KYOCERA mita

FS-C8008N/DN

SERVICE MANUAL

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Revision history

Version	Date	Replaced pages	Remarks
1.0	Feb-28-2003	-	-
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1.2	July-1-2003	2-1-10	-

Safety precautions

This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions

Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

⚠**DANGER**: High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠**WARNING**:Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠**CAUTION**: Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

The triangle (△) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.

 General warning.

 Warning of risk of electric shock.

 Warning of high temperature.

⃠ indicates a prohibited action. The specific prohibition is shown inside the symbol.

 General prohibited action.

 Disassembly prohibited.

● indicates that action is required. The specific action required is shown inside the symbol.

 General action required.

 Remove the power plug from the wall outlet.

 Always ground the printer.

1. Installation Precautions

⚠ WARNING

- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. .....

- Connect the ground wire to a suitable grounding point. Not grounding the printer may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. .....

⚠ CAUTION:

- Do not place the printer on an infirm or angled surface: the printer may tip over, causing injury. ....

- Do not install the printer in a humid or dusty place. This may cause fire or electric shock. .....

- Do not install the printer near a radiator, heater, other heat source or near flammable material. This may cause fire. .....

- Allow sufficient space around the printer to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. .....

- Always handle the machine by the correct locations when moving it. .....

- Always use anti-toppling and locking devices on printers so equipped. Failure to do this may cause the printer to move unexpectedly or topple, leading to injury. .....

- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. .....

- Advice customers that they must always follow the safety warnings and precautions in the printer's instruction handbook. .....

2. Precautions for Maintenance

⚠WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly. .....

- Always follow the procedures for maintenance described in the service manual and other related brochures. .....

- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits. .....

- Always use parts having the correct specifications. .....

- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident. .....

- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully. .....

- Always check that the printer is correctly connected to an outlet with a ground connection. .....

- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock. .....

- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight. .....

- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly. .....

⚠CAUTION

- Wear safe clothing. If wearing loose clothing or accessories such as ties, make sure they are safely secured so they will not be caught in rotating sections. .....

- Use utmost caution when working on a powered machine. Keep away from chains and belts. .....

- Handle the fixing section with care to avoid burns as it can be extremely hot. .....

- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures. .....

- Do not remove the ozone filter, if any, from the printer except for routine replacement. .....

- Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself. .....

- Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item. .....

- Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks. .....

- Remove toner completely from electronic components. .....

- Run wire harnesses carefully so that wires will not be trapped or damaged. .....

- After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws. .....

- Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary. .....

- Handle greases and solvents with care by following the instructions below: .....
  · Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
  · Ventilate the room well while using grease or solvents.
  · Allow applied solvents to evaporate completely before refitting the covers or turning the main switch on.
  · Always wash hands afterwards.

- Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc. .....

- Should smoke be seen coming from the printer, remove the power plug from the wall outlet immediately. .....

3. Miscellaneous

⚠WARNING

- Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas. .....

CONTENTS

1-6 Assembly and Disassembly

2-1 Mechanical Construction

2-2 Electrical Parts Layout

2-3 PWB Operation and Connector Signal Assignment

2-4 Appendixes

Chapter I

1-1-1 Specifications

Type	Console type color laser printer
Printing system	Electro photographic four colors (cyan, magenta, yellow, and black) printing. 4-cycle intermediate transfer drum.
Paper	Cassette: Plain paper (60 to 90 g/m^2) MP tray: Plain paper (60 to 90 g/m^2), Thick paper (90 to 220 g/m^2) Special paper: Transparencies, tracing paper, colored paper, letterhead and envelopes Note: Use the MP tray for special paper.
Printing sizes	Maximum: A3/Ledger Minimum: A6R/5$^1/_2$" × 8$^1/_2$"/Folio (When the MP tray is used.)
Print speed	A4: 8 pages/31 pages per min. [Color/Monochrome] A4R*: 4 pages/15 pages per min. [Color/Monochrome] A5: 8 pages/15 pages per min. [Color/Monochrome] B5: 4 pages/15 pages per min. [Color/Monochrome] A3: 4 pages/15 pages per min. [Color/Monochrome] Letter: 8 pages/31 pages per min. [Color/Monochrome] Letter-R*: 4 pages/15 pages per min. [Color/Monochrome] Legal: 4 pages/15 pages per min. [Color/Monochrome] Note (*): MP tray only
First copy time	28 s/17 s [Color/Monochrome] Note: A4, Ecopower mode off, room temperature 23° C/73.4 °F, 60 % RH
Warm-up time	Approximately 180 s or less (room temperature 23° C/73.4 °F, 60 % RH)
Paper feed system	FS-C8008N model: Paper feeder PF-30A (2 universal type cassettes) and MP (Multi purpose) tray FS-C8008DN model: Duplex unit PD-800 (1 universal type cassette) and MP (Multi purpose) tray
Paper loading capacity	Cassette: 500 sheets (80 g/m^2, 0.11 mm) MP (Multi purpose) tray: 150 sheets (80 g/m^2, 0.11 mm)
Printout stacking capacity	Face-down tray: 500 sheets with paper full sensor Face-up tray: 150 sheets (80 g/m^2, 0.11 mm)
Photoconductor	aSi drum (diameter 80 mm)
Charging system	Single positive corona charging
Exposure light source	Semiconductor laser
Exposure scanning system	Polygon mirror
Developing system	Dry, reverse developing (magnetic brush) Developer: 2-component Toner density control: T/C sensor Toner replenishing: automatic from the toner container
Transfer system	Primary: Intermediate transfer drum (diameter 160 mm) Secondary: Transfer belt
Separation system	AC separation charging
Fixing system	Heat roller and press/heat roller (soft type, diameter 45 mm) Heat source: 2 halogen heaters (500 W, 450 W) Control temperature: 155 °C/311 °F (at normal ambient temperature) Abnormally high temperature protection device: thermostats
Charge erasing system	Exposure by eraser lamp (LED array)
Cleaning system	Drum: Cleaning blade Primary (intermediate) transfer drum: Fur brush
Controller hardware	CPU: Power PC750CX 400 MHz Code ROM: 4 MB (1 system DIMM PWB in socket) Font ROM: 4 MB (PCL and KPDL) Main RAM: 128 MB (standard, onboard) Option expansion RAM: 2 sockets (Maximum 512 MB, not including the standard RAM) Option memory card: 1 slot (CompactFlash card) Option interface: 2 slots (KUIO LV)
Host computer interface	Parallel: Bi-directional parallel (IEEE 1284 Nibble/ECP mode) USB: USB2.0 Full-speed Network interface (standard): On-board NIC Network interface (option): KUIO-LV slot (when the printer is equipped with network interface card IB-20/IB-21E/IB-22)
Controller software	Emulation: PCL 5C, KPDL, KCGL Fonts: PCL, PS, PRESCRIBE

FS-C8008N/DN

Resolution	600 × 600 dpi
Dimensions	Printer main unit: 590 × 585 × 429 mm (W × D × H) $23^{1}/_{4}$" × $23^{5}/_{16}$" × $16^{7}/_{8}$" (W × D × H) Paper feeder PF-30A: 560 × 566 × 251 mm (W × D × H) $22^{3}/_{8}$" × $22^{1}/_{4}$" × $9^{7}/_{8}$" (W × D × H) Duplex unit PD-800: 560 × 566 × 251 mm (W × D × H) $22^{3}/_{8}$" × $22^{1}/_{4}$" × $9^{7}/_{8}$" (W × D × H)
Weight	Printer main unit: 76.3 kg/167.86 lbs (including toner containers) Paper feeder PF-30A: 19.1 kg/40.02 lbs Duplex unit PD-800: 22.1 kg/48.62 lbs
Floor requirements	891 × 560 mm (W × D) $35^{1}/_{16}$" × $22^{1}/_{16}$" (W × D)
Functions	Self-diagnostics, sleep mode (energy saving)
Power source	120 V AC, 60 Hz, 11.5 A 220 – 240 V AC, 50/60 Hz, 5.8 A
Power consumption	Maximum: 1296 W (120 V), 1318 W (220 – 240 V) Printing: 833 W (120 V), 803 W (220 – 240 V) Ready: 193 W (120 V), 196 W (220 – 240 V) Sleep mode: 22 W (120 V), 26 W (220 – 240 V)
Options	Expansion DIMM (32/64/128/256 MB), memory card, network interface card IB-20/IB-21E/IB-22, serial interface board IB-11, hard disk unit HD-4, paper feeder PF-30A, duplex unit PD-800*, mailbox sorter SO-30, document finisher DF-31, bulk stacker ST-30, caster CA-31, caster kit CA-31B Note (*): Standard for FS-C8008DN model.

1-1-2 Parts names and their functions

(1) Printer

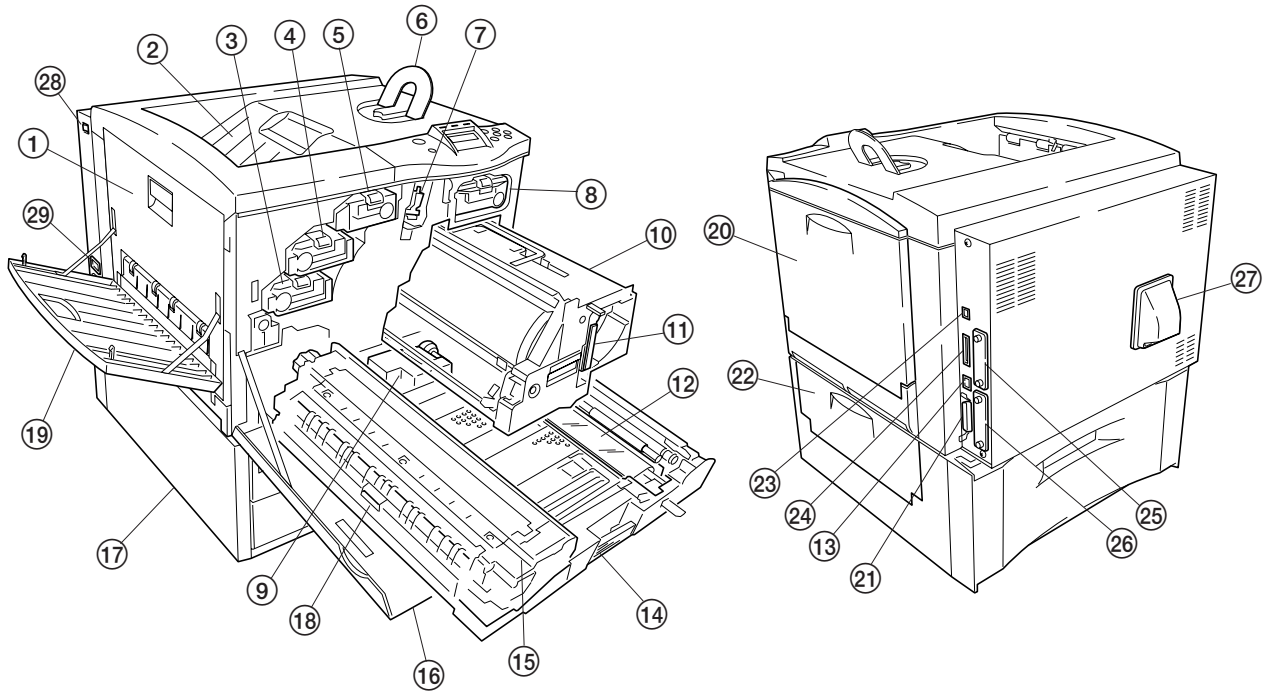


Figure 1-1-1

① Side cover
② Face-down tray
③ Cyan toner container
④ Magenta toner container
⑤ Yellow toner container
⑥ Paper stopper
⑦ Main charger unit
⑧ Black toner container
⑨ Waste toner bottle
⑩ Primary transfer unit
⑪ Release lever
⑫ Secondary transfer unit (transfer belt)
⑬ Network interface connector
⑭ Paper feed unit
⑮ Fuser unit
⑯ Front cover
⑰ Paper feeder PF-30A (FS-C8008N) Duplex unit PD-800 (FS-C8008DN)
⑱ Left paper guide
⑲ Face-up tray
⑳ MP tray
㉑ Parallel interface connector
㉒ Paper feeder/duplex unit side cover
㉓ USB interface connector
㉔ Memory card slot
㉕ Optinal interface slot*1 [HDD]
㉖ Optinal interface slot*2 [OPT]
㉗ Duct
㉘ Power switch
㉙ Power cord connector

*1: For optional hard disk unit HD-4
*2: For optional network interface card IB-20/IB-21E/IB-21 /IB-22 or serial interface board IB-11

Cautions:
The power cord must keep plugged from power at least 30 minutes since the power switch is turned off. In case the power plug must be unplugged immediately after power-off for service purpose, pull out the paper feed unit so that the fuser unit is away from developers to avoid toner lumping due to the heat from the fuser unit.

(2) Operation panel

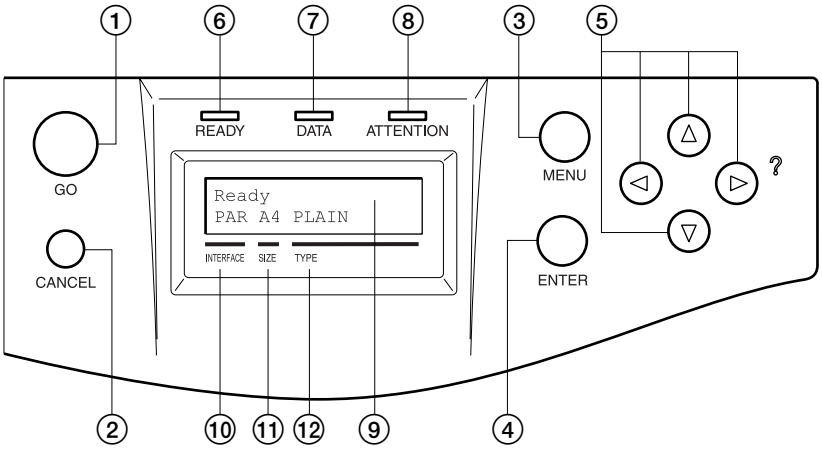


Figure 1-1-2

① Go key (GO)
② Cancel key (CANCEL)
③ Menu keys (MENU)
④ Enter key (ENTER)
⑤ Arrow keys
⑥ Ready indicator (READY)
⑦ Data indicator (DATA)
⑧ Attention indicator (ATTENTION)
⑨ Message display
⑩ Interface indicator (INTERFACE)
⑪ Paper size indicator (SIZE)
⑫ Paper type indicator (TYPE)

1-1-3 Cross section view

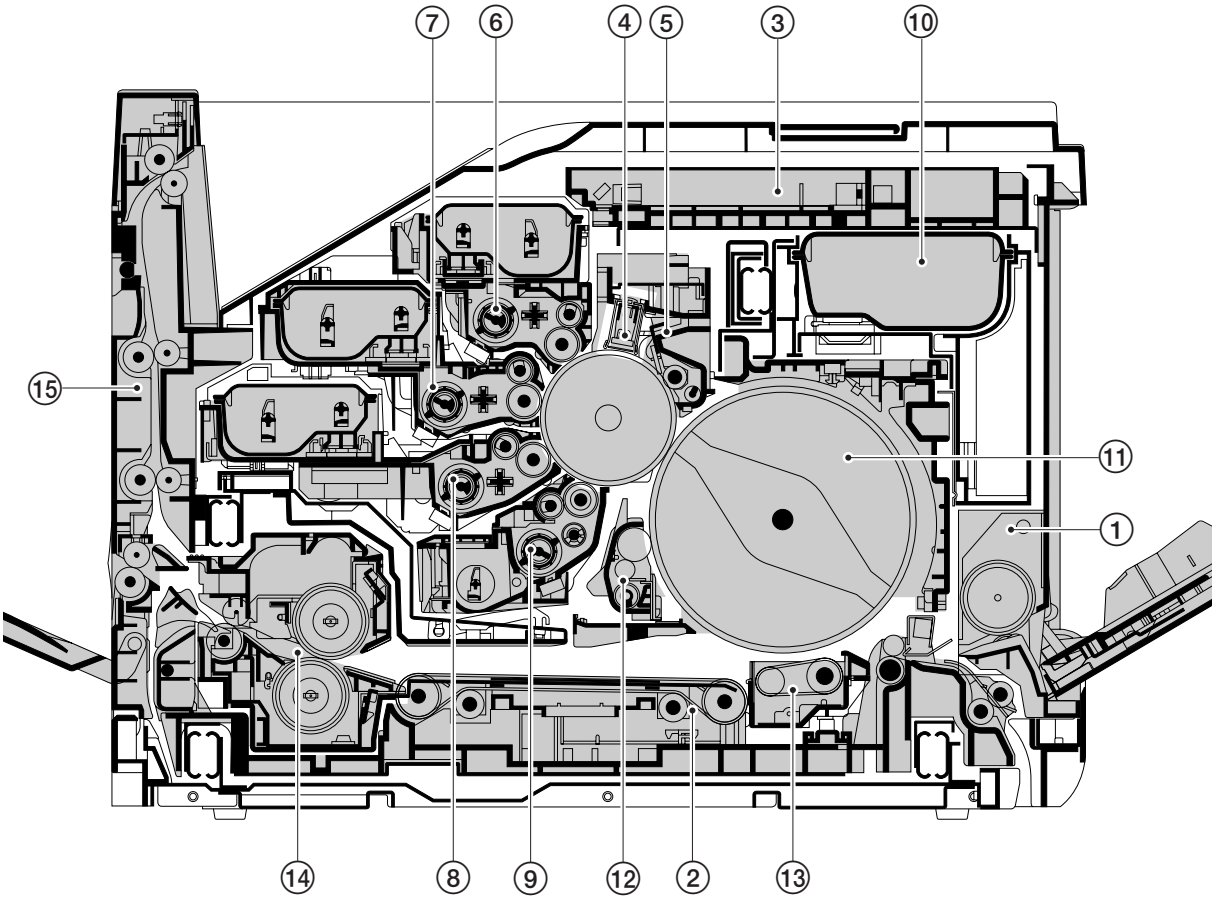


Figure 1-1-3 Cross section view

① MP tray unit
② Paper feed unit
③ Laser scanner unit
④ Main charger unit
⑤ Drum unit
⑥ Yellow developer and yellow toner container
⑦ Magenta developer and magenta toner container
⑧ Cyan developer and cyan toner container
⑨ Black developer
⑩ Black toner container
⑪ Primary transfer unit
⑫ Cleaning brush unit
⑬ Secondary transfer unit
⑭ Fuser unit
⑮ Face-down unit

1-2-1 Drum

Note the following when handling or storing the drum.

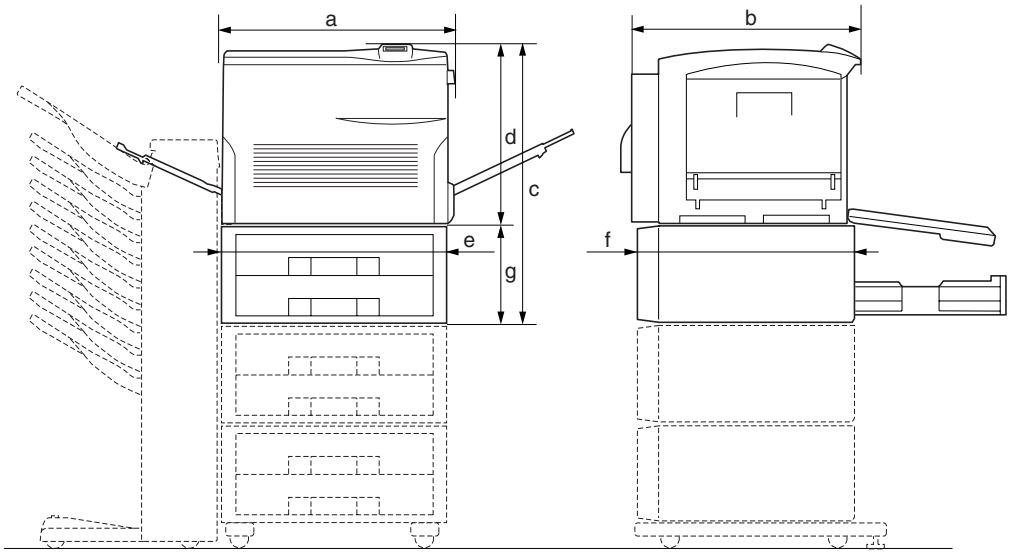
- When removing the drum unit, never expose the drum surface to strong direct light.
- Keep the drum at an ambient temperature and at a relative humidity not higher than 85 % RH. Avoid abrupt changes in temperature and humidity.
- Avoid exposure to any substance which is harmful to or may affect the quality of the drum.
- Do not touch the drum surface with any object. Should it be touched by hands or stained with oil, clean it.

1-2-2 Developer and toner container

- Store the developers and toner containers in a cool, dark place. Avoid direct light and high humidity.
- Do not bring any magnetic media or credit cards close to the developers or the toner containers.

1-2-3 Installation environment

1. Temperature: 10 - 32.5°C/50 - 90.5°F
2. Humidity: 15 - 80 %RH
3. Power supply: 120 V AC ±10 %, 11.5 A
   220 - 240 V AC 10 %, 5.8 A
4. Power source frequency: 50 Hz ±0.2 %/60 Hz ±0.2 %
5. Installation location
   - Avoid direct sunlight or bright lighting.
   - Avoid extremes of temperature and humidity, abrupt ambient temperature changes, and hot or cold air directed onto the machine.
   - Avoid dust and vibration.
   - Choose a surface capable of supporting the weight of the machine.
   - Place the machine on a level surface (maximum allowance inclination: 1°).
   - Avoid air-borne substances that may adversely affect the machine or degrade the photoconductor, such as mercury, acidic of alkaline vapors, inorganic gasses, NOx, SOx gases, and chlorine-based organic solvents.
   - Select a room with good ventilation.
6. Allow sufficient access for proper operation and maintenance of the machine.
   Machine front: 600 mm/23 5/8" Machine rear: 300 mm/11 13/16"
   Machine right: 500 mm/19 11/16" Machine left: 500 mm/19 11/16"

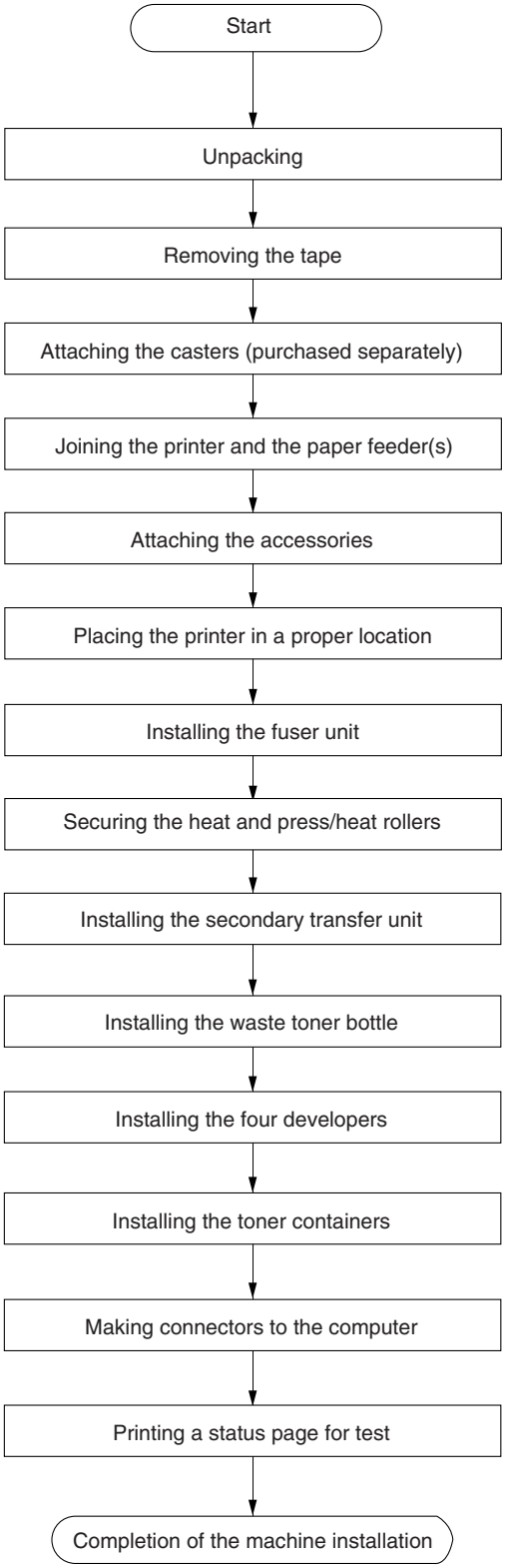


a: 590 mm/23 1/4"
b: 585 mm/23 5/16"
c: 680 mm26 3/4"
d: 429 mm/16 7/8"
e: 560 mm/22 3/8"
f: 566 mm/22 1/4"
g: 251 mm/9 7/8"

Figure 1-2-1 Installation dimensions

1-3-1 Unpacking and installation

(1) Installation procedure



Unpacking

• Printer

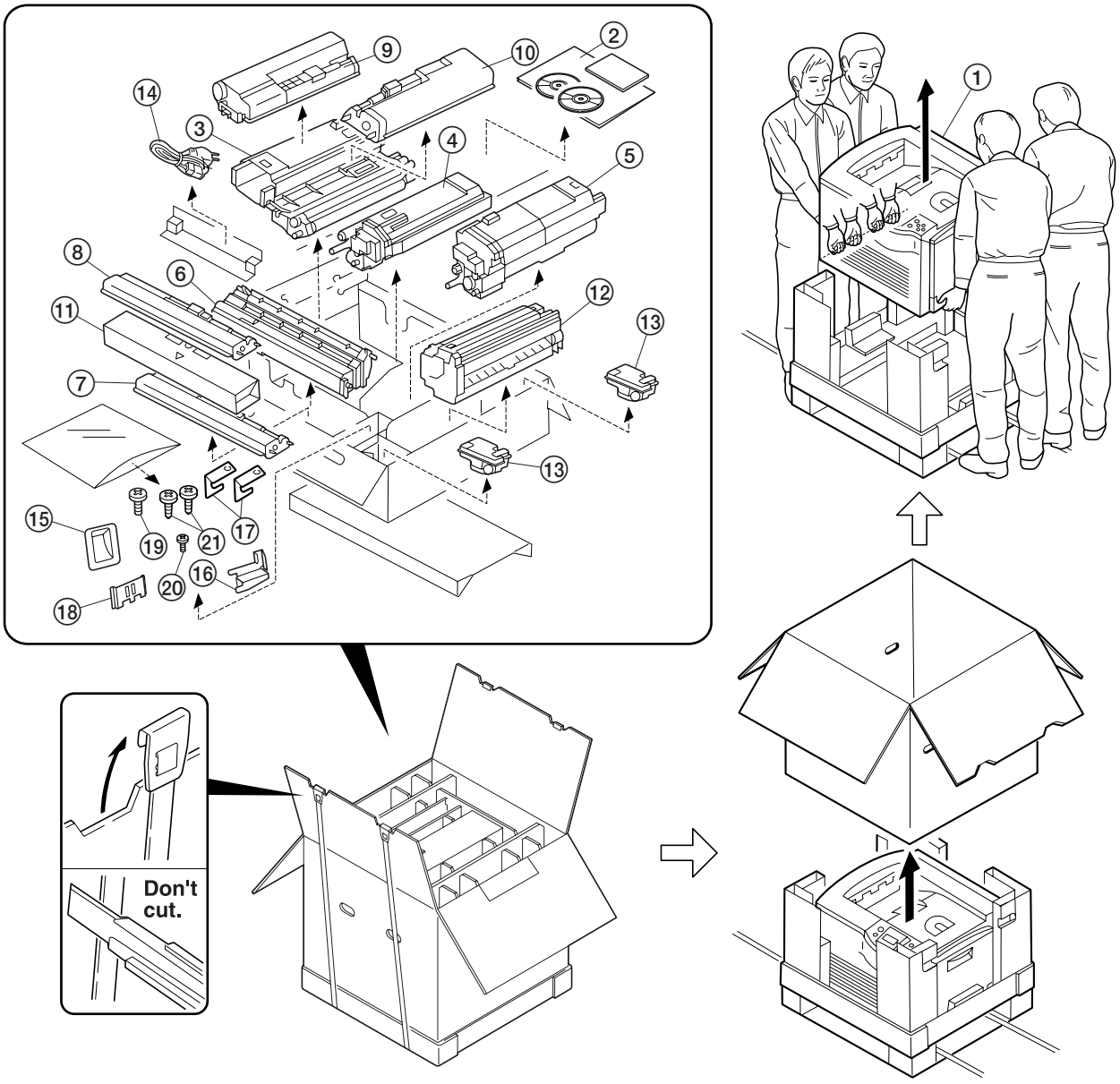


Figure 1-3-1 Unpacking (Printer)

① Printer
② Documents (Installation guide, quick reference guide, kyocera mita digital library CD-ROM and kyocera mita document library CD-ROM)
③ Cyan developer
④ Magenta developer
⑤ Yellow developer
⑥ Black developer
⑦ Cyan toner container
⑧ Magenta toner container
⑨ Yellow toner container
⑩ Black toner container
⑪ Secondary transfer unit
⑫ Fuser unit
⑬ Waste toner bottle
⑭ Power cord
⑮ Exhaust duct
⑯ Joint jig
⑰ Secondary transfer unit anchor jig
⑱ Quick reference guide holder
⑲ M4 binding screw (One) [for fixation of ⑯]
⑳ M3 screw (One) [for fixation of ⑫]
㉑ M3 binding screws (Two) [for fixation of ⑰]

Warning:
Lift the printer by more than two persons. The printer weighs approx. 76 kg.

• Paper feeder (or duplex unit)

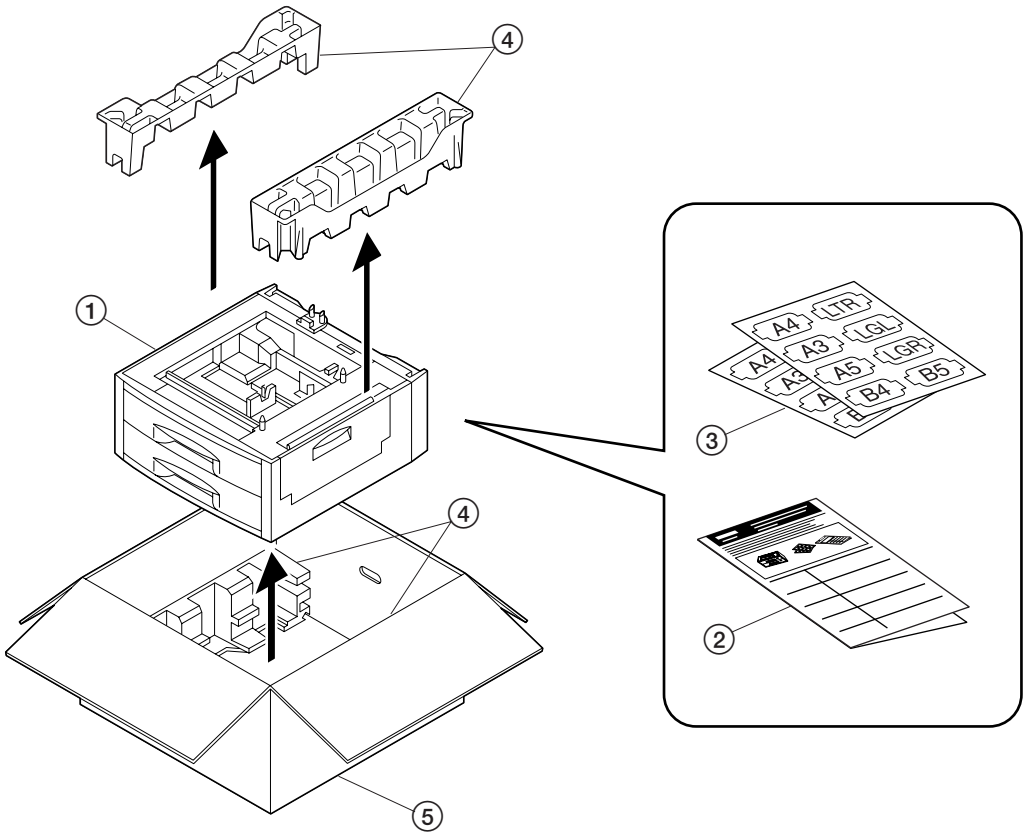


Figure 1-3-2 Unpacking the paper feeder (or duplex unit)

① Paper feeder (or duplex unit)
② Installation manual
③ Paper size indication plate
④ Pads
⑤ Packing case

Warning:
The paper feeder (duplex unit) weighs approx.19 kg (22 kg).

Removing the tape

1. Draw the upper and lower paper cassettes and then remove the transportation tape.

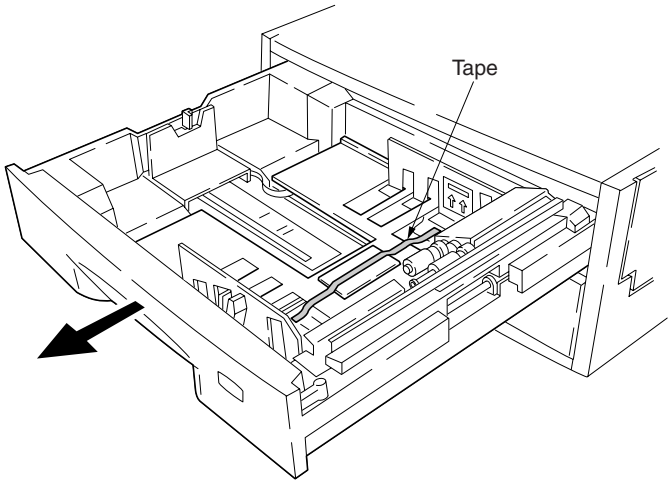


Figure 1-3-3

Attaching the casters (purchased separately)

Caution

To prevent the printer from tipping over because of weight of the printer and the upper paper drawers, the CA-31B caster kit must be installed at the bottom-most paper feeder, when an optional paper feeder or duplex unit is installed with the printer.

Caution labels have been attached to the paper feeder and the duplex unit.

1. Stand the paper feeder with the rear side on the floor.
2. Remove each one screw to remove four feet.
3. Install two optional caster bases onto the bottom of the paper feeder by using four screws for each. Be sure to face the longer end towards the front of the paper feeder.

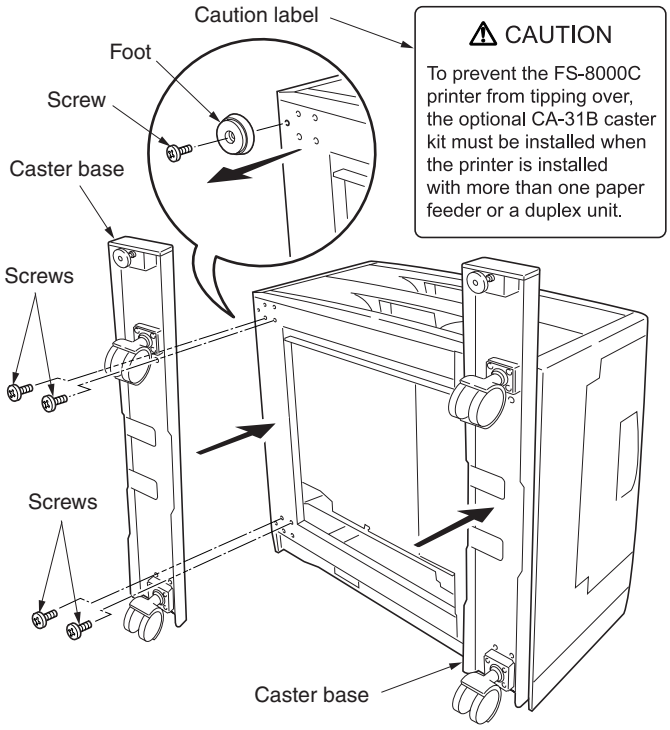


Figure 1-3-4

Joining the printer and paper feeder(s)

1. Using the topple-resistant bracket (supplied with the caster kit CA-31B), stack and join the bottom and middle paper feeders.

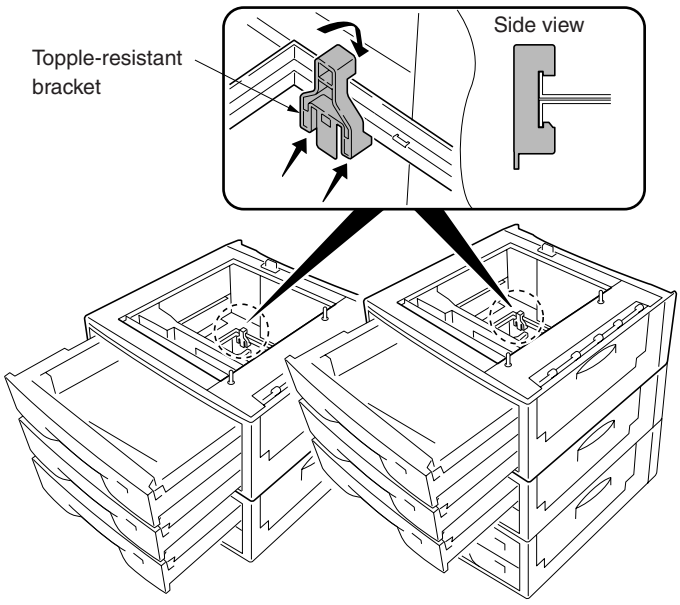


Figure 1-3-5

2. Place the printer on top of the paper feeders (by more than two persons).
3. Join the printer and topmost paper feeder with the joint jig provided using one screw.

Warning:
Lift the printer by more than two persons. The printer weighs approx. 76 kg.

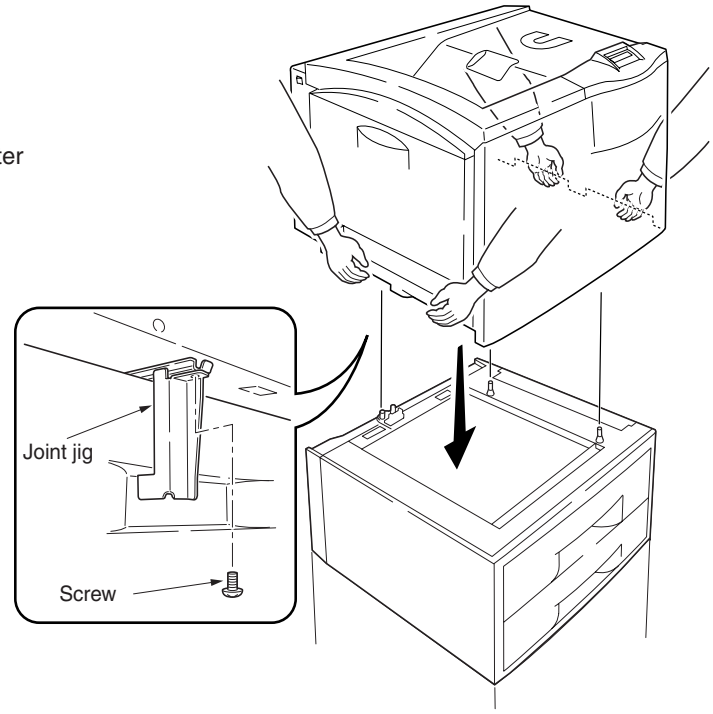


Figure 1-3-6

Attaching the accessories

1. Install the duct.
2. Install the quick reference guide holder. Peel the protective tape off from the holder when attaching the holder.
3. Remove the transportation tape form the front cover.

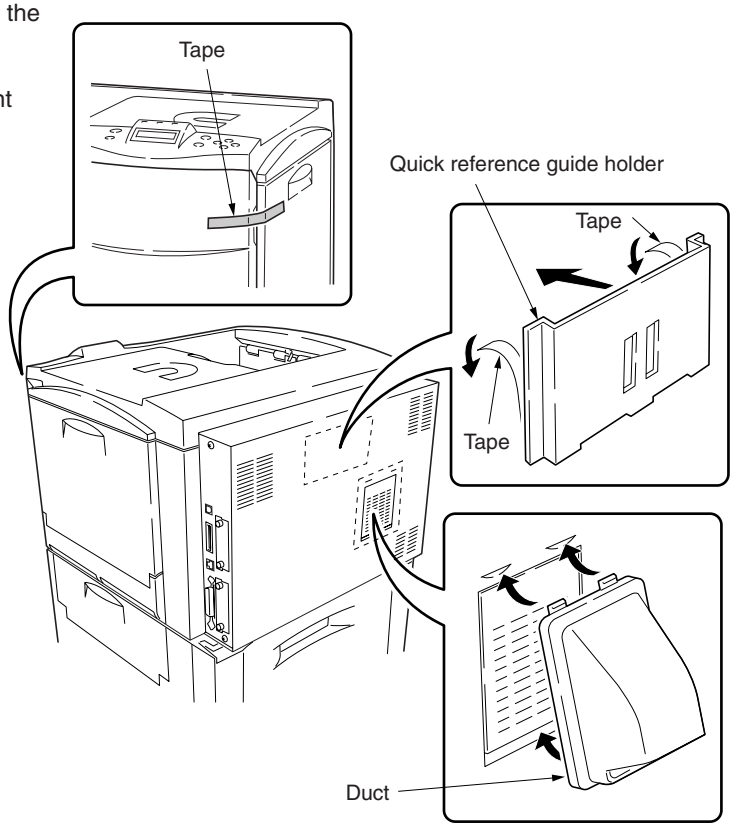


Figure 1-3-7

Placing the printer in a proper location

1. Place the paper feeder in a proper location.
2. Lock the stopper for each caster and turn the height adjuster clockwise until the adjuster reaches the floor. This fixes the printer in place.

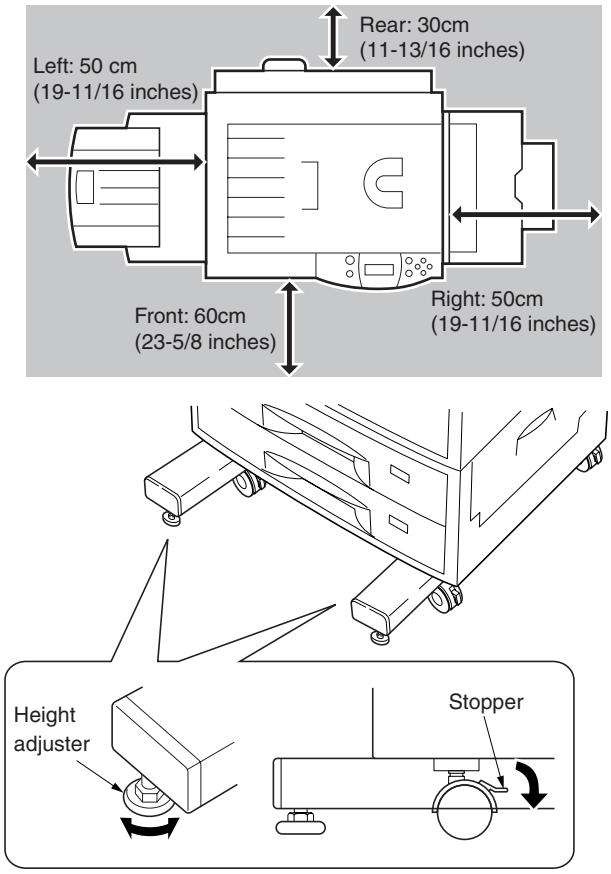


Figure 1-3-8

Installing the fuser unit

1. Open the front cover.
2. Pull out thoroughly the paper feed unit.

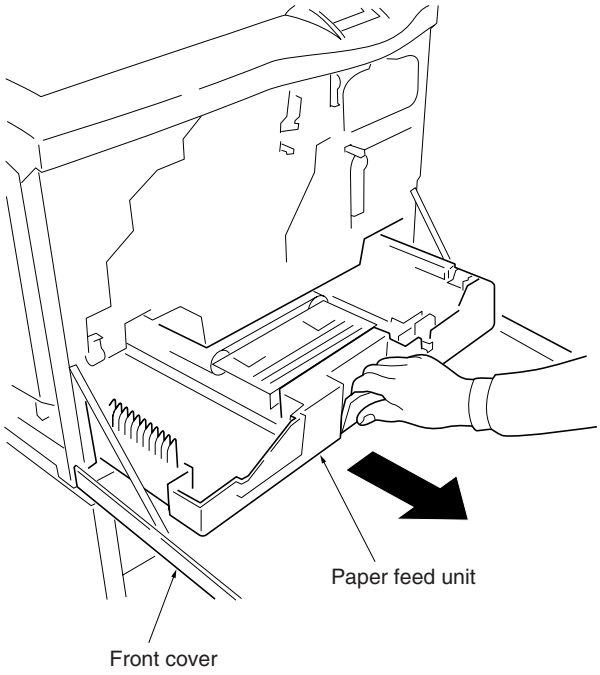


Figure 1-3-9

3. Remove one screw from the stopper lever (gray-colored).
4. Remove the lock pin from the primary transfer unit.
5. Release the (green-colored) lock lever.
6. Draw the primary transfer until it stops.
7. While pushing the stopper lever (gray-colored), pull out the primary transfer unit.
8. Pull out the primary transfer unit from the printer. Make sure not to scratch the round surface, especially at its bottom.

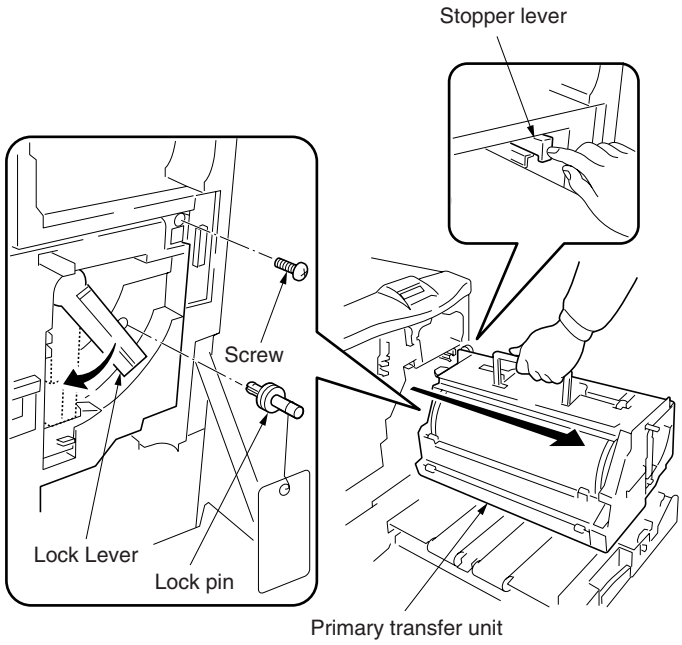


Figure 1-3-10

9. Open the left paper guide.
10. Insert the fuser unit onto the paper feed unit.

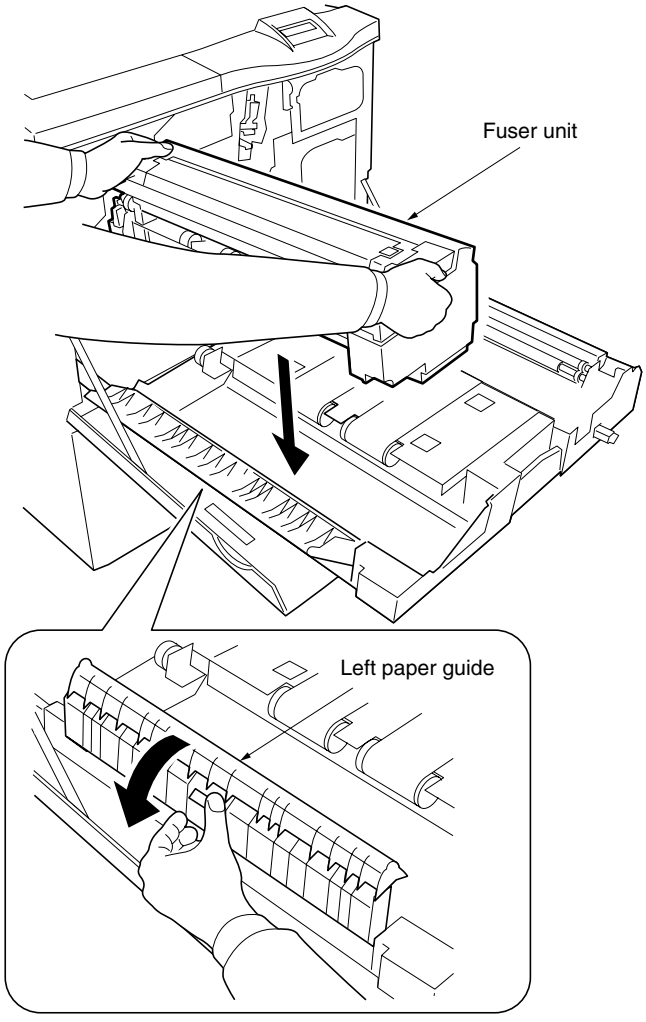


Figure 1-3-11

11. Secure the fuser unit with the screw.

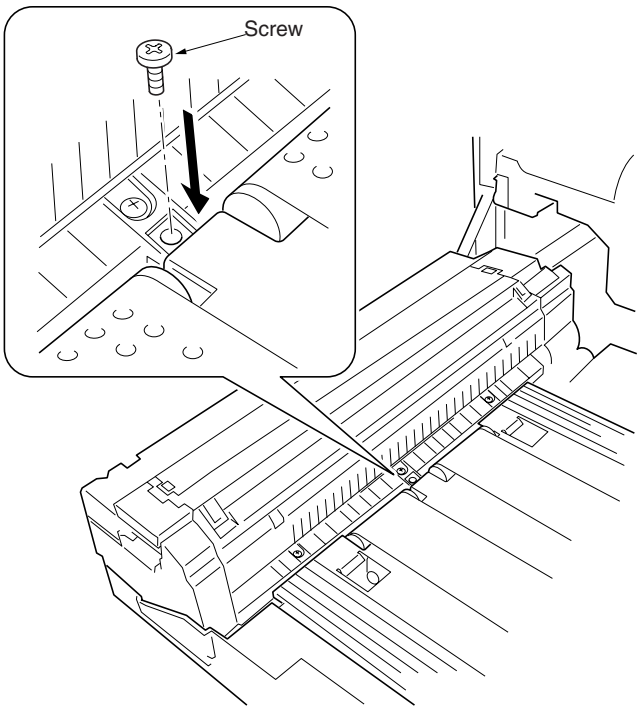


Figure 1-3-12

Securing the heat and press/heat rollers

The pressure between heat roller and press/heat roller are kept released during transportation. Secure the pressure by the following:

1. Open the left paper guide and the fuser top cover.
2. Firmly tighten two screws until they stop.
3. Close the fuser top cover and the left paper guide.

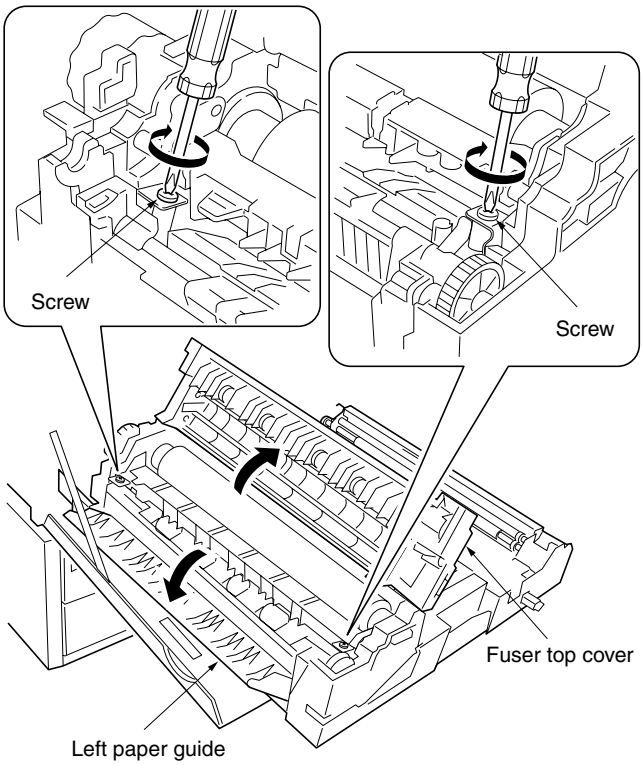


Figure 1-3-13

Installing the secondary transfer unit

1. Fit the fulcrums of secondary transfer unit on the bushes and then put it on the paper feed unit.
2. Fit the secondary transfer unit anchor jigs on the bushes.
3. Secure the secondary transfer unit with the each one screws.

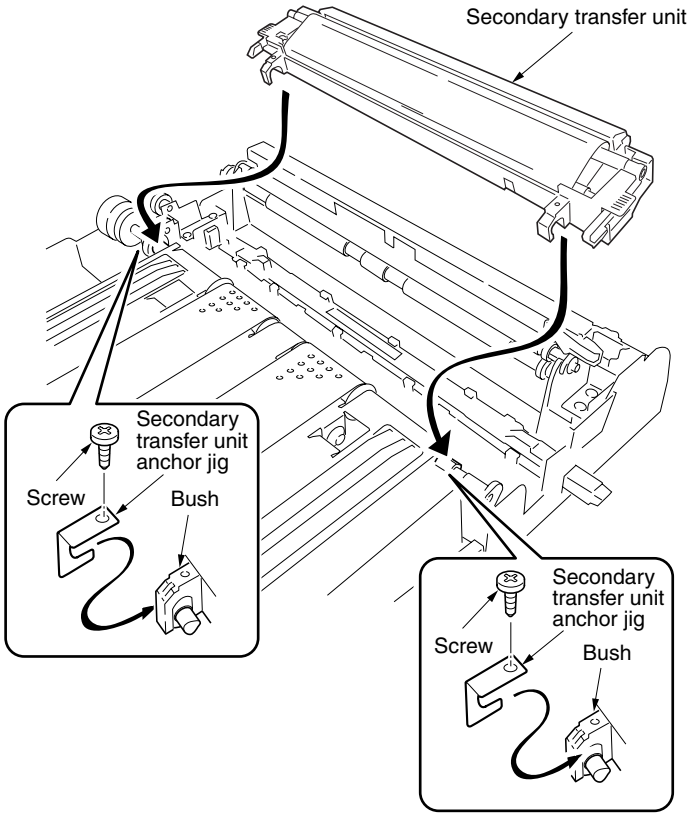


Figure 1-3-14

Installing the waste toner bottle

1. Install the waste toner bottle.

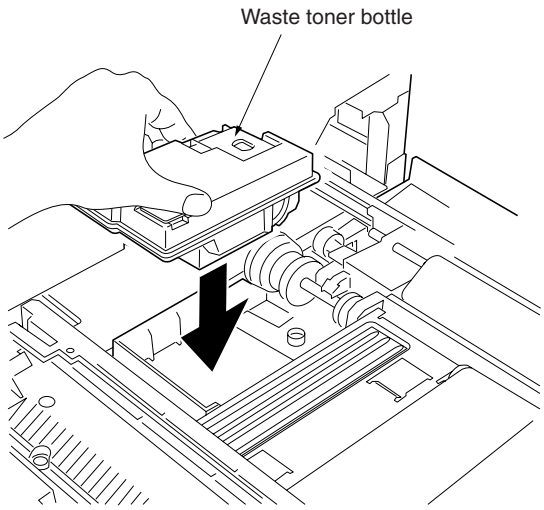


Figure 1-3-15

Installing the four developers

1. Close the paper feed unit.
2. Unscrew the two screw and then release the two stoppers. Remove the two screws of the process frame.
3. Pull out the process frame.

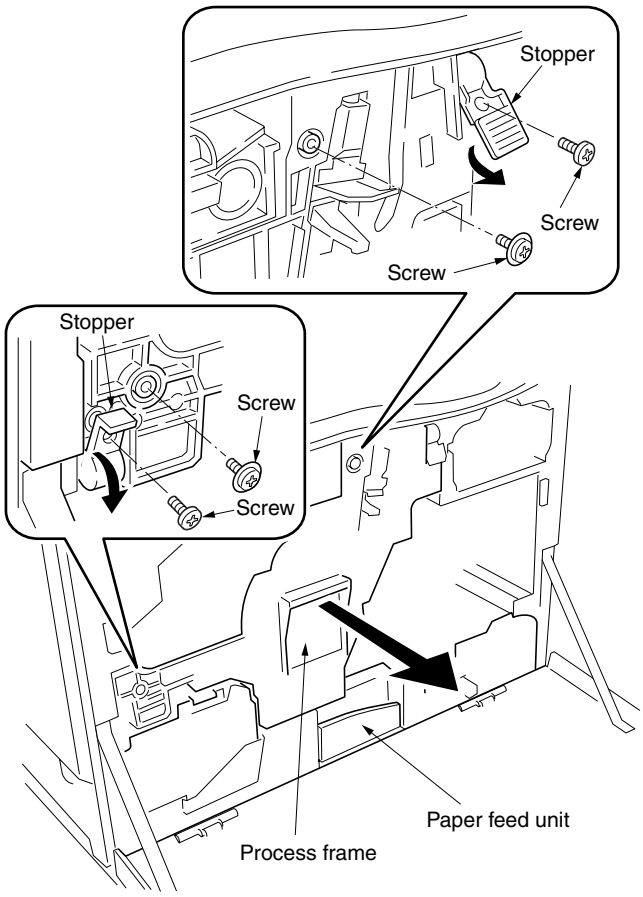


Figure 1-3-16

4. Detach the two tags.
5. Remove the front and rear stoppers.

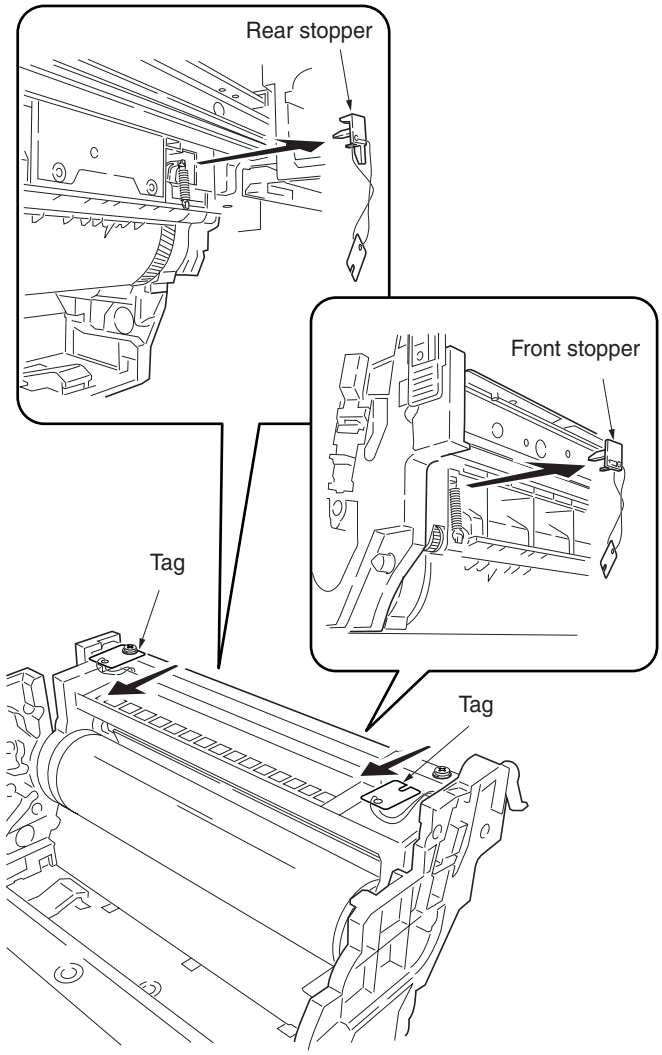


Figure 1-3-17

6. Peel off the tapes and then remove the protective pad from each developer unit.

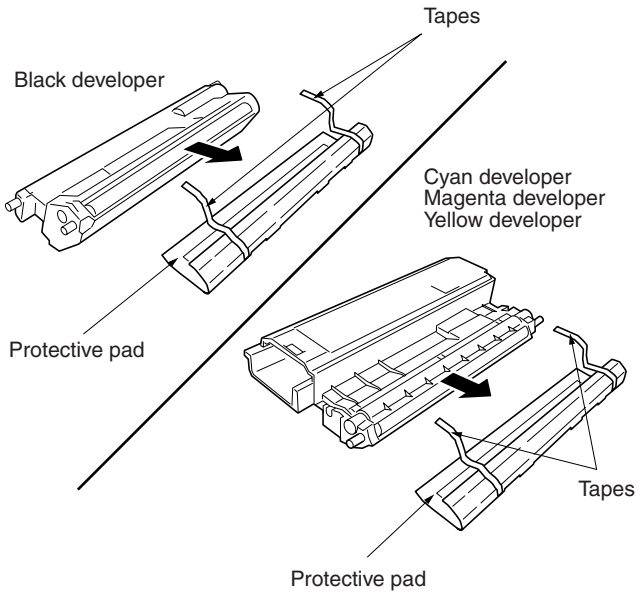


Figure 1-3-18

7. Set each developer in its corresponding position in the process frame.

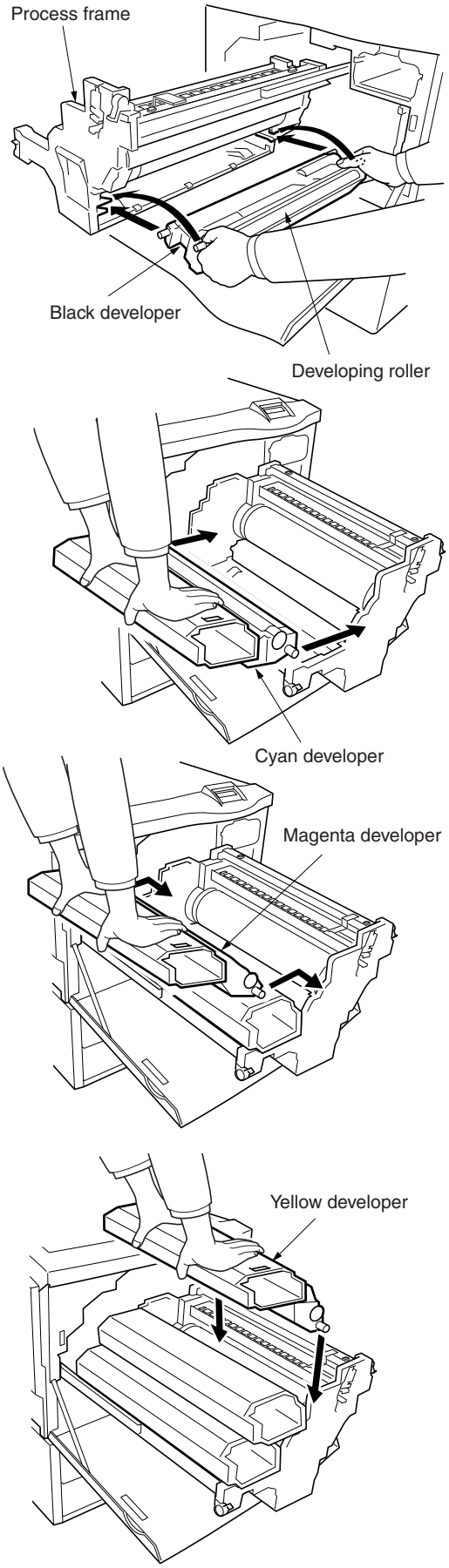


Figure 1-3-19

8. Close the process frame and then lock the two stoppers.
9. Secure the process frame with the two screws. Lock the two stoppers and secure each stopper with a screw.

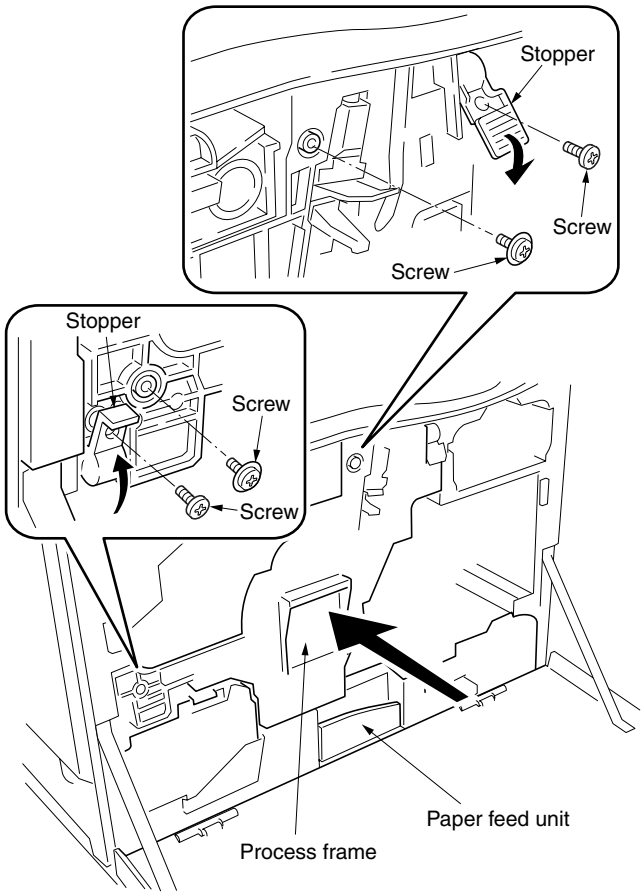


Figure 1-3-20

10. Pull out the paper feed unit.
11. Align the guide roller at the upper part of the primary transfer unit with the rail on the printer and mount the primary transfer unit to its original position.

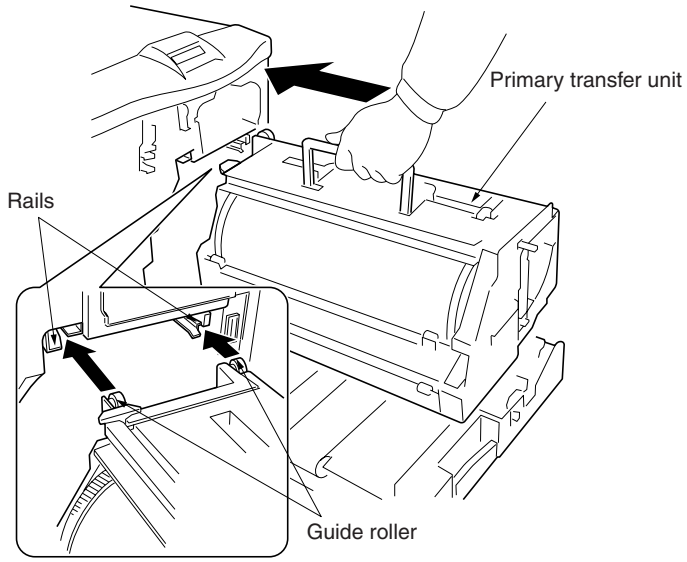


Figure 1-3-21

12. Close the lock lever.
13. Close the paper feed unit.
14. Secure the stopper lever (gray-colored) with the screw.

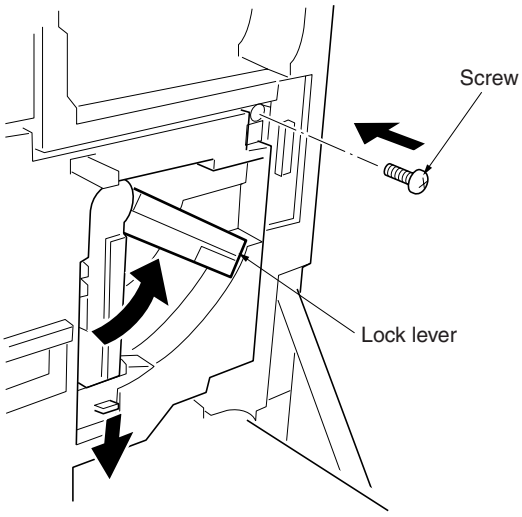


Figure 1-3-22

Installing the toner containers

1. Shake each toner container well before use.
2. Install the four toner containers into their corresponding developers.
3. Close the front cover.

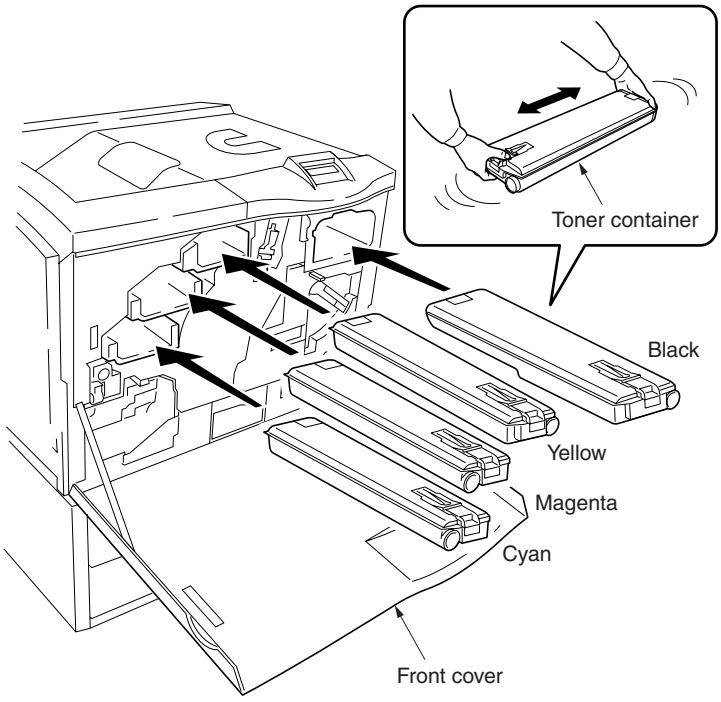


Figure 1-3-23

Making connections to the computer

1. Connect any of cable (USB, ethernet, or parallel) between the printer and the computer.
2. Connect the power cord to the printer power inlet.

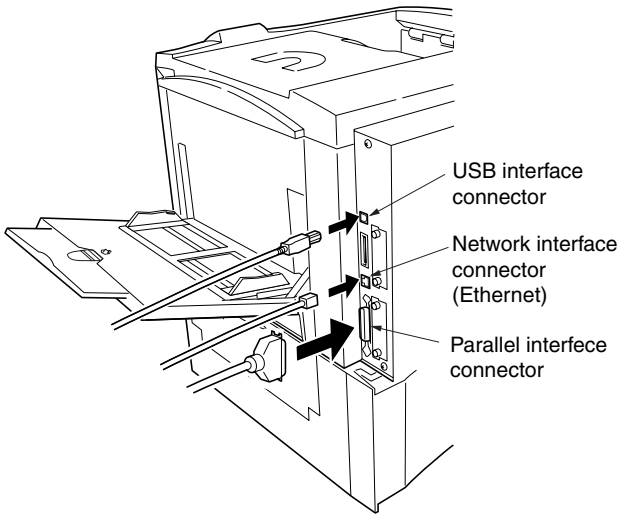


Figure 1-3-24

Printing a status page for test

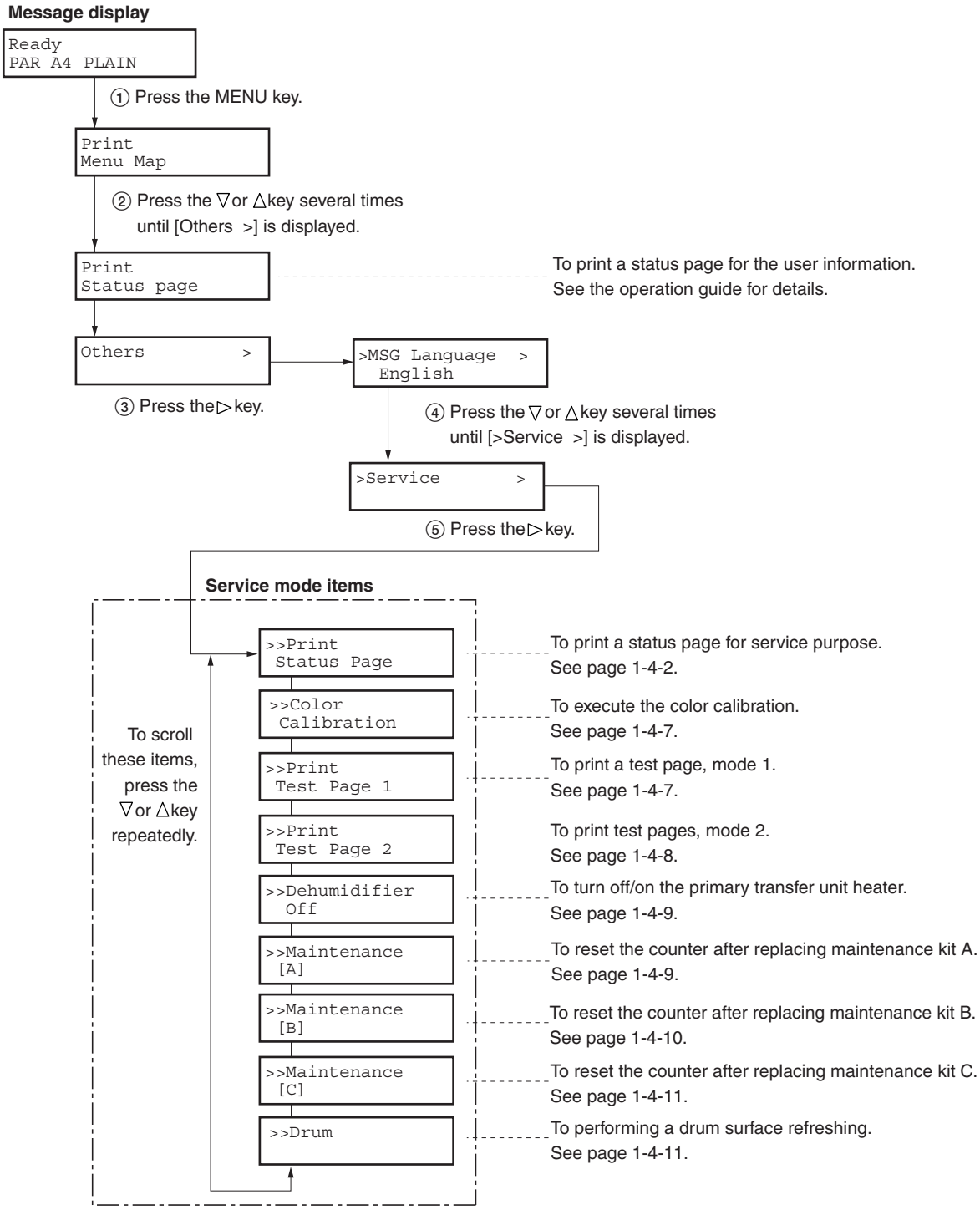
1. Add paper in the paper cassette.
2. Connect the power cord to the power out let.
3. Turn on the printer power switch, and then wait until [Print Ready] is displayed.
4. Press the MENU key on the operation panel.
5. Press the ▽ key repeatedly until [Print Status page] is displayed.
6. Press the ENTER key twice. A status page is printed.

