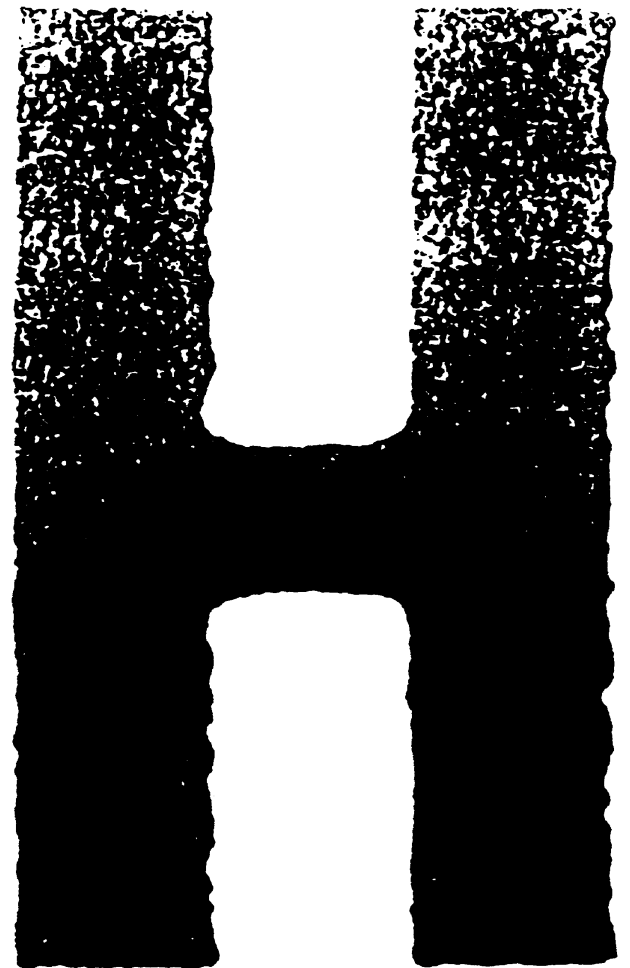


TOSHIBA
Leading Innovation >>>

SERVICE HANDBOOK

MULTIFUNCTIONAL DIGITAL SYSTEMS
e-STUDIO181/211



Model: DP-1810/2110
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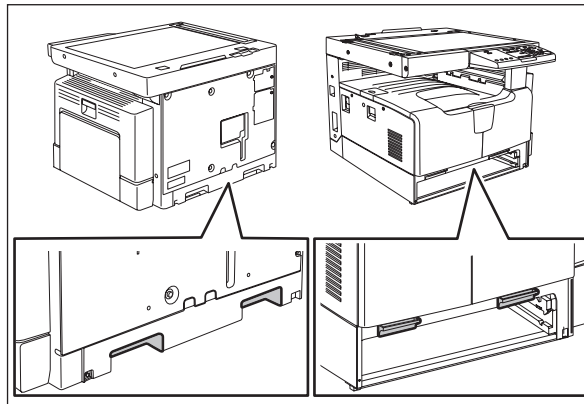
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GENERAL PRECAUTIONS REGARDING THE SERVICE FOR e-STUDIO181/211

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

1) Transportation/Installation

- When transporting/installing the equipment, remove the drawer, employ two persons and be sure to hold the positions as shown in the figure. The equipment is quite heavy and weighs approximately 34 kg (74.96 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 RADF) when transporting the equipment.
- Be sure to use a dedicated outlet with AC 110 V / 13.2 A, 115 V or 127 V / 12 A, 220-240 V or 240 V / 8 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 80 cm (32") 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.
- 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.

2) General Precautions at Service

- Be sure to turn the power OFF and unplug the power cable 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 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 a wristband since the ICs on it may be damaged due to static electricity.

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

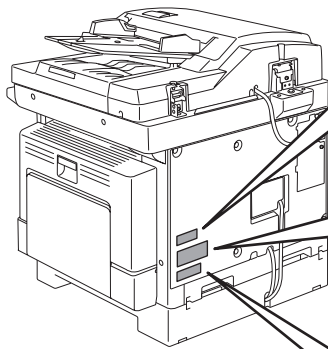
- Avoid expose to laser beam during service. This equipment uses a laser diode. Be sure not to expose your eyes to the laser beam. Do not insert reflecting parts or tools such as a screwdriver on the laser beam path. Remove all reflecting metals such as watches, rings, etc. before starting service.
- 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 roller, developer, high-voltage transformer, exposure lamp control inverter, inverter for the LCD backlight 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.

3) Important Service Parts for Safety

- The breaker, door switch, fuse, thermostat, thermofuse, thermistor, 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 burnout. Do not allow a short-circuit and/or do not use the parts not recommended by Toshiba TEC Corporation.

4) Cautionary Labels

- During servicing, be sure to check the rating plate and cautionary labels such as “Unplug the power cable during service”, “CAUTION. HOT”, “CAUTION. HIGH VOLTAGE”, “CAUTION. LASER BEAM”, etc. to see if there is any dirt on their surface and if they are properly stuck to the equipment.



Certification label (For UC)

Product is certified by the manufacturer to comply with DHHS Rule 21 CFR subchapter J applicable at the date of Manufacture.

Manufactured: TC

TOSHIBA TEC CORPORATION
2-17-2 Higashigotanda, Shinagawa-ku, Tokyo, Japan

Explanatory label

CLASS 1 LASER PRODUCT
APPAREIL À LASER DE CLASSE 1
LASER KLASSE 1
PRODUCTO DE LASER DE CLASE 1
クラス1レーザー製品

>PS<

Identification label

For UC





TOSHIBA
MULTIFUNCTIONAL DIGITAL SYSTEMS e-STUDIO181
MODEL DP-1810
115V ~
50/60Hz 12A
NO.

 complies with
UL 60950-1
CSA C22.2 No.60950-1

TOSHIBA TEC CORPORATION TC
MADE IN CHINA

For EU

TOSHIBA
MULTIFUNCTIONAL DIGITAL SYSTEMS
/SYSTEME MULTIFONCTION NUMERIQUE e-STUDIO181
MODEL/MODELE DP-1810
220-240V ~
50/60Hz 8A
NO.

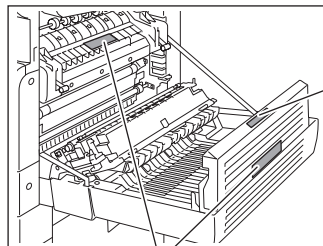
TOSHIBA TEC CORPORATION TC
MADE IN CHINA/FABRIQUE EN CHINE

For others

TOSHIBA
MULTIFUNCTIONAL DIGITAL SYSTEMS
/SYSTEME MULTIFONCTION NUMERIQUE e-STUDIO181
MODEL/MODELE DP-1810
220-240V ~
50/60Hz 8A
NO.



TOSHIBA TEC CORPORATION TC
MADE IN CHINA



Warning for high-temperature areas
(ventilation holes)

Warning for high-temperature areas (fuser unit)

5) **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:

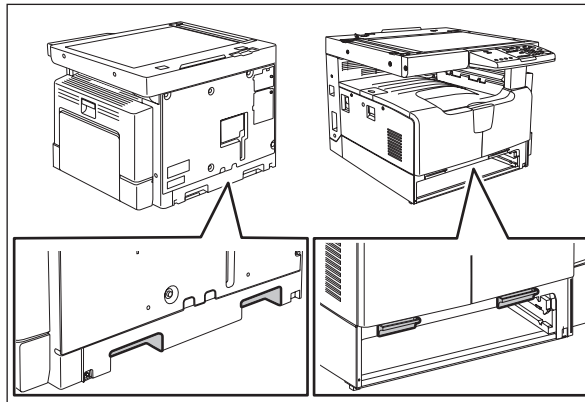
Entsorgung der gebrauchten Batterien und IC-RAMs (inclusive der Lithium-Batterie) nach diesem Handbuch.

ALLEGEMEINE SICHERHEITSMASSNAHMEN IN BEZUG AUF DIE WARTUNG FÜR e-STUDIO181/211

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

1) Transport/Installation

- Zum Transportieren/Installieren des Gerätes werden 2 Personen benötigt. Die Kassette zuerst herausnehmen und nur an den in der Abbildung gezeigten Stellen tragen. Das Gerät ist sehr schwer und wiegt etwa 34 kg; deshalb muss bei der Handhabung des Geräts besonders aufgepasst werden.



- Beim Transportieren des Geräts nicht an den beweglichen Teilen oder Einheiten halten.
- Eine spezielle Steckdose mit Stromversorgung von AC 110 V / 13.2 A, 115 V oder 127 V / 12 A, 220-240 V / 8 A als Stromquelle verwenden.
- Das Gerät ist aus Sicherheitsgründen zu erden.
- Einen geeigneten Standort für die Installation wählen. Standorte mit zuviel Hitze, hoher Luftfeuchtigkeit, Staub, Vibrieren 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.

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 entfernten 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.

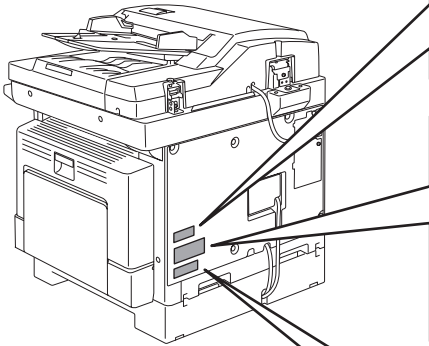
- Setzen Sie sich während der Wartungsarbeiten nicht dem Laserstrahl aus. Dieses Gerät ist mit einer Laserdiode ausgestattet. Es ist unbedingt zu vermeiden, direkt in den Laserstrahl zu blicken. Keine reflektierenden Teile oder Werkzeuge, wie z. B. Schraubendreher, in den Pfad des Laserstrahls halten. 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, 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.

3) Sicherheitsrelevante Wartungsteile

- Der Leistungsschutzschalter, der Türschalter, die Sicherung, der Thermostat, die Thermosicherung, der Thermistor, die IC-RAMs einschließlich der Lithiumakkus usw. sind besonders sicherheitsrelevant. Sie müssen unbedingt korrekt gehandhabt und installiert werden. Wenn diese Teile kurzgeschlossen und funktionsunfähig werden, kann dies zu schwerwiegenden Schäden, wie einem Abbrand, führen. Kurzschlüsse sind zu vermeiden, und es sind ausschließlich Teile zu verwenden, die von der Toshiba TEC Corporation empfohlen sind.

4) Warnetiketten

- Im Rahmen der Wartung unbedingt das Leistungsschild und die Etiketten mit Warnhinweisen überprüfen [z. B. „Unplug the power cable during service“ („Netz Kabel vor Beginn der Wartungsarbeiten abziehen“), „CAUTION. HOT“ („VORSICHT, HEISS“), „CAUTION. HIGH VOLTAGE“ („VORSICHT, HOCHSPANNUNG“), „CAUTION. LASER BEAM“ („VORSICHT, LASER“) usw.], um sicherzustellen, dass sie nicht verschmutzt sind und korrekt am Gerät angebracht sind.



Certification label (For UC)

Product is certified by the manufacturer to comply with DHHS Rule 21 CFR subchapter J applicable at the date of Manufacture.

Manufactured: TC

TOSHIBA TEC CORPORATION
2-17-2 Higashigotanda, Shinagawa-ku, Tokyo, Japan

Explanatory label


CLASS 1 LASER PRODUCT
APPAREIL À LASER DE CLASSE 1
LASER KLASSE 1
PRODUCTO DE LASER DE CLASE 1
クラス1レーザー製品

>PS<

Identification label

For UC





TOSHIBA
MULTIFUNCTIONAL DIGITAL SYSTEMS e-STUDIO181
MODEL DP-1810
115V ~
50/60Hz 12A
NO.

 complies with
UL 8955-1
CSA C22.2 No.6955-1

TOSHIBA TEC CORPORATION TC
MADE IN CHINA

For EU


TOSHIBA
MULTIFUNCTIONAL DIGITAL SYSTEMS
/SYSTEME MULTIFONCTION NUMERIQUE e-STUDIO181
MODEL/MODELE DP-1810
220-240V ~
50/60Hz 8A
NO.

TOSHIBA TEC CORPORATION TC
MADE IN CHINA/FABRIQUE EN CHINE

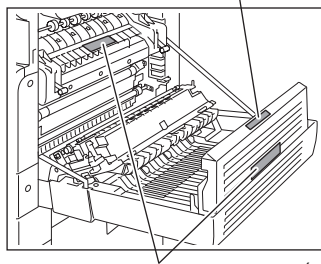
For others

TOSHIBA
MULTIFUNCTIONAL DIGITAL SYSTEMS
/SYSTEME MULTIFONCTION NUMERIQUE e-STUDIO181
MODEL/MODELE DP-1810
220-240V ~
50/60Hz 8A
NO.



TOSHIBA TEC CORPORATION TC
MADE IN CHINA

Warning for high-temperature areas (ventilation holes)



Warning for high-temperature areas (fuser unit)

- 5) 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.

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1. SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES

1.1 Specifications

Values in [] are for e- STUDIO211 in case that the specification is different among e-STUDIO181 and e-STUDIO211.

- Copy process Indirect electrophotographic process (dry)
- Type Desktop type
- Original table Fixed type (the left rear corner used as guide to place originals)
- Accepted originals Sheet, book and 3-dimensional object. The automatic document feeder (ADF) only accepts paper which are not pasted or stapled. (Single-sided originals: 50 to 127 g/m²/13 to 34 lb. Bond) Carbon paper are not acceptable either.
Maximum size: A3/LD

- Copy speed (Copies/min.)
e-STUDIO181

Paper size	Drawer	Bypass feed		PFU
		Size specified	Size not specified	
A4, B5, LT	18	16	11	16
A5-R, ST-R	-	16	11	-
A4-R, B5-R, LT-R	15.5	15.5	11	15.5
B4, LG, FOLIO, COMPUTER	13	13	11	13
A3, LD	11	11	11	11

e-STUDIO211

Paper size	Drawer	Bypass feed		PFU
		Size specified	Size not specified	
A4, B5, LT	21	20	11	20
A5-R, ST-R	-	20	11	-
A4-R, B5-R, LT-R	15.5	15.5	11	15.5
B4, LG, FOLIO, COMPUTER	13	13	11	13
A3, LD	11	11	11	11

- * “-” means “Not acceptable”.
- * The copy speed in the above table are available when originals are manually placed for single side, multiple copying.
- * When the ADF is used, the copy speed of 16[20] sheets per minute is only available under the following conditions:
 - Original/Mode: Single side original/A4/LT size. APS/automatic density are not selected.
 - Number of sheets: 16[20] or more.
 - Reproduction ratio: 100%

Copy speed for thick paper (Copies/min.)
e-STUDIO181/211

Thick 1 (81 g/m² to 105 g/m², 21.3 lb. Bond to 28 lb. Bond): Bypass feed on a sheet by sheet basis only
Thick 2 (106 g/m² to 163 g/m², 28 lb. Bond to 90 lb. Index): Bypass feed on a sheet by sheet basis only

• Copy paper

	Drawer	PFU	Bypass copy	Remarks
Size	A3, A4, A4-R, B4, B5, B5-R, LD, LG, LT, LT-R, FOLIO, COMPUTER, 13"LG, 8.5" x 8.5", 8K, 16K, 16K-R		A3 to A5-R, LD to ST-R, FOLIO, COMPUTER, 13"LG, 8.5" x 8.5", 8K, 16K, 16K-R (Non-standard or user-specified sizes can be set.)	
Weight	64 to 80 g/m ²		50 to 163 g/m ² (Single paper feeding) 64 to 80 g/m ² (Continuous feeding)	
Special paper	–		Tracing paper, labels, OHP film (thickness: 80 µm or thicker),	These special papers recommended by Toshiba Tec

- First copy time Approx. 7.6 sec. (A4, 100%, original placed manually)
Approx. 7.7 sec. (LT, 100%, original placed manually)
- Warming-up time..... Approx. 25 sec. (temperature: 20°C)
- Multiple copying Up to 999 copies; Key in set numbers
- Reproduction ratio Actual ratio: 100±0.5%
Zooming: 25 to 200% in increments of 1%
- Resolution/Gradation Scanning: 600 dpi x 600 dpi
Printing: Equivalent to 2400 dpi x 600 dpi
Gradation: 256 steps
- Eliminated portion Leading edges: 3.0±2.0 mm, Side/trailing edges: 2.0±2.0 mm (copy)
Leading / trailing edges: 5.0±2.0 mm, Side edges: 5.0±2.0 mm (print)
- Paper feeding Standard drawer:
1 drawer (stack height 28 mm, equivalent to 250 sheets; 64 to 80 g/m² (17 to 22 lb. Bond))

Bypass feeding:
Stack height 11.8 mm: equivalent to 100 sheets; 64 to 80 g/m² (17 to 22 lb. Bond)

Paper Feed Unit (PFU):
Option (One drawer: stack height 28 mm, equivalent to 250 sheets; 64 to 80 g/m² (17 to 22 lb. Bond))
- Capacity of originals in the automatic document feeder (Option)
..... A3 to A5-R, LD to ST-R:
100 sheets / 80 g/m² (Stack height 16 mm or less)
- Toner supply Automatic toner density detection/supply
Toner cartridge replacing method (There is a recovered toner supply mechanism.)
- Density control..... Automatic density mode and manual density mode selectable in 7 steps

- Weight.....Approx. 31.8 kg (70.11 lb.) (for NAD and others)
Approx. 32.9 kg (72.53 lb.) (for MJD and CND)
Approx. 34.2 kg (75.40 lb.) (for AUD)
- Power requirements.....AC 110 V / 13.2 A, 115 V or 127 V / 12 A
220-240 V or 240 V / 8 A (50/60 Hz)
* The acceptable value of each voltage is $\pm 10\%$.
- Power consumption 1.5 kW or less (100 V series)
1.6 kW or less (200 V series)
* The electric power is supplied to the ADF and PFU through the equipment.
- Total counterElectronical counter
- Dimensions of the equipment
..... W 600 x D 643 x H 462.5 (mm): See the figure below

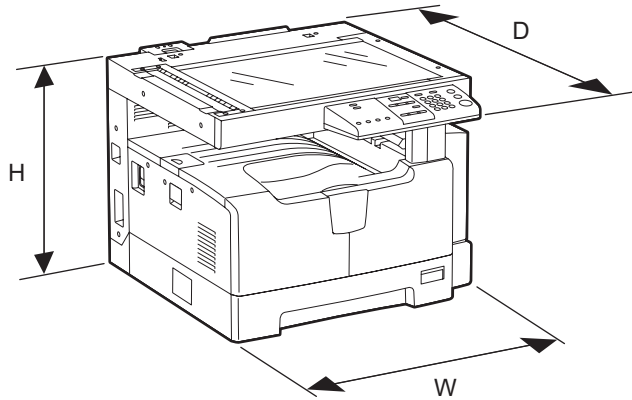


Fig. 1-1

1.2 Accessories

Unpacking/setup instruction	1 set
Operator's manual	1 pc.
Operator's manual pocket	1 pc. (for NAD)
Power cable	1 pc.
CD-ROM	2 pcs.
Rubber cap	6 pcs. (for MJD, ASD, ASU and SAD) 2 pcs. (for NAD, CND, AUD, TWD, KRD and ARD)
Transfer charger wire cleaner (installed inside of the transfer cover)	1 pc.
Drum (installed inside of the equipment)	1 pc.
Developer material	1 pc.
Nozzle	1 pc. (for NAD)
Toner cartridge	1 pc.
Warranty sheet	1 pc. (for NAD and CND)
Setup report	1 set (for NAD, MJD and CND)
Customer satisfaction card	1 pc. (for MJD)
Packing list	1 pc. (for CND)
Customer survey sheet	1 pc. (for CND)
Certificate of conformance	1 pc. (for CND)

* Machine version

NAD:	North America
ASD:	Hong Kong / Latin America
AUD:	Australia
MJD:	Europe
ASU:	Asia / Saudi Arabia
SAD:	Saudi Arabia
ARD:	Latin America
CND:	China
TWD:	Taiwan
KRD:	Korea
JPD:	Japan

1.3 Options

Platen Cover	KA-1650PC/PCC
Automatic Document Feeder (ADF)	MR-2020
Paper Feed Unit (PFU)	MY-1027/C
Expansion Memory	GC-1240
Damp Heater	MF-1640U/E
Harness Kit	GQ-1130
Desk	MH-1640
Operator's Manual Pocket	KK-1660/C

1.4 Supplies

Drum	OD-1600 (except for China) OD-2320 (for China)
Toner cartridge	PS-ZT1810(1)(for North America) PS-ZT1810A(1)(for Latin America) PS-ZT1810D(1)(for Asia) PS-ZT1810D5k(1)(for Asia) PS-ZT1810C(1)(for China) PS-ZT1810C10k(1)(for China) PS-ZT1810C5k(1)(for China) PS-ZT1810T(1)(for Taiwan) PS-ZT1810T5k(1)(for Taiwan) PS-ZT1810E(1)(for EUROPE) PS-ZT1810E5K(1)(for EUROPE)
Developer material	D-2320 (except for China) D-2320C (for China)

1.5 System List

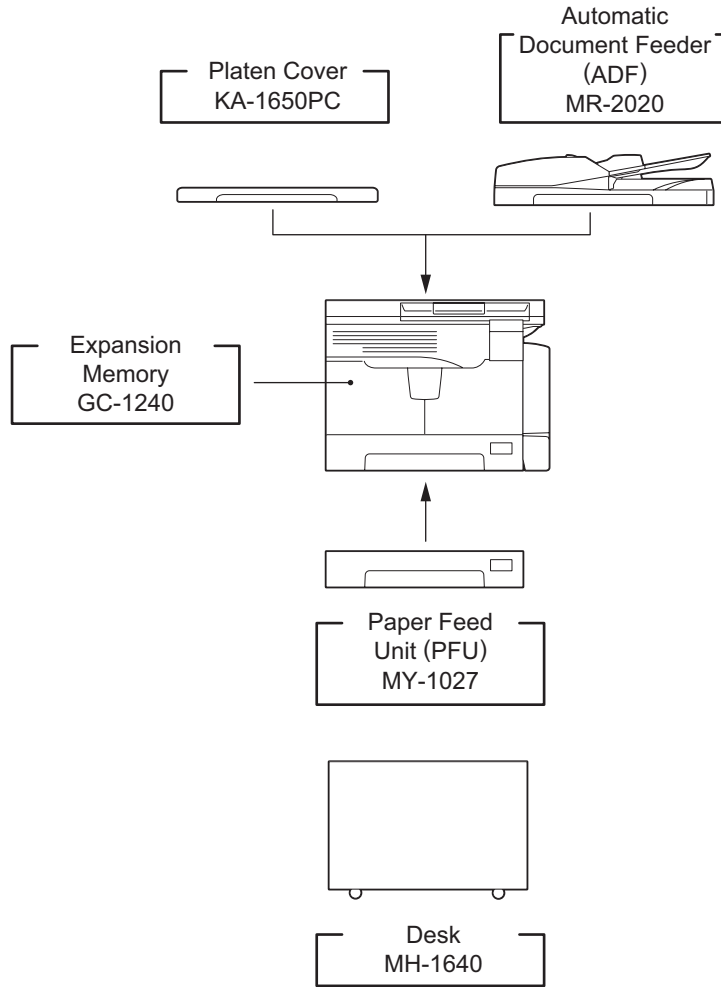


Fig. 1-2

2. ERROR CODE AND SELF-DIAGNOSTIC MODE

2.1 Error Code List

- One of the following error codes is displayed with “7-segment LED” while pressing the [CLEAR/ STOP] button and the digital key [8] simultaneously when the “CLEAR PAPER” or “CALL SERVICE” symbol is blinking.
- "CALL SERVICE" symbol blinks: A service call occurs.
- "CALL SERVICE" symbol lights: PM cycle (This symbol lights at the time of preventive maintenance. Copying can be performed.)

2.1.1 Jam

Error code	Classification	Contents	Troubleshooting
E01	Paper exit jam	Jam not reaching the exit sensor: The paper which has passed through the fuser unit does not reach the exit sensor.	P. 5-1
E02		Stop jam at the exit sensor: The trailing edge of the paper does not pass the exit sensor after its leading edge has reached this sensor.	P. 5-1
E03	Other paper jam	Power-ON jam: The paper is remaining on the paper transport path when power is turned ON.	P. 5-2
E09		Jam at the registration area due to registration time-out error	-
E12	Paper misfeeding	Bypass misfeeding (Paper not reaching the registration sensor): The paper fed from the bypass tray does not reach the registration sensor.	P. 5-4
E13		Drawer misfeeding (Paper not reaching the registration sensor): The paper fed from the drawer does not reach the registration sensor.	P. 5-5
E14		PFU drawer misfeeding (Paper not reaching the PFU feed sensor): The paper fed from the PFU drawer does not reach the PFU feed sensor.	P. 5-6
E21	Paper transport jam	PFU drawer transport jam (Paper not reaching the registration sensor): The paper does not reach the registration sensor after it has passed the PFU feed sensor.	P. 5-3
E40	Cover open jam	Transfer cover open jam: The transfer cover has opened during printing.	P. 5-7
E41		Front cover open jam: The front cover has opened during printing.	P. 5-8
E44		PFU cover open jam: The PFU cover has opened during printing.	P. 5-9
E71	ADF jam	Jam not reaching the original registration sensor: The original fed from the original feeding tray does not reach the original registration sensor.	P. 5-10
E72		Jam not reaching the read sensor: The original does not reach the read sensor after it has passed the registration sensor.	P. 5-10
E73		Stop jam at the exit sensor: The trailing edge of the original does not pass the exit sensor after its leading edge has reached this sensor.	P. 5-11
E86		ADF jam access cover open: The ADF jam access cover has opened during ADF operation.	P. 5-11
E87		ADF open jam: ADF has opened during ADF operation.	P. 5-12

2.1.2 Service call

Error code	Classification	Contents	Troubleshooting
C01	Drive system related service call	Main motor abnormality: The main motor is not rotating normally.	P. 5-13
C21	Scanning system related service call	CIS unit initialization error	P. 5-14
C26		Peak detection error: Lighting of the exposure lamp (white reference) is not detected when power is turned ON.	P. 5-14
C41	Fuser unit related service call	Thermistor or heater abnormality at power-ON: Abnormality of service call the thermistor is detected when power is turned ON or the temperature of the fuser roller does not rise in a specified period of time after power is turned ON.	P. 5-15
C43		Thermistor abnormality during warming up or in ready status after abnormality judgment	P. 5-16
C44		Heater abnormality after abnormality judgment: The temperature of the fuser roller has exceeded the range of control (in this case, the main switch turns OFF automatically) or does not even reach the range.	P. 5-17
C45		Thermistor abnormality during printing: Abnormality of the thermistor is detected during printing.	P. 5-17
C55 F11	Optional communication related service call	ADF I/F error: Communication error has occurred between the ADF and the scanner	P. 5-21
C94	Other service call	Firmware update error: An error message appears when either of the following Main PC boards is installed to e-STUDIO181/211. - The Main PC board for e-STUDIO163/203 in which e-STUDIO166/206 firmware is installed - The Main PC board for e-STUDIO163/166/203/206 in which e-STUDIO181/211 firmware is installed	P. 5-19
C97	Process related service call	High-voltage transformer abnormality: Leakage of the main charger is detected.	P. 5-20
CA1	Laser optical unit related service call	Polygonal motor abnormality: The polygonal motor is not rotating normally.	P. 5-18
CA2		H-Sync detection error: H-Sync detection PC board cannot detect laser beams.	P. 5-18
F14	Other service call	Invalid backup counter: The value of the total counter is inconsistent with that of the backup counter.	P. 5-20

2.2 Self-diagnosis Modes

Mode	For start	Contents	For exit	Display
Input check mode	[0]+[3]+ [POWER]	Checks the status of input signals.	[POWER] OFF/ON	
Output check mode	[0]+[4]+ [POWER]	Checks the status of output signals.	[POWER] OFF/ON	
Test print mode	[0]+[7]+ [POWER]	Outputs the test patterns.	[POWER] OFF/ON	
Adjustment mode	[0]+[5]+ [POWER]	Adjusts various items.	[POWER] OFF/ON	
Setting mode	[0]+[8]+ [POWER]	Sets various items.	[POWER] OFF/ON	
List print mode	[9]+[START] +[POWER]	Prints out the data lists of the codes 05/08 and pixel counter.	[POWER] OFF/ON	
Access code mode	[8]+[START] +[POWER]	Registers / deletes the access code.	[POWER] OFF/ON	
Function setting mode	[1]+[*]+ [POWER]	Sets the function table.	[POWER] OFF/ON	
Test mode	[1]+[3]+ [POWER]	Checks the operation of the equipment.	[POWER] OFF/ON	

Note:

To enter the desired mode, turn ON the power while two digital keys designated to each mode (e.g. [0] and [5]) are pressed simultaneously.

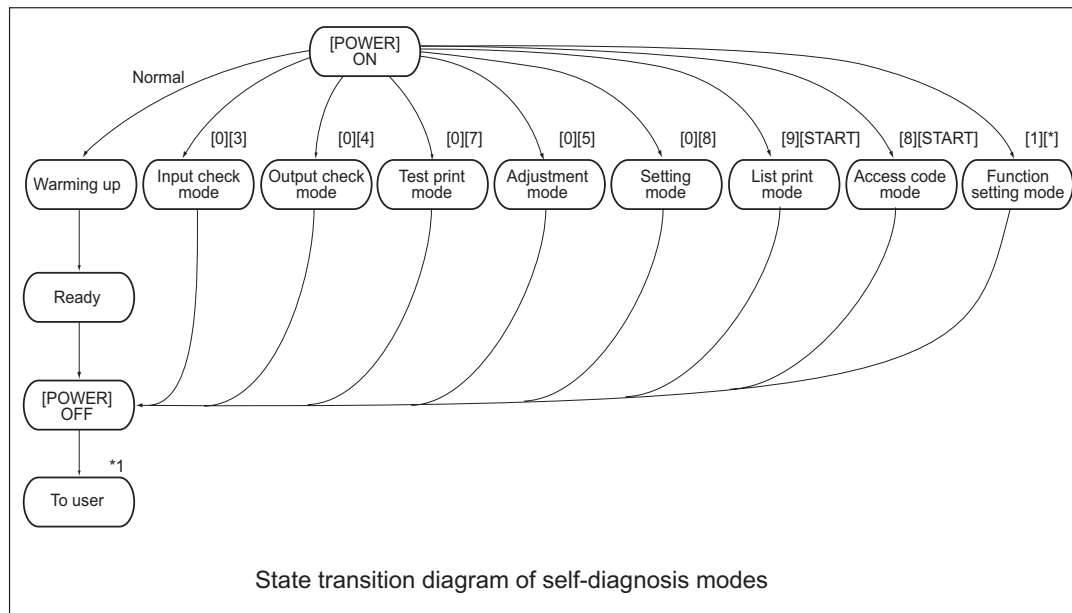


Fig. 2-1

*1 Turn OFF the power after using the self-diagnosis modes, and leave the equipment to the user.

<Operation procedure>

- Input check mode (03): Refer to P.2-5 "2.2.1 Input check (Test mode 03)".

- Output check mode (04): Refer to [P.2-8](#) "2.2.2 Output check (Test mode 04)".
- Test print mode (07): Refer to [P.2-10](#) "2.2.3 Test print mode (Test mode 07)".
- Adjustment mode (05): Refer to [P.2-17](#) "2.2.7 Adjustment mode (05)".
- Setting mode (08): Refer to [P.2-32](#) "2.2.8 Setting mode (08)".
- List print mode (9S): Refer to [P.2-11](#) "2.2.4 List Print Mode (9S)"
- Access code mode (8S): [P.2-13](#) "2.2.5 Access code mode (8S)"
- Function setting mode (1*): [P.2-15](#) "2.2.6 Function Setting Mode (1*)"

<Number display>

The numbers are displayed on a 7-segment LED.

A number of more than 3 digits long is separated as follows, and is displayed from the high-order position. Press the reproduction ratio button ([200%] or [25%]) to shift the display to the 3 digits of the next lower/higher order.

E.g.1) Displaying 1,000,000

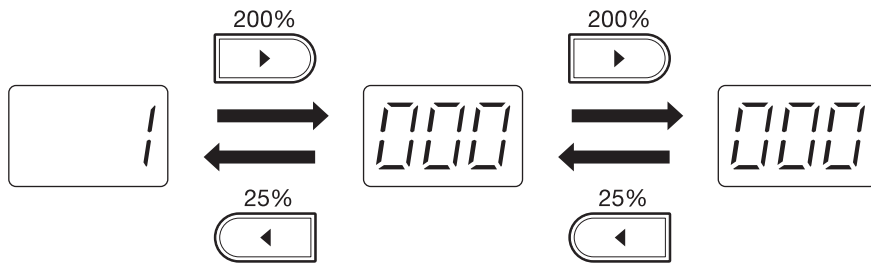


Fig. 2-2

E.g. 2) Displaying 80,000

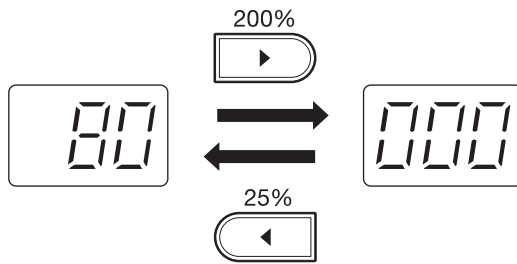
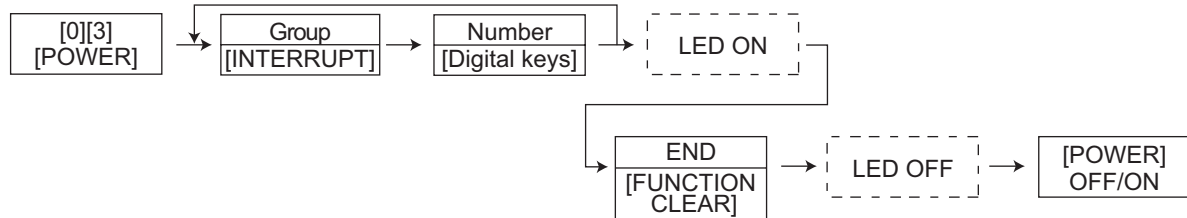


Fig. 2-3

2.2.1 Input check (Test mode 03)

The status of each input signal can be checked by pressing the [INTERRUPT] button, and the digital keys in the test mode (03).

<Operation procedure>



Group is displayed by ON/OFF of the [INTERRUPT] LED, and the number keyed in is displayed with the 7-segment LED. Each status is indicated by ON/OFF of the 7 [DENSITY LED] s.

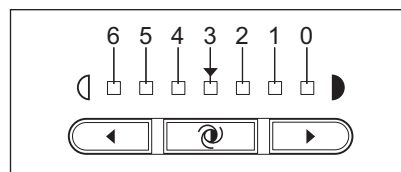


Fig. 2-4 Display position of the density LED

[INTER RUPT] LED	Number [Digital keys]	Display position of the density LED	Items to check	ON	OFF
OFF	[1]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	-	-	-
		4	Bypass paper sensor	No paper	Paper present
		5	Bypass unit connection	Not connected	Connected
		6	-	-	-
OFF	[4]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	-	-	-
		4	-	-	-
		5	Paper empty sensor	No paper	Paper present
		6	Drawer detection switch	Drawer not installed	Drawer installed
OFF	[6]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	-	-	-
		4	-	-	-
		5	PFU paper empty sensor	No paper	Paper present
		6	-	-	-

[INTER RUPT] LED	Number [Digital keys]	Display position of the density LED	Items to check	ON	OFF
OFF	[7]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	-	-	-
		4	-	-	-
		5	PFU feed sensor	Paper present	No paper
		6	PFU drawer detection switch	No drawer	Drawer present
OFF	[8]	0	-	-	-
		1	-	-	-
		2	Polygonal motor rotation status (Open the platen cover)	Abnormal rotation	Normal rotation
		3	-	-	-
		4	PFU board connection	Not connected	Connected
		5	-	-	-
		6	24 V power supply (Front cover opening/closing)	24 V OFF	24 V ON
OFF	[9]	0	-	-	-
		1	-	-	-
		2	PFU cover opening/closing switch	Cover opened	Cover closed
		3	Front cover opening/closing switch	Cover opened	Cover closed
		4	-	-	-
		5	Exit sensor	Paper present	No paper
		6	Registration sensor	Paper present	No paper
OFF	[0]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	Developer unit switch	Not connected	Connected
		4	Fuser unit switch	Connected	Not connected
		5	-	-	-
		6	Externally counter connection	Not connected	Connected

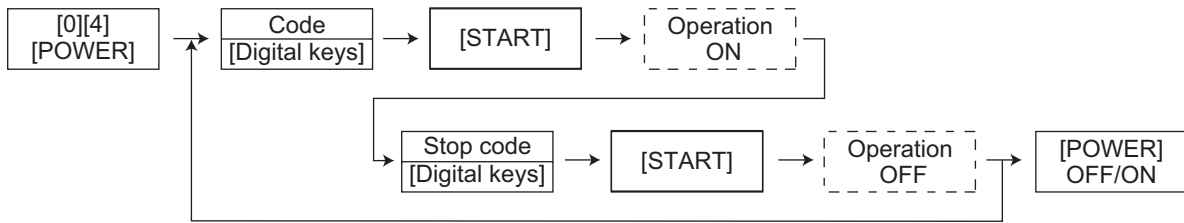
[INTER RUPT] LED	Number [Digital keys]	Display position of the density LED	Items to check	ON/Blinking	OFF
ON	[1]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	-	-	-
		4	-	-	-
		5	High-voltage transformer error	Normal	Error
		6	-	-	-
ON	[2]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	-	-	-
		4	CIS home position sensor	Home position	Other than home position
		5	Platen sensor	Cover opened	Cover closed
		6	ADF connection	Connected	Not connected
ON	[4]	0	ADF read sensor	Original present	No original
		1	-	-	-
		2	ADF exit sensor	Original present	No original
		3	ADF opening/closing sensor	ADF opened	ADF closed
		4	ADF cover opening/closing sensor	Cover opened	Cover closed
		5	ADF empty sensor	Original present	No original
		6	ADF tray sensor	Original present	No original
ON	[5]	0	-	-	-
		1	-	-	-
		2	-	-	-
		3	ADF original width sensor-2	Original present	No original
		4	ADF original width sensor-1	Original present	No original
		5	ADF original length sensor	Original present	No original
		6	ADF registration sensor	Original present	No original

2.2.2 Output check (Test mode 04)

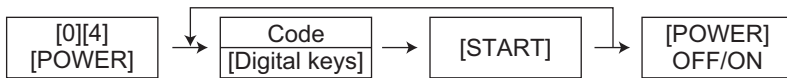
Status of the output signals can be checked by keying in the following codes in the test mode 04.

<Operation procedure>

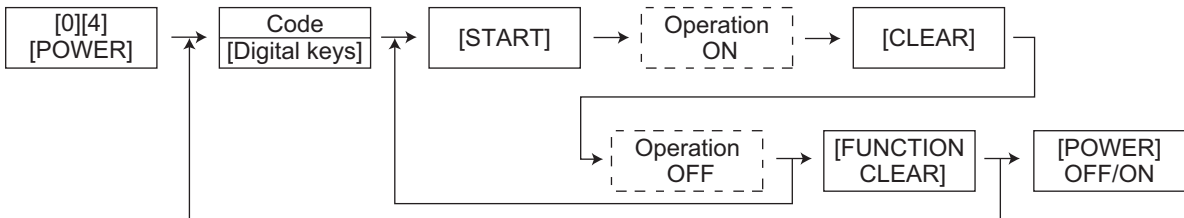
Procedure 1



Procedure 2



Procedure 3

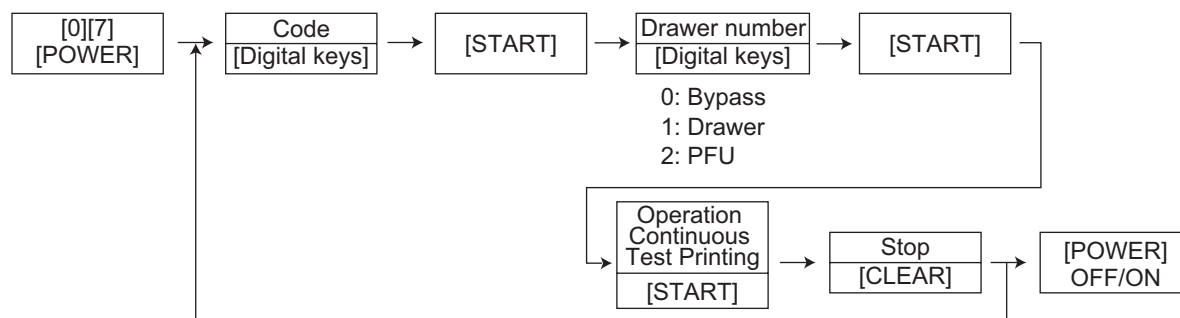


Code	Function	Code	Function	Procedure
101	Main motor ON (operational without developer unit)	151	Code No. 101 function OFF	1
102	Toner motor ON (normal rotation)	152	Code No. 102 function OFF	1
103	Polygonal motor ON (600 dpi)	153	Code No. 103 function OFF	1
108	Registration clutch ON	158	Code No. 108 function OFF	1
110	ADU motor ON (low speed)	160	Code No. 110 function OFF	1
118	Laser ON	168	Code No. 118 function OFF	1
201	Pickup solenoid ON/OFF			3
202	PFU pickup solenoid ON/OFF			3
203	PFU transport clutch (high speed) ON/OFF			3
204	Bypass pickup solenoid ON/OFF			3
205	PFU transport clutch (low speed) ON/OFF			3
218	Key copy counter count up			2
235	Discharge LED ON/OFF			3
236	Exhaust fan ON/OFF (low speed)			3
237	Exhaust fan ON/OFF (high speed)			3
249	Developer bias [-DC] ON/OFF			3
252	Main charger ON/OFF			3
253	Separation bias ON/OFF			3
255	Transfer guide bias ON/OFF			3
256	Transfer transformer ON/OFF			3
261	Scan motor ON (Automatically stops at limit position)			2
267	Contact image sensor (CIS) Unit ON/OFF			3
281	ADF feed motor ON/OFF (normal rotation)			3
282	ADF feed motor ON/OFF (reverse rotation)			3
283	ADF read motor ON/OFF (normal rotation)			3
411	Switching regulator cooling fan high speed rotation/low speed rotation			3

2.2.3 Test print mode (Test mode 07)

The embedded test pattern can be printed out by keying in the following codes in the test print mode (07).

<Operation procedure>



Notes:

1. Test printing is set by default to continue until the [CLEAR] button is pressed, or an error occurs. Note that printing may therefore continue until the paper set in the specified drawer completely runs out.
2. When an error occurs, it is indicated on the panel, but the recovery operation is not performed. Turn OFF the power and then back ON to clear the error.
3. During test printing, all button operations are disabled when the Message lamps on the control panel light.

Code	Types of test pattern	Remarks
111	Primary scanning direction 33 gradation steps	Error diffusion
113	Secondary scanning direction 33 gradation steps	Error diffusion
142	Grid pattern	Pattern width: 2 dots, Pitch: 10 mm
149	Solid black pattern (Whole area)	A3/LD

2.2.4 List Print Mode (9S)

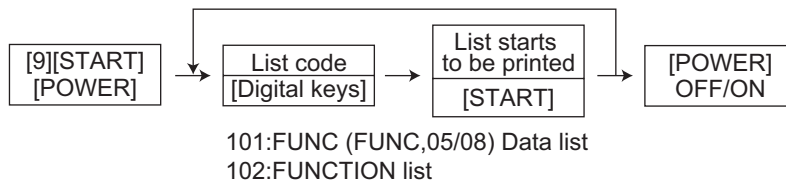
Lists of the function setting, adjustment mode (05), setting mode (08), system setting, memory dump, etc. can be output in this mode.
 ROM versions of the System firmware and scanner (ADF) are printed on the top right of each list.

- T150SY0Wxxx : System firmware ROM version
- Vxxxx: Scanner ROM version (ADF ROM version)

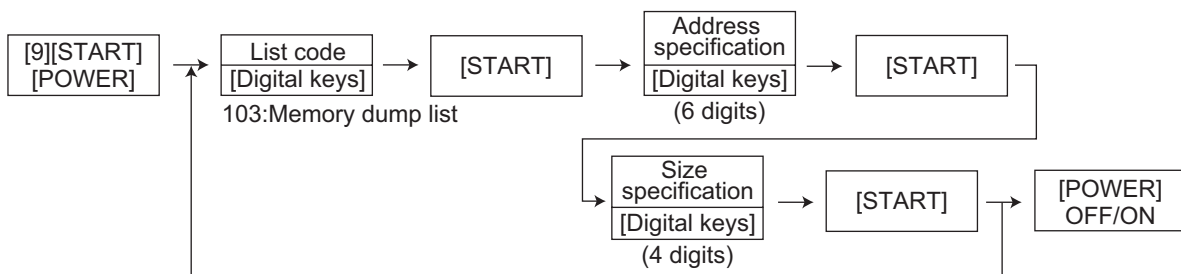
<Setting procedure>

101: FUNC (FUNC, 05/08) data list

102: System setting list



103: Memory dump list



Outputs a memory dump list of a specified size from a specified address.

Notes:

- Key in 6 digits for the address specification and 4 digits for the size specification.
- Key in using the digital keys as in the table below to enter the letters A to F.

Letter of alphabet	A	B	C	D	E	F
Digital keys	[*] [0]	[*] [1]	[*] [2]	[*] [3]	[*] [4]	[*] [5]

E.g.)When outputting an 80 size dump list from the address 0x0000A0

	Display	Key-in order
Address specification (6 digits)	0000A0	[0] -> [0] -> [0] -> [0] -> [*] -> [0] -> [0]
Size specification (4digits)	0080	[0] -> [0] -> [8] -> [0]

Output sample (103: Memory dump list)

MEMORY DUMP LIST			T280SY0Wxxx	Vxxxx
			PAGE	: 001
ADDRESS	HEX DATA	ASCII		
0000A0	0000000000000000	0000000000000000		
0000B0	0000000000000000	0000000000000000		
0000C0	0000000000000000	0000000000000000		
0000D0	0000000000000000	0000000000000000		
0000E0	0000000000000000	0000000000000000		
0000F0	0000000000000000	0000000000000000		
000100	0000000000000000	0000000000000000		
000110	0000000000000000	0000000000000000		

Fig. 2-5

2.2.5 Access code mode (8S)

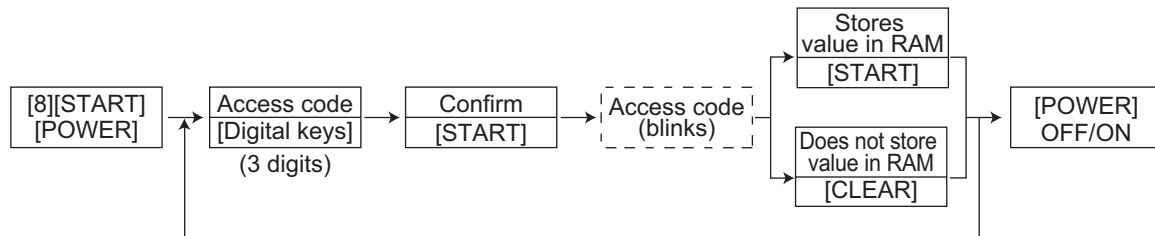
Storing/deleting of the access code, and confirming and changing of the counter value can be done in the access code mode (8S).

Note:

Department management must be enabled in FUNC-18 (bit-2) before you can use a registered access code.

<Setting procedure>

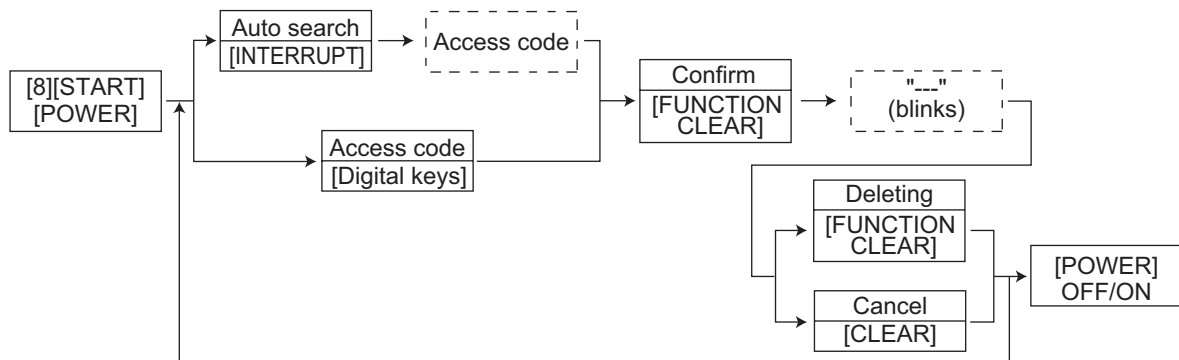
Registering the access code



Notes:

- Register up to 99 access codes in 3-digit numbers from 001 to 999.
- If the [START] button is pressed with an access code which has been already registered, a beep sounds and the display returns to the initial screen.

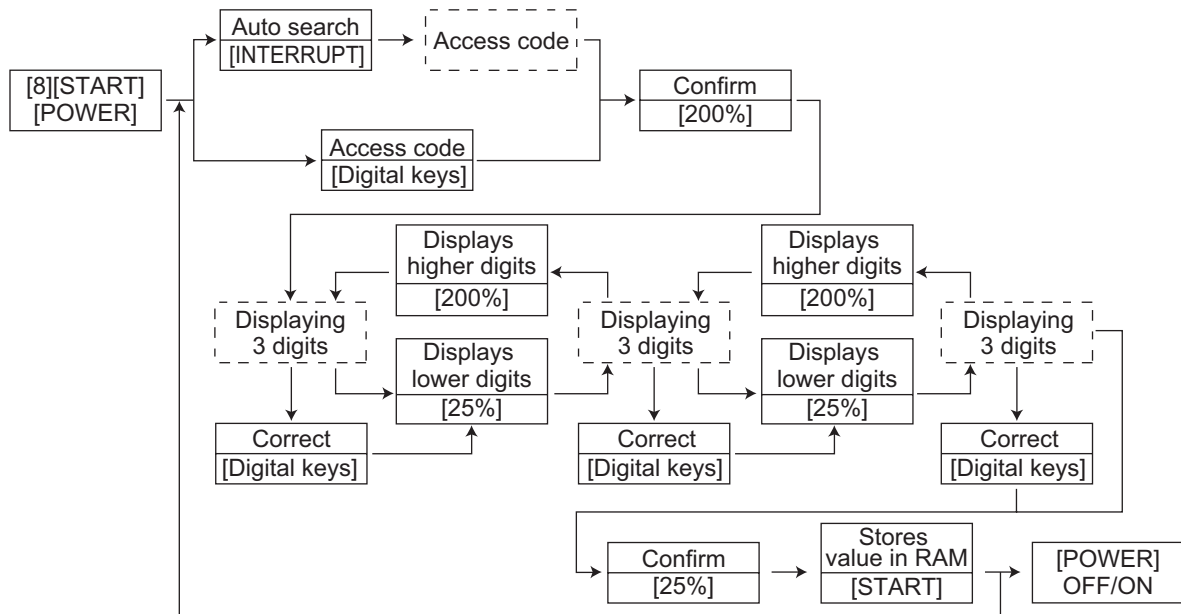
Deleting the access code



Notes:

- Auto search for the access code: Every time the [INTERRUPT] button is pressed, registered access codes are displayed in order.
- If the [START] button is pressed with an access code which has not been registered previously, the display returns to the initial screen.

