TOSHIBA

e-STUDIO5506AC
e-STUDIO6506AC
e-STUDIO7506AC

Think in color

Satisfying Specific Customer Needs for Designed Image Quality

Imaging Manual

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GENERAL PRECAUTIONS REGARDING THE SERVICE

The installation and service shall be done by a qualified service technician.

1. Transportation/Installation
- When transporting/installing the equipment, employ two or more persons and be sure to move it by the casters while lifting the stoppers.
  The equipment is quite heavy and weighs approximately Approx. 213 kg (469.6 lb.), therefore pay full attention when handling it.
- Be sure not to hold the movable parts or units (e.g. the control panel, ADU or DSDF) when transporting the equipment.
- Be sure to use a dedicated outlet with AC 120 V / 20 A, 220-240 V / 10 A for its power source.
- The equipment must be grounded for safety.
- Select a suitable place for installation. Avoid excessive heat, high humidity, dust, vibration and direct sunlight.
- Provide proper ventilation since the equipment emits a slight amount of ozone.
- To insure adequate working space for the copying operation, keep a minimum clearance of 30 cm (11.8") on the left, 80 cm (32") on the right and 10 cm (4") on the rear.
- The equipment shall be installed near the socket outlet and shall be easily accessible.
- Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.
- If the unpacking place and where the equipment is to be installed differ, perform image quality adjustment (automatic gamma adjustment) according to the temperature and humidity of the place of installation and the paper to be used.
- When the equipment is used after the option is removed, be sure to install the parts or the covers which have been taken off so that the inside of the equipment is not exposed.

- When the LAN cable, USB cable or telephone line is connected, be sure to wire the cable or line by passing it through the clamp of the rear cover.
  Otherwise, they will be caught when the duplexing unit is opened/closed and thus may be damaged.
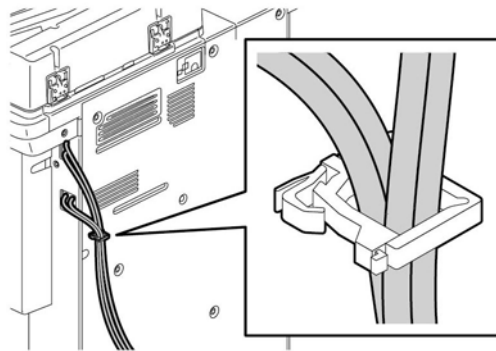
2. General Precautions at Service
- Be sure to turn the power OFF and unplug the power cables during service (except for the service should be done with the power turned ON).
- Unplug the power cable and clean the area around the prongs of the plug and socket outlet once a year or more. A fire may occur when dust lies on this area.
- When the parts are disassembled, reassembly is the reverse of disassembly unless otherwise noted in this manual or other related documents. Be careful not to install small parts such as screws, washers, pins, E-rings, star washers, harnesses in the wrong places.
- Basically, the equipment should not be operated with any parts removed or disassembled.
- The PC board must be stored in an anti-electrostatic bag and handled carefully using an antistatic wrist strap since the ICs on it may be damaged due to static electricity.

Caution: Before using the antistatic wrist strap, unplug the power cable of the equipment and make sure that there are no charged objects which are not insulated in the vicinity.

- Avoid expose to laser beam during service. This equipment uses a laser diode. Be sure not to expose your eyes to the laser beam. Do not insert reflecting parts or tools such as a screwdriver on the laser beam path. Remove all reflecting metals such as watches, rings, etc. before starting service.
- Be sure not to touch high-temperature sections such as the exposure lamp, fuser unit, damp heater and areas around them.
- Be sure not to touch high-voltage sections such as the chargers, transfer belt, 2nd transfer roller, developer, IH board, high-voltage transformer and power supply unit. Especially, the board of these components should not be touched since the electric charge may remain in the capacitors, etc. on them even after the power is turned OFF.
- Make sure that the equipment will not operate before touching potentially dangerous places (e.g. rotating/operating sections such as gears, belts pulleys, fans and laser beam exit of the laser optical unit).
- Be careful when removing the covers since there might be the parts with very sharp edges underneath.
- When servicing the equipment with the power turned ON, be sure not to touch live sections and rotating/operating sections. Avoid exposing your eyes to laser beam.
- Use designated jigs and tools.
- Use recommended measuring instruments or equivalents.
- Return the equipment to the original state and check the operation when the service is finished.
- Be very careful to treat the touch panel gently and never hit it. Breaking the surface could cause malfunctions.
- Do not leave plastic bags where children can get at them. This may cause an accident such as suffocation if a child puts his/her head into a bag. Plastic bags of options or service parts must be brought back.
- There is a risk of an electric shock or fire resulting from the damage to the harness covering or conduction blockage. To avoid this, be sure to wire the harness in the same way as that before disassembling when the equipment is assembled/disassembled.

3. General operations
- Check the procedures and perform them as described in the Service Manual.
- Make sure you do not lose your balance.
- Avoid exposure to your skin and wear protective gloves as needed.

4. Important Service Parts for Safety
- The breaker, IH coil, door switch, fuse, thermostat, thermofuse, thermistor, batteries, IC-RAMs including lithium batteries, etc. are particularly important for safety. Be sure to handle/install them properly. If these parts are short-circuited and their functions become ineffective, they may result in fatal accidents such as explosion or burnout. Avoid short-circuiting and do not use parts not recommended by Toshiba TEC Corporation.

5. Cautionary Labels
During servicing, be sure to check the rating plate and cautionary labels to see if there is any dirt on their surface and if they are properly stuck to the equipment.

6. Disposal of the Equipment, Supplies, Packing Materials, Used Batteries and IC-RAMs
- Regarding the recovery and disposal of the equipment, supplies, packing materials, used batteries
  and IC-RAMs including lithium batteries, follow the relevant local regulations or rules.

Caution:
    Dispose of used batteries and IC-RAMs including lithium batteries according to this manual.
Attention:
    Se débarrasser de batteries et IC-RAMs usés y compris les batteries en lithium selon ce manuel.
Vorsicht:
    Entsorgung der gebrauchten Batterien und IC-RAMs (inclusive der Lithium-Batterie) nach diesem
    Handbuch.

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7. When the option has been installed:
- When the EFI printer board has been installed, be sure to unplug the power cable before performing
  maintenance and inspection, otherwise troubles such as a communication error may occur.

8. Handling the heat pipe roller
- When discarding the heat pipe roller, do so after opening a hole from the axial edge of the D-cut side.
- Never attempt to incinerate it.

ALLGEMEINE SICHERHEITSMASSNAHMEN IN BEZUG AUF DIE WARTUNG

Die Installation und die Wartung sind von einem qualifizierten Service-Techniker durchzuführen.

1. Transport/Installation
- Zum Transportieren/Installieren des Gerätes werden 2 Personen benötigt. Bewegen Sie es mit den Rollen, während Sie die Absperrvorrichtungen heben. Das Gerät ist sehr schwer und wiegt etwa 213 kg; deshalb muss bei der Handhabung des Geräts besonders aufgepasst werden
- Beim Transportieren des Geräts nicht an den beweglichen Teilen oder Einheiten (z.B. das Bedienungsfeld, die Duplexeinheit oder die automatische Dokumentenzuführung) halten.
- Eine spezielle Steckdose mit Stromversorgung von AC 120V/20A, 220-240V/10A als Stromquelle verwenden.
- Das Gerät ist aus Sicherheitsgründen zu erden.
- Einen geeigneten Standort für die Installation wählen. Standorte mit zuviel Hitze, hoher Luftfeuchtigkeit, Staub, Vibration und direkter Sonneneinstrahlung sind zu vermeiden.
- Für ausreichende Belüftung sorgen, da das Gerät etwas Ozon abgibt.
- Um einen optimalen Kopierbetrieb zu gewährleisten, muss ein Abstand von mindestens 80 cm links, 80 cm rechts und 10 cm dahinter eingehalten werden.
- Das Gerät ist in der Nähe der Steckdose zu installieren; diese muss leicht zu erreichen sein.
- Nach der Installation muss das Netzkabel richtig hineingesteckt und befestigt werden, damit niemand darüber stolpern kann.
- Falls der Auspackungsstandort und der Installationsstandort des Geräts verschieden sind, die Bildqualitätsjustierung (automatische Gammajustierung) je nach der Temperatur und Luftfeuchtigkeit des Installationsstandorts und der Papiersorte, die verwendet wird, durchführen.
- Wenn das Gerät nach der Entfernung der Extras verwendet wird, die entfernten Teile oder Abdeckungen anbringen, damit das Innere des Gerät nicht freiliegt.
- Wenn LAN-Kabel, USB-Kabel oder die Telefonleitung angeschlossen sind, müssen diese Kabel durch die Klemme an der Rückwand verlegt werden.
  Ansonsten können sie beim Öffnen/Schließen der Duplexeinheit eingeklemmt und beschädigt werden.
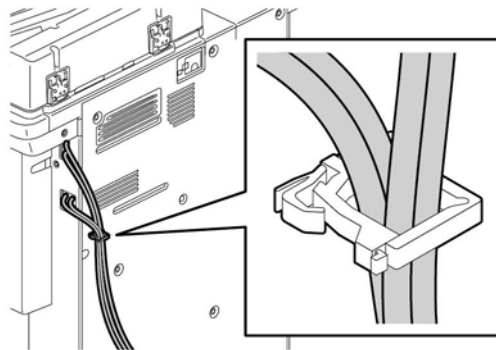
2. Allgemeine Sicherheitsmassnahmen in bezug auf die Wartung
- Während der Wartung das Gerät ausschalten und das Netzkabel herausziehen (ausser Wartung, die bei einem eingeschalteten Gerät, durchgeführt werden muss).
- Das Netzkabel herausziehen und den Bereich um die Steckerpole und die Steckdose die Umgebung in der Nähe von den Steckerzacken und der Steckdose wenigstens einmal im Jahr reinigen. Wenn Staub sich in dieser Gegend ansammelt, kann dies ein Feuer verursachen.
- Wenn die Teile auseinandergenommen werden, wenn nicht anders in diesem Handbuch usw erklärt, ist das Zusammenbauen in umgekehrter Reihenfolge durchzuführen. Aufpassen, dass kleine Teile wie Schrauben, Dichtungsringe, Bolzen, E-Ringe, Stern-Dichtungsringe, Kabelbäume nicht an den verkehrten Stellen eingebaut werden.
- Grundsätzlich darf das Gerät mit enfernten oder auseinandergenommenen Teilen nicht in Betrieb genommen werden.

- Das PC-Board muss in einer Anti-elektrostatischen Hülle gelagert werden. Nur Mit einer Manschette bei Betätigung eines Armbandes anfassen, sonst könnte es sein, dass die integrierten Schaltkreise durch statische Elektrizität beschädigt werden.

Vorsicht: Vor Benutzung der Manschette der Betätigung des Armbandes, das Netzkabel des Gerätes herausziehen und prüfen, dass es in der Nähe keine geladenen Gegenstände, die nicht isoliert sind, gibt.

- Setzen Sie sich während der Wartungsarbeiten nicht dem Laserstrahl aus. Dieses Gerät ist mit einer Laserdiode ausgestattet. Es ist unbedingt zu vermeiden, direkt in den Laserstrahl zu blicken. Keine reflektierenden Teile oder Werkzeuge, wie z. B. Schraubendreher, in den Pfad des Laserstrahls halten. Vor den Wartungsarbeiten sämtliche reflektierenden Metallgegenstände, wie Uhren, Ringe usw., entfernen.
- Auf keinen Fall Hochtemperaturbereiche, wie die Belichtungslampe, die Fixiereinheit, die Heizquelle und die umliegenden Bereiche, berühren.
- Auf keinen Fall Hochspannungsbereiche, wie die Ladeeinheiten, das Transferband, die zweite Transferwalze, die Entwicklereinheit, den Hochspannungstransformator und das Netzgerät, berühren. Insbesondere sollten die Platinen dieser Komponenten nicht berührt werden, da die Kondensatoren usw. auch nach dem Ausschalten des Geräts noch elektrisch geladen sein können.
- Vor dem Berühren potenziell gefährlicher Bereiche (z. B. drehbare oder betriebsrelevante Bereiche, wie Zahnräder, Riemen, Riemenscheiben, Lüfter und die Laseraustrittsöffnung der optischen Lasereinheit) sicherstellen, dass das Gerät sich nicht bedienen lässt.
- Beim Entfernen von Abdeckungen vorsichtig vorgehen, da sich darunter scharfkantige Komponenten befinden können.
- Bei Wartungsarbeiten am eingeschalteten Gerät dürfen keine unter Strom stehenden, drehbaren oder betriebsrelevanten Bereiche berührt werden. Nicht direkt in den Laserstrahl blicken.
- Ausschließlich vorgesehene Werkzeuge und Hilfsmittel verwenden.
- Empfohlene oder gleichwertige Messgeräte verwenden.
- Nach Abschluss der Wartungsarbeiten das Gerät in den ursprünglichen Zustand zurück versetzen und den einwandfreien Betrieb überprüfen.
- Das berührungsempfindliche Bedienungsfeld stets vorsichtig handhaben und keinen Stößen aussetzen. Wenn die Oberfläche beschädigt wird, kann dies zu Funktionsstörungen führen.
- Bewahren Sie Kunststofftüten kindersicher auf. Es besteht Erstickungsgefahr, wenn sich Kinder beim Spielen eine Kunststofftüte über den Kopf ziehen. Bitte nehmen Sie die Kunststofftüten von Optionen oder Serviceparts wieder zurück.
- Wenn der Schutzmantel eines Kabels oder die Steckerisolierung beschädigt werden, besteht Brandgefahr oder die Gefahr eines elektrischen Schlags. Um dies zu vermeiden, sollten Kabel in der gleichen Weise verlegt werden, wie sie vor der Demontage/dem Transport verlegt waren.

3. Allgemeine Sicherheitsmassnahmen
- Die Verfahren sind zu überprüfen und wie im Wartungshandbuch beschrieben durchzuführen.
- Vorsichtig, dass Sie nicht umfallen.
- Um Kontakt zur Haut zu vermeiden, tragen Sie wenn nötig Schutzhandschuhe.

4. Sicherheitsrelevante Wartungsteile
- Der Leistungsschutzschalter, die IH-Spule, der Türschalter, die Sicherung, der Thermostat, die Thermosicherung, der Thermistor, die Akkus, die IC-RAMs einschließlich der Lithium-Batterie sind besonders sicherheitsrelevant. Sie müssen unbedingt korrekt gehandhabt und installiert werden. Wenn diese Teile kurzgeschlossen und funktionsunfähig werden, kann dies zu schwerwiegenden Schäden, wie einer Explosion oder einem Abbrand, führen. Kurzschlüsse sind zu vermeiden, und es sind ausschließlich Teile zu verwenden, die von der Toshiba TEC Corporation empfohlen sind.

5. Warnetiketten
- Im Rahmen der Wartung unbedingt das Leistungsschild und die Etiketten mit Warnhinweisen überprüfen, um sicherzustellen, dass sie nicht verschmutzt sind und korrekt am Gerät angebracht sind.

6. Entsorgung des Geräts, der Verbrauchs- und Verpackungsmaterialien, alter Akkus und IC-RAMs
- In Bezug auf die Entsorgung und Wiederverwertung des Geräts, der Verbrauchs- und
  Verpackungsmaterialien, alter Akkus und IC-RAMs, einschließlich Lithiumakkus, sind die
  einschlägigen nationalen oder regionalen Vorschriften zu befolgen.

Caution:
  Dispose of used batteries and IC-RAMs including lithium batteries according to this manual.
Attention:
  Se débarrasser de batteries et IC-RAMs usés y compris les batteries en lithium selon ce manuel.
Vorsicht:
  Entsorgung der gebrauchten Batterien und IC-RAMs (inclusive der Lithium-Batterie) nach diesem
  Handbuch.

Revision Record

Ver00 <2013.04.25>	
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Purpose of the Imaging Manual

The Imaging Manual is intended for customers using the Toshiba e-STUDIO5506AC/6506AC/7506AC with a variety of specific needs and inquiries for high image quality, such as:

- ・How to obtain a clearer copy image
- ・How to maintain the current image quality
- ・How to make the text look sharper on the copy

The Toshiba MFPs are factory-configured to provide image quality settings that satisfy the majority of customers. However, these settings may not be necessarily optimal for the specific needs of all customers. Proper image quality adjustments can satisfy such needs. Most of the adjustments described in this manual must be performed by a service technician, but a few of them can also be performed by the customer.

It is strongly recommended that this manual be fully utilized by not only the service technician, but also the sales representative, who also has opportunities of obtaining customer feedback on the image quality. This manual helps the sales representative to study and comprehend what kind of customer requirements for image quality can be satisfied, to make proposals to customers to improve image quality, and to communicate the customers' specific requirements with ease to the service technician. In addition, this manual is expected to facilitate the marketing of Toshiba MFPs to prospective customers that have a specific demand for image quality and the expansion of sales.

The adjustments described in this manual are all based on the requests of actual customers. Meeting their specific wishes will only add to their satisfaction.

Please remember to read "Caution after the adjustment," to which you must pay close attention, after finishing the adjustment.

Precautions in Servicing

- For adjustments to be performed by the service technician, the precautions given in the Service Manual must be stringently followed. The adjustments must be performed by a qualified service technician who has completed the service training course.
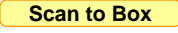
- The default listed mentioned in this manual may be different from the actual ones, due to the timing of shipping (firmware version). But note that the recommended values and acceptable value range stated in this manual remain the same.

Purpose of the Imaging Manual

<u>Icons</u>

The following icons used in this manual denote the following:

■ : • Copy ——— An adjustment having an effect on copying in the Black mode (excluding the Image smoothing mode)
  • Printer ——— An adjustment having an effect on Black and White mode printing
    * The adjustment will be effective, if "Black and White" is selected from among the "Color" options on the Windows printer driver or if "Mono" is selected from among the "Color Type" options on the Macintosh print dialog.
  • Scan ——— An adjustment having an effect on scanning in the Black mode

▓ : • Copy ——— An adjustment having an effect on copying in the Image smoothing mode in the Black mode
  • Scan ——— An adjustment having an effect on scanning in the Gray scale mode

▊ : • Copy ——— An adjustment having an effect on copying in the Full color mode
  • Printer ——— An adjustment having an effect on full-color printing
    * The adjustment will be effective, if "Auto" or "Color" is selected from among the "Color" options on the Windows printer driver or if "Auto" or "Color" is selected from among the "Color Type" options on the Macintosh print dialog.
  • Scan ——— An adjustment having an effect on scanning in the Full color mode

▚ : • Copy ——— An adjustment having an effect on copying in the Auto color mode
  • Scan ——— An adjustment having an effect on scanning in the Auto color mode

PCL6 : An adjustment having an effect on printing with the Windows PCL6 emulation printer driver

PS3 : An adjustment having an effect on printing with the Windows PS3 emulation printer driver

XPS : An adjustment having an effect on printing with the Windows PSX emulation printer driver

Mac : An adjustment having effect on printing with the Macintosh printer driver

Scan to Box : An adjustment having an effect on an image stored in the e-Filing box by the scanning functions (including Scan to Box, Scan to File and Scan to E-mail)

Copy to Box : An adjustment having an effect on an image stored in the e-Filing box by the copying functions (Copy to Box)

Print to Box : An adjustment having an effect on an image stored in the e-Filing box by the printing functions (Print to Box)

Fax to Box : An adjustment having an effect on an image stored in the e-Filing box by the Fax and Internet Fax functions (including Received Fax to Box and Received Internet Fax to Box)

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3. Printer-specific Adjustments

4. e-Filing-specific Adjustments

5. Scanning-specific Adjustments

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1.1 To Obtain a Darker Image

Before adjustment	After adjustment
The output image looks light and blurred.	The output 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 image quality control or automatic calibration, and adjust the transfer roller bias output, in order to obtain a darker and sharper image.

❑ Procedures

＊Perform the adjustment in accordance with the procedures below.

＊Both the service technician and the user can use procedure (1).

＊Only the service technician must use procedures (2) and (3).

(1)   Perform automatic calibration to correct variations in image density.

＊"ADMIN" is selected from among the "CALIBRATION DISPLAY LEVEL" options by default. In other words, an administrator is authorized to operate automatic calibration. But "USER" can also be selected to allow the user to operate it. Refer to the MFP Management Guide for further information regarding how to select the "CALIBRATION DISPLAY LEVEL" option.

To adjust the copy image quality

Use steps (a) through (i) to perform automatic calibration.

(a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

(b) Press [ADMIN].

(c) Enter the 6 to 64 digit administrator password. Press [ENTER].

(d) Press [GENERAL].

(e) Press [CALIBRATION].

(f) Press [COPY].

(g) Press [CALIBRATION] to print out the test chart.

(h) Place the printed test chart on the original glass.

(i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

* As a result of the above steps, the copy image quality will be corrected in the Full Color mode and Black and White mode simultaneously.

* To correct variations in image density by performing automatic calibration for each paper type, refer to " (1) Perform automatic calibration for each paper type to correct variations in image density" in "2.13 To Obtain a Good Color Balance on Thick Paper".

After performing automatic calibration, print and check the image quality.

If further image quality adjustments are necessary, go to step (2) to adjust the transfer (2nd transfer) roller bias output.

To adjust the print image quality

• Image quality adjustment for 600-dpi full-color printing

Use steps (a) through (j) to perform automatic calibration.

(a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

(b) Press [ADMIN].

(c) Enter the 6 to 64 digit administrator password. Press [ENTER].

(d) Press [GENERAL].

(e) Press [CALIBRATION].

(f) Press [600dpi PRINT].

(g) Press [CALIBRATION] to print out the test chart.

(h) Place the printed test chart on the original glass.

(i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

(j) The message "Is a result made to reflect?" will appear. Press [YES].

* To correct variations in image density by performing automatic calibration for each paper type, refer to "3.2 To Maintain a Steady Color Balance on Thick Paper or Special Paper".

After performing automatic calibration, print and check the image quality.

If further image quality adjustments are necessary, go to step (2) to adjust the transfer (2nd transfer) roller bias output.

•Image quality adjustment for 1200-dpi high-resolution printing

Press [1200dpi PRINT] in step (f), in the same way as image adjustment for 600-dpi full-color printing noted above.

After performing automatic calibration, print and check the image quality.
If further image quality adjustments are necessary, go to step (2) to adjust the transfer (2nd transfer) roller bias output.

•Image quality adjustment with simple calibration

Use steps (a) through (d) to perform simple calibration.

     (a) Press [USER FUNCTIONS] on the control panel to enter the "User Functions" menu.

     (b) Press [GENERAL].

     (c) Press [AUTO CALIBRATION].

     (d) The message "Set Auto Calibration Yes or No." appears. Press [Yes].

After performing simple calibration, print the image and check its quality.

If further image quality adjustments are necessary, carry out the next procedure.

■ ▥ ▥ ▨ (2) Select [05 ADJUSTMENT MODE]. Change the values for codes [2934 to 2937] to adjust the transfer (2nd transfer) roller bias output.

(Adjust the offset voltage of transfer roller bias so as to increase the density of the image.)

• The code to use varies depending on the paper type. Adjust the value for [05] code corresponding to the paper type for which you would like to improve the image quality. Set the value within a range of "2" to "8" to obtain the highest density of the image.

Paper type			[05] code	Subcode	Recommended value	Acceptable value range	Default
Full color	Front	Plain/Thick	05-2934	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			
	Back	Plain/Thick	05-2935	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			
Black	Front	Plain/Thick	05-2936	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			
	Back	Plain/Thick	05-2937	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			

* "Front" refers to the printed side in the simplex mode or the side that is delivered facing upwards in the duplex mode.

"Back" refers to the printed side that is delivered facing downwards in the duplex mode.

＊The table below shows you the acceptable paper weight for the paper type.

Paper type	Acceptable paper weight	
Plain paper	60 to 80 g/m²	16 to 21 lb. Bond
Thick	81 to 105 g/m²	22 to 28 lb. Bond
Thick 1	106 to 163 g/m²	Max. 60 lb. Cover
Thick 2	164 to 209 g/m²	Max. 110 lb. Index
Thick 3	210 to 256 g/m²	Max. 140 lb. Index
Thick 4	257 to 280 g/m²	Max. 100 lb. Cover

• After adjusting the transfer roller bias output, perform automatic calibration in the same manner as in procedure (1).

<Hint>　The transfer voltage increases as the set value is increased. It is usually recommended that the set value be increased, when you print on thick paper or paper with asperities on its surface. On the other hand, the set value should be decreased, when you print on thin paper.

After adjusting the density, print and check the image quality.
If further image quality adjustments are still necessary, use the next procedure.

▮ ▯ ▯ ▯ (3)　Check the life of the consumables (particularly the drum and fuser unit) and replace them, if necessary.
　　• When replacing any consumable, use steps (a) to (c).
　　　(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable to "0."
　　　　＊For further information regarding the PM support mode, refer to the Service Manual.
　　　(b) Select [05 ADJUSTMENT MODE], select code [2742], and then press the [START] button.
　　　　• Image quality control will be performed and the image quality control value will be initialized.
　　　(c) Perform automatic calibration in the same manner as in procedure (1).

　＊After replacing any consumable, remember to reset the counter corresponding to it to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

❑ Caution after the adjustment
Nothing in particular.

❑ Remarks
• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

• If printing on another type of paper causes a problem with the image quality after the adjustment, return the set values (for codes 05-2934 to 2937) to the default (set value: 5) and then perform the adjustment again.

• When replacing any consumable, refer to the relevant information in the Service Manual.

1.2 To Adjust the Density on a Solid Colored Image

If the density is decreased	If the density is increased
The solid colored area becomes lighter.	The solid colored area becomes darker.

❑ Explanation

The density of a certain color can be made darker or lighter in accordance with the type of paper or the content of an original.

When the toner amount on solid areas must be adjusted as requested by a user, an image quality target value or developer bias must be adjusted.

The correction amount needed varies depending on the status of use of the consumables such as the developer material or the drums, or the status of the installation site.

Since a constant value will be applied regardless of the influences of the above status in the developer bias adjustment, perform image quality adjustment while changing the target value as much as possible.

❑ Procedures

＊The service technician must perform the adjustment in accordance with the procedures below.

(1) Select [05 ADJUSTMENT MODE]. Adjust the density of the copied or printed solid image.

• Use steps (a) to (b) to perform the adjustment.

　(a)Select [05 ADJUSTMENT MODE] and change the value for code [2662] to correct the image quality target value.

Color to adjust	[05] Code	Subcode	Default
Y (Yellow)		0	343
M (Magenta)	05-2662	1	340
C (Cyan)		2	369
K (Black)		3	360

　＊When the value becomes larger than the present one, and the solid image becomes darker. When it

　　becomes smaller, the image becomes lighter.

　　The value must fall within a range of -50 and +50 from the default.

It is recommended that the changing amount for one time falls within ± 20 bits.

(b) Select [05 ADJUSTMENT MODE], select code [2742] and then press the [START] button.

After performing image quality control, print the image and check its quality on the solid areas.

■ ▥ ▥ ▨ (2) Select [08 SETTING MODE]. Change the value to adjust the density of a solid area during the
copying/printing operation.

• Use steps (a) to (b) to perform the adjustment.

(a) Select [08 SETTING MODE]. Change the values for codes [2513/2514] to adjust the developer
bias output value.

＊The value to use varies depending on the paper type and color to adjust. Check the code to use in
accordance with the following "Code" list, and refer to the "Value" list to select a proper value.

Paper type		Color to adjust	[08] code	Subcode
Except extra long size paper	Plain / Recycled / Thick	Y (yellow)	08-2513	0
		M (magenta)		1
		C (cyan)		2
		K (black)		3
	Other	Y (yellow)	08-2514	0
		M (magenta)		1
		C (cyan)		2
		K (black)		3
Extra long size paper*		Y (yellow)	08-2514	0
		M (magenta)		1
		C (cyan)		2
		K (black)		3

＊The table below shows you the acceptable paper weight for the paper type.

Paper type	Acceptable paper weight	
Plain/Recycled	60 to 80 g/m²	Max. 60 lb. Cover
Thick	81 to 105 g/m²	Max. 110 lb. Index

Code setting values

Value	Correction value for developer bias output	Density of the solid colored area
0	Value automatically set −100	Light
1	Value automatically set −80	↑
2	Value automatically set −60	↑
3	Value automatically set −40	↑
4	Value automatically set −20	↑
5	Value automatically set	↑
6	Value automatically set +20	Default
7	Value automatically set +40	↓
8	Value automatically set +60	↓
9	Value automatically set +80	↓
10	Value automatically set +100	Dark

＊Decreasing the value will make the solid colored area become lighter (decrease the amount of toner on the solid colored area). On the other hand, increasing the value will make the solid colored area become darker (increase the amount of toner on the area).

(b) Select [05 ADJUSTMENT MODE], select code [2742], and then press the [START] button.
After the image quality control is finished, perform printing to check the image quality of the solid colored area.

＊The changed setting values for 08-2513/2514 will be effective for the image printed immediately after the change. When these values are changed, performing image quality control with 05-2742 is recommended.

Repeat procedures (a) to (b) as required in order to change the setting value so that the solid colored area becomes your desired density.
Since the density of a gradation area (halftone), such as a photograph, is adjusted as well as that of a solid colored image, follow the procedure below.

(3) Perform automatic calibration for each type of paper whose density has been adjusted by means of the following flowchart.
＊This flowchart is common for the Full color and Black modes.

Start (Offsetting correction of contrast potential has been set.)

0: No automatic calibration for each paper type

1: Automatic calibration for each paper type

Value for 08-9059

Set "1" for code 08-9059.

Perform automatic calibration

Finish
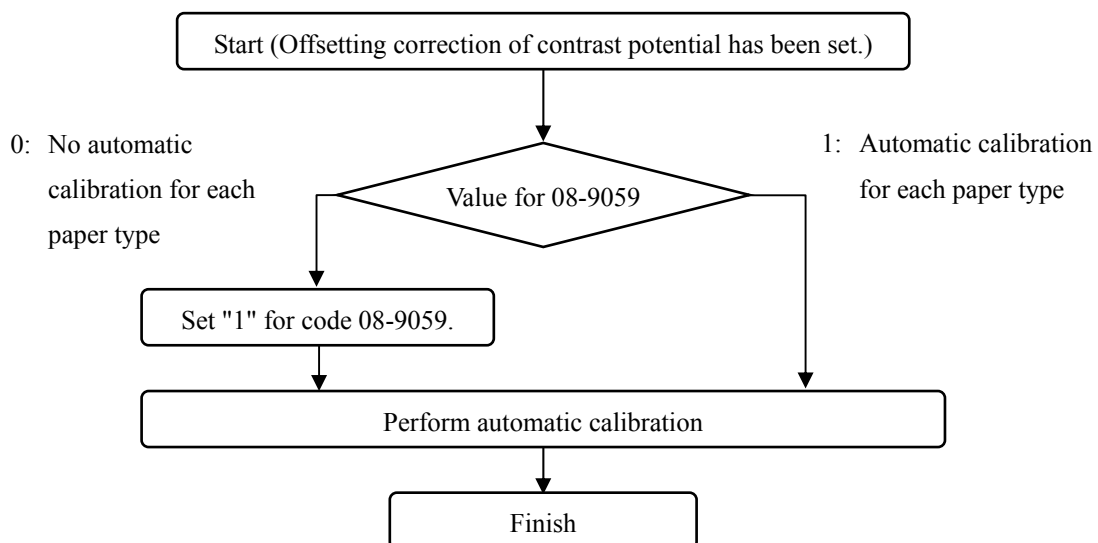
\<Hint\>   Automatic calibration

In paper types whose density has been adjusted, automatic calibration is performed for all MFP modes in the following table. However, automatic calibration for each paper type can be performed separately by changing the value of 08-9059 from "0" (default) to "1". Automatic calibration only for paper types whose density has been adjusted can also be performed; however, it is recommended to perform it for other paper types as well.

MFP mode	How to perform automatic calibration
Copy	Perform step (1) referring to "2.13 To Obtain a Good Color Balance on Thick Paper". Perform step (2) and later if required.
Print (600dpi)	Perform step (2) referring to "3.2 To Maintain a Steady Color Balance on Thick Paper or Special Paper".
Print (1200dpi)	

After automatic calibration, perform printing and check the image quality.

If further image quality adjustments are necessary, perform the next step.

■ ▥ ▦ ▨ (4) Check the life of the consumables (particularly the drum and transfer belt unit) and replace them, if necessary.

• When replacing any consumable, use steps (a) to (b).

(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable to "0."

＊For further information regarding the PM support mode, refer to the Service Manual.

Be sure to reset the counter. Otherwise, it may cause a loss in performance, including degradation in the image quality and a reduction in the life of the consumables.

(b) Perform automatic calibration.

＊Be sure to perform automatic calibration not only with the paper types adjusted in step (1) and (2), but also all paper types. Refer to the following table for adjustment.

MFP mode	How to perform automatic calibration
Copy	Perform step (1) referring to "2.13 To Obtain a Good Color Balance on Thick Paper". Perform step (2) and later if required.
Print (600dpi)	Perform step (2) referring to "3.2 To Maintain a Steady Color Balance on Thick Paper or Special Paper".
Print (1200dpi)	

＊After replacing any consumable, remember to reset the counter corresponding to it to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.
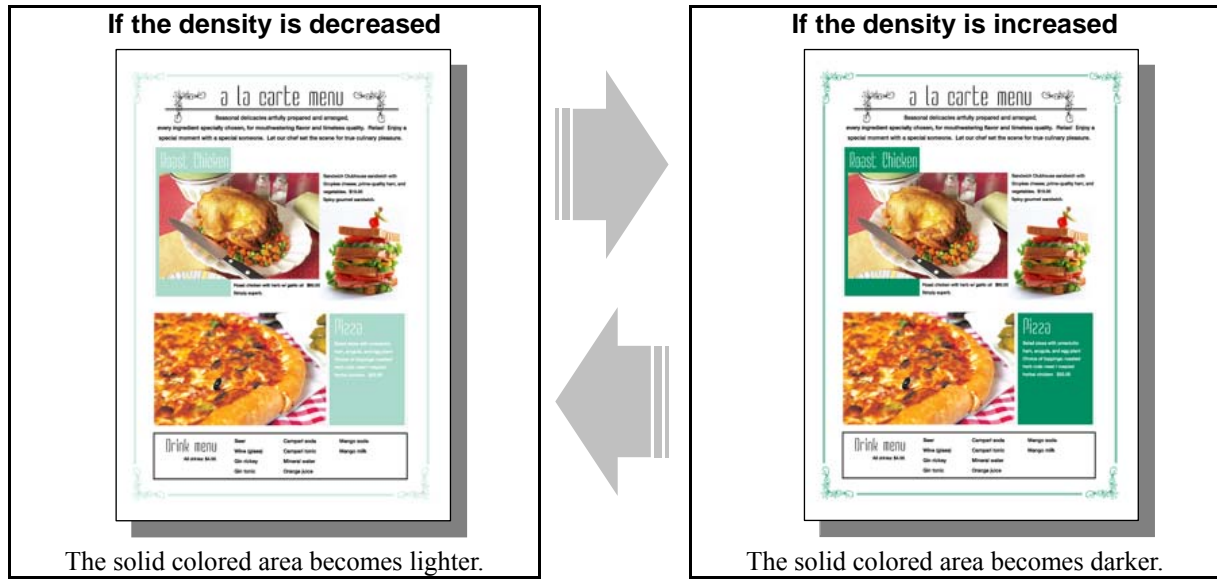
❑ Caution after the adjustment

• The adjustment may possibly cause an increase in the amount of toner consumed, scattering of the toner, diminished photo images or gradations (less accurate reproducibility of halftones), extremely dark images (decreased resolving power), extremely light images (faint thin lines), and shorten the life of the consumables. Therefore, carefully perform the adjustment, while checking the copy or print image.

• No effect of the adjustment may appear, depending on the operating environment of the MFP. Therefore, carefully perform the adjustment, while checking the copy or print image.

❑ Remarks

• The effect of the adjustment may vary, depending on the usage pattern of the consumables, such as the developer material and drum, and the operating environment of the MFP.

• When replacing any consumable, refer to the relevant information in the Service Manual.

1.3 To Achieve the Image Quality Most Suitable for the Paper Used

(To eliminate blur and graininess from an image)

Before adjustment	**After adjustment**
The image looks grained, depending on the type of paper.	A clear image quality, most suitable for a type of paper used, is obtained.
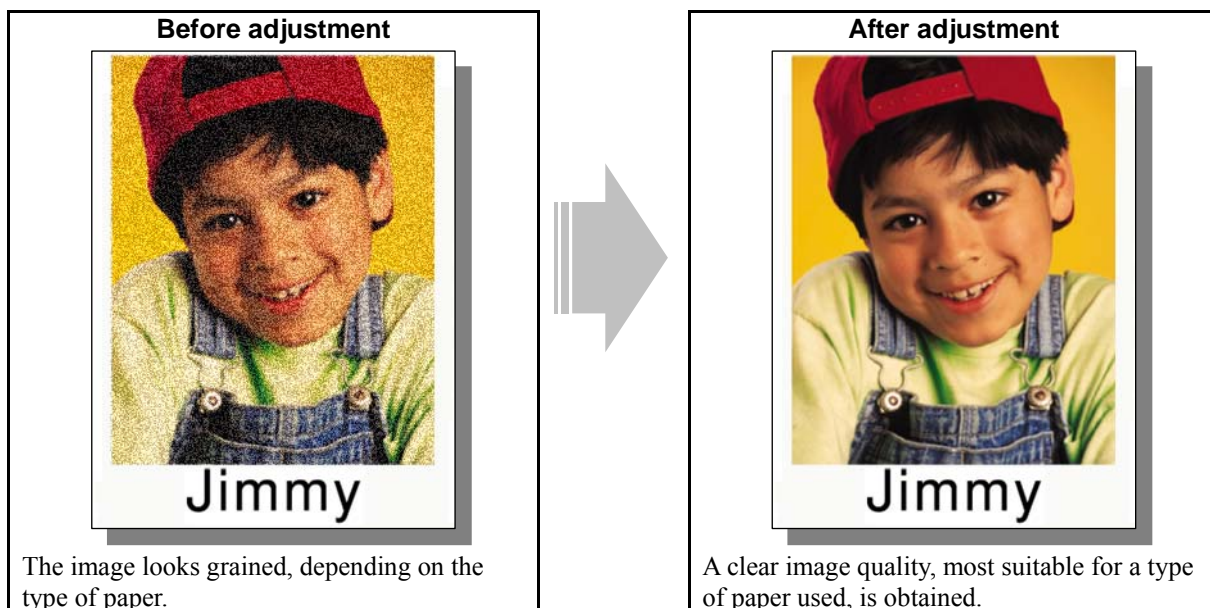
❑ Explanation

The image sometimes looks slightly blurred or grained on the copy or printout, depending on the type of paper used. Adjust the transfer roller bias output and the fuser temperature, in order to achieve the image quality most suitable for the paper used.

❑ Procedures

*All the steps in the adjustment must be performed by the service technician. The procedure to be followed differs depending on the purpose as follows:

  • To adjust halftone image: Go to step (1)

  • To adjust images on the high-density area (only when recycled paper is used): Go to step

(1) Select [05 ADJUSTMENT MODE]. Change the values for codes [2934 to 3937] to adjust the transfer (2nd transfer) roller bias output.

   (Adjust the offset voltage of transfer roller bias so as to optimize the halftones.)

  • The code to use varies depending on the paper type. Adjust the value for [05] code corresponding to the paper type for which you would like to improve the image quality. Set the value within a range of "2" to "8" to optimize the halftones.

Paper type			[05] code	Subcode	Recommended value	Acceptable value range	Default
Full color	Front	Plain/Thick	05-2934	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			
	Back	Plain/Thick	05-2935	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			
Black	Front	Plain/Thick	05-2936	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			
	Back	Plain/Thick	05-2937	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
		Thick 4		8			
		Envelope		10			

* "Front" refers to the printed side in the simplex mode or the side that is delivered facing downwards in the duplex mode.

"Back" refers to the printed side that is delivered facing upwards in the duplex mode.

＊The table below shows you the acceptable paper weight for the paper type.

Paper type	Acceptable paper weight	
Plain paper	60 to 80 g/m²	16 to 21 lb. Bond
Thick	81 to 105g/m²	22 to 28 lb. Bond
Thick 1	106 to 163 g/m²	Max. 60 lb. Cover
Thick 2	164 to 209 g/m²	Max. 110 lb. Index
Thick 3	210 to 256 g/m²	Max. 140 lb. Index
Thick 4	257 to 280 g/m²	Max. 100 lb. Cover

• After adjusting the transfer roller bias output, perform automatic calibration.

＊For further information regarding the procedures, refer to procedure (1) in 1.1 To Obtain a Darker Image.

<Hint> The transfer voltage increases as the set value is increased. It is usually desirable that the set value be decreased to obtain a clearly highlighted area.

After performing the adjustment, print and check the image quality.

If further image quality adjustment is necessary, go to step (3).

▮ ▮ ▮ ▮ (2) If the image on the high-density area looks grained on plain paper other than the TOSHIBA-recommended one is used, select "recycled paper" as a paper type.

＊ To select the paper type, refer to the Operator's Manual for Copying Guide.

• If fine adjustment of image quality in the recycled paper mode is required in accordance with the paper type, follow the steps from (a) to (b) below.

(a) Select [05 ADJUSTMENT MODE]. Change the value of the codes [2934] to [2937] to adjust (2nd) transfer bias output. (In this step the transfer roller bias offset voltage is adjusted to print the high-density area or the halftone area of the image most clearly.)

Paper type			[05] code	Subcode	Recommended value	Acceptable value range	Default
Full color	Front	Recycled paper	05-2934	7	2 to 8	0 to 10	5
	Back	Recycled paper	05-2935	7	2 to 8	0 to 10	5
Black	Front	Recycled paper	05-2936	7	2 to 8	0 to 10	5
	Back	Recycled paper	05-2937	7	2 to 8	0 to 10	5

＊"Front" refers to the printed side in the simplex mode or the side that is delivered facing downwards in the duplex mode.

"Back" refers to the printed side that is delivered facing upwards in the duplex mode.

• After adjusting the transfer roller bias output, perform automatic calibration.

＊ Refer to step (1) in "1.1 To Obtain a Darker Image".

<Hint> The larger the setting value is, the more the transfer voltage increases. It is usually recommended that the set value be increased when you print on thick paper or paper with asperities on its surface. On the other hand, the set value should be decreased when you print on thin paper.

After setting the value, print and check the image quality.

If further image quality adjustment is necessary, go to step (b).

(b) Select [08 SETTING MODE]. Change the value of the codes [5293/5294] to adjust fusing temperature in the recycled paper mode. (In this step fusing temperature is adjusted to print the high-density area of the image most clearly.)

Adjustment		Paper type	[08] code	Subcode	Recommended value	Acceptable value range	Default
Center heater	Black	Recycled paper	08-5293	0	9 to 11	0 to 22	11
	Color			1			

• After adjusting the fusing temperature, perform automatic calibration.

* Refer to step (1) in "1.1 To Obtain a Darker Image".

<Hint> The smaller the setting value, the lower the fusing temperature becomes. It is usually recommended that the set value be decreased in order to suppress roughness on the high-density area of the image. Adjust the value within the range of the recommended values while checking the image carefully because if it is too small, insufficient fusing may occur.
Since temperatures on the long side of the paper cannot be kept in a proper balance, the same value must be set for the [08] codes [5293] and [5294] unless otherwise required so.

After setting the value, print and check the image quality.

If further image quality adjustment is necessary, go to step (3).

■ ▥ ▥ ▨ (3) Check the life of the consumables (particularly the drum and transfer belt unit) and replace them, if necessary.

• When replacing any consumable, use steps (a) to (b).

(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable part to "0."

＊For further information regarding the PM support mode, refer to the Service Manual.

(b) Perform automatic calibration.

＊For further information regarding the procedures, refer to procedure (1) in 1.1 To Obtain a Darker Image.

* After replacing any consumable, remember to reset the counter by making it correspond to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

❑ Caution after the adjustment
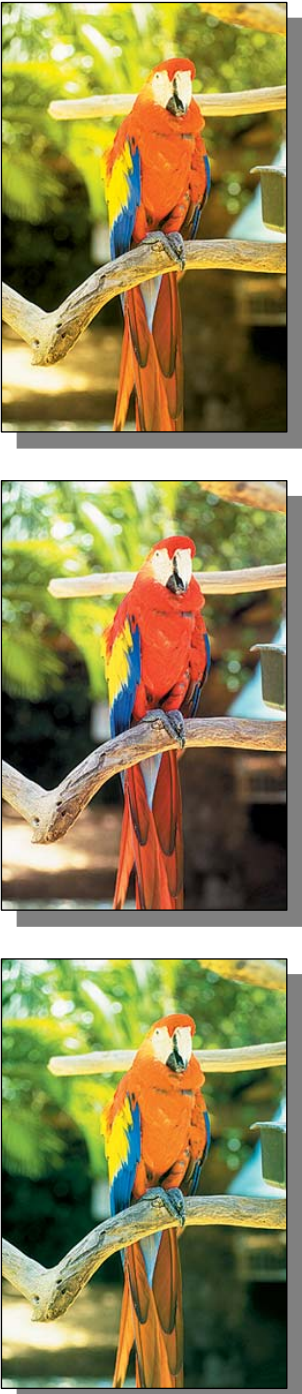
After the fusing temperature was adjusted in step (2) above, printing interruption may occur due to improper fusing temperature. Therefore adjust the value carefully. If you want to change the conditions for printing interruption, change the value of the [08] code [5409] (abnormality process starting temperature setting / recycled paper). For the setting values, refer to the Service Manual.

❑ Remarks

• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

• The desired image quality may not be obtained, depending on the type of paper used. In this case, use the recommended paper and then print or adjust the image quality.

• If an image problem occurs when you use the other paper type, temporarily set the values of the [08] codes [2934] to [2937] (bias offset) and [5293] to [5294] (fusing temperature during printing) back to the default ones. Then perform the adjustment again.

• When replacing any consumable, refer to the relevant information in the Service Manual.
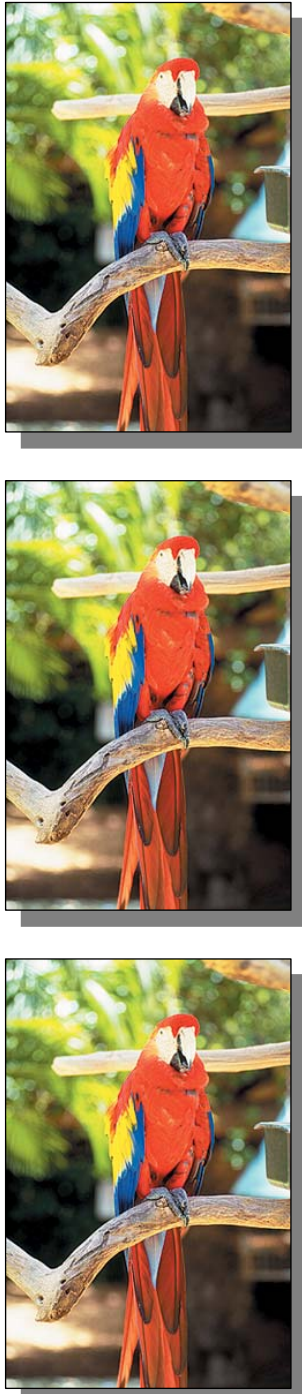
1.4 To Minimize Variations in the Image Quality under the Operating Conditions

(To optimally program image quality control)

Before adjustment	After adjustment

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

The image quality is constantly maintained.

❑ **Explanation**

Variation in density may appear on images depending on date and time when copying or printing is performed or the type of a job. To maintain image quality at a certain level, the types or the intervals among image quality controls must be adjusted.

There are two image quality control modes; the Short Mode which is only for adjusting density on solid images in a short time, and the Full Mode which is for adjusting density on the wide areas from halftones to solid images.

❑ **Procedures**

* The service technician must perform the adjustment in accordance with the procedures below.

■ ▥ ▯ ▨ (1) The types or the intervals in image quality controls must be adjusted by setting the most appropriate value for [08] code in accordance with the status of use or stability level required by a user. See the table below for an overview of image quality controls.

(1)-1. Overview of image quality controls:

Type of image quality control (IQC)				
Type of control		**Contents**	**Target of correction**	**Code for forcible control**
1. Full mode IQC *1		i)Charging/developer bias correction	Density on solid image	05-2742
		ii)Process for halftones	Halftones	05-2745
2. Short Mode IQC *2	Color	Charging/developer bias simple correction	Density on solid image	05-2738
3. Short Mode IQC *2	Black	Charging/developer bias simple correction	Density on solid image	05-2739

*1. The correction accuracy is high but it takes approx. 90 seconds (equal to the time taken by existing models). This control is performed with a simple calibration operated from the control panel.

*2. The control with the simple correction takes approx. 15 seconds, but its correction accuracy is not as high as the one in the Full Mode.

Default starting conditions			
Start-up condition	**Full**	**Short**	**Adjustment**
(1)After the first warming-up in a day *3	(o)	o	Switch IQC which starts after the first warming-up in a day. Code: 08-2492 0: Disabled, 1: Short, 2: Full
(2)When recovered from the toner-empty status	o		-
(3)Time left unused *3	(o)	o	Switch IQC to start. Code: 08-2496 0: Disabled, 1: Short, 2: Full *6 Set the period of time left unused. Code: 08-2507, Default: 6 hours
(4)Relative humidity	o		Set the humidity. Code: 08-2505, Default: 10% RH
(5)Accumulated number of output pages (Full)	o		Set the number of the output pages. Code: 08-2509, Default: 2000 pages *4
(6) Accumulated number of output pages (Short, Color)		o	Set the number of the output pages. Code: 08-2497, Default: 250 pages *4 *5
(7) Accumulated number of output pages (Short, Black)		o	↑

*3. The Short Mode is set as a default because the MFP can be recovered from warming-up or the Sleep Mode in a shorter time. For more stable image quality, switch it to the Full Mode.

*4. During continuous copying or printing, the control does not start until all jobs are finished.

If the control needs to be started when the specified number of pages has been output, also change the setting value for code 08-9199 (automatic interruption page number setting for printing). (Default: 500 pages)

*5. In the Short Mode, the image quality control starts individually for each counter of the Black Mode and the Color Mode. When the control is performed for the Color Mode, the counter for the Black Mode is also reset. However,the counter for the Color Mode is not reset when the control is performed for the Black Mode.

*6: 0 (Disabled) or 1 (Short) is set for 08-9264. If the equipment is left unused for two hours or more, the Full mode ICQ starts after the end of a job in order to maintain the image quality.

(1)-2. The MFP is installed in a place where the temperature and humidity vary widely:

(a) Set "1" (value × 5%R.H.) for code 08-2505 to increase the frequency of image quality control, in response to a change in humidity.

＊Image quality control will be performed, when the relative humidity changes in accordance with the specified difference from the previous image quality control. If the difference in the relative humidity exceeds the specified value, image quality control is performed first. Then a copy or print job will be performed.

Value for 08-2505	Difference in relative humidity
1	5%R.H.
2	10%R.H. (default)

(b) Set "5" or "3" for code 08-2508 to increase the frequency of image quality control, in response to a change in humidity.

* Image quality control will be performed, when the drum temperature changes in accordance with the difference from the previous image quality control. If the difference in the drum temperature exceeds the specified value after a print job is performed, image quality control is performed.

Value for 08-2508	Difference in drum temperature
3	3°C
5	5°C
7	7°C (default)

• After setting the value for code 08-2505, forcibly perform image quality control, as follows:
  Select [05 ADJUSTMENT MODE]. Select code [2742]. Press the [START] button.

(1)-3. To Have Uniform Variations in the Image Quality after Return from the Auto Power Save Mode:

Change the value of the [08] code [2507] to change the conditions for starting image quality control (shorten the period of time the MFP is left unused) after the MFP was recovered from the auto power save mode, so that the image quality control will be easily performed.

Image quality control is performed before the start of a job.

For a more stable image quality on halftones, switch the image quality control to start to the Full Mode with code 08-2492. (0: Disabled, 1: Short, 2: Full)

Value for 08-2507	Period of time the MFP is left unused before starting image quality control
0	3 minutes or longer
1	5 minutes or longer
2	7 minutes or longer
3	10 minutes or longer
4	15 minutes or longer
5	20 minutes or longer
6	30 minutes or longer
7	45 minutes or longer
8	60 minutes or longer
9	90 minutes or longer
10	120 minutes or longer
11	150 minutes or longer
12	180 minutes or longer
13	240 minutes or longer
14	300 minutes or longer
15	360 minutes or longer (default value)

\<Note\>   Do not disable the Auto shut off mode timer setting ("0" is set for 08-9112) while the Auto power save timer setting is set to invalid ("0" is set for 08-9111). If both settings are set to invalid, this equipment does not enter the energy saving mode so it is always in the ready status. Due to this, image quality control according to the period of time the MFP is left unused is not performed regardless of the setting value of 08-2507.

• After setting the value for code 08-2507, forcibly perform image quality control, as follows:
  Select [05 ADJUSTMENT MODE], select code [2742], and then press the [START] button.

(1)-4. To optimize the image quality stability according to the number of output pages in a day or the type of originals:

By changing the setting value for [08] codes, the image quality control can be started at the desired timing after the specified number of pages have been output. Referring to the guide below, set the value appropriately in accordance with the total number of pages output in a day, the number of jobs frequently performed, or the requested image quality in the user's office.

After changing the setting value, perform the image quality control following the procedure below.

Select [05 ADJUSTMENT MODE]. Select code [2742]. Press the [START] button.

After performing the adjustment, print the image and check its quality.

(A). For standard office use (mainly business documents) (Default)

	Code to set number of pages	Setting value	Starting conditions
Full IQC	08-2509	2000	The control starts after every 2000 pages.
Short IQC	08-2497	250	The control starts after 250 pages have been output, or when a job is interrupted after every 500 pages.
Printing interrupted	08-9199	500	

(B). To stabilize the density in continuous copying/printing(when interrupting jobs and starting the Short Mode at every 50 pages)

	Code to set number of pages	Setting value *6	Starting conditions
Full IQC	08-2509	2000	The control starts after every 2000 pages.
Short IQC	08-2497	50	The control starts when a job is interrupted after every 50 pages.
Printing interrupted	08-9199	50	

*6. To start the Short Mode at every 30 pages, set the value to "30" for both 08-2497 and 08-9199. However, setting a too-short interval will use up too much toner, even though the consumption in the Short Mode is approximately a quarter of that in the Full Mode.

(C). To stabilize the image quality on halftones in pictures (when interrupting jobs and starting the Full Mode at every 250 pages)

	Code to set number of pages	Setting value *7	Starting conditions
Full IQC	08-2509	250	The control starts after every 250 pages.
Short IQC	08-2497	250	When a job is interrupted after every 250 pages.
Printing interrupted	08-9199	250	

*7. When the number of times in the Full Mode increases, more toner is consumed.

(D). To emphasize quality (for less use of the Short Mode)

	Code to set number of pages	Setting value *8	Starting conditions
Full IQC	08-2509	2000	The control starts after every 2000 pages.
Short IQC	08-2497	500	The control starts only when a job is interrupted after 500 pages have been output.
Printing interrupted	08-9199	500	

*8. When the Full Mode and the Short Mode are set simultaneously, the former has a priority.

If you never want to start the Short Mode, set "1" (Disabled) to code 08-2495. (0: Enabled)

Notes:
・Set the value in consideration of users' requests and the total number of pages output in a day. To maintain the optimal image quality, it is recommended to start the Short Mode at least two or three times a day.
・Do not set the number of output pages smaller than 50 for codes 08-2509 and 08-9199 because this affects the life of consumables such as a cleaning blade.
・Changing this setting improves the stability of the image quality. However, a long application of this change affects the life of consumables. It is recommended to make only a minimal change and then return to the default value immediately.
・If 08-2367 (ON/OFF setting of drum and belt reverse rotation amount control) is set to "0", there is no effect because interrupting a job does not cause image quality control, regardless of the setting value of 08-2509 and 08-9199.

■ ▥ ▥ ▨ (2) Use the thick paper mode when you print on plain paper.

     • If the thick paper mode is used, printing decelerates but image quality becomes more stable because differences in color or temperatures during continuous printing will be reduced.

     • Set the thick paper mode following steps (a) to (i) below.

        (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

        (b) Press [USER].

        (c) Press [DRAWER] in the USER menu.

        (d) Select a drawer that you want to set for thick paper mode and paper size.

        (e) Press [PAPER TYPE].

        (f) Press [THICK 1].

        (g) Select [05 ADJUSTMENT MODE]. Then select the subcode "1" for the code [2934] and change the setting value to "3".

          • Change the level of transfer roller bias offset in the color mode, the front side of paper.

          ＊Check how the copy image changes carefully. The setting value may be changed to "4" or "2" if required.

        (h) Place paper to be used on the drawer that you selected in step (d) above.

        (i) Perform automatic calibration.

          ＊Refer to step (1) in "1.1 To Obtain a Darker Image".

     After setting the value, print and check the image quality.

     If further image quality adjustment is necessary, go to the next step.

■ ▥ ▥ ▨ (3) Check the life of the consumables (particularly the drum and transfer belt unit) and replace them, if necessary.

     • When replacing any consumable, use steps (a) to (b).

        (a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable to "0."

          ＊For further information regarding the PM support mode, refer to the Service Manual.

        (b) Perform automatic calibration.

          ＊For further information regarding the procedures, refer to procedure (1) in 1.1 To Obtain a Darker Image.

    ＊After replacing any consumable, remember to reset the counter corresponding to it to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

❏ Caution after the adjustment

• The adjustment may possibly slow down the copying or printing speed, extend the warm-up time when the MFP is returned from the auto power save mode, and shorten the life of the consumables, because of an increase in the number of times image quality control is performed. Therefore, carefully perform the adjustment, while checking the copy or print image.

• Note the following when you print in thick paper mode in step (2):

- • Printing speed decelerates to 17.5 sheets per minute (A4/LT) after the adjustment.
- • The thick paper mode cannot be set for the LCF (Large Capacity Feeder, optional). Therefore the maximum number of sheets acceptable for continuous printing should be the one for the drawer. However in the copying mode, you can set the thick paper mode to more than one drawer and copy more paper continuously with the automatic drawer change function.
- • The density level of the halftone image may differ from that of the plain paper mode after the adjustment.
- • The PM counter value increases by 2 counts for 1 sheet of thick paper.

❏ Remarks

• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment. Otherwise, it may cause a loss in MFP performance, including slowdown in the copying or printing speed.

• When replacing any consumable, refer to the relevant information in the Service Manual.

1.5 To Correct Out-of-Registration Colors

Before adjustment	After adjustment
– – – – Paper feeding direction – – –▶	**– – – – Paper feeding direction – – –▶**
The text and background are misaligned or out of registration.	Text is aligned with the background and a clear copy/print image is obtained.
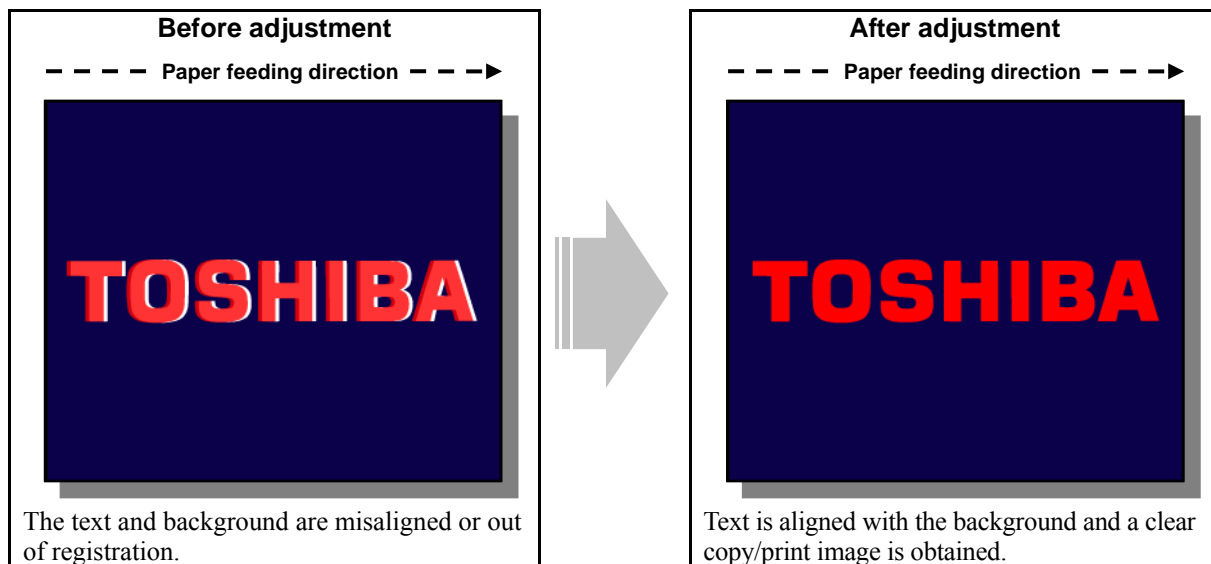
❏ Explanation

Colors of text or a thin line are sometimes printed out of alignment. Perform color registration control, in order to print or copy without out-of-registration colors.

❏ Procedures

＊The service technician must perform the adjustment in accordance with the procedure below.

＊This adjustment is intended to correct misaligned colors due to differences between the paper feeding speed and rotating speed of the transfer belt. Therefore, it will be effective, only if colors are misaligned in the paper feeding direction (or the secondary scanning direction). This adjustment cannot improve misaligned colors in the direction perpendicular to paper feeding (or primary scanning) or in the secondary scanning direction periodically (partially at regular intervals). Refer to "Troubleshooting for the Image 1) Color deviation" in the Service Manual.

<Adjustment for plain paper>

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

(2) Select [05 ADJUSTMENT MODE], select code [4719], and then press the [START] button.
 ・ Registration control will be forcibly performed.

<Adjustment for thick paper>

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

(2) Load the thick papers in the drawer. (Paper weight: 106 to 256 g/m² / 29 to 80 lbs (Cover) / 90 to 140 lbs (Index))

(3) Select the paper type of the thick paper loaded in the drawer.

(4) Select [05 ADJUSTMENT MODE]. Select code [4719], and then press the [START] button.
  ・ Registration control will be forcibly performed.

(5) Enter code [104], and then press [TEST PRINT].
  •Paper is fed from the drawer to print out a test print pattern.

Code	Test print pattern	Paper size	No. of copies
104	Test print pattern for identifying out-of-registration colors	A3/LD	2

(6) Check the first page of the printed test print pattern to identify a pattern for the out-of-registration colors.
  ＊There are 2 patterns for the out-of-registration colors. Check which pattern the out-of-registration colors to adjust on the body are included.

Pattern A for out-of-registration colors

Patch eliminated
trailing edge

Page 1 ← Page number

Paper feeding direction

Paper feeding speed **faster than** transfer belt rotating speed

Black belt at the leading edge in the paper feeding direction
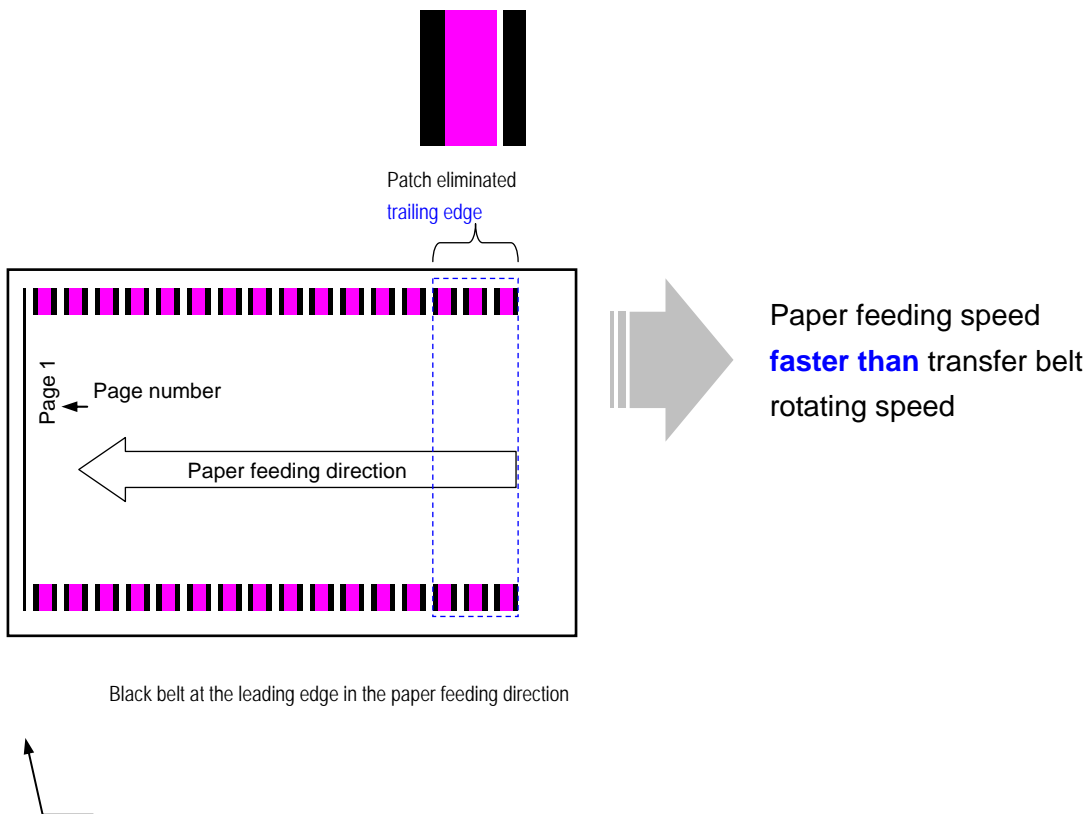
Pattern B for out-of-registration colors

Patch eliminated at the leading edge

Page 1

Paper feeding direction

Paper feeding speed **slower than** transfer belt rotating speed
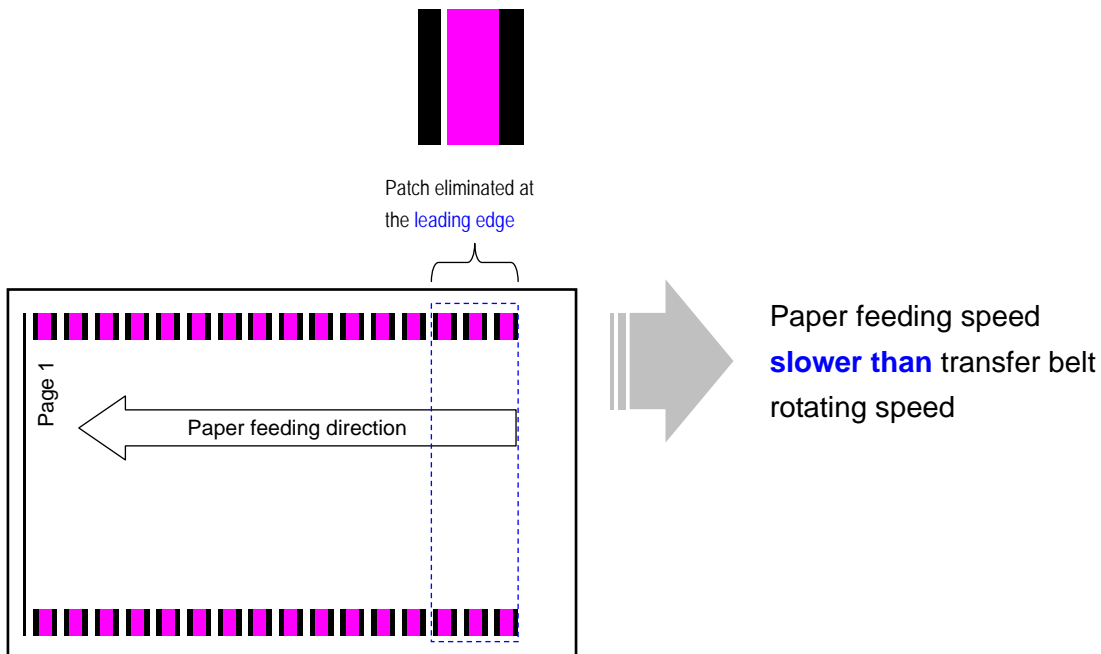
(6) Finely adjust the rotating speed of the fuser motor, in accordance with a pattern for the out-of-registration colors.

•Use steps (a) to (b) to perform the adjustment.

(a) Select code [4529]. Finely adjust the rotating speed of the fuser motor.

• Adjust the values in accordance with a pattern for the out-of-registration colors as shown in the table below.

Pattern for out-of-registration colors	[05] code	Subcode	Recommended value	Acceptable value range	Default
Pattern A	05-4529	4	123 to 127 (Set a value smaller than the current value)	0 to 255	128
Pattern B			129 to 133 (Set a value larger than the current value)		

(b) Select code [104], and then press [TEST PRINT]. Check all the patches on the second page of the printed test print pattern to check whether the misaligned colors have been improved.

❑ **Caution after the adjustment**

Nothing in particular.

❑ **Remarks**

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

• Out-of-registration colors cannot always be perfectly corrected; this depends on the type of text or lines to print.

• Also, refer to the relevant information in the Service Manual for further information regarding color registration control procedures.

1.6 To Adjust Printing Positions on Front and Back Sides in the duplex mode

❑ Explanation

The printing positions on the front and back sides of business cards may deviate. The amount of this deviation can be reduced with image position or image distortion adjustment.

❑ Procedures

* The service technicians must perform all adjustments in accordance with the procedures below.

(1) Overview of adjustment

Image position adjustment: Adjust values as closely as you can to the target value (+/-0).

(To make printing positions as precise as possible)

(2) Image position adjustment

Refer to the "6.1.7 Image dimensional adjustment at the printing section" of the Service Manual and adjust the image positions by approximating values from [A] to [F] below to a target value (+/-0) as closely as possible.

Items	Chart	Adjustment Tolerance	Chart	Adjustment Tolerance
[A] Reproduction ratio of the primary scanning direction	05-98*	200 ± 0.5 mm	05-315	4.2 ± 0.5 mm
[B] Primary scanning data writing start position	05-98	52 ± 0.5 mm	05-315	4.2 ± 0.5 mm
[C] Reproduction ratio of the secondary scanning direction (Fine adjustment of transfer belt motor rotation speed)		200 ± 0.5 mm		4.2 ± 0.5 mm
[D] Secondary scanning data writing start position		52 ± 0.5 mm		4.2 ± 0.5 mm
[E] Primary scanning data writing start position at duplexing	05-3	52 ± 0.5 mm	05-316	4.2 ± 0.5 mm
[F] Secondary scanning data writing start position at duplexing		52 ± 0.5 mm		4.2 ± 0.5 mm

* Use this chart to adjust the void width match.

Reproduction ratio adjustment of primary scanning direction

Adjust the reproduction ratio of primary scanning direction in printing.

[05] Code	Function	Remarks
05-4001	PRT/FAX	The larger the value is, the larger the reproduction ratio in the primary scanning direction becomes. (0.1%/step) Acceptable values: 0 to 255 (Default: 128)

Perform adjustments according to the following procedure while checking the chart output by [05 Adjustment Mode].

Notes:
· Since the reproduction ratio may vary due to expansion and contraction of paper immediately after the image is printed out, it is recommended to measure its dimension after at least 3 minutes have passed.
· Use the second drawer, A3/LD.
· Make sure the first line of the grid pattern is printed out since the line is occasionally vanished.

<Procedure>
(1) Select [05 ADJUSTMENT MODE].
(2) Key in a code and press the [START] button.
(3) Key in the adjustment value. (To correct a value, press [CLEAR].)
(4) Press [OK] to store the value. → The equipment goes back to the ready state.
(5) Check the chart.
If the image is not in the desired reproduction ratio, repeat steps (2) to (4).

(3)-(b) Image distortion adjustment

(3)-1 Adjustment of tilted images on the trailing edge

In this procedure, it is recommended to use the print sample (05-316, 04-141, 04-410) as shown below.
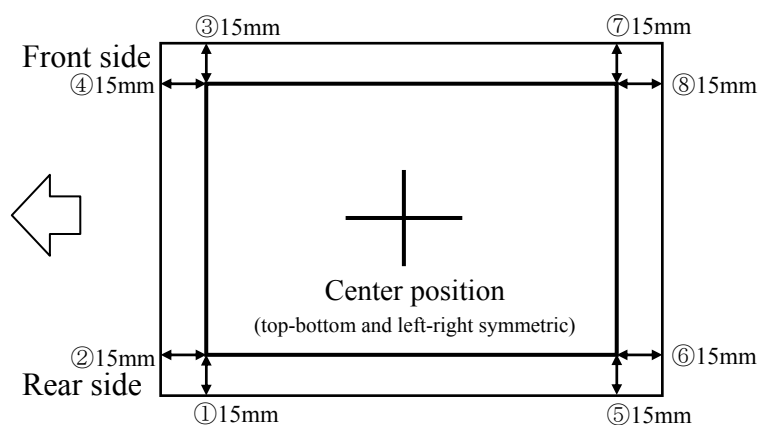
2. Copier-specific Adjustments

2.1 To Copy Text Clearly (To eliminate faint, smudged or blurred text)

Before adjustment	After adjustment
When a light print image is copied, the text looks blurred.	The graphic image and text look darker and sharper.
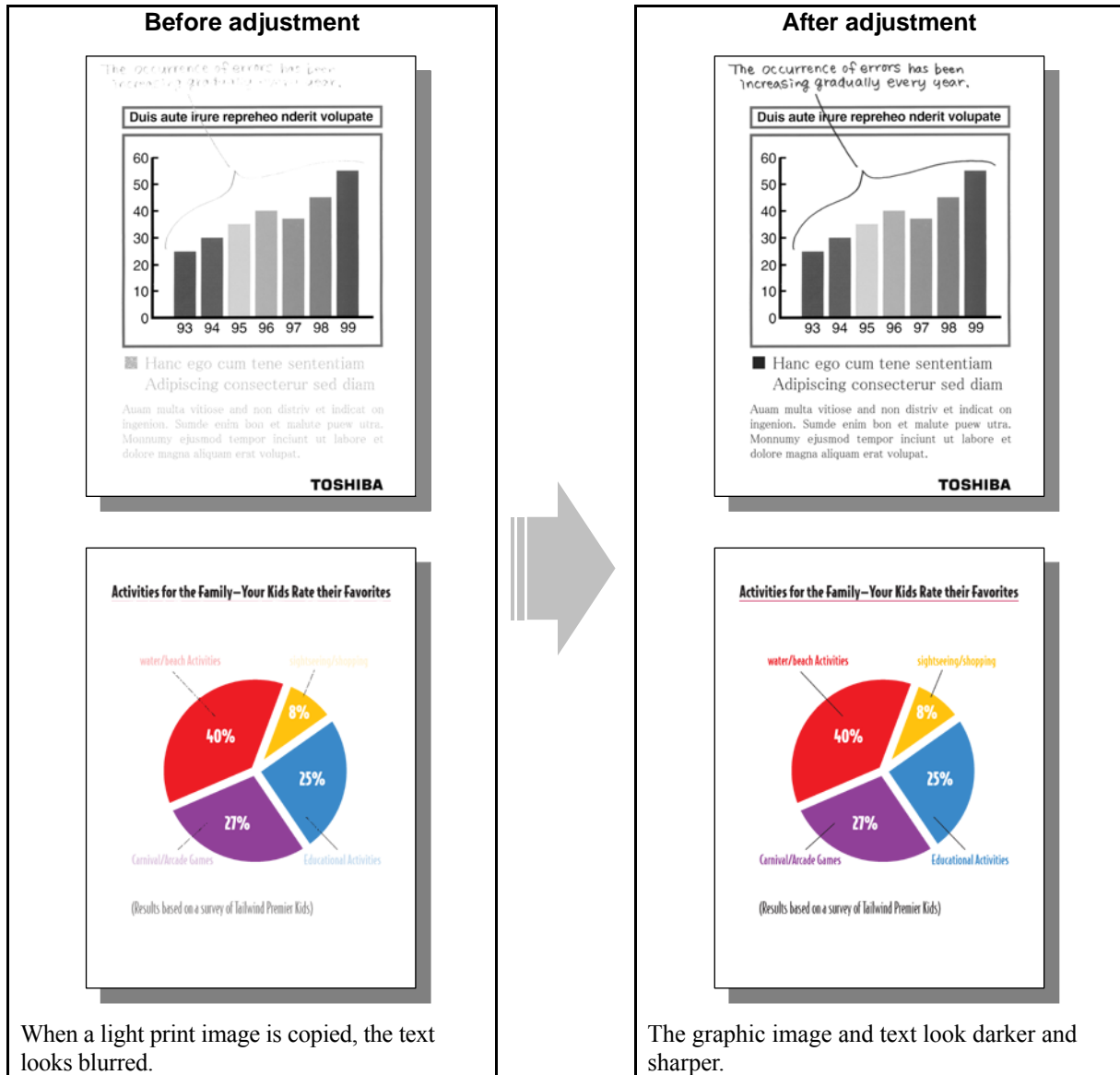
❑ Explanation

Perform image processing, in order to obtain a sharp and dark copy image when copying an original containing light text and graphic images, or a light copy image when copying an original containing a highly colored text and copy image.

❑ Procedures

＊The procedure to use varies, depending on whether to adjust the copy image quality in the Black mode, Full color mode. Refer to the procedure corresponding to the particular user's request.

2.1.1 To Adjust the Copy Image Quality in the Black Mode

* The Black Mode setting is applied even if it is judged as black in the Auto Color Mode.
＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
＊Both the service technician and the user can use procedures (1), (3) and (5).
＊Only the service technician must use procedures (2), (4), (6), (7), (8) and (9).

▮▯▥ (1) Press [BASIC] on the Control Panel. Press [▶] to increase the copy density.

    After increasing the copy density, copy and check the copy image quality.
    With the copy density set to the maximum, if further image quality adjustments are still necessary, the service technician must use the following procedures.

(2) Select [05 ADJUSTMENT MODE]. Increase the values for the codes [7114] to [7116], [7123] to [7125], [7134], [7137], [7138] and [7141] to make the copied text darker.

    •The code to use varies according to the original mode (Text/Photo, Text, Photo, User custom, Gray Scale) or the manual/automatic density setting. Select the [05] code for the mode in which the image quality is to be changed, and set "128" or more for the setting value.

Color mode	Target	Original mode	[05]code	Recommended value	Acceptable value range	Default
Black	Manual density	Text/Photo	05-7114	Set a value larger than 128.	0~255	128
		Text	05-7115			
		Photo	05-7116			
		Image smoothing	05-7138			
		User custom	05-7134			
	Automatic density	Text/Photo	05-7123	Set a value larger than 128.	0~255	128
		Text	05-7124			
		Photo	05-7125			
		Image smoothing	05-7141			
		User custom	05-7137			

* When the manual setting value of the manual density is altered while it is set in the BASIC menu on the control panel, the density in the steps in all the indicators including the center value is also changed. One step in the indicator corresponds to "20" of the setting value in [05] code.

    After the setting value is changed, make a copy and confirm the image quality.
    If you need additional image quality adjustment, perform the next procedure.

▮▯▥ (3) Press [IMAGE] on the Control Panel. Press [SHARPNESS].
    Press [SHARP] to increase the sharpness intensity.

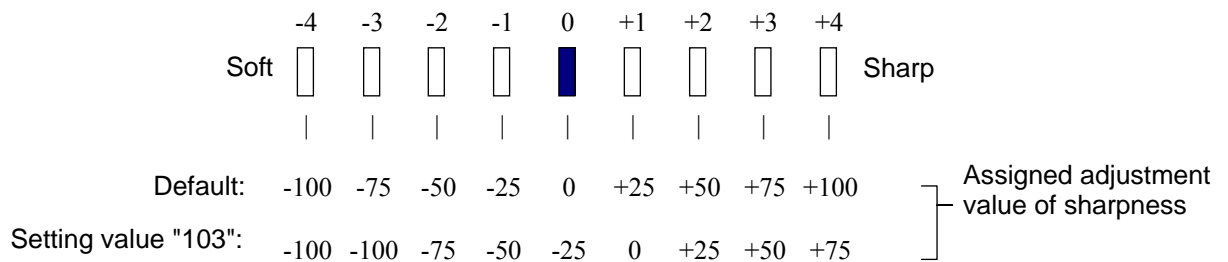   After increasing the sharpness intensity, copy and check the copy image quality.
    With the sharpness intensity set to the maximum, if further image quality adjustments are still necessary, the service technician must use the following procedures.

▉ ▉ (4) Select [05 ADJUSTMENT MODE]. Increase the values for codes [7056] to [7058] and [7061], [7249] to make the copied text darker (sharpness level increases).
  • The code to use varies according to the original mode (Text/Photo, Text or Photo). Adjust the value for [05] code corresponding to the original mode in which you would like to improve the image quality and set values larger than "128".

Color mode	Original mode	[05]code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-7056	Set a value larger than 128.	0 to 255	128
	Text	05-7057			
	Photo	05-7058			
	Image smoothing	05-7061			
	User custom	05-7249			

* The smaller the setting value, the lower the sharpness becomes, while the larger the setting value, the higher the sharpness becomes.

