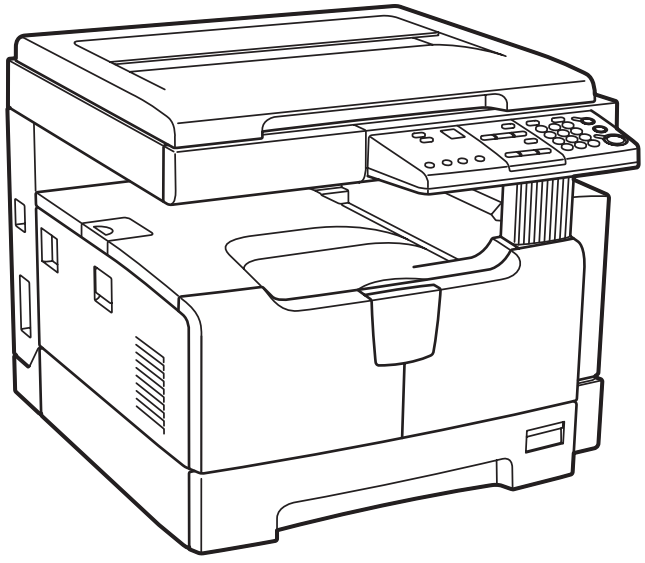
TOSHIBA

SERVICE MANUAL

MULTIFUNCTIONAL DIGITAL SYSTEMS

e-STUDIO223/243



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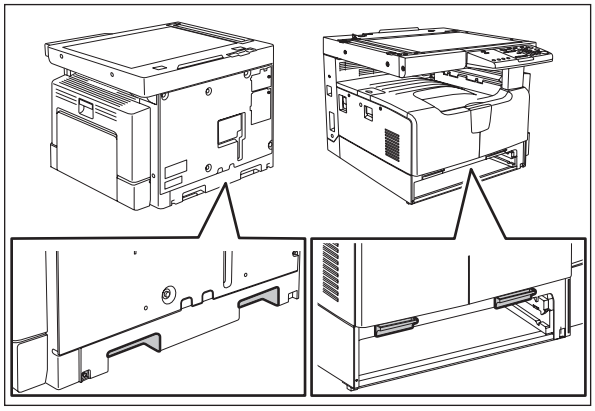
GENERAL PRECAUTIONS REGARDING THE SERVICE FOR e-STUDIO223/243

The installation and service shall 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 36 kg (79.37 lb.), therefore pay full attention when handling it.

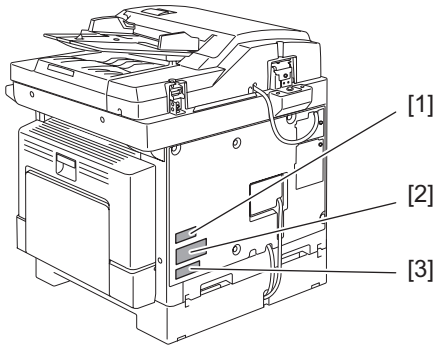


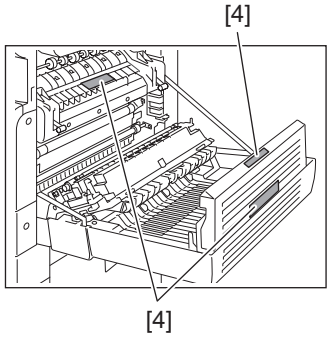
   - Be sure not to hold the movable parts or units (e.g. the control panel, ADU or RADF) when transporting the equipment
   - Be sure to use a dedicated outlet with AC 110 V / 13.2 A, 115 V or 127 V / 12 A, 220-240 V or 240 V / 8 A for its power source.
   - The equipment must be grounded for safety.
   - 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 10 cm (4”) 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 antistatic wrist band since the ICs on it may be damaged due to static electricity.
     Caution: Before using the antistatic wrist band, 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, developer, high-voltage transformer and power supply unit. Especially, the board of these components should not be touched since the electric charge may remain in the capacitors, etc. on them even after the power is turned OFF.
   - Make sure that the equipment will not operate before touching potentially dangerous places (e.g. rotating/operating sections such as gears, belts pulleys, fans and laser beam exit of the laser optical unit).
   - Be careful when removing the covers since there might be the parts with very sharp edges underneath.
   - When servicing the equipment with the power turned ON, be sure not to touch live sections and rotating/operating sections. Avoid exposing your eyes to laser beam.
   - Use designated jigs and tools.
   - Use recommended measuring instruments or equivalents.
   - Return the equipment to the original state and check the operation when the service is finished.

3. **Important Service Parts for Safety**
   - The breaker, door switch, fuse, thermostat, thermofuse, thermistor, batteries, IC-RAMs including lithium batteries, etc. are particularly important for safety. Be sure to handle/install them properly. If these parts are short-circuited and their functions become ineffective, they may result in fatal accidents such as 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 to see if there is any dirt on their surface and if they are properly stuck to the equipment.





[1] Certification label
[2] Explanatory label
[3] Rating plate
[4] Warning for high temperature area

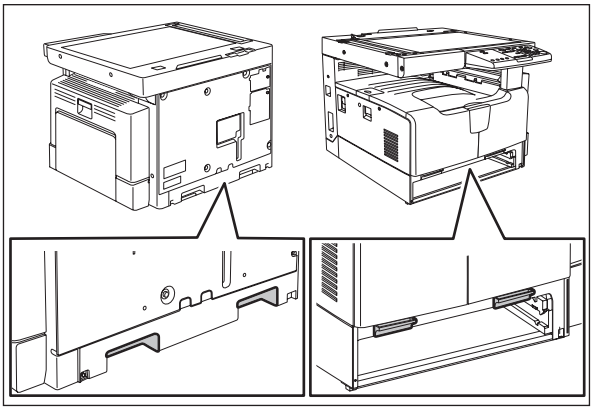
5. **Disposal of the Equipment, Supplies, Packing Materials, Used Batteries and IC-RAMs**
   - Regarding the recovery and disposal of the equipment, supplies, packing materials, used batteries and IC-RAMs including lithium batteries, follow the relevant local regulations or rules.

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-STUDIO223/243

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 36 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 10 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.

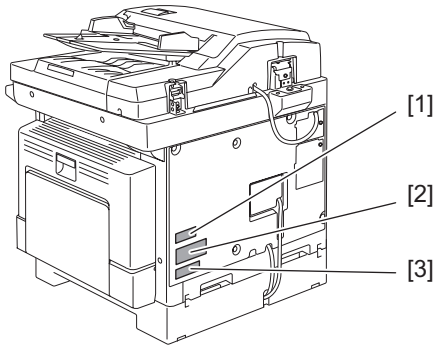
2. **Allgemeine Sicherheitsmassnahmen in bezug auf die Wartung**
   - Während der Wartung das Gerät ausschalten und das Netzkabel herausziehen (ausser Wartung, die bei einem eingeschalteten Gerät, durchgeführt werden muss).
   - Das Netzkabel herausziehen und den Bereich um die Steckerpole und die Steckdose 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 enfernten oder auseinandergenommenen Teilen nicht in Betrieb genommen werden.
   - Das PC-Board muss in einer Anti-elektrostatischen Hülle gelagert werden. Nur Mit einer Manschette bei Betätigung eines Armbandes anfassen, sonst könnte es sein, dass die integrierten Schaltkreise durch statische Elektrizität beschädigt werden.

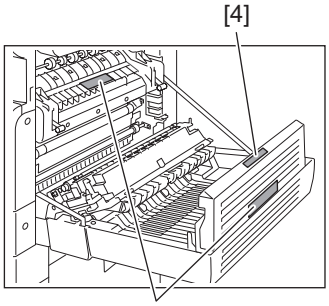
     Vorsicht: Vor Benutzung der Manschette der Betätigung des Armbandes, das Netzkabel des Gerätes herausziehen und prüfen, dass es in der Nähe keine geladenen Gegenstände, die nicht isoliert sind, gibt.

   - Setzen Sie sich während der Wartungsarbeiten nicht dem Laserstrahl aus. Dieses Gerät ist mit einer Laserdiode ausgestattet. Es ist unbedingt zu vermeiden, direkt in den Laserstrahl zu blicken. Keine reflektierenden Teile oder Werkzeuge, wie z. B. Schraubendreher, in den Pfad des Laserstrahls halten. Vor den Wartungsarbeiten sämtliche reflektierenden Metallgegenstände, wie Uhren, Ringe usw., entfernen.
   - Auf keinen Fall Hochtemperaturbereiche, wie die Belichtungslampe, die Fixiereinheit, die Heizquelle und die umliegenden Bereiche, berühren.
   - Auf keinen Fall Hochspannungsbereiche, wie die Ladeeinheiten, 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, Batterien, 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, um sicherzustellen, dass sie nicht verschmutzt sind und korrekt am Gerät angebracht sind.





[1] Klassifizierungsetikett
[2] Erklarungsetikett
[3] Erkennungsetikett
[4] Warnung fur Bereiche mit hohen Temperaturen

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.

- Laseremissionseinheit

  Diese Einheit besteht aus der Laserdiode, dem Fokussierungsobjektiv, der Blende und dem Zylinderobjektiv.

  - Laserdiode

Diese Laserdiode zeichnet sich durch eine geringe Regeldifferenz, eine kleine Laservariation und einen niedrigen Schwellenstrom aus.

Die Blende der Laseremissionseinheit ist unter dem Fokussierobjektiv angeordnet, um die Form der Laserstrahlen in der primären und sekundären Scanrichtung festzulegen.

Die Laserdiode gibt Laserstrahlen als Reaktion auf die Signale der Laseremissionssteuerung (ein/aus) von der Lasertreiber-PC-Platine (LDR) aus. Die durch das Fokussierobjektiv geführten Laserstrahlen werden auf die Trommeloberfläche fokussiert.

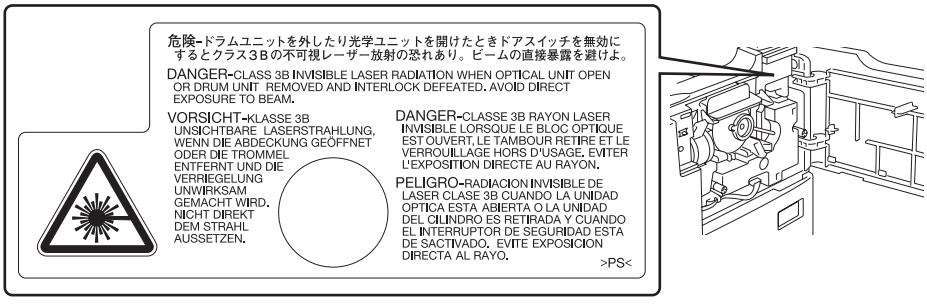
  - Vorsichtsmaßnahmen im Zusammenhang mit Lasern

Dieses Gerät enthält eine Laserdiode, die einen unsichtbaren Laserstrahl emittiert.

Da man diesen Laserstrahl nicht sehen kann, ist bei der Handhabung der Komponenten der optischen Lasereinheit, bei der Durchführung von Arbeiten und bei der Justierung des Laserstrahls äußerste Vorsicht geboten. Arbeiten dürfen niemals anhand anderer als den vorgeschriebenen Anleitungen durchgeführt werden; andernfalls kann es zu einer Schädigung Exposition durch Laserstrahlung kommen.

Die Lasereinheit ist vollständig mit einer Schutzabdeckung versiegelt. Solange ausschließlich die Arbeitsschritte der vorgeschriebenen Anleitungen durchgeführt werden, tritt der Laserstrahl nicht aus, und es besteht keine Gefahr, der Laserstrahlung ausgesetzt zu werden.

Das folgende Laser-Warnetikett ist an der Abdeckung vorne rechts angebracht.



- Warnhinweise:
  - 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.

  - Bei Wartungsarbeiten am eingeschalteten Gerät dürfen keine unter Strom stehenden, drehbaren oder betriebsrelevanten Bereiche berührt werden. Nicht direkt in den Laserstrahl blicken.
  - Im Rahmen der Wartung unbedingt das Leistungsschild und die Etiketten mit Warnhinweisen überprüfen [z. B. „Unplug the power cable during service“ („Netzkabel 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.

CONTENTS

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1. FEATURE

1.1 Main Feature of e-STUDIO223/243

- This is a compact MFP which adopts long-life consumables and does not produce waste. Users whose printing amount is small can operate it substantially without maintenance.
- A large-diameter roller is adopted as the feed roller in the drawer.
- The copy speed is improved.
  (e-STUDIO181/211: 18/21 ppm -> e-STUDIO223/243: 22/24 ppm)
- The GDI driver can be easily installed. (just by connecting the equipment and following the guidance)
- The various options for e-STUDIO181/211 can be used.

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2. SPECIFICATIONS / ACCESSORIES / OPTIONS / SUPPLIES

2.1 Specifications

Values in [ ] are for e-STUDIO243 in case that the specification is different among e-STUDIO223 and e-STUDIO243.

- 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/m^2/13 to 34 lb. Bond) Carbon paper are not acceptable either.
  Maximum size: A3/LD

- Copy speed (Copies/min.)

e-STUDIO223

Paper size	Drawer	Bypass feed		PFU
		Size specified	Size not specified	
A4, B5, LT	22	22	13	22
A5-R, ST-R	–	22	13	–
A4-R, B5-R, LT-R	17.5	17.5	13	17.5
B4, LG, FOLIO, COMPUTER	15	15	13	15
A3, LD	13	13	13	13

e-STUDIO243

Paper size	Drawer	Bypass feed		PFU
		Size specified	Size not specified	
A4, B5, LT	24	23	13	23
A5-R, ST-R	–	23	13	–
A4-R, B5-R, LT-R	17.5	17.5	13	17.5
B4, LG, FOLIO, COMPUTER	15	15	13	15
A3, LD	13	13	13	13

* "–" 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 22[24] 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: 22[24] or more.
  - Reproduction ratio: 100%

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Copy speed for thick paper (Copies/min.)
e-STUDIO223/243
Thick 1 (81 g/m^2 to 105 g/m^2, 21.3 lb. Bond to 28 lb. Bond): Bypass feed on a sheet by sheet basis only
Thick 2 (106 g/m^2 to 163 g/m^2, 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. 7.1 sec. (A4, 100%, original placed manually)
  Approx. 7.1 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/m^2 (17 to 22 lb. Bond))

  Bypass feeding:
  Stack height 11.8 mm: equivalent to 100 sheets; 64 to 80 g/m^2 (17 to 22 lb. Bond)

  Paper Feed Unit (PFU):
  Option (One drawer: stack height 28 mm, equivalent to 250 sheets; 64 to 80 g/m^2 (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/m^2 (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

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- Weight..... Approx. 31.7 kg (69.89 lb.) (for NAD and others)
  Approx. 33.7 kg (74.30 lb.) (for MJD and CND)
  Approx. 35.8 kg (78.93 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 ±10%.

- Power consumption ..... 1.5 kW or less (100 V series)
  1.5 kW or less (200 V series)
  * The electric power is supplied to the ADF and PFU through the equipment.

- Total counter ..... Electronical counter

- Dimensions of the equipment
  ..... W 600 x D 643 x H 462.5 (mm): See the figure below

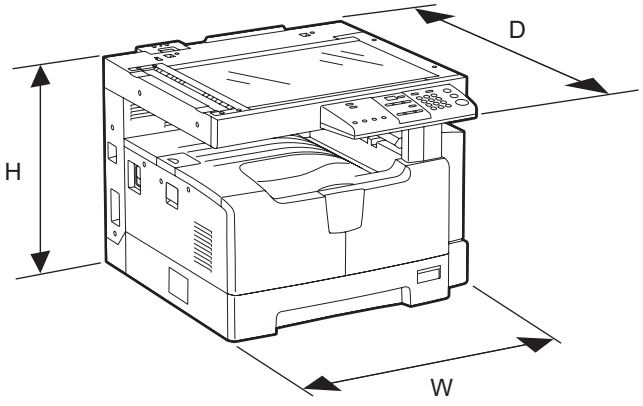

Fig. 2-1

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2.2 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 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
AUD: Australia
MJD: Europe
ASU: Asia / Saudi Arabia
SAD: Saudi Arabia
ARD: Argentina and 220-volt South America
CND: China
TWD: Taiwan
JPD: Japan

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2.3 Options

Platen Cover	KA-1640PC
Automatic Document Feeder (ADF)	MR-2020/C
Paper Feed Unit (PFU)	MY-1038/C
Expansion Memory	GC-1240/C
Damp Heater	MF-1640U/E
Harness Kit	GQ-1130
Desk	MH-1640
Operator's Manual Pocket	KK-1660/C

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2.4 Supplies

Drum	OD-1600 (except for China) OD-2320 (for China)
Developer material	D-2320 (except for China) D-2320C (for China)
Toner cartridge	PS-ZT2450U (1) (for North America) PS-ZT2450A (1) (for 220-volt South America) PS-ZT2450D (1) (for Asia) PS-ZT2450D5k (1) (for Asia) PS-ZT2450CS10k (1) (for China) PS-ZT2450CS5k (1) (for China) PS-ZT2450T (1) (for Taiwan) PS-ZT2450T5k (1) (for Taiwan) PS-ZT2450E (1) (for Europe) PS-ZT2450E5K (1) (for Europe)

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2.5 System List

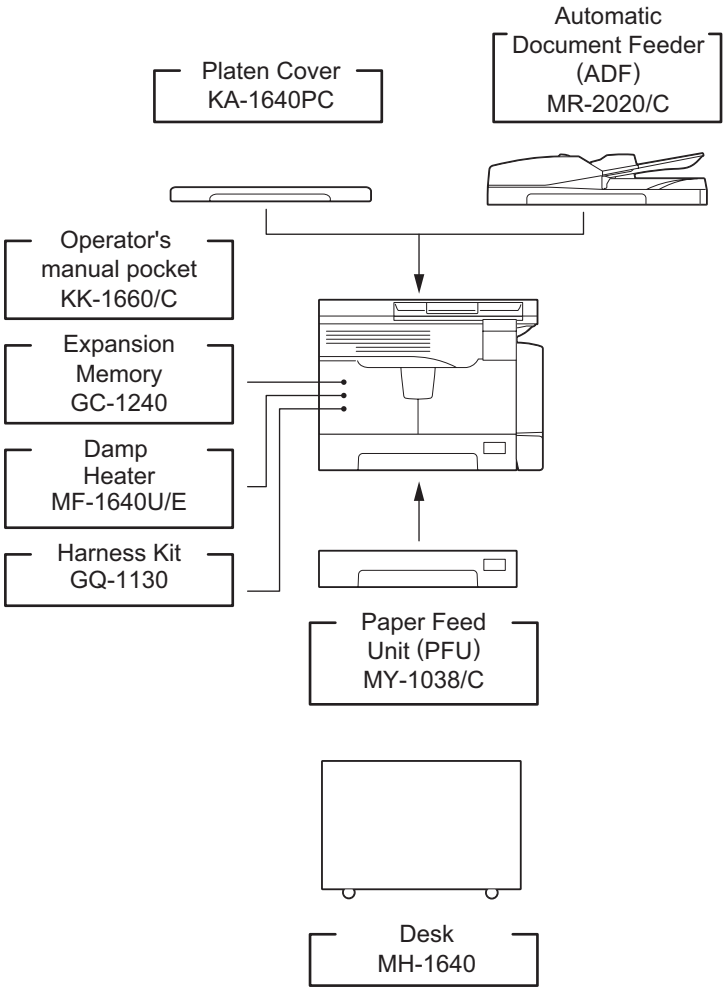

Fig. 2-2

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3. OUTLINE OF THE MACHINE

3.1 Sectional View

1. Front side

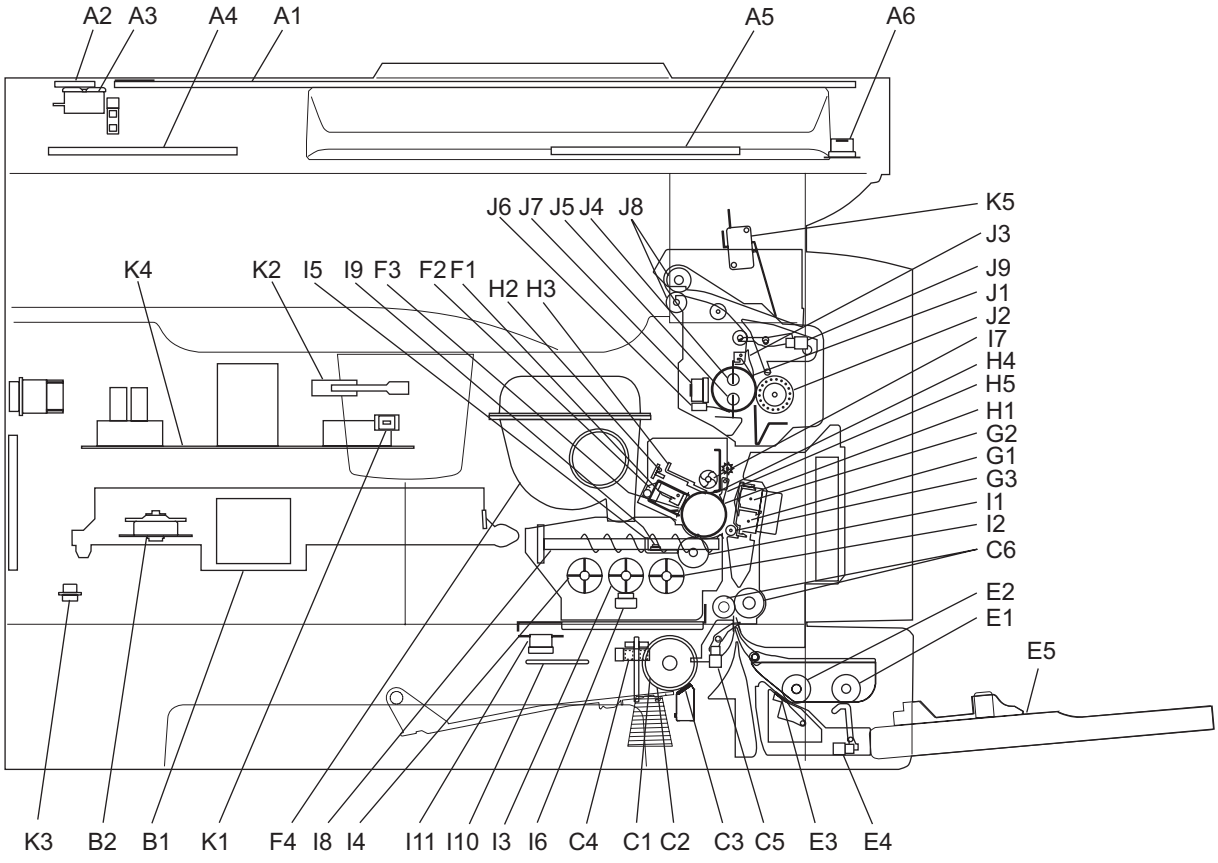

Fig. 3-1

A1	Original glass	
A2	ADF original glass	
A3	Contact image sensor unit (CIS)	
A4	Scanner damp heater (Left side)	DH1
A5	Scanner damp heater (Right side)	DH2
A6	Scanner damp heater thermostat	THMO2
B1	Laser optical unit	
B2	Polygonal motor	M4
C1	Main paper feed roller	
C2	Sub paper feed roller	
C3	Separation pad	
C4	Paper empty sensor	S7
C5	Registration sensor	S4
C6	Registration roller	
E1	Bypass pickup roller	
E2	Bypass feed roller	
E3	Bypass separation pad	
E4	Bypass paper sensor	S8

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E5	Bypass tray	
F1	Needle electrode	
F2	Main charger	
F3	Main charger grid	
F4	Toner cartridge	
G1	Transfer charger wire	
G2	Separation charger wire	
G3	Transfer guide roller	
H1	Drum	
H2	Discharge LED	
H3	Drum cleaning blade	
H4	Recovery blade	
H5	Drum separation finger	
I1	Developer sleeve (Magnetic roller)	
I2	Mixer-1	
I3	Mixer-2	
I4	Mixer-3	
I5	Doctor blade	
I6	Auto-toner sensor	S6
I7	Toner recovery auger	
I8	Toner recycle auger	
I9	Drum thermistor	THMS4
I10	Drum damp heater	DH3
I11	Drum damp heater thermostat	THMO3
J1	Fuser roller	
J2	Pressure roller	
J3	Fuser roller separation finger	
J4	Center heater lamp	LAMP1
J5	Side heater lamp	LAMP2
J6	Center/Side/Edge thermistor	THMS1/2/3
J7	Fuser thermostat	THMO1
J8	Exit roller	
J9	Exit sensor	S5
K1	Front cover opening/closing switch	SW4
K2	Front cover opening/closing interlock switch	SW3
K3	Temperature/humidity sensor	S3
K4	Switching regulator	
K5	ADU cover opening/closing interlock switch	SW2

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2. Rear side

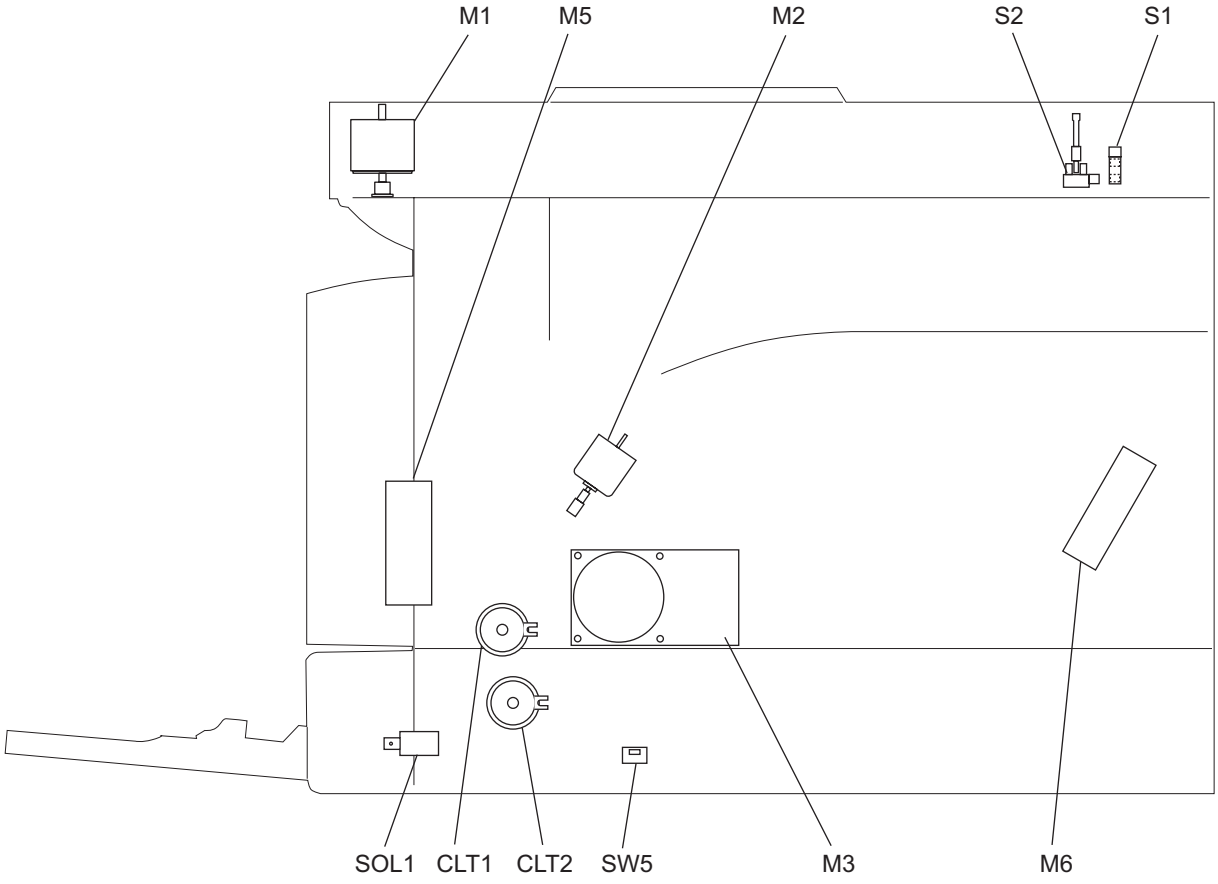

Fig. 3-2

M1	Scan motor
M2	Toner motor
M3	Main motor
M5	Exhaust fan
M6	Switching regulator cooling fan
S1	CIS home position sensor
S2	Platen sensor
SW5	Drawer detection switch
CLT1	Registration clutch
CLT2	Pickup clutch
SOL1	Bypass pickup solenoid

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3.2 Electric Parts Layout

[A] Scanner, control panel

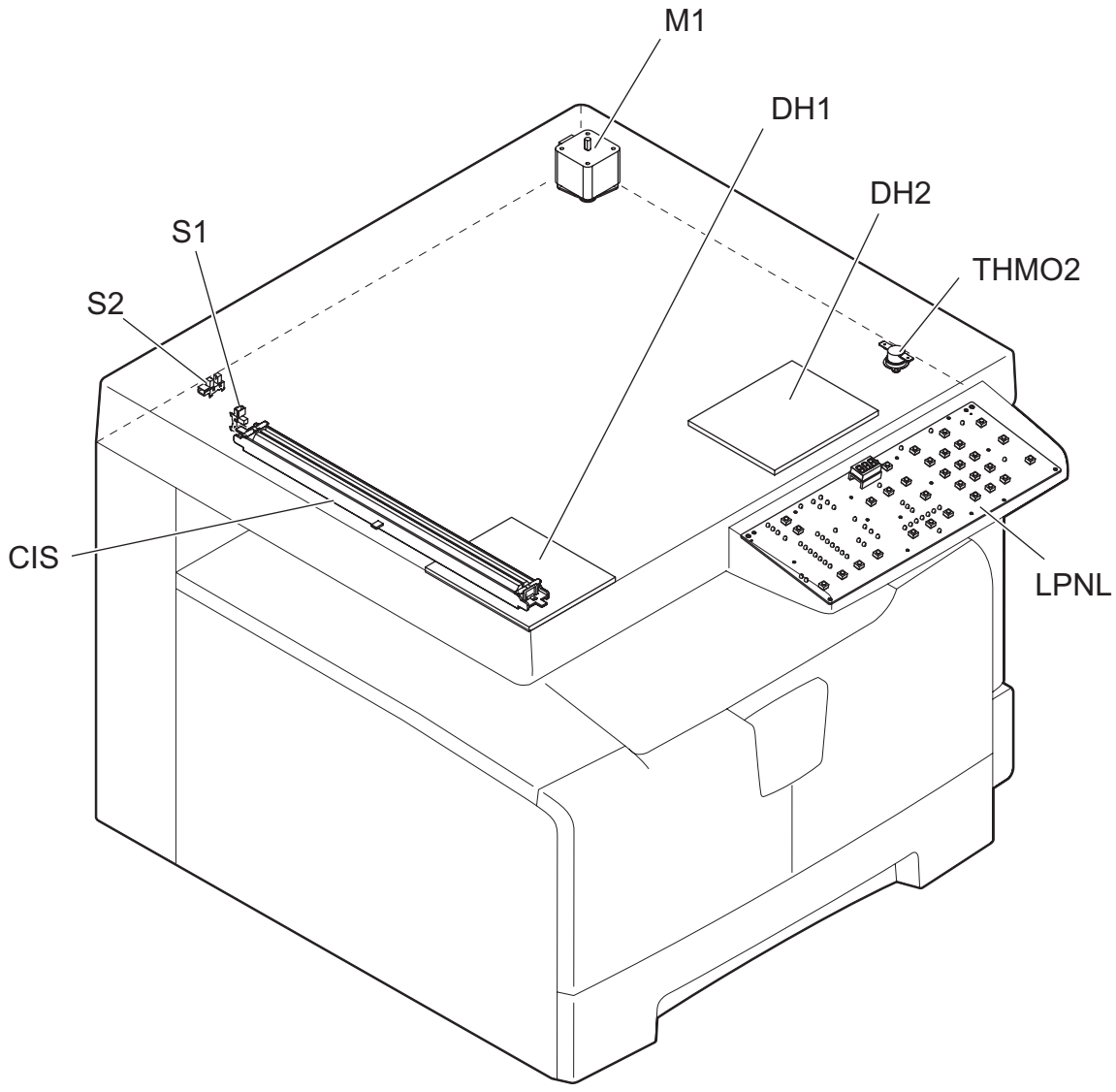

Fig. 3-3

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[B] Power supply section, switches

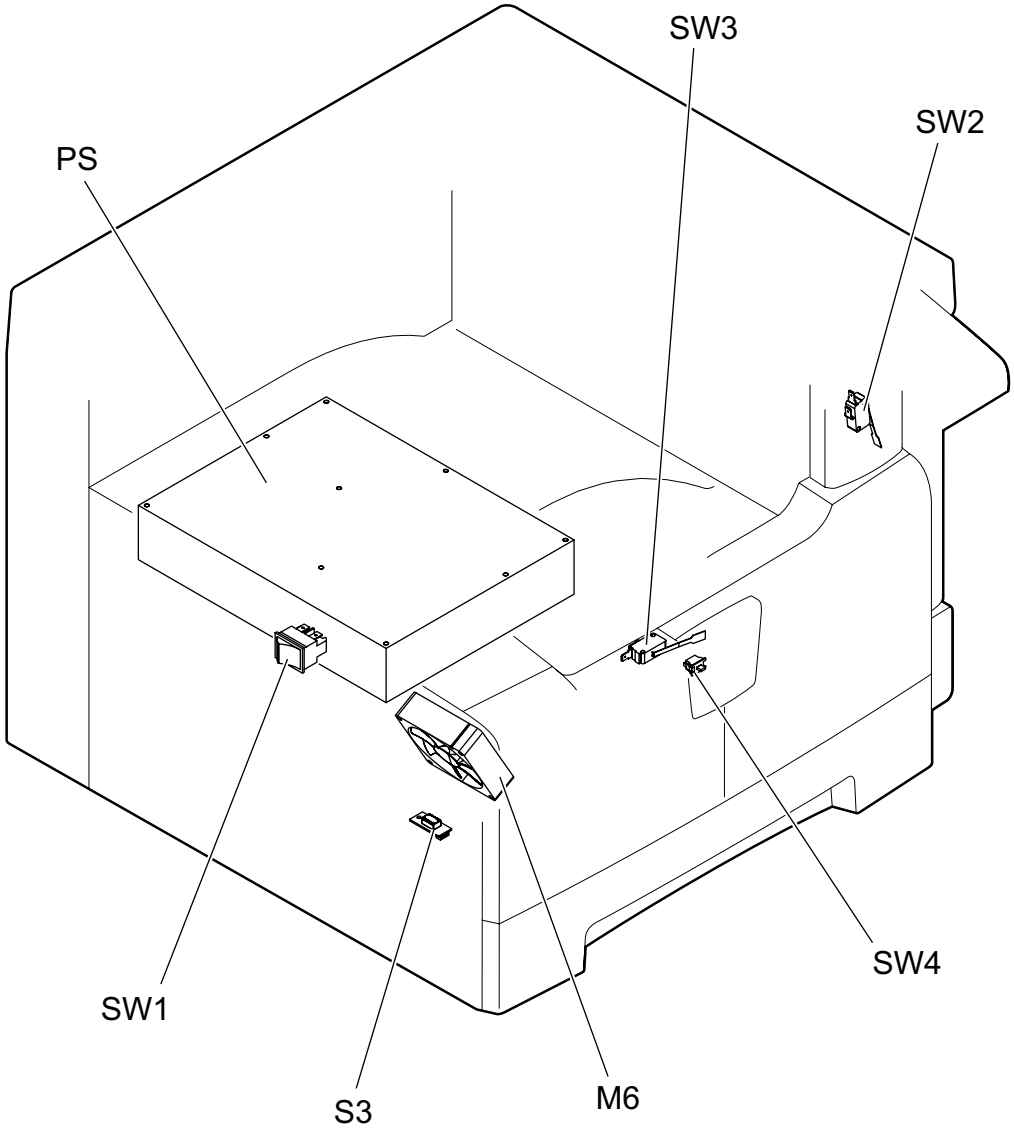

Fig. 3-4

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[C] Laser optical unit, fuser unit, toner cartridge section

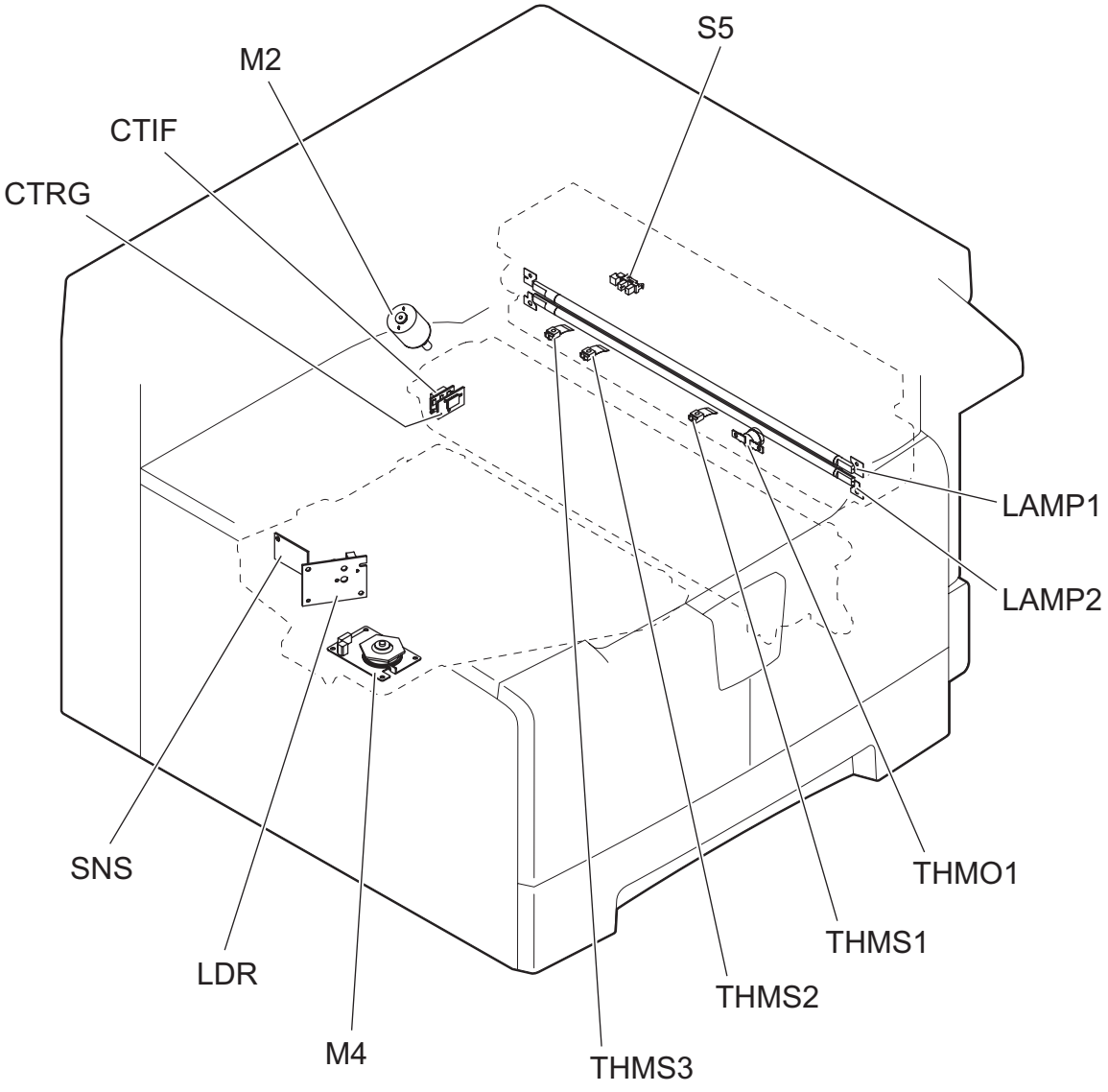

Fig. 3-5

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[D] Developer unit section

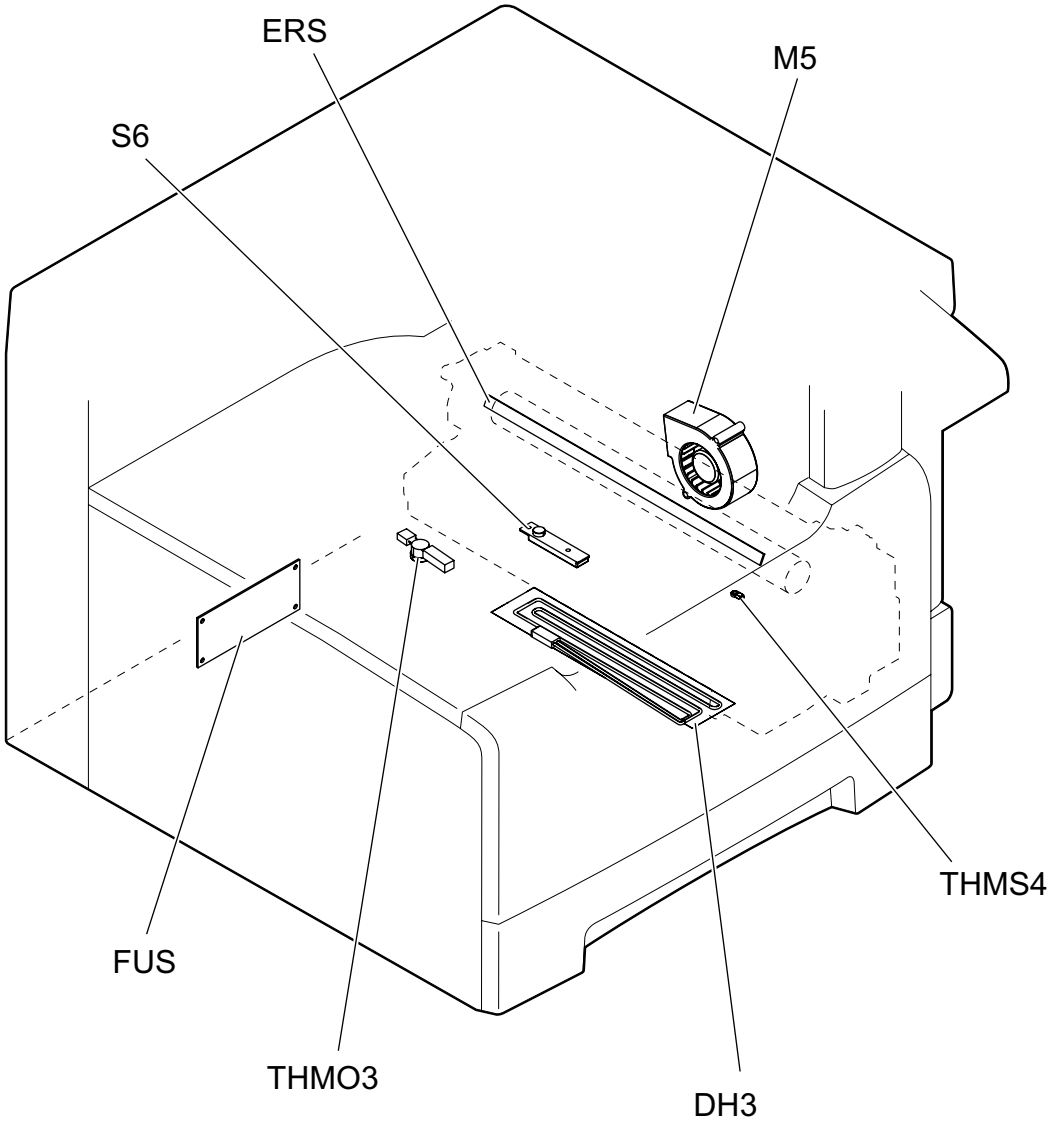

Fig. 3-6

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[E] Driving section

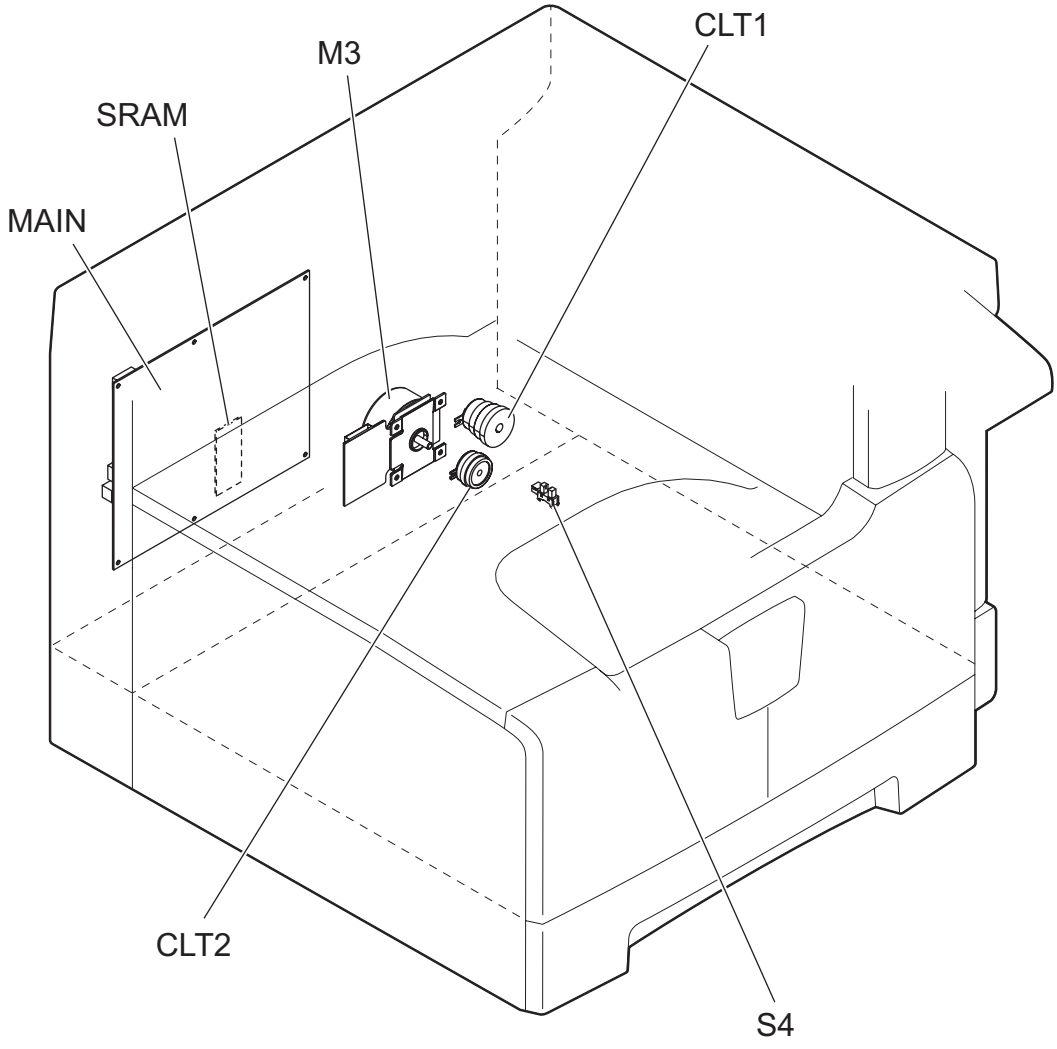

Fig. 3-7

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[F] Drawer section

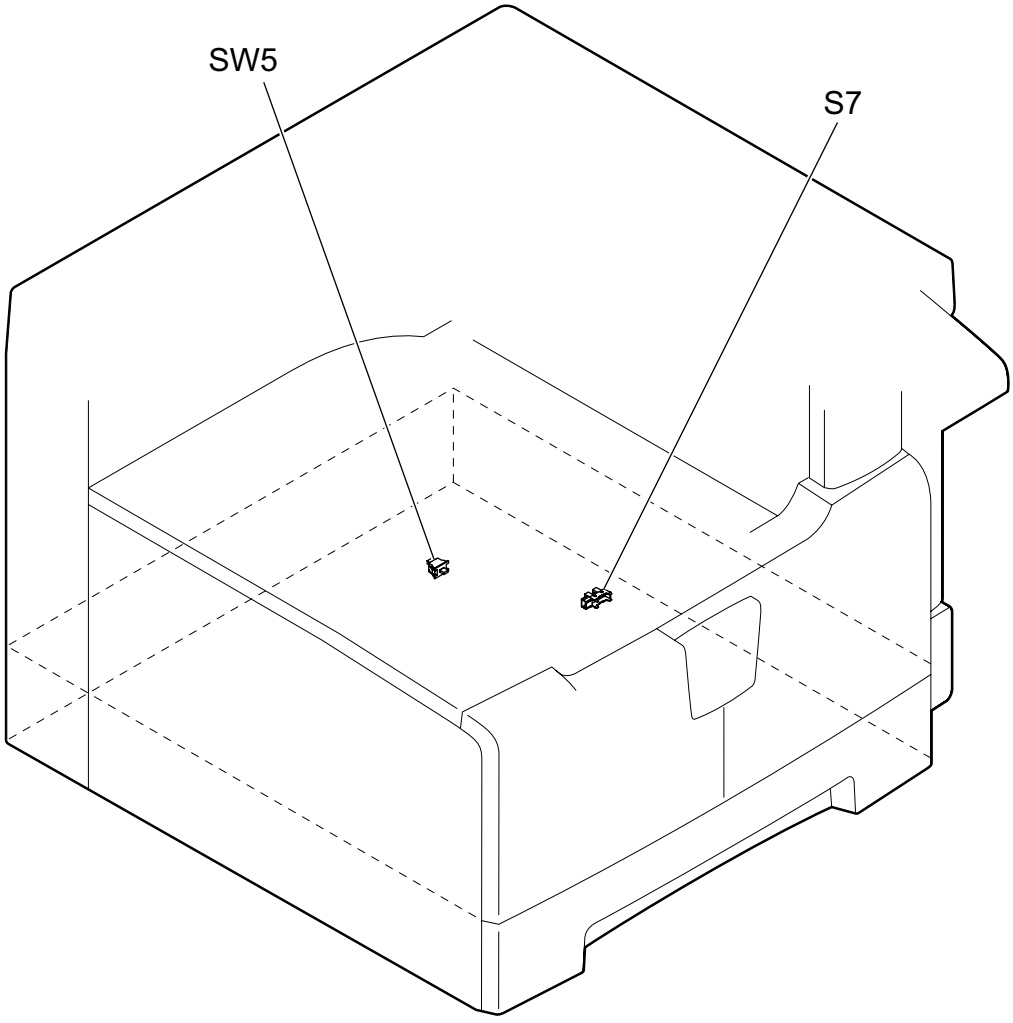

Fig. 3-8

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[G] Bypass unit

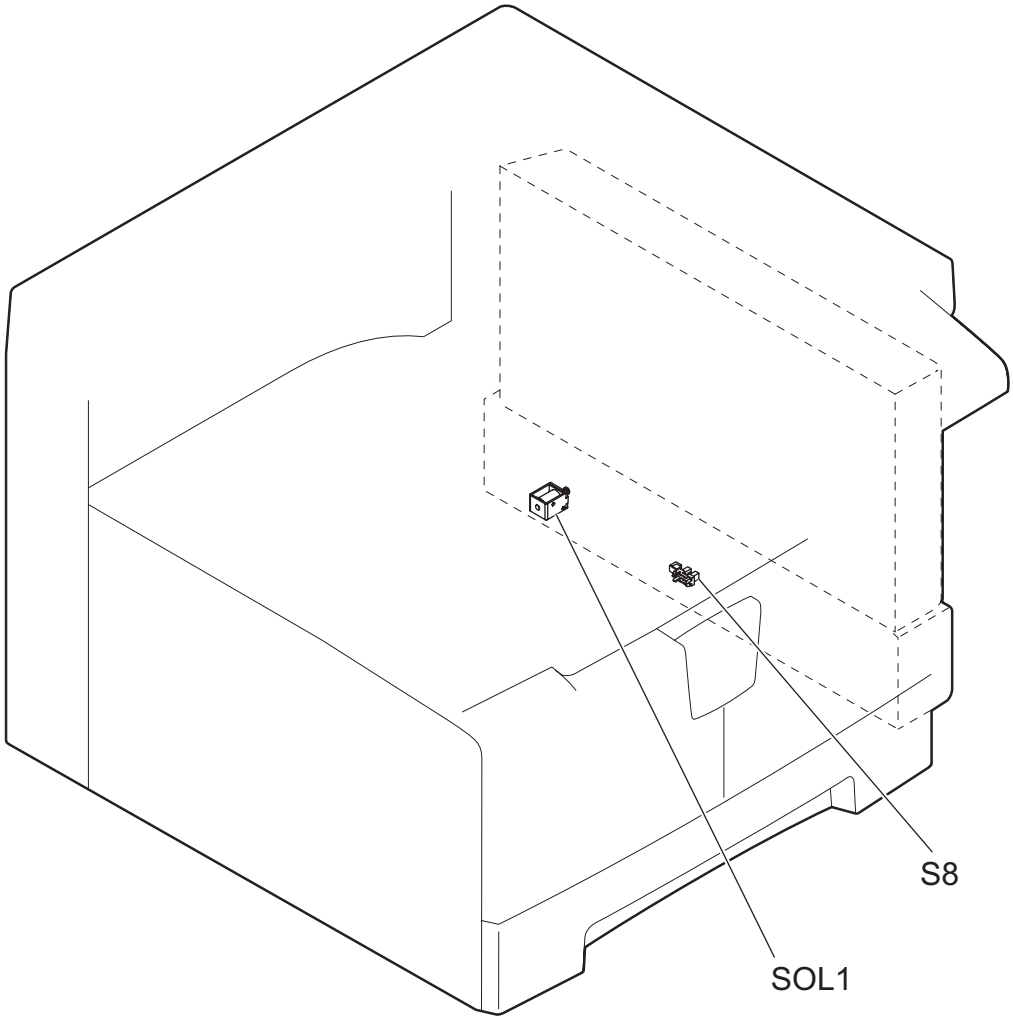

Fig. 3-9

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3.3 Symbols and Functions of Various Components

The column "P-I" shows the page and item number in the parts list.

1. Motors

Symbol	Name	Function	Remarks	P-I
M1	SCAN-MOT Scan motor	Driving the CIS	Fig. 3-3	10-1
M2	TNR-MOT Toner motor	Supplying the toner	Fig. 3-5	12-15
M3	MAIN-MOT Main motor	Driving the drum, developer unit, registration roller, Pickup roller, feed roller, cleaner unit	Fig. 3-7	12-2
M4	M/DC-POL Polygonal motor	Driving the polygonal mirror	Fig. 3-5	5-13
M5	EXT-FAN-MOT Exhaust fan	Exhausting ozone and cooling down the equipment inside	Fig. 3-6	11-23
M6	PS-FAN-MOT Switching regulator cooling fan	Cooling down the switching regulator	Fig. 3-4	5-11

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2. Sensors and switches

Symbol	Name	Function	Remarks	P-I
S1	HOME-SNR CIS home position sensor	Detecting CIS home position	Fig. 3-3	9-101
S2	PLTN-SNR Platen sensor	Detecting the opening/closing of platen cover or RADF	Fig. 3-3	9-101
S3	TEMP/HUMI-SNR Temperature/humidity sensor	Detecting the temperature and humidity inside the equipment	Fig. 3-4	5-16
S4	RGST-SNR Registration sensor	Detecting the transporting paper at the registration roller section	Fig. 3-7	15-107
S5	EXIT-SNR Exit sensor	Detecting the transporting paper at the exit section	Fig. 3-5	24-8
S6	ATTNR-SNR Auto-toner sensor	Detecting the density of toner in the developer unit	Fig. 3-6	21-46
S7	EMP-SNR Paper empty sensor	Detecting presence/absence of paper in the drawer	Fig. 3-8	15-107
S8	SFB-SNR Bypass paper sensor	Detecting presence/absence of paper on the bypass tray	Fig. 3-9	13-101
SW1	MAIN-SW Main switch	Turning ON/OFF of the equipment	Fig. 3-4	5-4
SW2	ADU-COV-INTLCK-SW ADU cover opening/closing interlock switch	Controlling cutoff and supply of the 24V voltage by opening/closing of the ADU cover	Fig. 3-4	6-8
SW3	FRNT-COV-INTLCK-SW Front cover opening/closing interlock switch	Controlling cutoff and supply of the 24V voltage by opening/closing of the front cover	Fig. 3-4	1-5
SW4	FRNT-COV-SW Front cover opening/closing switch	Detecting the opening/closing of the front cover	Fig. 3-4	1-101
SW5	CST-SW Drawer detection switch	Detecting presence/absence of the drawer	Fig. 3-8	16-110

3. Electromagnetic clutches

Symbol	Name	Function	Remarks	P-I
CLT1	RGST-CLT Registration clutch	Driving the registration roller	Fig. 3-7	16-21
CLT2	PKU-CLT Pickup clutch	Driving the paper feed roller	Fig. 3-7	12-113

4. Solenoids

Symbol	Name	Function	Remarks	P-I
SOL1	SFB-SOL Bypass pickup solenoid	Controlling the power transmission of the bypass pickup roller	Fig. 3-9	14-15

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5. PC boards

Symbol	Name	Function	Remarks	P-I
MAIN	PWA-F-MAIN Main PC board (MAIN board)	Controlling the whole system and image processing	Fig. 3-7	7-1
SRAM	PWA-F-SRAM SRAM PC board (SRAM board)	Storing the setting information of the equipment	Fig. 3-7	7-33
LDR	PWA-F-LDR Laser driving PC board (LDR board)	Driving the laser diode	Fig. 3-5	5-13
SNS	PWA-F-SNS H-sync signal detection PC board (SNS board)	Detecting the laser beam position	Fig. 3-5	5-13
LPNL	PWA-F-LPNL Control panel PC board (LPNL board)	Detecting the button entry and controlling LED on the control panel	Fig. 3-3	4-15
CTIF	PWA-F-CTIF Toner cartridge interface PC board (CTIF board)	Interface for detecting the toner cartridge (Detecting the CTRG board)	Fig. 3-5	7-30
CTRG	PWA-F-CTRG Toner cartridge PC board (CTRG board)	Storing the status of the toner cartridge	Fig. 3-5	103-3
FUS	PWA-F-FUS Fuse PC board (FUS board)	Supplying power to each damp heater * Optional for NAD/MJD/CND model, standard for other models	Fig. 3-6	7-12

6. Lamps and heaters

Symbol	Name	Function	Remarks	P-I
LAMP1	CNTR-LAMP Center heater lamp	Heating the center section of the fuser roller	Fig. 3-5	23-12
LAMP2	SIDE-LAMP Side heater lamp	Heating the section of both sides of the fuser roller	Fig. 3-5	23-13
ERS	LP-ERS Discharge LED	Removing the residual charge from the drum surface	Fig. 3-6	20-13
DH1	SCN-DH-L Scanner damp heater (Left)	Preventing condensation in the scanner unit * Optional for NAD/MJD/CND model, standard for other models	Fig. 3-3	9-17
DH2	SCN-DH-R Scanner damp heater (Right)	Preventing condensation in the scanner unit * Optional for NAD/MJD/CND model, standard for other models	Fig. 3-3	9-18
DH3	DRM-DH Drum damp heater	Preventing condensation of the drum * Optional for NAD/MJD/CND model, standard for other models	Fig. 3-6	8-6

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7. Thermistors and thermostats

Symbol	Name	Function	Remarks	P-I
THMS1	THMS-C-HTR Center thermistor	Detecting the surface temperature at the center of the fuser roller (for controlling the center heater lamp)	Fig. 3-5	23-6
THMS2	THMS-S-HTR Side thermistor	Detecting the surface temperature at the rear side of the fuser roller (for controlling the side heater lamp)	Fig. 3-5	23-6
THMS3	THMS-EDG-HTR Edge thermistor	Detecting the surface temperature at the edge of the rear side of the fuser roller (for preventing overheating)	Fig. 3-5	23-6
THMS4	THMS-DRM Drum thermistor	Detecting the temperature on the drum surface	Fig. 3-6	21-49
THMO1	THERMO-FSR Fuser thermostat	Preventing overheating in the fuser unit	Fig. 3-5	23-5
THMO2	THERMO-SCN-DH Scanner damp heater thermostat	Preventing overheating of the scanner damp heater * Optional for NAD/MJD/CND model, standard for other models	Fig. 3-3	9-20
THMO3	THERMO-DRM-DH Drum damp heater thermostat	Preventing overheating of the drum damp heater * Optional for NAD/MJD/CND model, standard for other models	Fig. 3-6	8-7

8. Others

Symbol	Name	Function	Remarks	P-I
CIS	CIS Contact image sensor unit	Reading originals	Fig. 3-3	9-8
PS	PS-ACC Switching regulator	• Generating DC voltage and supplying it to each section of the equipment • Generating high voltage and supplying it to the main charger, developer, transfer and separation units • Supplying AC power to the heater lamp	Fig. 3-4	5-2

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3.4 Copy Process

3.4.1 General description of copying process

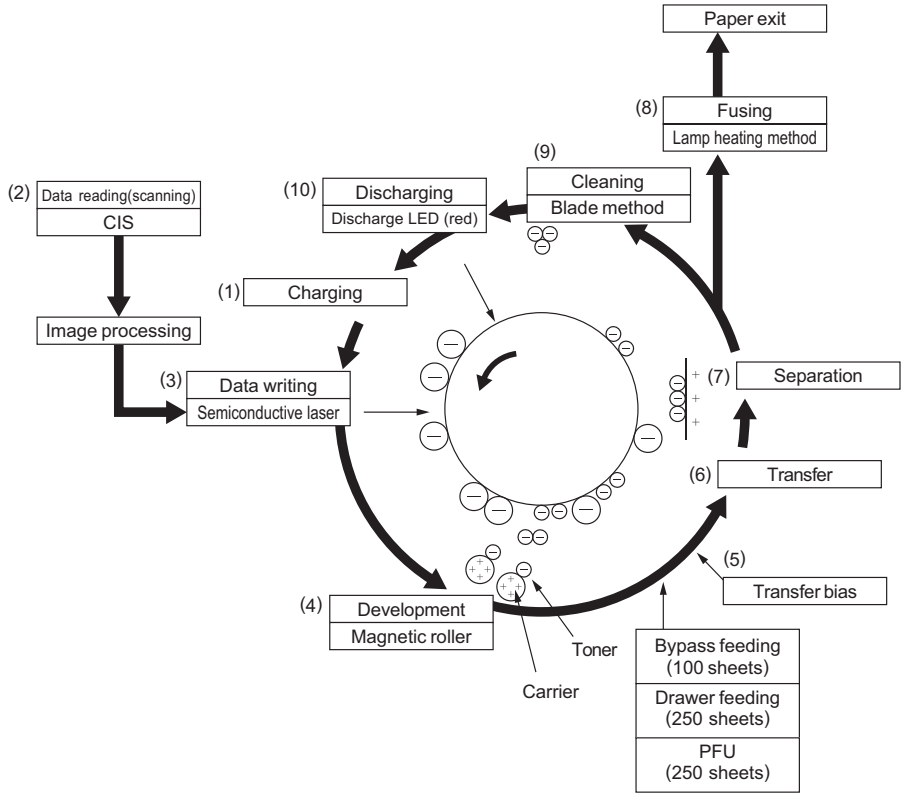

Fig. 3-10

(1) Charging: Applies negative charge on the surface of the photoconductive drum.
↓
(2) Data reading: The images on the original are converted into electrical signals.
↓
(3) Data writing: The electrical signals are converted into light signal (laser emission) which exposes the surface of the photoconductive drum.
↓
(4) Development: Negatively-charged toner adheres to the photoconductive drum and forms visible image.
↓
(5) Transfer bias: Improves transfer efficiency.
↓
(6) Transfer: Transfers the visible toner image on the photoconductive drum onto paper.
↓
(7) Separation: Separates paper with the toner image from the photoconductive drum.
↓
(8) Fusing: Fuses the toner image onto the paper by applying heat and pressure.
↓
(9) Cleaning: Scrapes off the residual toner from the drum.
↓
(10) Discharging: Eliminates the residual negative charge from the surface of the photoconductive drum.

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3.4.2 Comparison with e-STUDIO165/205

Process	e-STUDIO165/205	e-STUDIO223/243
1. Photoconductive drum	OD-1600 (OPC ø30)	OD-1600, OD-2320 (OPC ø30)
		←
• Sensitivity	Highly sensitized/durable drum	
2. Charging	Scorotron method	←
3. Data writing		
• Light source	Semiconductor laser (Adjustment not required)	←
4. Development		
• Magnetic roller	One magnetic roller	←
• Auto-toner	Magnetic bridge-circuit method	←
• Toner supply	Toner cartridge	←
• Toner-empty detection	Density detection method	←
• Toner	T-1640, T-1640E, T-1640D T-1640C, T-1640T	PS-ZT2450U (1), PS-ZT2450A (1), PS-ZT2450D (1), PS-ZT2450D5k (1), PS-ZT2450CS10k (1), PS-ZT2450CS5k (1), PS-ZT2450T (1), PS-ZT2450T5k (1), PS-ZT2450E (1), PS-ZT2450E5K (1)
• Developer material	D-2320, D-2320C	← ←
• Developer bias	DC- Adjustable output (during printing) AC (Adjustment not required, during printing) No DC+ (positive) output	← ←
5. Transfer	Adjustable output (Constant current)	←
6. Separation	Adjustable output (Constant current)	←
7. Discharge		
• Discharging position	Exposure after cleaning	←
• Discharge LED	Red LED	←
8. Cleaning		
• Method	Cleaning blade	←
• Recovered toner	Reuse (There is the recovered toner supply mechanism.)	←
9. Fusing		
• Method	Long-life fuser roller method Fuser roller: Thin roller coated with fluoroplastic (ø30) Pressure roller: PFA tube roller (ø25)	← ← ← ←
• Cleaning	None	←
• Heater	Heater lamp Turned ON/OFF by thermistor	←

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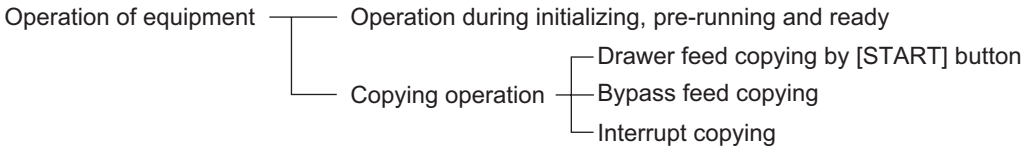
3.5 General Operation

3.5.1 Overview of operation



3.5.2 Description of operation

[1] Warming-up

1. Initialization
   Power ON
   → Heater lamp ON
   → Set number “0” reproduction ratio “100%” are displayed (LED “START” OFF)
   → Fan motors ON
   → Initialization of scanning system
   - The CIS unit moves to the home position.
   - The CIS unit moves to the peak detection position.
   - The LED of CIS is turned ON.
   - Peak detection (white color is detected by the shading correction plate)
   - The LED of CIS is turned OFF.
   - The CIS unit moves to the home position.

   → Ready state (LED “START” ON)

2. Pre-running operation (Only when the temperature is at 16 °C or less)
   The pre-running operation is started when the temperature of the fuser roller surface reaches a certain temperature.
   → The main motor is turned ON.
   - Fuser roller rotated
   - Drum rotated

   → Pre-running operation stops after 15 seconds.

3. When the surface temperature of the fuser roller becomes sufficient for fusing,
   → Ready state (LED “START” ON)

[2] Ready state (ready for copying)

Buttons on the control panel enabled
→ When no button is pressed for a certain period of time,
- Set number “1” is displayed. Equipment returns to the normal ready state.

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[3] Drawer feed copying

1. Press the [START] button
   →LED “START” ON → OFF
   → CIS LED ON
   → Scan motor ON → CIS unit move forward
   → Polygonal motor rotates in high speed
   → Main motor ON
   - The drum, fuser unit, developer unit and exit roller are driven.

2. Drawer paper feeding
   → Main charger, developer bias and discharge LED ON. Fans are rotated in high speed. Pickup clutch ON.
   - Paper feed roller start to rotate.
   → Paper reaches the registration roller.
   - The registration sensor is turned ON and aligning is performed.
   → Pickup clutch OFF

3. After the scanning operation:
   → Registration clutch ON after a certain period of time → paper is transported to the transfer area.
   → Copy counter operates

4. After the registration clutch is turned ON:
   → Transfer charger ON after a certain period of time
   → Copy counter operates

5. Completion of scanning
   → Scan motor OFF
   → CIS LED OFF
   → Registration clutch OFF (after the trailing edge of the paper passed the registration roller)
   → Ready state

6. Paper exit
   → Exit sensor detects the trailing edge of the paper
   → Main charger, developer bias and discharge LED OFF
   → Polygonal motor and main motor OFF
   → Drum, fuser unit and developer unit stop
   → Fans return to the ready rotation
   → LED “START” ON and the equipment enters the ready state

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[4] Bypass feed copying

1. Insert a sheet of paper into the bypass tray.
   → Bypass paper sensor ON
   - Bypass feed priority state

2. Press the [START] button
   → LED “START” ON → OFF
   → CIS LED ON
   → Scan motor ON → CIS unit move forward
   → Polygonal motor rotates in high speed
   → Main motor ON
   - The drum, fuser unit, developer unit and exit roller are driven.

3. Bypass feeding
   → Main charger, developer bias and discharge LED ON. Fans are rotated in high speed.
   → Bypass pickup solenoid ON
   - The bypass pickup roller start to rotate.
   - The bypass pickup roller is lowered.
   - The bypass feed roller start to rotate.
   → Paper reaches the registration roller
   → Aligning operation
   → After a certain period of time, the bypass pickup solenoid OFF

4. Hereafter, the operation 3) through 6) of 🕮 P.3-18 "[3] Drawer feed copying" is repeated.

[5] Interruption copying

1. Press the [INTERRUPT] button
   → LED “INTERRUPT” ON
   → Copying operation in progress is temporarily stopped. CIS unit return to appropriate positions.
   → Automatic density and reproduction ratio 100% are set (The set number remains the same)

2. Select the desired copy condition

3. After the interruption copying is finished:
   → LED “INTERRUPT” OFF by pressing the [INTERRUPT] button
   → Equipment returns to the status before the interruption

4. Press the [START] button
   → The copying operation before the interruption is resumed.

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3.5.3 Detection of abnormality

When something abnormal has occurred in the equipment, the symbols corresponding to the type of abnormality are displayed.

[1] Types of abnormality

1. Abnormality cleared without turning OFF the door switch
   (A) Add paper
   (B) Pick-up failure in bypass

2. Abnormality not cleared without turning OFF the door switch
   (C) Misfeed in equipment
   (D) Replace the toner cartridge
   (E) Developer unit not installed properly

3. Abnormality not cleared without turning OFF the main switch
   (F) Call for service

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[2] Description of abnormality

(A) Add paper

- Drawer empty sensor detects the presence or absence of paper.

  [When drawer is not installed]
  No drawer detected

  ↓

  LED “Add paper” ON

  ↓

  [START] button disabled

  [When drawer is installed]

  ↓

  Drawer detected

  ↓

  Paper empty sensor OFF

  ↓

  LED “Add paper” ON

  ↓

  [START] button disabled

(B) Pick-up failure in bypass

- During bypass feeding
  Bypass pickup solenoid ON

  ↓

  Registration sensor is not turned ON in a fixed period of time

  ↓

  Clear paper symbol is displayed: E12

  ↓

  Copying operation is disabled

  ↓

  Solution: The bypass paper sensor is turned OFF by removing the paper from the bypass tray.

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(C) Misfeed in equipment

- Exit sensor detects jamming of the leading edge of paper.

  ↓

  Registration clutch ON

  ↓ Less than the regulation time.

  Exit sensor ON
  If the exit sensor is not turned ON after the regulation time.

  ↓

  Paper jam (E01) → The copying operation is stopped.

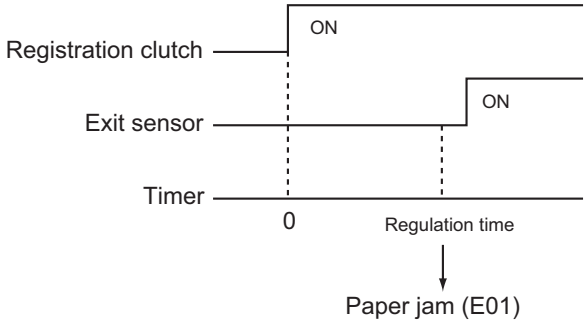

Fig. 3-11

- Exit sensor detects jamming of the tailing edge of paper.

  ↓

  Registration clutch OFF

  ↓ Less than the regulation time.

  Exit sensor OFF
  If the exit sensor is not turned OFF after the regulation time.

  ↓

  Paper jam (E02) → The copying operation is stopped.

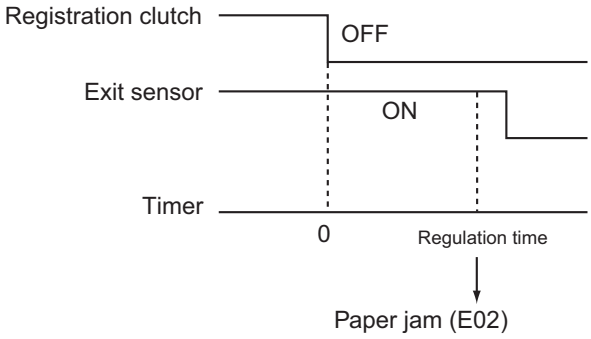

Fig. 3-12

- Immediately after the power ON

  ↓

  Any of all sensors on paper transport path detects paper (ON)

  ↓

  Paper jam (E03)

- Front cover is opened during copying

  ↓

  Paper jam (E41)

- Registration sensor detects jamming of the leading edge of paper:
  Registration sensor is not turned ON in a fixed period of time after the feeding starts.

  ↓

  Paper jam (E12, E13 and E21: Error code differs depending on the paper source.) Refer to the error code table in Service Handbook.

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- The PFU paper feed sensor is not turned ON in a fixed period of time after the pickup clutch is turned ON

  ↓

  Paper jam (E14)

(D) Replace the toner cartridge

- Toner density becomes low

  ↓

  Auto-toner sensor detects the absence of the toner

  ↓

  Control circuit → The toner lamp brinks: the copying operation disabled

  Solution: Open the front cover and replace the toner cartridge with a new one.
  Toner is supplied → copying operation enabled.

(E) Developer unit not installed properly

- Disconnection of the connectors of the developer unit

  ↓

  The equipment enters the following state:
  The toner lamp brinks, the start lamp is turned OFF and all buttons disabled.

  ↓

  Solution: Connect the connectors of the developer unit and close the front cover.

(F) Call for service

Error code is displayed instead of the set number by pressing the [CLEAR] button and [8] button simultaneously when the service call lamp is blinking.

📖 P.8-2 "8.2 Error Code List"

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3.6 Control Panel

3.6.1 Control panel and LED display

The control panel consists of button switches to operate the equipment and select various modes, and LEDs to display codes, values and the states (including each mode) of the equipment. The button switches and the LEDs are mounted on the control panel PC board (LPNL) and are installed the inside of the control panel.

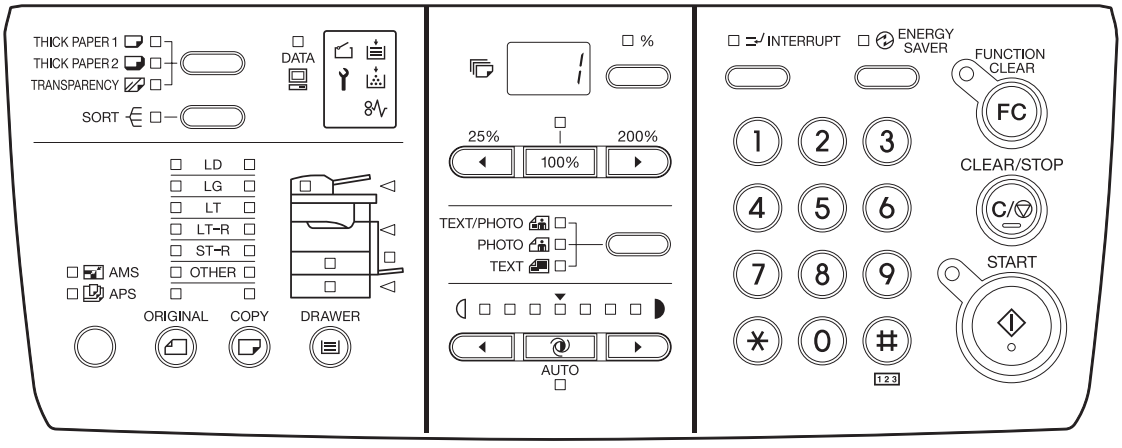

Fig. 3-13

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3.6.2 Items displayed on control panel

The following items are displayed in the 7-segment LED at the center of the control panel:

1. Copy quantity
   The number of copies set (= copy quantities) is displayed in the normal state.

2. Reproduction ratio
   The display switches from the copy quantities to the reproduction ratio of a job by pressing [%] button.
   When the [25%] and [100%] buttons are pressed simultaneously, the reproduction ratio is instantly set at 25%. When the [200%] and [100%] buttons are pressed simultaneously, the reproduction ratio is instantly set at 200%.

3. Total counter
   The total counter value is displayed by pressing the [#] button more than 2 seconds. The total 8 digits can be displayed; the first 2 digits of the value are displayed at first, then the next 3 digits, and then the last 3 digits are displayed in order.
   e.g.) 12345678: 12→345→678
   When the [25%] button is pressed, the digits shift to the 3 digits of next higher order. When the [200%] button is pressed, they shift to the 3 digits of next lower order.

4. ROM version
   A ROM version is displayed by pressing the [*] key, the [#] key and the [START] button simultaneously. The total 8 digits can be displayed; the first 2 digits of the ROM version are displayed at first, then the next 3 digits, and then the last 3 digits are displayed in order.
   e.g.) 12345678: 12→345→678
   When the [25%] button is pressed, the digits shift to the 3 digits of next higher order. When the [200%] button is pressed, they shift to the 3 digits of next lower order.

5. Error code
   When a paper jam or a service call has occurred, its error code is displayed in 3 digits by pressing the [CLEAR/STOP] button and the [8] key simultaneously.

6. Auto Power Save Mode / Auto Shut Off Mode
   “ALP” (Auto Low Power) is displayed during the Auto Power Save Mode, and “SLP” (Sleep) is displayed during the Auto Shut Off Mode.

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7. Setting mode
When the equipment is in each setting mode, “Fnc” is displayed in the 7-segment LED.

- Paper size setting mode
The size of the copy paper in the drawer is set in this mode.
The equipment enters into the paper size setting mode by pressing the [COPY] and [DRAWER] buttons simultaneously more than 2 seconds. Press the [DRAWER] button to select the drawer. Then press the [COPY] button to select the paper size, and then press the [START] button to perform the setting. When the setting needs to be canceled halfway, press the [FUNCTION CLEAR] button.

When a size other than the ones indicated on the control panel needs to be set, press the [DRAWER] button to select the drawer, and then press the [COPY] button to select “OTHER”, and then key in a code for the desired size as shown below. Then press the [START] button to perform the setting. When the setting needs to be canceled halfway, press the [FUNCTION CLEAR] button.

Paper size	Code	Paper size	Code
A3	01	LT-R	11
A4	02	ST-R	12
A4-R	03	FOLIO	13
B4	04	COMPUTER	14
B5	05	Postcard *2	15
B5-R	06	13”LG	16
A5-R *1	07	8K *3	17
LD	08	16K *3	18
LG	09	16K-R *3	19
LT	10		

*1 *2: These codes can be set only when the bypass tray is used.
*2: This code can be set only for JPD models.
*3: These codes can be set only for CND models.

- Operation sound setting mode
The operation (beep) sound of this equipment is set on or off in this mode.
When the density adjustment button “light” and “dark” are pressed simultaneously more than 2 seconds, the equipment enters into the operation sound setting mode. The on or off of this operation sound is switched by pressing the [AUTO] button. When the sound is on, all of the 7 density adjustment lamps are turned on. When the sound is off, all of these lamps are turned off. When the on or off of the sound has been switched, press the [START] button to perform the setting. When the setting needs to be canceled halfway, press the [FUNCTION CLEAR] button.

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3.6.3 Relation between equipment state and operation

	[START]	[CLEAR/ STOP]	[FUNCTION CLEAR]	[INTERRUPT]	[ENERGY SAVER]	Other buttons/ keys
Waiting	Starts copying	Clears copy quantity	Clears each setting	Enters into interrupting copy	Enters into energy saving mode	Operation acceptable
Warming up	Reserves auto start job	Clears copy quantity	Clears each setting	---	---	Operation acceptable
Copying	---	Pauses copy job	---	Enters into interrupting copy	---	---
Pausing copy job	Resumes copy job	Cancels copy job	Clears each setting	Enters into interrupting copy	---	---
Downloading firmware	---	---	---	---	---	---
In energy saving (low power) mode	---	---	---	---	Enters into waiting state	---
In sleep mode	Enters into waiting state	Enters into waiting state	Enters into waiting state	Enters into waiting state	---	Enters into waiting state
Interrupting copy job	Starts interrupting copy	Clears copy quantity	Cancels interrupting copy	Cancels interrupting copy	---	Operation acceptable
Cover open	---	Clears copy quantity	Clears each setting	---	---	Operation acceptable
Toner empty	---	---	---	---	---	Operation acceptable
Paper jam	---	---	---	---	---	---
Service call	---	---	---	---	---	---

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3.7 Scanner

3.7.1 General description

In the scanning section, this equipment uses a CIS (Contact Image Sensor) for scanning the image. The surface of an original is irradiated with light from the LED array mounted on the CIS unit and the reflected light is scanned by the CMOS sensor where the optical image data are converted into an analog electrical signal, and then transmitted to the MAIN board. After the binarization and the various image processing operations necessary for image formation are performed on the MAIN board, the data are transmitted to the writing section.

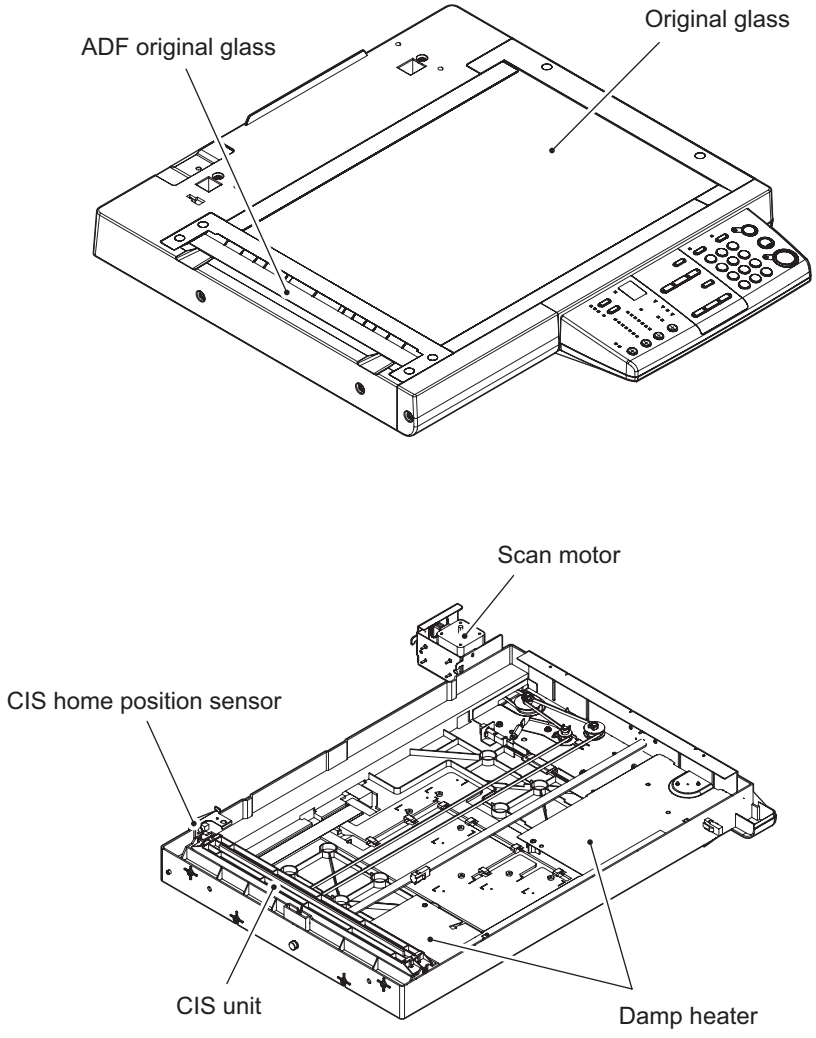

Fig. 3-14

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3.7.2 Construction

Scanning section	
Original glass	Original glass
	ADF Original glass
CIS unit (CIS)	CMOS
	RGB light guiding tube (two lights)
	Rod-lens array
Drive section	Scan motor (M1)
CIS home position sensor (S1)	
Others	Damp heater (DH1, DH2)

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3.7.3 Functions

1. Original glass
   This is a glass for placing original. Original (image) placed on the original glass is scanned by the CIS. The ADF original glass is used when original is read with the Automatic Document Feeder. Original is transported on the ADF original glass by the Automatic Document Feeder, and the transported original is read under the ADF original glass by the CIS. Do not use such solvents as alcohol when cleaning the surface of the ADF original glass, because it is coated so as not to be scratched by originals.

