KYOCERA mita

Color laser printers

FS-8000C
FS-8000CD
FS-8000CN

SERVICE MANUAL

ECOSYS®

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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

Chapter I

CONTENTS

1-1 Specifications

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 (64 to 90 g/m^2) MP tray: Plain paper (64 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/30 pages per min. [Color/Monochrome] A4-R*: 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/30 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 300 s or less (room temperature 23° C/73.4 °F, 60 % RH)
Paper feed system	FS-8000C/CN model: Paper feeder PF-30A (2 universal type cassettes) and MP (Multi purpose) tray FS-8000CD model: Duplex unit PD-30 (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 roller
Separation system	AC corona separation charging
Fixing system	Heat roller and press/heat roller (soft type, diameter 45 mm) Heat source: 2 halogen heaters (500 W) Control temperature: 185 °C/365 °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: 8 MB (2 system DIMM PWBs in sockets) Font ROM: 4 MB (PCL and KPDL) Main RAM: 64 MB (standard) Option expansion RAM: 2 sockets (Maximum 256 MB, including the standard RAM) Option memory card: 1 slot (CompactFlash card) Option interface*: 2 slots (KUIO LV) Note (*): A network interface card is standard-installed with FS-8000CN.

Host computer interface	Parallel: Bi-directional parallel (IEEE 1284 Nibble/ECP mode) Serial: RS-232C, 115.2 kbps maximum Option: KUIO 2 slots
Controller software	Emulation: PCL 5C, KPDL, KCGL Fonts: PCL, PS, PRESCRIBE
Smoothing	KIR (monochrome mode only)
Toner saving	EcoPrint mode (monochrome mode only)
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 × 251mm (W × D × H) $22^{3}/_{8}$" × $22^{1}/_{4}$" × $9^{7}/_{8}$" (W × D × H) Duplex unit PD-30: 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 and oil roller unit) Paper feeder PF-30A: 19.1 kg/40.02 lbs Duplex unit PD-30: 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: 1318 W (120 V), 1323 W (220 – 240 V) Printing: 412 W (120 V), 437 W (220 – 240 V) Ready: 177 W (120 V), 184 W (220 – 240 V) Sleep mode: 34 W/37 W* (120 V), 35 W/38 W* (220 – 240 V) Note (*): Network model
Options	Expansion DIMM (32/64/128 MB), memory card, network interface card IB-20/IB-21/IB-21E, hard disk unit, paper feeder PF-30A, duplex unit PD-30*, mailbox sorter SO-30, document finisher DF-31, bulk stacker ST-30, barcode reader BC-1, caster CA-31, caster kit CA-31B Note (*): Optional for FS-8000C/CN models.

1-1-2 Parts names and their functions

(1) Printer

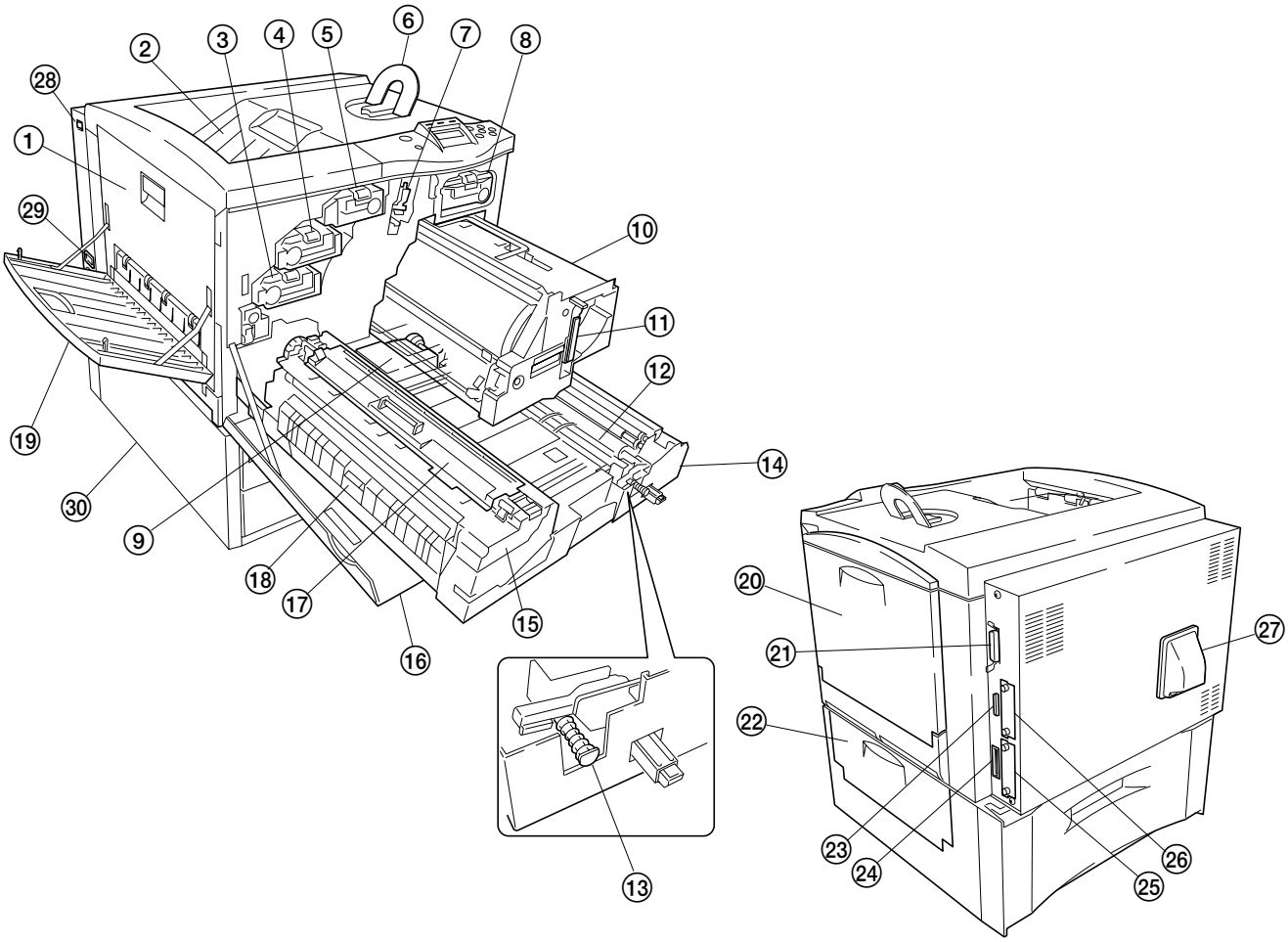


Figure 1-1-1

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 roller and separation charger unit)
⑬ Separation charger wire cleaner
⑭ Paper feed unit
⑮ Fuser unit
⑯ Front cover
⑰ Oil roller unit
⑱ Left paper guide
⑲ Face-up tray
⑳ MP tray
㉑ Parallel interface connector
㉒ Paper feeder/duplex unit side cover
㉓ Serial interface connector
㉔ Memory card slot
㉕ Network interface card*1 slot [OPT1]
㉖ Hard disk unit*2 or Network interface card*2 slot [OPT2/HDD]
㉗ Filter duct
㉘ Power switch
㉙ Power cord connector
㉚ Paper feeder*3 or duplex unit*4

*1: Standard-installed with FS-8000CN model only
*2: Option
*3: Standard-installed with FS-8000C model
*4: Standard-installed with FS-8000CD model

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

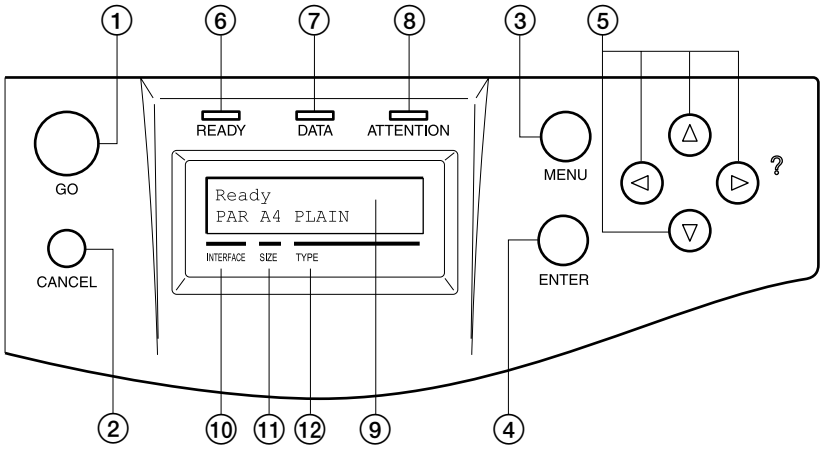


Figure 1-1-2

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

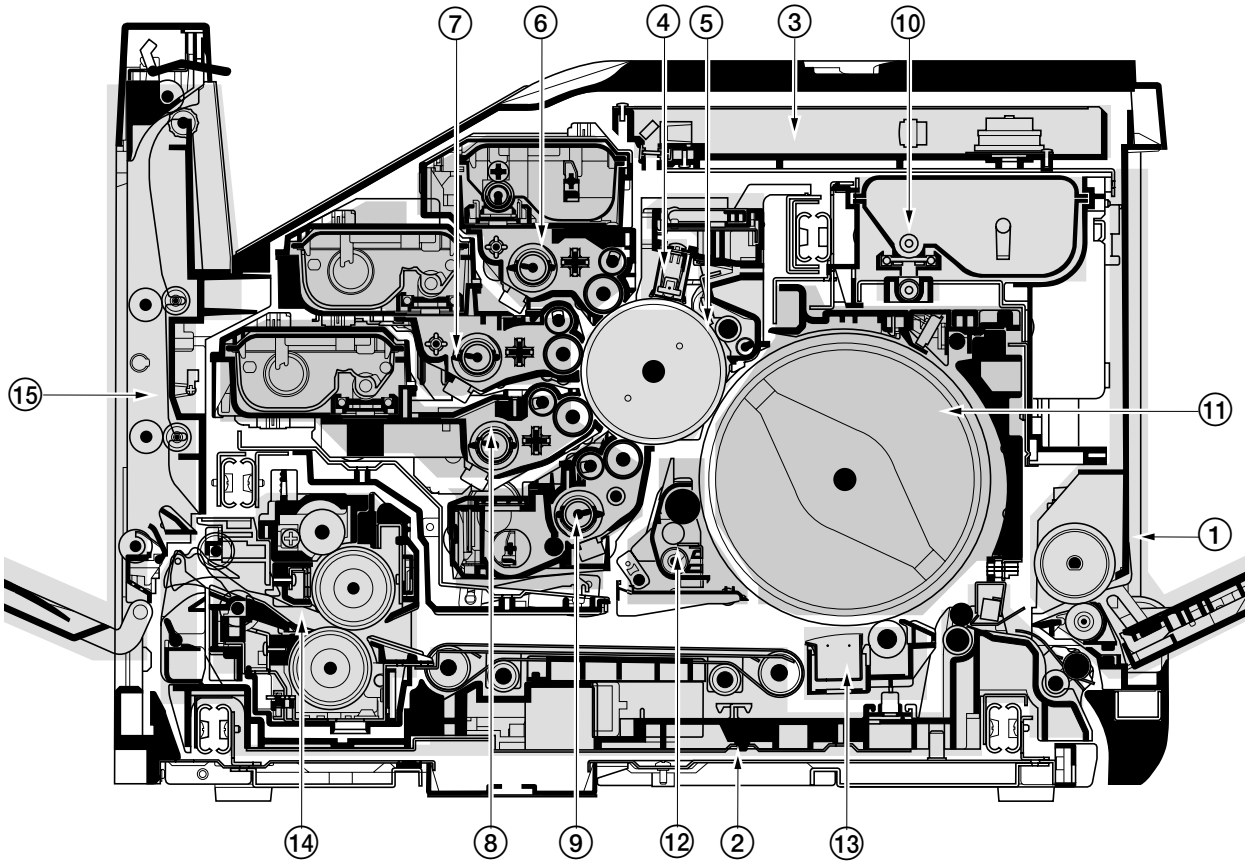


Figure 1-1-3 Cross section view

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

CONTENTS

1-2 Handling Precautions

1-2-1 Drum

Note the following when handling or storing the drum.

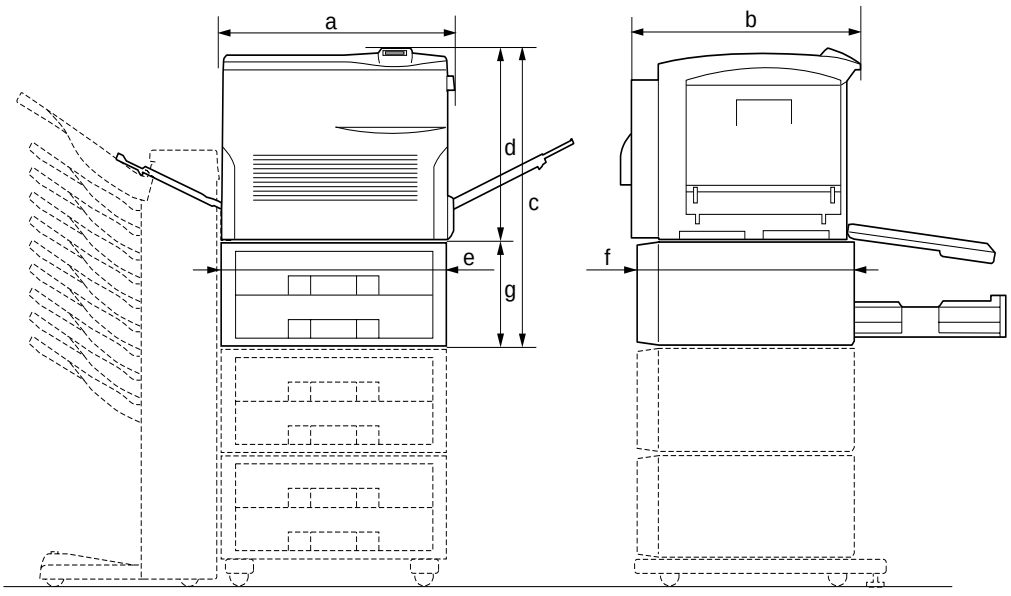
- Keep the drum at an ambient temperature between –20°C/–4°F and 40°C/104°F and at a relative humidity not higher than 85 % RH. Avoid abrupt changes in temperature and humidity.
- Avoid exposure to any substance which is harmful to or may affect the quality of the drum.
- Do not touch the drum surface with any object. Should it be touched by hands or stained with oil, clean it.

1-2-2 Developer and toner container

Store the developer and toner container in a cool, dark place. Avoid direct light and high humidity.

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"

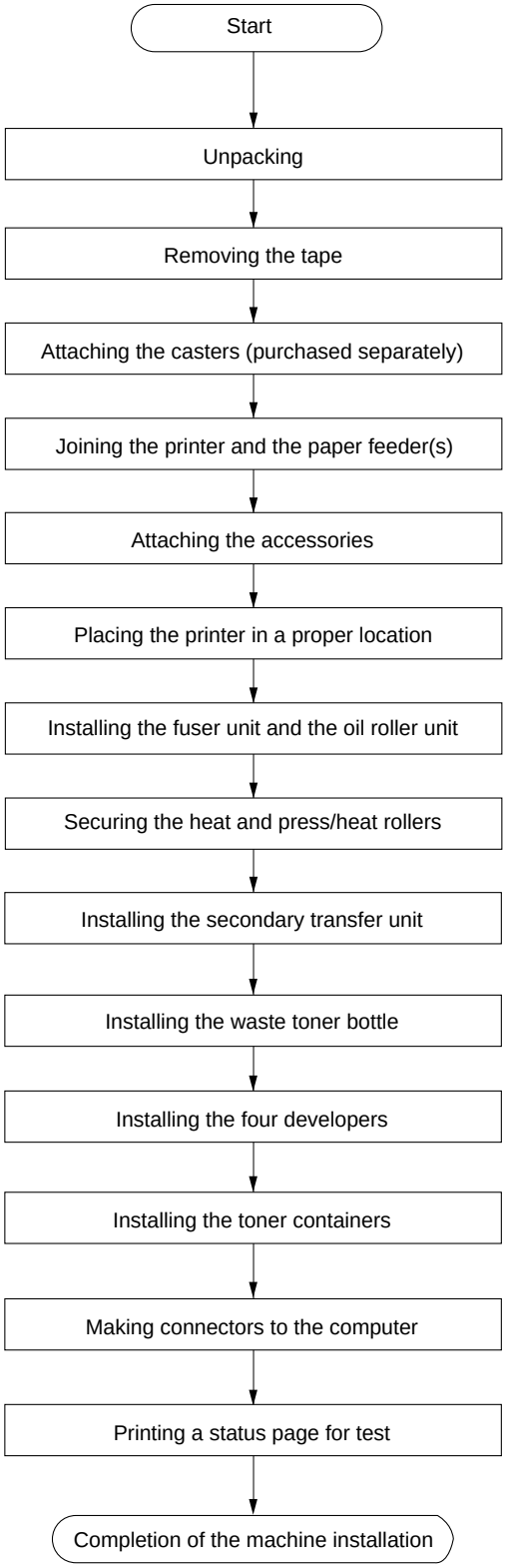
Figure 1-2-1 Installation dimensions

CONTENTS

1-3 Installation

1-3-1 Unpacking and installation

(1) Installation procedure



Unpack.

• Printer

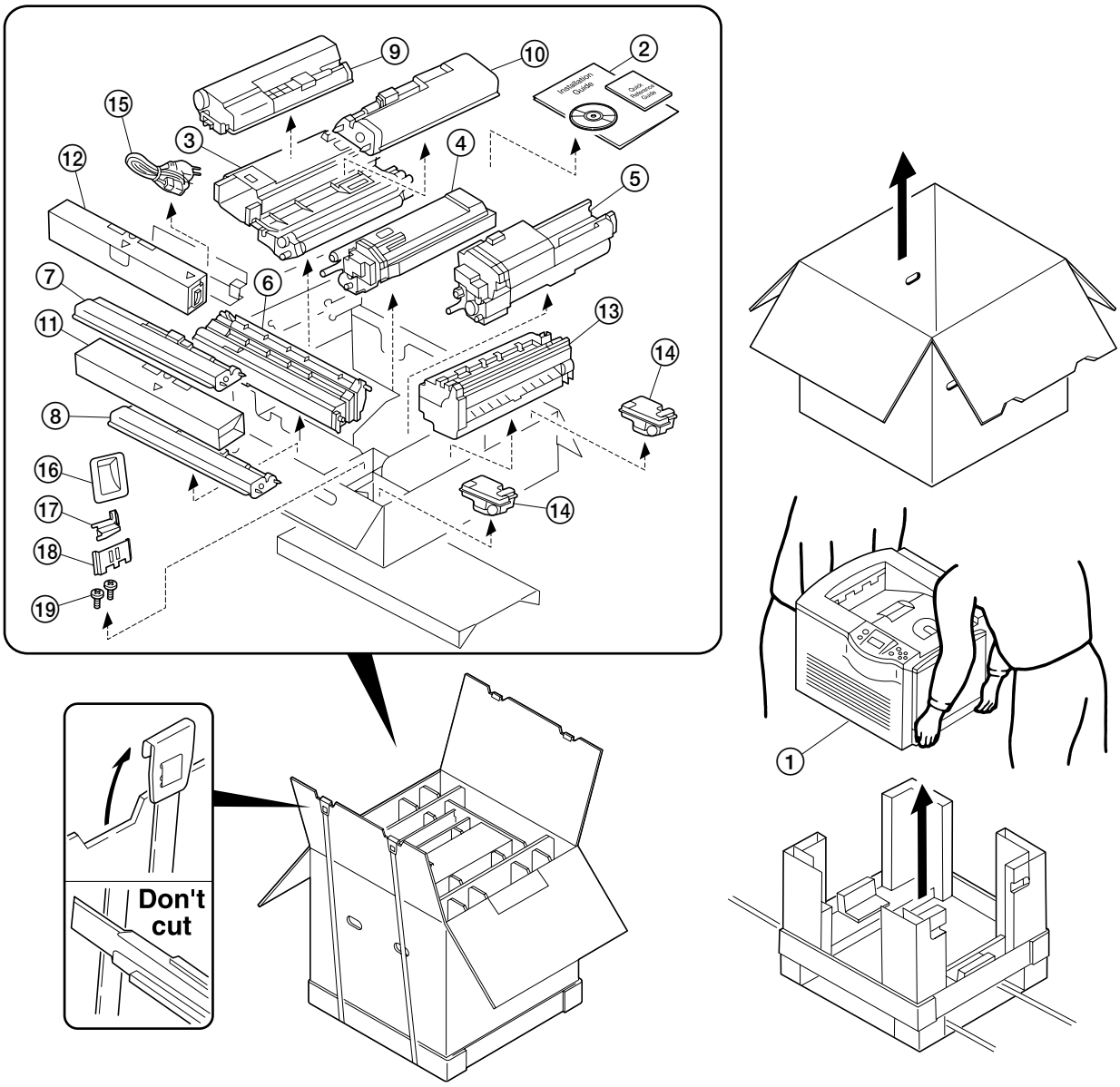


Figure 1-3-1 Unpacking (Printer)

① Printer
② Documents (Installation guide, Quick reference guide, and 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 Oil roller unit
⑬ Fuser unit
⑭ Waste toner bottles
⑮ Power cord
⑯ Filter duct
⑰ Joint jig
⑱ Quick reference guide holder
⑲ Screws (Two)

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

• Paper feeder (or duplex unit)

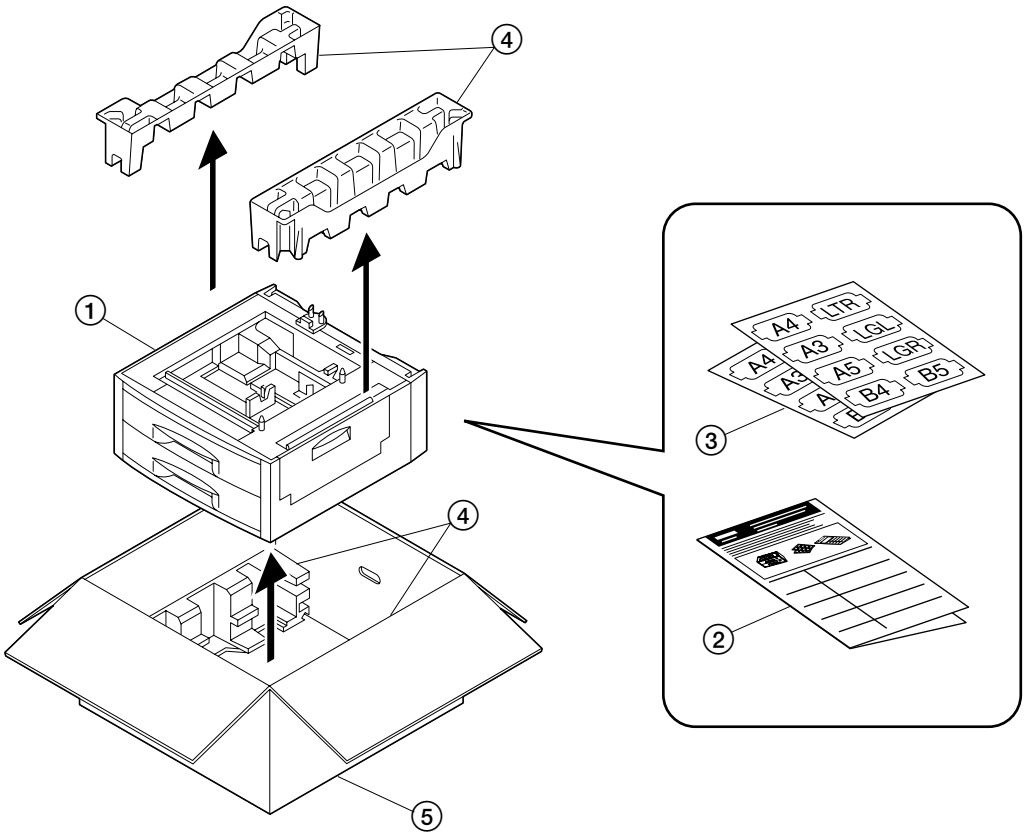


Figure 1-3-2 Unpacking the paper feeder (or duplex unit)

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.

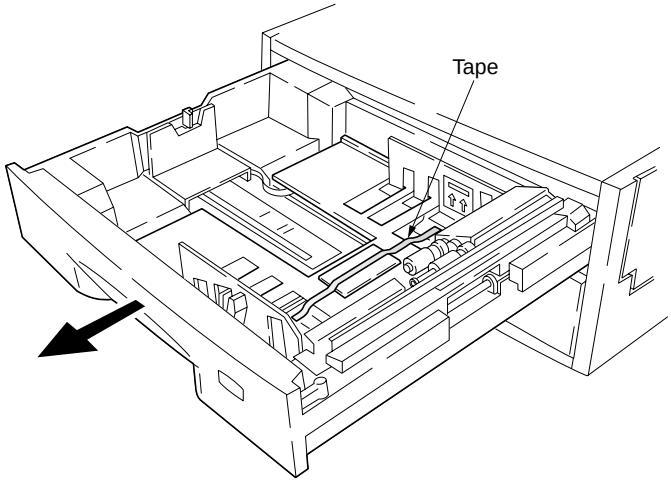


Figure 1-3-3

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.

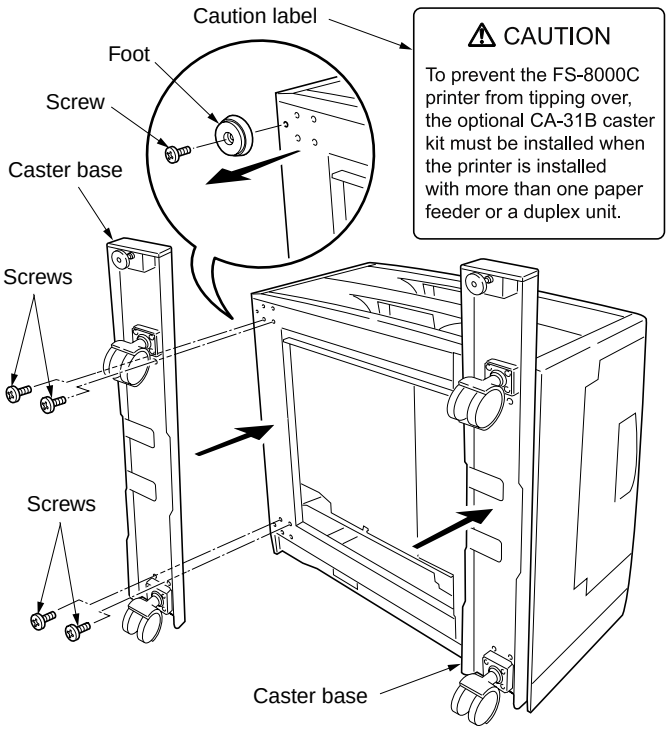


Figure 1-3-4

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.
2. Place the printer on top of the paper feeders (by more than two persons).

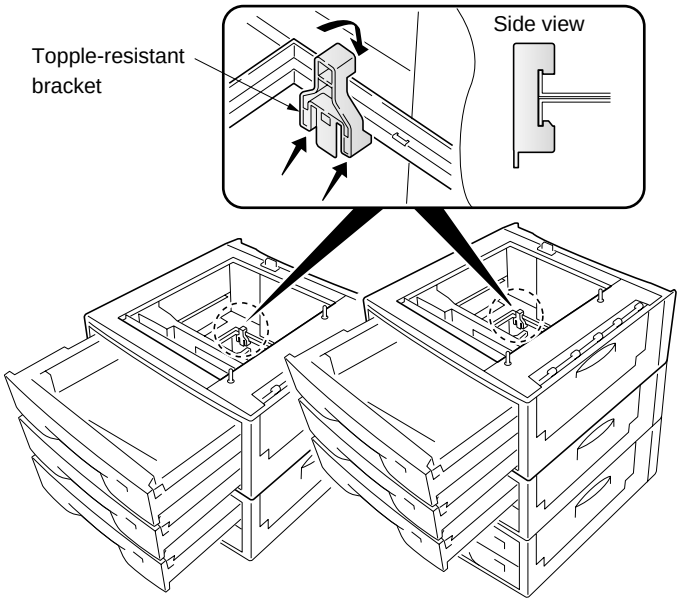


Figure 1-3-5

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.

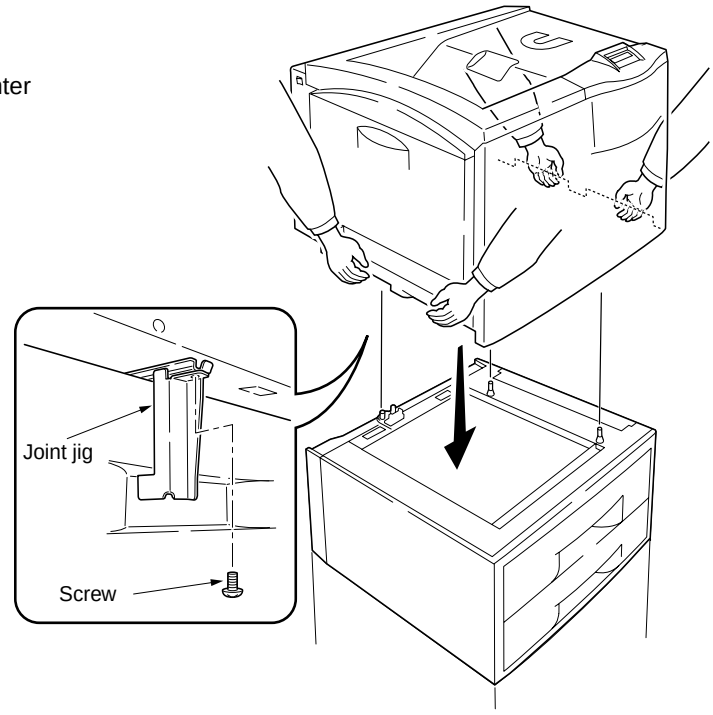


Figure 1-3-6

Attaching the accessories

1. Install the filter duct.
2. Install the quick reference guide holder. Peel the protective tape off from the holder when attaching the holder.

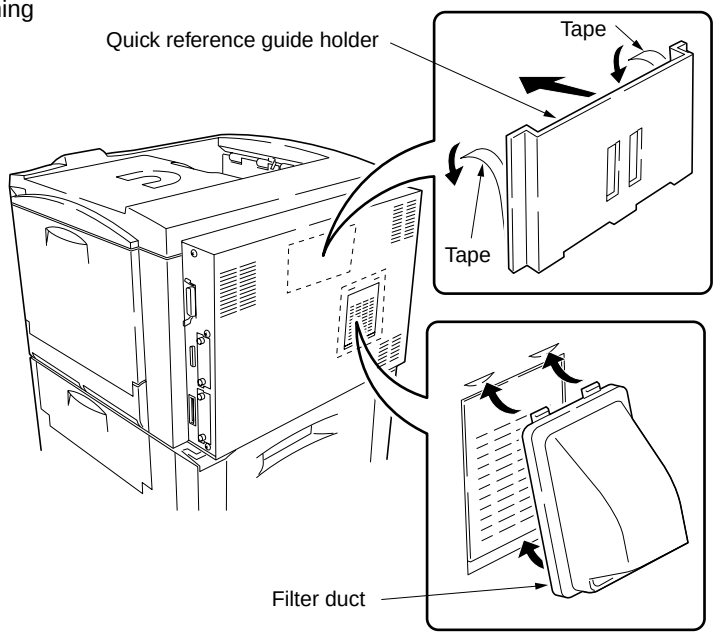


Figure 1-3-7

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.

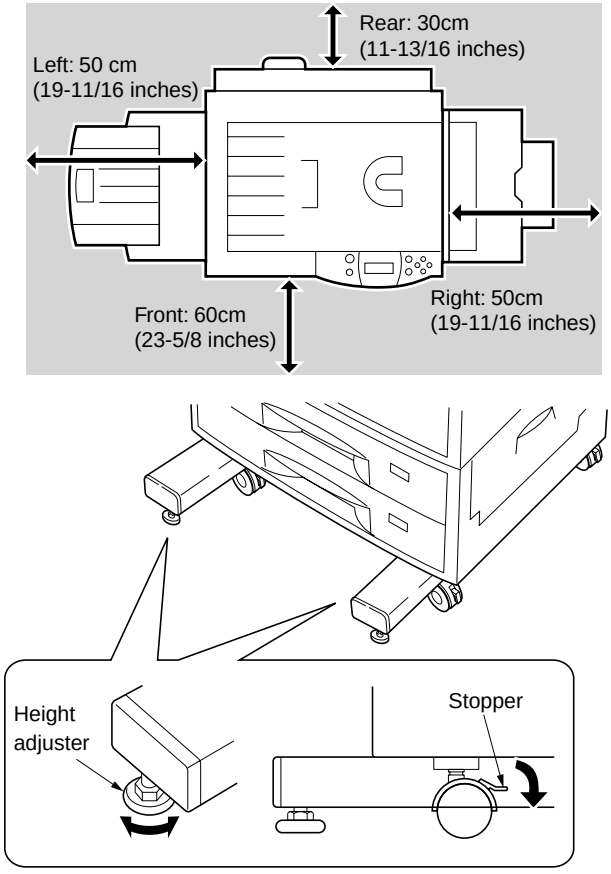


Figure 1-3-8

Installing the fuser unit and the oil roller unit

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

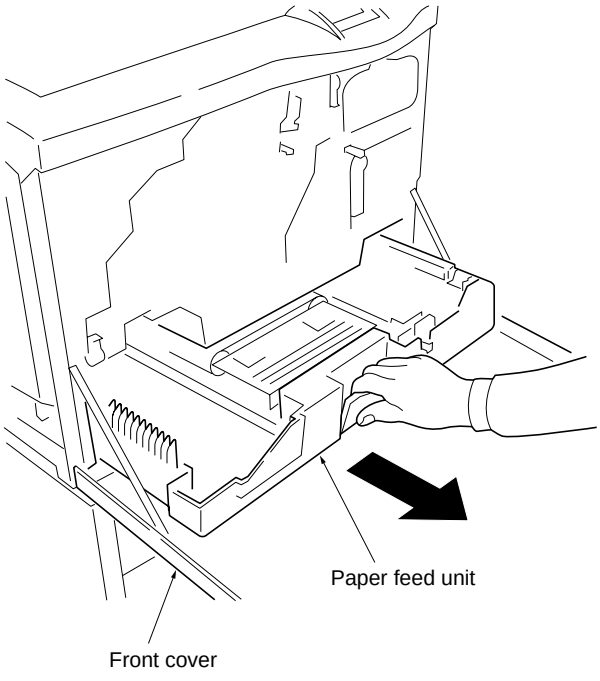


Figure 1-3-9

3. Open the left paper guide by pulling down the green-colored handle.
4. Insert the fuser unit onto the paper feed unit.
5. Secure the fuser unit with the screw.

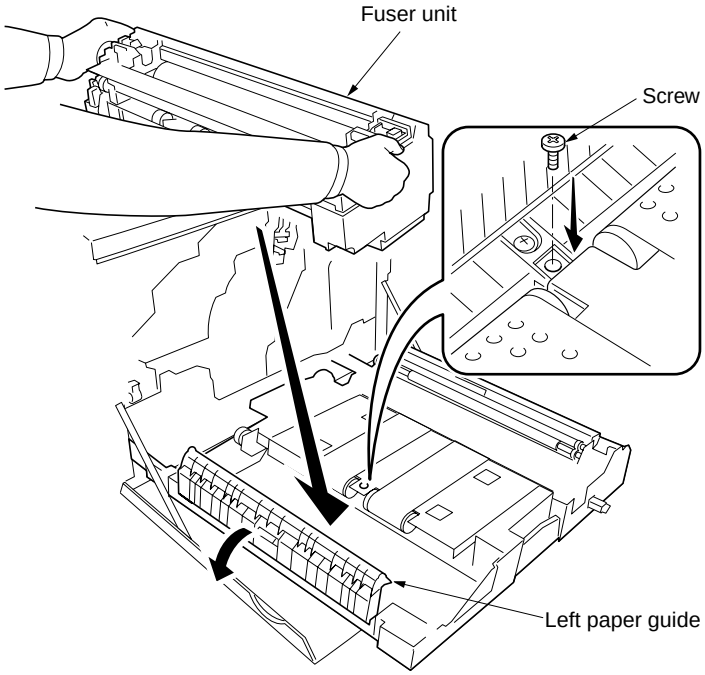


Figure 1-3-10

6. Remove the oil seal tapes at both ends of the oil roller unit.
7. Take out the oil roller unit from the case.

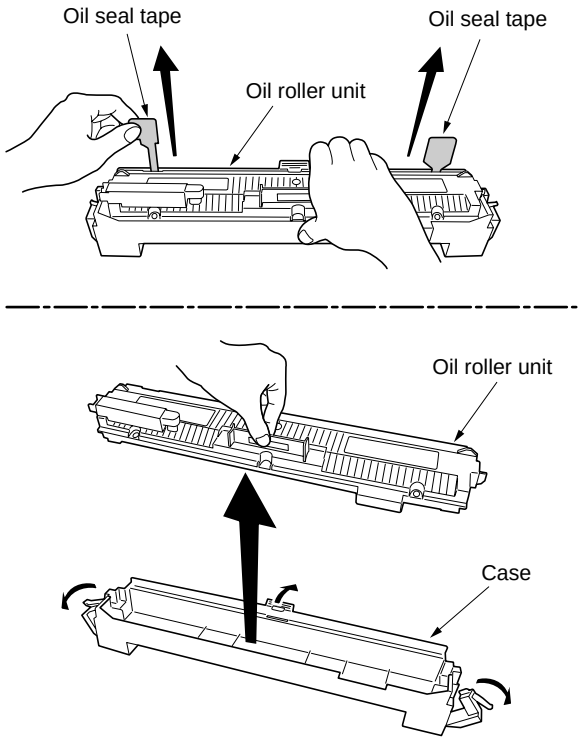


Figure 1-3-11

8. Install the oil roller unit onto the fuser unit until it is locked at both ends.

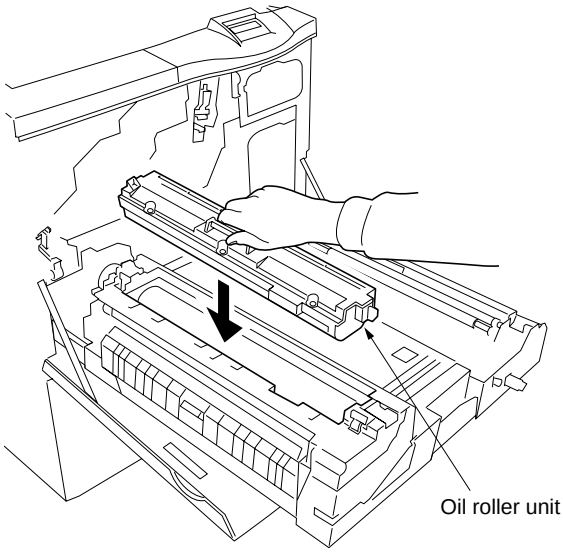


Figure 1-3-12

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 fuser top cover by lowering the lock buttons.
2. Firmly tighten two screws until they stop.

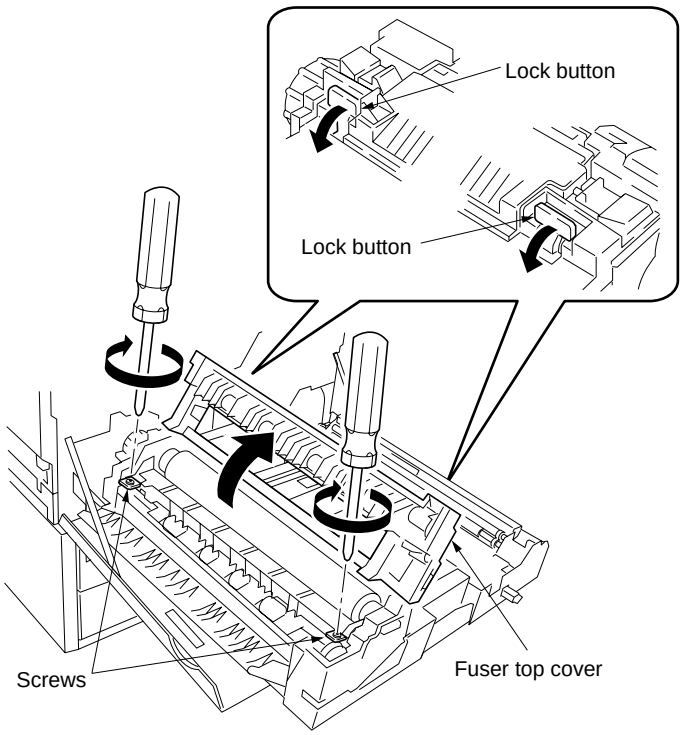


Figure 1-3-13

Installing the secondary transfer unit

1. Connect the tab from the paper feed unit to the terminal of the secondary transfer unit.
2. Fit the fulcrums of secondary transfer unit on the bushes and then put it on the paper feed unit.

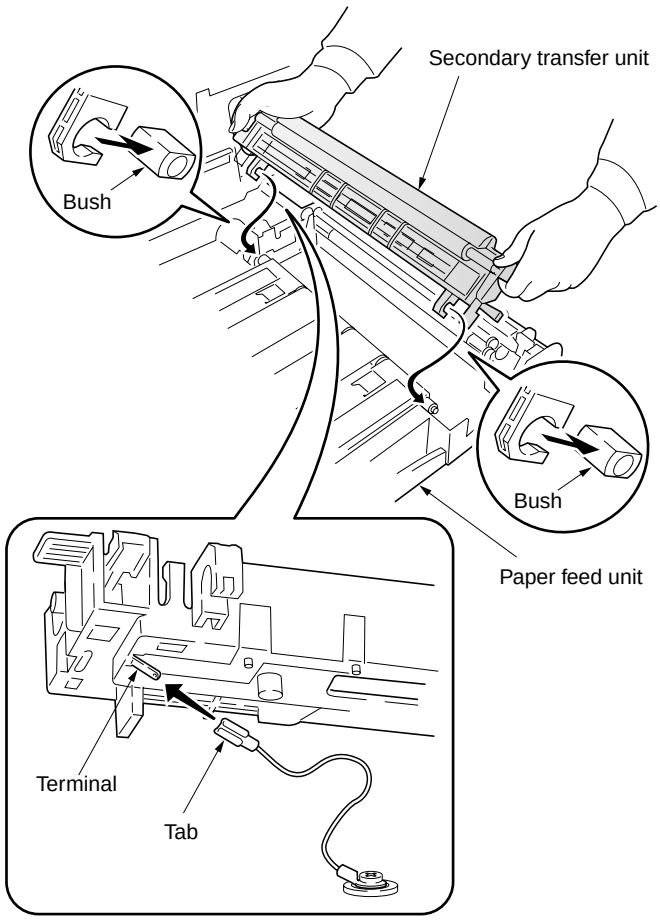


Figure 1-3-14

Installing the waste toner bottle

1. Install the waste toner bottle.

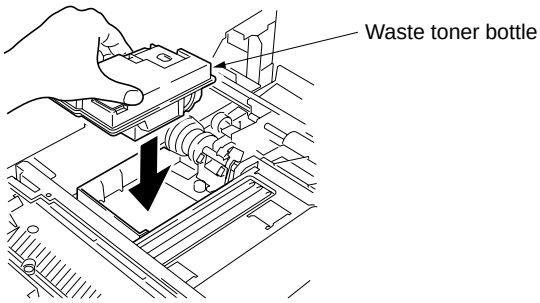


Figure 1-3-15

Installing the four developers

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

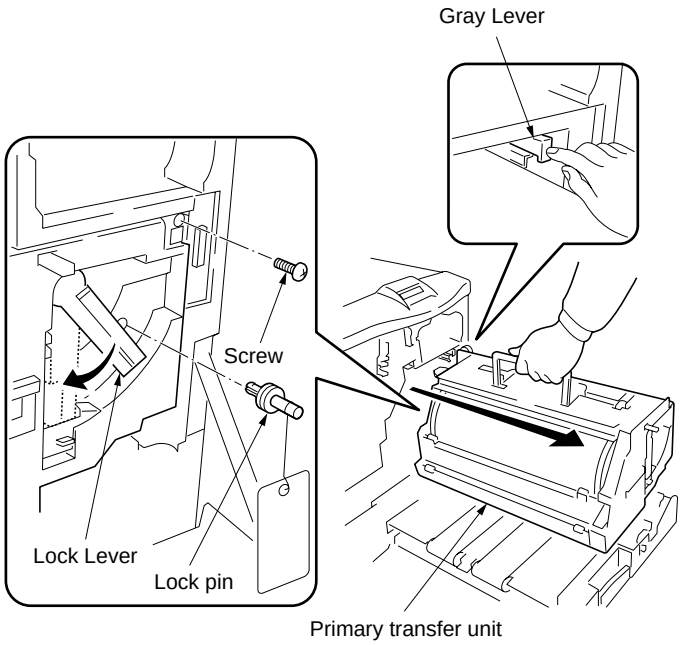


Figure 1-3-16

8. Unscrew screws A and B. Free the two stoppers.
9. Pull out the process frame.

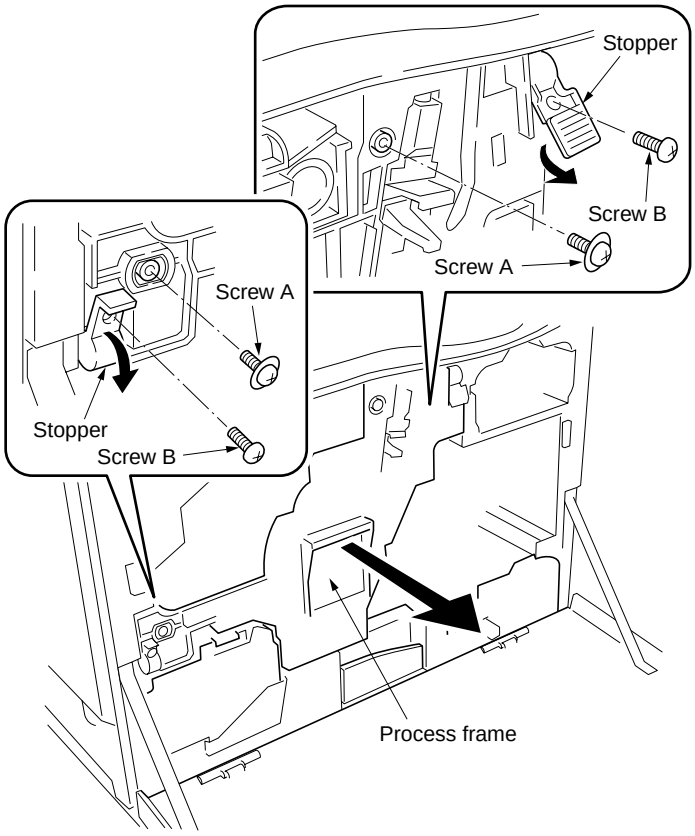


Figure 1-3-17

10. Detach the two tags.
11. Remove the front and rear stoppers.

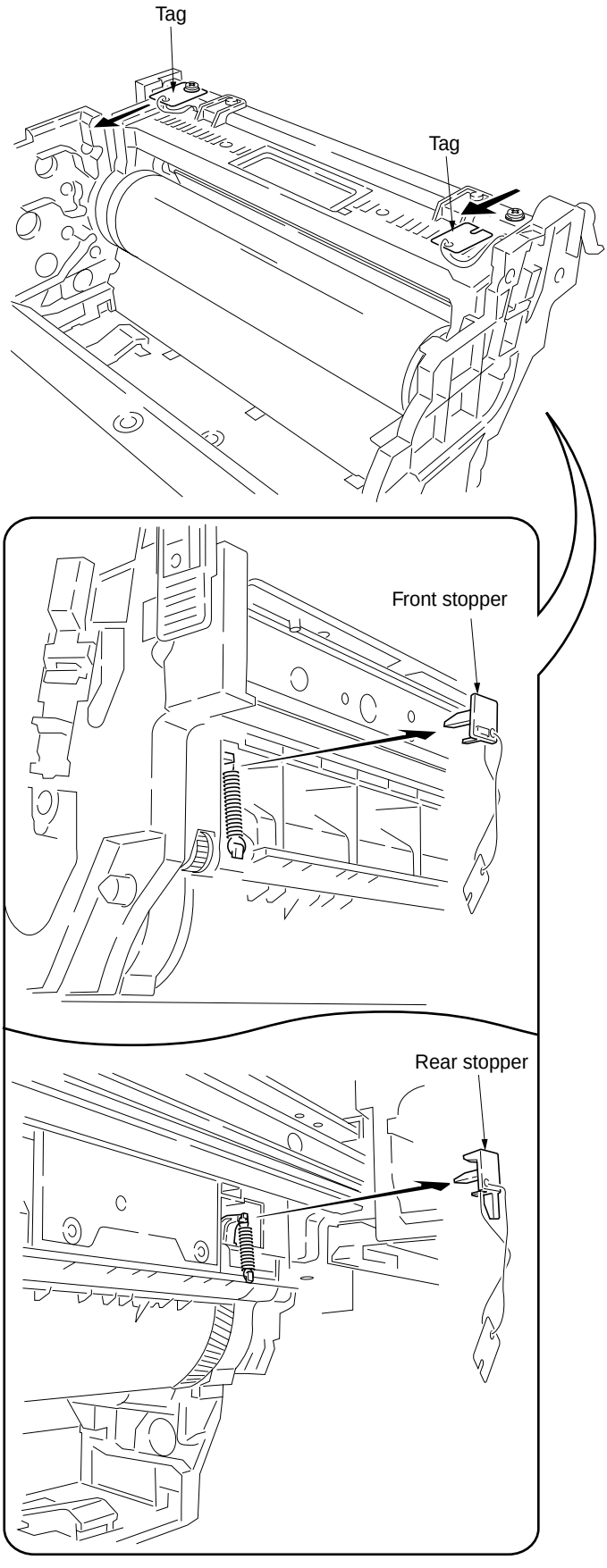


Figure 1-3-18

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

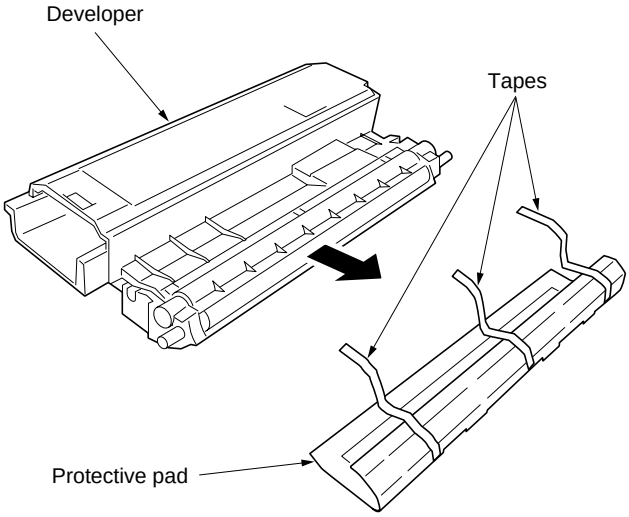


Figure 1-3-19

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

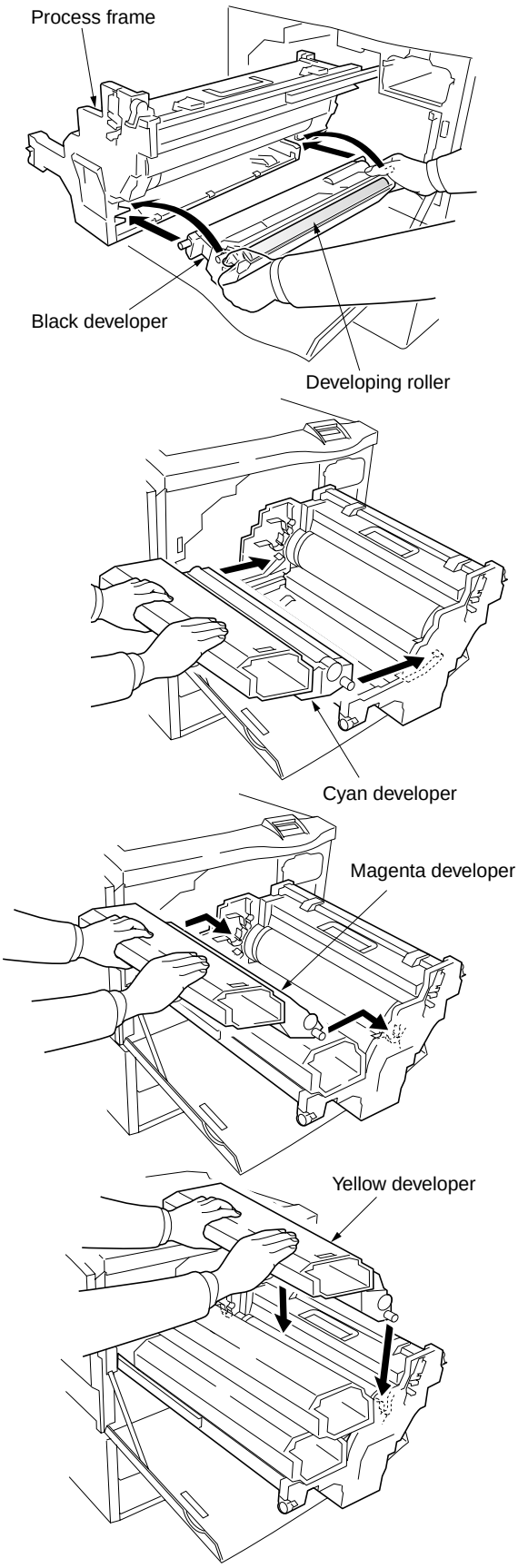


Figure 1-3-20

14. Close the process frame and then lock the two stoppers.
15. Fix two screws A first, and then fix two B screws.

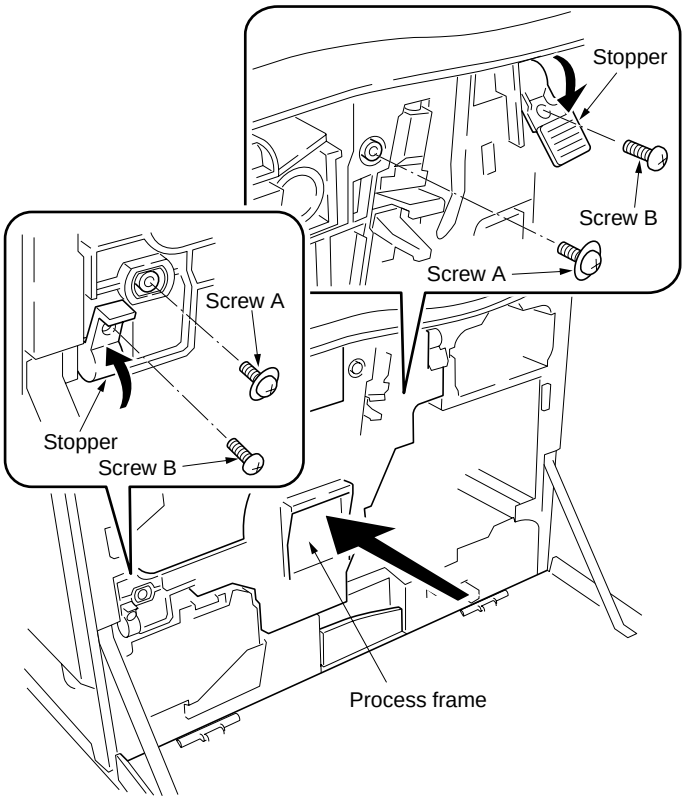


Figure 1-3-21

16. Pull out the paper feed unit.
17. Replace the primary transfer unit.
18. Close the lock lever.
19. Close the paper feed unit.
20. Secure the screw.