Confirming and changing of the access code counter value

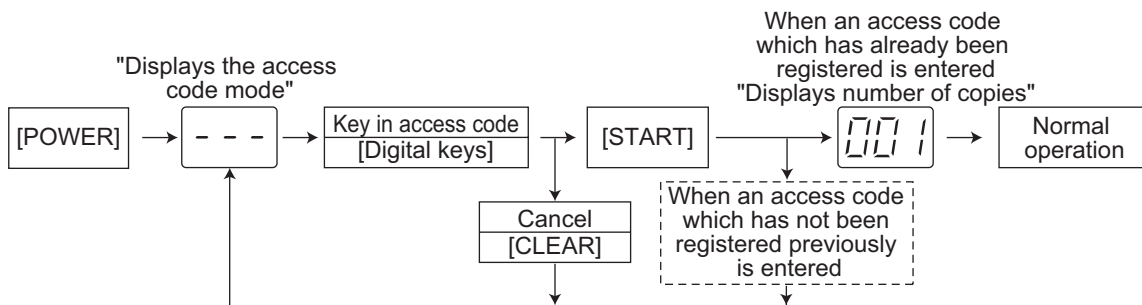


Notes:

- A counter value is separated as follows: 1 000 280 070, and is displayed from the high-order position. Press the reproduction ratio button ([200%] or [25%]) to shift the counter value display to the 3 digits of the next lower/higher order.
- Change of the counter value can be registered only after the [START] button is pressed. If the [CLEAR] button is pressed before the registration is completed, the changed value is also canceled.
- Only the total counter value for each access code can be confirmed.

<Operation procedure>

Follow the procedure bellow to key in an access code when the access code mode is set.

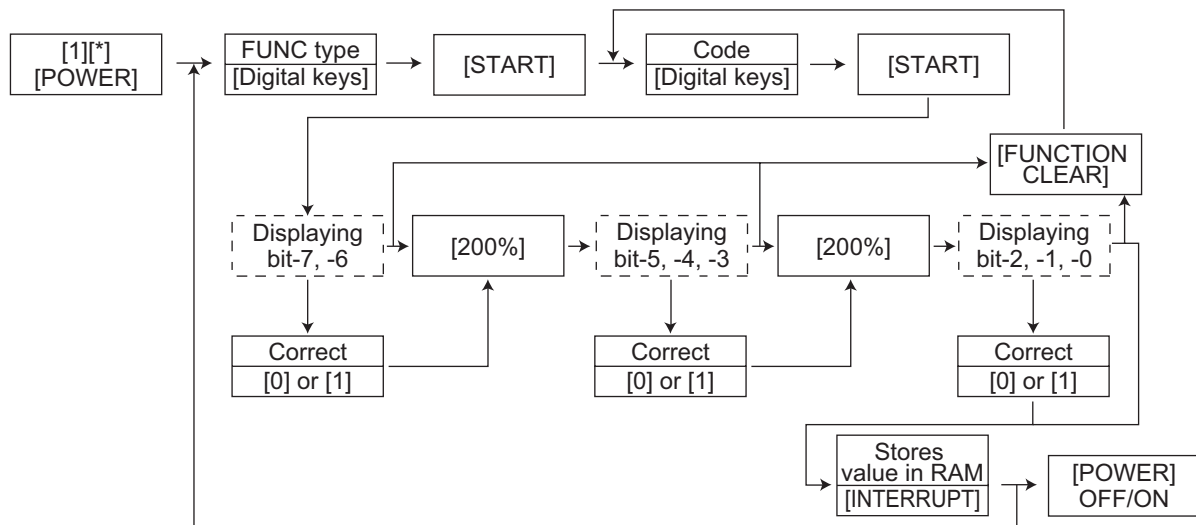


*: Apply the same procedure when the equipment enters the interruption mode.

2.2.6 Function Setting Mode (1*)

The function tables can be set in the function setting mode (1*). Each function table consists of 8 bits, and each bit is assigned to one function. To set a function, place a 0 or 1 in the bit which enables the function you want to set.

<Operation procedure>



Notes:

- Place a 0 or 1 in the bit you want to set in the function table.
- Press the [CLEAR] button in the middle of the setting to return to the initial screen.

FUNC Type	
100	FUNC
101	PCFUNC
102	HOME

FUNC (100)					
Code	Bit	Default	Items		Contents
18	7	0	Undefined	-	-
	6	1	Undefined	-	-
	5	0	Undefined	-	-
	4	0	Undefined	-	-
	3	1	Undefined	-	-
	2	0	Department Code setting	0: No 1: Yes	This bit setting determines whether or not the department control function is available.
	1	0	Undefined	-	-
	0	0	Undefined	-	-

FUNC (100)					
Code	Bit	Default	Items		Contents
30	7	0	Energy saving mode switching	00: Sleep Mode 01: Super Sleep Mode 10-11: Undefined	Sets the Energy saving mode.
	6	1			
	5	0	Undefined		
	4	1	Undefined		
	3	1	Undefined		
	2	0	Undefined		
	1	0	Undefined		
	0	0	Undefined		

2.2.7 Adjustment mode (05)

Items in the adjustment mode list in the following pages can be corrected or changed in the adjustment mode (05). Turn ON the power with pressing the digital keys [0] and [5] simultaneously in order to enter this mode.

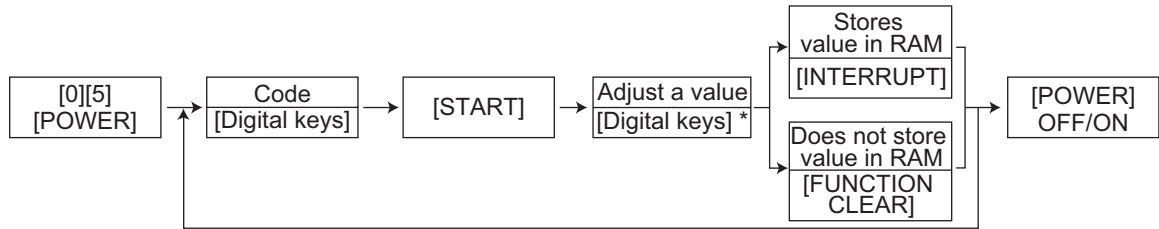
Classification List of Adjustment Mode (05)

Classification		Adjustment Mode (05)
ADF	[Aligning amount]	354
	[Transporting]	357,358,365
Image	[Printer density]	667-0 to 4,672-0 to 4
	[Image density]	501,503,504,505,506,507,508,509,510,512,514,515,532,533,534,845,846,847,850,851,852,855,856,857,860,861,862
	[Gamma table]	609
	[Gamma slope]	593,594,595
	[Background adjustment]	600,601,602,869,870,871
	[Sharpness]	620,621,622,623,865-0 to 2,866-0 to 2,867-0 to 2
	[Smudged/Faint text]	648,654,655,664,665
	[Margin]	430,431,432,433,435,436,437,438
	[Range correction]	535,536,537,570,571,572,693,694,695,820,821,822,825,826,827,830,831,832,835,836,837
Paper feeding	[Paper pushing amount]	466-0 to 7
	[Aligning amount]	450-0 to 2,451-0 to 2,458-0 to 2,460-0 to 2,461-0 to 2,462-0 to 3,463-0 to 2,464-0 to 2
Drive	[Exit motor]	424
	[Main motor]	421
Development	[Auto-toner]	200,201
	[Developer bias]	205
	[Temperature]	270
	[Relative humidity]	247
	[Drum temperature]	248
Scanner	[LED]	311,312,313
	[Position]	305,306
	[Carriage position]	359
	[Shading position]	350,351
	[Reproduction ratio]	340
	[Peak]	310
Charger	[Main charger bias]	210
Transfer	[Transfer bias]	220,221,222
Separation	[Separation bias]	233,234,235
Process	[Toner recycle]	280
Laser	[Write starting]	410,411,440,441,442
	[Polygonal motor]	401,405
	[Laser power]	286
	[Sideways deviation]	497-0 to 5

Note:

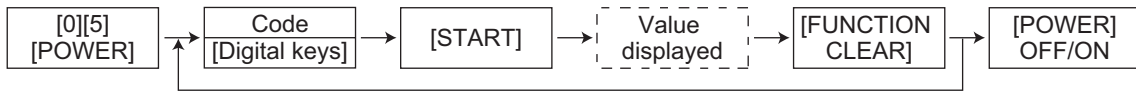
The density LED blinks while performing adjustment for the items which take time.
Be sure not to turn the power OFF nor perform any other operations while the density LED is blinking.

Procedure 1

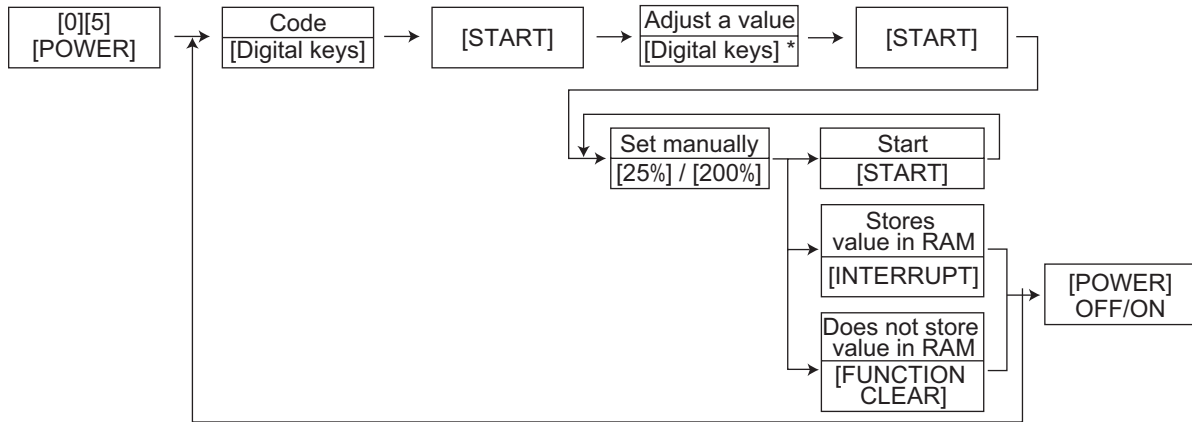


* Press [#] to enter minus (-).

Procedure 2

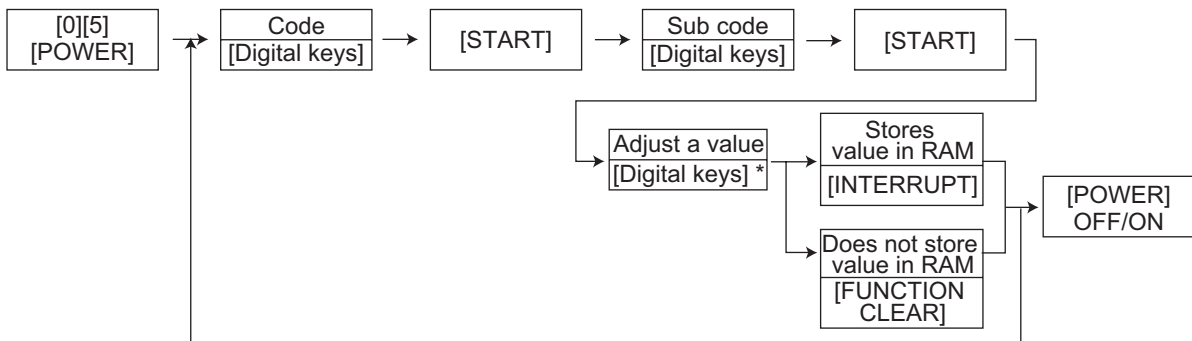


Procedure 3



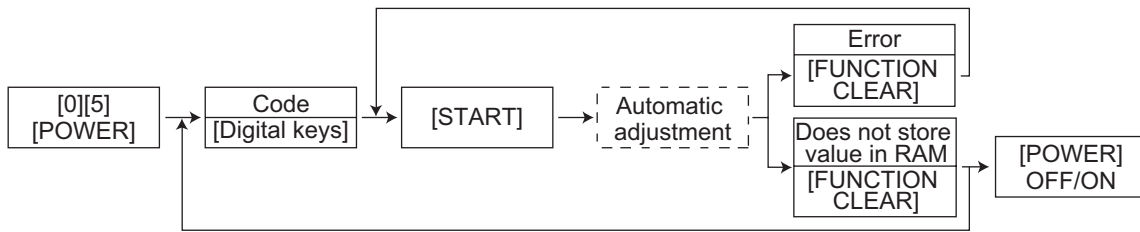
* Press [#] to enter minus (-).

Procedure 4

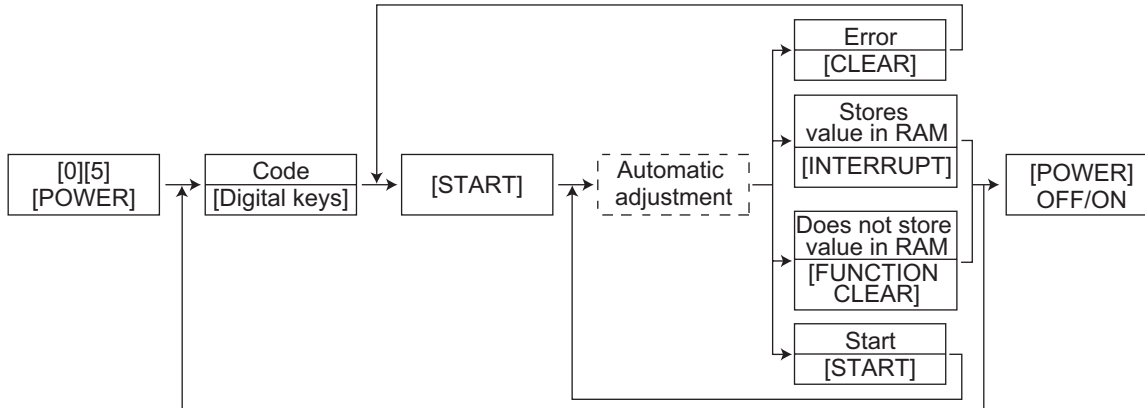


* Press [#] to enter minus (-).

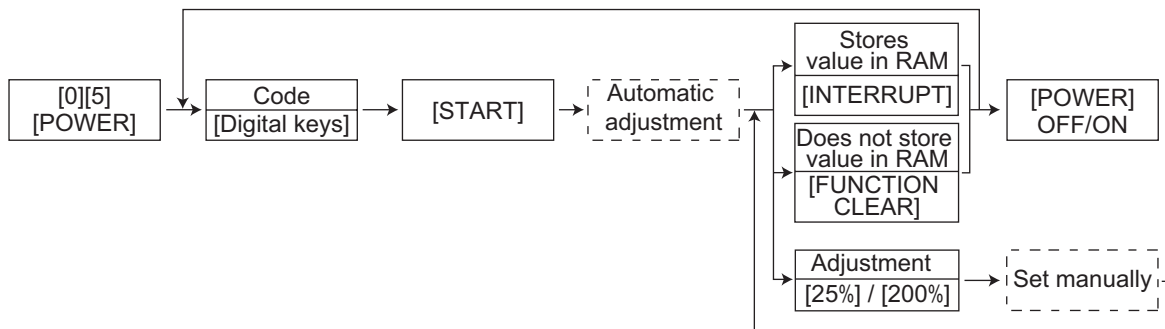
Procedure 6



Procedure 7



Procedure 17



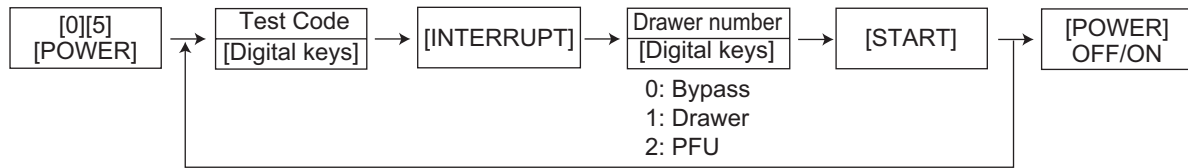
Note:

The fuser roller temperature control at the adjustment mode is different from that at the normal state.

Therefore, the problem of fusing efficiency may be occurred in the test copy at the adjustment mode. In that case, turn ON the power normally, leave the equipment for approx. 3 minutes after it has become ready state and then start up the adjustment mode again.

Test print pattern in Adjustment Mode (05)

Procedure



Test code	Types of test pattern	Remarks
1	Grid pattern	Pattern width: 2 dots, Pitch: 10mm
4	Solid black pattern (whole area)	A3/LD

Notes:

- The digit after the hyphen in “Code” of the following table is a sub code.
- In “RAM”, the SRAM of the board in which the data of each code is stored is indicated. “M” and “SYS” stands for the MAIN board.

Adjustment mode (05)							
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure
200	Developer	Automatic adjustment of auto-toner sensor (Fuser heater ON)	ALL	-	-	As the value increases, the sensor output increases correspondingly. The value starts changing approx. 2 minutes after this adjustment was started and is automatically set in the range of 2.35 to 2.45 V. * Selection is disable when developer unit is not installed. (Ch. 3.1)	17
201	Developer	Correction of auto-toner sensor (Fuser heater ON)	ALL	141 <0-255>	M	Corrects the control value of the auto-toner sensor setup in 05-200. * Selection is disable when developer unit is not installed.	3
205	Developer	Developer bias DC output adjustment	ALL	135 <0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment. (Ch. 3.6)	3
210	Charger	Main charger grid bias output adjustment	ALL	75 <0-255>	M		3
220	Transfer	Transfer transformer DC output adjustment (H)	ALL	117 <0-255>	M		3
221	Transfer	Transfer transformer DC output adjustment (C)	ALL	128 <0-255>	M		3
222	Transfer	Transfer transformer DC output adjustment (L)	ALL	101 <0-255>	M		3
233	Separation	Separation transformer DC output adjustment (H)	ALL	65 <0-255>	M		3
234	Separation	Separation transformer DC output adjustment (C)	ALL	65 <0-255>	M		3
235	Separation	Separation transformer DC output adjustment (L)	ALL	47 <0-255>	M		3
247	Developer	Relative humidity latest value	ALL	50 <0-100>	M		Displaying of the relative humidity latest value.
248	Developer	Drum temperature latest value	ALL	25 <0-100>	M	Displaying of the drum temperature latest value.	2
270	Developer	Temperature latest value	ALL	25 <0-50>	M	Displaying of the temperature latest value.	2
280	Process	Forced performing of idling for toner recycle	ALL	-	M	Perform this adjustment before the replacement of the developer material.(The toner is forcibly removed from the cleaner.)	6
286	Laser	Laser power adjustment	ALL	60 <0-255>	M	When the value increases, the laser output increases correspondingly.	3

Adjustment mode (05)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
305	Scanner	Image location adjustment of secondary scanning direction (scanner section)		ALL	120 <51-206>	SYS	When the value increases by "1", the image shifts by approx. 0.0640 mm toward the trailing edge of the paper. During this adjustment, the density LED blinks.	1
306	Scanner	Image location adjustment of primary scanning direction (scanner section)		ALL	130 <121-136>	SYS	When the value increases by "1", the image shifts by approx. 0.169 mm toward the front side of the paper. During this adjustment, the density LED blinks.	1
310	Scanner	Forced performing of peak detection		ALL	-	-	Activates the light intensity adjustment control. During this adjustment, the density LED blinks.	7
311	Scanner	LED (R) current effective value setting		ALL	76 <0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
312	Scanner	LED (B) current effective value setting		ALL	62 <0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
313	Scanner	LED (YG) current effective value setting		ALL	160 <0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
340	Scanner	Reproduction ratio adjustment of secondary scanning direction (scanner section)		ALL	125 <76-181>	SYS	When the value increases by "1", the reproduction ratio in the secondary scanning direction (vertical to paper feeding direction) increases by approx. 0.0947%. During this adjustment, the density LED blinks.	1
350	Scanner	Shading position adjustment	Original glass	ALL	128 <118-138>	SYS	0.064 mm/step During this adjustment, the density LED blinks.	1
351			ADF	ALL	128 <118-138>	SYS		1
354	ADF	Adjustment of ADF paper alignment		ALL	10 <0-20>	SYS	When the value increases by "1", the aligning amount increases by approx. 0.4 mm.	1
357	ADF	Fine adjustment of ADF transport speed		ALL	50 <0-100>	SYS	When the value increases by "1", the reproduction ratio of the secondary scanning direction when using the ADF increases by approx. 0.1%. During this adjustment, the density LED blinks.	1

Adjustment mode (05)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
358	ADF	ADF sideways deviation adjustment		ALL	128 <121-136>	SYS	When the value increases by "1", the image of original fed from the ADF shifts toward the rear side of paper by approx. 0.169 mm. During this adjustment, the density LED blinks.	1
359	Scanner	Carriage position adjustment during scanning from ADF		ALL	128 <0-255>	SYS	When the value increases by "1", the carriage position when using the ADF shifts by approx. 0.1 mm toward the original feeding side. During this adjustment, the density LED blinks.	1
365	ADF	ADF leading edge position adjustment	for single-sided original	ALL	50 <0-100>	SYS	When the value increases by "1", the copied image of original fed from the ADF shifts toward the trailing edge of paper by approx. 0.2 mm. During this adjustment, the density LED blinks.	1
401	Laser	Fine adjustment of polygonal motor rotation speed (adjustment of primary scanning direction reproduction ratio)		PRT	130 <0-255>	M	When the value increases by "1", the reproduction ratio of primary scanning direction increases by approx. 0.07%. (approx. 0.1 mm/step)	1
405				PPC	128 <0-255>	M		1
410	Laser	Adjustment of primary scanning laser writing start position.		PPC	88 <0-255>	M	When the value increases by "1", the writing start position shifts to the front side by approx. 0.0423 mm. When "1" is set at 08-203, the adjustment value set at 05-411 will also be reflected to 05-410.	1
411				PRT	168 <0-255>	M		1
421	Drive	Adjustment of secondary scanning direction reproduction ratio (fine adjustment of main motor speed)		PPC/PRT	125 <0-255>	M	When the value increases by "1", the reproduction ratio of secondary scanning direction increases by approx. 0.04%.	1
424	Drive	Fine adjustment of exit motor speed		PPC/PRT	160 <0-255>	M	When the value increases by "1", the rotation becomes faster by approx. 0.05%.	1

Adjustment mode (05)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
430	Image	Top margin adjustment (blank area at the leading edge of the paper)	PPC	50 <0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1	
431	Image	Left margin adjustment (blank area at the left of the paper along the paper feeding direction)	PPC	50 <0-255>	M		1	
432	Image	Right margin adjustment (blank area at the right of the paper along the paper feeding direction)	PPC	50 <0-255>	M		1	
433	Image	Bottom margin adjustment (blank area at the trailing edge of the paper)	PPC	95 <0-255>	M		1	
435	Image	Top margin adjustment (blank area at the leading edge of the paper)	PRT	24 <0-255>	M		1	
436	Image	Left margin adjustment (blank area at the left of the paper along the paper feeding direction)	PRT	0 <0-255>	M		1	
437	Image	Right margin adjustment (blank area at the right of the paper along the paper feeding direction)	PRT	0 <0-255>	M		1	
438	Image	Bottom margin adjustment (blank area at the trailing edge of the paper)	PRT	0 <0-255>	M		1	
440	Laser	Adjustment of secondary scanning laser writing start position	Drawer	ALL	20 <0-40>	M	When the value increases by "1", the image shifts toward the leading edge of the paper by approx. 0.2 mm.	1
441			PFU	ALL	21 <0-40>	M		1
442			Bypass feeding	ALL	8 <0-15>	M		1
450-0	Paper feeding	Paper aligning amount adjustment at the registration section (Drawer/Plain paper)	Long size	ALL	22 <0-63>	M	When the value increases by "1", the aligning amount increases by approx. 0.9 mm. <Paper length> Long size: 330 mm or longer Middle size: 220 mm to 329 mm Short size: 219 mm or shorter	4
450-1			Middle size	ALL	22 <0-63>	M		4
450-2			Short size	ALL	22 <0-63>	M		4
451-0	Paper feeding	Paper aligning amount adjustment at the registration section (PFU/Plain paper)	Long size	ALL	14 <0-63>	M		4
451-1			Middle size	ALL	14 <0-63>	M		4
451-2			Short size	ALL	14 <0-63>	M		4

Adjustment mode (05)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
458-0	Paper feeding	Paper aligning amount adjustment at the registration section (Bypass feeding/Plain paper)	Long size	ALL	10 <0-63>	M	When the value increases by "1", the aligning amount increases by approx. 1.4 mm. <Paper length> Long size: 330 mm or longer Middle size: 220 mm to 329 mm Short size: 219 mm or shorter	4
458-1			Middle size	ALL	10 <0-63>	M		4
458-2			Short size	ALL	10 <0-63>	M		4
460-0	Paper feeding	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 1)	Long size	ALL	10 <0-63>	M		4
460-1			Middle size	ALL	10 <0-63>	M		4
460-2			Short size	ALL	10 <0-63>	M		4
461-0	Paper feeding	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 2)	Long size	ALL	10 <0-63>	M	4	
461-1			Middle size	ALL	10 <0-63>	M	4	
461-2			Short size	ALL	10 <0-63>	M	4	
462-0	Paper feeding	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 3)	Long size	ALL	10 <0-63>	M	4	
462-1			Middle size	ALL	10 <0-63>	M	4	
462-2			Short size	ALL	10 <0-63>	M	4	
462-3			Postcard	ALL	10 <0-63>	M	4	
463-0	Paper feeding	Paper aligning amount adjustment at the registration section (Bypass feeding/OHP film)	Long size	ALL	10 <0-63>	M	4	
463-1			Middle size	ALL	10 <0-63>	M	4	
463-2			Short size	ALL	10 <0-63>	M	4	
464-0	Paper feeding	Paper aligning amount adjustment at the registration section (Bypass feeding / Envelope)	Long size	ALL	26 <0-63>	M	4	
464-1			Middle size	ALL	26 <0-63>	M	4	
464-2			Short size	ALL	26 <0-63>	M	4	

Adjustment mode (05)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
466-0	Paper feeding	Adjustment of paper pushing amount/ Bypass feeding	Plain paper	ALL	0 <0-255>	M	When the value increases by "1", the driving speed of bypass feed roller increases by approx. 0.2 ms when the paper transport is started from the registration section. * Postcard is supported only for JPN model.	4
466-1			Postcard	ALL	0 <0-255>	M		4
466-3			Envelope	ALL	0 <0-255>	M		4
466-4			Thick paper 1	ALL	0 <0-255>	M		4
466-5			Thick paper 2	ALL	0 <0-255>	M		4
466-6			Thick paper 3	ALL	0 <0-255>	M		4
466-7			OHP film	ALL	0 <0-255>	M		4
497-0			Laser	Adjustment of drawer sideways deviation	Drawer	ALL		128 <0-255>
497-1	PFU	ALL			128 <0-255>	M	4	
497-5	Bypass feeding	ALL			128 <0-255>	M	4	
501	Image	Density adjustment Fine adjustment of "manual density"/ Center value	Photo	PPC	128 <0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
503			Text/Photo	PPC	128 <0-255>	SYS		1
504			Text	PPC	128 <0-255>	SYS		1
505	Image	Density adjustment Fine adjustment of "manual density"/ Light step value	Text/Photo	PPC	33 <0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1
506			Photo	PPC	33 <0-255>	SYS		1
507			Text	PPC	33 <0-255>	SYS		1
508	Image	Density adjustment Fine adjustment of "manual density"/ Dark step value	Text/Photo	PPC	33 <0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
509			Photo	PPC	33 <0-255>	SYS		1
510			Text	PPC	33 <0-255>	SYS		1
512	Image	Density adjustment Fine adjustment of "automatic density"	Photo	PPC	128 <0-255>	SYS	When the value increases, the image becomes darker.	1
514			Text/Photo	PPC	128 <0-255>	SYS		1
515			Text	PPC	128 <0-255>	SYS		1
532	Image	Range correction/ Background peak adjustment	Text/Photo	PPC	32 <0-255>	SYS	When the value increases, the background becomes more brightened.	1
533			Photo	PPC	22 <0-255>	SYS		1
534			Text	PPC	46 <0-255>	SYS		1
535	Image	Range correction/ Text peak adjustment	Text/Photo	PPC	246 <0-255>	SYS	When the value decreases, the text becomes darker.	1
536			Text	PPC	254 <0-255>	SYS		1
537			Photo	PPC	236 <0-255>	SYS		1

Adjustment mode (05)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
570	Image	Range correction on original manually set on the original glass	Text/Photo	PPC	EUR:12 UC:12 JPN:22 <11-14, 21-24, 31-34, 41-44>	SYS	Sets whether the values of the background peak and text peak are fixed or not. One's place is an adjustment for "automatic density" and ten's place is for "manual density". Once they are fixed, the range correction is performed with standard values. The values of the background peak and text peak affect the reproduction of the background density and text density respectively. 1: fixed/fixed 2: varied/fixed 3: fixed/varied 4: varied/varied * Background peak/ Text peak	1
571			Photo	PPC	12 <11-14, 21-24, 31-34, 41-44>	SYS		1
572			Text	PPC	22 <11-14, 21-24, 31-34, 41-44>	SYS		1
593	Image	Gamma data slope adjustment	Text/Photo	PPC	5 <1-9>	SYS	Select the slope of Gamma curve (The larger the value is, the larger the slope becomes.)	1
594	Image		Photo	PPC	5 <1-9>	SYS		1
595	Image		Text	PPC	5 <1-9>	SYS		1
600	Image	Background adjustment	Text/Photo	PPC	3 <1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1
601			Photo	PPC	3 <1-9>	SYS		1
602			Text	PPC	3 <1-9>	SYS		1
609	Image	Switching of the scanner Gamma correction table when paper is fed from the ADF		ALL	0 <0-4>	SYS	The larger the value is, the lighter the density of the highlight areas becomes.	1
620	Image	Sharpness adjustment	Text/Photo	PPC	EUR: 1 UC: 1 JPN: 0 <0-96>	SYS	When the value increases, the image becomes sharper. When the value decreases, the image becomes softer. The smaller the value is, the less the moire becomes. One's place: Selecting a filter shape Ten's place: Adjustable from 0 to 9 regarding the default value as the standard (The larger the value is, the sharper the image becomes.) * When entering "0" on the ten's place, this value is not displayed on the entry screen.	1
621			Photo (Error diffusion)	PPC	0 <0-96>	SYS		1
622			Text	PPC	0 <0-96>	SYS		1
623			Photo (Dither)	PPC	0 <0-96>	SYS		1

Adjustment mode (05)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
648	Image	Adjustment of smudged/faint text		PPC	3 <0-4>	SYS	Adjustment of the smudged/faint text. With decreasing the value, the faint text is suppressed, and with increasing it, the smudged text is suppressed.	1
654	Image	Adjustment of smudged/faint text	PS	PRT	5 <0-9>	M	Adjustment of the smudged/faint text. With decreasing the value, the faint text is suppressed, and with increasing it, the smudged text is suppressed.	1
655			PCL	PRT	5 <0-9>	M		1
664	Image	Upper limit value in tonersaving period	PS	PRT	176 <0-255>	M	When the value decreases, the density of the printed text becomes lower.	1
665			PCL	PRT	176 <0-255>	M		1
667-0	Image	Density adjustment of copied image		PPC	0 <0-63>	M	Adjusts the density level of copied image. When the value decreases, the text becomes lighter.	4
667-1				PPC	19 <0-63>	M		4
667-2				PPC	25 <0-63>	M		4
667-3				PPC	31 <0-63>	M		4
667-4				PPC	44 <0-63>	M		4
672-0	Image	Adjustment of printer image density		PRT	0 <0-63>	M	Adjustment of the image density. With decreasing the value, the text becomes lighter.	4
672-1				PRT	19 <0-63>	M		4
672-2				PRT	25 <0-63>	M		4
672-3				PRT	31 <0-63>	M		4
672-4				PRT	56 <0-63>	M		4

Adjustment mode (05)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
693	Image	Range correction on original set on the ADF	Text/Photo	PPC	EUR:12 UC:12 JPN:22 <11-14, 21-24, 31-34, 41-44>	SYS	Sets whether the values of the background peak and text peak are fixed or not. One's place is an adjustment for "automatic density" and ten's place is for "manual density". Once they are fixed, the range correction is performed with standard values. The values of the background peak and text peak affect the reproduction of the background density and text density respectively. 1: fixed/fixed 2: varied/fixed 3: fixed/varied 4: varied/varied * Background peak/ Text peak	1
694			Photo	PPC	12 <11-14, 21-24, 31-34, 41-44>	SYS		1
695			Text	PPC	22 <11-14, 21-24, 31-34, 41-44>	SYS		1
820	Image	Range correction/ Text peak adjustment	Text/Photo	SCN	246 <0-255>	SYS	When the value decreases, the text becomes darker.	1
821			Text	SCN	236 <0-255>	SYS		1
822			Photo	SCN	254 <0-255>	SYS		1
825	Image	Range correction on original manually set on the original glass	Text/Photo	SCN	12 <11-14, 21-24, 31-34, 41-44>	SYS	Sets whether the values of the background peak and text peak are fixed or not. One's place is an adjustment for "automatic density" and ten's place is for "manual density". Once they are fixed, the range correction is performed with standard values. The values of the background peak and text peak affect the reproduction of the background density and text density respectively. 1: fixed/fixed 2: varied/fixed 3: fixed/varied 4: varied/varied * Background peak/ Text peak	1
826			Text	SCN	12 <11-14, 21-24, 31-34, 41-44>	SYS		1
827			Photo	SCN	12 <11-14, 21-24, 31-34, 41-44>	SYS		1

Adjustment mode (05)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
830	Image	Range correction on original set on the ADF	Text/Photo	SCN	12 <11-14, 21-24, 31-34, 41-44>	SYS	Sets whether the value of the background peak and text peak are fixed or not. One's place is an adjustment for "automatic density" and ten's place is for "manual density". Once they are fixed, the range correction is performed with standard values. The values of the background peak and text peak affect the reproduction of the background density and text density respectively. 1: fixed/fixed 2: varied/fixed 3: fixed/varied 4: varied/varied * Background peak/ Text peak	1
831			Text	SCN	12 <11-14, 21-24, 31-34, 41-44>	SYS		1
832			Photo	SCN	12 <11-14, 21-24, 31-34, 41-44>	SYS		1
835	Image	Range correction/ Background peak adjustment	Text/Photo	SCN	32 <0-255>	SYS	When the value increases, the background becomes more brightened.	1
836			Text	SCN	46 <0-255>	SYS		1
837			Photo	SCN	16 <0-255>	SYS		1
845	Image	Density adjustment Fine adjustment of "manual density"/ Center value	Text/Photo	SCN	128 <0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
846			Text	SCN	128 <0-255>	SYS		1
847			Photo	SCN	128 <0-255>	SYS		1
850	Image	Density adjustment Fine adjustment of "manual density"/Light step value	Text/Photo	SCN	33 <0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1
851			Text	SCN	33 <0-255>	SYS		1
852			Photo	SCN	33 <0-255>	SYS		1
855	Image	Density adjustment Fine adjustment of "manual density"/Dark step value	Text/Photo	SCN	33 <0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
856			Text	SCN	33 <0-255>	SYS		1
857			Photo	SCN	33 <0-255>	SYS		1
860	Image	Density adjustment Fine adjustment of "automatic density"	Text/Photo	SCN	128 <0-255>	SYS	When the value increases, the image becomes darker.	1
861			Text	SCN	128 <0-255>	SYS		1
862			Photo	SCN	128 <0-255>	SYS		1

Adjustment mode (05)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
865-0	Image	Sharpness adjustment (Text/Photo)	Reproduction ratio 40% or smaller	SCN	0 <0-99>	SYS	When the value increases, the image becomes sharper. When the value decreases, the image becomes softer. The smaller the value is, the less the moire becomes. One's place: Selecting a filter shape Ten's place: Sharpness intensity (0: Use default value, 1-9: Filter intensity)	4
865-1			Reproduction ratio 41-80%	SCN	0 <0-99>	SYS		4
865-2			Reproduction ratio 81% or larger	SCN	0 <0-99>	SYS		4
866-0	Image	Sharpness adjustment (Text)	Reproduction ratio 40% or smaller	SCN	0 <0-99>	SYS		4
866-1			Reproduction ratio 41-80%	SCN	0 <0-99>	SYS		4
866-2			Reproduction ratio 81% or larger	SCN	0 <0-99>	SYS		4
867-0	Image	Sharpness adjustment (Photo)	Reproduction ratio 40% or smaller	SCN	0 <0-99>	SYS		4
867-1			Reproduction ratio 41-80%	SCN	0 <0-99>	SYS		4
867-2			Reproduction ratio 81% or larger	SCN	0 <0-99>	SYS		4
869	Image	Background adjustment	Text/Photo	PPC	4 <1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1
870			Photo	PPC	6 <1-9>	SYS		1
871			Text	PPC	4 <1-9>	SYS		1

2.2.8 Setting mode (08)

The items in the setting code list can be set or changed in this setting mode (08).

Note:

When inputting a 4-digit code (ie. 1000 to 1999), press the [%] button instead of “1” for the thousand’s place, and then key in the other 3 digits.

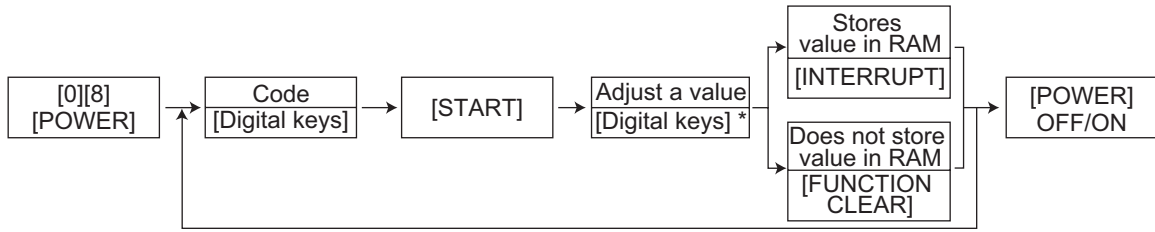
E.g.) 1372: [%] -> [3] -> [7] -> [2]

Classification List of Setting Mode (08)

Classification		Setting Mode (08)
ADF	[Switchback]	462
Counter	[Double count]	345,346,347,348,349,352,353
	[Total Counter copy]	388,389
	[Toner cartridge]	1410
	[External counter]	381, 975
	[Paper source]	356,357,358,374
	[Fuser unit]	1372,1378,1380,1382
	[Media type]	1385,1386,1388,1411
Image	[Error diffusion / Dither]	502
	[Default setting]	538,550
Paper feeding	[change of paper source]	481
	[Retry]	482
	[Default setting]	480
	[Paper exit]	698,699
	[Paper size]	224,226
	[Paper dimension]	229-0 to 1,230-0 to 1,231-0 to 1,232-0 to 1,233-0 to 1,234-0 to 1,235-0 to 1,236-0 to 1,237-0 to 1,238-0 to 1,239-0 to 1,240-0 to 1,241-0 to 1,242-0 to 1,244-0 to 1,245-0 to 1,337-0 to 1,338-0 to 1,339-0 to 1,340-0 to 1,341-0 to 1,471-0 to 1
Development	[Auto-toner]	414
	[Developer bias]	833,834,835,836,837,840,858,859,860,861,862,863
General	[Reset]	655
	[Nearly empty]	971
	[Page setting]	949
	[Line]	203
	[Access code]	672
Scanner	[Control status]	463
Main charger bias	[Main charger bias]	805,806,807,808,809,814,819,826,864,865,866,867
Fuser	[Pre-running]	439,440,441,523,526
	[Temperature]	404-0 to 3,405-0 to 3,407,409,410,411,413,424-0 to 3,425-0 to 3,433-0 to 1,437,438,448,450,451,452,453,476-0 to 3,515,516,520,521,525-0 to 3,527-0 to 3,535-0 to 1,536-0 to 3,537-0 to 3,539-0 to 3,540-0 to 3,541-0 to 3,800-0 to 1,801-0 to 1,802-0 to 1,804-0 to 1,886,896-0 to 1
	[Status counter]	400
Transfer bias	[Transfer bias]	830,868,869
Separation bias	[Separation bias]	831,870,871
Version	[System firmware]	900,921,922,923

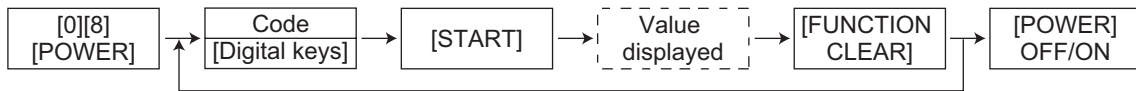
Classification		Setting Mode (08)
Image processing	[LED]	1913
	[Auto-toner]	455
	[Toner recycle]	838
	[Drum life correction]	1628-0 to 1
	[temperature/humidity]	839
Maintenance	[PM counter]	251,252
	[Error history]	253
	[Telephone number]	250
User interface	[Copy volume]	300
	[Jobs clear]	246
	[Energy saving mode]	970
	[Sorting]	641
	[Timer]	204,205,206
	[Book type]	611
	[External counter]	202
	[Default setting]	607,618,642
	[Paper size]	261
Laser	[Polygonal motor]	483,486
	[Power correction]	872,873,875,876,877,883

Procedure 1,5,9,11

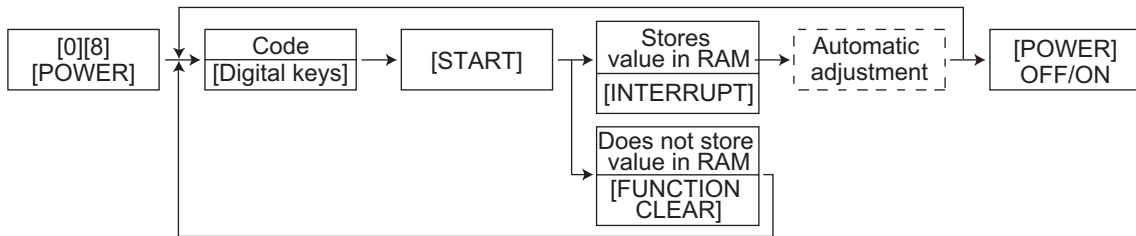


* Press [#] to enter minus (-).

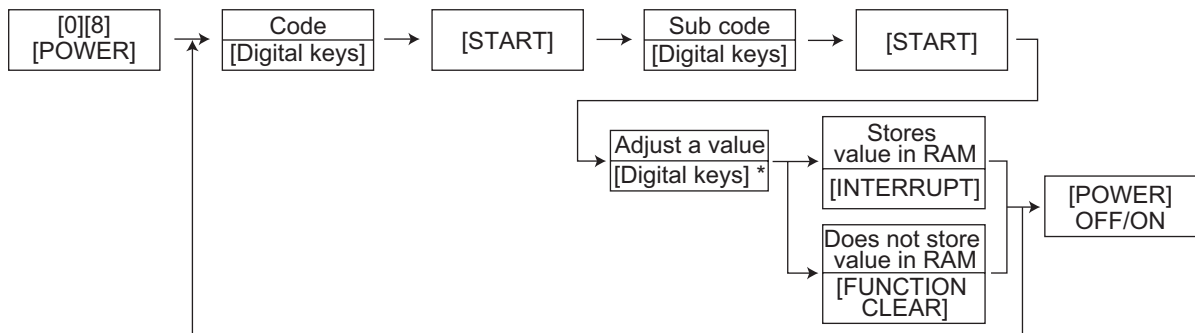
Procedure 2



Procedure 3

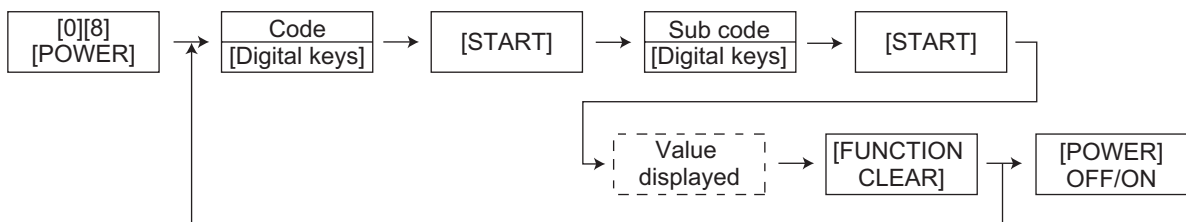


Procedure 4,10



* Press [#] to enter minus (-).

Procedure 14



Procedure 15



Notes:

- The digit after the hyphen in “Code” of the following table is a sub code.
- In “RAM”, the SRAM of the board in which the data of each code is stored is indicated. “M” and “SYS” stands for the MAIN board.

