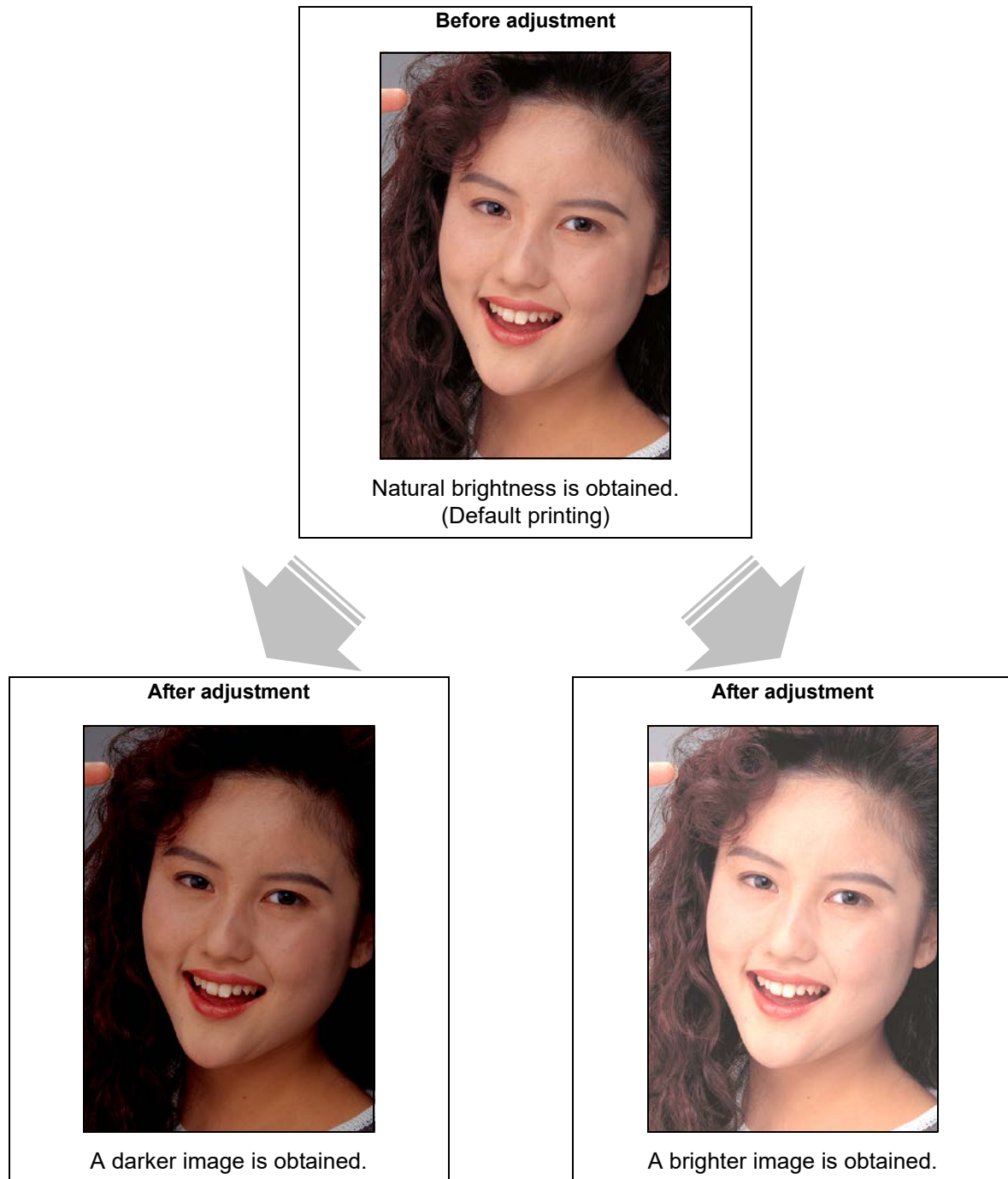
Before adjustment

Natural brightness is obtained.
(Default printing)

After adjustment

A darker image is obtained.

After adjustment

A brighter image is obtained.

❑**Explanation**

Perform this adjustment in order to carry out printing by easily adjusting the brightness.

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❑ **Adjustment type**

Type		Function to be affected
a	Brightness adjustment	Print

❑ **Adjustment method**

a. Brightness adjustment

For details about brightness adjustment, refer to "3.1.15 Brightness adjustment".

3.4.6   To adjust the overall saturation
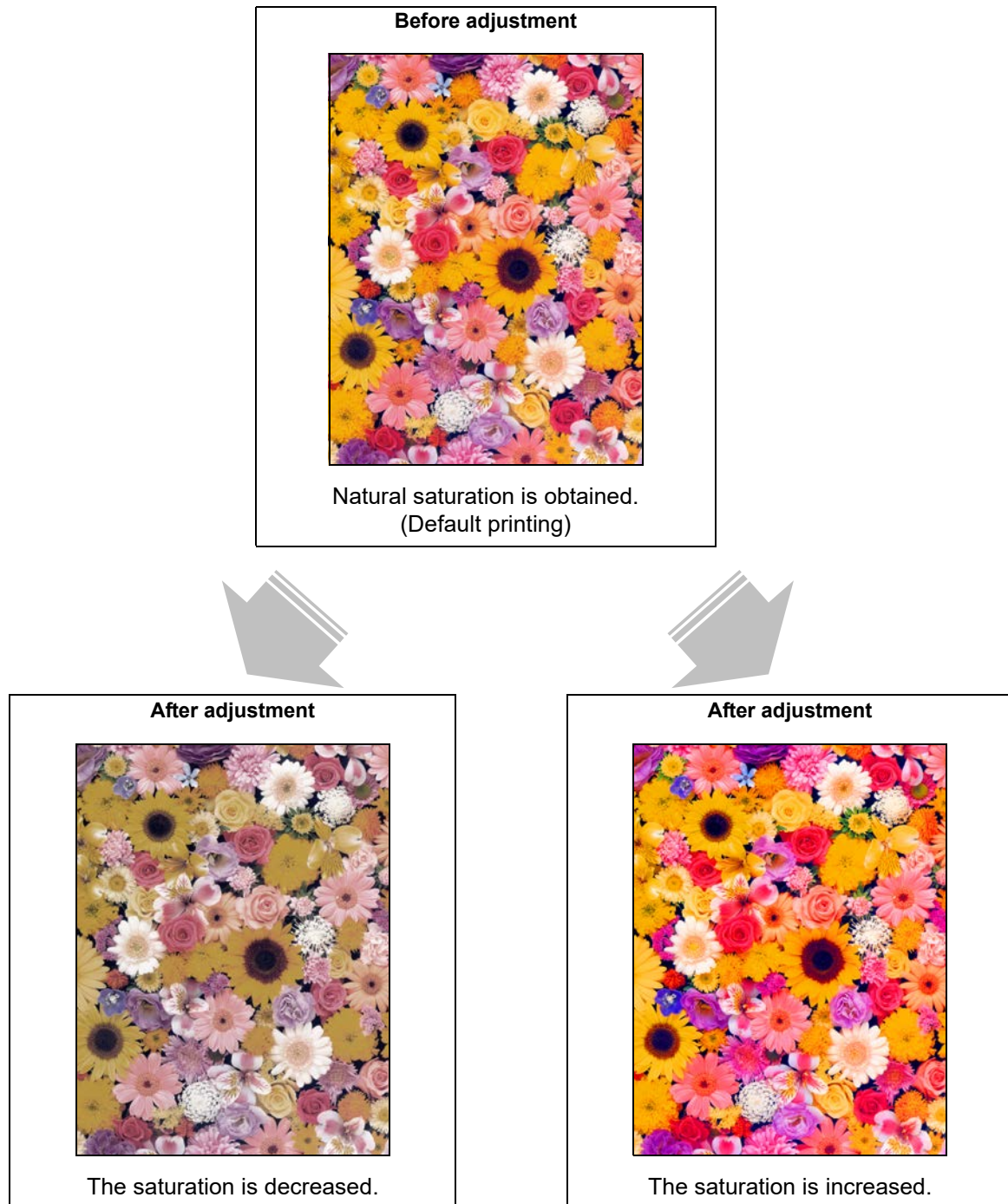
Before adjustment

Natural saturation is obtained.
(Default printing)

After adjustment

The saturation is decreased.

After adjustment

The saturation is increased.

❑**Explanation**

Perform this adjustment in order to carry out printing by easily adjusting the saturation.

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❑**Adjustment type**

Type		Function to be affected
a	Saturation adjustment	Print
b	1st transfer bias offset adjustment	Print

• Perform step b only when the saturation for R (Red) is insufficient even after step a has been performed.

❑**Adjustment method**

▌▌▌ **a. Saturation adjustment**

Change the setting of the Saturation option in the printer driver.

<Tip>

• The saturation adjustment does not reflect in black and gray areas.

For Windows

`PCL`　`PS` * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
Change the setting of the Saturation option in the [Image Attribute] tab.
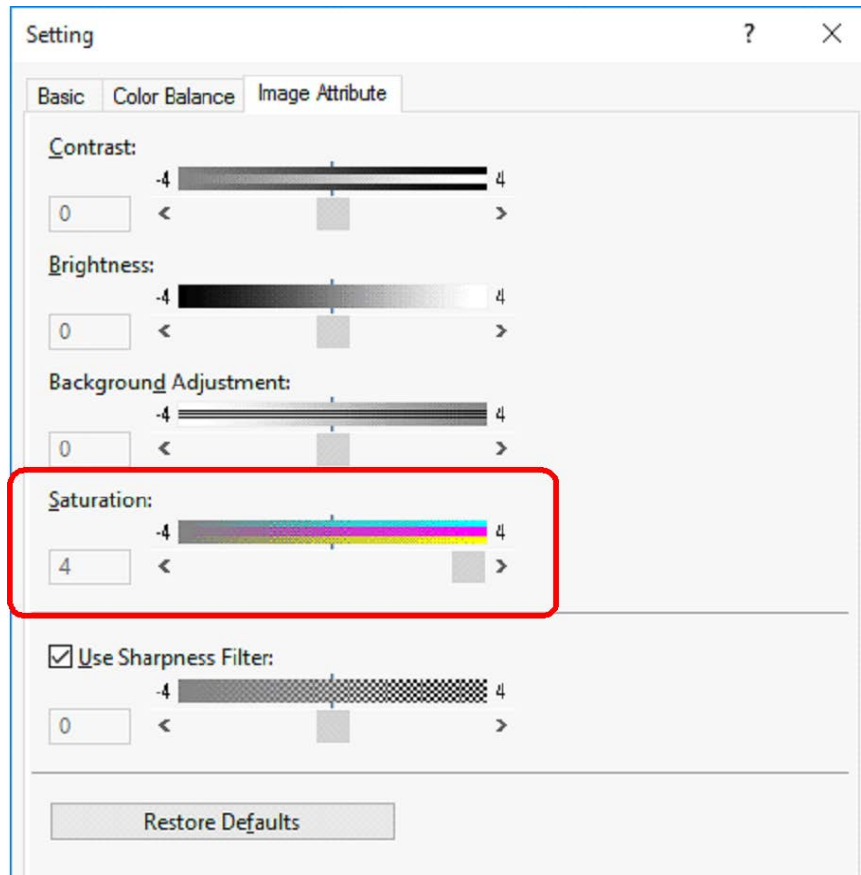
For Mac

Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 2]. Change the setting of the Saturation option.
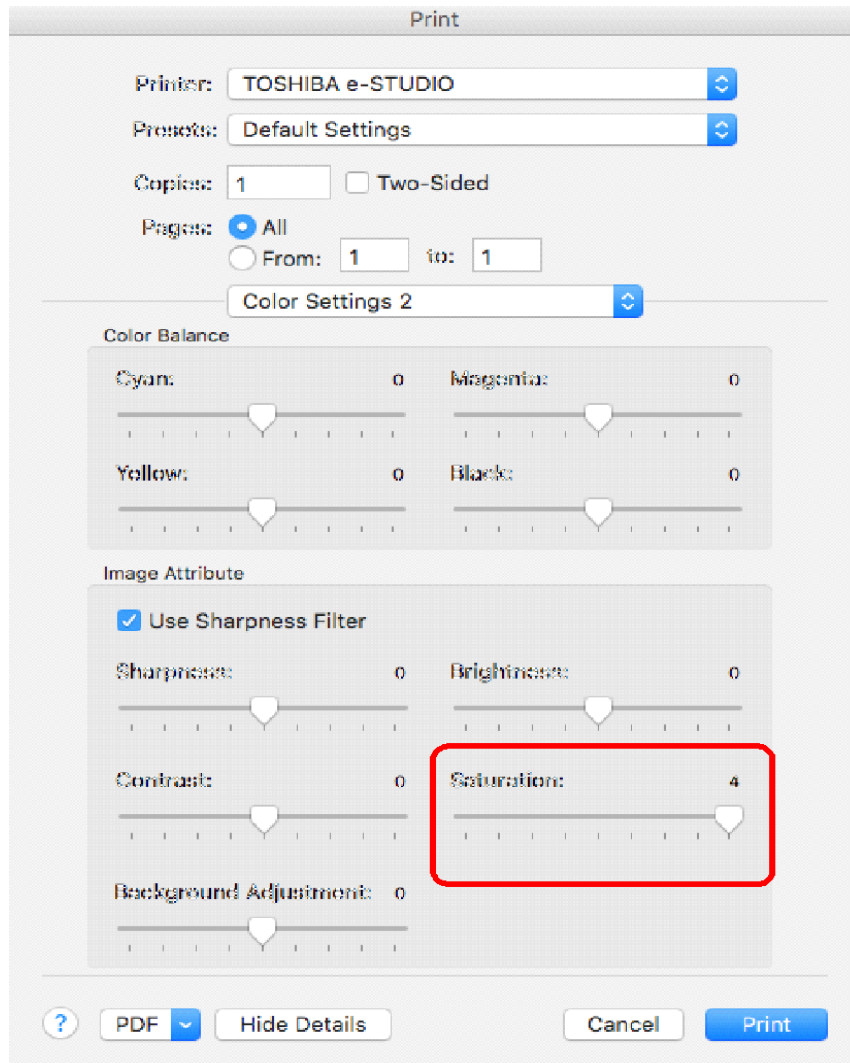
b. 1st transfer bias offset adjustment

Lighten the density for the C and K colors.
- Perform this only when the saturation for R (Red) is insufficient.
- For details, refer to "2.1.16 1st transfer bias offset adjustment".

3.4.7 To easily adjust the overall contrast
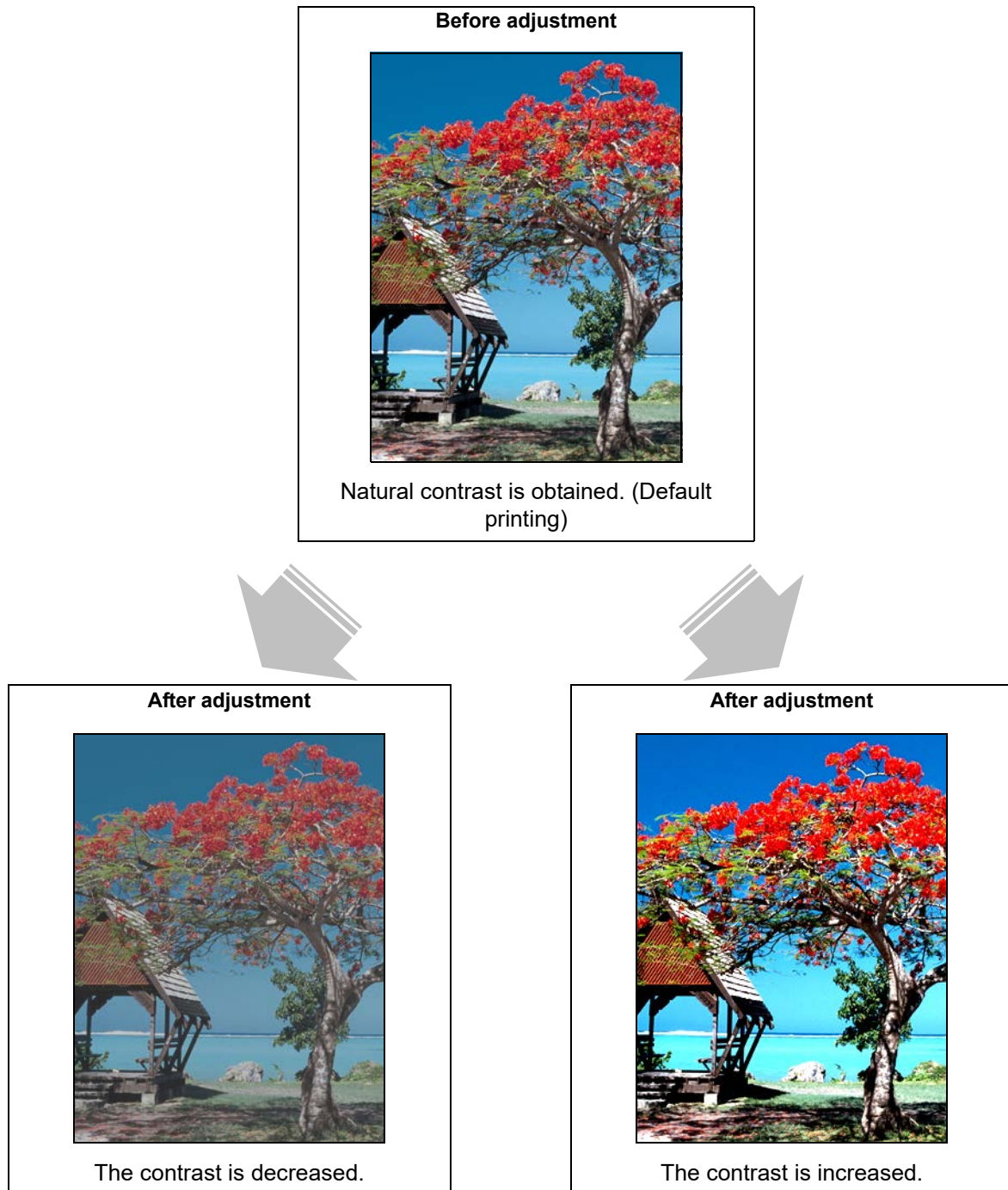
Before adjustment

Natural contrast is obtained. (Default printing)

After adjustment

The contrast is decreased.

After adjustment

The contrast is increased.

❑**Explanation**

Perform this adjustment in order to carry out printing by easily adjusting the contrast.

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❏ Adjustment type

	Type	Function to be affected
a	Contrast adjustment	Print

❏ Adjustment method

🟦 a. Contrast adjustment

Change the setting of the Contrast option in the printer driver.

For Windows

PCL   PS

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
Change the setting of the Contrast option in the [Image Attribute] tab.
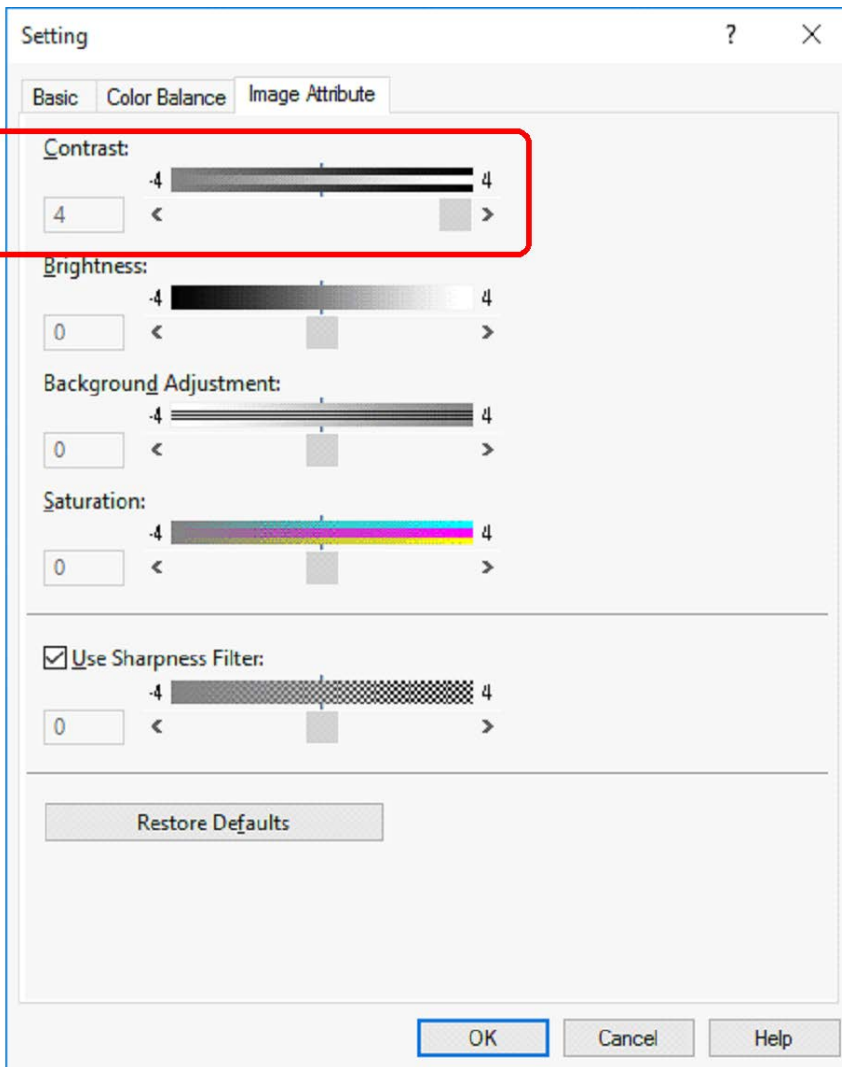
For Mac

Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 2]. Change the setting of the Contrast option.
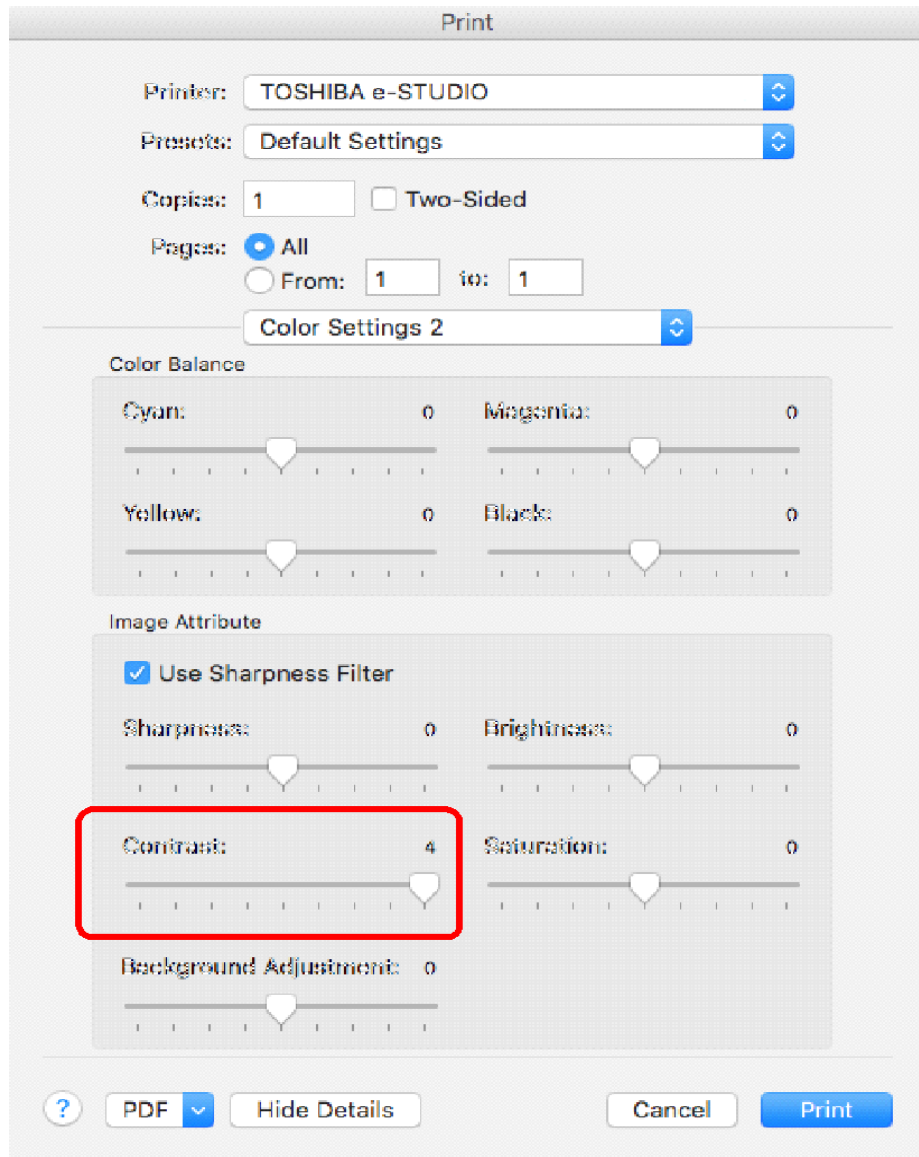
❑ **Caution after the adjustment**

Nothing in particular

3.5   To Print Images in Sharp/Soft

Print data

Before adjustment	After adjustment
Printing is performed without applying any change.	The edges are enhanced and the image becomes sharper.
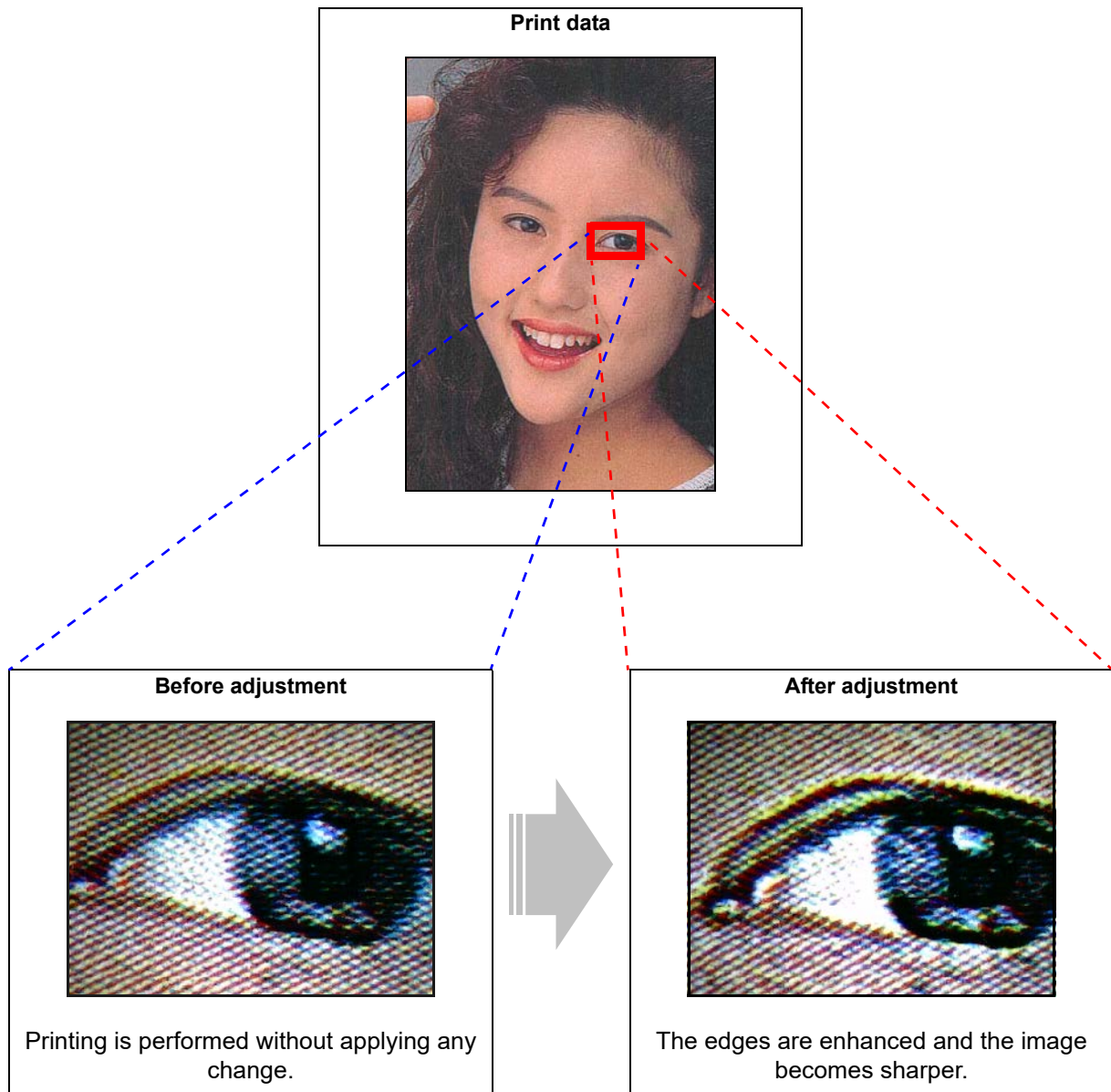
❑**Explanation**

Perform this adjustment in order to obtain a sharper or softer image.

- Jaggies in low-resolution images can be suppressed by adjusting the sharpness to softer.
- Text and lines on the background of a gradational image as well as text in the Format AutoShape dialog box with transparency selected on Microsoft Office may be blurred especially.

❑**Adjustment type**

Type		Function to be affected
a	Sharpness adjustment	Print

❑ Adjustment method

a. Sharpness adjustment

Perform sharpness adjustment.
For details, refer to "3.1.4 Sharpness adjustment".

❑ Caution after the adjustment

Nothing in particular

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3.6   To Adjust Text and Lines

❑**Explanation**

Perform this adjustment in order to change the line thickness or to reduce jaggies to make outline text and colored text read easily.