2. CIS unit (CIS)
   The CIS unit (CIS) is a sensor unit which consists of an LED array, lens array and CMOS sensor array of the same length as that of the original width in the primary scanning direction closely attached and unified. The original is irradiated at one time with the LED light source which consists of LEDs of RGB colors (one for each color), light guiding tube (two lights) to lead each light to the original, and then the reflected light is scanned by the CMOS sensor.
   In the CCD method (reduction optical method), the reflected light of the exposure lamp is LED through mirrors, lens and slit to the CCD where the optical-to-electrical conversion for scanned data is performed. In contrast, in the CIS method (close-contact sensor method), those operations are processed only by the CIS unit. The CIS has characteristics of shallow depth of focus and high light-sensitivity.

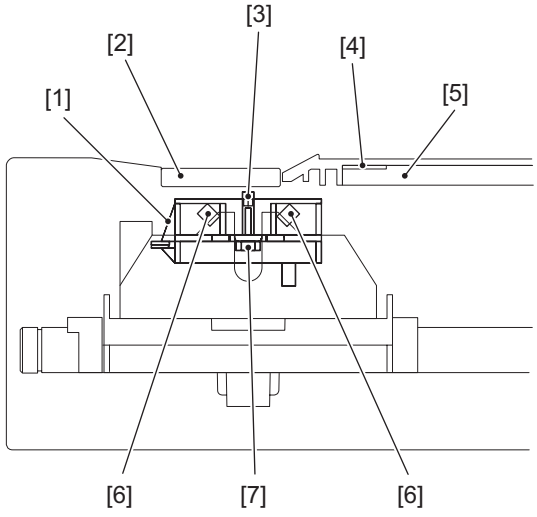

Fig. 3-15

[1] CIS unit [2] ADF original glass [3] Rod-lens array [4] Shading correction plate
[5] Original glass [6] RGB light guiding tube [7] CMOS

- CMOS sensor
  Scans the light reflected from an original and converts it to an electrical signal.
  In order to realize the same-to-scale optical system of A3 width and 7344 image pixels, the equipment uses 17 CMOS sensors (each CMOS sensor has 432 image pixels per line) to make up a CMOS sensor of 600x600 dpi resolution for scanning.

- RGB light guiding tube
  A light from the LED array mounted on the CIS unit (CIS) goes through the original glass and lights the original. Then, the reflected light from the original is scanned by the CMOS sensor. By adjusting each amount of R, G and B-LED light, it is possible to attain a light color which has nearly the same color effect as that of the YG xenon light for the light sensitivity of the CMOS sensor.

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3. Scan motor (M1)
   This is a two-phase stepping motor which drives the CIS unit (CIS). The rotation of the motor is transmitted to the CIS unit through the timing belt to move the unit in the secondary scanning direction.

4. CIS home position sensor (S1)
   This sensor detects if the CIS unit is at its home position.

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3.7.4 Description of operation

[1] Scanning operation

- Scanning an original on the original glass
  The rotation of the scan motor (M1) is transmitted to the CIS unit through the timing belt to move the unit to the home position. The home position is detected when the actuator installed on the CIS case passes the CIS home position sensor (S1).

  When the [START] button is pressed, the CIS unit starts scanning the original.

- Scanning an original on the ADF
  The CIS unit (CIS) stops and stays at the shading position during the shading correction, and at the scanning position during the scanning operation.

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3.8 Laser Optical Unit

3.8.1 General description

The laser optical unit radiates the laser beam onto the photoconductive drum responding to the digital image signals transmitted from the MAIN board. to create the latent image. Image signal is converted into the light emission signal of the laser diode on the laser driving PC board (LDR), then radiated on the drum through the optical elements such as cylinder lenses, polygonal mirror and fθ lens.
The unit must not be disassembled in the field as they are very sensitive to dust and finely adjusted at the factory.

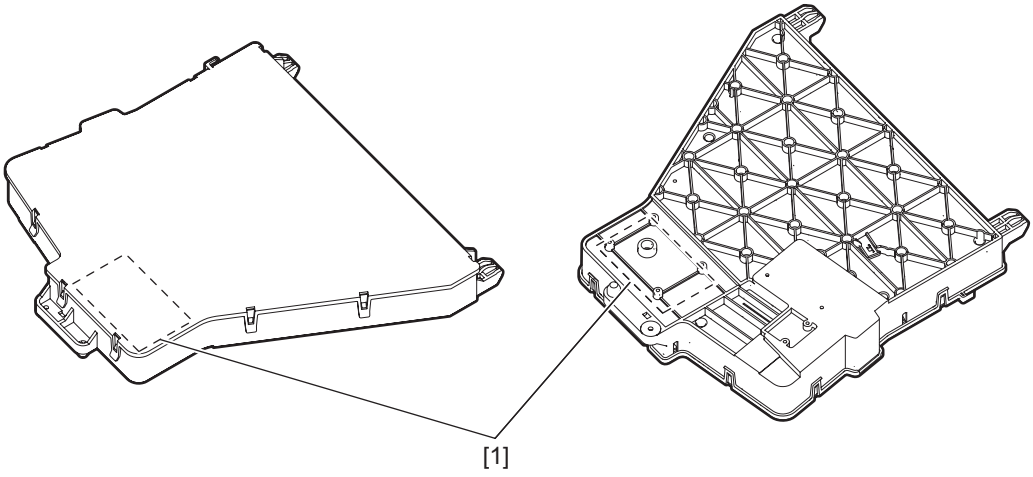

Fig. 3-16

[1] Polygonal motor

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3.8.2 Laser precautions

A laser diode is used for this equipment and radiates an invisible laser beam.
Since it is not visible, be extremely careful when handling the laser optical unit components, performing operations or adjusting the laser beam. Also never perform the procedure with other than the specified manuals because you could be exposed to the laser radiation.
The laser optical unit is completely sealed with a protective cover. As long as only the operations of specified manuals are performed, the laser beam is not leaked and you are in no danger of being exposed to laser radiation.
The following cautionary label for the laser is attached to the front right cover (inside of the front cover).

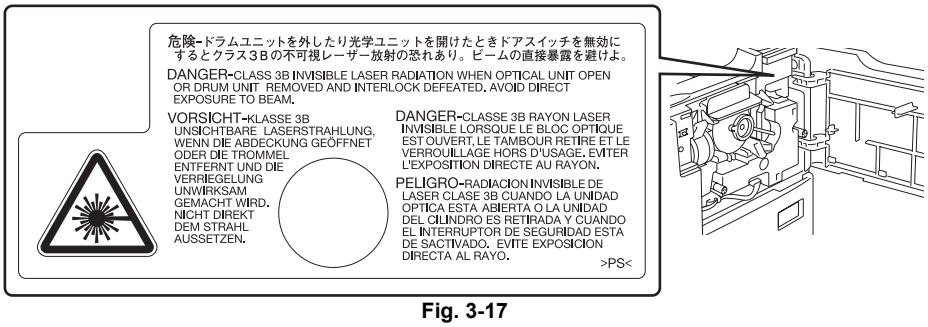

Fig. 3-17

Cautions:

- 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.
- 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.
- 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.

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3.9 Drive Unit

3.9.1 General description

The main motor drives the drum, developer unit, cleaner unit, fuser unit and transport rollers which transport paper (bypass feed roller, bypass pickup roller, registration roller, paper feed roller and exit roller).
The main motor is a brushless motor and is installed in the drive unit. The drive unit consists of gears and timing belts, and transmits the driving force of the main motor to each unit. The toner motor which drives the toner cartridge is also installed in the drive unit.

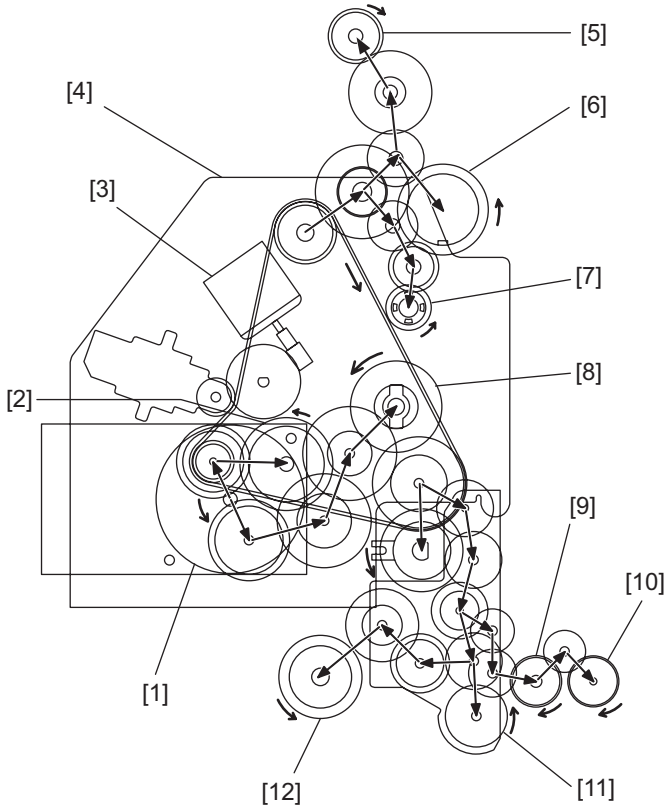

Fig. 3-18

[1] Main motor
[2] Mixer
[3] Toner motor
[4] Drive unit
[5] Exit roller
[6] Fuser roller
[7] Toner recovery auger
[8] Drum
[9] Bypass feed roller
[10] Bypass pickup roller
[11] PFU drive gear
[12] Paper feed roller

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3.9.2 Configuration

	Unit to be driven	Drive transmission
Main motor (M3)	Drum	Gears
	Developer unit (Mixer)	Gears
	Cleaner unit (Toner recovery auger)	Timing belt, gears
	Fuser unit (Fuser roller)	Timing belt, gears
	Rollers (Exit roller, Paper feed roller, Bypass feed roller, Bypass pickup roller and PFU)	Timing belt, gears
Toner motor (M2)	Toner cartridge	Gears

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3.9.3 Functions

1. Main motor (M3)
   The main motor is a brushless motor which is controlled by control signals output from the MAIN board. The driving force of the main motor is transmitted to the drum, developer unit, cleaner unit, fuser unit and the rollers which transport the paper, via gears and timing belts.

2. Toner motor (M2)
   The main motor is a DC motor which is controlled by control signals output from the MAIN board. The driving force of the toner motor is transmitted to the toner cartridge via gears.

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3.10 Paper Feeding System

3.10.1 General description

The purpose of this system is to pick up a sheet of paper from the drawer or bypass tray and transport it to the transfer position. The paper feeding system mainly consists of the paper feed roller, registration roller, bypass paper sensor, paper empty sensor, registration sensor and the drive system for these components.

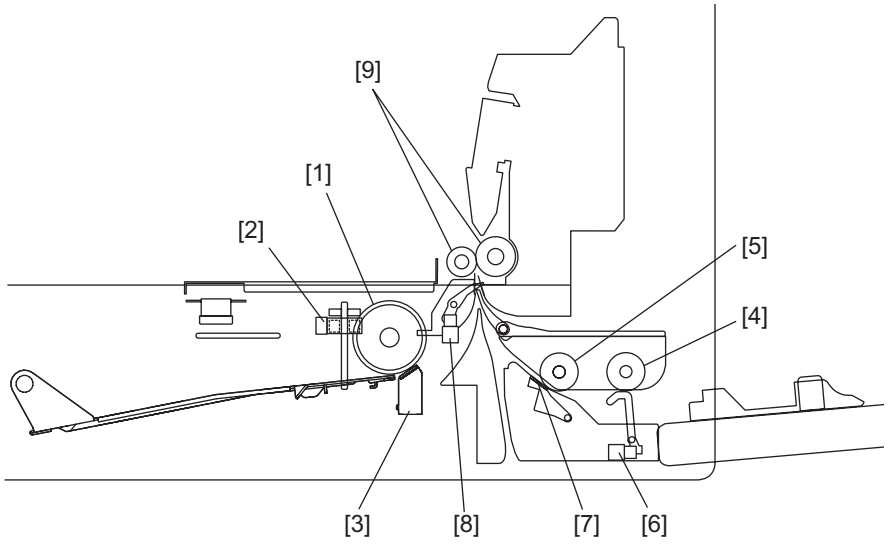

Fig. 3-19

[1] Paper feed roller (Main paper feed roller / Sub paper feed roller)
[2] Paper empty sensor
[3] Separation pad
[4] Bypass pickup roller
[5] Bypass feed roller
[6] Bypass paper sensor
[7] Bypass separation pad
[8] Registration roller
[9] Registration sensor

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3.10.2 Configuration

Paper feeding system		
Drawer	Main paper feed roller	Periodic replacement part
	Sub paper feed roller	
	Separation pad	Periodic replacement part
	Pickup clutch	
	Paper empty sensor (S7)	
Bypass unit	Bypass pickup roller	Periodic replacement part
	Bypass feed roller	Periodic replacement part
	Bypass separation pad	Periodic replacement part
	Bypass paper sensor (S8)	
	Bypass pickup solenoid (SOL1)	
	Bypass pickup clutch	
	Bypass feed clutch	
Registration roller		
Registration clutch (CLT1)		
Registration sensor (S4)		
Drawer detection switch (SW5)		

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3.10.3 Functions

1. Paper feed roller
   The paper feed roller consists of 1 main roller and 4 sub rollers, and paper fed by the former is prevented from skewing by the latter. One rotation of the feed roller can transport a sheet of paper to the registration roller.

2. Pickup clutch (CLT2)
   This is an electromagnetic clutch which drives the feed roller. When the pickup clutch (CLT2) is turned ON, the driving force from the main motor (M3) is transmitted to the feed roller in the drawer to rotate it.

3. Paper empty sensor (S7)
   This is a transmissive-type sensor and detects the availability of paper in the drawer. When there is no paper in the drawer, the actuator blocks the light path of the sensor, and the sensor determines that there is no paper.

4. Bypass pickup roller
   Draws out a sheet of paper from the bypass tray, and transports it to the bypass feed roller. The roller goes down and starts rotating when the drive is transmitted.

5. Bypass feed roller
   Transports the paper from the bypass pickup roller to the registration roller.

6. Bypass separation pad
   When two or more sheets of paper are transported from the bypass pickup roller, since the resistance force of the separation pad is larger than the frictional force between the sheets, the lower sheets are not transported any further.

7. Bypass paper sensor (S8)
   Detects whether paper is set in the bypass tray or not. When paper is set in the bypass tray, bypass feeding is performed in preference to drawer feeding. And it also detects whether paper has been transported from the bypass tray or not (i.e. whether the leading/trailing edge of the paper has passed the bypass feed roller or not.). The sensor is also used to detect jams such as paper missending in the bypass unit.

8. Bypass pickup solenoid (SOL1)
   Starts transmission of the drive to the bypass pickup clutch and bypass feed clutch. The driving force is not transmitted to the bypass pickup clutch and bypass feed clutch when the bypass pickup solenoid (SOL1) is turned OFF, and is transmitted to move down the pickup roller and rotate the bypass pickup roller and bypass feed roller when it is turned ON.

9. Bypass pickup clutch
   This is a spring-type mechanical one-way clutch used to transmit the drive from the main motor (M3) to the cam which moves the bypass pickup roller up and down. When the bypass pickup solenoid (SOL1) is turned OFF, the spring tension of the one-way clutch decreases so that the bypass pickup roller moves to the upper position (standby position), and moves to the lower position (operation position) when the solenoid is turned ON.

10. Bypass feed clutch
    This is a spring-type mechanical one-way clutch used to transmit the drive from the main motor (M3) to the bypass feed roller and bypass pickup roller. When the bypass pickup solenoid (SOL1) is turned OFF, the spring tension of the one-way clutch decreases to cut off the drive.

11. Registration roller
    Paper transported from the pickup roller or bypass feed roller is pushed against the registration roller which aligns the leading edge of the paper. Then, the registration rollers rotate to transport the paper to the transfer position.

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12. Registration clutch (CLT1)
    This is an electromagnetic clutch which drives the registration roller. When the registration clutch (CLT1) is turned ON, the drive is transmitted from the main motor (M3) to rotate the registration roller.

13. Registration sensor (S4)
    It is used to detect that the leading edge of the paper has reached the registration roller and to control the aligning amount of the paper (the amount of the paper bend before it is transported to the registration roller). Also, it is used to detect the trailing edge of the paper has passed the registration roller.

14. Drawer detection sensor (SW5)
    The switch to detect whether the drawer is fully inserted or not.

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3.10.4 Operation

[1] Drawer

[A] Operation of the feed roller

When the drawer is inserted into the equipment, the lock located in the center of the drawer is released, and the tray in the drawer is lifted up by the spring. This makes the paper in the tray contact the feed roller when it is rotated.
The driving force of the main motor (M3) is transmitted through the pickup clutch (CLT2) to the feed roller. The feed roller is rotated by this driving force to pull out a sheet of paper from the drawer. When multiple sheets of paper are fed, the pickup clutch is turned ON at each rotation. The feed roller consists of 1 main roller and 4 sub rollers, and paper fed by the former is prevented from skewing by the latter. One rotation of the feed roller can transport a sheet of paper to the registration roller.
This feeding system has no mechanism specific for detecting the transported paper. Therefore, whether the paper has been transported to the registration sensor (S4) within a specified period of time or not is substituted for the paper jam detection.

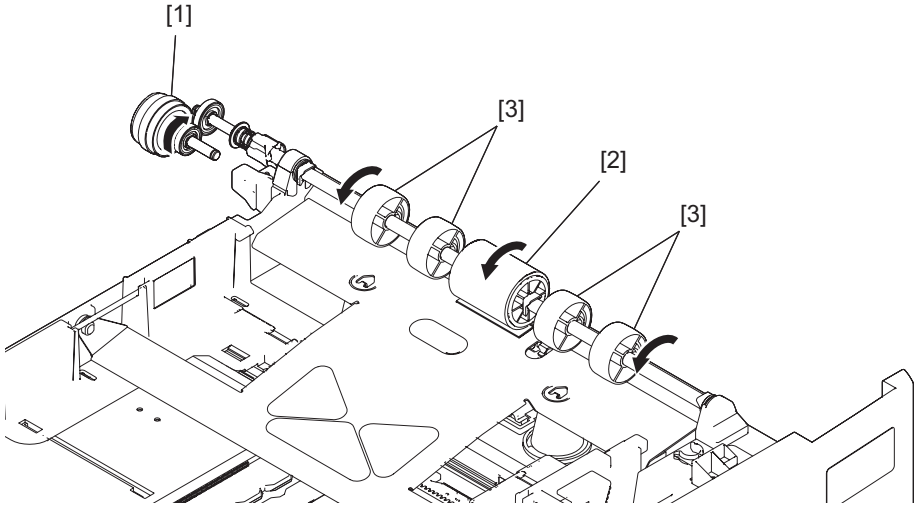

Fig. 3-20

[1] Pickup clutch
[2] Main paper feed roller
[3] Sub paper feed roller

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[B] Paper separation

This model is equipped with a separation pad which works to prevent multiple paper feeding.
The separation pad is pushed to the main paper feed roller by the spring force.
When two or more sheets of paper are fed, since the friction between two sheets of paper is smaller than that between a sheet and the separation pad, the lower sheets are not transported any further while the uppermost one is transported by the main paper feed roller.

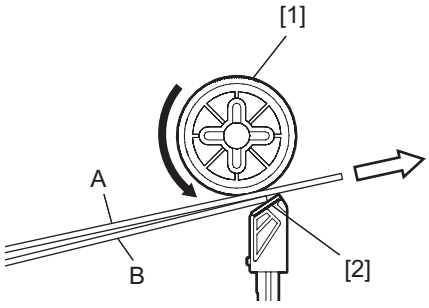

Fig. 3-21

[1] Main paper feed roller
[2] Separation pad

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[2] Bypass tray

[A] Operation of drawer pickup roller

When the paper is set on the bypass tray, the bypass paper sensor (S8) detects it and judges that there is paper on the bypass tray, and the bypass feeding is performed in preference to drawer feeding. When the bypass pickup solenoid (SOL1) is turned ON, the driving force of the main motor (M3) is transmitted to the bypass pickup clutch and bypass feed clutch. The bypass pickup roller is shifted down by the drive from the bypass pickup clutch. And then, the bypass pickup roller, as well as the bypass feed roller, is rotated by the drive from the bypass feed clutch to transport the paper on the bypass tray to the bypass feed roller.

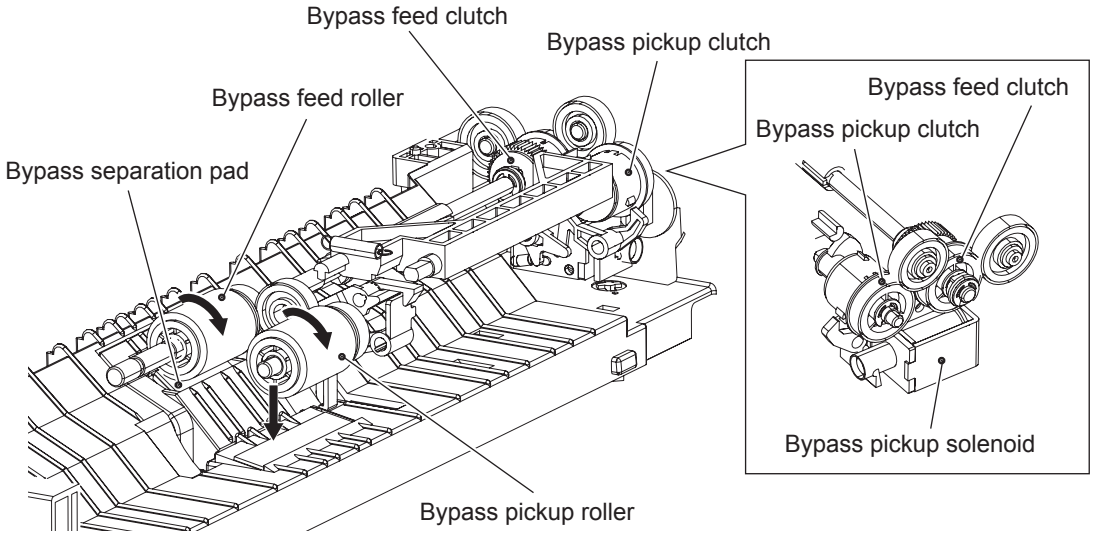

Fig. 3-22

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[B] Paper separation

This model is equipped with a separation pad which works to prevent multiple paper feeding. The separation pad is pushed to the bypass feed roller by the spring force. The bypass feed roller is rotated synchronously with the bypass pickup roller. When two or more sheets of paper are fed from the bypass pickup roller, since the friction between two sheets of paper is smaller than that between a sheet and the separation pad, the lower sheets are not transported any further while the uppermost one is transported by the feed roller.

The paper transported by the bypass feed roller reaches the registration roller. After the paper is aligned by the registration roller, the bypass pickup solenoid (SOL1) is turned OFF to stop the bypass pickup roller and bypass feed roller, and the bypass pickup roller returns to its original position.

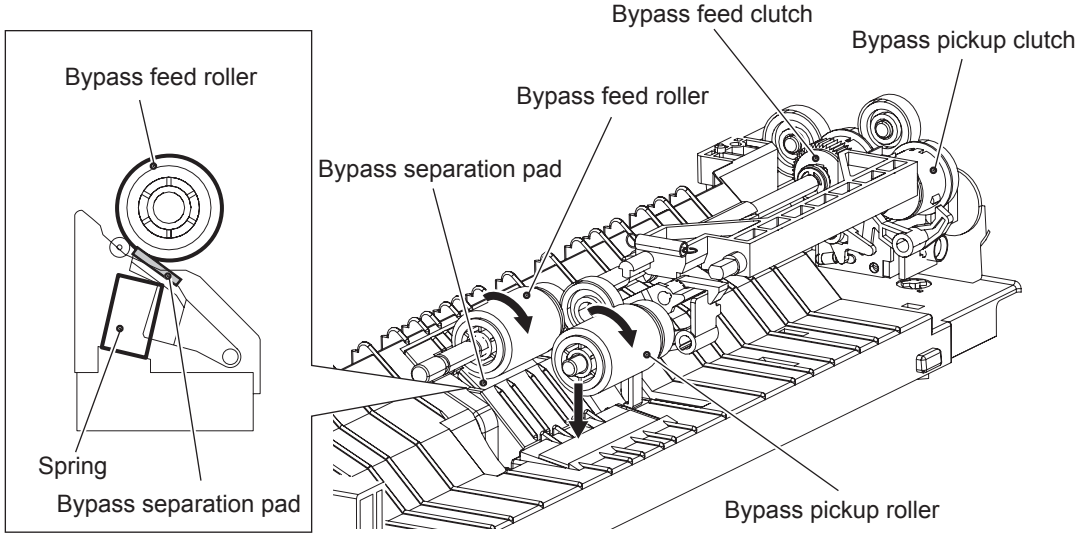

Fig. 3-23

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[3] General operation

[A] From power ON to standby status

- If the drawer is not completely inserted when the equipment is turned ON, it is judged by the drawer detection switch (SW5) that the drawer has not been inserted. Paper detection in the drawer cannot be performed unless the drawer is fully inserted.
- When the equipment is turned ON, if the paper empty sensor (S7) is turned OFF (L), it is judged that there is no paper in the drawer. With the sensor (S7) being ON (H), it is judged that there is paper in the drawer.
- If either of the sensors; registration sensor (S4) or exit sensor (S5) is ON (meaning there is paper on the transport path) when the equipment is turned ON, it is determined that a paper jam has occurred and no operation is enabled until the jammed paper is removed.

[B] Standby status

- After the availability of paper is checked as described above, the equipment enters the standby state.

[C] Drawer feeding

- When the pickup clutch (CLT2) is turned ON, the driving force of the main motor (M3) is transmitted to rotate the paper feed roller. A sheet of paper is then fed and transported to the registration roller.
- The leading edge of the paper turns ON the registration sensor (S4), and then the paper stops at the registration roller.
- The registration clutch (CLT1) is turned ON and the paper aligned by the registration roller is transported to the transfer unit.

[D] Bypass feeding

- The bypass paper sensor (S8) detects the availability of paper.
- When the bypass pickup solenoid (SOL1) is turned ON, the bypass pickup clutch arm and bypass feed clutch arm are pulled away from each clutch.
- The driving force of the main motor (M3) is transmitted to the bypass pickup clutch and bypass feed clutch to rotate the bypass pickup roller and bypass feed roller. At this time, the bypass pickup roller rotates and goes down simultaneously.
- Feeding starts and a sheet of paper is transported to the registration roller. The leading edge of the paper turns ON the registration sensor (S4), and then the paper stops at the registration roller.
- The bypass pickup solenoid (SOL1) is turned OFF, and the bypass pickup clutch arm and bypass feed clutch arm come in contact with each clutch. The drive for the bypass pickup roller and bypass feed roller is cut off, and the bypass pickup roller unit is lifted up.
- The registration clutch (CLT1) is turned ON and the paper aligned by the registration roller is transported to the transfer unit.

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3.11 Drum Related Section

3.11.1 General description

This chapter explains about the area around the drum, drum itself, image processing, their parts and control circuits.

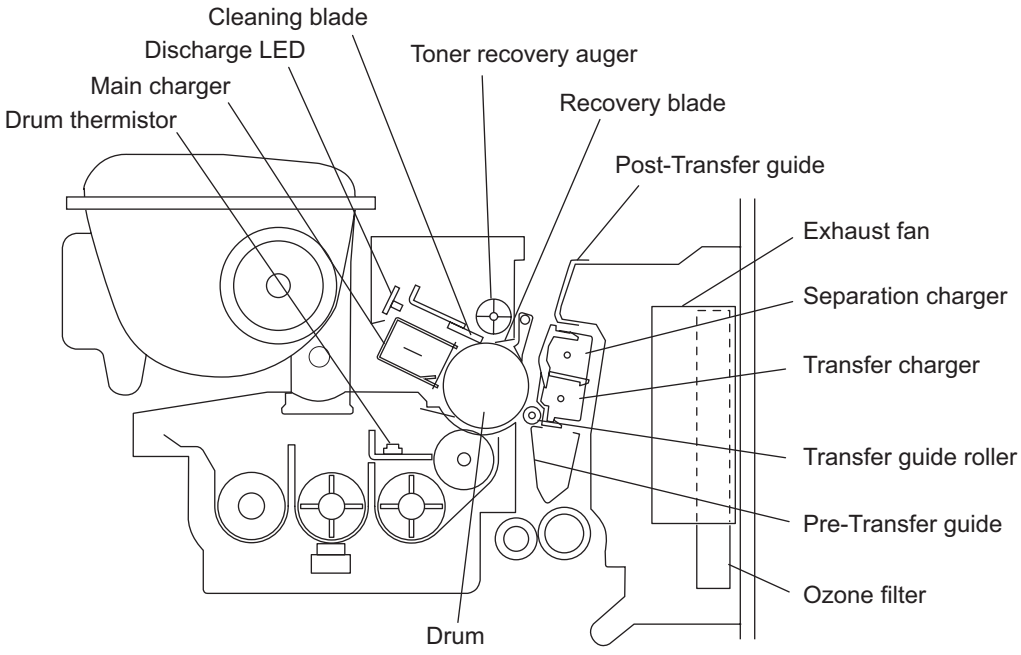

Fig. 3-24

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3.11.2 Configuration

Drum related section			
Drum cleaner unit	Drum		PM parts
	Drum separation finger		PM parts
	Drum cleaning blade		PM parts
	Recovery blade		PM parts
	Drum thermistor (THM4)		
Discharge LED (ERS)			
Main charger	Needle electrode		PM parts
	Main charger grid		PM parts
Transfer unit	Transfer/Separation charger	Transfer charger wire	PM parts
		Separation charger wire	PM parts
	Exhaust fan (M5)		
	Ozone filter		PM parts
	Transport guide		
Temperature/humidity sensor (S3)			
Switching regulator (PS)			

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3.11.3 Functions

1. Drum
   The drum is made of a cylindrical aluminum base coated with thin film of organic photoconductive substance.
   The photoconductive object becomes insulative (the electrical resistance is high) when it is not exposed to the light and electrically conductive (the electrical resistance is low) when it is exposed to the light. This object is called a photoconductor.

2. Main charger
   The main charger in this equipment consists of a metal rod with U-shaped section, insulated blocks at both ends of the rod and a needle electrode attached between them.
   When a high voltage is applied to the needle electrode, the air around it is charged (ionized). The ionized air then flows into the drum causing it to be charged. This phenomenon is called “corona discharge”. At the same time, a control bias is applied to the main charger grid to control the charging amount.
   In a dark place, negative charge is evenly applied onto the drum surface by the corona discharge and this grid. In addition, a cleaner is installed to clean up the dust attached on the needle electrode.
   - Needle electrode
     The needle electrode has aligned needles and their points perform the corona discharge. These points (electrodes) discharge toward the drum in one direction to realize the more efficient discharging comparing to the charger wire which discharges in a radial direction. Therefore, the needle electrode enables to reduce the ozone amount.

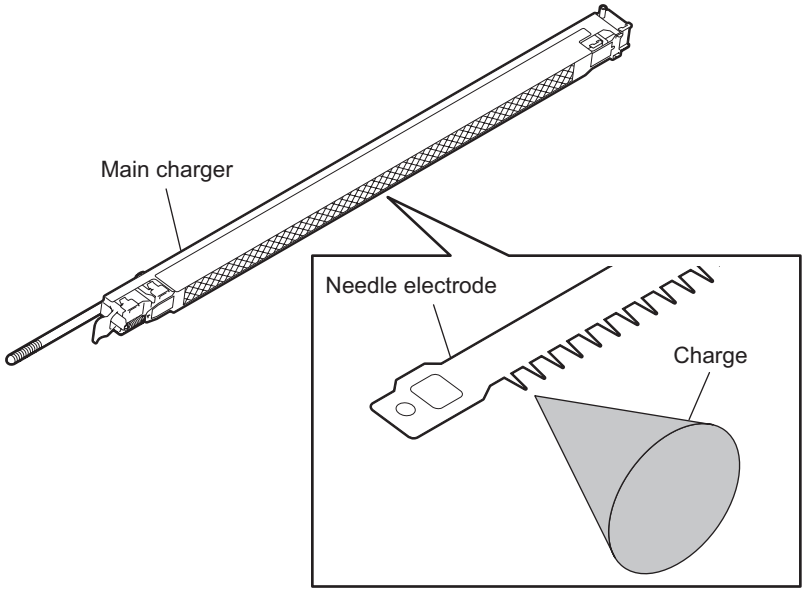

Fig. 3-25

3. Drum cleaner
   - Cleaning blade
     This blade is pressed against the drum surface and scrapes off the residual toner from the drum surface.
   - Recovery blade
     This blade catches the toner scraped off by the cleaning blade.
   - Toner recovery auger
     This auger carries the residual toner scraped off to the developer unit and reuses the toner.

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4. Transfer/Separation charger
   - Transfer guide
     This guide leads the paper transported from the feeding unit to the transfer section.
     Positive (+) bias voltage is applied to the registration roller and post-transfer guide to prevent the transferability from being lowered under conditions such as high humidity.
   - Transfer charger
     The transfer charger applies a charge (positive (+) charge) which is contrary to the charging polarity of the toner to the back of the paper. The toner image is transferred electrostatically on the paper by performing this corona discharge.
   - Separation charger
     After the transfer process, the corona discharge applies a negative charge (DC) on the back of the paper to separate the paper adhering to the drum surface by an electrostatic force.

5. Exhaust fan (M5)
   The exhaust fan (M5) cools down the inside of the equipment. The air to exhaust includes the ozone generated by the corona discharge, and this ozone is removed by the ozone filter. The exhaust fan (M5) also helps the paper separation by absorbing the paper to post-transfer guide.

6. Discharge LED (ERS)
   Discharging is a process to decrease or eliminate the electrical potential of the drum surface. The electrical resistance of the photosensitive layer is decreased by the light irradiation, and the residual charge on the drum surface is neutralized and eliminated. The electrical potential of the drum surface is fixed to a certain amount before the drum is charged.

7. Drum thermistor (THMS4)
   The drum thermistor (THMS4) detects the drum surface temperature, and thus the rotation speed of the exhaust fan (M5) is controlled when the equipment is in the ready status.

8. Switching regulator (PS)
   This is a board to generate the output control voltage of the main charger, main charger grid, transfer charger, separation charger, developer bias and pre/post-transfer guide bias.

9. Temperature/Humidity sensor (S3)
   This sensor and drum thermistors (THMS1,THMS2) detect the temperature and humidity inside of the equipment since the drum, developer material and paper are affected by environmental elements such as temperature or humidity. Thus the main charger grid, transfer/separation charger, transfer guide bias, developer bias, laser output and auto-toner output are controlled to be at their optimum states.

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3.12 Development System

3.12.1 General description

Development is the process of converting electrostatic latent images into visible images. The developer material is supplied onto the photoconductive drum surface by the developer sleeve (magnet roller). Then the toner in the developer material adheres to this drum surface to form images. This process is performed in the developer unit.
This chapter explains about the units, parts and control circuits related to development.
The developer unit in this equipment has a recovered toner supply mechanism which recycles the recovered toner scraped off by the drum cleaning blade. The developer unit is driven by the main motor (M3) to rotate the mixers and the developer sleeve.

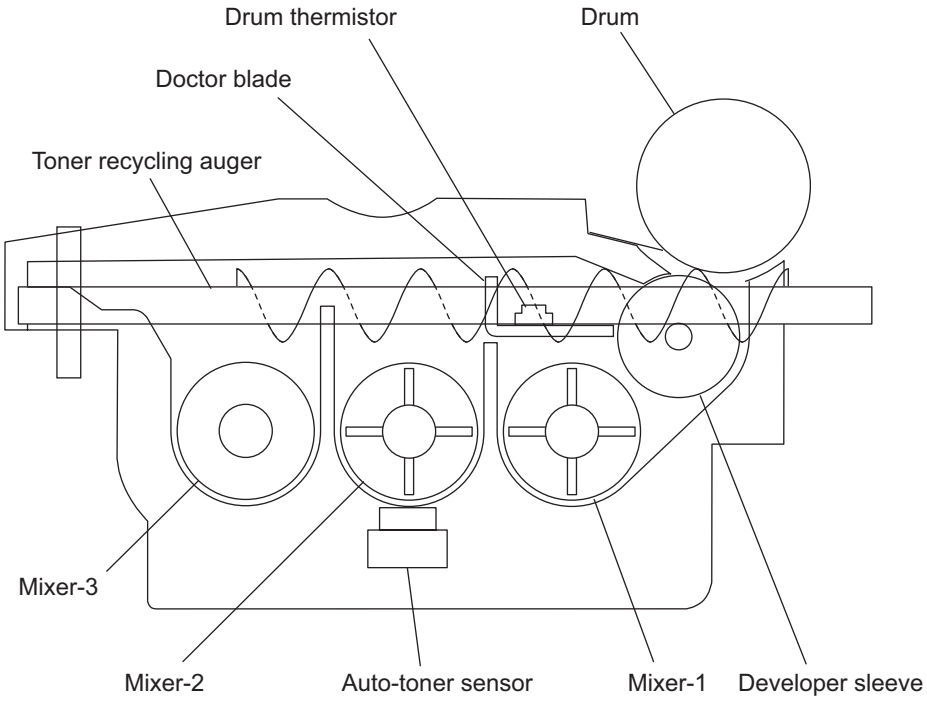

Fig. 3-26

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3.12.2 Construction

Development system		
Developer unit	Developer material	Periodic replacement required
	Mixers-1, -2 and -3	
	Developer sleeve (Magnet roller)	
	Doctor blade	
	Auto-toner sensor	S6
	Drum thermistor	THMS4
	Recovered toner supply mechanism (Toner recycling auger)	
Toner cartridge	Toner cartridge PC board	CTRG
	Toner cartridge interface PC board	CTIF
Toner motor		M2

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3.12.3 Functions

[1] Function of each unit

[1-1] Developer unit

- Developer material
  This consists of carrier and toner. The carrier is electrically conductive ferrite whose particle size is approx 65 μm, and the toner is resin whose particle size is approx 12.5 μm. The developer material requires a periodic replacement since it deteriorates with long-term use.

- Mixers-1, -2 and -3
  Mixing the developer material generates a friction of the carrier and the toner. The carrier is then positively charged and the toner is negatively charged, and the charged carrier and toner adhere on the drum surface by their static electricity. The mixer-3 is mounted exclusively for the recovered toner to mix it in a sufficient period of time.

- Developer sleeve (Magnet roller)
  This aluminum roller includes a magnet inside. The developer sleeve absorbs the developer material using this magnet to form a magnetic brush. The magnet is fixed therefore the only sleeve is rotated. This rotation makes the magnetic brush of the developer sleeve sweep over the drum surface, and thus development is performed.

- Doctor blade
  This controls the amount of the developer material transported from the developer sleeve so that the magnetic brush of the developer material can properly contact with the drum surface.

- Auto-toner sensor (S6)
  To print out normal images, a constant ratio of the carrier and the toner in the developer material (= toner density) must be maintained. The auto-toner sensor (S6) detects the content ratio of the toner in the developer material with its magnetic bridge circuit. When this sensor detects the insufficient status of the toner, it drives the toner motor (M2) to supply the toner from the toner cartridge.

- Drum thermistor (THMS4)
  This is installed in the developer unit to detect the ambient temperature of the drum.

- Recovered toner supply mechanism (Toner recycling auger)
  The recovered toner, transported from the drum cleaner, is then transported into the developer unit by the toner recycling auger mounted on the front side of this unit. The drive of the toner recycling auger is transmitted from the mixer-3.

[1-2] Toner cartridge

This is filled with the toner and this supplies the toner to the developer unit by the drive of the toner motor (M2). The toner cartridge in this equipment mounts the toner cartridge PC board (CTRG), and the data identifying recommended TOSHIBA toner cartridges and the counter values determining that the cartridge is nearly empty are written in this board. These data are read out by the toner cartridge interface PC board (CTIF) in this equipment, and data related to toner supply are also written in the toner cartridge PC board (CTRG). The toner cartridge interface PC board (CTIF) also detects whether the toner cartridge is installed or not.

[1-3] Toner motor (M2)

This drives the toner cartridge with gears.

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[2] Functions of the toner cartridge PC board (CTRG)

An IC chip is embedded in this board. Data such as identification information for the recommended TOSHIBA toner cartridge, thresholds to determine if the cartridge is nearly empty, and controlling data for the image quality to be optimal according to the toner characteristics are written in this chip.
To measure the amount of toner remaining in the cartridge, when the value of counter for period of toner cartridge rotation time (08-1410) is updated, this equipment writes the updated value into the toner cartridge PC board (CTRG).

These data written in the toner cartridge PC board (CTRG) enable the functions below, and accordingly this equipment operates as shown below. Data reading is performed every time the power of this equipment is turned ON and the front cover is closed.

[Data read by the toner cartridge PC board (CTRG)]

- Data to identify recommended TOSHIBA toner cartridges
- Thresholds to determine if the toner cartridge is nearly empty
- Value of counter for period of toner cartridge rotation time
- Data for optimizing image quality

[Functions]

- Cartridge detecting function
  This function checks whether the toner cartridge is inserted correctly or not, and whether the recommended toner cartridge is used or not.
- Toner remaining check function
  This function notifies the user of the near-empty status of toner. Normally, the message “Toner is low” is displayed when the toner is running out, and “Toner empty” when the toner cartridge is empty.
- Toner remaining check notification function
  Upon detecting the near-empty status of toner, this function automatically notifies your service representative.

- Image optimization function
  This function controls the quality of images to be optimal according to the characteristics of the toner used.

[Operations]

Toner cartridge	Recommended cartridge	Recommended cartridge refilled with new toner	Non-recommended cartridge
Cartridge detecting function	Enabled “Toner not recognized” is displayed when no cartridge is installed.	Enabled “Toner not recognized” is displayed when no cartridge is installed.	Disabled “Toner not recognized” is displayed even when the cartridge is installed.
Toner remaining check function	Enabled “Toner near Empty” is displayed when the cartridge is nearly empty.	Disabled “Toner near Empty” is displayed even when a new cartridge is installed.	Disabled This function does not operate.
Toner remaining check notification function	Enabled	Disabled	Disabled
Image optimization function	Enabled	Enabled	Disabled

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A sign of the status that the toner cartridge is nearly empty (= the behavior of the toner lamp) appears when the value of counter for period of toner cartridge rotation time has exceeded the thresholds previously written in the toner cartridge PC board (CTRG). When a used cartridge refilled with new toner is used, that is the value of counter for period of toner cartridge rotation time in the toner cartridge PC board (CTRG) had already exceeded the threshold to determine the near-empty status of the toner at this moment, the sign of the near-empty status appears immediately after the installation of this cartridge. When a non-recommended toner cartridge is used, the equipment may stop normal operations. The toner remaining check function, automatic remote supply order to TOSHIBA sales representatives and image optimization function may also be disabled.
The toner near-empty status threshold setting (08-971) is provided to adjust the timing for displaying the toner near-empty status as follows.

The toner near-empty status threshold setting (08-971)

0: The period from the appearance of the toner near-empty sign to the actual complete consumption of the toner is set long.
1: Normal (Default)
2: The period from the appearance of the toner near-empty sign to the actual complete consumption of the toner is set short.
3: The sign of the status that the cartridge is nearly empty does not appear.

Note that the shorter the period described above is set, the more frequently the toner in the cartridge may run out before the sign of the near-empty status of the toner appears because the way the toner remains in the cartridge differs every time.

When the value of the toner near-empty status threshold setting (08-971) is set at “3”, the toner remaining check function is disabled.

Image optimization function
Data for controlling the image quality according to the toner characteristics are written in the toner cartridge PC board (CTRG) so that images can be optimally printed.
Also there is a function that sets the image controlling level as required (08-500).

0: Controlling amount - Medium (default)
1: Controlling amount - Small
2: Controlling amount - Large

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[3] Recovered toner supply mechanism

The toner scraped off by the drum cleaning blade is transported by the toner recovery auger and the toner recycling auger to be recycled, and then returned into the developer unit. Then the recovered toner in the developer unit is mixed by the developer material using the mixer-3. The mixer-3 is mounted exclusively for the recovered toner to mix it in a sufficient period of time. On the other hand, the (fresh) toner transported from the toner cartridge into the developer unit is mixed by the mixer-2. Then the (fresh) toner and the recovered toner are mixed together and further transported to the mixer-1. They are further mixed by the mixer-1 and transported to the developer sleeve.

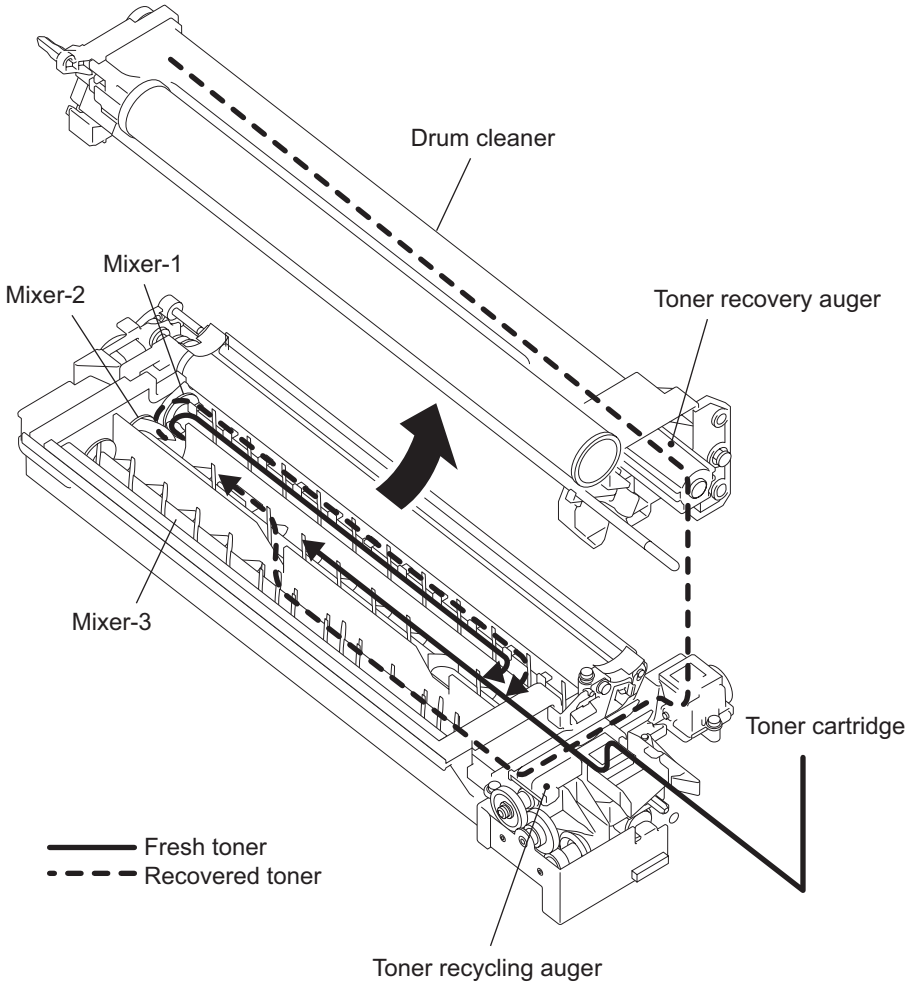

Fig. 3-27

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3.13 Fuser / Exit Unit

3.13.1 General description

In the equipment, the fuser unit which fuses toner on the paper and the paper exit section (exit roller) which outputs the paper with the fused toner to the inner tray are combined together to make up the fuser/exit unit.
In the fuser unit, toner is fused by applying heat and pressure on the transferred image on the transported paper. The paper is then transported to the exit tray after the completion of fusing. The fuser/exit unit is driven by the main motor to rotate the fuser roller and the exit roller.
Other than the above rollers, the fuser/exit unit consists of the heater lamps, separation fingers, thermistors (THMS1/THMS2/THMS3), fuser thermostat (THMO1), paper transport guide and the exit sensor which detects the status of the paper transport, etc.

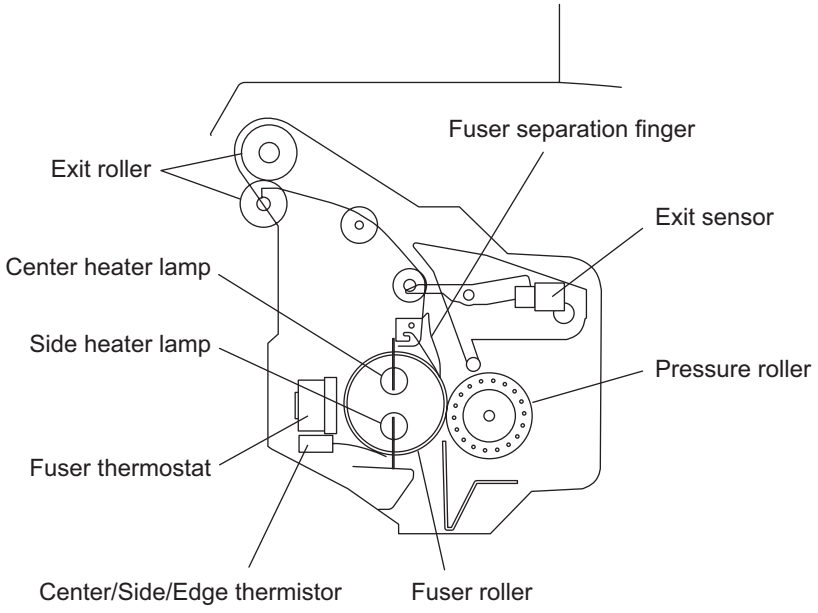

Fig. 3-28

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3.13.2 Configurations

Fuser / exit unit		
Pressure roller unit	Pressure roller	PFA tube sponge roller (ϕ25) Periodic replacement part
	Exit sensor (S5)	
Fuser roller unit	Fuser roller	Fluoro-plastic coated roller (ϕ30) Periodic replacement part
	Heater lamp (LAMP1, LAMP2)	564W+564W
	Thermistor (THM1, 2, 3)	
	Fuser thermostat (THMO1)	Non-contact type (170ºC)
	Separation finger	Periodic replacement part
	Exit roller	

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3.13.3 Functions

1. Pressure roller
   The pressure roller is a sponge roller which assures the nip amount of the fuser roller. The pressure from the spring presses the paper onto the fuser roller to fuse toner onto the paper efficiently.

2. Exit sensor (S5)
   The exit sensor detects if the leading or trailing edge of the paper is passing through the pressure roller and the fuser roller. This sensor is used for the detection of paper jams in the fuser/exit unit as well.

3. Fuser roller
   The fuser roller applies heat onto the paper and is heated by the heater lamps installed inside of the fuser roller. The heat from this roller fuses toner onto the paper. The fuser roller in this equipment is a thin roller which enhances heat conduction, and thus the warming-up time is shortened.

4. Heater lamp (LAMP1/LAMP2)
   The heater lamps are halogen lamps to apply heat to the fuser roller. The fuser unit in this equipment has 2 heater lamps (564W+564W) with different functions each other. One has a coil wound up on its center and this part generates heat. The other one has coils wound up on its both ends and these parts generate heat. The one has a coil on its center is called the center heater lamp (LAMP1) and the one has coils on its both ends is called the side heater lamp (LAMP2).
   The heater lamps are fixed on the inside of the fuser roller to heat it up. The heater lamps do not rotate even when the fuser roller is rotating.

5. Sensor thermistor (THMS1) / Side thermistor (THMS2)
   This thermistor detects the temperature of the fuser roller to maintain it in a certain temperature range (actually around 170°C) between the lower limit causing the poor fusing and the upper limit causing the high temperature offsetting. When the temperature of the fuser roller is lower than the preset temperature, it turns ON the power supply to the heater lamps, and when it is higher than the preset temperature, it cuts off the supply.
   The center thermistor (THMS1) detects the temperature of the center part of the fuser roller, and the side thermistor (THMS2) detects the temperature of one side of fuser roller and control the both sides.

6. Edge thermistor (THMS3)
   Both the ends of the fuser roller may be overheated without heat absorption by the paper since it does not pass through this area. The edge thermistor (THMS3) detects any temperature abnormality of this area caused by overheating of the fuser roller. Therefore this thermistor is not used for temperature control of the fuser roller.

7. Fuser thermostat (THMO1)
   The fuser thermostat (THMO1) cuts off the power supply to the heater lamps (LAMP1/LAMP2) by opening itself if the fuser roller becomes abnormally hot as a result of the problem such as thermistor malfunction. The fuser thermostat (THMO1) for this equipment is used to prevent abnormal operation. When the fuser thermostat (THMO1) detects any abnormality, it must be replaced as well as the other damaged parts in the fuser unit.

8. Separation finger
   Five separation fingers are installed above the fuser roller, in order to separate paper adhering to each roller.

9. Exit roller
   The exit roller, which transports the paper to the inner tray, is driven by the main motor (M3).

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3.13.4 Operation

The fuser roller is pressed by the pressure roller with the spring force. The fuser roller is rotated by the main motor drive, and the pressure roller is rotated by the rotation of the fuser roller. In addition, the heater lamps in the fuser roller do not structurally rotate.
2 heater lamps having different functions are installed; one applies heat to the center part of the fuser roller and the other applies heat to both ends of the roller. In this equipment, the surface temperature of the fuser roller at any paper size can be maintained by controlling the turning ON/OFF of the 2 heater lamps. The thermistors control the temperature of the fuser roller and detect temperature abnormalities. If the temperature becomes excessively high, the thermostat is opened to stop the power supply to the heater lamps.
Then the paper transported to the fuser unit is held between the fuser roller and pressure roller, and toner is fused on the paper with heat and pressure. After this, the separation fingers separate the paper from the fuser roller. Then the paper is transported to the inner tray through the exit roller. The paper transport status of the fuser/exit unit is detected by the exit sensor.

When the power is turned ON, the warming up of the fuser unit is started: the heater lamps are turned ON. If the temperature of the fuser roller does not reach or exceeds a specified temperature within a specified period of time, it is judged that the heater is abnormal. When the specified temperature has been reached normally, the equipment goes into the ready state.
When printing is not performed within a specified period of time during ready, the equipment enters the Auto Power Save Mode and turns the 2 heater lamps OFF or lowers the control temperature to save power consumption. And if printing is not performed within another specified period of time after the equipment has entered the Auto Power Save Mode, the equipment then enters the Auto Shut Off mode to turn OFF the 2 heater lamps.

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3.13.5 Fuser unit control circuit

[1] Configuration

In this equipment, the surface temperature of the fuser roller is controlled by turning ON/OFF 2 heater lamps (center and side) which have different heat-generating positions with the command from the SoC on the MAIN board. The surface temperature of the fuser roller is detected by 3 thermistors (center, side and edge) and then the information of the temperature is transmitted to the SoC and each control circuit. Based on the detected temperature, the SoC transmits the control signal of the heater lamp to the control circuit (TRC: Triac) of each heater lamp on the switching regulator. The power supply to each fuser roller is thus controlled by driving TRC. The SoC detects the overheating of the fuser roller. In case that the surface temperature of the fuser roller has exceeded the specified temperature, the SoC turns the heater lamp OFF.

If the SoC does not function for some reason and the fuser roller is abnormally overheated as the result, a forcible power-OFF circuit transmits a relay-OFF signal to the switching regulator to shut off the power supply to the heater lamp by opening the relay. In addition, if these control circuits do not function with thermistor abnormality or other reasons and the fuser roller is abnormally overheated as the result, thermostat shut off the power supply to the heater lamps to protect the equipment.

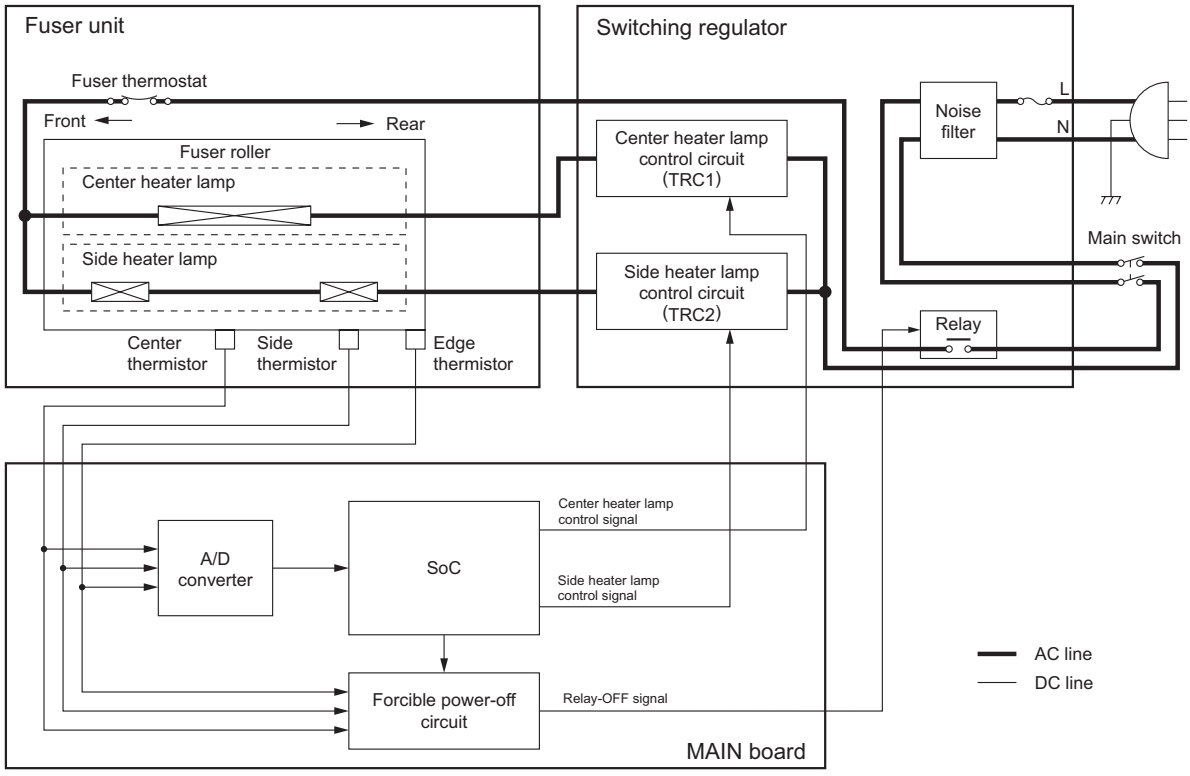

Fig. 3-29

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[2] Temperature detection section

To maintain the surface temperature of the fuser roller at a certain level, 3 thermistors (center, side and edge) detect the surface temperature of the fuser roller to turn ON/OFF and control 2 heater lamps (center and side).

1. Fuser unit error status counter control

- To enhance the safety of the fusing section unit, SoC provides the following protection: When the third [C41] error has occurred after two consecutive [C41] errors, the heater lamp is not turned ON and error [C41] is displayed immediately even if an operator turns OFF the power and back ON. However, if the equipment goes into a ready state normally with the fuser unit error status counter “1” or below, the counter is cleared to “0”.

- If the error codes [C41] to [C45] are displayed and still not cleared even though the thermistor, thermostat and heater lamp have been repaired (and the power ON/OFF does not clear the error), check the Setting Mode (08-400) to set the fuser unit error status counter to “0”.

Remark:

The fuser unit error status counter (Setting Mode (08-400)) never has values other than 0-19.

- If the heater lamp does not turn ON and the service call [C41] is displayed immediately after the power is ON, ensure the fuser unit error status counter is “2” or over. If it is “2” or over, be sure to check the thermistor, thermostat and heater lamp. Reset the counter to “0” after repairing them, then turn ON the power.

- If the fuser unit error status counter is “20” or over (e.g., 31), the data in SRAM or SRAM itself may possibly have been ruined due to causes such as leakage from the chargers. Check the bias, high-voltage transformers and charge wires to see if any of them is defective, and also look through all the data in the SRAM.

- When the thermistors detect overheating, the SoC decides the error code and counter value of the fuser unit error status, and turns OFF each output (the heater lamp, control panel display, motors and so on) to protect the fuser unit.

  Error code: C44 ([CLEAR/STOP] and [8])
  Counter value of the fuser unit error status: 9 (08-400)

  Thermistors continue detecting the abnormal temperature even after the error codes and counter values are decided. Even if the power is turned ON immediately, the heater lamp is automatically turned OFF again when the surface temperature of the fuser roller is still higher than the abnormal temperature detected.
  Wait until the surface temperature of the fuser roller is lowered enough, and turn ON the power to check the counter value. After confirming that it is the fuser unit abnormality, correct the abnormality and reset the counter value (08-400) to “0” to start up the equipment normally.

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2. Temperature detection configuration
   Thermistor is a device whose resistance decreases as it detects a higher temperature. Thus its input voltage to A/D converter changes and then SoC judges whether this change is normal or abnormal. If one of the fuser roller thermistors is broken, the control circuit judges that the fuser roller temperature is extremely low and keeps turning the heater lamp ON. As a result, the fuser roller temperature rises, and possibly activates the thermostat which is a safety protection device. To prevent this in advance, SoC works to detect whether each thermistor is broken or not.
   Also, the thermistors constantly check the temperature of heater lamp to prevent it from excessive heating by MAIN circuit abnormality or thermistor abnormality. The thermistors automatically turn OFF the power when the temperature of heater lamp exceeds the specified temperature.

3. Abnormality detection by the thermistors
   The following table shows the conditions judging the fuser roller temperature abnormality and detecting timing.

Checking timing	Priority	Temperature judged			Error-judging timing	Error code
		Center thermistor	Side thermistor	Edge thermistor		
On usual	1	230°C or above	-	-	On usual	C44
		-	230°C or above	-		
		-	-	230°C or above		
Detecting 40°C	1	40°C or below	-	-	Specified time	C41
		-	40°C or below	-		
Detecting 100°C	1	100°C or below	-	-	Specified time	C44
		-	100°C or below	-		
	2	40°C or below	150°C or above	-	On usual	C43
		150°C or above	40°C or below	-		
Detecting warming-up temperature	1	Warming-up temp. or below	-	-	Specified time	C44
		-	Warming-up temp. or below	-		
	2	40°C or below	150°C or above	-	On usual	C43
		150°C or above	40°C or below	-		
		-	150°C or above	40°C or below		
During ready status	1	40°C or below	150°C or above	-	On usual	C43
		150°C or above	40°C or below	-		
		-	150°C or above	40°C or below		
	2	40°C or below	-	-		C44
		-	40°C or below	-		
During copying	1	40°C or below	-	-	On usual	C44
		-	40°C or below	-		
	2	-	-	40°C or below		C45

* The figures in the “priority” section denote the priority of error checking.

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3.14 Power Supply Unit

3.14.1 Construction

The power supply unit consists of the AC filter, insulated-side DC output circuit, high-voltage output circuit, and heater lamp control circuit.

1. AC filter
   Eliminates noise from the outside and prevents the noise generated by the equipment from leaking to the outside.

2. DC output circuit (Low-voltage output circuit)
   Converts AC voltage input from outside to DC voltage and supplies it to each electric part. The DC voltage is divided into the following two lines.

   a.Main switch line: Power supply used in the entire equipment during the image forming process. Four kinds of voltage (+5V, +5VB, +24V and +24VDF) are output when the main switch of the equipment is turned ON.

   b.Cover switch line: Power supply used in the entire equipment during the image forming process. It is supplied via the cover switch. This voltage (+24VCOV-OFF) is output only when both the main switch of the equipment and the cover interlock switches are turned ON (when the front and ADU covers are closed).

* When the equipment is in Energy Saving Mode (Auto Shut Off Mode), only the +5VB for the main switch line is supplied.

3. High-voltage output circuit
   Generates the output currents/voltages for the charger, developer, transfer and separation biases, based on the +24V voltage which is generated by the DC output circuit.

4. Heater lamp control circuit
   TRC (Triac) is driven by the heater control signal (HTON1B/HTON2B) from the MAIN board and then AC power is supplied to each heater lamp (center and side) in the fuser unit. For details of the heater lamp control circuit, see the following.
   📖 P.3-61 "3.13.5 Fuser unit control circuit"

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3.14.2 Operation of DC output circuit

1. Starting line output
   When the power of the equipment is turned ON, all the voltages start being supplied. However, they start being supplied only when both the front cover and the ADU cover are closed.

2. Stopping line output
   When the power of the equipment is turned OFF, the power-OFF (PWRDWN-1) signal is output after the end of the instantaneous outage insurance time (20 ms or more), and then the supply of each voltage stops. If the supply of voltage of the +5VB line stops earlier than the 24V line does, it may cause damage to the electron device on each control circuit. To prevent this, the supply of the +5VB voltage stops after the power-OFF signal is output and the minimum retaining time (50 ms or more) has elapsed.

3. Output protection
   Each output system includes an overcurrent and overvoltage protection circuit (a fuse and internal protection circuit). This is to prevent defects (damage or abnormal operation of the secondary circuit) which may be caused by an overcurrent due to a short circuit or an overvoltage resulting from short-circuiting between different voltages. If the protection circuit is activated (except when the fuse is blown), repair the causes such as short-circuiting. Turn ON the power again 1 minute later to clear the overcurrent protection.

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3.14.3 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)

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3.14.4 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 clutch	CLT2	
		Bypass pickup solenoid	SOL1	
		Contact image sensor unit	CIS	
	PFU			
+24VDF	ADF			
+24VCOV-OFF	MAIN board	Toner motor	M2	F201: 4A
		Main motor	M3	
		Exhaust fan	M5	
		Auto-toner sensor	S6	
		Discharge LED	ERS	
	Coin controller			

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4. DISASSEMBLY AND REPLACEMENT

4.1 Disassembly and Replacement of Covers

4.1.1 Front cover

(1) Open the front cover.
(2) Release the upper hinge.
(3) Take off the front cover while lifting it up.

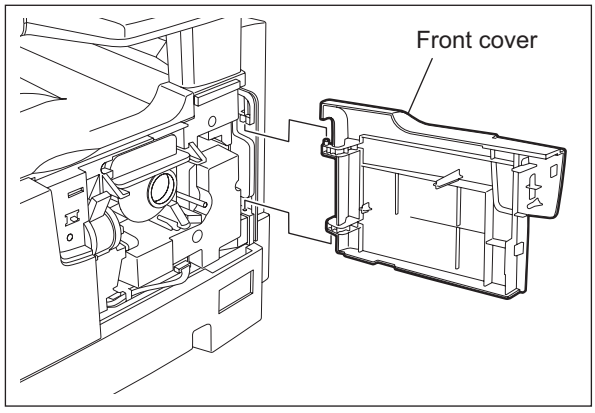

Fig. 4-1

4.1.2 Inner tray

(1) Remove 2 screws and take off the Inner tray.

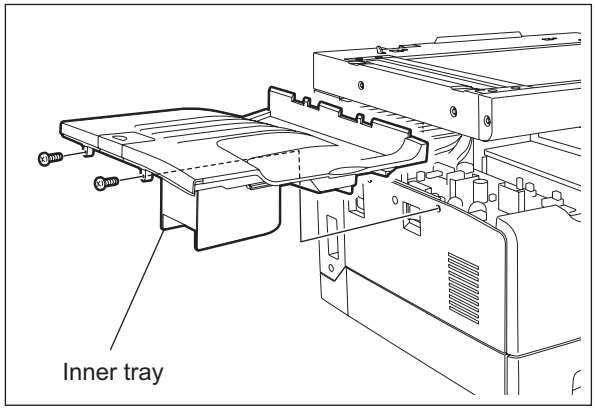

Fig. 4-2

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4.1.3 Left cover

(1) Take off the Inner tray.
🕮 P.4-1 "4.1.2 Inner tray"
(2) Remove 4 screws and take off the left cover.

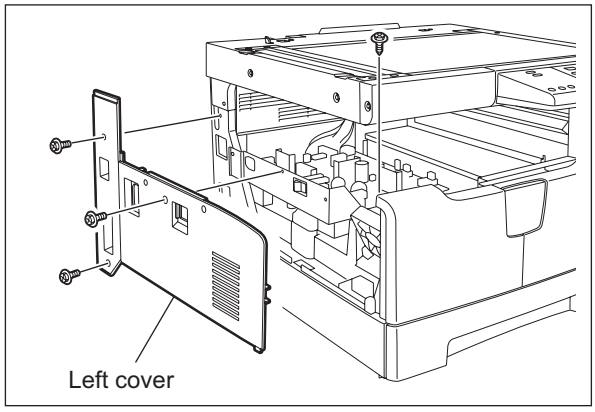

Fig. 4-3

4.1.4 Tray rear cover

(1) Take off the left cover.
🕮 P.4-2 "4.1.3 Left cover"
(2) Take off the tray rear cover.

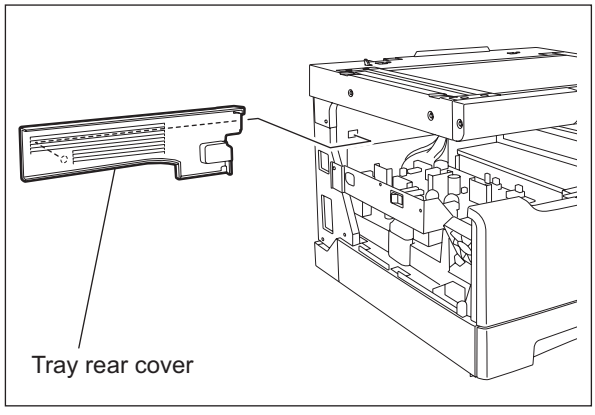

Fig. 4-4

4.1.5 Front right cover

(1) Take off the front cover.
🕮 P.4-2 "4.1.5 Front right cover"
(2) Pull out the toner cartridge.
(3) Open the ADU cover.
(4) Remove 2 screws and take off the front right cover.

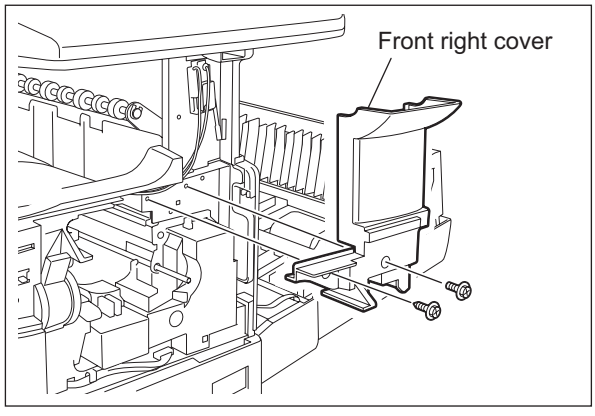

Fig. 4-5

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4.1.6 Front upper cover

(1) Remove 1 screw and take off the front upper cover.

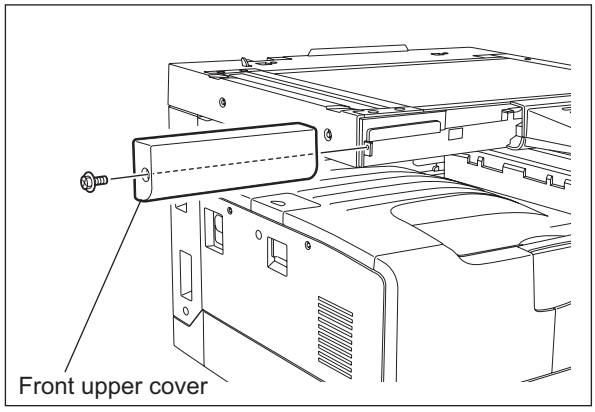

Fig. 4-6

4.1.7 ADU cover

(1) Open the bypass tray.
(2) Open the ADU cover.
(3) Open the transfer unit and release the ADU stopper on the front side.
(4) Remove 1 screw and take off the ADU stopper on the rear side.

Note:
Be careful not to fall off the ADU cover when the screws are removed from the ADU stopper.

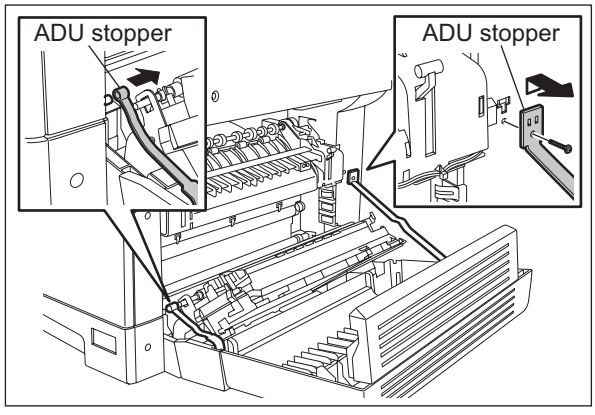

Fig. 4-7

(5) Take off the ADU cover while sliding it toward the right.

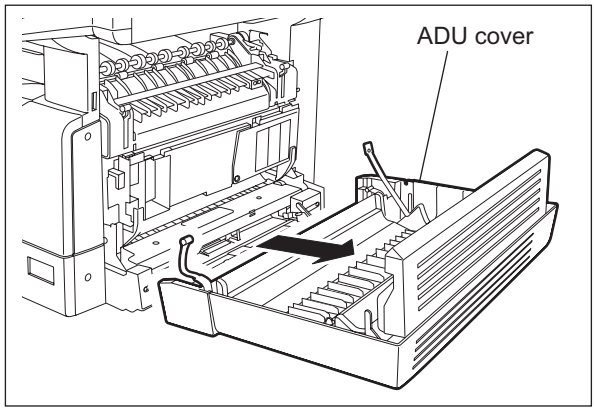

Fig. 4-8

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4.1.8 Right front cover

(1) Take off the front cover.
📖 P.4-1 "4.1.1 Front cover"
(2) Open the ADU cover.
(3) Pull out the drawer.
(4) Remove 2 screws and take off the right front cover.

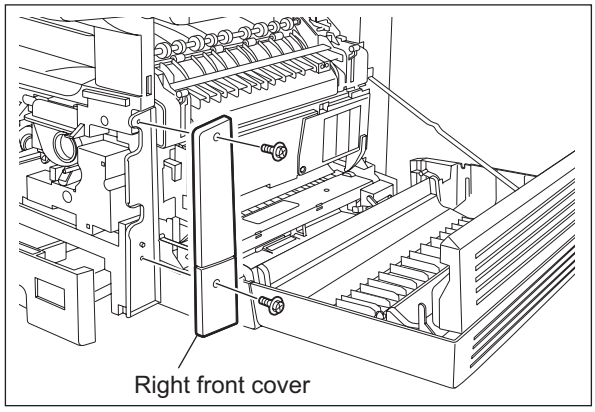

Fig. 4-9

4.1.9 Right rear cover

(1) Open the ADU cover.
(2) Remove 1 screw and take off the ADU stopper on the rear side.
(3) Take off the 2 screw and take off the right rear cover.

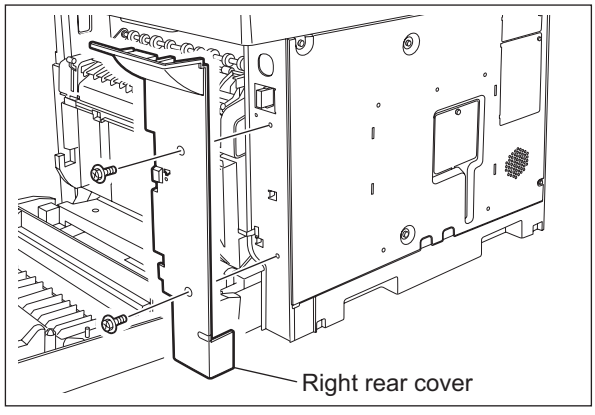

Fig. 4-10

4.1.10 Rear cover

(1) Remove 5 screws and take off the rear cover.

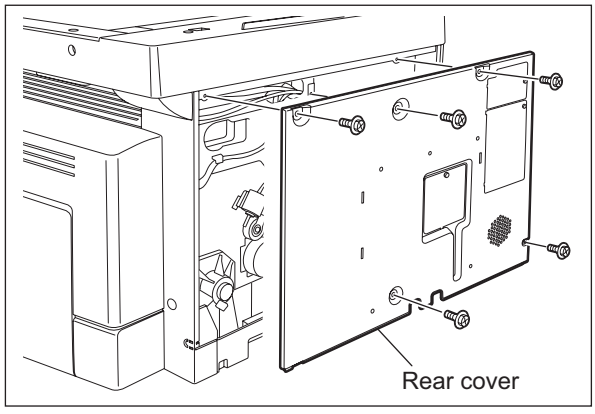

Fig. 4-11

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4.2 Control Panel

4.2.1 Control panel unit

(1) Remove 3 screws.

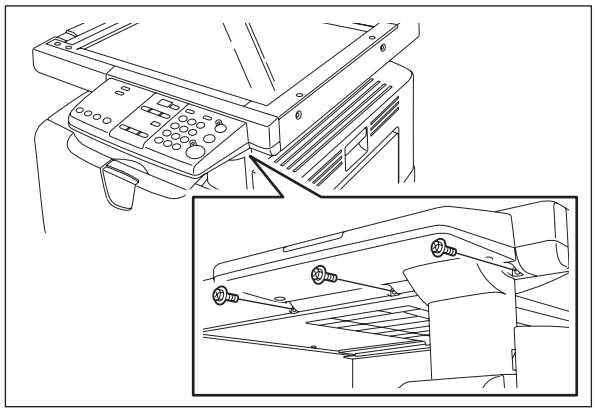

Fig. 4-12

(2) Take off the control panel unit while lifting it up.
(3) Disconnect 1 connector.

Note:
When installing the control panel unit, be sure not to have the harness being caught by the front right cover and the unit.

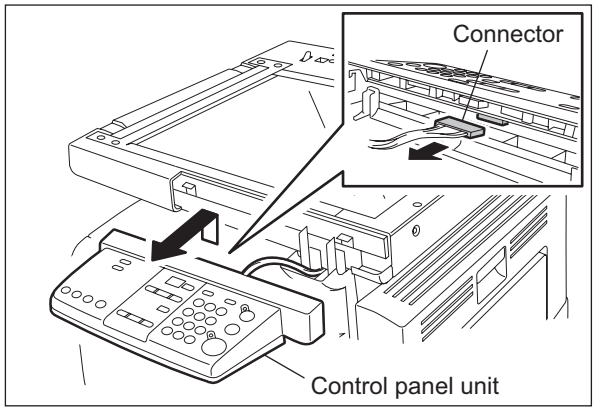

Fig. 4-13

4.2.2 Control panel PC board (LPNL)

(1) Take off the control panel unit.
📖 P.4-5 "4.2.1 Control panel unit"
(2) Remove 2 screws and take off the cover while sliding it.

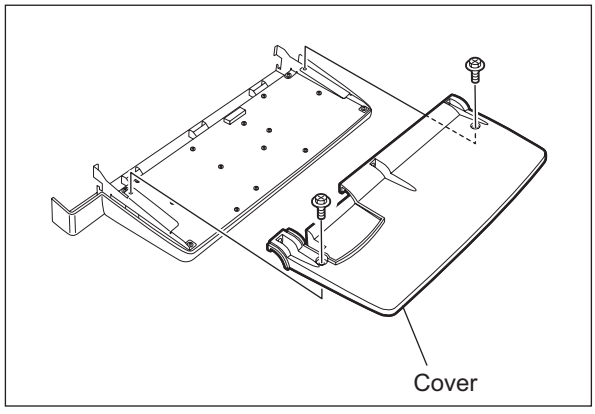

Fig. 4-14

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(3) Take off 2 brackets by removing 2 screws each.

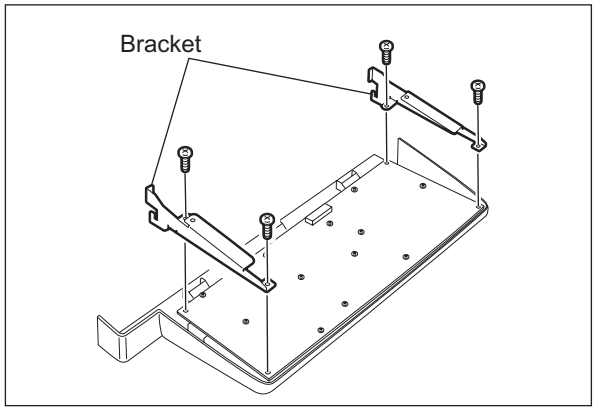

Fig. 4-15

(4) Remove 12 screws and take off the control panel PC board.

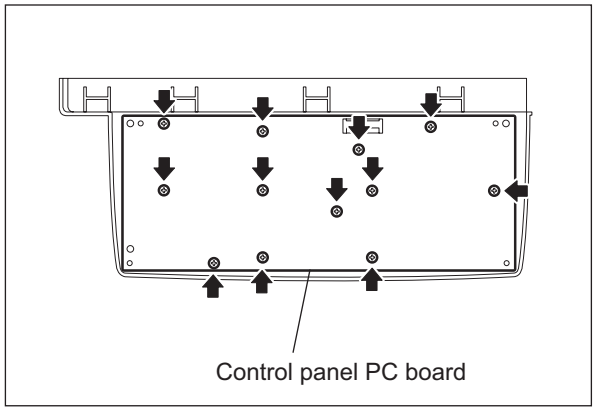

Fig. 4-16

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4.3 Scanner

4.3.1 Original glass

(1) Remove 2 rubber caps, 2 screws, and take off the original glass holder while sliding it to the right.

Note:
The rubber caps are not installed in the equipment for NAD, CND, AUD, TWD, KRD and ARD.

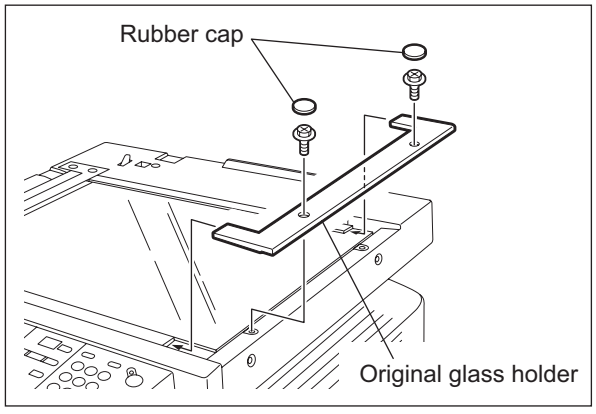

Fig. 4-17

(2) Remove 2 rubber caps, 2 screws, and take off the original glass.

Notes:
1. When handling the original glass, take care not to contaminate the surface with fingerprints or such.
2. Do not place the original glass directly on the floor.
3. When installing the original glass, fit 2 guides of the original glass in the groove of the scanner top cover.
4. The rubber caps are not installed in the equipment for NAD, CND, AUD, TWD, KRD and ARD.

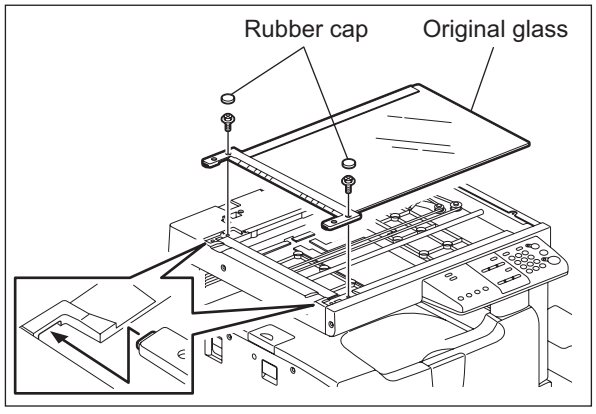

Fig. 4-18

(3) Take off the ADF original glass.

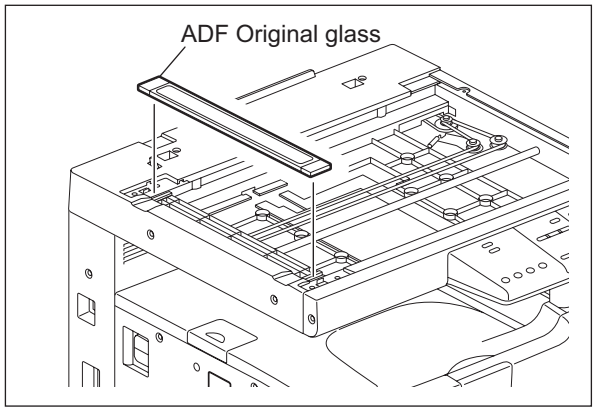

Fig. 4-19

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Notes:

1. Install the ADF original glass so that the attached Mylar sheet is placed on the front side.
2. When installing the ADF original glass, place it between 2 small guides with its left-hand side pushed to the scanner top cover.

