OKI®

B4200

MONOCHROME LED PAGE PRINTER

Maintenance Manual

Notice

Disclaimer

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Preface

This Maintenance Manual describes the field maintenance methods for B4200 Monochrome LED Page Printers.

This manual is written for use by service personnel. Please note that you should refer to the User's Guide for detailed. handling and operating methods of the equipment.

Table of Contents

Configuration

1. System Configuration

B4200 consists of control and engine blocks in the standard configuration, as shown in Figure 1-1.
In addition, the options marked with asterisk (*) are available.

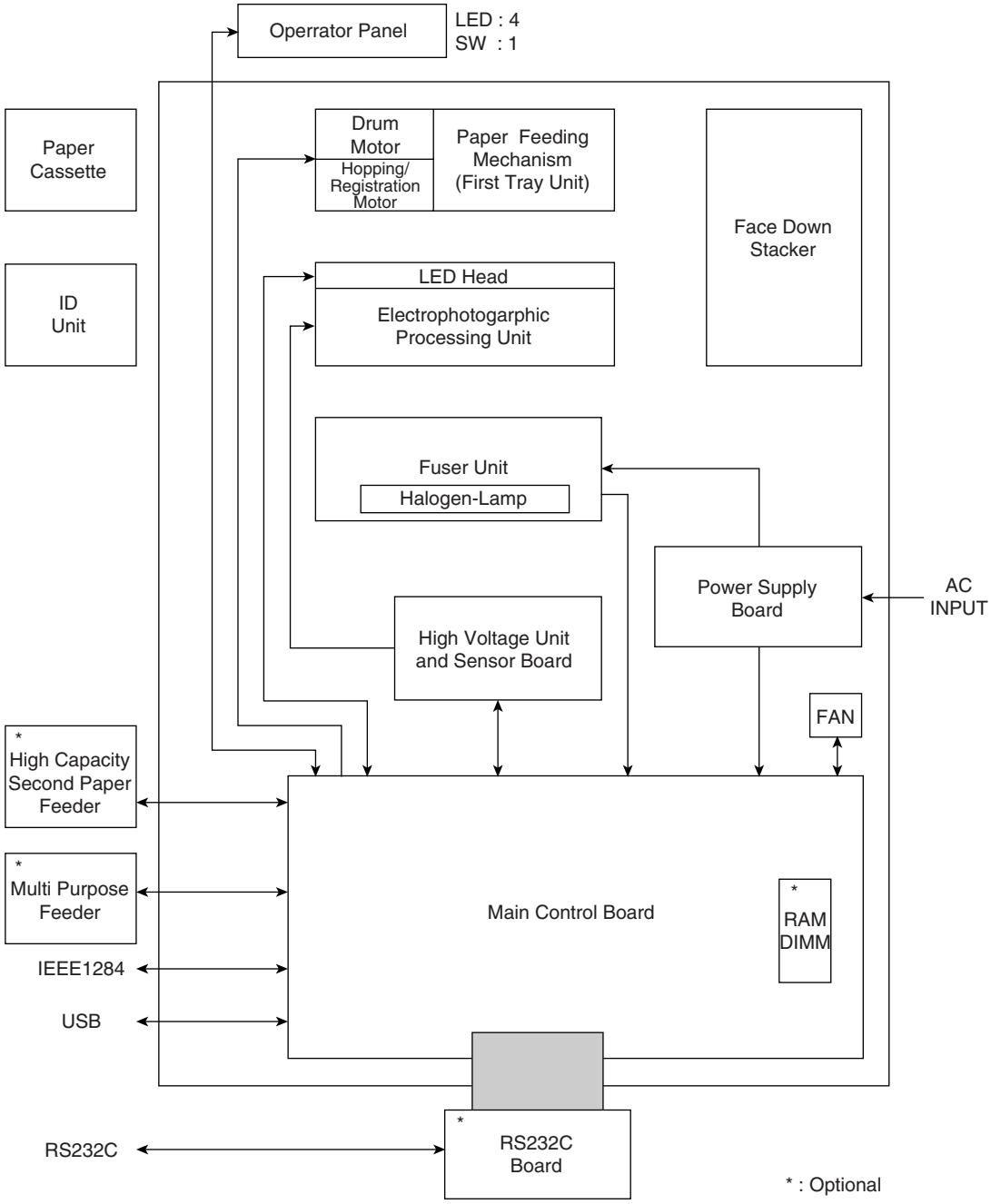


Figure 1-1

2. Printer Configuration

The printer unit consists of the following hardware components:

- Electrophotographic Processor
- Paper Feeder
- Controller
- Operator Panel
- Power Supply Unit

The printer unit configuration is shown in Figure 1-2.

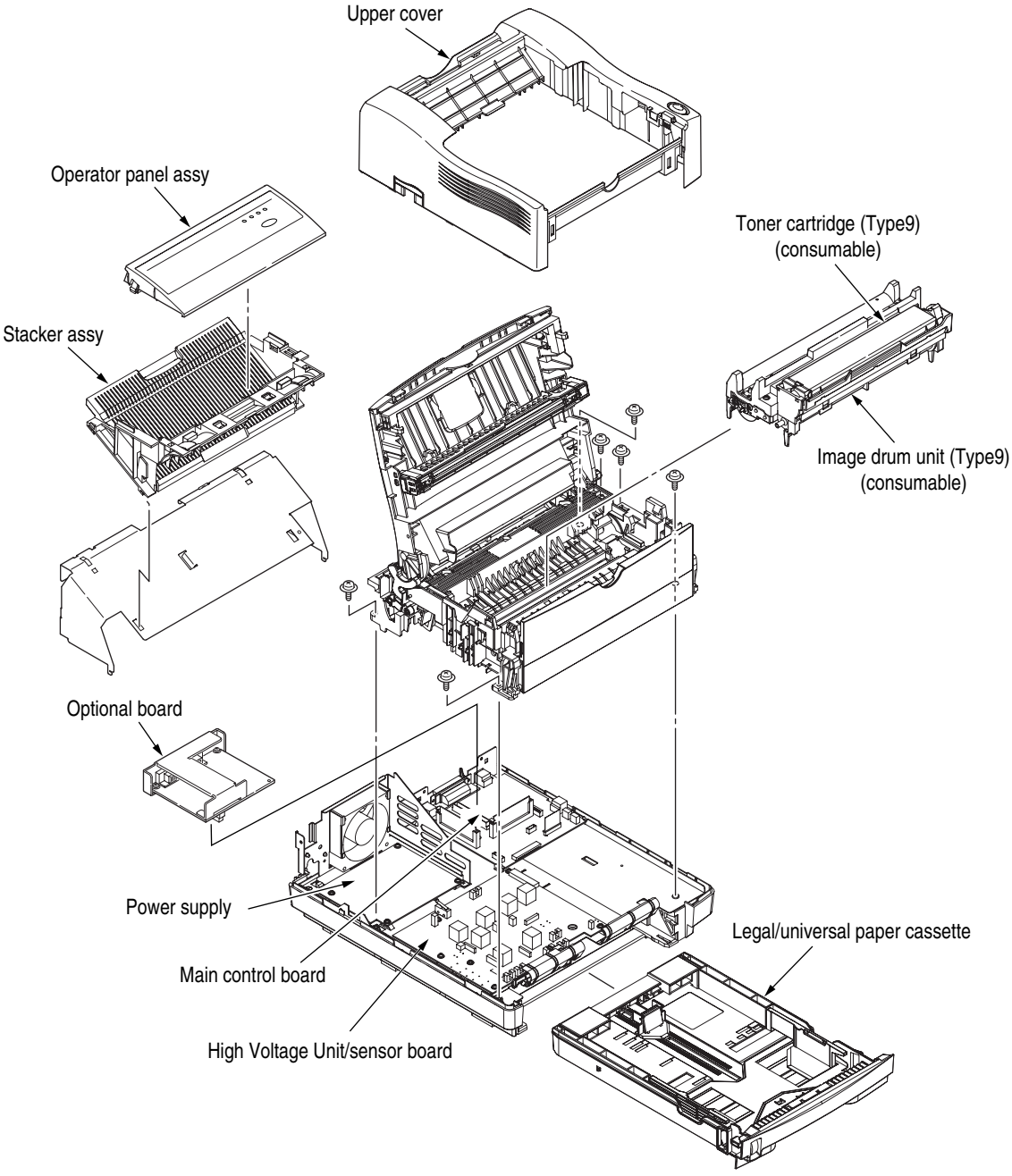
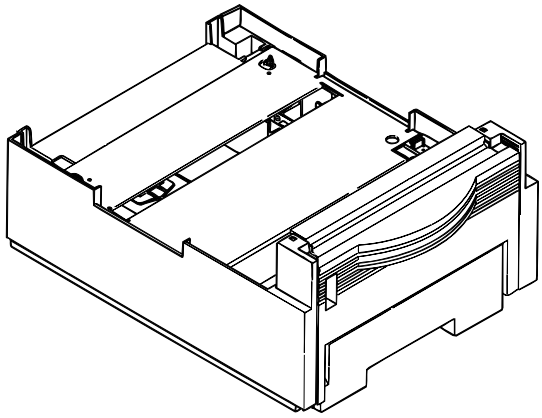


Figure 1-2

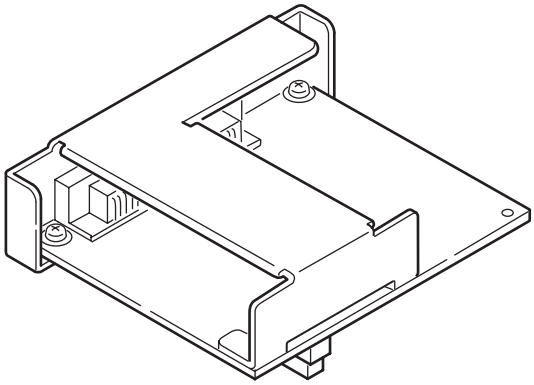
3. Optional Configuration

The options shown below are available for use with B4200. These are available separately from the printer unit.

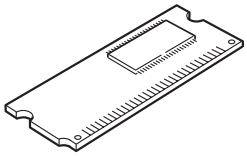
- High Capacity Second Paper Feeder



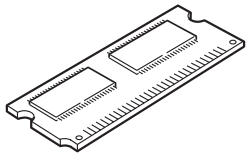
- RS-232C Serial Interface Board



- SDRAM DIMM

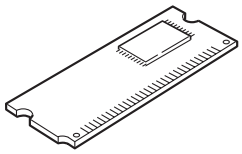


(i) 16MB

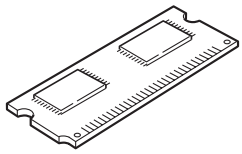


(ii) 32MB

- Flash DIMM



(i) 8MB



(ii) 16MB

4. Specification

1	Type	Desktop
2	External Dimensions	Height 7.9" (200 mm) Width 14.0" (355 mm) Depth 15.7" (400 mm)
3	Weight	Approx. 9 kg
4	Developing method Exposing method	Dry electrophotography LED stationary head
5	Paper Used	<Type> • Standard Paper – Xerox 4200 (20 lbs) • Application paper (manual face-up feed) – Label – Envelope – OHP paper (transparency) <Size> • Standard sizes – Letter – Legal – Legal-13* – Executive – COM-9 ** [** manual feed only] – COM-10** – Monarch** – DL** – C5** – A4 – A5 – B5 (JIS) – A6 • Applicable sizes – Width : 3.5" to 8.5" (90 to 216 mm) – Length : 5.8" to 14" (148 to 355.6 mm) <Thickness> – Automatic feed : 16 to 28 lbs (60 to 105 g/m^2) – Manual feed : Label, OHP paper (transparency) Envelope : (24 to 28 lbs)
6	Printing Speed	Continuous printing : 19 pages per minute with Letter size paper. 18 pages per minute with A4 size paper. Warm-up time : 35 seconds typical at room temperature [68½F (20½C), AC 120/230 V]. First page print time : 6.0 seconds typical for the Letter size paper (6.2 seconds for the A4 size) after warm-up.
7	Paper Feeding Method	Automatic feed or manual feed
8	Paper Delivery Method	Face down/face up
9	Resolution	600 x 600 dots/inch 600 x 1200 dots/inch
10	Power Input	120 VAC + 6%, -10% 230 VAC ± 10%

11	Power Consumption		120VAC	230VAC
		Peak :	Approx. 700W	Approx. 700W
		Typical operation :	Approx. 340W	Approx. 350W
		Idle :	Approx. 66W	Approx. 68W
		Power save mode (Without option) :	Approx. 8W	Approx. 9W
		Power save mode (With full option) :	Approx. 12W	Approx. 13W

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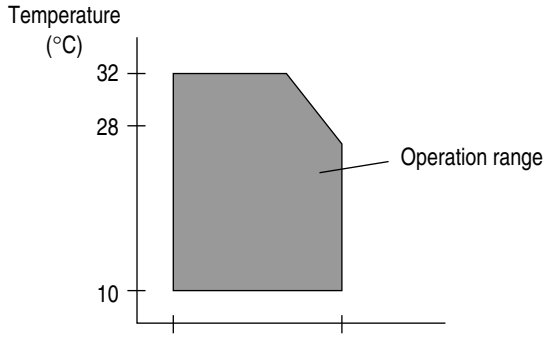
	In Operation	Power Off Mode	During Storage	Unit
Temperature	50-90 (10-32)	32-110 (0-43)	14-110 (-10-43)	F (C)
Humidity	20-80	10-90	10-90	%RH
Maximum wet bulb temperature	77 (77)	80.4 (26.8)	_____	F (C)
Minimum difference between wet and dry bulb temperatures	35.6 (2)	35.6 (2)	_____	F (C)

1. Storage conditions specified above apply to printers in packed condition.
2. Temperature and humidity must be in the range where no condensation occurs.

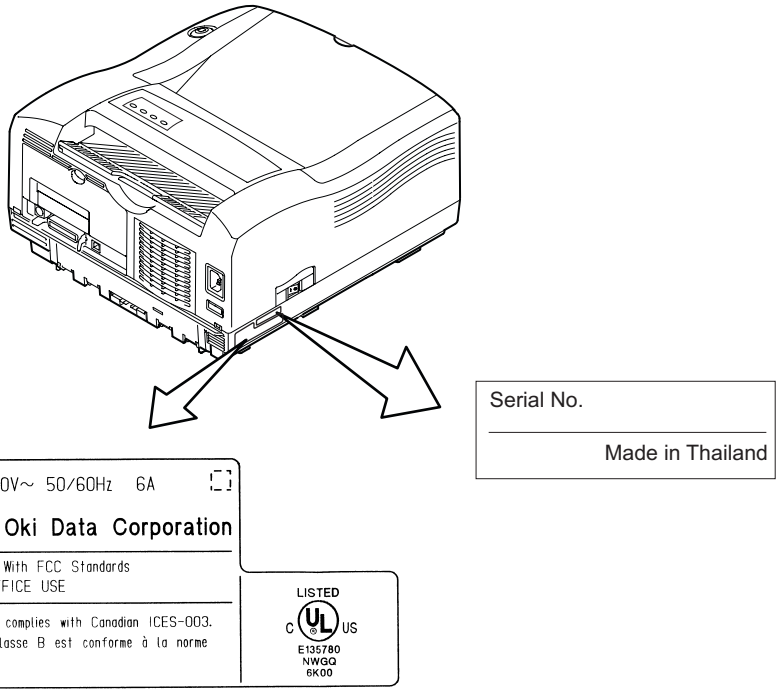


13	Noise	During operation: 53 dB (A) or less Standby: 38 dB (A) or less Quiet mode: Background level
14	Consumables	Image drum cartridge 25,000 (at continuous printing) 17,000 (3 page/job) without Power Save 11,000 (1 page/job) without Power Save 7,000 (1 page/job) with Power Save (Minimum)

5. Safety Standards

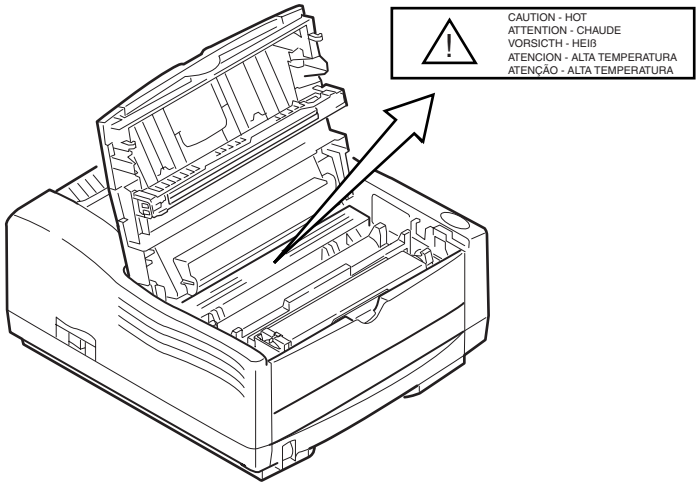
A. Certification Label

The safety certification label is affixed to the printer in the position described below.



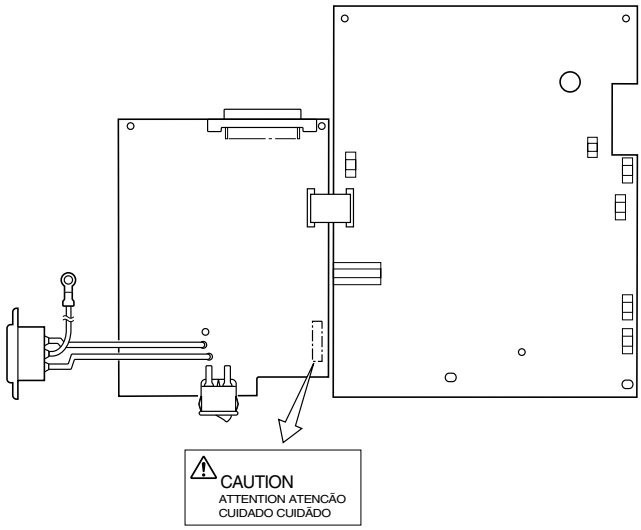
B. Warning Label

The warning labels are affixed to the sections which may cause bodily injury.
Follow the instructions on warning labels during maintenance.



C. Warning/Caution Marking

The following warning and caution markings are made on the power supply/sensor board.



The heat sink and transformer core present a risk of electric shock. Test before touching. Circuits may still be live after fuses open.

Parts Replacement

This section explains the procedures for replacement of parts, assemblies, and units in the field. Only the disassembly procedures are explained here. For reassembly, reverse the disassembly procedure.

1. Caution for Parts Replacement

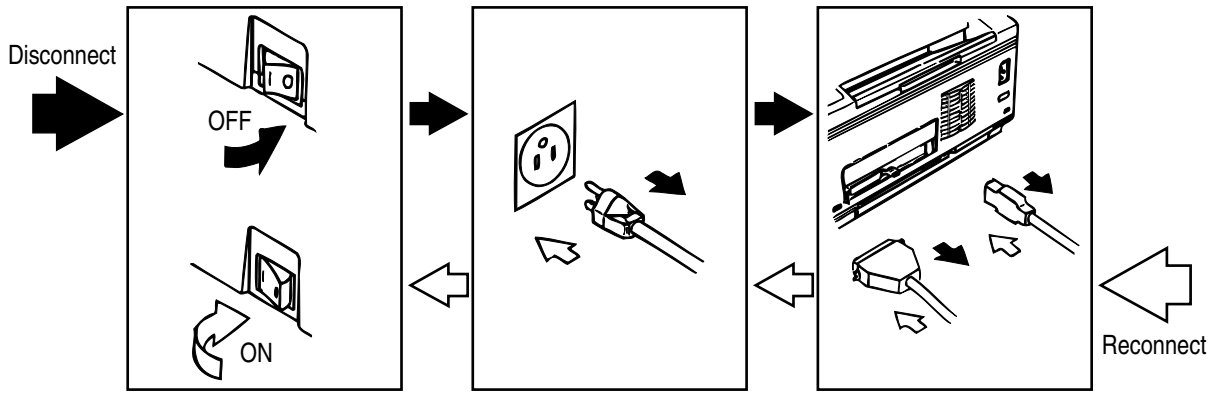
1. Before replacing parts, remove the AC cord and interface cable.

Remove the AC cord:

a. Turn off ("O") the power switch of the printer
b. Disconnect the AC inlet plug of the AC cord from the AC receptacle.
c. Disconnect the AC cord and interface cable from the printer.

Reconnect the printer:

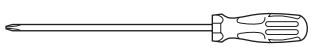
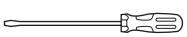
a. Connect the AC cord and interface cable to the printer.
b. Connect the AC inlet plug to the AC receptacle.
c. Turn on ("|") the power switch of the printer.

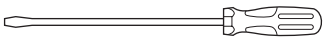
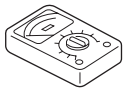
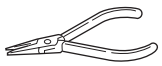
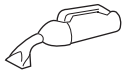
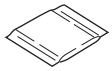


2. Do not disassemble the printer as long as it is operating normally.
3. Do not remove parts which do not have to be touched; try to keep the disassembly to a minimum.
4. Use specified service tools.
5. When disassembling, follow the laid out sequences. Parts may be damaged if these sequences are not followed.
6. Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the original positions during disassembly.
7. When handling IC's such as microprocessors, ROMs and RAMs, or circuit boards, do not wear gloves that are likely to generate static electricity.
8. Do not place printed circuit boards directly on the equipment or floor.

Service Tools

The tools required for field replacement of printed circuit boards, assemblies, and units are listed below.

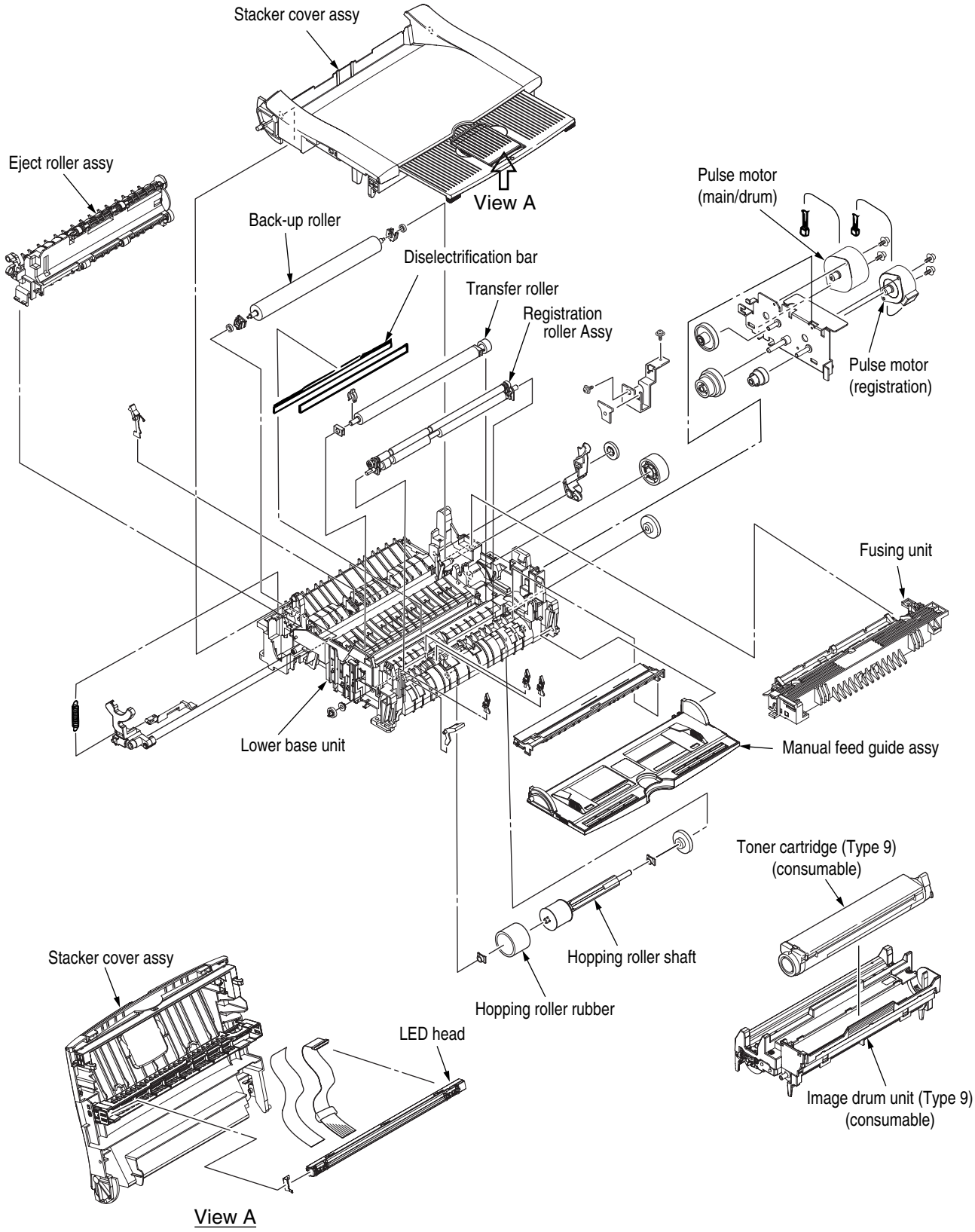
No.	Service Tools		Qty.	Application
1		No. 1-100 Phillips screwdriver	1	2~2.5 mm screws
2		No. 2-100 Phillips screwdriver	1	3~5 mm screws
3		No. 3-100 screwdriver	1	

No.	Service Tools		Qty.	Application
4		No. 5-200 Phillips screwdriver	1	
5		Digital multimeter	1	
6		Pliers	1	
7		Toner Vacuum	1	
8		LED Head cleaner	1	Cleans LED Head

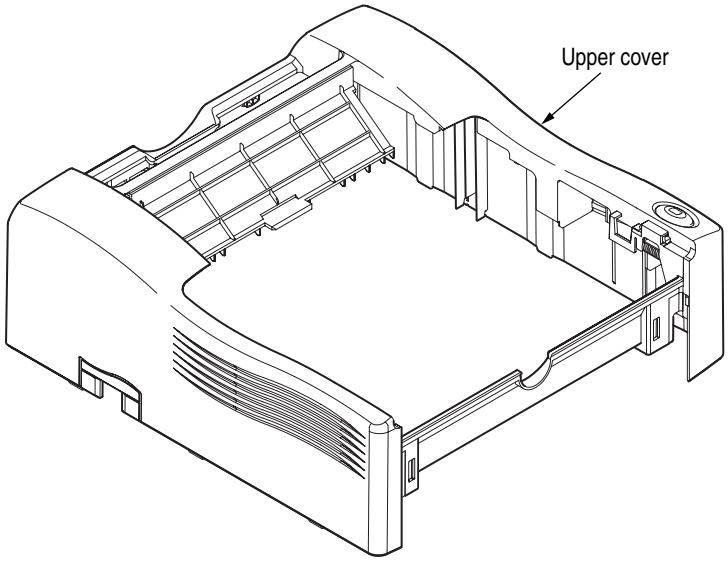
2. Parts Layout

This section explains the layout of main components of the equipment.

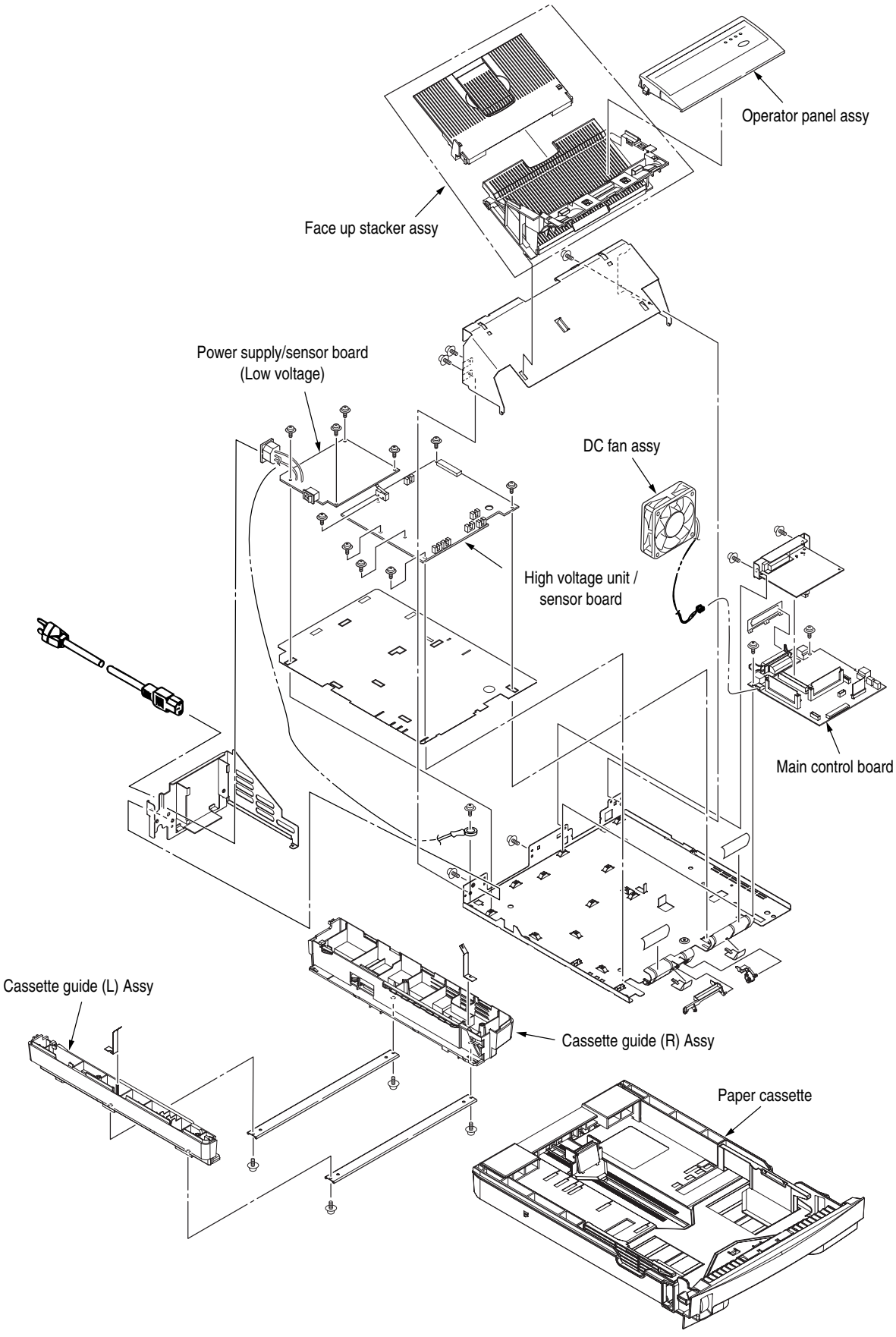
A. Lower Base Unit



B. Upper cover unit

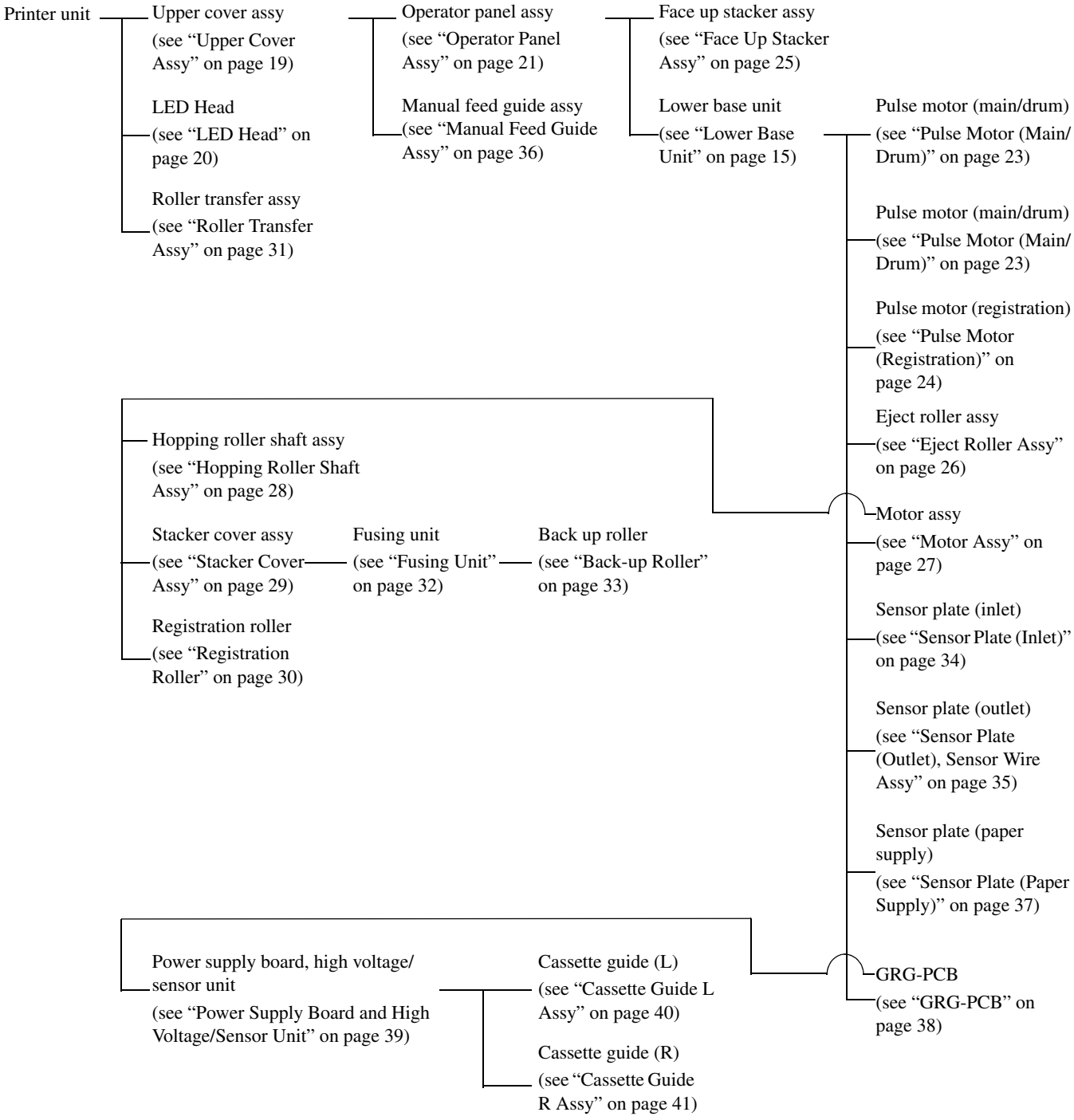


C. Base Unit


Operator panel assy
Face up stacker assy
Power supply/sensor board
(Low voltage)
DC fan assy
High voltage unit /
sensor board
Main control board
Cassette guide (L) Assy
Cassette guide (R) Assy
Paper cassette

3. How to Change Parts

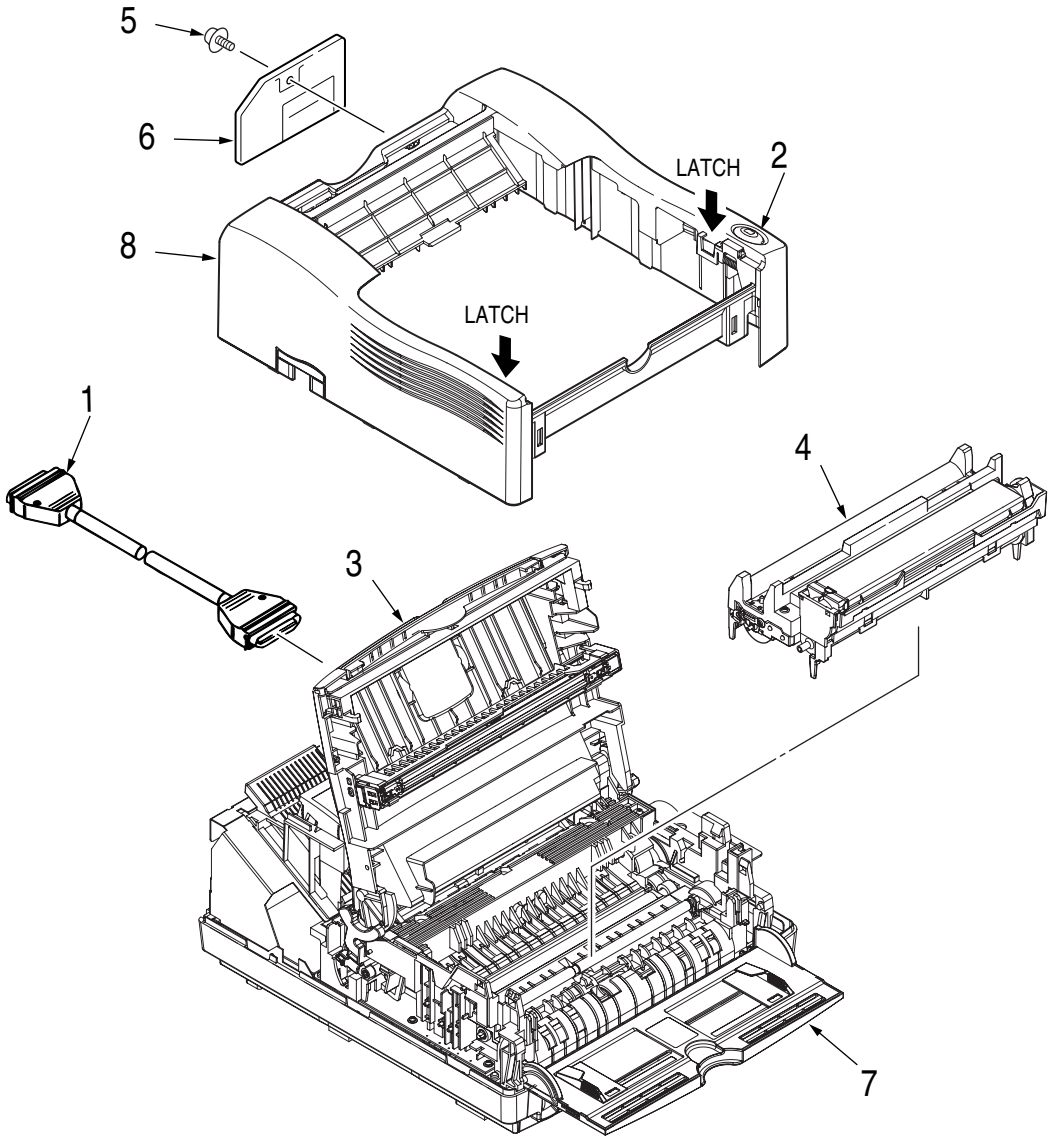
This section explains how to change parts and assemblies listed in the disassembly diagram below. Within the parts replacement procedures, those parts below are RSPL parts.