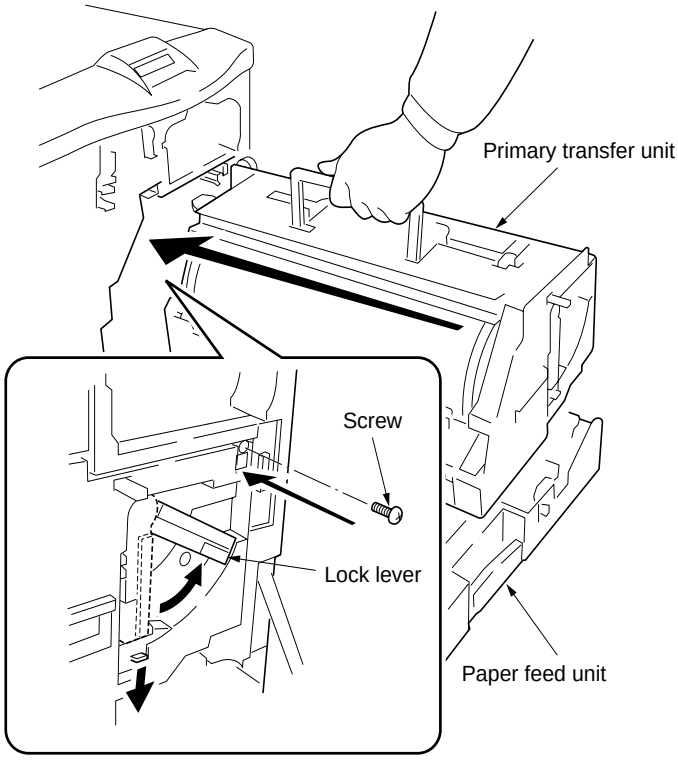


Figure 1-3-22

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.

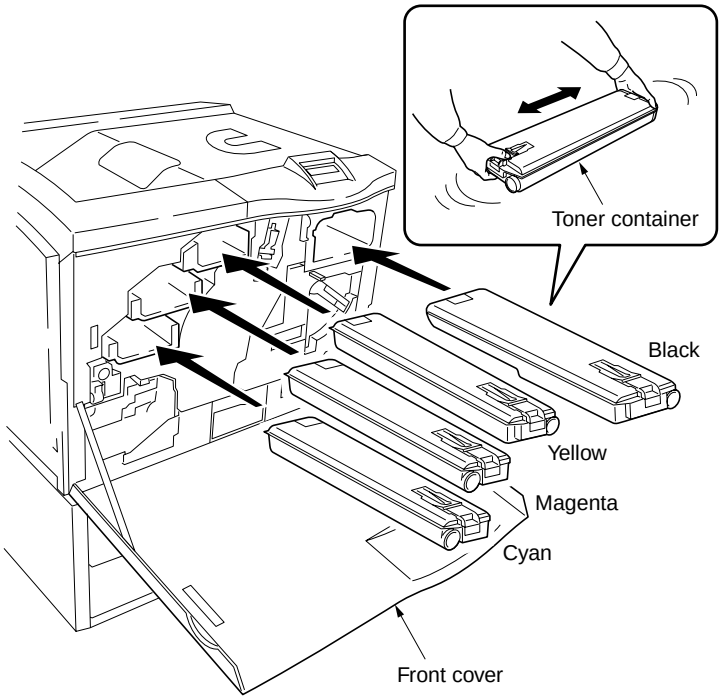


Figure 1-3-23

Making connections to the computer

1. Connect the printer cable to the printer parallel connector. Connect the other end to the computer.

   NOTE: To install the network interface card for connecting the printer to the network, refer to the documentation supplied with the network interface card. (Standard-installed with FS-8000CN model only.)

2. Connect the power cord to the printer power inlet.

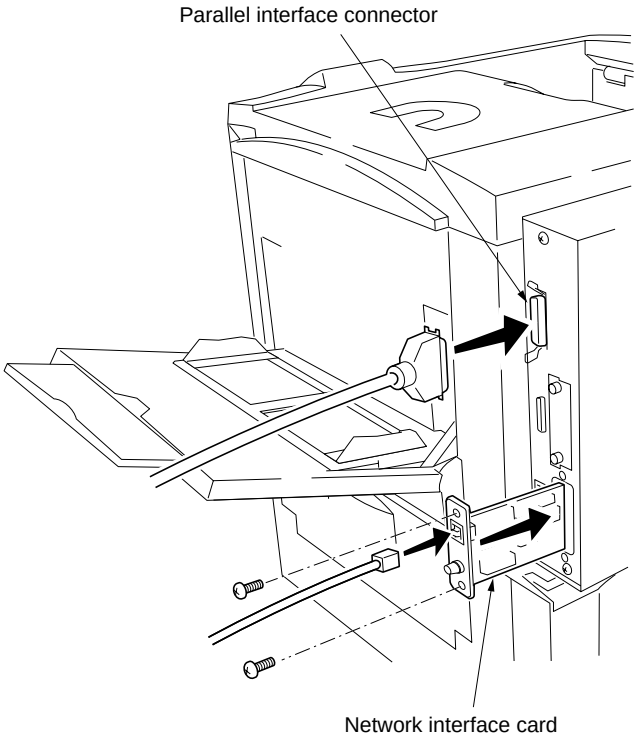


Figure 1-3-24

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

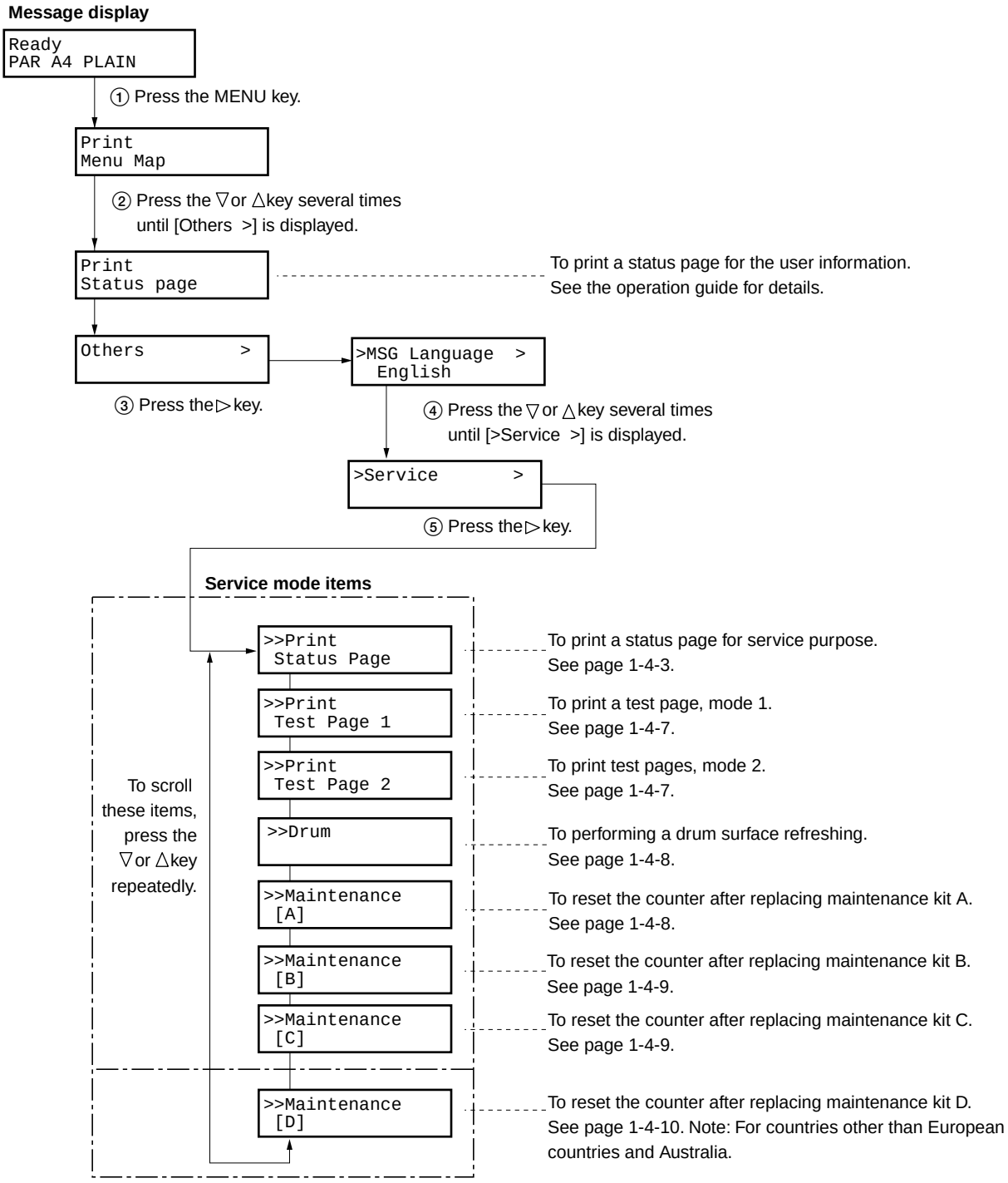
CONTENTS

1-4 Service Mode and Maintenance

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. The status page is printed. (See the figure below.) **Completion**

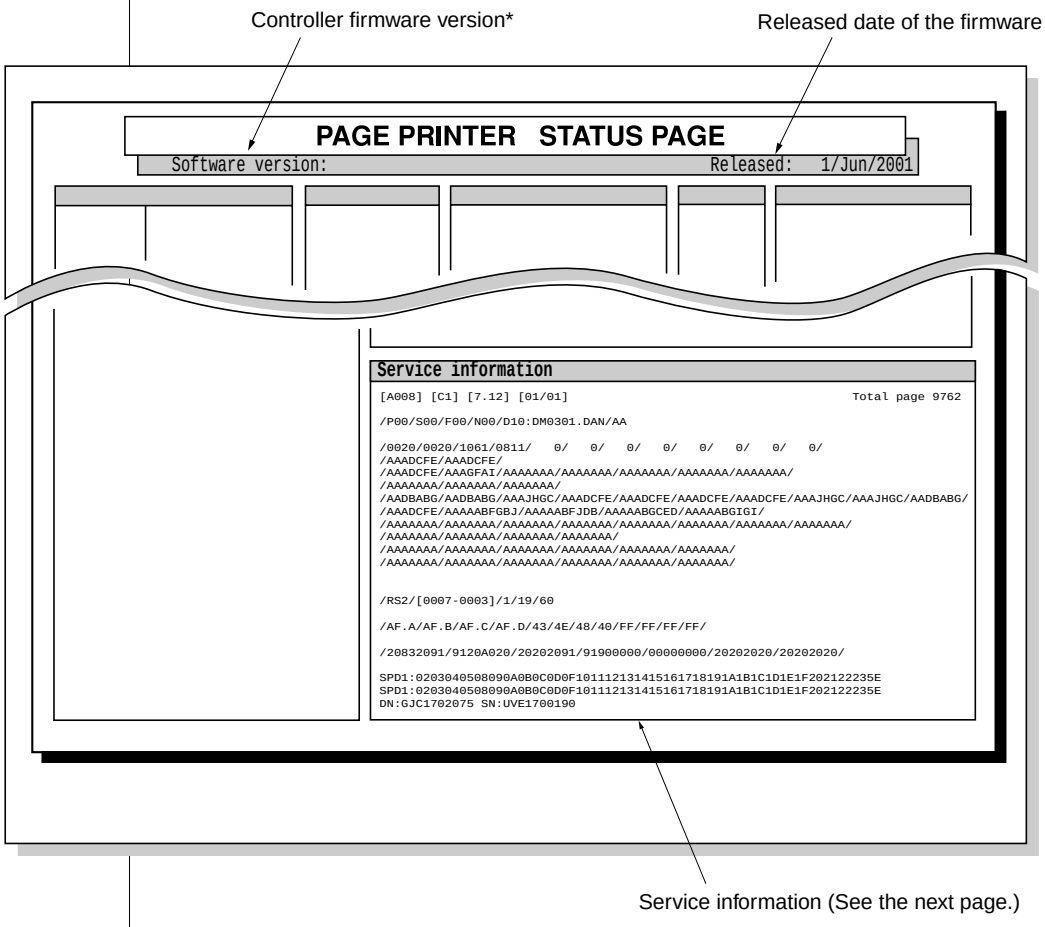


Figure 1-4-1

Service items	Description

Detail of service information

Service information

```
[A008] [C1] [7.12] [01/01]                                          Total page 9762
  ①    ②     ③      ④                                                  ⑤
/P00/S00/F00/N00/D10:DM0301.DAN/AA
 ⑥  ⑦  ⑧  ⑨        ⑩          ⑪
/0020/0020/1061/0811/   0/   0/   0/   0/   0/   0/   0/   0/
          ⑫                          ⑬
/AAADCFE/AAADCFE/
       ⑭
/AAADCFE/AAAGFAI/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/
                          ⑮
/AAAAAAA/AAAAAAA/AAAAAAA/
          ⑯
/AADBABG/AADBABG/AAAJHGC/AAADCFE/AAADCFE/AAADCFE/AAAJHGC/AAAJHGC/AADBABG/
                                   ⑰
/AAADCFE/AAAAABFGBJ/AAAAABFJDB/AAAAABGCED/AAAAABGIGI/
    ⑱                    ⑲
/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/
                 ⑳                                  ㉑
/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/
                ㉒
/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/
                          ㉓
/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/AAAAAAA/
                          ㉓


/RS2/[0007-0003]/1/19/60
 ㉔      ㉕      ㉖ ㉗ ㉘

/AF.A/AF.B/AF.C/AF.D/43/4E/48/40/FF/FF/FF/FF/
         ㉙                  ㉚

/20832091/9120A020/20202091/91900000/00000000/20202020/20202020/
                                   ㉛
SPD1:0203040508090A0B0C0D0F10111213141516171819 1A1B1C1D1E1F202122235E
                                   ㉜
SPD1:0203040508090A0B0C0D0F10111213141516171819 1A1B1C1D1E1F202122235E
                                   ㉝
DN:GJC1702075 SN:UVE1700190
      ㉞          ㉟
```

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]
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.

Service items	Description

Item	Description
⑤ Total page counter	
⑥ Parallel I/O information	
⑦ Serial I/O error code	00: Normal Bit 0: Overrun error Bit 1: Framing error Bit 2: Parity error
⑧ Operation panel key lock status (Displayed only when locked)	01: Partial lock 02: Full lock
⑨ NVRAM error code (Displays only when error occurred)	01: ID error 02: Version error 03: Checksum error 04: NVRAM crush error
⑩ 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
⑪ Engine error information	
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 /Duplexer
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 /Oil roller 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 Maintenance kit D counter	Twelve occurrences (from the left to the right, top to bottom) of page counts at which maintenance kit D was replaced. The right-bottom code indicates the current count. Note: Maintenance kit D is for countries other than European and Australia.

Service items	Description

Item	Description
㉔ Serial interface information	RS2: RS-232C
㉕ Option unit information	First 2 byte / Second 2 byte bit 0: MP tray / bit 0: Face-up tray bit 1: Cassette 1 / bit 1: Face-down tray bit 2: Cassette 2 / bit 2: Reserved bit 3: Cassette 3 / bit 3: Reserved bit 4: Cassette 4 / bit 4: Document finisher bit 5: Cassette 5 / bit 5: Mailbox sorter bit 6: Cassette 6 / bit 6: Reserved bit 7: Duplex unit / bit 7: Bulk stacker bit 8 to 15: Reserved / bit 8 to 15: Reserved
㉖ Operation panel message language	PMSG command settings (decimal)
㉗ Current temperature	0 to 100 °C (in 1 °C increment, "-"= Humidity/temperature sensor is abnormal.)
㉘ Current humidity	50 to 90 % RH (in 2 % increment)
㉙ Average print density (%)	/Cyan /Magenta /Yellow /Black
㉚ Color calibration result	Last: /Cyan /Magenta /Yellow /Black Previous: /Cyan /Magenta /Yellow /Black /
㉛ Media type attributes	Media type 1 to 28 (See table below)
㉜ SPD information (slot 1)	
㉝ SPD information (slot 2)	
㉞ Drum serial number	
㉟ Printer serial number	

Media type attributes

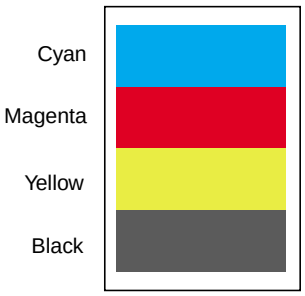
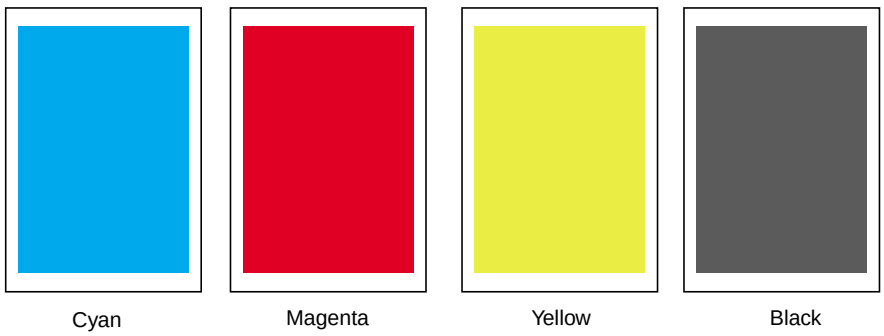
No.	Media type	Paper feed source		Attributes (default)			No.	Media type	Paper feed source		Attributes (default)		
		MP tray	Paper feeders cassettes 1 to 6	Transfer	Fuser speed	Duplex			MP tray	Paper feeders cassettes 1 to 6	Transfer	Fuser speed	Duplex
1	Plain	Y	Y	0	2	0	15-20	Reserved	-	-	-	-	-
2	Transparency	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

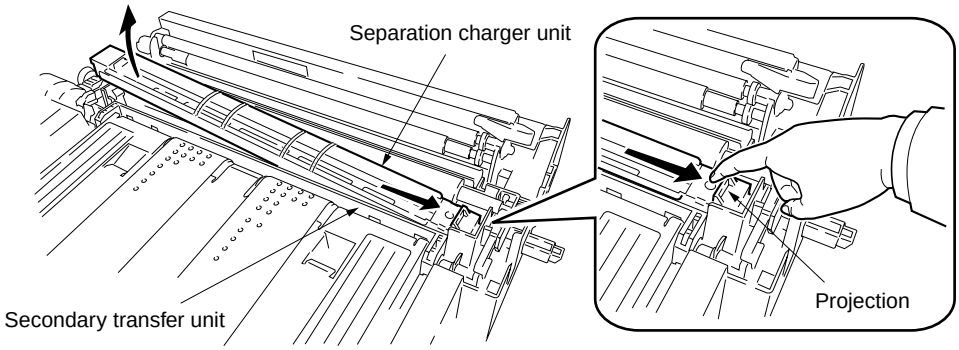
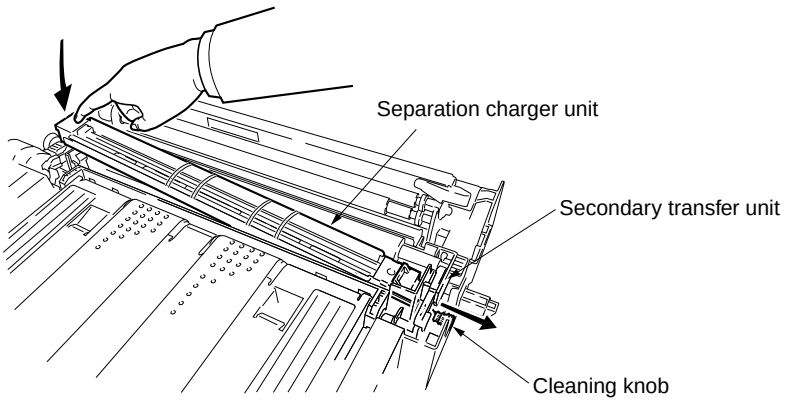
Media type attributes:

[Transfer]	[Fuser speed]	[Duplex]
0= Normal	0= 1/4	0= Enable
1= Thick	1= 1/2	1= Disable
3= Extra thick	2= Normal	

Service items	Description
>>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. The test page is printed. **Completion**  **Figure 1-4-2**
>>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. Four test pages are printed. **Completion**  **Figure 1-4-3**

Service items	Description
>>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. The drum surface refreshing starts and automatically finishes. **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 400,000 images of printing. The interval counter must be reset using this service item. MK-800A Maintenance kit A includes the following units: • Drum unit: DK-800 DRUM UNIT [Part No.: 5PLPXARAPKX] (including MC-800 MAIN CHARGER ASSY and FILTER KIT) • Primary transfer unit: TR-800P PRI TRANSFER UNIT [Part No.: 5PLPXASAPKX] (including CLEANER ASSY) • Secondary transfer unit: TR-800S SEC TRANSFER UNIT [Part No.: 5PLPXATAPKX] **Purpose** To reset the life counter for the components included in maintenance kit A. **Start** Replace the drum unit (See page 1-6-13). Replace the primary transfer unit (See page 1-6-15). Replace the secondary transfer unit (See page 1-6-21). Replace the ozone filter (See page 1-6-45). Enter the service mode (>>Maintenance [A]). Press the ENTER key. 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 1-4-5). 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 200,000 pages of printing. The interval counter must be reset using this service item. MK-801B*1/MK-800B*2 Maintenance kit B includes the following units: • Black developer: DV-800K DEVELOPER BLACK [Part No.: 5PLPXAXAPKX] • Fuser unit (including oil unit): FK-800(E) FUSER UNIT (E) [Part No.: 5PLPXAUAPKE] FK-800(U) FUSER UNIT (U) [Part No.: 5PLPXAVAAMA] • Separation charger unit: SC-800 SEPARATE CHARGER [Part No.: 5PLPXBRAPKX] *1: For European countries and Australia. *2: For U.S., Canada, and Asian countries. (The separation charger unit is not included. For details on the maintenance kits, see page 2-4-3.) **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 with oil roller unit (See page 1-6-24). Replace the separation charger unit [European countries and Australia only] (See page 1-6-22). Enter the service mode (>>Maintenance [B]). Press the ENTER key. 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 1-4-5). This may be used to determine the possibility that the counter was errorneously or unintentionally reset.
>>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 200,000 images of printing. The interval counter must be reset using this service item. MK-800C Maintenance kit C • Yellow developer: DV-800Y DEVELOPER YELLOW [Part No.: 5PLPXBAAPKX] • Magenta developer: DV-800M DEVELOPER MAGENTA [Part No.: 5PLPXAZAPKX] • Cyan developer: DV-800C DEVELOPER CYAN [Part No.: 5PLPAYAPKX] **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. 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 1-4-5). This may be used to determine the possibility that the counter was errorneously or unintentionally reset.

Service items	Description
>>Maintenance [D]	**Counter reset for the maintenance kit D** The following procedure is not necessary for European countries and Australia. **Description** The "Install MK [D]" message means that maintenance kit D (Separation charger unit) should be replaced together at every 100,000 pages of printing. The interval counter must be reset using this service item. MK-800D Maintenance kit D • Separation charger: (MK-800D)SC-800 SEPARATE CHARGER [Part No.: 5PLPXBRAPKX] **Purpose** To reset the life counter for the separation charger unit. **Start** Pull the projection of the separation charger unit and then remove it from the secondary transfer unit. Place the new separation charger unit with its cleaning knob inserted in the opening at the  **Figure 1-4-4** front of the secondary transfer unit. then, push the rear end of the separation charger unit so that it is fully seated in the secondary transfer unit.  **Figure 1-4-5** Enter the service mode (>>Maintenance [D]). Press the ENTER key. The counter for the separation charger unit 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 1-4-5). This may be used to determine the possibility that the counter was errorneously or unintentionally reset.

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-82K black toner container lasts an average of 25,000 monochrome pages.
• Each of the TK-82C cyan, TK-82M magenta, and TK-82Y 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.

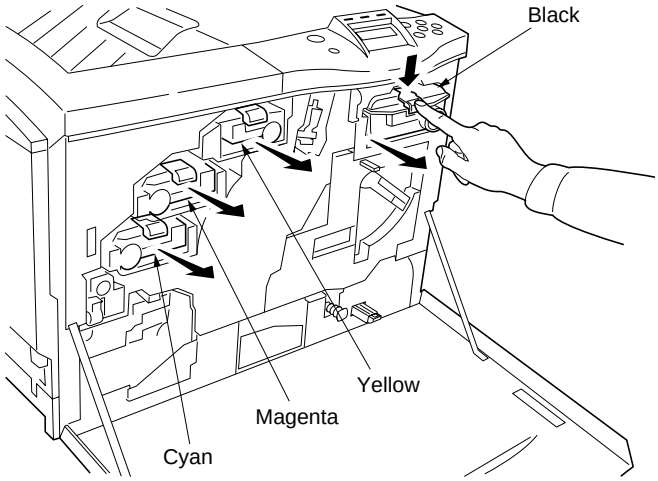


Figure 1-4-6

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.

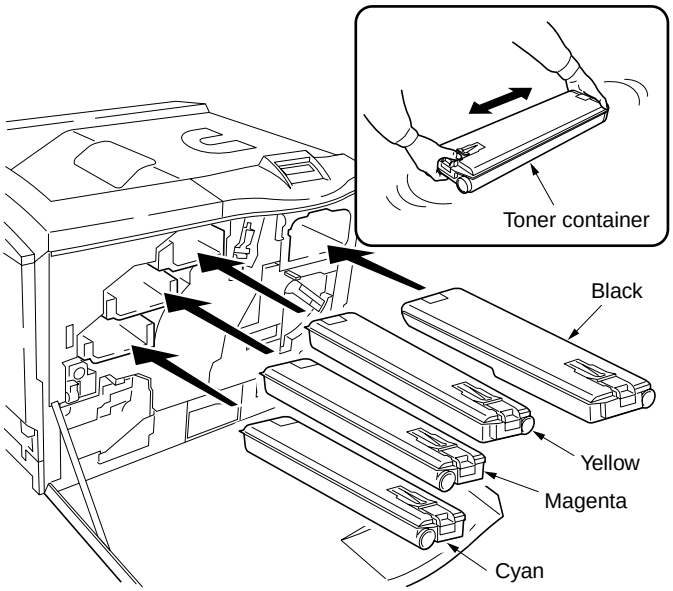


Figure 1-4-7

5. Tilt the lever to the right and then 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.

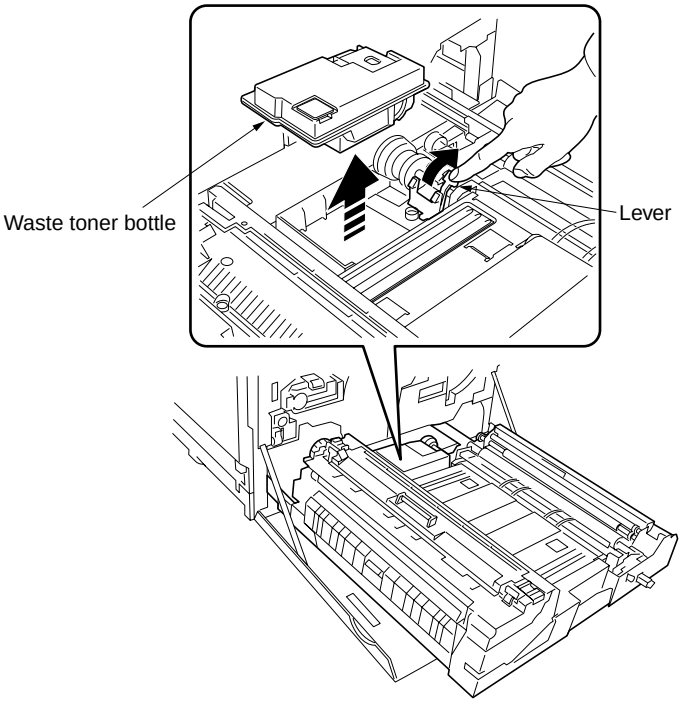


Figure 1-4-8

(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.

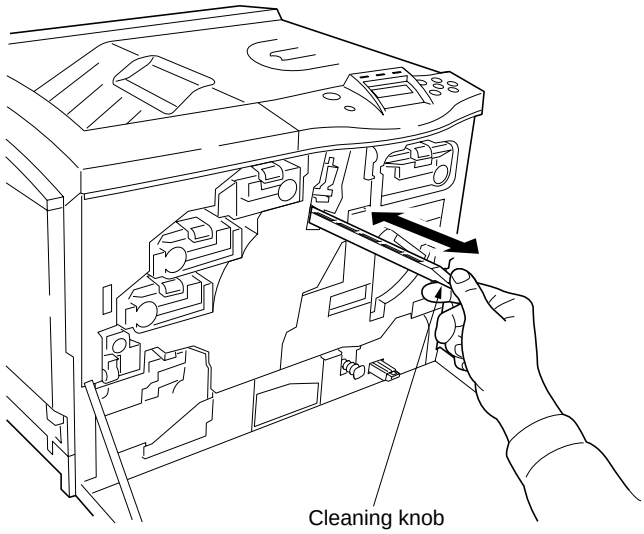


Figure 1-4-9

• 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.

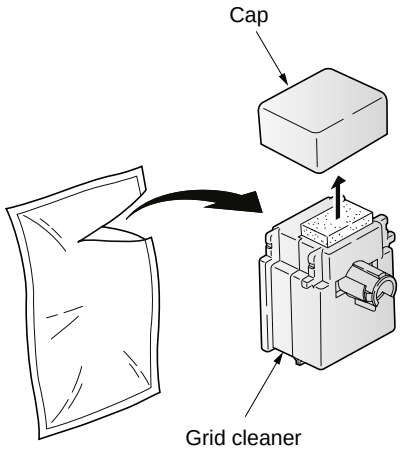


Figure 1-4-10

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

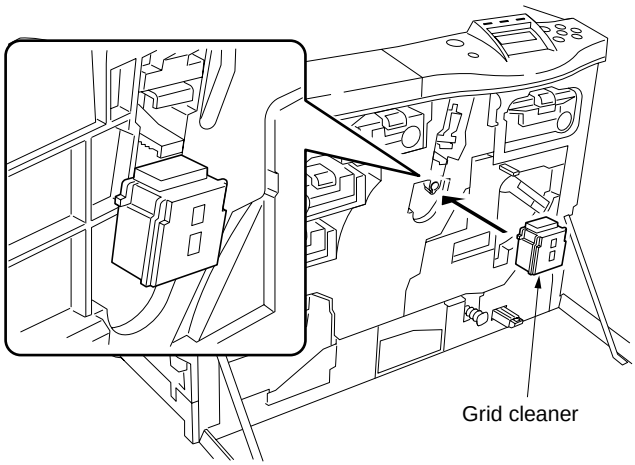


Figure 1-4-11

3. Push the main charger unit release lever upward.
4. Slightly lift the main charger unit, and gently pull the gray-colored main charger handle 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.

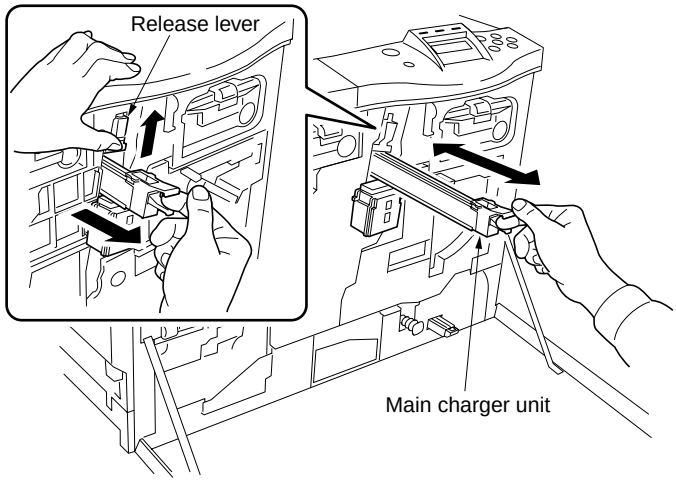


Figure 1-4-12

• 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.

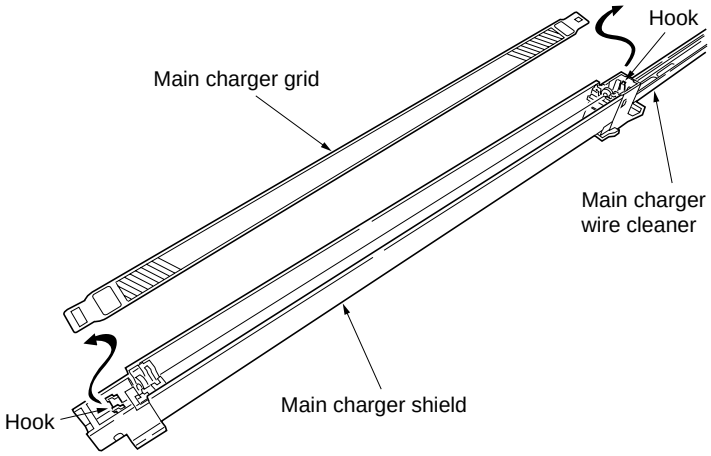


Figure 1-4-13

(3) Cleaning the printer

Follow the procedure below to clean the separation charger unit (wire), upper and lower registration rollers, conveying belts, and the registration sensor.

Procedure

• Separation charger wire

1. Grasping the cleaning knob of the separation charger, gently pull the knob out and push it back in.
2. Repeat this several times. This cleans the separation charger wires inside.

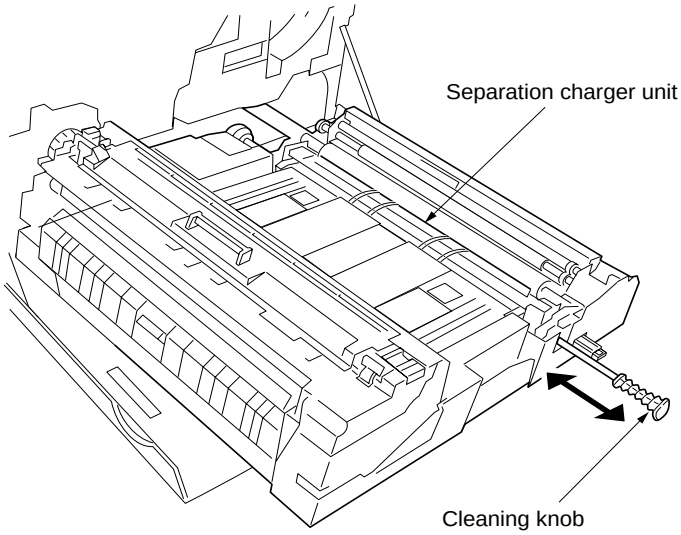


Figure 1-4-14

• 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.

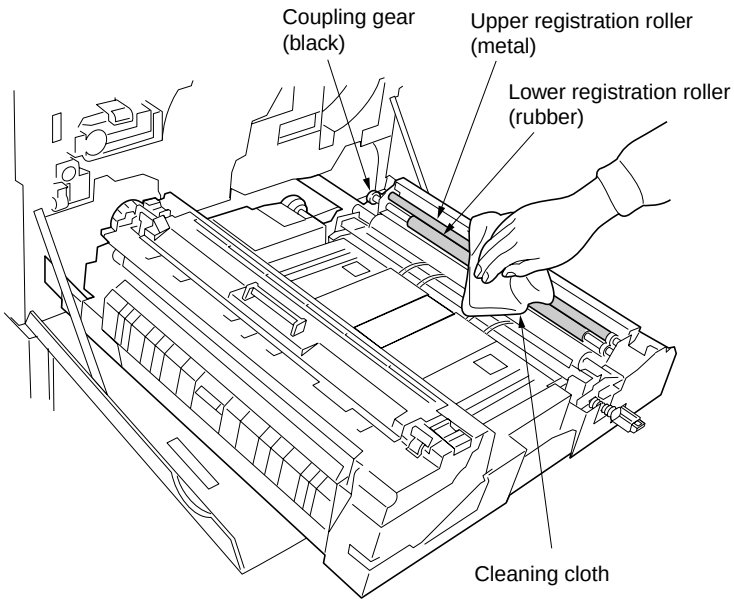


Figure 1-4-15

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

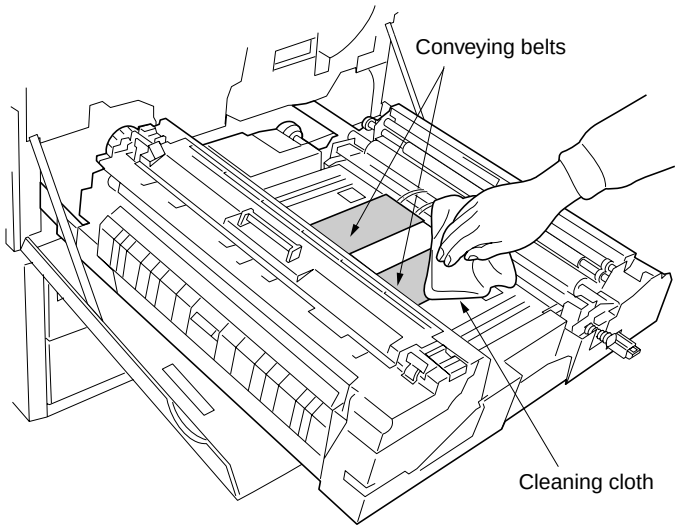


Figure 1-4-16

• 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.

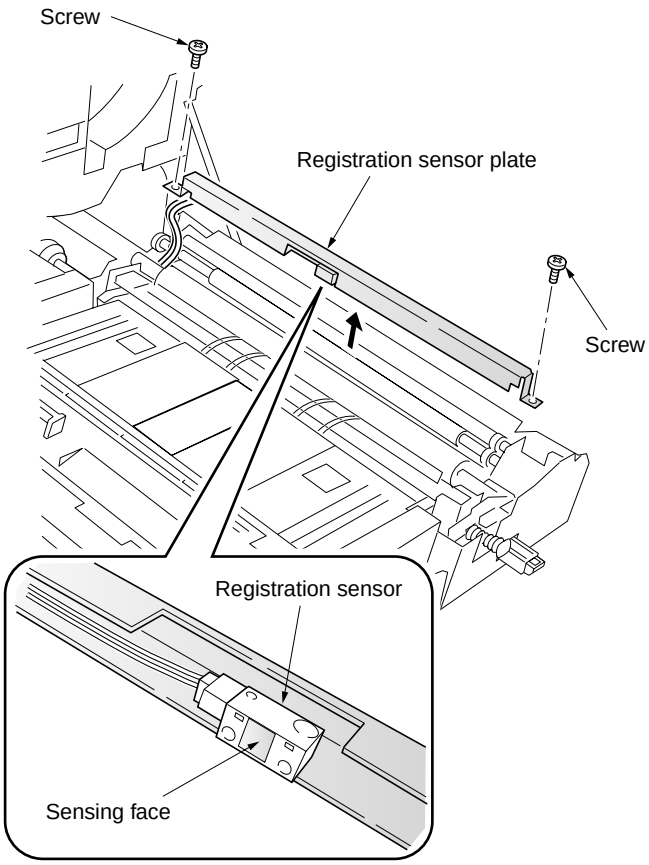


Figure 1-4-17

• 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).

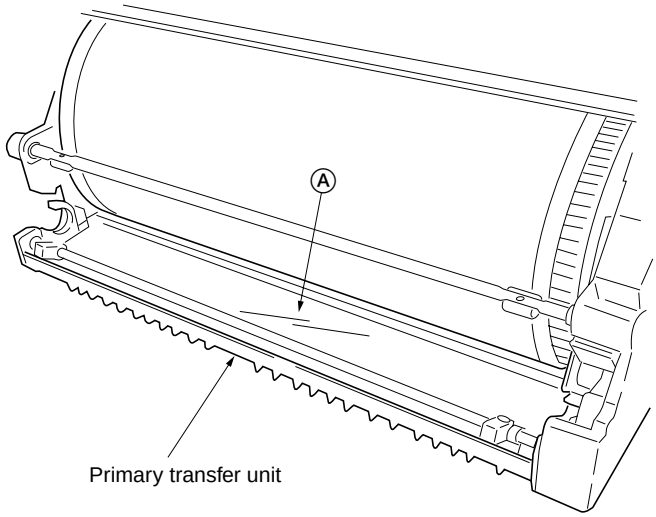


Figure 1-4-18

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

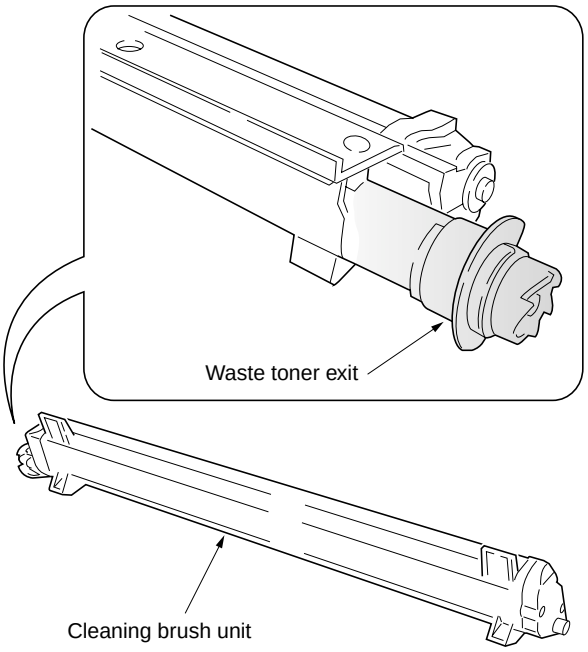


Figure 1-4-19

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

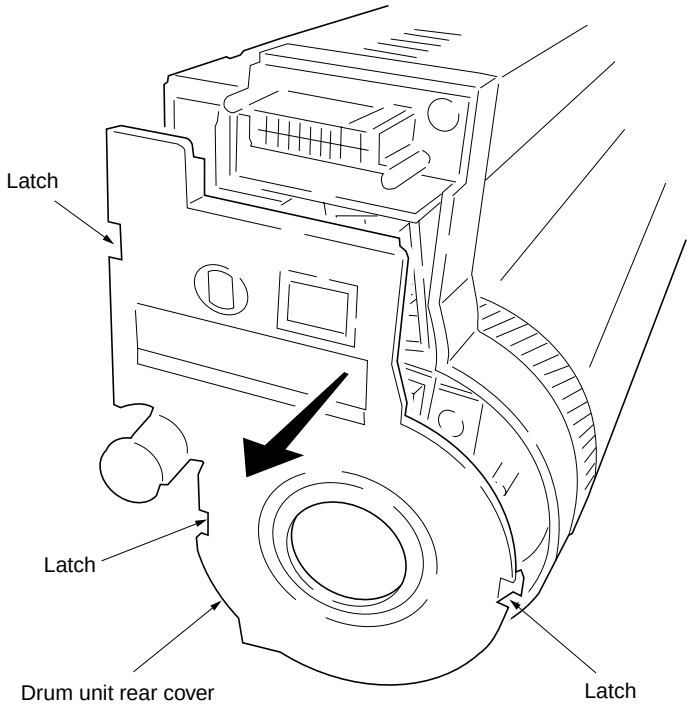


Figure 1-4-20

3. Clean the gear tooth of drum R flange.
4. Clean Idle gear Z17H Z22H, drum gear Z14H Z28H, CLN gear Z17, and shafts and then grease up them.

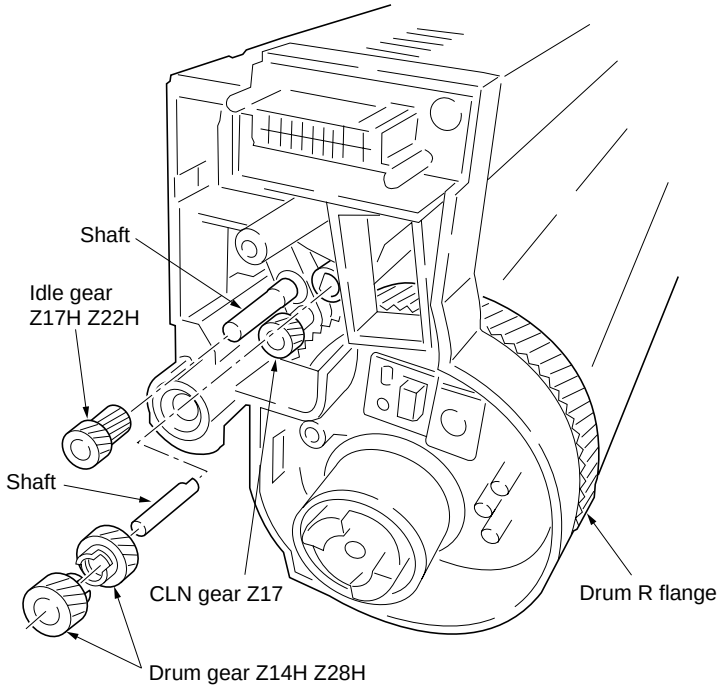


Figure 1-4-21

(4) Replacing the oil roller unit

Follow the procedure below to replace the oil roller unit (OL-82 oil kit).

Procedure

1. Remove the old oil roller unit by unlatching the latches of both ends.

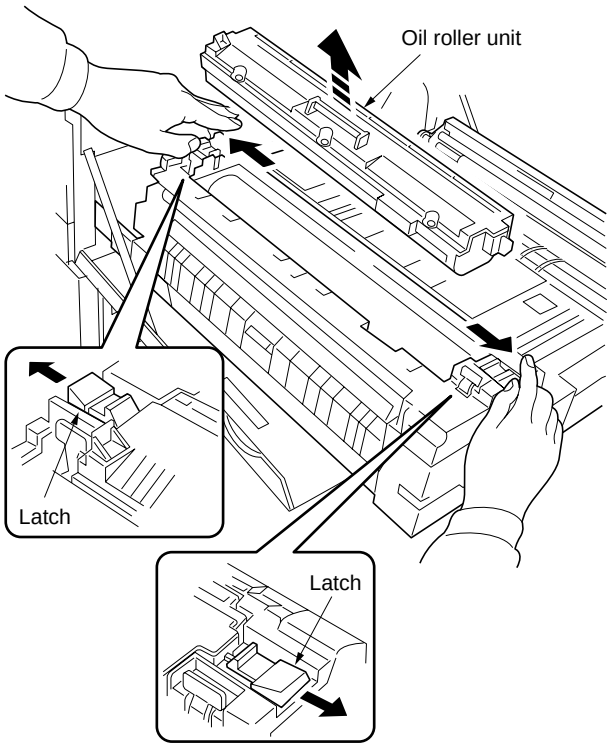


Figure 1-4-22

2. Remove the sealing tapes at both ends.
3. Remove the cover from the oil roller unit.
4. Install the oil roller unit onto the fuser unit until it is locked.

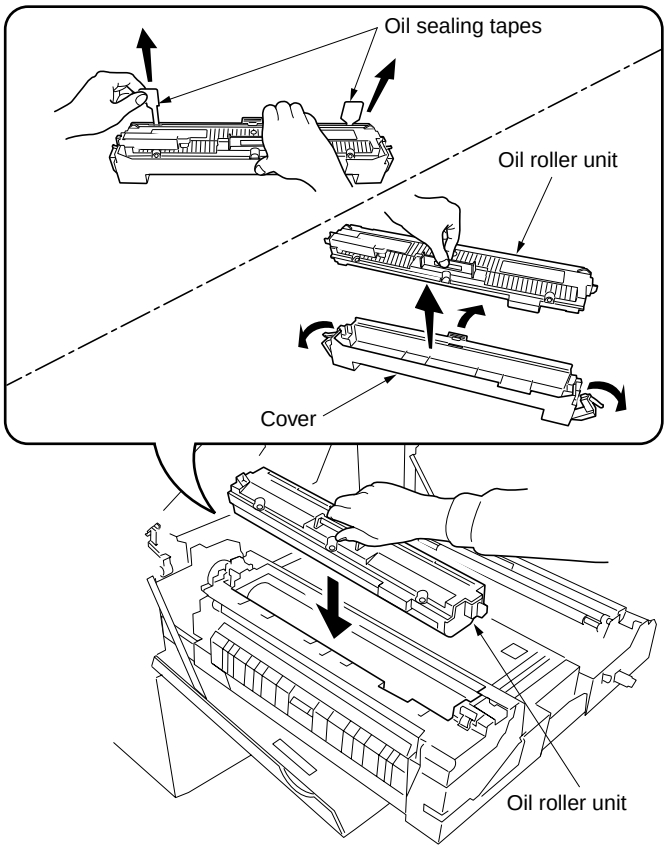


Figure 1-4-23

(5) 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.

(6) 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.

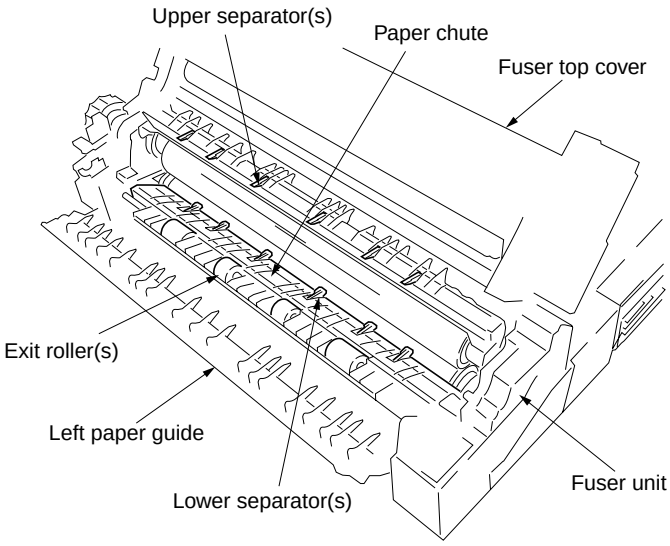


Figure 1-4-24

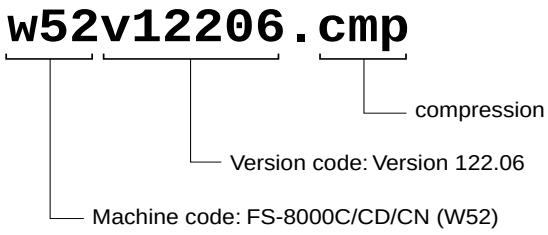
1-4-3 Downloading printer firmware for upgrade

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.

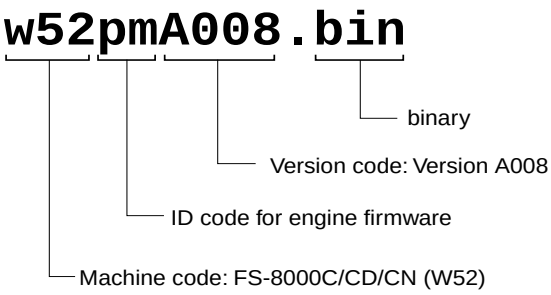
(1) Format for the firmware files

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

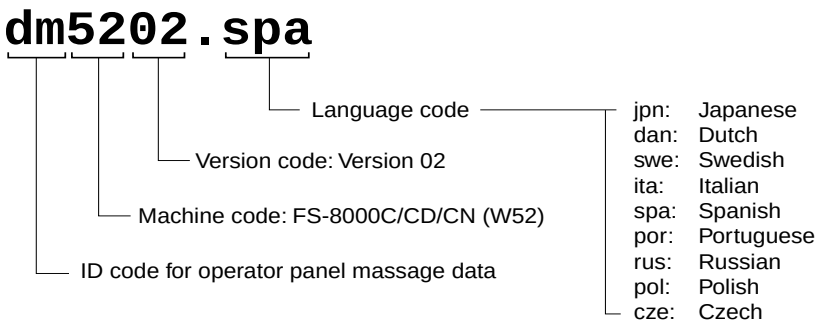


Table 1-4-1

(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.

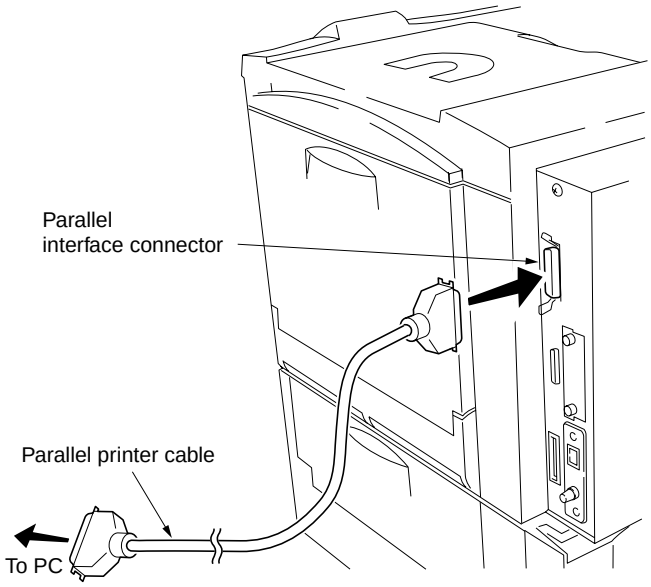


Figure 1-4-25

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. `w52v12206.cmp`) and the engine firmware (ex. `W52pm008.bin`) 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.

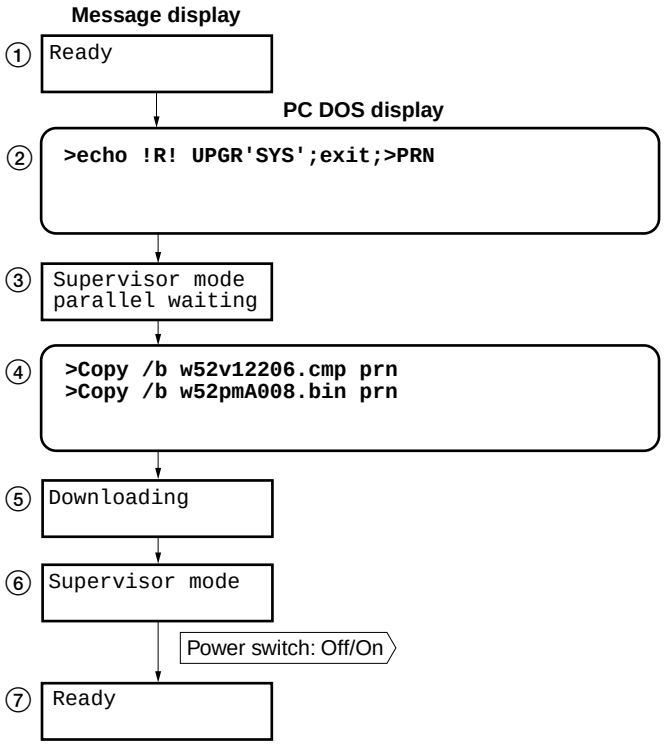


Figure 1-4-26

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.

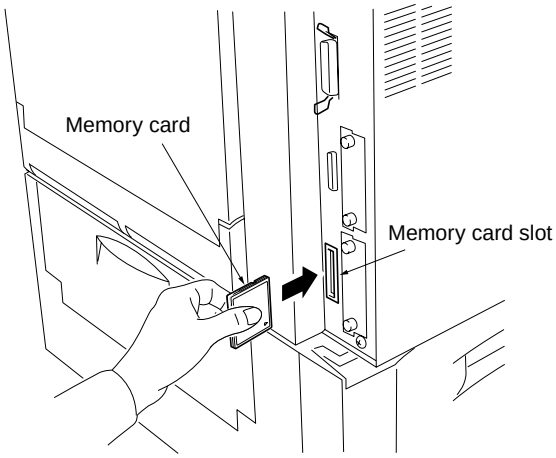


Figure 1-4-27

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.

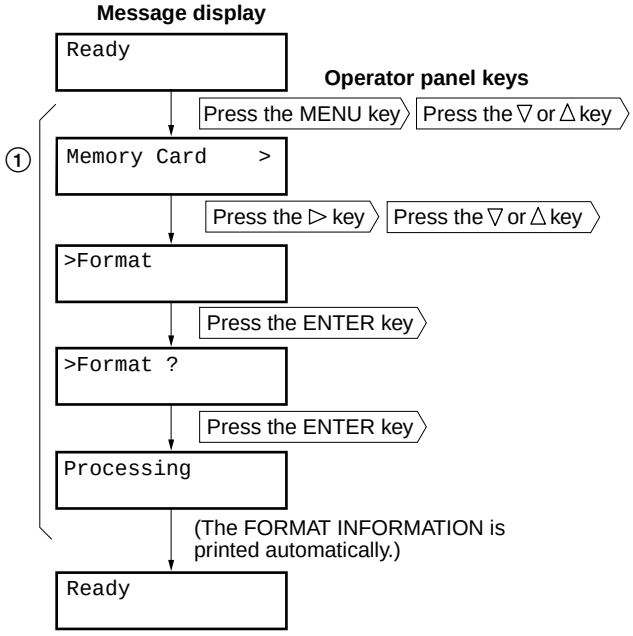


Figure 1-4-28

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.