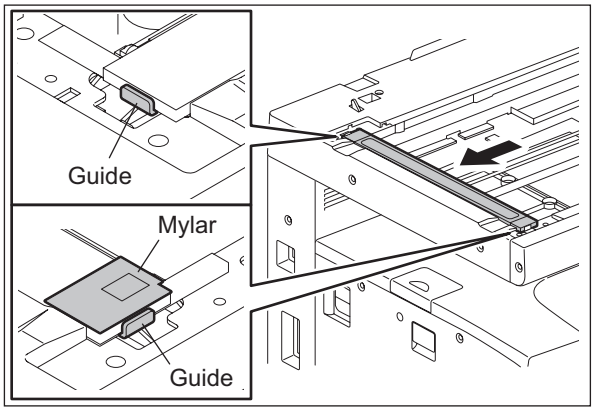

Fig. 4-20

4.3.2 Scanner top cover

(1) Take off the original glass.
🕮 P.4-7 "4.3.1 Original glass"
(2) Take off the front upper cover.
🕮 P.4-3 "4.1.6 Front upper cover"
(3) Take off the control panel unit.
🕮 P.4-5 "4.2.1 Control panel unit"
(4) Remove 8 screws and take off the scanner top cover.

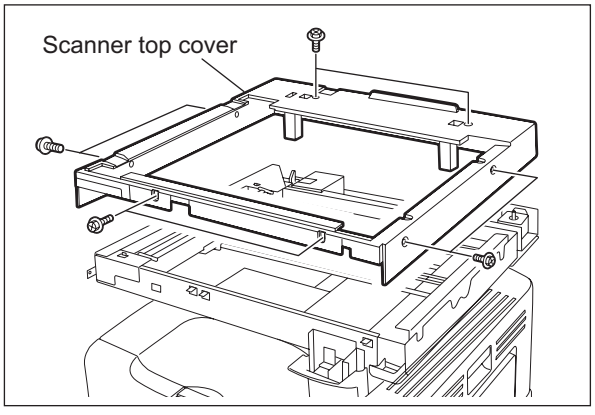

Fig. 4-21

4.3.3 Scan motor (M1)

(1) Take off the scanner top cover.
🕮 P.4-8 "4.3.2 Scanner top cover"
(2) Disconnect 1 connector.

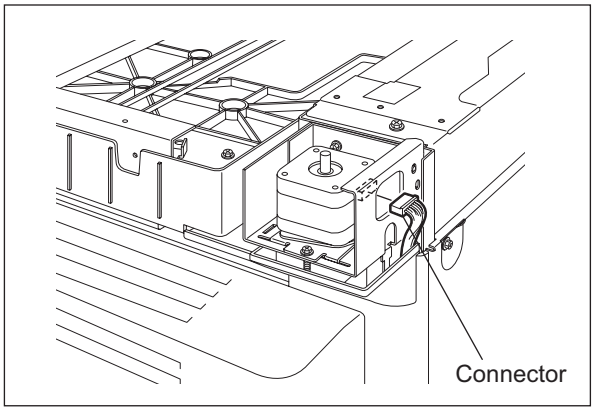

Fig. 4-22

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(3) Remove 2 screws and take off the scan motor.

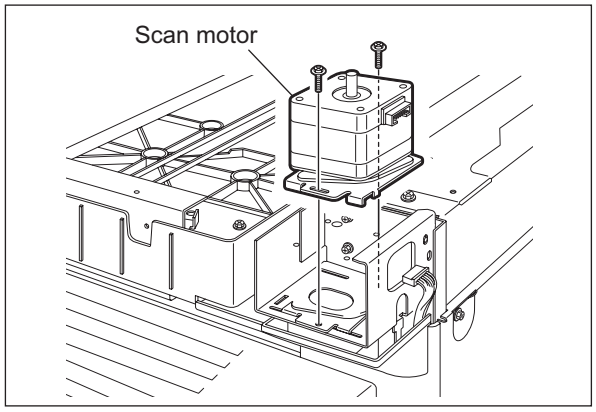

Fig. 4-23

Notes:

When installing the scan motor, be sure to adjust the tension of the belt using the belt tension jig. Also, be sure to take off the right rear cover when performing the adjustment. (📖 P.4-4 "4.1.9 Right rear cover")

The adjustment procedure is as follows.

1. Temporarily fix the screw A and B.

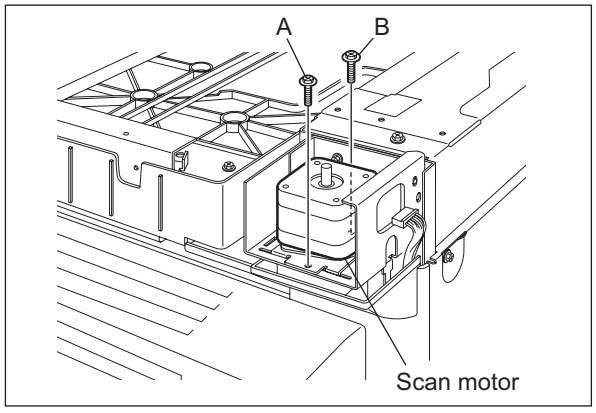

Fig. 4-24

2. Hook the belt tension jig to the motor bracket and frame.
3. The scan motor is pulled by the belt tension jig. Fix the screw A and then B at the stopped position.
4. Remove the belt tension jig.

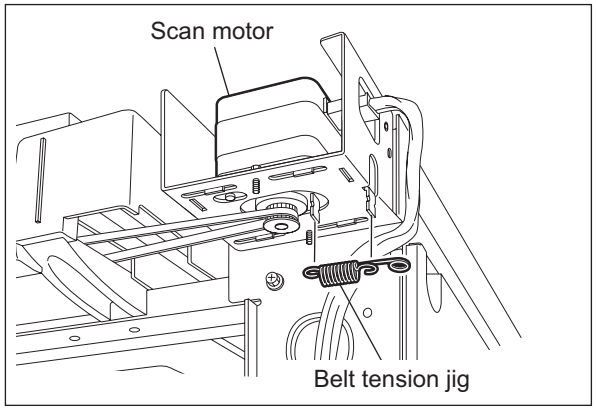

Fig. 4-25

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4.3.4 CIS home position sensor (S1)

(1) Take off the original glass.
📖 P.4-7 "4.3.1 Original glass"
(2) Remove 1 screw and take off the CIS home position sensor with the bracket.

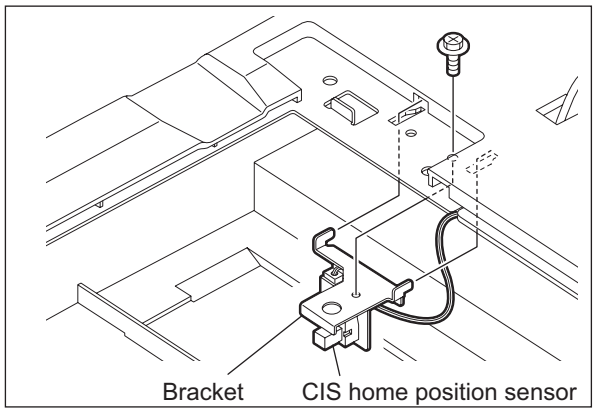

Fig. 4-26

(3) Release 2 latches, take off the CIS home position sensor, release the harness from harness clamp and disconnect 1 connector.

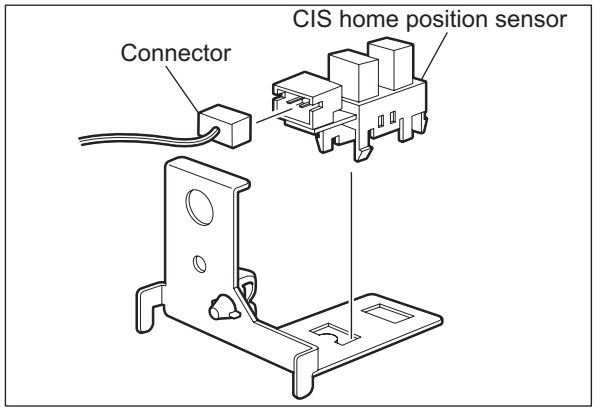

Fig. 4-27

4.3.5 Platen sensor (S2)

(1) Take off the scanner top cover.
📖 P.4-8 "4.3.2 Scanner top cover"
(2) Remove 1 screw and take off the sensor with the bracket.
(3) Disconnect 1 harness clamp and 1 connector.

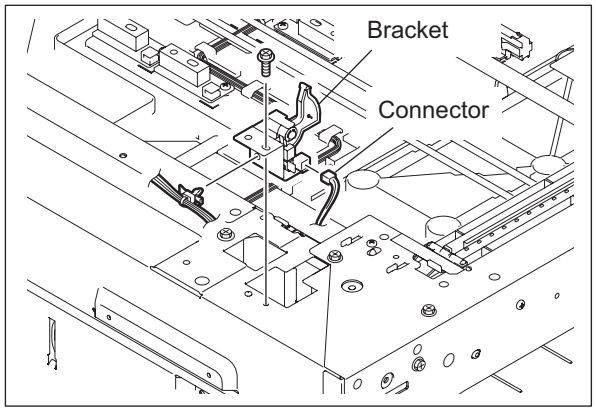

Fig. 4-28

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(4) Release 2 latches and take off the platen sensor.

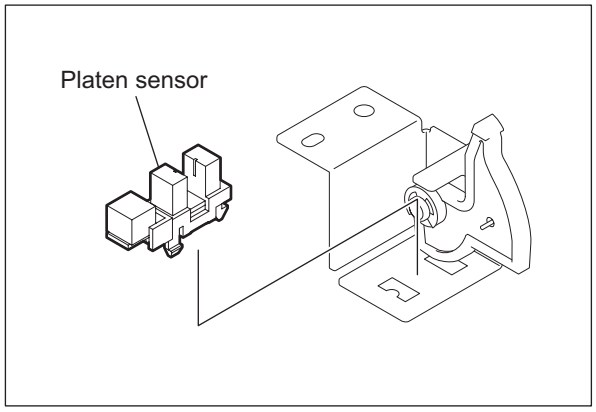

Fig. 4-29

4.3.6 CIS unit (CIS)

(1) Take off the original glass.
P.4-7 "4.3.1 Original glass"
(2) Move the CIS unit to the right most position.

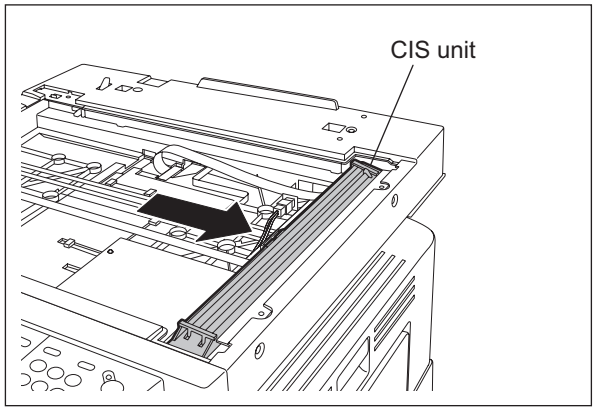

Fig. 4-30

Notes:
- Be sure to hold the CIS unit drive belt-1 to move the CIS unit.
- When the CIS unit is moved, be sure not to touch the shaft as the silicon oil is applied on it.

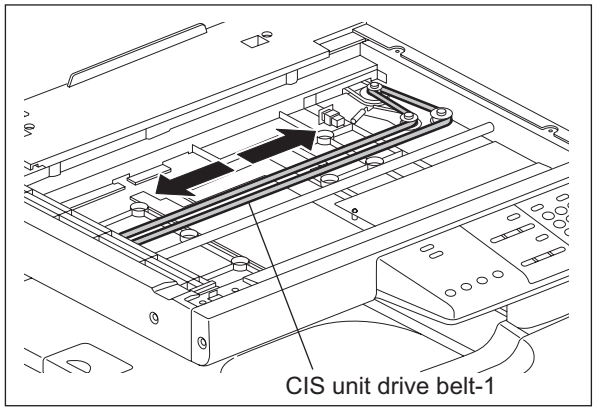

Fig. 4-31

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(3) Remove the seal which fixes the harness.

Note:

Attach the seal by following the procedure below.

- Place the flat harness along the edge of the scanner base.
- Align the seal with the two edges of the scanner base.

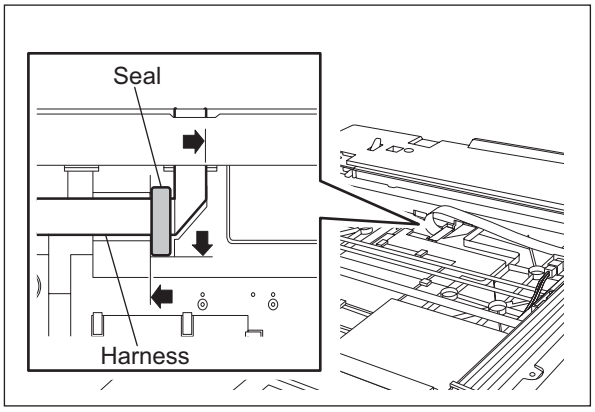

Fig. 4-32

(4) Lift up the CIS unit [1], disconnect 1 connector [2] on the bottom of the CIS unit, and then take off the CIS unit.

Notes:

- Take care not to contaminate the CIS unit surface with fingerprints, dust or such.
- Be sure to perform "05-310" with the platen cover or the ADF/RADF closed after replacing the CIS unit.
- Be sure to unlock the connector before disconnecting it.

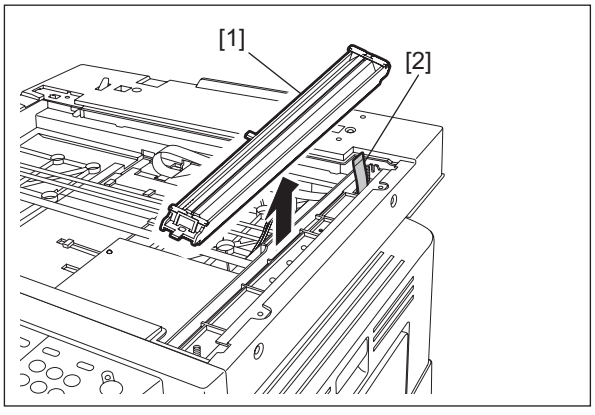

Fig. 4-33

(5) Release 2 latches each to take off 2 original glass guides [3] from the CIS unit.

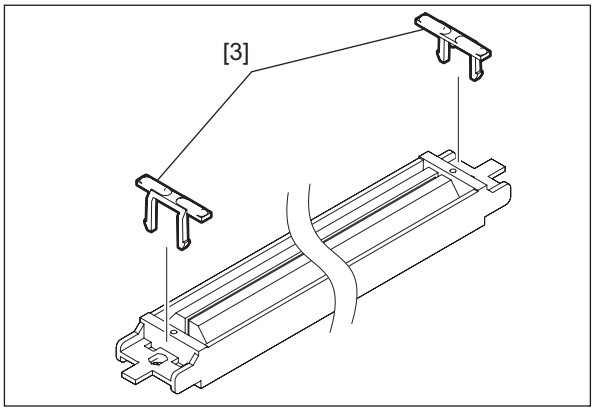

Fig. 4-34

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Notes:

1. When installing the CIS unit, be sure to pass the flat harness through the harness holder of the CIS case.

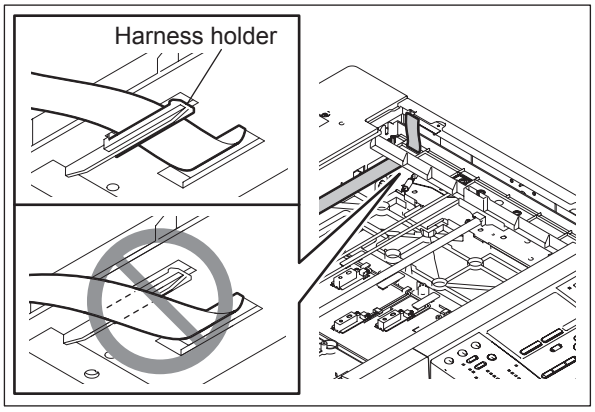

Fig. 4-35

2. Be sure to pull the flat harness so that it is not warped.

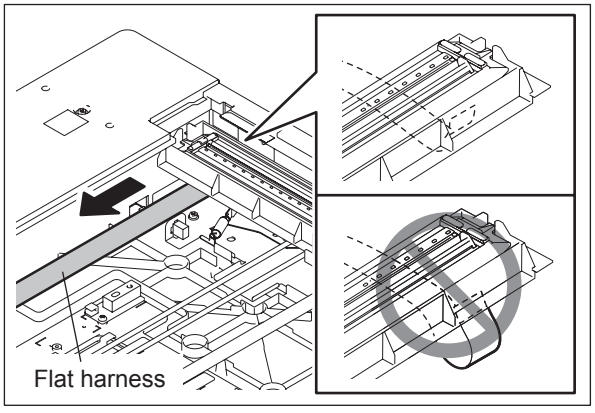

Fig. 4-36

4.3.7 CIS case

(1) Take off the CIS unit.
📖 P.4-11 "4.3.6 CIS unit (CIS)"
(2) Remove 1 screw and take off the belt stopper.

Note:
When installing the belt stopper, install it so that the protrusion of the stopper fits in the V-groove on the inside of the CIS unit drive belt-1.

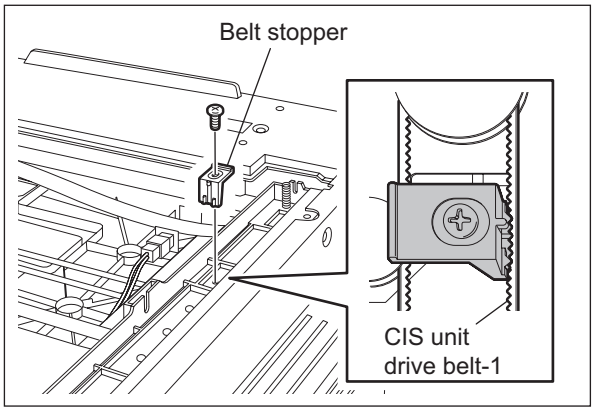

Fig. 4-37

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(3) Take off the CIS case.

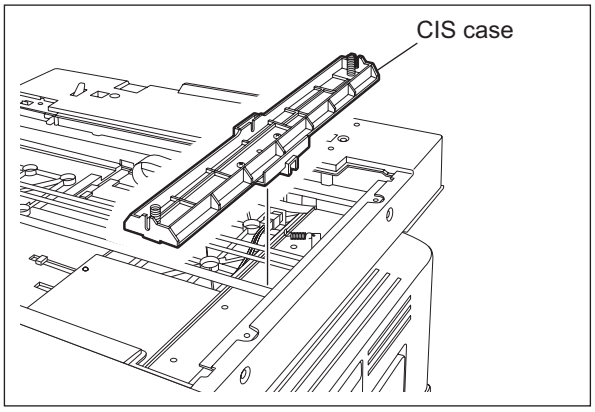

Fig. 4-38

Notes:

1. When installing the CIS case, be sure to fit the shaft of the equipment in the shaft guide attached on the bottom of the CIS case.
2. When installing the CIS case, install it so that the “L” shaped portion of the bottom of the CIS case comes under the CIS unit drive belt-1.

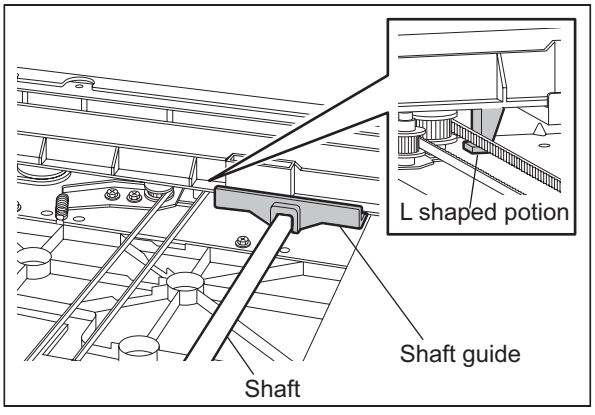

Fig. 4-39

4.3.8 CIS unit drive belt-1

(1) Take off the CIS case.
📖 P.4-13 "4.3.7 CIS case"
(2) Loosen 1 fixing screw of the tension bracket.

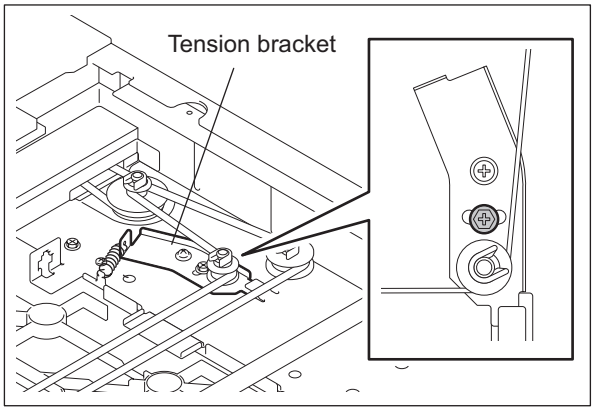

Fig. 4-40

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(3) Take off the CIS unit drive belt-1.

Note:
When assembling the CIS unit drive belt-1, assemble it while the fixing screw is loosened. Then tighten the fixing screw of the tension bracket.

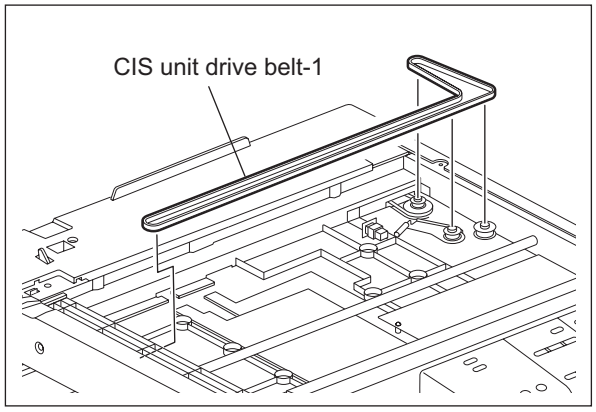

Fig. 4-41

4.3.9 CIS unit drive belt-2

(1) Take off the scanner top cover.
🕮 P.4-8 "4.3.2 Scanner top cover"
(2) Take off the right rear cover.
🕮 P.4-4 "4.1.9 Right rear cover"
(3) Take off the CIS unit drive belt-1.
🕮 P.4-14 "4.3.8 CIS unit drive belt-1"
(4) Loosen 2 fixing screws of the scan motor.

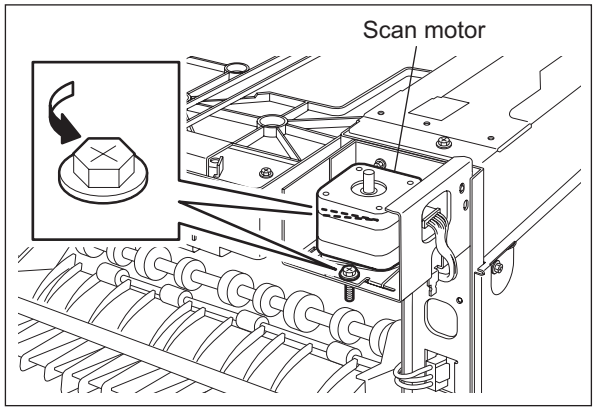

Fig. 4-42

(5) Take off the CIS unit drive belt-2.

Note:
When assembling the CIS unit drive belt-2, be sure to perform the tension adjustment for the scan motor.
🕮 P.4-8 "4.3.3 Scan motor (M1)"

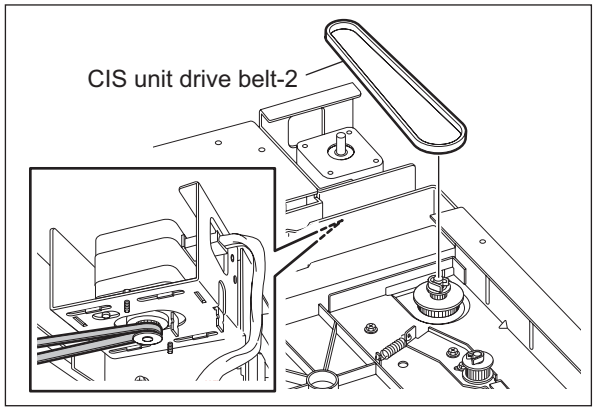

Fig. 4-43

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4.4 Laser Optical Unit

4.4.1 Laser optical unit

(1) Take off the rear cover.
🕮 P.4-4 "4.1.10 Rear cover"
(2) Disconnect 3 connectors [1] from the MAIN board.

Note:
Connect the flat harness to the MAIN board with its erectrode side down. An error “CA2“ will be displayed if the connection is incorrect.

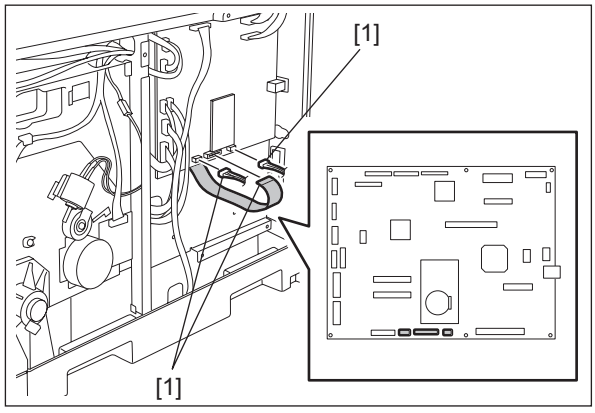

Fig. 4-44

(3) Take off the switching regulator unit.
🕮 P.9-3 "9.1.4 Switching regulator unit (PS)"
(4) Remove 1 screw.
(5) Pull out the laser optical unit [2] while lifting it up and take it off.

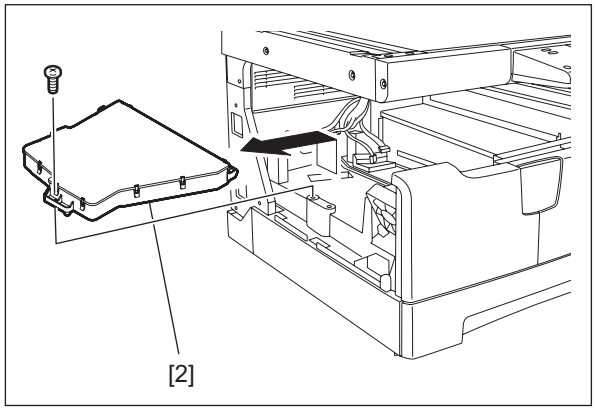

Fig. 4-45

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4.5 Drive Unit

4.5.1 Main motor (M3)

(1) Take off the rear cover.
P.4-4 "4.1.10 Rear cover"
(2) Disconnect 1 connector, remove 2 screws, and then take off the main motor.

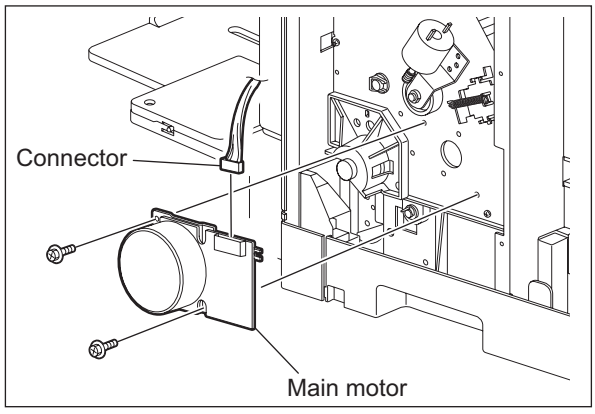

Fig. 4-46

4.5.2 Toner motor (M2)

(1) Take off the rear cover.
P.4-4 "4.1.10 Rear cover"
(2) Disconnect 1 connector, remove 1 screw, take off the toner motor with the bracket, and then remove 1 bushing and 1 gear.

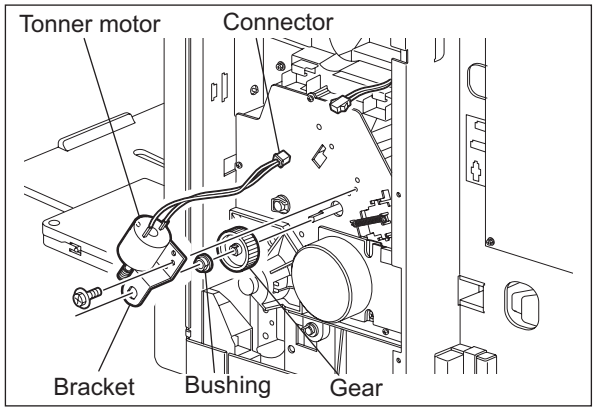

Fig. 4-47

(3) Remove 2 screws and take off the toner motor.

Note:
Pay attention to the size (length) of the screws. If incorrect ones are used, the motor could be damaged.

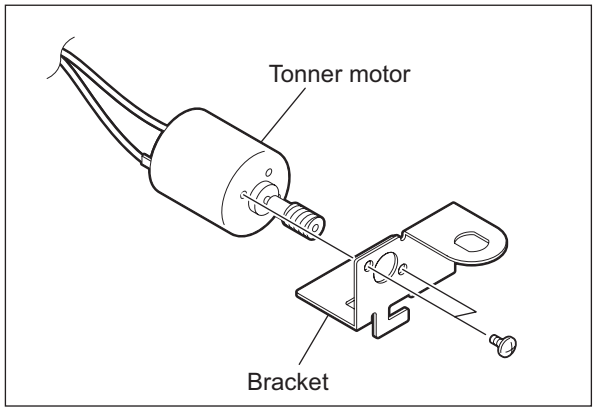

Fig. 4-48

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4.5.3 Main motor drive unit

(1) Take off the Process unit.
📖 P.4-36 "4.7.1 Process unit"
(2) Take off the toner motor with the bracket.
(3) Remove 2 screws and take off the registration roller holder.

Note:
When installing the registration roller holder, align the arm of the registration clutch with the rotation stopper of the registration roller holder.

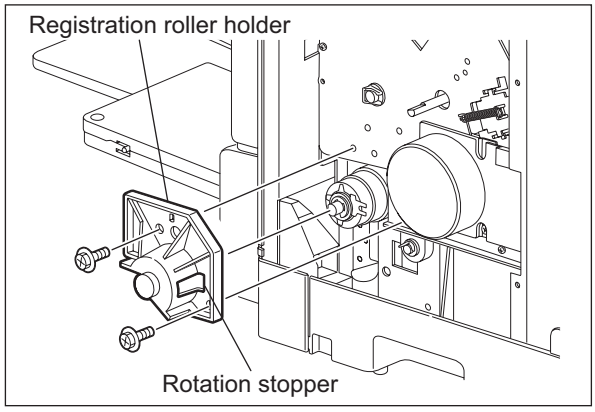

Fig. 4-49

(4) Remove 1 clip and take off 1 bushing.

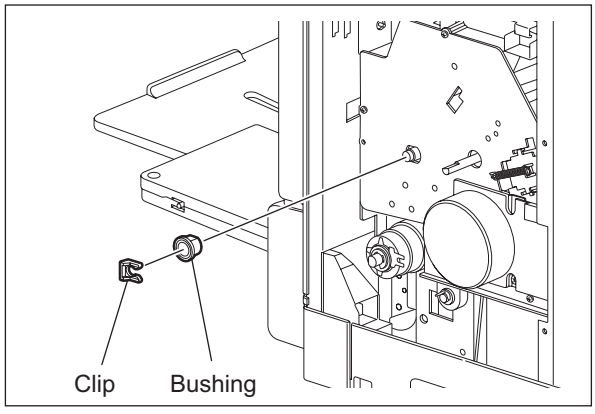

Fig. 4-50

(5) Disconnect 1 connector, remove 3 screws and take off the main motor drive unit.

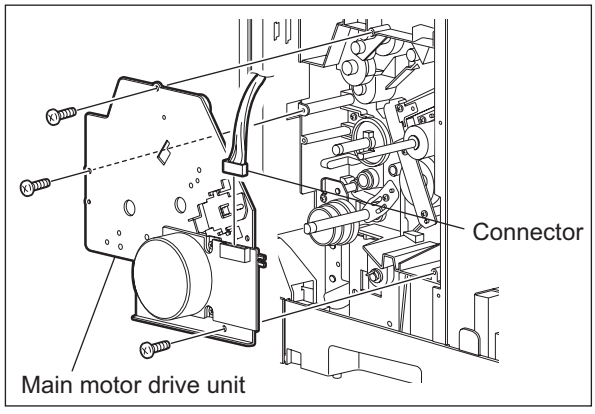

Fig. 4-51

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(6) Loosen 1 tensioner fixing screw and remove the tension spring.

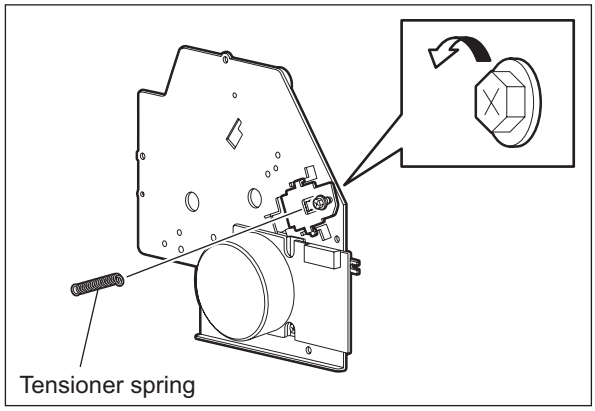

Fig. 4-52

(7) Take off the gear and timing belt from the main motor drive unit.

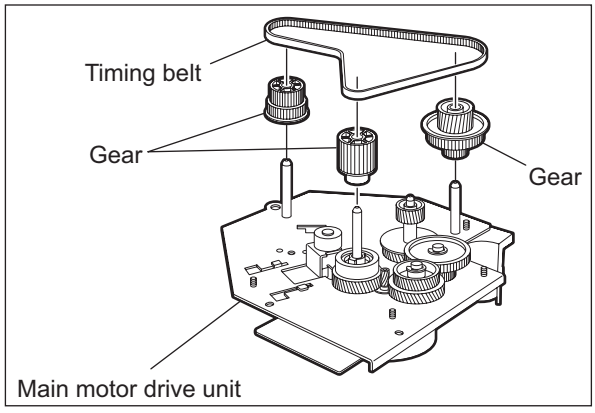

Fig. 4-53

Notes:

- Do not apply more tension to the belt of the main motor drive unit than that produced by the spring force.
- Follow the procedure bellow to perform tension adjustment when assembling the main motor drive unit.
  - Align the tensioner with the punch mark and tighten the tensioner fixing screw.
  - Hook the tensioner spring.
  - Install the main motor drive unit to the equipment.
  - Loosen the tensioner fixing screw.
  - Let the spring force produce tension for the belt, and tighten the fixing screw.

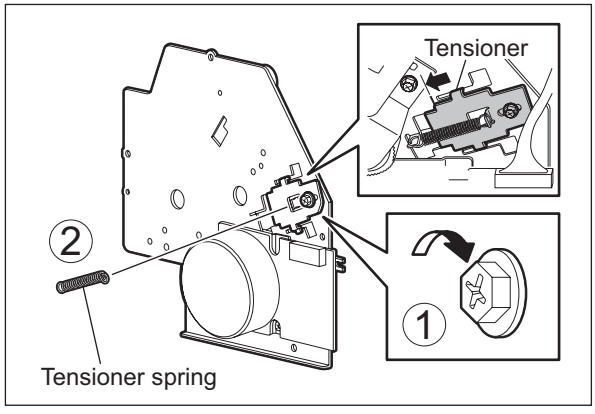

Fig. 4-54

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4.6 Paper Feeding System

4.6.1 Bypass unit

(1) Take off the ADU cover.
P.4-3 "4.1.7 ADU cover"
(2) Remove 1 screw and take off the harness cover.

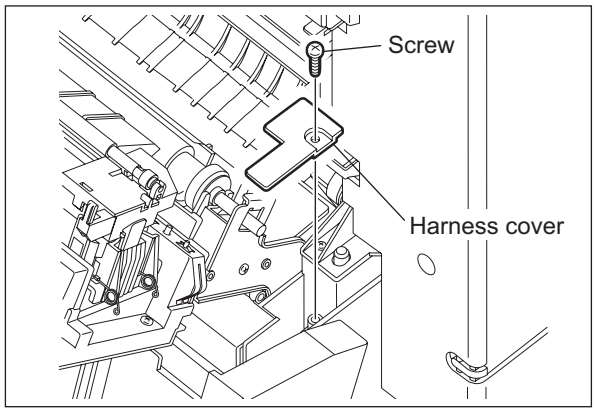

Fig. 4-55

(3) Release the harness from the harness clamp and disconnect 1 connectors.

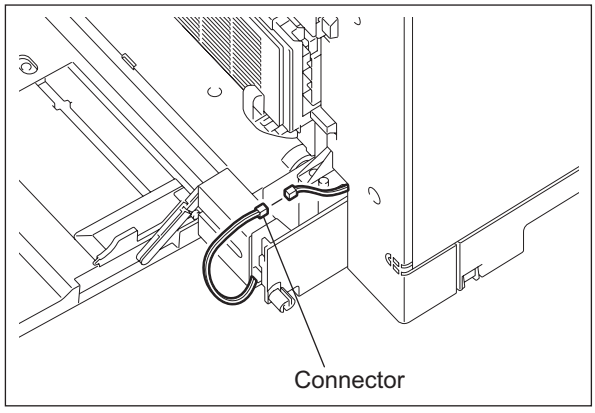

Fig. 4-56

(4) Remove 2 screws, and take off the bypass unit by lifting it up.

Note:
When installing the bypass unit, place the guide behind the transfer unit.

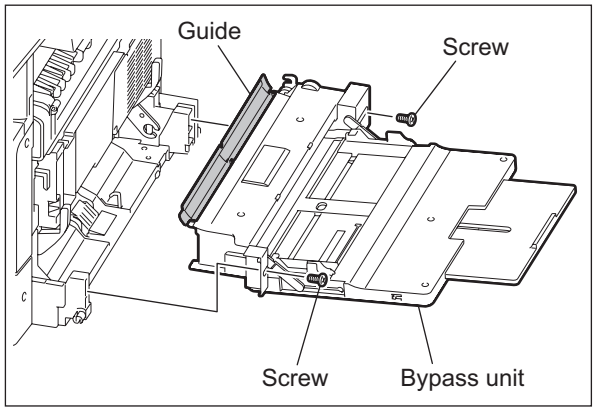

Fig. 4-57

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4.6.2 Bypass tray

(1) Take off the bypass unit.
P.4-20 "4.6.1 Bypass unit"
(2) Release each latch to take off the front and rear tray arms.
(3) Take off the bypass tray.

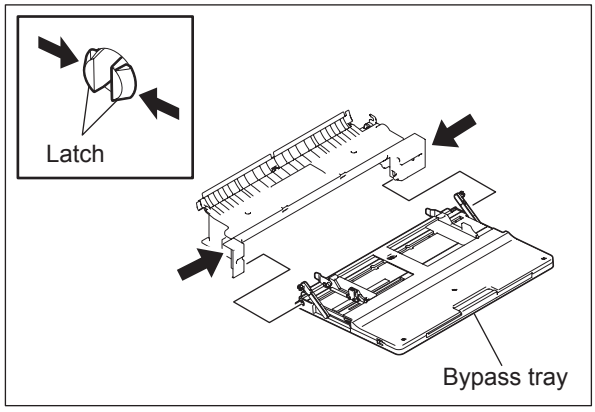

Fig. 4-58

4.6.3 Bypass separation pad PM

(1) Take off the bypass unit.
P.4-20 "4.6.1 Bypass unit"
(2) Remove 2 screws and take off the bypass separation pad unit.

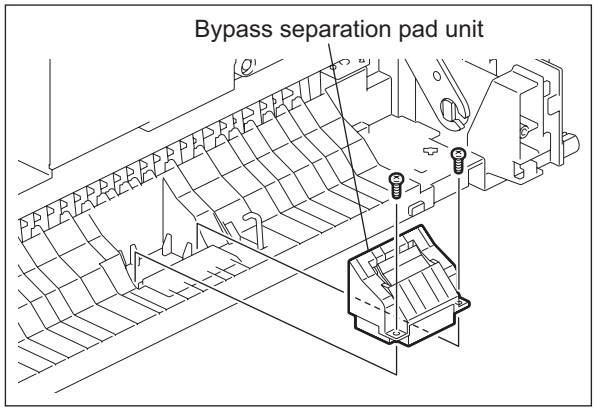

Fig. 4-59

(3) Remove 1 screw on the bottom of the bypass separation pad unit, and take off the cover.

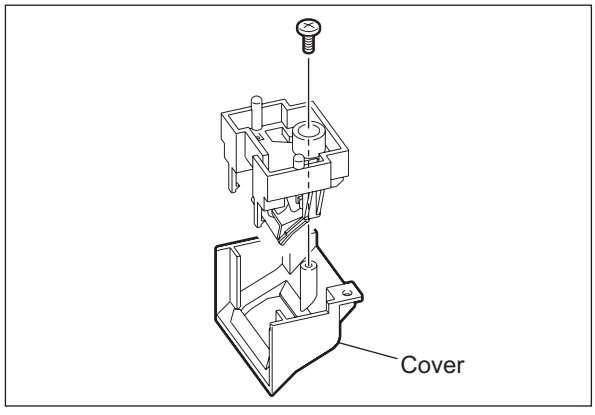

Fig. 4-60

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(4) Take off the bypass separation pad while pinching the mounting bracket.

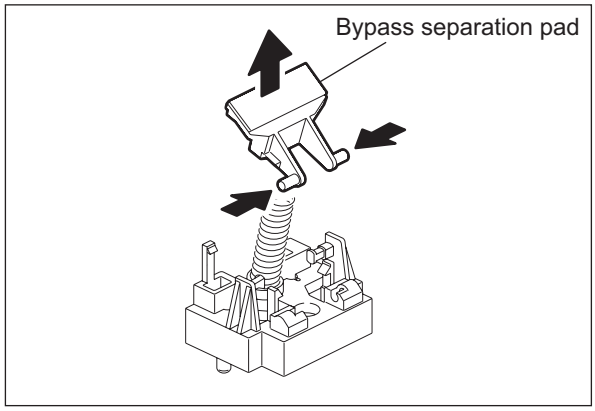

Fig. 4-61

Note:
When the separation pad is replaced, apply one grain of rice-sized white grease to the supporting point.

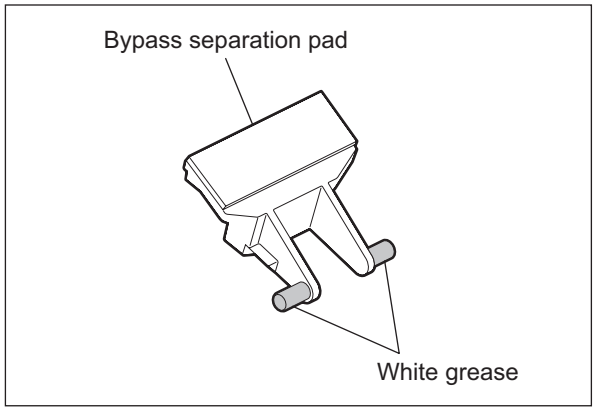

Fig. 4-62

4.6.4 Bypass roller unit

(1) Take off the bypass unit.
📖 P.4-20 "4.6.1 Bypass unit"
(2) Remove 2 screws, and take off the cover.

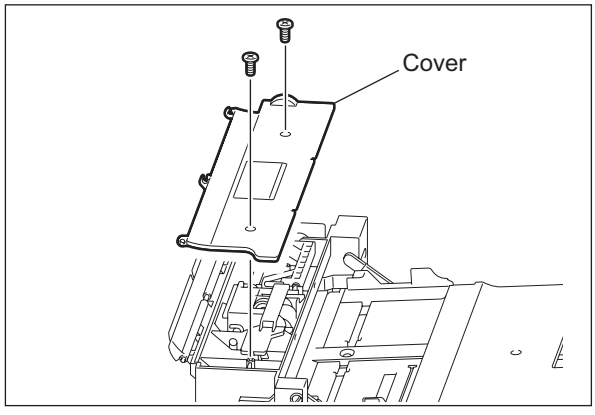

Fig. 4-63

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(3) Remove 1 spring and 2 screws. Then take off the bracket.

Notes:

- When installing the bracket, engage the U-shaped part of each head on both front and rear arms with each protrusion on the bypass roller unit.

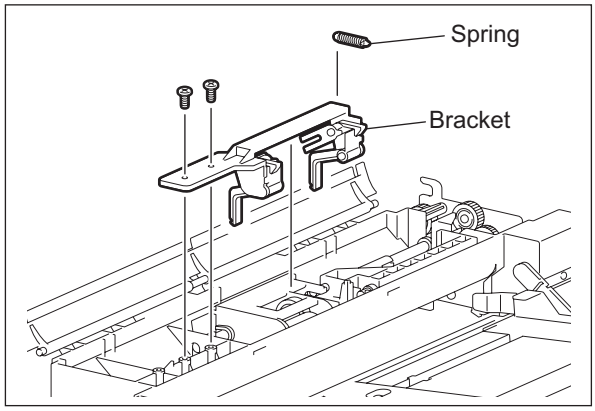

Fig. 4-64

- When the bracket is removed, place it as shown in the figure on the right to prevent the levers from coming off.

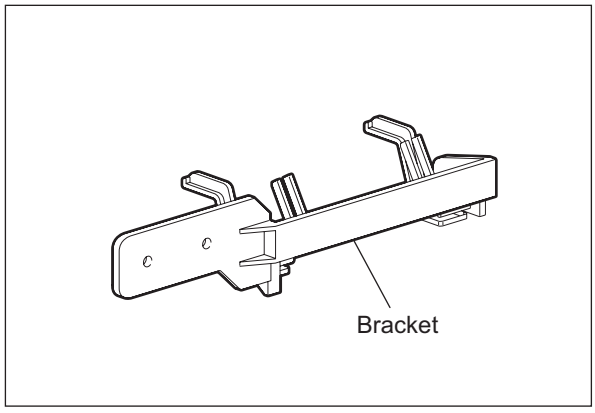

Fig. 4-65

(4) Remove 1 clip, and take off the bypass roller unit while sliding it to the front side.

Note:

When installing the bypass roller unit, insert the shaft into the coupling on the rear side.

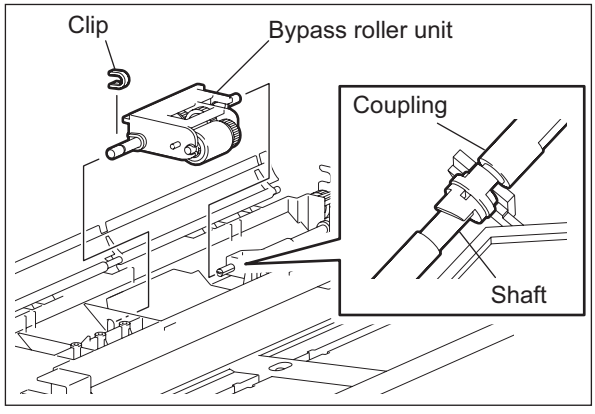

Fig. 4-66

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4.6.5 Bypass pickup roller PM

(1) Take off the bypass roller unit.
P.4-22 "4.6.4 Bypass roller unit"
(2) Take off the bypass pickup roller and the shaft.

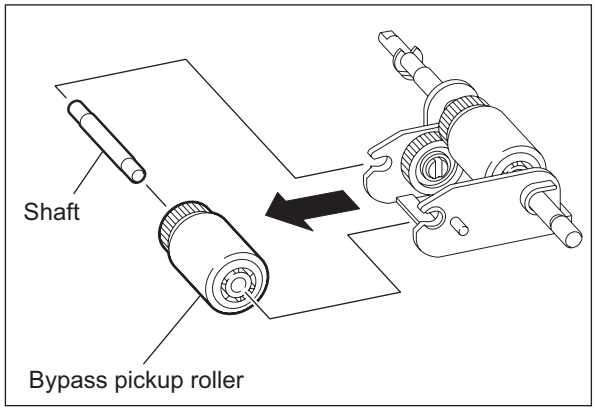

Fig. 4-67

4.6.6 Bypass feed roller PM

(1) Take off the bypass roller unit.
P.4-22 "4.6.4 Bypass roller unit"
(2) Remove 1 clip. Then pull out the shaft.
(3) Take off the bypass feed roller.

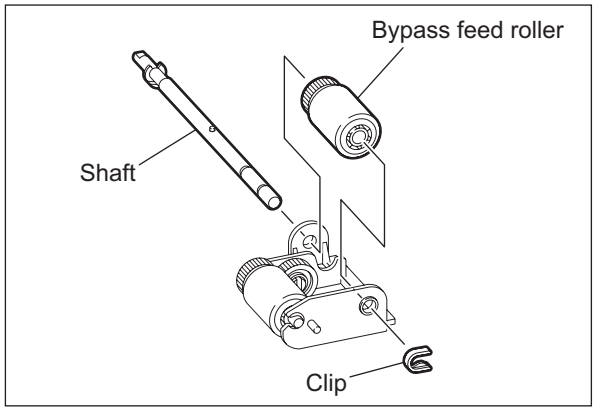

Fig. 4-68

4.6.7 Bypass paper sensor (S8)

(1) Remove 1 screw on the bottom of the equipment.
(2) Take off the bypass paper sensor with the bracket.

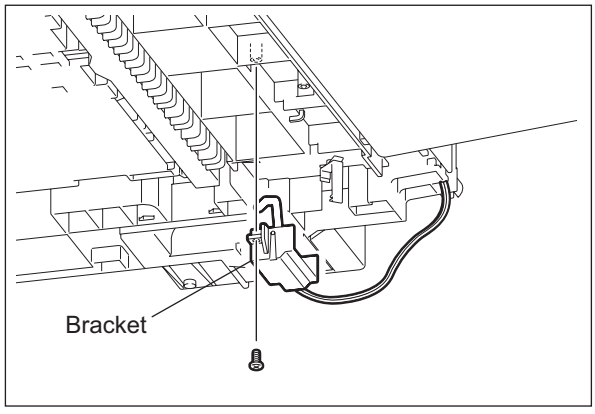

Fig. 4-69

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(3) Take off the actuator with the spring while pushing the bracket stays wider.

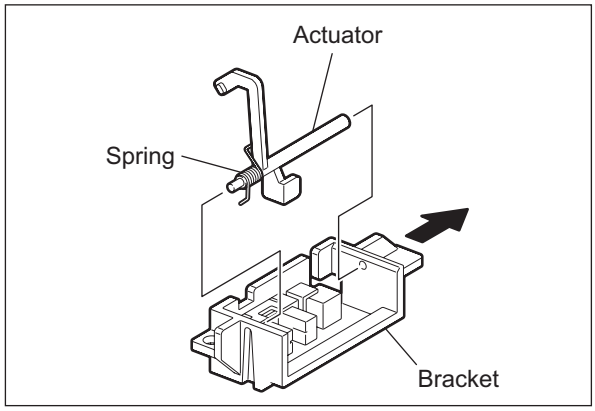

Fig. 4-70

(4) Release 2 latches, take off the bypass paper sensor, and disconnect the connector.

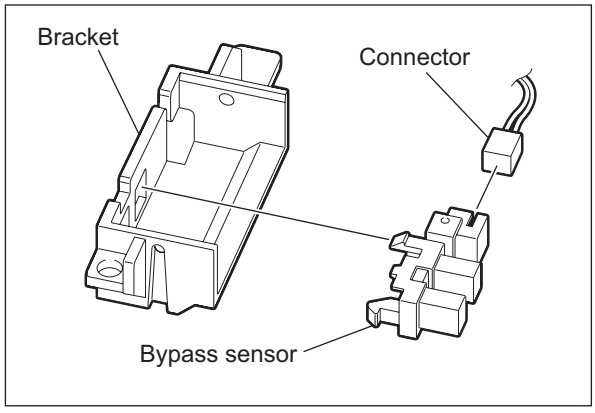

Fig. 4-71

4.6.8 Bypass pickup solenoid (SOL1)

(1) Take off the bypass unit.
📖 P.4-20 "4.6.1 Bypass unit"
(2) Remove 1 screw.

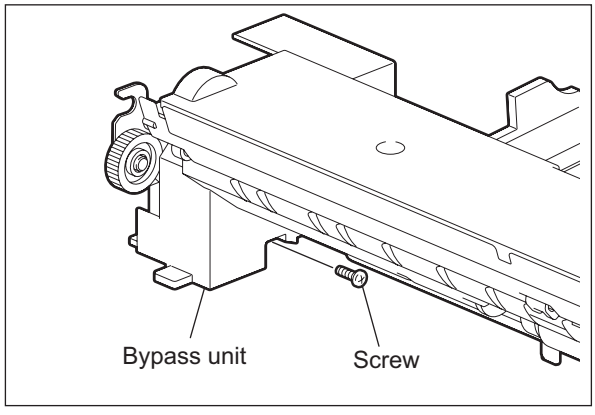

Fig. 4-72

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(3) Release the harness from the harness clamp and slide the pickup solenoid with the spring upward to take it off.

Note:
When installing the bypass pickup solenoid, be sure to place the spring between the arm and the solenoid.

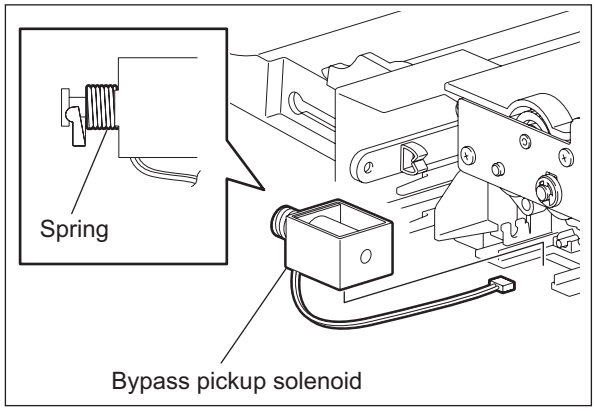

Fig. 4-73

4.6.9 Bypass pickup clutch / Bypass feed clutch

(1) Take off the bypass unit.
P.4-20 "4.6.1 Bypass unit"
(2) Remove 1 E-ring, 1 bushing and 2 screws. Then take off the 1 bracket and 2 gears.

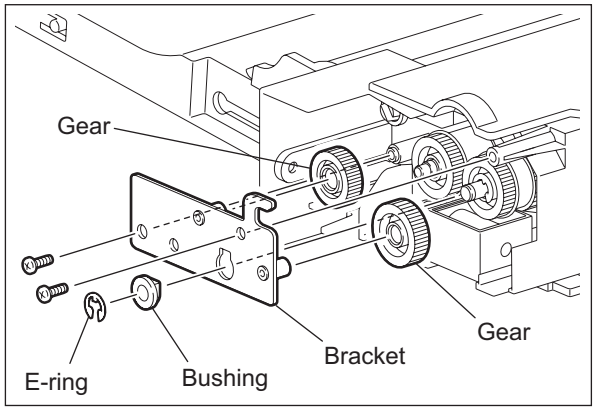

Fig. 4-74

(3) Take off the bypass pickup clutch with its shaft.

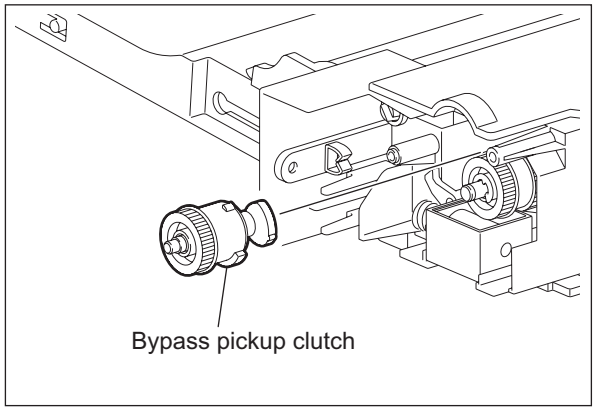

Fig. 4-75

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(4) Remove 2 E-rings. Then remove the gear, cover, spring and cam out of the shaft.

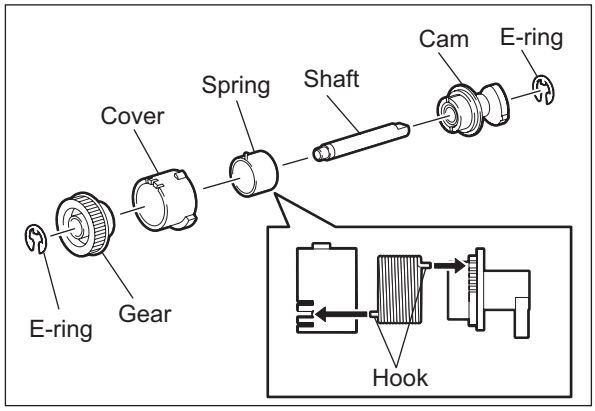

Fig. 4-76

Note:
When assembling the bypass pickup clutch, be sure to adjust the position of the hook of the spring and cover so that the center slit of the cover and the center of the cam are aligned.

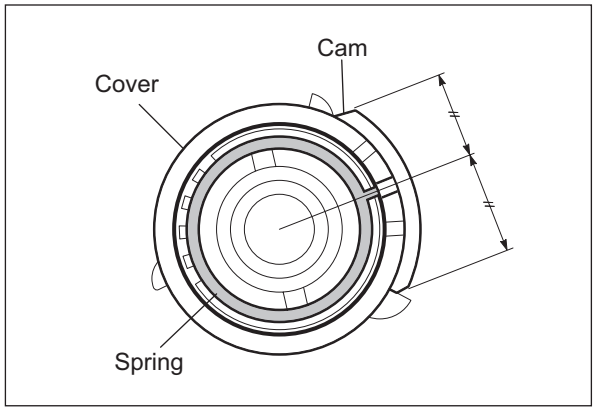

Fig. 4-77

(5) Remove 1 E-ring, and take off the bypass feed clutch.

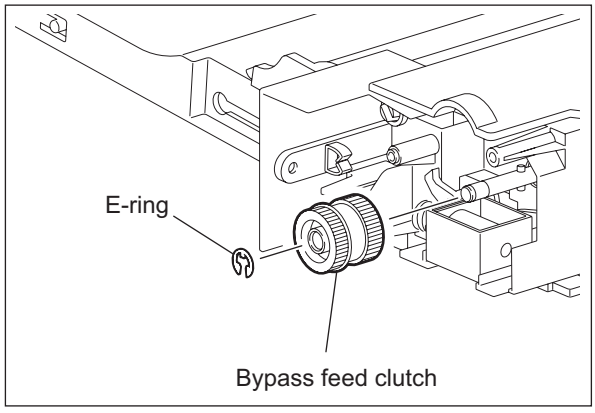

Fig. 4-78

(6) Remove the gear, cover, spring and cap.

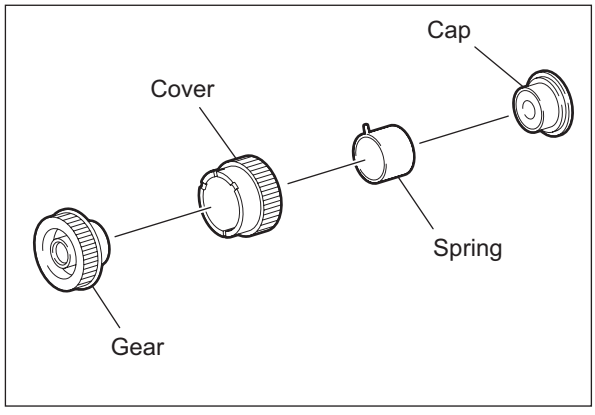

Fig. 4-79

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4.6.10 Damp heater unit (DH3) / Dummy plate

Notes:

- This damp heater unit is optional for NAD, CND and MJD.
- The dummy plate is attached to the equipment in which the damp heater unit is not installed. To take it off, perform the procedure from step (3).

(1) Take off the rear cover.
📖 P.4-4 "4.1.10 Rear cover"
(2) Release the harness from the harness clamp and disconnect the connector.

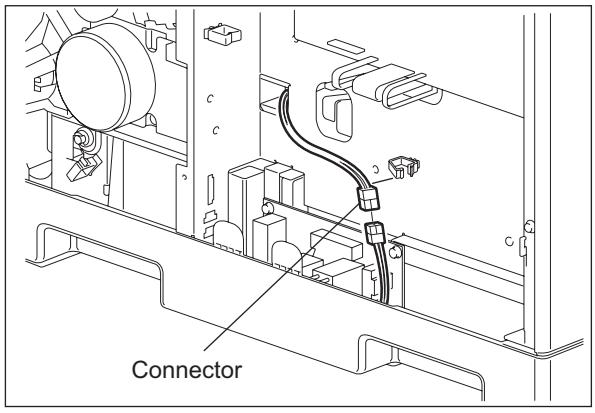

Fig. 4-80

(3) Take off the process unit.
📖 P.4-36 "4.7.1 Process unit"
(4) Remove 1 screw and take off the damp heater unit or dummy plate while sliding it to the rear side and lifting it up.

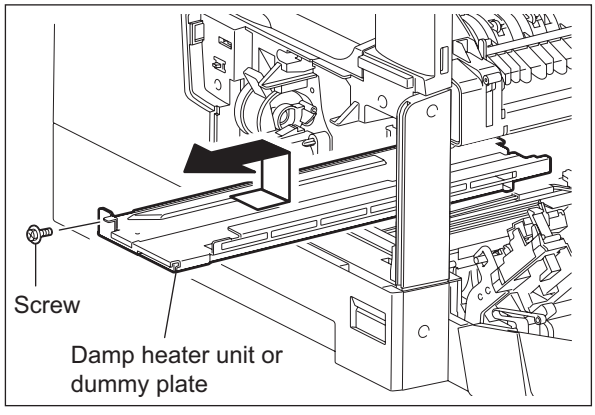

Fig. 4-81

4.6.11 Paper empty sensor (S7)

(1) Take off the drawer.
(2) Take off the damp heater unit or dummy plate.
📖 P.4-28 "4.6.10 Damp heater unit (DH3) / Dummy plate"
(3) Disconnect 1 connector [1], remove 1 screw, and take off the bracket [2] of the paper empty sensor.

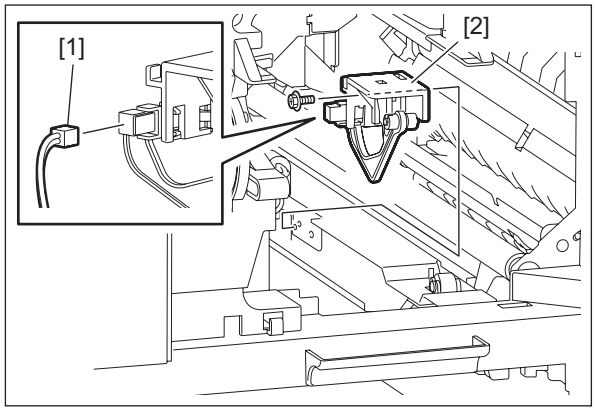

Fig. 4-82

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(4) Release 2 latches and take off the paper empty sensor [4] from the bracket [3].

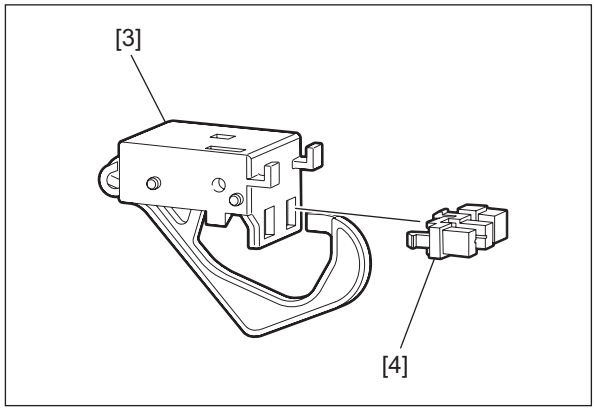

Fig. 4-83

4.6.12 Main feed roller / Sub feed roller PM

(1) Take off the drawer.
(2) Remove 2 clips [1].
(3) Slide the bushings [2] inside.
(4) Slide the feed roller [3] to the rear side, and take it off while moving it to the front side.
(5) Remove 2 bushings [2].

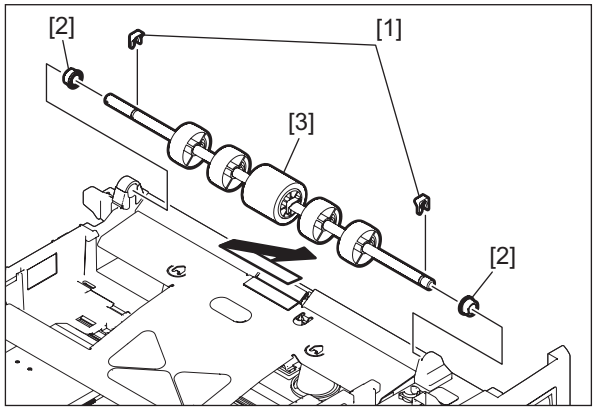

Fig. 4-84

(6) Remove the fingers and take off the sub feed rollers [4] and the parallel pins [5] (4 places)

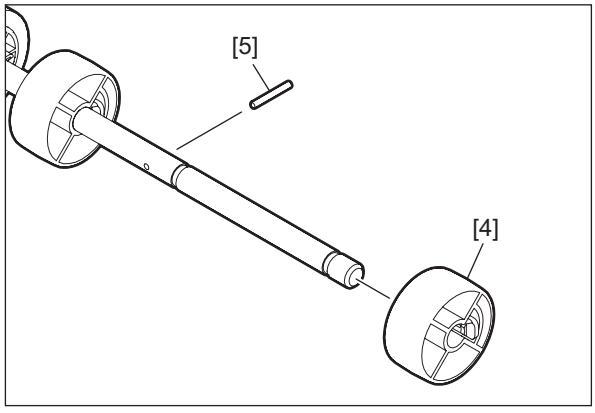

Fig. 4-85

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(7) Remove the clip [6].
(8) Take off the main feed roller [7] and the parallel pin [8].

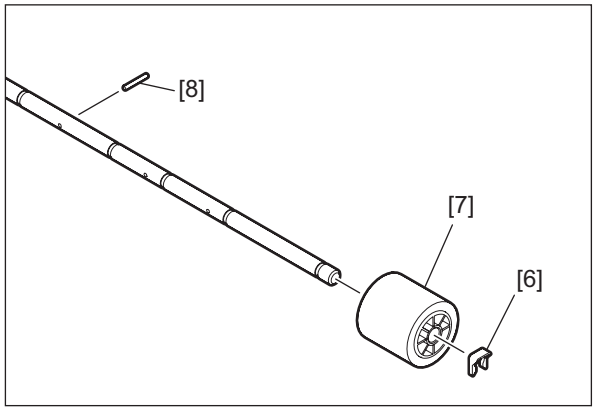

Fig. 4-86

4.6.13 Separation pad PM

(1) Take off the drawer.
(2) Take off the main feed roller and sub feed roller.
📖 P.4-29 "4.6.12 Main feed roller / Sub feed roller"
(3) Remove the separation pad [1].

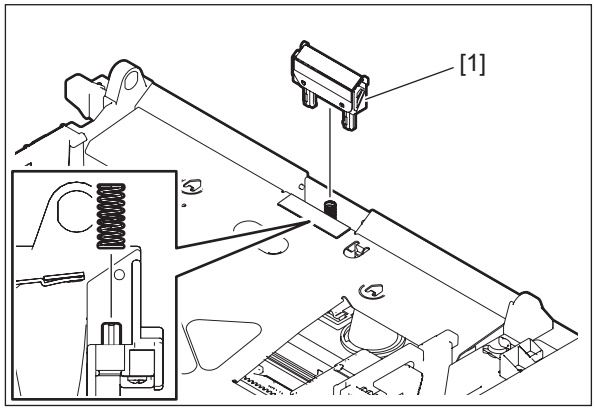

Fig. 4-87

4.6.14 Registration clutch (CLT1)

(1) Take off the rear cover.
📖 P.4-4 "4.1.10 Rear cover"
(2) Remove 2 screws and take off registration roller holder.

Note:
When installing the registration roller holder, engage the arm of the registration clutch with the rotation stopper of the registration roller holder.

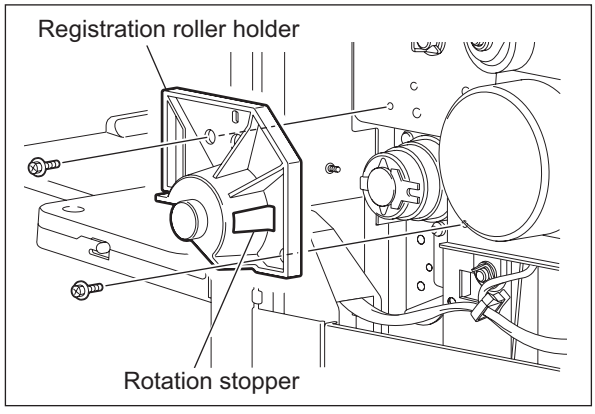

Fig. 4-88

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(3) Release the harness from the harness clamp, disconnect 1 connector and take off the registration clutch.

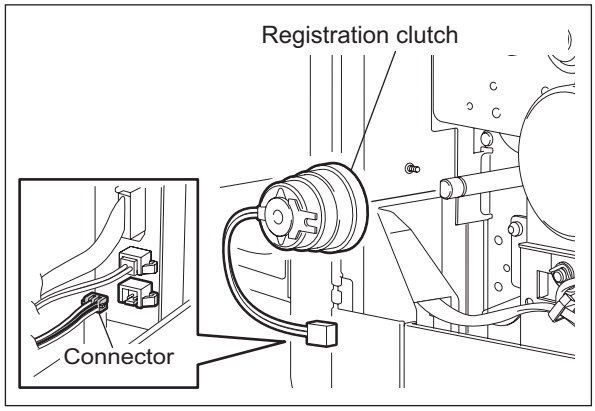

Fig. 4-89

4.6.15 Pickup clutch (CLT2)

(1) Take off the rear cover.
📖 P.4-4 "4.1.10 Rear cover"
(2) Release the harness from 2 harness clamps [1], and disconnect 1 connector [2].

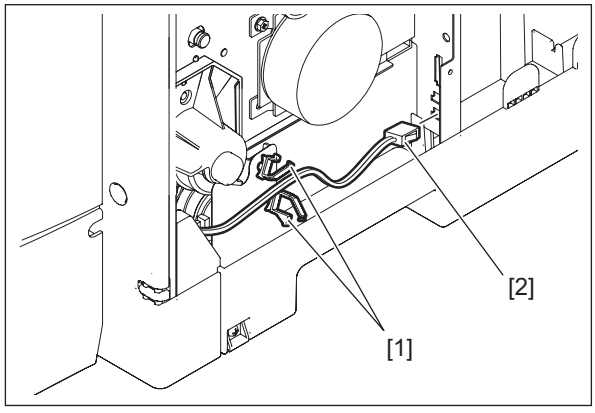

Fig. 4-90

(3) Turn up the film [3].
(4) Remove the clip [4].
(5) Take off the pickup clutch [5].

Note:
When the pickup clutch is installed, hook the rotation stopper of the clutch on the groove of the frame.

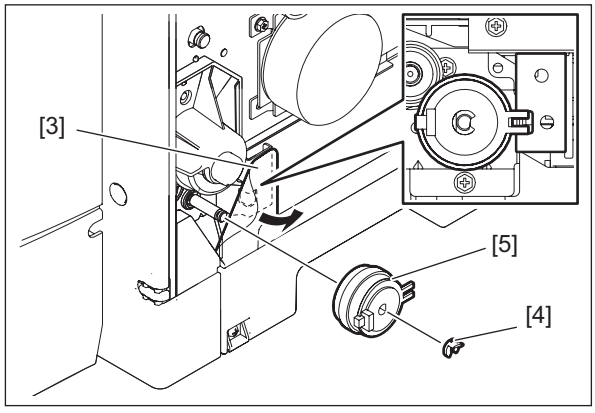

Fig. 4-91

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4.6.16 Registration roller (rubber)

(1) Take off the transfer/separation charger.
📖 P.4-42 "4.7.12 Transfer/Separation charger"
(2) Remove 1 clip and take off 1 gear and the registration roller (rubber) while sliding them to the front side.

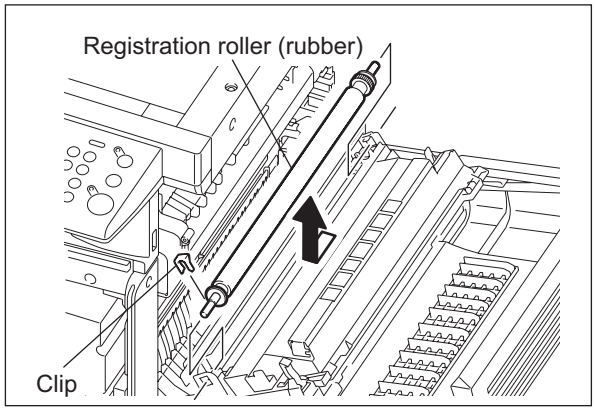

Fig. 4-92

(3) Remove 2 washers, 1 E-ring, 1 gear, and 1 pin from the registration roller.

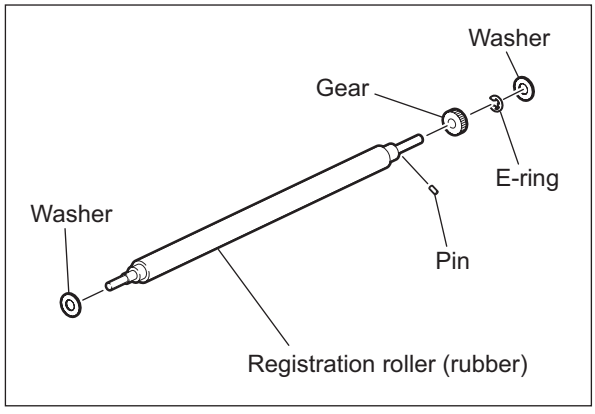

Fig. 4-93

4.6.17 Registration roller (metal)

(1) Take off the Process unit.
📖 P.4-36 "4.7.1 Process unit"
(2) Take off the transfer unit.
📖 P.4-44 "4.7.14 Transfer unit"
(3) Take off the registration clutch.
📖 P.4-30 "4.6.14 Registration clutch (CLT1)"
(4) Remove 1 clip, 1 bushing and then take off the registration roller (metal) while sliding it to the rear side.

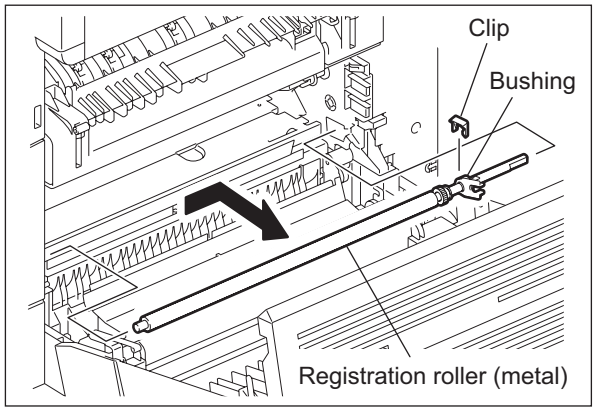

Fig. 4-94

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(5) Remove 1 bushing, 1 E-ring and then take off 1 gear and 1 pin.

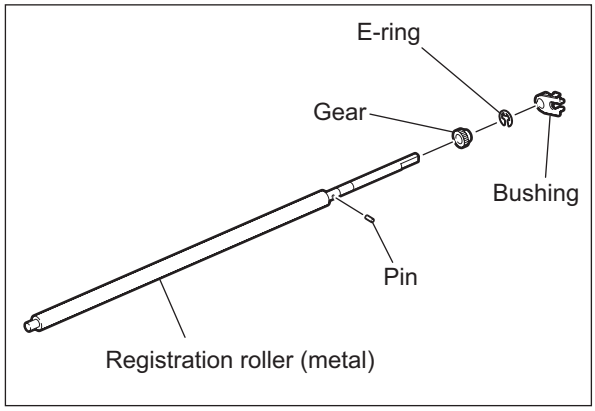

Fig. 4-95

4.6.18 Feed gear unit

(1) Take off the main motor drive unit.
📖 P.4-18 "4.5.3 Main motor drive unit"
(2) Take off the registration clutch.
📖 P.4-30 "4.6.14 Registration clutch (CLT1)"
(3) Remove 2 screws, and then take off the feed gear unit.

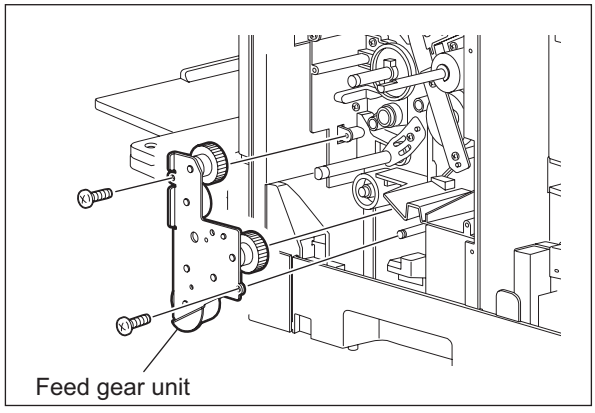

Fig. 4-96

4.6.19 Drawer detection switch (SW5)

(1) Take off the damp heater unit or dummy plate.
📖 P.4-28 "4.6.10 Damp heater unit (DH3) / Dummy plate"
(2) Release the latch [1], take off the bracket [2] while lifting it up, and then disconnect the connector [3].

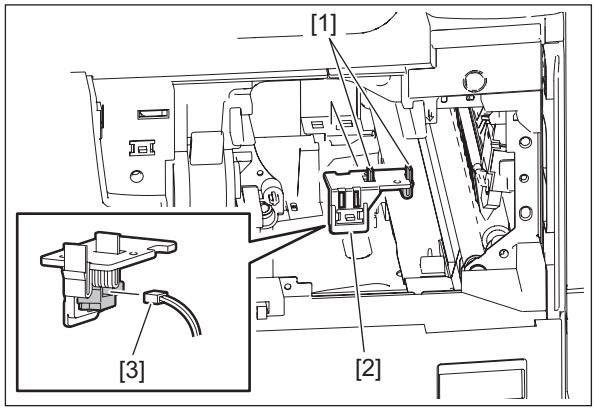

Fig. 4-97

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(3) Release the latch and take off the drawer detection switch [5] from the bracket [4].

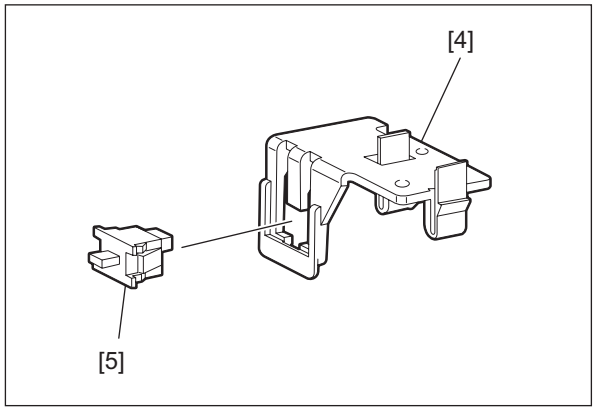

Fig. 4-98

4.6.20 Registration sensor (S4)

(1) Take off the rear cover.
📖 P.4-4 "4.1.10 Rear cover"
(2) Release the harness from the harness clamp [1] and disconnect 1 connector [2].

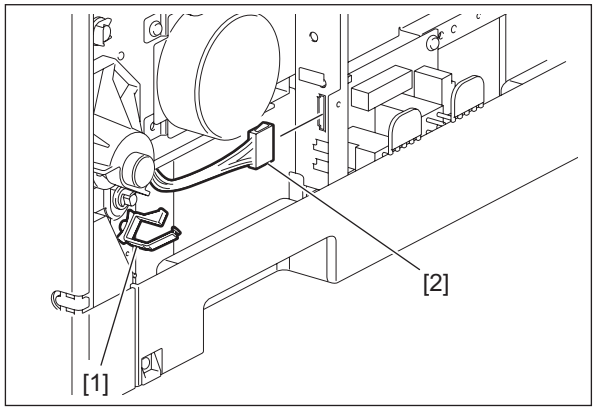

Fig. 4-99

(3) Take off the damp heater unit or dummy plate.
📖 P.4-28 "4.6.10 Damp heater unit (DH3) / Dummy plate"
(4) Take off the registration roller (metal).
📖 P.4-32 "4.6.17 Registration roller (metal)"
(5) Remove 1 screw [3].

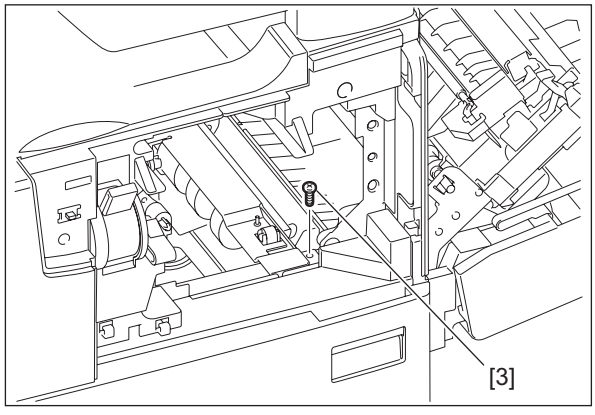

Fig. 4-100

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(6) Take off the registration guide [4] while lifting it up. Release the latch and take off the drawer detection switch bracket [5].

Note:

Be careful not to break the harness which connects the registration guide unit with the drawer detection switch when taking off the unit.

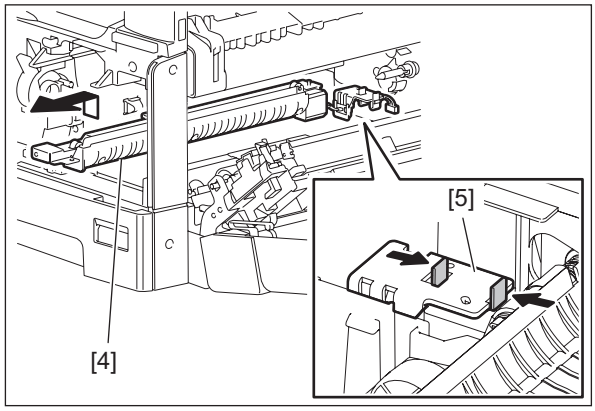

Fig. 4-101

(7) Take off the bracket of paper empty sensor.
📖 P.4-28 "4.6.11 Paper empty sensor (S7)"

(8) Release the harness from the harness clamp, disconnect the connector [6], remove 3 screws, and then take off the registration guide [7].

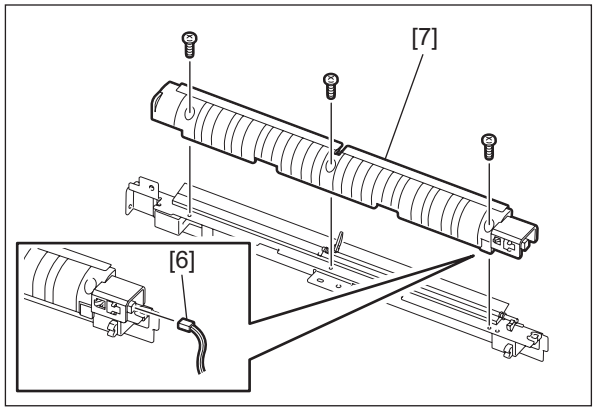

Fig. 4-102

(9) Remove the seal [8], release 2 latches, and take off the registration sensor [9].

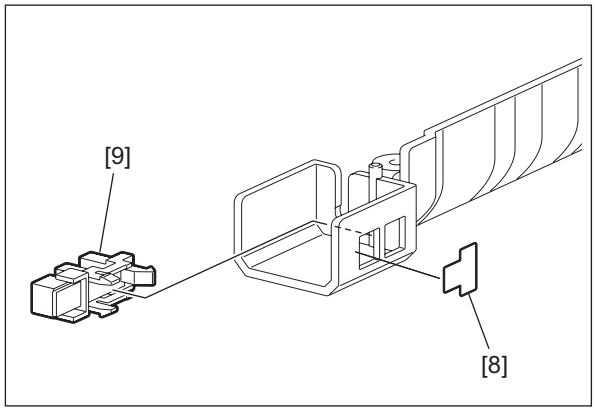

Fig. 4-103

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4.7 Drum Related Section

4.7.1 Process unit

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

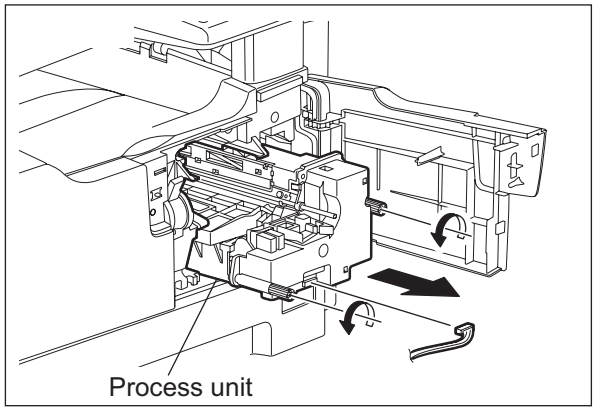

Fig. 4-104

Notes:

1. When installing the process unit, make sure that the connector (harness) is not caught under the developer unit.
2. When closing the drawer of the equipment, make sure that the connector (harness) is not caught.