Completion of the machine installation

1-4-1 Service mode

The printer is equipped with the service mode that can be accessed in the menu system. The service mode is intended for use by the service person for maintenance and service for the items explained in the following sections.

(1) Executing service mode



(2) Contents of service mode items

Service items	Description
>>Print Status Page	**Printing a status page for service purpose** **Description** Service information on the status page include various information and settings for the printer, including service statistics, etc. **Purpose** To understand the machine environments and general settings. **Procedure** Enter the service mode (>>Printing Status Page). Press the ENTER key, (>>Printing Status Page?) is displayed. Press the ENTER key twice. The status page (and the network status page) are printed. (See the figure below.) **Completion**

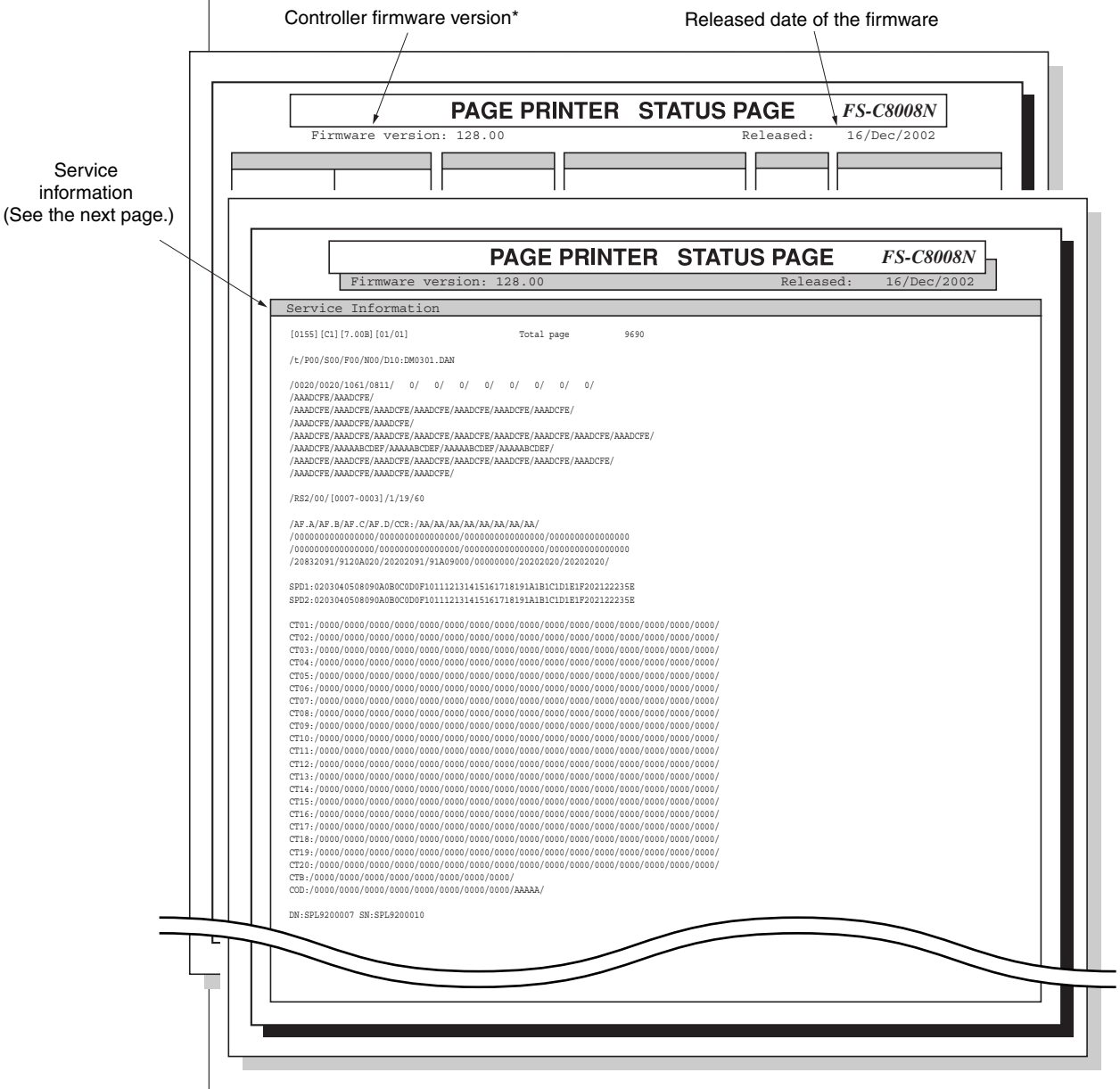


Figure 1-4-1

Service items	Description
	Detail of service information

```
Service information

  [0155][C1][7.00B][01/01]                      Total page           9690
     ①    ②     ③      ④                                       ⑤
  /t/P00/S00/F00/N00/D10:DM0301.DAN
  ⑥  ⑦   ⑧   ⑨   ⑩       ⑪
⑫ /0020/0020/1061/0811/    0/    0/    0/    0/    0/    0/    0/    0/⑬
⑭ /AAADCFE/AAADCFE/
⑮ /AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/
⑯ /AAADCFE/AAADCFE/AAADCFE/
⑰ /AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/
⑱ /AAADCFE/AAAAABCDEF/AAAAABCDEF/AAAAABCDEF/AAAAABCDEF/⑲
⑳ /AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/AAADCFE/㉑
㉒ /AAADCFE/AAADCFE/AAADCFE/AAADCFE/

  /RS2/00/[0007-0003]/1/19/60
    ㉓  ㉔      ㉕      ㉖ ㉗ ㉘
㉙ /AF.A/AF.B/AF.C/AF.D/CCR:/AA/AA/AA/AA/AA/AA/AA/AA/㉚
㉛-1 /0000000000000000/0000000000000000/0000000000000000/0000000000000000
㉛-2 /0000000000000000/0000000000000000/0000000000000000/0000000000000000
㉜ /20832091/9120A020/20202091/91A09000/00000000/20202020/20202020/

㉝ SPD1:0203040508090A0B0C0D0F101112131415161718191A1B1C1D1E1F202122235E
㉞ SPD2:0203040508090A0B0C0D0F101112131415161718191A1B1C1D1E1F202122235E

㉟-1 CT01:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㉟-2 CT02:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊱-1 CT03:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊱-2 CT04:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊲-1 CT05:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊲-2 CT06:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊳-1 CT07:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊳-2 CT08:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊴-1 CT09:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊴-2 CT10:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊴-3 CT11:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊴-4 CT12:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊵-1 CT13:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊵-2 CT14:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊵-3 CT15:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊵-4 CT16:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊶-1 CT17:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊶-2 CT18:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊶-3 CT19:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊶-4 CT20:/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/0000/
㊷ CTB:/0000/0000/0000/0000/0000/0000/0000/0000/
㊸ COD:/0000/0000/0000/0000/0000/0000/0000/0000/AAAAA/

㊹ DN:SPL9200007 SN:SPL9200010㊺
```

Item	Description
① Engine controller PWB flash ROM Information	[ROM version]
② Operation panel PWB mask ROM information	[ROM version]
③ Boot ROM Information	[ROM version]

Service items	Description

Item	Description
④ Software jumper switch information (Hexadecimal)	First byte Bit 0: 1: (fixed) Bit 1: 0: Overseas 1: Domestic (Japan) Bit 2: (Not used) Bit 3: (Not used) Bit 4: 0: Kyocera 1: OEM Bit 5: 0: For Europe 1: for U.S. Bit 6: 0: Non MICR mode 1: MICR mode Bit 7: 0: Kyocera 1: Kyocera Mita Second byte OEM information: Displayed in OEM mode only.
⑤ Total page counter	-
⑥ Toner install information	Display in toner installation mode setting (From issue of TNRE"INST"; to power off)
⑦ Parallel I/O information	-
⑧ Serial I/O error code	00: Normal Bit 0: Overrun error Bit 1: Framing error Bit 2: Parity error
⑨ Operation panel key lock status (Displayed only when locked)	01: Partial lock 02: Full lock
⑩ NVRAM error code (Displays only when error occurred)	01: ID error 02: Version error 03: Checksum error 04: NVRAM crush error
⑪ NVRAM downloading status	00: None downloaded bit 0: Font data bit 1: Host data bit 2: Macro data bit 3: Program data bit 4: Operation panel message data (File name displayed) bit 5: OEM data bit 6: Reserved bit 7: Error occurred
⑫ Printable area information	/Top offset / Left offset /Page length /Page width
⑬ Left offset	MP tray/Cassette 1 /Cassette 2 /Cassette 3 /Cassette 4 / Cassette 5 /Cassette 6 /Duple unit ($^{1}/_{600}$ inches unit)
⑭ Page counter according to paper size	/A3 /A4 /
⑮ Page counter according to paper source	/Cassette 1 /Cassette 2 /Cassette 3 /Cassette 4 /Cassette 5 /Cassette 6 /Duplexer /
⑯ Page counter according to paper output	/Mailbox sorter /Bulk stacker /Document finisher /
⑰ Life counter	/Drum unit /Primary transfer unit /Secondary transfer unit /Cyan developer /Magenta developer /Yellow developer / Black developer /Fuser unit /Main charger unit
⑱ Color page counter	-
⑲ Pixel counter	/Cyan /Magenta /Yellow /Black /
⑳ Maintenance kit A counter	Four occurrences (from the left to the right) of image counts at which maintenance kit A was replaced. The right-most code indicates the current count.
㉑ Maintenance kit B counter	Four occurrences (from the left to the right) of page counts at which maintenance kit B was replaced. The right-most code indicates the current count.
㉒ Maintenance kit C counter	Four occurrences (from the left to the right) of image counts at which maintenance kit C was replaced. The right-most code indicates the current count.
㉓ Serial interface information	RS2: RS-232C RS4: RS-442A

Service items	Description

Item	Description
㉔ Drum light sensitivity information	-
㉕ Option unit information	First 2 byte bit 0: MP tray bit 1: Cassette 1 bit 2: Cassette 2 bit 3: Cassette 3 bit 4: Cassette 4 bit 5: Cassette 5 bit 6: Cassette 6 bit 7: Duplex unit bit 8 to 15: Reserved Second 2 byte bit 0: Face-up tray bit 1: Face-down tray bit 2: Reserved bit 3: Reserved bit 4: Document finisher bit 5: Mailbox sorter bit 6: Reserved bit 7: Bulk stacker bit 8 to 15: Reserved
㉖ Operation panel message language	PMSG command settings (decimal)
㉗ Current temperature	0 to 60 °C (in 1 °C increment, "-"= Humidity/temperature sensor is abnormal.)
㉘ Current humidity	10 to 90 % RH (in 2 % increment)
㉙ Average print density (total)	/Cyan /Magenta /Yellow /Black (Two digits of integer part and one digit of fraction part)
㉚ Color calibration result	/Cyan /Magenta /Yellow /Black /Cyan /Magenta /Yellow /Black If the right side is /FF/FF/FF/FF/, /cyan/magenta/yellow/black on the left side is the calibration result. (No error occurs.)
㉛ Engine parameter setting	Hexadecimal, 64 byte (128 digit)
㉜ Media type attributes	Media type 1 to 28 (See table on next page)
㉝ SPD information (slot 1)	-
㉞ SPD information (slot 2)	-
㉟-1 Calibration sensor value ㉟-2 Calibration sensor value	/2bp First (Black/Cyan) / /2bp First (Magenta/Yellow) /
㊱-1 Calibration sensor value ㊱-2 Calibration sensor value	/4bp Second (Black/Cyan) / /4bp Second (Magenta/Yellow) /
㊲-1 Calibration sensor value ㊲-2 Calibration sensor value	/2bp First (Black/Cyan) / /2bp First (Magenta/Yellow) /
㊳-1 Calibration sensor value ㊳-2 Calibration sensor value	/4bp Second (Black/Cyan) / /4bp Second (Magenta/Yellow) /First: /Back /Cyan /
㊴-1 CTD sensor output ㊴-2 CTD sensor output ㊴-3 CTD sensor output ㊴-4 CTD sensor output	Characteristic value of input/output
㊵-1 CTD sensor value ㊵-2 CTD sensor value ㊵-3 CTD sensor value ㊵-4 CTD sensor value	Reference for optimum bias value (1)
㊶-1 CTD sensor value ㊶-2 CTD sensor value ㊶-3 CTD sensor value ㊶-4 CTD sensor value	Reference for optimum bias value (2)
㊷ Calibration bias value	Magenta /Yellow / Second: /Back /Cyan /Magenta /Yellow /

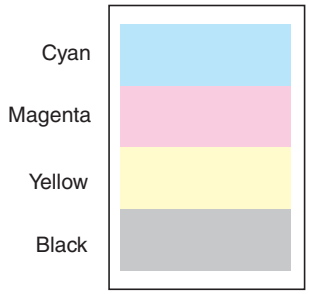
Service items	Description

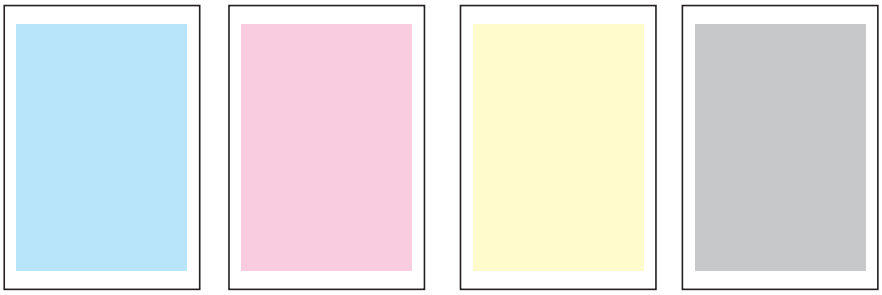
Item	Description
㊸ Calibration information	/Background value (P-wave) /Background value (S-wave) /Dark current (P-wave) /Dark current (S-wave) /Overabundance value (P-wave) /Overabundance value (P-wave) /Performance error/Warning /Calibration performance counter
㊹ Drum and printer serial number	-
㊺ Drum and printer serial number	-

Media type attributes

No.	Media type	Paper feed source		Attributes (default)			No.	Media type	Paper feed source		Attributes (default)		
		MP tray	Paper feeders cassettes 1 to 6	Transfer	Fuser speed	Duplex			MP tray	Paper feeders cassettes 1 to 6	Transfer	Fuser speed	Duplex
1	Plain	Y	Y	0	2	0	15-20	Reserved	-	-	-	-	-
2	Transparency	Y	N	3	0	1	21	Custom 1	Y	Y	0	2	0
3	Preprinted	Y	Y	0	2	0	22	Custom 2	Y	Y	0	2	0
4	Labels	Y	N	1	1	1	23	Custom 3	Y	Y	0	2	0
5	Bond	Y	N	1	1	1	24	Custom 4	Y	Y	0	2	0
6	Recycled	Y	Y	0	2	0	25	Custom 5	Y	Y	0	2	0
7	Vellum	Y	Y	0	2	0	26	Custom 6	Y	Y	0	2	0
8	Rough	Y	Y	0	1	1	27	Custom 7	Y	Y	0	2	0
9	Letter head	Y	Y	0	2	0	28	Custom 8	Y	Y	0	2	0
10	Color	Y	Y	0	2	0							
11	Prepunched	Y	Y	0	2	0							
12	Envelope	Y	N	1	1	1							
13	Cardstock	Y	N	1	1	1							
14	Coated	Y	N	0	1	1							

Shaded area: Not changeable.
Paper feed source attribute: Y= Yes N= No
Media type attributes:
[Transfer] 0= Normal 1= Thick 3= OHP (Transparency)
[Fuser speed] 0= 1/4 1= 1/2 2= Normal
[Duplex] 0= Enable 1= Disable

Service items	Description
>>Color Calibration	**Execution of a color calibration** **Description** Executing the color adjustment (color calibration). **Purpose** To carry out the color calibration operation manually which is carried out automatically each time the power to the printer is turned on. **Start** Enter the service mode (>>Color Calibration). Press the ENTER key twice. The color calibration starts and automatically finishes. **Completion**
>>Printing Test Page 1	**Printing a test page, mode 1** **Description** Printing a test page that has four colors printed on a sheet. **Purpose** To check the activation of the developers. **Start** Enter the service mode (>>Printing Test Page 1). Press the ENTER key twice. The test page is printed. **Completion**  **Figure 1-4-2**

Service items	Description
>>Printing Test Page 2	**Printing test pages, mode 2** **Description** Prints four sheets in individual colors. **Purpose** To check the activation of the developers. **Start** Enter the service mode (>>Printing Test Page 2). Press the ENTER key twice. Four test pages are printed. **Completion**  **Figure 1-4-3**

Service items	Description
>>Defumidifier Off	**Setting for primary transfer unit heater On/Off** **Description** The primary transfer unit heater is enabled or disabled (disabled at the factory default setting). **Purpose** To keep the temperature inside the machine by operating the primary transfer unit heater when the machine is not operating with the power switch off. This prevents dew condensation that is easily generated in an installation environment with a large difference of temperature and prevents improper images such as image running. **Start** Enter the service mode (>>Defumidifier Off). Press the ENTER key. Press the △ or ▽ key and change into (>>Defumidifier ? On) display. Press the ENTER key. **Completion**
>>Maintenance [A]	**Counter reset for the maintenance kit A** **Description** The "Install MK [A]" message means that maintenance kit A should be replaced at every 600,000 images of printing. The interval counter must be reset using this service item. MK-803A Maintenance kit A includes the following units: • Drum unit: DK-803 DRUM UNIT [Part No.: **********] (including MC-803P MAIN CHARGER ASSY) • Primary transfer unit: TR-803P PRI TRANSFER UNIT [Part No.: **********] (including CLEANER ASSY) • Secondary transfer unit: TR-803S SEC TRANSFER UNIT [Part No.: **********] **Purpose** To reset the life counter for the components included in maintenance kit A. **Start** Replace the drum unit (including the main charger unit) (See pages 1-6-13 and 1-6-14). Replace the primary transfer unit (See page 1-6-15). Replace the secondary transfer unit (See page 1-6-21). Enter the service mode (>>Maintenance [A]). Press the ENTER key twice. The counter for each component is reset immediately. **Completion** **Note:** Occurrences of resetting the maintenance kits are recorded on the service status page in number of pages or images at which the maintenance kit was replaced (See page 1-4-4). This may be used to determine the possibility that the counter was errorneously or unintentionally reset.

Service items	Description
>>Maintenance [B]	**Counter reset for the maintenance kit B** **Description** The "Install MK [B]" message means that maintenance kit B should be replaced together at every 300,000 pages of printing. The interval counter must be reset using this service item. MK-803B Maintenance kit B includes the following units: • Black developer: DV-803K DEVELOPER BLACK [Part No.: **********] • Fuser unit: FK-803(E) FUSER UNIT (E) [Part No.: **********] FK-803(U) FUSER UNIT (U) [Part No.: **********] • Conveying belt: BELT TRANS [Part No.: 2BM17540] **Purpose** To reset the life counter for the components included in maintenance kit B. **Start** Replace the black developer (See page 1-6-16). Replace the fuser unit (See page 1-6-23). Replace the conveying belts (See page 1-6-7). Enter the service mode (>>Maintenance [B]). Press the ENTER key twice. The counter for each component is reset immediately. **Completion** **Note:** Occurrences of resetting the maintenance kits are recorded on the service status page in number of pages or images at which the maintenance kit was replaced (See page 1-4-4). This may be used to determine the possibility that the counter was errorneously or unintentionally reset.

Service items	Description
>>Maintenance [C]	**Counter reset for the maintenance kit C** **Description** The "Install MK [C]" message means that maintenance kit C should be replaced together at every 300,000 images of printing. The interval counter must be reset using this service item. MK-803C Maintenance kit C • Yellow developer: DV-803Y DEVELOPER YELLOW [Part No.: **********] • Magenta developer: DV-803M DEVELOPER MAGENTA [Part No.: **********] • Cyan developer: DV-803C DEVELOPER CYAN [Part No.: **********] **Purpose** To reset the life counter for the components included in maintenance kit C. **Start** Replace the cyan, magenta, and yellow developers (See page 1-6-16). Enter the service mode (>>Maintenance [C]). Press the ENTER key twice. The counter for each component is reset immediately. **Completion** **Note:** Occurrences of resetting the maintenance kits are recorded on the service status page in number of pages or images at which the maintenance kit was replaced (See page 1-4-4). This may be used to determine the possibility that the counter was errorneously or unintentionally reset.
>>Drum	**Drum surface refreshing** **Description** The drum rotates for approximately 5 minutes without printing operation. **Purpose** To clean the drum surface when an image problem occurs. **Start** Enter the service mode (>>Drum). Press the ENTER key, (>>Drum?) is displayed. Press the ENTER key. The drum surface refreshing starts and automatically finishes. **Completion**

1-4-2 Maintenance

(1) Replacing the toner container

The life of the toner containers depends on the amount of toner required to accomplish your printing jobs. When 5 % coverage (a typical business document) of individual toner colors is assumed for A4 or letter size paper in landscape orientation, without using draft (EcoPrint [monochrome printing only]) mode:

• The TK-801K black toner container lasts an average of 25,000 monochrome pages.
• Each of the TK-801C cyan, TK-801M magenta, and TK-801Y yellow toner containers lasts an average of 10,000 color images.

The toner containers packed with the new printer are starter toner containers. The black starter toner container lasts an average of 12,500 monochrome pages. Each of the cyan, magenta, and yellow starter toner containers lasts an average of 5,000 color images.

Procedure

1. Open the front cover.
2. While pushing down the lever (blue-colored) at the front of the toner container to unlock the container, pull the toner container out.

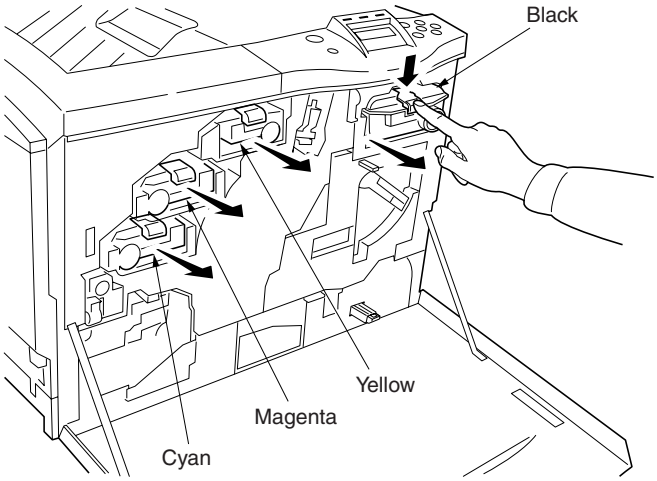


Figure 1-4-4

3. Take the new toner container out of the toner kit. To loosen and redistribute the toner inside, hold the container and rotate the container back and forth at least 10 times.
4. Insert the new toner container all the way in. The container is locked automatically when it is properly seated.

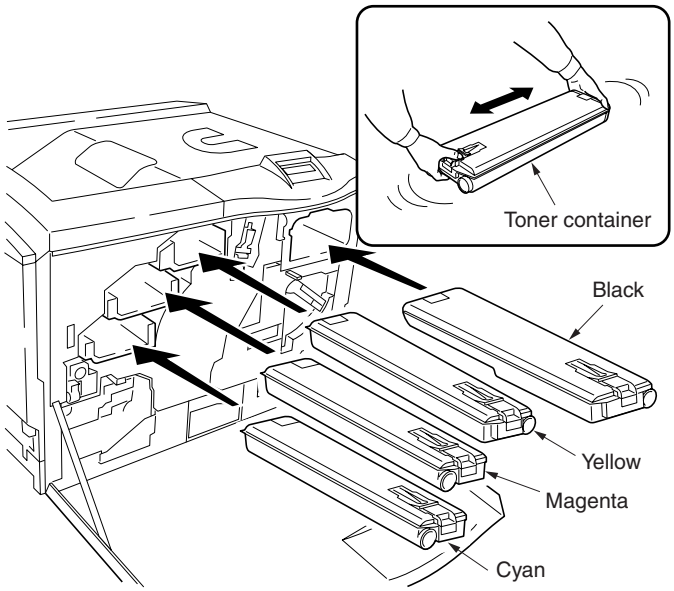


Figure 1-4-5

5. Remove the waste toner bottle.
6. Install the new waste toner bottle (Supplied in the new toner kit).

Cautions:
- Do not cap the opening on the new waste toner bottle.

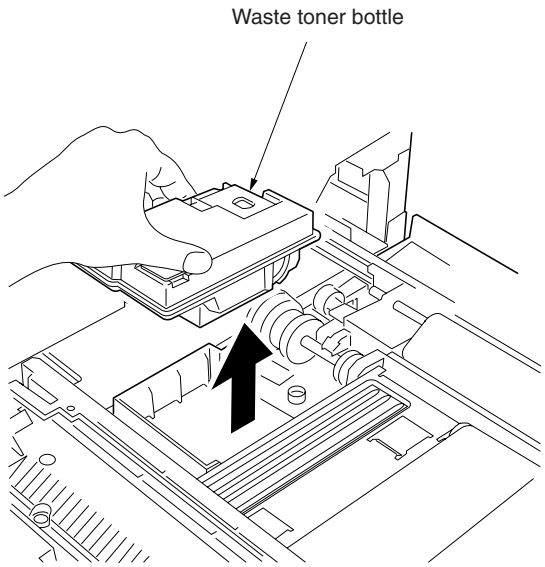


Figure 1-4-6

(2) Cleaning the main charger unit

The main charger unit needs to be cleaned periodically as it gets contaminated with dioxide after a long usage. The main charger is comprised of two main parts — the wire and the grid — both of which should be cleaned separately as instructed below.

Follow the procedure below to cleaning the main charger unit:

Procedure

• Main charger wire

1. Open the front cover.
2. Grasp the cleaning knob (green-colored). Gently pull the cleaning knob out and push it back in. Repeat this several times.

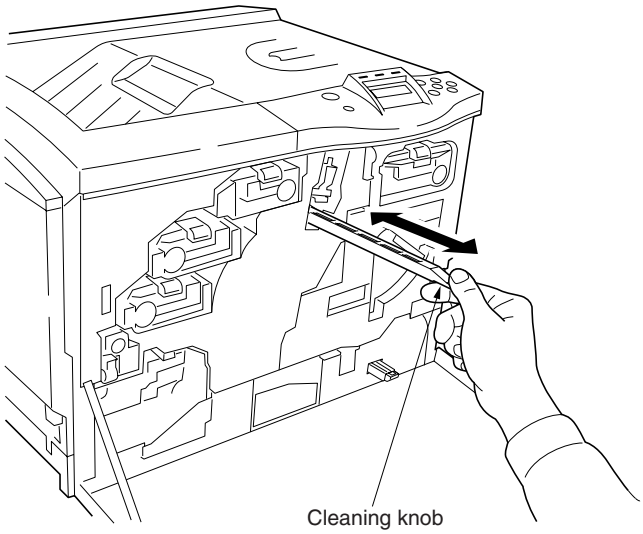


Figure 1-4-7

• Main charger grid

1. Take the grid cleaner out of the toner kit. Take the grid cleaner out of the protective bag and remove the cap.

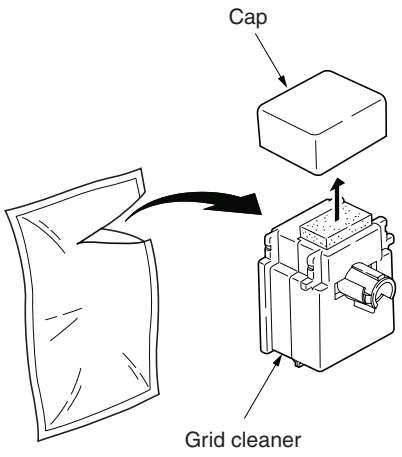


Figure 1-4-8

2. Attach the grid cleaner to the printer with the pad facing up.

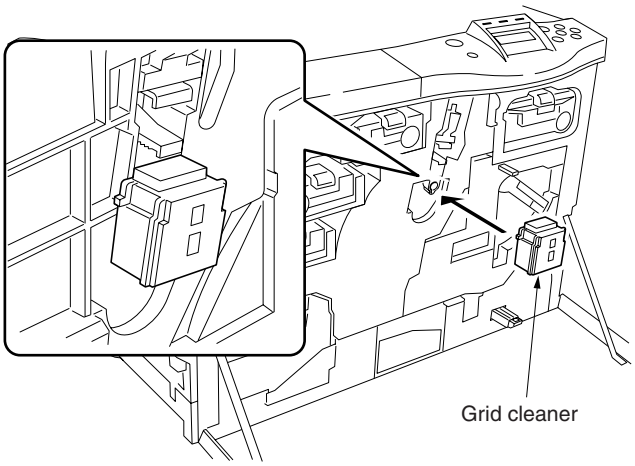


Figure 1-4-9

3. Push the main charger unit release lever upward.
4. Slightly lift the gray-colored main charger handle, and gently pull the main charger unit out and push it back in.
5. Repeat this several times. These movements clean the grid.
6. After cleaning is finished, remove the grid cleaner from the printer and discard it.
7. Close the front cover.

Cautions:

• The grid cleaner cannot be reused.

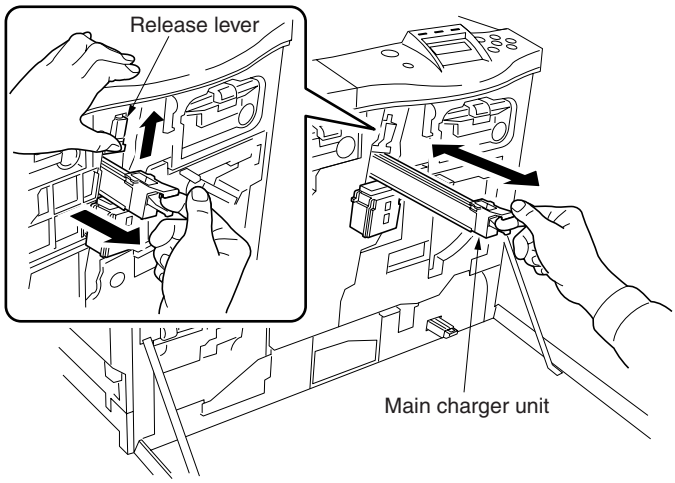


Figure 1-4-10

• Main charger shield
1. Remove the main charger unit from the drum unit.
2. Detach the main charger grid from the hooks.
3. Draw the main charger wire cleaner out until it stops.
4. Clean the inside of the main charger shield and refit the all parts.

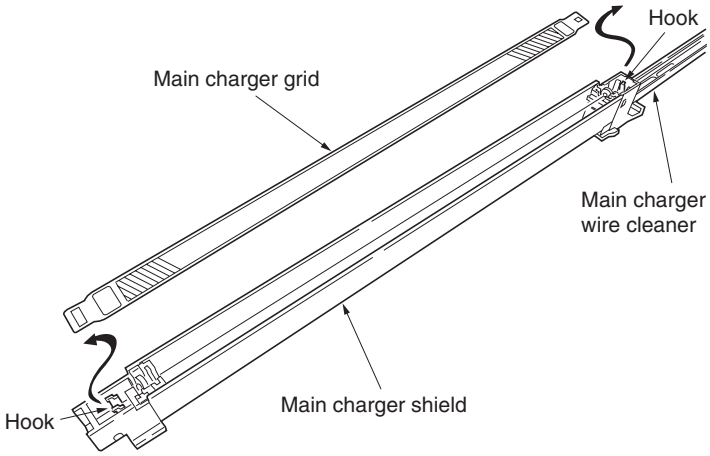


Figure 1-4-11

(3) Cleaning the printer

Follow the procedure below to clean the upper and lower registration rollers, conveying belts, and the registration sensor.

Procedure

• Registration rollers

1. Clean the upper (metal) and lower (rubber) registration rollers using the cleaning cloth. Rotate the rollers by rotating the coupling gear (black) at the rear end of the upper registration roller.

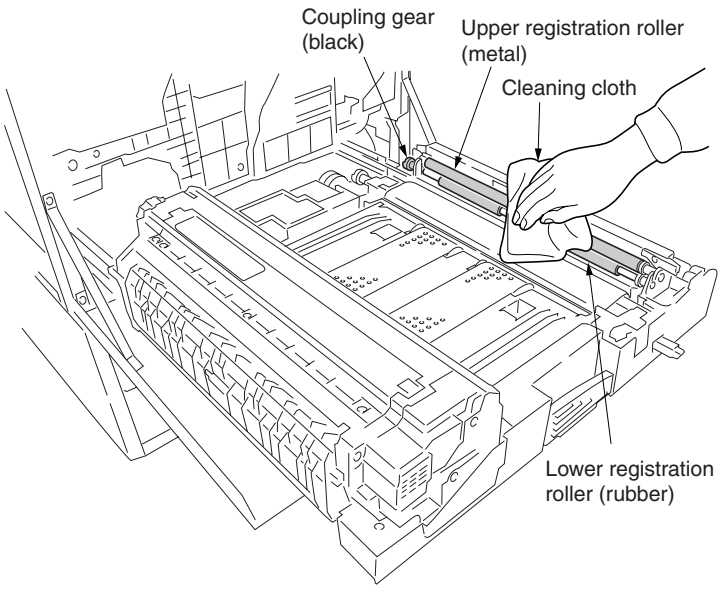


Figure 1-4-12

• Conveying belts
1. Clean the conveying belts (rubber) using the cleaning cloth.

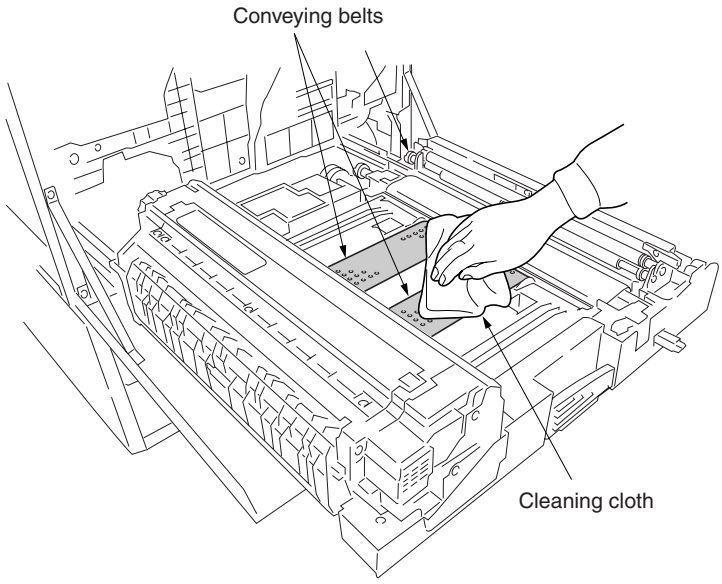


Figure 1-4-13

• Registration sensor
1. Remove the two screws and detach the registration sensor plate.
2. Clean the sensing face of registration sensor using the cleaning cloth.

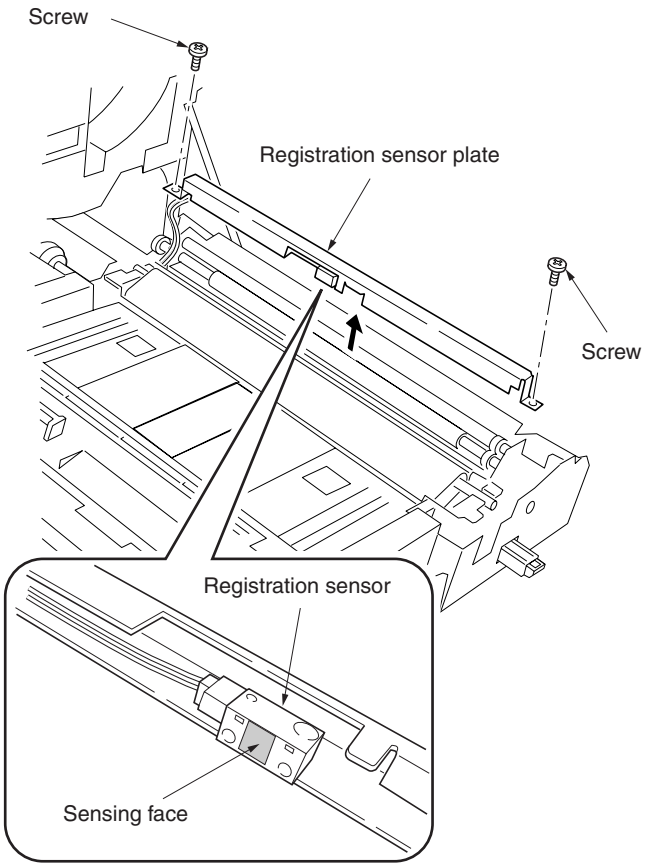


Figure 1-4-14

• Primary transfer unit

1. Remove the primary transfer unit and then remove the cleaning brush unit (See page 1-6-15).
2. Clean the platform for the cleaning brush unit (Ⓐ in the figure).

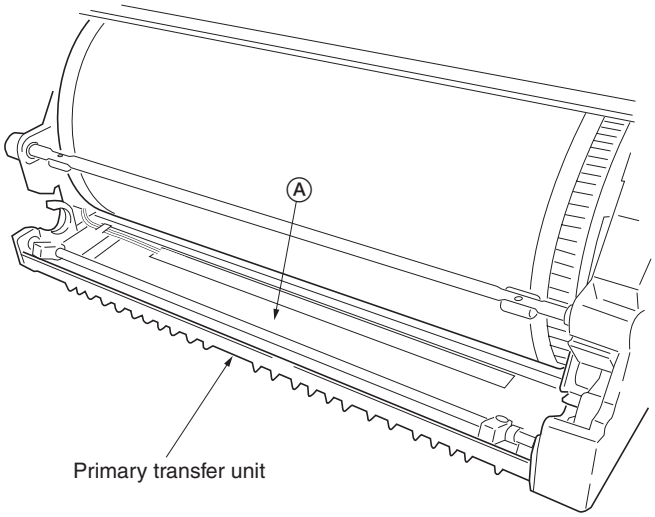


Figure 1-4-15

3. Clean around the waste toner exit of the cleaning brush unit.

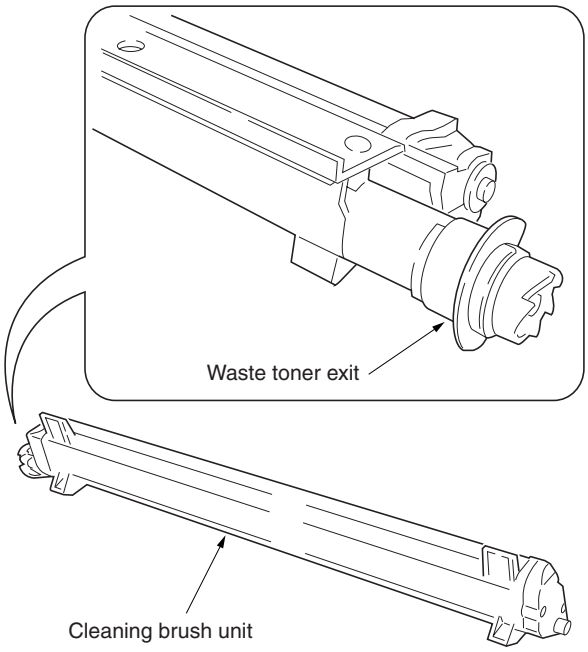


Figure 1-4-16

• Drum unit
1. Remove the drum unit (See page 1-6-14).
2. Remove the one screw.
3. Unlatch the three latches and then remove the drum unit rear cover.

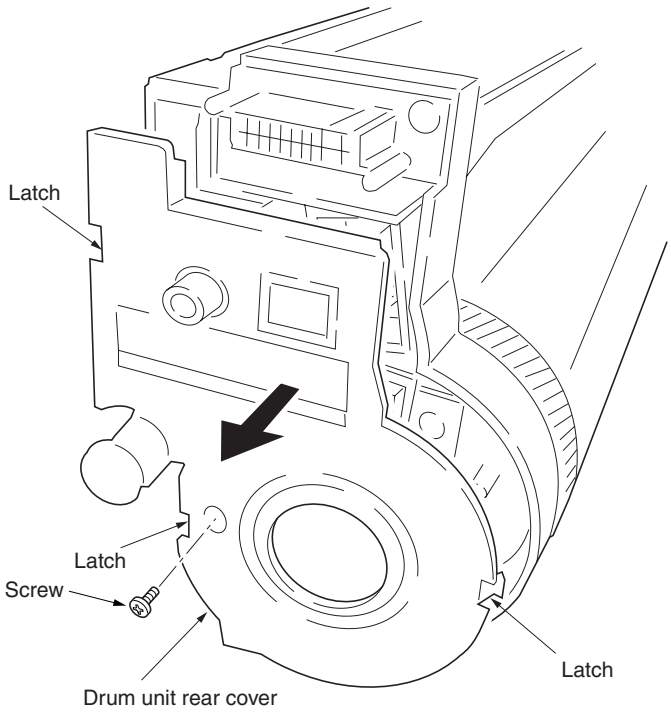


Figure 1-4-17

4. Clean the gear tooth of drum R flange.
5. Clean Idle gear Z17H Z22H, drum gear Z28H Z28H, CLN gear Z17, and shafts and then grease up them.

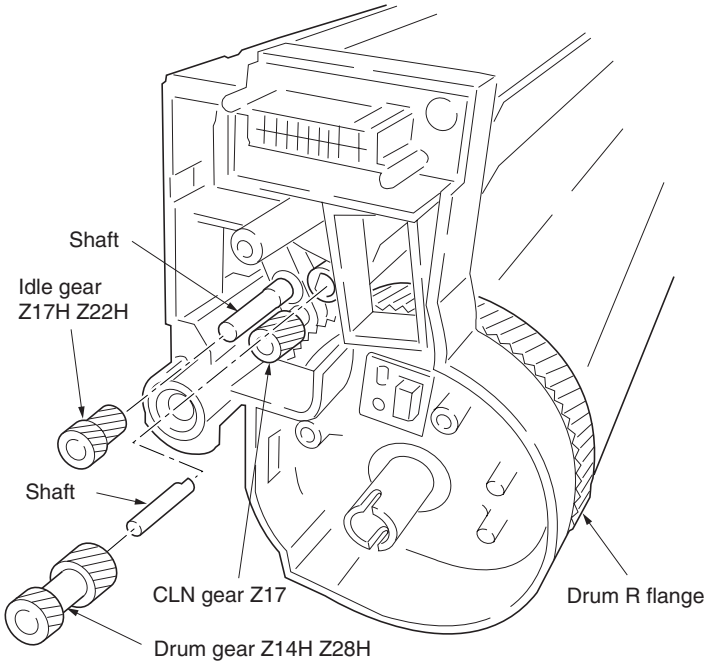


Figure 1-4-18

(4) Cleaning the heat and press/heat rollers of paper dust

Paper dust may accumulate on the heat and press/heat rollers after a prolonged use of the printer, resulting paper dust on transparencies or one side of double-side-printed paper. To clean the heat and press/heat rollers of paper dust, perform the following procedure.

Procedure

1. Set the MP tray mode to [First].
2. Set the paper size to [A4] or [Letter], and media type to [Plain] for the current paper cassette.
3. Load a sheet of A4 or Letter size paper on the MP tray in lengthwise direction.
4. At the DOS-prompt of the PC, send the following Prescribe command sequence (This prints solid black over an A4 page.):

   ```
   echo !R! unit c;map 0,0;pat 1;blk 20,28.7;page;exit,e;>prn
   ```

5. At a page of solid black is printed, reload it on the MP tray with the printed side down.
6. Print a status page.

   If the symptom still persists, try repeating the above procedure for several times.

(5) Cleaning the fuser unit

Follow the procedure below to clean the paper chute, upper and lower separators, and exit rollers.

Cautions:

- The fuser unit is hot after the printer was running. Wait until it cools down.

Procedure

1. Draw the paper feed unit.
2. Open the left paper guide and fuser unit top cover.
3. Clean the paper chute, upper and lower separators, and exit rollers.

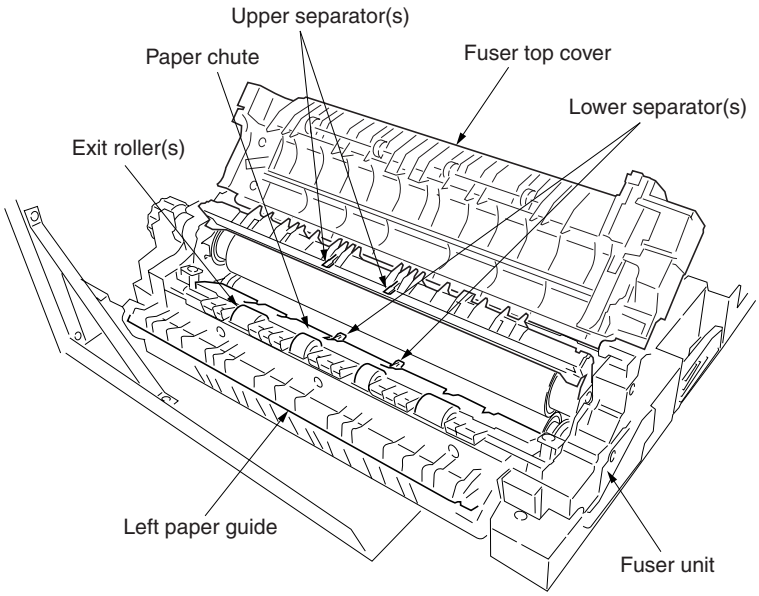


Figure 1-4-19

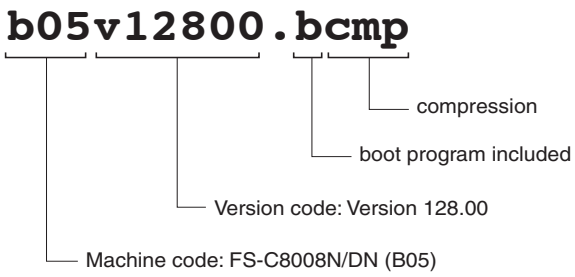
1-4-3 Downloading printer firmware for upgrade

The system (program) and engine firmware that are stored in a system DIMM PWB and a flash ROM on the engine controller PWB are upgradable by downloading new firmware into these devices. Downloading can be made either by directly sending the new firmware from PC via the parallel interface or using a memory card that contains the new firmware.
The message data for the operator panel display is also downloadable so that a new message language is appended for the operator panel. The message data should be downloaded directly from PC.

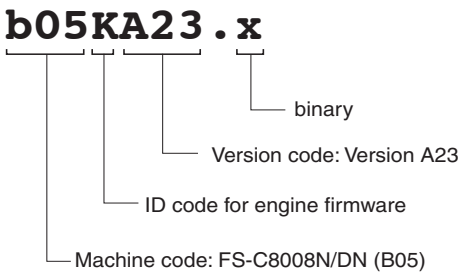
(1) Format for the firmware files

The file name for the firmware files is coded so that it implies the type, applicable product, and the version of the file. Refer to the example below:

System firmware file name example



Engine firmware file name example



Operator panel message data file name example

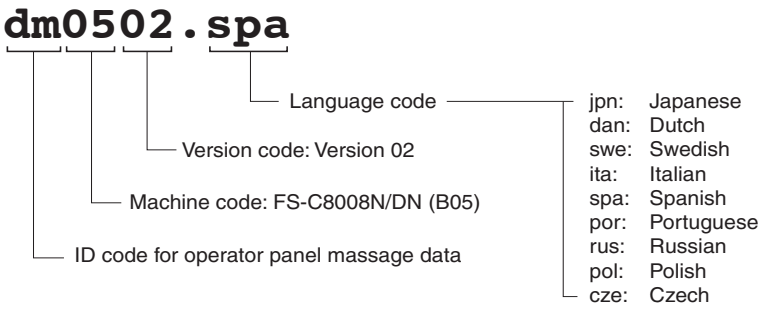


Table 1-4-1

(2) Downloading firmware via the parallel interface

To download the system or engine firmware using the parallel interface, use the procedure below. Note that you can download both the system and engine firmware at a time.

Connecting the parallel printer cable

1. Turn printer and PC power off.
2. Connect the parallel printer cable between the PC and the printer.

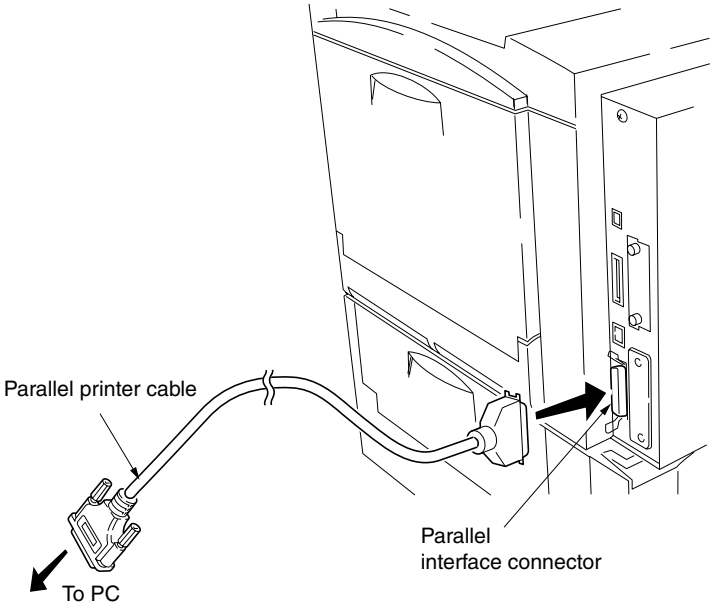


Figure 1-4-20

Downloading the firmware files

1. Turn printer power on.
2. Confirm Display ① is displayed.
3. At the DOS prompt, enter Command ②. Note that `UPGR'SYS'` should be entered as upper case letters.
4. Confirm Display ③ is displayed.
5. At the DOS prompt, enter Command ④ so that the system firmware (ex. `b05v12800.cmp`) and the engine firmware (ex. `b05KA23.x`) are copied to the printer.
6. Display ⑤ is displayed during downloading. When Display ⑥ is displayed to indicate downloading is finished, turn printer power off, then on.
7. Confirm Display ⑦ is displayed after warming up.

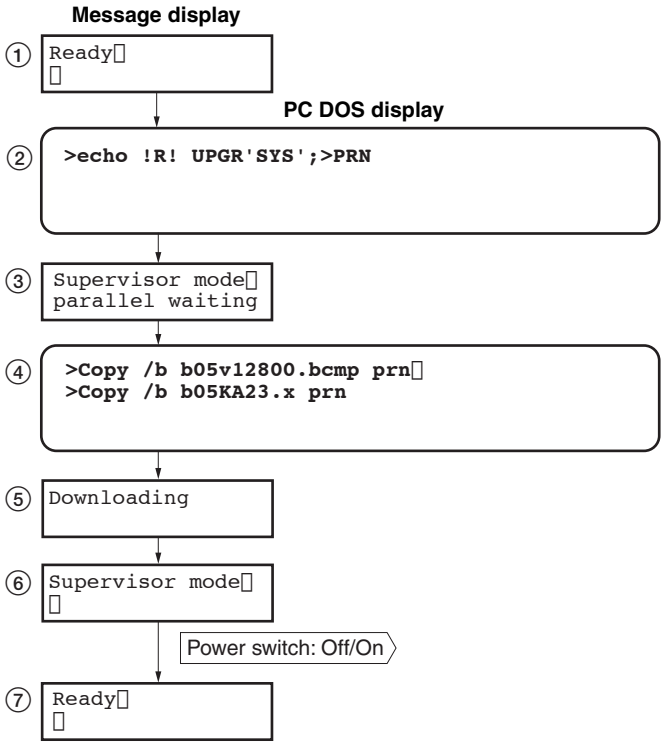


Figure 1-4-21

Confirming upgrading

1. Print a status page. (See page 1-4-2.)
2. Check that the status page shows the new firmware version.

(3) Downloading firmware using the memory card

The procedure below provides how to download firmware from a memory card. A memory card can hold both the system and the engine firmware together for downloading these firmware at a time.

Formatting the memory card

1. Turn printer power on.
2. Insert the memory card into the printer's memory card slot.

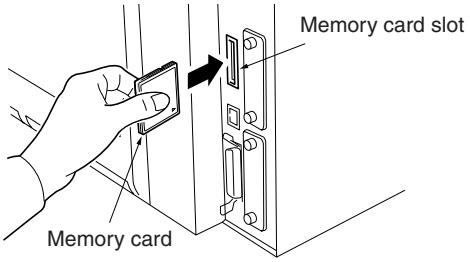


Figure 1-4-22

3. Press MENU key on the printer's operator panel and format the memory card (①).
4. When formatting is complete, turn printer power off.
5. Remove the formatted memory card from the printer.

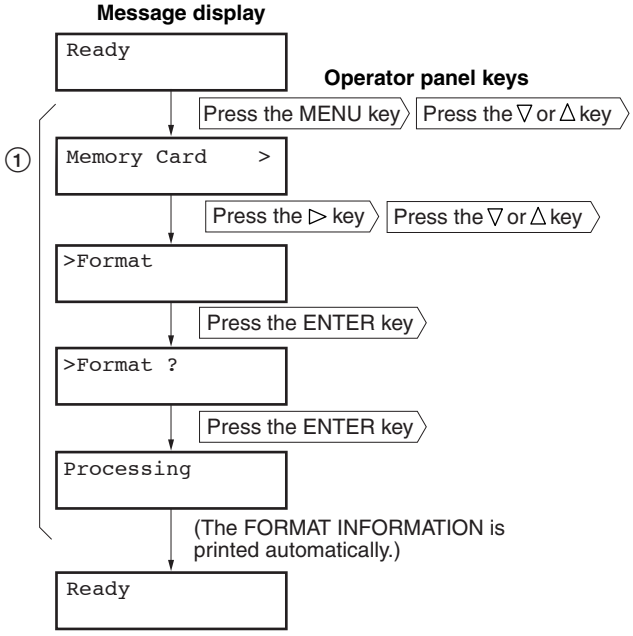


Figure 1-4-23

Copying firmware files to the memory card

1. Insert the memory card to the PC's slot or to the adaptor.
2. Copy the firmware file to download to the root directory of the memory card.
3. Remove the memory card from the PC or adaptor.

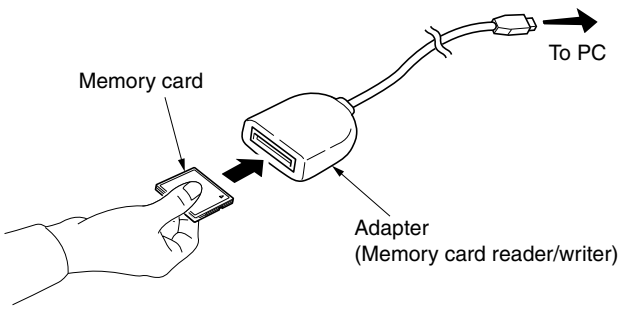


Figure 1-4-24

Downloading firmware file

1. Confirm that the printer's power switch is set to off.
   Cautions:
   Even if the power switch is turned off, the power supply unit fan motor may continue rotating to cool the inside of the machine. In this case, remove the power cord temporarily and then connect it after several seconds to turn off the machine completely.

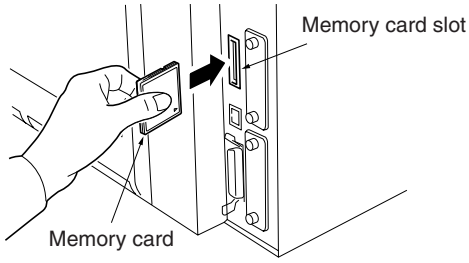


Figure 1-4-25

2. Insert the memory card into the printer's memory card slot.
3. Turn printer power on. The firmware file in the memory card will be automatically downloaded.
4. The checksum of firmware is displayed and the buzzer sounds at the same time. Downloading is now complete.
5. Turn printer power off.
6. Remove the memory card from the printer's memory card slot.
7. Turn printer power on.
8. Confirm Display ① is displayed after warming up.

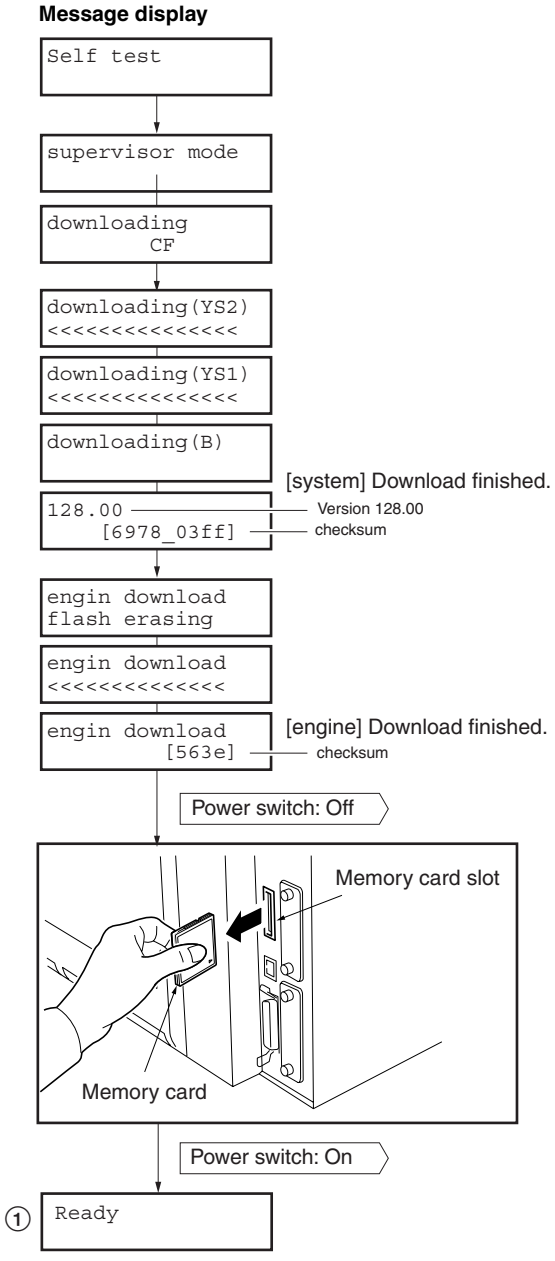


Figure 1-4-26

Confirming upgrading

1. Print a status page. (See page 1-4-2.)
2. Check that the status page shows the new firmware version.

(4) Downloading message data

To download the new message data for the display, proceed as follows:

Connecting the parallel printer cable

1. Turn printer and PC power off.
2. Connect the parallel printer cable between the PC and the printer.

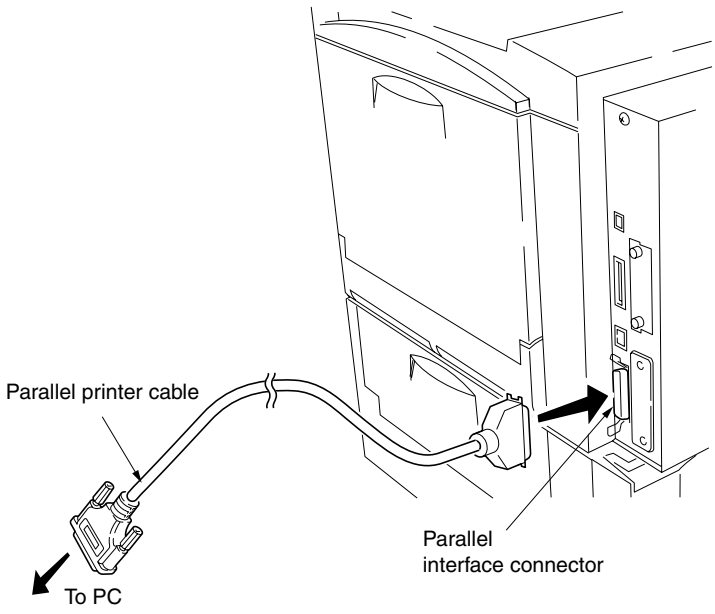


Figure 1-4-27

Downloading the message data file

1. Turn printer power on.
2. Confirm Display ① is displayed.
3. At the DOS prompt, enter Command ②. Note that `BOOT'SPR'` should be entered as upper case letters.
4. Confirm Display ③ is displayed.
5. At the DOS prompt, enter Command ④ so that the message data file (ex. `dm0502.spa`) is copied to the printer.
6. Display ⑤ is displayed during downloading. When Display ⑥ is displayed to indicate downloading is finished, turn printer power off, then on.
7. Confirm Display ⑦ is displayed after warming up.

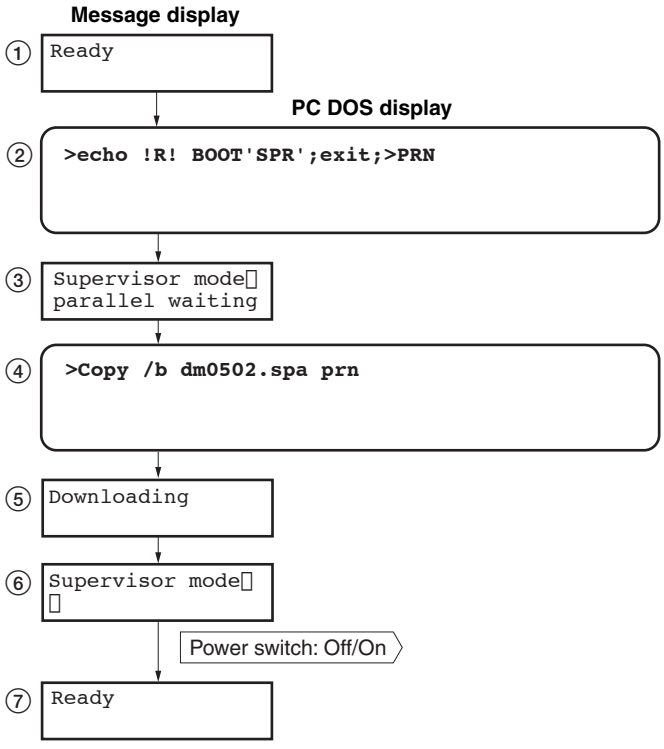


Figure 1-4-28

Confirming upgrading

1. Print a status page. (See page 1-4-2.)
2. Check that the status page shows the new message data version.

1-5-1 Paper misfeed detection

(1) Paper misfeed indication

When a paper misfeed occurs, the printer immediately stops printing and displays the jam location on the operation panel. To remove paper jammed in the printer, open the front cover, paper feed unit, side cover, paper cassette, duplexer, paper feeder cover, duplex unit cover. Paper misfeed detection can be reset by opening and closing the respective covers.

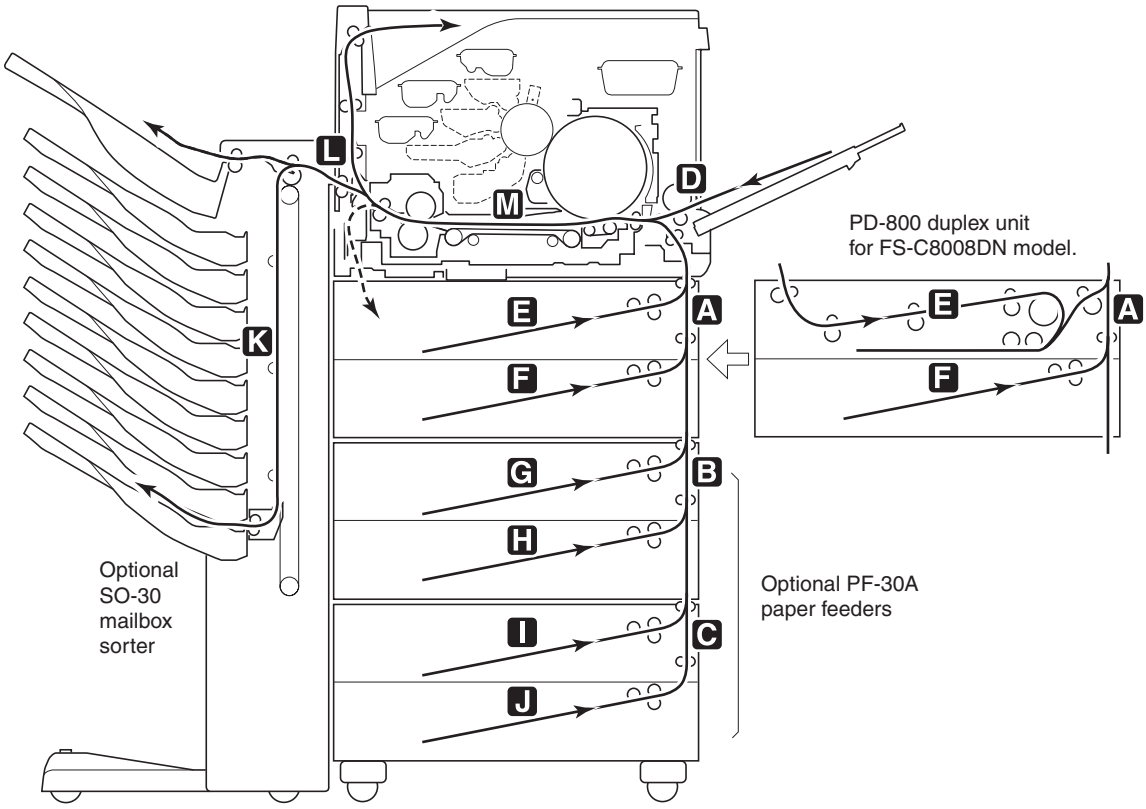


Figure 1-5-1 Paper misfeed indication

Table 1-5-1

Jam location	Contents
A	Misfeed in the first paper feeder side cover
	Misfeed in the duplex unit side cover
B	Misfeed in the second paper feeder side cover
C	Misfeed in the third paper feeder cover
D	No paper feed from MP tray
E	No paper feed from cassette 1 (The first paper feeder)
	No paper feed from duplexer (Duplex unit)
F	No paper feed from cassette 2 (The first paper feeder)
G	No paper feed from cassette 3 (The second paper feeder)
H	No paper feed from cassette 4 (The second paper feeder)
I	No paper feed from cassette 5 (The third paper feeder)
J	No paper feed from cassette 6 (The third paper feeder)
K	Misfeed in optional mailbox sorter, document finisher, or bulk stacker
L	Misfeed in side cover
M	Misfeed in paper feed unit

(2) Paper misfeed detection sensors

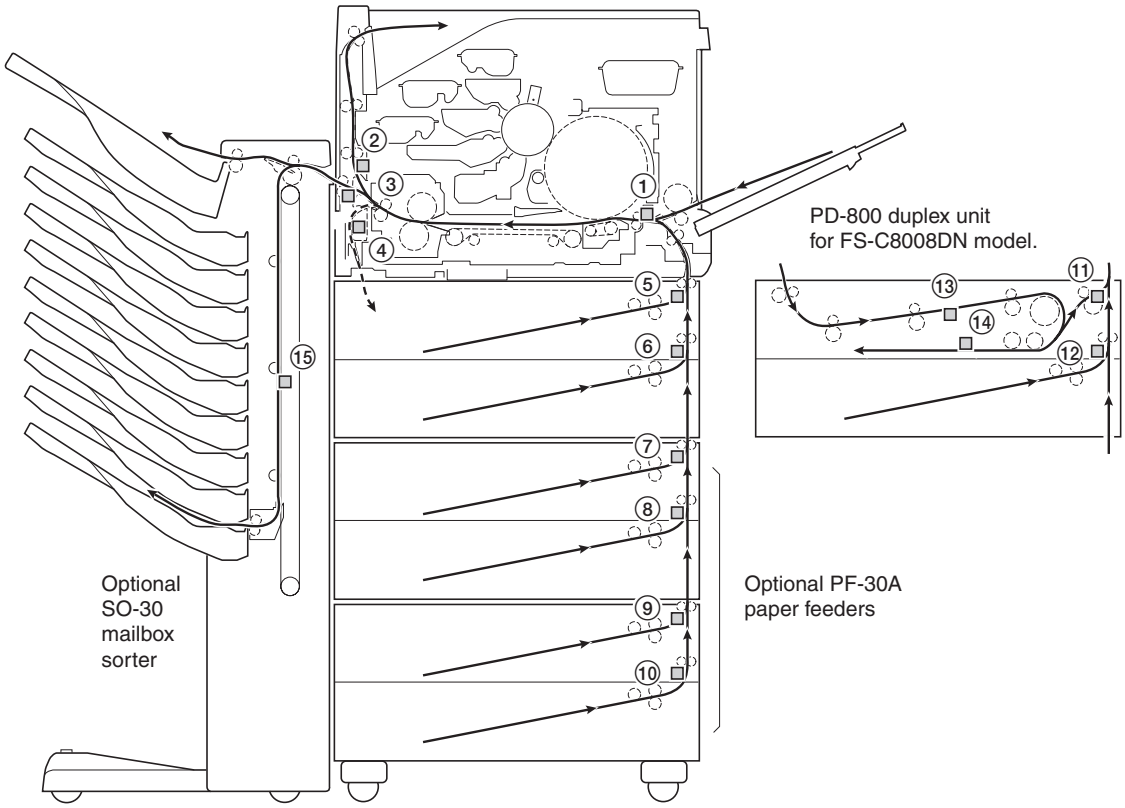


Figure 1-5-2 Paper misfeed detection sensors

① Registration sensor
② Upper paper exit sensor
③ Lower paper exit sensor
④ Duplex paper exit sensor
⑤ Upper jam sensor [The first paper feeder]
⑥ Lower jam sensor [The first paper feeder]
⑦ Upper jam sensor [The second paper feeder]
⑧ Lower jam sensor [The second paper feeder]
⑨ Upper jam sensor [The third paper feeder]
⑩ Lower jam sensor [The third paper feeder]
⑪ Duplex unit upper jam sensor
⑫ Duplex unit lower jam sensor
⑬ Duplex unit upper tray jam sensor
⑭ Duplex unit lower tray jam sensor
⑮ Jam sensor (Optional mailbox sorter, document finisher, or bulk stacker)

1-5-2 Self-diagnosis

(1) Self-diagnostic function

This printer is equipped with a self-diagnostic function. When a problem is detected, printing is disabled. The problem is displayed as a code consisting of digits number followed by a number between 0121 and F070, indicating the nature of the problem. A message is also displayed requesting the user to call for service.