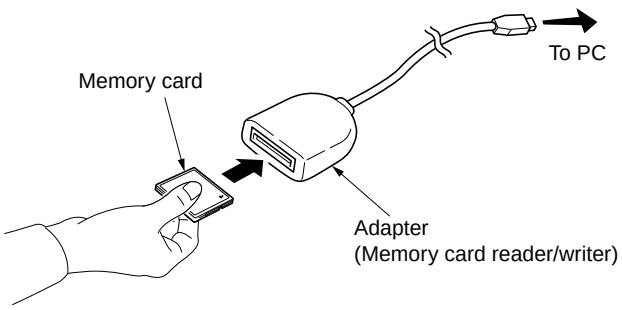


Figure 1-4-29

Downloading firmware file

1. Confirm that the printer's power switch is set to off.
2. Insert the memory card into the printer's memory card slot.

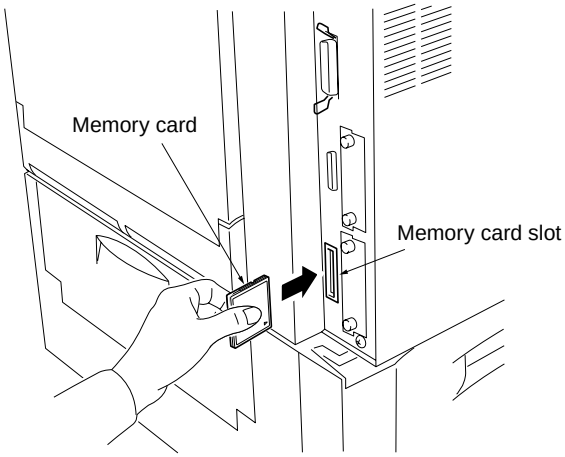


Figure 1-4-30

3. Turn printer power on. The firmware file in the memory card will be automatically downloaded.
4. Message ① is displayed during downloading. Confirm the display changes to Message ② which indicates downloading is complete and turn printer power off, then on.
5. Confirm Display ③ is displayed after warming up.

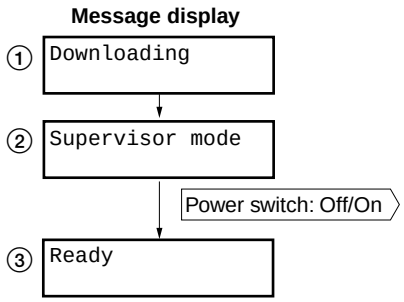


Figure 1-4-31

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.

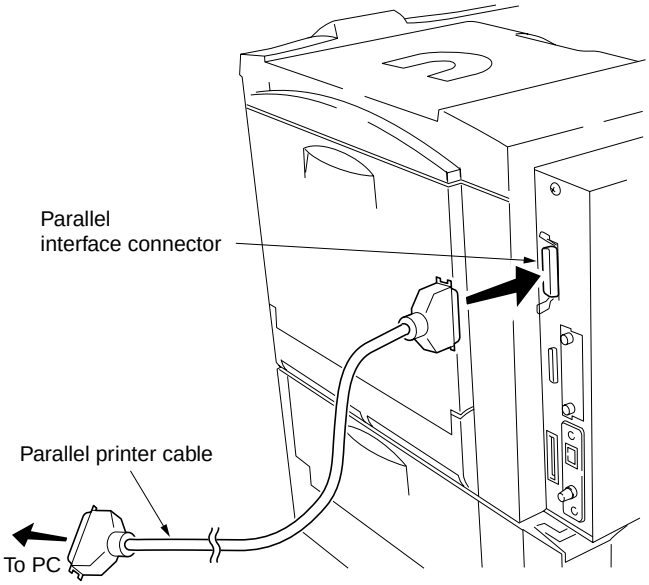


Figure 1-4-32

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. `dm5202.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.

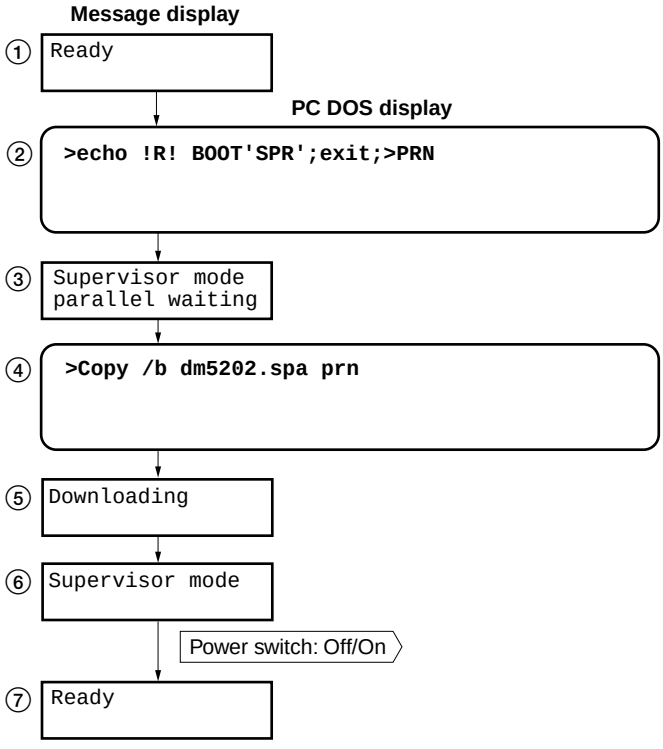


Figure 1-4-33

Confirming upgrading

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

CONTENTS

1-5 Troubleshooting

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.

Feeding the paper having a paper size which does not match the current paper size from the MP tray can cause paper jam.

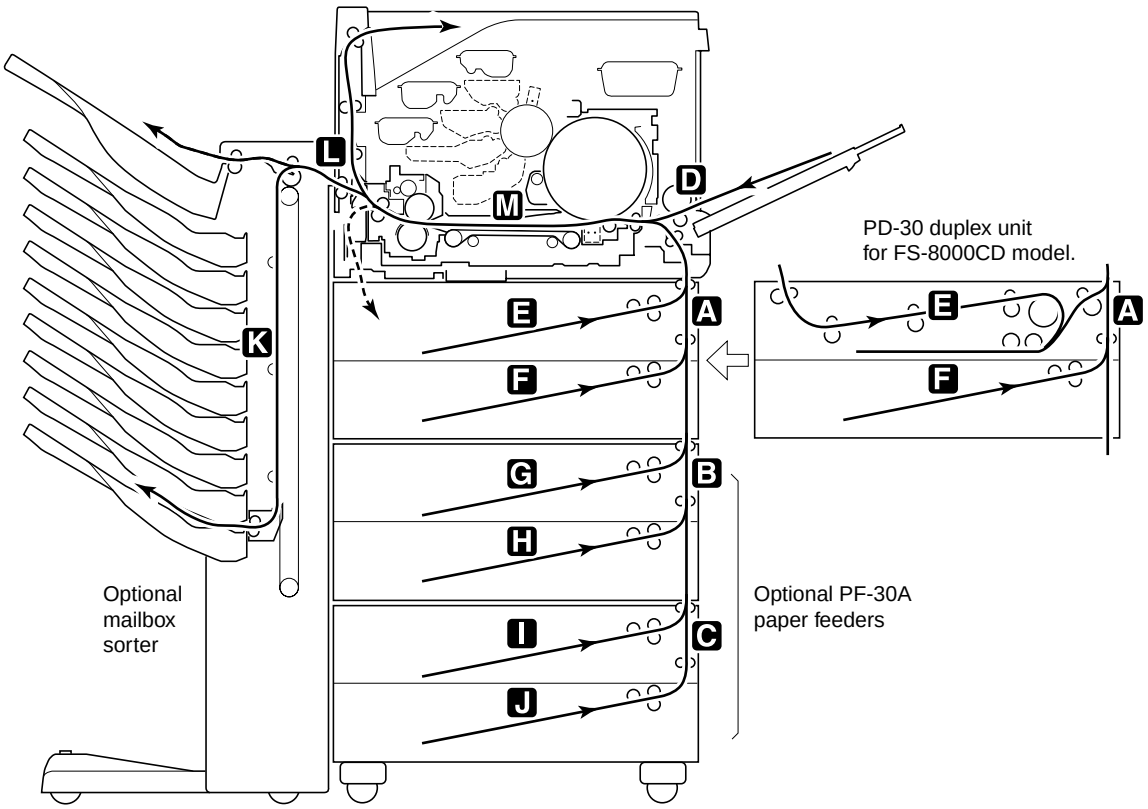


Figure 1-5-1 Paper misfeed indication

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

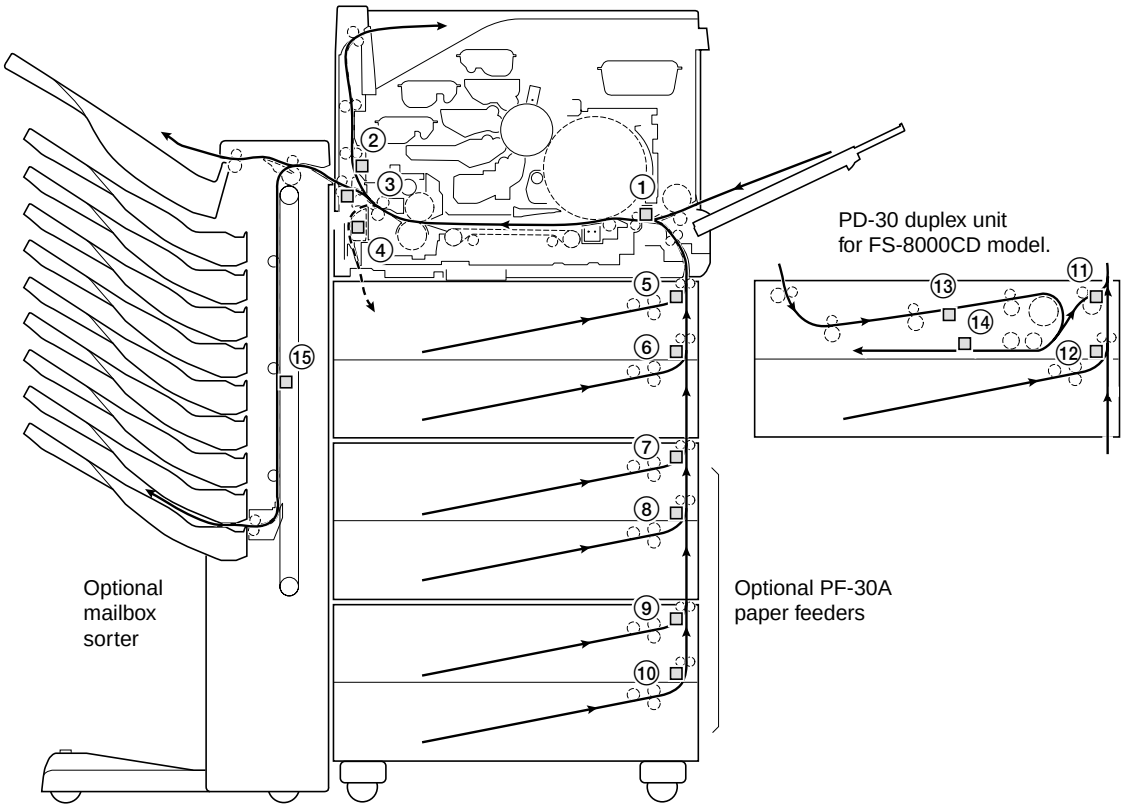


Figure 1-5-3 Paper misfeed detection sensors

① Registration sensor (REGS)
② Upper paper exit sensor (UPEXS)
③ Lower paper exit sensor (LPEXS)
④ Duplex paper exit sensor (DUPEXS)
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 Duplexer upper jam sensor
⑫ Duplexer lower jam sensor
⑬ Duplexer upper tray jam sensor
⑭ Duplexer 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.

Self diagnostic codes

Code	Contents	Remarks	
		Causes	**Check procedures/corrective measures**
0121	**EEPROM read error** • The ASIC (U7) of engine controller PWB (KP-801) does not access to the EEPROM (U621) of drum PWB (KP-813) normally.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective drum PWB (KP-813).	Replace the drum unit. See page 1-6-14.
		Defective harness (S02575) between engine controller PWB (KP-801) and drum unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02575). Check the insertion of connectors.
0440	**Communication error between printer and document finisher/ mailbox sorter** • The CPU (U2) of engine controller PWB (KP-801) does not communicate with the document finisher DF-31/mailbox sorter SO-30 normally. • The microcomputer (U26) of engine controller PWB (KP-801) does not communicate to the document finisher DF-31/mailbox sorter SO-30 normally.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective main PWB of document finisher DF-31/ mailbox sorter SO-30.	Replace the main PWB of document finisher DF-31/mailbox sorter SO-30. See document finisher DF-31/mailbox sorter SO-30's service manual.
		Defective paper feeder/options relay PWB (KP-830).	Replace the paper feeder/options relay PWB (KP-830). See page 1-6-44.
		Defective signal cable between printer and document finisher DF-31/mailbox sorter SO-30.	Replace the signal cable between printer and document finisher DF-31/mailbox sorter SO-30.
		Defective harness (S02591) between engine controller PWB (KP-801) and paper feeder/ options relay PWB (KP-830), or poor contact of the connector terminals.	Check the continuity of the harness (S02591). 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-801) does not communicate with the bulk stacker ST-31 normally.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective main board of bulk stacker ST-31.	Replace the main board of bulk stacker ST-31. See bulk stacker ST-31's service manual.
		Defective paper feeder/options relay PWB (KP-830).	Replace the paper feeder/options relay PWB (KP-830). See page 1-6-44.
		Defective signal cable between bulk stacker ST-31.	Replace the signal cable between printer and bulk stacker ST-31.
		Defective harness (S02591) between engine controller PWB (KP-801) and paper feeder/ options relay PWB (KP-830), or poor contact of the connector terminals.	Check the continuity of the harness (S02591). Check the insertion of connectors.
0460	**Communication error between printer and duplex unit** • The CPU (U2) of engine controller PWB (KP-801) does not communicate with the duplex unit PD-30 normally.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective main board of duplex unit PD-30.	Replace the main board of duplex unit PD-30. See duplex unit PD-30's service manual.
		Defective paper feeder/options relay PWB (KP-830).	Replace the paper feeder/options relay PWB (KP-830). See page 1-6-44.
		Defective connection printer and duplex unit PD-30.	Reinstall duplex unit PD-30.
		Defective harness (S02591) between engine controller PWB (KP-801) and paper feeder/ options relay PWB (KP-830), or poor contact of the connector terminals.	Check the continuity of the harness (S02591). 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 paper feeder PF-30A or power is turned on.	Defective upper cassette base motor.	Replace the upper cassette base motor. See paper feeder PF-30A'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 paper feeder PF-30A.	Replace the main board of paper feeder PF-30A. See paper feeder PF-30A's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
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 paper feeder PF-30A or power is turned on.	Defective lower cassette base motor.	Replace the lower cassette base motor. See paper feeder PF-30A'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 paper feeder PF-30A.	Replace the main board of paper feeder PF-30A. See paper feeder PF-30A's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
	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 duplex unit PD-30.	Defective lower cassette base motor.	Replace the lower cassette base motor. See the duplex unit PD-30'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 duplex unit PD-30.	Replace the main board of the duplex unit PD-30. See the duplex unit PD-30's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.

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 paper feeder PF-30A or power is turned on.	Defective upper cassette base motor.	Replace the upper cassette base motor. See paper feeder PF-30A'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 paper feeder PF-30A.	Replace the main board of paper feeder PF-30A. See paper feeder PF-30A's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
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 paper feeder PF-30A or power is turned on.	Defective lower cassette base motor.	Replace the lower cassette base motor. See paper feeder PF-30A'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 paper feeder PF-30A.	Replace the main board of paper feeder PF-30A. See paper feeder PF-30A's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
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 paper feeder PF-30A or power is turned on.	Defective upper cassette base motor.	Replace the upper cassette base motor. See paper feeder PF-30A'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 paper feeder PF-30A.	Replace the main board of paper feeder PF-30A. See paper feeder PF-30A's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.

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 paper feeder PF-30A or power is turned on.	Defective lower cassette base motor.	Replace the lower cassette base motor. See paper feeder PF-30A'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 paper feeder PF-30A.	Replace the main board of paper feeder PF-30A. See paper feeder PF-30A's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
1210	**Side registration home position sensor detection error (Duplex unit)** • The side registration home position sensor of duplex unit PD-30 does not detect home position of side registration guides.	Defective side registration home position sensor.	Replace the side registration home position sensor. See duplex unit PD-30's service manual.
		Defective side registration motor.	Replace the main board of duplex unit PD-30. See duplex unit PD-30's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
2000	**Main drive motor lock** • The frequency generation pulse which the main drive motor generates to CPU (U2) on the engine controller PWB (KP-801) 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 (S02571) between engine controller PWB (KP-801) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02571). Check the insertion of connectors.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.

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-801) has issued a motor activation signal to the main drive motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02571) between engine controller PWB (KP-801) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02571). Check the insertion of connectors.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
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-801) 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 (S02571) between engine controller PWB (KP-801) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02571). 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-801) during normal operation (after self-diagnostics codes 2111 and 2121 are cleared).	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02570) between engine controller PWB (KP-801) and black developer drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02570). 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 ASIC (U8) on the engine controller PWB (KP-801) during normal operation (after self-diagnostics codes 2112 and 2122 are cleared).	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02609) between engine controller PWB (KP-801) and color developers drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02609). 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-801) has issued a motor activation signal to the black developer drive motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02570) between engine controller PWB (KP-801) and main drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02570). 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-801) has issued a motor activation signal to the drive motor for the color developers.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02609) between engine controller PWB (KP-801) and color developers drive motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02609). 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-801) has issued a motor activation signal to the black developer drive motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02570) between engine controller PWB (KP-801) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02570). 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-801) has issued a motor activation signal to the drive motor that drives the color developers.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02609) between engine controller PWB (KP-801) and color developers, or poor contact of the connector terminals.	Check the continuity of the harness (S02609). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
2340	**Fuser drive motor driving clock table error** • An error has occurred in the driving clock table on the engine controller PWB (KP-801) that controls the fuser drive motor (a stepping motor).	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
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 (U8) on the engine controller PWB (KP-801) during normal operation.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02564) between engine controller PWB (KP-801) and paper feed motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02564). 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-801) has issued a motor activation signal to the paper feed motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02564) between engine controller PWB (KP-801) and paper feed motor, or poor contact of the connector terminals.	Check the continuity of the harness (S02564). 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 (U8) on the engine controller PWB (KP-801) has issued a motor activation signal to the paper feed motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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 (S02564) between engine controller PWB (KP-801) and main paper feed, or poor contact of the connector terminals.	Check the continuity of the harness (S02564). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
4000	**Polygon motor error** • The READY signal is not entered within the predetermined period when CPU (U2) on the engine controller PWB (KP-801) has issued a motor activation signal to the laser scanner unit.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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-801) and laser scanner unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02542). 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 (U7) on the engine controller PWB (KP-801) has issued a laser activation signal.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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-801) and laser scanner unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02542). Check the insertion of connectors.
5120	**Abnormal separation charger high voltage leak current** • ASIC (U8) on the engine controller PWB (KP-801) has detected a excessive leakage current in the separation charger high voltage supply.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective separation charger high voltage unit.	Replace the separation charger high voltage unit. See page 1-6-42.
		Defective harness (S02616) between engine controller PWB (KP-801) and separation charger high voltage unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02616). 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-801) generates the signal to activate the eraser lamp.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective drum unit (eraser lamp or drum PWB [KP-813]).	Replace the drum unit. See page 1-6-14.
		Defective harness (S02575) between engine controller PWB (KP-801) and drum unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02575). 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-801) has turned on the upper heater lamp. This is detected when the upper heater lamp is turned on.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective upper heater lamp.	Replace the fuser unit (upper heater lamp). See page 1-6-29.
		Defective upper thermostat.	Replace the fuser unit (upper thermostat). See page 1-6-28.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-28.
		Defective upper fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-24.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-38.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit, or poor contact of the connector terminals.	Check the continuity the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective upper heater lamp.	Replace the fuser unit (upper heater lamp). See page 1-6-29.
		Defective upper thermostat.	Replace the fuser unit (upper thermostat). See page 1-6-28.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective upper fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-26.
		Defective AC power source (Abnormal low voltage).	Connect to the proper AC power source.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective upper heater lamp.	Replace the fuser unit (upper heater lamp). See page 1-6-29.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective upper fuser thermistor.	Replace the fuser unit (upper fuser thermistor). See page 1-6-26.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-38.
		Defective AC power source. (Abnormal high voltage)	Connect to the proper AC power source.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective upper fuser thermistor, or improper fitting..	Replace the fuser unit (upper fuser thermistor). See page 1-6-26.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit (upper fuser thermistor), or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective upper fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-26.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit (upper fuser thermistor), or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801) has turned on the lower heater lamp. This is detected when the lower heater lamp is turned on.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective lower heater lamp.	Replace the fuser unit (lower heater lamp). See page 1-6-29.
		Defective lower thermostat.	Replace the fuser unit (lower thermostat). See page 1-6-28.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective lower fuser thermistor, or fitting is not proper.	Replace the fuser unit (lower fuser thermistor). See page 1-6-26.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-38.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective lower heater lamp.	Replace the fuser unit (lower heater lamp). See page 1-6-29.
		Defective lower thermostat.	Replace the fuser unit (lower thermostat). See page 1-6-28.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective lower fuser thermistor, or fitting is not proper.	Replace the fuser unit (upper fuser thermistor). See page 1-6-26.
		Defective AC power source (Abnormal low voltage).	Connect to the proper AC power source.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective lower heater lamp.	Replace the fuser unit (lower heater lamp). See page 1-6-29.
		Defective fuser PWB (KP-811).	Replace the fuser unit (lower thermostat). See page 1-6-28.
		Defective lower fuser thermistor.	Replace the lower fuser thermistor. See page 1-6-26.
		Defective power supply unit.	Replace the power supply unit. See page 1-6-38.
		Defective AC power source (Abnormal high voltage).	Connect to the proper AC power source.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective lower fuser thermistor, or improper fitting.	Replace the fuser unit (lower fuser thermistor). See page 1-6-26.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit (lower fuser thermistor), or poor contact of the connector terminals.	Check the continuity of the harness (S02572). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective fuser PWB (KP-811).	Replace the fuser unit (fuser PWB [KP-811]). See page 1-6-24.
		Defective lower fuser thermistor, or fitting is not proper.	Replace the fuser unit (lower fuser thermistor). See page 1-6-26.
		Defective harness (S02572) between engine controller PWB (KP-801) and fuser unit (lower fuser thermistor), or poor contact of the connector terminals.	Check the continuity of the harness (S02572). Check the insertion of connectors.
6430	**Oil roller unit fuse break error** • The engine controller PWB (KP-801) is not able to cut the fuse on the oil roller unit.	Defective oil roller unit fuse.	Replace the oil roller unit.
		Defective harness (S02619) between engine controller PWB (KP-801) and oil roller unit detection sensor, or poor contact of the connector terminals.	Check the continuity of the harness (S02619). 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-801) activates the black toner feed motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective black developer (Black developer PWB [KP-817]).	Replace the black developer. See page 1-6-16.
		Defective harness (S02547) between engine controller PWB (KP-801) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02547). 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-801) activates the cyan toner feed motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective cyan developer (Cyan developer PWB [KP-815]).	Replace the cyan developer. See page 1-6-16.
		Defective harness (S02547) between engine controller PWB (KP-801) and cyan developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02547). 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-801) activates the magenta toner feed motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective magenta developer (Magenta developer PWB [KP-815]).	Replace the magenta developer. See page 1-6-16.
		Defective harness (S02546) between engine controller PWB (KP-801) and magenta developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02546). 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-801) activates the yellow toner feed motor.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective yellow developer (Yellow developer PWB [KP-847]).	Replace the yellow developer. See page 1-6-16.
		Defective harness (S02546) between engine controller PWB (KP-801) and yellow developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02546). 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-801).	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective black developer (black developer PWB [KP-817] 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 (S02547) between engine controller PWB (KP-801) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02547). 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-801).	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective cyan developer (cyan developer PWB [KP-815] 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 (S02547) between engine controller PWB (KP-801) and cyan developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02547). 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-801).	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective magenta developer (magenta developer PWB [KP-815] 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 (S02546) between engine controller PWB (KP-801) and magenta developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02546). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective yellow developer (yellow developer PWB [KP-815] 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 (S02546) between engine controller PWB (KP-801) and yellow developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02546). 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-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		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-822).	Replace the feed drive PWB (KP-822).
		Defective harness (S02547) between engine controller PWB (KP-801) and black developer, or poor contact of the connector terminals.	Check the continuity of the harness (S02547). Check the insertion of connectors.
		Defective harness (S02563) between engine controller PWB (KP-801) and feed drive PWB (KP-822), or poor contact of the connector terminals.	Check the continuity of the harness (S02563). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
7700	**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-813).	Replace the drum unit. See page 1-6-14.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective harness (S02575) between engine controller PWB (KP-801) and drum unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02575). Check the insertion of connectors.
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-813).	Replace the drum unit. See page 1-6-14.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective harness (S02575) between engine controller PWB (KP-801) and drum unit, or poor contact of the connector terminals.	Check the continuity of the harness (S02575). Check the insertion of connectors.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
8010	**Feeder motor error (Document finisher)** • Feeder motor of the document finisher DF-31 does not operate normally.	Defective feeder motor of the document finisher DF-31.	Replace feeder motor of the document finisher DF-31. See document finisher DF-31's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
8020	**Paper ejection motor error (Document finisher)** • Paper ejection motor of the document finisher DF-31 does not operate normally.	Defective paper ejection motor of the document finisher DF-31.	Replace paper ejection motor of the document finisher DF-31. See document finisher DF-31's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
8140	**Tray elevation motor error (Document finisher)** • Tray elevation motor of the document finisher DF-31 does not operate normally.	Defective tray elevation motor of the document finisher DF-31.	Replace tray elevation motor of the document finisher DF-31. See document finisher DF-31's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
8170	**Matching board movement motor error (Document finisher)** • Matching board movement motor of the document finisher DF-31 does not operate normally.	Defective matching board movement motor of the document finisher DF-31.	Replace matching board movement motor of the document finisher DF-31. See document finisher DF-31's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
8210	**Staple movement motor error (Document finisher)** • Staple movement motor of the document finisher DF-31 does not operate normally.	Defective staple movement motor of the document finisher DF-31.	Replace staple movement motor of the document finisher DF-31. See document finisher DF-31's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
8230	**Staple motor error (Document finisher)** • Staple motor of the document finisher DF-31 does not operate normally.	Defective staple motor of the document finisher DF-31.	Replace staple motor of the document finisher DF-31. See document finisher DF-31's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.

Code	Contents	Remarks	
		Causes	Check procedures/corrective measures
8290	**Sorter compatibility error** • The engine controller PWB (KP-801) does not recognize compatibility of the mailbox sorter SO-30 for this printer.	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 mailbox sorter SO-30's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
8510	**Bulk stacker compatibility error** • The engine controller PWB (KP-801) does not recognize compatibility of the bulk stacker ST-30 for installed printer.	The ROM version of bulk stacker ST-30 main board is not compatible for this printer.	Replace the ROM of bulk stacker ST-30 main board for this printer.
		Defective bulk stacker ST-30 board.	Replace the bulk stacker ST-30 main board. See bulk stacker ST-30's service manual.
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
F0 **F000**	**Main controller PWB error** • The operation breakdown occurs between main controller PWB (KP-800) and operation panel PWB (KP-805) during 30 seconds.	Defective main controller PWB (KP-800).	Replace the main controller PWB (KP-800). See page 1-6-36.
		Defective operator panel PWB (KP-805).	Replace the operator panel PWB (KP-805).
		Defective main-engine controllers relay PWB (KP-802).	Replace the main-engine controllers relay PWB (KP-802).
		Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective harness (S02540) between engine controller PWB (KP-801) and operator panel PWB (KP-805), or poor contact of the connector terminals.	Check the continuity of the harness (S02540). 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-800).	Replace the main controller PWB (KP-800). See page 1-6-36.
F020	**Memory check error** • Access to the expanding memory (DIMM) or RAM on the main controller PWB (KP-800) is unobtainable.	Defective main controller PWB (KP-800).	Replace the main controller PWB (KP-800). See page 1-6-36.
		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-800).	Replace the main controller PWB (KP-800). See page 1-6-36.
F040	**Main - Engine controller PWBs communication error** • The communication breakdown occurred between main controller PWB (KP-800) and engine controller PWB (KP-801) during 30 seconds.	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.
		Defective main controller PWB (KP-800).	Replace the main controller PWB (KP-800). See page 1-6-36.
F070	**Flash ROM checksum error** • Check result is not correct about flash ROM (U10) checksum of engine controller PWB (KP-801).	Defective engine controller PWB (KP-801).	Replace the engine controller PWB (KP-801). See page 1-6-37.

1-5-3 Image formation problems

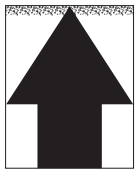
(1) No image appears (entirely white).

See page 1-5-33.

(2) No image appears (entirely black).

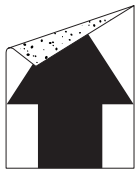
See page 1-5-33.

(3) Dirt on the top edge.



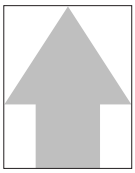
See page 1-5-33.

(4) Dirt on the back side.



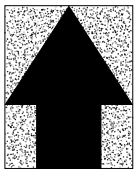
See page 1-5-34.

(5) Image is too light.



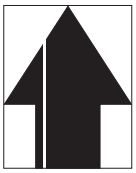
See page 1-5-34.

(6) Background is visible.



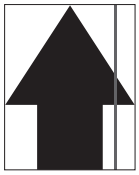
See page 1-5-34.

(7) A white line appears longitudinally.



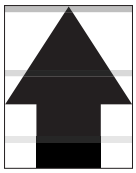
See page 1-5-35.

(8) A line appears longitudinally.



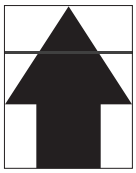
See page 1-5-35.

(9) Oily streaks (15 cm intervals) appears at the top of the page longitudinally.



See page 1-5-35.

(10) A line appears laterally.

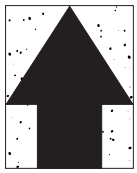


See page 1-5-36.

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

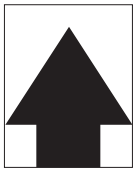
See page 1-5-36.

(12) Dots appear on the image.



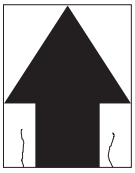
See page 1-5-36.

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



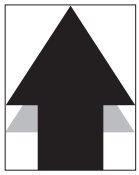
See page 1-5-37.

(14) Paper creases.



See page 1-5-37.

(15) Offset occurs.

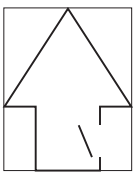


See page 1-5-37.

(16) Image is partly missing.

See page 1-5-37.

(17) Fusing is poor.

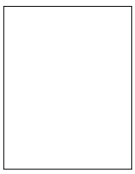


See page 1-5-38.

(18) Dragged dirt lines appears.

See page 1-5-38.

(1) No image appears (entirely white).



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

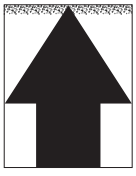
Causes	Check procedures/corrective measures
1. No laser beam output.	
A. Defective main controller PWB operation.	Replace main controller PWB [KP-800] (See page 1-6-36).
B. Defective laser scanner unit operation.	Replace laser scanner unit (See page 1-6-11).
C. Defective engine controller PWB operation.	Replace engine controller PWB [KP-801] (See page 1-6-37).
D. Defective harness between engine controller PWB and laser scanner unit.	Replace harness (S02542).
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.	Reinstall main charger unit.
A. Poor insertion main charger unit.	Replace main charger unit (See page 1-6-13).
B. Broken main charger wire.	Replace main controller PWB [KP-800] (See page 1-6-36).
C. Defective main controller PWB operation.	Replace engine controller PWB [KP-801] (See page 1-6-37).
D. Defective engine controller PWB operation.	Replace drum unit (See page 1-6-14).
E. Defective drum unit.	Replace drum unit (See page 1-6-14).

(3) Dirt on the top edge.

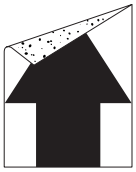


Causes
1. Dirty transfer roller.
2. Defective cleaning brush unit operation.

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

(4) Dirt on the back side.

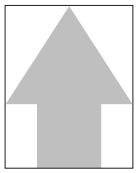
Causes
1. Dirty conveying belts.



Causes	Check procedures/corrective measures
1. Dirty conveying belts.	Clean the conveying belts (See page 1-4-17).

(5) Image is too light.

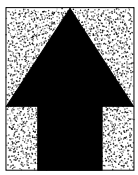
Causes
1. Defective developing bias output.
2. Dirty or flawed drum.
3. EcoPrint mode enabled (monochrome printing only).



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/cleaning brush bias high voltage unit operation.	Replace developing/cleaning brush bias high voltage unit (See page 1-6-35)
D. Defective engine controller PWB operation.	Replace engine controller PWB [KP-801] (See page 1-6-37).
E. Defective main controller PWB operation.	Replace main controller PWB [KP-800] (See page 1-6-36).
2. Dirty or flawed drum.	Perform the drum surface refreshing (See page 1-4-8).
3. EcoPrint mode enabled (monochrome printing only).	Disable EcoPrint mode (Refer to the operation guide).

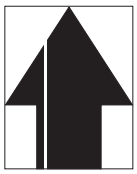
(6) Background is visible.

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/cleaning brush bias high voltage unit operation.	Replace developing/cleaning brush bias high voltage unit (See page 1-6-40)
D. Defective engine controller PWB operation.	Replace engine controller PWB [KP-801] (See page 1-6-37).
E. Defective main controller PWB operation.	Replace main controller PWB [KP-800] (See page 1-6-36).
2. Defective cleaning brush unit.	Replace cleaning brush unit (See page 1-6-15).

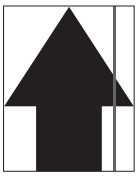
(7) A white line appears longitudinally.



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-800] (See page 1-6-36).
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.

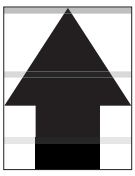
(8) A line appears longitudinally.



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 1-4-13).
2. Dirty or flawed drum.	
A. Dirty drum.	Perform drum surface refreshing (See page 1-4-8).
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).

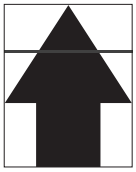
(9) Oily streaks (15 cm intervals) appears at the top of the page longitudinally.



Causes
1. Oil roller unit is new or after the printer has been left unused for a prolonged period of time.

Causes	Check procedures/corrective measures
1. Oil roller unit is new or after the printer has been left unused for a prolonged period of time.	Print several pages unit the streaks disappear.

(10) 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-801] (see page 1-6-37).

(11) 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).

(12) 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 1-4-8).
2. Deformed or worn cleaning blade.	Replace the drum unit (see page 1-6-14).

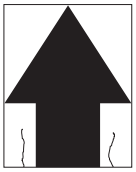
(13) The leading edge of the image is misaligned with the original image.

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-801] (See page 1-6-37).
3. Defective main controller PWB operation.	Replace main controller PWB [KP-800] (See page 1-6-36).

(14) Paper creases.

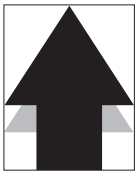
Causes
1. Paper curled.
2. Paper damp.



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.

(15) Offset occurs.

Causes
1. Defective cleaning blade.



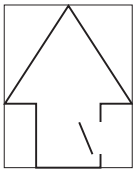
Causes	Check procedures/corrective measures
1. Defective cleaning blade.	Replace the drum unit (see page 1-6-14).

(16) 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 1-4-8).
4. Flawed drum.	Replace the drum unit (see page 1-6-14).

(17) 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 1-3-10).
3. Flawed heat or press/heat roller.	Replace the heat or press/heat roller (see page 1-6-30).

(18) 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).

CONTENTS

1-6 Assembly and Disassembly

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 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.

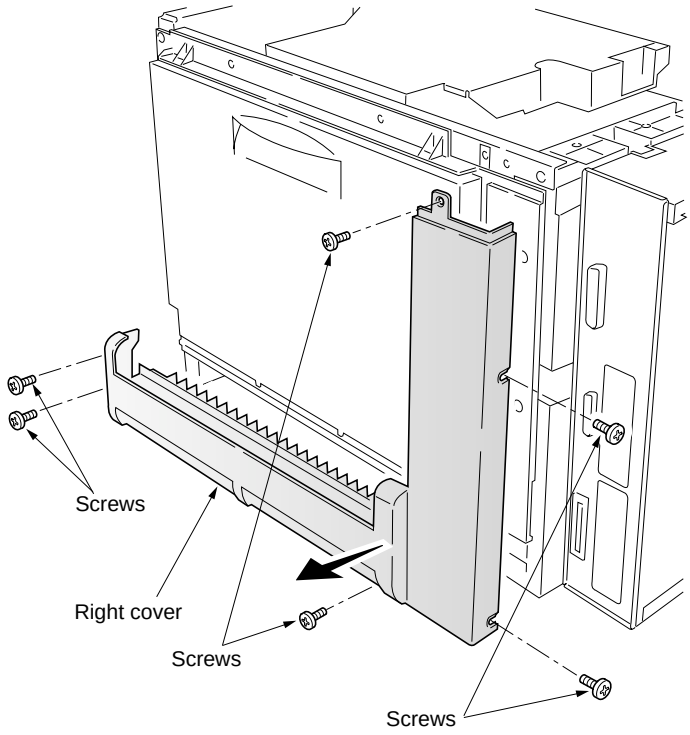


Figure 1-6-1

3. Remove one connector (YC28) from the engine controller PWB.
4. Remove the six screws and then remove the MP tray unit.
5. Replace the MP tray unit and refit all the removed parts.

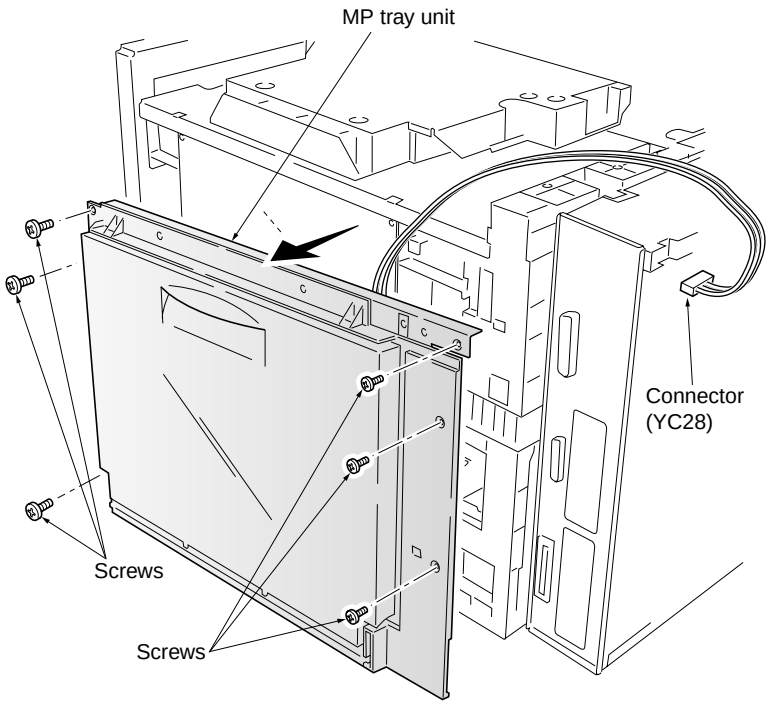


Figure 1-6-2

(2) Detaching and refitting the MP tray feed roller and MP tray retard roller
Follow the procedure below to 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 while pressing the lever.
4. Remove the holder from the MP tray unit.
5. Remove the MP tray retard roller from the holder.
6. Replace the MP tray feed roller and MP tray retard roller and refit all the removed parts.

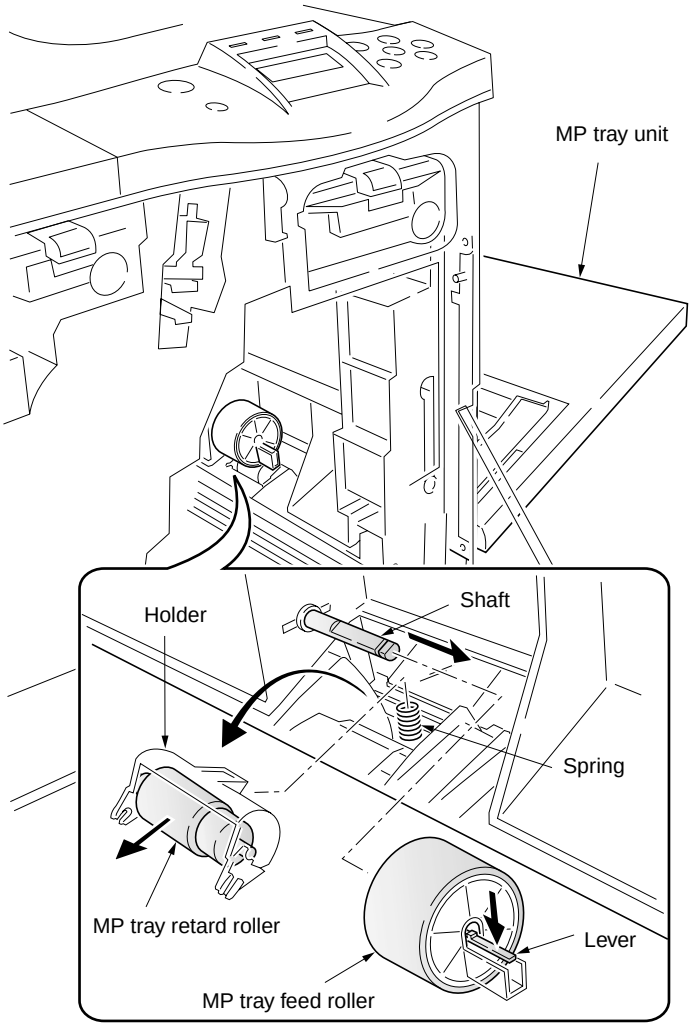


Figure 1-6-3

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

Procedure
1. Remove rear cover (See page 1-6-37).
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)

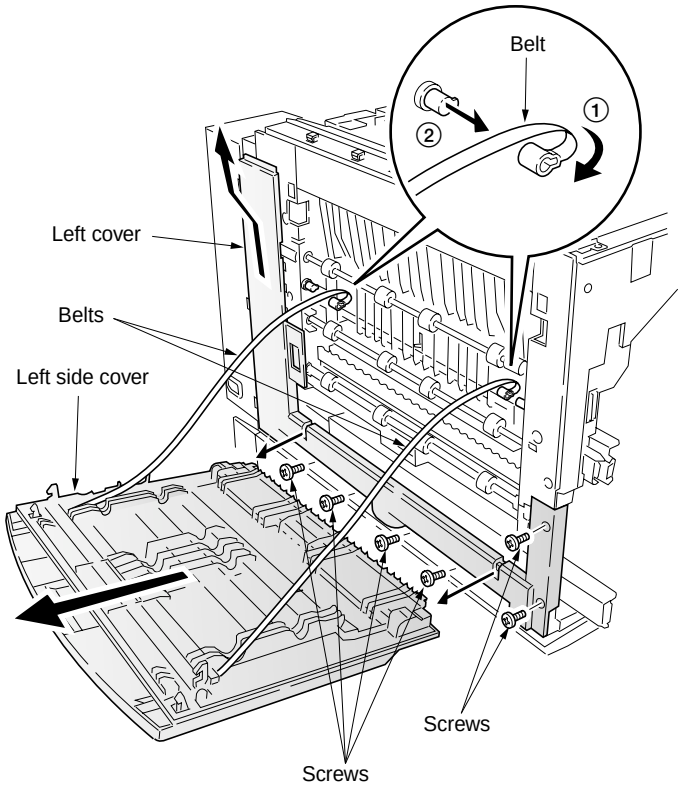


Figure 1-6-4

6. Remove the one connector (YC18) 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. Replace the face-down unit and refit all the removed parts.

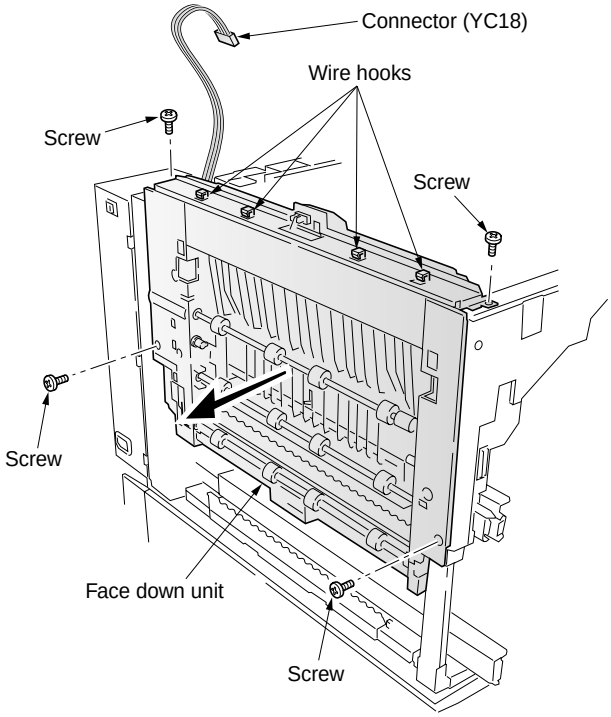


Figure 1-6-5

(4) Detaching and refitting drive assembly B
Follow the procedure below to replace drive assembly B.

Procedure
1. Remove the main controller box (See page 6-1-42).
2. Remove the two connectors.
3. Remove the four screws and then remove the drive assembly B.
4. Replace the drive assembly B and refit all the removed parts.

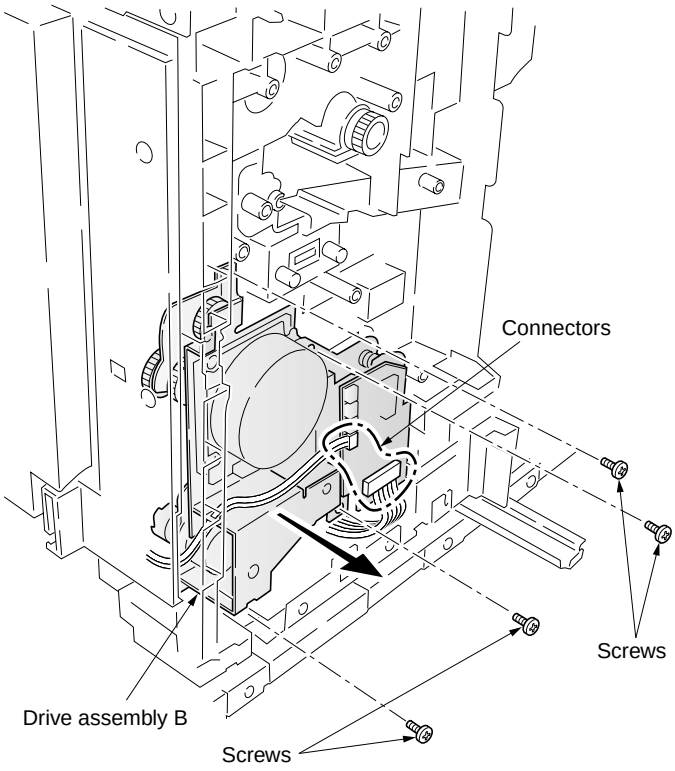


Figure 1-6-6

(5) Detaching and refitting drive assembly A
Follow the procedure below to replace drive assembly A.

Procedure
1. Remove the power supply unit (See page 1-6-39).
2. Remove all (six) tabs from the drive assembly A.
3. Remove the seven screws and then remove drive assembly A.
4. Replace drive assembly A and refit all the removed parts.

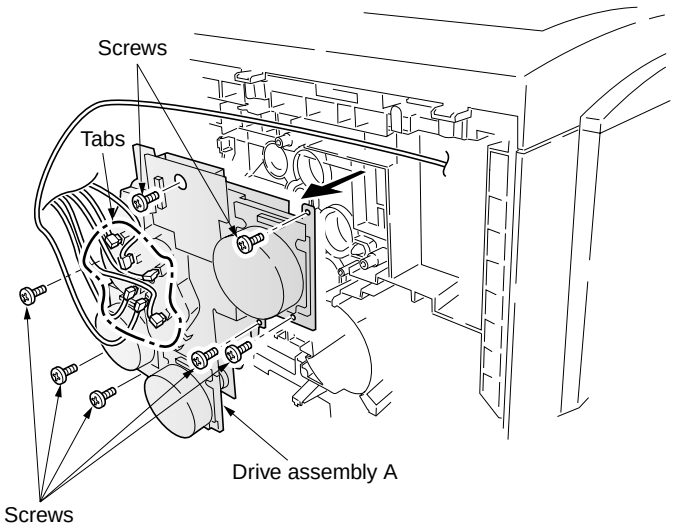


Figure 1-6-7

(6) Detaching and refitting the paper conveying belts

Follow the procedure below to replace the paper conveying belts.

Procedure

1. Draw the paper feed unit.
2. Remove the one screw and then remove the clutch cover.
3. Remove the five screws.
4. Remove the one connector and the wire holder and then remove the paper conveying assembly.

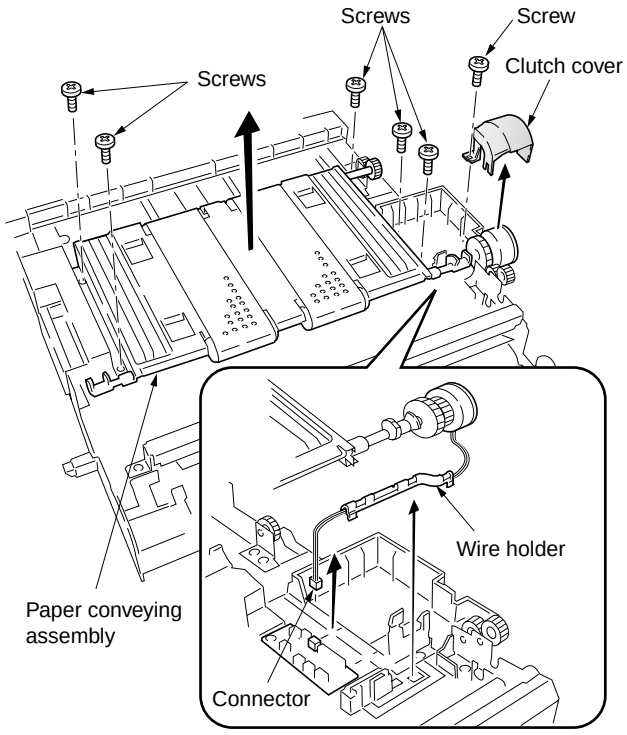


Figure 1-6-8

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

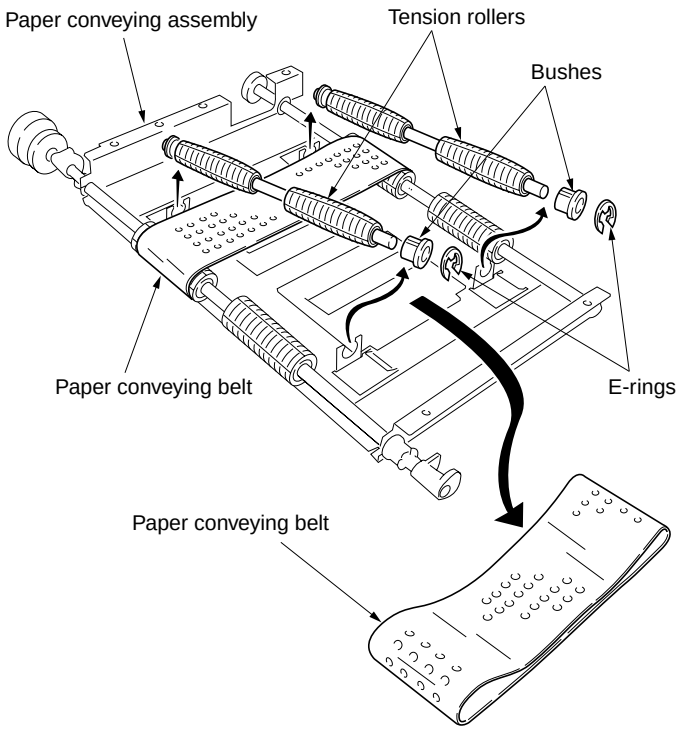


Figure 1-6-9

(7) Detaching and refitting the paper conveying fan motors 1 and 2
Follow the procedure below 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.

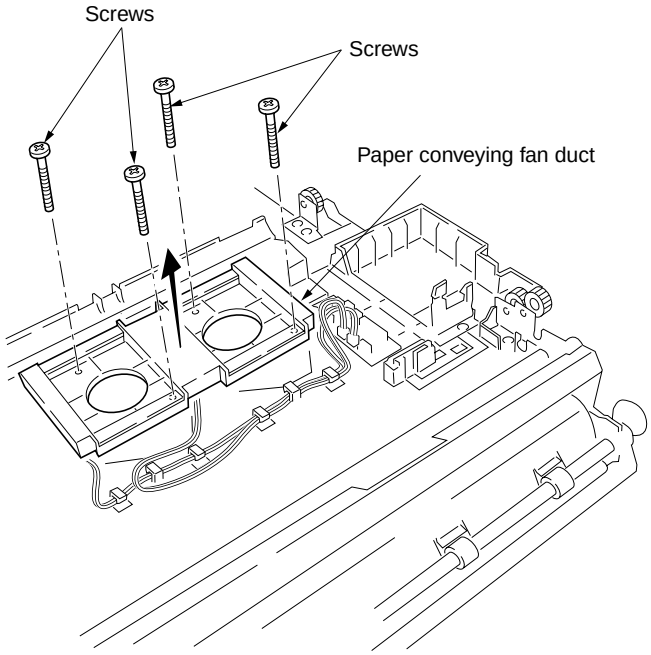


Figure 1-6-10

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

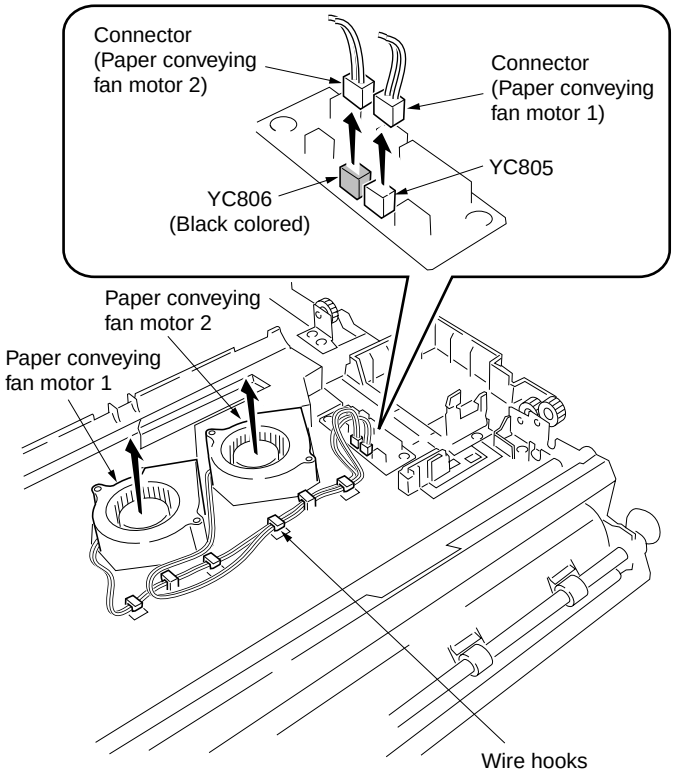


Figure 1-6-11

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

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

Procedure

1. Remove the secondary transfer unit (See page 1-6-22).
2. Remove the two springs and then remove the upper registration roller assembly.
3. Remove the two E-rings, two bushes, and gear from the upper registration roller.