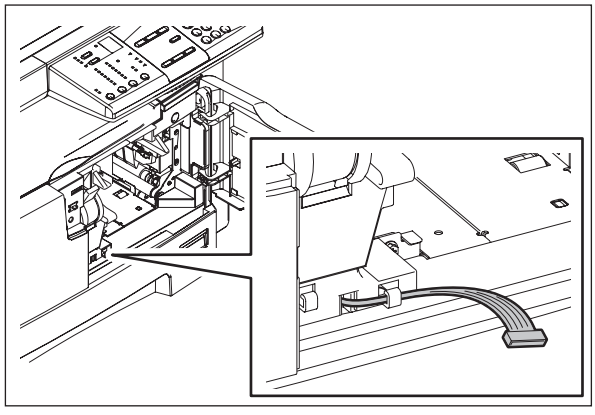

Fig. 4-105

3. Make sure that the harness on the upper part of the process unit does not contact the frame of the equipment.

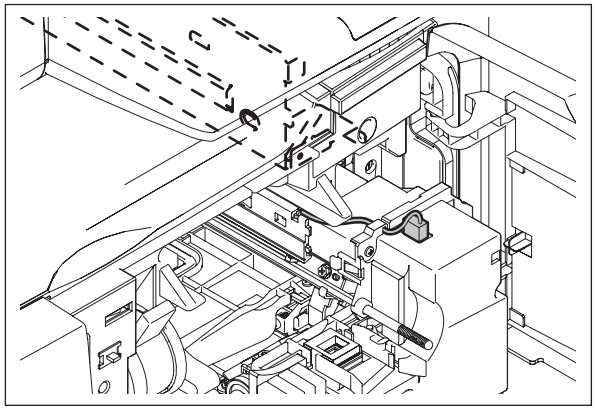

Fig. 4-106

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4.7.2 Drum cleaner unit

(1) Take out the process unit.
P.4-36 "4.7.1 Process unit"
(2) Disconnect 2 connectors and remove 2 screws.
(3) Release 1 latch. Then pull out the process unit front cover and take it off.

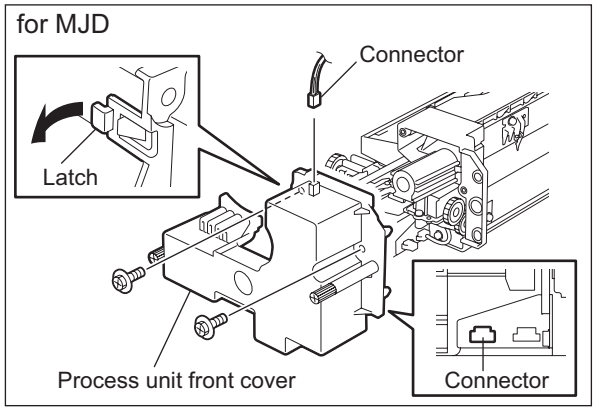

Fig. 4-107

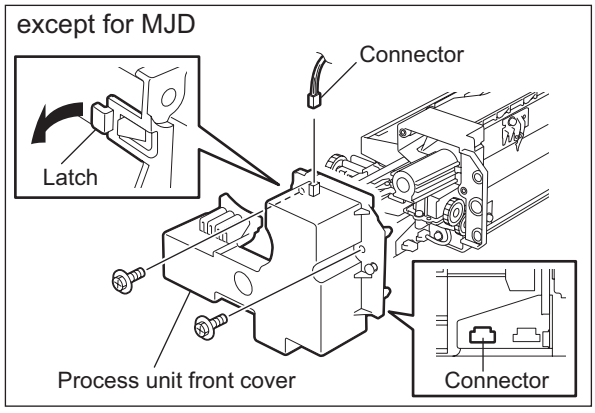

Fig. 4-108

Note:
When installing the process unit front cover, wire the harness correctly in order not to contact the gears and harness of the process unit front cover each other.

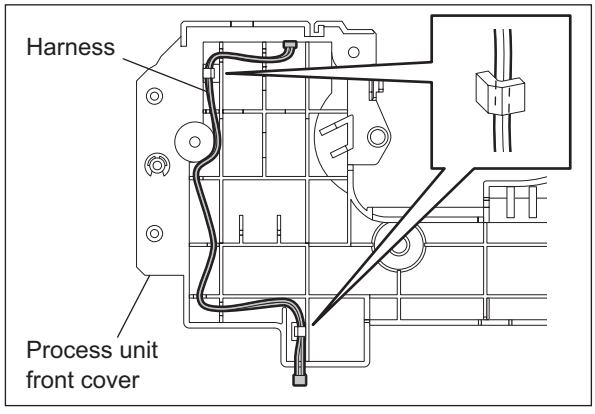

Fig. 4-109

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(4) Lift up the drum cleaner unit and take it off.

Notes:

1. Be careful not to touch or scratch the drum surface at this time.

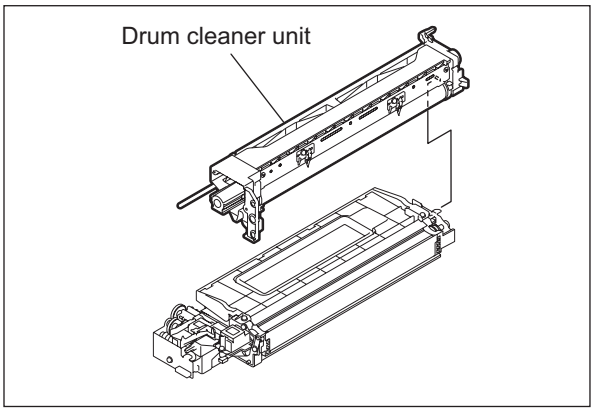

Fig. 4-110

2. Do not deform the guide mylar by touching this.

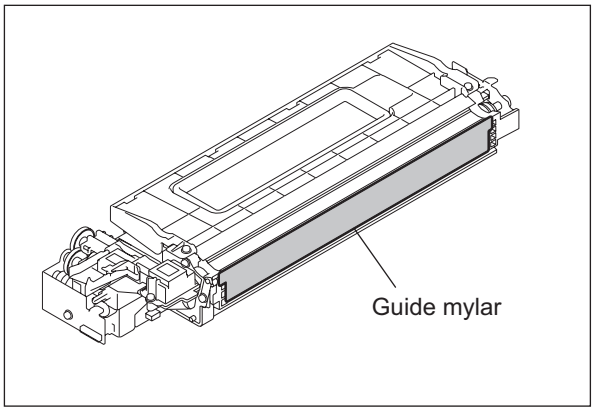

Fig. 4-111

4.7.3 Discharge LED (ERS)

(1) Take off the drum cleaner unit.
📖 P.4-37 "4.7.2 Drum cleaner unit"

(2) Release 1 latch and take off the discharge LED unit.

Note:

Be careful not to touch or scratch the drum surface at this time.

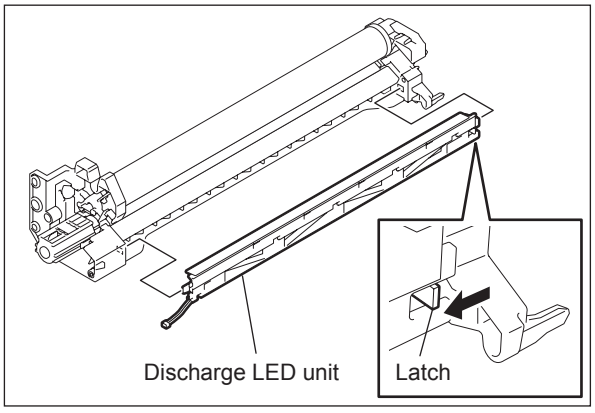

Fig. 4-112

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(3) Release the harness from the harness clamp and pull out the discharge LED.

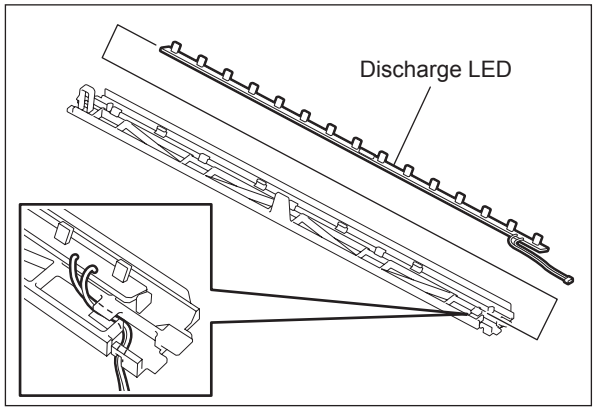

Fig. 4-113

4.7.4 Main charger

(1) Take off the discharge LED unit.
P.4-38 "4.7.3 Discharge LED (ERS)"
(2) Pull out the main charger and take it off by sliding it to the rear side.

Note:
Be careful not to touch or scratch the drum surface at this time.

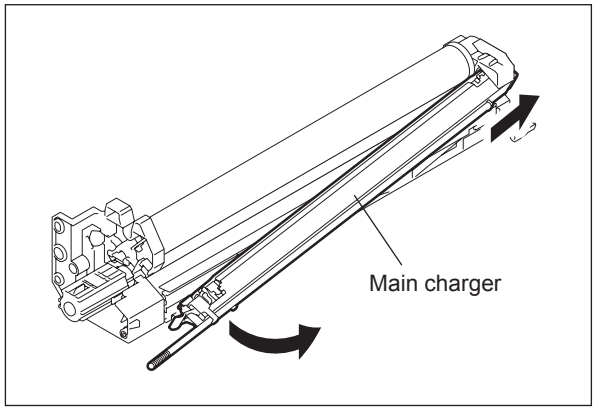

Fig. 4-114

4.7.5 Main charger grid PM

(1) Take off the main charger.
P.4-39 "4.7.4 Main charger"
(2) Remove the spring and take off the main charger grid.

Note:
Do not touch the mesh area of the grid.

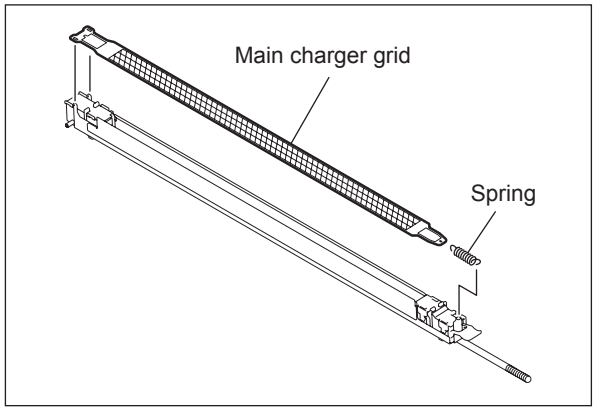

Fig. 4-115

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4.7.6 Main charger cleaner

(1) Take off the main charger.
📖 P.4-39 "4.7.4 Main charger"
(2) Release the hook of the cleaning shaft. Then rotate the shaft at 90 degrees to take it off.

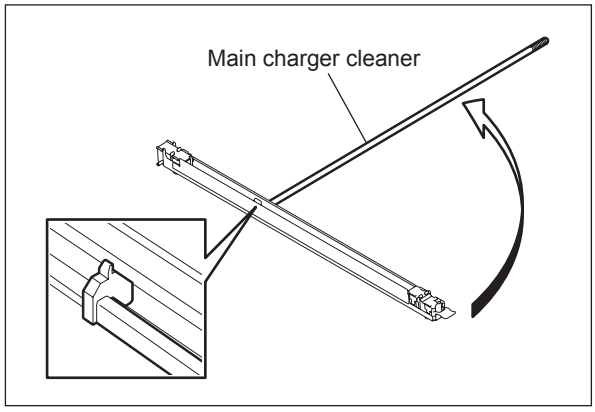

Fig. 4-116

4.7.7 Needle electrode PM

(1) Take off the main charger grid and main charger cleaner.
📖 P.4-39 "4.7.4 Main charger"
📖 P.4-40 "4.7.6 Main charger cleaner"
(2) Take off the terminal covers of both front and rear sides.

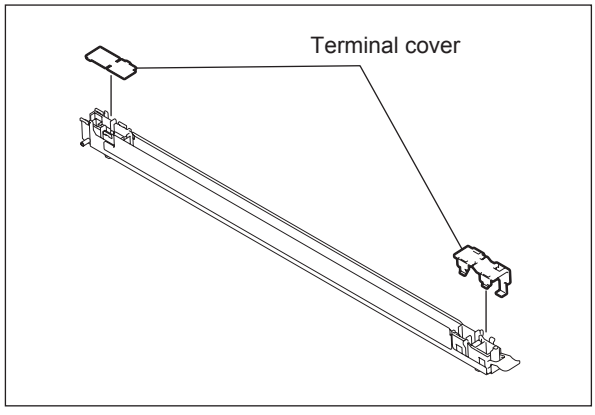

Fig. 4-117

(3) Remove the terminal and spring. Then take off the needle electrode.

Notes:
1. Do not touch the needle electrode directly with bare hands.
2. Make sure not to hold or bend the needle electrode.

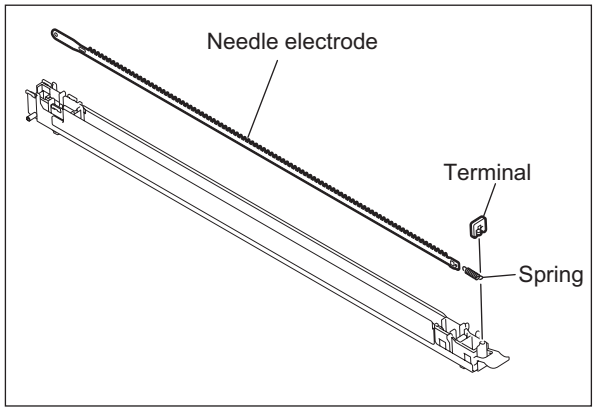

Fig. 4-118

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4.7.8 Drum PM

(1) Take off the main charger.
P.4-39 "4.7.4 Main charger"
(2) Rotate the lever while pushing its latch and pull it out.
(3) Take off the drum.

Notes:
1. Be careful not to touch, spit or scratch the drum surface.
2. Avoid direct light. Place the drum in a dark place immediately after taking off.
3. Be careful not to touch or scratch the edge of the cleaning blade.

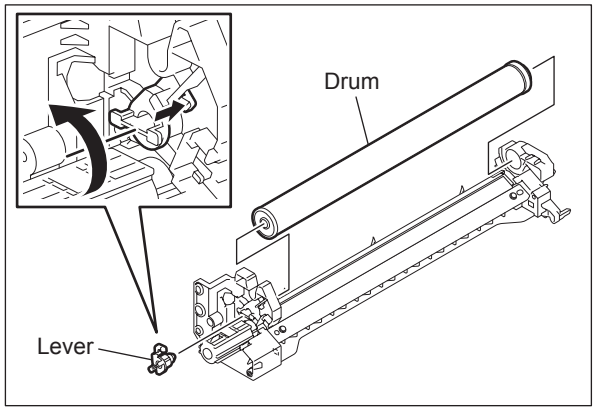

Fig. 4-119

4.7.9 Drum cleaning blade PM

(1) Take off the drum.
P.4-41 "4.7.8 Drum"
(2) Remove 2 screws and take off the drum cleaning blade.

Note:
Be careful not to touch or scratch the edge of the drum cleaning blade.

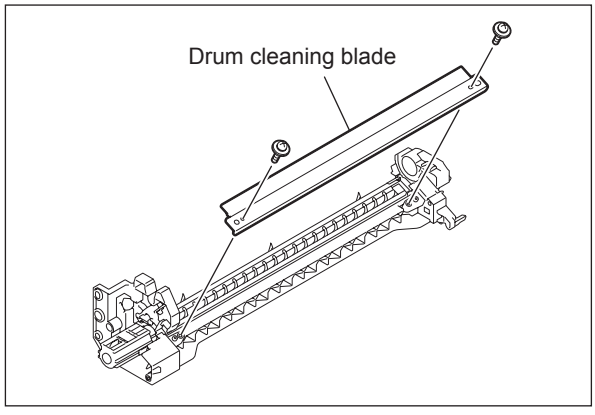

Fig. 4-120

4.7.10 Drum separation finger PM

(1) Take off the drum.
P.4-41 "4.7.8 Drum"
(2) Take off 2 drum separation finger units by removing 1 screw each.

Note:
When replacing the drum separation fingers, make sure that the drum has been taken off first since the fingers may scratch the drum surface.

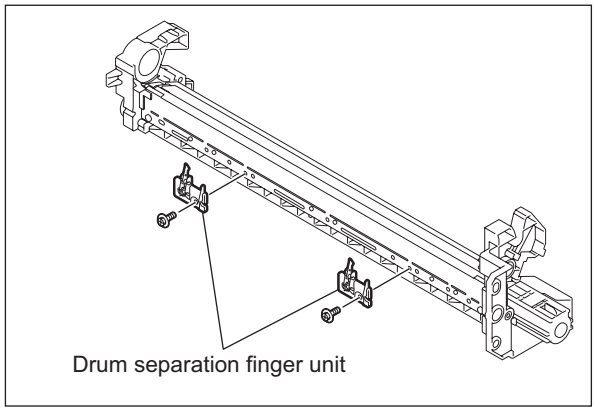

Fig. 4-121

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(3) Take off the drum separation finger with the spring.

Note:
When the drum separation fingers have been replaced, check if the pressure movement is normal by moving them with your hands.

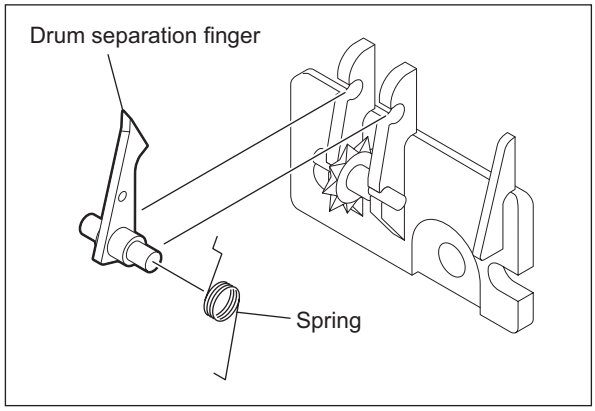

Fig. 4-122

4.7.11 Recovery blade PM

(1) Take off 2 drum separation finger units.
P.4-41 "4.7.10 Drum separation finger"
(2) Remove 2 screws, and take off the whole recovery blade with the bracket.

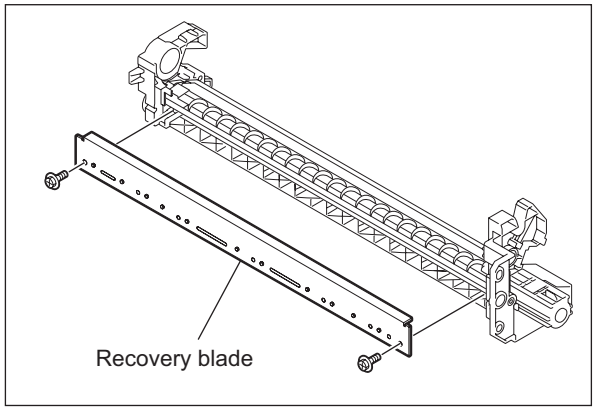

Fig. 4-123

4.7.12 Transfer/Separation charger

(1) Open the ADU cover and transfer unit.
(2) Release the latch and take off the transfer and separation chargers.

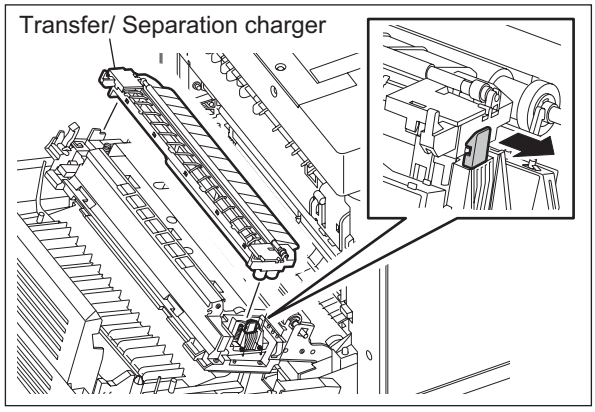

Fig. 4-124

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4.7.13 Charger wire PM

* Length: 353 mm (tungsten wire), diameter: 0.06 mm

(1) Take off the transfer/separation charger. P.4-42 "4.7.12 Transfer/Separation charger"
(2) Release 9 latches and take off the separation supporter.

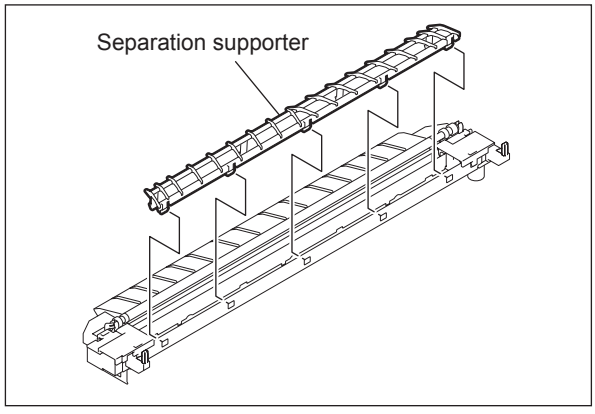

Fig. 4-125

(3) Release 2 latches and take off the terminal cover on the front side.
(4) Release 2 latches and take off the terminal cover on the rear side.

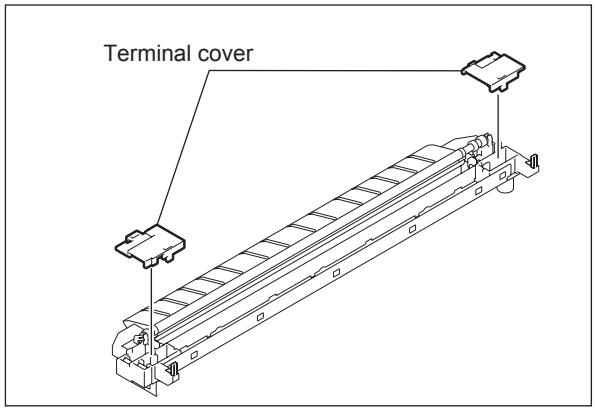

Fig. 4-126

(5) Remove the terminal and spring. Then take off the transfer charger wire.
(6) Remove the cushioning material, disconnect the terminal and remove the spring. Then take off the separation charger wire.

Notes:
1. Insert the wire securely into the V-grooves of the front and rear sides.
2. Do not twist the wire.
3. Do not touch the wire directly with bare hands.

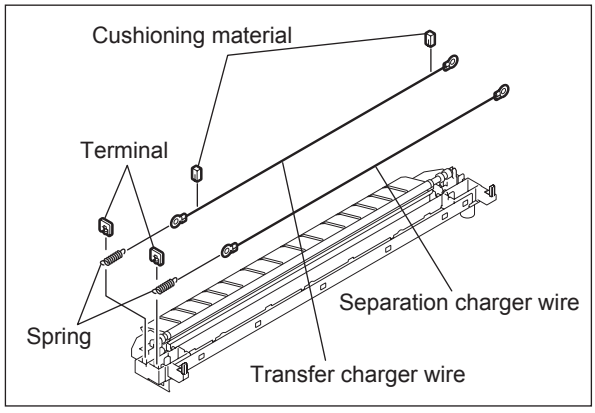

Fig. 4-127

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4.7.14 Transfer unit

Note:
When taking off the transfer unit, take off the process unit first to prevent the drum from light.

(1) Open off the ADU cover.
(2) Take off 2 guides.

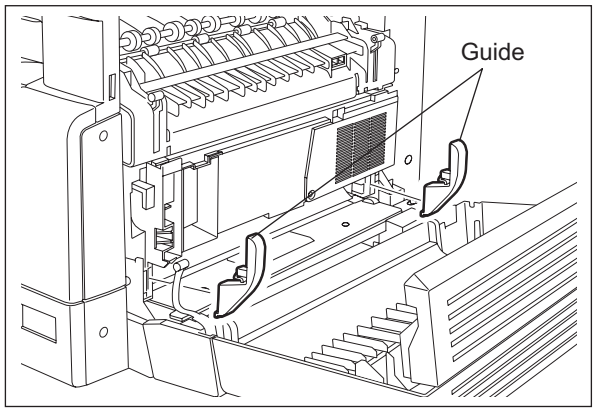

Fig. 4-128

(3) Take off the transfer unit while pulling the lever.

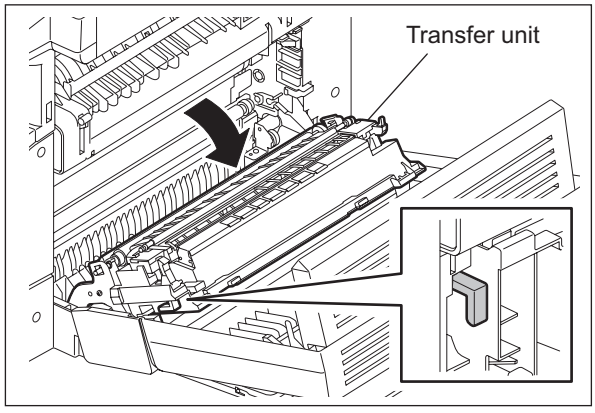

Fig. 4-129

(4) Remove 1 screw and take off the harness cover.

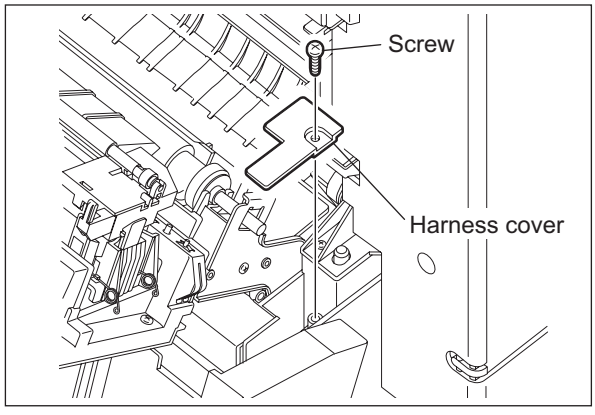

Fig. 4-130

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(5) Disconnect 1 connector.

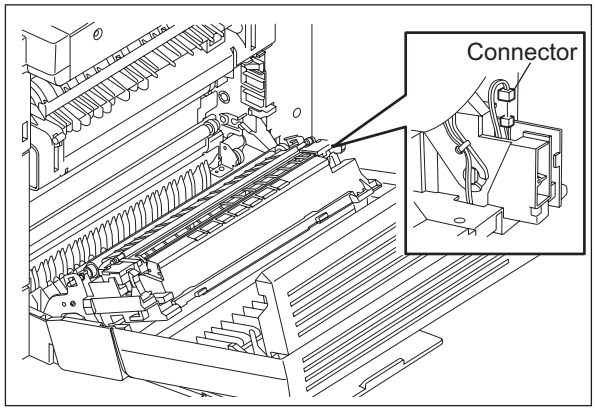

Fig. 4-131

(6) Take off the transfer unit while lifting it up.

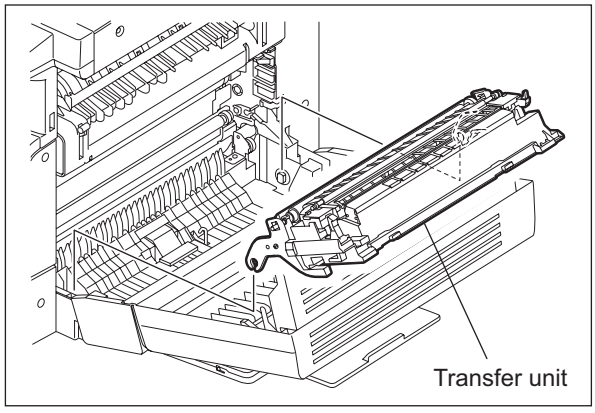

Fig. 4-132

4.7.15 Ozone filter PM

(1) Open the ADU cover.
(2) Release 1 latch and take off the rear side guide.

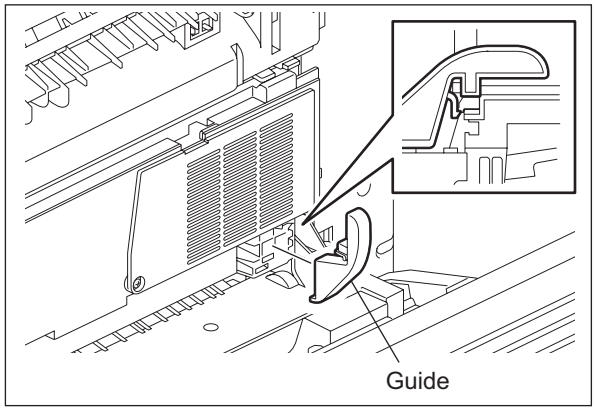

Fig. 4-133

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(3) Remove 1 screw and take off the ozone filter cover.
(4) Take off the ozone filter.

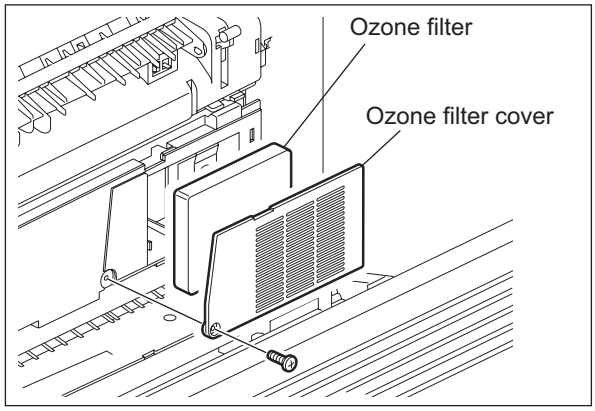

Fig. 4-134

4.7.16 Exhaust fan (M5)

(1) Take off the transfer unit.
📖 P.4-44 "4.7.14 Transfer unit"
(2) Take off the transfer/separation charger.
📖 P.4-42 "4.7.12 Transfer/Separation charger"
(3) Remove 1 screw and take off the post transfer guide.

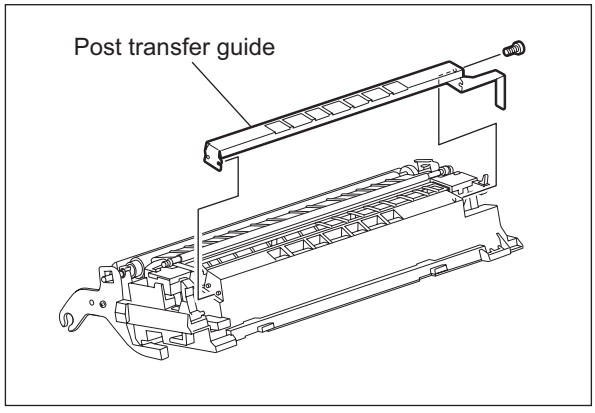

Fig. 4-135

(4) Remove 4 screws.

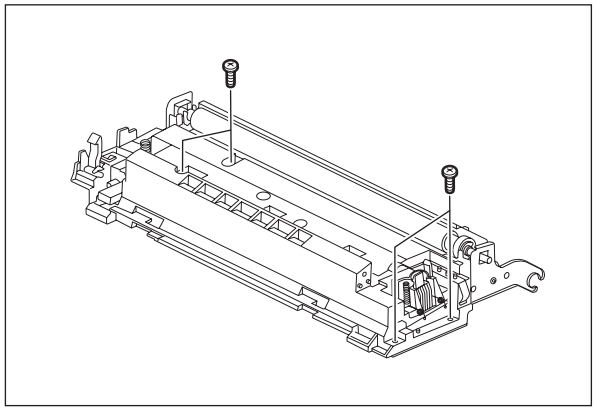

Fig. 4-136

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(5) Remove 1 strap, release the harness from the harness clamp, and take off the exhaust fan with the duct.

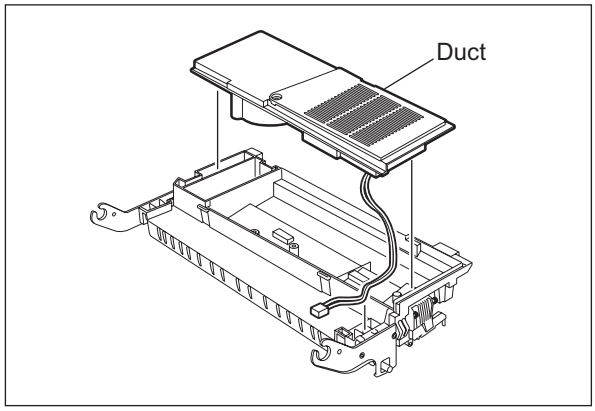

Fig. 4-137

(6) Release the harness from the harness clamp, remove the two-sided tape and take off the exhaust fan.

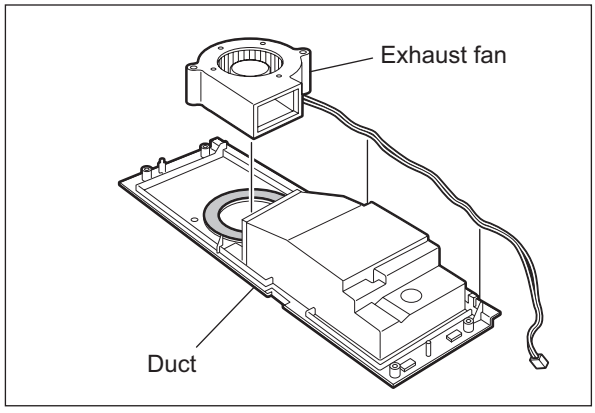

Fig. 4-138

4.7.17 Temperature/humidity sensor (S3)

(1) Take off the left cover.
📖 P.4-2 "4.1.3 Left cover"
(2) Disconnect 1 connector, remove 1 screw, and then take off the temperature/humidity sensor.

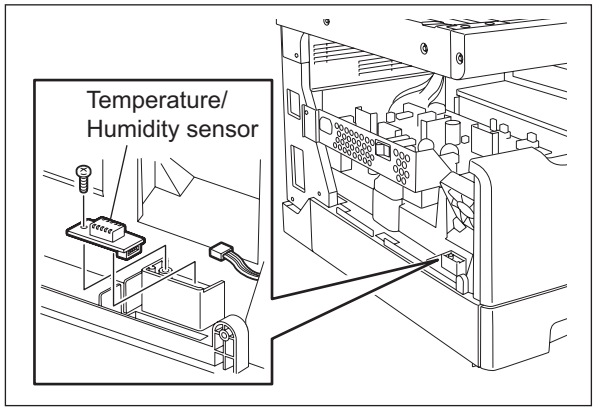

Fig. 4-139

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4.7.18 Toner cartridge interface PC board (CTIF)

(1) Take off the process unit.
📖 P.4-36 "4.7.1 Process unit"
(2) Take off the inner tray.
📖 P.4-1 "4.1.2 Inner tray"
(3) Disconnect 1 connector, remove 1 screw and then take off the toner cartridge interface PC board.

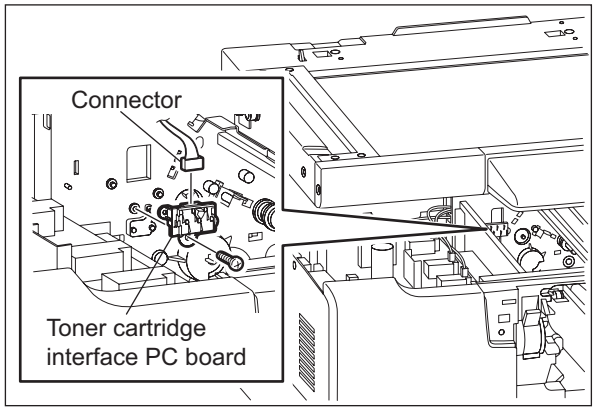

Fig. 4-140

Note:
The installation position of the toner cartridge interface PC board in the models for CND differs from that of others.

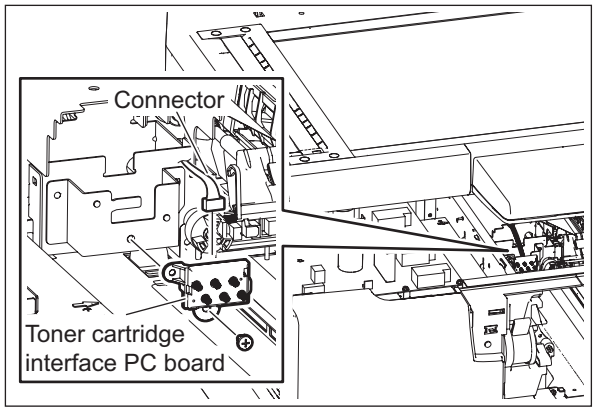

Fig. 4-141

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4.8 Development System

4.8.1 Developer unit

Note:
Make sure to perform “05-280” and take off the process unit before the developer material is replaced.

(1) Take off the Process unit.
📖 P.4-36 "4.7.1 Process unit"
(2) Take off the drum cleaner unit from the process unit so that only the developer unit will be left.
📖 P.4-37 "4.7.2 Drum cleaner unit"

Notes:
1. Be careful not to touch or scratch the drum surface at this time.

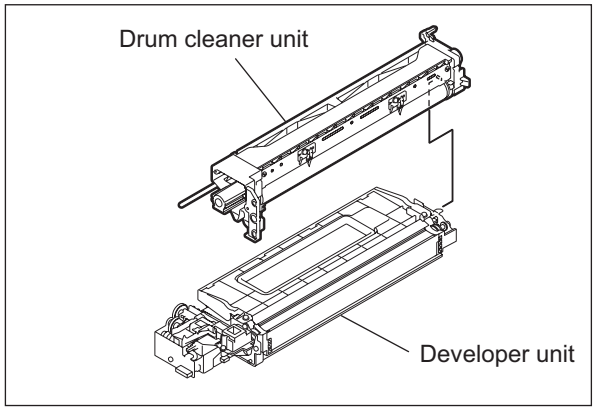

Fig. 4-142

2. Do not deform the Guide Mylar by touching this.

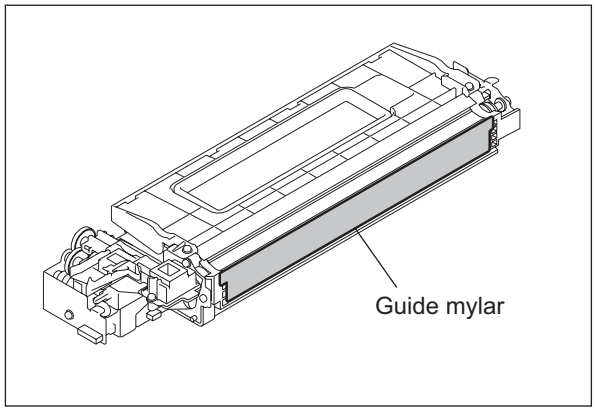

Fig. 4-143

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Notes:

1. When installing the developer unit, make sure that the connector (harness) is not caught under it.
2. When closing the drawer of the equipment, make sure that the connector (harness) is not caught.

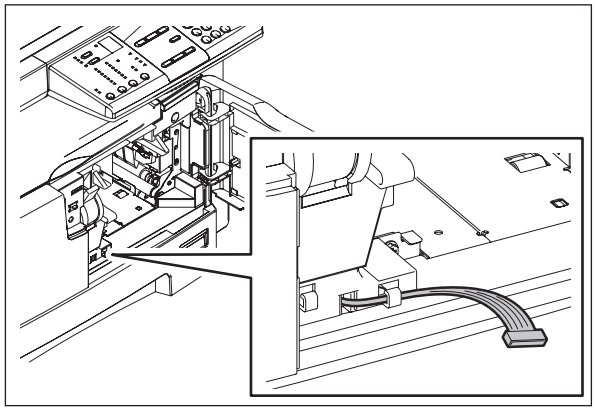

Fig. 4-144

3. Make sure that the harness on the upper part of the developer unit does not contact the frame of the equipment.

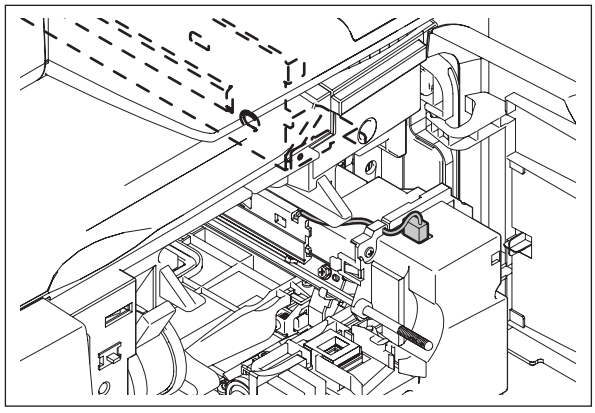

Fig. 4-145

4.8.2 Developer material PM

(1) Take out the developer unit
📖 P.4-49 "4.8.1 Developer unit".
(2) Remove 2 screws and slide the developer unit upper cover to the direction of the arrow and take it off.

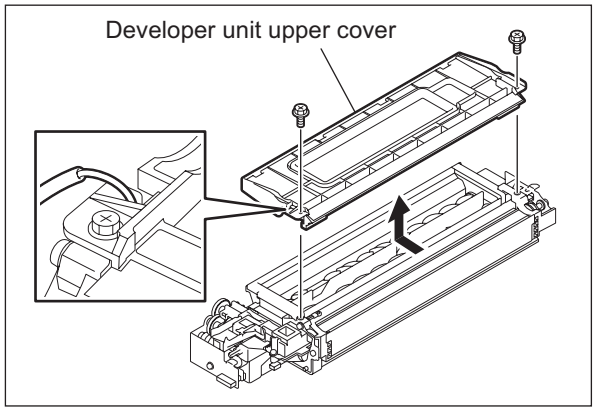

Fig. 4-146

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Note:
When installing the developer unit upper cover, make sure that the side seal comes between the developer unit upper cover and rubber seal on the cover.

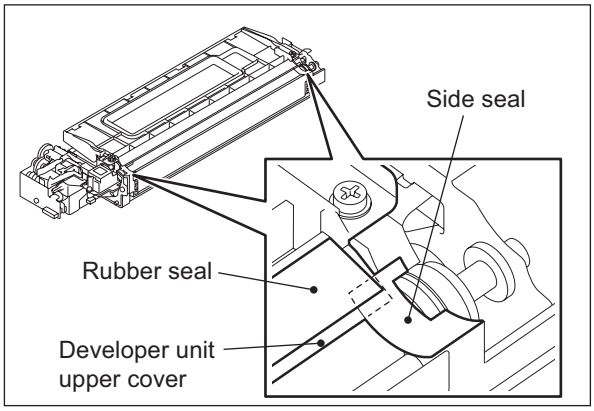

Fig. 4-147

(3) Remove the developer material from rear side.

Note:
When removing the developer material, be careful not to drop the developer material on the gears of the developer unit.

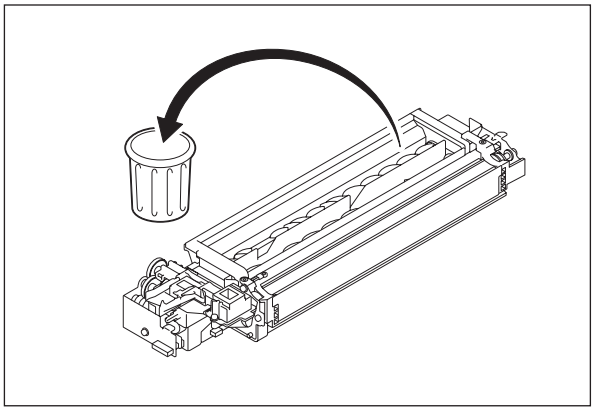

Fig. 4-148

4.8.3 Filling developer unit with developer material

(1) Rotate the gear on the rear side of the developer unit to the direction of the arrow while filling the developer unit with the developer material. Spread out the developer material over the developer sleeve.

- Attach the nozzle as required.

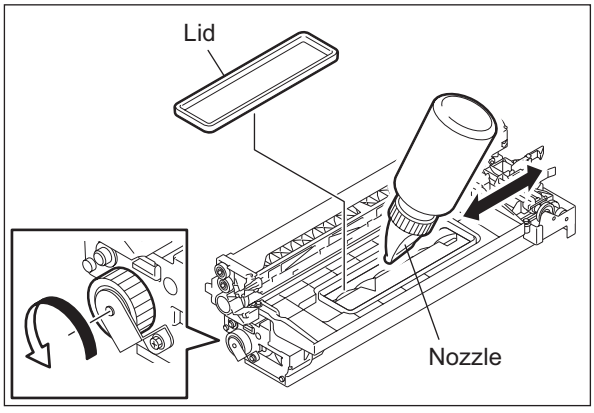

Fig. 4-149

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4.8.4 Auto-toner sensor (S6)

(1) Remove the developer material.
📖 P.4-50 "4.8.2 Developer material"
(2) Place the developer unit upside down. Disconnect 1 connector, release 1 latch, and then rotate the auto toner sensor counter-clockwise to take it off.

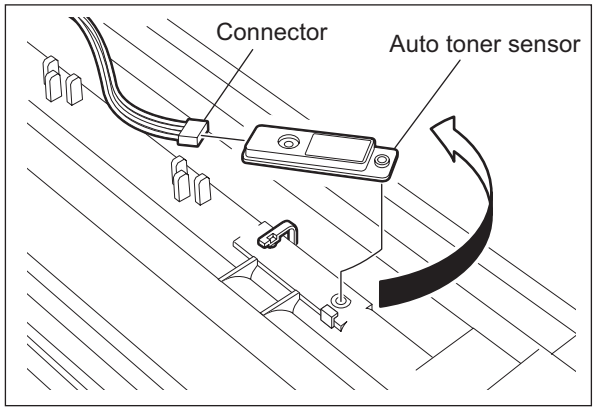

Fig. 4-150

4.8.5 Drum thermistor (THMS4)

(1) Remove the developer material.
📖 P.4-50 "4.8.2 Developer material"
(2) Disconnect 1 connector, remove 1 screw and take off the drum thermistor.

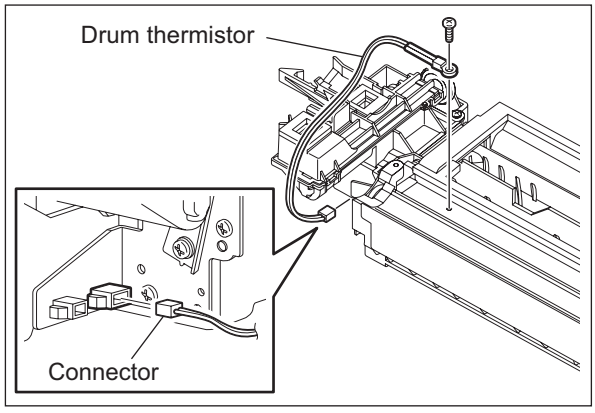

Fig. 4-151

4.8.6 Guide roller / Developer sleeve

(1) Remove the developer material.
📖 P.4-50 "4.8.2 Developer material"
(2) Remove 2 screws and take off the recovered toner supply unit.

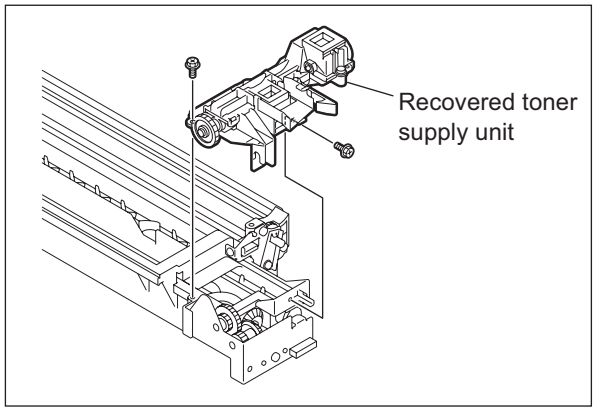

Fig. 4-152

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(3) Remove 1 screw. Disconnect 1 connector while taking off the recovered toner drive unit. Remove 1 gear.

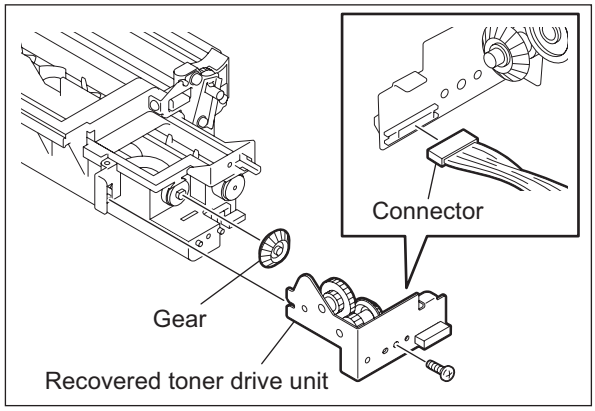

Fig. 4-153

(4) Remove 2 plate springs fixing the doctor sleeve on its both ends.

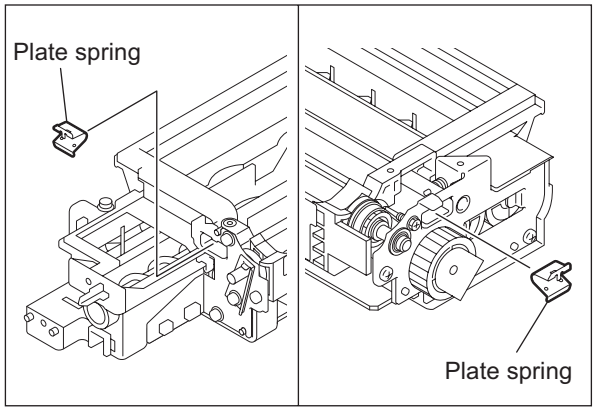

Fig. 4-154

(5) Remove 2 screws on both ends of the doctor sleeve and remove 2 coil springs.

Note:
When the screws on both ends of the doctor sleeve are removed, be sure to adjust the doctor sleeve gap (0.45±0.05 mm) after assembling.
(Refer to Service Handbook Chap.3.9)

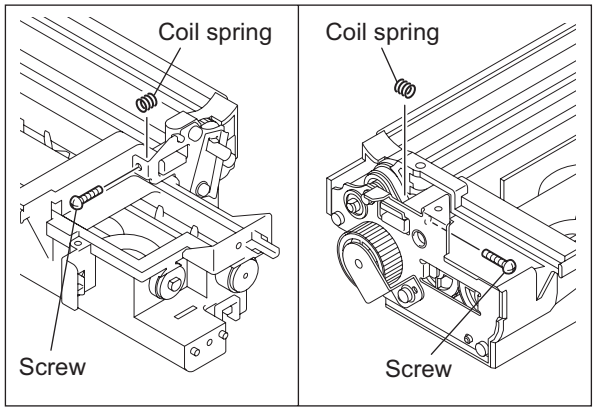

Fig. 4-155

(6) Remove 1 screw and take off the polarity adjustment lever.

Note:
Make a note of the position where the polarity adjustment lever is pointing. (Mark the position if needed.) When reassembling, match the polarity adjustment lever with the previously marked position on the scale.

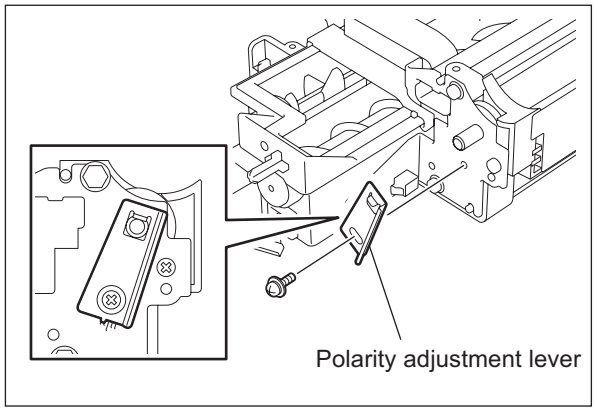

Fig. 4-156

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(7) Disconnect 2 connectors, remove 3 screws and take off the bracket.

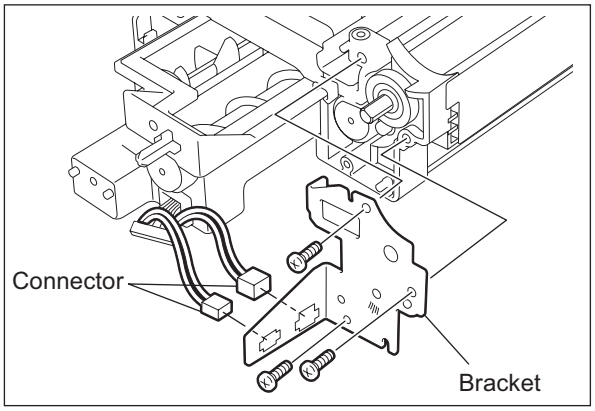

Fig. 4-157

(8) Remove 1 E-ring and take off the guide roller on the front side.

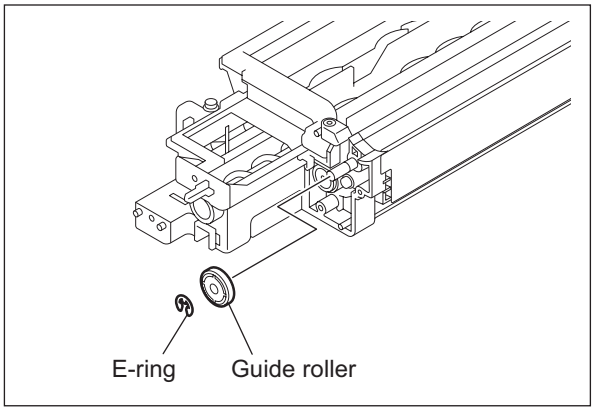

Fig. 4-158

(9) Remove 1 screw and the gear.

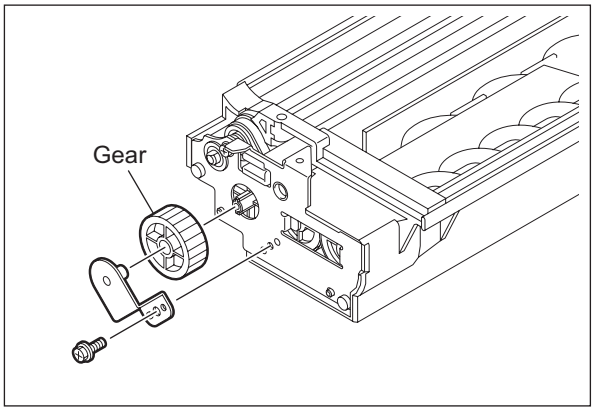

Fig. 4-159

(10) Remove 3 screws. Take off 1 bearing and the bracket.

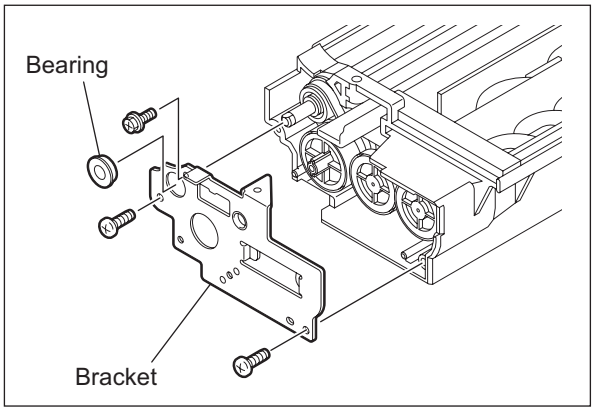

Fig. 4-160

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(11) Take off 4 gears and 1 timing belt.

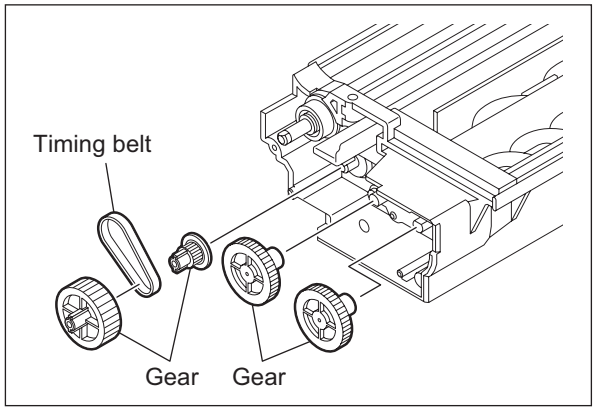

Fig. 4-161

(12) Remove 1 E-ring, 1 pin and 1 pulley.
(13) Take off the guide roller on the rear side.

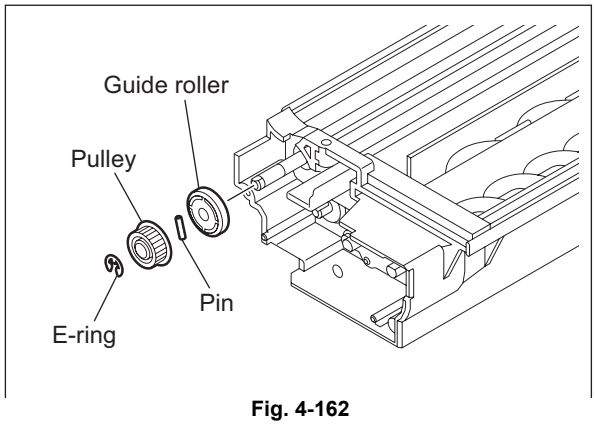

Fig. 4-162

(14) Remove the seal on the front side. Remove 1 E-ring and 1 bushing.

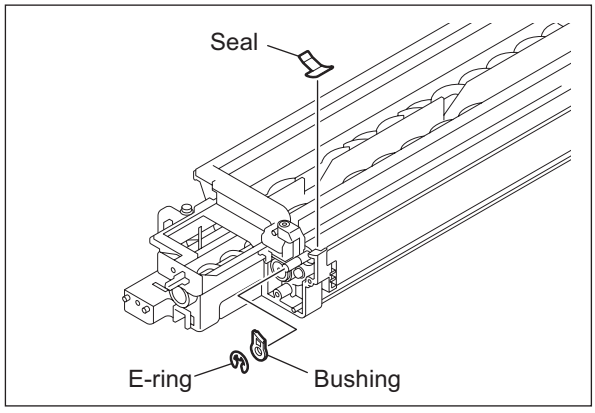

Fig. 4-163

(15) Take off the developer sleeve.

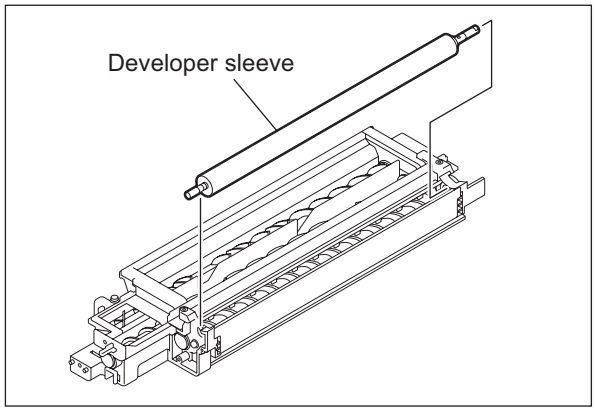

Fig. 4-164

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4.8.7 Mixer

(1) Take off the developer sleeve.
🕮 P.4-52 "4.8.6 Guide roller / Developer sleeve"
(2) Take off the doctor sleeve.

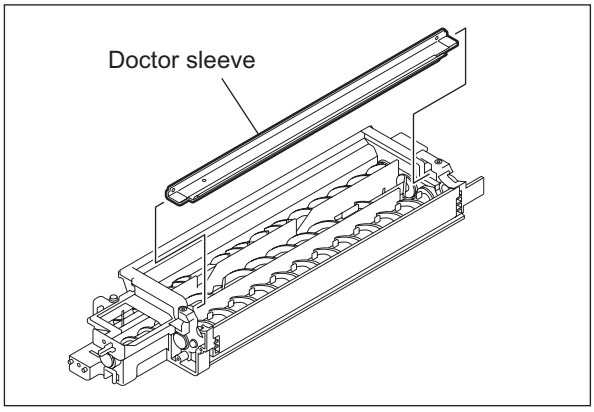

Fig. 4-165

(3) Remove 1 screw and take off the tensioner bracket.
(4) Remove 2 screws and take off the holder.

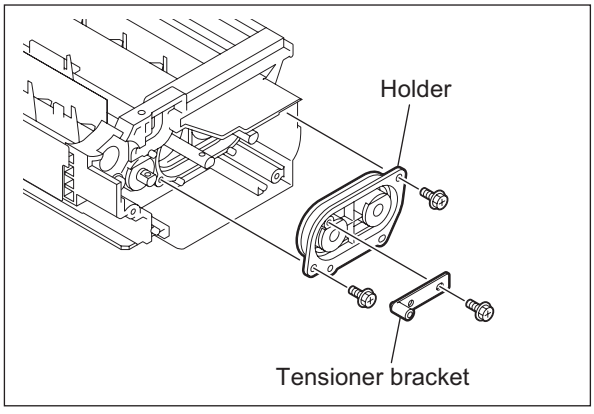

Fig. 4-166

(5) Remove 2 bushings and 2 oil seals from the holder.
(Replacement of Oil seal: 🕮 P.4-58 "4.8.8 Replacement of oil seal")

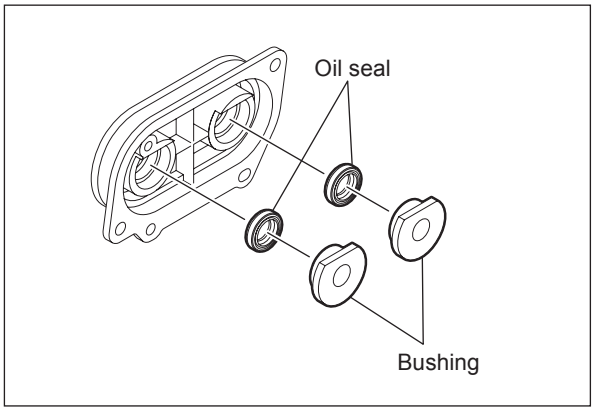

Fig. 4-167

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(6) Take off the mixers-2 and -3.

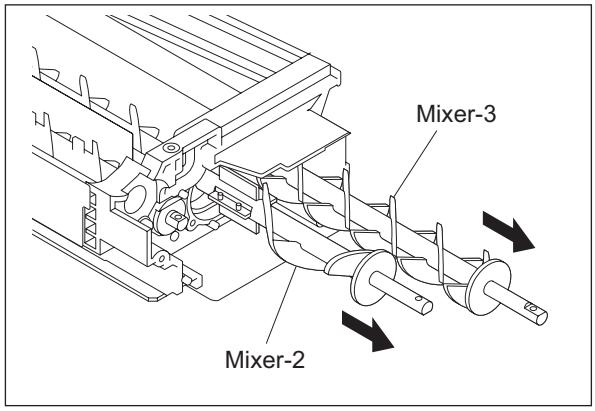

Fig. 4-168

(7) Remove 2 bushings and 2 oil seals on the rear side.
(Replacement of Oil seal: 📖 P.4-58 "4.8.8 Replacement of oil seal")

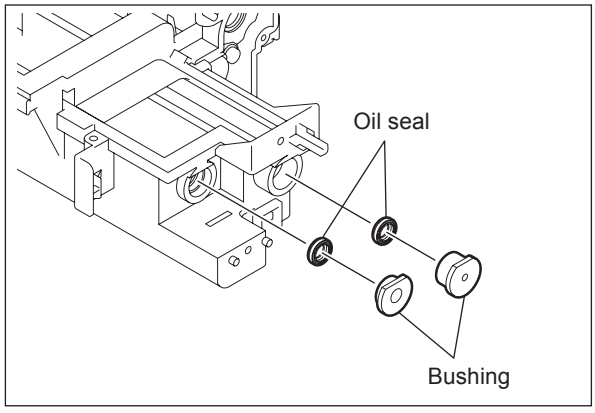

Fig. 4-169

(8) Remove the end section of the mixer-1.
(9) Remove the bushing and oil seal.
(Replacement of Oil seal: 📖 P.4-58 "4.8.8 Replacement of oil seal")

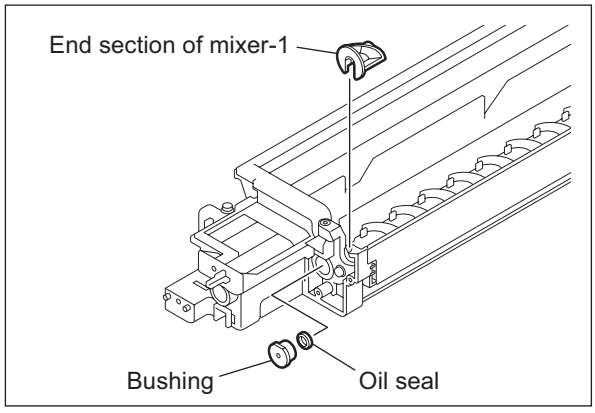

Fig. 4-170

(10) Take off the mixer-1.

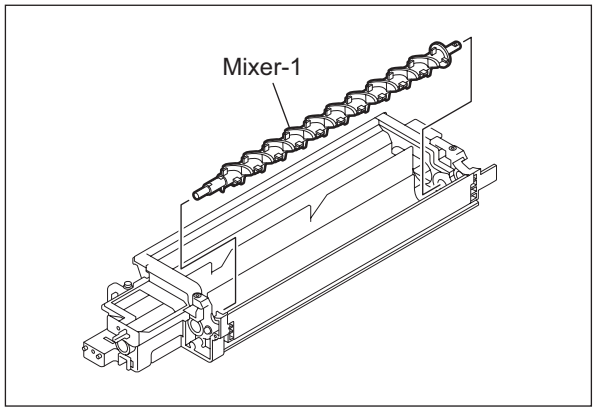

Fig. 4-171

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(11) Remove the bushing on the rear side.
(12) Remove the oil seal.
(Replacement of Oil seal: 📖 P.4-58 "4.8.8 Replacement of oil seal")

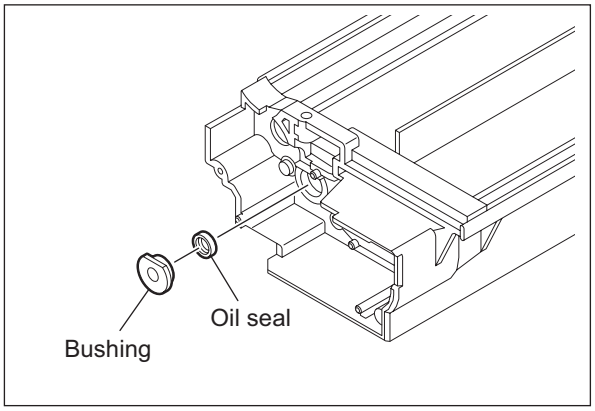

Fig. 4-172

4.8.8 Replacement of oil seal

(1) Insert a fine screwdriver into the depression of the oil seal to take it out.
(2) Push in a new oil seal parallel to the frame or bushing (shown figure at right).
(3) Apply the grease (Alvania No.2; amount of 2 rice grains) on entire surface of the oil seal evenly.

Note:
Wipe off the excessive grease.

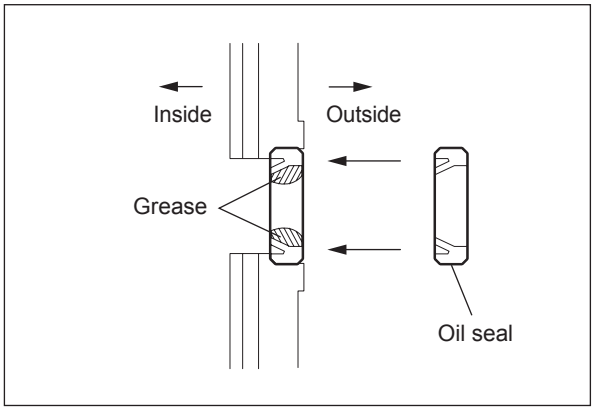

Fig. 4-173

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4.9 Fuser / Exit Unit

Note:

When disassembling the fuser unit or replacing any parts in it, be sure that the wire harness is correctly set, and also be careful not to catch it between other parts.

a. Make sure that the terminal of the thermostat harness does not contact the metal plate.
b. Route the harness of the thermostat so that it is hooked on the notches of the rib.
c. Route the harnesses of the thermistor so that they are hooked on the housing as shown below.
d. Route the harnesses of the thermistor so that they are hooked on the housing as shown below.

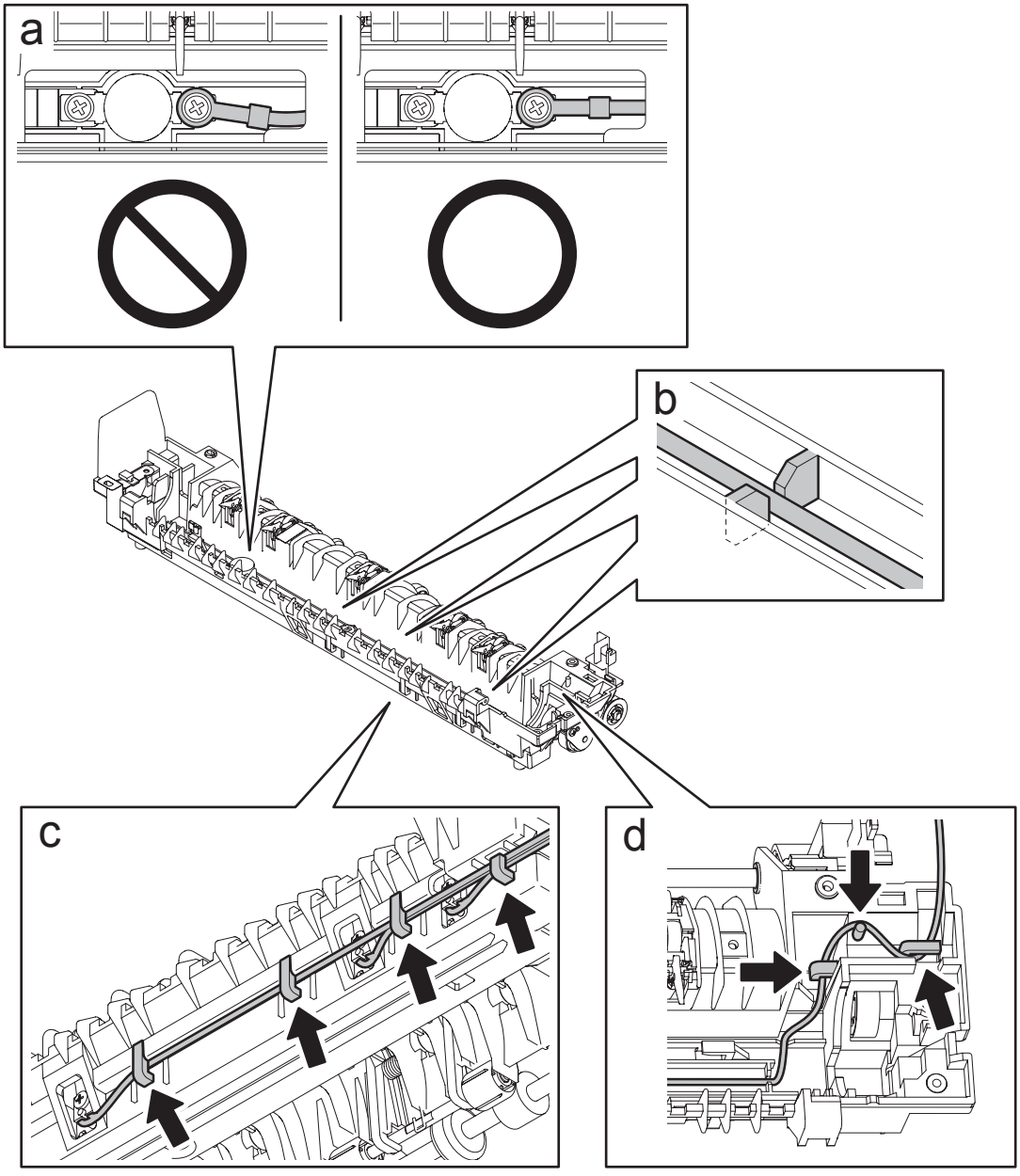

Fig. 4-174

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e. Route the AC harnesses so that they are hooked on the housing as shown below.

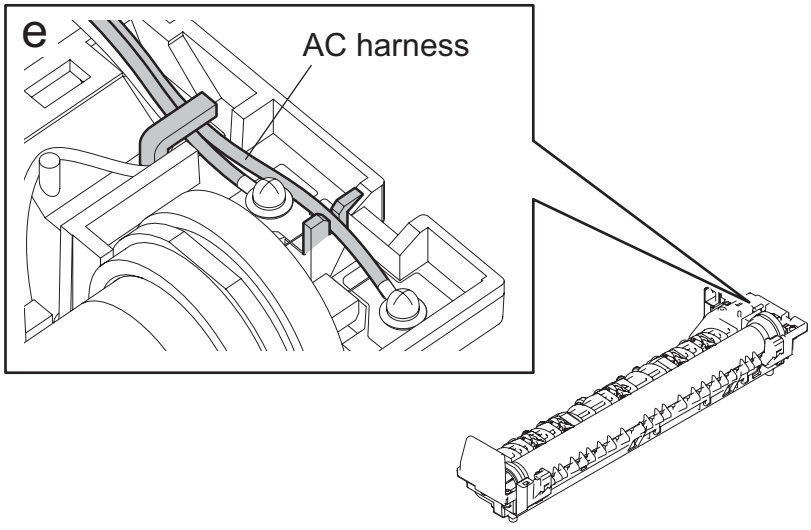

Fig. 4-175

f. When installing the cover of the fuser unit, make sure that the connector (harness) is not caught.

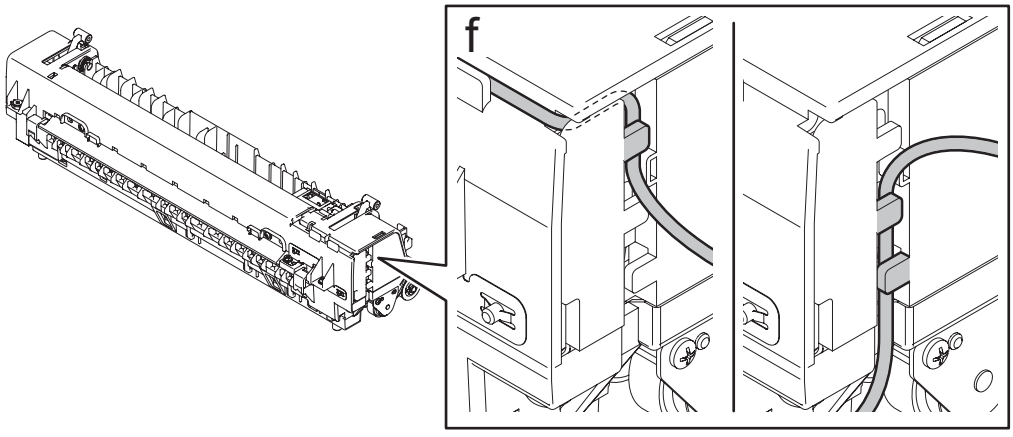

Fig. 4-176

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4.9.1 Fuser/Paper exit unit

(1) Take off the right rear cover.
🕮 P.4-4 "4.1.9 Right rear cover"
(2) Lay down the transfer unit.
(3) Disconnect 3 connectors, remove 2 screws, and then take off the fuser/paper exit unit.

Note:
Be careful because the fuser/paper exit unit is hot.

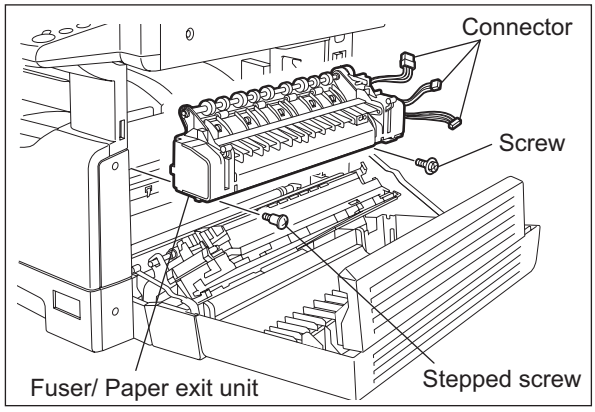

Fig. 4-177

4.9.2 Pressure roller unit / Fuser roller unit

(1) Take off the fuser/paper exit unit.
🕮 P.4-61 "4.9.1 Fuser/Paper exit unit"
(2) Remove 1 spring and 2 screws.
(3) Separate the pressure roller unit from the fuser roller unit.

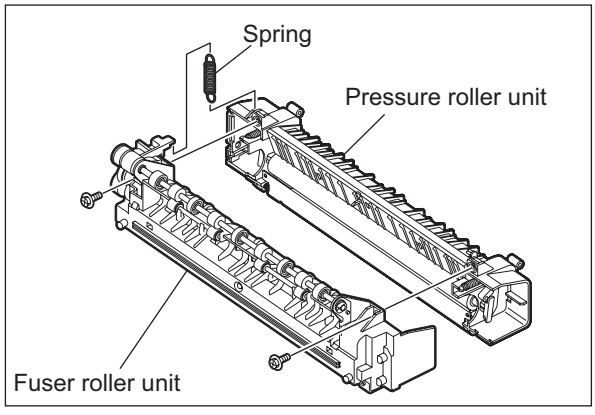

Fig. 4-178

Note:
Separate the pressure roller and the heat roller while pressing the thermistor ground leaf spring.

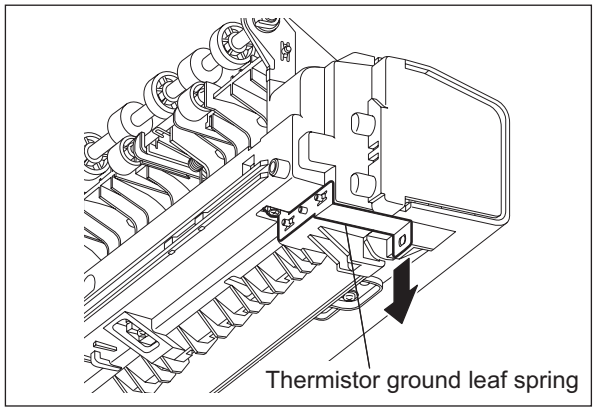

Fig. 4-179

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4.9.3 Exit roller

(1) Take off the fuser roller unit.
P.4-66 "4.9.7 Fuser roller"
(2) Release the latch and take off the gear-A.

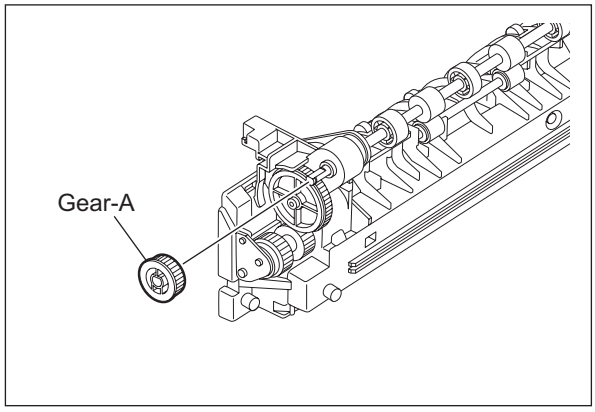

Fig. 4-180

(3) Take off the gear-B.

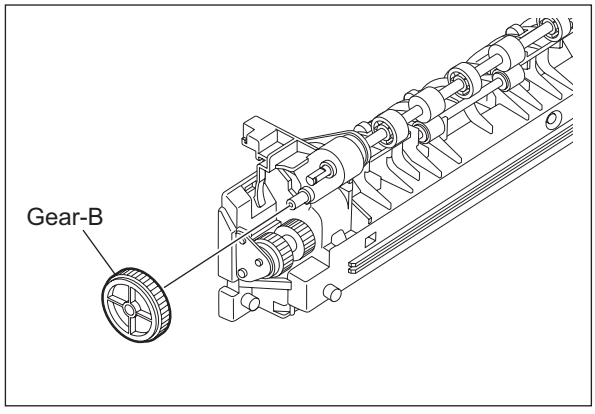

Fig. 4-181

(4) Remove the bracket.

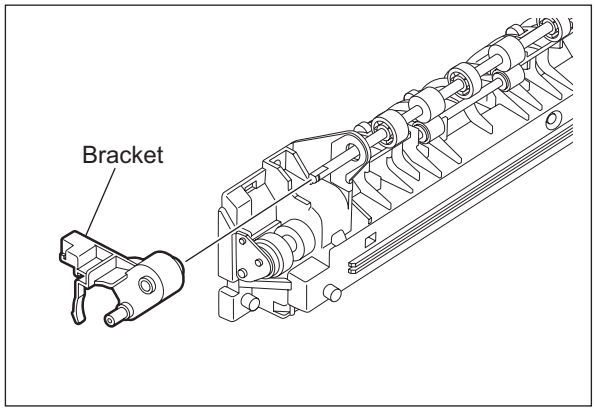

Fig. 4-182

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(5) Remove 1 clip and 1 bushing.
(6) Take off the exit roller by sliding it to the rear side.

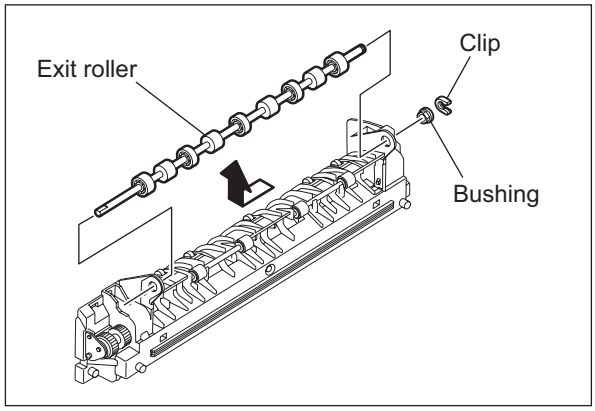

Fig. 4-183

4.9.4 Exit sensor (S5)

(1) Take off the fuser/paper exit unit.
P.4-61 "4.9.1 Fuser/Paper exit unit"
(2) Release the stopper using a flathead screwdriver.

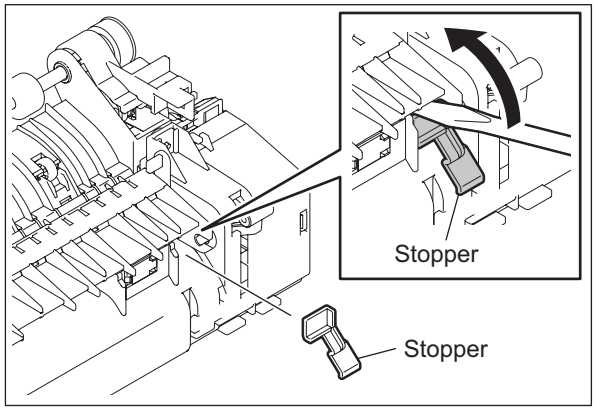

Fig. 4-184

(3) Open the guide and slide it to the front side. Then slide its rear hinge downward.

Note:
Keep the guide being slid to the front side during the steps (3) and (4).

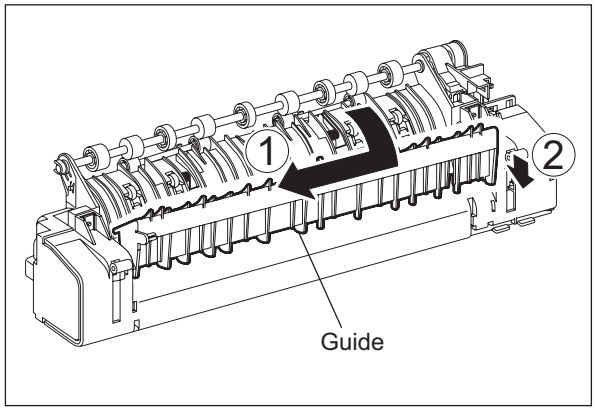

Fig. 4-185

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(4) Close the guide, and then take off the guide by sliding its rear hinge to the right side.