3.6.1   To reduce jaggies on text and lines (Improves by means of halftone adjustment)

Before adjustment	After adjustment
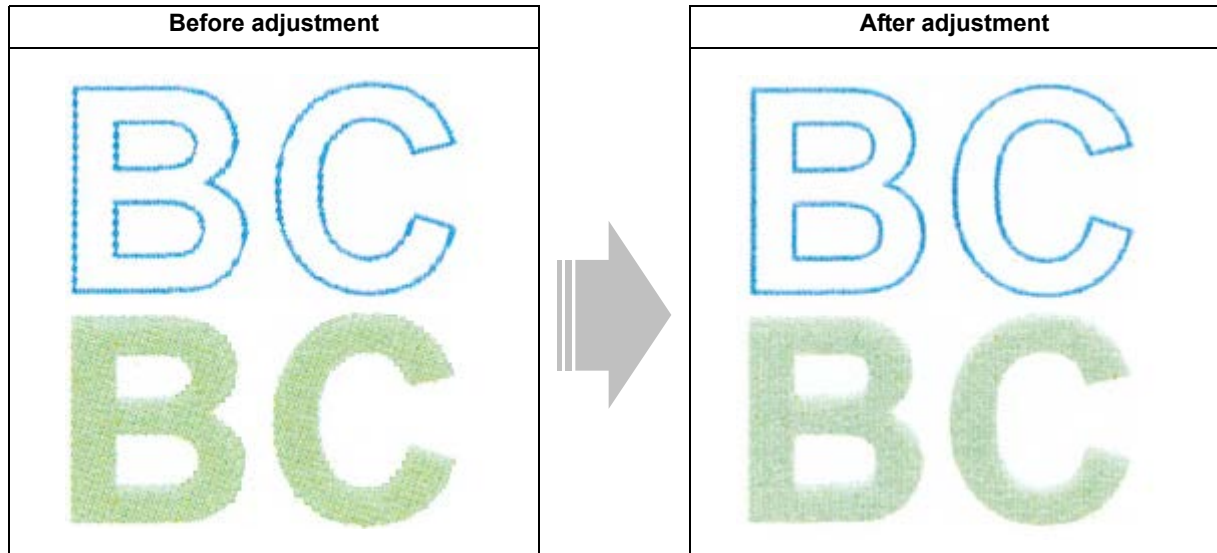
❑**Explanation**

By changing the halftone level to a finer setting, you can improve the problems such as jaggies on lines and the outline of text as well as be able to avoid thin lines becoming dotted ones.

❑**Adjustment type**

	Type	Function to be affected
a	Image Quality Type	Print
b	Halftone adjustment (when changing per user)	Print
c	Halftone applicable range adjustment (600dpi)	Print
d	Resolution	Print
e	Halftone applicable range adjustment (1200dpi)	Print

• Be sure to perform the procedures in order from step a.

❑ **Adjustment method**

a. Image Quality Type

Select [Line Art] which is suitable for printing images containing lots of lines.

For details, refer to "3.2 To Make Printing Suitable for Original".

・The halftone level of [Line Art] is a finer setting. Therefore, jaggies can be suppressed.

・Color tones may be changed accordingly.

<Tip>

・This adjustment will have an effect only when files created by general applications, such as Microsoft Office, are printed by PostScript (PS, Mac).

・This will have no effect on printing files created by graphics applications (e.g. Illustrator) or DTP applications (e.g. QuarkXPress), or on printing PDF files with CMYK colors created on these applications. In a Windows PS driver, this will have an effect by deselecting the [Use PostScript Passthrough] check box in the PostScript Setting option in the [Others] tab. (This is not available in a Mac printer driver.) In this case, the color tone may be changed and the image quality may be diminished depending on the type of file. (when changing per user)

b. Halftone adjustment (when changing per user)

If you do not want to change the color tone, select [Detail].

For details, refer to "3.1.10 Halftone adjustment (when changing per user)".

c. Halftone applicable range adjustment (600dpi)

When "Auto" is set for halftone in the printer driver, change the halftone applied to text/thin lines and graphics.

To apply fine halftone to text/thin lines, change the halftone for Text to "High definition".

To apply fine halftone to graphics, change the halftone for Graphic to "Detail".

For how to change the halftone, refer to "3.1.14 Halftone applicable range adjustment".

d. Resolution

PS

Select [1200dpi] for the Resolution option.

For details, refer to "3.1.13 Resolution".

・[1200dpi] is selectable only for a PS printer driver.

・You can obtain high effectiveness by changing both the settings of the Image Quality Type and Halftone options.

e. Halftone applicable range adjustment (1200dpi)

When [Auto] is set in the Halftone option in the printer driver, a rough halftone will be applied to graphics. To apply fine halftone to graphics while "Auto" is set for the halftone setting, change the halftone for graphics to "Detail".

For details, refer to "3.1.14 Halftone applicable range adjustment".

❑ **Caution after the adjustment**

Nothing in particular

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3.6.2 To reduce jaggies on text and lines (Improves by means of density adjustment)

Original

Before adjustment

Printing is performed without applying any change.

After adjustment

A smoother (softer) image is obtained.
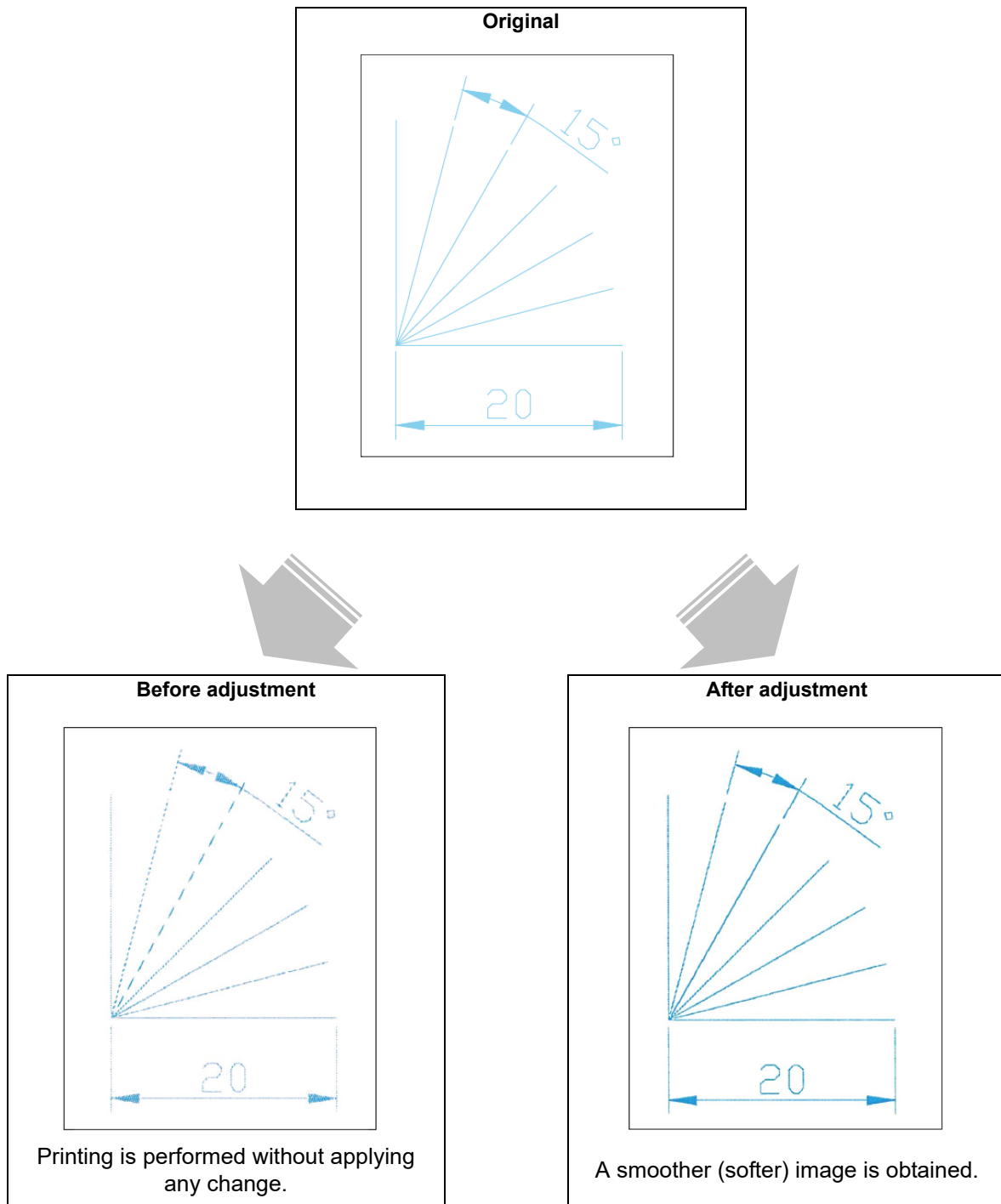
❑**Explanation**

If the colors of text and lines are light ones, conspicuous jaggies can be made difficult to see by changing the color level to be darker. Perform this adjustment in order to reduce this problem.

❑Adjustment type

	Type	Function to be affected
a	Image Quality Type	Print
b	Sharpness adjustment	Print
c	Thin line / text density adjustment	Print
d	Color balance adjustment	Print

• You can start from any of the procedures. Adjustment results of steps c and d also affect other unintended things.

❑Adjustment method

a. Image Quality Type

Select [Presentation] or [Line Art], which gives priority to the reproduction of saturation, for the image quality type.
For details, refer to "3.2 To Make Printing Suitable for Original".

• By selecting [Presentation] or [Line Art], colors tend to be reproduced more darkly. As a result, jaggies can become difficult to see.
• Color tones may be changed accordingly.

<Tip>

• This adjustment will have an effect only when files created by general applications, such as Microsoft Office, are printed by PostScript (PS, Mac).
• This will have no effect on printing files created by graphics applications (e.g. Illustrator) or DTP applications (e.g. QuarkXPress), or on printing PDF files with CMYK colors created on these applications. In a Windows PS driver, this will have an effect by deselecting the [Use PostScript Passthrough] check box in the PostScript Setting option in the [Others] tab. (This is not available in a Mac printer driver.) In this case, the color tone may be changed and the image quality may be diminished depending on the type of file.

b. Sharpness adjustment

By enhancing the sharpness, boundaries of text and lines will become darker. As a result, jaggies can become difficult to see.
For details, refer to "3.1.4 Sharpness adjustment".

• This adjustment will be reflected only when printing is performed by selecting [600dpi].

c. Thin line / text density adjustment

By increasing the density of thin lines and small text, jaggies can become difficult to see.
For details, refer to "3.1.6 Thin line / text density adjustment".

d. Color balance adjustment

By increasing the density of lines and text with this adjustment, jaggies can become difficult to see.
For details, refer to "3.1.5 Color balance adjustment".

❏ **Caution after the adjustment**

Nothing in particular

3.6.3 To adjust the line thickness

Before adjustment	After adjustment
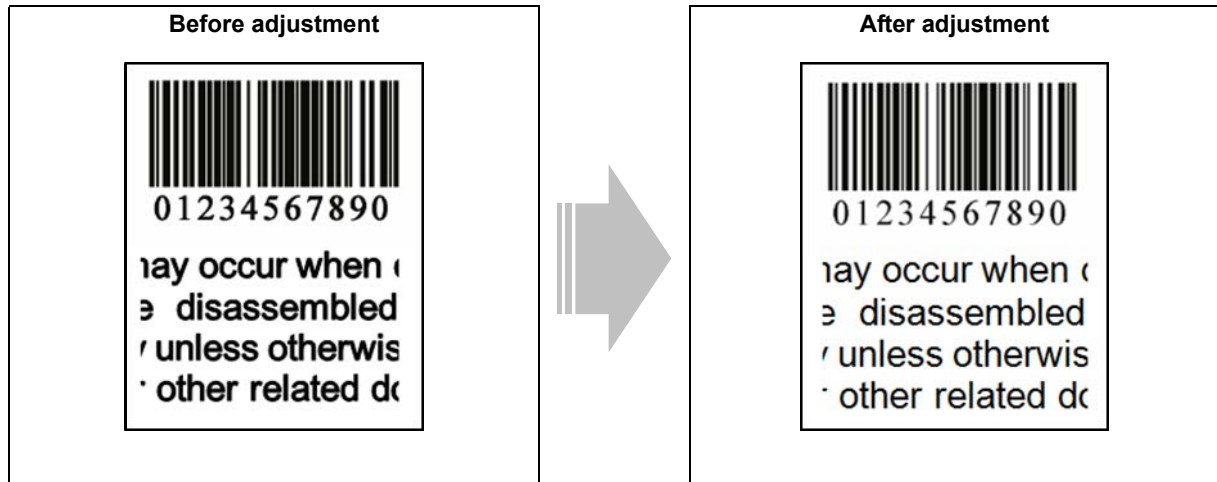
❑**Explanation**

Perform this adjustment in order to improve the following symptoms by adjusting line thickness.

・The thickness of printed lines differs from that displayed on the screen.

・Barcode lines are blurred.

・Lines are dotted because they are too thin.

❑**Adjustment type**

	Type	Function to be affected
a	Graphic line width adjustment	Print
b	Image Quality Type	Print
c	Sharpness adjustment	Print
d	Blurred text in black adjustment	Print
e	Pulse width adjustment	All

・You can start from any of the procedures. Adjustment results of steps d and e also affect other unintended things.

❑**Adjustment method**

a. Graphic line width adjustment

Select the [Distinguish Thin Line] check box in the printer driver.

This adjustment will have an effect when lines have been dotted because they are too thin.

For details, refer to "3.1.7 Graphic line width adjustment".

・You cannot make lines thinner.

b. Image Quality Type

Select [General] or [Line Art] which can obtain a good effect on the reproducibility of thin lines. By selecting [General], thin lines are reproduced darkly and clearly. By selecting [Line Art], the difference of the line width is reproduced expressly.

For details, refer to "3.2 To Make Printing Suitable for Original".

c. Sharpness adjustment

By enhancing the sharpness, the text and lines will become thicker.

For details, refer to "3.1.4 Sharpness adjustment".

 • This adjustment will be reflected only when printing is performed by selecting [600dpi].

d. Blurred text in black adjustment

By performing this adjustment, a blurred barcode sometimes becomes readable.

For details, refer to "3.1.8 Blurred text in black adjustment".

e. Pulse width adjustment

By performing this adjustment, the line thickness can be changed. If you want to arrange dark lines, adjust the code to give priority to high density.

For details, refer to "3.1.12 Pulse width adjustment".

❑ Caution after the adjustment

Nothing in particular

3.6.4 To suppress smudges on text and lines (on white backgrounds)

Before adjustment	After adjustment
Black text looks smudged due to toner scattering around the text.	Smudges are suppressed.
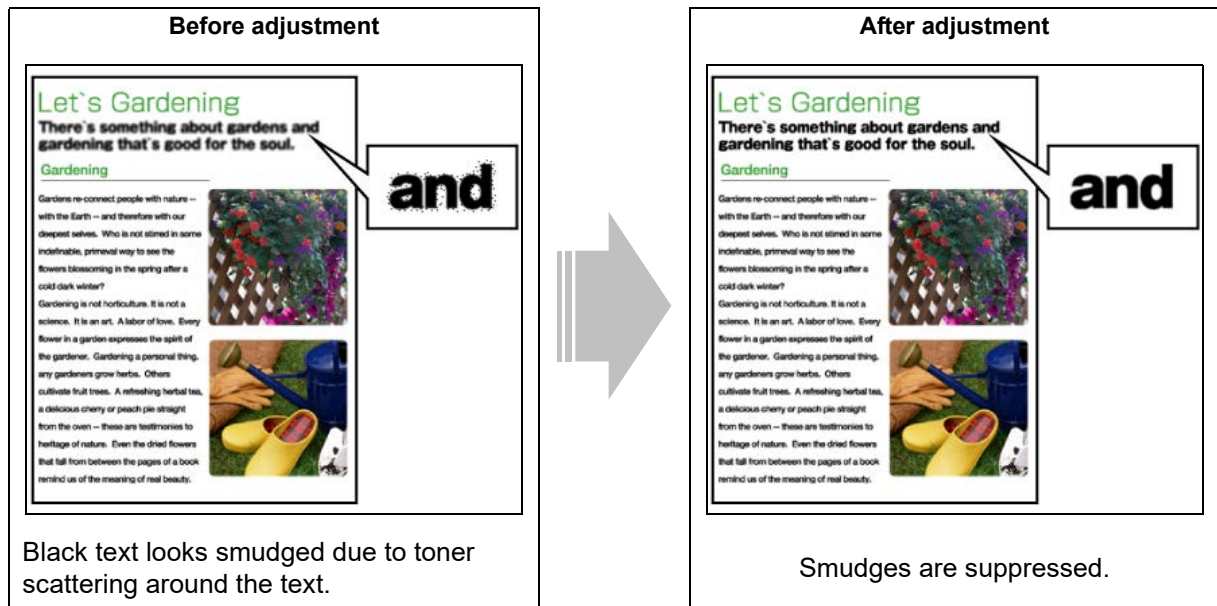
❑ **Explanation**

You can suppress smudges on text and lines printed by 4 color toners.

Perform this adjustment if a barcode is outputted as image data and is smudged as a result of printing with 4 color toners.

❑ **Adjustment type**

	Type	Function to be affected
a	Sharpness adjustment	Print
b	Toner used amount adjustment	Print

❑ **Adjustment method**

a. Sharpness adjustment

By deselecting the [Use Sharpness Filter] check box, the enhancement of the outline form of text and lines can be suppressed and thus smudges can be reduced.

For details, refer to "3.1.4 Sharpness adjustment".

• This adjustment will be reflected only when printing is performed by selecting [600dpi].

b. Toner used amount adjustment

By reducing the toner amount used for printing, this symptom will be suppressed.

For details, refer to "3.1.9 Toner used amount adjustment".

In addition, if this adjustment is performed together with toner used amount reduction factor adjustment, further positive effect in smudge suppression can be obtained.

Image Quality Type	Code	Subcode	Recommended value	Acceptable value range	Default value
General	05-8088	0	The smaller the value, the higher the smudge suppression becomes.	0 to 5	5
Photograph		1			
Presentation		2			
Line Art		3			

<Notes>

 • Note that if too small a value is set, the reproducibility of photos may become worse.

❑**Caution after the adjustment**

Nothing in particular

3.6.5   To suppress smudges on text and lines (when including the color of text and lines are similar to that of the background)

Background with even color tone
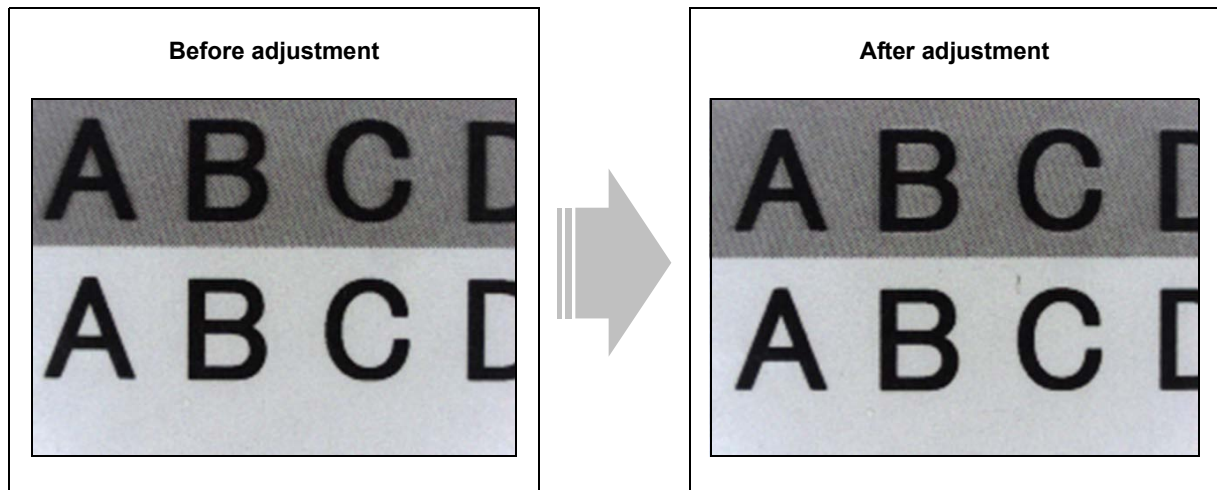
Background with uneven color tone (such as photos)
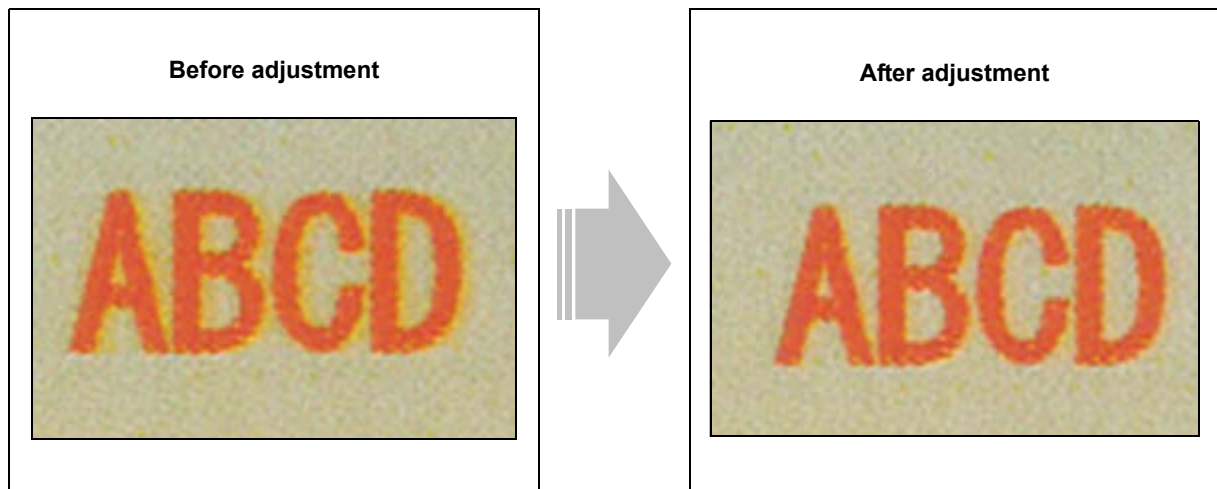
❑ **Explanation**

When colored cells in a spreadsheet photo are used as a background, text and lines whose color is similar to that of the background are sometimes smudged. Perform this adjustment in order to suppress this symptom.

❑ **Adjustment type**

Type		Function to be affected
a	Halftone adjustment (when changing all print jobs)	Print
b	Sharpness adjustment	Print
c	Color balance adjustment	Print
d	Gamma balance adjustment	Print
e	Potential on white background / correction setting	All

❑Adjustment method

a. Halftone adjustment (when changing all print jobs)

Set the value to "1".

For details, refer to "3.1.11 Halftone adjustment (when changing all print jobs)".

b. Sharpness adjustment

Set the value to "0".

For details, refer to "3.1.4 Sharpness adjustment".

c. Color balance adjustment

Lighten the level of the high density area.

For details, refer to "3.1.5 Color balance adjustment".

 • This adjustment will be reflected only when printing of a color original.

d. Gamma balance adjustment

Lighten the level of the high density area.

For details, refer to "3.1.1 Gamma balance adjustment".

 • This adjustment will be reflected only when printing of a black-and-white original.
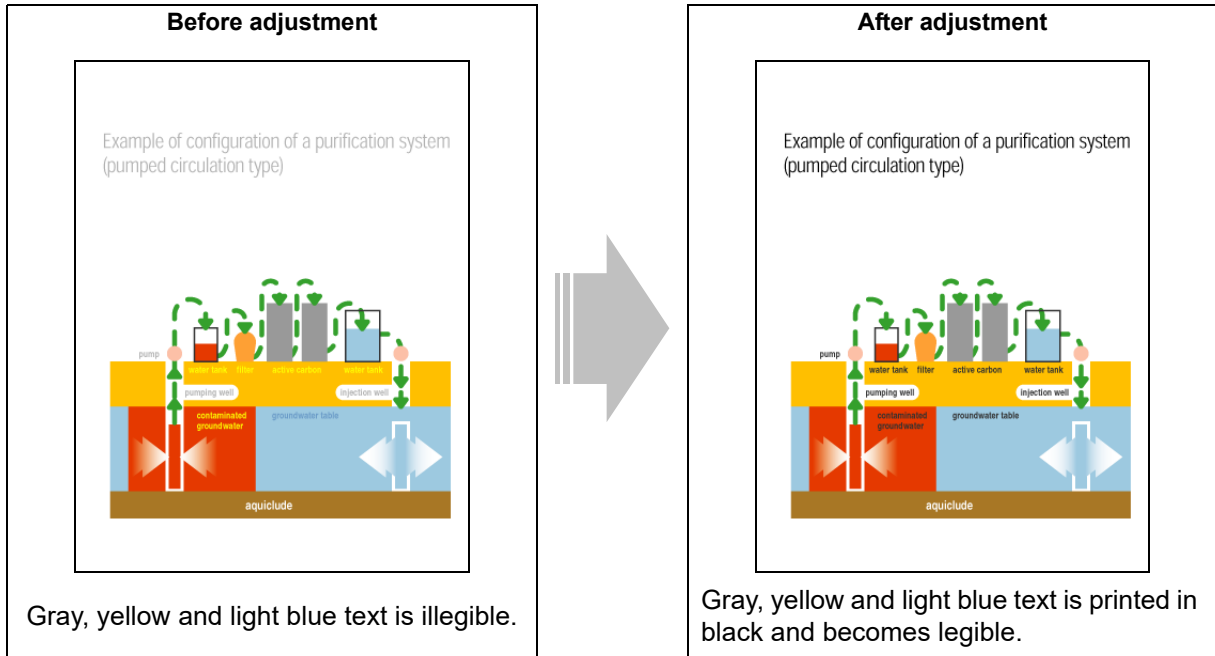
e. Potential on white background / correction setting

Text and lines can be printed darkly and clearly by setting a smaller value.

For details, refer to "2.1.14 Potential on white background / correction setting".

3.6.6   To print black text and lines in darker black

Before adjustment	After adjustment
When black text viewed from a monitor is printed in Color mode, the color tone has been changed.	The color toner of the text can be made to be close to darker black.
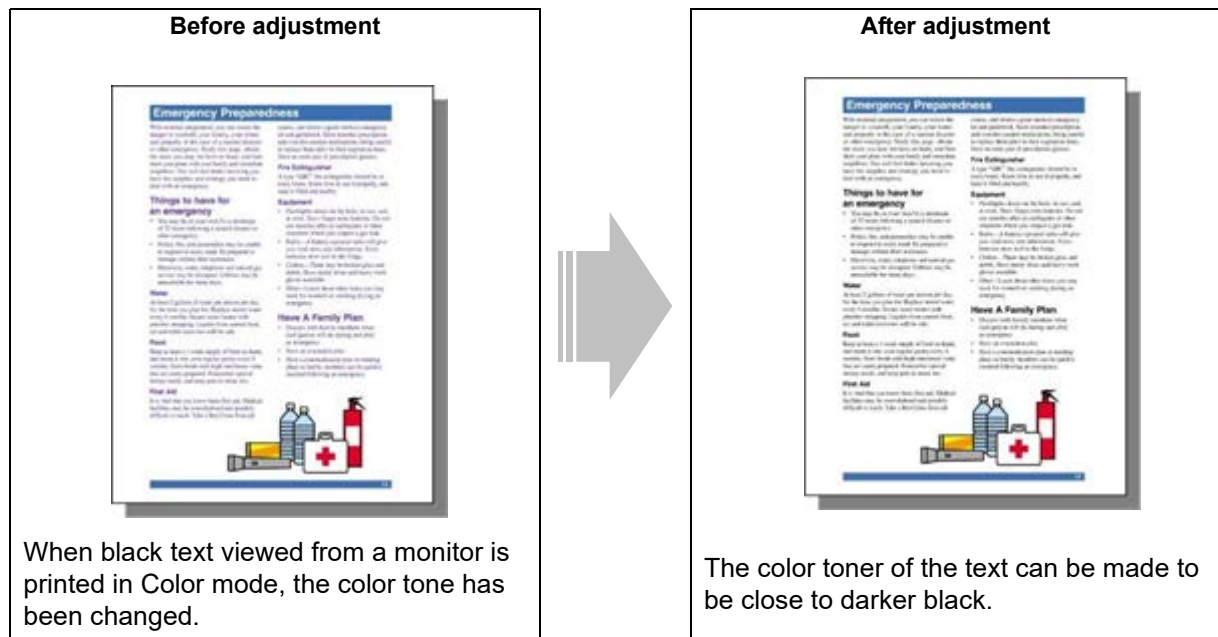
❑ **Explanation**

When black text viewed from a monitor is printed in Color mode, the color sometimes becomes other than black. This symptom may occur due to the following reasons.

(1) The files of black text and lines (CMY = 0%, K = 100%) are printed on the PCL6 printer driver.

(2) Black text and lines are treated as image data instead of text and line data on the files.
When smudging occurs in printing of barcodes, this will be a major factor.

(3) Black text and lines are not defined as 100% black (RGB = 0% or CMY = 0%, K = 100%) on the files.

❑ **Adjustment type**

	Type	Function to be affected
a	Printer driver change	Print
b	Image Quality Type	Print
c	PureBlack/PureGray adjustment	Print

❑ **Adjustment method**

a. Printer driver change

If printing has been performed on a PCL6 printer driver, change it to a PS3 one.
Black text may be changed to a non-pure black one if files made by graphics applications (e.g. Illustrator) or DTP applications 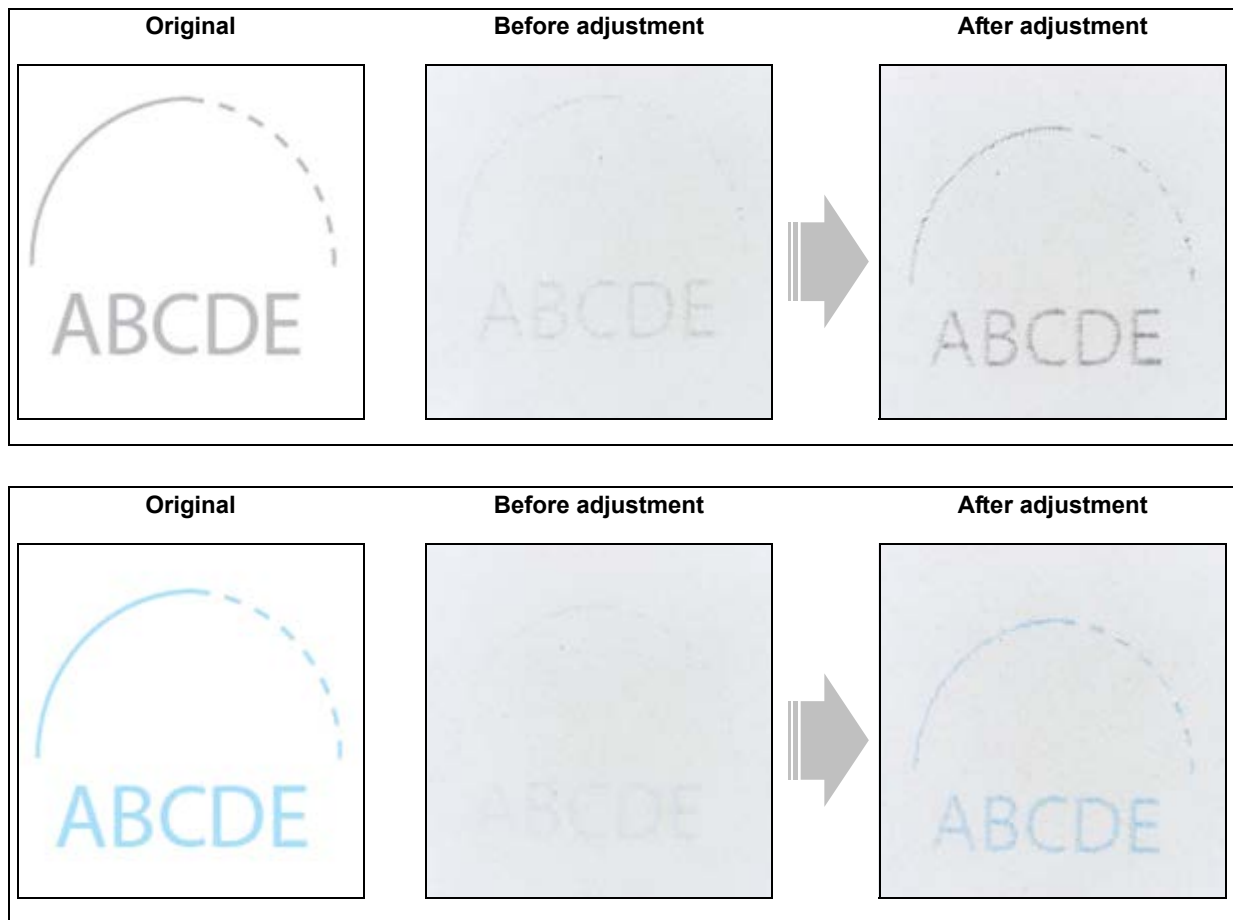(e.g. QuarkXPress) or PDF files created on such applications are printed on a PCL6 printer driver. In a PS3 printer driver, black text can be printed in the same black as that for the file.
For details about the printer driver, refer to "3.2 To Make Printing Suitable for Original".

b. Image Quality Type

Select [Line Art] which is suitable for printing images containing lots of lines. For details, refer to "3.2 To Make Printing Suitable for Original".

c. PureBlack/PureGray adjustment

This symptom will be suppressed by carrying out black printing using only K toner.
For details, refer to "3.1.2 PureBlack/PureGray adjustment".