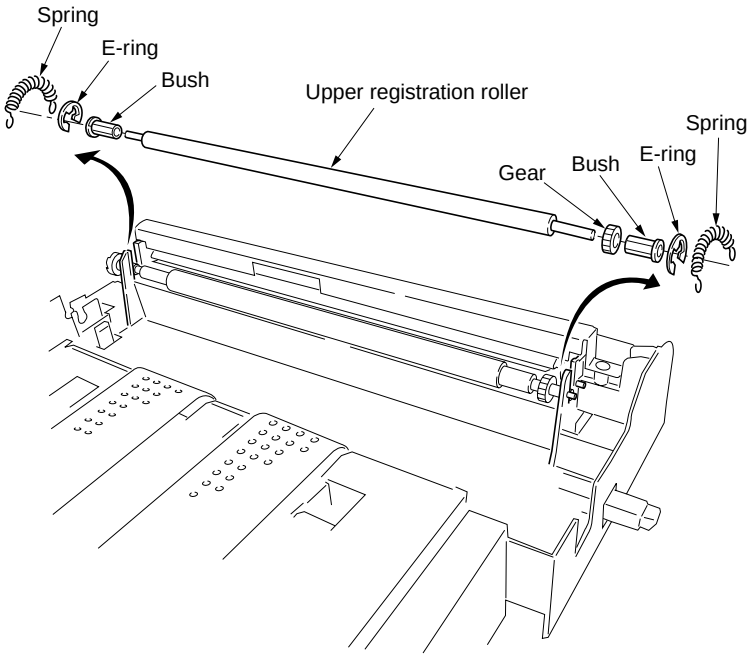


Figure 1-6-12

4. While unlatching the latch, remove the input gear.
5. Remove the two bushes.
6. While sliding the lower registration roller back and forth and then remove it. Do not deform the sheet.
7. Remove the E-ring and gear from the lower registration roller.
8. Replace the lower registration roller and refit all the removed parts.

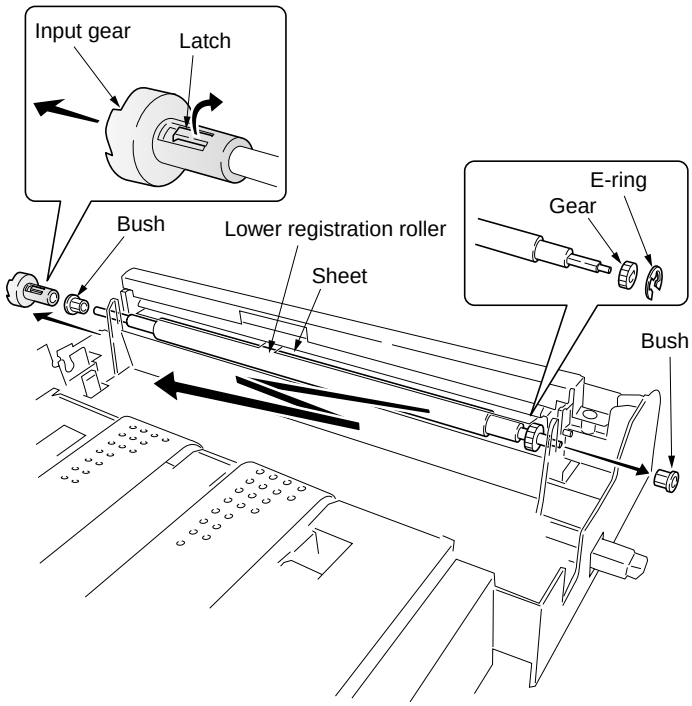


Figure 1-6-13

(9) Detaching and refitting the middle roller
Follow the procedure below 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.

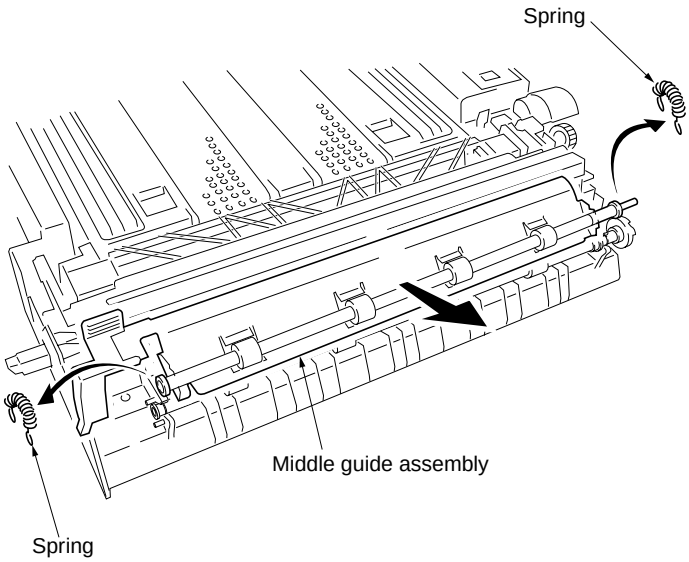


Figure 1-6-14

3. Remove the two springs.
4. Detach the front end of the middle roller and slide the MID R bush and middle roller to the backward.
5. Remove the middle roller assembly from the paper feed unit.
6. While unlatching the latch and then remove the input gear.
7. Remove the two E-rings, bush, and MID R bush from the middle roller.
8. Replace the middle roller and refit all the removed parts.

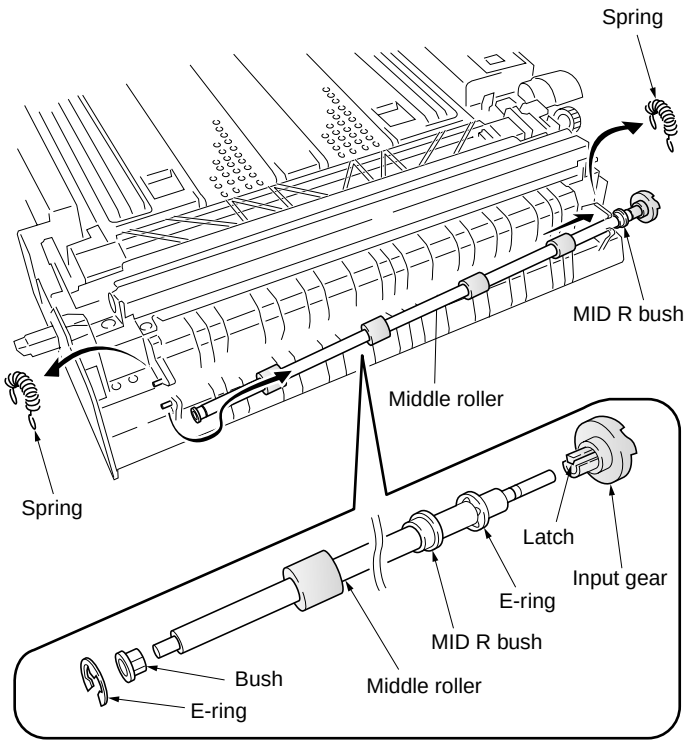


Figure 1-6-15

1-6-3 Laser scanner unit

(1) Detaching and refitting the laser scanner unit

Perform the following procedure when the laser scanner unit is to be checked or replaced.

Procedure

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

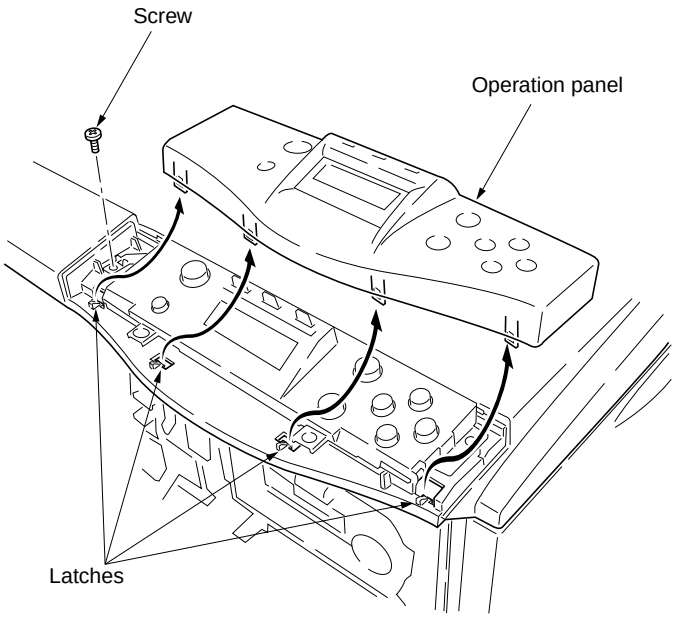


Figure 1-6-16

4. Remove the rear cover (See page 1-6-37).
5. Remove the one connector (YC4) from the engine controller PWB.
6. Remove the five screws and then remove the top cover.

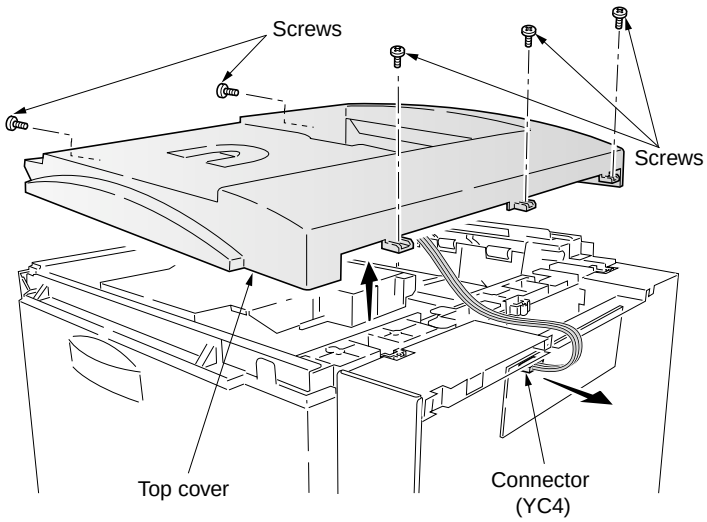


Figure 1-6-17

7. Remove the one connector from the laser scanner unit.
8. Remove the four screws and then remove the laser scanner unit.
9. 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 pieces between the laser scanner unit (bottom of the polygon motor) and frame.

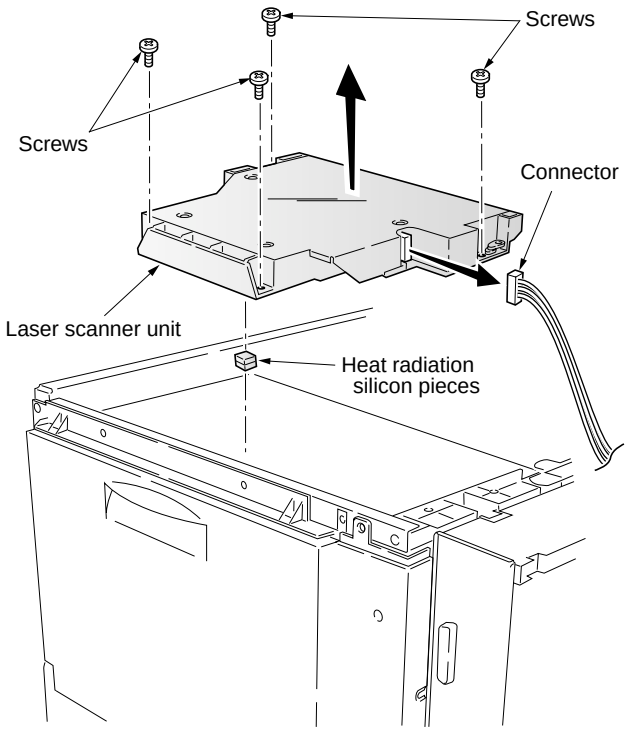


Figure 1-6-18

1-6-4 Main charger unit

(1) Detaching and refitting the main charger unit

Perform the following procedure when the main charger unit is to be checked or replaced.

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.

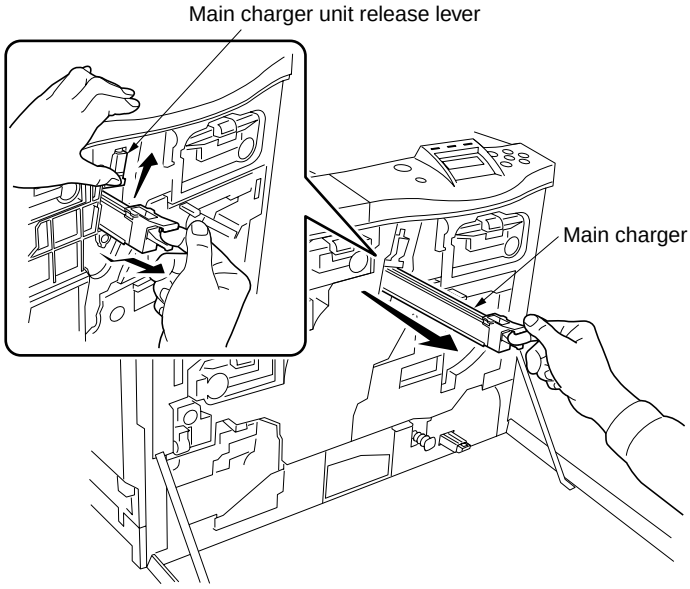


Figure 1-6-19

(2) Detaching and refitting the main charger grid

Perform the following procedure when the main charger grid is to be checked or replaced.

Procedure

1. Remove the main charger unit.
2. Detach the main charger grid from the hooks.
3. Replace the main charger shield and refit all the removed parts.

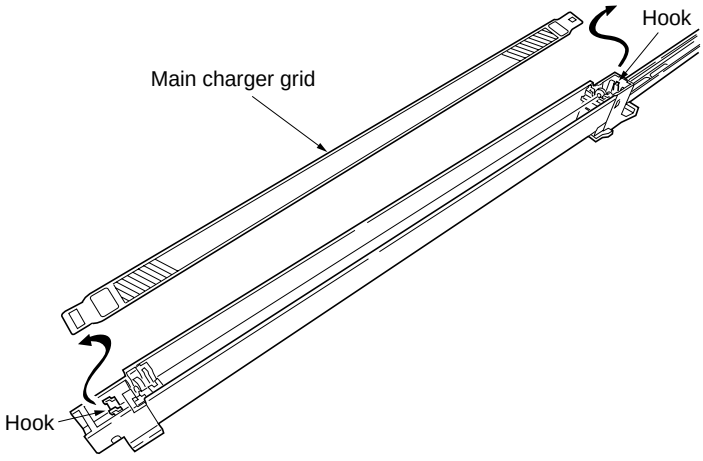


Figure 1-6-20

1-6-5 Drum unit

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

Cautions:
- Before removing the drum unit, first remove the main charger unit.
- 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 two screws and then remove the drum unit.
4. Replace the drum unit and refit all the removed parts.

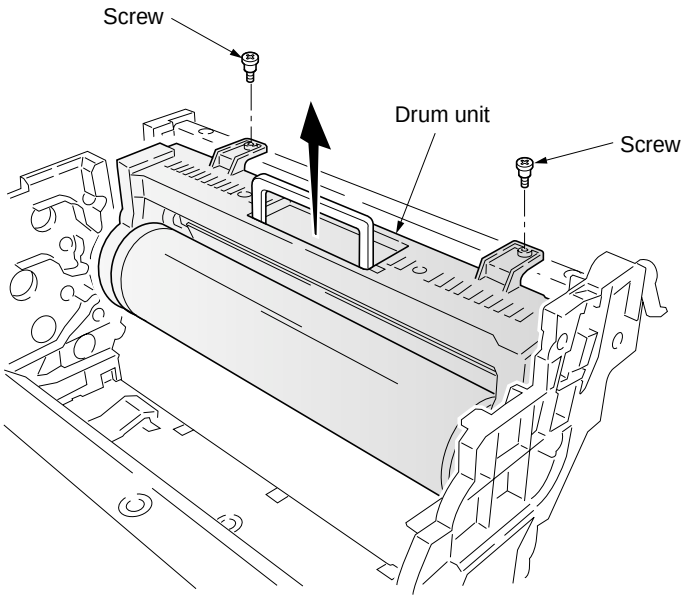


Figure 1-6-21

1-6-6 Primary transfer unit

(1) Detaching and refitting the primary transfer unit
Follow the procedure below 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.
6. While pressing the gray lever, remove the primary transfer unit from the printer.
7. Replace the primary transfer unit and refit all the removed parts.

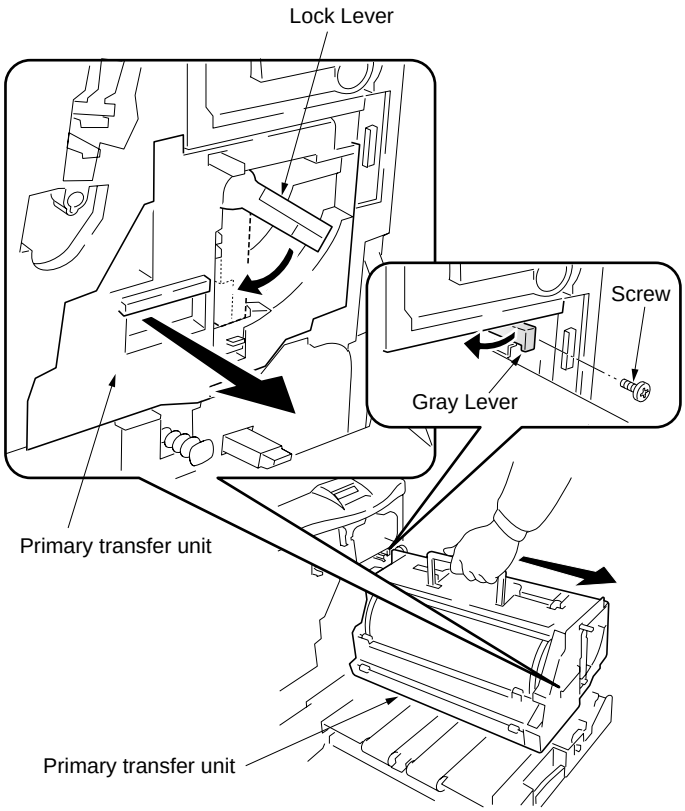


Figure 1-6-22

(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. Replace the cleaning brush unit and refit all the removed parts.

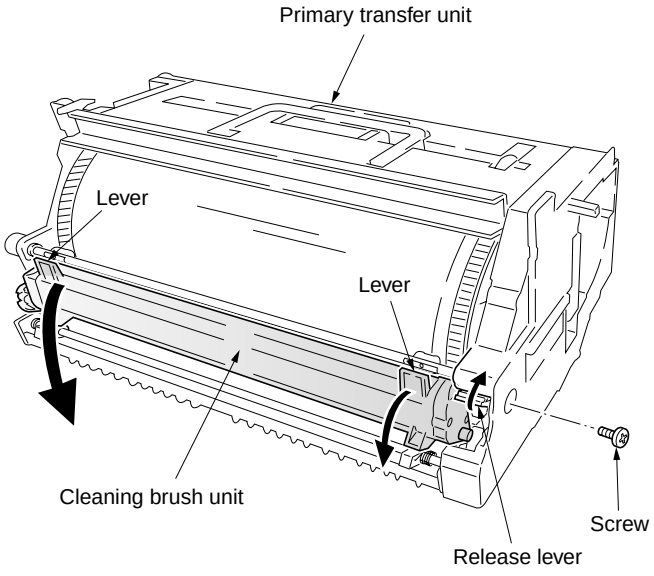


Figure 1-6-23

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

(1) Detaching and refitting the developers
Follow the procedure below to replace the developers.

Cautions:
- When closing the process frame, secure two screws A first, and then secure two screws B.

Procedure
1. Remove the primary transfer unit (See the previous page).
2. Close the paper feed unit.
3. Remove the four screws A and B.
4. Open the two stoppers.
5. Draw the process frame.

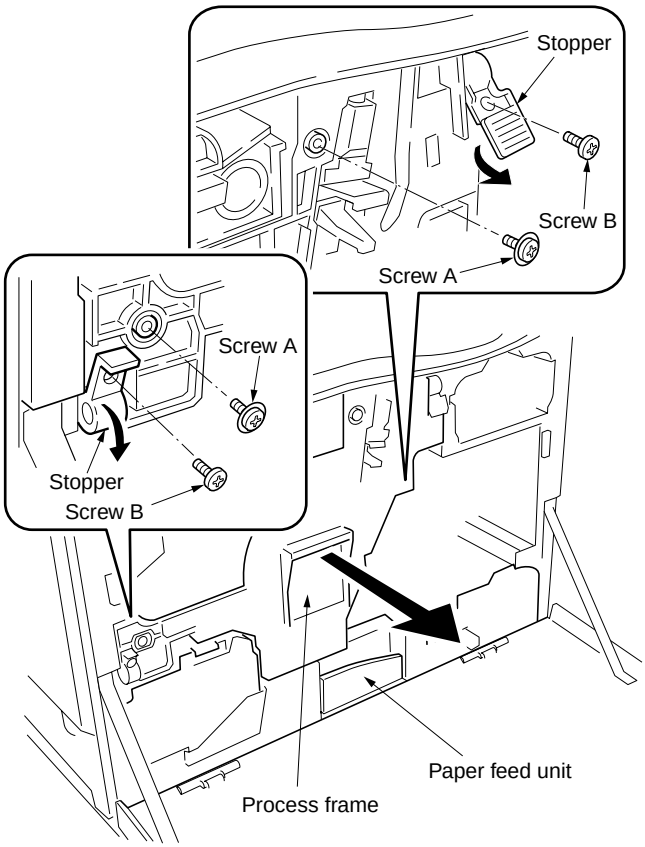


Figure 1-6-24

6. Remove the developers in the order of black, yellow, magenta, and cyan from the process frame.
7. Replace the developers and refit all the removed parts.

Cautions:

- While the developers are removed from the printer, keep them away from any magnetic record media, credit cards, etc.

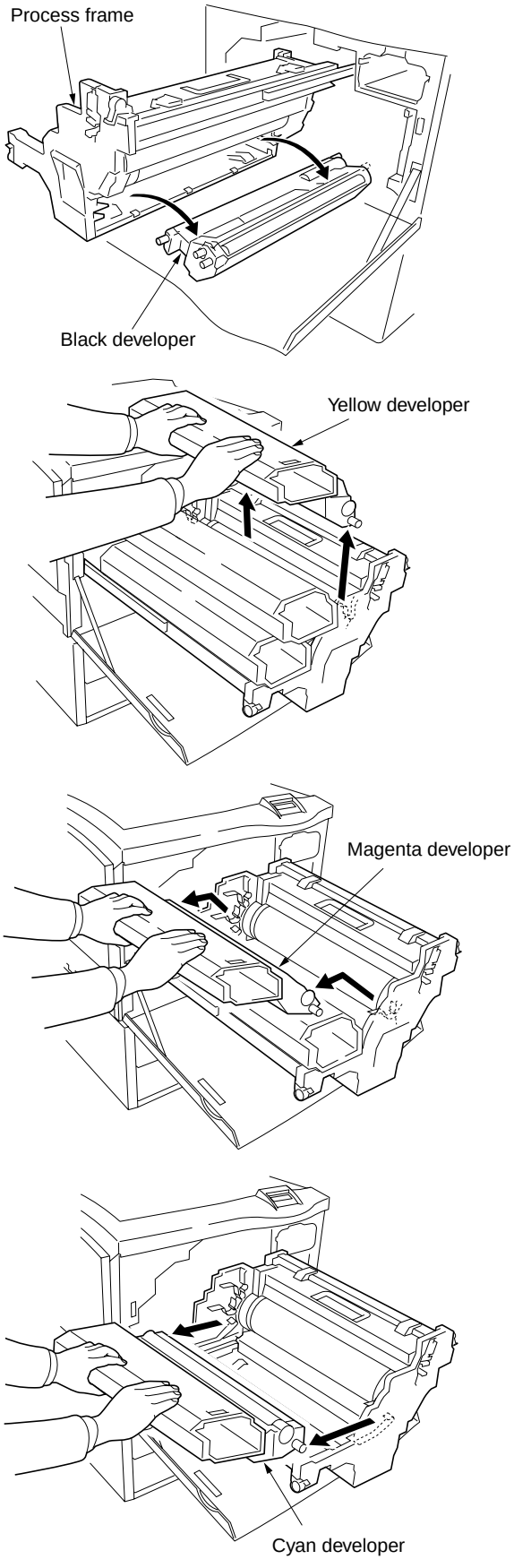


Figure 1-6-25

(2) Detaching and refitting the waste toner duct assembly
Follow the procedure below 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.

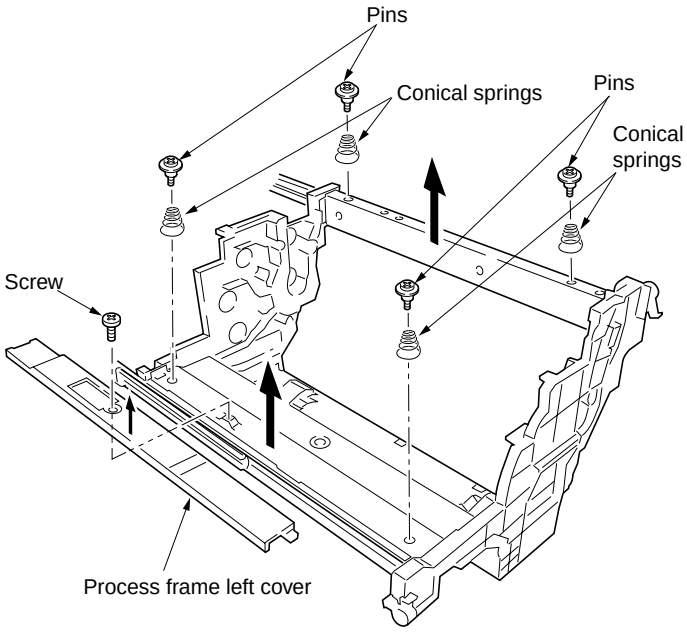


Figure 1-6-26

4. Remove the three screws.
5. Remove the waste toner duct assembly and the steel ball.

Cautions:

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

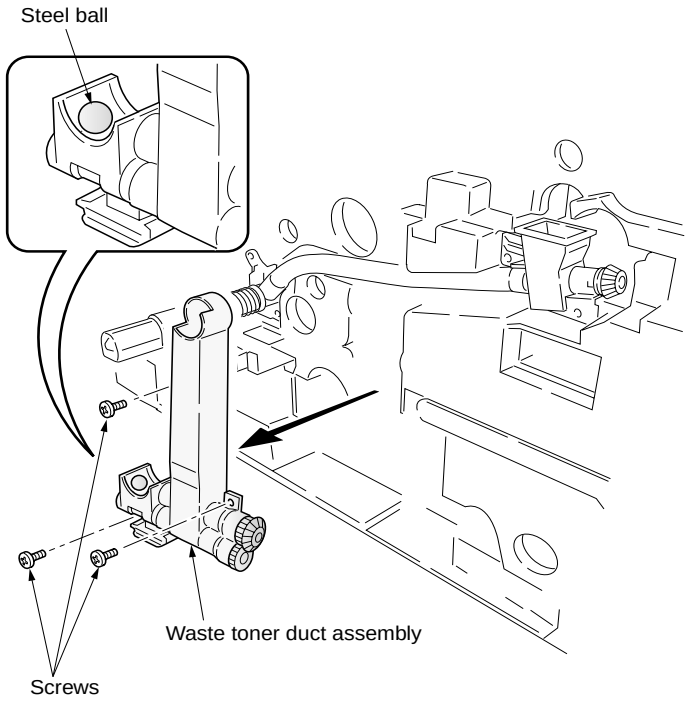


Figure 1-6-27

(3) Detaching and refitting the black toner feed assembly
Follow the procedure below 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. Replace the black toner feed assembly and refit all the removed parts.

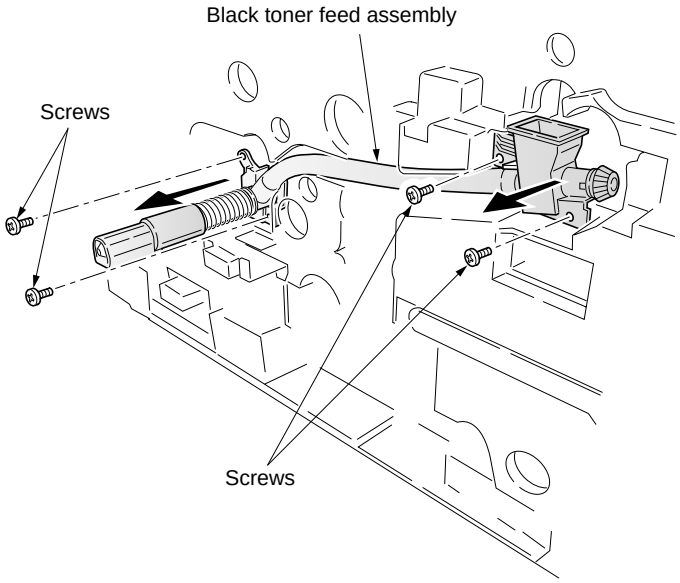


Figure 1-6-28

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

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

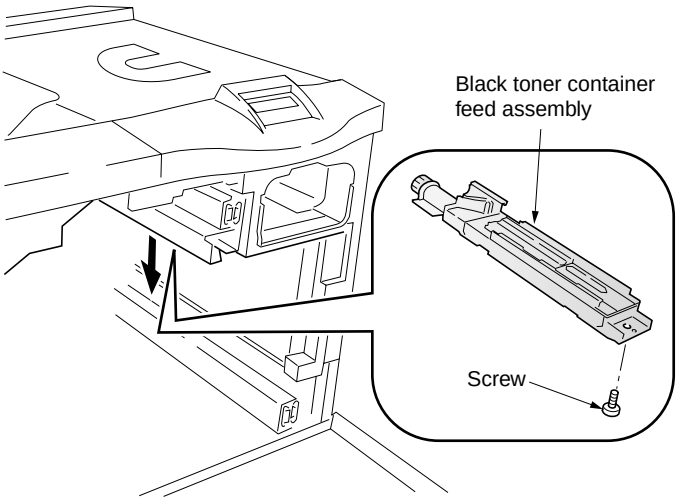


Figure 1-6-29

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

Procedure
1. Draw the process frame (See page 1-6-16).
2. Remove the harness holder (See page 1-6-42).
3. Remove the four screws and then remove the black toner feed drive assembly.
4. Replace the black toner feed drive assembly and refit all the removed parts.

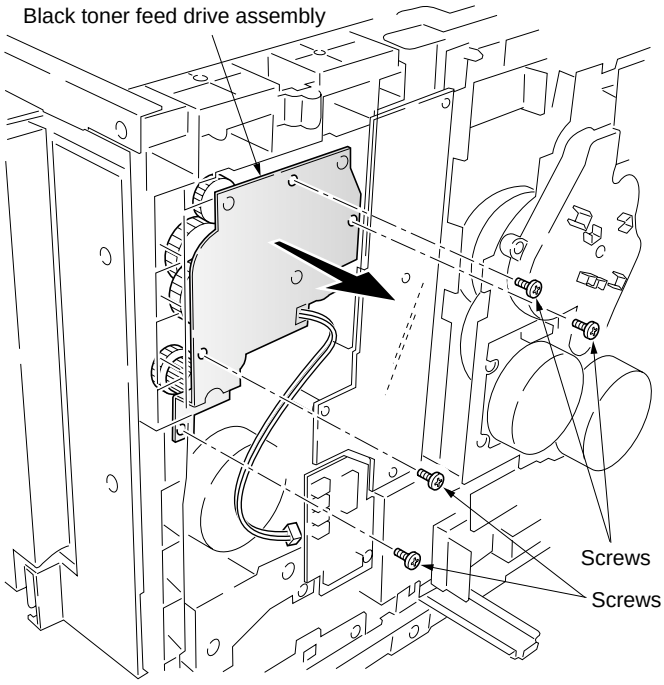


Figure 1-6-30

1-6-8 Secondary transfer unit

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

Procedure

1. Open the front cover.
2. Draw the paper feed unit.
3. Remove the waste toner bottle.
4. Detach the secondary transfer unit from the bushes.
5. Remove the tab from the terminal.
6. Remove the secondary transfer unit from the paper feed unit.

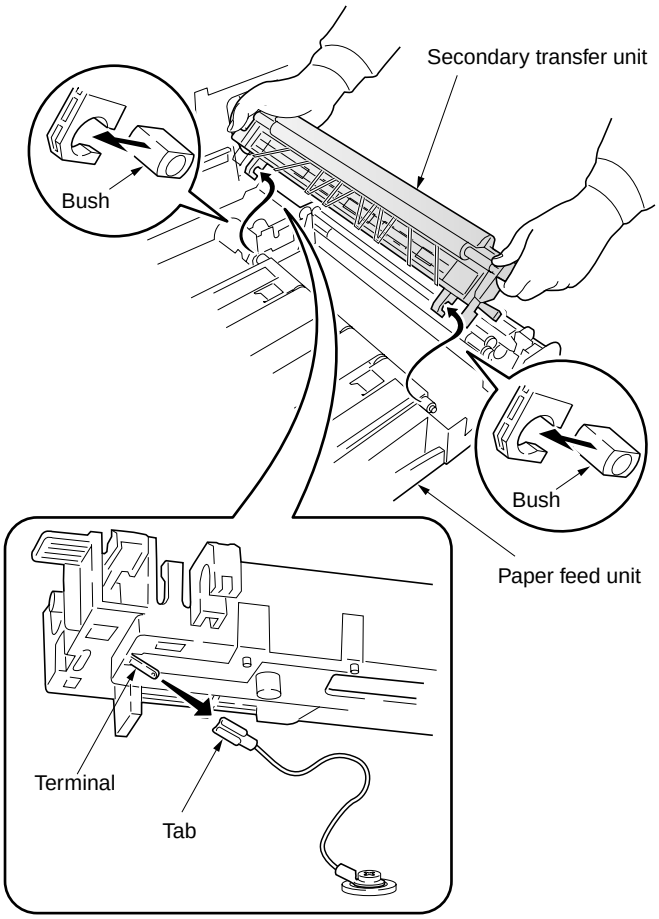


Figure 1-6-31

7. Remove the transfer roller. To remove the transfer roller, pull both ends up.

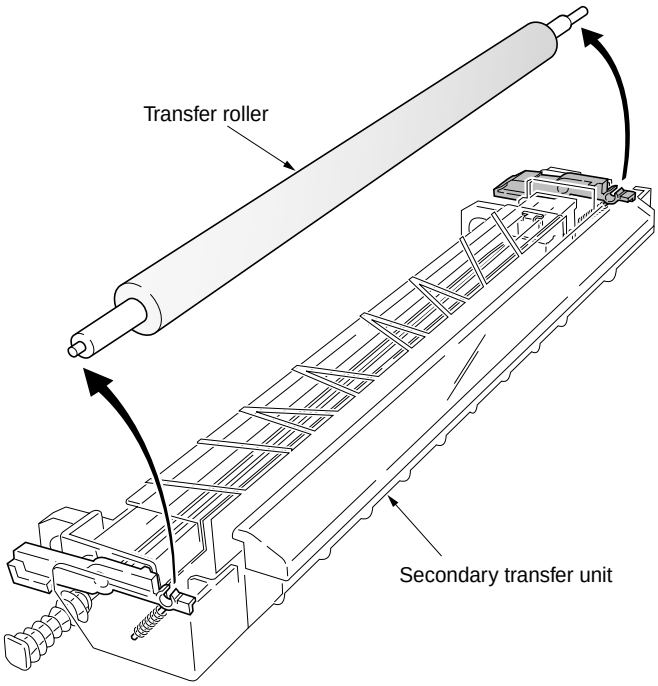


Figure 1-6-32

8. Pull the projection of separation charger unit (front side).
9. Remove the separation charger unit from the secondary transfer unit.
10. Replace the transfer roller or the separation charger unit and refit all the removed parts.

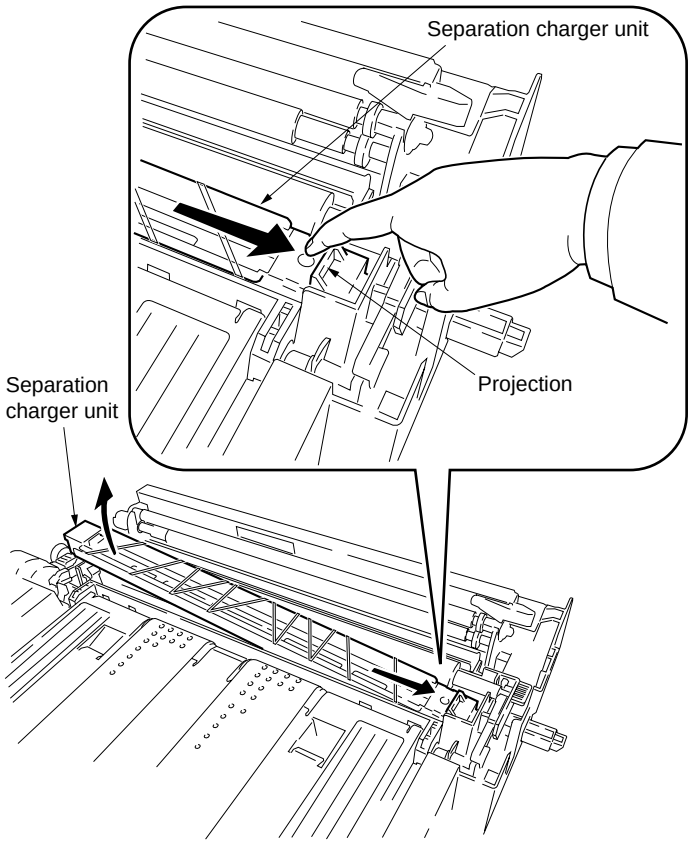


Figure 1-6-33

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

Procedure

1. Draw the paper feed unit.
2. Remove the one screw and then remove the clutch cover.
3. Remove the five screws.
4. Remove the one connector and the wire holder and then remove the paper conveying assembly.

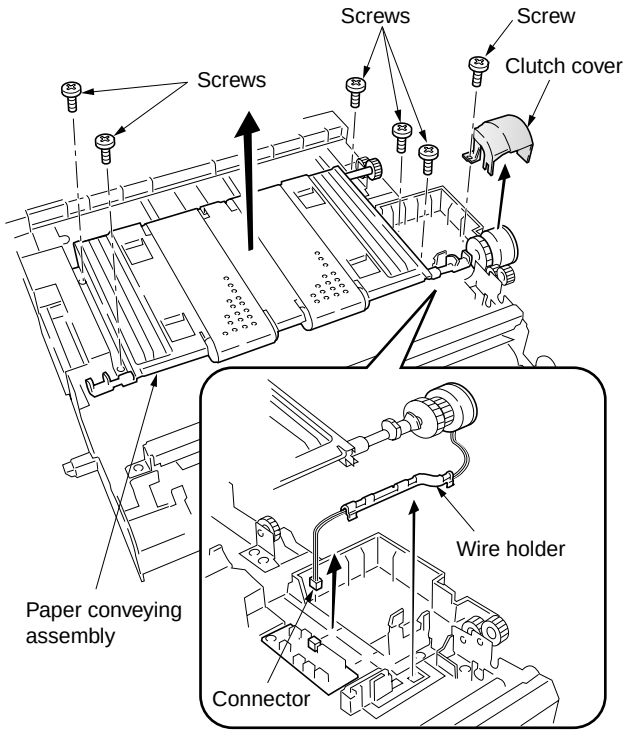


Figure 1-6-34

5. Remove the E-ring and then remove the secondary transfer unit shift clutch.
6. Remove the wire holder from the secondary transfer unit shift clutch.
7. Replace the secondary transfer unit shift clutch and refit all the removed parts.

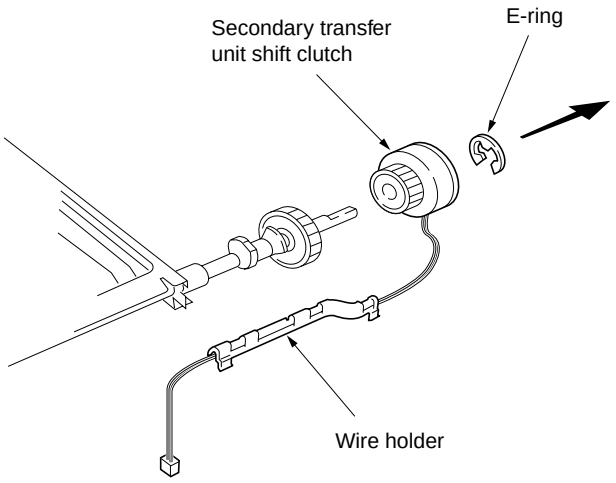


Figure 1-6-35

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 detach the fuser unit.

Procedure

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

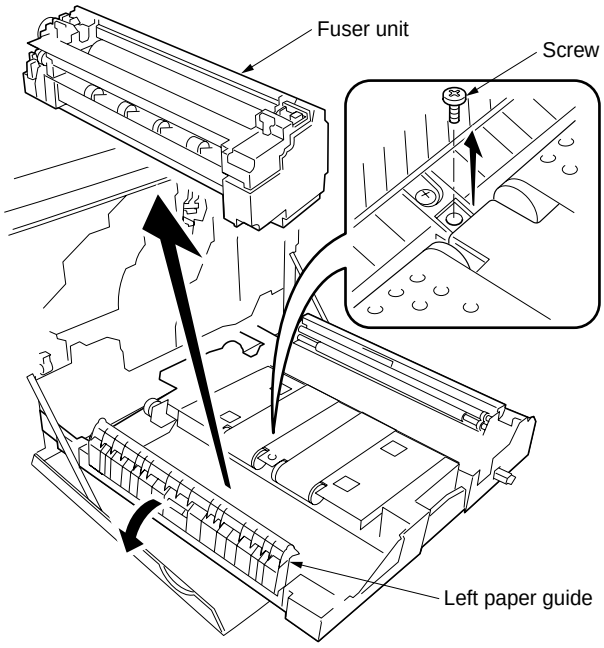


Figure 1-6-36

(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.

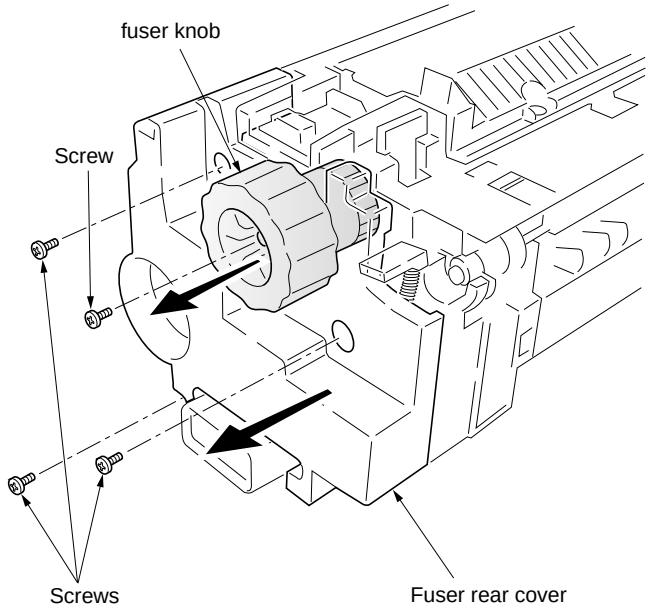


Figure 1-6-37

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

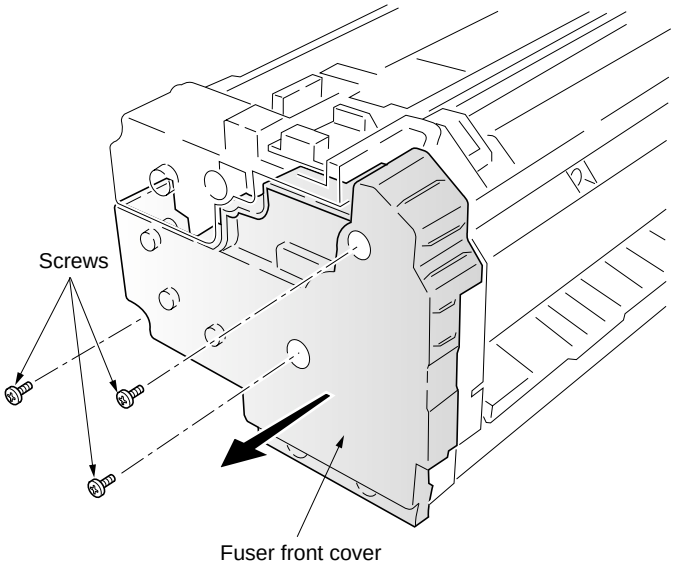


Figure 1-6-38

5. Open and hold the fuser top cover in its upright position and pull it out.
6. Open and hold the upper separator bracket and then pull it out.

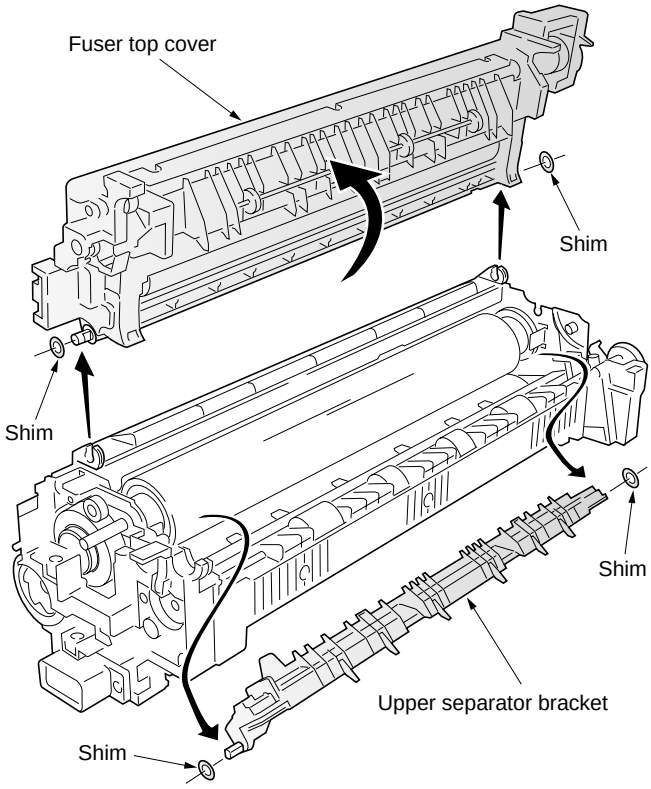


Figure 1-6-39

(3) Detaching and refitting the upper and lower fuser thermistors
Follow the procedure below 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.

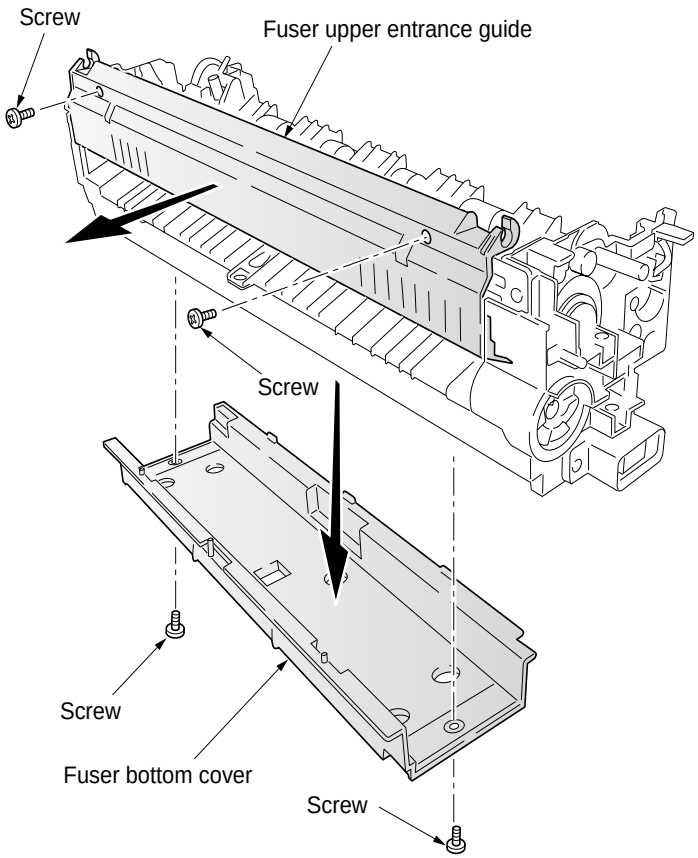


Figure 1-6-40

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

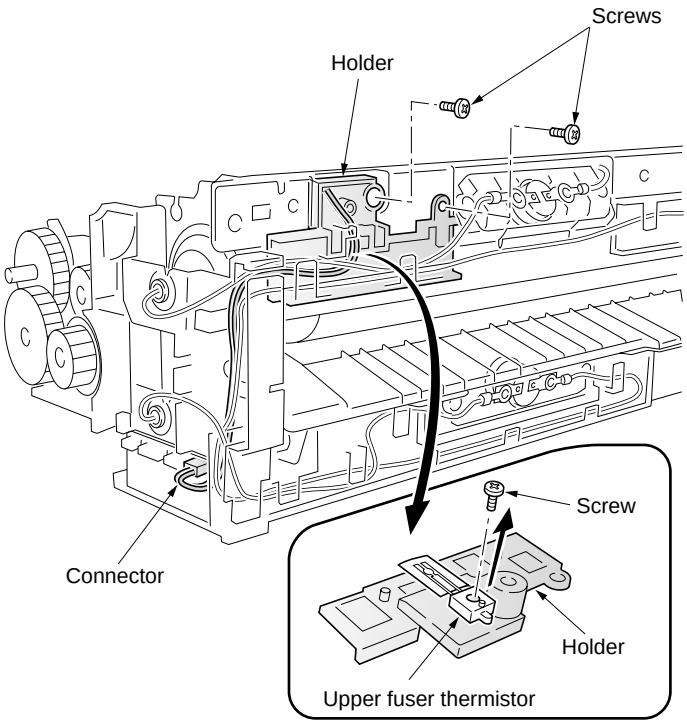


Figure 1-6-41

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

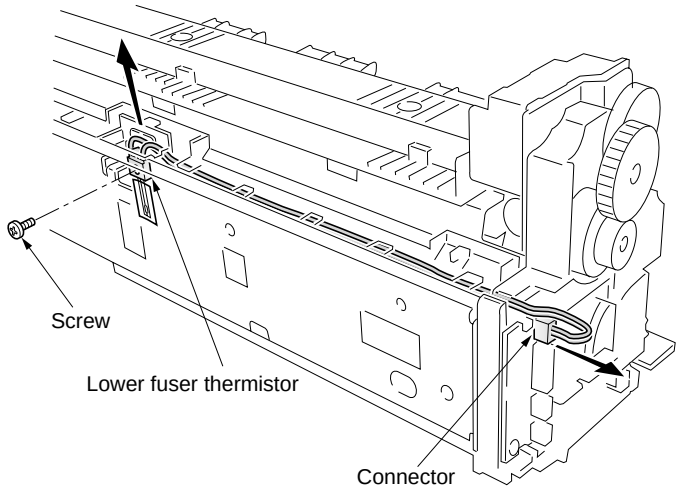


Figure 1-6-42

(4) Detaching and refitting the upper and lower thermostats
Follow the procedure below 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. Replace the upper and lower thermostats and refit all the removed parts.

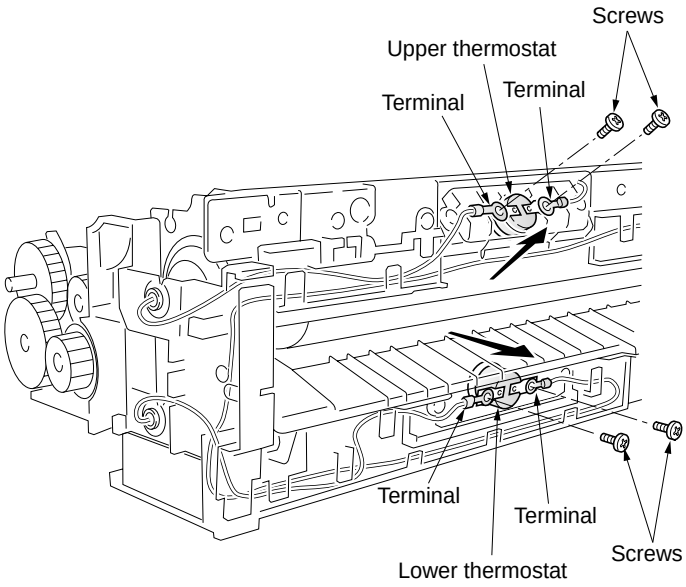


Figure 1-6-43

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

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.

Procedure

1. Remove the fuser top cover (See page 1-6-24).
2. Remove each one screw and then remove the terminals.
3. Draw the upper and lower heater lamps out from the fuser unit.
4. Replace the upper and lower heater lamps and refit all the removed parts.

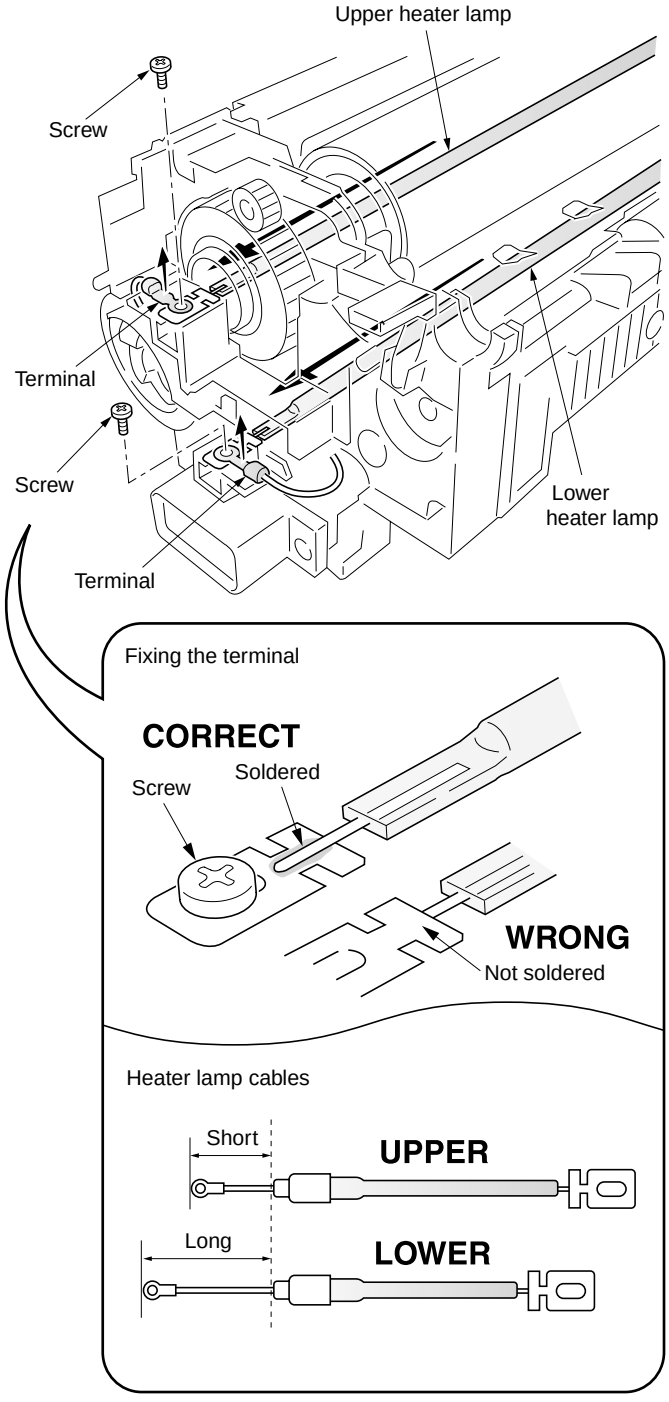


Figure 1-6-44

(6) Detaching and refitting the heat roller and the press/heat roller
Follow the procedure below to replace the heat roller and the press/heat roller.

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

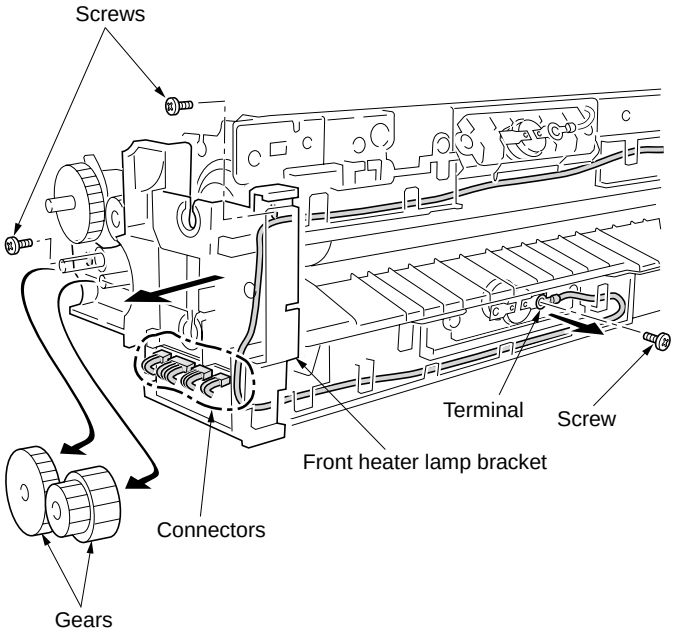


Figure 1-6-45

7. Remove the lever and the spring.
8. Remove two screws and then detach the connector.
9. Remove three screws and then remove the rear heater lamp bracket.