A. Upper Cover Assy

1. With the power switch turned off, unplug the AC power cord from the outlet.
2. Disconnect the interface cable (1).
3. Press the button (2) on right side of the Upper cover and open the stacker cover assy (3).
4. Take out the image drum unit (4).
5. Remove one screw (5), and remove the I/F cover (6) from the back side of the printer.
6. Open the manual feed guide assy (7). Unlock the latches at two locations on the front side. Lift the front side of the upper cover (8) up and unlock the latches at two locations on the back side. Lift and remove the upper cover assy (8).

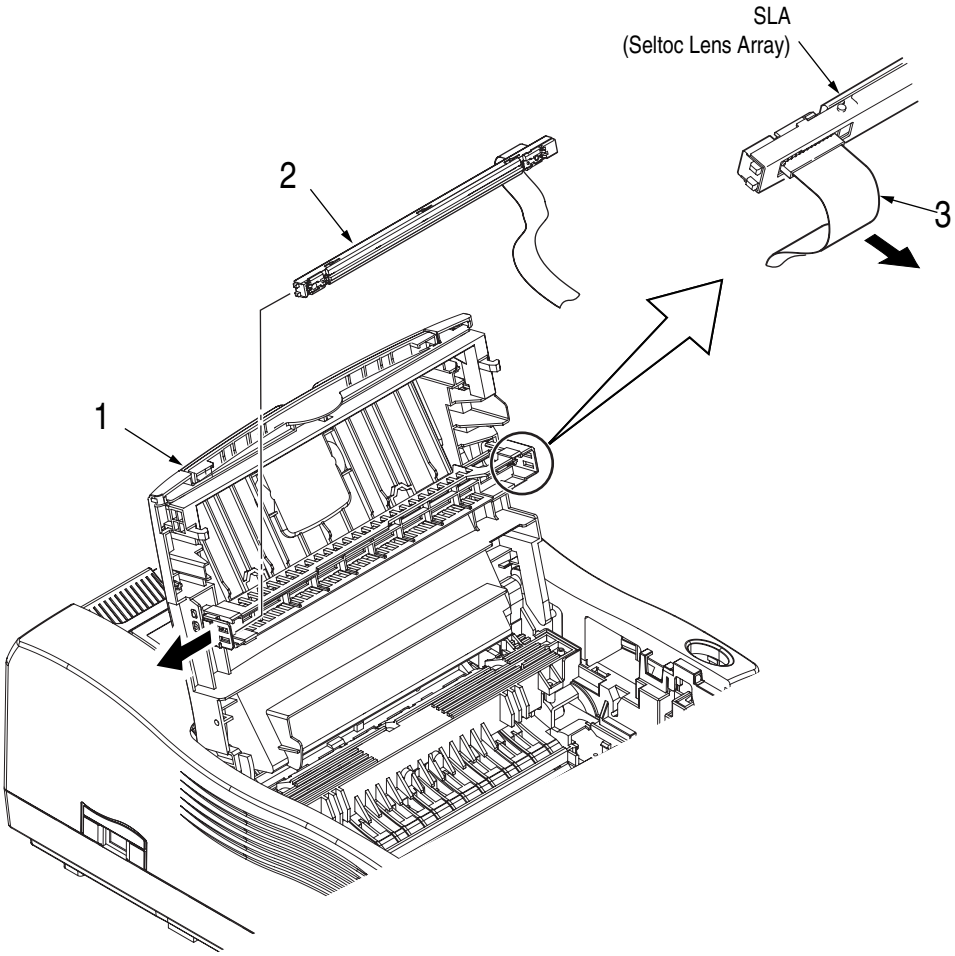
   Note: When removing or reinstalling the upper cover, be careful not to get the motor cables tangled or caught.



B. LED Head

1. Press the button on right side of the upper cover and open the stacker cover assy (1).
2. Open the hook section on the left side of the head holder and remove the LED head (2).
3. Remove the head cable (3) from the head connector.

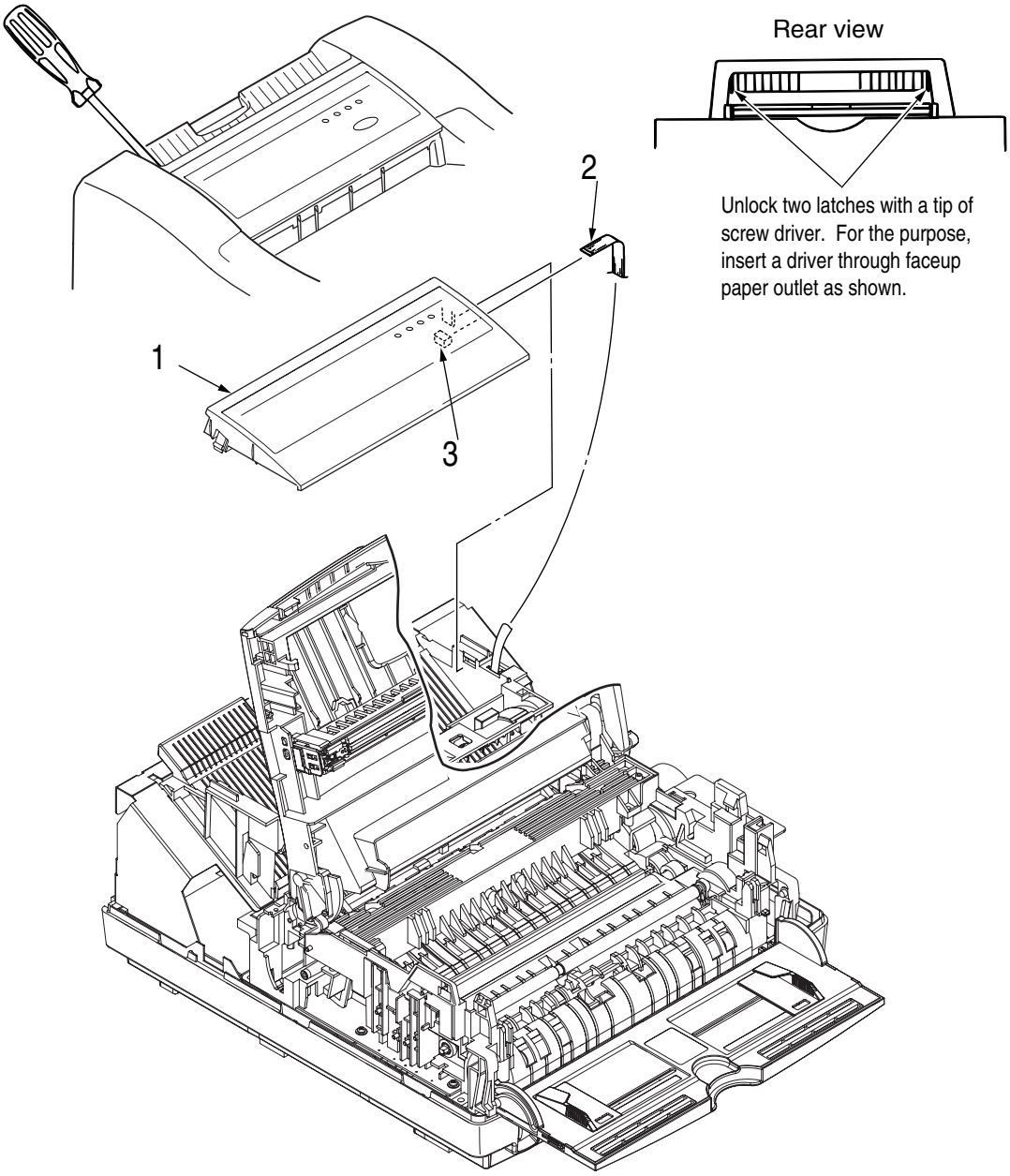
   Note: Be sure not to touch directly or push on the SLA part of the LED head.



C. Operator Panel Assy

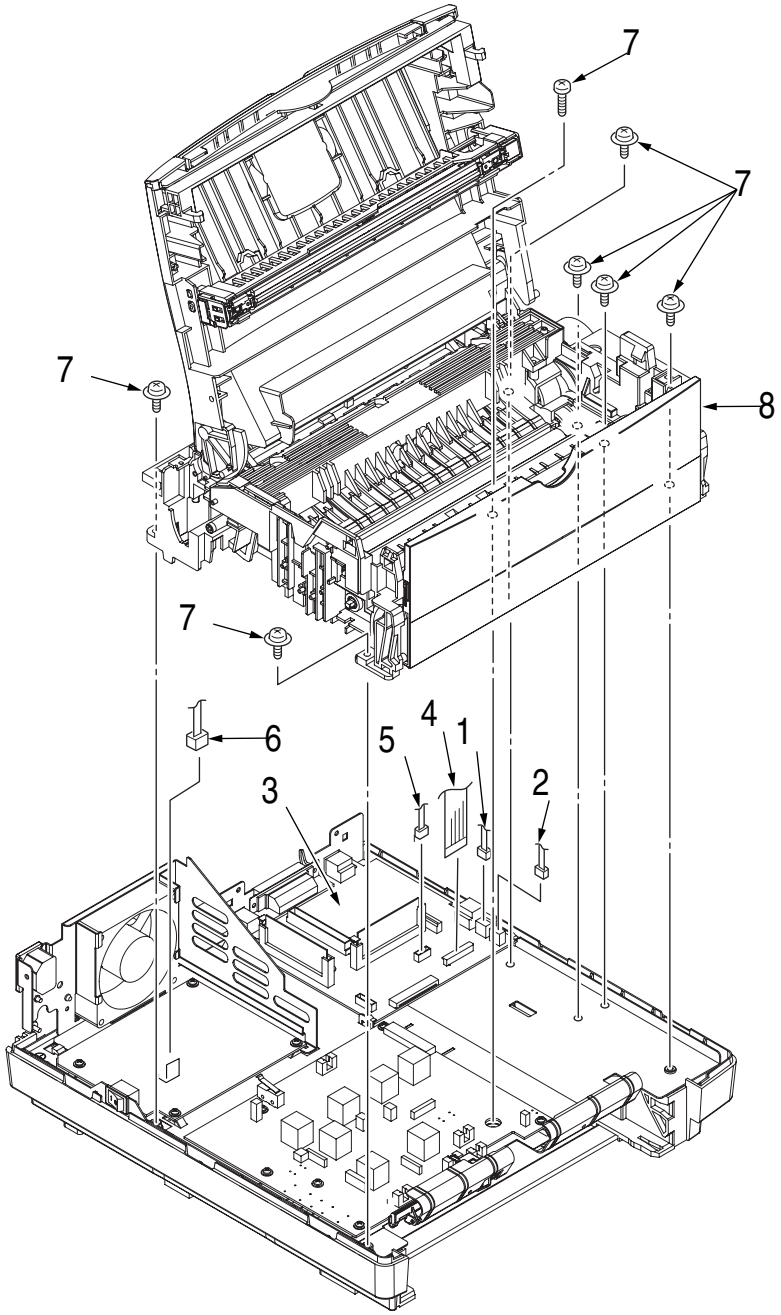
1. Unlock two latches on the upper cover from the rear side, lift the operator panel assy (1) from the back and remove it.
2. Remove the Sumi card (operator panel) (2) from the connector (CN1) (3).

Note: You can remove the operator panel assy while the upper cover installed on the unit. However, it is much easier to remove the panel assy after removal of upper cover.



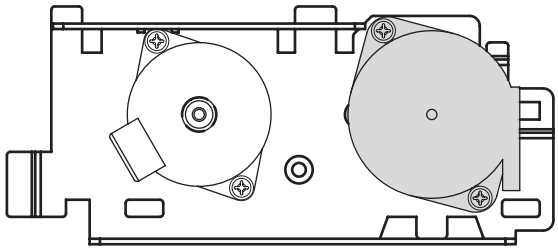
D. Lower Base Unit

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the roller transfer assy (see “Roller Transfer Assy” on page 31).
5. Remove the connecting cables (2) and (3) of the pulse motors from the connectors (DM, RM) of the GRG-PCB (1).
6. Remove the LED head cables (4) from the connector (HEAD1).
7. Remove the Thermistor cable (5) from the connector (THERM).
8. Remove the connecting cable (8) of the heater from the connector (CN2).
9. Open the manual feed guide assy, remove seven screws (7), then remove the lower base unit (6).

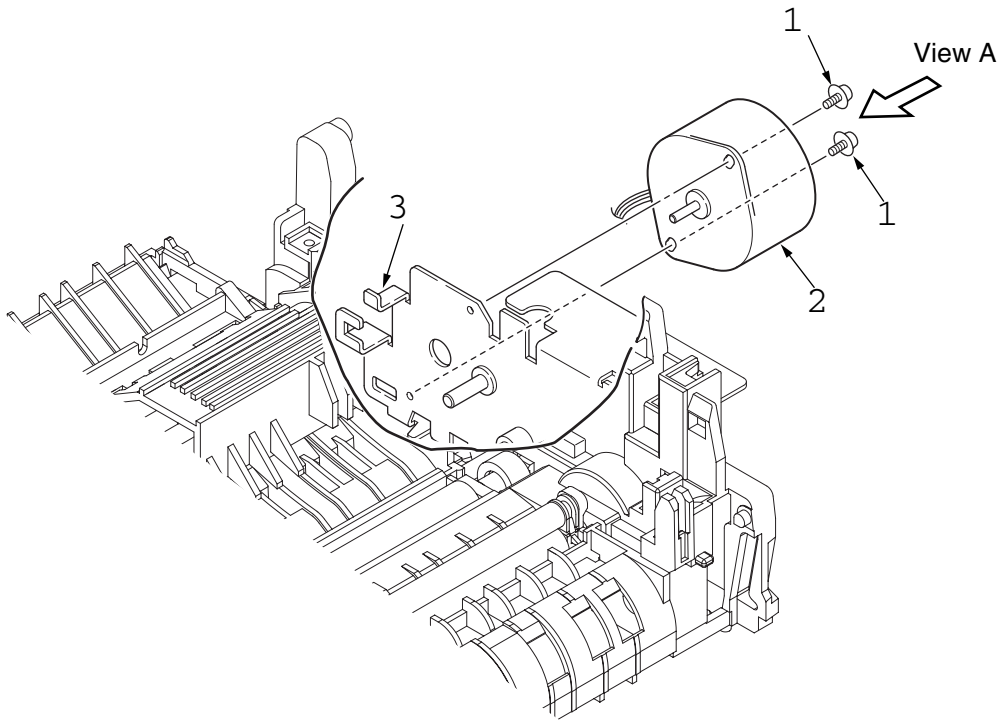


E. Pulse Motor (Main/Drum)

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the lower base unit (see “Lower Base Unit” on page 22).
3. Remove two screws (1) and remove the pulse motor (main/drum) (2) from the motor bracket (3).

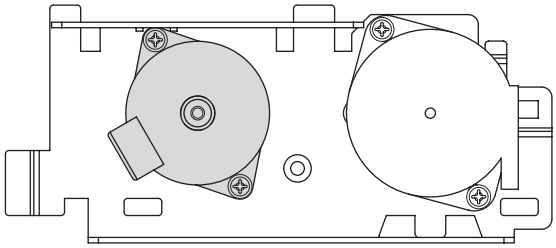


View A

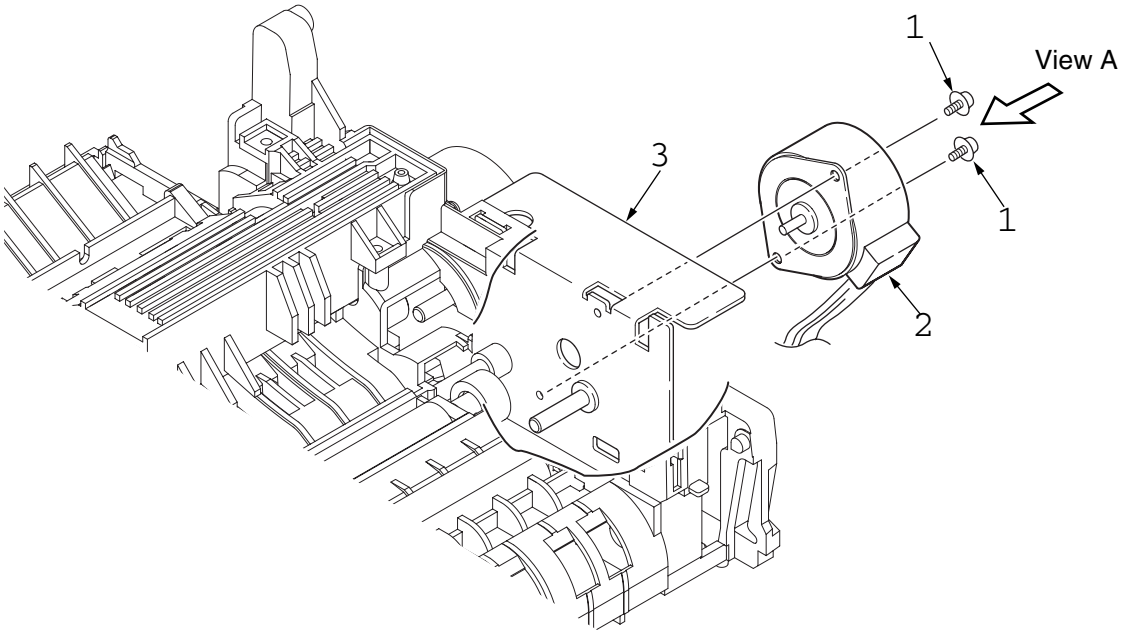


F. Pulse Motor (Registration)

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the lower base unit (see “Lower Base Unit” on page 22).
3. Remove two screws (1) and remove the pulse motor (registration) (2) from the motor bracket (3).

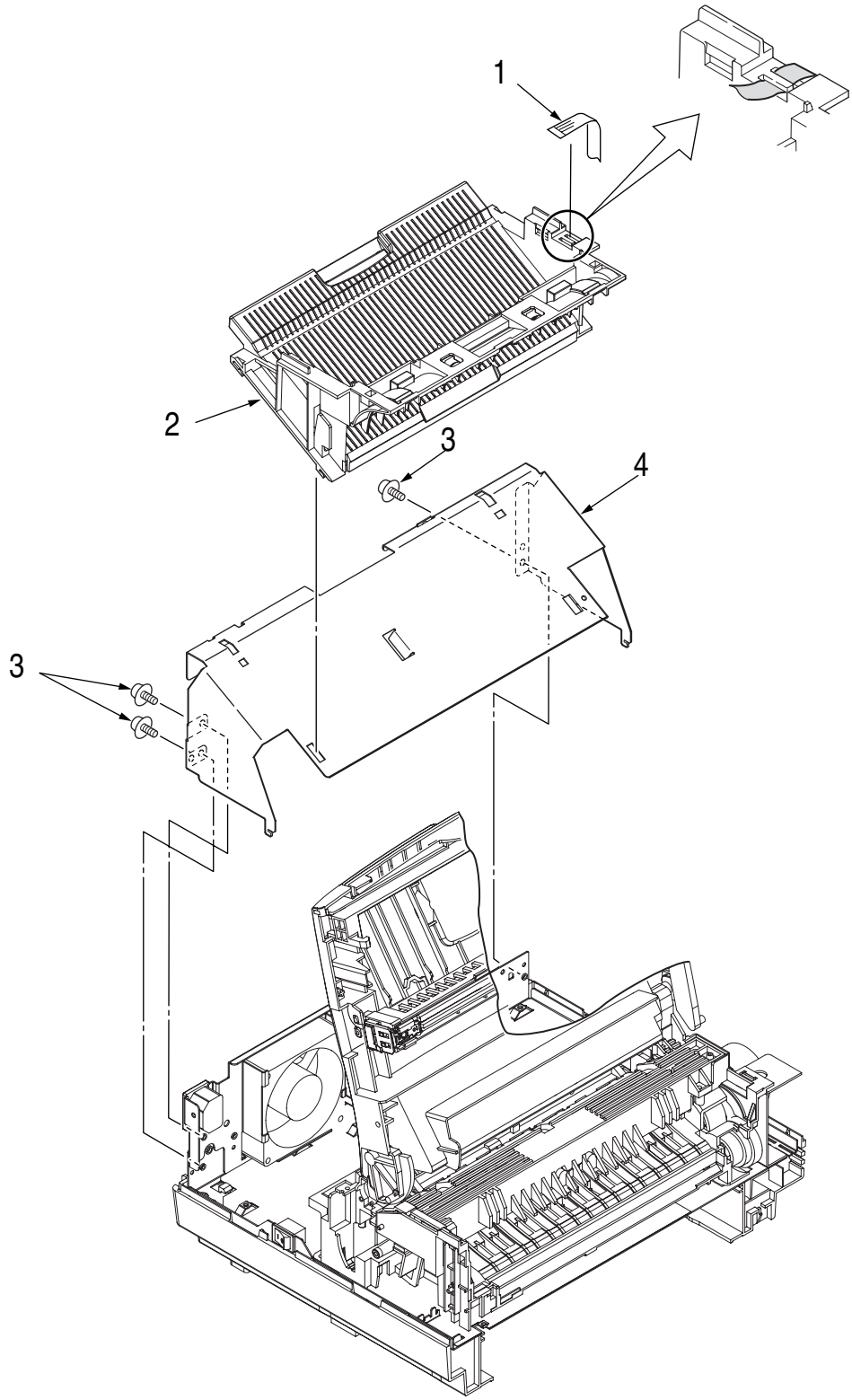


View A



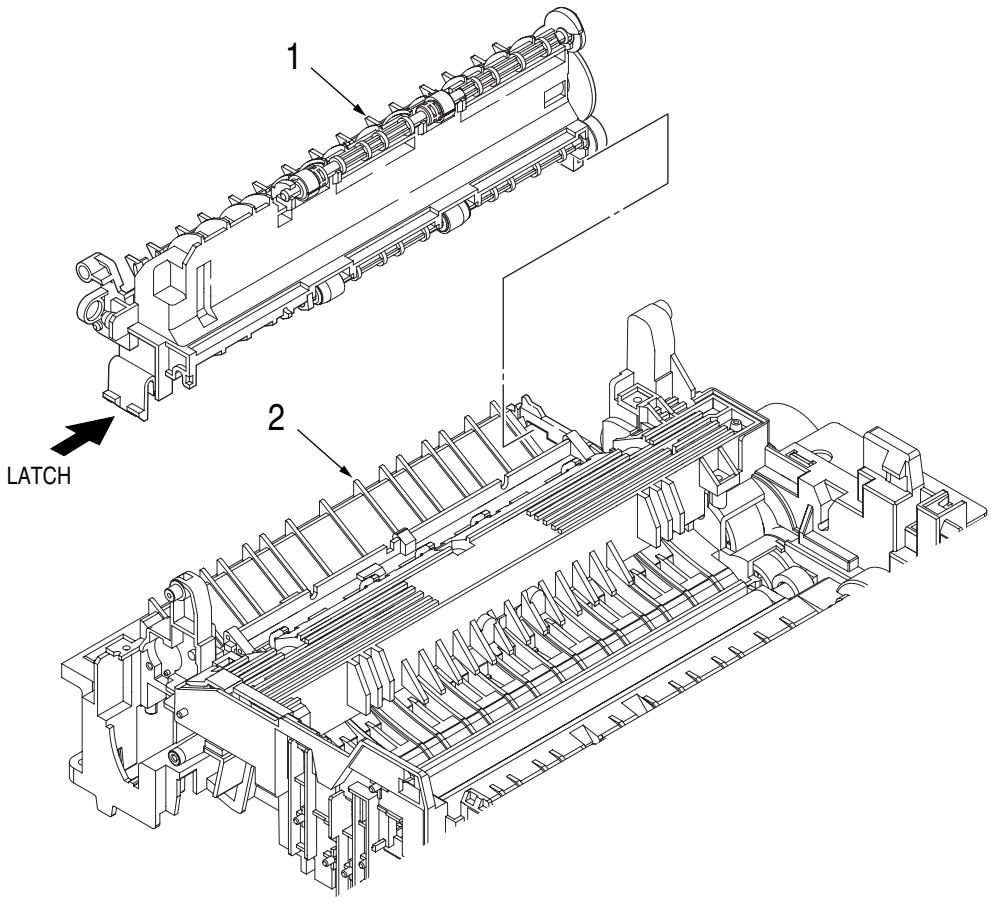
G. Face Up Stacker Assy

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the Sumi card (Operator panel cable) (1) off the latch section of face up stacker (2).
4. Remove three screws (3) and remove both the shield plate (4) and face up stacker (2) together.
5. Unlock the latches at two locations, and remove the face up stacker (2).



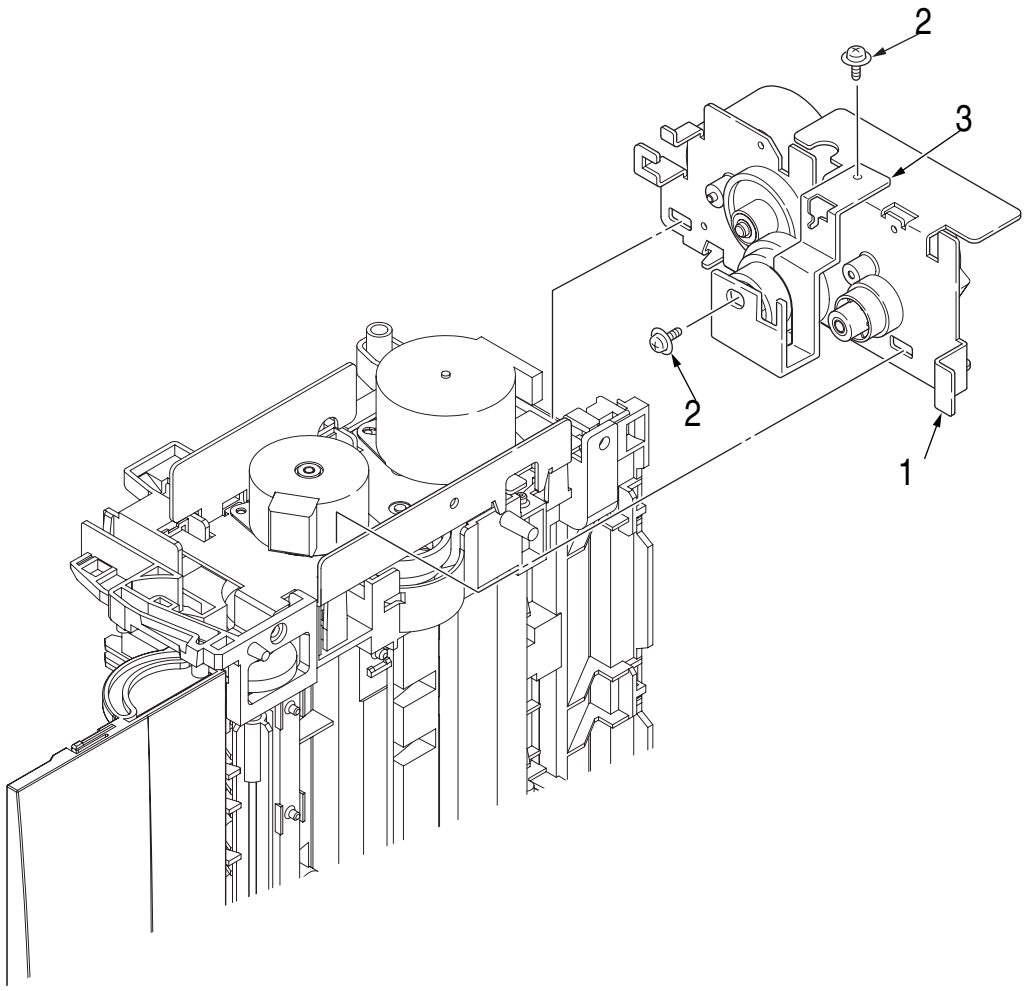
H. Eject Roller Assy

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the stacker cover assy (see “Stacker Cover Assy” on page 29).
5. Disengage the eject roller assy (1) from the lower base (2) by pressing the latch section of the eject roller assy (1) in the direction of the arrow shown below, and remove the eject roller assy (1).



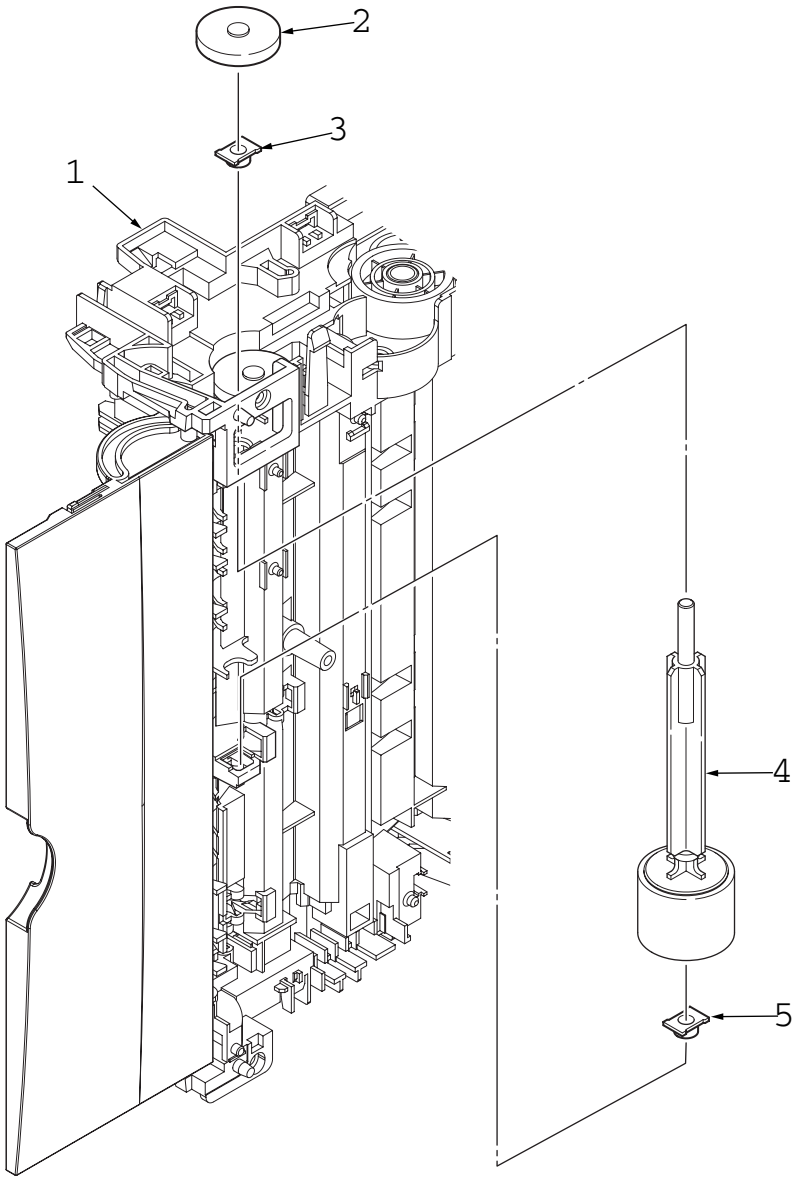
I. Motor Assy

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the lower base unit (see “Lower Base Unit” on page 22).
5. Stand the lower base unit on its side as shown, and unlock two latches, then remove the motor assy (1).
6. Remove two screws (2) and remove the bracket-Motor-Sub (3) from the Motor bracket.