❑ **Caution after the adjustment**

Nothing in particular

3.6.7   To clearly print double lines and text

Before adjustment	After adjustment
Thin lines or double lines are dotted.	Thin lines or double lines can be printed clearly.

❑ Explanation

When an attempt is made to print double lines that are laid out on thin lines or solid filled areas, they may be dotted. Perform this adjustment in order to print them out clearly.

❑ Adjustment type

Type		Function to be affected
a	Pulse width adjustment	All
b	Potential on white background / correction setting	All

• Adjustment should be performed from steps a and then b.

❑ Adjustment method

a. Pulse width adjustment

By performing this adjustment, the line thickness can be changed. If you want to arrange dark lines, adjust the code to give priority to high density.
For details, refer to "3.1.12 Pulse width adjustment".

b. Potential on white background / correction setting

[PCL] [PS] [Mac]

Text and lines can be printed darkly and clearly by setting a smaller value.
For details, refer to "2.1.14 Potential on white background / correction setting".

3.6.8 To print illegible gray or colored text in black

Before adjustment	After adjustment
Gray, yellow and light blue text is illegible.	Gray, yellow and light blue text is printed in black and becomes legible.

❑ **Explanation**

When an attempt is made to print an original in which yellow, light blue and gray text is deployed on a light-colored background, text may become illegible depending on the color tone of the text and the background. In addition, when a color original is printed in Black mode, colored text may turn gray and eventually become illegible. In this case, all colored text (except white text) can be printed by replacing them with black so that they become more legible. Perform this adjustment in order to print them out by replacing the color with black.

- This adjustment will have an effect only on printing with a Windows PCL or PS printer driver.
  (This adjustment cannot be performed when printing from a Mac printer driver.)

❑ **Adjustment type**

	Type	Function to be affected
a	Use Black for All Text	Print

❑ **Adjustment method**

PCL   PS

■▮▮▮ **a. Use Black for All Text**

Open the Properties page of the printer driver and then select [Advanced] in the [Image Quality] tab.
Select the [Use Black for All Text] check box in the [Basic] tab.

- This adjustment will have an effect only when files created by general applications, such as Microsoft Office, are printed by PostScript (PS, Mac).
- This will have no effect on printing files created by graphics applications (e.g. Illustrator) or DTP applications (e.g. QuarkXPress), or on printing PDF files with CMYK colors created on these applications.
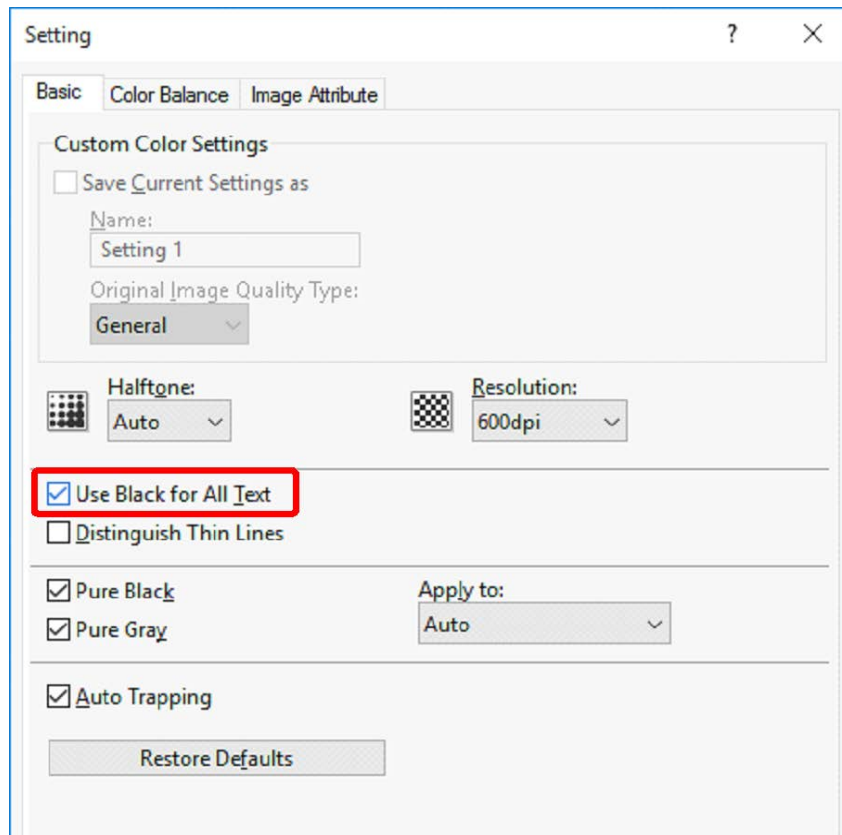
❑ **Caution after the adjustment**

Nothing in particular

❑ **Remarks**

Not all colored text may be printed in black depending on the type of text (e.g. text larger than 72 points).

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3.6.9   To print light-color text and lines clearly

| Original | Before adjustment | After adjustment |

| Original | Before adjustment | After adjustment |

❏ **Explanation**

When light-color lines or small light-color text has become faint or dotted lines during printing, perform this adjustment.

❏ **Adjustment type**

Type		Function to be affected
a	Image Quality Type	Print
b	Sharpness adjustment	Print
c	Background adjustment	Print
d	Thin line / text density adjustment	Print
e	Color balance adjustment	Print
f	Gamma balance adjustment	Print
g	Gradation reproduction switching for Text	Print

<Notes>

• Steps a, b, c and g make all light colors darker. Perform steps d, e and f in order to darken the density only for a specific color.

❑ **Adjustment method**

a. Image Quality Type

Select [Presentation] which can obtain vivid and darker colors or [Line Art] which is suitable for printing images containing lots of lines.
For details, refer to "3.2 To Make Printing Suitable for Original".
 • The color tones of text and lines may be changed accordingly.

b. Sharpness adjustment

By enhancing the sharpness, the text and lines will become darker and thus faintness can be suppressed.
For details, refer to "3.1.4 Sharpness adjustment".
 • This adjustment will be reflected only when printing is performed by selecting [600dpi].

c. Background adjustment

Darken the density of the background.
For details, refer to "3.1.3 Background adjustment".

d. Thin line / text density adjustment

By increasing the density of thin lines and small text, faintness can be suppressed.
For details, refer to "3.1.6 Thin line / text density adjustment".

e. Color balance adjustment

By increasing the density of lines and text, faintness can be suppressed. When [1200dpi] is selected for the Resolution option and [Auto] is set for the Halftone option in the printer driver, adjust the color balance for [Text] and [Graphic].
For details, refer to "3.1.5 Color balance adjustment".
 • This adjustment will be reflected only when printing of a color original.

f. Gamma balance adjustment

By increasing the density of lines and text, faintness can be suppressed. When [Auto] is set for the Halftone option in the printer driver, adjust the color balance for [Text] and [Graphic].
For details, refer to "3.1.1 Gamma balance adjustment".
 • This adjustment will be reflected only when printing of a black-and-white original.

g. Gradation reproduction switching for Text

You can improve reproducibility of text that is thin and nearly black during color printing.

Color mode	Resolution	Code	Recommended value	Acceptable value range	Default value
Full color	600 dpi	05-8176	1 0: Text reproduction priority 1: Gradation priority	0 to 1	0
	1200 dpi	05-8177			

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❑ **Caution after the adjustment**

This adjustment will reflect on the color tone of photos. Therefore, carefully perform the adjustment while checking the image.

3.6.10 To print lines and patterns as shown in the screen

Original	Before adjustment	After adjustment

Original	Before adjustment	After adjustment
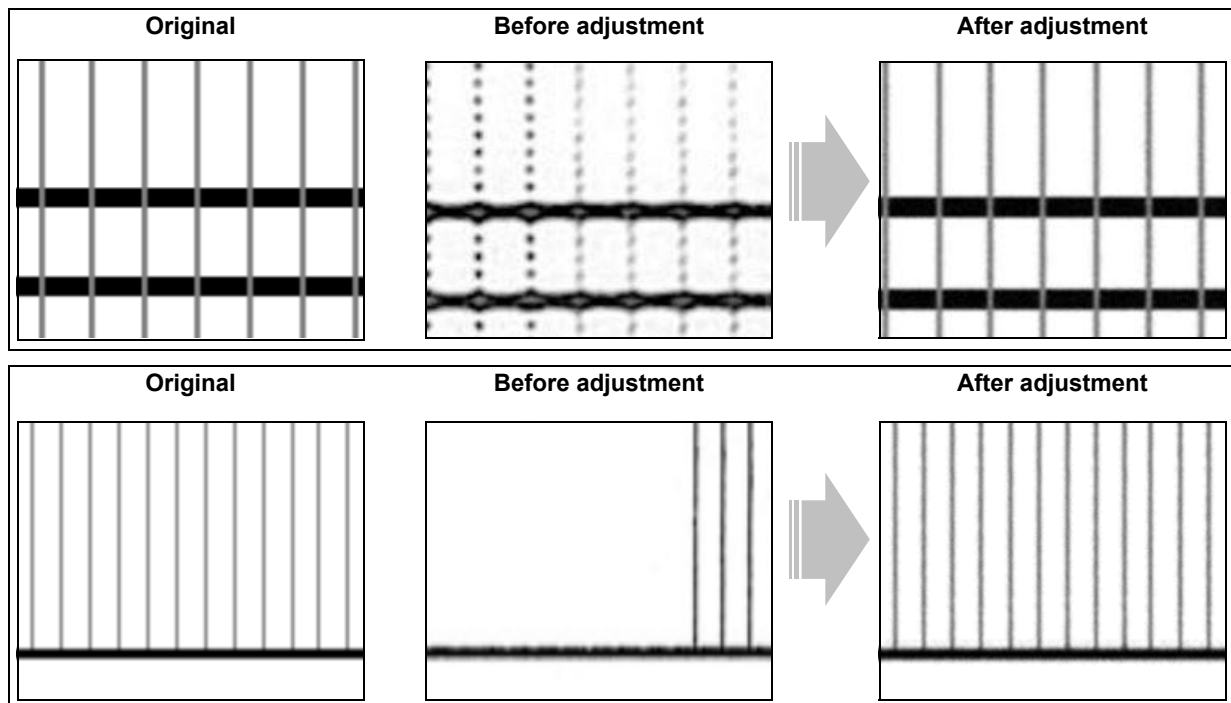
❑**Explanation**

Perform this adjustment in the following cases.

• When printing the line thickness evenly

• When lines are not properly printed just as print data

• When printing colored thin lines or light-colored lines

• When making lines thicker or reducing jaggies

❑**Adjustment type**

	Type	Function to be affected
a	Halftone adjustment (when changing per user)	Print
b	Halftone applicable range adjustment (600dpi)	Print
c	Resolution	Print
d	Graphic line width adjustment	Print
e	Image Quality Type	Print
f	Halftone applicable range adjustment (1200dpi)	Print

❑ **Adjustment method**

a. Halftone adjustment (when changing per user)

Select [Detail] in the Halftone option in order to reproduce thin lines with a finer halftone.

You can reduce jaggies by selecting [Detail] in the Halftone option.

For details, refer to "3.1.10 Halftone adjustment (when changing per user)".

b. Halftone applicable range adjustment (600dpi)

When "Auto" is set for halftone in the printer driver, change the halftone applied to text/thin lines and graphics.

To apply fine halftone to text/thin lines, change the halftone for Text to "High definition".

To apply fine halftone to graphics, change the halftone for Graphic to "Detail".

For how to change the halftone, refer to "3.1.14 Halftone applicable range adjustment".

c. Resolution

To reproduce thin lines by making the resolution level higher, press [Settings]. Select [1200dpi] in the Resolution option in the [Basic] tab.

For details, refer to "3.1.13 Resolution".

• [1200dpi] is selectable only for a PS printer driver.

d. Graphic line width adjustment

If the line thickness is too thin, its reproducibility can be improved by making it thicker. This adjustment will have an effect when lines have been dotted because they are too thin.

Select the [Distinguish Thin Line] check box in the printer driver.

For details, refer to "3.1.7 Graphic line width adjustment".

e. Image Quality Type

Select [Line Art] which is suitable for printing images containing lots of lines.

For details, refer to "3.2 To Make Printing Suitable for Original".

• Since the halftone level of [Line Art] is a finer setting and can make printing darker, thin lines tend to be reproduced.

• Color tones may be changed accordingly.

f. Halftone applicable range adjustment (1200dpi)

When [Auto] is set in the Halftone option in the printer driver, a rough halftone will be applied to graphics.

When the halftone setting is "Auto", to apply fine halftone to graphics, change the halftone for Graphic to "Detail".

For details, refer to "3.1.14 Halftone applicable range adjustment".

❑ **Caution after the adjustment**

Nothing in particular

3.7   To Make Light Colored Areas Darker

Before adjustment	After adjustment
The light-colored areas become darker but the highly colored areas become blurred.	Only the light-colored areas become darker.

❑**Explanation**

When the entire image is printed darker to make the light-colored areas darker, the highly colored areas may become much darker and blurred. Perform this adjustment to print only the light-colored areas in a higher density and leave the dark areas as is.

e-STUDIO2020AC/2520AC/2021AC/2521AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC (Ver01)

❑ **Adjustment type**

	Type	Function to be affected
a	Background adjustment	Print
b	Color balance adjustment	Print
c	Gamma balance adjustment	Print

• Adjustment should be performed from steps a, b and then c.

❑ **Adjustment method**

For Windows

PCL   PS   * This adjustment will have an effect only on Auto or Color mode printing.

a. Background adjustment

For details, refer to "3.1.3 Background adjustment".
• This adjustment makes all light colors darker. To adjust a particular light color, perform the following steps.

PCL   PS   Mac   * This adjustment will have an effect only on Auto or Color mode printing.

b. Color balance adjustment

For details, refer to "3.1.5 Color balance adjustment".

PCL   PS   Mac   * This adjustment will have an effect only on Black mode printing.
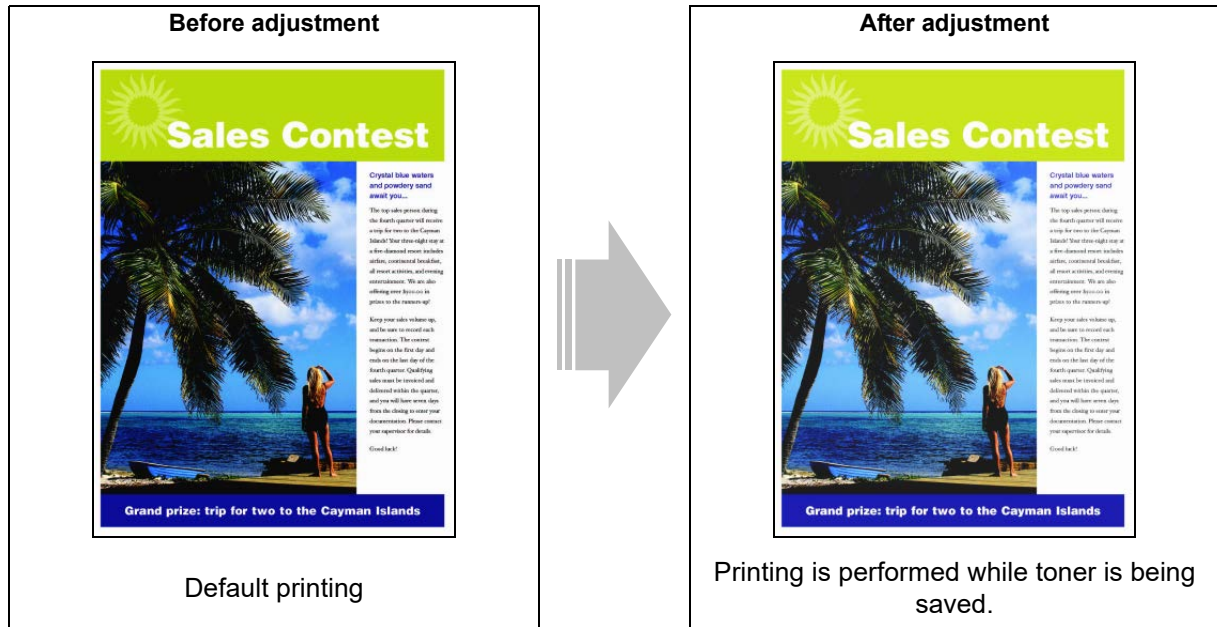
c. Gamma balance adjustment

For details, refer to "3.1.1 Gamma balance adjustment".

❑ **Caution after the adjustment**

Nothing in particular

3.8 To Decrease Image Density and Save Toner

3.8.1 To print in toner saving mode

Before adjustment	After adjustment
Default printing	Printing is performed while toner is being saved.

❑**Explanation**

When toner saving mode is enabled, it is intended to decrease the image density and reduce the amount of toner used automatically. Change the option in the printer driver and perform printing in toner saving mode, for instance, if a large number of copies must be printed, or if the image density is too high. Perform this adjustment if the image density in toner saving mode needs to be adjusted according to customer requests.

❑**Adjustment type**

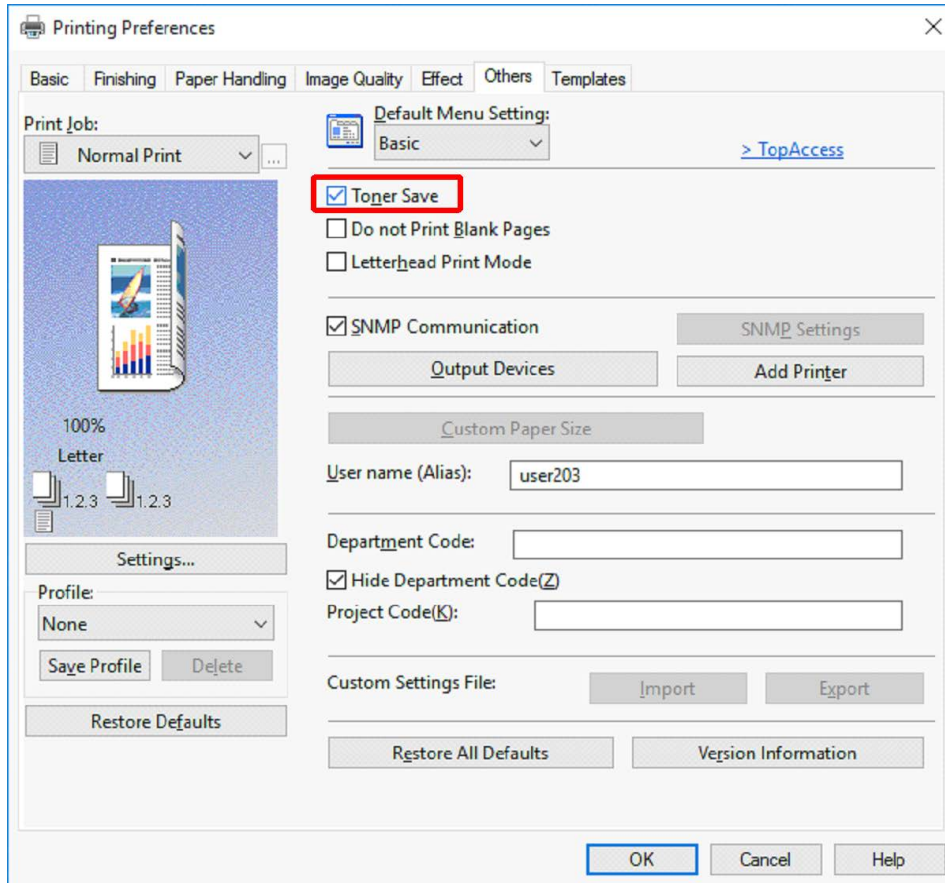| Type		Function to be affected
a	Toner Save	Print

❑ **Adjustment method**

■▎|‖ **a. Toner Save**

For Windows

[PCL] [PS]
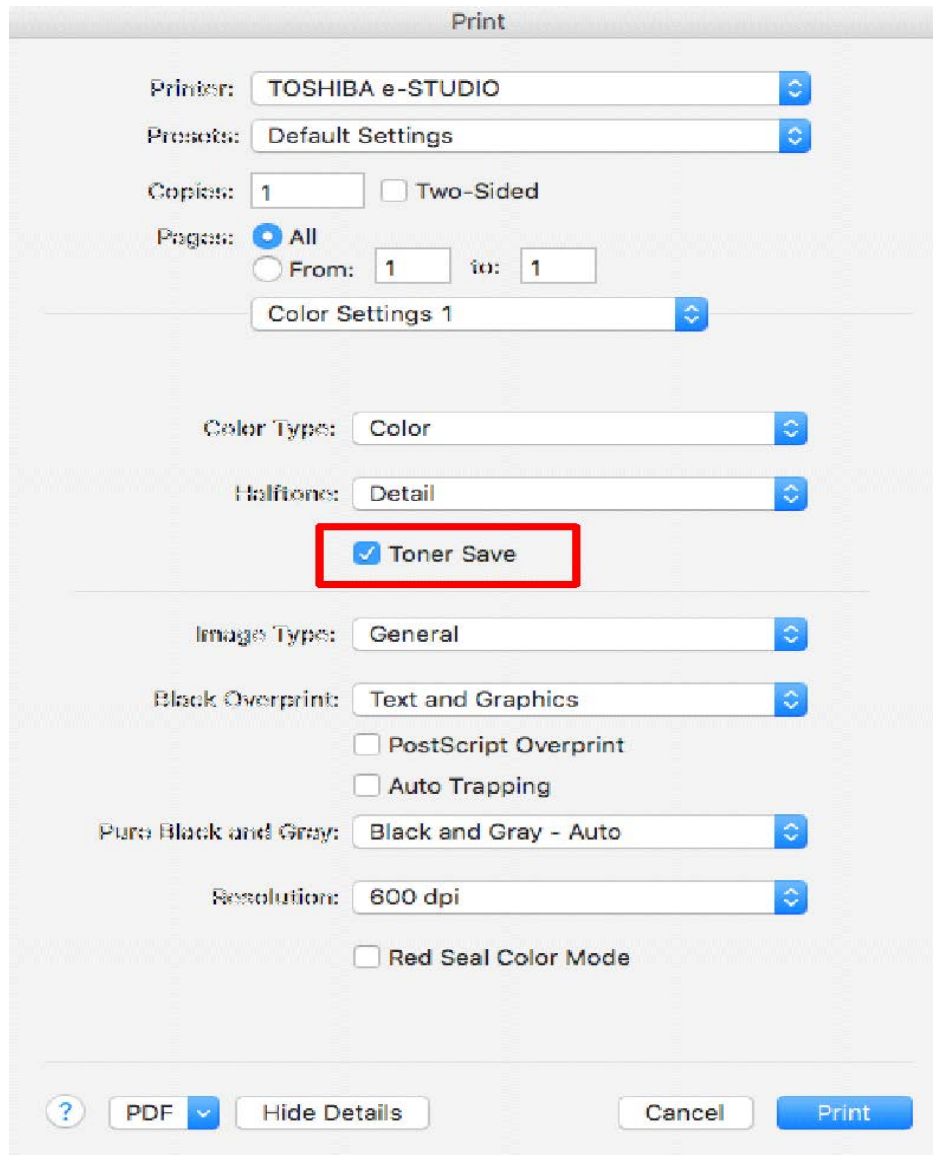
Open the Properties page of the printer driver. Select the [Toner Save] check box in the [Others] tab.

For Mac

Mac

Open the print dialog box and select [Color Settings 1] and then the [Toner Save] check box.


❑**Caution after the adjustment**

This adjustment may provide image density lower than the user desires, when printing is performed in toner saving mode. Therefore, carefully perform the adjustment while checking the image.

❑**Remarks**

• The print density in toner saving mode can also be adjusted.

  For details, refer to "3.8.2 To adjust print density in toner saving mode".

3.8.2   To adjust print density in toner saving mode

Before adjustment	After adjustment
Image density is too dark even when printing is performed in toner saving mode.	Image density in toner saving mode is adjustable as desired.
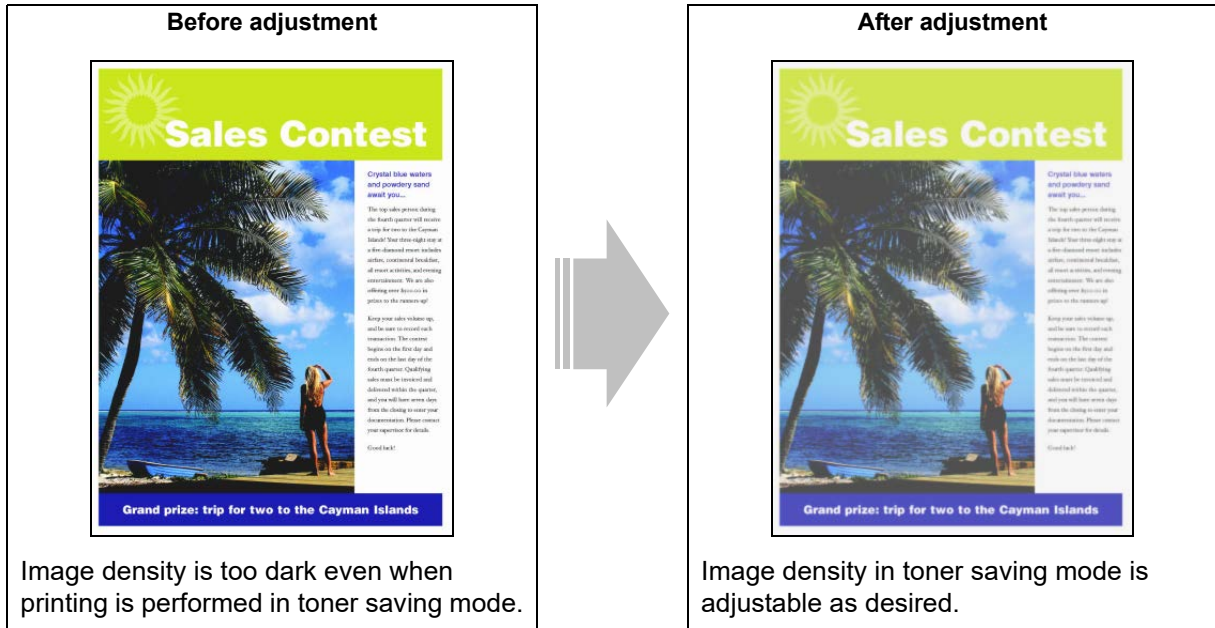
❑**Explanation**

Perform this adjustment if image density in toner saving mode needs to be adjusted according to customer requests.

❑**Adjustment type**

Type		Function to be affected
a	Print density adjustment in toner saving mode	Print

❑ **Adjustment method**

PCL PS Mac

■▮▮▮ **a. Print density adjustment in toner saving mode**

The setting codes to be changed differ between the adjustment of the image quality in full color and twin color mode printing, and that for black mode printing. Select the adjustment procedure corresponding to the original type to be printed.

To adjust image quality in full color or twin color mode printing

([Auto], [Color] or [Twin Color] is selected in the Color option in a PCL or PS printer driver. Or [Auto], [Color] or [Twin Color] is selected in the Color Type option on Macintosh.)
 • Printing on Mac is performed in PS. (See the "PS" columns in the table below.)

Print density in toner saving mode

Resolution	PDL	Code	Subcode	Recommended value	Acceptable value range	Default value
600dpi	PS	05-8160	0	To make the density lighter: Set a value smaller than the default one. To make the density darker: Set a value larger than the default one.	0 to 255	176
	PCL	05-8160	1			
1200dpi	PS	05-8161	-			

 • Change the value in increments of 10, while checking the image until the optimum value is obtained.

To adjust image quality in black mode printing

([Black] is selected in the Color option in a PCL or PS printer driver. Or [Mono] is selected in the Color Type option on Macintosh.)
 • Printing on Mac is performed in PS. (See the "PS" columns in the table below.)

Print density in toner saving mode

Resolution	PDL	Code	Subcode	Recommended value	Acceptable value range	Default value
600dpi	PS	05-7307	0	To make the density lighter: Set a value smaller than the default one. To make the density darker: Set a value larger than the default one.	0 to 255	176
	PCL	05-7307	1			
1200dpi	PS	05-7302	-			

 • Change the value in increments of 30, while checking the image until the optimum value is obtained.

❑ **Caution after the adjustment**

The adjustment may cause an increase in the amount of toner used (if the image density is increased) or faint images (if the image density is decreased). Therefore, carefully perform the adjustment while checking the image.