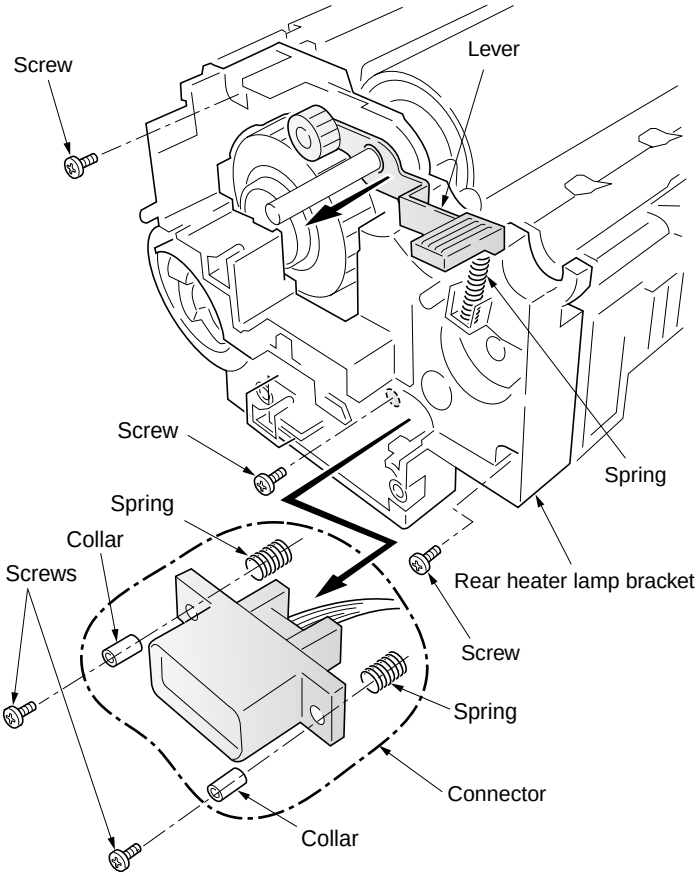


Figure 1-6-46

10. Remove two screws and then remove the fuser top frame.
11. Remove the gear.

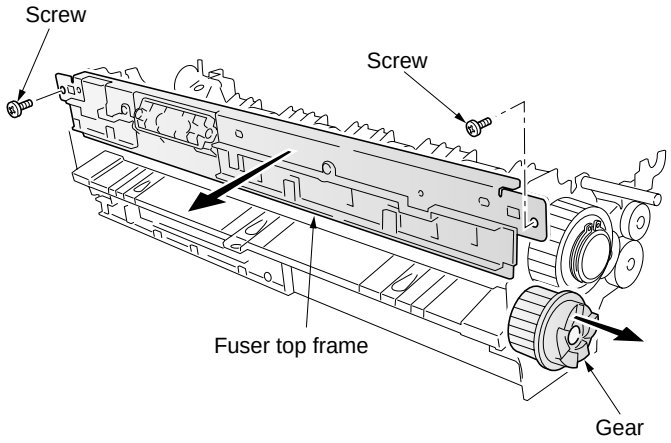


Figure 1-6-47

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

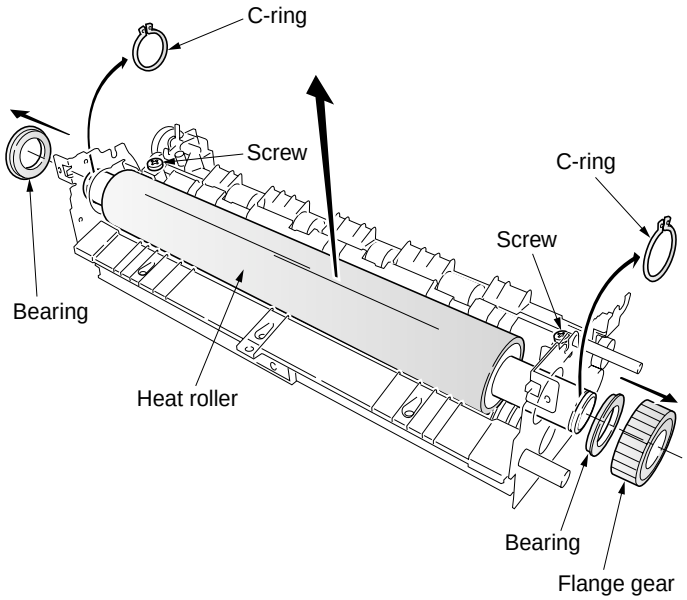


Figure 1-6-48

16. Remove three screws and then remove the fuser right paper guide.
17. Remove three screws and then remove the fuser left lower cover.

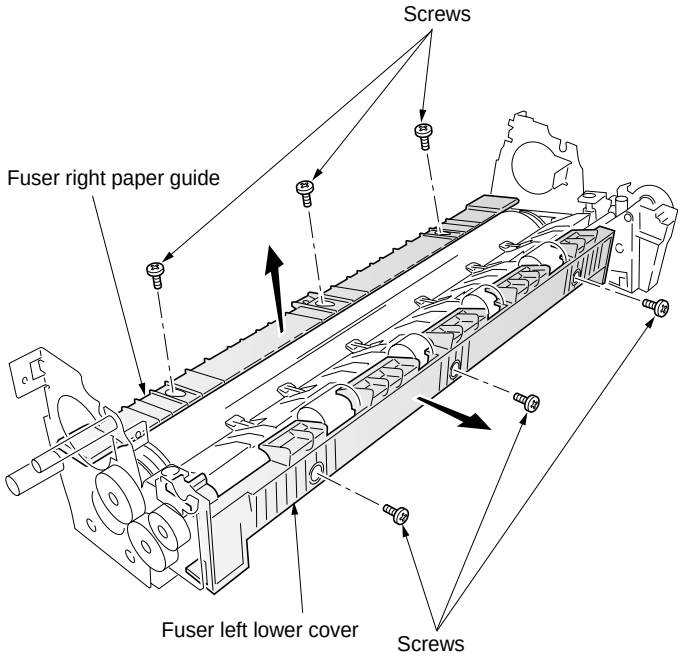


Figure 1-6-49

18. Remove the gear.
19. Remove two E-rings and then remove the two bushes and the exit roller gears.
20. Remove the fuser exit roller.
21. Remove three screws and then remove the fuser left paper guide.

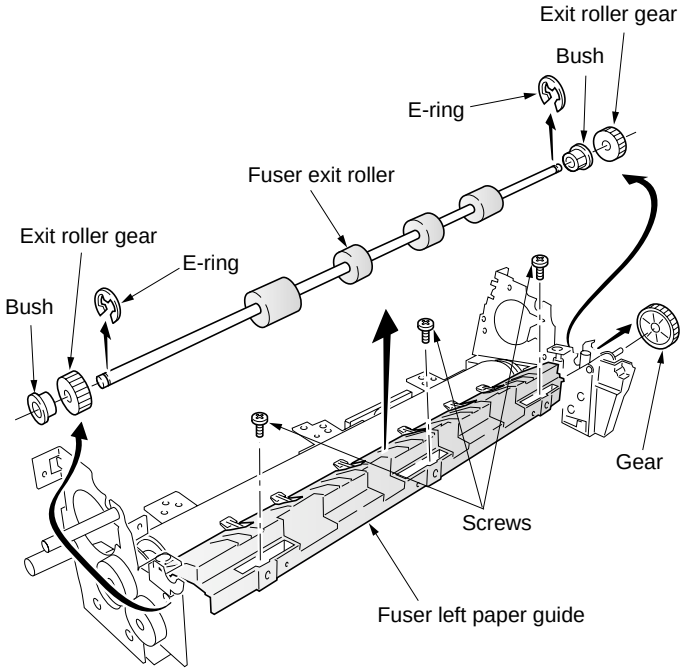


Figure 1-6-50

22. Remove two screws and then remove the lower separator bracket.

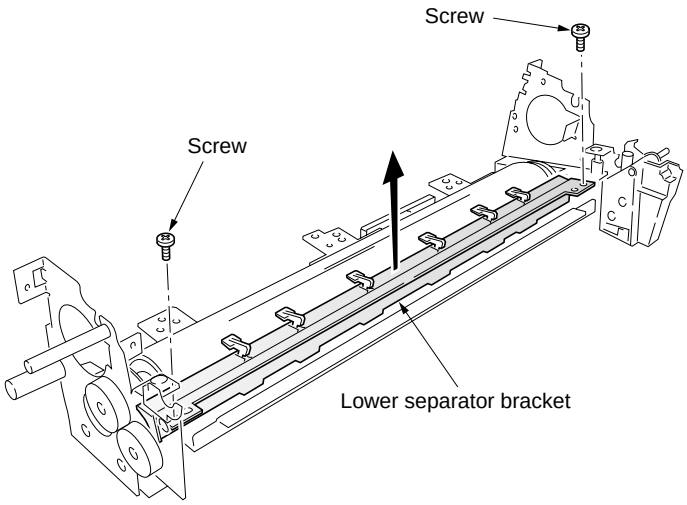


Figure 1-6-51

23. Remove the press/heat roller and then remove two bearings.
24. Replace the heat roller and the press/heat roller and refit all the removed parts.

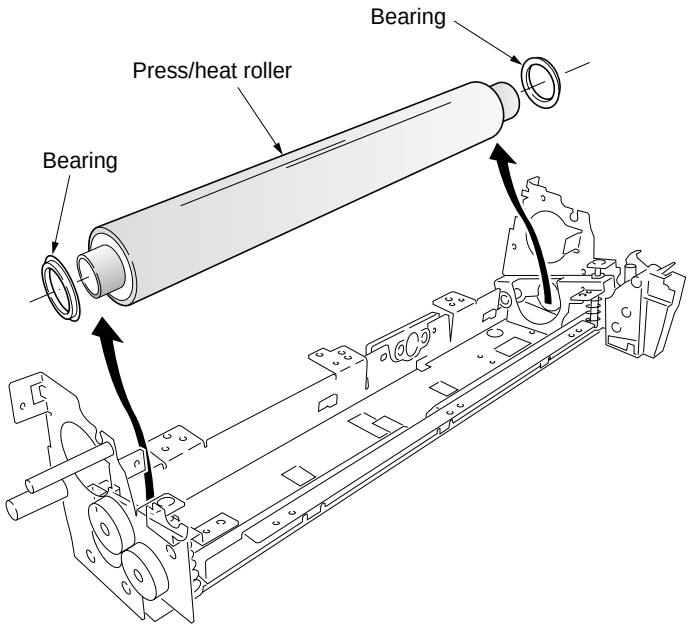


Figure 1-6-52

(7) Detaching and refitting the separators of lower separator bracket
Follow the procedure below to replace the separator of lower separator bracket.

Procedure

1. Remove the lower separator bracket from the fuser unit (See page 1-6-33).
2. Remove three screws and then remove the stay.
3. Remove the spring.
4. Lay down the separator and then pull out it.
5. Replace the separator and refit all the removed parts.

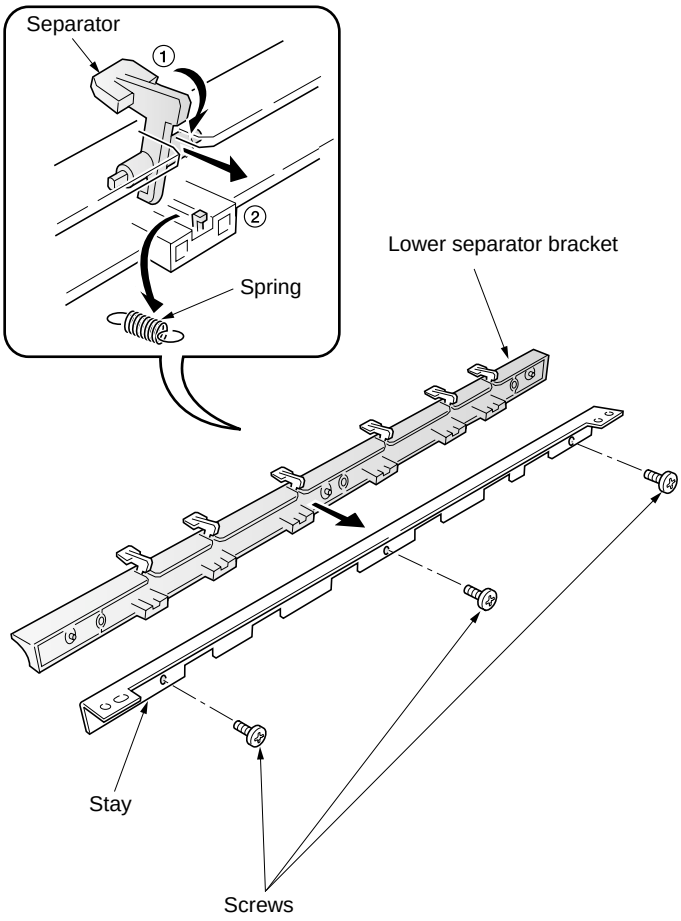


Figure 1-6-53

(8) Detaching and refitting drive assembly C

Follow the procedure below to replace drive assembly C.

Procedure

1. Remove the power supply unit (See page 1-6-38).
2. Remove one connector.
3. Remove three screws and then remove drive assembly C.
4. Replace drive assembly C and refit all the removed parts.

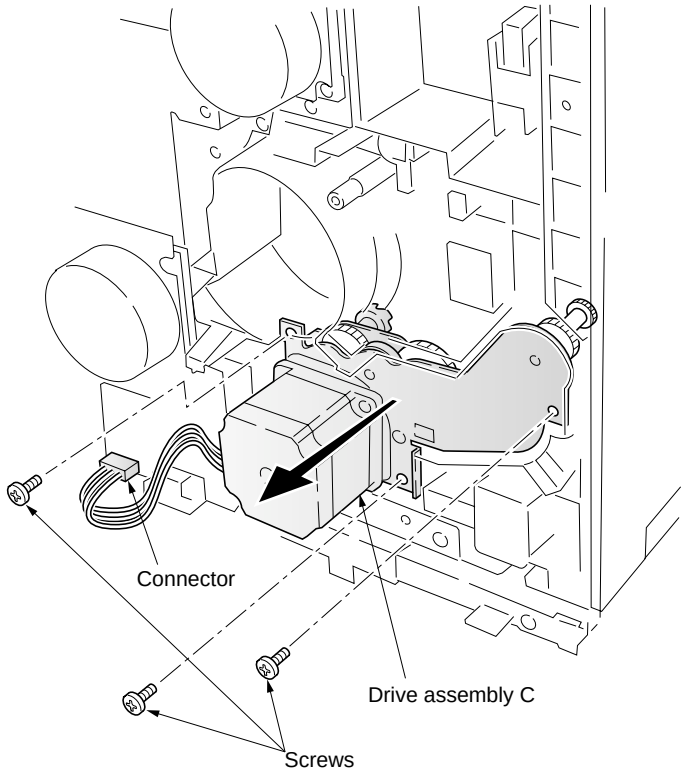


Figure 1-6-54

1-6-10 PWBs and high voltage units

(1) Detaching and refitting the main controller PWB

Follow the procedure below to detaching and refitting the main controller PWB.

Procedure

1. Remove the three screws.
2. Draw the main controller PWB.

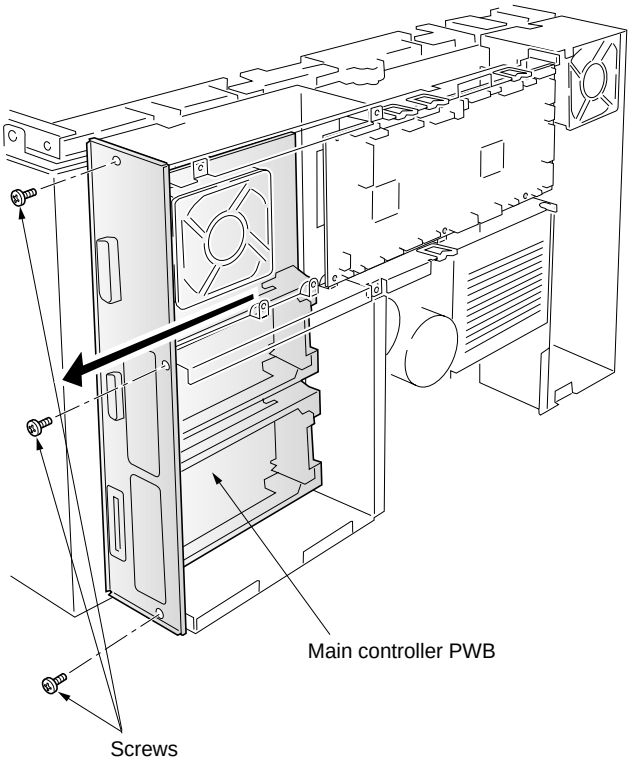


Figure 1-6-55

(2) Detaching and refitting the engine controller PWB

Follow the procedure below to detaching and refitting the engine controller PWB.

Procedure

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

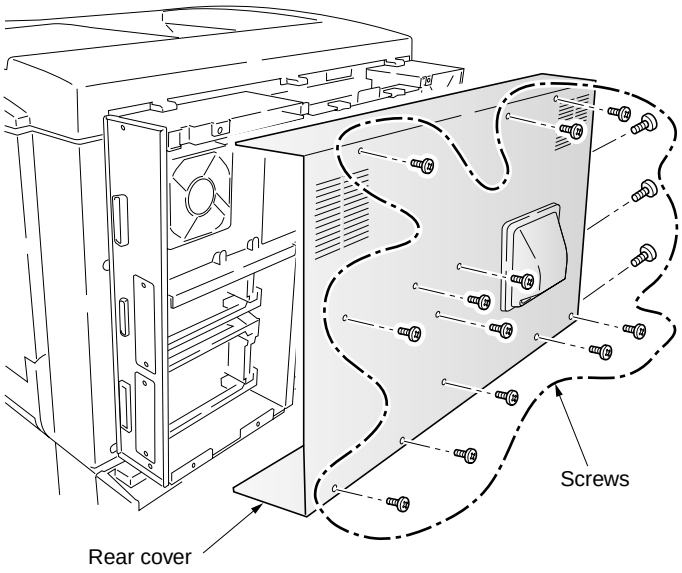


Figure 1-6-56

2. Remove all (twenty six) connectors from the engine controller PWB.
3. Remove six screws and then remove the engine controller PWB.
4. Replace the engine controller PWB and refit all the removed parts.

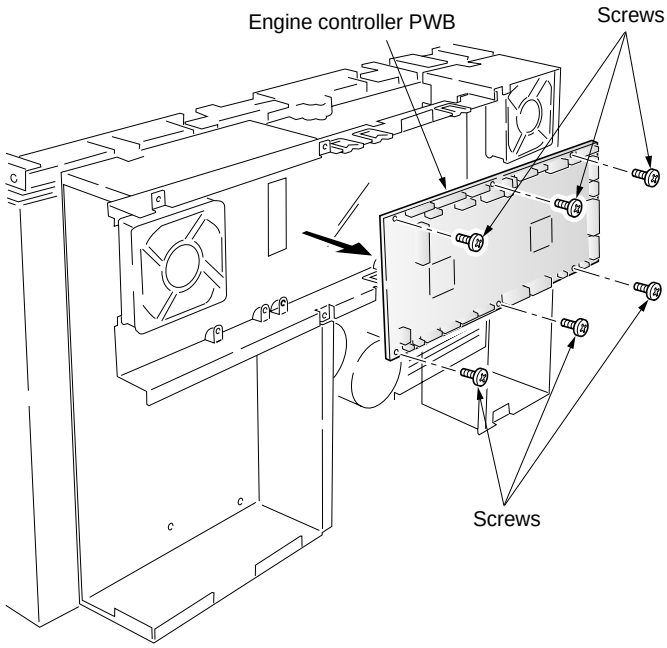


Figure 1-6-57

(3) Detaching and refitting the power supply unit
Follow the procedure below to detaching and refitting 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.

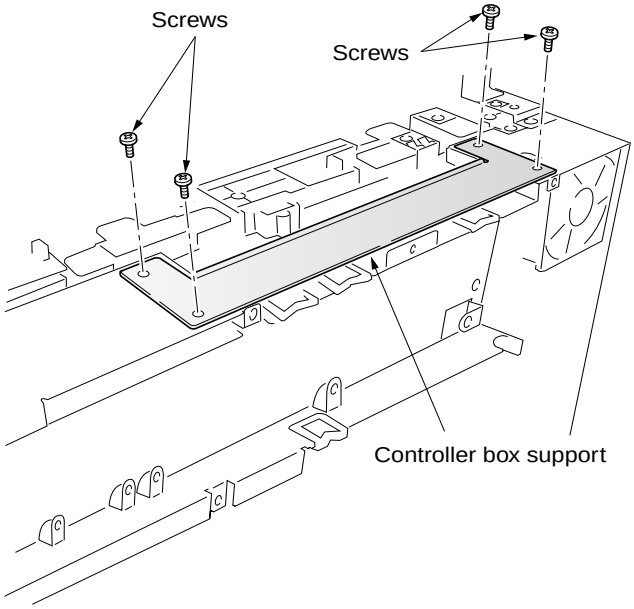


Figure 1-6-58

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

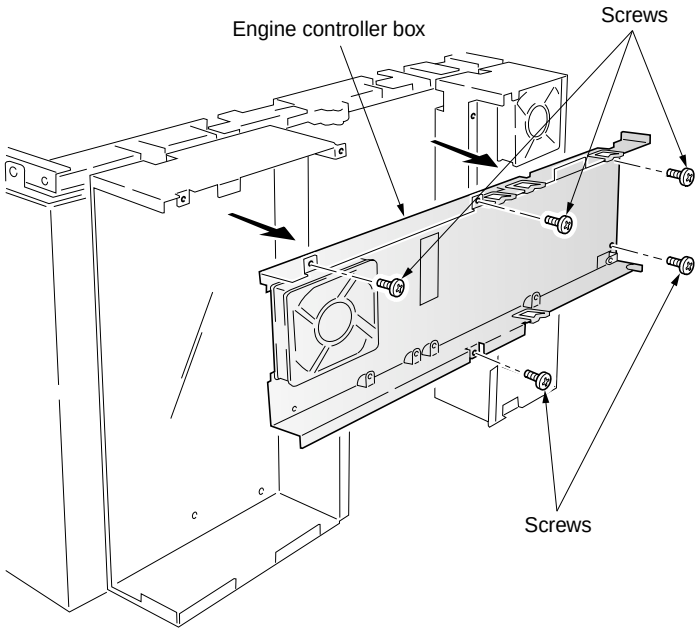


Figure 1-6-59

4. Remove the face-down unit (See page 1-6-5).
5. Remove one connector.
6. Remove one screw and then remove the ground plate.
7. Remove four screws and then remove the power supply unit.
8. Replace the power supply unit and refit all the removed parts.

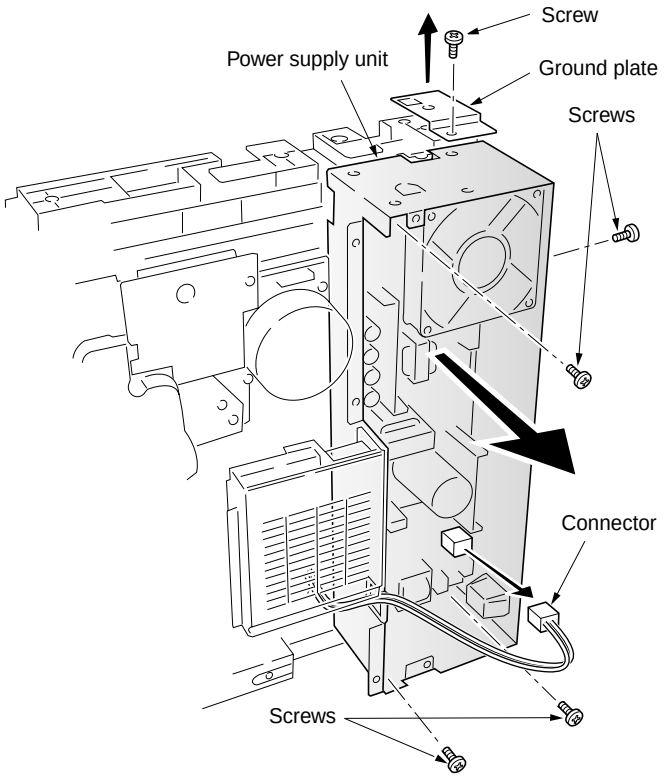


Figure 1-6-60

(4) Detaching and refitting the developing/cleaning brush bias high voltage unit
Follow the procedure below to detach and refit the developing/cleaning brush bias high voltage unit.

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

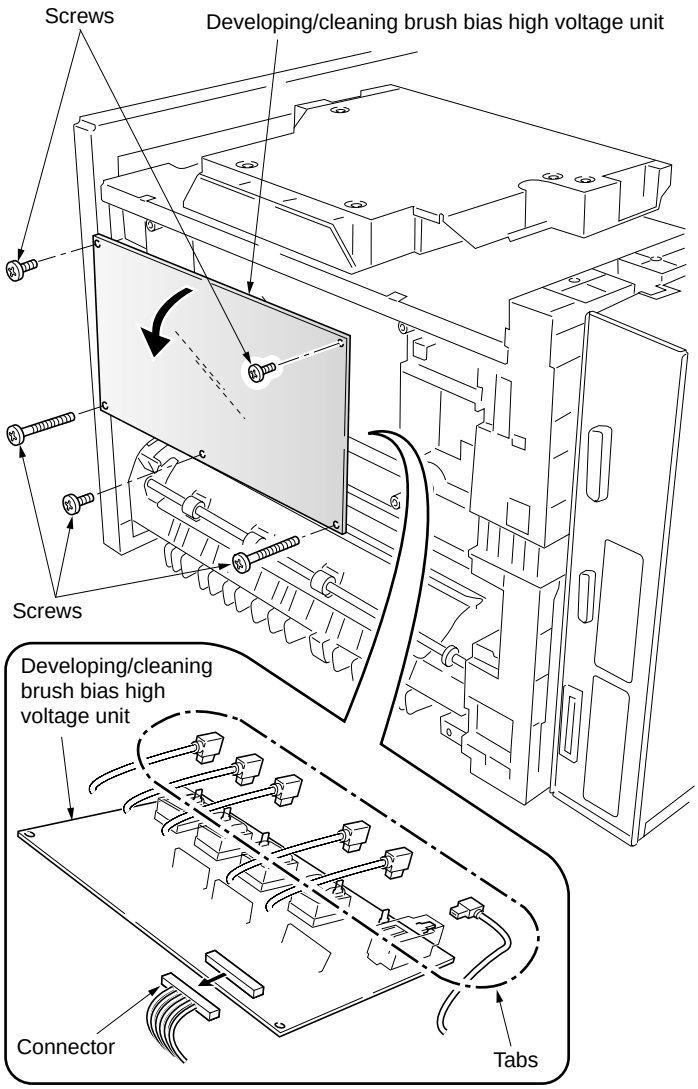


Figure 1-6-61

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

Follow the procedure below to detach and refit the main charger high voltage unit.

Procedure

1. Remove the power supply unit (See page 1-6-38).
2. Remove all (three) tabs and one connector from the main charger high voltage unit.
3. Remove four screws and ground plate then remove the main charger high voltage unit.
4. Replace the main charger high voltage unit and refit all the removed parts.

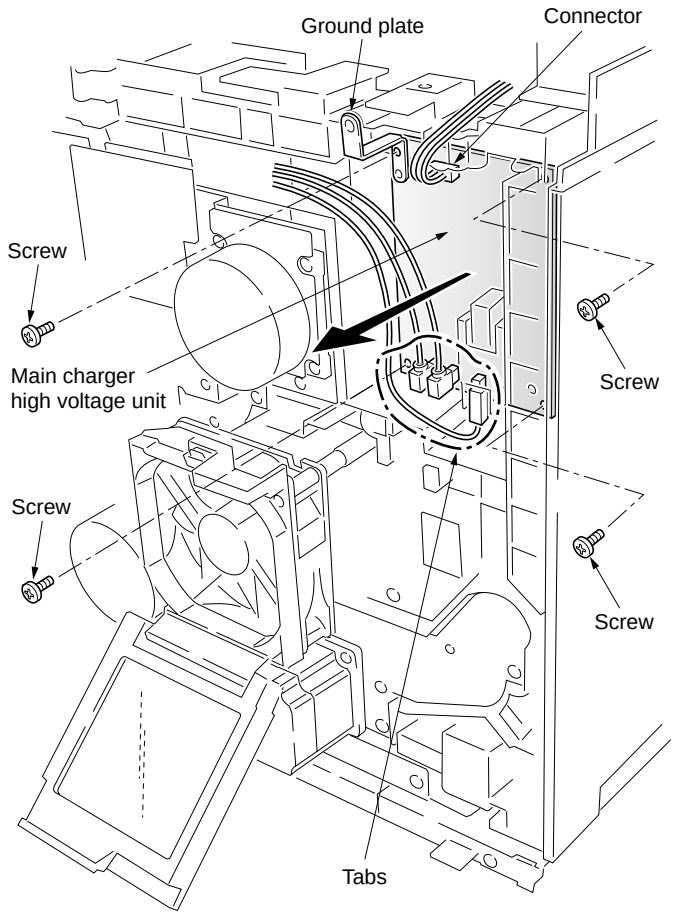


Figure 1-6-62

(6) Detaching and refitting the separation charger high voltage unit
Follow the procedure below to detach and refit the separation charger high voltage unit.

Procedure

1. Remove the engine controller PWB (See page 1-6-37).
2. Remove the engine controller box (See page 1-6-38).
3. Remove four screws and then remove the controller box support.
4. Remove the right cover (See page 1-6-3).
5. Remove four screws and then remove the main controller box.

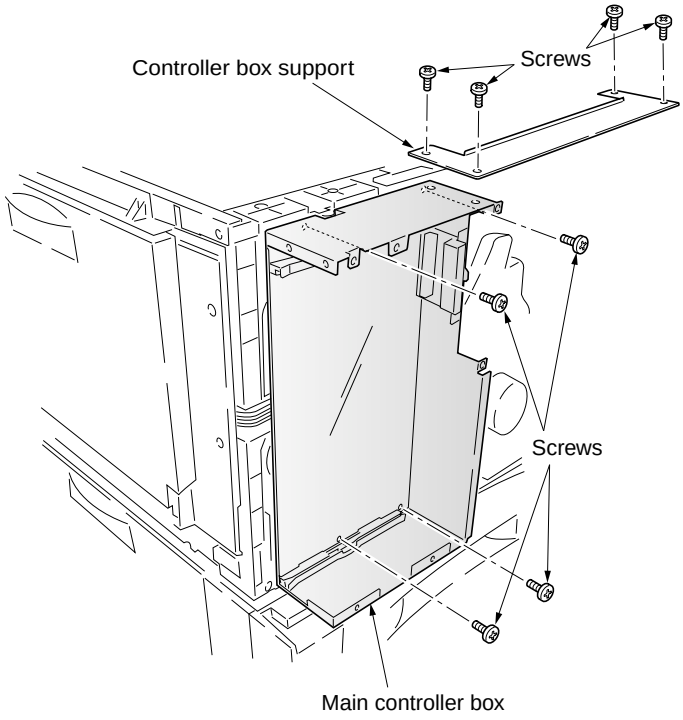


Figure 1-6-63

6. Remove all (five) tabs from the drive assembly A and two connectors from the feed drive PWB.
7. Remove all harnesses from the harness holder.
8. Remove two screws and then remove the harness holder.

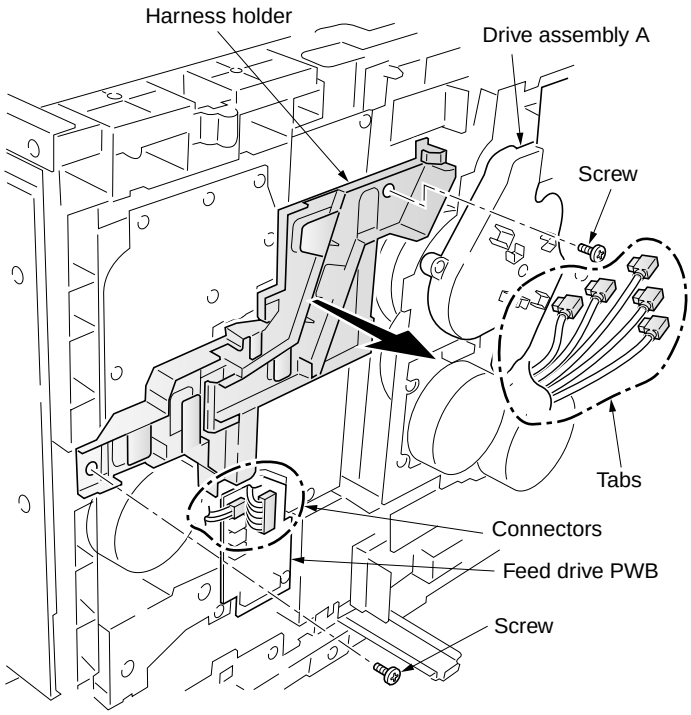


Figure 1-6-64

9. Remove one tab.
10. Remove four screws and then remove the separation charger bias high voltage unit.
11. Remove one connector from the separation charger high voltage unit.
12. Replace the separation charger high voltage unit and refit all the removed parts.

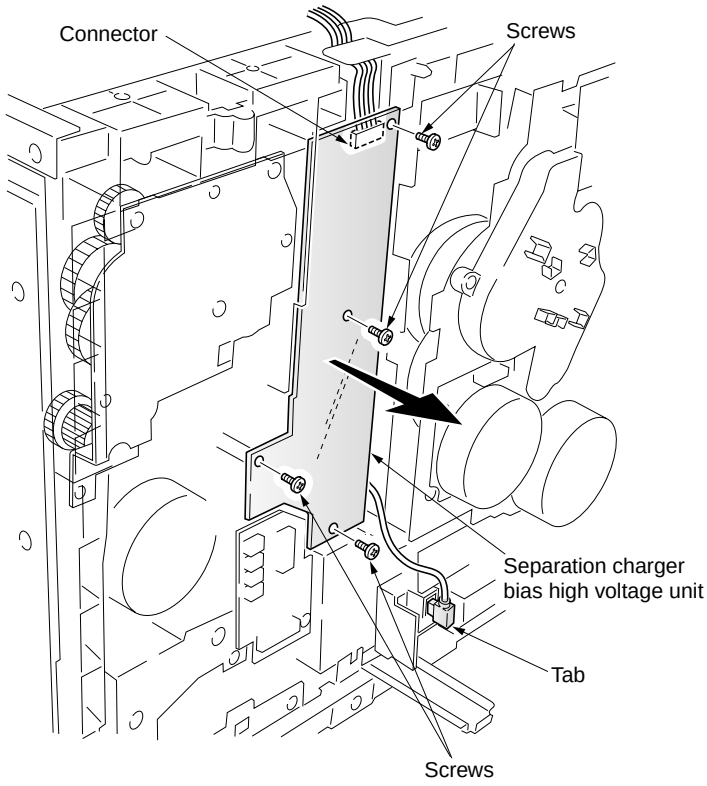


Figure 1-6-65

(7) Detaching and refitting the paper feeder/options relay PWB
Follow the procedure below to detach and refit the paper feeder/options relay PWB.

Procedure
1. Remove the rear cover (See page 1-6-37).
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. Replace the paper feeder/options relay PWB and refit all the removed parts.

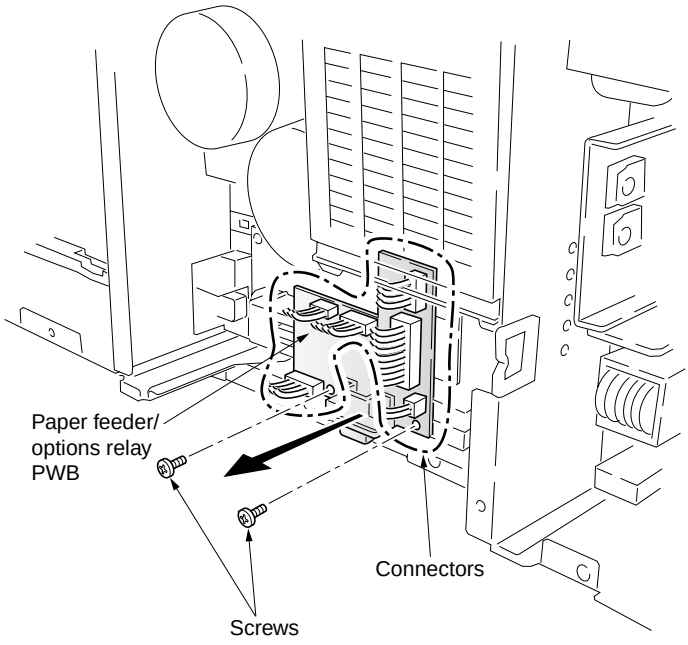


Figure 1-6-66

(8) Detaching and refitting the transfer roller bias high voltage unit
Follow the procedure below to detach and refit the transfer roller bias high voltage unit.

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

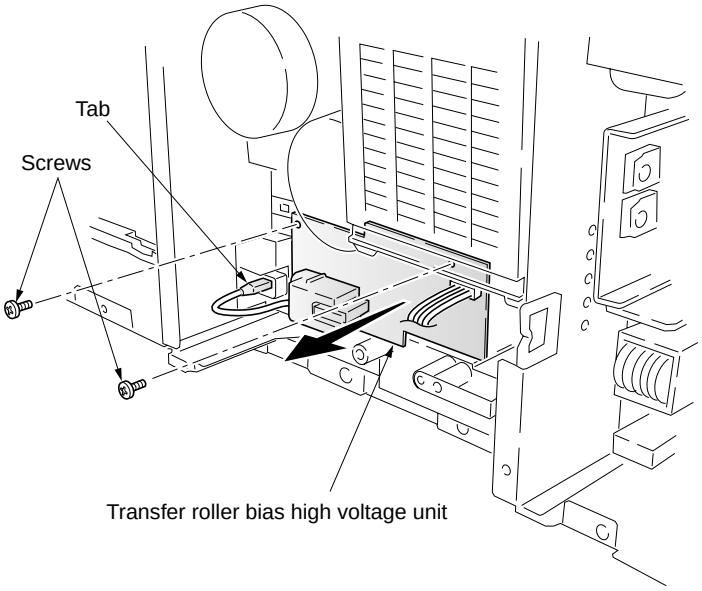


Figure 1-6-67

1-6-11 Others

(1) Detaching and refitting the ozone filter

The ozone filter is included in the maintenance kit A and should be replaced at every 400,000 images of printing. Follow the procedure below to detaching and refitting the ozone filter.

Procedure

1. While pressing the bottom of the filter duct, remove the filter duct.
2. Push the [PUSH HERE] marking and then open the filter cover.
3. Pull the [PULL] tag and then remove the ozone filter.
4. Replace the ozone filter and refit all the removed parts.

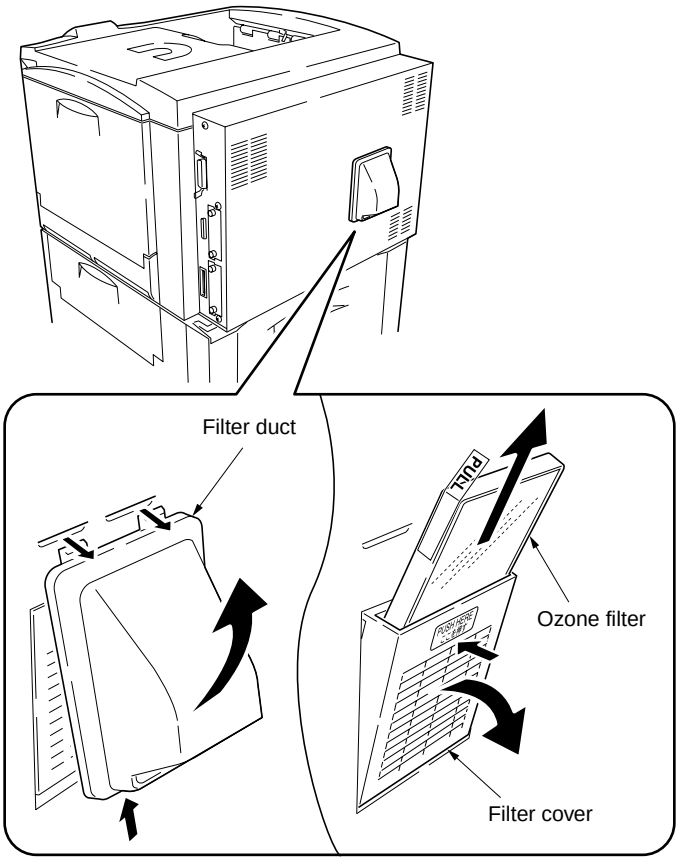


Figure 1-6-68

Chapter II

CONTENTS

2-1 Mechanical Construction

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.

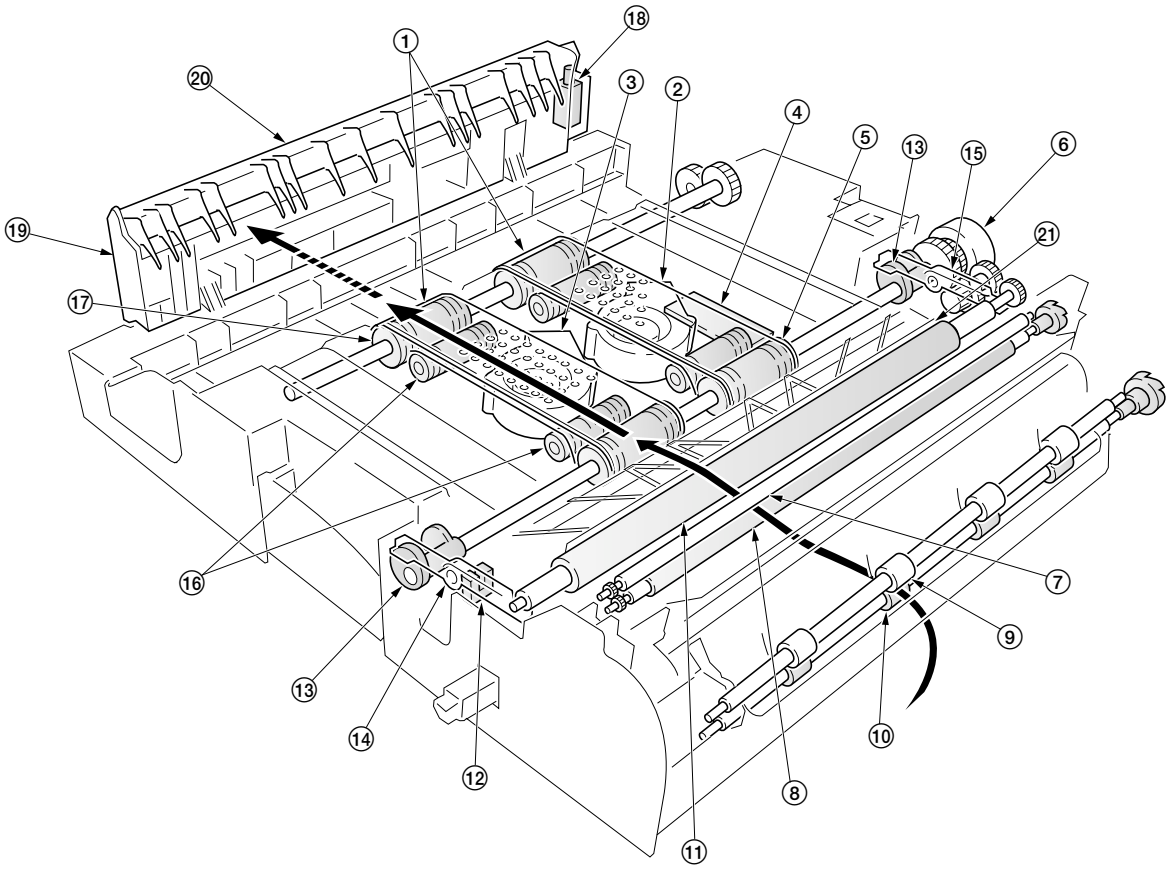


Figure 2-1-1 Paper feeder unit and secondary transfer unit

① Paper conveying belts
② Paper conveying fan motor 1 (PCFM1)
③ Paper conveying fan motor 2 (PCFM2)
④ Feed PWB (FPWB) [KP-826]
⑤ Paper conveying belt pulleys
⑥ Secondary transfer unit shift clutch (STRSCL)
⑦ Upper registration roller
⑧ Lower registration roller
⑨ Middle pulleys
⑩ Middle roller
⑪ Transfer roller
⑫ Secondary transfer unit position sensor (STRPS)
⑬ Cams
⑭ Front transfer lever
⑮ Rear transfer lever
⑯ Tension rollers
⑰ Paper conveying belt rollers
⑱ Duplex paper exit selection solenoid (DUPEXSSOL)
⑲ Left paper guide
⑳ Change guide
㉑ 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 (FUDM) that drives the fuser unit; whereas, the paper feed section is driven by the paper feed motor (PFM). 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 (PCFM1 and PCFM2) are provided. The suction air flows through the punched holes on the conveying belts.

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

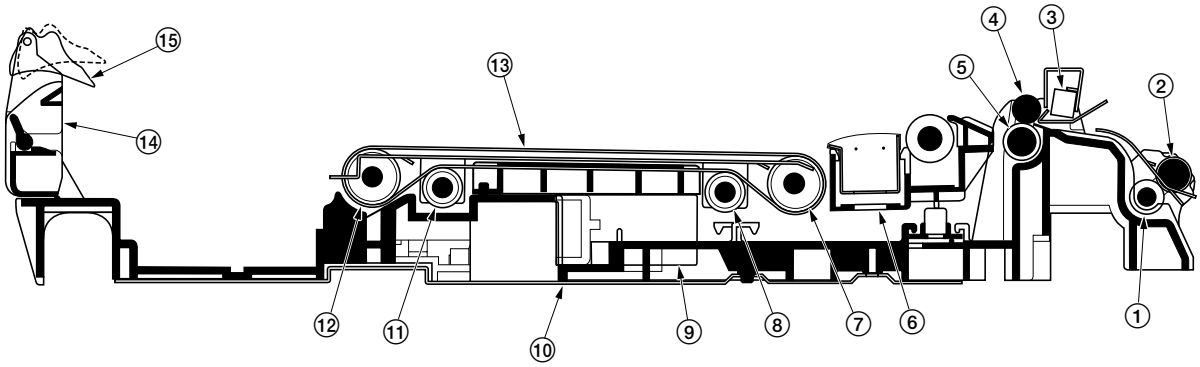


Figure 2-1-2 Paper feed unit

① Middle roller
② Middle pulleys
③ Registration sensor (REGS)
④ Upper registration roller
⑤ Lower registration roller
⑥ Secondary transfer unit
⑦ Paper conveying belt pulleys
⑧ Tension rollers
⑨ Paper conveying fan motor 1 (PCFM1)
⑨ Paper conveying fan motor 2 (PCFM2)
⑩ Paper feed unit
⑪ Tension rollers
⑫ Paper conveying belt rollers
⑬ Paper conveying belts
⑭ Left paper guide
⑮ Change guide

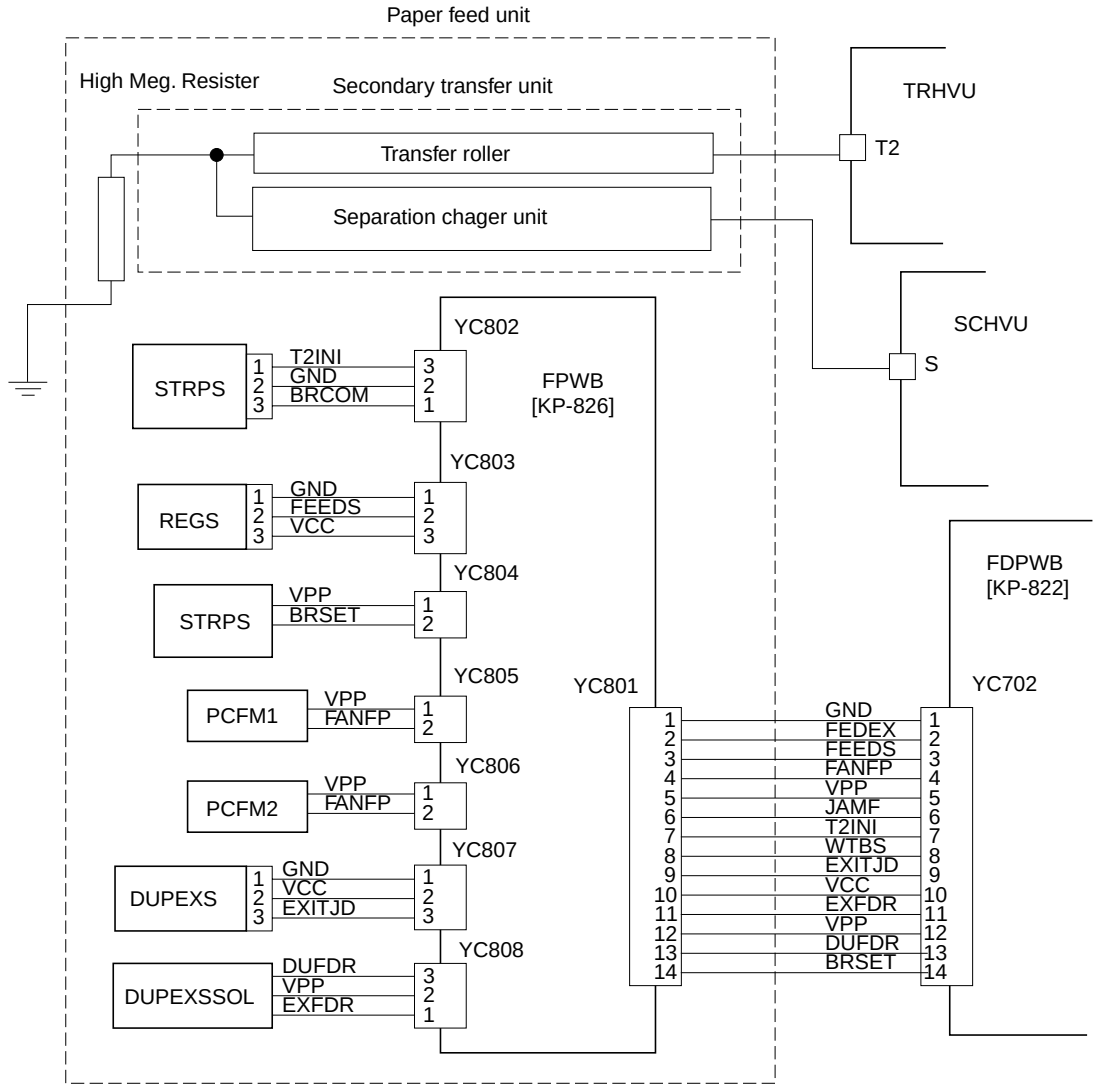


Figure 2-1-3 Paper feed unit block diagram

(2) Secondary transfer unit

The secondary transfer unit includes the transfer roller and the separation charger unit. The transfer roller 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.

The primary transfer drum is covered with the electroconductive sponge. 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 roller (TRHVU). This bias is automatically adjusted according to the paper type currently selected.

The separation charger unit has two thin wires which are given high voltage (Typical value: 450 V DC weighted by 12.75 kV AC [p-p], generated by the high-voltage unit for separation charge (SCHVU), for generating the attracting charge for the paper. These wires are cleaned manually by the system including a pad.

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.

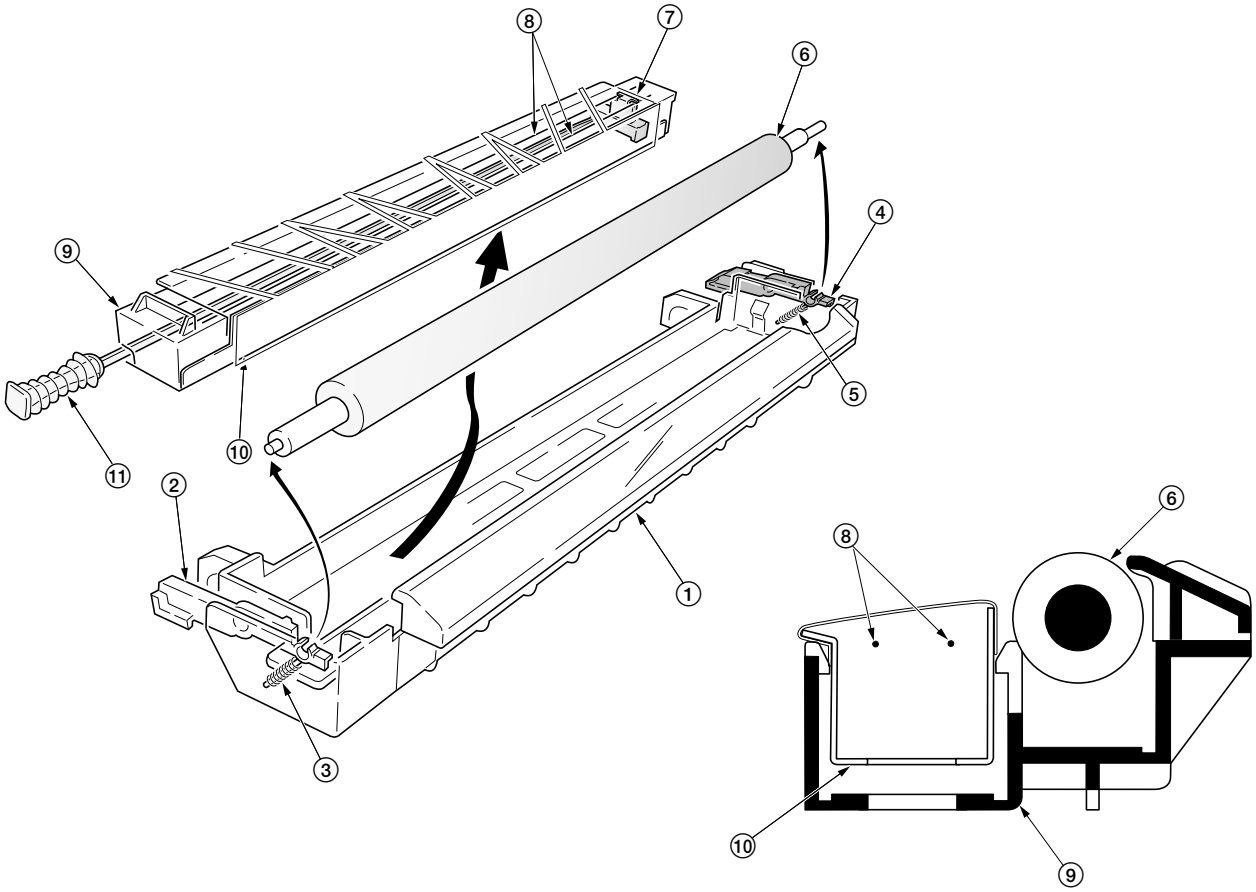


Figure 2-1-4 Secondary transfer unit

① Secondary transfer unit
② Transfer roller lever front
③ Spring front
④ Transfer roller lever rear
⑤ Spring rear
⑥ Transfer roller
⑦ Separation charger cleaner
⑧ Separation charger wires
⑨ Separation charger unit
⑩ Separation charger shield
⑪ Separation charger cleaning knob

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 (MPFPWB) that measures the width of the paper and detects the presence of paper.

The MP tray includes a bottom plate and accommodates approximately 150 sheets of paper. When paper feeding is required, the solenoid for the MP bottom plate is activated (MPBSOL) 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 paper feed section includes a feed roller and a clutch (MPFCL). 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.