Setting mode (08)							
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure
202	User interface	Counter installed externally	ALL	0 <0-3>	M	0: No external counter 1: Coin controller 2: Copy key card 3: Key copy counter	1
203	General	Line adjustment mode	ALL	0 <0-1>	M	0: For factory shipment 1: For line * Field: “0” must be selected	1
204	User interface	Auto-clear timer setting	ALL	3 <0-15>	SYS	0: Invalid 1: 15 sec. 2: 30 sec. 3: 45 sec. 4: 60sec. 5: 75 sec. 6: 90 sec. 7: 105 sec. 8: 120 sec.9: 135 sec. 10: 150 sec. 11: 180 sec. 12: 210 sec. 13: 240 sec. 14: 270 sec. 15: 300 sec.	1
205	User interface	Auto power save mode timer setting	ALL	8 <0-30>	SYS	0: Invalid 2: 1 min. 4: 2 min. 6: 3 min. 7: 4 min. 8: 5 min. 10: 10 min. 11: 15 min. 12: 20 min. 13: 25 min. 14: 30 min. 15: 35 min. 16: 40 min. 17: 45 min. 18: 50 min. 19: 55 min. 20: 60 min. 21: 70 min. 22: 80 min. 23: 90 min. 24: 100 min.25: 110 min. 26: 120 min. 27: 150 min. 28: 180 min. 29: 210 min. 30: 240 min.	1
206	User interface	Auto Shut Off Mode timer setting (Auto Sleep Mode)	ALL	24 <0-24>	M	0: 3 min. 1: 5 min. 2: 10 min. 3: 15 min. 4: 20 min. 5: 25 min. 6: 30 min. 7: 35 min. 8: 40 min. 9: 45 min. 10: 50 min. 11: 55 min. 12: 60 min. 13: 70 min. 14: 80 min. 15: 90 min. 16: 100 min.17: 110 min. 18: 120 min. 19: 150 min. 20: 180 min. 21: 210 min. 22: 240 min. 23: Invalid 24: 1 min.	1

Setting mode (08)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
224	Paper feeding	Paper size (Bypass)		ALL	14 <0-15>	SYS	Paper size (Bypass) 0:A3 1:A4 2:A4-R 3:A5-R 4:B4 5:B5 6:B5R 7:LETTER 8:LETTER-R 9:LEDGER 10:LEGAL 11:STATEMENT-R 12:COMPUTER 13:FOLIO 14:NON-STANDARD 15:POST CARD	9
225	Paper feeding	Paper size (Standard drawer)		ALL	UC: 7 Other: 1 <0-13>	M	Paper size (Standard drawer) 0:A3 1:A4 2:A4-R 3:A5-R 4:B4 5:B5 6:B5-R 7:LETTER 8:LETTER-R 9:LEDGER 10:LEGAL 11:STATEMENT-R 12:COMPUTER 13:FOLIO	9
226	Paper feeding	Paper size (PFU)		ALL	UC: 7 Other: 1 <0-13>	M	Paper size (PFU) 0:A3 1:A4 2:A4-R 3:A5-R 4:B4 5:B5 6:B5R 7:LETTER 8:LETTER-R 9:LEDGER 10:LEGAL 11:STATEMENT-R 12:COMPUTER 13:FOLIO	9
229-0	Paper feeding	Paper size (A3)	feeding direction	ALL	420 <140-432>	M		10
229-1			widthwise direction	ALL	297 <140-432>	M		10
230-0	Paper feeding	Paper size (A4-R)	feeding direction	ALL	297 <140-432>	M		10
230-1			widthwise direction	ALL	210 <140-432>	M		10

Setting mode (08)							
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure
231-0	Paper feeding	Paper size (A5-R)	feeding direction	ALL	210 <140-432>	M	10
231-1			widthwise direction	ALL	148 <140-432>	M	10
232-0	Paper feeding	Paper size (B4)	feeding direction	ALL	364 <140-432>	M	10
232-1			widthwise direction	ALL	257 <140-432>	M	10
233-0	Paper feeding	Paper size (B5-R)	feeding direction	ALL	257 <140-432>	M	10
233-1			widthwise direction	ALL	182 <140-432>	M	10
234-0	Paper feeding	Paper size (LT-R)	feeding direction	ALL	279 <140-432>	M	10
234-1			widthwise direction	ALL	216 <140-432>	M	10
235-0	Paper feeding	Paper size (LD)	feeding direction	ALL	432 <140-432>	M	10
235-1			widthwise direction	ALL	279 <140-432>	M	10
236-0	Paper feeding	Paper size (LG)	feeding direction	ALL	356 <140-432>	M	10
236-1			widthwise direction	ALL	216 <140-432>	M	10
237-0	Paper feeding	Paper size (ST-R)	feeding direction	ALL	216 <140-432>	M	10
237-1			widthwise direction	ALL	140 <140-432>	M	10
238-0	Paper feeding	Paper size (COMPUTER)	feeding direction	ALL	356 <140-432>	M	10
238-1			widthwise direction	ALL	257 <140-432>	M	10
239-0	Paper feeding	Paper size (FOLIO)	feeding direction	ALL	330 <140-432>	M	10
239-1			widthwise direction	ALL	210 <140-432>	M	10
240-0	Paper feeding	Paper size (13"LG)	feeding direction	ALL	330 <140-432>	M	10
240-1			widthwise direction	ALL	216 <140-432>	M	10

Setting mode (08)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
241-0	Paper feeding	Paper size (8.5"X8.5")	feeding direction	ALL	216 <140-432>	M		10
241-1			widthwise direction	ALL	216 <140-432>	M		10
242-0	Paper feeding	Paper size (Non-standard)	feeding direction	ALL	432 <105-432>	SYS		10
242-1			widthwise direction	ALL	279 <105-432>	SYS		10
244-0	Paper feeding	Paper size (8K)	feeding direction	ALL	390 <140-432>	M		10
244-1			widthwise direction	ALL	270 <140-432>	M		10
245-0	Paper feeding	Paper size (16K-R)	feeding direction	ALL	270 <140-432>	M		10
245-1			widthwise direction	ALL	195 <140-432>	M		10
246	User interface	Clearing copy jobs at auto clear	ALL	0 <0-1>	M	0: No clearing 1: Clearing	1	
250	Maintenance	Service technician telephone number	ALL	0 <20 digits>	SYS	A telephone number can be entered up to 20 digits.	11	
251	Maintenance	Setting value of PM counter	ALL	Refer to content <8 digits>	M	<Default> JPN:0 UC, EUR :77,000 (e-STUDIO181) :90,000 (e-STUDIO211)	1	
252	Maintenance	Current value of PM counter Display/0 clearing	ALL	0 <8 digits>	M	Counts up when the registration sensor is ON.	1	
253	Maintenance	Error history display	ALL	-	SYS	Displaying of the latest 3 errors code Press the reproduction ratio button ([200%] or [25%]) to change the errors code.	2	
261	User interface	Fixes the paper size setting for the bypass tray	ALL	0 <0-1>	M	0: Size not fixed (Turn the power OFF or press the Function Clear key to return to the non-standard size.) 1: Size fixed (Turn the power OFF or press the Function Clear key to return to the size set at 08-224.)	1	
300	User interface	Maximum number of copy volume (MAX9)	PPC	0 <0-2>	SYS	0: 999 1: 99 2: 9	1	

Setting mode (08)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
337-0	Paper feeding	Paper size (#10-R)	feeding direction	ALL	241 <105-432>	M		10
337-1			widthwise direction	ALL	105 <105-432>	M		10
338-0	Paper feeding	Paper size (DL-R)	feeding direction	ALL	220 <105-432>	M		10
338-1			widthwise direction	ALL	110 <105-432>	M		10
339-0	Paper feeding	Paper size (Envelope: Monerch-R)	feeding direction	ALL	191 <98-432>	M		10
339-1			widthwise direction	ALL	98 <98-432>	M		10
340-0	Paper feeding	Paper size (Envelope: CHO-3-R)	feeding direction	ALL	235 <105-432>	M		10
340-1			widthwise direction	ALL	120 <105-432>	M		10
341-0	Paper feeding	Paper size (Envelope: YOU-4-R)	feeding direction	ALL	235 <105-432>	M		10
341-1			widthwise direction	ALL	105 <105-432>	M		10
345	Counter	Count setting of envelope (PM)	ALL	1 <0-1>	M	0: Counted as 1 1: Counted as 2	1	
346	Counter	Count setting of large-sized paper (PM)	ALL	1 <0-1>	M	0: Counted as 1 1: Counted as 2	1	
347	Counter	Definition setting of large-sized paper (PM)	ALL	1 <0-1>	M	0: A3/LD 1: A3/LD/B4/LG/FOLIO/COMP	1	
348	Counter	Count setting of thick paper (PM)	ALL	1 <0-1>	M	0: Counted as 1 1: Counted as 2	1	
349	Counter	Count setting of OHP film (PM)	ALL	1 <0-1>	M	0: Counted as 1 1: Counted as 2	1	
352	Counter	Count setting of large-sized paper (Fee charging system counter)	ALL	JPN: 0 Other: 1 <0-1>	M	0: Counted as 1 1: Counted as 2	1	
353	Counter	Definition setting of large-sized paper (Fee charging system counter)	ALL	0 <0-1>	M	0: A3/LD 1: A3/LD/B4/LG/FOLIO/COMP/8K	1	
356	Counter	Counter for Drawer feeding	ALL	0 <8 digits>	M	Counts the number of sheets fed from Drawer	2	
357	Counter	Counter for PFU feeding	ALL	0 <8 digits>	M	Counts the number of sheets fed from PFU	2	
358	Counter	Counter for bypass feeding	ALL	0 <8 digits>	M	Counts the number of sheets fed from bypass feed	2	
374	Counter	Counter for ADF	ALL	0 <8 digits>	SYS	Counts the number of originals fed from ADF	2	

Setting mode (08)									
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure		
381	Counter	Setting for counter installed externally	ALL	1 <0-1>	M	Selects the job to count up for the external counter. 0: Not selected 1: Copier	1		
388	Counter	Copying total counter / MAIN board → SRAM board	ALL	-	-	Copies the total counter value of the MAIN board to the SRAM board.	15		
389	Counter	Copying total counter / SRAM board → MAIN board	ALL	-	-	Copies the total counter value of the SRAM board to the MAIN board.	15		
400	Fuser	Fuser unit error status counter	ALL	0 <0-19>	M	0: No error 1: C41 (Once) 2: C41 (consecutively occurred) 3: C46 4: C43 5: C44 6: C45 7: C44 8: C45 9: C44 10: C47 11: C47 12: C48 13: C49 14: C47 15: C48 16: C49 17: C47 18: C48 19: C49	1		
404-0	Fuser	Temperature drop setting in ready status (Center thermistor)	The first drop	ALL	1 <0-10>	M	This code is valid only when "20" is set to 08-886. Setting value x -5°C: from 0°C to -50°C	4	
404-1			The second drop	ALL	1 <0-10>	M		4	
404-2			The third drop	ALL	1 <0-10>	M		4	
404-3			The fourth drop	ALL	1 <0-10>	M		4	
405-0	Fuser	Temperature drop setting in ready status (Side thermistor)	The first drop	ALL	3 <0-10>	M			4
405-1			The second drop	ALL	3 <0-10>	M			4
405-2			The third drop	ALL	3 <0-10>	M			4
405-3			The fourth drop	ALL	3 <0-10>	M			4
407	Fuser	Fuser roller temperature in ready status (Side thermistor)	ALL	6 <0-12>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C	1		
409	Fuser	Fuser roller temperature at energy saver mode (Center thermistor)	ALL	EUR: 7 Other: 0 <0-13>	M	0: OFF 1: 40°C 2: 50°C 3: 60°C 4: 70°C 5: 80°C 6: 90°C 7: 100°C 8: 110°C 9: 120°C 10: 130°C 11: 140°C 12: 150°C 13: 160°C	1		

Setting mode (08)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
410	Fuser	Fuser roller temperature during printing (Center thermistor/Plain paper)	ALL	6 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1	
411	Fuser	Fuser roller temperature on standby (Center thermistor)	ALL	6 <0-12>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C	1	
413	Fuser	Fuser roller temperature during printing (Center thermistor/Thick paper 1)	ALL	6 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1	
414	Developer	Toner density life correction switching	ALL	0 <0-7>	M	0: Unchanged (Default) 1: Approx. 0.1 wt% lower 2: Approx. 0.2 wt% higher 3: Approx. 0.5 wt% higher 4: Approx. 0.6 wt% lower 5: Approx. 0.8 wt% lower 6: Approx. 1.0 wt% lower 7: Approx. 1.3 wt% lower	1	
424-0	Fuser	Temperature drop switching time setting in ready status (Center thermistor)	The first drop	ALL	15 <2-60>	M	This code is valid only when "20" is set to 08-886. Setting value x 1 min.: from 2 to 60 min. later	4
424-1			The second drop	ALL	15 <2-60>	M		4
424-2			The third drop	ALL	15 <2-60>	M		4
424-3			The fourth drop	ALL	15 <2-60>	M		4
425-0	Fuser	Temperature drop switching time setting in ready status (Side thermistor)	The first drop	ALL	15 <2-60>	M		4
425-1			The second drop	ALL	15 <2-60>	M		4
425-2			The third drop	ALL	15 <2-60>	M		4
425-3			The fourth drop	ALL	15 <2-60>	M		4

Setting mode (08)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
433-0	Fuser	Temperature control lower limit (Plain paper/ at ordinary temperature)	Center thermistor	ALL	5 <0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C	4
433-1			Side thermistor	ALL	3 <0-12>	M	4: 150°C 5: 155°C 6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	4
437	Fuser	Fuser roller temperature during printing (Center thermistor /Thick paper 2)		ALL	9 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1
438	Fuser	Fuser roller temperature during printing (Center thermistor/OHP film)		ALL	6 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1
439	Fuser	Pre-running time for first printing (Thick paper 2)		ALL	10 <0-15>	M	0: Invalid 1: 1 sec. 2: 2 sec. 3: 3 sec. 4: 4 sec. 5: 5 sec. 6: 6 sec. 7: 7 sec. 8: 8 sec. 9: 9 sec. 10: 10 sec. 11: 12 sec. 12: 14 sec. 13: 16 sec. 14: 18 sec. 15: 20 sec.	1
440	Fuser	Pre-running time for first printing (Plain paper)		ALL	0 <0-15>	M	0: Invalid 1: 1 sec. 2: 2 sec. 3: 3 sec. 4: 4 sec. 5: 5 sec. 6: 6 sec. 7: 7 sec. 8: 8 sec. 9: 9 sec. 10: 10 sec. 11: 12 sec. 12: 14 sec. 13: 16 sec. 14: 18 sec. 15: 20 sec.	1
441	Fuser	Pre-running time for first printing (Thick paper 1)		ALL	10 <0-15>	M	0: Invalid 1: 1 sec. 2: 2 sec. 3: 3 sec. 4: 4 sec. 5: 5 sec. 6: 6 sec. 7: 7 sec. 8: 8 sec. 9: 9 sec. 10: 10 sec. 11: 12 sec. 12: 14 sec. 13: 16 sec. 14: 18 sec. 15: 20 sec.	1

Setting mode (08)							
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure
448	Fuser	Fuser roller temperature in Energy Saving Mode (Side thermistor)	ALL	EUR: 7 Other: 0 <0-13>	M	0: OFF 1: 40°C 2: 50°C 3: 60°C 4: 70°C 5: 80°C 6: 90°C 7: 100°C 8: 110°C 9: 120°C 10: 130°C 11: 140°C 12: 150°C 13: 160°C	1
450	Fuser	Fuser roller temperature during printing (Side thermistor/Plain paper)	ALL	6 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1
451	Fuser	Fuser roller temperature during printing (Side thermistor/Thick paper 1)	ALL	6 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1
452	Fuser	Fuser roller temperature during printing (Side thermistor/Thick paper 2)	ALL	9 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1
453	Fuser	Fuser roller temperature during printing (Side thermistor/OHP film)	ALL	6 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1
455	Image processing	Toner supply amount correction/Toner motor control	ALL	0 <0-5>	M	Corrects the supply amount of the fresh toner (driving period of the toner motor) into the developer unit. 0: x1.0 1: x0.75 2: x0.5 3: x0.3 4: x2.0 5: x1.5	1

Setting mode (08)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
462	ADF	Setting for switchback operation to copy mixed-sized original on ADF		ALL	0 <0-1>	SYS	Sets whether or not detecting the original length by transporting without scanning in reverse when finding A4-R/FOLIO paper. 0: Invalid- Judges as A4-R without transporting in reverse with no scanning. 1: Valid- Judges whether it is A4-R or FOLIO size by transporting in reverse with no scanning. * The original is transported in reverse with no scanning when detecting LT-LG size-paper in LT, regardless of this setting.	1
463	Scanner	Control status		ALL	0 <0-6>	SYS	0 : Normal end 1 : White level abnormality (G) 2 : Peak detection abnormality (G) 3 : Adjustment impossible (R) 4 : Adjustment impossible (B) 5 : Adjustment impossible (YG) 6 : White level abnormality	1
471-0	Paper feeding	Paper size (Postcard)	feeding direction	ALL	148 <100-432>	M	* Postcard is supported only for JPN model.	10
471-1			widthwise direction	ALL	100 <100-432>	M		10
476-0	Fuser	Temperature drop setting during printing (Center thermistor/ Thick paper)	The first drop	ALL	1 <0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5°C: from 0°C to -50°C Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	4
476-1			The second drop	ALL	1 <0-10>	M		4
476-2			The third drop	ALL	1 <0-10>	M		4
476-3			The fourth drop	ALL	1 <0-10>	M		4
480	Paper feeding	Default setting of paper source		PPC	0 <0-4>	SYS	0: A4/LT 1: Drawer 2: LCF 3: Not used 4: Not used	1

Setting mode (08)							
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure
481	Paper feeding	Automatic change of paper source	PPC	1 <0-1>	SYS	Sets whether or not changing the drawer automatically to the other drawer with the paper of the same size when paper in the selected drawer has run out. 0: OFF 1: ON	1
482	Paper feeding	Feeding retry setting	ALL	0 <0-1>	M	0: ON 1: OFF	1
483	Laser	Pre-running rotation of polygonal motor	ALL	0 <0-2>	SYS	Sets whether or not switching the polygonal motor from the standby rotation to the normal rotation when the original is set on the ADF or the platen cover is opened. 0: Valid (when using ADF and the original is set manually) 1: Invalid 2: Valid (when using ADF only)	1
486	Laser	Timing of auto-clearing of polygonal motor pre-running rotation	ALL	0 <0-2>	SYS	Switches the polygonal motor to the standby rotation when a certain period of time has passed from the pre-running. At this code, the period to switch the status to the standby rotation is set. 0: 15 sec. 1: 30 sec. 2: 45 sec. * This setting is effective when "0" or "2" is set at 08-483.	1
502	Image	Error diffusion and dither setting at photo mode	PPC	1 <0-1>	SYS	Sets the image reproduction method at photo mode. 0: Error diffusion 1: Dither	1
515	Fuser	Temperature setting of warming-up (Center thermistor)	ALL	9 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1

Setting mode (08)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
516	Fuser	Temperature setting of warming-up (Side thermistor)	ALL	9 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1	
520	Fuser	Fuser roller temperature during printing (Center thermistor/Envelope)	ALL	9 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1	
521	Fuser	Fuser roller temperature during printing (Side thermistor/Envelope)	ALL	9 <0-14>	M	0: 140°C 1: 145°C 2: 150°C 3: 155°C 4: 160°C 5: 165°C 6: 170°C 7: 175°C 8: 180°C 9: 185°C 10: 190°C 11: 195°C 12: 200°C 13: 205°C 14: 210°C	1	
523	Fuser	Pre-running time for first printing (Envelope)	ALL	10 <0-15>	M	0: Invalid 1: 1 sec. 2: 2 sec. 3: 3 sec. 4: 4 sec. 5: 5 sec. 6: 6 sec. 7: 7 sec. 8: 8 sec. 9: 9 sec. 10: 10 sec. 11: 12 sec. 12: 14 sec. 13: 16 sec. 14: 18 sec. 15: 20 sec.	1	
525-0	Fuser	Temperature drop switching time setting during printing (Center thermistor)	The first drop	ALL	20 <0-200>	M	This code is valid only when "20" is set to 08-535. Setting value x 5 sec.: from 0 to 1,000 sec. later	4
525-1			The second drop	ALL	38 <0-200>	M		4
525-2			The third drop	ALL	75 <0-200>	M		4
525-3			The fourth drop	ALL	75 <0-200>	M		4
526	Fuser	Pre-running time for first printing (OHP film)	ALL	0 <0-15>	M	0: Invalid 1: 0 sec. 2: 2 sec. 3: 3 sec. 4: 4 sec. 5: 5 sec. 6: 6 sec. 7: 7 sec. 8: 8 sec. 9: 9 sec. 10: 10 sec. 11: 12 sec. 12: 14 sec. 13: 16 sec. 14: 18 sec. 15: 20 sec.	1	

Setting mode (08)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
527-0	Fuser	Temperature drop switching time setting during printing (Side thermistor)	The first drop	ALL	20 <0-200>	M	This code is valid only when "20" is set to 08-535. Setting value x 5 sec.: from 0 to 1,000 sec. later	4
527-1			The second drop	ALL	30 <0-200>	M		4
527-2			The third drop	ALL	48 <0-200>	M		4
527-3			The fourth drop	ALL	75 <0-200>	M		4
535-0	Fuser	Temperature drop control setting during printing (Temperature/Time)	Plain paper	ALL	2 <0-20>	M	0: None 1: Pattern 1 2: Pattern 2 3: Pattern 3 4: Pattern 4 5: Pattern 5 6: Pattern 6 7: Pattern 7 8: Pattern 8 9: Pattern 9 10: Pattern 10 11: Pattern 11 12: Pattern 12 13: Pattern 13 14: Pattern 14 15: Pattern 15 16: Pattern 16 17: Pattern 17 18: Pattern 18 19: Pattern 19 20: Manual adjustment	4
535-1			Thick paper	ALL	12 <0-20>	M		4
536-0	Fuser	Temperature drop setting during printing (Center thermistor)	The first drop	ALL	1 <0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5°C: from 0°C to -50°C	4
536-1			The second drop	ALL	2 <0-10>	M		4
536-2			The third drop	ALL	3 <0-10>	M		4
536-3			The fourth drop	ALL	3 <0-10>	M		4
537-0	Fuser	Temperature drop setting during printing (Side thermistor)	The first drop	ALL	1 <0-10>	M		4
537-1			The second drop	ALL	2 <0-10>	M		4
537-2			The third drop	ALL	3 <0-10>	M		4
537-3			The fourth drop	ALL	5 <0-10>	M		4
538	Image	Density default in image quality mode	ALL	0 <0-7>	SYS	0: AUTO 1: Light 3 2: Light 2 3: Light 1 4: Center 5: Dark 1 6: Dark 2 7: Dark 3	1	

Setting mode (08)								
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure	
539-0	Fuser	Temperature drop setting during printing (Side thermistor/ Thick paper)	The first drop	ALL	1 <0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5°C: from 0°C to -50°C	4
539-1			The second drop	ALL	2 <0-10>	M		4
539-2			The third drop	ALL	3 <0-10>	M		4
539-3			The fourth drop	ALL	3 <0-10>	M		4
540-0	Fuser	Temperature drop switching time setting during printing (Thick paper/ Center thermistor)	The first drop	ALL	20 <0-200>	M	This code is valid only when "20" is set to 08-535. Setting value x 5 sec.: from 0 to 1,000 sec.later Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	4
540-1			The second drop	ALL	48 <0-200>	M		4
540-2			The third drop	ALL	100 <0-200>	M		4
540-3			The fourth drop	ALL	100 <0-200>	M		4
541-0	Fuser	Temperature drop switching time setting during printing (Thick paper/ Side thermistor)	The first drop	ALL	20 <0-200>	M	This code is valid only when "20" is set to 08-535. Setting value x 5 sec.: from 0 to 1,000 sec.later Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	4
541-1			The second drop	ALL	48 <0-200>	M		4
541-2			The third drop	ALL	100 <0-200>	M		4
541-3			The fourth drop	ALL	100 <0-200>	M		4
550	Image	Default setting of original mode	PPC	0 <0-2>	SYS	0: Text/Photo 1: Photo 2: Text	1	
604	User interface	Default setting for APS/ AMS	PPC	0 <0-2>	SYS	0: APS (Automatic Paper Selection) 1: AMS (Automatic Magnification Selection) 2: Not selected	9	
607	User interface	Default setting of RADF mode	PPC	0 <0-1>	SYS	0: Continuous feeding (by pressing the [START] button) 1: Single feeding (by setting original on the tray)	1	
611	User interface	Book type original priority	PPC	0 <0-1>	SYS	0: Left page to right page 1: Right page to left page	1	
618	User interface	Default setting when mixed size originals are set on ADF	PPC	0 <0-1>	SYS	0: Scanned as all in same size 1: Scanned as each original size (RADF only)	1	
630	General	Access code display	-	0 <0-1>	SYS	0: Displayed 1: Not displayed	1	
641	User interface	Automatic Sorting Mode setting (ADF)	PPC	2 <0,2>	M	0: Invalid 2: SORT	1	
642	User interface	Default setting of Sorter Mode	PPC	1 <0,1>	M	0: SORT 1: GROUP	1	

Setting mode (08)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
655	General	Reset the 05/08 codes		-	-	-	Returns the set value for the 05/08 code to its default value. However, various counter values of the 08 codes are not reset.	-
672	General	Initialization of Access code		-	-	SYS	Initializing of the Access code * Key in the code and press the [START] button to perform the initialization.	3
698	Paper feeding	Limit function for the number of paper exit		ALL	1 <0-1>	M	Sets if the MFP controls the paper exit full status or not. If "0" is set to 08-698, the MFP will not go into the paper exit full status. 0: OFF 1: ON Number set at 08-699 will be set as the limit number of paper exit.	1
699	Paper feeding	Limit number setting for paper exit		ALL	250 <1-999>	M	When the counter reaches the value specified, the MFP goes into the paper exit full status. Sets the limit number of paper exit for 08-698.	1
800-0	Fuser	Temperature control lower limit (OHP film)	Center thermistor	ALL	7 <0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C 6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	4
800-1			Side thermistor	ALL	5 <0-12>	M		4
801-0	Fuser	Temperature control lower limit (Thick paper 1)	Center thermistor	ALL	7 <0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C 6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	4
801-1			Side thermistor	ALL	5 <0-12>	M		4
802-0	Fuser	Temperature control lower limit (Thick paper 2)	Center thermistor	ALL	11 <0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C 6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	4
802-1			Side thermistor	ALL	11 <0-12>	M		4
804-0	Fuser	Temperature control lower limit (Envelope)	Center thermistor	ALL	11 <0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C 6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	4
804-1			Side thermistor	ALL	11 <0-12>	M		4

Setting mode (08)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
805	Charger	Main charger bias correction (Text/Photo/OHP film)		PRT	98 <0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
806	Charger	Main charger bias correction (Toner Saving Mode/OHP film)		PRT	98 <0-255>	M		1
807	Charger	Main charger bias correction (Text/Photo/OHP film)		PPC	98 <0-255>	M		1
808	Charger	Main charger bias correction (Text/OHP film)		PPC	98 <0-255>	M		1
809	Charger	Main charger bias correction (Photo/OHP film)		PPC	98 <0-255>	M		1
814	Charger	Main charger bias correction (Text/Photo/OHP film)	GDI	PRT	98 <0-255>	M		1
819	Charger	Main charger bias correction (Text/Photo)	GDI	PRT	128 <0-255>	M		1
826	Charger	Main charger bias correction (Toner saving mode)		PRT	128 <0-255>	M		1
830	Transfer	Transfer transformer DC correction (C)		ALL	128 <0-255>	M		Corrects the value of the transfer transformer DC output adjustment (05-221).
831	Separation	Separation transformer DC correction (C)		ALL	128 <0-255>	M	Corrects the value of the separation transformer DC output adjustment (05-234).	1
833	Developer	Developer bias DC correction (Text/Photo/OHP film)		PRT	107 <0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
834	Developer	Developer bias DC correction (Toner Saving Mode/OHP film)		PRT	107 <0-255>	M		1
835	Developer	Developer bias DC correction (Text/Photo/OHP film)		PPC	107 <0-255>	M		1
836	Developer	Developer bias DC correction (Text/OHP film)		PPC	107 <0-255>	M		1
837	Developer	Developer bias DC correction (Photo/OHP film)		PPC	107 <0-255>	M		1
838	Image processing	Switching of recycled toner saving control		ALL	0 <0-1>	M	0: Switched 1: Not switched	1

Setting mode (08)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
839	Image processing	Correction by temperature/humidity		ALL	0 <0-3>	M	Sets the correction by temperature/humidity. 0: All valid 1: All invalid 2: Valid only in auto-toner sensor 3: All valid except transfer and separation	1
840	Developer	Developer bias DC correction (Text/Photo/OHP film)	GDI	PRT	107 <0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
858	Developer	Developer bias DC correction (Normal)	GDI	PRT	128 <0-255>	M		1
859	Developer	Developer bias DC correction (Toner saving mode)		PRT	128 <0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
860	Developer	Developer bias DC correction (Normal)		PRT	128 <0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
861	Developer	Developer bias DC correction (Text/Photo)		PPC	128 <0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
862	Developer	Developer bias DC correction (Text)		PPC	128 <0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
863	Developer	Developer bias DC correction (Photo)		PPC	128 <0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
864	Charger	Main charger bias correction (Normal)		PRT	128 <0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
865	Charger	Main charger bias correction (Text/Photo)		PPC	128 <0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
866	Charger	Main charger bias correction (Text)		PPC	128 <0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
867	Charger	Main charger bias correction (Photo)		PPC	128 <0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
868	Transfer	Transfer transformer DC correction (H)		ALL	128 <0-255>	M	Corrects the value of the transfer transformer DC output adjustment (05-220).	1
869	Transfer	Transfer transformer DC correction (L)		ALL	128 <0-255>	M	Corrects the value of the transfer transformer DC output adjustment (05-222).	1
870	Separation	Separation transformer DC correction (H)		ALL	128 <0-255>	M	Corrects the value of the separation transformer DC output adjustment (05-233).	1

Setting mode (08)								
Code	Classification	Items		Function	Default <Acceptable value>	RAM	Contents	Procedure
871	Separation	Separation transformer DC correction (L)		ALL	128 <0-255>	M	Corrects the value of the separation transformer DC output adjustment (05-235).	1
872	Laser	Laser power correction (Normal)		PRT	128 <0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
873	Laser	Laser power correction (Text/Photo)		PPC	128 <0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
875	Laser	Laser power correction (Toner saving mode)		PRT	128 <0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
876	Laser	Laser power correction (Text)		PPC	128 <0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
877	Laser	Laser power correction (Photo)		PPC	128 <0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
883	Laser	Laser power correction (Normal)	GDI	PRT	136 <0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
886	Fuser	Temperature drop control setting in ready status (Temperature/Time)		ALL	4 <0-20>	M	0: None 1: Pattern 1 2: Pattern 2 3: Pattern 3 4: Pattern 4 5: Pattern 5 6: Pattern 6 7: Pattern 7 8: Pattern 8 9: Pattern 9 10: Pattern 10 11: Pattern 11 12: Pattern 12 13: Pattern 13 14: Pattern 14 15: Pattern 15 16: Pattern 16 17: Pattern 17 18: Pattern 18 19: Pattern 19 20: Manual adjustment	1
896-0	Fuser	Temperature control lower limit (Plain paper/ Low temperature)	Center thermistor	ALL	5 <0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C 6: 160°C 7: 165°C 8: 170°C 9: 175°C	4
896-1			Side thermistor	ALL	3 <0-12>	M	10: 180°C 11: 185°C 12: 120°C	4
900	Version	System firmware ROM version		ALL	-	-	T150SY0Wxxx	2
921	Version	FROM internal program		ALL	-	-	VTSxx.xxxW Displays the "xx.xxx" part of the above code as "xx-xxx". (Press the reproduction ratio buttons to switch the display between "xx-" and "xxx".)	2

Setting mode (08)							
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure
949	General	Automatic interruption page setting during printing	ALL	0 <0-100>	SYS	Sets the automatic interruption page.	1
970	User interface	Sound setting when switching to Energy Saving Mode	ALL	JPN: 0 Other: 1 <0-1>	SYS	0: OFF 1: ON	1
971	General	Toner near empty threshold value	ALL	1 <0-3>	SYS	Performs adjustment for the toner near-empty detection timing. 0: Toner near empty threshold value (long) 1: Toner near empty threshold value (standard) 2: Toner near empty threshold value (short) 3: Toner near-empty detection disabled	1
975	General	Job handling when printing is short paid with coin controller	ALL	1 <0-1>	M	Sets whether printing is to be paused or stopped when the prepaid balance runs out during printing. 0: Pause printing and wait for additional payment. 1: Stop printing and cancel the accepted print job.	1
1372	Counter	Heater and energizing time accumulating counter Display/0 clearing	ALL	0 <8 digits>	M	Counts up the heater control time accumulated (when power of the equipment is ON) but does not count at the Sleep Mode.	1
1378	Counter	Counter for period of time fuser unit is at ready temperature	ALL	0 <8 digits>	M	Counts up the heater control time accumulated (when the equipment is at ready status).	1
1380	Counter	Counter for period of time fuser unit is at printing temperature	ALL	0 <8 digits>	M	Counts up the heater control time accumulated (during printing).	1
1382	Counter	Counter for period of time fuser unit is at energy saving temperature/ Counter reset	ALL	0 <8 digits>	M	Counts up the heater control time accumulated (when the equipment is in the Energy Saving Mode).	1
1385	Counter	Number of output pages (Thick paper 1)	ALL	0 <8 digits>	M	Counts up when the registration sensor is ON.	1
1386	Counter	Number of output pages (Thick paper 2)	ALL	0 <8 digits>	M	Counts up when the registration sensor is ON.	1
1388	Counter	Number of output pages (OHP film)	ALL	0 <8 digits>	M	Counts up when the registration sensor is ON.	1

Setting mode (08)							
Code	Classification	Items	Function	Default <Acceptable value>	RAM	Contents	Procedure
1410	Counter	Counter for period of toner cartridge rotation time	ALL	0 <8 digits>	M	Counts up the period of rotation time of the toner cartridge.	1
1411	Counter	Counter for envelope	ALL	0 <8 digits>	M	Counts up when the registration sensor is ON.	1
1628-0	Processing	Drum life correction switching of the drum reverse rotation amount	ALL	4 <0-15>	M	Drum life correction switching of the drum reverse rotation amount	1
1628-1	Processing	Drum life correction switching of the normal drum rotation amount after the reverse rotation	ALL	9 <0-15>	M	Drum life correction switching of the normal drum rotation amount after the reverse rotation	1
1913	Processing	The function clear LED blinks	PPC	1 <0-1>	SYS	Blinks when the value is different from the present default value after copying (until auto clear or all clear.) 0: Invalid (Always off) 1: Valid	1

<<PM management setting code>>

- The following items are displayed or set by using sub-codes at PM management setting in the table below.

<Sub-codes>

0: Present number of output pages

- Means the present number of output pages.

1: Recommended number of output pages for replacement

- Means the recommended number of output pages for replacement.

3: Present driving counts

- Means the present drive counts (1 count = 2 seconds).

4: Recommended driving counts to be replaced

- Means the recommended drive counts for replacement (1 count = 2 seconds).

6: Present output pages for control

- Means the present number of output pages for controlling.

7: Present driving counts for control

- Means the present drive counts for controlling (1 count = 2 seconds).

Notes:

- Sub-code 3 is equivalent to sub-code 7.
When the value of sub-code 3 is changed, the value of sub-code 7 is also updated and vice versa.
- Sub-code 0 is equivalent to sub-code 6.
When the value of sub-code 0 is changed, the value of sub-code 6 is also updated and vice versa.
- When "0" is set at one of sub-codes 0, 3, 6 and 7, the rest of them are automatically updated to "0".

Items	PM management setting <Procedure 4> *Indicated in 8 digits	Remarks
Upper Fuser roller bushing	361-0, 1, 3, 4, 6, 7	<Default values of code 361 Sub-code 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Photoconductive drum	1150-0, 1, 3, 4, 6, 7	<Default values of code 1150 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Drum cleaning blade	1158-0, 1, 3, 4, 6, 7	<Default values of code 1158 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Drum separation finger	1172-0, 1, 3, 4, 6, 7	<Default values of code 1172 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Main charger grid	1174-0, 1, 3, 4, 6, 7	<Default values of code 1174 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Needle electrode	1182-0, 1, 3, 4, 6, 7	<Default values of code 1182 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Ozone filter	1198-0, 1, 3, 4, 6, 7	<Default values of code 1198 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Developer material	1200-0, 1, 3, 4, 6, 7	<Default values of code 1200 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Transfer charger wire	1214-0, 1, 3, 4, 6, 7	<Default values of code 1214 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Separation charger wire	1224-0, 1, 3, 4, 6, 7	<Default values of code 1224 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Fuser roller	1246-0, 1, 3, 4, 6, 7	<Default values of code 1246 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Pressure roller	1250-0, 1, 3, 4, 6, 7	<Default values of code 1250 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Fuser roller separation finger	1268-0, 1, 3, 4, 6, 7	<Default values of code 1268 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000
Feed roller (Drawer)	1298-0, 1	<Default values of code 1298 Sub-codes 0: 0/0 Sub-code 1: 80,000/80,000
Feed roller (PFU)	1300-0, 1	<Default values of code 1300 Sub-codes 0: 0/0 Sub-code 1: 80,000/80,000

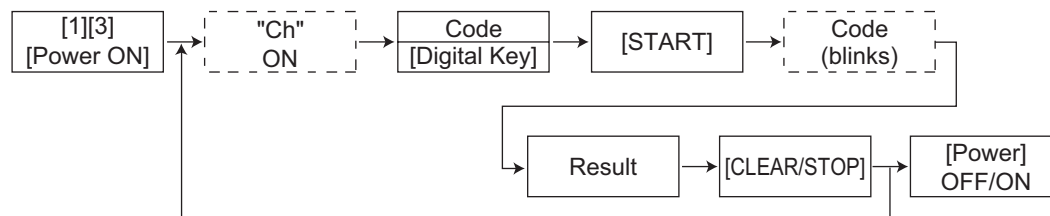
Items	PM management setting <Procedure 4> *Indicated in 8 digits	Remarks
Separation roller (Bypass unit)	1316-0, 1	<Default values of code 1316 Sub-codes 0: 0/0 Sub-code 1: 80,000/80,000
Feed roller (Bypass unit)	1324-0, 1	<Default values of code 1324 Sub-codes 0: 0/0 Sub-code 1: 80,000/80,000
Pickup roller (Bypass unit)	1332-0, 1	<Default values of code 1332 Sub-codes 0: 0/0 Sub-code 1: 80,000/80,000
Recovery blade	1336-0, 1, 3, 4, 6, 7	<Default values of code 1336 Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 77,000/90,000 Sub-code 4: 180,000/180,000

2.2.9 Test Mode (13)











The operation of the following items can be checked in the test mode (13).

Code	Item	Content
01	SRAM test	The read/write test is performed throughout the image memory. The test checks the whole SRAM. When an error is found, the address of the erroneous portion is displayed and the test is stopped.
02	DRAM test	The read/write test is performed on the DRAM. When an error is found, the address of the erroneous portion is displayed and the test is stopped.
03	Image processing RAM test	The read/write test is performed on the RAM used for the image processing.
04	CODEC test	The hardware test is performed on the CODEC block inside the SoC. The test encodes data of 10 lines using the MH coding, decodes it and compares it with the original data.
05	ADF test	Paper feeding, transporting and exiting are performed for originals. The number of the original sheets which exited is counted and displayed.
06	Button test	The buttons on the control panel are tested if they are operated properly.
07	LED test	All LEDs on the control panel are lit.
08	FROM test	The FROM is tested to see if it functions correctly. The checksum of the program data and function data stored in FROM is calculated and compared with the one reported in advance.

<Key used in operation>



<Test result>

Code	Item	Result	
		Not abnormal	Abnormal
01	SRAM test	The following display is lit on the 7-segment LED. 	The damaged memory address is displayed. The display can be shifted to 3 digits by the reproduction ratio button.
02	DRAM test	The following display is lit on the 7-segment LED. 	The damaged memory address is displayed. The display can be shifted to 3 digits by the reproduction ratio button.
03	Image processing RAM test	The following display is lit on the 7-segment LED. 	The following display is lit on the 7-segment LED. 
04	CODEC test	The following display is lit on the 7-segment LED. 	The following display is lit on the 7-segment LED. 
05	ADF test	The number of exiting sheets is displayed on the 7-segment LED.	-
06	Button test	When all buttons are pressed and the [CLEAR] button is pressed, the following display is lit on the 7-segment LED. 	When all buttons are pressed and the [CLEAR] button is pressed, if it is not detected that all buttons are pressed, the following display is lit on the 7-segment LED. 
07	LED test	All LEDs are lit.	The abnormal LED is not lit.
08	FROM test	The following display is lit on the 7-segment LED. 	The following display is lit on the 7-segment LED. 

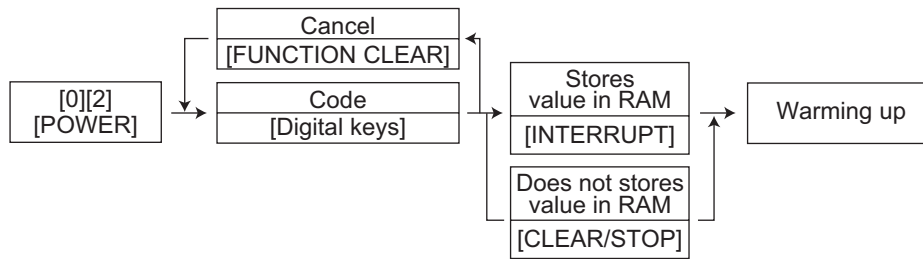
Notes:

1. Before the ADF test (05) is started, make sure that the equipment has no abnormality and paper is set on the original tray.
2. When the ADF test (05) is ready to start, "0" is displayed on the 7-segment LED and the [Start] lamp is lit. Pressing the [START] button starts the test.
3. In the button test (06), the [ENERGY SAVER] and [CLEAR] buttons are not included. (When the [CLEAR] button is pressed during the button test (06), the display returns to the test mode in which the code can be entered.)
4. In the LED test (07), the [ENERGY SAVER] lamp is not included.

2.2.10 Country/Region code (02)

It is not necessary to set the Country/Region code normally. When the SRAM board is replaced, this setting is required following the procedure below.

<Procedure>



<Code>

Model	Code (Default)	
	e-STUDIO165/205	e-STUDIO167/207/237
NAD	1	1
AUD	-	61
ASU/SYD/SAD	-	65
CND	86	86
ASD	-	852
TWD	886	886
ARD	-	55
KRD	82	65
MJD	44	44

3. ADJUSTMENT

3.1 Adjustment of Auto-Toner Sensor

When the developer material is replaced, adjust the auto-toner sensor in the following procedure.

<Procedure> (Adjustment Mode (05-200))

- (1) Install the process unit into the equipment.

Note:

Do not install the toner cartridge.

- (2) While pressing [0] and [5] simultaneously, turn the power ON.
The following message is displayed on a 7-segment LED.

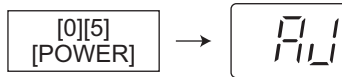


Fig. 3-1

- (3) Key in code [200] and press the [START] button.
The display on the 7-segment LED changes as follows and the “density LEDs” lights from the left in order.

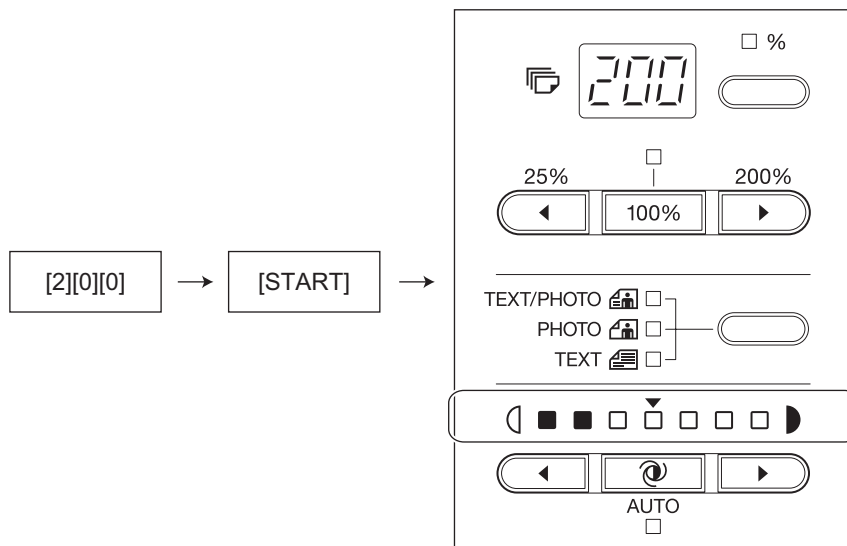


Fig. 3-2

- (4) After about 2 minutes, all the “density LEDs” light and a value on the 7-segment LED automatically starts changing.

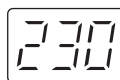


Fig. 3-3

Note:

The output voltage of the auto-toner sensor (2.30 V in the above case).
The drum, developer unit, etc. are in operation.

- (5) After a short time, the value on the 7-segment LED becomes stable and all the “density LEDs” are turned off.
- (6) Check if the value on the 7-segment LED is within the range of 232 to 248 (i.e. the output voltage range of the auto-toner sensor is 2.32 V to 2.48 V.).
- (7) If the value is not within the range of 232 to 248, press the reproduction ratio buttons ([25%] / [200%]) to adjust the value manually.
- (8) Press the [INTERRUPT] button.
The drum, developer unit, etc. are stopped and the following is displayed on the 7-segment LED.

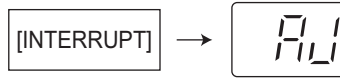


Fig. 3-4

- (9) Turn the power OFF.
- (10) Install the toner cartridge.

3.2 Image Dimensional Adjustment

3.2.1 General description

There are several adjustment items in the image dimensional adjustment, as listed below. When adjusting these items, the following adjustment order should strictly be observed.

Item to be adjusted		Code in mode 05	
1	Paper alignment at the registration roller	450, 451, 458, 460, 461, 462, 463, 464	
2	Printer related adjustment	(a) Reproduction ratio of primary scanning direction (Fine adjustment of polygonal motor rotation speed)	401
		(b) Primary scanning data laser writing start position	411
		(c) Reproduction ratio of secondary scanning direction (Fine adjustment of main motor rotation speed)	421
		(d) Secondary scanning data laser writing start position	441, 440, 442
3	Scanner related adjustment	(a) Reproduction ratio of primary scanning direction	405
		(b) Image location of primary scanning direction	306
		(c) Reproduction ratio of secondary scanning direction	340
		(d) Image location of secondary scanning direction	305
		(e) Top margin	430
		(f) Right margin	432
		(g) Bottom margin	433

[Procedure to key in adjustment values]

In accordance with the procedure described below, make adjustment of each adjustment item so that the measured values obtained from test copies satisfy the specification.

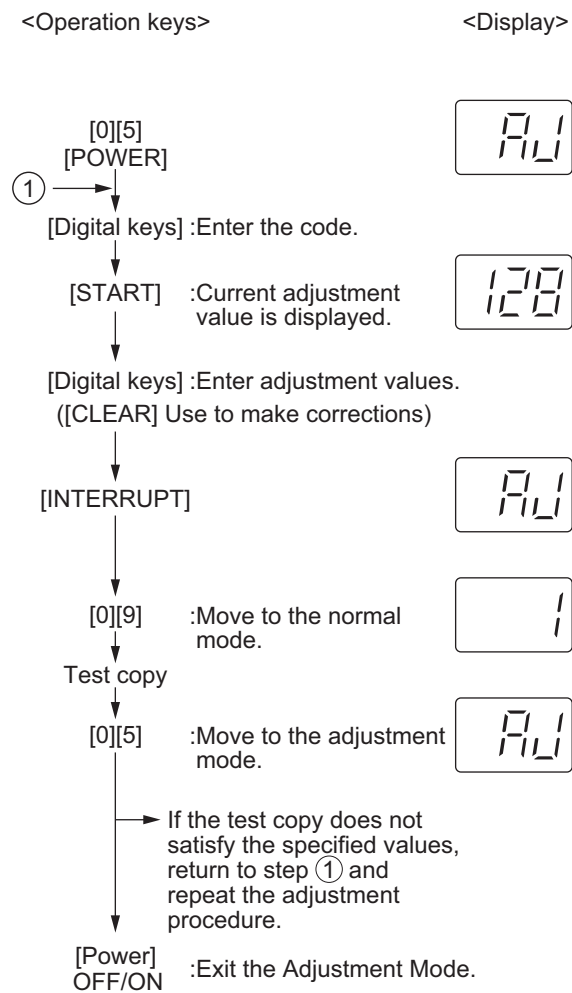


Fig. 3-5

3.2.2 Paper alignment at the registration roller

The aligning amount is adjusted by using the following codes in Adjustment Mode (05).

Paper type	Weight	Drawer	PFU	Bypass feed
Plain paper	64-80 g/m ² 17-20 lb.	450 (*1)	451 (*1)	458 (*1)
Thick paper 1	81-105g/m ² 21-28 lb.	-	-	460 (*1)
Thick paper 2	106-163g/m ² 29-43 lb.	-	-	461 (*1)
Thick paper 3	164-209g/m ² 44-55 lb.	-	-	462 (*2)
OHP	-	-	-	463 (*3)
Envelope	-	-	-	464 (*4)

Sub-code

(*1) 0: Long size 1: Middle size 2: Short size

(*2) 0: Long size 1: Middle size 2: Short size 3: Post card

(*3) 0: Long size of OHP film 1: Middle size of OHP film 2: Short size of OHP film

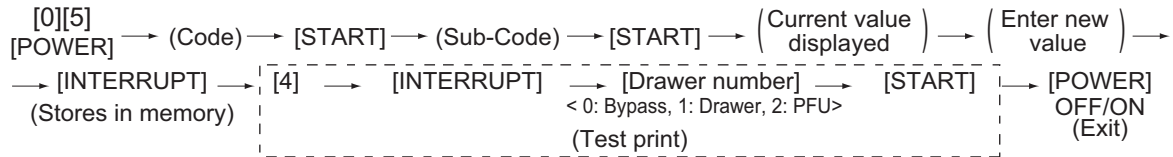
(*4) 0: Long size of Envelope 1: Middle size of Envelope 2: Short size of Envelope

Notes:

1. Long size: 330 mm or longer (13.0 inches or longer)
Middle size: 220-239 mm (8.7-12.9 inches)
Short size: 219 mm or shorter (8.6 inches or shorter)
2. The adjustment of "Post card" is for Japan only.

<Procedure>

- (1) Perform the test print according to the following procedure.



- (2) Check if any transfer void is occurring. If there is a transfer problem, try the values in descending order as “31” → “30” → “29”... until the transfer void disappears. At the same time, confirm if any paper jam occurs. Also, when the aligning amount has been increased, this may increase the scraping noise caused by the paper and the Mylar sheet as it is transported by the registration roller. If this scraping noise is annoying, try to decrease the value.

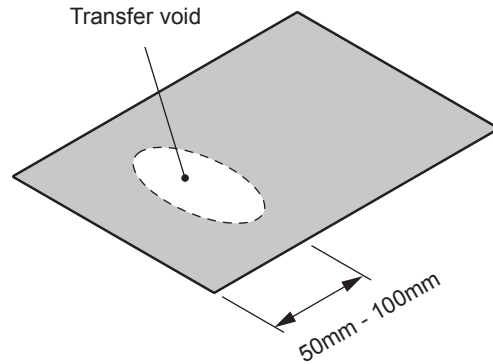


Fig. 3-6

- (3) Perform the same procedure for all paper sources.

Note:

When paper thinner than specified is used, paper jams may occur frequently at the registration section. In this case, it is advisable to change (or reduce) the aligning amount. However, if the aligning amount is reduced too much, this may cause the shift of leading edge position. So, when adjusting the aligning amount, try to choose the appropriate amount while confirming the leading edge position is not shifted.

* As a tentative countermeasure, the service life of the feed roller can be extended by increasing the aligning amount.

3.2.3 Printer related adjustment

[A] Reproduction ratio of primary scanning direction (Fine adjustment of polygonal motor rotation speed (Printer))

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Press [1] → [INTERRUPT] → [Drawer number] (Select from 0: bypass, 1: drawer or 2: PFU.) → [START]. (A grid pattern with 10 mm squares is printed out. Use A3/LD from standard drawer of the equipment.)
- (3) Check the grid pattern on the test chart printed out and measure the distance A from the 1st line to the 21st line of the grid pattern.
- (4) Check if the distance A is within 200 ± 0.5 mm.
- (5) If not, use the following procedure to change values and measure the distance A again.

(Adjustment Mode) → (Key in code [401]) → [START]
→ (Key in a value (acceptable values: 0 to 255))
→ [INTERRUPT] (Stored in memory) → "AJ" is displayed
→ Press [1] → [INTERRUPT] → Press [Drawer number] → [START]
→ (A grid pattern is printed out.)
*The larger the adjustment value is, the longer the distance A becomes (approx. 0.125 mm/step).

[B] Primary scanning data laser writing start position (Printer)

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Press [1] → [INTERRUPT] → [Drawer number] (Select from 0: bypass, 1: drawer or 2: PFU.) → [START]. (A grid pattern with 10 mm squares is printed out. Use A3/LD from standard drawer of the equipment.)
- (3) Check the grid pattern on the test chart printed out and measure the distance B from the left edge of the paper to the 6th line of the grid pattern.
- (4) Check if the distance B is within 52 ± 0.5 mm.
- (5) If not, use the following procedure to change values and measure the distance B again.

(Adjustment Mode) → (Key in the code [411]) → [START]
→ (Key in a value (acceptable values: 0 to 255))
→ [INTERRUPT] (Stored in memory) → "AJ" is displayed
→ Press [1] → [INTERRUPT] → Press [Drawer number] → [START]
→ (A grid pattern is printed out.)
*The larger the adjustment value is, the longer the distance B becomes (approx. 0.05 mm/step).

- (6) After the adjustment for the code 411 is completed, apply the same adjustment value for the code 410.

(Adjustment Mode) → (Key in the code [410]) → [START]
→ (Key in the same value in the step 5 above)
→ Press [INTERRUPT] (Stored in memory).

Note:

Make sure the first line of the grid pattern is printed out since the line is occasionally vanished.

[C] Reproduction ratio of secondary scanning direction (Fine adjustment of main motor rotation speed (Copier/Printer))

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment mode)
- (2) Press [1] → [INTERRUPT] → [Drawer number] (Select from 0: bypass, 1: drawer or 2: PFU.) → [START]. (A grid pattern with 10 mm squares is printed out. Use A3/LD from standard drawer of the equipment.)
- (3) Check the grid pattern on the test chart printed out and measure the distance C from the 10th line at the leading edge of the paper to the 30th line of the grid pattern.
*Normally, the 1st line of the grid pattern is not printed.
- (4) Check if the distance C is within 200 ± 0.5 mm.
- (5) If not, use the following procedure to change values and measure the distance C again.

(Adjustment Mode) → (Key in code [421]) → [START]

→ (Key in a value (acceptable values: 0 to 255))

→ [INTERRUPT] (Stored in memory) → "AJ" is displayed

→ Press [1] → [INTERRUPT] → Press [Drawer number] → [START]

→ (A grid pattern is printed out.)

*The larger the adjustment value is, the longer the distance C becomes (approx. 0.125 mm/step).

[D] Secondary scanning data laser writing start position

This adjustment has to be performed for each paper source. (If there is no paper source, skip this step.)
The following table shows the order of the paper source to be adjusted, code, paper size and acceptable values.

Order for adjustment	Paper source	Code	Paper size	Acceptable value	Remarks
1	Drawer	440	A3/LD	0 to 40	
2	PFU	441	A4/LT	0 to 40	
3	Bypass feed	442	A4/LT	0 to 15	

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Press [1] → [INTERRUPT] → [Drawer number] (Select from 0: bypass, 1: drawer or 2: PFU.) → [START]. (A grid pattern with 10 mm squares is printed out.)
- (3) Check the grid pattern on the test chart printed out and measure the distance D from the leading edge of the paper to the 6th line of the grid pattern.
*Normally, the 1st line of the grid pattern is not printed.
- (4) Check if the distance D is within 50 ± 0.5 mm.
- (5) If not, use the following procedure to change values and measure the distance D again.

(Adjustment Mode) → (Key in the code shown above) → [START]
→ (Key in an acceptable value shown above)
→ [INTERRUPT] (Stored in memory) → "AJ" is displayed
→ Press [1] → [INTERRUPT] → Press [Drawer number] → [START]
→ (A grid pattern is printed out.)

*The larger the adjustment value is, the longer the distance D becomes (approx. 0.4 mm/step).