3.9　To Omit Blank Pages for Printing

Before adjustment	After adjustment
A blank page is not omitted.	A blank page is omitted.
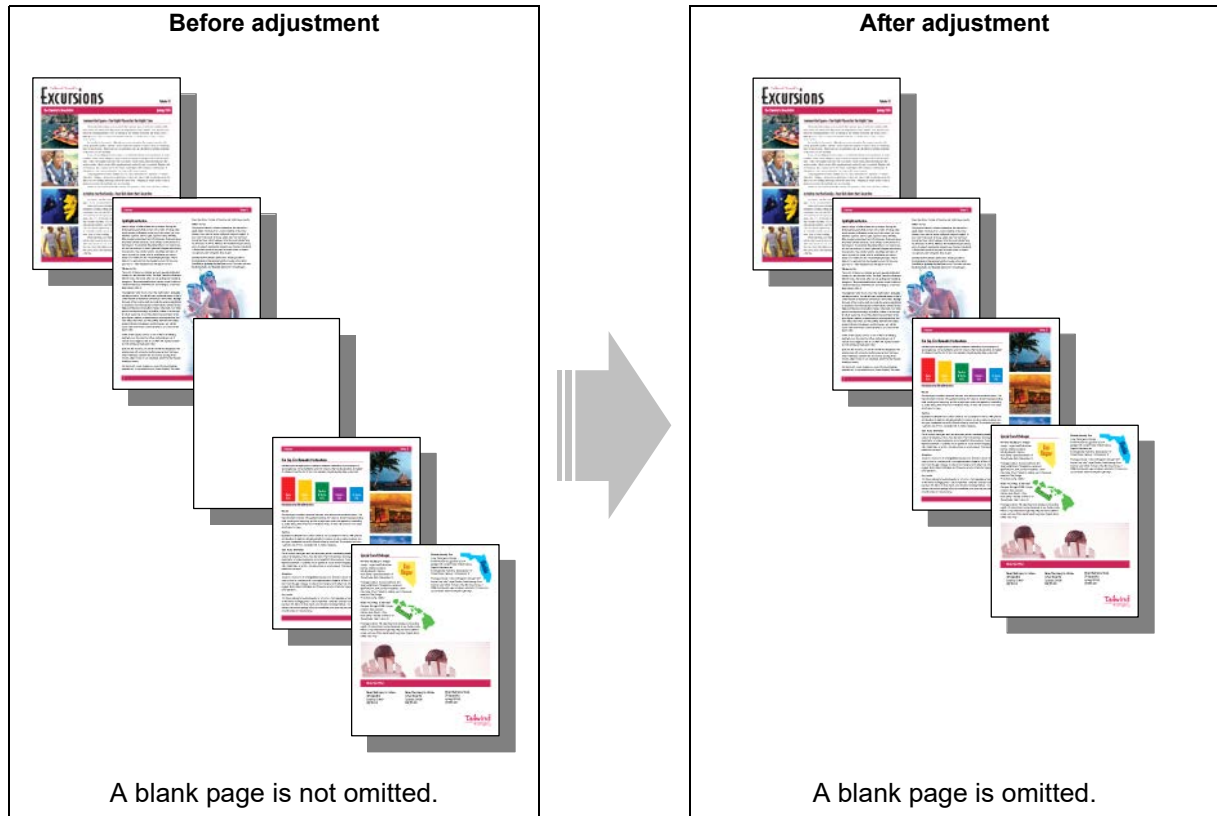
❏**Explanation**

Some applications may be designed to automatically insert blank pages to match the layout of the pages in a document. Perform this adjustment in order to omit all blank pages from printing.

- If any data are inserted in the header or footer of a particular page on Excel or Word even though no data are present in the body, the page will not be recognized as a blank page. Due to this, pages with only a header or a footer will be printed out.

❏**Adjustment type**

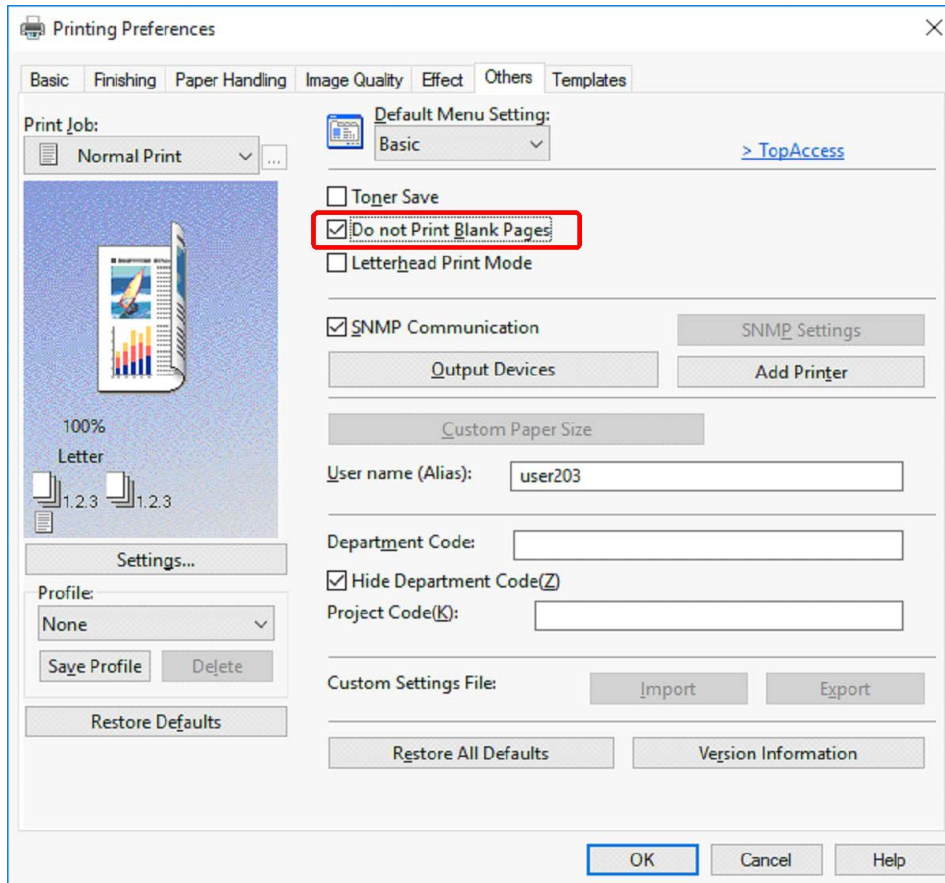|	Type	Function to be affected
a	Do not Print Blank Pages	Print

❑**Adjustment method**

■▐▐▌ **a. Do not Print Blank Pages**

For Windows

PCL   PS

Open the Properties page of the printer driver. Select the [Do not Print Blank Pages] check box in the [Others] tab.

For Mac

Mac

Open the print dialog box and select [Print Mode]. Select the [Do not print blank pages] check box.

❑ **Caution after the adjustment**

The adjustment may cause incorrect operation of the following options as specified. Therefore, pay attention to the combination of these options.

• Booklet printing	• N-up printing	• Use Front Cover
• Use Back Cover	• Interleave Pages	

3.10 To Prevent Dark Toner from Coming Off

Before adjustment	After adjustment
The dark toner comes off.	The dark toner is securely fused.

❑ Explanation

When highly colored lines, for which a large accumulated amount of C, M, Y and K toners are used, are created on raster data (image), such as BMP, GIF, JPEG and TIFF, and printed on thick paper with a rough surface, the toner may come off. This is because the toner is not fused securely because C, M, Y and K toners may be overlaid and the paper may be extremely thick or the surface may be rough. Perform this adjustment in order to avoid a toner fusing problem.

• This adjustment does not affect a single color of C, M, Y and K, or bright colors such as red and green.

❑ Adjustment type

	Type	Function to be affected
a	Toner used amount adjustment	Print

❑ Adjustment method

a. Toner used amount adjustment

Adjust the toner used amount.

For details, refer to "3.1.9 Toner used amount adjustment".

❑ Caution after the adjustment

Nothing in particular

3.11 To Register Image Quality Adjusted Corresponding to Preference (Uses Custom Color Settings Option)

❑**Explanation**

The option to obtain the desired print image quality can be registered as custom color settings.

• This adjustment will have an effect only on printing with a Windows PCL or PS printer driver.
  (This adjustment cannot be performed when printing from a Mac printer driver.)

❑**Adjustment type**

	Type	Function to be affected
a	Custom Color Settings	Print

❑ Adjustment method

a. Custom Color Settings

- As an example of using the Custom Color Settings option, the procedure of the following conditions is explained: Select [Presentation] as the base in the Image Quality Type option, set a larger value for the Middle density in the Color Balance Details option and register the data with the file name "Draft agenda".
- The check box in the Custom Color Settings option will be effective only if you login using a user name belonging to an Administrator or a Power User, and then open the property page of the printer driver in the "Printer & scanners" folder.
  For details on how to set the printer driver, refer to the "Print".

> PCL   PS

▌▌ (1) From the "Printer & scanners" folder, select the printer driver in which a profile is created and click [Manage].

(2) Click [Printer properties].

(3)   Click [Preference] in the [General] tab.

(4) Click the [Image Quality] tab and then [Setting].

(5) Change each setting in the [Basic], [Color Balance] and [Image Attribute] tabs in order to obtain the desired image quality.

> E.g.:
>   In the [Color Balance] tab, select the [Detail] check box and click [Edit].
>   Set the value for the Middle density of the colors in the Color Balance Details option.
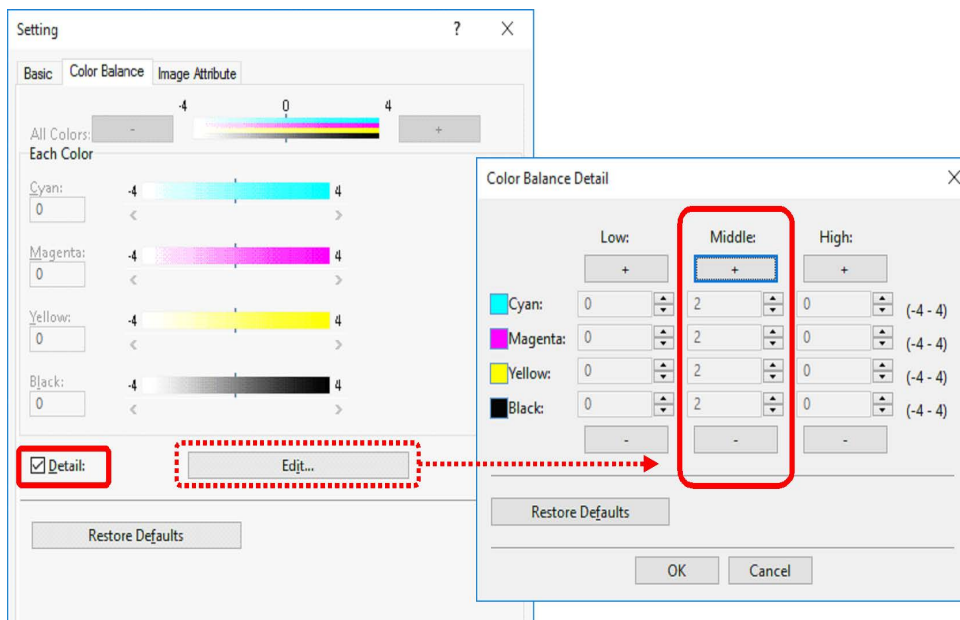
(6) In the [Basic] tab, select the [Save Current Settings as] check box in the Custom Color Settings option.

(7) Enter an optional name in the Name option.

(8) Select the type to be used in the Image Quality Type option and click [OK].
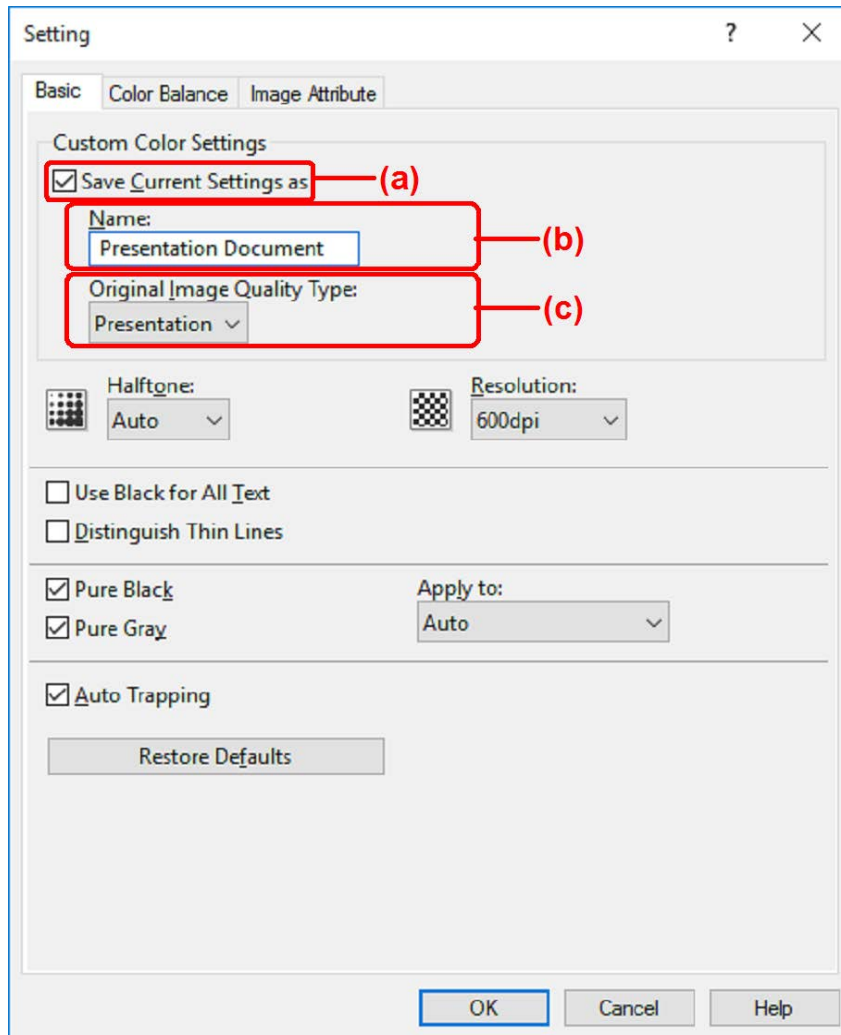
(9) After the name is registered, open the Properties page of the printer driver. Then check that the created setting is registered in the Image Quality Type option in the [Image Quality] tab.

  • The icon of the base image quality type will be displayed in the background of the icons for the registered custom color settings.
    (The icon for "Presentation" is displayed in the background as illustrated below.)
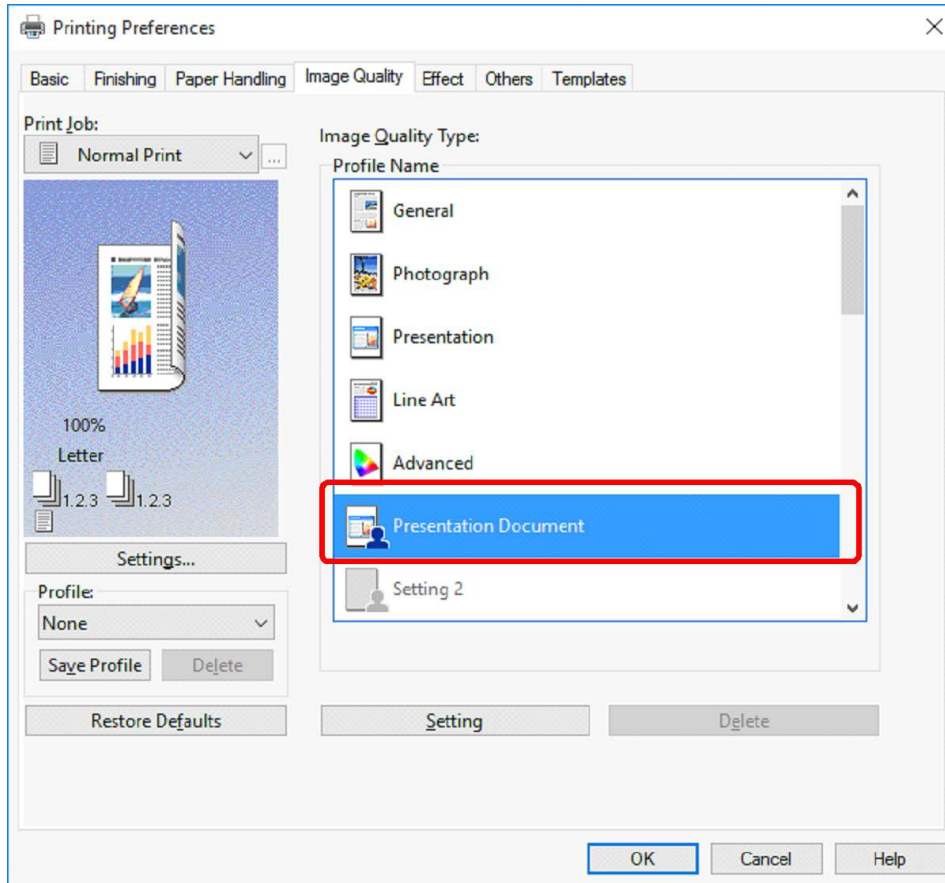
3.12 To Print Full Color Original in Two Colors

Before adjustment	After adjustment
The original is printed in Full Color mode.	Areas other than black are printed in the same color (Red).

❑**Explanation**

Perform this adjustment in order to print the black areas in black and others in the same color for a full color original.

• Twin Color mode is not available when 1200 dpi is selected for a PS printer driver.

❑**Adjustment type**

	Type	Function to be affected
a	Color mode	Print
b	Gradation reproduction for twin color printing	Print

❏**Adjustment method**

Select [Twin Color] in the Color option.

a. Color mode

For Windows

`PCL` `PS`

Open the Properties page of the printer driver. Select [Twin Color] in the Color option in the [Basic] tab.

Click [Details] and select the color to be used for areas other than black in the Color option.

For Mac

Mac
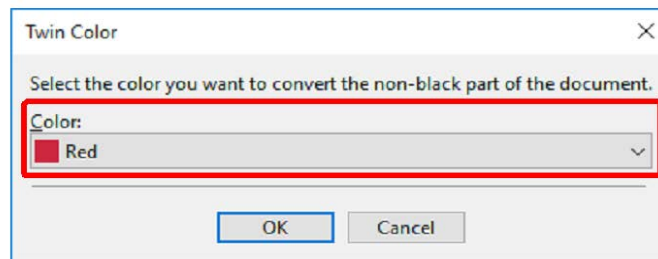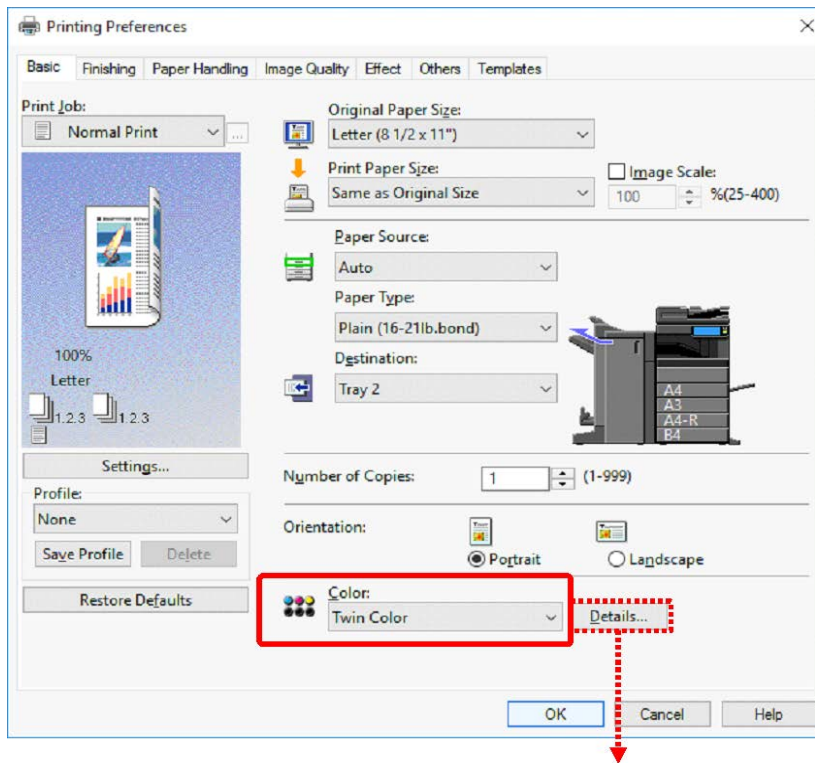
Open the print dialog box and select [Color Settings 1]. Select [Black and ***] in the Color Type option.
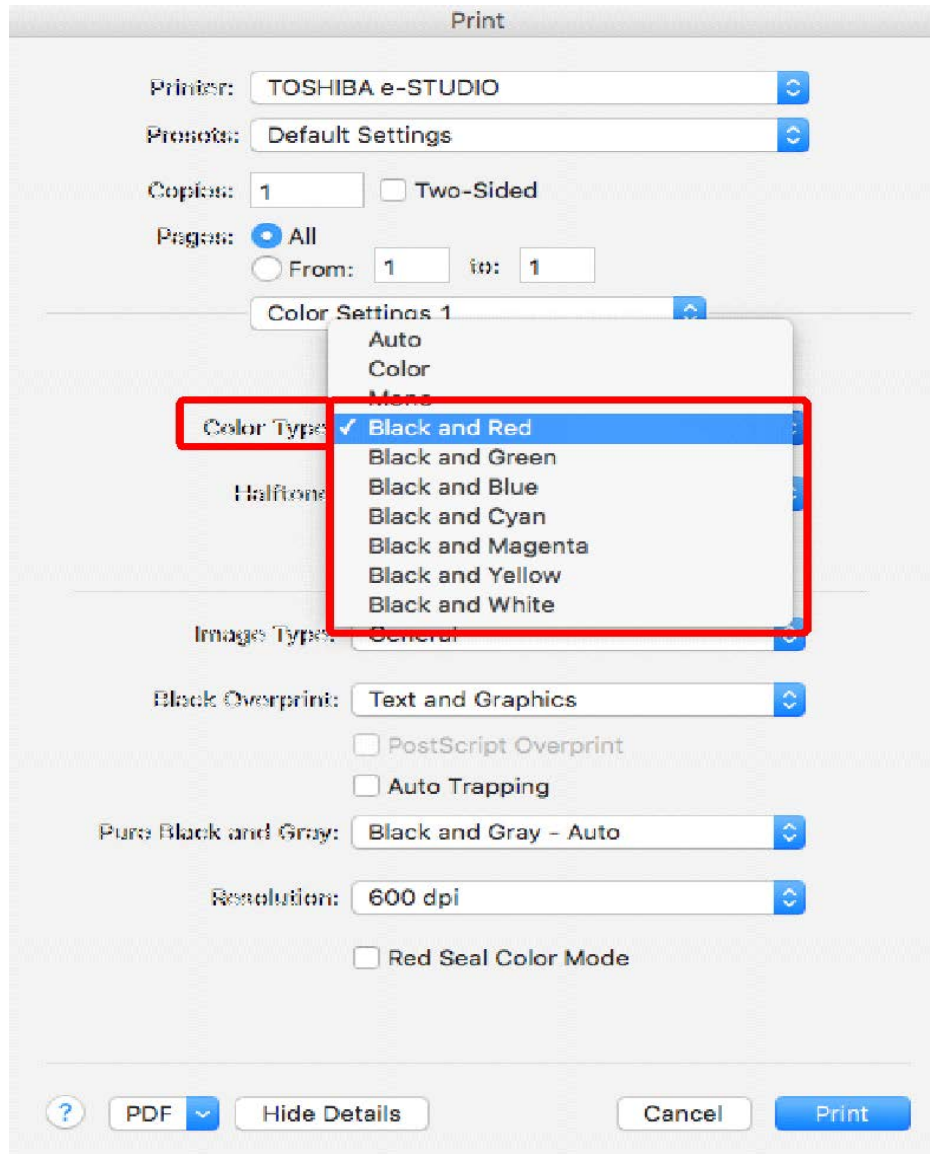
b. Gradation reproduction for twin color printing

The gradation reproduction for twin color printing can be switched by means of the following self-diagnostic code.

Code	Setting value	Contents	Default value
05-8002	0	Gradation reproduction priority (The gradation ability of an original such as a photo becomes more emphasized.)	0
	1	Text reproduction priority (Text or lines can be printed more clearly.)	

3.12.1 To adjust colors other than black

❑ Explanation

Perform this adjustment to change the density and the color tone of the color selected for areas other than black.

❑ Adjustment type

	Type	Function to be affected
a	Color balance adjustment (twin color)	Print

❑ Adjustment method

▌ a. Color balance adjustment (twin color)

Adjust the values of the settings (color selected for twin color printing).
- The color to be adjusted varies according to the color (color to be used for areas other than black) selected in Color mode. Refer to the table below and select the color to be adjusted.

Selected color	Color to adjust		
	Y (Yellow)	M (Magenta)	C (Cyan)
Red	✓	✓	
Green	✓		✓
Blue		✓	✓
Cyan			✓
Magenta		✓	
Yellow	✓		

E.g.:
When printing is performed with the following options selected: Color option = [Twin Color], Details option = [Red]
Adjust the value of 05-8033 (for Y), 05-8034 (for M) and 05-8023 (for K).

Density for each color adjustment

Selected color	Color to adjust	Code	Subcode	Recommended value	Acceptable value range	Default value
Red	Y (Yellow)	05-8033	0/1/2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
	M (Magenta)	05-8034				
	C (Cyan)	05-8035				
Green	Y (Yellow)	05-8036				
	M (Magenta)	05-8037				
	C (Cyan)	05-8038				
Blue	Y (Yellow)	05-8039				
	M (Magenta)	05-8040				
	C (Cyan)	05-8041				
Cyan	Y (Yellow)	05-8024				
	M (Magenta)	05-8025				
	C (Cyan)	05-8026				

Selected color	Color to adjust	Code	Subcode	Recommended value	Acceptable value range	Default value
Magenta	Y (Yellow)	05-8027	0/1/2	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
	M (Magenta)	05-8028				
	C (Cyan)	05-8029				
Yellow	M (Magenta)	05-8030				
	C (Cyan)	05-8031				
	Y (Yellow)	05-8032				
Black	K (Black)	05-8023				

The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	Low density area
1	Middle density area
2	High density area

- Change the value in increments of 20, while checking the image until the optimum value is obtained.
- Depending on the value, the density may exceed that of the adjacent density area.
- One step in the indicator corresponds to "25" of the value in [05] code.

❑ **Caution after the adjustment**

Nothing in particular

3.12.2 To obtain clear image quality in twin color mode printing

❏**Explanation**

Perform this adjustment in order to obtain clear image quality in twin color mode printing.

❏**Adjustment type**

Type		Function to be affected
a	Sharpness adjustment	Print

❏**Adjustment method**

a. Sharpness adjustment

Increase the sharpness intensity.

For details, refer to "3.1.4 Sharpness adjustment".

❏**Caution after the adjustment**

Nothing in particular

3.12.3 To change the adjustment range for judgment

❑**Explanation**

Even if the text looks black on a monitor, it is not perfectly black but is in fact slightly colored. Therefore, colored text sometimes appears in black areas when printing is performed in Twin Color mode. Perform this adjustment in order to change the threshold to judge black and other colors.

❑**Adjustment type**

	Type	Function to be affected
a	PureBlack/PureGray adjustment (twin color)	Print

❑**Adjustment method**

▐▐ a. PureBlack/PureGray adjustment (twin color)

Set a larger value.

Adjustment of the boundary between black and other colors

Item	Code	Recommended value	Acceptable value range	Default value
Text	05-8213	To make the color tend to be judged as black: Set a value larger than the default one. To make the color tend to be judged as a color other than black: Set a value smaller than the default one.	1 to 255	8
Graphic	05-8214			1
Image	05-8215			1

❑**Caution after the adjustment**

Nothing in particular

3.13   To Use ICC Profile

❏**Explanation**

To deliver color images with a precise color tone among several color MFPs, ICC profiles are generally used. This section explains the setting items that become available with the use of ICC profiles.
This function is available only for PS printer drivers for Windows and PS printer drivers for Macintosh.

3.13.1   To create ICC profiles for printing on the paper to be used

❏**Explanation**

Patch printing is performed to create a new printer profile to be used when [Advanced] is selected in the Image Quality Type option. However, the details on how the setting items should be selected in a printer driver correctly are sometimes unclear to perform this patch printing. To create a proper ICC profile with the correct print image, the suitable setting items must be selected.

❏**Printer driver**

PS

(1)   Open the Properties page of the printer driver. Select the paper type in the Paper Type option in the [Basic] tab.
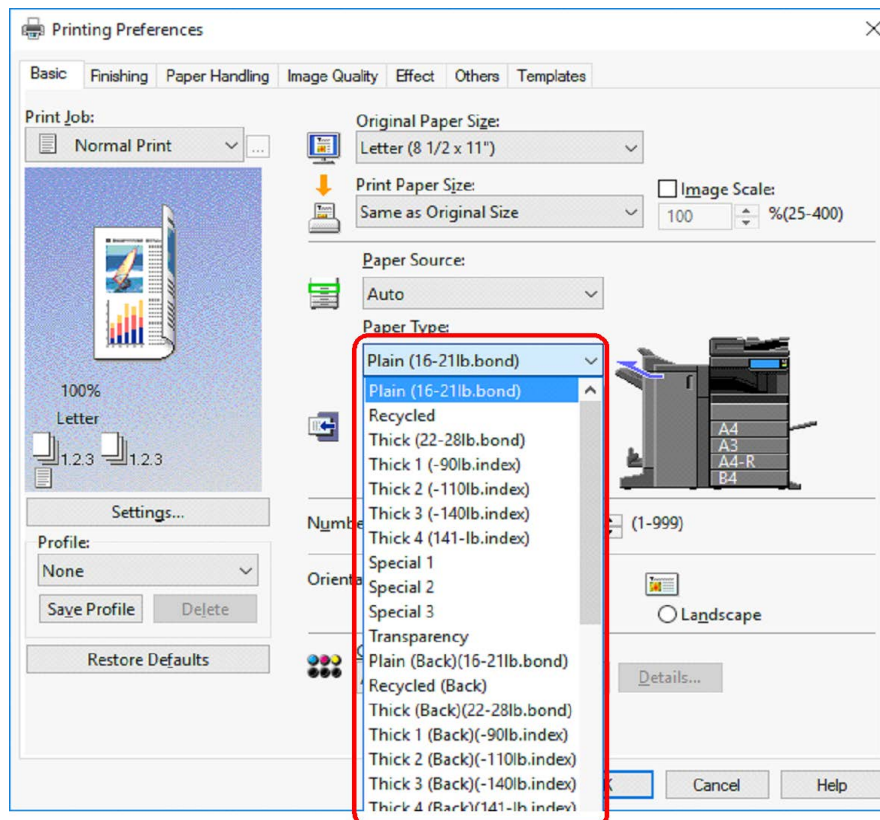
PS

■|▊| (2) Select [Advanced] in the Image Quality Type option in the [Image Quality] tab menu. Then click [Setting].
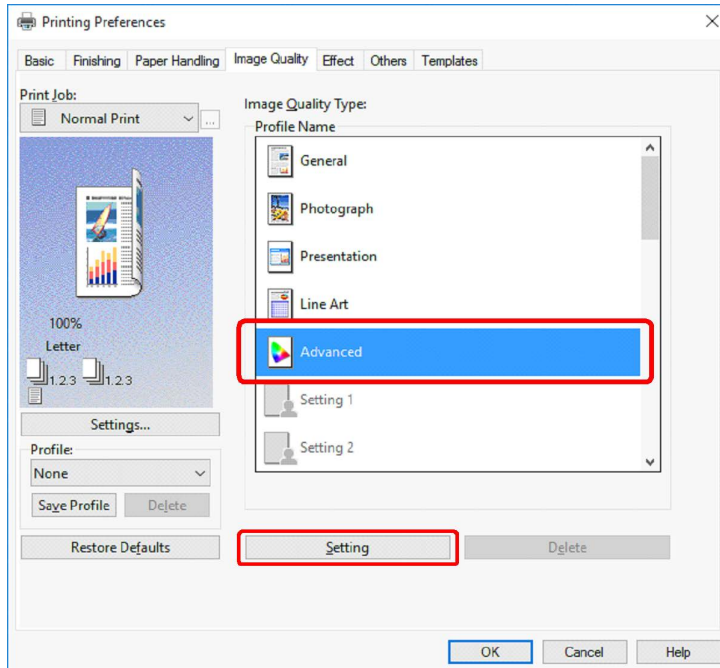
PS

■|▊| (3) Select the desired halftone type in the Halftone option in the [Basic] tab.