J. Hopping Roller Shaft Assy

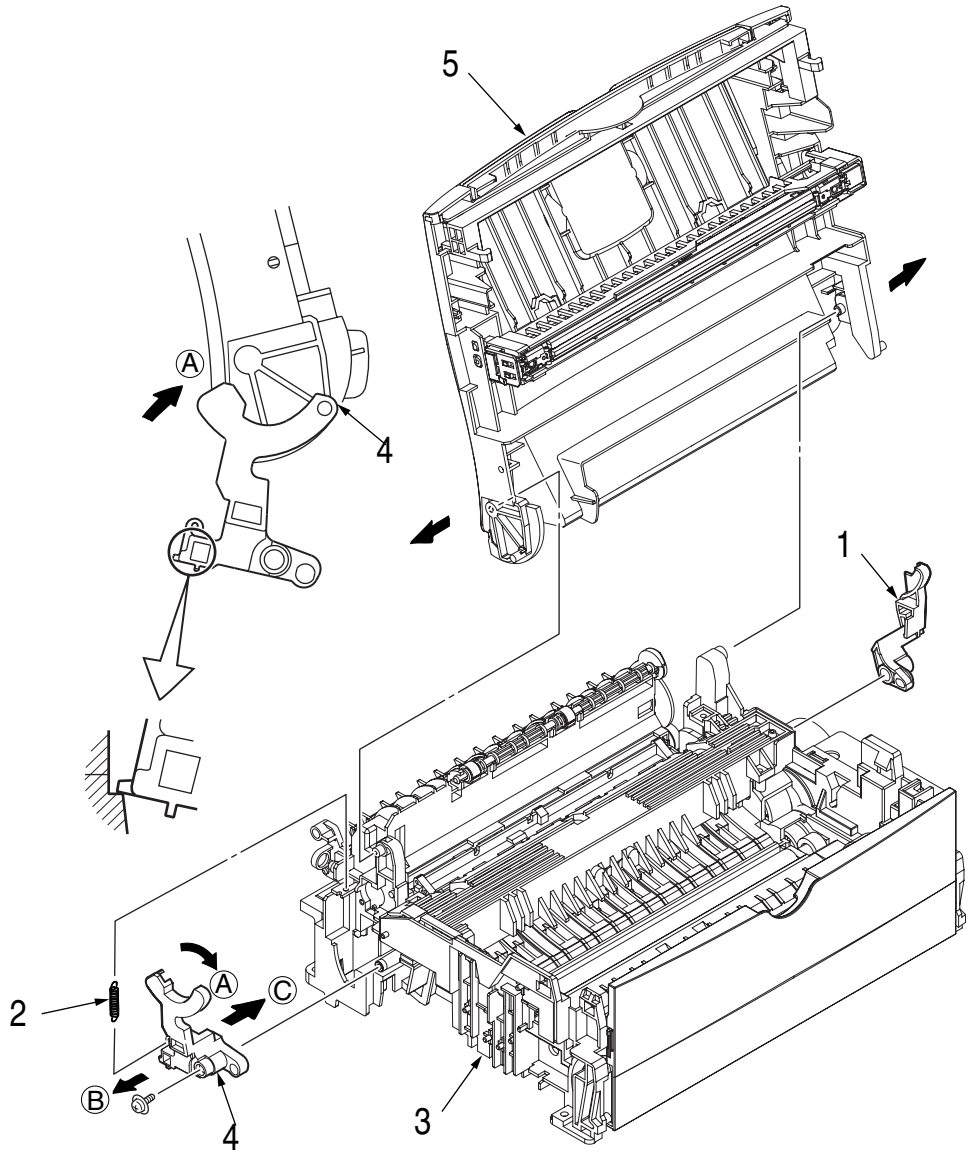
1. Remove the upper cover (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the lower base unit (see “Lower Base Unit” on page 22).
5. Remove the motor assy (see “Motor Assy” on page 27).
6. With the lower base unit (1) standing on its side, remove the one-way clutch gear (2) and the bearing (A) (3).
7. Remove the hopping roller shaft assy (4) (the bearing B (5) comes off, so be careful not to lose it).



K. Stacker Cover Assy

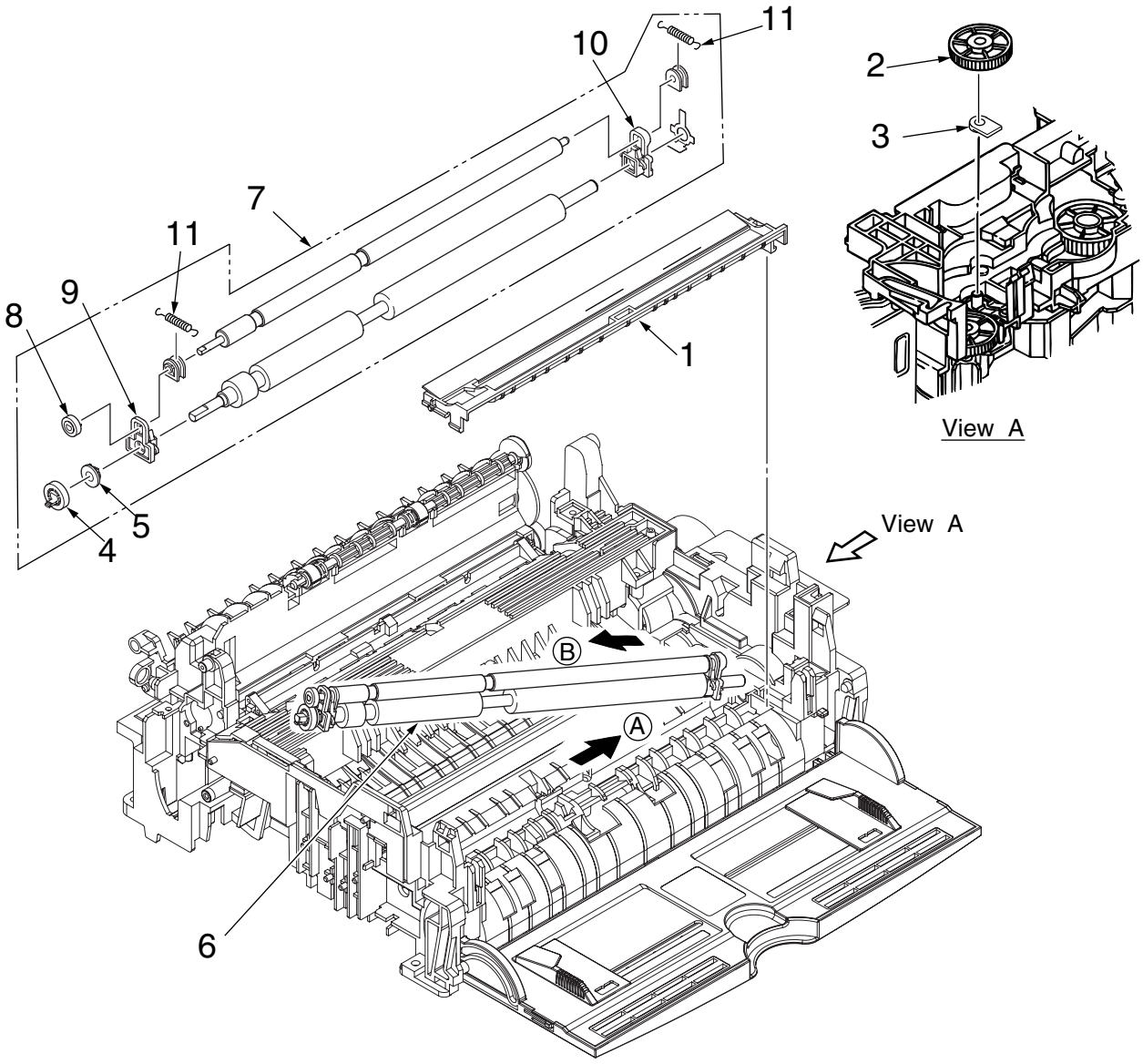
1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the motor assy (see “Motor Assy” on page 27).
5. Remove the reset lever R (1).
6. Remove one screw, detach the reset spring (2) from the lower base unit (3), turn the reset lever L (4) in the direction of arrow A until it stops, and remove it in the direction of arrow B.
7. Unlock two latches of the lower base unit (3), then remove the stacker cover assy (5).

   Note : When reinstalling the reset lever L (4), fit it onto the guide of the lower base unit (3), turn it in the direction of arrow C while pressing down the shaft of back up roller, and engage the reset lever L (4).



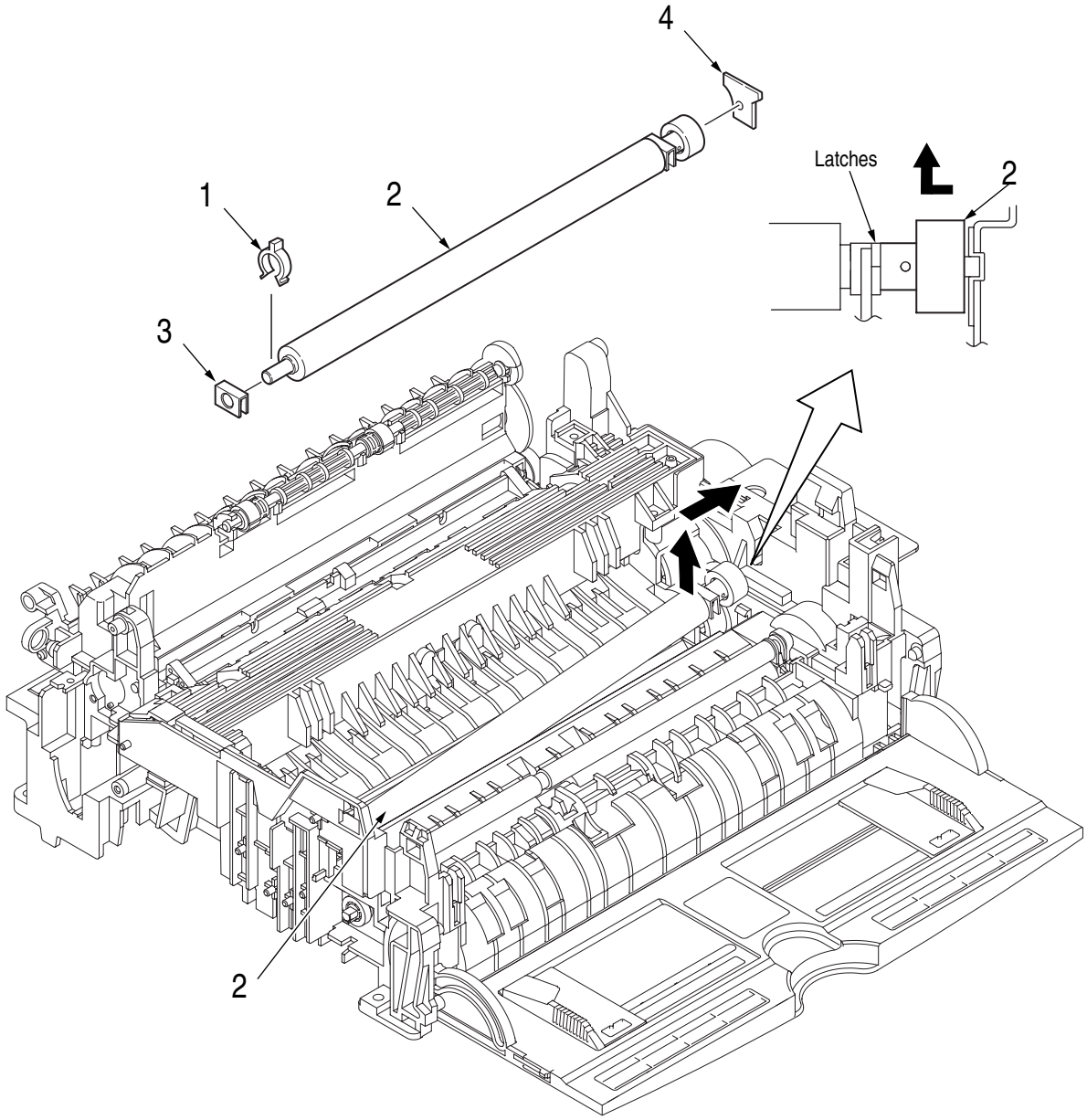
L. Registration Roller

1. Remove the upper cover (see 2.3.1).
2. Remove the operator panel assy (see 2.3.3).
3. Remove the face up stacker assy (see 2.3.7).
4. Remove the lower base unit (see 2.3.4).
5. Remove the motor assy (see 2.3.9).
6. Unlock the latch at the left side of the paper guide (R) (1) and remove the paper guide (R) (1).
7. With the lower base unit standing on its side, remove the one-way clutch gear (2) and the bearing (3).
8. Remove the Registration Gear by unlocking the latch of the Gear (4).
9. Remove the Registration Bearing L (5).
10. Press the registration roller (6) in the direction of arrow A and lift up the left side of it, then remove the registration roller Assy (7).
11. Pull out the registration roller Assy (7) in the direction of arrow B.
12. Remove the pressure roller Assy gear (8) by unlocking the latch of the gear (8).
13. Remove the bearing-Registration L (9) and bearing Registration R (10).
14. Remove the Spring A from the bearing (9, 10).



M. Roller Transfer Assy

1. With the power switch turned off, unplug the AC cord from the outlet.
2. Open the stacker cover.
3. Remove the spacer (1).
4. Release the roller transfer assy 2 by unlocking two latches of the bearing TR (never apply excessive force when unlocking the latch) and slide the roller transfer assy left to remove the gear from the bracket.
5. Lift the right side of the roller transfer assy (2), and shift it to the right side, then pull it out from the main unit (at this time, the bearings (3) of the left side and holder-TR (4) of the right side of the roller transfer assy (2) will also come off).



N. Fusing Unit

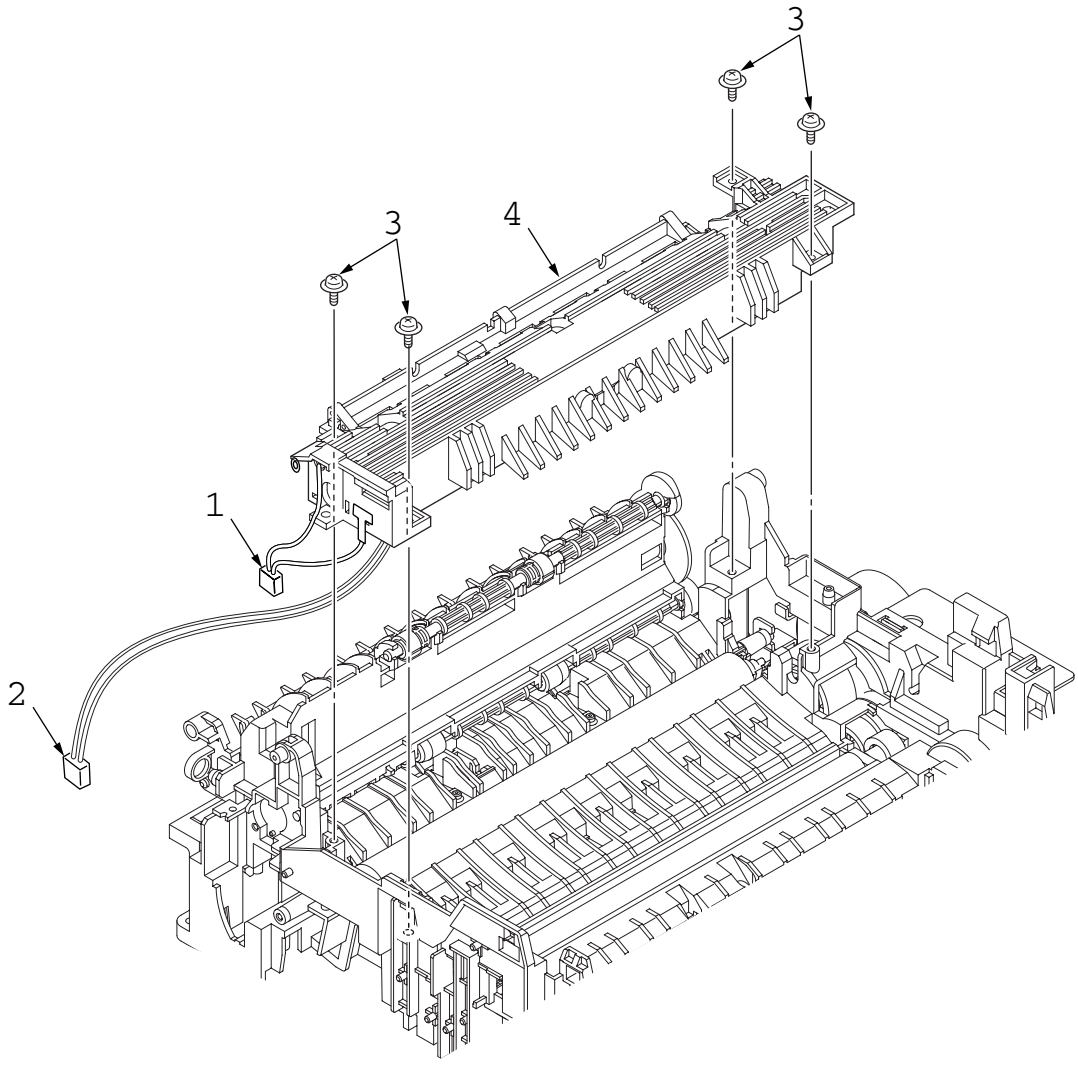
1. Remove the upper cover (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the lower base unit (see “Lower Base Unit” on page 22).
5. Remove the stacker cover assy (see “Stacker Cover Assy” on page 29).
6. Remove the connecting cable (1) of the heater and connecting cable (2) of the thermistor from the hooks of the lower base.
7. Remove four screws (3), lift and remove the fusing unit (4).

Caution: Fusing unit may be hot. Use care when handling.

Notes: 1. When reinstalling or removing the fusing unit, tighten or loosen the screws while holding the fusing unit assy (4) down with your hand (it is being pushed up by back up roller).

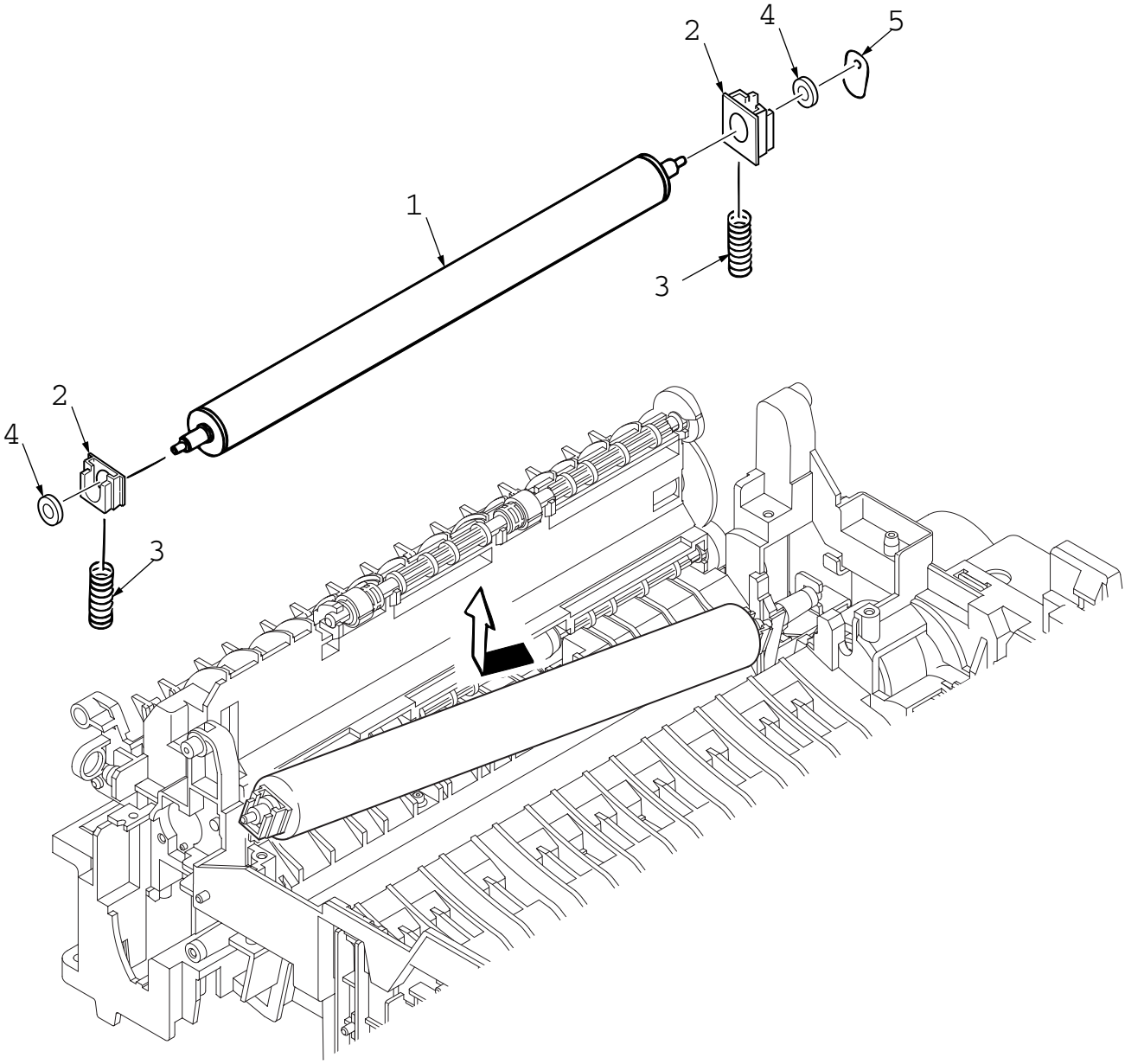
2. When reinstalling the screws (3), be sure to direct the screws into preexisting thread and avoid damaging the threads.

3. Do not apply excessive torque when tightening the screws (3).



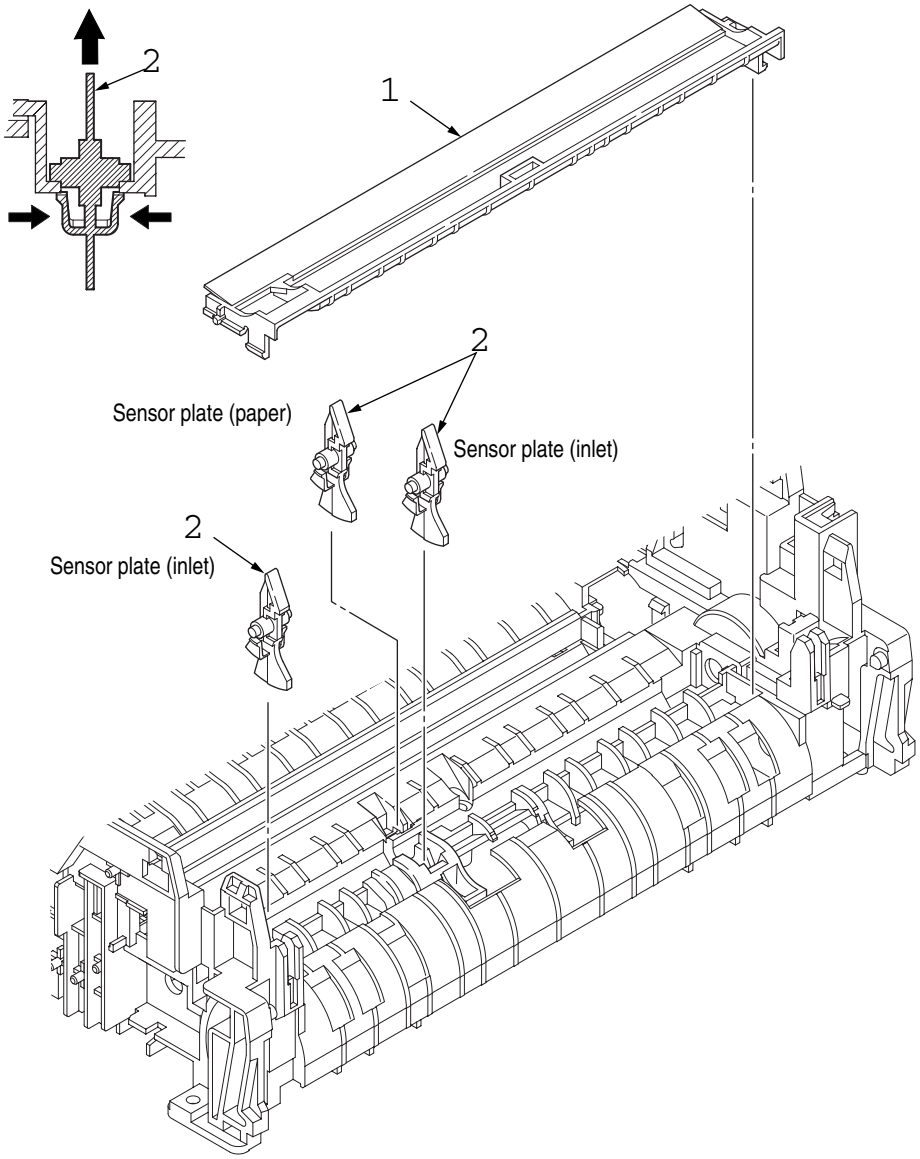
O. Back-up Roller

1. Remove the fusing unit assy (see “Fusing Unit” on page 32).
2. Lift the left side of the back-up roller (1), and pull it out to the left side (at this time, two bearing Holders (back-up) (2) and the bias springs (back-up) (3) and the two ball-bearings (4), washer C (5) will also come off).



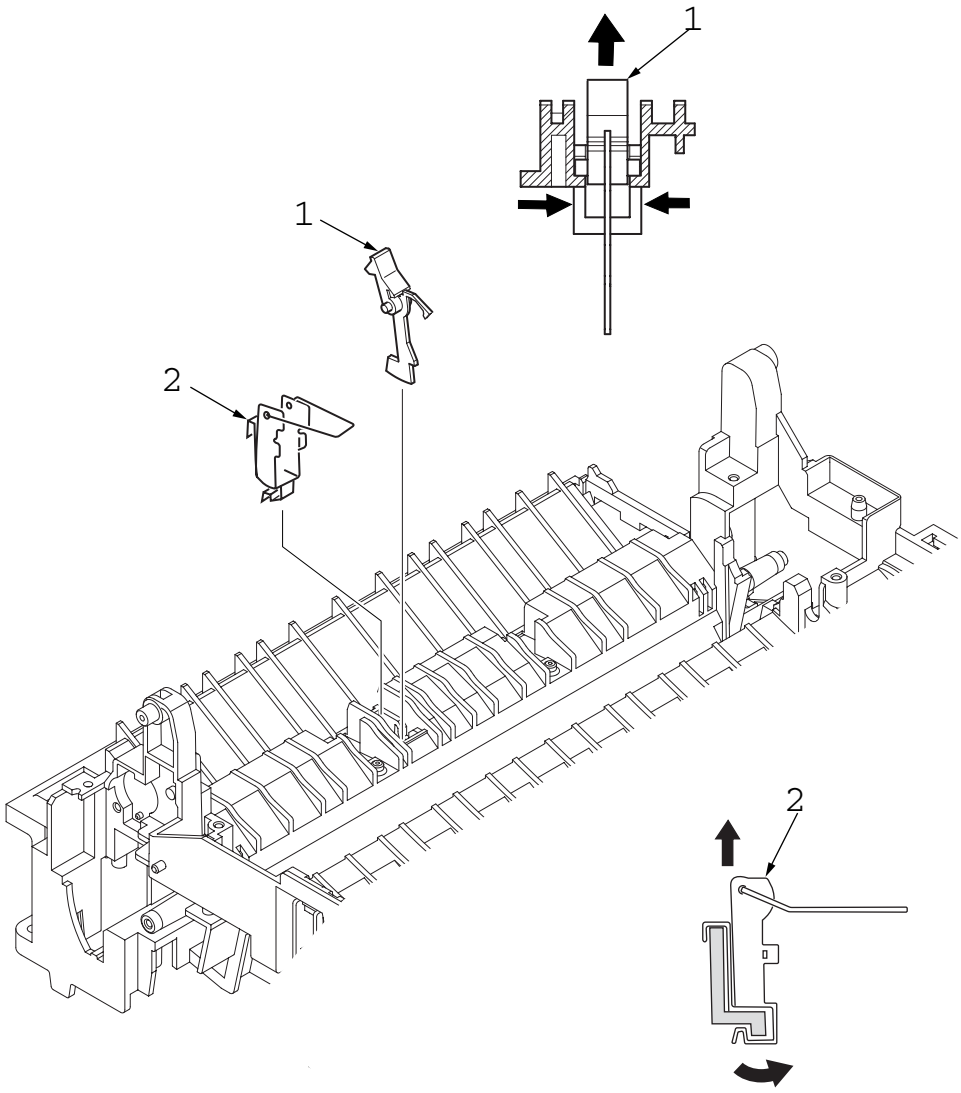
P. Sensor Plate (Inlet)

1. Remove the upper cover (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the lower base unit (see “Lower Base Unit” on page 22).
5. Unlock the latch at the left side of the paper guide (R) (1) and remove the paper guide (R) (1).
6. Press the clamps of three sensor plates (inlet and paper) (2), and remove them by pressing them upward from the bottom.



Q. Sensor Plate (Outlet), Sensor Wire Assy

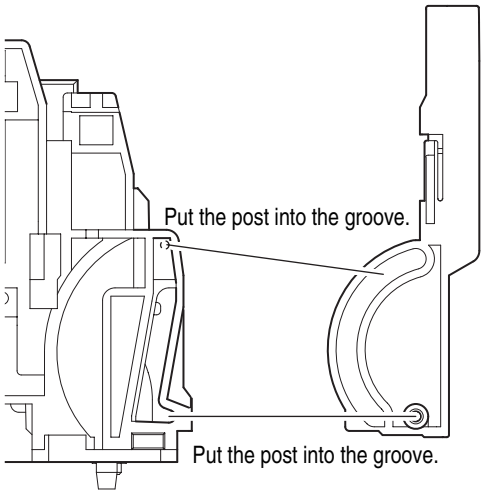
1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the eject roller assy (see “Eject Roller Assy” on page 26).
4. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
5. Remove the lower base unit (see “Lower Base Unit” on page 22).
6. Remove the fusing unit assy (see “Fusing Unit” on page 32).
7. Press the clamps of the sensor plate (outlet) (1), and remove the sensor plate by pushing it up.
8. Turn the clamps of the sensor wire assy (2) remove the sensor wire assy from the lower base unit.

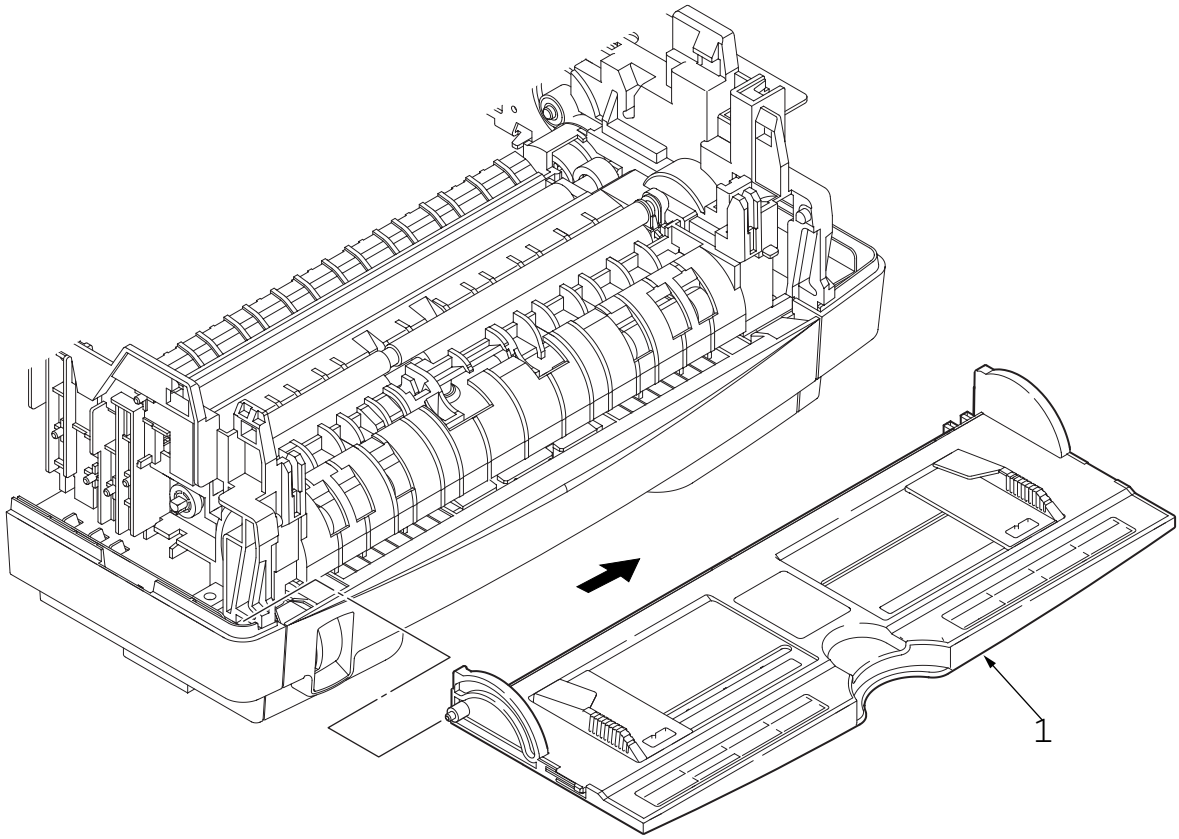


R. Manual Feed Guide Assy

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Open the manual feed guide assy (1), and release the engagement on both sides with the main unit by carefully bending the manual feed guide assy (1).