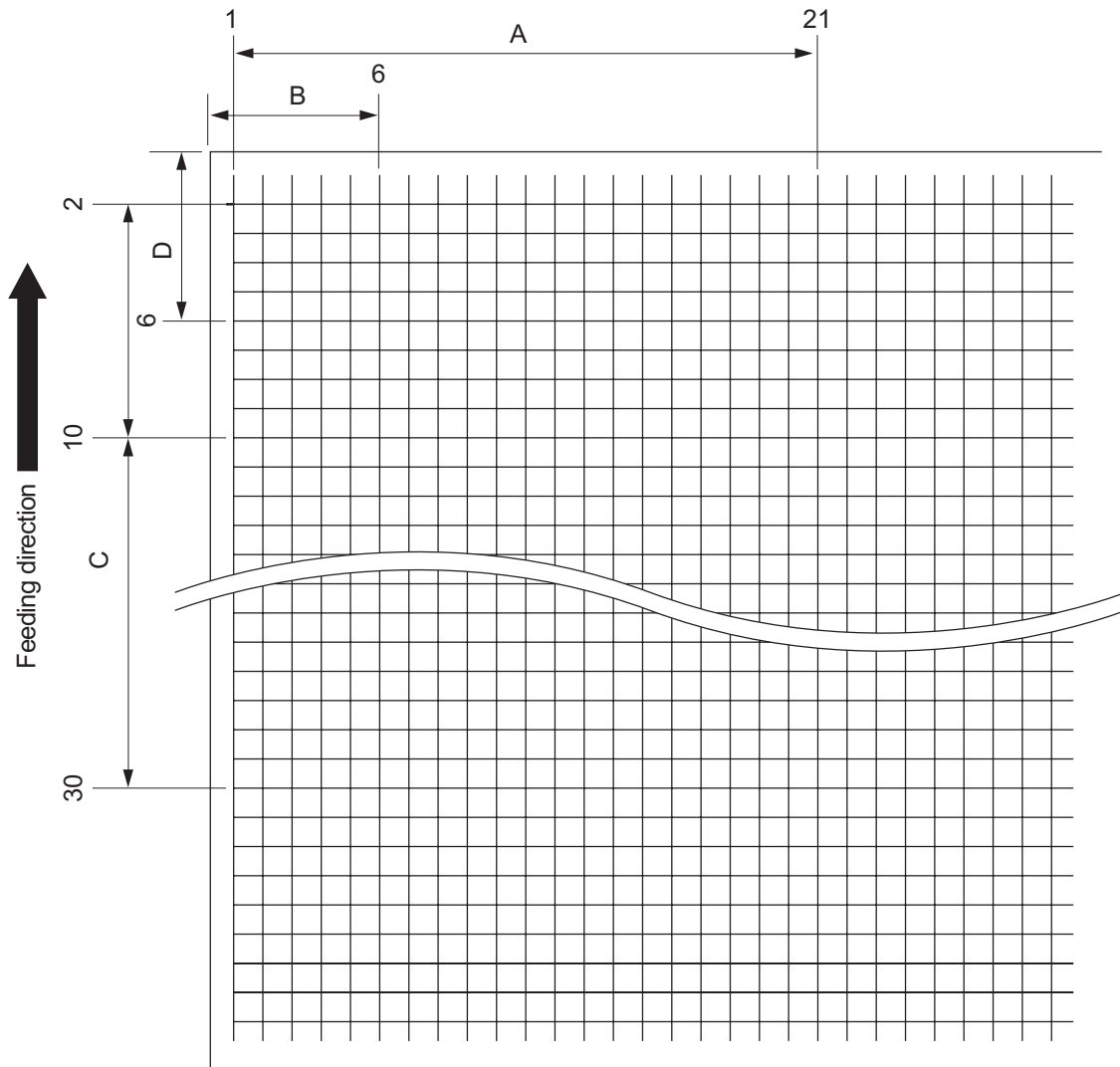


Fig. 3-7 Grid pattern

<Procedure>

[0] [5] [Power ON] → [1] → [INTERRUPT] → [Drawer number] → [START]

- A: 05-401 (Drawer, A3/LD) → 200±0.5 mm (0.125 mm/step)
- B: 05-411 (Drawer, A3/LD) → 52±0.5 mm (0.05 mm/step)
→ Key in the same value for 05-410.
- C: 05-421 (Drawer, A3/LD) → 200±0.5 mm (0.125 mm/step)
- D: 05-440 (Drawer, A3/LD), 441 (PFU, A4/LT), 442 (Bypass feed, A4/LT)
→ 50±0.5 mm(0.4 mm/step)

3.2.4 Scanner related adjustment

[A] Reproduction ratio adjustment of the primary scanning direction

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON → (Adjustment Mode)
- (2) Place a ruler on the original glass (along the direction from the rear to the front of the equipment).
- (3) Press [0] and [9] simultaneously to enter the normal mode.
- (4) Make a copy at the mode of A3 (LD), 100% and standard drawer of the equipment.
- (5) Press [0] and [5] simultaneously to enter the adjustment mode.
- (6) Measure the distance A from 10 mm to 270 mm of the copied image of the ruler.
- (7) Check if the distance A is within the range of 260 ± 0.5 mm.
- (8) If not, use the following procedure to change values and repeat the steps (3) to (7) above.

(Adjustment Mode) → (Key in the code [405]) → [START]

→ (Key in a value (acceptable values: 0 to 255))

→ Press the [INTERRUPT] button (stored in memory). → ("AJ" is displayed.)

*The larger the adjustment value is, the higher the reproduction ratio and the longer the distance A become (approx. 0.125 mm/step).

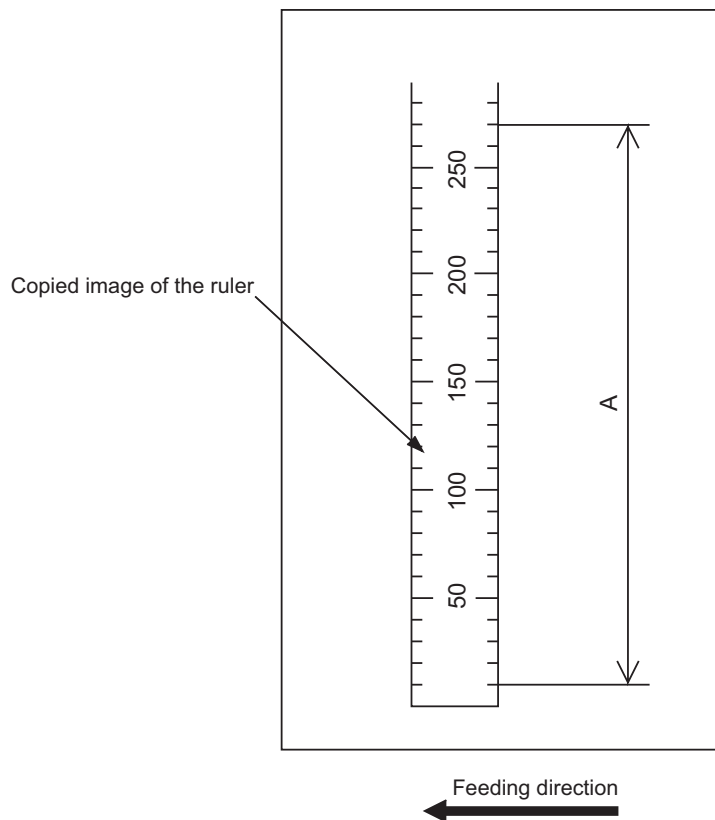


Fig. 3-8

[B] Image position adjustment of the primary scanning direction

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Place a ruler on the original glass with its leading edge pushed against the rear side and its side along the original scale on the left.
- (3) Press [0] and [9] simultaneously to enter the normal mode.
- (4) Make a copy at the mode of A3 (LD), 100% and standard drawer of the equipment.
- (5) Press [0] and [5] simultaneously to enter the adjustment mode.
- (6) Measure the distance B from the left edge of the paper to 10 mm of the copied image of the ruler.
- (7) Check if the distance B is within the range of 10 ± 0.5 mm.
- (8) If not, use the following procedure to change values and repeat the steps (3) to (7) above.

(Adjustment Mode) → (Key in the code [306]) → [START]

→ (Key in a value (acceptable values: 121 to 136))

→ Press the [INTERRUPT] button (stored in memory: The density LED blinks.) → ("AJ" is displayed.)

*The smaller the adjustment value is, the more the image is shifted to the left and the distance B become narrower (0.169 mm/step).

Be sure not to perform any operations while the density LED is blinking.

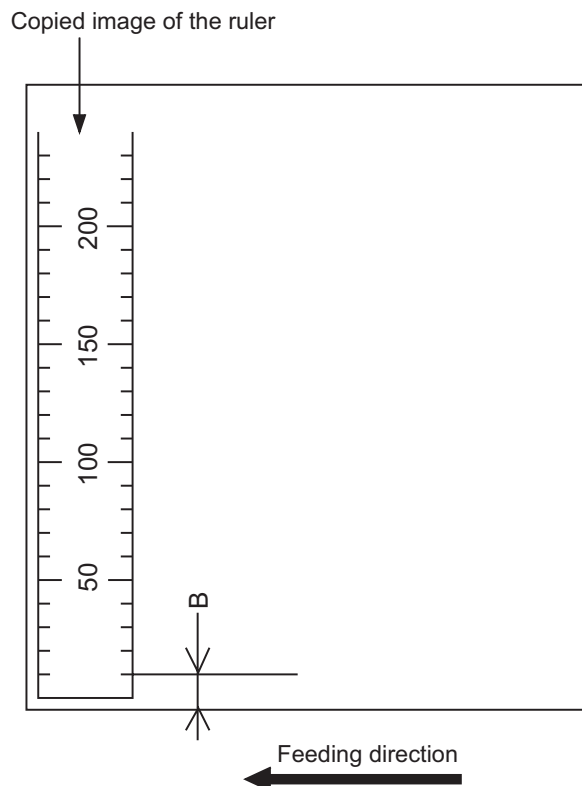


Fig. 3-9

[C] Reproduction ratio adjustment of the secondary scanning direction

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Place a ruler on the original glass with its leading edge pushed against the original scale on the left.
- (3) Press [0] and [9] simultaneously to enter the normal mode.
- (4) Make a copy at the mode of A3 (LD), 100% and standard drawer of the equipment.
- (5) Press [0] and [5] simultaneously to enter the adjustment mode.
- (6) Measure the distance C from 200 mm to 400 mm of the copied image of the ruler.
- (7) Check if the distance C is within the range of 200 ± 0.5 mm.
- (8) If not, use the following procedure to change values and repeat the steps (3) to (7) above.

(Adjustment Mode) → (Key in the code [340]) → [START]

→ (Key in a value (acceptable values: 76 to 181))

→ Press the [INTERRUPT] button (stored in memory: The density LED blinks.) → ("AJ" is displayed.)

*The smaller the adjustment value is, the lower the reproduction ratio becomes (0.189 mm/step).
Be sure not to perform any operations while the density LED is blinking.

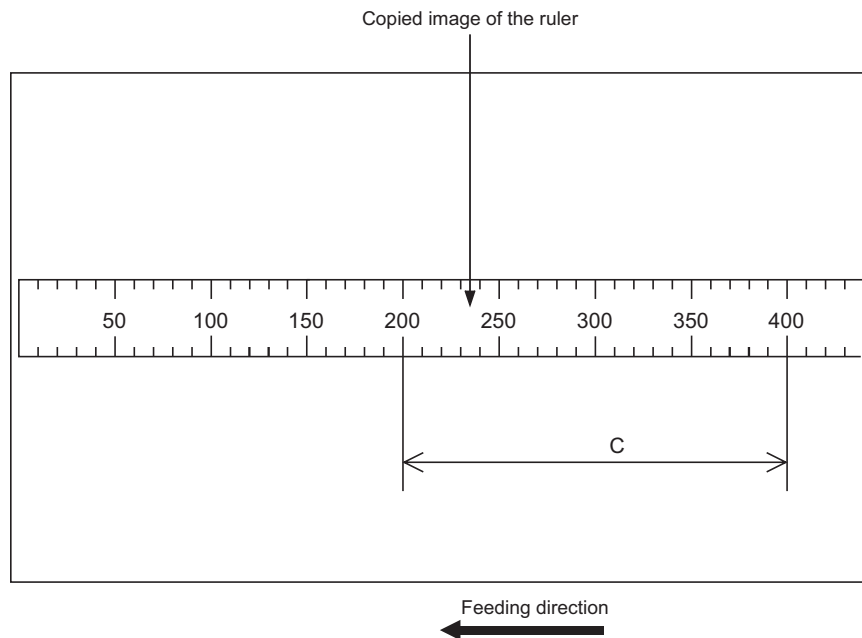


Fig. 3-10

[D] Image position adjustment of the secondary scanning direction

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Place a ruler on the original glass with its leading edge pushed against the original scale on the left.
- (3) Press [0] and [9] simultaneously to enter the normal mode.
- (4) Make a copy at the mode of A3 (LD), 100% and standard drawer of the equipment.
- (5) Press [0] and [5] simultaneously to enter the adjustment mode.
- (6) Measure the distance D from the leading edge of the paper to 10 mm of the copied image of the ruler.
- (7) Check if the distance D is within the range of 10 ± 0.5 mm.
- (8) If not, use the following procedure to change values and repeat the steps (3) to (7) above.

(Adjustment Mode) → (Key in the code [305]) → [START]

→ (Key in a value (acceptable values: 51 to 206))

→ Press the [INTERRUPT] button (stored in memory: The density LED blinks.) → ("AJ" is displayed.)

*The larger the adjustment value is, the more the image is shifted to the trailing edge (0.064 mm/step).

Be sure not to perform any operations while the density LED is blinking.

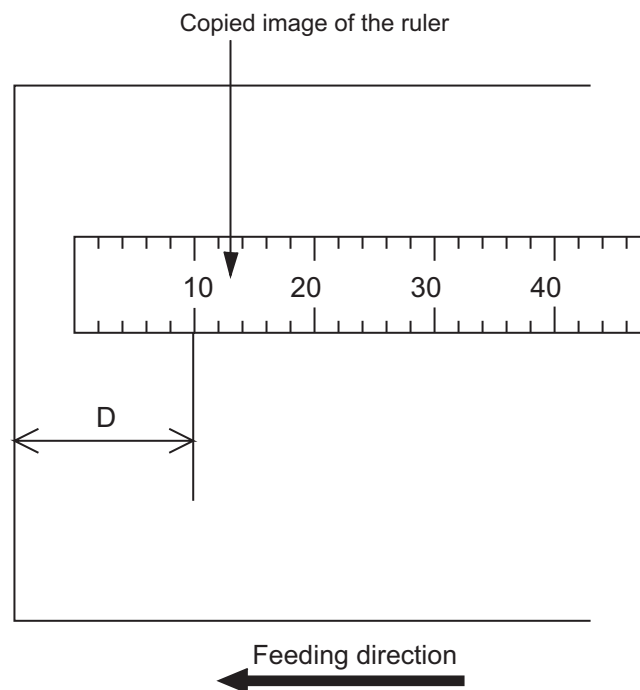


Fig. 3-11

[E] Top margin

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Press [4] → [INTERRUPT] → [PAPER FEED] (Select from 0: bypass, 1: drawer or 2: PFU.) → [START] (A solid black pattern (whole area) is printed out. Print out 2 sheets in A3/LD size.).
- (3) Place the paper printed out in step (2) to cover the whole area of the original glass.
- (4) Press [0] and [9] simultaneously to enter the normal mode.
- (5) Make a copy at the mode of A3/LD, 100%, Text/Photo and standard drawer of the equipment.
- (6) Press [0] and [5] simultaneously to enter the adjustment mode.
- (7) Measure the blank area E at the leading edge of the copied image.
- (8) Check if the blank area E is within the range of 3 ± 0.5 mm.
- (9) If not, use the following procedure to change values and repeat the steps (4) to (8) above.

(Adjustment Mode) → (Key in the code [430]) → [START]

→ (Key in a value (acceptable values: 0 to 255))

→ Press the [INTERRUPT] button (stored in memory). → ("AJ" is displayed.)

*The larger the adjustment value is, the wider the blank area becomes (approx. 0.04 mm/step).

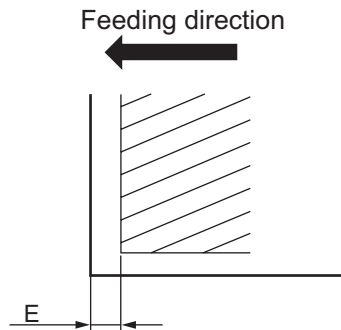


Fig. 3-12

[F] Right margin

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Press [4] → [INTERRUPT] → [PAPER FEED] (Select from 0: bypass, 1: drawer or 2: PFU.) → [START] (A solid black pattern (whole area) is printed out. Print out 2 sheets in A3/LD size.).
- (3) Place the paper printed out in step (2) to cover the whole area of the original glass.
- (4) Press [0] and [9] simultaneously to enter the normal mode.
- (5) Make a copy at the mode of A3/LD, 100%, Text/Photo and standard drawer of the equipment.
- (6) Press [0] and [5] simultaneously to enter the adjustment mode.
- (7) Measure the blank area F at the right side of the copied image.
- (8) Check if the blank area F is within the range of 2 ± 1.0 mm.
- (9) If not, use the following procedure to change values and repeat the steps (4) to (8) above.

(Adjustment Mode) → (Key in the code [432]) → [START]

→ (Key in a value (acceptable values: 0 to 255))

→ Press the [INTERRUPT] button (stored in memory). → ("AJ" is displayed.)

*The larger the adjustment value is, the wider the blank area at the right side becomes (approx. 0.04 mm/step).

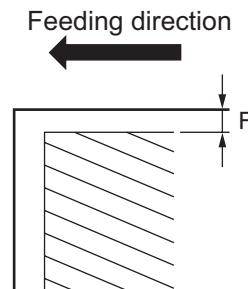


Fig. 3-13

[G] Bottom margin

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON. → (Adjustment Mode)
- (2) Press [4] → [INTERRUPT] → [PAPER FEED] (Select from 0: bypass, 1: drawer or 2: PFU.) → [START] (A solid black pattern (whole area) is printed out. Print out 2 sheets in A3/LD size.).
- (3) Place the paper printed out in step (2) to cover the whole area of the original glass.
- (4) Press [0] and [9] simultaneously to enter the normal mode.
- (5) Make a copy at the mode of A3/LD, 100%, Text/Photo and standard drawer of the equipment.
- (6) Press [0] and [5] simultaneously to enter the adjustment mode.
- (7) Measure the blank area G at the trailing edge of the copied image.
- (8) Check if the blank area G is within the range of 2 ± 1.0 mm.
- (9) If not, use the following procedure to change values and repeat the steps (4) to (8) above.

(Adjustment Mode) → (Key in the code [433]) → [START]

→ (Key in a value (acceptable values: 0 to 255))

→ Press the [INTERRUPT] button (stored in memory). → ("AJ" is displayed.)

*The larger the adjustment value is, the wider the blank area at the trailing edge becomes (approx. 0.04 mm/step).

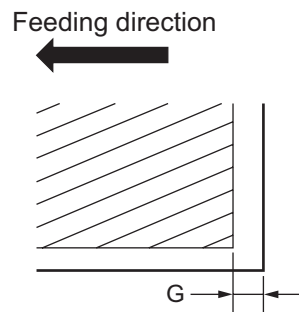


Fig. 3-14

3.3 Image Quality Adjustment (Copying Function)

3.3.1 Density adjustment

The center density and the density variation controlled by density adjustment keys can be adjusted as follows.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
503	501	504	Manual density mode center value	The larger the value is, the darker the image becomes. Acceptable values: 0 to 255
505	506	507	Manual density mode light step value	The larger the value is, the lighter the light side becomes. Acceptable values: 0 to 255
508	509	510	Manual density mode dark step value	The larger the value is, the darker the dark side becomes. Acceptable values: 0 to 255
514	512	515	Automatic density mode	The larger the value is, the darker the image becomes. Acceptable values: 0 to 255

Make a test copy and compare the image obtained with the current settings; if necessary, make adjustment using the following procedure.

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON.
- (2) Key in a code and press the [START] button.
- (3) Key in an adjustment value.
(To correct the keyed-in value, press the [CLEAR] button.)
- (4) Press the [INTERRUPT] button to store the value. → The equipment goes back to the ready state.
- (5) Let the equipment restarted and perform copying job.
- (6) If the desired image density has not been attained, repeat step (2) to (5).

3.3.2 Gamma slope adjustment

Gamma slope is adjustable with the following codes.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
593	594	595	Gamma slope adjustment	1 to 9: Select the gamma slope angle. (The larger the value is, the larger the angle becomes.)

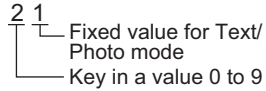
<Procedure>

Procedure is same as that of  P.3-18 "3.3.1 Density adjustment".

3.3.3 Sharpness adjustment

If you want to make copy images look softer or sharper, perform the following adjustment.

< Adjustment Mode (05) >

Original mode				Item to be adjusted	Remarks
Text/ Photo	Photo	Text	Photo (Dither)		
620	621	622	623	Sharpness adjustment	<p>Key in the following values depending on the original mode.</p> <p>One's place Selecting a filter shape Ten's place 0: Use Default value 1 to 9: Change intensity (The larger the value is, the sharper the image becomes.)</p> <ul style="list-style-type: none"> Example of value entry in case the mode is "Text/Photo".  <p>Note: When the value "0" is keyed in at the ten's digit, the value is not displayed on LCD screen.</p>

Make a test copy and compare the image obtained with the current settings; if necessary, make adjustment using the following procedure.

<Procedure>

Procedure is same as that of  P.3-18 "3.3.1 Density adjustment".

3.3.4 Setting range correction

The values of the background peak / text peak in the range correction can be switched to “varied” or “fixed” in the following codes.

If they are fixed, the range correction is performed with standard values.

The values of the background peak affect the reproduction of the background density and the values of the text peak affect that of the text density.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks															
Text/Photo	Photo	Text																	
570	571	572	Range correction for original manually set on the original glass	The following are the default values set for each original mode. Text/Photo: 12, Photo: 12, Text: 22 Each digit stands for: One's place: Automatic density mode Ten's place: Manual density mode The setting conditions possible are as follows: <table style="margin-left: 40px;"> <tr> <td></td> <td>Background peak</td> <td>Text peak</td> </tr> <tr> <td>1:</td> <td>fixed</td> <td>fixed</td> </tr> <tr> <td>2:</td> <td>varied</td> <td>fixed</td> </tr> <tr> <td>3:</td> <td>fixed</td> <td>varied</td> </tr> <tr> <td>4:</td> <td>varied</td> <td>varied</td> </tr> </table>		Background peak	Text peak	1:	fixed	fixed	2:	varied	fixed	3:	fixed	varied	4:	varied	varied
	Background peak	Text peak																	
1:	fixed	fixed																	
2:	varied	fixed																	
3:	fixed	varied																	
4:	varied	varied																	
693	694	695	Range correction for original set on the ADF																

Make a test copy and compare the image obtained with the current settings; if necessary, make adjustment using the following procedure.

<Procedure>

Procedure is same as that of  P.3-18 "3.3.1 Density adjustment".

3.3.5 Setting range correction (Adjustment of background peak)

The levels of the background peak for the range correction can be set at the following codes.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
532	533	534	Background peak for range correction	When the value increases, the background (low density area) of the image is not output. Acceptable values: 0 to 255 (Default: Text/Photo: 32, Photo: 22, Text: 46)

Make a test copy and compare the image obtained with the current settings; if necessary, make adjustment using the following procedure.

<Procedure>

Procedure is same as that of  P.3-18 "3.3.1 Density adjustment".

3.3.6 Setting range correction (Adjustment of text peak)

The levels of the text peak for the range correction can be set at the following codes.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
535	536	537	Text peak for range correction	When the value is increased, text (high image density part) becomes lighter. Acceptable values: 0 to 255 (Default: text/photo: 246, photo: 254, text: 236)

* The image changes slightly in text mode because it is treated as a simple binary format image.

<Procedure>

Procedure is same as that of  P.3-18 "3.3.1 Density adjustment".

3.3.7 Adjustment of smudged/faint text

The smudged/faint text can be set at the following codes.

< Adjustment Mode (05) >

Original mode		Item to be adjusted	Remarks
Text/Photo			
648		Adjustment of smudged/faint spotted text	When the value increases, the faint text is improved. When the value decreases, the smudged text is improved. Acceptable values: 0 to 4 (Default: 3) Note: Remember the image specifications and life span of the replacing parts may not meet the standard when the setting value is changed from the default value.

Make a test copy and compare the image obtained with the current settings; if necessary, make adjustment using the following procedure.

<Procedure>

Procedure is same as that of  P.3-18 "3.3.1 Density adjustment".

3.3.8 Adjustment of image density

The image density level can be set at the following codes.

< Adjustment Mode (05) >

Code	Item to be adjusted	Remarks
667-0 to 4	Adjustment of image density	When the value is decreased, text becomes lighter. Acceptable values: 0 to 63 Notes: <ol style="list-style-type: none">1. Set not to reverse the large and small number of the setting value corresponding to the sub code. Ex.) When the image density level for 667-0, 667-1, 667-2, 667-3, and 667-4 is assumed to be "A", "B", "C", "D", and "E" respectively, they should have the following correlation: $A \leq B \leq C \leq D \leq E$2. Remember that the image specifications and life span of the replacing parts may not meet the standard when the setting value is changed from the default value.

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON.
- (2) Key in the code "667" and press the [START] button.
- (3) Key in the sub code (0, 1, 2, 3 or 4), and press the [START] button.
- (4) Key in an adjustment value.
(To correct the keyed-in value, press the [CLEAR] button.)
- (5) Press the [INTERRUPT] button to store the value in memory. The equipment goes back to the ready state.
- (6) For resetting the value, repeat step (2) to (5).
- (7) Turn the power OFF and then back ON to perform printing job.
- (8) If the desired image density has not been attained, repeat step (2) to (7).

3.4 Image Quality Adjustment (Printing Function)

3.4.1 Adjustment of smudged/faint text

The smudged/faint text can be set at the following codes.

< Adjustment Mode (05) >

Language		Remarks
PS	PCL	
654	655	When the value increases, the smudged text is improved. When the value decreases, the faint text is improved. Acceptable values: 0 to 9 (Default: 5)

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON.
- (2) Key in a code and press the [START] button.
- (3) Key in an adjustment value.
(To correct the keyed-in value, press the [CLEAR] button.)
- (4) Press the [INTERRUPT] button to store the value in memory. The equipment goes back to the ready state.
- (5) Turn the power OFF and then back ON to perform printing job.
- (6) If the desired text density has not been attained, repeat step (2) to (5).

3.4.2 Adjustment of image density

The image density level is adjustable both at standard and toner saving modes.

< Adjustment Mode (05) >

Toner mode	Item to be adjusted	Remarks
GDI		
672-0 to 4	Adjustment of image density	<p>When the value is decreased, text becomes lighter. Acceptable values: 0 to 63</p> <p>Notes:</p> <ol style="list-style-type: none">1. Set not to reverse the large and small number of the setting value corresponding to the sub code. Ex.) When the image density level for 672-0, 672-1, 672-2, 672-3, and 672-4 is assumed to be "A", "B", "C", "D", and "E" respectively, they should have the following correlation: $A \leq B \leq C \leq D \leq E$2. Remember that the image specifications and life span of the replacing parts may not meet the standard when the setting value is changed from the default value.

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON.
- (2) Key in a code and press the [START] button.
- (3) Key in the sub code (0, 1, 2, 3 or 4), and press the [START] button.
- (4) Key in an adjustment value.
(To correct the keyed-in value, press the [CLEAR] button.)
- (5) Press the [INTERRUPT] button to store the value in memory. The equipment goes back to the ready state.
- (6) For resetting the value, repeat step (2) to (5).
- (7) Turn the power OFF and then back ON to perform printing job.
- (8) If the desired image density has not been attained, repeat step (2) to (7).

3.5 Image Quality Adjustment (Scanning Function)

3.5.1 Density adjustment

Adjusts the center density and the variation of density adjustment button.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
845	847	846	Manual density mode center value	The larger the value is, the darker the image becomes. Acceptable values: 0 to 255
850	852	851	Manual density mode light step value	The larger the value is, the lighter the light side becomes. Acceptable values: 0 to 255
855	857	856	Manual density mode dark step value	The larger the value is, the darker the dark side becomes. Acceptable values: 0 to 255
860	862	861	Automatic density mode	The larger the value is, the darker the image becomes. Acceptable values: 0 to 255

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON.
- (2) Key in a code and press the [START] button.
- (3) Key in an adjustment value.
(To correct the keyed-in value, press the [CLEAR] button.)
- (4) Press the [INTERRUPT] button to store the value. The equipment goes back to the ready state.
- (5) Turn the power OFF and then back ON to perform scanning job.
- (6) If the desired image density has not been attained, repeat step (2) to (5).

3.5.2 Sharpness adjustment

If you want to make scan images look softer or sharper, perform the following adjustment.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
865-0	867-0	866-0	Reproduction ratio: 25% to 40%	Key in the following values depending on the original mode. One's place Selecting a filter shape Ten's place 0: Use Default value 1 to 9: Change intensity <ul style="list-style-type: none"> The larger the value is, the sharper the image becomes.) Example of value entry in case the mode is "Text/Photo". <div style="margin-left: 20px;"> $\begin{array}{c} 2 \quad 1 \\ \quad \\ \text{Fixed value for Text/} \\ \text{Photo mode} \\ \text{Key in a value 0 to 9} \end{array}$ </div> <p>Note: When the value "0" is keyed in at the ten's digit, the value is not displayed on LCD screen.</p>
865-1	867-1	866-1	Reproduction ratio: 41% to 80%	
865-2	867-2	866-2	Reproduction ratio: 81% to 400%	

<Procedure>

- (1) While pressing [0] and [5] simultaneously, turn the power ON.
- (2) Key in a code and press the [START] button.
- (3) Key in the sub code (0,1 or 2), and press the [START] button.
- (4) Key in an adjustment value.
(To correct the keyed-in value, press the [CLEAR] button.)
- (5) Press the [INTERRUPT] button to store the value in memory. The equipment goes back to the ready state.
- (6) For resetting the value, repeat step (2) to (5).
- (7) Turn the power OFF and then back ON to perform scanning job.
- (8) If the desired image density has not been attained, repeat step (2) to (7).

3.5.3 Setting range correction

The values of the background peak / text peak in the range correction can be switched to “varied” or “fixed” in the following codes.

If they are fixed, the range correction is performed with standard values.

The values of the background peak affect the reproduction of the background density and the values of the text peak affect that of the text density.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks										
Text/Photo	Photo	Text												
825	827	826	Range correction for original manually set on the original glass	The following are the default values set for each original mode. Text/Photo: 12, Photo: 12, Text: 12 Each digit stands for: One's place: Automatic density mode Ten's place: Manual density mode The setting conditions possible are as follows: <table style="margin-left: 40px;"> <tr> <td>Background peak</td> <td>Text peak</td> </tr> <tr> <td>1: fixed</td> <td>fixed</td> </tr> <tr> <td>2: varied</td> <td>fixed</td> </tr> <tr> <td>3: fixed</td> <td>varied</td> </tr> <tr> <td>4: varied</td> <td>varied</td> </tr> </table>	Background peak	Text peak	1: fixed	fixed	2: varied	fixed	3: fixed	varied	4: varied	varied
Background peak	Text peak													
1: fixed	fixed													
2: varied	fixed													
3: fixed	varied													
4: varied	varied													
830	832	831	Range correction for original set on the ADF											

<Procedure>

Procedure is same as that of  P.3-26 "3.5.1 Density adjustment".

3.5.4 Setting range correction (Adjustment of background peak)

The levels of the background peak for the range correction can be set at the following codes.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
835	837	836	Background peak for range correction	When the value increases, the background (low density area) of the image is not output. Acceptable values: 0 to 255 (Default: text/photo: 32, photo: 16, text: 46)

<Procedure>

Procedure is same as that of  P.3-26 "3.5.1 Density adjustment".

3.5.5 Setting range correction (Adjustment of text peak)

The levels of the text peak for the range correction can be set at the following codes.

< Adjustment Mode (05) >

Original mode			Item to be adjusted	Remarks
Text/Photo	Photo	Text		
820	822	821	Text peak for range correction	When the value is increased, text (high image density part) becomes lighter. Acceptable values: 0 to 255 (Default: text/photo: 246, photo: 254, text: 236)

* The image changes slightly in text mode because it is treated as a simple binary format image.

<Procedure>

Procedure is same as that of  P.3-26 "3.5.1 Density adjustment".

3.6 Adjustment of High-Voltage Transformer

When replacing the high-voltage transformer, checking each output adjustment of main charger, developer bias, transfer charger and separation charger is needed.

3.6.1 Adjustment

[1] Preparation

Items to check		Developer Bias	Main Charger	Transfer Charger	Separation Charger
Process Unit		Take off from the equipment. (Not used)			
High-Voltage Transformer Jig		Install the high-voltage transformer jig in the equipment. Note: Connect the green cable of the high-voltage transformer jig to ground on the equipment frame. Refer to P.3-31 "[A] Installation of the high-voltage transformer jig".			
Digital Tester	(+) terminal	Connect with the black cable of the high-voltage transformer jig.	Connect with the red cable (thick line) of the high-voltage transformer jig.	Connect with the red cable (thin line) of the high-voltage transformer jig.	
	(-) terminal	Connect with the white cable of the high-voltage transformer jig.			
	Function switch	DC			
	Full-scale (range)	1000 V		2 V	
	Remarks	Use a digital tester with an input resistance of 10 MΩ (RMS value) or higher.			
How to turn ON the power		Attach the door switch jig and start with the adjustment mode [05] while the front cover opened. Then press the front cover opening/closing switch.			
Note		Refer to P.3-33 "[B] Connection for developer bias adjustment".	Refer to P.3-33 "[C] Connection for main charger adjustment".	Refer to P.3-34 "[D] Connection for transfer/separation charger adjustment".	

[A] Installation of the high-voltage transformer jig

- (1) Open the bypass tray, ADU and transfer cover.
- (2) Open the front cover and take off the toner cartridge.
- (3) Disconnect 1 connector. Loosen 2 screws and pull out the process unit.

Note:

Be careful not to let the connector and the harness be caught when installing the process unit after adjustment.

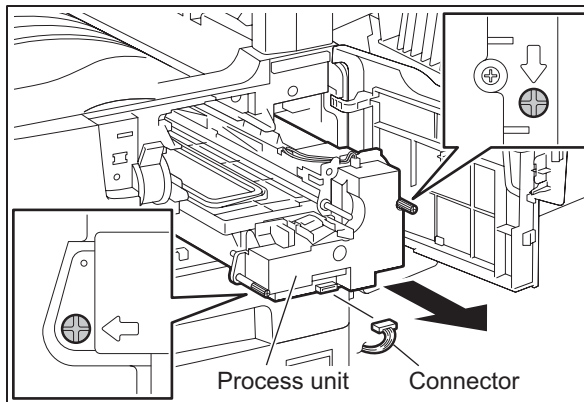


Fig. 3-15

- (4) Install the high-voltage transformer jig and fix it with 2 screws.

Note:

Be careful not to let the connector and the harness be caught.

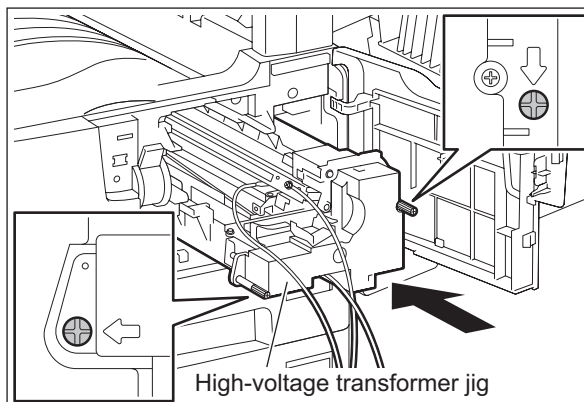


Fig. 3-16

- (5) Fix the green cable of the high-voltage transformer jig to the frame of the equipment.

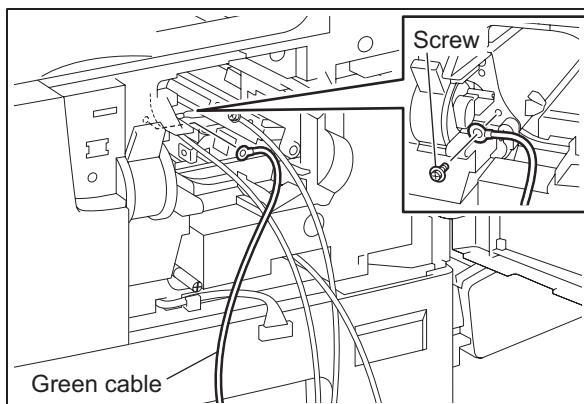


Fig. 3-17

- (6) Install the cover open switch release jig for service.
- (7) Close the transfer cover.

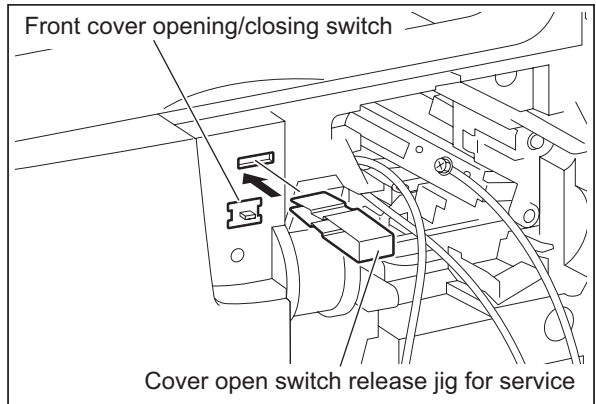


Fig. 3-18

[B] Connection for developer bias adjustment

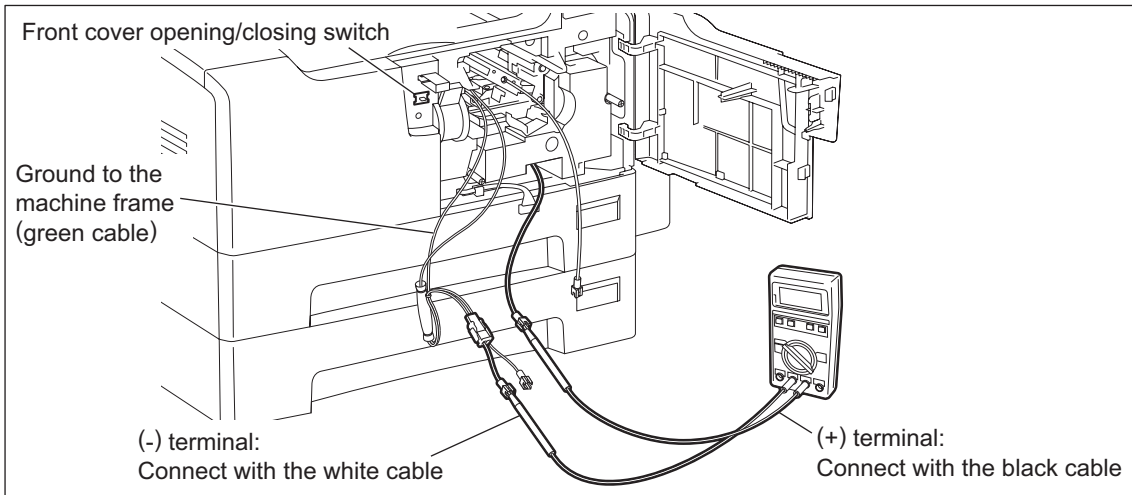


Fig. 3-19

[C] Connection for main charger adjustment

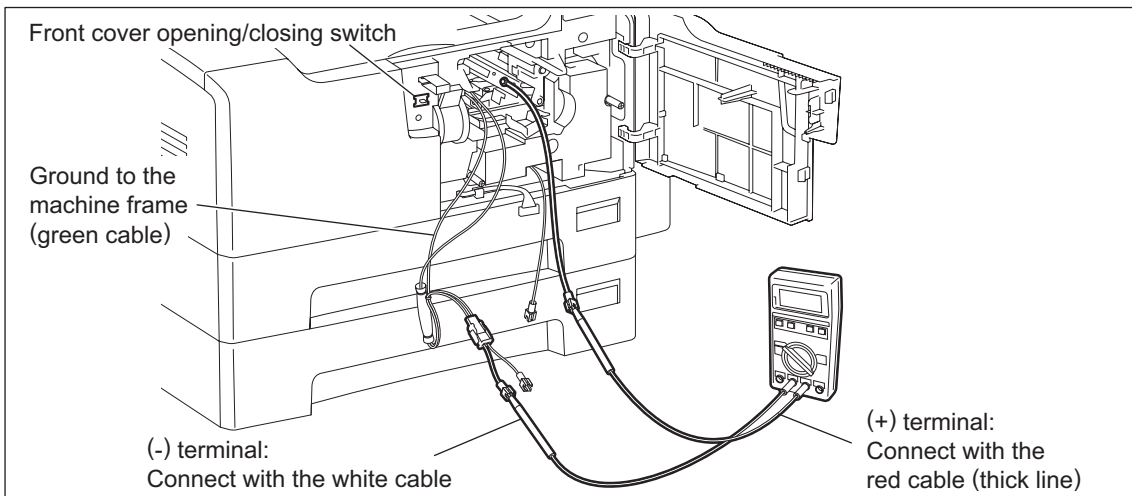


Fig. 3-20

[D] Connection for transfer/separation charger adjustment

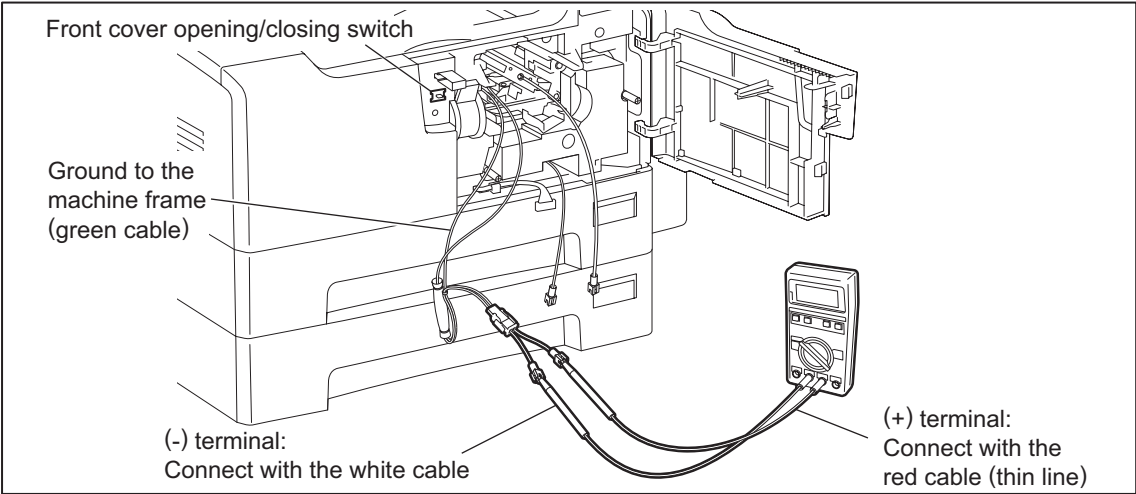


Fig. 3-21

[2] Operation

Note:

When adjusting output of high-voltage transformer, make sure to use the high-voltage transformer jig.

Connect the digital testers as described in "[1] Preparation", and follow the procedure on the next page to adjust the output from the main charger, developer bias charger, transfer charger and separation charger.

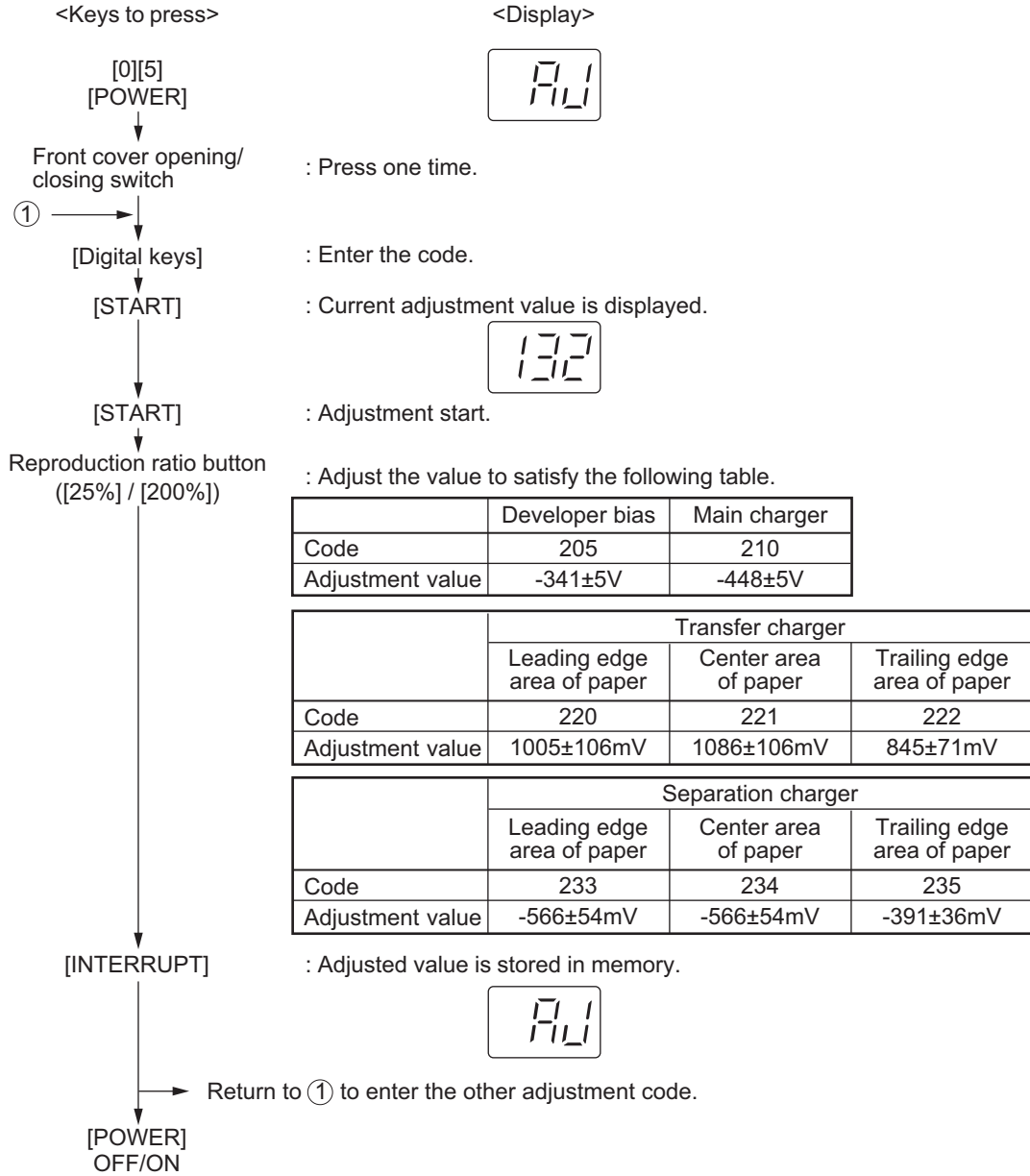


Fig. 3-22

3.6.2 Precautions

[1] Developer bias

Note for adjustment

Adjust the developer bias if fogging occurs over the entire image even though the main charger grid voltage and toner density are appropriate. However, the following may occur if the developer bias is lowered too much:

- Image contrast becomes low.
- Image is patchy or blurred.
- The carrier in the developer material adheres to the photoconductive drum, causing scratches around the cleaner.

[2] Transfer

Items to check before adjustment

Blotched image or poor transfer can be also caused by matters other than defective adjustment of transfer output. Check the following items before adjusting the transfer charger. If there is no problem, adjust the output of the transfer charger.

- Is the charger wire incorrectly installed or dirty? Is the transfer guide deformed?
- Is the process unit properly installed? Is the developer magnetic brush in contact with the drum? Is the process unit worked correctly? Is the toner density low?
- Is the copy paper fed straight? Is the copy paper abnormally moist?
- Is the rotation of the registration roller normal?
- Is the separation output different from the set value?
- Is the developer bias value an appropriate one?
- Are the transfer/separation charger case grounded? Is the high-voltage transformer grounded?

Note for adjustment

When blotched image appear:

- If blotched image appear in halftone areas, lower the transfer output value. Remember that transfer performance becomes low if the transfer output value is lowered too much.

When poor transfer occurs:

Increase the transfer output value under the following conditions. Remember that blotched image appear if the transfer output value is increased too much.

- Transfer is poor even though the charger wire is not dirty.
- Thick paper has been frequently used.

The adjustment code varies according to where blotched image and poor transfer occur. Select the required adjustment code while referring to the following diagram.



Fig. 3-23

[3] Separation

Items to check before adjustment

Poor paper separation from the drum can be also caused by matters other than defective adjustment of the separation output. Check the following items before making an adjustment. If there is no problem, adjust the output of the separation charger.

- Is the charger wire incorrectly installed or dirty?
- Is the process unit installed properly? Is the developer magnetic brush in contact with the drum? Is the process unit worked correctly? Is the toner density low?
- Is the copy paper fed straight? Is the copy paper abnormally moist?
- Is the rotation of the registration roller normal?
- Is the output of the main charger normal?
- Is the developer bias an appropriate value?
- Is the transfer output different from the set value?
- Is the transfer/separation charger case grounded? Is the high-voltage transformer grounded?
- Is the separation finger in contact with the drum surface?

Note for adjustment

When poor paper separation occurs:

Increase the separation output value under the following conditions. Remember that if the separation output value is increased too much, blotched image occurs and separation performance becomes low.

- Poor separation occurs even though the charger wire is not dirty.
- Thin paper has been frequently used.

When poor transfer occurs:

- Decrease the separation output value when poor transfer occurs. Remember that the separation performance becomes low if the separation output value is decreased too much.

The adjustment code varies according to where poor paper separation and poor transfer occur. Select the required adjustment code while referring to the following diagram.

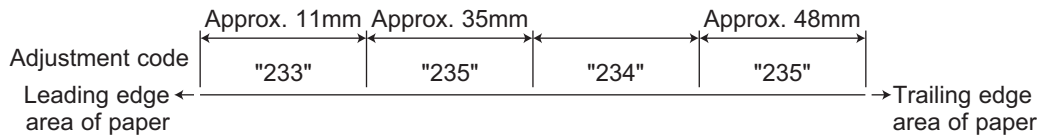


Fig. 3-24

* Adjustment code 235 performs the adjustment for 2 areas.

3.7 Adjustment of the Scanner Section

3.7.1 CIS unit

[A] Replacing the CIS unit

- The CIS unit must not be readjusted and some part of its components must not be replaced in the field since the unit is precisely adjusted. If any of the components is defective, replace the whole unit.
- Handle the CIS unit with care not to contaminate the lens with fingerprints or such.
- Take off 2 original glass guides from the CIS unit, and then install a new CIS unit.
- Be sure to perform "05-310" with the platen cover or the ADF closed after replacing the CIS unit.

<Error recovery procedure>

Check the following items and perform "05-310" again.

If an error occurs during the execution of "05-310", "Err" is displayed on the 7-segment LED.

- (1) Check the connection of the harness and connector. Reconnect them if they are not connected securely.
- (2) Check if the harness is open-circuited or damaged. Replace the harness if it is.
- (3) Replace the MAIN board.
- (4) Replace the CIS unit.
- (5) Perform "08-463" and check the control status to see if "0" (normal end) is displayed.

3.7.2 CIS unit drive belt-1

Adjust the tension of the CIS unit drive belt-1 when installing it.

<Procedure>

- (1) Install the CIS unit drive belt-1 after the tension bracket fixing screw are loosened.
- (2) Tighten the tension bracket fixing screw.

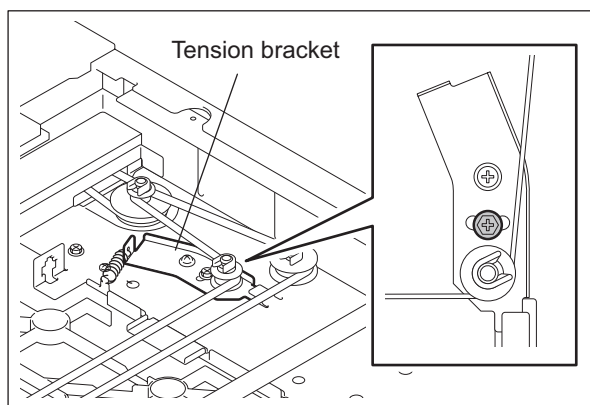


Fig. 3-25

3.7.3 Scan motor (CIS unit drive belt-2)

When installing the scan motor and CIS unit drive belt-2, adjust the tension of the CIS unit drive belt-2 with the belt tension jig.

<Procedure>

- (1) Temporarily fix screws A and B.

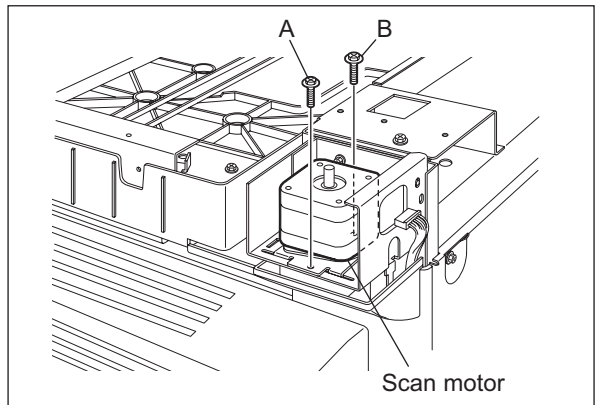


Fig. 3-26

- (2) Hook the belt tension jig on the motor bracket and frame.