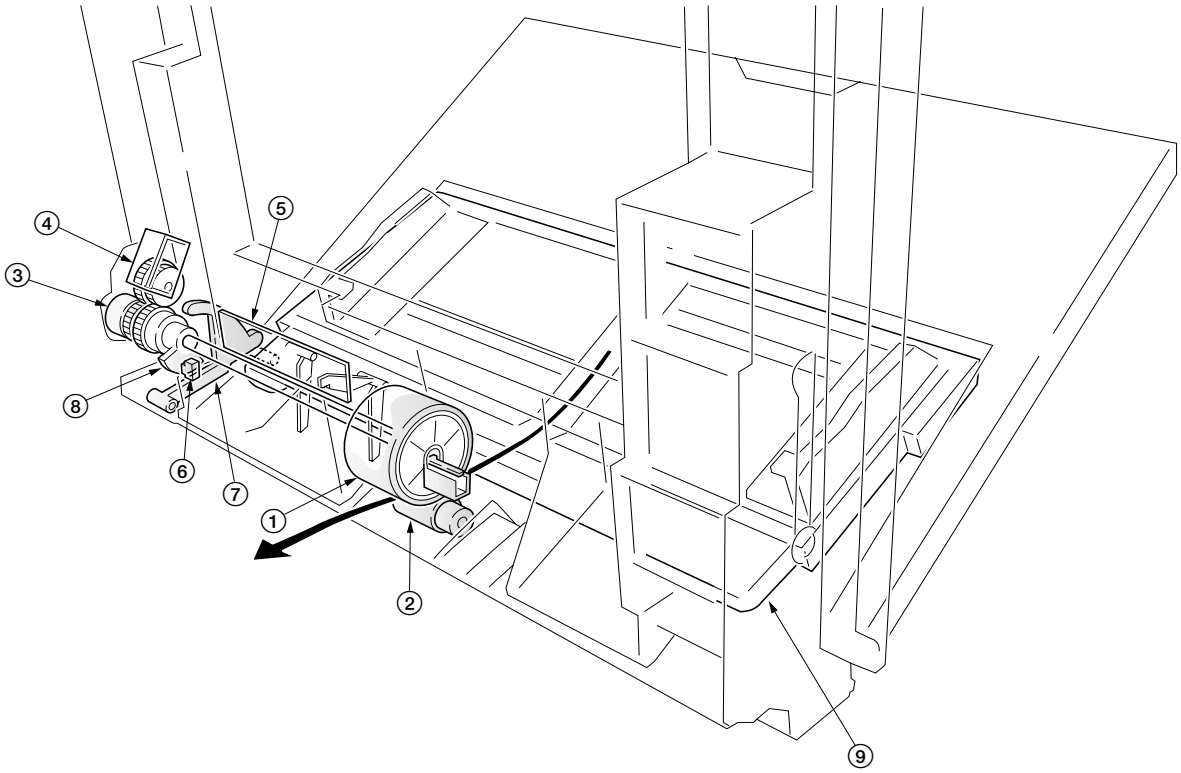


Figure 2-1-5 MP tray unit

① MP tray feed roller
② MP tray retard roller
③ MP tray feed clutch (MPFCL)
④ MP tray bottom plate solenoid (MPBPSOL)
⑤ MP tray feed PWB (MPFPWB)
⑥ MP tray bottom plate position sensor (MPBPPS)
⑦ MP tray cam actuator
⑧ MP tray cam
⑨ MP tray bottom plate

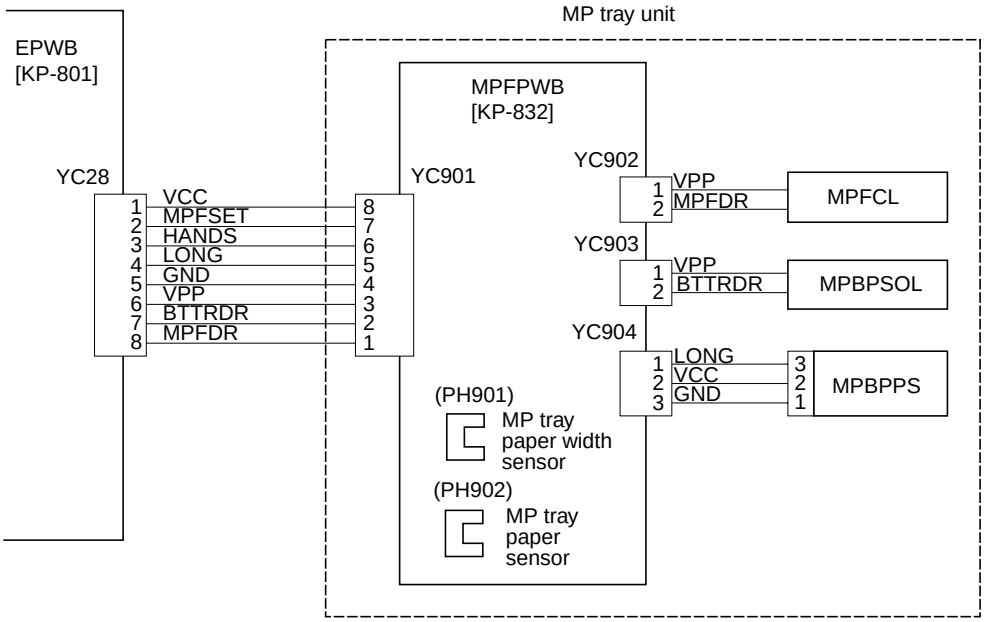


Figure 2-1-6 MP tray feed unit block diagram

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.

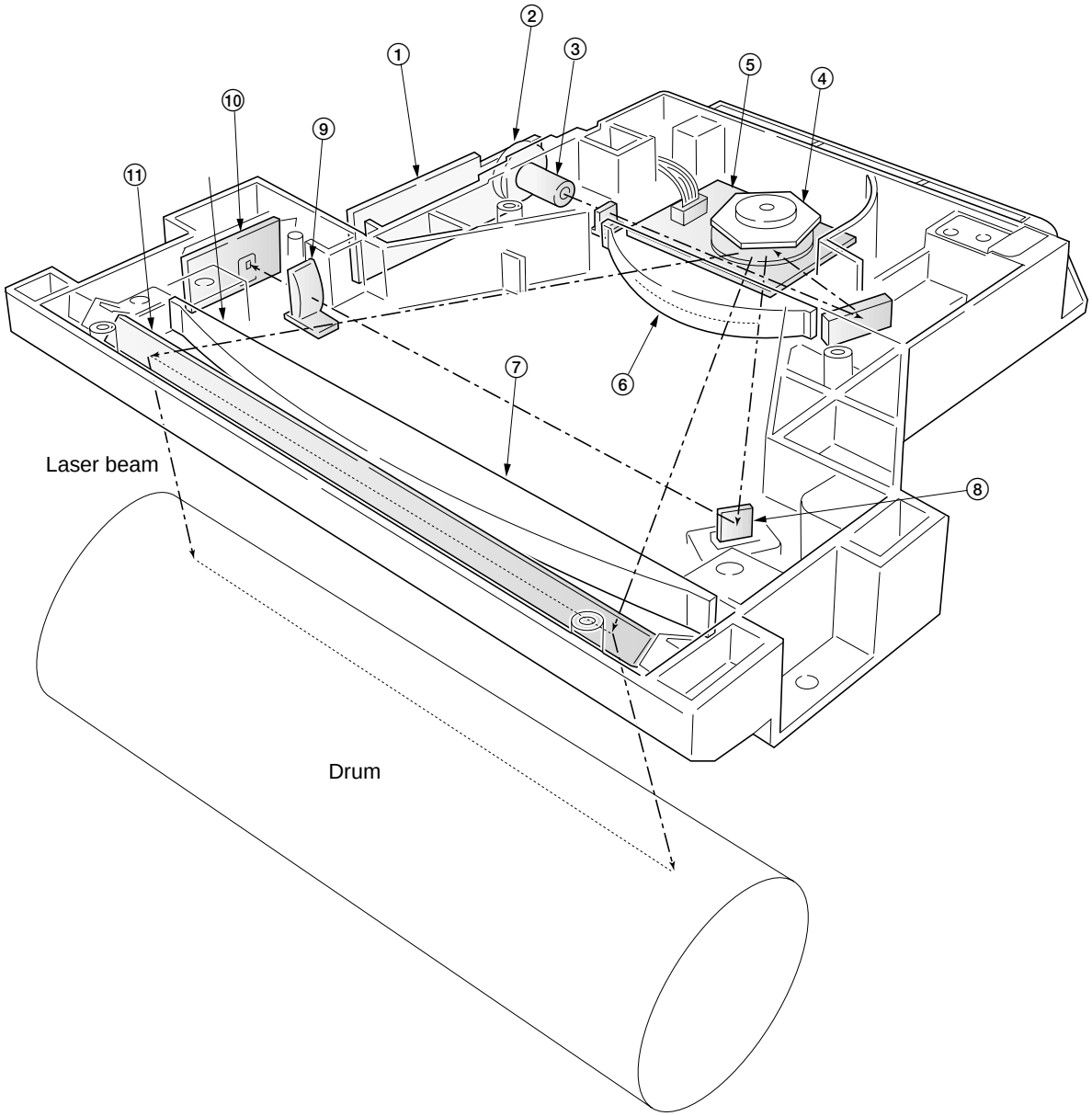


Figure 2-1-7 Laser scanner unit

① APC PWB (APCPWB)
② Laser diode
③ Collimator lens
④ Polygon mirror
⑤ Polygon motor (PM)
⑥ fθ lens
⑦ fθ lens
⑧ BD sensor mirror
⑨ Cylindrical correcting lens
⑩ PB PWB (PDPWB)
⑪ Diversion mirror

① APCPWB: 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 31690.52224 rpm with each face reflecting the laser beam toward the drum for one main-direction scan.
⑤ Polygon motor (PM): 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 [PDPWB] 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 [PDPWB].
⑩ BD sensor [PDPWB]: Detects the beam reflected by the BD sensor mirror, outputting a signal to the main controller PWB (MPWB) to provide timing for the main-direction sync signal.
⑪ Diversion mirror: Reflects the laser beams onto the drum surface.

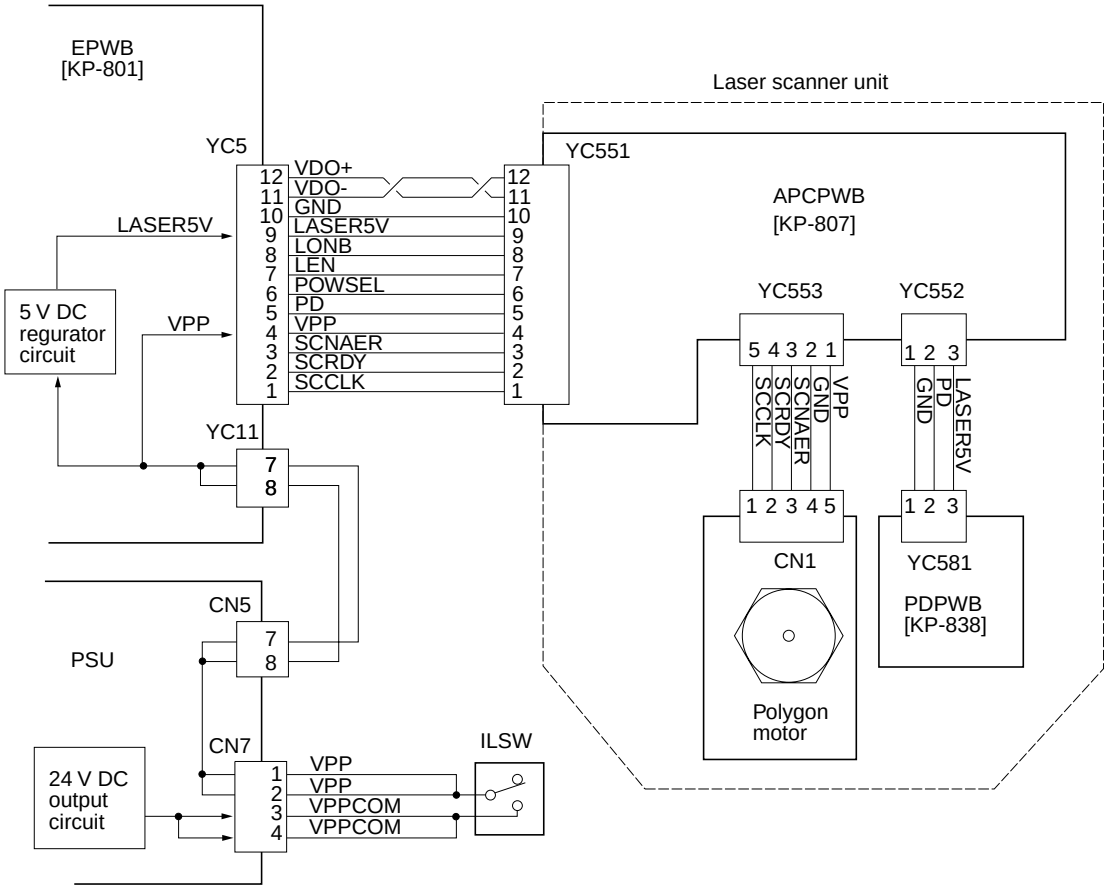


Figure 2-1-8 Laser scanner unit block diagram

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 toner to the developing roller. 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 toner from being fed outwards as the magnet repels the toner. 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. Then the toner is free to proceed over the developing roller towards the drum, forming a magnetic brush.

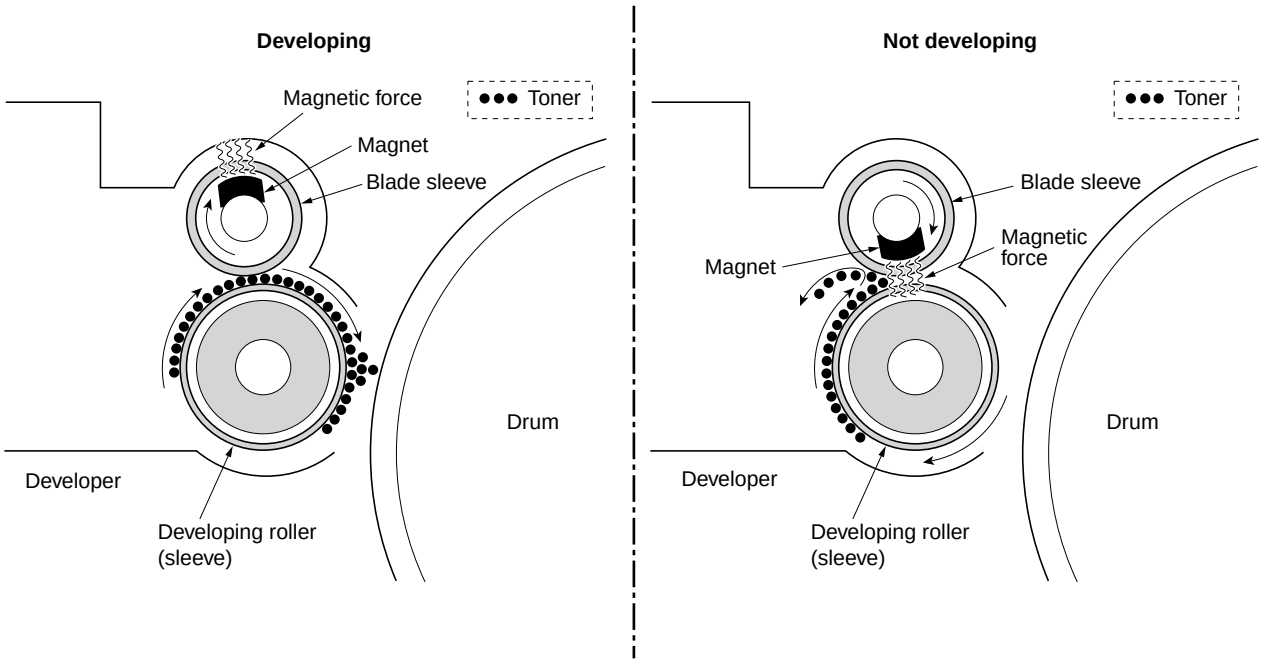


Figure 2-1-9 Magnetic shutter

(1) Yellow developer

The yellow toner container is directly mounted atop the yellow developer. As the yellow toner feed motor (YTFM) 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 toner in the hopper.

The developing roller has a 5-pole magnet and a sleeve located coaxially to the magnet. Toner 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 toner is constituted over the developing roller. The magnetic brush is constituted at the opposite area circumferentially to pole N1 and flies toner over to the drum.

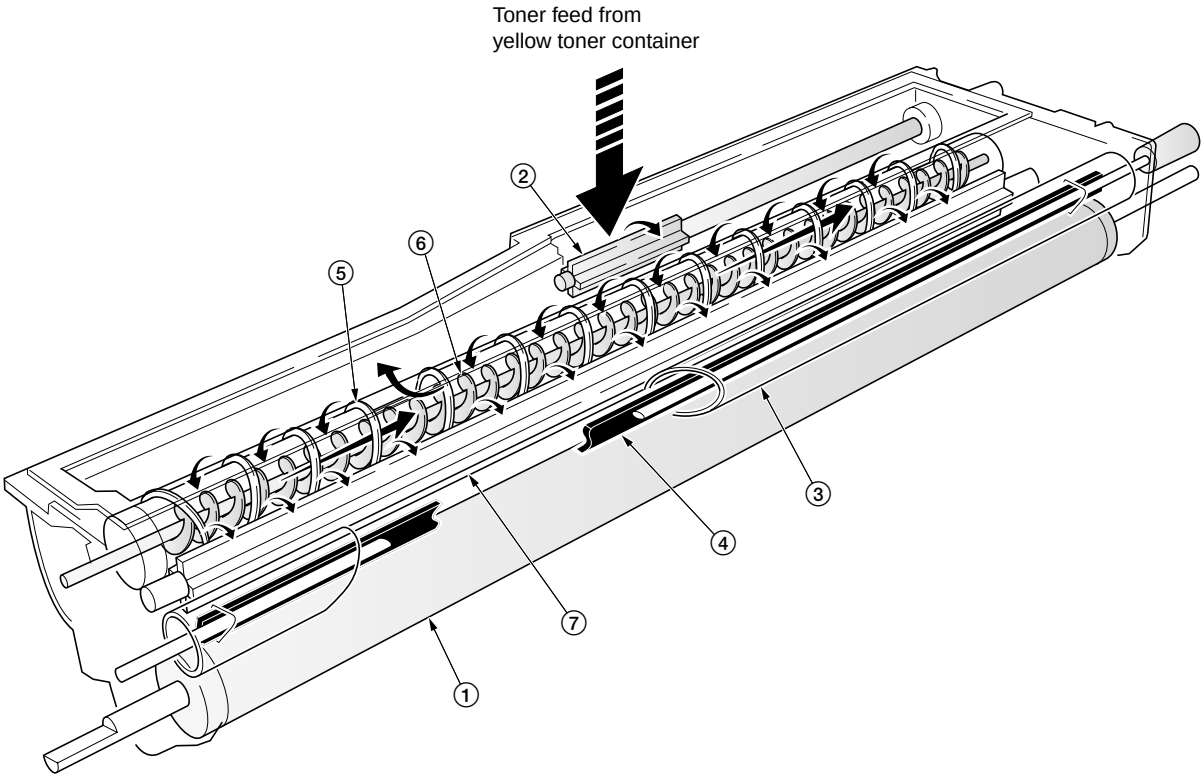


Figure 2-1-10 Yellow developer

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

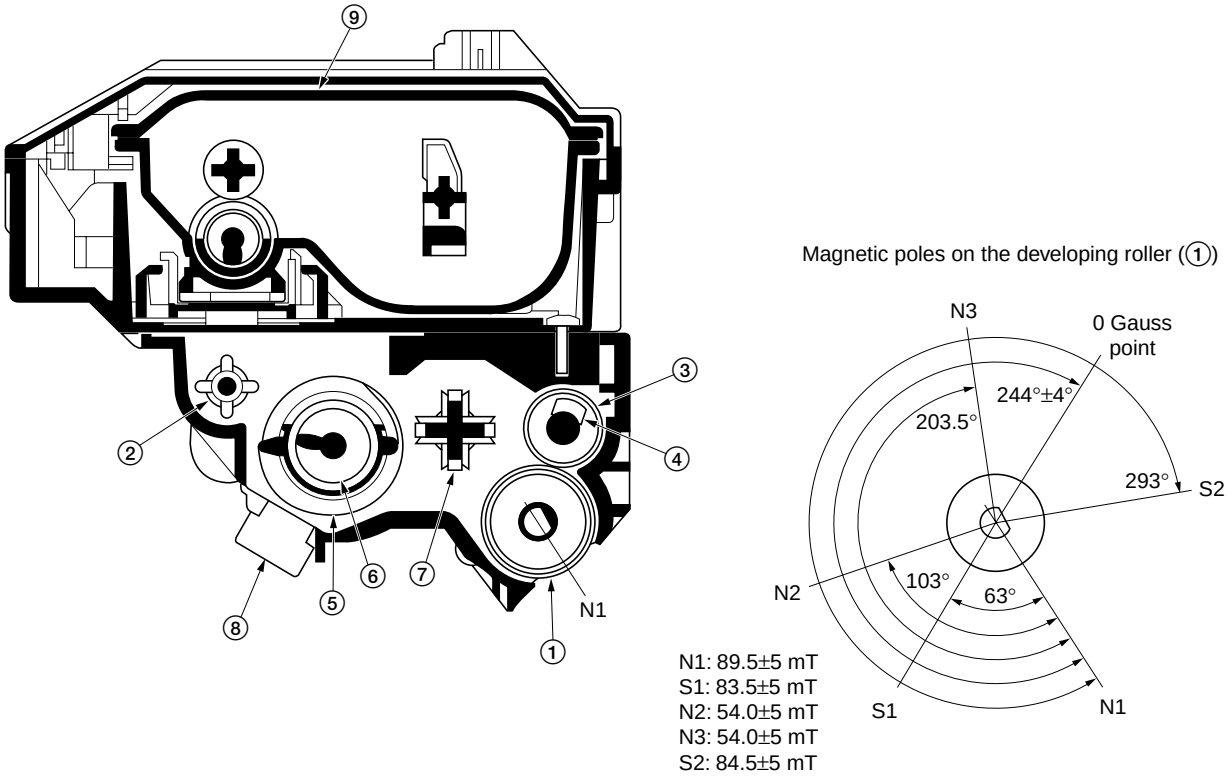


Figure 2-1-11 Yellow developer and magnetic poles on the developing roller

① Developing roller
② Toner feed paddle
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Agitation paddle
⑧ Yellow T/C sensor (YTPCS)
⑨ Yellow toner container

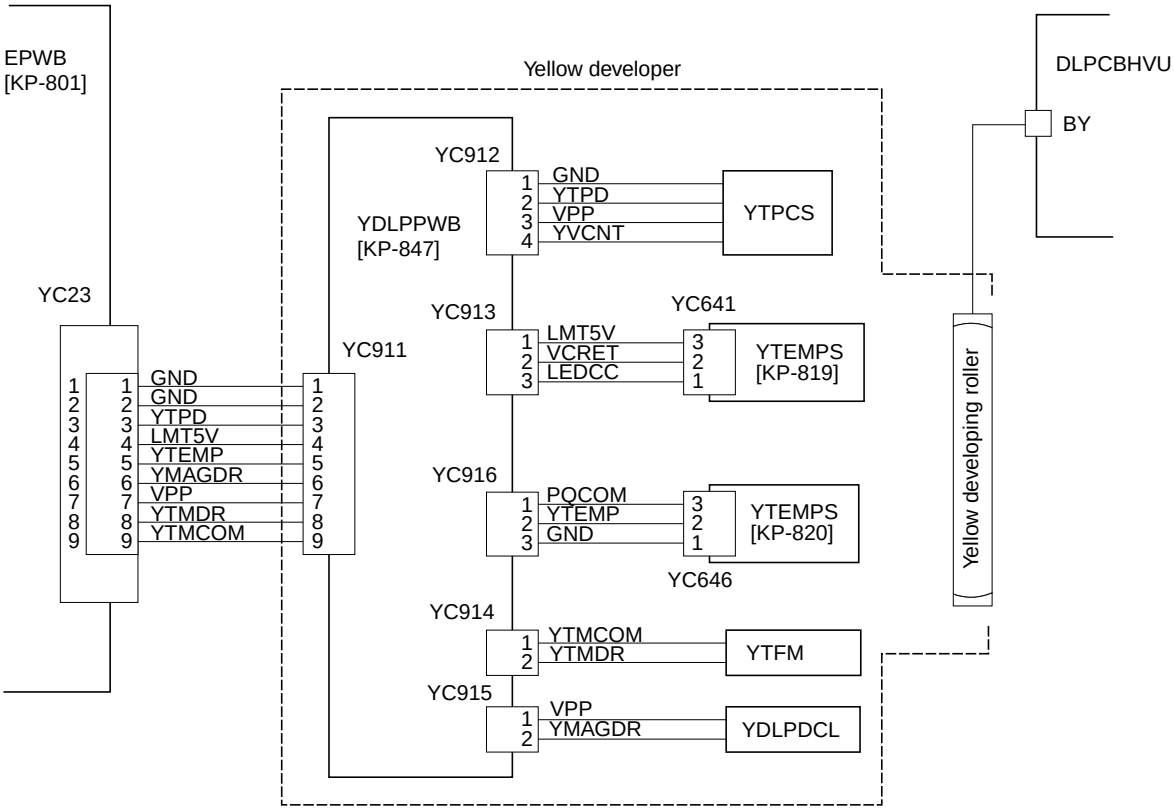


Figure 2-1-12 Yellow developer block diagram

(2) Magenta developer

The magenta toner container is directly mounted atop the magenta developer. As the magenta toner feed motor (MTFM) 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 toner in the hopper.

The developing roller has a 5-pole magnet and a sleeve located coaxially to the magnet. Toner 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 toner is constituted over the developing roller. The magnetic brush is constituted at the opposite area circumferentially to pole N1 and flies over to the drum.

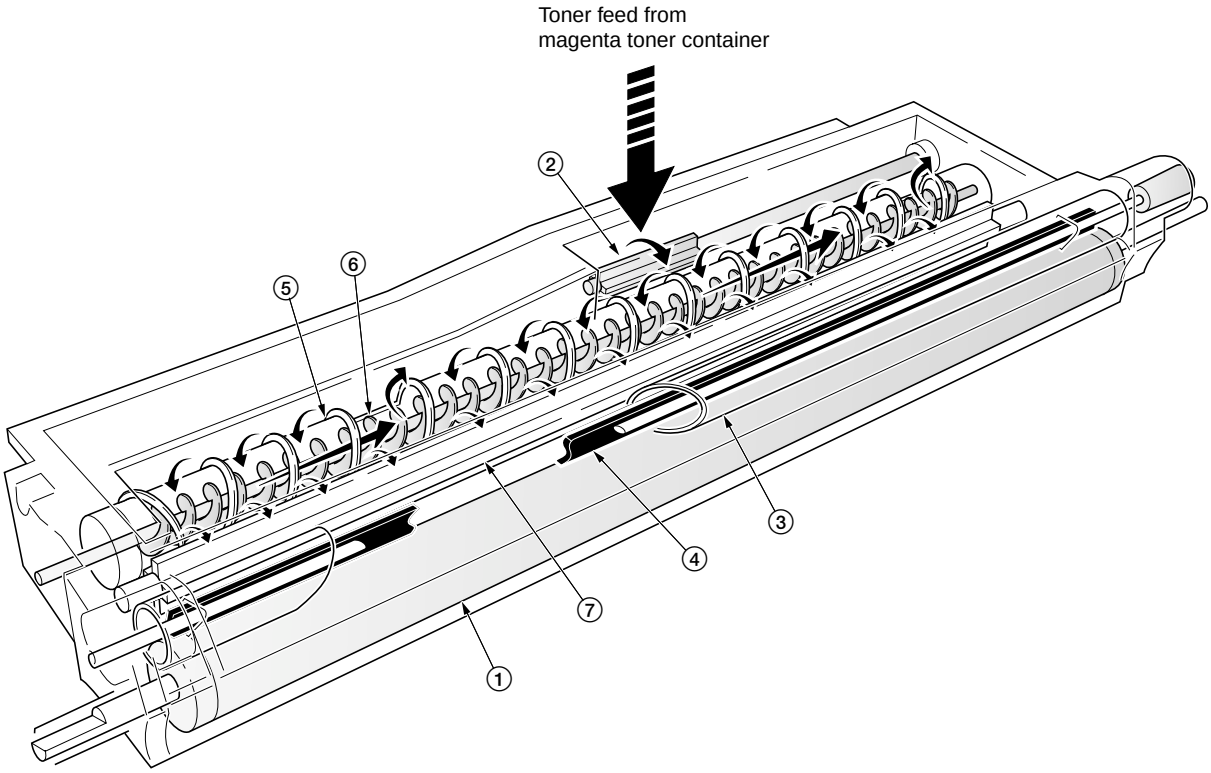


Figure 2-1-13 Magenta developer

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

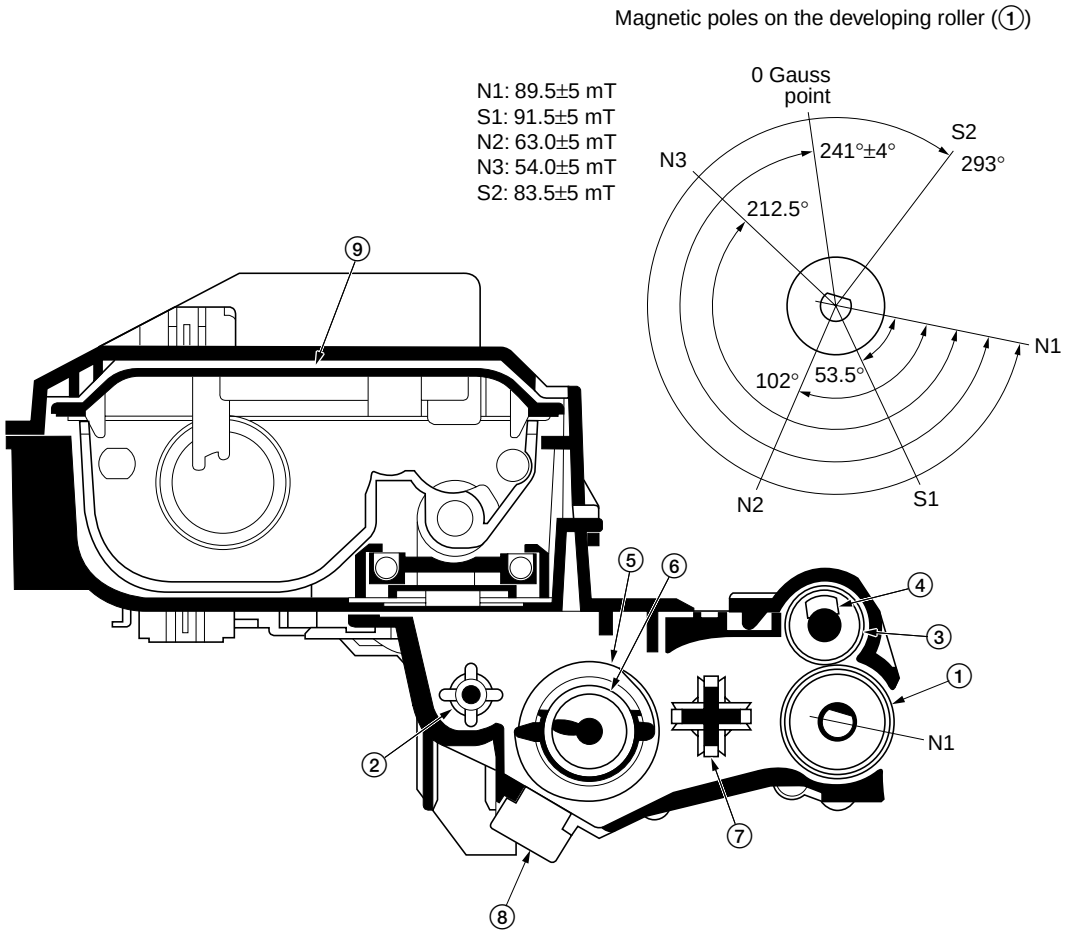


Figure 2-1-14 Magenta developer and magnetic poles on the developing roller

① Developing roller
② Toner feed paddle
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Agitation paddle
⑧ Magenta T/C sensor (MTPCS)
⑨ Magenta toner container

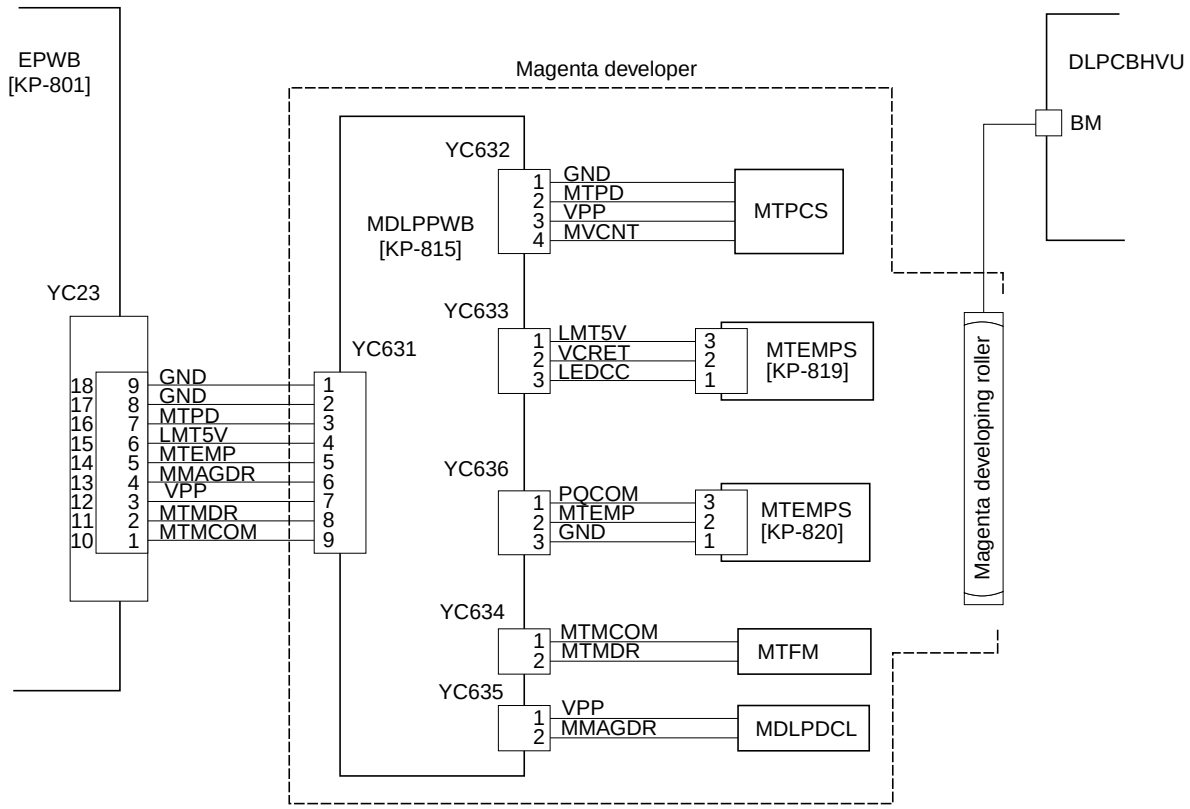


Figure 2-1-15 Magenta developer block diagram

(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 paddle. The mixer screw and the paddle rotate in the opposite direction to each other, ensuring the effective circulation of toner in the hopper.

The developing roller has a 5-pole magnet and a sleeve located coaxially to the magnet. Toner 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 toner is constituted over the developing roller. The magnetic brush is constituted at the opposite area circumferentially to pole N1 and flies over to the drum.

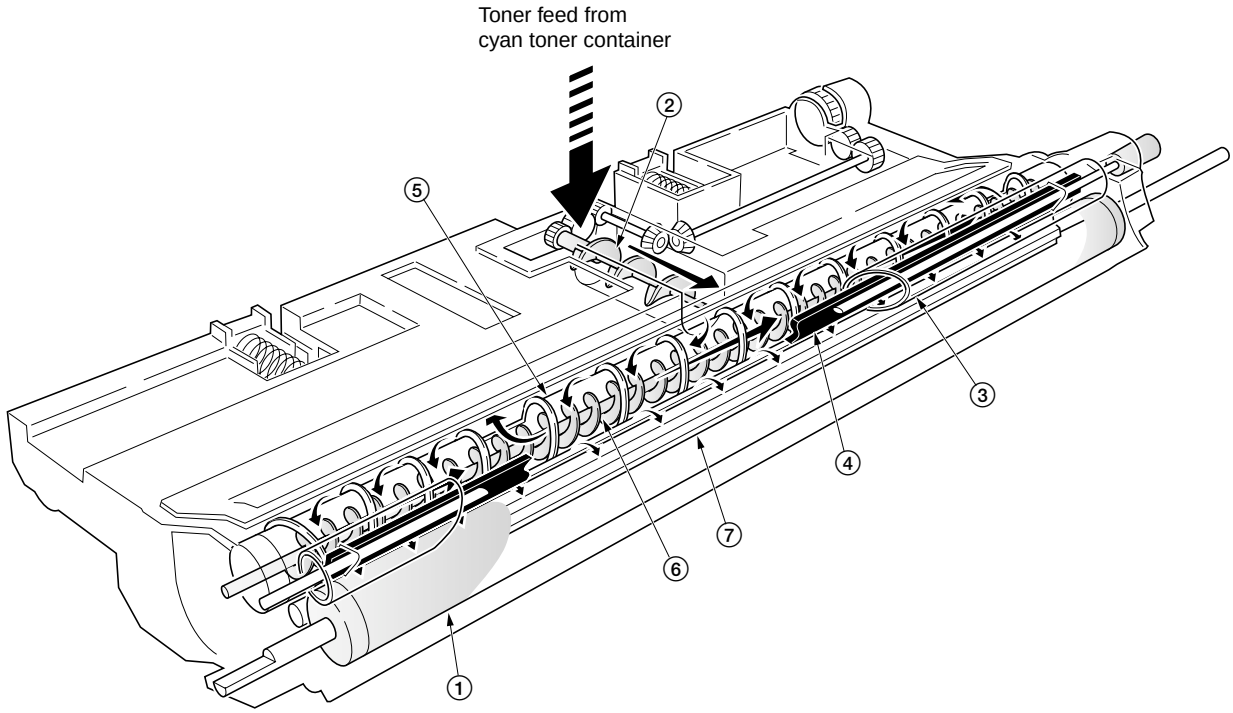


Figure 2-1-16 Cyan developer

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

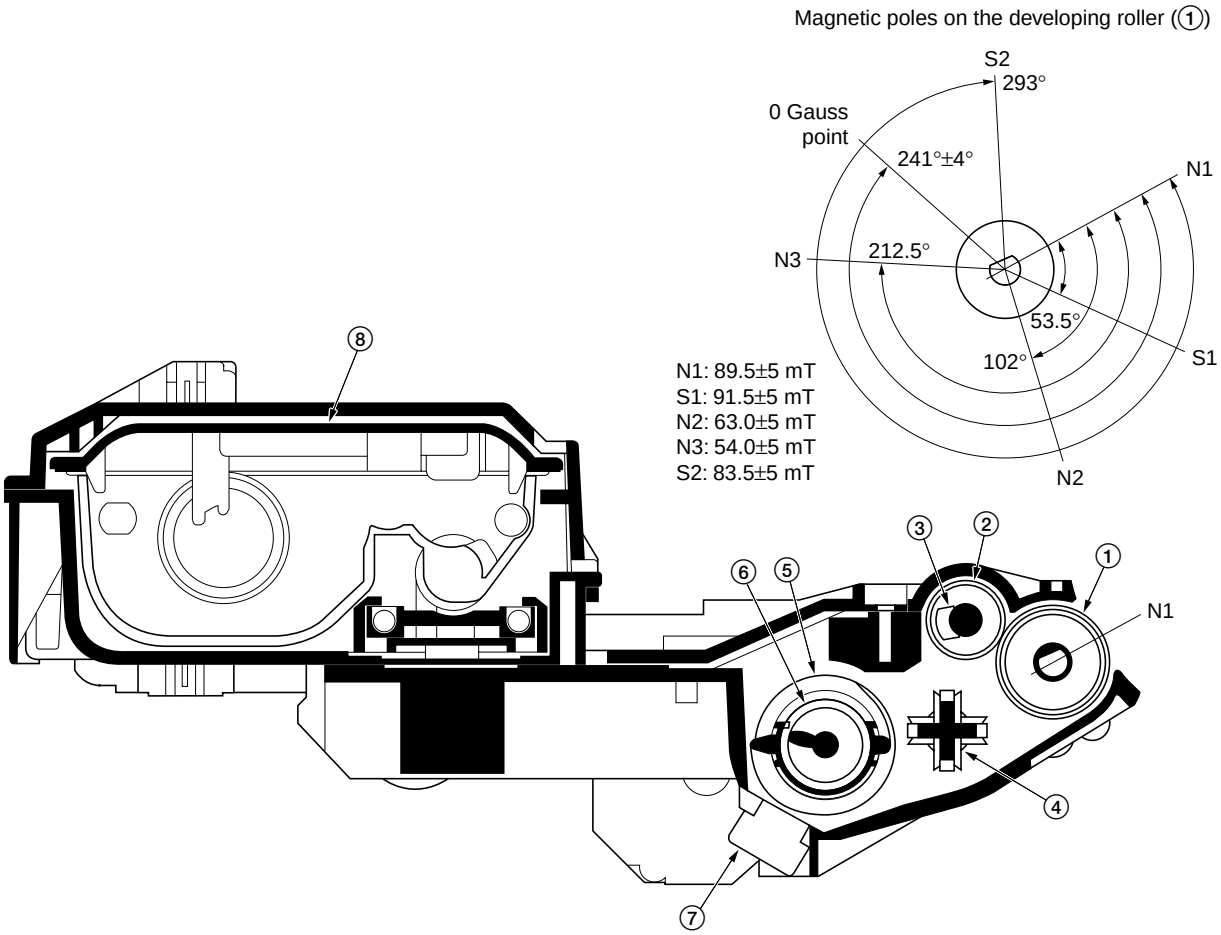


Figure 2-1-17 Cyan developer and magnetic poles on the developing roller

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

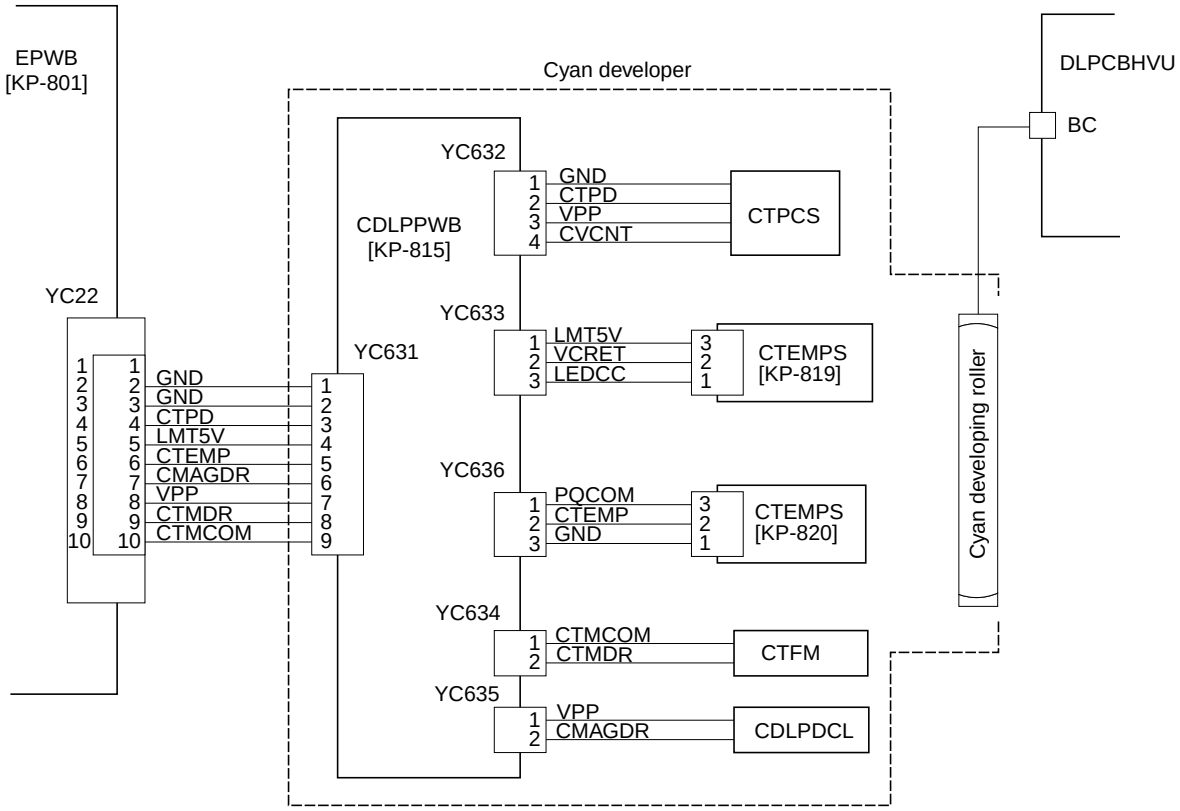


Figure 2-1-18 Cyan developer block diagram

(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.

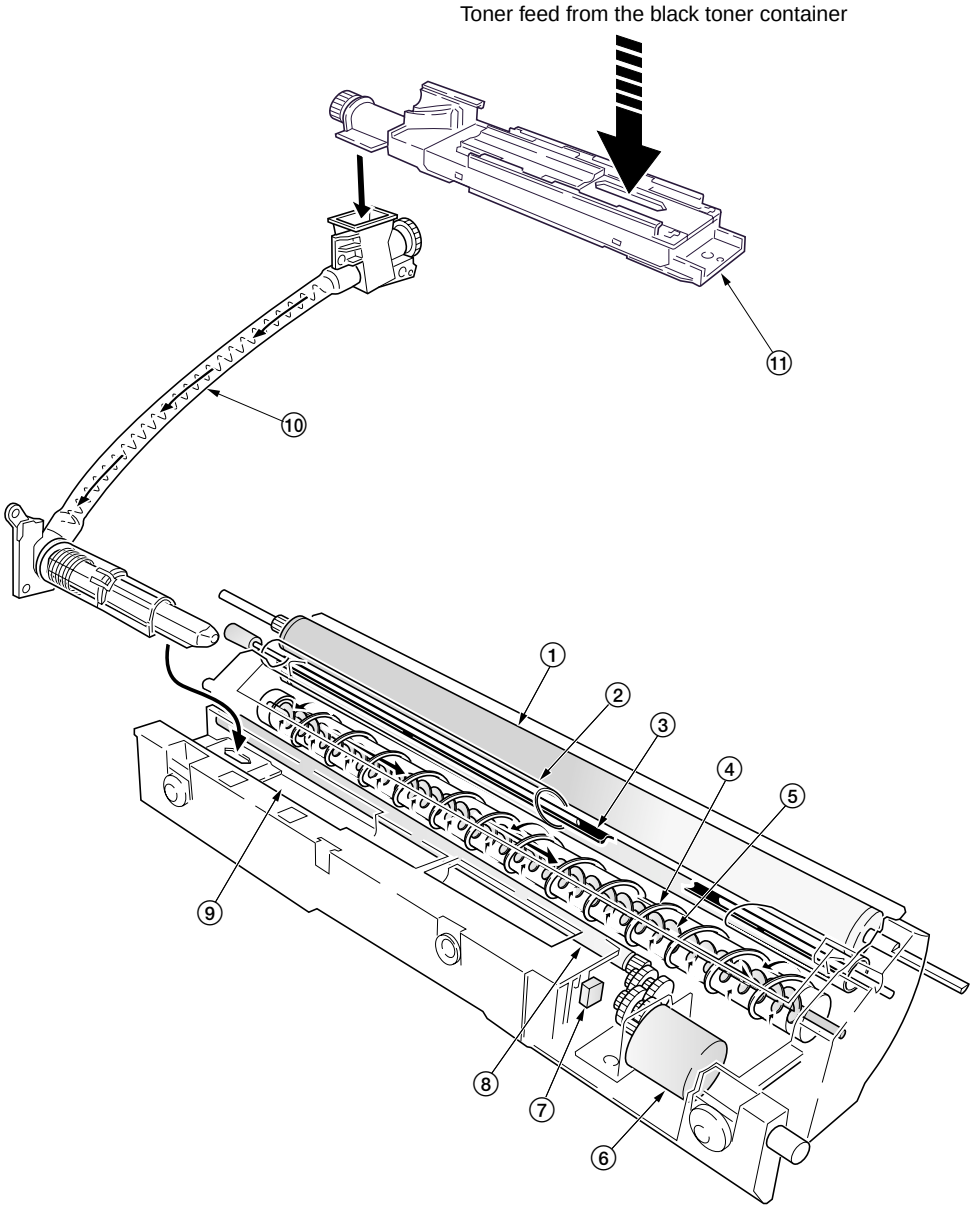


Figure 2-1-19 Black developer

① Developing roller
② Blade sleeve
③ Shutter magnet
④ Mixer tube
⑤ Mixer screw
⑥ Black toner feed motor (KTFM)
⑦ Black toner intermediate hopper sensor (KTIHS)
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 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. The mixer tube which has a mixer screw inside which revolves coaxially with the mixer tube redistributing toner in the opposite directions. Redistributing toner also positive-charges the toner owing to static electricity. The charged toner is then sent to the developing roller. Since the black developer has its developing roller at its top, toner must be escalated from the hopper to the developing roller. To accomplish this, the black toner is slightly magnetized and an intermediate (3-pole) magnet roller is provided in the middle of the developing chamber. The black toner 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. Toner 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 toner is constituted over the developing roller. The magnetic brush is constituted at the opposite area circumferentially to pole N1 and flies over to the drum.

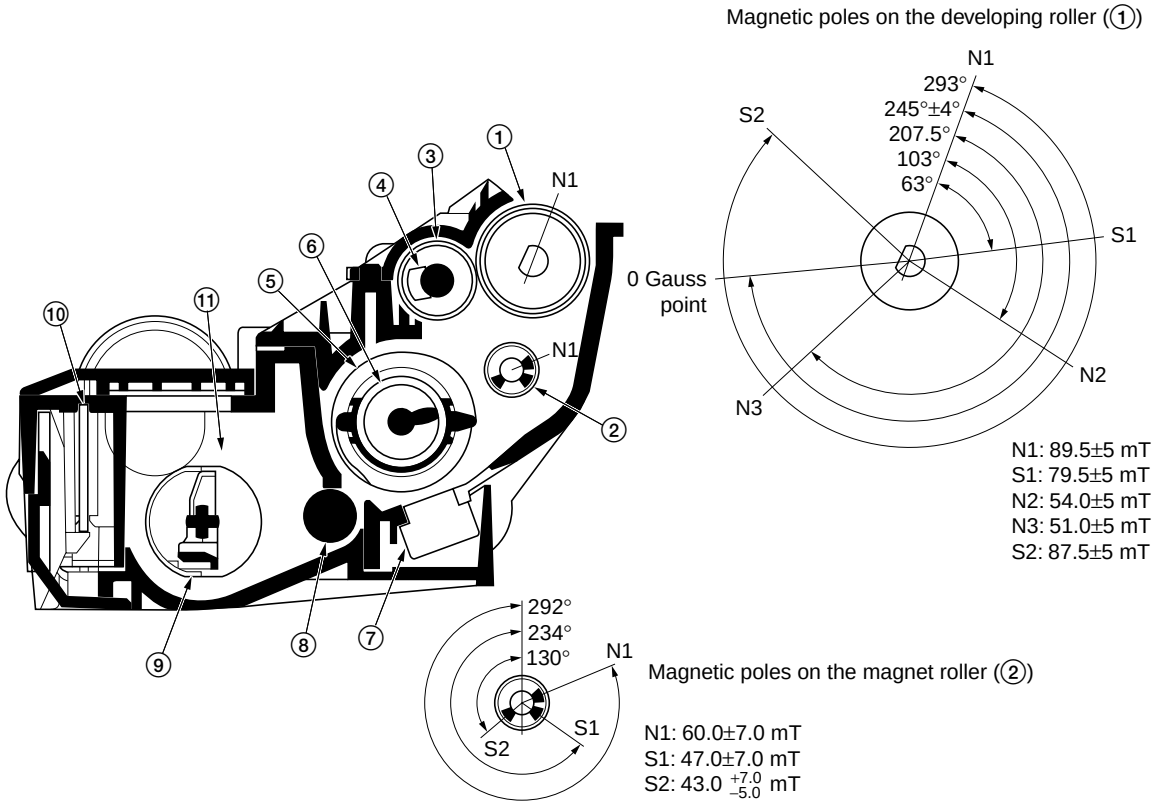


Figure 2-1-20 Black developer and magnetic poles on the developing roller

① Developing roller
② Magnet roller
③ Blade sleeve
④ Shutter magnet
⑤ Mixer tube
⑥ Mixer screw
⑦ Black T/C sensor (KTPCS)
⑧ Toner feed magnet roller
⑨ Agitation paddle
⑩ Black developer PWB (KDLPPWB) [KP-817]
⑪ Intermediate toner hopper

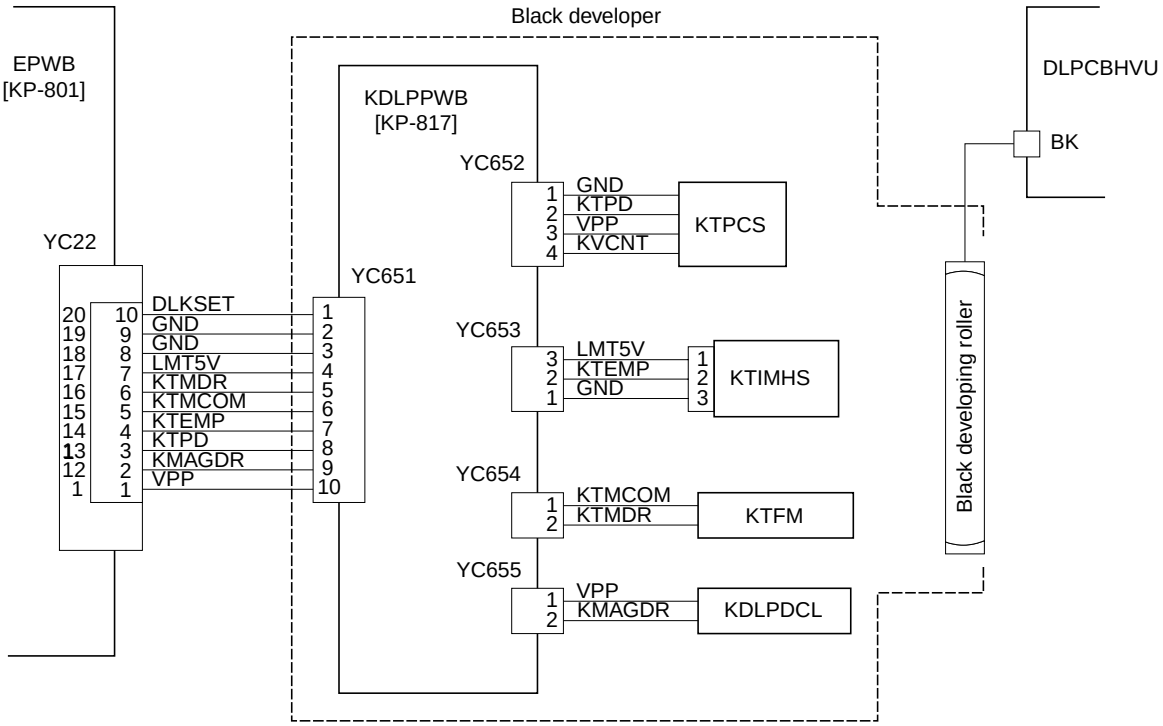


Figure 2-1-21 Black developer block diagram

Engine control for black toner development

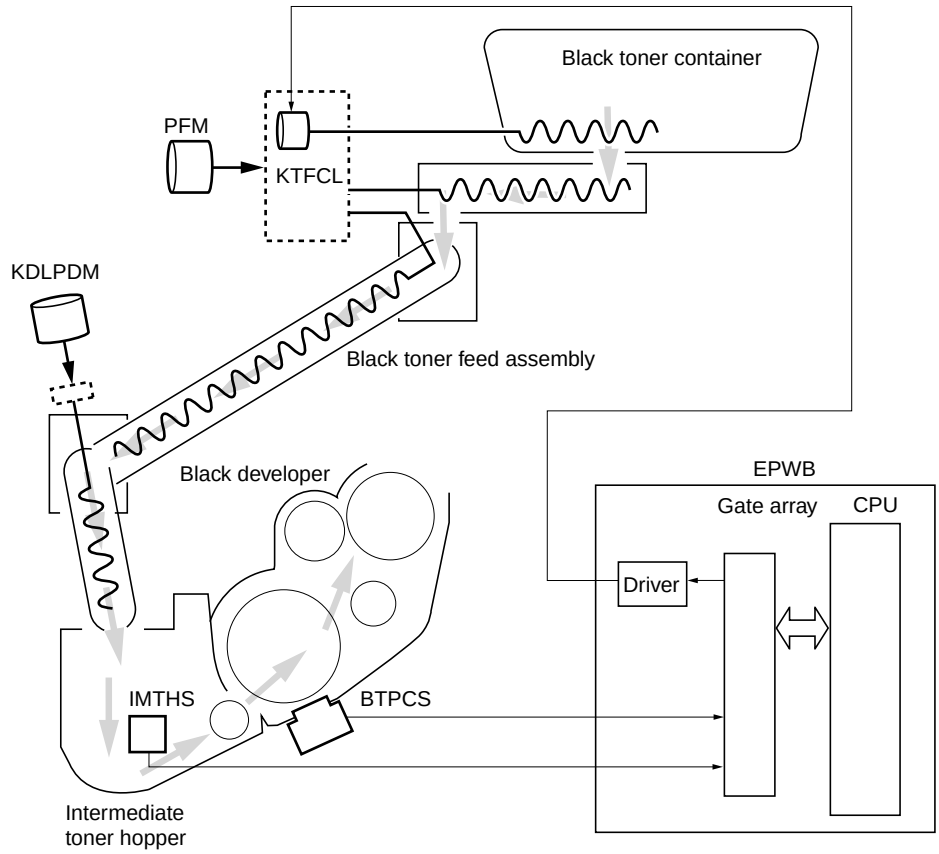
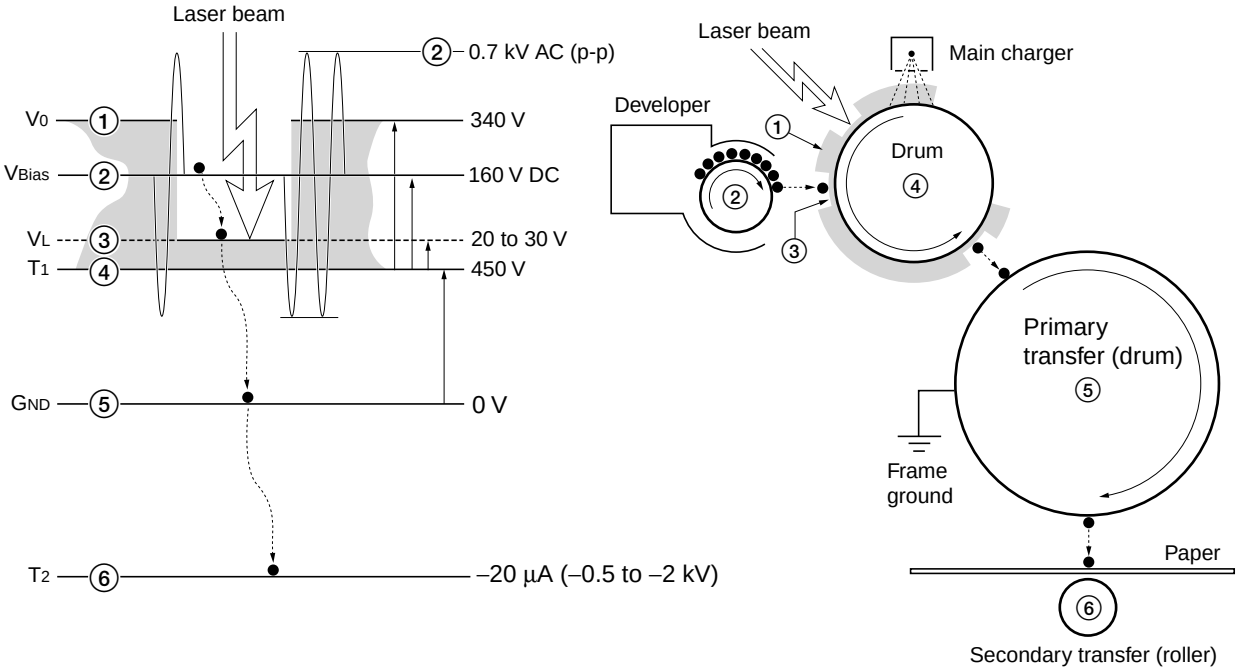


Figure 2-1-22 Black developer block diagram

CPU on the engine controller PWB (EPWB) watches the amount of the black toner by means of a sensor (IMTHS) in the intermediate toner hopper in the black developer. When the black toner dwindles, the clutch (KTFCL) that feeds the black toner is activated to feed toner from the black toner container to the feed assembly for the black toner. Toner is fed by a screw in the feed assembly for the black toner. The feed assembly for the black toner is driven by a motor (KDLPDM) 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 through 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: Drum surface voltage (①)
(Yellow: 330 V, Magenta and Cyan 340 V, Black: 420 V)
V_L: Exposed drum surface voltage (③)
V_{Bias}: Developing bias DC + AC (②)
([Yellow: 140 V, Magenta and Cyan: 160 V, Black: 240 V DC] + 0.7 kV AC, f= 3.6 kHz)
T_1: Drum base voltage (④)
(variable by temperature and humidity)
GND: Frame ground (⑤)
T_2: Secondary transfer bias (⑥)
(adjusted according to paper type)

Figure 2-1-23 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 (ODS). 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 twice 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 (EL) 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.