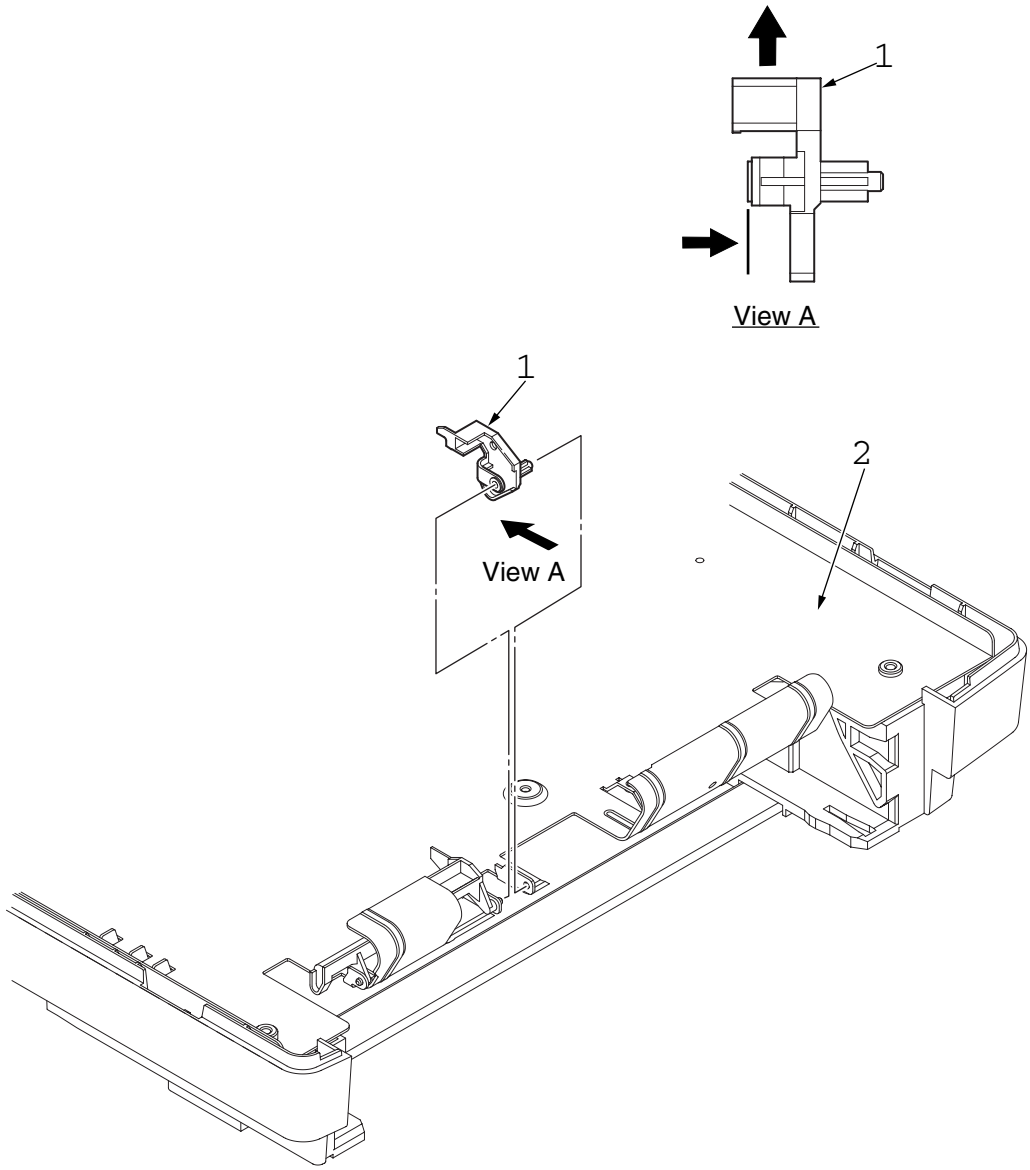
   Note : When remounting, verify the proper the engagements as shown in the diagram.





S. Sensor Plate (Paper Supply)

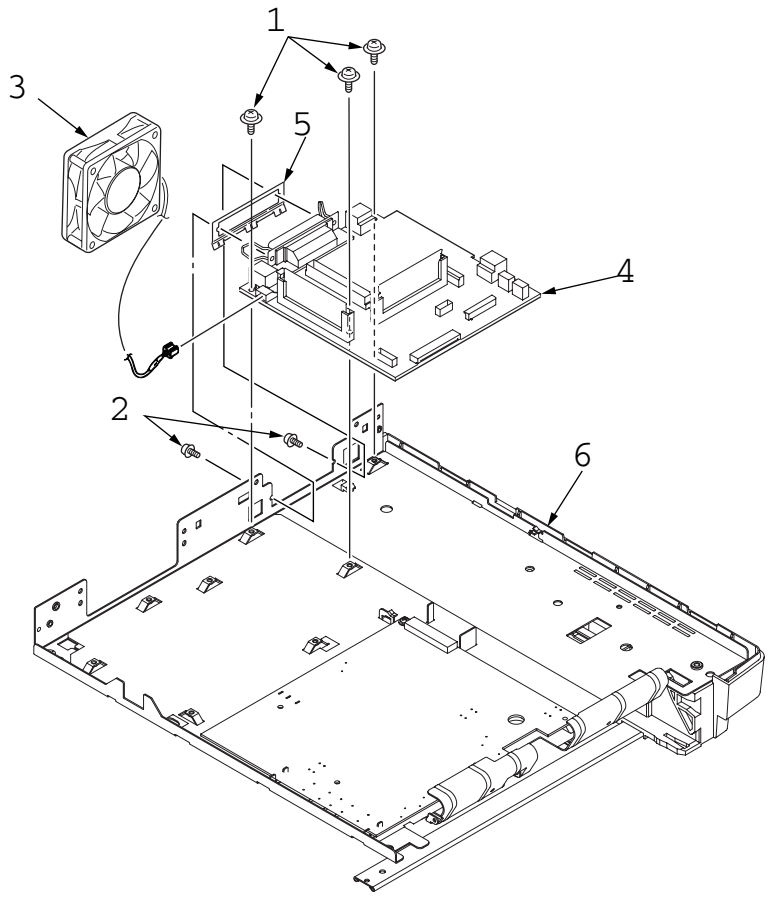
1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25).
4. Remove the lower base unit (see “Lower Base Unit” on page 22).
5. Press the clamps of the sensor plate (paper supply) (1) to unlock the latch, and remove it from the base plate (2).



T. GRG-PCB

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the operator panel assy (see “Operator Panel Assy” on page 21).
3. Remove the face up stacker assy (see “Face Up Stacker Assy” on page 25.).
4. Remove the lower base unit (see “Lower Base Unit” on page 22).
5. Remove three screws (1) and two screws (2).
6. Remove the connector FAN, and disconnect the fan motor (3).
7. Remove the three connectors PWZ, PS1 and HVIF.
8. Remove the GRG-PCB (4) and plate earth A (5).

   Note : When reinstalling the GRG-PCB 4 onto the base plate (6), insert the edge of the GRG-PCB (4) in two slots of the base plate (6).



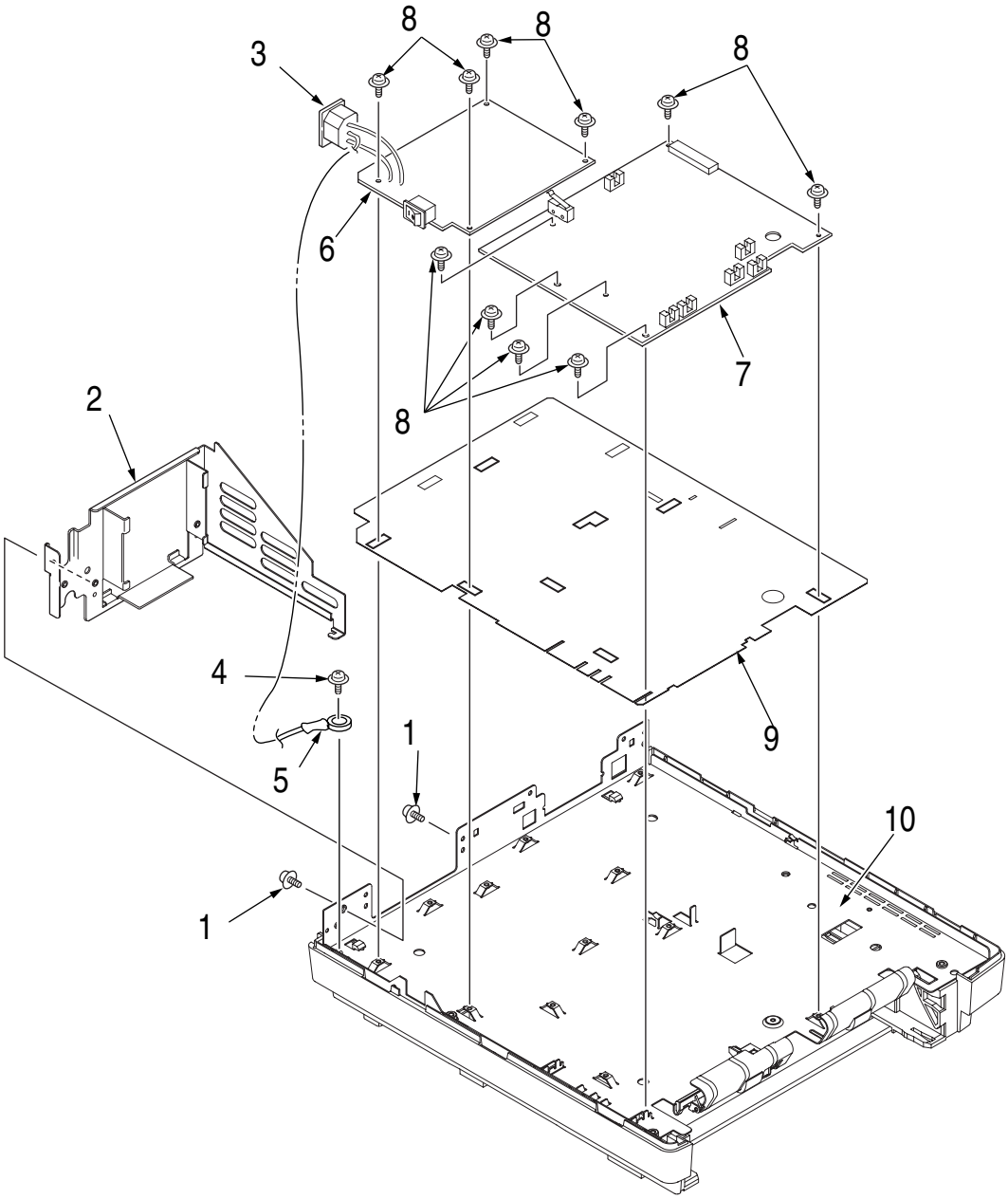
U. Power Supply Board and High Voltage/Sensor Unit

1. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
2. Remove the lower base unit (see “Lower Base Unit” on page 22).
3. Remove two screws (1) and the guide plate (2).
4. Remove the AC inlet (3) from the guide plate (2).
5. Remove the screw (4) and remove the grounding (earth) wire (5).
6. Remove the connectors CN2 from power supply board (6) and CN1 from high voltage/sensor unit (10).
7. Remove ten screws (7), and remove the power supply board 6 and high voltage/sensor unit (10).
8. Remove the Insulation plate (8) from the base plate (9).

Notes : 1.Be careful about the sensor (paper supply) when reinstalling the lower base.

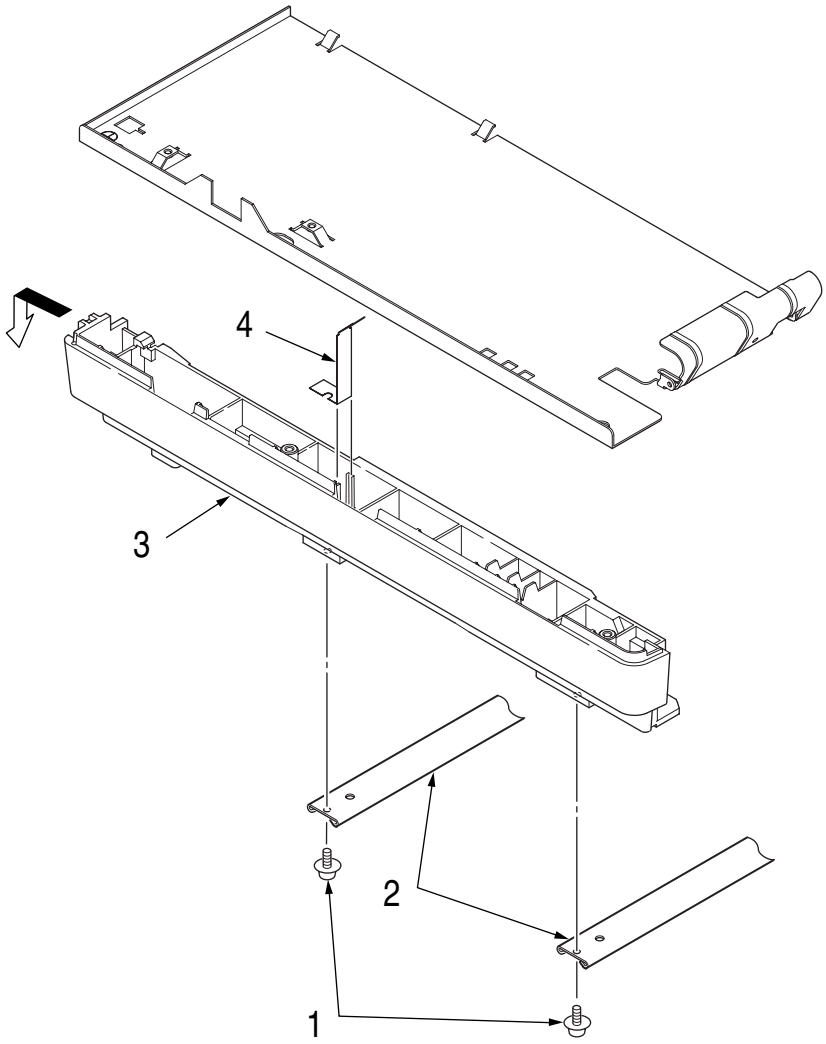
2.Make sure that no excessive force is applied to the power supply switch.

3.When installing the power supply/sensor onto the base plate, be careful not to bend the base plate (it is desirable to place a block underneath it to prevent bending).



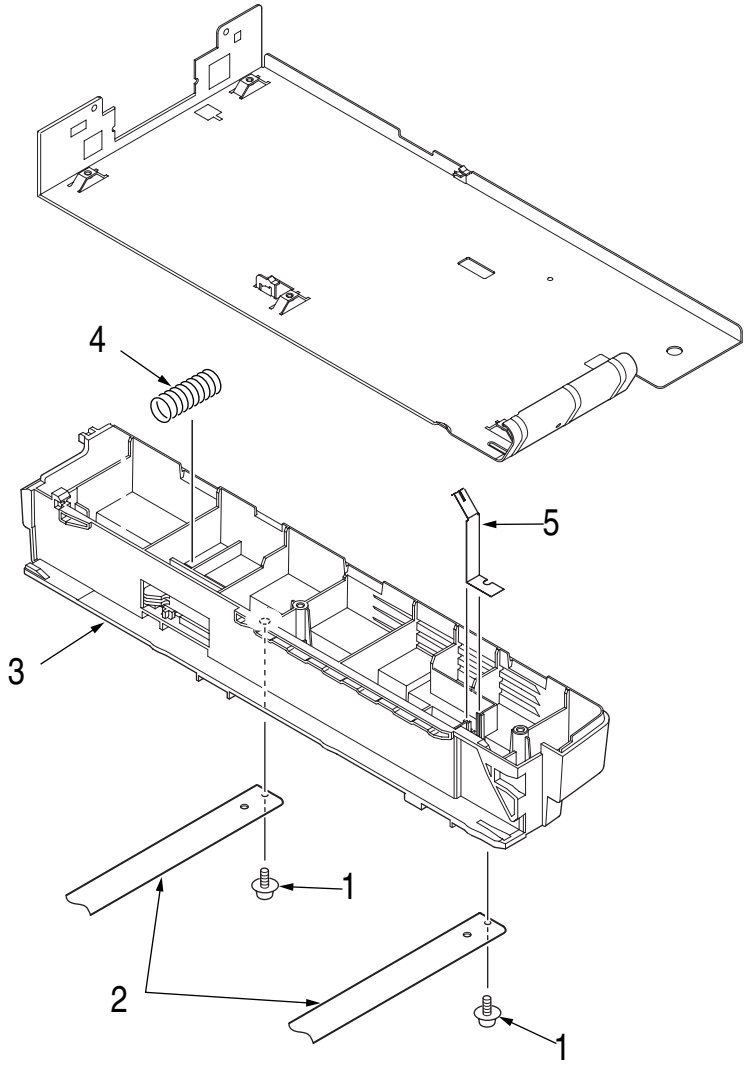
V. Cassette Guide L Assy

1. Remove the paper cassette.
2. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
3. Remove the lower base unit (see “Lower Base Unit” on page 22).
4. Remove two screws (1), and remove the beam plates (2).
5. Remove the cassette guide L Assy (3) by shifting it in the direction of the arrow as shown below.
6. Remove the earth plate (4).



W. Cassette Guide R Assy

1. Remove the paper cassette.
2. Remove the upper cover assy (see “Upper Cover Assy” on page 19).
3. Remove the lower base unit (see “Lower Base Unit” on page 22).
4. Remove two screws (1), and remove the beam plates (2).
5. Remove the cassette guide R Assy (3) by shifting it in the direction of arrow.
6. Remove the earth plate (4) and the cassette lock spring (5).



Adjustment

This chapter explains adjustment necessary when a part is replaced. This adjustment is made by changing the parameter values set in EEPROM on the main control board. The status monitor can be used for assessing trouble diagnosis.

1. Adjustment Function

A. Status Monitor)

This utility is located on the CD-ROM that comes with the printer. Use the utility for basic troubleshooting diagnosis, following the prompts. Execute fixes as needed.

2. Adjustment When Replacing a Part

Adjustment is necessary when replacing any of the following parts.

Part Replaced	Adjustment
LED Head	Set the LED head drive time.
Image Drum Cartridge	Reset the image drum counter (refer to User's Guide).
Main Control Board	EEPROM data Upload/Download

A. Uploading/Downloading EEPROM data

When the controller printed circuit board is replaced, the contents of the old EEPROM shall be copied to the new EEPROM on the new board to preserve customer settings. For the purpose, use the EEPROM operation on the Option of the Maintenance Utility. To copy follow the steps below.

1. Be sure to confirm that the printer and the PC are connected with a centronics I/F cable. Then execute the Maintenance Utility.

   Note: Printer driver will be uninstalled.

2. Select the Option on the Maintenance Utility.
3. Click the "UPLOAD EEPROM" button on the "EEPROM Operations."
4. The contents of the EEPROM data are displayed on the "DIALOG" of the Maintenance Utility. The contents of the old EEPROM are then copied into the memory of the PC.
5. Replace the controller P.C.B. with a new one while it displays the above "DIALOG."
6. After the replacement, click "Downloaded EEPROM" on the "EEPROM Operations". EEPROM upload has been completed.

In case of troubles such as centronics I/F failure, etc. EEPROM data may not be uploaded properly. In such case, it is necessary to adjust the following settings manually after the replacement using the Maintenance Utility.

- Factory setting

  The maintenance utility is designed to be used only by field engineer and it should not be released to the end-users.

Periodical Maintenance

1. Periodical Replacement Parts

The parts are to be replaced periodically as specified below:

Part Name	Condition for Replacement	Cleaning	Remarks
Toner Cartridge 2.5K (Type 9)	About 2,500 sheets of paper have been printed.	LED head	Consumables
Image Drum Cartridge (Type 9)	About 25,000 sheets of paper have been printed. See "Image drum cartridge" on page 10.		Consumables

2. Cleaning

Remove any toner or dust accumulated inside the printer. Clean in and around the printer with a piece of cloth when necessary. Use the toner vacuum to clean inside the printer.

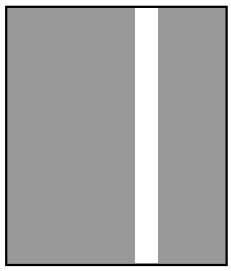
Note: Do not touch the image drum, LED lens array, or LED head connector block.

A. Cleaning of LED Lens Array

Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page, as shown below.

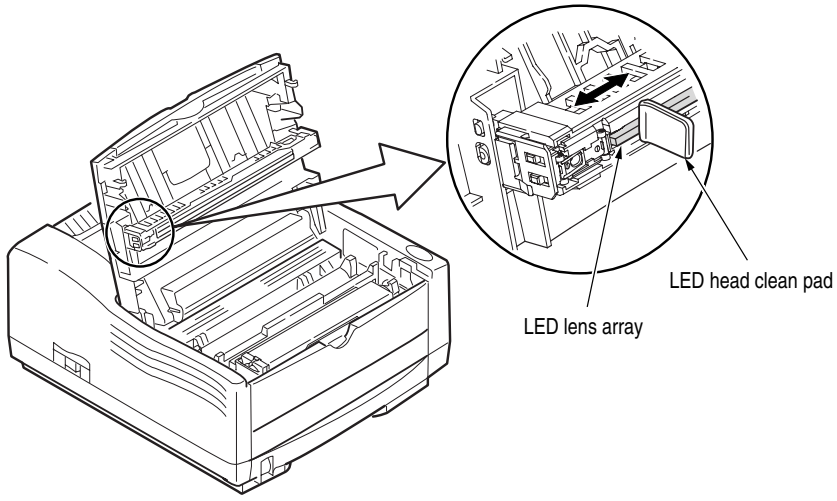
Note: The LED lens array must be cleaned with an LED head cleaner included in the replacement toner kit.

White lines or stripes (void, light printing)



1. Set the LED head cleaner to the LED lens array as shown in the figure, then slide the cleaner back and forth horizontally several times to clean the head.

   Note: Gently press the LED head cleaner onto the LED lens array.



2. Throw the cleaner pad away.

B. Cleaning Page Function

There is a charge roller cleaning function with this printer, which can be executed by the user.

1. Press the control switch to take the printer off line.
2. Open the manual feed tray and insert a sheet of letter sized plain paper between the paper guides.
3. Press and hold down the control switch for at least five seconds.
4. The printer grips the paper and prints a cleaning page.
5. Return the printer to on line by pressing the control switch.
6. If subsequent printing appears faded or uneven, try replacing the toner cartridge.

Troubleshooting Procedures

1. Troubleshooting Tips

1. Check the troubleshooting section in the User's Guide.
2. Gather as much information about the situation as possible.
3. Inspect the equipment under the conditions close to those in which the problem had occurred.

2. Points to Check before Correcting Image Problems

1. Is the printer being run in proper ambient conditions?
2. Are supplies (toner) and routine replacement part (image drum cartridge) being replaced properly?
3. Is the printing paper normal (acceptable quality)?
4. Is the image drum cartridge being loaded properly?

3. Tips for Correcting Image Problems

1. Do not touch, or bring foreign matter into contact with the surface of the image drum.
2. Do not expose the image drum to direct sunlight.
3. Keep hands off the fuser unit as it heats up during operation.
4. Do not expose the image drum to light for longer than 5 minutes at room temperature.

4. Preparation for Troubleshooting

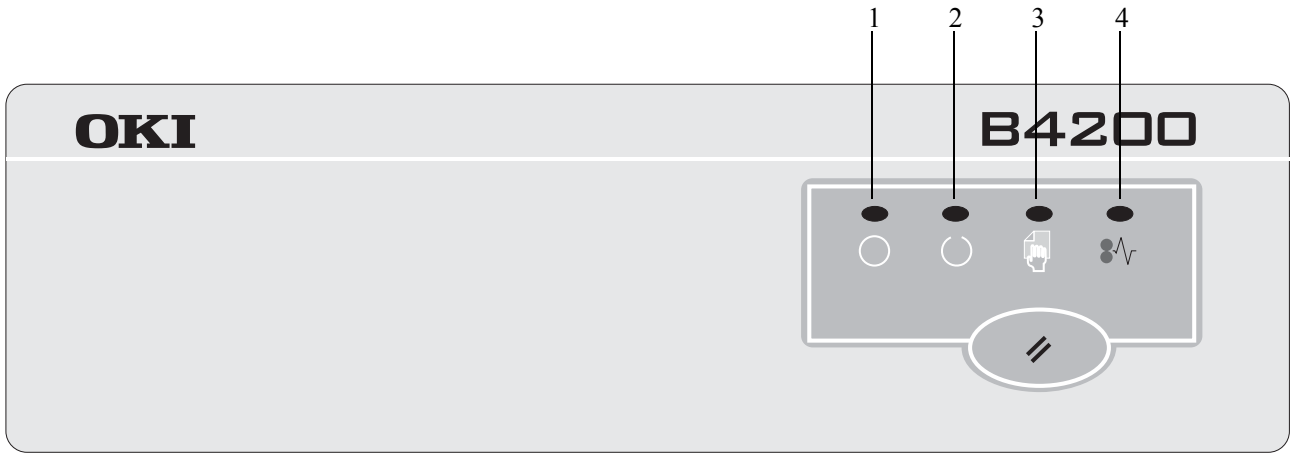
A. Operator Panel Display

The failure status of printer is displayed on the status monitor of the PC. Take proper action according to the message displayed on the status monitor.

B. LED indicator

The printer is equipped with four LEDs. These LEDs indicate the following states:

1. Power
2. Ready
3. Manual Feed
4. Error



C. LED Function Table

Status	◯ Ready (green)	Manual Feed (amber)	Error (amber)	Remark
Online(Ready)	ON	OFF	Undefined	
Offline	OFF	OFF	Undefined	
Data Arrive	Flash 2	OFF	Undefined	
Data Processing	Flash 2	OFF	Undefined	
Data Exist	Flash 1	OFF	Undefined	
Printing	Flash 2	OFF	Undefined	
Printing (copy)	Undefined	OFF	Undefined	
Canceling Job	Flash 1	OFF	Undefined	
Canceling Job	Flash 1	OFF	Undefined	
Warming Up	Flash 1	OFF	OFF	
Power Saving	Undefined	OFF	OFF	
Toner Low	Undefined	Undefined	Flash 1 or Flash 2	
Toner Empty	Undefined	OFF	Flash 2	
Toner Sensor Error	Undefined	Undefined	Flash 1	
Change Drum	Undefined	Undefined	Flash 3	
Print Demo	Flash 2	Undefined	Undefined	
Print Fonts	Flash 2	Undefined	Undefined	
Print Menu Map	Flash 2	Undefined	Undefined	
Print Cleaning	Flash 2	Undefined	Undefined	
Invalid data	Undefined	OFF	Flash 2	
tttt tray paper out (BACK GROUND)	Undefined	Undefined	Flash 1	
Tray2 cover open	Undefined	Undefined	Flash 1	
File System Error (File System full)	Undefined	Undefined	Flash 1	
File System Error (Write Protect)	Undefined	Undefined	Flash 1	
File System Error (Operation failure)	Undefined	Undefined	Flash 1	
Manual Paper Request	Undefined	Flash 2	Undefined	
tttt Tray mmmm Paper Request	OFF	OFF	Flash 2	
Tray2 cover open	OFF	OFF	Flash 2	
tttt Tray mmmm Paper Media Mismatch	OFF	OFF	Flash 2	
tttt Tray mmmm Paper Size Mismatch	OFF	OFF	Flash 2	
RS232C Overflow Error	OFF	OFF	Flash 2	
RS232C Overrun Error	OFF	OFF	Flash 2	
RS232C Parity Error	OFF	OFF	Flash 2	
RS232C Framing Error	OFF	OFF	Flash 2	
Toner Empty	OFF	OFF	Flash 2	
Page Buffer Overflow	OFF	OFF	Flash 2	
Paper Size Error	OFF	OFF	Flash 2	

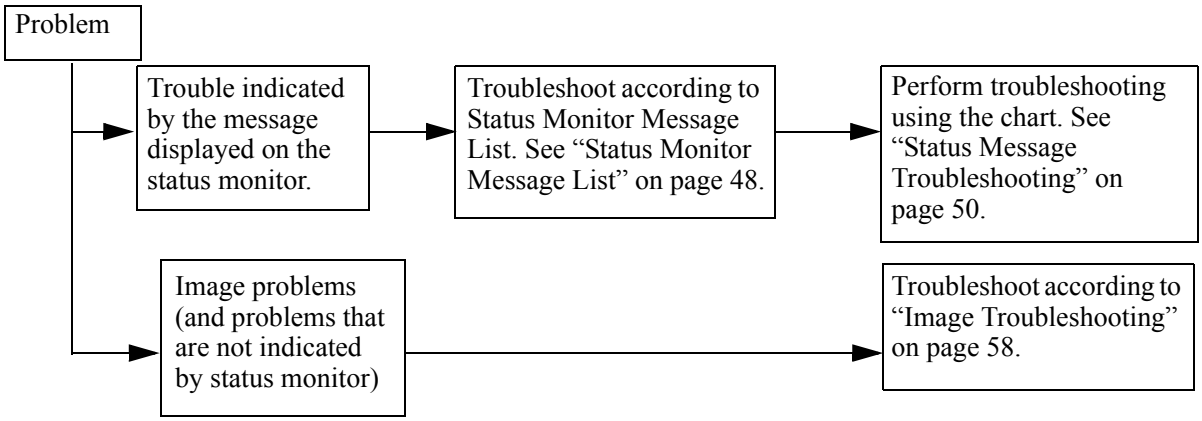
Flash 1: Slow blinking
Flash 2: Blinking
Flash 3: Fast blinking

Status	◯ Ready (green)	Manual Feed (amber)	Error (amber)	Remark
Paper Induct Jam	OFF	OFF	Flash 2	
Paper Feed Jam	OFF	OFF	Flash 2	
Paper Exit Jam	OFF	OFF	Flash 2	
Change Drum	OFF	OFF	Flash 2	
I/D Not Installed	OFF	Undefined	Flash 2	
Cover Open	OFF	Undefined	Flash 2	
Restarting Printer	OFF	OFF	Flash 2	
Fatal Error	Flash 3	Flash 3	Flash 3	
During initializing	OFF	OFF	OFF	
Initializing EEPROM	OFF	OFF	OFF	
Checking RAM	OFF	OFF	OFF	
During initializing EEPROM	Flash 2 (3 times)	Flash 2 (3 times)	Flash 2 (3 times)	
Drum counter being reset	Flash 2 (2 times)	Flash 2 (2 times)	Flash 2 (2 times)	
Forced ROM start-up function Rising	Flash 2	Flash 2	Flash 2	
During initializing	ON and then OFF	ON and then OFF	ON and then OFF	

Flash 1: Slow blinking
Flash 2: Blinking
Flash 3: Fast blinking

5. Troubleshooting Flow

Should there be a problem with the printer, carry out troubleshooting according to the following procedure flow:



A. Status Monitor Message List

The table below lists the statuses and troubles to be displayed on the status monitor in the message format.

Category	Status Message	Code	Display Content	Remedy
Normal Status	Warming Up	10003	Warming-up status	Normal operation
	Online (Ready)	10001	Online (ready) status	Normal operation
	Power Save Mode	10094	Power save status	Normal Operation
	Toner Low	10006	The toner amount in the toner cartridge is small.	Normal Operation
	Toner Sensor	10093	The toner sensor is faulty.	Replace the toner sensor.
	Change Drum	40093	Life of I/D drum	Change the I/D Unit and reset Drum counter see “Adjustment When Replacing a Part” on page 42.
	Manual Paper In	10097	The paper is in the manual feed mode.	Normal operation
	Printing In Progress	10098	Printing in progress X=0 Non Warning X=1 Toner Low X=2, 3 Change Drum	Normal operation
	Ejection In Progress	10099	Ejection in progress X=0, Non Warning X=1, Toner Low X=2, 3 Change Drum	Normal operation
	Manual Request Executive Letter Legal 14 Legal 13 A6 A5 A4 B5 Monarch COM-10 DL C5 COM-9	411xx	Request the paper to be set in the manual feed mode. The paper sizes are as follows: Executive, Letter, Legal 14, Legal 13, A4, A5, A6,B5, Monarch, DL, C5, COM-10, COM-9 xx: Paper size in the tray being selected	Set the requested paper in the manual feed mode.
Paper size error	Paper Size Error	30034	Paper of improper size was fed. 2.52" (64 mm) L 15.77" (400.56 mm)	Check the paper. Also check whether more than one sheet of paper was fed simultaneously. To release the error display, open the cover, then close it. If this error occurs frequently, see Paper Size Error on page 55.

Category	Status Message	Code	Display Content	Remedy
Paper Jam	Paper Input Jam	40077	A paper jam occurred when sheets of paper were being supplied.	Check the paper. To release the error display, open the cover, then close it. If this error occurs frequently, see Paper Input Jam on page 52.
	Paper Feed Jam	40078	A paper jam occurred during paper feeding.	Open the cover, then remove the jammed paper. To release the error display, close the cover. If this error occurs frequently, see Paper Feed Jam on page 53.
	Paper Exit Jam	40079	A paper jam occurred during paper ejection.	Open the cover, then remove the jammed paper. To release the error display, close the cover. If this error occurs frequently, see Paper Exit Jam on page 54.
	ID Not Installed	40033		Install I/D Unit
Cover open	Cover Open	40021	The upper cover is open.	To release the error display, close the cover. If this error occurs frequently, replace the power supply board.
Buffer overflow	Page Buffer Overflow	30097	The page buffer overflowed because there is a large amount of print data.	To release the error display, press the reset button on the status motor of the printer driver. Install RAM or reduce the amount of print data.
Device configuration error	Program ROM Check Error		An error occurred during program ROM check.	Replace program ROM or the main control board. (When replacing the main control board, also adjust EEPROM data.) (See "Adjustment When Replacing a Part" on page 42)
	Resident RAM Check Error		An error occurred during resident RAM check.	Replace the main control board. (When replacing the main control board, also adjust EEPROM data.) (See "Adjustment When Replacing a Part" on page 42)
	EEPROM Check Error		An error occurred during EEPROM check.	Replace the main control board. (When replacing the main control board, also adjust EEPROM data.) (See "Adjustment When Replacing a Part" on page 42)
	Option RAM Check Error		An error occurred during option RAM check.	Check the connection of the Option RAM PC board. If the optional RAM PC board is faulty, replace it.
	Fuser Error	40084	A heater timeout error occurred.	See Section Fusing Unit Error on page 56.
	Thermistor Open Check Error		The thermistor is open.	Replace the heater Assy.
	Thermistor Short Check Error		A thermistor short occurred.	Replace the heater Assy.
	Watch Dog Timeout Error		A watchdog timeout occurred.	To release the error display, turn on the power supply again. Replace the main control board.
	Motor Timeout Error		A motor timeout occurred.	To release the error display, turn on the power supply again. Replace the main control board.