- It is not recommended to select [Auto] in this option. Otherwise, multiple types of halftones may be used on the same page.
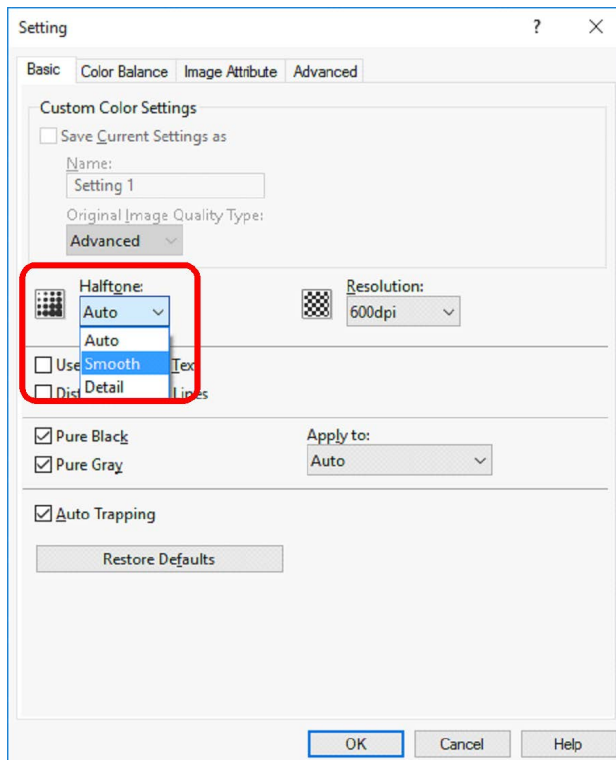
PS

■■▮ (4) Select the desired resolution level in the Resolution option.
     • [1200dpi] is selectable only for a PS printer driver.
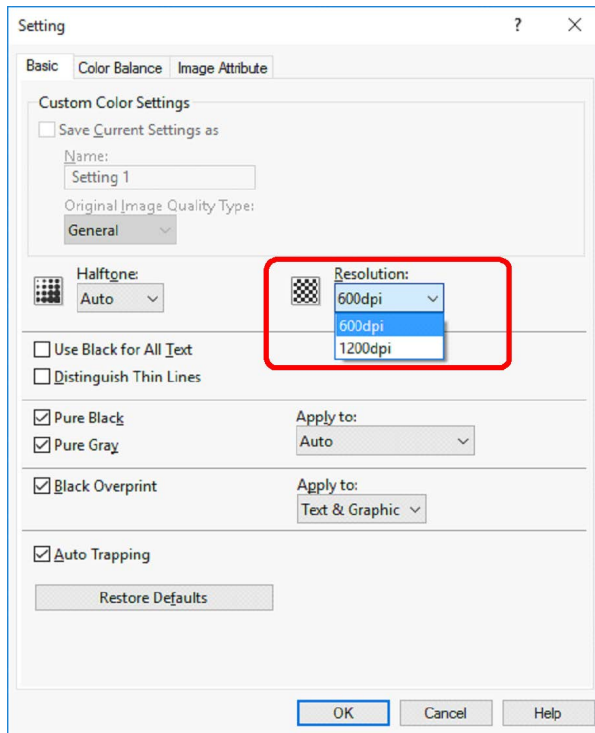
PS

■■▮ (5) Deselect the [Use Sharpness Filter] check box in the [Image Attribute] tab.

e-STUDIO2020AC/2520AC/2021AC/2521AC/2525AC/3025AC/3525AC/4525AC/5525AC/6525AC (Ver01)
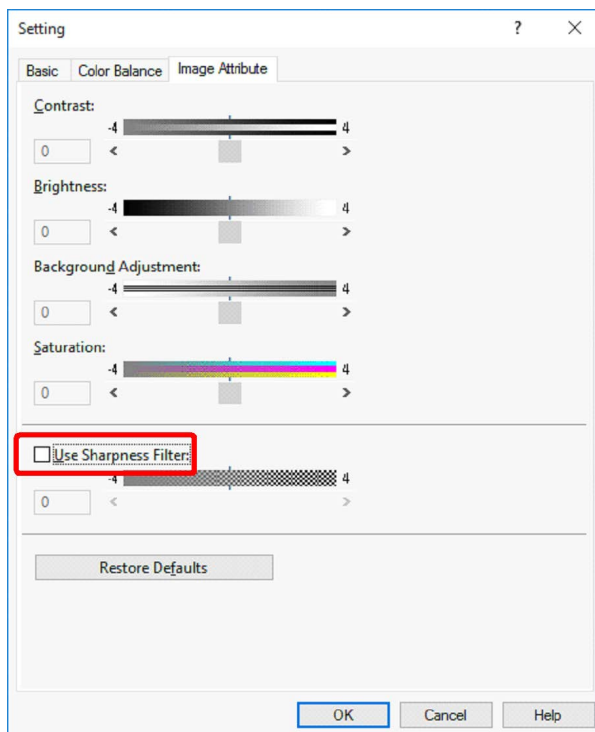
PS

■|▌▌ (6) Select [None] in the CMYK Source Profiles option in the [Advanced] tab.

　　　• Any printer profile can be set in this step.
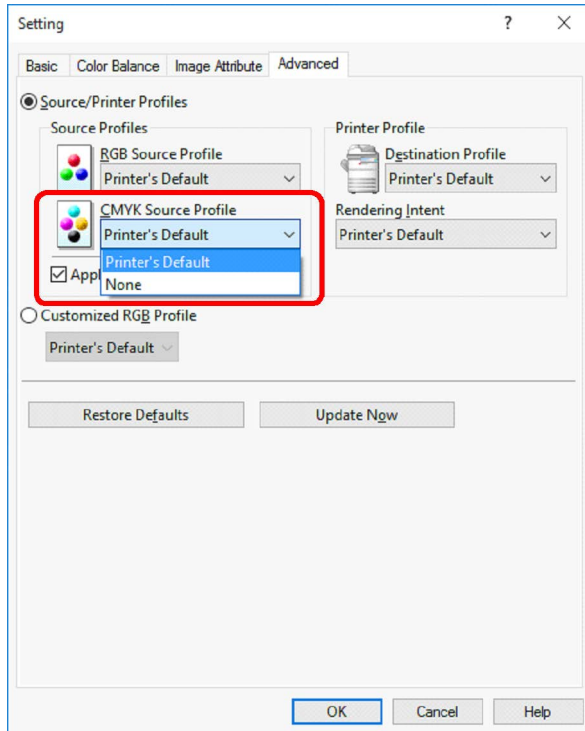
PS

■|▌▌ (7) Deselect the [Apply to Device Color Only] check box.
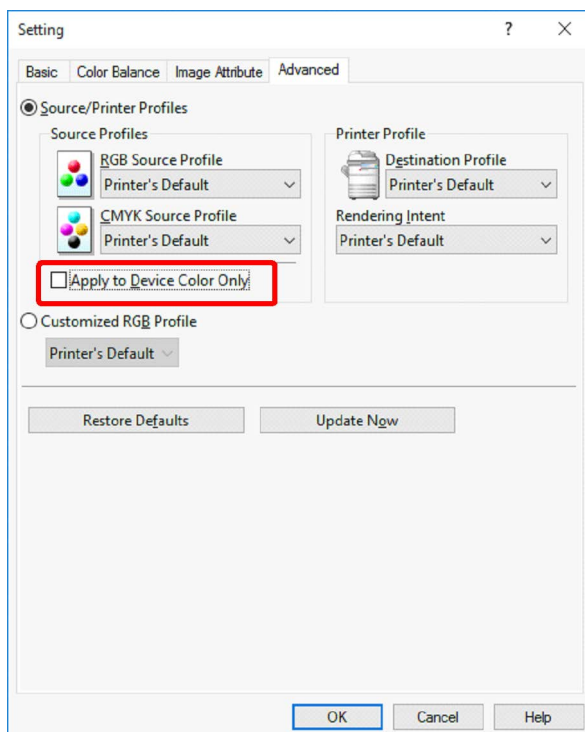
PS

■▮▥ (8) Print a color measurement patch to be used in the ICC profile creation software.

PS

■▮▥ (9) Create the ICC profile in accordance with the operational procedure provided by the ICC profile creation software.

❑ **Caution after the adjustment**

Nothing in particular

❑ **Remarks**

• Carefully read the precautions of the ICC profile creation software before starting printing.
• Printing will not be performed correctly on some paper types that are out of the MFP specifications.

3.13.2 To perform printing using the ICC profiles

	Purpose	Contents
a	To print precise colors using an existing RGB source ICC profiles	Standard RGB color space ICC profiles are disclosed and distributed via some websites. By applying these profiles for printing RGB images, outputs in which colors are converted precisely can be obtained.
b	To perform simulated printing with CMYK inks for each ink vendor	ICC profiles supporting CMYK inks for each vendor are disclosed and distributed via some websites. By using these profiles as a CMYK source profile, simulated printing can be performed.
c	To perform printing using custom RGB profiles	In the service tool (e-BRIDGE Color Profile Tool V3.0), RGB source ICC profiles which meet the color reproduction for a specific printer can be created. By using this created profile, printing with the color reproduction for a specific printer is possible.
d	To convert colors with specified source ICC profiles (not using embedded ICC profiles)	ICC profiles specified by a user can be applied to convert colors without using embedded ICC profiles even if they are attached to RGB or CMYK images.

❑ **Adjustment method**

PS

▌▐▌▐ (1) Create a printer profile using the ICC profile creation software.

Or obtain a printer profile from a website.

PS

▌▐▌▐ (2) Access TopAccess and open the [Administration] tab. Then upload the printer profile.

Follow steps (a) to (g) to upload the profile.

(a) Access TopAccess and open the [Administration] tab.

(b) Open the Setup menu and click the ICC Profile sub menu.
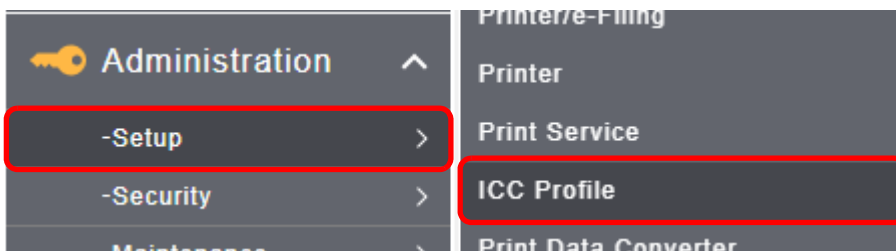
(c) Click [Maintenance] for the profile to be uploaded.

    • The Maintenance Destination Profiles page for the selected profile is displayed.
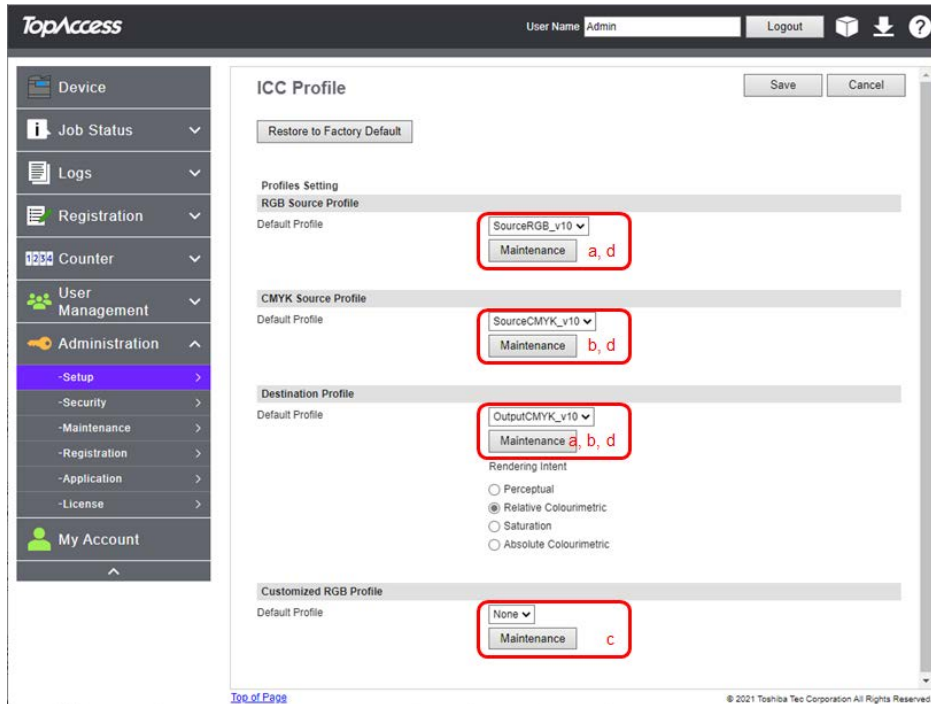
(d) Click [Browse] in the Import new Profile option to select a file for the profile. Then click [Import].

(e) Click [Previous].

    The display returns to the ICC Profile sub menu.

(f) Click [Save].

    A confirmation dialog box is displayed.

(g) Click [OK].

• For the details of TopAccess, refer to the "TopAccess".

PS

◼▐▐ (3) Open the Properties page in the printer driver and then select [Advanced] in the Image Quality Type option in the [Image Quality] tab. Then click [Setting].
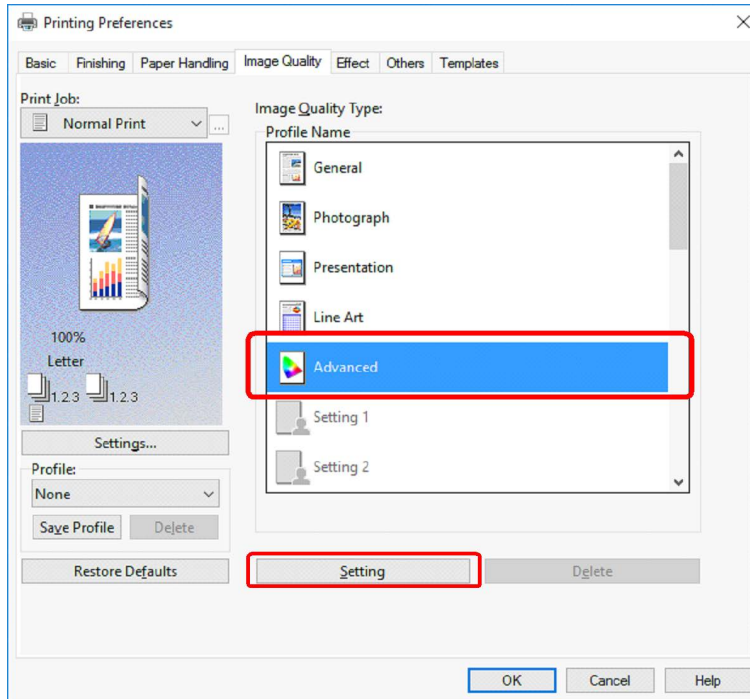
PS

◼▐▐ (4) Select the uploaded ICC profile in the [Advanced] tab.
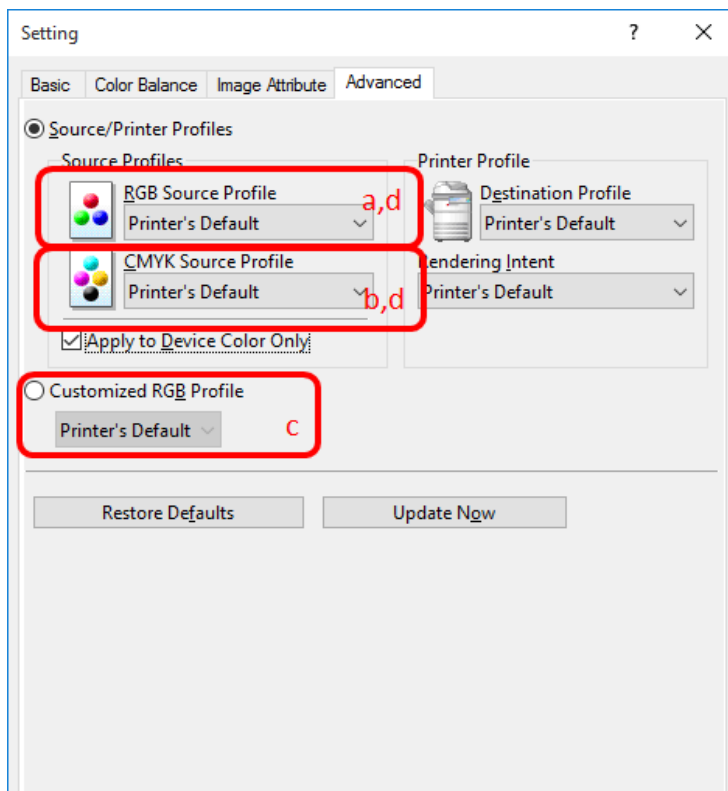
PS

▮▮▯ (5) Select the uploaded printer profile in the Printer Profile option in the [Advanced] tab.
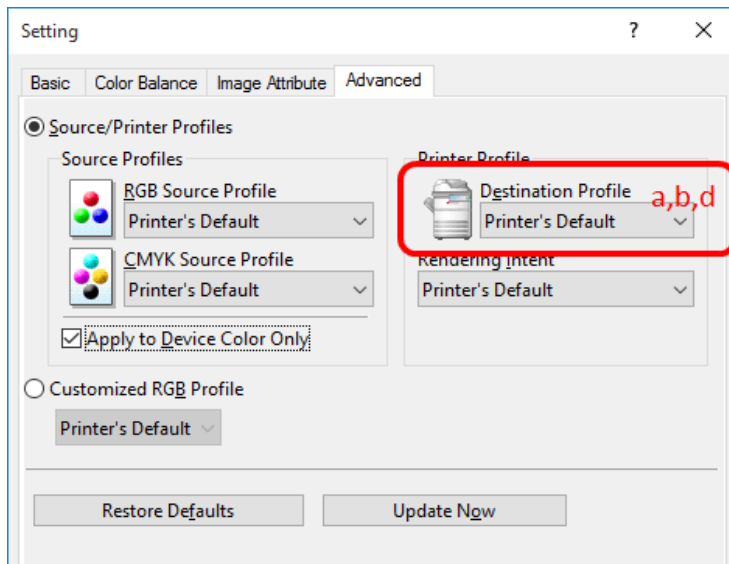
• In the case of d, perform the following setting.

(6) Deselect the [Apply to Device Color Only] check box.
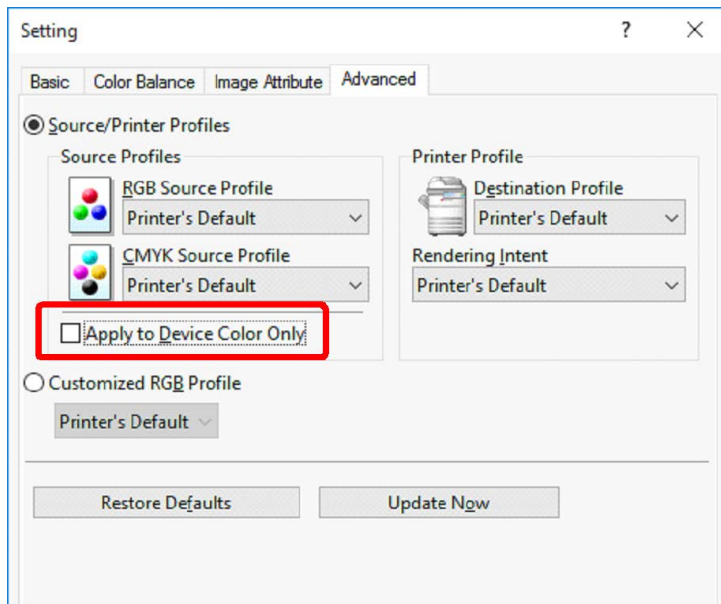
❏ **Caution after the adjustment**

Nothing in particular

❏ **Remarks**

• Not all colors may be printed precisely because the color gamut reproducible with MFPs differs depending on the model.

• The accuracy of color reproduction differs depending on the printer profiles.

3.13.3 To perform further image adjustment after ICC profiles are applied

❑ **Explanation**

Further image adjustment can also be performed after printer profiles have been applied by selecting [Advanced] in the Image Quality Type option in the printer driver menu.

❑ **Adjustment method**

PS

(1) Open the Properties page in the printer driver and then select [Advanced] in the Image Quality Type option in the [Image Quality] tab. Then click [Setting].
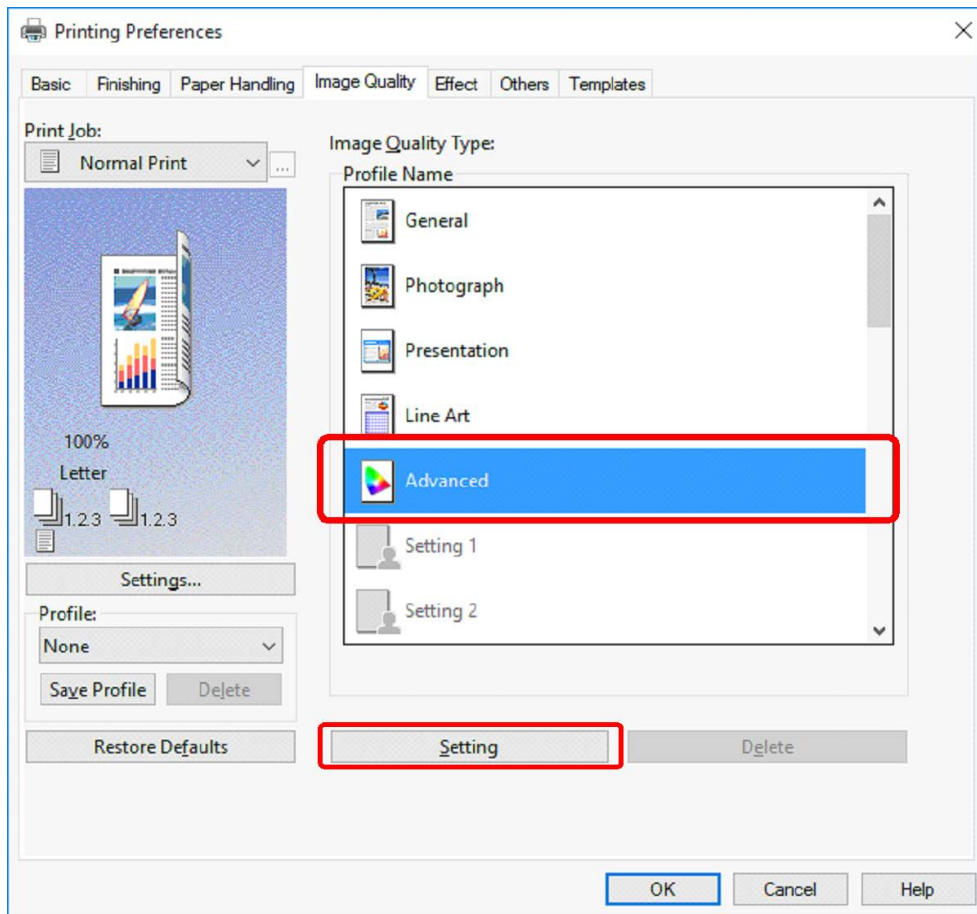
PS

■ ❚❙❙❘ (2) Select the desired profile from RGB Source Profile, CMYK Source Profile or Destination Profile in the [Advanced] tab.
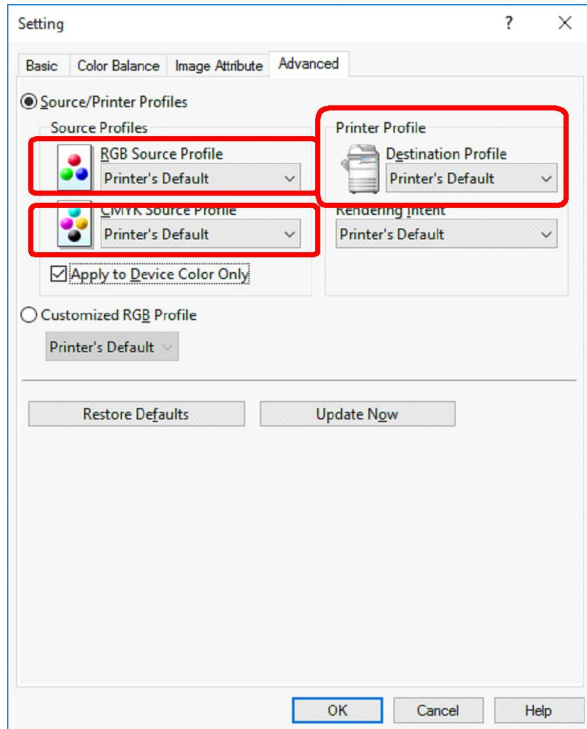
PS

■ ❚❙❙❘ (3) Select the [Color Balance] tab and change each setting to obtain the desired color tone.

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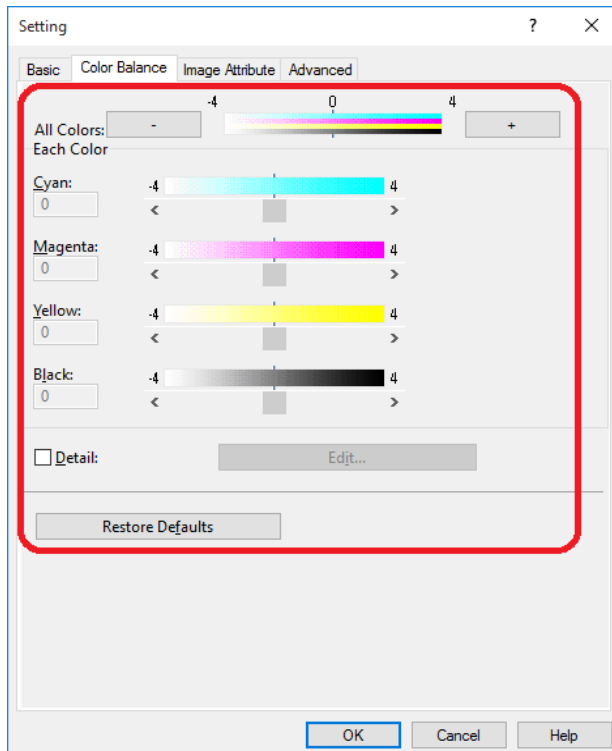
PS

██▐███ (4) Select the [Image Attribute] tab and change each setting to obtain the desired image quality.
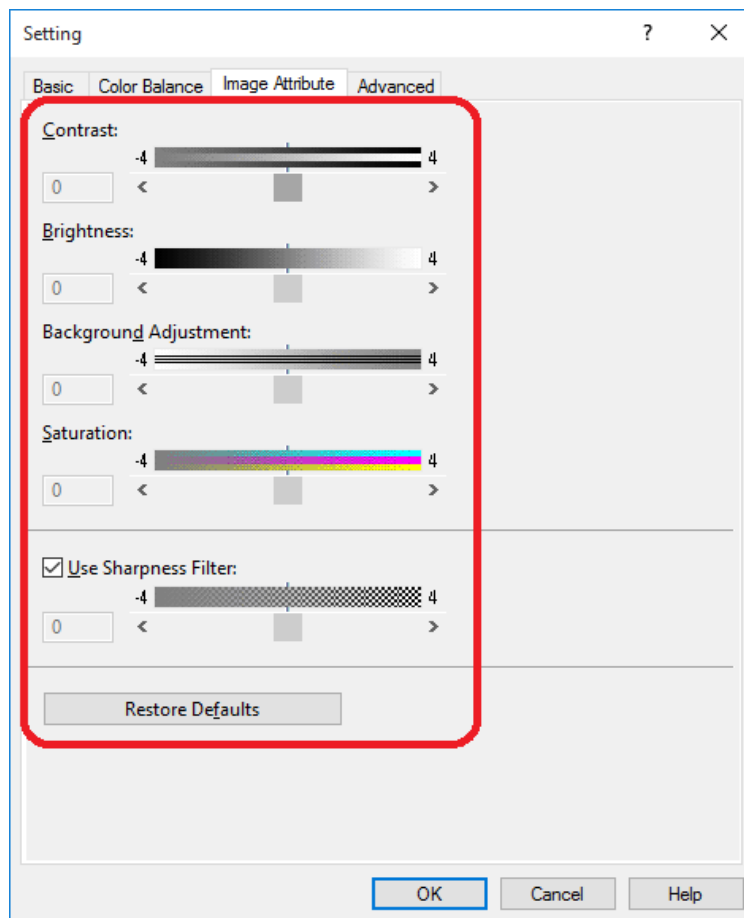
❑ **Caution after the adjustment**

Nothing in particular

3.14   To Improve Reproducibility of Red Seal Color
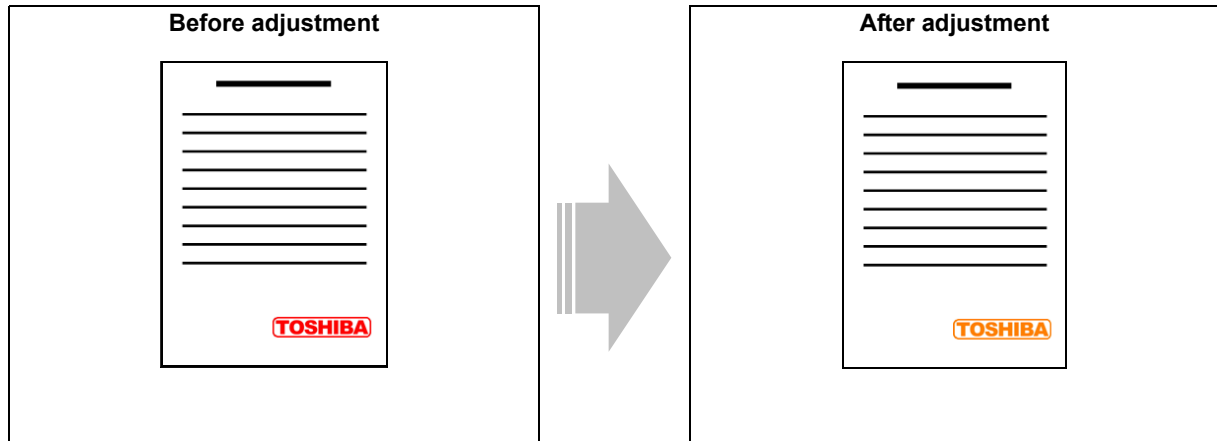
□**Explanation**

Specify the settings so that Red Seal Color mode can be selected as the image quality type. In addition, perform this adjustment to improve the reproducibility of red seal color when printing an original containing a red seal.