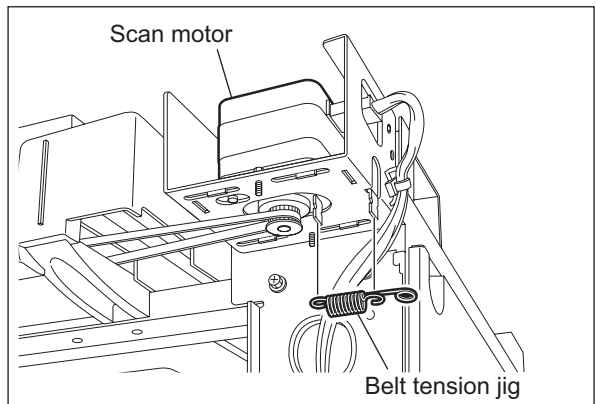


Fig. 3-27

- (3) Tighten screws A and B where the scan motor pulled by the belt tension jig stops.

3.8 Adjustment of the Paper Feeding System

3.8.1 Sheet sideways deviation caused by paper feeding

<Procedure>

The center of the printed image shifts to the front side. → Move the guide to the front side (Arrow (A) direction in the lower figure).

The center of the printed image shifts to the rear side. → Move the guide to the rear side (Arrow (B) direction in the lower figure).

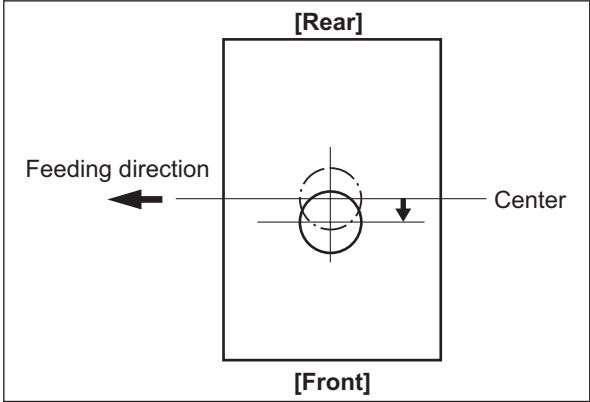


Fig. 3-28

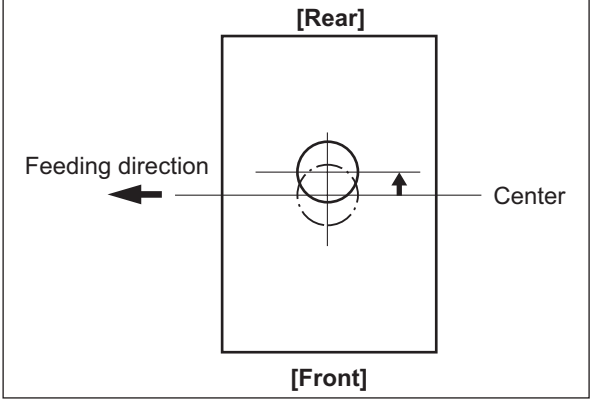


Fig. 3-29

- 1. Loosen the screen.
- 2. Move the entire guide to the front or rear side.
- 3. Tighten the screw.

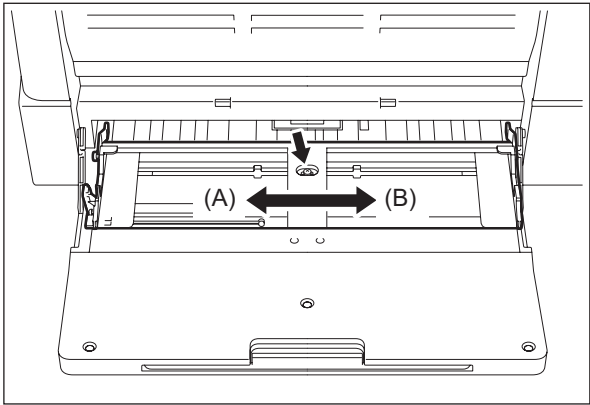


Fig. 3-30

3.9 Adjustment of Developer Unit

3.9.1 Doctor-to-sleeve gap

Adjustment tool to use: Doctor-sleeve jig
<Procedure>

- (1) Perform the adjustment code "05-280".
- (2) Take out the process unit from the equipment.
- (3) Take out the developer unit from the process unit.
- (4) Remove 2 screws and take off the developer unit upper cover and discharge the developer material.

Note:

Discharge the developer material from the rear side, being careful not to let it be scattered on the gear.

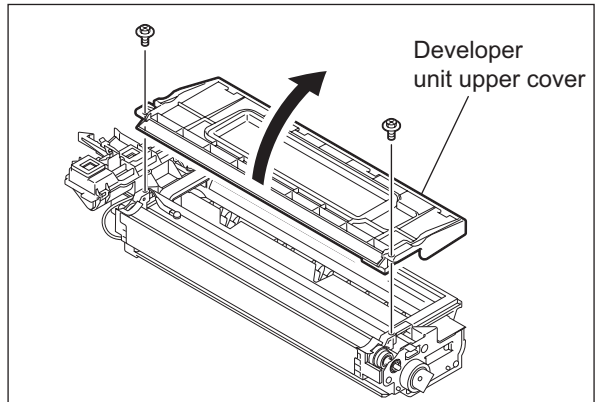


Fig. 3-31

- (5) Turn the adjustment screw to widen the gap so that the jig can be inserted in it. (Turning the screw clockwise widens the gap)

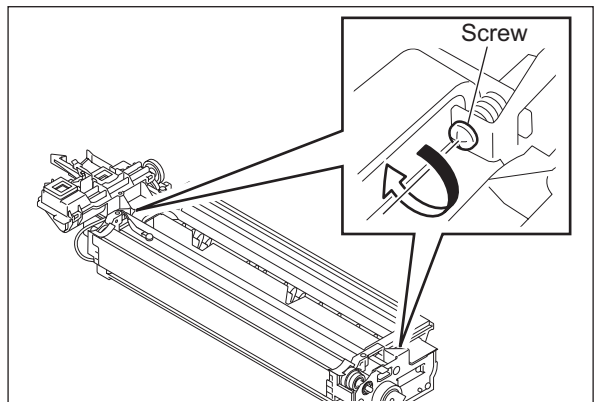


Fig. 3-32

- (6) Insert the gauge with the thickness "0.45" of the doctor sleeve jig into the gap between the developer sleeve and doctor blade after lifting up the toner scattering prevention sheet. Adjust the screws with the doctor blade to push the doctor sleeve jig lightly.

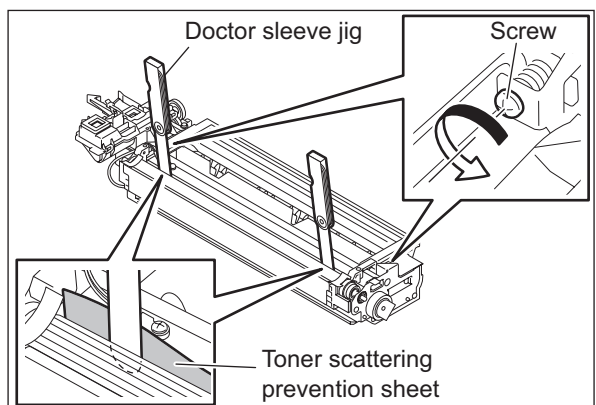


Fig. 3-33

- (7) Insert the gauge "0.40" of the doctor sleeve jig into the gap between the developer sleeve and doctor blade. Confirm that the jig moves smoothly to the front and rear side, and the gauge "0.50" cannot be inserted into the gap.

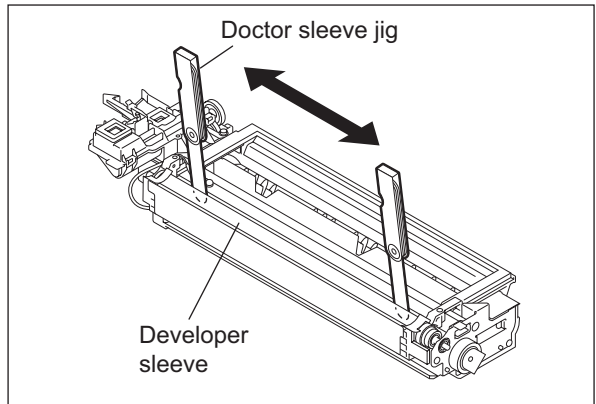


Fig. 3-34

- (8) Confirm that the side seals are attached on the toner scattering prevention sheet.

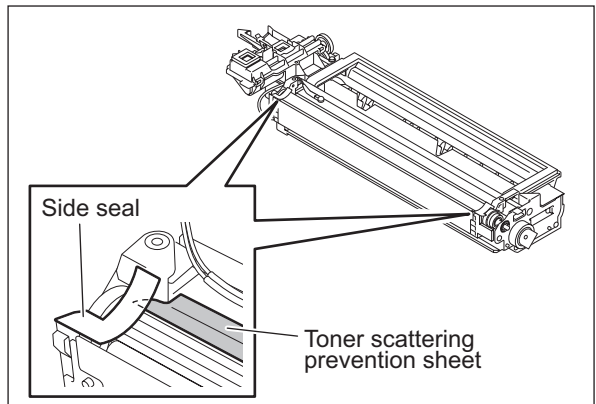



Fig. 3-35

- (9) Attach the developer unit upper cover and tighten 2 screws.

Note:

After the developer material has been replaced, adjust the auto-toner sensor. (See  P.3-1 "3.1 Adjustment of Auto-Toner Sensor".)

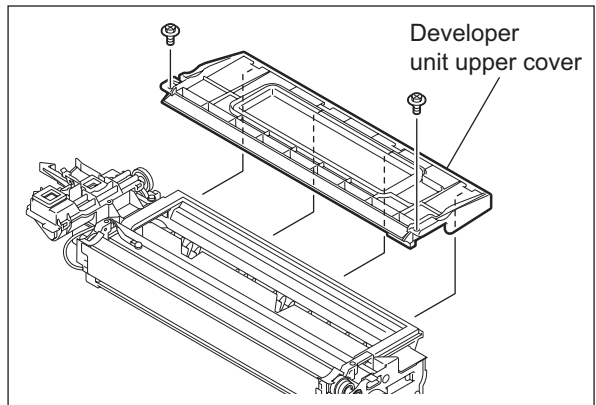


Fig. 3-36

3.10 Adjustment of the ADF (MR-2020)

3.10.1 Adjustment of ADF Position

Perform this adjustment when the ADF is not installed in the correct position.

Note:

Check if the image adjustment for the equipment is performed properly before this adjustment of the ADF.

[A] Checking

- (1) Open the ADF and install 2 positioning pins (the positioning pins are installed to the back side of the hinge which is on the left side of the ADF).

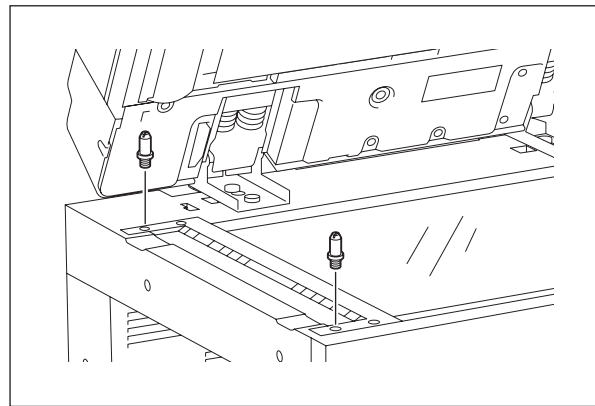


Fig. 3-37

- (2) Remove the platen sheet.

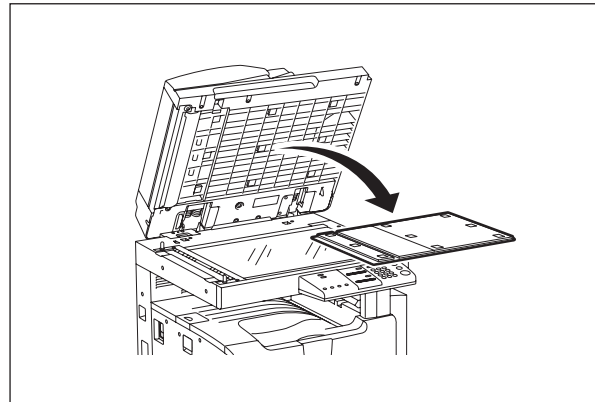


Fig. 3-38

- (3) Close the ADF and check if the positioning pins fit the holes on the ADF.

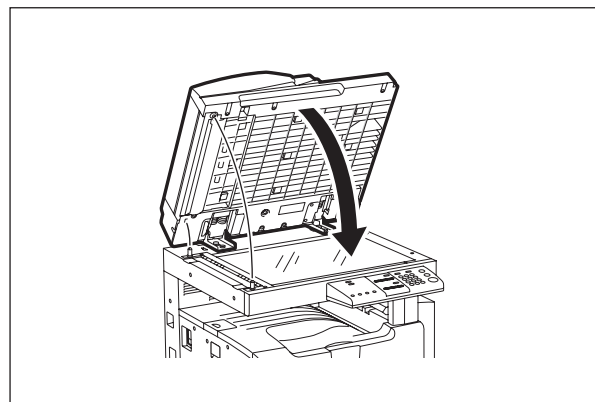


Fig. 3-39

[B] Adjustment

If the pins cannot be fitted into the holes, perform the adjustment according to the following procedure.

- (1) Remove the right-hand hinge screw at the rear side.

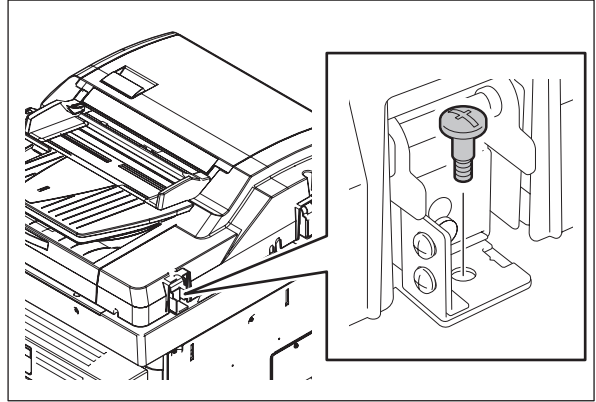


Fig. 3-40

- (2) Remove 2 screws and take off the bracket on the rear side.

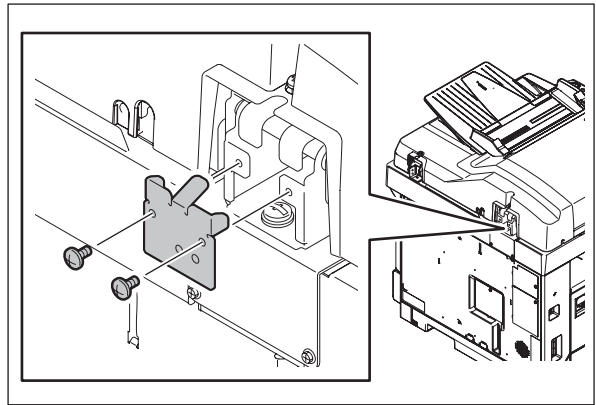


Fig. 3-41

- (3) Loosen the left-hand hinge screw at the rear side.

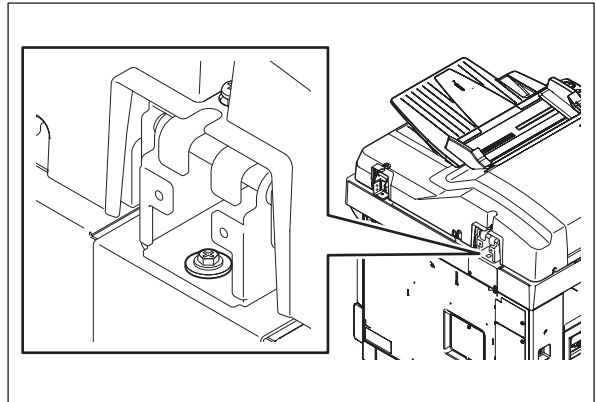


Fig. 3-42

- (4) Loosen the hinge screws at the front side.

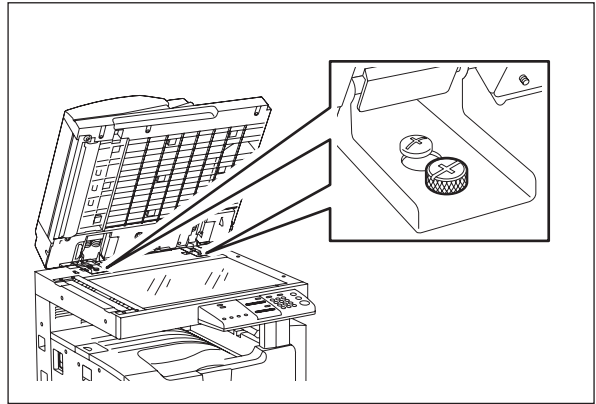


Fig. 3-43

- (5) Position the pins with the holes on the ADF by moving it so that the pins fit into the holes when the ADF is closed.

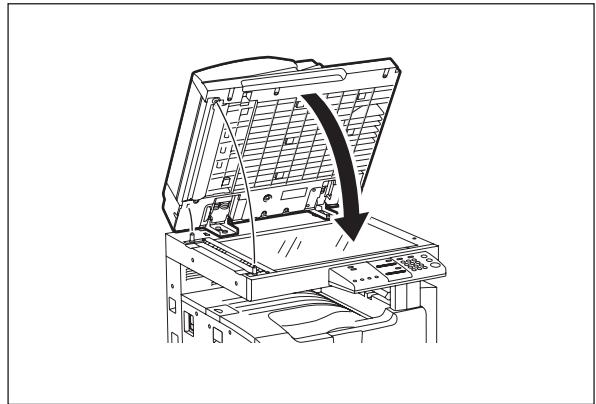


Fig. 3-44

- (6) Tighten the left-hand hinge screw at the rear side.

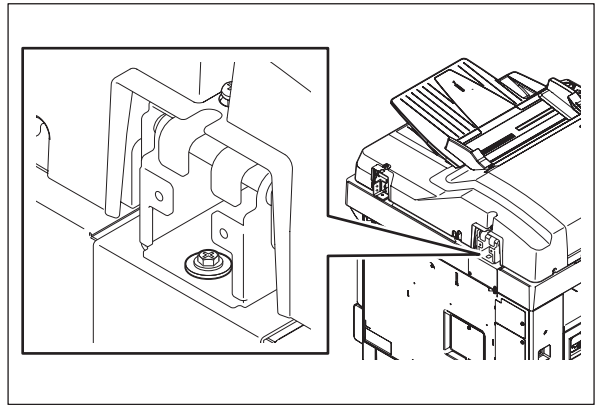


Fig. 3-45

- (7) Install the bracket.

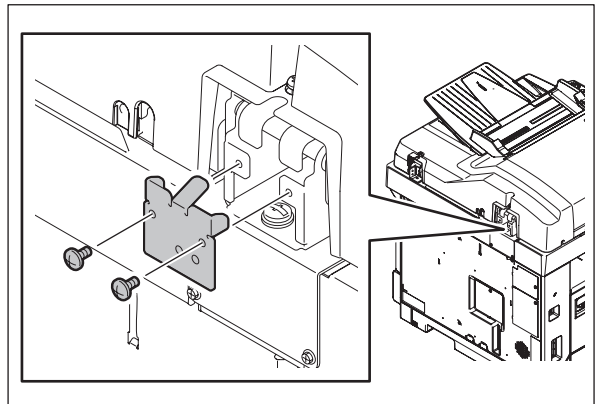


Fig. 3-46

- (8) Loosen the hole position adjustment screws on the right hand side.

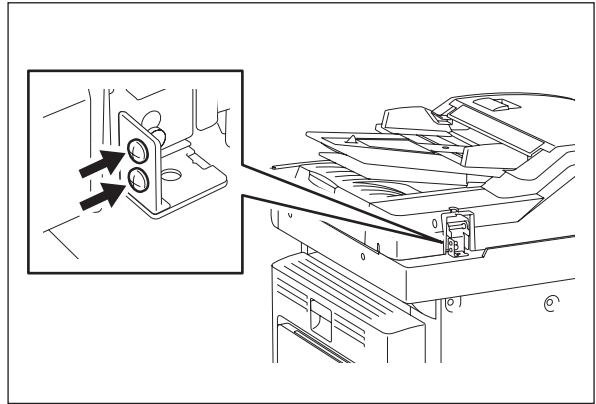


Fig. 3-47

- (9) Match the screw hole positions.

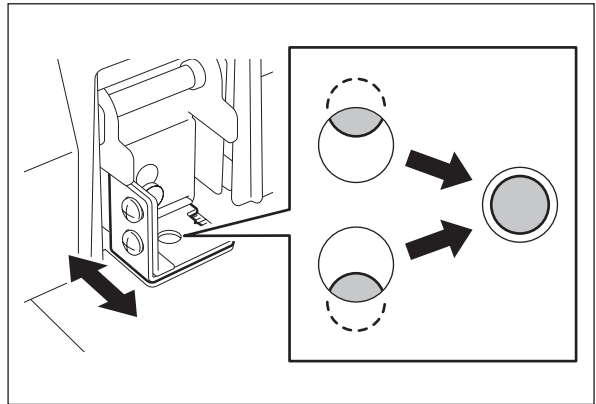


Fig. 3-48

- (10) Install the right-hand hinge screw at the rear side.

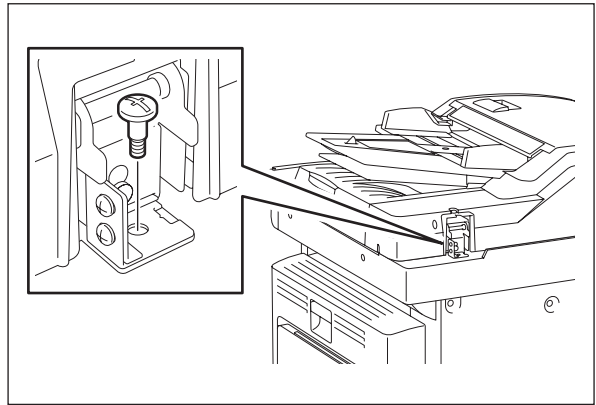


Fig. 3-49

- (11) Loosen the hinge screws at the front side.

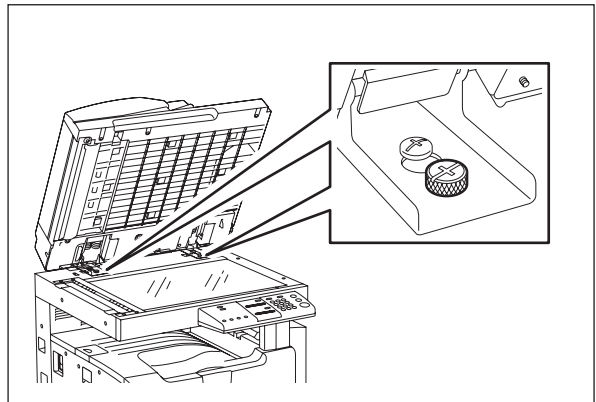


Fig. 3-50

- (12) Place the platen sheet on the original glass and align it to the top left corner.
Close the ADF gently and open it to check if the platen sheet is attached properly.

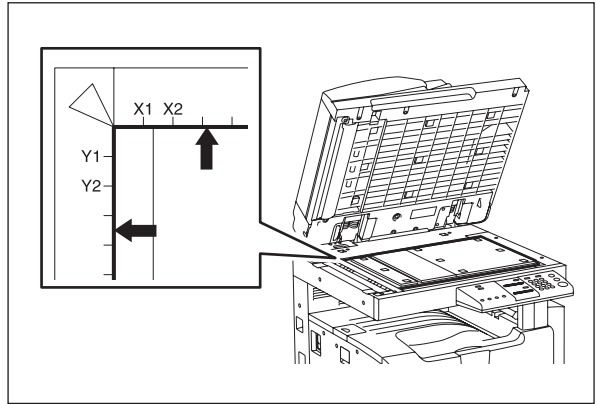


Fig. 3-51

3.10.2 Adjustment of ADF Height

Note:

Check if the image adjustment for the equipment is performed properly before this adjustment of the ADF.

[A] Checking

- (1) Close the ADF.
- (2) Light the exposure lamp.
 - Turn the power ON while pressing [0] and [4] simultaneously.
 - Key in [261], press the [START] button, and then wait until the CIS unit stops.
 - Key in [267] and then press the [START] button. The exposure lamp is turned ON for a given length of time.
- (3) Visually check the gap between platen guide holder "A" and upper surface of the original glass "B" from the left hand side of the equipment. If the value is not within the tolerance, perform the adjustment according to the following procedure.

[Tolerance of the gap]

Rear side: 0 - 0.2 mm

Front side: 0 mm

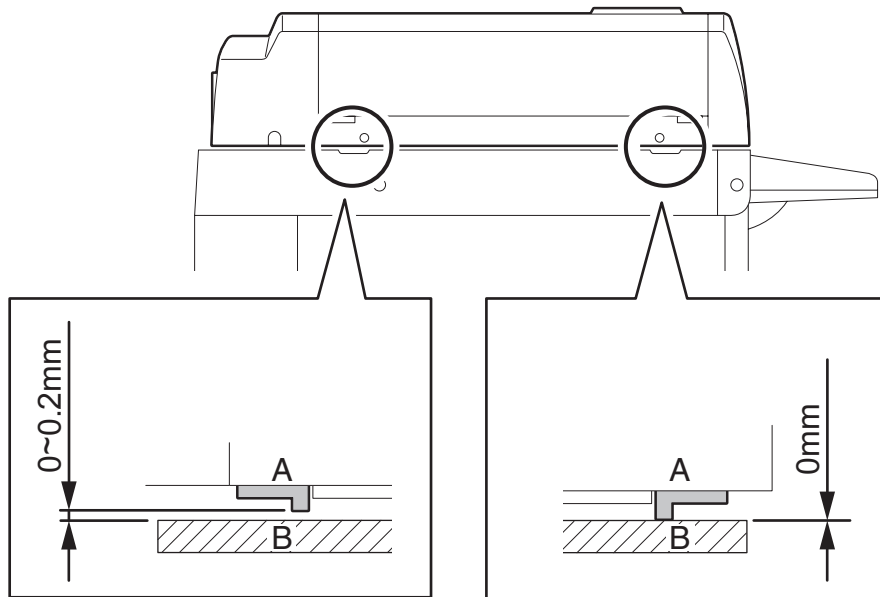


Fig. 3-52

[B] Adjustment

- (1) Close the ADF.
 - (2) Adjust it by turning the adjustment screws on the hinges.
 - Adjust the height on the rear side by means of the screw on the hinge on the feed side of the ADF.
- Turn it clockwise Heightened
Turn it counterclockwise Lowered

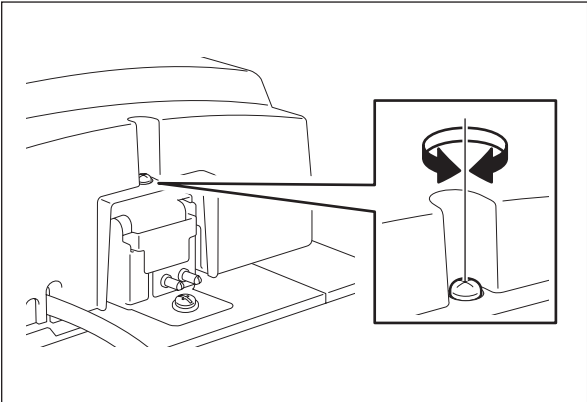


Fig. 3-53

- Adjust the gap on the rear side by means of the screw on the hinge on the feed side of the ADF.
- Turn it clockwise Lowered
Turn it counterclockwise Heightened

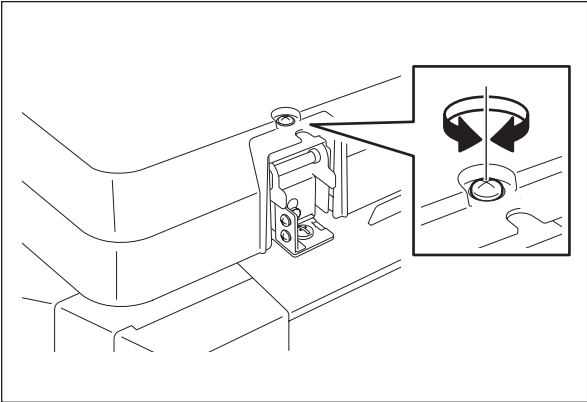


Fig. 3-54

3.10.3 Adjustment of Skew

Note:

Check if the image adjustment for the equipment is performed properly before this adjustment of the RADF. Also, the RADF position and height shall be adjusted properly.

[A] Checking

Check the image using the chart (original) with vertical and horizontal lines in the following procedure.

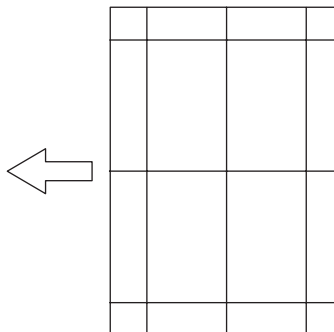


Fig. 3-55 Chart (Original)

- (1) Place the chart provided as an original with its face up on the original tray of the ADF, select [1 Sided -> 1 Sided] and press the [START] button.
- (2) Superimpose the chart on the copy and check the inclination of the copy image.

[B] Adjustment

- (1) Shift the aligning plate with the scale as the guide shown in the figure below to adjust the skew.

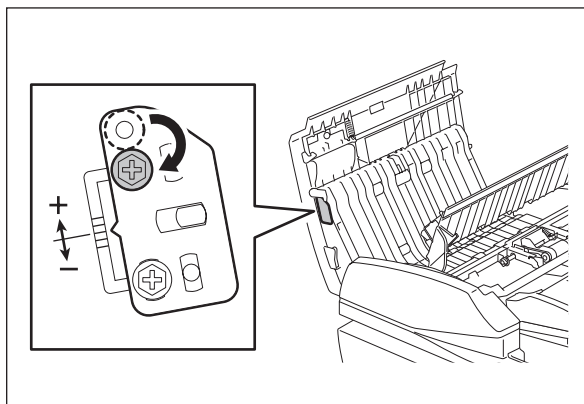


Fig. 3-56

(2) If the image skew is "C" as shown in the figure below, shift the aligning plate in the direction of "+", and if "D", shift it to "-".

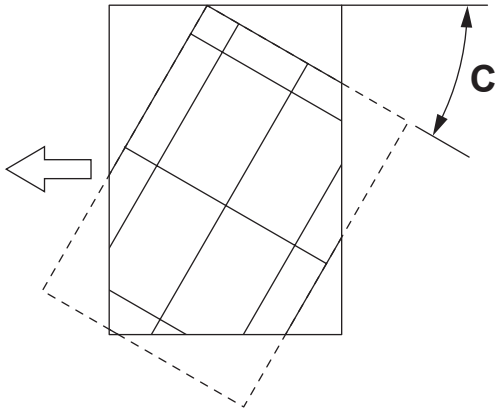


Fig. 3-57

Shift the aligning plate in the direction of "+".

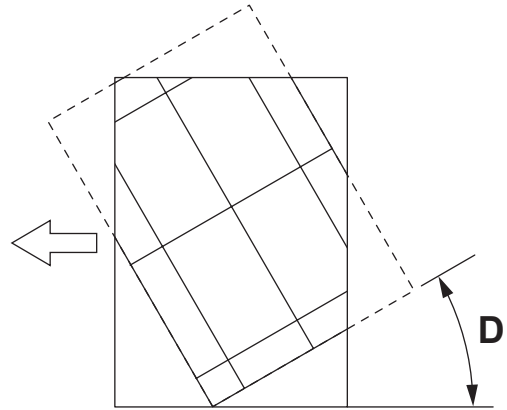


Fig. 3-58

Shift the aligning plate in the direction of "-".

3.10.4 Adjustment of the Leading Edge Position

Note:

Check if the image adjustment for the equipment is performed properly before this adjustment of the ADF. Also, the ADF position and height shall be adjusted properly.

[A] Checking

Check the image using the chart (original) with vertical and horizontal lines in the following procedure.

- (1) Place the chart provided as an original with its face up on the original tray of the ADF, select [1 Sided -> 1 Sided] and press the [START] button.
- (2) Superimpose the chart on the copy and check the leading edge E of the chart and F of the copy.

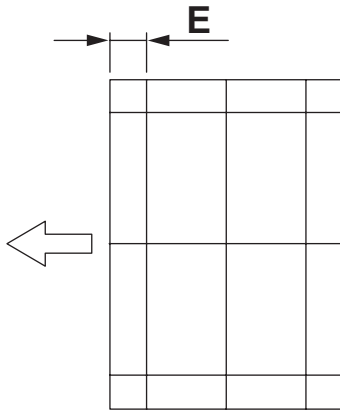


Fig. 3-59 Chart (Original)

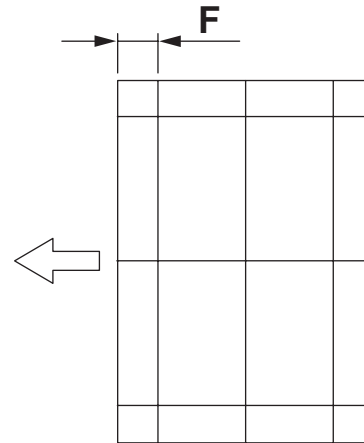


Fig. 3-60 Copy

[B] Adjustment

- (1) Turn the power ON while pressing [0] and [5] simultaneously, key in [365] and then press the [START] button.
- (2) Enter the value.
 - If the leading edge (F) margin of the copy image is larger than the (E) margin of the chart, enter a value smaller than the current one.

Note:

Changing one value shifts the copy image by 0.2 mm.

- If the leading edge (F) margin of the copy image is smaller than the (E) margin of the chart, enter a value larger than the current one.

Note:

Changing one value shifts the copy image by 0.2 mm.

- (3) Press the [INTERRUPT] button.

3.10.5 Adjustment of Horizontal Position

Note:

Check if the image adjustment for the equipment is performed properly before this adjustment of the ADF. Also, the ADF position and height shall be adjusted properly.

[A] Checking

Check the image using the chart (original) with a center line in the following procedure.

- (1) Place the chart provided as an original with its face up on the original tray of the ADF.
- (2) Press the [START] button.
- (3) Fold the copy in half and check if the center line is misaligned.

[B] Adjustment

- (1) Turn the power ON while pressing [0] and [5] simultaneously.
- (2) Key in [358] and then press the [START] button.
 - If the center line of the copy image is shifted to the front side of the equipment, enter a value larger than the current one.

Note:

Changing one value shifts the copy image by 0.169 mm.

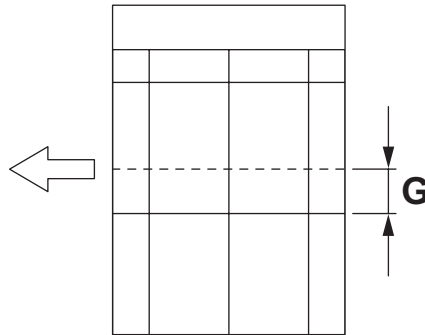


Fig. 3-61

- If the center line of the copy image is shifted to the rear side of the equipment, enter a value smaller than the current one.

Note:

Changing one value shifts the copy image by 0.169 mm.

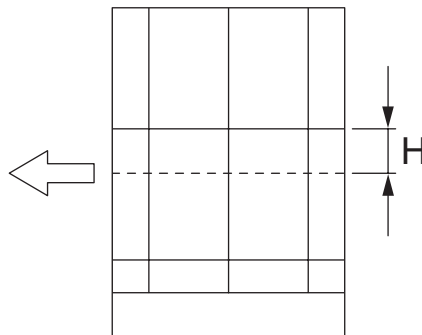


Fig. 3-62

- (3) Press the [INTERRUPT] button.

3.10.6 Adjustment of Copy Ratio

Note:

Check if the image adjustment for the equipment is performed properly before this adjustment of the ADF. Also, the ADF position and height shall be adjusted properly.

[A] Checking

Check the image using the chart (original) with vertical and horizontal lines in the following procedure.

- (1) Place the chart provided as an original with its face up on the original tray of the ADF.
- (2) Press the [START] button.
- (3) Superimpose the chart on the copy and check the image dimension "l".

[B] Adjustment

- (1) Turn the power ON while pressing [0] and [5] simultaneously.
- (2) Key in [357] and then press the [START] button.
 - If the copy image dimension "l" is larger than the chart dimension, enter a value smaller than the current one.
 - If the copy image dimension "l" is smaller than the chart dimension, enter a value larger than the current one.

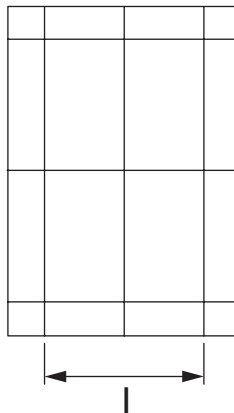


Fig. 3-63

- (3) Press the [INTERRUPT] button.

3.10.7 Adjustment of ADF Opening/Closing Sensor

Adjust the bracket position so that the sensor is turned ON when the height "A" becomes 100 mm or less (within the empty weight falling limit).

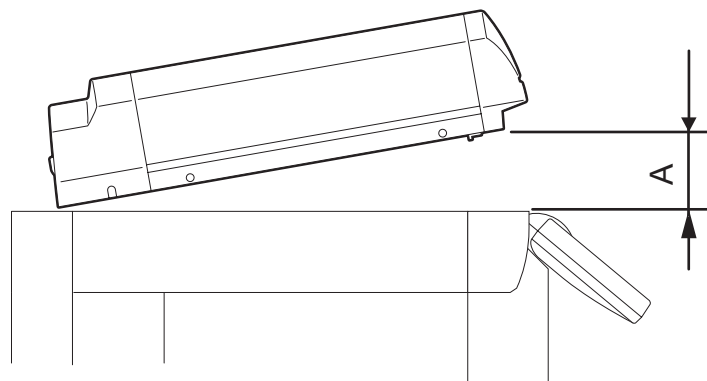


Fig. 3-64

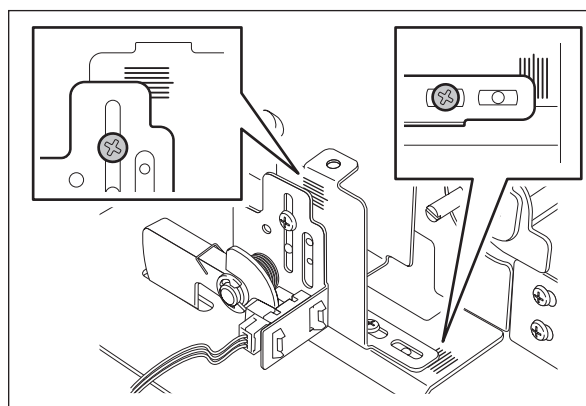


Fig. 3-65

4. PREVENTIVE MAINTENANCE (PM)

4.1 General Descriptions for PM Procedure

Perform the preventive maintenance in the following timing.

e-STUDIO181: every 77,000 sheets

e-STUDIO211: every 90,000 sheets

- (1) Preparation
 - Ask the user about the current conditions of the equipment and note them down.
 - Before starting maintenance, make some sample copies and store them.
 - Turn OFF the power and make sure to unplug the equipment.
- (2) Perform a preventive maintenance using the following checklist and illustrations. Refer to the Service Manual if necessary.
- (3) Plug in the equipment after the maintenance has been finished. Then turn ON the power and make some copies to confirm that the equipment is working properly.
- (4) After preventive maintenance, set the value of 08-252 (Current value of PM counter Display) to "0".
*This turns off the "CALL SERVICE" symbol.

4.2 Operational Items in Overhauling

Overhaul each equipment with the following timing.

- e-STUDIO181: When the number of output pages has reached 216,000 or 2.5 years have passed from the start of use (Whichever is earlier)
- e-STUDIO211: When the number of output pages has reached 270,000 or 2.5 years have passed from the start of use (Whichever is earlier)

- (1) Replace all the supplies.
- (2) Check the components in the drive section (gears, pulleys, timing belts, etc.). Replace them with new ones if they are damaged.
- (3) Check all the adhesives such as tape and Mylar if they are damaged or have become unstuck. Replace them with new ones if necessary.
- (4) Check the performance of all the switches and sensors. Replace them with new ones if necessary.
- (5) Clean inside the equipment thoroughly.
- (6) Check if the harnesses, thermistors, fuses, etc. are damaged. Replace them if necessary.

4.3 Preventive Maintenance Checklist

Symbols used in the checklist

Cleaning	Lubrication/Coating	Replacement	Operation check
A: Clean with alcohol B: Clean with soft pad, cloth or vacuum cleaner	L: Launa 40 SI: Silicon oil W1: White grease (Molykote EM-30L) W2: White grease (Molykote HP-300) AV: Alvania No.2 FL: Floil (GE-334C)	Value: Replacement cycle (Value x 1000) R: Replace if deformed or damaged	O: After cleaning or replacement, confirm there is no problem.

4

[Preventive Maintenance checklist]

Notes:

- Perform cleaning and lubricating in the following timing.
Exceptionally, the lubrication for the drum unit, main charger, developer unit and transfer unit must follow the PM cycle of each unit.
e-STUDIO181: every 77,000 sheets
e-STUDIO211: every 90,000 sheets
- Value under "Replacement" indicates the replacement cycle for e-STUDIO181/211.
- The replacement cycle of the parts in the feeding section equals to the number of sheets fed from each paper source.
- Be careful not to put oil on the rollers, belts and belt pulleys when lubricating.
- Page-Item (P-I) is described in the column of the Parts list.

A. Scanner

	Items to check	Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
A1	Original glass	B or A				P17-I1	*a1
A2	ADF original glass	B				P17-I2	*a1
A3	Carriage rail	B					
A4	Original glass guide	B		R		P9-I9	

B. Laser unit

	Items to check	Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
B1	Slit glass	B					

C. Feed unit

Items to check		Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
C1	Pickup roller			90		P16-I17	
C2	Drive gear (tooth face and shaft)		W1				*c1
C3	Paper guide	B					
C4	GCB bushing bearing		L				
C5	One side of the plastic bushing		W1				
C6	Registration roller (metal)	A		R		P16-I4	
C7	Registration roller (rubber)	A		R		P11-I18	

D. ADF (MR-2020)

Items to check		Cleaning (30K)	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
D1	Pickup roller	A		90		P5-I1	
D2	Separation roller	A		90		P4-I10	
D3	Feed roller	A		90		P5-I1	
D4	Registration roller	A					
D5	Intermediate transfer	A					
D6	Front read roller	A					
D7	Rear read roller	A					
D8	Exit/reverse roller	A					
D9	Platen sheet	B or A					

E. Bypass feed unit

Items to check		Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
E1	Pickup roller			90		P14-I22	
E2	Feed roller			90		P14-I22	
E3	Separation pad			90		P13-I22	
E4	Bypass tray	B					
E5	Drive gear (tooth face and shaft)		W1				
E6	GCB bushing bearing		L				
E7	One side of the plastic bushing		W1				

F. Main charger

Items to check		Cleaning	Lubrication	Replacement (KD)	Operation check	Parts list <P-I>	Remarks
F1	Main charger case	B				P18-I1	*f1
F2	Needle electrode			77/90		P18-I2	*f1
F3	Contact point of terminals	B					
F4	Main charger wire cleaner			R	○	P18-I7	
F5	Main charger grid			77/90		P18-I3	

G. Transfer / Separation charger

Items to check		Cleaning	Lubrication	Replacement (KD)	Operation check	Parts list <P-I>	Remarks
G1	Charger case	B				P19-I2	*g1
G2	Transfer charger wire			77/90	○	P19-I18	*g1
G3	Separation charger wire			77/90	○	P19-I18	*g1
G4	Pre-transfer guide	B or A					
G5	Post-transfer guide	B or A					
G6	Separation supporter	B				P19-I17	
G7	Terminal cover	B				P19-I10	
G8	Contact point of terminals	B					
G9	Transfer guide roller	B		R		P19-I14	

H. Drum/Cleaner related section

Items to check		Cleaning	Lubrication	Replacement (KD)	Operation check	Parts list <P-I>	Remarks
H1	Photoconductive drum			7790			Ch.4.7.2
H2	Discharge LED	B					
H3	Whole cleaner unit	B					
H4	Drum cleaning blade			77/90		P20-I5	*h1
H5	Separation finger for drum			77/90		P20-I17	*h2
H6	Recovery blade	B		77/90		P20-I6	*h3
H7	Ozone filter			77/90		P11-I3	

I. Developer unit / Toner cartridge related section

Items to check		Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
I1	Whole developer unit	B					
I2	Developer material			77/90			*i1
I3	Front shield	B		R			
I4	Oil seal (6 pcs.)		AV	360/450		P21-I11	*i2
I5	Guide roller	B or A					
I6	Side shield	B		R			
I7	Developer unit lower stay	B					
I8	Toner cartridge drive gear shaft		W1				

J. Fuser/Paper exit unit

Items to check		Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
J1	Fuser roller			77/90		P23-I8	
J2	Pressure roller			77/90		P24-I4	
J3	Separation finger for fuser roller			77/90		P23-I14	*j1
J4	Fuser unit entrance guide	A				P24-I9	
J5	Thermistor (3 pcs.)	A		R		P23-I6	*j2
J6	Drive gear (tooth face and shaft)		W2	R		P23-I22 P23-I23	
J7	Fuser roller gear			R		P23-I10	
J8	Pressure roller bushing			77/90		P23-I30	
J9	Exit roller	A		R		P23-I19	

K. PFU (MY-1027)

Items to check		Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
K1	Pickup roller	A		90		P3-I12	
K2	Feed roller	A				P3-I16	

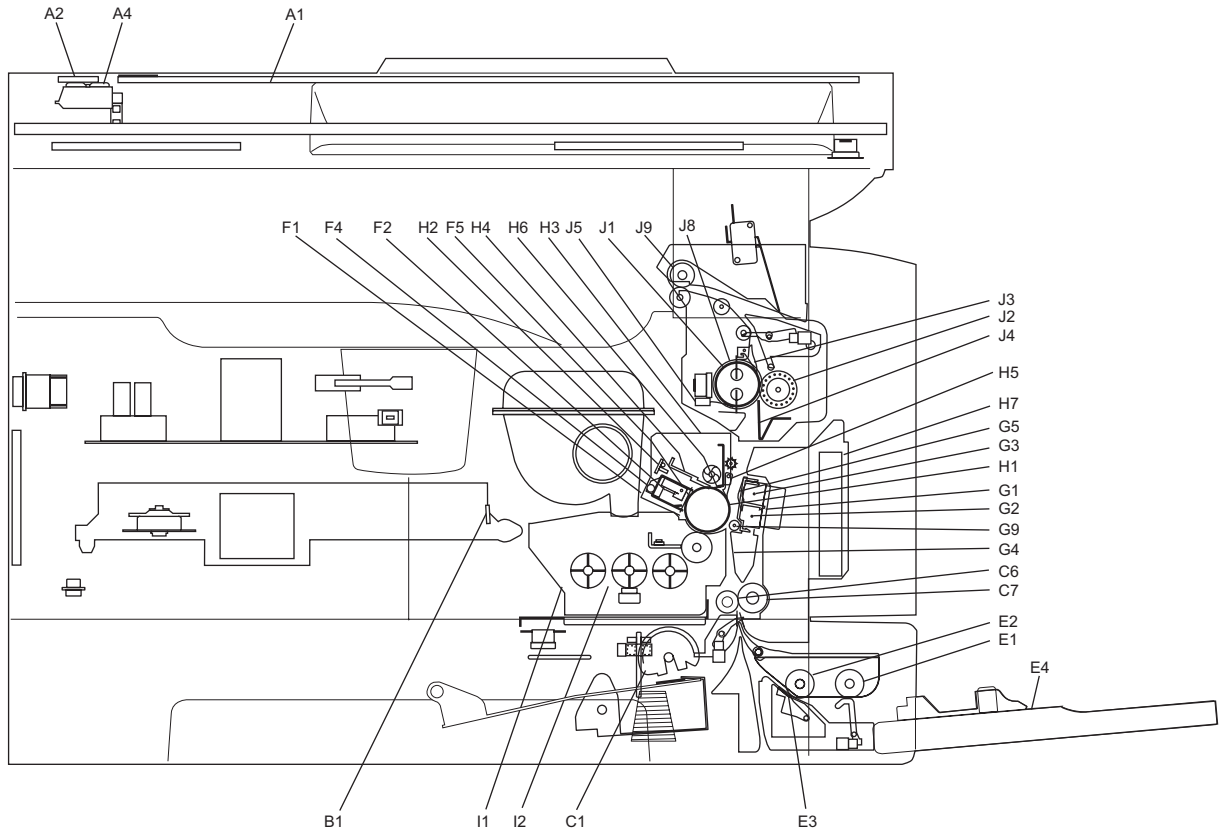


Fig. 4-1 Front side

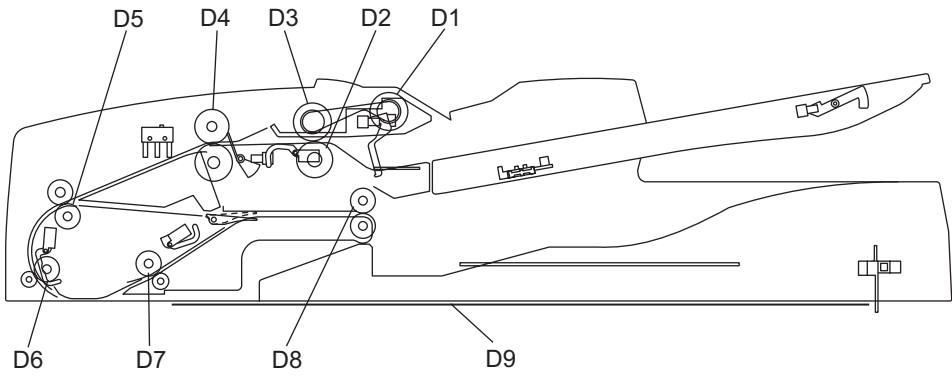


Fig. 4-2 Automatic Document Feeder (ADF)

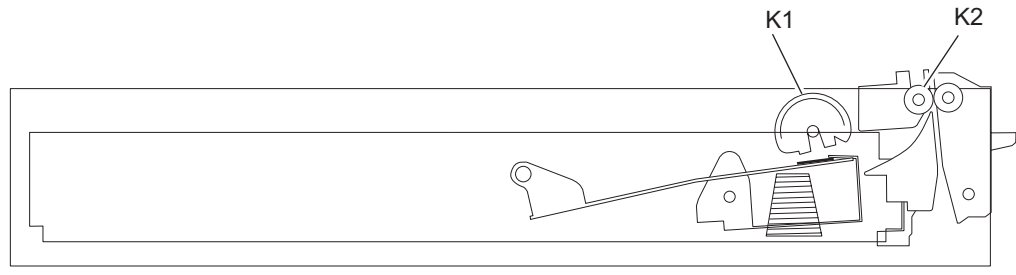


Fig. 4-3 Paper Feed Unit (PFU)

Remarks “*” in the Preventive Maintenance Check List

- * a1. Original glass / ADF original glass
Clean both sides of the original glass and ADF original glass.
Make sure that there is no dust after cleaning. Then install the original glass and ADF original glass.

Note:

Make sure that there is no fingerprints or oil staining on part of the original glass on where the original scale is mounted since the shading correction plate is located below the scale to be scanned.