Status Message Troubleshooting

If the problems cannot be corrected by using the status message/problem list, follow the troubleshooting flowcharts given here to identify and fix the problem.

No.	Trouble	Flowchart Number
1	The printer does not work normally after the power is turned on.	①

No.	Trouble	Flowchart Number
2	Jam Alarm Paper input jam Paper feed jam Paper exit jam	 ②-1 ②-2 ②-3
3	Paper Size Error	③
4	Fusing Unit Error	④
5	SSIO (Synchronous Serial Input/Output) error I/F timeout (no response) between the printer and an optional tray (High Capacity Second Paper Feeder, Power Envelope Feeder).	⑤
6	Fan Error	⑥

①. The printer does not work normally after the power is turned on.

- Turn the power off, then back on.

- Is the Power LED (|) lamp on?

  - No Is the AC cord being connected properly?

    - No Connect the AC cord properly.

  - Yes Is +5 V being applied between Pins 11 and 21 of POWER connector on the main control board?
    Pin 21 : 0 V
    Pin 11 : +5 V

    Ⓐ

    - No Is the connection between POWER connector on the main control board and connector CN3 on the power supply/sensor board being made properly?

      No Correct the connection.

    - Yes Go to .

  - Yes Is +12 V being applied between Pins 15 (GND) and 24 of POWER connector?
    Pin 23 : 0 V
    Pin 24 : +12 V

    - No Go to Ⓐ

  - Yes Is the flexible cable for the operator panel assy being connected to the PANEL connector on the control board and the connector CN1 on the OPP board properly?

    - No Connect the flexible cable properly.

  - Yes Replace the operator panel assy or flexible cable.

  - Has the problem been solved?

    - No Replace the main control board.

  - Yes End

- Yes Is the Ready LED lamp on?

  - No Replace the main control board.

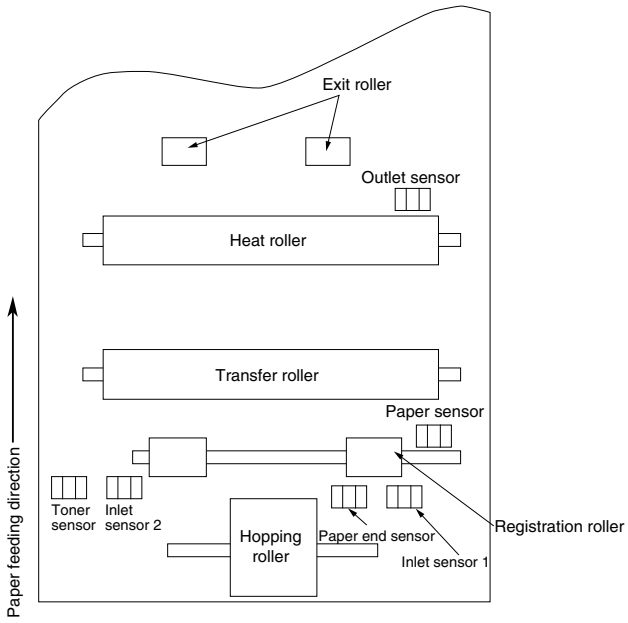
- Yes Take the measurement of the following voltage readings at connector CN3 on the power supply board without main control board:
  Voltage between Pins 11 and 16: ... about 5VDC
  Voltage between Pins 17 and 16: ... about 30VDC
  Voltage between Pins 24 and 16: ... about 12VDC

- Yes Replace the power supply board.

[JAM error]

②-1 Paper input jam

- Does the JAM error occur when the power is turned on?
  - Yes — Is the paper at the inlet sensor?
    - Yes — Remove the paper.
  - No — Is the operation of the inlet sensor plate normal (moves freely when touched)?
    - No — Replace the inlet sensor plate.
  - Yes — Clean the inlet sensor on the power supply/sensor board, or replace the power supply/sensor board.
- No — Does the JAM alarm occur after paper feeding?
  - Yes — Is the paper fed to the inlet sensor plate?
    - Yes — Is the operation of the input sensor plate normal (moves freely when touched)?
      - No — Replace the inlet sensor plate.
    - Yes — Clean the inlet sensor on the power supply/sensor board or replace the power supply/sensor board.
  - No — Replace the hopping roller rubber or paper cassette.
- No — Is the hopping roller rotating?
  - Yes — Set the paper tray properly.
- No — Is the registration motor rotating?
  - Yes — Replace the one-way clutch gear of the hopping roller assembly.
- No — Is RM connector on the main control board being connected properly?
  - No — Connect RM connector properly.
- Yes — Is the coil resistance (normal resistance: both between Pins 1 and 2, as well as Pins 3 and 4 are about 7.9 Ω) of the registration motor normal?
  - No — Replace the registration motor.
- Yes — Replace the main control board.



②-2 Paper feed jam

- Does the JAM error occur when the power is turned on?
  - Yes — Is the paper on the inlet sensor?
    - Yes — Remove the paper.
  - No — Is the operation of the paper sensor plate normal (moves freely when touched)?
    - No — Replace the paper sensor plate.
  - Yes — Replace the power supply/sensor board.
- No — Has the paper reached the paper sensor plate?
  - No — Is the registration roller rotating?
    - No — Replace the one-way clutch gear of the hopping roller assembly.
  - Yes — Is the image drum cartridge being set properly?
    - No — Set the image drum cartridge properly.
  - Yes — Check the hopping roller assembly or tray.
- Yes — Has the paper reached the outlet sensor plate?
  - Yes — Is the operation of the outlet sensor plate normal (moves freely when touched)?
    - No — Replace the outlet sensor plate.
  - Yes — Clean the outlet sensor on the power supply/sensor board or replace the power supply/sensor board.
- No — Is the main/drum motor rotating?
  - No — Is DM connector on the main control board being connected properly?
    - No — Connect DM connector properly.
  - Yes — Is the coil resistance (normal resistance: both between Pins 1 and 2, as well as Pins 3 and 4 are about 8.6.Ω) of the main/drum motor correct?
    - No — Replace the main/drum motor.
  - Yes — Replace the main control board.
- Yes — Is the transfer roller rotating?

②-2-a

②-2-a

- No — Check the gears (transfer roller gear, idle gear and reduction gear).

- Yes — Is the fusing unit being installed properly?
  - No — Install the fusing unit properly.

- Yes — Is the image drum cartridge being set properly?
  - No — Set the image drum cartridge properly.

- Yes — Clean the paper sensor on the power supply/sensor board or replace the power supply/sensor board.

[JAM error]

②-3 Paper exit jam

- Does the paper exit jam error occur when the power is turned on?
  - Yes — Is the paper on the outlet sensor plate?
    - Yes — Remove the paper.
  - No — In the operation of the outlet sensor plate normal (moves freely when touched)?
    - No — Replace the outlet sensor plate.
  - Yes — Clean the outlet sensor on the power supply/sensor board or replace the power supply/sensor board.

- No — Is the face-up stacker pulled out completely from the printer or pushed into the printer completely?
  - No — Pull the face-up stacker out of the printer completely or push it into the printer completely.

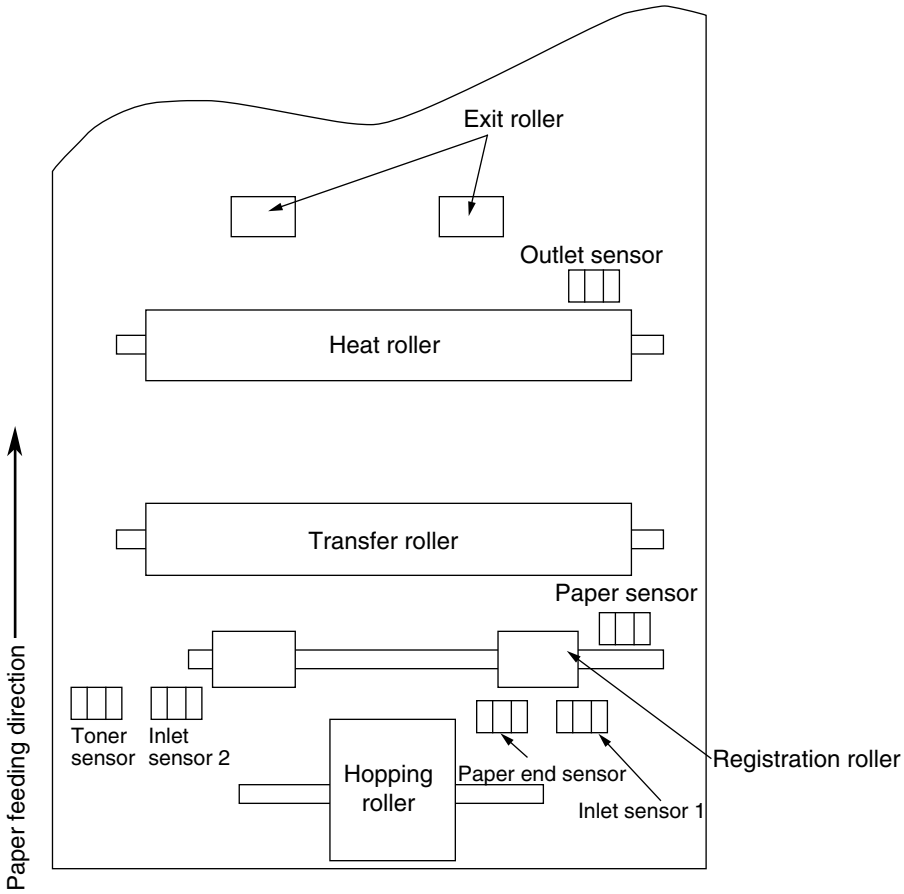
- Yes — Is the eject roller assembly being installed properly?
  - No — Install the eject roller assembly properly.

- Yes — Has the coil spring come off the eject roller assembly?
  - Yes — Install the coil spring to the eject roller assembly.

- No — Replace the eject roller assembly.

③ Paper size error

- Is paper of the specified size being used?
  - No Use paper of the specified size.
- Yes Are inlet sensor plates 1 and 2 operating properly (moves freely when touched)?
  - No Replace the inlet sensor plate or clean the inlet sensor on the power supply/sensor board.
- Yes Does the outlet sensor plate operate properly (moves freely when touched)?
  - No Replace the outlet sensor plate or clean the outlet sensor on the power supply/sensor board.
- Yes Replace the power supply/sensor board.



④ Fusing unit error (ERROR 170) (ERROR 171) (ERROR 172) (ERROR 173)

Status Message : Thermistor Open Error
: Thermistor Short Check Error
: Fuser Error Heater temp High
: Fuser Error Heater temp Low

• Turn the power off, then back on again.

Yes Is the thermistor open or shorted? Measure the resistance between thermistor contacts (heater contacts 120V/2Ω or 240V/7Ω, and thermistor contacts 200KΩ at room temperature) (see Figure below).

• Yes Replace the fusing unit.

No Is the thermistor connector connected to the main control board connector?

• No Connect the thermistor connector property.

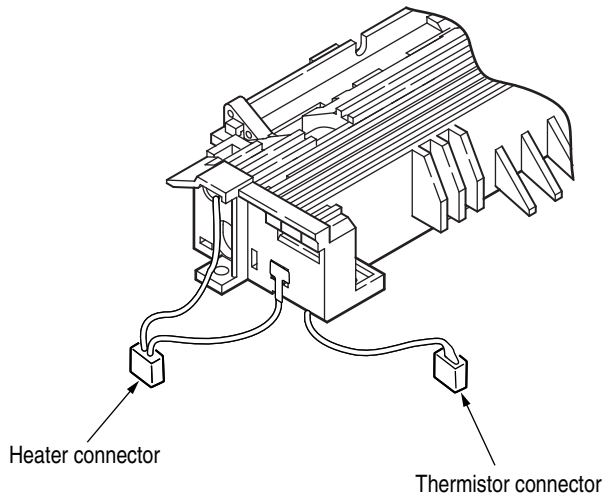
Yes Is the heater of the fusing unit turned on (when the heater is turned on, light is emitted)?

• Yes Check the thermistor connector or replace the main control board or the fusing unit.

No Is the AC voltage being supplied to the connector for the heater of the power supply board? (see Figure below)

• No Replace the main control board or the power supply/sensor board.

Yes Check the heater connector cord and the heater connector for poor contact .



⑤ Synchronous serial I/O error or I/F timeout between printer and optional tray

Status Message : SSIO Error
: Tray2 Timeout Error or Feeder Timeout Error

- Is an option tray being used?
  - Yes — Is the cable between the main control board and the optional tray being connected properly?
    - No — Connect the cable properly.
    - Yes — Replace the main control board.
  - Has the problem been solved?
    - No — Check the problem by following the High Capacity Second Paper Feeder maintenance manual of "Appendix D High Capacity Second Paper Feeder" on page 94.
    - Yes — End
- No — Replace the main control board.
- Has the problem resolved?
  - No — Replace the power supply/sensor board.
- Yes — End

6. Image Troubleshooting

Procedures for troubleshooting for abnormal image printouts are explained below. The Image Troubleshooting Figure below shows typical abnormal images.

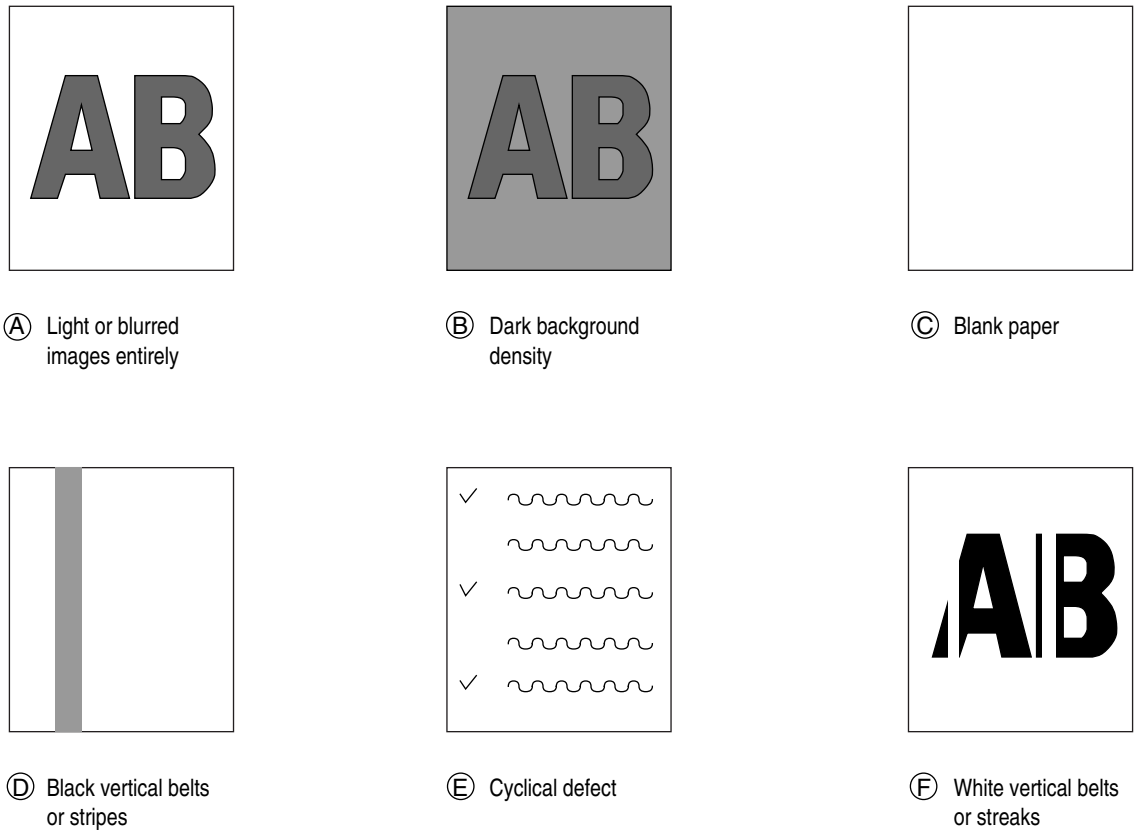
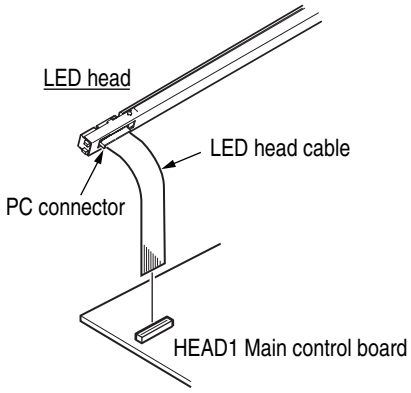


Figure: Image Troubleshooting

Problem	Flowchart number
Images are light or blurred entirely (A)	①
Dark background density (B)	②
Blank paper is output (C)	③
Black vertical belts or stripes (D)	④
Cyclical defect (E)	⑤
Print voids	⑥
Poor fusing (images are blurred or peels off when the printed characters and images on the paper are touched by hand)	⑦
White vertical belts or streaks (F)	⑧

①. Images are light or blurred entirely.

- Is toner low (is the TONER LOW message displayed)?
  - Yes — Supply toner.
- No — Is paper of the specified grade being used?
  - No — Use paper of the specified grade.
- Yes — Is the lens surface of the LED head dirty?
  - Yes — Clean the lens.
- No — Is the LED head being installed properly (check the HEAD1 connector of the main control board and PC connector on the LED head for proper connection)?
  - No — Install the LED head properly.
- Yes — Is the contact plate of the transfer roller in contact with the contact assembly of the power supply/sensor board properly (see Figure)?
  - No — Adjust the contact plate of the transfer roller to make a proper contact with the power supply/sensor board and shaft of the transfer roller.



- Yes — Is the contact of the developing roller and the contact of the toner supply roller of the image drum cartridge in contact with the contact assembly properly (see Image Troubleshooting Figure on page 58, (A) and (B))?
  - No — Adjust the contacts of the developing and toner supply roller to make a proper contact with the contact assembly.
- Yes — Replace the transfer roller.
- Has the problem been solved?
  - Yes — End
- No — Replace the image drum cartridge.
- Has the problem been solved?
  - Yes — End

Note: After replacing the image drum cartridge, reset the drum counter by clicking the "Reset" button in the Status Monitor. (see User's Guide).

- No — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?
  - No — Replace the back-up roller or bias spring.
- Yes — Replace the main control board or power supply/sensor board.

②. Dark background density

- Has the image drum been exposed to external light?
  - Yes — Install the image drum in the printer and wait about 30 minutes.
- No — Perform the cleaning page function (see “Cleaning Page Function” on page 44).
- Has the problem been solved?
  - Yes — End
- No — Is the heat roller of the fusing unit dirty?
  - Yes — Clean the heat roller.
- No — Is the contact of the cleaning roller of the image drum cartridge in contact with the contact assembly properly (see “Figure 5-4” on page 65 (C))?
  - No — Adjust the contact of the cleaning roller to make a proper contact with the contact assembly.
- Yes — Replace the image drum cartridge.
- Has the problem been solved?
  - Yes — End

    Note: After replacing the image drum cartridge, reset the drum counter by clicking the "Reset" button in the Status Monitor. (see User’s Guide).
- No — Replace the main control board or power supply/sensor board.

③. Blank paper is output.

- Is the LED head being connected properly (check the HEAD1 and HEAD2 connectors on the main control board and PC connector on the LED head)?
  - No — Connect the LED head properly or replace the head cable(s).
- Yes — Is the contact of the image drum cartridge in proper contact with the ground contact properly (see “Figure 5-4” on page 65 (C))?
  - No — Adjust the ground contact (Drum) of the contact assembly.
- Yes — Replace the LED head.
- Has the problem been solved?
  - Yes — End.

    Note: After replacing the LED head, set the LED head drive time (“Adjustment When Replacing a Part” on page 42).
- No — Replace the main control board or power supply/sensor board.

④. Black vertical belts or stripes

- Perform the cleaning page function (see “Cleaning Page Function” on page 44).
- Has the problem been solved?
  - Yes End.
- No Replace the image drum cartridge.
- Has the problem been solved?
  - Yes End

    Note: After replacing the image drum cartridge, reset the drum counter by clicking the "Reset" button in the Status Monitor. (see User’s Guide).
- Clean the LED lens array of the LED head.
- Has the problem been solved?
  - Yes End.
- No Replace the LED head.

    Note: After replacing the LED head, set the LED head drive time (“Adjustment When Replacing a Part” on page 42).
- Has the problem been solved?
  - Yes End
- No Replace the main control board or power supply/sensor board.

⑤. Cyclical Defect

Unit	Frequency	Remedy
Image drum	3.71" (94.2mm)	Replace or clean the image drum cartridge.
Developing roller	1.86" (47.12mm)	Replace the image drum cartridge.
Toner supply roller	2.96" (75.27mm)	Replace the image drum cartridge.
Charging roller	1.21" (30.63mm)	Replace the image drum cartridge.
Cleaning roller	0.93" (23.56mm)	Replace the image drum cartridge.
Transfer roller	1.95" (49.6mm)	Replace the transfer roller.
Heat roller	2.44" (62.0mm)	Replace the fusing unit assy.
Back-up roller	2.73" (69.4mm)	Replace the back-up roller.

Note: After replacing the image drum cartridge, reset the drum counter by clicking the "Reset" button in the Status Monitor. (see User’s Guide).

⑥. Prints voids

- Is the contact plate of the transfer roller in proper contact with the power supply/sensor board (see “Figure 5-5” on page 66)?
  - No — Adjust the contact plate so that it touches the power supply/sensor board and the shaft of the transfer roller properly.
- Yes — Replace the transfer roller.
- Has the problem been solved?
  - Yes — End
- No — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?
  - No — Replace the back-up roller or bias spring.
- Yes — Are the contacts of the toner supply roller, developing roller, image drum and charging roller in proper contact with the contact assy (see “Figure 5-4” on page 65 - A , B , C , D , E)?
  - No — Adjust the contacts so that they touch the contact assy properly.
- Yes — Replace the image drum cartridge.
- Has the problem been solved?
  - Yes — End

    Note: After replacing the image drum cartridge, reset the drum counter by clicking the "Reset" button in the Status Monitor. (see User’s Guide).
- No — Is the LED head being installed properly (check HEAD1 connector on the main control board and PC Connector on the LED head)?
  - No — Install the LED head properly.
- Yes — Replace the LED head or the head cable.
- Has the problem been solved?
  - Yes — End

    Note: After replacing the LED head, set the LED head drive time (“Adjustment When Replacing a Part” on page 42).
- No — Replace the main control board or power supply/sensor board.

⑦. Poor Fusing

Poor fusing (images are blurred or peel off when the printed characters and images on the paper are touched by hand).

- Is paper of the specified grade being used?
  - No — Use paper of the specified grade.
- Yes — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?
  - No — Replace the back-up roller or bias spring.
- Yes — Is the contact of the fusing unit assy in proper contact with the contact assy (see “Figure 5-4” on page 65 - G)?
  - No — Adjust the contact of the fusing unit assy to make a proper contact with the contact assembly.
- Yes — Replace the fusing unit assembly.
- Has the problem been solved?
  - Yes — End
- No — Replace the main control board or power supply/sensor board.

⑧. White vertical belts or streaks

- Is the LED lens dirty?
  - Yes — Clean the LED lens.
- No — Is the contact plate of the transfer roller in proper contact with the power supply/sensor board (“Figure 5-5” on page 66)?
  - No — Adjust the contact plate to make a proper contact with the power supply/sensor board.
- Yes — Replace the transfer roller.
- Has the problem been solved?
  - Yes — End
- No — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?
  - No — Replace the back-up roller or bias spring.
- Yes — Is the LED head being installed properly (check HEAD1 connector on the main control board and PC connector on the LED head)?
  - No — Install the LED head properly.
- Yes — Replace the LED head.
- Has the problem been solved?
  - Yes — End

    Note: After replacing the LED head, set the LED head drive time (“Adjustment When Replacing a Part” on page 42).
- Yes — Replace the image drum cartridge.
  - Yes — End

    Note: After replacing the image drum cartridge, reset the drum counter by clicking the "Reset" button in the Status Monitor. (see User’s Guide).
- No — Replace the main control board or power supply/sensor board.

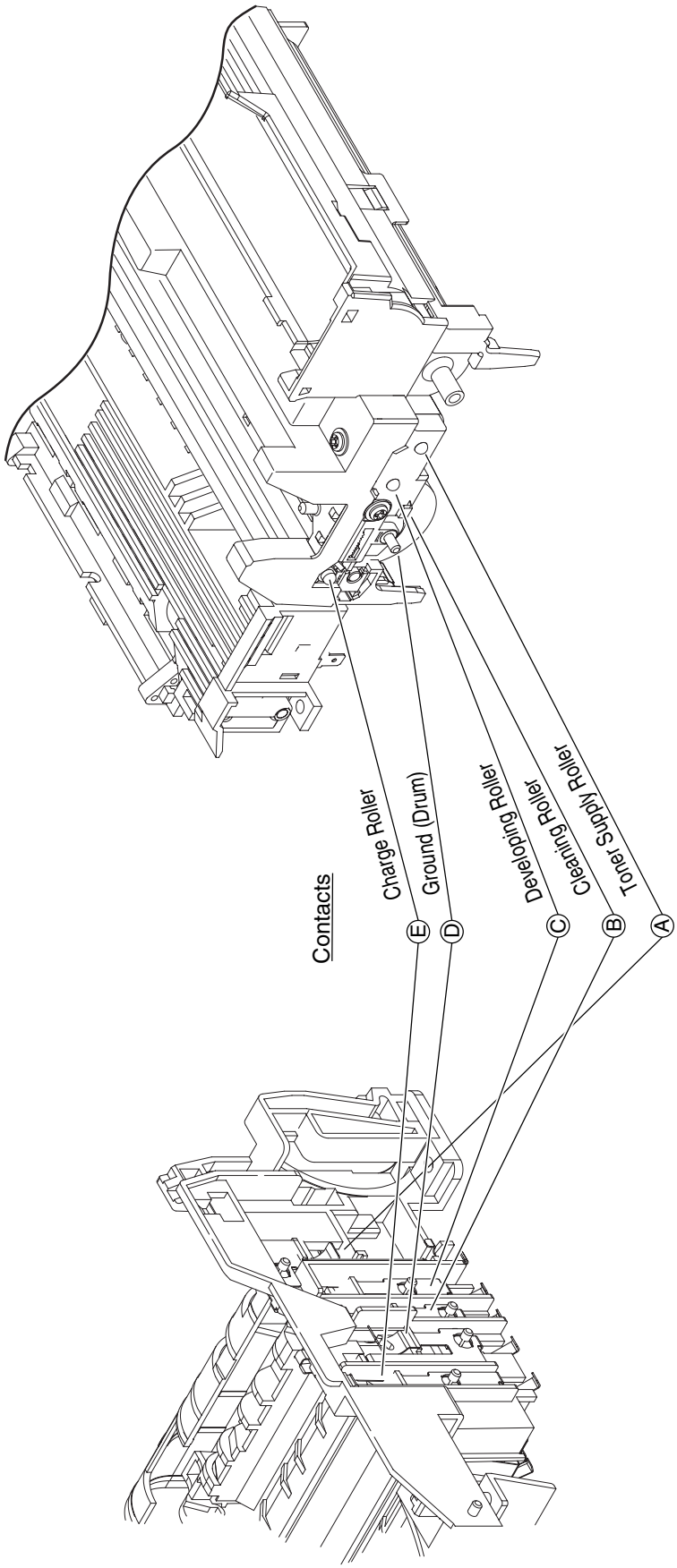

Contacts
Charge Roller
Ground (Drum)
Developing Roller
Cleaning Roller
Toner Supply Roller
E
D
C
B
A

Figure 5-4

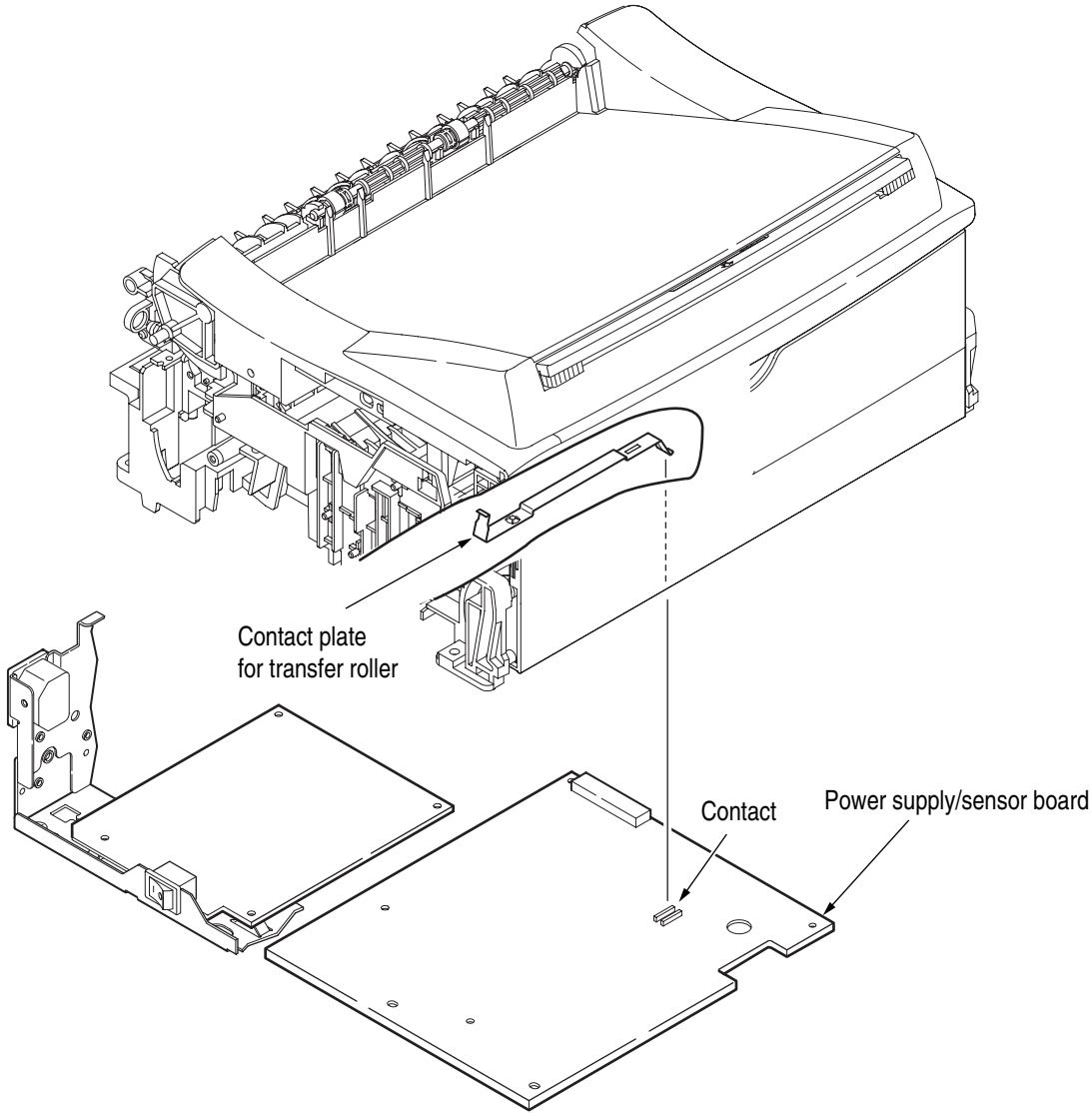
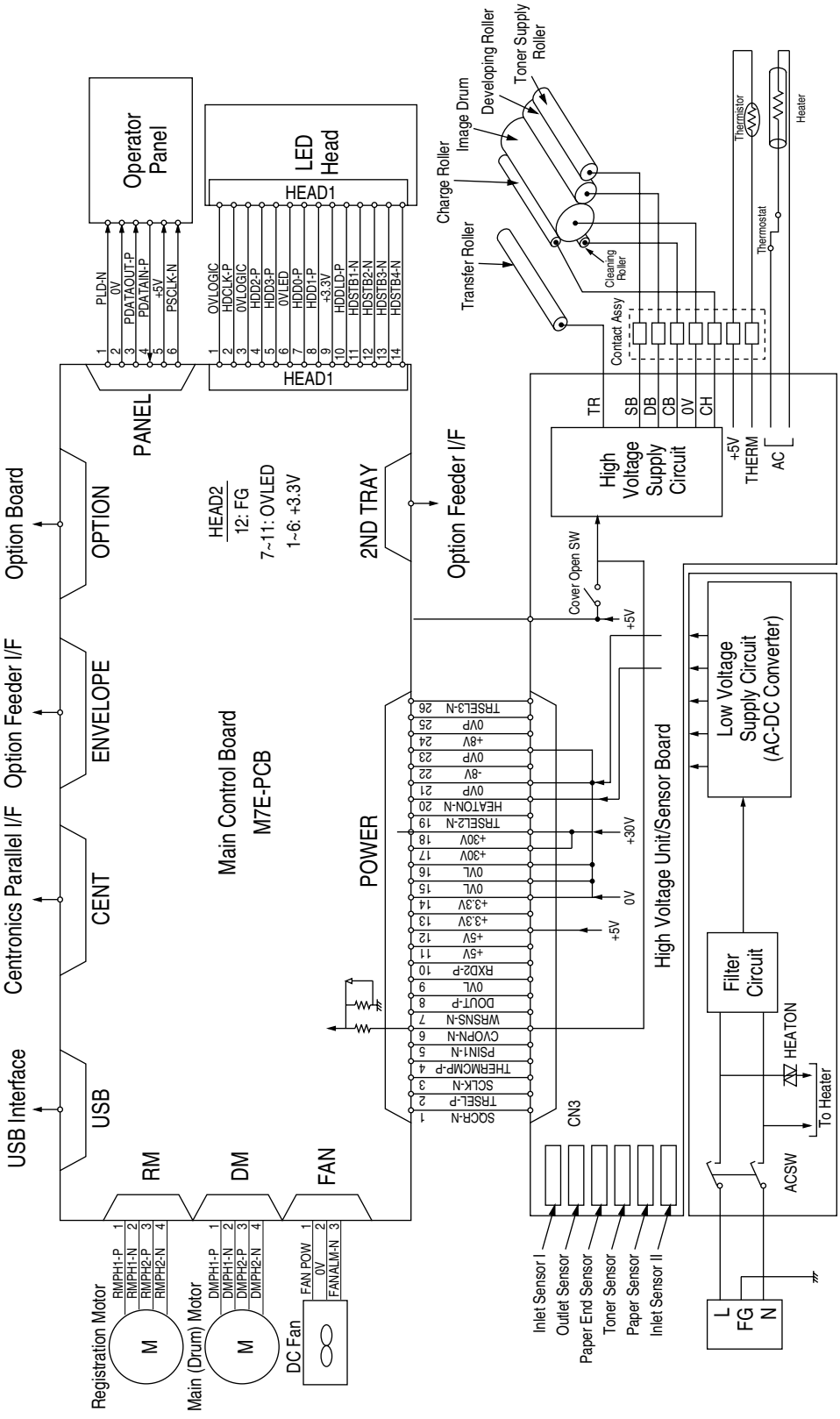