(For example, if the intensity of the center value is reduced by "25" (smaller), the value of each step of the indicator will also be correspondingly decreased.) However, the adjustment value range which affects the sharpness is within +/-100; this is the total of the setting value for the [05] code and that for the indicator. For example, when "103" (reduced by 25 from the default value) is set for the [05] code as shown in the figure below, the variation on the software side by the indicator is within -3 steps. Even if -4 steps are applied, the image quality will not change.

```
              -4    -3    -2    -1     0    +1    +2    +3    +4
      Soft    ▯     ▯     ▯     ▯     ▮     ▯     ▯     ▯     ▯    Sharp

               |     |     |     |     |     |     |     |     |

   Default:  -100   -75   -50   -25     0   +25   +50   +75  +100    ┐ Assigned adjustment
                                                                     ├ value of sharpness
Setting value "103":  -100  -100   -75   -50   -25     0   +25   +50   +75    ┘
                      ────────┐
                              └─ Since "-25" is assigned to the center, the image quality
                                 remains the same even if the indicator is changed from
                                 "-3" to "-4".
```

After selecting the Text mode, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

■ (5) Press [BASIC] on the Control Panel. Select "TEXT" from among the original mode options.
  * To have "TEXT" selected from among the original mode options by default, refer to 2.18 To Program Frequently Used Copy Settings (To Use Custom Mode).

  After selecting the Text mode, copy and check the copy image quality.
  If further image quality adjustments are still necessary, use the next procedure.

■ (6) Select [05 ADJUSTMENT MODE]. Decrease the values for codes [7097], [7098] and [7252] to make the text darker (improving faint text or thin lines).

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text / Photo	05-7097	Set a value smaller than 2.	0 to 4	2
Text	05-7098			
User custom	05-7252			

  * Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

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

  After increasing the copy density, copy and check the copy image quality.
  If further image quality adjustments are still necessary, use the next procedure.

■ ▚ (7) Select [05 ADJUSTMENT MODE]. Change the values for codes [7190] to [7192] and [7956] to adjust the gamma balance in each of medium- and high-density areas.

Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text / Photo	05-7190	1/2	Set a value larger than 128.	0 to 255	128
Text	05-7191				
Photo	05-7192				
Image smoothing	05-7956				

  * Set the value in increments of approximately 20, while checking the copy image until the optimum value is obtained.
  (Please be careful because the gradation (or density) of the medium-density area may exceed that of the high-density area, depending on the set value.)

  * The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The density of light text or a graphic image will vary, if the medium- or high-density area is mainly adjusted. Setting "0" for the subcode allows you to adjust the low-density area. But it will not affect the light text or graphic images. Therefore, never change the value for the low-density area.

Subcode	Area where the density is adjusted
1	Medium-density area
2	High-density area

After changing the value, make a copy and check the image quality.

If further image quality adjustments are necessary, reset all the values changed in steps (1) to (6) above to the default ones and then follow the next step.

■□ ▥ ▨ (8) Select [08 SETTING MODE]. Change the value for subcode "3" of code [2548] to make the outline of the copied text thicker and clearer, or thinner and finer.

＊This adjustment can be made applicable to all colors by selecting the corresponding subcode. In this step, however, change the setting value only for subcode "3" to adjust the image quality for the black mode.

Setting item	[08] code	Subcode	Recommended value	Acceptable range value	Default
Potential on printing white text / Correction setting (K)	08-2548	3	To make the outline of text thicker and clearer: Set a value smaller than 5. To make the outline of text thinner and finer: Set a value larger than 5.	0 to 12	6

＊To check the amount changed with this setting, it is recommended to set the value at "3" or "4" first to decrease it, and then to set the value at "8" or "9" first to increase it. Then check the copy image and increase or decrease the value further so that the image will be adjusted finely.

• After changing the value, perform automatic calibration.
  ＊Refer to step (1) in "1.1 To Obtain a Darker Image" to perform automatic calibration.

If further adjustments are necessary after performing step (8), you can repeat steps (1) to (7). When repeating these steps, however, adjust the value while checking the copy image carefully.

(9) Select [08 SETTING MODE]. Change the value for subcode "3" or "7" of code [2620].

Original mode		[08]code	Subcode	Recommended value	Acceptable range value	Default
Text/Photo	Plain paper	08-2620	3	Set a value larger than 15 to make the text darker and clearer.	8 to 36	15
Text						
Photo						
Image moothing						
Text/Photo	Thick	08-2620	7			
Text						
Photo						
Image moothing						

❑ **Caution after the adjustment**

The adjustment may possibly cause an increase in the amount of toner used, moiré, blurred text (small, dark text blurred), faint text (fine outlines of text shredded) diminished photo images or gradational images (less accurate reproducibility of halftones), or in some consumption conditions of consumables, background fogging or a decrease in the amount of developer material (carrier streaks). Therefore, carefully perform the adjustment while checking the copy image.

❑ **Remarks**

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

• If you perform only step (8) above (changing the setting value of subcode "3" of code [08-2548]) as an image quality adjustment for the black mode, it may cause an extra increase or decrease in the amount of K toner used compared with that for the other colors, or it may create a difference in the reproducibility of halftones.

2.1.2　To Adjust the Copy Image Quality in the Full Color Mode

＊The setting value for the Full color mode shall be applied also when the original is judged as the full color image in the Auto color mode.

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1), (3) and (7).

＊Only the service technician must use procedures (2), (4), (5), (6), (8) and (9).

(1)　Press [BASIC] on the Control Panel. Press [▶] to increase the copy density.

    After increasing the copy density, copy and check the copy image quality.
    With the copy density set to the maximum, if further image quality adjustments are still necessary, the service technician must use the following procedures

(2)　Select [05 ADJUSTMENT MODE]. Increase the values for codes [7713 to 7726] to strengthen the copy density of text.

    • The code to be set varies depending on the original mode setting (Text/photo, Text, Printed image, Photo (developing paper), Map, User custom, Red seal color) or the manual/automatic density setting. Select the [05] code for the mode in which the image quality is to be changed, and set "128" or more for the setting value.

Color mode	Target	Original mode	[05]code	Recommended value	Acceptable value range	Default
Full color	Manual density	Text/Photo	05-7713	Set a value larger than 128.	0 to 255	128
		Text	05-7714			
		Printed image	05-7715			
		Photo	05-7716			
		Map	05-7717			
		User custom	05-7718			
		Red seal color	05-7719			
	Automatic density	Text/Photo	05-7720	Set a value larger than 128.	0 to 255	128
		Text	05-7721			
		Printed image	05-7722			
		Photo	05-7723			
		Map	05-7724			
		User custom	05-7725			
		Red seal color	05-7726			

    ＊ When the manual setting value of the manual density is altered while it is set in the BASIC menu on the control panel, the density in the steps in all the indicators including the center value is also changed. One step in the indicator corresponds to "20" of the setting value in [05] code.

After increasing the copy density, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

▐▌ (3) Press [IMAGE] on the Control Panel. Press [SHARPNESS].

Press [SHARP] to increase the sharpness intensity.

After increasing the sharpness intensity, copy and check the copy image quality.

With the sharpness intensity set to the maximum, if further image quality adjustments are still necessary, the service technician must use the following procedures.

▐▌ (4) Select [05 ADJUSTMENT MODE]. Increase the values for codes [7794 to 7800] to strengthen the copy density of text (or increase the sharpness intensity).

• The code to use varies according to the original mode (Text/Photo, Text, Printed image, Photo or Map).

Adjust the value for [05] code corresponding to the original mode in which you would like to improve the image quality and set values larger than "128" for codes 05-7794 to 7800.
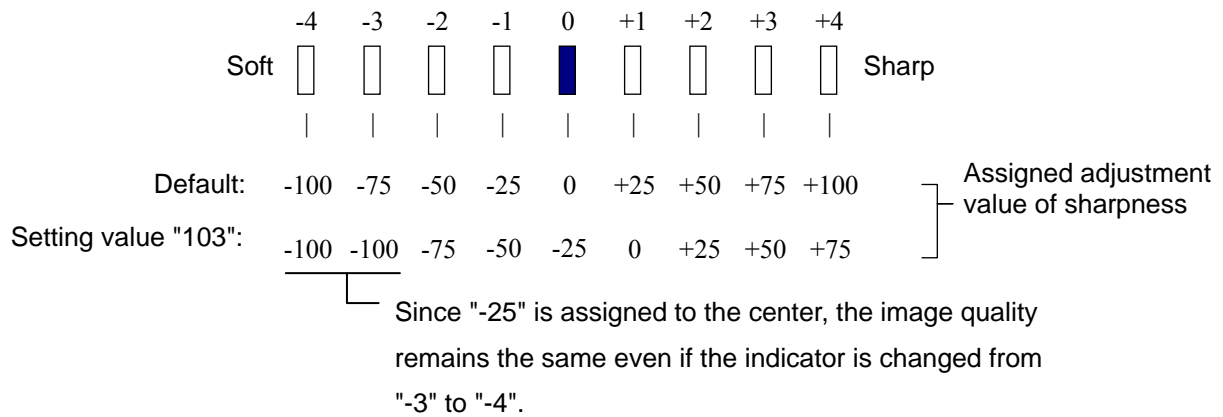
Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-7796			
Text	05-7797			
Printed image	05-7798			
Photo	05-7799	Set a value larger than 128.	0 to 255	128
Map	05-7800			
User custom	05-7795			
Red seal color	05-7794			

＊Setting "0" provides the softest image, while setting "255" provides the sharpest image.

Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is increased by 25 (sharper), the value of each step of the indicator will also be increased by 25 (sharper).)

However, the range of adjustment values that is valid for sharpness level change is from -100 to +100 of the total of the setting value of the [05] code and that of the indicator. For instance, if the setting value of the [05] code is "103" (-25 from the default value), the limit of the steps in the soft side of the indicator is "-3". If the step is set at "-4", the image quality will not be changed.

＊ The adjustment value range that has an effect on the sharpness is within +/- 100; this is the total of the setting value for the [05] code and that for the indicator. For example, when "103" (reduced by 25 from the default value) is set for the [05] code as shown in the figure below, the variation on the software side by the indicator is within -3 steps. Even if -4 steps are applied, the image quality will not change.

```
            -4    -3    -2    -1    0    +1    +2    +3    +4

    Soft    □     □     □     □    ▮    □     □     □     □    Sharp

             |     |     |     |    |     |     |     |     |

Default:    -100  -75   -50   -25   0    +25   +50   +75  +100        Assigned adjustment
                                                                     value of sharpness
Setting value "103":  -100  -100  -75   -50   -25   0    +25   +50   +75
```

Since "-25" is assigned to the center, the image quality
remains the same even if the indicator is changed from
"-3" to "-4".

After increasing the sharpness intensity, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

(5) Select [05 ADJUSTMENT MODE] and change the values of the codes [7840], [7841] and [7842] to adjust
the reproduction level of the Text/Photo, User custom and Red seal color original modes.

The larger the value is, the clearer the reproduction of thin text will become.

Original mode	[05] Code	Recommended value	Acceptable value range	Default
Text/Photo	05-7840			
User custom	05-7841	Set a value larger than 5.	0 to 9	0
Red seal color	05-7842			

* Adjustment for the User custom setting is enabled in the Text/Photo mode base only.

* Set the value in increments of 1, while checking the copy image until the optimum value is obtained.
Set the value to "5" and check the copy image quality. If further image quality adjustment is necessary, set
the value to "6". If further adjustment is necessary, increase the value step by step.

* If a value becomes too much larger, a photo area may become coarse.

* If "4" to "1" is set for the setting value, the text may become blurred.

* For the User custom mode, refer to "2.18 To Program Frequently Used Copy Settings (To Use Custom
Mode)".

* The setting content of the default value "0" is the same as that for the value "5".

🔳 🔲 (6) Select [05 ADJUSTMENT MODE]. Change the values for codes [7889 to 7892] to adjust the maximum color density of the text.

Color to adjust	[05] code	Recommended value	Acceptable value range	Default
Y (Yellow)	05-7889	Set a value larger than 5 to increase the density. Set a value smaller than 5 to decrease the density.	0 to 10	5
M (Magenta)	05-7890			
C (Cyan)	05-7891			
K (Black)	05-7892			

＊Set the value in increments of 1, while checking the copy image until the optimum value is obtained.

＊This adjustment will be effective, only if the [TEXT/PHOTO] or [TEXT] mode is selected or the [CUSTOM] mode based on the [TEXT/PHOTO] or [TEXT] mode is selected from among the original mode options. Only the text areas (portions that are recognized as text) are adjusted in the [TEXT/PHOTO] mode and [TEXT] mode. Only K color can be adjusted in the [TEXT] mode.

After adjusting the maximum color density of the text, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

🔳 (7) Press [BASIC] on the Control Panel. Select "TEXT" from among the original mode options.
＊To have "TEXT" selected from among the original mode options by default, refer to 2.18 To Program Frequently Used Copy Settings (To Use Custom Mode).

After changing the value, make a copy and check the image quality.
If further image quality adjustments are necessary, reset all the values changed in steps (1) to (6) above to the default one and then follow the next step.

▊▊ (8) Select [08 SETTING MODE]. Change the value for code [2548] to make the outline of the copied text thicker and clearer, or thinner and finer.

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

Setting item		[08] code	Subcode	Recommended value	Acceptable range value	Default
Potential on printing white text / Correction setting	Y	08-2548	0	To make the outline of text thicker and clearer: Set a value smaller than 5. To make the outline of text thinner and finer: Set a value larger than 5.	0 to 12	6
	M		1			
	C		2			
	K		3			

＊To check the amount changed with this setting, it is recommended to set the value at "3" or "4" first to decrease it, and then to set the value at "8" or "9" first to increase it. Then check the copy image and increase or decrease the value further so that the image will be adjusted finely.

• After changing the value, perform automatic calibration.
　＊Refer to step (1) in "1.1 To Obtain a Darker Image" to perform automatic calibration.

If further adjustments are necessary after performing step (8), you can repeat steps (1) to (7).
When repeating these steps, however, adjust the value while checking the copy image carefully.

(9) Select [08 SETTING MODE]. Change the value for subcode "0" to "7" of code [2620].

Color to adjust	Original mode	[08]code	Subcode	Recommended value	Acceptable range value	Default
Y	Plain paper	08-2620	0	Set a value larger than 15 to make the text darker and clearer.	8-36	15
M			1			
C			2			
K			3			
Y	Thick	08-2620	4			
M			5			
C			6			
K			7			

❏ **Caution after the adjustment**

The adjustment may possibly cause an increase in the amount of toner used, moiré, blurred text (small, dark text blurred), faint text (fine outlines of text shredded) diminished photo images or gradational images (less accurate reproducibility of halftones), or in some consumption conditions of consumables, background fogging or a decrease in the amount of developer material (carrier streaks). Therefore, carefully perform the adjustment while checking the copy image.

❏ **Remarks**

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

• If you perform only step (8) above (changing the setting value of code [08-2548]) as an image quality adjustment for a certain color, it may cause an extra increase or decrease in the amount of the toner used for this color compared with that for the other colors, or it may create a difference in the reproducibility of halftones.

2.2 To Closely Match the Color Balance of the Original

Before adjustment	After adjustment
↓ Copy	↓ Copy
The copy image looks yellowish, compared with the original.	The color balance of the copy image is closely matched with that of the original.
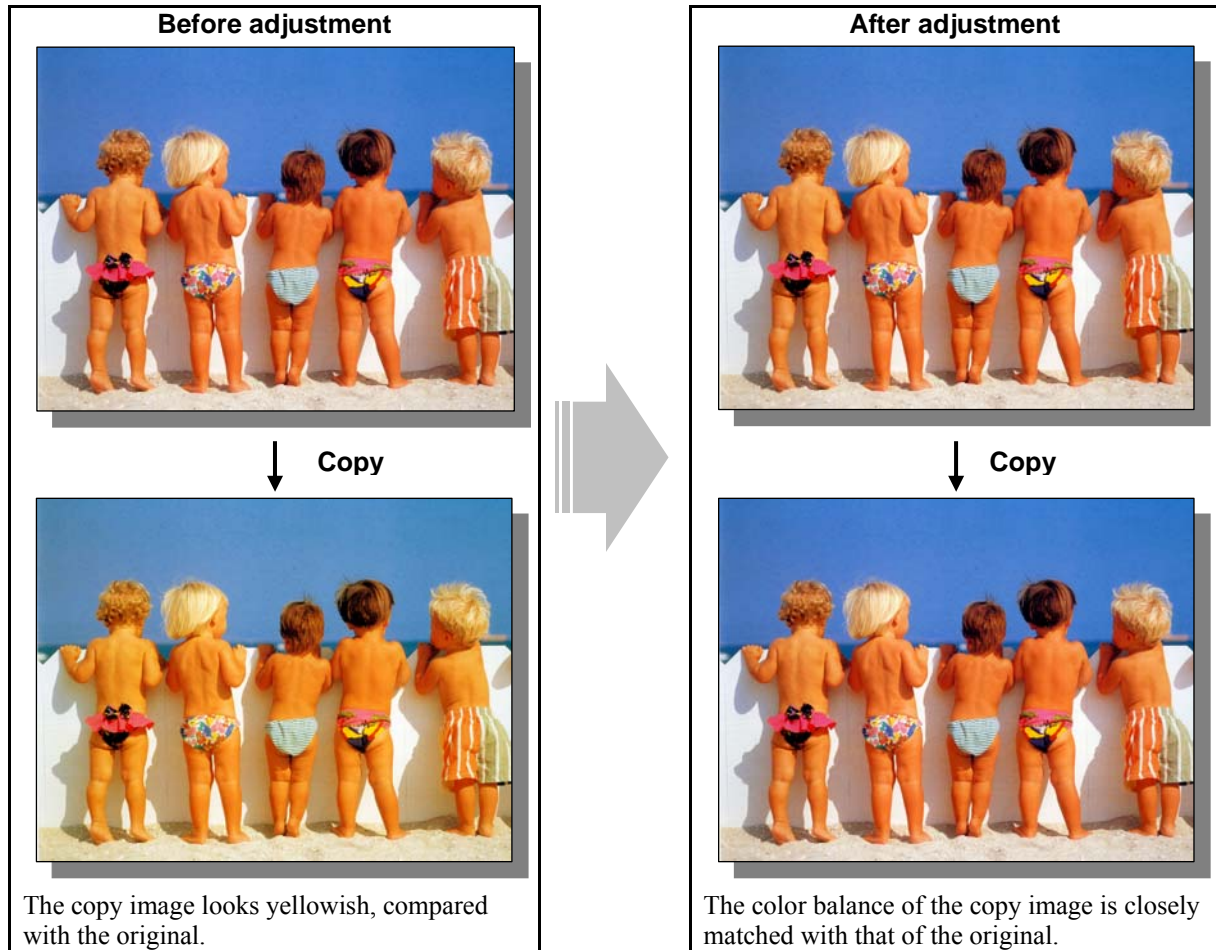
❑ **Explanation**

Depending on the color balance of the original, the copy image sometimes looks different from the original. To make the colors on the copy the same as those in the original, perform image quality control, automatic calibration, color adjustment (color balance, RGB and hue adjustments), and color density adjustment.

❑ **Procedures**

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

* Both the service technician and the user can use procedures (1) to (3).

* Only the service technician must use procedure (4) and (5).

■ ▥ ▥ ▨ (1) Perform automatic calibration to correct variations in the copy density.

       * [ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other words, an administrator is authorized to operate automatic calibration. But the [USER] option can also be selected to allow the user to operate it. Refer to the MFP Management Guide for further information regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

      • Use steps (a) through (i) to perform automatic calibration.

          (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

          (b) Press [ADMIN].

          (c) Enter an administrator password of 6 to 64 digits. Press [ENTER].

          (d) Press [GENERAL].

          (e) Press [CALIBRATION].

          (f) Press [COPY].

          (g) Press [CALIBRATION] to print out the test chart.

          (h) Place the printed test chart on the original glass.

          (i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

        * As a result of the above steps, the copy image quality will be corrected in the Full color mode and the Black and White mode simultaneously.

     After performing automatic calibration, copy and check the copy image quality.

     If further image quality adjustments are still necessary, use the next procedure.

▐▌ ▐▌ (2) Perform hue adjustment to adjust the tint of the color in the color area to change.

　　• Use steps (a) through (d) to perform the adjustment.

　　　(a) Press [IMAGE] on the Control Panel.

　　　(b) Press [HUE].

　　　(c) Press [+] or [-] on the indicator of the color to adjust.

　　　　＊Pressing [+] or [-] on the indicator changes the hue as shown below.

　　　　　(For instance, press [+] at R (Red). Then the tint of R (Red) is closely matched with that of Y (Yellow). Press [-] at

　　　　　R (Red). Then the tint of R (Red) will be closely matched with that of M (Magenta).
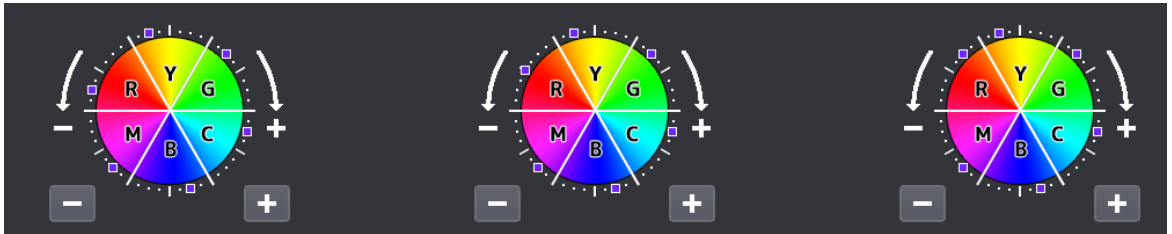
　　　(d) Press [ENTER].

　　After adjusting the hue, copy and check the copy image quality.

　　If further image quality adjustments are still necessary, use the next procedure.

▐▌ ▐▌ (3) Perform color balance adjustment or RGB adjustment to adjust the tint of colors in general.

　　• Use steps (a) through (d) to perform the adjustment.

　　　(a) Press [IMAGE] on the Control Panel.

　　　(b) Press [COLOR BALANCE] to adjust the color balance by changing the amount of toner (C, M, Y

　　　　and K) or [RGB ADJUSTMENT] to adjust the color balance by changing the intensity of R, G and B.

　　　(c) Press [+] to enhance the tint of the color or [-] to decrease it.

　　　　＊After selecting the color balance by changing the amount of toner (C, M, Y and K), press

　　　　　[DETAIL]. The tint of the color can be adjusted according to density area (low-, medium- or high-

　　　　　density area).

　　　(d) Press [ENTER].

　　After adjusting the tint of the colors, copy and check the copy image quality.

　　If further image quality adjustments are still necessary, use the next procedure.

(4) Select [05 ADJUSTMENT MODE]. Change the setting values for codes [7665] to [7671] to adjust the hue.

Original mode	[05]code	Subcode	Recommended value	Default
Text/Photo	05-7665			
Text	05-7666			
Printed image	05-7667			
Photo	05-7668	0/1/2/3/4/5	0 to 255	128
Map	05-7669			
User custom	05-7670			
Red seal color	05-7671			

* Set the value in increments of approx. 15 steps while checking the copy image until the optimum value is obtained.

* Each setting value for the Text/Photo, Text and Photo (developing paper) original mode is reflected to the quality of the image in the Full color and Auto color modes.

* The sub code varies according to the area where the hue is adjusted. Set the sub code for the area to be adjusted by referring to the following below.

Subcode	Target area of hue adjustment	Recommended value
0	For adjusting the tint of Red	Setting a larger value: The tint of Red becomes closer to that of Y (Yellow). Setting a smaller value: The tint of Red becomes closer to that of M (Magenta).
1	For adjusting the tint of Yellow	Setting a larger value: The tint of Yellow becomes closer to that of G (Green). Setting a smaller value: The tint of Yellow becomes closer to that of R (Red).
2	For adjusting the tint of Green	Setting a larger value: The tint of Green becomes closer to that of C (Cyan). Setting a smaller value: The tint of Green becomes closer to that of Y (Yellow).
3	For adjusting the tint of Cyan	Setting a larger value: The tint of Cyan becomes closer to that of B (Blue). Setting a smaller value The tint of Cyan becomes closer to that of G (Green).
4	For adjusting the tint of Blue	Setting a larger value: The tint of Blue becomes closer to that of M (Magenta). Setting a smaller value The tint of Blue becomes closer to that of C (Cyan).
5	For adjusting the tint of Magenta	Setting a larger value: The tint of Magenta becomes closer to that of R (Red). Setting a smaller value The tint of Magenta becomes closer to that of B (Blue).

(5) Select [05 ADJUSTMENT MODE]. Change the values for codes [7960 to 7987] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-7960	0/1/2			
	Text	05-7961	0/1/2			
	Printed image	05-7962	0/1/2			
	Photo	05-7963	0/1/2			
	Map	05-7964	0/1/2			
	User custom	05-7980	0/1/2			
	Red seal color	05-7984	0/1/2			
M (Magenta)	Text/Photo	05-7965	0/1/2			
	Text	05-7966	0/1/2			
	Printed image	05-7967	0/1/2			
	Photo	05-7968	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Map	05-7969	0/1/2			
	User custom	05-7981	0/1/2			
	Red seal color	05-7985	0/1/2			
C (Cyan)	Text/Photo	05-7970	0/1/2			
	Text	05-7971	0/1/2			
	Printed image	05-7972	0/1/2			
	Photo	05-7973	0/1/2			
	Map	05-7974	0/1/2			
	User custom	05-7982	0/1/2			
	Red seal color	05-7986	0/1/2			
K (Black)	Text/Photo	05-7975	0/1/2			
	Text	05-7976	0/1/2			
	Printed image	05-7977	0/1/2			
	Photo	05-7978	0/1/2			
	Map	05-7979	0/1/2			
	User custom	05-7983	0/1/2			
	Red seal color	05-7987	0/1/2			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ **Caution after the adjustment**

The adjustment may possibly cause offset failure, particularly when the highly colored original is copied in the Photo mode. Therefore, carefully perform the adjustment, while checking the copy image.

❑ **Remarks**

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.3 To Improve the Reproducibility of Gray

Before adjustment	After adjustment
Another color (M) is blended in the gray area.	No undesired color is blended. A clear copy image is obtained.
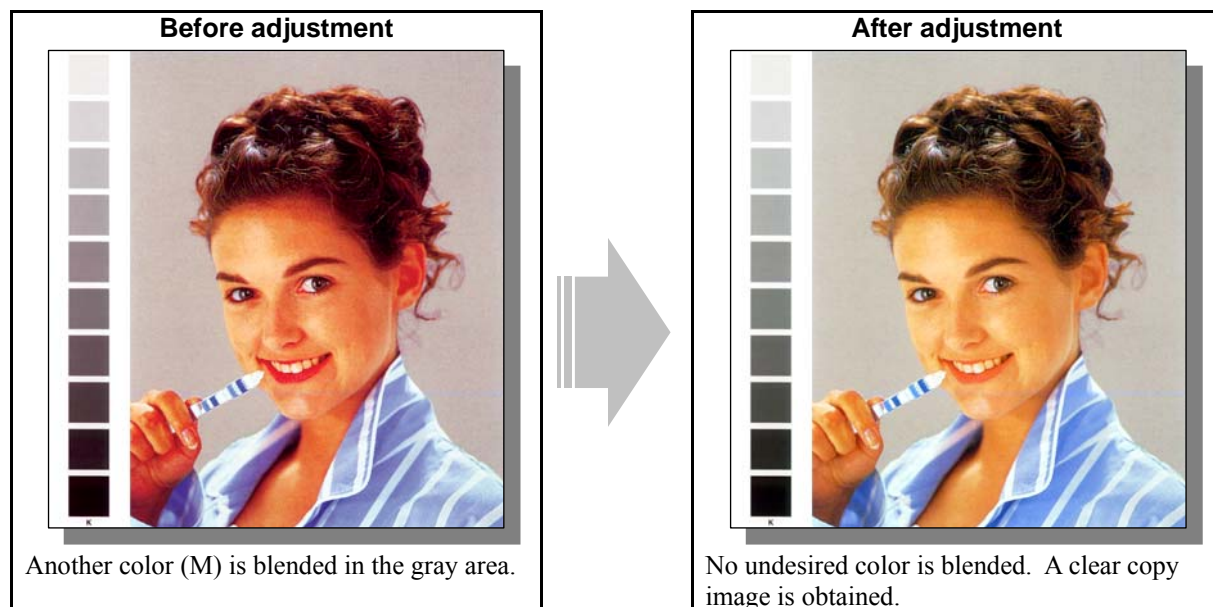
❑ Explanation

When an original containing gray is copied, another color may be blended in the gray area. Perform image quality control, automatic calibration, color adjustment (color balance adjustment or RGB adjustment) and color density adjustment, in order to avoid this problem (or to obtain an achromatic color, for instance).

❑ Procedures

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) and (2).

＊Only the service technician must use procedure (3).

(1) Perform automatic calibration to correct variations in the copy density.

＊For further information regarding the adjustment procedures, refer to procedure (1) in 2.2 To Closely Match the Color Balance of the Original.

＊[ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other words, an administrator is authorized to operate automatic calibration. But the [USER] option can also be selected to allow the user to operate it. Refer to the MFP Management Guide for further information regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

After performing automatic calibration, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Perform color balance adjustment or RGB adjustment to adjust the tint of colors in general.
＊For further information regarding the adjustment procedures, refer to procedure (3) in 2.2 To Closely Match the Color Balance of the Original.

After adjusting the tint of colors, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

(3) Select the User custom mode and select [05 ADJUSTMENT MODE]. Change the setting value for the code [7690] to decrease the magenta level in gray.
*For the User custom mode, refer to the procedures in "2.18.2 To Adjust Custom Mode Settings in Full Color Mode".

[05] Code	Setting value
05-7690	3

(4) Select [05 ADJUSTMENT MODE]. Change the values for codes [7960 to 7987] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-7960	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-7961	0/1/2			
	Printed image	05-7962	0/1/2			
	Photo	05-7963	0/1/2			
	Map	05-7964	0/1/2			
	User custom	05-7980	0/1/2			
	Red seal color	05-7984	0/1/2			
M (Magenta)	Text/Photo	05-7965	0/1/2			
	Text	05-7966	0/1/2			
	Printed image	05-7967	0/1/2			
	Photo	05-7968	0/1/2			
	Map	05-7969	0/1/2			
	User custom	05-7981	0/1/2			
	Red seal color	05-7985	0/1/2			
C (Cyan)	Text/Photo	05-7970	0/1/2			
	Text	05-7971	0/1/2			
	Printed image	05-7972	0/1/2			
	Photo	05-7973	0/1/2			
	Map	05-7974	0/1/2			
	User custom	05-7982	0/1/2			
	Red seal color	05-7986	0/1/2			
K (Black)	Text/Photo	05-7975	0/1/2			
	Text	05-7976	0/1/2			
	Printed image	05-7977	0/1/2			
	Photo	05-7978	0/1/2			
	Map	05-7979	0/1/2			
	User custom	05-7983	0/1/2			
	Red seal color	05-7987	0/1/2			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ Caution after the adjustment

The adjustment may possibly cause offset failure, particularly when a highly colored original is copied in the Photo mode. Also, it may cause degradation in the color reproducibility. (Excessively enhancing the tint of black makes other colors, such as skin tones, look dull.) Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.4 To Copy in Vivid Colors

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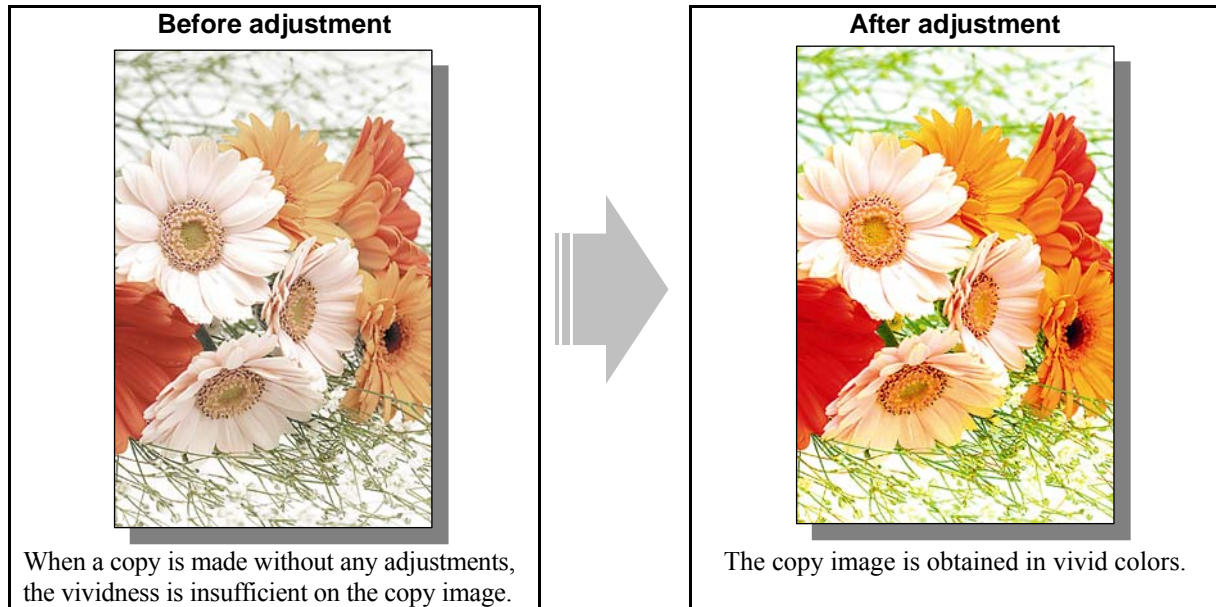
❏ Explanation

When a copy is made without any adjustments, the vividness may be insufficient on the copy image. Perform saturation adjustment, color adjustment (color balance adjustment or RGB adjustment), and color density adjustment, in order to obtain a copy image in vivid colors.

❏ Procedures

＊You can start with any of the procedures other than (5). But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) to (3).

＊Only the service technician must use procedure (4) and (5).

＊Only if the vividness of R (Red) is still insufficient even after procedures (1) to (4) have been used, the service technician must use procedure (6).

(1) Press [IMAGE] on the Control Panel. Press [ONE TOUCH ADJUSTMENT].
Press [VIVID] .

After selecting the "Vivid" option, copy and check the copy image quality.
When the copy image quality with the "Vivid" option is insufficient, cancel the "Vivid" option and use the next procedure.
(The one-touch adjustment can be canceled by pressing [ONE TOUCH ADJUSTMENT] again.)

(2) Perform saturation adjustment to adjust the overall saturation.
• Use steps (a) through (d) to perform the adjustment.
(a) Press [IMAGE] on the Control Panel.
(b) Press [SATURATION].
I   Press [+] to increase the saturation of the copy image.
(d) Press [ENTER].

After adjusting the saturation, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Perform color balance adjustment or RGB adjustment to adjust the tint of colors in general.
＊For further information regarding the adjustment procedures, refer to procedure (3) in 2.2 To Closely Match the Color Balance of the Original.

After adjusting the tint of colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(4) Select [05 ADJUSTMENT MODE]. Change the setting values for codes [7675] to [7681] to adjust the saturation.

Original mode	[05]code	Subcode	Recommended value	Default
Text/Photo	05-7675			
Text	05-7676			
Printed image	05-7677			
Photo	05-7678	0/1/2/3/4/5	0 to 255	128
Map	05-7679			
User custom	05-7680			
Red seal color	05-7681			

* Set the value in increments of approx. 15 steps while checking the copy image until the optimum value is obtained.

* Each setting value for the Text/Photo, Text and Photo (developing paper) original mode is reflected to the quality of the image in the Full color and Auto color modes.

* The sub code varies according to the area where the hue is adjusted. Set the sub code for the area to be adjusted by referring to the following below.

Subcode	Target area of hue adjustment	Recommended value
0	For adjusting the tint of Red	Setting a larger value: The saturation level increases. Setting a smaller value: The saturation level decreases.
1	For adjusting the tint of Yellow	
2	For adjusting the tint of Green	
3	For adjusting the tint of Cyan	
4	For adjusting the tint of Blue	
5	For adjusting the tint of Magenta	

(5) Select [05 ADJUSTMENT MODE]. Change the values for codes [7960 to 7987] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-7960	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-7961	0/1/2			
	Printed image	05-7962	0/1/2			
	Photo	05-7963	0/1/2			
	Map	05-7964	0/1/2			
	User custom	05-7980	0/1/2			
	Red seal color	05-7984	0/1/2			
M (Magenta)	Text/Photo	05-7965	0/1/2			
	Text	05-7966	0/1/2			
	Printed image	05-7967	0/1/2			
	Photo	05-7968	0/1/2			
	Map	05-7969	0/1/2			
	User custom	05-7981	0/1/2			
	Red seal color	05-7985	0/1/2			
C (Cyan)	Text/Photo	05-7970	0/1/2			
	Text	05-7971	0/1/2			
	Printed image	05-7972	0/1/2			
	Photo	05-7973	0/1/2			
	Map	05-7974	0/1/2			
	User custom	05-7982	0/1/2			
	Red seal color	05-7986	0/1/2			
K (Black)	Text/Photo	05-7975	0/1/2			
	Text	05-7976	0/1/2			
	Printed image	05-7977	0/1/2			
	Photo	05-7978	0/1/2			
	Map	05-7979	0/1/2			
	User custom	05-7983	0/1/2			
	Red seal color	05-7987	0/1/2			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

After setting the values, copy and check the copy image quality.

Only if the vividness of R (Red) is still insufficient even after all the above procedures have been used, must the service technician use the next procedure.

(6) Select [05 ADJUSTMENT MODE]. Change the value for code [2905] to adjust the transfer (1st transfer) roller bias output.

(Adjust the offset voltage of transfer roller bias for C (Cyan) and K (Black) so as to increase the density of R (Red).)

• The code to use varies depending on the paper type and color to adjust. Adjust the value for the subcode corresponding to the color for which you would like to improve the image quality. Set the value within a range of "2" to "5" to obtain the highest density of R (Red).

Paper type	Color to adjust	[05] code	Subcode	Recommended value	Acceptable value range	Default
Plain paper	C (Cyan)	05-2905	2	2 to 5	0 to 10	5
	K (Black)		3			
Thick	C (Cyan)		8			
	K (Black)		9			

* Never change the values for subcodes other than the above. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

<Note> • The adjustment may possibly decrease the density of G (Green), B (Blue) and K (Black) extremely. Therefore, carefully perform the adjustment, while checking the copy image.

• Unless this adjustment changes the density of R (Red), return the values to the default (set value: 5).

• This adjustment may affect not only the copy image but also every image quality such as the printout. Therefore, perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ **Caution after the adjustment**

The adjustment may possibly cause offset failure, particularly when the highly colored original is copied in the Photo mode. Therefore, carefully perform the adjustment, while checking the copy image.

❑ **Remarks**

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.5 To Make the Pale Area of the Original Look Darker and Sharper

(To improve the highlight reproducibility)

Before adjustment	After adjustment
The splashing area (highlight) is blurred.	A clear copy image of the splashing area is obtained.
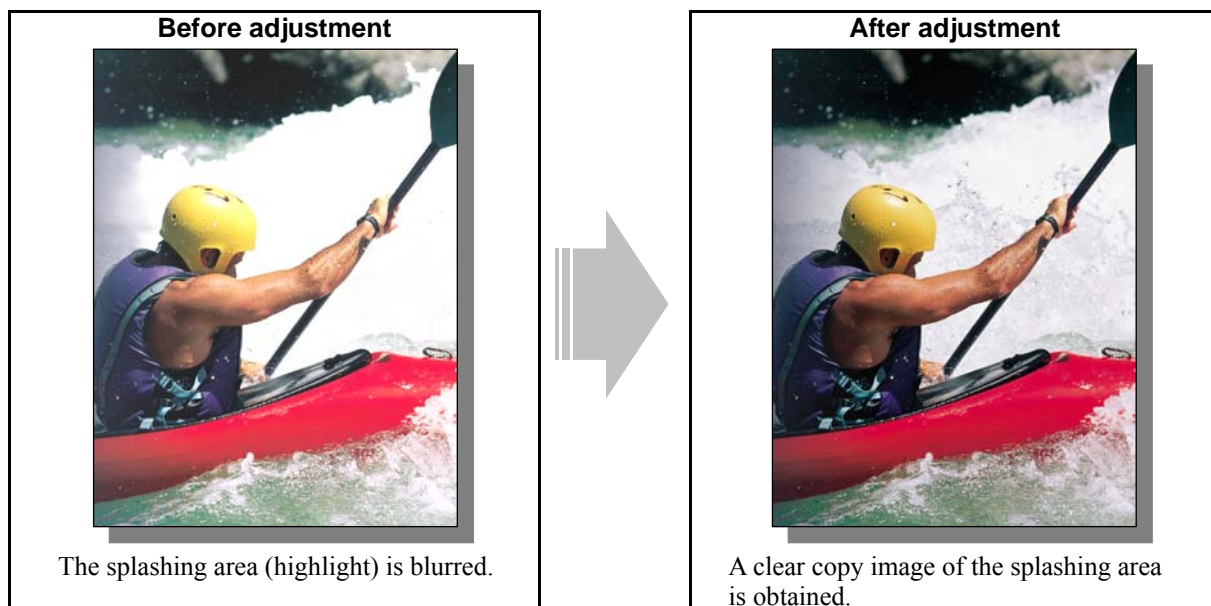
❑ **Explanation**

Perform the copy density adjustment and background adjustment, in order to make the pale area (highlight) of the original look darker and sharper on the copy.

❑ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) and (3).

＊Only the service technician must use procedures (2), (4) and (5).

■ ▐▌▌ ▐ (1) Press [IMAGE] on the Control Panel. Press [BACKGROUND ADJUSTMENT].

Press [DARK] to darken the background.

After increasing the background density, copy and check the copy image quality.

With the background density set to the maximum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

▮ ▐▌ 🎨 (2) Select [05 ADJUSTMENT MODE]. Change the values for the following codes below to adjust the density level of the background.

* The highlighted area will become highly visible, if the background density is increased.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-7656	Set 128 or larger.	0 to 255	128
	Text	05-7657			
	Printed Image	05-7658			
	Photo	05-7659			
	Map	05-7660			
	User custom	05-7661			
	Red seal color	05-7662			
Mono color	Text/Photo	05-7707			
	Text	05-7708			
	Printed Image	05-7709			
Twin color	Text/Photo	05-7710			
	Text	05-7711			
	Printed Image	05-7712			
Black	Text/Photo	05-7100			
	Text	05-7101			
	Printed Image	05-7102			
	Image smoothing	05-7105			
	User custom	05-7106			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

<Note> "Making the highlighted area more visible (or increasing the background density)" and "eliminating the background color (or decreasing the background density)" are mutually contradictory. If the background color is darkened to make the highlighted area more visible, the hue of the background may change.

After adjusting the background density, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

▐▌ 🎨 (3) Press [BASIC] on the Control Panel. Press [▶] to increase the copy density.

After increasing the copy density, copy and check the copy image quality.

With the copy density set to the maximum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

▮ ▐▌ 🎨 (4) Select the User custom mode and select [05 ADJUSTMENT MODE]. Change the setting value for the code [7690] to change the reproduction level of the background.

* For the User custom mode, refer to the procedures in "2.18.2 To Adjust Custom Mode Settings in Full Color Mode".

[05] Code	Setting value
05-7690	4

■■ ■■ (5) Select [05 ADJUSTMENT MODE]. Change the values for codes [7190 to 7193] and [7960 to 7987] to adjust the color density.

Color mode	Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Full color Mono color Twin color	Y (Yellow)	Text/Photo	05-7960	0/1	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
		Text	05-7961	0/1			
		Printed image	05-7962	0/1			
		Photo	05-7963	0/1			
		Map	05-7964	0/1			
		User custom	05-7980	0/1			
		Red seal color	05-7984	0/1			
	M (Magenta)	Text/Photo	05-7965	0/1			
		Text	05-7966	0/1			
		Printed image	05-7967	0/1			
		Photo	05-7968	0/1			
		Map	05-7969	0/1			
		User custom	05-7981	0/1			
		Red seal color	05-7985	0/1			
	C (Cyan)	Text/Photo	05-7970	0/1			
		Text	05-7971	0/1			
		Printed image	05-7972	0/1			
		Photo	05-7973	0/1			
		Map	05-7974	0/1			
		User custom	05-7982	0/1			
		Red seal color	05-7986	0/1			
	K (Black)	Text/Photo	05-7975	0/1			
		Text	05-7976	0/1			
		Printed image	05-7977	0/1			
		Photo	05-7978	0/1			
		Map	05-7979	0/1			
		User custom	05-7983	0/1			
		Red seal color	05-7987	0/1			
Black	K (Black)	Text/Photo	05-7190	0/1			
		Text	05-7191	0/1			
		Printed image	05-7192	0/1			
		Image smoothing	05-7193	0/1			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The density of the highlighted area will vary, if the low- or medium-density area is mainly adjusted. Setting "2" for subcode allows you to adjust the high-density area. But it will not affect the highlighted area. Therefore, never change the value for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

❏ **Caution after the adjustment**

The adjustment may possibly provide an excessively dark background. Therefore, carefully perform the adjustment, while checking the copy image.

❏ **Remarks**

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.6 To Eliminate the Background Color

Before adjustment	After adjustment
The background color of the original is also copied. Therefore, no clear contrast is made between the background and text.	The background color is eliminated, allowing clear contrast between the background and text.
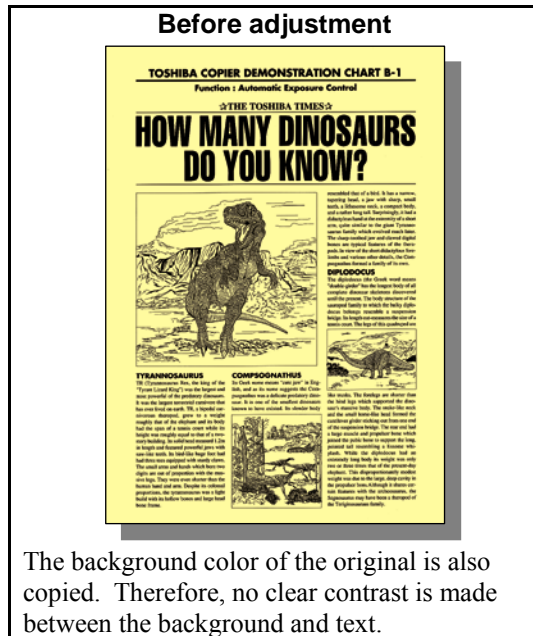
❑ Explanation

When a full-color original, such as colored paper, is copied, its background color is also copied. Therefore, no clear contrast is made between the background and the text on the copy. Perform background adjustment, in order to copy an original with a highly colored background, while eliminating the background color or making it white.

❑ Procedures

＊The procedure to use varies, depending on whether to adjust the copy image quality in the Black mode or the Full color mode. Refer to the procedure corresponding to the user's particular request.

2.6.1   To Adjust the Copy Image Quality in the Black Mode

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedure (1).

＊Only the service technician must use procedures (2) to (3).

▐ (1) Press [IMAGE] on the Control Panel. Press [BACKGROUND ADJUSTMENT].

Press [LIGHT] to decrease the background density.

After decreasing the background density, copy and check the image quality.

With the background density set to the minimum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

▐ (2) Select [05 ADJUSTMENT MODE]. Change the values for codes [7100] to [7102], [7105] and [7106] adjust the density level of the background.

Adjustment	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-7100	Set 127 or larger.	0 to 255	128
	Text	05-7101			
	Photo	05-7102			
	Image smoothing	05-7105			
	User custom	05-7106			

* The smaller the setting value, the lighter the background becomes, while the larger the setting value, the darker the background becomes.

Adjust the value and determine the optimal value while checking the copies by considering that the setting value "25" for the [05] code corresponds to one step in the background adjustment on the control panel.

If further image quality adjustments are still necessary, use the next procedure.

(3) Select [05 ADJUSTMENT MODE]. Change the values for codes [7190] to [7192] to adjust the gamma balance in each of low- and medium-density areas.

Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text/Photo	05-7190	0/1	Set a value smaller than 128.	0 to 255	128
Text	05-7191	0/1			
Photo	05-7192	0/1			

＊Set the value in increments of approximately 20, while checking the copy image until the optimum value is obtained.

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The background density will vary, if the low- or medium-density area

is mainly adjusted. Setting "2" for the subcode allows you to adjust the high-density area. But it will not affect the background density. Therefore, never change the value for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

After adjusting the gamma curve balance, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

❑ Caution after the adjustment

The adjustment may possibly cause text handwritten with a pencil or light text to become illegible on the copy.

Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.6.2   To Adjust the Copy Image Quality in the Full Color Mode

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) and (4).

＊Only the service technician must use procedures (2) and (3).

(1) Press [AUTO] on the Control Panel to select the automatic density adjustment.

(2) Press [IMAGE] on the Control Panel. Press [BACKGROUND ADJUSTMENT].
Press [LIGHT] to decrease the background density.

After decreasing the background density, copy and check the image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(3) Select [05 ADJUSTMENT MODE]. Change the values for the following codes below to adjust the density level of the background.

Adjustment	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color / Auto color (when judged as color)	Text/Photo	05-7656	Set a value smaller than 128.	0 to 255	128
	Text	05-7657			
	Printed image	05-7658			
Full color	Photo	05-7659			
	Map	05-7660			
	User custom	05-7661			
	Red seal color	05-7662			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* In the manual density adjustment, images are processed with the highlighting reproducibility given priority. Therefore it is recommended to select the automatic density adjustment in order to make the background lighter.

<Note>   "Making the highlighted area more visible (or increasing the background density)" and "eliminating the background color (or decreasing the background density)" are mutually contradictory. If the density of the background color is decreased, the highlighted area may become less visible.

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, or background elimination is necessary according to color, use the next procedure.

▊▊ ▊ (4)   Select [05 ADJUSTMENT MODE]. Change the values for codes [7960 to 7987] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-7960	0/1/2			
	Text	05-7961	0/1/2			
	Printed image	05-7962	0/1/2			
	Photo	05-7963	0/1/2			
	Map	05-7964	0/1/2			
	User custom	05-7980	0/1/2			
	Red seal color	05-7984	0/1/2			
M (Magenta)	Text/Photo	05-7965	0/1/2			
	Text	05-7966	0/1/2			
	Printed image	05-7967	0/1/2			
	Photo	05-7968	0/1/2	Set a value larger than 128 to increase the density.	0 to 255	128
	Map	05-7969	0/1/2			
	User custom	05-7981	0/1/2			
	Red seal color	05-7985	0/1/2			
C (Cyan)	Text/Photo	05-7970	0/1/2	Set a value smaller than 128 to decrease the density.		
	Text	05-7971	0/1/2			
	Printed image	05-7972	0/1/2			
	Photo	05-7973	0/1/2			
	Map	05-7974	0/1/2			
	User custom	05-7982	0/1/2			
	Red seal color	05-7986	0/1/2			
K (Black)	Text/Photo	05-7975	0/1/2			
	Text	05-7976	0/1/2			
	Printed image	05-7977	0/1/2			
	Photo	05-7978	0/1/2			
	Map	05-7979	0/1/2			
	User custom	05-7983	0/1/2			
	Red seal color	05-7987	0/1/2			

＊ Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊ The setting value "25" corresponds to one step in the background adjustment on the control panel.

＊ The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

＊ The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The background (highlight) density will vary, if the low- or medium-density area is mainly adjusted. Setting "2" for the subcode allows you to adjust the high-density area. But it will not affect the background density. Therefore, never change the value for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

After adjusting the background density, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

▐▌ ▐ (5) Press [BASIC] on the Control Panel. Select "TEXT" from among the original mode options.

　　　＊To have "TEXT" selected from among the original mode options by default, refer to To Program

　　　　Frequently Used Copy Settings (To Use Custom Mode).

❑ Caution after the adjustment

The adjustment may possibly cause the highlighted area to become less visible on the copy. Therefore, carefully

perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss

in MFP performance, including degradation in the image quality.

2.7 To Avoid Copying the Image Seen through the Back of a 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 images seen through the back of the page are also copied.	The images seen through the back of the page are not copied any more in duplex copying.
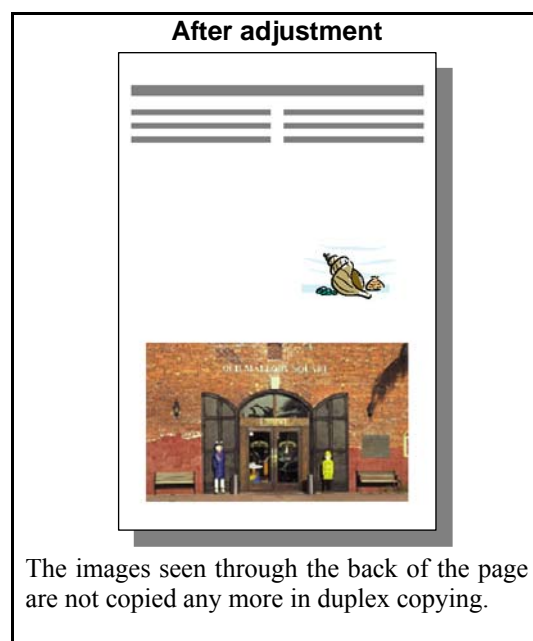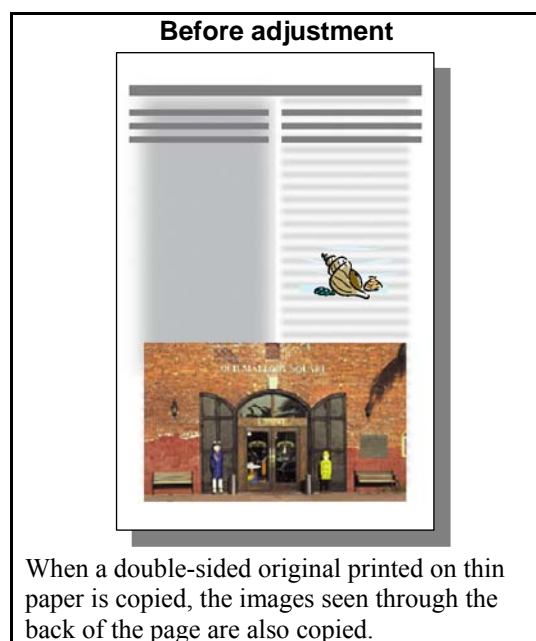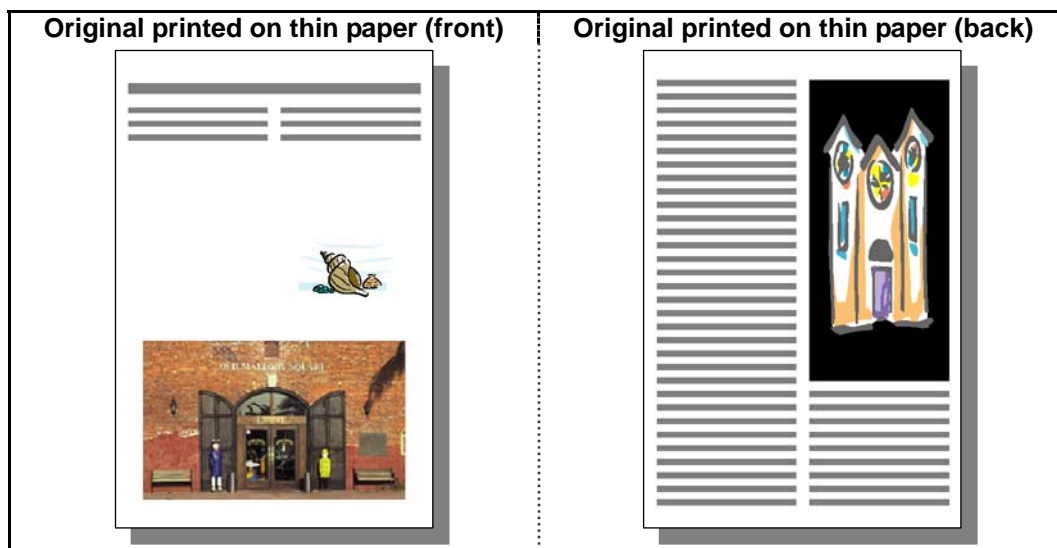
❏ Explanation

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

❏ Procedures

* The procedure to use varies, depending on whether to adjust the copy image quality in the Black mode or the Full color mode. Refer to the procedure corresponding to the user's particular request.

2.7.1 To Adjust the Copy Image Quality in the Black Mode

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed

below. You can use one procedure in conjunction with another. But if this changes the image quality more than

required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure

to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedure (1) and (2).

＊Only the service technician must use procedures (3) to (5).

▉ (1) Press [IMAGE] on the Control Panel. Press [BACKGROUND ADJUSTMENT].
Press [LIGHT] to decrease the background density.

After decreasing the background density, copy and check the image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, the
service technician must use the next procedure.

▉ (2) Press [BASIC] on the Control Panel. Press [◖] to decrease the copy density.
＊Move the copy density indicator to the " ◖ " side for 1 or 2 steps. The images seen through the back of the page
will no longer be copied. But remember that text will also be lightly copied, depending on the type of original.

After decreasing the copy density, copy and check the copy image quality.
With the copy density set to the minimum, if the images seen through the back of the page are still copied, or if
you would like to prevent this problem without changing the copy density of text, use the next procedure.

■ (3)   Select [05 ADJUSTMENT MODE]. Change the values for codes [7100] to [7102], [7105] and [7106]

adjust the density level of the background.

Adjustment	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-7100	Set 128 or larger.	0 to 255	128
	Text	05-7101			
	Photo	05-7102			
	Image smoothing	05-7105			
	User custom	05-7106			

* The smaller the setting value, the lighter the background becomes, while the larger the setting value, the

darker the background becomes.

Adjust the value and determine the optimal value while checking the copies by considering that the

setting value "25" for the [05] code corresponds to one step in the background adjustment on the control

panel.

After adjusting the background density, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

■ (4)   Select [05 ADJUSTMENT MODE]. Change the values for codes [7190] to [7192] to adjust the gamma

balance in each of the low- and medium-density area.

Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text/Photo	05-7190	0/1	Set a value smaller than 128.	0 to 255	128
Text	05-7191	0/1			
Photo	05-7192	0/1			

* Set the value in increments of approximately 20, while checking the copy image until the optimum value is

obtained. (Note that gradations (density level) in the medium- and high-density areas may be reversed with

some setting values.)

*Since the subcode varies according to the area where the density is adjusted, refer to the table below and

set the appropriate subcode. Remember that mainly adjusting the low- or medium-density area will change

the copy density of the images seen through the back of the page.   Setting "2" for the subcode will allow

you to adjust the high-density area. But this will not solve the problem. Therefore, never change the value

for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

❑ **Caution after the adjustment**

The adjustment may possibly cause text handwritten with a pencil or light text to become illegible on the copy.

Therefore, carefully perform the adjustment, while checking the copy image.

❑ **Remarks**

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.7.2 To Adjust the Copy Image Quality in the Full Color Mode

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) and (3).

＊Only the service technician must use procedure (2).

(1) Press [IMAGE] on the Control Panel. Press [BACKGROUND ADJUSTMENT].
Press [LIGHT] to decrease the background density.

After decreasing the background density, copy and check the copy image quality.
With the background density set to the minimum, if the images seen through the back of the page are still copied, the service technician must use the next procedure.

(2) Select [05 ADJUSTMENT MODE]. Change the values for the following codes below to adjust the density level of the background.

Adjustment	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color / Auto color (when judged as color)	Text/Photo	05-7656	Set a value smaller than 128.	0 to 255	128
	Text	05-7657			
	Printed image	05-7658			
Full color	Photo	05-7659			
	Map	05-7660			
	User custom	05-7661			
	Red seal color	05-7662			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

<Note> "Making the highlighted area more visible (or increasing the background density)" and "eliminating the background color (or decreasing the background density)" are mutually contradictory. If the density of the background color is decreased, the highlighted area may become less visible.

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

🔳 🔳 (3) Press [BASIC] on the Control Panel. Select "TEXT" from among the original mode options.

＊To have "TEXT" selected from among the original mode options by default, refer to 2.18 To Program

　　Frequently Used Copy Settings (To Use Custom Mode).

❏ **Caution after the adjustment**

The adjustment may possibly cause the highlighted area to become less visible on the copy. Therefore, carefully

perform the adjustment, while checking the copy image.

❏ **Remarks**

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss

in MFP performance, including degradation in the image quality.

2.8 To Eliminate Moiré

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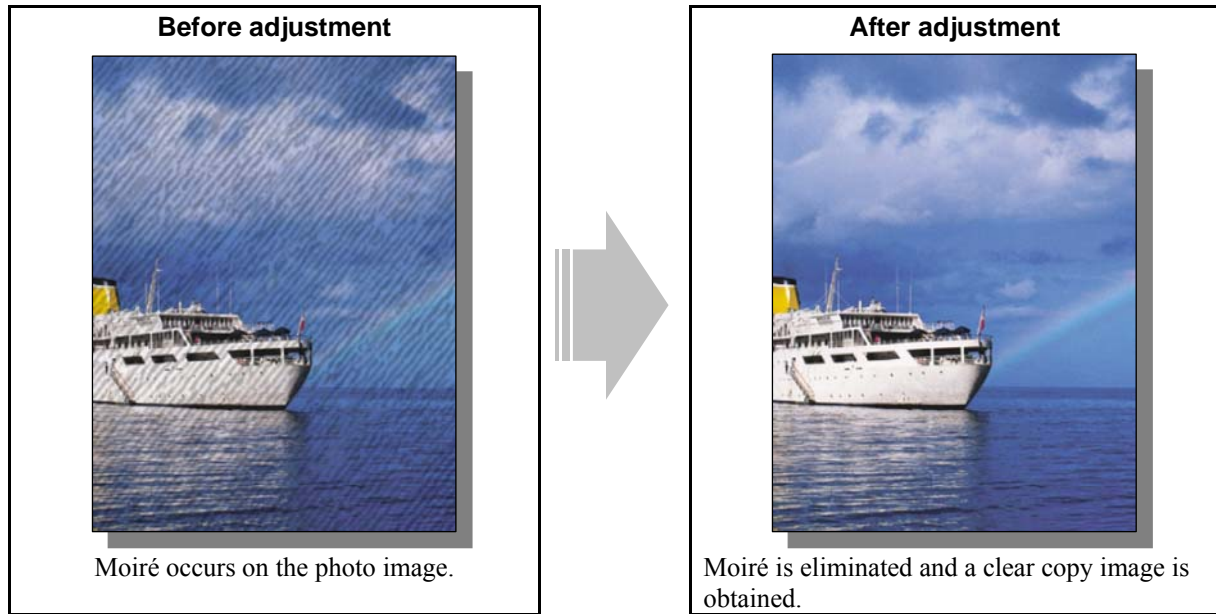
□ **Explanation**

When an original containing photo images or gradational images (halftones) is copied, moiré sometimes occurs on the copy. Perform adjustment regarding image processing (sharpness intensity), in order to obtain a clear copy image, while eliminating moiré.

□ **Procedures**

＊ You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊ Both the service technician and the user can use procedures (1) and (2).

＊ Only the service technician must use procedure (3).

■▮ ▮▌ ▮▌ (1) Press [BASIC] on the Control Panel and select the original mode option, as follows:

   • To copy in the Full color or the Auto color mode: Select the Printed image mode option.

   • To copy in the Black mode: Select the Photo mode option.

   * To have the above original mode options selected by default, use the following procedures:

To change the default original mode on the Control Panel

Use steps (a) to (d) to change default original mode.

   (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

   (b) Press [USER].

   (c) Press [COPY].

   (d) In the "ORIGINAL MODE FOR COLOR" or "BLACK" option, press the button corresponding to the desired original mode option.

To change the default original mode in [08 SETTING MODE]

Select [08 SETTING MODE]. Change the value for code [9970] or [9976] to change the original mode option, which is selected by default at power-on.

   • In the Black mode

Value for 08-9970	Default original mode at power-on
0	Text/Photo (default)
1	Text
2	Photo
3	Image smoothing
4	User custom

   • In the Full color mode

Value for 08-9976	Default original mode at power-on
0	Text/Photo (default)
1	Text
2	Printed image
3	Photo
4	Map
5	User custom
6	Read seal color

   * Press [BASIC] on the Control Panel. Select "Custom" from among the original mode options in the Black or the Full color mode.

   If [Custom] is not displayed on a menu to select an original mode, enable the User custom mode by referring to Chapter 2.18.

After changing the default original mode option, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

■ ▊ ▐▌ ▨ (2) Press [IMAGE] on the Control Panel. Press [SHARPNESS].

Press [SOFT] to soften the copy image.

After softening the copy image, copy and check the copy image quality.

If further image quality adjustments is necessary, go to the next step.
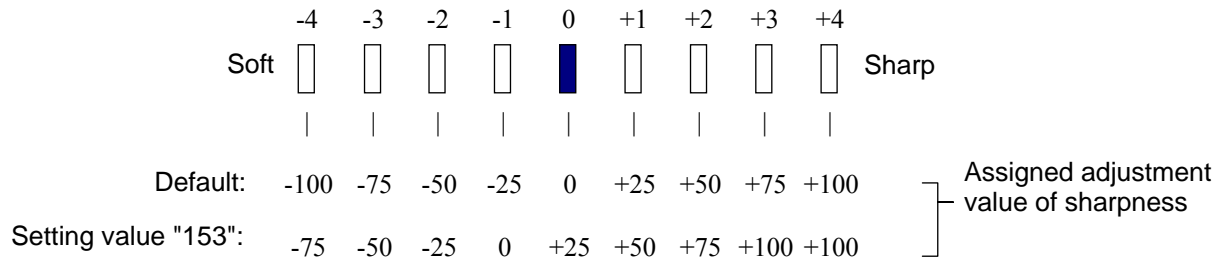
(3) Select [05 ADJUSTMENT MODE].Change the values for codes [7056] to [7058], [7249], [7794] to [7806], and [7061] to adjust the default value for the sharpness intensity.

＊Decreasing the sharpness intensity will minimize moiré.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-7796	Set a value smaller than 128.	0 to 255	128
	Text	05-7797			
	Printed Image	05-7798			
	Photo	05-7799			
	Map	05-7800			
	User 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			
	User custom	05-7249			
	Image smoothing	05-7061			

＊The smaller the value is, the weaker the sharpness intensity becomes. The larger the setting value is, the stronger the sharpness intensity becomes.

Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is decreased by 25 (softer), the value of each step of the indicator will also be decreased by 25 (softer).)

However, the range of adjustment values that is valid for sharpness level change is from -100 to +100 of the total of the setting value of the [05] code and that of the indicator. For instance, if the setting value of the [05] code is "103" (-25 from the default value), the limit of the steps in the soft side of the indicator is "-3". If the step is set at "-4", the image quality will not be changed.

	-4	-3	-2	-1	0	+1	+2	+3	+4	
Soft	☐	☐	☐	☐	▮	☐	☐	☐	☐	Sharp

Default: -100   -75   -50   -25   0   +25   +50   +75   +100

Setting value "103":   -100   -100   -75   -50   -25   0   +25   +50   +75

Assigned adjustment value of sharpness

Since "-25" is assigned to the center, the image quality remains the same even if the indicator is changed from "-3" to "-4".

<Note> "Minimizing moiré" and "Sharpening the copy image" are mutually contradictory. When the adjustment is performed to minimize moiré, the resolution of the copy image may decrease.

❑ Caution after the adjustment

Nothing in particular.

❑ Remarks

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.9 To Copy Sharply (To enhance sharpness)

Before adjustment	After adjustment
The image looks light and blurred on the copy.	The edges are enhanced and the copy image becomes sharper.
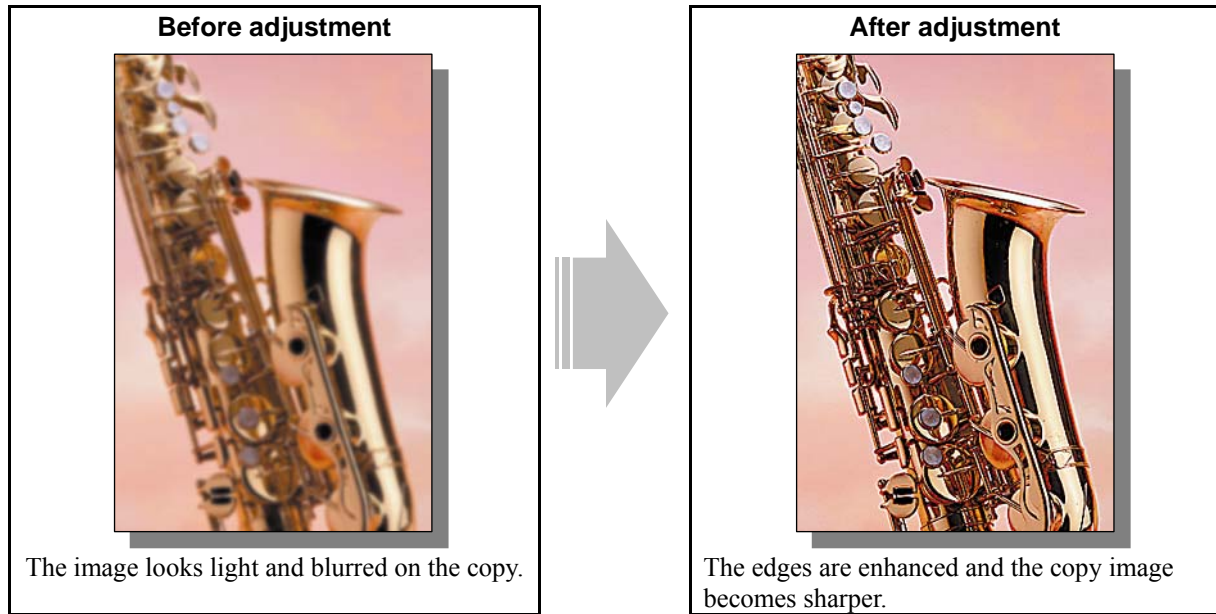
❏ **Explanation**

Perform adjustment regarding image processing (sharpness intensity), in order to obtain a sharper copy image, when a light or blurred original is copied.

❏ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) and (2).

＊Only the service technician must use procedure (3).

(1) Press [IMAGE] on the Control Panel. Press [ONE TOUCH ADJUSTMENT].
Press [CLEAR] .

After selecting the "Clear" option, copy and check the copy image quality.
When the copy image quality with the "Clear" option selected is insufficient, cancel the "Clear" option and use the next procedure.
(The one-touch adjustment can be canceled by pressing [ONE TOUCH ADJUSTMENT] again.)

(2) Press [IMAGE] on the Control Panel. Press [SHARPNESS].
Press [SHARP] to increase the sharpness intensity.

After increasing the sharpness intensity, copy and check the copy image quality.
If further image quality adjustment is necessary, go to the next step.

■▌ ▐▌▐ ▐▌ (3) Select [05 ADJUSTMENT MODE]. Change the values for codes [7056] to [7058], [7249], [7795] to [7800] and [7806] to [7809] to adjust the default value for the sharpness intensity.

＊Increasing the sharpness intensity will enhance the edges of the image.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-7796	Set a value larger than 128.	0 to 255	128
	Text	05-7797			
	Printed Image	05-7798			
	Photo	05-7799			
	Map	05-7800			
	User 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			
	User custom	05-7249			
	Image smoothing	05-7061			

＊The smaller the setting value is, the weaker the sharpness intensity becomes. The larger the setting value is, the stronger the sharpness intensity becomes.

Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is increased by 25 (sharper), the

value of each step of the indicator will also be increased by 25 (sharper).)

However, the range of adjustment values that is valid for sharpness level change is from -100 to +100 of the total of the setting value of the [05] code and that of the indicator. For instance, if the setting value of the [05] code is "153" (+25 from the default value), the limit of the steps in the sharp side of the indicator is "+3". If the step is set at "+4", the image quality will not be changed.

<Note>   "Sharpening the copy image" and "Minimizing moiré" are mutually contradictory. When an adjustment is performed to sharpen the copy image, moiré may occur.

❑ Caution after the adjustment

Nothing in particular.

❑ Remarks

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in copier performance, including degradation in the image quality.

2.10 To Make Photo Edges Look Softer

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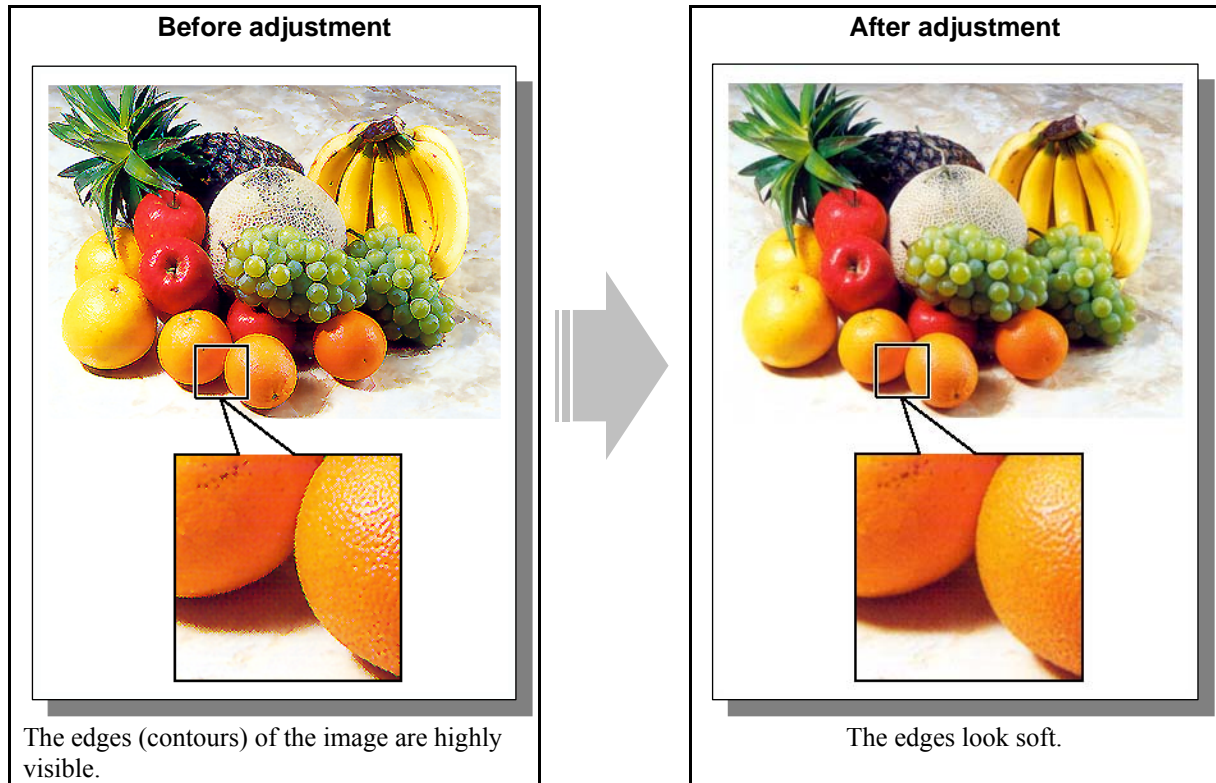
❑ Explanation

When a photo image is copied, the contours or edges of the image sometimes become highly visible on the copy. Perform adjustment regarding image processing (sharpness intensity), in order to soften the edges of the image.

❑ Procedures

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) and (2).

＊Only the service technician must use procedures (3) to (5).

■ ▐▌ ▞ (1) Press [BASIC] on the Control Panel and select the original mode option, as follows:

• To copy in the Full color or the Auto color mode: Select the Printed image mode option.

• To copy in the Black mode: Select the Photo mode option.

＊When copying a photo image in the Full color mode, select the Photo mode option from among the original mode options.

＊To have the above original mode options selected by default, refer to 2.18 To Program Frequently Used Copy Settings (To Use Custom Mode).

After changing the default original mode option, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

■ ▐▌ ▐▌ ▞ (2) Press [IMAGE] on the Control Panel. Press [SHARPNESS].

Press [SOFT] to soften the copy image.

After softening the copy image, copy and check the copy image quality.

If further image quality adjustment is necessary, go to the next step.

■ ▐▌ ▞ (3) Select [05 ADJUSTMENT MODE]. Change the values for codes [7056] to [7058], [7061], [7249] and [7794] to [7800] to adjust the default value for the sharpness intensity.

* Decreasing the sharpness intensity will minimize the edges of the image.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text / Photo	05-7056	Set a value smaller than 128. (28 to 127)	0 to 255	128
	Text	05-7057			
	Photo	05-7058			
	User custom	05-7249			
	Image smoothing	05-7061			
Full color	Text / Photo	05-7796	Set a value smaller than 128. (28 to 127)	0 to 255	128
	Text	05-7797			
	Printed image	05-7798			
	Photo	05-7799			
	Map	05-7800			
	User custom	05-7795			
	Red seal color	05-7794			

* The smaller the setting value is, the weaker the sharpness intensity becomes. The larger the setting value is, the stronger the sharpness intensity becomes.

Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is decreased by 25 (softer), the value of each step of the indicator will also be decreased by 25 (softer).)

However, the range of adjustment values that is valid for sharpness level change is from -100 to +100 of the total of the setting value of the [05] code and that of the indicator. For instance, if the setting value of the [05] code is "103" (-25 from the default value), the limit of the steps in the soft side of the indicator is "-3". If the step is set at "-4", the image quality will not be changed.

	-4	-3	-2	-1	0	+1	+2	+3	+4	
Soft	▯	▯	▯	▯	▮	▯	▯	▯	▯	Sharp
	|	|	|	|	|	|	|	|	|	
Default:	-100	-50	-50	-25	0	+25	+50	+75	+100	Assigned adjustment value of sharpness
Setting value "103":	-100	-100	-75	-50	-25	0	+25	+50	+75	

Since "-25" is assigned to the center, the image quality remains the same even if the indicator is changed from "-3" to "-4".

<Note> "Minimizing the edges of the copy image" and "Sharpening the copy image" are mutually contradictory. When the adjustment is performed to minimize the edges, the resolution of the copy image may decrease.

After decreasing the sharpness intensity, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

▮▮ ▮ (4) Select [05 ADJUSTMENT MODE]. Change the values for codes [7889 to 7892] to adjust the maximum color density of text.

Color to adjust	[05] code	Recommended value	Acceptable value range	Default
Y (Yellow)	05-7889	Set a value larger than 5 to increase the density. Set a value smaller than 5 to decrease the density.	0 to 10	5
M (Magenta)	05-7890			
C (Cyan)	05-7891			
K (Black)	05-7892			

＊Set the value in increment of 1, while checking the copy image until the optimum value is obtained.

After adjusting the maximum color density of the text, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

▮▮ ▮ (5) Select [05 ADJUSTMENT MODE]. Change the setting values for codes [7840], [7841] and [7842] to adjust the reproduction level for the Text/photo, User custom and Red seal color original modes.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-7840	Set a value smaller than 5.	0 to 9	0
	User custom	05-7841			
	Red seal color	05-7842			

* Adjustment for the User custom setting is enabled in the Text/photo mode base only.

＊Set the value in increments of 1, while checking the copy image until the optimum value is obtained.

Set the value to "5" and check the copy image quality.

If further image quality adjustment is necessary, set the value to "4".

If further adjustment is necessary, decrease the value step by step.

＊Remember that if a value larger than "5" is set, the edges of the image are enhanced (attaching importance to the reproducibility of text). The table below shows you the correlation between the value and image quality.

Value	Advantage of image quality	Reproducibility of edges
0	Default	Intermediate
1	Intended to improve the reproducibility of photos more than the one obtained when "2" is set.	Soft
2	Intended to improve the reproducibility of photos more than the one obtained when "3" is set.	↓
3	Intended to improve the reproducibility of photos more than the one obtained when "4" is set.	↓
4	Intended to improve the reproducibility of photos more than the one obtained when "5" is set.	↓
5	Equivalent to the one obtained when the default value ("0") is set.	Intermediate
6	Intended to improve the reproducibility of text more than the one obtained when "5" is set.	↓
7	Intended to improve the reproducibility of text more than the one obtained when "6" is set.	↓
8	Intended to improve the reproducibility of text more than the one obtained when "7" is set.	↓
9	Intended to improve the reproducibility of text more than the one obtained when "8" is set.	Sharp

＊For the User custom mode, refer to "2.18 To Program Frequently Used Copy Settings (To Use Custom Mode)".