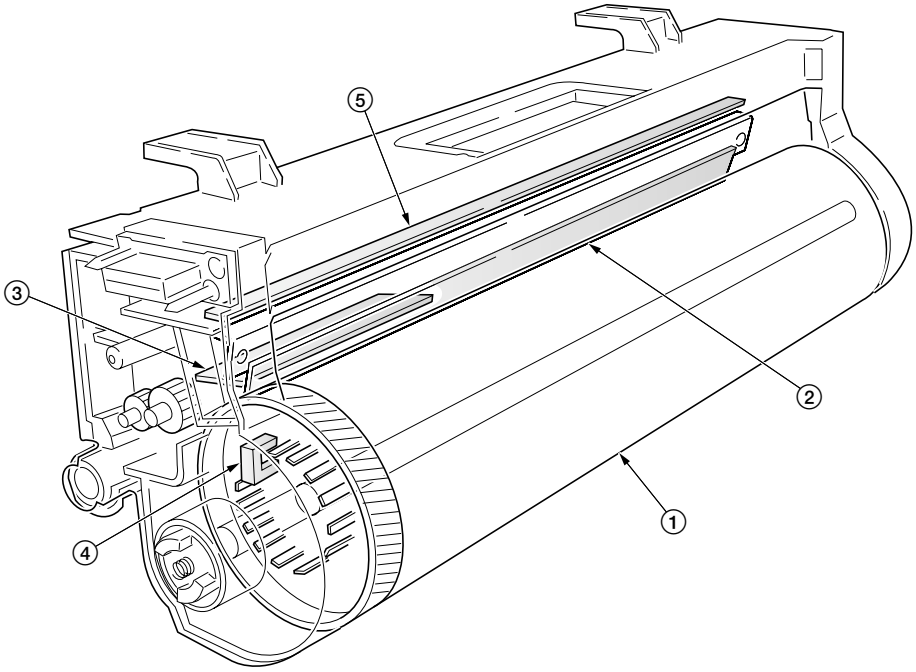


Figure 2-1-24 Drum unit

① Drum
② Cleaning blade
③ Eraser lamp (EL)
④ Drum PWB (DRPWB) [KP-813]
⑤ Offset drum sensor (ODS)

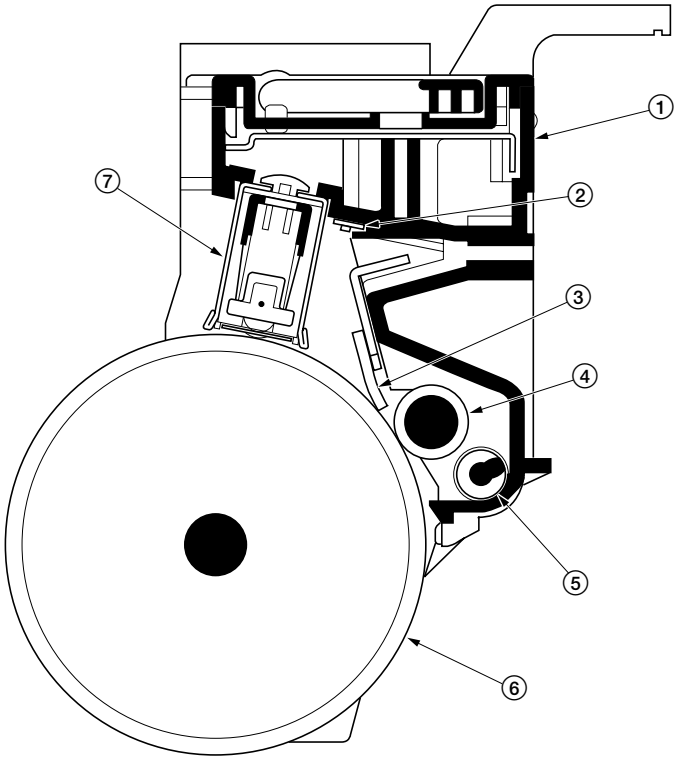


Figure 2-1-25 Drum unit

① Drum unit
② Eraser lamp (EL)
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.

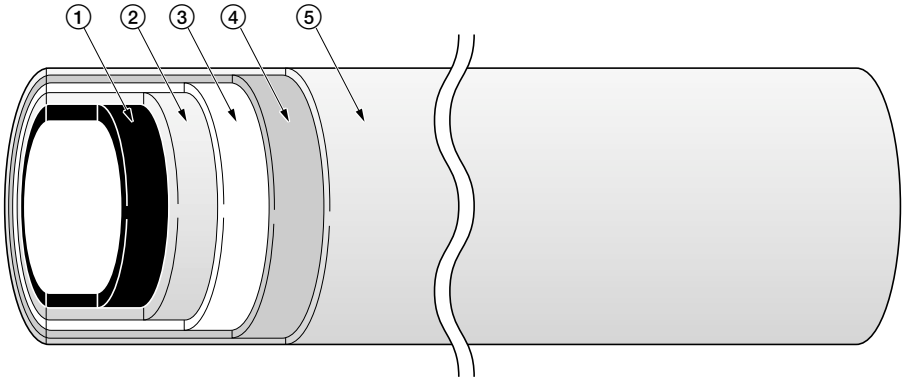


Figure 2-1-26 Amorphous silicon drum layer

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 9 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.

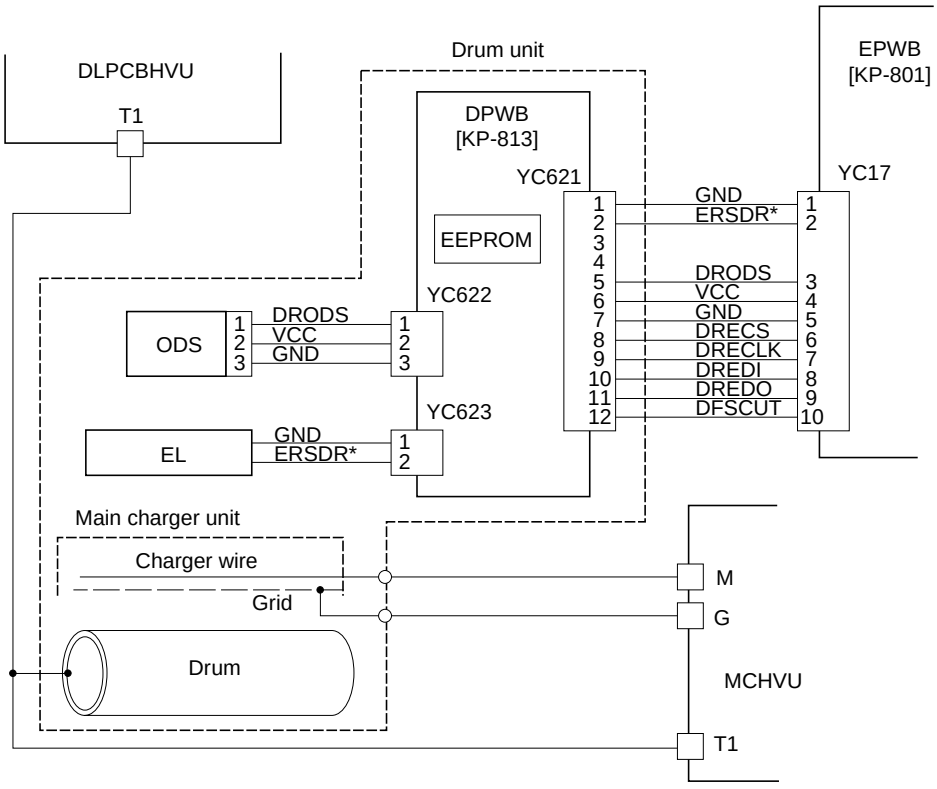


Figure 2-1-27 Drum unit and main charger unit block diagram

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 (150 V for yellow, 160 V for magenta and cyan, and 240 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.

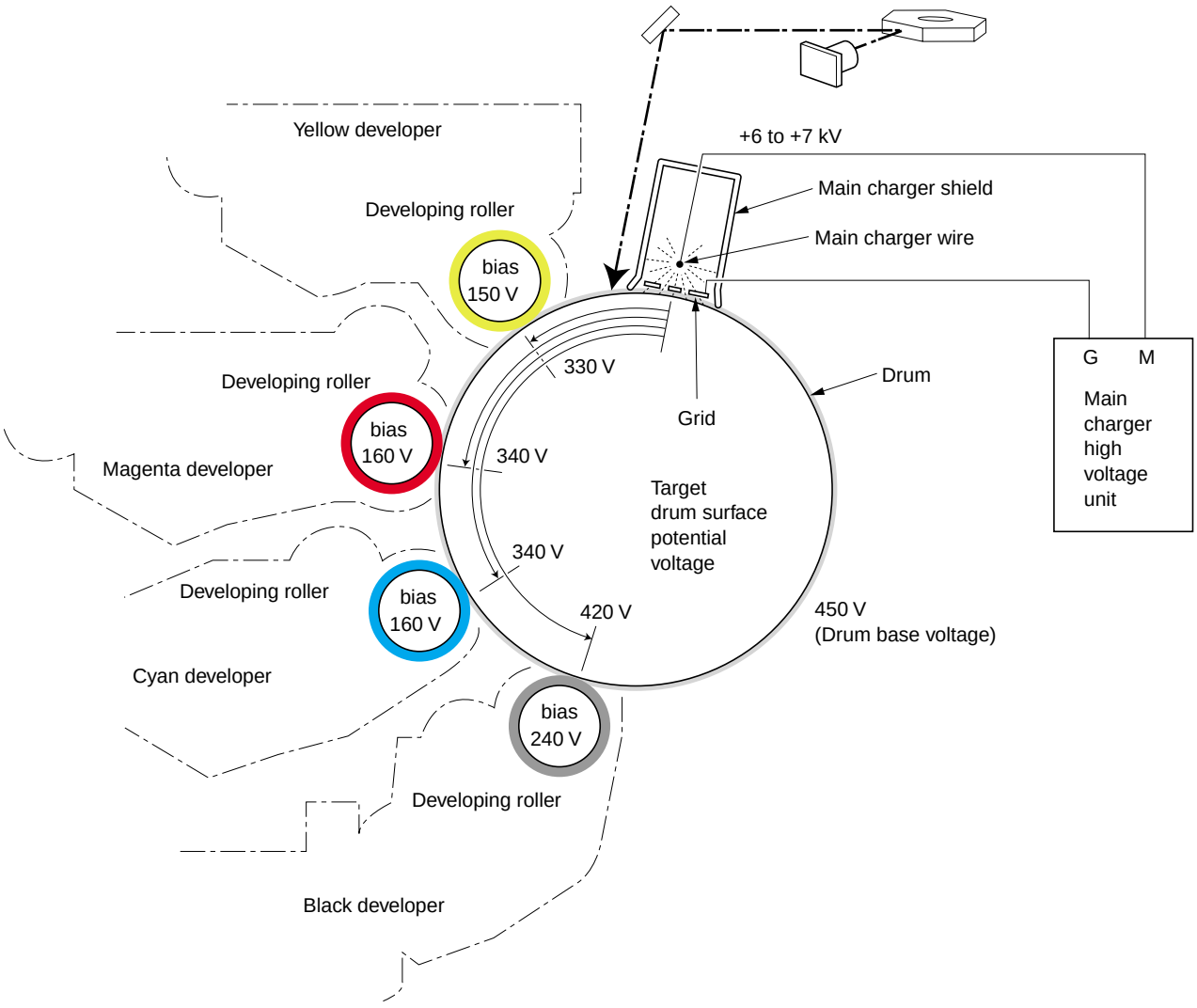


Figure 2-1-28 Dark decay

(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.

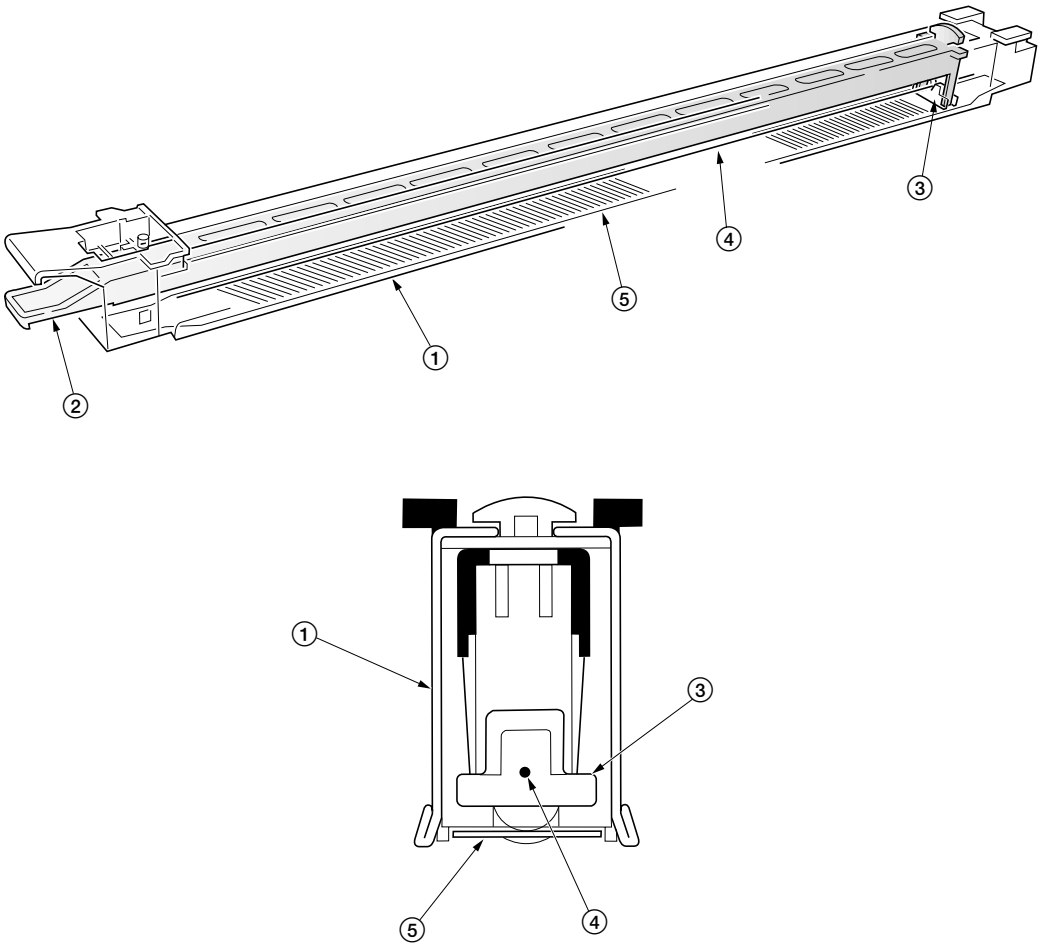


Figure 2-1-29 Main charger unit

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.

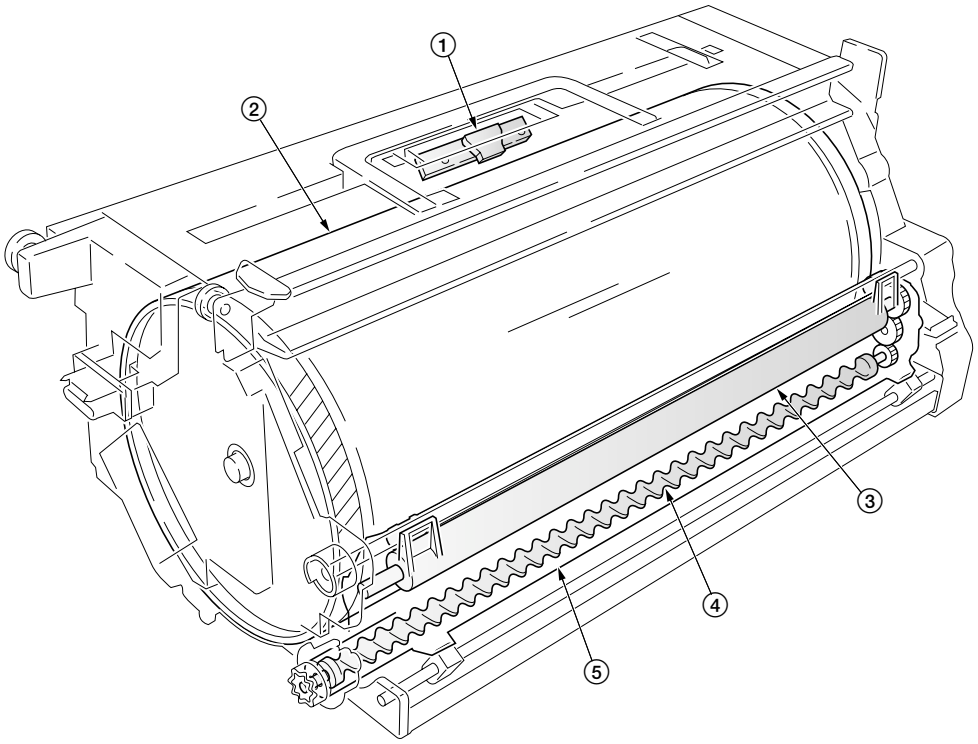


Figure 2-1-30 Primary transfer unit

① Primary transfer drum
② Image density sensor (IDS)
③ Cleaning brush
④ Exit screw
⑤ Cleaning brush unit

(2) Cleaning brush unit

The cleaning brush unit contains the cleaning brush, cleaning roller, scrapers, 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. This is accomplished by a cam which is driven by the cleaning brush unit shift solenoid (CBSSOL) for the cleaning brush.

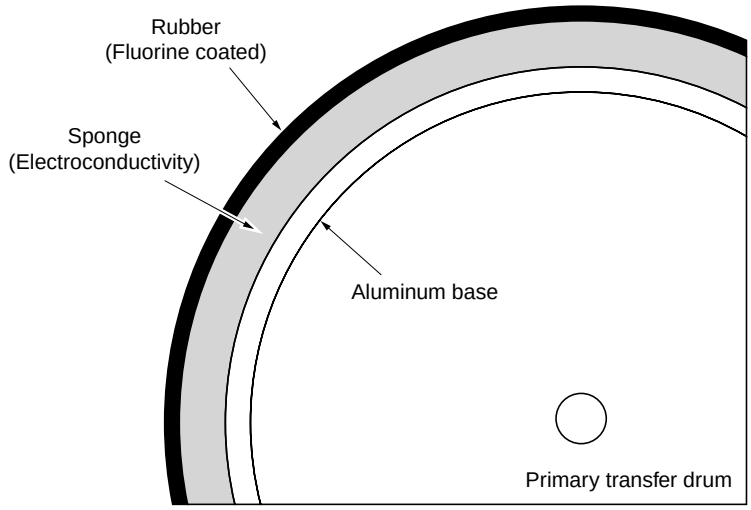


Figure 2-1-31 Primary transfer drum layer

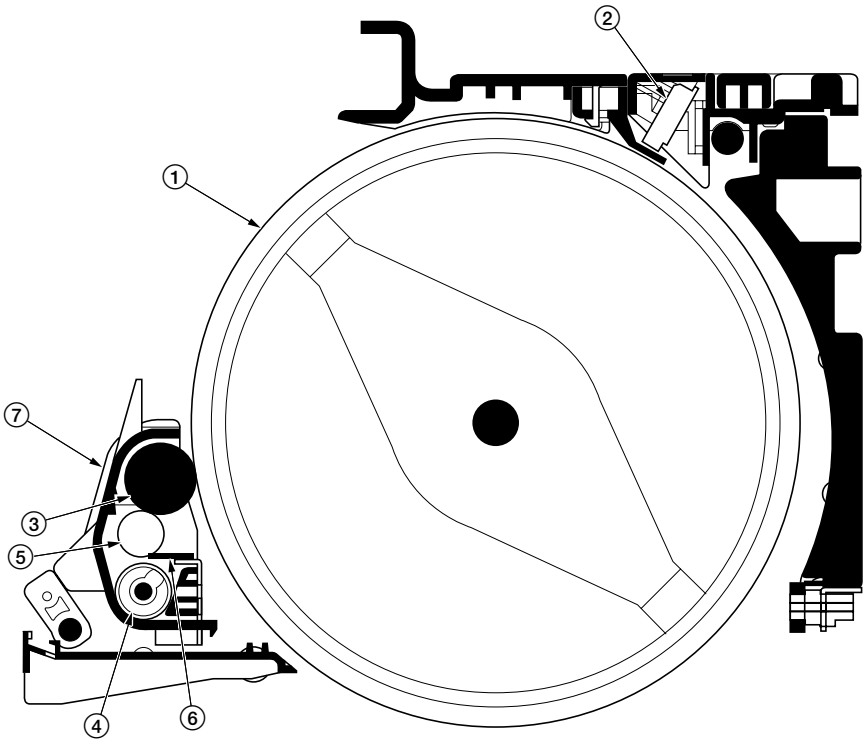


Figure 2-1-32 Primary transfer unit

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

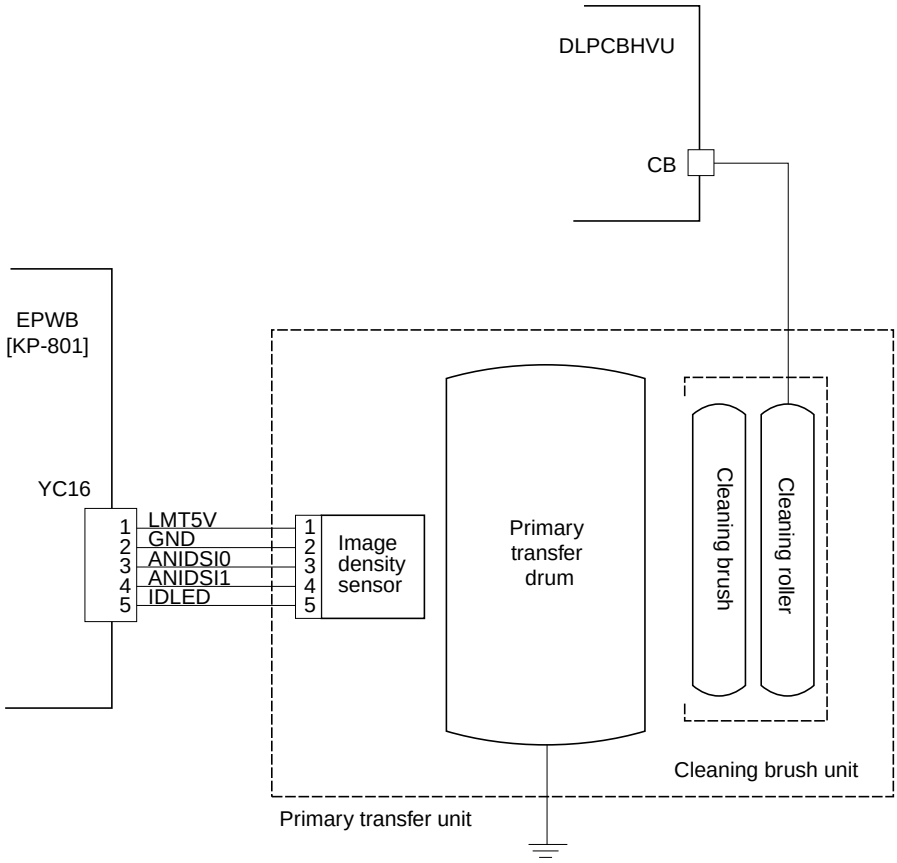


Figure 2-1-33 Primary transfer unit block diagram

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 two revolutions. (The diametric ratio for the photoconductor drum and the primary transfer drum is 1 to 2.) The primary transfer drum can complete 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

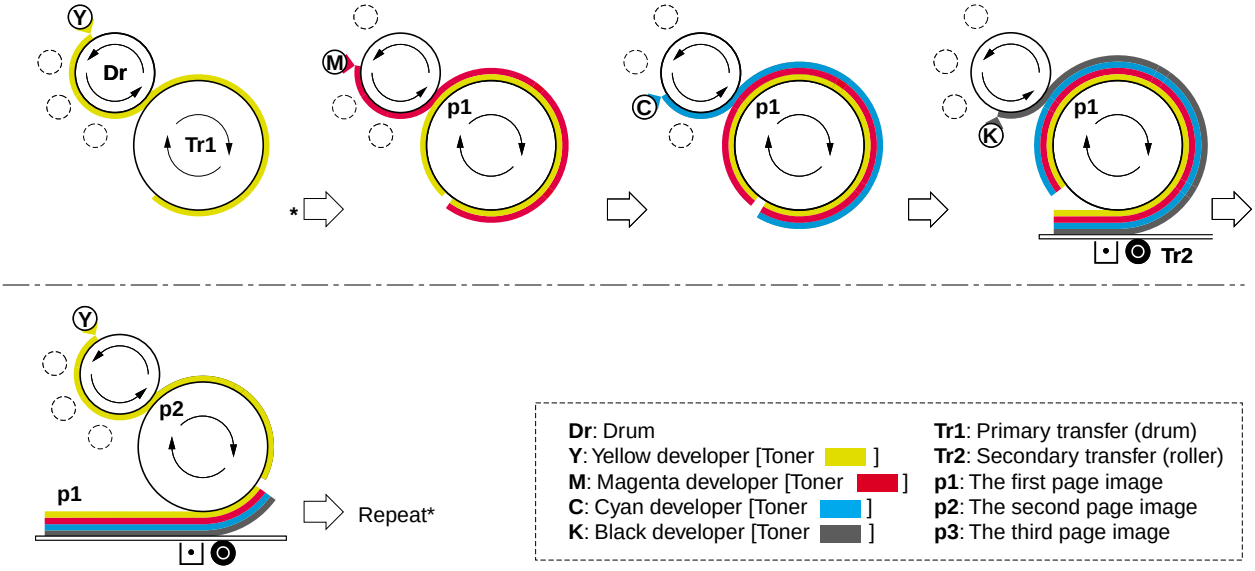


Figure 2-1-34 A3 size paper color printing process

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 30 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)

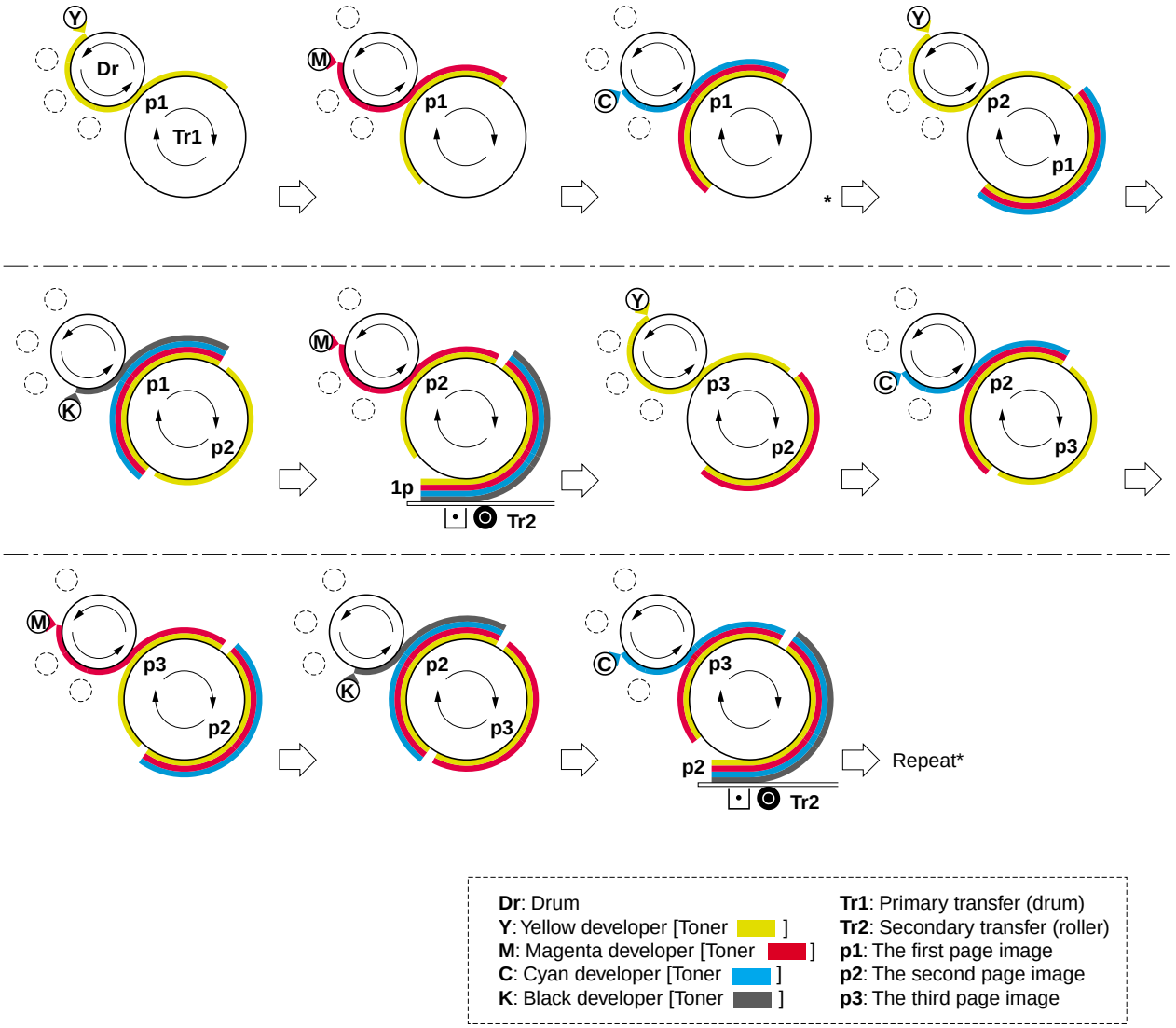


Figure 2-1-35 A4/Letter size paper color printing process (Two-page mode)

2-1-7 Fuser unit

The fuser unit is detachable and mounted on the left-most end of the paper feed unit. The fuser unit literally fuses toner on the paper by means of heat and pressure following the transferring process of the electrophotographic cycle.

The fuser has the oil roller unit at the top, which is activated during fusing is in process and lowers the oil roller down onto the top roller so that the oil is applied onto the paper.

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 500 W heater inside. Paper is pinched between these rollers for permanently fusing 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.

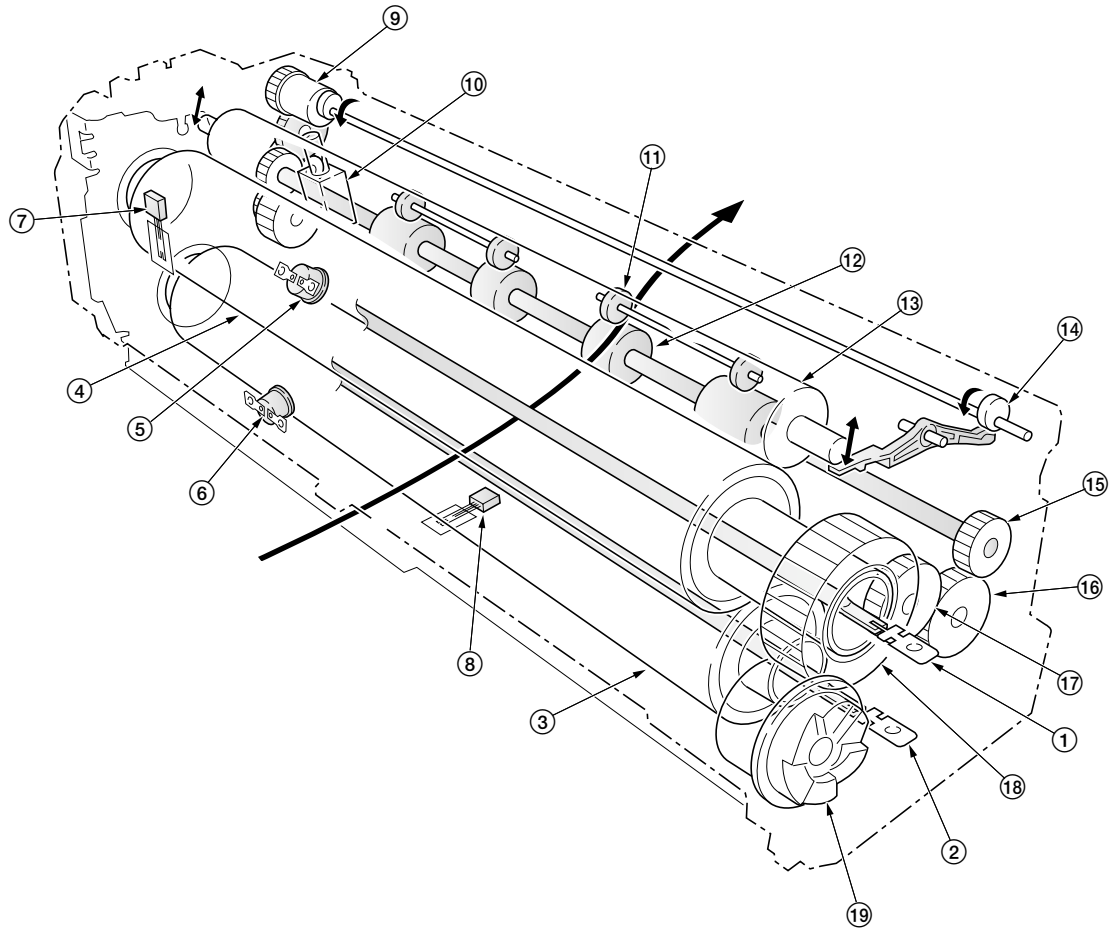


Figure 2-1-36 Fuser unit section

① Upper heater lamp (UHL)
② Lower heater lamp (LHL)
③ Heat roller
④ Press/heat roller
⑤ Upper thermostat (UTHS)
⑥ Lower thermostat (LTHS)
⑦ Fixing heater (FH)
⑧ Upper fuser thermistor (UFTH)
⑨ Lower fuser thermistor (LFTH)
⑩ Oil roller up/down solenoid (ORUDSOL)
⑪ Exit pulley
⑫ Exit roller
⑬ Oil roller
⑭ Oil roller cam
⑮ Exit roller gear
⑯ Idle gear
⑰ Idle gear
⑱ Fuser gear
⑲ Input gear

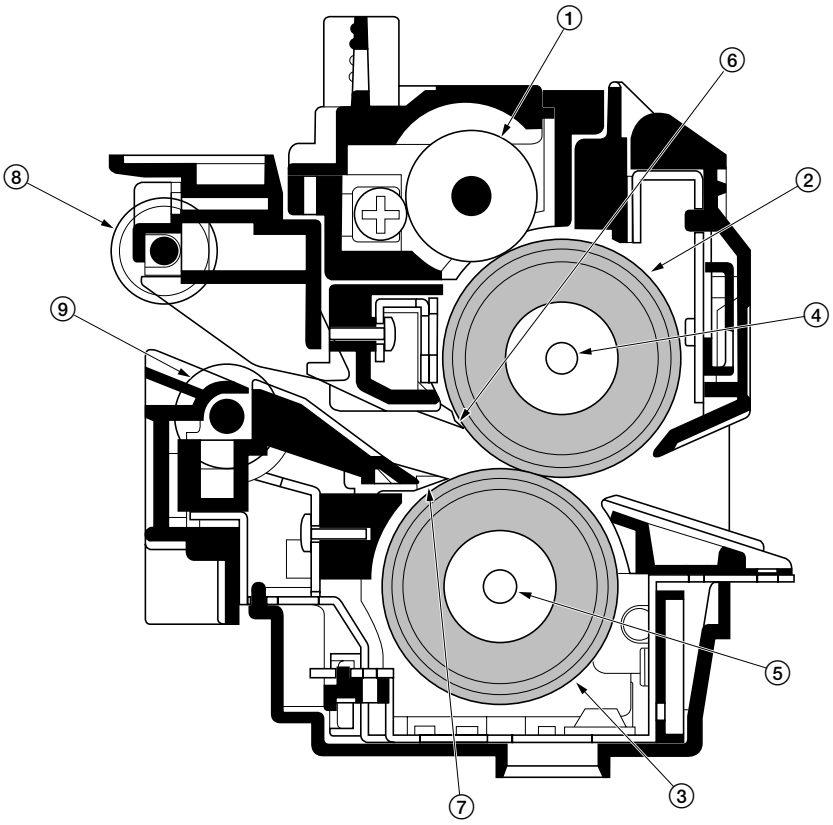


Figure 2-1-37 Fuser unit section

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

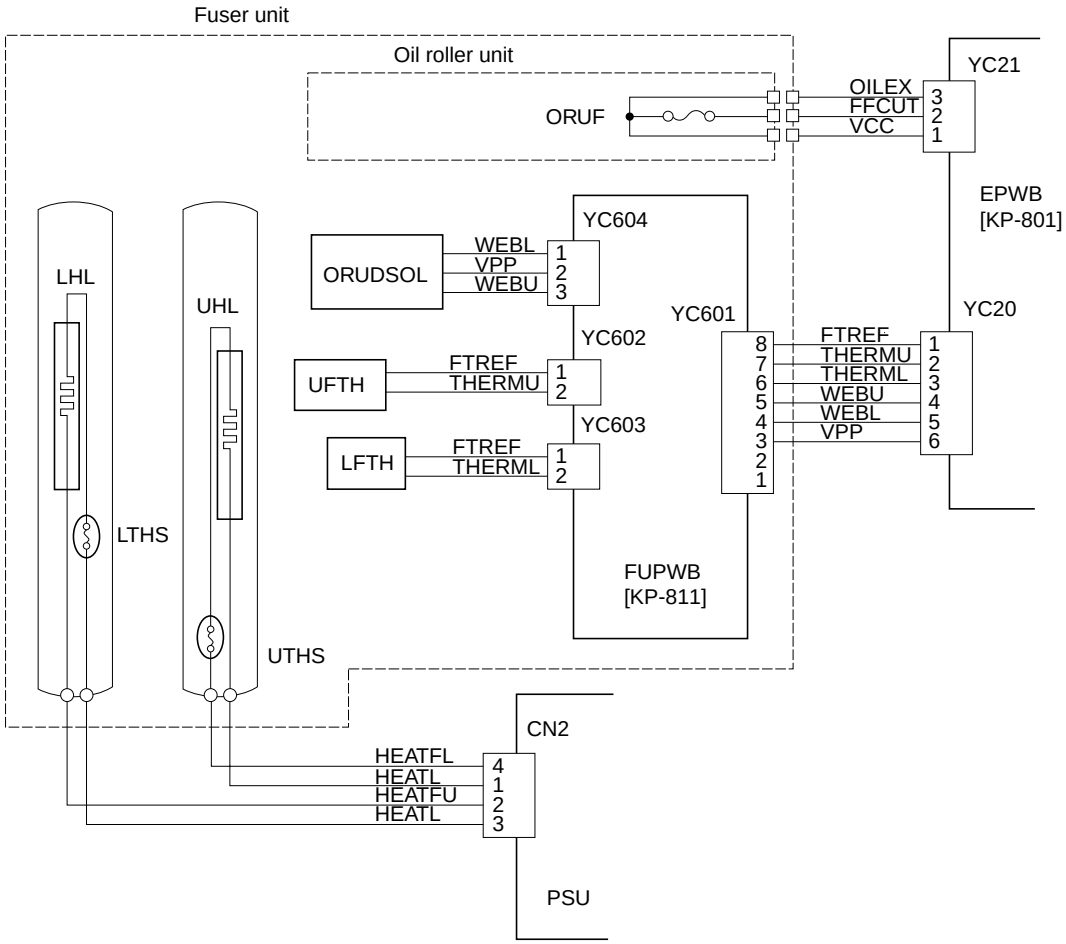


Figure 2-1-28 Fuser unit block diagram

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 (FUDSOL) to manipulate the change guide so that the paper is sent horizontally in the face-up tray.

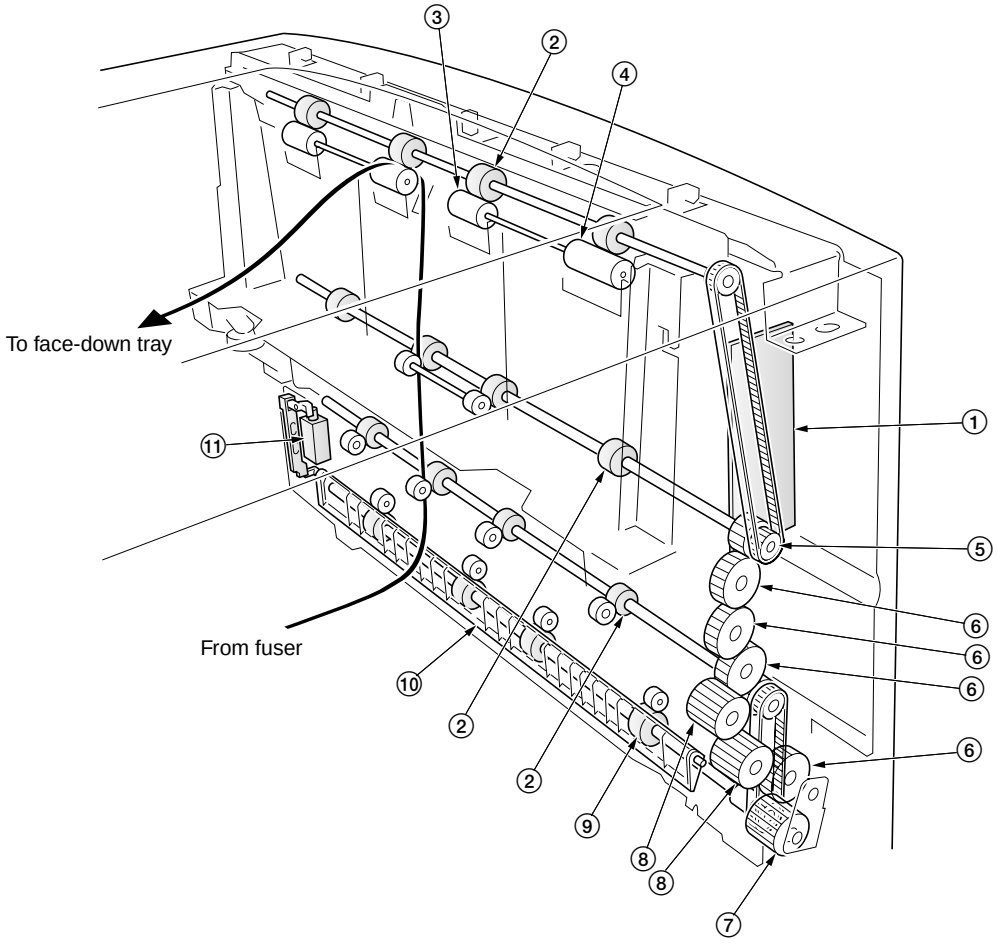


Figure 2-1-39 Face-down tray unit

① Face-down PWB (FDPWB) [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 (FUDSOL)

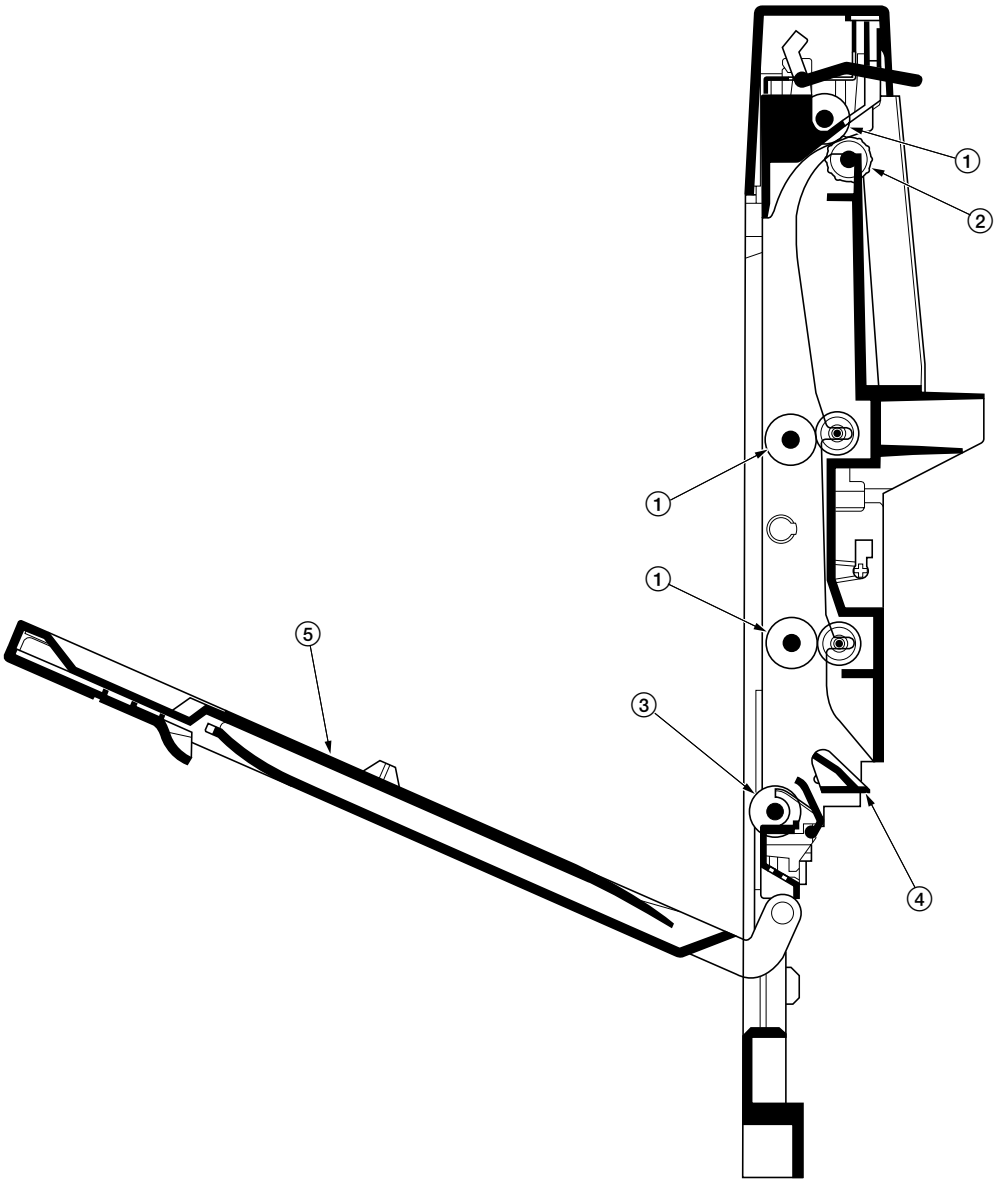


Figure 2-1-40 Face-down tray unit

① FD roller
② Exit AL pulley
② Exit BL pulley
③ FU roller
④ Change guide
⑤ Face-up tray

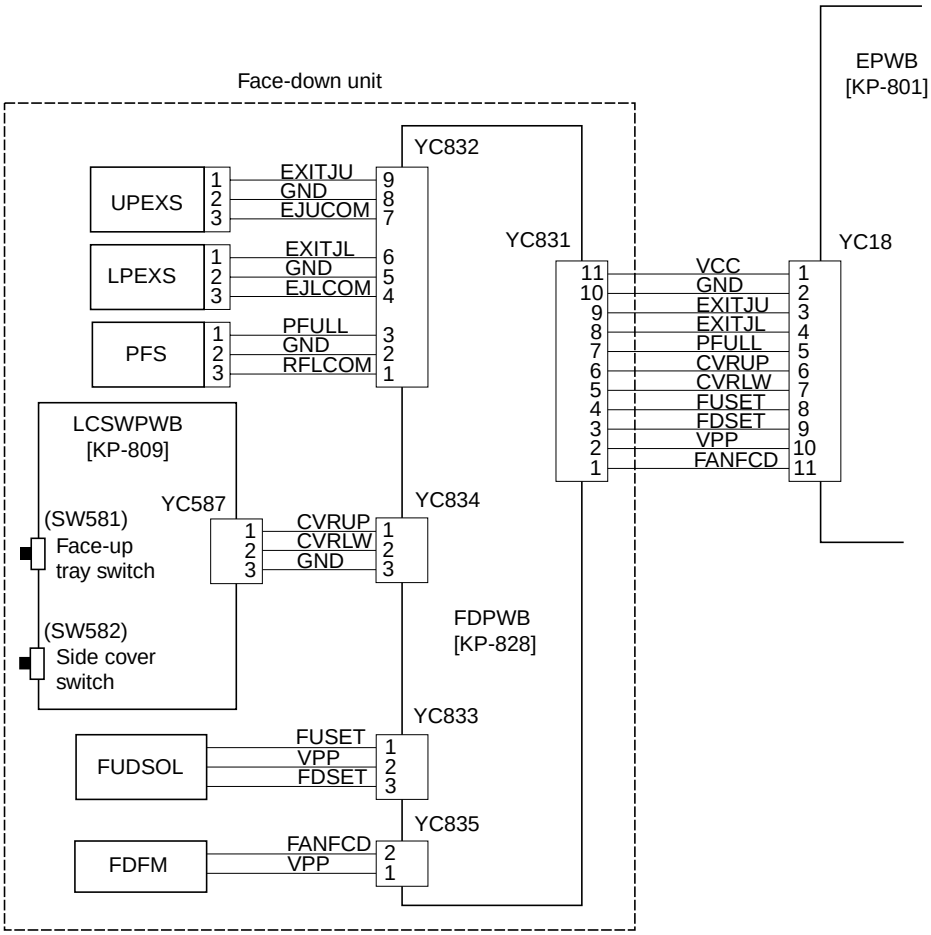


Figure 2-1-41 face-down unit block diagram

CONTENTS

2-2 Electrical Parts Layout

2-2-1 Electrical parts layout

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

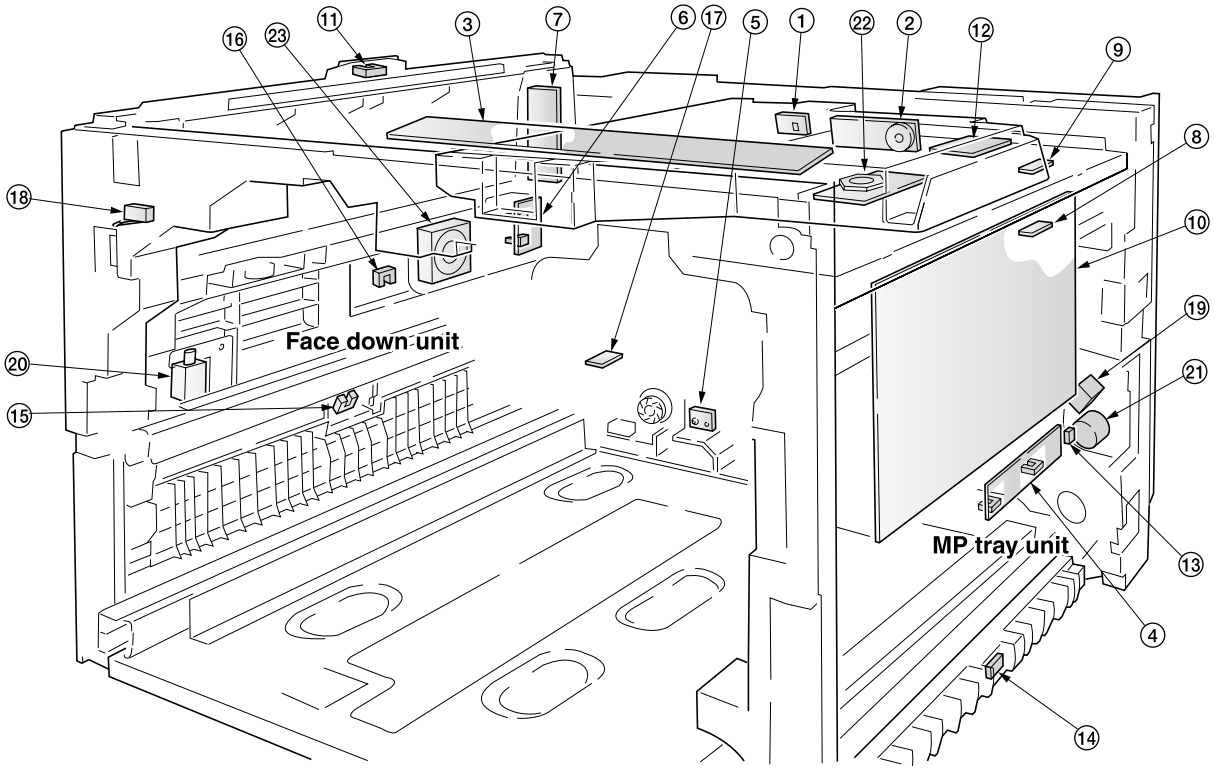


Figure 2-2-1 Main frame, Face-down unit, and MP tray unit

1. PD PWB (PDPWB) [KP-838] ..... Detects laser beam. Generates the horizontal sync output.
2. APC PWB (APCPWB) [KP-807] ..... Controls the laser beam output.
3. Operation panel PWB (OPPWB) [KP-805] .. Displays LCD messages and LED indicators. Controls key inputs.
4. MP tray feed PWB (MPFPWB) [KP-832] ..... Detects the paper and its width in MP tray. Activates electrical components.
5. Waste toner full sensor PWB (WTFSPWB) [KP-849] ..... Detects the waste toner bottle being full.
6. Left cover switch PWB (LCSWPWB) [KP-809] ..... Monitors whether the face-up tray and the side cover is open.
7. Face-down PWB (FDPWB) [KP-828] ..... Relays wirings for the face-down tray unit electrical components.
8. Black toner empty sensor PWB (KTESPWB) [KP-895] ..... Monitors toner in the black toner container (emitter)
9. Black toner empty sensor PWB (KTESPWB) [KP-896] ..... Monitors toner in the black toner container (receptor)
10. Developing/cleaning brush bias high voltage unit (DLPCBHVU) ..... Generates the developing bias and the primary transfer cleaning brush bias.
11. Paper full sensor (PFS) ..... Detects whether the face-down tray is full.
12. Humidity/temperature sensor (HUMTEMPS) ..... Detects the ambient temperature and humidity.
13. MP tray bottom plate position sensor (MPBPPS) . Detects MP tray bottom plate position.
14. Middle paper feed sensor (MPFS) ..... Detects paper jam at the paper feed unit.
15. Lower paper exit sensor (LPEXS) ..... Detects paper jam at the face-up tray unit.
16. Upper paper exit sensor (UPEXS) ..... Detects paper jam at the left cover.
17. Oil roller unit detection terminal (ORDT) ..... Connects the oil roller unit (fuse); and its fuse to blow when a new oil roller unit is installed.
18. Interlock switch (INTLSW) ..... Monitors whether the front cover is open and the 24 V DC power.
19. MP tray bottom plate solenoid (MPBPSOL) ..... Activates the MP tray bottom plate.
20. Face up/down solenoid (FUDSOL) ..... Switches the output stack between face up and face down.
21. MP tray feed clutch (MPFCL) ..... Controls drive chain to the MP tray feed roller.
22. Polygon motor (PM) ..... Revolves the polygon mirror.
23. Face-down unit fan motor (FDFM) ..... Dissipates the heated air in the printer.