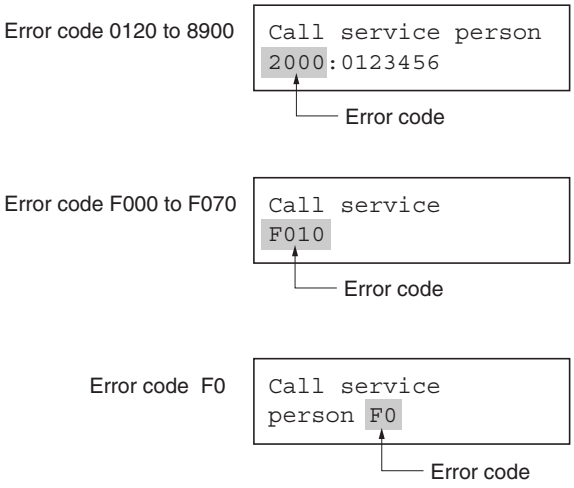


Figure 1-5-3 Self-diagnosis

Self diagnostic codes

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
0121	**EEPROM read error** • The ASIC (U7) of engine controller PWB (KP-992) does not access to the EEPROM (U621) of drum PWB (KP-999) normally.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective drum PWB (KP-999).	Replace the drum unit. See page 1-6-14.
		Defective harness (2BM2864) between engine controller PWB (KP-992) and drum unit, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2864). Check the insertion of connectors.
0440	**Communication error between printer and document finisher/ mailbox sorter** • The CPU (U2) of engine controller PWB (KP-992) does not communicate with the DF-31 document finisher/SO-30 mailbox sorter normally. • The ASIC (U8) of engine controller PWB (KP-992) does not communicate to the DF-31 document finisher/SO-30 mailbox sorter normally.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective main PWB of DF-31 document finisher/SO-30 mailbox sorter.	Replace the main PWB of DF-31 document finisher/SO-30 mailbox sorter. See DF-31 document finisher/SO-30 mailbox sorter's service manual.
		Defective paper feeder/options relay PWB (KP-995).	Replace the paper feeder/options relay PWB (KP-995). See page 1-6-40.
		Defective signal cable between printer and DF-31 document finisher/ SO-30 mailbox sorter.	Replace the signal cable between printer and DF-31 document finisher/SO-30 mailbox sorter.
		Defective harness (2CK2719) between engine controller PWB (KP-992) and paper feeder/options relay PWB (KP-995), or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719). Check the insertion of connectors.
		Defective document finisher interface PWB.	Replace the document finisher interface PWB.
		Defective harness (2CK2727) between document finisher interface PWB and engine controller PWB (KP-992), or poor contact of the connector terminals.	Check the continuity of the harness (2CK2727). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
0450	**Communication error between printer and bulk stacker** • The CPU (U2) of engine controller PWB (KP-992) does not communicate with the ST-30 bulk stacker normally.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective main board of ST-30 bulk stacker.	Replace the main board of ST-30 bulk stacker. See ST-30 bulk stacker's service manual.
		Defective paper feeder/options relay PWB (KP-995).	Replace the paper feeder/options relay PWB (KP-995). See page 1-6-40.
		Defective signal cable between ST-30 bulk stacker.	Replace the signal cable between printer and ST-30 bulk stacker.
		Defective harness (2CK2719) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995), or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719). Check the insertion of connectors.
0460	**Communication error between printer and duplex unit** • The CPU (U2) of engine controller PWB (KP-992) does not communicate with the PD-800 duplex unit normally.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective main board of PD-800 duplex unit.	Replace the main board of duplex unit PD-30. See PD-800 duplex unit's service manual.
		Defective paper feeder/options relay PWB (KP-995).	Replace the paper feeder/options relay PWB (KP-995). See page 1-6-40.
		Defective connection printer and PD-800 duplex unit.	Reinstall PD-800 duplex unit.
		Defective harness (2CK2719) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995), or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
1010	**Overcurrent detection of upper cassette base motor (The first paper feeder)** • Excessive current has flowed through the upper cassette base motor which elevates the bottom plate in the cassette when the upper cassette is installed in the top PF-30A paper feeder or power is turned on.	Defective upper cassette base motor.	Replace the upper cassette base motor. See PF-30A paper feeder's service manual.
		Defective bottom plate elevation mechanism of upper cassette.	Check whether there is an object that prevents the bottom plate of upper cassette from operating normally.
		Defective main board of PF-30A paper feeder.	Replace the main board of PF-30A paper feeder. See PF-30A paper feeder's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
1020	**Overcurrent detection of lower cassette base motor (The first paper feeder)** • Excessive current has flowed through the lower cassette base motor which elevates the bottom plate in the cassette when the lower cassette is installed in the first PF-30A paper feeder or power is turned on.	Defective lower cassette base motor.	Replace the lower cassette base motor. See PF-30A paper feeder's service manual.
		Defective bottom plate elevation mechanism of lower cassette.	Check whether there is an object that prevents the bottom plate of lower cassette from operating normally.
		Defective main board of PF-30A paper feeder.	Replace the main board of PF-30A paper feeder. See PF-30A paper feeder's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
	Overcurrent detection of cassette base motor (Duplex unit) • Excessive current has flowed through the cassette base motor which elevates the bottom plate in the cassette when the lower cassette is installed in the PD-800 duplex unit.	Defective lower cassette base motor.	Replace the lower cassette base motor. See the PD-800 duplex unit's service manual.
		Defective bottom plate elevation mechanism of lower cassette.	Check whether there is an object that prevents the bottom plate of lower cassette from operating normally.
		Defective main board of the PD-800 duplex unit.	Replace the main board of the duplex unit PD-30. See the PD-800 duplex unit's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
1030	**Overcurrent detection of upper cassette base motor (The second paper feeder)** • Excessive current has flowed through the upper cassette base motor which elevates the bottom plate in the cassette when the upper cassette is installed in the second PF-30A paper feeder or power is turned on.	Defective upper cassette base motor.	Replace the upper cassette base motor. See PF-30A paper feeder's service manual.
		Defective bottom plate elevation mechanism of upper cassette.	Check whether there is an object that prevents the bottom plate of upper cassette from operating normally.
		Defective main board of PF-30A paper feeder.	Replace the main board of PF-30A paper feeder. See PF-30A paper feeder's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
1040	**Overcurrent detection of lower cassette base motor (The second paper feeder)** • Excessive current has flowed through the lower cassette base motor which elevates the bottom plate in the cassette when the lower cassette is installed in the second PF-30A paper feeder or power is turned on.	Defective lower cassette base motor.	Replace the lower cassette base motor. See PF-30A paper feeder's service manual.
		Defective bottom plate elevation mechanism of lower cassette.	Check whether there is an object that prevents the bottom plate of lower cassette from operating normally.
		Defective main board of PF-30A paper feeder.	Replace the main board of PF-30A paper feeder. See PF-30A paper feeder's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
1050	**Overcurrent detection of upper cassette base motor (The third paper feeder)** • Excessive current has flowed through the upper cassette base motor which elevates the bottom plate in the cassette when the upper cassette is installed in the third PF-30A paper feeder or power is turned on.	Defective upper cassette base motor.	Replace the upper cassette base motor. See PF-30A paper feeder's service manual.
		Defective bottom plate elevation mechanism of upper cassette.	Check whether there is an object that prevents the bottom plate of upper cassette from operating normally.
		Defective main board of PF-30A paper feeder.	Replace the main board of PF-30A paper feeder. See PF-30A paper feeder's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
1060	**Overcurrent detection of lower cassette base motor (The third paper feeder)** • Excessive current has flowed through the lower cassette base motor which elevates the bottom plate in the cassette when the lower cassette is installed in the third PF-30A paper feeder or power is turned on.	Defective lower cassette base motor.	Replace the lower cassette base motor. See PF-30A paper feeder's service manual.
		Defective bottom plate elevation mechanism of lower cassette.	Check whether there is an object that prevents the bottom plate of lower cassette from operating normally.
		Defective main board of PF-30A paper feeder.	Replace the main board of PF-30A paper feeder. See PF-30A paper feeder's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
1210	**Side registration home position sensor detection error (Duplex unit)** • The side registration home position sensor of PD-800 duplex unit does not detect home position of side registration guides.	Defective side registration home position sensor.	Replace the side registration home position sensor. See PD-800 duplex unit's service manual.
		Defective side registration motor.	Replace the main board of duplex unit PD-30. See PD-800 duplex unit's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
2000	**Main drive motor lock** • The frequency generation pulse which the main drive motor generates to CPU (U2) on the engine controller PWB (KP-992) in normal operation (after self-diagnostics codes 2010 and 2020 are cleared) is not at the correct frequency.	Defective main drive motor.	Replace the main drive motor.
		Excessive torque for driving drum unit or primary transfer unit. (Overloaded by a damaged gear.)	Check if the drum unit or primary transfer unit rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2711) between engine controller PWB (KP-992) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2711). Check the insertion of connectors.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
2010	**Main drive motor starting error** • No FG (Frequency generation) pulse is entered within the predetermined period since ASIC (U8) on the engine controller PWB (KP-992) has issued a motor activation signal to the main drive motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective main drive motor.	Replace the main drive motor.
		Excessive torque for driving drum unit or primary transfer unit. (Overloaded by a damaged gear.)	Check if the drum unit or primary transfer unit rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2711) between engine controller PWB (KP-992) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2711). Check the insertion of connectors.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
2020	**Main drive motor starting time-out** • The FG (Frequency generation) pulse does not reach the correct frequency since ASIC (U8) on the engine controller PWB (KP-992) has issued a motor activation signal to the main drive motor.	Defective main drive motor.	Replace the main drive motor.
		Excessive torque for driving drum unit or primary transfer unit. (Overloaded by a damaged gear.)	Check if the drum unit or primary transfer unit rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2711) between engine controller PWB (KP-992) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2711). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
2101	**Black developer drive motor lock** • The FG (Frequency generation) pulse which the black developer drive motor generates is not entered at the correct frequency in CPU (U2) on the engine controller PWB (KP-992) during normal operation (after self-diagnostics codes 2111 and 2121 are cleared).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective black developer drive motor.	Replace the black developer drive motor.
		Excessive torque for driving black developer. (Overloaded by a damaged gear.)	Check if the black developer rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2711) between engine controller PWB (KP-992) and black developer drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2711). Check the insertion of connectors.
2102	**Color developers drive motor lock** • The FG (Frequency generation) pulse which the color developers drive motor generates is not entered at the correct frequency in CPU (U2) on the engine controller PWB (KP-992) during normal operation (after self-diagnostics codes 2112 and 2122 are cleared).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective color developers drive motor.	Replace the color developers drive motor.
		Excessive torque for driving color developers. (Overloaded by a damaged gear.)	Check if the yellow, magenta, and cyan developers rotate smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2710) between engine controller PWB (KP-992) and color developers drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2710). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
2111	**Black developer drive motor starting error** • No FG (Frequency generation) pulse is entered when ASIC (U7) on the engine controller PWB (KP-992) has issued a motor activation signal to the black developer drive motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective black developer drive motor.	Replace the black developer drive motor.
		Excessive torque for driving black developer. (Overloaded by a damaged gear.)	Check if the black developer rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2711) between engine controller PWB (KP-992) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2711). Check the insertion of connectors.
2112	**Color developers drive motor starting error** • No FG (Frequency generation) pulse is entered when ASIC (U7) on the engine controller PWB (KP-992) has issued a motor activation signal to the drive motor for the color developers.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective color developers drive motor.	Replace the color developers drive motor.
		Excessive torque for driving color developers. (Overloaded by a damaged gear.)	Check if the yellow, magenta, and cyan developers rotate smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2710) between engine controller PWB (KP-992) and color developers drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2710). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
2121	**Black developer drive motor starting time-out** • The FG (Frequency generation) pulse does not reach the correct frequency when ASIC (U7) on the engine controller PWB (KP-992) has issued a motor activation signal to the black developer drive motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective black developer drive motor.	Replace the black developer drive motor.
		Excessive torque for driving black developer. (Overloaded by a damaged gear.)	Check if the black developer rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2711) between engine controller PWB (KP-992) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2711). Check the insertion of connectors.
2122	**Color developers drive motor starting time-out** • The FG (Frequency generation) pulse does not reach the correct frequency when ASIC (U8) on the engine controller PWB (KP-992) has issued a motor activation signal to the drive motor that drives the color developers.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective color developers drive motor.	Replace the color developers drive motor.
		Excessive torque for driving color developers. (Overloaded by a damaged gear.)	Check if the yellow, magenta, and cyan developers rotate smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2710) between engine controller PWB (KP-992) and color developers, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2710). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
2320	**Fuser drive motor error** • The fuser control system does not operate normally.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
2340	**Fuser drive motor driving clock table error** • An error has occurred in the driving clock table on the engine controller PWB (KP-992) that controls the fuser drive motor (a stepping motor).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
2500	**Paper feed motor lock** • The FG (Frequency generation) pulse which the paper feed motor generates is not entered at the correct frequency in ASIC (U2) on the engine controller PWB (KP-992) during normal operation.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective paper feed motor.	Replace the paper feed motor.
		Excessive torque for driving paper feed unit. (Overloaded by a damaged gear.)	Check if the paper feed unit rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2707) between engine controller PWB (KP-992) and paper feed motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2707). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
2510	**Paper feed motor starting error** • No FG (Frequency generation) pulse is entered within the predetermined period when ASIC (U8) on the engine controller PWB (KP-992) has issued a motor activation signal to the paper feed motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective paper feed motor.	Replace the paper feed motor.
		Excessive torque for driving paper feed unit. (Overloaded by a damaged gear.)	Check if the paper feed unit rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2707) between engine controller PWB (KP-992) and paper feed motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2707). Check the insertion of connectors.
2520	**Paper feed motor starting time-out** • The FG (Frequency generation) pulse does not reach the correct frequency within the predetermined period when ASIC (U2) on the engine controller PWB (KP-992) has issued a motor activation signal to the paper feed motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective paper feed motor.	Replace the paper feed motor.
		Excessive torque for driving paper feed unit. (Overloaded by a damaged gear.)	Check if the paper feed unit rotates smoothly. Check for broken gears. Replace if any.
		Defective harness (2CK2707) between engine controller PWB (KP-992) and paper feed motor, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2707). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
4000	**Polygon motor error** • The ready signal (SCRDY) is not entered within the predetermined period when CPU (U2) on the engine controller PWB (KP-992) has issued a motor activation signal to the laser scanner unit.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective laser scanner unit (PD PWB [KP-838]).	Replace the laser scanner unit. See page 1-6-11.
		Defective harness (2BM2852) between engine controller PWB (KP-992) and laser scanner unit, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2852). Check the insertion of connectors.
4200	**Horizontal synchronized signal (PD) detection error** • The horizontal synchronization signal (PD) is not entered by the laser scanner unit when ASIC (U8) on the engine controller PWB (KP-992) has issued a laser activation signal.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective laser scanner unit (PD PWB [KP-838]).	Replace the laser scanner unit. See page 1-6-11.
		Defective harness (S02542) between engine controller PWB (KP-992) and laser scanner unit, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2852). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
5300	**Eraser lamp broken detection** • The current at the correct level is not detected when ASIC (U8) on the engine controller PWB (KP-992) generates the signal to activate the eraser lamp.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective drum unit (eraser lamp or drum PWB [KP-813]).	Replace the drum unit. See page 1-6-14.
		Defective harness (2BM2864) between engine controller PWB (KP-992) and drum unit, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2864). Check the insertion of connectors.
6000	**Heat roller heating time-out 1** • The temperature on the heat roller does not rise within the predetermined period when ASIC (U8) on the engine controller PWB (KP-992) has turned on the upper heater lamp. This is detected when the upper heater lamp is turned on.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective upper heater lamp.	Replace the fuser unit (upper heater lamp). See page 1-6-28.
		Defective upper thermostat.	Replace the fuser unit (upper thermostat). See page 1-6-28.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-997]). See page 1-6-27.
		Defective upper fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-25.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-36.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity the harness (2CK2719, 2CK2712). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6010	**Heat roller heating time-out 2** • The temperature on the heat toller does not reach the correct temperature within the predetermined period after self-diagnostic code 6000 is cleared. The period for detection is longer than the condition for self-diagnostics code 6000.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective upper heater lamp.	Replace the fuser unit (upper heater lamp). See page 1-6-28.
		Defective upper thermostat.	Replace the fuser unit (upper thermostat). See page 1-6-28.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-23.
		Defective upper fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-25.
		Defective AC power source (Abnormal low voltage).	Connect to the proper AC power source.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.
6020	**Heat roller abnormal high temperature** • The temperature on the heat roller has risen up to the abnormal temperature.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective upper heater lamp.	Replace the fuser unit (upper heater lamp). See page 1-6-28.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-997]). See page 1-6-23.
		Defective upper fuser thermistor.	Replace the fuser unit (upper fuser thermistor). See page 1-6-25.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-36.
		Defective AC power source. (Abnormal high voltage)	Connect to the proper AC power source.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6030	**Upper fuser thermistor broken detection** • No temperature detection output is obtained from the upper fuser thermistor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-997]). See page 1-6-23.
		Defective upper fuser thermistor, or improper fitting..	Replace the fuser unit (upper fuser thermistor). See page 1-6-25.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.
6040	**Upper fuser thermistor abnormal temperature detection** • The temperature detection output from the upper fuser thermistor is abnormal change.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective fuser PWB (KP-992).	Replace the fuser unit (fuser PWB [KP-992]). See page 1-6-23.
		Defective upper fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-25.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6100	**Press/heat roller heating time-out 1** • The temperature on the press/heat roller does not rise within the predetermined period when ASIC (U8) on the engine controller PWB (KP-992) has turned on the lower heater lamp. This is detected when the lower heater lamp is turned on.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective lower heater lamp.	Replace the fuser unit (lower heater lamp). See page 1-6-28.
		Defective lower thermostat.	Replace the fuser unit (lower thermostat). See page 1-6-28.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-997]). See page 1-6-23.
		Defective lower fuser thermistor, or fitting is not proper.	Replace the fuser unit (lower fuser thermistor). See page 1-6-25.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-36.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.
6110	**Press/heat roller heating time-out 2** • The temperature on the press/heat toller does not reach the correct temperature within the predetermined period after self-diagnostic code 6100 is cleared. The period for detection is longer than the condition for self-diagnostics code 6100.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective lower heater lamp.	Replace the fuser unit (lower heater lamp). See page 1-6-28.
		Defective lower thermostat.	Replace the fuser unit (lower thermostat). See page 1-6-28.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-997]). See page 1-6-23.
		Defective lower fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-25.
		Defective AC power source (Abnormal low voltage).	Connect to the proper AC power source.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6120	**Press/heat roller abnormal high temperature** • The temperature on the press/heat roller has risen up to the predetermined abnormal temperature.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective lower heater lamp.	Replace the fuser unit (lower heater lamp). See page 1-6-28.
		Defective fuser PWB (KP-997).	Replace the fuser unit (lower thermostat). See page 1-6-28.
		Defective lower fuser thermistor.	Replace the fuser unit (lower fuser thermistor). See page 1-6-25.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-36.
		Defective AC power source (Abnormal high voltage).	Connect to the proper AC power source.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.
6130	**Lower fuser thermistor broken detection** • The temperature detection is not obtained from the lower fuser thermistor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-997]). See page 1-6-23.
		Defective lower fuser thermistor, or improper fitting.	Replace the fuser unit (lower fuser thermistor). See page 1-6-25.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
6140	**Lower fuser thermistor abnormal temperature detection** • The temperature detection output from the lower fuser thermistor is out of the normal range.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective fuser PWB (KP-997).	Replace the fuser unit (fuser PWB [KP-997]). See page 1-6-23.
		Defective lower fuser thermistor, or fitting is not proper.	Replace the fuser unit (lower fuser thermistor). See page 1-6-25.
		Defective harness (2CK2719, 2CK2712) between engine controller PWB (KP-992) and paper feeder/ options relay PWB (KP-995) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2719, 2CK2712). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
7001	**Black toner feed motor lock** • The revolution of the black toner feed motor does not reach the predetermined revolution within the predetermined period when ASIC (U8) on the engine controller PWB (KP-992) activates the black toner feed motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective black developer (Black developer PWB [KP-1003]).	Replace the black developer. See page 1-6-16.
		Defective harness (2CK2702, 2CK2706) between engine controller PWB (KP-992) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2702, 2CK2706). Check the insertion of connectors.
7002	**Cyan toner feed motor lock** • The revolution of the cyan toner feed motor does not reach the predetermined revolution within the predetermined period when ASIC (U8) on the engine controller PWB (KP-992) activates the cyan toner feed motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective cyan developer (Cyan developer PWB [KP-1003]).	Replace the cyan developer. See page 1-6-16.
		Defective harness (2CK2702, 2CK2705) between engine controller PWB (KP-992) and cyan developer, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2702, 2CK2705). Check the insertion of connectors.
7003	**Magenta toner feed motor lock** • The revolution of the magenta toner feed motor does not reach the predetermined revolution within the predetermined period when ASIC (U8) on the engine controller PWB (KP-992) activates the magenta toner feed motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective magenta developer (Magenta developer PWB [KP-1003]).	Replace the magenta developer. See page 1-6-16.
		Defective harness (2BM2854, 2CK2704) between engine controller PWB (KP-992) and magenta developer, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2854, 2CK2704). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
7004	**Yellow toner feed motor lock** • The revolution of the yellow toner feed motor does not reach the predetermined revolution within the predetermined period when ASIC (U8) on the engine controller PWB (KP-992) activates the yellow toner feed motor.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective yellow developer (Yellow developer PWB [KP-1001]).	Replace the yellow developer. See page 1-6-16.
		Defective harness (2BM2854, 2CK2703) between engine controller PWB (KP-992) and yellow developer, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2854, 2CK2703). Check the insertion of connectors.
7101	**Black T/C sensor toner density detection error** • A normal toner density signal is not entered in the A/D port of CPU (U2) on the engine controller PWB (KP-992).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective black developer (black developer PWB [KP-1003] or black T/C sensor).	Replace the black developer. See page 1-6-16.
		Defective black developer. (Black toner feed motor does not rotate in the correct revolution.)	Replace the black developer. See page 1-6-16.
		Defective harness (2CK2708, 2CK2714) between engine controller PWB (KP-992) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2708, 2CK2714). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
7102	**Cyan T/C sensor toner density detection error** • A normal toner density signal is not entered in the A/D port of CPU (U2) on the engine controller PWB (KP-992).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective cyan developer (cyan developer PWB [KP-1003] or cyan T/C sensor).	Replace the cyan developer. See page 1-6-16.
		Defective cyan developer. (Cyan toner feed motor does not rotate in the correct revolution.)	Replace the cyan developer. See page 1-6-16.
		Defective harness (2CK2702, 2CK2705) between engine controller PWB (KP-992) and cyan developer, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2702, 2CK2705). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
7103	**Magenta T/C sensor toner density detection error** • A normal toner density signal is not entered in the A/D port of CPU (U2) on the engine controller PWB (KP-992).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective magenta developer (magenta developer PWB [KP-1003] or magenta T/C sensor).	Replace the magenta developer. See page 1-6-16.
		Defective magenta developer. (Magenta toner feed motor does not rotate in the correct revolution.)	Replace the magenta developer. See page 1-6-16.
		Defective harness (2BM2854, 2CK2704) between engine controller PWB (KP-992) and magenta developer, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2854, 2CK2704). Check the insertion of connectors.
7104	**Yellow T/C sensor toner density detection error** • A normal toner density signal is not entered in the A/D port of CPU (U2) on the engine controller PWB (KP-801).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective yellow developer (yellow developer PWB [KP-1001] or yellow T/C sensor).	Replace the yellow developer. See page 1-6-16.
		Defective yellow developer. (Yellow toner feed motor does not rotate in the correct revolution.)	Replace the yellow developer. See page 1-6-16.
		Defective harness (2BM2854, 2CK2703) between engine controller PWB (KP-992) and yellow developer, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2854, 2CK2703). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
7301	**Intermediate toner hopper toner feed error** • Black toner is not fed in the intermediate toner hopper in the black toner developer from the black toner container within the predetermined period.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective black toner empty sensor PWB (KP-895, KP-896).	Replace the black toner empty sensor PWB (KP-895, KP-896).
		Defective black toner feed clutch.	Replace the black toner feed clutch.
		Poor contact of the black toner feed clutch.	Check the insertion of connectors.
		Defective feed drive PWB (KP-1011).	Replace the feed drive PWB (KP-1011).
		Defective harness (2CK2702, 2CK2706) between engine controller PWB (KP-992) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (2CK2702, 2CK2706). Check the insertion of connectors.
		Defective harness (2CK2707) between engine controller PWB (KP-992) and feed drive PWB (KP-1011), or poor contact of the connector terminals.	Check the continuity of the harness (2CK2707). Check the insertion of connectors.
7700 7710	**Offset drum sensor detection error** • A pulse signal is not entered to ASIC (U7) on the engine controller PWB from the offset drum sensor.	Defective drum PWB (KP-999).	Replace the drum unit. See page 1-6-14.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective harness (2BM2864, 2CK2714) between engine controller PWB (KP-992) and drum unit, or poor contact of the connector terminals.	Check the continuity of the harness (2BM2864, 2CK2714). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
8010	**Feeder motor error (Document finisher)** • Feeder motor of the DF-31 document finisher does not operate normally.	Defective document finisher interface PWB.	Replace the document finisher interface PWB.
		Defective feeder motor of the DF-31 document finisher.	Replace feeder motor of the DF-31 document finisher. See DF-31 document finisher's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
8020	**Paper ejection motor error (Document finisher)** • Paper ejection motor of the DF-31 document finisher does not operate normally.	Defective document finisher interface PWB.	Replace the document finisher interface PWB.
		Defective paper ejection motor of the DF-31 document finisher.	Replace paper ejection motor of the DF-31 document finisher. See DF-31 document finisher's service manual.
8140	**Tray elevation motor error (Document finisher)** • Tray elevation motor of the DF-31 document finisher does not operate normally.	Defective document finisher interface PWB.	Replace the document finisher interface PWB.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective tray elevation motor of the DF-31 document finisher.	Replace tray elevation motor of the DF-31 document finisher. See DF-31 document finisher's service manual.
8170	**Matching board movement motor error (Document finisher)** • Matching board movement motor of the DF-31 document finisher does not operate normally.	Defective document finisher interface PWB.	Replace the document finisher interface PWB.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective matching board movement motor of the DF-31 document finisher.	Replace matching board movement motor of the DF-31 document finisher. See DF-31 document finisher's service manual.

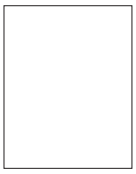
Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
8210	**Staple movement motor error (Document finisher)** • Staple movement motor of the DF-31 document finisher does not operate normally.	Defective document finisher interface PWB.	Replace the document finisher interface PWB.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective staple movement motor of the DF-31 document finisher.	Replace staple movement motor of the DF-31 document finisher. See DF-31 document finisher's service manual.
8230	**Staple motor error (Document finisher)** • Staple motor of the DF-31 document finisher does not operate normally.	Defective document finisher interface PWB.	Replace the document finisher interface PWB.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective staple motor of the DF-31 document finisher.	Replace staple motor of the DF-31 document finisher. See DF-31 document finisher's service manual.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
8290	**Sorter compatibility error** • The engine controller PWB (KP-992) does not recognize compatibility of the SO-30 mailbox sorter.	The ROM version of mailbox sorter S0-30 main board is not compatible for this printer.	Replace the ROM of mailbox sorter S0-30 main board for this printer.
		Defective mailbox sorter S0-30 main board.	Replace the sorter SO-30 main board. See SO-30 mailbox sorter's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-801). See page 1-6-35.
8510	**Bulk stacker compatibility error** • The engine controller PWB (KP-992) does not recognize compatibility of the bulk stacker ST-30.	The ROM version of ST-30 bulk stacker main board is not compatible for this printer.	Replace the ROM of ST-30 bulk stacker main board for this printer.
		Defective ST-30 bulk stacker board.	Replace the ST-30 bulk stacker main board. See bulk stacker's service manual.
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
8900	**ROM version false setting** • A version of the optional eject equipment does not fit.	The optional eject equipment which does not conform to this printer is installed.	Install optional eject equipment conforming to this printer.
F0 F000	**Main controller PWB error** • The operation breakdown occurs between main controller PWB (KP-991) and operation panel PWB (KP-805) during 30 seconds.	Defective main controller PWB (KP-991).	Replace the main controller PWB (KP-991). See page 1-6-34.
		Defective operator panel PWB (KP-805).	Replace the operator panel PWB (KP-805).
		Defective main-engine controllers relay PWB (KP-993).	Replace the main-engine controllers relay PWB (KP-993).
		Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective harness (2BM2851) between engine controller PWB (KP-991) and operator panel PWB (KP-805), or poor contact of the connector terminals.	Check the continuity of the harness (2BM2851). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
F010	**System DIMM checksum error** • Checksum for the system DIMM PWB (KP-689) that holds the system program is wrong.	Defective system DIMM PWB (KP-689).	Replace the system DIMM PWB (KP-689).
		Defective main controller PWB (KP-991).	Replace the main controller PWB (KP-991). See page 1-6-34.
F020	**Memory check error** • Access to the expanding memory (DIMM) or RAM on the main controller PWB (KP-991) is unobtainable.	Defective main controller PWB (KP-991).	Replace the main controller PWB (KP-991). See page 1-6-34.
		Defective expansion memory (DIMM).	Replace the expansion memory (DIMM).
F030	**Main controller PWB system error** • The error concerned with the system occurred except self diagnostic codes F0 (F010) conditions.	Defective main controller PWB (KP-991).	Replace the main controller PWB (KP-991). See page 1-6-34.
F040	**Main - Engine controller PWBs communication error** • The communication breakdown occurred between main controller PWB (KP-991) and engine controller PWB (KP-992) during 30 seconds.	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
		Defective main controller PWB (KP-991).	Replace the main controller PWB (KP-991). See page 1-6-34.
F050	**Engine checksum error** • Check result is not correct about CPU of engine controller PWB (KP-992).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
F060	**Engine RAM error** • Check result is not correct about RAM of engine controller PWB (KP-992).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.
F070	**Flash ROM checksum error** • Check result is not correct about flash ROM (U9) checksum of engine controller PWB (KP-992).	Defective engine controller PWB (KP-992).	Replace the engine controller PWB (KP-992). See page 1-6-35.

1-5-3 Image formation problems

(1) No image appears (entirely white).

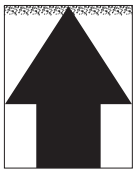


See page 1-5-32.

(2) No image appears (entirely black).

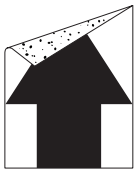
See page 1-5-32.

(3) Dirt on the top edge.



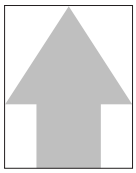
See page 1-5-32.

(4) Dirt on the back side.



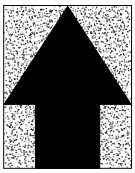
See page 1-5-33.

(5) Image is too light.



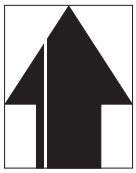
See page 1-5-33.

(6) Background is visible.



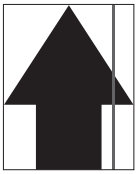
See page 1-5-33.

(7) A white line appears longitudinally.



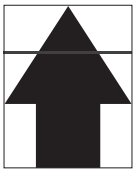
See page 1-5-34.

(8) A line appears longitudinally.



See page 1-5-34.

(9)A line appears laterally.

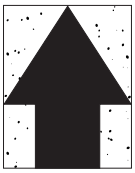


See page 1-5-35.

(10) One side of the print image is darker than the other.

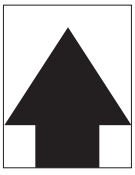
See page 1-5-35.

(11) Dots appear on the image.



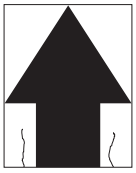
See page 1-5-35.

(12) The leading edge of the image is misaligned with the original image.



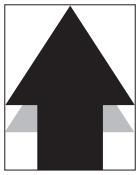
See page 1-5-36.

(13) Paper creases.



See page 1-5-36.

(14) Offset occurs.

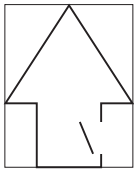


See page 1-5-36.

(15) Image is partly missing.

See page 1-5-37.

(16) Fusing is poor.



See page 1-5-37.

(17) Dragged dirt lines appears.

See page 1-5-37.

(1) No image appears (entirely white).

Causes
1. No laser beam output.
2. No developing.
3. No transferring.

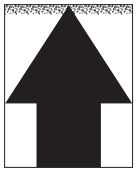
Causes	Check procedures/corrective measures
1. No laser beam output.	
A. Defective main controller PWB operation.	Replace main controller PWB [KP-991] (See page 1-6-34).
B. Defective laser scanner unit operation.	Replace laser scanner unit (See page 1-6-11).
C. Defective engine controller PWB operation.	Replace engine controller PWB [KP-992] (See page 1-6-35).
D. Defective harness between engine controller PWB and laser scanner unit.	Replace harness (2BM2852).
2. No developing.	
A. Yellow, magenta, cyan, and black magnet solenoids are not driven.	Replace main drive PWB [KP-824].
3. No transferring.	
A. Defective secondary transfer unit operation.	Replace secondary transfer unit (See page 1-6-21).
B. Secondary transfer unit shift clutch installed or operating incorrectly.	Check the installation position and operation of the secondary transfer unit shift clutch. If the either operates incorrectly, replace it.

(2) No image appears (entirely black).

Causes
1. No main charging.

Causes	Check procedures/corrective measures
1. No main charging.	
A. Poor insertion main charger unit.	Reinstall main charger unit.
B. Broken main charger wire.	Replace main charger unit (See page 1-6-13).
C. Defective main controller PWB operation.	Replace main controller PWB [KP-991] (See page 1-6-34).
D. Defective engine controller PWB operation.	Replace engine controller PWB [KP-992] (See page 1-6-35).
E. Defective drum unit.	Replace drum unit (See page 1-6-14).

(3) Dirt on the top edge.

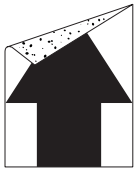


Causes
1. Dirty transfer roller.
2. Defective cleaning brush unit operation.

Causes	Check procedures/corrective measures
1. Dirty transfer belt.	Print several pages.
2. Defective cleaning brush unit operation.	Replace cleaning brush unit (See page 1-6-15).

(4) Dirt on the back side.

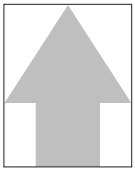
Causes
1. Dirty conveying belts.
2. Dirty transfer belts.



Causes	Check procedures/corrective measures
1. Dirty conveying belts.	Clean the conveying belts (See page 1-4-18).
1. Dirty transfer belt.	Print several pages.

(5) Image is too light.

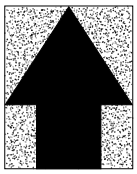
Causes
1. Defective developing bias output.
2. Dirty or flawed drum.



Causes	Check procedures/corrective measures
1. Defective developing bias output.	
A. Defective developer.	Check the image by using the test print 1 or 2 of service mode (See page 1-4-7). If any color appears defect, replace the developer of cause.
B. Defective drum unit.	Replace drum unit (See page 1-6-14).
C. Defective developing/primary transfer/ cleaning brush bias high voltage unit operation.	Replace developing/primary transfer/cleaning brush bias high voltage unit (See page 1-6-38)
D. Defective engine controller PWB operation.	Replace engine controller PWB [KP-992] (See page 1-6-35).
E. Defective main controller PWB operation.	Replace main controller PWB [KP-991] (See page 1-6-34).
2. Dirty or flawed drum.	Perform the drum surface refreshing (See page 1-4-11).

(6) Background is visible.

Causes
1. Defective developing bias output.
2. Defective cleaning brush bias output.



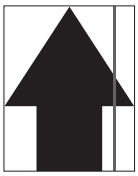
Causes	Check procedures/corrective measures
1. Defective developing bias output.	
A. Defective developer.	Replace developer (See page 1-6-16).
B. Defective drum unit.	Replace drum unit (See page 1-6-14).
C. Defective developing/primary transfer/ cleaning brush bias high voltage unit operation.	Replace developing/primary transfer/cleaning brush bias high voltage unit (See page 1-6-38)
D. Defective engine controller PWB operation.	Replace engine controller PWB [KP-992] (See page 1-6-35).
E. Defective main controller PWB operation.	Replace main controller PWB [KP-991] (See page 1-6-34).
2. Defective cleaning brush unit.	Replace cleaning brush unit (See page 1-6-15).

(7) A white line appears longitudinally.

Causes
1. Defective laser beam output.
2. Foreign object in one of the developers.

Causes	Check procedures/corrective measures
1. Defective Laser beam output.	
A. Defective laser scanner unit.	Replace the laser scanner unit. (See page 1-6-11).
B. Defective main controller PWB operation.	Replace main controller PWB [KP-991] (See page 1-6-34).
2. Foreign object in one of the developers.	Check the image by using the test print 1 or 2 of service mode (See page 1-4-7). If the white line appears on a particular page, replace the developer for that color.

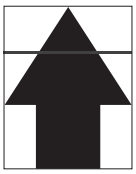
(8) A line appears longitudinally.



Causes
1. Dirty main charger wire.
2. Dirty or flawed drum.
3. Deformed or worn cleaning blade.

Causes	Check procedures/corrective measures
1. Dirty main charger wire.	Clean the main charger wire (see page 1-4-14).
2. Dirty or flawed drum.	
A. Dirty drum.	Perform drum surface refreshing (See page 1-4-11).
B. Flawed drum.	Replace the drum unit (see page 1-6-14).
3. Deformed or worn cleaning blade in the drum unit.	Replace the drum unit (see page 1-6-14).

(9) A line appears laterally.



Causes
1. Defective laser scanner unit.
2. Defective engine controller PWB operation.

Causes	Check procedures/corrective measures
1. Defective laser scanner unit.	Replace the laser scanner unit (see page 1-6-11).
2. Defective engine controller PWB operation.	Replace the engine controller PWB [KP-992] (see page 1-6-35).

(10) One side of the print image is darker than the other.

Causes
1. Main charger unit improperly inserted.

Causes	Check procedures/corrective measures
1. Main charger unit improperly inserted.	Reinstall main charger unit (see page 1-6-13).

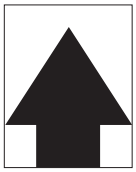
(11) Dots appear on the image.

Causes
1. Dirty or flawed drum.
2. Deformed or worn cleaning blade.

Causes	Check procedures/corrective measures
1. Dirty or flawed drum.	Perform the drum surface refreshing (See page 1-4-11).
2. Deformed or worn cleaning blade.	Replace the drum unit (see page 1-6-14).

(12) The leading edge of the image is misaligned with the original image.

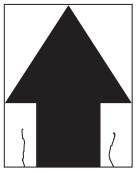
Causes
1. Registration clutch operating incorrectly.
2. Defective engine controller PWB operation.
3. Defective main controller PWB operation.



Causes	Check procedures/corrective measures
1. Registration clutch operating incorrectly.	Check the operation of the registration clutch. If it operates incorrectly, replace it.
2. Defective engine controller PWB operation.	Replace engine controller PWB [KP-992] (See page 1-6-35).
3. Defective main controller PWB operation.	Replace main controller PWB [KP-991] (See page 1-6-34).

(13) Paper creases.

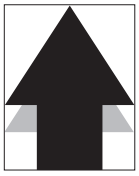
Causes
1. Paper curled.
2. Paper damp.



Causes	Check procedures/corrective measures
1. Paper curled.	Check the paper storage conditions. Replace paper.
2. Paper damp.	Check the paper storage conditions. Replace paper.

(14) Offset occurs.

Causes
1. Defective cleaning blade.



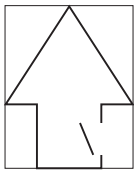
Causes	Check procedures/corrective measures
1. Defective cleaning blade.	Replace the drum unit (see page 1-6-14).

(15) Image is partly missing.

Causes
1. Paper damp.
2. Paper creased.
3. Drum condensation.
4. Flawed drum.

Causes	Check procedures/corrective measures
1. Paper damp.	Check the paper storage conditions.
2. Paper creased.	Replace the paper.
3. Drum condensation.	Perform the drum surface refreshing (See page 1-4-11). Change a setup of the primary transfer unit heater into ON. (See page 1-4-9).
4. Flawed drum.	Replace the drum unit (see page 1-6-14).

(16) Fusing is poor.



Causes
1. Wrong type of paper.
2. Defective pressure springs for the heat and press/heat rollers.
3. Flawed heat or press/heat roller.

Causes	Check procedures/corrective measures
1. Wrong types of paper.	Check if the paper meets specifications. Replace paper.
2. Defective pressure springs for the heat and press/heat rollers.	Secure the press/heat roller pressure screws (see page 1-3-9).
3. Flawed heat or press/heat roller.	Replace the heat or press/heat roller (see page 1-6-29).

(17) Dragged dirt lines appears.

Causes
1. The dirt on the heat roller and press/heat roller resulted by the toner that remained behind the separators. This may happen due to an excessive use of the paper with rough surface (economy).

Causes	Check procedures/corrective measures
1. The dirt on the heat roller and press/heat roller resulted by the toner that remained behind the separators. This may happen due to an excessive use of the paper with rough surface (economy).	Change the specified premium paper (90 g/m^2), or change the paper type setting to [Rough] from the operation panel (Refer to operation guide).

1-6-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the power switch off and disconnect the power plug before starting disassembly. The power plug must not be unplugged from power at least 30 minutes since the printer is switched off. In case the power plug must be unplugged just after power off for service purpose, pull out the paper feed unit so that the fuser unit is away from developers to avoid toner lumping due to heat from the fuser unit.
- When handling PWBs (printed wiring boards), do not touch connectors with bare hands. It will damage the PWB.
- Do not touch any PWB containing ICs with bare hands or any object prone to static charge.
- Use only the specified part when to replacing the thermostat in the fuser. Never substitute electric wires, as the printer may be seriously damaged.

1-6-2 Paper feed section

(1) Detaching and refitting the MP tray unit

Follow the procedure below to check or to replace the MP tray unit.

Procedure

1. Remove the top cover (See page 1-6-11).
2. Remove the six screws and then remove the right cover.

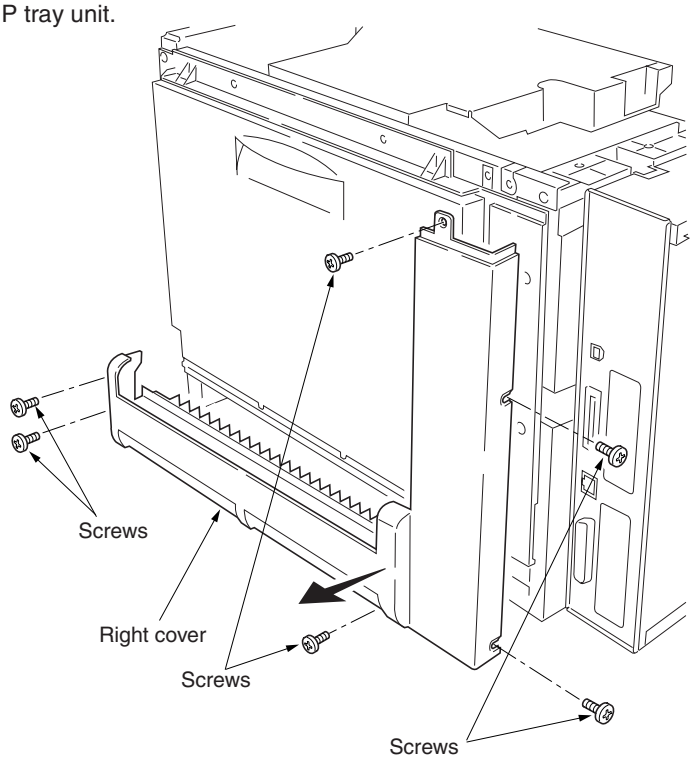


Figure 1-6-1

3. Remove one connector (YC16) from the engine controller PWB.
4. Remove the one screw and then remove the grounding plate.
5. Remove the six screws and then remove the MP tray unit.
6. Check or replace the MP tray unit and refit all the removed parts.

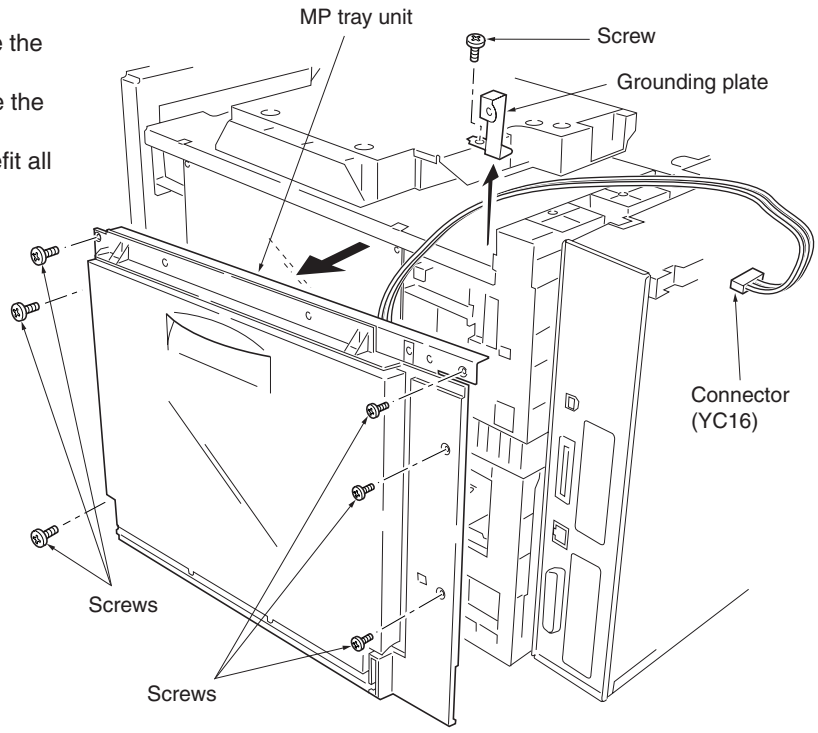


Figure 1-6-2

(2) Detaching and refitting the MP tray feed roller and MP tray retard roller

Follow the procedure below to check or to replace the MP tray feed roller and MP tray retard roller.

Procedure

1. Remove the primary transfer unit (See page 1-6-15).
2. Open MP tray.
3. Remove the MP tray feed roller from the shaft while pressing the lever.
4. Remove the holder from the MP tray unit.
5. Remove the MP tray retard roller from the holder.
6. Check or replace the MP tray feed roller and MP tray retard roller and refit all the removed parts.

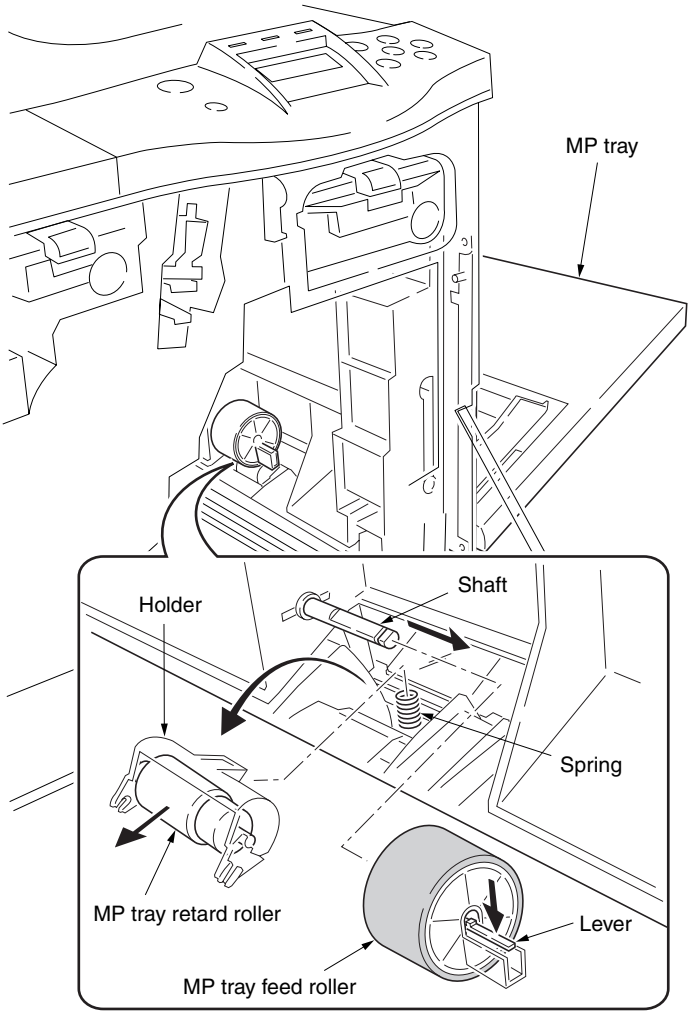


Figure 1-6-3

(3) Detaching and refitting the face-down unit
Follow the procedure below to check or to replace the face-down unit.

Procedure
1. Remove rear cover (See page 1-6-35).
2. Remove the top cover (See page 1-6-11).
3. Detach the two belts and then remove the left side cover.
4. Remove the six screws.
5. While pulling the left side cover to upward and then remove it. (Note that the cover is hooked inside.)

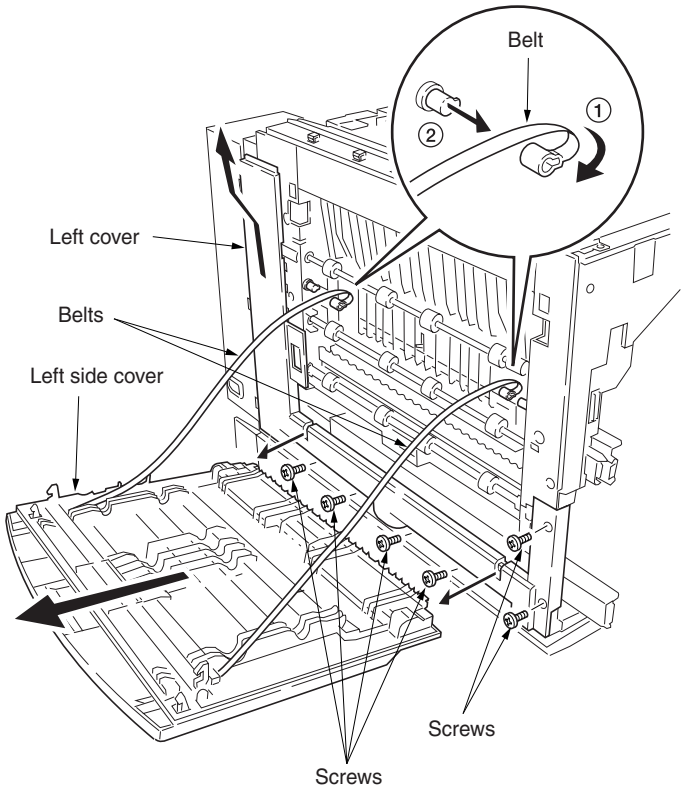


Figure 1-6-4

6. Remove the one connector (YC14) from the engine controller PWB.
7. Remove the harness from the four wire hooks.
8. Remove the four screws and then remove the face down unit.
9. Check or replace the face-down unit and refit all the removed parts.

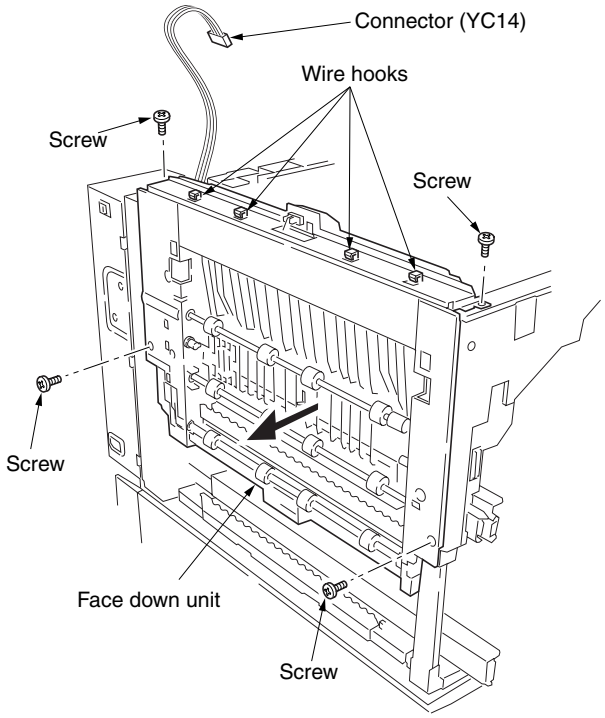


Figure 1-6-5

(4) Detaching and refitting drive assembly B

Follow the procedure below to check or to replace drive assembly B.

Procedure

1. Remove the main controller PWB (See page 1-6-34).
2. Remove the engine controller PWB (See page 1-6-35).
3. Remove the four screws and then remove the controller box support.
4. Remove the six screws and then remove the main controller box.
5. Remove the black toner feed assembly (See page 1-6-20).

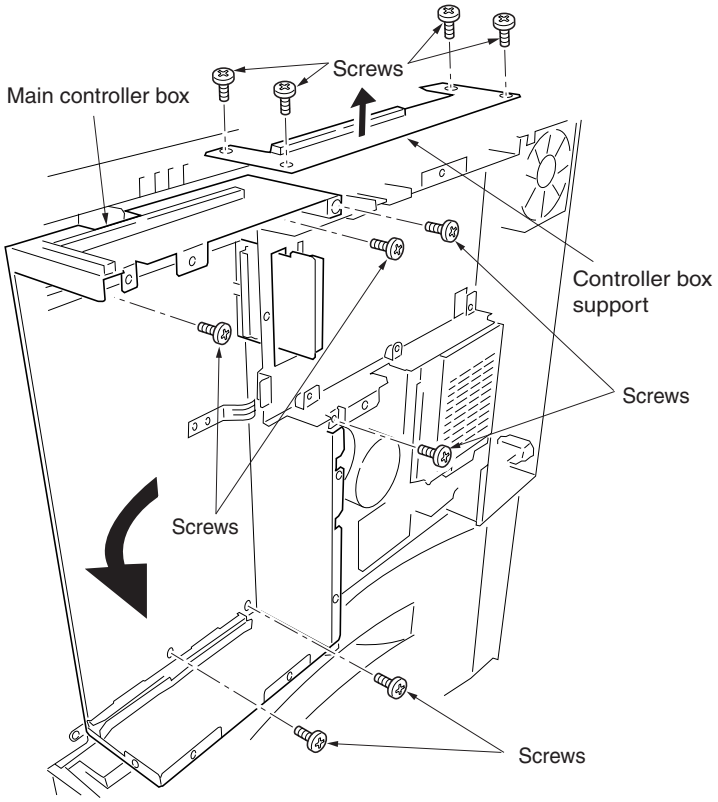


Figure 1-6-6

6. Remove the two connectors.
7. Remove the four screws and then remove the drive assembly B.
8. Check or replace the drive assembly B and refit all the removed parts.

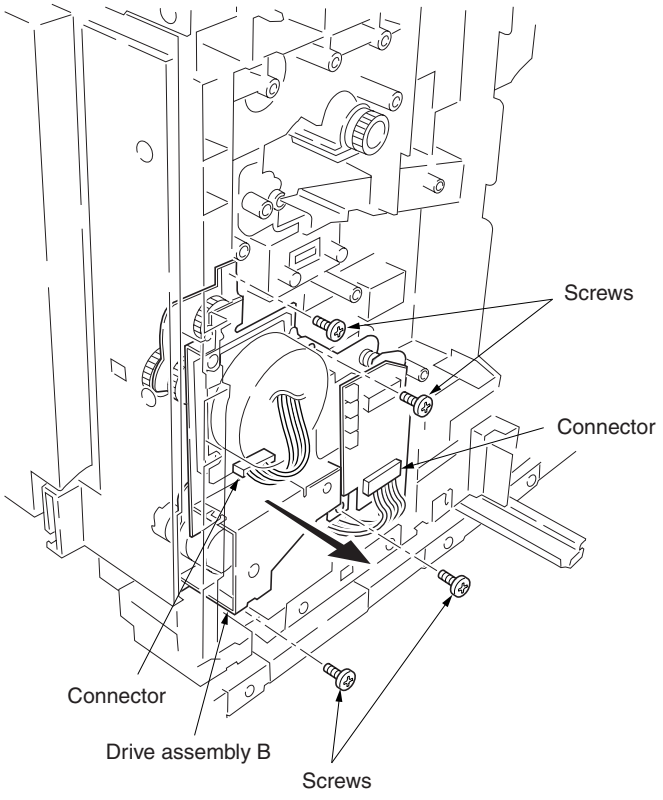


Figure 1-6-7

(5) Detaching and refitting drive assembly A

Follow the procedure below to check or to replace drive assembly A.

Procedure

1. Remove the power supply unit (See page 1-6-36).
2. Remove the two screws and then remove the fuser unit fan motor.

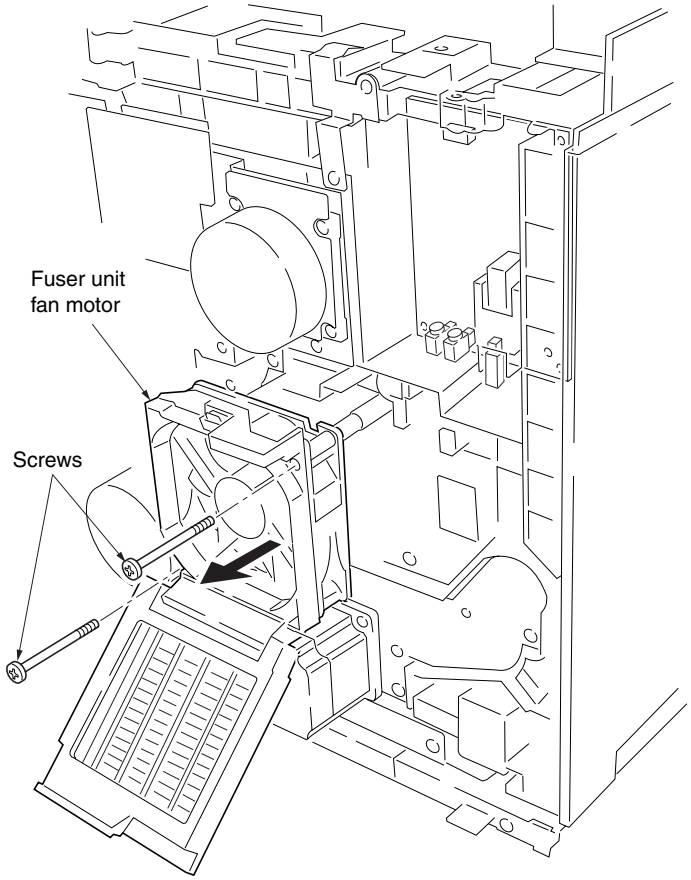


Figure 1-6-8

3. Remove all (six) tabs from the drive assembly A.
4. Remove the seven screws and then remove the grounding plate and the drive assembly A.
5. Check or replace drive assembly A and refit all the removed parts.

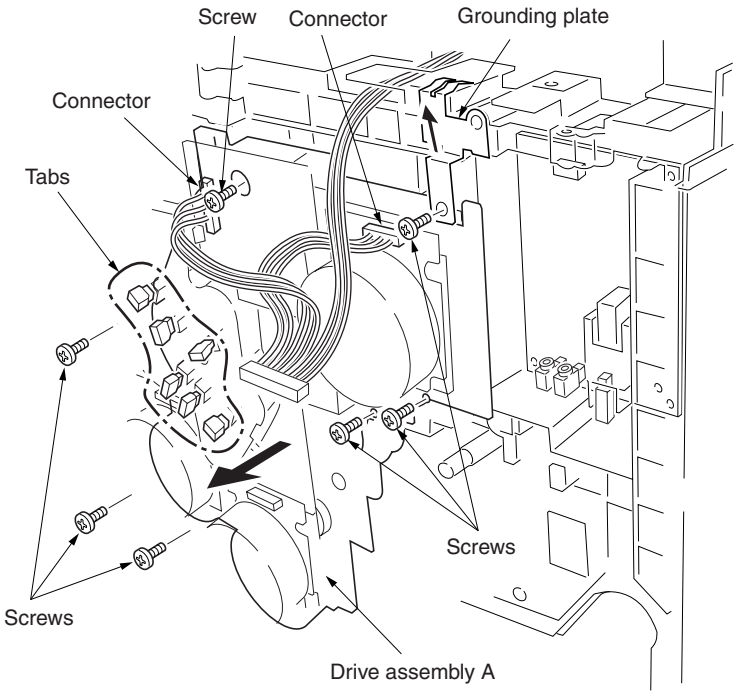


Figure 1-6-9

(6) Detaching and refitting the conveying belts

Follow the procedure below to check or to replace the conveying belts.

Procedure

1. Draw the paper feed unit.
2. Remove the secondary transfer unit (See page 1-6-21).
3. Remove the fuser unit (See page 1-6-23).
4. Remove the five screws and then remove the paper conveying assembly.
5. Remove the one connector.

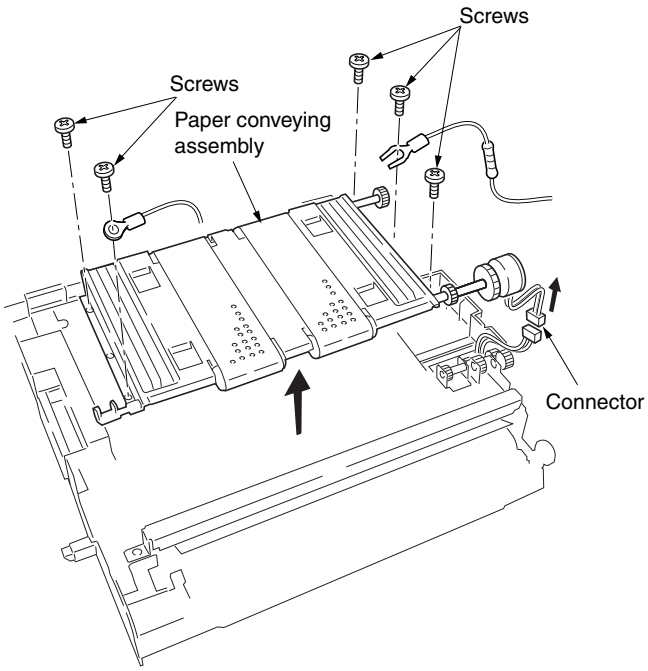
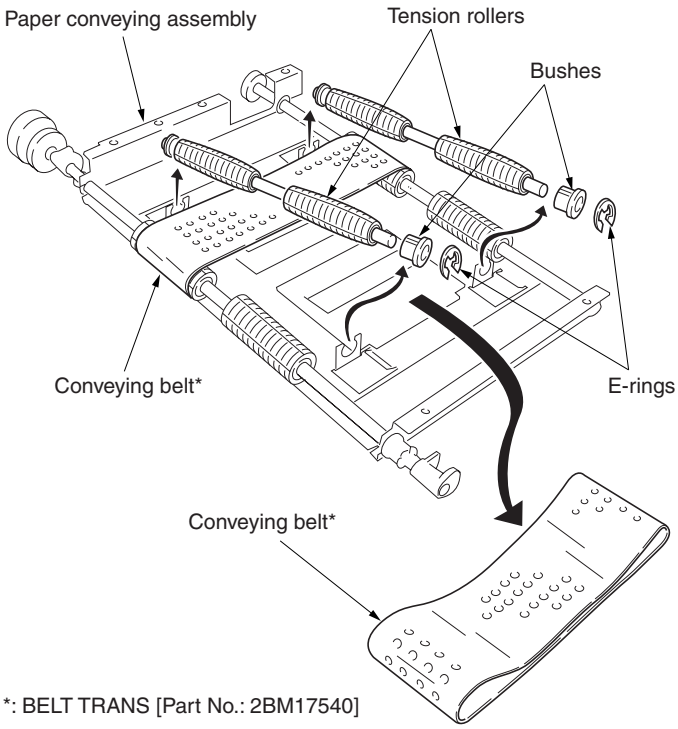


Figure 1-6-10

6. Remove the E-ring and bush and then remove each tension roller.
7. Remove the two conveying belts from the paper conveying assembly.
8. Check or replace the conveying belts and refit all the removed parts.



*: BELT TRANS [Part No.: 2BM17540]

Figure 1-6-11

(7) Detaching and refitting the paper conveying fan motors 1 and 2

Follow the procedure below to check or to replace the paper conveying fan motors 1 and 2.

Procedure

1. Remove the paper conveying assembly (See previous page).
2. Remove four screws and then remove the paper conveying fan duct.

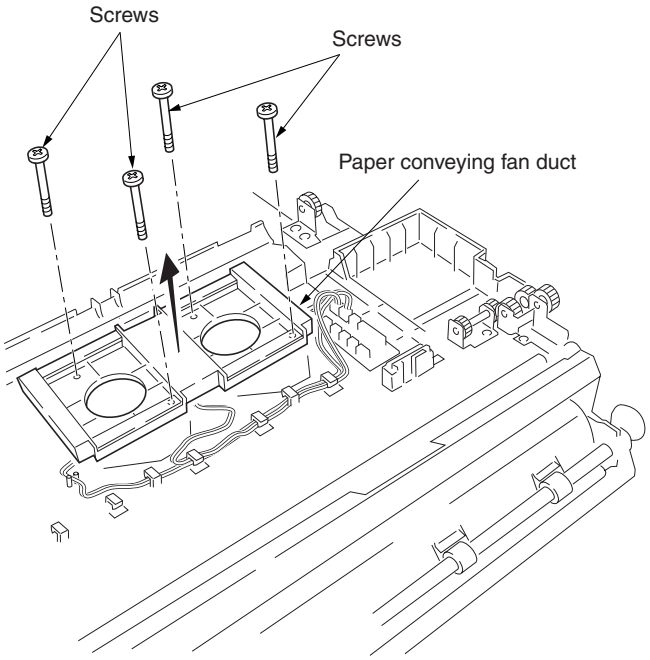


Figure 1-6-12

3. Remove the two connectors and wire hooks and then remove the paper conveying fan motors 1 and 2.
4. Check or replace the paper conveying fan motors 1 and 2, and refit all the removed parts.

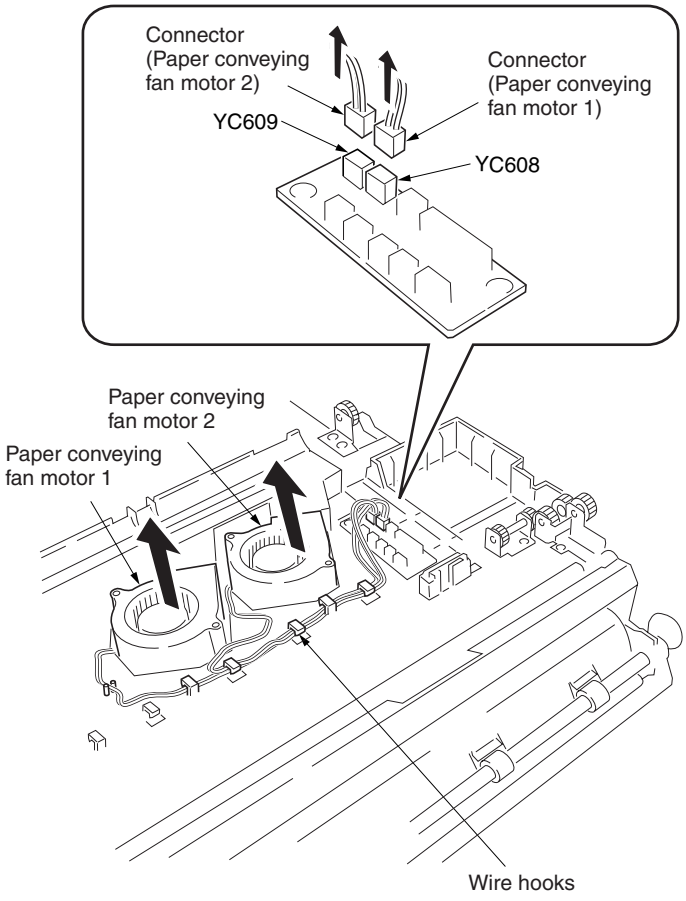


Figure 1-6-13

(8) Detaching and refitting the upper and lower registration rollers

Follow the procedure below to check or to replace the upper and lower registration rollers.

Procedure

1. Remove the secondary transfer unit (See page 1-6-21).
2. Remove the two screws and then remove the registration sensor plate.
3. Remove the two springs and then remove the upper registration roller assembly.
4. Remove the two E-rings, two bushes, and gear from the upper registration roller.

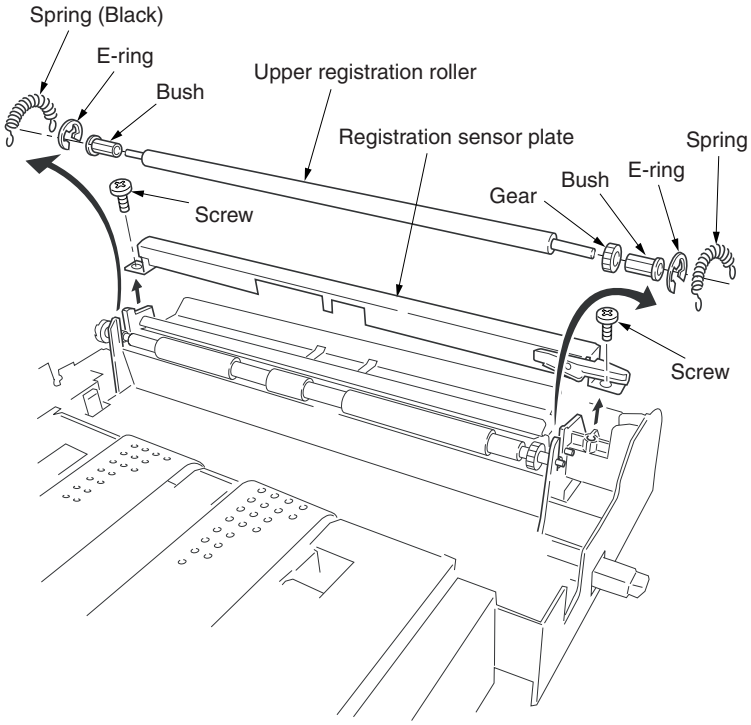


Figure 1-6-14

5. While unlatching the latch, remove the input gear.
6. Remove the two screws and then remove registration paper guide.
7. Remove the two bushes.
8. While sliding the lower registration roller back and forth and then remove it. Do not deform the sheet.
9. Remove the E-ring and gear from the lower registration roller.
10. Check or replace the upper and lower registration rollers, and refit all the removed parts.

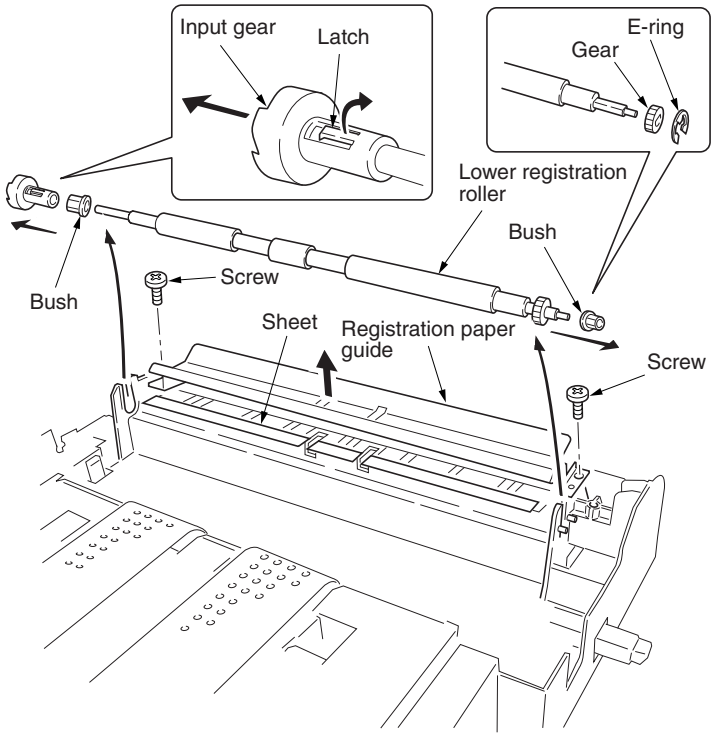


Figure 1-6-15

(9) Detaching and refitting the middle roller
Follow the procedure below to check or to replace the middle roller.

Procedure
1. Draw the paper feed unit out.
2. Remove the two springs and then remove the middle guide assembly.

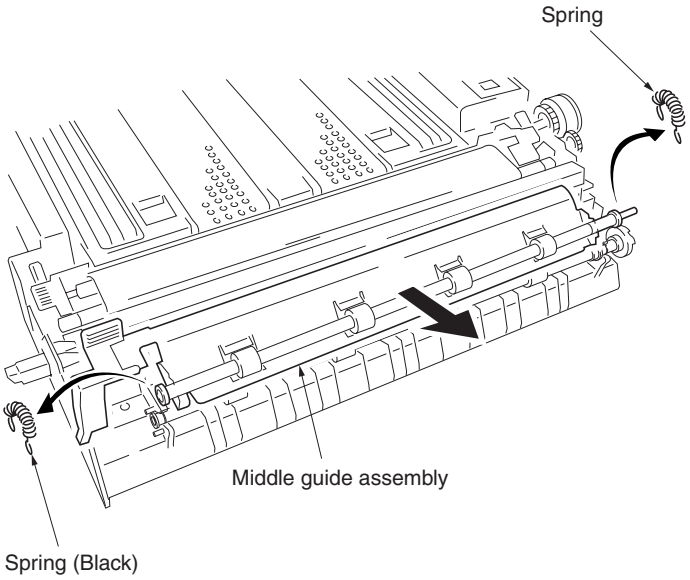


Figure 1-6-16

3. Remove the left edge of the intermediate roller (the front side of the printer), and slide MID R bush and the intermediate roller to the right (the back side of the printer).
4. Remove the middle roller assembly from the paper feed unit.
5. While unlatching the latch and then remove the input gear.
6. Remove the two E-rings, bush, and MID R bush from the middle roller.
7. Check or replace the middle roller and refit all the removed parts.

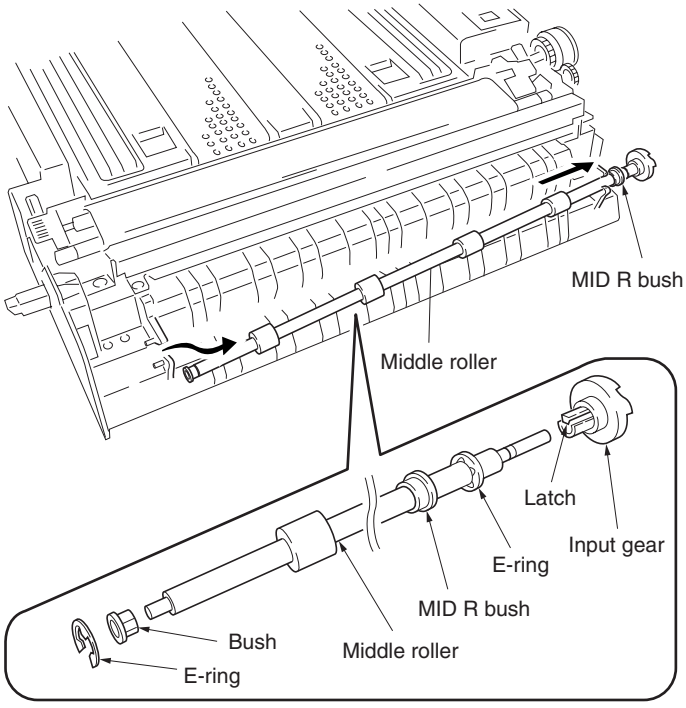


Figure 1-6-17

1-6-3 Laser scanner unit

(1) Detaching and refitting the laser scanner unit
Follow the procedure below to check or to replace the laser scanner unit.

Procedure
1. Open the front cover.
2. Unlatch the four latches and then remove the operation panel.
3. Remove the one screw.

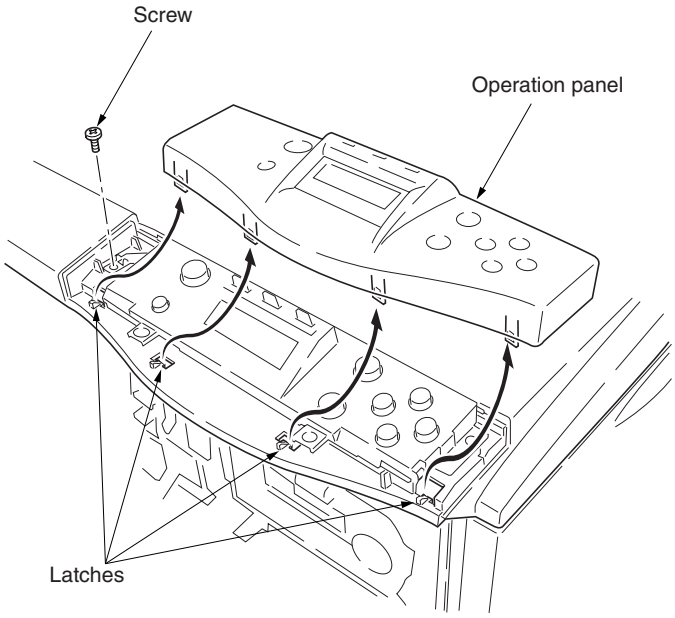


Figure 1-6-18

4. Remove the rear cover (See page 1-6-35).
5. Remove the one connector (YC5) from the engine controller PWB.
6. Remove the five screws and then remove the top cover.