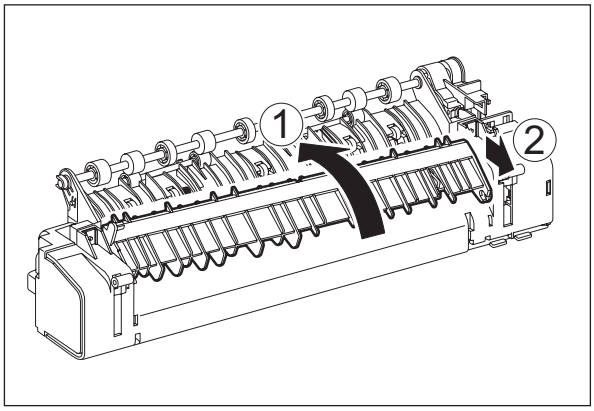

Fig. 4-186

(5) Remove 1 spring and take off the guide while the guide is being slid to the rear side.

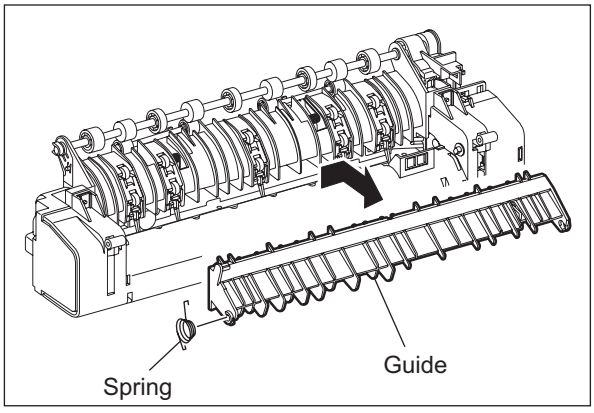

Fig. 4-187

Note:
When installing the guide, secure the spring to the hook of the fuser unit and the other end of the spring to the guide.

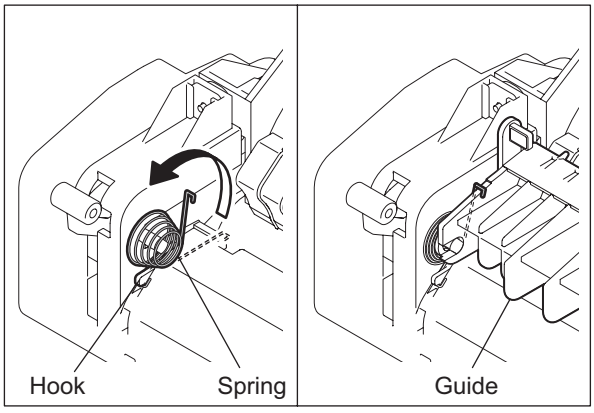

Fig. 4-188

(6) Remove the Mylar.
(7) Disconnect 1 connector, release 2 latches, and then take off the exit sensor.

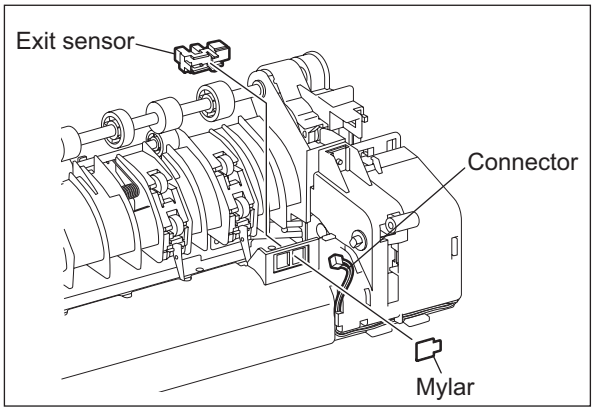

Fig. 4-189

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4.9.5 Separation finger PM

(1) Take off the fuser roller unit.
P.4-66 "4.9.7 Fuser roller"
(2) Remove 5 springs.

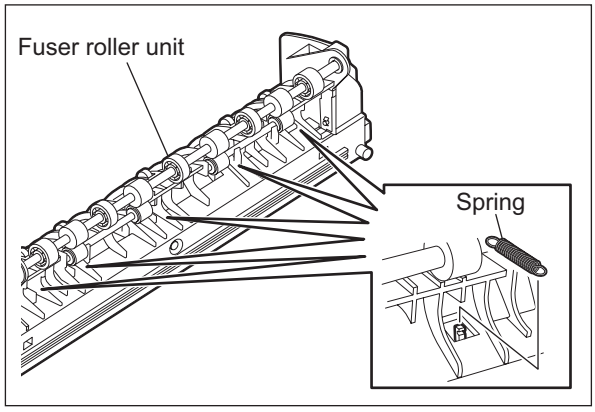

Fig. 4-190

(3) Take off 5 separation fingers.

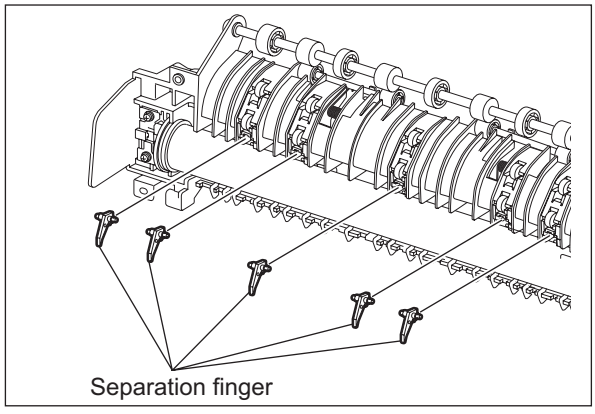

Fig. 4-191

4.9.6 Center heater lamp / Side heater lamp (LAMP1/LAMP2)

(1) Take off the fuser roller unit.
P.4-66 "4.9.7 Fuser roller"
(2) Remove 2 screws on each terminal of both center heater lamp and side heater lamp.

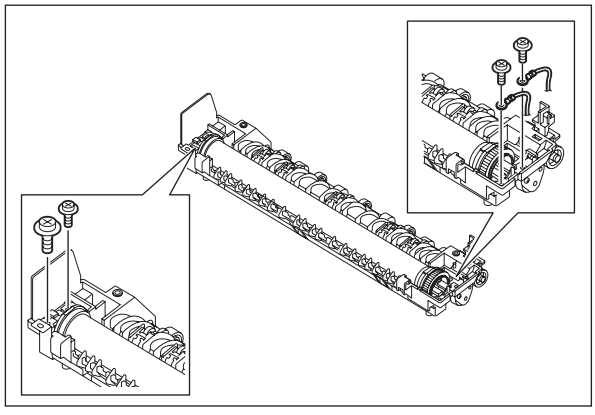

Fig. 4-192

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(3) Pull out the center heater lamp and side heater lamp.

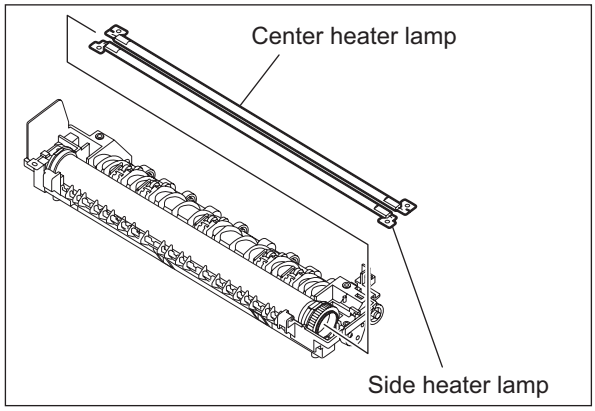

Fig. 4-193

Notes:

- When installing the heater lamps, be sure not to mix up the upper heater lamp and the lower heater lamp.
  The upper heater lamp has a coil wound up on its center part, and the lower heater lamp has coils wound up on its both edges.
- When installing the heater lamps, be sure to face up their weld sides.
- Do not touch the lamps directly with your hands.
- The connector on each end of the harness which connects to the center heater lamp has a small screw hole. The connector on each end of the harness which connects to the side heater lamp has a big one.

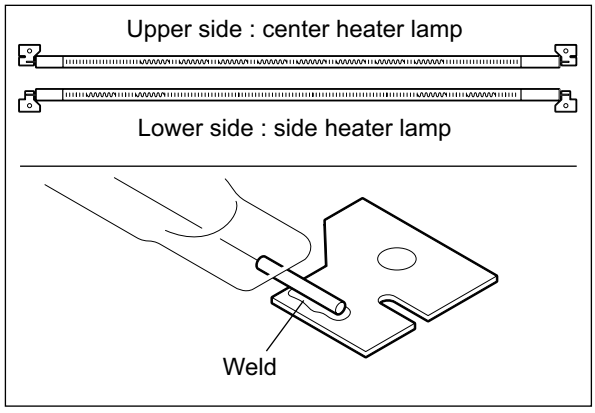

Fig. 4-194

4.9.7 Fuser roller PM

(1) Take off the center heater lamp and the side heater lamp.
📖 P.4-65 "4.9.6 Center heater lamp / Side heater lamp (LAMP1/LAMP2)"
(2) Take off the separation fingers.
📖 P.4-65 "4.9.5 Separation finger"
(3) Take out the fuser roller upward.

Notes:

- When installing the fuser roller, slide each bushing on both edges of the roller outward so that the bushings will engage with the frame and the installation will be secured.
- Do not apply force onto the roller because it may be deformed.

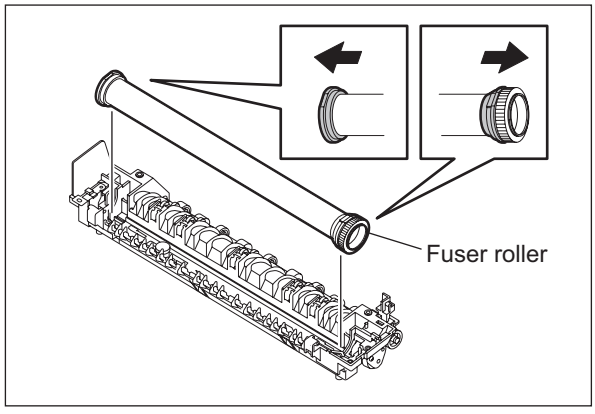

Fig. 4-195

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(4) Remove 1 C-ring and 1 bushing on the front side of the fuser roller.
(5) Remove 1 C-ring, 1 gear and 1 bushing on the rear side of the fuser roller.

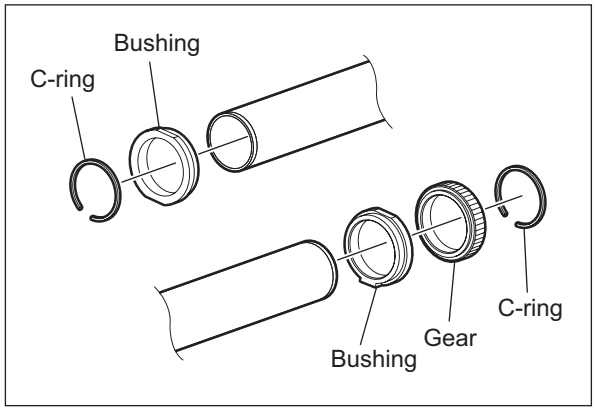

Fig. 4-196

4.9.8 Pressure roller PM

(1) Take off the pressure roller unit.
P.4-61 "4.9.2 Pressure roller unit / Fuser roller unit"
(2) Remove 3 screws, and then take off the fuser unit entrance guide.

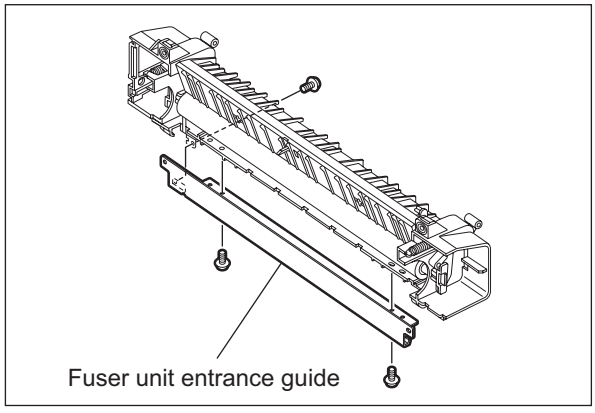

Fig. 4-197

(3) Remove 2 springs.

Note:
When installing the spring, be sure to hang the spring on the upper hook.

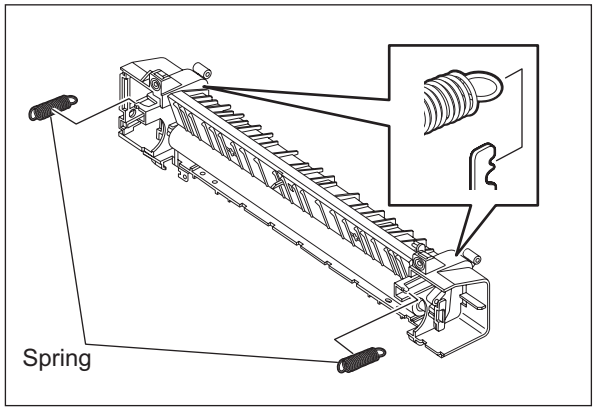

Fig. 4-198

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(4) Take off each 1 pressure lever on both front and rear sides.

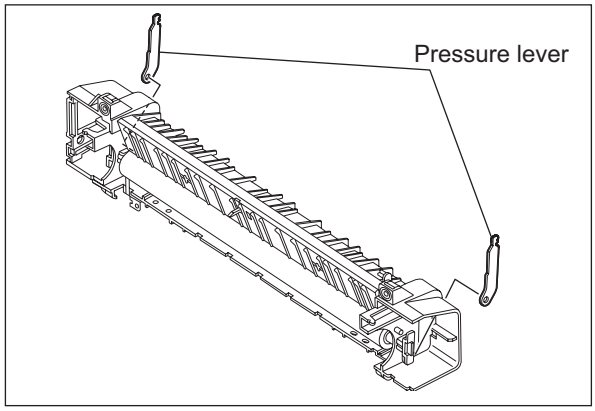

Fig. 4-199

(5) Take off 2 bushings and then take off the pressure roller while sliding the pressure roller to the rear side.

Notes:

- Do not drop the pressure roller when you lift it up because it is quite heavy.
- Be sure to install the pressure roller from the rear side (pressure roller ground plate side) in order not to deform the pressure roller ground plate.

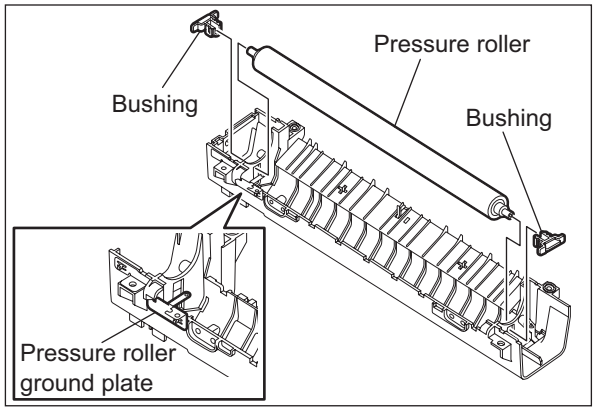

Fig. 4-200

4.9.9 Center thermistor / Side thermistor / Edge thermistor (THMS1/ THMS2/THMS3)

(1) Take off the fuser roller.
📖 P.4-66 "4.9.7 Fuser roller"

(2) Remove each 1 screw of the thermistors, and then take off each thermistor by releasing its harness out of the harness clamp.

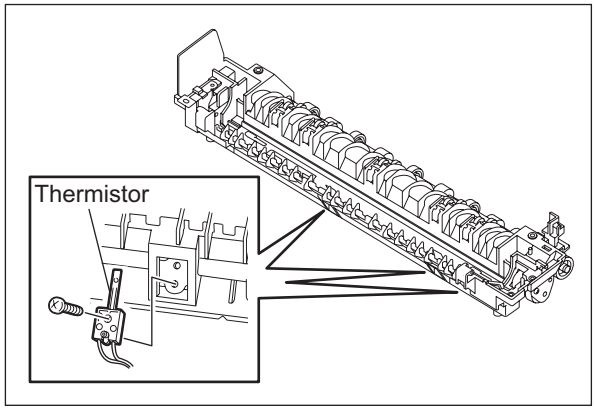

Fig. 4-201

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Note:

When installing the thermistors, do not mix up the installation positions of the side thermistor and the edge thermistor by telling them apart by the length of their harnesses.

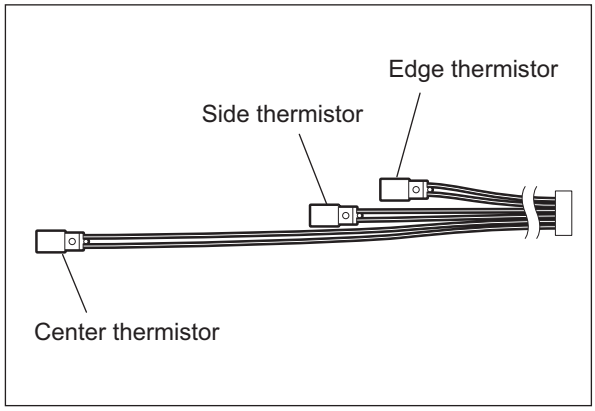

Fig. 4-202

4.9.10 Fuser thermostat (THMO1)

(1) Take off the fuser roller.
P.4-66 "4.9.7 Fuser roller"
(2) Remove 2 screws and take off the fuser thermostat.

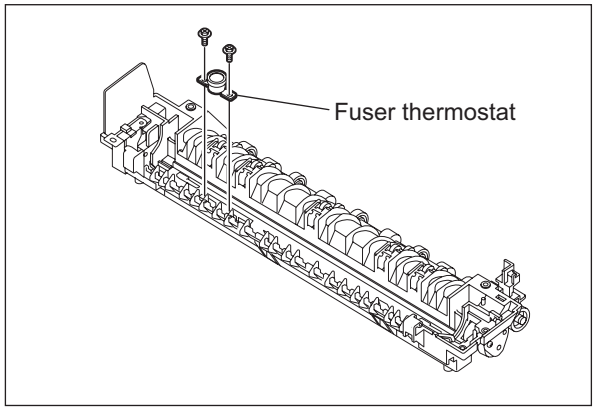

Fig. 4-203

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4.10 Removal and Installation of Options

4.10.1 MR-2020 (Automatic Document Feeder (ADF)) / MR-3023 (Reversing Automatic Document Feeder (RADF))

(1) Turn the power OFF and unplug the power cable.
(2) Remove 1 screw and take off the connector cover.

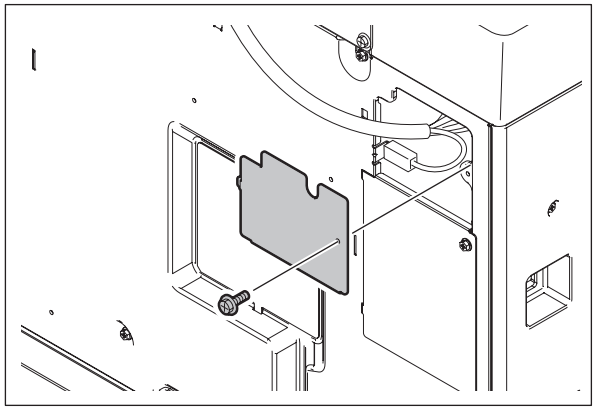

Fig. 4-204

(3) Remove the ground wire.

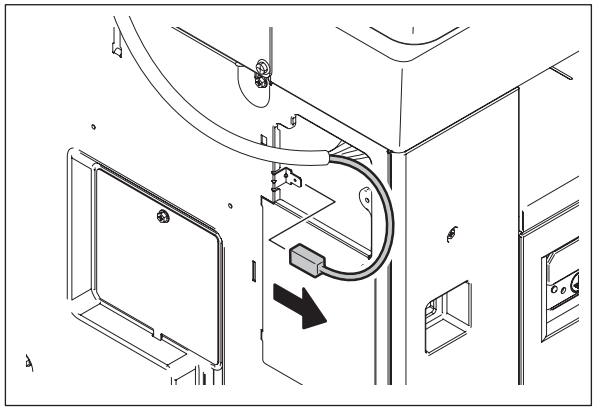

Fig. 4-205

(4) Disconnect the connector.

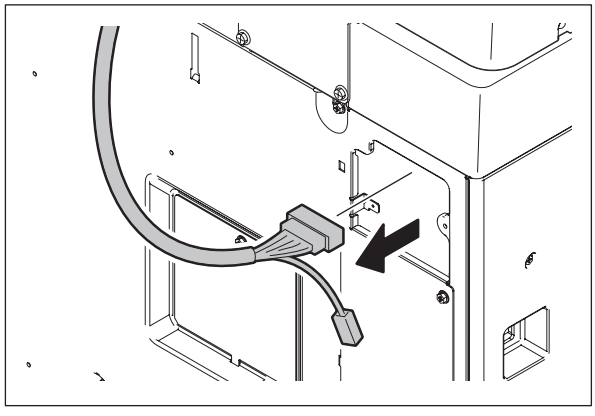

Fig. 4-206

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(5) Remove 1 screw on the rear right side.

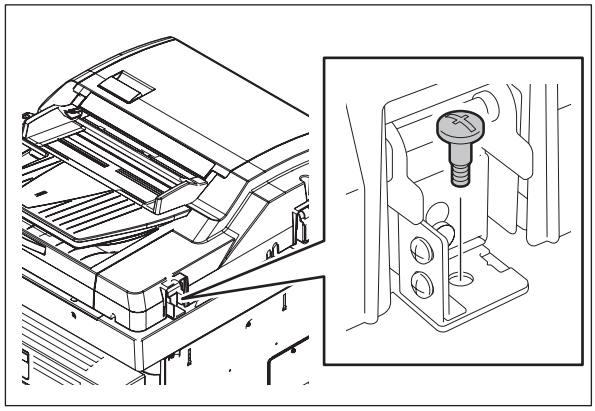

Fig. 4-207

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

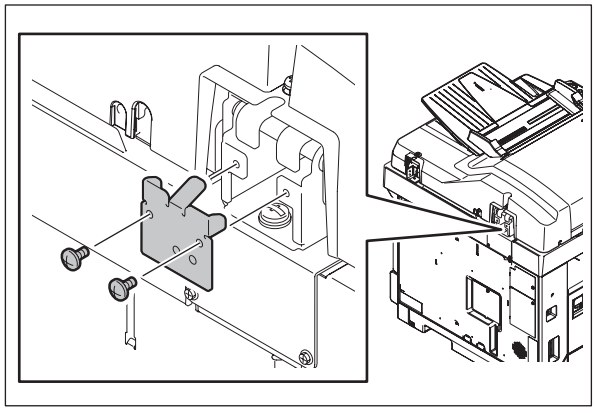

Fig. 4-208

(7) Remove 1 screw and 1 washer on the rear left side.

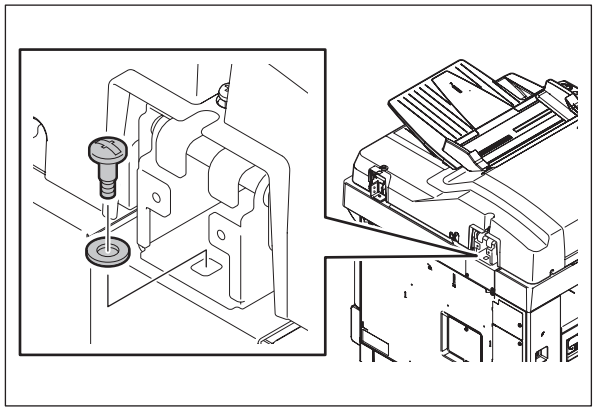

Fig. 4-209

(8) Open the ADF.

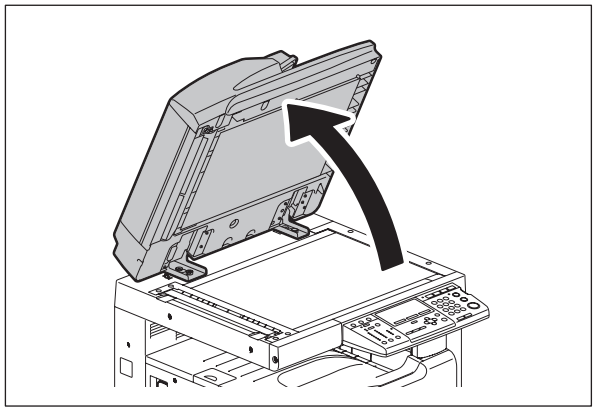

Fig. 4-210

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(9) Remove 2 screws on the front side.

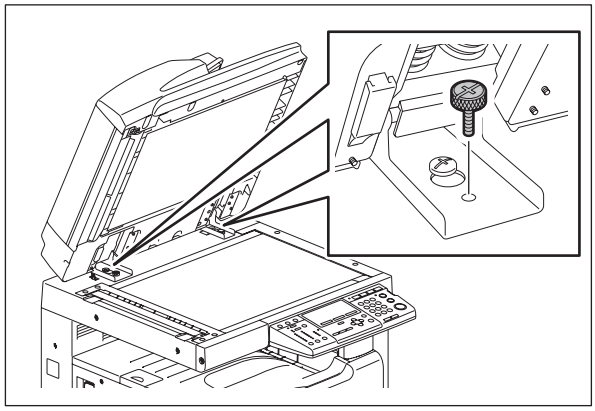

Fig. 4-211

(10) Slide the ADF backward and take off by lifting it up.

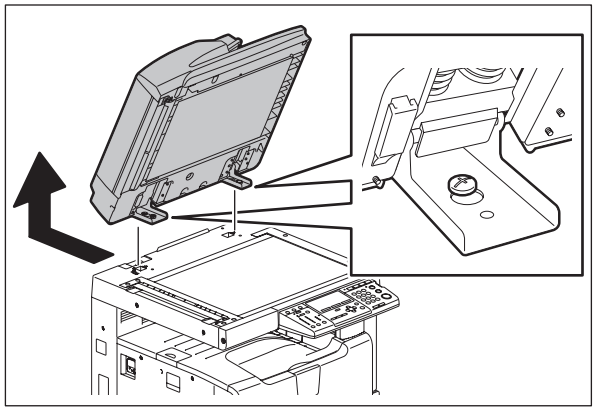

Fig. 4-212

4.10.2 MY-1038 (Paper Feed Unit (PFU))

(1) Turn the power OFF and unplug the power cable.
(2) Remove 1 screw and take off the PFU connector cover.

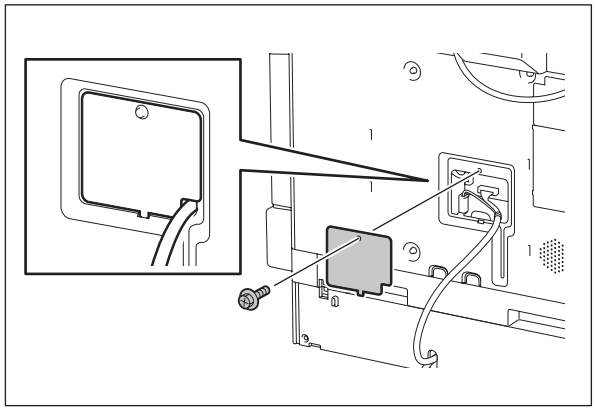

Fig. 4-213

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(3) Remove the ground wire.

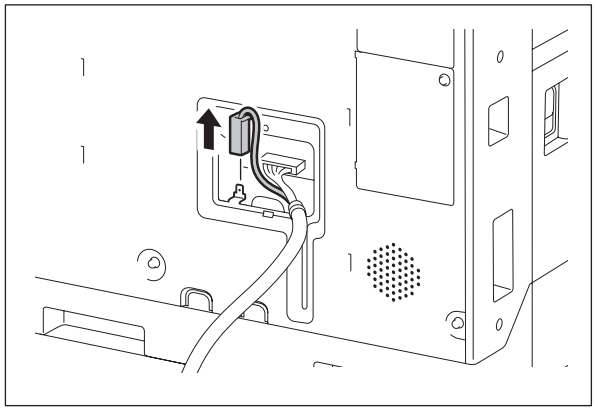

Fig. 4-214

(4) Disconnect the connector.

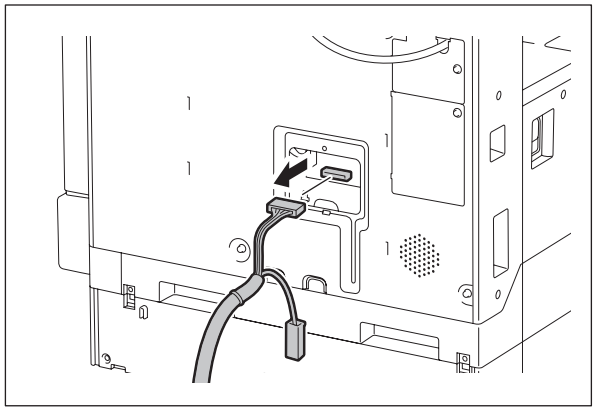

Fig. 4-215

(5) Install the PFU connector cover.

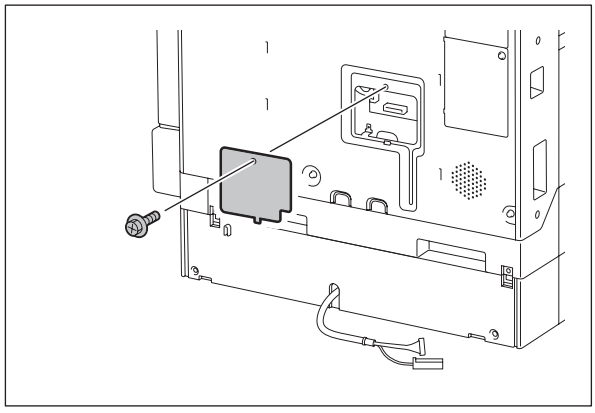

Fig. 4-216

(6) Take off the rear cover.
📖 P.4-4 "4.1.10 Rear cover"
(7) Disconnect 1 connector (optional damp heater). Release the harness from the harness clamp.

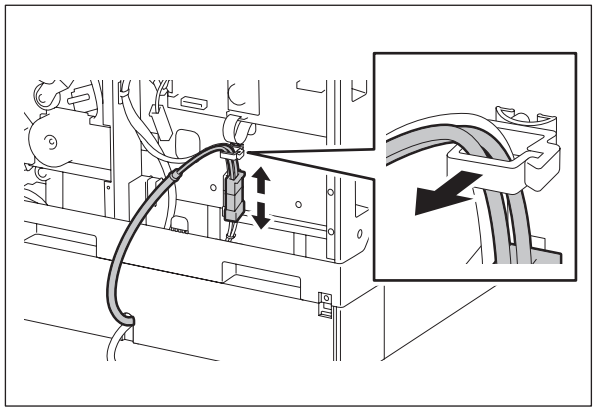

Fig. 4-217

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(8) Take off the drawer of the equipment and PFU drawer.

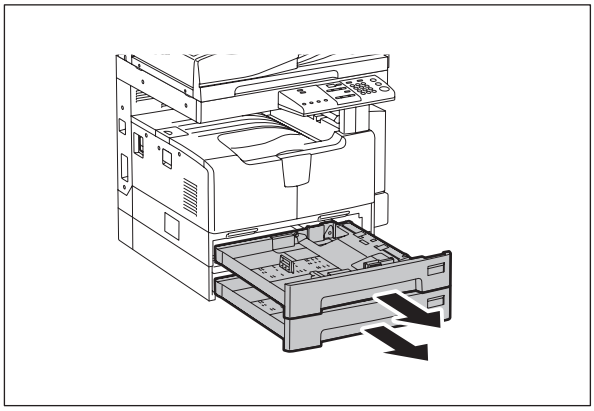

Fig. 4-218

(9) Remove 1 screw and take off 1 fixing brackets on the front left side.

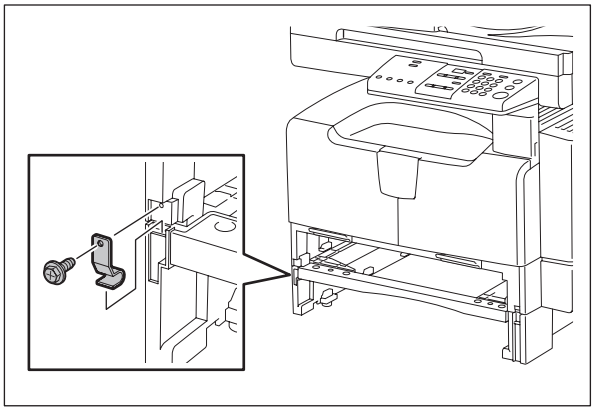

Fig. 4-219

(10) Remove 1 screw and take off 1 fixing brackets on the front right side.

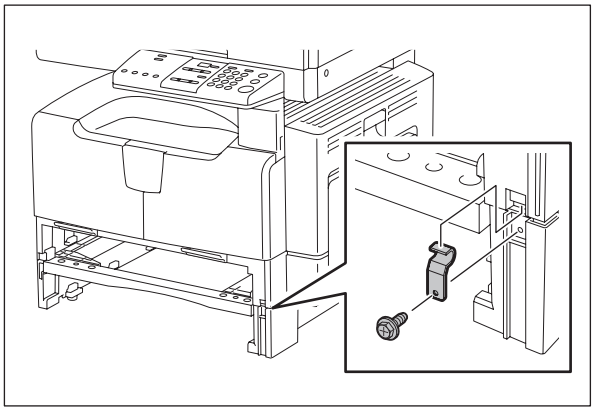

Fig. 4-220

(11) Remove 1 screw and take off 1 fixing brackets on the rear left side.

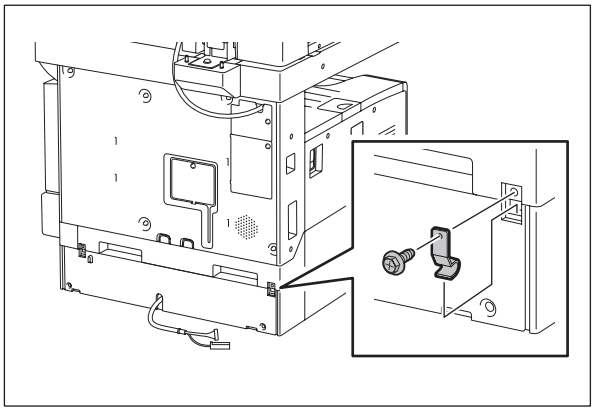

Fig. 4-221

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(12) Remove 1 screw and take off 1 fixing brackets on the rear right side.

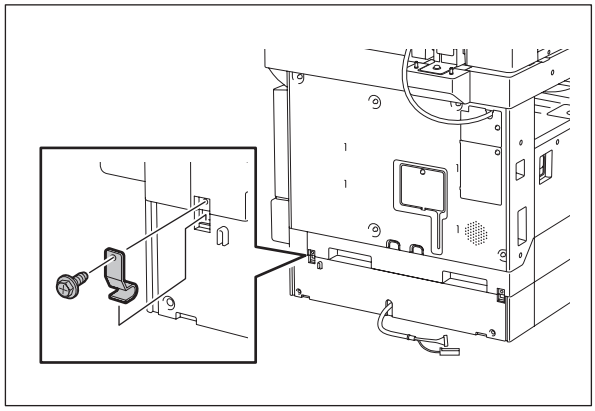

Fig. 4-222

(13) Lift up the equipment and take off the PFU.

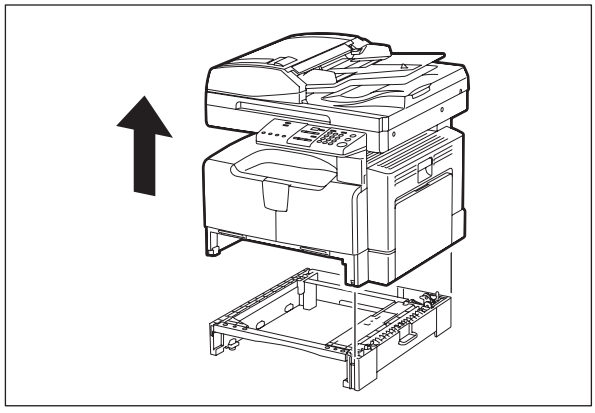

Fig. 4-223

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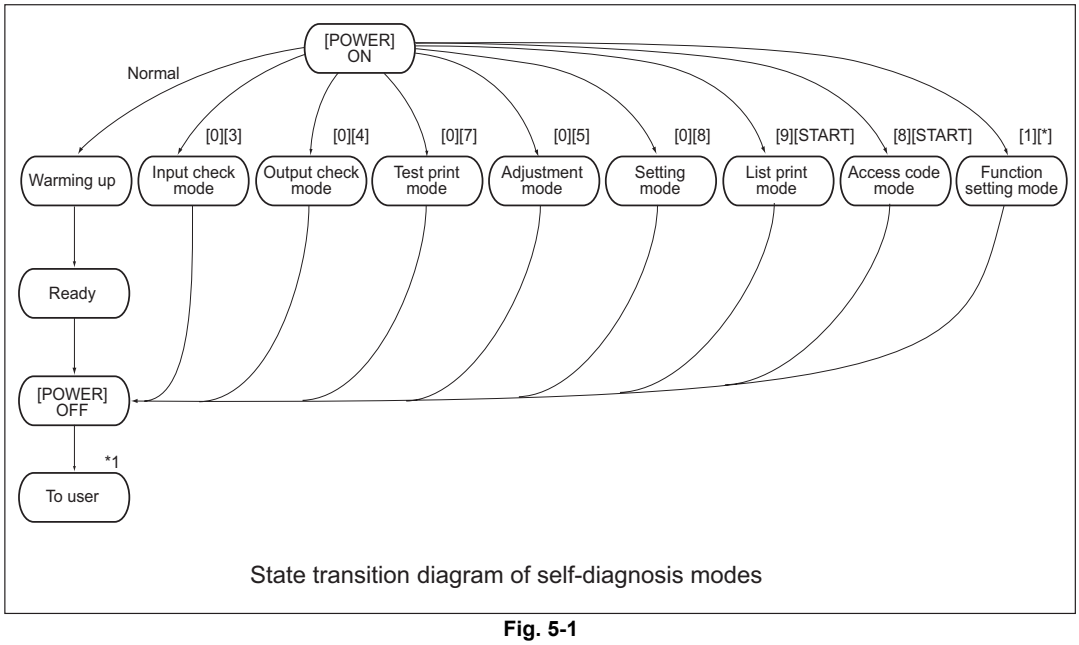
5. SELF-DIAGNOSTIC MODE

5.1 Overview

Mode	For start	Contents	For exit	Display
Input check mode	[0]+[3]+ [POWER]	Checks the status of input signals.	[POWER] OFF/ON	In
Output check mode	[0]+[4]+ [POWER]	Checks the status of output signals.	[POWER] OFF/ON	Ou
Test print mode	[0]+[7]+ [POWER]	Outputs the test patterns.	[POWER] OFF/ON	Pr
Adjustment mode	[0]+[5]+ [POWER]	Adjusts various items.	[POWER] OFF/ON	AJ
Setting mode	[0]+[8]+ [POWER]	Sets various items.	[POWER] OFF/ON	Ad
List print mode	[9]+[START] +[POWER]	Prints out the data lists of the codes 05/08 and pixel counter.	[POWER] OFF/ON	Lo
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	Fu
Test mode	[1]+[3]+ [POWER]	Checks the operation of the equipment.	[POWER] OFF/ON	Ch

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.



State transition diagram of self-diagnosis modes

Fig. 5-1

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

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<Operation procedure>

- Input check mode (03): Refer to 🕮 P.5-3 "5.2 Input Check (Test Mode 03)".
- Output check mode (04): Refer to 🕮 P.5-4 "5.3 Output Check (Test Mode 04)".
- Test print mode (07): Refer to 🕮 P.5-5 "5.4 Test Print Mode (Test Mode 07)".
- Adjustment mode (05): Refer to 🕮 P.5-12 "5.8 Adjustment Mode (05)".
- Setting mode (08): Refer to 🕮 P.5-16 "5.9 Setting Mode (08)".
- List print mode (9S):Refer to 🕮 P.5-6 "5.5 List Print Mode (9S)"
- Access code mode (8S): 🕮 P.5-8 "5.6 Access Code Mode (8S)"
- Function setting mode (1*): 🕮 P.5-10 "5.7 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

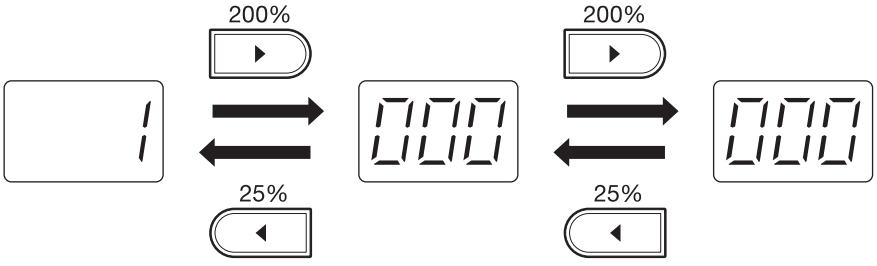

Fig. 5-2

E.g. 2) Displaying 80,000

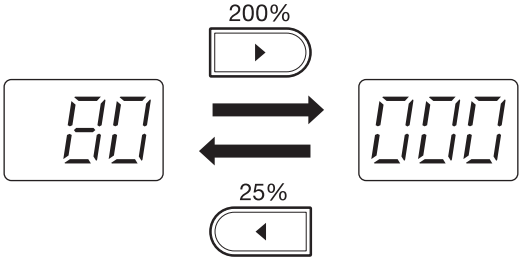

Fig. 5-3

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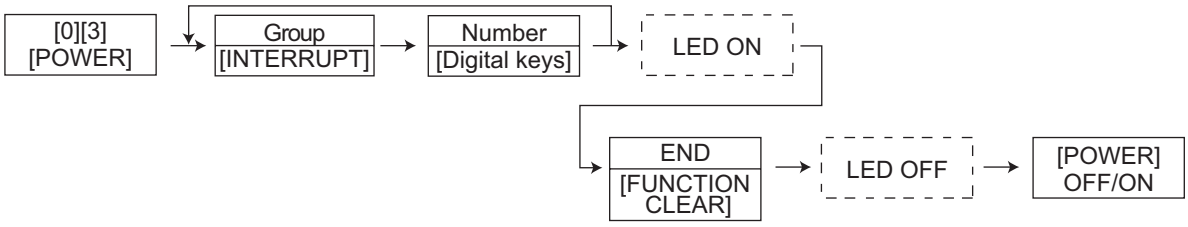
5.2 Input Check (Test Mode 03)

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.

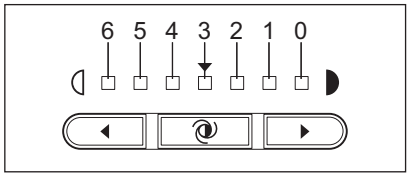


Fig. 5-4 Display position of the density LED

Refer to "Appendix" in this manual for the codes available in the test mode 03.

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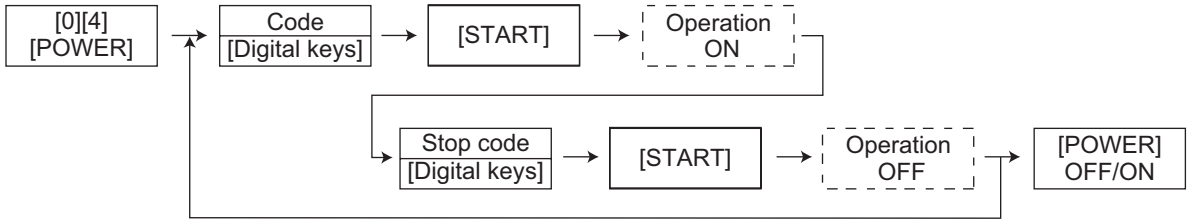
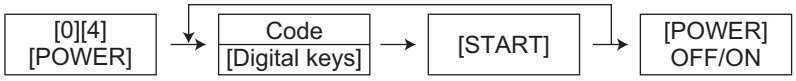
5.3 Output Check (Test Mode 04)

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

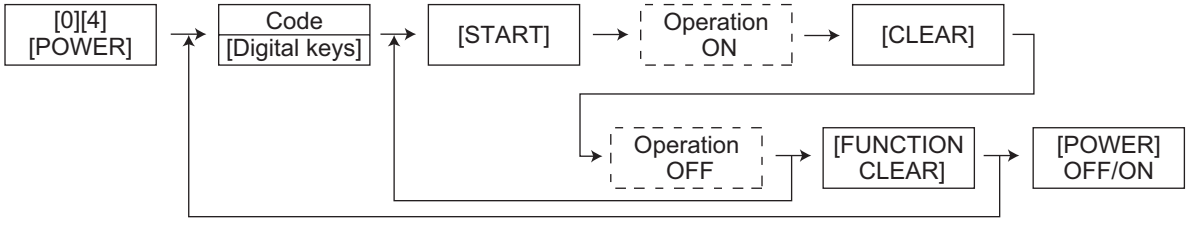
<Operation procedure>
Procedure 1



Procedure 2



Procedure 3



Refer to "Appendix" in this manual for the codes available in the test mode 04.

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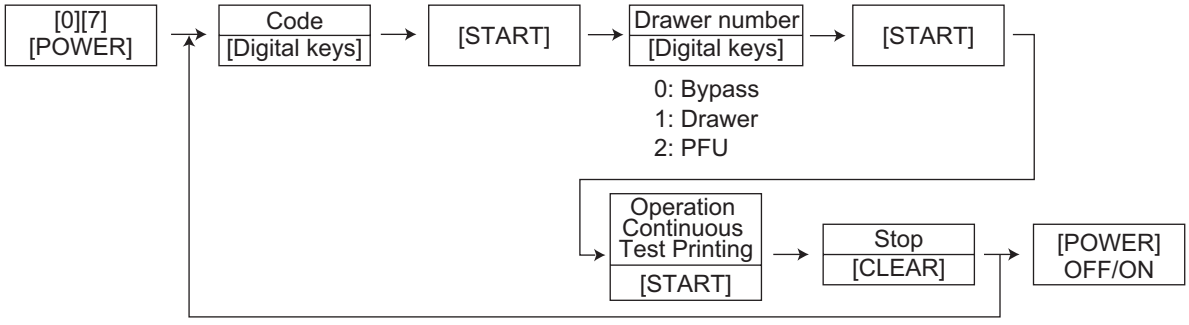
5.4 Test Print Mode (Test Mode 07)

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.

Refer to "Appendix" in this manual for the codes available in the test mode 07.

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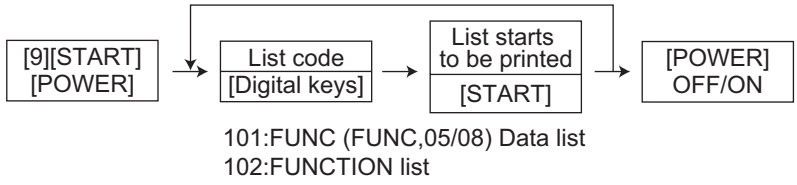
5.5 List Print Mode (9S)

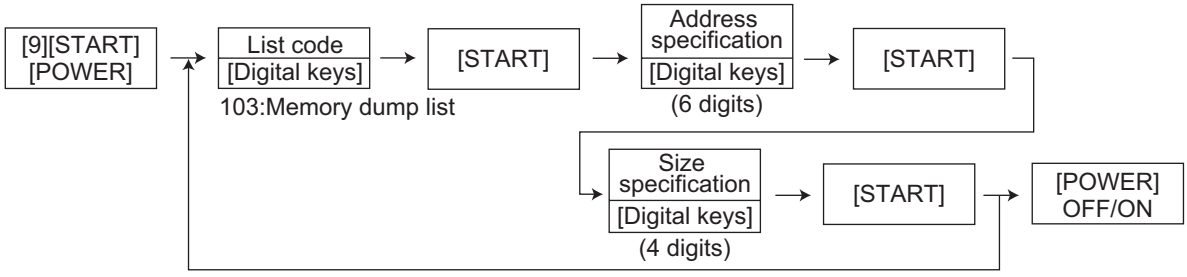
Lists of the function setting, adjustment mode (05), setting mode (08), system setting, memory dump, etc. can be output in this mode.
ROM versions of the System firmware and scanner (ADF) are printed on the top right of each list.
- T220SY0Wxxx : System firmware ROM version
- Vxxxx: Scanner ROM version (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]

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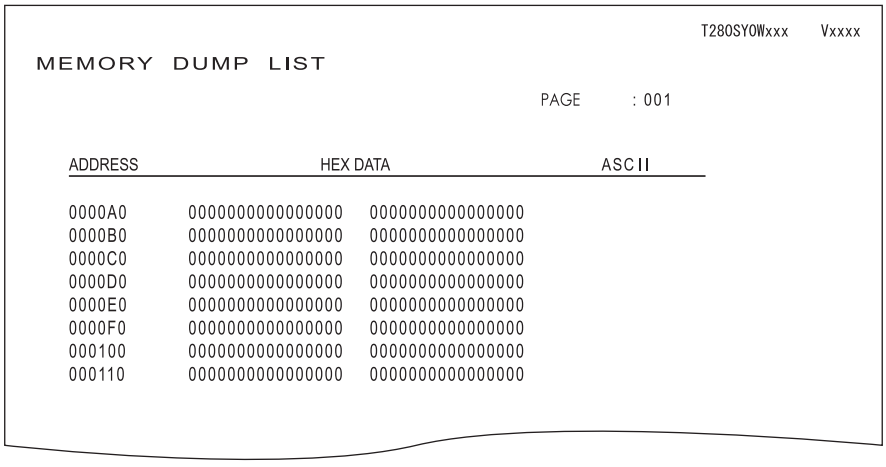
Output sample (103: Memory dump list)



T280SY0Wxxx Vxxxx

MEMORY DUMP LIST

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. 5-5

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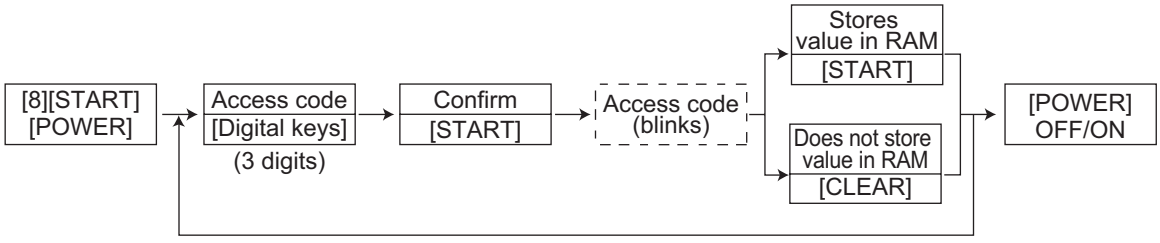
5.6 Access Code Mode (8S)

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

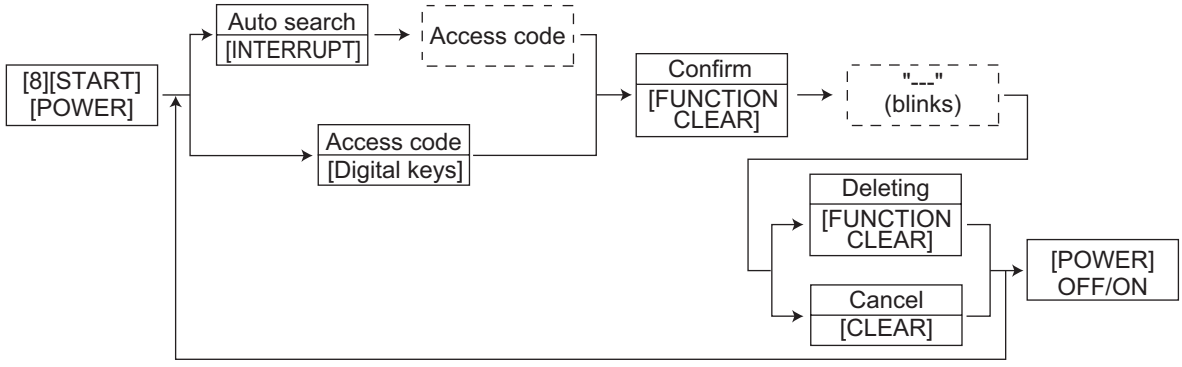
Note:
Department management must be enabled in FUNC-18 (bit-2) before you can use a registered access code.

<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.

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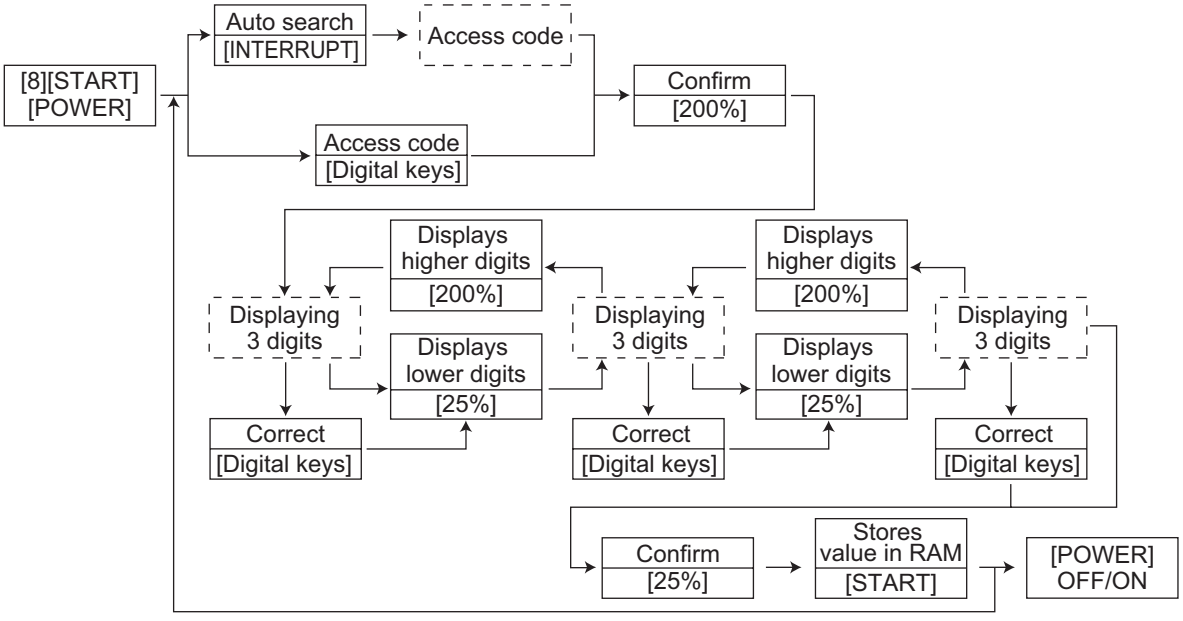
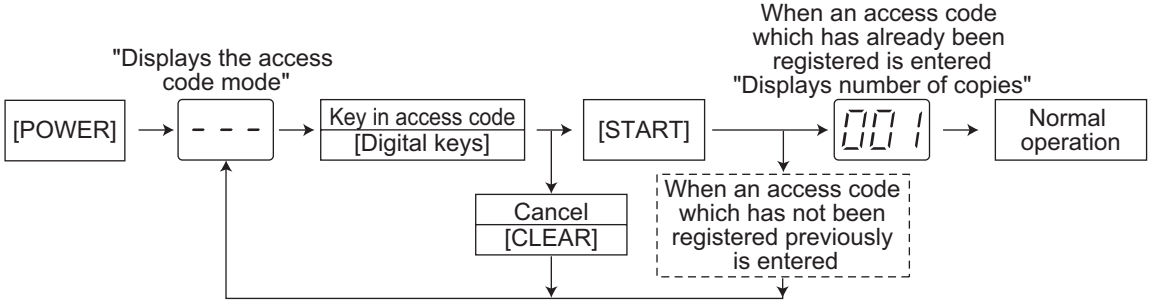
Confirming and changing of the access code counter value



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.

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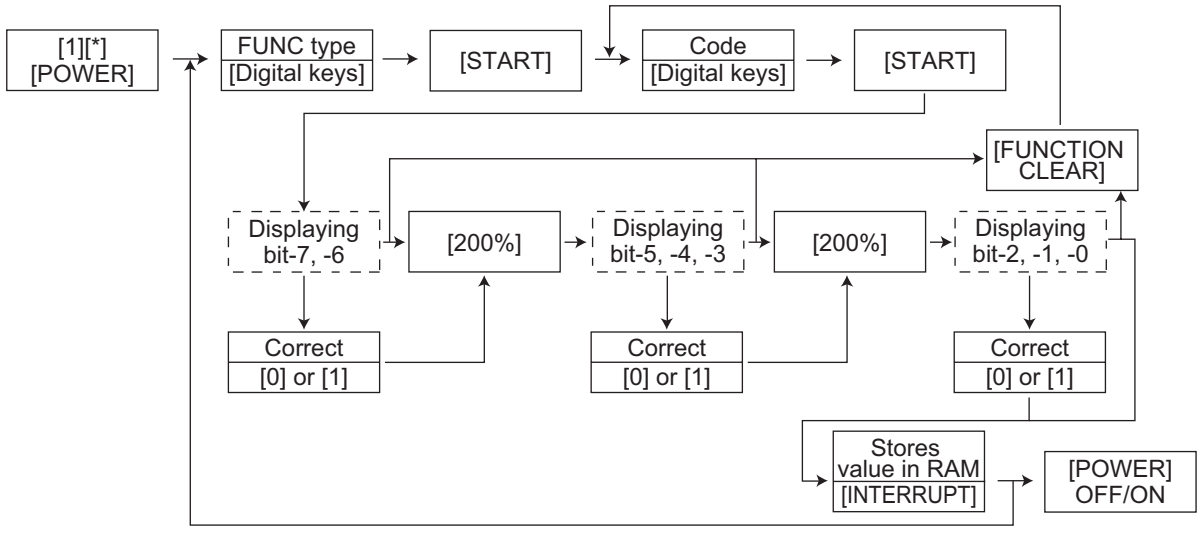
5.7 Function Setting Mode (1*)

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	-	-

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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		

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5.8 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]	354,355
	[Transporting]	356,357,358,365
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]	430,431,432,433,434,435,436,437,438
	[Range correction]	535,536,537,570,571,572,693,694,695,700,701,702,710,714,715,719, 720,724,725,729,820,821,822,825,826,827,830,831,832,835,836,837
Paper feeding	[Paper pushing amount]	466-0 to 7
	[Aligning amount]	448-0 to 2,449-0 to 2,450-0 to 2,451-0 to 2,455-0 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 2,469-0 to 5, 471-0 to 2,472-0 to 2,474-0 to 2
Drive	[Exit motor]	424,425
	[Main motor]	421,422
Development	[Auto-toner]	200,201
	[Developer bias]	205
	[Temperature]	270
	[Relative humidity]	247
	[Drum temperature]	248
Scanner	[LED]	311,312,313,314,315,316
	[Position]	305,306
	[Carriage position]	359
	[Shading position]	350,351
	[Reproduction ratio]	340
	[Peak]	310,317-1 to 6, 318-1 to 6
Charger	[Main charger bias]	210
Transfer	[Transfer bias]	220,221,222
Separation	[Separation bias]	233,234,235
Process	[Toner recycle]	280
Laser	[Write starting]	410,411,440,441,442,443,444,445,498
	[Polygonal motor]	401,405
	[Laser power]	286
	[Sideways deviation]	497-0 to 5

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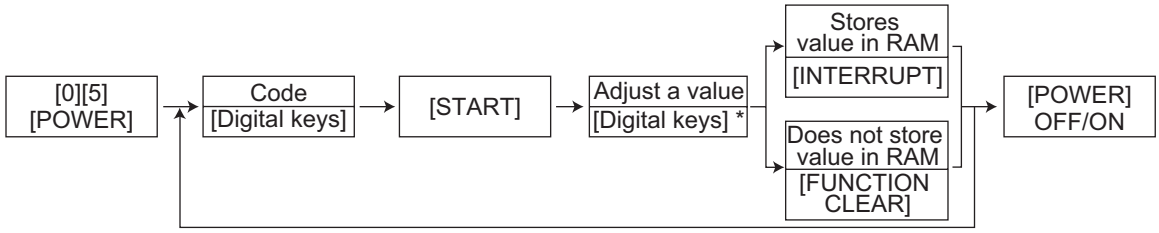
Note:

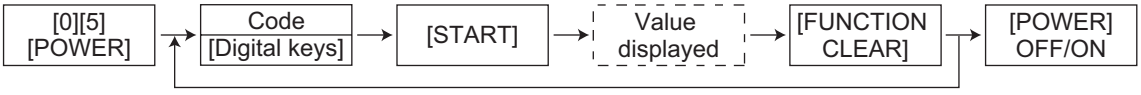
The density LED blinks while performing adjustment for the items which take time.
Be sure not to turn the power OFF nor perform any other operations while the density LED is blinking.

Procedure 1

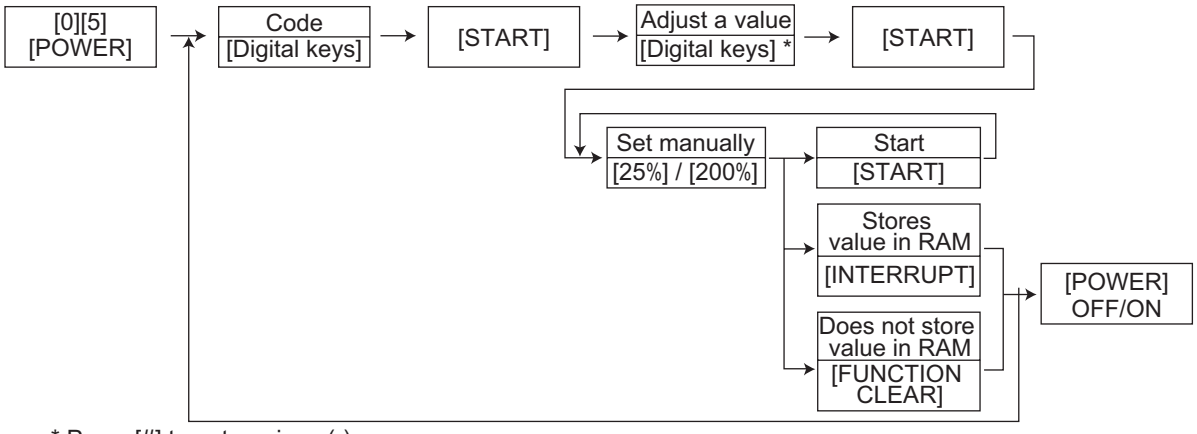


* Press [#] to enter minus (-).

Procedure 2

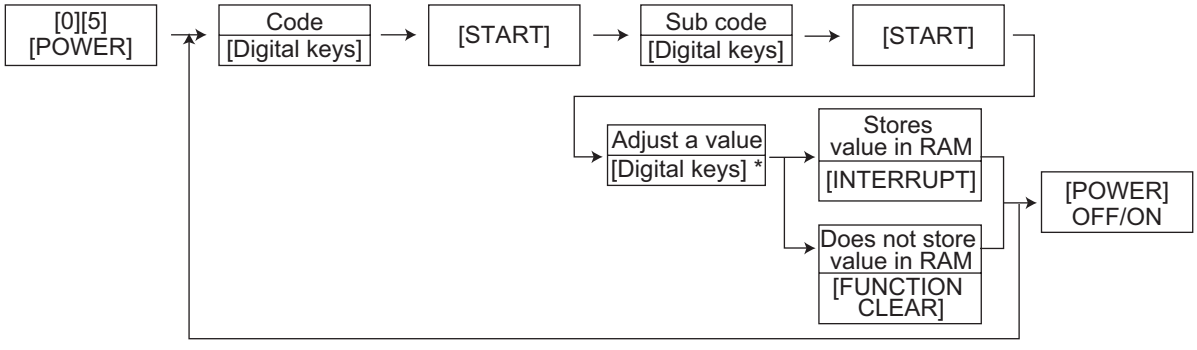


Procedure 3



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

Procedure 4



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

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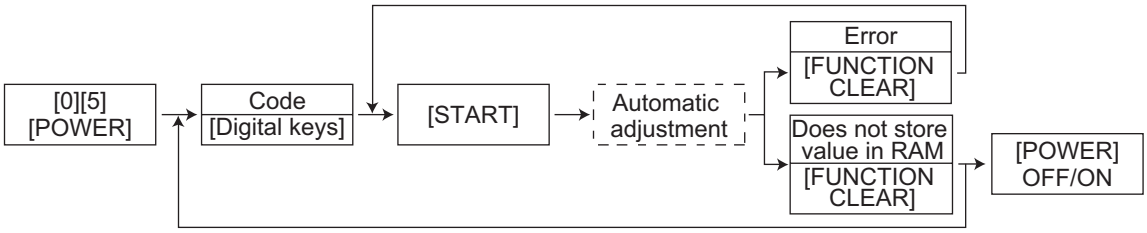
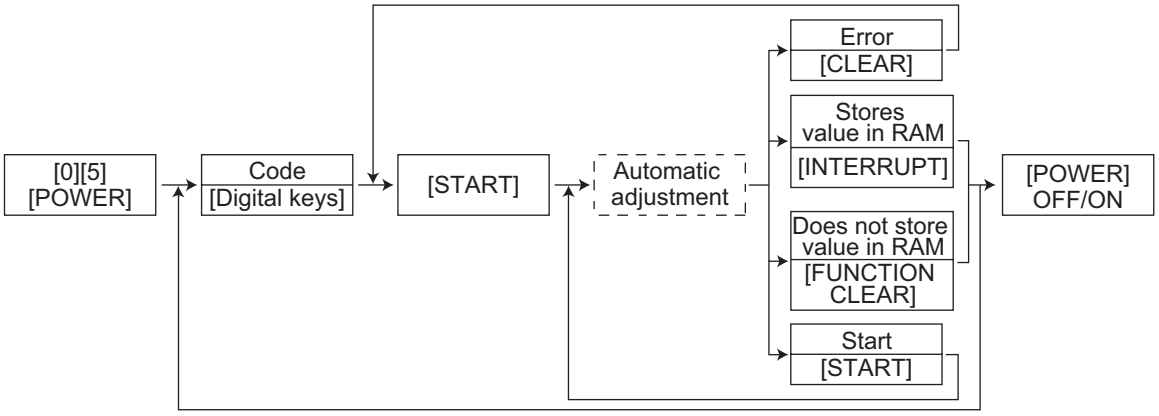
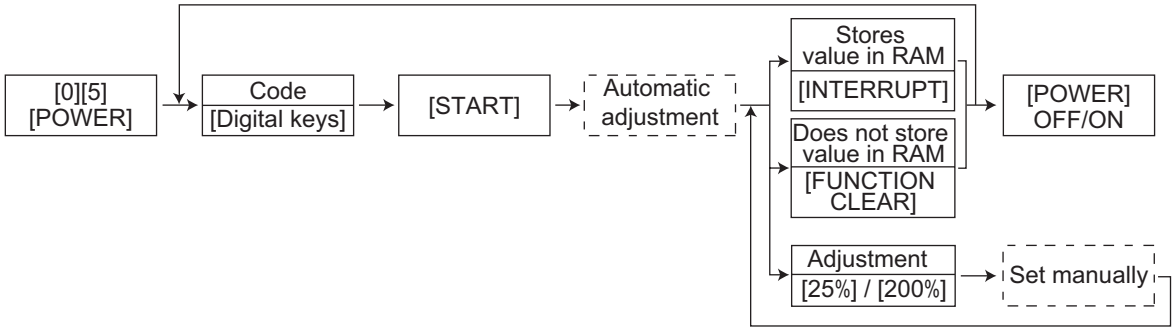
Procedure 6



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.

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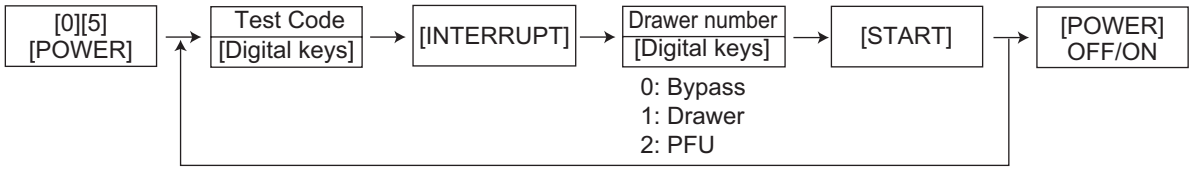
Test print pattern in Adjustment Mode (05)

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

Refer to "Appendix" in this manual for the codes available in the adjustment mode 05.

5

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5.9 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]	1410,1567-0 to 4
	[External counter]	381, 975
	[Paper source]	356,357,358,360,370,372,374,1392,1393,1398,1399
	[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]	457,458,482
	[Default setting]	255,480
	[Paper exit]	698,699
	[Paper size]	224,226,227,228
	[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]	833,834,835,836,837,840,857,858,859,860,861,862,863
General	[Reset]	655
	[Nearly empty]	971
	[Page setting]	949
	[Line]	203
	[Access code]	672
	[ID card]	662
	[Operation check]	700
Scanner	[Control status]	463,464,465,466
Main charger bias	[Main charger bias]	805,806,807,808,809,814,818,819,826,864,865,866,867
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

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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
	[Serial number]	995
User interface	[Copy volume]	300
	[Jobs clear]	246
	[Energy saving mode]	970
	[Sorting]	641
	[Timer]	204,205,206
	[Book type]	611
	[External counter]	202,222,223
	[Default setting]	603,604,618,642,688,691,903
	[Paper size]	261,262
Laser	[Polygonal motor]	483,486
	[Power correction]	872,873,875,876,877,883,884
Facsimile	[Transfer setting]	510
RADF	[Duplexing copy]	685,905

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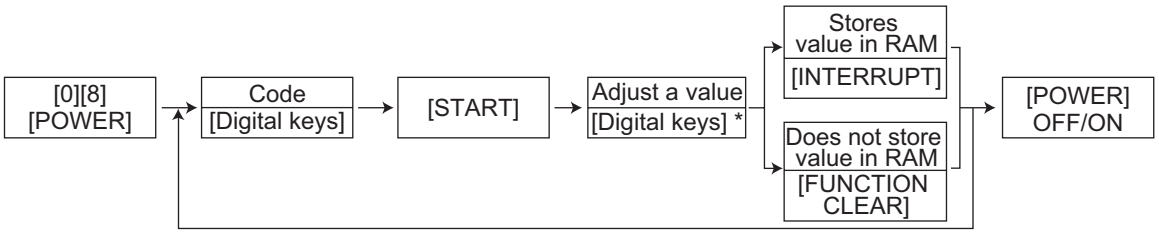
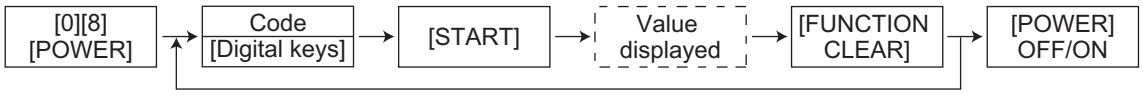
Procedure 1,5,9,11

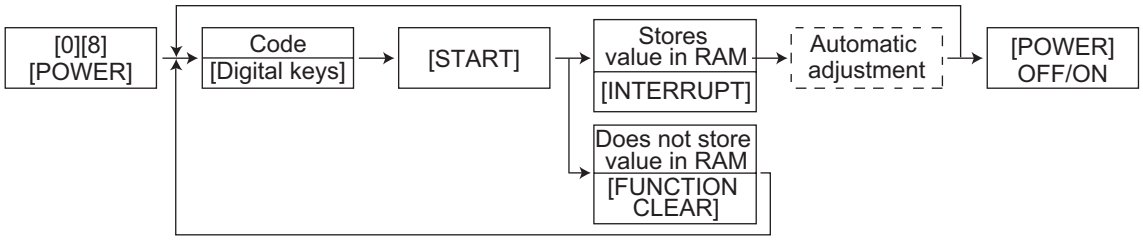


* Press [#] to enter minus (-).

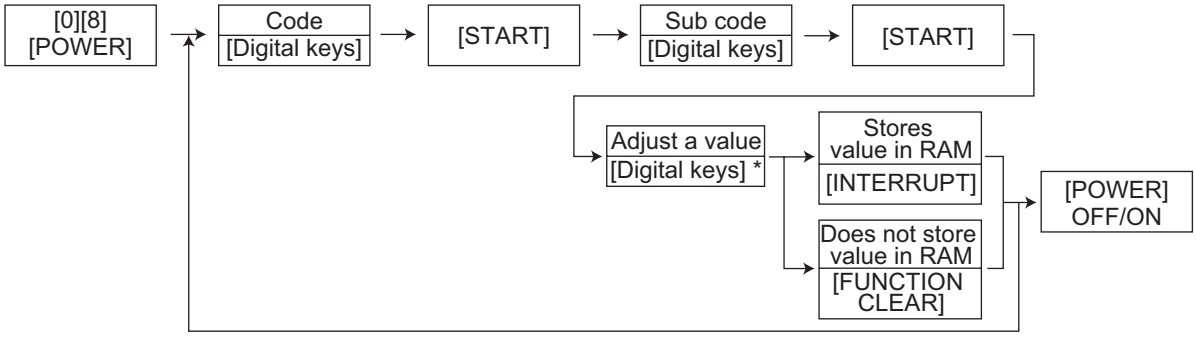
Procedure 2



Procedure 3

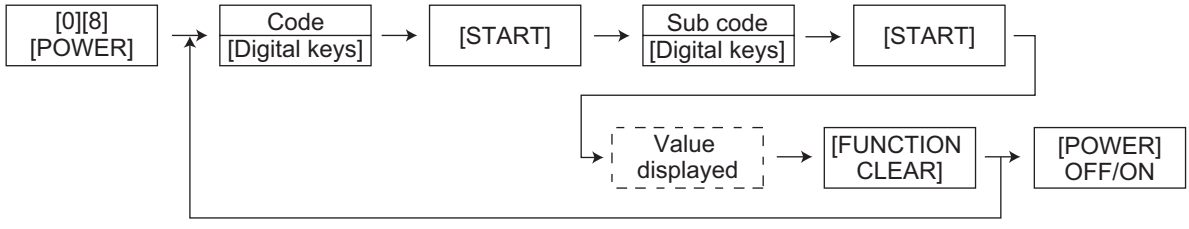


Procedure 4,10

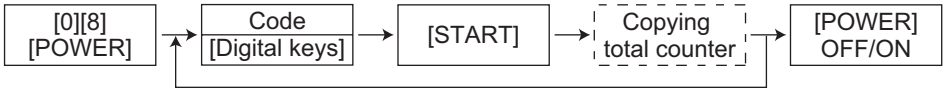


* Press [#] to enter minus (-).

Procedure 14



Procedure 15



Refer to "Appendix" in this manual for the codes available in the setting mode 08.

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<<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 (22 cpm / 24 cpm)> Sub-code 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Photoconductive drum	1150-0, 1, 3, 4, 6, 7	<Default values of code 1150 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Drum cleaning blade	1158-0, 1, 3, 4, 6, 7	<Default values of code 1158 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Drum separation finger	1172-0, 1, 3, 4, 6, 7	<Default values of code 1172 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Main charger grid	1174-0, 1, 3, 4, 6, 7	<Default values of code 1174 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Needle electrode	1182-0, 1, 3, 4, 6, 7	<Default values of code 1182 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000

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Items	PM management setting <Procedure 4> *Indicated in 8 digits	Remarks
Ozone filter	1198-0, 1, 3, 4, 6, 7	<Default values of code 1198 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Developer material	1200-0, 1, 3, 4, 6, 7	<Default values of code 1200 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Transfer charger wire	1214-0, 1, 3, 4, 6, 7	<Default values of code 1214 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Separation charger wire	1224-0, 1, 3, 4, 6, 7	<Default values of code 1224 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Fuser roller	1246-0, 1, 3, 4, 6, 7	<Default values of code 1246 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Pressure roller	1250-0, 1, 3, 4, 6, 7	<Default values of code 1250 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Fuser roller separation finger	1268-0, 1, 3, 4, 6, 7	<Default values of code 1268 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000
Sub paper feed roller (Drawer)	1290-0, 1	<Default values of code 1290 (22 cpm / 24 cpm)> Sub-codes 0: 0/0/0 Sub-code 1: 90,000/90,000
Sub paper feed roller (PFU)	1292-0, 1	<Default values of code 1292 (22 cpm / 24 cpm)> Sub-codes 0: 0/0/0 Sub-code 1: 90,000/90,000
Feed roller (Drawer)	1298-0, 1	<Default values of code 1298 (22 cpm / 24 cpm)> Sub-codes 0: 0/0 Sub-code 1: 90,000/90,000
Feed roller (PFU)	1300-0, 1	<Default values of code 1300 (22 cpm / 24 cpm)> Sub-codes 0: 0/0 Sub-code 1: 90,000/90,000
Separation pad (Drawer)	1306-0, 1	<Default values of code 1306 (22 cpm / 24 cpm)> Sub-codes 0: 0/0/0 Sub-code 1: 90,000/90,000
Separation pad (PFU)	1308-0, 1	<Default values of code 1308 (22 cpm / 24 cpm)> Sub-codes 0: 0/0/0 Sub-code 1: 90,000/90,000

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Items	PM management setting <Procedure 4> *Indicated in 8 digits	Remarks
Separation roller (Bypass unit)	1316-0, 1	<Default values of code 1316 (22 cpm / 24 cpm)> Sub-codes 0: 0/0 Sub-code 1: 90,000/90,000
Feed roller (Bypass unit)	1324-0, 1	<Default values of code 1324 (22 cpm / 24 cpm)> Sub-codes 0: 0/0 Sub-code 1: 90,000/90,000
Pickup roller (Bypass unit)	1332-0, 1	<Default values of code 1332 (22 cpm / 24 cpm)> Sub-codes 0: 0/0 Sub-code 1: 90,000/90,000
Recovery blade	1336-0, 1, 3, 4, 6, 7	<Default values of code 1336 (22 cpm / 24 cpm)> Sub-codes 0, 3, 6, 7: 0/0 Sub-code 1: 90,000/90,000 Sub-code 4: 157,000/157,000

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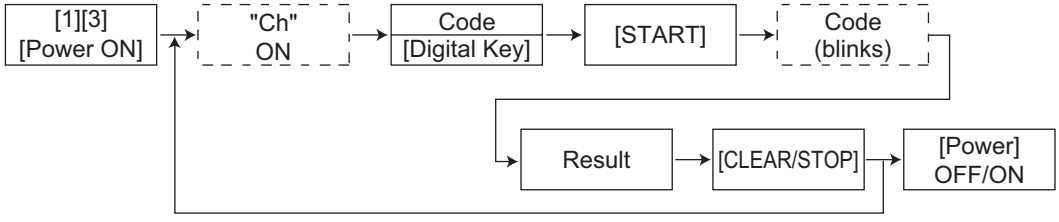
5.10 Test Mode (13)

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>



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<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.

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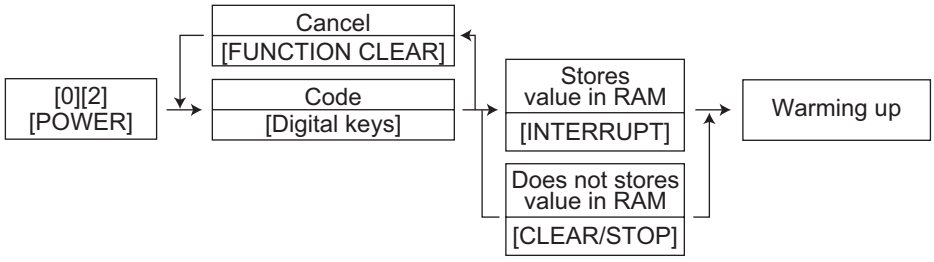
5.11 Country/Region Code (02)

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-STUDIO223/243
NAD	1
AUD	61
ASU/SYD/SAD	65
CND	86
ASD	852
TWD	886
ARD	9998
MJD	44

Notes:

- When inputting 4-digit codes, only the last 3 digits are displayed.
- A value more than 3 digits long is separated into 3 numbers from the one place, and is displayed from the first 3. Press the reproduction ratio key ([200%] or [25%]) to shift the display to the next or the previous 3 digits.

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6. ADJUSTMENT

6.1 Image related adjustment Order

This chapter explains the procedures for image related adjustment. When replacing components which have other specified instructions for adjustment, those specified instructions are to be obeyed in priority. In the following diagram, the solid lines with arrow lead to essential adjustments, while the dotted lines lead to adjustments to be performed if necessary.

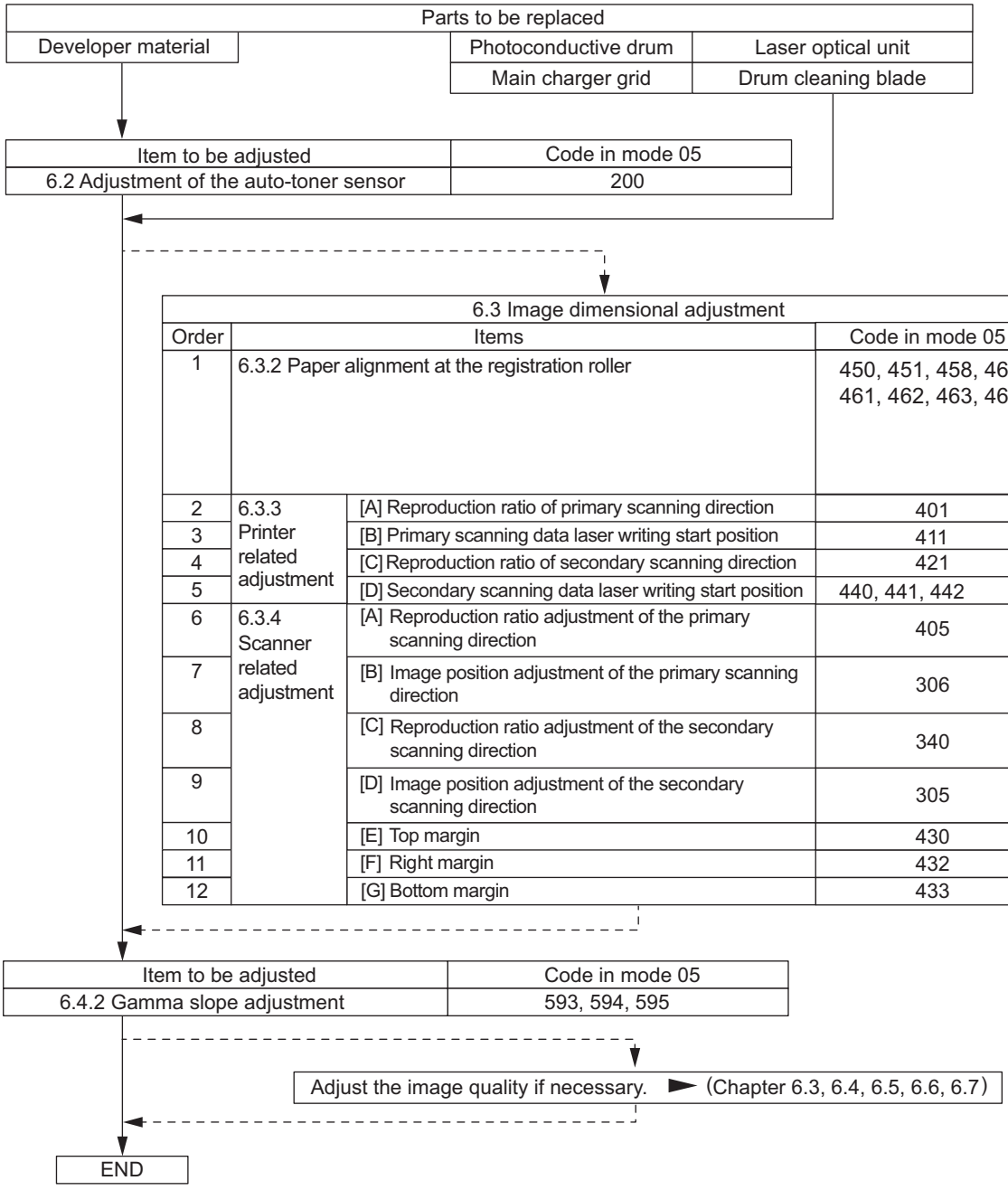

Fig. 6-1

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6.2 Adjustment of the 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.

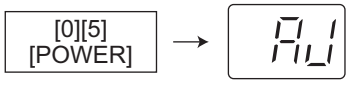

Fig. 6-2

(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.