❑ Caution after the adjustment

When an original containing text is copied, the adjustment may possibly cause the text to become blurred on the copy. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.11 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.
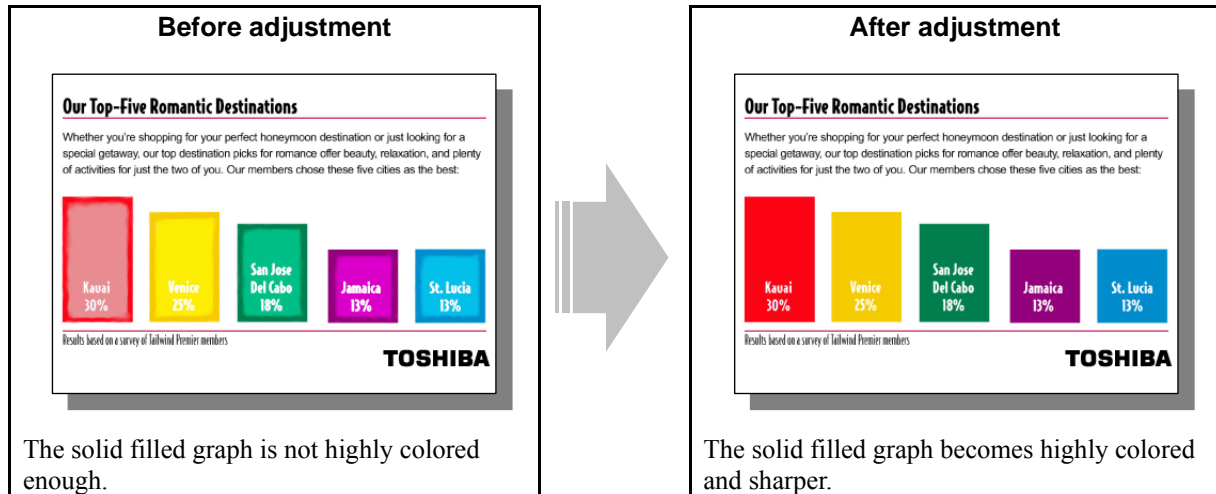
□ **Explanation**

Solid filled bold text, such as a logo, is sometimes not highly colored on the copy. Change the original mode option, perform copy density adjustment and level adjustment for black headline text, in order to make the solid filled image more highly colored.

＊This adjustment will have an effect only on copying in the Full color mode.

□ **Procedures**

＊The procedure to use varies, depending on whether to adjust the copy image quality of a black or colored logo.

  Refer to the procedure corresponding to the user 's particular request.

2.11.1 To Adjust the Copy Image Quality of a Black Logo

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use steps (1) and (2).

＊Only the service technician can use steps (3) and (4).

> **<Important>** Before you start this adjustment, make sure that no color misalignment exists on the logos. If there is any, correct it before adjustment. For how to correct the color misalignment (deviation), refer to "1.5 To Correct Out-of-Registration Colors" in this manual and also the Service Manual.

(1) Press [BASIC] on the Control Panel. If you want to emphasize the reproducibility of text more, select "TEXT" as an original mode. If you want to emphasize that of photos, select "TEXT/PHOTO".

＊If you want the "TEXT" or "TEXT/PHOTO" mode to be the default original mode, refer to "2.18 To Program Frequently Used Copy Settings (To Use Custom Mode)".

After selecting the Text mode, copy and check the copy image quality.

If further image quality adjustment is necessary, go to the next step.

(2) Perform color balance adjustment to enhance black.

• Use steps (a) through (d) to perform the adjustment.

(a) Press [IMAGE] on the Control Panel.

(b) Press [COLOR BALANCE].

(c) Press [+] to enhance the tint of [BLACK].

＊Press [DETAIL]. The tint of the color can be adjusted according to the density area (low-, medium- or high-density area).

(d) Press [ENTER].

After adjusting the tint of black, copy and check the copy image quality.

If further image quality adjustment is necessary even after the tint of black was set to the maximum, the service technician must perform the next step.

▋▋ ▋ (3) Select [05 ADJUSTMENT MODE]. Change the setting values for codes [7811], [7812], [7816] and [7817] to adjust the black header density level.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color / Auto color	Text/Photo	05-7811	Set a value larger than 4.	0 to 8	0
	Text	05-7812			
	User custom	05-7816	When the base original mode is Text/Photo, Text or Map: Set a value larger than 4. When the base original mode is Printed Image or Photo: Set a value larger than 3.		
	Red seal color	05-7817	Set a value larger than 4.		

* Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

* For the User custom mode, refer to "2.18 To Program Frequently Used Copy Settings (To Use Custom Mode)".

After adjusting the level of black headline text, copy and check the copy image quality.

If further image quality adjustment is necessary, the service technician must perform the next step.

▋▋ ▋ (4) Select [05 ADJUSTMENT MODE]. Change the setting values for codes [7975], [7976], [7983] and [7987] to adjust the black density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
K (Black)	Text/Photo	05-7975	0/1/2	Set a value larger than 128.	0 to 255	128
	Text	05-7976				
	User custom	05-7983				
	Red seal color	05-7987				

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ **Caution after the adjustment**

The adjustment may possibly cause the highly or deeply colored area, such as in a photo, to become blurred on the copy. Also, it may also cause offset failure, grained images and degradation in gradation. Therefore, carefully perform the adjustment, while checking the copy image.

2.11.2 To Adjust the Copy Image Quality of a Colored Logo

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed
  below. You can use one procedure in conjunction with another. But if this changes the image quality more than
  required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure
  to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) to (3).

＊Only the service technician must use procedure (4).

(1) Press [BASIC] on the Control Panel. Press [▶] to increase the copy density.

  After increasing the copy density, copy and check the copy image quality.
  With the copy density set to the maximum, if further image quality adjustments are still necessary, use the
  next procedure.

(2) Perform color balance adjustment or RGB adjustment to adjust the tint of the colors in general.
  • Use steps (a) through (d) to perform the adjustment.
    (a) Press [IMAGE] on the Control Panel.
    (b) Press [COLOR BALANCE] to adjust the color balance by changing the amount of toner
    (c) Press [+] to enhance the tint of the color or [-] to decrease it.
      ＊After selecting the color balance by changing the amount of toner (C, M, Y and K), press
        [DETAIL]. The tint of the color can be adjusted according to density area (low-, medium- or high-
        density area).
    (d) Press [ENTER].

  After adjusting the tint of the colors, copy and check the copy image quality.
  If further image quality adjustments are still necessary, use the next procedure.

(3) Press [BASIC] on the Control Panel. Select "TEXT" from among the original mode options.
    ＊To have "TEXT" selected from among the original mode options by default, refer to "2.18 To Program
      Frequently Used Copy Settings (To Use Custom Mode)".

  After selecting the Text or Map mode, copy and check the copy image quality.
  If further image quality adjustments are still necessary, the service technician must use the next procedure.

■■ (4)   Select [05 ADJUSTMENT MODE]. Change the setting values for codes [7960], [7961], [7965], [7966], [7970], [7971], [7975], [7976] and [7980] to [7983] to adjust the density for each color.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-7960	0/1/2	Set a value larger than 128.	0 to 255	128
	Text	05-7961	0/1/2			
	User custom	05-7980	0/1/2			
	Red seal color	05-7984	0/1/2			
M (Magenta)	Text/Photo	05-7965	0/1/2			
	Text	05-7966	0/1/2			
	User custom	05-7981	0/1/2			
	Red seal color	05-7985	0/1/2			
C (Cyan)	Text/Photo	05-7970	0/1/2			
	Text	05-7971	0/1/2			
	User custom	05-7982	0/1/2			
	Red seal color	05-7986	0/1/2			
K (Black)	Text/Photo	05-7975	0/1/2			
	Text	05-7976	0/1/2			
	User custom	05-7983	0/1/2			
	Red seal color	05-7887	0/1/2			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ **Caution after the adjustment**

The adjustment may possibly cause a dark-colored area, such as in a photo, to become blurred on the copy. Also, it may also cause offset failure, grained images and degradation in gradation. Therefore, carefully perform the adjustment, while checking the copy image.

2.12 To Sharply Contrast the Hues of Highlighters on the Copy

Before adjustment	**After adjustment**

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, their hues may sometimes not be accurately reproduced on the copy. The inks of highlighters are special. Therefore, their hues cannot be accurately reproduced. To reproduce the hues of similar highlighters, such as yellow and green, while producing sharp contrasts on the copy, perform color adjustment (color balance adjustment or RGB adjustment).

❑ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) and (3).

＊Only the service technician must use procedures (2) and (4).

▌▌ (1) Press [IMAGE] on the Control Panel. Press [ONE TOUCH ADJUSTMENT].
Press [MARKER] .

After selecting the "Marker" option, copy and check the copy image quality.

When the copy image quality with the "Marker" option is insufficient, cancel the "Marker" option and use the next procedure. (The one-touch adjustment can be canceled by pressing [ONE TOUCH ADJUSTMENT] again.)

▌▌ (2) Select [05 ADJUSTMENT MODE]. Change the value for code [1769] to adjust the tint of colors in Marker mode.

[05] code	Subcode	Acceptable value range	Default
05-7850	0 to 5	0 to 6	3

＊Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

＊The subcode varies according to the color where the adjustment is performed. Refer to the table below and set the subcode for the color to be adjusted.

Subcode	Color to adjust
0	Y (Yellow)
1	M (Magenta)
2	C (Cyan)
3	R (Red)
4	G (Green)
5	B (Blue)

＊Setting a value larger than the default value moves the hue of the color selected to [+] as shown below. On the other hand, setting a value smaller than the default value moves it to [-].
(For instance, set 6 for R (Red). Then the tint of the red is closely matched with that of Y (Yellow). Set 0 for R (Red). Then the tint of the red will be closely matched with that of M (Magenta).
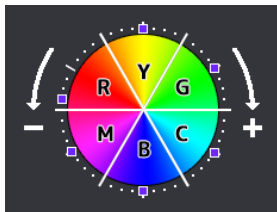
After adjusting the hue, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

■ (3) Perform color balance adjustment or RGB adjustment to adjust the tint of the colors in general.
 ＊For further information regarding the adjustment procedures, refer to procedure (3) in 2.2 To Closely Match the Color Balance of the Original.

 After adjusting the tint of colors, copy and check the copy image quality.
 If further image quality adjustments are still necessary, the service technician must use the next procedure.

■ ■ (4) Select [05 ADJUSTMENT MODE]. Change the values for codes [7960] to [7979] and [7980] to [7983] to adjust the density level of each color.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-7960	0/1/2			
	Text	05-7961	0/1/2			
	Printed image	05-7962	0/1/2			
	Photo	05-7963	0/1/2			
	Map	05-7964	0/1/2			
	User custom	05-7980	0/1/2			
	Red seal color	05-7984	0/1/2			
M (Magenta)	Text/Photo	05-7965	0/1/2			
	Text	05-7966	0/1/2			
	Printed image	05-7967	0/1/2			
	Photo	05-7968	0/1/2	Set a value larger than 128 to increase the density.		
	Map	05-7969	0/1/2			
	User custom	05-7981	0/1/2			
	Red seal color	05-7985	0/1/2			
C (Cyan)	Text/Photo	05-7970	0/1/2		0 to 255	128
	Text	05-7971	0/1/2	Set a value smaller than 128 to decrease the density.		
	Printed image	05-7972	0/1/2			
	Photo	05-7973	0/1/2			
	Map	05-7974	0/1/2			
	User custom	05-7982	0/1/2			
	Red seal color	05-7986	0/1/2			
K (Black)	Text/Photo	05-7975	0/1/2			
	Text	05-7976	0/1/2			
	Printed image	05-7977	0/1/2			
	Photo	05-7978	0/1/2			
	Map	05-7979	0/1/2			
	User custom	05-7983	0/1/2			
	Red seal color	05-7987	0/1/2			

 ＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

 ＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

 ＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ **Caution after the adjustment**

The adjustment may possibly vary the hues of areas (including photo images and text) other than those marked with highlighters. Therefore, carefully perform the adjustment, while checking the copy image.

❑ **Remarks**

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.13 To Obtain a Good Color Balance 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.
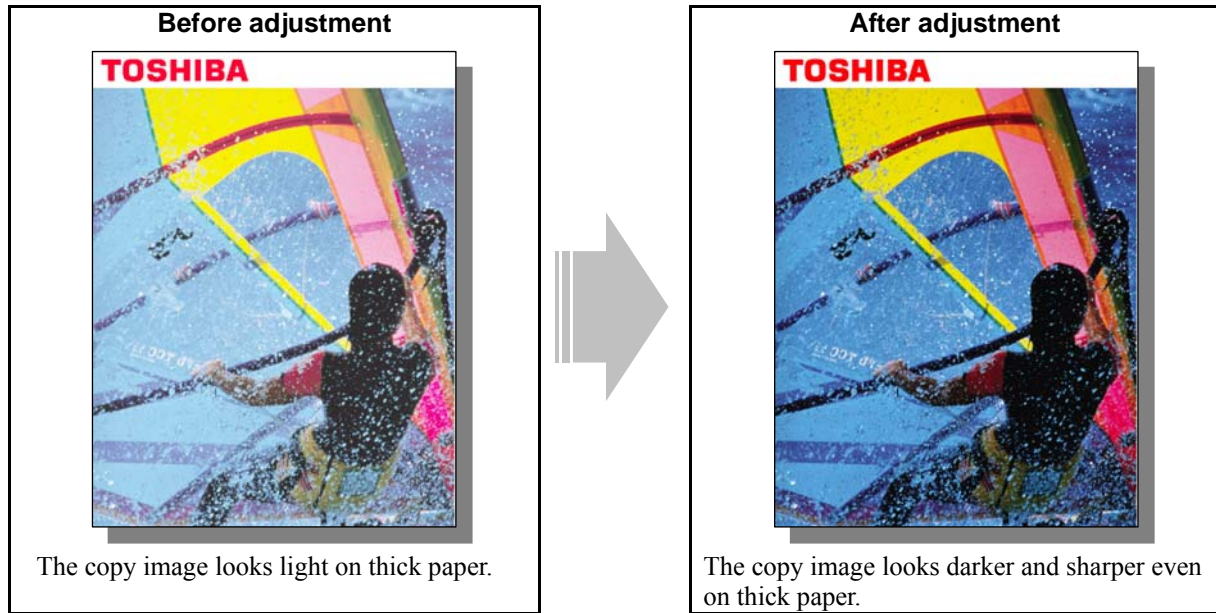
❑ **Explanation**

When image looks light on paper that is different from usual paper, perform automatic calibration for each paper type to obtain the optimum image quality.

❑ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Only the service technician must use procedures (1), (2) and (4).

＊Both the service technician and the user can use procedure (3).

■ ▥ ▦ ▨ (1) Perform automatic calibration for each paper type to correct variations in image density.

＊A privilege to perform automatic calibration is set to Administrator by default but this can be changed to the User. For how to change the privilege, refer to the MFP Management Guide.

• Follow steps (a) through (j) to perform the automatic calibration.

(a) Select [08 SETTING MODE]. Change the value of the code [9059] to "1" so that automatic calibration for each paper type will be enabled.

Value for 08-9059	Display for user calibration
0	Not displayed (default)
1	Displayed

(b) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

(c) IPress [ADMIN].

(d) Enter an administrator password in 6 to 64 digits. Press [ENTER].

(e) Press [GENERAL].

(f) Press [CALIBRATION].

(g) Press [COPY].

(h) Select the paper type for correction.

(i) Press [CALIBRATION] to print a test chart.

(j) Place the printed test chart on the original glass.

(k) Press the [START] button to start the calibration. The message "WAIT" disappears when the calibration is finished.

＊The procedure above covers both the color and black copy calibration.

After the automatic calibration, copy and check the image quality.

If further image quality adjustment is necessary, go to the next step.

▦ ▨ (2) Select [05 ADJUSTMENT MODE].. Change the values for codes [7913] to adjust the amount of toner used.

• The code to use varies according to the paper type. Adjust the value for [05] code corresponding to the paper type for whose image quality you would like to improve and increase the value to obtain the copy density that the user desires.

• In the [7913] setting, the toner amount of Y, M, C and K single colors is not changed, but that of the overlaid colors reproduced by two or more colors, such as R, G, B and K, is controlled.

Paper type	[05] code	Subcode	Recommended value	Acceptable value range	Default
Thick 1		3			
Thick 2		4			
Thick 3		5			
Thick 4	05-7913	6	128	0 to 255	128
Special 1		7			
Special 2		8			
Special 3		9			
OHP		12			

＊Set the value in increments of approximately 4, while checking the copy image until the optimum value is obtained.

＊Although the larger the value, the darker the density becomes, offsetting may occur if the value is too large. Adjust the value while checking the copy image carefully.

* The table below shows you the acceptable paper weight for the paper type.

Paper type	Acceptable paper weight	
Thick 1	106 to 163 g/m²	Max. 60 lb. Cover
Thick 2	164 to 209 g/m²	Max. 110 lb. Index
Thick 3	210 to 256 g/m²	Max. 140 lb. Index
Thick 4	257 to 280 g/m²	Max. 100 lb. Cover

* Use the recommended OHP transparencies and special paper.

After adjusting the amount of toner used, copy and check the copy image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure.

(3) Perform color balance adjustment or RGB adjustment to adjust the tint of the colors in general.

   * For further information regarding the adjustment procedures, refer to procedure (3) in 2.2 To Closely Match the Color Balance of the Original.

After adjusting the tint of colors, copy and check the copy image quality.

If further image quality adjustments are still necessary, use the next procedure.

(4) Select [05 ADJUSTMENT MODE]. Change the values for codes [7960] to [7987] to adjust the density level of each color.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-7960	0/1/2			
	Text	05-7961	0/1/2			
	Printed image	05-7962	0/1/2			
	Photo	05-7963	0/1/2			
	Map	05-7964	0/1/2			
	User custom	05-7980	0/1/2			
	Red seal color	05-7984	0/1/2			
M (Magenta)	Text/Photo	05-7965	0/1/2			
	Text	05-7966	0/1/2			
	Printed image	05-7967	0/1/2			
	Photo	05-7968	0/1/2	Set a value larger than 128 to increase the density.		
	Map	05-7969	0/1/2			
	User custom	05-7981	0/1/2			
	Red seal color	05-7985	0/1/2		0 to 255	128
C (Cyan)	Text/Photo	05-7970	0/1/2	Set a value smaller than 128 to decrease the density.		
	Text	05-7971	0/1/2			
	Printed image	05-7972	0/1/2			
	Photo	05-7973	0/1/2			
	Map	05-7974	0/1/2			
	User custom	05-7982	0/1/2			
	Red seal color	05-7986	0/1/2			
K (Black)	Text/Photo	05-7975	0/1/2			
	Text	05-7976	0/1/2			
	Printed image	05-7977	0/1/2			
	Photo	05-7978	0/1/2			
	Map	05-7979	0/1/2			
	User custom	05-7983	0/1/2			
	Red seal color	05-7987	0/1/2			

＊Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

＊The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ Caution after the adjustment

Nothing in particular.

❑ Remarks

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables

• If the adjustment causes a toner fixing problem, decrease the values for codes 05-7899 and 7905 to 7911.

2.14 To Obtain Smooth Gray-Scale Photo Images

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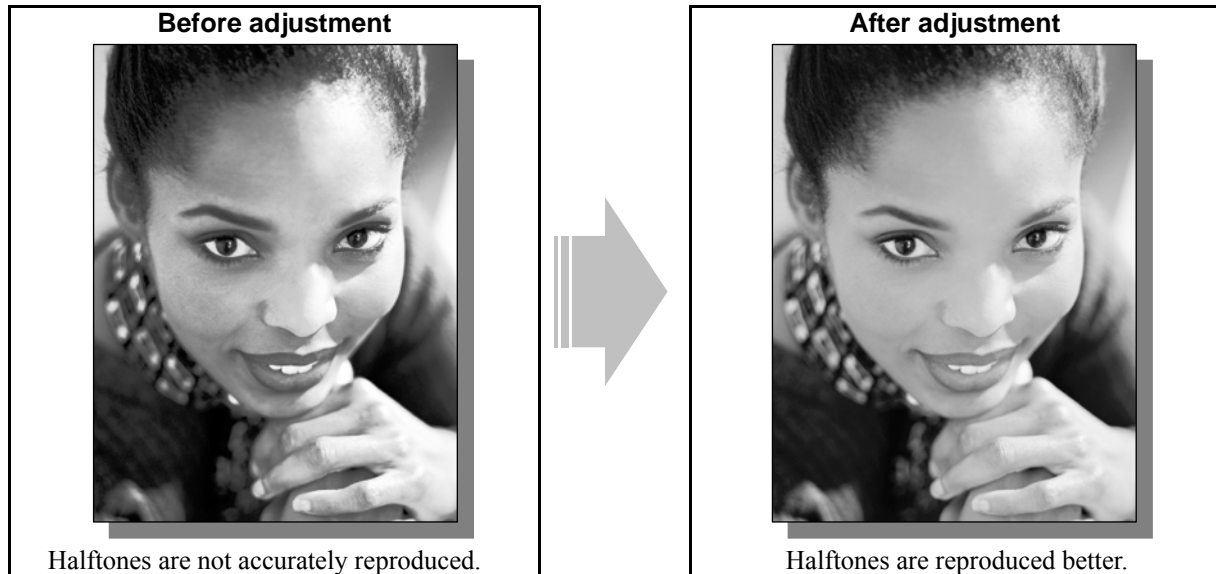
❑ **Explanation**

When a photo image or gradational image is copied in the Black mode with the Text/Photo mode selected, halftones are not accurately reproduced. Select the Photo mode or the Image smoothing mode from among the original mode options, in order to reproduce halftones better in the Black mode.

❑ **Procedures**

* Both the service technician and the user can perform all adjustments.

▊ (1) Press [BASIC] on the Control Panel. Select "PHOTO" from among the original mode options.
　　* To have "PHOTO" selected from among the original mode options by default, refer to 2.18 To Program Frequently Used Copy Settings (To Use Custom Mode).

　　After selecting the Photo mode, copy and check the copy image quality.
　　If further image quality adjustments are still necessary, use the next procedure.

▊ (2) Press [BASIC] on the Control Panel. Select "IMAGE SMOOTHING" from among the original mode options.
　　* To have "IMAGE SMOOTHING" selected from among the original mode options by default, refer to 2.18 To Program Frequently Used Copy Settings (To Use Custom Mode).

❑ **Caution after the adjustment**

Nothing in particular.

2.15 To Change the Threshold in Auto Color Mode

(To change the threshold between the Full Color mode and the Black mode to meet the user 's needs)
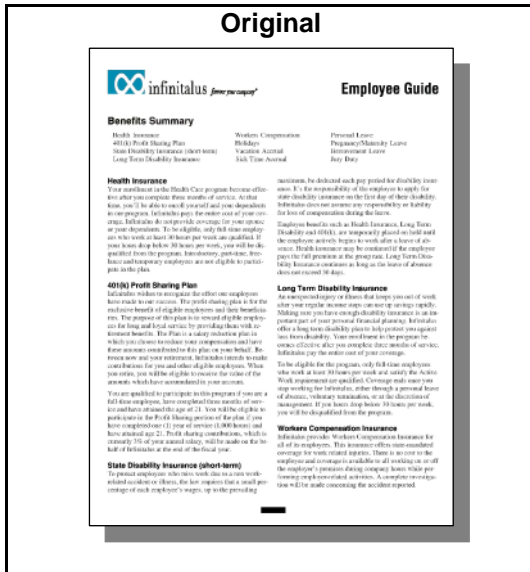
Original

Copied in the Auto color mode

Before adjustment
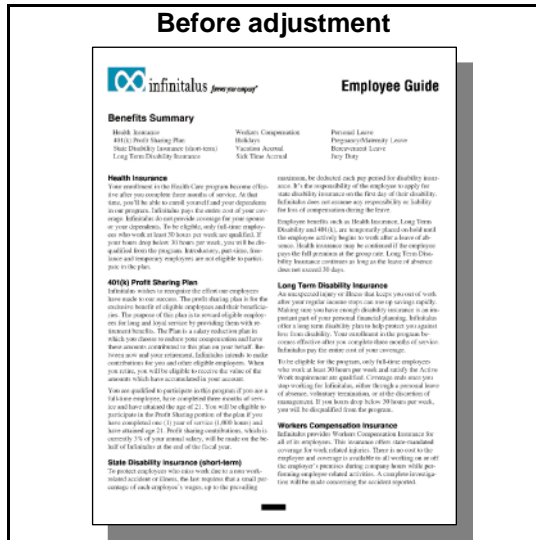
It is copied in the Full color mode.

After adjustment
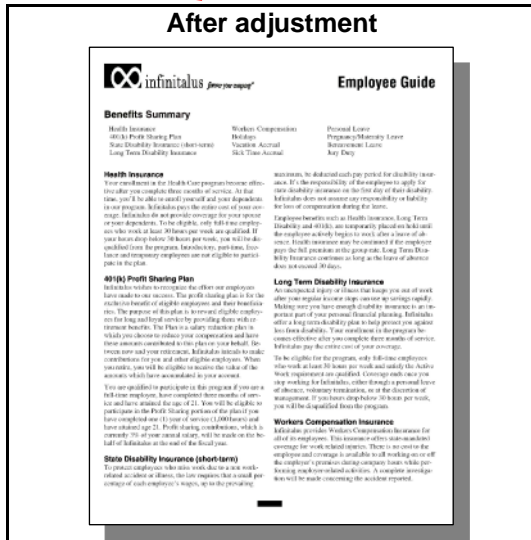
Changing the threshold value will allow a colored original to be copied in the Black mode.

❑ **Explanation**

When the Auto color mode is selected, it will be automatically determined whether an original is colored or black-and-white. Then it will be copied in the Full color mode or the Black mode. But adjust the threshold value, in order to change the threshold between the Black mode and the Full color mode and suit the preferences of the user.

❏ Procedures

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedure (1).

＊Only the service technician must use procedure (2).

(1) Change the threshold for the Auto Color mode.

• Follow steps (a) through (d) to perform the adjustment.

(a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

(b) Press [USER].

(c) Press [COPY].

(d) Change the threshold with the "ACS ADJUSTMENT" indicator. If you move the indicator to the left, the original tends to be judged as a black original. If you move it to the right, the original tends to be judged as a color original.

<Hint> 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

* Position of indicator: "0" in the table above denotes the left end of the indicator (the original is judged as black most) and "6" denotes the right end of the indicator (the original is judged as color most).

* Adjustment value: This refers to the judgment threshold for the Auto Color mode. The adjustment value of the code in step (2) below will be added to this value.

* The diameter of the standard "stamp" is   pprox.. from 8 mm to 12 mm. In this field the number of the stamps on the chart and its judgment result are described.

* The size of the standard "red character" is   pprox.. 10.5 pt. In this field the number of the red characters entered and its judgment result are described.

After specifying the original size and copy size, copy and check the copy image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Select [05 ADJUSTMENT MODE]. Change the values for code [7630] to adjust the threshold value in the Auto color mode.

  * As the set value is increased, the original will be more likely to be recognized as black-and-white. On the other hand, if the value is decreased, it will be more likely to be recognized as full color.

Threshold to adjust	[05] code	Acceptable value range	Default
Threshold when an original is placed on the original glass or when the DF is used	05-7630	0 to 255	70

  * Set the value in increments of approximately 20, while checking the copy image until the optimum value is obtained.

❑ Caution after the 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 users to clean the original cover on a routine basis (once a week).

• After the threshold in the Auto color mode is adjusted, based on a particular type of original, other types of original may not be correctly detected. Therefore, carefully perform the adjustment, while checking whether any type of original is correctly detected.

• Note that changing the judgment threshold for originals influences the Auto color in network scanning.

2.16 To Adjust the Twin-Color Copy Image Quality

Before adjustment	After adjustment
When a twin-color copy is made in the red and black mode, red may be blended in a part of black area.	The blend of undesired colors in the black area is reduced.

❑ **Explanation**

When a twin-color copy is made, red may be blended into the black area or colors other than black on the twin-color copy may look different from what the user desires. Adjust the tint of the colors, the reproducibility of black in the Red and black mode, or the boundary between black and colors other than black, in order to reduce a blend of undesired colors into the black area or adjust the tint of colors other than black.

❑ **Procedures**

* The procedure to use varies, depending on whether to adjust the tint of colors other than black, the reproducibility of black in the Red and black mode, or the boundary between black and colors other than black. Refer to the procedure corresponding to the user 's particular request.

2.16.1 To Adjust the Tint of Colors other than Black

＊Both the service technician and the user can perform all adjustments.

▐▌ (1)　Press [IMAGE] on the Control Panel. Press [TWIN COLOR COPY].

　　　　Select the Twin-color copy mode from among the twin color copy mode options.

　　　• To select Red and black mode:

　　　　　Press [RED & BLACK].

　　　• To select the Twin-color selectable mode:

　　　　Use steps (a) through (d) to select the Twin-color selectable mode.

　　　　　(a) Press [TWIN COLOR SELECTABLE].

　　　　　(b) Press [CHANGE BLACK TO]. Press the button for the desired color.

　　　　　(c) Press [SECOND COLOR]. Press the button for the desired color.

　　　　　(d) Press [ENTER].

　　Use procedure (2).

▐▌ (2)　Press [ADJUST]. Press [+]or [-] for the color to be adjusted, in order to adjust the tint of colors other than
　　　　black.

　　　• In the Red and black mode:

　　　　　• Press [-] to decrease yellow and [+] to enhance magenta, in order to enhance the tint of red.

　　　　　• Press [+] to enhance yellow and [-] to decrease magenta, in order to decrease the tint of red.

　　　• In the Twin-color selectable mode:

　　　　　Press [+] to enhance the tint of the color or [-] to decrease it.

　　　* Note that the adjustment is not possible if the combination of the selected colors in the Twin-color
　　　　selectable copy mode is "Black and Black" or "Color other than black and Color other than black".

　　　＊Press [DETAIL]. The tint of the color can be adjusted according to the density area (low-, medium- or
　　　　high-density area).

❑ **Caution after the adjustment**

Nothing in particular.

2.16.2 To Adjust the Boundary between Black and Colors other than Black

＊Both the service technician and the user can use procedures (1) and (2).

＊Only the service technician must use procedure (3).

＊Note that the adjustment results of steps (1) and (2) will be applied only to the Red and Black mode. The adjustment result of step (3) will be applied to both of the Red and Black mode and the Twin Color mode (enabling selection of other colors).

▌▐ (1) Press [IMAGE] on the Control Panel. Press [TWIN COLOR COPY].

Press [RED&BLACK] to enter the Red and black mode.

Use procedure (2).

▌▐ (2) Press [ADJUST]. 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.

After adjusting the boundary, copy and check the copy image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure.

▌▐ (3) Select [05 ADJUSTMENT MODE]. Change the values for codes [7641/7642] to adjust the boundary between black and colors other than black.

＊In the Twin-color selectable copy mode, the larger the setting value, the wider the area that is to be reproduced by the color selected as the "black in the original" becomes, while the smaller the setting value, the wider the area that is to be reproduced by the color selected as the "color other than black" becomes. In the Red and Black mode, the larger the setting value, the wider the area to be reproduced in black becomes, while the smaller the setting value, the larger the area to be reproduced in red becomes.

Mode to adjust	[05] code	Subcode	Acceptable value range	Default
Twin color mode with selected colors	05-7641	0/1/2	0 to 255	128
Twin color – Red and black mode ("RED" selected in Twin color selectable mode)	05-7642			

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	High-density area
1	Medium-density area
2	Low-density area

❑ **Caution after the adjustment**

Nothing in particular.

2.16.3 To Adjust the Tint of Specified Colors for Twin-Color or Single-Color Copying

❑ **Explanation**

In twin-color or single-color copying, the tint of the color specified from the control panel can be changed by adjusting the toner amount of the color (Y, M, C or K).

❑ **Procedures**

*The service technician must perform all adjustments.

(1) Select [05 ADJUSTMENT MODE]. Change the values of codes [7644] to [7653] to adjust the value of Y, M, C or K for the tint of the specified color.

(2) After changing the setting value, reboot the equipment, and check the tint of the image printed in twin-color or single-color copying.

* Select the subcode (0 to 3) depending on which toner color (Y, M, C and K) you want to change.
* When the subcode for the specified color (Y, M, C or K) is larger, the toner amount for the adjusted color increases, when the former is smaller, the latter decreases.
* 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. Therefore, carefully perform the adjustment, while checking the copy or print image.
* When all the subcodes are set to "0", the specified color becomes white.
* Adjustments for yellow green, pink, orange and purple are enabled in mono color copying only.

Specified color from the control panel	Color of toner amount to be adjusted	[05] code	Subcode	Acceptable value range	Default
Magenta	Y	7644	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Yellow	Y	7645	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Yellow green	Y	7646	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Cyan	Y	7647	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Pink	Y	7648	0	0 to 255	128
	M		1		

	C		2		
	K		3		
Red	Y	7649	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Orange	Y	7650	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Green	Y	7651	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Blue	Y	7652	0	0 to 255	128
	M		1		
	C		2		
	K		3		
Purple	Y	7653	0	0 to 255	128
	M		1		
	C		2		
	K		3		

2.17 To Adjust the Image Quality Scanned from the DF

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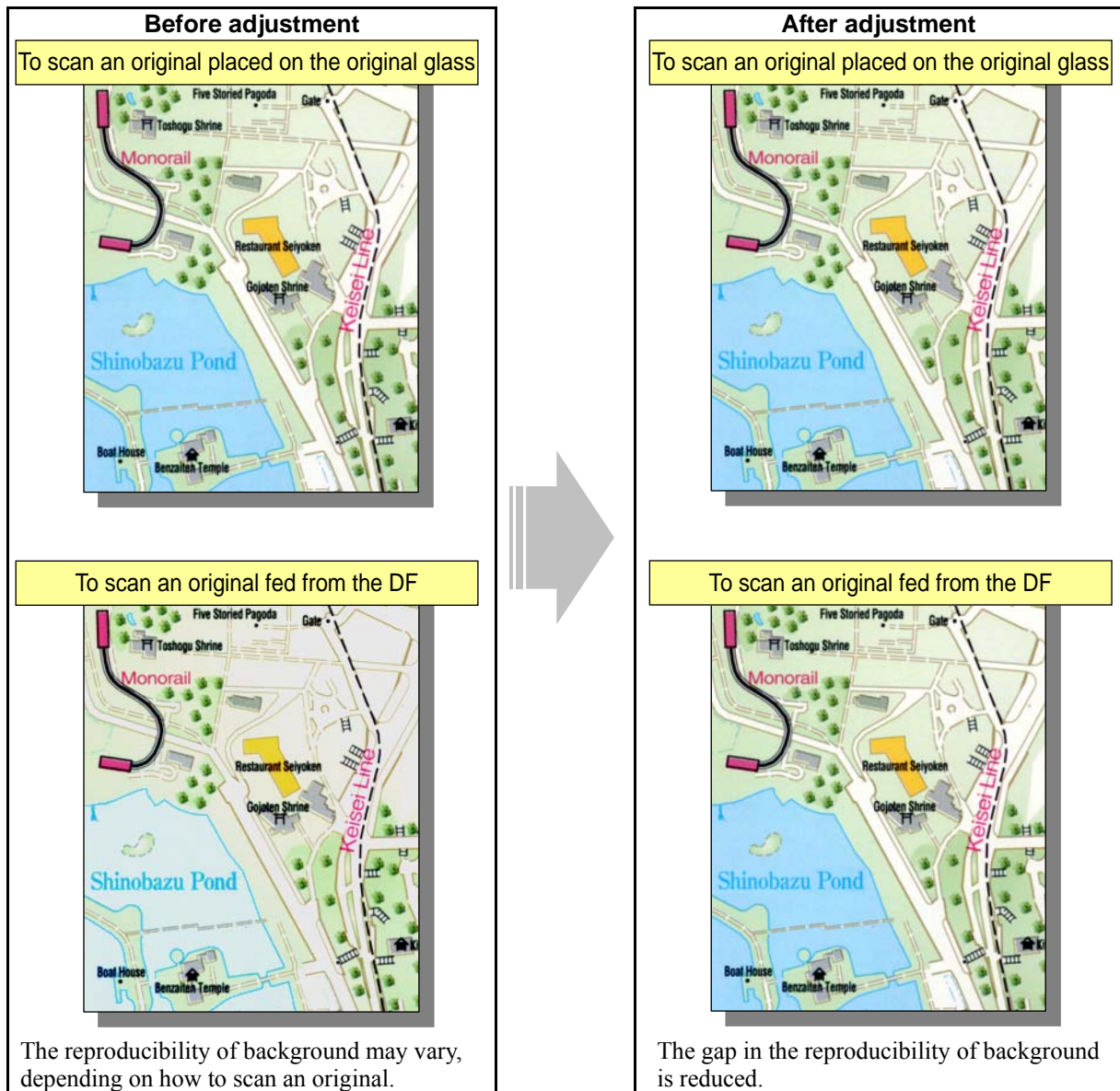
❑ **Explanation**

The reproducibility of the background may vary, depending on the type of original, or whether the scanning is of an original placed on the original glass or one fed from the DF. Adjust the reproducibility of background, while scanning an original fed from the DF, in order to minimize the gap in the reproducibility of the background, using either method of how to scan an original.

*Correctly adjusting the installation heights of the MFP and the DF is a prerequisite to perform this adjustment.
  Therefore, perform all the necessary adjustments. Only if further adjustment is still desired for the reproducibility of
  background, should this adjustment be performed.

❑ Procedures

＊The service technician must perform all adjustments.

■ ▥ ▥ ▨ (1)   Select [05 ADJUSTMENT MODE]. Change the value for the code [3009] or [3011] to adjust the

reproducibility of the background when using the DF.

Color mode	[05] code	Recommended value	Acceptable value range	Default
Common for full color and black for front side for DSDF	05-3009	Set a value larger than 3 to increase the background density.	0 to 4	0
Common for full color and black back side for DSDF	05-3011	Set a value smaller than 2 to decrease the background density.		

＊Set the value in increments of approximately 1, while checking the copy image until the optimum value is

obtained. (When changing the value from the default value for the first time, it is recommended to set

"2.")

＊The table below shows you the correlation between the value and image quality.

Value	Advantage of image quality	Reproductivity of background
0	Default (equivalent to the one obtained when an original placed on the original glass is scanned)	---
1	Lighter background is reproduced than the one obtained when "2" is set.	Light
2	Lighter background is reproduced than the one obtained when the default value is set.	↓
3	Darker background is reproduced than the one obtained when the default value is set.	↓
4	Darker background is reproduced than the one obtained when "3" is set.	Dark

After setting the value, copy and check the image quality.

If further image quality adjustment is necessary, go to the next step.

■ ▥ ▥ ▥ (2) Select [05 ADJUSTMENT MODE]. Change the values for codes [7025] or [7026] to adjust the reproducibility of the background when using the DF.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color for front side for DSDF	ALL	05-7026	Set a value larger than 128 to increase the background density. Set a value smaller than 128 to decrease the background density.	0 to 255	128
Black for front side for DSDF	ALL	05-7025			
Common for full color and black back side for DSDF	ALL	05-7024			

＊Set the value in increments of approximately 20, while checking the copy image until the optimum value is obtained.

* Note that the adjustment results are also reflected to the scanning function.

❑ **Caution after the adjustment**

Correctly adjusting the installation heights of the MFP and the DF is a prerequisite to perform this adjustment. Therefore, perform all the necessary adjustments. Only if further adjustment is still desired for the reproducibility of background, should this adjustment be performed.

2.18 To Program Frequently Used Copy Settings

(To Use Custom Mode)

❑ **Explanation**

Five original modes (Text/Photo, Text, Printed image, Photo and Map) are available for the color modes and four original modes (Text/Photo, Text, Photo and Image smoothing) are available for the black mode by default. However, a new original mode adjusted to be able to satisfy the user's particular requests about image quality can be added as a "custom" mode. One custom mode can be added for each of the color and black modes. For users who frequently use the special type of originals or who are not satisfied with the image quality of the existing original modes, it is recommended to register a set of copy settings that satisfy the user's particular requests as the custom mode. However, "Photo" and "Image smoothing" cannot be selected for the "custom" mode.

* In the User custom mode, one of the original modes set by default is selected as a base (reference) original mode. Adjustments required for the intended purpose must be performed based on the selected mode.

. It is also available to use the custom mode as an independent original mode. This means that the change of the setting values in the custom mode does not affect each default original modes.

❑ **Procedures**

The adjustment procedure differs depending on whether in the black mode or the full color mode the settings in the custom mode are adjusted. Ask the user which mode he or she uses and then refer to the procedure that is more suitable for his or her request.

2.18.1 To Adjust Custom Mode Settings in Black Mode

* All the steps in the adjustment procedure shall be performed by the service technician.

▐ (1) Select [08 SETTING MODE]. Change the value for the code [7034] to enable the functions of the custom mode in the black mode.

Value for 08-7034	Custom mode for black mode
0	Unused
1	Used (Text/Photo base)
2	Used (Text base)

After the setting, perform the adjustment accordingly referring to the corresponding chapters.

❑ **Cautions after the adjustment**

Nothing in particular

2.18.2 To Adjust Custom Mode Settings in Full Color Mode

* All the steps in the adjustment procedure shall be performed by the service technician.

(1) Select [08 SETTING MODE]. Change the value for the code [7614] to enable the functions of the custom mode in the full color mode.

Value for 08-7614	User mode for full color mode
0	Unused
1	Used (Text/Photo base)
2	Used (Text base)
3	Used (Printed Image base)
4	Used (Photo base)
5	Used (Map base)

＊The default adjustment value for the custom mode is preset at the one that reproduces the image quality equivalent to that of Text/Photo in the full color mode at the time of shipment.

After the setting, perform the adjustment accordingly referring to the corresponding chapters.

2.19 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.
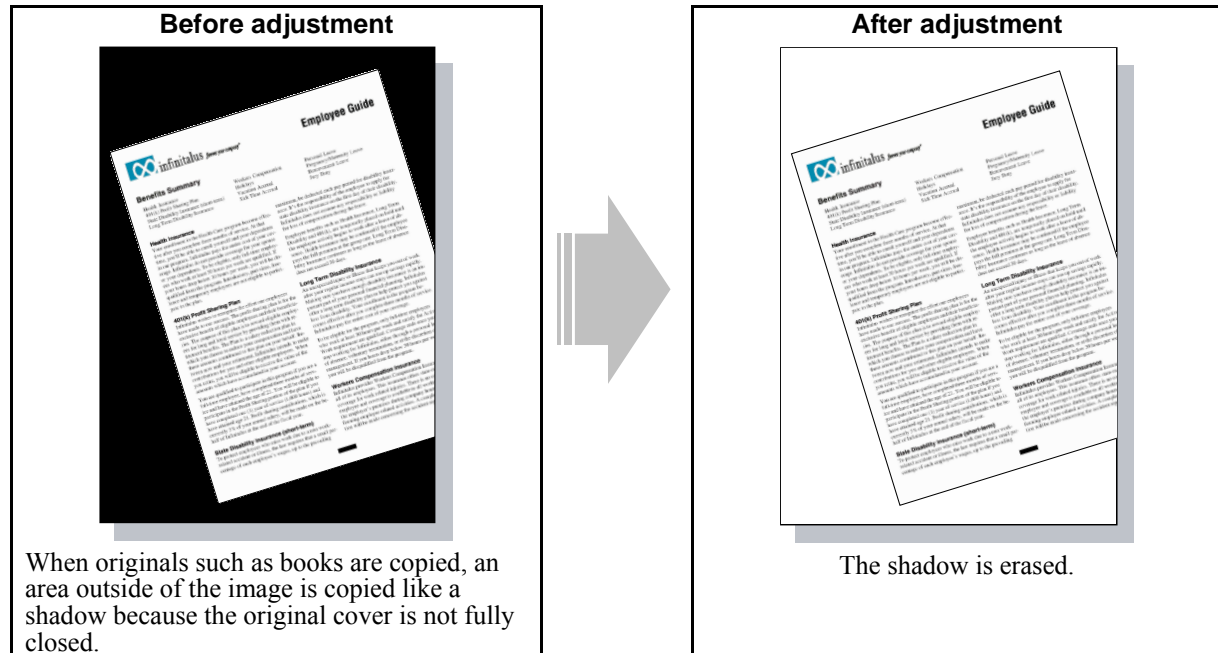
❏ Explanation

When originals such as books are copied, an area outside of the image is copied like a shadow because the original cover is not fully closed. Use the Outside Erase function to avoid copying areas outside of the image.

❏ Procedures

*Both the service technician and the user can use all the steps of this adjustment.

(1) Press [EDIT] on the touch panel and then press [OUTSIDE ERASE].
Change the border between the original and areas not belonging to the original by pressing either [+] or [-] as required.
* When you adjust it to [+] side, the area to be detected as that not belonging to the original is widened.
When you adjust it to [-] side, the area to be detected as that not belonging to the original is narrowed.

<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 opened (The density of areas not belonging to the original is lowered due to outside light.)
*When the original has extremely dark areas (The extremely dark areas are wrongly detected as areas not belonging to the original and thus erased.)
*In case of special originals (e.g. a three-dimensional object, an original with black edges, the edges of an opened book)

❏ Caution after the adjustment

Areas not belonging to the original may not be erased exactly as the user has requested (erased too much or not erased at all) depending on the type of the original. Also the area to be erased may change depending on the orientation of the original. Therefore adjust it carefully while checking the copy image.

2.20 To Avoid Copying Blank Page of Original Scanned with DF

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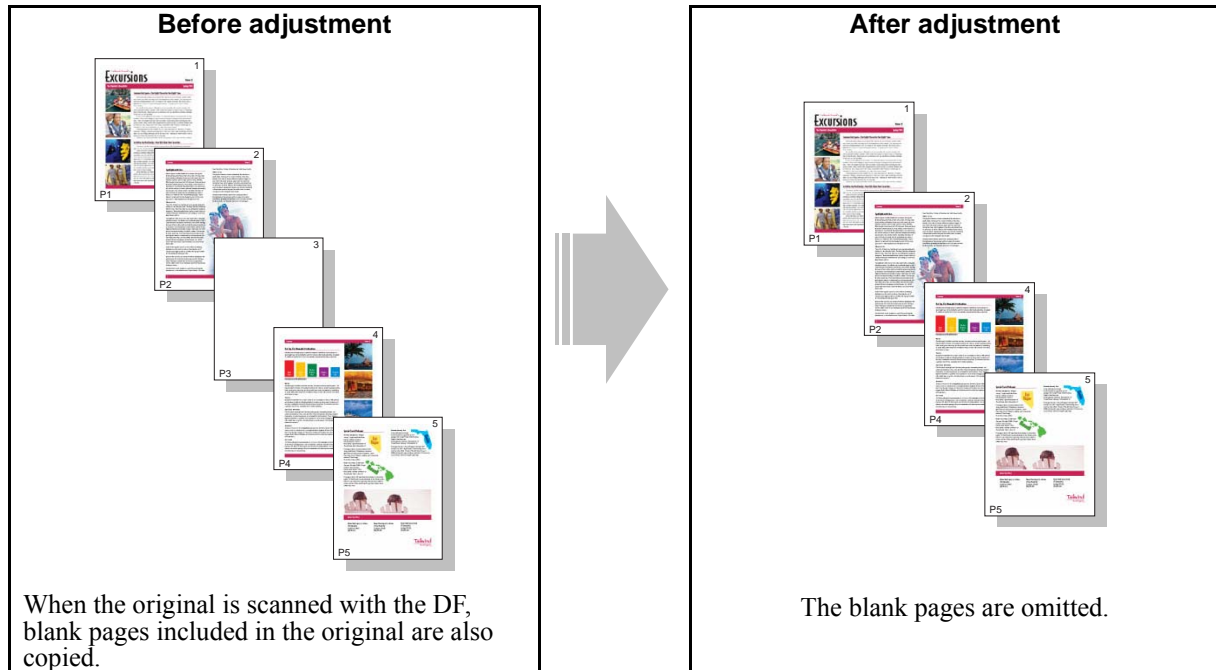
❏ Explanation

When the original is scanned with the DF, blank pages included in the original are also copied. To copy while omitting the blank pages automatically, the Blank Omit Pages function must be set and its threshold for judging if the page is blank or not must be adjusted. However, colored originals with no text or images are not omitted even this adjustment was performed because they cannot be detected as "blank pages" with this function.

* Target originals

- 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 3 letters in 10.5 pt. (an original that is omitted as a blank page with the default setting)

❏ Procedures

* You can start with any of the steps. However, it is recommended to perform the steps in order as listed below.

* Both the service technician and the user can use step (1) and (2).

* Only the service technician can use step (3).

(1) Press [EDIT] on the touch panel and then press [OMIT BLANK PAGE].

Then press [OK] to enable the Omit Blank Page function.

After the setting, copy and check the image.

If there is any page other than colored pages that cannot be omitted, the service technician must perform the procedure below.

■ ▥ ▥ ▨ (2) Press [USER FUNCTIONS] on the Control Panel. Then press [+] or [-] of [OMIT BLANK PAGE ADJUSTMENT].

■ ▥ ▥ ▨   (3) Select [05 ADJUSTMENT MODE]. Change the value for the code [7618] to adjust the threshold for judging the original as blank pages.

• The larger the setting value is, the more the original tends to be judged as a blank page.

[05] code	Recommended value	Acceptable range value	Default
05-7618	Set a value larger than 128.	0~255	128
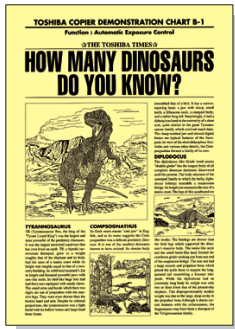
    * Set the value in increments of approximately 15 until the optimum value is obtained, while checking if proper originals are judged as a blank page.

❑ **Caution after the adjustment**

• When the threshold for judging blank pages is changed, the same threshold for in the network scanning function is also changed.

• Originals with a small portion of small letters may be judged as a blank page. Therefore adjust the value carefully while checking the copy image.

2.21 To Obtain Image in Even Density Level

<table>
<tr>
<td>Original</td>
<td colspan="2">After adjustment</td>
</tr>
<tr>
<td>
When the density is adjusted automatically, the density on the entire copy image becomes uneven.</td>
<td>
When the density is adjusted manually, the density of the entire copy image is even.</td>
<td>Feeding direction</td>
</tr>
<tr>
<td></td>
<td colspan="2">Before adjustment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feeding direction</td>
</tr>
</table>

❑ **Explanation**

When an original with a background is copied in the automatic density adjustment mode, unevenness may occur on the copied background. Perform this function to avoid density unevenness.

❑ **Procedures**

* Both the service technicians and the users can use steps (1) and (3).
* Only the service technicians can use step (2).

(1)   Press [BASIC] on the control panel and press [◖] to lower the copy density manually.

After the adjustment is complete, make a copy and confirm the image quality. If uneven image density still persists, have the service technicians perform the following procedure.

■ ▨ (2) Select [05 ADJUSTMENT MODE]. Change the setting values for codes [7237], [7286] and [7287] to set the range correction to be fixed.

Color mode	Original mode	[05]code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-7286	0	0, 1	1
	Text	05-7287			
	User custom	05-7237			

* Description of the setting value

Value	Range correction
0	Fixed
1	Flexible

After the adjustment is complete, make a copy and confirm the image quality.

❑ **Caution after the adjustment**

Nothing in particular

2.22 To Improve Reproducibility of Red Seal Color

Before adjustment	After adjustment
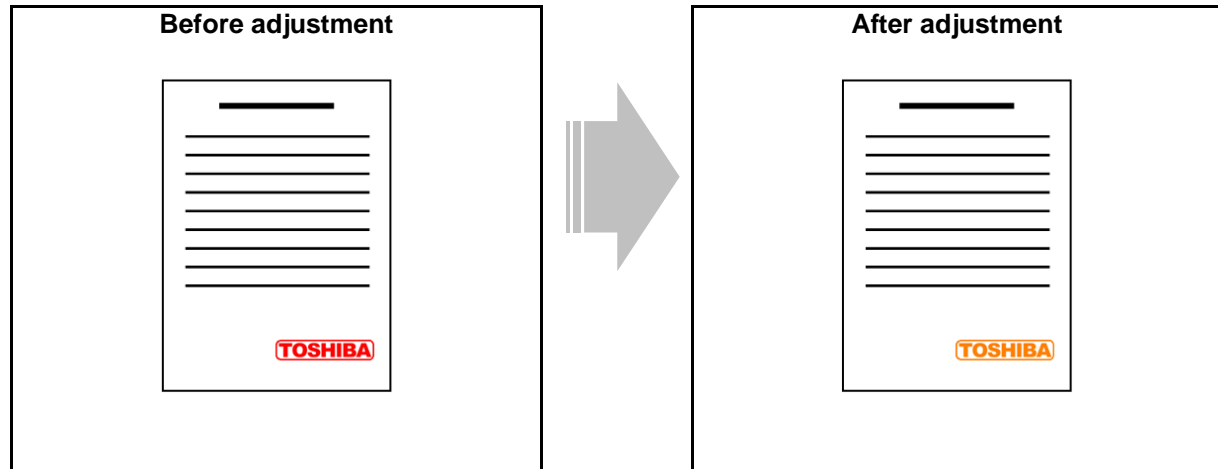
❑ **Explanation**

When an original containing a red seal is copied, users can select the Red Seal Color as the original mode. Use this mode if the reproducibility of red seal color copied under the default copy settings is insufficient.

❑ **Procedures**

   (1) Select [08 SETTING MODE]. Change the value for code [7610] to "1".

  (2) Press [BASIC] on the control panel in the normal mode. Select "RED SEAL COLOR" among the original modes.

After selecting "RED SEAL COLOR", make a copy and check its image quality.

2.23 To Reduce Streaks at Scanning with DF

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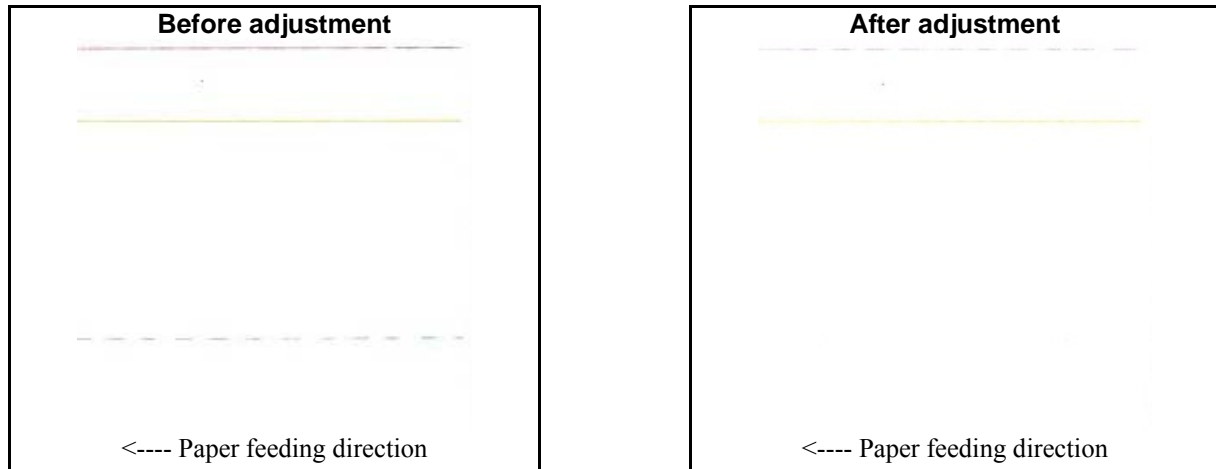
❑ Explanation

If streaks occur in copying with the DF, they can be solved by cleaning the original glass in the DF. Moreover, they can be made inconspicuous by changing the setting of the following self-diagnostic code.

❑ Procedures

* The procedure of this adjustment differs between "When adjusting the image quality of the Black mode" and "When adjusting the image quality of the Full color mode".

Select the adjustment procedure corresponding to the user's requirement.

2.23.1 When adjusting the image quality of the Black mode

* Both the service technician and the user can use step (1).

* Only the service technician can use step (2).

(1) Press [Image] and then [ADF Noise Reduction] on the touch panel.

Change the setting value of the noise reduction level.

Setting value	Description
None	The noise reduction function is disabled.
Low	The noise reduction level is low.
Middle	The noise reduction level is medium.
High	The noise reduction level is high.

After changing the setting value, perform printing and check its image quality.

If an additional image quality adjustment is necessary, perform the following steps.

■ ▥ (2) Enter [05 ADJUSTMENT MODE] and change the setting values for the codes from [7150] to [7152] to adjust the noise reduction level.

Color mode	Original mode	[05] Code	Recommended value	Acceptable value range	Default
Black	Text/Photo	7151	Set a value smaller than 100.	0 to 200	100
	Text	7152			
	User custom	7150			

* The smaller the value is, the larger the noise reduction level becomes. The larger the value is, the smaller the noise reduction level becomes.

* When "0" is set for the setting value, this function becomes disabled.

After changing the setting value, perform printing and check its image quality.

❑ **Caution after the adjustment**

Nothing in particular

2.23.2 When adjusting the image quality of the Full color mode

* Both the service technician and the user can use all steps of this adjustment.

    <Notes>

・This adjustment is available when the Text/Photo mode is selected for the original mode for full color copying.

・Normally, the use with the factory default setting (Disabled) is recommended since the adjustment may decrease the reproducibility of fine characters.

■ ▥ ▥ ▨ (1) Press [Image] and then [ADF Noise Reduction] on the touch panel.

Change the setting value of the noise reduction level.

Setting value	Description
None	The noise reduction function is disabled.
Low	The noise reduction level is low.
Middle	The noise reduction level is medium.
High	The noise reduction level is high.

After changing the setting value, perform printing and check its image quality.

❑ **Caution after the adjustment**

Nothing in particular

2.24 To Change Gray Tone

Before adjustment	After adjustment
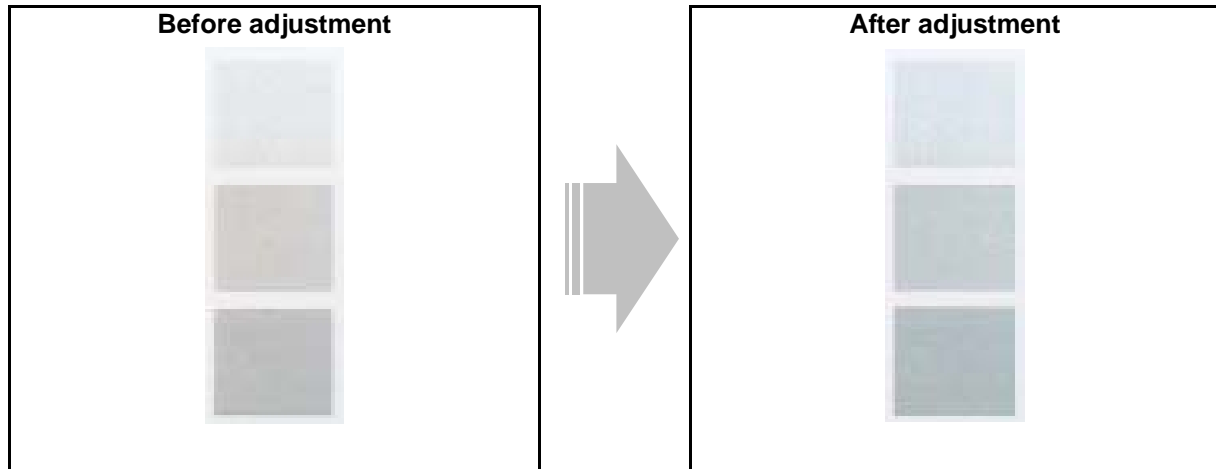
❑ Explanation

The gray tone can be changed when an original including gray color is copied.

❑ Procedures

The service technician must perform the adjustments.

(1) Select [08 SETTING MODE] and change the setting value of the code [7614] to enable the User custom mode for the full color.

For details, refer to "2.18.2 To Adjust Custom Mode Settings in Full Color Mode".

Base mode: [Text/Photo] (Setting value: 1)

(2) Select [05 ADJUSTMENT MODE] and change the setting value for the code [7690].

[05] Code	Recommended value	Acceptable value range	Default	Remarks
05-7690	3	0 to 4	0	0: Default (Gray reproduction level is equivalent to the Text/photo mode.) 1: Gray reproduction level is equivalent to the Photo mode. 3: The gray tone becomes a more bluish one.

❑ Caution after the adjustment

Nothing in particular

❑ Remarks

The setting content of the values "2" and "4" is the same as that for the default ("0").

2.25 The Color Reproduction of the Back Side Differs from that for the Front Side at DSDF Scanning

❑ **Explanation**

When the color reproduction between the front and back sides at the DSDF scanning differs, the color reproduction of the back side can be nearly matched with that for the front side.

❑ **Procedures**

The service technician must perform all adjustments.

(1) Perform automatic calibration. For details, refer to (1) in "3.1 To Maintain a Steady Color Balance".

(2) Select [05 ADJUSTMENT MODE]. Enter [50] and press [TEST PRINT] to print out an adjustment pattern.

(3) Select [08 SETTING MODE]. Perform the code [7021] and scan the front and back sides of the pattern printed in step (2), in accordance with the message displayed on the panel.

First, scan the front side. (Place the printed side up. Set the pattern on the DSDF while its side with 2 black quadrilaterals comes to the leading edge and press [OK].)

Next, scan the back side. (Place the printed side down. Set the pattern on the DSDF while its side with 2 black quadrilaterals comes to the leading edge and press [OK].)

(4) When an error occurs, check the following items.
  - Check that the print side is set properly.
  - Check that the 2 black quadrilaterals are set to the leading edge.
  - Check that the guides in the DSDF match the paper size.
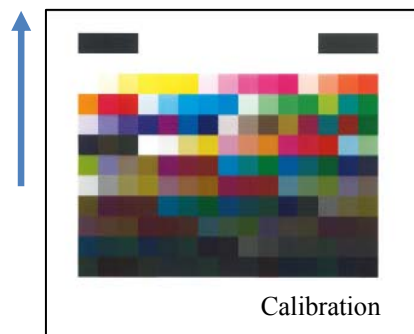
Calibration

❑ **Caution after the adjustment**

When colored paper is used, calibration may not be performed properly.

This adjustment is applied in common to copying, scanning and faxing.

❑ **Remarks**

If you want to return the color reproduction of the back side at the DSDF scanning to the original one after the adjustment has been performed with this procedure, carry out the code [7002] in [08 SETTING MODE].

2.26 To Improve the Gradation Reproduction of Dark Portions in Photos

Before adjustment	After adjustment
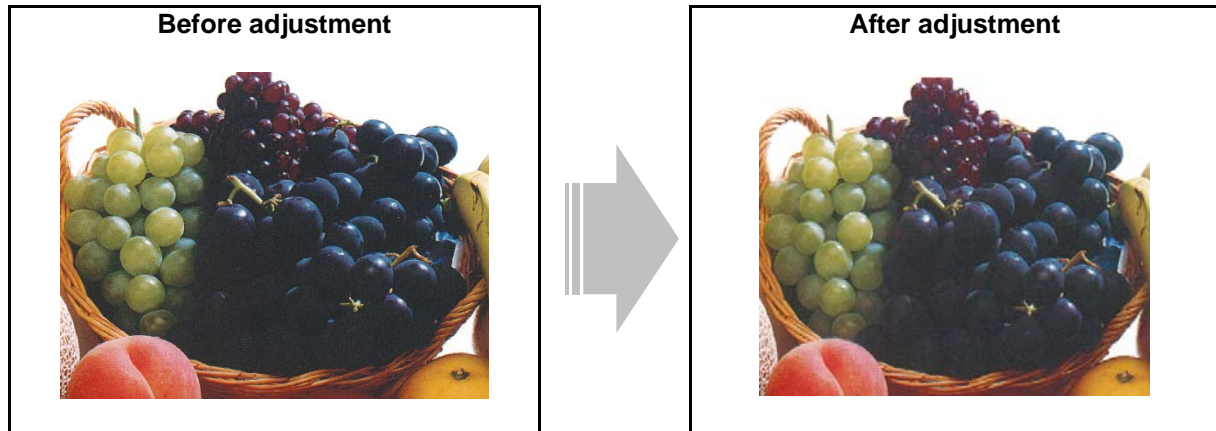
❑ **Explanation**

To improve the gradation reproduction of images including dark portions, select the Printed image original mode or use the color balance.

If you want to improve the gradation reproduction of dark portions in photos only, but not to affect the entire image, perform the adjustment by means of the following steps.

❑ **Procedures**

The service technician must perform all adjustments.

(1)Select [05 ADJUSTMENT MODE] and change the setting value for the code corresponding to the original mode to be used.

Color mode	Original mode	[05] Code	Recommended value	Acceptable value range	Default
Full color / Auto color	Text/Photo	05-7811	Set a value smaller than 4.	0 to 8	0
	Text	05-7812			
	User custom	05-7816	Base original mode is Text/Photo, Text: Set a value smaller than 4. Base original mode is Printed image, Photo, Map: Set a value smaller than 3.		
	Red seal color	05-7817	Set a value smaller than 4.		

* Set the value in increments of 1, while checking the copy image until the optimum value is obtained.

* For the User custom mode, refer to "2.18 To Program Frequently Used Copy Settings (To Use Custom Mode)".

* The setting content of the default value "0" is the same as that for the setting value of each original mode as below.

Original mode	Setting value	Original mode	Setting value
Text/Photo	4	Printed image	3
Text		Photo	
Red seal color		Map	

❑ Caution after the adjustment

This adjustment will affect to that for set at (3) in "2.11.1 To Adjust the Copy Image Quality of a Black Logo". When performing this adjustment, pay attention to the balance against the reproduction level of the black color logos, too.

Restrictions on Use of Printer Functions

When this MFP is being used as a printer, printer functions available differ depending on the color or resolution settings. See the table below for the relation between color or resolution settings and printer functions available.

Printer functions	600dpi Auto / Color	600dpi Twin Color	600dpi Black and White	1200dpi (PS3 only) Auto / Color	1200dpi (PS3 only) Twin Color	1200dpi (PS3 only) Black and White
Image Quality Type						
General	✓			✓		
Photograph	✓					
Presentation	✓					
Line Art	✓			✓		
Advanced	✓ *1			✓		
Image Quality – Basic						
Halftone	✓	✓	✓	✓		✓
Use Black for All text	✓	✓	✓	✓		✓
Pure Black / Pure Gray	✓			✓		
Black Over Print	✓ *2			✓		
PostScript Over Print	✓ *2			✓ *2		
Distinguish Thin Lines	✓	✓	✓	✓		✓
Image Quality – Color Balance / Image Attribute						
Color Balance	✓	✓	✓ *3	✓		✓ *3
Contrast	✓	✓	✓	✓		✓
Brightness	✓	✓	✓	✓		✓
Background Adjustment	✓	✓	✓	✓		✓
Saturation	✓			✓		
Use Sharpness Filter	✓	✓	✓			
Auto Trapping	✓	✓				
Others						
Toner Save	✓	✓	✓	✓		✓
Toner Limit	✓	✓	✓	✓		✓
Calibration			✓	✓		✓

*1 Applicable only to PS3 and XPS printer drivers

*2 Applicable only to a PS3 printer driver

*3 Applicable only to black (K)

  <Hint>   The resolution level 1200 dpi is suitable for cases such as:
- When printing thin lines (e.g. in a graph) clearly
  > 3.16 To Clearly Print Thin Lines/Double Lines

- When suppressing jagged diagonal lines
  > 3.14 To Clearly Print Light-Colored Thin Lines or Text

    * 600 dpi is recommended for images such as photographs or design drawings that require emphasis on colors or gradations.

3.1 To Maintain a Steady Color Balance
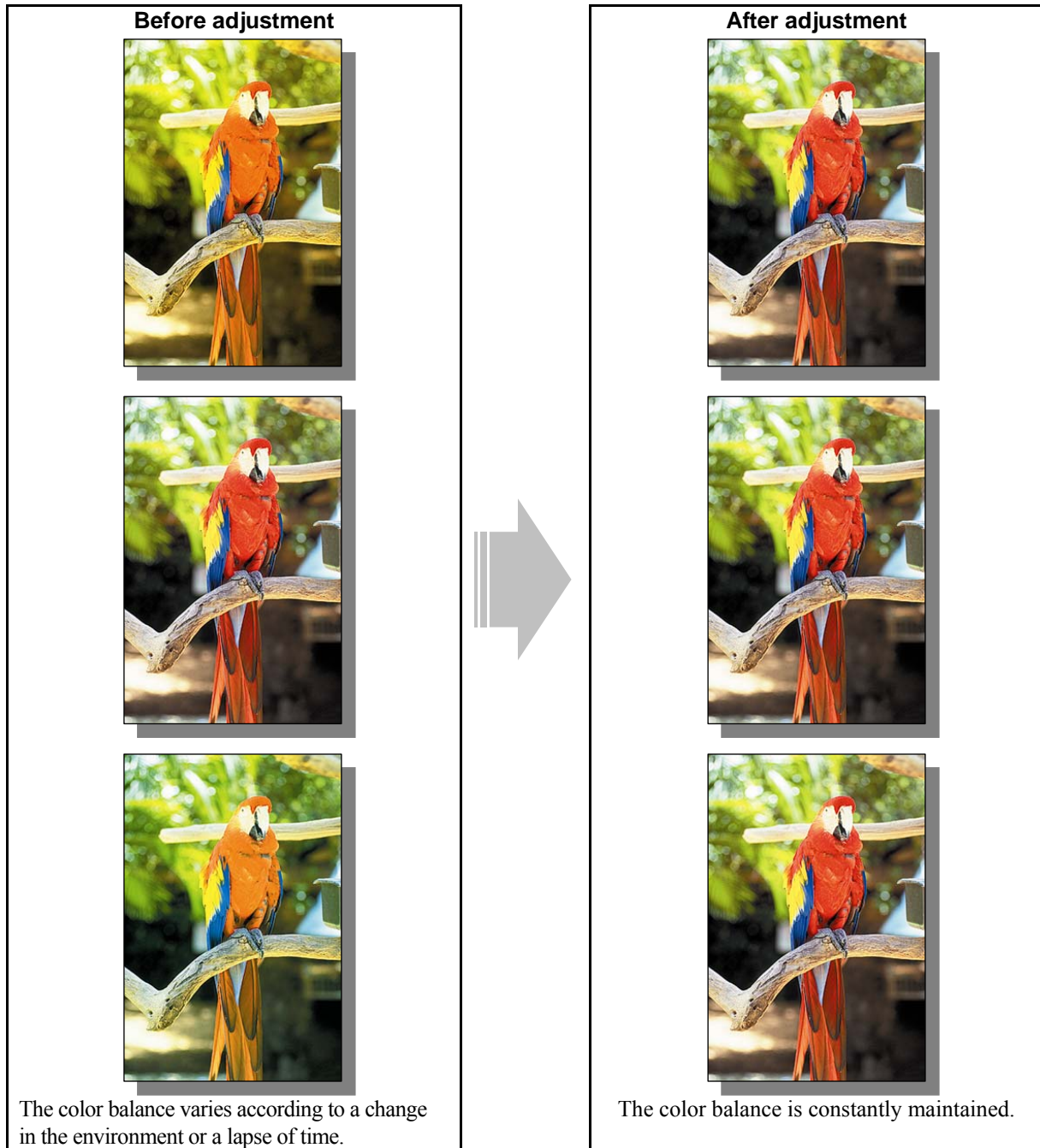
Before adjustment	After adjustment
The color balance varies according to a change in the environment or a lapse of time.	The color balance is constantly maintained.

❑ Explanation

The color balance varies according to a change in the environment, replacement of the consumables and so forth. Periodically adjust the color reproducibility (automatic calibration), in order to constantly maintain a steady color balance on the printouts.

Automatic calibration is the basic adjustment to accurately reproduce colors on the printouts. When you would like to accurately reproduce the desired hue or when you have replaced the consumables and changed the operating conditions, perform automatic calibration to ensure the color reproducibility.

❏ **Procedures**

＊ Perform the adjustment in accordance with the procedures below.
* Both the service technician and the user can use all steps of this adjustment.

| PCL6 | PS3 | XPS | Mac |

(1) Perform automatic calibration to correct variations in image density.

＊ [ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other words, an administrator is authorized to operate automatic calibration. But the [USER] option can also be selected to allow the user to operate it. Refer to the MFP Management Guide for further information regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

＊ Perform each adjustment for 600dpi and 1200dpi.

＊ Use steps (a) through (i) to perform the automatic calibration.

   (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.
   (b) Press [ADMIN].
   (c) Enter an administrator password of 6 to 64 digits. Press [OK].
   (d) Press [GENERAL].
   (e) Press [CALIBRATION].
   (f) Press [600dpi PRINT] or [1200dpi PRINT].
   (g) Press [CALIBRATION] to print out the test chart.
   (h) Place the printed test chart on the original glass.
   (i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

3.2 To Maintain a Steady Color Balance on Thick Paper or Special Paper
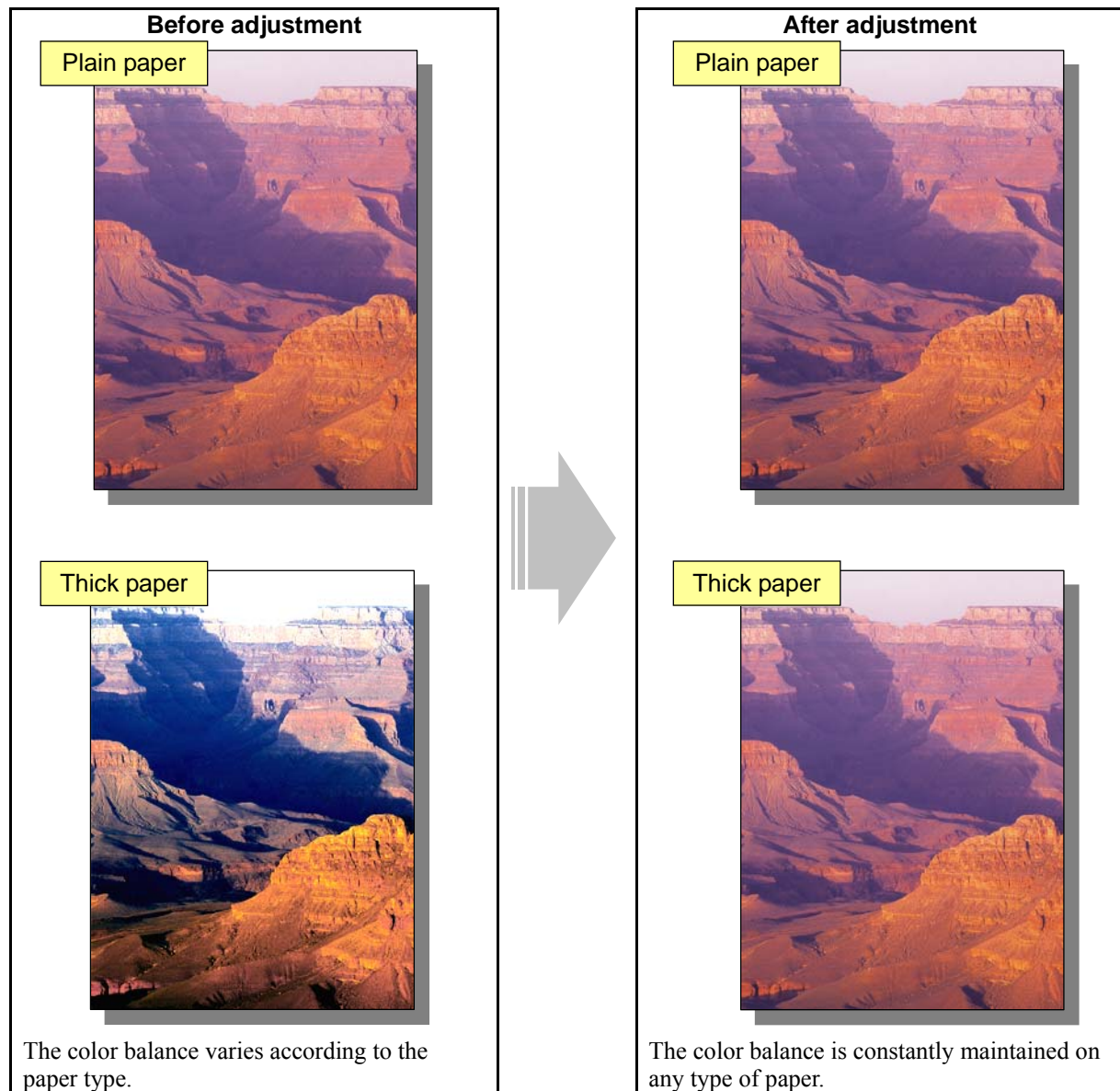
Before adjustment	**After adjustment**
Plain paper Thick paper The color balance varies according to the paper type.	Plain paper Thick paper The color balance is constantly maintained on any type of paper.

❑ Explanation

The color balance varies according to a change in the environment, replacement of the consumables and so forth. The amount of the change varies significantly, according to the paper type. Periodically adjust the color reproducibility (automatic calibration) corresponding to the paper type, in order to constantly maintain a steady color balance on any type of paper.

Automatic calibration is the basic adjustment to accurately reproduce colors on the printouts. When you would like to accurately reproduce the desired hue or when you have replaced the consumables and changed the operating conditions, perform automatic calibration to ensure the color reproducibility.

❑ Procedures

＊Perform the adjustment in accordance with the procedures below.

＊Only the service technician must use procedure (1).

＊Both the service technician and the user can use procedure (2).

PCL6 | PS3 | XPS | Mac

■ |▊| (1)   Select [08 SETTING MODE]. Set "1" for code [9059].

• During automatic calibration, the paper type can be selected and image quality control will be
automatically performed.

Value for 08-9059	Operation switching at calibration (displaying of a paper selection menu during automatic calibration)
0	No paper selecting buttons display
1	Paper selecting buttons displayed.(For both Copy and Printer)

After setting the value, use the next procedure.

PCL6 | PS3 | Mac

■ |▊| (2)   Perform automatic calibration to correct variations in image density.

＊[ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other
words, an administrator is authorized to operate the automatic calibration. But the [USER] option can also
be selected to allow the user to operate it. Refer to the MFP Management Guide for further information
regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

＊Perform each adjustment for 600dpi and 1200dpi.

＊Use steps (a) through (k) to perform the automatic calibration.

(a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

(b) Press [ADMIN].

(c) Enter an administrator password of 6 to 64 digits. Press [OK].

(d) Press [GENERAL].

(e) Press [CALIBRATION].

(f) Press [600dpi PRINT] or [1200dpi PRINT].

(g) Press the button for the paper type to be corrected.
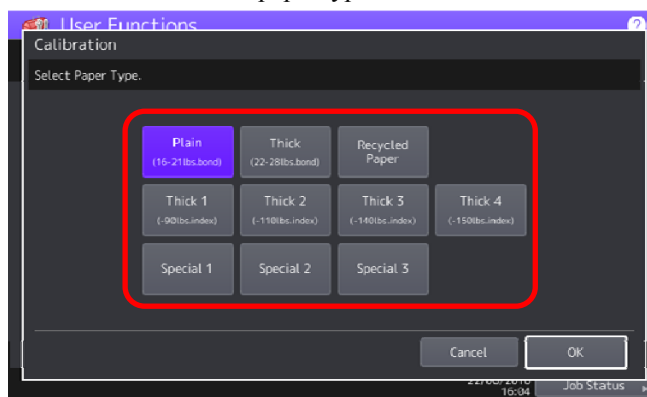
(h) Press [DEFAULT] to set the default calibration setting, or [CALIBRATION] to adjust the calibration
setting.

* When you press [DEFAULT], the system maintains the default calibration setting for the selected job
type and returns to the previous screen.

* When you press [CALIBRATION], a chart is printed out and the calibration guide illustration is
displayed on the touch panel. Proceed to the next step.

(i) Place the paper type (A4/LT size) selected in (g) on the bypass tray.

(j) Place the printed chart face down on the original glass aligning it with its left rear corner, so that two black rectangular marks are on the left side.

(k) Press the [START] button on the control panel.

* The calibration begins. Do not operate the equipment until the message "Scanning and calibrating" disappears.

* If the chart is not properly placed, the message "Set chart correctly" is displayed on the touch panel. In this case, return to step (j) and realign the chart.

3.3 To Obtain the Desired Color Balance

Before adjustment	After adjustment
The natural color balance is obtained.	The desired color balance is obtained. (Ex. Yellowness is enhanced.)
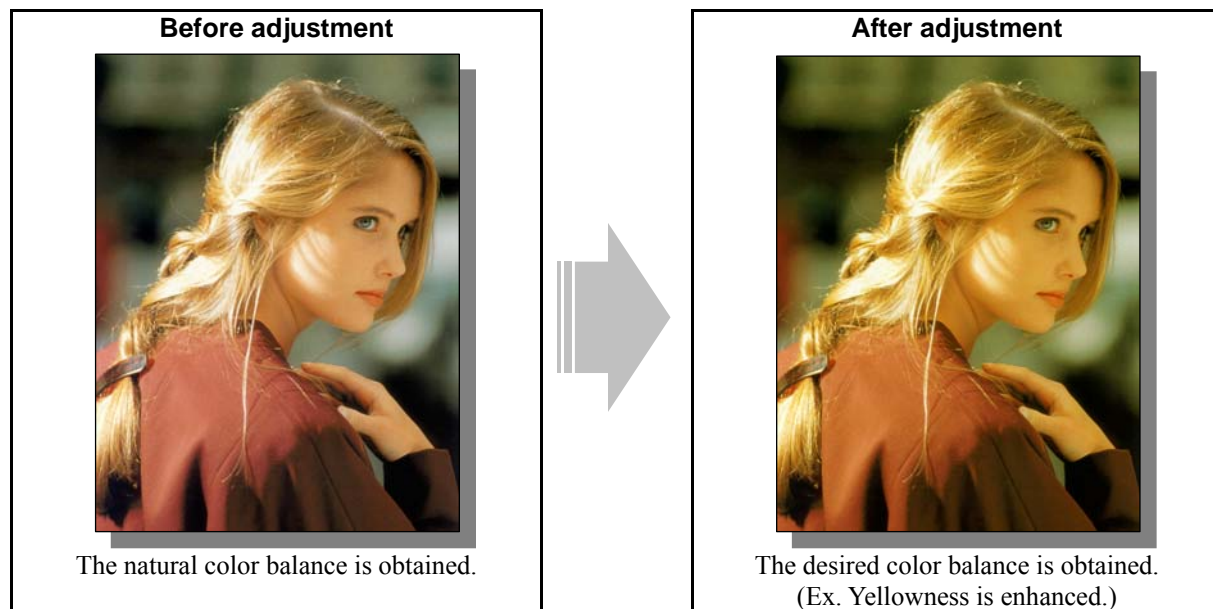
❑ **Explanation**

If you would like to change the color balance or darkness of the printouts and reproducibility of halftones in accordance with a type of original or the user's requirements, change the "Image Quality Type" option on the printer driver or adjust the color balance.