- * c1. Drive gears in the paper feeding section (teeth of gears and shafts)
Apply some white grease (Molykote EM-30L) to the teeth of gears and shafts of the drive gears.

Note:

Make sure that oil is not running over or scattered around as the gear is rotated coming into the clutch after applying Molykote to the gear which is located near the clutch. The quantity of Molykote should be smaller than that to be applied to the other parts.

- * f1. Main charger case / Needle electrode
Clean the main charger case with a cloth soaked in water and squeezed tightly, and then wipe them with a dry cloth.
Clean the needle electrode only with the main charger cleaner.
Replace the needle electrode with a new one if it is damaged regardless of the number of output pages which have been mode.

Note:

Do not touch the needle electrode with your bare hand when attaching the needle electrode.


- * g1. Transfer / separation charger case and transfer / separation charger wire
Clean the transfer / separation charger case with a cloth soaked in water and squeezed tightly, and then wipe them with a dry cloth.
Replace the wire with a new one if it is damaged regardless of the number of output pages which have been mode.

Notes:

- Do not deform the metal plate of the transfer guide roller.
- Be careful of the following when attaching a new wire (length: 353 mm)
 - Insert the wire securely into the V-grooves of the front and rear sides.
 - Do not twist the wire.
 - Do not touch the wire with your bare hand.

- * h1. Drum cleaning blade
Since the edge of the blade is vulnerable and can be easily damaged by factors such as the adherence of paper dust. Replace the cleaning blade with new ones if poor images are printed due to the damaged blade regardless of the number of output pages if which have been made.
- * h2. Separation fingers for drum
The paper jam may be caused if the tip of the separation finger is damaged or deformed. If there is any problem with it, replace the finger with a new one regardless of the number of output pages which have been made.
If any mark which was made by the finger appears on the printed image, clean the tip of the finger.

Notes:

1. Wipe the tip of the finger lightly with a dry cloth trying not to deform it.
Do not leave the lint on the tip.
 2. Apply patting powder to the tip of the fingers and drum surface after replacing or cleaning them to reduce the load on the drum surface by the finger.
- * h3. Recovery blade
Replace the recovery blade regardless the number of output pages if the edge of the blade get damaged.
 - * i1. Developer material
Make sure to perform "05-280" and take off the process unit before the developer material is replaced.
After replacing the developer material, be sure to perform the auto-toner adjustment.
( P.3-1 "3.1 Adjustment of Auto-Toner Sensor")
 - * i2. Oil seal (Developer unit)
Mixer unit (Shafts of mixers-1, -2 & -3) 6 pcs.

Note:

Lubricate the oil seal only when the oil seal is replaced.

During replacement, coat the oil seal with grease (Alvanian No.2).

- (1) Push in a new oil seal parallel to the mounting hole section of the developer frame or outside of the holder.
 - * Pay attention to the direction in which the oil seal is attached. (See figure on right.)
- (2) Apply an even coat of grease to the inside of the oil seal.
 - Amount: About two small drops
- (3) Wipe off any grease the exudes from the inside.

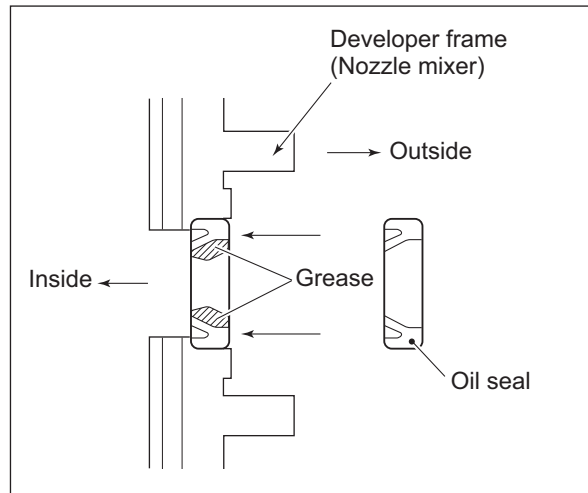


Fig. 4-4

- * j1. Separation fingers for fuser roller
The paper jam may be caused if the tip of the finger is damaged or deformed. If there is any problem with it, replace the finger with a new one regardless of the number of output pages which have been made. Do not damage the tip of the finger during the cleaning. The finger may be damaged if the toner adhering to the tip of it is scraped off forcibly. Replace the finger if the toner is sticking to it heavily.
- * j2. Thermistor
Clean the thermistor with alcohol if the toner or dirt is sticking to it when the fuser roller is replaced.
Do not deform or damage the thermistor during the cleaning. Replace the thermistor with a new one if it is damaged or deformed regardless of degree.

4.4 PM KIT

Item	Product name	Part name	Qty.
DEV-KIT-2340	Developer material	D-2320	1
	Drum cleaning blade	BL-2320D	1
	Separation finger for drum	SCRAPER-371	2
	Recovery blade	BLADE-REC	1
	Main charger grid	GRID-CH-M-371	1
	Needle electrode	CH-M	1
	Transfer charger wire	WIRE-CH-060-353-R	1
	Separation charger wire	WIRE-CH-060-353-R	1
FR-KIT-1640	Ozone filter	FILTER-OZON-TRU-371	1
	Fuser roller	HR-1640-U	1
	Pressure roller	HR-1640-L	1
	Separation finger for fuser roller	SCRAPER-280	5
	Bush for fuser roller	BUSH-HR/RLR	2
DF-KIT-3018	Pickup roller	ASYS-ROL-FEED	1
	Feed roller	ASYS-ROL-FEED	1
	Separation roller	ASYS-ROL-RET	1

4.5 Jig List

Item	Parts list	
	Page	Item
Door switch jig	101	1
Brush	101	2
Doctor sleeve jig	101	3
Developer material nozzle	101	4
Belt tension jig	101	6
High-voltage transformer jig	101	7
Downloading jig (DLM board)	102	1
Download JIG-2 (6 Flash ROMs)	102	2
Download JIG-1 (2 Flash ROMs)	102	3
ROM writer adapter (For 1881)	102	4
ROM writer adapter (For 1931)	102	5

4.6 Grease List

	Grease name	Part name	Volume	Container	Parts list	
					Page	Item
SI	Silicon oil	ASM-SILICONE-1M	100cc	Bottle	101	10
L	Launa 40	OIL-LAUNA40-100	100cc	Oiler	101	11
W2	White grease (Molykote HP-300)	ASM-PG-HP300-S	100g	Bottle	101	12A
W2	White grease (Molykote HP-300)	GREASE-HP300-S	10g	Bottle	101	12B
AV	Alvania No.2	ASM-PG-ALV2	100g	Tube	101	13
W1	White grease (Molykote EM-30L)	MOLYKOTE-100	100g	Tube	101	14
FL	Floil (GE-334C)	ASM-PG-GE334C-S	20g	Bottle	101	15

4.7 Precautions for Storing and Handling Supplies

4.7.1 Precautions for storing TOSHIBA supplies

1. Toner/Developer

Toner and developer should be stored in a place where the ambient temperature is between 10°C to 35°C (no condensation), and should also be protected against direct sunlight during transportation.

2. Photoconductive drum

Like the toner and developer, photoconductive drum should be stored in a dark place where the ambient temperature is between 10°C to 35°C (no condensation). Be sure to avoid places where drums may be subjected to high humidity, chemicals and/or their fumes.

3. Drum cleaning blade

This item should be stored in a flat place where the ambient temperature is between 10°C to 35°C, and should also be protected against high humidity, chemicals and/or their fumes.

4. Fuser roller / Pressure roller

Avoid places where the rollers may be subjected to high humidity, chemicals and/or their fumes.

5. Paper

Avoid storing paper in places where it may be subjected to high humidity. After a package is opened, be sure to place and store it in a storage bag.

4.7.2 Checking and cleaning of photoconductive drum

1. Use of gloves

If fingerprints or oil adhere to the drum surface, the property of the photoconductive drum may degrade, affecting the quality of the print image. So, do not touch the drum surface with your bare hands.

2. Handling precautions

As the photoconductive drum surface is very sensitive, be sure to handle the drum carefully when installing and removing it so as not damage its surface.

Be sure to apply "patting powder" (lubricant) to the entire surface of the drum (including both ends of the drum where OPC is not coated) when replacing the drum. When the drum has been replaced with a new one, the drum counter (the Setting Mode 08-1150-0,3,6,7) must be cleared to 0 (zero).

Notes:

- Application of patting powder is for reducing the friction between the drum and cleaning blade. If the application of patting powder is neglected, the drum and cleaning blade may be damaged.
- When paper fibers or thread adhere to the cleaning blade edge, they may reduce the cleaning efficiency and, in addition, may damage the blade and the drum. Be sure to remove any fibers found adhering to the blade.

3. Installation of the equipment and storage of drum

Avoid installing the equipment where it may be subjected to high temperature, high humidity, chemicals and/or their fumes.

Do not place the light drum in a location where it is exposed to direct sunlight or high intensity light such as near a window. Otherwise the drum will fatigue, and will not produce sufficient image density immediately after being installed in the equipment.

4. Cleaning the drum

At preventive maintenance calls, wipe the entire surface of the drum clean using the designated cleaning cotton. Use sufficiently thick cleaning cotton (dry soft pad) so as not to scratch the drum surface inadvertently with your fingertips or nails. Also, remove your rings and wristwatch before starting cleaning work to prevent accidental damage to the drum.

Do not use alcohol, selenium refresher and other organic solvents or silicon oil as they will have an adverse effect on the drum.

5. Scratches on photoconductive drum surface

If the surface is scratched in such a way that the aluminum substrate is exposed, no print image will be produced on this area. In addition, the cleaning blade will be damaged so replacement with a new drum will be necessary.

6. Collecting used photoconductive drums

Regarding the recovery and disposal of used photoconductive drums, we recommend following the relevant local regulations or rules.

4.7.3 Checking and cleaning of drum cleaning blade

1. Handling precautions

Pay attention to the following points as the cleaning blade life is determined by the condition of its edge:

- Do not allow hard objects to hit or rub against blade edge.
- Do not rub the edge with a cloth or soft pad.
- Do not leave oil (or fingerprints, etc.) on the edge.
- Do not apply solvents such as paint thinner to the blade.
- Do not allow paper fibers or dirt to contact the blade edge.
- Do not place the blade near a heat source.

2. Cleaning procedure

Clean the blade edge with a cloth moistened with water and squeezed lightly.

4.7.4 Checking and cleaning of fuser roller and pressure roller

1. Handling precautions

- Fuser roller

Do not leave any oil (fingerprints, etc.) on the fuser roller.

Be careful not to allow any hard object to hit or rub against the fuser roller, or it may be damaged, possibly resulting in poor cleaning.

- Pressure roller

Do not leave any oil (fingerprints, etc.) on the pressure roller.

2. Checking

- Check for stain and damage on the fuser and pressure rollers, and clean if necessary.
- Check the separation guide and fingers and check for chipped tips.
- Check the thermistors for proper contact with the pressure roller.
- Check the fused and fixed condition of the toner.
- Check the gap between the entrance guide and pressure roller.
- Check the fuser roller for proper rotation.

3. Cleaning procedure

When fuser roller and pressure roller become dirty, they will cause jamming. If this happens, wipe the surface clean with a piece of soft cloth. For easier cleaning, clean the roller while they are still warm.

Note:

Be careful not to rub the fuser roller and pressure roller surface with your nails or hard objects because it can be easily damaged. Do not use silicone oil on the fuser roller and pressure roller.

5. TROUBLESHOOTING

5.1 Diagnosis and Prescription for Each Error Code

5.1.1 Paper transport jam

[E01] Leading edge of paper not reaching the exit sensor

[E02] Trailing edge of paper not passing the exit sensor

Open the transfer cover. Is there any paper on the transport path?

↓ YES → Remove the paper.

NO

Is the exit sensor working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[5])

| NO → 1. Check if the connector of the exit sensor is disconnected.
| 2. Check if the connector CN17 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the exit sensor.
| 6. Replace the MAIN board.
↓


YES

Is the registration roller clutch working?

(Perform the output check in the test mode: 04-108/158)

| NO → 1. Check if the connector of the registration roller clutch is
| disconnected.
| 2. Check if the connector CN26 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the registration roller clutch.
| 6. Replace the MAIN board.
↓

YES

1. Check the registration roller. Replace it if it is worn out.
2. Check if the aligning amount is appropriate. (See  P.3-5 "3.2.2 Paper alignment at the registration roller")

An [E01] error occurs both when the amount is too large and too small.

[E03] Paper remaining inside the equipment at power-ON

Open the cover of the unit/area whose picture is blinking on the control panel. Is there any paper on the transport path? (Refer to the following table.)

↓ YES → Remove the paper.

NO

Is the sensor in the jamming area working? (Perform the input check in the test mode: refer to the following table.)

| NO → 1. Check if the connector of the sensor is disconnected.
| 2. Check if any of the connectors on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the sensor.
| 6. Replace the MAIN board.
↓

YES

Replace the MAIN board.

Relation between the jamming area and the corresponding sensors and covers
(If a jam is occurring in the PFU, check the PFU board.)

Jamming area	Cover	Sensor	Test mode / Input check
Registration area	Transfer cover	Registration sensor	03-[INTERRUPT]OFF/[9]/[6]
Exit area	Transfer cover	Exit sensor	03-[INTERRUPT]OFF/[9]/[5]
PFU	PFU side cover	PFU feed sensor	03-[INTERRUPT]OFF/[7]/[5]

[E21] Paper fed from the PFU drawer not reaching the registration sensor

Open the transfer cover. Is there paper in front of the registration sensor?

↓ YES → Remove the paper.

NO

Is the registration sensor working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[6])

| NO → 1. Check if the connector of the registration sensor is disconnected.
| 2. Check if the connector CN26 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the registration sensor.
| 6. Replace the MAIN board.
↓

YES

Are the PFU transport clutches (High speed/Low speed) working?

(Perform the output check in the test mode: 04-203, 205)

| NO → 1. Check if the connectors of the PFU transport clutches (High speed/
| Low speed) are disconnected.
| 2. Check if the connector CN4 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the PFU transport clutches (High speed/Low speed).
| 6. Replace the MAIN board.
↓

YES

1. Check the condition of the pickup roller of paper source, and replace it if it is worn out.
2. Check the transport roller. Replace it if it is worn out.

5.1.2 Paper misfeeding

[E12] Bypass misfeeding

Open the transfer cover. Is there any paper in front of the registration sensor?

↓ YES → Remove the paper.

NO

Is the registration sensor working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[6])

| NO → 1. Check if the connector of the registration sensor is disconnected.
| 2. Check if the connector CN26 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the registration sensor.
| 6. Replace the MAIN board.
↓

YES

Is the bypass pickup solenoid working? (Perform the output check in the test mode: 04-204)

Is the bypass paper sensor working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[1]/[4])

| NO → 1. Check if the connector of the bypass pickup solenoid and bypass
| paper sensor are disconnected.
| 2. Check if the connector CN26 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the bypass pickup solenoid and bypass paper sensor.
| 6. Replace the MAIN board.
↓

YES

Check the bypass pickup roller. Replace it if it is worn out.

[E13] Drawer misfeeding (paper not reaching the registration sensor)

Open the transfer cover. Is there any paper in front of the registration sensor?

↓ YES → Remove the paper.

NO

Is the registration sensor working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[6])

- | NO →
1. Check if the connector of the registration sensor is disconnected.
 2. Check if the connector CN26 on the MAIN board is disconnected.
 3. Check if the connector pins are disconnected and the harnesses are open circuited.
 4. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
 5. Replace the registration sensor.
 6. Replace the MAIN board.
- ↓

YES

Is the pickup solenoid working?

(Perform the output check in the test mode: 04-201)

- | NO →
1. Check if the connector of the pickup solenoid is disconnected.
 2. Check if the connector CN26 on the MAIN board is disconnected.
 3. Check if the connector pins are disconnected and the harnesses are open circuited.
 4. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
 5. Replace the pickup solenoid.
 6. Replace the MAIN board.
- ↓

YES

Check the drawer pickup roller. Replace it if it is worn out.

[E14] PFU drawer misfeeding (paper not reaching the PFU feed sensor)

Open the side cover. Is there any paper in front of the PFU feed sensor?

↓ YES → Remove the paper.

NO

Is the PFU feed sensor working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[7]/[5])

| NO → 1. Check if the connector of the PFU feed sensor is disconnected.
| 2. Check if the connector CN4 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the PFU feed sensor.
| 6. Replace the MAIN board.
↓

YES

Is the PFU pickup solenoid working?

(Perform the output check in the test mode: 04-202)

| NO → 1. Check if the connector of the PFU pickup solenoid is disconnected.
| 2. Check if the connector CN4 on the MAIN board is disconnected.
| 3. Check if the connector pins are disconnected and the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 5. Replace the PFU pickup solenoid.
| 6. Replace the MAIN board.
↓

YES

Check the PFU drawer pickup roller. Replace it if it is worn out.

5.1.3 Cover open jam

[E40] ADU cover opened during printing

Is the ADU cover open?

↓ YES → Remove paper if there is any, then close the cover.

NO

Is the voltage of 24V being supplied from the power supply unit?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[8]/[6].)

↓ NO →

1. Check if the connector for 24 V power supply is disconnected.
2. Check if the connector CN23 on the MAIN board is disconnected.
3. Check if the connector pins are disconnected and the harnesses are open circuited.
4. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
5. Replace the MAIN board.

↓

YES

Replace the MAIN board.

[E41] Front cover opened during printing

Is the front cover open?

↓ YES → Close the cover.

NO

Is the front cover opening/closing switch working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[3])

- | NO →
1. Check if the connector of the front cover opening/closing switch is disconnected.
 2. Check if the connector CN3 on the MAIN board is disconnected.
 3. Check if the connector pins are disconnected and the harnesses are open circuited.
 4. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
 5. Replace the front cover opening/closing switch.
 6. Replace the MAIN board.
- ↓

YES

Is the voltage of 24V being supplied from the power supply unit?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[8]/[6])

- | NO →
1. Check if the connector for 24 V power supply is disconnected.
 2. Check if the connector CN23 on the MAIN board is disconnected.
 3. Check if the connector pins are disconnected and the harnesses are open circuited.
 4. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
 5. Replace the MAIN board.
- ↓

YES

Replace the MAIN board.

[E44] PFU cover opened during printing

Is the PFU cover open?

↓ YES → Remove the paper if there is any, then close the cover.

NO

Is the PFU cover opening/closing switch working?

(Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[2])

↓ NO →

1. Check if the connector of the PFU cover opening/closing switch is disconnected.
2. Check if the connector CN4 on the MAIN board is disconnected.
3. Check if the connector pins are disconnected and the harnesses are open circuited.
4. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
5. Replace the PFU cover opening/closing switch.
6. Replace the MAIN board.

YES

Replace the MAIN board.

5.1.4 Transport jam (ADF)

[E71] Jam not reaching the original registration sensor

Are the pickup roller, feed roller and separation roller stained or worn out?

↓ YES → Clean the rollers or replace them.

NO

Is the original excessively curled or folded?

↓ YES → Flatten and set it again.

NO

Are the original registration sensor working?

(Perform the input check: 03-[INTERRUPT]ON/[5]/[6])

↓ NO →

1. Check if the connectors of the original registration sensor are disconnected.
2. Check if the connector CN74 on the ADF board is disconnected.
3. Check if the connector pins are disconnected or the harnesses are open circuited.
4. Check if the conductor pattern on the ADF board is short circuited or open circuited.
5. Replace the original registration sensor.
6. Replace the ADF board.

YES

Replace the ADF board.

[E72] Jam not reaching the read sensor

Are the registration roller and read roller stained?

↓ YES → Clean the rollers.

NO

Is the read sensor working? (Perform the input check: 03-[INTERRUPT]ON/[4]/[0])

↓ NO →

1. Check if the connector of the read sensor are disconnected.
2. Check if the connector CN75 on the ADF board is disconnected.
3. Check if the connector pins are disconnected or the harnesses are open circuited.
4. Check if the conductor pattern on the ADF board is short circuited or open circuited.
5. Replace the read sensor.
6. Replace the ADF board.

YES

Replace the ADF board.

[E73] Stop jam at the exit sensor

Is the exit roller stained?

↓ YES → Clean the roller.

NO

Is the exit sensor working? (Perform the input check: 03-[INTERRUPT]ON/[2]/[2])

- | NO →
1. Check if the connector of the exit sensor is disconnected.
 2. Check if the connector CN75 on the ADF board is disconnected.
 3. Check if the connector pins are disconnected or the harnesses are open circuited.
 4. Check if the conductor pattern on the ADF board is short circuited or open circuited.
 5. Replace the exit sensor.
 6. Replace the ADF board.
- ↓

YES

Replace the ADF board.

[E86] ADF jam access cover open

Is the ADF jam access cover opened?

↓ YES → Remove the original, if any, and close the ADF jam access cover.

NO

Is the ADF jam access cover switch working?

(Perform the input check: 03-[INTERRUPT]ON/[4]/[4])

- | NO →
1. Check if the connector of the ADF jam access cover switch is disconnected.
 2. Check if the connector CN75 on the ADF board is disconnected.
 3. Check if the connector pins are disconnected or the harnesses are open circuited.
 4. Check if the conductor pattern on the ADF board is short circuited or open circuited.
 5. Replace the ADF jam access cover switch.
 6. Replace the ADF board.
- ↓

YES

Replace the ADF board.

[E87] ADF open jam

Is the ADF opened?

↓ YES → Remove the original, if any, and close the ADF.

NO

Is the ADF opening/closing sensor adjusted within the specified range?

↓ NO → Adjust the ADF opening/closing sensor.

YES

Is the ADF opening/closing sensor working?

(Perform the input check: 03-[INTERRUPT]ON/[4]/[3])

| NO → 1. Check if the connector of the ADF opening/closing sensor is
| disconnected.
| 2. Check if the connector CN74 on the ADF board is disconnected.
| 3. Check if the connector pins are disconnected or the harnesses are
| open circuited.
| 4. Check if the conductor pattern on the ADF board is short circuited or
| open circuited.
| 5. Replace the ADF opening/closing sensor.
| 6. Replace the ADF board.
↓

YES

Replace the ADF board.

5.1.5 Drive system related service call

[C01] Main motor is abnormal

Is the main motor working? (Perform the output check in the test mode: 04-101/151)

- | NO →
1. Check if the connector CN1 of the main motor is disconnected.
 2. Check if the connector CN16 on the MAIN board is disconnected.
 3. Check if the connector pins are disconnected and the harnesses are open circuited.
 4. Check if the conductor patterns on the main motor board and MAIN board are short circuited or open circuited.
 5. Replace the main motor.
 6. Replace the MAIN board.
- |
- |
- |
- |
- |
- |
- ↓

YES

Is the LED on the main motor board lit without flickering?

- | NO →
1. Check if the connector pins are disconnected and the harnesses are open circuited.
 2. Check if the conductor patterns on the main motor board and MAIN board are short circuited or open circuited.
 3. Replace the main motor.
 4. Replace the MAIN board.
- |
- |
- |
- |
- ↓

YES

1. Check if the PLL lock signal CN305-B8 output from the MAIN board is always level "L".
2. Check if the voltage supplied to the CPU input terminal IC24-12 is always "L".
3. Replace the MAIN board.

5.1.6 Scanning system related service call

[C21] CIS unit initialization error

Does the CIS case move to its home position when the power is turned ON?

- | YES →
1. Check if the CIS home position sensor is installed properly.
 2. Check if any of the connectors is disconnected from the CIS home position sensor.
 3. Check if the connector CN14 on the MAIN board is disconnected.
 4. Check if the connector pins are disconnected and the harnesses are open circuited.
 5. Check if the conductor patterns on the MAIN board are short circuited or open circuited.
 6. Replace the CIS home position sensor.
 7. Replace the MAIN board.
- ↓

NO

Is there any abnormal sound when the CIS case is moving?

- | YES →
1. Check if the CIS unit drive belt-1 or the CIS unit drive belt-2 is damaged.
 2. Check if the belt tension of the CIS unit drive belt-1 or the CIS unit drive belt-2 is loose.
 3. Check if the joint of the belt stopper and the CIS unit drive belt-1 is loose.
- ↓

NO

1. Check if the tension of the CIS unit drive belt-1 or the CIS unit drive belt-2 is too tight.
2. Check if any of the connectors of the scan motor is disconnected.
3. Check if the connector CN18 on the MAIN board is disconnected.
4. Check if the connector pins are disconnected and the harnesses are open circuited.
5. Check if the conductor patterns on the MAIN board are short circuited or open circuited.
6. Replace the scan motor.
7. Replace the MAIN board.

[C26] Peak detection error

Does the exposure lamp light? (Perform the output check in the test mode: 04-267)

- ↓ YES → Replace the CIS unit.

NO

1. Check if the connector of the CIS unit are disconnected.
2. Check the MAIN board if the connector (CN6) is disconnected and the harness is short circuited or open circuited.
3. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
4. Replace the MAIN board.
5. Replace the CIS unit.

5.1.7 Fuser unit related service call

CAUTION

Be sure to turn OFF the power and unplug the power cable beforehand when checking the heater.

The fuser unit itself or the part of the unit remains heated and the capacitors are still charged after a while the power cable is unplugged. So make sure the unit is cooled down enough before checking.

[C41] Thermistor or heater is abnormal at power ON

1. Check the thermistors

- (1) Check if the connectors are disconnected.
- (2) Check if the center, side and edge thermistors are in contact with the surface of the fuser roller properly.
- (3) Check if the harnesses of the center, side and edge thermistors are open circuited.

2. Check the heater

- (1) Check if the heater is broken.
- (2) Check if the connector of the heater is disconnected.
- (3) Check if the thermostat is blown.

3. Check the MAIN board

- (1) Check if the connectors CN17 are disconnected.
- (2) Check if the conductor pattern on the MAIN board is short circuited or open circuited.
- (3) Replace the MAIN board.

4. Check the switching regulator

Check if the connectors CN108 are disconnected.

5. Clear the status counter

After repairing the matter which caused the error [C41], perform the following:

- (1) Turn ON the power while [0] and [8] are pressed simultaneously.
- (2) Key in "400", then press [START].
- (3) Change the current status counter value "1" or "2" to "0", then press [ENTER] or [INTERRUPT] (to cancel [C41]).
- (4) Turn the power OFF and then back ON. Make sure that the equipment enters the normal ready state.

[C43] Thermistor abnormality during warming up or in ready status after abnormality judgment

1. Check the thermistors

- (1) Check if the connectors are disconnected.
- (2) Check if the center, side and edge thermistors are in contact with the surface of the fuser roller properly.
- (3) Check if the harnesses of the center, side and edge thermistors are open circuited.

2. Check the heater

- (1) Check if the heater is broken.
- (2) Check if the connector of the heater is disconnected.
- (3) Check if the thermostat is blown.

3. Check the MAIN board

- (1) Check if the connectors CN17 are disconnected.
- (2) Check if the conductor pattern on the MAIN board is short circuited or open circuited.
- (3) Replace the MAIN board.

4. Clear the status counter

After repairing the matter which caused the error [C43], perform the following:

- (1) Turn ON the power while [0] and [8] are pressed simultaneously.
- (2) Key in "400", then press [START].
- (3) Change the current status counter value "4" to "0", then press [ENTER] or [INTERRUPT] (to cancel [C43]).
- (4) Turn the power OFF and then back ON. Make sure that the equipment enters the normal ready state.

[C44] Fuser is abnormal after abnormality judgment**1. Check the thermistors**

- (1) Check if the connectors are disconnected.
- (2) Check if the center, side and edge thermistors are in contact with the surface of the fuser roller properly.
- (3) Check if the harnesses of the center, side and edge thermistors are open circuited.

2. Check the heater

- (1) Check if the heater is broken.
- (2) Check if the connector of the heater is disconnected.
- (3) Check if the thermostat is blown.

3. Check the MAIN board

- (1) Check if the connectors CN17 are disconnected.
- (2) Check if the conductor pattern on the MAIN board is short circuited or open circuited.
- (3) Replace the MAIN board.

4. Clear the status counter

Change the current status counter value (08-400) "5", "7" or "9" to "0" for [C44], taking the same procedure as that for [C41].

- * The status counter value is as follows in the following cases. Change them to "0" respectively.
- The error occurred during warming-up: "5"
 - The error occurred after the equipment has become ready: "7"
 - The temperature detected by the center thermistor is 230°C or higher: "9"
 - The temperature detected by the side thermistor is 230°C or higher: "9"
 - The temperature detected by the edge thermistor is 230°C or higher: "9" only during printing.

[C45] Thermistor abnormality during printing**1. Check the edge thermistor**

- (1) Check if the connector is disconnected.
- (2) Check if the edge thermistor is in contact with the surface of the fuser roller properly.
- (3) Check if the harness of the edge thermistor is open circuited.

2. Check the MAIN board

- (1) Check if the connector CN17 is disconnected.
- (2) Check if the conductor pattern on the board is short circuited or open circuited.
- (3) Replace the MAIN board.

3. Clear the status counter

Change the current status counter value (08-400) "6" to "0".

5.1.8 ADF related service call

No service call for the ADF (MR-2020).

5.1.9 Laser optical unit related service call

[CA1] Polygonal motor is abnormal

Is the polygonal motor rotating?

- | NO → 1. Check if the connector of the harness is disconnected between MAIN
| board (CN24) and the laser optical unit.
| 2. Check if the harness is open circuited and the connector pin is
| disconnected.
| 3. Check if the conductor pattern on the MAIN board is short circuited or
| open circuited.
| 4. Replace the laser optical unit.
| 5. Replace the MAIN board.
↓

YES

1. Check if the conductor pattern on the MAIN board is short circuited or open circuited.
2. Replace the MAIN board.

[CA2] H-Sync detection error

Are the harness open circuited and the connectors disconnected or misconnected between the MAIN board (CN21, CN22) and laser optical unit?

- ↓ YES → 1. Connect the disconnected connectors.
2. Replace the laser optical unit if the harness is open circuited.

NO

1. Replace the MAIN board.
2. Replace the laser optical unit.

5.1.10 Service call for others

[C94] Firmware update error

A C94 error message appears when either of the following Main PC boards is installed to e-STUDIO181/211.

- The Main PC board for e-STUDIO163/203 in which e-STUDIO166/206 firmware is installed
- The Main PC board for e-STUDIO163/166/203/206 in which e-STUDIO181/211 firmware is installed

Be sure not to make a mistake in the combination of the Main PC board and the firmware since the error message does not appear if there is an incorrect combination. Each equipment condition according to the combination of the Main PC board and the firmware is as shown in the list below.

Main PC board \ Firmware	e-STUDIO 165/205	e-STUDIO 163/203	e-STUDIO 167/207/237	e-STUDIO 166/206	e-STUDIO 182/212/242	e-STUDIO 181/211
e-STUDIO165/205	Installation disabled	Installation disabled	Installation disabled	Installation disabled	Installation disabled	Installation disabled
e-STUDIO163/203	Start-up disabled	Start-up enabled (function restricted)	Start-up disabled	C94	Start-up disabled	C94
e-STUDIO167/207/237	Installation disabled	Installation disabled	Installation disabled	Installation disabled	Installation disabled	Installation disabled
e-STUDIO166/206	Start-up disabled	Start-up enabled (function restricted)	Start-up disabled	Start-up enabled (function restricted)	Start-up disabled	C94
e-STUDIO182/212/242	Installation disabled	Installation disabled	Installation disabled	Installation disabled	Installation disabled	Installation disabled
e-STUDIO181/211	Start-up disabled	Start-up enabled (function restricted)	Start-up disabled	Start-up enabled (function restricted)	Start-up disabled	Start-up enabled

- C94 C94 error message appears
- Start-up enabled (function restricted) It is possible to start up the equipment even if its copy speed becomes slow
- Start-up enabled It is possible to start up the equipment normally
- Start-up disabled It is NOT possible to start up the equipment
- Installation disabled It is NOT possible to install the Main PC board in the equipment

Fig. 5-1

Note:

Be sure to check the version of the firmware after it is updated.

[C97] High-voltage transformer abnormality

- (1) Is the main charger installed securely?
- (2) Check if the spring of high-voltage supply contact point is deformed.
- (3) Check if the needle electrode is broken or the main charger grid is deformed.
- (4) Check if any foreign matters is on the needle electrode or the main charger grid.
- (5) Is the transfer/separation charger installed securely?
- (6) Check if the transfer/separation charger wire is broken or unhooked.
- (7) Check if any foreign matter is on the transfer/separation charger wire.

[F14] Invalid backup counter

Has the MAIN board been replaced?

↑ YES → Download the counter value of the SRAM board to the MAIN board in
↓ the setting mode (08-389).

NO

Has the SRAM board been replaced?

↑ YES → Download the counter value of the MAIN board to the SRAM board in
↓ the setting mode (08-388).

NO

1. Check if the connector CN2 on the SRAM board and the connector CN2 on the MAIN board are securely connected.
2. Replace the SRAM board.
3. Replace the MAIN board.

5.1.11 Optional communication related service call

[C55] ADF I/F error

[F11] ADF I/F error

- (1) Check if the connector CN71 on the ADF/RADF board is disconnected.
- (2) Check if the relay connector between the ADF/RADF board and the PFC board is disconnected.
- (3) Check if the connector CN246 on the PFC board is disconnected.
- (4) Check if the connector pins are disconnected and the harnesses are open circuited.
- (5) Check if the conductor patterns on the ADF/RADF board and the MAIN board are short circuited or open circuited.
- (6) Replace the ADF/RADF board.
- (7) Replace the MAIN board.

5.2 Troubleshooting for the Image

1. Abnormality of image density / Gray balance

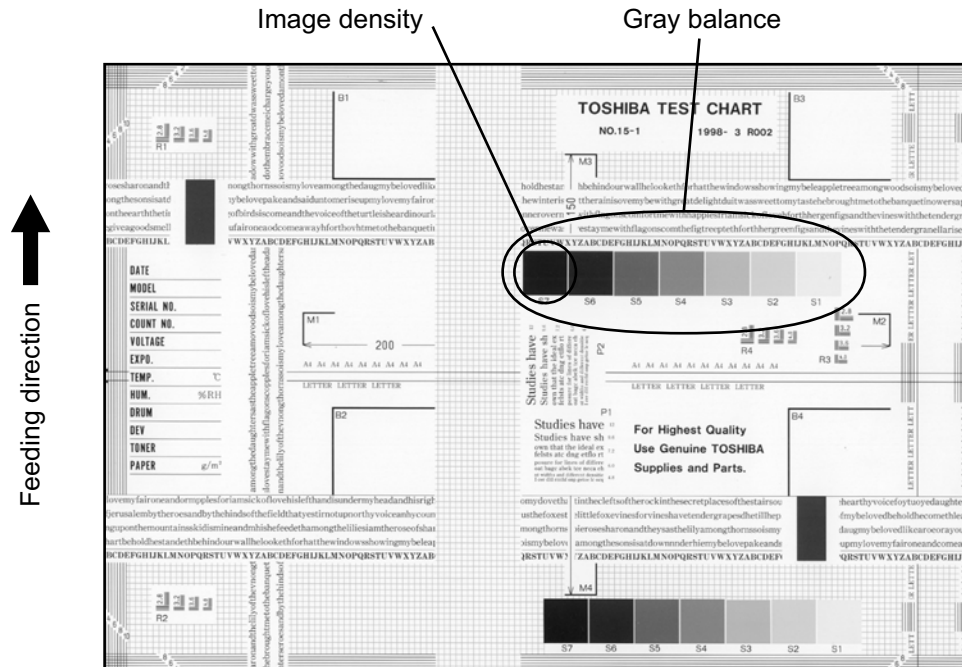


Fig. 5-2

Defective area	Step	Check items	Prescription
Density/Gray balance	1	Check the density/gray balance.	Adjust the density.
Printer section	2	Check test print image (07-113).	Go to step 4 if there is any problem on image.
Scanner	3	Are the original glass and CIS unit dirty?	Clean them.
Printed image	4	Is the image faded?	Perform troubleshooting for faded image.
	5	Is background fogging occurring?	Perform troubleshooting for background fogging.
	6	Is there a blotch on the image?	Perform troubleshooting for blotched image.
	7	Is the image transferred normally?	Perform troubleshooting for abnormal transfer.

2. Background fogging

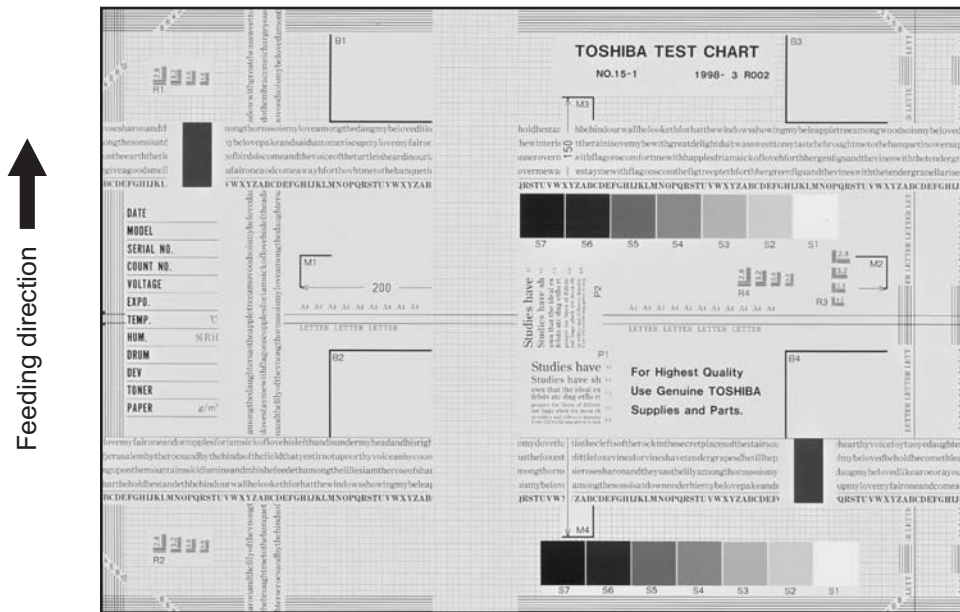


Fig. 5-3

Defective area	Step	Check items	Prescription
Density reproduction	1	Check the reproduction of the image density.	Adjust the density.
Background reproduction	2	Check the background reproduction.	Adjust the background.
Printer section	3	Check test print image (07-113).	Go to step 4 if there is any problem on image.
Scanner	4	Are the original glass and CIS unit dirty?	Clean them.
Auto-toner	5	Is the auto-toner sensor normal?	Check the performance of the auto-toner sensor and readjust.
	6	Is the toner supplied normally?	Check the motor and circuits.
High-voltage transformer (Main charger / Developer bias)	7	Is the high-voltage transformer output defective?	Adjust the output, or replace the transformer.
Developer unit	8	Is the contact between the drum and developer material normal?	Adjust the doctor-sleeve gap and polarity.
Developer material/Toner/Drum	9	Using the specified developer material, toner and drum?	Use the specified developer material, toner and drum.
	10	Have the developer material and drum reached their PM life?	Replace the developer material and drum.
	11	Is the storage environment of the toner cartridge 35°C less without dew?	Use the toner cartridge stored in the environment within specification.
Drum cleaning blade	12	Is the drum cleaned properly?	Check the pressure of the drum cleaning blade.
Toner dusting	13	Is toner heaped on the seal of the developer unit?	Remove the toner and clean the developer unit.

3. Moire/lack of sharpness

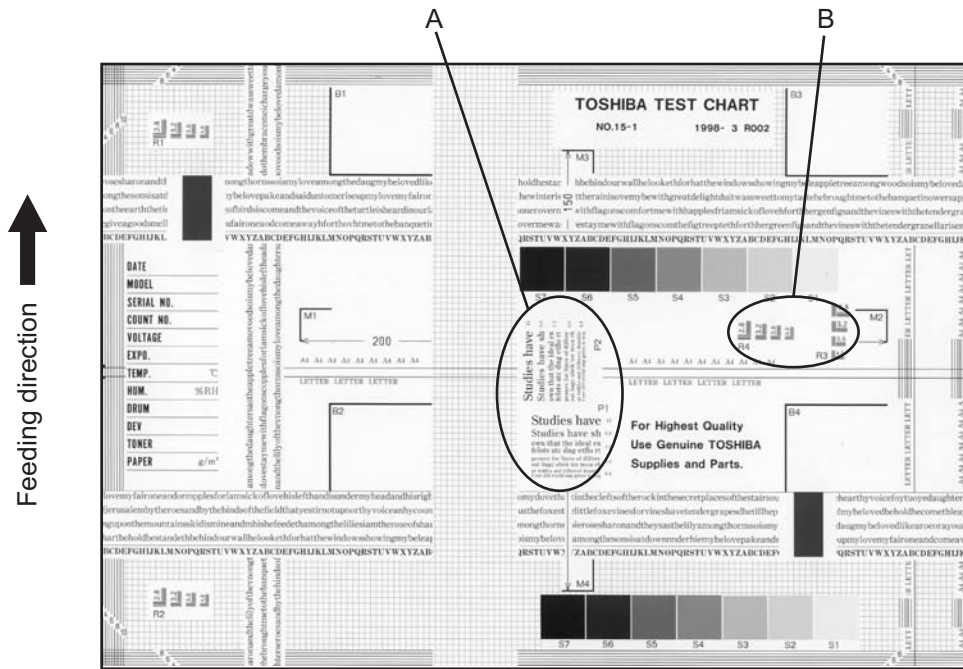


Fig. 5-4

Moire

Defective area	Step	Check items	Prescription
Density reproduction	1	Check the reproduction of the image density.	Adjust the density.
Parameter adjustment value	2	Check the image processing parameters.	Check the adjustment value for sharpness.
Printer section	3	Check test print image (07-113).	When defects occur, perform the corresponding troubleshooting procedure.

Lack of sharpness

Defective area	Step	Check items	Prescription
Density reproduction	1	Check the reproduction of the image density.	Adjust the density.
Parameter adjustment value	2	Check the image processing parameters.	Check the adjustment value for sharpness.
Printer section	3	Check test print image (07-113).	When defects occur, perform the corresponding troubleshooting procedure.
	4	Check the image processing parameters.	Check the encircled areas A and B in the image, and change the sharpness intensity in the sharpness adjustment mode.

4. Toner offset

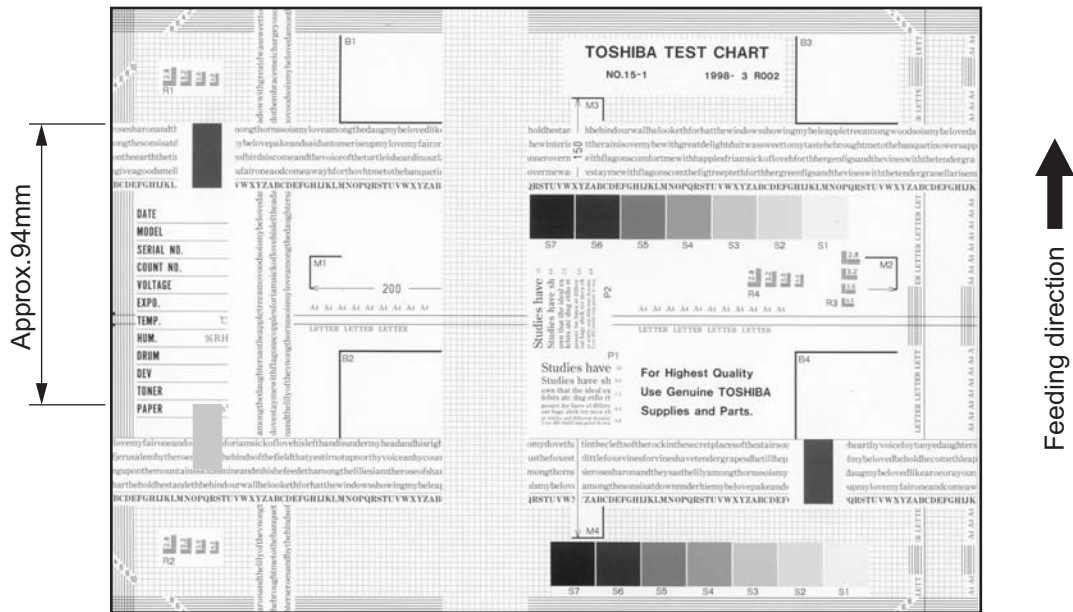


Fig. 5-5

Toner offset (Shadow image appears approx. 94 mm toward the dark image.)

Defective area	Step	Check items	Prescription
Density	1	Is the density too high?	Adjust the density.
Fuser unit	2	Is the pressure of the fuser roller normal?	Check the pressure releasing parts and pressurization mechanism.
	3	Is the thermistor in contact with the fuser roller?	Contact the thermistor with the fuser roller.
	4	Is there a scratch on the fuser roller surface?	Replace the fuser roller.
	5	Has the fuser roller reached its PM life?	Replace the fuser roller.
	6	Is the setting temperature of the fuser roller normal?	Check the adjustment values of fuser roller temperature? 08-407, 410, 411, 450, 515, 516
Paper	7	Has the appropriate paper type been selected?	Select a proper mode.
	8	Is the setting temperature of the fuser roller in each paper type normal?	Check the setting and correct it. 08-413, 437, 438, 451, 452, 453, 520, 521
	9	Using the recommended paper?	Use the recommended paper.
Developer material	10	Using the specified developer material?	Use the specified developer material and toner.
Scanner	11	Are the original glass (especially the position of shading correction plate) and CIS unit dirty?	Clean them.

5. Blurred image

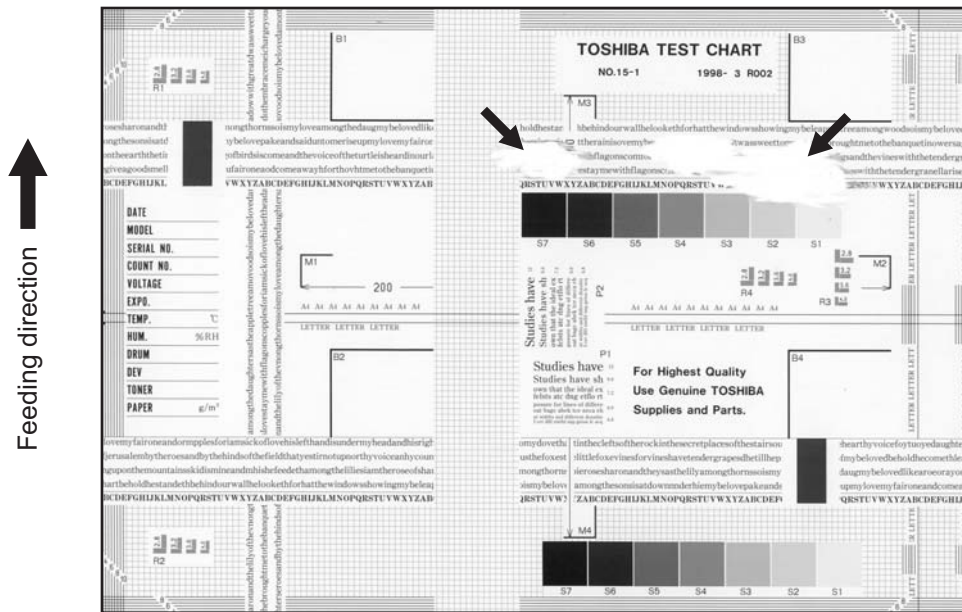


Fig. 5-6

Defective area	Step	Check items	Prescription
Paper	1	Is the paper in the drawer damp?	Change paper. Avoid storing paper in damp place.
Bedewed scanner	2	Is the scanner bedewed?	Clean the scanner.
Drum	3	Is the drum surface wet or dirty?	Wipe the drum with a piece of dry cloth. * Do not use alcohol or other organic solvents.
Ozone exhaust	4	Is the exhaust fan operating properly?	Check the connection of connector. Replace the ozone exhaust fan.
	5	Is the ozone filter stained or damaged?	Replace the ozone filter.

6. Poor fusing

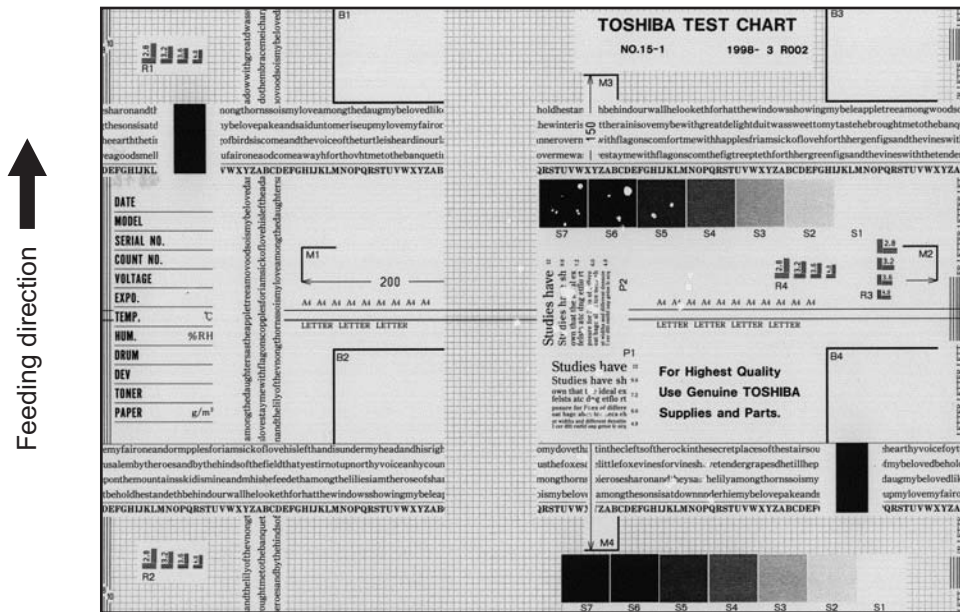


Fig. 5-7

Defective area	Step	Check items	Prescription
Heater electric power	1	Check if the connector contacts properly.	Correct it.
	2	Is the heater shorted or broken?	Replace the heater.
Pressure between fuser roller and pressure roller	3	Are the pressure springs working properly?	Check and adjust the pressure springs.
Fuser roller temperature	4	Is the temperature of the fuser roller normal?	Check the setting and correct it. 08-407, 410, 411, 450, 515, 516
Developer material/Toner	5	Using the specified developer material and toner?	Use the specified developer material and toner.
Paper	6	Is the paper in the drawer damp?	Avoid storing paper in damp place.
	7	Is the paper type corresponding to its mode?	Use the proper type of paper or select the proper mode.
	8	Is the setting temperature of the fuser roller in each paper type normal?	Check the setting and correct it. 08-413, 437, 438, 451, 452, 453, 520, 521
	9	Using the recommended paper?	Use the recommended paper.