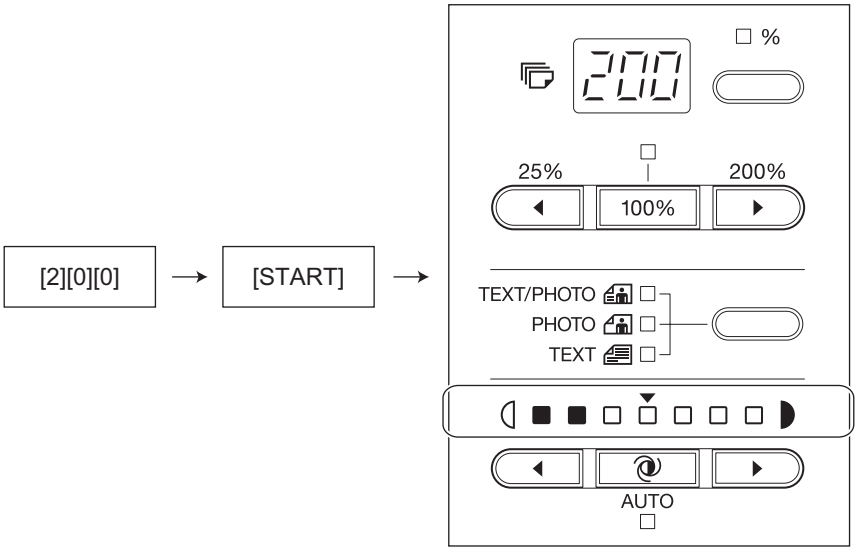

Fig. 6-3

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

Fig. 6-4

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.

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(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.

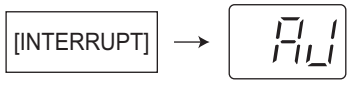

Fig. 6-5

(9) Turn the power OFF.

(10) Install the toner cartridge.

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6.3 Image Dimensional Adjustment

6.3.1 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

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[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.

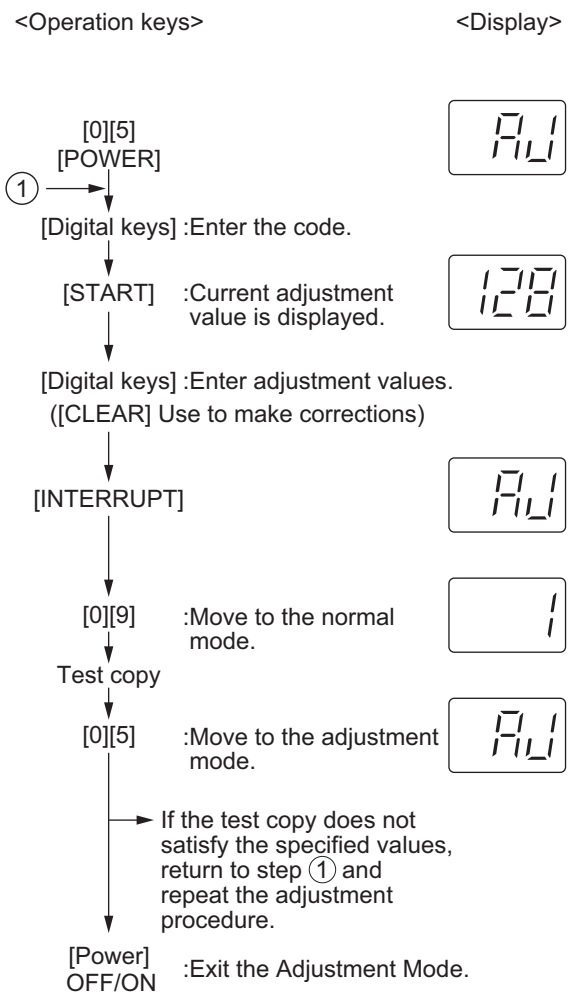

Fig. 6-6

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6.3.2 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.

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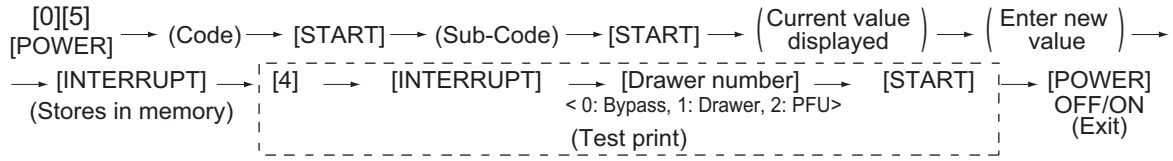
<Procedure>

(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.

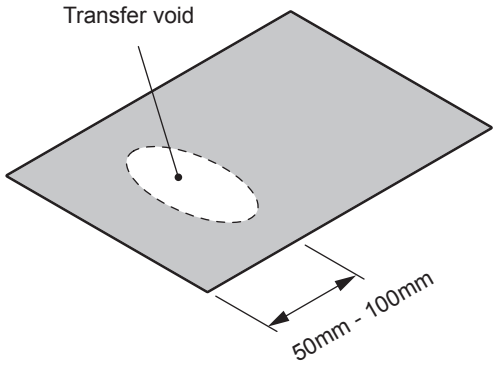


Fig. 6-7

(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.

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6.3.3 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).

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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).

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[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).

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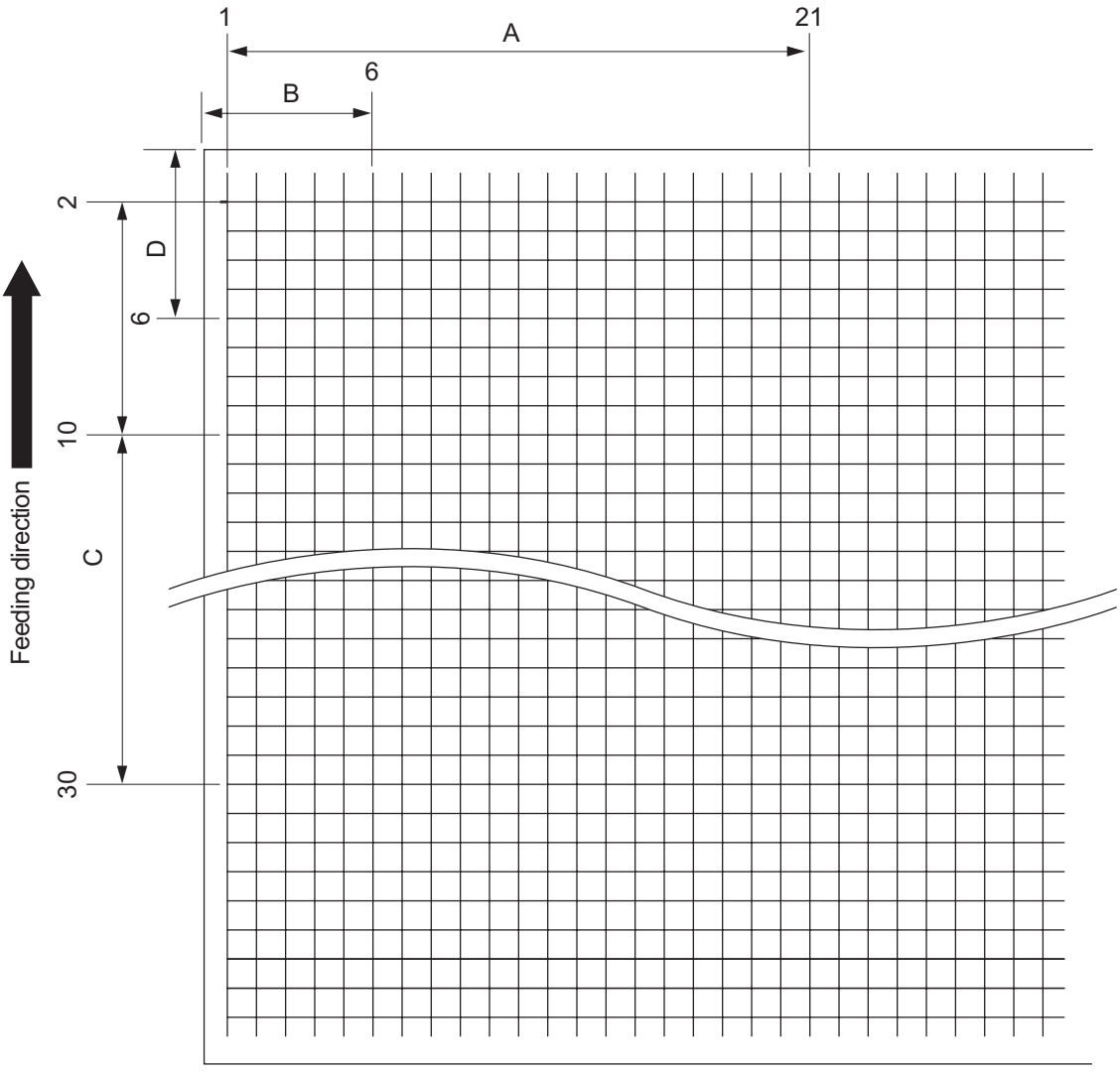

Fig. 6-8 Grid pattern

<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)

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6.3.4 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).

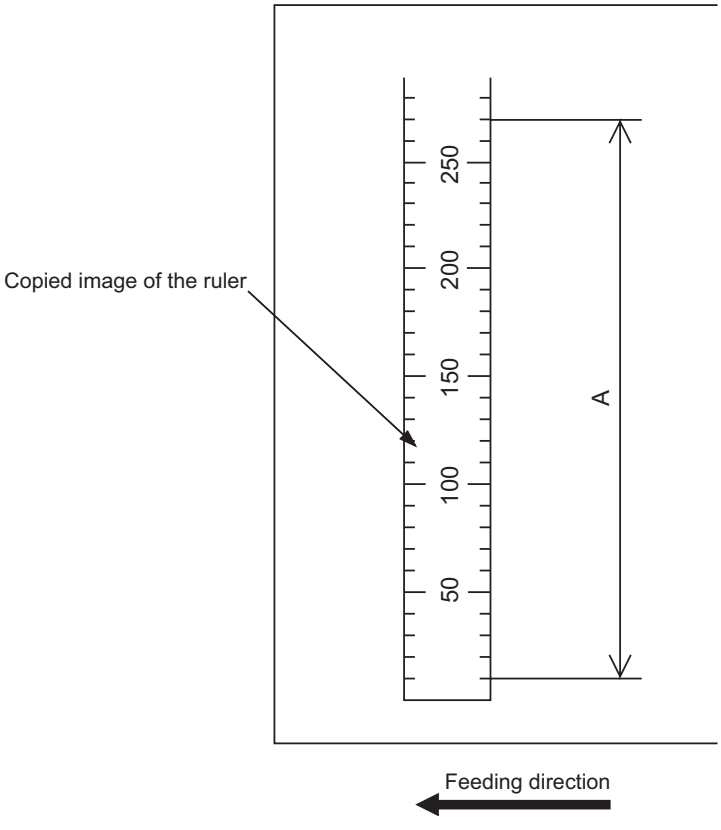

Fig. 6-9

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[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.

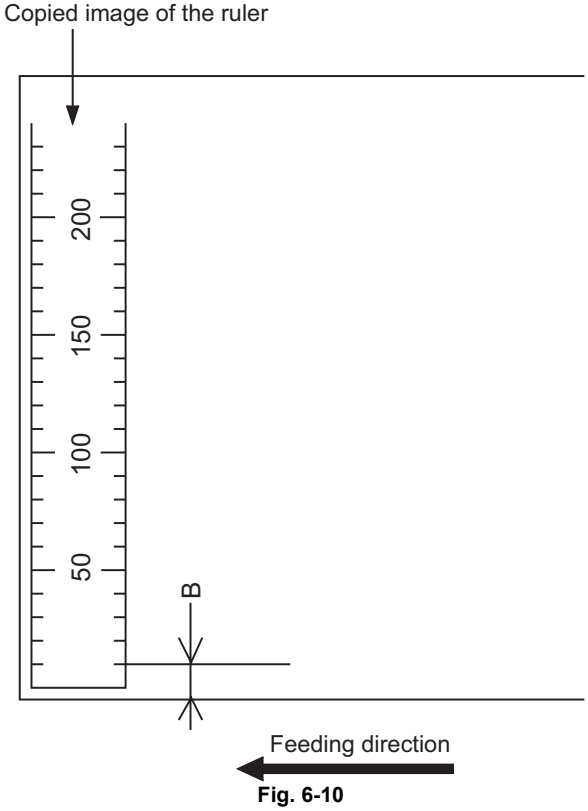

Fig. 6-10

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[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.

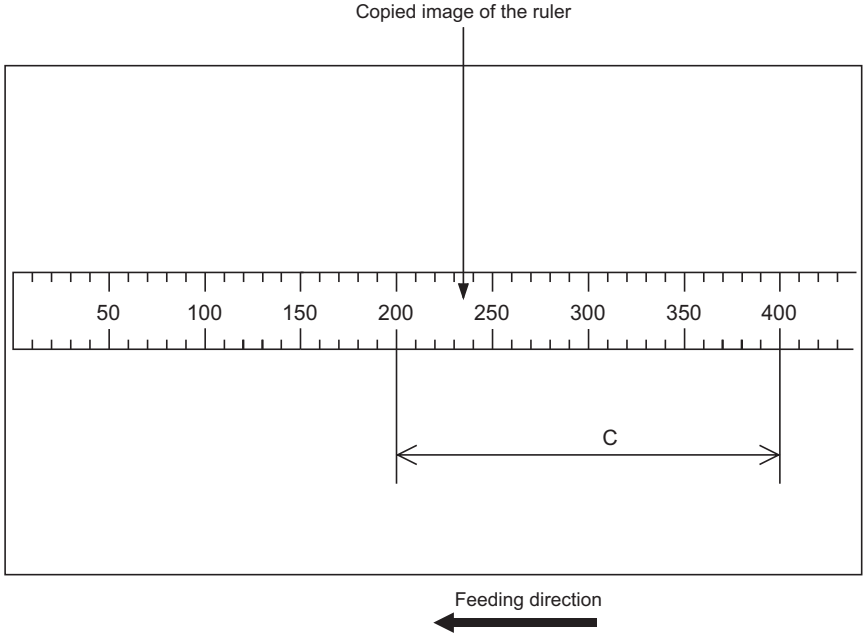

Fig. 6-11

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[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.

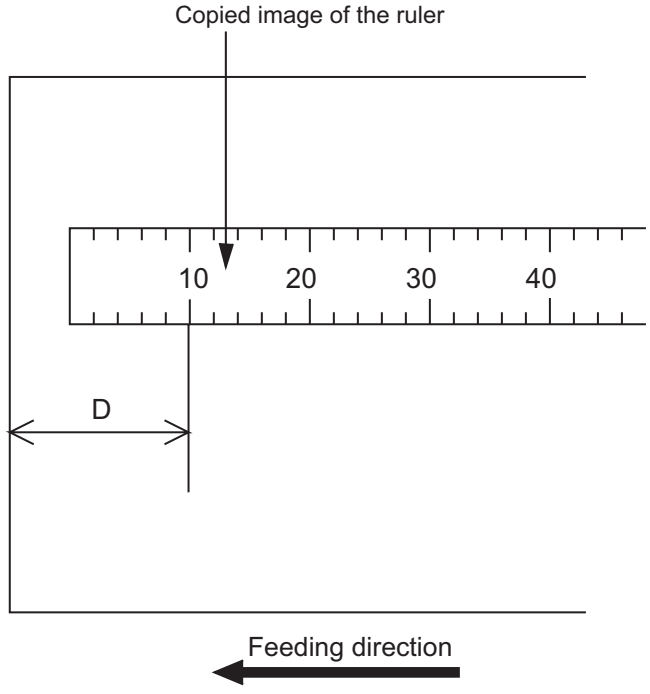

Fig. 6-12

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[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).

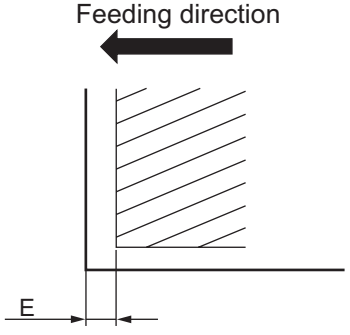

Fig. 6-13

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[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).

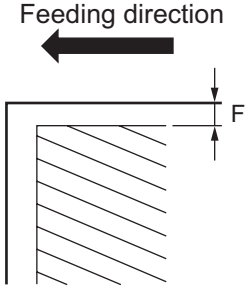

Fig. 6-14

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[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).

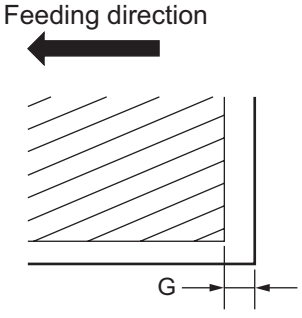

Fig. 6-15

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6.4 Image Quality Adjustment (Copying Function)

6.4.1 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).

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6.4.2 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.6-19 "6.4.1 Density adjustment".

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6.4.3 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	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 (The larger the value is, the sharper the image becomes.) • Example of value entry in case the mode is "Text/Photo". 2 1 └ Fixed value for Text/ Photo mode └ Key in a value 0 to 9 **Note:** When the value "0" is keyed in at the ten's digit, the value is not displayed on LCD screen.

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.6-19 "6.4.1 Density adjustment".

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6.4.4 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: 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.6-19 "6.4.1 Density adjustment".

6.4.5 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.6-19 "6.4.1 Density adjustment".

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6.4.6 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.6-19 "6.4.1 Density adjustment".

6.4.7 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.6-19 "6.4.1 Density adjustment".

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6.4.8 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:** 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).

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6.5 Image Quality Adjustment (Printing Function)

6.5.1 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).

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6.5.2 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	When the value is decreased, text becomes lighter. Acceptable values: 0 to 63 **Notes:** 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).

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6.6 Image Quality Adjustment (Scanning Function)

6.6.1 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).

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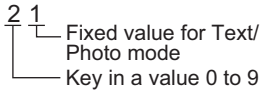
6.6.2 Sharpness adjustment

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 • The larger the value is, the sharper the image becomes.) • Example of value entry in case the mode is "Text/Photo".  **Note:** When the value "0" is keyed in at the ten's digit, the value is not displayed on LCD screen.
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).

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6.6.3 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: 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.6-27 "6.6.1 Density adjustment".

6.6.4 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.6-27 "6.6.1 Density adjustment".

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6.6.5 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.6-27 "6.6.1 Density adjustment".

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6.7 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.

6.7.1 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.6-32 "[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.6-34 "[B] Connection for developer bias adjustment".	Refer to 🕮 P.6-34 "[C] Connection for main charger adjustment".	Refer to 🕮 P.6-35 "[D] Connection for transfer/ separation charger adjustment".	

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[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.

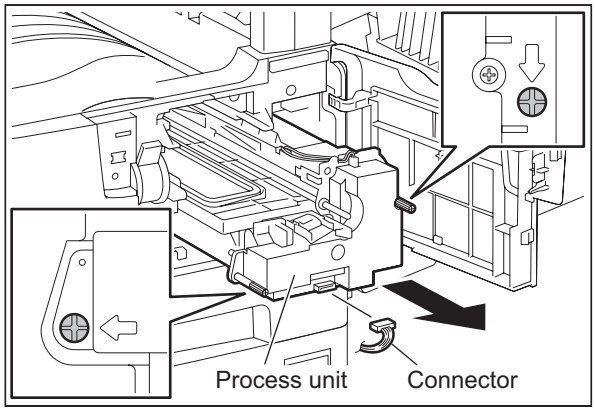

Fig. 6-16

(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.

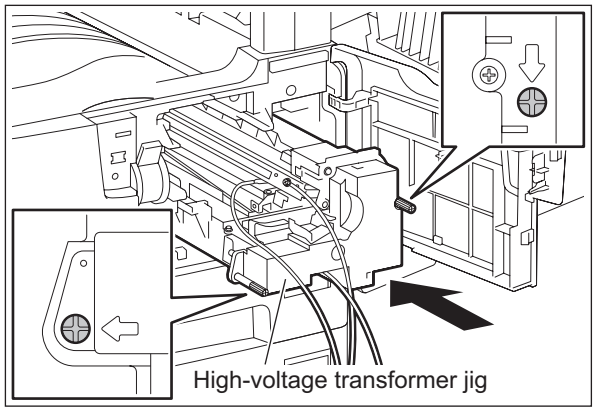

Fig. 6-17

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

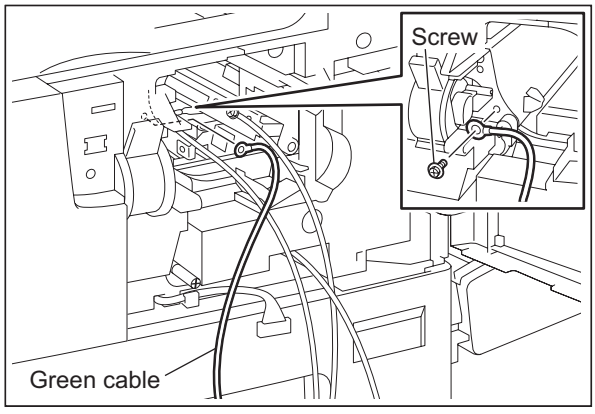

Fig. 6-18

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

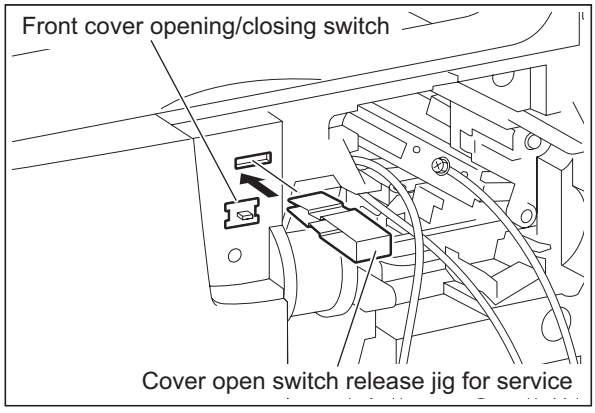

Fig. 6-19

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[B] Connection for developer bias adjustment

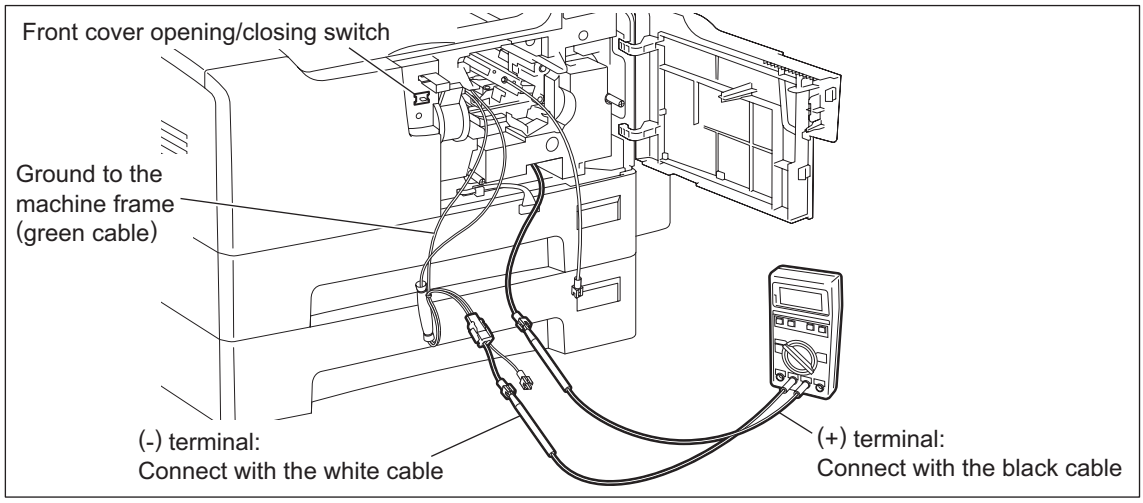

Fig. 6-20

[C] Connection for main charger adjustment

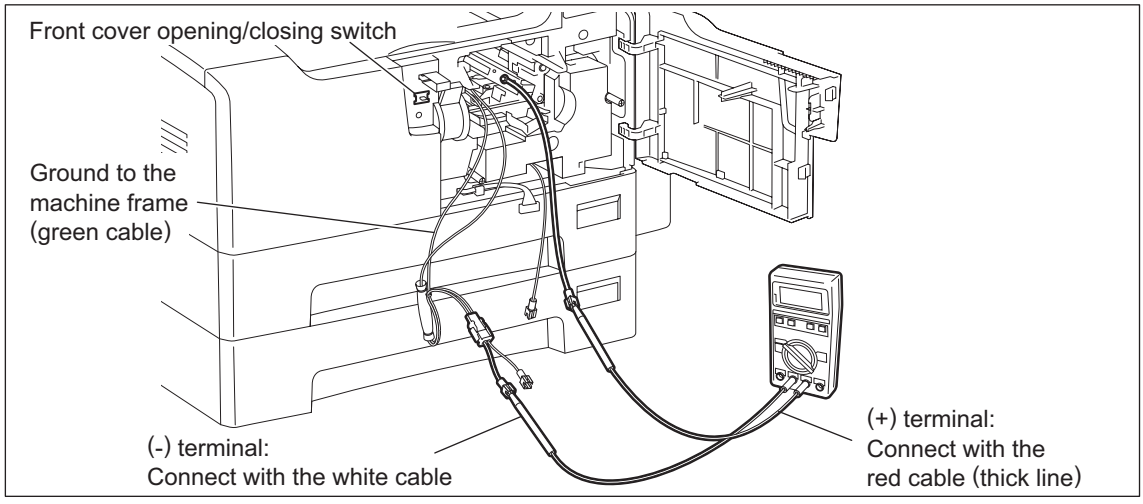

Fig. 6-21

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[D] Connection for transfer/separation charger adjustment

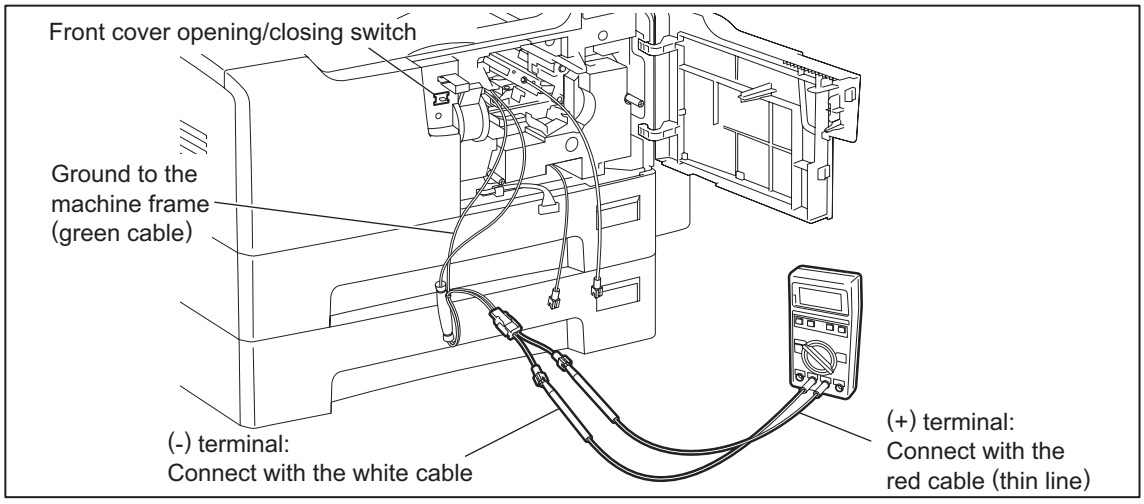

Fig. 6-22

6

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[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.

<Keys to press> <Display>

[0][5]
[POWER]

↓

Front cover opening/ closing switch : Press one time.

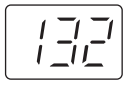
① →

↓

[Digital keys] : Enter the code.

↓

[START] : Current adjustment value is displayed.



↓

[START] : Adjustment start.

↓

Reproduction ratio button ([25%] / [200%]) : Adjust the value to satisfy the following table.

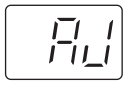
	Developer bias	Main charger
Code	205	210
Adjustment value	-341±5V	-454±5V

	Transfer charger		
	Leading edge area of paper	Center area of paper	Trailing edge area of paper
Code	220	221	222
Adjustment value	1005±106mV	1086±106mV	845±71mV

	Separation charger		
	Leading edge area of paper	Center area of paper	Trailing edge area of paper
Code	233	234	235
Adjustment value	-566±54mV	-566±54mV	-391±36mV

↓

[INTERRUPT] : Adjusted value is stored in memory.



→ Return to ① to enter the other adjustment code.

↓

[POWER]
OFF/ON

Fig. 6-23

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6.7.2 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.

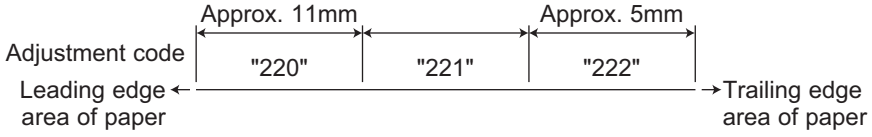

Fig. 6-24

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[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.

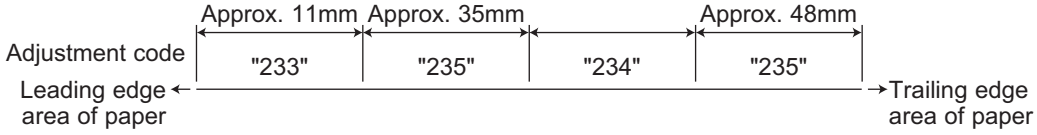

Fig. 6-25

* Adjustment code 235 performs the adjustment for 2 areas.

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6.8 Adjustment of the Scanner Section

6.8.1 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.

6.8.2 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.

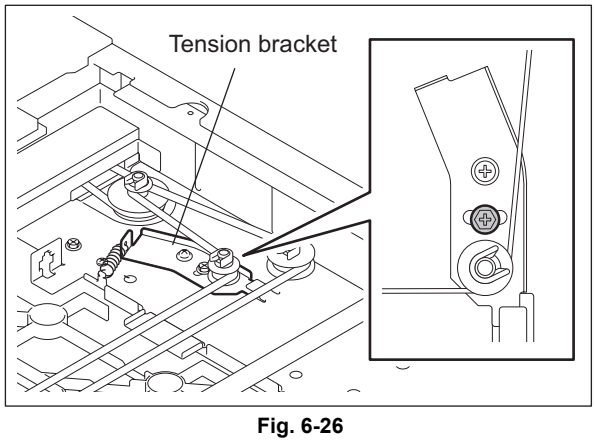

Fig. 6-26

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6.8.3 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.

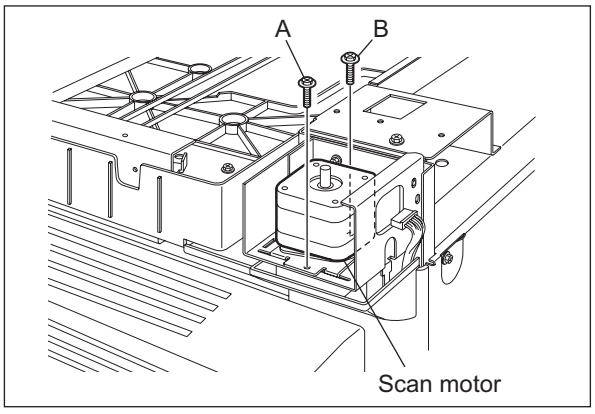

Fig. 6-27

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

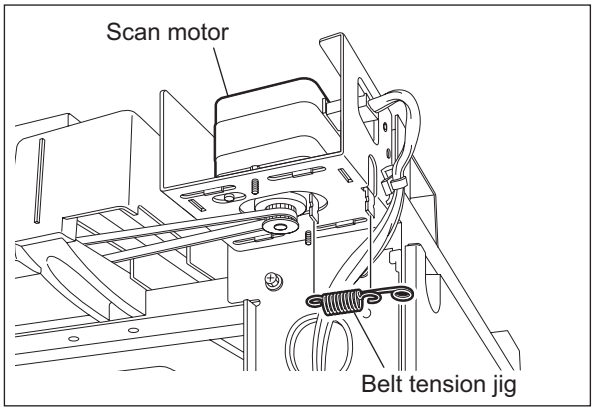

Fig. 6-28

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

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6.9 Adjustment of the Paper Feeding System

6.9.1 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).

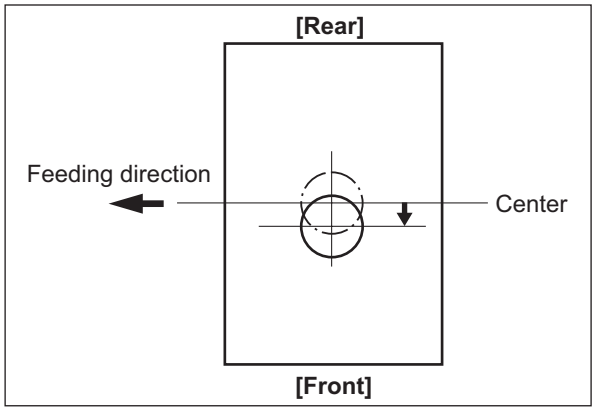

Fig. 6-29

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).

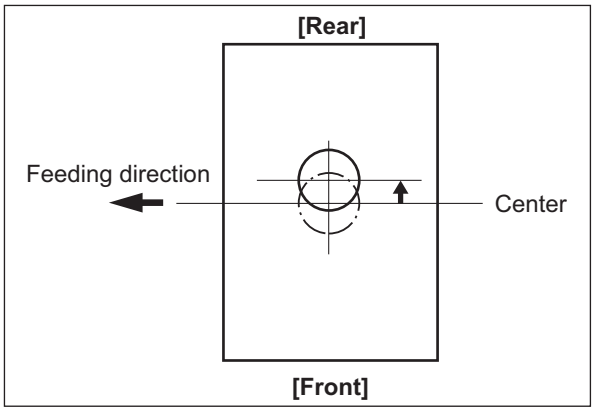

Fig. 6-30

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

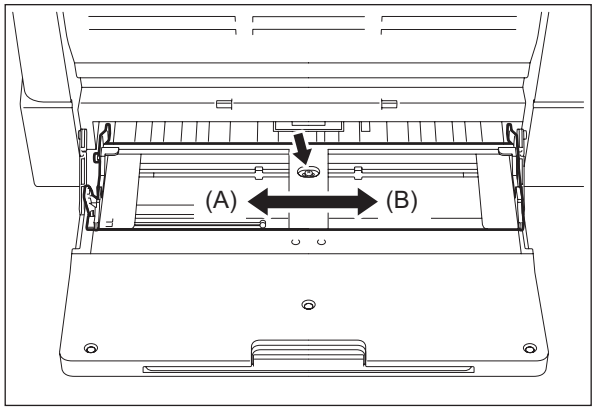

Fig. 6-31

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6.10 Adjustment of Developer Unit

6.10.1 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.

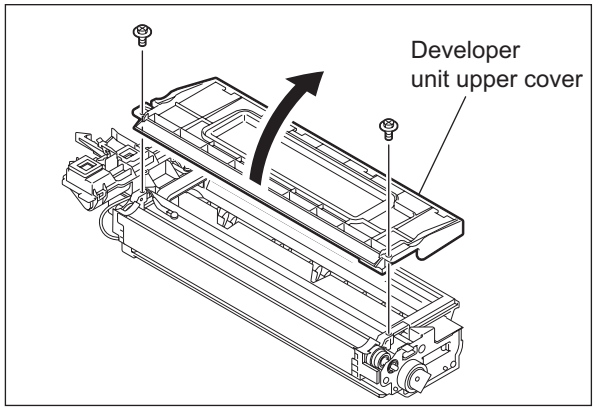

Fig. 6-32

(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)

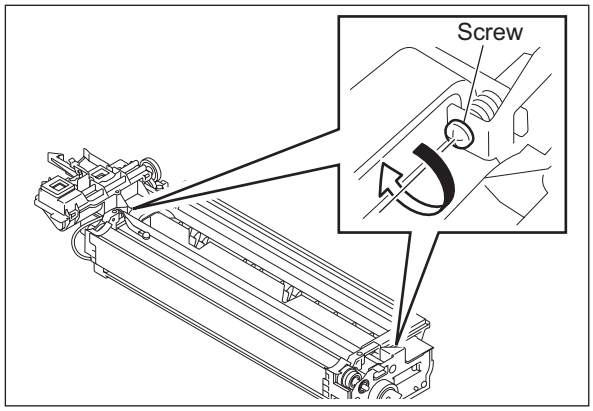

Fig. 6-33

(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.

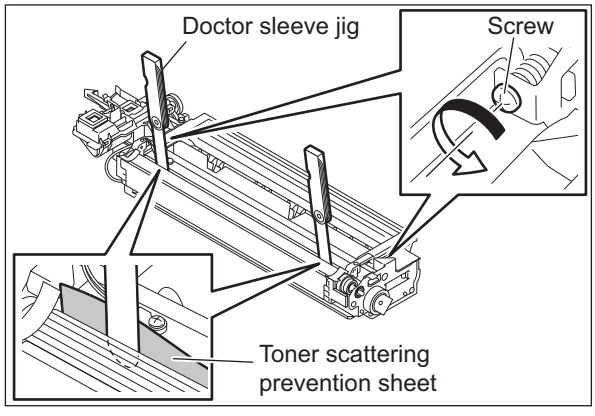

Fig. 6-34

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(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.

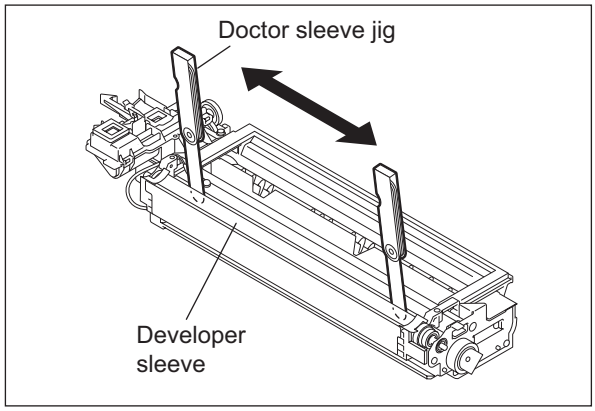

Fig. 6-35

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

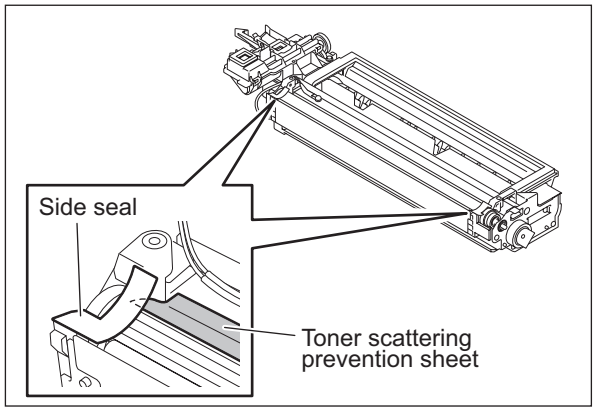

Fig. 6-36

(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.6-2 "6.2 Adjustment of the Auto-Toner Sensor".)

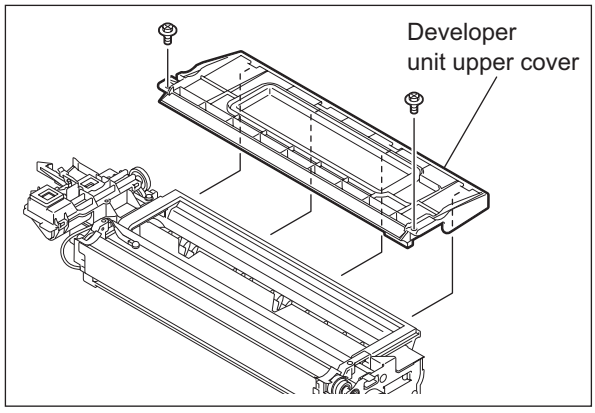

Fig. 6-37

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6.11 Adjustment of the ADF (MR-2020)

6.11.1 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).

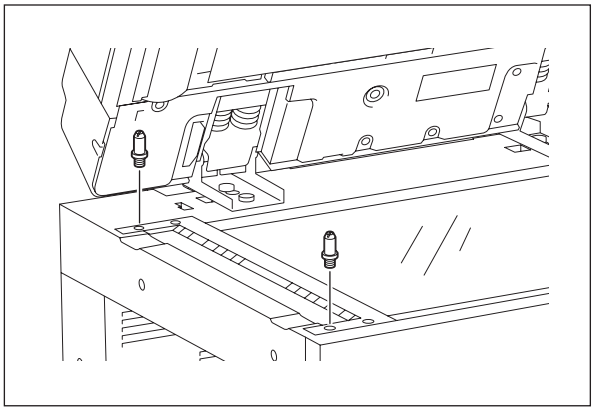

Fig. 6-38

(2) Remove the platen sheet.

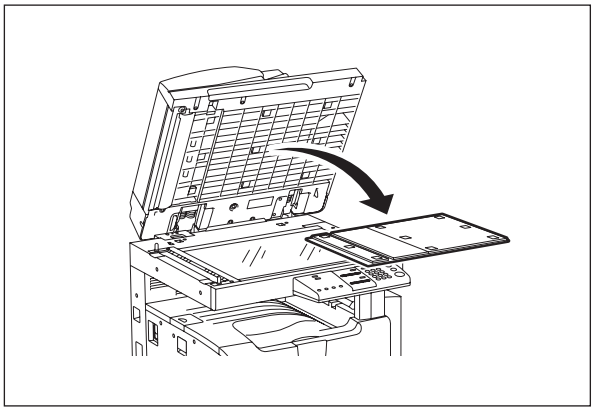

Fig. 6-39

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

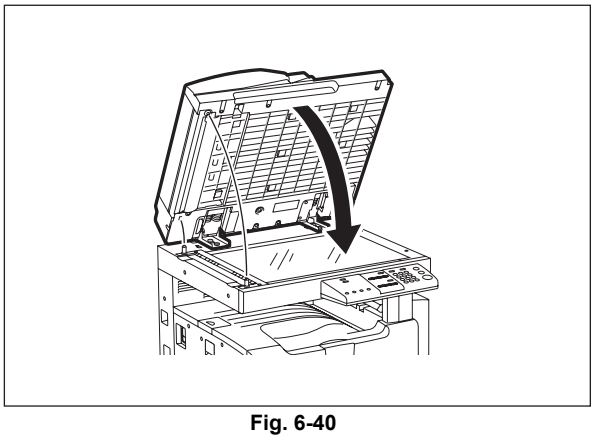

Fig. 6-40

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[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.

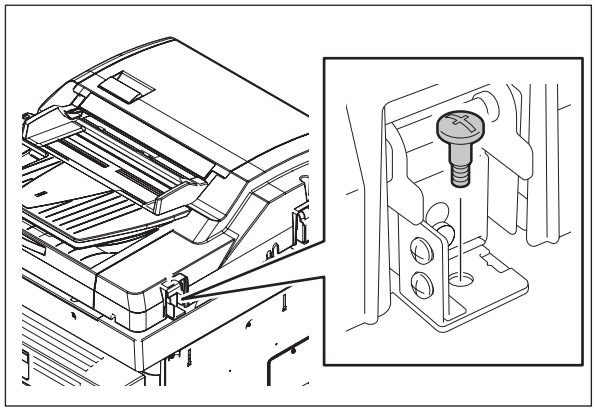

Fig. 6-41

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

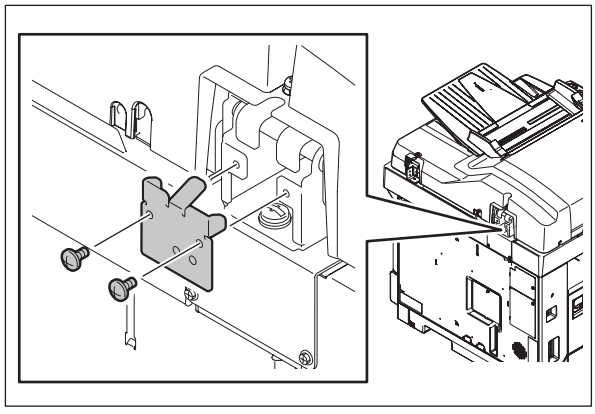

Fig. 6-42

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

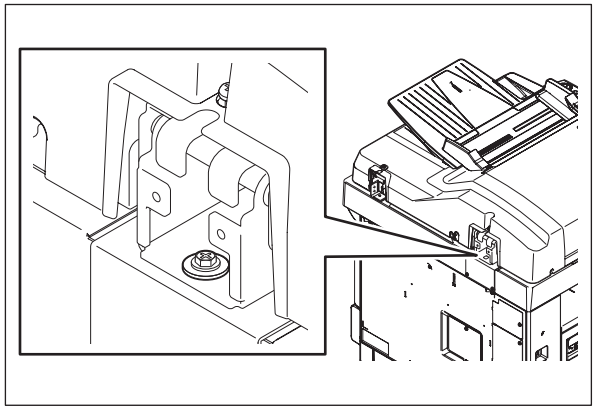

Fig. 6-43

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

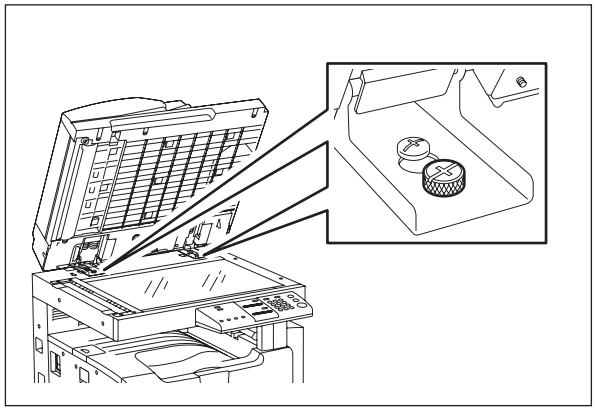

Fig. 6-44

(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.

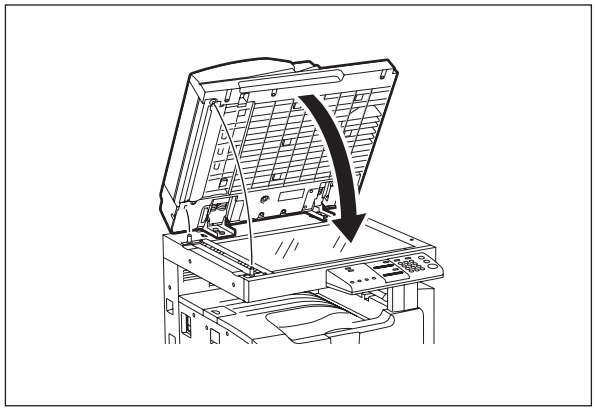

Fig. 6-45

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

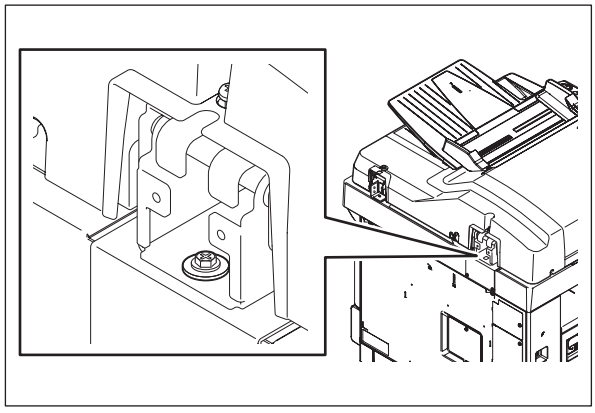

Fig. 6-46

(7) Install the bracket.

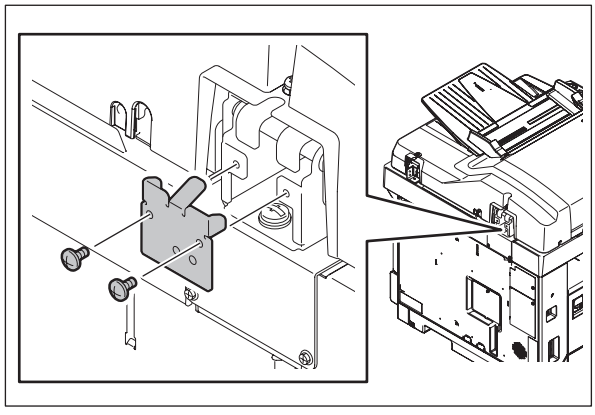

Fig. 6-47

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

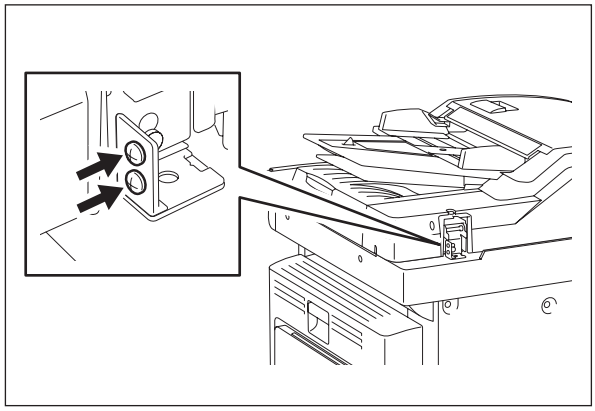

Fig. 6-48

(9) Match the screw hole positions.

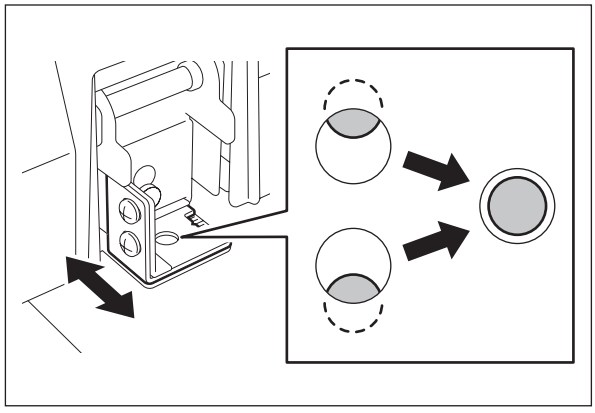

Fig. 6-49

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

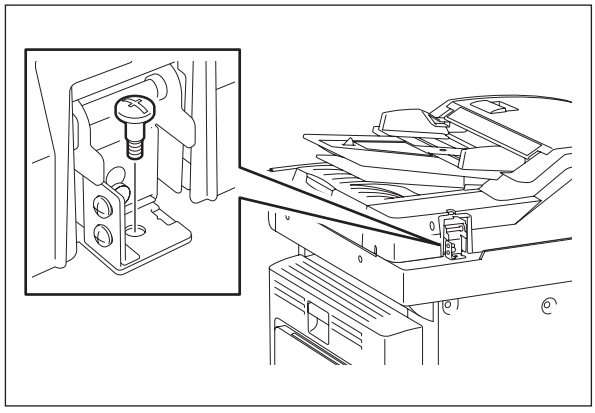

Fig. 6-50

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

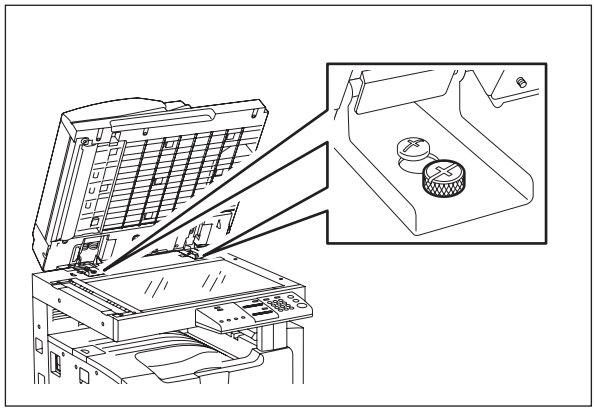

Fig. 6-51

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(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.

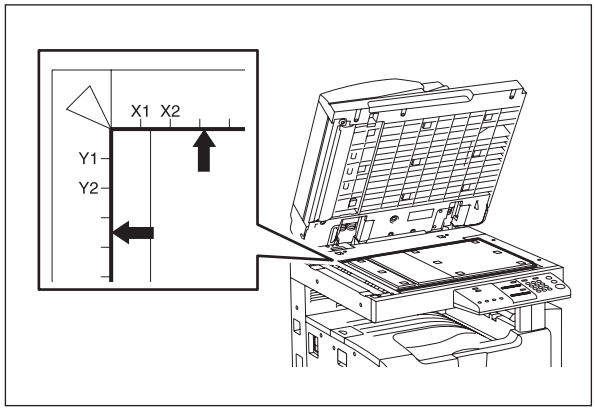

Fig. 6-52

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6.11.2 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

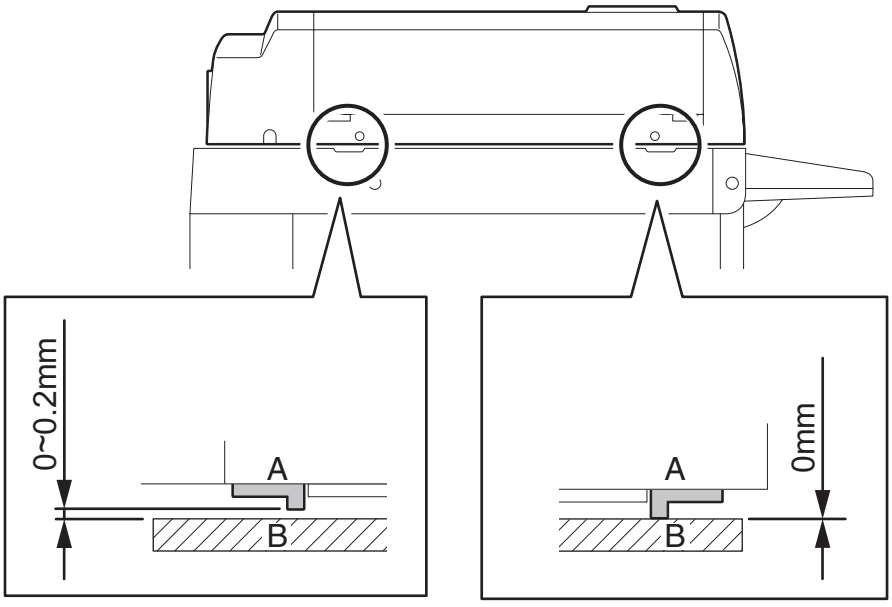

Fig. 6-53

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[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

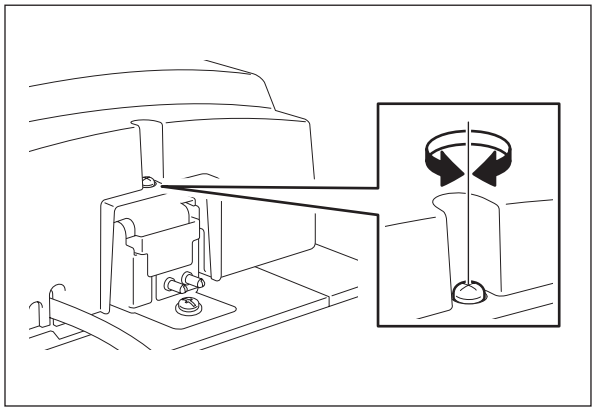

Fig. 6-54

- 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

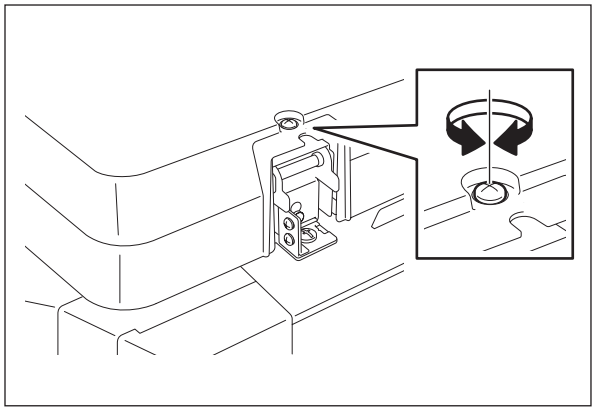

Fig. 6-55

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6.11.3 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.

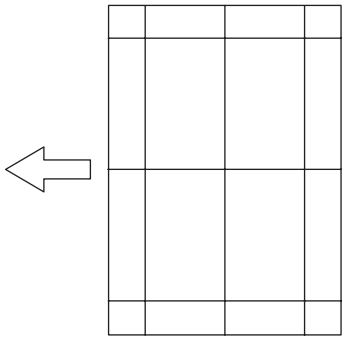

Fig. 6-56 Chart (Original)

(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.

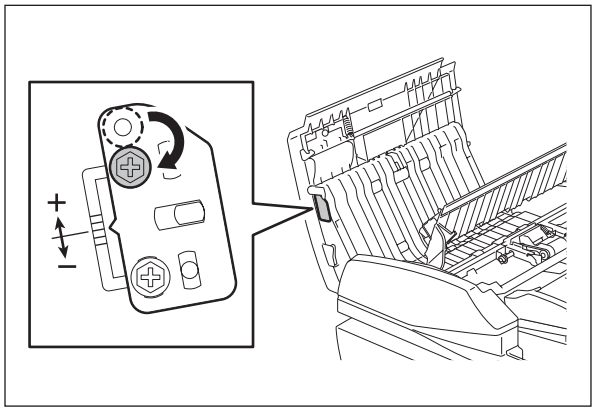

Fig. 6-57

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(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 “-”.

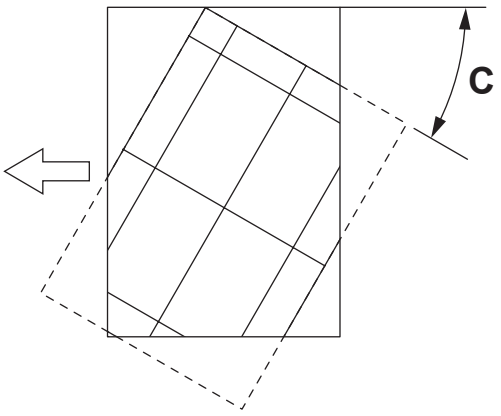

Fig. 6-58

Shift the aligning plate in the direction of “+”.

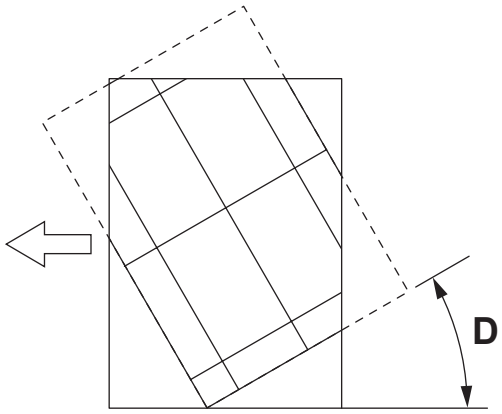

Fig. 6-59

Shift the aligning plate in the direction of “-”.

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6.11.4 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.

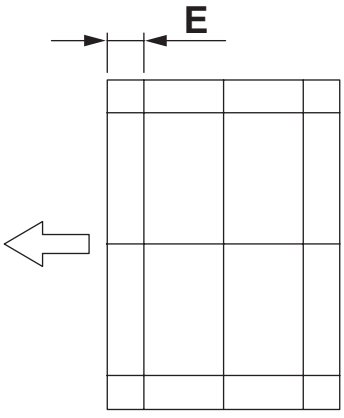

Fig. 6-60 Chart (Original)

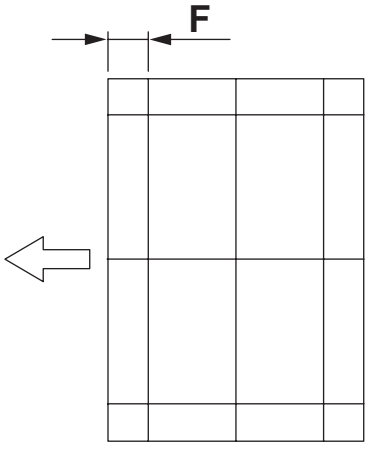

Fig. 6-61 Copy

[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.

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6.11.5 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.

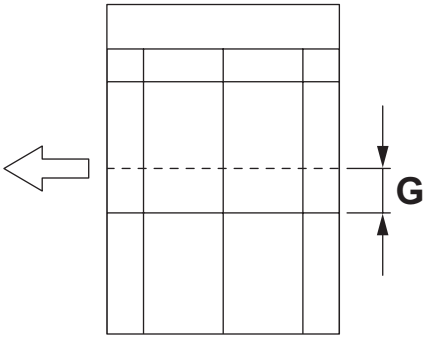

Fig. 6-62

- 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.

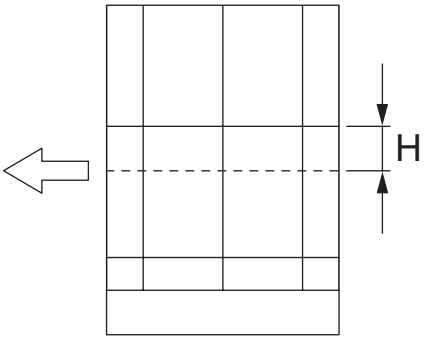

Fig. 6-63

(3) Press the [INTERRUPT] button.

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6.11.6 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 “I”.

[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 “I” is larger than the chart dimension, enter a value smaller than the current one.
- If the copy image dimension “I” is smaller than the chart dimension, enter a value larger than the current one.

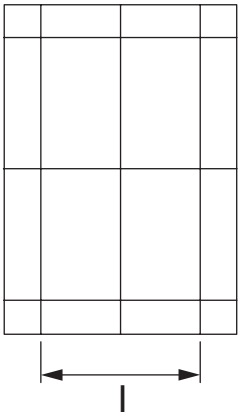

Fig. 6-64

(3) Press the [INTERRUPT] button.

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6.11.7 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).

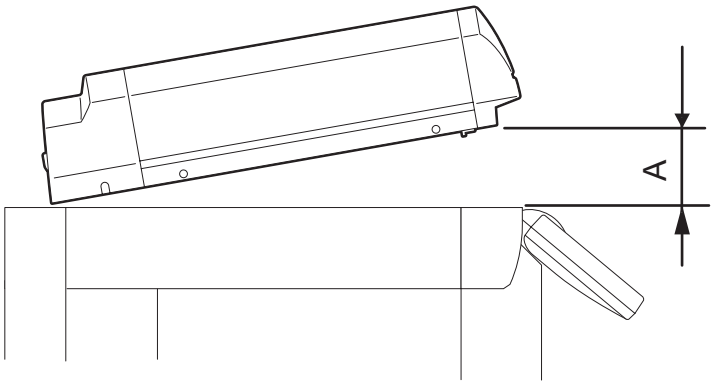

Fig. 6-65

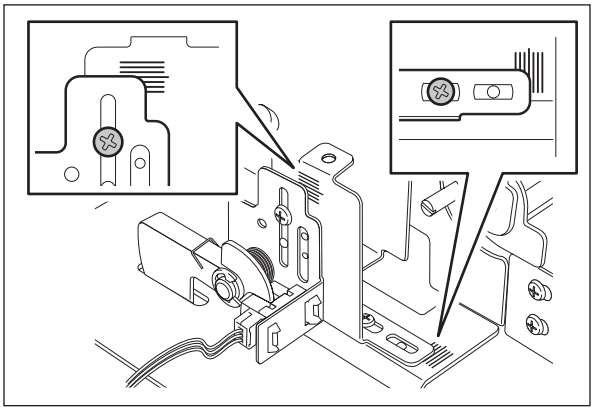

Fig. 6-66

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7. PREVENTIVE MAINTENANCE (PM)

7.1 General Descriptions for PM Procedure

Perform the preventive maintenance in the following timing.
e-STUDIO223/243: 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.

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7.2 Operational Items in Overhauling

Overhaul each equipment with the following timing.

e-STUDIO223/243: 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.

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7.3 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.

[Preventive Maintenance checklist]

Notes:

1. 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-STUDIO223/243: every 90,000 sheets
2. Value under “Replacement” indicates the replacement cycle for e-STUDIO223/243.
3. The replacement cycle of the parts in the feeding section equals to the number of sheets fed from each paper source.
4. Be careful not to put oil on the rollers, belts and belt pulleys when lubricating.
5. 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					

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C. Feed unit

Items to check		Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
C1	Main paper feed roller	A		90		P25-I7	
C2	Sub paper feed roller	A				P25-I25	
C3	Separation roller			90		P25-I28	
C4	Drive gear (tooth face and shaft)		W1				*c1
C5	Paper guide	B					
C6	GCB bushing bearing		L				
C7	One side of the plastic bushing		W1				
C8	Registration roller (metal)	A		R		P16-I4	
C9	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				

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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			90		P18-I2	*f1
F3	Contact point of terminals	B					
F4	Main charger wire cleaner			R	○	P18-I7	
F5	Main charger grid			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			90	○	P19-I18	*g1
G3	Separation charger wire			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			90			Ch.7.7.2
H2	Discharge LED	B					
H3	Whole cleaner unit	B					
H4	Drum cleaning blade			90		P20-I5	*h1
H5	Separation finger for drum			90		P20-I17	*h2
H6	Recovery blade	B		90		P20-I6	*h3
H7	Ozone filter			90		P11-I3	

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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			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			90		P23-I8	
J2	Pressure roller			90		P24-I4	
J3	Separation finger for fuser roller			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			90		P23-I30	
J9	Exit roller	A		R		P23-I19	

K. PFU (MY-1038)

Items to check		Cleaning	Lubrication	Replacement (x 1,000 sheets)	Operation check	Parts list <P-I>	Remarks
K1	Main paper feed roller	A		90		P4-I24	
K2	Sub paper feed roller	A				P4-I29	
K3	Separation pad			90		P4-I18	
K4	PFU feed roller	A				P3-I8	

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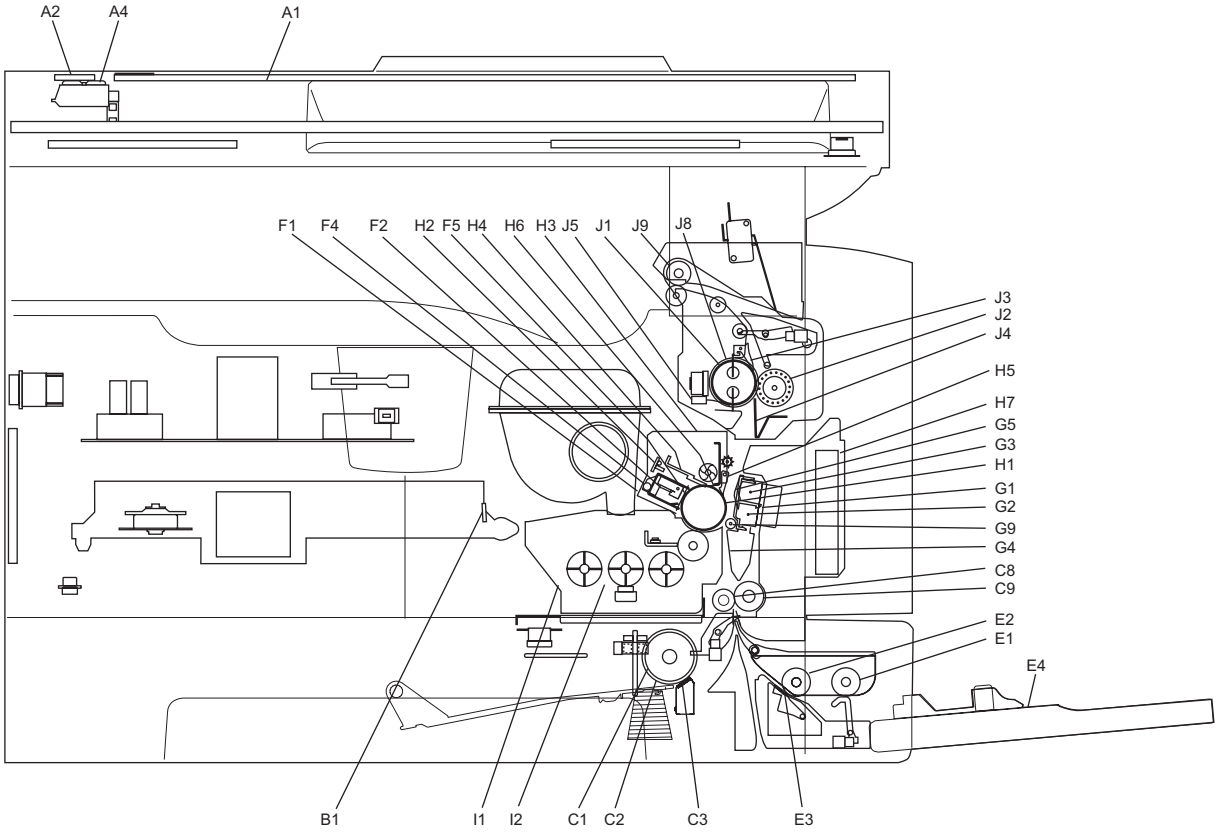

Fig. 7-1 Front side

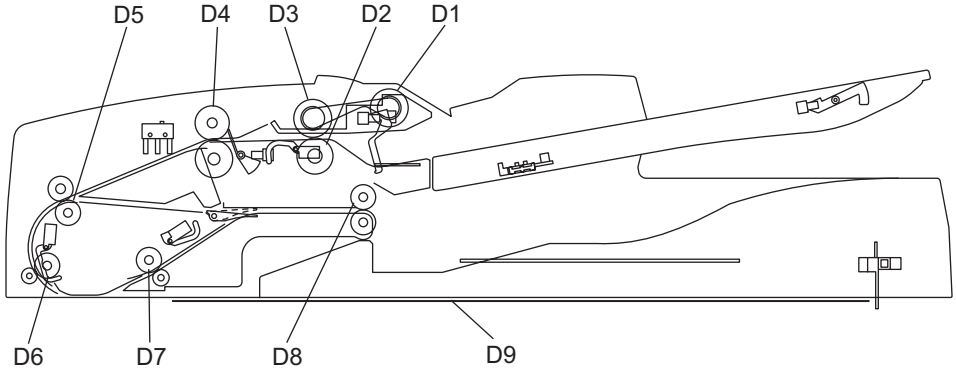

Fig. 7-2 Automatic Document Feeder (ADF)

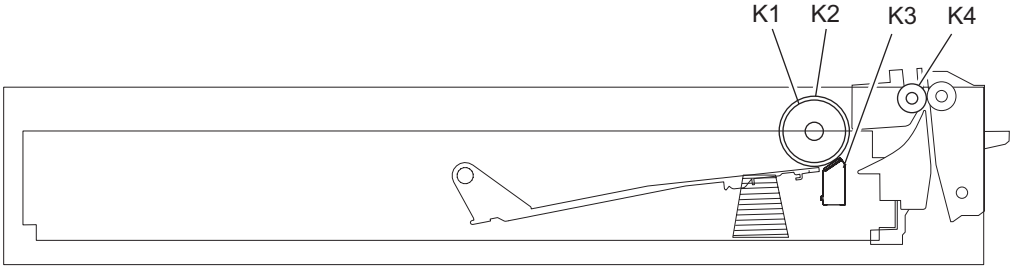

Fig. 7-3 Paper Feed Unit (PFU)

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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.
When disassembling the driving section and applying grease at PM, follow the notes as below.

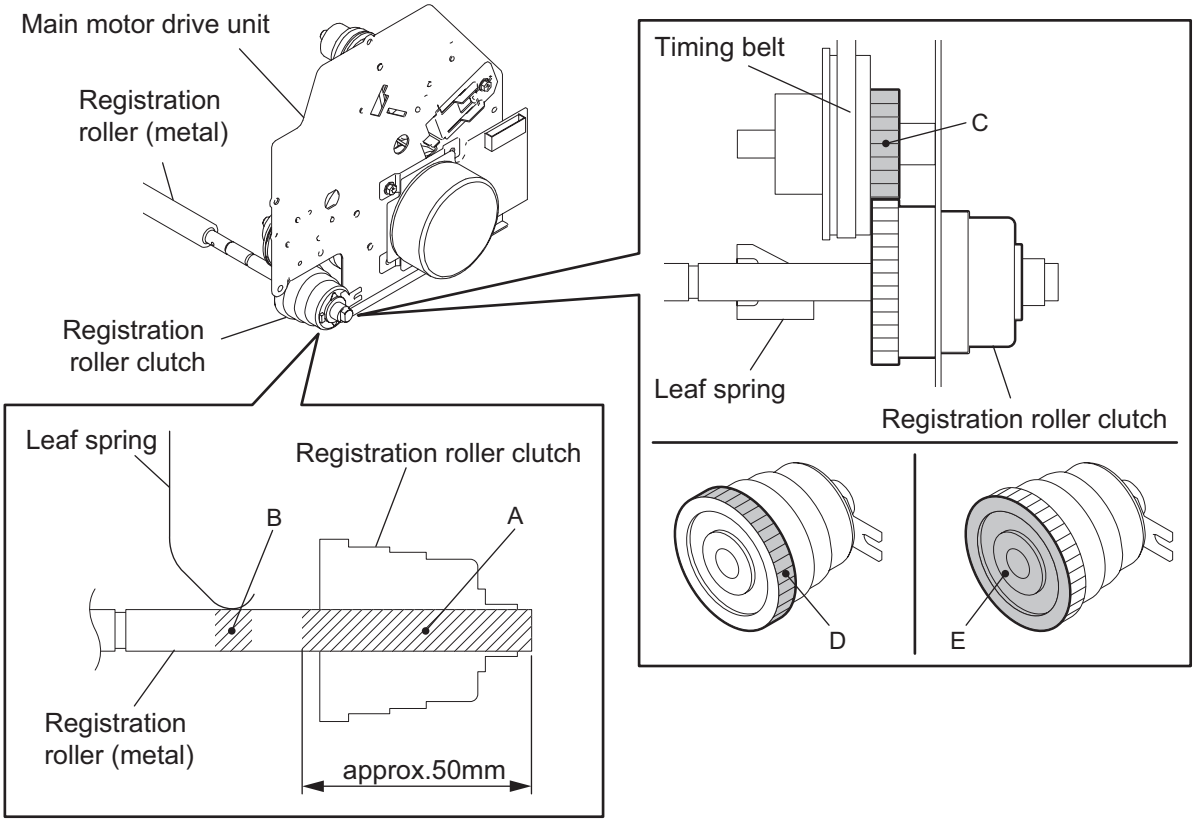

Fig. 7-4

A: Do not apply grease to the installation section of the registration roller clutch. Wipe off any grease.
B: Do not wipe off the conductive grease applied to the contact section of the leaf spring and the registration roller (metal).
C: Do not apply grease to gear teeth which contact the registration roller clutch gear.
D: Apply a blob of grease (the size of a rice grain) to the gear teeth of the registration roller clutch. Be careful not to use too much.
E: Do not apply grease to the side of the registration roller clutch gear. Wipe off any grease.

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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.

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* 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.6-2 "6.2 Adjustment of the 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.

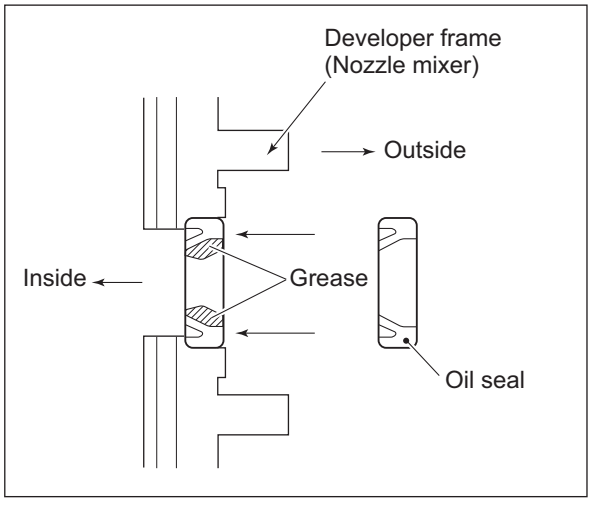

Fig. 7-5

* 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.

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7.4 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

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7.5 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

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7.6 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

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7.7 Precautions for Storing and Handling Supplies

7.7.1 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.

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7.7.2 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.

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7.7.3 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.

7.7.4 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 white 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.

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8. TROUBLESHOOTING

8.1 General Descriptions

This chapter explains the procedures for solving troubles occurring in the equipment.

When a trouble occurs, check if an error code is displayed on the LCD screen of the control panel first. If displayed, refer to“8.2 Error Code List” to figure out the classification and contents of the error, and then refer to “8.3 Diagnosis and Prescription for Each Error Code” to remove its cause.
If not displayed and the equipment does not operate properly or images are not printed properly, refer to “8.4 Troubleshooting for the Image” to remove its cause.

Note:

If unusual odor is detected or if smoke or fire comes out of the equipment, immediately turn the power OFF.
Even in the cases other than the above, fully observe safety precautions.
If any Main board or SRAM board shall be replaced, refer to 📖 P.9-7 "9.2 Caution in Replacing the MAIN Board" or 📖 P.9-7 "9.3 Caution in Replacing the SRAM Board".

8.1.1 If a problem continues even after performing all troubleshooting.

If a problem continues even after performing all troubleshooting and technical tips, report the problem to the appropriate Toshiba service center along with the following information. This information will help the service center understand your problem and take quick action to find the solution.

1. Serial Number
2. List Print
   Refer to 📖 P.5-6 "5.5 List Print Mode (9S)" for the detailed procedure to obtain a List Print.
   - FUNC (FUNC, 05/08) data list
   - System setting list
3. For image-related problems, collect image samples with the problem areas and the feeding direction marked first. Then provide information about the media type and weight, and the print data / spool files for duplicating the problem.
4. For abnormal acoustic noise, describe the situation in as much detail as possible.
5. For hardware-related problems, provide photos of any broken parts, paper jams, etc. In case of paper jams, include the type of paper and its manufacturer.
6. For software-related problems, provide list prints, TopAccess Logs and the detailed procedure needed to duplicate the problem.

* This is the minimum information required to report a complaint. It would be appreciated if you could obtain additional information.

* Follow the directions of the service center if they request additional information as each issue is unique to some degree.

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8.2 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.)

8.2.1 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. 8-4
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. 8-4
E03	Other paper jam	Power-ON jam: The paper is remaining on the paper transport path when power is turned ON.	P. 8-5
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. 8-7
E13		Drawer misfeeding (Paper not reaching the registration sensor): The paper fed from the drawer does not reach the registration sensor.	P. 8-8
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. 8-9
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. 8-6
E40	Cover open jam	Transfer cover open jam: The transfer cover has opened during printing.	P. 8-10
E41		Front cover open jam: The front cover has opened during printing.	P. 8-10
E44		PFU cover open jam: The PFU cover has opened during printing.	P. 8-11
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. 8-12
E72		Jam not reaching the read sensor: The original does not reach the read sensor after it has passed the registration sensor.	P. 8-12
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. 8-13
E86		ADF jam access cover open: The ADF jam access cover has opened during ADF operation.	P. 8-13
E87		ADF open jam: ADF has opened during ADF operation.	P. 8-14

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8.2.2 Service call

Error code	Classification	Contents	Troubleshooting
C01	Drive system related service call	Main motor abnormality: The main motor is not rotating normally.	P. 8-15
C21	Scanning system related service call	CIS unit initialization error	P. 8-16
C26		Peak detection error / FPGA configuration error: Lighting of the exposure lamp (white reference) is not detected when power is turned ON.	P. 8-16
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. 8-17
C43		Thermistor abnormality during warming up or in ready status after abnormality judgment	P. 8-18
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. 8-19
C45		Thermistor abnormality during printing: Abnormality of the thermistor is detected during printing.	P. 8-20
C55	Optional communication related service call	ADF I/F error: Communication error has occurred between the ADF and the scanner	P. 8-23
C94	Other service call	Firmware update error: An error message appears when either of the following Main PC boards is installed to e-STUDIO223/243. - The Main PC board for e-STUDIO181/211 - The Main PC board for e-STUDIO163/166/203/206	P. 8-22
C97	Process related service call	High-voltage transformer abnormality: Leakage of the main charger is detected.	P. 8-22
CA1	Laser optical unit related service call	Polygonal motor abnormality: The polygonal motor is not rotating normally.	P. 8-21
CA2		H-Sync detection error: H-Sync detection PC board cannot detect laser beams.	P. 8-21
F14	Other service call	Invalid backup counter: The value of the total counter is inconsistent with that of the backup counter.	P. 8-22

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8.3 Diagnosis and Prescription for Each Error Code

8.3.1 Paper transport jam

[E01] Leading edge of paper not reaching the exit sensor
[E02] Trailing edge of paper not passing the exit sensor

Classification	Contents
Paper transport jam	Leading edge of paper not reaching the exit sensor Trailing edge of paper not passing the exit sensor

Step	Check Item	Result	Measure	Next Step
1	Open the transfer cover. Is there any paper on the transport path?	Yes	Remove the paper.	2
		No		
2	Is the exit sensor working? (Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[5])	Yes		3
		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.	
3	Is the registration roller clutch working? (Perform the output check in the test mode: 04-108/158)	Yes		4
		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.	
4			1. Check the registration roller. Replace it if it is worn out. 2. Check if the aligning amount is appropriate. (See📖 P.6-6 "6.3.2 Paper alignment at the registration roller") An [E01] error occurs both when the amount is too large and too small.	

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

Classification	Contents
Paper transport jam	Paper remaining inside the equipment at power-ON

Step	Check Item	Result	Measure	Next Step
1	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.	2
		No		
2	Is the sensor in the jamming area working? (Perform the input check in the test mode: refer to the following table.)	Yes		3
		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.	
3			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]

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

Classification	Contents
Paper transport jam	Paper fed from the PFU drawer not reaching the registration sensor

Step	Check Item	Result	Measure	Next Step
1	Open the transfer cover. Is there paper in front of the registration sensor?	Yes	Remove the paper.	2
		No		
2	Is the registration sensor working? (Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[6]	Yes		3
		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.	
3	Are the PFU transport clutches (High speed/Low speed) working? (Perform the output check in the test mode: 04-203, 205)	Yes		4
		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.	
4			1. Check the condition of the paper feed roller of paper source, and replace it if it is worn out. 2. Check the transport roller. Replace it if it is worn out.	

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8.3.2 Paper misfeeding

[E12] Bypass misfeeding

Classification	Contents
Paper misfeeding	Bypass misfeeding

Step	Check Item	Result	Measure	Next Step
1	Open the transfer cover. Is there any paper in front of the registration sensor?	Yes	Remove the paper.	2
		No		
2	Is the registration sensor working? (Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[6])	Yes		3
		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.	
3	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])	Yes		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.	
4			Check the bypass pickup roller. Replace it if it is worn out.	

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

Classification	Contents
Paper misfeeding	Drawer misfeeding (paper not reaching the registration sensor)

Step	Check Item	Result	Measure	Next Step
1	Open the transfer cover. Is there any paper in front of the registration sensor?	Yes	Remove the paper.	2
		No		
2	Is the registration sensor working? (Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[6])	Yes		3
		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.	
3	Is the pickup clutch working? (Perform the output check in the test mode: 04-201)	Yes		4
		No	1. Check if the connector of the pickup 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 pickup clutch. 6. Replace the MAIN board.	
4			Check the drawer paper feed roller. Replace it if it is worn out.	

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

Classification	Contents
Paper misfeeding	PFU drawer misfeeding (paper not reaching the PFU feed sensor)

Step	Check Item	Result	Measure	Next Step
1	Open the side cover. Is there any paper in front of the PFU feed sensor?	Yes	Remove the paper.	2
		No		
2	Is the PFU feed sensor working? (Perform the input check in the test mode: 03-[INTERRUPT]OFF/[7]/[5])	Yes		3
		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.	
3	Is the PFU pickup clutch working? (Perform the output check in the test mode: 04-202)	Yes		4
		No	1. Check if the connector of the PFU pickup clutch 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 clutch. 6. Replace the MAIN board.	
4			Check the PFU drawer paper feed roller. Replace it if it is worn out.	

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8.3.3 Cover open jam

[E40] ADU cover opened during printing

Classification	Contents
Cover open jam	ADU cover opened during printing

Step	Check Item	Result	Measure	Next Step
1	Is the ADU cover open?	Yes	Remove paper if there is any, then close the cover.	2
		No		
2	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])	Yes		3
		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.	
3			Replace the MAIN board.	

[E41] Front cover opened during printing

Classification	Contents
Cover open jam	Front cover opened during printing

Step	Check Item	Result	Measure	Next Step
1	Is the front cover open?	Yes	Close the cover.	2
		No		
2	Is the front cover opening/closing switch working? (Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[3])	Yes		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.	
3	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])	Yes		4
		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.	
4			Replace the MAIN board.	

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[E44] PFU cover opened during printing

Classification	Contents
Cover open jam	PFU cover opened during printing

Step	Check Item	Result	Measure	Next Step
1	Is the PFU cover open?	Yes	Remove the paper if there is any, then close the cover.	2
		No		
2	Is the PFU cover opening/ closing switch working? (Perform the input check in the test mode: 03-[INTERRUPT]OFF/[9]/[2])	Yes		3
		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.	
3			Replace the MAIN board.	

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8.3.4 Transport jam (ADF)

[E71] Jam not reaching the original registration sensor

Classification	Contents
Transport jam (ADF)	Jam not reaching the original registration sensor

Step	Check Item	Result	Measure	Next Step
1	Are the pickup roller, feed roller and separation roller stained or worn out?	Yes	Clean the rollers or replace them.	2
		No		
2	Is the original excessively curled or folded?	Yes	Flatten and set it again.	
		No		3
3	Are the original registration sensor working? (Perform the input check: 03-[INTERRUPT]ON/[5]/[6])	Yes		4
		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.	
4			Replace the ADF board.	