❑ **Procedures**

＊Perform the adjustment in accordance with the procedures below.

＊Both the service technician and the user can use procedures (1) and (2).

＊Only the service technician must use procedure (3).

▉▉ (1)   Change the "Image Quality Type" option on the printer driver.

For Windows

`PCL6`   `PS3`   `XPS`   * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Change the "Image Quality Type" option in the "Image Quality" tab.
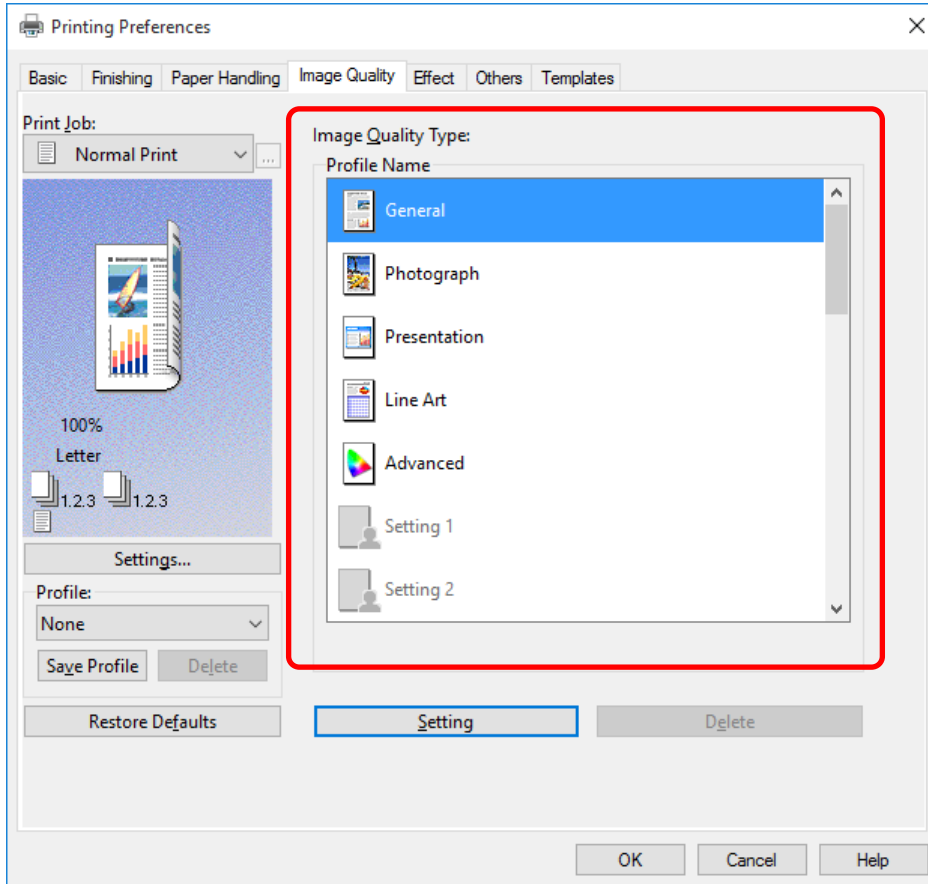
For Macintosh

Mac   * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Color Settings 1" - "Image Type" option.

* This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed in PostScript (PS3, XPS and Macintosh). It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed using the C, M, Y and K toners. Unmark the "Use PostScript Passthrough" checkbox in the "PostScript Setting" options in the "Others" tab. The "Image Quality Type" option will be effective, if printing on Windows (PS3) is performed (but not on Macintosh) or if a file created on the above applications is printed. However, the color balance may be changed, and also the image quality may be diminished, depending on the type of file.

＊The Image Quality Type options feature the following:

• General:　　　　　　　　"General" is the best-rounded option to offer fine printouts of any type of original, including text, photographs and graphics. It is suitable for printing using word-processing and spreadsheet software. If "General" is selected, "Smooth," which is intended to improve the reproducibility of gradations, will be applied to graphics and images, while "Detail," which is intended to improve the resolving power, will be applied to text, from among the "Halftone" options (screen).

• Photograph:　　　　　　"Photograph" is intended to improve the reproducibility of halftones, such as photos and gradational images. This provides the color balance closely matching the one on the monitor with sRGB selected as a color space. If "Photograph" is selected, "Smooth," which is intended to improve the reproducibility of gradations, will be applied to graphics and images, while "Detail," which is intended to improve the resolving power, will be applied to text, from among the "Halftone" options.

• Presentation:　　　　　　"Presentation" is intended to improve to the reproducibility of vivid colors. It is suitable for printing presentation materials and graphics, which require sharp-contrast images. The color balance this option provides does not match the one on the monitor, because priority is given to printing in highly vivid colors. If "Presentation" is selected, "Smooth," which is intended to improve the reproducibility of gradations, will be applied to graphics and images, while "Detail," which is intended to improve the resolving power, will be applied to text, " from among the "Halftone" options.

• Line Art:　　　　　　　"Line Art" is intended to reproduce thin lines clearly without jaggies visible on the printout. It is suitable for printing out line drawings. If "Line Art" is selected, "Detail", which is intended to print halftones in detail (with the high frequency), will be applied to graphics, images and text, from among the "Halftone" options. The color reproduction this option provides is the same as the one the "General" option does. However, since the amount of the black toner reproduced by 4 colors has been increased, this is also suitable for images consisting of thin lines such as photographs or barcodes.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

(2)   Change the "Color Balance" option, the "Brightness" or "Saturation" option on the printer driver.

For Windows

| PCL6 | PS3 | XPS | * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press [Image Type Quality] in the "Image Quality" tab.
Change the option in the "Color Balance" or "Image Attribute" tab.

＊Initially, change the value by 4 steps, while checking the printouts until the optimum value is obtained.

• "Color Balance" tab: Change the "All Colors" or "Each Color" option
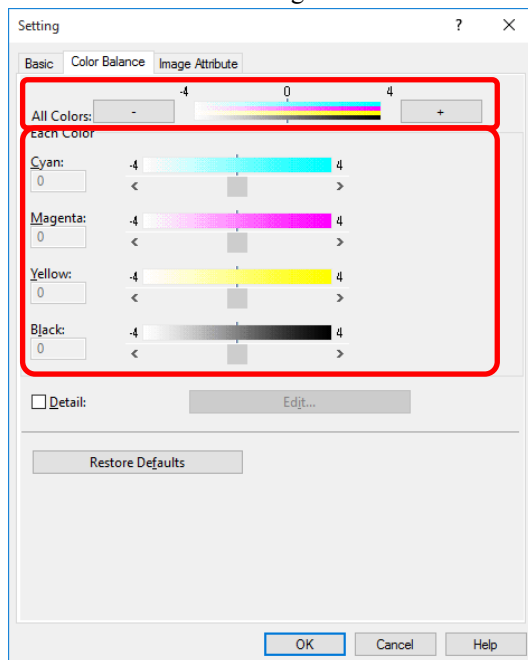
• "Image Attribute" tab: Change the "Brightness" or "Saturation" option.
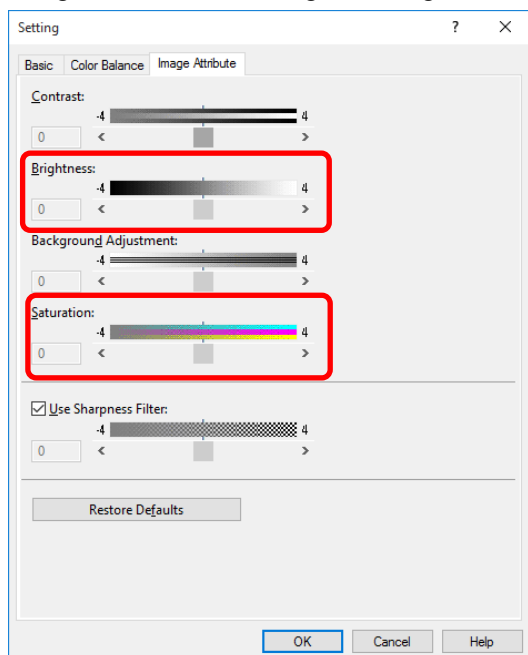
For Macintosh

Mac　* This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Color Settings 2" - "Color Balance" option, the "Brightness" or "Saturation" option.

＊Initially, change the value by 4 steps, while checking the printouts until the optimum value is obtained.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure.

PCL6 PS3 XPS Mac   * This adjustment will have an effect only on Auto or Color mode printing.

(3) Select [05 ADJUSTMENT MODE]. Change the values for codes [8042 to 8065] or [8268 to 8275] to adjust the color density.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image Quality Type = General, Halftone = Auto
   > Text area, Graphic and image area
      Change the values of "Smooth" for Y: 05-8058, M: 05-8059, C: 05-0860 and K: 05-8061.

• When printing on Macintosh is performed with the following option selected: Image Type = Photograph, Halftone = Smooth
   > Change the values for Y: 05-8050, M: 05-8051, C: 05-8052 and K: 05-8053.
   ＊Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL5c	Smooth	05-8058	0/1/2	Set a value larger than 128	0 to 255	128
		Detail	05-8062	0/1/2			
	PS3 (600dpi)	Smooth	05-8050	0/1/2			
		Detail	05-8054	0/1/2			
	PS3 (1200dpi)	Smooth	05-8268	0/1/2			
		Detail	05-8272	0/1/2			
	XPS	Smooth	05-8042	0/1/2			
		Detail	05-8046	0/1/2			
M (Magenta)	PCL5c	Smooth	05-8059	0/1/2			
		Detail	05-8063	0/1/2			
	PS3 (600dpi)	Smooth	05-8051	0/1/2			
		Detail	05-8055	0/1/2			
	PS3 (1200dpi)	Smooth	05-8269	0/1/2			
		Detail	05-8273	0/1/2			
	XPS	Smooth	05-8043	0/1/2			
		Detail	05-8047	0/1/2			
C (Cyan)	PCL5c	Smooth	05-8060	0/1/2			
		Detail	05-8064	0/1/2			
	PS3 (600dpi)	Smooth	05-8052	0/1/2			
		Detail	05-8056	0/1/2			
	PS3 (1200dpi)	Smooth	05-8270	0/1/2			
		Detail	05-8274	0/1/2			
	XPS	Smooth	05-8044	0/1/2			
		Detail	05-8048	0/1/2			
K (Black)	PCL5c	Smooth	05-8061	0/1/2			
		Detail	05-8065	0/1/2			
	PS3 (600dpi)	Smooth	05-8053	0/1/2			
		Detail	05-8057	0/1/2			
	PS3 (1200dpi)	Smooth	05-8271	0/1/2			
		Detail	05-8275	0/1/2			
	XPS	Smooth	05-8045	0/1/2			
		Detail	05-8049	0/1/2			

＊Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

* "Halftone" 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 details (with the high frequency).

The halftone option to be applied in printing can be selected from among the "Halftone" options on the printer driver (Windows) or in the print dialog box (Macintosh).

"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described in the table below.

| Apply to | "Color" and "Image Quality Type" options | | | | Black and White | Twin Color |
| | Auto/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

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note> • This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Smooth is changed, it will be applied to printing performed with PCL6 and Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ **Precautions after the completion of the adjustment**

Nothing in particular.

3.4 To Closely Match the Color Balance on the Monitor

As viewed on the monitor

Before adjustment

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

After adjustment

The color balance of the printout is closely matched with the one on the monitor
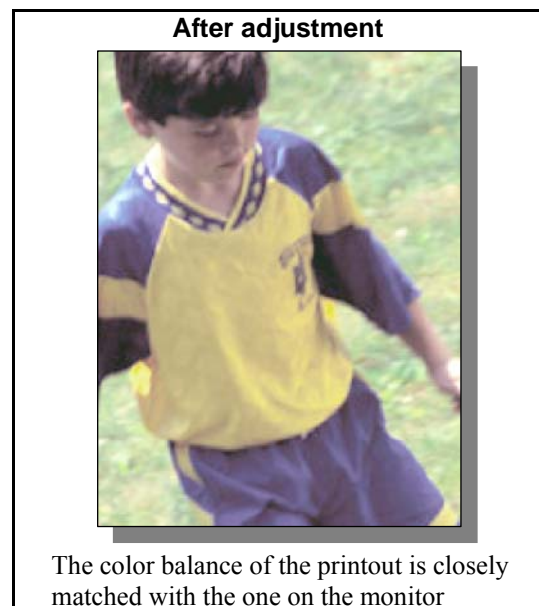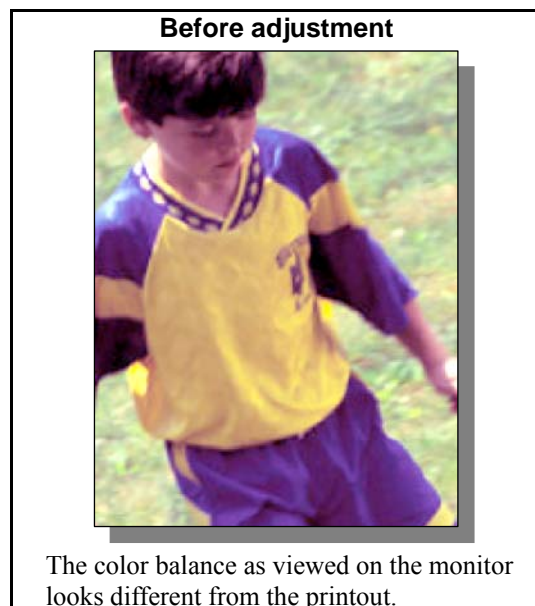
❏ **Explanation**

The color balance on the printouts is initially programmed to provide the maximum color saturation within the range of colors reproducible in printing. In general, colors, which can be reproduced, vary, depending on whether they are reproduced on the printout or on the monitor (or depending on whether they are reproduced in "ink" or with the "light"). Consequently, the color balance on the printout cannot be perfectly matched with the one on the monitor. Change the "Image Quality Type" option, in order to closely match the color balance on the printout with the one on the monitor, at a user's request.

* This adjustment will be effective in closely matching the color balance on the printout with the one on the monitor, if the sRGB is selected as a color space. Therefore, remember that it may not be matched with the color balance on the monitor, which does not support sRGB or if a color space other than sRGB is selected. On commercially available monitors, sRGB is not selected as a color space by default.

❏ Procedures

＊Both the service technician and the user can perform all adjustments.

▐ ▌(1) Select "Photograph" from among the "Image Quality Type" options.

＊This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed in PostScript (PS3, XPS and Macintosh). It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed using the C, M, Y and K toners. Unmark the "Use PostScript Passthrough" checkbox in the "PostScript Setting" options in the "Others" tab. The "Image Quality Type" option will be effective, if printing on Windows (PS3) is performed (but not on Macintosh) or if a file created on the above applications is printed. However, the color balance may be changed, and also the image quality may be diminished, depending on the type of file.

For Windows

PCL6   PS3   XPS   * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Select "Photograph" from among the "Image Quality Type" options.
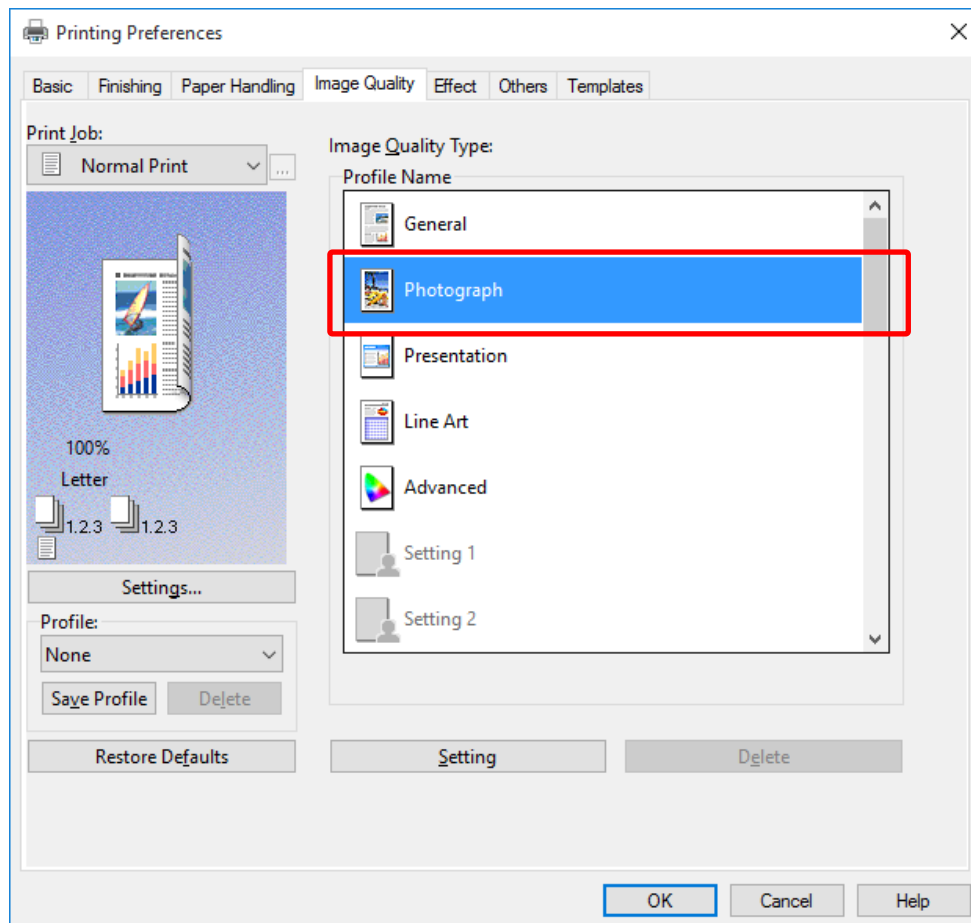
<u>**For Macintosh**</u>

Mac * This adjustment will have an effect only on full-color printing

Open the print dialog box. Select "Photograph" from among the "Color Settings 1" - "Image Type" options.
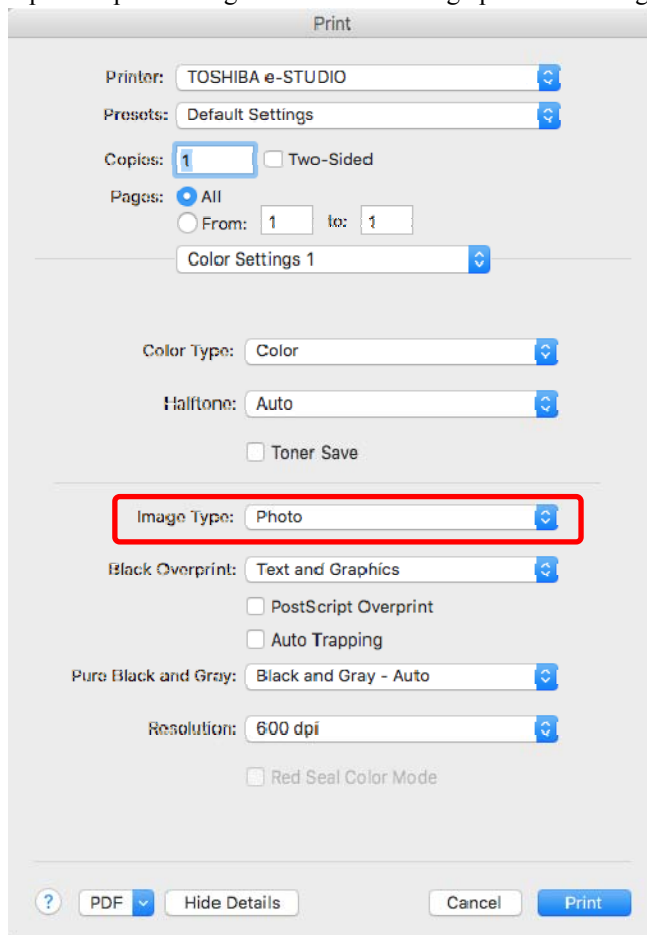
❑ **Caution after the adjustment**

Nothing in particular.

❑ **Remarks**

• Setting a color space to sRGB is a prerequisite to maximize the effectiveness of this adjustment. Therefore, if the monitor does not support sRGB or if color management cannot be performed, the effectiveness of the adjustment may be significantly lost.

• In general, it is impossible to reproduce color saturation closely matching the true colors, as viewed on the monitor, because the range of colors reproducible in toner colors is narrower than the one on the monitor.

3.5 To Maintain a Uniform Gray Hue

(To maintain Consistency in Gray among Text, Photos and Graphics)
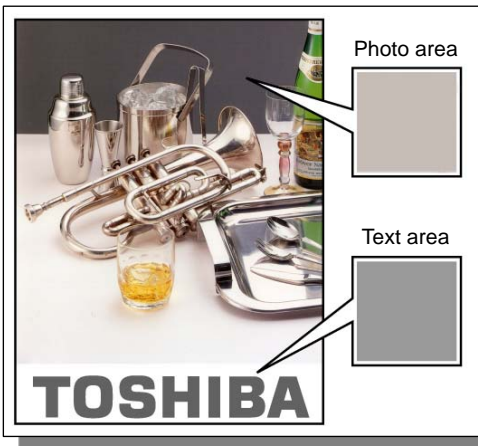
Before adjustment	After adjustment
 Photo area Text area How gray is reproduced varies depending on the type of original. As a result, there are variations in gray.	 Photo area Text area All color toners are used to reproduce gray. As a result, consistency is maintained in the gray hue.
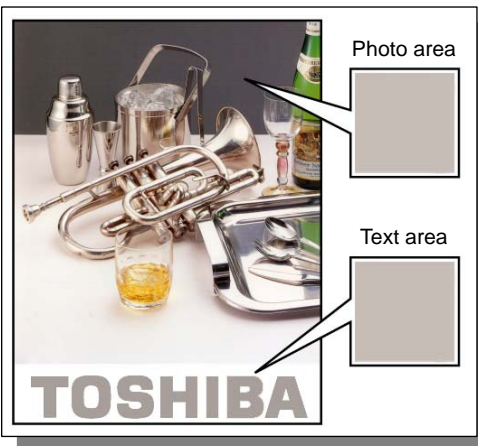
❑ **Explanation**

For printing, only the 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 on the printouts. Change the option on the printer driver, in order to maintain consistency in the gray hue between the drawing data and the image data.

❑ **Procedures**

＊Both the service technician and the user can perform all adjustments.

▌▌ (1) Change the "Pure Gray" option on the printer driver.

("Pure Gray" allows gray areas to always be reproduced using all color toners (C, M, Y and K) without changing the hue of color areas.)

＊This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed. It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed.

For Windows

| PCL6 | PS3 | XPS | * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Unmark the "Pure Gray" checkbox in the "Basic" tab.
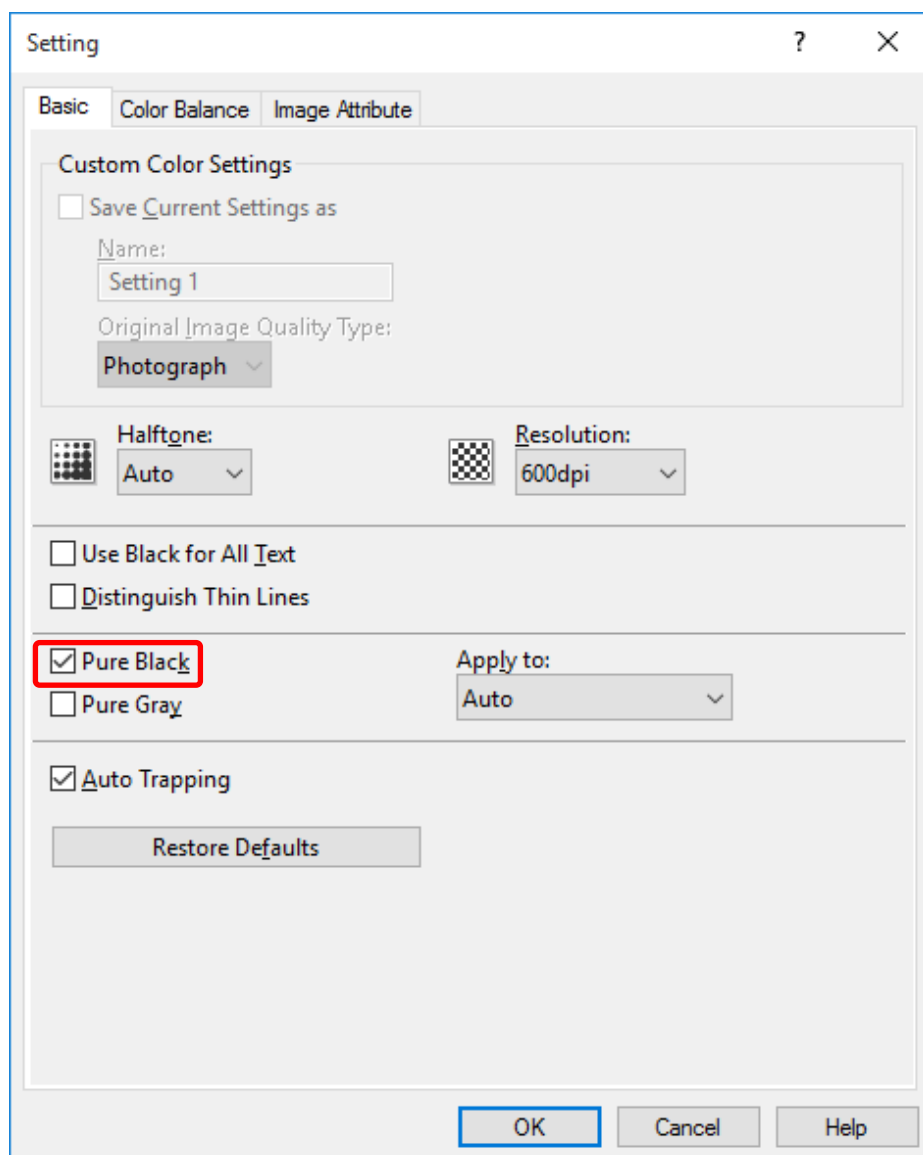
For Macintosh

`Mac` * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Select "Color Settings 1" - "Black – Auto" from among the "Pure Black and Gray" options.
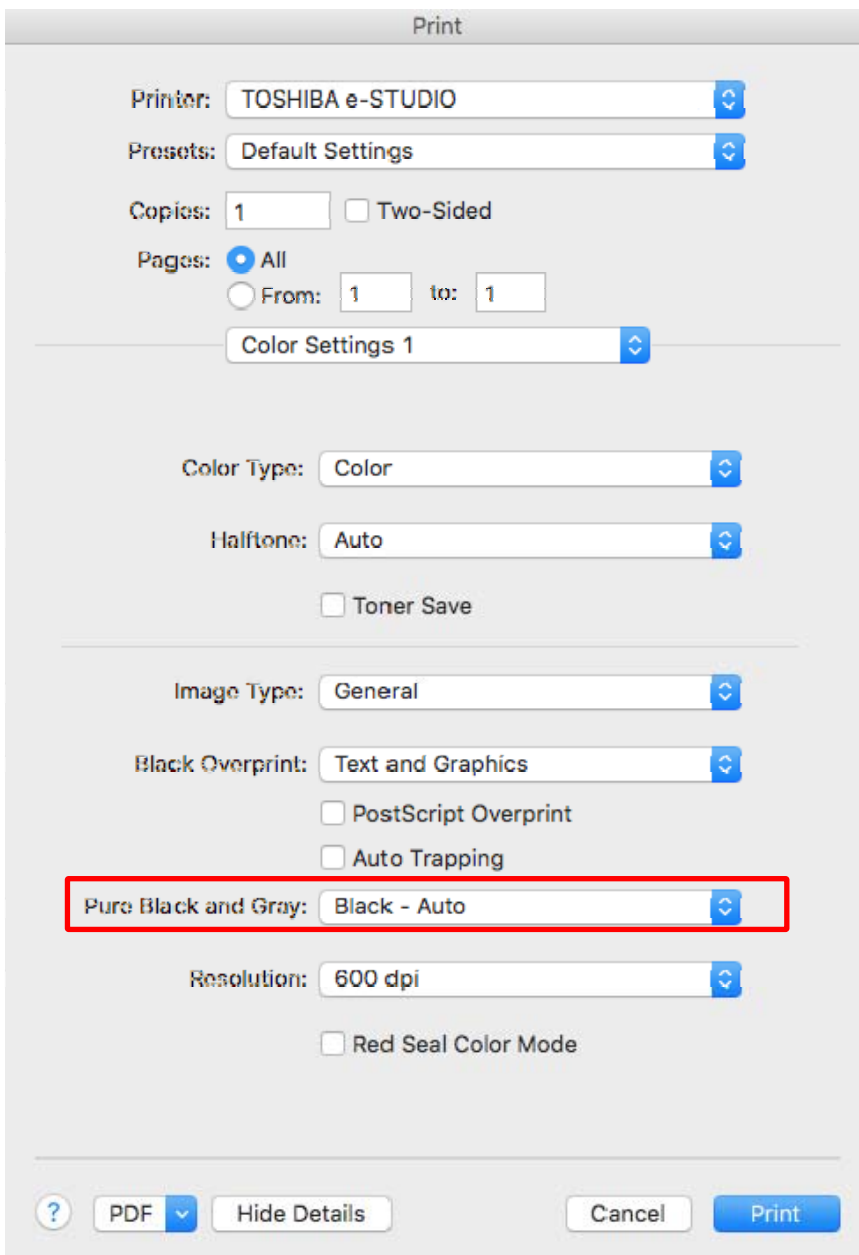
❑ **Caution after the adjustment**

The adjustment allows gray areas always to be reproduced using all color toners (C, M, Y and K). As a result, undesired colors may look blended, depending on the print image. Therefore, carefully perform the adjustment, while checking the printouts.

3.6 To Use Only the Black Toner to Reproduce Gray Areas

(To use only the black toner to reproduce black-and-white photos or gradational images)
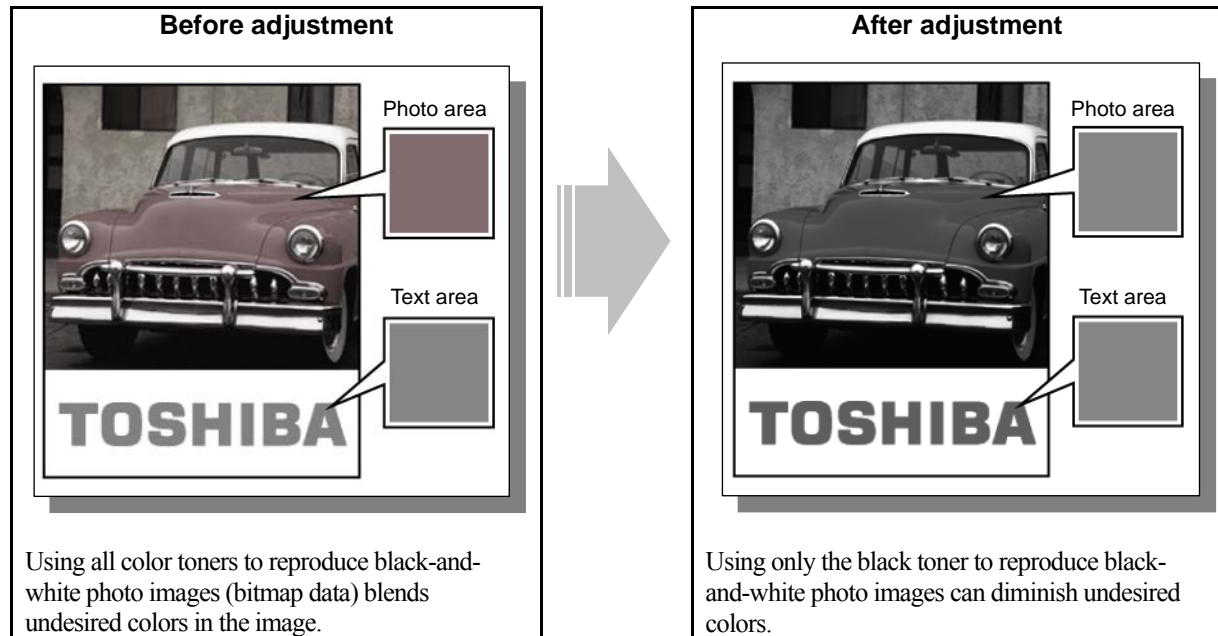
Before adjustment	After adjustment
Photo area	Photo area
Text area	Text area
Using all color toners to reproduce black-and-white photo images (bitmap data) blends undesired colors in the image.	Using only the black toner to reproduce black-and-white photo images can diminish undesired colors.

❑ Explanation

For printing, only the 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 on the printouts.

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

- A gray-scale or black-and-white photo 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 on 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.)

Change the option on the printer driver, in order to use only the black toner to reproduce the gray area where C, M, Y and K are used as described above.

❑ Procedures

* Perform the adjustment in accordance with the procedure below.
* Both the service technicians and the users can perform step (1).
* Only the service technicians can perform step (2).

(1) Mark the "Pure Gray" checkbox on the printer driver. Select "Text, Graphic & Image" from among the "Apply to" options. ("Pure Gray" allows gray areas to always be reproduced using only the K toner without changing the hue of color areas.)

＊This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed. It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed.

For Windows

PCL6　　PS3　　* This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Mark the "Pure Gray" checkbox in the "Basic" tab. Select "Text, Graphic & Image" from among the "Apply to" options.
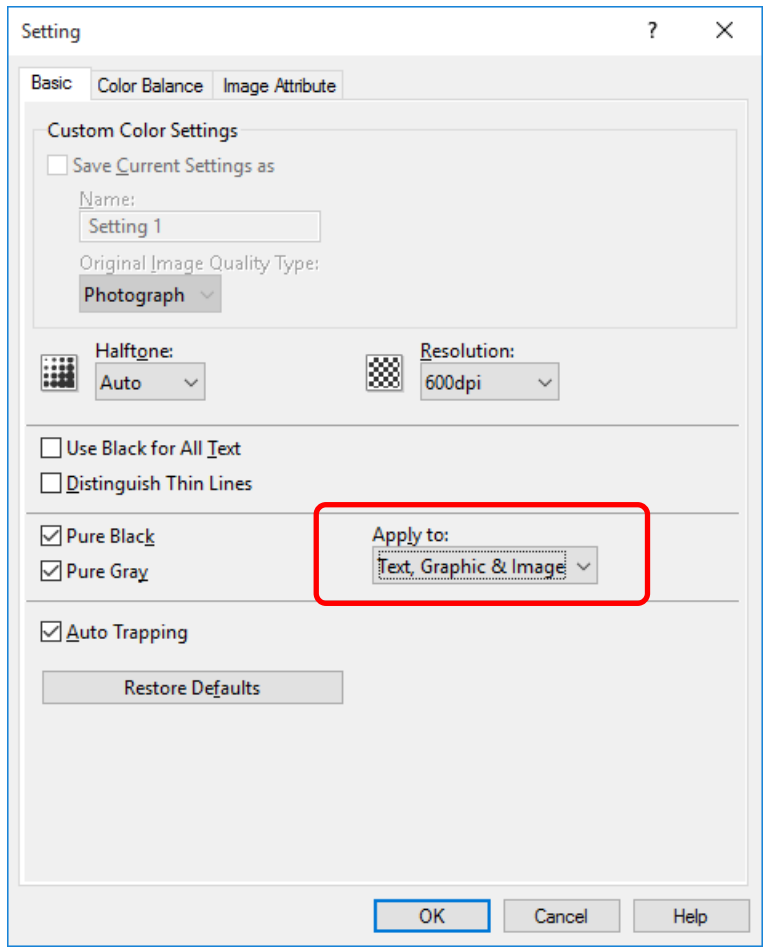
	Apply to			
	Auto	**Text**	**Text & Graphic**	**Text, Graphic & Image**
Text	Black (K toner)	Black (K toner)	Black (K toner)	Black (K toner)
Graphic	Black (K toner)	Color (CMYK toner)	Black (K toner)	Black (K toner)
Image	Color (CMYK toner)	Color (CMYK toner)	Color (CMYK toner)	Black (K toner)

＊The above table shows the sample combinations of when the Image Quality Type is "General". When "Auto" is selected, the areas to be applied are automatically selected according to the Image Quality Type.

For Macintosh

| Mac | * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Select "Color Settings 1" - "Black & Gray – Text, Graphic & Image" from among the "Pure Black and Gray" options.
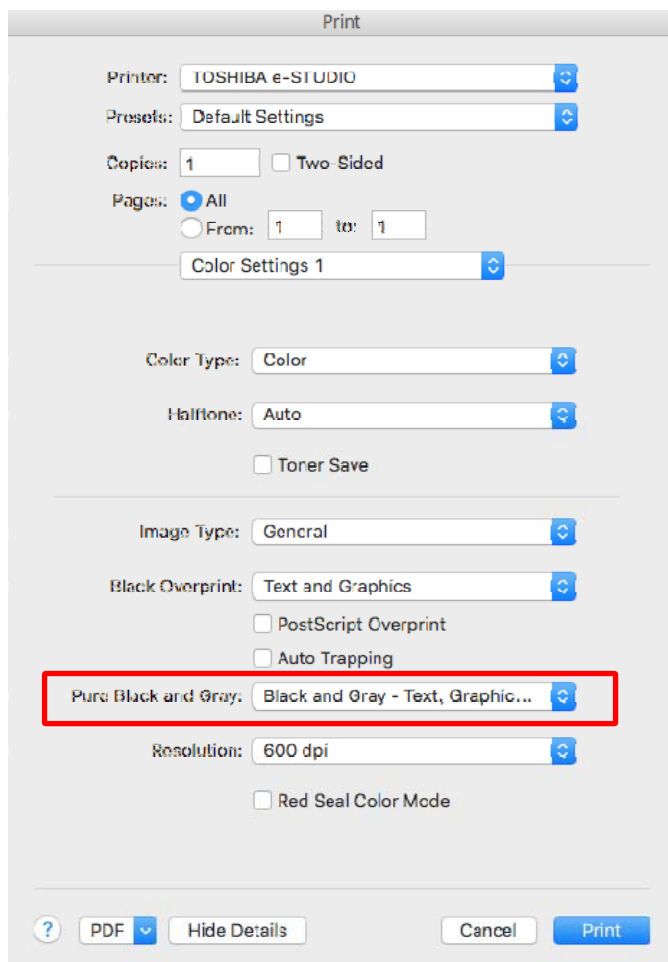
❑ Caution after the adjustment

The adjustment allows gray areas to always be reproduced using only the K toner. As a result, color photos may look more grained. Therefore, carefully perform the adjustment, while checking the printouts.

(2)   Select [05 ADJUSTMENT MODE]. Change the values for codes [8210] to [8212] and [8249] to [8254] to adjust the judgmental threshold for the "Pure Black and Gray" setting.

PDL	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS	Text	8252	0/1/2/3/4	The larger the value, the wider the area to be replaced with that for printing with only black toner becomes. The smaller the value, the smaller the area to be replaced with that for printing with only black toner becomes.	1 to 255	8/8/8/8/8
PS	Graphics	8253	0/1/2/3/4		1 to 255	1/1/1/8/1
PS	Image	8254	0/1/2/3/4		1 to 255	1/1/1/8/1
PCL	Text	8210	0/1/2/3		1 to 255	8/8/8/8
PCL	Graphics	8211	0/1/2/3		1 to 255	1/1/1/8
PCL	Image	8212	0/1/2/3		1 to 255	1/1/1/8
XPS	Text	8249	0/1/2/3/4		1 to 255	8/8/8/8/8
XPS	Graphics	8250	0/1/2/3/4		1 to 255	1/1/1/8/1
XPS	Image	8251	0/1/2/3/4		1 to 255	1/1/1/8/1

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

＊If the default value is "1", change the "Pure Black and Gray" setting to "Off" on the Color Settings menu of printer driver since no value smaller than 1 is provided.

When "Text, Graphic & Image" is selected for the "Apply to" setting on the printer driver setting menu, photo areas whose colors are close to black may be treated as black because the larger the value is, the wider the area to be printed only with K toner becomes. Therefore adjust the value carefully while checking the copied image.

3.7 To Easily Adjust the Overall Brightness

Before adjustment

The image is printed with a natural brightness.
(Default printing)

After adjustment

A darker print image is obtained.

After adjustment

A brighter print image is obtained.
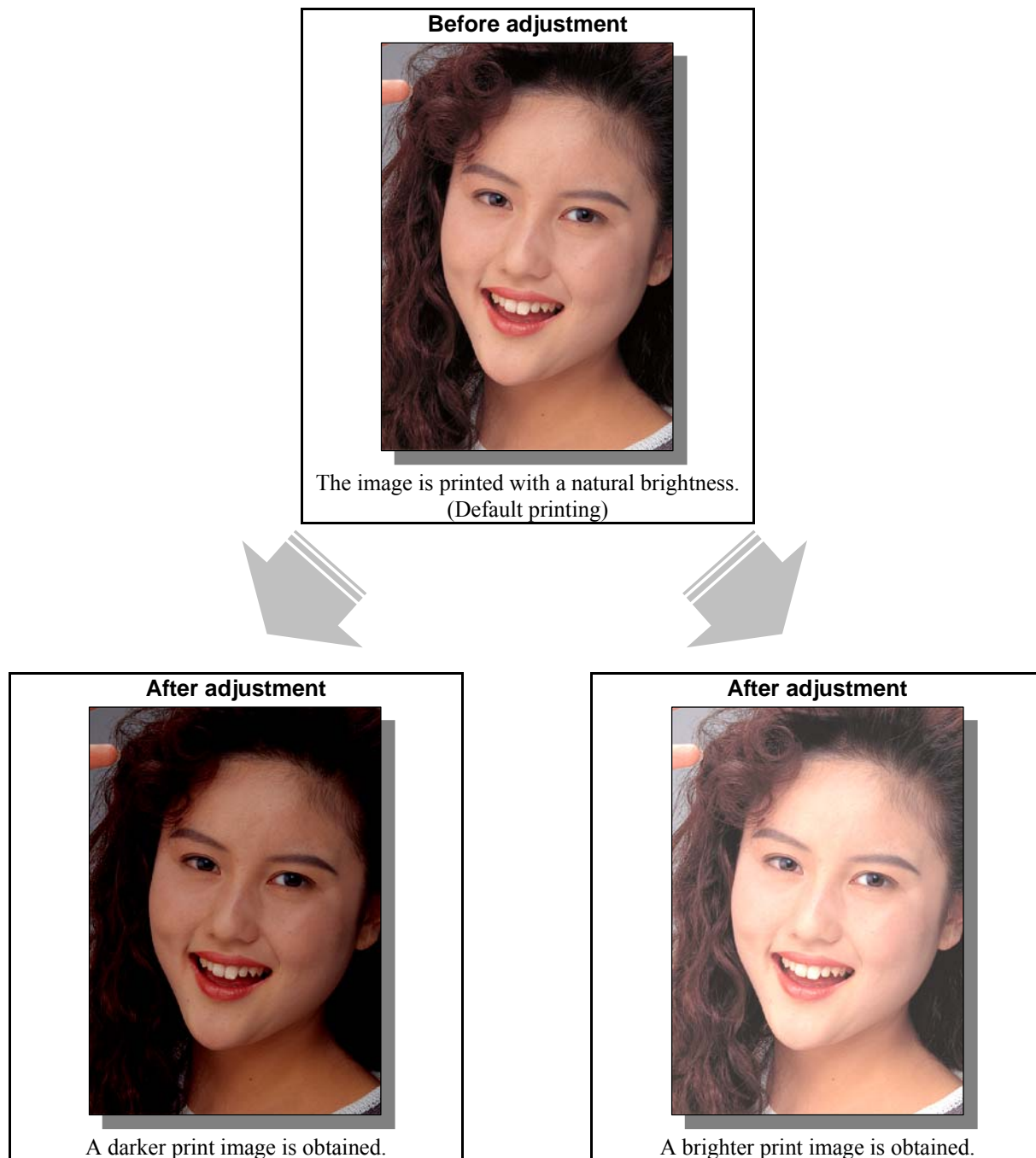
❑ **Explanation**

The brightness of the print image can be easily adjusted by changing the "Brightness" setting on the printer driver.

❏ Procedures

*Both the service technician and the user can perform all adjustments.

▮▮ (1)   Change the "Brightness" option on the printer driver.

  • Select the desired value for brightness on a scale of -4 (Darkest) to 4 (Lightest).

For Windows

| PCL6 | PS3 | XPS |

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Change the "Brightness" option in the "Image Attribute" tab.
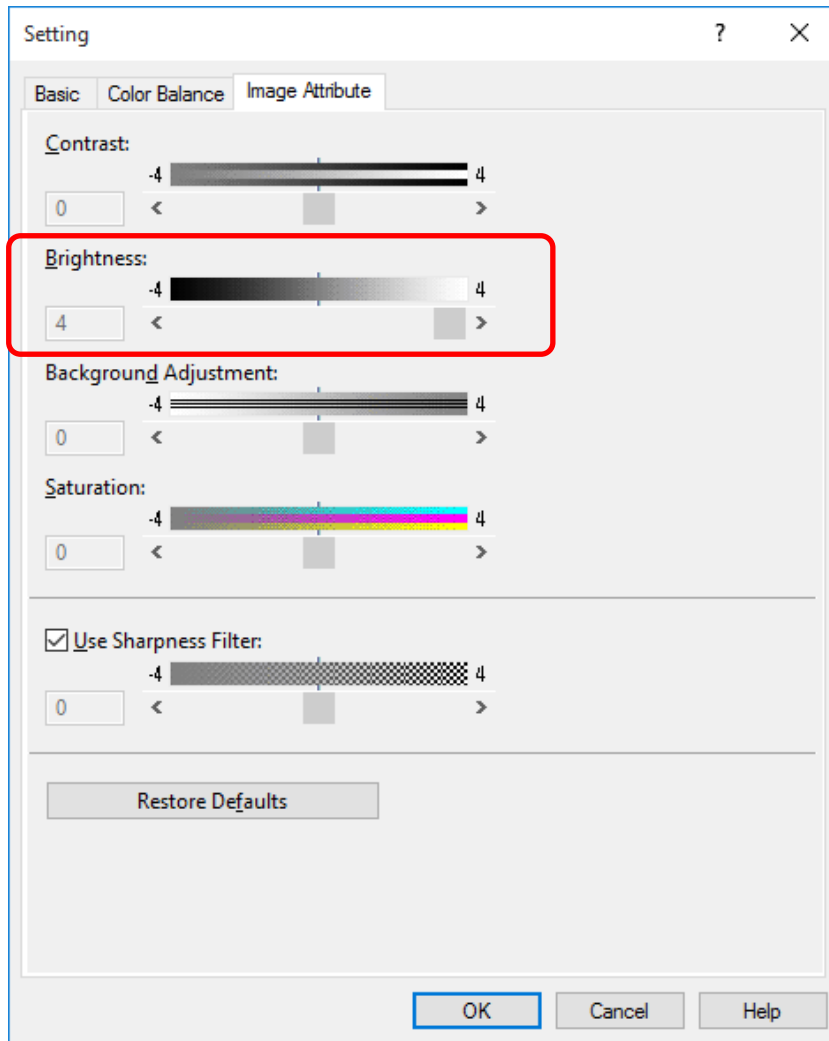
For Macintosh

Mac   * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Color Settings 2" - "Brightness" option.
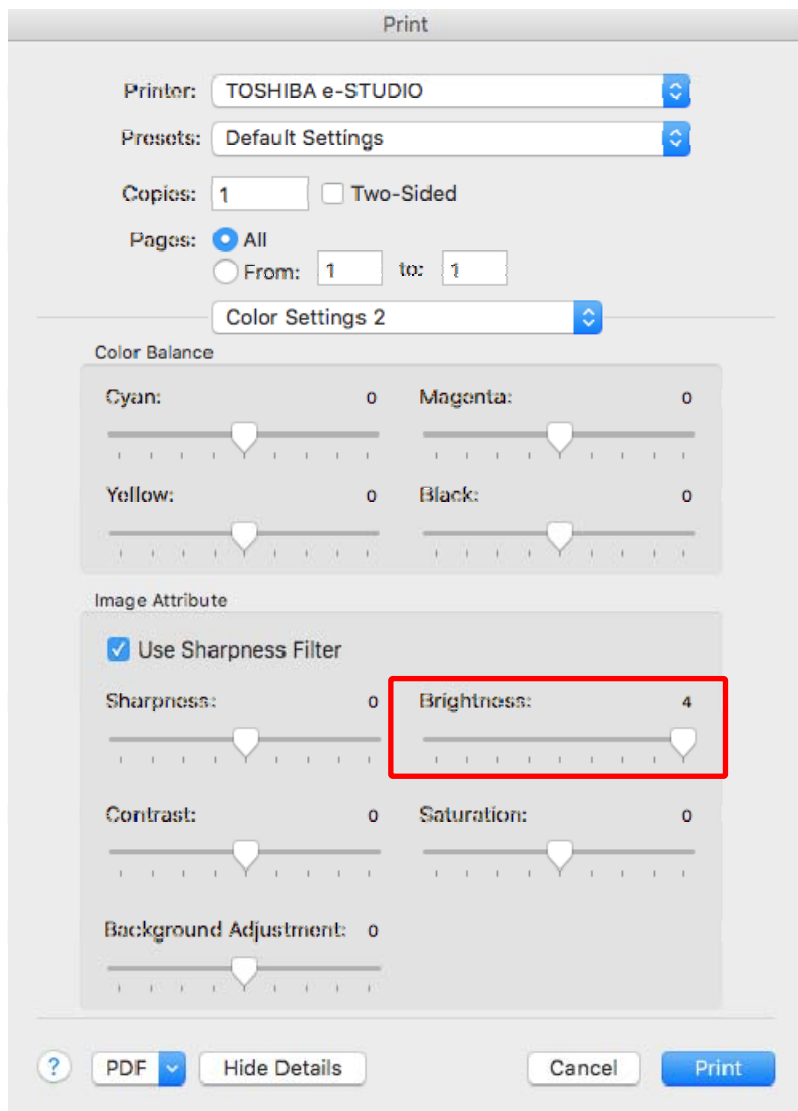
❏ **Caution after the adjustment**

Nothing in particular.

❏ **Remarks**

The brightness adjustment does not affect black text (CMY = 100%, K = 100% or RGB = 0%).

3.8 To Adjust the Overall Saturation

Before adjustment

The image is printed with a natural saturation.
(Default printing)

After adjustment

The saturation is decreased.

After adjustment

The saturation is increased.

❑ Explanation

The saturation of the print image can be easily adjusted by changing the "Saturation" option on the printer driver.

❑ **Procedures**

＊Both the service technician and the user can use procedure (1).

＊Only if the saturation of R (Red) is still insufficient even after procedure (1) has been used, must the service
technician use procedure (2).

▐▌ (1)   Change the "Saturation" option on the printer driver.

For Windows

PCL6   PS3   XPS

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Change the "Saturation" option in the "Image Attribute" tab.

For Macintosh

Mac
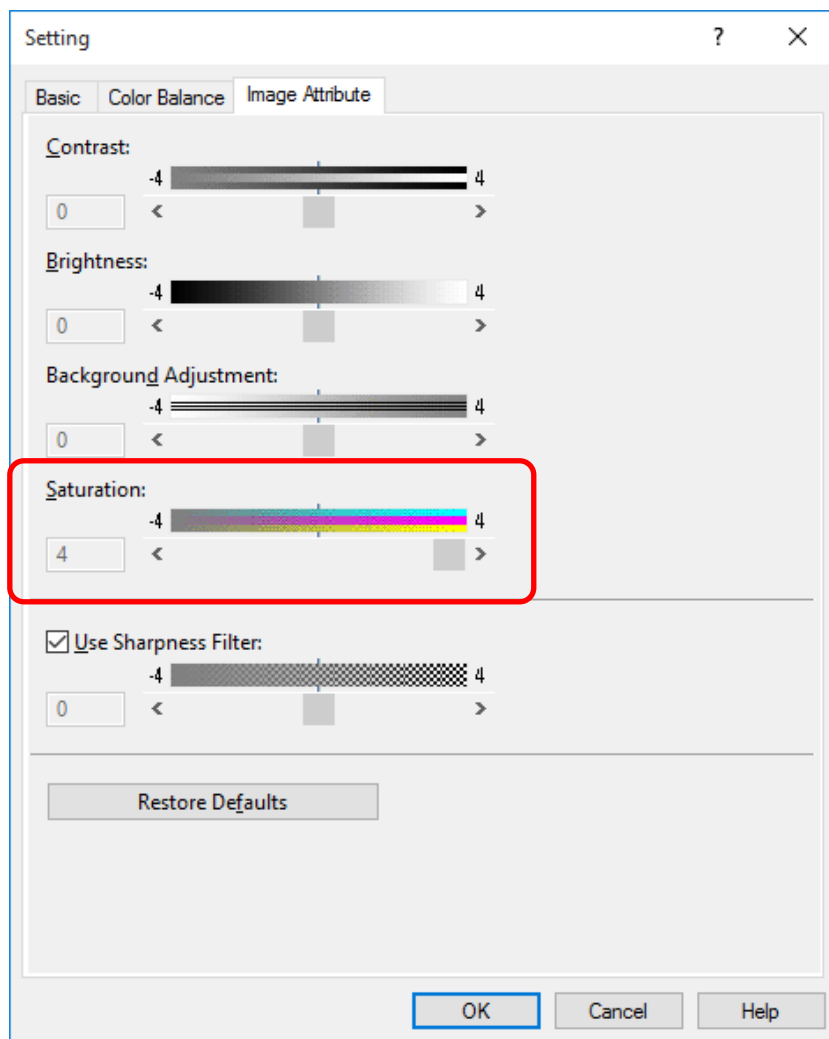
Open the print dialog box. Change the "Color Settings 2" - "Saturation" option.
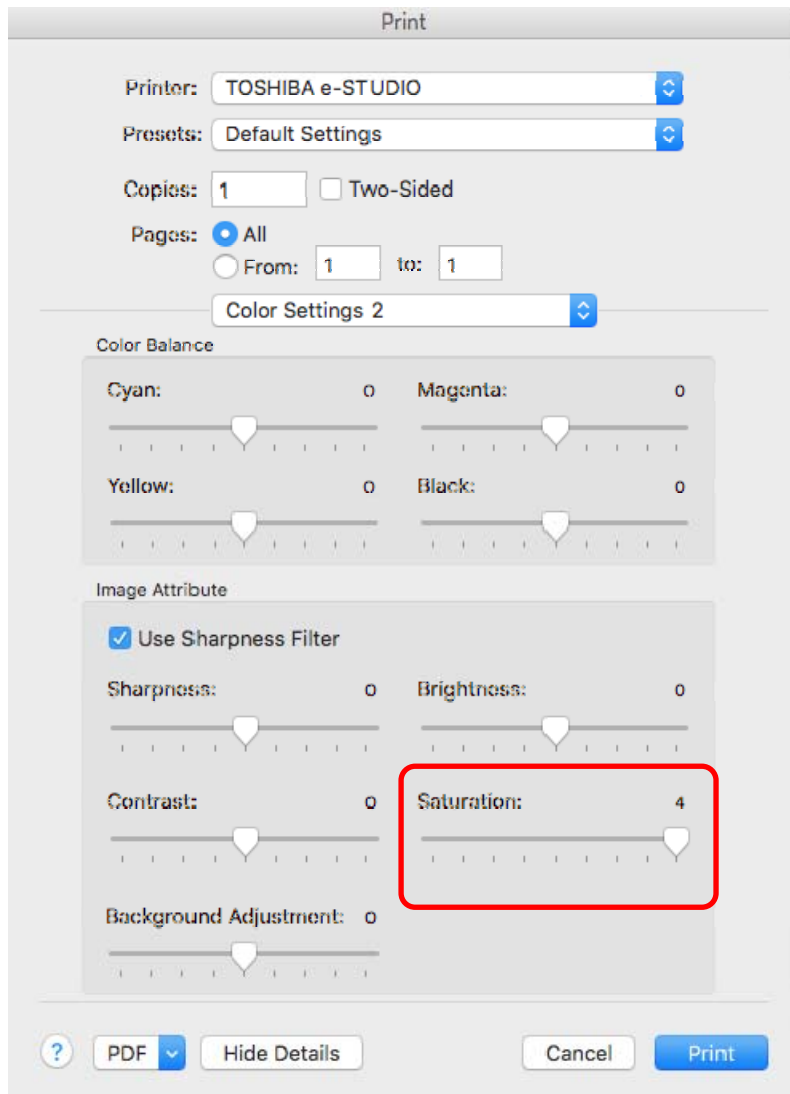
After changing the option on the printer driver, print and check the print image quality.

Only if the saturation of R (Red) is still insufficient even after all the above procedures have been used, must the service technician use the next procedure.

(2) Select [05 ADJUSTMENT MODE]. Change the value for code [2905] to adjust the transfer (1st transfer) roller bias output.
(Adjust the offset voltage of the transfer roller bias for C (Cyan) and K (Black) so as to increase the density of R (Red).)

• The code to use varies depending on the paper type and color to adjust. Adjust the value for the subcode corresponding to the color for which you would like to improve the image quality. Set the value within a range of "2" to "5" to obtain the highest density of R (Red).

Paper type	Color to adjust	[05] code	Subcode	Recommended value	Acceptable value range	Default
Plain paper	C (Cyan)	05-2905	2	2 to 5	0 to 10	5
	K (Black)		3			
Thick	C (Cyan)		8			
	K (Black)		9			

＊Never change the values for subcodes other than the above. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.
＊Plain paper: Plain paper and recycled paper
＊Thick: Thick 1/2/3/4, special 1/2, envelope, and OHP

<Note> • The adjustment may possibly decrease the density of G (Green), B (Blue) and K (Black) extremely. Therefore, carefully perform the adjustment, while checking the printout.

• Unless this adjustment changes the density of R (Red), return the values to the default (set value: 5).

• This adjustment may affect not only the printouts but also every type of image quality such as the copy image. Therefore, perform the adjustment, being aware that the image quality of 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.

❑ **Remarks**

The saturation adjustment does not affect black or gray areas on the printout.

3.9 To Easily Adjust the Overall Contrast

Before adjustment

The image is printed with a natural contrast.
(Default printing)

After adjustment

The contrast is decreased.

After adjustment

The contrast is increased.
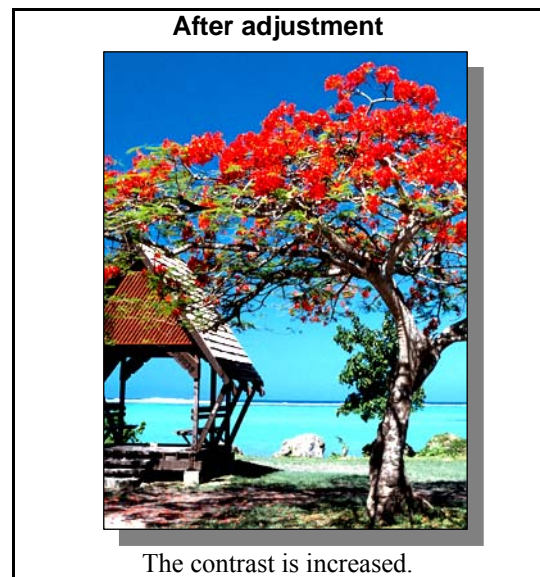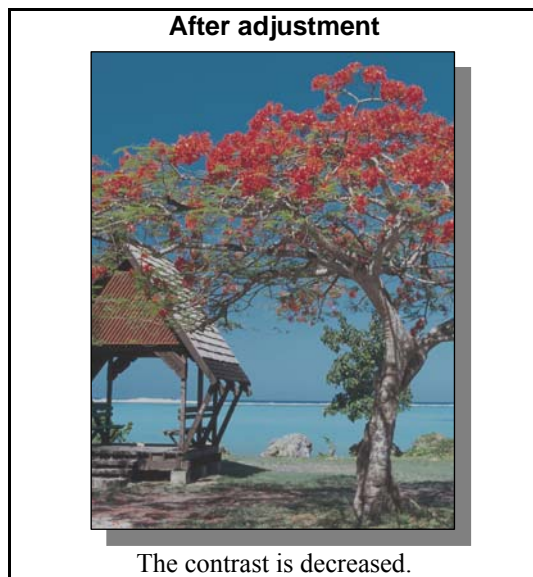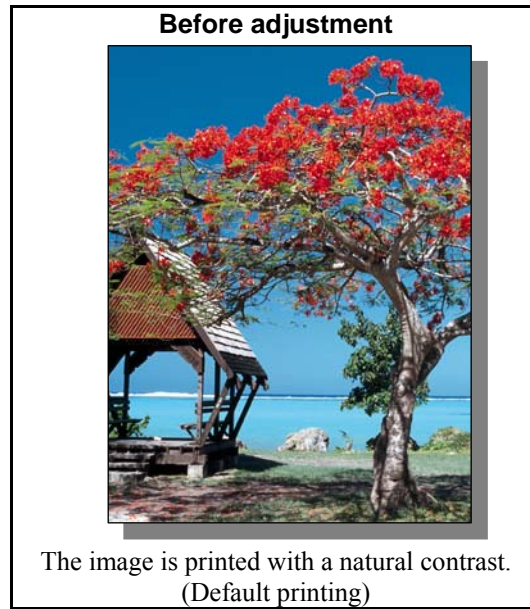
❑ Explanation

The contrast of the print image can be easily adjusted by changing the "Contrast" option on the printer driver.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

▌▌ (1)   Change the "Contrast" option on the printer driver.

   • Select the desired value for contrast on a scale of -4 (Lowest) to 4 (Highest).

For Windows

PCL6   PS3   XPS   .

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Change the "Contrast" option in the "Image Attribute" tab.
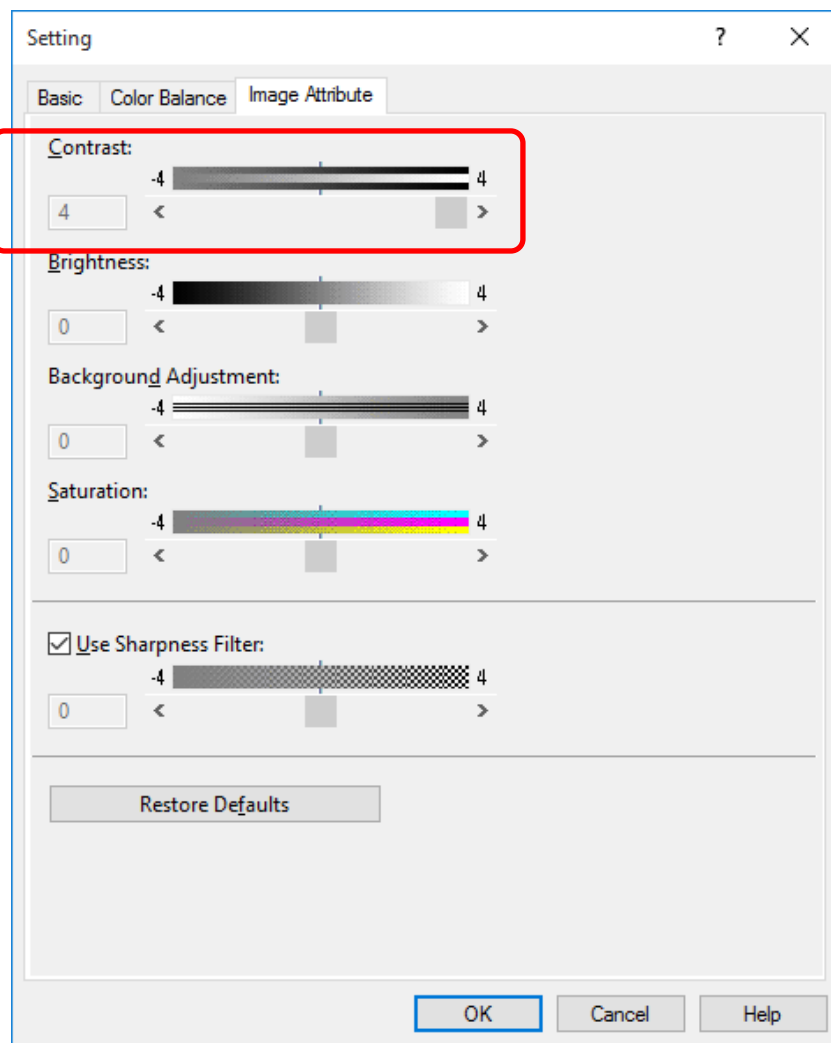
For Macintosh

Mac   * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Color Settings 2" - "Contrast" option.
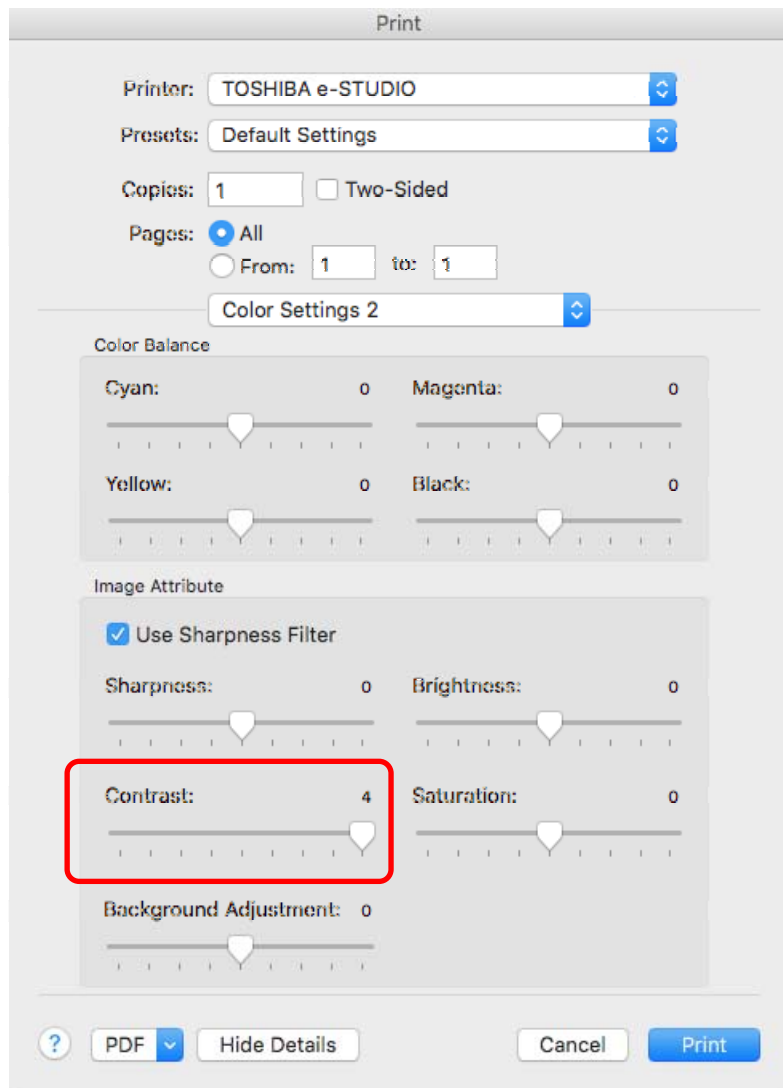
❑ Caution after the adjustment

Nothing in particular.

3.10 To Obtain a Sharper Print Image

Print data

Before adjustment

Unadjusted settings.

After adjustment

The edge of the print image is so enhanced that it looks sharper.
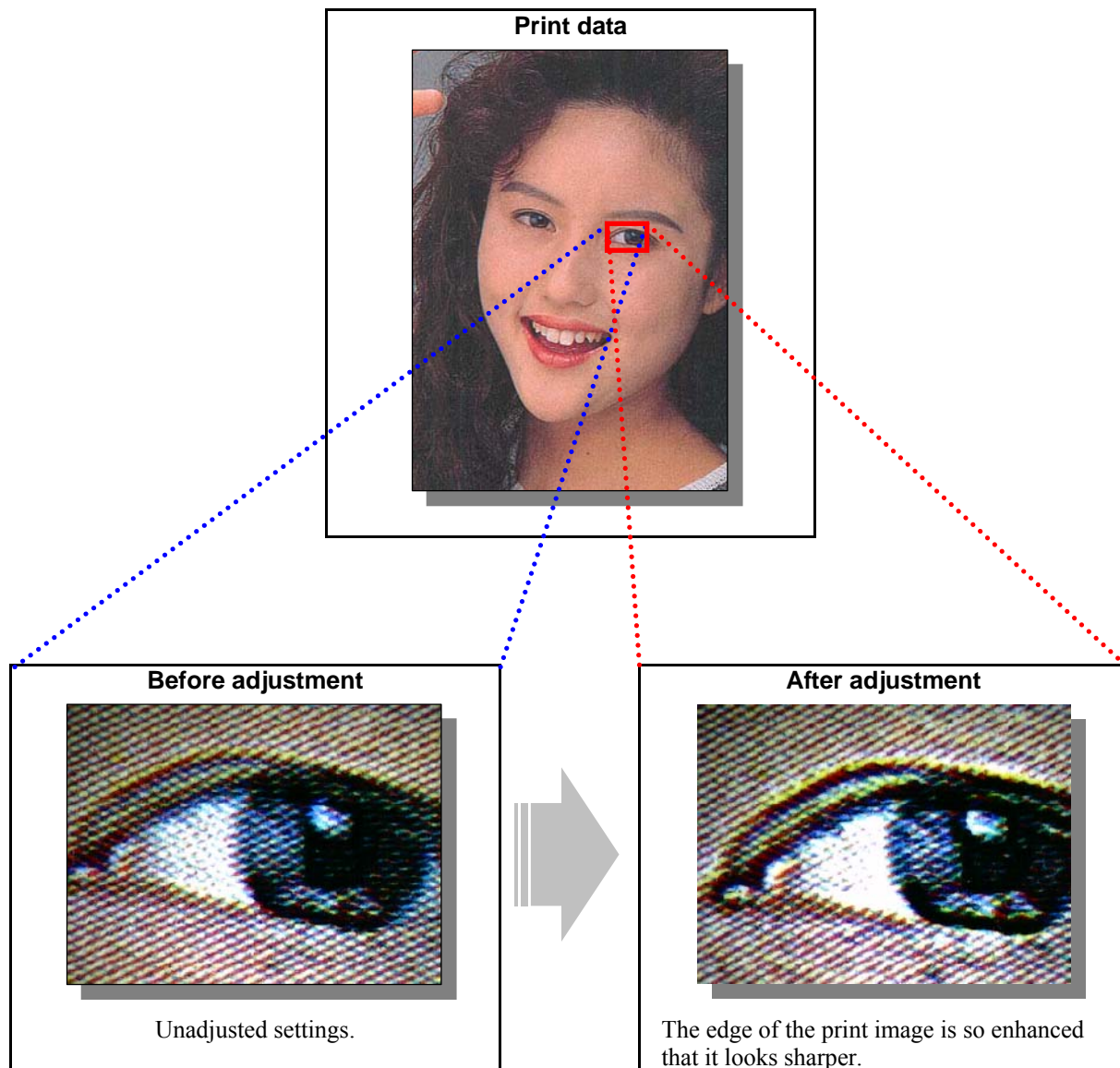
❑ **Explanation**

Increase the sharpness intensity under the menu on the printer driver, in order to obtain a sharper print image.

* The sharpness adjustment will have an effect on photo images, such as BMP, GIF, JPEG and TIFF.

❑ Procedures

* Perform the adjustment in accordance with the procedure below.

* Both the service technicians and the users can perform step (1).

* Only the service technicians can perform step (2).

▐▌ (1)   Change the "Sharpness" option on the printer driver.

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

[PCL6] [PS3] [XPS]

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Set the value for "Sharpness" within a range of "1" to "4" in the "Image Attribute" tab.

• Setting "4" provides the sharpest print image.

＊Sharpness adjustment is not available when 1200 dpi is selected for PS3 printer driver.

For Macintosh

Mac
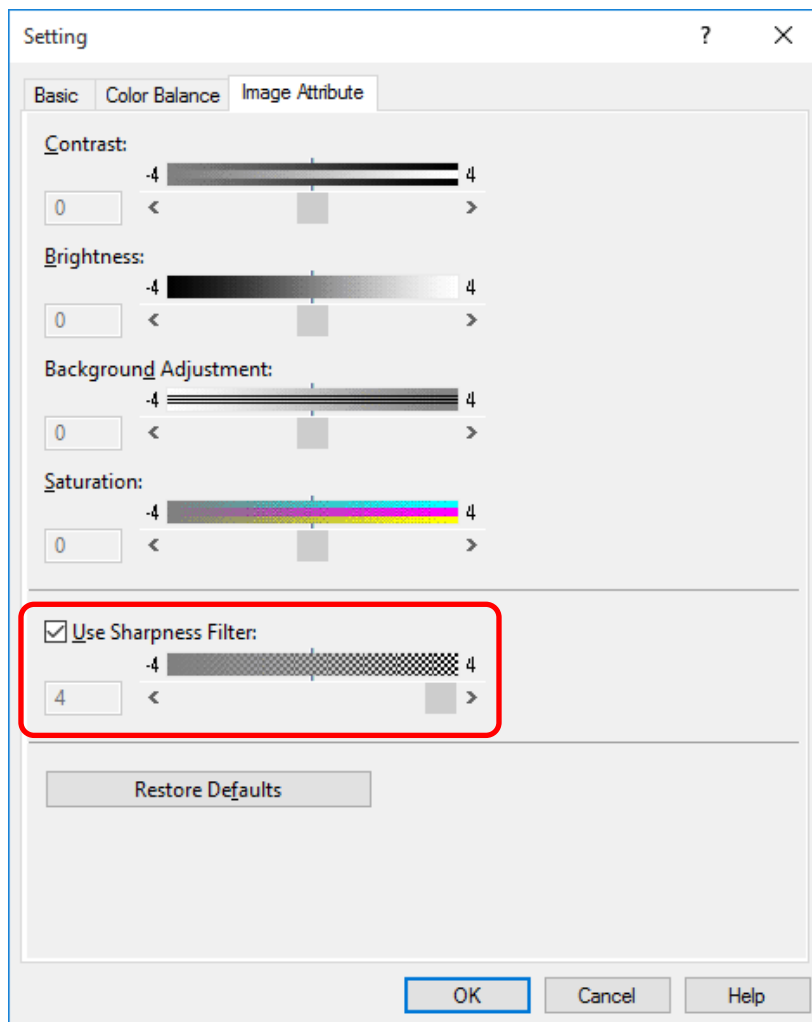
Open the print dialog box. Set the value for "Color Settings 2" - "Sharpness" within a range of "1" to "4."

• Setting "4" provides the sharpest print image.
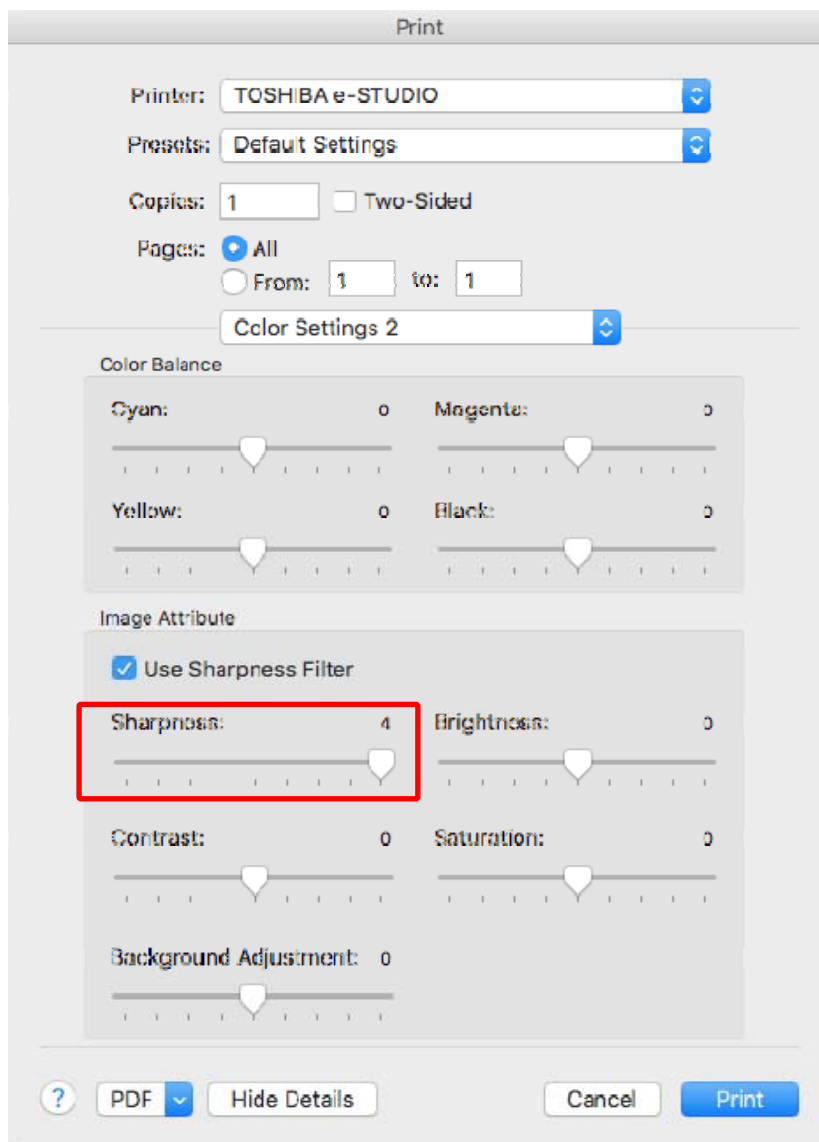
After changing the options on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

(2) Select [05 ADJUSTMENT MODE]. Increase the setting values for codes [8108] to [8113] and [8118] to adjust the sharpness to be increased.

・Adjust the [05] code for the settings (color mode and original type) to be used for printing.

Color mode	Image quality type	[05] code	Subcode	Recommended value	Acceptable value range	Default
Auto/Color	General	05-8110	0/1/2	Set a value larger than 128.	0 to 255	128
	Photo	05-8111	0/1/2			
	Presentation	05-8112	0/1/2			
	Line art	05-8113	0/1/2			
Mono color	—	05-8118	0/1/2			
Twin color	—	05-8108	0/1/2			
Auto/Color	Red seal color	05-8109	0/1/2			

Subcode	Original
0	Text
1	Graphic
2	Image

<Note> • When the setting value of this code is larger than "128" (default), the level of the sharpness intensity is equivalent to the one when the value is set within a range of "0" to "+4" on the printer driver menu. When the setting value of this code is smaller than "128", the level of the sharpness intensity is equivalent to the one when the value is set within a range of "-4" to "-1" on the printer driver menu. Note that when the setting value of this code is "0", the image quality will not be changed even if the value is changed on the printer driver menu.

❑ **Caution after the adjustment**

The adjustment may possibly cause rough edges of the image contained in low-resolution bitmap data. As a result, outlined edges may look shaded, black bands may appear, and toner may be scattered around the lines. Therefore, carefully perform the adjustment, while checking the printouts.