□**Adjustment type**

	Type	Function to be affected
a	Red Seal Color Mode	Print

❑ **Adjustment method**

a. Red Seal Color Mode

(1) Set "1" (Display setting ON) in 08-8005.

(2) Change the setting of the Red Seal Color Mode option in the printer driver.

For Windows

| PCL | | PS | * This adjustment will have an effect only on Auto or Color mode printing.

Open the Properties page of the printer driver. Select [General] in the Original Image Quality Type option in the [Image Quality] tab and click [Setting].
Select the [Red Seal Color Mode] check box in the [Basic] tab.
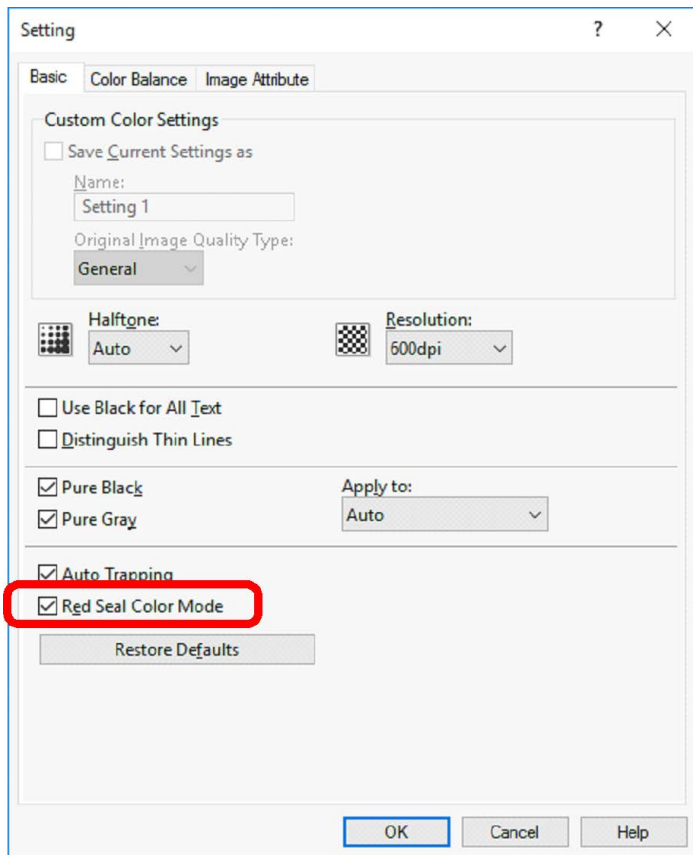
For Mac

 Mac * This adjustment will have an effect only on Color mode printing.

Open the print dialog box and select [Color Settings 1]. Deselect the [Red Seal Color Mode] check box.
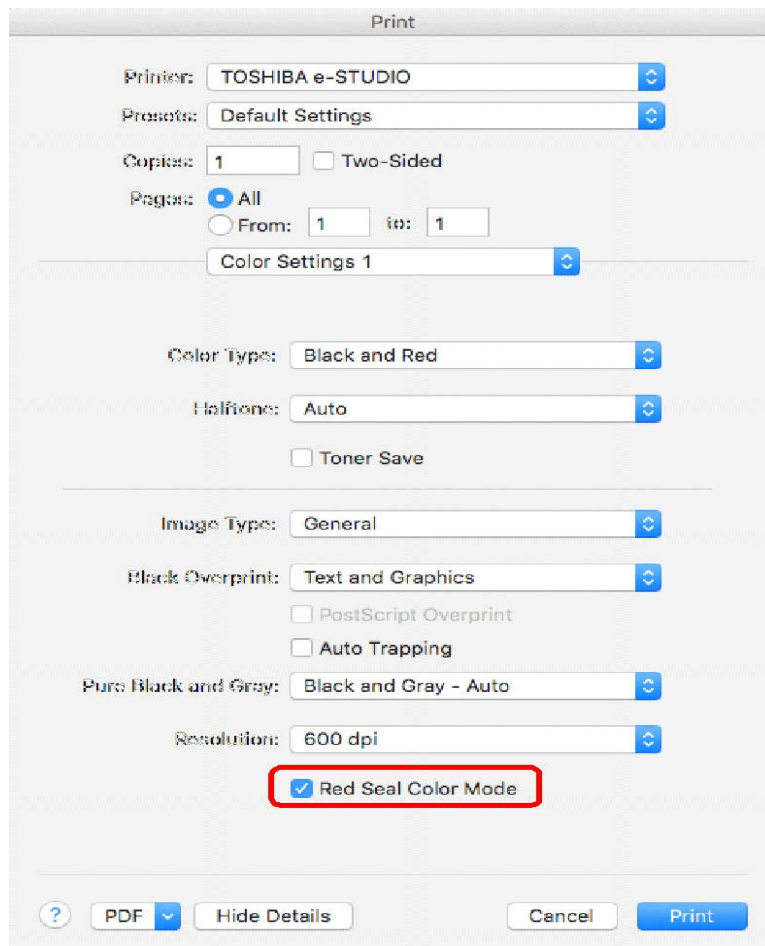
After the setting value is changed, perform printing and check image quality.

❑Caution after the adjustment

Nothing in particular

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3.15   To Suppress Unevenness and Jitteriness on Images, White Voids in Lines on Background and Around Text

❑ **Explanation**

Perform this adjustment in order to improve the following symptoms.

• When an attempt is made to print evenly colored low/middle density images, unevenness in density or jitteriness sometimes becomes visible.

Before adjustment	After adjustment
Feeding direction	Feeding direction
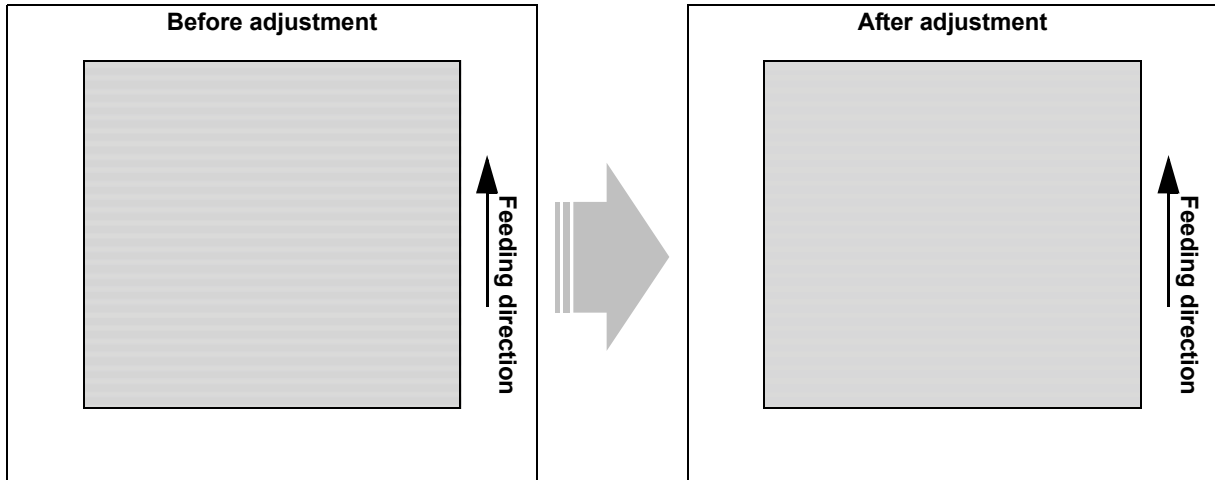
• White voids may occur on the boundary when the color of the background and text on it is the same type or there are thin lines with the same color type in evenness data.
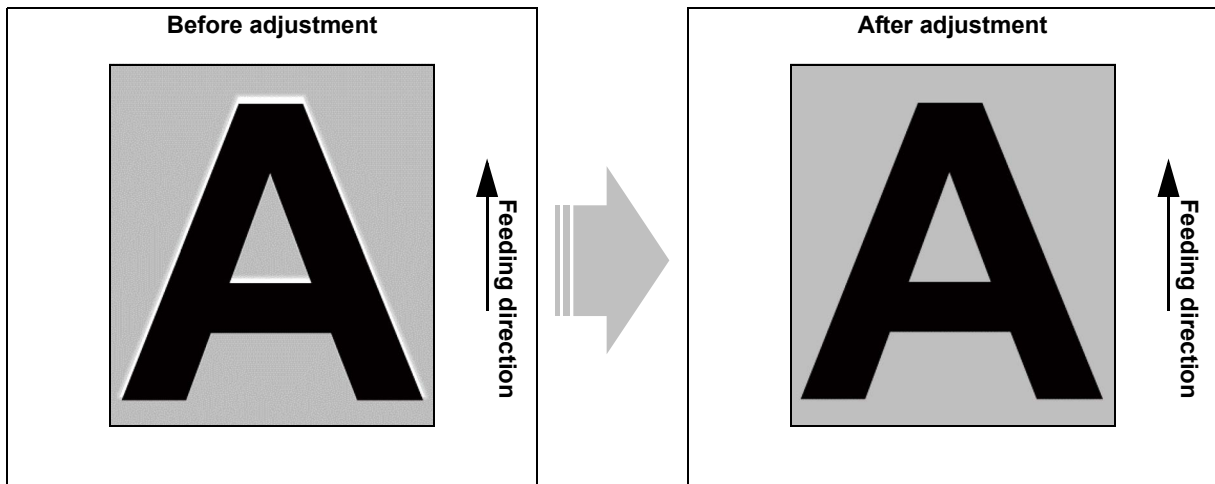
Before adjustment	After adjustment
Feeding direction	Feeding direction

❑ **Adjustment type**

	Type	Function to be affected
a	Halftone adjustment (when changing all print jobs)	Print
b	White void correction around the text	Print

❑ **Adjustment method**

a. Halftone adjustment

Adjust the halftone setting.

For details, refer to "3.1.11 Halftone adjustment (when changing all print jobs)".

b. White void correction around the text

Enable to correct white voids around text.

Color mode	Resolution	PDL	Code	Sub code	Meaning of the sub code	Recommended value	Acceptable value	Default value
Full color	600 dpi	PS	05-8200	0	Y	1 to 3 0: Correction off The larger the value the greater the correction	0 to 5	0
				1	M			
				2	C			
				3	K			
		PCL	05-8201	0	Y			
				1	M			
				2	C			
				3	K			
	1200 dpi	PS	05-8208	0	Y			
				1	M			
				2	C			
				3	K			
Black	600 dpi	PS	05-8204	0	-			
		PCL		1	-			
	1200 dpi	PS	05-7378	-	-			

You can change the target of correction for K toner during color printing and Black-and-white printing. It is effective against white voids around text that occur when printing image data (JPEG, etc.).

Color mode	Resolution	PDL	Code	Sub code	Recommended value	Acceptable value	Default value
Full color	600 dpi	PS	05-8203	0	1 to 2 0: Graphic only 1: Image only 2: Applied to both Graphic and Image	0 to 2	0
		PCL		1			
Black	600 dpi	PS	05-8206	0			
		PCL		1			

• Setting the correction too high may make the colors around text dense or make the density uneven.

❑ **Caution after the adjustment**

Nothing in particular

3.16 To Suppress Out-of-Registration Colors

Before adjustment	After adjustment
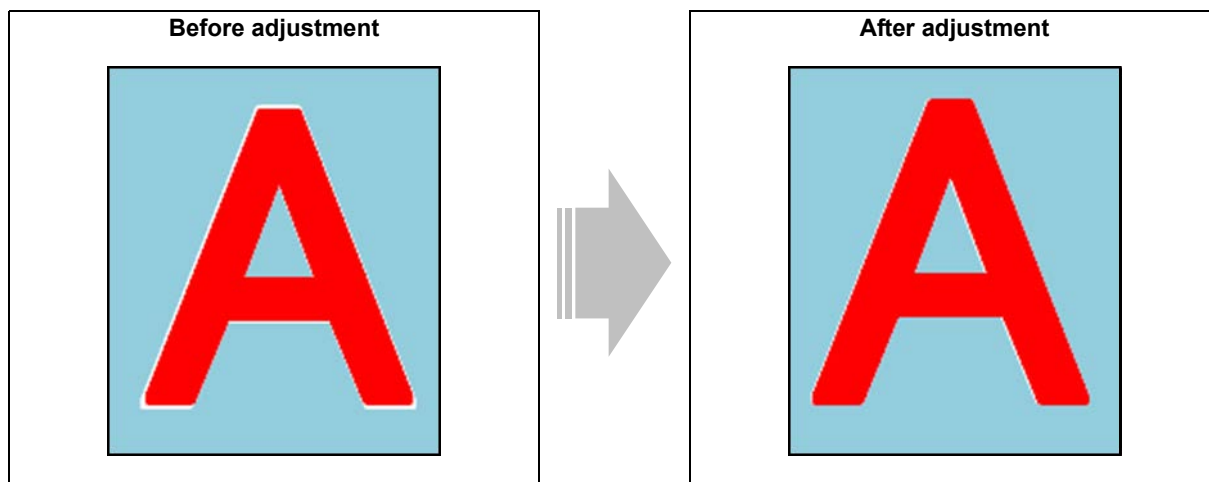
❑ Explanation

White voids in the background caused by off-registration of the text or graphics can be reduced and color misalignment can be suppressed by Auto Trapping adjustment. Perform this adjustment in order to enhance the effectiveness of the correction for this symptom.

❑ Adjustment type

Type		Function to be affected
a	Auto trapping adjustment	Print

❑ Adjustment method

a. Auto trapping adjustment

Change the setting value of the subocde "0". Only when the effect is insufficient even if the setting value of the subcode "0" is changed to "3", alter the one for the subcode "1".

<Tip>
- This adjustment will be reflected only when "600 dpi" is set in Resolution.
- This adjustment is effective only to the boundary of the text or graphics.

Auto trapping adjustment

Color mode	Adjustment	Code	Subcode	Recommended value	Acceptable value range	Default value
Auto/Color	Trap width (dot)	05-8244	0	Set the value to 3. (*1)	1 to 3	2
	Trap density	05-8244	1	Set a value smaller than the default one. (*2)	0 to 255	128

*1 When a larger value is set, it will get stronger against a wider gap (off registration); however, overlapped areas will become more conspicuous.

*2 The smaller the value is, the darker the boundary color becomes. In this case, gaps will not become conspicuous; however, overlapping areas will become more conspicuous.

• The above setting will be effective when [Auto Trapping] in the printer driver has been enabled. ([Auto Trapping] is enabled as the default.)

❏ **Caution after the adjustment**

Nothing in particular

3.17   To Minimize Noise Appears around Text and Lines

Original	Before adjustment	After adjustment
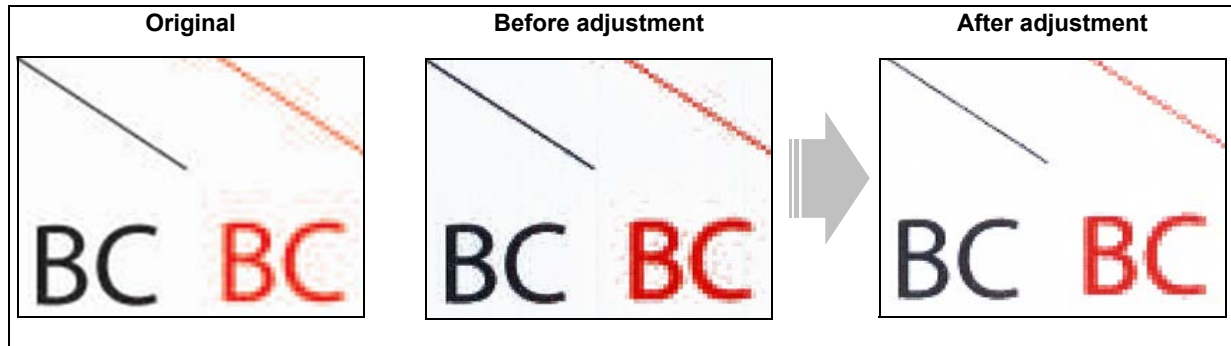
❑**Explanation**

If text and lines are created as a low-resolution photo, a noise may appear on the white background around text and lines due to the compression of the source data.
Such type of noise can be minimized by this adjustment.

❑**Adjustment type**

	Type	Function to be affected
a	Background adjustment	Print
b	Color balance adjustment	Print

❑**Adjustment method**

a. Background adjustment

   Darken the density of the background.
   For details, refer to "3.1.3 Background adjustment".
   • This adjustment makes all light colors darker. To adjust a particular light color, perform the following steps.

b. Color balance adjustment

   For details, refer to "3.1.5 Color balance adjustment".

❑**Caution after the adjustment**

Nothing in particular

4. Scanning Function Adjustments

4.1 Adjustment Method

When this MFP is used as a scanner, perform image adjustments by combining the following items in accordance with the usage purposes.

Type	Purpose	[05]	[08]	SCN	UF
Color mode	To perform scanning with the color mode suitable for the original	-	-	Y	-
Original mode	To perform scanning with image quality suitable for the original	-	-	Y	Y
Density adjustment	To adjust the density of entire images	Y	-	Y	Y
Background adjustment	To adjust the background density	Y	-	Y	Y
Sharpness adjustment	To adjust the sharpness of the boundary of text and lines	Y	-	Y	-
Resolution	To adjust the image quality and the file size	-	-	Y	Y
Compression rate	To adjust the image quality and the file size	Y	-	Y	Y

* SCN: [Scan] mode (control panel)
* UF: [User Functions] menu (control panel)

<Notes>
• Both the service technician and the user can perform the adjustments on the control panel.

4.1.1　Color mode

You can perform scanning with the color mode suitable for the original.

❑**Control panel**

(1)　Press [Scan] on the Home screen and then [Scan Setting].
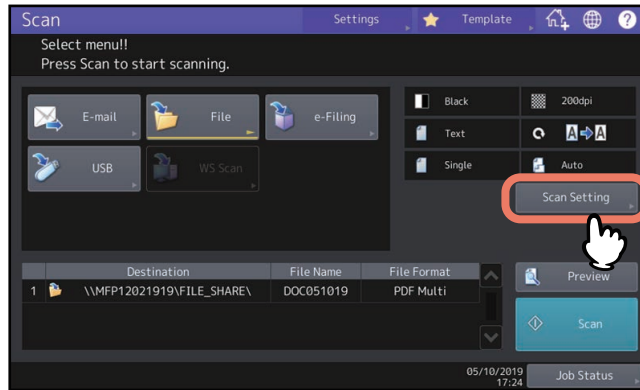
(2)　Press [Color Mode] to select the proper color mode.
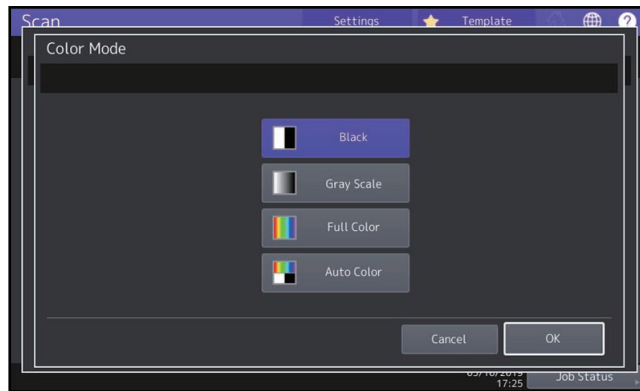
4.1.2   Original mode

You can perform scanning with image quality suitable for the original.

❑ **Control panel**

(1) Press [Scan] on the Home screen and then [Scan Setting].

(2) Press [Original Mode] to select the original mode.
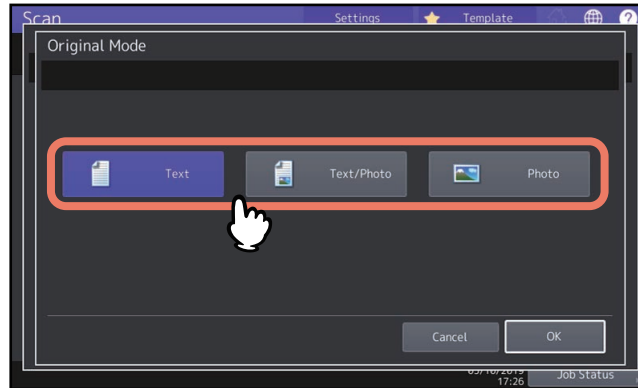
The available original modes are as below.

Original mode	Description	Suitable original
Text	• Emphasizes the reproduction of text • Makes background of the original less fogging	• Originals with text only or with text and line art only
Text/Photo	• Satisfies the reproduction of both text and photographs	• Originals with text and photographs mixed • Originals printed by an MFP
Photo	• Obtains the image quality suitable for originals with photos	• Originals with photos

• The original mode cannot be set when [Gray Scale] is selected for the color mode.

<Tip>
• You can change the default value of the original mode for each color mode using the following procedure.
(1)Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
(2)Press [Scan].
(3)Select the original mode to be set for the default for each color mode.

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4.1.3 Density adjustment

You can adjust the density of entire images.

❑**Control panel**

(1) Press [Scan Setting] on the Scan screen. Press [◖] [◗] of [Exposure] to adjust the density.
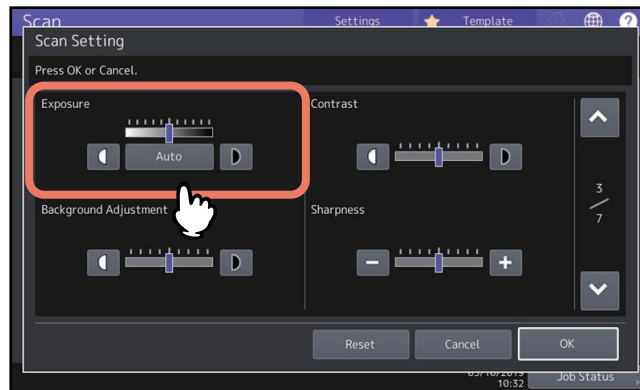
• The density will be adjusted automatically by pressing [Auto].

<Tip>
• You can change the default value of the density for each color mode with the following procedure.
(1)Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
(2)Press [Scan].
(3)Set the default value for each color mode.

❑ **Self-diagnosis code**

Color mode	Item	Original mode	Code	Recommended value	Acceptable value range	Default value
Full Color	Manual density	Text/Photo	05-8339	To make the density darker: Set a value larger than the default one. To make the density lighter: Set a value smaller than the default one.	0 to 255	128
		Text	05-8340			
		Photo	05-8341			
		Custom	05-8380			
	Automatic density	Text/Photo	05-8342			
		Text	05-8343			
		Photo	05-8344			
		Custom	05-8381			
Gray Scale	Manual density	-	05-7447			
	Automatic density		05-7459			
Black	Manual density	Text/Photo	05-7444			
		Text	05-7445			
		Photo	05-7446			
		Custom	05-7475			
	Automatic density	Text/Photo	05-7456			
		Text	05-7457			
		Photo	05-7458			
		Custom	05-7478			
Drop Out Color			05-7443			

• One step in the indicator corresponds to "20" of the value in [05] code.

4.1.4   Background adjustment

You can adjust the density of the background.

❏ Control panel

Press [Scan Setting] on the Scan screen. Press [◁] [▷] of [Background Adjustment] to adjust the density.
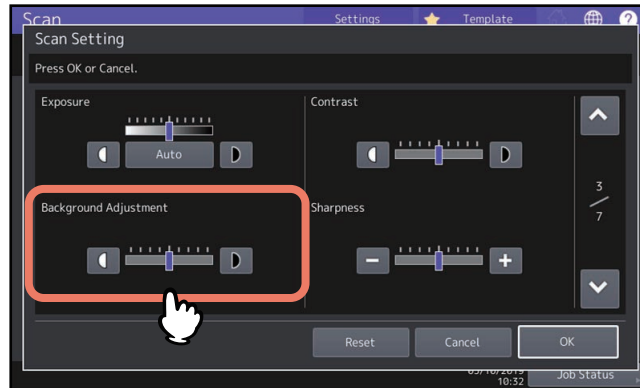
> **\<Tip\>**
> • You can change the default value of the background adjustment for each color mode with the following procedure.
> (1) Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
> (2) Press [Scan].
> (3) Set the default value for each color mode.

❏ Self-diagnosis code

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-8309	To make the background density darker: Set a value larger than the default one. To make the background density lighter: Set a value smaller than the default one.	0 to 255	128
	Text	05-8310			
	Photo	05-8311			
	Custom	05-8370			
Gray Scale	---	05-7439			
Black	Text/Photo	05-7436			
	Text	05-7437			
	Photo	05-7438			
	Custom	05-7441			
Drop Out Color		05-7442			

• One step in the indicator corresponds to "25" of the value in [05] code.
• The value is the center value of [Background Adjustment]. When the value is changed, all the steps of the indicator are shifted accordingly.
• Change the value in increments of 10, while checking the image until the optimum value is obtained.

4.1.5   Sharpness adjustment

You can adjust the sharpness of the boundary of text and lines.

❑ Control panel

Press [Scan Setting] on the Scan screen. Press [◖] [◗] of [Sharpness] to adjust the sharpness.
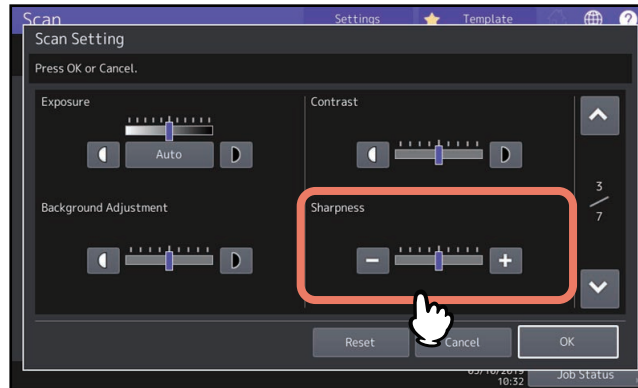
❑ Self-diagnosis code

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Black	Text/Photo	05-7430	To make the image softer or to minimize moiré: Set a value smaller than the default one. To make the image or thin lines sharper: Set a value larger than the default one.	0 to 255	128
Black	Text	05-7431			
Black	Photo	05-7432			
Black	Custom	05-7470			
Full Color	Text/Photo	05-8354			
Full Color	Text	05-8335			
Full Color	Photo	05-8336			
Full Color	Custom	05-8375			
Gray Scale	---	05-7433			

• One step in the indicator corresponds to "25" of the value in [05] code.

• The value is the center value of [Sharpness]. When the value is changed, all the steps of the indicator are shifted accordingly.

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4.1.6   Resolution

You can adjust the image quality and the file size

❑ Control panel

(1)Press [Scan Setting] on the Scan screen and then [Resolution].

(2)Select the resolution.

<Tip>
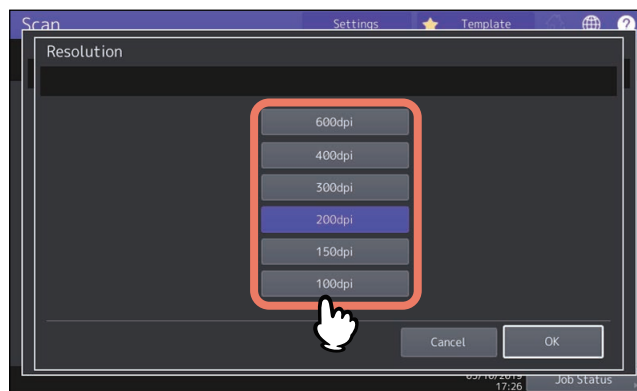
• You can change the default value of the resolution for each color mode with the following procedure.

(1) Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.

(2) Press [Scan].

Set the resolution for each color mode.

• The relationship between the resolution and the file size when 200 dpi is set as "1"

Resolution	File size (ratio)
100 dpi	0.3
150 dpi	0.6
200 dpi	1
300 dpi	2
400 dpi	3
600 dpi	8

• The file size ratio varies depending on the original type or its content.

4.1.7 Compression rate

You can adjust the image quality and the file size

❑ **Control panel**
    (1)Press [Scan Setting] on the Scan screen and then [Compress].
    (2)Select the compression ratio.
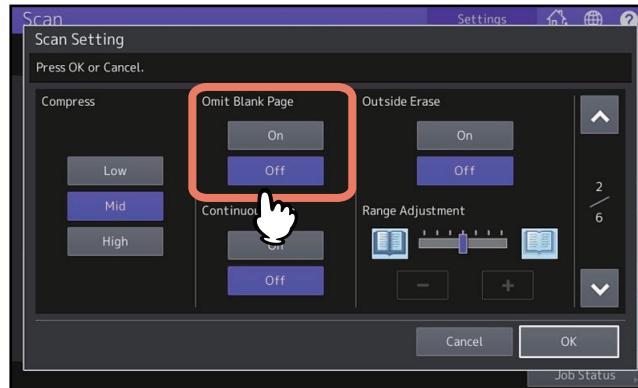
<Tip>
   • You can change the default value of the compression ratio with the following procedure.
       (1) Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
       (2) Press [Scan].
         Select the compression ratio.
            • Level of the compression ratio: [Low] < [Mid] < [High]

❑ **Self-diagnosis code**

JPEG compression level

Color mode	Code	Subcode	Subcode description	Recommended value	Acceptable value range	Default value
Full Color	05-8304	0	Low	To make the compression ratio higher: Set a value smaller than the default one. To make the compression ratio lower: Set a value larger than the default one.	0 to 255	128
		1	Mid			
		2	High			

   • The higher the compression ratio becomes, the smaller the file size becomes but the image quality worsens. The lower the compression ratio becomes, the larger the file size becomes but the image quality improves.