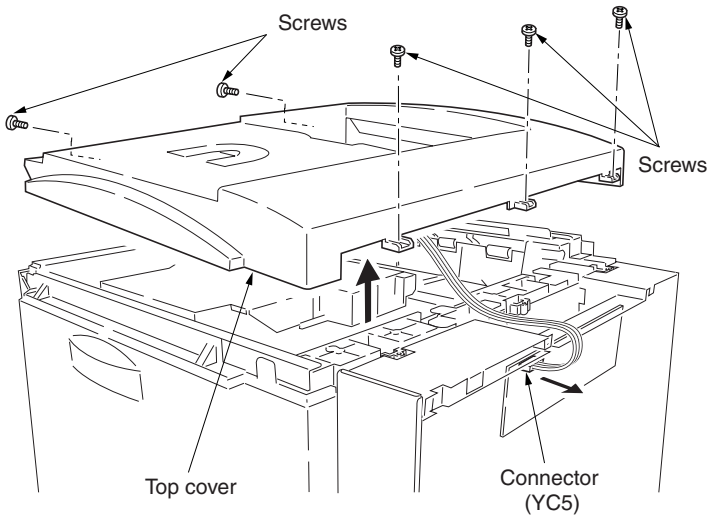


Figure 1-6-19

7. Remove the one connector from the laser scanner unit.
8. Remove the four screws and then remove the laser scanner unit.
9. Check or replace the laser scanner unit and refit all the removed parts.

Cautions:

- When refitting the laser scanner unit, make sure placing the heat radiation silicon block between the laser scanner unit (bottom of the polygon motor) and frame.

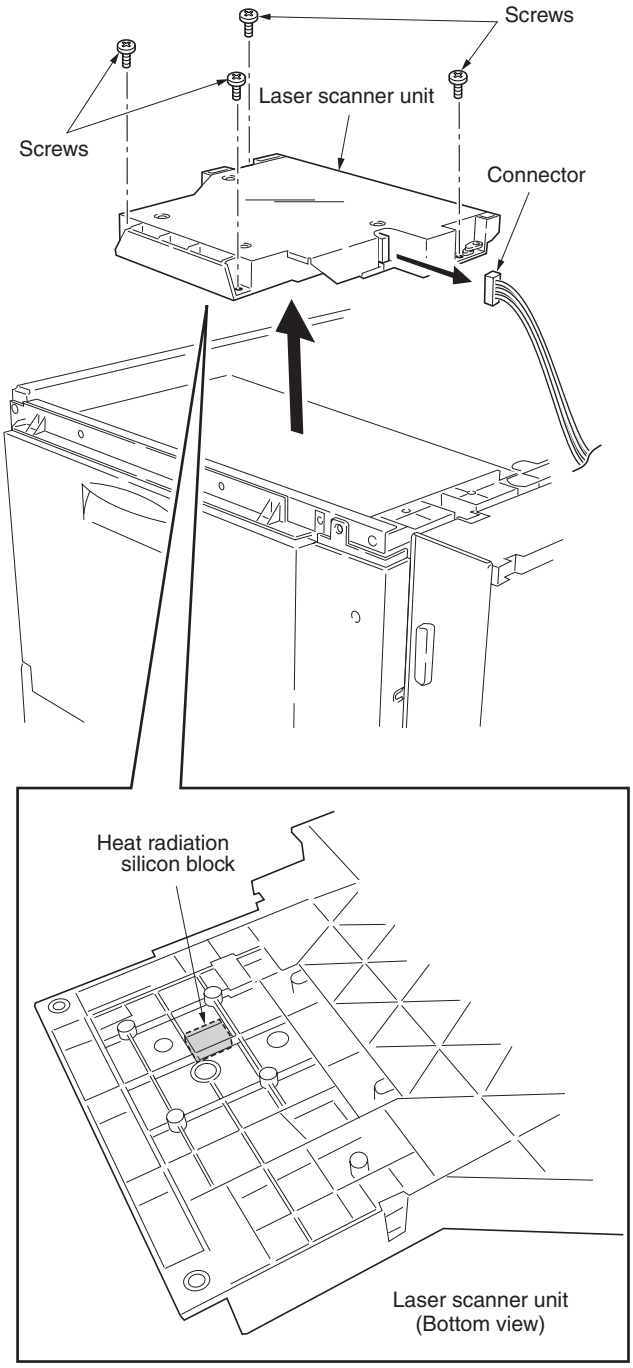


Figure 1-6-20

1-6-4 Main charger unit

(1) Detaching and refitting the main charger unit
Follow the procedure below to check or to replace the main charger unit.

Procedure
1. Open the front cover.
2. While pushing the main charger unit release lever upward, slightly lift the main charger unit, and then pull it out.

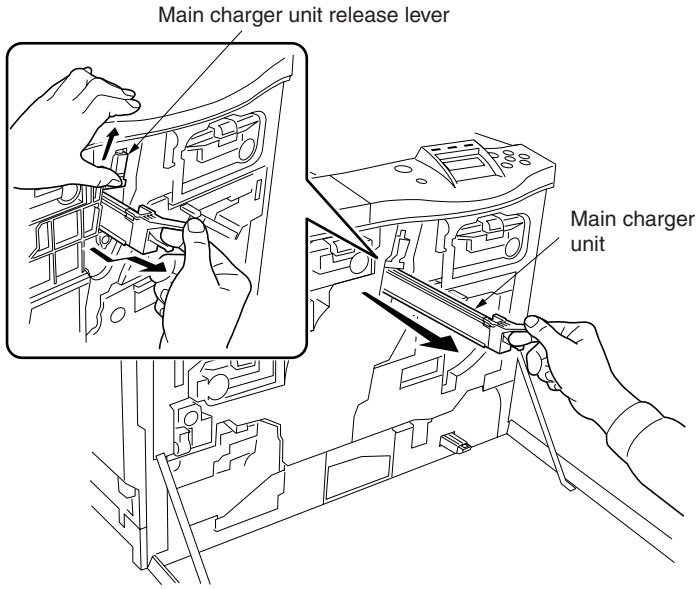


Figure 1-6-21

(2) Detaching and refitting the main charger grid
Follow the procedure below to check or to replace the main charger grid.

Procedure
1. Remove the main charger unit.
2. Detach the main charger grid from the hooks.
3. Check or replace the main charger shield and refit all the removed parts.

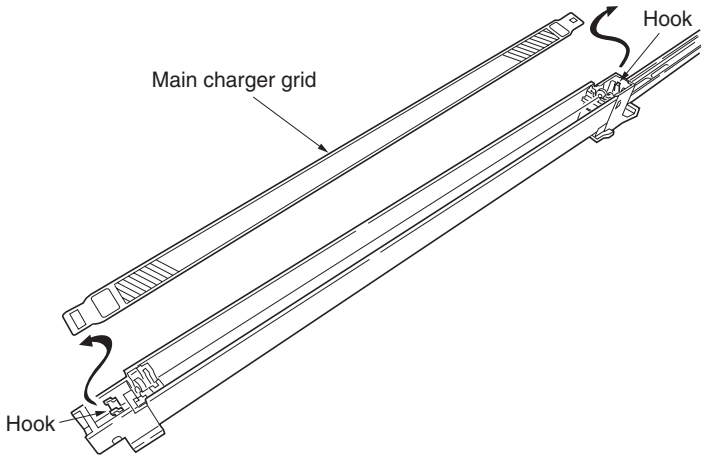


Figure 1-6-22

1-6-5 Drum unit

(1) Detaching and refitting the drum unit
Follow the procedure below to check or to replace the drum unit.

Cautions:
- Before removing the drum unit, first remove the main charger unit (See previous page).
- While the drum unit is removed from the printer, keep the drum unit on a clean, flat surface in a dry place.

1. Remove all (four) developers (See page 1-6-16).
2. Remove the main charger unit (See the previous page).
3. Remove the one screw and then remove the drum unit holding the handle.
4. Check or replace the drum unit and refit all the removed parts.

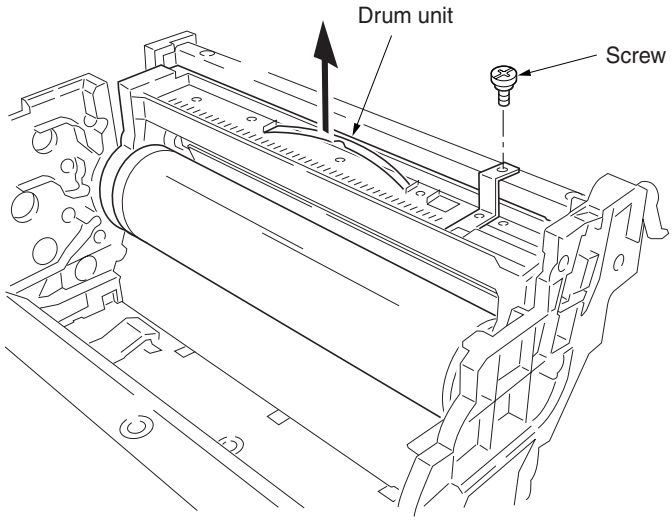


Figure 1-6-23

1-6-6 Primary transfer unit

(1) Detaching and refitting the primary transfer unit
Follow the procedure below to check or to replace the primary transfer unit.

Cautions:
- While the primary transfer unit is removed from the printer, keep the primary transfer unit on a clean, flat surface in a dry place.

Procedure
1. Open the front cover.
2. Draw the paper feed unit.
3. Turn the lock lever to release position.
4. Draw the primary transfer unit until it stops.
5. Remove the one screw of the gray lever.
6. While pressing the gray lever, remove the primary transfer unit from the printer.
7. Check or replace the primary transfer unit and refit all the removed parts.

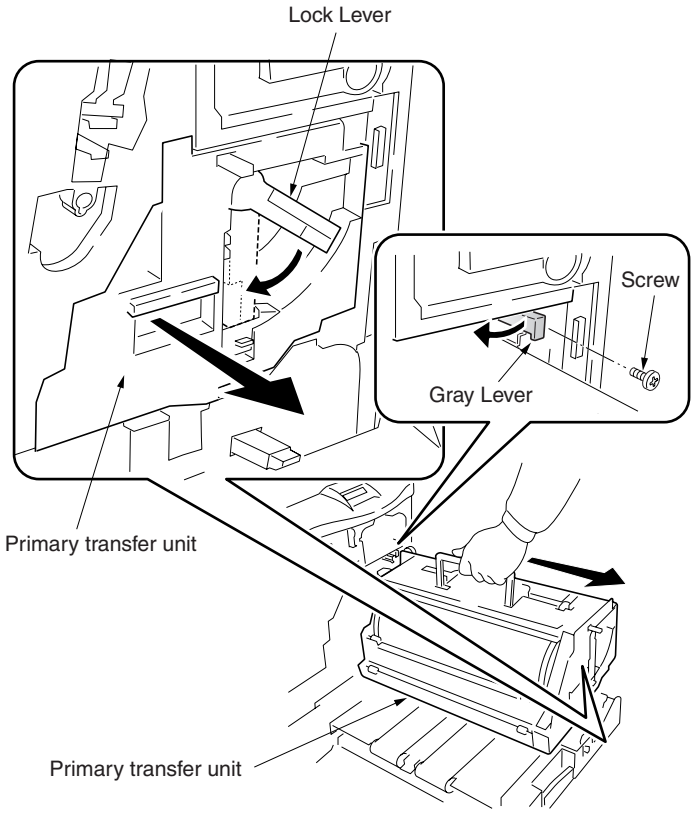


Figure 1-6-24

(2) Detaching and refitting the cleaning brush unit
Follow the procedure below to replace the cleaning brush unit.

Procedure
1. Remove the primary transfer unit (See above).
2. Remove the one screw.
3. Pull the release lever up.
4. Pull the levers down and then remove the cleaning brush unit.
5. Check or replace the cleaning brush unit and refit all the removed parts.

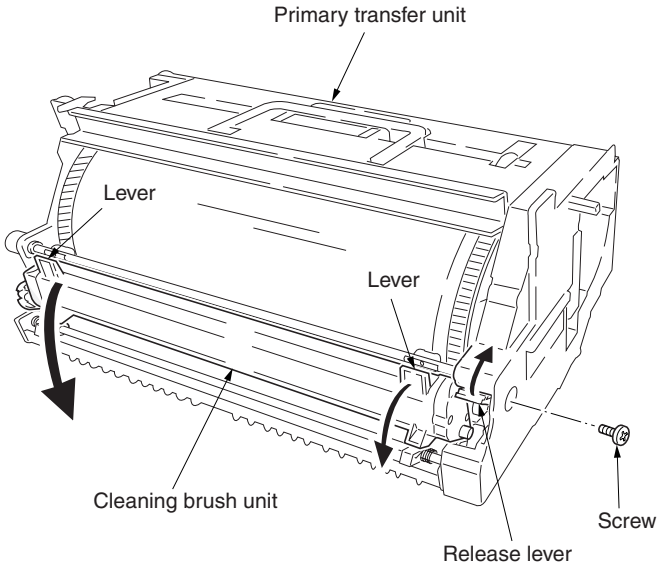


Figure 1-6-25

1-6-7 Developers (and toner feed section)

(1) Detaching and refitting the developers

Follow the procedure below to check or to replace the developers.

Procedure

1. Remove the primary transfer unit (See the previous page).
2. Close the paper feed unit.
3. Remove the two screws and open the two stoppers.
4. Remove the two screws from the process frame.
5. Draw the process frame.
6. Remove the developers in the order of black, yellow, magenta, and cyan from the process frame.
7. Check or replace the developers and refit all the removed parts.

Cautions:

- Do not bring any magnetic media or credit cards close to the developers that have been removed from the printer.

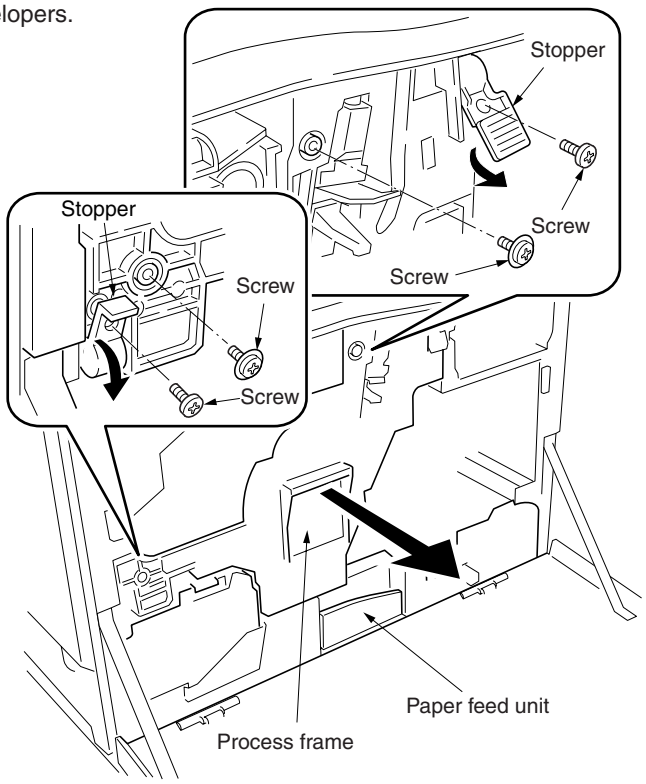


Figure 1-6-26

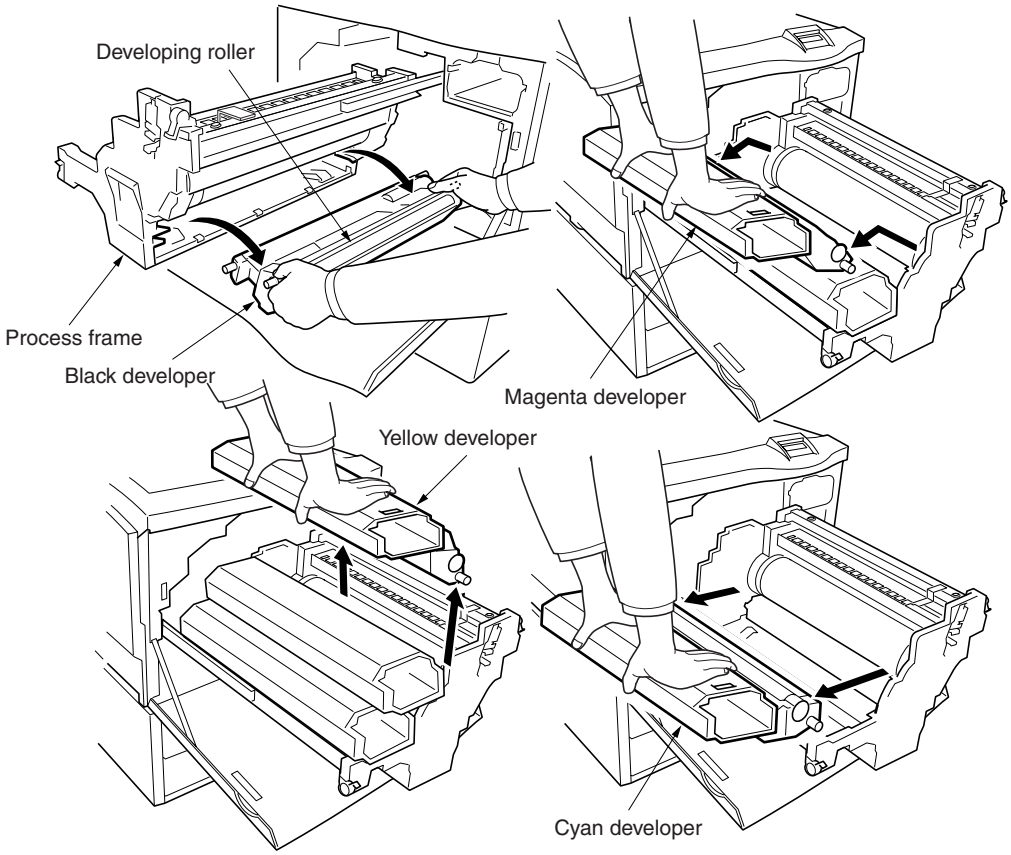


Figure 1-6-27

(2) Developer counter setting at developer replacement

Cautions:

When replacing a currently installed developer with another developer, be sure to set the developer counter before performing a test print after replacement. The method of setting the developer counter depends on the conditions of the developer to be installed.

When replacing the developer as maintenance kit B or C:

After replacing the maintenance kit, run counter reset for maintenance kit from the menu on the operation panel. (See page 1-4-2.)

To replace the developer alone with a new or second-hand developer:

Set the developer counter using the procedure below.

1. Turn printer and PC power off.
2. Connect the parallel printer cable between the PC and the printer.
3. Turn printer and PC power on.

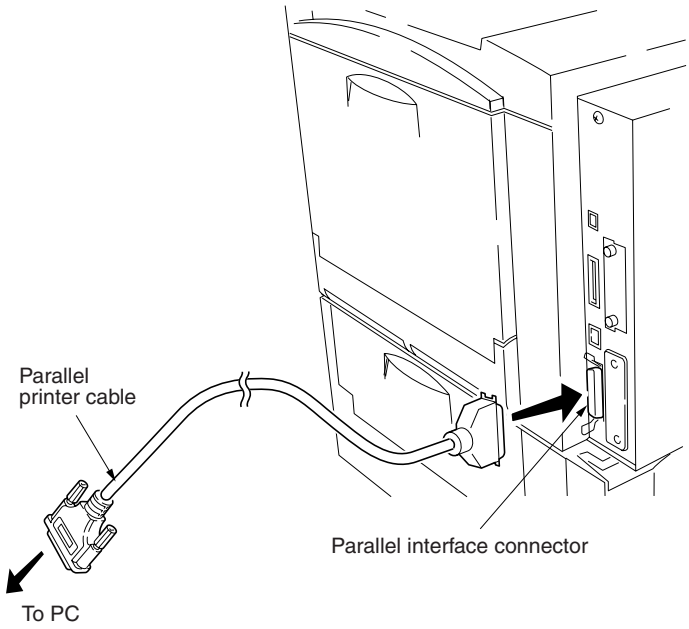


Figure 1-6-28

4. Confirm Display ① is displayed.
5. At the DOS prompt, enter the KCFG command ② (adjust the color code and the developer counter value of the developer to be installed based on the conditions of a new or second-hand product) and run the command.
6. Turn power switch off and on.
7. Confirm Display ③ is displayed after warming up.
8. Print a status page. (See page 1-4-2.)

* The developer does not keep its developer counter value. When using a second-hand developer, therefore, if the record by status page output at the time of removal is not kept, the developer counter value cannot be known.

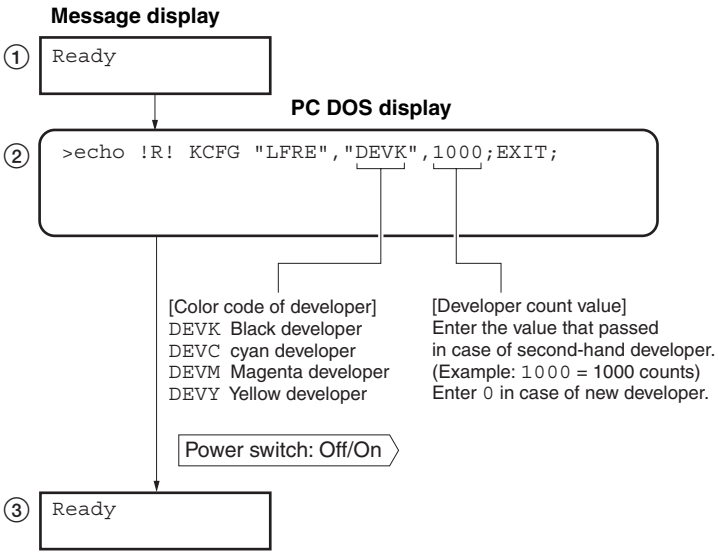


Figure 1-6-29

(3) Detaching and refitting the waste toner duct assembly
Follow the procedure below to check or to replace the waste toner duct assembly.

Procedure

1. Remove the drum unit (See page 1-6-14).
2. Remove the one screw and then remove the process frame left cover.
3. Remove the four pins and conical springs and then remove the process frame from the rails.

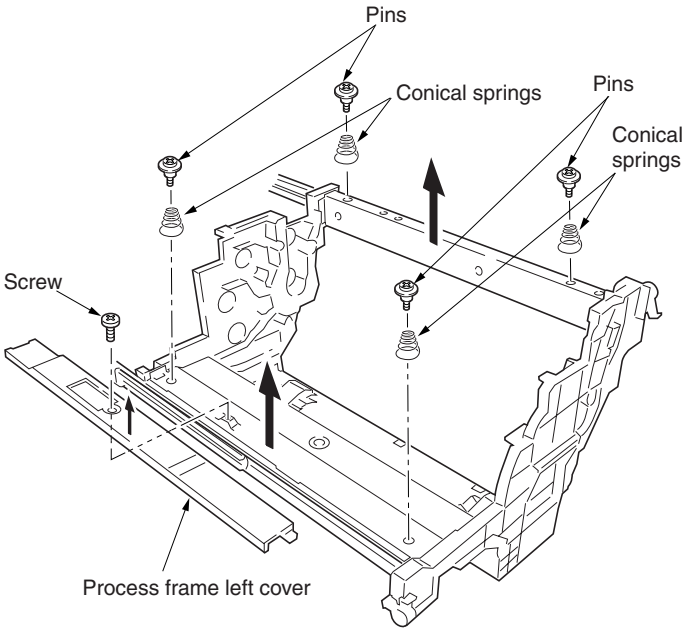


Figure 1-6-30

4. Remove the three screws.
5. Remove the waste toner duct assembly and the steel ball.
6. Check or replace the waste toner duct assembly and refit all the removed parts.

Cautions:

- When refitting the waste toner duct, make sure to place the steel ball in the opening of the duct.

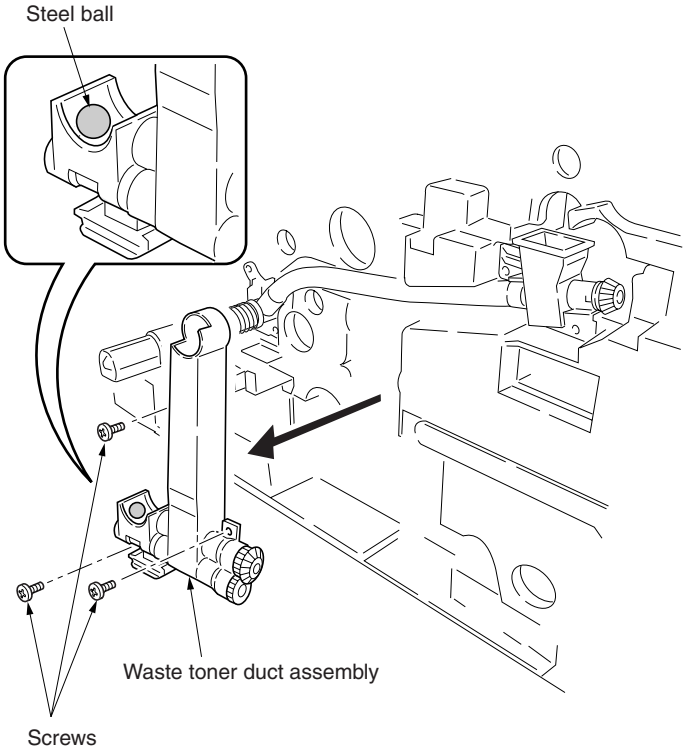


Figure 1-6-31

(4) Detaching and refitting the black toner feed assembly
Follow the procedure below to check or to replace the black toner feed assembly.

Procedure
1. Remove the waste toner duct assembly (See the previous page).
2. Remove the four screws and then remove the black toner feed assembly.
3. Check or replace the black toner feed assembly and refit all the removed parts.

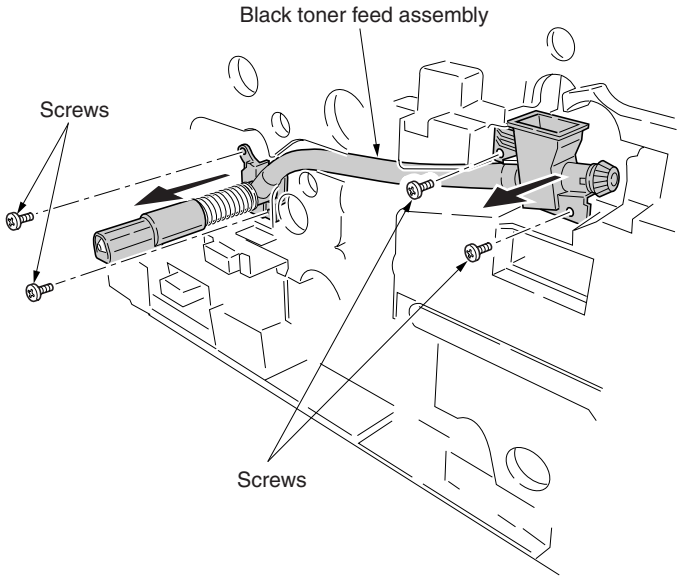


Figure 1-6-32

(5) Detaching and refitting the black toner container feed assembly
Follow the procedure below to check or to replace the black toner container feed assembly.

Procedure
1. Remove the process frame (See the previous page).
2. Remove the black toner container.
3. Remove the one screw and then remove the black toner container feed assembly.
4. Check or replace the black toner container feed assembly and refit all the removed parts.

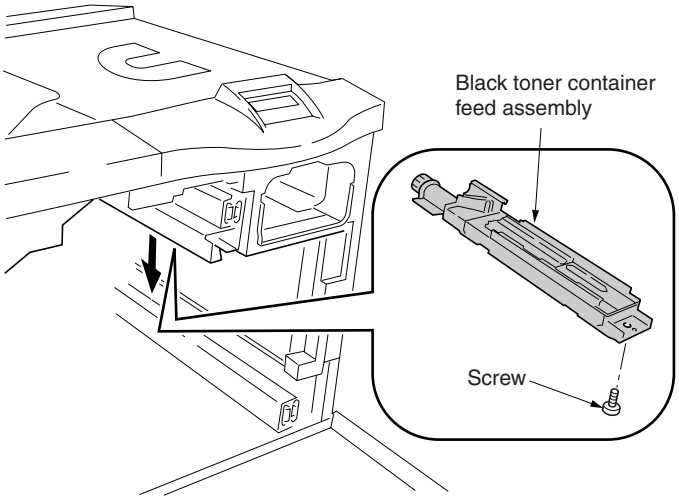


Figure 1-6-33

(6) Detaching and refitting the black toner feed drive assembly
Follow the procedure below to check or to replace the black toner feed drive assembly.

Procedure

1. Draw the process frame (See page 1-6-16).
2. Remove the engine controller PWB (See page 1-6-35).
3. Remove the engine controller box (See page 1-6-36).
4. Remove the main controller box (See page 1-6-5).
5. Remove the all (five) tabs from the drive assembly A and remove two connectors from the feed drive PWB.
6. Remove the all harnesses from the harness holder.
7. Remove the two screws and then remove the harness holder.

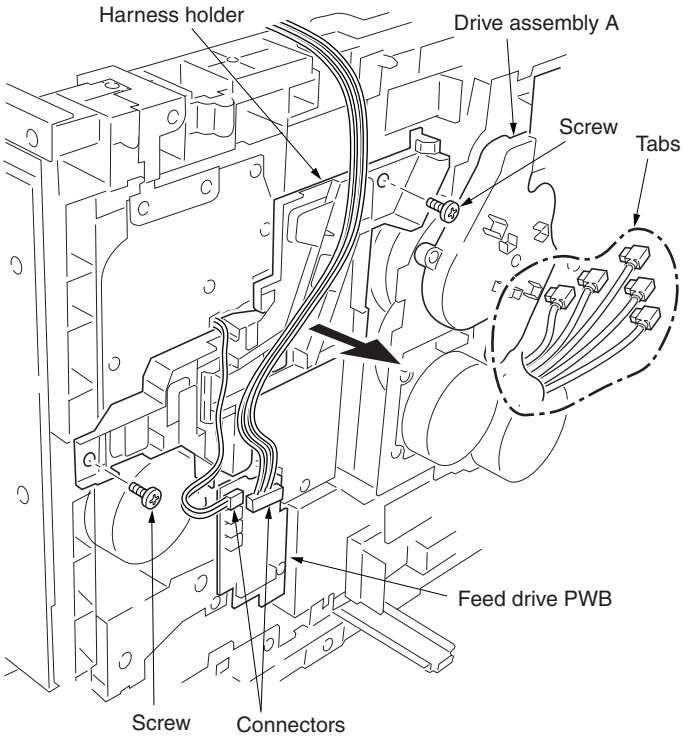


Figure 1-6-34

8. Remove the four screws and then remove the black toner feed drive assembly.
9. Check or replace the black toner feed drive assembly and refit all the removed parts.

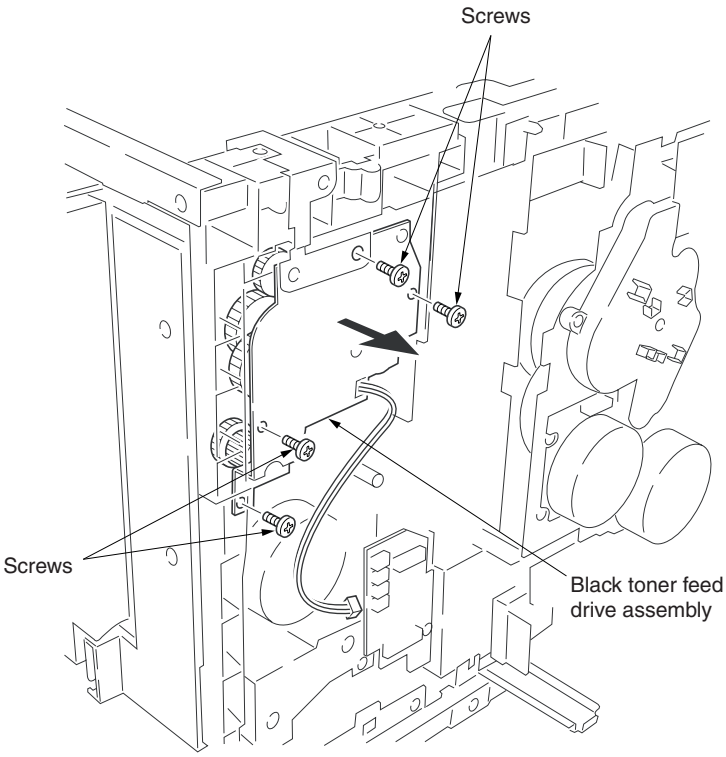


Figure 1-6-35

1-6-8 Secondary transfer unit

(1) Detaching and refitting the transfer roller and the separation charger unit
Follow the procedure below to check or to replace the secondary transfer unit.

Procedure

1. Open the front cover.
2. Draw the paper feed unit.
3. Remove the waste toner bottle.
4. Remove each one screw and remove two jigs.
5. Remove the secondary transfer unit from the paper feed unit.

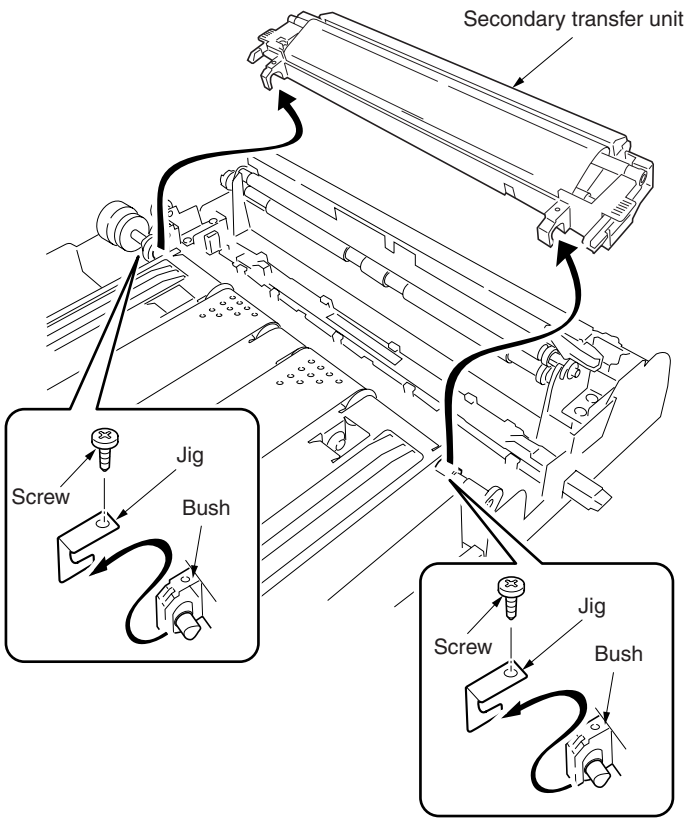


Figure 1-6-36

(2) Detaching and refitting the secondary transfer unit shift clutch
Follow the procedure below to check or to replace the secondary transfer unit shift clutch.

Procedure

1. Draw the paper feed unit.
2. Remove the secondary transfer unit (See previous page).
3. Remove the five screws and then remove the paper conveying assembly.
4. Remove the one connector.

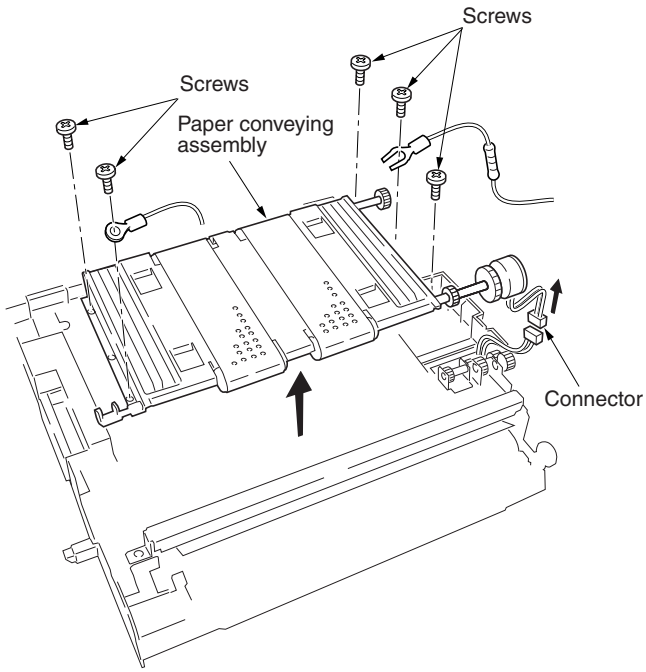


Figure 1-6-37

5. Remove the one cut-washer and then remove the secondary transfer unit shift clutch.
6. Check or replace the secondary transfer unit shift clutch and refit all the removed parts.

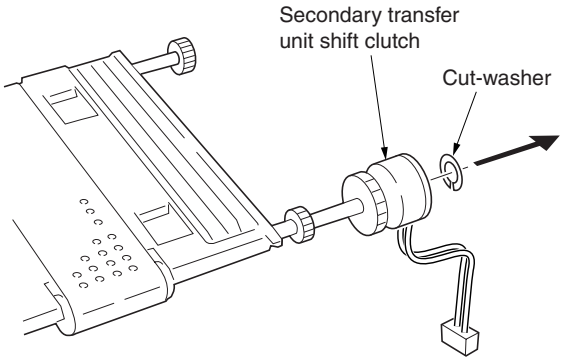


Figure 1-6-38

1-6-9 Fuser unit (and drive section)

Cautions:

- The fuser unit is hot after the printer was running. Wait until it cools down.

(1) Detaching and refitting the fuser unit

Follow the procedure below to check or to replace the fuser unit.

Procedure

1. Open the front cover.
2. Draw the paper feed unit out.
3. Remove one screw.
4. Open the left paper guide down.
5. Remove the fuser unit.

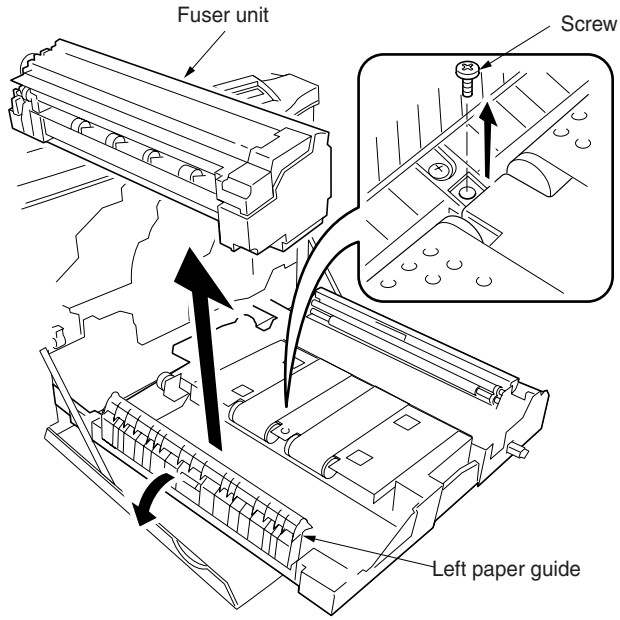


Figure 1-6-39

(2) Detaching and refitting the fuser top cover and upper separator bracket

Follow the procedure below to remove the fuser top cover and the upper separator bracket.

Procedure

1. Detach the fuser unit (See above).
2. Remove the one screw and then remove the fuser knob.
3. Remove the three screws and then remove the fuser rear cover.

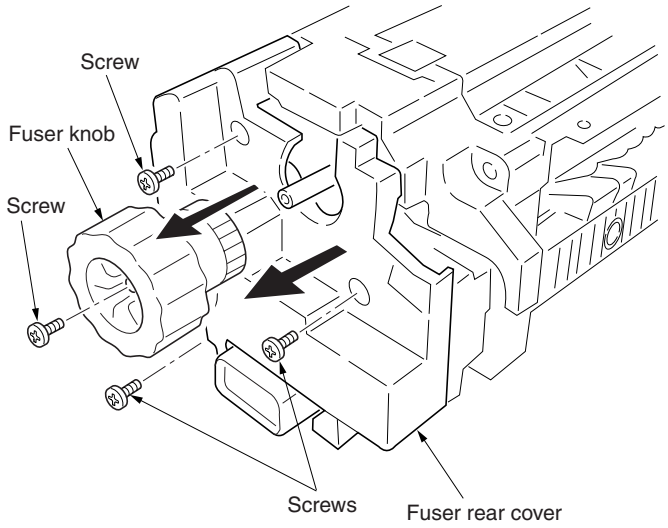


Figure 1-6-40

4. Open the fuser top cover.
5. Remove three screws and then remove the fuser front cover.

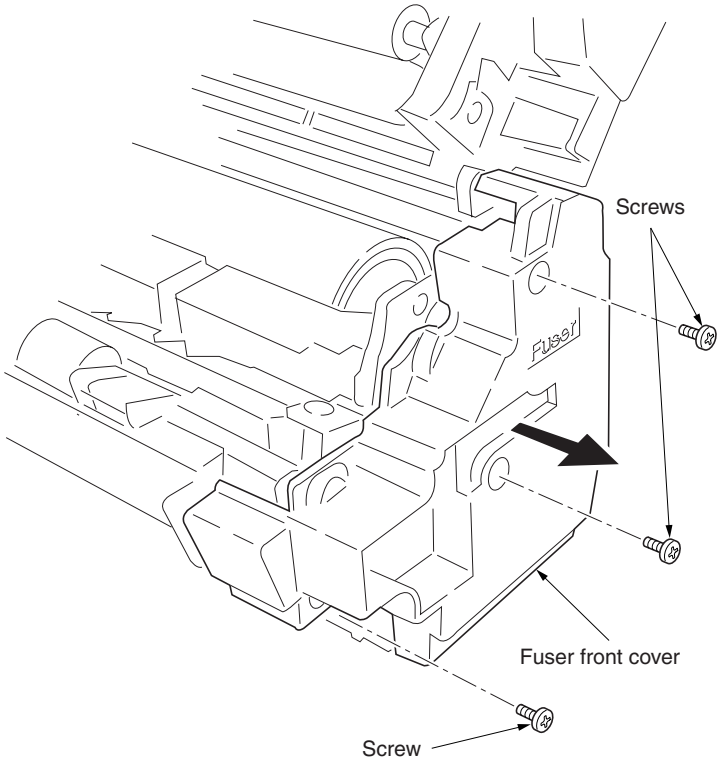


Figure 1-6-41

6. Open and hold the fuser top cover in its upright position and pull it out.

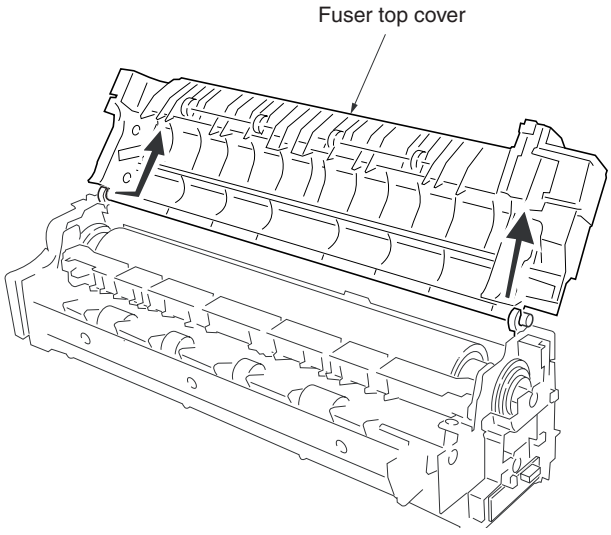


Figure 1-6-42

(3) Detaching and refitting the upper and lower fuser thermistors

Follow the procedure below to check or to replace the upper and lower fuser thermistors.

Procedure

1. Remove the fuser top cover (See the previous page).
2. Remove the two screws and then remove the fuser upper entrance guide.
3. Remove the two screws and then remove the fuser bottom cover.

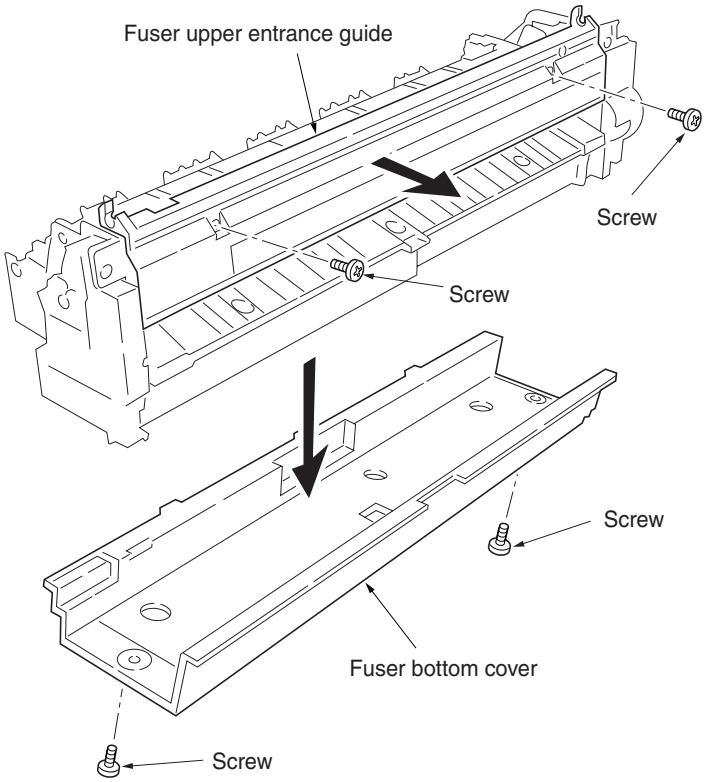


Figure 1-6-43

4. Remove one connector.
5. Remove two screws and then remove the holder.
6. Remove one screw and then remove the upper fuser thermistor.

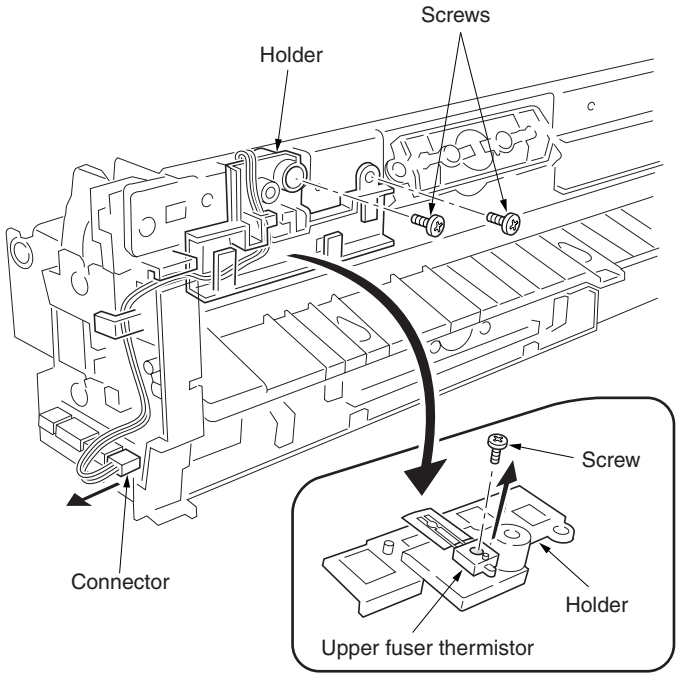


Figure 1-6-44

7. Remove one connector.
8. Remove one screw and then remove the lower fuser thermistor.
9. Check or replace the upper and lower thermistor and refit all the removed parts.

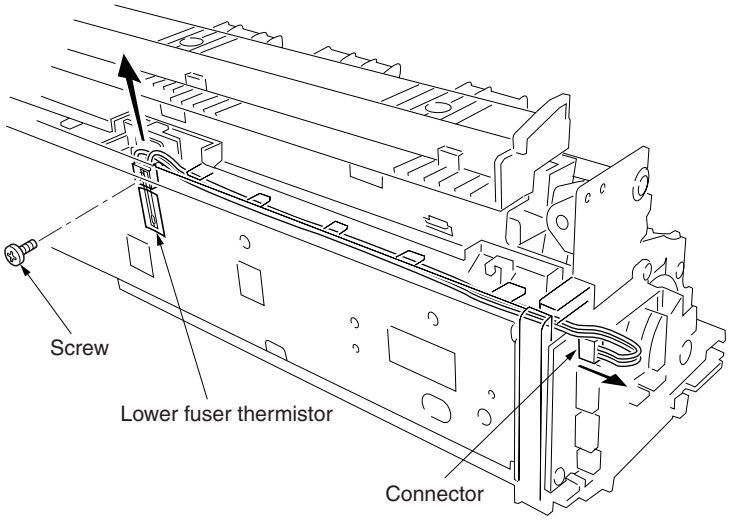


Figure 1-6-45

(4) Detaching and refitting the upper and lower thermostats
Follow the procedure below to check or to replace the upper and lower thermostats.

Procedure

1. Remove the fuser top cover (See page 1-6-24).
2. Remove the two screws and then remove the two terminals for each thermostat.
3. Remove the upper and lower thermostats.
4. Check or replace the upper and lower thermostats and refit all the removed parts.

Cautions:
Tighten the screws on the terminal securely. If the screws are loosened or removed, abnormal overheat may occur.

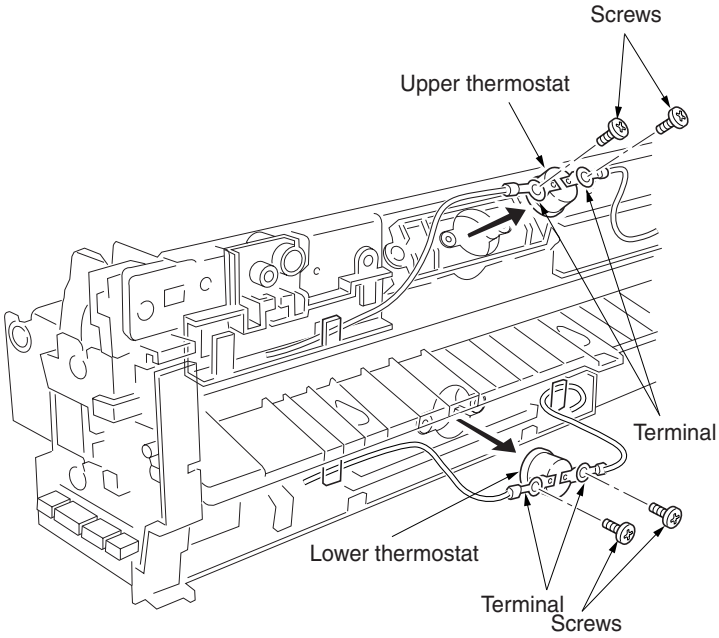


Figure 1-6-46

(5) Detaching and refitting the upper and lower heater lamps
Follow the procedure below to check or to replace the upper and lower heater lamps.

Procedure

1. Remove the fuser top cover (See page 1-6-24).
2. Remove the each one screw and then remove the terminal of one side from the upper and lower thermostat.

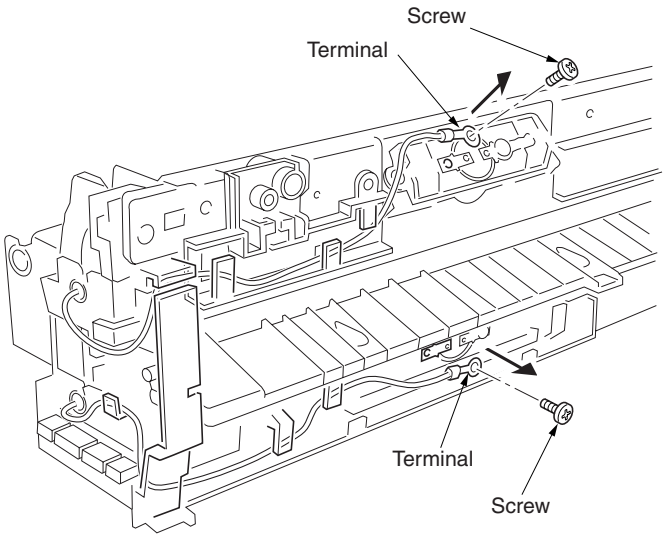


Figure 1-6-47

3. Remove the each one screw and then remove the terminals.
4. Draw the upper and lower heater lamps out from the fuser unit.
5. Check or replace the upper and lower heater lamps and refit all the removed parts.

Cautions:

- When refitting the heater lamps, do not mix them. The upper and lower heater lamps are not identical and each has a cable of different length.
- The terminal must be fixed by the screw with the soldered side facing up.
- Tighten the screws on the terminal securely. If the screws are loosened or removed, abnormal overheat may occur.

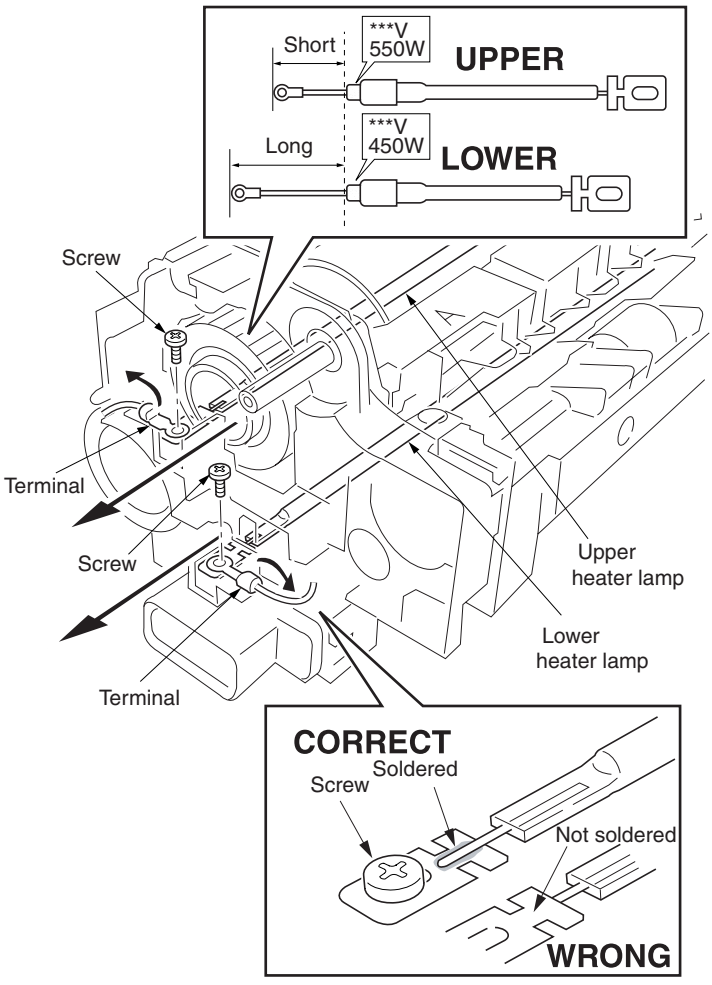


Figure 1-6-48

(6) Detaching and refitting the heat roller, the press/heat roller and separator

Follow the procedure below to check or to replace the heat roller, the press/heat roller and separator.

Procedure

1. Remove the upper and lower heater lamps (See the previous page).
2. Remove one screws and then remove the terminal.
3. Remove four connectors.
4. Remove two screws.
5. Remove the front heater lamp bracket.

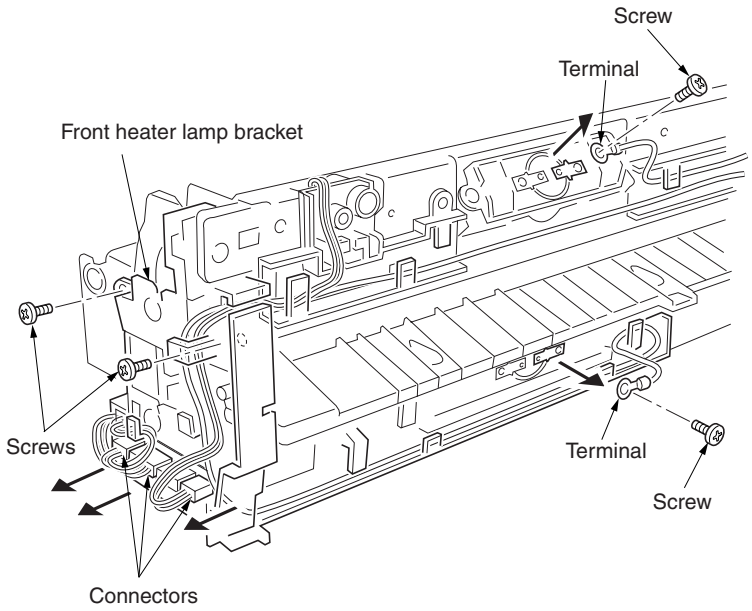


Figure 1-6-49

6. Remove two screws and then remove the two springs and connector.
7. Remove two screws and then remove the rear heater lamp bracket.

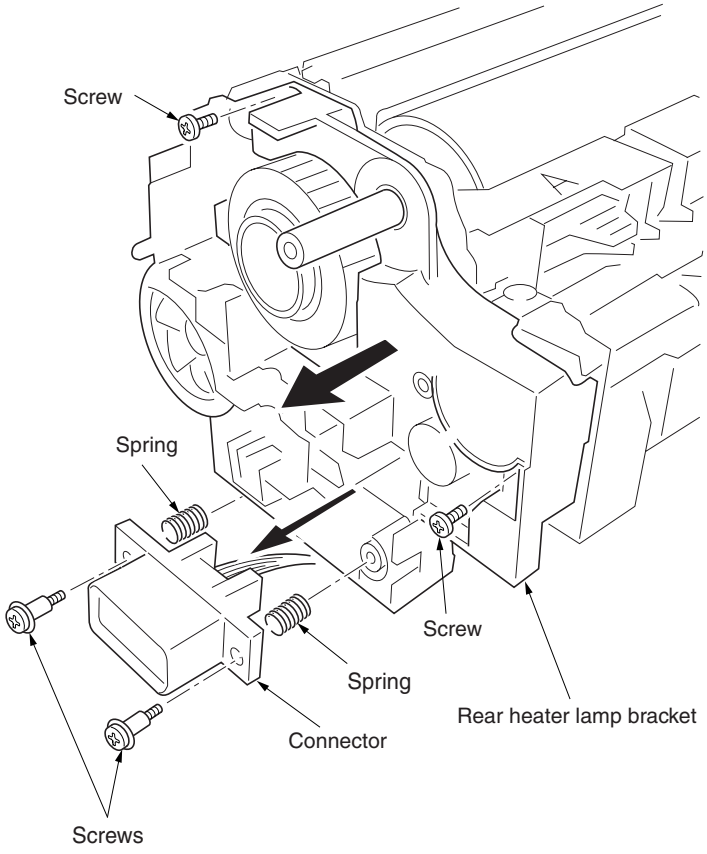


Figure 1-6-50

8. Remove two screws and then remove the fuser top frame.
9. Remove the gear.

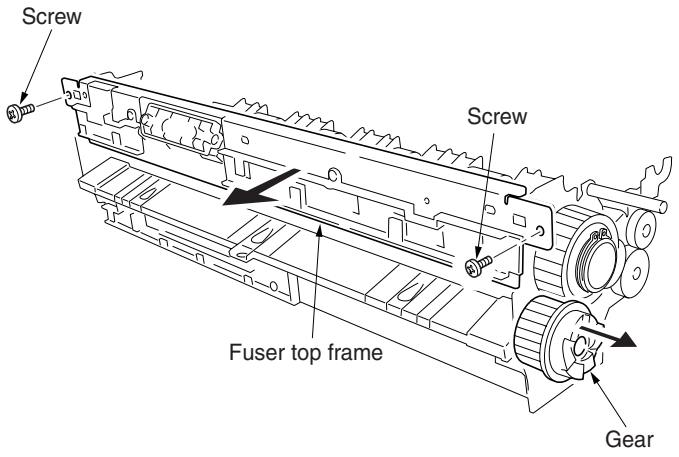


Figure 1-6-51

10. Loosen two screws to release the press/heat roller pressure.
11. Remove the flange gear.
12. Remove two C-rings.
13. Remove two bearings and two bushes and then remove the heat roller.

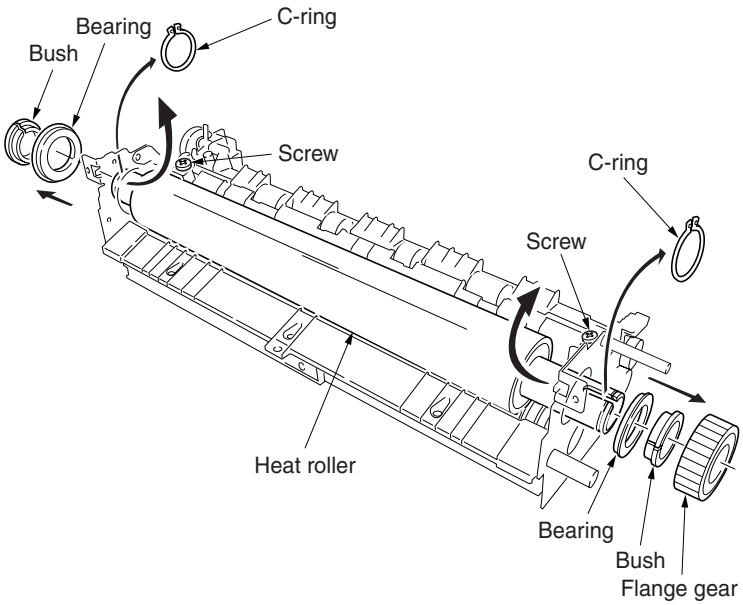


Figure 1-6-52

14. Remove three screws and then remove the fuser right paper guide.
15. Remove three screws and then remove the fuser left lower cover.

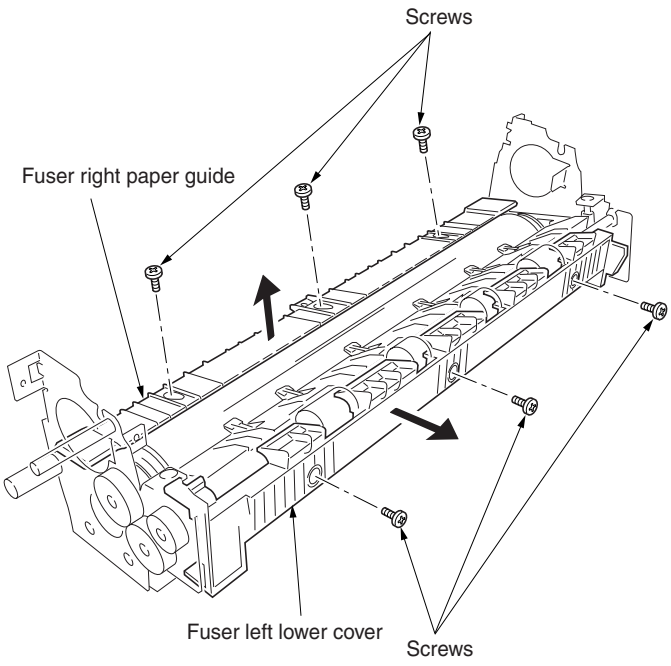


Figure 1-6-53

16. Remove two E-rings and then remove the two bushes and the exit roller gear.
17. Remove the fuser exit roller.

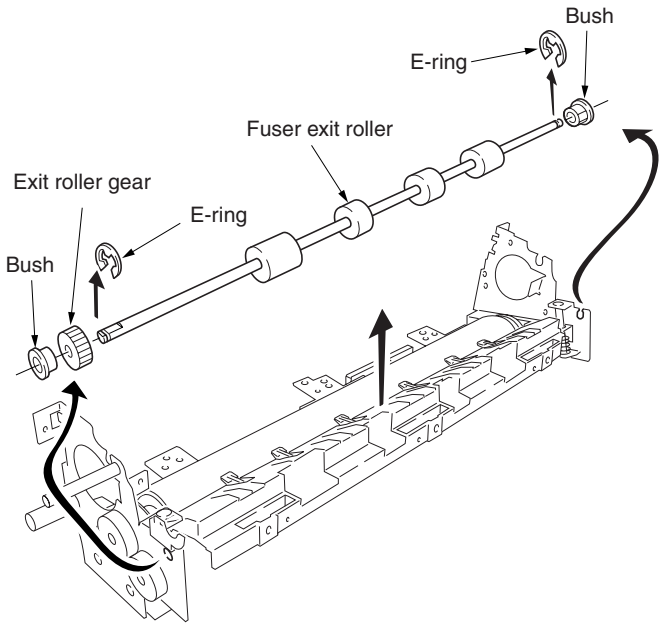


Figure 1-6-54

18. Remove three screws and then remove the fuser left paper guide.
19. Remove the spring and then remove the separator.

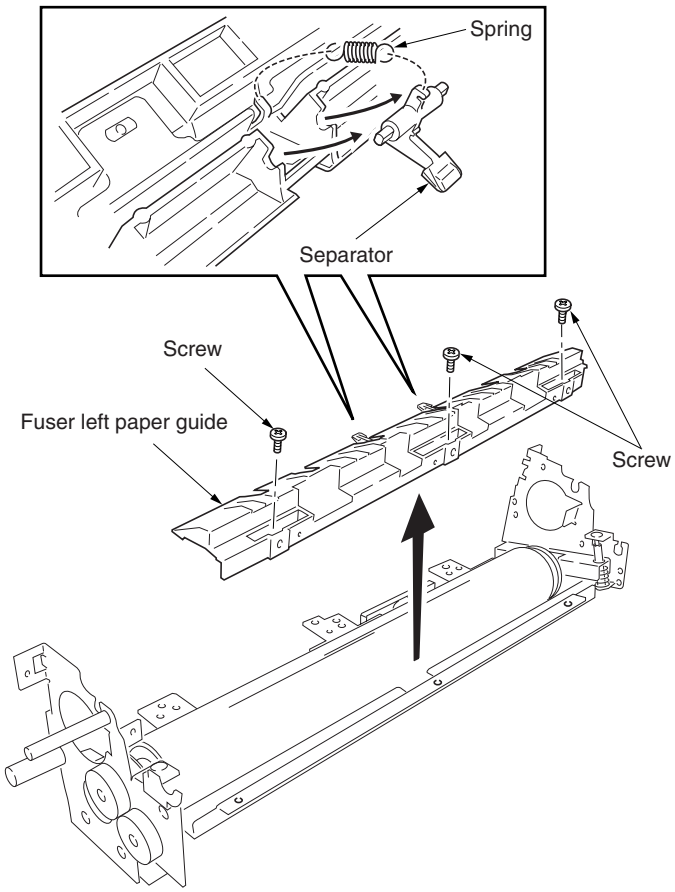


Figure 1-6-55

20. Remove the press/heat roller and then remove two bearings.
21. Check or replace the heat roller, the press/heat roller and separator, and refit all the removed parts.

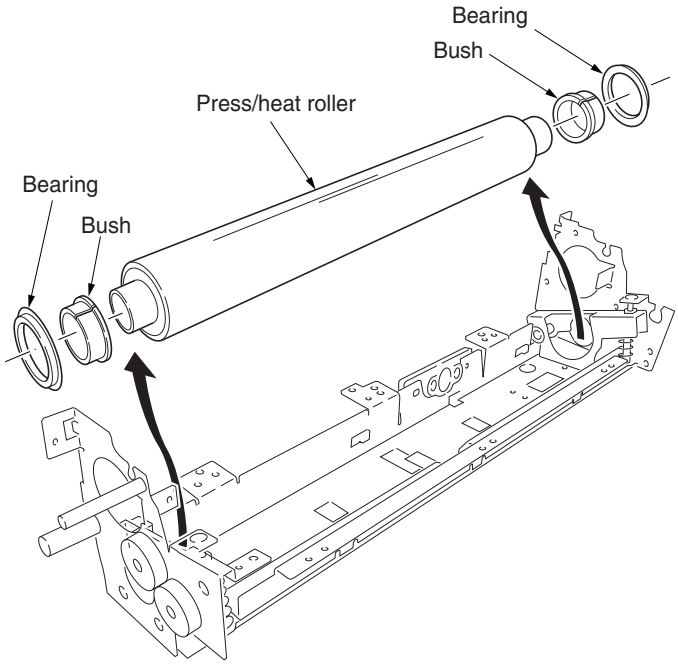


Figure 1-6-56

(7) Detaching and refitting drive assembly C

Follow the procedure below to check or to replace drive assembly C.

Procedure

1. Remove the power supply unit (See page 1-6-36).
2. Remove one connector.
3. Remove three screws and then remove the grounding plate and the drive assembly C.
4. Check or replace drive assembly C and refit all the removed parts.

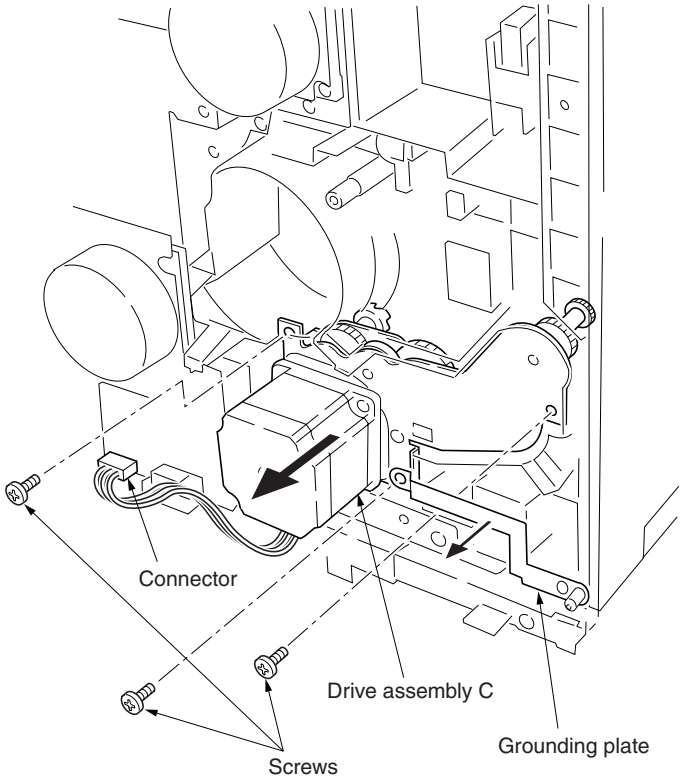


Figure 1-6-57

1-6-10 PWBs and high voltage units

(1) Detaching and refitting the main controller PWB
Follow the procedure below to replace the main controller PWB.

Procedure
1. Remove the two screws.
2. Draw the main controller PWB.

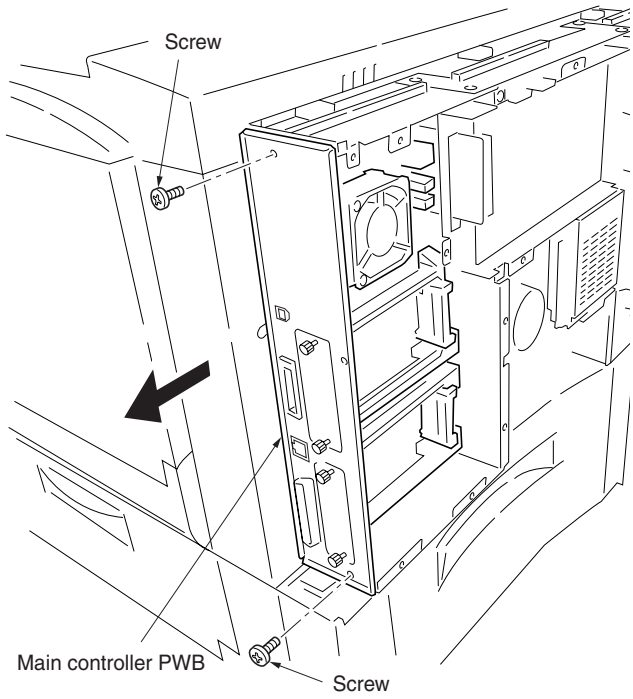


Figure 1-6-58

(2) Detaching and refitting the engine controller PWB

Follow the procedure below to check or to replace the engine controller PWB.

Procedure

1. Remove all (rear: ten, left: three) screws and then remove the rear cover.

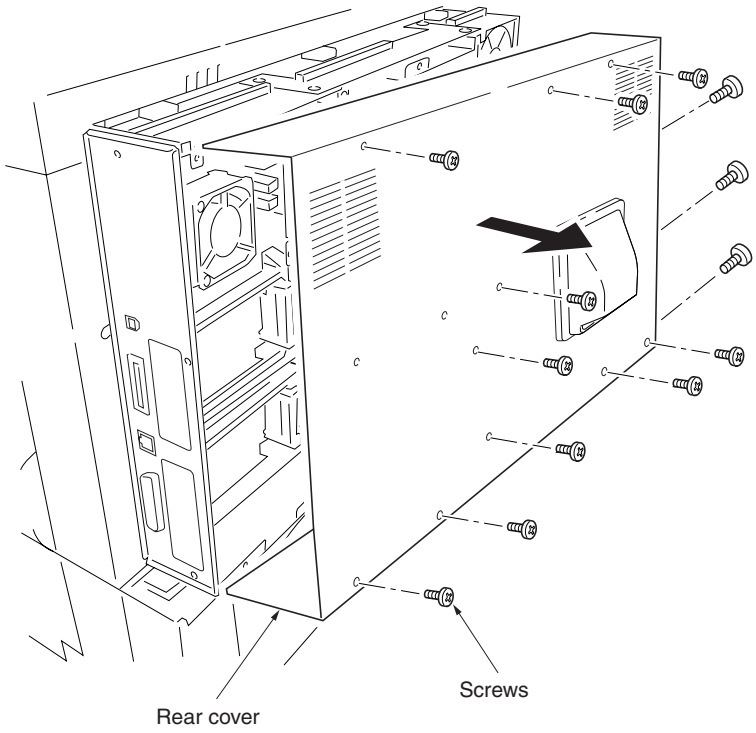


Figure 1-6-59

2. Remove all (seventeen) connectors from the engine controller PWB.
3. Remove six screws and then remove the engine controller PWB.
4. Check or replace the engine controller PWB and refit all the removed parts.