3.11 To Obtain a Softer Image

Before adjustment	After adjustment
Unadjusted settings.	A softer image is obtained.
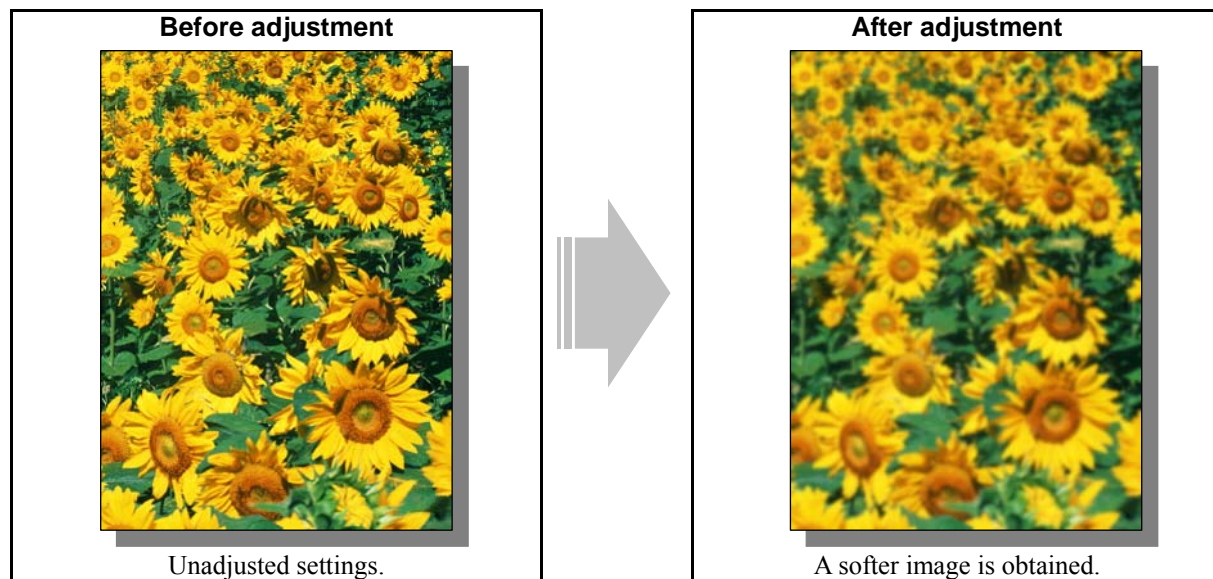
❑ Explanation

Decrease the sharpness intensity under the menu on the printer driver, in order to obtain a softer print image.

* The sharpness adjustment will have an effect on photo images, such as BMP, GIF, JPEG and TIFF.

❑ **Procedures**

* Both the service technicians and the users can perform step (1).

* Only the service technicians can perform step (2).

(1) Change the setting of the sharpness in the printer driver.

For Windows

PCL6 **PS3** **XPS**

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Uncheck the "Use Sharpness Filter" checkbox in the "Image Attribute" tab. To make a softer image, check its checkbox and then set the value within a range of "-1" to "-4."

• Setting "-4" provides the smoothest (softest) image.

The value "OFF" of sharpness intensity adjustment is positioned as shown below.

＊Sharpness adjustment is not available when 1200 dpi is selected for PS3 printer driver.

For Macintosh

Mac

Open the print dialog box. Set the value for "Color Settings 2" - "Sharpness" within a range of "-1" to "-4."

• Setting "-4" provides the smoothest (softest) print image.

After changing the options on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

(2) Select [05 ADJUSTMENT MODE]. Decrease the setting values for codes [8108] to [8113] and [8118] to adjust the sharpness to be decreased.

• Adjust the [05] code for the settings (color mode and original type) to be used for printing.

Color mode	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Auto/Color	General	05-8110	0/1/2	Set a value smaller than 128.	0 to 255	128
	Photo	05-8111	0/1/2			
	Presentation	05-8112	0/1/2			
	Line art	05-8113	0/1/2			
Mono color	-	05-8118	0/1/2			
Twin color	-	05-8108	0/1/2			
Auto/Color	Red seal color	05-8109	0/1/2			

Subcode	Original
0	Text
1	Graphics
2	Image

<Note> •When the setting value of this code is larger than "128" (default), the level of the sharpness intensity is equivalent to the one when the value is set within a range of "0" to "+4" on the printer driver menu. When the setting value of this code is smaller than "128", the level of the sharpness intensity is equivalent to the one when the value is set within a range of "-4" to "0" on the printer driver menu. Note that when the setting value of this code is "0", the image quality will not be changed even if the value is changed on the printer driver menu.

❑ **Caution after the adjustment**

The adjustment provides a soft or blurred image in general. Therefore, carefully perform the adjustment, while checking the printouts. Especially text and lines on the background of a gradational image, and text in the Format AutoShape dialog box with transparency selected on Microsoft Office may be blurred.

3.12 To Make Low-resolution Data Look Finer (To soften an image)

Print data

Before adjustment

Unadjusted settings.

After adjustment

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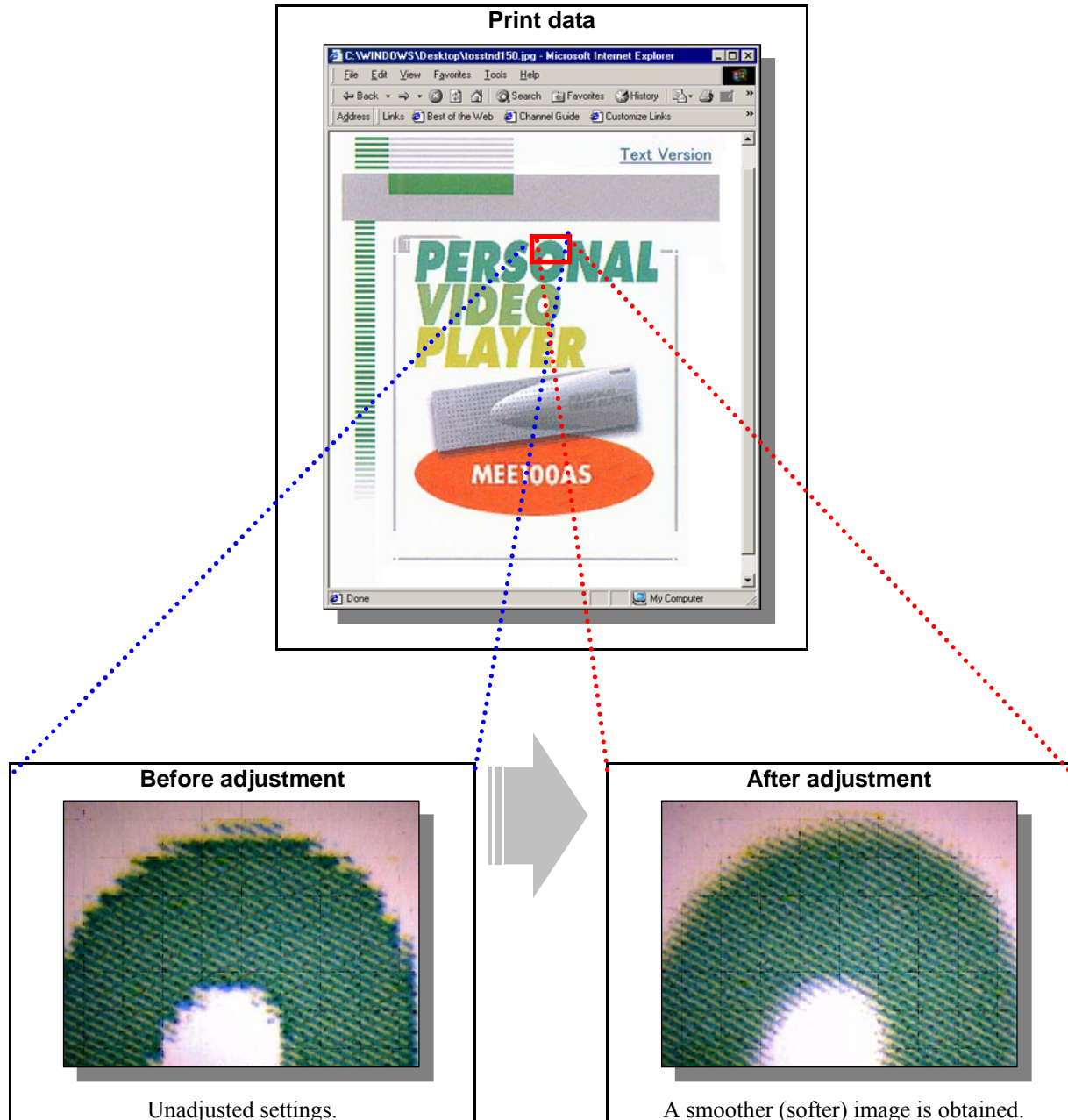
❑ **Explanation**

When a low-resolution image is printed, the edges may be jagged. Decrease the sharpness intensity, in order to eliminate the jaggies from the print image.

＊The sharpness adjustment will have an effect particularly on photo images, such as BMP, GIF, JPEG and TIFF.

❑ Procedures

* Both the service technicians and the users can perform step (1).

* Only the service technicians can perform step (2).

▌▌▌ (1)   Change the setting of the sharpness in the printer driver.

For Windows

`PCL6` `PS3` `XPS`

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Uncheck the "Use Sharpness Filter" checkbox in the "Image Attribute" tab. To make a smoother image, check its checkbox and then set the value within a range of "-1" to "-4."

• Setting "-4" provides the smoothest (softest) print image.

The value "OFF" of sharpness intensity adjustment is positioned as shown below.

＊Sharpness adjustment is not available when 1200 dpi is selected for PS3 printer driver.

For Macintosh

Mac

Open the print dialog box. Set the value for "Color Settings 2" - "Sharpness" within a range of "-1" to "-4."

• Setting "-4" provides the smoothest (softest) print image.

After changing the options on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

(2) Select [05 ADJUSTMENT MODE]. Decrease the setting values for codes [8108] to [8113] and [8118] to adjust the sharpness to be decreased.

• Adjust the [05] code for the settings (color mode and original type) to be used for printing.

Color mode	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Auto/Color	General	05-8110	0/1/2	Set a value smaller than 128.	0 to 255	128
	Photo	05-8111	0/1/2			
	Presentation	05-8112	0/1/2			
	Line art	05-8113	0/1/2			
Mono color	-	05-8118	0/1/2			
Twin color	-	05-8108	0/1/2			
Auto/Color	Red seal color	05-8109	0/1/2			

Subcode	Original
0	Text
1	Graphics
2	Image

<Note> •When the setting value of this code is larger than "128" (default), the level of the sharpness intensity is equivalent to the one when the value is set within a range of "0" to "+4" on the printer driver menu. When the setting value of this code is smaller than "128", the level of the sharpness intensity is equivalent to the one when the value is set within a range of "-4" to "0" on the printer driver menu. Note that when the setting value of this code is "0", the image quality will not be changed even if the value is changed on the printer driver menu.

❑ **Caution after the adjustment**

The adjustment provides a soft or blurred image in general. Therefore, carefully perform the adjustment, while checking the printouts. Especially text and lines on the background of a gradational image, and text in the Format AutoShape dialog box with transparency selected on Microsoft Office may be blurred.

3.13 To Eliminate Smudges from Highly Colored Text and Lines

(To prevent toner scattering around text and lines where a large amount of toner is used)

Before adjustment	After adjustment
Black text looks smudged due to toner scattering around the text.	Smudges are eliminated.
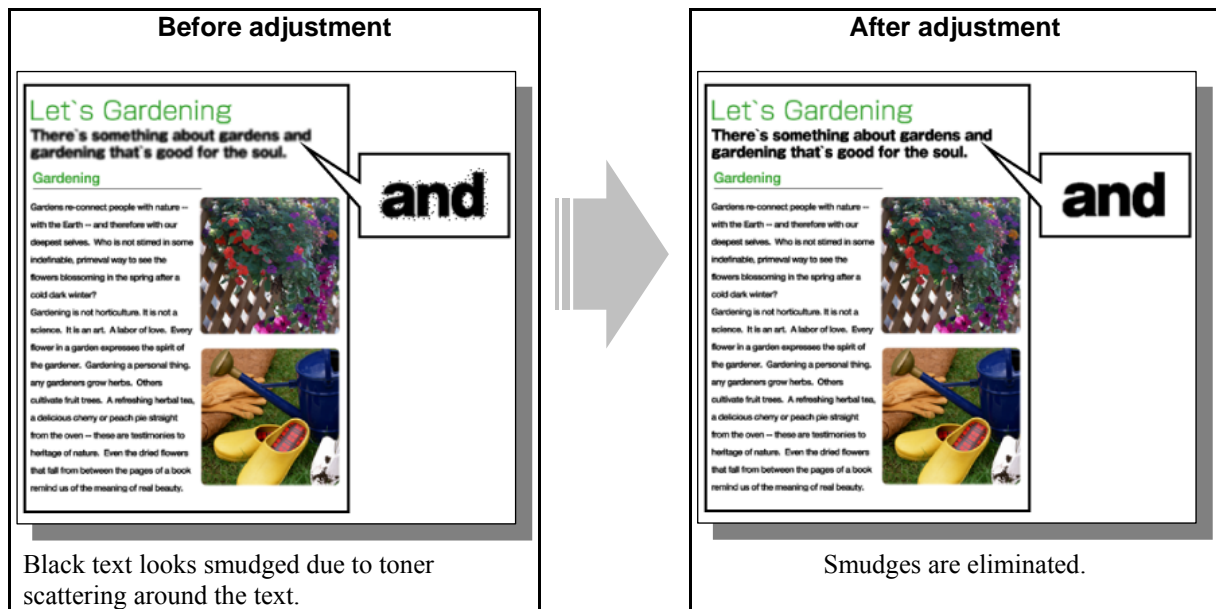
❏ Explanation

When highly colored text and lines where a large amount of toner is used, created on raster data (image), such as BMP, GIF, JPEG and TIFF are printed, the text and lines look smudged due to toner scattering around the text and lines. Adjust the sharpness intensity or the amount of toner used, in order to obtain a clearer print image.

<Hint> If smudged text and lines appear on the print image in PDF format on Adobe Reader, unmark the "Print as image" checkbox to print out the image. If the "Print as image" checkbox is marked, text and lines will be printed as raster data (bitmap image) and may be smudged.

❏ Procedures

* Perform the adjustment in accordance with the procedures below.
* Both the service technicians and the users can perform step (1).
* Only the service technicians can perform steps (2) and (3).

▊▊ (1)   Change the "Use Sharpness Filter" option on the printer driver.

For Windows

PCL6   PS3   XPS   * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Uncheck the "Use Sharpness Filter" checkbox in the "Image Attribute" tab.

＊Always set "Uncheck". Setting "-2" or a smaller value may provide blurred print images.

＊Sharpness adjustment is not available when 1200 dpi is selected for PS3 printer driver.

For Macintosh

Mac
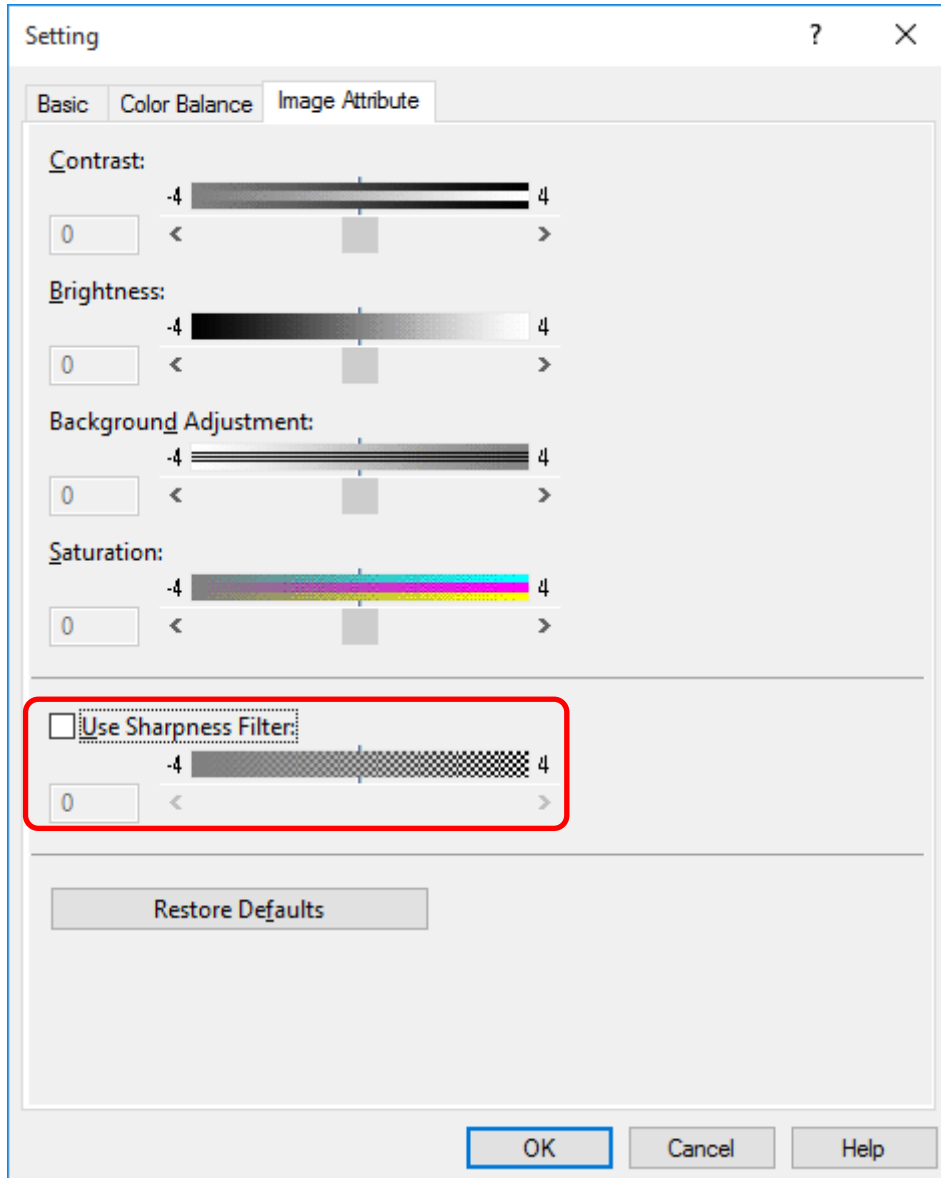
Open the print dialog box and change the "Color Settings 2" - "filter" setting.
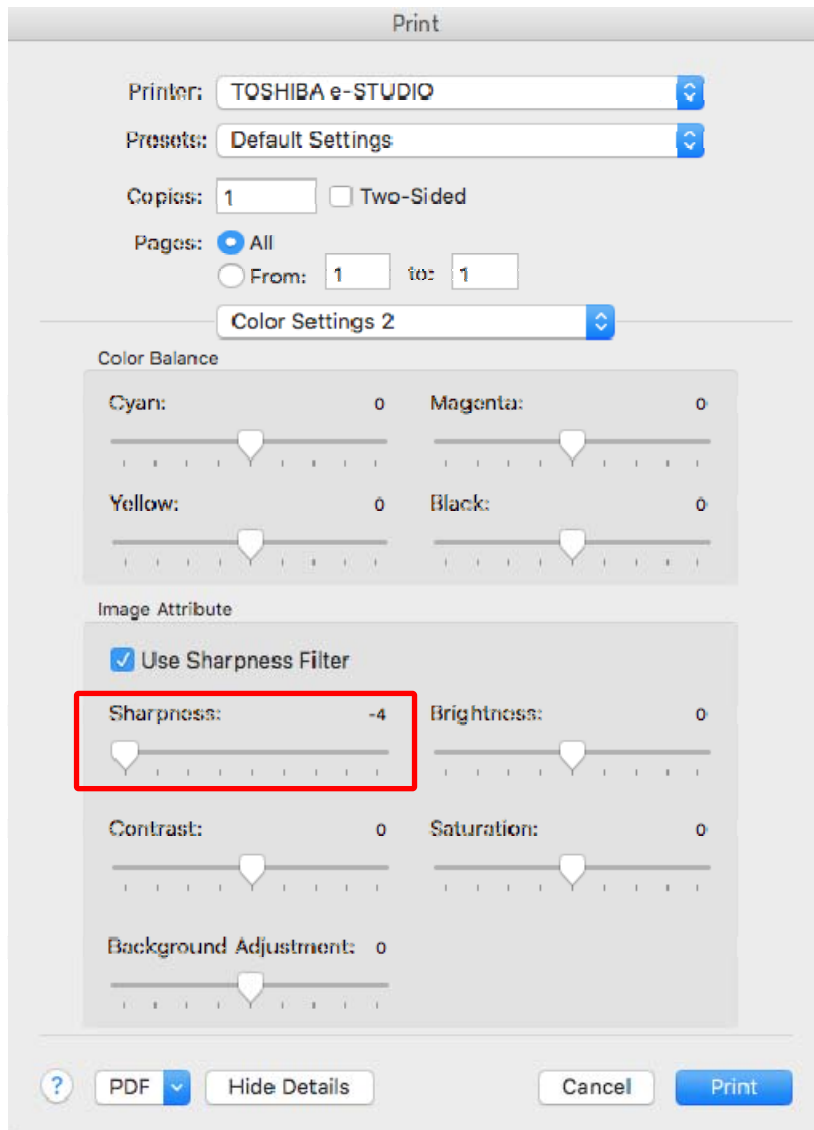
After changing the options on the printer driver, print and check the print image quality

| PCL6 | PS3 | XPS | Mac |

(2) Select [05 ADJUSTMENT MODE]. Set 0 for the setting values for codes [8109] to [8113] to adjust the filter.

Color mode	Image quality type	[05] code	Subcode	Recommended value	Acceptable value range	Default
Auto/Color	General	05-8110	0/1/2	Change the value to 0.	0 to 255	128
	Photo	05-8111	0/1/2			
	Presentation	05-8112	0/1/2			
	Line art	05-8113	0/1/2			
	Red seal color	05-8109	0/1/2			

Subcode	Original
0	Text
1	Graphics
2	Image

\<Note\> •When the setting value of this code is larger than "128" (default), the level of the sharpness intensity is equivalent to the one when the value is set within a range of "0" to "+4" on the printer driver menu. When the setting value of this code is smaller than "128", the level of the sharpness intensity is equivalent to the one when the value is set within a range of "-4" to "-1" on the printer driver menu. Note that when the setting value of this code is "0", the image quality will not be changed even if the value is changed on the printer driver menu.

PCL6　**PS3**　**XPS**　**Mac**

(3) Select [05 ADJUSTMENT MODE] and adjust the toner limit by setting a value smaller than the default for
[8070/8071/8090/8089].

Resolution	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
600dpi	Smooth	05-8071	0~8,11,12	Set a value smaller than the default.	0 to 255	128
	Detail	05-8070	0~8,11,12			
1200dpi	Smooth	05-8090	0~8,11,12	Set a value smaller than the default.	0 to 255	128
	Detail	05-8089	0~8,11,12			

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

Subcode	Original
0	Plain paper 1
1	Thick
2	Recycled paper
3	Thick 1
4	Thick 2
5	Thick 3
6	Thick 4
7	Special 1
8	Special 2
11	Envelope
12	OHP

(4) Select [08 SETTING MODE]. Adjust the subcodes "0" to "7" of code [2620] or those of code [2622].

This adjustment is applied in common to all printer drivers.

Color to adjust	Paper type	Resolution	[08] code	Subcode	Recommended value	Acceptable value range	Default
Y	Plain paper	600dpi	08-2620	0	Set a value smaller than 15 to decrease toner scattering.	8-36	15
M				1			
C				2			
K				3			
Y	Thick	600dpi	08-2620	4			
M				5			
C				6			
K				7			
Y	Plain paper	1200dpi	08-2622	0			
M				1			
C				2			
K				3			
Y	Thick	1200dpi	08-2622	4			
M				5			
C				6			
K				7			

＊Plain paper: Plain paper and recycled paper

＊Thick: Thick 1/2/3/4, special 1/2, envelope, and OHP

❑ Caution after the adjustment

• The adjustment in procedure (1) may possibly provide insufficient photo contrast images. Therefore, carefully perform the adjustment, while checking the printouts.

• The adjustment may possibly cause an increase in the amount of toner used, moiré, blurred text (blurring of small and dark text), faint text (fine outlines of text shredded), diminished photo images or gradational images (less accurate reproducibility of halftones), or in some consumption conditions, background fogging or a decrease in the amount of developer material (carrier streaks). Therefore, carefully perform the adjustment, while checking the printouts.

• In step (4) the adjustment value for K (Black) and the resolution 600 dpi is the same as those for the Photo mode in the Copier function and the Gray scale mode. Therefore, carefully perform the adjustment, while checking the printouts.

• In step (4) the adjustment value for the resolution 600 dpi is the same as that for the Full Color Mode in the Copier function. Therefore, carefully perform the adjustment, while checking the printouts.

• The adjustment may possibly cause dark areas such as making shades on photo images look unnaturally faint. Therefore, carefully perform the adjustment, while checking the printouts.

❏ Remarks

• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment.

Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction

in the life of the consumables.
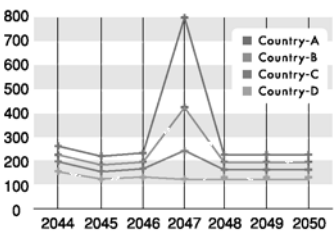
3.14 To Clearly Print Light-Colored Thin Lines or Text

Before adjustment	After adjustment
Light-colored thin lines and text are dotted on the printout.	The light-colored thin lines and text are clearly printed out.
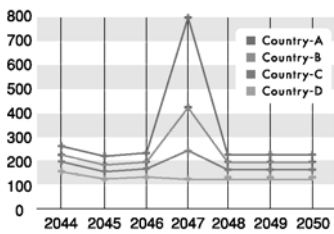
❑ Explanation

When light-colored thin lines and text are printed, they may be dotted on the printout. Change the options on the printer driver, adjust the color balance or gamma curve balance, in order to print them out clearly.

❑ Procedures

* The procedure to use varies, depending on whether to adjust the print image quality in the Color mode or in the Black and White mode. Refer to the procedure corresponding to the user's particular request.

* The item to set varies depending on the type of data to adjust. Select the effective option according to the data format to adjust, such as a print image (raster data), text (font), and line drawing (graphic data).

3.14.1 To Adjust the Print Image Quality in the Color Mode

＊Perform the adjustment in accordance with the procedures below.
＊Both the service technician and the user can use procedures (1), (2), and (4).
＊Only the service technician must use procedures (3), (5) and (6).

(1) Change the "Image Quality Type" and "Halftone" options.

For Windows

`PCL6` `PS3` `XPS`   * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Change the "Image Quality Type" and "Halftone" options in the Image Quality tab.

• Set either of the following options, in accordance with the type of original to print:

  • Image Quality Type: "Presentation" (To make color darker)
    Halftone: "Detail" (To make the halftone screen high frequency)
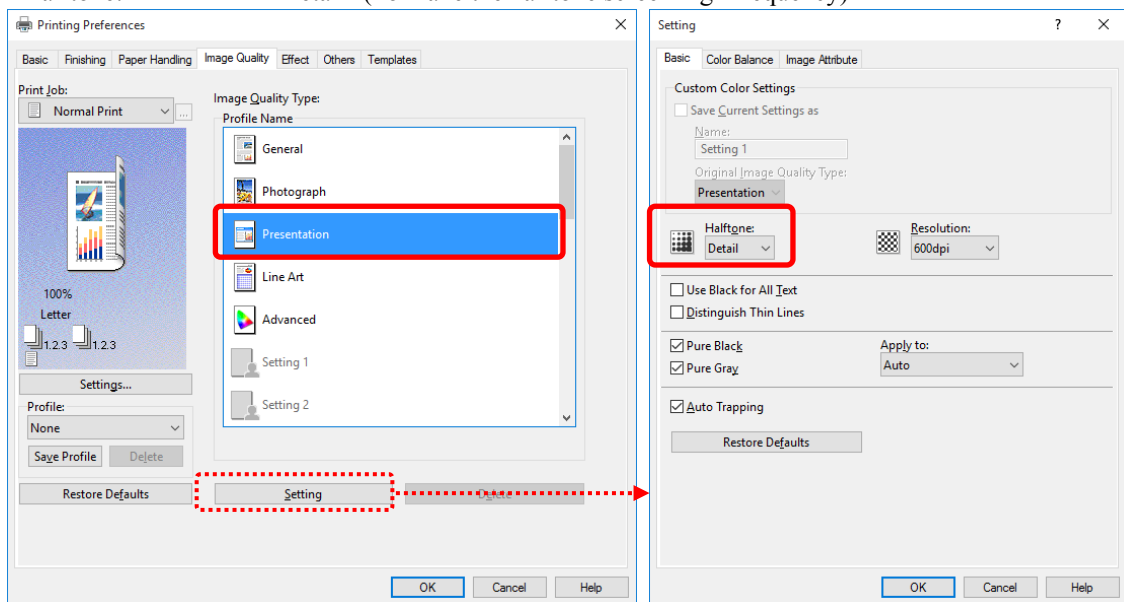
  • Image Quality Type: "Line Art" (To make the color darker and enhance thin lines)
    Halftone: "Auto" or "Detail" (To make the halftone screen high frequency)
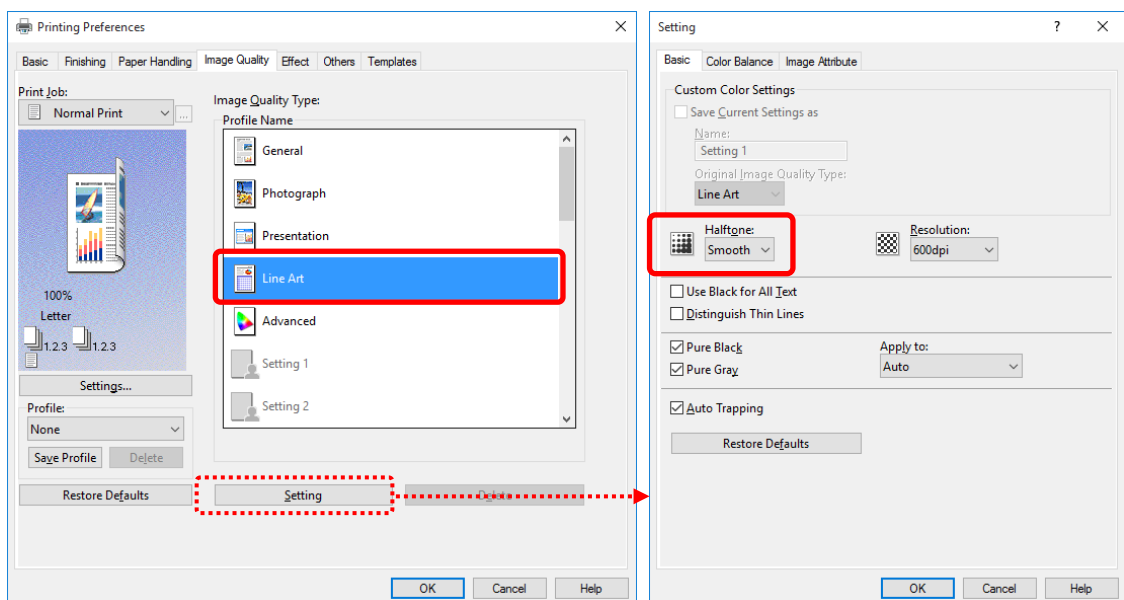
For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Color Settings 1" - "Image Type" and "Halftone" options.

• Set either of the following options, in accordance with the type of original to print:

  • Image Type: "Presentation" (To make color darker)

   Halftone: "Detail" (To make the halftone screen high frequency)
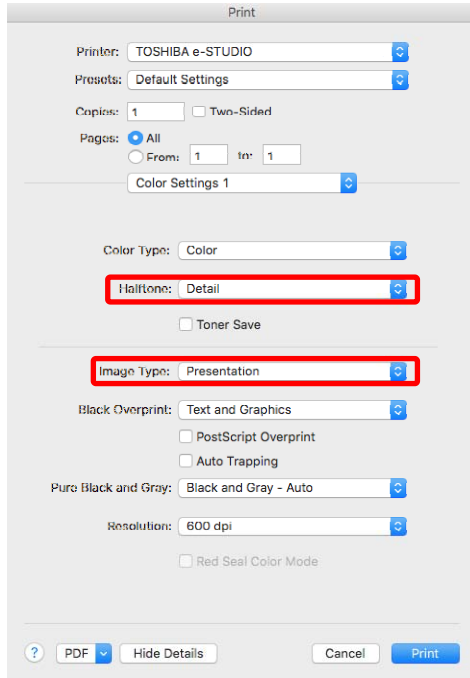
  • Image Type: "Line Art" (To make the color darker and enhance thin lines)

   Halftone: "Auto" or "Detail" (To make the halftone screen high frequency)

  After changing the options on the printer driver, print and check the print image quality.

  If further image quality adjustments are still necessary, use the next procedure.

(2) Change the "Sharpness" option on the printer driver.

For Windows

| PCL6 | PS3 | XPS | * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Set the value for "Use Sharpness Filter" within a range of "1" to "4" in the "Image Attribute" tab.

• Setting "4" provides the sharpest print image.

＊Initially, set "4" and check the printout. If further image quality adjustments are still necessary, refer to (5) to do this.

＊Sharpness adjustment is not available when 1200 dpi is selected for PS3 printer driver.

For Macintosh

Mac   * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Set the value for "Color Settings 2" - "Sharpness" within a range of "1" to "4."

• Setting "+4" provides the sharpest print image.

＊Initially, set "4" and check the printout. If further image quality adjustments are still necessary, refer to (5) to do this.

<Hint>   In addition to the sharpness adjustment, decreasing "Brightness" (moving to [-] side), changing "Contrast" or increasing "Saturation" (moving to [+] side) may improve the image quality.

After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

PCL6   PS3   XPS   Mac   * This adjustment will have an effect only on Auto or Color mode printing.

▐▌ (3) Select [05 ADJUSTMENT MODE]. Increase the values for codes [8109 to 8113] to perform fine adjustment and increase the sharpness intensity.

• Adjust the value for [05] code corresponding to the print option to be applied (Color mode and Image quality type).

Color mode	Image quality type	[05] code	Subcode	Recommended value	Acceptable value range	Default
Auto / Color	General	05-8110	0/1/2	Set a value larger than 128.	0 to 255	128
	Photograph	05-8111	0/1/2			
	Presentation	05-8112	0/1/2			
	Line Art	05-8113	0/1/2			
	Red seal color	05-8109	0/1/2			

Subcode	Apply to
0	Text
1	Graphic
2	Image

＊Set the value in increments of approximately 5, while checking the printouts until the optimum value is obtained.

\<Note\> • This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Sharpness" option. Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

• When the setting value of this code is larger than "128" (default), the level of the sharpness intensity is equivalent to the one when the value is set within a range of "0" to "+4" on the printer driver menu. When the setting value of this code is smaller than "128", the level of the sharpness intensity is equivalent to the one when the value is set within a range of "-4" to "0" on the printer driver menu. Note that when the setting value of this code is "0", the image quality will not be changed even if the value is changed on the printer driver menu.

PCL6 PS3 XPS   * This adjustment will have an effect only on Auto or Color mode printing.

▌▌ (4) Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Mark the "Detail" checkbox in the "Color Balance" tab. Press [Edit].

Set the value for the Low/Middle density of the color you would like to adjust, within a range of "1" to "4" in the "Color Balance Details" option.

＊ This adjustment will have an effect only on printing on the Windows PCL6, XPS or PS3 emulation printer driver.

(This adjustment cannot be performed on a Macintosh printer driver.)

＊ Initially, set "4" and check the printout.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

PCL6 PS3 XPS Mac   * This adjustment will have an effect only on Auto or Color mode printing.

▌▌ (5) Select [05 ADJUSTMENT MODE]. Adjust the color balance.

• Use the procedures below to adjust the color balance.

Select [05 ADJUSTMENT MODE]. Change the values for codes [8054 to 8057], [8062 to 8065], [8046 to 8049] or [8272 to 8275] to adjust the color balance and increase the color density.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image
Quality Type = Presentation, Halftone =Detail
> Change the values for Y: 05-8062, M: 05-8063, C: 05-8064 and K: 05-8065.

• When printing on Macintosh is with the following option selected: Image Type = Line Art,
Halftone = Auto
> Change the values for Y: 05-8054, M: 05-8055, C: 05-8056 and K: 05-8057.
＊Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Color to adjust	PDL	Halftpne	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL6	Detail	05-8062	0/1/2	Set a value larger than 128.	0 to 255	128
	PS3 (600dpi)	Detail	05-8054	0/1/2			
	PS3 (1200dpi)	Detail	05-8272	0/1/2			
	XPS	Detail	05-8046	0/1/2			
M (Magenta)	PCL6	Detail	05-8063	0/1/2			
	PS3 (600dpi)	Detail	05-8055	0/1/2			
	PS3 (1200dpi)	Detail	05-8273	0/1/2			
	XPS	Detail	05-8047	0/1/2			
C (Cyan)	PCL6	Detail	05-8064	0/1/2			
	PS3 (600dpi)	Detail	05-8056	0/1/2			
	PS3 (1200dpi)	Detail	05-8274	0/1/2			
	XPS	Detail	05-8048	0/1/2			
K (Black)	PCL6	Detail	05-8065	0/1/2			
	PS3 (600dpi)	Detail	05-8057	0/1/2			
	PS3 (1200dpi)	Detail	05-8275	0/1/2			
	XPS	Detail	05-8049	0/1/2			

＊Set the value in increments of approximately 20, while checking the printouts until the optimum
value is obtained.

＊The value for [05] code for K (black) will affect black-and-white images (including text, lines and
photos) on the printout.

* The subcode varies according to the area where the density is adjusted. Refer to the table below
and set the subcode for the area to be adjusted.

* Whether to fix or change the maximum density in a high-density area can be selected by the setting
of 05-8066.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note> This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Detail is changed, it will be applied to printing performed with PCL6 and Halftone = "Detail" (or "Auto") selected.)

Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

If "Smooth" is selected from among the "Halftone" options, this adjustment will have no affect.

After adjusting the color balance, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

(6) Select [08 SETTING MODE]. Adjust the subcodes "0" to "7" of code [2620] or those of code [2622]. This adjustment is applied in common to all printer drivers.

Color to adjust	Paper type	Resolution	[08]code	Subcode	Recommended value	Acceptable value range	Default
Y	Plain paper	600dpi	08-2620	0	Set a value larger than 15 to make the outline of the text clearer.	8 to 36	15
M				1			
C				2			
K				3			
Y	Thick	600dpi	08-2620	4			
M				5			
C				6			
K				7			
Y	Plain paper	1200dpi	08-2622	0			
M				1			
C				2			
K				3			
Y	Thick	1200dpi	08-2622	4			
M				5			
C				6			
K				7			

＊Plain paper: Plain paper and recycled paper

＊Thick: Thick 1/2/3/4, special 1/2, envelope, and OHP

❑ **Caution after the adjustment**

・The adjustment may possibly cause outlined edges, incorrect color of thin lines, jaggies, variations in gradation and unnatural photo images. Therefore, carefully perform the adjustment, while checking the printouts.

・The adjustment may possibly cause an increase in the amount of toner used, moiré, blurred text (blurring of small, dark text), faint text (fine outlines of text shredded), diminished photo images or gradational images (less accurate reproducibility of halftones), or in some consumption conditions, background fogging or a decrease in the amount of developer material (carrier streaks). Therefore, carefully perform the adjustment, while checking the printouts.

• In step (6) the adjustment value for K (Black) and the resolution 600 dpi is the same as those for the Photo mode in the Copier function and the Gray scale mode. Therefore, carefully perform the adjustment, while checking the printouts.

・In step (6) the adjustment value for the resolution 600 dpi is the same as that for the Full Color mode in the Copier function. Therefore, carefully perform the adjustment while checking the printed image.

❑ **Remarks**

• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

3.14.2 To Adjust the Print Image Quality in the Black and White Mode

＊Perform the adjustment in accordance with the procedures below.

＊Both the service technician and the user can use procedure (1), (2) and (4).

＊Only the service technician must use procedures (3) and (5).

■ (1) Change the "Halftone" option on the printer driver.

For Windows

PCL6　PS3　XPS　 * This adjustment will have an effect only on Black and white mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Select "Detail" from among the "Halftone" options in the "Basic" tab.
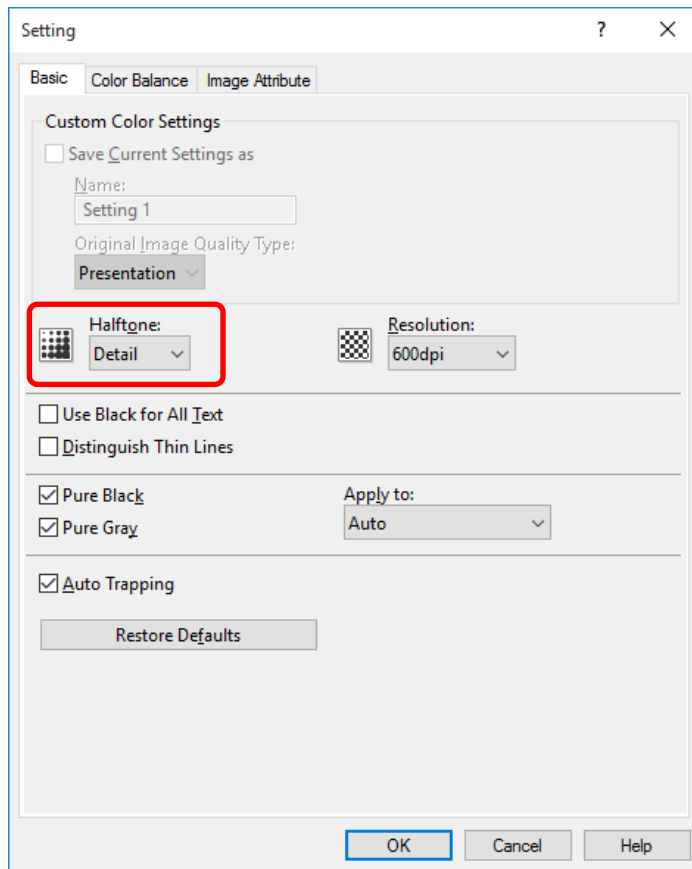
For Macintosh

Mac   * This adjustment will have an effect only on Black and white mode printing.

Open the print dialog box. Select "Color Settings 1" - "Detail" from among the "Halftone" options.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

▐▊▌ (2) Change the "Sharpness" option on the printer driver.

For Windows

PCL6   PS3   XPS   * This adjustment will have an effect only on Black and white mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Set the value for "Use Sharpness Filter" within a range of "1" to "4" in the "Image Attribute" tab.

• Setting "4" provides the sharpest print image.

＊Initially, set "4" and check the printout. If further image quality adjustments are still necessary, refer to (4) to do this.

＊Sharpness adjustment is not available when 1200 dpi is selected for PS3 printer driver.

For Macintosh

[Mac]   * This adjustment will have an effect only on Black and white mode printing.

Open the print dialog box. Set the value for "Color Settings 2" - "Sharpness" within a range of "1" to "4."

• Setting "+4" provides the sharpest print image.

＊Initially, set "4" and check the printout. If further image quality adjustments are still necessary, refer to (4)
  to do this.

<Hint>   In addition to the sharpness adjustment, decreasing "Brightness" (moving to [-] side), changing
         "Contrast" or increasing "Saturation" (moving to [+] side) may improve the image quality.

After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

PCL6   PS3   XPS   Mac   * This adjustment will have an effect only on Black and white mode printing.

▌☐ (3) Select [05 ADJUSTMENT MODE]. Increase the value for code [8118] to perform fine adjustment and increase the sharpness intensity.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Color mode).

Color mode	[05] code	Sub code	Recommended value	Acceptable value range	Default
Black and White	05-8118	0/1/2	Set a value lager than 128	0 to 255	128

Subcode	Original
0	Text
1	Graphic
2	Image

＊Set the value in increments of approximately 5, while checking the printouts until the optimum value is obtained.

<Note> This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Sharpness" option. Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

PCL6   PS3   XPS   * This adjustment will have an effect only on Auto or Color mode printing.

▌▌ (4) Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Mark the "Detail" checkbox in the "Color Balance" tab. Press [Edit].

Set the value for the Low/Middle density of the color you would like to adjust, within a range of "1" to "4" in the "Color Balance Details" option.

＊This adjustment will have an effect only on printing on the Windows PCL6, XPS or PS3 emulation printer driver.

(This adjustment cannot be performed on a Macintosh printer driver.)

＊Initially, set "4" and check the printout.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

| PCL6 | PS3 | XPS | Mac | * This adjustment will have an effect only on Black and white mode printing.

▮ (5) Select [05 ADJUSTMENT MODE]. Increase the values for codes [7315 to 7320] or [7309 to 7310] to adjust the gamma curve balance and increase the density on Black and White mode printing.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

＊Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS3 (600dpi)	Smooth	05-7315	0/1/2	Set a value larger than 128	0 to 255	128
	Detail	05-7316	0/1/2			
	Auto (Text)	05-7360	0/1/2			
	Auto (Graphic)	05-7361	0/1/2			
	Auto (Image)	05-7362	0/1/2			
PS3 (1200dpi)	Smooth	05-7309	0/1/2			
	Detail	05-7310	0/1/2			
PCL6	Smooth	05-7317	0/1/2			
	Detail	05-7318	0/1/2			
	Auto (Text)	05-7363	0/1/2			
	Auto (Graphic)	05-7364	0/1/2			
	Auto (Image)	05-7365	0/1/2			
XPS	Smooth	05-7319	0/1/2			
	Detail	05-7320	0/1/2			
	Auto (Text)	05-7366	0/1/2			
	Auto (Graphic)	05-7367	0/1/2			
	Auto (Image)	05-7368	0/1/2			

＊Set the value in increments of approximately 10, while checking the printouts until the optimum value is obtained.

* When the halftone is set to "Auto", the gamma balance can be adjusted for every print data format (Text, Graphic and Image).

*The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

* Whether to fix or change the maximum density in a high-density area can be selected by the setting of 05-8066.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note> • This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Halftone" option. (For instance, if the value for [05] code for PCL and Detail is changed, it will be applied to printing performed with PCL6 and Halftone = "Detail" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

• When "Mono" is selected from among the "Color" options and "Auto" (default) is selected from among the "Halftone" options, "Detail" of the "Halftone" options is applied to text, and "Smooth" is applied to raster data (images) and graphics(illustrations). Therefore, particular attention is required since the adjustment may have a different impact according to the patterns of the image to be printed.

After increasing the density, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

❑ **Caution after the adjustment**
The adjustment may possibly cause outlined edges, jaggies and variations in gradation. As a result the photo image may look unnatural. Therefore, carefully perform the adjustment, while checking the printouts.

3.15 To Make the Light-Colored Area Darker on the Printout

Before adjustment	After adjustment
Print	**Print**
The light-colored area becomes darker but the highly colored area becomes blurred.	Only the light-colored area becomes darker.

❑ **Explanation**

When the entire image is printed darker to make the light-colored area darker, the highly colored area may become much darker and blurred. To print only the light area in a higher density and leave the dark area as it is, change the setting for the printer driver and adjust the background and color balance.

❑ **Procedures**

＊Perform the adjustment in accordance with the procedures below.

＊Both the service technician and the user can use procedure (1) and (3).

＊Only the service technician must use procedures (2), (4) and (5).

＊The item to set varies depending on the type of data to adjust. Select an effective option according to the data
format to adjust, such as a print image (raster data), text (font), and line drawing (graphic data).

For Windows

PCL6 PS3 XPS ＊ This adjustment will have an effect only on Auto or Color mode printing.

(1) Open the property page of the printer driver and press [Setting] in the "Image Quality" tab. Set the
"Background adjustment" option in the "Image Attribute" tab within the range of "1" to "4".
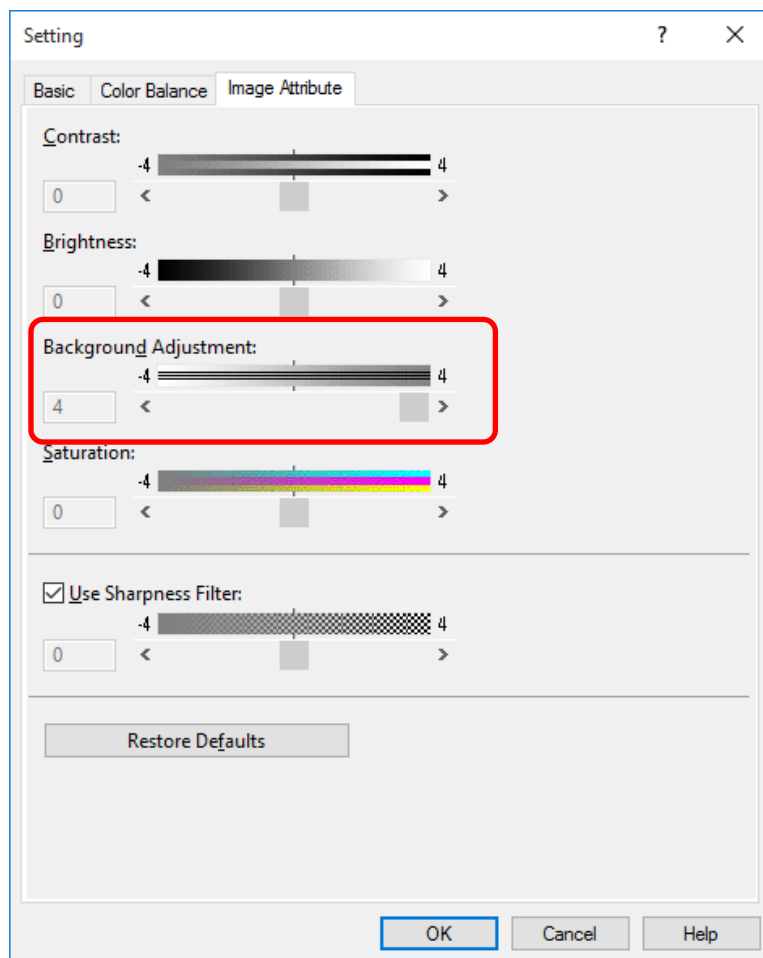
(2) Select [05 ADJUSTMENT MODE]. Increase the values for codes [8010] to [8019] to make the background density darker.

Resolution	Halftone	Color mode	[05]code	Recommended value	Acceptable value range	Default
600dpi	Smooth	Color	05-8010	Set a value larger than 128.	0 to 255	128
		Twin color	05-8011			
		Mono color	05-8012			
	Detail	Color	05-8013			
		Twin color	05-8014			
		Mono color	05-8015			
1200dpi	Smooth	Color	05-8016			
		Mono color	05-8018			
	Detail	Color	05-8017			
		Mono color	05-8019			

PCL6   PS3   XPS   * This adjustment will have an effect only on Auto or Color mode printing.

(3) Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.
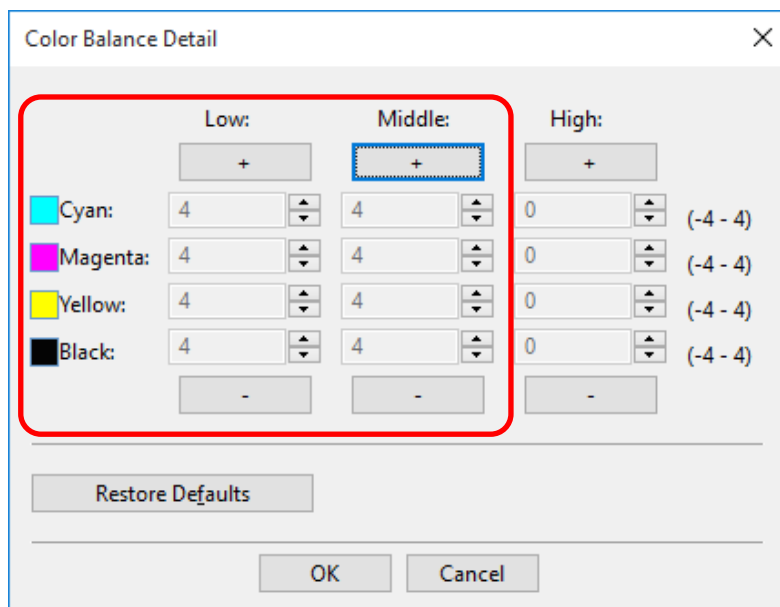
Mark the "Detail" checkbox in the "Color Balance" tab. Press [Edit].

Set the value for the Low/Middle density of the color you would like to adjust, within a range of "1" to "4" in the "Color Balance Details" option.

＊This adjustment will have an effect only on printing on a Windows PCL6 or PS3 or XPS emulation printer driver.

(This adjustment cannot be performed on a Macintosh printer driver.)

＊Initially, set "4" and check the printout.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure according to the image type.

• To adjust the color image: Go to procedure (4).

• To adjust the black and white image: Go to procedure (5).

`PCL6` `PS3` `Mac`   * This adjustment will have an effect only on Auto or Color mode printing.

▊ (4) Select [05 ADJUSTMENT MODE]. Increase the values for codes [8042 to 8065] or [8268 to 8275] to

increase the Low/Middle density of the color.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image Quality

Type = General, Halftone = Auto

> Text area, graphic area and image area

Change the values for Y: 05-8058, M: 05-8059, C: 05-8060 and K: 05-8061.

• When printing on Macintosh is performed with the following option selected: Image Type =

Photograph, Halftone = Smooth

> Change the values for Y: 05-8050, M: 05-8051, C: 05-8052 and K: 05-8053.

＊Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL5c	Smooth	05-8058	0/1	Set a value larger than 128.	0 to 255	128
		Detail	05-8062	0/1			
	PS3 (600dpi)	Smooth	05-8050	0/1			
		Detail	05-8054	0/1			
	PS3 (1200dpi)	Smooth	05-8268	0/1			
		Detail	05-8272	0/1			
	XPS	Smooth	05-8042	0/1			
		Detail	05-8046	0/1			
M (Magenta)	PCL5c	Smooth	05-8059	0/1			
		Detail	05-8063	0/1			
	PS3 (600dpi)	Smooth	05-8051	0/1			
		Detail	05-8055	0/1			
	PS3 (1200dpi)	Smooth	05-8269	0/1			
		Detail	05-8273	0/1			
	XPS	Smooth	05-8043	0/1			
		Detail	05-8047	0/1			
C (Cyan)	PCL5c	Smooth	05-8060	0/1			
		Detail	05-8064	0/1			
	PS3 (600dpi)	Smooth	05-8052	0/1			
		Detail	05-8056	0/1			
	PS3 (1200dpi)	Smooth	05-8270	0/1			
		Detail	05-8274	0/1			
	XPS	Smooth	05-8044	0/1			
		Detail	05-8048	0/1			
K (Black)	PCL5c	Smooth	05-8061	0/1			
		Detail	05-8065	0/1			
	PS3 (600dpi)	Smooth	05-8053	0/1			
		Detail	05-8057	0/1			
	PS3 (1200dpi)	Smooth	05-8271	0/1			
		Detail	05-8275	0/1			
	XPS	Smooth	05-8045	0/1			
		Detail	05-8049	0/1			

＊Set the value in increments of approximately 20, while checking the printouts until the optimum value is

obtained.

＊"Halftone" 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 details (with the high frequency).

The halftone option to be applied in printing can be selected from among the "Halftone" options on the printer driver (Windows) or in the print dialog box (Macintosh).

"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described in the table below.

Apply to	"Color" and "Image Quality Type" options				Black and White	Twin Color
	Auto/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

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

* Whether to fix or change the maximum density in a high-density area can be selected by the setting of 05-8066.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note>   This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Smooth is changed, it will be applied to printing performed with PCL6 and Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

PCL6　PS3　XPS　Mac　* This adjustment will have an effect only on Black and white mode printing.

■ (5) Increase the values for codes [7315 to 7320] or [7309 to 7310] to adjust the gamma curve balance and increase the Low/Medium density on Black and White mode printing.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

＊Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS3 (600dpi)	Smooth	05-7315	0/1/2	Set a value larger than 128	0 to 255	128
	Detail	05-7316	0/1/2			
PS3 (1200dpi)	Smooth	05-7309	0/1/2			
	Detail	05-7310	0/1/2			
PCL6	Smooth	05-7317	0/1/2			
	Detail	05-7318	0/1/2			
XPS	Smooth	05-7319	0/1/2			
	Detail	05-7320	0/1/2			

PDL	Apply to	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS3	Text	05-7360	0/1/2	Set a value larger than 128	0 to 255	128
	Graphic	05-7361	0/1/2			
	Image	05-7362	0/1/2			
PCL6	Text	05-7363	0/1/2			
	Graphic	05-7364	0/1/2			
	Image	05-7365	0/1/2			
XPS	Text	05-7366	0/1/2			
	Graphic	05-7367	0/1/2			
	Image	05-7368	0/1/2			

＊Set the value in increments of approximately 10, while checking the printouts until the optimum value is obtained.

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.
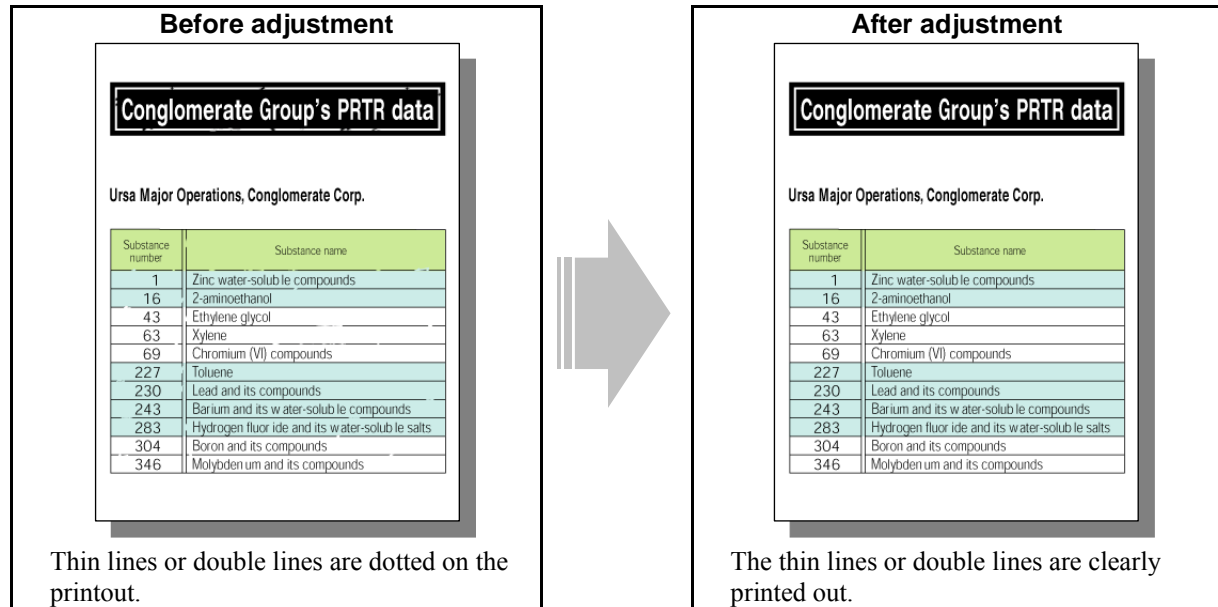
Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

\<Note> • This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Halftone" option. (For instance, if the value for [05] code for PCL and Detail is changed, it will be applied to printing performed with PCL6 and Halftone = "Detail" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

• When "Mono" is selected from among the "Color" options and "Auto" (default) is selected from among the "Halftone" options, "Detail" of the "Halftone" options is applied to text and graphics (illustrations), and "Smooth" is applied to raster data (images). Therefore, particular attention is required since the adjustment may have a different impact according to the patterns of the image to be printed.

❑ **Caution after the adjustment**

Nothing in particular.

3.16 To Clearly Print Thin Lines/Double Lines

Before adjustment	After adjustment
 Thin lines or double lines are dotted on the printout.	 The thin lines or double lines are clearly printed out.

❑ Explanation

When thin lines or double lines, which are laid out on a solid filled area, are printed out, they may be dotted on the printout. Change the option on the printer driver, setting for emphasizing thin lines, in order to clearly print them out.

❑ Procedures

＊Follow the procedure below to perform the adjustment. However, the service technician shall judge whether or not the adjustment is to be performed in conjunction with the printer driver setting in step (1) and the [08] code setting in step (4) after checking the printed image.

＊Both the service technician and the user can use procedure (1).

＊Only the service technician must use procedures (2), (3) and (4).

(1) Enable the "Distinguish Thin Line" option on the printer driver.

For Windows

PCL6   PS3   XPS

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Mark the "Distinguish Thin Line" checkbox in the "Basic" tab.

For Macintosh

Mac
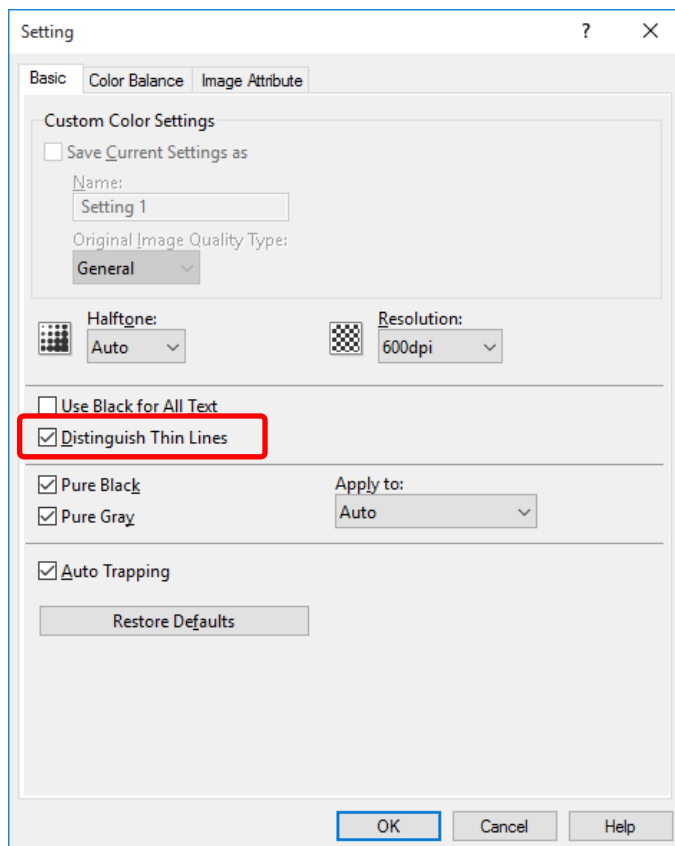
Open the print dialog box. Enable the "Print Mode" - "Distinguish Thin Line" option.
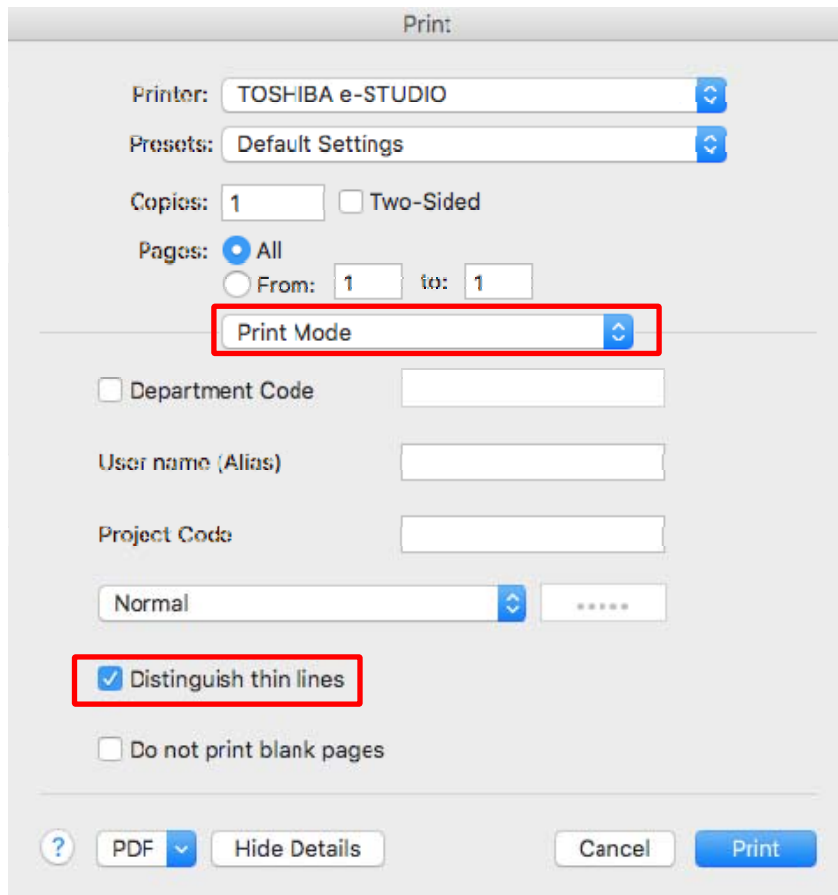
After changing the setting on the printer driver menu, print the image and check its image quality.

If further image quality adjustment is necessary, the service technician shall use the following procedure because the color of the text of the original file may not be set as black:

██ |█| PS3   * Applicable only to 1200dpi

██ |█|| (2) Select [05 ADJUSTMENT MODE]. Increase the setting value of the code [8242] to increase the density
level of thin lines by emphasizing them.

PDL	Color	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS3 (1200dpi)	Black	05-8242	0	Set value larger than 3	0 to 5	3
	Color		1	Set value larger than 1		1

<Note>   When the setting value of the color adjustment is increased, thin lines in light colors in printing
at 1200 dpi may turn out darker than at 600 dpi.
For example, when a 3D object such as Word Art is printed at 1200 dpi, the border lines may
become darker.

After setting the value, print the image and check its image quality.
If further image quality adjustment is necessary, use the following procedure:

PS3   * Applicable only to 1200 dpi

██ |█| (3) Select [05 ADJUSTMENT MODE]. Change the setting value of the code [8243] to adjust a range for
emphasizing thin lines.

PDL	Color	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS3 (1200dpi)	Black (Min.)	05-8243	0	Set value larger than 1	0 to 255	1
	Black (Max.)		1	Set value smaller than 200		200
	Color (Min.)		2	Set value larger than 1		1
	Color (Max.)		3	Set value smaller than 255		255

After changing the value, perform printing and check the image quality.
If further image quality adjustments are necessary, follow the next step. However, the service technician
shall judge whether or not the adjustment is to be performed in conjunction with the settings in steps (1) to
(3).

PCL6   PS3   XPS   Mac

█ ▌▊ (4) Select [08 SETTING MODE]. Change the value for code [2548] to make the outline of the copied text thicker and clearer, or thinner and finer.

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

Setting item		[08] code	Subcode	Recommended value	Acceptable range value	Default
Potential on printing white text / Correction setting	Y	08-2548	0	To make the outline of text thicker and clearer: Set a value smaller than 5. To make the outline of text thinner and finer: Set a value larger than 5.	0 to 12	6
	M		1			
	C		2			
	K		3			

   ＊To check the amount changed with this setting, it is recommended to set the value at "3" or "4" first to decrease it, and then to set the value at "8" or "9" first to increase it. Then check the copy image and increase or decrease the value further so that the image will be adjusted finely.

   • After changing the value, perform automatic calibration.
   ＊Refer to step (1) in "1.1 To Obtain a Darker Image" to perform automatic calibration.

❑ **Caution after the adjustment**

• Performing this adjustment on thin lines may not give satisfactory results. In this case, it is recommended to perform the adjustment in conjunction with "3.14 To Clearly Print Light-Colored Thin Lines or Text". However, the service technician shall judge whether or not the adjustment is to be performed in conjunction with "3.14 To Clearly Print Light-Colored Thin Lines or Text" after checking the printed image.

• In some consumption conditions, background fogging or a decrease in the amount of developer material (carrier streaks) may occur. Therefore, carefully perform the adjustment while checking the printed image.

❑ **Remarks**

If you perform only step (4) above (changing the setting value of the code [08-2548]) as an image quality adjustment for a certain color, it may cause an extra increase or decrease in the amount of the toner used for this color compared with that for the other colors, or it may create a difference in the reproducibility of halftones.

3.17 To Decrease the Image Density and Save Toner

(To Print in the Toner Save Mode)

Before adjustment	After adjustment
Default printing.	Printing is performed, while the toner is being saved.
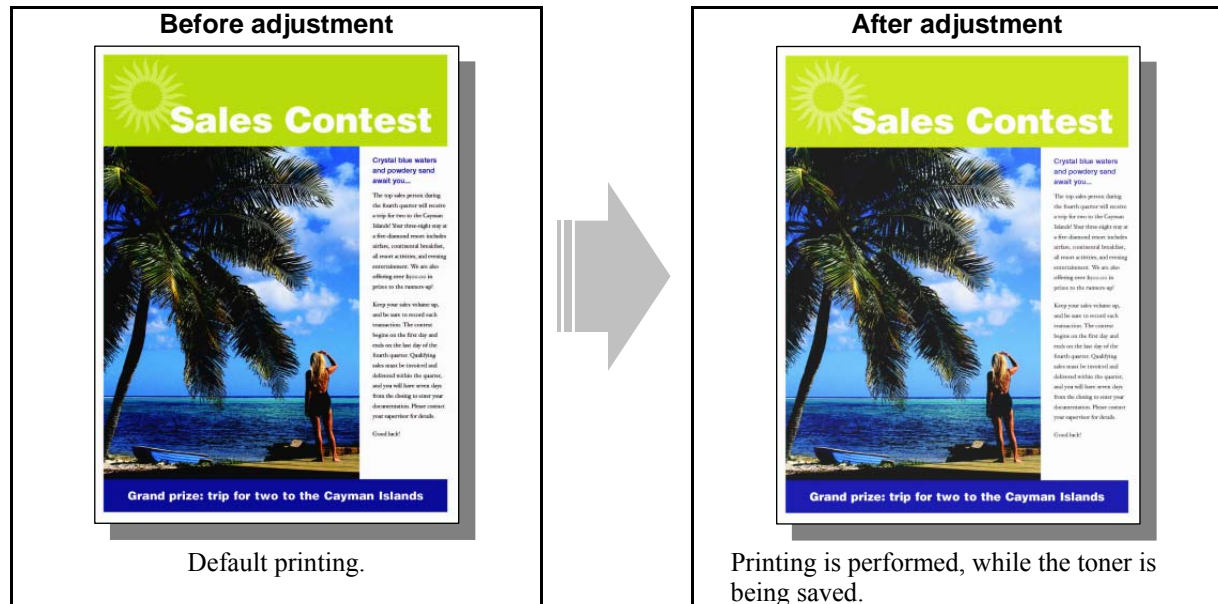
❑ **Explanation**

This product offers a toner save mode. It is intended to automatically decrease the image density and reduce the amount of toner used. Change the option on the printer driver and perform printing in the toner save mode, for instance, if a large number of copies have to be printed, or if the image density is too high.

❑ **Procedures**

* Both the service technician and the user can perform all adjustments.

■ ▌▌ (1) Enable the "Toner Save" option on the printer driver.

For Windows

PCL6   PS3   XPS

Open the property page of the printer driver. Mark the "Toner Save" checkbox in the "Others" tab.

For Macintosh

Mac
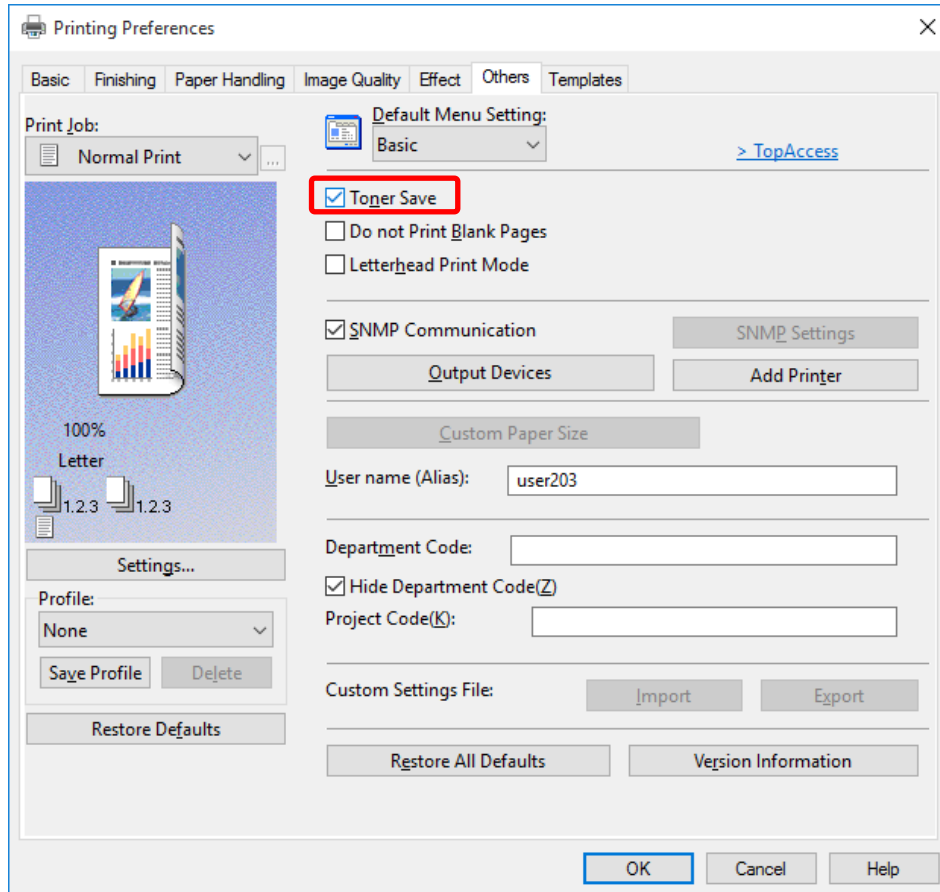
Open the print dialog box. Enable the "Color Settings 1" - "Toner Save" option.
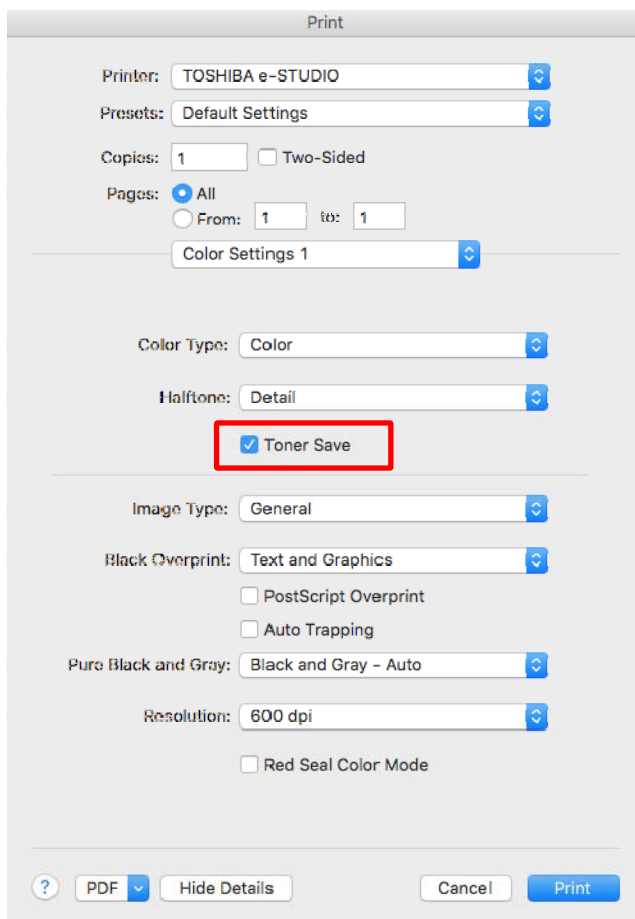
❑ **Caution after the adjustment**

The adjustment may possibly provide the image density lower than the user desires, when printing is performed in the toner save mode. Therefore, carefully perform the adjustment, while checking the printouts.

❑ **Remarks**

The print density in the toner save mode can also be adjusted. For further information regarding the adjustment procedures, refer to 3.18 To Adjust the Image Density in the Toner Save Mode.

3.18 To Adjust the Image Density in the Toner Save Mode

Before adjustment	After adjustment
The image density is too dark, even when printing is performed in the toner save mode.	The image density in the toner save mode is adjustable, as desired.

❑ **Explanation**

The product offers a toner save mode. It is intended to automatically decrease the image density and reduce the amount of toner used. Adjust the upper limit of the image density in the toner save mode, in order to obtain the desired image density requested by a particular user.

❑ **Procedures**

* The service technician must perform all adjustments.

PCL6   PS3   XPS   Mac

■ ▐ ▐▌▐ (1) Select [05 ADJUSTMENT MODE]. Change the value to adjust the image density in the toner save mode.

＊The [05] code to use varies, depending on whether to adjust the image quality on Full Color or Twin Color printing or on Black and White printing. Use either of the procedures below corresponding to the type of original to print.

To adjust the image quality in Full Color or Twin Color printing

("Auto," "Color" or "Twin Color" is selected from among the "Color" options on the PCL6 or PS3 or XPS printer driver. "Auto," "Color" or "Twin Color" is selected from among the "Color Type" options on Macintosh.)

＊The "Color" options are available in the "Basic" tab on the PCL6, PS3 and XPS printer drivers. The "Color Type" options are available in the "Color Settings 1" menu in the print dialog box on Macintosh.

(a) Select [05 ADJUSTMENT MODE]. Change the value for codes [8160] or [8161] to adjust the upper limit of the image density in the toner save mode.
    * Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)
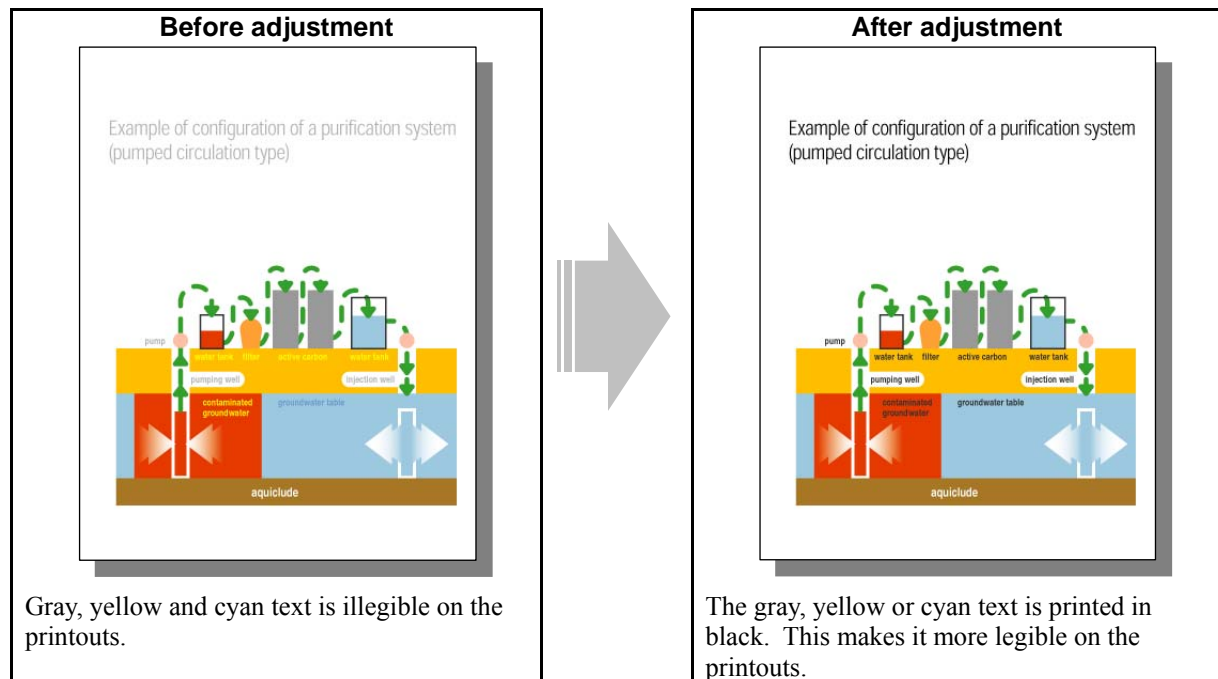
Resolution	PDL	[05] code	Subcode	Recommended value	Acceptable value range	Default
600dpi	PS3	05-1055	0	Set a value smaller than 176 to decrease the density. Set a value larger than 176 to increase the density.	0 to 255	176
	PCL6	05-1055	1			
	XPS	05-1055	2			
1200dpi	PS3	05-8161	-	Set a value smaller than 176 to decrease the density. Set a value larger than 176 to increase the density.	0 to 255	176

＊Set the value in increments of approximately 10, while checking the printouts until the optimum value is obtained.

To adjust the image quality on Black and White printing

("Black and White" is selected from among the "Color" options on the PCL6 or PS3 or XPS printer driver.
"Mono" is selected from among the "Color Type" options on Macintosh.)

* The "Color" options are available in the "Basic" tab on the PCL6, PS3 and XPS printer drivers. The
 "Color Type" options are available in the "Color Settings 1" menu in the print dialog box on Macintosh.

(a) Select [05 ADJUSTMENT MODE]. Increase the value for codes [7307] or [7302] to adjustment the upper
 limit of the image density in the toner save mode.
 * Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Resolution	PDL	[05] code	Subcode	Recommended value	Acceptable value range	Default
600dpi	PS3	05-7307	0	Set a value smaller than 176 to decrease the density. Set a value larger than 176 to increase the density.	0 to 255	176
	PCL6	05-7307	1			
	XPS	05-7307	2			
1200dpi	PS3	05-7302	0	Set a value smaller than 176 to decrease the density. Set a value larger than 176 to increase the density.	0 to 255	176

 * Set the value in increments of approximately 10, while checking the printouts until the optimum value is
 obtained.

❑ **Caution after the adjustment**

The adjustment may possibly cause an increase of the amount of toner used (if the image density is increased) or provide
faint print images (if the image density is decreased). Therefore, carefully perform the adjustment, while checking the
printouts.