4.2   To Clearly Scan Text (To Reduce Noise around Text)

Before adjustment	After adjustment
If an original is scanned in Full Color mode or Gray Scale mode, noise may occur in text or the edges of solid filled in area.	The image quality is maintained, while noise is being reduced.
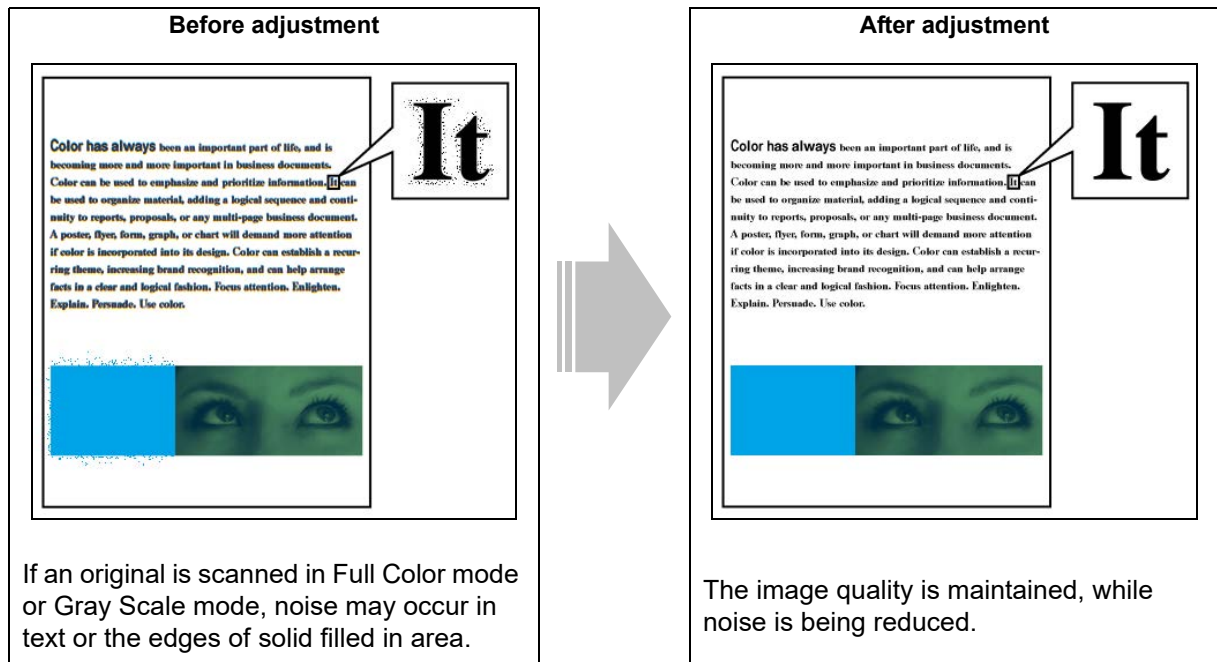
❏ **Explanation**

Perform this adjustment to reduce noise (toner scattering) that has occurred around text or the edges of a solid filled in area caused by data compression when an original is scanned in Full Color mode or Gray Scale mode.

<Tip>

• This adjustment will have an effect only on scanning in Full Color mode, Auto Color mode and Gray Scale mode.

❏ **Adjustment type**

	Type	Function to be affected
a	Compression rate	Scan
b	Resolution	Scan

❑ **Adjustment method**

a. Compression rate

Select [Low] in [Compress].
For details, refer to "4.1.7 Compression rate".

b. Resolution

Specify a higher level in [Resolution].
For details, refer to "4.1.6 Resolution".

\<Tip\>

• When too high a level is specified in [Resolution], moiré may occur. Therefore, while checking the image until the optimum value is obtained.

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4.3 To Scan an Original, while Eliminating the Background Color (Reduces Fog in Background)
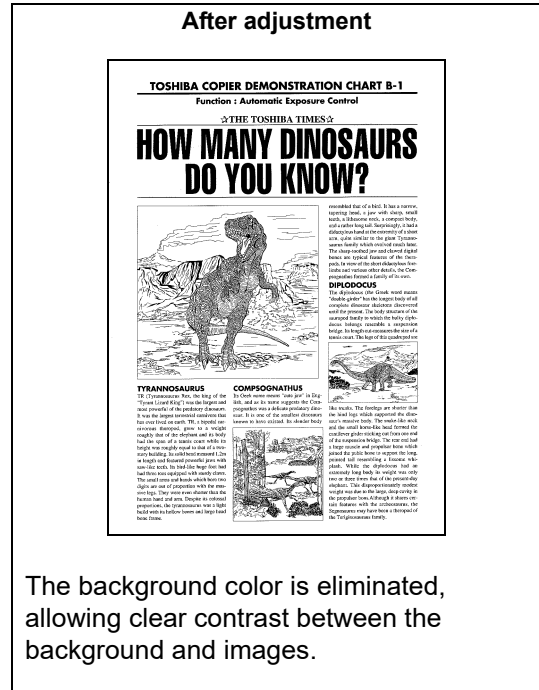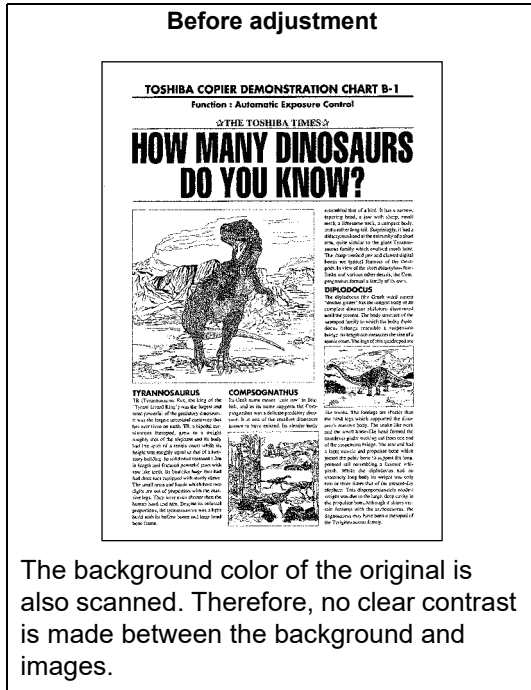
Before adjustment	After adjustment
The background color of the original is also scanned. Therefore, no clear contrast is made between the background and images.	The background color is eliminated, allowing clear contrast between the background and images.

Explanation

If an original with a dark-colored paper is copied, its background color is also reproduced, and no clear contrast is made between the background and the images as a result. Perform this adjustment in order to make a clear contrast between the background and the images by eliminating the background color or making it white.

❏ Adjustment type

	Type	Function to be affected
a	Density adjustment	Scan
b	Background adjustment	Scan

❏ Adjustment method

a. Density adjustment

Select [Auto] in [Exposure].
For details, refer to "4.1.3 Density adjustment".

b. Background adjustment

Lighten the density of the background.
For details, refer to "4.1.4 Background adjustment".

4.4 To Clearly Scan and Print Original in Black Mode (Improves Gradation and Reduces Graininess)

Before adjustment	After adjustment
If an original is scanned in Black mode, halftones may become blurred in black.	The halftones of the scanned image are clearly printed out.
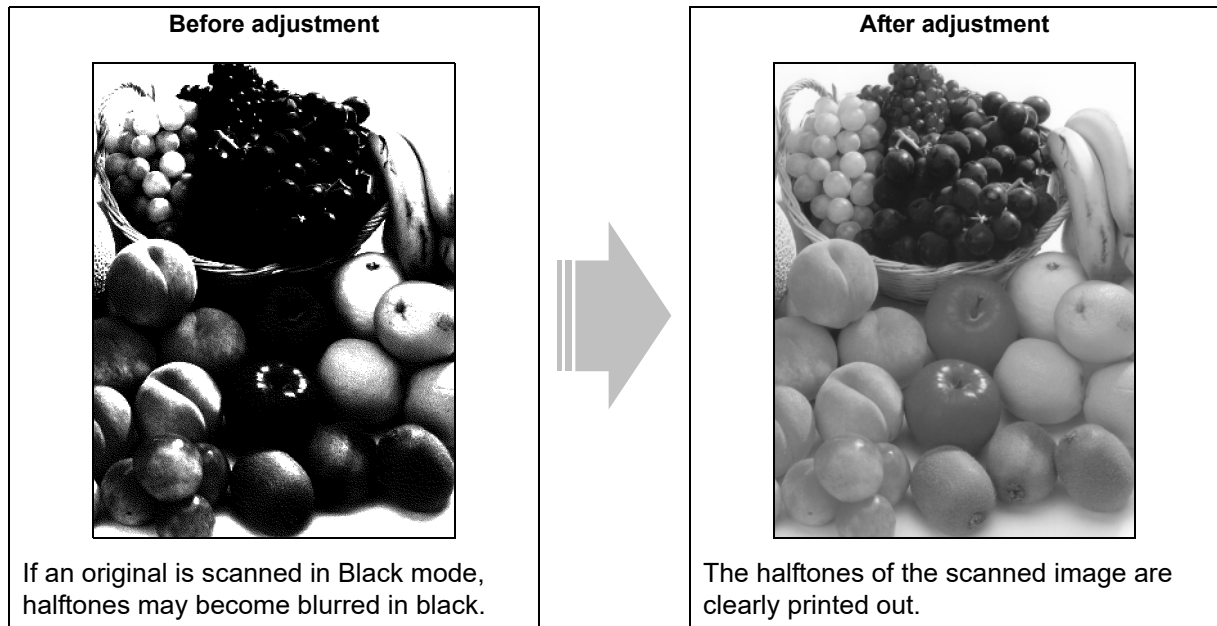
❑**Explanation**

Perform this adjustment to reduce blur or graininess of the halftones that has occurred during scanning in Black mode.

❑**Adjustment type**

Type		Function to be affected
a	Color mode	Scan

❑**Adjustment method**
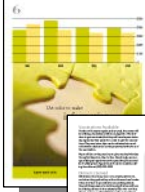
a. Color mode

Select [Gray Scale].

For details, refer to "4.1.1 Color mode".

<Tip>

- When the color mode is changed from [Black] to [Gray Scale], the file size will increase 7 times for a text original and be double for a photo original.

4.5　To Scan Original while Reducing File Size

Before adjustment	After adjustment

Before adjustment

Approx. 600 KB

Approx. 200 KB

Approx. 900 KB

Approx. 550 KB

* The above file sizes are just for reference.

If an original is constantly scanned at the default compression rate, the file size may become larger than required.

After adjustment

Approx. 100 KB

Approx. 30 KB

Approx. 150 KB

Approx. 90 KB

* The above file sizes are just for reference.

If an original is scanned at a reasonable compression rate depending on the purposes, the file size will be successfully reduced.

❑**Explanation**

The file size of the scanned data significantly varies depending on the selected resolution and compression rate. Perform this adjustment to minimize the file size as much as possible while maintaining image quality that satisfies the original type and purposes.

<Tip>
- When the priority is given to the file size in Full Color mode and Gray Scale mode, perform step [A] in 4.5.1. If satisfactory results cannot be obtained after step [A] has been performed, carry out step [B] in 4.5.1.
- When the priority is given to the image quality or a file is stored with another color mode, perform 4.5.2.

4.5.1   Using Slim PDF

[A] Reducing the file size

❑ **Adjustment type**

	Type	Function to be affected
a	Slim PDF	Scan
b	Compression quality of Slim PDF background processing	Scan

❑ **Adjustment method**

a. Slim PDF

Store the image in Slim PDF.

(1)Press the button for the file destination on the Scan screen.

(2)Select [Slim PDF] in [File Format].

b. Compression quality of Slim PDF background processing

Set a smaller value.

Code	Recommended value	Acceptable value range	Default value
05-9104	Set a value smaller than the default one. The file size becomes smaller and the scanning speed will be faster; however, the image quality of the areas other than text will worsen.	0 to 10	5

• Change the value in increments of 1, while checking the image until the optimum value is obtained.

[B] Increasing the image quality

The image quality of Slim PDF may be increased by performing this adjustment after step [A] has been carried out.

If satisfactory results cannot be obtained, perform 4.5.2.

❑ **Adjustment type**

	Type	Function to be affected
a	Scanning orientation change	Scan
b	Sharpness adjustment	Scan
c	Background adjustment	Scan
d	Resolution of Slim PDF background processing	Scan

Improved points	Type
To reduce blurred portions in text and photos	a, d
To maintain the same color of text	a, b
To avoid background fogs	c

❑ **Adjustment method**

a. Scanning orientation change

Perform either of the following methods.

• Set the original by changing its orientation.

• Change the setting of [Orientation] in [Scan Setting].

b. Sharpness adjustment

Decrease the sharpness intensity.

For details, refer to "4.1.5 Sharpness adjustment".

c. Background adjustment

Lighten the density of the background.

For details, refer to "4.1.4 Background adjustment".

d. Resolution of Slim PDF background processing

Set a larger value.

Code	Recommended value	Acceptable value range	Default value
05-9107	Set a value larger than the default one. When a larger value is set, the image quality of the areas other than text will be improved; however, the file size becomes bigger and the scanning speed will be slower.	0 to 3	1

• Change the value in increments of 1, while checking the image until the optimum value is obtained.

4.5.2   Reducing the file size by using other than Slim PDF

❑ **Adjustment type**

	Type	Function to be affected
a	Color mode	Scan
b	Resolution	Scan
c	Original mode	Scan
d	Compression rate	Scan
e	Background adjustment	Scan

❑ **Adjustment method**

The table below shows the effective adjustments for each color mode. Refer to it when performing adjustments.

Color mode	b	c	d	e
Full Color	Yes		Yes	Yes
Black	Yes	Yes		Yes
Gray Scale	Yes		Yes	Yes
Auto Color	Yes		Yes	Yes

The table below shows the symptoms of image quality degradation which may occur when each adjustment is performed.

Image quality degradation	a	b	c	d	e
Photo areas are blurred.	Yes	Yes	Yes	Yes	Yes
Noise will be increased around text.		Yes		Yes	
Small text becomes illegible.		Yes		Yes	
The reproducibility of lighter color tone is lowered.	Yes				Yes

a. Color mode

Set [Black] in the color mode.

For details, refer to "4.1.1 Color mode".

b. Resolution

Specify a lower level in [Resolution].

For details, refer to "4.1.6 Resolution".

<Tip>

• When the setting is changed from [200dpi] to [150dpi], the file size will be reduced to 60%. When the setting is changed from [200dpi] to [100dpi], the file size will be reduced to 30%. (This will vary depending on the content of the original.)

c. Original mode

Select [Text] for the original mode.
For details, refer to "4.1.2 Original mode".

<Tip>
- This adjustment will have an effect only on scanning in Black mode.
- When this adjustment is performed, the image quality of photo areas is degraded. Therefore, perform this only when a black-and-white original with no photos is scanned or when an original is scanned without taking care of the image quality.
- When the original mode is changed from [Photo] to [Text], the file size will be reduced to 20%. (This will vary depending on the content of the original.)

d. Compression rate

Select [High] in [Compress].
For details, refer to "4.1.7 Compression rate".

<Tip>
- This adjustment will have an effect only on scanning in Full Color mode, Auto Color mode and Gray Scale mode.
- When the compression ratio is changed from [Mid] to [High], the file size will be reduced to 60%. (This will vary depending on the content of the original.)

e. Background adjustment

Lighten the density of the background.
For details, refer to "4.1.4 Background adjustment".

<Tip>
- This adjustment will have an effect only when an original with a colored-background such as newspaper or colored-paper is scanned.
- This adjustment will have an effect only on scanning in Full Color mode, Auto Color mode and Gray Scale mode.

4.6   To Scan Original Sharply (Enhances Sharpness)
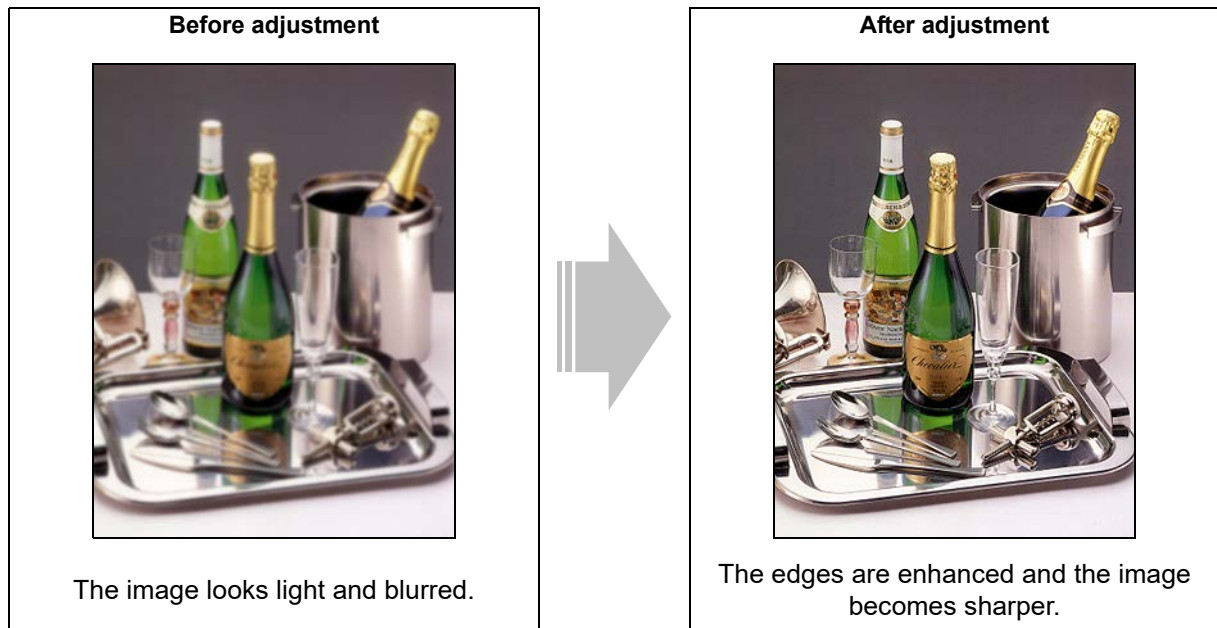
Before adjustment	After adjustment
The image looks light and blurred.	The edges are enhanced and the image becomes sharper.

❑ **Explanation**

Perform this adjustment in order to obtain a sharper image when a light or blurred original is scanned.

❑ **Adjustment type**

Type		Function to be affected
a	Sharpness adjustment	Scan

❑ **Adjustment method**

a. Sharpness adjustment

Increase the sharpness intensity.

For details, refer to "4.1.5 Sharpness adjustment".

4.7   To Scan Original while Enhancing Black

Before adjustment	After adjustment
Scan Black is not dark enough compared to the original.	Scan Black is enhanced and closely matched with the original color tone.

❏ **Explanation**

When a color original is scanned, black is not dark enough compared to the original. Perform this adjustment in order to scan the original while making the color tone of black closely matched with that of the original.

<Tip>
 • This adjustment will have an effect only on scanning in Full Color mode and Auto Color mode.

❏ **Adjustment type**

Type		Function to be affected
a	Black density adjustment	Scan

❑**Adjustment method**

a. Black density adjustment

Set a larger value.

Color mode	Original mode	Code	Recommended value	Acceptable value range	Default value
Full Color	Text/Photo	05-8314	Set a value larger than the default one.	0 to 4	1
	Text	05-8315	Set a value larger than the default one.		0
	Photo	05-8316			
	Custom	05-8371			

<Tip>

• When too large a value is set, the density of the background will also darken. Therefore, carefully perform the adjustment.

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4.8   To Scan Original with Desired Gradation

Before adjustment

The image is scanned with natural gradation.
(Default scanning)

After adjustment

When the middle density area is made
lighter

After adjustment

When the middle density area is made
darker
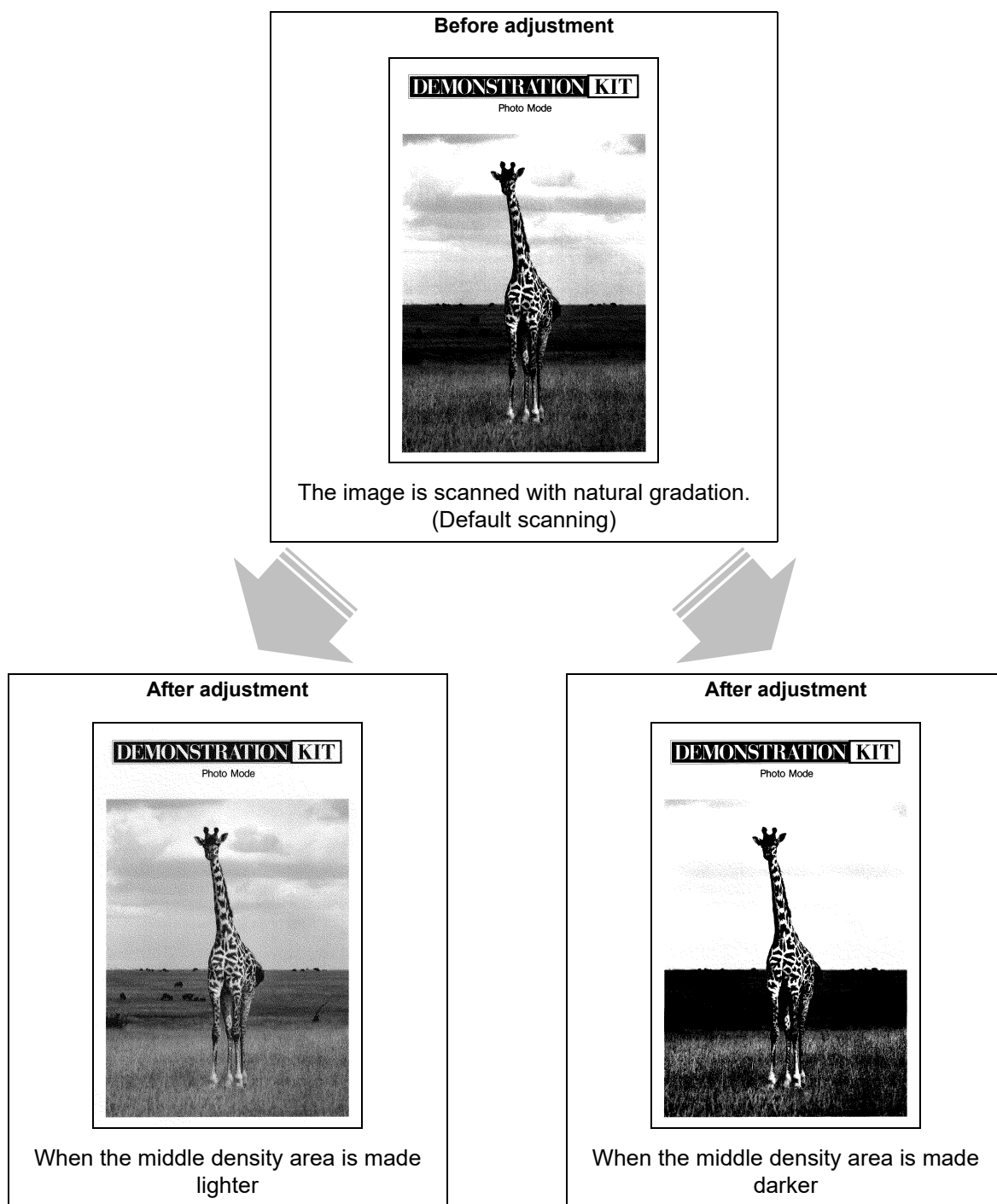
❏**Explanation**

Perform this adjustment to change the reproducibility (gradation) of the halftones in accordance with the content in the original or the requests from a user when scanning is performed in Black mode or Gray Scale mode.

<Tip>
  • This adjustment will have an effect only on scanning in Black mode and Gray Scale mode.

❑ **Adjustment type**

Type		Function to be affected
a	Gamma balance adjustment	Scan

❑ **Adjustment method**

a. Gamma balance adjustment

Change the value for the middle density area.

Color mode	Original mode	Code	Subcode	Recommended value	Acceptable value range	Default value
Black	Text/Photo	05-7485	0/1/2	To make the density lighter: Set a value smaller than the default one. To make the density darker: Set a value larger than the default one.	0 to 255	128
	Photo	05-7487	0/1/2			
	Custom	05-7480	0/1/2			
Gray Scale	---	05-7488	0/1/2			

• Change the value in increments of 20, while checking the image until the optimum value is obtained.

The following table shows the explanation about the subcodes.

Subcode	Target density area to adjust
0	Low density area
1	Middle density area
2	High density area

4.9 To Eliminate Shades around Scanned Images

❑**Explanation**

Perform this adjustment to eliminate shades which appear around scanned images.

❑**Adjustment type**

Type		Function to be affected
a	Void amount around the image adjustment	Scan

❑**Adjustment method**

a. Void amount around the image adjustment

Adjust the width of the void (non-image areas around scanned images).

Original size	Code	Recommended value	Acceptable value range	Default value
[Auto] (standard paper size)	05-7489	The larger the value, the wider the width of the void.	0 to 255	0
[Registered Size]	05-7490			
[Auto Detected]	05-7491			

• The values of "24 steps" correspond to 1 mm of the image area.

4.10   To Scan Yellow Clearly

Before adjustment	After adjustment
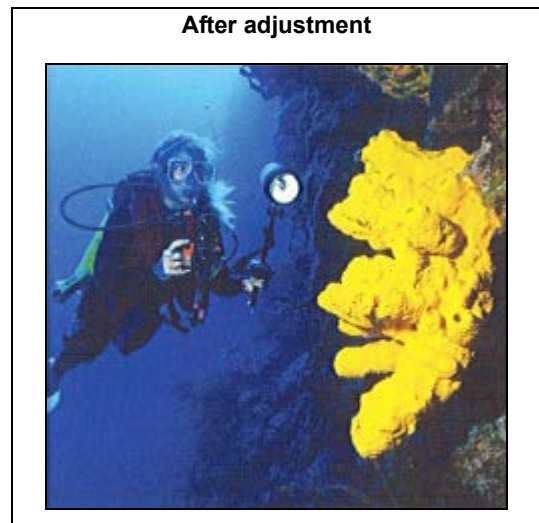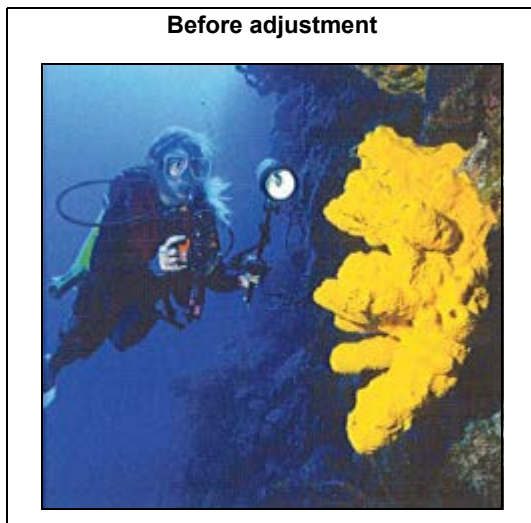
❑ **Explanation**

Perform this adjustment in order to reproduce yellow vividly.

❑ **Adjustment type**

	Type	Function to be affected
a	Original mode	Scan
b	Saturation	Scan
c	RGB adjustment	Scan

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❑**Adjustment method**

a. Original mode

Select [Text/Photo] for the original mode.

For details, refer to "4.1.2 Original mode".

b. Saturation

Press [Scan Setting] on the Scan screen. Press [+] [-] of [Saturation] to adjust the color balance.
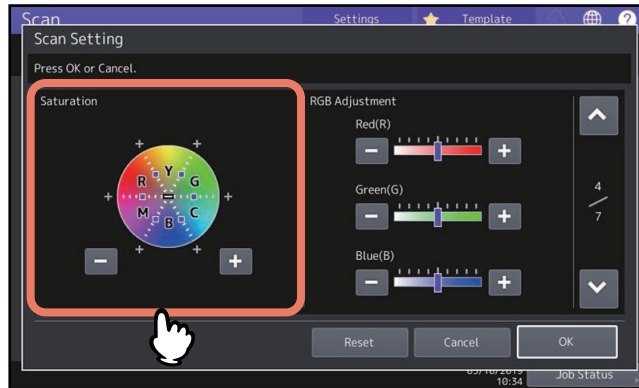
<Notes>

• This adjustment influences not only yellow but also other colors. Therefore, carefully perform the adjustment.

c. RGB adjustment

Press [Scan Setting] on the Scan screen. Press [+] [-] of [RGB Adjustment] to adjust the color balance.
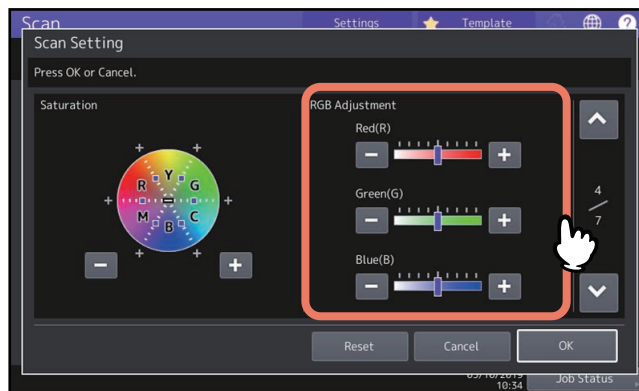
The examples of the adjustment of yellow are as below.

Example	Type
To scan while reducing red	G: [+], R: [-]
To scan while reducing green	G: [-], R: [+]
To scan yellow more vividly	B: [-], R and G: [+]

<Notes>

• This adjustment influences not only yellow but also other colors. Therefore, carefully perform the adjustment.

4.11 To Change Judgment Area of [Omit Blank Page] and [Auto Color] (Correctly Judges Originals with Images on Near the Edges)

Omit Blank Page

Original	Before adjustment	After adjustment

TOSHIBA

Since those originals are judged as blank pages, they will be removed.

TOSHIBA

Auto Color

Original	Before adjustment	After adjustment

TOSHIBA
ABCDEFGHIJKLMNOPQRST
UVWXYZabcdefghijklmnopqrst
uvwxyzABCDEFGHIJKLMNOP
QRSTUVWXYZabcdefghijklmn
opqrstuvwxyzABCDEFGHIJKL
MNOPQRSTUVWXYZabcdefg
hijklmnopqrstuvwxyzABCDEF
GHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyzA
BCDEFGHIJKLMNOPQRSTU
VWXYZabcdefghijklmnopqrstu
vwxyzABCDEFGHIJKLMNOP
QRSTUVWXYZabcdefghijklmn
opqrstuvwxyzABCDEFGHIJKL
MNOPQRSTUVWXYZabcdefg
hijklmnopqrstuvwxyz.

TOSHIBA
ABCDEFGHIJKLMNOPQRST
UVWXYZabcdefghijklmnopqrst
uvwxyzABCDEFGHIJKLMNOP
QRSTUVWXYZabcdefghijklmn
opqrstuvwxyzABCDEFGHIJKL
MNOPQRSTUVWXYZabcdefg
hijklmnopqrstuvwxyzABCDEF
GHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyzA
BCDEFGHIJKLMNOPQRSTU
VWXYZabcdefghijklmnopqrstu
vwxyzABCDEFGHIJKLMNOP
QRSTUVWXYZabcdefghijklmn
opqrstuvwxyzABCDEFGHIJKL
MNOPQRSTUVWXYZabcdefg
hijklmnopqrstuvwxyz.