7. Blank copy

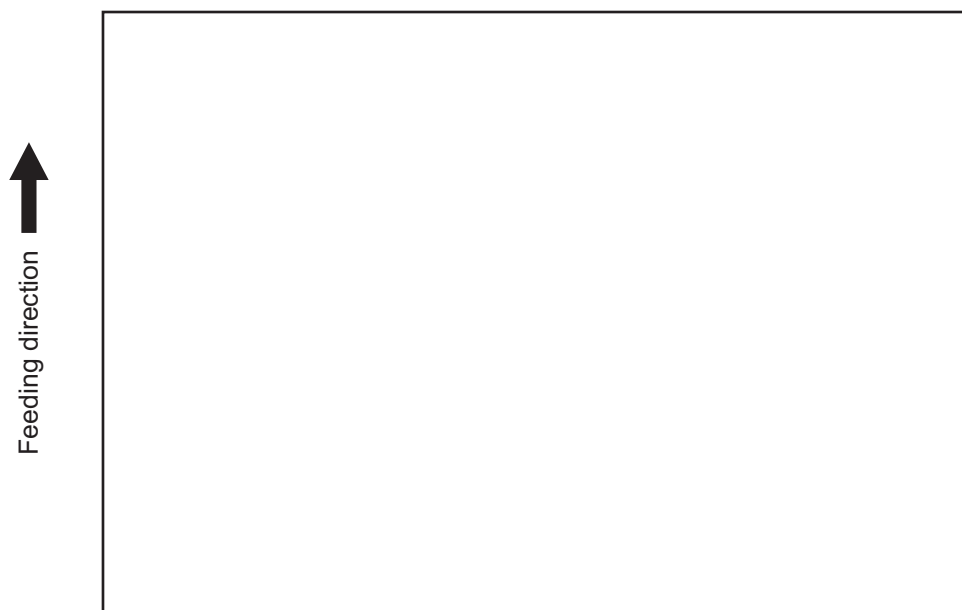


Fig. 5-8

Defective area	Step	Check items	Prescription
Transfer charger wire	1	Is the transfer charger wire cut off?	Replace the transfer charger wire.
High-voltage transformer (Transfer charger, Developer bias)	2	Is the high-voltage transformer output defective?	Adjust the output, or replace the transformer.
	3	Are the connectors of the high-voltage harness securely connected? Is the harness open circuited?	Reconnect the harness securely. Replace the high-voltage harness.
Developer unit	4	Is the developer unit installed properly?	Check and correct the engaging condition of the developer unit gears.
	5	Do the developer sleeve and mixers rotate?	Check and fix the drive system of the developer unit.
	6	Is the developer material smoothly transported?	Remove the foreign matter from the developer material.
	7	Has the magnetic brush phase been shifted?	Adjust the developer polarity.
	8	Is the doctor blade positioned properly?	Adjust it using the doctor-sleeve jig.
Drum	9	Is the drum rotating?	Check the drive system of the drum.
MAIN, LDR, SNS boards, CIS unit and harnesses	10	Are the connectors securely connected? Check if the harnesses connecting the boards are open circuited.	Connect the connectors securely. Replace the harness.

8. Solid copy

↑
Feeding direction



Fig. 5-9

Defective area	Step	Check items	Prescription
Scanner	1	Does the exposure lamp light?	Check if the connector contacts with the MAIN board and CIS unit terminal.
Bedewed scanner and drum	2	Is the scanner or drum bedewed?	Clean the CIS unit and drum. Keep the power cord plugged in all trough the day and night. (For the model with damp heater)
Main charger	3	Is the main charger securely installed?	Install it securely.
	4	Is the needle electrode broken?	Replace the needle electrode.
High-voltage transformer (Main charger)	5	Is the high-voltage transformer output defective?	Adjust the output, or replace the transformer.
	6	Are the connectors of the high-voltage harness securely connected? Is the harness open circuited?	Reconnect the harness securely. Replace the high-voltage harness.
MAIN, LDR, SNS boards, CIS unit and harnesses	7	Are the connectors securely connected? Check if the harnesses connecting the boards are open circuited.	Connect the connectors securely. Replace the harness.

9. White banding (in the feeding direction)

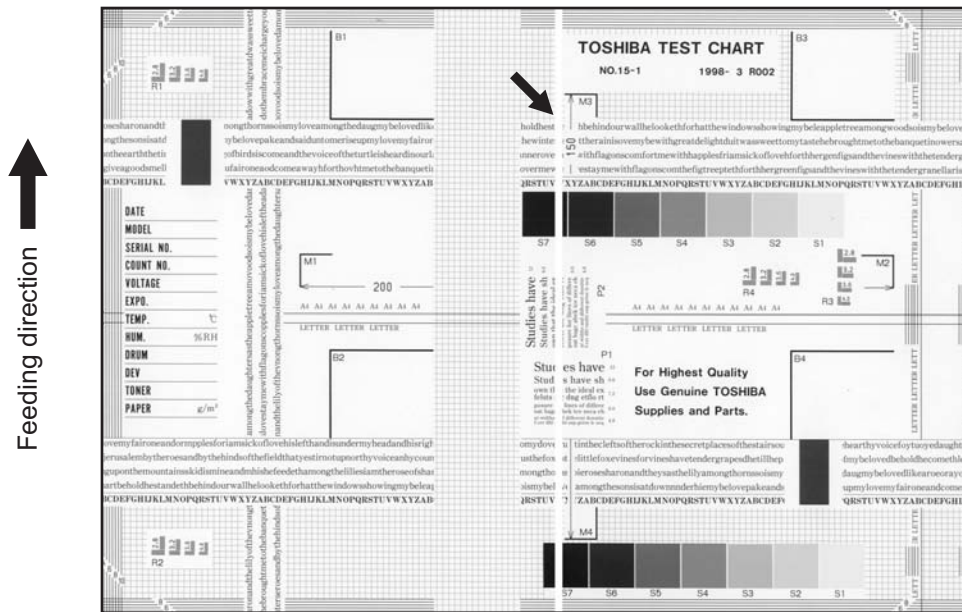


Fig. 5-10

Defective area	Step	Check items	Prescription
Laser optical unit	1	Is there a foreign matter or stain on the slit glass?	Remove the foreign matter or stain.
Main charger grid	2	Is there a foreign matter or dew on the charger grid?	Remove the foreign matter.
Transfer charger wire	3	Is there any foreign matter or stain on the transfer charger wire?	Clean the transfer charger wire.
Developer unit	4	Is the developer material transported properly?	Remove the foreign matter if there is any.
	5	Is there a foreign matter or dew on the drum seal?	Remove the foreign matter or dew.
	6	Is the upper drum seal of the developer unit in contact with the drum?	Correct the position of the drum seal or replace it.
Drum	7	Is there a foreign matter on the drum surface?	Replace the drum.
Transport path	8	Does the toner image contact with any foreign matter before the paper enters the fusing section after the separation?	Remove the foreign matter.
Discharge LED	9	Is any of the discharge LEDS off?	Replace the discharge LED.
Scanner	10	Are the original glass (especially the position of shading correction plate) and CIS unit dirty?	Clean them.
Cleaner	11	Is there any foreign matter, which contacts the drum on the cleaner stay?	Remove the foreign matter.

10. White banding (at right angle with the feeding direction)

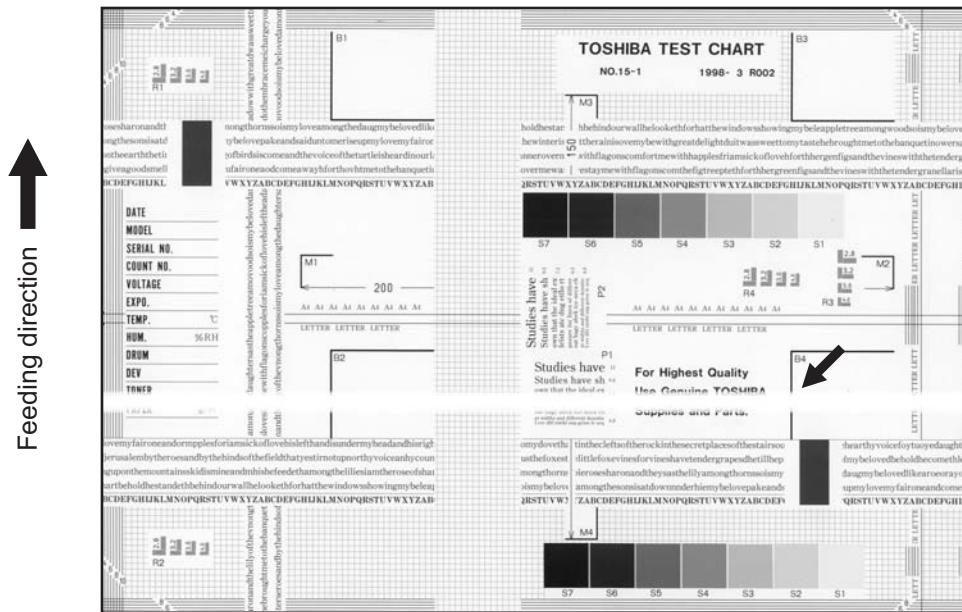


Fig. 5-11

Defective area	Step	Check items	Prescription
Main charger	1	Is there a foreign matter on the charger?	Remove the foreign matter.
	2	Is the connector in proper contact with the terminal?	Clean or adjust the terminal.
Drum	3	Is there any abnormality on the drum surface?	Replace the drum.
Discharge LED	4	Does the discharge LED light normally?	Replace the discharge LED or check the harness and the circuit.
Developer unit	5	Is the developer sleeve rotating normally? Is there any abnormality on the sleeve surface?	Check the drive system of the developer unit, or clean the sleeve surface.
Drive system	6	Are the drum and scanner jittering?	Check each drive system.
High-voltage transformer (Main charger / Developer bias / Transfer charger)	7	Is the high-voltage transformer output defective?	Adjust the output, or replace the transformer.
Transfer charger	8	Is any foreign matter such as paper shred sticking to the transfer charger wire?	Remove the foreign matter from the wire.
Feed system	9	Is the aligning amount proper?	Adjust the aligning amount.

11. Skew (inclined image)

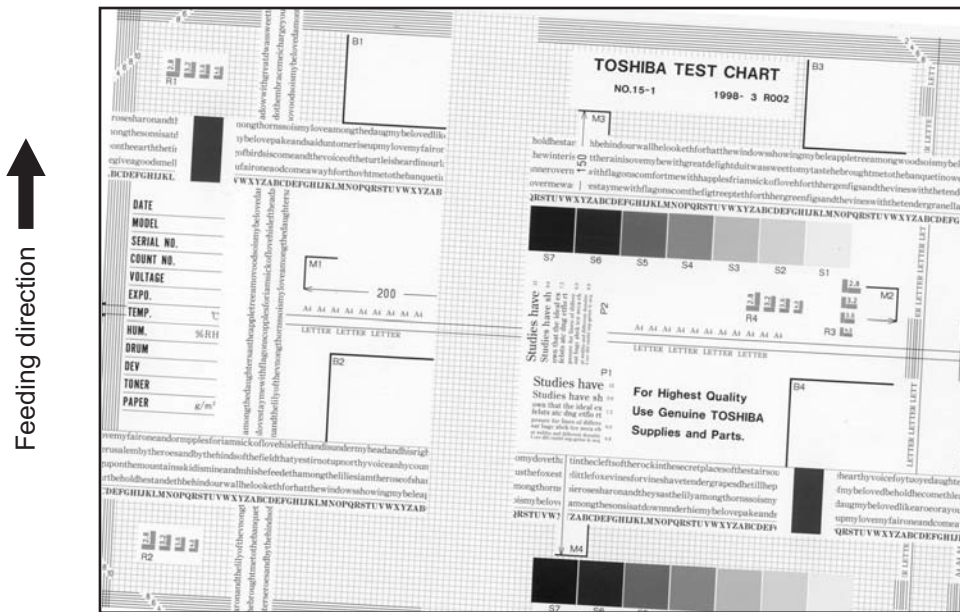


Fig. 5-12

Defective area	Step	Check items	Prescription
Drawers	1	Is the drawer properly installed?	Install the drawer properly.
	2	Is there too much paper in the drawer?	Reduce paper to 250 sheets or less.
	3	Is the corner of the paper folded?	Change the direction of the paper and set it again.
	4	Are the side guides of the drawer properly installed?	Adjust the position of the side guides.
Feed roller	5	Is the surface of the feed roller dirty?	Clean the feed roller surface with alcohol, or replace the roller.
Rollers	6	Are the roller and shaft secured?	Check and tighten the E-rings, pins, clips and setscrews.
Registration roller	7	Is the spring detached from the registration roller?	Attach the spring correctly. Clean the roller if it is dirty.
Pre-registration guide	8	Is the pre-registration guide properly installed?	Correct it.
CIS unit	9	Is the CIS unit slanted?	Replace the CIS case.
Feed system	10	Is the aligning amount proper?	Adjust the aligning amount.

12. Black banding (in the feeding direction)

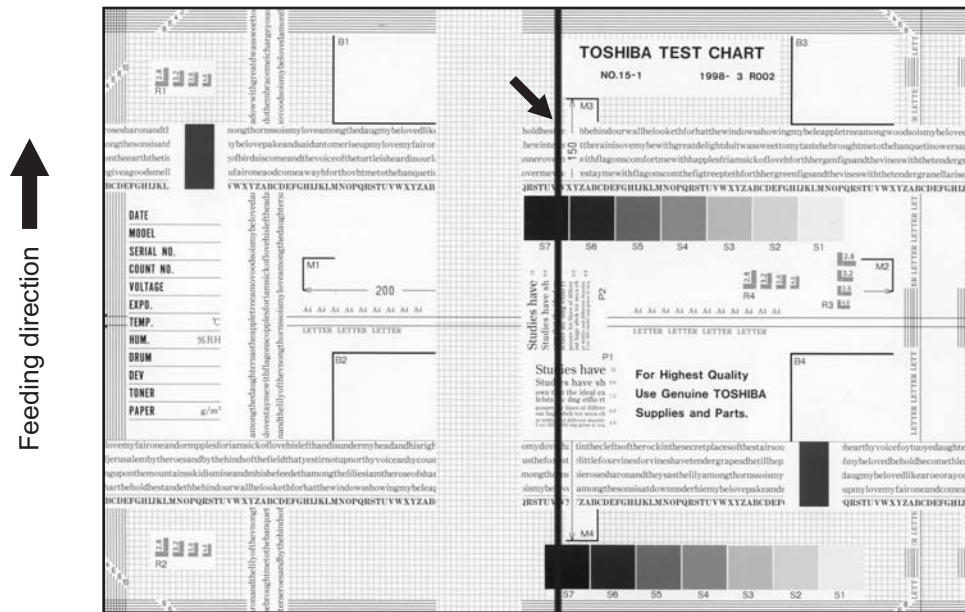


Fig. 5-13

Defective area	Step	Check items	Prescription
Shading correction plate	1	Is there dust or stains on part of the original glass where the shading correction plate is placed.	Clean the plate.
Main charger	2	Is there a foreign matter on the main charger grid?	Remove the foreign matter.
	3	Is the main charger grid dirty or deformed?	Clean or replace the main charger grid.
	4	Is there a foreign matter on the main charger?	Remove the foreign matter.
	5	Is the needle electrode dirty or deformed?	Clean or replace the needle electrode.
	6	Is there a foreign matter inside the main charger case?	Remove the foreign matter.
	7	Is the inside of the main charger case dirty?	Clean the inside of the main charger case.
	Cleaner	8	Is there paper dust sticking to the drum cleaning blade edge?
9		Is the drum cleaning blade working properly?	Check the pressurization of the drum cleaning blade.
10		Has the used toner been recovered properly?	Clean the toner recovery auger.
Fuser unit	11	Is the fuser roller surface dirty or damaged?	Clean or replace the fuser roller.
	12	Is the thermistor dirty?	Clean the thermistor.
Drum	13	Are there scratches on the drum surface?	Replace the drum.
Laser optical unit	14	Is there a foreign matter or stain on the slit glass?	Remove the foreign matter or the stain.

13. Black banding (at right angle with the feeding direction)

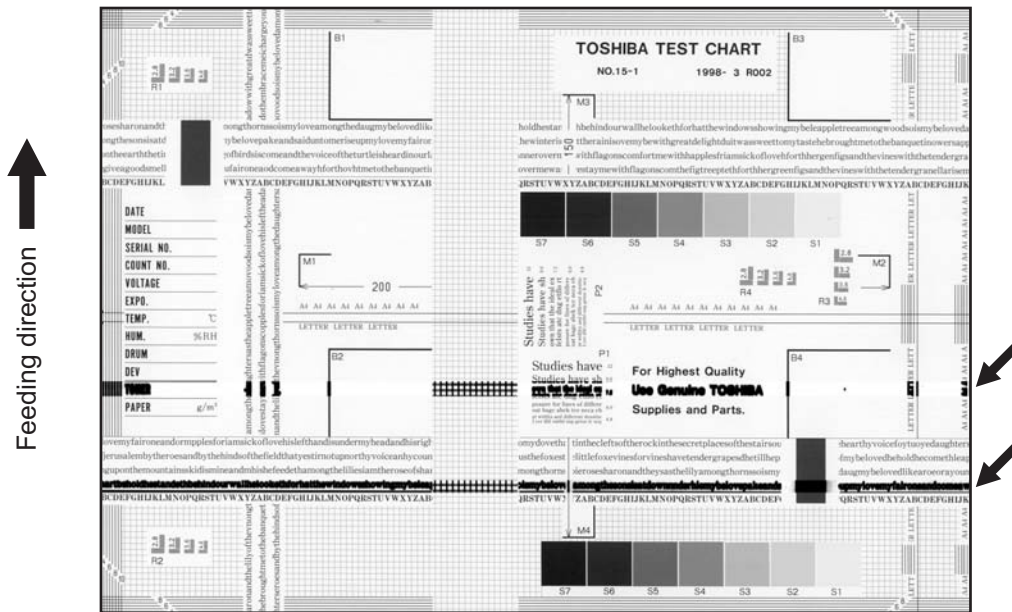


Fig. 5-14

Defective area	Step	Check items	Prescription
Main charger	1	Is the needle electrode dirty or deformed?	Clean or replace the needle electrode.
Fuser unit	2	Are the fuser roller, separation finger for fuser roller and thermistor dirty?	Clean them.
	3	Has the cleaning roller, pressure roller, fuser roller and separation finger for fuser roller reached their PM life?	Replace them.
High-voltage transformer (Main charger / Developer bias / Transfer charger)	4	Is the high-voltage transformer output defective?	Adjust the output, or replace the transformer.
Drum	5	Is there a deep scratch on the drum surface?	Replace the drum if the scratch has reached the aluminum base.
	6	Is there thin scratch (drum pitting) on the drum surface?	Check and adjust the contact condition of the cleaning blade and recovery blade.
Scanner	7	Are the original glass (especially the position of shading correction plate) and CIS unit dirty?	Clean them.

14.White spots

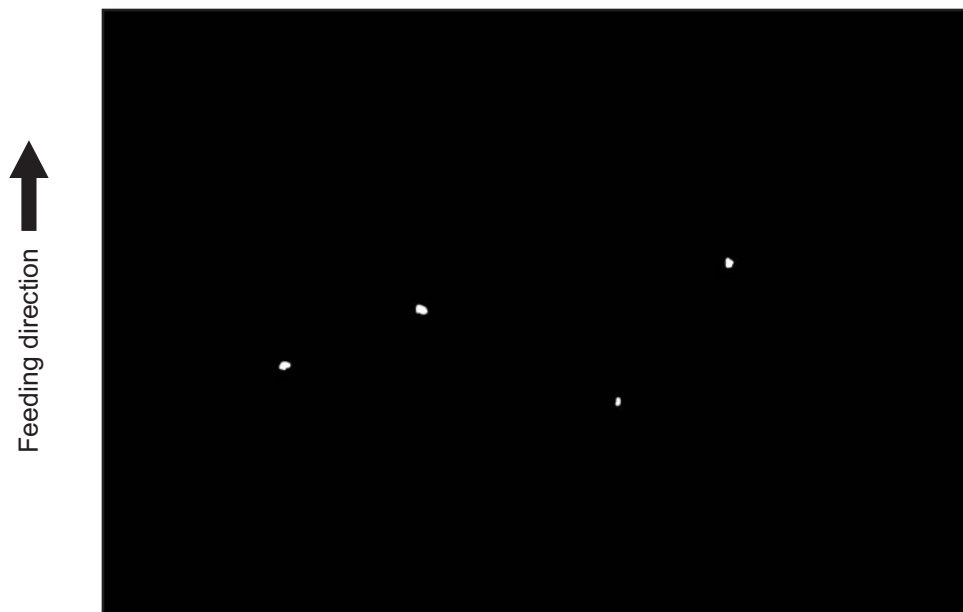


Fig. 5-15

Defective area	Step	Check items	Prescription
Developer unit, Toner cartridge	1	Is the toner density in the developer material appropriate?	Check and correct the auto-toner sensor and toner supply operation. Check if the amount of the toner is sufficient in the toner cartridge.
	2	Is the doctor-sleeve gap proper?	Adjust the doctor-sleeve gap.
Developer material, Toner, Drum	3	Using the specified developer material, toner and drum?	Use the specified developer material, toner and drum.
	4	Have the developer material and drum reached their PM life?	Replace the developer material and drum.
	5	Is the storage environment of the toner cartridge 35°C or less without dew?	Use the toner cartridge stored in the environment with specification.
	6	Is there any dent on the drum surface?	Replace the drum.
	7	Is there any film forming on the drum?	Clean or replace the drum.
Main charger	8	Is there any foreign matter on the charger?	Remove it.
	9	Is the needle electrode dirty or deformed?	Clean or replace the needle electrode.
High-voltage transformer (Main charger / Developer bias / Transfer charger)	10	Is the high-voltage transformer output defective?	Adjust the output, or replace the transformer.
Transfer/Separation charger	11	Is there any foreign matter such as fiber in the paper transport area of the transfer/separation charger?	Clean the transfer/separation charger.

15. Poor image transfer

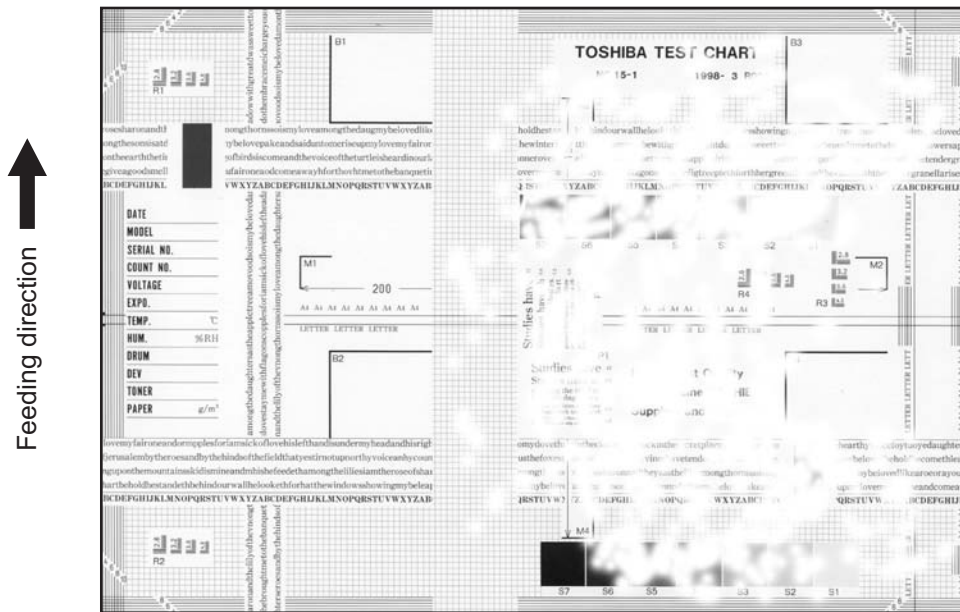


Fig. 5-16

Defective area	Step	Check items	Prescription
Paper	1	Is the paper in the drawer curled?	Reinsert the paper with the reverse side up or change the paper.
	2	Is the paper in the drawer damp?	Avoid storing paper in damp place.
	3	Is the paper type corresponding to its mode?	Select the proper mode.
	4	Using the recommended paper?	Use the recommended paper.
Transfer charger	5	Is the transfer charger case dirty?	Clean the transfer charger case.
	6	Is the transfer charger wire dirty?	Clean the transfer charger wire.
Registration roller	7	Is there any abnormality related to the registration roller or with the roller itself?	Clean the roller if it is dirty. Securely attach the springs if they are detached. Replace the clutch if it is defective. Adjust the rotation speed of the roller.
High-voltage transformer (Transfer charger)	8	Is the high-voltage transformer output defective?	Adjust the output, or replace the transformer.

16. Uneven image density

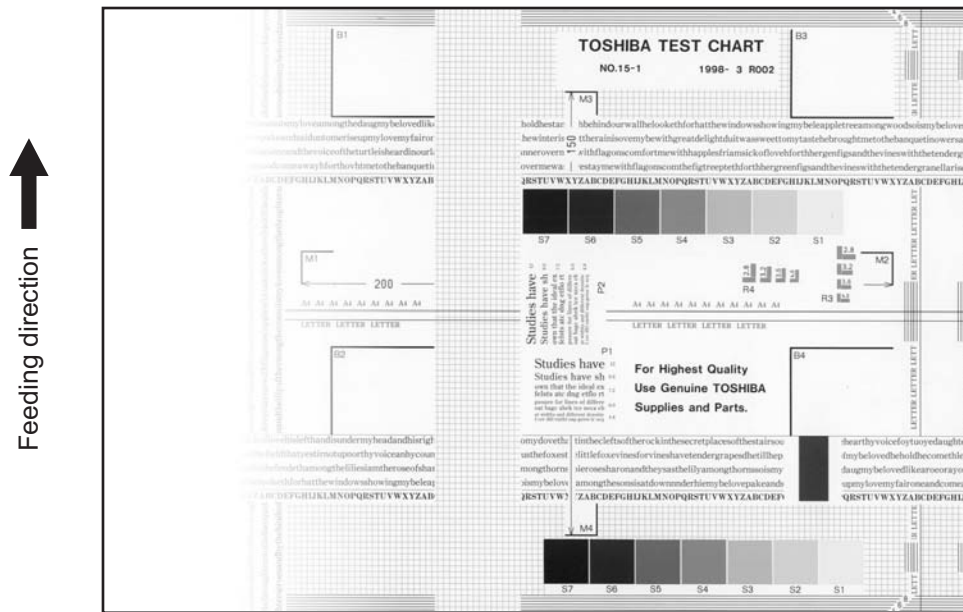


Fig. 5-17

Defective area	Step	Check items	Prescription
Main charger	1	Is the main charger dirty?	Clean or replace the needle electrode and main charger grid.
Transfer charger	2	Is the transfer charger dirty?	Clean the transfer charger.
	3	Is the transfer charger wire dirty?	Clean the transfer charger wire.
Laser optical unit	4	Is there any foreign matter or stain on the slit glass?	Remove the foreign matter or stain.
	5	Are the connectors of discharge LED harness securely connected?	Reconnect the harness securely.
	6	Is the discharge LED dirty?	Clean the discharge LED.
Developer unit	7	Is any of the discharge LEDs off?	Replace the discharge LED.
	8	Is the magnetic brush in proper contact with the drum?	Adjust the doctor-sleeve gap.
	9	Is the developer sleeve pressurization mechanism working?	Check the mechanism.
Scanner section	10	Is the developer material transported normally?	Remove foreign matters if there is any.
	11	Is the platen cover or ADF opened?	Close the platen cover or ADF.
	12	Are the original glass (especially the position of shading correction plate) and CIS unit dirty?	Clean them.

17. Faded image (low density, abnormal gray balance)

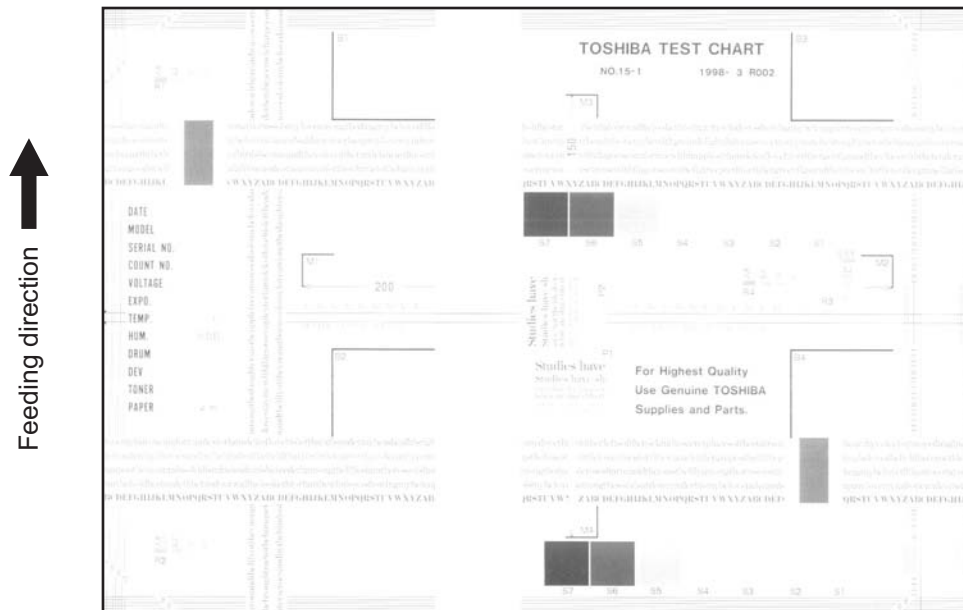


Fig. 5-18

Defective area	Step	Check items	Prescription
Toner empty	1	Is "ADD TONER" symbol lit?	Replace the toner cartridge.
Auto-toner circuit	2	Is there enough toner in the cartridge?	Check the performance of the auto-toner circuit.
	3	Is the toner density in the developer material too low?	
Toner motor	4	Is the toner motor working normally?	Check the toner motor and the motor drive.
Toner cartridge	5	Is there any problem with the toner cartridge?	Replace the toner cartridge.
Developer material	6	Has the developer material reached its PM life?	Replace the developer material.
Developer unit	7	Is the magnetic brush in proper contact with the drum?	Check the installation of the developer unit. Adjust the doctor-sleeve gap and polarity.
	8	Is the developer sleeve pressurization mechanism working?	Check the mechanism.
Main charger	9	Is the main charger dirty?	Clean it or replace the needle electrode and main charger grid.
Drum	10	Is "film-forming" occurring on the drum surface?	Clean or replace the drum.
	11	Has the drum reached its PM life?	Replace the drum.
Transfer charger	12	Is the transfer charger wire cut off?	Replace the transfer charger wire.
High-voltage transformer	13	Is the setting for the high-voltage transformer proper?	Adjust the output from the high-voltage transformer.
	14	Are the connectors of the high-voltage harness securely connected? Is the harness open circuited?	Reconnect the harness securely. Replace the high-voltage harness.
Discharge LED	15	Are the connectors of discharge LED harness securely connected?	Reconnect the harness securely.

18. Image dislocation in feeding direction

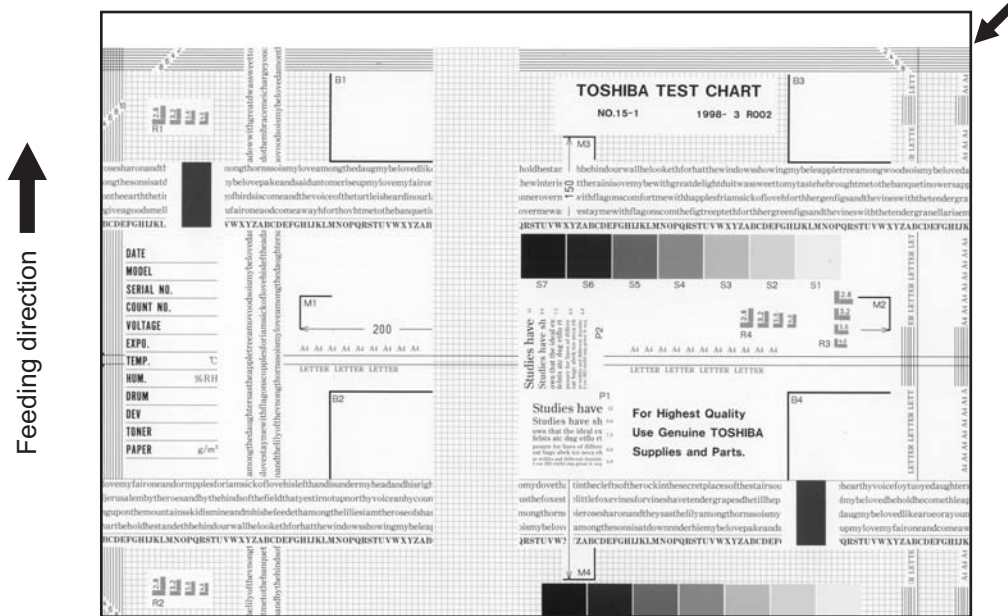


Fig. 5-19

Defective area	Step	Check items	Prescription
Scanner/Printer adjustment	1	Have the printed images been dislocated in the same manner?	Adjust the position of the leading edge of paper in the Adjustment Mode.
Registration roller	2	Is the registration roller dirty, or the spring detached?	Clean the registration roller with alcohol. Securely attach the springs.
	3	Is the registration roller working properly?	Adjust or replace the gears if they are not engaged properly.
Registration clutch	4	Is the registration clutch working properly?	Check the registration clutch, and replace them if necessary.
Pre-registration guide	5	Is the pre-registration guide installed properly?	Install the guide properly.
Feed system	6	Is the aligning amount proper?	Adjust the aligning amount.

19. Jittering image

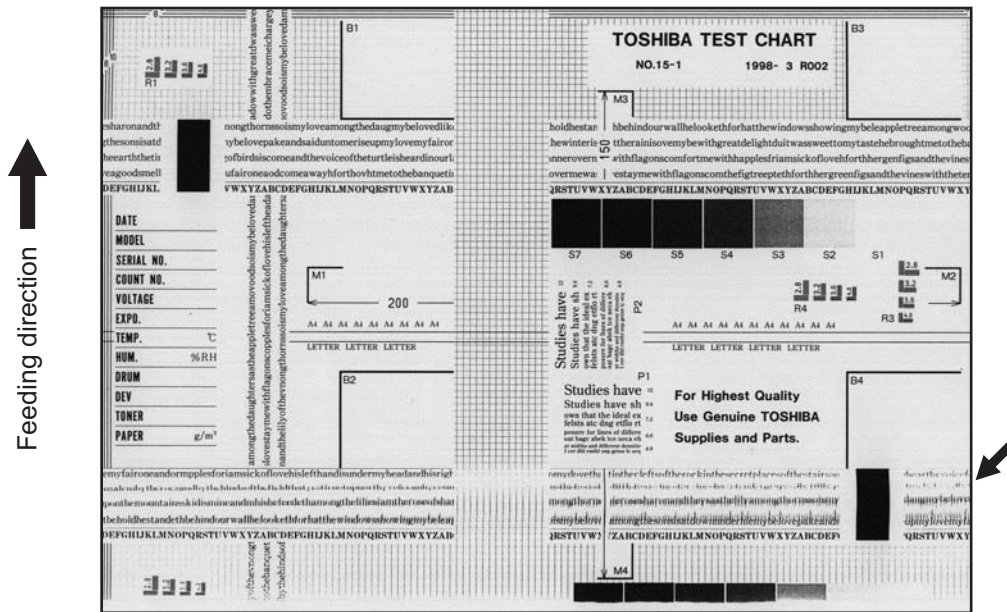


Fig. 5-20

Defective area	Step	Check items	Prescription
—	1	Is the toner image on the drum normal?	If normal, perform steps 2 to 4. Perform step 5 and followings in case the image is abnormal.
Registration roller	2	Is the registration roller rotating normally?	Check the registration roller area and springs for installation condition.
Fuser roller and pressure roller	3	Are the fuser roller and pressure roller rotating normally?	Check the fuser roller area. Replace the rollers if necessary.
Drum	4	Is there a big scratch on the drum?	Replace the drum.
Operation of carriage	5	Is there any problem with the carriage foot?	Replace the carriage foot.
	6	Is the tension of the timing belt normal?	Adjust the tension.
	7	Is there any problem with the drive system of the carriage?	Check the drive system of the carriage.
Scanner	8	Is the CIS unit secured?	Secure it.
Drum drive system	9	Is there any problem with the drive system of the drum?	Check the drive system of the drum. Clean or replace the gears if they have stains or scratches.

20. Poor cleaning

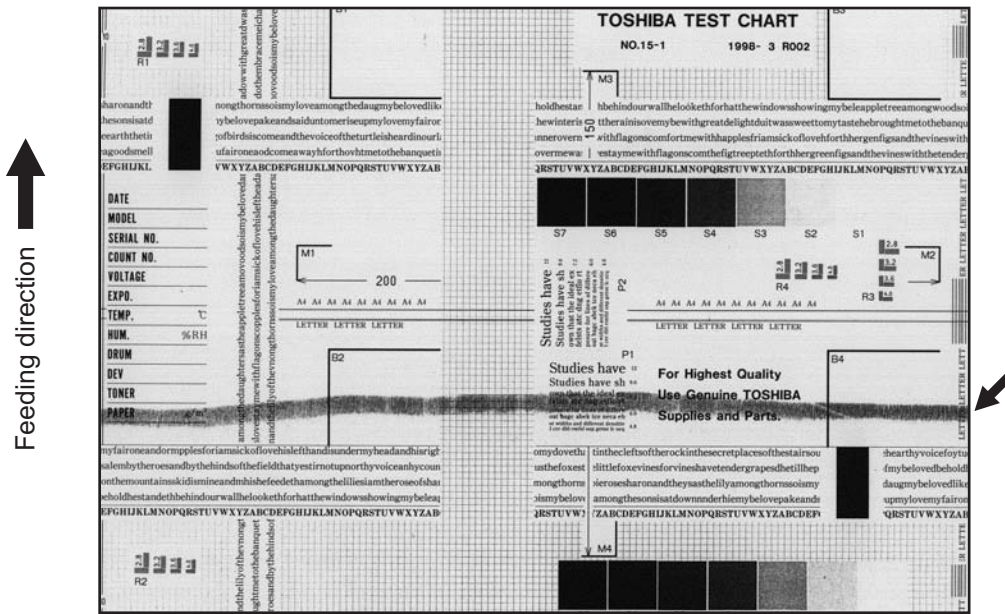


Fig. 5-21

Defective area	Step	Check items	Prescription
Developer material	1	Using the specified developer material?	Use the specified developer material and toner.
Cleaner	2	Is the cleaning blade in proper contact with the drum?	Check the cleaning blade.
	3	Has the cleaning blade been turned up?	Replace the cleaning blade. Check and replace drum if necessary.
Toner recovery auger	4	Is the toner recovered normally?	Clean the toner recovery auger. Check the pressure of the cleaning blade.
Fuser unit	5	Is the cleaning roller damaged or has it reached its PM life?	Replace the cleaning roller.
	6	Are there bubble-like scratches on the fuser roller (94 mm pitch on the image)?	Replace the fuser roller. Check and adjust the temperature control circuit.
	7	Has the fuser roller reached its PM life?	Replace the fuser roller.
	8	Is the pressure of the fuser roller normal?	Check and adjust the mechanism.
	9	Is the setting temperature of the fuser roller normal?	Check the setting and correct it. 08-407, 410, 411, 450, 515, 516

21. Uneven light distribution

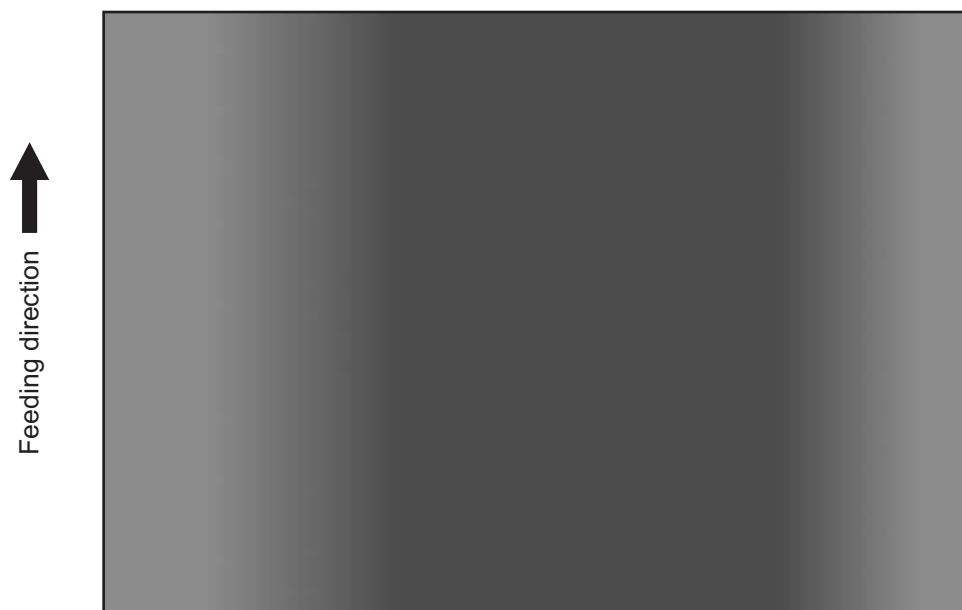


Fig. 5-22

Defective area	Step	Check items	Prescription
Original glass	1	Is the original glass dirty?	Clean the original glass.
Main charger	2	Are the needle electrode, main charger grid and main charger case dirty?	Clean or replace them.
Discharge LED	3	Is the discharge LED dirty?	Clean the discharge LED.
	4	Is any of the discharge LEDs off?	Replace the discharge LED.
Scanner	5	Are the original glass (especially the position of shading correction plate) and CIS unit dirty?	Clean them.
Exposure lamp	6	Is the CIS unit degraded?	Replace the CIS unit.

22. Blotched image

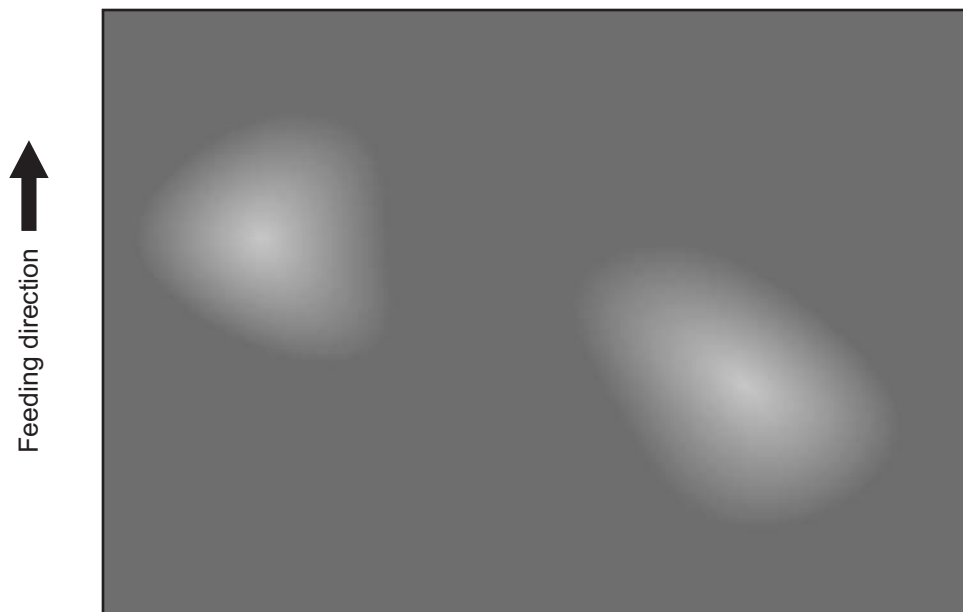


Fig. 5-23

Defective area	Step	Check items	Prescription
Paper	1	Is the paper type corresponding to its mode?	Check the paper type and mode.
	2	Is the paper too dry?	Change the paper.
Separation	3	Is the output from the separation charger too high?	Adjust the output, from the separation charger.
Transfer	4	Is the transfer charger case dirty?	Clean the transfer charger case.
	5	Is the transfer charger wire dirty?	Clean the transfer charger wire.
High-voltage transformer (Transfer charger)	6	Is the output from the high-voltage transformer normal?	Adjust the output. Replace the transformer if necessary.


5.3 Replacement of PC Boards

5.3.1 Replacing MAIN board

<<CAUTION IN REPLACING the MAIN board>>

The procedure for replacing the MAIN board is as follows.

<After replacing the MAIN board>

- (1) Install SRAM board to the new MAIN board (from the old MAIN board).
- (2) [If an expansion memory (GC-1240) has already been installed]
Install expansion memory (GC-1240) to the new MAIN board (from the old MAIN board).
- (3) Update the version of system ROMs (System Firmware, OS data, UI data) (The ROMs had been used for the old MAIN board).
See  P.6-1 "6. FIRMWARE UPDATING" for the details of System ROM update.

Note:

Be sure to check the version of the firmware after it is updated.

- (4) Perform 08-389 (Copying total counter / SRAM board → MAIN board) to recover the total counter.
- (5) Be sure to perform "05-310" with the platen cover or the ADF closed after replacing the MAIN board.

5.3.2 Replacing SRAM board

<<CAUTION IN REPLACING the SRAM board>>

The procedure for replacing the SRAM board is shown below:

* If the adjustment values in the SRAM can be viewed, print them out in the list print mode before replacing the SRAM board.

- (1) Take off the MAIN board from the equipment.
- (2) Take off the SRAM board including the locking support from the equipment.
- (3) Remove the socket and the battery from the SRAM board, and install them to the new SRAM board.
- (4) Install the new SRAM board to the MAIN board, and the MAIN board to the equipment.
- (5) While pressing [1], [3] and [*] simultaneously, turn the power ON. (RAM clear)
- (6) Turn the power OFF and then start with the setting mode (08).
- (7) Perform 08-655 (Reset the 05/08 codes).
- (8) Perform 08-388 (Copying total counter / MAIN board -> SRAM board) to recover the total counter.
- (9) While pressing [1], [3] and [#] simultaneously, turn the power ON. (RAM clear)
- (10) Turn the power OFF.

- (11) While pressing [0] and [2] simultaneously, turn the power ON. Enter the code for the destination and press the [INTERRUPT] button.
 (Destination code: NAD: 1, CND: 86, JPD: 81, Other destinations: 44)
 *After pressing the [INTERRUPT] button, wait until the equipment goes into the ready status as it starts in the normal mode automatically.

- (12) Turn the power OFF and then start with the adjustment mode (05).

- (13) Set the adjustment value.

Set the adjustment values of the following codes according to the list printed out in advance.
 (If the adjustment values could not be printed out because of the SRAM board damage or any other reason, enter the values on the list output at the last maintenance. If there is no list, enter the default values.)

05-201 (Correction of auto-toner sensor)
 05-205 (Developer bias DC output adjustment)
 05-210 (Main charger grid bias output adjustment)
 05-220 (Transfer transformer DC output adjustment (H))
 05-221 (Transfer transformer DC output adjustment (C))
 05-222 (Transfer transformer DC output adjustment (L))
 05-233 (Separation transformer DC output adjustment (H))
 05-234 (Separation transformer DC output adjustment (C))
 05-235 (Separation transformer DC output adjustment (L))
 05-305 (Image location adjustment of secondary scanning direction (scanner section))
 05-306 (Image location adjustment of primary scanning direction (scanner section))
 05-340 (Reproduction ratio adjustment of secondary scanning direction (scanner section))
 05-401 (Adjustment of primary scanning direction reproduction ratio (printer))
 05-405 (Adjustment of primary scanning direction reproduction ratio (copy))
 05-410 (Adjustment of primary scanning laser writing start position (copy))
 05-411 (Adjustment of primary scanning laser writing start position (printer))
 05-421 (Adjustment of secondary scanning direction reproduction ratio)
 05-440 (Adjustment of secondary scanning laser writing start position (drawer))
 05-442 (Adjustment of secondary scanning laser writing start position (bypass tray))
 05-430 (Top margin adjustment (blank area at the leading edge of the paper))
 05-431 (Left margin adjustment (blank area at the left of the paper along the paper feeding direction))
 05-432 (Right margin adjustment (blank area at the right of the paper along the paper feeding direction))
 05-433 (Bottom margin adjustment (blank area at the trailing edge of the paper))
 05-501 (Density adjustment Fine adjustment of "manual density"/Center value (Photo))
 05-503 (Density adjustment Fine adjustment of "manual density"/Center value (Text/Photo))
 05-504 (Density adjustment Fine adjustment of "manual density"/Center value (Text))
 05-512 (Density adjustment Fine adjustment of "automatic density" (Photo))
 05-514 (Density adjustment Fine adjustment of "automatic density" (Text/Photo))
 05-515 (Density adjustment Fine adjustment of "automatic density" (Text))
 Also, set the adjustment values which have been changed for servicing.

- (14) Be sure to perform "05-310" with the platen cover or the ADF closed after replacing the SRAM board.

- (15) Turn the power OFF and then start with the setting mode (08).

(16) Set the setting value.

Set the setting values of the following codes according to the list printed out in advance.
(If the adjustment values could not be printed out because of the SRAM board damage or any other reason, enter the values on the list output at the last maintenance. If there is no list, enter the default values.)

08-252	(Current value of PM counter Display)
08-361_0	(Upper Fuser roller bushing (Present number of output pages))
08-361_1	(Upper Fuser roller bushing (Recommended number of output pages for replacement))
08-361_3	(Upper Fuser roller bushing (Present driving counts))
08-361_4	(Upper Fuser roller bushing (Recommended driving counts to be replaced))
08-361_6	(Upper Fuser roller bushing (Present output pages for control))
08-361_7	(Upper Fuser roller bushing (Present driving counts for control))
08-1150_0	(Photoconductive drum (Present number of output pages))
08-1150_1	(Photoconductive drum (Recommended number of output pages for replacement))
08-1150_3	(Photoconductive drum (Present driving counts))
08-1150_4	(Photoconductive drum (Recommended driving counts to be replaced))
08-1150_6	(Photoconductive drum (Present output pages for control))
08-1150_7	(Photoconductive drum (Present driving counts for control))
08-1158_0	(Drum cleaning blade (Present number of output pages))
08-1158_1	(Drum cleaning blade (Recommended number of output pages for replacement))
08-1158_3	(Drum cleaning blade (Present driving counts))
08-1158_4	(Drum cleaning blade (Recommended driving counts to be replaced))
08-1158_6	(Drum cleaning blade (Present output pages for control))
08-1158_7	(Drum cleaning blade (Present driving counts for control))
08-1172_0	(Drum separation finger (Present number of output pages))
08-1172_1	(Drum separation finger (Recommended number of output pages for replacement))
08-1172_3	(Drum separation finger (Present driving counts))
08-1172_4	(Drum separation finger (Recommended driving counts to be replaced))
08-1172_6	(Drum separation finger (Present output pages for control))
08-1172_7	(Drum separation finger (Present driving counts for control))
08-1174_0	(Main charger grid (Present number of output pages))
08-1174_1	(Main charger grid (Recommended number of output pages for replacement))
08-1174_3	(Main charger grid (Present driving counts))
08-1174_4	(Main charger grid (Recommended driving counts to be replaced))
08-1174_6	(Main charger grid (Present output pages for control))
08-1174_7	(Main charger grid (Present driving counts for control))
08-1182_0	(Needle electrode (Present number of output pages))
08-1182_1	(Needle electrode (Recommended number of output pages for replacement))
08-1182_3	(Needle electrode (Present driving counts))
08-1182_4	(Needle electrode (Recommended driving counts to be replaced))
08-1182_6	(Needle electrode (Present output pages for control))
08-1182_7	(Needle electrode (Present driving counts for control))
08-1198_0	(Ozone filter (Present number of output pages))
08-1198_1	(Ozone filter (Recommended number of output pages for replacement))
08-1198_3	(Ozone filter (Present driving counts))
08-1198_4	(Ozone filter (Recommended driving counts to be replaced))
08-1198_6	(Ozone filter (Present output pages for control))
08-1198_7	(Ozone filter (Present driving counts for control))
08-1200_0	(Developer material (Present number of output pages))
08-1200_1	(Developer material (Recommended number of output pages for replacement))
08-1200_3	(Developer material (Present driving counts))
08-1200_4	(Developer material (Recommended driving counts to be replaced))
08-1200_6	(Developer material (Present output pages for control))
08-1200_7	(Developer material (Present driving counts for control))
08-1214_0	(Transfer charger wire (Present number of output pages))
08-1214_1	(Transfer charger wire (Recommended number of output pages for replacement))

08-1214_3 (Transfer charger wire (Present driving counts))
 08-1214_4 (Transfer charger wire (Recommended driving counts to be replaced))
 08-1214_6 (Transfer charger wire (Present output pages for control))
 08-1214_7 (Transfer charger wire (Present driving counts for control))
 08-1246_0 (Fuser roller (Present number of output pages))
 08-1246_1 (Fuser roller (Recommended number of output pages for replacement))
 08-1246_3 (Fuser roller (Present driving counts))
 08-1246_4 (Fuser roller (Recommended driving counts to be replaced))
 08-1246_6 (Fuser roller (Present output pages for control))
 08-1246_7 Fuser roller (Present driving counts for control))
 08-1250_0 (Pressure roller (Present number of output pages))
 08-1250_1 (Pressure roller (Recommended number of output pages for replacement))
 08-1250_3 (Pressure roller (Present driving counts))
 08-1250_4 (Pressure roller (Recommended driving counts to be replaced))
 08-1250_6 (Pressure roller (Present output pages for control))
 08-1250_7 (Pressure roller (Present driving counts for control))
 08-1268_0 (Fuser roller separation finger (Present number of output pages))
 08-1268_1 (Fuser roller separation finger (Recommended number of output pages
 for replacement))
 08-1268_3 (Fuser roller separation finger (Present driving counts))
 08-1268_4 (Fuser roller separation finger (Recommended driving counts to be replaced))
 08-1268_6 (Fuser roller separation finger (Present output pages for control))
 08-1268_7 (Fuser roller separation finger (Present driving counts for control))
 08-1298_0 (Feed roller (Drawer) (Present number of output pages))
 08-1298_1 (Feed roller (Drawer) (Recommended number of output pages for replacement))
 08-1300_0 (Feed roller (PFU) (Present number of output pages))
 08-1300_1 (Feed roller (PFU) (Recommended number of output pages for replacement))
 08-1316_0 (Separation roller (Bypass unit) (Present number of output pages))
 08-1316_1 (Separation roller (Bypass unit) (Recommended number of output pages
 for replacement))
 08-1324_0 (Feed roller (Bypass unit) (Present number of output pages))
 08-1324_1 (Feed roller (Bypass unit) (Recommended number of output pages
 for replacement))
 08-1336_0 (Recovery blade (Present number of output pages))
 08-1336_1 (Recovery blade (Recommended number of output pages for replacement))
 08-1336_3 (Recovery blade (Present driving counts))
 08-1336_4 (Recovery blade (Recommended driving counts to be replaced))
 08-1336_6 (Recovery blade (Present output pages for control))
 08-1336_7 (Recovery blade (Present driving counts for control))
 08-1372 (Heater and energizing time accumulating counter Display/0 clearing)
 08-1378 (Counter for period of time fuser unit is at ready temperature)
 08-1380 (Counter for period of time fuser unit is at printing temperature)
 08-1382 (Counter for period of time fuser unit is at energy saving temperature/
 Counter reset)
 08-1385 (Number of output pages (Thick paper 1))
 08-1386 (Number of output pages (Thick paper 2))
 08-1388 (Number of output pages (OHP film))
 08-1410 (Counter for period of toner cartridge rotation time)
 08-1411 (Counter for envelope)

Also, set the setting values which have been changed for servicing.