3.19 To Print Illegible Gray or Colored Text in Black

Before adjustment	After adjustment
Example of configuration of a purification system (pumped circulation type)	Example of configuration of a purification system (pumped circulation type)
Gray, yellow and cyan text is illegible on the printouts.	The gray, yellow or cyan text is printed in black. This makes it more legible on the printouts.

❑ **Explanation**

Text may look illegible on the printout, depending on the hues of the background and the text contained in the original, particularly, when printing an original containing yellow, light blue or gray text on a light-colored background. In addition, when a full-color original is printed in the Black and White mode, the colored text may turn gray on the printout and eventually become illegible. In this case, change the option on the printer driver, in order to reproduce the colored text (except the white text) in black and make it more legible on the printout.

＊This adjustment will have an effect only on printing on a Windows PCL6 or PS3 or XPS emulation printer driver.
 (This adjustment cannot be performed on a Macintosh printer driver.)

❑ **Procedures**

＊Both the service technician and the user can perform all adjustments.

PCL6   PS3   XPS

(1) Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Mark the "Use Black for All Text" checkbox in the "Basic" tab.

＊This adjustment will be effective, only if a file created on a general application, such as Microsoft Office,
is printed in PostScript (PS3). It may not be effective, if a file created on a graphic application (e.g.
Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications
is printed.
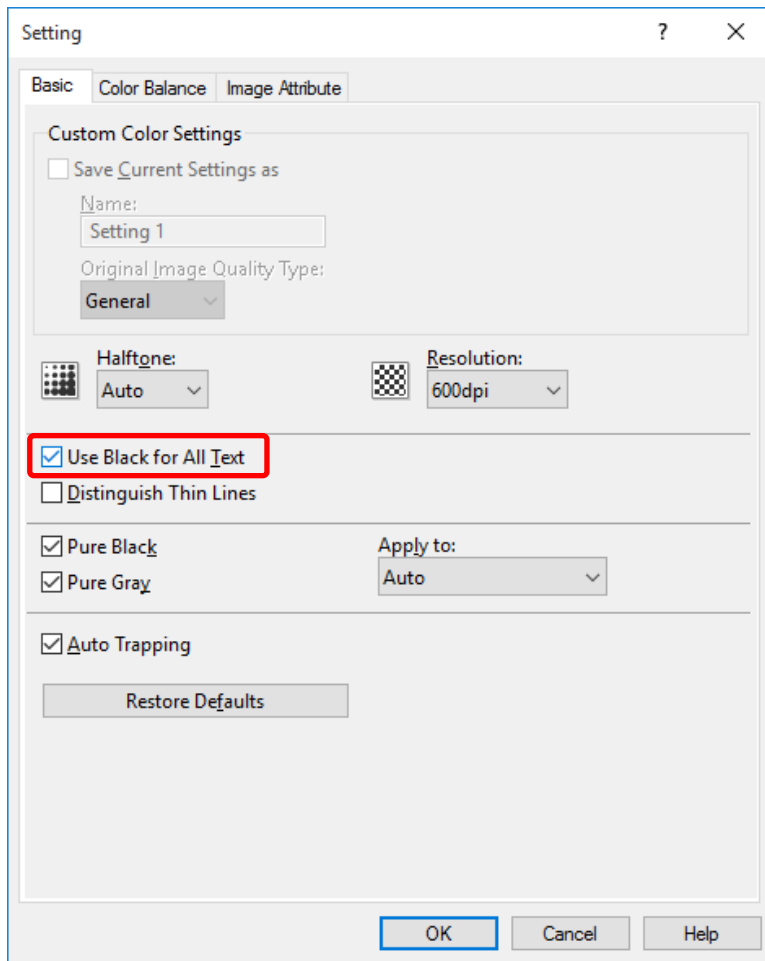
❑ **Caution after the adjustment**

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).

3.20 To Ignore Blank Pages for Printing

Before adjustment	After adjustment
A blank page is also delivered.	A blank page is ignored for printing.
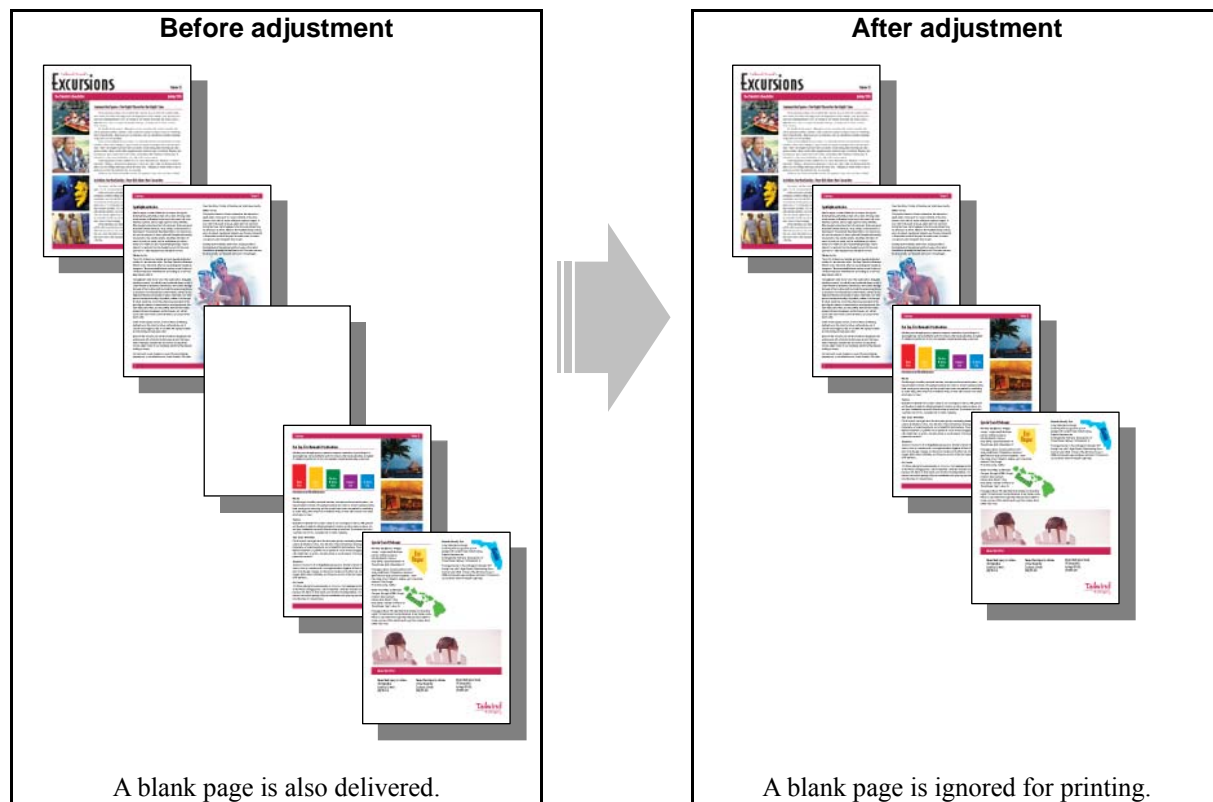
❑ Explanation

Some applications may be designed to automatically insert blank pages for laying out the pages of a document.

Change the option on the printer driver, in order to ignore all blank pages for printing.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

█ ▐▐▌ (1)Enable the "Do not Print Blank Pages" option on the printer driver.

For Windows

PCL6   PS3   XPS

Open the property page of the printer driver. Mark the "Do not Print Blank Pages" checkbox in the "Others" tab.

For Macintosh

Mac
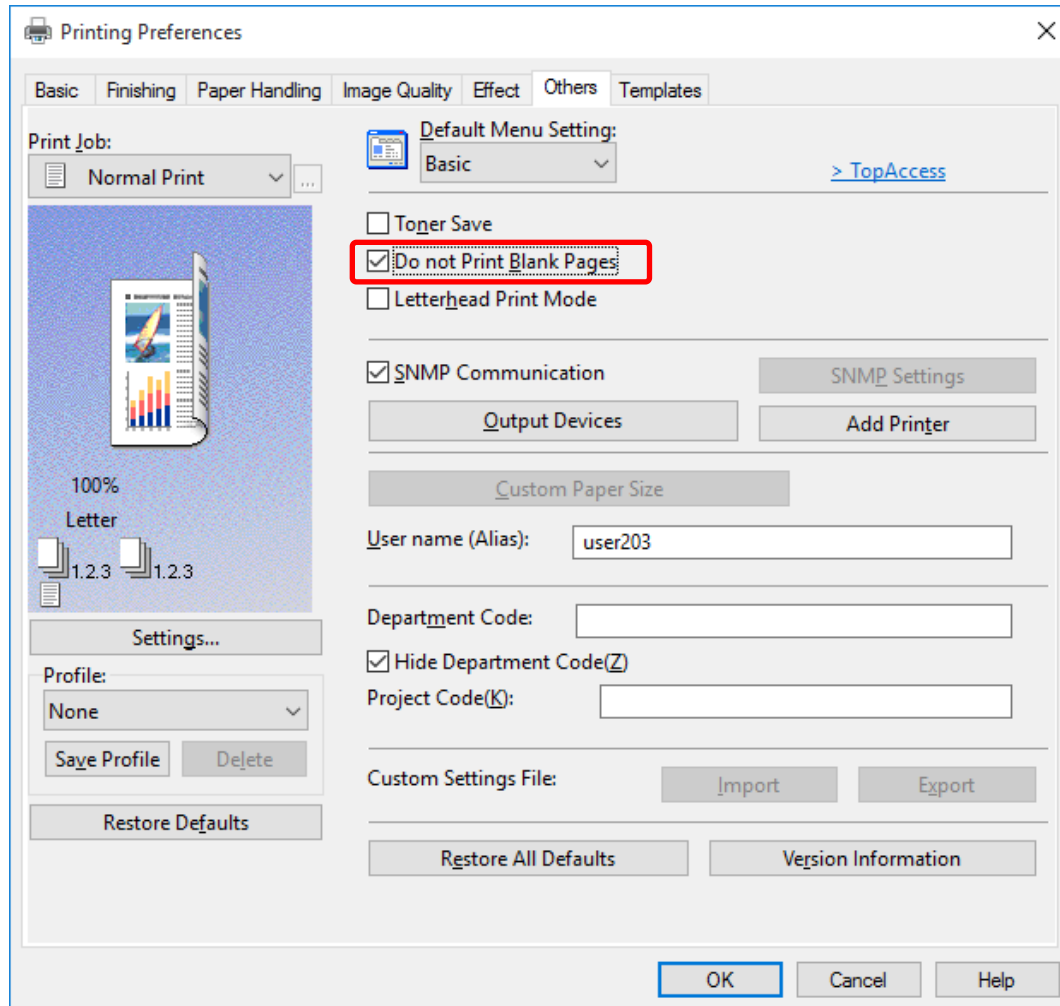
Open the print dialog box. Enable the "Print Mode" - "Do not Print Blank Pages" option.
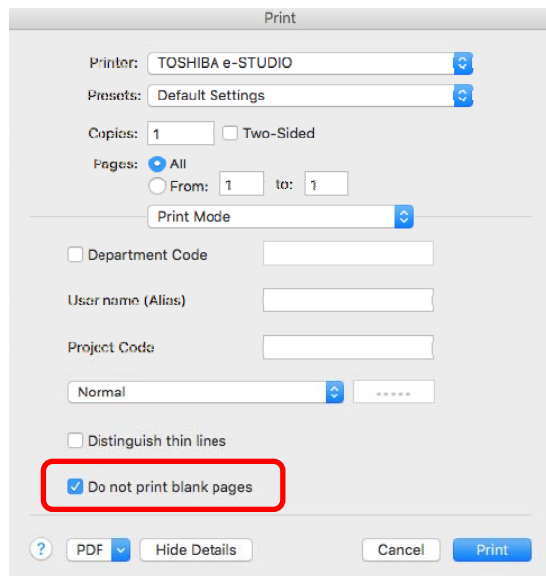
❑ **Caution after the adjustment**

The adjustment may not possibly operate the following options as programmed. Therefore, pay special attention to the combination of options.

- Booklet printing
- N-up printing
- Use Front Cover
- Use Back Cover
- Interleave Pages

❑ **Remarks**

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. The header or footer will be printed out.

3.21 To Sharply Print Black Text

Before adjustment	After adjustment
Text looks black on the monitor. But the hue will vary, if it is printed out in the Full color mode.	The hue of the text is nearly matched with the black hue on the monitor.
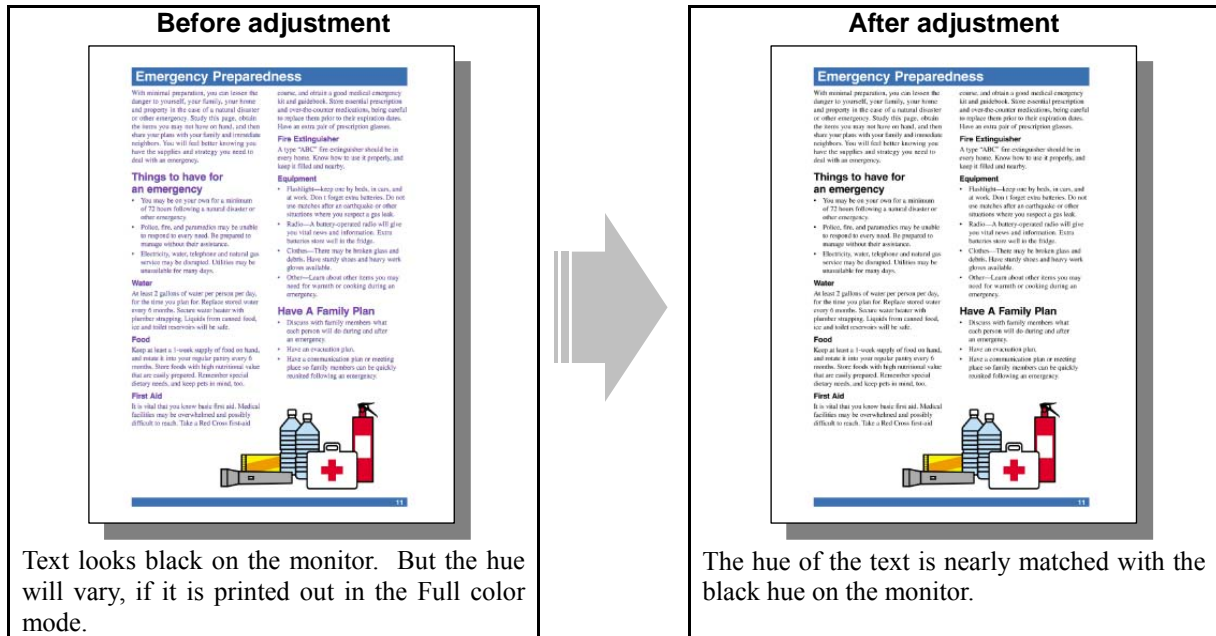
❑ Explanation

Text looks black on the monitor. But if it is printed in the Full color mode (with "Auto" selected from among the "Color" options), all color toners (C, M, Y and K) will be used to print it, depending on the application in use.

As a result, the black hue on the printout looks different from what the user desires. This problem is caused by the application specifications, not by the printer.

Particularly, the following factors may print black text using all color toners (C, M, Y and K) when a PDF file is printed out:

- The file of black text (CMY = 0%, K = 100%) is printed on the PCL6 printer driver.
- Black text is treated as image data instead of text data on the file.
- Black text is not defined as 100% black (RGB = 0% or CMY = 0%, K = 100%) on the file.

Change the option on the printer driver or adjust the color balance, in order to nearly match the hue of the black text on the file, in which these factors may be included, with the black hue.

As a point to remember, determine whether the text to adjust is entered as an actual text (font) or as a graphic or image data.

❑ Procedures

＊Perform the adjustment in accordance with the procedures below.

＊Both the service technician and the user can use procedures (1), (2), (4) and (5).

＊Only the service technician must use procedures (3) and (6).

▮▮ (1) If printing is performed on a PCL6 printer driver, select a PS3 printer driver.

    <Hint>   If printing is performed on a PCL6 printer driver, or if a file or a graphic application created on a DTP application, such as Illustrator, QuarkXPress, FreeHand, or CorelDraw, is printed using the CMYK toners, or a high-definition PDF file created on these applications is printed, black text may not be converted into 100% black. But if printing is performed on a PS3 printer driver, black text can be printed in black, as shown on the file.

    After printing on the PS3 driver, print and check the print image quality.
    If further image quality adjustments are still necessary, use the next procedure.

▮▮ (2) Mark the "Pure Black" checkbox on the printer driver. Select "Text, Graphic & Image" from among the "Apply to" options.

    <Hint>   Text on the Web page may be raster data (image) created in GIF or JPEG format. Black-and-white data created in PDF format by scanning the original are also raster data. If the "Pure Black" checkbox is marked on the printer driver, "Auto" is selected from among the "Apply to" options by default. Raster data are handled as an image, which is intended to improve the texture, and the 4 color toners (C, M, Y and K) will be used to print black. If "Text, Graphic & Image" is selected from among the "Apply to" options, only the K toner will be used to print black on raster data.

For Windows

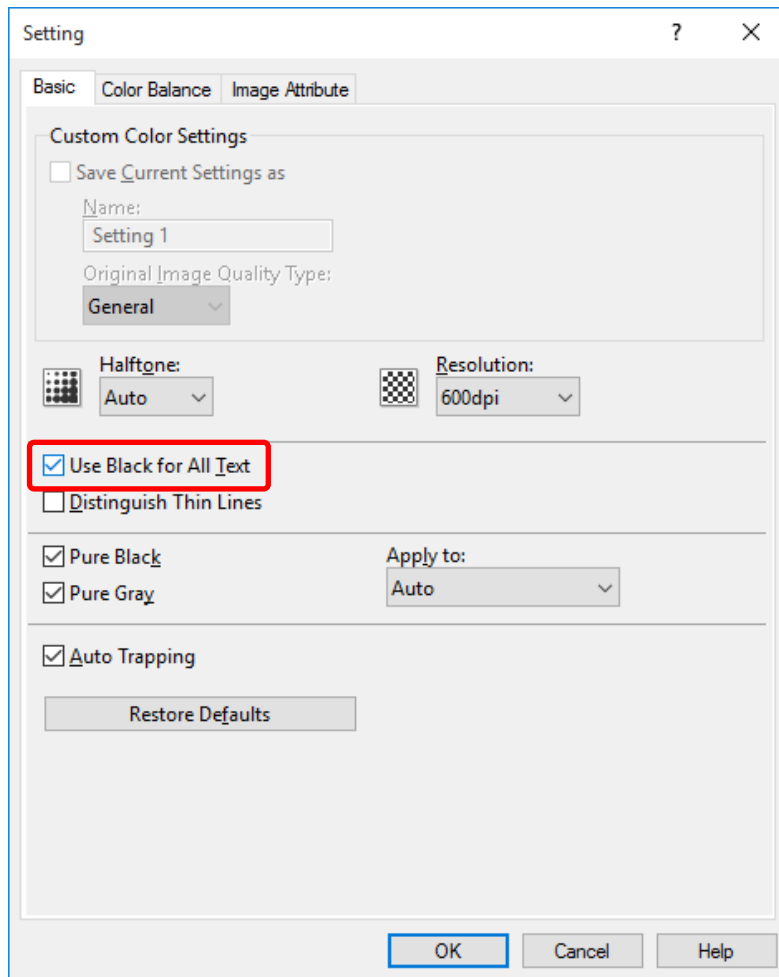`PCL6` `PS3` `XPS` * This adjustment will have an effect only on Black and white mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.
Mark the "Pure Black" checkbox in the "Basic" tab. Select "Text, Graphic & Image" from among the "Apply to" options.
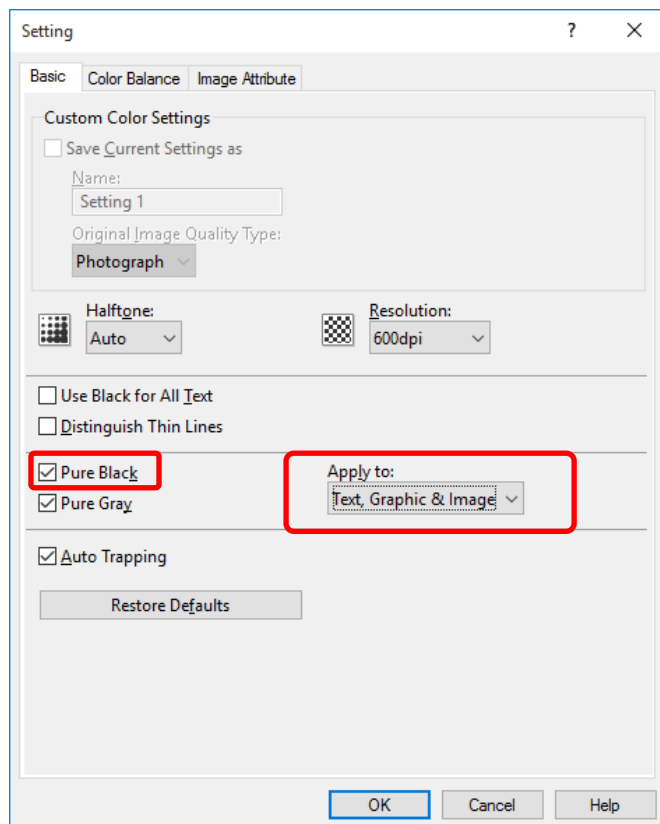
For Macintosh

Mac   * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Select "Color Settings 1" - "Black – Text, Graphic and Image" from among the "Pure Black and Gray" options.
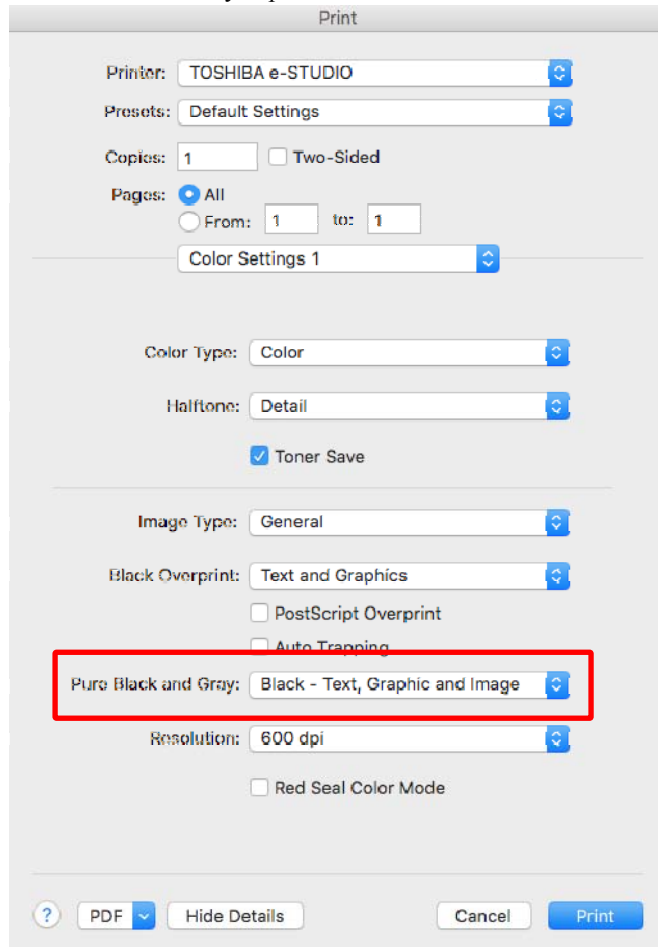
After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

PCL6　　PS3　　XPS　　Mac　　　* This adjustment will have an effect only on Black and white mode printing.

(3) Select [05 ADJUSTMENT MODE]. Change the values for codes [8210 to 8212] or [8249 to 8254] to adjust the threshold values for "Pure Gray" and "Pure Black" (to adjust the area to print only using the K toner).

　　• Adjust the value for [05] code corresponding to the print option to be applied (Apply to, PDL, Item, Subcode (Image quality type)).

　　* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Apply to	PDL	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text	PCL6	05-8210	0/1/2/3	Set a value smaller than the default to decrease the area to print only using the K toner. Set a value larger than the default to increase the area to print only using the K toner.	1 to 255	8 / 8 / 8 / 8
	PS3	05-8252	0/1/2/3/4			8 / 8 / 8 / 8 / 8
	XPS	05-8249	0/1/2/3/4			8 / 8 / 8 / 8 / 8
Graphics	PCL6	05-8211	0/1/2/3			1 / 1 / 1 / 8
	PS3	05-8253	0/1/2/3/4			1 / 1 / 1 / 8 / 1
	XPS	05-8250	0/1/2/3/4			1 / 1 / 1 / 8 / 1
Image	PCL6	05-8212	0/1/2/3			1 / 1 / 1 / 8
	PS3	05-8254	0/1/2/3/4			1 / 1 / 1 / 8 / 1
	XPS	05-8251	0/1/2/3/4			1 / 1 / 1 / 8 / 1

　　* The subcode varies according to the Image quality type where the adjustment is performed. Refer to the table below and set the subcode for the Image quality type to adjust.

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

<Note>　　If the graphic and image options are changed, the adjustment may possibly cause the unnatural hue of gradational and photo images, and the inadequate reproducibility of gradations. Therefore, carefully perform the adjustment, while checking the printouts.

PCL6　PS3　XPS

(4) Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Mark the "Use Black for All Text" checkbox in the "Image Quality" tab.

＊This adjustment will have an effect only on printing on a Windows PCL6 or PS3 or XPS emulation printer driver.

(This adjustment cannot be performed on a Macintosh printer driver.)

＊This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed in PostScript (PS3). It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed.

<Note>　　The adjustment may provide all colored text in black.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure, because text may not be defined as 100% black on the file.

`PCL6` `PS3` `XPS` * This adjustment will have an effect only on Auto or Color mode printing.

(5) Open the property page of the printer driver and press [Setting] in the "Image Quality" tab. Mark the "Detail" checkbox in the "Color Balance" tab and then press [Edit].

     • Set the value for the Low/Medium density of the color you would like to adjust within a range of "1" to "4" in the "Color Balance Details" option.

     * This adjustment will have an effect only on printing on the Windows PCL6, PS3 or XPS emulation printer driver. (This adjustment cannot be performed on a Macintosh printer driver.)

     * Initially, set "4" and check the printout.
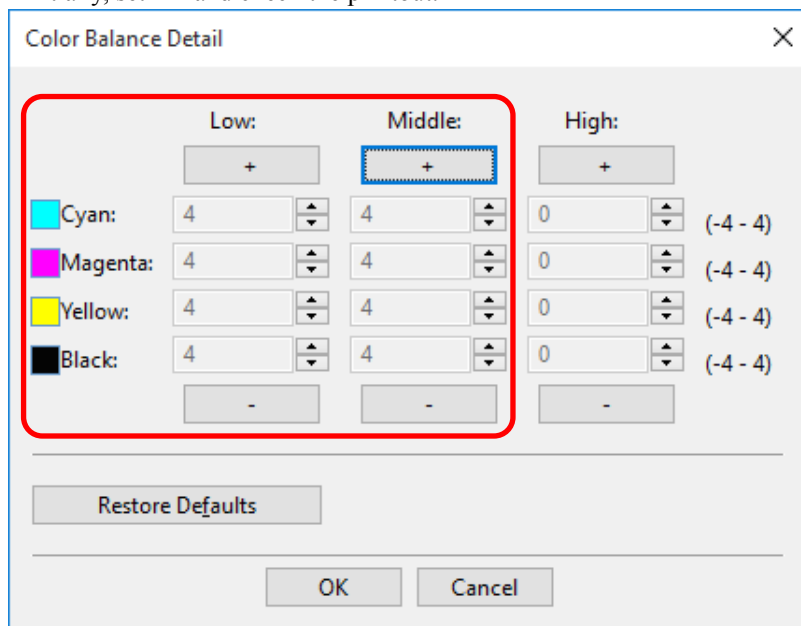
After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, use the next procedure.

`PCL6` `PS3` `XPS` `Mac` * This adjustment will have an effect only on Black and white mode printing.

(6) Select [05 ADJUSTMENT MODE]. Change the values for codes [8042 to 8065] or [8268 to 8275] to adjust the color density (Color balance).

     • Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

     Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image Quality Type = General, Halftone = Auto

         > Text area, graphic area and image area

         Change the values for Y: 05-8058, M: 05-8059, C: 05-8060 and K: 05-8061.

     • When printing on Macintosh is performed with the following option selected: Image Type = Photograph, Halftone = Smooth

         > Change the values for Y: 05-8050, M: 05-8051, C: 05-8052 and K: 05-8053.

         * Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

＊The hue of the black text printed using all color toners (C, M, Y and K) will look much clearer, if the amount of the C (cyan) toner used is larger than the M (magenta) or Y (yellow) toner. Remember that adjusting the density of K (black) does not affect the hue of the black text, if all color toners are used to print the text.

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL6	Smooth	05-8058	0/1/2			
		Detail	05-8062	0/1/2			
	PS3 (600dpi)	Smooth	05-8050	0/1/2			
		Detail	05-8054	0/1/2			
	PS3 (1200dpi)	Smooth	05-8268	0/1/2			
		Detail	05-8272	0/1/2			
	XPS	Smooth	05-8042	0/1/2			
		Detail	05-8046	0/1/2			
M (Magenta)	PCL6	Smooth	05-8059	0/1/2			
		Detail	05-8063	0/1/2			
	PS3 (600dpi)	Smooth	05-8051	0/1/2			
		Detail	05-8055	0/1/2			
	PS3 (1200dpi)	Smooth	05-8269	0/1/2			
		Detail	05-8273	0/1/2			
	XPS	Smooth	05-8043	0/1/2			
		Detail	05-8047	0/1/2	Set a value larger than 128.	0 to 255	128
C (Cyan)	PCL6	Smooth	05-8060	0/1/2			
		Detail	05-8064	0/1/2			
	PS3 (600dpi)	Smooth	05-8052	0/1/2			
		Detail	05-8056	0/1/2			
	PS3 (1200dpi)	Smooth	05-8270	0/1/2			
		Detail	05-8274	0/1/2			
	XPS	Smooth	05-8044	0/1/2			
		Detail	05-8048	0/1/2			
K (Black)	PCL6	Smooth	05-8061	0/1/2			
		Detail	05-8065	0/1/2			
	PS3 (600dpi)	Smooth	05-8053	0/1/2			
		Detail	05-8057	0/1/2			
	PS3 (1200dpi)	Smooth	05-8271	0/1/2			
		Detail	05-8275	0/1/2			
	XPS	Smooth	05-8045	0/1/2			
		Detail	05-8049	0/1/2			

＊Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

＊ "Halftone" 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 details (with the high frequency).

The halftone option to be applied in printing can be selected from among the "Halftone" options on the printer driver (Windows) or in the print dialog box (Macintosh).

"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described by the table below.

Apply to	"Color" and "Image Quality Type" options				Black and White	Twin Color
	Auto/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

＊ The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note> • This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Smooth is changed, it will be applied to printing performed with PCL6 and Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ Caution after the adjustment

The adjustment may possibly change the hue of the text and the image, such as a photo image, on the printout.

Therefore, carefully perform the adjustment, while checking the printouts.

❑ Remarks

To check the definition of black text

When creating a PDF file, 100% black may not be defined as follows, depending on the application settings:

"100% black" indicates the following values:
- RGB data: RGB = 0%
- CMYK data: CMY = 0%, K = 100%

As a result, text, which should be defined as 100% black on the application, is not defined as 100% black on the saved PDF file. (A small percent of color data is defined.) Eventually, all color toners (C, M, Y and K) will be used to print it.

If printing is performed on a PCL6 printer driver, print data are captured as RGB data. If black text is defined as 100% black (CMY=0%, K = 100%) for CMYK data on a PDF file, it will not be converted into 100% black (RGB = 0%) for RGB data on Acrobat, and it will be printed in colors. (It is recommended to print CMYK data on a PS3 printer driver instead of a PCL6 printer driver.)

Use "Output Preview" on Acrobat Professional to examine the color definition on the PDF file.

＊For further information regarding the Output Preview, refer to an appropriate manual or the Help menu of Acrobat Professional.

(1) Open a PDF file on Acrobat Professional.

(2) Select "Output Preview" in the "Advanced" menu.

(3) Select a profile from among the "Simulation Profile" options.

* Select the profile to use for the Monitor Simulation, in order to print RGB data, and the one to use for the Ink Simulation, in order to print CMYK data from among the "Simulation Profile" options.

(4) Move the cursor over the data to check the color definition. Then the color calibration will be displayed in percentage on "Separations."
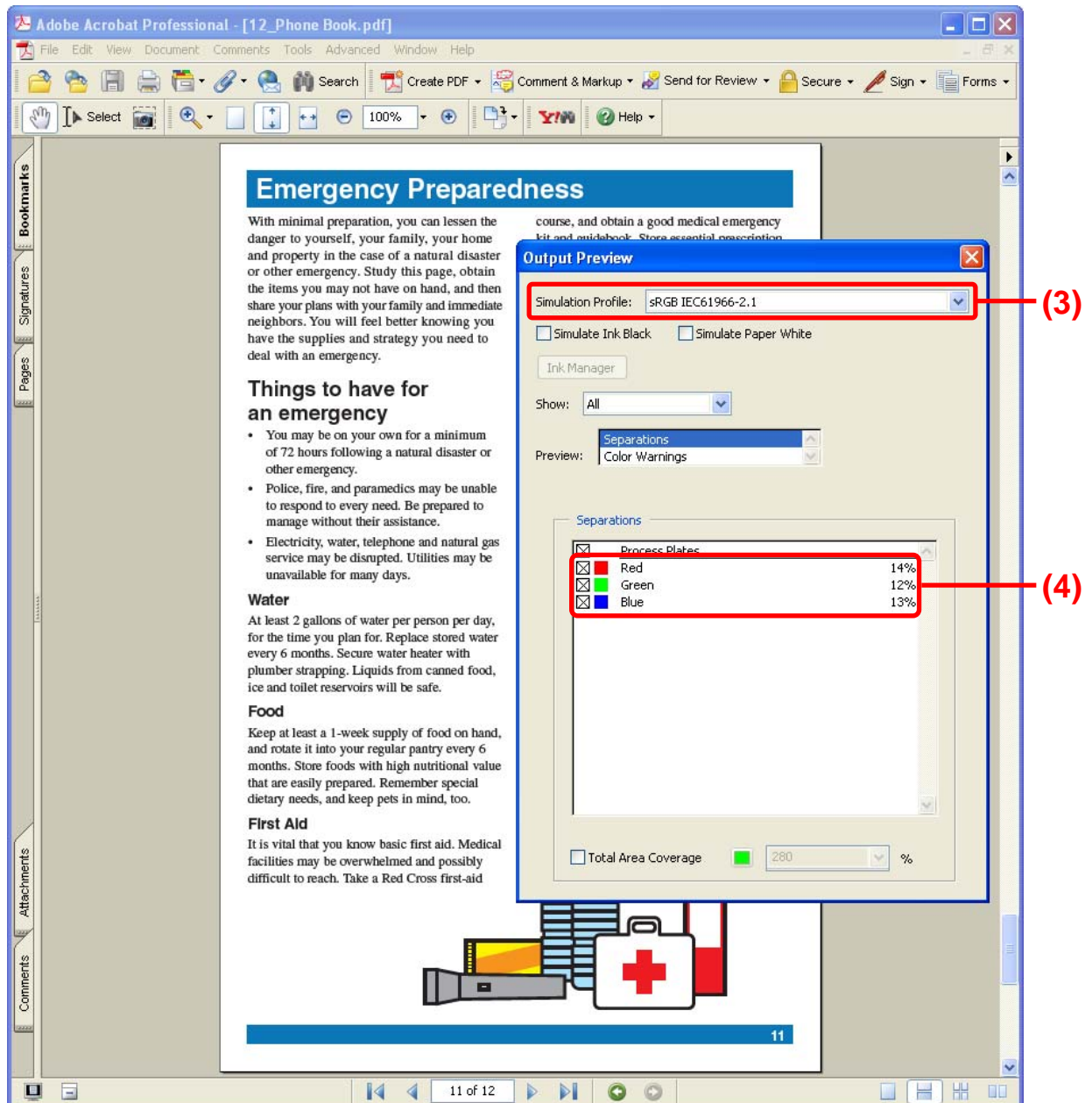
3.22 To Prevent Dark Toner from Coming Off

Before adjustment	After adjustment
The dark toner comes off.	The dark toner is securely fixed.

❑ Explanation

When highly colored lines, where 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 the rough surface of paper or thick paper, the toner may come off the paper. This is because the C, M, Y and K toners may be overlaid, the paper may be extremely thick or the surface may be rough, and the amount of toner used may be insufficient. Adjust the limit value of the maximum amount of toner used, in order to avoid a toner fixing problem.

This adjustment does not affect a single color of C, M, Y and K, or bright colors such as red and green.

❑ Procedures

＊The service technician must perform all adjustments.

| PCL6 | PS3 | XPS | Mac | * This adjustment will have an effect only on Auto or Color mode printing.

(1) Select [05 ADJUSTMENT MODE]. Decrease the values for codes [8070/8071] or [8089/8090] to reduce the limit value of the maximum amount of toner used.
  • Adjust the value for [05] code corresponding to the print option to be applied (Paper type and Halftone).

   ＊Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Resolution	Halftone	[05] Code	Subcode	Recommended value	Acceptable value range	Default
600dpi	Smooth	05-8071	0~8,11,12	Set a value smaller than the default.	0 to 255	128
	Detail	05-8070	0~8,11,12			
1200dpi	Smooth	05-8090	0~8,11,12	Set a value smaller than the default.	0 to 255	128
	Detail	05-8089	0~8,11,12			

＊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
2	Recycled paper
3	Thick 1
4	Thick 2
5	Thick 3
6	Thick 4
7	Special 1
8	Special 2
11	Envelope
12	OHP

❑ Caution after the adjustment

The adjustment may possibly cause dark areas such as shades on photo images to look unnaturally faint.

Therefore, carefully perform the adjustment, while checking the printouts.

3.23 To Register the Image Quality Adjusted Corresponding to a Preference
(To use the Custom Color Settings)

❑ **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 on a Windows PCL6 or PS3 or XPS emulation printer driver.
　(This adjustment cannot be performed on a Macintosh printer driver.)

❑ **Procedures**

* Both the service technician and the user can perform all adjustments.

* As an example of using Customer Color Settings, if "Presentation" is selected as the base type from among the "Image Quality Type" options, the procedure below is to set a larger value for the Middle density of the color in the "Color Balance Details" option, and register the name of "Draft agenda."

| PCL6 | PS3 | XPS |

(1) Open the property page of the printer driver in the "Printers and Faxes" folder. Press [Setting] in the "General" tab and open [Printing Preferences].

　　　Ex: Mark the "Detail" checkbox in the "Color Balance" tab. Press [Edit].
　　　　　Set the value for the Middle density of the color in the "Color Balance Details" option.
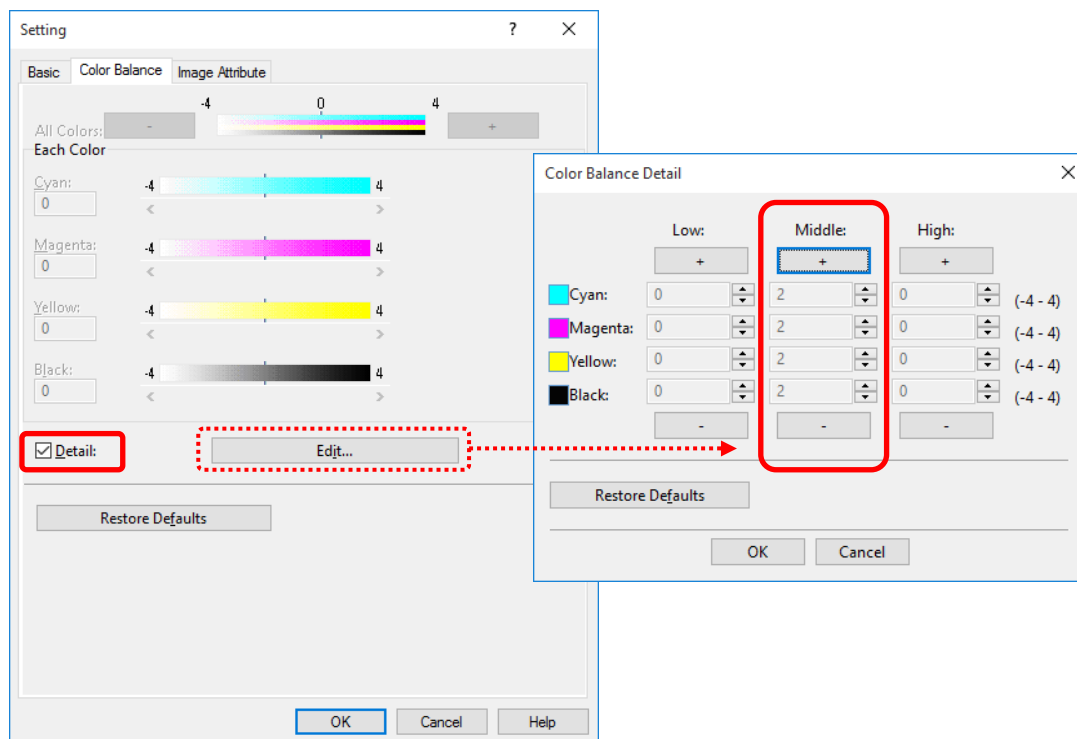
　　　After setting the values, use the procedure.

`PCL6` `PS3` `XPS`

▌▌ (2) Register the name for what has been specified in procedure (1), in the "Basic" tab in the "Setting" option.

• Use steps (a) to (c) to register the name.

(a) Mark the "Save Current setting as" checkbox in the "Custom Color Settings" option.

(b) Enter an optional name in the "Name" option.

(c) Select the type you would like to use as the base one from among the "Image Quality Type" options in "Original Image Quality Type."
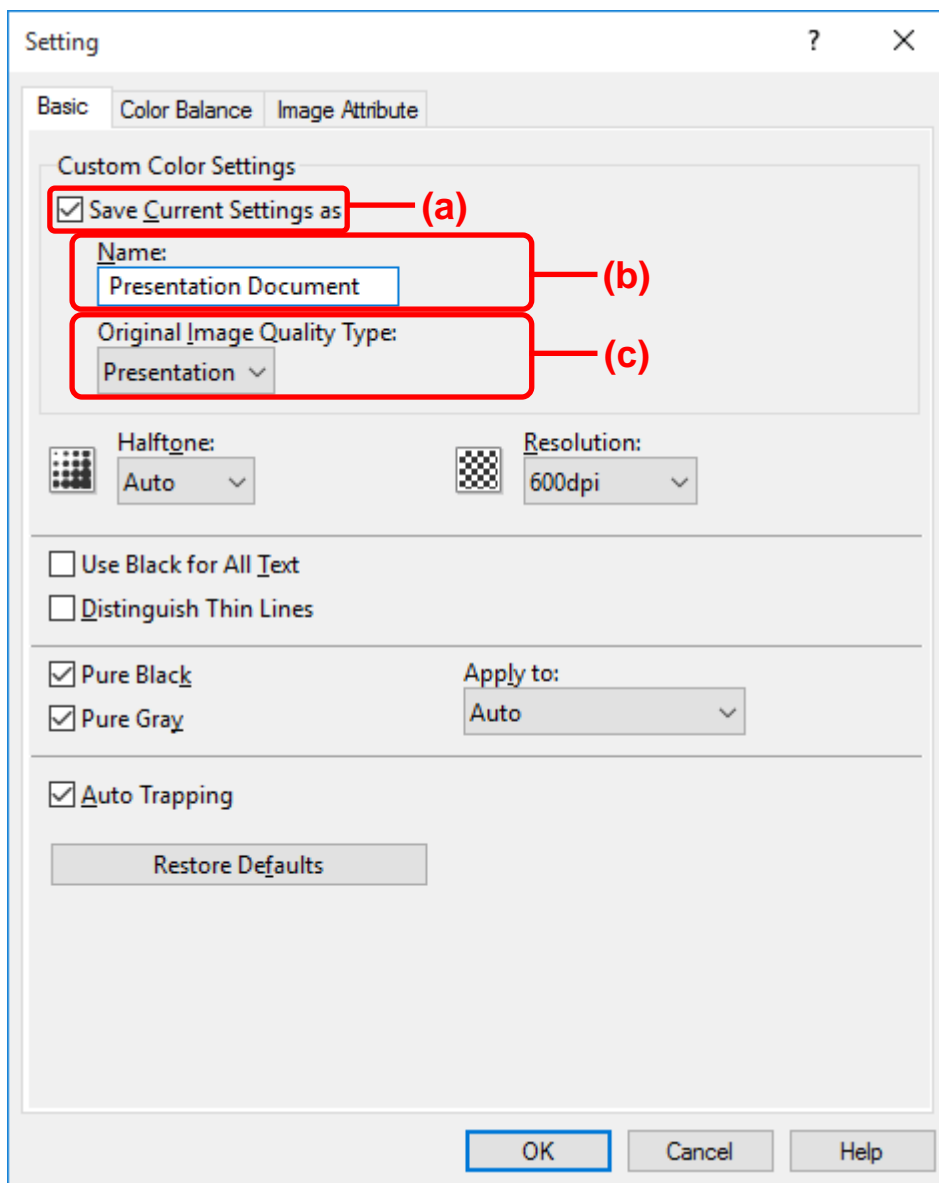
After registering the name, open the property page of the printer driver. Make sure that the name created for the "Image Quality Type" option in the "Image Quality" tab has been registered.

＊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 of "Presentation" is displayed in the background as illustrated below.)
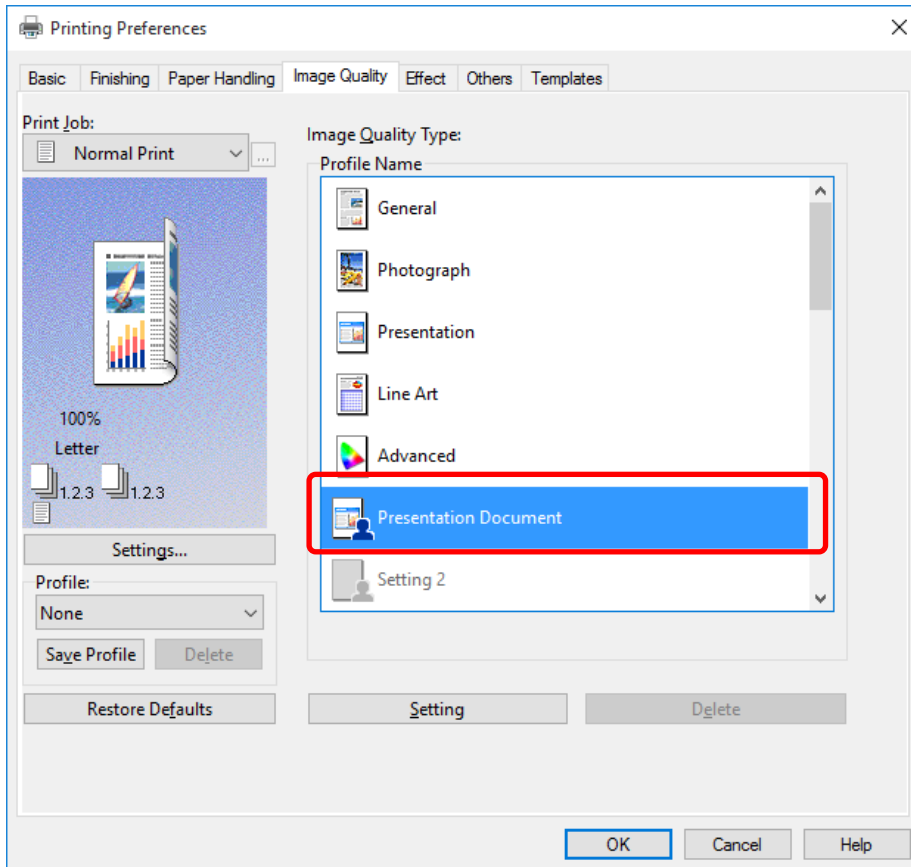
❑ **Caution after the adjustment**

The Custom Color Settings indicate a condition where the default setting has been changed.
Adjusting the values in detail in the "Setting" option allows the user to register the desired print image quality.

❑ **Remarks**

The checkbox in the "Custom Color Settings" option will be effective, only if you login using a user name belonging to Administrator or Power Users (only on Windows NT4.0 / 2000 / XP / Vista / Server 2003), and open the property page of the printer driver in the "Printers and Faxes" folder.

3.24 To Print a Full-Color Original in Two Colors

Before adjustment	After Adjustment
The original is printed in the Full color mode.	The areas other than black is printed in the same color (Red).
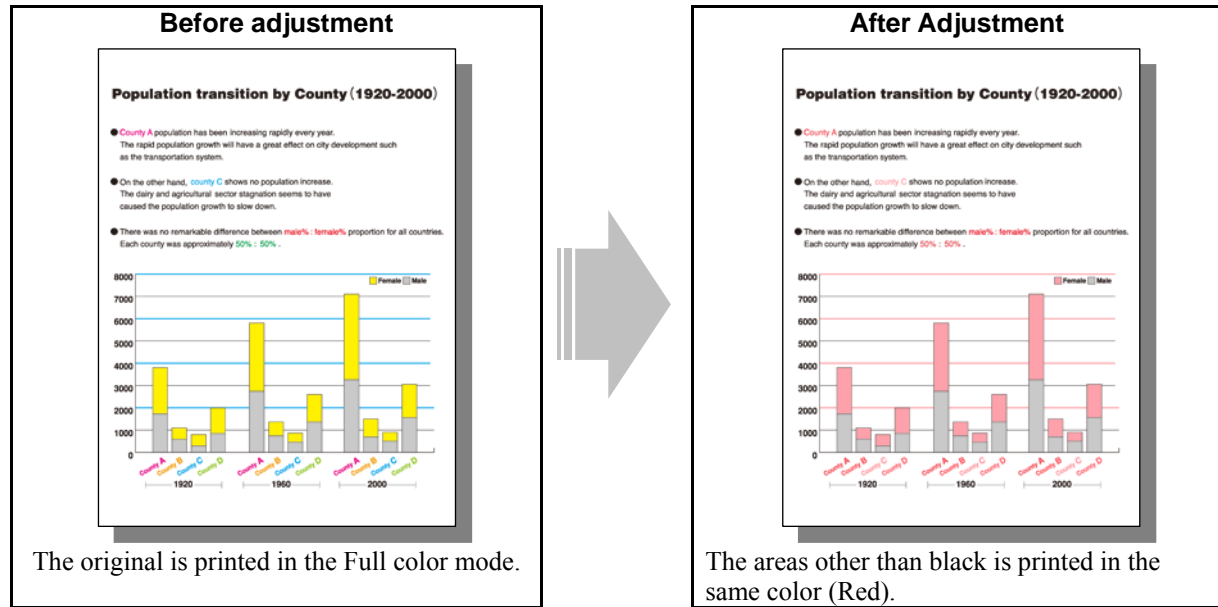
❑ Explanation

Select the twin color print mode option, in order to change colored text and lines on full-color original and print out the original.

* The gradation reproduction for twin-color print can be switched by means of the following self-diagnostic code.

Enter [05 ADJUSTMENT MODE] and change the setting value for the code [8002].

[05] Code	Setting value	Contents	Default
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.)	

* The Twin Color mode is not available when 1200 dpi is selected for the PS3 printer driver.

❑ Procedures

* The procedure to use varies depending on whether "To Adjust Colors", "To Adjust the Sharpness" or "To Print a Full-Color Original in Two Colors". Refer to the procedure corresponding to the particular user's request.

3.24.1 To Adjust Colors

▮ (1) Select "Twin Color" from among the "Color" options on the printer driver.

For Windows

| PCL6 | PS3 | XPS |

Open the property page of the printer driver. Select "Twin Color" from among the "Color" options in the "Basic" tab. Press [Details]. Select the color to be used for the area other than black, from among the "Color" options.

For Macintosh

Mac
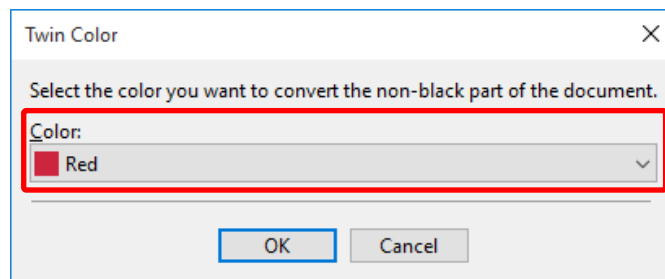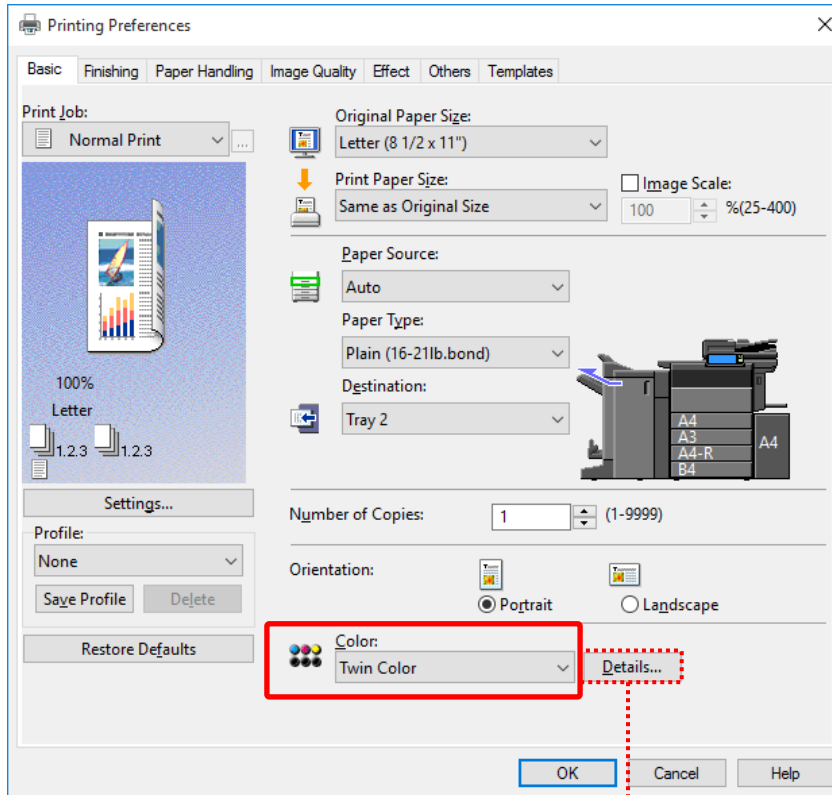
Open the print dialog box. Select "Twin color (Black & ***)" from among the "Color Type" options.
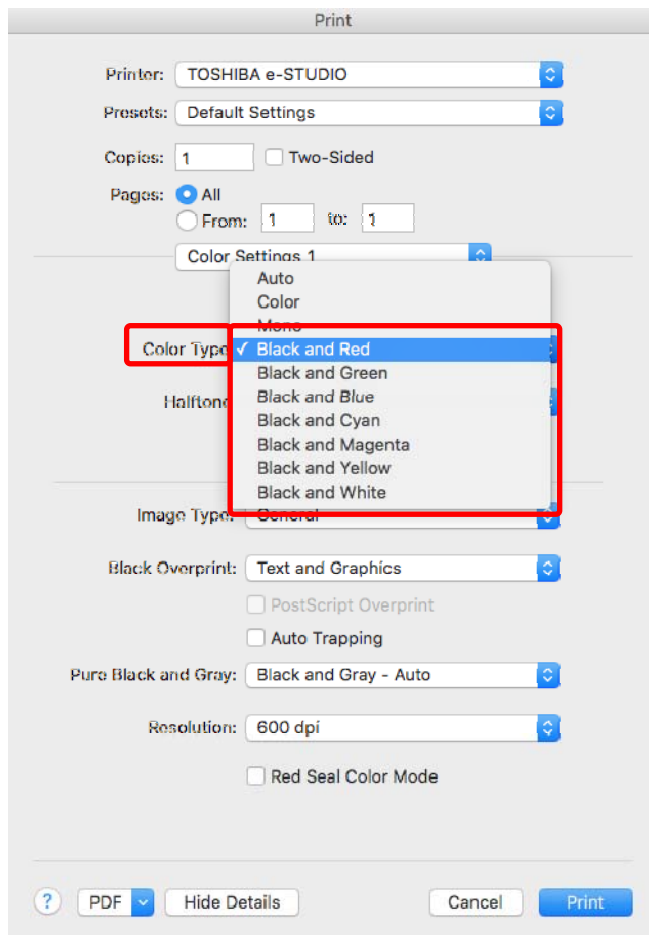
After selecting these options, print and check the print image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure according to the image quality problem the user has.

 • To obtain a shaper or softer print image: Go to procedure (2).

 • To make only the light-colored area darker: Go to procedure (3).

▌▐ (2) Change the "Color balance" option on the printer driver.

For Windows

`PCL6` `PS3` `XPS` * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab. Change the option in the "Color Balance" tab.

＊Set the value, while checking the printouts until the optimum value is obtained.

- "Color Balance" tab: Change the "All Colors" or "Each Color" option.

- To make detailed setting, you can set it by marking "Detail" checkbox. (Same as Auto color or Full color mode)
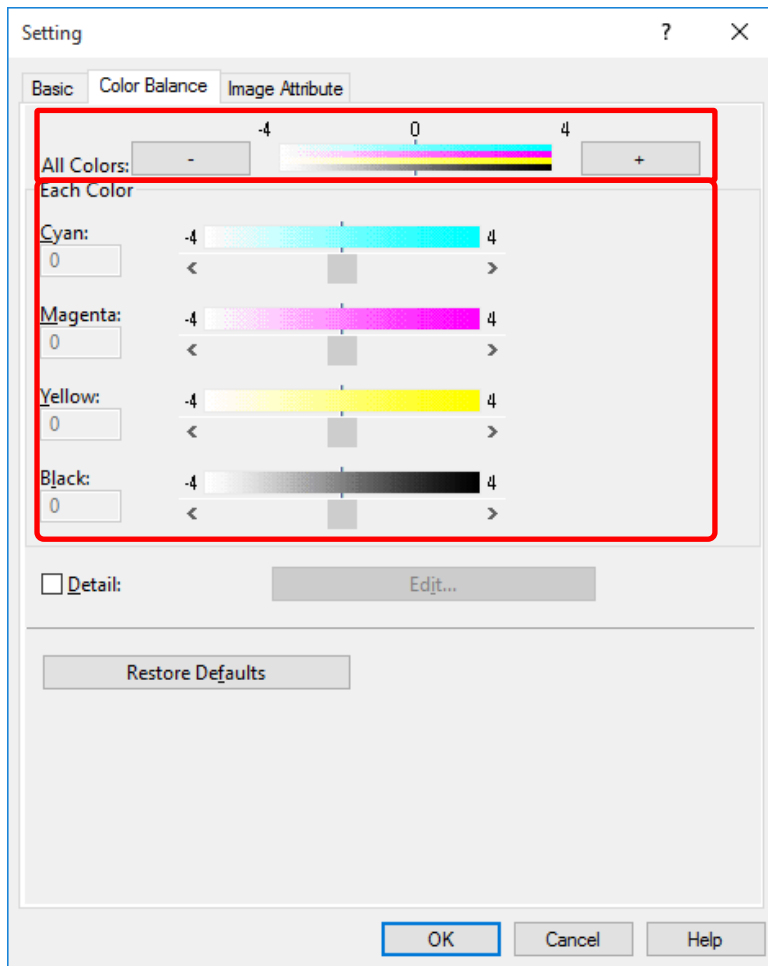
(3) Select [05 ADJUSTMENT MODE]. Change the values for codes [8023 to 8041] to adjust the color density.

- Adjust the value for the [05] code corresponding to the print option to be applied (color selected in the "Twin Color" option).

Ex.: When printing is performed with the following options selected: "Color" option = "Twin Color", "Details" option = "Red"
Adjust the values for the following [05] codes: [8033] for Y (Yellow), [8034] for M (Magenta) and [8023] for K (Black)

Selected color	Halftone	[05] code	Sub code	Recommended value	Acceptable value range	Default
Red	Y(Yellow)	05-8033	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 256	128
	M(Magenta)	05-8034	0/1/2			
	C(Cyan)	05-8035	0/1/2			
Green	Y(Yellow)	05-8036	0/1/2			
	M(Magenta)	05-8037	0/1/2			
	C(Cyan)	05-8038	0/1/2			
Blue	Y(Yellow)	05-8039	0/1/2			
	M(Magenta)	05-8040	0/1/2			
	C(Cyan)	05-8041	0/1/2			
Cyan	Y(Yellow)	05-8024	0/1/2			
	M(Magenta)	05-8025	0/1/2			
	C(Cyan)	05-8026	0/1/2			
Magenta	Y(Yellow)	05-8027	0/1/2			
	M(Magenta)	05-8028	0/1/2			
	C(Cyan)	05-8029	0/1/2			
Yellow	Y(Yellow)	05-8030	0/1/2			
	M(Magenta)	05-8031	0/1/2			
	C(Cyan)	05-8032	0/1/2			
Red/Green/ Blue/Cyan/ Magenta/ Yellow	K(Black)	05-8023	0/1/2			

＊Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

* The color to be adjusted varies according to the color (color to be used for the area other than black) selected in the Twin-color mode. Refer to the table below and select the color to be adjusted.

Selected color	Color to be adjusted		
	Y (Yellow)	M (Magenta)	C (Cyan)
Red	✓	✓	
Green	✓		✓
Blue		✓	✓
Cyan			✓
Magenta		✓	
Yellow	✓		

* "Halftone" 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" options on the printer driver (Windows) or in the print dialog box (Macintosh).

"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described by the table below.

Apply to	"Color" and "Image Quality Type" options					
	Auto/Color				Black and White	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

* The subcode varies depending on the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted	
0	Low-density area	
1	Medium-density area	
2	High-density area	05-8066-0: The maximum color density in a high-density area is fixed. 05-8066-1: The maximum color density in a high-density area is changed.

<Note> This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for Smooth is changed, it will be applied to printing performed with Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ Caution after the adjustment

If "White" is selected in the Twin-color mode, all areas other than black will not be printed. White toner will not be used to print these areas.

3.24.2 To Adjust the Sharpness

▮ (1) Select "Twin Color" from among the "Color" options on the printer driver.
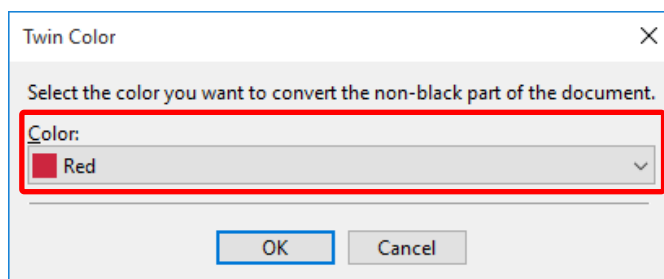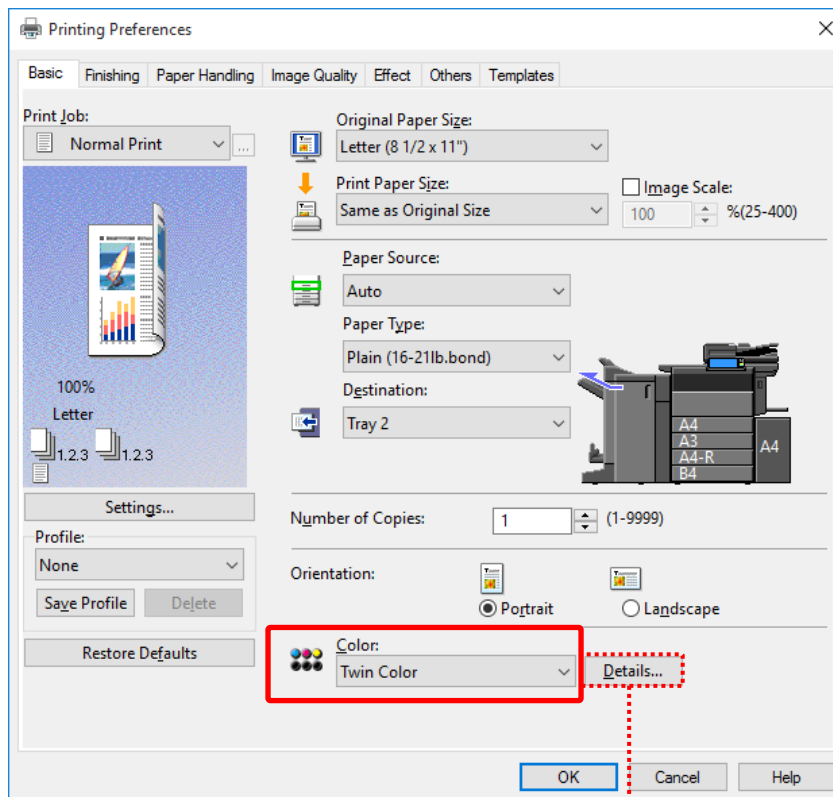
For Windows

[PCL6] [PS3] [XPS]

Open the property page of the printer driver. Select "Twin Color" from among the "Color" options in the "Basic" tab. Press [Details]. Select the color to use for the area other than black, from among the "Color" options.
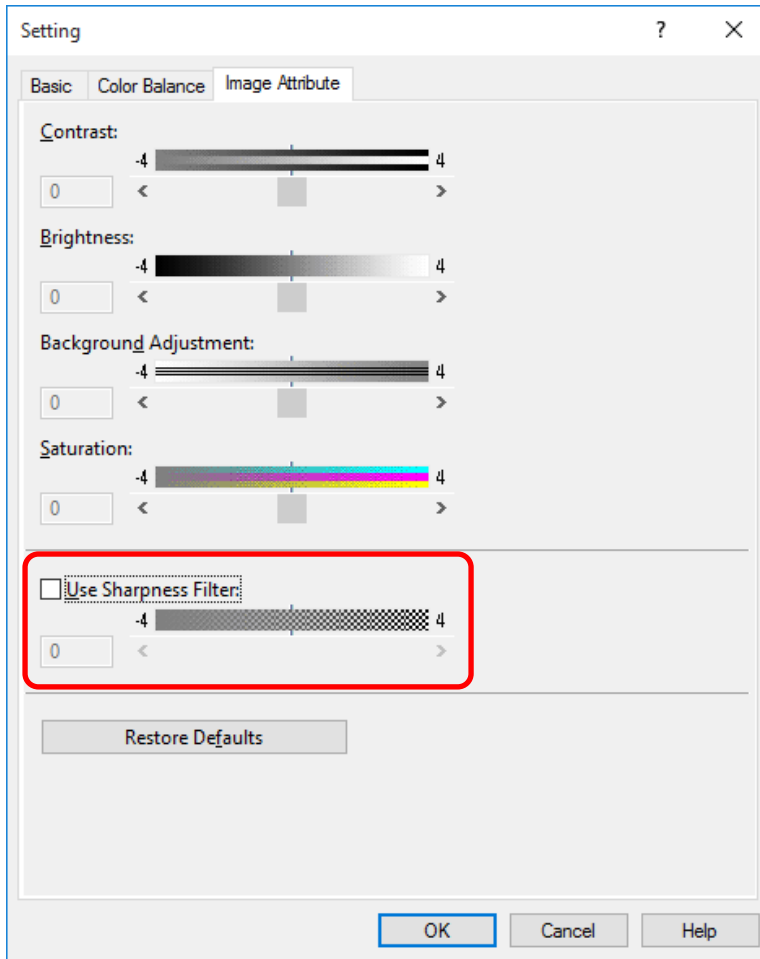
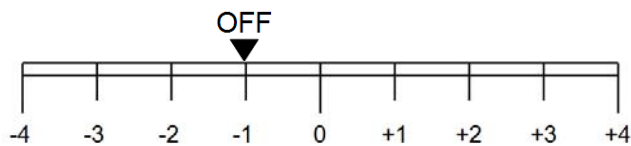▌▌▌ (2) Change the "Sharpness" option on the printer driver.

For Windows

`PCL6` `PS3` `XPS`

Open the property page of the printer driver. Press [Setting] in the "Image Quality" tab.

Set the value for "Sharpness" within a range of "-4" to "4" or to "OFF" in the "Image Attribute" tab.

The value "OFF" of sharpness intensity adjustment is positioned as shown below.

* It is enabled only in the Twin color copy mode.
Select [05 ADJUSTMENT MODE]. Change the setting value of code [8108].

Color mode	[05]code	Subcode	Recommended value	Acceptable value range	Default
Twin color	05-8108	0/1/2	The larger the value is, the sharper the image becomes.	0～255	128

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

Subcode	Original mode
0	Text
1	Graphic
2	Image

<Note> • When the setting value of this code is changed to "0", the sharpness adjustment on the Windows menu is also changed to OFF automatically.

• When the setting value of this code is larger than "128" (default), the level of the sharpness intensity is equivalent to the one when the value is set within a range of "0" to "+4" on the printer driver menu. When the setting value of this code is smaller than "128", the level of the sharpness intensity is equivalent to the one when the value is set within a range of "-4" to "-1" on the printer driver menu. Note that when the setting value of this code is "0", the image quality will not be changed even if the value is changed on the printer driver menu.

3.24.3 To Print a Full-Color Original in Two Colors

To adjust the boundary between black and colors other than black

(1) Select [05 ADJUSTMENT MODE]. Change the values for codes [8213 to 8215] to adjust the boundary between black and colors other than black.

＊As the set value is increased, the area of "CHANGE BLACK TO" will become larger. On the other hand, if the value is decreased, the area of "SECOND COLOR" will become larger.

Apply to	[05] code	Recommended value	Acceptable value range	Default
Text	8213	Increase the set value to enlarge the black area.	1 to 255	8
Graphic	8214			1
Image	8215			1

3.25 To Use ICC Profile

❑ Explanation

To interchange color images among several devices and reproduce precise color balance of the obtained images on each device, ICC profiles are generally used. This section introduces setting items that become available with the use of ICC profiles.

This function is available only for PS3 and XPS printer drivers of Windows and a PS3 printer driver of Macintosh.

❑ Procedures

* The setting procedure differs depending on how the user wants to use ICC profiles. Follow the most suitable procedure referring to the subsections " To Create ICC Profiles for Printing on the Paper to be Used ", "To Print Precise Colors Using Existing RGB Source ICC Profiles", "To Perform Simulated Printing with CMYK Inks of Each Ink Manufacturer", "To Print Using Custom RGB Profiles", "To Convert Colors with Specified Source ICC Profiles (Not Using Embedded ICC Profiles)" or "To Perform Further Adjustment After Using ICC Profiles", according to the request from the user.

3.25.1 To Create ICC Profiles for Printing on the Paper to be Used

❏ **Explanation**

To create a new printer profile to be used when "Advanced" is selected in the "Image Quality Type" option, patch printing for the printer must be performed but some users have difficulty to select the correct setting items on the printer driver menu. To create a proper ICC profile with the correct print image, the suitable setting items must be selected.

❏ **Procedures**

*Both the service technician and the user can perform all settings.

PS3　XPS

(1) Open the Properties page of the printer driver and then select the paper type on the "Paper Type" option on the "Basic" tab menu.
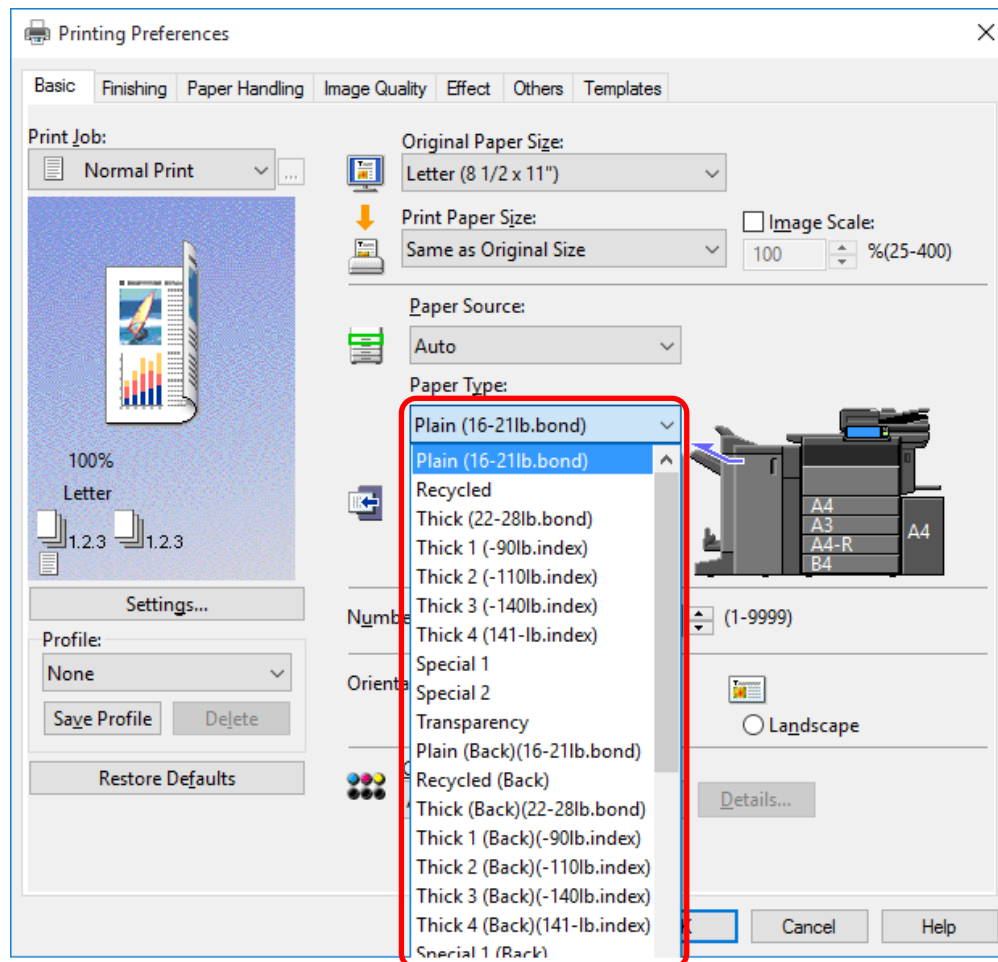
PS3 **XPS**

■ ❚❙❚ (2) Select "Advanced" in the "Image Quality Type" option on the "Image Quality" tab menu and then click [Setting]. "
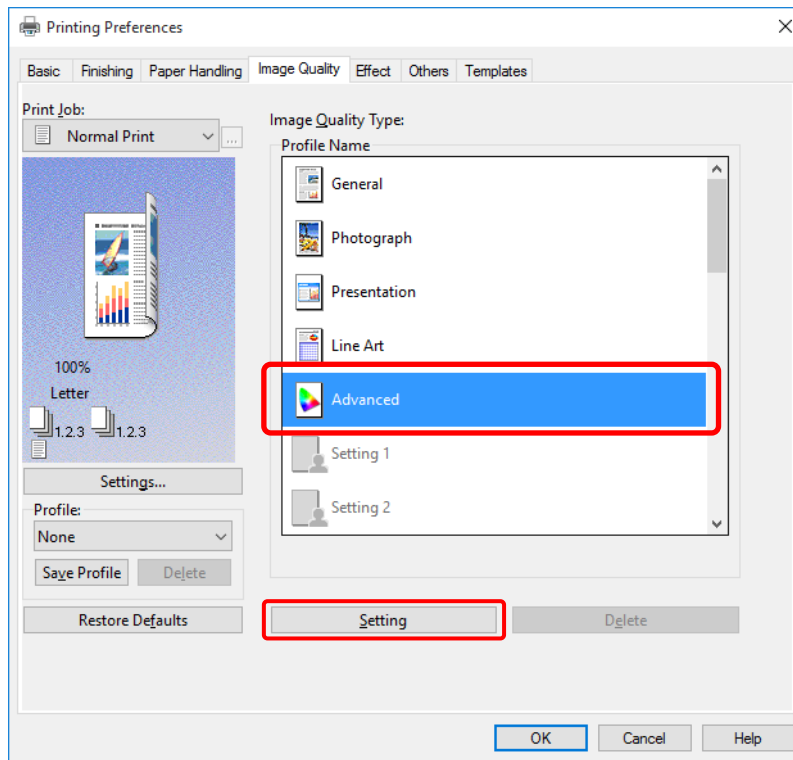
PS3 **XPS**

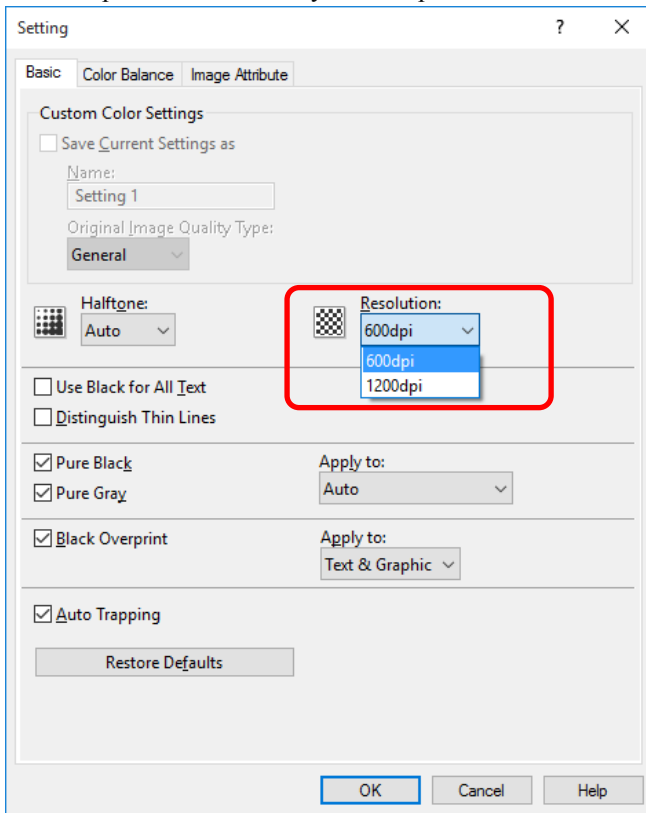■ ❚❙❚ (3) Select the desired type of halftone on the "Halftone" option on the "Basic" tab menu.

＊It is not recommended to select "Auto" on this option because several types of halftone may be used on the same page.
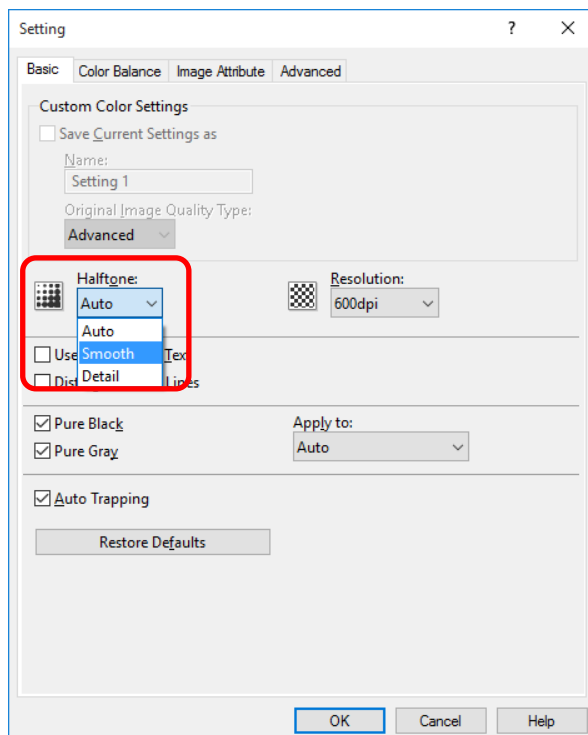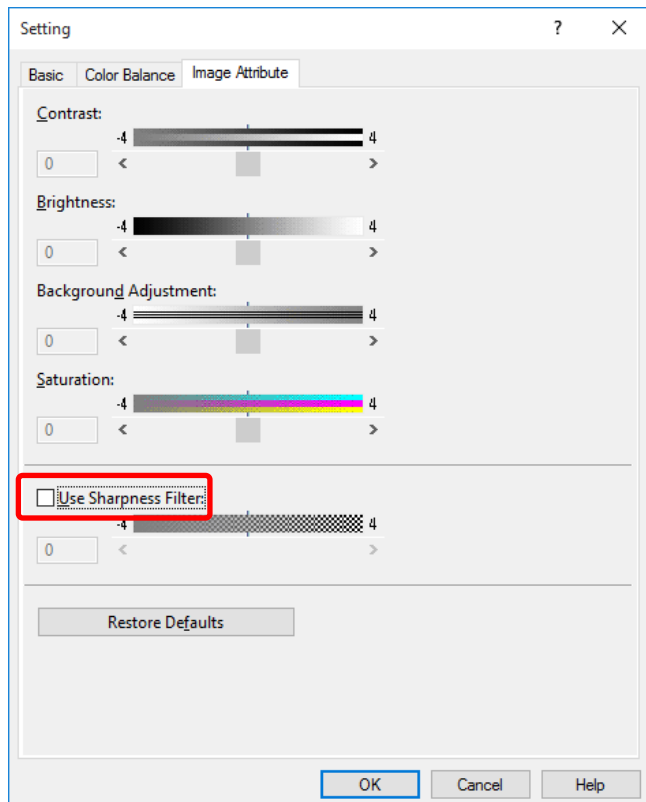
PS3   **XPS**

▊▊ ▊▊▊ (4) Select the desired resolution level on the "Resolution" option.