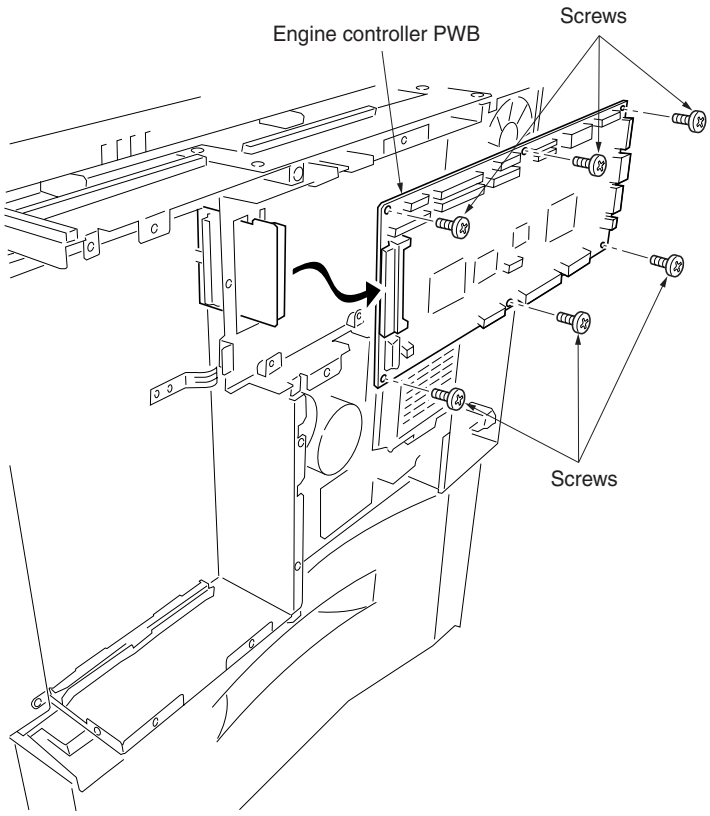


Figure 1-6-60

(3) Detaching and refitting the power supply unit
Follow the procedure below to check or to replace the power supply unit.

Procedure

1. Remove the engine controller PWB (See the previous page).
2. Remove four screws and then remove the controller box support.

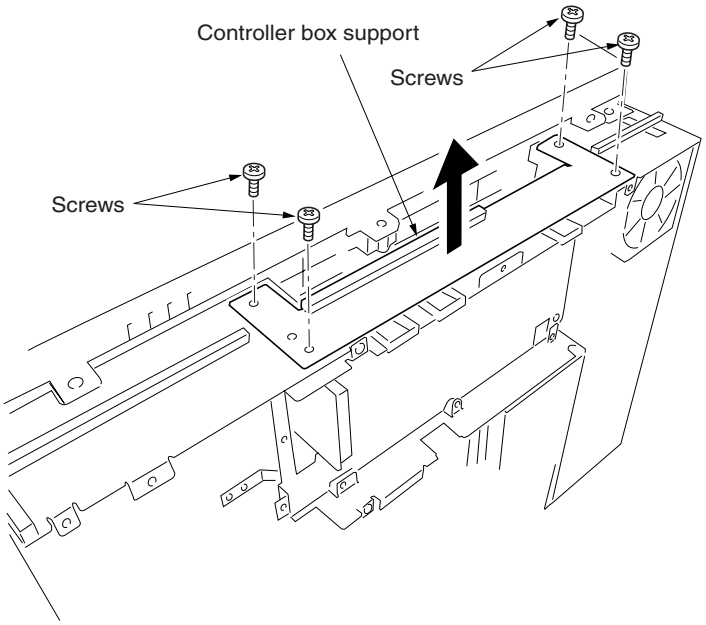


Figure 1-6-61

3. Remove four screws and then remove the engine controller box.

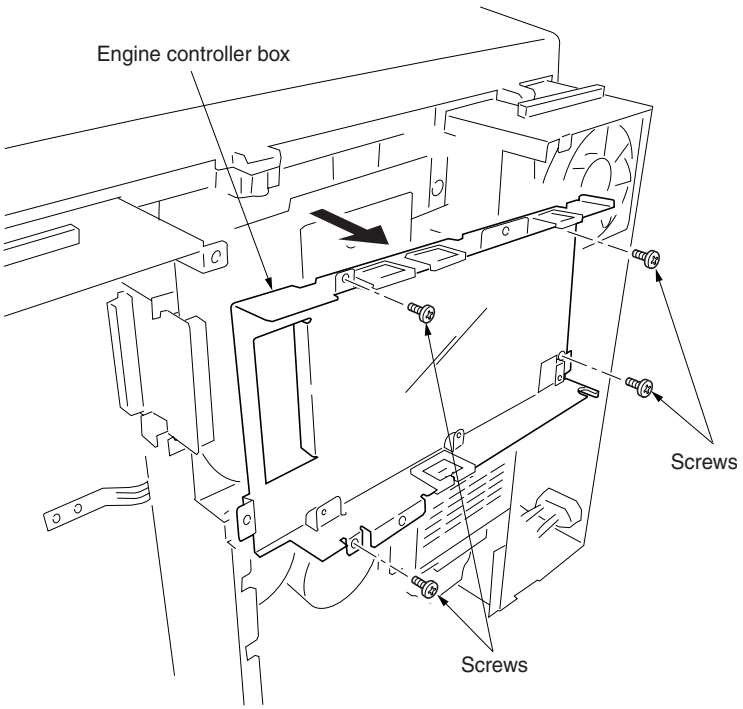


Figure 1-6-62

4. Remove the face-down unit (See page 1-6-4).
5. Remove two connectors.
6. Remove five screws and then remove the grounding plate and the power supply unit.
7. Check or replace the power supply unit and refit all the removed parts.

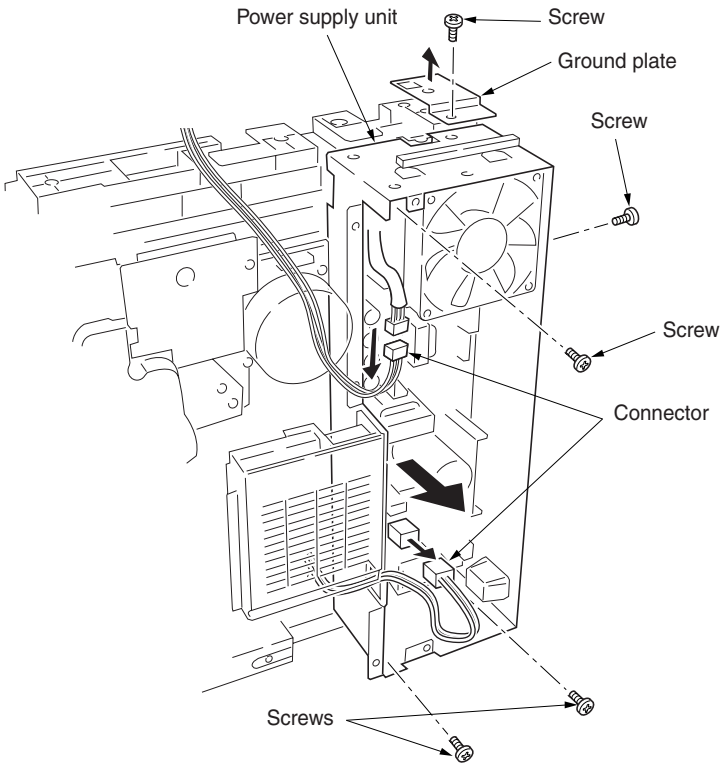


Figure 1-6-63

(4) Detaching and refitting the developing/primary transfer/cleaning brush bias high voltage unit
Follow the procedure below to check or to replace the developing/primary transfer/cleaning brush bias high voltage unit.

Procedure

1. Remove the MP tray unit (See page 1-6-2).
2. Remove five screws.
3. Remove all (six) tabs and one connector from developing/primary transfer/cleaning brush bias high voltage unit.
4. Remove the developing/primary transfer/ cleaning brush bias high voltage unit.
5. Check or replace the developing/primary transfer/cleaning brush bias high voltage unit and refit all the removed parts.

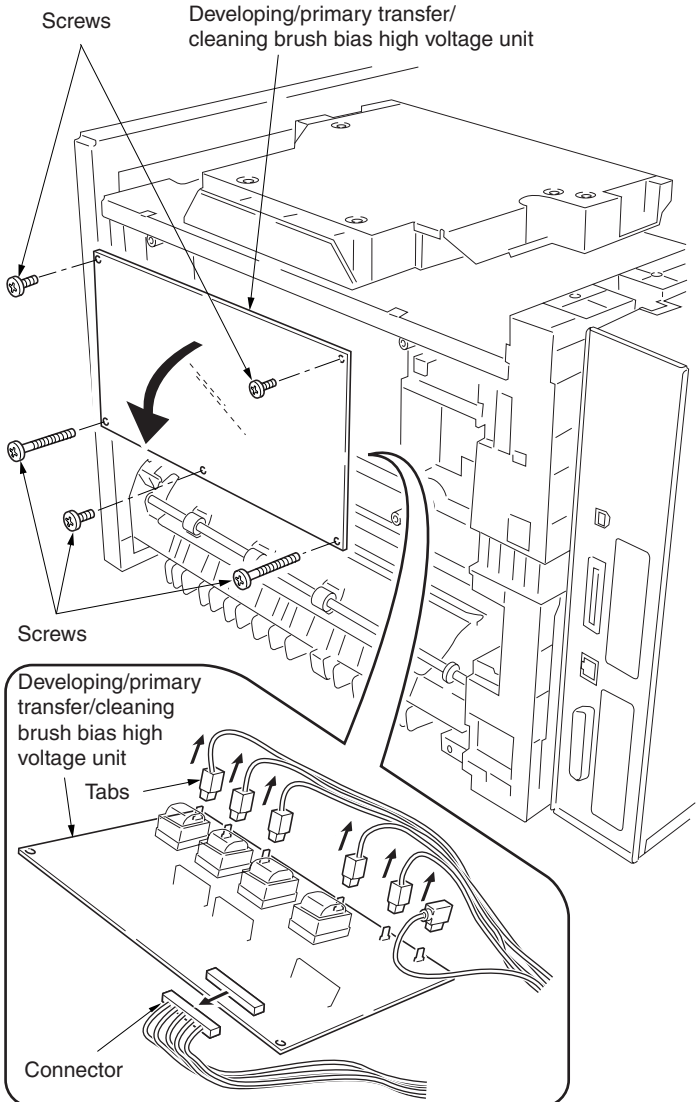


Figure 1-6-64

(5) Detaching and refitting the main charger high voltage unit

Follow the procedure below to check or to replace the main charger high voltage unit.

Procedure

1. Remove the power supply unit (See page 1-6-36).
2. Remove all (three) tabs and one connector from the main charger high voltage unit.
3. Remove three screws and then remove the main charger high voltage unit.
4. Check or replace the main charger high voltage unit and refit all the removed parts.

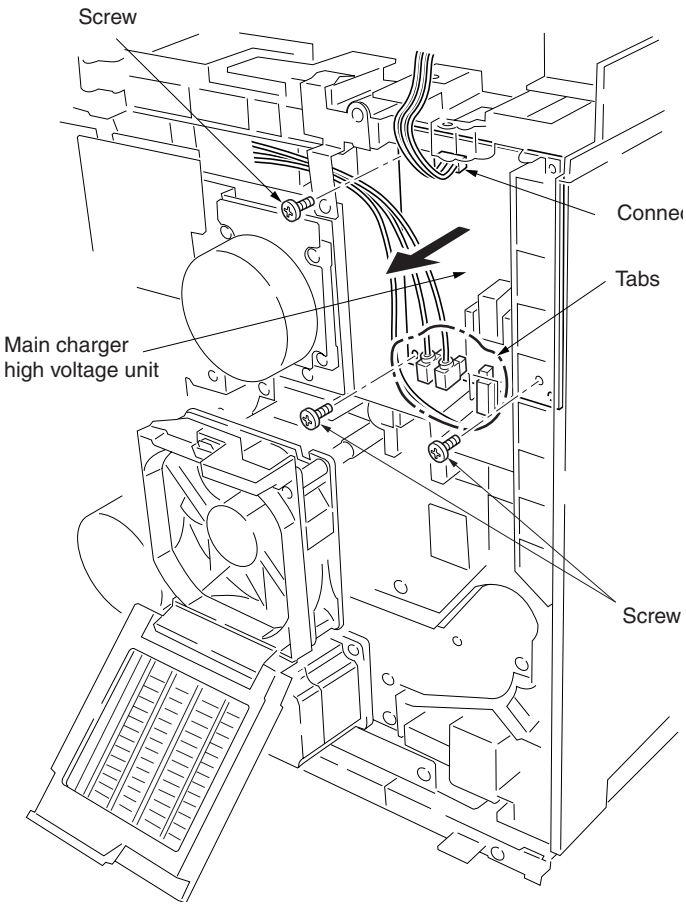


Figure 1-6-65

(6) Detaching and refitting the paper feeder/options relay PWB
Follow the procedure below to check or to replace the paper feeder/options relay PWB.

Procedure
1. Remove the rear cover (See page 1-6-35).
2. Remove all (six) connectors from the paper feeder/options relay PWB.
3. Remove two screws and then remove the paper feeder/options relay PWB.
4. Check or replace the paper feeder/options relay PWB and refit all the removed parts.

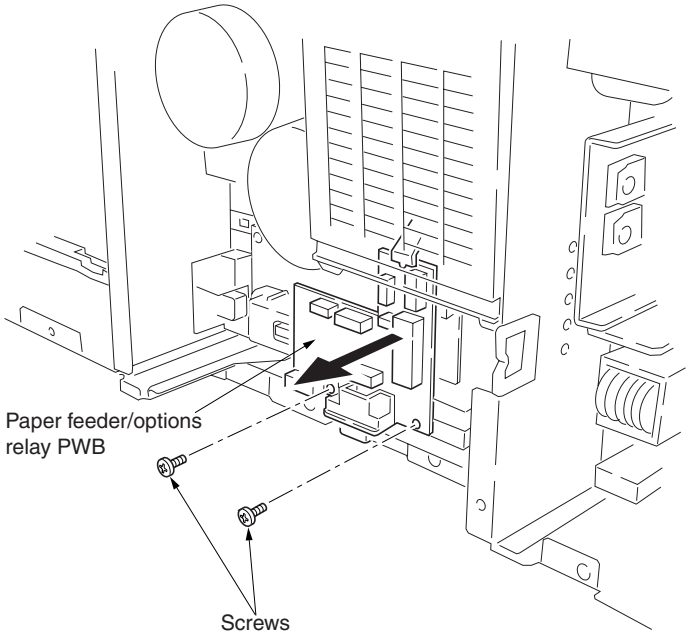


Figure 1-6-66

(7) Detaching and refitting the secondary transfer bias high voltage unit
Follow the procedure below to check or to replace the secondary transfer bias high voltage unit.

Procedure
1. Remove the paper feeder/options relay PWB (See above).
2. Remove one tab from the secondary transfer bias high voltage unit.
3. Remove two screws and then remove the secondary transfer bias high voltage unit.
4. Check or replace the secondary transfer bias high voltage unit and refit all the removed parts.

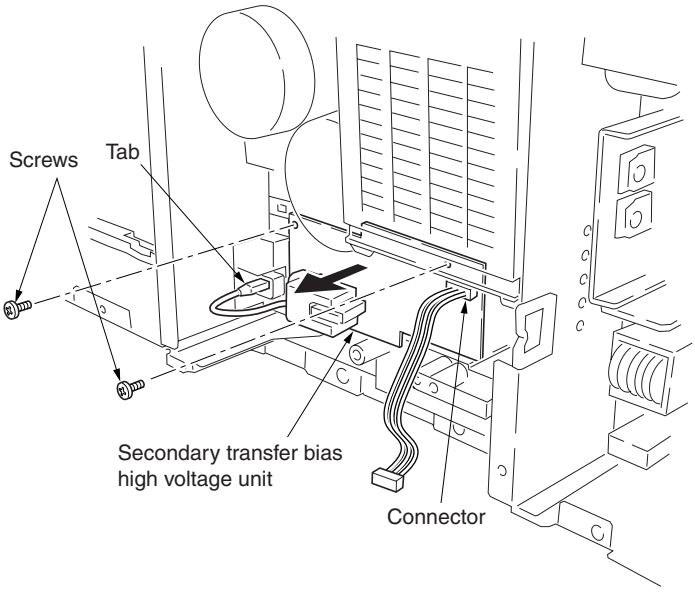


Figure 1-6-67

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Chapter II

2-1-1 Paper feed unit and secondary transfer unit

(1) Paper feed unit

The paper feed unit includes several portions such as the paper feed section that drives the paper fed from the paper feeder or the duplex unit towards the secondary transfer unit, paper conveying section that moves the paper from the secondary transfer unit to the fuser unit, and the left paper guide that determines the destination of the paper which has passed through the fuser unit. A cam works to dress the transfer roller on the secondary transfer unit from the primary transfer unit in conjunction with color printing process, and a link lifts the secondary transfer unit when the paper feed unit is drawn in connection with the front cover.

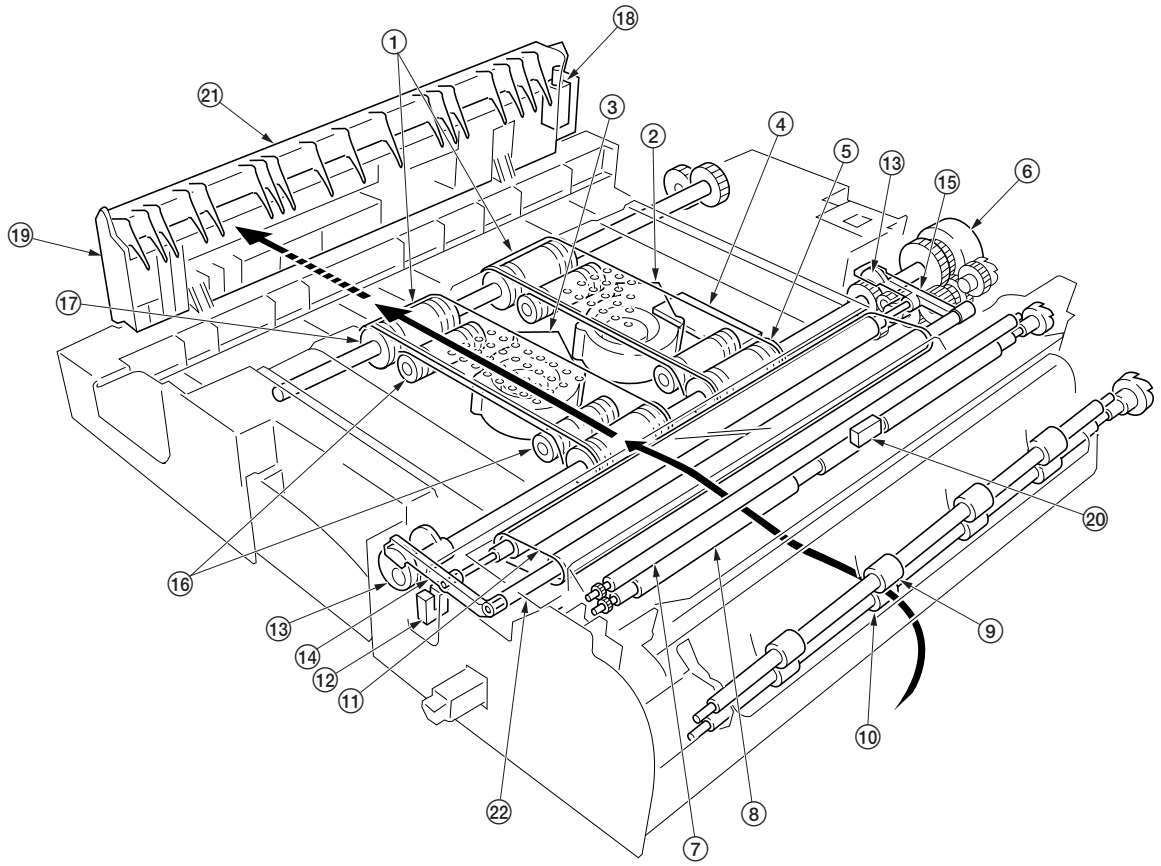


Figure 2-1-1 Paper feeder unit and secondary transfer unit

① Paper conveying belts
② Paper conveying fan motor 1
③ Paper conveying fan motor 2
④ Feed PWB [KP-1013]
⑤ Paper conveying belt pulleys
⑥ Secondary transfer unit shift clutch
⑦ Upper registration roller
⑧ Lower registration roller
⑨ Middle pulleys
⑩ Middle roller
⑪ Transfer belt
⑫ Secondary transfer unit position sensor
⑬ Cams
⑭ Front transfer lever
⑮ Rear transfer lever
⑯ Tension rollers
⑰ Paper conveying belt rollers
⑱ Duplex paper exit selection solenoid
⑲ Left paper guide
⑳ Registration sensor
㉑ Change guide
㉒ Secondary transfer unit

The paper feed section of the paper feed unit and the paper conveying section are driven by separate driving systems: Since the paper conveying section must be driven in synchronization with speeds that paper passes through the fuser unit, it is driven by the fuser unit drive motor that drives the fuser unit; whereas, the paper feed section is driven by the paper feed motor. The paper feed section has a longer pathway than the length of A4 or Letter size to allow variation of the paper feed speed. An A4 or Letter size sheet whenever it is on the paper conveying belts can be free from both the secondary transfer unit and the fuser unit. To stabilize this situation of the sheet, two fans are provided. The suction air flows through the punched holes on the conveying belts.

The left paper guide includes a change guide which is activated in conjunction with a solenoid that selects duplex exit for the paper when duplex printing. This guides the paper towards the duplex unit underneath the printer.

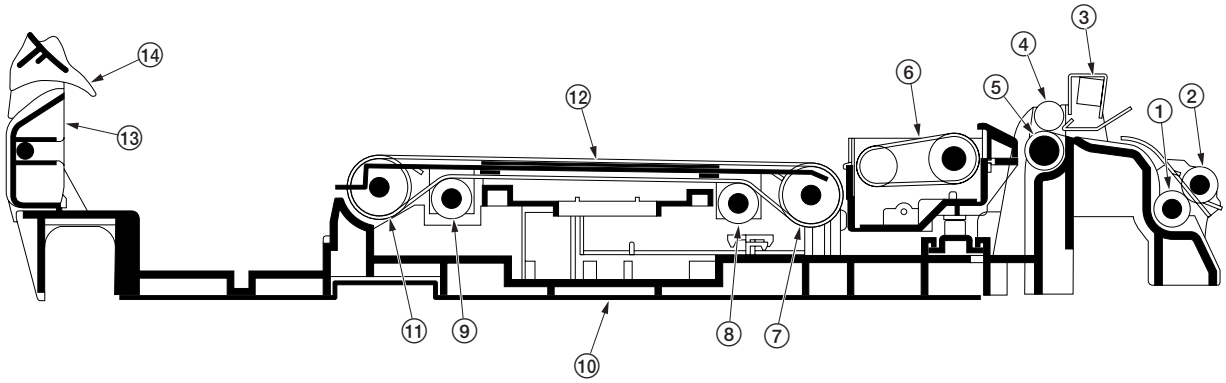


Figure 2-1-2 Paper feed unit

① Middle roller
② Middle pulleys
③ Registration sensor
④ Upper registration roller
⑤ Lower registration roller
⑥ Secondary transfer unit
⑦ Paper conveying belt pulleys
⑧ Tension roller
⑨ Tension roller
⑩ Paper feed unit
⑪ Paper conveying belt rollers
⑫ Paper conveying belts
⑬ Left paper guide
⑭ Change guide

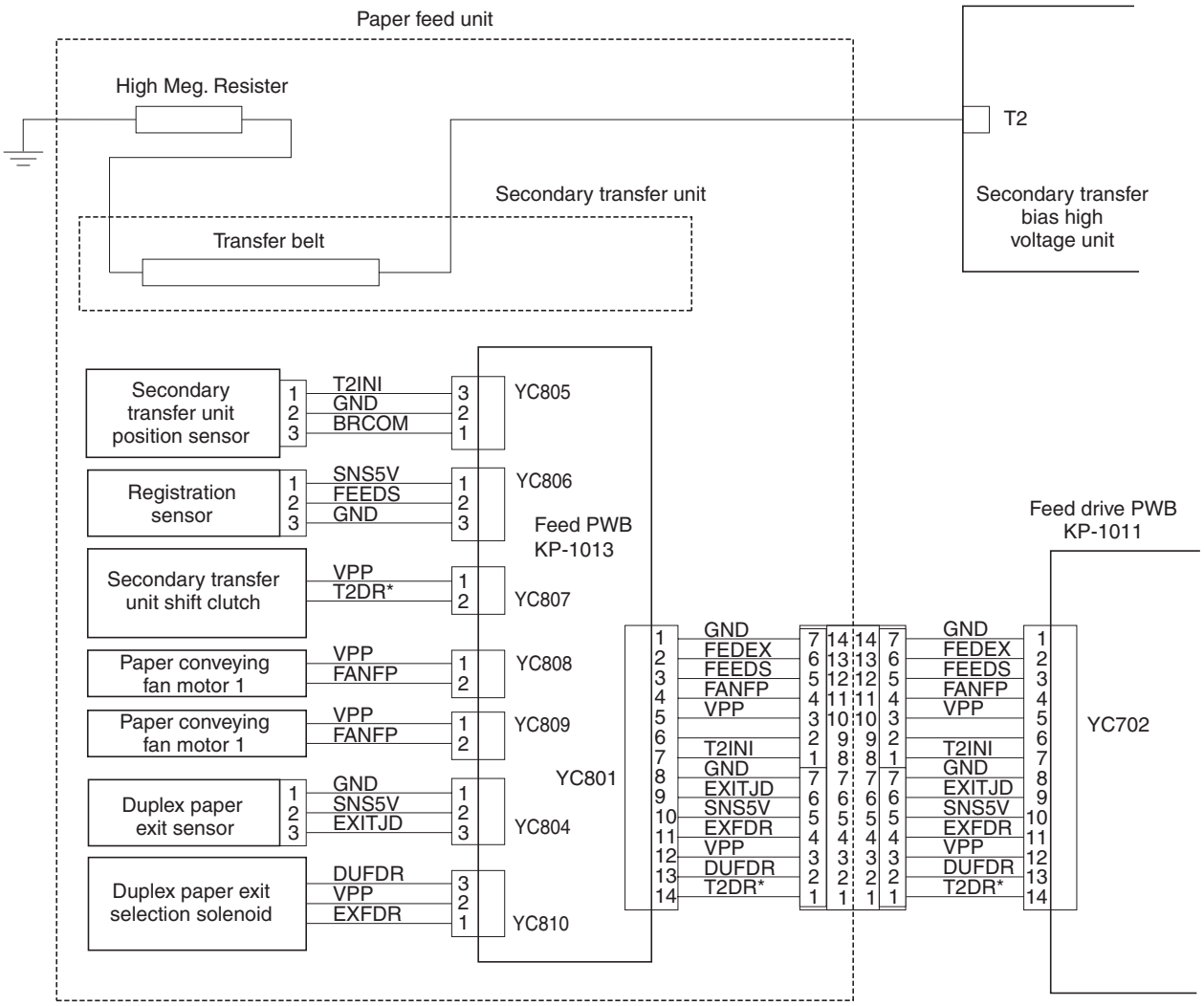


Figure 2-1-3 Paper feed unit block diagram

(2) Secondary transfer unit

The secondary transfer unit includes the transfer belt. The transfer belt is used to transfer images of toner constituted by the primary transfer drum towards the paper. The separation charger gives the paper the repelling charge so that the paper is effectively scraped off of the primary transfer drum.

At the beginning of transferring process, the drum is given a bias of approximately –20 microamperes and –0.5 to –2 kV generated by the high-voltage unit for the transfer belt. This bias is automatically adjusted according to the paper type currently selected.

Since the primary transfer unit has to revolve four turns until four layers of different colored toner have been constituted, the secondary transfer unit should be dressed away from the primary transfer drum until all layers have been done. The secondary transfer unit therefore includes levers and springs for this purpose, which are driven by a cam and a clutch on the paper feed unit.

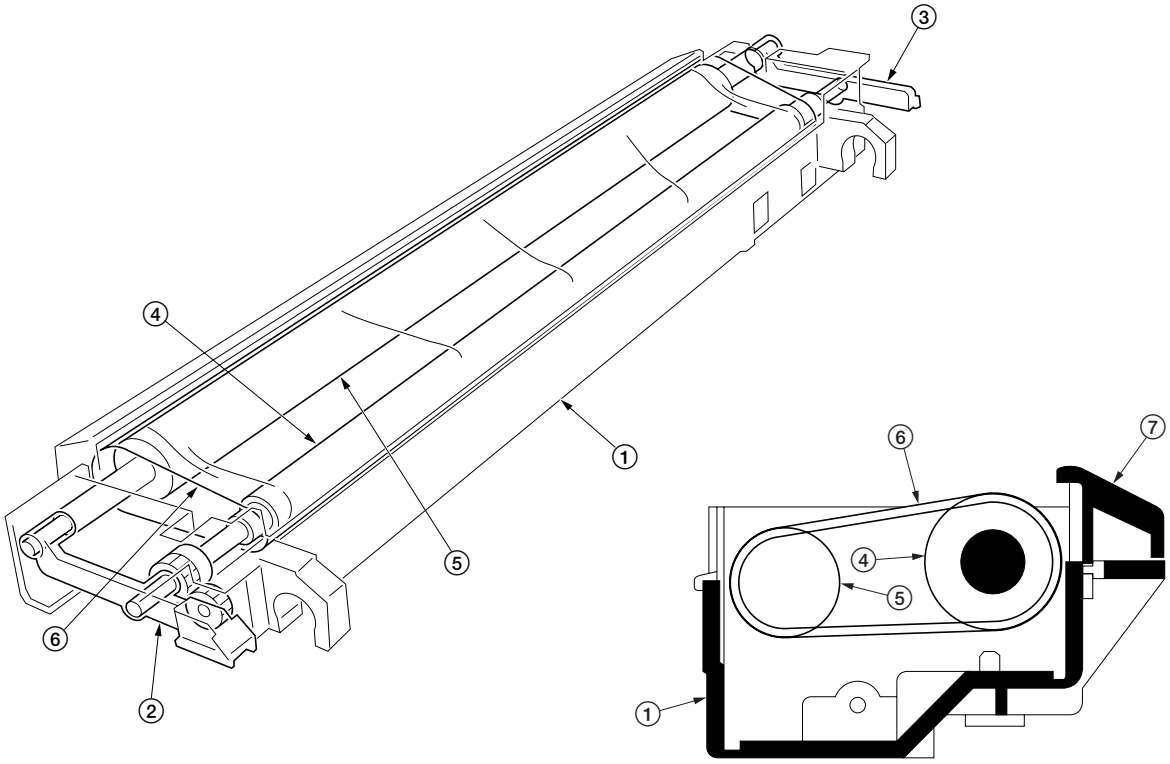


Figure 2-1-4 Secondary transfer unit

① Secondary transfer unit
② Transfer roller lever front
③ Transfer roller lever rear
④ Transfer belt drive roller
⑤ Transfer belt roller
⑥ Transfer belt
⑦ Paper guide chute

2-1-2 MP tray unit

The MP tray unit includes sections of paper stack, paper feed, and paper detection.

The paper detection is accomplished by two sensors mounted on the MP tray feed PWB that measures the width of the paper and detects the presence of paper.

The paper stack section holds approximately 150 sheets of paper and includes a bottom plate that pushes up the paper stack for paper feeding. When paper feeding is required, the solenoid for the MP bottom plate is activated to rotate the cam for the MP tray. The actuator for the cam pushes up the bottom plate which in turn pushes up the paper stack abut the feed roller. The activation of the bottom plate is detected as the cam revolves, using a reflection plate. The MP tray includes the MP tray paper length sensor to detect the length of paper.

The paper feed section includes a feed roller and a clutch. When the clutch is activated, the feed roller revolves and the bottom plate is raised to feed paper. The retard roller beneath the feed roller prevents that more than one sheet are fed at a time.

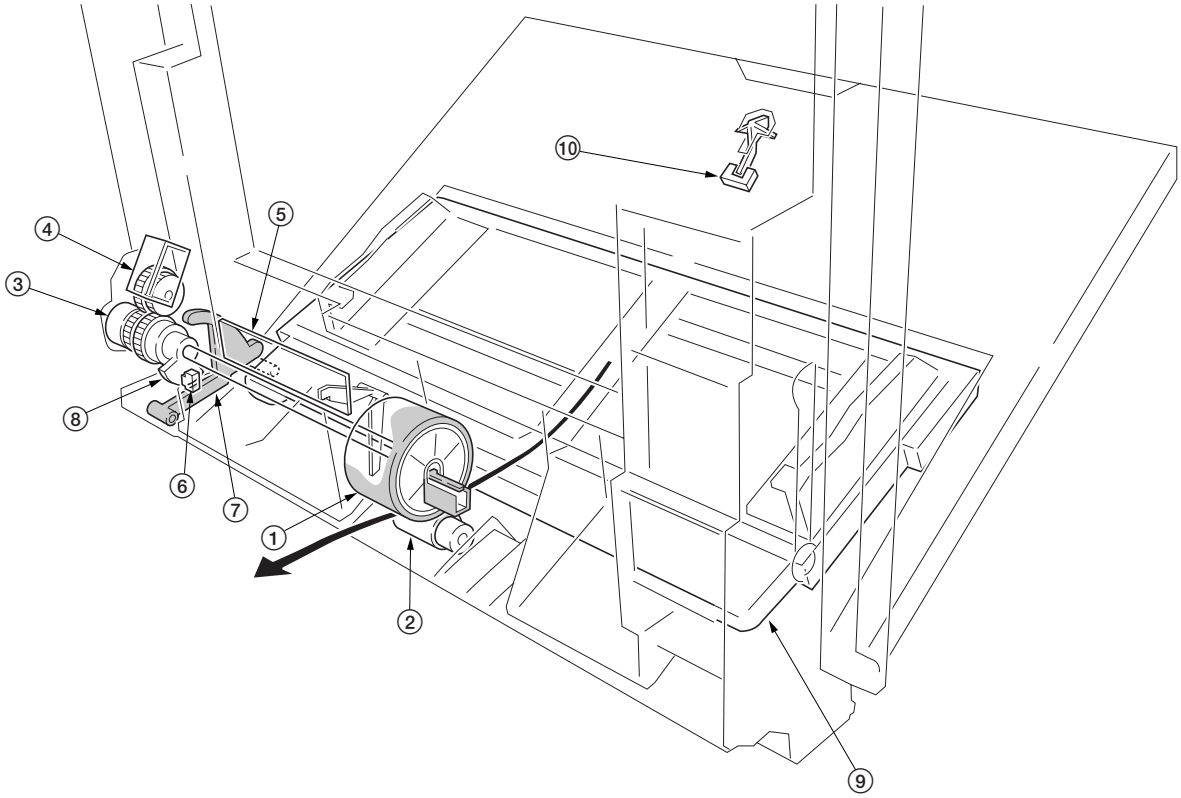


Figure 2-1-5 MP tray unit

① MP tray feed roller
② MP tray retard roller
③ MP tray feed clutch
④ MP tray bottom plate solenoid
⑤ MP tray feed PWB [KP-1015]
⑥ MP tray bottom plate position sensor
⑦ MP tray cam actuator
⑧ MP tray cam
⑨ MP tray bottom plate
⑩ MP tray paper length sensor

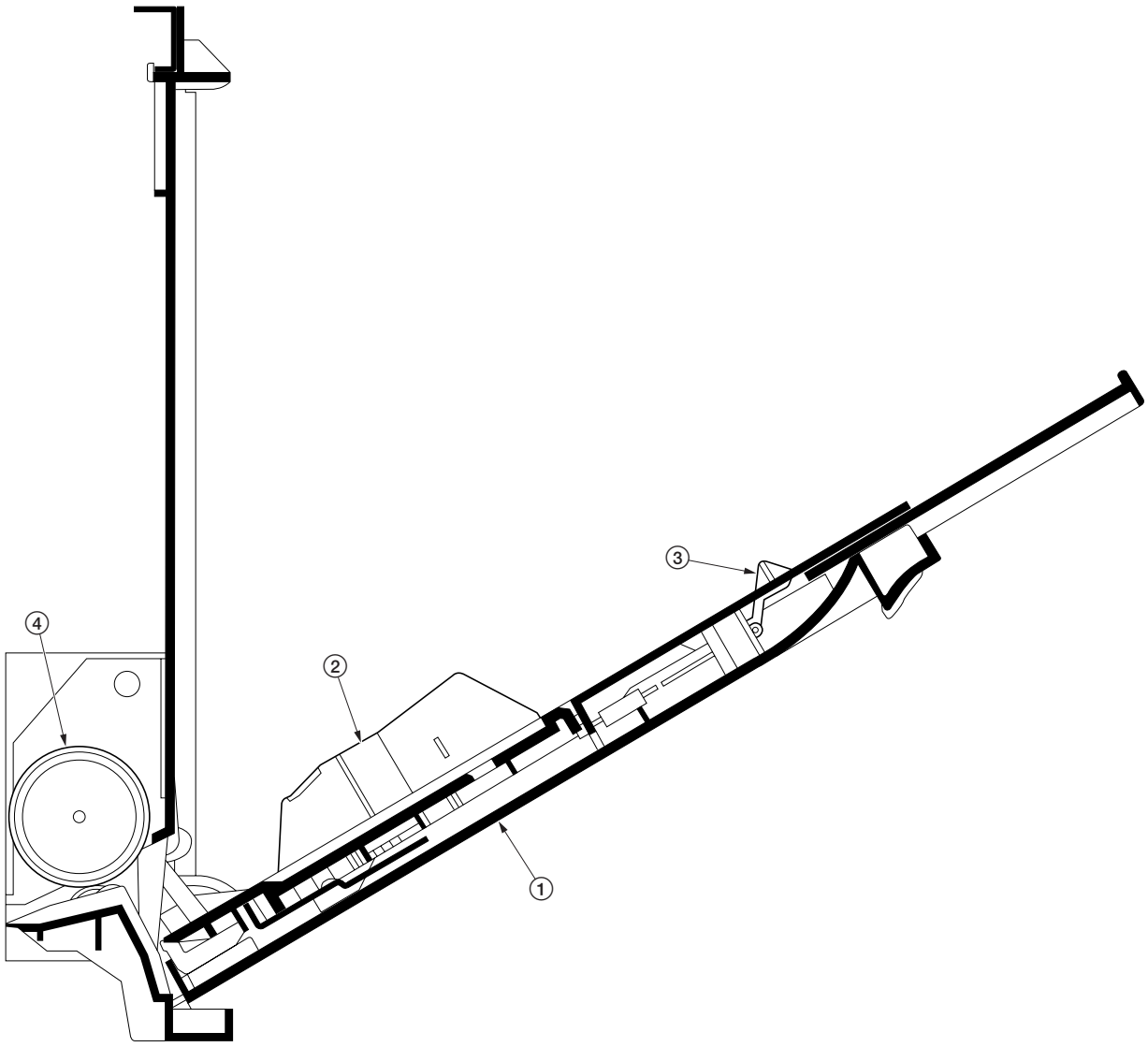


Figure 2-1-6 MP tray unit

① MP tray
② Paper guide
③ MP tray paper length sensor
④ MP tray feed roller

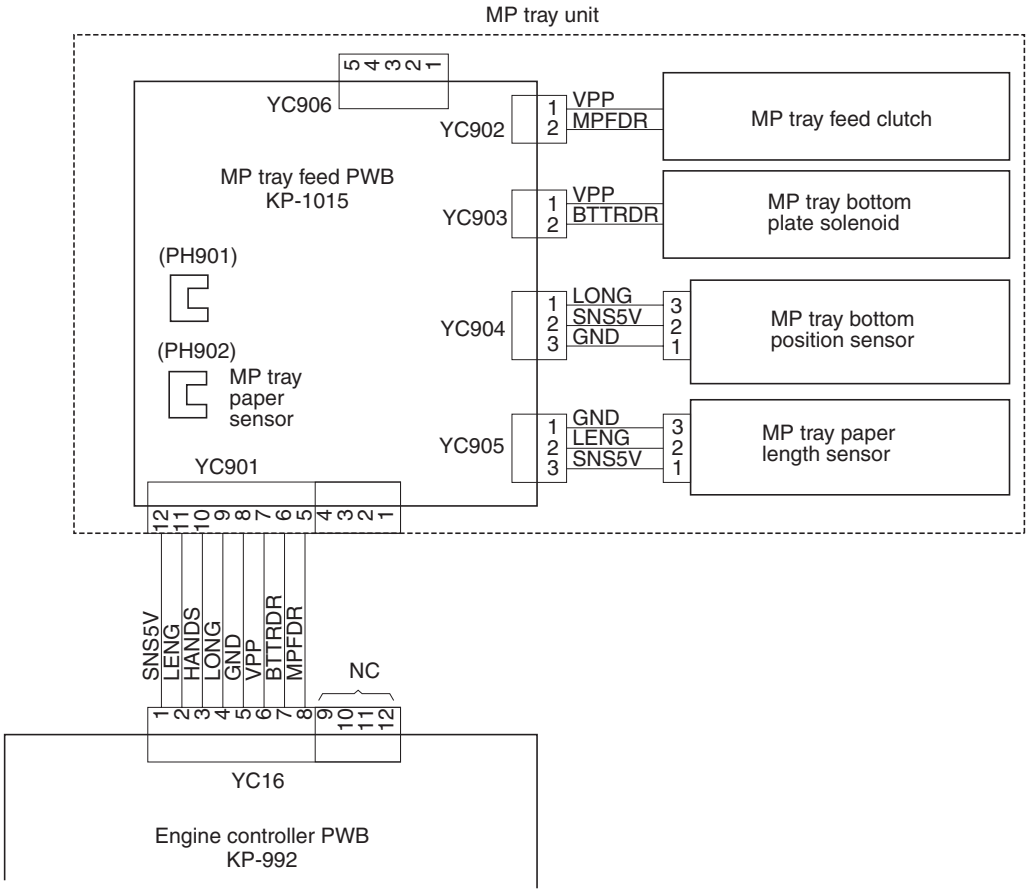


Figure 2-1-7 MP tray feed unit block diagram

2-1-3 Laser scanner unit

The laser scanner unit consists of a polygon mirror motor, laser diode, beam-detector unit, lenses, the automatic power controller board, etc.

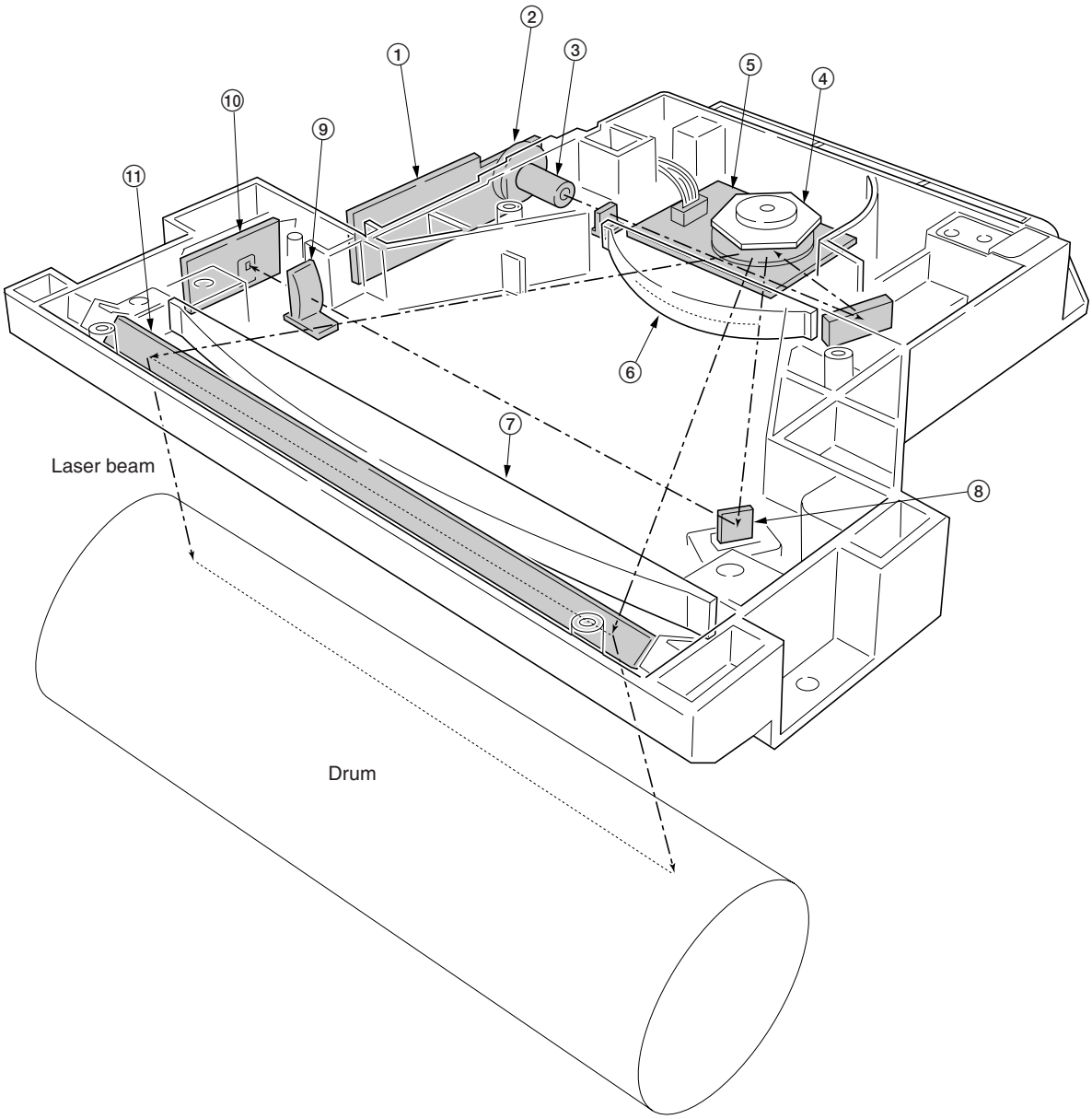


Figure 2-1-8 Laser scanner unit

① APC PWB
② Laser diode
③ Collimator lens
④ Polygon mirror
⑤ Polygon motor
⑥ fθ lens
⑦ fθ lens
⑧ BD sensor mirror
⑨ Cylindrical correcting lens
⑩ PD PWB
⑪ Diversion mirror

① APC PWB: Laser power control.
② Laser diode: Generates the laser beam (400 mW±30 %, 670 nm) which forms a latent image on the drum.
③ Collimator lens: Collimates the diffused laser beam emitted from the laser diode to convert it into a cylindrical beam.
④ Polygon mirror: Six-facet mirror that rotates at approximately 32038.839 rpm with each face reflecting the laser beam toward the drum for one main-direction scan.
⑤ Polygon motor: Rotation polygon mirror.
⑥ Fθ lens: Corrects for non-linearity of the laser beam scanning speed on the drum surface, keeps the beam diameter constant and corrects for the vertical alignment of the polygon mirror to ensure that the focal plane of the laser beam is on the drum surface.
⑦ Fθ lens: Corrects for non-linearity of the laser beam scanning speed on the drum surface, keeps the beam diameter constant and corrects for the vertical alignment of the polygon mirror to ensure that the focal plane of the laser beam is on the drum surface.
⑧ BD sensor mirror: Reflects the laser beam to the BD sensor [PD PWB] to generate the main-direction (horizontal) sync signal.
⑨ Cylindrical correcting lens: Corrects for the deviation of the laser beam reflected by the BD sensor mirror to the BD sensor [PD PWB].
⑩ BD sensor [PD PWB]: Detects the beam reflected by the BD sensor mirror, outputting a signal to the engine controller PWB to provide timing for the main-direction sync signal.
⑪ Diversion mirror: Reflects the laser beams onto the drum surface.

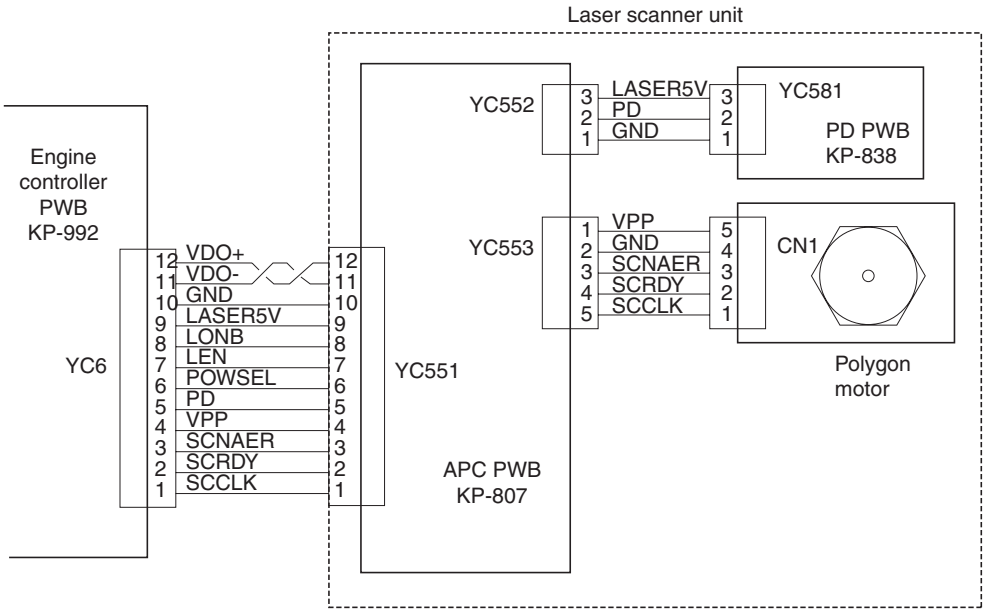


Figure 2-1-9 Laser scanner unit block diagram

2-1-4 Developer

The printer has developers in four colors – yellow, magenta, cyan, and black. Each of the developers except black has the respective toner container mounted directly, including the toner feed mechanism. Since the black developer has to be seated right underneath the drum unit, which prevents the black toner container directly mounted on the developer, the toner container is separated from the developer.

To accomplish color print process, each developer implements developing in the specific color as the drum unit rotates a turn. While a color development is in process, the developers for other colors should be disabled. For this purpose, a shutter utilizing magnetism is provided for each developer that effectively close the gateway for the developer (toner + carrier) to the developing roller. Also in the developing process for monochrome printing, developing of colors other than black must be prevented. As a mechanism for this purpose, each developer is equipped with a shutter that makes use of magnetic force, and when developing is not needed, exposure of developer to the drum side of the developing roller can be prevented.

When development for the specific color is not required, the magnet in the sleeve faces towards the developing roller by means of a spring. The magnet behaves as a shutter and prevents developer (toner + carrier) from being fed outwards as the magnet repels the developer (toner + carrier). When development is required for the color, a solenoid is activated to turn the magnet so that the magnet is away 180° from the developing roller. Thus, the developer is fed to the drum side with the sleeve of the developing roller and only the toner is transferred to the drum with the magnetic brush formed on the magnet N1 pole of the developing roller. Developing is performed in this way.

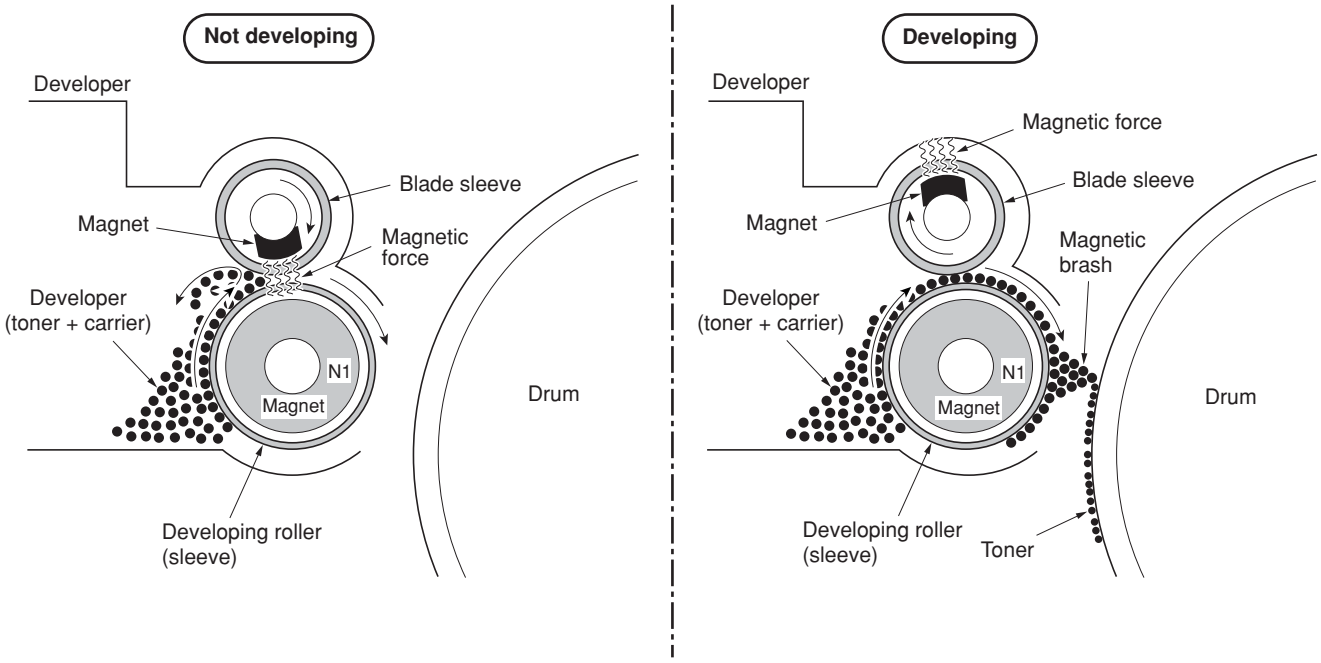


Figure 2-1-10 Magnetic shutter

(1) Yellow developer

The yellow toner container is directly mounted atop the yellow developer. As the yellow toner feed motor turns on to feed toner, the toner pours down in the toner hopper onto the paddle. The paddle drives toner to the mixer tube. The mixer tube has a mixer screw inside which revolves coaxially with the paddle. The mixer screw and the paddle rotate in the opposite direction to each other, ensuring the effective circulation of developer (toner + carrier) in the hopper.

The developing roller has a 5-pole magnet and a sleeve located coaxially to the magnet. Developer (toner + carrier) is carried along the sleeve as it rotates and passed between the blade sleeve and the developing sleeve. The gap between the sleeves is adjusted so that a constant layer of developer (toner + carrier) is constituted over the developing roller. The magnetic brush (toner + carrier) is constituted at the opposite area circumferentially to pole N1 and flies toner over to the drum.

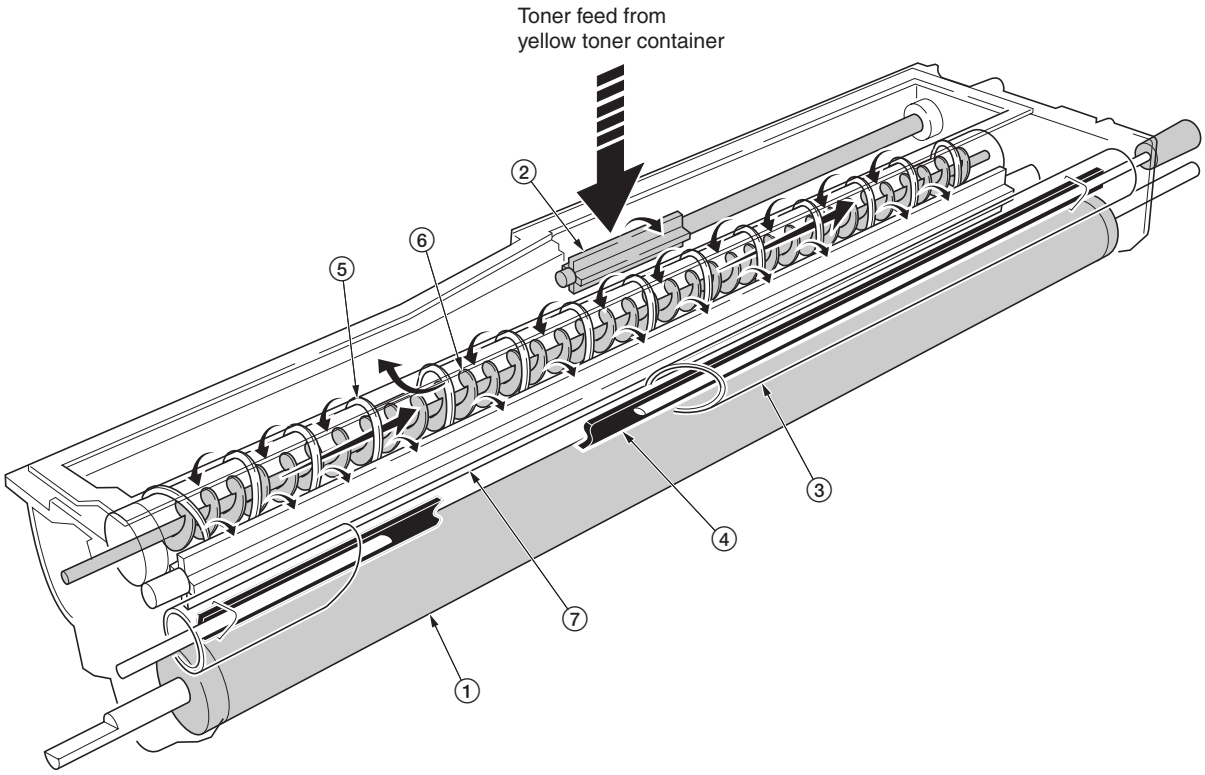


Figure 2-1-11 Yellow developer

① Developing roller
② Toner feed paddle
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Agitation paddle

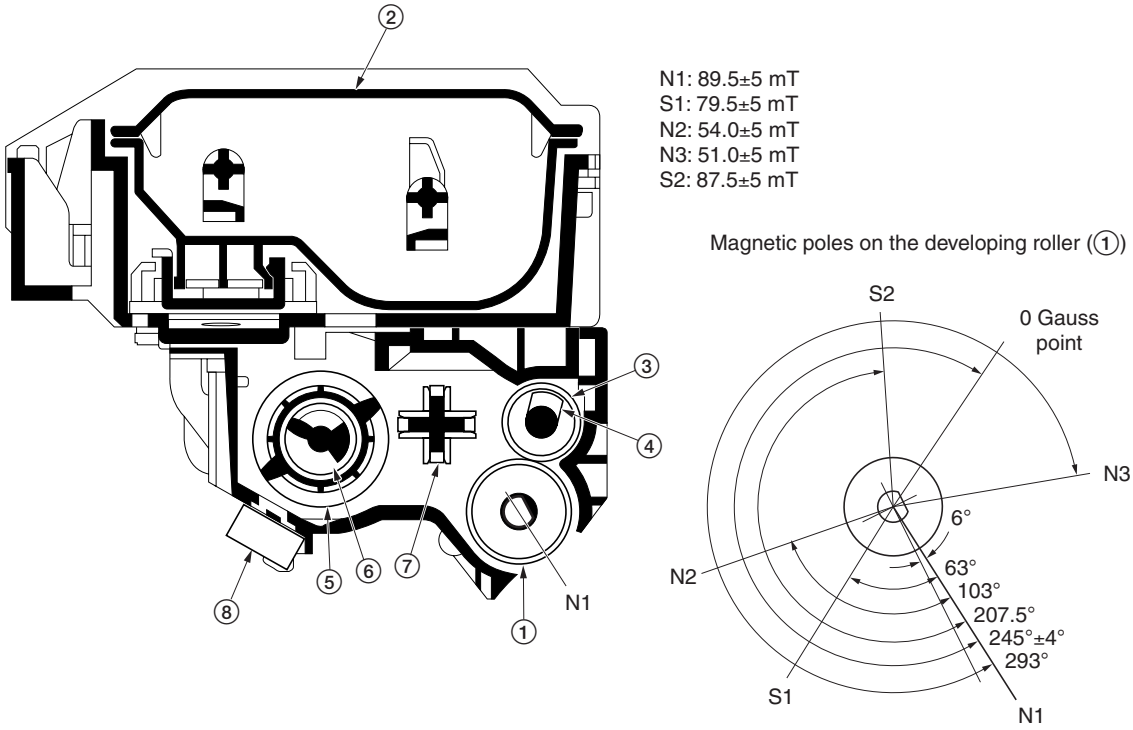


Figure 2-1-12 Yellow developer and magnetic poles on the developing roller

① Developing roller
② Yellow toner container
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Agitation paddle
⑧ Yellow T/C sensor

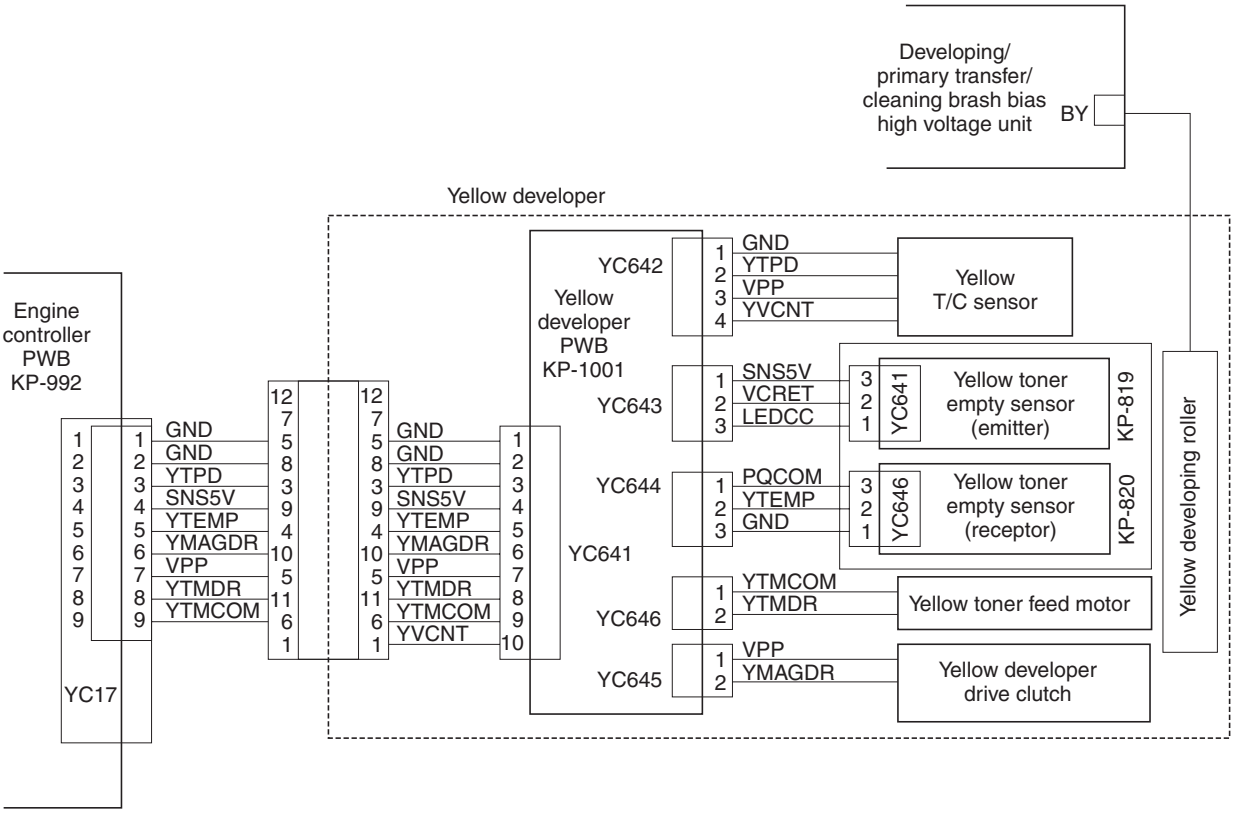


Figure 2-1-13 Yellow developer block diagram

(2) Magenta developer

The magenta toner container is directly mounted atop the magenta developer. As the magenta toner feed motor turns on to feed toner, the toner pours down in the toner hopper onto the paddle. The paddle drives toner to the mixer tube. The mixer tube has a mixer screw inside which revolves coaxially with the paddle. The mixer screw and the paddle rotate in the opposite direction to each other, ensuring the effective circulation of developer (toner + carrier) in the hopper.

The developing roller has a 5-pole magnet and a sleeve located coaxially to the magnet. Developer (toner + carrier) is carried along the sleeve as it rotates and passed between the blade sleeve and the developing sleeve. The gap between the sleeves is adjusted so that a constant layer of developer (toner + carrier) is constituted over the developing roller. The magnetic brush (toner + carrier) is constituted at the opposite area circumferentially to pole N1 and flies toner over to the drum.

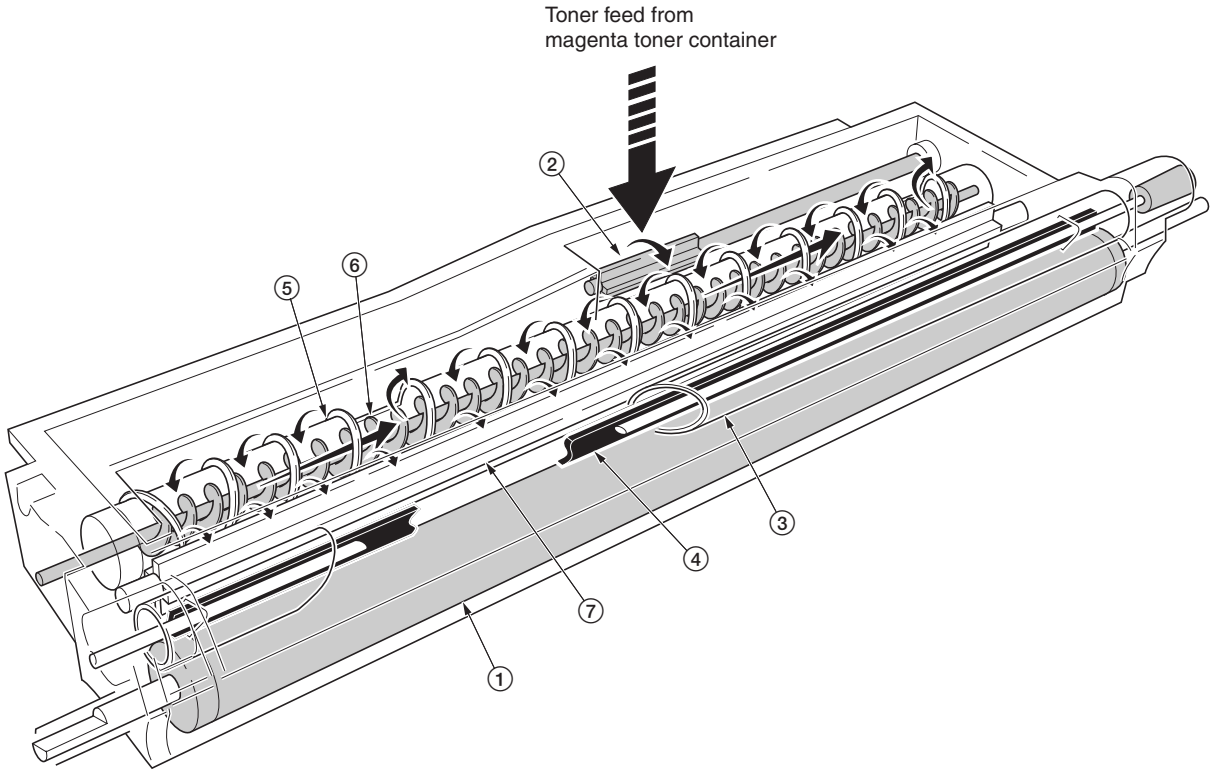


Figure 2-1-14 Magenta developer

① Developing roller
② Toner feed paddle
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Agitation paddle

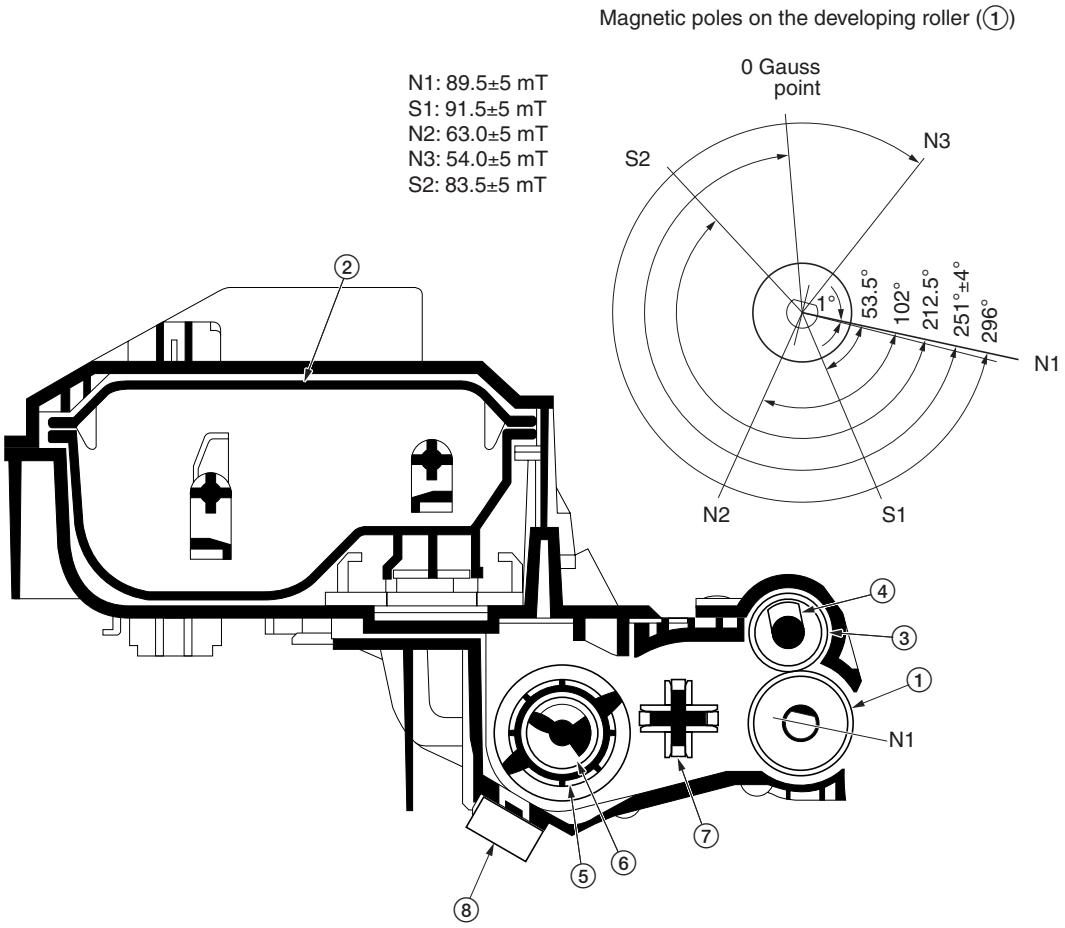


Figure 2-1-15 Magenta developer and magnetic poles on the developing roller

① Developing roller
② Magenta toner container
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Agitation paddle
⑧ Magenta T/C sensor

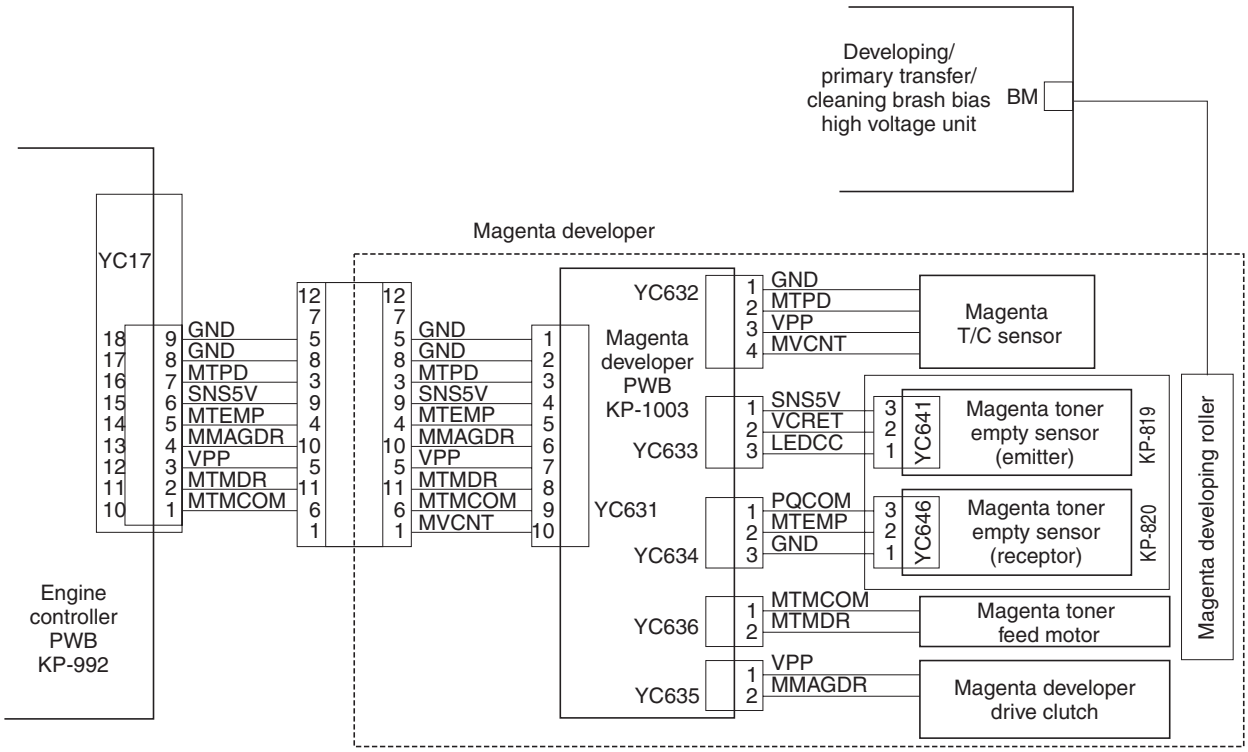


Figure 2-1-16 Magenta developer block diagram

(3) Cyan developer

The cyan developer, unlike the other color developers, has the toner container with a considerable offset in terms of mounting. Toner replenished by the cyan toner container is driven via a horizontal pathway into the hopper in the developer. As the motor for feeding toner turns on, toner begins driven in a free-fall fashion onto the toner supply screw which is joined with the motor for feeding the cyan toner. The toner supply screw horizontally relays the toner up to the mixer tube. The mixer tube has a mixer screw inside which revolves coaxially with the tube. The mixer tube and the mixer screw rotate in the opposite direction to each other, ensuring the effective circulation of developer (toner + carrier) in the hopper.