[E72] Jam not reaching the read sensor

Classification	Contents
Transport jam (ADF)	Jam not reaching the read sensor

Step	Check Item	Result	Measure	Next Step
1	Are the registration roller and read roller stained?	Yes	Clean the rollers.	
		No		2
2	Is the read sensor working? (Perform the input check: 03-[INTERRUPT]ON/[4]/[0])	Yes		3
		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.	
3			Replace the ADF board.	

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[E73] Stop jam at the exit sensor

Classification	Contents
Transport jam (ADF)	Stop jam at the exit sensor

Step	Check Item	Result	Measure	Next Step
1	Is the exit roller stained?	Yes	Clean the roller.	
		No		2
2	Is the exit sensor working? (Perform the input check: 03-[INTERRUPT]ON/[2]/[2])	Yes		3
		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.	
3			Replace the ADF board.	

[E86] ADF jam access cover open

Classification	Contents
Transport jam (ADF)	ADF jam access cover open

Step	Check Item	Result	Measure	Next Step
1	Is the ADF jam access cover opened?	Yes	Remove the original, if any, and close the ADF jam access cover.	
		No		2
2	Is the ADF jam access cover switch working? (Perform the input check: 03-[INTERRUPT]ON/[4]/[4])	Yes		3
		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.	
3			Replace the ADF board.	

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[E87] ADF open jam

Classification	Contents
Transport jam (ADF)	ADF open jam

Step	Check Item	Result	Measure	Next Step
1	Is the ADF opened?	Yes	Remove the original, if any, and close the ADF.	
		No		2
2	Is the ADF opening/closing sensor adjusted within the specified range?	Yes		3
		No	Adjust the ADF opening/closing sensor.	
3	Is the ADF opening/closing sensor working? (Perform the input check: 03-[INTERRUPT]ON/[4]/[3])	Yes		4
		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.	
4			Replace the ADF board.	

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8.3.5 Drive system related service call

[C01] Main motor is abnormal

Classification	Contents
Drive system related service call	Main motor is abnormal

Step	Check Item	Result	Measure	Next Step
1	Is the main motor working? (Perform the output check in the test mode: 04-101/151)	Yes		2
		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.	
2	Is the LED on the main motor board lit without flickering?	Yes		3
		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.	
3			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.	

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8.3.6 Scanning system related service call

[C21] CIS unit initialization error

Classification	Contents
Scanning system related service call	CIS unit initialization error

Step	Check Item	Result	Measure	Next Step
1	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		2
2	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		3
3			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 / FPGA configuration error

Classification	Contents
Scanning system related service call	Peak detection error / FPGA configuration error

Step	Check Item	Result	Measure	Next Step
1	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.	

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8.3.7 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

Classification	Contents
Fuser unit related service call	Thermistor or heater is abnormal at power ON

Check Item	Measure
Check the thermistors	• Check if the connectors are disconnected. • Check if the center, side and edge thermistors are in contact with the surface of the fuser roller properly. • Check if the harnesses of the center, side and edge thermistors are open circuited.
Check the heater	• Check if the heater is broken. • Check if the connector of the heater is disconnected. • Check if the thermostat is blown.
Check the MAIN board	• Check if the connectors CN17 are disconnected. • Check if the conductor pattern on the MAIN board is short circuited or open circuited. • Replace the MAIN board.
Check the switching regulator	• Check if the connectors CN108 are disconnected.
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.

Parts to be replaced	Remark
MAIN board	
Switching regulator	

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

Classification	Contents
Fuser unit related service call	Thermistor abnormality during warming up or in ready status after abnormality judgment

Check Item	Measure
Check the thermistors	• Check if the connectors are disconnected. • Check if the center, side and edge thermistors are in contact with the surface of the fuser roller properly. • Check if the harnesses of the center, side and edge thermistors are open circuited.
Check the heater	• Check if the heater is broken. • Check if the connector of the heater is disconnected. • Check if the thermostat is blown.
Check the MAIN board	• Check if the connectors CN17 are disconnected. • Check if the conductor pattern on the MAIN board is short circuited or open circuited. • Replace the MAIN board.
Check the switching regulator	• Check if the connectors CN108 are disconnected.
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.

Parts to be replaced	Remark
MAIN board	
Switching regulator	

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[C44] Fuser is abnormal after abnormality judgment

Classification	Contents
Fuser unit related service call	Fuser is abnormal after abnormality judgment

Check Item	Measure
Check the thermistors	• Check if the connectors are disconnected. • Check if the center, side and edge thermistors are in contact with the surface of the fuser roller properly. • Check if the harnesses of the center, side and edge thermistors are open circuited.
Check the heater	• Check if the heater is broken. • Check if the connector of the heater is disconnected. • Check if the thermostat is blown.
Check the MAIN board	• Check if the connectors CN17 are disconnected. • Check if the conductor pattern on the MAIN board is short circuited or open circuited. • Replace the MAIN board.
Check the switching regulator	• Check if the connectors CN108 are disconnected.
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.

Parts to be replaced	Remark
MAIN board	
Switching regulator	

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[C45] Thermistor abnormality during printing

Classification	Contents
Fuser unit related service call	Fuser is abnormal after abnormality judgment

Check Item	Measure
Check the thermistors	• Check if the connector is disconnected. • Check if the edge thermistor is in contact with the surface of the fuser roller properly. • Check if the harness of the edge thermistor is open circuited.
Check the MAIN board	• Check if the connectors CN17 are disconnected. • Check if the conductor pattern on the MAIN board is short circuited or open circuited. • Replace the MAIN board.
Clear the status counter	Change the current status counter value (08-400) “6” to “0”.

Parts to be replaced	Remark
MAIN board	
Switching regulator	

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8.3.8 ADF related service call

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

8.3.9 Laser optical unit related service call

[CA1] Polygonal motor is abnormal

Classification	Contents
Laser optical unit related service call	Polygonal motor is abnormal

Step	Check Item	Result	Measure	Next Step
1	Is the polygonal motor rotating?	Yes	1. Check if the conductor pattern on the MAIN board is short circuited or open circuited. 2. Replace the MAIN board.	
		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.	

[CA2] H-Sync detection error

Classification	Contents
Laser optical unit related service call	H-Sync detection error

Step	Check Item	Result	Measure	Next Step
1	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.	

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8.3.10 Service call for others

[C94] Firmware update error

Classification	Contents
Service call for others	Firmware update error

Check Item	Measure
Check the MAIN board.	A C94 error message appears when either of the following Main PC boards is installed to e-STUDIO223/243. • The Main PC board for e-STUDIO181/211. • The Main PC board for e-STUDIO163/166/203/206.

[C97] High-voltage transformer abnormality

Classification	Contents
Service call for others	High-voltage transformer abnormality

Check Item	Measure
Check the High-voltage transformer.	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

Classification	Contents
Service call for others	Invalid backup counter

Step	Check Item	Result	Measure	Next Step
1	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		2
2	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		3
3			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.	

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8.3.11 Optional communication related service call

[C55] ADF I/F error

Classification	Contents
Optical communication related service call	ADF I/F error

Check Item	Measure
Check the connection.	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.

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8.4 Troubleshooting for the Image

1. Abnormality of image density / Gray balance

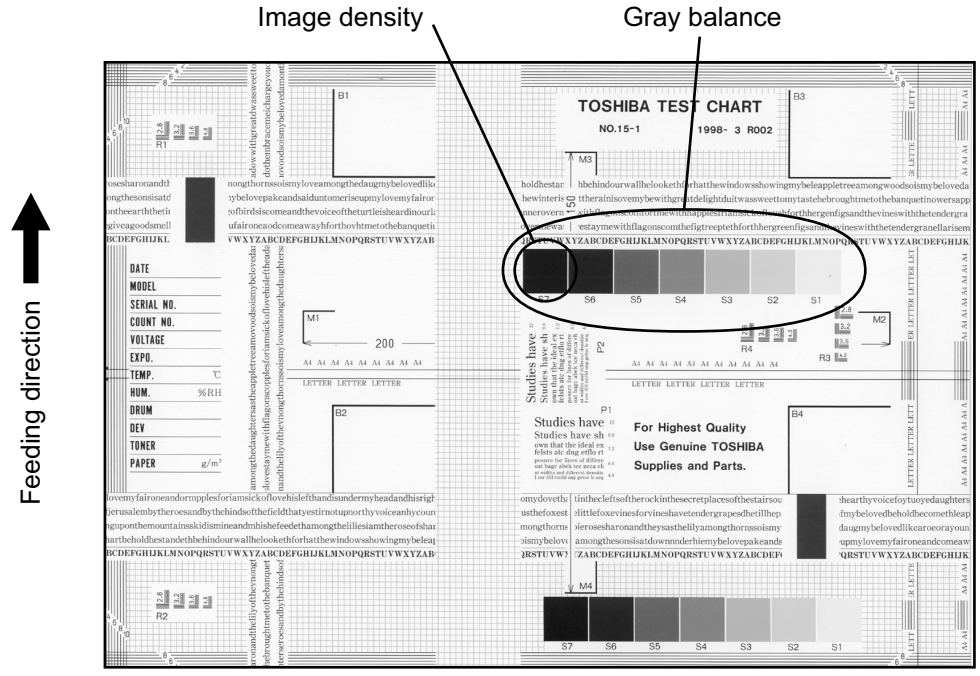

Fig. 8-1

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.

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2. Background fogging

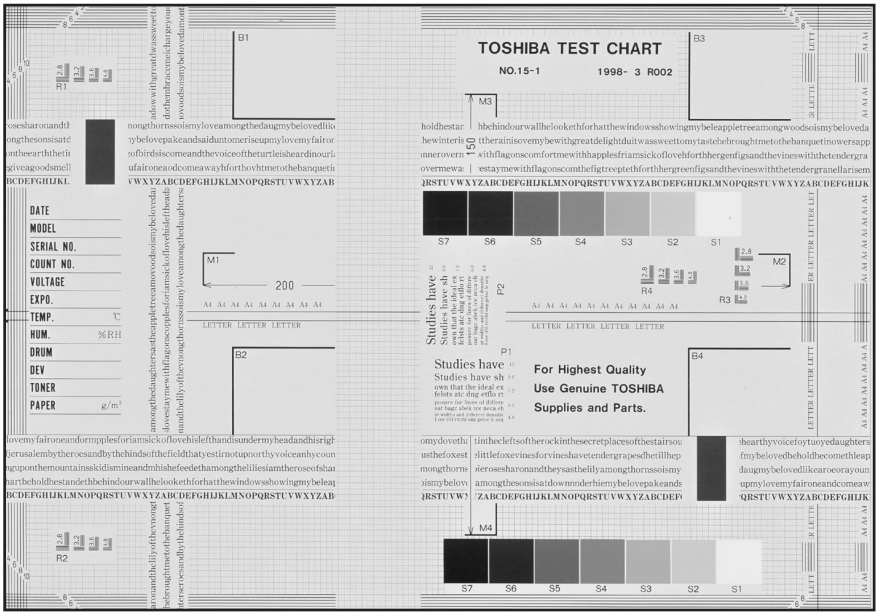

Fig. 8-2

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.

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3. Moire/lack of sharpness

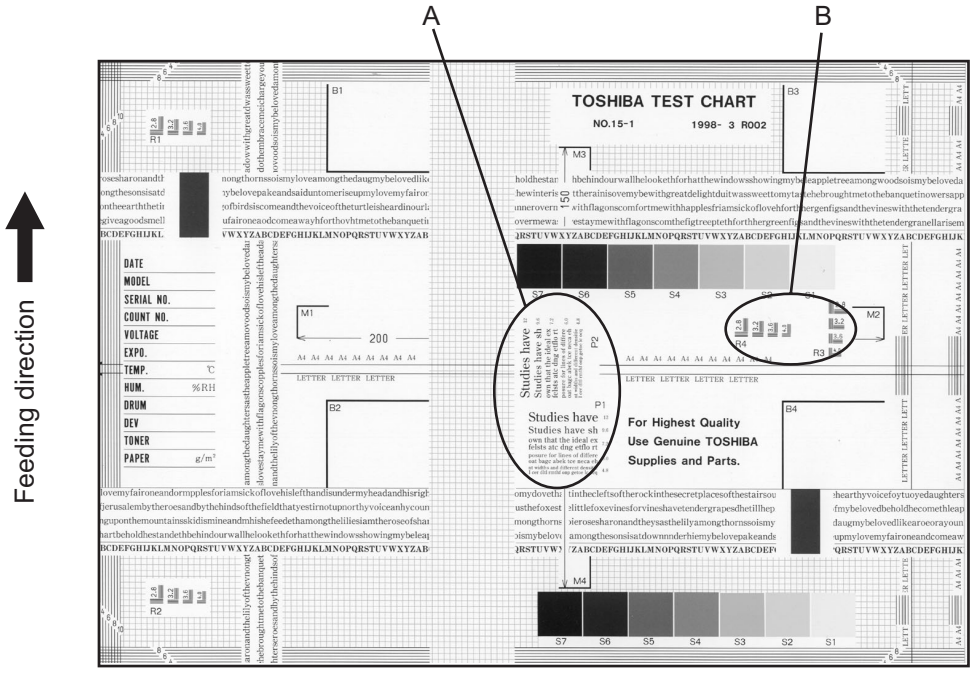

Fig. 8-3

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.

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4. Toner offset

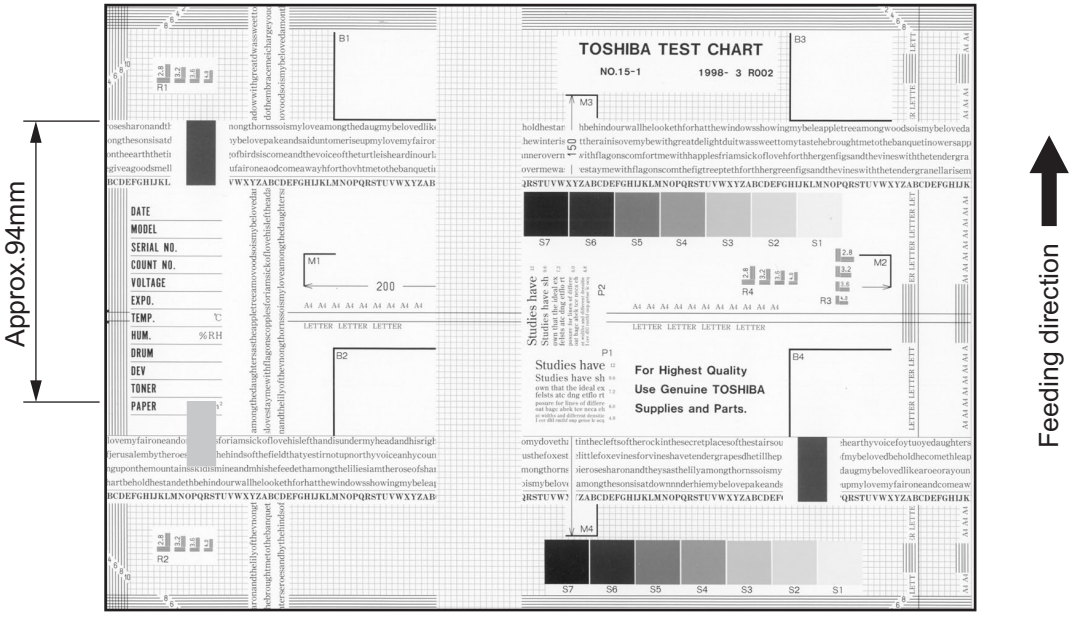

Fig. 8-4

8

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.

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5. Blurred image

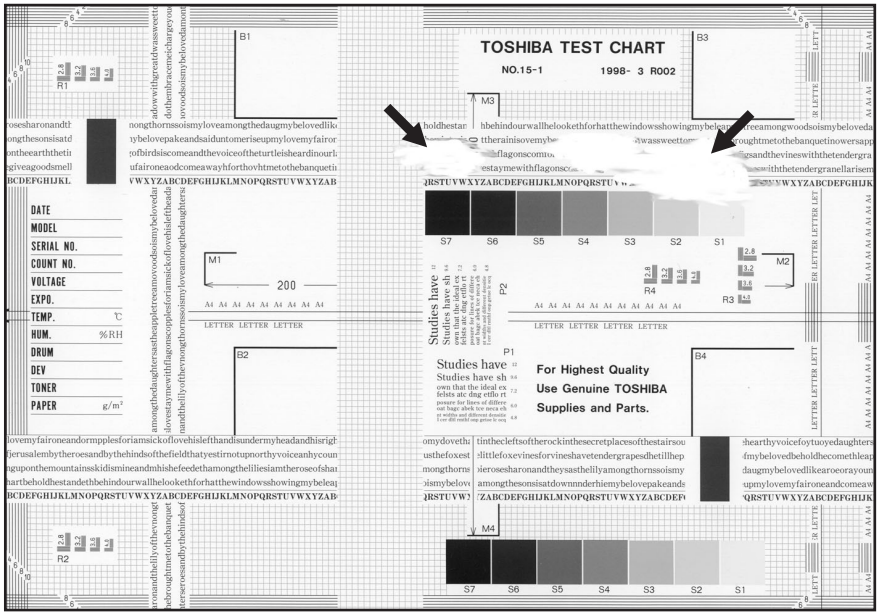

Fig. 8-5

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.

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6. Poor fusing

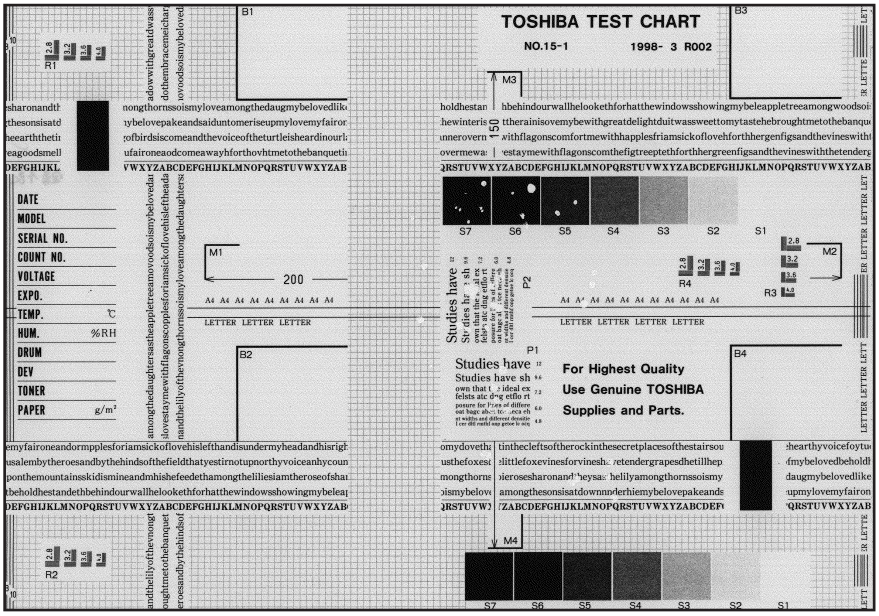

Fig. 8-6

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.

8

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7. Blank copy

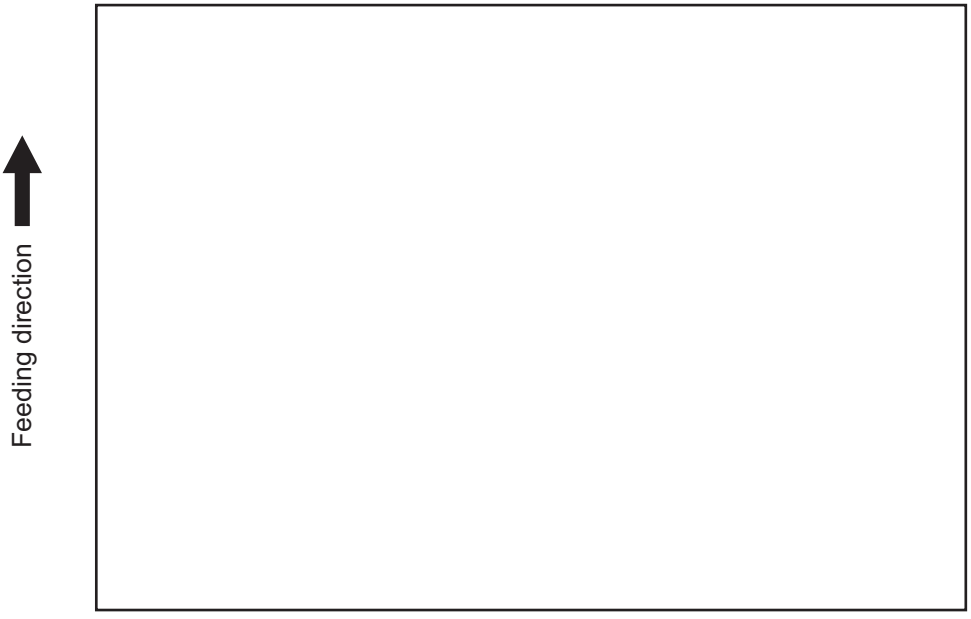

Fig. 8-7

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.

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8. Solid copy

Fig. 8-8

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.

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9. White banding (in the feeding direction)

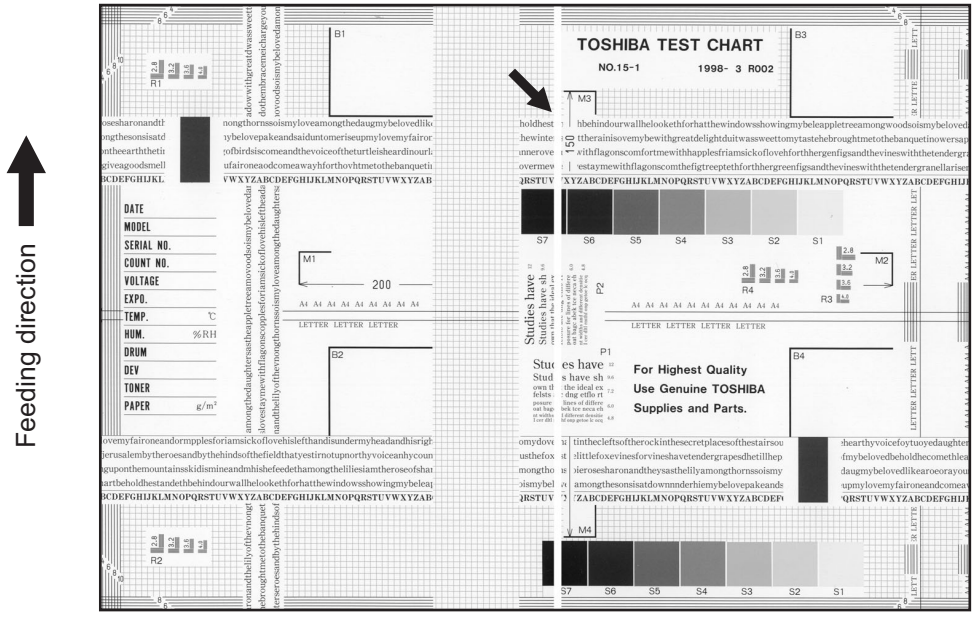

Fig. 8-9

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 floated lid of the developer bottle blocking the laser light path?	Check the lid and place it properly.
	5	Is the developer material transported properly?	Remove the foreign matter if there is any. *1)
	6	Is there a foreign matter or dew on the drum seal?	Remove the foreign matter or dew.
	7	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	8	Is there a foreign matter on the drum surface?	Replace the drum.
Transport path	9	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	10	Is any of the discharge LEDS off?	Replace the discharge LED.
Scanner	11	Are the original glass (especially the position of shading correction plate) and CIS unit dirty?	Clean them.
Cleaner	12	Is there any foreign matter, which contacts the drum on the cleaner stay?	Remove the foreign matter.

*1) Prescription for foreign matter in the doctor sleeve gap
- Pull the doctor blade [1] in the direction of the arrow.

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- Rotate the gear [2].
- Remove the foreign matter that has come out on the developer sleeve [3].

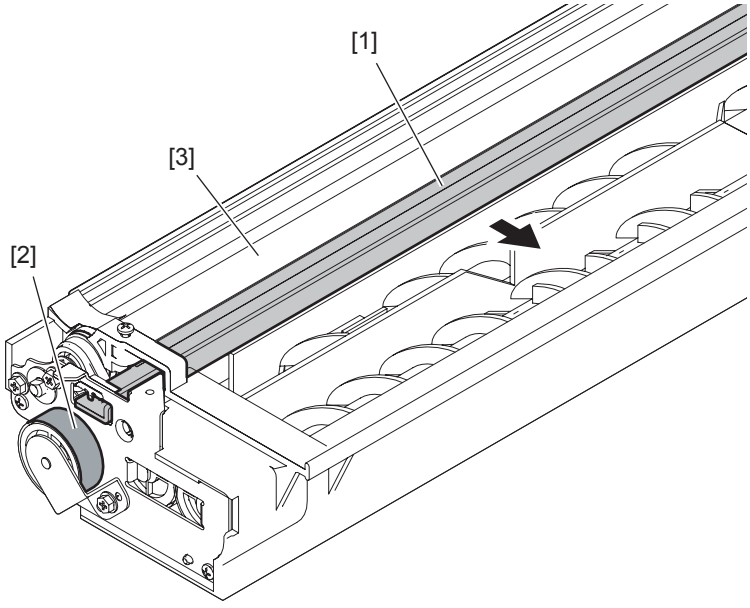

Fig. 8-10

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

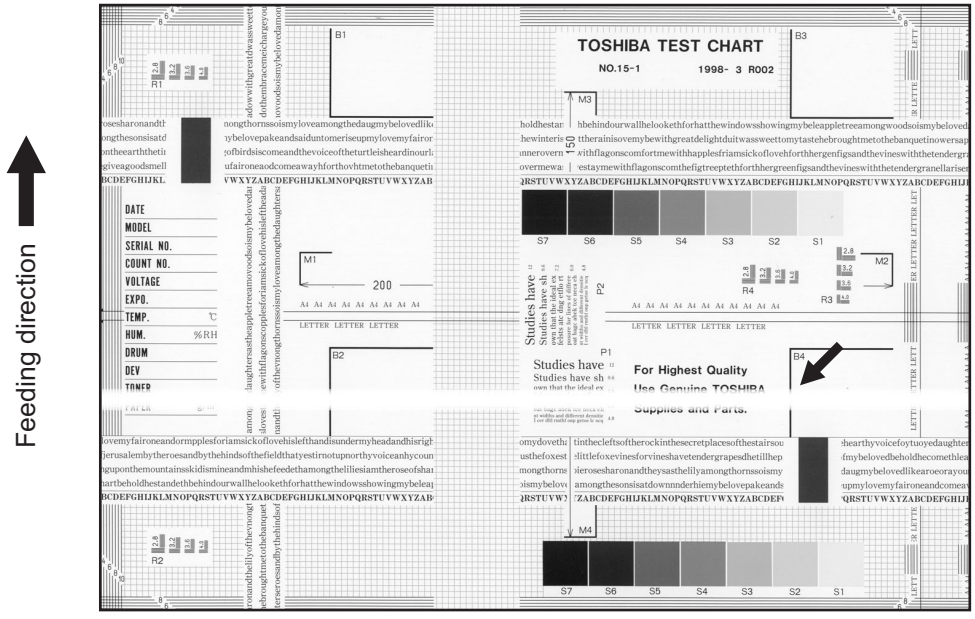

Fig. 8-11

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.

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11. Skew (inclined image)

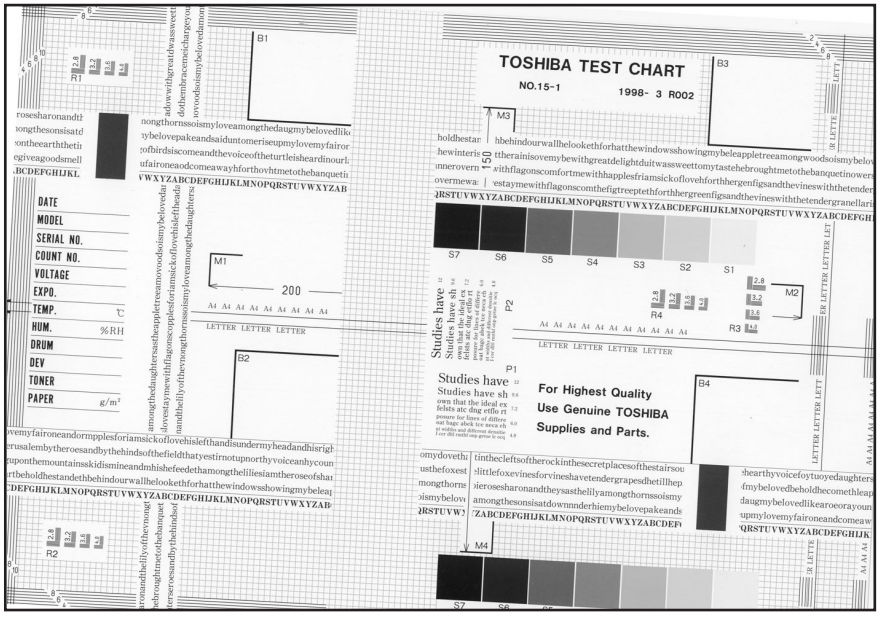

Fig. 8-12

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.

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12.Black banding (in the feeding direction)

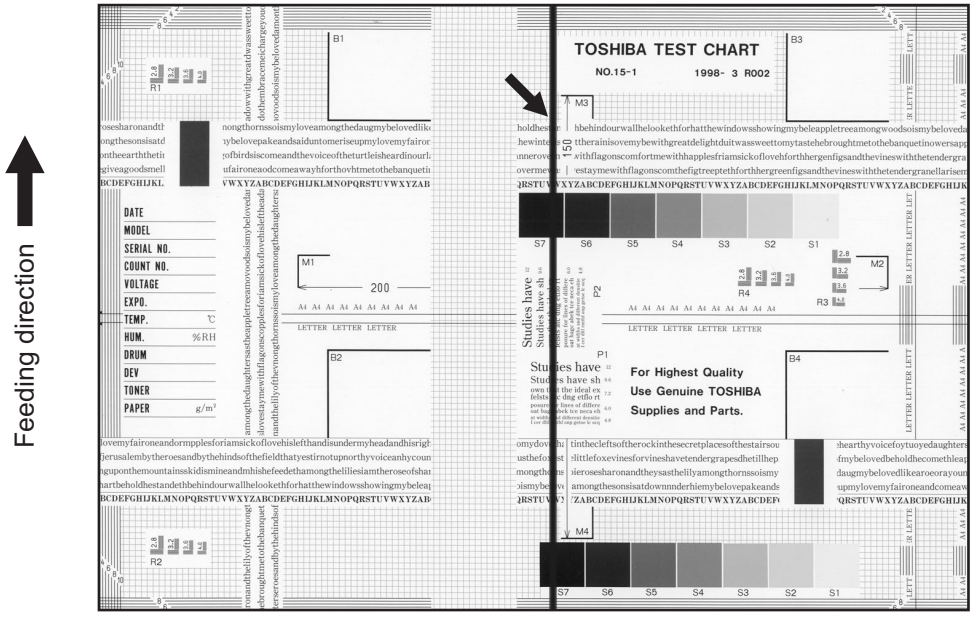

Fig. 8-13

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?	Clean or replace the cleaning blade.
	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.

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

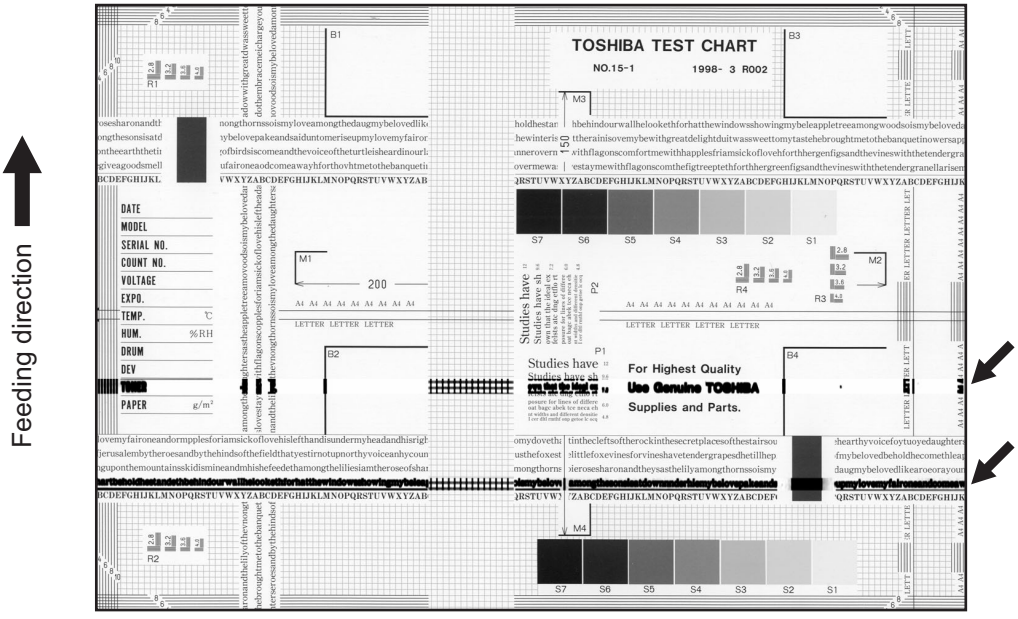

Fig. 8-14

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.

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14.White spots

Fig. 8-15

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.

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15.Poor image transfer

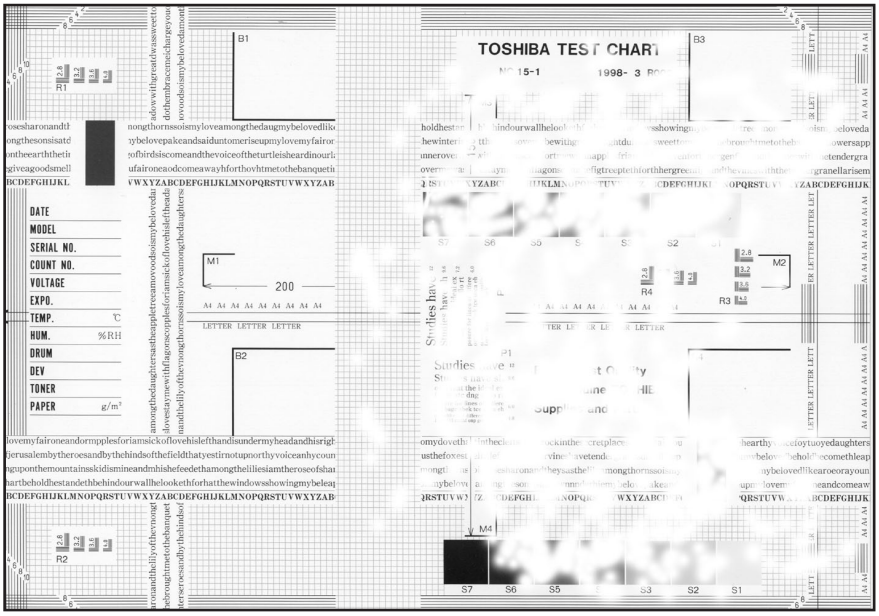

Fig. 8-16

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.

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16.Uneven image density

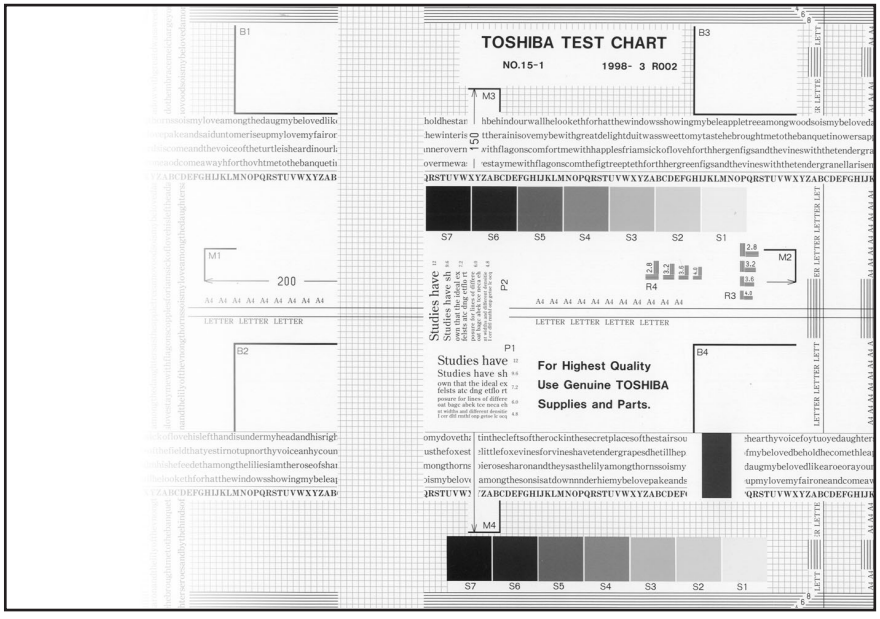

Fig. 8-17

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.
Discharge LED	5	Are the connectors of discharge LED harness securely connected?	Reconnect the harness securely.
	6	Is the discharge LED dirty?	Clean the discharge LED.
	7	Is any of the discharge LEDs off?	Replace the discharge LED.
Developer unit	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.
	10	Is the developer material transported normally?	Remove foreign matters if there is any.
Scanner section	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.

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

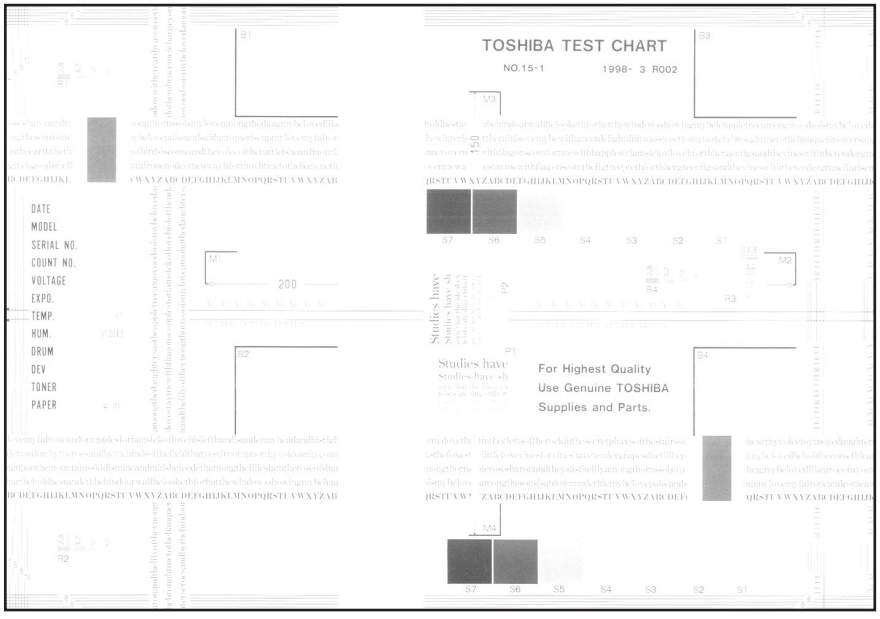

Fig. 8-18

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.

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18.Image dislocation in feeding direction

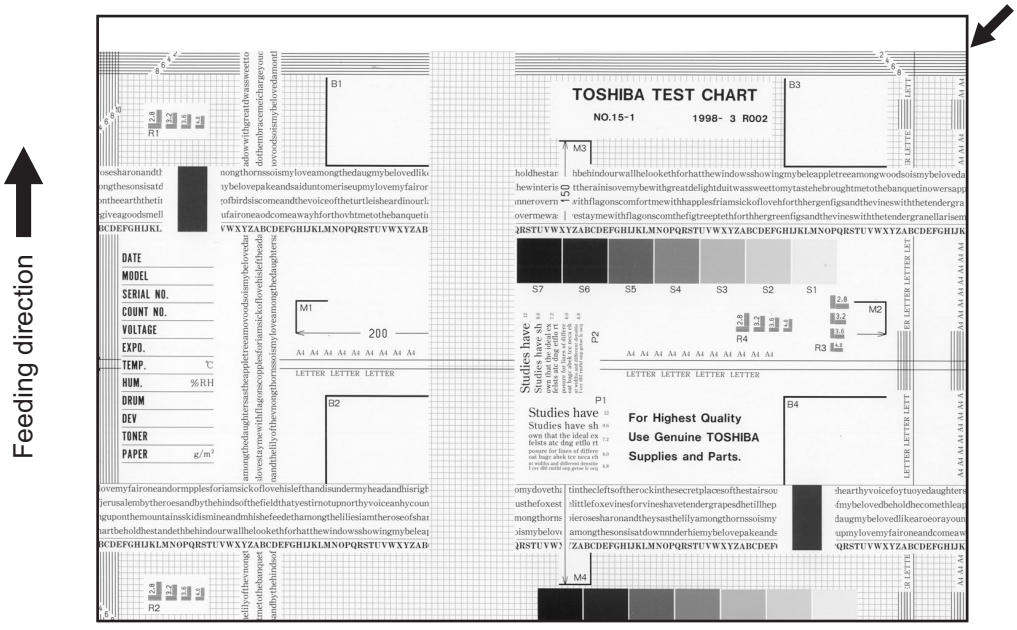

Fig. 8-19

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.

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19.Jittering image

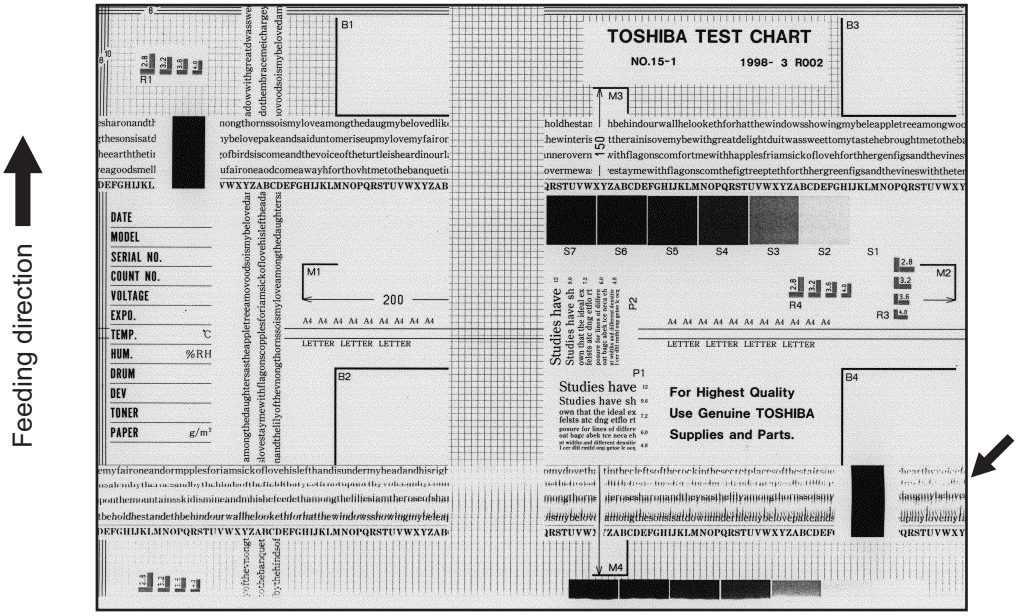

Fig. 8-20

8

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.

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20.Poor cleaning

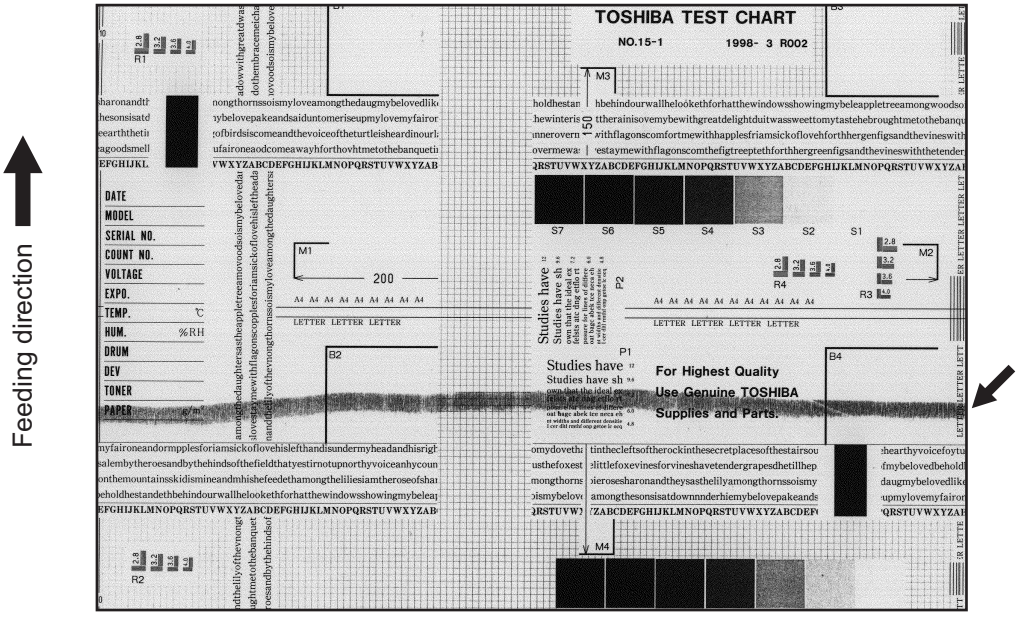

Fig. 8-21

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

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21.Uneven light distribution

Fig. 8-22

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.

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22.Blotched image

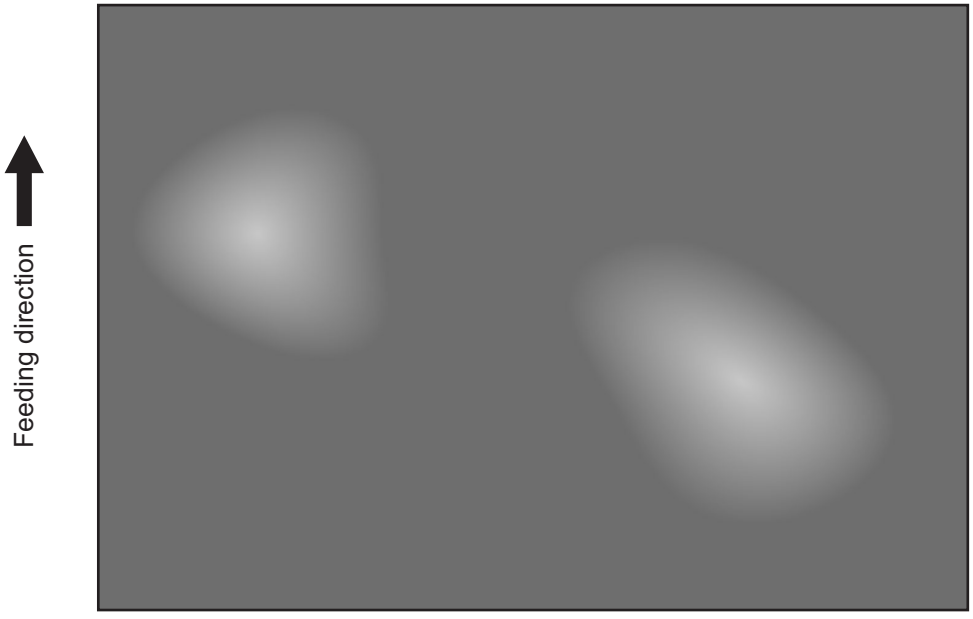

Fig. 8-23

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.

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9. REPLACEMENT OF PC BOARDS

9.1 Disassembly and Replacement of PC Boards

Notes:

- When the PC board is replaced, refer to the following pages.
  📖 P.9-7 "9.2 Caution in Replacing the MAIN Board"
  📖 P.9-7 "9.3 Caution in Replacing the SRAM Board"
- If the PC board has to be replaced due to an operational defect, this may have been caused by a contact failure of the connector. Before replacing the board, disconnect and then reconnect the connector to check if this action eliminates the operational defect.

9.1.1 MAIN board (MAIN)

(1) Take off the rear cover.
📖 P.4-4 "4.1.10 Rear cover"

(2) Disconnect 14 connectors.

Note:
Connect the flat harness to the MAIN board with its erectrode side down. An error “CA2” will be displayed if the connection is incorrect.

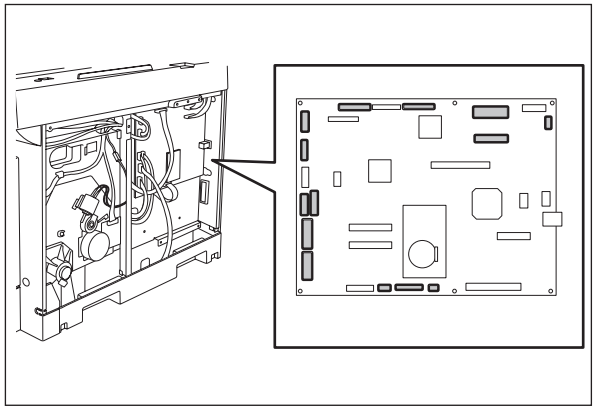

Fig. 9-1

(3) Remove 6 screws and take off the MAIN board.

Notes:

1. When replacing the MAIN board, also attach the SRAM board to the new MAIN board from the old MAIN board.
2. Be sure to perform “08-389” after the SRAM board has been replaced.
3. Be sure to perform "05-310" with the platen cover or the ADF closed after replacing the MAIN board.

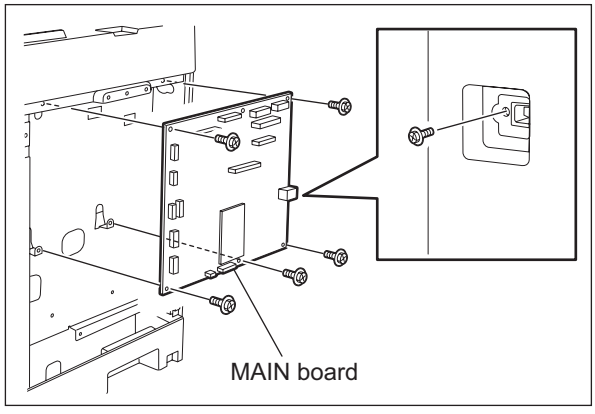

Fig. 9-2

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9.1.2 SRAM board (SRAM)

(1) Take off the rear cover.
P.4-4 "4.1.10 Rear cover"

(2) Release 1 lock support and take off the SRAM board.

Notes:

1. Be sure to perform “08-388” after the SRAM board has been replaced.
2. Perform "05-310" with the platen cover and the ADF closed after replacing the SRAM board.

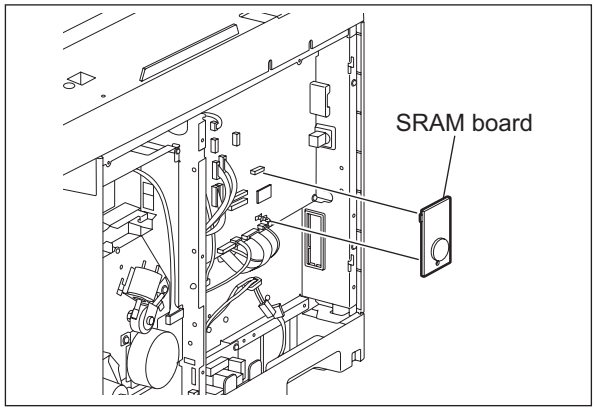

Fig. 9-3

3. Make sure that the direction of the battery on the SRAM board is correct when replacing it.

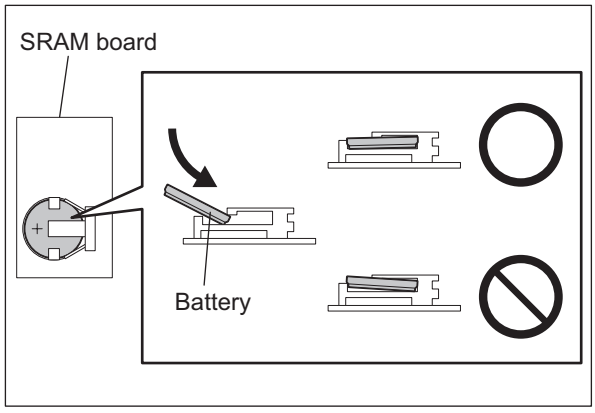

Fig. 9-4

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9.1.3 Fuse PC board (FUS)

Note:
This fuse PC board is copacked with the damp heater unit. (The damp heater unit is optional for NAD, CND and MJD.)

(1) Take off the rear cover.
📖 P.4-4 "4.1.10 Rear cover"
(2) Remove 2 screws and take off the cover.

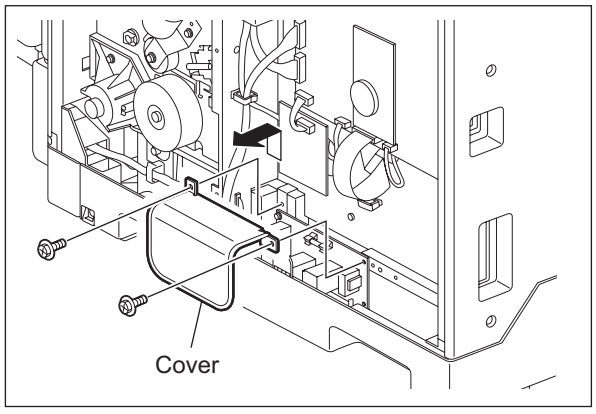

Fig. 9-5

(3) Disconnect 2 connectors, remove 1 screw, and then take off the fuse PC board by lifting it up.

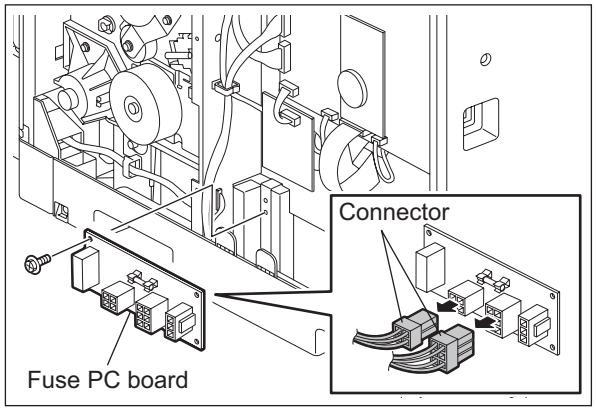

Fig. 9-6

9.1.4 Switching regulator unit (PS)

Note:
When the fuse PC board is installed as options, remove the rear cover (📖 P.4-4 "4.1.10 Rear cover") and disconnect connectors before performing the procedure below.

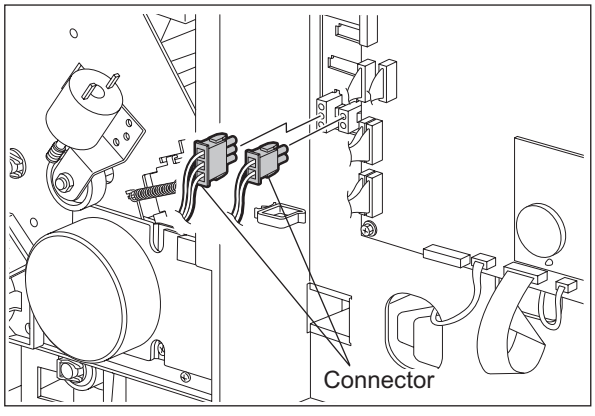

Fig. 9-7

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(1) Take off the left cover.
P.4-2 "4.1.3 Left cover"
(2) Disconnect 13 connectors.

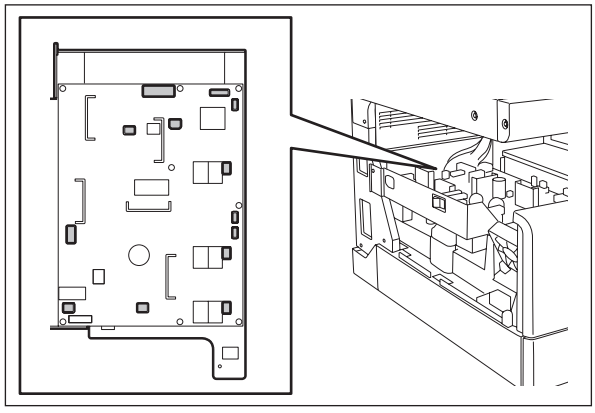

Fig. 9-8

Note:

Connect the connectors to the correct faston terminals on the switching regulator board.

Connector		Harness
F. Red	-	Black-thick
E. Blue	-	White-thick
D. White	-	Black-thin
C. White	-	Red-thin
B. White	-	Red-thick
A. White	-	White-thick

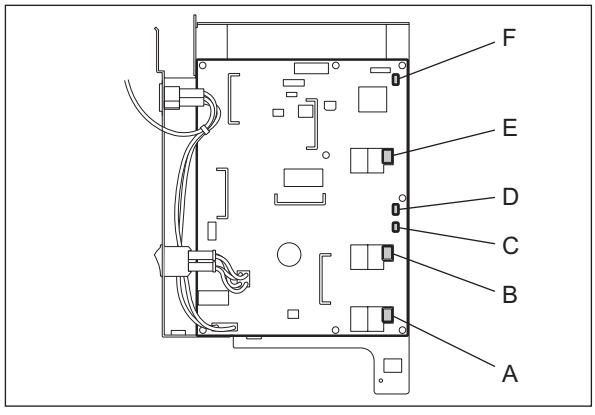

Fig. 9-9

(3) Remove 2 screws, slide the switching regulator unit with the whole case slightly to the front, and then lift it up to take it off.

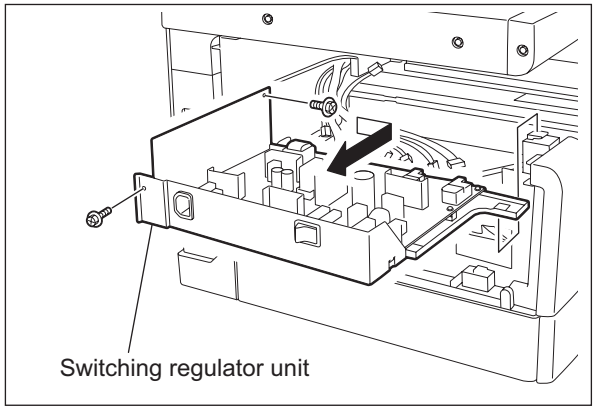

Fig. 9-10

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(4) Disconnect 3 connectors.
(5) Remove 1 screw and 1 ground wire.

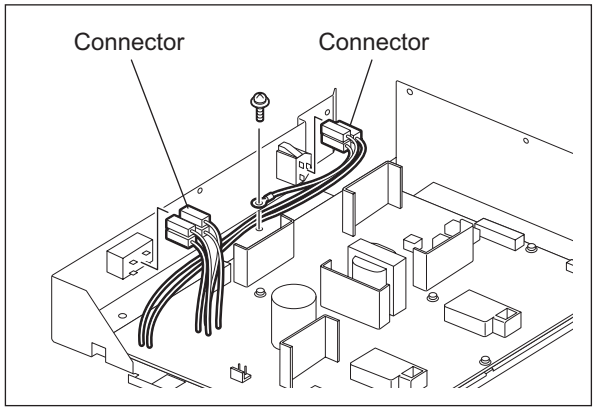

Fig. 9-11

Note:
Make sure that the position is correct when inserting the connector.

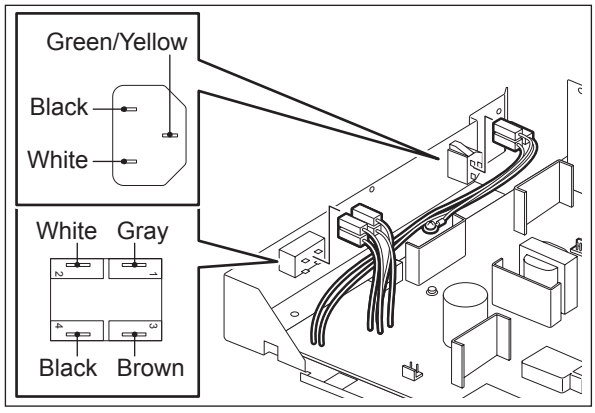

Fig. 9-12

(6) Remove 8 screws, release 1 locking supports, and take off the switching regulator board.

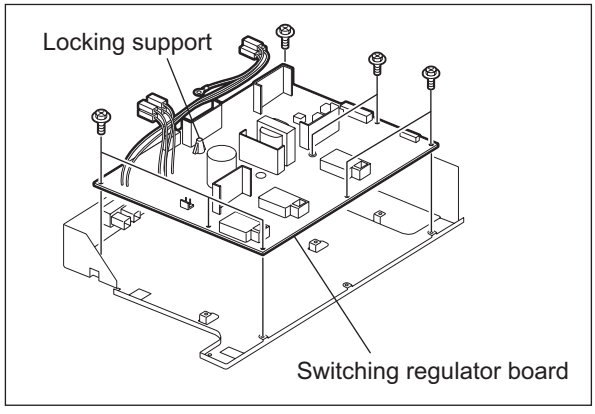

Fig. 9-13

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9.1.5 Switching regulator cooling fan (M6)

(1) Take off the left cover.
P.4-2 "4.1.3 Left cover"

(2) Disconnect 1 connector and take off the switching regulator cooling fan while sliding it upward.

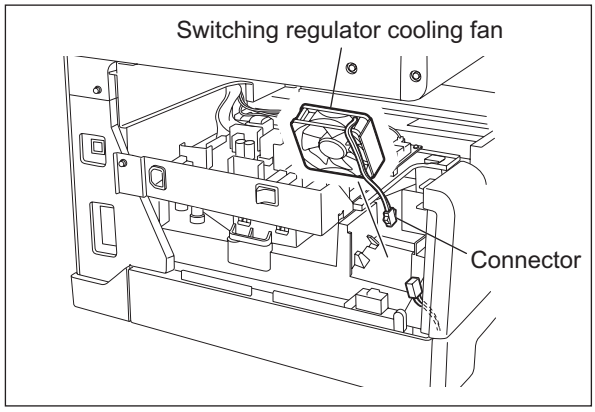

Fig. 9-14

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9.2 Caution in Replacing the 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.10-1 "10. 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.

9.3 Caution in Replacing the 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.

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(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).

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(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))

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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))
08-1290_0 (Sub paper feed roller (Drawer) (Present number of output pages))
08-1290_1 (Sub paper feed roller (Drawer) (Recommended number of output pages for replacement))
08-1292_0 (Sub paper feed roller (PFU) (Present number of output pages))
08-1292_1 (Sub paper feed roller (PFU) (Recommended number of output pages for replacement))
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))
08-1306_0 (Separation pad (Drawer) (Present number of output pages))
08-1306_1 (Separation pad (Drawer) (Recommended number of output pages for replacement))
08-1308_0 (Separation pad (PFU) (Present number of output pages))
08-1308_1 (Separation pad (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))

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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”.

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10. 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.10-1 "10.1 Firmware Updating with Download Jig"

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

10.1 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

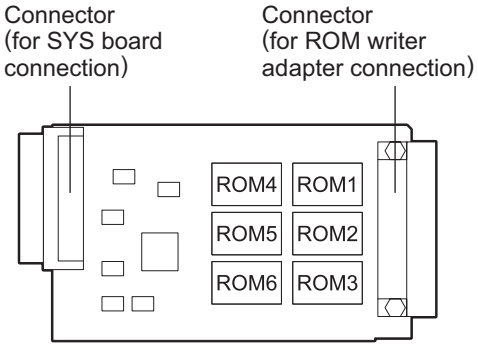

Fig. 10-1 Jig board: PWA-DWNLD-350-JIG2(48 MB)

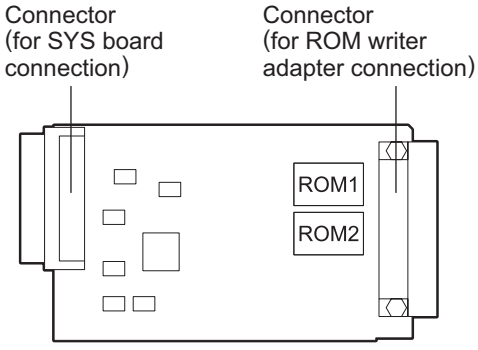

Fig. 10-2 Jig board: PWA-DWNLD-350-JIG1(16 MB)

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.10-6 "10.1.2 Writing the data to the download jig (PWA-DWNLD-350-JIG)"

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K-PWA-DLM-320

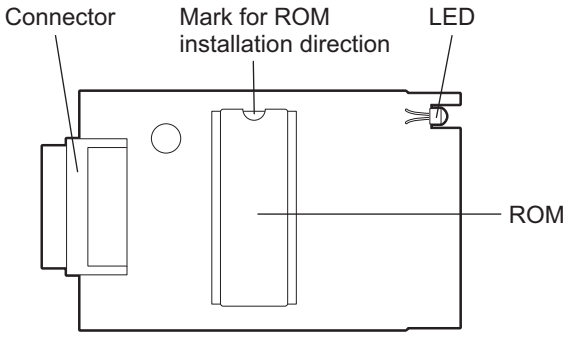

Fig. 10-3 Jig board: K-PWA-DLM-320

Important:

Pay attention to the direction of the ROM.

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10.1.1 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-STUDIO223/243.
  - The Main PC board for e-STUDIO181/211.
  - The Main PC board for e-STUDIO163/166/203/206.

  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.8-22 " [C94] Firmware update error"

(1) Write the data to the download jig.
📖 P.10-6 "10.1.2 Writing the data to the download jig (PWA-DWNLD-350-JIG)"

(2) Turn OFF the power of the equipment.

(3) Remove the rear cover.

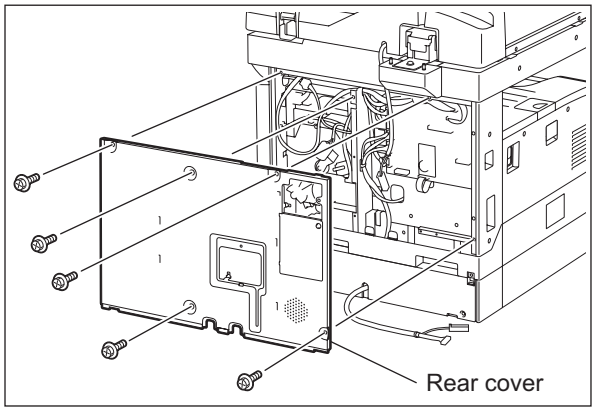

Fig. 10-4

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

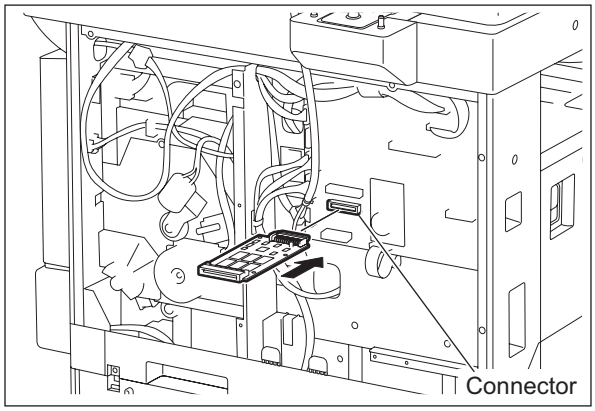

Fig. 10-5

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

■ : ON □ : OFF

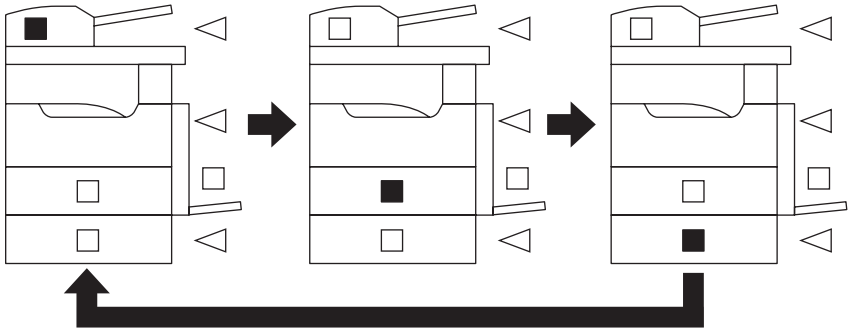

Fig. 10-6

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

■ : ON □ : OFF

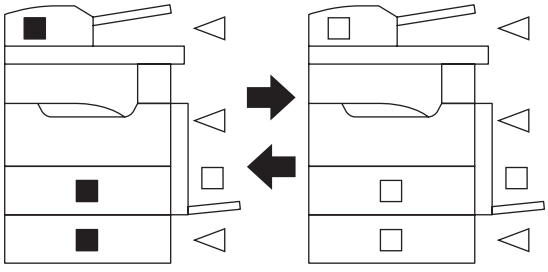

Fig. 10-7

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?

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◀ : ON

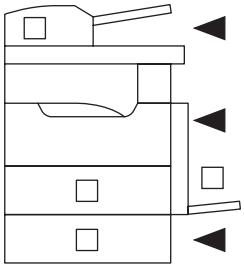

Fig. 10-8

(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

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10.1.2 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.

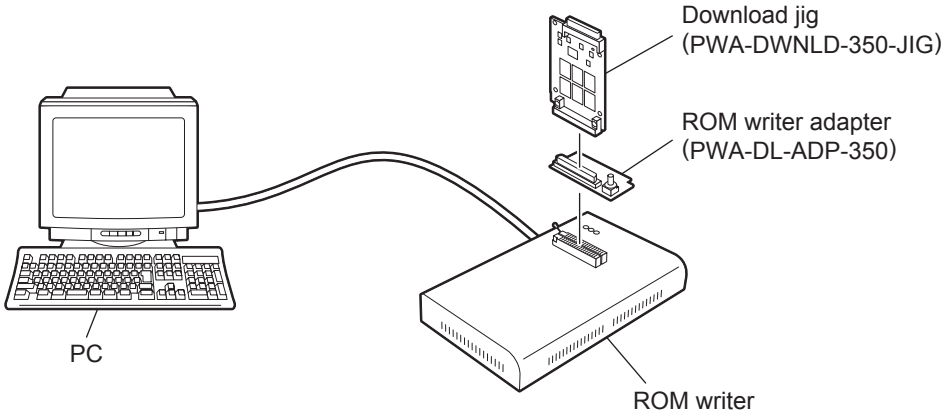

Fig. 10-9

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)

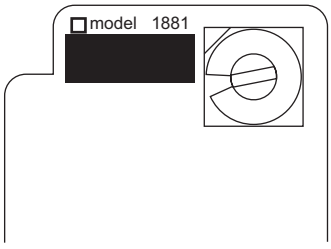

Fig. 10-10 PWA-DL-ADP-350-1881

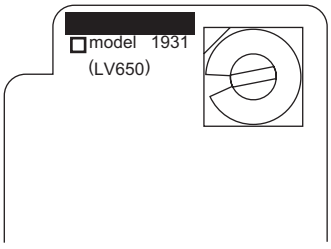

Fig. 10-11 PWA-DL-ADP-350-1931

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[A] Precaution when writing the data

- Set the writing voltage (VID) to 3.3V.
- When writing the data, set the address from 0 to 1FFFFF. 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.

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10.1.3 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.

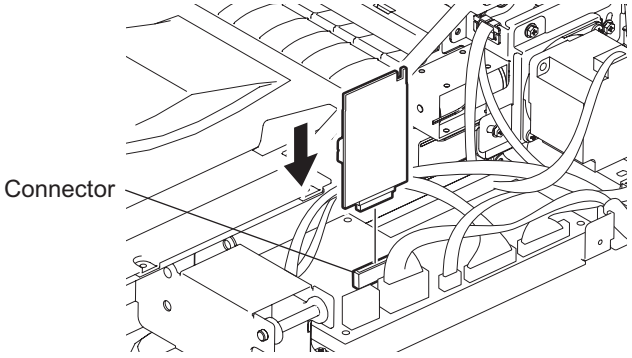

Fig. 10-12

Note:
Be sure to print out the list to confirm the firmware version for the ADF.
📖 P.5-6 "5.5 List Print Mode (9S)"

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10.2 Firmware Updating with Software Update Tool

10.2.1 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.

10.2.2 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.)

10.2.3 Preparation and precaution

1. Confirm that there is a software updating tool USB driver (created by decompressing "eST163_PCDL_Inst_Rev210_2.zip") on your PC.
2. Only installation by hardware wizard can recognize e-STUDIO223/243.

10.2.4 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 below appears. Select the port and click [OK].

Note:
If the port to be selected does not appear, reboot the PC.

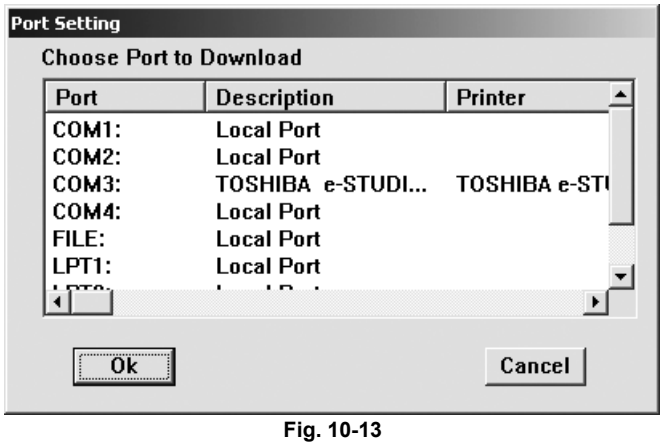

Fig. 10-13

10

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

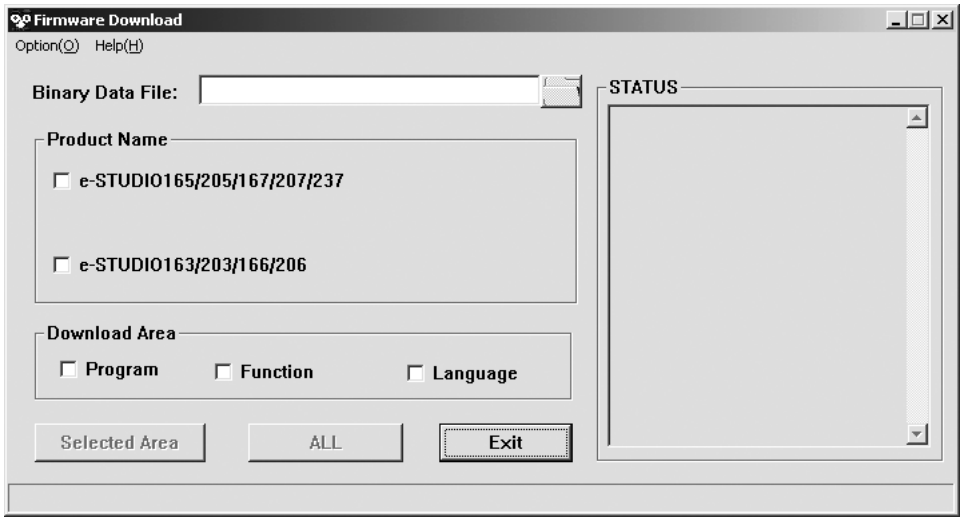

Fig. 10-14

(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.

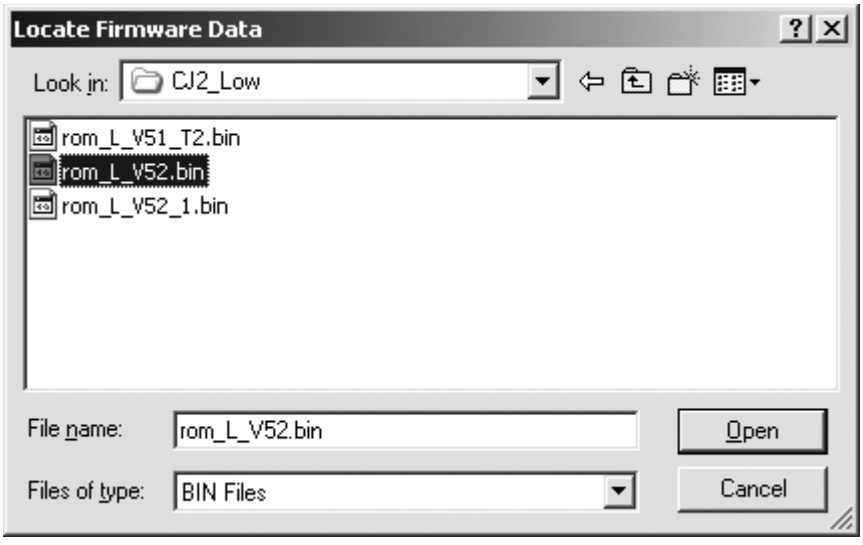

Fig. 10-15

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

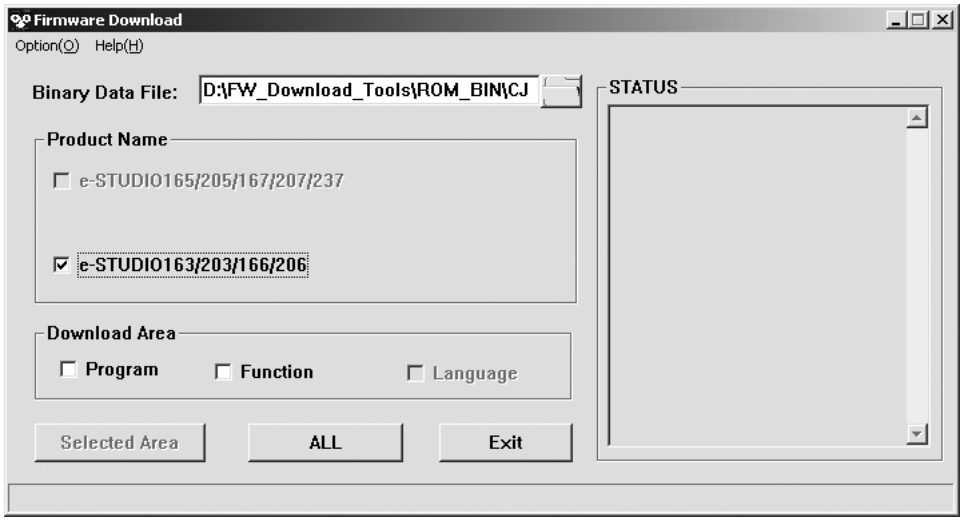

Fig. 10-16

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

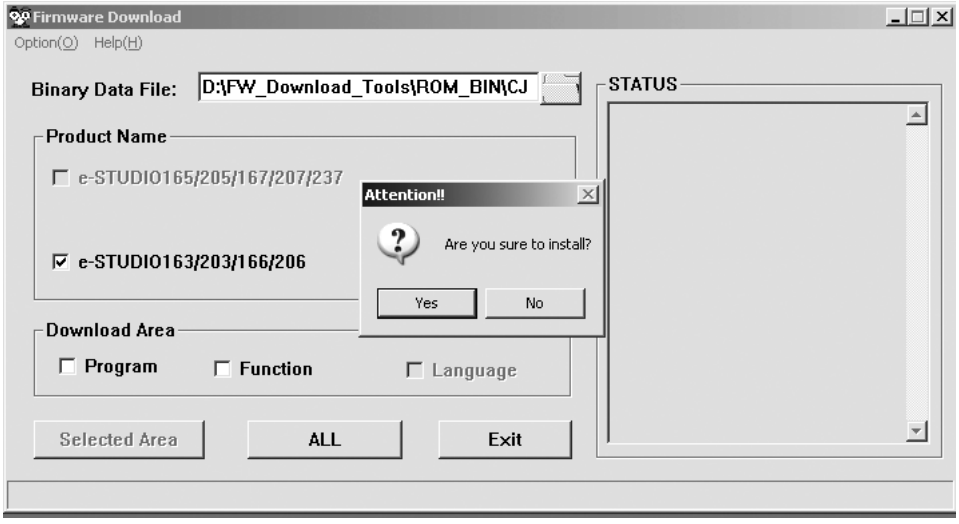

Fig. 10-17

Note:

In e-STUDIO223/243, 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.)

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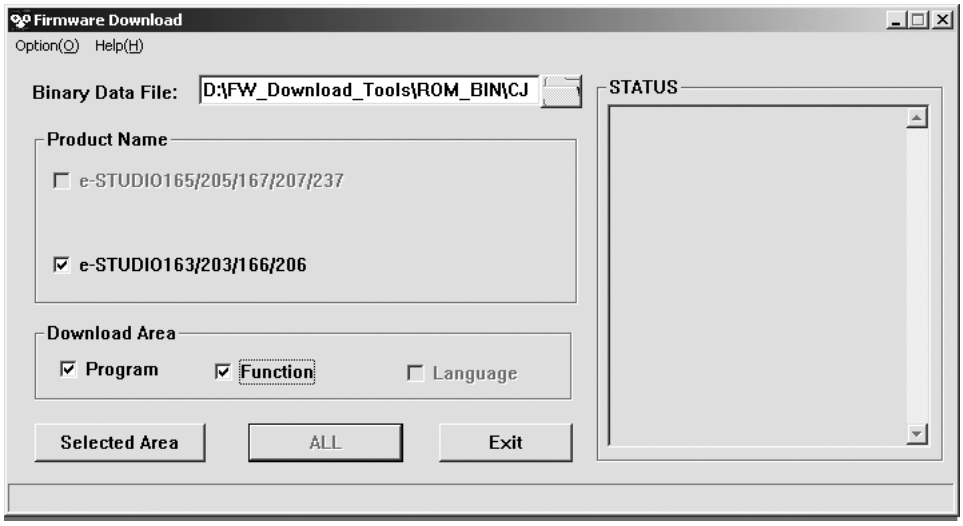

Fig. 10-18

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

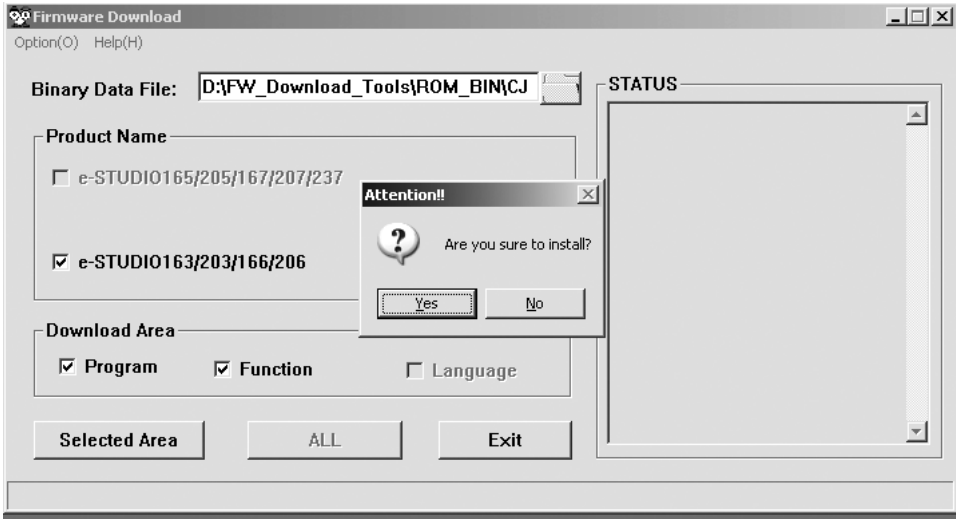

Fig. 10-19

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(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.

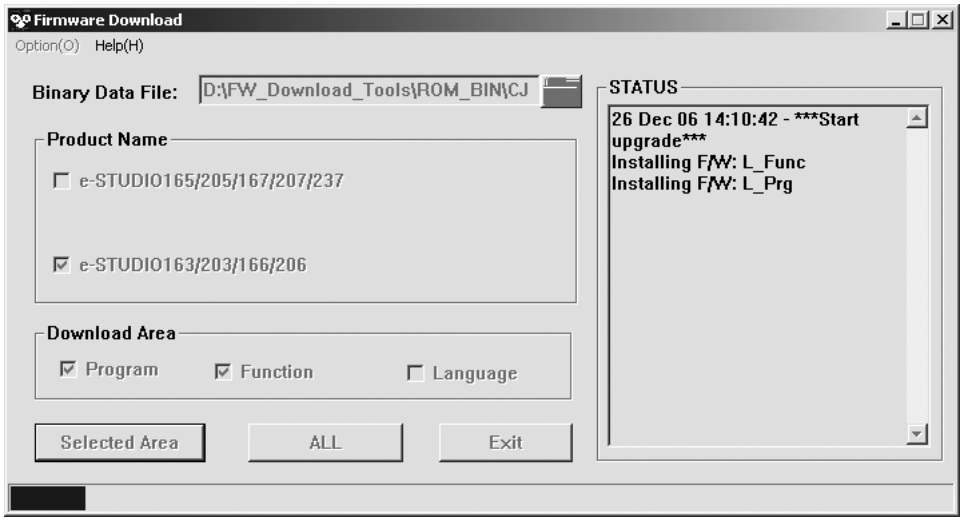


Fig. 10-20

(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.