*"1200 dpi" is selectable only for PS3 printer driver.

PS3   **XPS**

▊▊ ▊▊▊ (5) Uncheck "Use Sharpness Filter" on the "Image Attribute" tab menu.
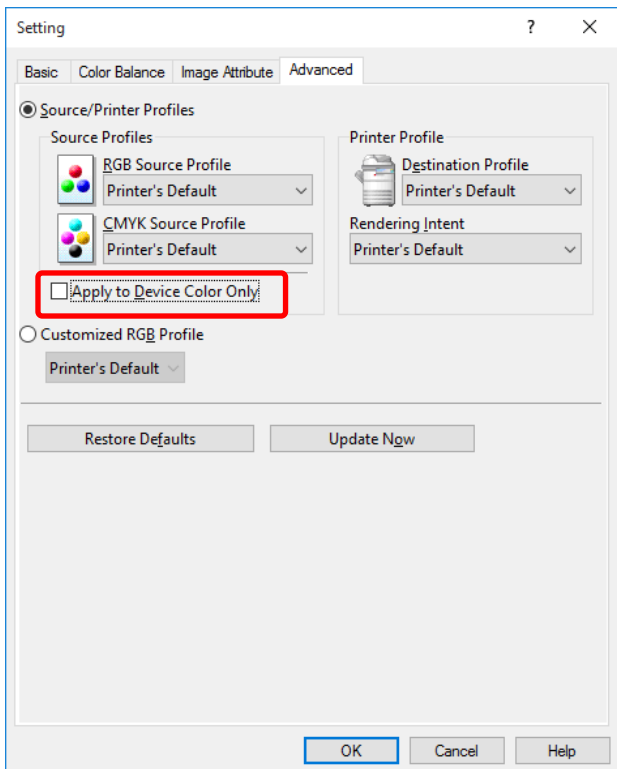
PS3 **XPS**

■ ||| (6) Select "None" on the "CMYK Source Profile" option on the "Advanced" tab menu.

* At this step you can set any printer profile.
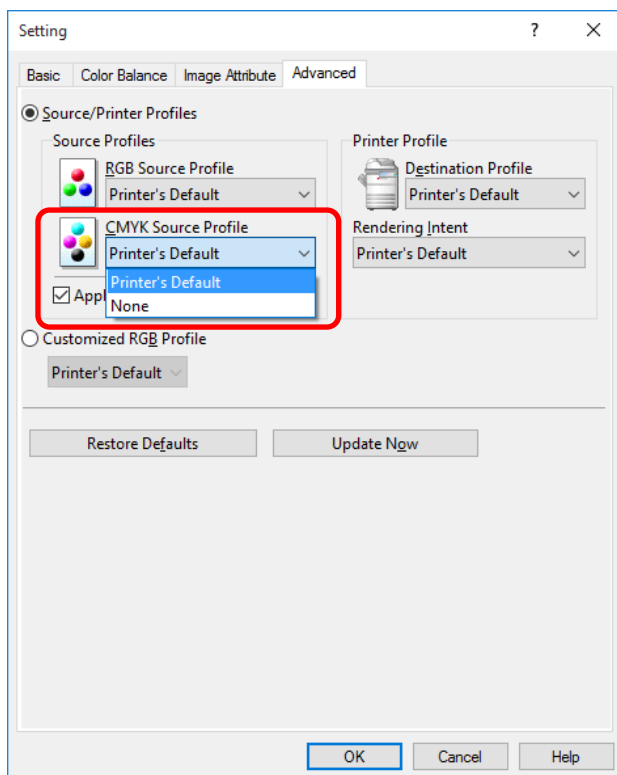
PS3 **XPS**

■ ||| (7) Uncheck "Apply to Device Color Only".

PS3 **XPS**

❚❚ ❚❚❚ (8)   Print a color measurement patch to be used on the ICC profile creation software.

PS3 **XPS**

❚❚ ❚❚❚ (9)   Create the ICC profile following the operational procedure provided by the ICC profile creation software.

❑ **Caution after the adjustment**

Nothing in particular.

❑ **Remarks**

• Read the precautions provided by the ICC profile creation software carefully before starting printing.

• The correct image may not be printed on some paper types that are out of the MFP's specifications.

3.25.2 To Print Precise Colors Using Existing RGB Source ICC Profiles

❑ Explanation

Some users use standard RGB color space ICC profiles that are disclosed and distributed by some websites when they print RGB images in their computers with RGB color space which matches with one of the ICC profiles they obtained from the website. This method is used, for example, when photo images must be printed with Adobe RGB color space. Namely, when the user has a standard ICC profile that is most suitable for particular images, he or she can apply this profile to the color conversion at the printing so that ideal print images whose colors are precisely converted can be obtained.

❑ Procedures

* Both the service technician and the user can perform all settings.

> **PS3** **XPS**

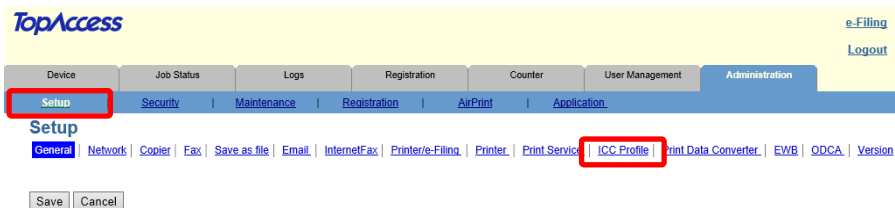■ ❚❚ (1) Create the desired printer profile using the ICC profile creation software.

> **PS3** **XPS**

■ ❚❚ (2) Access TopAccess and open the "Administration" tab menu. Then upload the desired RGB source profile and printer profile.

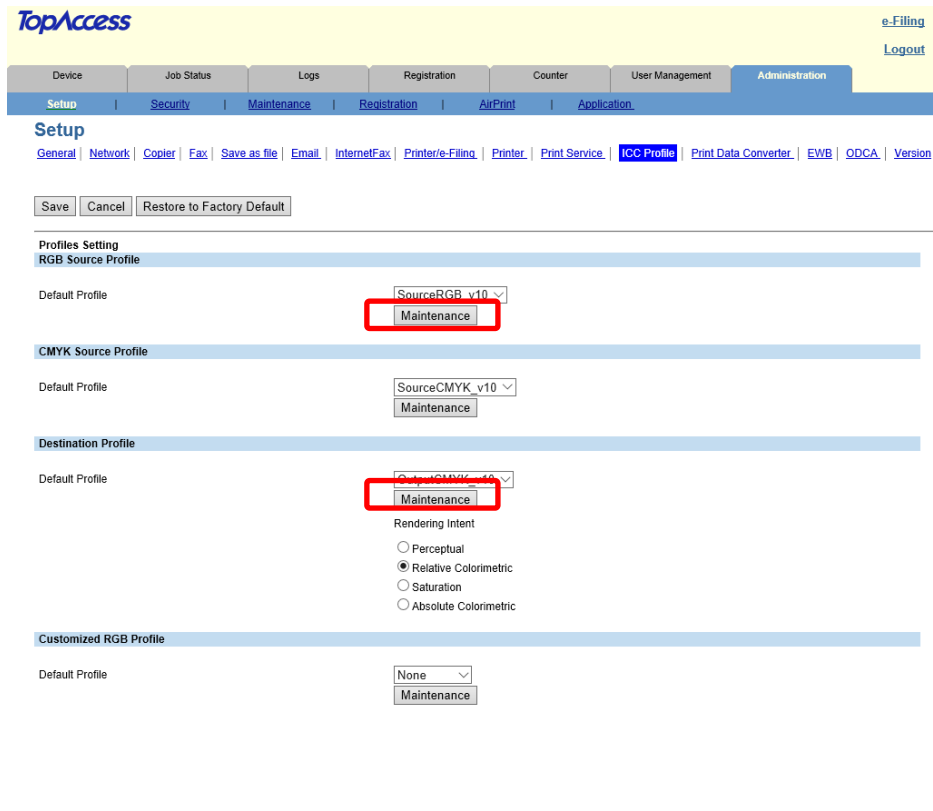• Follow (a) to (g) below to upload the profiles.

   (a) Access TopAccess and open the "Administration" tab menu.

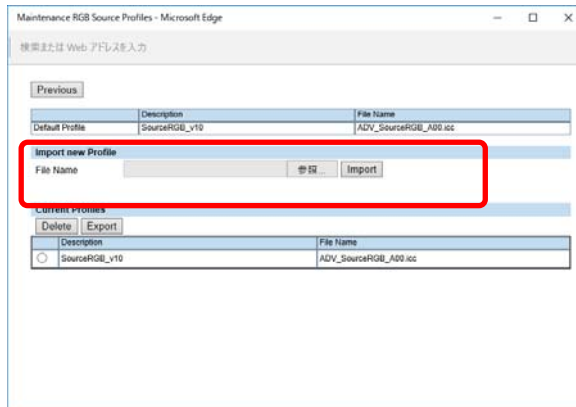   (b) Open the "Setup" menu and the "ICC Profile" submenu.

(c) Click [Maintenance] for the desired profile.

 * The Maintenance Destination Profiles page for the selected profile is displayed.

(d) Click [Browse] of "Import new Profile" to select a file for the profile. Then click [Import].

(e) Click [Previous].

 * The display returns to the "ICC Profile" submenu.
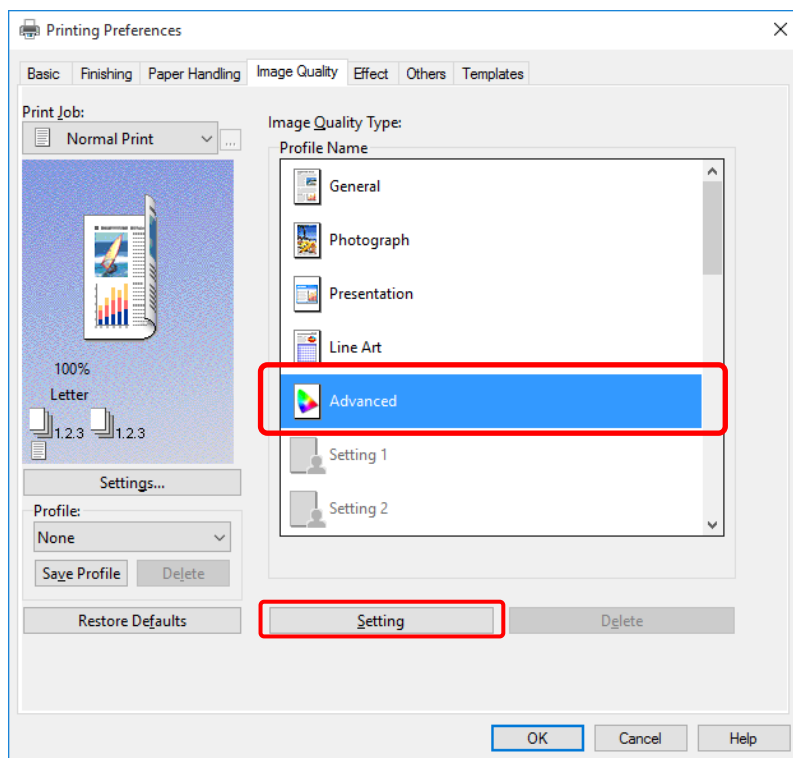
(f) Click [Save].

 * A confirmation dialog box is displayed.

(g) Click [OK].

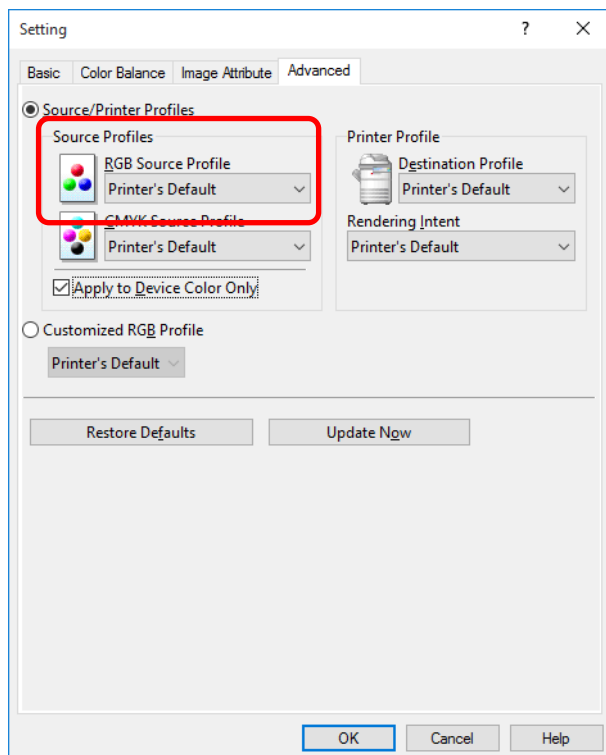 * For the details of TopAccess, see the TopAccess Guide.

PS3   XPS

■ |▊| |▊▊| (3) Open the Properties page of the printer driver and then select "Advanced" on the "Image Quality Type" option on the Image Quality" tab menu. Then click [Setting].
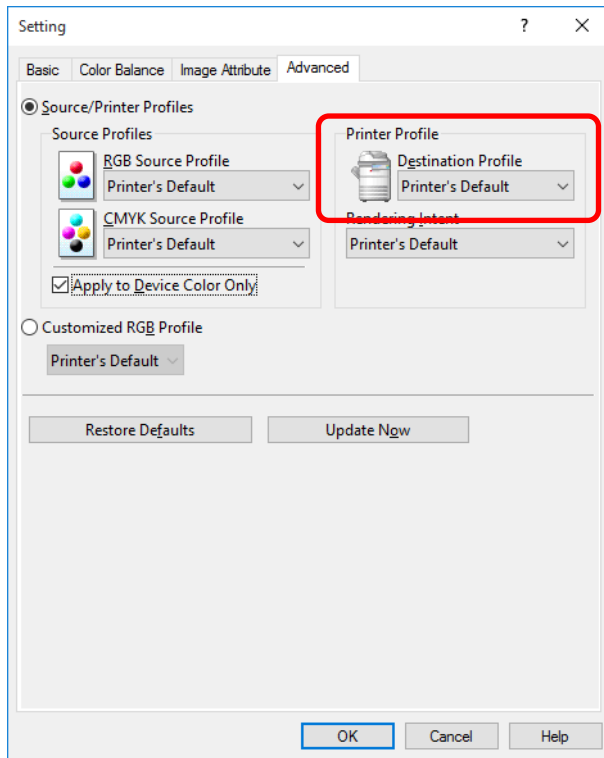

PS3   XPS

■ |▊| |▊▊| (4) Select the uploaded RGB profile on "RGB Source Profile" on the "Advanced " tab menu.

PS3 **XPS**

■ ▮▮▮ (5) Select the profile of the printer uploaded in "Printer Profile" in the "Color profile" tab.

❑ **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 models.

• The accuracy of color reproduction differs depending on printer profiles used.

3.25.3 To Perform Simulated Printing with CMYK Inks of Each Ink Manufacturer

❑ **Explanation**

ICC profiles for CMYK ink series provided by each ink manufacturer are disclosed and distributed by some websites and some users want to make a simulated printing using one of these profiles. This simulation is possible by using ICC profiles for CMYK ink of particular ink manufacturer as a CMYK source profile.

❑ **Procedures**

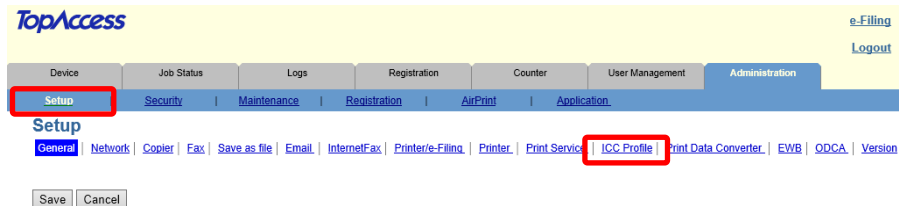*Both the service technician and the user can perform all settings.

[PS3][XPS]

■ ❚❚ (1) Create the desired printer profile using the ICC profile creation software.
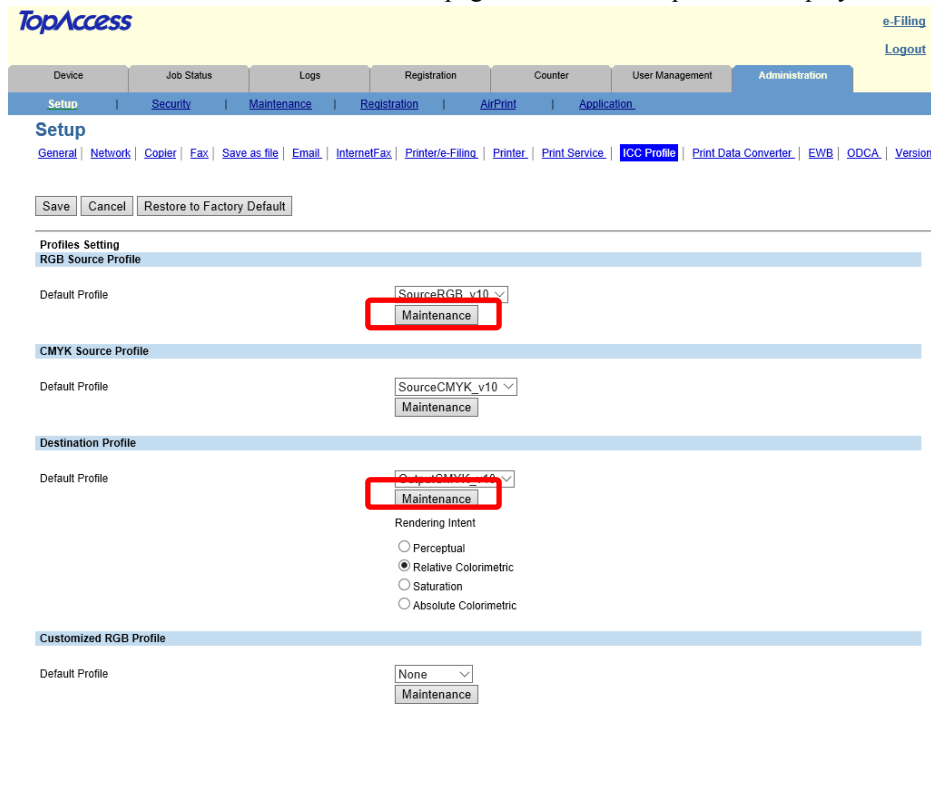
[PS3][XPS]

■ ❚❚ (2) Access TopAccess and open the "Administration" tab menu. Then upload the desired CMYK source profile and printer profile.

　• Follow (a) to (g) below to upload the profiles.

　　(a)Access TopAccess and open the "Administration" tab menu.

　　(b)Open the "Setup" menu and the "ICC Profile" submenu.

(c) Click [Maintenance] for the desired profile.

* The Maintenance Destination Profiles page for the selected profile is displayed.

(d) Click [Browse] of "Import new Profile" to select a file for the profile. Then click [Import].

(e) Click [Previous].

* The display returns to the "ICC Profile" submenu.

(f) Click [Save].

* A confirmation dialog box is displayed.
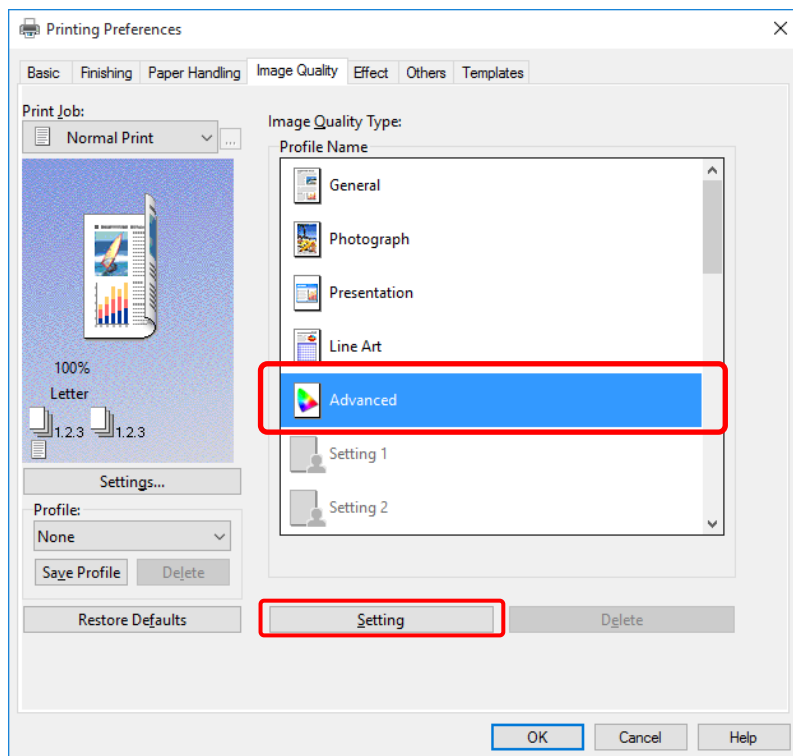
(g) Click [OK].

* For the details of TopAccess, see the TopAccess Guide.

PS3 **XPS**

■ ▌▊ (3) Open the Properties page of the printer driver and then select "Advanced" on the "Image Quality Type" option on the Image Quality" tab menu. Then click [Setting].

PS3 **XPS**

■ ▌▊ (4) Select the uploaded CMYK profile on "CMYK Source Profile" on the "Advanced" tab menu.
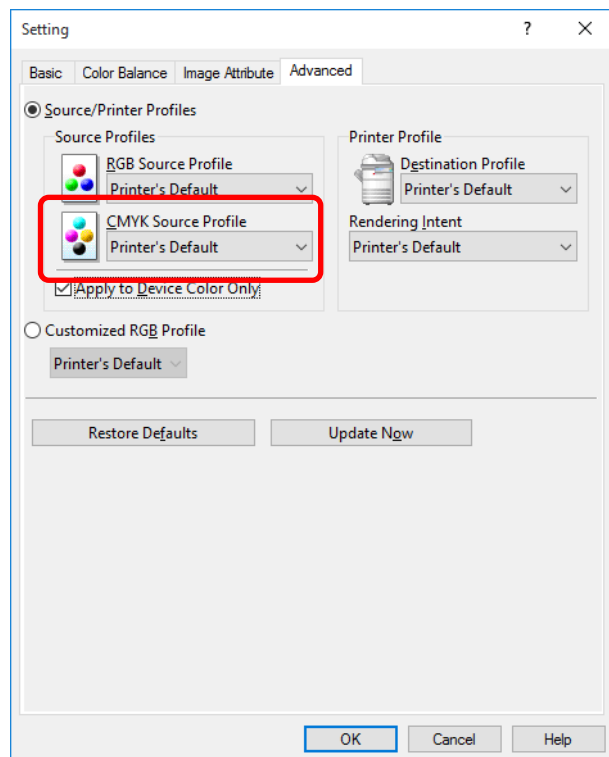
PS3   XPS

▉ ▐▌ (5) Select the profile of the printer uploaded in "Printer Profile" in the "Color profile" tab.
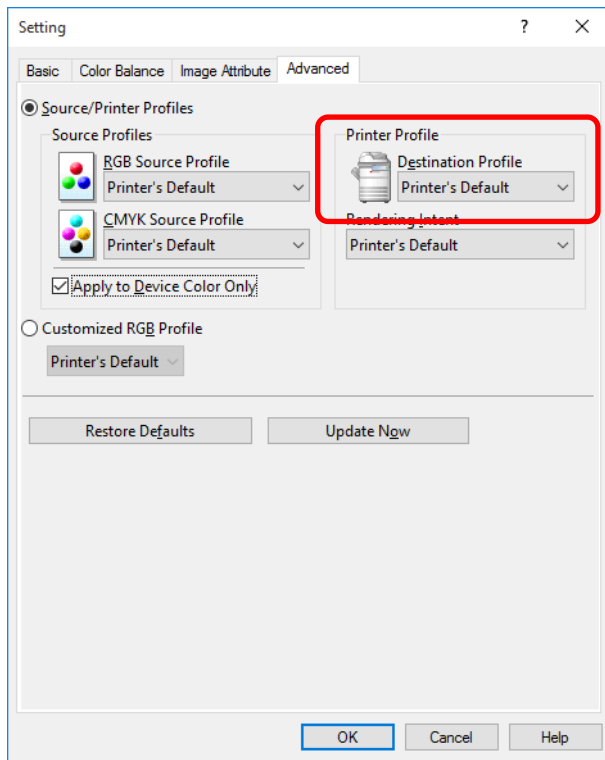
☐ **Caution after the adjustment**

Nothing in particular.

☐ **Remarks**

• Not all colors may be printed precisely because the color gamut reproducible with MFPs differs depending on the models.

• The accuracy of color reproduction differs depending on printer profiles used.

3.25.4 To Print Using Custom RGB Profiles

❏ **Explanation**

In the service tool (e-BRIDGE Color Profile Tool V3.0), RGB source ICC profiles which meet the specific color reproduction can be created.

By using this created profile, printing with a specific color reproduction is possible.

❏ **Procedures**

* Only the service technician must use step (1).

* Both the service technician and the user can use steps (2) or later.

PS3 **XPS**

■▌ ‖‖ (1) Create the RGB source ICC profile for the desired color reproduction using e-BRIDGE Color Profile Tool V3.0.

PS3 **XPS**

■▌ ‖‖ (2) Access TopAccess and open the "Administration" tab menu. Then upload the desired RGB source profile.

• Follow (a) to (g) below to upload the profile.

(a) Access TopAccess and open the "Administration" tab menu.

(b) Open the "Setup" menu and the "ICC Profile" sub menu.
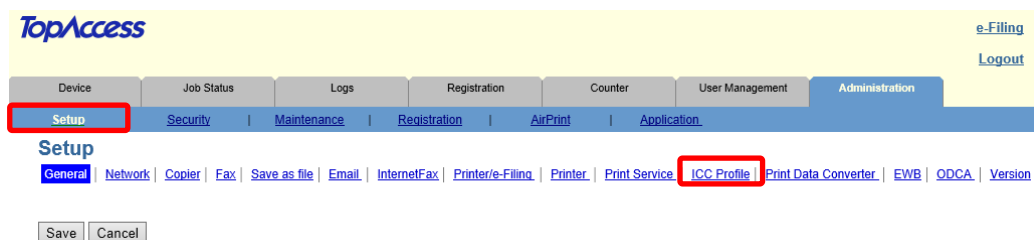
(c) Click [Maintenance] for the custom RGB profile.

* The Maintenance Destination Profiles page for the selected profile is displayed.

(d) Click [Browse] of "Import new Profile" 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, see the TopAccess Guide.

PS3 **XPS**

◼ ▥ (3) Open the Properties page of the printer driver and then select "Advanced" on the "Image Quality Type"

option on the "Image Quality" tab menu. Then click [Setting].
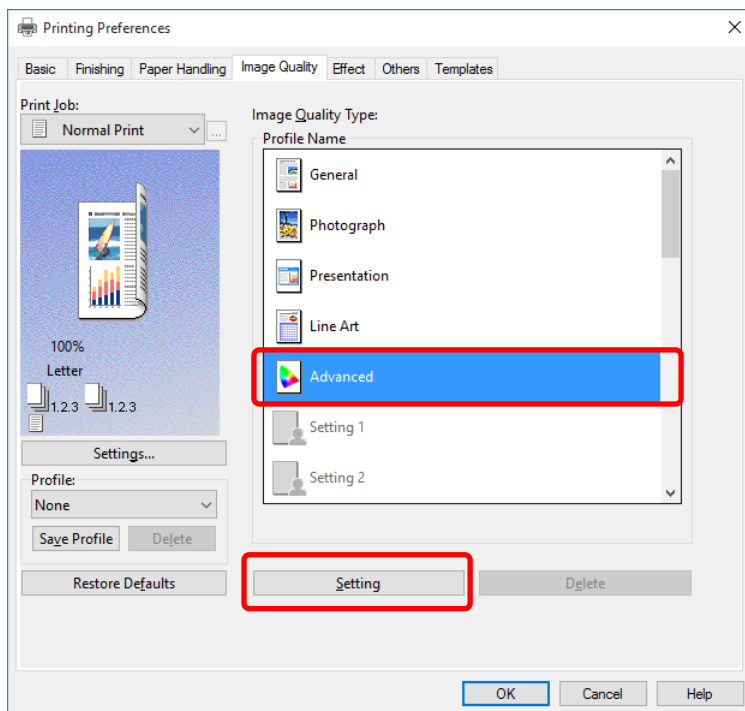
PS3 **XPS**

◼ ▥ (4) Select the uploaded ICC profile on "Custom RGB profile" on the "Advanced" tab menu.
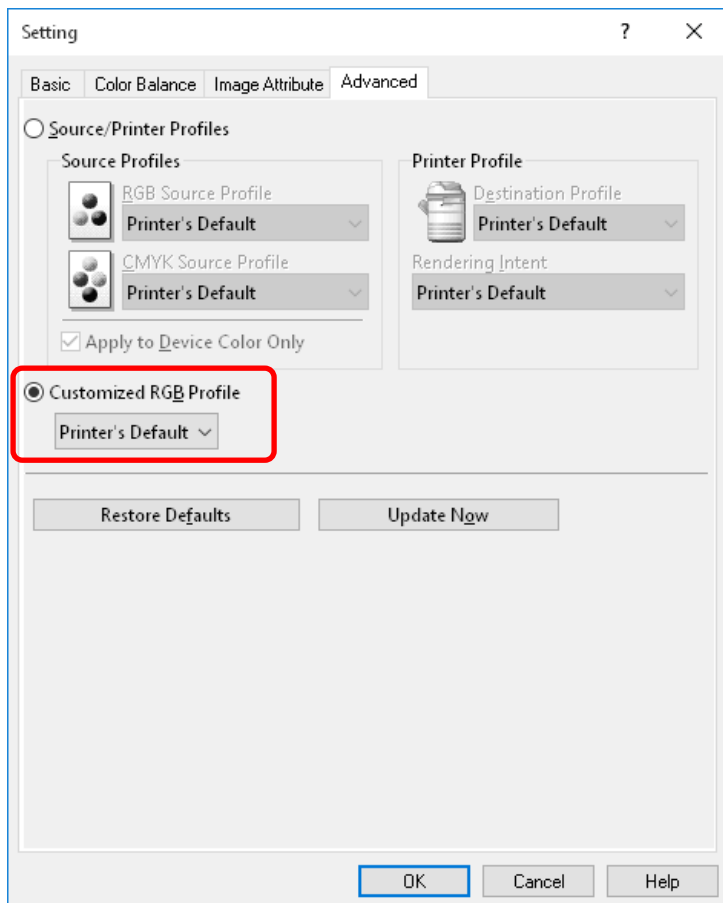
❑ **Caution after the adjustment**

Nothing in particular

❑ **Remarks**

Not all colors may be printed precisely because the color gamut reproducible with MFPs differs depending on the models.

3.25.5 To Convert Colors with Specified Source ICC Profiles (Not Using Embedded ICC Profiles)

❑ **Explanation**

When a user's RGB images or CMYK images have embedded ICC profiles, the user can ignore the embedded ICC profiles and apply a different ICC profile previously specified by the user, so that he or she can obtain print images whose quality is equivalent to that of Fiery images.

❑ **Procedures**

*Both the service technician and the user can perform all settings.

PS3 XPS

■ ▮▮ (1) Create the desired printer profile using the ICC profile creation software.

PS3 XPS

■ ▮▮ (2) Access TopAccess and open the "Administration" tab menu. Then upload the desired RGB source profile, CMYK source profile and printer profile.
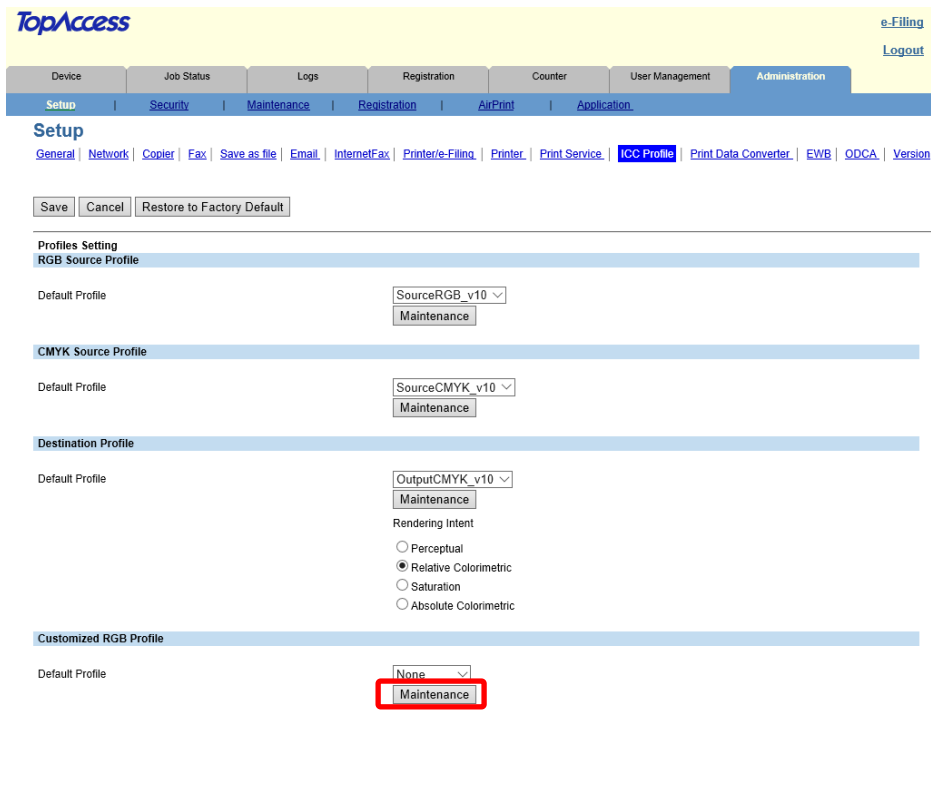- Follow (a) to (g) below to upload the profiles.
    (a) Access TopAccess and open the "Administration" tab menu.
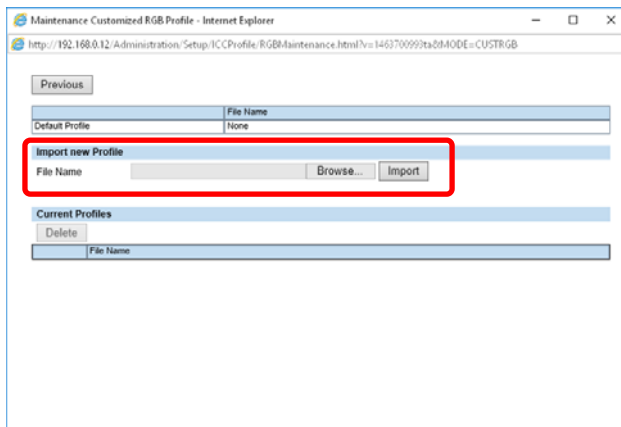   (b) Open the "Setup" menu and the "ICC Profile" submenu.

(c) Click [Maintenance] for the desired profile.

* The Maintenance Destination Profiles page for the selected profile is displayed.

(d) Click [Browse] of "Import new Profile" to select a file for the profile. Then click [Import].

(e) Click [Previous].

* The display returns to the "ICC Profile" submenu.

(f) Click [Save].

* A confirmation dialog box is displayed.

(g) Click [OK].

* For the details of TopAccess, see the TopAccess Guide.

❚❚ ❘❙❙ (3) Open the Properties page of the printer driver and then select "Advanced" on the "Image Quality Type" option on the Image Quality" tab menu. Then click [Setting].

PS3 XPS

❚❚ ❘❙❙ (4) Select the uploaded profile on "RGB Source Profile" or "CMYK Source Profile" on the "Advanced" tab menu.
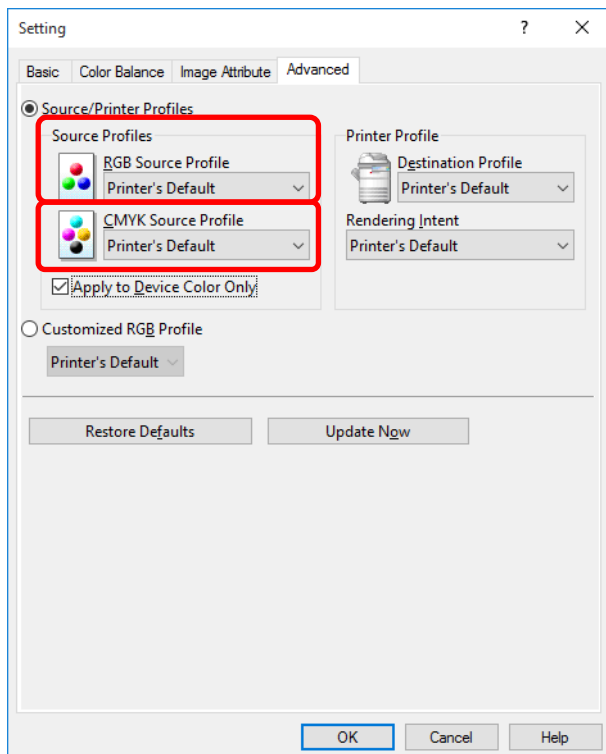
PS3 **XPS**

■||■ (5) Uncheck "Apply to Device Color Only".
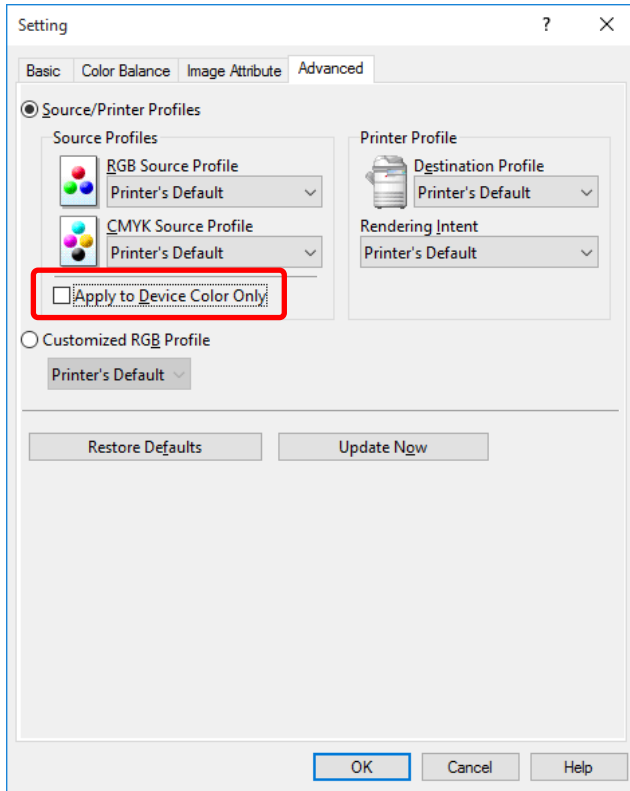
PS3 **XPS**

■||■ (6) Select the uploaded printer profile on "Profile" of the "Destination Profile" option.
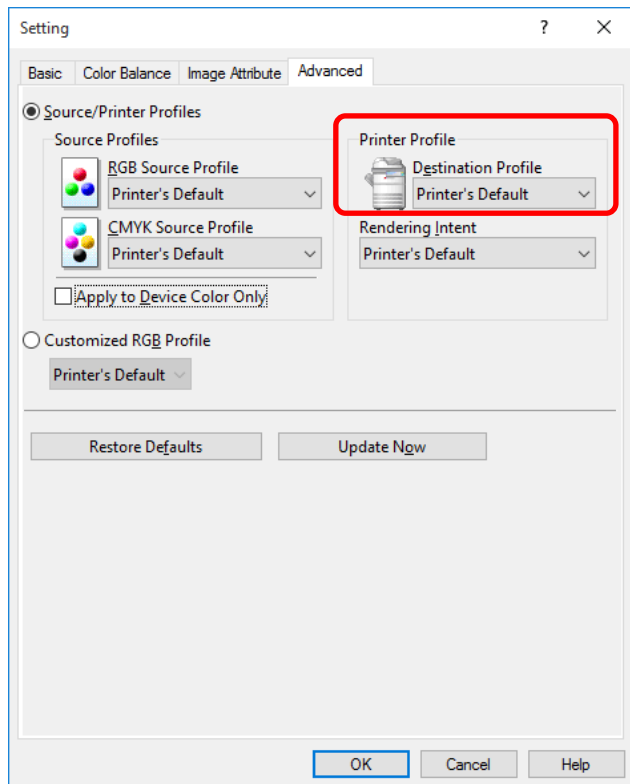
❑ **Caution after the adjustment**

Nothing in particular.

❑ **Remarks**

Colors printed in this procedure may not be completely the same as those of Fiery images because the color

measurement method of this procedure is not completely equal to the one for Fiery.

3.25.6 To Perform Further Adjustment After Using ICC Profiles

❑ Explanation

After printer profiles were applied by selecting "Advanced" on the "Image Quality Type" option on the printer driver menu, a user can perform further image adjustments.

### ❑ Procedures

＊Both the service technician and the user can perform all settings.

PS3　XPS

(1) Open the Properties page of the printer driver and then select "Advanced" on the "Image Quality Type" option on the "Image Quality" tab menu. Then click [Setting].
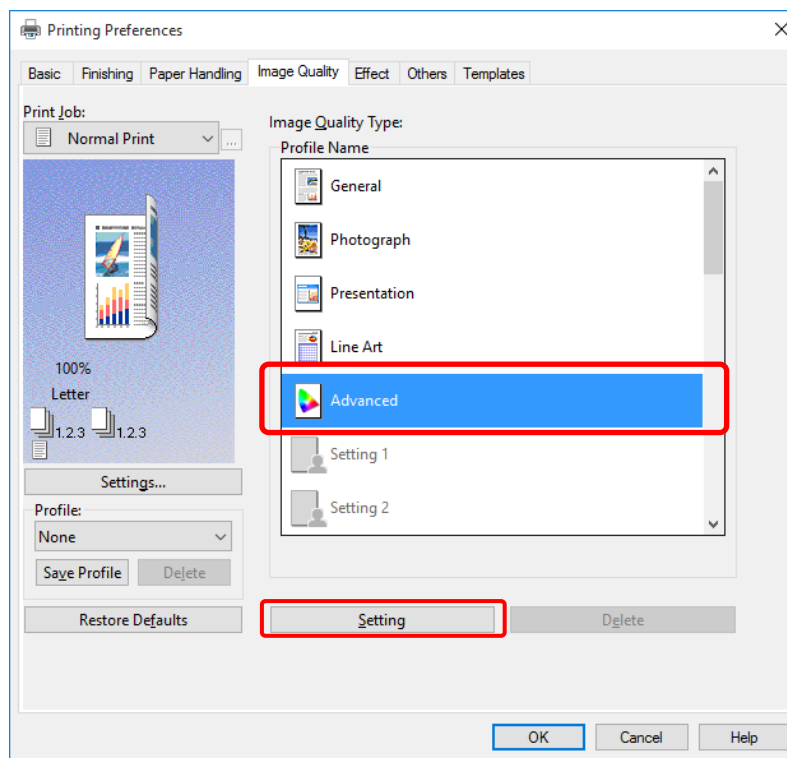
PS3 **XPS**

(2) Select the desired profiles on "RGB Source Profile", "CMYK Source Profile" or "Profile" of the "Destination Profile" option.
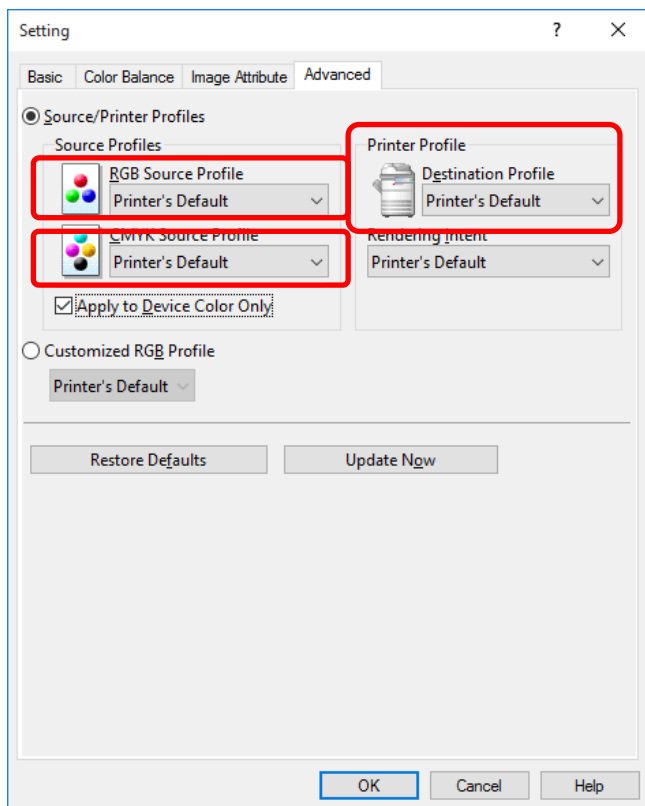
PS3 **XPS**

(3) Open the "Color Balance" tab menu and then change each setting items to obtain the desired color balance.
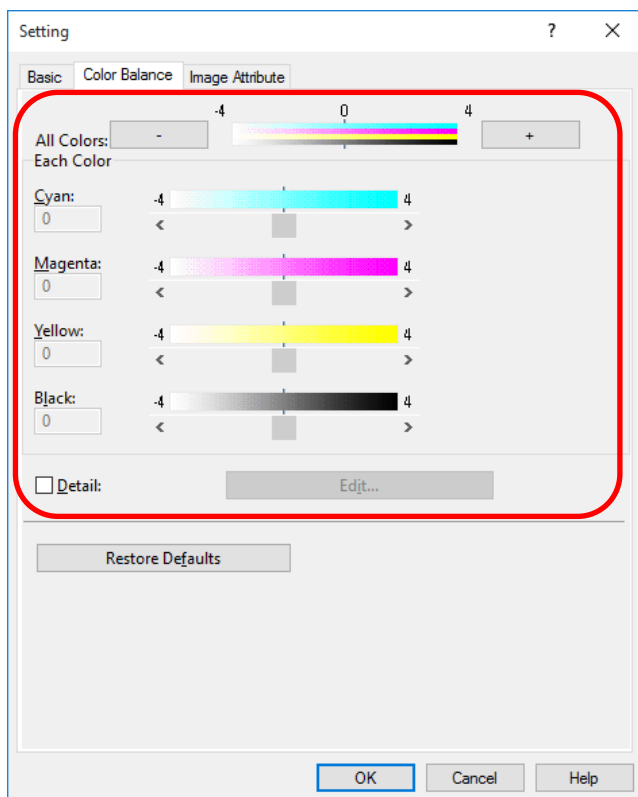
PS3 **XPS**

■|‖| (4) Open the "Image Attribute" tab menu and then change each setting items to obtain the desired image quality.
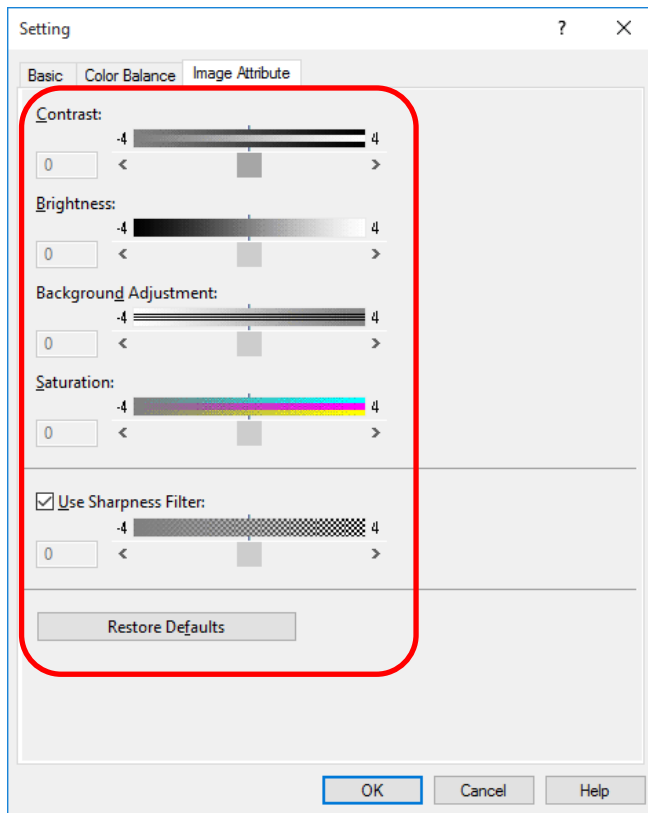
❑ **Caution after the adjustment**

Nothing in particular.

3.26 To Improve the Reproducibility of Red Seal Color

Before	After
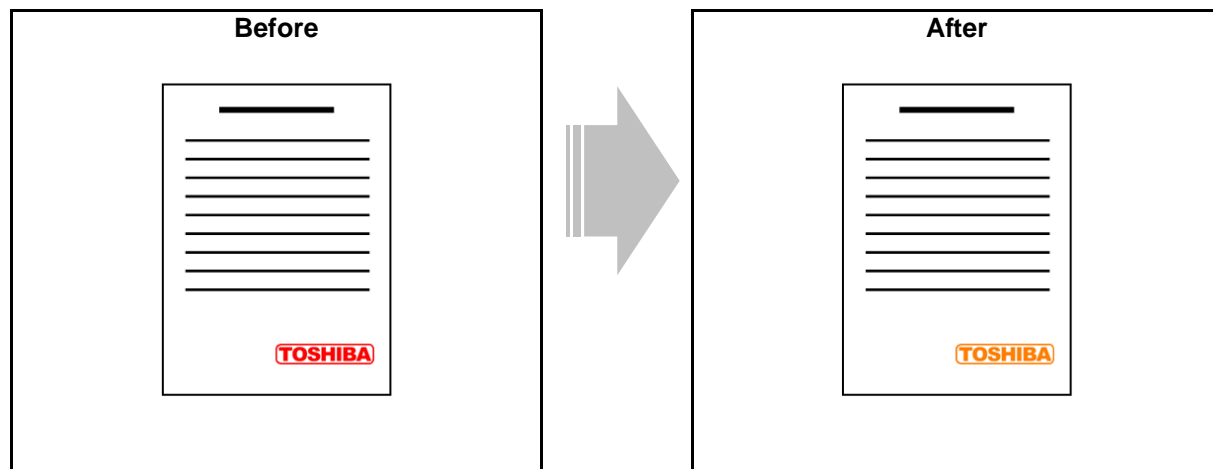
❏ Explanation

When an original containing a red seal is printed, users can select the Red Seal Color Mode as the original mode. Use this mode if the reproducibility of red seal color printed under the default settings is insufficient.

❏ Procedures

(1) Select [08 SETTING MODE]. Change the value for code [8005] to "1".

(2) Select the "Red Seal Color Mode" check box on the printer driver.

For Windows

PCL6   **PS3**   **XPS**   * This adjustment will only have an effect on Auto or Color mode printing.

Open the property page of the printer driver. Select "General" in the "Original Image Quality Type" box in the "Image Quality" tab, and then press [Setting].

Mark the "Red Seal Color Mode" checkbox in the "Basic" tab.
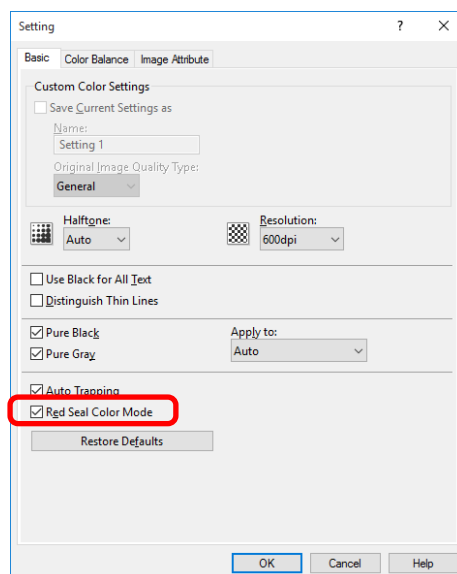
For Macintosh

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

Open the print dialog box. Select the "Color Settings 1" - "Red Seal Color Mode" check box.
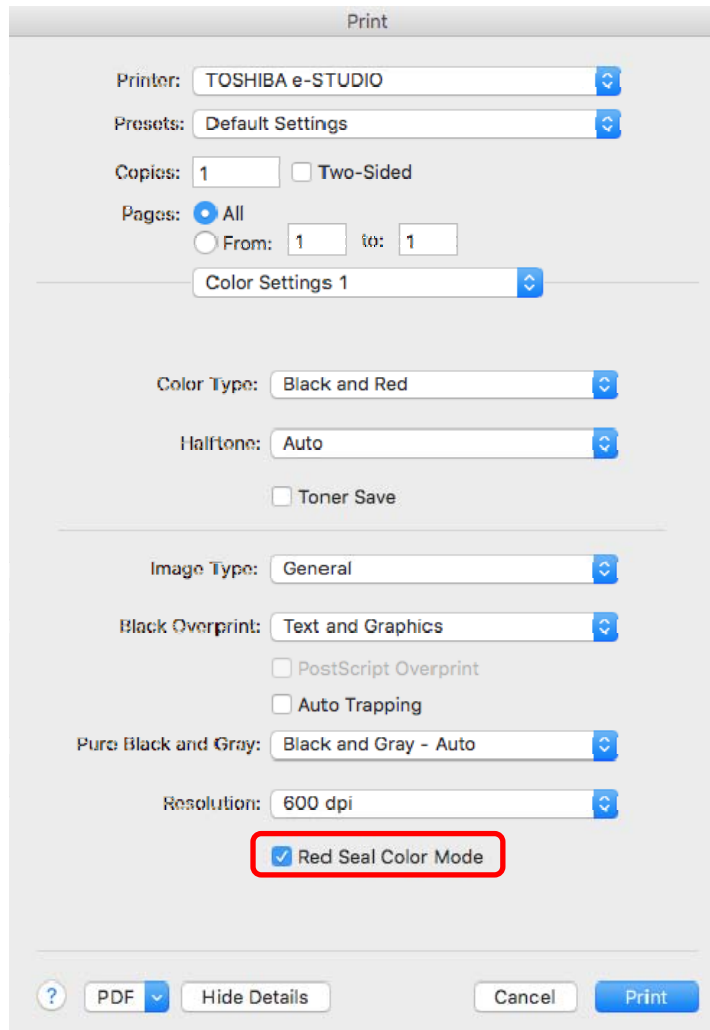
After changing the setting on the printer driver, print the image and check its image quality.

3.27 To Suppress the Unevenness on Images

❏ **Explanation**

When the density of a halftone section looks uneven, this unevenness can be suppressed by changing the number of screen lines.

With this adjustment, image quality in continuous copying can be more stable.

❏ **Procedures**

* Perform the adjustment in accordance with the procedures below.

* Both the service technician and the user can use procedure (1).

* Only the service technician must use procedure (2).

(1) Change the roughness of images in 600 dpi printing.

    Use steps (a) through (f) to change the setting value.

    (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

    (b) Press [ADMIN].

    (c) Enter the 6 to 64 digit administrator password. Press [ENTER].

    (d) Press [GENERAL].

    (e) Press [ROUGHNESS OF PRINT].

    (f) Press [LOW].

<Note>

This setting applies to print jobs with 600 dpi. Set this to color and black printing, respectively.

Changing the setting displays the CONFIRMATION screen that asks whether you want to perform calibration or not. Be sure to select [OK] and carry it out.

(2) Select [08 SETTING MODE] and change the value.

* This procedure makes the same setting as step (1) in [08 SETTING MODE].

Color mode	code	Explanation
Full color	08-8110	The number of screen lines can be set when "Smooth" is selected on "Halftone" of "Setting" in the "Image Quality" tab of the printer driver
Black	08-7310	0: High screen ruling value (smoother image) 1: Low screen ruling value (rougher image)

Make sure to perform automatic gamma adjustment after changing the value.

❏ **Caution after the adjustment**

When the low screen ruling is set, jaggedness may appear on diagonal or curved lines. In this case, check the printed image and then switch the setting if necessary

3.28 To Suppress Color Misalignment

Before adjustment	After adjustment
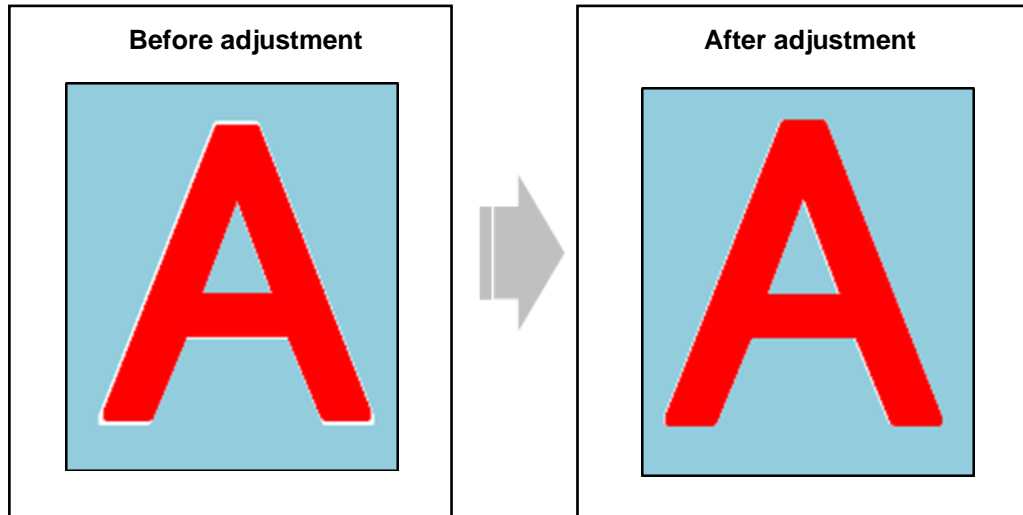
❑ Explanation

White voids in the background caused by off-registration of the text or graphics can be reduced and color misalignment can be suppressed by the Auto Trapping adjustment. Use this mode if the effectiveness of the color misalignment correction is to be enhanced.

❑ Procedures

* The service technician must perform all adjustments.

Enter [05 ADJUSTMENT MODE] and change the setting value for the code [8244]. First, change the setting value of the subcode "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".

Color mode	Adjustment	[05] Code	Subcode	Recommended value	Acceptable value range	Default
Auto/Color	Trap width (dot)	8244	0	Set the value to 3 (*1)	1 to 3	2
	Trap density	8244	1	Set the value smaller than 128 (*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 color becomes. In this case, the gaps will not become conspicuous; however, overlapped areas will become more conspicuous.

❑ Caution after the adjustment

Perform the adjustment while checking the images, since the outline form of the boundary of the text or graphics will be accentuated if the effectiveness of the trapping is enhanced.

❑ Remarks

Nothing

3.29 To Adjust Smudged Black Text and Black Thin Lines

Before adjustment	After adjustment

❑ Explanation

Black text or black thin lines sometimes become thicker and thus are smudged. Use this mode to perform printing while adjusting the thickness of black text or black thin lines.

❑ Procedures

* The service technician must perform all adjustments.

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

To adjust the image quality in full color or twin color printing

("Auto", "Color" or "Twin Color" is selected from among the "Color" options on the PCL6 or PS3 or XPS printer driver. Or "Auto", "Color" or "Twin Color" is selected from among the "Color Type" options on Macintosh.)

* The "Color" options are available in the "Basic" tab on the PCL6, PS3 and XPS printer drivers. The "Color Type" options are available in the "Color Settings 1" menu in the print dialog box on Macintosh.

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

Enter [05 ADJUSTMENT MODE] and change the setting values for the codes from [8121] to [8126] to adjust smudged black text and black thin lines.

Resolution	Color	PDL	[05] Code	Recommended value	Acceptable value range	Default
600dpi	Color	PS	8121	When a larger value than the default one is set, black text or black thin lines are thinly printed.	0 to 9	2
		PCL	8122			5
		XPS	8123			5
	Twin Color	PS	8124			2
		PCL	8125			5
		XPS	8126			5

▋ <u>To adjust the image quality in black-and-white printing</u>

("Black and White" is selected from among the "Color" options on the PCL6 or PS3 or XPS printer driver. Or "Mono" is selected from among the "Color Type" options on Macintosh.)

* The "Color" options are available in the "Basic" tab on the PCL6, PS3 and XPS printer drivers. The "Color Type" options are available in the "Color Settings 1" menu in the print dialog box on Macintosh.

Enter [05 ADJUSTMENT MODE] and change the setting values for the codes from [7325] to [7327] or [7305] to adjust smudged black text and black thin lines.

Resolution	Color	PDL	[05] Code	Recommended value	Acceptable value range	Default
600dpi	Black	PS	7325	When a larger value than the default one is set, black text or black thin lines are thinly printed.	0 to 9	2
		PCL	7326			5
		XPS	7327			5
1200dpi	Black	PS	7305			6

❑ Caution after the adjustment

Perform the adjustment while checking the printed images since faint black text or black thin lines may occur.

3.30 To Perform Fine Adjustment of Print Ratio for Front Side at Duplex Printing

☐ **Explanation**

Perform this fine adjustment if the deviation in the printing positions between the front and back sides of the output is conspicuous due to the differences in the image size during duplex printing of a business card or postcard.

By performing fine adjustment of the print ratio at the front side in each of the primary and secondary scanning directions, the image size of the front side can be made to be close that for the back side and thus the deviation in the printing positions can be reduced.
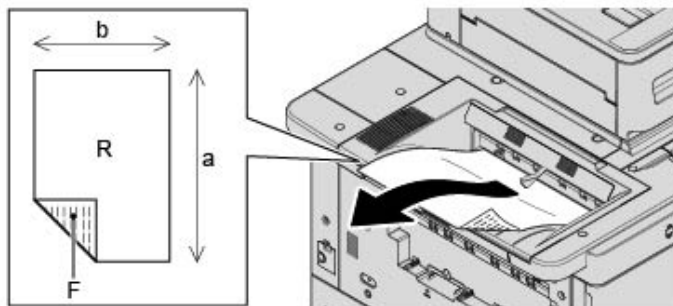
a: Primary scanning direction

b: Secondary scanning direction

F: Front side (the side to which the print
ratio is adjusted)

R: Back side

☐ **Procedures**

* The service technician must perform the adjustment or the MFP administrator (user) can perform the
adjustment by being instructed from the service technician.

Notes:

* This adjustment is performed when the print ratio between the front and back sides is not equal and thus
the deviation between them in the printing position still persists after that in duplex printing has been
adjusted in accordance with "1.6 To Adjust Printing Positions on Front and Back Sides in Duplex Mode".

* When this adjustment is performed, the image position at the trailing edge will be changed while the start
position is taken as a standard in both the primary and secondary directions.

* Printing only from the following Windows printer drivers is supported for this adjustment, but printing
from other than the printer driver, such as e-Filing Box or USB, does not reflect this adjustment.

TOSHIBA Universal Printer2 (PCL6, PS)

TOSHIBA Universal PS3

TOSHIBA Universal XPS

- It is recommended to explain to users that the duplex printing speed will be lowered for the paper type for
which this adjustment is performed.

- Depending on the hygroscopic condition of the paper, its size will be changed in duplex printing and thus
the image sizes between the front and back sides will deviate. In such a case, reattempt the adjustment as
required.

- If this adjustment is required frequently and it is hard to have it done by the service technician, it will be possible to have it carried out by a user.

In such a case, display the setting screen of this adjustment in TopView and give sufficient explanation about the procedure.

(1) Set "1" in 08-3513 to display the "Enable adjustment of image position for duplex" check box in the printer driver.

Setting value of 08-3513	Check box display for "Duplex print adjustment"
0	Not display (default)
1	Display

(2) Start the equipment normally.

(3) To reflect the settings of the equipment, acquire the device information from the printer driver of the client PC.

(a) Right-click [Start], then click [Control Panel] > [View devices and printers].

(b) Right-click the printer driver of this equipment and select [Printer properties] from the displayed menu.

(c) Select the [Device Settings] tab. The [Device Settings] tab is displayed and the settings of the equipment are reflected to the printer driver.

* If the [Update Automatically] check box in [Device Settings Retrieval] is not selected, click [Update Now].
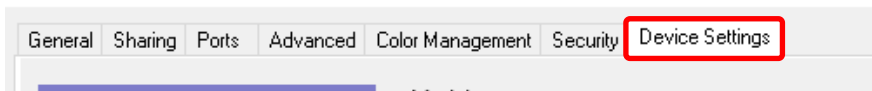
(d) Close the property of the printer and then open it again.

(e) Click [Preferences...] and check that the "Enable adjustment of image position for duplex" check box is displayed in the [Other] tab.

* Once the "Enable adjustment of image position for duplex" check box is selected, the result of this adjustment will be reflected to the printing.
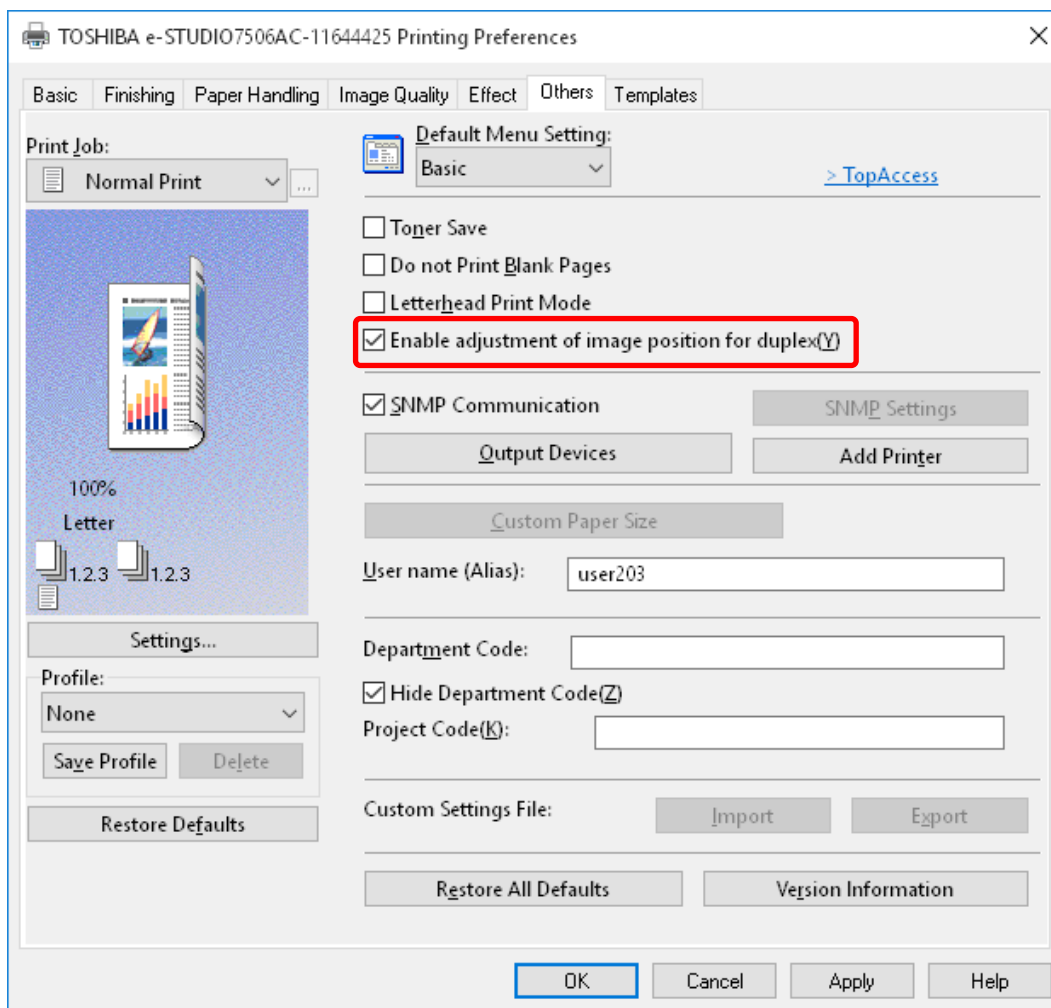
(4) While checking with the equipment, perform the adjustment.

(f) Place the paper to be adjusted in the drawer. Carry out duplex printing using the printer driver.

* Make sure that the "Enable adjustment of image position for duplex" check box has been selected.

(g) Measure the amount of the deviation in the end edge of the front and back sides in the primary and secondary scanning directions.

(h) From the table below, check the code of the paper type to be adjusted and the sub code of the adjustment direction.

* When adjustment for Thick 3 in the primary scanning direction is performed, change the setting value of 05-4955-0.

Paper type	[05] Code	Subcode	Items	Description of values	Default
Plain paper	4951	0	Primary scanning direction		
	4951	1	Secondary scanning direction		
Thick paper	4952	0	Primary scanning direction		
	4952	1	Secondary scanning direction		
Thick 1	4953	0	Primary scanning direction		
	4953	1	Secondary scanning direction		
Thick 2	4954	0	Primary scanning direction	0: Not adjusted	
	4954	1	Secondary scanning direction	1: 0.05% reduction	
Thick 3	4955	0	Primary scanning direction	2: 0.10% reduction	
	4955	1	Secondary scanning direction	3: 0.15% reduction	
Special 1	4956	0	Primary scanning direction	4: 0.20% reduction 5: 0.25% reduction	0
	4956	1	Secondary scanning direction	6: 0.30% reduction	
Special 2	4957	0	Primary scanning direction	7: 0.35% reduction	
	4957	1	Secondary scanning direction	8: 0.40% reduction	
Special 3	4958	0	Primary scanning direction	9: 0.45% reduction 10: 0.50% reduction	
	4958	1	Secondary scanning direction		
User Media Type 1	4959	0	Primary scanning direction		

	4959	1	Secondary scanning direction		
User Media Type 2	4960	0	Primary scanning direction		
	4960	1	Secondary scanning direction		
User Media Type 3	4961	0	Primary scanning direction		
	4961	1	Secondary scanning direction		
User Media Type 4	4962	0	Primary scanning direction		
	4962	1	Secondary scanning direction		
User Media Type 5	4963	0	Primary scanning direction		
	4963	1	Secondary scanning direction		
User Media Type 6	4964	0	Primary scanning direction		
	4964	1	Secondary scanning direction		
User Media Type 7	4965	0	Primary scanning direction		
	4965	1	Secondary scanning direction		
User Media Type 8	4966	0	Primary scanning direction		
	4966	1	Secondary scanning direction		
User Media Type 9	4967	0	Primary scanning direction		
	4967	1	Secondary scanning direction		
User Media Type 10	4968	0	Primary scanning direction		
	4968	1	Secondary scanning direction		

(i) By referring to the table below, change the setting value (reduction rate).

Relationship between the amount of the deviation and the setting value (E.g.: A4/LT landscape)

Setting value	Long edge		Short edge	
	A4 (mm)	LT (inch)	A4 (mm)	LT (inch)
0: Not adjusted	-	-	-	-
1: 0.05% reduction	0.150	0.055	0.110	0.043
2: 0.10% reduction	0.300	0.110	0.210	0.085
3: 0.15% reduction	0.450	0.165	0.320	0.128
4: 0.20% reduction	0.590	0.220	0.420	0.170
5: 0.25% reduction	0.740	0.275	0.530	0.213
6: 0.30% reduction	0.890	0.330	0.630	0.255
7: 0.35% reduction	1.040	0.385	0.740	0.298
8: 0.40% reduction	1.190	0.440	0.840	0.340
9: 0.45% reduction	1.340	0.495	0.950	0.383
10: 0.50% reduction	1.490	0.550	1.050	0.425

(j) If the result of the adjustment is insufficient, repeat steps (f) to (i).

Tips:

When you let a user perform this adjustment, set "1" in 08-3514 and display the setting screen of this adjustment in TopView.

Setting value of 08-3514	Screen display of reproduction ratio adjustment at duplex printing on TopAccess
0	Not display (default)
1	Display

Check that [Adjustment Position in Duplex Print (reduction ratio)] is displayed in TopAccess - [Administration] - [Printer].

* The setting procedure is the same as that for (4).

4. e-Filing-specific Adjustments

4.1 To Clearly Store a B/W Image in the Auto Color Mode

After adjustment

After the threshold value was adjusted

Before adjustment

The light image becomes blurred and text becomes illegible.

Stored in the Gray scale mode

Even the light image is not blurred. Text is clear and legible.
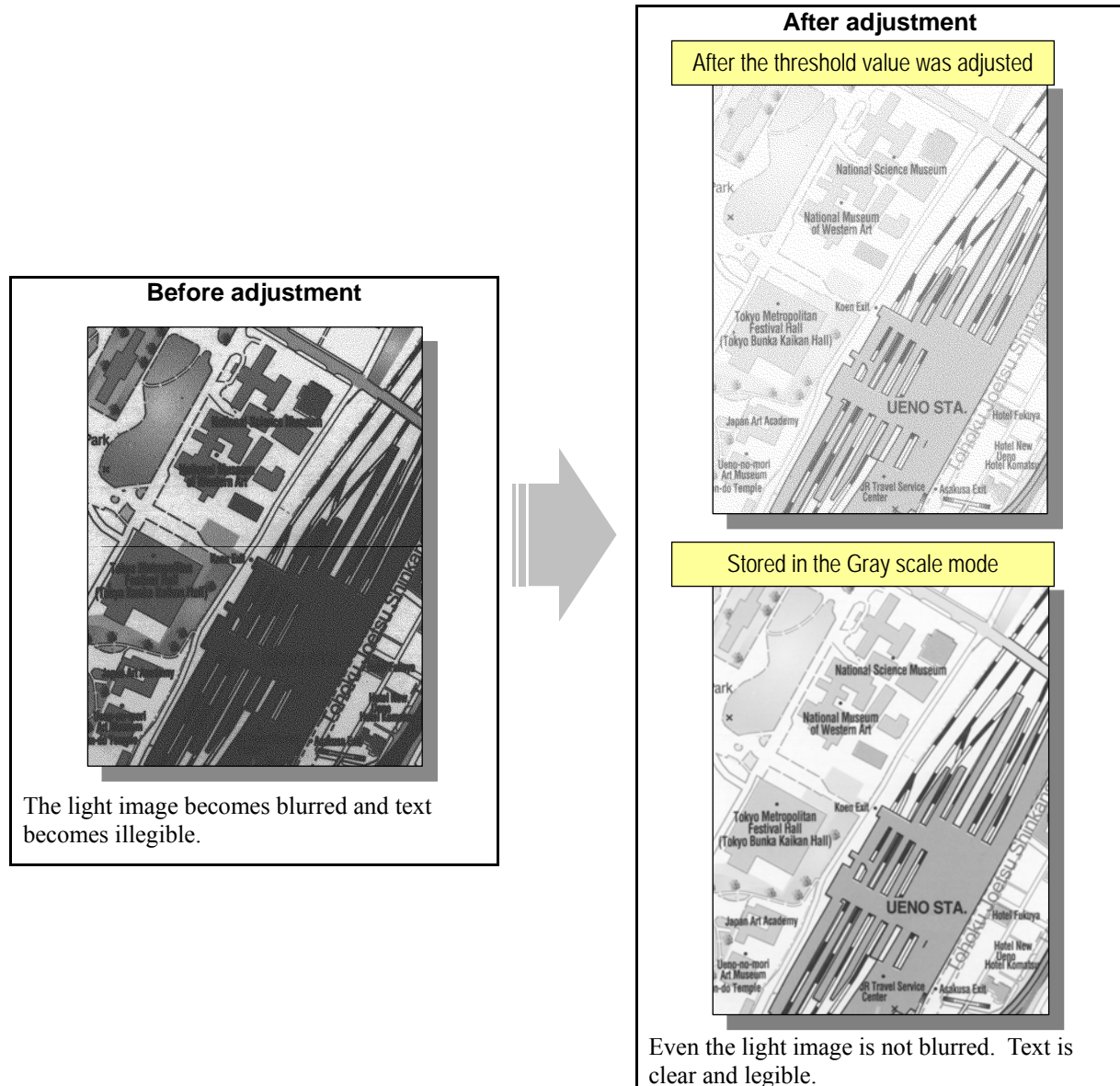
❑ **Explanation**

When a black-and-white original containing black-and-white photo images is scanned in the Auto color mode and stored in the e-Filing box (Scan to Box), it is stored with binary data, with reference to a threshold value. This may make a dark area blurred and a light area eliminated. Adjust the threshold value, in order to clearly store the black-and-white original in the Auto color mode.

*This adjustment will have an effect on the image stored using Scan to File and Scan to E-mail.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

Scan to Box　　* This adjustment will have an effect only on images stored in the Auto color mode.

(1) This adjustment is effective when you scan an original judged as a black image at the most appropriate density level in the color modes.

- Use steps (a) to (d) to adjust the density.
  - (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.
  - (b) Press [USER].
  - (c) Press [SCAN].
  - (d) Press [◁] or [▶] of the "B/W ADJUSTMENT FOR STANDARD" option to adjust the density level for scanning the original judged as a black image in the Auto color mode.
    - If the density level is set to " ◁ ," the original will be stored with the low density.
    - If the density level is set to " ▶ ," the original will be stored with the high density.

After adjusting the density, scan and store the original in the e-Filing box. Then check the image quality. Only if the user's desired image quality is still not obtained after the density has been adjusted, use the next procedure.

Scan to Box　　* This adjustment will have an effect only on images stored in the Auto color mode.

(2) Select "HIGH QUALITY" from among the "IMAGE QUALITY FOR BLACK IN ACS" options, to store the black-and-white original in the Gray scale mode.

- Use steps (a) to (d) to select the "IMAGE QUALITY FOR BLACK IN ACS" option.
  - (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.
  - (b) Press [USER].
  - (c) Press [SCAN].
  - (d) Press [HIGH QUALITY] in the "IMAGE QUALITY FOR BLACK IN ACS" option.

❑ Caution after the adjustment

All scanning functions are implemented with reference to the density and the "IMAGE QUALITY FOR BLACK IN ACS" option. They will affect the image quality of black-and-white originals stored in the Auto color mode. Therefore, carefully perform the adjustment, being aware that the image quality of all future images will be changed, when storing originals other than the one that is used for the adjustment.

❑ Remarks

- If "HIGH QUALITY" is selected from among the "IMAGE QUALITY FOR BLACK" options and black-and-white originals are scanned in the Auto color mode and stored in the e-Filing box (Scan to Box), this allows them to be stored in the Gray scale mode rather than in the binary mode, and eventually provides better halftones. The data will increase in size, compared to those in the binary mode.

- The adjustment of density will be effective, only if "STANDARD" is selected from among the "IMAGE QUALITY FOR BLACK IN ACS" options.

4.2 To Store an Original while Reducing the File Size

Before adjustment	After adjustment
Ex.: A4, 200 dpi, LOW = Approx. 1000 KB	Ex.: A4, 200 dpi, HIGH = Approx. 400 KB
When "LOW" is from among the compression rate options, the file size will become larger than required.	When "HIGH" is from among the compression rate options, the file size will be reduced.
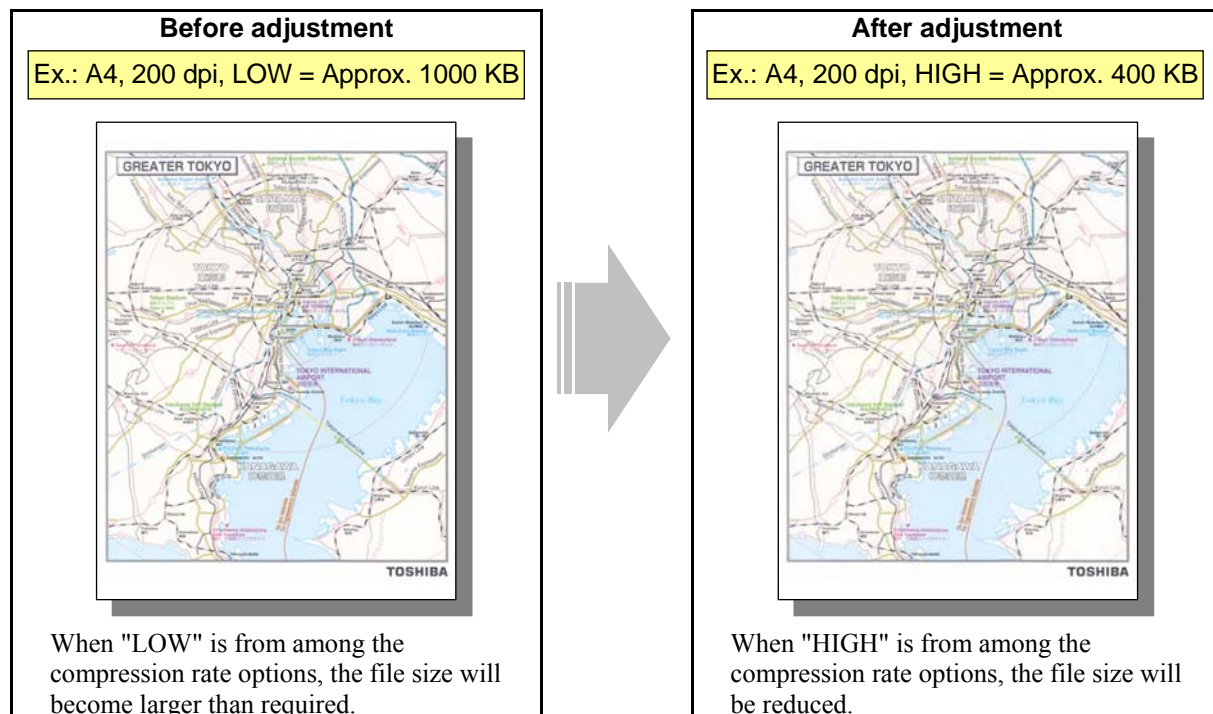
❑ **Explanation**

When an original is scanned in the Full color or the Gray scale mode and stored in the e-Filing box (Scan to Box), it will be compressed into JPEG format. The data compression rate can be selected on a job-by-job basis. The file size significantly varies depending on the selected data compression rate. (When "LOW" is selected from among the compression rate options, the file size will be 2 to 3 times larger than the one when "HIGH" is selected.) When storing the original, if a higher priority is given to file size reduction than the image quality, change the compression rate.