The developing roller has a 5-pole magnet and a sleeve located coaxially to the magnet. Developer (toner + carrier) is carried along the sleeve as it rotates and passed between the blade sleeve and the developing sleeve. The gap between the sleeves is adjusted so that a constant layer of developer (toner + carrier) is constituted over the developing roller. The magnetic brush (toner + carrier) is constituted at the opposite area circumferentially to pole N1 and flies toner over to the drum.

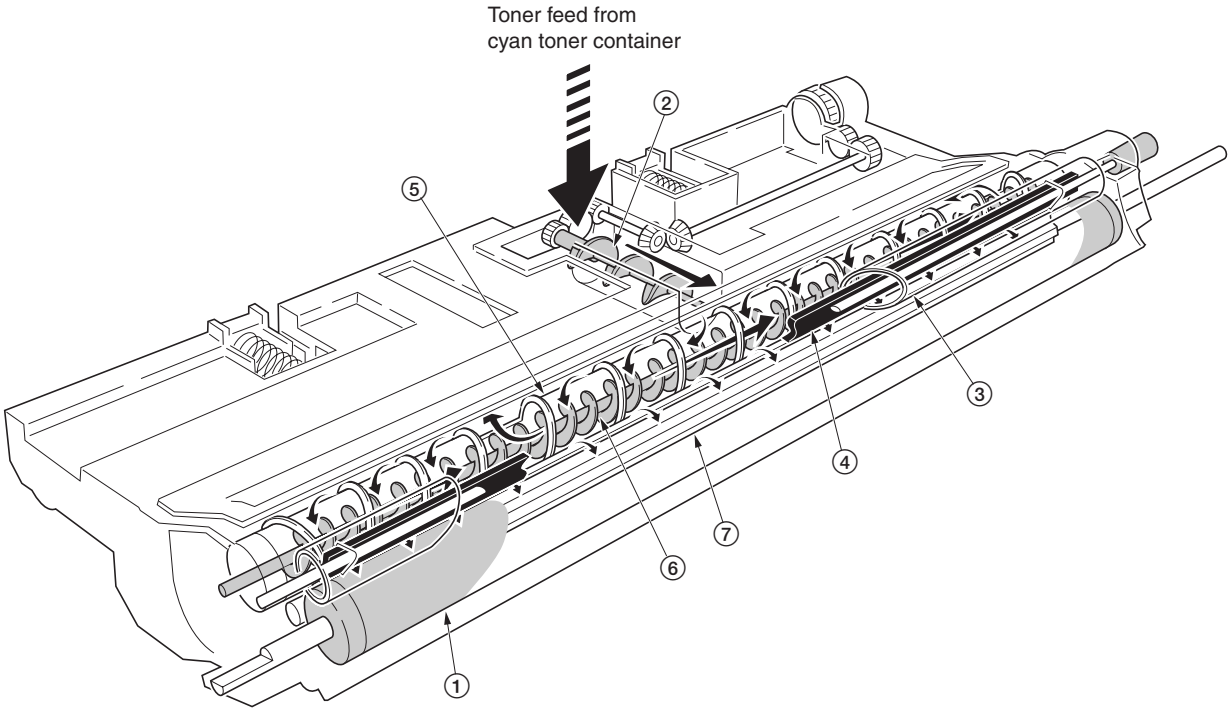


Figure 2-1-17 Cyan developer

① Developing roller
② Toner supply screw
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Agitation paddle

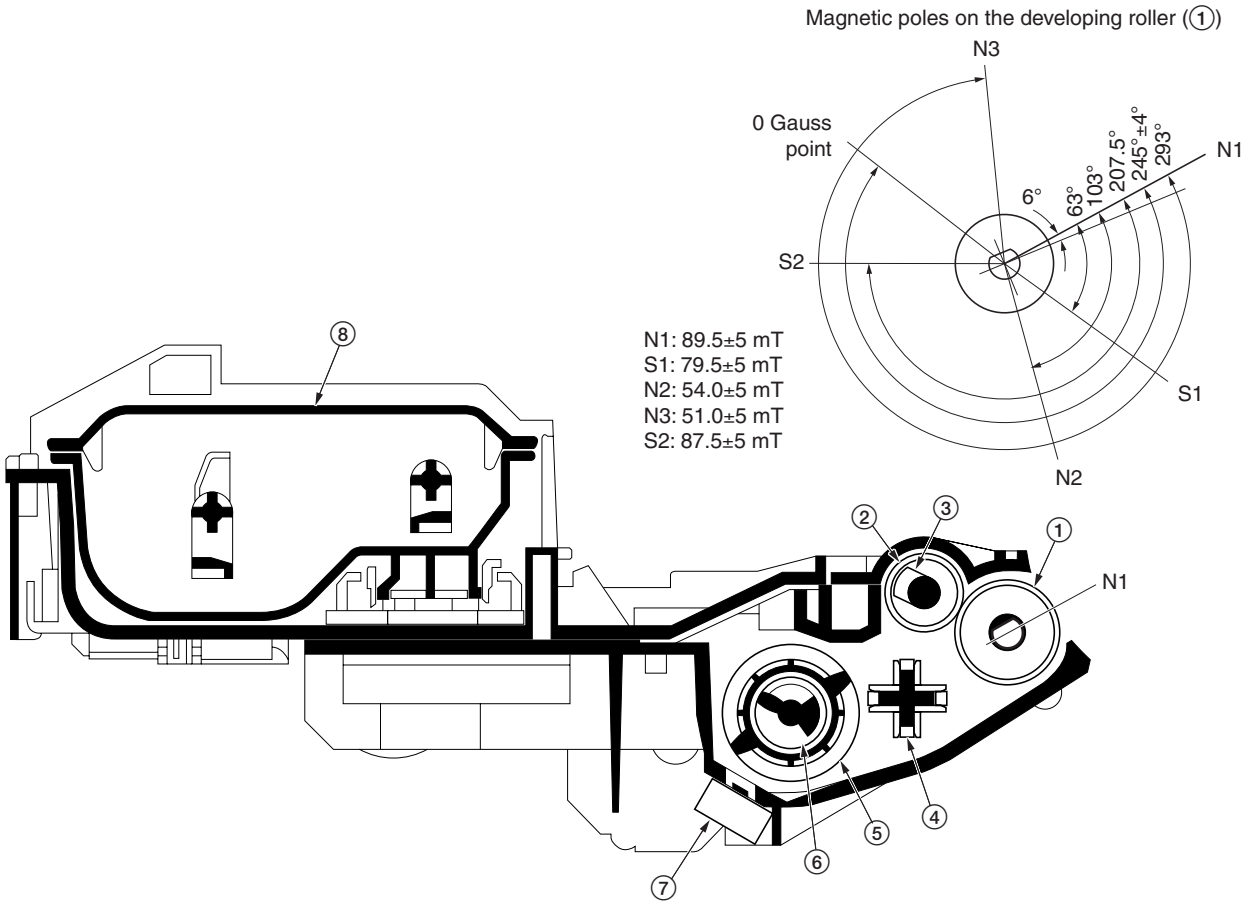


Figure 2-1-18 Cyan developer and magnetic poles on the developing roller

① Developing roller
② Blade sleeve
③ Shutter magnet
④ Agitation paddle
⑤ Mixer tube
⑥ Mixer screw
⑦ Cyan T/C sensor
⑧ Cyan toner container

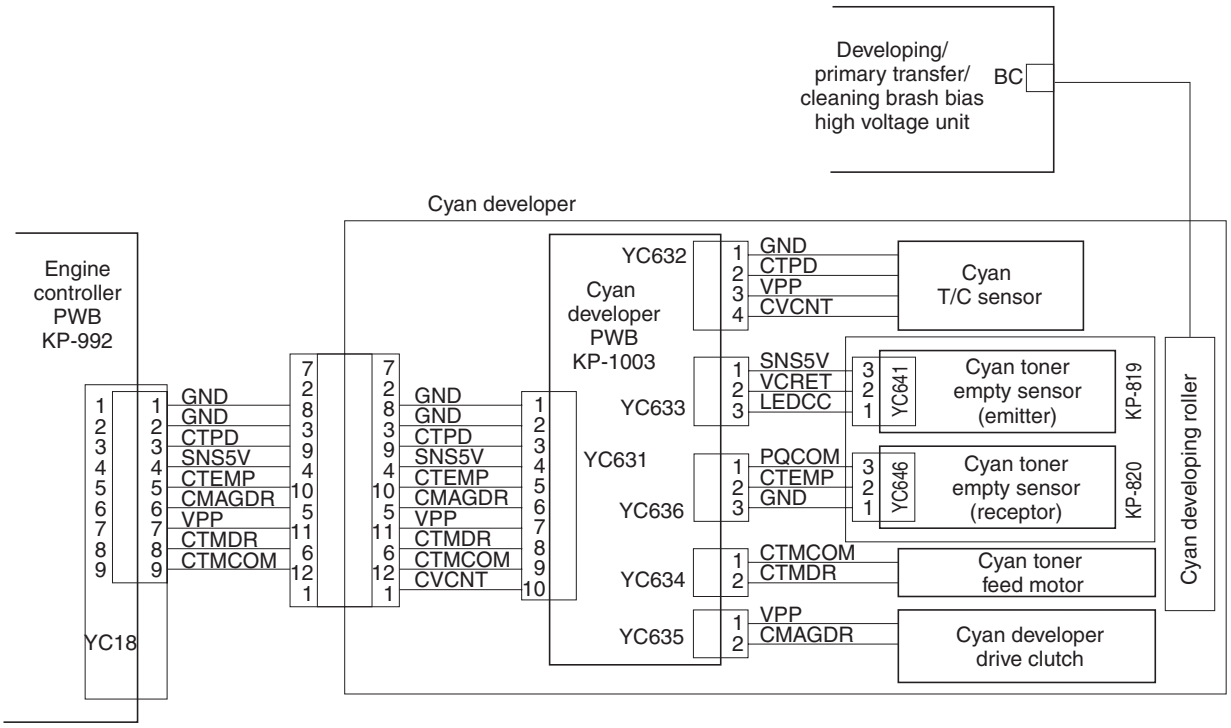


Figure 2-1-19 Cyan developer block diagram

(4) Black developer

Since the black developer has to be seated right underneath the drum unit, which prevents the black toner container directly mounted on the developer. The toner container is located in area above the primary transfer unit. Toner feeding from the toner container to the developer unit is accomplished by the feed assembly which includes a tube through which the toner is conveyed.

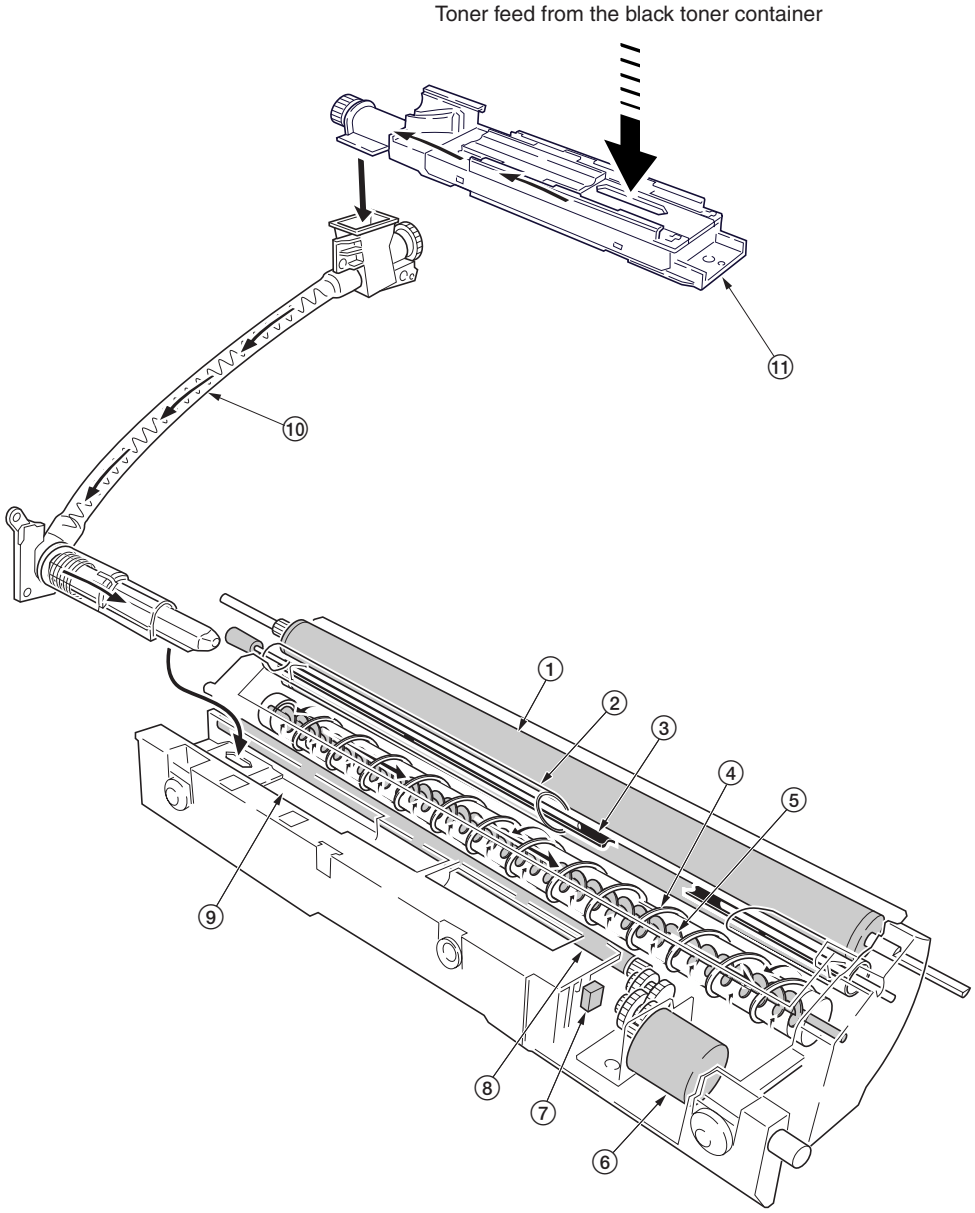


Figure 2-1-20 Black developer

① Developing roller
② Blade sleeve
③ Shutter magnet
④ Mixer tube
⑤ Mixer screw
⑥ Black toner feed motor
⑦ Black toner intermediate hopper sensor
⑧ Toner feed magnet roller
⑨ Intermediate toner hopper
⑩ Black toner feed assembly
⑪ Black toner container feed assembly

The black developer has an intermediate toner hopper and developing hopper inside. The toner temporarily stored in this intermediate hopper is driven to the mixer tube in the toner hopper by means of the magnet roller when the toner density falls. The mixer tube which has a mixer screw inside which revolves coaxially with the mixer tube redistributing developer (toner + carrier) in the opposite directions. Redistributing developer (toner + carrier) also positive-charges the developer (toner + carrier) owing to static electricity. The charged developer (toner + carrier) is then sent to the developing roller. Since the black developer has its developing roller at its top, developer (toner + carrier) must be escalated from the hopper to the developing roller. To accomplish this, the developer (toner + carrier) is slightly magnetized and an intermediate (3-pole) magnet roller is provided in the middle of the developing chamber. The developer (toner + carrier) is attracted by magnetism by this intermediate magnet roller, escalated, and fed to the developing roller.

The developing roller has a 5-pole magnet and a sleeve which rotates coaxially to the magnet. Developer (toner + carrier) is carried along the sleeve as it rotates and passed between the blade sleeve and the developing sleeve. The gap between the sleeves is adjusted so that a constant layer of developer (toner + carrier) is constituted over the developing roller. The magnetic brush (toner + carrier) is constituted at the opposite area circumferentially to pole N1 and flies toner over to the drum.

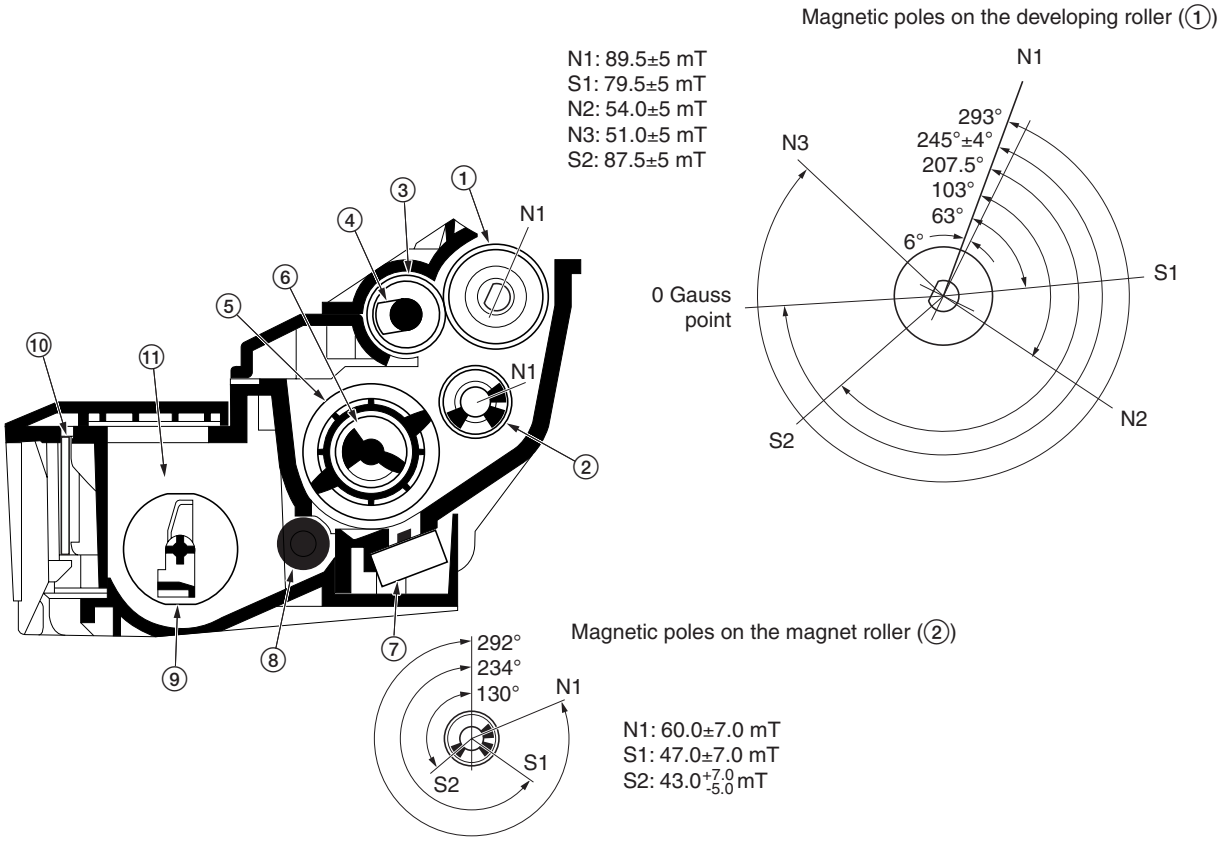


Figure 2-1-21 Black developer and magnetic poles on the developing roller

① Developing roller
② Magnet roller
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Black T/C sensor
⑧ Toner feed magnet roller
⑨ Agitation paddle
⑩ Black developer PWB [KP-1005]
⑪ Intermediate toner hopper

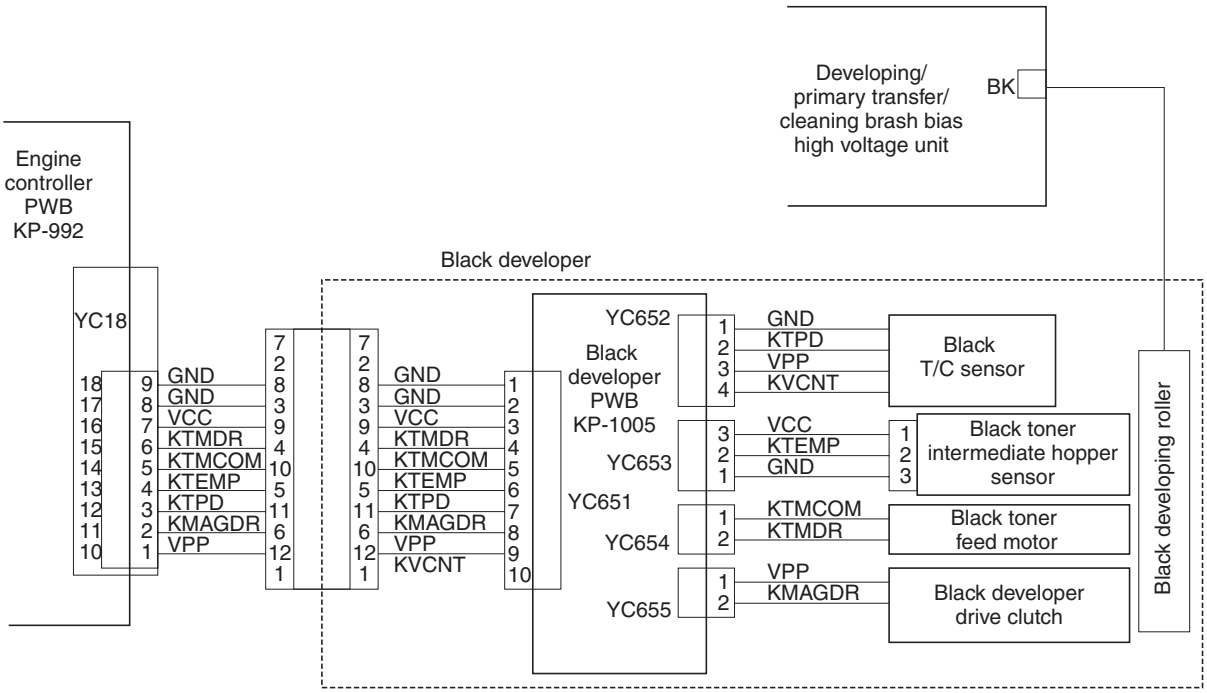


Figure 2-1-22 Black developer block diagram

Engine control for black toner development

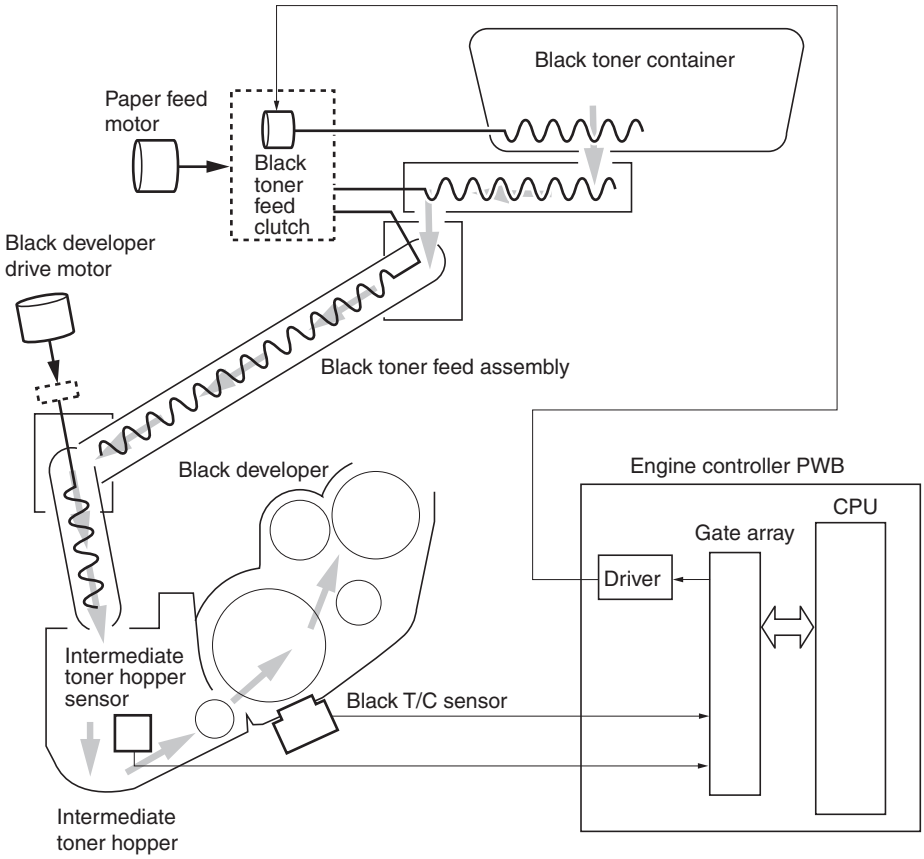
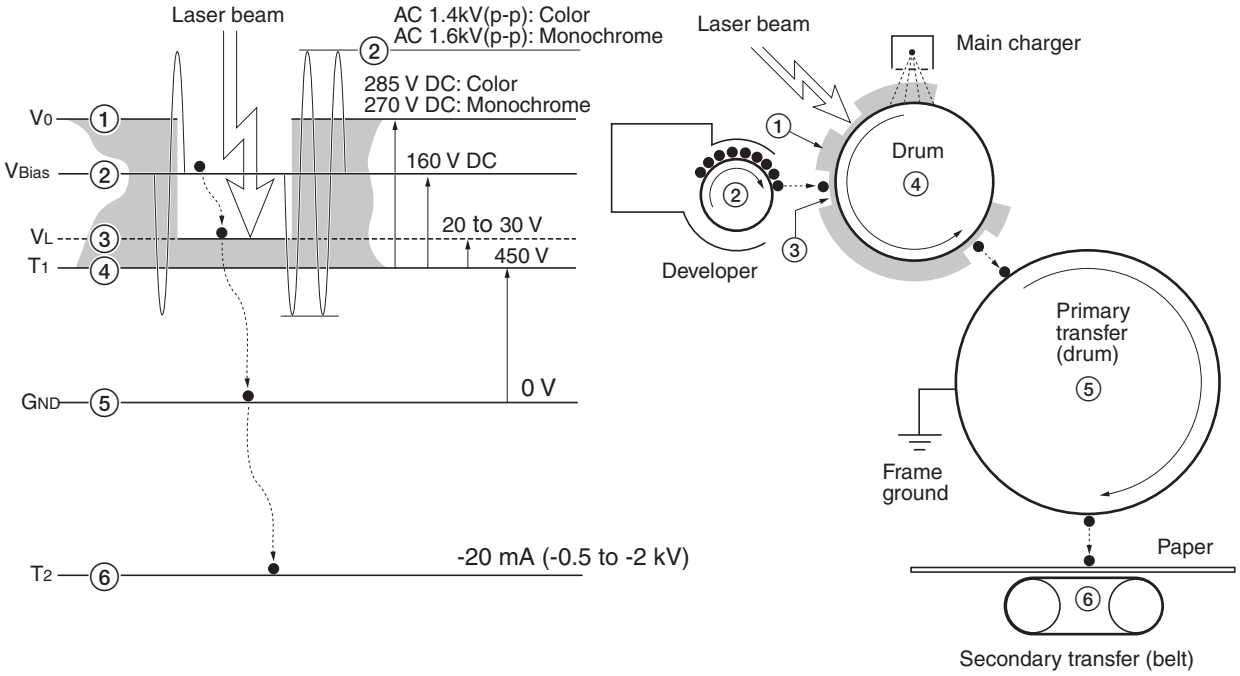


Figure 2-1-23 Black developer block diagram

CPU on the engine controller PWB watches the amount of the black toner by means of a sensor in the intermediate toner hopper in the black developer. When the black toner dwindles, the clutch that feeds the black toner is activated to feed toner from the black toner container to the feed assembly for the black toner. Then the black toner is lowered to the side of the black developer by the screw in the black toner feed assembly and fed to the intermediate toner hopper in the black developer by drive of the black toner developer drive motor. The feed assembly for the black toner is driven by a motor and passed to the intermediate hopper in the black developer.

(5) Transition of toner for development

Toner, basically a charged ink in positive polarity, travels through the developer, the drum, the primary transfer unit, and finally transferred on paper, all by means of voltage differences. The diagram below shows how the toner moves from the developer to the paper in a delicate balance among the biases.



●●●		: Toner (positive-charged)
		Main charge on the drum
V_0	①	Drum surface voltage by the main charger output (Yellow/Magenta/Cyan: 285 V DC, Black: 270 V DC)
V_L	③	Exposed drum surface voltage
V_{Bias}	②	Developing bias DC + AC (f= 6.0 kHz) (Yellow/Magenta/Cyan: 160 V DC, 1.4 kV AC, Black: 180 V DC, 1.6 kV AC)
T_1	④	Drum base voltage (variable by temperature and humidity)
GND	⑤	Frame ground
T_2	⑥	Secondary transfer bias (adjusted according to paper type)

Figure 2-1-24 Transition of toner for development

2-1-5 Drum unit and main charger unit

(1) Drum unit

The drum unit includes the photoconductor (ø 80 mm), cleaning system, eraser system, etc. Amorphous-silicon material is used for the photoconductor. During the electrophotographic process, the photoconductor is charged with high voltage dispersed by the main charger wire. On the flange located at the back of the drum unit are 18 pins which are used for interrupters to the offset drum sensor. These pins and the sensor generate the pulse signal which is used as the reference at which the drum begins revolution.

The residual toner on the drum unit is scraped off by the cleaning blade and removed by the cleaning roller. The cleaning roller is directly in contact with the drum and rotates 1.2 times faster than the drum unit in the opposite direction, effectively polishing the drum. The waste toner is driven outwards by a screw.

The eraser lamp disperses the light over the drum to quench the residual charge when image transfer has finished.

The drum unit includes a PWB on which a EEPROM is held to store data such as the drum sensitivity and maintain the serial number, life count, etc., proprietary to the individual drum unit. The drum sensitivity information is utilized for compensation of the main charging magnitude specifically to the individual drum. The innate image quality is not obtainable in case the photoconductor is replaced in the drum unit.

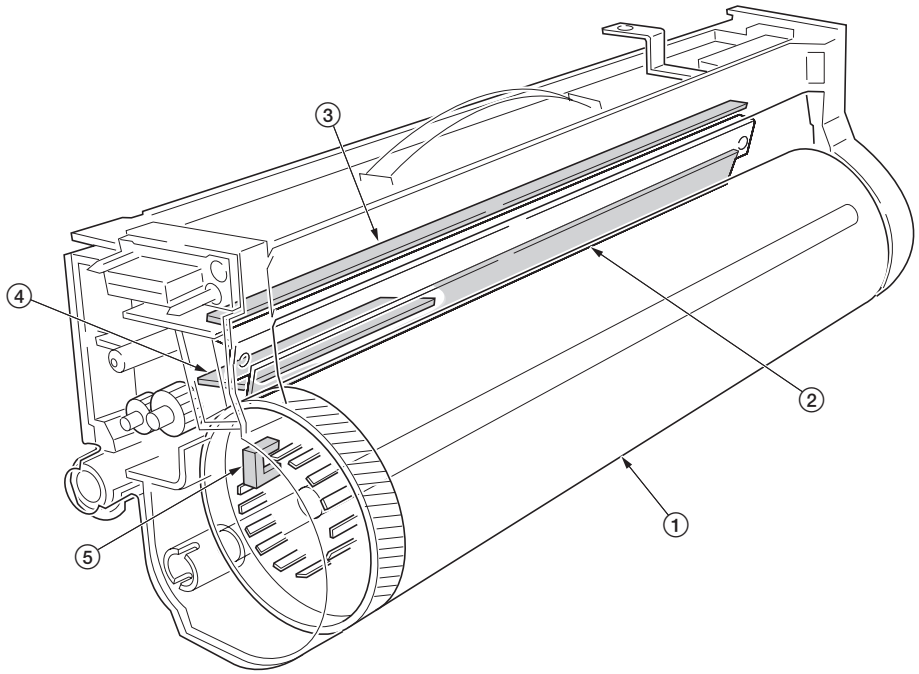


Figure 2-1-25 Drum unit

① Drum
② Cleaning blade
③ Eraser lamp
④ Drum PWB [KP-999]
⑤ Offset drum sensor

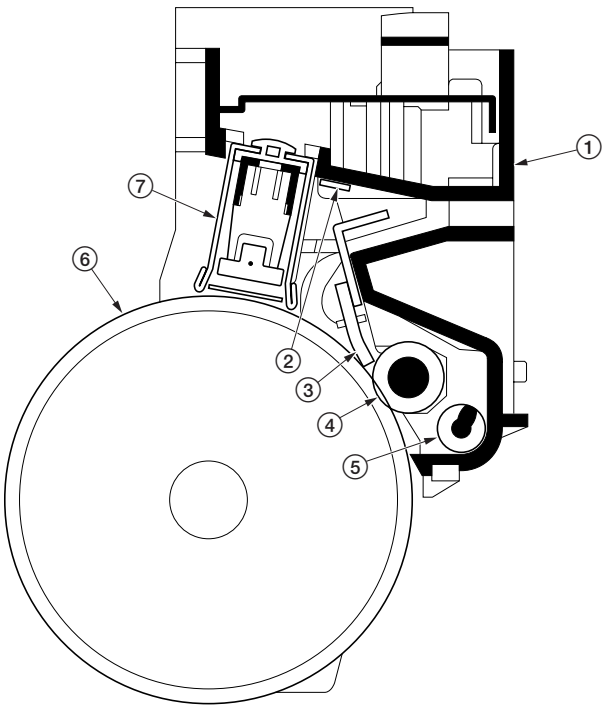


Figure 2-1-26 Drum unit

① Drum unit
② Eraser lamp
③ Cleaning blade
④ Cleaning roller
⑤ Waste toner exit screw
⑥ Drum
⑦ Main charger unit

The printer use the long lasting amorphous silicon drum. The drum surface is a composite of five substances coated in five layers as shown below.

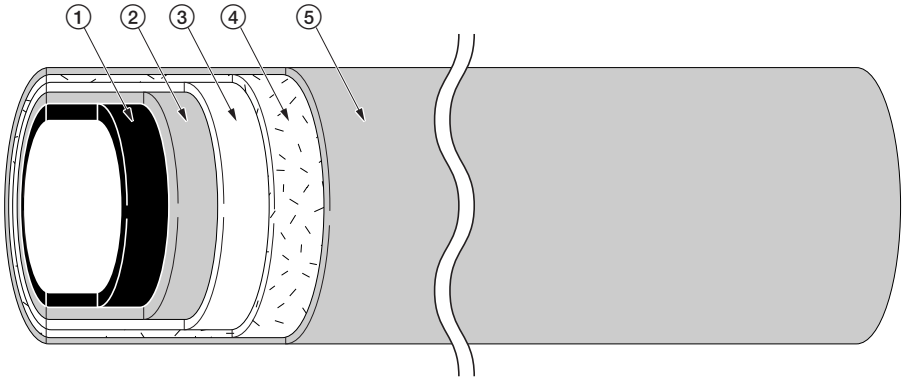


Figure 2-1-27 Amorphous silicon drum layer

① Aluminum base
② Carrier block (1 to 3 μm thick)
③ Photoconductor a-Si
④ Primary protection layer (1 μm thick)
⑤ Secondary protection layer

The primary and secondary layers are for protecting the amorphous silicon layer underneath. The amorphus silicon layer is of photoconductive, meaning it can be electronically conductive when exposed to a (laser) light source to effectively ground electrons charged on its outer surface to the ground. This layer is approximately 12 μm thick. The carrier block layer lies between the amorphous silicon layer and the aluminum base cylinder and prevents the backward electron flow, from the base cylinder to the drum's outer surface, which might give adverse effect (possibly "ghost") on the print quality.

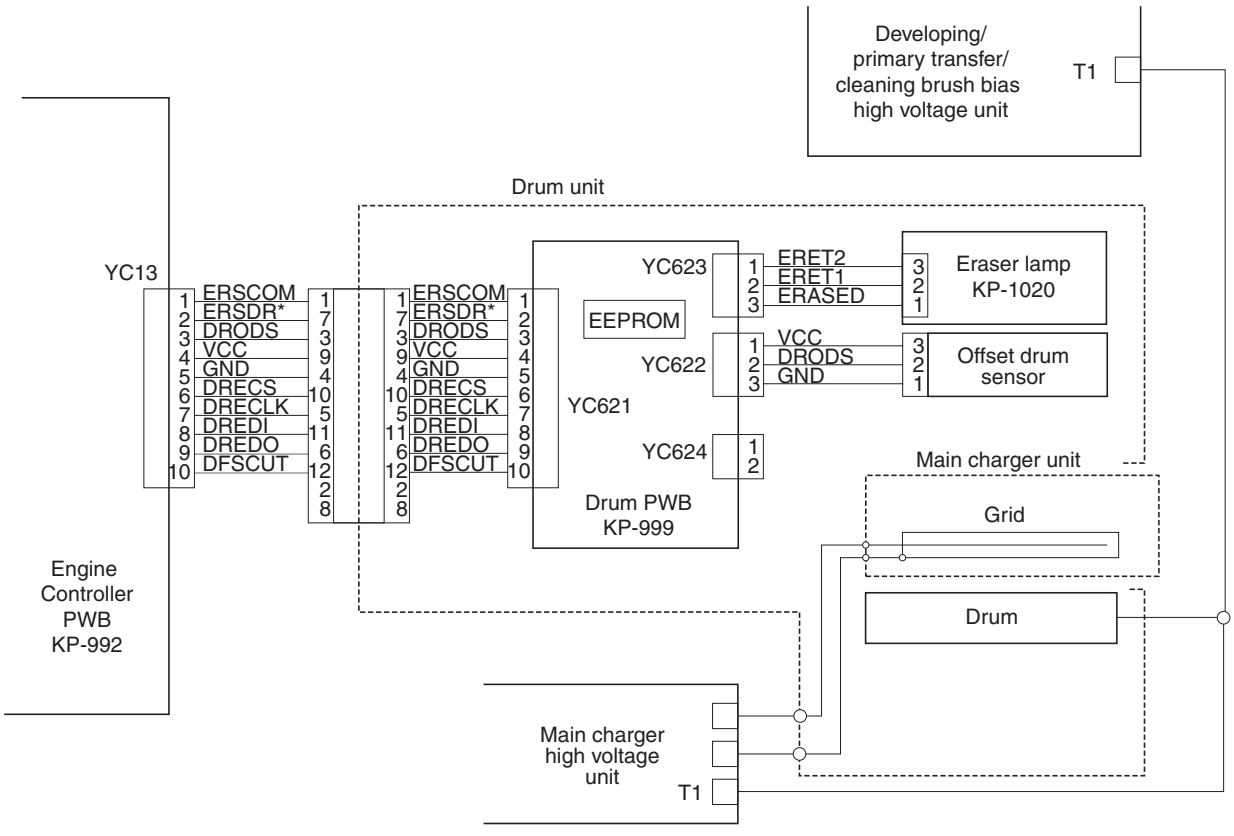


Figure 2-1-28 Drum unit and main charger unit block diagram

Dark decay

The main charge to the drum is delicately controlled by adjusting both the high voltage (+6 to +7 kV) and the potential at the main charger grid. The potential developed at the surface of the drum is also affected by the inherent sensitivity of the drum. The charge on the surface of the drum decreases as time passes by at the rate of approximately 100 V per second, known as the “dark decay.” Since the developer units are located over different distances around the drum’s circumference, to maintain the target surface potential (285 V for yellow/magenta/cyan, and 270 V for black) in the area on the drum where development for specific color occurs, the main charging is controlled in compensation with the dark decay for each color.

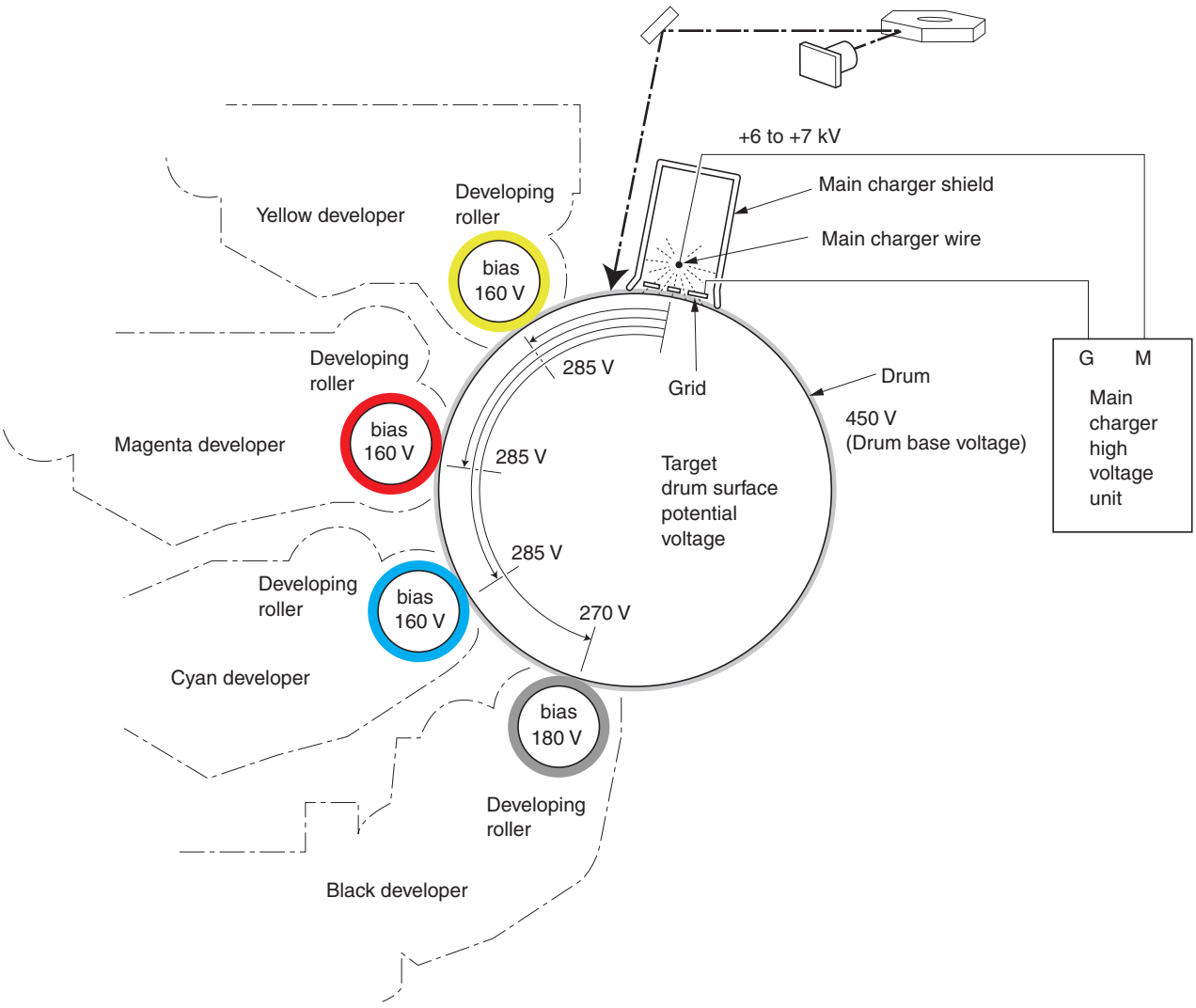


Figure 2-1-29 Dark decay

(2) Main charger unit

The main charger unit is devised at the top of the drum unit, consisting of a wire, grid, and a shield. The main charger disperses +6 kV to +7 kV high voltage over the drum in the beginning of the electrophotographic cycle. To clean the main charger wire of carbon dioxide, a manual cleaning system is provided.

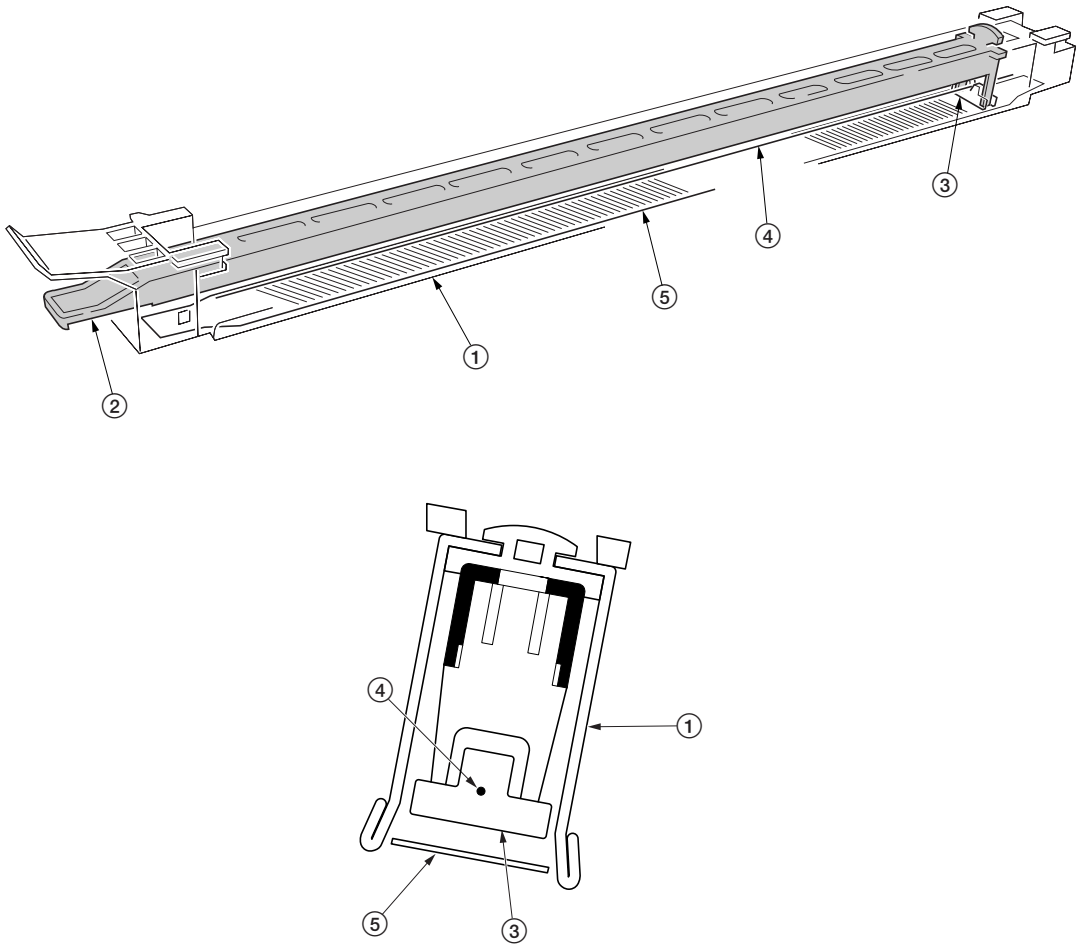


Figure 2-1-30 Main charger unit

1 Main charger shield
2 Main charger cleaning knob
3 Main charger cleaner
4 Main charger wire
5 Main charger grid

2-1-6 Primary transfer unit

(1) Primary transfer unit

The primary transfer unit has the primary transfer drum, as the main part, and the cleaning brush unit. The primary transfer drum is an aluminum cylinder, covered by the electroconductive sponge, and outermostly by the fluorine-coated rubber. The primary transfer drum is 160 mm diametric; whereas the photoconductor drum is 80 mm diametric, having a diameter ratio of 2 to 1. One rotation of the photoconductor drum can produce one page of A4 or Letter image over the half circumference of the primary transfer drum. In other words, the primary transfer drum can have two pages of A4 or Letter size; or one page of A3 or Ledger size at a time.
The cleaning brush unit is equipped with a primary transfer unit heater at the lower part to prevent image running due to dew condensation at the primary transfer unit and drum (photoconductor). The heater is turned on when the machine is in the sleep mode to keep the temperature at the primary transfer unit and drum (photoconductor).

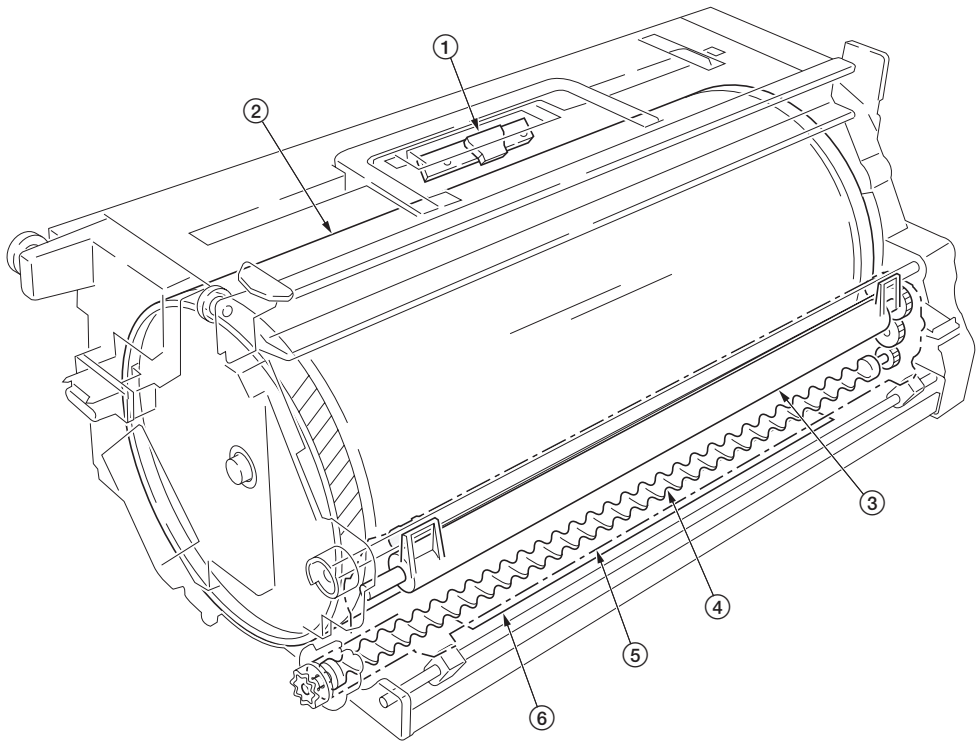


Figure 2-1-31 Primary transfer unit

① Primary transfer drum
② Image density sensor
③ Cleaning brush
④ Exit screw
⑤ Cleaning brush unit
⑥ Primary transfer unit heater

(2) Cleaning brush unit

The cleaning brush unit contains the cleaning brush, cleaning roller, cleaning brush blade, and a spiral screw, and acts to remove and recollect the residual toner on the primary transfer drum. Note that the residual toner is removed not by being scraped off but by the electrostatic attraction. The cleaning brush is applied via the cleaning roller with the – 600 V bias. Since the toner is positively biased, it is attracted to the cleaning brush. The residual toner attracted onto the cleaning brush is then scraped off by a blade and passed to the exit screw which in turn drives the toner to the waste toner duct.

A color image is constituted by four images of different colors overlapped one by one. The cleaning brush therefore must be dressed away from the primary transfer drum while a color image is being laid over the primary transfer drum before the subsequent transferring process. For this purpose, a cam mechanism that operates the cleaning brush unit is provided. The cam is driven by the cleaning brush unit shift solenoid for the cleaning brush.

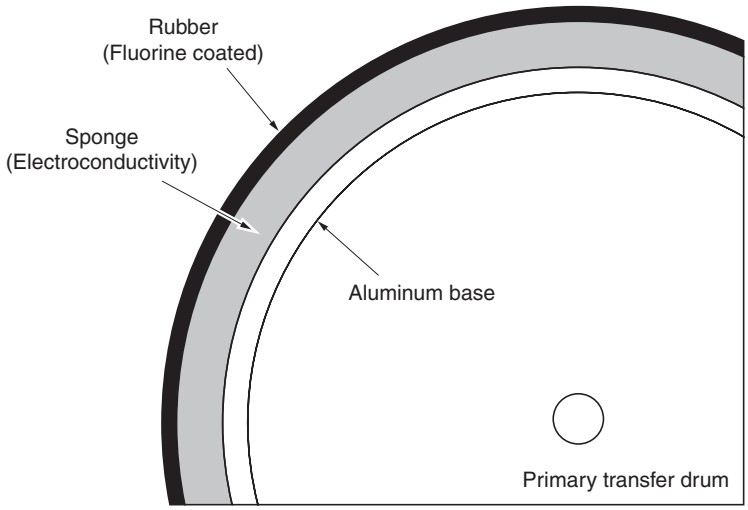


Figure 2-1-32 Primary transfer drum layer

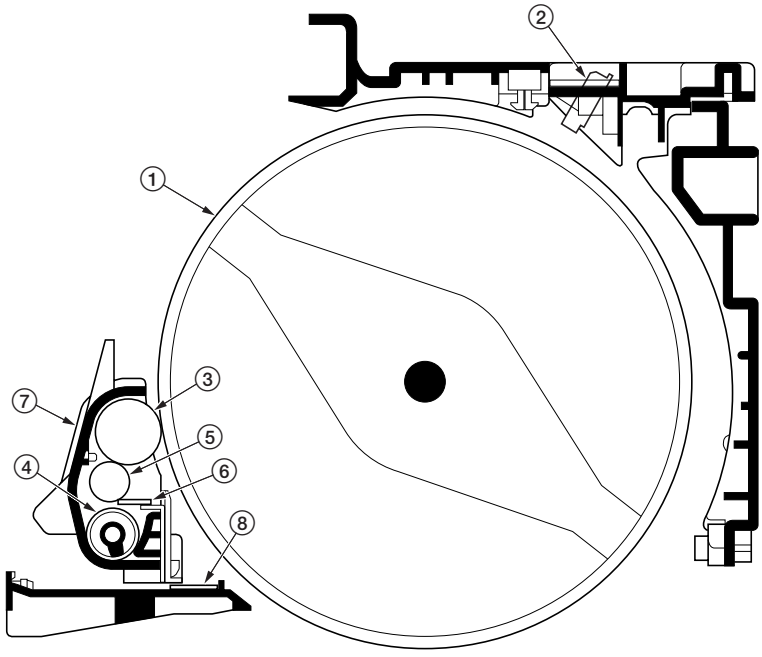


Figure 2-1-33 Primary transfer unit

① Primary transfer drum
② Image density sensor
③ Cleaning brush
④ Exit screw
⑤ Cleaning roller
⑥ Cleaning brush blade
⑦ Cleaning brush unit
⑧ Primary transfer unit heater

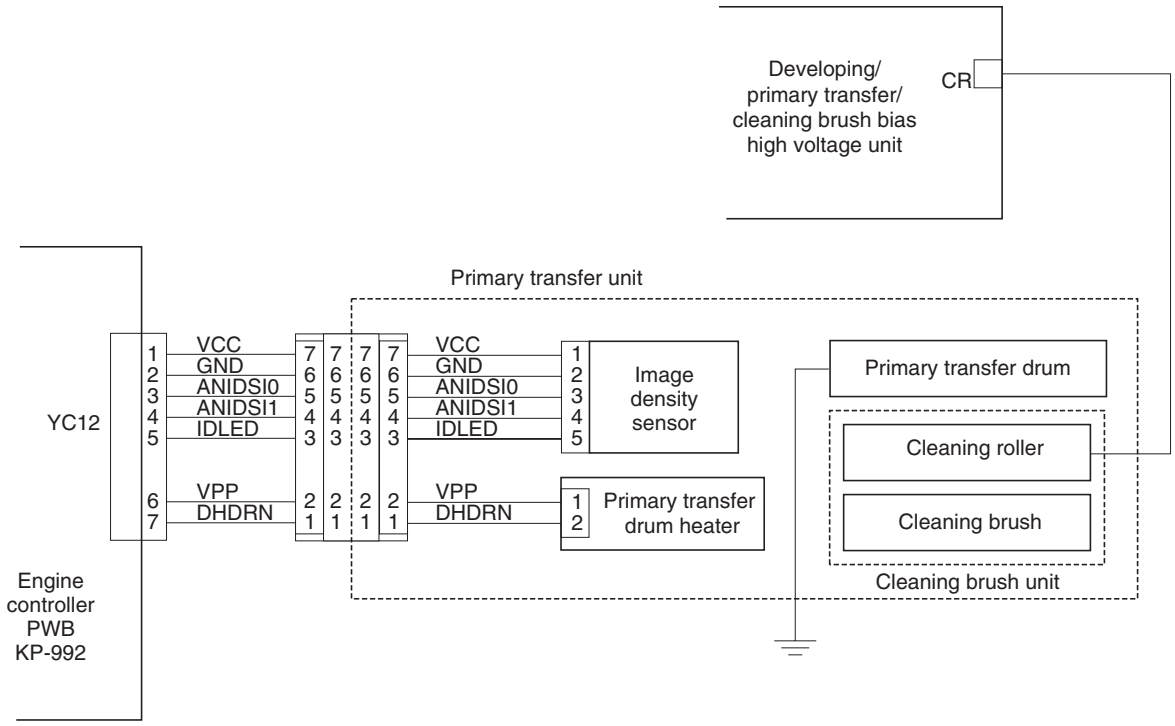


Figure 2-1-34 Primary transfer unit block diagram

Color print process

In color printing, an image in each color is constituted over the drum unit one after another. Each image is developed by toner and transferred onto the primary transfer drum until four layers of cyan, magenta, yellow, and black are constituted over the primary transfer drum. The color layers are constituted on the primary transfer drum in the order of yellow (bottom-most), magenta, cyan, and black (top-most).

The photoconductor drum can create an A4 image in one revolution. (The diametric ratio for the photoconductor drum and the primary transfer drum is 1 to 2.) The primary transfer drum can complete one A4 or Letter size image in a half revolution and two A4 or Letter size image in one revolution, or one A3 or Ledger size image in one revolution.

A3 size paper color printing process

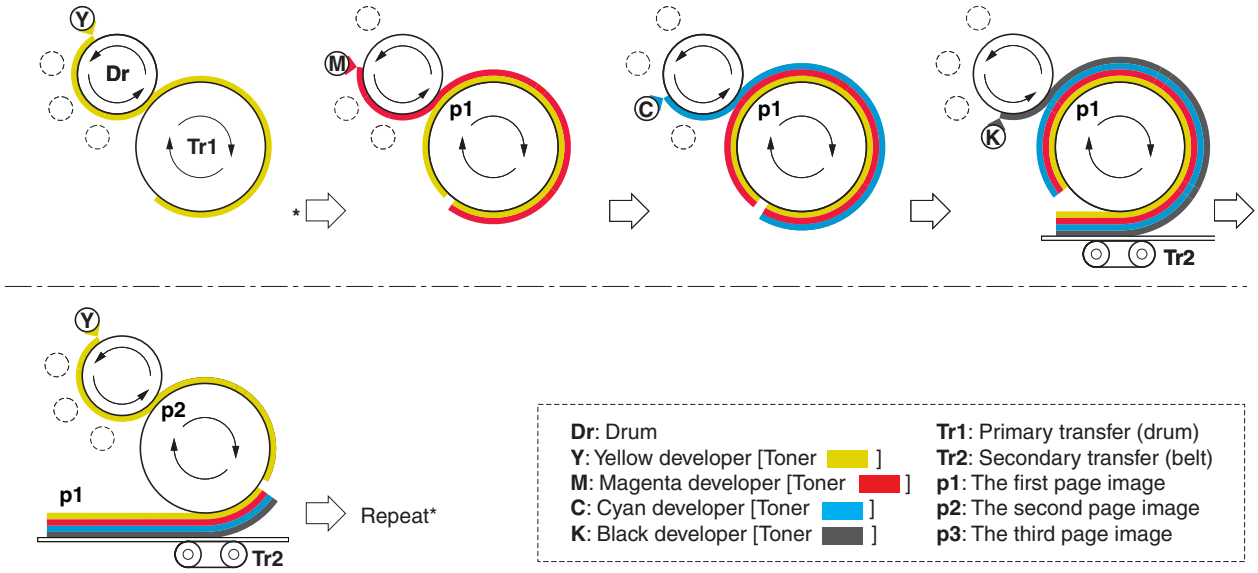


Figure 2-1-35 A3 size paper color printing process

Two-page mode

Two-page mode is the way the printer prints two A4 or Letter size images in a single revolution of the primary transfer drum, ensuring 31 ppm for monochrome or 8 ppm for color printing speeds.

Two pages of A4 or Letter size are laid side by side over the primary transfer drum in the order of yellow, magenta, cyan, and black as explained previously. For the fullest efficiency of printing, the printer prints these two pages in a way explained in Figure 2-1-35.

Table 2-1-1

Drum revolution	Page	Color	Page printed
1	1	Yellow	↓
2	1	Magenta	↓
3	1	Cyan	↓
4	2	Yellow	↓
5	1	Black	↓
6	2	Magenta	1
7	3	Yellow	↓
8	2	Cyan	↓
9	3	Magenta	↓
10	2	Black	↓
11	3	Cyan	2

A4/Letter size paper color printing process (Two-page mode)

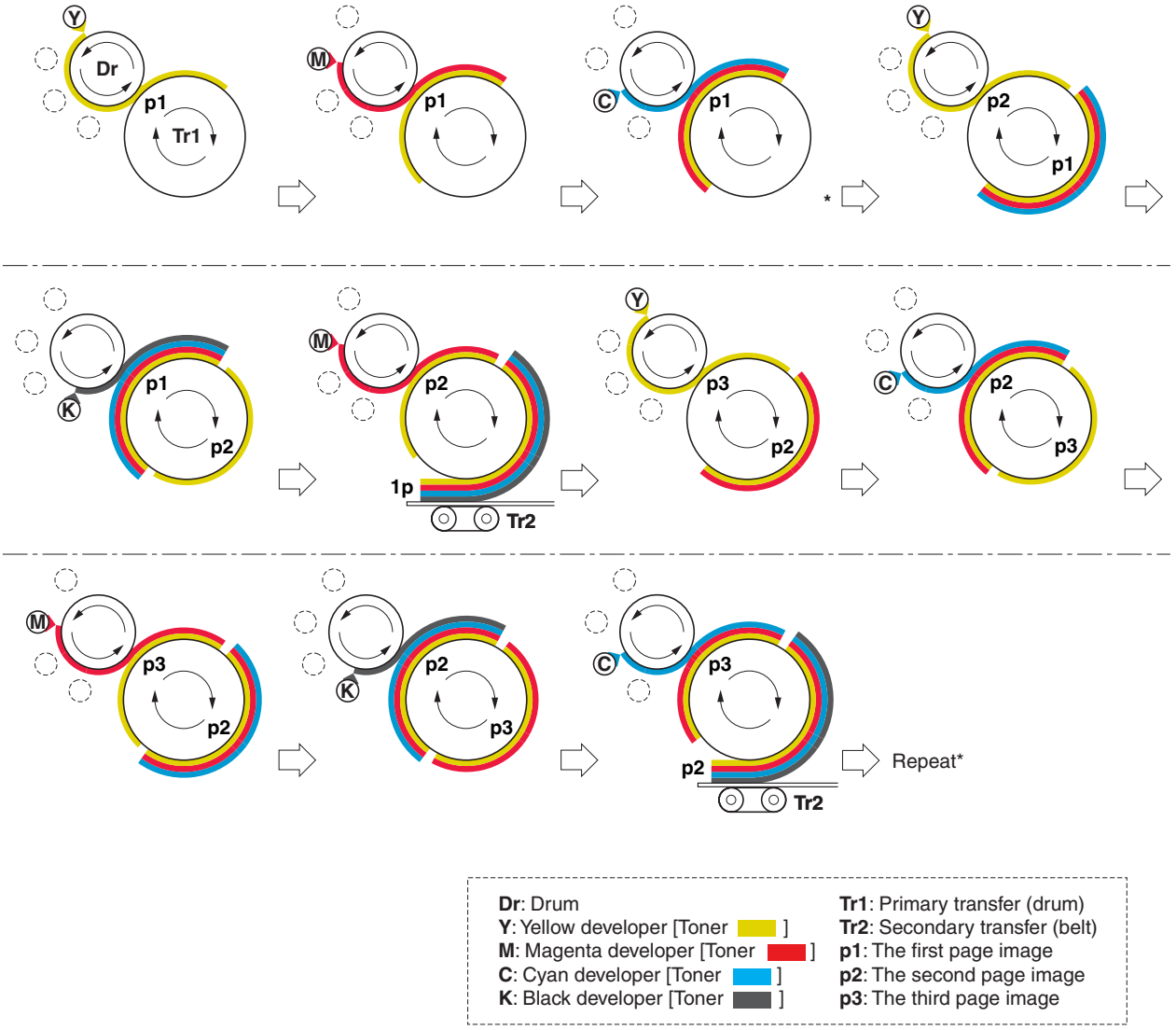


Figure 2-1-36 A4/Letter size paper color printing process (Two-page mode)

2-1-7 Fuser unit

The fuser unit is mounted on the left-most end of the paper feed unit and fixed by one screw, and detachable. The fuser unit literally fuses toner on the paper by means of heat and pressure following the transferring process of the electrophotographic cycle.
Both the heat roller and the press/heat roller are of soft type (ø 45 mm) and in contact with each other with a nip of approximately 10 mm. The nip is required to apply a sufficient heat capacity to the paper in color printing. Both rollers have a heater lamp inside (heat roller: 500 W, press/heat roller: 450 W). The heat roller and the press/heat roller hold paper on which toner images have been transferred in the secondary transfer process and apply heat and pressure to the paper to fix the toner images.
The fusing temperature is controlled as the thermistor for the top roller and the bottom roller signals the engine controller PWB. The heaters are activated in PWM (Pulse-Width Modulation) system depending on the temperature the two thermistor detect and report.
The rollers are driven by a dedicated fuser motor. To optimize fusing depending on paper type, the revolution of the rollers are changed accordingly in half the normal speed for thick paper; quarter the normal speed for transparencies.

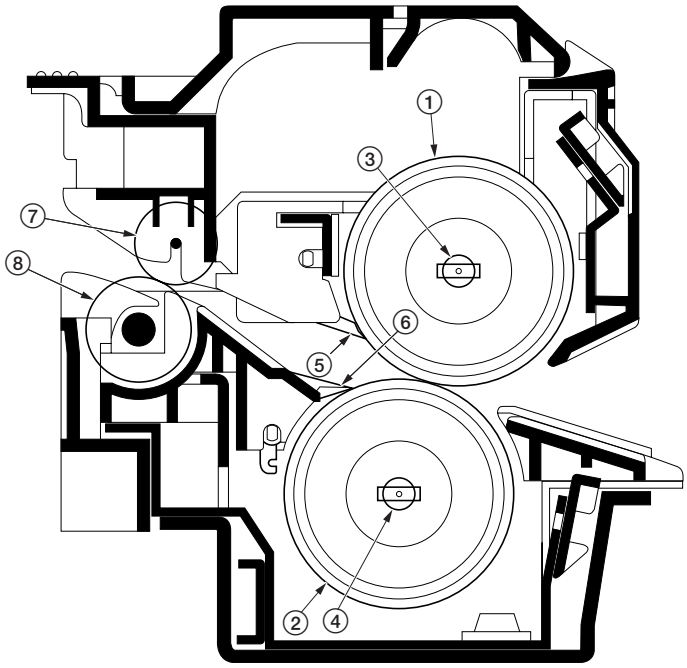


Figure 2-1-37 Fuser unit section

① Heat roller
② Press/heat roller
③ Upper heater lamp
④ Lower heater lamp
⑤ Upper separator
⑥ Lower separator
⑦ Exit pulley
⑧ Exit roller

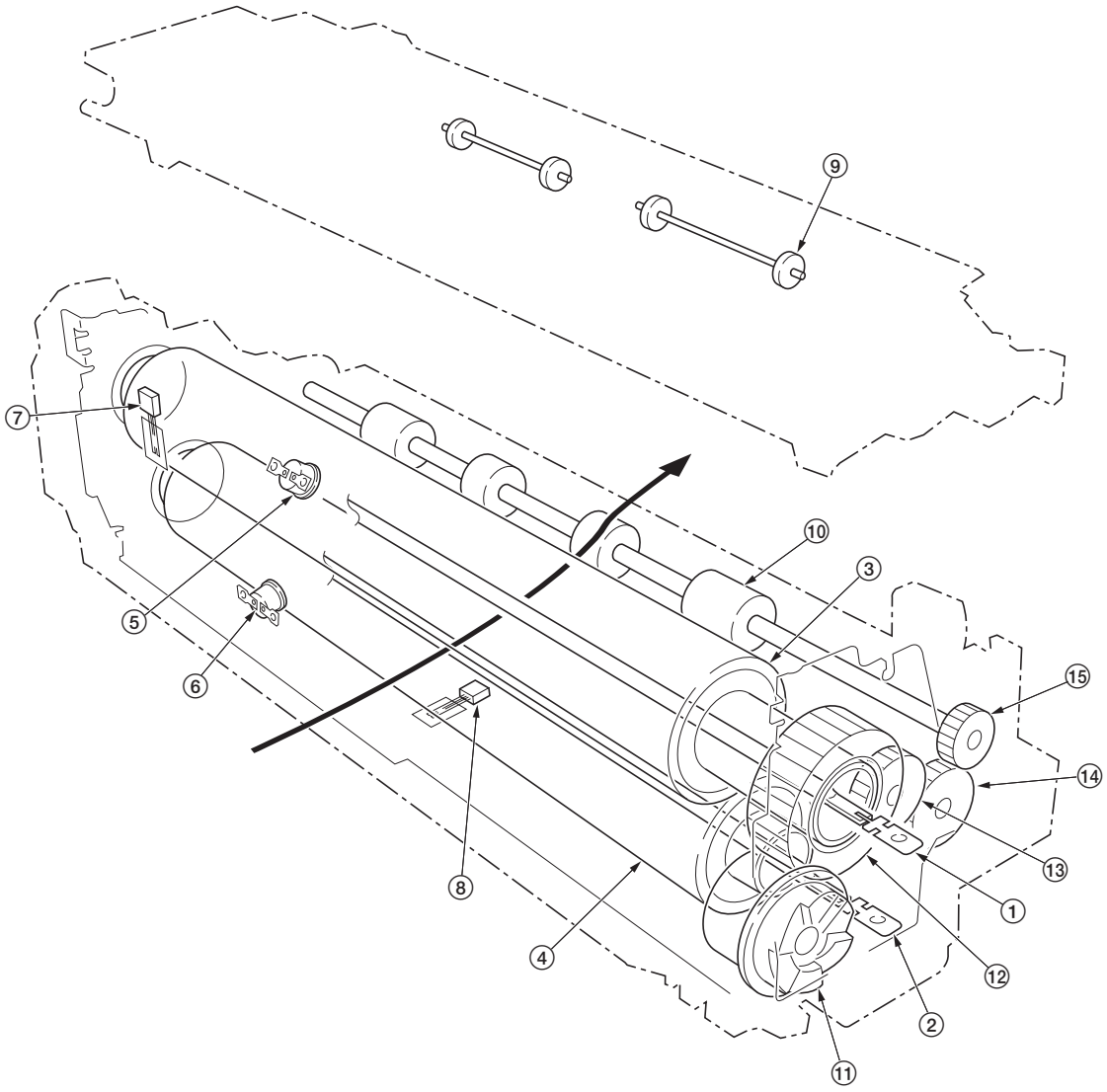


Figure 2-1-38 Fuser unit section

① Upper heater lamp
② Lower heater lamp
③ Heat roller
④ Press/heat roller
⑤ Upper thermostat
⑥ Lower thermostat
⑦ Upper fuser thermistor
⑧ Lower fuser thermistor
⑨ Exit pulley
⑩ Exit roller
⑪ Input gear
⑫ Fuser gear
⑬ Idle gear
⑭ Idle gear
⑮ Exit roller gear

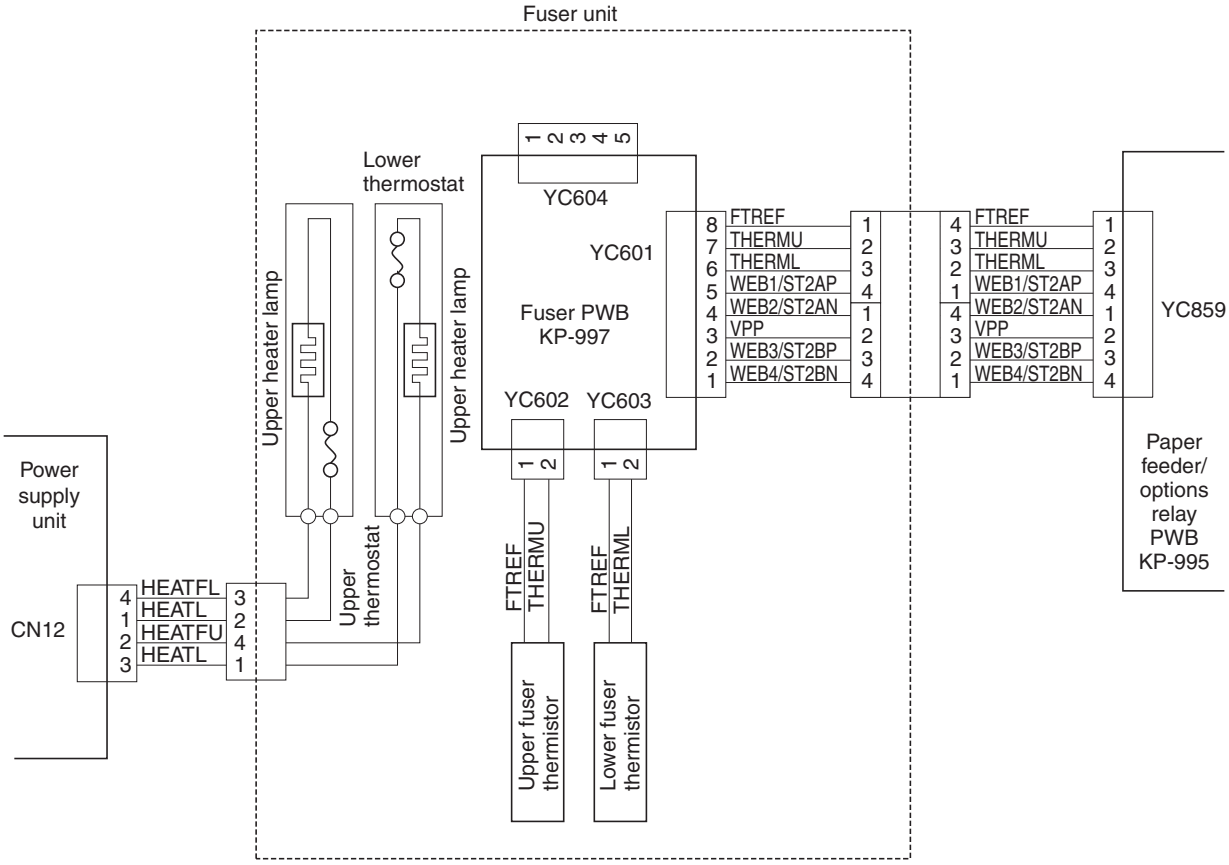


Figure 2-1-39 Fuser unit block diagram

2-1-8 Face-down tray unit

The face-down tray unit changes the destination the printed pages are stuck. For face-down, the paper is guided along the change guide vertically into the face-down tray. In face-up, a solenoid is activated to manipulate the change guide so that the paper is sent horizontally in the face-up tray.