Contact plate
for transfer roller
Contact
Power supply/sensor board

Figure 5-5

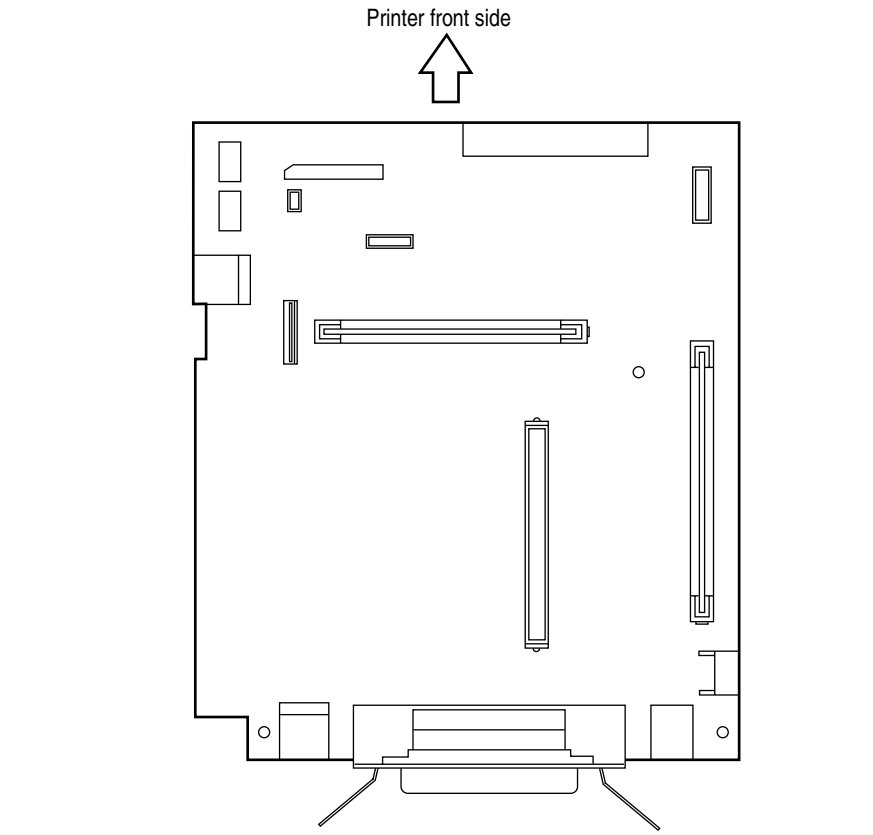
Wiring Diagram

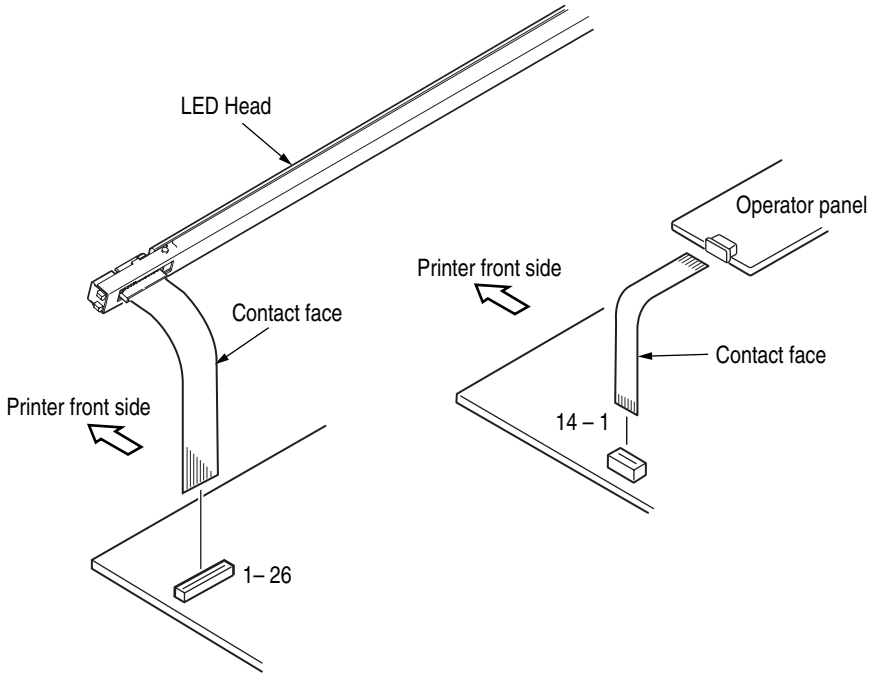
1. Interconnect Signal Diagram



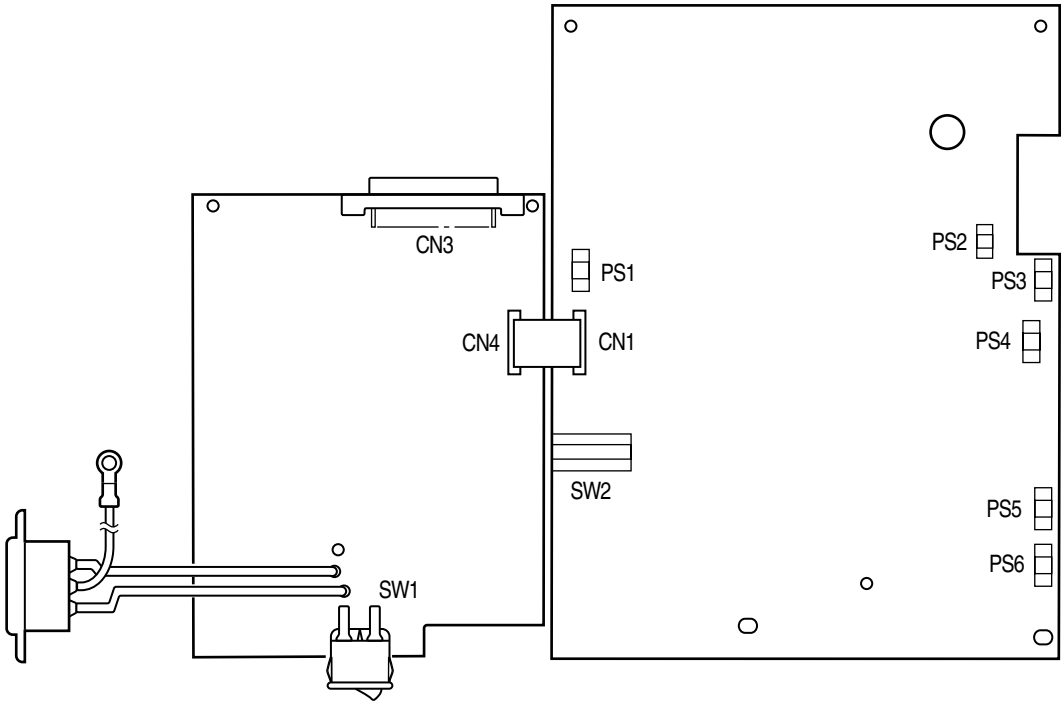
2. PCB Layout and Connector Signal List

A. Main Control Board (GRG-PCB)





B. Power Supply/Sensor Board



FAN Connector Pin Assignment (To fan motor)

Opening	Pin Number	I/O*	Signal	Description
1	1	O	FANPOW	Power supply for fan driving
2	2	C	OV	Ground
3	3	I	FANALM-N	Fan alarm

DM Connector Pin Assignment (To main/drum motor)

Opening	Pin Number	I/O*	Signal	Description
1	1	O	DMPH1-P	Coil 1-P
2	2	O	DMPH1-N	Coil 1-N
3	3	O	DMPH2-P	Coil 2-P
4	4	O	DMPH2-N	Coil 2-N

Excitation Sequence

Pin Number	Line Color	Step Number			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

* I: In, O: Out, C: Common - Rotary direction is clockwise viewed from the output axis

RM Connector Pin Assignment (To registration motor)

Opening	Pin Number	I/O*	Signal	Description
1	1	O	RMPH1-P	Coil 1-P
2	2	O	RMPH1-N	Coil 1-N
3	3	O	RMPH2-P	Coil 2-P
4	4	O	RMPH2-N	Coil 2-N

* I: In, O: Out

Excitation Sequence

Pin Number	Line Color	Step Number			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Clockwise viewed from the output axis

HEAD1 Connector Pin Assignment (To LED head)

		PIN NO.	I/O*	Signal	Description
1		1	C	0VLOGIC	Ground for Logic
	2	2	O	HDCLK-P	Clock
3		3	C	0VLOGIC	Ground for Logic
	4	4	O	HDD2-P	Data 2
5		5	O	HDD3-P	Data 3
	6	6	C	0VLED	Ground for LED
7		7	O	HDD0-P	Data 0
	8	8	O	HDD1-P	Data 1
9		9	C	+3.3V	+3.3V power supply for LED driving
	10	10	O	HDDLD-P	Load
11		11	O	HDSTB1-N	Strobe 1
	12	12	C	HDSTB2-N	Strobe 2
13		13	O	HDSTB3-N	Strobe 3
	14	14	C	HDSTB4-N	Strobe 4

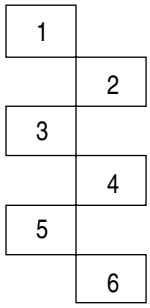
* O: Out
C: Common

HEAD2 Connector Pin Assignment (To LED head)

		PIN NO.	I/O*	Signal	Description
1		1	O	+3.3V	+3.3V power supply for LED driving
	2	2	O		
3		3	O		
	4	4	O		
5		5	O		
	6	6	O		
7		7	C	OVLED	Ground for LED
	8	8	C		
9		9	C		
	10	10	C		
11		11	C		
	12	12	C	FG	FG

* O: Out
C: Common

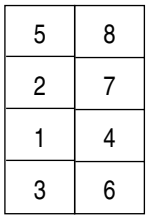
PANEL Connector Pin Assignment (To operator panel)



PIN NO.	I/O*	Signal	Description
1	C	+5V	+5V power supply
2	O	READY	Signal for READY
3	O	PAPER	Signal for PAPER
4	O	ALARM	Signal for ALARM
5	I	SW-N	Signal for Switch
6	C	0VL	Ground

* I: In
O: Out
C: Common

ENVELOPE Connector Pin Assignment (To option feeder I/F)



PIN NO.	I/O*	Signal	Description
1	O	PAPERIN-N	Paper sense 1
2	O	SCLK-N	Clock
3	O	DATA-N	Data
4	I	PAPERIN-N	OPT send data ready
5	C	OVP	Analog groud
6	O	30V	+30V power supply
7	C	0V	Logic gound
8	O	5V	+5V power supply

* I: In
O: Out
C: Common

2NDTRAY Connector Pin Assignment (To option tray I/F)

PIN NO.	I/O*	Signal	Description
1	O	PAPERIN-N	Paper sense 1
2	O	SCLK-N	Clock
3	O	DATA-N	Data
4	I	PAPERIN-N	OPT send data ready
5	C	OVP	Analog groud
6	O	30V	+30V power supply
7	C	0V	Logic gound
8	O	5V	+5V power supply

* I: In
O: Out
C: Common

POWER Connector Pin Assignment (To power supply/sensor board)

2	1
4	3
6	5
8	7
10	9
12	11
14	13
16	15
18	17
20	19
22	21
24	23
26	25

Pin No.	I/O*	Signal	Description
2	O	TRSEL-P	TR control switch
4	I	THERMCMP-P	Heater temperature
6	I	CVOPN-N	Cover open (+5V)
8	O	DOUT-P	Serial data output
10	I	RXD2-P	Serial data input
12	I	+5V	Logic circuit supply voltage
14	I	+3.3V	LED head supply voltage
16	C	OVL	Logic ground
18	I	+30V	Motor and fan drive voltage and source voltage for high voltage supply
20	O	HEATON-N	Heater on
22	I		NC
24	I	+12V	High voltage supply
26	O	TRSEL3-N	TR control switch

Pin No.	I/O*	Signal	Description
1	I	SQCR-N	Sequence clear signal of serial I/F
3	I	SCLK-N	Clock signal of serial I/F
5	I	PSIN1-N	Paper sense
7	I	WRSNS-N	Reading of paper edge
9	C	OVL	Ground for logic
11	I	+5V	Logic circuit supply voltage
13	I	+3.3V	LED head supply voltage
15	C	OVL	Logic ground
17	I	+30V	Motor and fan drive voltage and source voltage for high voltage supply
19	O	TRSEL2-N	TR control switch
21	C	0VP	Power (motor) ground
23	C	0VP	Power (motor) ground
25	C	0VP	Power (motor) ground

* O : Out
I : In
C : Common

CENT Connector Pin Assignment (To Centro parallel I/F)

1	19
2	20
3	21
4	22
5	23
6	24
7	25
8	26
9	27
10	28
11	29
12	30
13	31
14	32
15	33
16	34
17	35
18	36

Pin No.	I/O*	Signal	Description	Pin No.	I/O*	Signal	Description
1	I	STROBE-N	Strobe	19	C	SG	Ground
2	C	DATA1-P	Data bit 0	20	C	SG	Ground
3	C	DATA2-P	Data bit 1	21	C	SG	Ground
4	C	DATA3-P	Data bit 2	22	C	SG	Ground
5	C	DATA4-P	Data bit 3	23	C	SG	Ground
6	C	DATA5-P	Data bit 4	24	C	SG	Ground
7	C	DATA6-P	Data bit 5	25	C	SG	Ground
8	C	DATA7-P	Data bit 6	26	C	SG	Ground
9	C	DATA8-P	Data bit 7	27	C	SG	Ground
10	O	ACK-N	Acknowledge	28	C	SG	Ground
11	O	BUSY-P	Busy	29	C	SG	Ground
12	O	PE-P	paper end	30	C	SG	Ground
13	O	SEL-P	Select	31	I	IPRIME-N	Input prime
14	I	AUTOFEED-N	Auto feed	32	O	FAULT-N	Fault
15		NC	Not connected	33	C	SG	Ground
16	C	SG	Ground	34		NC	Not connected
17	C	FG		35	O	HILEVEL	Always kept high
18	O	P-LOGIC-H	+5V power supply	36	I	SELIN-N	Select in

* O : Out
I : In
C : Common

USB Connector Pin Assignment To USB I/F)

2	1
3	4

PIN NO.	I/O*	Signal	Description
1	I	Vcc	+5V Power supply
2	I/O	D-	USB Data
3	I/O	D+	USB Data
4	C	0V	Ground

* I: In
O: Out
C: Common

OPTION Connector Pin Assignment (To option RAM / RS232C or Network)

01		51	
	02		52
03		53	
	04		54
05		55	
	06		56
07		57	
	08		58
09		59	
	10		60
11		61	
	12		62
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	14		64
15		65	
	16		66
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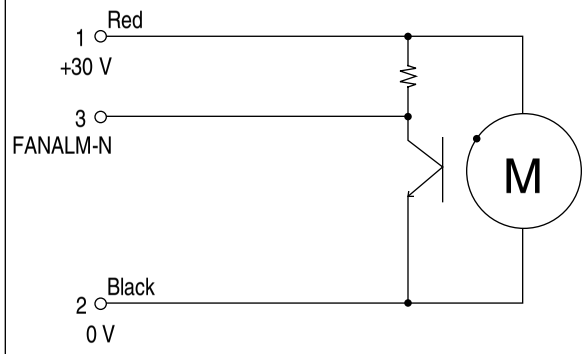
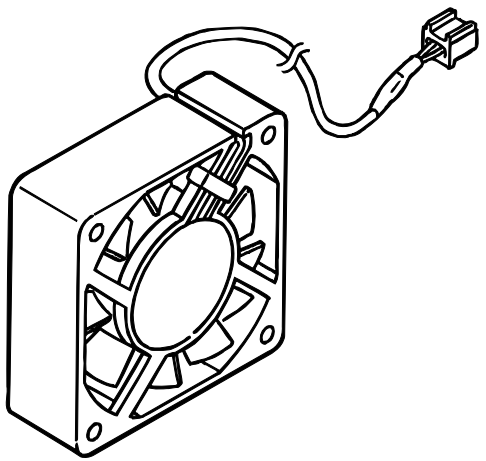
	30		80
31		81	
	32		82
33		83	
	34		84
35		85	
	36		86
37		87	
	38		88
39		89	
	40		90
41		91	
	42		92
43		93	
	44		94
45		95	
	46		96
47		97	
	48		98
49		99	
	50		100

Pin No.	I/O*	Signal	Description	Pin No.	I/O*	Signal	Description
01	O	A0	OR write enable	51	I/O	D16	Data bit 16
02	C	0V	Logic ground	52	I/O	D0	Data bit 0
03	O	A1	Address bit 1	53	I/O	D17	Data bit 17
04	O	A2	Address bit 2	54	I/O	D1	Data bit 1
05	O	RSDTR0-N	RS232C Data terminal ready	58	I/O	D18	Data bit 18
06	O	A3	Address bit 3	56	I/O	D2	Data bit 2
07	O	A4	Address bit 4	57	I/O	D19	Data bit 19
08	C	0V	Logic ground	58	I/O	D3	Data bit 3
09	O	A5	Address bit 5	59	I/O	D20	Data bit 20
10	O	A6	Address bit 6	60	I/O	D4	Data bit 4
11	C	+5V	Logic power supply	61	I/O	D21	Data bit 21
12	O	A7	Address bit 7	62	I/O	D5	Data bit 5
13	O	A8	Address bit 8	63	I/O	D22	Data bit 22
14	C	0V	Logic ground	64	I/O	D6	Data bit 6
15	O	A9	Address bit 9	65	I/O	D23	Data bit 23
16	O	A10	Address bit 10	66	I/O	D7	Data bit 7
17	C	+5V	Logic power supply	67	I/O	D24	Data bit 24
18	O	A11	Address bit 11	68	I/O	D8	Data bit 8
19	O	A12	Address bit 12	69	I/O	D25	Data bit 25
20	C	0V	logic ground	70	I/O	D9	Data bit 9
21	O	A13	Address bit 13	71	I/O	D26	Data bit 26
22	O	A14	Address bit 14	72	I/O	D10	Data bit 10
23	C	+5V	Logic power supply	73	I/O	D27	Data bit 27
24	O	A15	Address bit 15	74	I/O	D11	Data bit 11
25	O	A16	address bit 16	75	I/O	D28	Data bit 28
26	C	0V	Logic ground	76	I/O	D12	Data bit 12
27	O	A17	Address bit 17	77	I/O	D29	Data bit 29
28	O	A18	Address bit 18	78	I/O	D13	Data bit 13
29	C	+5V	Logic power supply	79	I/O	D30	Data bit 30
30	O	A19	Address bit 19	80	I/O	D14	Data bit 14
31	O	A20	Address bit 20	81	I/O	D31	Data bit 31
32	C	0V	Logic ground	82	I/O	D15	Data bit 15
33	O	A21	Address bit 21	83	O	DRAS2-N	DRAM select 2
34	O	A22	Address bit 22	84	O	DRAS3-N	DRAM select 3
35	O	A23	Address bit 23	85	O	DRAS4-N	DRAM select 2
36	O	0V	Logic ground	86	O	DRAS5-N	DRAM select 5
37	O	0V	Logic ground	87	O	DCAS3-N	DCAS3
38	C	0V	Logic ground	88	O	DCAS2-N	DCAS2
39	O	RSRTS0-N	RS232C request to send	89	O	DCAS1-N	DCAS1
40	O	CS1-N	ROM/SRAM select 1	90	O	DCAS0-N	DCAS0
41	O	CS2-N	ROM/SRAM select 2	91	O	RD-N	RD-N
42	O	CS3-N	ROM/SRAM select 3	92	O	WR-N	WR-N
43	I	SCRREQ-P	SCC send request	93	I	INT1-N	Interrupt request 1
44	C	0V	Logic ground	94	I	INT2-N	Interrupt request 2
45	I	SCSREQ-P	SCC receive request	95	O	EEPRMCS1-P	EEPROM select
46	O	IOS0-N	I/O select 0	96	O	EEPRMCLK-P	EEPROM clock
47	O	IOS1-N	I/O select 1	97	C	SSTXD-P	EEPROM data
48	O	RSTXD0-N	RS232C send data	98	I	DRDY-N	Data read
49	O	-8V	RS232C line voltage	99	C	+8V	RS232C line voltage
50	I	RSRXD0-P	RS232C receive data	100	O	RESET-N	Reset signal

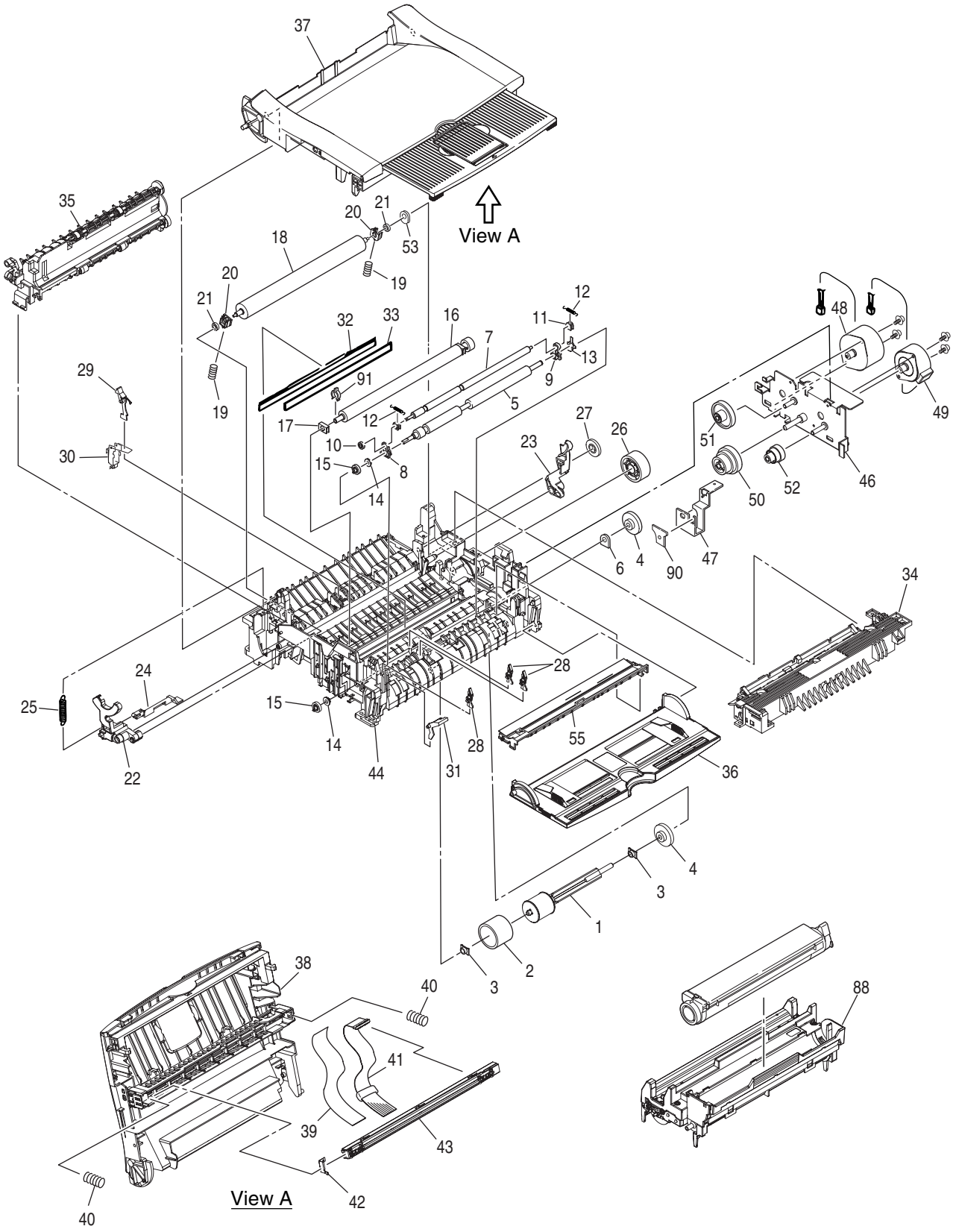
* O : Out
I : In
C : Common

3. Resistance Check

Unit	Circuit Diagram	Illustration	Resistance
Registration motor			Between Pins 1 and 2: 7.9Ω Between Pins 3 and 4: 7.9Ω
Main/drum motor			Between Pins 1 and 2: 8.6Ω Between Pins 3 and 4: 8.6Ω
Fusing unit			Between Pins 1 and 2: 120V 2Ω 240V 7Ω Between Pins 3 and 4: 200KΩ (at room temperature)

Unit	Circuit Diagram	Illustration	Resistance
Fan			

Parts List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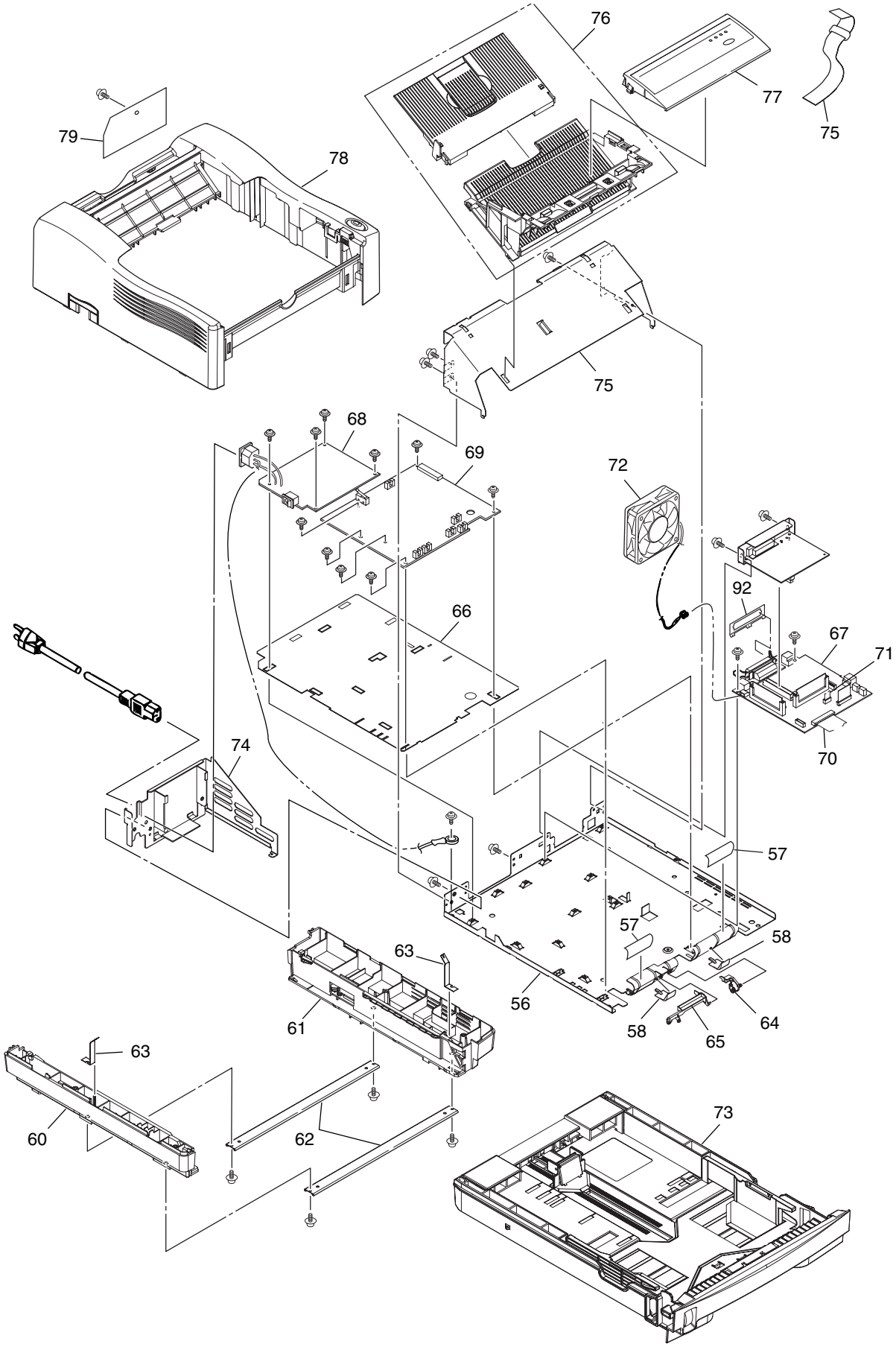
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For B4200

#:New Parts

No.	Part No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
1	51112301	Hopping Roller Shaft	1	3	6	12	
2	53342401	Rubber-Hopping Roller	1	3	6	12	
3	51607402	Bearing	2	6	12	24	
4	51228901	One-way Clutch Gear	2	6	12	24	
5	42174301	Roller-Regist	1	3	6	12	#
6	51607501	Bearing(Registration)	1	3	6	12	
7	42174201	Roller-Pressure	1	3	6	12	#
8	41279501	Holder-Regist L	1	3	6	12	
9	41279601	Holder-Regist R	1	3	6	12	
10	41279801	Gear-Pressure	1	3	6	12	
11	41279401	Bearing-Pressure	2	6	12	24	
12	41281201	Spring-Tension	2	6	12	24	
13	41280401	Plate-Contact PA	1	3	6	12	
14	41279301	Bearing-Regist L	1	3	6	12	
15	41279701	Gear-Regist	1	3	6	12	
16	42208501	Roller Assy.-Transfer	1	3	6	12	#
17	40438001	Bearing TR	1	3	6	12	
18	41301801	Roller-Back up	1	3	6	12	
19	41584101	Spring Bias	2	6	12	24	
20	41536201	Holder-BU	2	6	12	24	
21	41584201	Bearing-Ball	2	6	12	24	
22	42208601	Lever-Reset L Assy.	1	3	6	12	#
23	50805901	Reset Lever R	1	3	6	12	
24	53068901	Switch Arm	1	3	6	12	
25	50924201	Reset Spring	1	3	6	12	
26	42126101	Idle Gear	1	3	6	12	#
27	51229201	Eject Roller Idle Gear	1	3	6	12	
28	51010701	Sensor Plate(Inlet)	3	9	18	36	
29	40771401	Lever-Eject Sensor Assembly	1	3	6	12	
30	41027701	Sensor Wire Assembly	1	3	6	12	
31	42468801	Toner Sensor(Adhesion)	1	3	6	12	
32	51010903	Diselectrification Bar Shaft	1	3	6	12	
33		Diselectrification Film	1	3	6	12	
34-a	42209201	Heat Assy	1	10	20	40	120V #
34-b	42209202	Heat Assy	1	10	20	40	230V #
35	40772501	Roller Assy.-Eject	1	3	6	12	
36	42145701	Cover Assy.-Front	1	3	6	12	#

#:New Parts

No.	Part No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
37	42200401	Cover Assy.-Stacker	1	3	6	12	#
38	42129101	Holder-Head	1	3	6	12	#
39	42146701	Film-FG	1	3	6	12	#
40	42146501	Spring-Head	2	6	12	24	#
41	42408201	Cable-Assy-Head	1	5	10	20	#
42	42146601	Contact-Head	1	3	6	12	#
43	42266801	LED Head Unit-51MXF	1	5	10	20	#
44	42208301	Frame Subassy.-Lower	1	3	6	12	#
45		Damper Frame	1	3	6	12	
46	42122701	Bracket-Motor(Caulking)	1	3	6	12	#
47	42352501	Bracket-Sub-M	1	3	6	12	#
48	42196001	Motor-Pulse(Main)	1	3	6	12	#
49	42196101	Motor-Pulse(Regist)	1	3	6	12	#
50	42121701	Gear-M3	1	3	6	12	#
51	42121801	Gear-M2	1	3	6	12	#
52	42121901	Gear-R2	1	3	6	12	#
53	50517201	Washer C	1	3	6	12	
54		FG Plate OP	1	3	6	12	
55	42209101	Guide-Paper R(Adhesive)	1	3	6	12	#
56	42200501	Plate-Base Assy.	1	3	6	12	#
57		Polyethylene Tape	2	6	12	24	L=90mm
58	40828301	Guide-Paper H	2	6	12	24	
59		CS-RING(CS3-SUS)	2	6	12	24	
60	42209401	Cassette guide L Assy.	1	3	6	12	#
61	42209501	Cassette guide R Assy.	1	3	6	12	#
62		Beam Plate	2	6	12	24	
63		FG Plate(bm)	2	6	12	24	
64	51019701	Sensor Plate(Paper Supply)	1	3	6	12	
65	51011501	Cassette Sensor Plate	1	3	6	12	
66	42146301	Insulator	1	3	6	12	#
67	42263804	Board-GRG	1	5	10	20	#
68-a	41991601	Power Supply Unit	1	5	10	20	100V/120V #
68-b	41991701	Power Supply Unit	1	5	10	20	230V #
69	42284101	Board-HLB	1	5	10	20	#
70	56639214	Sumi-Card(30P)	1	5	10	20	#
71	42101001	Cord Assy.(13p-5P,8p)	1	5	10	20	#
72	42283501	Fan Motor	1	3	6	12	#
73	42209601	Cassette Assy.-Paper	1	3	6	12	#

#:New Parts

No.	Part No.	Name	Q'ty /Unit	Recommended Q'ty/Year			Remarks
				per 500	per 1000	per 2000	
74	42146201	Plate-Guide	1	3	6	12	#
75	40997101	Cord Assy.-OP	1	5	10	20	
76	42146801	Face Up Stacker Assy.	1	3	6	12	#
77	42200201	Frame Assy.-OP Panel	1	3	6	12	B4200 #
78	42147201	Cover-Upper Assy.	1	3	6	12	#
79	42129601	Cover-IF	1	3	6	12	#
90	42406601	Holder-Tr_R	1	3	6	12	#
91	42406701	Spacer-Tr_L	1	3	6	12	#
92		Plate-Earth_A	1	3	6	12	#
	Option						
81	42160909	Board GRL	1				
82	42160910	Board GRL-2	1				
83							
84	42264009	Board GRM	1				
85	42264010	Board GRM-2	1				
86							
87	42264205	Board GRJ	1				
	Consumable						
88	42102801	Image Drum Unit Type 9	1				
90	42103001	Toner Cartridge Type 9 (2.5K)	1				

Appendix A RS-232C Serial Interface (option)

1. Connector
   - Printer side: 25-pin receptacle
     Type DB-25S (made by Cannon) or equivalent
   - Cable side: 25-pin plug
     Type DB-25S (made by Cannon)
     Shell
     Type DB-C8-J10-F2-1 (made by Nihon Kouku Denshi) or equivalent

   Note: Plug shall be fixable with a lock screw.