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

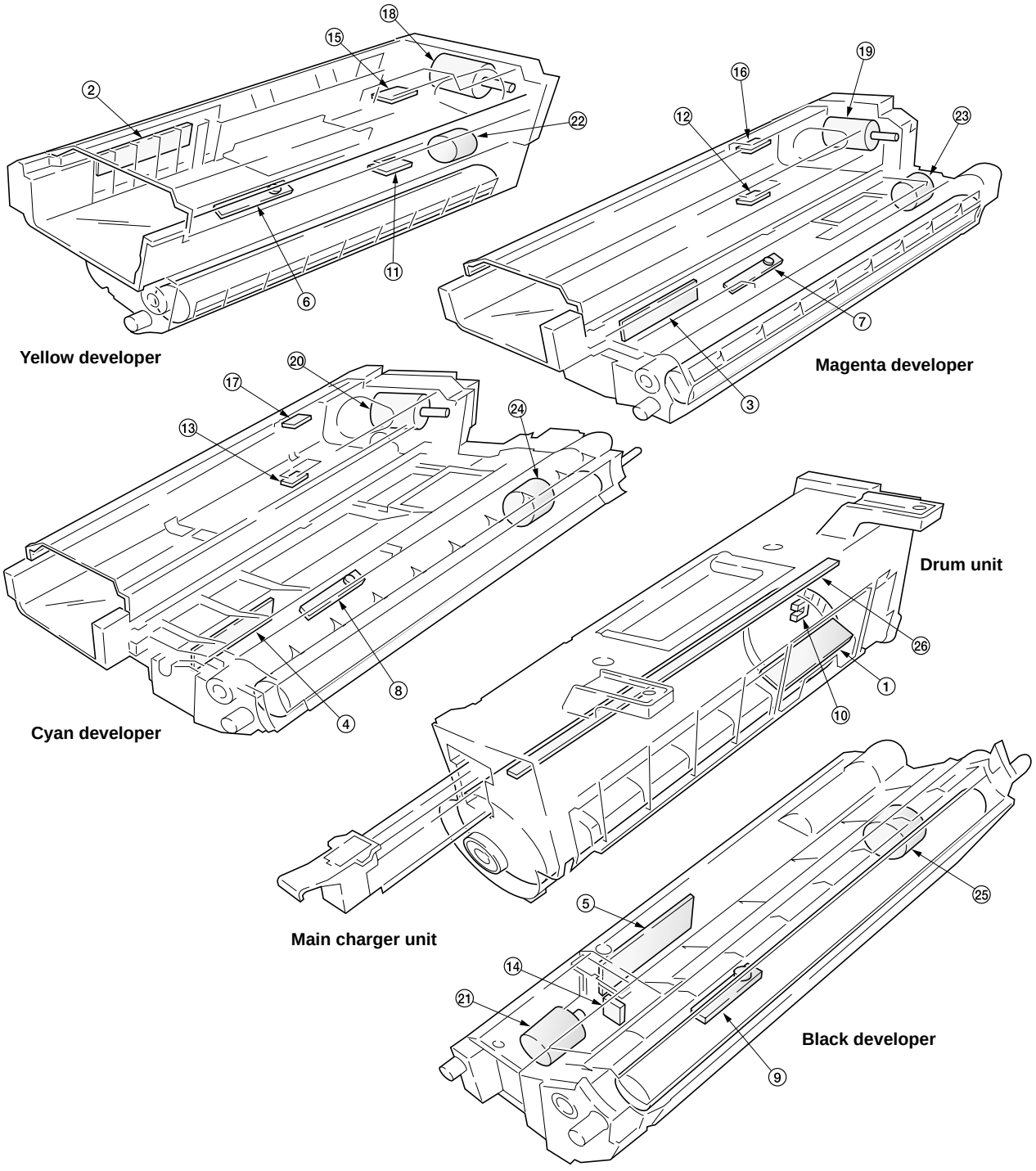


Figure 2-2-2 Developers, drum unit, and main charger unit

1. Drum PWB (DRPWB) [KP-813]	Accommodates the individual information for the drum including the light sensitivity, serial number, etc.
2.Yellow developer PWB (YDLPPWB) [KP-847]	Relays wirings for the electrical component in the yellow developer.
3. Magenta developer PWB (MDLPPWB) [KP-815].	Relays wirings for the electrical component in the magenta developer.
4. Cyan developer PWB (CDLPPWB) [KP-815].....	Relays wirings for the electrical component in the cyan developer.
5. Black developer PWB (KDLPPWB) [KP-817]	Relays wirings for the electrical component in the black developer.
6. Yellow T/C sensor (YTPCS)	Measures the toner concentration in the hopper for the yellow developer.
7. Magenta T/C sensor (MTPCS)	Measures the toner concentration in the hopper for the magenta developer.
8. Cyan T/C sensor (CTPCS)	Measures the toner concentration in the hopper for the cyan developer.
9. Black T/C sensor (KTPCS)	Measures the toner concentration in the hopper for the black developer.
10. Offset drum sensor (ODS)	Detects the home position for the drum at which revolution begins.
11. Yellow toner empty sensor (YTEMPS) [KP-819]	Measures toner in the yellow toner container (emitter).
12. Magenta toner empty sensor (MTEMPS) [KP-819]	Measures toner in the magenta toner container (emitter).
13. Cyan toner empty sensor (CTEMPS) [KP-819]	Measures toner in the cyan toner container (emitter).
14. Black toner Intermediate hopper sensor (KITHS)	Measure toner in the intermediate hopper for the black developer.
15. Yellow toner empty sensor (YTEMPS) [KP-820]	Measures toner in the yellow toner container (receptor).
16. Magenta toner empty sensor (MTEMPS) [KP-820]	Measures toner in the magenta toner container (receptor).
17. Cyan toner empty sensor (CTEMPS) [KP-820]	Measures toner in the cyan toner container (receptor).
18. Yellow toner feed motor (YTFM)	Replenishes the yellow developer with toner.
19. Magenta toner feed motor (MTFM)	Replenishes the magenta developer with toner.
20. Cyan toner feed motor (CTFM)	Replenishes the cyan developer with toner.
21. Black toner feed motor (KTFM)	Replenishes the intermediate toner hopper for the black developer with toner.
22. Yellow developer drive clutch (YDLPDCL)	Drives the yellow developer.
23. Magenta developer drive clutch (MDLPDCL)	Drives the magenta developer.
24. Cyan developer drive clutch (CDLPDCL)	Drives the cyan developer.
25. Black developer drive clutch (KDLPDCL)	Drives the black developer.
26. Eraser lamp (EL)	Discharges the drum.

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

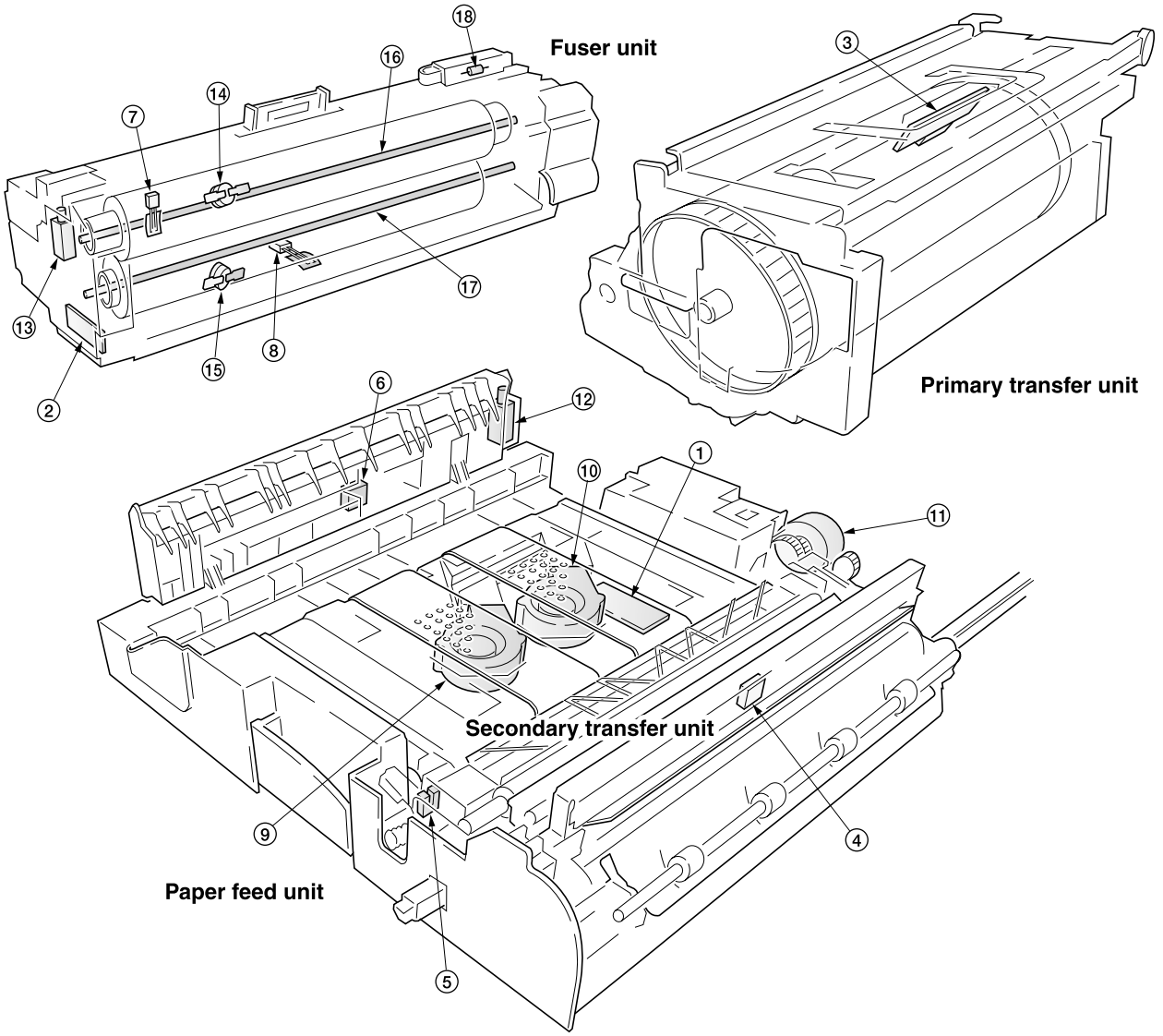


Figure 2-2-3 Primary transfer, secondary transfer, paper feed, and fuser units

1. Feed PWB (FPWB) [KP-826] ..... Controls electrical components in the paper feed unit.
2. Fuser PWB (FUPWB) [KP-811] ..... Relays wirings from electrical components on the fuser unit.
3. Image density sensor (IDS) ..... Measures image density for color calibration.
4. Registration sensor (REGS) ..... Determines the starting point for registration.
5. Secondary transfer unit position sensor (STRPS) ..... Determines the starting point for secondary image transferring.
6. Duplex paper exit sensor (DUPEXS) ..... Detects paper jam at the outlet for the duplexer.
7. Upper fuser thermistor (UFTH) ..... Measures the upper heat roller temperature.
8. Lower fuser thermistor (LFTH) ..... Measures the lower heat roller temperature.
9. Paper conveying fan motor 1 (PCFM1) ..... Attracts paper towards the conveying belt, 1.
10. Paper conveying fan motor 2 (PCFM2) ..... Attracts paper towards the conveying belt, 2.
11. Secondary transfer unit shift clutch (STRSCL) ..... Controls recessing the secondary transfer unit.
12. Duplex paper exit selection solenoid (DUPEXSSOL) ..... Switches the flap for guiding paper to the duplexer.
13. Oil roller up/down solenoid (ORUDSOL) ..... Controls recessing the oil roller.
14. Upper thermostat (UTHS) ..... Disable power for the upper heater lamp in emergency.
15. Lower thermostat (LTHS) ..... Disable power for the lower heater lamp in emergency.
16. Upper heater lamp (UHL) ..... Energize the upper heat roller.
17. Lower heater lamp (LHL) ..... Energize the lower heat roller.
18. Oil roller unit fuse (ORF) ..... Blows off when inserted in the fuser unit (counter reset).

(4) Main frame rear and controller box

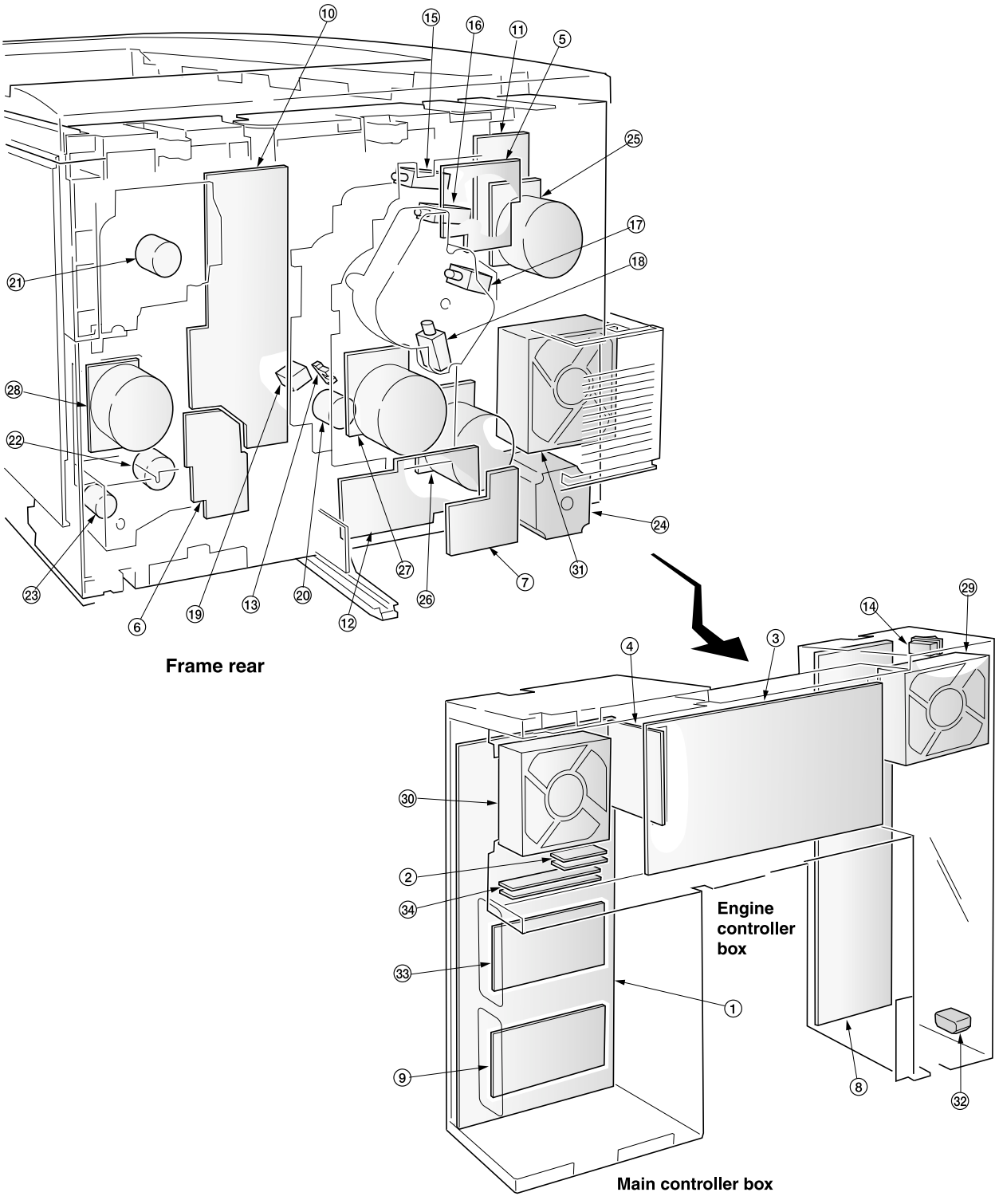


Figure 2-2-4 Main frame rear and controller box

1. Main controller PWB (MPWB) [KP-800]	Implements firmware for managing data processing for printing, interface with PC and the network, etc.
2. System DIMM PWB (DIMMPWB) [KP-689]	System program (firmware).
3. Engine controller PWB (EPWB) [KP-801]	Controls printer hardware including electrical components.
4. Engine-main controllers relay PWB (EMRYPWB) [KP-802]	Interconnects the engine controller PWB and the main controller PWB.
5. Main drive PWB (MDPWB) [KP-824]	Controls the developer units, solenoids for the primary transfer unit, and clutches.
6. Feed drive PWB (FDPWB) [KP-822]	Interconnects the electrical components paper in the paper feed unit.
7. Paper feeder/options relay PWB (PFRYPWB) [KP-830]	Interconnects the bottom-mounted options and paper exit options. Drives the fuser motor.
8. Power supply unit (PSU)	Receives AC mains supply and converts into 5 V DC and 24 V DC.
9. Network interface card (NIC)*	Interfaces with the network.
10. Separation charger high voltage unit (SCHVU)	Generates the separation charger high voltage.
11. Main charger high voltage unit (MCHVU)	Generates the main charger high voltage.
12. Transfer roller bias high voltage unit (TRHVU)	Generates the transfer roller bias.
13. Cleaning brush unit position sensor (CBPS)	Detects the position of the cleaning brush unit.
14. Power switch (POWSW)	Switches AC power input on and off.
15. Yellow developer magnet solenoid (YDLPMSOL)	Activates the magnetic brush for development (by repositioning the magnet), yellow.
16. Magenta developer magnet solenoid (MDLPMSOL)	Activates the magnetic brush for development (by repositioning the magnet), magenta.
17. Cyan developer magnet solenoid (CDLPMSOL)	Activates the magnetic brush for development (by repositioning the magnet), cyan.
18. Black developer magnet solenoid (KDLPMSOL)	Activates the magnetic brush for development (by repositioning the magnet), black.
19. Cleaning brush unit sift solenoid (CBSSOL)	Controls recessing the cleaning brush unit.
20. Cleaning brush unit drive clutch (CBDCL) ...	Controls driving the cleaning brush unit.
21. Black toner feed clutch (KTFCL)	Controls driving the black toner container and the black toner feed assembly.
22. Registration clutch (REGCL)	Controls driving the registration roller.
23. Paper feed clutch (PFCL)	Controls driving the paper feed roller.
24. Fuser unit drive motor (FUDM)	Controls driving the fuser unit and the conveying belts in the paper feed unit.
25. Color developers drive motor (CDLPDM)	Drives the yellow, magenta, and cyan developers.
26. Black developer drive motor (KDLPDM)	Drives the black developer.
27. Main drive motor (MDM)	Drives the drum unit.
28. Paper feed motor (PFM)	Drives the paper feed unit.
29. Power supply unit fan motor (PSFM)	Dissipates heat in the power supply unit.
30. Main controller box fan motor (MFM)	Dissipates heat from the main controller PWB.
31. Fuser unit fan motor (FUFM)	Dissipates heat from the fuser unit.
32. AC inlet	Inputs AC mains supply.
33. Hard disk unit (HDD)*	Holds print jobs.
34. Expanding memory (DIMM)**	For expanding main RAM.

*: Standard installed for FS-8000CD model only.
**: Option

CONTENTS

2-3 PWB Operation and Connector Signal Assignment

2-3-1 Engine controller PWB [KP-801]

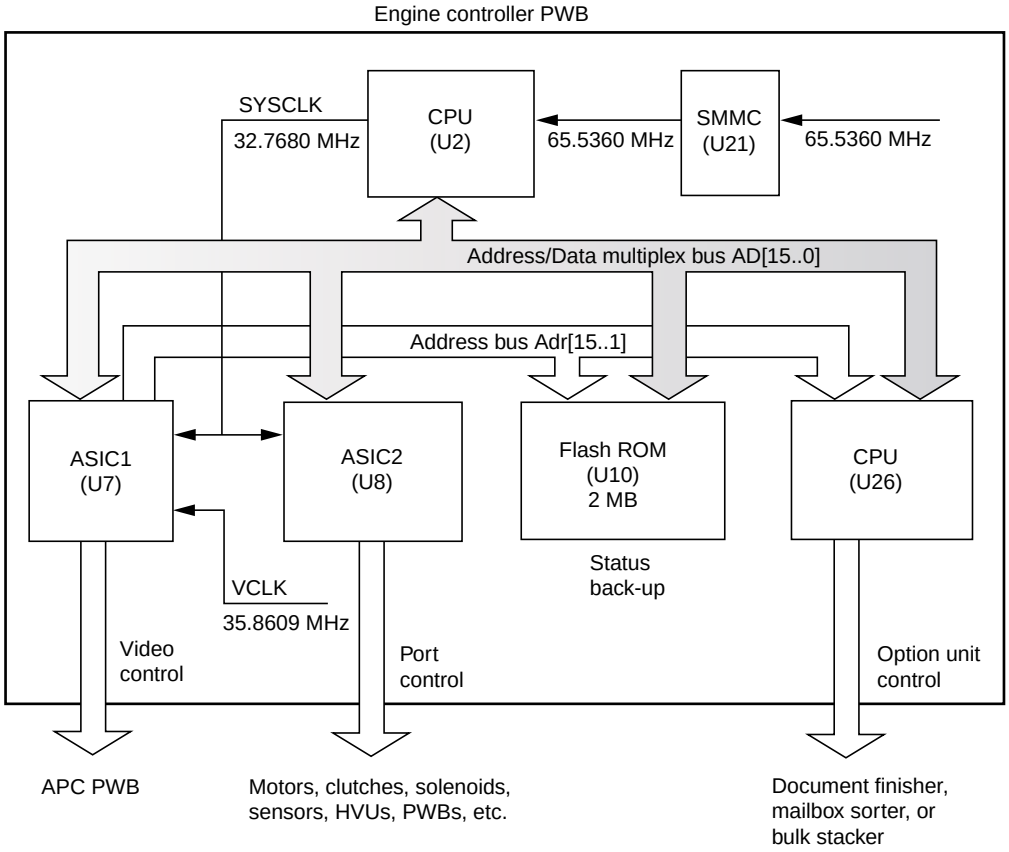


Figure 2-3-1 Engine controller PWB [KP-801] block diagram

Connector signal assignment

Connector	Pin No.	Signal	I/O	Description
YC1 Connected to the main controller PWB [KP-801] via engine-main controllers relay PWB [KP-802]	1	SO	O	Serial communication data
	2	SDIR	O	Serial communication control
	3	SI	I	Serial communication data reception
	4	ENGIRN	O	Serial communication interrupt
	5	VPPSEL	I	Engine program write control
	6	GND	-	Ground
	7	VD0p	I	Image data
	8	VD0n	I	Image data
	9	GND	-	Ground
	10	VD1p	I	Image data
	11	VD1n	I	Image data
	12	VHALF	O	Voltage for differential output
	13	VD2p	I	Image data
	14	VD2n	I	Image data
	15	GND	-	Ground
	16	VD3p	I	Image data
	17	VD3n	I	Image data
	18	GND	-	Ground
	19	MMODDESp	I	Gradation control
	20	MMODESn	I	Gradation control
	21	GND	-	Ground
	22	MMODELp	O	Gradation control
	23	MMODELn	I	Gradation control
	24	GND	-	Ground
	25	MODEp	I	Image/text data selection
	26	MODEn	I	Image/text data selection
	27	GND	-	Ground
	28	VENBp	I	Image data output timing
	29	VENBn	I	Image data output timing
	30	GND	-	Ground
	31	SVCLKp	I	Main (horizontal) scanning video clock
	32	SVCLKn	I	Main (horizontal) scanning video clock
	33	GND	-	Ground
	34	LSYNCp	O	Image data output scanning synchronization
	35	LSYNCn	O	Image data output scanning synchronization
	36	GND	-	Ground
	37	PURGE	O	Paper exit completion
	38	FPCLK	I	Serial communication clock, for the operation panel PWB
	39	FPDIR	I	Serial communication control, for the operation panel PWB
	40	PFRESn	I	Reset signal, for the operation panel PWB
	41	SBSY	I	Serial communication control
	42	GND	O	Ground
	43	SCLK	I	Serial communication clock
	44	GND	-	Ground
	45	PRGRESn	I	Engine program writing control
	46	RSTn	O	Reset
	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	VCC	O	5 V DC
	55	GND	-	Ground

Connector	Pin No.	Signal	I/O	Description
YC1 Connected to the main controller PWB [KP-801] via engine-main controllers relay PWB [KP-802]	56	VCC	O	5 V DC
	57	GND	-	Ground
	58	VCC	O	5 V DC
	59	GND	-	Ground
	60	VCC	O	5 V DC
	61	GND	-	Ground
	62	VCC	O	5 V DC
	63	GND	-	Ground
	64	VCC	O	5 V DC
	65	GND	-	Ground
	66	VCC	O	5 V DC
	67	GND	-	Ground
	68	VCC	O	5 V DC
	69	GND	-	Ground
	70	VCC	O	5 V DC
	71	GND	-	Ground
	72	VCC	O	5 V DC
	73	GND	-	Ground
	74	VCC	O	5 V DC
	75	VSYNC	O	Sub (vertical) scanning video clock
	76	VCC	O	5 V DC
	77	PSEL	O	First/second page selection (Two pages mode), H: First , L: Second
	78	GND	-	Ground
	79	FPDATA	O	Serial communication data, for operation panel
	80	EOPO	O	Page ending signal
YC2				Not used
YC4 Connected to Operation panel PWB [KP-805]	1	FPGND	-	Ground
	2	FPDIR	O	Serial communication control
	3	FPCLK	O	Serial communication clock
	4	FPDAT	O	Serial communication data
	5	FPRESn	O	Reset
	6	FPVCC	O	VCC
YC5 Connected to APC PWB [KP-807]	1	SCCLK	O	Polygon motor revolution control clock
	2	SCRDY	I	Polygon motor continuous revolution signal, L: Continuous
	3	SCANER	O	Polygon motor drive, L: Drive
	4	VPP	O	24 V DC
	5	PD	I	Horizontal synchronization from PD PWB
	6	POWSEL	O	Laser power control
	7	LEN	O	Laser output enable
	8	LONB	O	Laser output drive
	9	LASER5V	O	5 V DC for laser scanner unit (for APC and PD PWB), Interlock switch off: 5 V DC is off
	10	GND	-	Ground
	11	VD0n	O	Image data signal
	12	VD0p	O	Image data signal

Connector	Pin No.	Signal	I/O	Description
YC6 Connected to the humidity/ temperature sensor	1	TEMP	I	Temperature detection data (analog)
	2	GND	-	Ground
	3	HMOUT	I	Humidity detection data (analog)
	4	VCC	O	5 V DC
YC7 Connected to the main drive motor	1	FG	I	FG (Frequency generation) pulse
	2	VCC	O	5 V DC
	3	MMHU	I	Main drive motor control
	4	MMHV	I	Main drive motor control
	5	MMHW	I	Main drive motor control
	6	GND	-	Ground
	7	MMU	O	Main drive motor control
	8	MMV	O	Main drive motor control
	9	MMW	O	Main drive motor control
YC8 Connected to the color developers drive motor	1	FG	I	FG (Frequency generation) pulse
	2	VCC	O	5 V DC
	3	DMCHU	I	Color developers drive motor control
	4	DMCHV	I	Color developers drive motor control
	5	DMCHW	I	Color developers drive motor control
	6	GND	-	Ground
	7	DMCU	O	Color developers drive motor control
	8	DMCV	O	Color developers drive motor control
	9	DMCW	O	Color developers drive motor control
YC9 Connected to the paper feed motor	1	FG	I	FG (Frequency generation) pulse
	2	VCC	O	5 V DC
	3	FMHU	I	Paper feed motor control
	4	FMHV	I	Paper feed motor control
	5	FMHW	I	Paper feed motor control
	6	GND	-	Ground
	7	FMU	O	Paper feed motor control
	8	FMV	O	Paper feed motor control
	9	FMW	O	Paper feed motor control
YC10 Connected to the developing/ 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	T1REMn	O	Primary transfer bias control (T1), L: On
	6	ANT1	O	Primary transfer bias voltage control PWM
	7	BAYREMn	O	Yellow developing AC bias control, L: On
	8	ANBDY	O	Yellow developing DC voltage control PWM
	9	BDYREMn	O	Yellow developing bias control, L: On
	10	BAMREMn	O	Magenta developing AC bias control, L: On
	11	ANBDM	O	Magenta developing DC voltage control PWM
	12	BDMREMn	O	Magenta developing bias control, L: On
	13	BARCREMn	O	Cyan developing AC bias control, L: On
	14	ANBDC	O	Cyan developing DC voltage control PWM
	15	BDCREMn	O	Cyan developing bias control, L: On
	16	BAKREMn	O	Black developing AC bias control, L: On
	17	ANBDK	O	Black developing DC voltage control PWM
	18	BDKREMn	O	Black developing bias control, L: On
	19	ANCR	O	Cleaning brush bias voltage control PWM
	20	CRREMn	O	Cleaning brush bias control, L: On

Connector	Pin No.	Signal	I/O	Description
YC11 Connected to the power supply unit	1	VCC	I	5 V DC
	2	VCC	I	5 V DC
	3	GND	-	Ground
	4	GND	-	Ground
	5	GND	-	Ground
	6	GND	-	Ground
	7	VPP	I	24 V DC
	8	VPP	I	24 V DC
YC12 Connected to the power supply unit	1	FAN+24V	I	24 V DC for power supply unit fan motor (Not linked with the interlock switch)
	2	GND	-	Ground
	3	PSCNT	O	Power supply control, L: Power on
	4	PSOFFn	I	Power supply unit power down reset
	5	FANBn	O	Power supply unit fan motor drive, L: On
	6	HTENn	O	Heater lamp drive enable, L: Enable
	7	ZERCCn	I	Zero cross signal, L: Input pulse
	8	SDVPP	O	24 V DC power supply off signal, L: Power off
	9	LHEATn	O	Lower heater lamp control, L: On
	10	UHEATn	O	Upper heater lamp control, L: On
YC13 Connected to the main charger high voltage unit	1	GND	-	Ground
	2	VPP	O	24 V DC
	3	MCREMn	O	Main charger grid bias control, L: On
	4	ANMC	O	Main charger grid bias voltage PWM
YC14 Connect to the separation charger high voltage unit	1	GND	-	Ground
	2	VPP	O	24 V DC
	3	ANSP	O	Separation charger bias voltage PWM
	4	SPREM	O	Separation charger DC and AC signal, L: On
	5	SPER	O	Separation charger leak detection
YC15 Connected to the EEPROM PWB [KP-889]	1	VCC	O	5 V DC
	2	-	O	-
	3	-	O	-
	4	GND	O	Ground
	5	-	O	-
	6	-	O	-
YC16 Connected to the image density sensor	1	LMT5V	O	5 V DC (Fused)
	2	GND	-	Ground
	3	ANIDSI0	O	Image density sensor detection 0
	4	ANIDSI1	O	Image density sensor detection 1
	5	IDLED	O	5 V DC power supply for Image density sensor emitter (LED)
YC17 Connected to the drum PWB [KP-813]	1	GND	-	Ground
	2	ERSDRn	I	Eraser lamp drive signal, H: On
	3	DRODS	I	Off set drum sensor output pulse (synchronized with the drum rotation)
	4	VCC	O	5 V DC
	5	GND	-	Ground
	6	DRECS	O	Chip select signal for EEPROM on the drum PWB
	7	DRECLK	O	Clock signal for EEPROM on the drum PWB
	8	DREEDI	I	Data input signal for EEPROM
	9	DREDO	O	Data output signal for EEPROM
	10	DFSCUT	O	Not used

Connector	Pin No.	Signal	I/O	Description
YC18	1	VCC	O	5 V DC
Connected to the face-down PWB [KP-828]	2	GND	-	Ground
	3	EXITJU	I	Upper paper exit sensor detection, L: detected
	4	EXITJL	I	Lower paper exit sensor detection, L: detected
	5	PFULL	I	Paper full sensor detection, L: Full
	6	CVRUP	I	Left cover open/close detection, H: Open
	7	CVRLW	I	Face-up tray open/close detection, H: Open
	8	FUSET	O	Face-up/down solenoid drive
	9	FDSET	O	Face-up/down solenoid drive
	10	VPP	O	24 V DC
	11	FANFCD	O	Face-down unit fan motor drive
YC19	1	LMT5V	O	5 V DC (Fused)
Connected to the black toner empty sensor [KP-895]	2	VCRET	I	5 V DC (Fused)
	3	LEDCC	O	Black toner empty sensor emitter [infrared LED] drive
Connected to the black toner empty sensor [KP-896]	4	PQCOM	O	5 V DC (Fused, Via resister)
	5	TONE	I	Black toner empty sensor receiver [photo transistor] detection (analog)
	6	GND	-	Ground
YC20	1	FTREF	O	Reference voltage for fuser thermistors (approx. 4.2 V DC)
Connected to the fuser PWB [KP-811]	2	THERMU	I	Upper fuser thermistor detection
	3	THERML	I	Lower fuser thermistor detection
	4	WEBU	O	Oil roller up/down solenoid drive
	5	WEBL	O	Oil roller up/down solenoid drive
	6	VPP	O	24 V DC
YC21	1	VCC	O	5 V DC
Connected to the oil roller unit detection terminal	2	FFCUT	I	Oil roller unit new/old detection, H: New
			O	Oil roller unit fuse blowout execution
	3	OILEX	I	Oil roller unit installation detection, H: Installed
YC22	1	NC	-	Not used
Connected to the cyan developer PWB [KP-815]	2	GND	-	Ground
	3	GND	-	Ground
	4	CTPD	I	Cyan T/C sensor detection (analog)
	5	LMT5V	O	5 V DC (Fused)
	6	CTEMP	I	Cyan toner empty sensor [KP-820] detection, L: Empty
	7	CMAGDR	O	Cyan developing roller drive clutch drive, L: On
	8	VPP	O	24 V DC
	9	CTMDR	O	Cyan toner feed motor drive (PWM)
	10	CTMCOM	I	Cyan toner feed motor back electromotive force
Connected to the black developer PWB [KP-817]	11	VPP	O	24 V DC
	12	KMAGDR	O	Black developing roller drive clutch drive, L: On
	13	KTPD	I	Black T/C sensor detection (analog)
	14	KTEMP	I	Black
	15	KTMCOM	I	Black toner feed motor back electromotive force
	16	KTMDR	O	Black toner feed motor drive (PWM)
	17	LMT5V	O	5 V DC (Fused)
	18	GND	-	Ground
	19	GND	-	Ground
	20	DLKSET	I	Black developer installation detection, H: Installed

Connector	Pin No.	Signal	I/O	Description
YC23	1	GND	-	Ground
Connected to the yellow developer PWB [KP-847]	2	GND	-	Ground
	3	YTPD	I	Yellow T/C sensor detection (analog)
	4	LMT5V	O	5 V DC (Fused)
	5	YTEMP	I	Yellow toner empty sensor [KP-820] detection, L: Empty
	6	YMAGDR	O	Yellow developer drive clutch drive, L: On
	7	VPP	O	24 V DC
	8	YTMDR	O	Yellow toner feed motor drive (PWM)
	9	YTMCOM	I	Yellow toner feed motor back electromotive force
Connected to the magenta developer PWB [KP-815]	10	MTMCOM	I	Magenta toner feed motor back electromotive force
	11	MTMDR	O	Magenta toner feed motor drive (PWM)
	12	VPP	O	24 V DC
	13	MMAGDR	I	Magenta developer drive clutch drive, L: On
	14	MTEMP	I	Magenta toner empty sensor [KP-820] detection, L: Empty
	15	LMT5V	O	5 V DC (Fused)
	16	MTPD	O	Magenta T/C sensor detection (analog)
	17	GND	-	Ground
	18	GND	-	Ground
YC24	1	GND	-	Ground
Connected to the feed drive PWB [KP-822]	2	GND	-	Ground
	3	FEDEX	I	Paper feed unit installation detection, L: Installed
	4	SUBROL	-	Not used
	5	FEEDS	I	Registration sensor detection, L: Detected
	6	FEDDR	O	Paper feed clutch drive
	7	FANFP	O	Paper conveying fan motors 1 and 2 drive
	8	REGDR	O	Registration clutch drive
	9	VPP	O	24 V DC
	10	VPP	O	24 V DC
	11	JAMF	-	Not used
	12	TNRKDR	O	Black toner feed clutch drive
	13	T2INI	I	Secondary transfer unit home position detection, L: Home
	14	GND	-	Ground
	15	NC	-	Not used
	16	BRSET	O	Secondary transfer unit shift clutch drive
	17	EXITJD	I	Duplex paper exit sensor detection, L: Detected
	18	DUFDR	O	Duplex paper exit selection solenoid drive(For duplexer)
	19	VCC	O	5 V DC
	20	EXFDR	O	Duplex paper exit selection solenoid drive(For printer)
YC25	1	GND	-	Ground
Connected to the main controller box fan motor	2	FANC+	O	Main controller box fan motor drive
YC26	1	GND	-	Ground
Connected to the fuser unit fan motor	2	FANF+	O	Fuser unit fan motor drive

Connector	Pin No.	Signal	I/O	Description
YC27	1	VPP	O	24 V DC
Connected to the main drive PWB [KP-824]	2	MIXDRn	-	Not used
	3	YSOL1	O	Yellow developer magnet solenoid drive
	4	BRUSDR	O	Cleaning brush unit drive clutch drive
	5	MSOL1	O	Magenta developer magnet solenoid drive
	6	ROLDR	O	Cleaning brush unit shift solenoid drive
	7	CSOL1	O	Cyan developer magnet solenoid drive
	8	BUINI	I	Cleaning brush unit position sensor detection, H: Home
	9	KSOL1	O	Black developer magnet solenoid drive
	10	VCC	O	5 V DC
	11	GND	-	Ground
YC28	1	VCC	O	5 V DC
Connected to the MP tray feed PWB [KP-832]	2	MPFSET	-	Not used
	3	HANDS	I	MP tray paper detection, H: Not detected
	4	LONG	I	MP tray bottom plate position sensor detection, H: Home
	5	GND	-	Ground
	6	VPP	O	24 V DC
	7	BTTRDR	O	MP tray bottom plate solenoid drive
	8	MPFDR	O	MP tray feed clutch drive, L: On
YC29	1	WTLED	O	Waste toner full sensor PWB [KP-849] emitter (LED) drive
Connected to the paper feeder/ options relay PWB [KP830]	2	PFSEL2	O	Communication control 2, for option paper feeder/duplex unit/document finisher, etc.
	3	PFSEL1	O	Communication control 1, for option paper feeder/duplex unit/document finisher, etc.
	4	FINRX	I	Communication data, reception for document finisher
	5	PFSEL0	O	Communication control 0, for option paper feeder/duplex unit/document finisher, etc.
	6	DUSEN	I	Duplexer paper exit sensor detection, H: Detected
	7	WTONER	I	Waste toner full sensor PWB [KP-849], toner full detection, L: full
	8	VCC	O	5 V DC
	9	VCC	O	5 V DC
	10	VPP	O	24 V DC
	11	STPEN	O	Option document finisher power-off, H: Off
	12	STOBN	O	Fuser unit drive motor (stepping drive) control
	13	VPP	O	24 V DC
	14	STOAN	O	Fuser unit drive motor (stepping drive) control
	15	GND	-	Ground
	16	T2INV	I	Transfer roller bias (negative) control, H: On
	17	VPP	O	24 V DC
	18	ANT2	O	Transfer roller bias voltage control PWM
	19	T2REM	O	Transfer roller bias (positive) control, H: On
	20	GND	-	Ground
	21	STOAP	O	Fuser unit drive motor (stepping drive) control
	22	VPP	O	24 V DC
	23	GND	-	Ground
	24	STOBP	O	Fuser unit drive motor (stepping drive) control
	25	WTBS	I	Waste toner full sensor PWB [KP-849], waste toner bottle detection, H: Installed
	26	VPP	O	24 V DC
	27	VCC	O	5 V DC
	28	VCC	O	5 V DC
	29	GND	-	Ground
	30	GND	-	Ground
	31	PFSDO	O	Communication data output, for option paper feeder/duplex unit/document finisher, etc.
	32	PDSCLK	O	Communication clock, for option paper feeder/duplex unit/document finisher, etc.
	33	PFSDI	I	Communication data input, for option paper feeder/duplex unit/document finisher, etc.
	34	FINTX	O	Communication control, for option document finisher

Connector	Pin No.	Signal	I/O	Description
YC30	1	DMFG	I	FG (Frequency generation) pulse
Connected to the black developer drive motor	2	VCC	O	5 V DC
	3	DMKHU	I	Black developer drive motor control
	4	DMKHV	I	Black developer drive motor control
	5	DMKHW	I	Black developer drive motor control
	6	GND	-	Ground
	7	DMKU	O	Black developer drive motor control
	8	DMKV	O	Black developer drive motor control
	9	DMKW	O	Black developer drive motor control

2-3-2 Main controller PWB [KP-800]

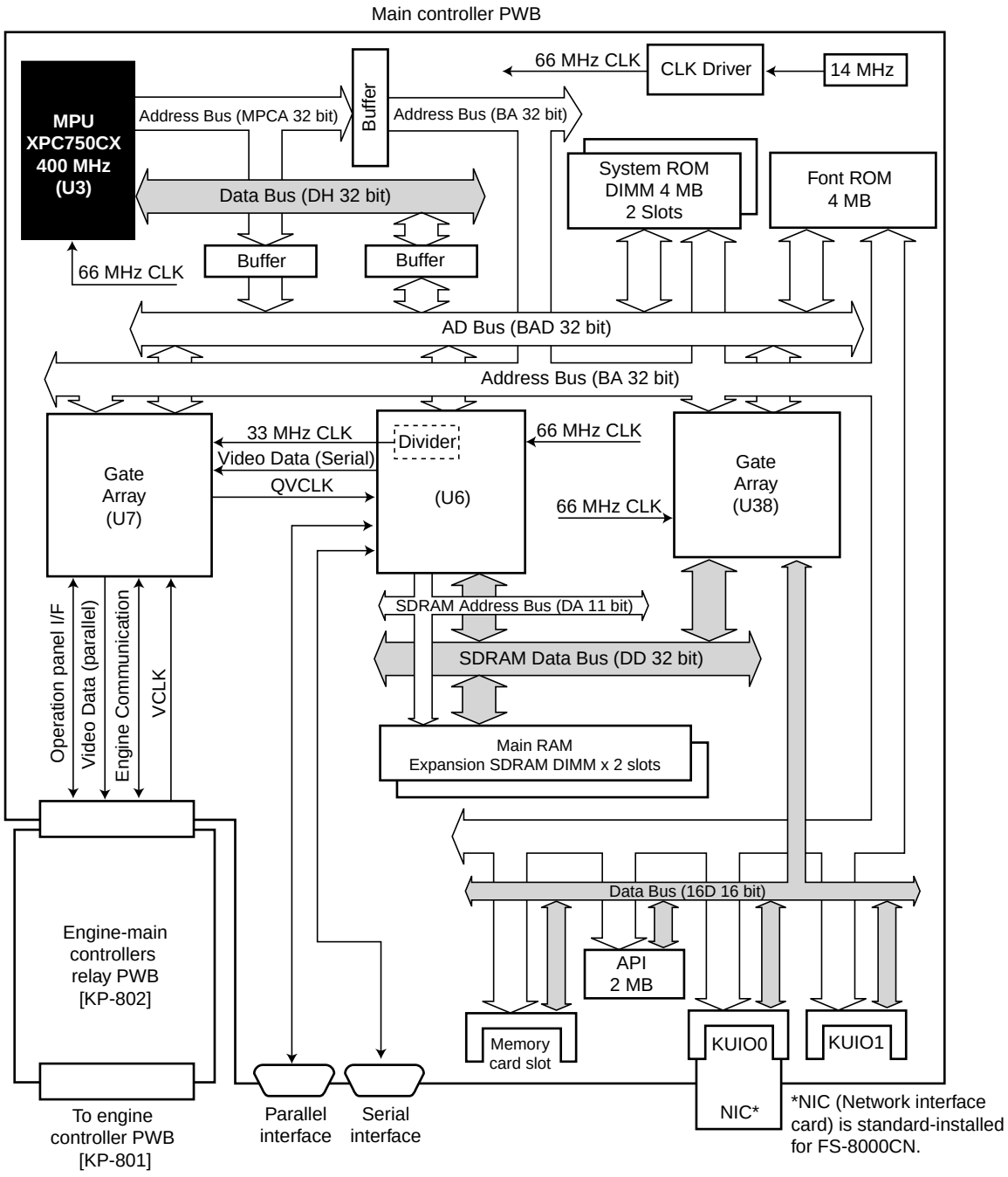
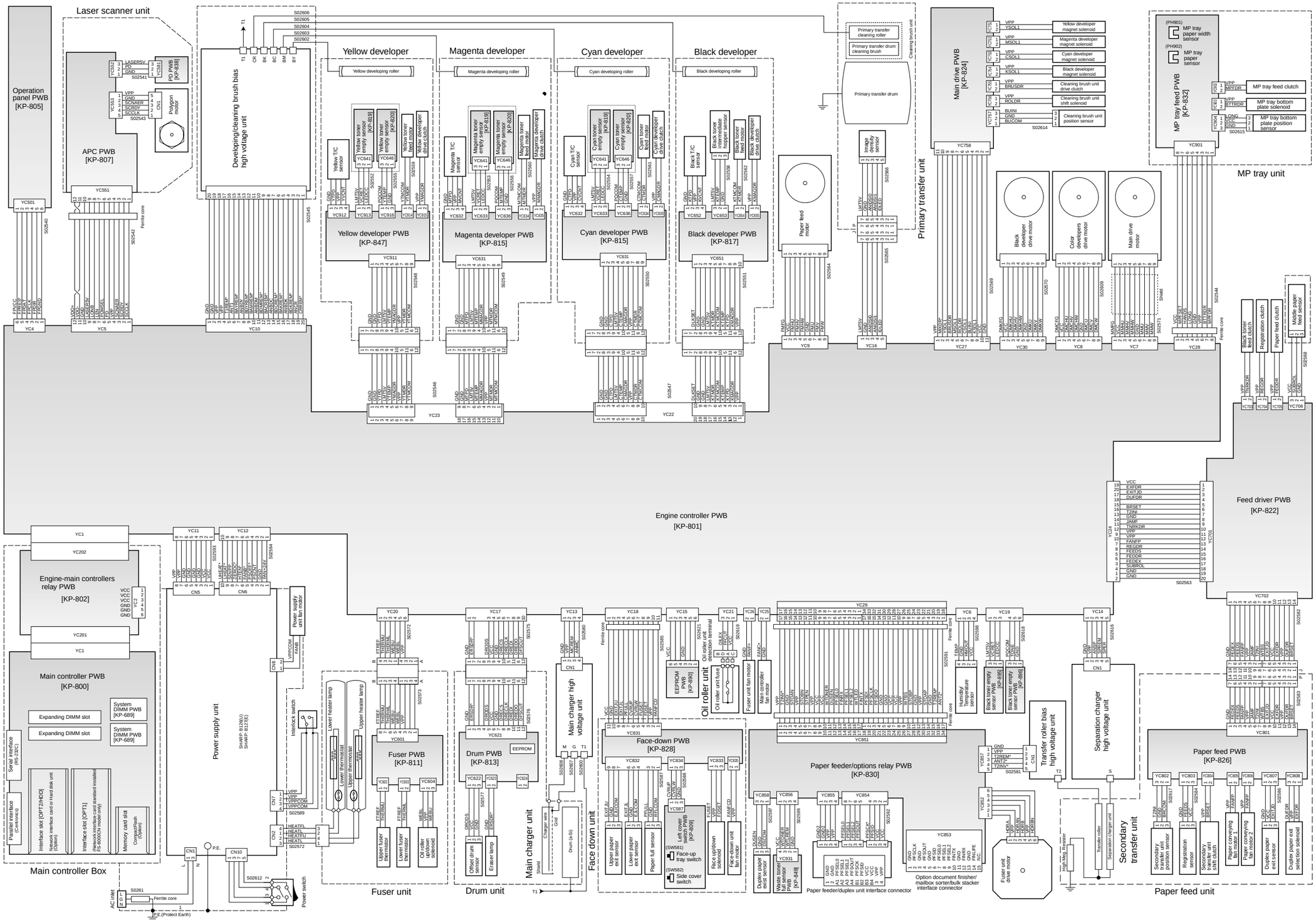


Figure 2-3-2 Main controller PWB [KP-800] block diagram

CONTENTS

2-4 Appendixes

Connection diagram



Maintenance kits

Maintenance kit part name		Part No.	Fig. No.	Ref. No.
Name used in the service manual	Parts name			
MK-800A Maintenance kit A	MK-800A MAINTENANCE KIT A			
Drum unit	DK-800 DRUM UNIT	5PLPXARAPKX	07	-
(including main charger unit)	(including MC-800 MAIN CHARGER ASSY	5PLPXAQAPKX	07	101
Ozone filter	and FILTER KIT)	2BM42790	02	002
Primary transfer unit	TR-800P PRI TRANSFER UNIT	5PLPXASAPKX	17	-
(including cleaning brush unit)	(including CLEANER ASSY)	2BM93270	17	056
Secondary transfer unit	TR-800S SEC TRANSFER UNIT	5PLPXATAPKX	05	101
*1 MK-801B Maintenance kit B	MK-801B MAINTENANCE KIT B			
Black developer	DV-800K DEVELOPER BLACK	5PLPXAXAPKX	-	-
Fuser unit (with oil roller unit)	FK-800(E) FUSER UNIT (E)	5PLPXAUAPKE	06	-
	FK-800(U) FUSER UNIT (U)	5PLPXAVAAMA	06	-
Separation charger unit	SC-800 SEPARATE CHARGER	5PLPXBRAPKX	05	114
*2 MK-800B Maintenance kit B	MK-800B MAINTENANCE KIT B			
Black developer	DV-800K DEVELOPER BLACK	5PLPXAXAPKX	-	-
Fuser unit (with oil roller unit)	FK-800(E) FUSER UNIT (E)	5PLPXAUAPKE	06	-
	FK-800(U) FUSER UNIT (U)	5PLPXAVAAMA	06	-
MK-800C Maintenance kit C	MK-800C MAINTENANCE KIT C			
Yellow developer	DV-800Y DEVELOPER YELLOW	5PLPXBAAPKX	-	-
Magenta developer	DV-800M DEVELOPER MAGENTA	5PLPXAZAPKX	-	-
Cyan developer	DV-800C DEVELOPER CYAN	5PLPXAYAPKX	-	-
*2 MK-800D Maintenance kit D	MK-800D MAINTENANCE KIT D			
Separation charger unit	(MK-800D)SC-800 SEPARATE CHARGER	5PLPXBRAPKX	05	114

*1 For European countries and Australia.
*2 For U.S., Canada, and Asian countries.

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 Check and replace	At any service visit. At any service visit.	Clean with alcohol or a dry cloth. Check and replace if damaged.	1-4-17 1-6-7
	Upper registration roller	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-4-16
	Lower registration roller	Clean Check and replace	At any service visit. At any service visit.	Clean with alcohol or a dry cloth. Check and replace if damaged.	1-4-16 1-6-9
	Secondary transfer unit shift clutch	Check and replace	At any service visit.	Check and replace if damaged.	1-6-23
	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.	1-4-17
	Separation charger wire	Clean	At any service visit.	Clean by using wire cleaner.	1-4-16
	Separation charger shield	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-6-21

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 1-4-8
	Drum R flange	Clean	At any service visit.	Clean the gear tooth.	1-4-19
	Drum gear Z14 Z28H and shaft	Clean and grease	At any service visit.	Clean and then apply grease gear and shaft.	1-4-19
	Idle gear Z17 Z22H and shaft	Clean and grease	At any service visit.	Clean and then apply grease gear and shaft.	1-4-19
	CLN gear Z17	Clean and grease	At any service visit.	Clean and then apply grease gear.	1-4-19
	Main charger wire	Clean	At any service visit.	Clean by using wire cleaner.	1-4-13
	Main charger grid	Clean	At any service visit.	Clean by using grid cleaner.	1-4-14
	Main charger shield	Clean	At any service visit.	Clean with alcohol or a dry cloth.	1-4-15

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.	1-4-18
	Cleaning brush unit	Clean	At any service visit.	Clean the waste toner exit with alcohol or a dry cloth.	1-4-18

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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