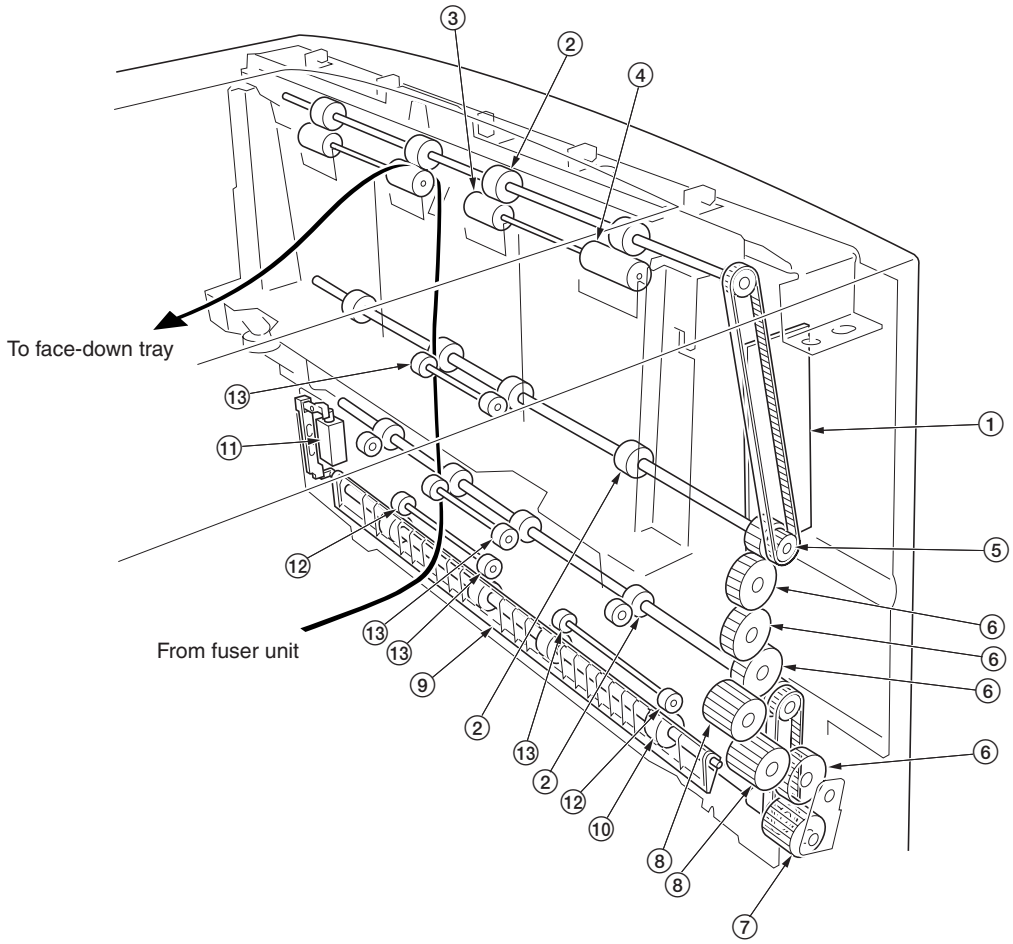


Figure 2-1-40 Face-down tray unit

① Face-down PWB [KP-828]
② FD roller
③ Exit AL pulley
④ Exit BL pulley
⑤ FD pulley gear Z18
⑥ Gear Z26
⑦ Input gear Z24
⑧ Gear Z22
⑨ Change guide
⑩ FU roller
⑪ Face up/down solenoid
⑫ Exit C pulley
⑬ Exit A pulley

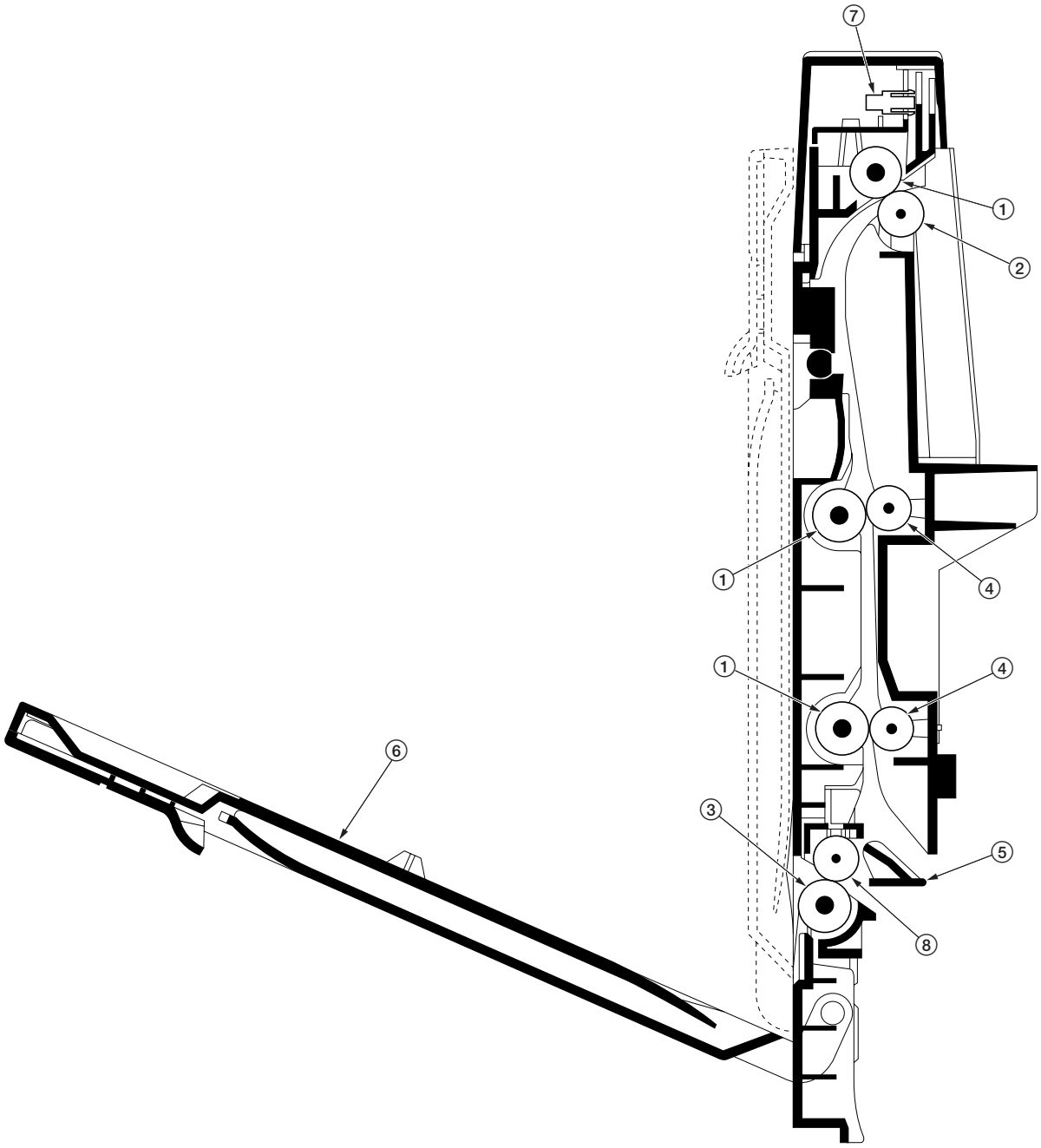


Figure 2-1-41 Face-down tray unit

① FD roller
② Exit AL pulley, Exit BL pulley
③ FU roller
④ Exit A pulley
⑤ Change guide
⑥ Face-up tray
⑦ Paper full sensor
⑧ Exit A pulley, Exit C pulley

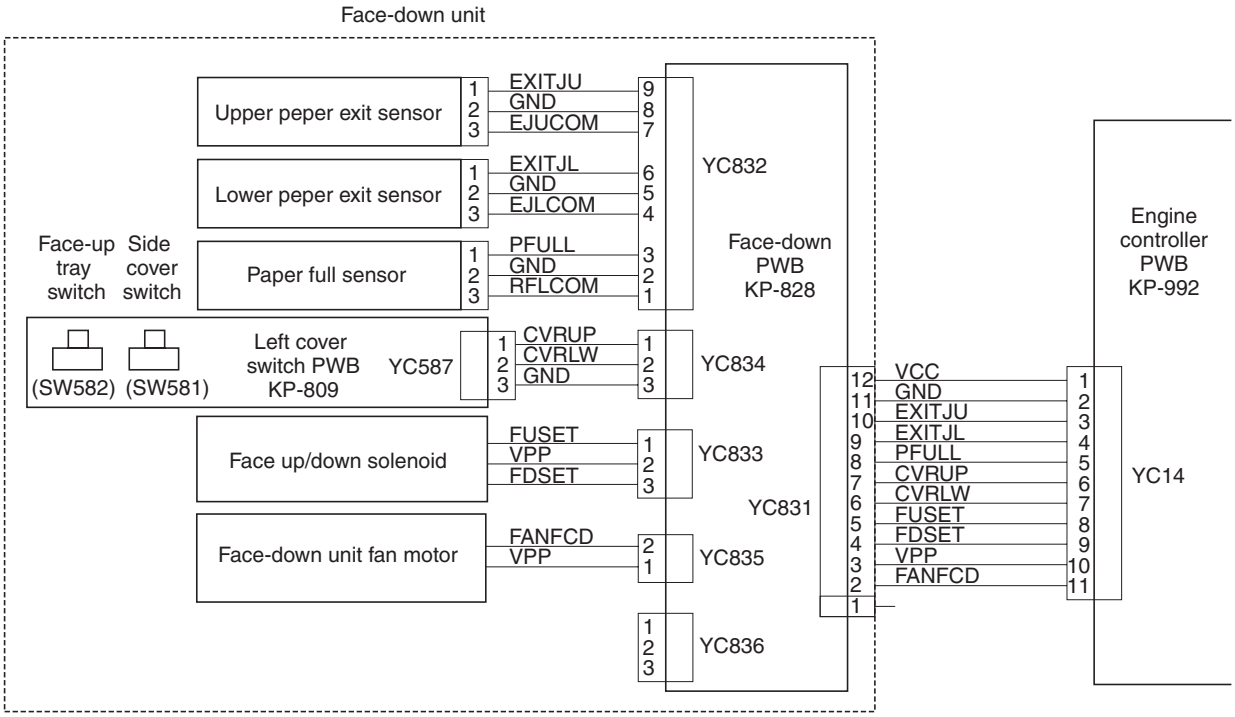


Figure 2-1-42 face-down unit block diagram

2-2-1 Electrical parts layout

(1) Main frame, Face-down unit, and MP tray unit

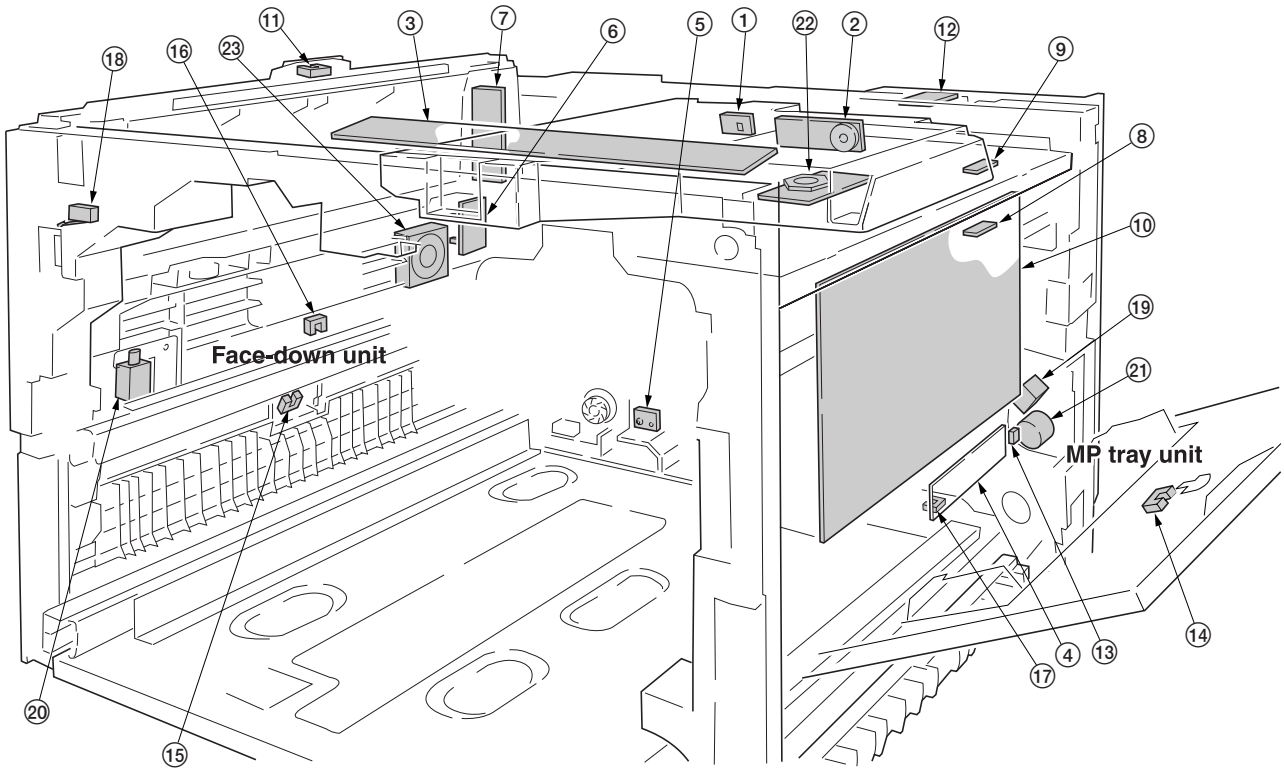


Figure 2-2-1 Main frame, Face-down unit, and MP tray unit

1. PD PWB [KP-838]	Detects laser beam. Generates the horizontal sync output.
2. APC PWB [KP-807]	Controls the laser beam output.
3. Operation panel PWB [KP-805]	Displays LCD messages and LED indicators. Controls key inputs.
4. MP tray feed PWB [KP-1015]	Detects the paper and its width in MP tray. Activates electrical components.
5. Waste toner full sensor PWB [KP-849]	Detects the waste toner bottle being full.
6. Left cover switch PWB [KP-809]	Monitors whether the face-up tray and the side cover is open.
7. Face-down PWB [KP-828]	Relays wirings for the face-down tray unit electrical components.
8. Black toner empty sensor PWB [KP-895]	Monitors toner in the black toner container (emitter)
9. Black toner empty sensor PWB [KP-896]	Monitors toner in the black toner container (receptor)
10. Developing/primary transfer/cleaning brush bias high voltage unit	Generates the developing bias and the primary transfer cleaning brush bias.
11. Paper full sensor	Detects whether the face-down tray is full.
12. Humidity/temperature sensor	Detects the ambient temperature and humidity.
13. MP tray bottom plate position sensor	Detects MP tray bottom plate position.
14. MP tray paper length sensor	Detects paper length on the MP tray.
15. Lower paper exit sensor	Detects paper jam at the face-up tray unit.
16. Upper paper exit sensor	Detects paper jam at the left cover.
17. MP tray sensor	Detects paper on the MP tray.
18. Interlock switch	Monitors whether the front cover is open and the 24 V DC power.
19. MP tray bottom plate solenoid	Activates the MP tray bottom plate.
20. Face up/down solenoid	Switches the output stack between face up and face down.
21. MP tray feed clutch	Controls drive chain to the MP tray feed roller.
22. Polygon motor	Revolves the polygon mirror.
23. Face-down unit fan motor	Dissipates the heated air in the printer.

(2) Developers, drum unit, and main charger unit

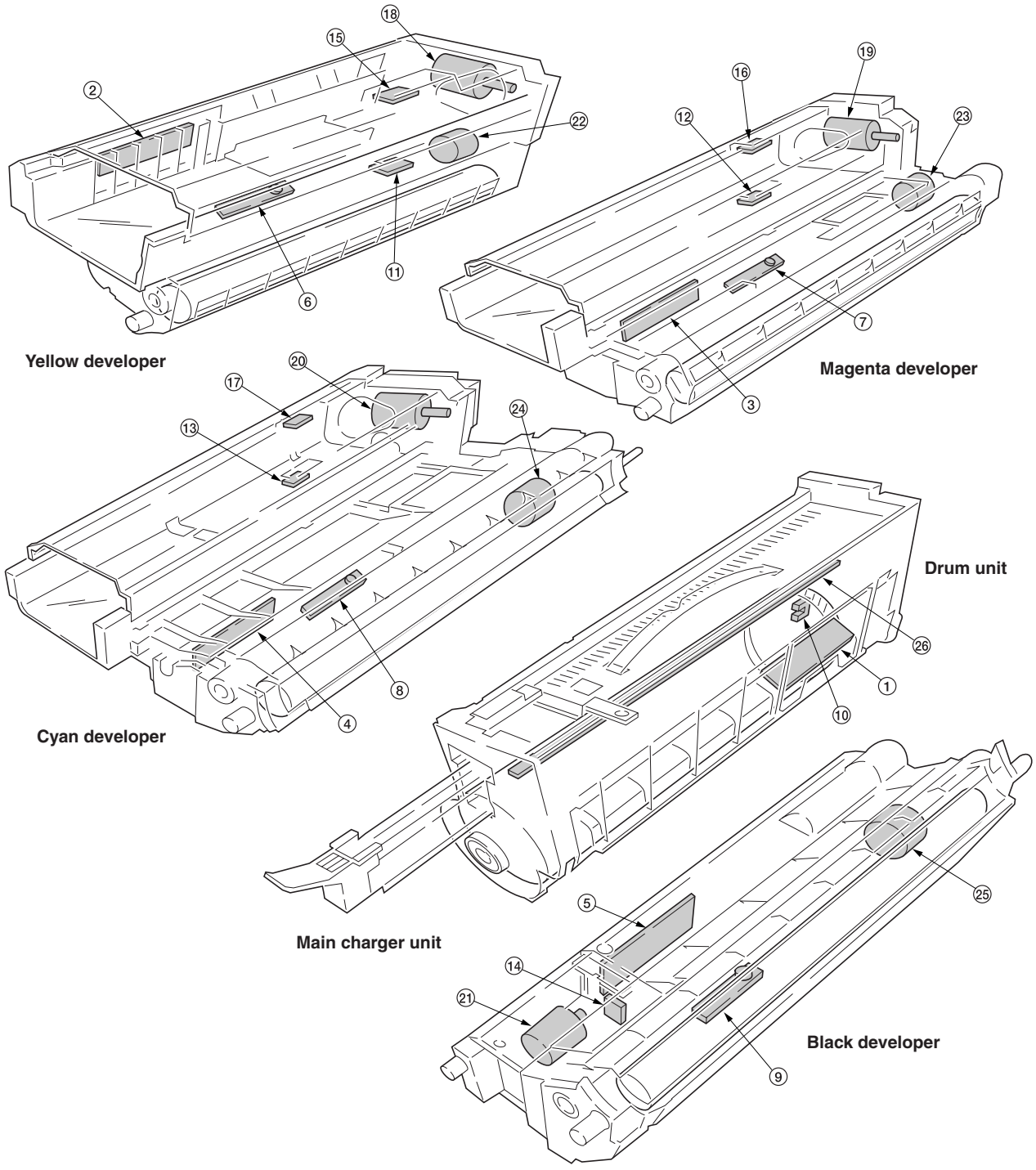


Figure 2-2-2 Developers, drum unit, and main charger unit

1. Drum PWB [KP-999]	Accommodates the individual information for the drum including the light sensitivity, serial number, etc to EEPROM.
2.Yellow developer PWB [KP-1001]	Relays wirings for the electrical component in the yellow developer.
3. Magenta developer PWB [KP-1003]	Relays wirings for the electrical component in the magenta developer.
4. Cyan developer PWB [KP-1003]	Relays wirings for the electrical component in the cyan developer.
5. Black developer PWB [KP-1005]	Relays wirings for the electrical component in the black developer.
6. Yellow T/C sensor	Measures the toner concentration in the hopper for the yellow developer.
7. Magenta T/C sensor	Measures the toner concentration in the hopper for the magenta developer.
8. Cyan T/C sensor	Measures the toner concentration in the hopper for the cyan developer.
9. Black T/C sensor.....	Measures the toner concentration in the hopper for the black developer.
10. Offset drum sensor	Detects the home position for the drum at which revolution begins.
11. Yellow toner empty sensor [KP-819]	Measures toner in the yellow toner container (emitter).
12. Magenta toner empty sensor [KP-819]	Measures toner in the magenta toner container (emitter).
13. Cyan toner empty sensor [KP-819]	Measures toner in the cyan toner container (emitter).
14. Black toner Intermediate hopper sensor	Measure toner in the intermediate hopper for the black developer.
15. Yellow toner empty sensor [KP-820]	Measures toner in the yellow toner container (receptor).
16. Magenta toner empty sensor [KP-820]	Measures toner in the magenta toner container (receptor).
17. Cyan toner empty sensor [KP-820]	Measures toner in the cyan toner container (receptor).
18. Yellow toner feed motor	Replenishes the yellow developer with toner.
19. Magenta toner feed motor.....	Replenishes the magenta developer with toner.
20. Cyan toner feed motor	Replenishes the cyan developer with toner.
21. Black toner feed motor	Replenishes the intermediate toner hopper for the black developer with toner.
22. Yellow developer drive clutch	Drives the yellow developer.
23. Magenta developer drive clutch	Drives the magenta developer.
24. Cyan developer drive clutch	Drives the cyan developer.
25. Black developer drive clutch	Drives the black developer.
26. Eraser lamp	Discharges the drum.

(3) Primary transfer, secondary transfer, paper feed, and fuser units

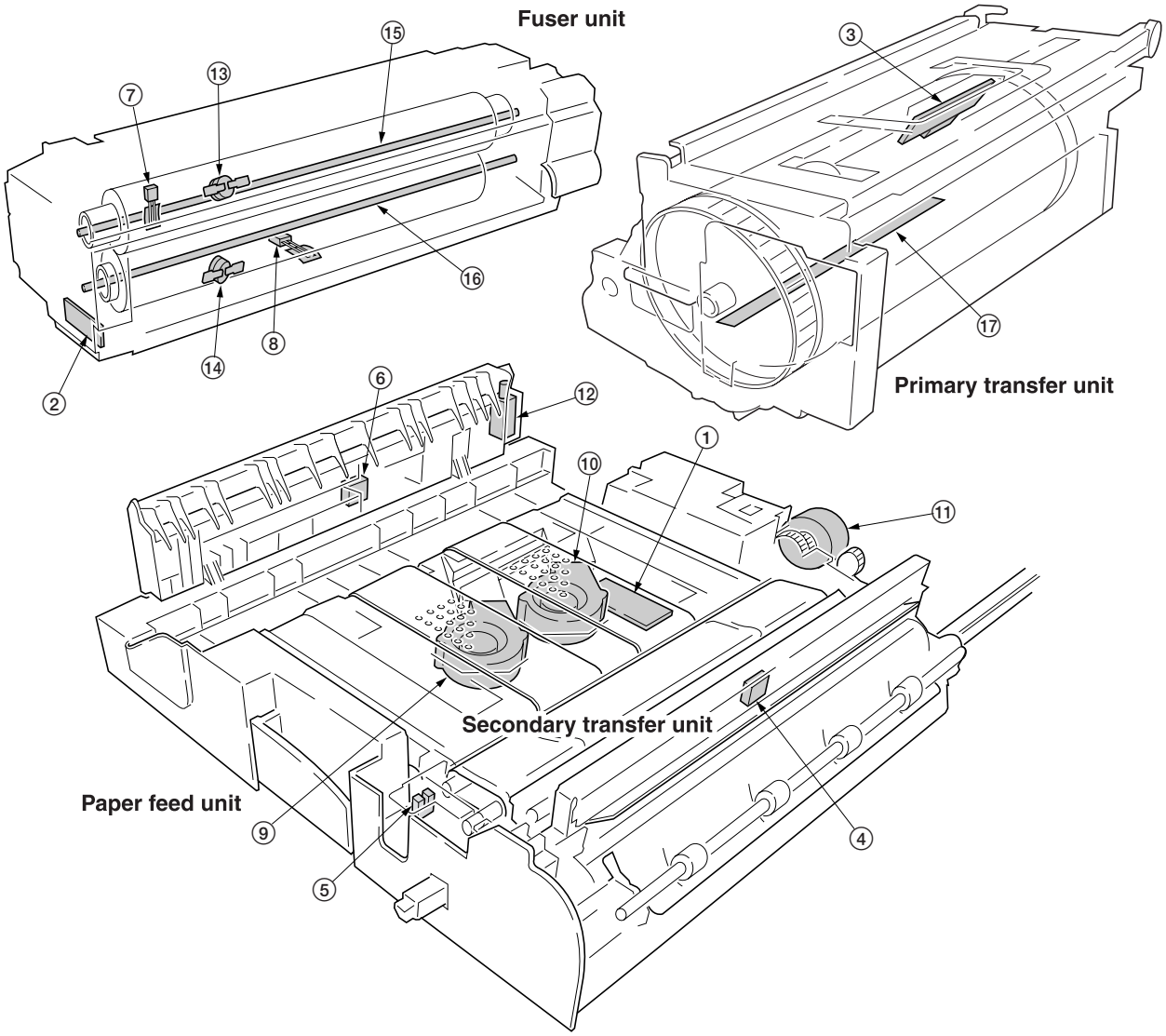


Figure 2-2-3 Primary transfer, secondary transfer, paper feed, and fuser units

1. Feed PWB [KP-1013] ..... Controls electrical components in the paper feed unit.
2. Fuser PWB [KP-997] ..... Relays wirings from electrical components on the fuser unit.
3. Image density sensor ..... Measures image density for color calibration.
4. Registration sensor ..... Detects paper before the transfer belt.
5. Secondary transfer unit position sensor ..... Determines the starting point for secondary image transferring.
6. Duplex paper exit sensor ..... Detects paper jam at the outlet for the duplexer.
7. Upper fuser thermistor ..... Measures the upper heat roller temperature.
8. Lower fuser thermistor ..... Measures the lower heat roller temperature.
9. Paper conveying fan motor 1 ..... Attracts paper towards the conveying belt, 1.
10. Paper conveying fan motor 2 ..... Attracts paper towards the conveying belt, 2.
11. Secondary transfer unit shift clutch ..... Controls recessing the secondary transfer unit.
12. Duplex paper exit selection solenoid ..... Switches the flap for guiding paper to the duplexer.
13. Upper thermostat ..... Disable power for the upper heater lamp in emergency.
14. Lower thermostat ..... Disable power for the lower heater lamp in emergency.
15. Upper heater lamp ..... Energize the upper heat roller.
16. Lower heater lamp ..... Energize the lower heat roller.
17. Primary transfer unit heater ..... Prevents the dew condensation in the primary transfer unit and the drum (photoconductor).

(4) Main frame rear and controller box

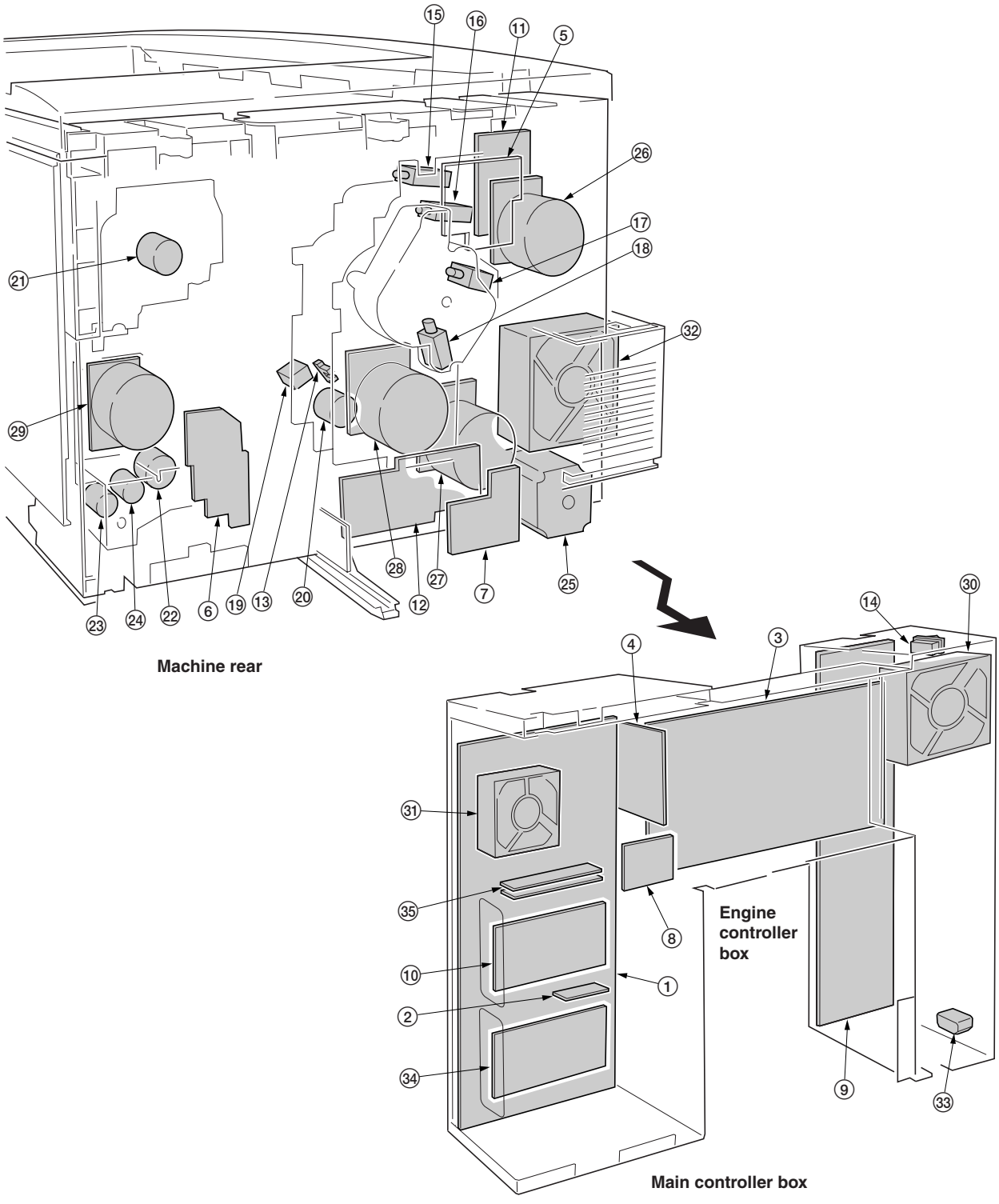


Figure 2-2-4 Main frame rear and controller box

1. Main controller PWB [KP-991]	Implements firmware for managing data processing for printing, interface with PC and the network, etc.
2. System DIMM PWB [KP-893]	System program (firmware).
3. Engine controller PWB [KP-992]	Controls printer hardware including electrical components.
4. Engine-main controllers relay PWB [KP-993]	Interconnects the engine controller PWB and the main controller PWB.
5. Main drive PWB [KP-824]	Controls the developer units, solenoids for the primary transfer unit, and clutches.
6. Feed drive PWB [KP-1011]	Interconnects the electrical components paper in the paper feed unit.
7. Paper feeder/options relay PWB [KP-995]	Interconnects the bottom-mounted options and paper exit options. Drives the fuser unit drive motor.
8. Document finisher interface PWB*1	Interface for optional document finisher DF-31 connection.
9. Power supply unit	Receives AC mains supply and converts into 3.3 V DC, 5 V DC and 24 V DC.
10. Hard disk unit	Holds print jobs.
11. Main charger high voltage unit	Generates the main charger high voltage.
12. Secondary transfer bias high voltage unit	Generates the secondary transfer bias.
13. Cleaning brush unit position sensor	Detects the position of the cleaning brush unit.
14. Power switch	Switches AC power input on and off.
15. Yellow developer magnet solenoid	Activates the magnetic brush for development (by repositioning the magnet), yellow.
16. Magenta developer magnet solenoid	Activates the magnetic brush for development (by repositioning the magnet), magenta.
17. Cyan developer magnet solenoid	Activates the magnetic brush for development (by repositioning the magnet), cyan.
18. Black developer magnet solenoid	Activates the magnetic brush for development (by repositioning the magnet), black.
19. Cleaning brush unit sift solenoid	Controls recessing the cleaning brush unit.
20. Cleaning brush unit drive clutch	Controls driving the cleaning brush unit.
21. Black toner feed clutch	Controls driving the black toner container and the black toner feed assembly.
22. Registration clutch	Controls driving the registration roller.
23. Paper feed clutch	Controls driving the paper feed roller.
24. Intermediate paper feed clutch	Controls driving the paper feed roller.
25. Fuser unit drive motor	Controls driving the fuser unit and the conveying belts in the paper feed unit.
26. Color developers drive motor	Drives the yellow, magenta, and cyan developers.
27. Black developer drive motor	Drives the black developer.
28. Main drive motor	Drives the drum unit.
29. Paper feed motor	Drives the paper feed unit.
30. Power supply unit fan motor	Dissipates heat in the power supply unit.
31. Main controller box fan motor	Dissipates heat from the main controller PWB.
32. Fuser unit fan motor	Dissipates heat from the fuser unit.
33. AC inlet	Inputs AC mains supply.
34. Network interface card*2/ Serial interface board*2	Interface with a network/serial
35. Expanding memory (DIMM)*2	For expanding main RAM.

*1: Attached to optional document finisher DF-31
*2: Optional

2-3-1 Power supply unit

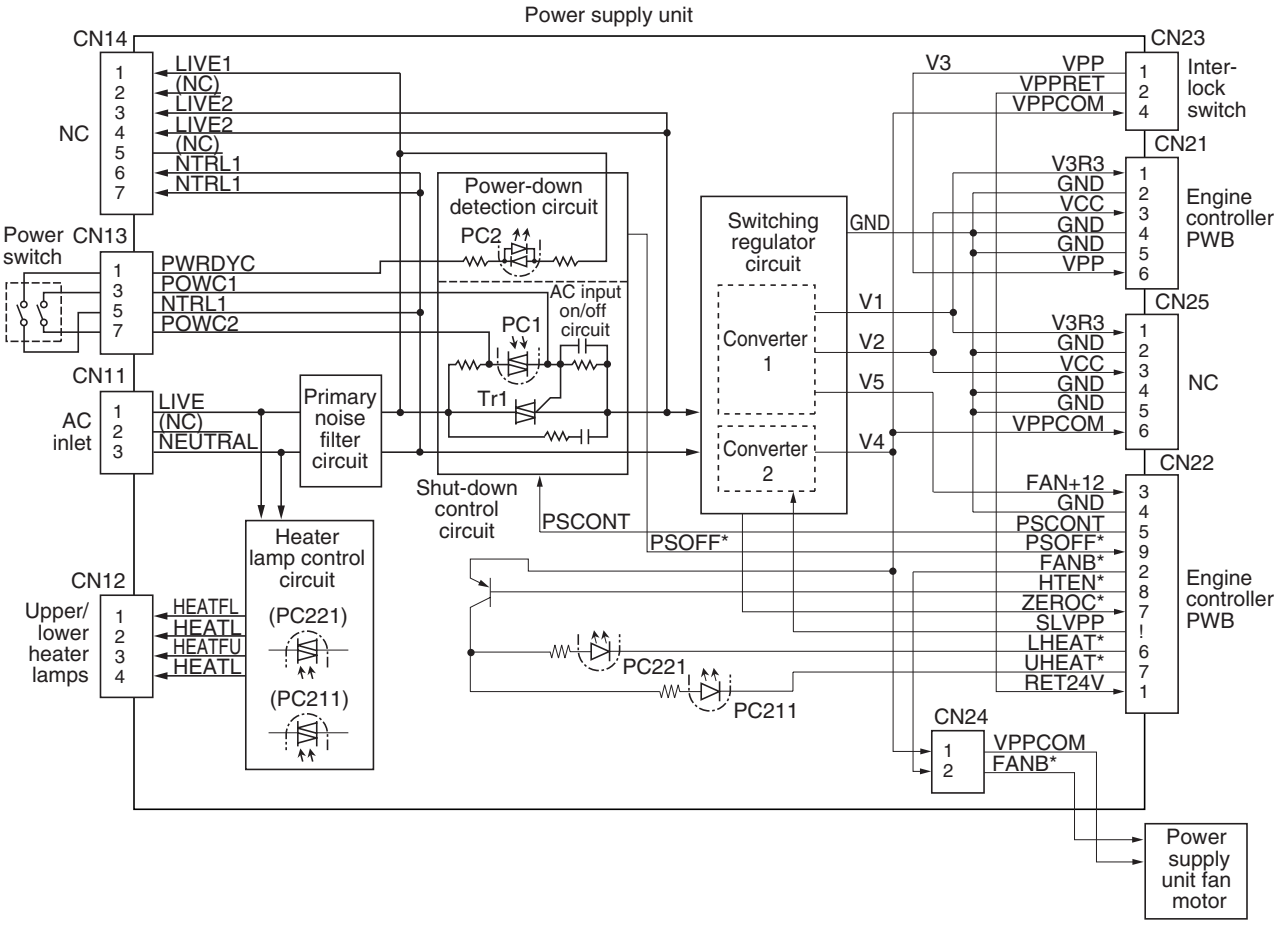


Figure 2-3-1 Power supply unit

The power supply unit consists of a switching regulator circuit, which is the main component, primary noise filter circuit, heater lamp control circuit, shut-down control circuit, and so on.
The primary noise filter circuit suppresses noise of 120 V AC or 220 - 240 V AC power supply input from the AC inlet and prevents outflow of noise from the power supply unit to the outside. The switching regulator circuit generates 3.3 V DC, 5 V DC , and 24 V DC in the secondary coil of the transformer by rectifying and smoothing full waves of 120 V AC or 220 - 240 V AC, which is input through the primary noise filter circuit, and switching the current in the primary coil of the transformer.
The heater lamp control circuit turns on or off the 120 V AC or 220 - 240 V AC applied to the heater lamp using the upper and lower heater lamp lighting signals (UHEAT and LHEAT) output from the engine controller PWB through the photocouplers (PC221 and PC211). The engine controller PWB controls the output timing of the heater lamp lighting signals based on the zero-cross signal (ZEROC) output from the zero-cross signal detection section in the switching regulator circuit. The shut-down control circuit monitors power switch off operation, and when the power switch is turned off, the photocoupler (PC2) is turned off and the circuit outputs the power-down signal (PSOFF*) to the engine controller PWB. After the engine controller PWB detects the power-down signal (PSOFF*), the circuit outputs the shut-down control signal (PSCONT) to the AC power on/off circuit to turn on triac (Tr1) separately from the power switch and to continue AC power input for control of operating the power supply unit. The circuit, therefore, continues rotation of the fan motor for a certain time after the power switch is turned off to dissipate heat of the fixing unit and to prevent hardening of toner.

Connector signal assignment

Connector	Pin No.	Signal	I/O	Description
CN11	1	LIVE	I	120 V AC or 220-240 V AC
Connected to the AC inlet	2	N.C.	-	
	3	NEUTRAL	I	120 V AC or 220-240 V AC
CN12	1	HEATFL	O	Lower heater lamp (COMMON)
Connected to the upper heater lamp/lower heater lamp	2	HEATL	O	Lower heater lamp (LIVE)
	3	HEATFU	O	Lower heater lamp (COMMON)
	4	HEATL	O	Lower heater lamp (LIVE)
CN13	1	PWRDYC	O	Power switch ON/OFF detection signal
Connected to the power switch	2	-	-	
	3	POWC1	O	AC power on/off
	4	-	-	
	5	NTRL1	O	Power switch ON/OFF detection signal
	6	-	-	
	7	POWC2	O	AC power on/off
CN14				
Not used				
CN21	1	V3R3	O	3.3 V DC
Connected to the engine controller PWB	2	GND	-	Ground
	3	VCC	O	5 V DC
	4	GND	-	Ground
	5	GND	-	Ground
	6	VPP	O	24 V DC (via interlock switch)
CN22	1	RET24V	O	Interlock switch detecting signal
Connected to the engine controller PWB	2	FANB*	I	Fuser unit fan motor drive signal (L: On)
	3	FAN+12V	I	12 V DC
	4	GND	-	Ground
	5	PSCNT	I	Shutdown control signal (H: Power supply unit shutdown)
	6	LHEAT*	I	Lower heater lamp ON signal (L: On)
	7	UHEAT*	I	Upper heater lamp ON signal (L: On)
	8	HTEM*	I	Heater lamp ON enable signal (L: Enable)
	9	PSOFF*	O	Power switch OFF detection signal (L: Power switch off)
	10	ZEROC*	O	Zero-cross signal (H: Zero-cross point detecting pulse)
	11	SLVPP	I	24 V DC power-off signal (H: Power off)
CN23	1	VPP	I	24 V DC (via interlock switch)
Connected to interlock switch	2	VPRET	I	Interlock detecting signal
	3	N.C.	-	-
	4	VPPCOM	O	24 V DC
CN24	1	FANB	O	Power supply unit fan motor drive signal (L: On)
Connected to power supply unit fan motor	2	N.C.	-	-
	3	VPPCOM	O	24 V DC
CN25				
Not used				

2-3-2 Engine controller PWB [KP-992]

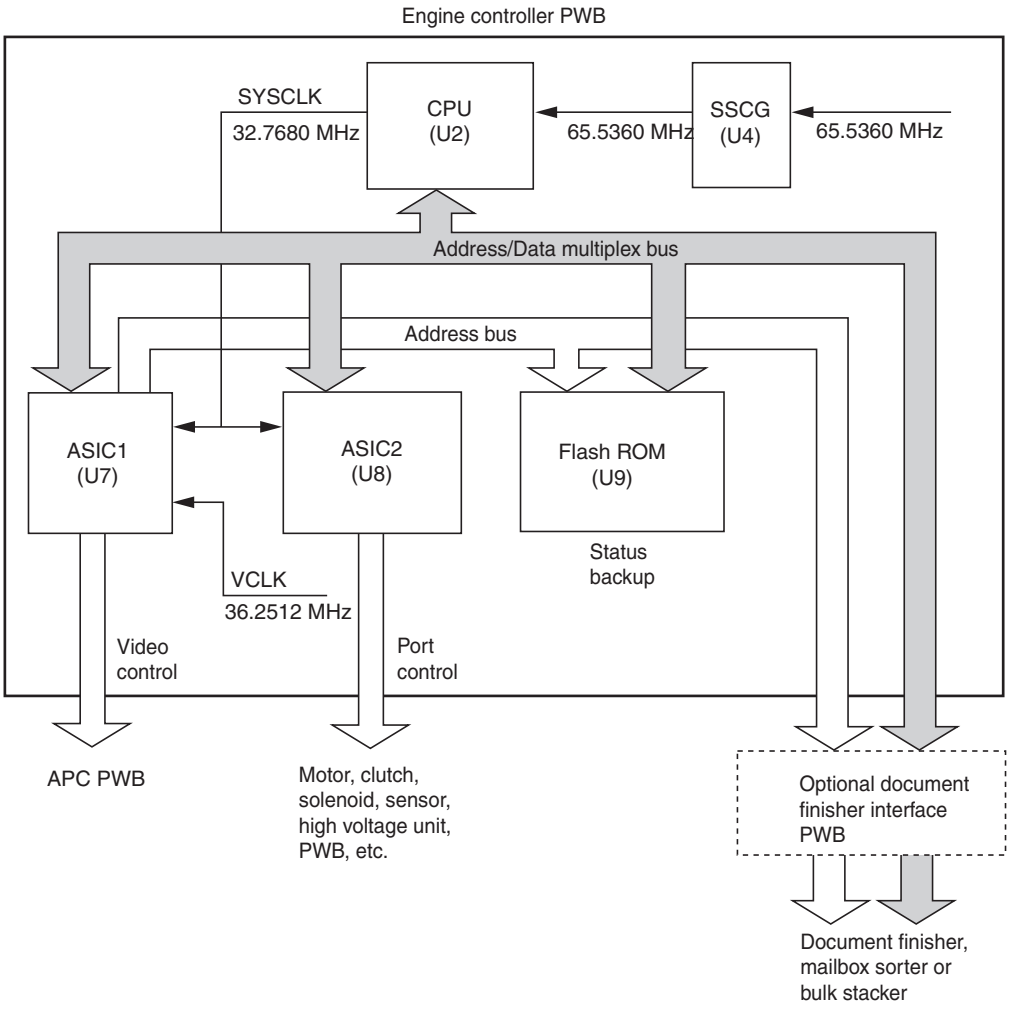


Figure 2-3-2 Engine controller PWB [KP-992] block diagram

Connector signal assignment

Connector	Pin No.	Signal	I/O	Description
YC1 Connected to the main controller PWB [KP-991] via engine-main controllers relay PWB [KP-993]	1	SO	O	Serial communication data transmission signal
	2	SDIR	O	Serial communication control signal
	3	SI	I	Serial communication data reception signal
	4	ENGIRN	O	Serial communication interrupt signal
	5	VPPSEL	I	Engine program write control signal
	6	GND	-	Ground
	7	VD0p	I	Image data signal
	8	VD0n	I	Image data signal
	9	GND	-	Ground
	10	VD1p	I	Image data signal
	11	VD1n	I	Image data signal
	12	VHALF	O	Voltage for differential output signal
	13	VD2p	I	Image data signal
	14	VD2n	I	Image data signal
	15	GND	-	Ground
	16	VD3p	I	Image data signal
	17	VD3n	I	Image data signal
	18	GND	-	Ground
	19	MMODDESp	I	Gradation control signal
	20	MMODESn	I	Gradation control signal
	21	GND	-	Ground
	22	MMODELp	O	Gradation control signal
	23	MMODELn	I	Gradation control signal
	24	GND	-	Ground
	25	MODEp	I	Image/text data selection signal
	26	MODEn	I	Image/text data selection signal
	27	GND	-	Ground
	28	VENBp	I	Image data output timing signal
	29	VENBn	I	Image data output timing signal
	30	GND	-	Ground
	31	SVCLKp	I	Main (horizontal) scanning video clock signal
	32	SVCLKn	I	Main (horizontal) scanning video clock signal
	33	GND	-	Ground
	34	LSYNCp	O	Image data output scanning synchronization signal
	35	LSYNCn	O	Image data output scanning synchronization signal
	36	GND	-	Ground
	37	PURGE	O	Paper exit completion signal
	38	FPCLK	I	Serial communication clock signal, for the operation panel PWB
	39	FPDIR	I	Serial communication control signal, for the operation panel PWB
	40	PFRESn	I	Reset signal, for the operation panel PWB
	41	SBSY	I	Serial communication control signal
	42	VCC	O	5 V DC
	43	SCLK	I	Serial communication clock signal
	44	VCC	-	5 V DC
	45	PRGRESn	I	Engine program writing control signal
	46	RSTn	O	Reset signal
	47	GND	-	Ground
	48	VCC	O	5 V DC
	49	GND	-	Ground
	50	VCC	O	5 V DC
	51	GND	-	Ground
	52	VCC	O	5 V DC
	53	GND	-	Ground
	54	+3.3V	O	3.3 V DC
	55	GND	-	Ground

Connector	Pin No.	Signal	I/O	Description
YC1 Connected to the main controller PWB [KP-991] via engine-main controllers relay PWB [KP-993]	56	+3.3V	O	3.3 V DC
	57	GND	-	Ground
	58	+3.3V	O	3.3 V DC
	59	GND	-	Ground
	60	+3.3V	O	3.3 V DC
	61	GND	-	Ground
	62	+3.3V	O	3.3 V DC
	63	GND	-	Ground
	64	+3.3V	O	3.3 V DC
	65	GND	-	Ground
	66	+3.3V	O	3.3 V DC
	67	GND	-	Ground
	68	+3.3V	O	3.3 V DC
	69	+3.3V	O	3.3 V DC
	70	+3.3V	O	3.3 V DC
	71	+3.3V	O	3.3 V DC
	72	+3.3V	O	3.3 V DC
	73	+3.3V	O	3.3 V DC
	74	+3.3V	O	3.3 V DC
	75	VSYNC	O	Sub (vertical) scanning video clock signal
	76	+3.3V	O	3.3 V DC
	77	PSEL	O	First/second page selection signal (Two pages mode), H: First , L: Second
	78	GND	-	Ground
	79	FPDATA	O	Serial communication data signal, for operation panel
	80	EOPO	O	Page ending signal
YC2 Connected to optional document finisher relay PWB	1	GND	-	Ground
	2	VCC	O	5 V DC
	3	EA1	O	Address bus (EA1) signal
	4	EA3	O	Address bus (EA3) signal
	5	EA5	O	Address bus (EA5) signal
	6	EA7	O	Address bus (EA6) signal
	7	EADB0	I/O	Data bus (EADB0) signal
	8	EADB2	I/O	Data bus (EADB2) signal
	9	EADB4	I/O	Data bus (EADB4) signal
	10	EADB6	I/O	Data bus (EADB6) signal
	11	FINSETn	I	Document finisher SET signal
	12	WEn	O	Data writing signal
	13	FINCSn	O	Document finisher chip select signal
	14	VCC	O	5 V DC
	15	GND	-	Ground
	16	GND	-	Ground
	17	GND	-	Ground
	18	EA2	O	Address bus (EA2) signal
	19	EA4	O	Address bus (EA4) signal
	20	EA6	O	Address bus (EA6) signal
	21	EA8	O	Address bus (EA8) signal
	22	EADB1	I/O	Data bus (EADB1) signal
	23	EABD3	I/O	Data bus (EADB3) signal
	24	EADB5	I/O	Data bus (EADB5) signal
	25	EADB7	I/O	Data bus (EADB7) signal
	26	FINIRQ	I	Document finisher request signal
	27	RDn	O	Data reading signal
	28	RESn	O	Reset signal
	29	VCC	O	5 V DC
	30	GND	-	Ground

Connector	Pin No.	Signal	I/O	Description
YC3 Connected to optional document finisher relay PWB	1 2	FINTXD FINRXD	I O	Document finisher serial communication data reception signal Document finisher serial communication data transmission signal
YC4 Not used				
YC5 Connected to operation panel PWB [KP-805]	1 2 3 4 5 6	FPGND FPDIR FPCLK FPDAT FPRES* FPVCC	- O O I/O O O	Ground Serial communication control signal Serial communication clock signal Serial communication data signal Reset signal 3.3 V DC
YC6 Connected to APC PWB [KP-807]	1 2 3 4 5 6 7 8 9 10 11 12	SCCLK SCRDY SCANER VPP PD POWSEL LEN LONB LASER5V GND VD0- VD0+	O I I I - O O O - - O O	Polygon motor rotating control clock signal Polygon motor continuous rotating signal, L: Continuous Polygon motor drive signal, L: Drive 24 V DC Horizontal synchronization signal from PD PWB Laser power control signal Laser output enable signal Laser output drive signal 5 V DC for laser scanner unit (for APC and PD PWB) Ground Image data signal signal Image data signal signal
YC7 Connected to the black developer drive motor and main drive motor	1 2 3 4 5 6 7 8 9	DMKFG VCC DMKHU DMKHV DMKHW GND DMKU DMKV DMKW	I O I I I - O O O	Black developer drive motor FG (Frequency generation) pulse 5 V DC Black developer drive motor control Black developer drive motor control Black developer drive motor control Ground Black developer drive motor control Black developer drive motor control Black developer drive motor control
	10 11 12 13 14 15 16 17 18	MMFG VCC MMHU MMHV MMHW GND MMU MMV MMW	I O I O I I I - O	Main drive motor FG (Frequency generation) pulse 5 V DC Main drive motor control Main drive motor control Main drive motor control Ground Main drive motor control Main drive motor control Main drive motor control

Connector	Pin No.	Signal	I/O	Description
YC8 Connected to the power supply unit	1	V3R3	I	3.3 V DC
	2	GND	-	Ground
	3	VCC	I	5 V DC
	4	GND	-	Ground
	5	GND	-	Ground
	6	VPP	I	24 V DC (via interlock switch)
YC9 Connected to the developing/ primary transfer/ cleaning brush bias high voltage unit	1	GND	-	Ground
	2	GND	-	Ground
	3	VPP	O	24 V DC
	4	VPP	O	24 V DC
	5	T1REM*	O	Primary transfer bias control signal (T1), L: On
	6	ANT1	O	Primary transfer bias voltage control PWM signal
	7	BAYREM*	O	Yellow developing AC bias control signal, L: On
	8	ANBDY	O	Yellow developing DC voltage control PWM signal
	9	BDYREM*	O	Yellow developing bias control signal, L: On
	10	BAMREM*	O	Magenta developing AC bias control signal, L: On
	11	ANBDM	O	Magenta developing DC voltage control PWM signal
	12	BDMREM*	O	Magenta developing bias control signal, L: On
	13	BACREM*	O	Cyan developing AC bias control signal, L: On
	14	ANBDC	O	Cyan developing DC voltage control PWM signal
	15	BDCREM*	O	Cyan developing bias control signal, L: On
	16	BAKREM*	O	Black developing AC bias control signal, L: On
	17	ANBDK	O	Black developing DC voltage control PWM signal
	18	BDKREM*	O	Black developing bias control signal, L: On
	19	ANCR	O	Cleaning brush bias voltage control PWM signal
	20	CRREM*	O	Cleaning brush bias control signal, L: On
YC10 Connected to the power supply unit	1	RET24V	I	Interlock switch detecting signal
	2	FANB*	O	Fuser unit fan motor drive signal (L: On)
	3	FAN+12V	O	12 V DC
	4	GND	-	Ground
	5	PSCNT	O	Shutdown control signal (H: Power supply unit shutdown)
	6	LHEAT*	O	Lower heater lamp ON signal (L: On)
	7	UHEAT*	O	Upper heater lamp ON signal (L: On)
	8	HTEM*	O	Heater lamp ON enable signal (L: Enable)
	9	PSOFF*	I	Power switch OFF detection signal (L: Power switch off)
	10	ZEROC*	I	Zero-cross signal (H: Zero-cross point detecting pulse)
	11	SLVPP	O	24 V DC power-off signal (H: Power off)
YC11 Connected to the black toner empty sensor (emitter) [KP-895]/ (receptor) [KP-896], and KP-890	1	VCC	O	5 V DC
	2	VCRET	I	5 V DC
	3	LEDCC	O	Black toner empty sensor emitter [infrared LED] drive signal
	4	PQCOM	O	5 V DC (via resistor)
	5	TONE	I	Black toner empty sensor receiver [photo transistor] detection (analog) signal
	6	GND	-	Ground
	7	VCC	O	5 V DC
	8	E2DO	O	Data output signal
	9	E2DI	I	Data input signal
	10	GND	-	Ground
	11	E2CLK	O	Clock signal
	12	E2CS1	O	Chip select signal

Connector	Pin No.	Signal	I/O	Description
YC13 Connected to the drum PWB [KP-999]	1	ERSCOM	I	Eraser lamp broken detecting signal input
	2	ERSDRN	O	Eraser lamp drive signal, H: On
	3	DRODS	I	Off set drum sensor output pulse
	4	VCC	O	5 V DC
	5	GND	-	Ground
	6	DRECS	O	Chip select signal for EEPROM
	7	DRECLK	O	Clock signal for reading/writing EEPROM
	8	DREDI	I	Data input signal for EEPROM
	9	DREDO	O	Data output signal for EEPROM
	10	DFSCUT	O	Not used
YC12 Connected to the image density sensor and primary transfer unit heater	1	VCC	O	5 V DC
	2	GND	-	Ground
	3	ANIDSI0	O	Image density sensor detection signal 0
	4	ANIDSI1	O	Image density sensor detection signal 1
	5	IDLED	O	5 V DC power supply for Image density sensor emitter (LED)
	6	VPP	O	12 V DC
	7	DHDRN	O	Primary transfer unit heater ON signal, L: On
YC14 Connected to the face-down tray PWB [KP-828]	1	VCC	O	5 V DC
	2	GND	-	Ground
	3	EXITJU	I	Upper exit sensor detecting signal, L: detected
	4	EXITJL	I	Lower exit sensor detecting signal, L: detected
	5	PFULL	I	Paper full sensor detecting signal, H: detected
	6	CVRUP	I	Left cover OPEN/CLOSE detecting signal, H: Open
	7	CVRLW	I	Face-up tray OPEN/CLOSE detecting signal, H: Open
	8	FUSET	O	Face up/down solenoid drive signal
	9	FDSET	O	Face up/down solenoid drive signal
	10	VPP	O	24 V DC
	11	FANFCD	O	Face up/down unit fan motor drive signal
YC15 Connected to the fuser unit fan motor	1	FANF+	O	Fuser unit fan motor drive signal
	2	GND	-	Ground
YC16 Connected to the MP tray feed PWB [KP-1015]	1	SNS5V	O	5 V DC
	2	LENG	I	MP tray paper length sensor detection, L: Detected
	3	HANDS	I	MP tray paper detection signal, L: Detected
	4	LONG	I	MP tray bottom plate position sensor detection signal, H: Home position
	5	GND	-	Ground
	6	VPP	O	24 V DC
	7	BTTRDR	O	MP tray bottom plate solenoid drive signal
	8	MPFDR	O	MP tray feed clutch drive signal, L: On
	9	-	-	Not used
	10	-	-	Not used
	11	-	-	Not used
	12	-	-	Not used

Connector	Pin No.	Signal	I/O	Description
YC17	1	GND	-	Ground
Connected to the yellow developer PWB [KP-1001] and magenta developer PWB [KP-1003]	2	GND	-	Ground
	3	YTPD	I	Yellow T/C sensor detection signal (analog)
	4	SNS5V	O	5 V DC
	5	YTEMP	I	Yellow toner empty sensor [KP-820] detection signal, L: Empty
	6	YMAGDR	O	Yellow developer drive clutch drive signal, L: On
	7	VPP	O	24 V DC
	8	YTMDR	O	Yellow toner feed motor drive (PWM) signal
	9	YTMCOM	I	Yellow toner feed motor back electromotive force
	10	MTMCOM	I	Magenta toner feed motor back electromotive force
	11	MTMDR	O	Magenta toner feed motor drive (PWM) signal
	12	VPP	O	24 V DC
	13	MMAGDR	I	Magenta developer drive clutch drive signal, L: On
	14	MTEMP	I	Magenta toner empty sensor [KP-820] detection signal, L: Empty
	15	SNS5V	O	5 V DC
	16	MTPD	O	Magenta T/C sensor detection signal (analog)
	17	GND	-	Ground
	18	GND	-	Ground
YC18	1	GND	-	Ground
Connected to the cyan developer PWB [KP-1003] and black developer PWB [KP-1003]	2	GND	-	Ground
	3	CTPD	I	Cyan T/C sensor detection signal (analog)
	4	SNS5V	O	5 V DC
	5	CTEMP	I	Cyan toner empty sensor [KP-820] detection signal, L: Empty
	6	CMAGDR	O	Cyan developer drive clutch drive signal, L: On
	7	VPP	O	24 V DC
	8	CTMDR	O	Cyan toner feed motor drive (PWM) signal
	9	CTMCOM	I	Cyan toner feed motor back electromotive force
	10	VPP	O	24 V DC
	11	KMAGDR	O	Black developer drive clutch drive signal, L: On
	12	KTPD	I	Black T/C sensor detection signal (analog)
	13	KTEMP	I	Black toner intermediate hopper sensor detection signal, L: Empty
	14	KTMCOM	I	Black toner feed motor back electromotive force
	15	KTMDR	O	Black toner feed motor drive (PWM) signal
	16	VCC	O	5 V DC
	17	GND	-	Ground
	18	GND	-	Ground

Connector	Pin No.	Signal	I/O	Description
YC19 Feed drive PWB [KP-1011], paper feed motor and temperature/ humidity sensor	1, 2	GND	-	Ground
	3	FEDEX	I	Paper feed unit installation detection signal, L: Installed
	4	MROLDR	O	Intermediate feed clutch drive signal
	5	FEEDS	I	Registration sensor detection signal, L: Detected
	6	FEDDR	O	Paper feed clutch drive signal
	7	FANFP	O	Paper conveying fan motors 1 and 2 drive signal
	8	REGDR	O	Registration clutch drive signal
	9, 10	VPP	O	24 V DC
	11	-	-	Not used
	12	TNRKDR	O	Black toner feed clutch drive signal
	13	T2INI	I	Secondary transfer unit home position detection, L: Home position
	14	GND	-	Ground
	15	DUFDR	O	Duplex paper exit selection solenoid drive signal (for duplex unit)
	16	T2DR	O	Duplex paper exit selection solenoid drive signal (for duplex unit)
	17	EXFDR	O	Duplex paper exit sensor detection signal, L: Detected
	18	EXITJD	I	Secondary transfer unit shift clutch drive signal (for duplex unit)
	19	SNS5V	O	5 V DC
	20	FMFG	I	Paper feed motor FG (Frequency generation) pulse
	21	VCC	O	5 V DC
	22	FMHU	I	Paper feed motor control signal
	23	FMHV	I	Paper feed motor control signal
	24	FMHW	I	Paper feed motor control signal
	25	GND	-	Ground
	26	FMU	O	Paper feed motor control signal
	27	FMV	O	Paper feed motor control signal
	28	FMW	O	Paper feed motor control signal
	29	TEMP	I	Temperature detection data signal (analog)
	30	GND	-	Ground
	31	HMOUT	I	Humidity detection data signal (analog)
	32	VCC	O	5 V DC
YC20 Connected to the main charger high voltage unit, main drive PWB [KP-824] and color developers drive motor	1	GND	-	Ground
	2	VPP	O	24 V DC
	3	MCREM	O	Main charger grid bias control signal, L: On
	4	ANMC	O	Main charger grid bias voltage signal PWM
	5	GND	-	Ground
	6	SNS5V	O	5 V DC
	7	KSOL1	O	Black developer magnet solenoid drive signal
	8	BUINI	I	Cleaning brush unit position sensor detection signal, H: Home position
	9	CSOL1	O	Cyan developer magnet solenoid drive signal
	10	ROLDR	O	Cleaning brush unit shift solenoid drive signal
	11	MSOL1	O	Magenta developer magnet solenoid drive signal
	12	BRUSDR	O	Cleaning brush unit drive clutch drive signal
	13	YSOL1	O	Yellow developer magnet solenoid drive signal
	14	MIXDR*	O	Not used
	15	VPP	O	24 V DC
	16	FG	I	Color developers drive motor FG (Frequency generation) pulse
	17	VCC	O	5 V DC
	18	DMCHU	I	Color developers drive motor control signal
	19	DMCHV	I	Color developers drive motor control signal
	20	DMCHW	I	Color developers drive motor control signal
	21	GND	-	Ground
	22	DMCU	O	Color developers drive motor control signal
	23	DMCV	O	Color developers drive motor control signal
	24	DMCW	O	Color developers drive motor control signal

Connector	Pin No.	Signal	I/O	Description
YC21 Connected to the paper feeder/ options relay PWB [KP-995] (Connected to the Waste toner full sensor PWB [KP-849], fuser unit drive motor, fuser PWB [KP-997], lower fuser thermistor, upper fuser thermistor, secondary transfer bias high voltage unit via paper feeder/ options relay PWB [KP-995])	1	PFSDO	O	Serial communication data transmit signal, for option paper feeder/duplex unit
	2	PFSCLK	O	Serial communication clock signal, for option paper feeder/duplex unit
	3	PFSDI	I	Serial communication data receive signal, for option paper feeder/duplex unit
	4	FINTX	O	Communication control transmit signal, for option document finisher
	5	WTLED	O	Waste toner full sensor PWB [KP-849] emitter (LED) drive signal
	6	PFSEL2	O	Option unit selection signal 2, for option paper feeder/duplex unit
	7	PFSEL1	O	Option unit selection signal 1, for option paper feeder/duplex unit
	8	FINRX	I	Communication control receive signal, for option document finisher
	9	PFSEL0	O	Option unit selection signal 0, for option paper feeder/duplex unit
	10	DUSEN	I	Duplexer paper exit sensor detection, H: Detected
	11	VCC	O	5 V DC
	12	VCC	O	5 V DC
	13	VPP	O	24 V DC
	14	STPEN	O	Option document finisher POWER-OFF signal, H: Off
	15	STOBN	O	Fuser unit drive motor (stepping drive) control signal
	16	VPP	O	24 V DC
	17	STOAN	O	Fuser unit drive motor (stepping drive) control signal
	18	GND	-	Ground
	19	T2INV*	O	Transfer belt bias (negative) control, H: On
	20	VPP	O	24 V DC
	21	-	-	Not used
	22	-	-	Not used
	23	-	-	Not used
	24	-	-	Not used
	25	THERML	I	Lower fuser thermistor detecting signal (analog)
	26	THERMU	I	Upper fuser thermistor detecting signal (analog)
	27	FTREF	O	Reference voltage (+4.2 V DC) for fuser thermistors
	28	ANT2*	O	Transfer belt bias voltage control signal PWM
	29	T2REM*	O	Transfer belt bias (positive) control signal H: On
	30	GND	-	Ground
	31	STOAP	O	Fuser unit drive motor (stepping drive) control signal
	32	VPP	O	24 V DC
	33	GND	-	Ground
	34	STOBP	O	Fuser unit drive motor (stepping drive) control signal
	35	WTBS	I	Waste toner full sensor PWB [KP-849], waste toner bottle detection, H: Installed
	36	VPP	O	24 V DC
	37	VCC	O	5 V DC
	38	VCC	O	5 V DC
	39	GND	-	Ground
	40	GND	-	Ground
YC1022 Not used				
YC1023 Not used				

2-3-3 Main controller PWB [KP-991]

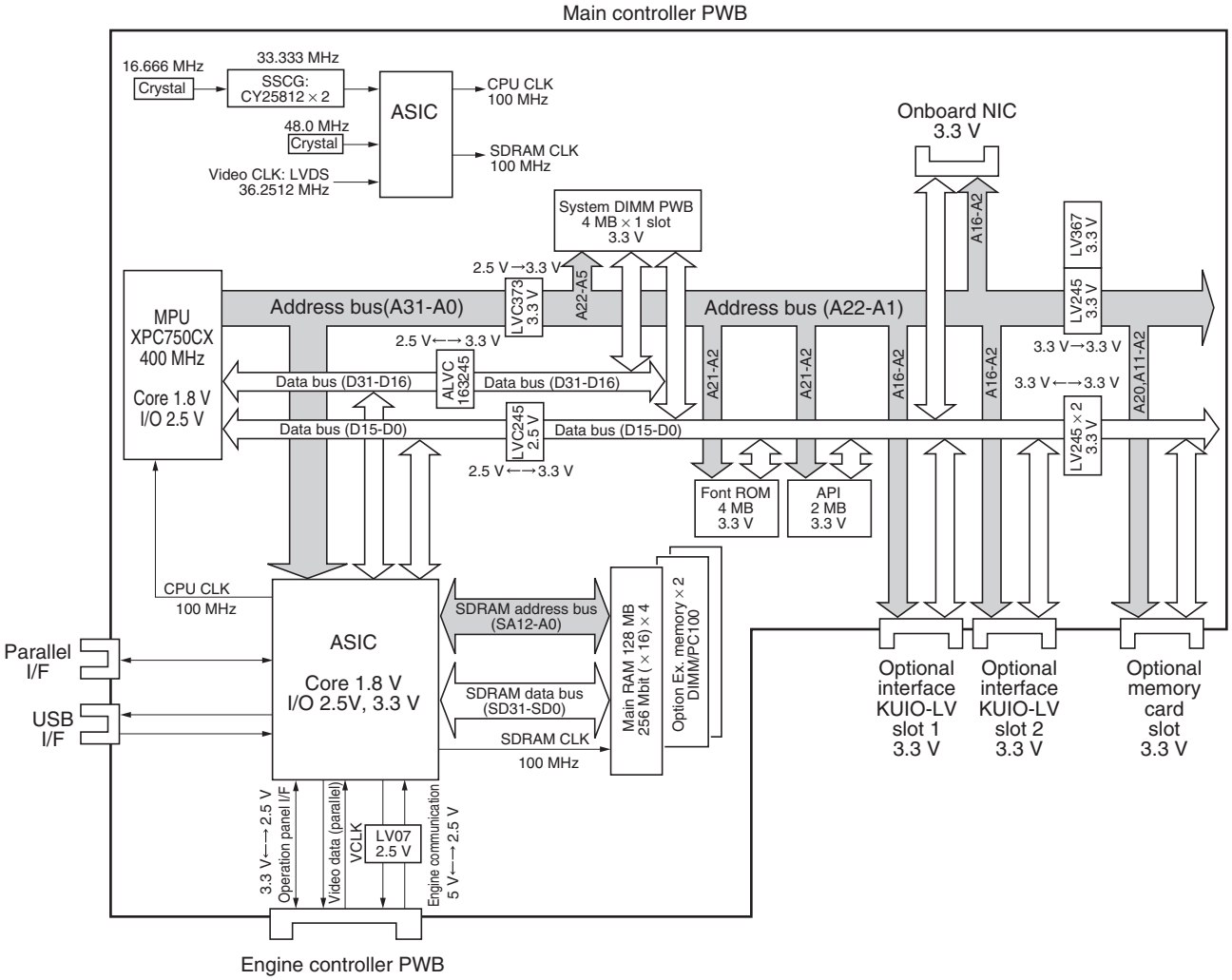
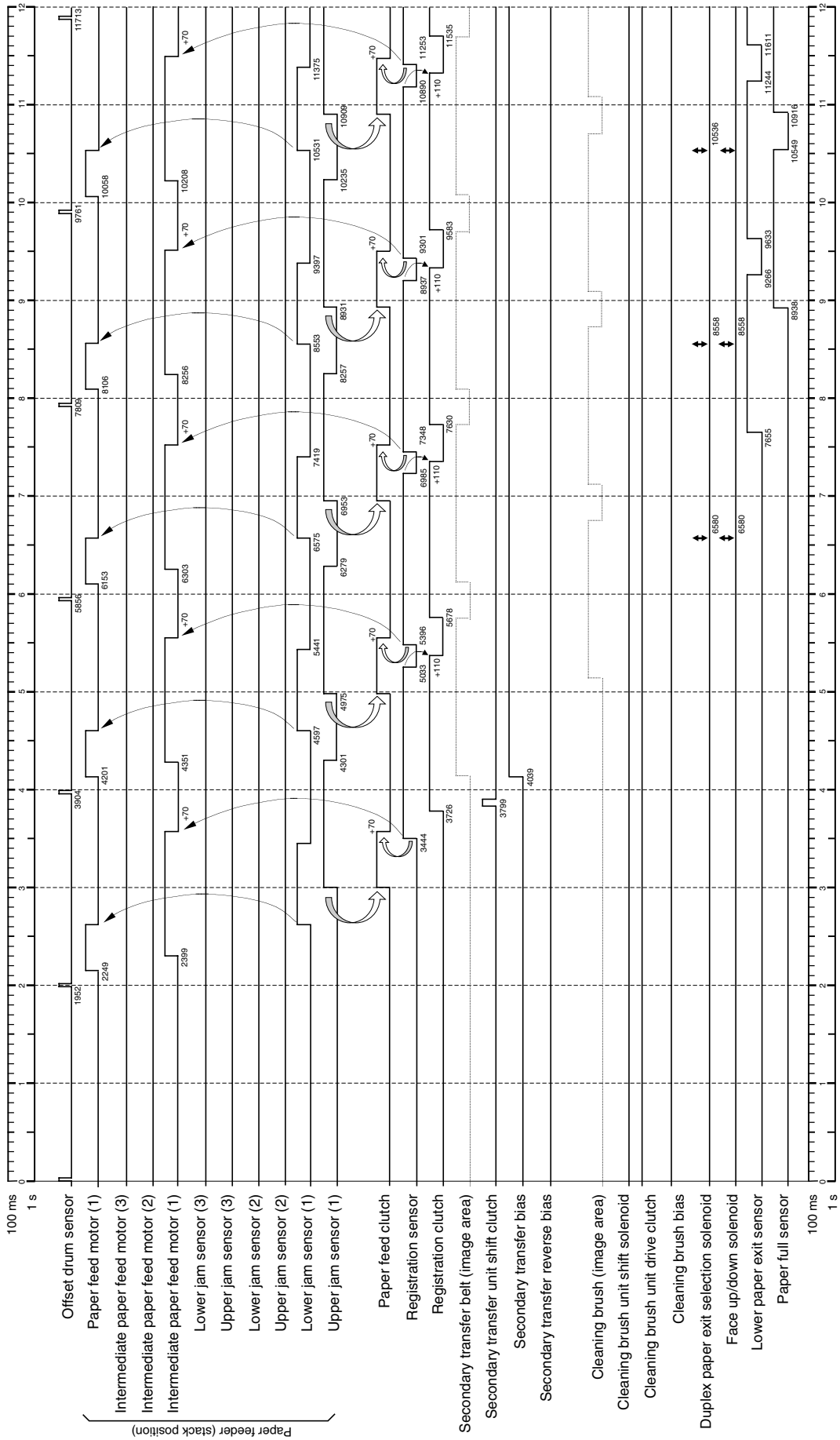
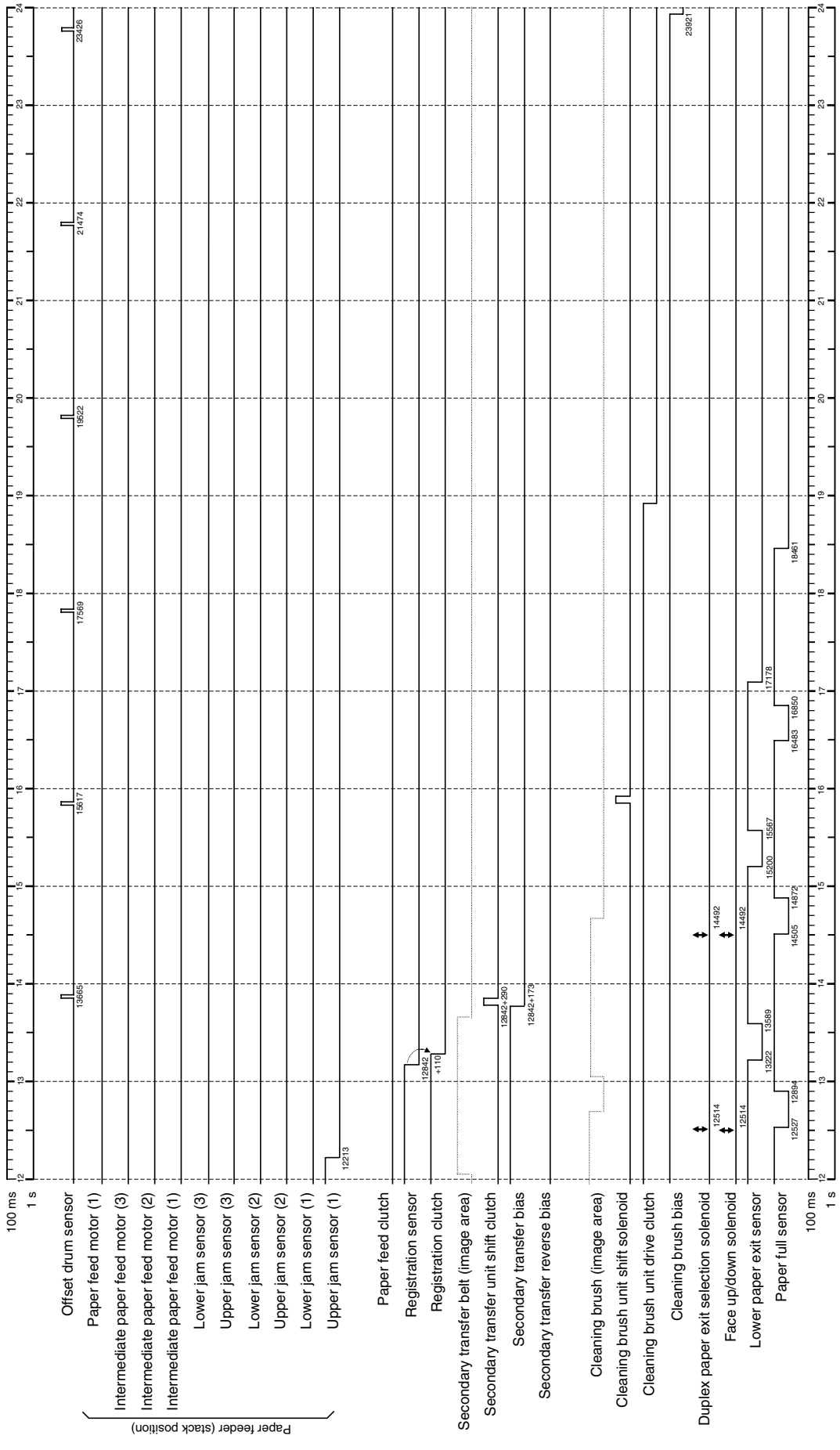