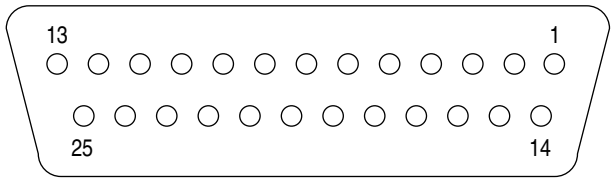
2. Cable
   - Cable length: 6 ft (1.8 m) max. (cable shall be shielded)

   Note: Cable is not provided.

3. Interface signal

Pin No.	Signal Name	Abbreviation	Signal Direction	Functions
1	Frame Ground	FG		Frame Ground
2	Transmitted Data	TD	← PR	Transmitted Data
3	Received Data	RD	→ PR	Received Data
4	Request to Send	RTS	← PR	Stay space level
5	-			(Not connected)
6	-			(Not connected)
7	Signal Ground	SG		Signal Ground
8	-			(Not connected)
9 ~ 17	-			(Not connected)
18	-			(Not connected)
19	-			(Not connected)
20	Data Terminal Ready	DTR	← PR	Data terminal ready
21 ~ 25	-			(Not connected)

   - Connector Pin Arrangement

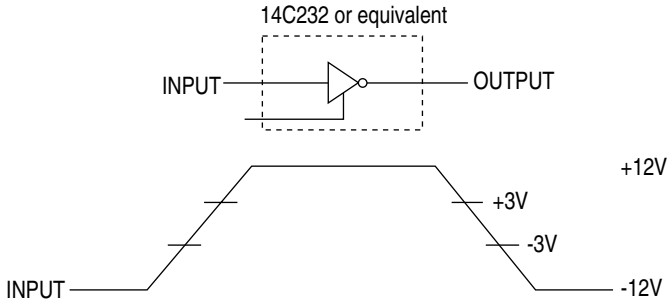


(View from the cable side)

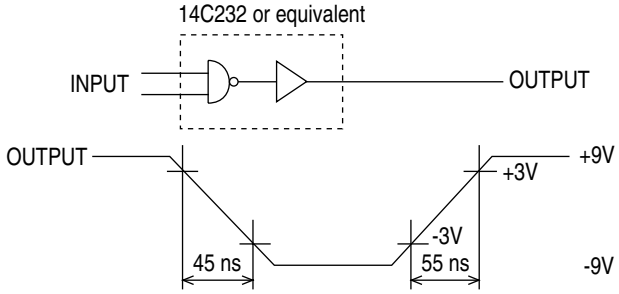
   When the Ready/Busy protocol is used for the buffer busy control method, the busy signal can be set to Pin-20 (DTR) in the menu.

4. Signal Level
   - MARK polarity : -3V to -15V (LOGIC = 1)
   - SPACE polarity : +3V to +15V (LOGIC = 0)

5. Interface Circuit
   a. Receiving Circuit



   b. Sending Circuit



6. Receive Margin

   37% min. at all reception rates.

7. Communications Protocol
   a. READY/BUSY protocol
   b. X-ON/X-OFF protocol

Appendix B Centronics Parallel Interface

1. Connector
   - Printer side: 36-pin receptacle
     (single port) Type 57RE-40360-730B-D29A (made by Daiichi Denshi), CNAX05841A36AT (made by Ougat) or equivalent
   - Cable side: 36-pin plug
     Type 57-30360 (made by Daiichi Denshi) or equivalent
     Plug-552274-1 (AMP), 552073-1 (AMP) or equivalent

   Note: Plug shall be fixable with a lock screw.

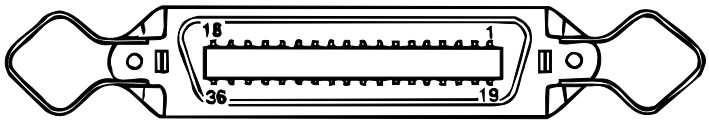
2. Cable
   - Cable length: 6 ft (1.8 m) max. (A shielded cable composed of twisted pair wires is recommended for noise prevention.)

   Note: Cable is not provided and is not available from Oki.

3. Table of Parallel I/F Signals

Pin No.	Signal name	Signal direction	Functions
1	$\overline{\text{DATA STROBE}}$	→ PR	Parallel data sampling strobe
2	DATA BIT - 1	→ PR	PR Parallel input and output data
3	DATA BIT - 2		
4	DATA BIT - 3		
5	DATA BIT - 4		
6	DATA BIT - 5		
7	DATA BIT - 6		
8	DATA BIT - 7		
9	DATA BIT - 8		
10	$\overline{\text{ACKNOWLEDGE}}$	← PR	Completion of data input or end of a function
11	BUSY	← PR	During print processing or alarm
12	PAPER END	← PR	End of paper
13	SELECT	← PR	Select state (ON-LINE)
14	$\overline{\text{AUTOFEED}}$	→ PR	Request to change mode
15	-		(Not used)
16	0V		Signal ground
17	CHASSIS GROUND		Chassis ground
18	+5V	← PR	50 mA max.
19 ⋮ 30	0V		Signal ground
31	$\overline{\text{INPUT PRIME}}$	→ PR	Initializing signal
32	$\overline{\text{FAULT}}$	← PR	End of paper or during alarm
33	-		Signal ground
34	-		(Not used)
35	-		High level (3.3 k)
36	$\overline{\text{SELECT IN}}$	→ PR	Request to change mode

- Connector Pin Arrangement



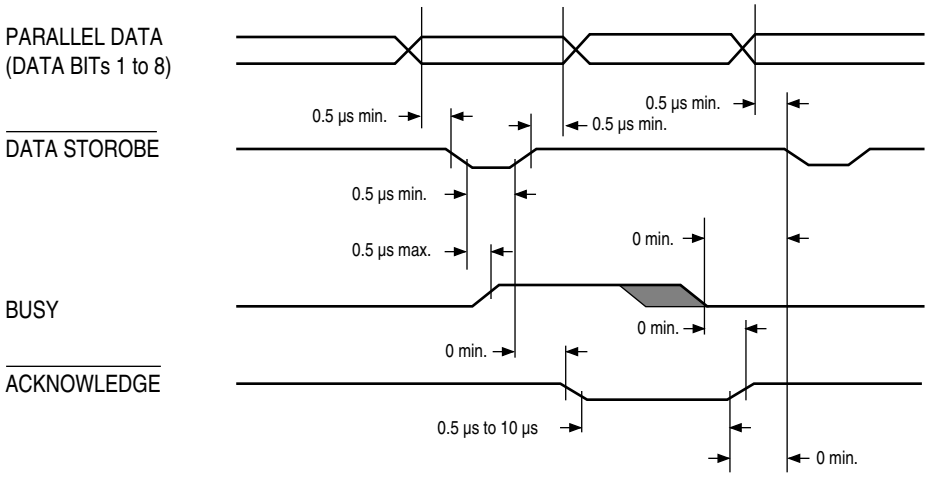
4. Signal Level
   - LOW : 0 V to +0.8 V
   - HIGH : +2.4 V to 5.0 V

5. Specifications

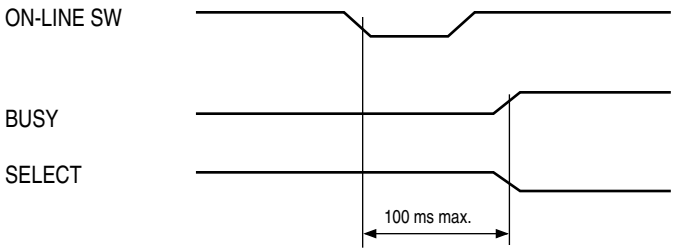
Item	Description
Mode	Compatibility mode, Nibble mode, ECP mode
Data bit length	8 bits (in the compatibility mode)
Input prime	Valid/Invalid
Receive buffer	0.1M, 0.2M, 0.5M Bytes
Control	Handshaking control is performed in each mode. Data received from the host is stored in the receive buffer. Busy control is performed. Signal lead control is performed.

6. Timing Charts

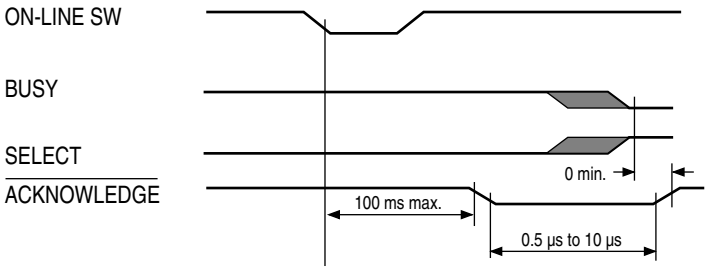
a. Data receiving timing



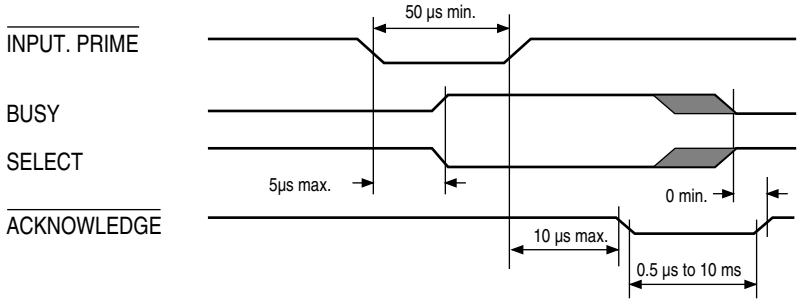
b. On-line → off-line switching timing by ON-LINE SW



c. Off-line → on-line switching timing by ON-LINE SW



d. INPUT PRIME timing (when set to the effective INPUT PRIME signal)



Appendix C Universal Serial Bus (USB)

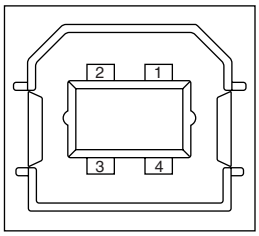
1. Universal Serial Bus Specification Revision 2.0 full speed compliance

1. Connector
   - Printer side: “B” Receptacle (Upstream Input to the USB Device)
   - Cable side: Series “B” Plug
2. Cable
   - Cable length: Max 5m (A cable must meet USB Spec Rev 1.1 for normal operation)

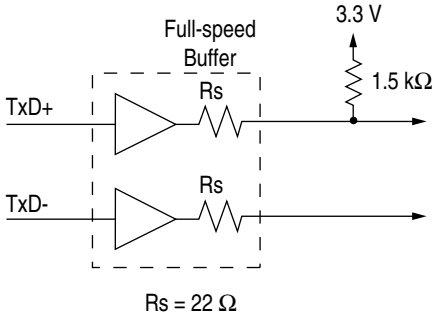
   Note: Cable is not provided and is not available from Oki.
3. Table of USB I / F signals

Contact Number	Signal Name
1	Vbus
2	D -
3	D +
4	GND
Shell	Shielded

4. Connector pin arrangement



5. Mode & Class of Device
   - Full - speed Driver
   - Self - powered Device
6. Data Signaling Rate
   - Full - speed function - 12Mb/s
7. Interface circuit



8. Signal Level

- Input/Output Level

Parameter	Symbol	Min.	Max.	Units
Input Levels :				
High (driven)	V_{IH}	2.0		V
High (floating)	V_{IHZ}	2.7	3.6	V
Low	V_{IL}		0.8	V
Output Levels :				
Low	OL	0.0	0.3	V
High (driven)	OH	2.8	3.6	V
Output Signal Crossover Voltage	V_{CRS}	1.3	2.0	V

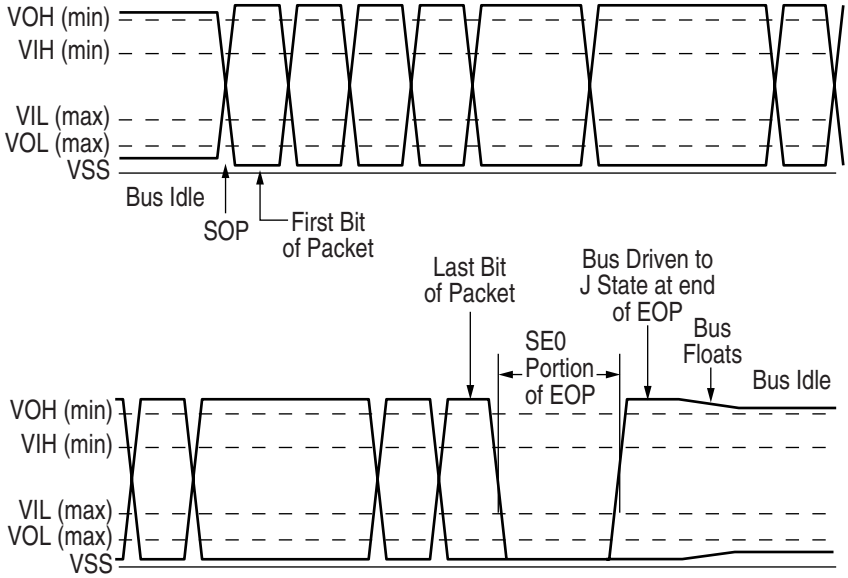
- Signaling Levels

Bus State	Signaling Levels	
	Required	Acceptable
Differential "1"	(D+) - (D-) > 200mV and D+ > V_{IH} (min)	(D+) - (D-) > 200mV
Differential "0"	(D-) - (D+) > 200mV and D- > V_{IH} (min)	(D-) - (D+) > 200mV
Single-ended 0 (SE0)	D+ and D- < V_{IL} (max)	D+ and D- < V_{IH} (min)
Data J state: Low-speed Full-speed	 Differential "0" Differential "1"	
Data K state: Low-speed Full-speed	 Differential "1" Differential "0"	
Idle state: Low-speed Full-speed	 D- > V_{IHZ} (min) and D+ < V_{IL} (max) D+ > V_{IHZ} (min) and D- < V_{IL} (max)	 D- > V_{IHZ} (min) and D+ < V_{IH} (min) D+ > V_{IHZ} (min) and D- < V_{IH} (min)
Resume state	Data K state	
Start-of-Packet (SOP)	Data lines switch from Idle to K state	
End-of-Packet (EOP)	SE0 for 1 bit time[1] followed by a J state for 1 bit time	SE0 for 1 bit time[1] followed by a J state
Disconnect (at downstream port)	SE0 for 2.5µs	
Connect (at downstream port)	Idle for 2ms	Idle for 2.5µs
Reset	D+ and D- < V_{IL} (max) for 10ms	D+ and D- < V_{IL} (max) for 2.5µs

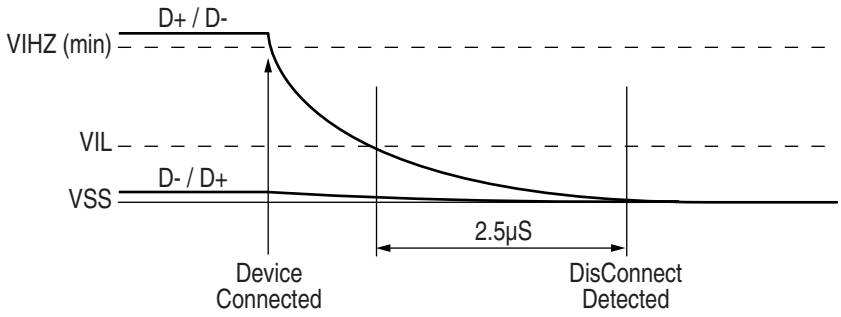
Note: The width of EOP is defined in bit times relative to the device type receiving the EOP. The nbit time is approximate.

9. Timing Chart

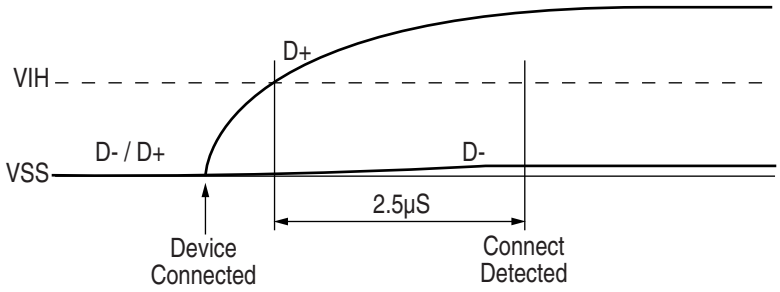
a. Packet Voltage Levels



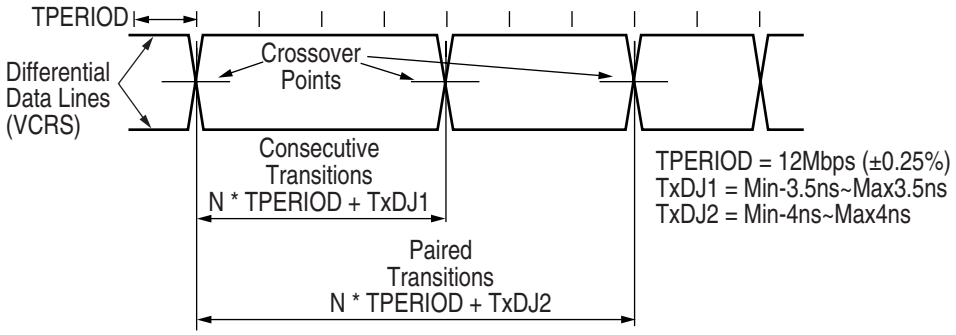
b. Disconnect Detection



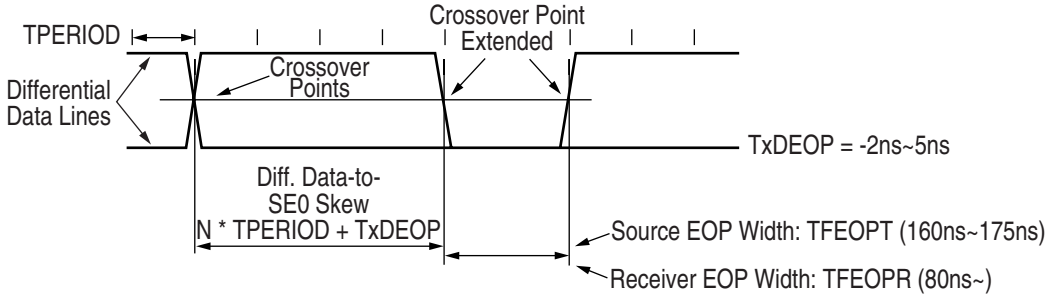
c. Full-speed Device Connect Detection



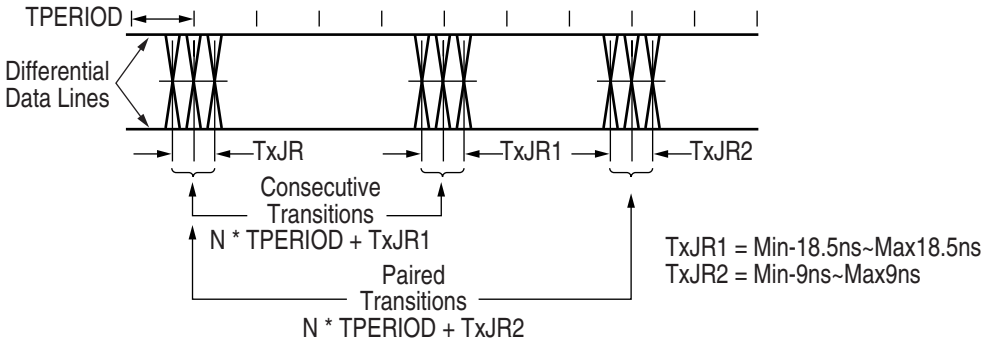
d. Differential Data Jitter



e. Differential-to-EOP Transition Skew and EOP Width



f. Receiver Jitter Tolerance



Appendix D High Capacity Second Paper Feeder

1. Outline

A. Function

The printer is mounted on top of this High Capacity Second Paper Feeder. The High Capacity Second Paper Feeder supplies paper automatically through the operation of pulse motor (hopping), which is driven by signals sent from the printer.

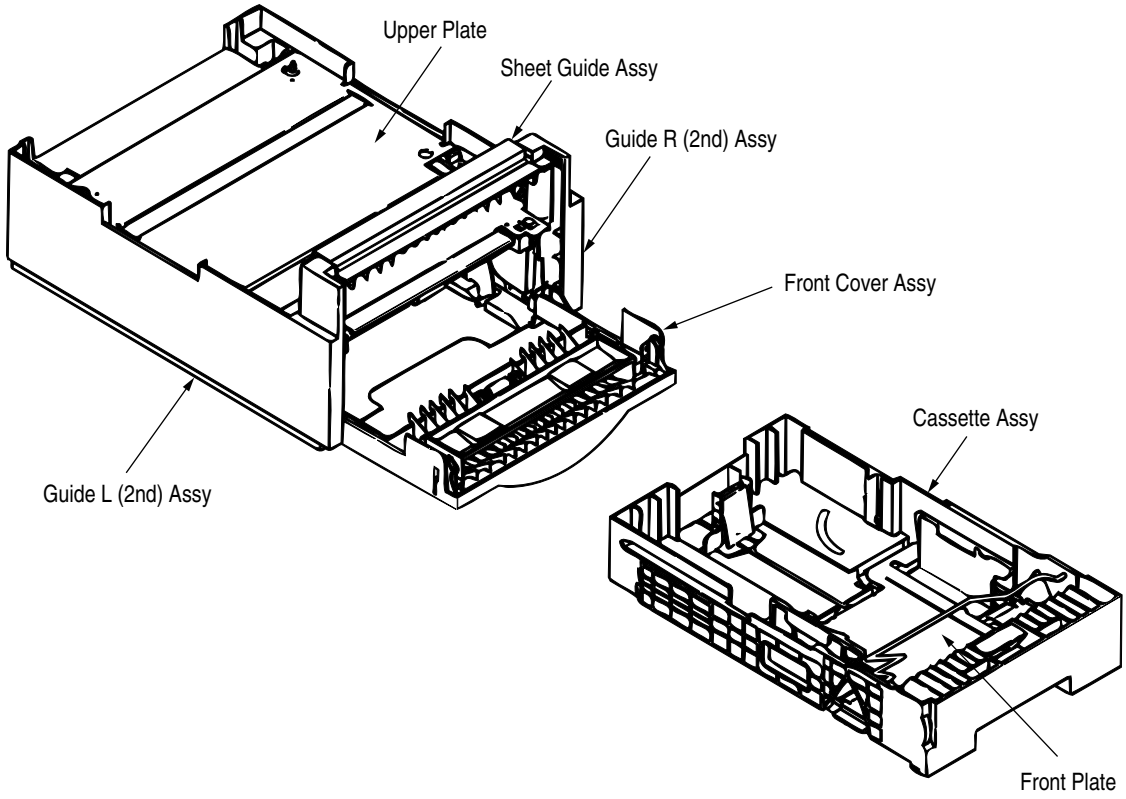
Paper Types

- Standard paper: Xerox 4200 (20-lb)
- Special paper: OHP sheets (for PPC), Label sheets (PPC sheets); use of envelopes or thick paper is not possible.
- Cut sheet size: Letter, Executive, Legal13, Legal14, A4, A5, B5
- Special size: Width: 5.83" to 8.50" (148 to 216mm)
- Length: 8.27" to 14.00" (210 to 355.6mm)

Weight and Thickness

- 16-lb to 24-lb (60~90 g/m^2)
- Paper setting quantity: 500 sheets of paper weighing 64 g/m^2

B. External View and Component Names



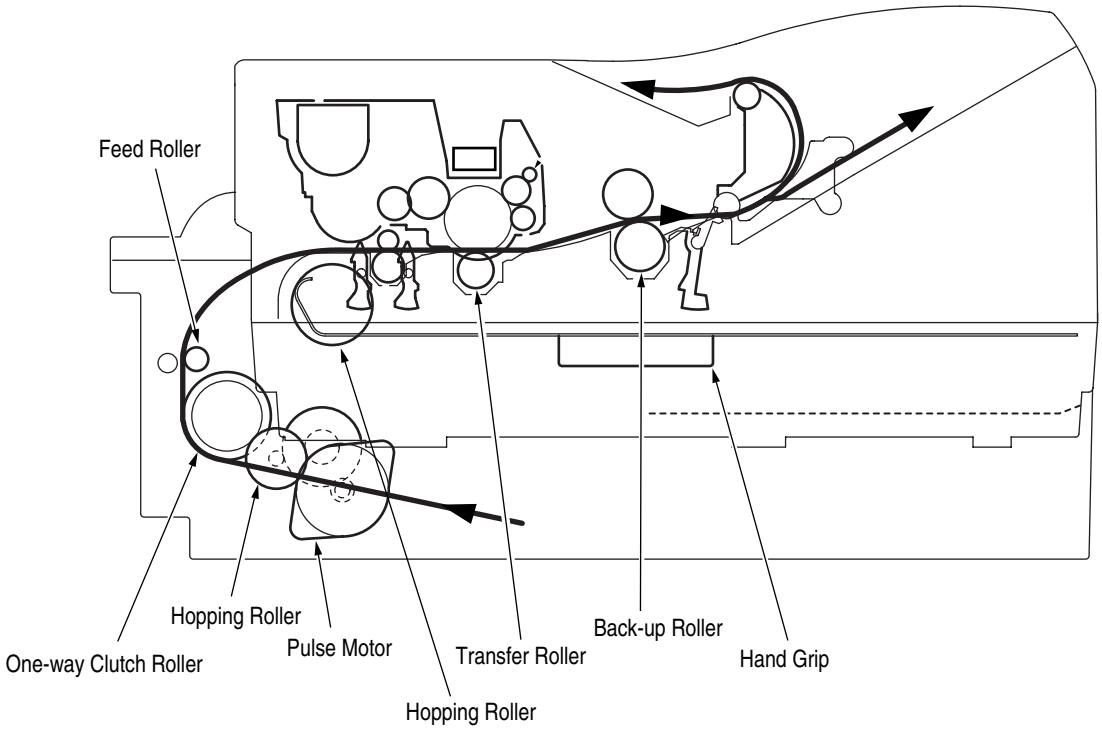
2. Mechanism Description

A. General Mechanism

The High Capacity Second Paper Feeder feeds the paper into the printer by receiving the signal from the printer, which drives the pulse motor inside the High Capacity Second Paper Feeder, which is transmitted to rotate the one-way clutch of the hopping frame assembly. The paper is delivered from the hopper into the printer through the turning of the hopping roller and feed roller. Once delivered into the printer, the paper is then controlled and fed through by pulse motor (registration) of the printer.

B. Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time. The paper is loaded in the paper cassette, then transported by the pulse motor with the brake shoe one sheet at a time.



3. Parts Replacement

This section covers the procedures for the disassembly, reassembly and installations in the field. For reassembly procedures, follow the disassembly procedures in the reverse order.

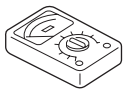
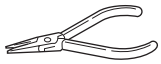
A. Precautions Concerning Parts Replacement

1. Parts replacements must be carried out by first turning the printer power switch off "O" and removing the printer from the High Capacity Second Paper Feeder.
2. Do not disassemble the High Capacity Paper Feeder if it is operating normally.
3. Establish the extent of disassembly suitable for the purpose of the procedure and do not disassemble any more than necessary.
4. Only specified service tools may be used.
5. Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.
6. Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.
7. When handling printed circuit boards, do not use any glove which may generate static electricity.
8. Do not place the printed circuit boards directly on the equipment or floor.

Service Tools

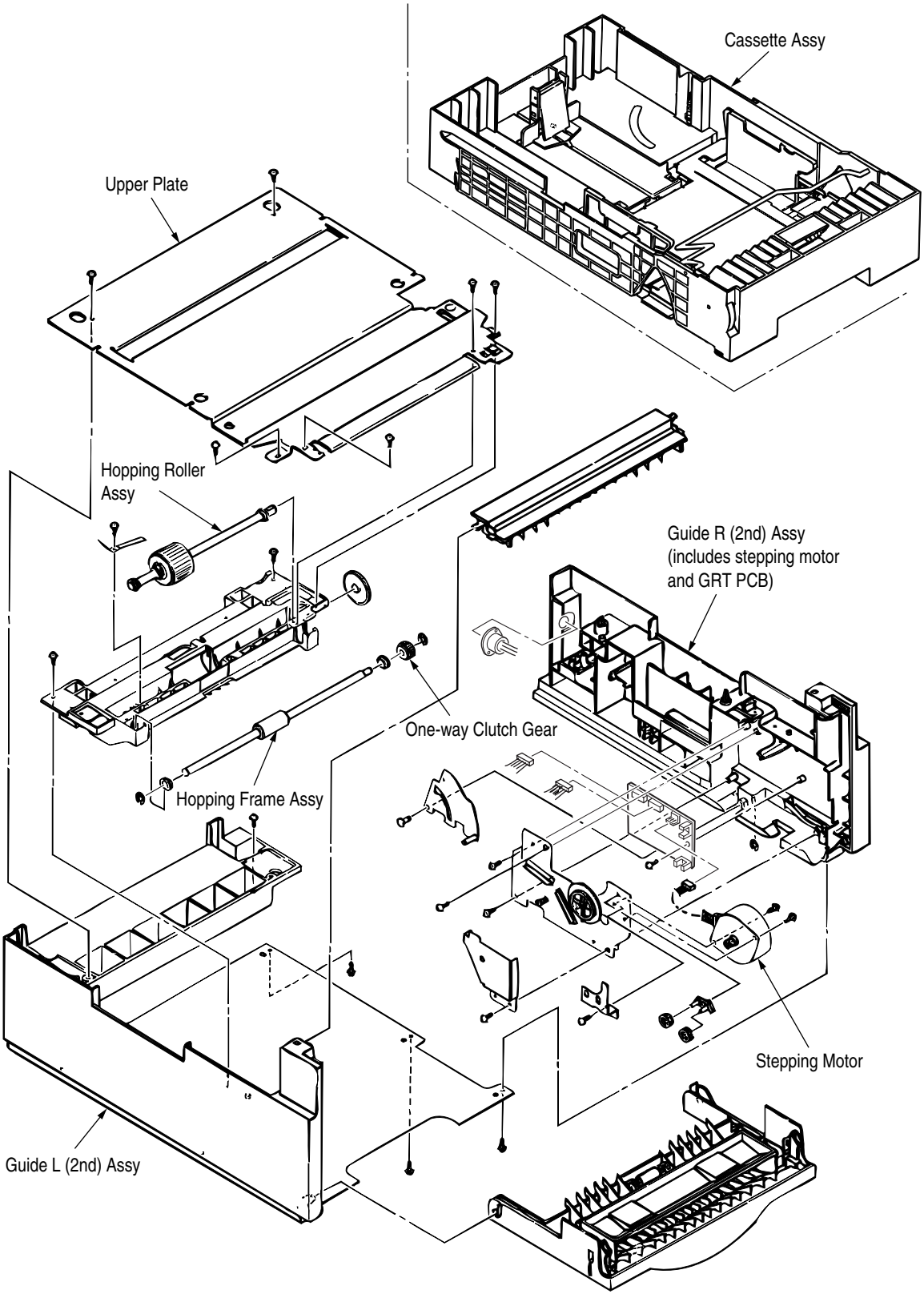
The table below shows the tools required for the replacement of printed circuit boards, assemblies and units in the field.

No.	Service Tools		Qty.	Application
1		No. 1-100 Phillips screwdriver	1	2~2.5 mm screws
2		No. 2-100 Phillips screwdriver	1	3~5 mm screws

No.	Service Tools		Qty.	Application
3		No. 3-100 screwdriver	1	
4		Digital multimeter	1	
5		Pliers	1	

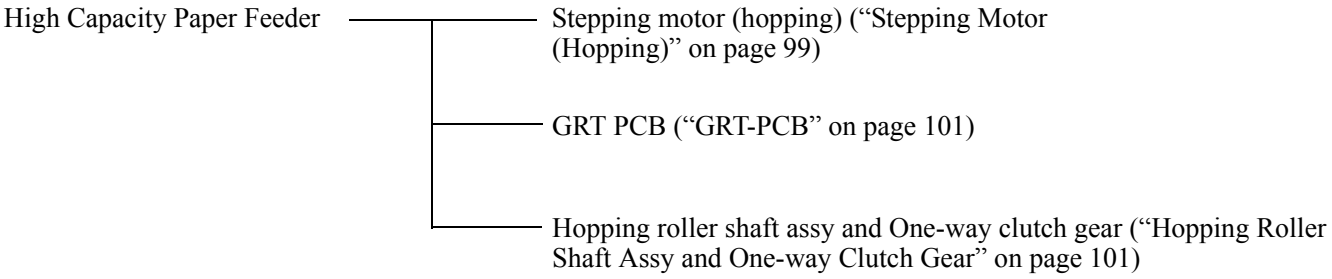
B. Parts Layout

This section describes the layout of the main components.