* This adjustment will have an effect on images stored using Scan to File and Scan to E-mail.

❑ **Procedures**

* Both the service technician and the user can perform all adjustments.

<div style="background:yellow">**Scan to Box**</div> * This adjustment will have an effect only on images (JPEG format) stored in the Full color mode (including the Auto color mode) or the Gray scale mode.

(1) Select "HIGH" from among the compression rate options.

＊"MID" is selected from among the compression rate options by default.

＊The procedure to use varies, depending on whether to select the compression rate on a job-by-job basis (without utilizing the template), utilize the template, or change the default compression rate. Refer to "To select the compression rate on a job-by-job basis" in order to store an image at a high compression rate for a particular job. Refer to "To utilize the template" in order to select an appropriate compression rate, corresponding to the type of original to store and the purpose of the image stored. Refer to "To change the default compression rate" in order to have "HIGH" selected from among the compression rate options by default.

To select the compression rate on a job-by-job basis (without utilizing the template)

When scanning the original, press [SCAN SETTING] on the Control Panel. Select "HIGH" from among the COMPRESS options.

To utilize the template

Recall the template where "HIGH" is selected from among the compression rate options and scan the original.

＊The user may want to select a compression rate, depending on the type of original or purpose of the image stored. In this case, it is recommended to utilize the template. Initially, select the desired compression rate in the template and recall it as necessary. This facilitates changing the compression rate on a job-by-job basis. For further information regarding the template and its use, refer to the Operator's Manual for Scanning Guide and TopAccess Guide.

To change the default compression rate

Use steps (a) to (d) to change the default compression rate.

(a)Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.
(b) Press [USER].
(c) Press [SCAN].
(d)Press [HIGH] in the "COMPRESS" option.

❑ **Caution after the adjustment**

Changing the default compression rate of the scanning functions will affect the quality of originals, which will be stored in the Full color (including the Auto color) or the Gray scale mode. Carefully perform the adjustment, being aware that the image quality of all future images will be changed, when storing originals other than the one that is used for the adjustment.

❑ **Remarks**

If the full-color or gray-scale image is copied or printed and stored in the e-Filing box (Copy to Box or Print to Box), the user can select a desired compression rate, when downloading the image using File Downloader on a client PC.

4.3 To Match the Color Balance on the Original

(To adjust the color balance in Print to Box)

Before adjustment	After adjustment
Original image: Photograph	Original image: Photograph

The image stored in the e-Filing box looks different in the color balance from the original.

The color balance of the image stored is closely matched with that of the original.
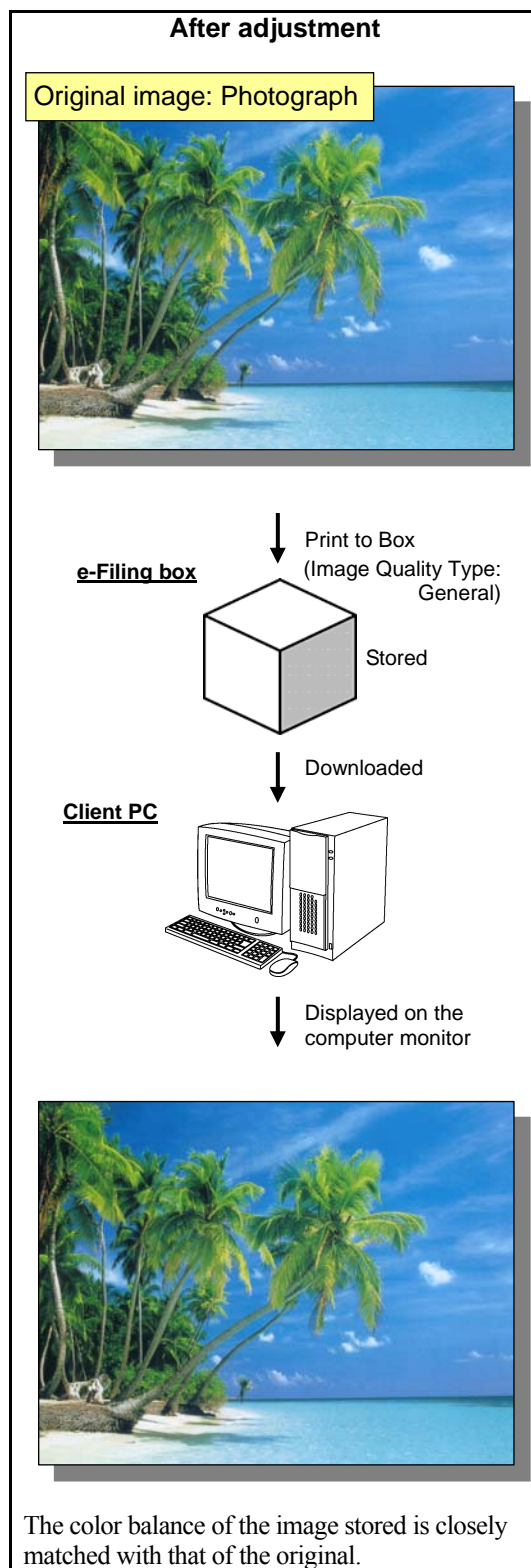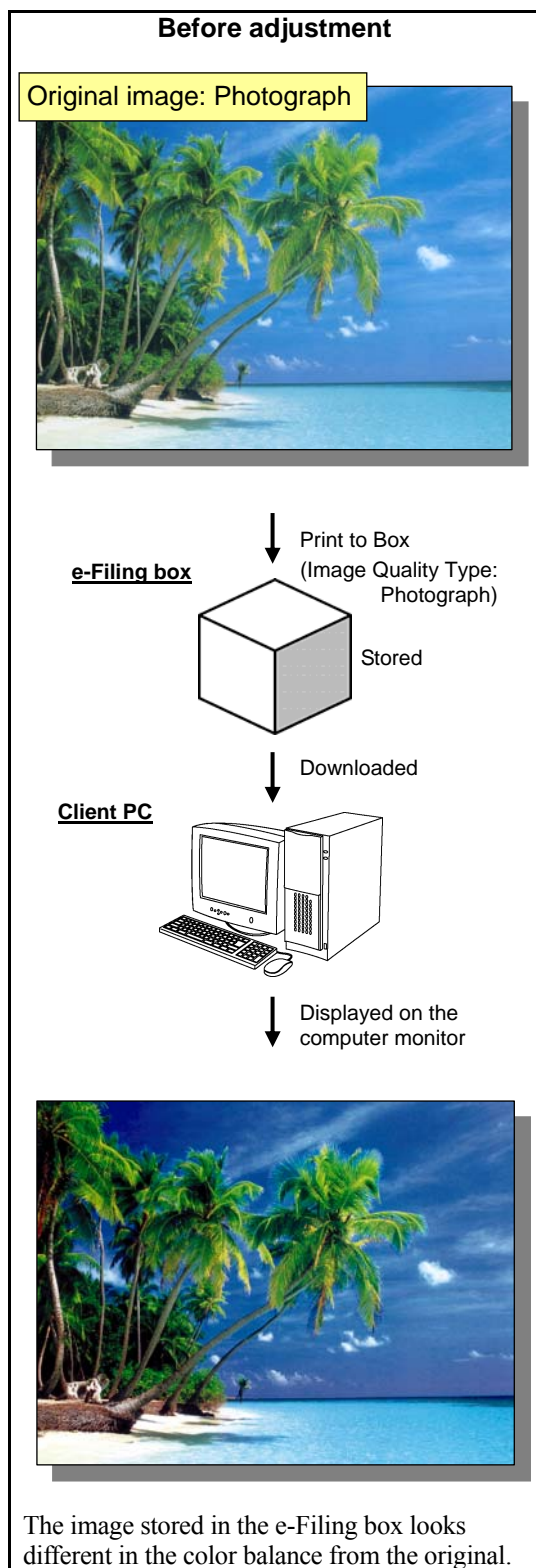
❑ Explanation

If a full-color image is printed on a client PC and stored in the e-Filing box (Print to Box), it will be optimized for printing on paper. This is the reason why the image stored in the e-Filing box looks slightly different in the color balance from the original displayed on the computer monitor. Change the "Image Quality Type" setting on the printer driver, in order to minimize the difference in the color balance and closely match the color balance of the image stored with that of the original.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

| Print to Box | PCL5c | PS3 | XPS | * This adjustment will have an effect only on the image stored in the Auto mode or the Color mode. |

(1) Open the property page of the printer driver. Select "General" from among the "Image Quality Type" options in the Image Quality tab.
   * "General" allows the image to be stored in colors, which are closely matched with the original, compared to the other Image Quality Type options.
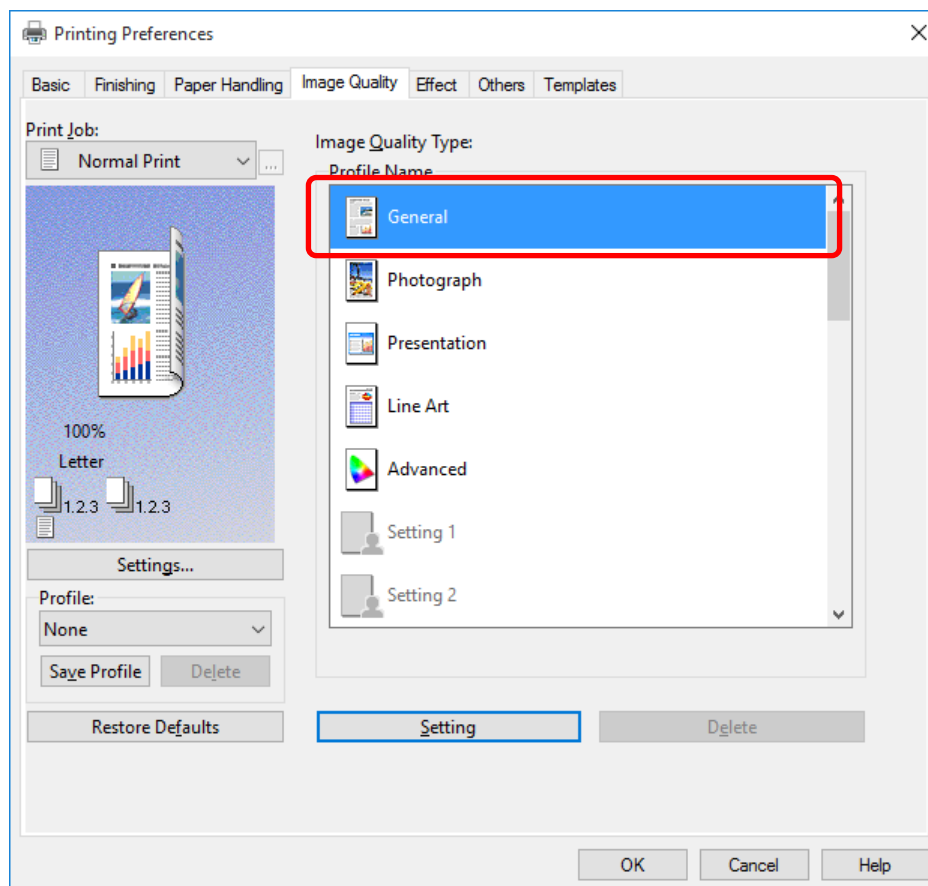
❑ Caution after the adjustment

Nothing in particular.

4.4 To Scan and Print, while Minimizing Moiré

Before adjustment	After adjustment
When the image stored in the e-Filing box is printed, moiré is likely to occur.	The image stored in the e-Filing box can be printed, while moiré is minimized.
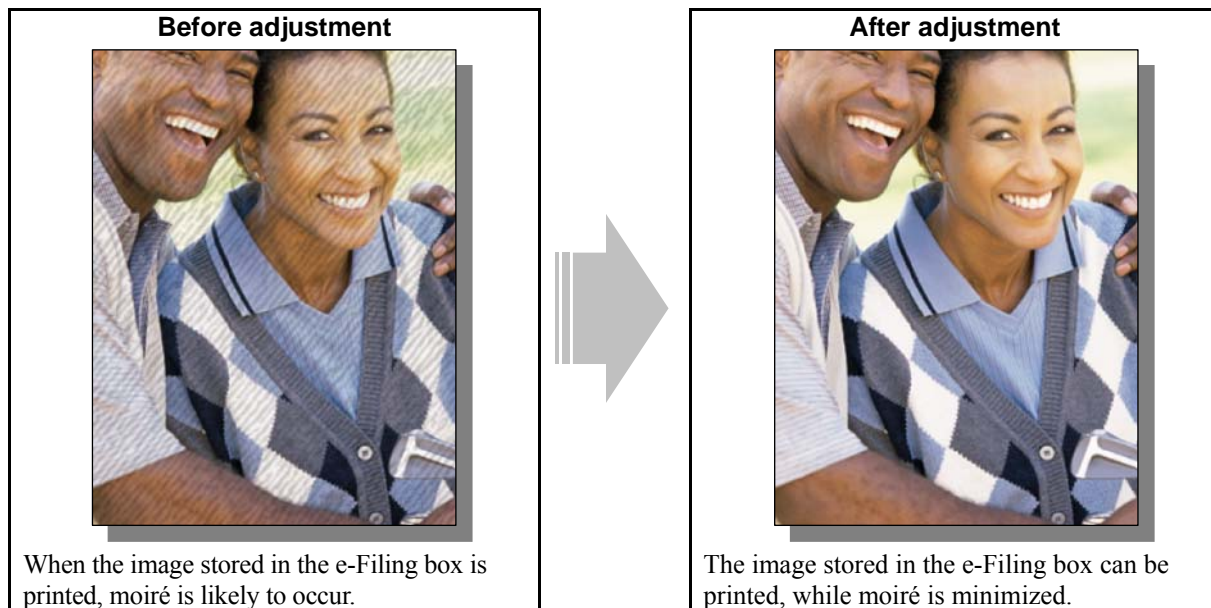
❏ **Explanation**

An original is scanned and stored in the e-Filing box (Scan to Box). When the image stored is printed directly from the e-Filing box, moiré may occur, depending on the type of original. Also, it is likely to occur, particularly when the original is scanned in the Full color mode or the Auto color mode in a high resolution (600 dpi) or even in the Gray scale mode. Select an appropriate scan resolution or adjust the sharpness intensity in the scanning functions, in order to store the original and print it from the e-Filing box, while minimizing moiré.

❏ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedures (1) to (3).

＊Only the service technician must use procedure (4).

Scan to Box

(1) When scanning the original, press [SCAN SETTING] on the Control Panel. Select "PHOTO" from among the original mode options.

＊This adjustment will be effective, only if "TEXT" or "TEXT/PHOTO" is initially selected from among the original mode options.

＊This adjustment will have an effect only on the image stored in the Full color mode (including the Auto color mode).

After changing the original mode, scan and store the original. Then print and check the print image quality. If further image quality adjustments are still necessary, use other procedures.

██ ██   Scan to Box

(2) When scanning the original, press [SCAN SETTING] on the Control Panel. Select a lower resolution in the resolution option.

    * "200 (dpi)" is selected from among the resolution options by default. If moiré occurs in a resolution of 200 dpi, select a lower resolution (150 dpi is recommended.).

    After changing the resolution, scan and store the original. Then print and check the print image quality. If you do not prefer to decrease a resolution, or if moiré still occurs even in a lower resolution, use other procedures.

    Scan to Box

(3) When scanning, press [SCAN SETTING] on the Control Panel. Adjust the sharpness intensity.

    • Press [+] on the indicator to increase the sharpness intensity or [-] to decrease it.

    * The sharpness intensity is set to the center (±) by default. If moiré occurs by default, press [-] to decrease the sharpness intensity.

    After adjusting the sharpness intensity, scan and store the original. Then print and check the print image quality. With the sharpness intensity set to the minimum, if moiré still occurs, use other procedures.

    Scan to Box

(4) Select [05 ADJUSTMENT MODE]. Change the values for codes [7430 to 7433], [7470], [8335], [8336], [8354] and [8375] to adjust the sharpness intensity in the scanning functions.

    * This adjustment will have an effect only on an image stored in the Full color mode or the Gray scale mode.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-8354	Set a value smaller than 128.	0 to 255	128
	Text	05-8335			
	Photo	05-8336			
	User custom	05-8375			
Gray scale	---	05-7433			
Black	Text/Photo	05-7430			
	Text	05-7431			
	Photo	05-7432			
	User custom	05-7470			

    * Setting "0" provides the softest image, while setting "255" provides the sharpest image.

❑ Caution after the adjustment

When the original containing text and lines is scanned and printed, the adjustment may possibly cause the blurred text and lines or a blend of undesired colors. Therefore, carefully perform the adjustment, while checking the scanned-in image or printout.

4.5 To Finely Print the Image Stored in the e-Filing box

(To print images stored through Copy to Box or Print to Box)

Before adjustment	After adjustment

Before adjustment

Copy to Box, Print to Box (Print data)

e-Filing box

Stored

Downloaded (Converted into RGB)

Client PC

Stored

Print (Converted into print data again)

If the image stored in the e-Filing box is downloaded to a PC and then printed out, the image data conversion may diminish the image quality.

After adjustment

Copy to Box, Print to Box (Print data)

e-Filing box

Stored

Print (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 and 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 File Downloader or the TWAIN driver, the image quality may be diminished.

The image data stored in the e-Filing box (Copy to Box or Print to Box) are optimized for printing on paper. However, they are converted for the computer monitor display after being downloaded to the PC. The quality of the image may be diminished when it is printed out since the data optimized for display on the computer monitor are not suitable for printing.

Therefore, images should be printed out directly from the e-Filing box, rather than being downloaded to the PC.

❑ **Procedures**

＊Both the service technician and the user can perform all adjustments.

Copy to Box　Print to Box

(1) Print out the image stored in the e-Filing box on the Control Panel or using the e-Filing Web utility.

＊For further information regarding how to print it out, refer to the Operator's Manual for e-Filing Guide.

<Note>　Scan to Box　Fax to Box

If the image is scanned or faxed and stored in the e-Filing box (Scan to Box or Fax to Box), download it to the client PC once, select the desired Image Quality Type option on the printer driver, and print it out, rather than printing it out directly from the e-Filing box. Then, the image may be finely printed.

For further information regarding how to print full-color images scanned and stored, refer to 4.7 To Finely Print Color Images Scanned and Stored (To print images stored through Scan to Box).

❑ **Caution after the adjustment**

Nothing in particular.

❑ **Remarks**

When "Archive Document" of the e-Filing Web utility or "Backup" of the e-Filing Backup/Restore Utility is used, image data stored in the e-Filing box can be converted to a file maintaining the image quality optimized for printing. For example, you may want to temporarily move stored data to make some space in the box and save them again in the box. When data are converted to a PDF or TIFF file and then moved using the File Downloader, the image quality may be diminished. However, you can use Archive Document or Backup to move the data while maintaining the image quality. The Backup feature can also collectively backs up all the data in the e-Filing box. Note that files created through the Archive Document or Backup feature cannot be directly opened on the PC or printed out. For further information regarding Archive Document and Backup, refer to the e-Filing Guide.

4.6 To Store an Image Suitable for Displaying on the Monitor or Image Editing

Before adjustment	After adjustment

When the original is stored by Copy to Box, it is not suitable for monitor display since it is optimized for printing on paper. This may diminish the image quality.

The original is stored as RGB data by Scan to Box. This can avoid unnecessary data conversion. As a result, the image quality can be maintained.
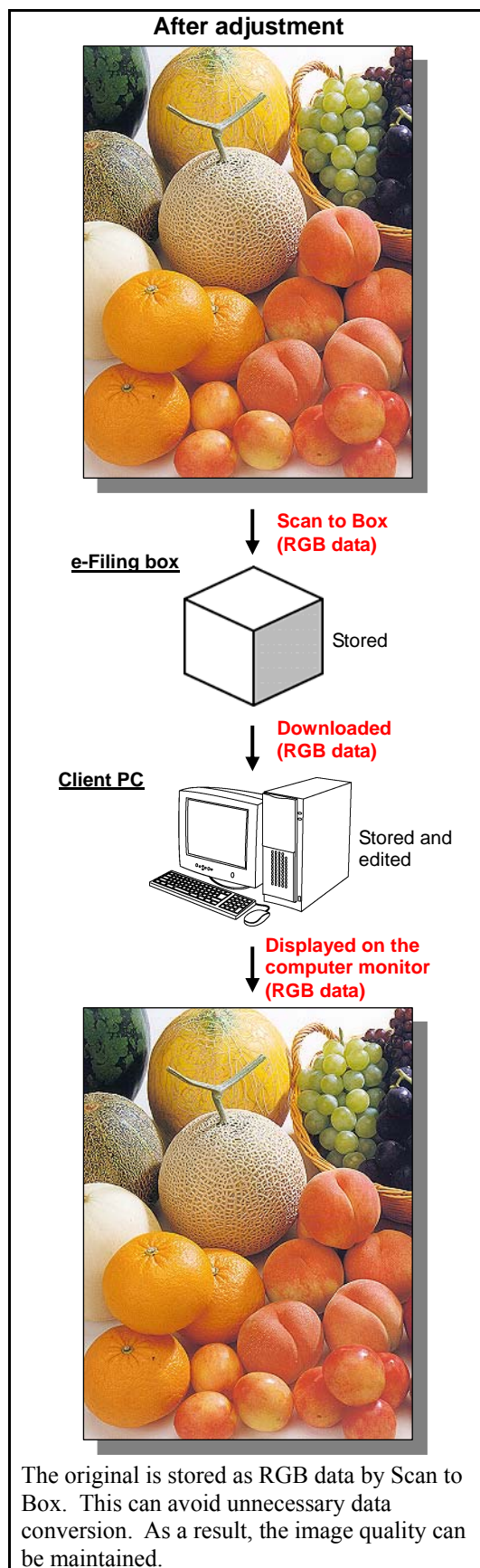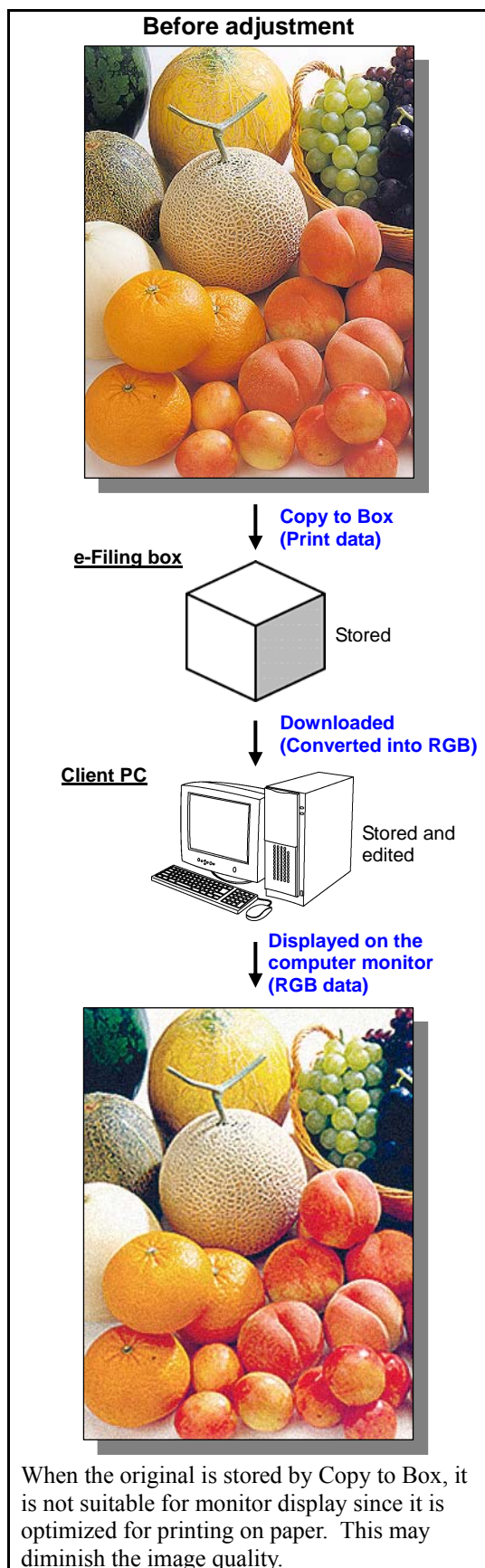
❑ Explanation

If a full-color original is copied or printed and stored in the e-Filing box (Copy to Box), and it is displayed on the monitor by being downloaded to a client PC using File Downloader or the TWAIN driver, the image quality may be diminished.

The image data stored in the e-Filing box (Copy to Box) are optimized for printing on paper. However, they are converted for the computer monitor display after being downloaded to the PC. This may cause the colors to be misaligned or grainy on the printout, so if the image is edited on the PC, its quality may be diminished.

To store a full-color original and display it on the computer monitor, while minimizing image degradation, scan and store it in the e-Filing box (Scan to Box). This allows it to be stored as data optimized for display on the computer monitor.

❑ Procedures

＊Both the service technician and the user can perform all adjustments.

   `Scan to Box`   * This adjustment will have an effect only on the image stored in the Full color mode (including the Auto color mode).

(1) Scan the full-color image and store it in the e-Filing box.

   ＊For further information regarding how to scan and store images, refer to the Operator's Manual for e-Filing Guide and Scanning Guide.

❑ Caution after the adjustment

Nothing in particular.

4.7 To Finely Print Color Images Scanned and Stored

(To print images stored through Scan to Box)

Before adjustment

Scan to Box
(RGB data)

e-Filing box

Stored

Ex: Printing image mode = Presentation

Print
(Converted into
print data)

Unless the printing image mode is selected, 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: Printing image mode = Photo

Print
(Converted into
print data)

When the printing image mode suitable for the stored data is selected, the data can be printed finely with optimal image processing.

❑ **Explanation**

When an image is scanned stored in the e-Filing box (Scan to Box) in the Full color or the Auto color mode, and printed as it is (without the printing image mode set), printing may be performed with image processing not suitable for the image, and the user may not obtain the desired image quality. To finely print a full-color image scanned and stored, select the printing image mode (General/Photograph/Presentation/Line Art) suitable for the image. Then, printing can be performed with image processing optimal for the image, in the same manner as printing on the printer driver.

❑ **Procedures**

＊Perform the adjustment in accordance with the procedures below.

＊Both the service technician and the user can perform all adjustments.

[Scan to Box]　* This adjustment will have an effect only on the image stored in the Full color mode (including the Auto color mode).

(1) Scan the full-color image and store it in the e-Filing box.

　　＊For further information regarding how to scan and store images, refer to the Operator＇s Manual for e-Filing Guide and Scanning Guide.
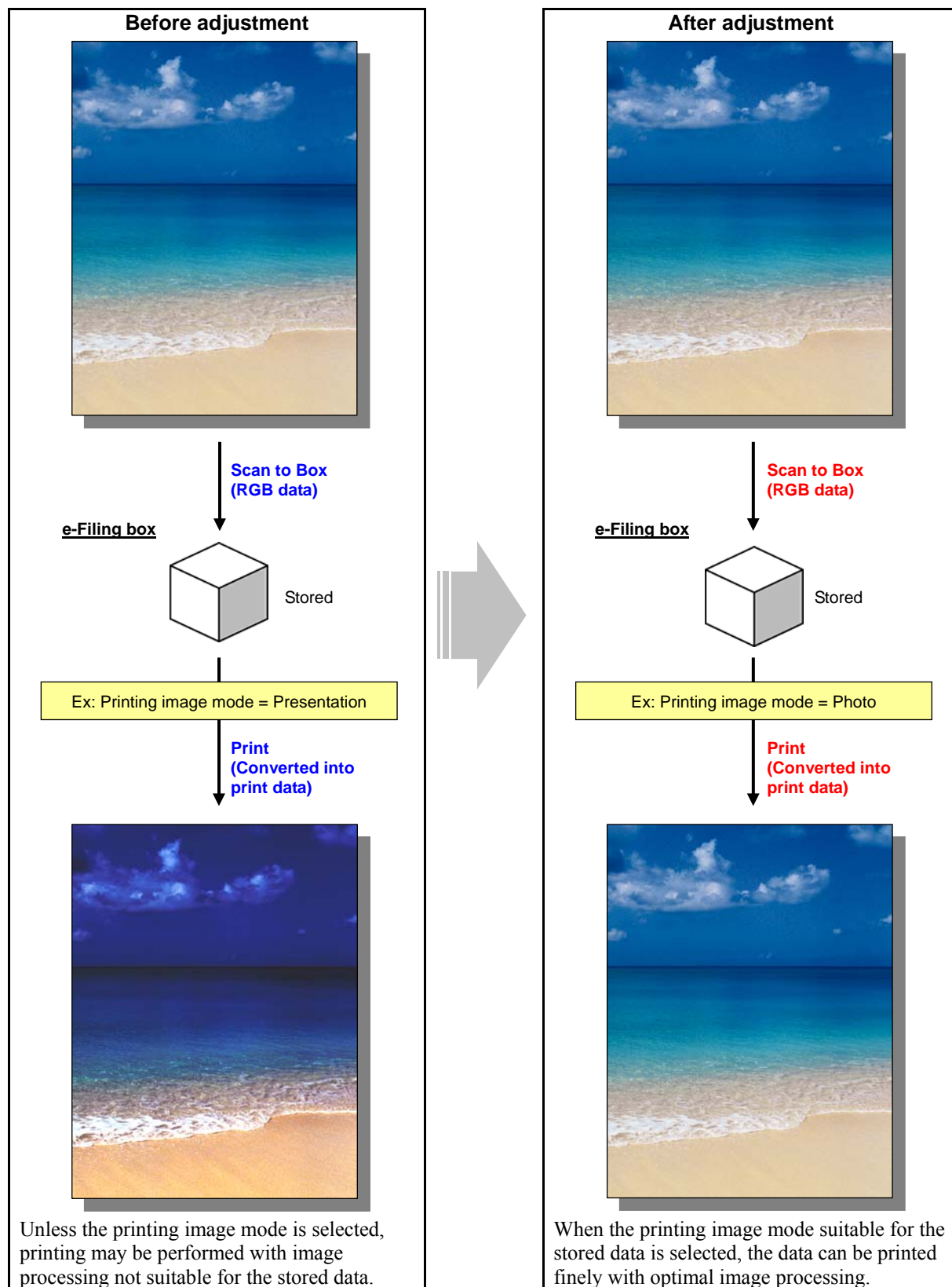
[Scan to Box]

(2) Select a printing image mode suitable for the stored image.

　　• Use steps (a) to (d) to change the printing image mode.

　　　　(a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

　　　　(b) Press [USER].

　　　　(c) Press [E-FILING].

　　　　(d) Press the button for the mode suitable for the image in the [PRINTING IMAGE MODE] option.

　　＊For further information regarding the features of each printing image mode, refer to the explanation of the "Image Quality Type" options in Procedure (1) of 3.3 To Obtain the Desired Color Balance.

　　<Note>　　A change to the printing image quality mode will apply to all future printouts using the e-Filing box. Carefully perform the adjustment while printing out images other than the one that is used for the adjustment.

[Scan to Box]

(3) Print out the image stored in the e-Filing box on the Control Panel or using the e-Filing Web utility.

　　＊For further information regarding how to print it out, refer to the Operator's Manual for e-Filing Guide.

❑ **Caution after the adjustment**

Nothing in particular.

4.8 Appendix

* Perform the e-Filing setting according to the input and output methods of the data.

Chapter	Purpose	Input method	Output method
4.1	To scan black images more clearly in the Auto color mode.	Scan to Box	Displaying on a computer monitor
4.2	To scan an original while reducing its file size.	Scan to Box	Displaying on a computer monitor
4.3	To match the color balance of the scanned image to that of the original.	Print to Box	Displaying on a computer monitor
4.4	To scan and print originals while avoiding Moiré.	Scan to Box	Printing on paper
4.5	To print images stored in e-Filing boxes more clearly.	Copy to Box Print to Box	Printing on paper
4.6	To scan images optimal for image processing or to be displayed on a computer monitor.	Scan to Box	Displaying on a computer monitor
4.7	To print color images stored with the scanning function more clearly.	Scan to Box	Printing on paper

5.1 To Clearly Scan Text (To reduce noise around text)

Before adjustment	After adjustment
If the original is scanned in the Full color mode or the Gray scale mode, noise may occur in text or edges of a solid filled area.	The image quality is maintained, while noise is being reduced.
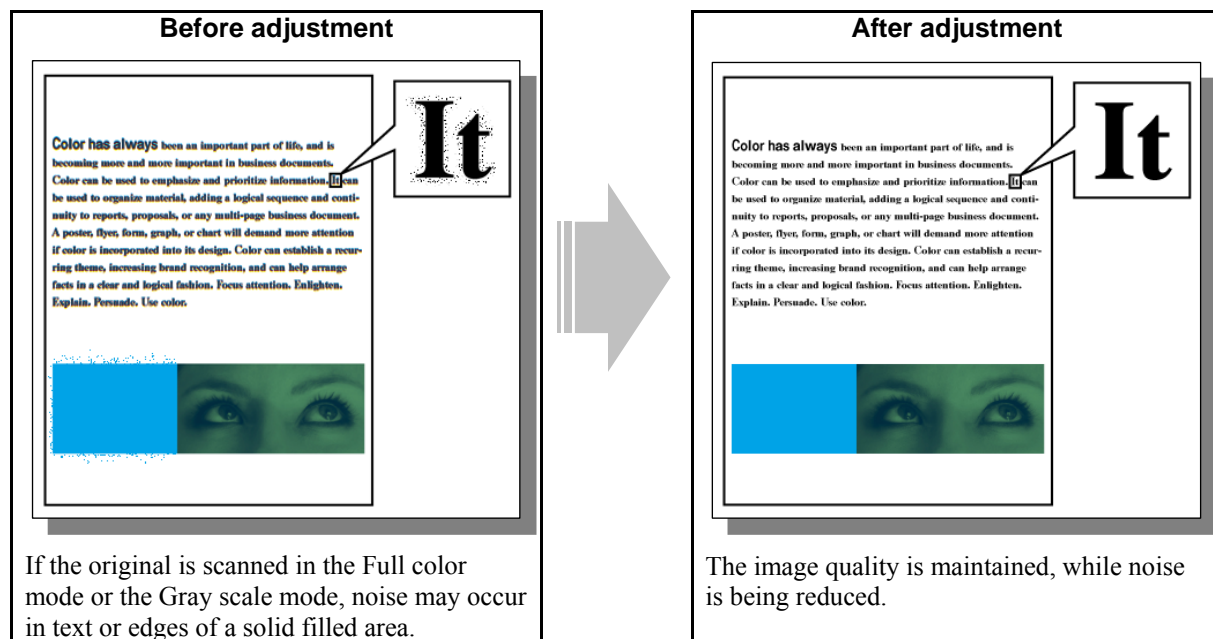
❑ **Explanation**

When an original is scanned in the Full color or the Gray scale mode, the data compression may cause noise (toner scattering) around text or the edges of a solid filled area. Adjust the compression rate or change the scan resolution, in order to obtain a better scanned-in image, while reducing noise.

＊This adjustment will have an effect on the image scanned in the Full color mode (including the Auto color mode) or the Gray scale mode.

❑ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use this procedure. However, step (3) in the procedure must be performed only by the service technician.

(1) When scanning the original, press [SCAN SETTING] on the Control Panel. Select "LOW" from among the compression rate options.

＊[MID] is selected from among the compression rate options by default.

After changing the compression rate, scan the original and check the scanned-in image quality.

If further image quality adjustments are still necessary, use procedure (2).

(2) When scanning the original, press [SCAN SETTING] on the Control Panel. Select a higher resolution in the resolution option.
 ＊"200 (dpi)" is selected from among the resolution options by default. If noise occurs in a resolution of 200 dpi, select a higher resolution (300 dpi, 400 dpi or 600 dpi).

 After changing the resolution, scan the original and check the scanned-in image quality.
 If further image quality adjustments are still necessary, use procedure (1).

(3) Select [05 ADJUSTMENT MODE]. Change the value for the code [8304] to change the JPEG compression ratio.

Compression ratio	[05] code	Subcode	Recommended value	Acceptable range value	Default
High quality		0	Set a value smaller than 128 for higher compression ratio. Set a value larger than 128 for lower compression ratio.	0 to 255	128
Standard	05-8304	1			
Low quality		2			

❑ **Caution after the adjustment**
• The adjustment of the compression rate or resolution may possibly increase the size of the file to be stored. Therefore, carefully perform the adjustment, while checking the scanned-in image quality. The table below shows you the correlation between a resolution and file size. (The ratio of the file size may vary depending on the type of original. Therefore, use the table below just for your reference.)
 ＊The file size in a resolution of 200 dpi is 1.

Resolution	File size ratio
200 dpi	1
300 dpi	Approx. × 2
400 dpi	Approx. × 3
600 dpi	Approx. × 8

• If the resolution selected in procedure (2) is too high, moiré may possibly occur in the scanned-in image. Therefore, carefully adjust the resolution, while checking the scanned-in image.

❑ **Remarks**
Use the following steps to change the default compression rate and resolution options:
 (a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.
 (b) Press [USER].
 (c) Press [SCAN].
 (d) In the " COMPRESS" or "RESOLUTION" option, press the button corresponding to the desired compression rate or resolution option.

 ＊The default resolution can be selected on a color mode basis: Full color mode (including the Auto color mode), Gray scale mode and Black mode.
  • The following resolution options are available as the default:
   • Full color mode (including the Auto color mode):   600 / 400 / 300 / 200 / 150 / 100 (dpi)
   • Gray scale mode: 600 / 400 / 300 / 200 / 150 / 100 (dpi)
   • Black mode: 600 / 400 / 300 / 200 / 150 / 100 (dpi)

5.2 To Scan an Original, while Eliminating the Background Color

(To eliminate the background density)

Before adjustment	After adjustment
The background color of the original is also scanned. Therefore, no clear contrast is made between the background and image.	The background color is eliminated, allowing clear contrast between the background and image.
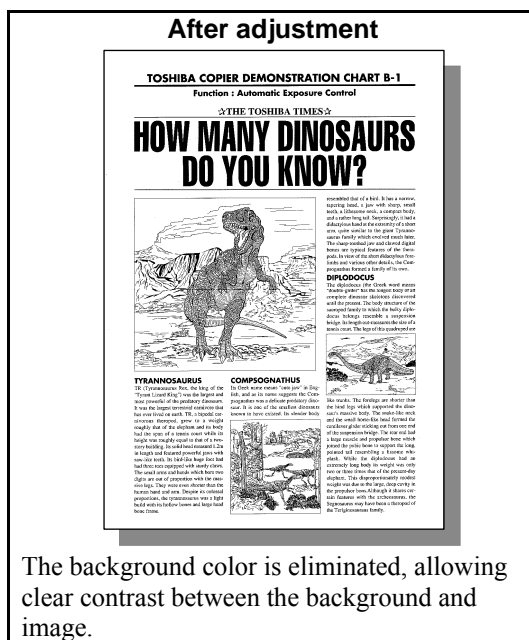
❑ **Explanation**

When an original with a background is scanned, such as a newspaper and colored paper, the background color is also scanned. Therefore, no clear contrast is made between the background and image. Perform background adjustment, in order to clearly scan such originals.

＊This adjustment will have an effect on the image scanned in all color modes.

❑ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedure (1) and (2).

＊Only the service technician must use procedure (3).

(1) Set the density adjustment method to the automatic adjustment by pressing [AUTO] of the "EXPOSURE" option.

(2) When scanning the original, press [SCAN SETTING] on the Control Panel. Press [BACKGROUND ADJUSTMENT]. Press [◖] to decrease the background density.

  After decreasing the background density, scan the original and check the scanned-in image quality.
  With the background density set to the minimum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(3) Select [05 ADJUSTMENT MODE]. Change the values for codes [7436 to 7439], [7441], [8309 to 8311] and [8370] to decrease the background density.

• The code to use varies depending on original mode. Adjust the value for [05] code corresponding to the color mode for which you would like to improve the image quality.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-8309	Set a value smaller than 128.	0 to 255	128
Full color	Text	05-8310			
Full color	Photo	05-8311			
Full color	User custom	05-8370			
Gray scale	---	05-7439			
Black	Text/Photo	05-7436			
Black	Text	05-7437			
Black	Photo	05-7438			
Black	User custom	05-7441			

＊The setting value "25" corresponds to one step in the background adjustment on the control panel.

*The background density will become the lowest, if "0" is set. On the other hand, it will become the highest, if "255" is set. Changing the value will also change the background density, when the "Background Adjustment" indicator is set to the center. Then, if the background density of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is decreased by 5 (lighter), the value of each step of the indicator will also be decreased by 5 (lighter)).

❑ **Caution after the adjustment**

The adjustment may possibly diminish the quality of the light-colored image. Therefore, carefully perform the adjustment, while checking the scanned-in image.

❑ **Remarks**

When scanning the original, use the following steps to change the default indicator position in the background adjustment option, which is displayed on the Control Panel:

(a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

(b) Press [USER].

(c) Press [SCAN].

(d) Press [Next] twice to display the menu to change the initial values for the Full color and Auto color modes.

(e) Select the default background density in the "BACKGROUND ADJUSTMENT" option.

5.3 To Clearly Scan and Print an Original in Black and White

(To improve gradation and reduce graininess)

Before adjustment	After adjustment
If the original is scanned in the Black mode, the halftones may become blurred in black.	The halftones of the scanned-in image are clearly printed out.

❑ Explanation

If an original is scanned in the Black mode, a difference in the density level of the halftones cannot be accurately scanned. As a result, it may become blurred in black or grained. Scan a black-and-white original in the Gray scale mode, in order to scan and print it out in black and white more clearly.

❑ Procedures

＊Both the service technician and the user can perform all adjustments.

(1) When scanning the original, press [SCAN SETTING] on the Control Panel. Select "GRAY SCALE" from among the color mode options.
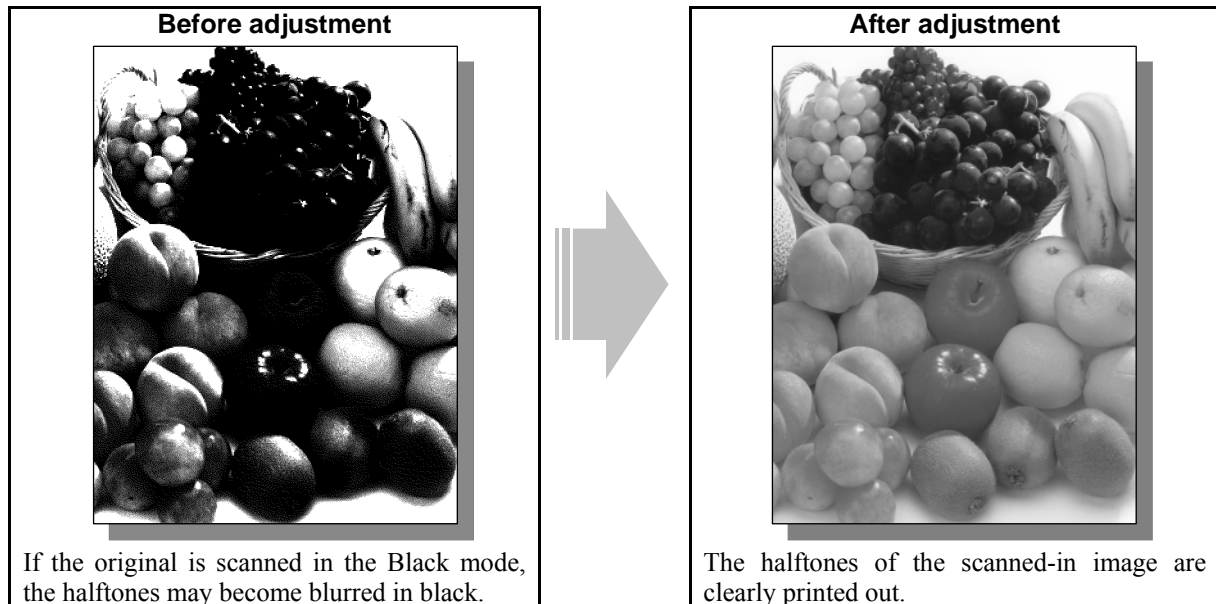
❑ Caution after the adjustment

The adjustment may possibly increase the size of the file to be stored. Therefore, carefully perform the adjustment, while checking the scanned-in image quality. The correlation between color mode and file size is as described below. (The ratio of the file size may vary depending on the type of original. Therefore, use the description below just for your reference.)

＊Ratio of the file size in the Black mode to the Gray scale mode
- If the file size in the Black mode with the Text mode selected is 1, it will be increased to approximately 7 times in the Gray scale mode.
- If the file size in the Black mode with the Photo mode selected is 1, it will be approximately doubled in the Gray scale mode.

5.4 To Scan the Original, while Reducing the File Size

Before adjustment	After adjustment
Approx. 600 KB	Approx. 100 KB
Approx. 200 KB	Approx. 30 KB
Approx. 900 KB	Approx. 150 KB
Approx. 550 KB	Approx. 90 KB
* The above file sizes are just for your reference.	* The above file sizes are just for your reference.
If the original is constantly scanned at the default compression rate, the file size may become larger than required.	If the original is scanned at a reasonable compression rate, depending on the purpose of the scanned-in image, the file size will be successfully reduced.

❑ Explanation

If an original is scanned in the default resolution and at the default compression rate, a proper image will be obtained for general purposes. But the file size may become larger than required. The file size of the scanned-in image significantly varies, depending on the selected resolution or compression rate. If an appropriate resolution and a compression rate are selected in accordance with the purpose of the original, the image quality will be maintained, while the file size is being reduced. Change the resolution, original mode, or compression rate or perform the background adjustment, in order to minimize the file size of the scanned-in image.

The product offers the "Slim PDF" function. This will diminish the image quality but reduce the file size to approximately 1/8 to 1/10, compared to the scanned-in image (300dpi, compression rate: MID) in JPEG format.

❑ Procedures

*The procedure to use varies, depending on whether to reduce the file size by changing the options when scanning the original or in Slim PDF. Refer to "To Reduce the File Size by Changing the Options when Scanning the Original" in order to reduce the file size without changing the file format. Refer to "To Reduce the File Size in Slim PDF" in order to give a higher priority to the file size reduction than the image quality.

5.4.1 To Reduce the File Size by Changing the Options when Scanning the Original

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use this procedure. However, step (5) in the procedure must be performed only by the service technician.

(1) When scanning the original, press [SCAN SETTING] on the Control Panel. Select a lower resolution in the resolution option.
　＊"200 (dpi)" is selected from among the resolution options by default. Select a lower resolution option (100 dpi or 150 dpi) to reduce the file size.

　＊This adjustment will have an effect on an image scanned in all color modes (Full color, Gray scale, Black and Auto color).

　After changing the resolution, scan the original and check the scanned-in image quality.
　If further image quality adjustments are still necessary, use other procedures.

(2) When scanning the original, press [SCAN SETTING] on the Control Panel. Select "TEXT" from among the original mode options.
　＊Perform this adjustment, only if a black-and-white original containing no photo images is scanned or if degradation in the photo image quality is acceptable.

　＊This adjustment will be effective, only if [TEXT/PHOTO] or [PHOTO] is initially selected from among the original mode options.

　＊This adjustment will have an effect only on an image scanned in the Black mode.

　After changing original mode, scan the original and check the scanned-in image quality.
　If further image quality adjustments are still necessary, use other procedures.

(3) When scanning the original, press [SCAN SETTING] on the Control Panel. Select "HIGH" from among the compression rate options.
　＊[MID] is selected from among the compression rate options by default.

　＊This adjustment will have an effect only on an image scanned in the Full color mode (including the Auto color mode) or the Gray scale mode.

　After changing the compression rate, scan the original and check the scanned-in image quality.
　If further image quality adjustments are still necessary, use other procedures.

▮▮ ▮▮ ▮ (4) When scanning the original, press [SCAN SETTING] on the Control Panel. Press [BACKGROUND ADJUSTMENT]. Press [◖] to decrease the background density. Then select "HIGH" from among the compression rate options.

＊This adjustment will be effective, only if the original with a color background, such as a newspaper and color paper, is scanned.

＊This adjustment will have an effect only on the image scanned in the Full color mode (including the Auto color mode) or the Gray scale mode.

After decreasing the background density and changing the compression rate, scan the original and check the scanned-in image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, use other procedures.

▮▮ ▮ (5) Select [05 ADJUSTMENT MODE]. Change the value for the code [8304] to change the JPEG compression ratio.

Compression ratio	[05] code	Subcode	Recommended value	Acceptable range value	Default
High quality		0	Set a value smaller than 128 for higher compression ratio. Set a value larger than 128 for lower compression ratio.	0 to 255	128
Standard	05-8304	1			
Low quality		2			

❑ **Caution after the adjustment**

• The table below shows you the correlation between the adjustment and file size. (The ratio of the file size may vary, depending on the type of original. Therefore, use the table below just for your reference.)

• Correlation between the resolution and the file size (procedure (1))

＊The file size in a resolution of 200 dpi is 100%.

Resolution	File size ratio
200 dpi	100%
150 dpi	Approx. 60%
100 dpi	Approx. 30%

• Correlation between the original mode and the file size (procedure (2))

＊The file size in the Photo mode is 100%.

Original mode	File size ratio
Photo	100%
Text	Approx. 20%

• Correlation between the compression rate and the file size (procedure (3))

＊The file size is 100%, with [MID] selected.

Compression rate	File size ratio
MID	100%
HIGH	Approx. 80%

• The adjustment may possibly diminish the image quality, as shown by the table below. Therefore, carefully perform the adjustment, while checking the scanned-in image.

Procedures used	Possible image degradation
Any of procedures from (1) to (4)	The photo image area may be blurred.
(1) or (3)	Noise may be increase around text.
(1) or (3)	Small-sized text may become illegible.
(4)	Light-colored images may not be clearly scanned.

❑ Remarks

• Use the following steps to change the default resolution, original mode, compression rate and/or background adjustment options:

(a) Press [USER FUNCTIONS] on the Control Panel to enter the "User Functions" menu.

(b) Press [USER].

(c) Press [SCAN].

(d) Press the Next button several times to display the screen to change the default value in the desired Color mode.

(e) In the "RESOLUTION," "ORIGINAL MODE," " COMPRESS" and/or "BACKGROUND ADJUSTMENT" option, press the desired button to change the default.

＊ The default resolution can be selected on a color mode basis: Full color mode (including the Auto color mode), Gray scale mode and Black mode

• The following resolution options are available as the default:

• Full color mode (including Auto color mode):   600 / 400 / 300 / 200 / 150 / 100 (dpi)

• Gray scale mode: 600 / 400 / 300 / 200 / 150 / 100 (dpi)

• Black mode: 600 / 400 / 300 / 200 / 150 / 100 (dpi)

• Remember that when scanning the original in the Full color mode, if the original mode option is switched from the Text/Photo mode or the Photo to the Text mode, the file size may become larger.

5.4.2 To Reduce the File Size in Slim PDF

* Both the service technician and the user can use procedure (1).

* The service technician must use only procedure (2) in [05 ADJUSTMENT MODE] (step (b) "To reduce the blurred area of text and photos"). Both the service technician and the user can use other procedures.

<Note> • Slim PDF will be available only if "FILE", "USB", or "SCAN TO E-MAIL" is selected in scan mode to scan the original in the Full color mode or the Gray scale mode.

- The image quality or file size in Slim PDF may be more affected than in JPEG or PDF, depending on the environment (original placing direction) when the original is scanned. In addition, the scanning will be slowed down.

- Slim PDF is not suitable for the following originals. It is recommended to scan them in JPEG or PDF.
  - Originals blurred when scanned in JPEG or PDF
    (If the original is scanned in Slim PDF, the image quality may be further diminished)
  - Complicated originals such as tables or maps containing lines or small-sized text
  - Originals where stable image quality is required, such as critical documents

(1) When scanning the original, press [SLIM PDF] on the Control Panel.

After adjusting the original in Slim PDF, scan the original and check the scanned-in image quality.
If the image quality adjustment in Slim PDF is necessary, use the next procedure.

(2) Adjust the image quality in Slim PDF at a user's request.

To reduce the blurred area of text and photos

Use steps (a) to (b) to perform the adjustment.

(a) Turn the original and place it. Or when scanning the original, press [SCAN SETTING] on the Control Panel. Change the "ROTATION" option to turn the original.

After changing the "ROTATION" option, scan the original and check the scanned-in image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(b) Select [05 ADJUSTMENT MODE]. Change the values for code [9104] and [9107] to adjust the image quality and resolution of a background.

[05] code	Recommended value	Acceptable value range	Default
05-9104	5	0 to 10	5
05-9107	1 or 2	0 to 3	1

＊Changing the value provides the effects below. Enter the value within the recommended value range.
  Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.
    Set a smaller value: High compression (small file size), low image quality, and high scanning speed
    Set a later value: Low compression (large file size), high image quality, and low scanning speed

To leave the color of text as it is

Use steps (a) to (b) to perform the adjustment.

(a) Turn the original and place it. Or when scanning the original, press [SCAN SETTING] on the Control Panel. Change the "ROTATION" option to turn the original.

After changing the "ROTATION" option, scan the original and check the scanned-in image quality. If further image quality adjustments are still necessary, use the next procedure.

(b) When scanning the original, press [SCAN SETTING] on the Control Panel. Press [-] to decrease the sharpness intensity.
　　＊Decrease the sharpness intensity by 1 step from the current value.

To eliminate the background density

Use steps (a) to (b) to perform the adjustment.

(a) When scanning the original, press [SCAN SETTING] on the Control Panel. Press [◖] to decrease the background density.
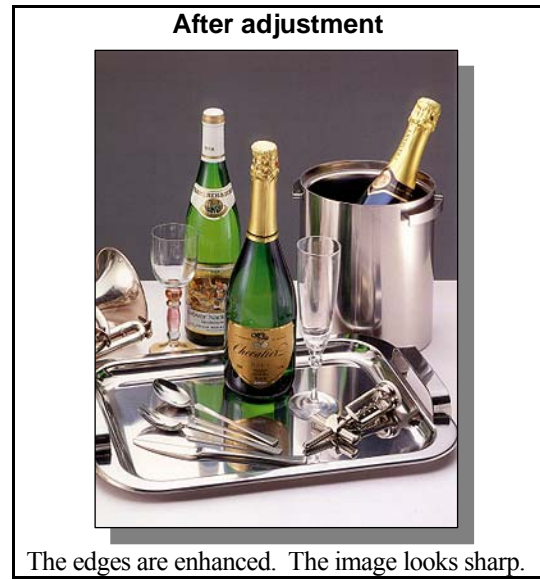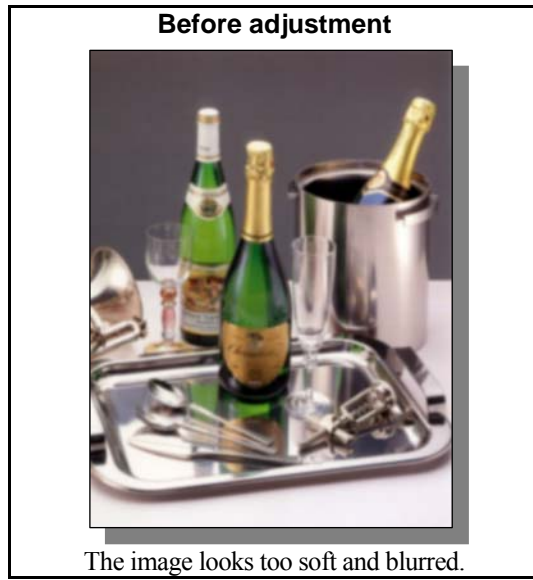
After decreasing the background density, scan the original and check the scanned-in image quality.
Only if the user's desired image quality is still not obtained after the above procedure has been performed, scan the original in JPEG or PDF.

❏ Caution after the adjustment

The adjustment may possibly cause blurred text, noise or vary the hues of areas. Therefore, carefully perform the adjustment, while checking the scanned-in image quality.

5.5 To Sharply Scan the Original (To increase the sharpness intensity)

Before adjustment	After adjustment
The image looks too soft and blurred.	The edges are enhanced. The image looks sharp.

❑ **Explanation**

Adjust the sharpness intensity, in order to sharply scan the soft and blurred original.

* This adjustment will have an effect on the image scanned in all color modes (Full color, Gray scale, Black and Auto color).

❑ **Procedures**

＊You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

＊Both the service technician and the user can use procedure (1).

＊Only the service technician must use procedure (2).

◼▥▦▨ (1) When scanning the original, press [SCAN SETTING] on the Control Panel. Press [+] to increase the sharpness intensity.

After increasing the sharpness intensity, scan the original and check the scanned-in image quality.
With the sharpness intensity set to the maximum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

◼▥▦▨ (2) Select [05 ADJUSTMENT MODE]. Change the values for codes [7430 to 7433],[7470], [8335], [8337], [8354] and [8375] to adjust the sharpness intensity.
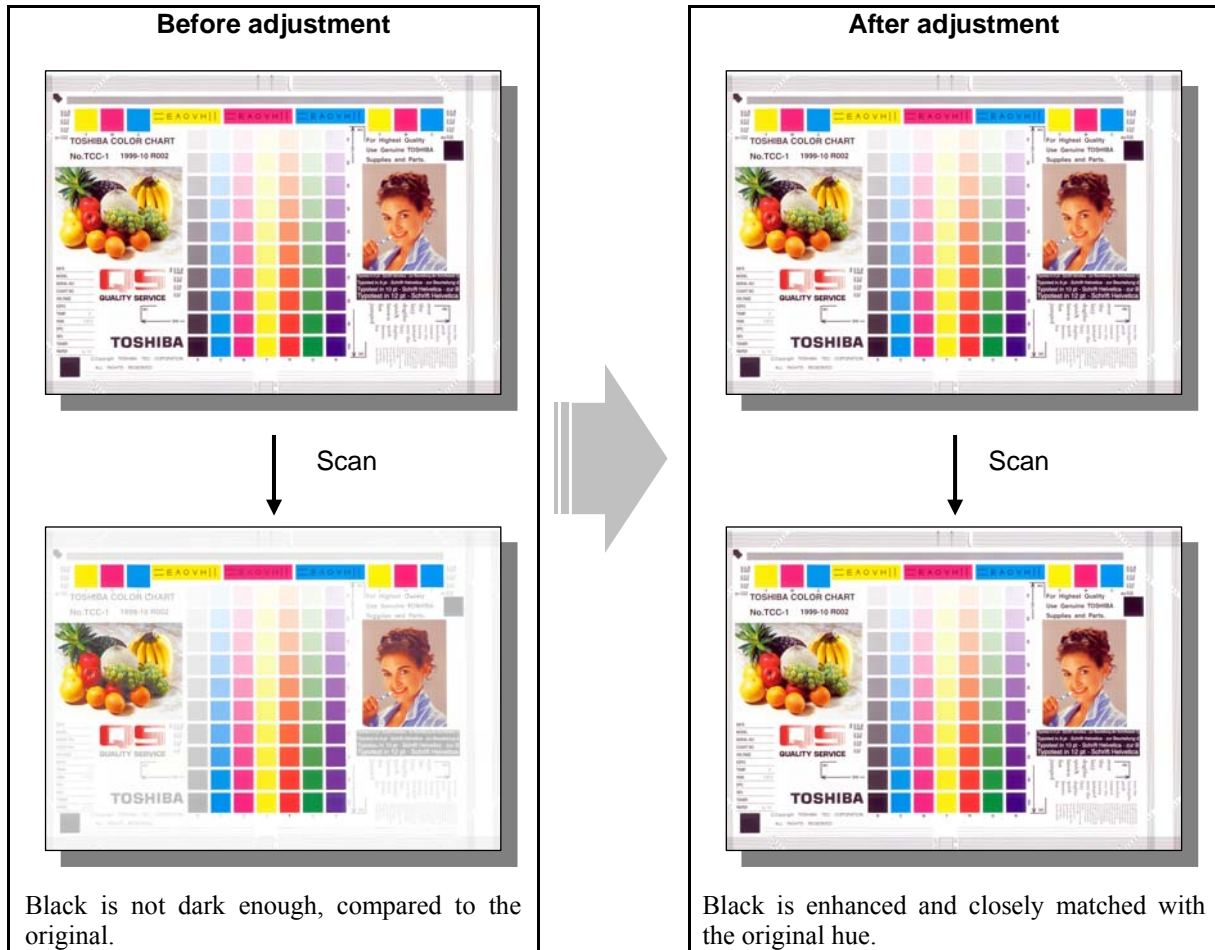
Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-7430	Set a value larger than 128.	0 to 255	128
	Text	05-7431			
	Photo	05-7432			
	User custom	05-7470			
Full color	Text/Photo	05-8354			
	Text	05-8335			
	Photo	05-8336			
	User custom	05-8375			
Gray scale	---	05-7433			

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.

❑ **Caution after the adjustment**

The adjustment may possibly cause moiré. In addition, when text and thin lines in a light-colored background are scanned, the background around the text or line may be eliminated. Therefore, carefully perform the adjustment, while checking the scanned-in image.

5.6 To Scan an Original, while Enhancing Black

Before adjustment	After adjustment
Scan	Scan
Black is not dark enough, compared to the original.	Black is enhanced and closely matched with the original hue.

❑ Explanation

When a full-color original is scanned, black is not dark enough, compared to the original. (In general, the scanned-in image is likely to become less dark.) Finely adjust the black density of the scanned-in image, in order to darken black and closely match it with the original hue.

* This adjustment will have an effect only on the image scanned in the Full color mode (including the Auto color mode).

❏ **Procedures**

＊The service technician must perform all adjustments.

(1) Select [05 ADJUSTMENT MODE]. Change the values for codes [8314 to 8316] and [8371] to adjust the
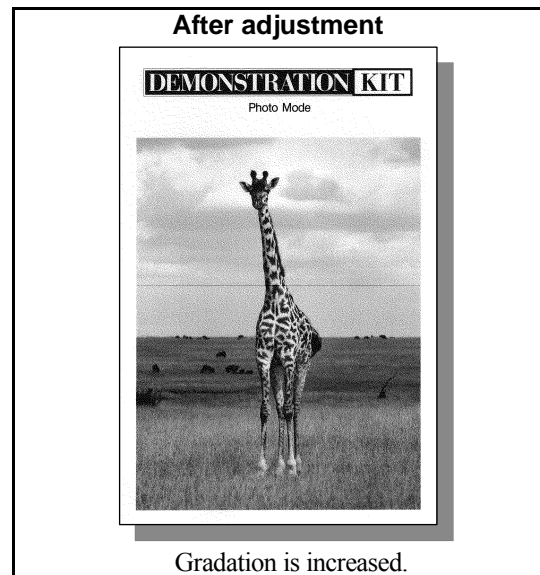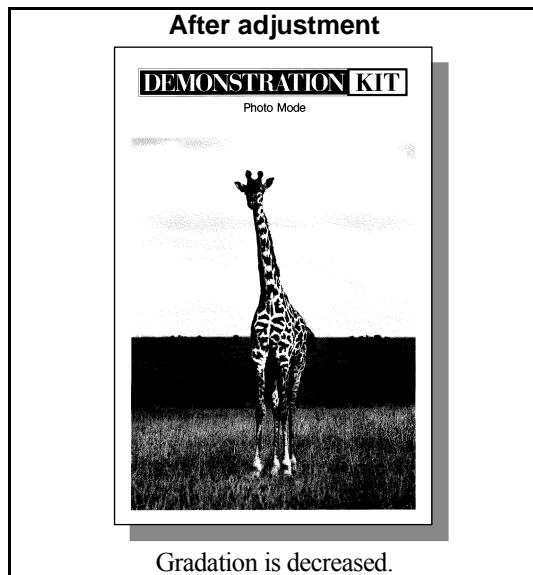black density of a scanned-in image.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-8314	Set a value larger than 1.	0 to 4	1
	Text	05-8315	Set a value larger than 0.	0 to 4	0
	Photo	05-8316			
	User custom	05-8371			

＊Setting "0" provides the lightest black, while setting "4" the darkest.

❏ **Caution after the adjustment**

The adjustment may possibly provide the extremely dark background. Therefore, carefully perform the

adjustment, while checking the scanned-in image.

5.7 To Scan an Original with the Desired Gradation

Before adjustment

The image is scanned with natural gradation.
(Default scanning)

After adjustment

Gradation is decreased.

After adjustment

Gradation is increased.
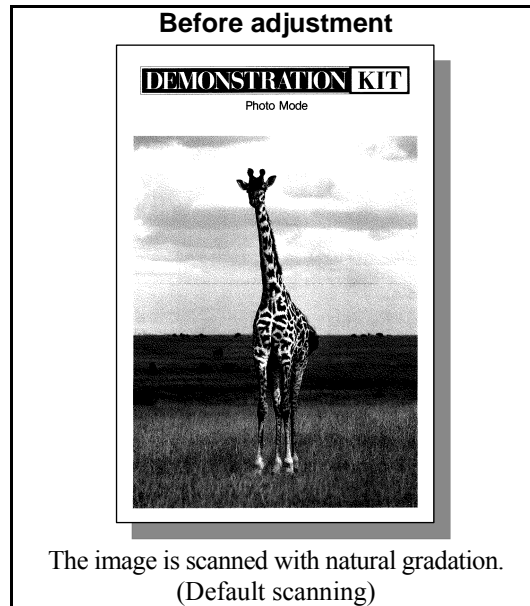
❑ Explanation

When an original is scanned in the Black mode or the Gray scale mode, changing the scan density according to density area (low-, medium- or high-density area) allows a user to adjust the reproducibility of halftones (gradation). Adjust the gamma curve balance, in order to change the gradation, depending on the type of original or at a user's request.

* This adjustment will have an effect only on the image scanned in the Black mode or the Gray scale mode.

❑ **Procedures**

＊The service technician must perform all adjustments.

▉▐ ▐▌▌ (1) Select [05 ADJUSTMENT MODE]. Change the values for codes [7480] and [7485 to 7488] to adjust the

gamma curve balance of the low-, medium- and high-density areas.

Color mode	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-7485	0/1/2	Set a value smaller than 128 to decrease the density. Set a value larger than 128 to increase the density.	0 to 255	128
	Text	05-7486	0/1/2			
	Photo	05-7487	0/1/2			
	User custom	05-7480	0/1/2			
Gray scale	---	05-7488	0/1/2			

＊Set the value in increments of approximately 20, while checking the scanned-in image until the optimum

value is obtained.

＊The subcode varies according to the area where the density is adjusted. Refer to the table below and set the

subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

＊Gradation in the Black mode will vary, if the medium-density area is mainly adjusted. But remember that

adjusting the low- or high-density area will rarely affect the gradation in the Black mode.

❑ **Caution after the adjustment**

Nothing in particular.

5.8 To Register the Original Mode Optimal for a Particular Type of Original

(To have "Custom" selected)

❑ **Explanation**

If the value for [05] code is adjusted in existing original mode (Text /Photo, Text, Photo or Gray scale), in order to clearly scan a particular type of original, other types of original may not be clearly scanned. In this case, add the original mode option adjusted for a particular type of original as "Custom (User custom)" mode. To have "Custom" selected, add the value adjusted for [05] code in "Custom" mode to the one in reference original mode. Select reference original mode for "Custom" from among the original mode options.

To have "Custom" in the Black mode, select the existing original mode option as reference original mode.

To have "Custom" in the Full color mode (including the Auto color mode) selected, select the existing original mode or "e-document" mode option where the value has been adjusted to identify whiteout areas, as reference original mode.

* e-document: This is the mode that corresponds to the law in Japan.

* This adjustment will have an effect only on the image scanned in the Black mode or the Full color mode
   (including the Auto color mode).

❑ **Procedures**

* Perform the adjustment in accordance with the procedures below.

* Only the service technician must use procedures (1) and (2).

* Both the service technician and the user can use procedure (3).

(1) Select [08 SETTING MODE]. Change the value for code [7401] or [8303] to select reference original mode
      for "Custom" mode from among the original mode options.

      • Select the original mode option, which is most likely to be matched with the image quality the user desires.

For the Black mode

Value for 08-7401	Reference original mode
0	Reserved (Default)
1	Text/Photo
2	Text
3	Photo

For the Full color mode

Value for 08-8303	Reference original mode
0	Reserved (Default)
1	Text/Photo
2	Text
3	Photo
4	e-document

After selecting the reference original mode option, use the next procedure.

■▯ ▮▮ ▮◢ (2) Select [05 ADJUSTMENT MODE] to adjust the values in the Custom mode, in order to obtain the image quality the user desires.

• Select the necessary value for [05] code in the table below.

Color mode	[05] code	Adjustment	Acceptable value range	Default
Black	05-7425	Range correction (Automatic density adjustment)	0 to 1	1
	05-7426	Range correction (Manual density adjustment)		0
	05-7441	Background adjustment	0 to 255	128
	05-7470	Sharpness adjustment		128
	05-7475	Manual density adjustment center value		128
	05-7478	Automatic density adjustment		128
	05-7480	Gamma curve balance adjustment		128
	05-8404	Background processing offset adjustment (Automatic density adjustment)	0 to 255	128
	05-8409	Background processing offset adjustment (Manual density adjustment)		128
Full color	05-8334	Range correction adjustment (Automatic density adjustment)	0 to 1	1
	05-8365	Range correction adjustment (Manual density adjustment)		0
	05-8370	Background adjustment	0 to 255	128
	05-8371	Fine adjustment of black density	0 to 4	0
	05-8372	RGB conversion method selection	0 to 3	0
	05-8373	Saturation adjustment	0 to 255	128
	05-8375	Sharpness adjustment		128
	05-8380	Manual density adjustment center value		128
	05-8381	Manual density adjustment light step value		20
	05-8382	Manual density adjustment dark step value		20
	05-8389	Background processing offset adjustment (Automatic density adjustment)		128
	05-8394	Background processing offset adjustment (Manual density adjustment)		128

＊For further information regarding the codes, refer to the Service Manual.

<Note> Select the code for the Custom mode option, in order to adjust the value for [05] code in the Custom mode. Never adjust any values for [05] code in existing original mode.

After adjusting the value in the Custom mode, use the next procedure.

■▮▮ ▮▮ (3) When scanning the original, press [SCAN SETTING] on the Control Panel. Select "Custom" from among
the original mode options.

❑ **Caution after the adjustment**

Nothing in particular.

5.9 To Eliminate Shading around Scanned Images

❑ **Explanation**

The white void amount around the scanned image is adjusted. Since the void amount is very small in the stored image in scanning, shading may appear around the scanned image due to a slight difference of the original size. This can be eliminated by adjusting the setting value.

＊The setting value is applied to all resolutions and color modes.

❑ **Procedures**

＊All the steps in the adjustment procedure shall be performed by the service technician.

(1) Select [05 ADJUSTMENT MODE]. Change the value for the code [7489] to adjust the white void amount around the scanned image.

[05] code	Setting value (Target)	Acceptable value range	Default
05-7489	The setting value "1" corresponds to 1 dot with 600 dpi, that is "24" to 1 mm.	0 to 255	0

* When the value increases, the white void around the scanned image becomes wider, and the data on the image decrease.

5.10 To Scan Yellow Clearly

Before adjustment	After adjustment
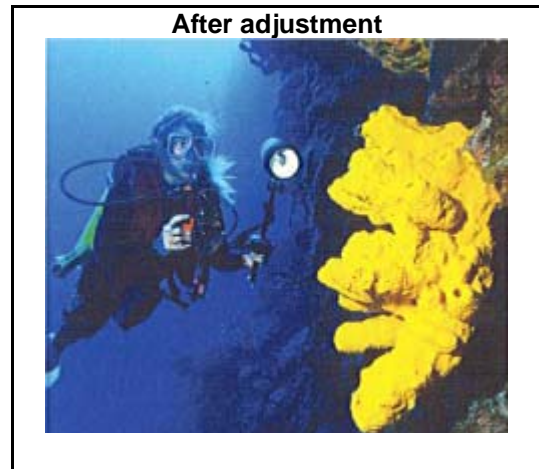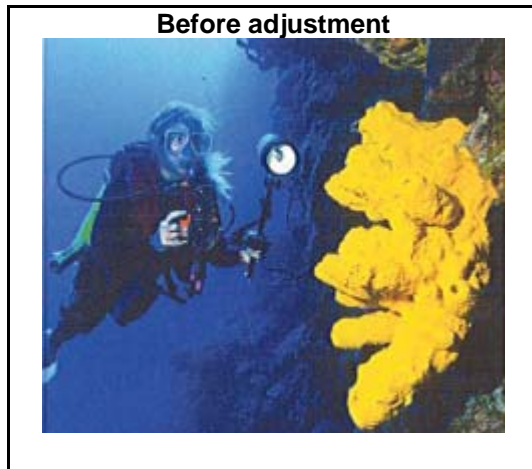
❑ Explanation

When a color original is scanned, adjustment can be made for clear reproduction of a vivid yellow as shown above.

❑ Procedures

* Perform the adjustment in accordance with the procedures below.

* Both the service technician and the user can use all steps of this adjustment.

(1) To use the Text/Photo mode
After adjusting, perform scanning and check its image quality.

If the color does not become fine in the Text/Photo mode, perform the following steps.

▌▌(2) Press [SCAN] on the control panel, and then [+] in [SATURATION] to increase the saturation of the copy image.

<Note>

• This increases the saturation not only for yellow but also for other colors.

After adjusting the saturation, copy and check the copy image quality.

If the yellow does not become vivid even though the saturation is increased, try the next procedure.

▌▌(3) Press [SCAN] on the control panel, and perform color balance adjustment.

To scan reddish yellow clearly

Use steps (a) through (c) to perform the adjustment.

(a) Set G (green) to [+] side in Color Balance.

(b) Set R (red) to [-] side in Color Balance.

(c) Set the color balance with a combination of both (a) and (b).

To scan greenish yellow clearly

Use steps (a) through (c) to perform the adjustment.

(a) Set R (red) to [+] side in Color Balance.

(b) Set G (green) to [-] side in Color Balance.

(c) Set the color balance with a combination of both (a) and (b).

To scan yellow more vividly

Use steps (a) through (c) to perform the adjustment.

(a) Set B (blue) to [-] side in Color Balance.

(b) Set R (red) and G (green) to [+] side in Color Balance.

(c) Set the color balance with a combination of both (a) and (b).

<Note>

• This adjustment influences not only yellow but also other colors.

After adjusting the color balance, copy and check the copy image quality.

❑ Caution after the adjustment

Nothing in particular.

5.11 To Reduce Streaks in Scanning with DF

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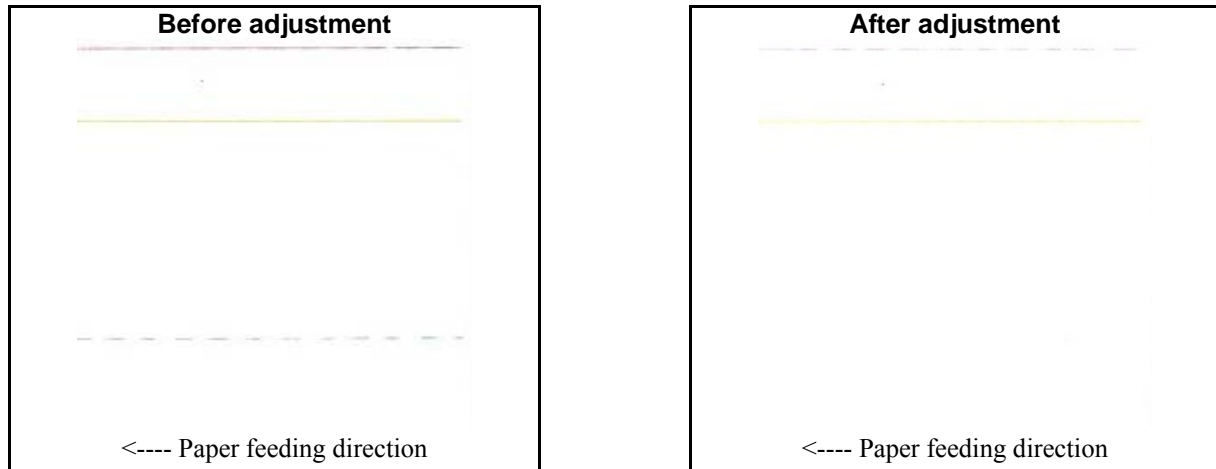
❑ Explanation

If streaks occur in scanning with the DF, this problem can be solved by cleaning the original glass in the DF.

Moreover, they can be made inconspicuous by changing the setting of the following self-diagnostic code.

❑ Procedures

* Perform the steps in order as listed below.

* Both the service technician and the user can use step (1).

* Only the service technician can use step (2).

<Notes>

Normally, the use with the factory default setting (Disabled) is recommended since the adjustment may decrease

the reproducibility of fine characters and lines.

(1) Press [Scan Setting] on the touch panel and select [ADF Scan Noise Reduction].

By pressing [Low], [Middle] or [High], adjust the noise reduction level to reduce streaks in scanning with

the DF.

After adjusting, perform scanning and check its image quality.

* Explanation of setting value

Setting value	Description
None	The noise reduction function is disabled. (Default)
Low	The noise reduction level is low.
Middle	The noise reduction level is medium.
High	The noise reduction level is high.

When the noise reduction level for each [Low], [Middle] or [High] is changed, the service technician must perform the following step.

■❚ ❙❙❙ ❙❙❙ ◪(2) Enter [05 ADJUSTMENT MODE] and change the setting values for the codes from [7400] to [7404] and from [8412] to [8415] to adjust the noise reduction level.

| Color mode	Original mode	[05] Code	Recommended value	Acceptable value range	Default
White and Black	Text/Photo	05-7401	90 to 120	0 to 200	100
	Text	05-7402			
	Photo	05-7403			
	User custom	05-7400			
Full color	Text/Photo	05-8413			
	Text	05-8414			
	Photo	05-8415			
	User custom	05-8412			
Gray scale	---	05-7404			

* Setting "200" provides the weakest noise reduction level, while setting "1" provides the strongest one.
   Moreover, when "0" is set for the setting value, this function becomes disabled.
* The noise reduction level for each [Low], [Middle] or [High] of [ADF Scan Noise Reduction] set from the touch panel is changed. Setting the recommended value provides the most effective result.

After changing the setting value, perform scanning and check its image quality.

❑ **Caution after the adjustment**

Perform the adjustment while checking the scanned images since the adjustment may decrease the reproducibility of fine characters and lines.
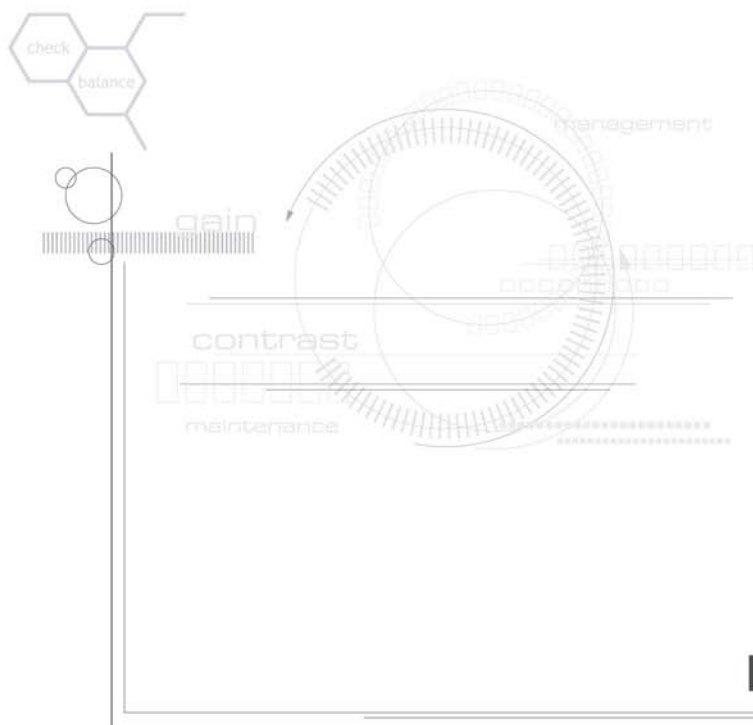
Imaging Manual

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