TOSHIBA
ABCDEFGHIJKLMNOPQRST
UVWXYZabcdefghijklmnopqrst
uvwxyzABCDEFGHIJKLMNOP
QRSTUVWXYZabcdefghijklmn
opqrstuvwxyzABCDEFGHIJKL
MNOPQRSTUVWXYZabcdefg
hijklmnopqrstuvwxyzABCDEF
GHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyzA
BCDEFGHIJKLMNOPQRSTU
VWXYZabcdefghijklmnopqrstu
vwxyzABCDEFGHIJKLMNOP
QRSTUVWXYZabcdefghijklmn
opqrstuvwxyzABCDEFGHIJKL
MNOPQRSTUVWXYZabcdefg
hijklmnopqrstuvwxyz.

❏**Explanation**

The following symptoms may occur for originals with images on near the edges.

- A color original may be judged as a black-and-white one because of Auto Color mode.
- Since those originals are judged as blank pages, they will be removed when [Omit Blank Page] is enabled.

These symptoms have occurred since the images are located outside of the judgment image area of each function. Therefore, perform the adjustment so that they will be included in the judgment area.

❑ **Adjustment type**

Type		Function to be affected
a	Blank page threshold void amount adjustment / Void amount for ACS adjustment	Copy, Scan

❑ **Adjustment method**

a. Blank page threshold void amount adjustment / Void amount for ACS adjustment

- Blank page threshold void amount adjustment: Adjust the void amount of the image area to be used for the blank page judgment.
- Void amount for ACS adjustment: Adjust the void amount of the image area to be used to judge the full color original or the black-and-white one in Auto Color mode.
  The smaller the value, the lower the void amount becomes and the wider the image area to be used for the judgment becomes.

Type	Code	Subcode	Recommended value	Acceptable value range	Default value
Blank page threshold void amount adjustment	05-7616	0	100	0 to 255	200
Void amount for ACS adjustment		1			

- Change the value in increments of 15, while checking the judgment result until the optimum value is obtained.
- The values of "24 steps" correspond to 1 mm of the image area.
- If too small a value is set, shadows and stains on the edge of the original may be judged as images and thus the desired result may not be obtained.

4.12 To Scan while Removing all Colors other than Black

Original

ABCDEFG

1 2 3 4 5

1. Abcdef ghijklmn ☑

2. Opqrstuvw xyz abcd ▢

3. Efghijk lmnop qrstuvwxyzabc defgh ijklmnopq

WXYZ

Default black scanning

ABCDEFG

1 2 3 4 5

1. Abcdef ghijklmn ☑

2. Opqrstuvw xyz abcd ▢

3. Efghijk lmnop qrstuvwxyzabc defgh ijklmnopq

WXYZ

Colors other than black are reproduced in gray.

When the Drop Out Color option is enabled

ABCDEFG

1 2 3 4 5

1. Abcdef ghijklmn ✓

2. Opqrstuvw xyz abcd

3. Efghijk lmnop qrstuvwxyzabc defgh ijklmnopq

WXYZ

Colors other than black are not reproduced.

Original

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRST
UVWXYZ
abcdefghijklmnopqrstuvwxyz

good

Default black scanning

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRST
UVWXYZ
abcdefghijklmnopqrstuvwxyz

good

Colors other than black are reproduced
in gray.

When the Drop Out Color option is enabled

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRST
UVWXYZ

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRST
UVWXYZ
abcdefghijklmnopqrstuvwxyz

Colors other than black are not
reproduced.

❑**Explanation**

Perform this adjustment when a color original (*) including black text is scanned by removing all colors other than black. The removal level of gray-like colors (mixed-color gray) such as navy blue can also be adjusted.

* Color original: A colored mark sheet original with notes added in a black pencil as well as a black-and-white original with notes added with a color pen.
• When this function is used, a color original will be scanned in black-and-white.

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• When a larger value is set (gray-like colors tend to be removed), a light gray (achromatic color) will also be easily removed.

❏ **Adjustment type**

	Type	Function to be affected
a	Drop Out Color	Scan
b	Drop Out Color adjustment	Scan

❏ **Adjustment method**

a. Drop Out Color

(1)Press [Scan] on the Home screen and then [Scan Setting].

(2) Select [Black] in [Color Mode].

(3)Select [On] for [Drop Out Color].

(4)Press [+] or [-] of [Drop Out Level Adjustment] to change the removal level of gray-like colors (mixed-color gray).

• Pressing [+] makes gray-like colors tend to be removed. Pressing [-] makes gray-like colors tend to remain.

b. Drop Out Color adjustment

Adjust the removal level of gray-like colors more finely.

Color mode	Code	Recommended value	Acceptable value range	Default value
Black	05-7472	To make gray-like colors in an original tend to be removed: Set a larger value. To make gray-like colors in an original tend to remain: Set a smaller value.	20 to 80	50

• One step in the indicator corresponds to "10" of the value in [05] code.

4.13 To Clearly Scan Black-and-White Images in Auto Color Mode

Before adjustment

The light image becomes blurred and text becomes illegible.

After adjustment

After the threshold value is changed

Scanned in Gray Scale mode

The light image is not blurred. Text is clear and legible.
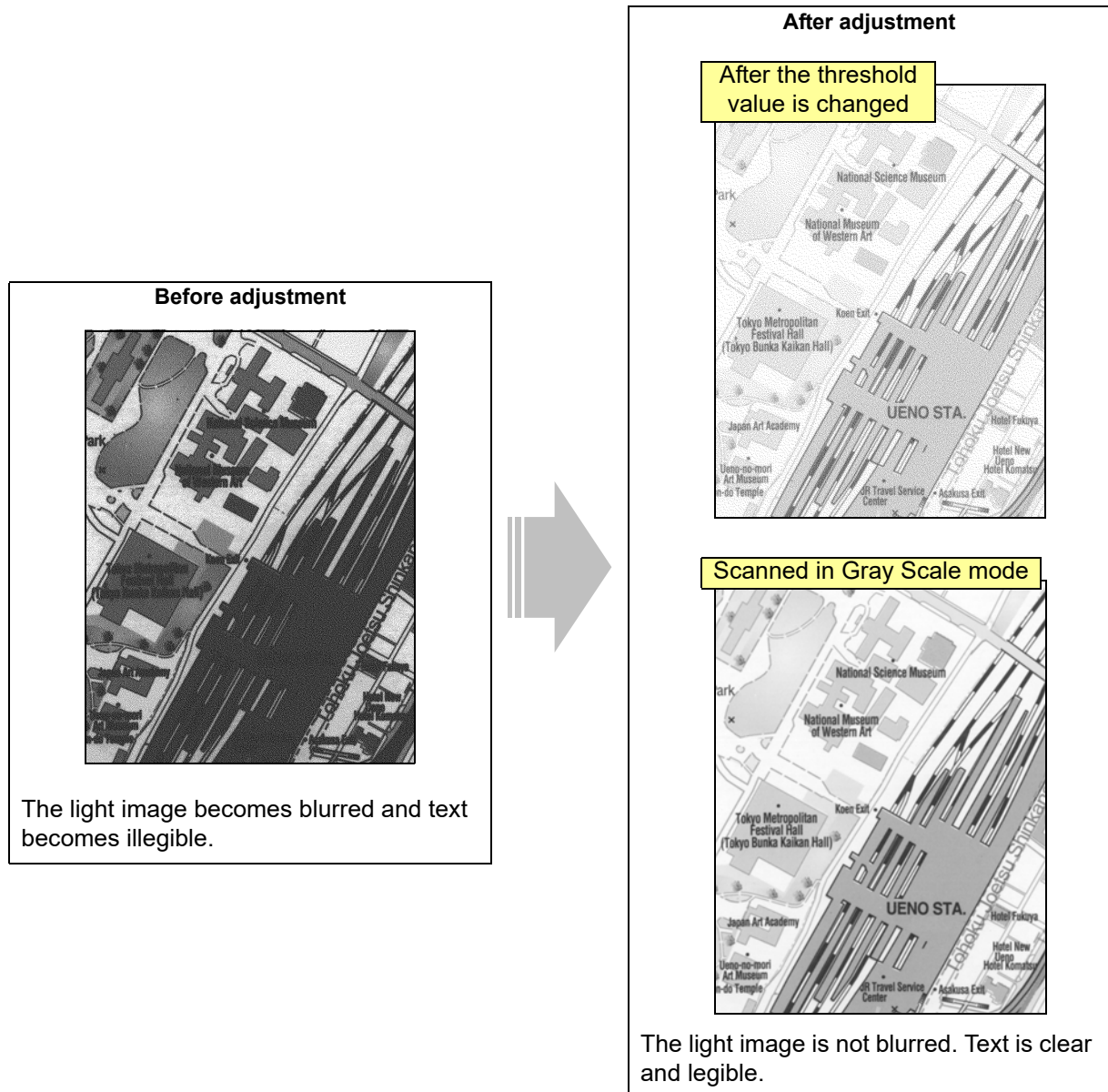
❑**Explanation**

When a black-and-white original containing photos is scanned in Auto Color mode, a dark area may be blurred and a light one may be eliminated. Perform this adjustment in order to clearly scan a black-and-white original in the Auto Color mode.

❑**Adjustment type**

	Type	Function to be affected
a	B/W Adjustment for Standard	Scan
b	Image Quality for Black in ACS	Scan

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❑**Adjustment method**

a. B/W Adjustment for Standard

Adjust the default value of the density for the page judged as a black-and-white original in Auto Color mode using the following procedure.
(1) Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
(2) Press [Scan].
(3)Press [<] or [>] for [B/W Adjustment for Standard] to adjust the density.

b. Image Quality for Black in ACS

Change the default value to [High Quality] for the image quality for the page judged as a black-and-white original in Auto Color mode with the following procedure.
(1) Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.
(2) Press [Scan].
(3)Select [High Quality] for [Image Quality for Black in ACS].

<Tip>
• When [High Quality] is selected for [Image Quality for Black in ACS], a black-and-white page is scanned in Gray Scale mode. Selecting [High Quality] improves gradation better, but the file size will increase compared to [Standard].

4.14 To Scan and Print Original while Minimizing Moiré

Before adjustment	After adjustment
When the image stored in the e-Filing box using the scanning function is printed, moiré is likely to occur.	The image can be printed while moiré is minimized
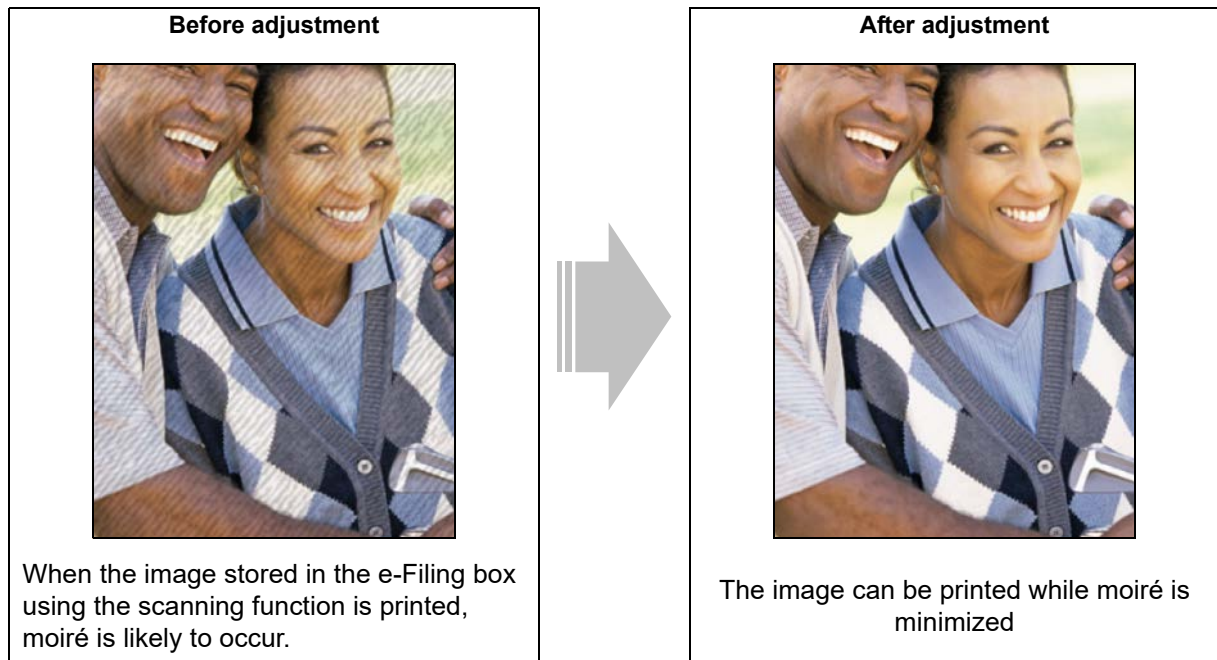
❑**Explanation**

When image data that are scanned and stored in the e-Filing box are printed, moiré may occur depending on the type of original. This tends to occur when the original is scanned in Full Color mode or Auto Color mode in high resolution (600 dpi), or even in Gray Scale mode. Perform this adjustment in order to minimize moiré as much as possible.

<Tip>
- When this adjustment is performed, text and lines are blurred or undesired colors are blended. Therefore, carefully perform the adjustment.

❑**Adjustment type**

Type		Function to be affected
a	Original mode	Scan
b	Resolution	Scan
c	Sharpness adjustment	Scan

❏**Adjustment method**

a. Original mode

Select [Photo] for the original mode.

For details, refer to "4.1.2 Original mode".

> **<Tip>**
> • This adjustment will have an effect only on scanning in Full Color mode.

b. Resolution

Specify a lower level in [Resolution].

For details, refer to "4.1.6 Resolution".

c. Sharpness adjustment

Decrease the sharpness intensity.

For details, refer to "4.1.5 Sharpness adjustment".

4.15 To Register Original Mode Optimal for Particular Type of Original (Utilizes [Custom])

❑ **Explanation**

You can add a new original mode adjusted to be able to satisfy the user's particular requests regarding image quality as Custom mode, for Color and Black modes respectively.

It is recommended to register a set of scan settings as Custom mode if users frequently scan the special type of originals or if users are not satisfied with the image quality of the existing original modes.

4.15.1 To use Custom mode in Black mode

❑ **Adjustment method**

(1) Enable Custom mode.

Custom mode is not displayed on the touch panel by the default. When the original mode used as the base mode is selected, Custom mode is displayed on the touch panel and can be used.

Color mode	Code	Acceptable value range	Default value	Description of parameters
Black	08-7401	0 to 3	0	0: Not displayed
				1: Text/Photo base
				2: Text base
				3: Photo base

(2) Perform image quality adjustment of Custom mode.

Color mode	Code	Subcode	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Black	05-7441	-	Background adjustment	0 to 255	128	The larger the value, the darker the background becomes. The smaller the value, the lighter the background becomes.	4.1.4
	05-7470	-	Sharpness adjustment			The larger the value, the sharper the image becomes. The smaller the value, the softer the image becomes. Moreover, the less moiré appears.	4.1.5
	05-7475	-	Density adjustment (Manual adjustment)			The larger the value, the darker the image density at manual adjustment becomes.	4.1.3
	05-7478	-	Density adjustment (Automatic density adjustment)			The larger the value, the darker the image density at automatic adjustment becomes.	4.1.3
	05-7480	0	Gamma balance adjustment (Low density area)			The larger the value, the darker the target density area becomes.	4.8
		1	Gamma balance adjustment (Middle density area)				
		2	Gamma balance adjustment (High density area)				

4.15.2 To use Custom mode in Full Color mode

❑ **Adjustment method**

(1) Enable Custom mode.
Custom mode is not displayed on the touch panel by the default. When the original mode used as the base mode is selected, Custom mode is displayed on the touch panel and can be used.

Color mode	Code	Acceptable value range	Default value	Description of parameters
Full Color	08-8303	0 to 4	0	0: Not displayed
				1: Text/Photo base
				2: Text base
				3: Photo base
				4: e-document base *

* e-document: The original mode in order to comply with laws in Japan. This has been adjusted so that areas corrected with white-out can be identified.

(2) Perform image quality adjustment of Custom mode.

Color mode	Code	Subcode	Adjustment	Acceptable value range	Default value	Setting value	Reference section
Full Color	05-8370	-	Background adjustment	0 to 255	128	The larger the value, the darker the background becomes. The smaller the value, the lighter the background becomes.	4.1.4
	05-8371	-	Black density adjustment	0 to 4	0	The larger the value, the darker the image becomes.	4.7
	05-8373	-	Saturation adjustment			The larger the value, the brighter the image becomes. The smaller the value, the duller the image becomes.	-
	05-8375	-	Sharpness adjustment			The larger the value, the sharper the image becomes. The smaller the value, the softer the image becomes. Moreover, the less moiré appears.	4.1.5
	05-8380	-	Density adjustment (Manual adjustment)			The larger the value, the darker the image density at manual adjustment becomes.	4.1.3
	05-8381	-	Density adjustment (Automatic density adjustment)	0 to 255	128	The larger the value, the darker the image density at automatic adjustment becomes.	4.1.3
	05-8422	-	Contrast adjustment			The larger the value, the higher the contrast becomes. The smaller the value, the lower the contrast becomes.	
	05-8428	0	RGB color balance adjustment (R)			The larger the value, the darker the red becomes. The smaller the value, the lighter the red becomes.	-
		1	RGB color balance adjustment (G)			The larger the value, the darker the red becomes. The smaller the value, the lighter the red becomes.	
		2	RGB color balance adjustment (B)			The larger the value, the darker the red becomes. The smaller the value, the lighter the red becomes.	

5. e-Filing Function Adjustments

Perform e-Filing adjustment in accordance with the input methods and output direction.

Chapter	Item	Input method	Output direction
5.1	To Obtain Same Color Tone as that for Color Originals	Print to Box	PC monitor
5.2	To Finely Print Images Stored in e-Filing Box	Copy to Box Print to Box	Printing paper
5.3	To Obtain Images Suitable for Monitor Displaying or Image Editing	Scan to Box	PC monitor
5.4	To Finely Print Scanned Color Images	Scan to Box	Printing paper

5.1 To Obtain Same Color Tone as that for Color Originals (Print to Box)

Before adjustment

Image on an original: Photograph

e-Filing box

Print to Box (Image Quality Type: Photograph)

Stored

Downloaded

Client PC

Monitor display

The color tone between the color original and the image stored in the e-Filing box differs.

After adjustment

Image on an original: Photograph

e-Filing box

Print to Box (Image Quality Type: General)

Stored

Downloaded

Client PC

Monitor display

The image is stored by closely matching with the color tone of the color original.

❏**Explanation**

When printing of a color original is performed from an application on a client PC by selecting Full Color mode and its image is stored in the e-Filing box, if they are compared, its color tone looks different from that for the image of the color original in the application. This is because the color tone of the image stored in the e-Filing box is optimized for printing on paper. Perform this adjustment in order to minimize this color tone difference.

❏**Adjustment type**

Type		Function to be affected
a	Image Quality Type of the printer driver	Print to Box

❏**Adjustment method**

a. Image Quality Type of the printer driver

Select [Genera] in the Image Quality Type option of the printer driver.
For details, refer to "3.2 To Make Printing Suitable for Original".

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5.2 To Finely Print Images Stored in e-Filing Box (Prints Images Stored through Copy to Box, Print to Box)

Before adjustment

e-Filing box

Copy to Box, Print to Box (Print data)

Stored

Downloaded (Converted into RGB)

Client PC

Stored

Printed (Converted into the print data again)

If the image stored in the e-Filing box is downloaded to a client PC and then printed out, the image data conversion may degrade the image quality.

After adjustment

e-Filing box

Copy to Box, Print to Box (Print data)

Stored

Printed (Print data)

If the image is printed out directly from the e-Filing box, the image quality will be maintained.

❑ **Explanation**

If the original is copied or printed, is stored in the e-Filing box (Copy to Box or Print to Box) and is printed out by being downloaded to a client PC using a File Downloader or a TWAIN driver, the image quality may be degraded. This is because the image data stored in the e-Filing box (Copy to Box or Print to Box), which are optimized for printing on paper, are converted into those for the monitor display at the time of downloading and become unsuitable for printing as a result.

Perform this adjustment in order to print the images stored in the e-Filing box more finely.

❑ **Adjustment type**

Type		Function to be affected
a	Printing through the e-Filing web utility	Copy to Box, Print to Box

❑ **Adjustment method**

a. Printing through the e-Filing web utility
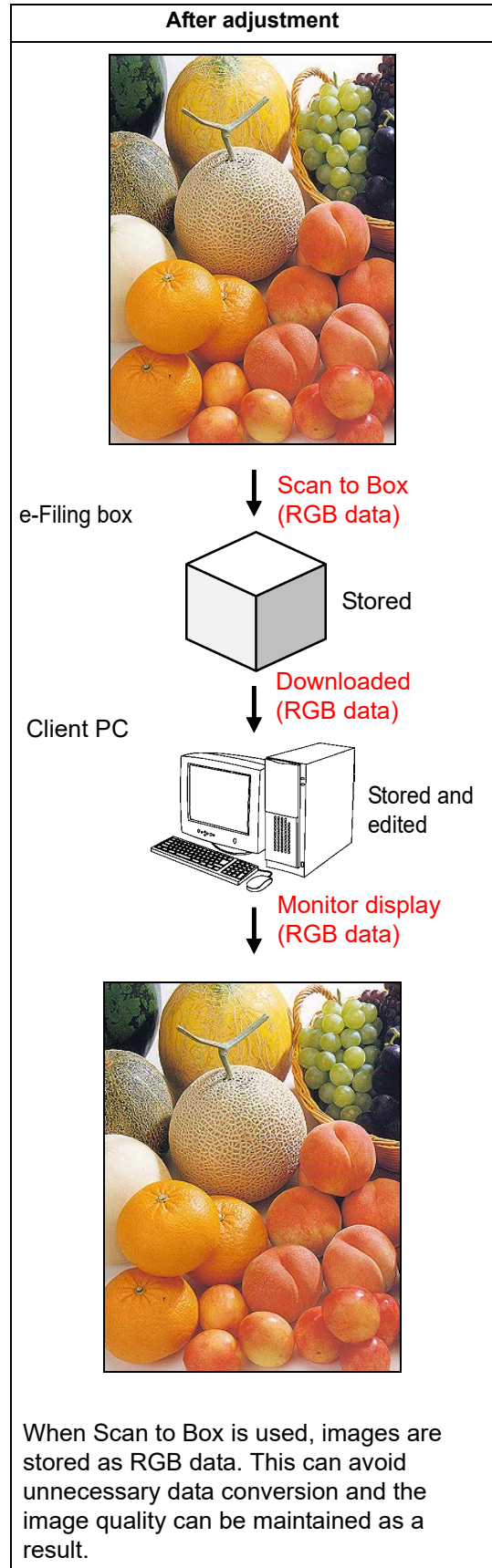
For details, refer to the "e-Filing".

<Tip>

• Depending on the original, images may be finely printed by downloading it to a client PC and then adjusting it in a printer driver, rather than printing it out directly from the e-Filing web utility.

• When "Archive Document" of the e-Filing Web utility or "Backup" of the e-Filing Backup/ Restore Utility is used, image data in the e-Filing box can be converted to a file while maintaining their image quality optimized for printing.

E.g.:

In order to obtain some space in the e-Filing box, when stored image data are temporarily moved from the box and then restored in the box: When data are converted to a PDF or TIFF format file and then moved using a File Downloader, the image quality may be diminished. However, if "Archive Document" or "Backup" is used, the data can be moved while maintaining their image quality.

- All the data in the e-Filing box can also be backed up collectively using "Backup".
- Files created using "Archive Document" and "Backup" cannot be directly opened on a client PC or printed out.
- For further information about "Archive Document" and "Backup", refer to the "e-Filing".

5.3 To Obtain Images Suitable for Monitor Displaying or Image Editing

Before adjustment	After adjustment

When Copy to Box is used, images are stored while being optimized for print data. Therefore, the stored data are not suitable for monitor display and the image quality may be degraded.

When Scan to Box is used, images are stored as RGB data. This can avoid unnecessary data conversion and the image quality can be maintained as a result.
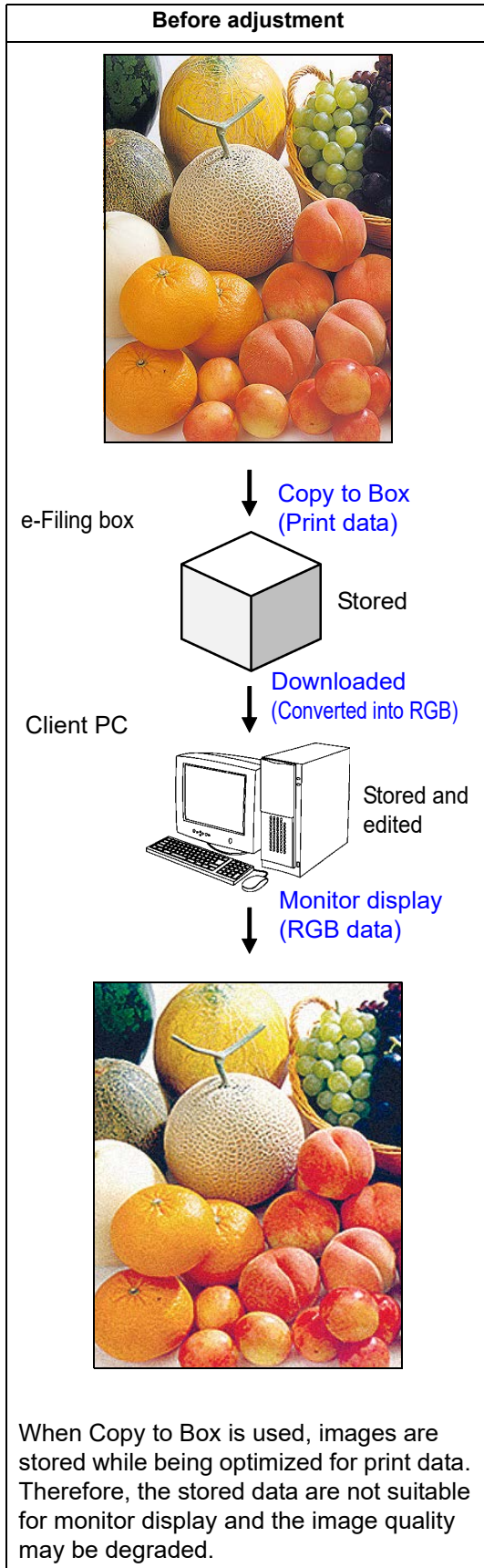
❑**Explanation**

If a color original is copied or printed, is stored in the e-Filing box (Copy to Box or Print to Box) and is displayed on a monitor by being downloaded to a client PC using a File Downloader or a TWAIN driver, the image quality may be degraded. This is because the image data stored in the e-Filing box (Copy to Box or Print to Box), which are optimized for printing on paper, are converted into those for the monitor display at the time of downloading. Depending on the original type, out-of-registration colors or grained images will occur. Moreover, when the images are edited on a client PC, its quality may be degraded. Perform this adjustment in order to store a color original for monitor displaying purposes while minimizing the image degradation.

❑**Adjustment type**

Type		Function to be affected
a	Scanning to e-Filing	Scan to Box

❑**Adjustment method**

a. Scanning to e-Filing

For details, refer to the "e-Filing".

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5.4 To Finely Print Scanned Color Images (Prints Images Stored through Scan to Box)

Before adjustment

Scan to Box
(RGB data)

e-Filing box

Stored

Ex: Image Printing Mode = Presentation

Printed
(Converted into
print data)

Unless the mode is not selected in Image Printing mode, printing may be performed with image processing not suitable for the stored data.

After adjustment

Scan to Box
(RGB data)

e-Filing box

Stored

Ex: Image Printing Mode = Photograph

Printed
(Converted into
print data)

When a suitable mode for the stored data is selected in Image Printing mode, they will be printed finely with optimal image processing.

❑ **Explanation**

The image processing which is not suitable for printing may be applied to a color image which is scanned and then stored in the e-Filing box (Scan to Box) in Full Color or Auto Color mode. Perform this adjustment in order to print the images stored in the e-Filing box through Scan to Box more finely.

❑ **Adjustment type**

Type	Function to be affected
a	Scanning to e-Filing	Scan to Box
b	Mode change of Image Printing mode	Scan to Box
c	Printing through the e-Filing web utility	Scan to Box
d	Sharpness adjustment	Scan to Box

❑ **Adjustment method**

a. Scanning to e-Filing

For details, refer to the "e-Filing".

b. Mode change of Image Printing mode

Select the mode suitable for the image stored in the e-Filing box in Image Printing mode in accordance with the following procedure.

(1)Press [User Functions -User-] on the Home screen to enter into the [User Functions] menu.

(2)Press [e-Filing].

(3)Select the mode suitable for the image to print in Image Printing mode.

    <Tip>

• For details, refer to the table of " Features for each image quality type" in "3.2 To Make Printing Suitable for Original".

c. Printing through the e-Filing web utility

For details, refer to the "e-Filing".

d. Sharpness adjustment

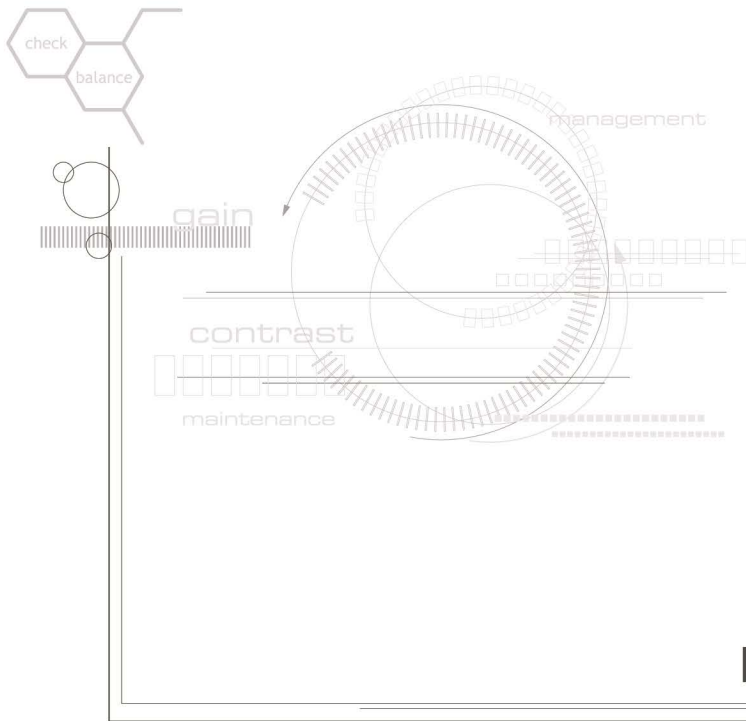| Object	Code	Recommended value	Acceptable value range	Default value
Color	05-8107	To make the image softer or to minimize moiré: Set a value smaller than the default one.	0 to 255	128
Black	05-8120	To make the image or thin lines sharper: Set a value larger than the default one.		

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