Figure 2-3-3 Main controller PWB [KP-991] block diagram

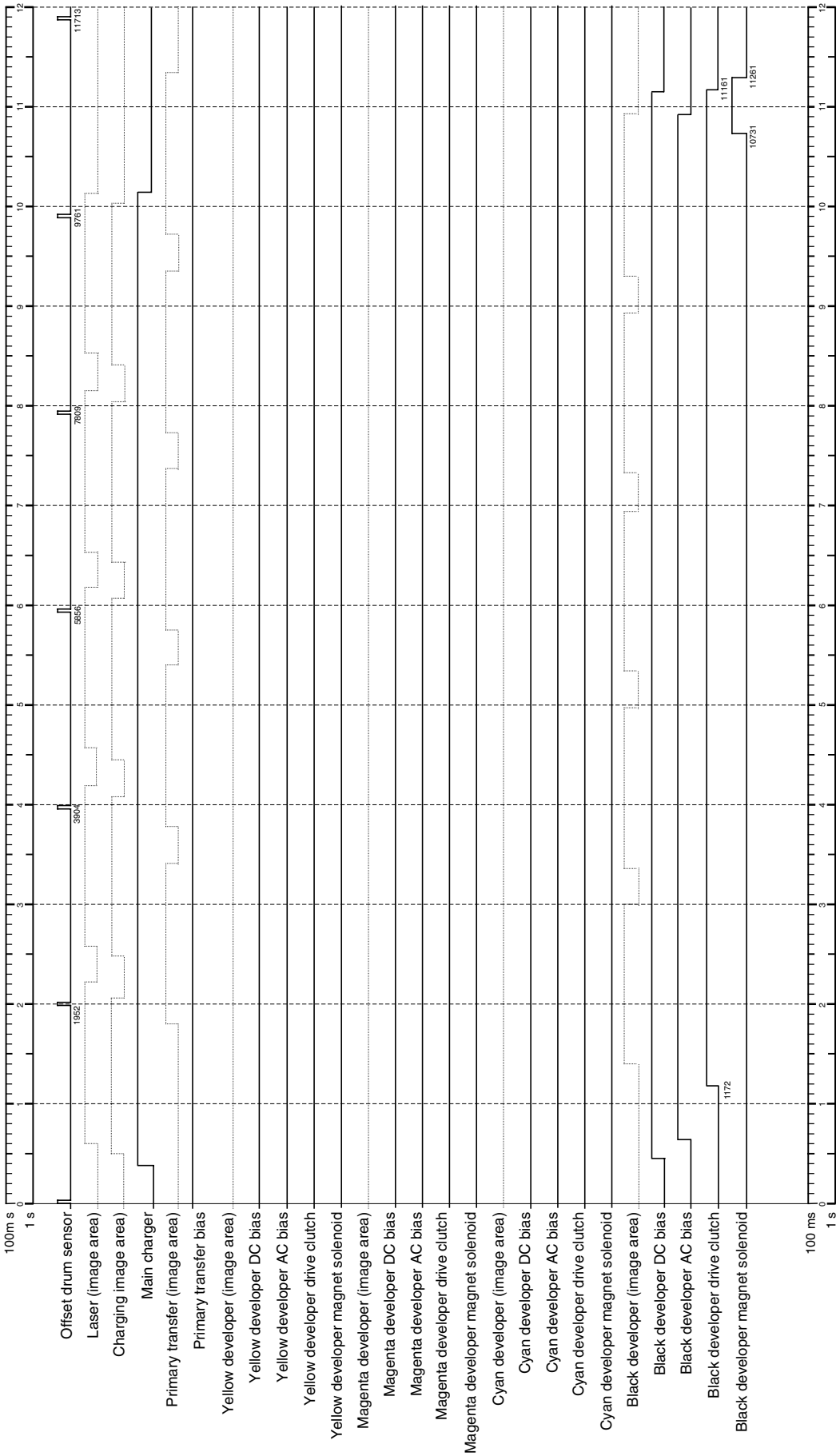
Timing chart No.1 ($^1/_5$) Monochrome printing (31 ppm), A4 paper, Paper feeder upper cassette feeding



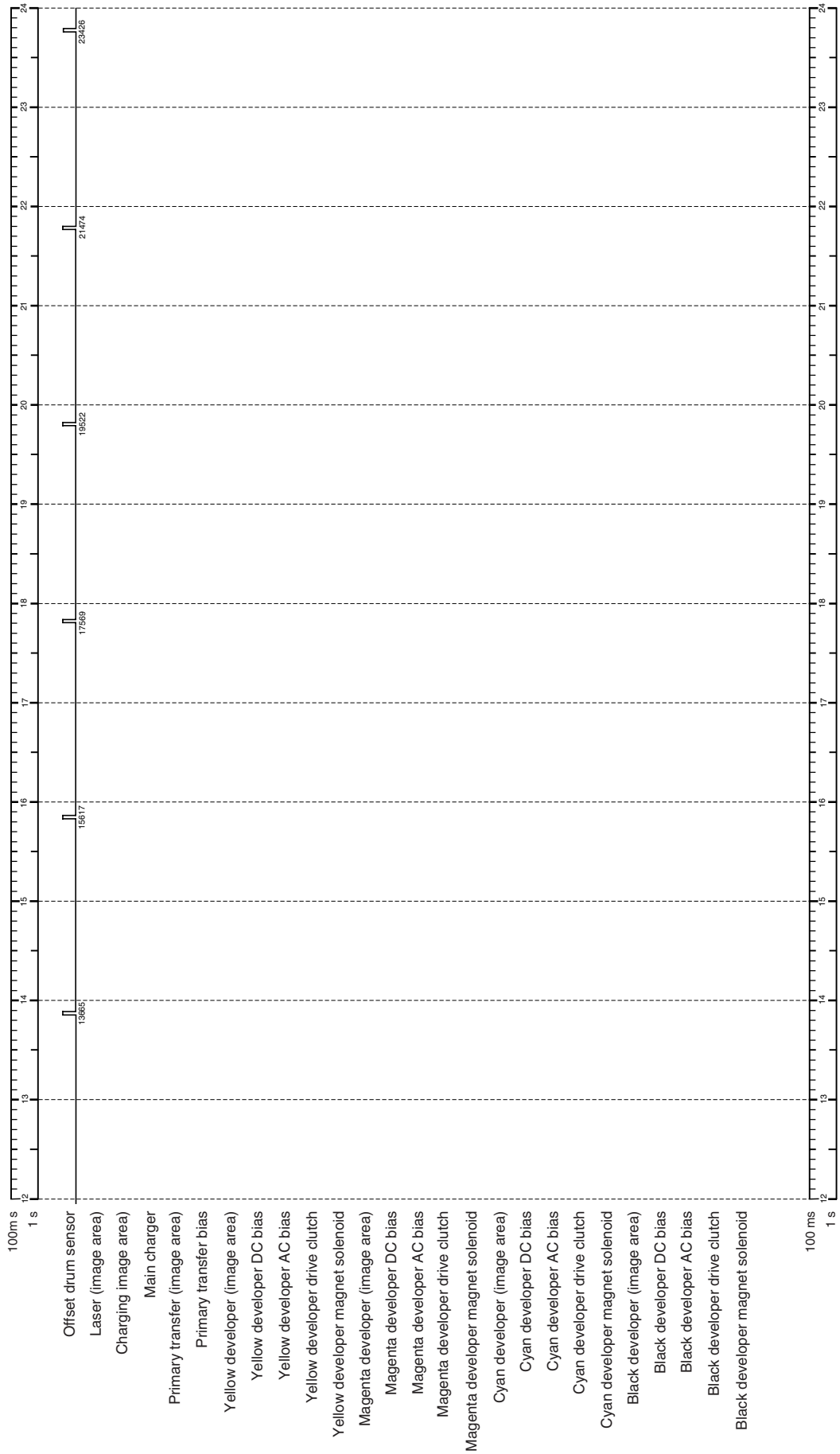
Timing chart No.1 ($^{2}/_{5}$) Monochrome printing (31 ppm), A4 paper, Paper feeder upper cassette feeding



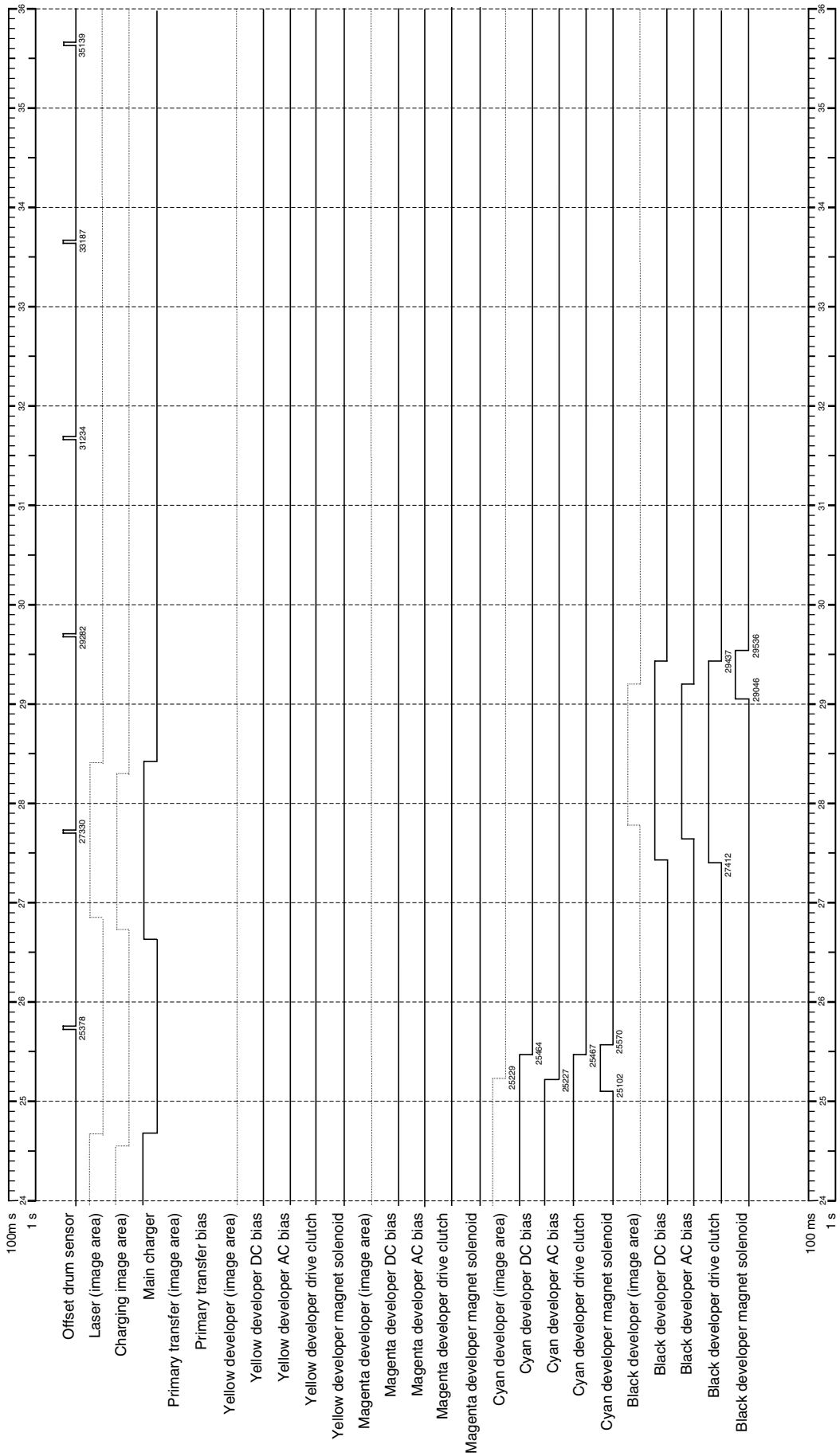
Timing chart No.1 ($^{3}/_{5}$) Monochrome printing (31 ppm), A4 paper, Paper feeder upper cassette feeding



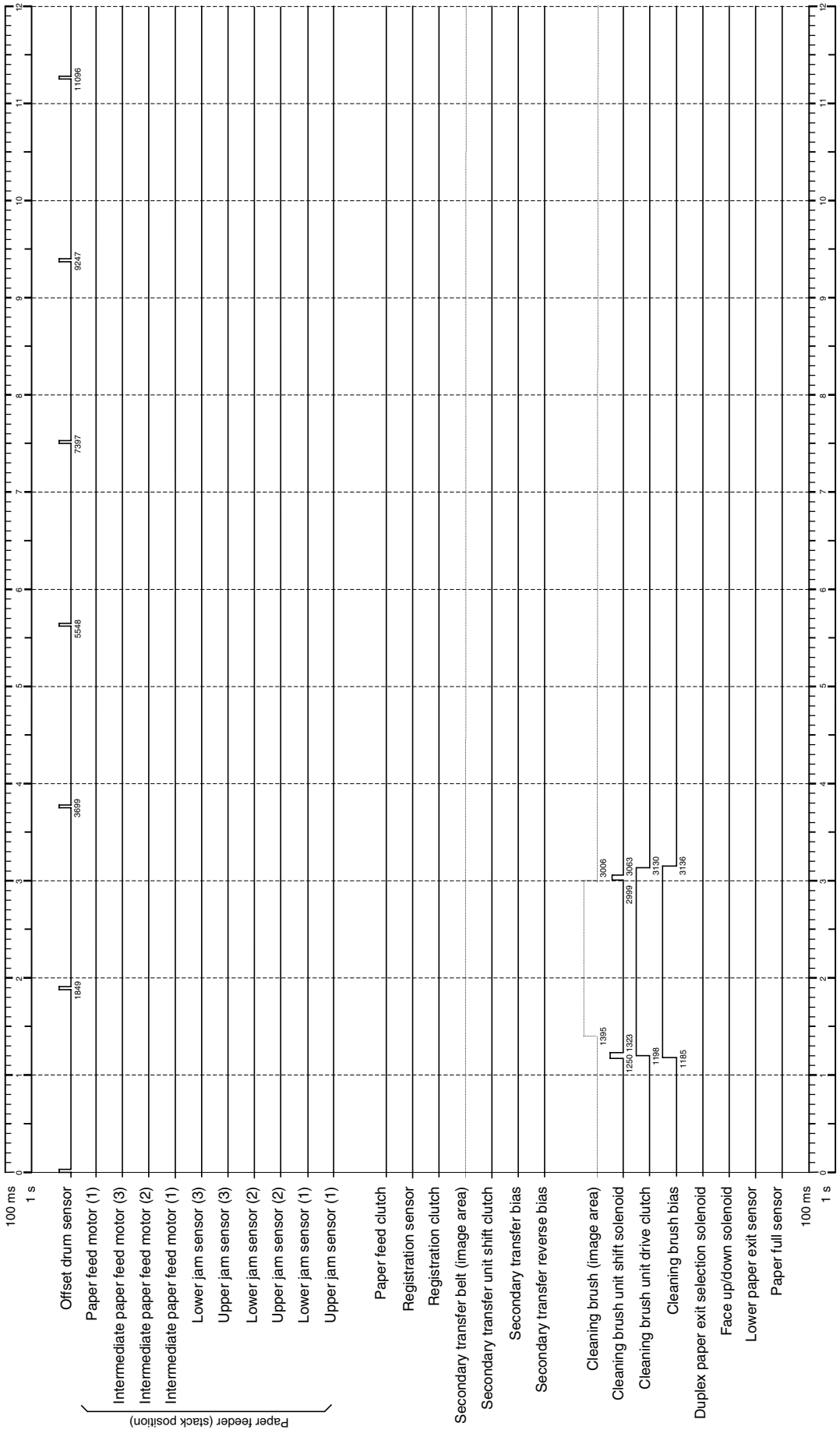
Timing chart No.1 (4/5) Monochrome printing (31 ppm), A4 paper, Paper feeder upper cassette feeding



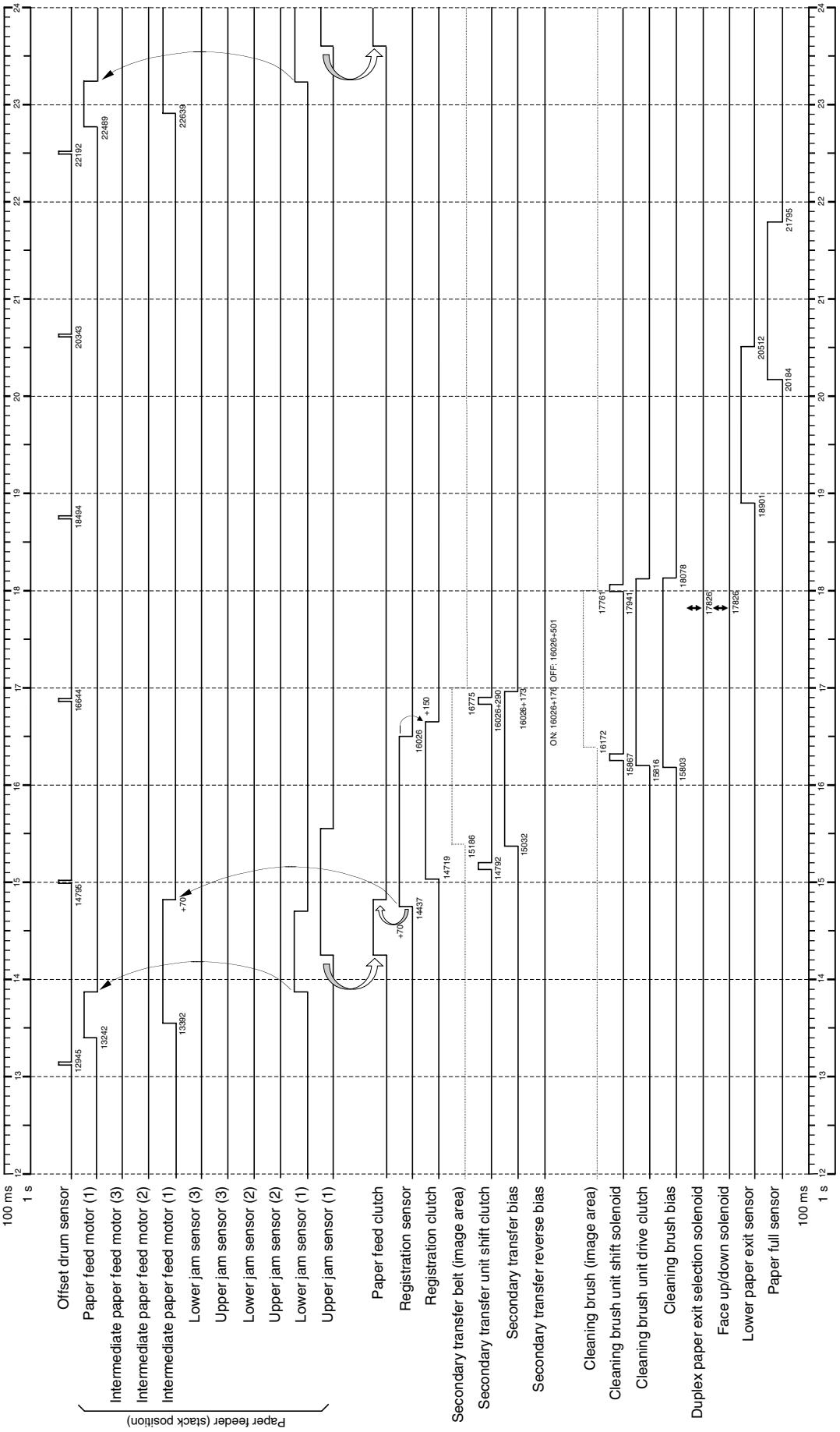
Timing chart No.1 ($^{5}/_{5}$) Monochrome printing (31 ppm), A4 paper, Paper feeder upper cassette feeding



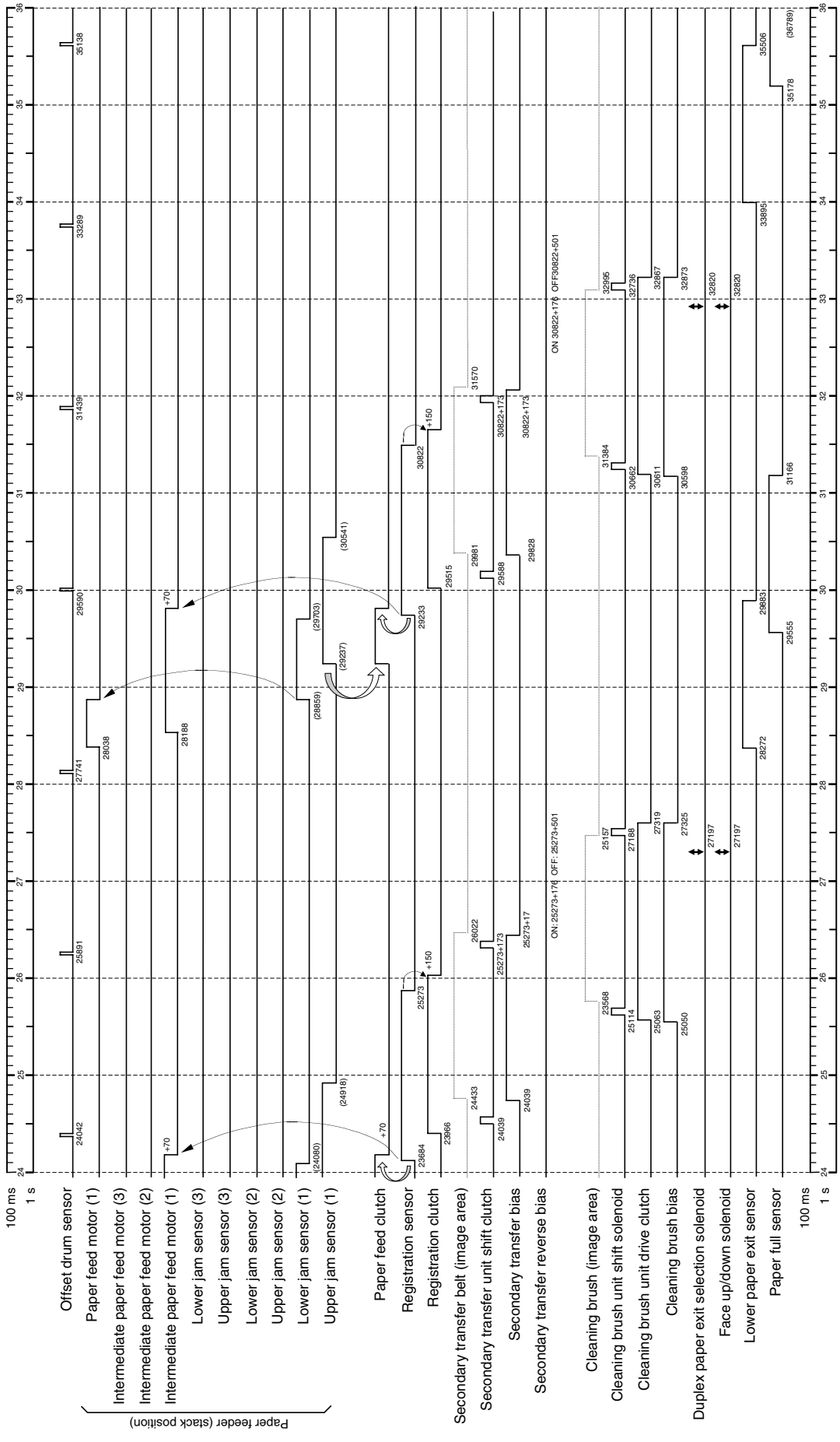
Timing chart No.2 (1/7) Color printing (8 ppm), A4 paper, Paper feeder upper cassette feeding



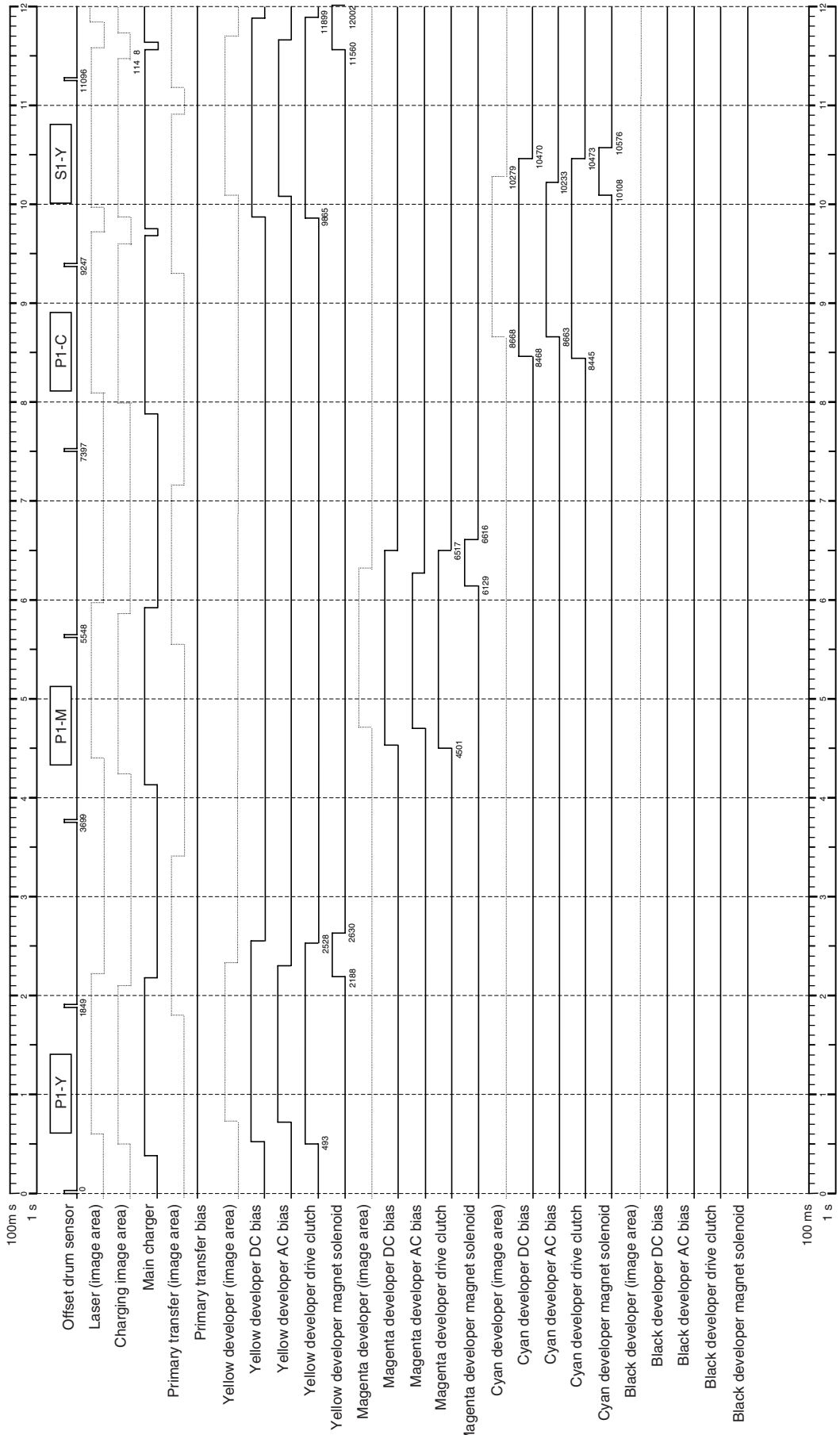
Timing chart No.2 (2/7) Color printing (8 ppm), A4 paper, Paper feeder upper cassette feeding



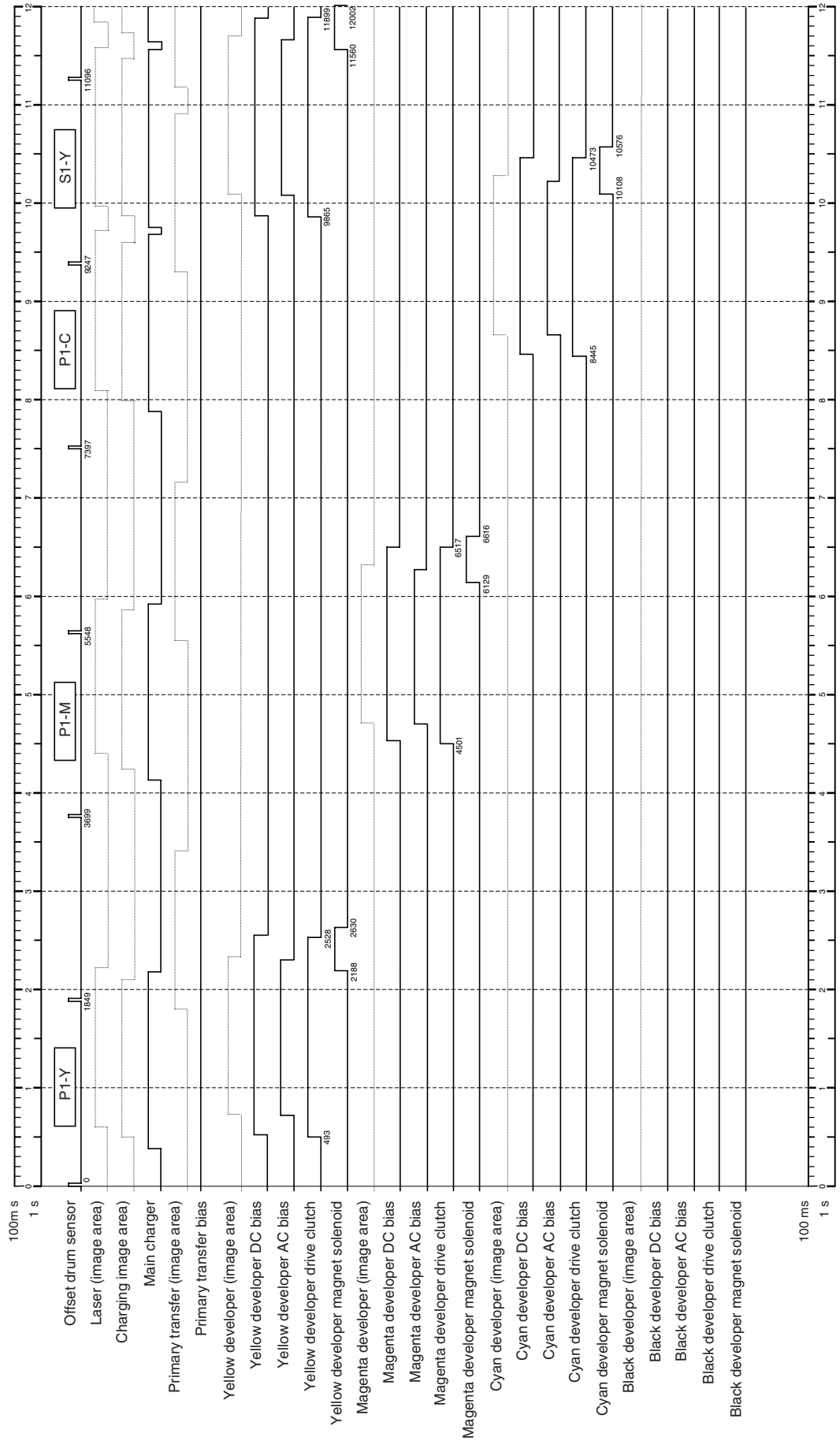
Timing chart No.2 ($^{3}/_{7}$) Color printing (8 ppm), A4 paper, Paper feeder upper cassette feeding



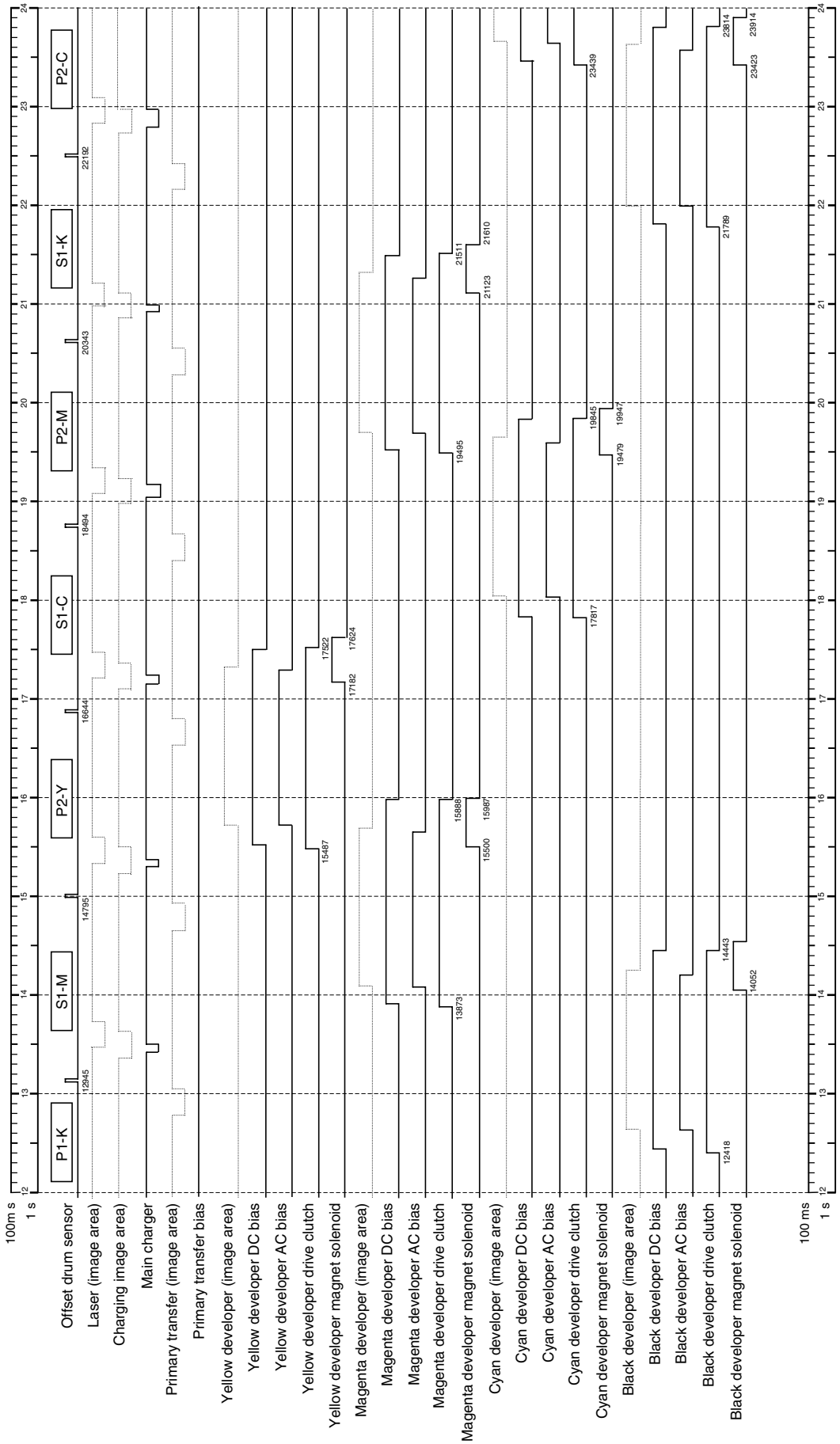
Timing chart No.2 ($^{4}/_{7}$) Color printing (8 ppm), A4 paper, Paper feeder upper cassette feeding



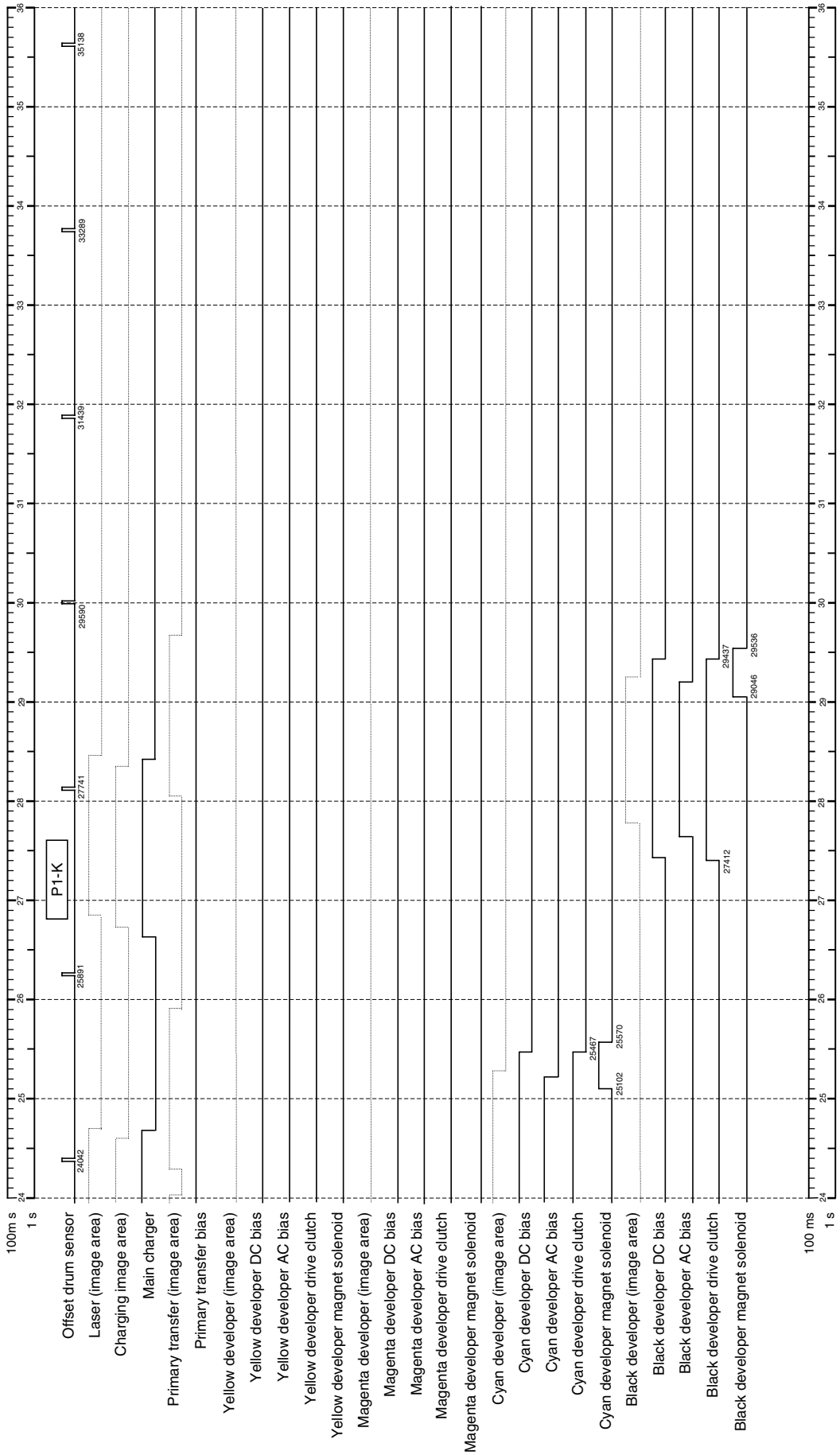
Timing chart No.2 (5/7) Color printing (8 ppm), A4 paper, Paper feeder upper cassette feeding



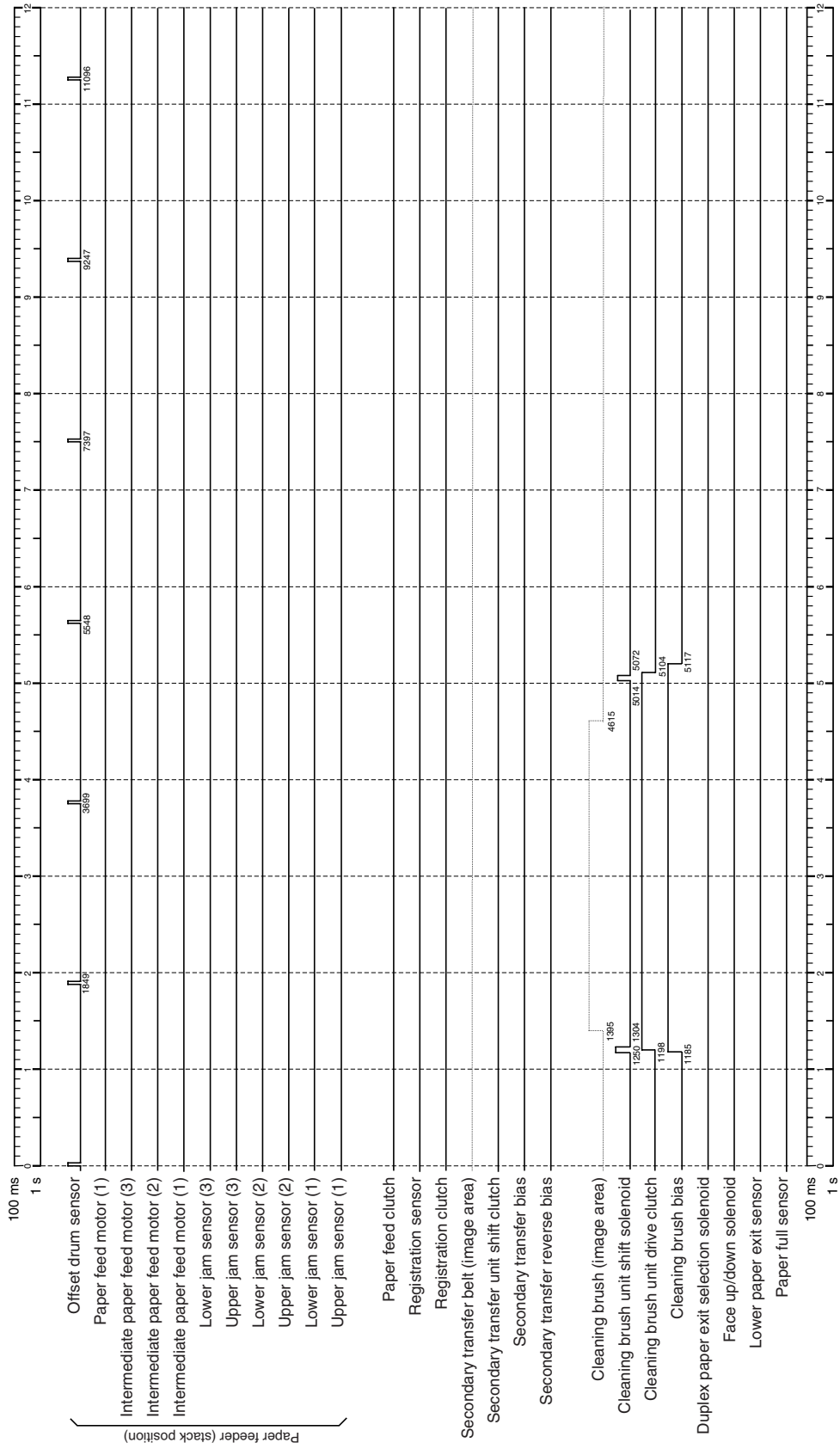
Timing chart No.2 (6/7) Color printing (8 ppm), A4 paper, Paper feeder upper cassette feeding



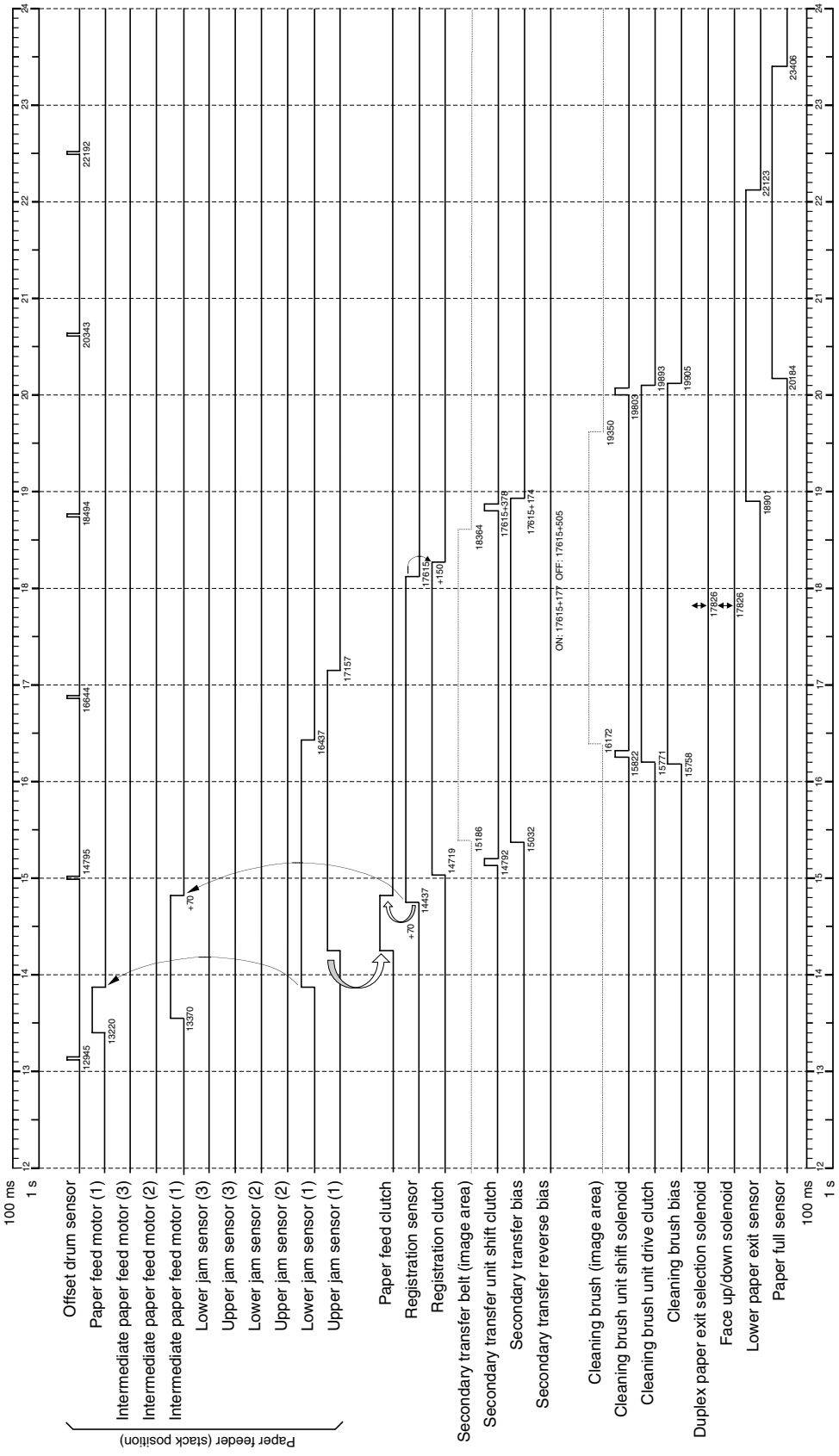
Timing chart No.2 ($^{7}/_{7}$) Color printing (8 ppm), A4 paper, Paper feeder upper cassette feeding



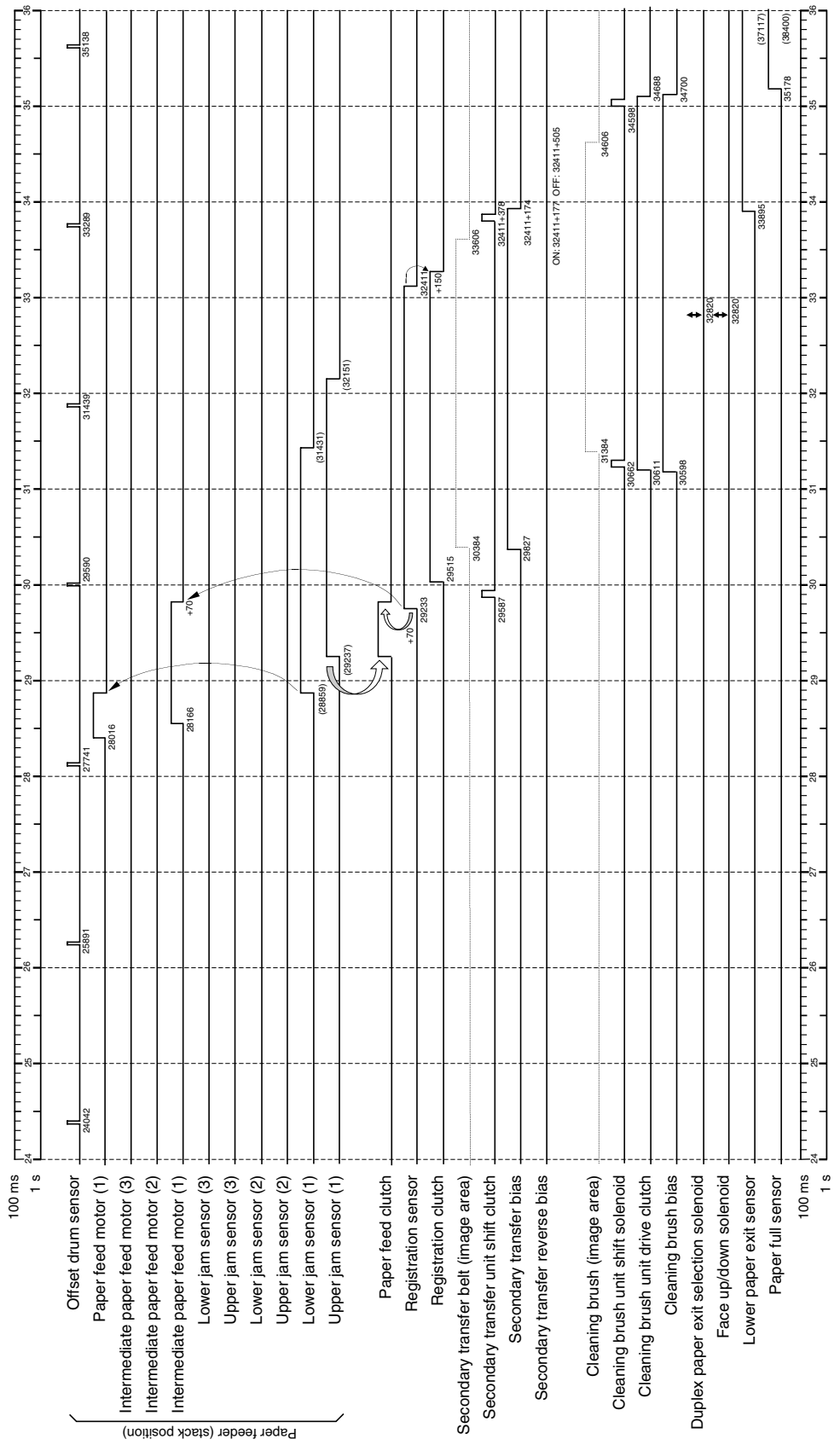
Timing chart No.3 ($^1/_6$) Color printing (4 ppm), A3 paper, Paper feeder upper cassette feeding



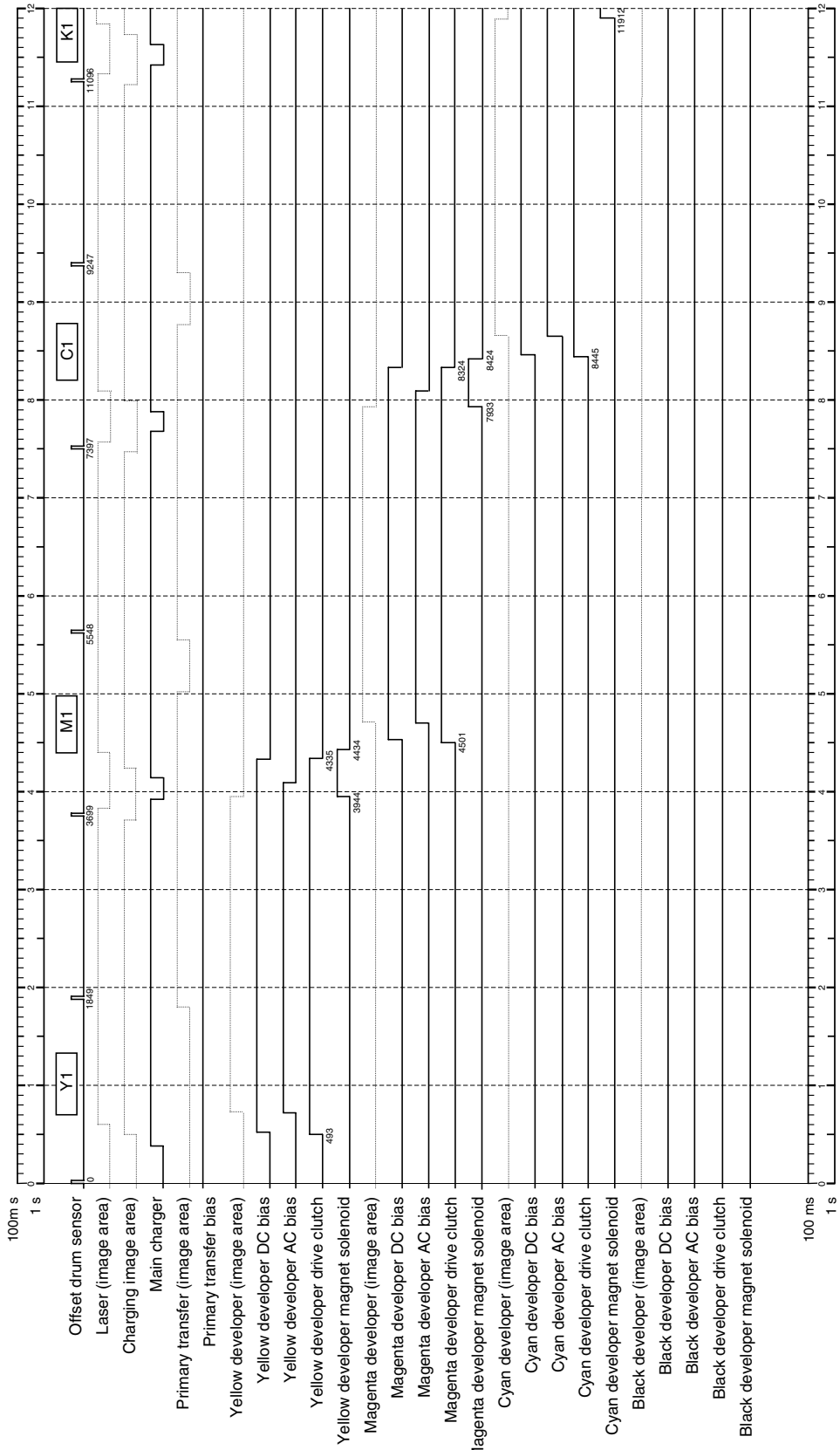
Timing chart No.3 (2/6) Color printing (4 ppm), A3 paper, Paper feeder upper cassette feeding



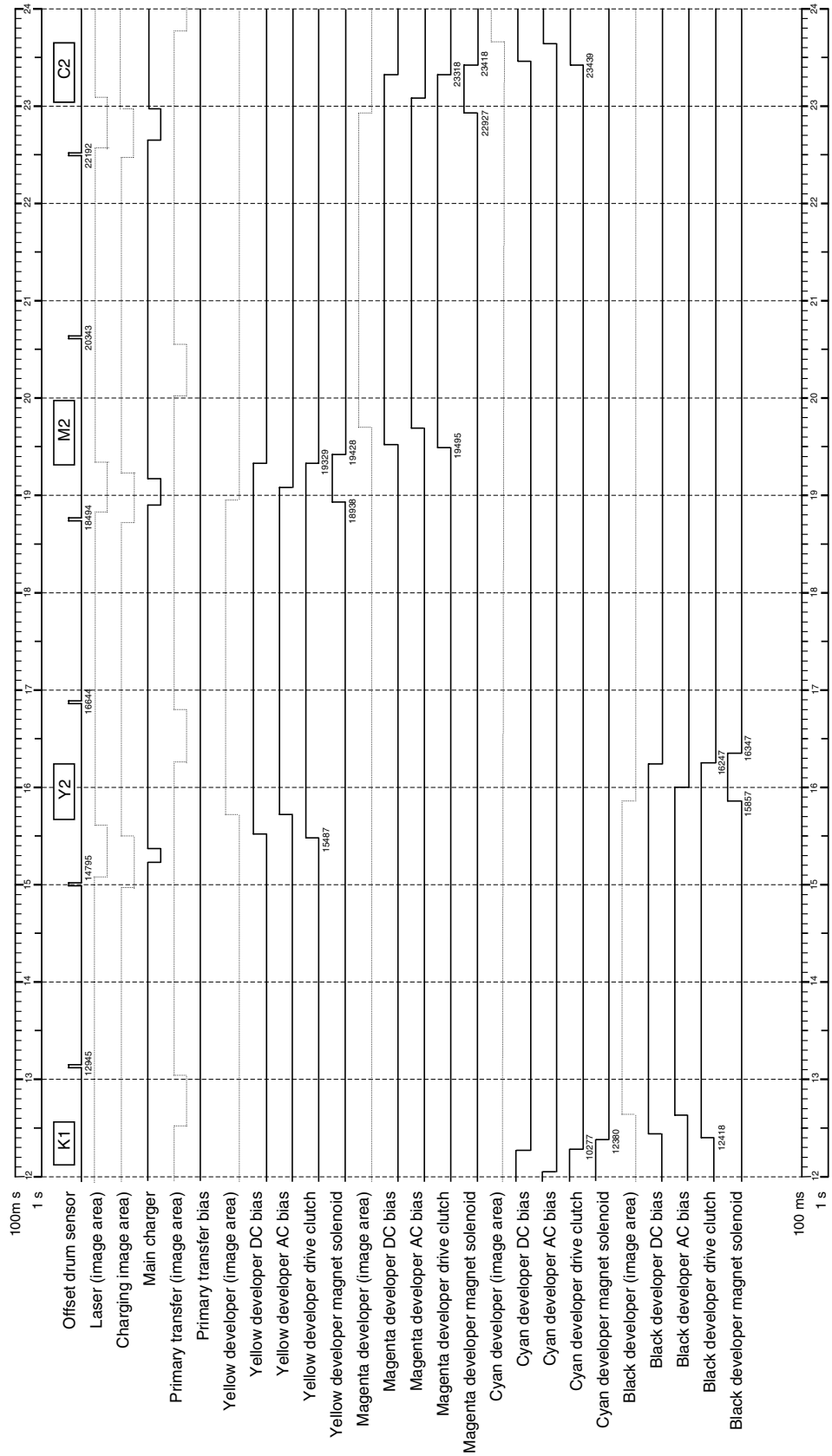
Timing chart No.3 (3/6) Color printing (4 ppm), A3 paper, Paper feeder upper cassette feeding



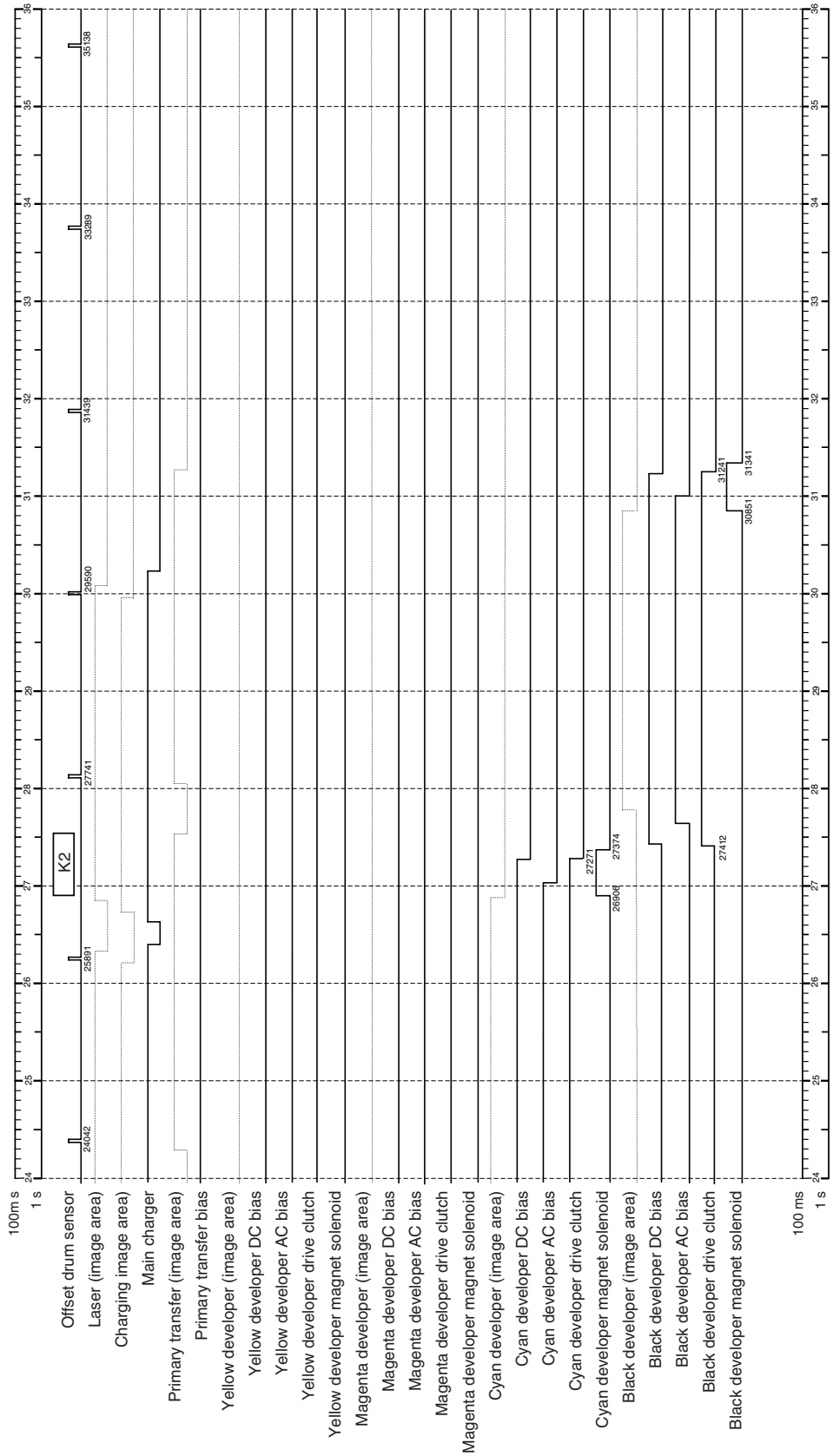
Timing chart No.3 (4/6) Color printing (4 ppm), A3 paper, Paper feeder upper cassette feeding



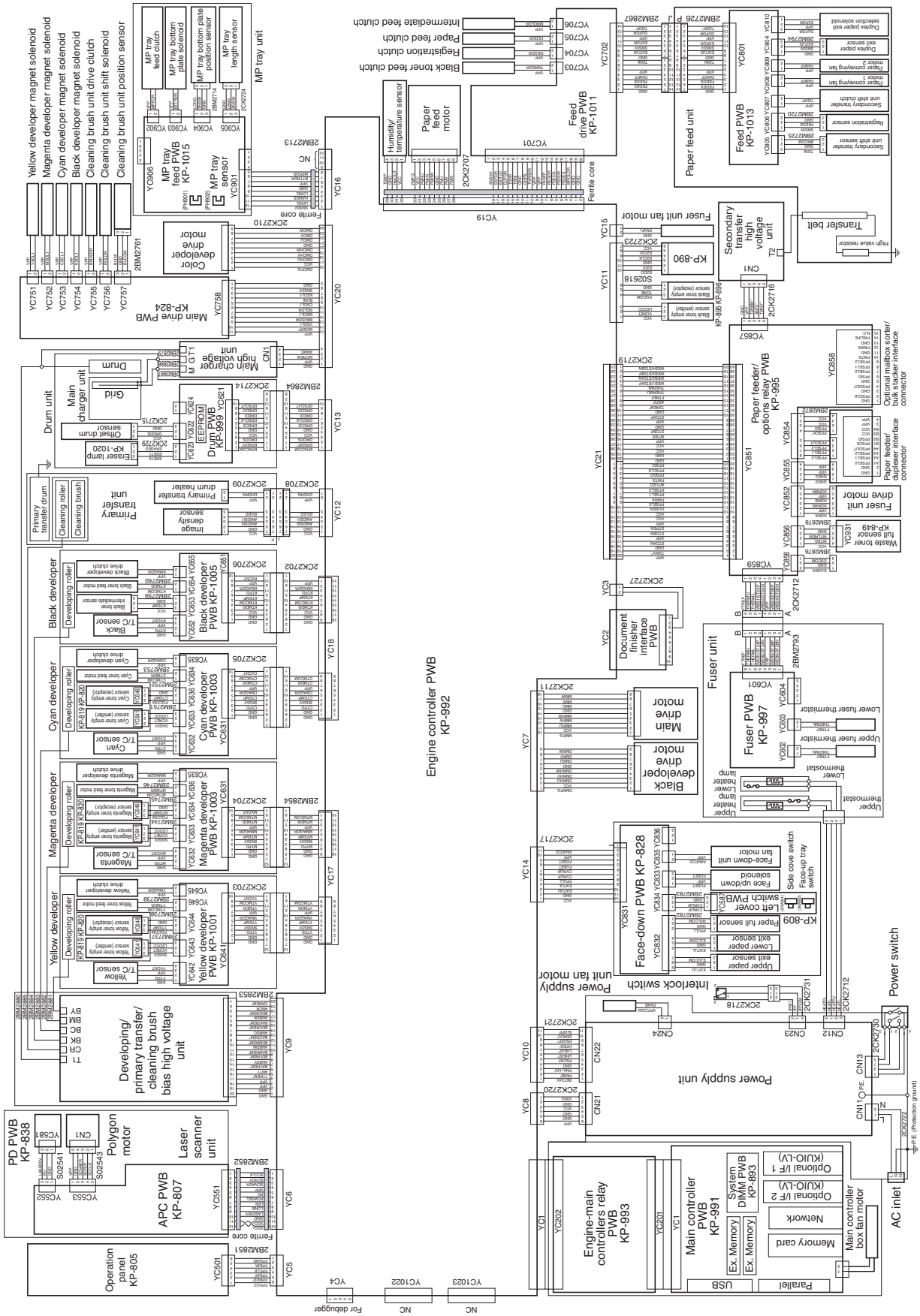
Timing chart No.3 (5/6) Color printing (4 ppm), A3 paper, Paper feeder upper cassette feeding



Timing chart No.3 (6/6) Color printing (4 ppm), A3 paper, Paper feeder upper cassette feeding



Connection diagram



Maintenance kits

Maintenance kit part name		Part No.	Fig. No.	Ref. No.
Name used in the service manual	**Parts name**			
MK-803A Maintenance kit A	MK-803A MAINTENANCE KIT A			
Drum unit	DK-803 DRUM UNIT	**********	**	**
(including main charger unit)	(including MC-803 MAIN CHARGER ASSY	**********	**	**
Primary transfer unit	TR-803P PRI TRANSFER UNIT	**********	**	**
(including cleaning brush unit)	(including CLEANER ASSY)	**********	**	**
Secondary transfer unit	TR-803S SEC TRANSFER UNIT	**********	**	**
MK-803B Maintenance kit B	MK-803B MAINTENANCE KIT B			
Black developer	DV-803K DEVELOPER BLACK	**********	**	**
Fuser unit	FK-803(E) FUSER UNIT (E)	**********	**	**
	FK-803(U) FUSER UNIT (U)	**********	**	**
Conveying belts	BELT TRANS	2BM17540	**	**
MK-803C Maintenance kit C	MK-803C MAINTENANCE KIT C			
Yellow developer	DV-803Y DEVELOPER YELLOW	**********	**	**
Magenta developer	DV-803M DEVELOPER MAGENTA	**********	**	**
Cyan developer	DV-803C DEVELOPER CYAN	**********	**	**

Periodic maintenance procedures

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Test print	Maximum print size	Test print	At any service visit.		

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Paper feed unit and secondary transfer unit	Paper conveying belts	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-4-18
	Upper registration roller	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-4-17
	Lower registration roller	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-4-17
	Secondary transfer unit shift clutch	Check and replace	At any service visit.	Check and replace if damaged.	1-6-22
	Paper conveying fan motors 1 and 2	Check and replace	At any service visit.	Check and replace if damaged.	1-6-8
	Registration sensor	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-4-18

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Drum unit and main charger unit	Drum	Check and clean Perform maintenance mode	At any service visit. At any service visit.	Check drum surface and clean by using soft cloth if dirty. Perform the maintenance mode (drum surface refreshing) if an image problem occurs.	1-6-14 1-4-11
	Drum R flange	Clean	At any service visit.	Clean the gear tooth.	1-4-20
shaft	Drum gear Z28-Z28H and	Clean and grease	At any service visit. gear and shaft.	Clean and then apply grease	1-4-20
	Idle gear Z17H Z22H and shaft	Clean and grease	At any service visit.	Clean and then apply grease gear and shaft.	1-4-20
	CLN gear Z17	Clean and grease	At any service visit. gear.	Clean and then apply grease	1-4-20
	Main charger wire	Clean	At any service visit.	Clean by using wire cleaner.	1-4-14
	Main charger grid	Clean	At any service visit.	Clean by using grid cleaner.	1-4-15
	Main charger shield	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-4-16

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Primary transfer unit and cleaning brush unit	Primary transfer unit	Clean	At any service visit.	Clean the platform for the cleaning brush unit with alcohol or a dry cloth.	1-4-19
	Cleaning brush unit	Clean	At any service visit.	Clean the waste toner exit with alcohol or a dry cloth.	1-4-19

Section	Maintenance part/location	Method	Maintenance cycle	Points and cautions	Page
Fuser unit	Separators	Clean	At any service visit.	Clean with alcohol or a dry cloth after heat cooled down.	1-4-22
	Paper chute	Clean	At any service visit.	Clean with alcohol or a dry cloth	1-4-22
	Heat and heat/press roller	Print a solid black page.	At any service visit.	Perform the procedure described on page 1-4-21 if a paper dust problem occurs.	1-4-21

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