- (17) Check that the setting value for 08-203 (Line adjustment mode) is "0" (For factory shipment). If it is "1" (For line), change it to "0".

6. FIRMWARE UPDATING

When you want to update the firmware above or the equipment becomes inoperative status due to some defectives of the firmware, updating the firmware is available by the following actions.

- Updating with the download jig
 P.6-1 "6.1 Firmware Updating with Download Jig"

Notes:

- Be sure to check the version of the firmware after it is updated.
- No error message appears even when the firmware for e-STUDIO163/166 is updated to e-STUDIO181 by mistake. Make sure that the firmware to be updated corresponds to the proper model, otherwise the copy speed of A4/B5 size paper feeding from the drawer becomes 16 copies/min.
- No error message appears even when the firmware for e-STUDIO203/206 is updated to e-STUDIO211 by mistake. Make sure that the firmware to be updated corresponds to the proper model, otherwise the copy speed of A4/B5 size paper feeding from the drawer becomes 20 copies/min.

6.1 Firmware Updating with Download Jig

In this equipment, it is feasible to update the firmware automatically by connecting the download jig using the dedicated connector and turning ON the equipment.

Firmware	Stored	Download jig
System ROM	System control PC board (SYS board)	PWA-DWNLD-350-JIG1(16 MB) or PWA-DWNLD-350-JIG2(48 MB)
ADF ROM	ADF control PC board (MR-2017)	K-PWA-DLM-320

PWA-DWNLD-350-JIG

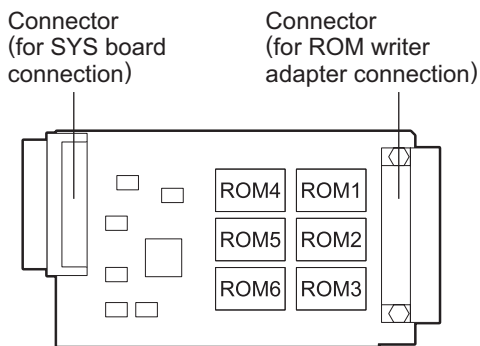


Fig. 6-1 Jig board: PWA-DWNLD-350-JIG2(48 MB)

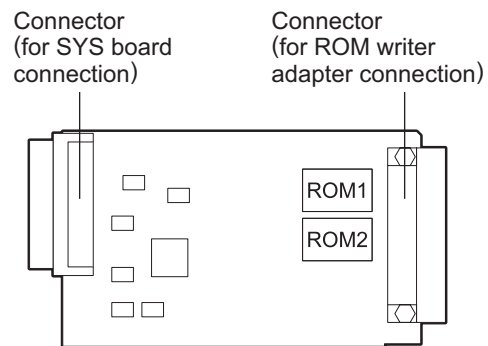


Fig. 6-2 Jig board: PWA-DWNLD-350-JIG1(16 MB)

Important:

- The download jig (PWA-DWNLD-350-JIG) has two types having different ROM capacity.

Download jig	ROM capacity
PWA-DWNLD-350-JIG2 (48 MB)	8 MB x 6
PWA-DWNLD-350-JIG1 (16 MB)	8 MB x 2

- The download jig (PWA-DWNLD-350-JIG) is the jig in which the Flash ROM is mounted on the board directly. Therefore, ROM writer adapter (PWA-DL-ADP-350) is required to write the data to these Flash ROMs. Refer to the following to write the data.
📖 P.6-6 "6.1.2 Writing the data to the download jig (PWA-DWNLD-350-JIG)"

K-PWA-DLM-320

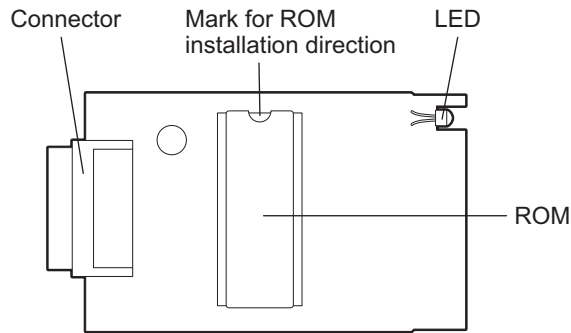


Fig. 6-3 Jig board: K-PWA-DLM-320

Important:

Pay attention to the direction of the ROM.

6.1.1 PWA-DWNLD-350-JIG

[A] Update procedure

Important:

- Turn OFF the power before installing and removing the download jig.
- Do not turn OFF the power during the update. The data could be damaged and not be operated properly.
- Ensure that the firmware to be updated is for the intended model.
- Be sure to check the version of the firmware after it is updated.
- A C94 error message appears when either of the following Main PC boards is installed to e-STUDIO181/211.
 - The Main PC board for e-STUDIO163/203 in which e-STUDIO166/206 firmware is installed
 - The Main PC board for e-STUDIO163/166/203/206 in which e-STUDIO181/211 firmware is installed

Be sure not to make a mistake in the combination of the Main PC board and the firmware since the error message does not appear if there is an incorrect combination. Refer to the following for each equipment condition according to the combination of the Main PC board and the firmware.

📖 P.5-19 "[C94] Firmware update error"

- (1) Write the data to the download jig.

📖 P.6-6 "6.1.2 Writing the data to the download jig (PWA-DWNLD-350-JIG)"

- (2) Turn OFF the power of the equipment.

- (3) Remove the rear cover.

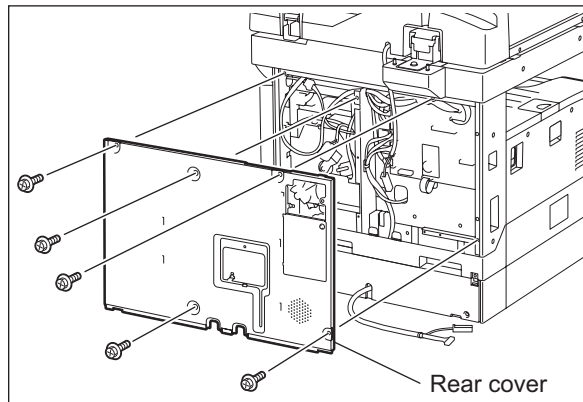


Fig. 6-4

- (4) Connect the download jig with the connector (CN1) on the MAIN board.

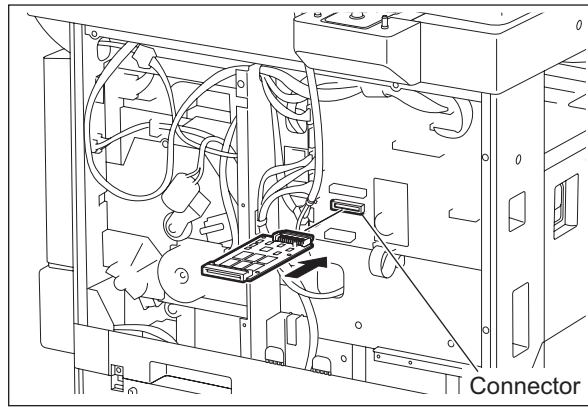


Fig. 6-5

- (5) Turn ON the power.
 Downloading starts automatically and the processing status is displayed on Control panel.

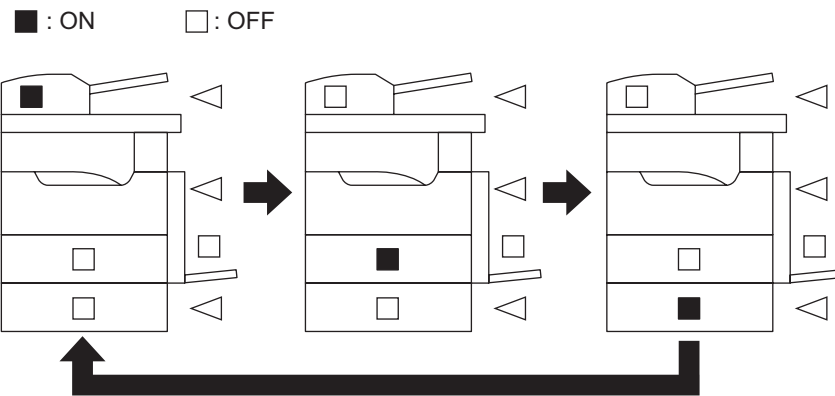


Fig. 6-6

- (6) After the update is completed properly, the LED (DRAWER and Original setting) on the control panel blinks.

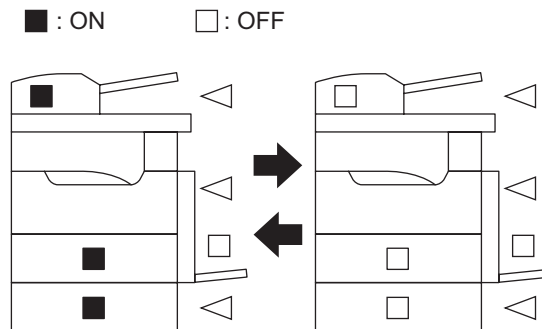


Fig. 6-7

When the update is not completed properly, the LED (Paper jam position) on the control panel blinks. Turn OFF the power, and then check the following items. After confirming and clearing the problems, restart updating from the beginning.

- Is the download jig connected properly?
- Is the updating data written to the download jig properly?
- Do the download jig and the equipment operate properly?

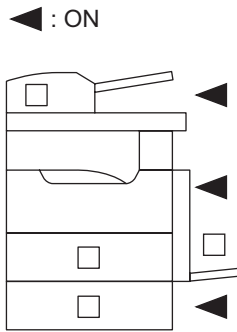


Fig. 6-8

(7) Turn OFF the power, remove the download jig and install the rear cover.

[B] Confirmation of the updated data

After the updating is completed, check each data version in the Setting Mode (08) to confirm that the data was overwritten properly.

08-900: System ROM version

6.1.2 Writing the data to the download jig (PWA-DWNLD-350-JIG)

The download jig (PWA-DWNLD-350-JIG) is the jig in which the Flash ROM is mounted on the board directly. The ROM writer adapter (PWA-DL-ADP-350) is required to write data to these Flash ROMs. Connect the download jig with the ROM writer via ROM writer adapter to write data. For the procedure to write data, refer to the download procedure, instruction manual of each ROM writer, or others.

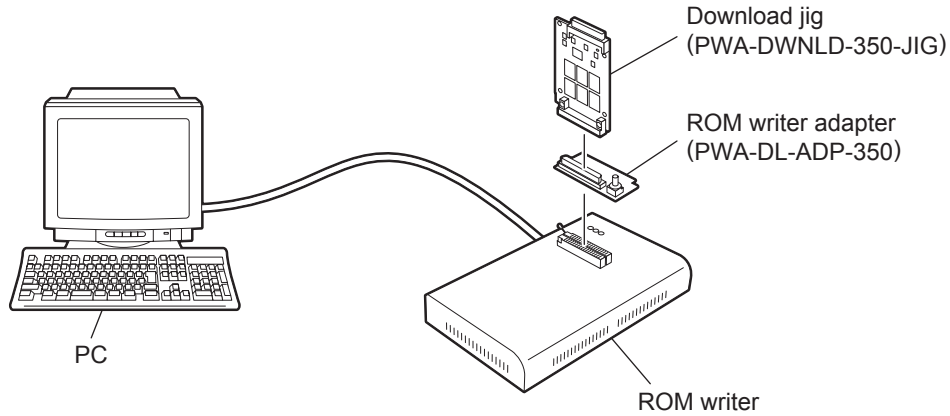


Fig. 6-9

Note:

There are two types of the ROM writer adapter. Use the proper one according to the ROM writer to be used. Applicable type of the adapter for the ROM writer can be confirmed by the model name indicated on the board. Confirm that the adapter is available for the ROM writer to be used before connecting them. If an unapplied adapter is connected, the application of the ROM writer judges it as an error and writing the data cannot be implemented. Applicable combinations of the ROM writer and adapter are as follows.

ROM writer	ROM writer adapter
Minato Electronics MODEL 1881XP/1881UXP (or equivalent)	PWA-DL-ADP-350-1881 (model 1881)
Minato Electronics MODEL 1893/1895/1931/1940 (or equivalent)	PWA-DL-ADP-350-1931 (model 1931)

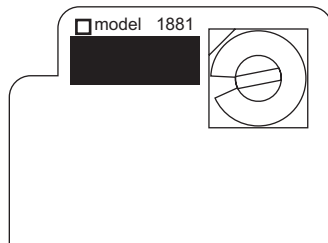


Fig. 6-10 PWA-DL-ADP-350-1881

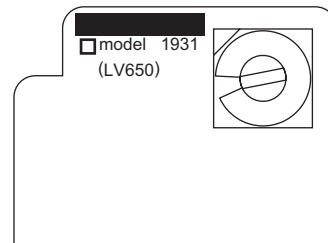


Fig. 6-11 PWA-DL-ADP-350-1931

[A] Precaution when writing the data

- Set the writing voltage (VID) to 3.3V.
- When writing the data, set the address from 0 to 1FFFFFF. The data may not be written correctly if it is not set.
- The Flash ROM in which the data will be written, on the download jig is selected by switching the rotary switch on the adapter. Be sure to switch the rotary switch on the adapter depending on the data (file) to be written.

Important:

When an error such as "Over current detects" appears while the data are being written to the download jig and the writing cannot be finished, set the writing voltage (VID) to 12 V and then write them.

Rotary Switch	File Name	Flash ROM
1	rom_L. bin	ROM1
2	N/A	ROM2
3	N/A	ROM3
4	N/A	ROM4
5	N/A	ROM5
6	N/A	ROM6

Note:

Be sure not to confuse different ROM Versions since the file name is identical although the ROM version is different.

6.1.3 K-PWA-DLM-320

It is feasible to update the firmware automatically by connecting the download jig to the ADF control PC board and turning the power of the equipment ON.

< Procedure >

- (1) Turning OFF the power of the equipment and take off the ADF rear cover.
 - (2) Connect the download jig with the connector (CN81) on the PC board.
 - (3) While pressing [0] and [8] simultaneously, turn ON the power. (rewriting data starts)
 - (4) During the data is rewritten, the LED on the download jig lights. When the data rewriting is completed, the LED blinks slowly (at an interval of 0.8 sec.). If the LED blinks fast (at an interval of 0.1 sec.), the rewriting has been failed.
 - (5) Turn OFF the power of the equipment and remove the download jig.
 - (6) Install the ADF rear cover.
- * If rewriting data is failed, turn OFF the power and repeat the procedure.

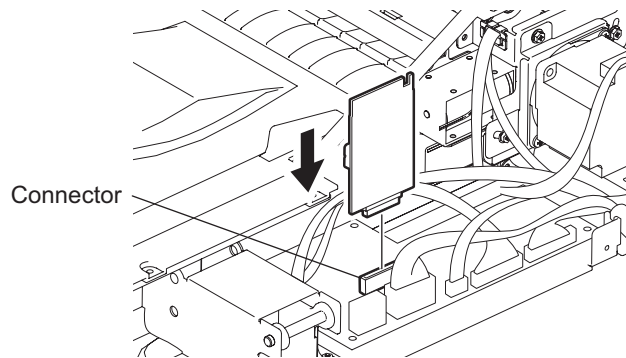


Fig. 6-12

Note:

Be sure to print out the list to confirm the firmware version for the ADF.

📖 P.2-11 "2.2.4 List Print Mode (9S)"

6.2 Firmware Updating with Software Update Tool

6.2.1 General Description

The software update tool is used for upgrading the version of the system ROM for the equipment. You can download the system ROM data from a PC to the equipment by installing this tool and connecting a PC with the equipment using a USB cable.

6.2.2 System Requirements

Tools introduced in this manual shall be operated under the following systems:

- OS: Windows 2000 SP4, Windows XP SP1, Windows XP SP2
- USB version: USB Ver.2.0 (Recommended)
- USB Cable: USB2.0 Hi-Speed certified cable (USB cable supporting the USB2.0 Hi-Speed mode (480 Mbps of transfer speed) certified by the USB Implementers Forum.)

6.2.3 Preparation and Precaution

1. Confirm that there is a software updating tool USB driver (created by decompressing "eST163_PCDL_Inst_Rev210_1.zip") on your PC.
2. Only installation by hardware wizard can recognize e-STUDIO181/211.
3. If the TOSHIBA Viewer USB driver is already installed, the software update tool USB driver cannot be. Delete the corresponding COM port on the Device Manager window and then start the installation of the software update tool USB driver.

6.2.4 Update Procedure

- (1) Turn OFF the power of the equipment, and connect the equipment and PC with USB cable.
- (2) Turn the power ON while pressing [2], [#] and [*] buttons simultaneously.

Note:

When the equipment goes into the Software update mode, all the LEDs on the control panel are OFF.

- (3) Double-click the icon "FirmwareDownload.exe" to start up the Software update tool.
- (4) The Port Setting window appears. Select the port and click [OK].

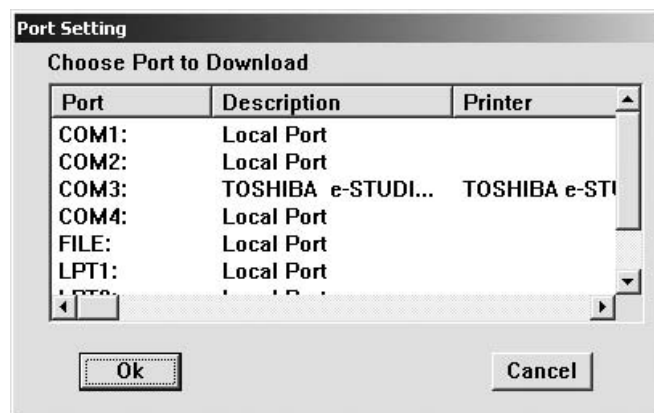


Fig. 6-13

- (5) The Download window below appears. Click the folder icon.

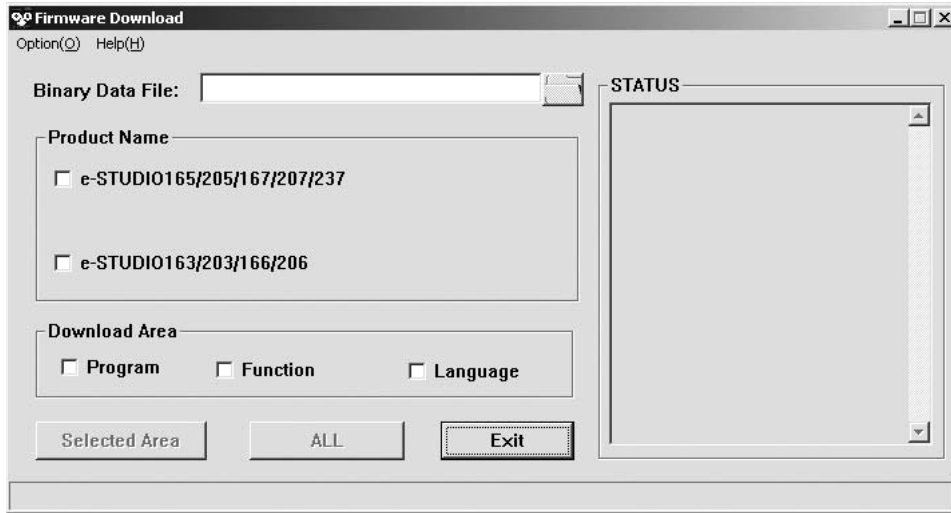


Fig. 6-14

- (6) Select the firmware data file to be updated on the Local Firmware Data window (in the figure below, "rom_L_V52.bin" is selected). Double-click the file or click [Open (O)] to open it.

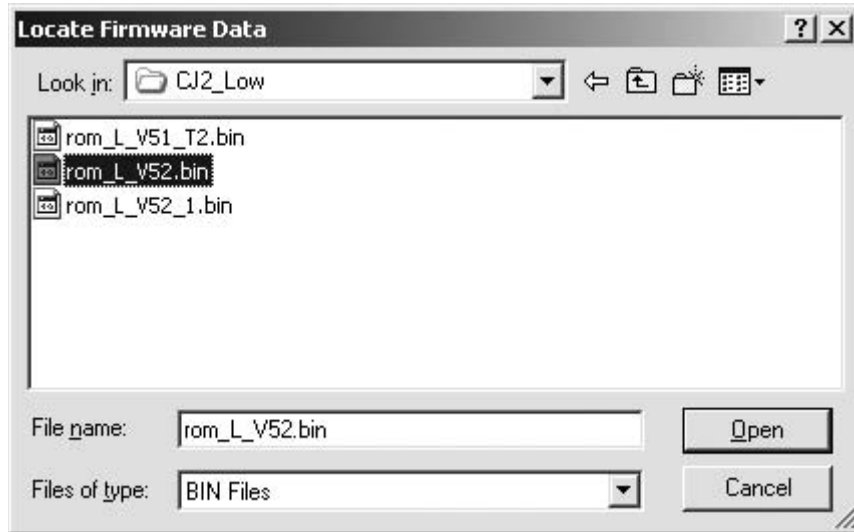


Fig. 6-15

- (7) Select "e-STUDIO163/203/166/206" check box in the Product Name field.

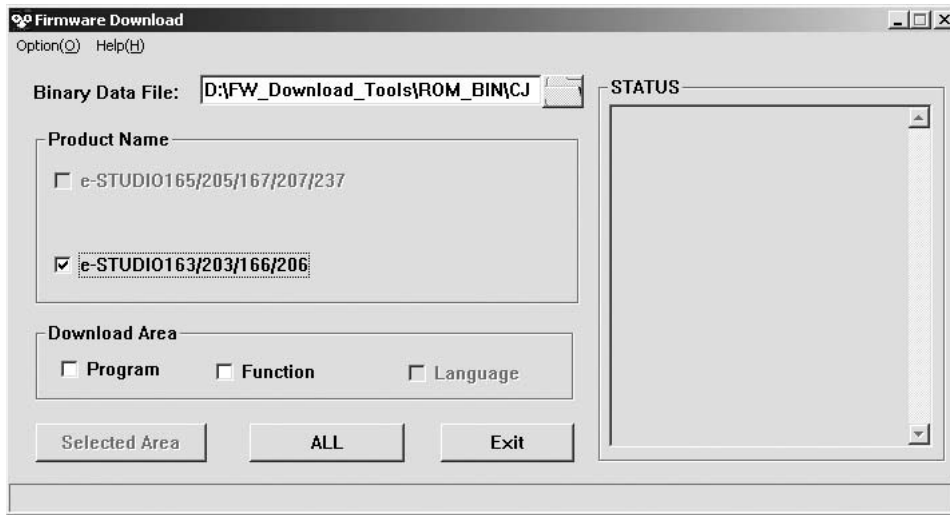


Fig. 6-16

- (8) Confirm that both the "Program" and the "Function" check boxes in the Download Area field are selected, and then click [ALL].

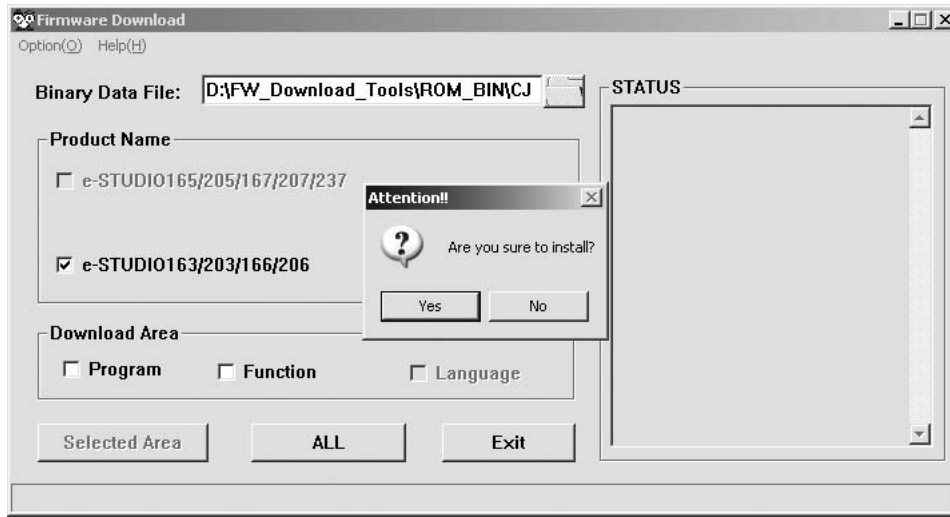


Fig. 6-17

Note:

In e-STUDIO181/211, the downloaded area has two selections; "Program (program data)" and "Function (function data)". Updating is available on each area individually, but it is recommended that you update data on all the areas.

Perform step (8) when you want to update all the data in one go. Perform the following procedure when you want to update the data individually.

Select the program you want to update. (Select either the Program or the Function check box. The Program and Function check boxes are selected in the following example.)

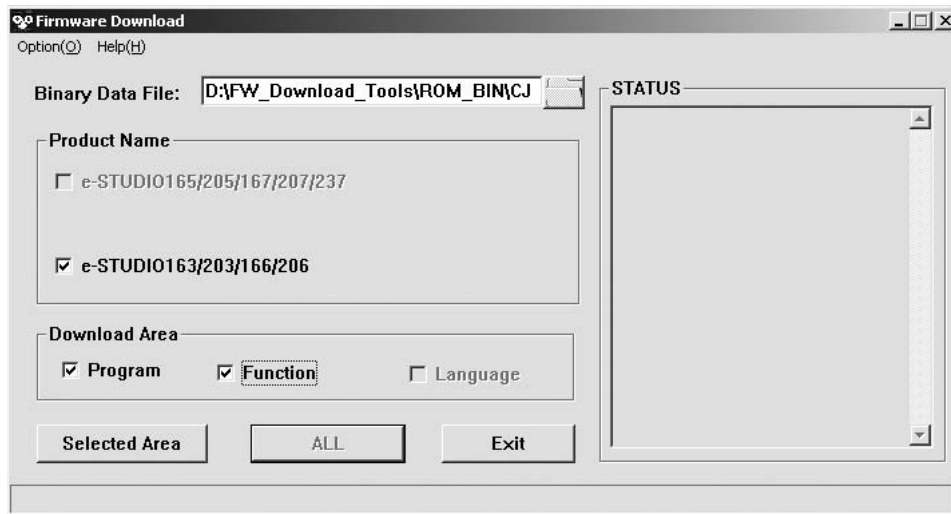


Fig. 6-18

Click [Selected Area].
The Attention window appears. Click [Yes].

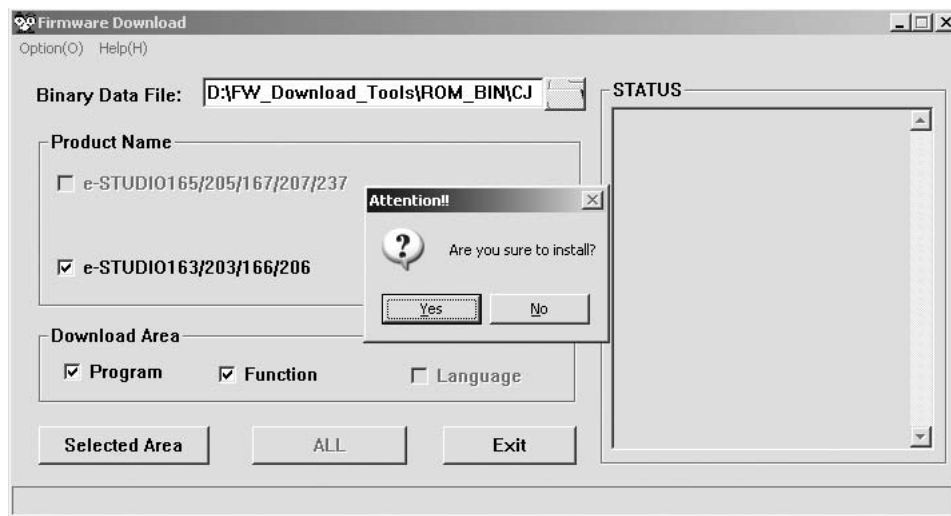


Fig. 6-19

- (9) When updating has started, USB communication data are displayed in the STATUS field, and a bar indicating the updating status appears at the bottom of the window.

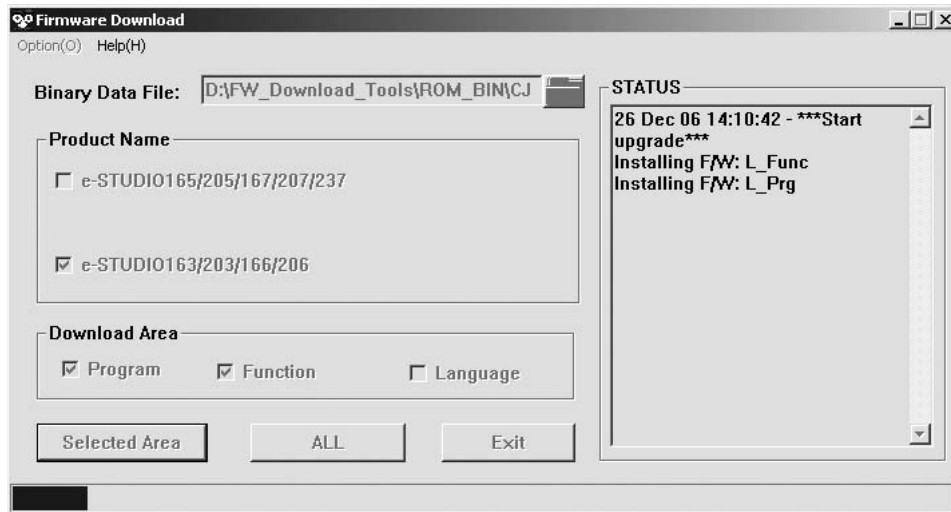


Fig. 6-20

- (10) When the program data transmission is completed, the message window shown below appears on your PC monitor. Click [OK] to finish displaying the status.

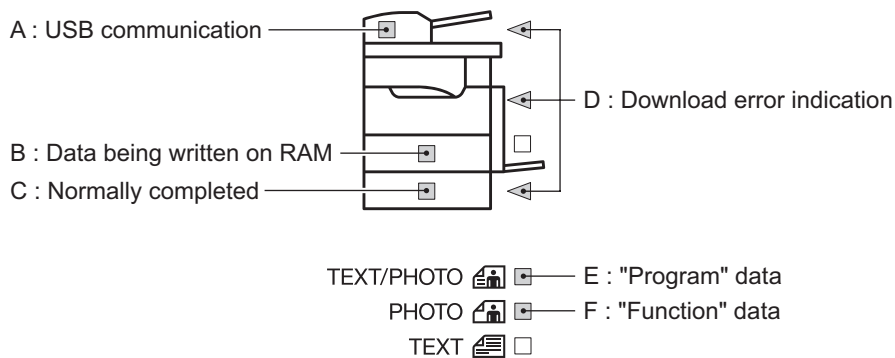


Fig. 6-21

- (11) Click [Exit] in the Firmware Download window to finish updating.

Note:

The display on the control panel of the equipment during update is as follows; the status of the equipment and the corresponding software are indicated by the LED.



- During the update:
LEDs "B" and "E" or LEDs "B" and "F" are lit.
- When correctly completed:
All the LEDs "A", "B" and "C" blink.
- On an update error:
All the LEDs of D are lit.

Note:

If an error occurs, repeat the procedure from the first step to retry updating.

- (12) Turn OFF the power of the equipment, and disconnect the USB cable.

Note:

After the updating is completed, check each data version in the Setting Mode (08) to confirm that the data were overwritten properly.

08-900: System firmware ROM version

08-921: FROM internal program

7. POWER SUPPLY UNIT

7.1 Output Channel

The following are 4 output channels for the main switch line.

1. +5V
 - +5V: CN104 Pin 1
Output to the MAIN board
 - +5VB: CN104 Pin 6
Output to the FUS board
 - +5VB: CN104 Pins 7 and 8
Output to the MAIN board
2. +24V
 - +24V: CN104 Pins 15 and 16
Output to the MAIN board
 - +24VDF: CN104 Pins 17 and 18
Output to the ADF (via MAIN board)

The following is an output channel for the cover switch line.

1. +24V
 - +24VCOV-OFF: CN104 Pins 21 and 22
Output to the MAIN board, PFU (via MAIN board)

7.2 Fuse

When the power supply secondary fuse is blown out, confirm that there is no abnormality with each part using the following table.

Voltage	Board/Unit	Part		Fuse type
+24V	MAIN board	Scan motor	M1	F203: 4A
		Polygonal motor	M4	
		Switching regulator cooling fan	M6	
		Registration clutch	CLT1	
		Pickup solenoid	SOL1	
		Bypass pickup solenoid	SOL2	
		Contact image sensor unit	CIS	
	PFU			
+24VDF	ADF			F202: 4A
+24VCOV-OFF	MAIN board	Toner motor	M2	F201: 4A
		Main motor	M3	
		Exhaust fan	M5	
		Auto-toner sensor	S6	
		Discharge LED	ERS	
	Coin controller			

7.3 Configuration of Power Supply Unit

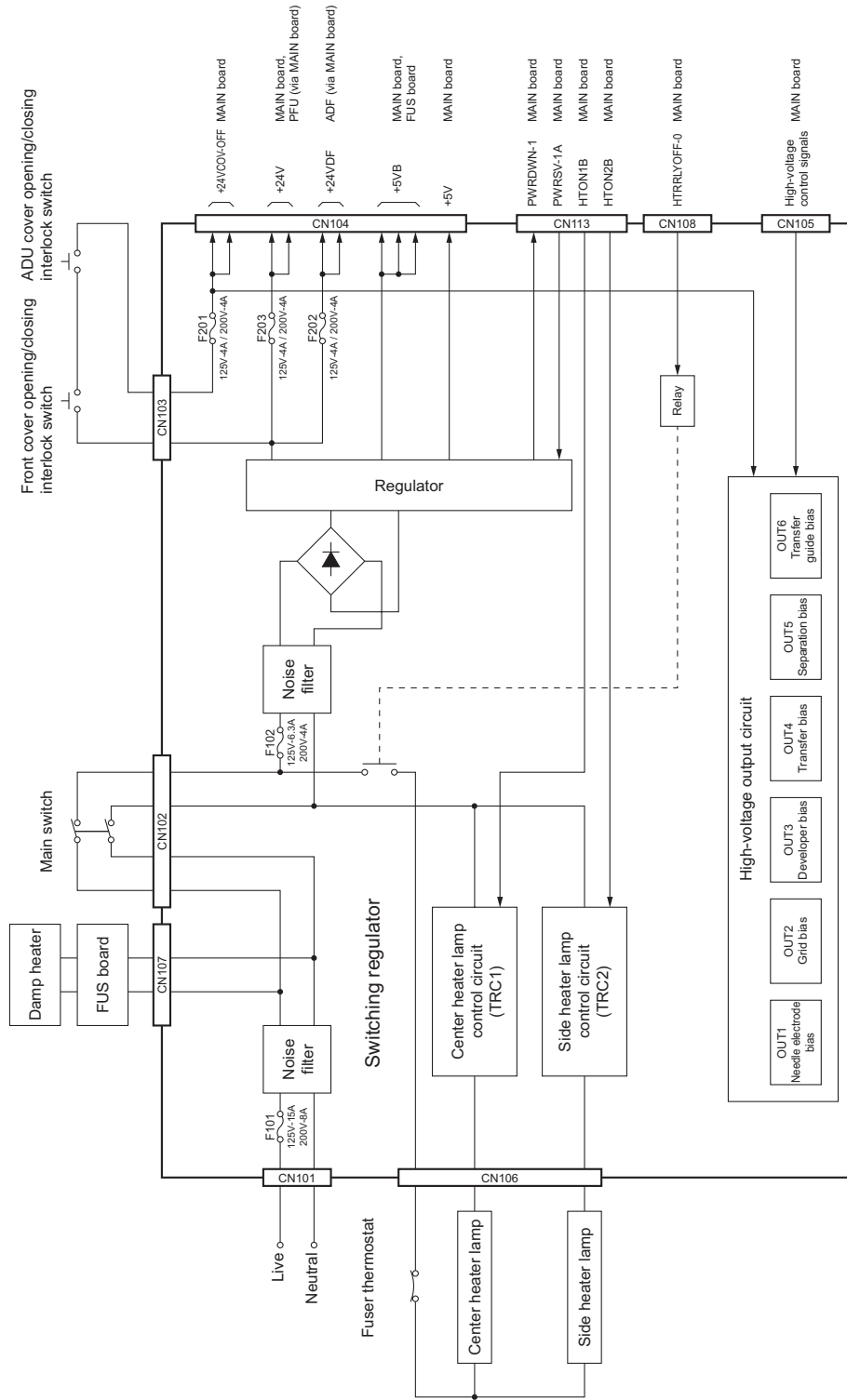


Fig. 7-1

8. WIRE HARNESS CONNECTION

8.1 AC Wire Harness

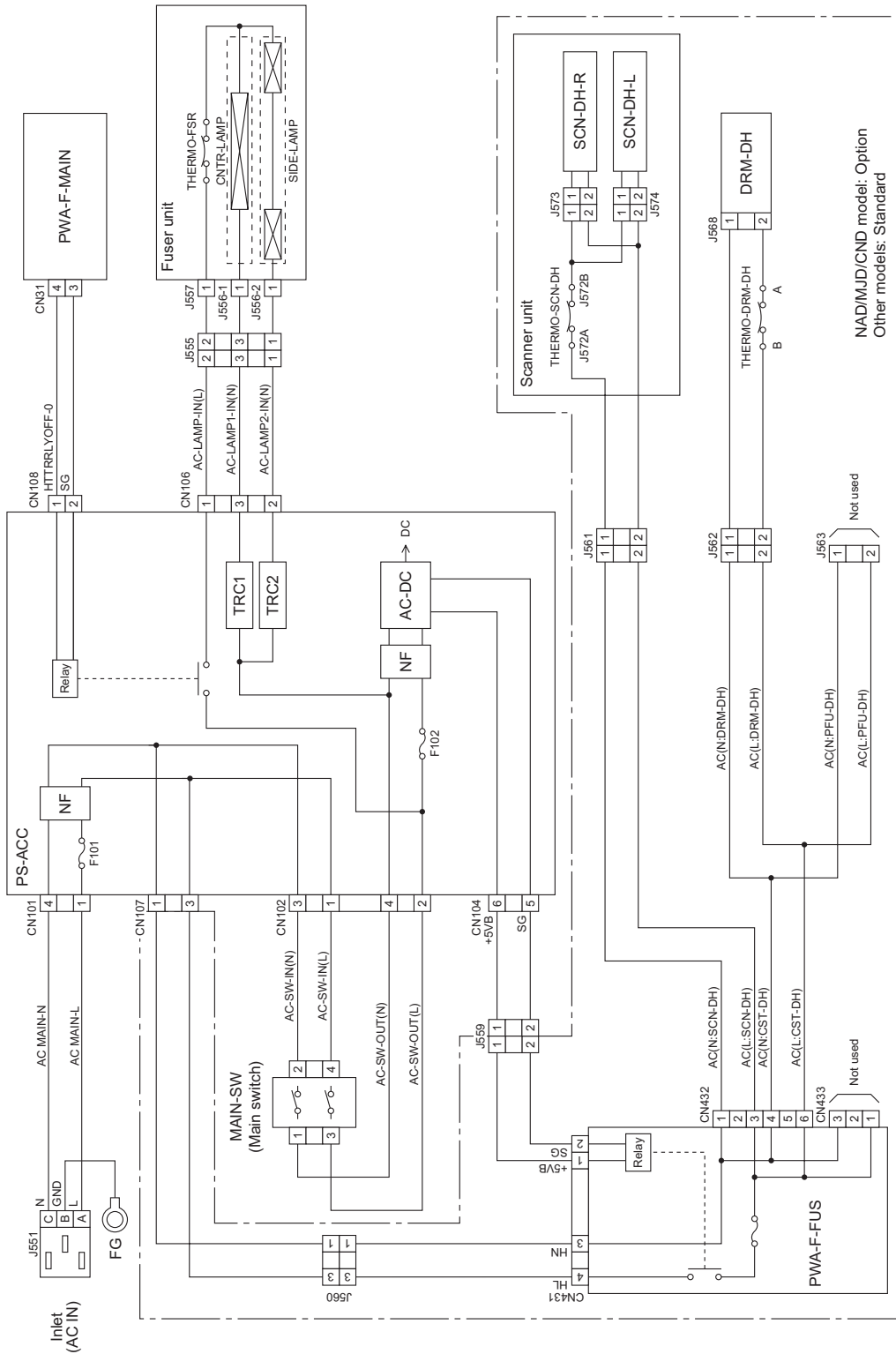
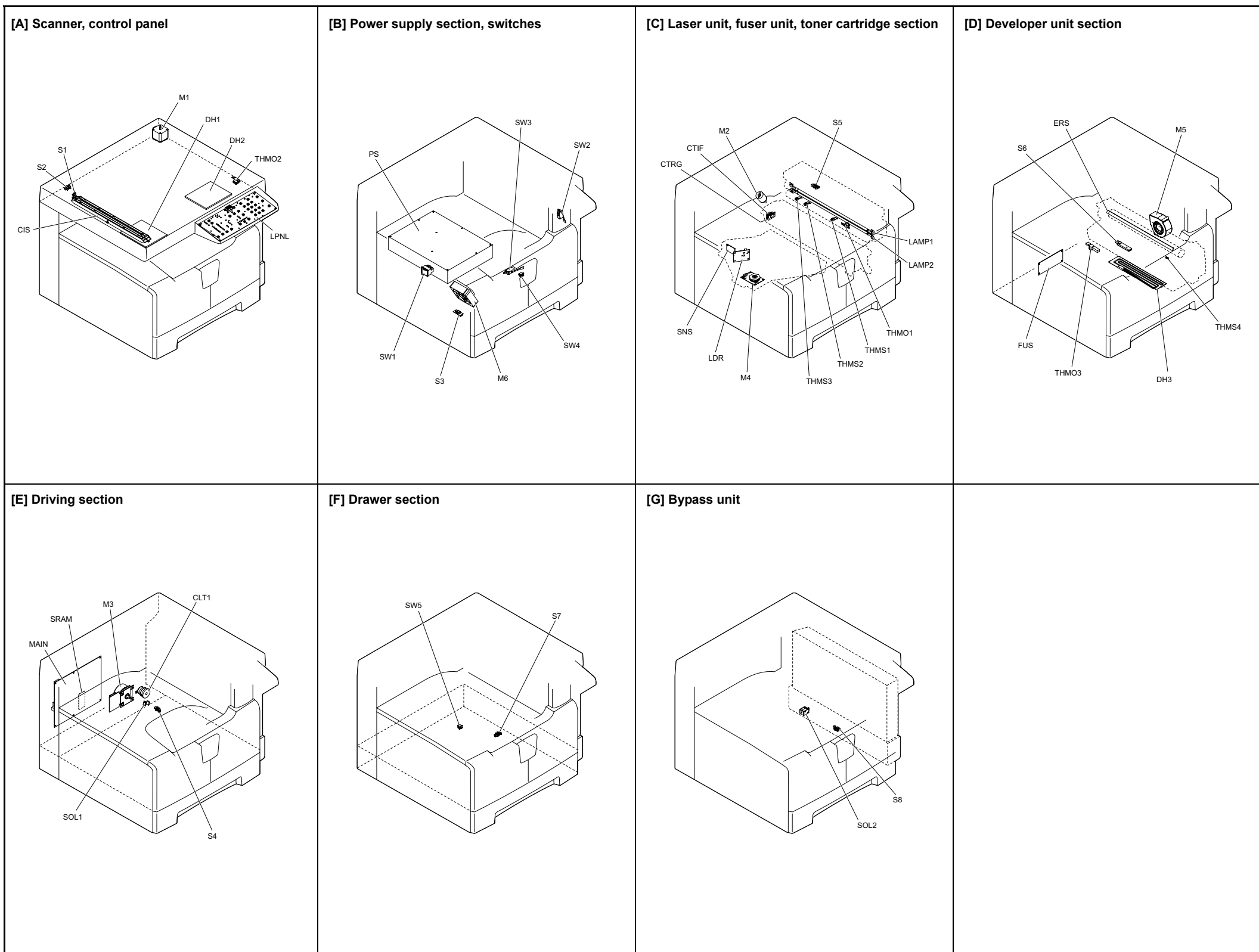


Fig. 8-1

8.3 Electric Parts Layout



Motors			
Symbol	Name	Figure	Wire harness location
M1	SCAN-MOT Scan motor	[A]	5-E
M2	TNR-MOT Toner motor	[C]	1-A
M3	MAIN-MOT Main motor	[E]	1-B
M4	M/DC-POL Polygonal motor	[C]	8-C
M5	EXT-FAN-MOT Exhaust fan	[D]	8-C
M6	PS-FAN-MOT Switching regulator cooling fan	[B]	1-E

Sensors and Switches			
Symbol	Name	Figure	Wire harness location
S1	HOME-SNR CIS home position sensor	[A]	5-D
S2	PLTN-SNR Platen sensor	[A]	5-D
S3	TEMP/HUMI-SNR Temperature/humidity sensor	[B]	1-E
S4	RGST-SNR Registration sensor	[B]	8-D
S5	EXIT-SNR Exit sensor	[E]	1-D
S6	ATTNR-SNR Auto-toner sensor	[C]	1-D
S7	EMP-SNR Paper empty sensor	[D]	8-D
S8	SFB-SNR Bypass paper sensor	[G]	8-C
SW1	MAIN-SW Main switch	[B]	AC wire harness
SW2	ADU-COV-INTLCK-SW ADU cover opening/closing interlock switch	[B]	1-F AC wire harness
SW3	FRNT-COV-INTLCK-SW Front cover opening/closing interlock switch	[B]	1-F AC wire harness
SW4	FRNT-COV-SW Front cover opening/closing switch	[B]	1-E
SW5	CST-SW Drawer detection switch	[F]	8-E

Electromagnetic spring clutches			
Symbol	Name	Figure	Wire harness location
CLT1	RGST-CLT Registration clutch	[E]	8-D

Solenoids			
Symbol	Name	Figure	Wire harness location
SOL1	CST-SOL Pickup solenoid	[E]	8-D
SOL2	SFB-SOL Bypass pickup solenoid	[G]	8-D

PC boards			
Symbol	Name	Figure	Wire harness location
MAIN	PWA-F-MAIN Main PC board (MAIN board)	[E]	5-B
SRAM	PWA-F-SRAM SRAM PC board (SRAM board)	[E]	4-D
LDR	PWA-F-LDR Laser driving PC board (LDR board)	[C]	8-B
SNS	PWA-F-SNS H-sync signal detection PC board (SNS board)	[C]	8-A
LPNL	PWA-F-LPNL Control panel PC board-L (LPNL board)	[A]	5-G
CTIF	PWA-F-CTIF Toner cartridge interface PC board (CTIF board)	[C]	2-B
CTRG	PWA-F-CTRG Toner cartridge PC board (CTRG board)	[C]	2-B
FUS	PWA-F-FUS Fuse PC board (FUS board) * Optional for NAD/MJD/CND model, standard for other models	[D]	2-H AC wire harness

Lamps and heaters			
Symbol	Name	Figure	Wire harness location
LAMP1	CNTR-LAMP Center heater lamp	[C]	AC wire harness
LAMP2	SIDE-LAMP Side heater lamp	[C]	AC wire harness
ERS	LP-ERS Discharge LED	[D]	1-D
DH1	SCN-DH-L Scanner damp heater (Left) * Optional for NAD/MJD/CND model, standard for other models	[A]	AC wire harness
DH2	SCN-DH-R Scanner damp heater (Right) * Optional for NAD/MJD/CND model, standard for other models	[A]	AC wire harness
DH3	DRM-DH Drum damp heater * Optional for NAD/MJD/CND model, standard for other models	[D]	AC wire harness

Thermistors and thermostats			
Symbol	Name	Figure	Wire harness location
THMS1	THMS-C-HTR Center thermistor	[C]	1-C
THMS2	THMS-S-HTR Side thermistor	[C]	1-C
THMS3	THMS-EDG-HTR Edge thermistor	[C]	1-C
THMS4	THMS-DRM Drum thermistor	[D]	1-D
THMO1	THERMO-FSR Fuser thermostat	[C]	AC wire harness
THMO2	THERMO-SCN-DH Scanner damp heater thermostat * Optional for NAD/MJD/CND model, standard for other models	[A]	AC wire harness
THMO3	THERMO-DRM-DH Drum damp heater thermostat * Optional for NAD/MJD/CND model, standard for other models	[D]	AC wire harness

Others			
Symbol	Name	Figure	Wire harness location
CIS	CIS Contact image sensor unit	[A]	5-C
PS	PS-ACC Switching regulator	[B]	2-G AC wire harness

TOSHIBA

TOSHIBA TEC CORPORATION

2-17-2, HIGASHIGOTANDA, SHINAGAWA-KU, TOKYO, 141-8664, JAPAN