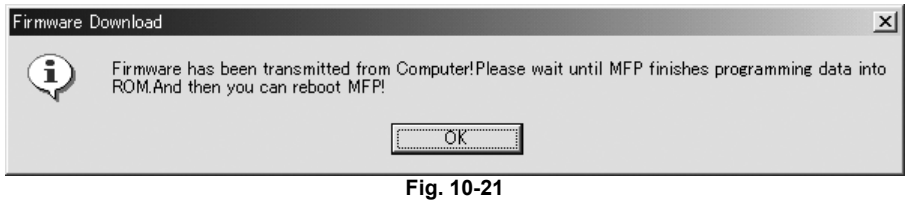
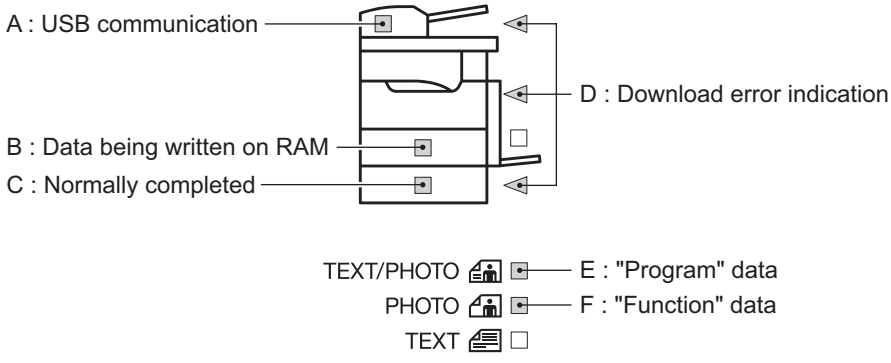


Fig. 10-21

(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.

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(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

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11. EXTERNAL COUNTERS

11.1 Outline

This specification describes the interface between external counters, such as Coin Controller and Totalizer.

11.2 Signal

11.2.1 Pin layout

- Connector on the MAIN board

Pin No.	I/O	Signal name	Function	Voltage level	Port	Remarks	Totalizer	Coin Controller
1	Power	24VCOV-OFF	24V line	DC24V±10%		When cover opened: OFF	In use	In use
2	Out	CTRON	Total Counter On Signal	Open Collector (TD62308)	OPAL PL0	L: ON	In use	In use
3	In	KCTRC	Counter Connection Signal	L=0V, H=DC5V	OPAL PL5	L: Connected Connected to SG with harness	In use	In use
4	Out	MCRUN	Ready to Copy Signal	Open Collector (SN7407)	OPAL PM4	L: Operating	In use	In use
5	Out	EXTCTR	Exit Sensor On Signal	Open Collector (SN7407)	OPAL PM3	L: ON	-	In use
6	GND	PG	Power ground	0V			In use	In use
7	Out	CSTCTR	Drawer paper feed counter On signal (Front side of paper print counter)	Open Collector (SN7407)	OPAL PL1	L: ON	In use	-
8	Out	ADUCTR	ADU paper feed counter On signal (Back side of paper print counter)	Open Collector (SN7407)	OPAL PL2	L: ON	In use	-
9	GND	SG	Signal Ground	0V			In use	In use
10	Out	TSIZE3	Paper size Signal	Open Collector (SN7407)	OPAL PL7	L: ON	In use	-
11	Out	TSIZE2	Paper size Signal	Open Collector (SN7407)	OPAL PL6	L: ON	In use	-
12	Out	TSIZE1	Paper size Signal	Open Collector (SN7407)	OPAL PL5	L: ON	In use	-
13	Out	TSIZE0	Paper size Signal	Open Collector (SN7407)	OPAL PL4	L: ON	In use	-
14	Power	5V	5V line	DC5V±3%			In use	In use
15	In	CTRON-EN	Counter enabled signal	L=0V, H=DC5V	OPAL PJ6	L: Enabled	In use	In use
16	Out	L/S-SIZE	Paper size (large/ small) signal	Open Collector (SN7407)	OPAL PM6	L: Large size H: Small size *	-	In use

* Definition for large size is changed by the setting of 08-353.

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11.2.2 Details of the signals

1. CTRON signal (output signals)
   The signal is a count signal synchronized with an electronic counter for the equipment. This signal is turned to a low level (ON) every time the counter counts up. This output signal also drives each mechanical counter directly.
   If “1” is set for the setting code 08-352 (counter setting for large-sized paper), a sheet of large-sized paper is counted as two sheets.
   The signal is used for both totalizer and coin controllers.

2. KCTRC signal (input signals)
   This signal is a connection signal that detects whether each counter is installed or not. The counter is installed when this signal is at a low level.
   When this signal is at a high level, copying with the counter is disabled. This signal is connected to "SG" with counter harness kit.
   The signal is used for both totalizer and coin controllers.

3. MCRUN signal (output signal)
   This signal is turned to a low level while the equipment performs copying.
   When copying is interrupted due to forcible toner supply or another reason, however, this signal remains at a high level until the equipment becomes ready for copying again.
   The signal is used for both totalizer and coin controllers.

4. EXTCTR signal (output signal)
   This signal is turned ON, since it is synchronized with the turning OFF of the exit sensor.
   A coin controller counts up the degree of usage of copy cards by means of this signal.
   This signal is used only for coin controllers.

5. CSTCTR signal, ADUCTR signal (output signal)
   The CSTCTR signal is turned to a low level (ON), since it is synchronized with the CTRON signal when paper is fed from a drawer or the bypass tray. This signal is for counting print jobs for the front side of the paper.
   The ADUCTR signal is turned to a low level (ON), since it is synchronized with the CTRON signal when paper is fed from the ADU. This signal is for counting print jobs for the back side of the paper.
   This signal is used only for totalizer.

6. TSIZE3, 2, 1, 0 signal (output signal)
   These four signals are output in combination corresponding to the size of the copy paper.
   This signal is used only for totalizer.

7. CTRON-EN signal (input signal)
   This signal enables copying with each counter. Copying is enabled when this signal is at a low level. Copying is disabled when it is at a high level.
   The signal is used for both totalizer and coin controllers.

8. L/S-signal (output signal)
   This signal is turned to a low level immediately when large-sized paper is selected or when the paper size is not specified for bypass feeding. The signal is at a high level in other cases.
   The definition of large-sized paper can be set in the setting code 08-353.
   This signal is used only for coin controllers.

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11.3 Notices

11.3.1 Setting code

Each signal will be enabled by configuring the setting code “08-202” (Counter installed externally).

08-202
0: No external counter (Default)
1: Coin controller
2: Copy key card
3: Key copy counter

11.3.2 Setting value change and restrictions when using the totalizer (DocuLyzerNW)

1. Setting value
   - 08-202 (Counter installed externally): Set to “2” (Copy key card).
   - 08-381 (Setting for counter installed externally): It should be charged precisely according to the usage.
     Example: To charge only when copies are made, set to “0”.

2. Restrictions
   - 08-352 (Large size double count setting): Set to “0” (Single count).

11.3.3 Setting value change and restrictions when using the coin controller

1. Setting value
   - 08-202 (Counter installed externally): Set to “1” (Coin controller).
   - 08-381 (Setting for counter installed externally): It should be charged precisely according to the usage.
     Example: To charge only when copies are made, set to “0”.

2. Restrictions
   For 08-353 (Large size double count setting), set to “0” when A3 and LD are specified as the large size, and set to “1” when B4, LG, FOLIO, COMP and 8K are specified as the large size in addition to A3 and LD.

11.3.4 Simultaneous installation of external counters

It is not allowed to install more than one external counter at the same time. Physically, the multiple external counters cannot be installed together since the output signals are used in common.

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12. WIRE HARNESS CONNECTION

12.1 AC Wire Harness

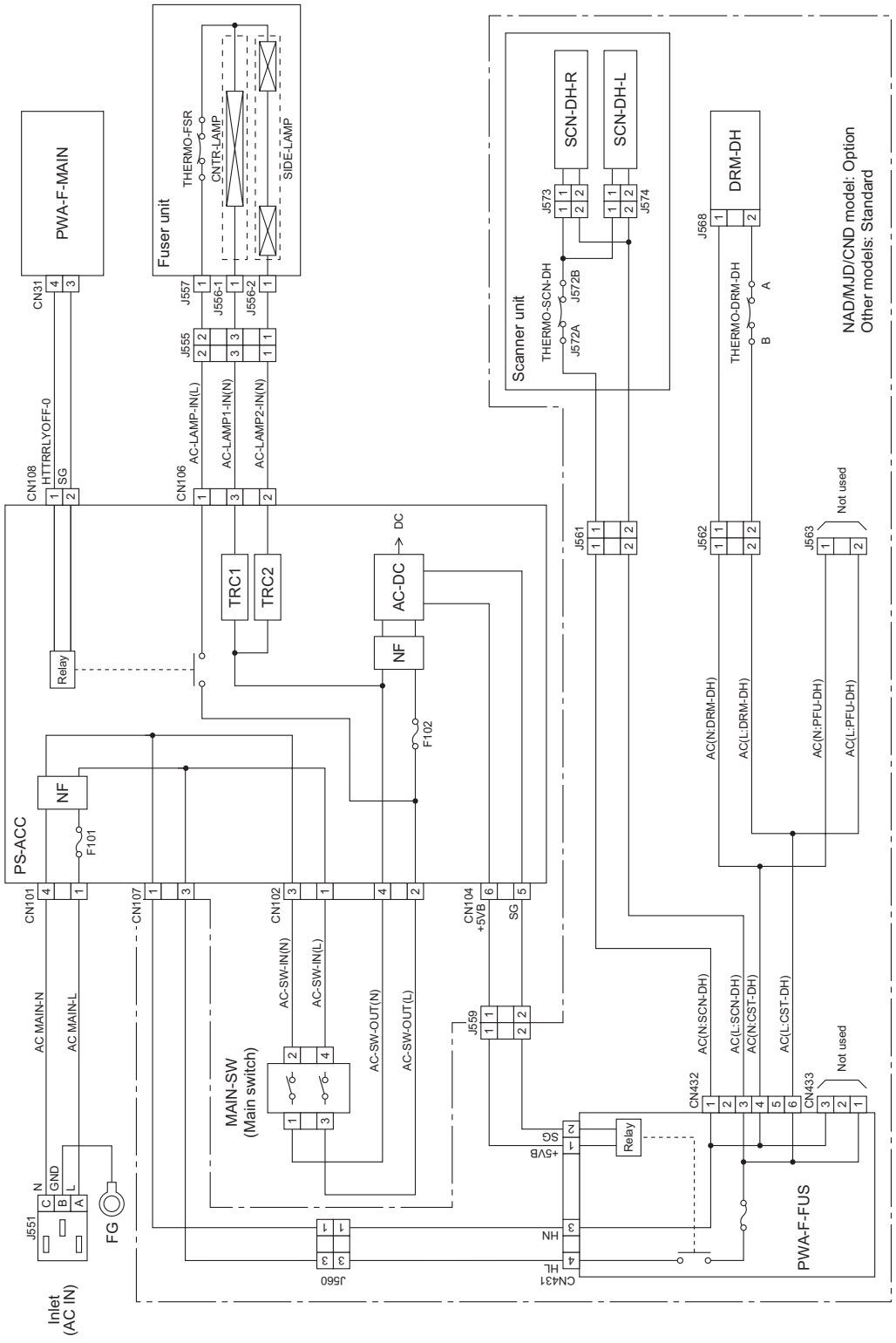

Fig. 12-1

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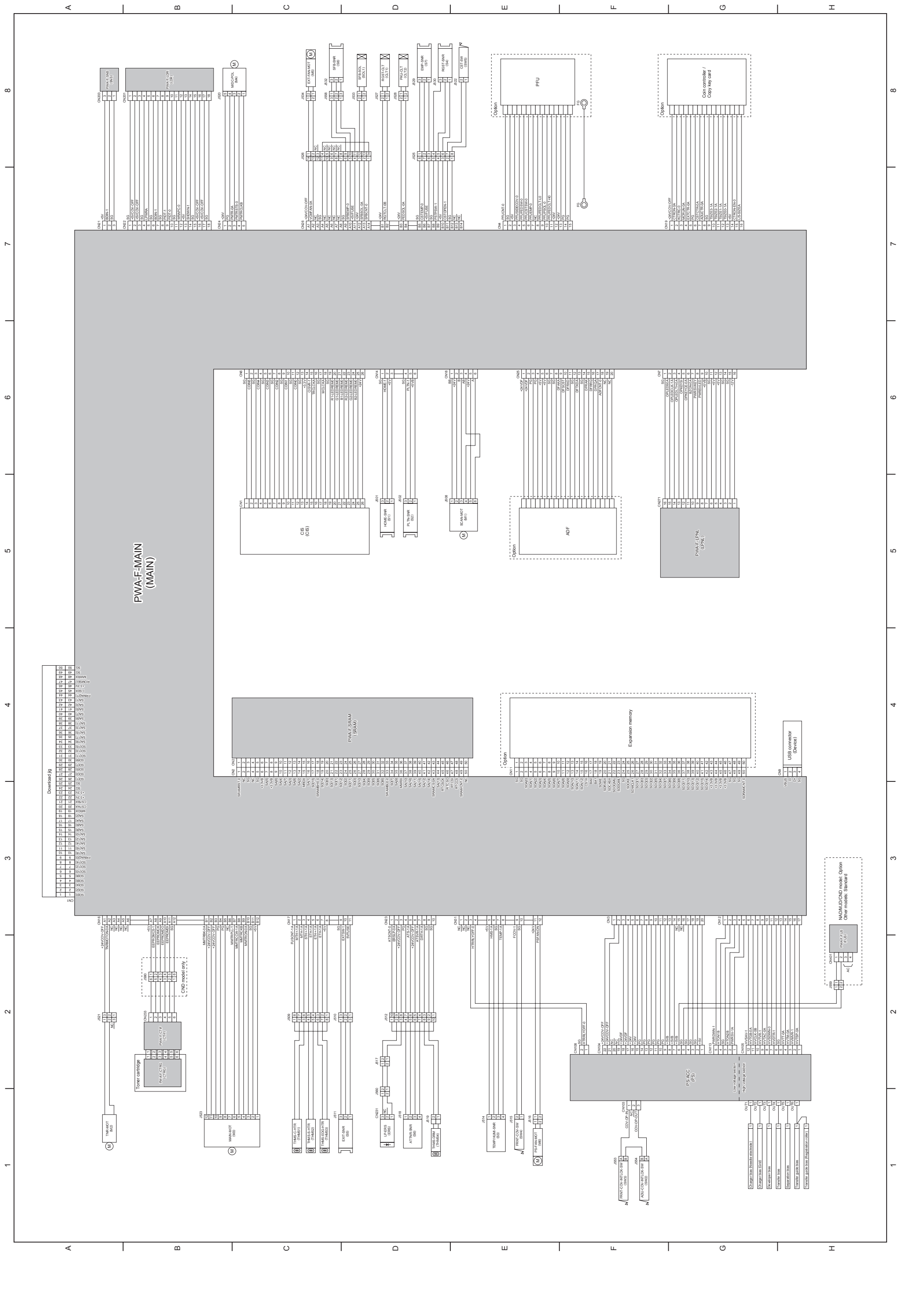
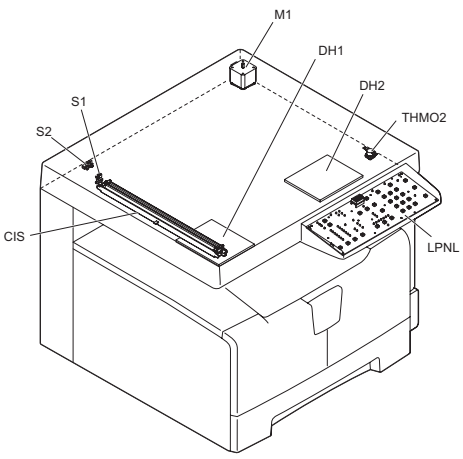
12.2 DC Wire Harness

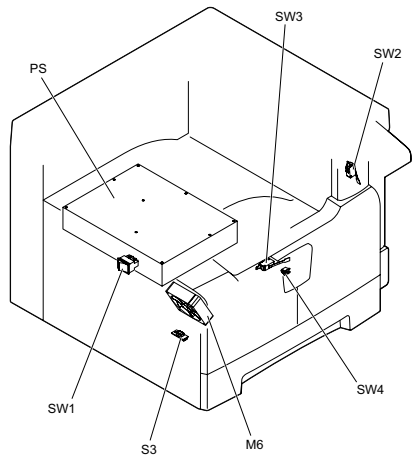


12.3 Electric Parts Layout

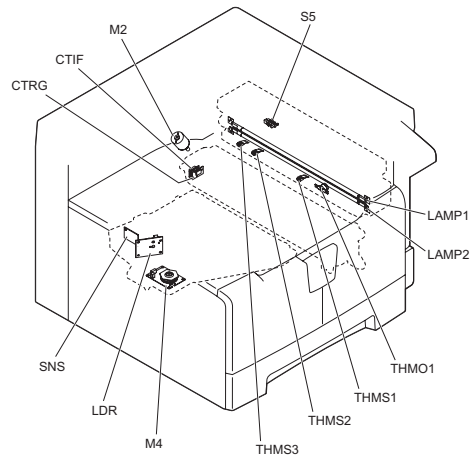
[A] Scanner, control panel



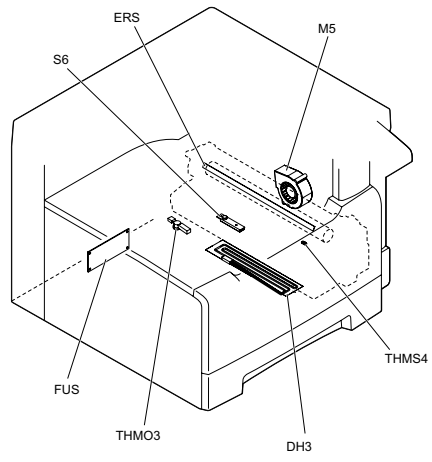
[B] Power supply section, switches



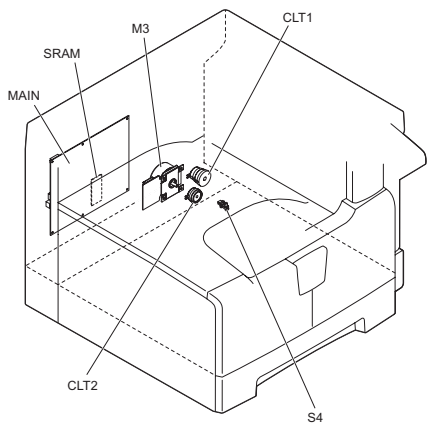
[C] Laser unit, fuser unit, toner cartridge section



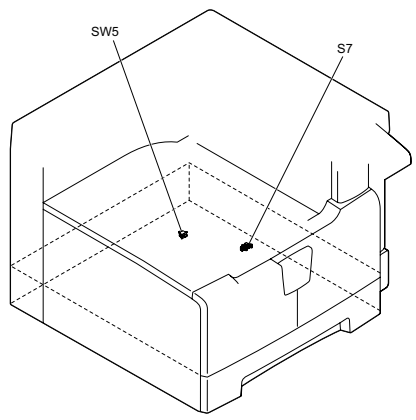
[D] Developer unit section



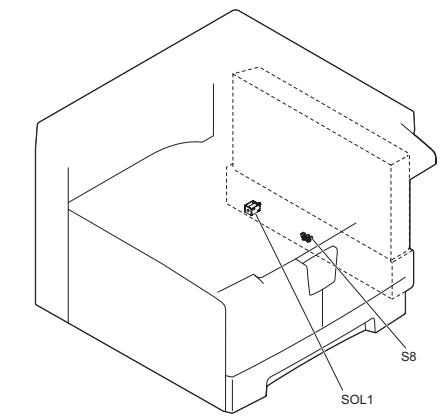
[E] Driving section



[F] Drawer section



[G] Bypass unit



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
CLT2	PKU-CLT Pickup clucth	[E]	8-D

Solenoids

Symbol	Name	Figure	Wire harness location
SOL1	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

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Input Check (Test Mode 03)

[INTERRUPT] LED	Number [Digital keys]	Display position of the density LED	Items to check	Contents	
				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	-	-	-
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)	24V OFF	24V 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

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	Cover opened	Cover closed
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	[1]	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

Output Check (Test Mode 04)

Code	Function	Procedure
101	Main motor ON (operational without developer unit)	1
102	Toner motor ON (normal rotation)	1
103	Polygonal motor ON (600 dpi)	1
108	Registration clutch ON	1
110	ADU motor ON (low speed)	1
118	Laser ON	1
151	Code No. 101 function OFF	1
152	Code No. 102 function OFF	1
153	Code No. 103 function OFF	1
158	Code No. 108 function OFF	1
160	Code No. 110 function OFF	1
168	Code No. 118 function OFF	1
201	Pickup clutch ON/OFF	3
202	PFU pickup clutch 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	3
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)	3
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 fun high speed rotation/low speed rotation	3

Test Print Mode (Test Mode 07)

Code	Types of test pattern	Remarks	Procedure	Output from
111	Primary scanning direction 33 gradation steps	Error diffusion	1	MAIN
113	Secondary scanning direction 33 gradation steps	Error diffusion	1	MAIN
142	Grid pattern	Pattern width: 2 dots, Pitch: 10 mm	1	MAIN
149	Solid black pattern (Whole area)	A3/LD	1	MAIN

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Process	Development	Auto adj. for dev. material supply and ATS		200		Automatic adjustment of auto-toner sensor(Fuser heater ON)	-		-	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.	5
05	Adjustment mode	Process	Development	ALL		201		Correction of auto-toner sensor(Fuser heater ON)	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.	7
05	Adjustment mode	Process	Development	ALL		205		Developer bias DC output adjustment	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.	7
05	Adjustment mode	Process	Charger	ALL		210		Main charger grid bias output adjustment	75	<0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment.	7
05	Adjustment mode	Process	Transfer	ALL		220		Transfer transformer DC output adjustment (H)	117	<0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment.	7
05	Adjustment mode	Process	Transfer	ALL		221		Transfer transformer DC output adjustment (C)	128	<0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment.	7
05	Adjustment mode	Process	Transfer	ALL		222		Transfer transformer DC output adjustment (L)	101	<0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment.	7

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Process	Separation	ALL		233		Separation transformer DC output adjustment (H)	65	<0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment.	7
05	Adjustment mode	Process	Separation	ALL		234		Separation transformer DC output adjustment (C)	65	<0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment.	7
05	Adjustment mode	Process	Separation	ALL		235		Separation transformer DC output adjustment (L)	47	<0-255>	M	As the value increases, the transformer output increases correspondingly. Remove the developer unit and install the adjustment jig to make adjustment.	7
05	Adjustment mode	Process	Development	ALL		247		Relative humidity latest value	50	<0-100>	M	Displaying of the relative humidity latest value.	3
05	Adjustment mode	Process	Development	ALL		248		Drum temperature latest value	25	<0-100>	M	Displaying of the drum temperature latest value.	3
05	Adjustment mode	Process	Development	ALL		270		Temperature latest value	25	<0-50>	M	Displaying of the temperature latest value.	3
05	Adjustment mode	Process	Process	ALL		280		Forced performing of idling for toner recycle	-		M	Perform this adjustment before the replacement of the developer material. (The toner is forcibly removed from the cleaner.) During performing this adjustment, the density LED blinks.	3
05	Adjustment mode	Process	Laser	ALL		286		Laser power adjustment	70	<0-255>	M	When the value increases, the laser output increases correspondingly.	7

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Scanner	Scanner	Image location adjustment		305		Image location adjustment of secondary scanning direction (scanner section)	146	<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
05	Adjustment mode	Scanner	Scanner	Image location adjustment		306		Image location adjustment of primary scanning direction (scanner section)	130	<110-147>	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
05	Adjustment mode	Scanner	Scanner	ALL		310		Forced performing of peak detection	-		-	Activates the light intensity adjustment control. During this adjustment, the density LED blinks.	6
05	Adjustment mode	Scanner	Scanner	ALL		311		LED (R1) current effective value setting	64	<0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
05	Adjustment mode	Scanner	Scanner	ALL		312		LED (G1) current effective value setting	240	<0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
05	Adjustment mode	Scanner	Scanner	ALL		313		LED (B1) current effective value setting	0	<0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
05	Adjustment mode	Scanner	Scanner	ALL		314		LED (R2) current effective value setting	64	<0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
05	Adjustment mode	Scanner	Scanner	ALL		315		LED (G2) current effective value setting	240	<0-255>	SYS	Displays total of the initial value and light intensity correction value.	1
05	Adjustment mode	Scanner	Scanner	ALL		316		LED (B2) current effective value setting	0	<0-255>	SYS	Displays total of the initial value and light intensity correction value.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Scanner	Scanner	ALL		317	1	Final result of the peak detection black level adjustment (CH1)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		317	2	Final result of the peak detection black level adjustment (CH2)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		317	3	Final result of the peak detection black level adjustment (CH3)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		317	4	Final result of the peak detection black level adjustment (CH4)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		317	5	Final result of the peak detection black level adjustment (CH5)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		317	6	Final result of the peak detection black level adjustment (CH6)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		318	1	Final result of the peak detection white level adjustment (CH1)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		318	2	Final result of the peak detection white level adjustment (CH2)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Scanner	Scanner	ALL		318	3	Final result of the peak detection white level adjustment (CH3)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		318	4	Final result of the peak detection white level adjustment (CH4)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		318	5	Final result of the peak detection white level adjustment (CH5)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	ALL		318	6	Final result of the peak detection white level adjustment (CH6)	0	<0-32767>	SYS	Displays the total of the initial value and the peak detection level adjustment value.	2
05	Adjustment mode	Scanner	Scanner	Reproduction ratio adjustment		340		Reproduction ratio adjustment of secondary scanning direction (scanner section)	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
05	Adjustment mode	Scanner	Scanner	ALL	Original glass	350		Shading position adjustment	128	<118-138>	SYS	0.064 mm/step During this adjustment, the density LED blinks.	1
05	Adjustment mode	Scanner	Scanner	ALL	ADF	351		Shading position adjustment	128	<118-138>	SYS	0.064 mm/step During this adjustment, the density LED blinks.	1
05	Adjustment mode	Scanner	ADF	ALL	for single sided original	354		Adjustment of ADF paper alignment	10	<0-20>	SYS	When the value increases by "1", the aligning amount increases by approx. 0.4 mm.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Scanner	ADF/RADF	ALL	for double sided original	355		Adjustment of ADF/RADF paper alignment	10	<0-20>	SYS	When the value increases by "1", the aligning amount increases by approx. 0.4 mm.	1
05	Adjustment mode	Scanner	ADF	ALL		357		Fine adjustment of ADF transport speed	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
05	Adjustment mode	Scanner	ADF	ALL		358		ADF sideways deviation adjustment	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
05	Adjustment mode	Scanner	Scanner	ALL		359		Carriage position adjustment during scanning from ADF	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
05	Adjustment mode	Scanner	ADF	ALL	for single sided original	365		ADF leading edge position adjustment	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
05	Adjustment mode	Scanner	ADF/RADF		for double sided original	366		ADF/RADF leading edge position adjustment	50	<0-100>	SYS	When the value increases by "1", the copied image of original fed from the ADF/RADF shifts toward the trailing edge of paper by approx. 0.2 mm. During this adjustment, the density LED blinks.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Laser	PRT		401		Fine adjustment of polygonal motor rotation speed(adjustment of primary scanning direction reproduction ratio)	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
05	Adjustment mode	Printer	Laser	PPC		405		Fine adjustment of polygonal motor rotation speed(adjustment of primary scanning direction reproduction ratio)	128	<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
05	Adjustment mode		Laser	Adj. of primary scan. laser writing start		410		Adjustment of primary scanning laser writing start position.	168	<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
05	Adjustment mode	Printer	Laser	Adj. of primary scan. laser writing start		411		Adjustment of primary scanning laser writing start position.	168	<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
05	Adjustment mode	Printer	Drive	PPC/PRT		421		Adjustment of secondary scanning direction reproduction ratio(fine adjustment of main motor speed)	125	<0-255>	M	When the value increases by "1", the reproduction ratio of secondary scanning direction increases by approx. 0.04%.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Drive	FAX		422		Adjustment of secondary scanning direction reproduction ratio(fine adjustment of main motor speed)	128	<0-255>	M	When the value increases by "1", the reproduction ratio of secondary scanning direction increases by approx. 0.04%.	1
05	Adjustment mode	Printer	Drive	PPC/PRT		424		Fine adjustment of exit motor speed	160	<0-255>	M	When the value increases by "1", the rotation becomes faster by approx. 0.05%.	1
05	Adjustment mode	Printer	Drive	FAX		425		Fine adjustment of exit motor speed	128	<0-255>	M	When the value increases by "1", the rotation becomes faster by approx. 0.05%.	1
05	Adjustment mode	Printer	Image	Margin adjustment	PPC	430		Top margin adjustment(blank area at the leading edge of the paper)	50	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1
05	Adjustment mode	Printer	Image	Margin adjustment	PPC	431		Left margin adjustment(blank area at the left of the paper along the paper feeding direction)	50	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1
05	Adjustment mode	Printer	Image	Margin adjustment	PPC	432		Right margin adjustment(blank area at the right of the paper along the paper feeding direction)	50	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1
05	Adjustment mode	Printer	Image	Margin adjustment	PPC	433		Bottom margin adjustment(blank area at the trailing edge of the paper)	95	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Image	ALL		434	0	Bottom margin adjustment(blank area at the trailing edge of the paper)/Reverse side at duplexing	29	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	2
05	Adjustment mode	Printer	Image	ALL		434	1	Right margin adjustment(blank area at the right of the paper along the paper feeding direction)/Reverse side at duplexing	29	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	2
05	Adjustment mode	Printer	Image	Margin adjustment	PRT	435		Top margin adjustment(blank area at the leading edge of the paper)	24	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1
05	Adjustment mode	Printer	Image	Margin adjustment	PRT	436		Left margin adjustment(blank area at the left of the paper along the paper feeding direction)	0	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1
05	Adjustment mode	Printer	Image	Margin adjustment	PRT	437		Right margin adjustment(blank area at the right of the paper along the paper feeding direction)	0	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1
05	Adjustment mode	Printer	Image	Margin adjustment	PRT	438		Bottom margin adjustment(blank area at the trailing edge of the paper)	0	<0-255>	M	When the value increases by "1", the blank area becomes wider by approx. 0.0423 mm.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Laser	Adjustment of secondary scanning laser writing start position		440		Drawer	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
05	Adjustment mode	Printer	Laser	Adjustment of secondary scanning laser writing start position		441		PFU	21	<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
05	Adjustment mode	Printer	Laser	Adjustment of secondary scanning laser writing start position		442		Bypass feeding	8	<0-15>	M	When the value increases by "1", the image shifts toward the leading edge of the paper by approx. 0.2 mm.	1
05	Adjustment mode	Printer	Image	Adjustment of secondary scanning laser writing start position		443		LCF	8	<0-15>	M	When the value increases by "1", the image shifts toward the leading edge of the paper by approx. 0.2 mm.	1
05	Adjustment mode	Printer	Image	Adjustment of secondary scanning laser writing start position		444		PFP	8	<0-15>	M	When the value increases by "1", the image shifts toward the leading edge of the paper by approx. 0.2 mm.	1
05	Adjustment mode	Printer	Image	Adjustment of secondary scanning laser writing start position		445		Duplex feeding	8	<0-15>	M	When the value increases by "1", the image shifts toward the leading edge of the paper by approx. 0.2 mm.	1
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	448	0	Paper aligning amount adjustment at the registration section (PFP upper drawer/Plain paper)	12	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	448	1	Paper aligning amount adjustment at the registration section (PFP upper drawer/Plain paper)	12	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	448	2	Paper aligning amount adjustment at the registration section (PFP upper drawer/Plain paper)	12	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	449	0	Paper aligning amount adjustment at the registration section (PFP lower drawer/Plain paper)	12	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	449	1	Paper aligning amount adjustment at the registration section (PFP lower drawer/Plain paper)	12	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	449	2	Paper aligning amount adjustment at the registration section (PFP lower drawer/Plain paper)	12	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	450	0	Paper aligning amount adjustment at the registration section (Drawer/Plain paper)	12	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	450	1	Paper aligning amount adjustment at the registration section (Drawer/Plain paper)	12	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	450	2	Paper aligning amount adjustment at the registration section (Drawer/Plain paper)	12	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	451	0	Paper aligning amount adjustment at the registrationsection (PFU/Plain paper)	17	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	451	1	Paper aligning amount adjustment at the registrationsection (PFU/Plain paper)	17	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	451	2	Paper aligning amount adjustment at the registrationsection (PFU/Plain paper)	17	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	455	0	Paper aligning amount adjustment at the registration section (Upper drawer/Plain paper)	20	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	455	1	Paper aligning amount adjustment at the registration section (Upper drawer/Plain paper)	20	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	455	2	Paper aligning amount adjustment at the registration section (Upper drawer/Plain paper)	20	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	458	0	Paper aligning amount adjustment at the registration section (Bypass feeding/Plain paper)	9	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	458	1	Paper aligning amount adjustment at the registration section (Bypass feeding/Plain paper)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	458	2	Paper aligning amount adjustment at the registration section (Bypass feeding/Plain paper)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	460	0	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 1)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	460	1	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 1)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	460	2	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 1)	9	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	461	0	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 2)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	461	1	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 2)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	461	2	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 2)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	462	0	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 3)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	462	1	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 3)	9	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	462	2	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 3)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Postcard	462	3	Paper aligning amount adjustment at the registration section (Bypass feeding/Thick paper 3)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	463	0	Paper aligning amount adjustment at the registration section (Bypass feeding/OHP film)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	463	1	Paper aligning amount adjustment at the registration section (Bypass feeding/OHP film)	9	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	463	2	Paper aligning amount adjustment at the registration section (Bypass feeding/OHP film)	9	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	464	0	Paper aligning amount adjustment at the registration section (Bypass feeding /Envelope)	26	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	464	1	Paper aligning amount adjustment at the registration section (Bypass feeding /Envelope)	26	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	464	2	Paper aligning amount adjustment at the registration section (Bypass feeding /Envelope)	26	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Plain paper	466	0	Adjustment of paper pushing amount/Bypass feeding	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.	2
05	Adjustment mode	Printer	Paper feeding	ALL	Postcard	466	1	Adjustment of paper pushing amount/Bypass feeding	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.	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Envelope	466	3	Adjustment of paper pushing amount/Bypass feeding	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.	2
05	Adjustment mode	Printer	Paper feeding	ALL	Thick paper 1	466	4	Adjustment of paper pushing amount/Bypass feeding	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.	2
05	Adjustment mode	Printer	Paper feeding	ALL	Thick paper 2	466	5	Adjustment of paper pushing amount/Bypass feeding	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.	2
05	Adjustment mode	Printer	Paper feeding	ALL	Thick paper 3	466	6	Adjustment of paper pushing amount/Bypass feeding	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.	2
05	Adjustment mode	Printer	Paper feeding	ALL	OHP film	466	7	Adjustment of paper pushing amount/Bypass feeding	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.	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	469	0	Paper aligning amount adjustment at the registration section (Upper drawer/Thick paper 1)	20	<0-255>	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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	469	1	Paper aligning amount adjustment at the registration section (Upper drawer/Thick paper 1)	20	<0-255>	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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	469	2	Paper aligning amount adjustment at the registration section (Upper drawer/Thick paper 1)	20	<0-255>	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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	469	3	Paper aligning amount adjustment at the registration section (Upper drawer/Thick paper 2)	20	<0-255>	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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	469	4	Paper aligning amount adjustment at the registration section (Upper drawer/Thick paper 2)	22	<0-255>	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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	469	5	Paper aligning amount adjustment at the registration section (Upper drawer/Thick paper 2)	19	<0-255>	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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	471	0	Paper aligning amount adjustment at the registration section (PFP upper drawer/Thick paper 1)	20	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	471	1	Paper aligning amount adjustment at the registration section (PFP upper drawer/Thick paper 1)	22	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	471	2	Paper aligning amount adjustment at the registration section (PFP upper drawer/Thick paper 1)	19	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	472	0	Paper aligning amount adjustment at the registration section (PFP lower drawer/Thick paper 1)	20	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	472	1	Paper aligning amount adjustment at the registration section (PFP lower drawer/Thick paper 1)	22	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	472	2	Paper aligning amount adjustment at the registration section (PFP lower drawer/Thick paper 1)	19	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Long size	474	0	Paper aligning amount adjustment at the registration section (Thick paper 1)	24	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Middle size	474	1	Paper aligning amount adjustment at the registration section (Thick paper 1)	24	<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	2
05	Adjustment mode	Printer	Paper feeding	ALL	Short size	47	2	Paper aligning amount adjustment at the registration section (Thick paper 1)	33	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Printer	Image	Adjustment of drawer sideways deviation		497	0	Drawer	128	<0-255>	M	When the value increases by "1", the image shifts toward the front side by 0.0423 mm.	2
05	Adjustment mode	Printer	Image	Adjustment of drawer sideways deviation		497	1	PFU	128	<0-255>	M	When the value increases by "1", the image shifts toward the front side by 0.0423 mm.	2
05	Adjustment mode	Printer	Image	Adjustment of drawer sideways deviation		497	5	Bypass feeding	128	<0-255>	M	When the value increases by "1", the image shifts toward the front side by 0.0423 mm.	2
05	Adjustment mode	Printer	Image	Adjustment of primary scanning laser writing start position at duplex feeding		498	0	Long size	128	<0-255>	M	When the value increases by "1", the image shifts toward the front side by 0.0423 mm.	2
05	Adjustment mode	Printer	Image	Adjustment of primary scanning laser writing start position at duplex feeding		498	1	Short size (A4/LT or smaller)	128	<0-255>	M	When the value increases by "1", the image shifts toward the front side by 0.0423 mm.	2
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Center value	501		Photo	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Center value	503		Text/Photo	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Center value	504		Text	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Light step value	505		Text/Photo	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Light step value	506		Photo	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Light step value	507		Text	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Dark step value	508		Text/Photo	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Dark step value	509		Photo	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "manual density"/Dark step value	510		Text	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "automatic density"	512		Photo	128	<0-255>	SYS	When the value increases, the image becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "automatic density"	514		Text/Photo	128	<0-255>	SYS	When the value increases, the image becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Image	PPC	Density adjustment Fine adjustment of "automatic density"	515		Text	128	<0-255>	SYS	When the value increases, the image becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Text/Photo	532		Range correction/Background peak adjustment	32	<0-255>	SYS	When the value increases, the background becomes more brightened.	1
05	Adjustment mode	Image processing	Image	PPC	Photo	533		Range correction/Background peak adjustment	22	<0-255>	SYS	When the value increases, the background becomes more brightened.	1
05	Adjustment mode	Image processing	Image	PPC	Text	534		Range correction/Background peak adjustment	46	<0-255>	SYS	When the value increases, the background becomes more brightened.	1
05	Adjustment mode	Image processing	Image	PPC	Text/Photo	535		Range correction/Text peak adjustment	246	<0-255>	SYS	When the value decreases, the text becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Text	536		Range correction/Text peak adjustment	254	<0-255>	SYS	When the value decreases, the text becomes darker.	1
05	Adjustment mode	Image processing	Image	PPC	Photo	537		Range correction/Text peak adjustment	236	<0-255>	SYS	When the value decreases, the text becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Image	PPC	Text/Photo	570		Range correction on original manually set on the original glass	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
05	Adjustment mode	Image processing	Image	PPC	Photo	571		Range correction on original manually set on the original glass	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Image	PPC	Text	572		Range correction on original manually set on the original glass	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
05	Adjustment mode	Image processing	Image	PPC	Text/Photo	593		Gamma data slope adjustment	5	<1-9>	SYS	Select the slope of Gamma curve (The larger the value is, the larger the slope becomes.)	1
05	Adjustment mode	Image processing	Image	PPC	Photo	594		Gamma data slope adjustment	5	<1-9>	SYS	Select the slope of Gamma curve (The larger the value is, the larger the slope becomes.)	1
05	Adjustment mode	Image processing	Image	PPC	Text	595		Gamma data slope adjustment	5	<1-9>	SYS	Select the slope of Gamma curve (The larger the value is, the larger the slope becomes.)	1
05	Adjustment mode	Image processing	Image	PPC	Text/Photo	600		Background adjustment	3	<1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1
05	Adjustment mode	Image processing	Image	PPC	Photo	601		Background adjustment	3	<1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Image	PPC	Text	602		Background adjustment	3	<1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1
05	Adjustment mode	Image processing	Image	ALL		609		Switching of the scanner Gamma correction table when paper is fed from the ADF	0	<0-4>	SYS	The larger the value is, the lighter the density of the highlight areas becomes.	1
05	Adjustment mode	Image processing	Sharpness adjustment	PPC		620		Text/Photo	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
05	Adjustment mode	Image processing	Sharpness adjustment	PPC		621		Photo(Error diffusion)	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Sharpness adjustment	PPC		622		Text	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
05	Adjustment mode	Image processing	Sharpness adjustment	PPC		623		Photo(Dither)	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
05	Adjustment mode	Image processing	Adjustment of smudged/faint text	PPC		648			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
05	Adjustment mode	Image processing	Adjustment of smudged/faint text	PRT		654		PS	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Adjustment of smudged/faint text	PRT		655		PCL	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
05	Adjustment mode	Image processing	Upper limit value in tonersaving period	PRT		664		PS	176	<0-255>	M	When the value decreases, the density of the printed text becomes lower.	1
05	Adjustment mode	Image processing	Upper limit value in tonersaving period	PRT		665		PCL	176	<0-255>	M	When the value decreases, the density of the printed text becomes lower.	1
05	Adjustment mode	Image processing	Density adjustment of copied image	PPC		667	0		0	<0-63>	M	Adjusts the density level of copied image. When the value decreases, the text becomes lighter.	2
05	Adjustment mode	Image processing	Density adjustment of copied image	PPC		667	1		19	<0-63>	M	Adjusts the density level of copied image. When the value decreases, the text becomes lighter.	2
05	Adjustment mode	Image processing	Density adjustment of copied image	PPC		667	2		25	<0-63>	M	Adjusts the density level of copied image. When the value decreases, the text becomes lighter.	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Density adjustment of copied image	PPC		667	3		31	<0-63>	M	Adjusts the density level of copied image. When the value decreases, the text becomes lighter.	2
05	Adjustment mode	Image processing	Adjustment of copied image density	PPC		667	4		41	<0-63>	M	Adjusts the density level of copied image. When the value decreases, the text becomes lighter.	2
05	Adjustment mode	Image processing	Adjustment of printer image density	PRT		672	0	GDI	0	<0-63>	M	Adjustment of the image density. With decreasing the value, the text becomes lighter.	2
05	Adjustment mode	Image processing	Adjustment of printer image density	PRT		672	1	GDI	44	<0-63>	M	Adjustment of the image density. With decreasing the value, the text becomes lighter.	2
05	Adjustment mode	Image processing	Adjustment of printer image density	PRT		672	2	GDI	25	<0-63>	M	Adjustment of the image density. With decreasing the value, the text becomes lighter.	2
05	Adjustment mode	Image processing	Adjustment of printer image density	PRT		672	3	GDI	31	<0-63>	M	Adjustment of the image density. With decreasing the value, the text becomes lighter.	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Adjustment of printer image density	PRT		672	4	GDI	56	<0-63>	M	Adjustment of the image density. With decreasing the value, the text becomes lighter.	2
05	Adjustment mode	Image processing	Range correction on original set on the ADF	PPC		693		Text/Photo	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
05	Adjustment mode	Image processing	Range correction on original set on the ADF	PPC		694		Photo	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Range correction on original set on the ADF	PPC		695		Text	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
05	Adjustment mode	Image pro	Adjustment of binarized threshold(Text)	FAX	Center value	700		Center value	120	<0-255>	SYS	When the value increases, the image at the center step becomes lighter.	1
05	Adjustment mode	Image pro	Adjustment of binarized threshold(Text)	FAX	Light step value	701		Light step value	33	<0-255>	SYS	When the value increases, the image of "light" side becomes lighter.	1
05	Adjustment mode	Image pro	Adjustment of binarized threshold(Text)	FAX	Dark step value	702		Dark step value	33	<0-255>	SYS	When the value increases, the image of "dark" side becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "manual density"/Center value	FAX		710		Photo	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "manual density"/Center value	FAX		714		Text/Photo	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "manual density"/Light step value	FAX		715		Photo	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "manual density"/Light step value	FAX		719		Text/Photo	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "manual density"/Dark step value	FAX		720		Photo	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "manual density"/Dark step value	FAX		724		Text/Photo	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "automatic density"	FAX		725		Photo	128	<0-255>	SYS	When the value increases, the image becomes darker.	1
05	Adjustment mode	Image pro	Density adjustment Fine adjustment of "automatic density"	FAX		729		Text/Photo	128	<0-255>	SYS	When the value increases, the image becomes darker.	1
05	Adjustment mode	Image processing	Range correction/ Text peak adjustment	SCN		820		Text/Photo	246	<0-255>	SYS	When the value decreases, the text becomes darker.	1
05	Adjustment mode	Image processing	Range correction/ Text peak adjustment	SCN		821		Text	236	<0-255>	SYS	When the value decreases, the text becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Range correction/ Text peak adjustment	SCN		822		Photo	254	<0-255>	SYS	When the value decreases, the text becomes darker.	1
05	Adjustment mode	Image processing	Range correction on original manually set on the original glass	SCN		825		Text/Photo	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Range correction on original manually set on the original glass	SCN		826		Text	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
05	Adjustment mode	Image processing	Range correction on original manually set on the original glass	SCN		827		Photo	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Range correction on original set on the ADF	SCN		830		Text/Photo	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
05	Adjustment mode	Image processing	Range correction on original set on the ADF	SCN		831		Text	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Range correction on original set on the ADF	SCN		832		Photo	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
05	Adjustment mode	Image processing	Range correction/ Background peak adjustment	SCN		835		Text/Photo	32	<0-255>	SYS	When the value increases, the background becomes more brightened.	1
05	Adjustment mode	Image processing	Range correction/ Background peak adjustment	SCN		836		Text	46	<0-255>	SYS	When the value increases, the background becomes more brightened.	1
05	Adjustment mode	Image processing	Range correction/ Background peak adjustment	SCN		837		Photo	16	<0-255>	SYS	When the value increases, the background becomes more brightened.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Center value	SCN		845		Text/Photo	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Center value	SCN		846		Text	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Center value	SCN		847		Photo	128	<0-255>	SYS	When the value increases, the image at the center step becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Light step value	SCN		850		Text/Photo	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Light step value	SCN		851		Text	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Light step value	SCN		852		Photo	33	<0-255>	SYS	When the value increases, the image of the "light" steps becomes lighter.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Dark step value	SCN		855		Text/Photo	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Dark step value	SCN		856		Text	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "manual density"/Dark step value	SCN		857		Photo	33	<0-255>	SYS	When the value increases, the image of the "dark" steps becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "automatic density"	SCN		860		Text/Photo	128	<0-255>	SYS	When the value increases, the image becomes darker.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "automatic density"	SCN		861		Text	128	<0-255>	SYS	When the value increases, the image becomes darker.	1
05	Adjustment mode	Image processing	Density adjustment Fine adjustment of "automatic density"	SCN		862		Photo	128	<0-255>	SYS	When the value increases, the image becomes darker.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Sharpness adjustment (Text/Photo)	SCN		865	0	Reproduction ratio 40% or smaller	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)	2
05	Adjustment mode	Image processing	Sharpness adjustment (Text/Photo)	SCN		865	1	Reproduction ratio 41-80%	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)	2
05	Adjustment mode	Image processing	Sharpness adjustment (Text/Photo)	SCN		865	2	Reproduction ratio 81% or larger	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)	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Sharpness adjustment (Text)	SCN		866	0	Reproduction ratio 40% or smaller	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)	2
05	Adjustment mode	Image processing	Sharpness adjustment (Text)	SCN		866	1	Reproduction ratio 41-80%	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)	2
05	Adjustment mode	Image processing	Sharpness adjustment (Text)	SCN		866	2	Reproduction ratio 81% or larger	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)	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Sharpness adjustment (Photo)	SCN		867	0	Reproduction ratio 40% or smaller	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)	2
05	Adjustment mode	Image processing	Sharpness adjustment (Photo)	SCN		867	1	Reproduction ratio 41-80%	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)	2
05	Adjustment mode	Image processing	Sharpness adjustment (Photo)	SCN		867	2	Reproduction ratio 81% or larger	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)	2
05	Adjustment mode	Image processing	Background adjustment	SCN		869		Text/Photo	4	<1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
05	Adjustment mode	Image processing	Background adjustment	SCN		870		Photo	6	<1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1
05	Adjustment mode	Image processing	Background adjustment	SCN		871		Text	4	<1-9>	SYS	When the value decreases, the background becomes darker. When the value increases, the background becomes lighter.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	System	User interface	ALL		202		Counter installed externally	0	<0-3>	M	0: No external counter 1: Coin controller 2: Copy key card 3: Key copy counter	1
08	Setting mode	System	General	ALL		203		Line adjustment mode	0	<0-1>	M	0: For factory shipment 1: For line *Field: "0" must be selected	1
08	Setting mode	System	User interface	ALL		204		Auto-clear timer setting	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
08	Setting mode	System	User interface	ALL		205		Auto power save mode timer setting	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. 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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	System	User interface	ALL		206		Auto Shut Off Mode timer setting (Auto Sleep Mode)	23	<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: 1 min. 24:Invalid	1
08	Setting mode	System	User interface	ALL		222		Message when the Key copy counter is installed	0	<0-1>	SYS	0:「Set key copy counter」 1:「Ask cashier to switch on」	1
08	Setting mode	System	User interface	ALL		223		Moving the menu by pressing the direct function key	JPN:1 Other:0	<0-1>	M	0: Menu not moved 1: Menu moved	1
08	Setting mode	Printer	User interface	ALL		224		Paper size (Bypass)	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	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Printer	Paper feeding	ALL		225		Paper size (Standard drawer)	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	1
08	Setting mode	Printer	Paper feeding	ALL		226		Paper size (PFU)	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	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Printer	Paper feeding	ALL		227		Paper size (PFP upper drawer)	UC:7 Other:1	<0-13>	M	Paper size (Drawer) 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	1
08	Setting mode	Printer	Paper feeding	ALL		228		Paper size (PFP lower drawer)	UC:7 Other:1	<0-13>	M	Paper size (PFP lower drawer) 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	1
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	229	0	Paper size (A3)	420	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	229	1	Paper size (A3)	297	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	230	0	Paper size (A4-R)	297	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	230	1	Paper size (A4-R)	210	<140-432>	M		2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	231	0	Paper size (A5-R)	210	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	231	1	Paper size (A5-R)	148	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	232	0	Paper size (B4)	364	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	232	1	Paper size (B4)	257	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	233	0	Paper size (B5-R)	257	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	233	1	Paper size (B5-R)	182	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	234	0	Paper size (LT-R)	279	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	234	1	Paper size (LT-R)	216	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	235	0	Paper size (LD)	432	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	235	1	Paper size (LD)	279	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	236	0	Paper size (LG)	356	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	236	1	Paper size (LG)	216	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	237	0	Paper size (ST-R)	216	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	237	1	Paper size (ST-R)	140	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	238	0	Paper size (COMPUTER)	356	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	238	1	Paper size (COMPUTER)	257	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	239	0	Paper size (FOLIO)	330	<140-432>	M		2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	239	1	Paper size (FOLIO)	210	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	240	0	Paper size (13"LG)	330	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	240	1	Paper size (13"LG)	216	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	241	0	Paper size (8.5"X8.5")	216	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	241	1	Paper size (8.5"X8.5")	216	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	242	0	Paper size (Non-standard)	432	<105-432>	SYS		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	242	1	Paper size (Non-standard)	279	<105-432>	SYS		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	244	0	Paper size (8K)	390	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	244	1	Paper size (8K)	270	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	245	0	Paper size (16K-R)	270	<140-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	245	1	Paper size (16K-R)	195	<140-432>	M		2
08	Setting mode	System	User interface	ALL		246		Clearing copy jobs at auto clear	0	<0-1>	M	0: No clearing 1: Clearing	1
08	Setting mode	System	Maintenance	ALL		250		Service technician telephone number	0	<20 digits>	SYS	A telephone number can be entered up to 20 digits.	11
08	Setting mode	Counter	Maintenance	ALL		251		Setting value of PM counter	Refer to content	<8 digits>	M	<Default> JPN: 0 UC, EUR:90,000	1
08	Setting mode	Counter	Maintenance	ALL		252		Current value of PM counter Display/0 clearing	0	<8 digits>	M	Counts up when the registration sensor is ON.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	System	Maintenance	ALL		253		Error history display	-		SYS	Displaying of the latest 8 errors code Press the reproduction ratio button ([200%] or [25%]) to change the errors code.	6
08	Setting mode	Printer	Paper feeding	ALL		255		PFP installation	0	<0-4>	M	0: Automatic 1: PFP single-drawer type installed 2: PFP dual-drawer type installed 3: - 4: Not installed Even when "1" is set, if the PFP dual-drawer has been installed at power-ON, it will be automatically changed to "2".	1
08	Setting mode	System	User interface	ALL		261		Fixes the paper size setting for the bypass tray	0	<0-1>	M	0: Size not fixed (Turnthe 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
08	Setting mode	System	User interface	ALL		262		Displaying both A4 and A4-R on the initial screen for the bypass paper size setting	0	<0~1>		0: Not displayed 1: Displayed	1
08	Setting mode	System	User interface	PPC		300		Maximum number of copy volume (MAX9)	0	<0-2>	SYS	0: 999 1: 99 2:9	1
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	337	0	Paper size (#10-R)	241	<105-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	337	1	Paper size (#10-R)	105	<105-432>	M		2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	338	0	Paper size (DL-R)	220	<105-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	338	1	Paper size (DL-R)	110	<105-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	339	0	Paper size (Envelope: Monerch-R)	191	<98-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	339	1	Paper size (Envelope: Monerch-R)	98	<98-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	340	0	Paper size (Envelope: CHO-3-R)	235	<105-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	340	1	Paper size (Envelope: CHO-3-R)	120	<105-432>	M		2
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	341	0	Paper size (Envelope: YOU-4-R)	235	<105-432>	M		2
08	Setting mode	Counter	Paper feeding	ALL	widthwise direction	341	1	Paper size (Envelope: YOU-4-R)	105	<105-432>	M		2
08	Setting mode	Counter	Counter	ALL		345		Count setting of envelope (PM)	1	<0-1>	M	0: Counted as 1 1: Counted as 2	1
08	Setting mode	Counter	Counter	ALL		346		Count setting of large-sized paper (PM)	1	<0-1>	M	0: Counted as 1 1: Counted as 2	1
08	Setting mode	Counter	Counter	ALL		347		Definition setting of large-sized paper (PM)	1	<0-1>	M	0: A3/LD 1: A3/LD/B4/LG/FOLIO/COMP	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Counter	Counter	ALL		348		Count setting of thick paper (PM)	1	<0-1>	M	0: Counted as 1 1: Counted as 2	1
08	Setting mode	Counter	Counter	ALL		349		Count setting of OHP film (PM)	1	<0-1>	M	0: Counted as 1 1: Counted as 2	1
08	Setting mode	Counter	Counter	ALL		352		Count setting of large-sized paper (Fee charging system counter)	JPN: 0 Other: 1	<0-1>	M	0: Counted as 1 1: Counted as 2	1
08	Setting mode	Counter	Counter	ALL		353		Definition setting of large-sized paper (Fee charging system counter)	0	<0-1>	M	0: A3/LD 1: A3/LD/B4/LG/FOLIO/COMP/8K	1
08	Setting mode	Counter	Counter	ALL		356		Counter for Drawer feeding	0	<8 digits>	M	Counts the number of sheets fed from Drawer	3
08	Setting mode	Counter	Counter	ALL		357		Counter for PFU feeding	0	<8 digits>	M	Counts the number of sheets fed from PFU	3
08	Setting mode	Counter	Counter	ALL		358		Counter for bypass feeding	0	<8 digits>	M	Counts the number of sheets fed from bypass feed	3
08	Setting mode	Counter	Counter	ALL		360		Counter for PFP upper drawer feeding	0	<8 digits>	M	Counts the number of sheets fed from PFP upper drawer	3
08	Setting mode	Counter	Counter	ALL		370		Counter for PFP lower drawer feeding	0	<8 digits>	M	Counts the number of sheets fed from PFP lower drawer	3
08	Setting mode	Counter	Counter	ALL		372		Counter for ADU	0	<8 digits>	M	Counts the number of output pages of duplex printing.	3

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Counter	Counter	ALL		374		Counter for ADF	0	<8 digits>	SYS	Counts the number of originals fed from ADF	3
08	Setting mode	System	Counter	ALL		381		Setting for counter installed externally	1	<0-1>	M	Selects the job to count up for the external counter. 0: Not selected 1: Copier	1
08	Setting mode	Counter	Counter	ALL		388		Copying total counter / MAIN board → SRAM board	-		-	Copies the total counter value of the MAIN board to the SRAM board.	5
08	Setting mode	Counter	Counter	ALL		389		Copying total counter / SRAM board → MAIN board	-		-	Copies the total counter value of the SRAM board to the MAIN board.	5
08	Setting mode	Process	Fuser	ALL		400		Fuser unit error status counter	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
08	Setting mode	Process	Fuser	ALL	The first drop	404	0	Temperature drop setting in ready status (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	404	1	Temperature drop setting in ready status (Center thermistor)	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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	The third drop	404	2	Temperature drop setting in ready status (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	404	3	Temperature drop setting in ready status (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The first drop	405	0	Temperature drop setting in ready status (Side thermistor)	3	<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	2
08	Setting mode	Process	Fuser	ALL	The second drop	405	1	Temperature drop setting in ready status (Side thermistor)	3	<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	2
08	Setting mode	Process	Fuser	ALL	The third drop	405	2	Temperature drop setting in ready status (Side thermistor)	3	<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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	405	3	Temperature drop setting in ready status (Side thermistor)	3	<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	2
08	Setting mode	Process	Fuser	ALL		407		Fuser roller temperature in ready status (Side thermistor)	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL		409		Fuser roller temperature at energy saver mode (Center thermistor)	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
08	Setting mode	Process	Fuser	ALL		410		Fuser roller temperature during printing (Center thermistor/Plain paper)	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
08	Setting mode	Process	Fuser	ALL		411		Fuser roller temperature on standby (Center thermistor)	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
08	Setting mode	Process	Fuser	ALL		413		Fuser roller temperature during printing (Center thermistor/Thick paper 1)	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
08	Setting mode	Process	Developer	ALL		414		Toner density life correction switching	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	The first drop	424	0	Temperature drop switching time setting in ready status (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	424	1	Temperature drop switching time setting in ready status (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The third drop	424	2	Temperature drop switching time setting in ready status (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	424	3	Temperature drop switching time setting in ready status (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The first drop	425	0	Temperature drop switching time setting in ready status (Side thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	425	1	Temperature drop switching time setting in ready status (Side thermistor)	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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	The third drop	425	2	Temperature drop switching time setting in ready status (Side thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	425	3	Temperature drop switching time setting in ready status (Side thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	Center thermistor	433	0	Temperature control lower limit (Plain paper/at ordinary temperature)	6	<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	2
08	Setting mode	Process	Fuser	ALL	Side thermistor	433	1	Temperature control lower limit (Plain paper/at ordinary temperature)	4	<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	2
08	Setting mode	Process	Fuser	ALL		437		Fuser roller temperature during printing (Center thermistor /Thick paper 2)	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL		438		Fuser roller temperature during printing (Center thermistor/OHP film)	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
08	Setting mode	Process	Fuser	ALL		439		Pre-running time for first printing (Thick paper 2)	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
08	Setting mode	Process	Fuser	ALL		440		Pre-running time for first printing (Plain paper)	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
08	Setting mode	Process	Fuser	ALL		441		Pre-running time for first printing (Thick paper 1)	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL		448		Fuser roller temperature in Energy Saving Mode (Side thermistor)	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
08	Setting mode	Process	Fuser	ALL		450		Fuser roller temperature during printing (Side thermistor/Plain paper)	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
08	Setting mode	Process	Fuser	ALL		451		Fuser roller temperature during printing (Side thermistor/Thick paper 1)	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
08	Setting mode	Process	Fuser	ALL		452		Fuser roller temperature during printing (Side thermistor/Thick paper 2)	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
08	Setting mode	Process	Fuser	ALL		453		Fuser roller temperature during printing(Side thermistor/OHP film)	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Image processing	ALL		455		Toner supply amount correction/Toner motor control	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
08	Setting mode	Printer	Paper feeding	ALL		457	0	Feeding retry counter setting value (PFP upper drawer)	5	<0-5>	M	Sets the retry times for feeding from the PFP upper drawer.	2
08	Setting mode	Printer	Paper feeding	ALL		457	1	Feeding retry counter setting value (PFP upper drawer)	5	<0-5>	M	Feeding retry counter setting value (PFP upper drawer)	2
08	Setting mode	Printer	Paper feeding	ALL		458	0	Feeding retry counter setting value (PFP lower drawer)	5	<0-5>	M	Sets the retry times for feeding from the PFP lower drawer.	2
08	Setting mode	Printer	Paper feeding	ALL		458	1	Feeding retry counter setting value (PFP lower drawer)	5	<0-5>	M	Sets the retry times for feeding from the PFP lower drawer.	2
08	Setting mode	Scanner	ADF	ALL		462		Setting for switchback operation to copy mixed-sized original on ADF	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	scanner	Scanner	ALL		463		Control status	0	<0-6>	SYS	0 : Normal end 1 : R1 level abnormality 2 : G1 level abnormality 3 : B1 level abnormality 4 : R2 level abnormality 5 : G2 level abnormality 6 : B2 level abnormality	1
08	Setting mode	Scanner	Scanner	ALL		464		Scanner LED ON/OFF status	0	<0-1>	SYS	0 : LED ON 1 : LED OFF	1
08	Setting mode	Scanner	Scanner	ALL		465		Black level control status	0	<0-255>	SYS	1 : CH1 black level abnormality 2 : CH2 black level abnormality 4 : CH3 black level abnormality 8 : CH4 black level abnormality 16 : CH5 black level abnormality 32 : CH6 black level abnormality 64 : Time over	1
08	Setting mode	Scanner	Scanner	ALL		466		White level control status	0	<0-255>	SYS	1 : CH1 white level abnormality 2 : CH2 white level abnormality 4 : CH3 white level abnormality 8 : CH4 white level abnormality 16 : CH5 white level abnormality 32 : CH6 white level abnormality 64 : Time over	1
08	Setting mode	Printer	Paper feeding	ALL	feeding direction	471	0	Paper size (Postcard)	148	<100-432>	M	* Postcard is supported only for JPN model.	2
08	Setting mode	Printer	Paper feeding	ALL	widthwise direction	471	1	Paper size (Postcard)	100	<100-432>	M	* Postcard is supported only for JPN model.	2
08	Setting mode	Process	Fuser	ALL	The first drop	476	0	Temperature drop setting during printing (Center thermistor/ Thick paper)	1	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	The second drop	476	1	Temperature drop setting during printing (Center thermistor/ Thick paper)	1	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	2
08	Setting mode	Process	Fuser	ALL	The third drop	476	2	Temperature drop setting during printing (Center thermistor/ Thick paper)	1	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	476	3	Temperature drop setting during printing (Center thermistor/ Thick paper)	1	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	2
08	Setting mode	Printer	Paper feeding	PPC		480		Default setting of paper source	0	<0-4>	SYS	0: A4/LT 1: Drawer 2: LCF 3: Not used 4: Not used	1
08	Setting mode	Printer	Paper feeding	PPC		481		Automatic change of paper source	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
08	Setting mode	Printer	Paper feeding	ALL		482		Feeding retry setting	0	<0-1>	M	0: ON 1: OFF	1
08	Setting mode	Printer	Laser	ALL		483		Pre-running rotation of polygonal motor	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Printer	Laser	ALL		486		Timing of auto-clearing of polygonal motor pre-running rotation	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
08	Setting mode	Image processing	Image	PPC		502		Error diffusion and dither setting at photo mode	1	<0-1>	SYS	Sets the image reproduction method at photo mode. 0: Error diffusion 1: Dither	1
08	Setting mode	System	FAX	FAX		510		FAX automatic transmission	1	<0-1>		0:Automatic transmission 1:Do not automatic transmission	1
08	Setting mode	Process	Fuser	ALL		515		Temperature setting of warming-up (Center thermistor)	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
08	Setting mode	Process	Fuser	ALL		516		Temperature setting of warming-up (Side thermistor)	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
08	Setting mode	Process	Fuser	ALL		520		Fuser roller temperature during printing (Center thermistor/Envelope)	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL		521		Fuser roller temperature during printing (Side thermistor/Envelope)	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
08	Setting mode	Process	Fuser	ALL		523		Pre-running time for first printing (Envelope)	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
08	Setting mode	Process	Fuser	ALL	The first drop	525	0	Temperature drop switching time setting during printing (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	525	1	Temperature drop switching time setting during printing (Center thermistor)	38	<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	2
08	Setting mode	Process	Fuser	ALL	The third drop	525	2	Temperature drop switching time setting during printing (Center thermistor)	75	<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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	525	3	Temperature drop switching time setting during printing (Center thermistor)	75	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL		526		Pre-running time for first printing (OHP film)	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
08	Setting mode	Process	Fuser	ALL	The first drop	527	0	Temperature drop switching time setting during printing (Side thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	527	1	Temperature drop switching time setting during printing (Side thermistor)	30	<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	2
08	Setting mode	Process	Fuser	ALL	The third drop	527	2	Temperature drop switching time setting during printing (Side thermistor)	48	<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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	527	3	Temperature drop switching time setting during printing (Side thermistor)	75	<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	2
08	Setting mode	Process	Fuser	ALL	Plain paper	535	0	Temperature drop control setting during printing (Temperature/ Time)	2	<0-20>	M	0: None1: Pattern 12: Pattern 23: Pattern 34: Pattern 45: Pattern 56: Pattern 67: Pattern 78: Pattern 89: Pattern 910: Pattern 1011: Pattern 1112: Pattern 1213: Pattern 1314: Pattern 1415: Pattern 1516: Pattern 1617: Pattern 1718: Pattern 1819: Pattern 1920: Manual adjustment	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	Thick paper	535	1	Temperature drop control setting during printing (Temperature/ Time)	12	<0-20>	M	0: None1: Pattern 12: Pattern 23: Pattern 34: Pattern 45: Pattern 56: Pattern 67: Pattern 78: Pattern 89: Pattern 910: Pattern 1011: Pattern 1112: Pattern 1213: Pattern 1314: Pattern 1415: Pattern 1516: Pattern 1617: Pattern 1718: Pattern 1819: Pattern 1920: Manual adjustment	2
08	Setting mode	Process	Fuser	ALL	The first drop	536	0	Temperature drop setting during printing (Center thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	536	1	Temperature drop setting during printing (Center thermistor)	2	<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	2
08	Setting mode	Process	Fuser	ALL	The third drop	536	2	Temperature drop setting during printing (Center thermistor)	3	<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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	536	3	Temperature drop setting during printing (Center thermistor)	3	<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	2
08	Setting mode	Process	Fuser	ALL	The first drop	537	0	Temperature drop setting during printing (Side thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	537	1	Temperature drop setting during printing (Side thermistor)	2	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	The third drop	537	2	Temperature drop setting during printing (Side thermistor)	3	<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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	537	3	Temperature drop setting during printing (Side thermistor)	5	<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	2
08	Setting mode	Image processing	Image	ALL		538		Density default in image quality mode	0	<0-7>	SYS	0: AUTO 1: Light 32: Light 2 3: Light 14: Center 5: Dark 16: Dark 2 7: Dark 3	1
08	Setting mode	Process	Fuser	ALL	The first drop	539	0	Temperature drop setting during printing (Side thermistor/ Thick paper)	1	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC	2
08	Setting mode	Process	Fuser	ALL	The second drop	539	1	Temperature drop setting during printing (Side thermistor/ Thick paper)	2	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC	2
08	Setting mode	Process	Fuser	ALL	The third drop	539	2	Temperature drop setting during printing (Side thermistor/ Thick paper)	3	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	The fourth drop	539	3	Temperature drop setting during printing (Side thermistor/ Thick paper)	3	<0-10>	M	This code is valid only when "20" is set to 08-535. Setting value x -5ºC:from 0ºC to -50ºC	2
08	Setting mode	Process	Fuser	ALL	The first drop	540	0	Temperature drop switching time setting during printing (Thick paper/Center thermistor)	20	<0-200>	M	This code is valid only when "20" is set to 08-535. Setting value x 5 sec.:from 0 to 1,000sec.later Thick paper: Thick Paper1/Thick Paper2/OHP/Envelope	2
08	Setting mode	Process	Fuser	ALL	The second drop	540	1	Temperature drop switching time setting during printing (Thick paper/Center thermistor)	48	<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	2
08	Setting mode	Process	Fuser	ALL	The third drop	540	2	Temperature drop switching time setting during printing (Thick paper/Center thermistor)	100	<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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	540	3	Temperature drop switching time setting during printing (Thick paper/Center thermistor)	100	<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	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	The first drop	541	0	Temperature drop switching time setting during printing (Thick paper/Side thermistor)	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	2
08	Setting mode	Process	Fuser	ALL	The second drop	541	1	Temperature drop switching time setting during printing (Thick paper/Side thermistor)	48	<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	2
08	Setting mode	Process	Fuser	ALL	The third drop	541	2	Temperature drop switching time setting during printing (Thick paper/Side thermistor)	100	<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	2
08	Setting mode	Process	Fuser	ALL	The fourth drop	541	3	Temperature drop switching time setting during printing (Thick paper/Side thermistor)	100	<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	2
08	Setting mode	Image processing	Image	PPC		550		Default setting of original mode	0	<0-2>	SYS	0: Text/Photo 1: Photo 2: Text	1
08	Setting mode	System	User interface	PPC		603		Setting for automatic duplexing mode	0	<0-2>	SYS	0: Invalid 1: Single-sided to duplex copying 2: Double-sided to duplex copying	1
08	Setting mode	System	User interface	PPC		604		Default setting for APS/AMS	0	<0-2>	SYS	0: APS (Automatic Paper Selection) 1: AMS (Automatic Magnification Selection) 2: Not selected	9

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	System	User interface	PPC		607		Default setting of RADF mode	0	<0-1>	SYS	0: Continuous feeding (by pressing the [START] button) 1: Single feeding (by setting original on the tray)	1
08	Setting mode	System	User interface	PPC		611		Book type original priority	0	<0-1>	SYS	0: Left page to right page 1: Right page to left page	1
08	Setting mode	System	User interface	PPC		618		Default setting when mixed size originals are set on ADF	0	<0-1>	SYS	0: Scanned as all in same size 1: Scanned as each original size (RADF only)	1
08	Setting mode	System	General	-		630		Access code display	0	<0-1>	SYS	0: Displayed 1: Not displayed	1
08	Setting mode	System	User interface	PPC		641		Automatic Sorting Mode setting (ADF)	2	<0,2>	M	0: Invalid 2: SORT	1
08	Setting mode	System	User interface	PPC		642		Default setting of Sorter Mode	1	<0,1>	M	0: SORT 1: GROUP	1
08	Setting mode	System	General	-		655		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.	-
08	Setting mode	System	General	-		662		ID card function setting	1	<0,1>	-	0: Invalid 1: Valid	1
08	Setting mode	System	General	-		672		Initialization of Access code	-		SYS	Initializing of the Access code *Key in the code and press the [START] button to perform the initialization.	3

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	System	RADF	PPC		685		Paper feeding by turns at duplex copying	1	<0-1>	-	0: Invalid 1: Valid	1
08	Setting mode	System	User interface	PPC		688		UI shortcut key	1	<0-3>	-	0 : Invalid 1 : Valid, Fix/Manual reproduction ratio only 2 : Valid, Standard drawer only 3 : Valid, Both of Fix/Manual reproduction ratio and Standard drawer	1
08	Setting mode	System	User interface	ALL		691		template function Setting	1	<0-1>	-	0: Not permitted 1: Permitted	1
08	Setting mode	System	Paper feeding	ALL		698		Limit function for the number of paper exit	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
08	Setting mode	System	Paper feeding	ALL		699		Limit number setting for paper exit	250	<1-999>	M	When the counter reaches the value specified, the MFP goes into the paper exit full status. Sets the limitSets the limit number of paper exit for 08-698.	1
08	Setting mode	System	General	-		700		Operation flag for detection device (Control flag for DF copying test)	1	<0,1>	-	0: Operated as a detection 1: Not operated as a detection	1
08	Setting mode	Process	Fuser	ALL	Center thermistor	800	0	Temperature control lower limit (OHP film)	7	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	Side thermistor	800	1	Temperature control lower limit (OHP film)	5	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2
08	Setting mode	Process	Fuser	ALL	Center thermistor	801	0	Temperature control lower limit (Thick paper 1)	7	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2
08	Setting mode	Process	Fuser	ALL	Side thermistor	801	1	Temperature control lower limit (Thick paper 1)	5	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2
08	Setting mode	Process	Fuser	ALL	Center thermistor	802	0	Temperature control lower limit(Thick paper 2)	11	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2
08	Setting mode	Process	Fuser	ALL	Side thermistor	802	1	Temperature control lower limit(Thick paper 2)	11	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2
08	Setting mode	Process	Fuser	ALL	Center thermistor	804	0	Temperature control lower limit (Envelope)	11	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL	Side thermistor	804	1	Temperature control lower limit (Envelope)	11	<0-12>	M	0: 130°C 1: 135°C 2: 140°C 3: 145°C 4: 150°C 5: 155°C6: 160°C 7: 165°C 8: 170°C 9: 175°C 10: 180°C 11: 185°C 12: 120°C	2
08	Setting mode	Process	Charger	PRT		805		Main charger bias correction (Text/Photo/OHP film)	98	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PRT		806		Main charger bias correction (Toner Saving Mode/OHP film)	98	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PPC		807		Main charger bias correction (Text/Photo/OHP film)	98	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PPC		808		Main charger bias correction (Text/OHP film)	98	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PPC		809		Main charger bias correction (Photo/OHP film)	98	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PRT	GDI	814		Main charger bias correction (Text/Photo/OHP film)	98	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Charger	FAX		818		Main charger bias correction	128	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PRT	GDI	819		Main charger bias correction (Text/Photo)	128	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PRT		826		Main charger bias correction (Toner saving mode)	128	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Transfer	ALL		830		Transfer transformer DC correction (C)	128	<0-255>	M	Corrects the value of the transfer transformer DC output adjustment (05-221).	1
08	Setting mode	Process	Separation	ALL		831		Separation transformer DC correction (C)	128	<0-255>	M	Corrects the value of the separation transformer DC output adjustment (05-234).	1
08	Setting mode	Process	Developer	PRT		833		Developer bias DC correction (Text/Photo/OHP film)	107	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PRT		834		Developer bias DC correction (Toner Saving Mode/OHP film)	107	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PPC		835		Developer bias DC correction (Text/Photo/OHP film)	107	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Developer	PPC		836		Developer bias DC correction (Text/OHP film)	107	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PPC		837		Developer bias DC correction (Photo/OHP film)	107	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Image processing	ALL		838		Switching of recycled toner saving control	0	<0-1>	M	0: Switched 1: Not switched	1
08	Setting mode	Process	Image processing	ALL		839		Correction by temperature/humidity	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
08	Setting mode	Process	Developer	PRT	GDI	840		Developer bias DC correction (Text/Photo/OHP film)	107	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	FAX		857		Developer bias DC correction (Toner saving mode)	128	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PRT	GDI	858		Developer bias DC correction (Normal)	128	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PRT		859		Developer bias DC correction (Toner saving mode)	128	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PRT		860		Developer bias DC correction (Normal)	128	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Developer	PPC		861		Developer bias DC correction (Text/Photo)	128	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PPC		862		Developer bias DC correction (Text)	128	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Developer	PPC		863		Developer bias DC correction (Photo)	128	<0-255>	M	Corrects the value of the developer bias adjustment (05-205).	1
08	Setting mode	Process	Charger	PRT		864		Main charger bias correction (Normal)	128	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PPC		865		Main charger bias correction (Text/Photo)	128	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PPC		866		Main charger bias correction (Text)	128	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Charger	PPC		867		Main charger bias correction (Photo)	128	<0-255>	M	Corrects the value of the main charger bias adjustment (05-210).	1
08	Setting mode	Process	Transfer	ALL		868		Transfer transformer DC correction (H)	128	<0-255>	M	Corrects the value of the transfer transformer DC output adjustment (05-220).	1
08	Setting mode	Process	Transfer	ALL		869		Transfer transformer DC correction (L)	128	<0-255>	M	Corrects the value of the transfer transformer DC output adjustment (05-222).	1
08	Setting mode	Process	Separation	ALL		870		Separation transformer DC correction (H)	128	<0-255>	M	Corrects the value of the separation transformer DC output adjustment (05-233).	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Separation	ALL		871		Separation transformer DC correction (L)	128	<0-255>	M	Corrects the value of the separation transformer DC output adjustment (05-235).	1
08	Setting mode	Process	Laser	PRT		872		Laser power correction (Normal)	128	<0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
08	Setting mode	Process	Laser	PPC		873		Laser power correction (Text/Photo)	128	<0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
08	Setting mode	Process	Laser	PRT		875		Laser power correction (Toner saving mode)	128	<0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
08	Setting mode	Process	Laser	PPC		876		Laser power correction (Text)	128	<0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
08	Setting mode	Process	Laser	PPC		877		Laser power correction (Photo)	128	<0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
08	Setting mode	Process	Laser	PRT	GDI	883		Laser power correction (Normal)	136	<0-255>	M	Corrects the value of the laser power adjustment (05-286).	1
08	Setting mode	Process	Laser	FAX		884		Laser power correction (Normal)	128	<0-255>	M	Corrects the value of the laser power adjustment (05-286).	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Fuser	ALL		886		Temperature drop control setting in ready status (Temperature/Time)	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
08	Setting mode	Process	Fuser	ALL	Center thermistor	896	0	Temperature control lower limit (Plain paper/Low temperature)	6	<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	2
08	Setting mode	Process	Fuser	ALL	Side thermistor	896	1	Temperature control lower limit (Plain paper/Low temperature)	4	<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	2
08	Setting mode	System	Version	ALL		900		System firmware ROM version	-		-	T220SY0Wxxx	2
08	Setting mode	System	User interface	ALL		903		SRU/CRU Mode setting	0	<0-1>	-	0 : CRU 1 : SRU	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	System	RADF	PPC		905		Process for last page (one-sided original) at duplex copying	0	<0-1>	-	0: One-side copy 1: Double-sided copy (blank paper is added to as the last even numbered page to output the copy in the same orientation with previous pages.)	1
08	Setting mode	System	Version	ALL		921		FROM internal program	-		-	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
08	Setting mode	Process	General	ALL		949		Automatic interruption page setting during printing	0	<0-100>	SYS	Sets the automatic interruption page.	1
08	Setting mode	System	User interface	ALL		970		Sound setting when switching to Energy Saving Mode	JPN: 0 Other: 1	<0-1>	SYS	0: OFF 1: ON	1
08	Setting mode	System	General	ALL		971		Toner near empty threshold value	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
08	Setting mode	System	General	ALL		975		Job handling when printing is short paid with coin controller	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

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	System	Version	ALL		995		Equipment number (serial number) display	0	<20 digits>	SYS	The Equipment number can be entered in alphabets (A-Z=*01-*26) and figures (0-9) within 20digits.	3
08	Setting mode	Counter	Counter	ALL		1372		Heater and energizing time accumulating counter Display/0 clearing	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
08	Setting mode	Counter	Counter	ALL		1378		Counter for period of time fuser unit is at ready temperature	0	<8 digits>	M	Counts up the heater control time accumulated (when the equipment is at ready status).	1
08	Setting mode	Counter	Counter	ALL		1380		Counter for period of time fuser unit is at printing temperature	0	<8 digits>	M	Counts up the heater control time accumulated (during printing).	1
08	Setting mode	Counter	Counter	ALL		1382		Counter for period of time fuser unit is at energy saving temperature/Counter reset	0	<8 digits>	M	Counts up the heater control time accumulated (when the equipment is in the Energy Saving Mode).	1
08	Setting mode	Counter	Counter	ALL		1385		Number of output pages (Thick paper 1)	0	<8 digits>	M	Counts up when the registration sensor is ON.	1
08	Setting mode	Counter	Counter	ALL		1386		Number of output pages (Thick paper 2)	0	<8 digits>	M	Counts up when the registration sensor is ON.	1
08	Setting mode	Counter	Counter	ALL		1388		Number of output pages (OHP film)	0	<8 digits>	M	Counts up when the registration sensor is ON.	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Counter	Counter	ALL		1392		Feeding retry counter (PFP upper drawer)	0	<8 digits>	M	Counts the retry number of sheets for feeding from the PFP upper drawer.	1
08	Setting mode	Counter	Counter	ALL		1393		Feeding retry counter (PFP lower drawer)	0	<8 digits>	M	Counts the retry number of sheets for feeding from the PFP lower drawer.	1
08	Setting mode	Counter	Counter	ALL		1398		Feeding retry counter setting value (PFP upper drawer)	0	<8 digits>	M	When the value of "Feeding retry counter (PFP lower drawer)" exceeds this one, the retry is no longer made after that. However, if this is "0", the retry is performed regardless of the retry counter.	1
08	Setting mode	Counter	Counter	ALL		1399		Feeding retry counter setting value (PFP lower drawer)	0	<8 digits>	M	When the value of "Feeding retry counter (PFP lower drawer)" exceeds this value, the retry is no longer made after that. However, if this is "0", the retry is performed regardless of the retry counter.	1
08	Setting mode	Counter	Counter	ALL		1410		Counter for period of toner cartridge rotation time	0	<8 digits>	M	Counts up the period of rotation time of the toner cartridge.	1
08	Setting mode	Counter	Counter	ALL		1411		Counter for envelope	0	<8 digits>	M	Counts up when the registration sensor is ON.	1
08	Setting mode	Counter	Counter	ALL		1576	0	Toner cartridge installation history	0	<8 digits>	SYS	Displays the lot number of the currently installed cartridge.	2
08	Setting mode	Counter	Counter	ALL		1567	1	Toner cartridge installation history	0	<8 digits>	SYS	Displays the lot number of the 1st cartridge before the currently installed one.	2
08	Setting mode	Counter	Counter	ALL		1567	2	Toner cartridge installation history	0	<8 digits>	SYS	Displays the lot number of the 2nd cartridge before the currently installed one.	2
08	Setting mode	Counter	Counter	ALL		1567	3	Toner cartridge installation history	0	<8 digits>	SYS	Displays the lot number of the 3rd cartridge before the currently installed one.	2

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Counter	Counter	ALL		1567	4	Toner cartridge installation history	0	<8 digits>	SYS	Displays the lot number of the 4th cartridge before the currently installed one.	2
08	Setting mode	Process	Processing	ALL		1626		Development contrast life correction switching	0	<0-8>	M	Switches the life correction of the development contrast. 0: Not corrected 1: Initial minus correction amount (Small: -30 V), Correction period (Short: 0 to 700 sheets) 2: Initial minus correction amount (Middle: -60 V), Correction period (Short: 0 to 5,000 sheets) 3: Initial minus correction amount (Large: -90 V), Correction period (Medium: 0 to 11,000 sheets) 4: Initial minus correction amount (Small: -30 V), Correction period (Medium: 0 to 5,000 sheets) 5: Initial minus correction amount (Middle: -60 V), Correction period (Long: 0 to 12,000 sheets) 6: Initial minus correction amount (Large: -90 V), Correction period (Long: 0 to 13,000 sheets) 7: Initial minus correction amount (Medium: -60 V), Correction period (Medium: 0 to 10,000 sheets) 8: Initial minus correction amount (Large: -90 V), Correction period (Short: 0 to 7,000 sheets)	1
08	Setting mode	Process	Processing	ALL		1628	0	Drum life correction switching of the drum reverse rotation amount	4	<0-15>	M	Drum life correction switching of the drum reverse rotation amount	1

05/08	Mode	Element	Sub element	Item	Subitem	Code	Sub-code	Details	Default value	Acceptable value	RAM	Contents	Procedure
08	Setting mode	Process	Processing	ALL		1628	1	Drum life correction switching of the normal drum rotation amount after the reverse rotation	8	<0-15>	M	Drum life correction switching of the normal drum rotation amount after the reverse rotation	2
08	Setting mode	System	Processing	PPC		1913		The function clear LED blinks	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

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