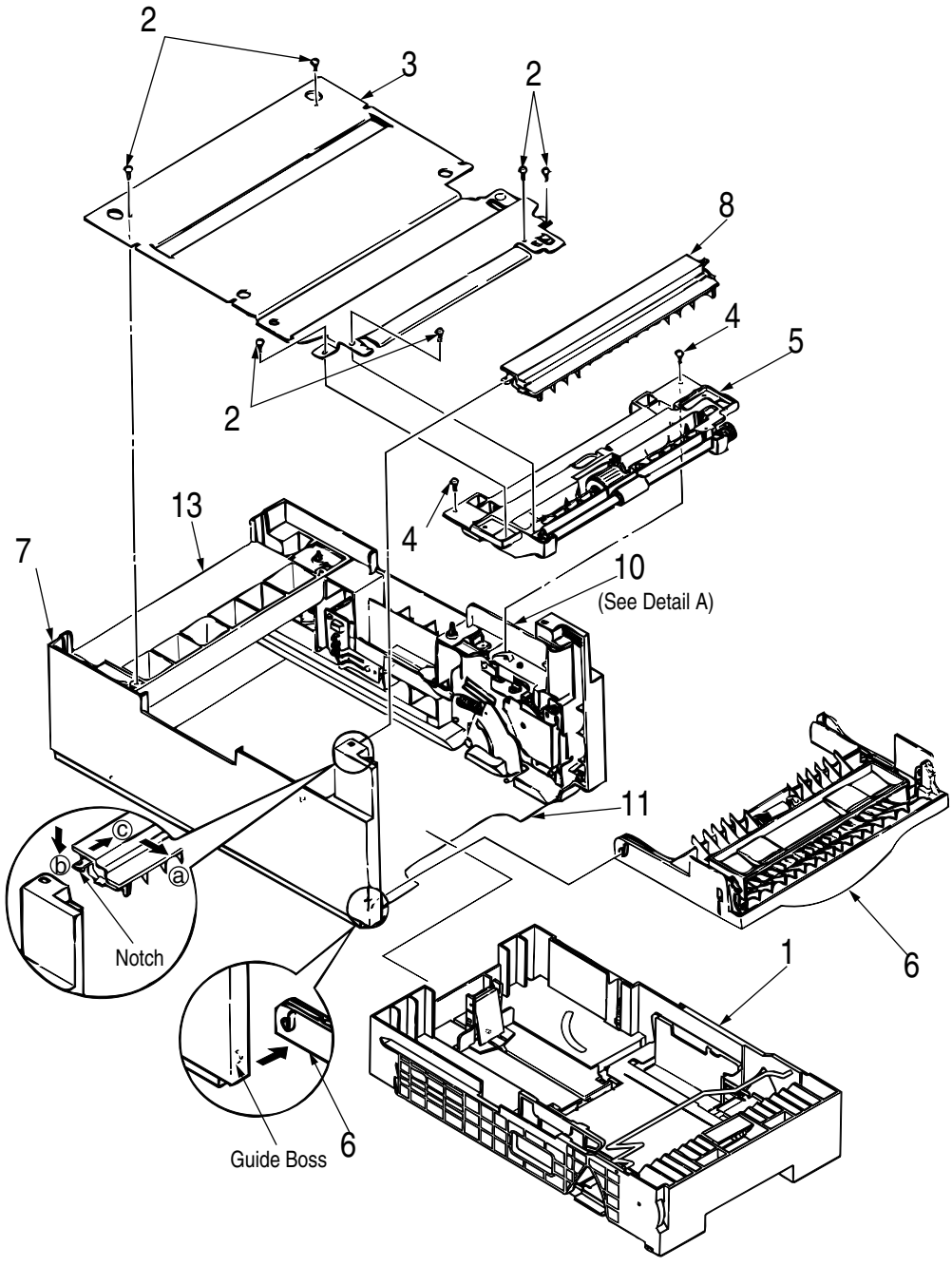
C. Parts Replacement Methods

This section describes the parts replacement methods for the components listed in the disassembly order diagram below.



Stepping Motor (Hopping)

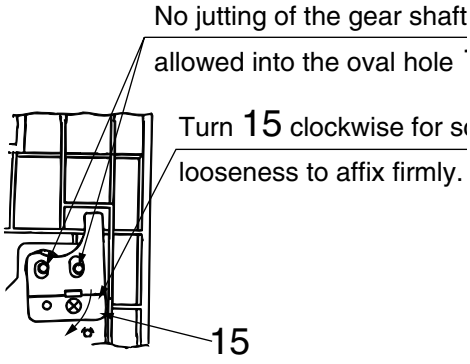
1. Turn the printer power switch off, pull out the AC cord from the outlet. Remove the printer off High Capacity Second Paper Feeder.
2. Take the paper cassette assy (1) out of High Capacity Second Paper Feeder.
3. Remove six screws (2) and remove the upper plate (3). Remove two screws (4) and remove the hopping frame assy (5).
4. Remove the front cover assy (6) off the guide boss on the guide L (2nd) assy (7) by bending the guide L (2nd) assy (7) in the direction of arrow shown in the magnified view below.
5. Pull the sheet guide assy (8) in the direction of arrow ⓐ and also push in the direction of arrow ⓑ to unlock the notch, and bring the sheet guide assy (8) in the direction of arrow ⓒ to remove the sheet guide assy (8).

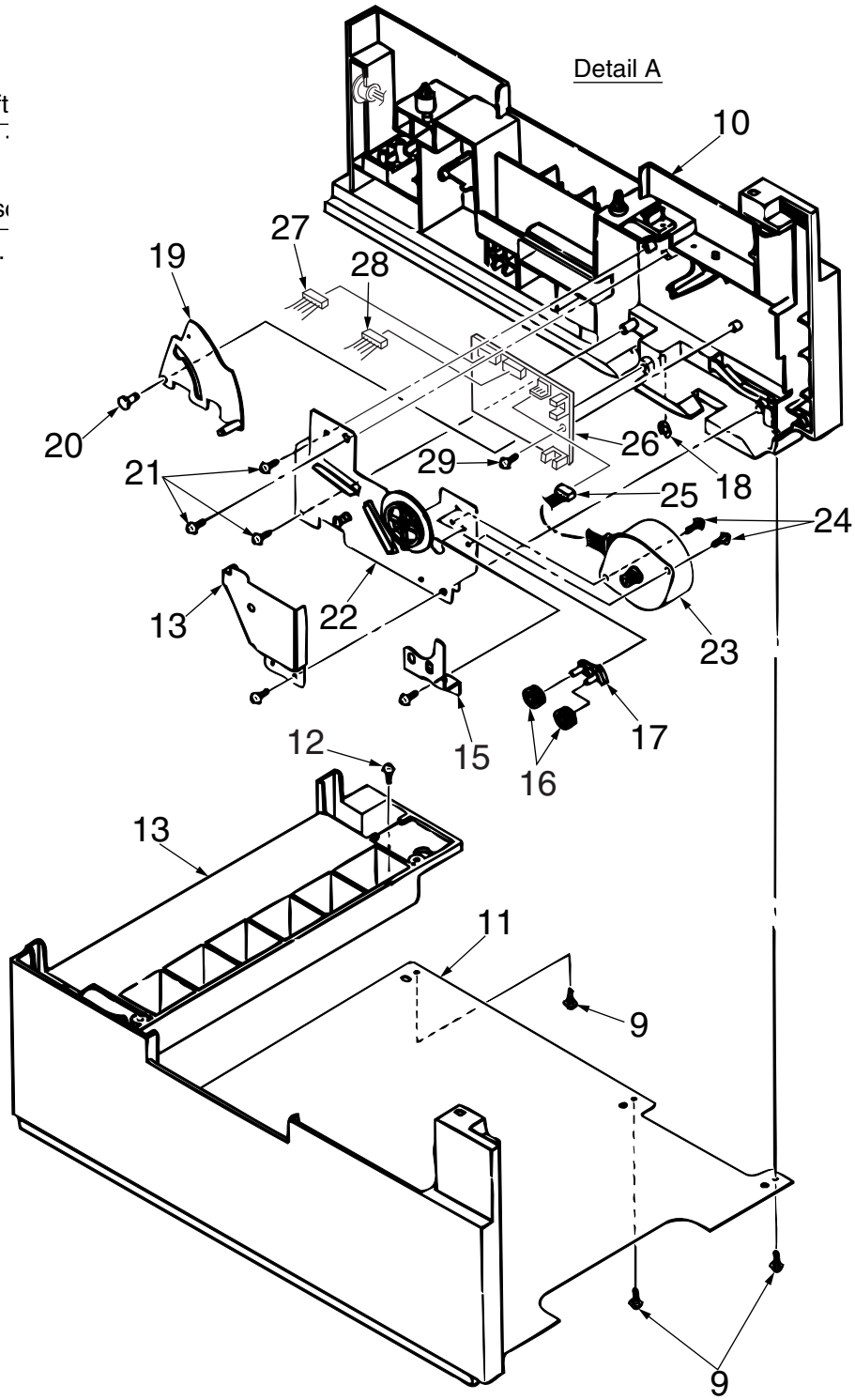


6. Remove three screws (9) which are holding the guide R (2nd) assy (10) to the bottom plate (11). Remove the screw (12) which is keeping the rear cover (13) and guide R (2nd) assy (10). Remove the guide R (2nd) assy (10).
7. Remove the protect (M) (14), guide bracket (15), planet gears (16) and planet gear bracket (17).
8. Remove the E-ring (18) which is keeping the sheet link (19) on the guide R (2nd) assy (10), and pull out the hinge stand (20).

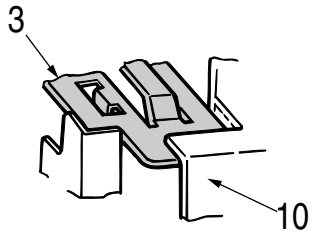
9. Remove three remaining screws (21) which are keeping the motor on the motor bracket (22), and remove the connector off the Stepping Motor (23).
10. Remove two screws (24) on the Stepping Motor (23).

Note: The guide bracket (15) must be attached as shown in the following illustration:





Note: The upper plate (3) must be attached as shown in the following illustration.



GRT-PCB

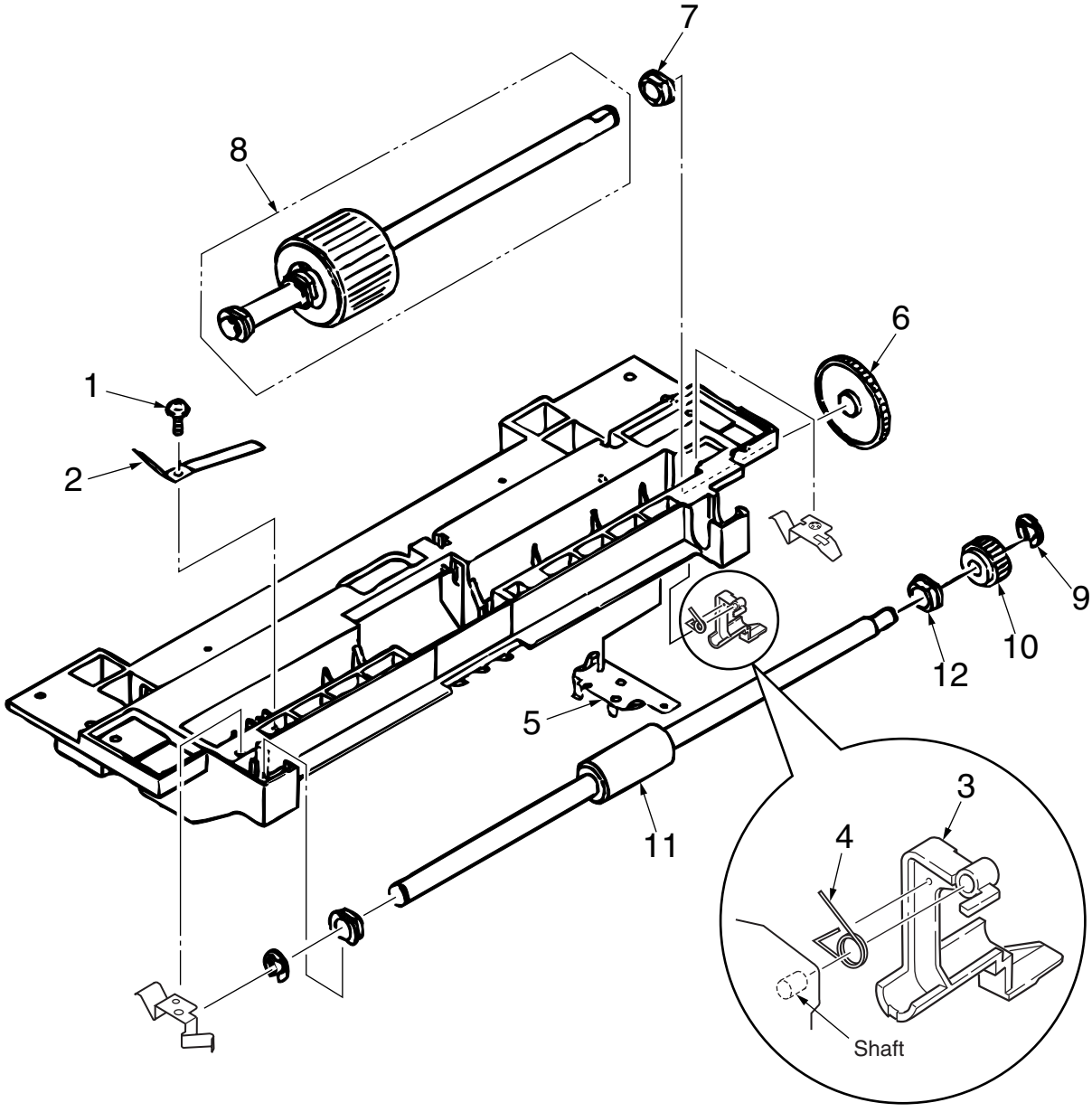
Note : Refer to Detail A on the previous page.

1. Remove the pulse motor (see “Stepping Motor (Hopping)” on page 99).
2. Remove the connectors (27, 28) from the GRT PCB (26).
3. Remove the screw (29) and remove the GRT PCB (26).

Hopping Roller Shaft Assy and One-way Clutch Gear

1. Follow up to step (3) of (“Stepping Motor (Hopping)” on page 99) and remove the hopping frame assy.
2. Remove the screw (1) and remove the earth plate (2). Remove the sensor lever (T) (3) and remove the tension spring (4) and remove the ground plate (5). Remove the gear (6) and remove the metal bush (7) and hopping roller shaft assy (8).
3. Remove the E-ring (9) and remove the one-way clutch gear (10) on the right side of the feed roller (11).

   Note : The metal bush (12) also comes off. Be careful not to lose it.



Note: The tension lever and the sensor lever require concurrent replacing.

4. Troubleshooting

A. Troubleshooting Tips

1. Check the troubleshooting section in the User's Guide.
2. Gather as much information about the situation as possible.
3. Inspect the equipment under the conditions close to those in which the problem had occurred.

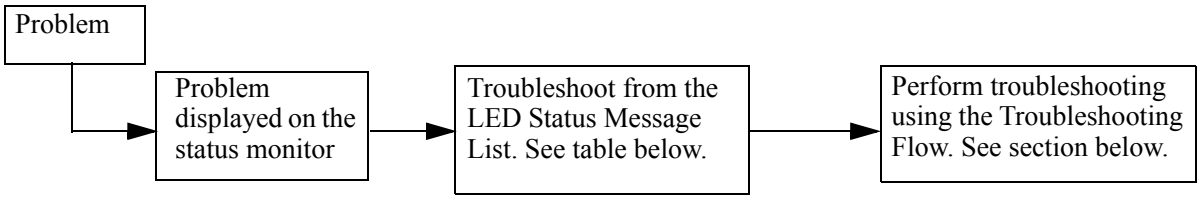
B. Preparation for Troubleshooting

A. Operator Panel Display

The status of the problem is displayed on the LED on the Operator panel.

B. Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.



LED Status Message List

The listing of the statuses and problems displayed in the form of messages on the status monitor in the Table below.

Classification	LED Status Message	Description	Recovery method
Jam error (feeding)	Blinking OFF OFF	Notifies of occurrence of jam while the paper is being fed from High Capacity Second Paper Feeder.	• Check the paper in the High Capacity Second Paper Feeder. • Carry out the recovery printing by opening and closing the cover, and turn the error display off. • When the problem occurs frequently, go through the Troubleshooting.
Jam error (ejection)	Blinking OFF OFF	Notifies of occurrence of jam while the paper is being ejected from the printer.	• Check the paper in the printer. Carry out the recovery printing by opening and closing the cover to reset the error display.

Classification	LED Status Message	Description	Recovery method
Paper size error	Blinking OFF OFF	Notifies of incorrect size paper feeding from High Capacity Second Paper Feeder.	• Check the paper in the High Capacity Second Paper Feeder. • Also check to see if there was a feeding of multiple sheets. • Carry out the recovery printing by opening and closing the cover to reset the error display.
Tray paper out	Blinking OFF OFF	Notifies of no paper state of the High Capacity Second Paper feeder.	• Load the paper in High Capacity Second Paper Feeder.
Paper size request	Blinking OFF OFF	Notifies correct paper size for the High capacity Second Paper Feeder.	• Load the requested size paper in the High Capacity Second Paper Feeder.

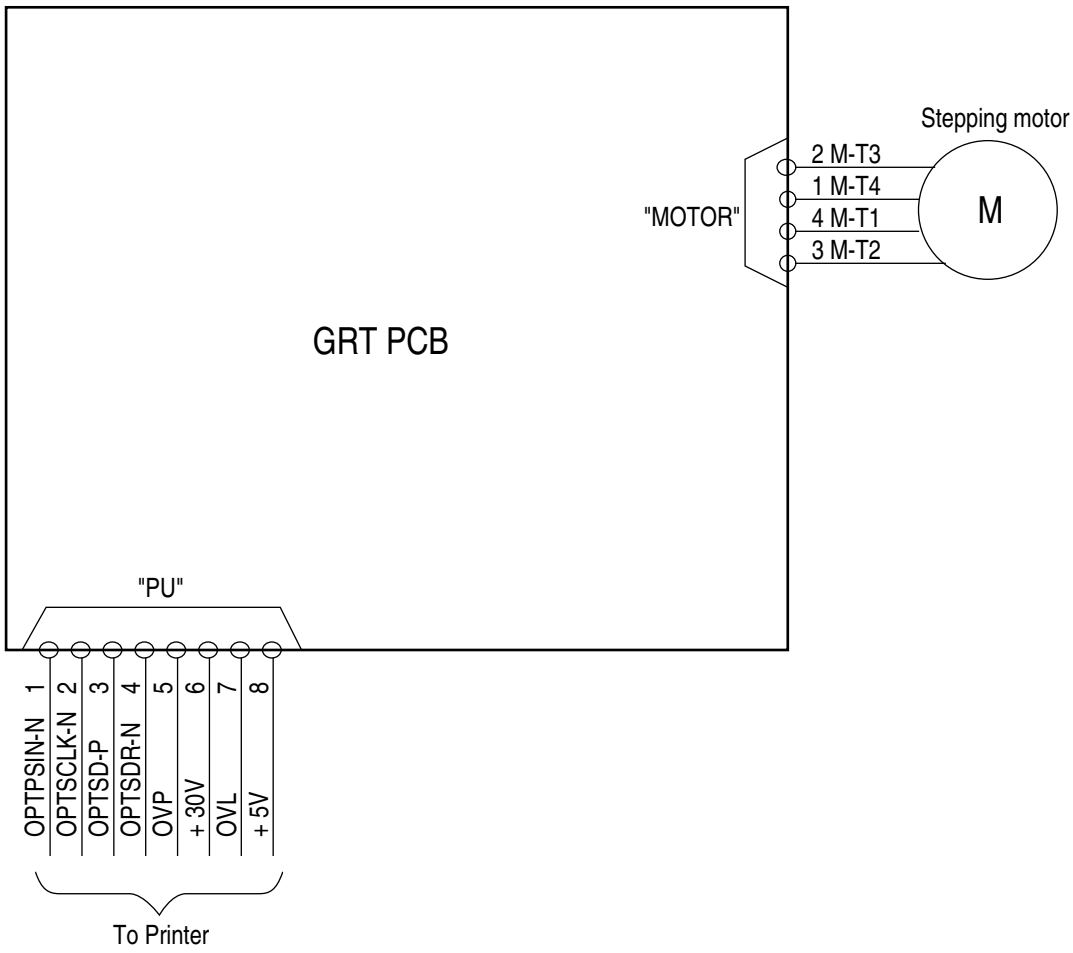
JAM Error Troubleshooting Flowchart

Paper Inlet Jam.

- Does paper jam at the inlet when the power is turned on?
  - Yes — Is the paper located above the sensor plate (inlet)?
    - Yes — Remove the paper.
  - No — Is the sensor plate (inlet) operating normally?
    - No — Replace the sensor plate (inlet).
  - Yes — Replace the power supply/sensor board or inlet sensor.
- No — When the paper is fed in, does the paper inlet jam occur?
  - Yes — Is the paper being fed to above sensor plate (inlet)?
    - Yes — Is the sensor plate (inlet) operating normally?
      - No — Replace the sensor plate. (inlet)
    - Yes — Clean the inlet sensor on the power supply/sensor board or replace the power supply/sensor board or inlet sensor.
  - No — Replace the hopping roller shaft assy or paper cassette.
- No — Are the hopping roller and feed roller rotating?
  - Yes — Set the paper properly.
- No — Is the pulse motor turning?
  - Yes — Replace the hopping roller shaft assy or one-way clutch gear on the feed roller assy.
- No — Is the connector being connected properly?
  - No — Connect the connector properly.
- Yes — Check the coil resistance (approx. 4.3Ω) of the pulse motor. Is it normal?
  - No — Replace the stepping motor.
- Yes — Replace the GRT PCB.

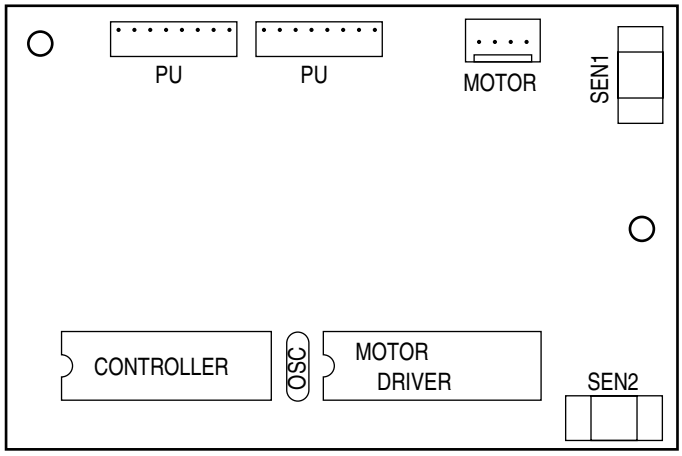
5. Connection Diagram

A. Interconnection Diagram



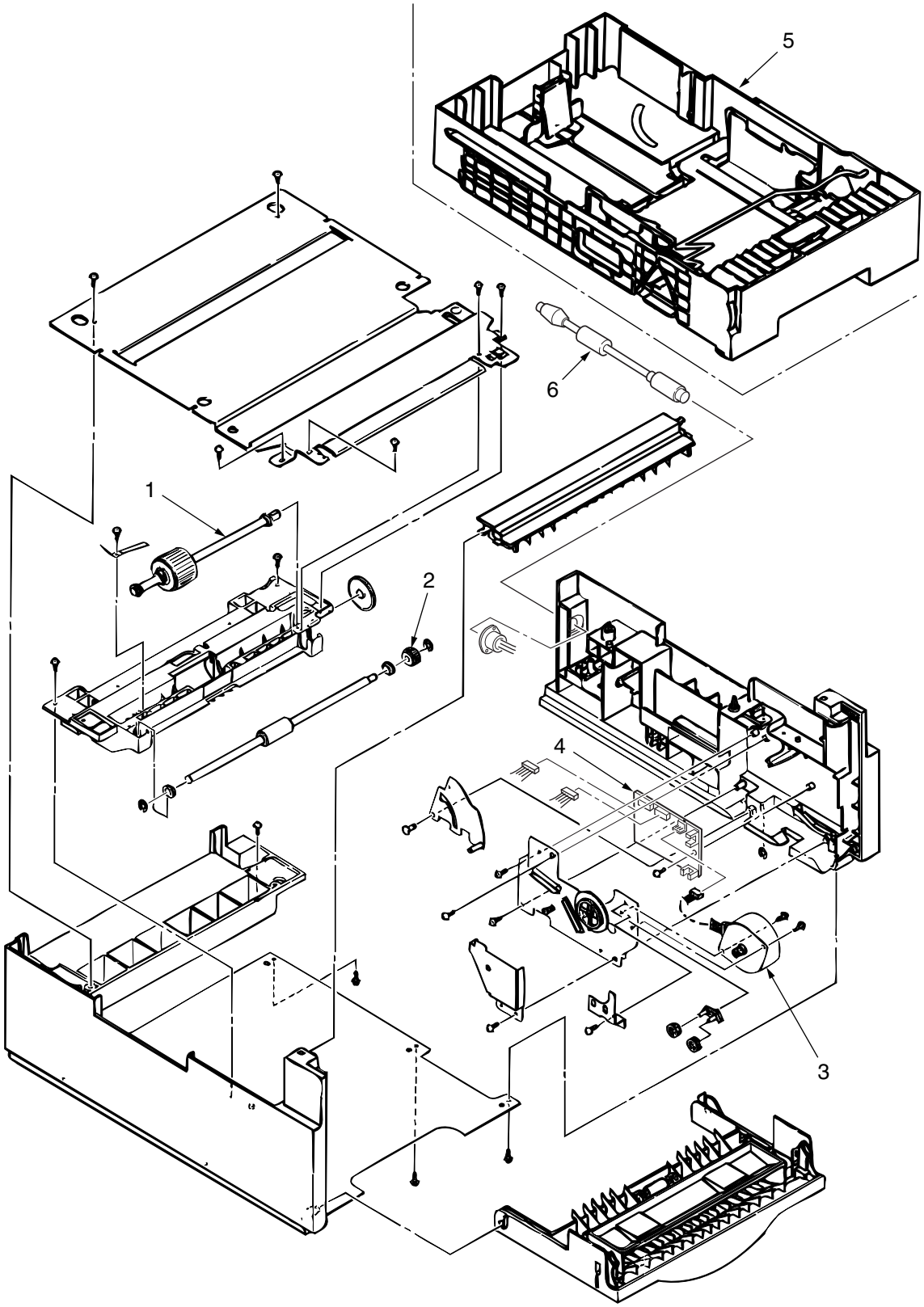
B. PCB Layout

GRT-PCB



6. Parts List

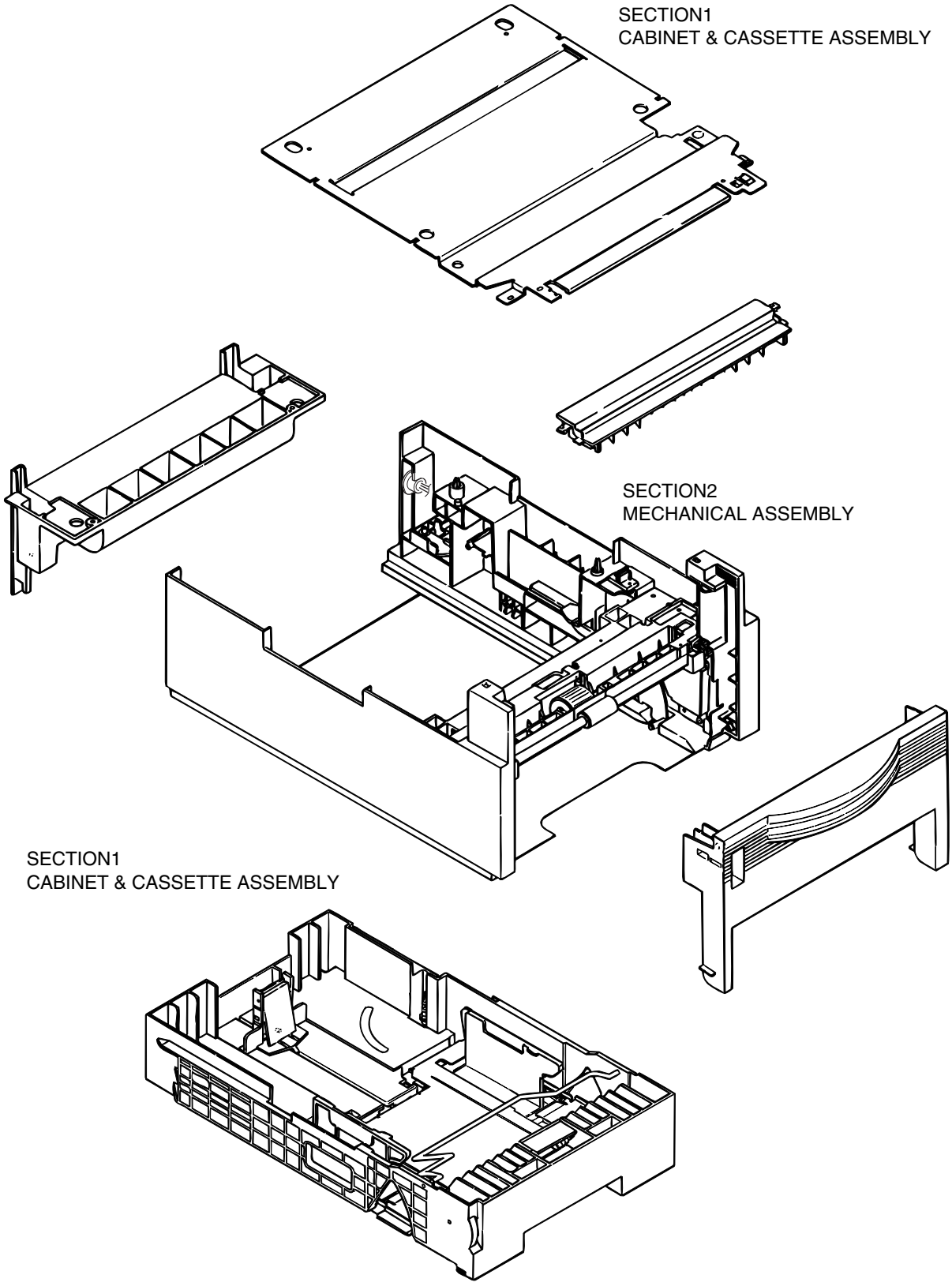
High Capacity Second Paper Feeder



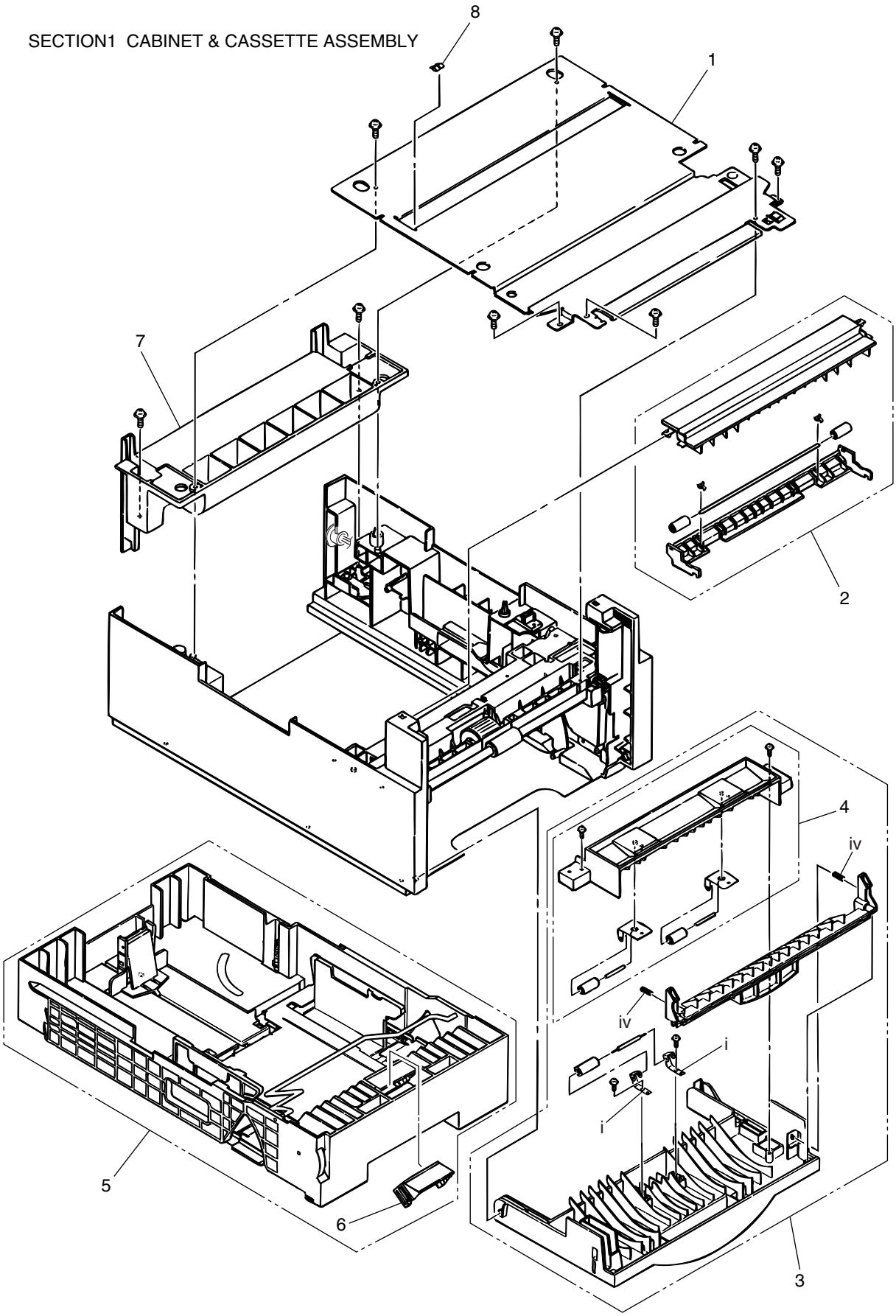
A. High Capacity Paper Feeder List

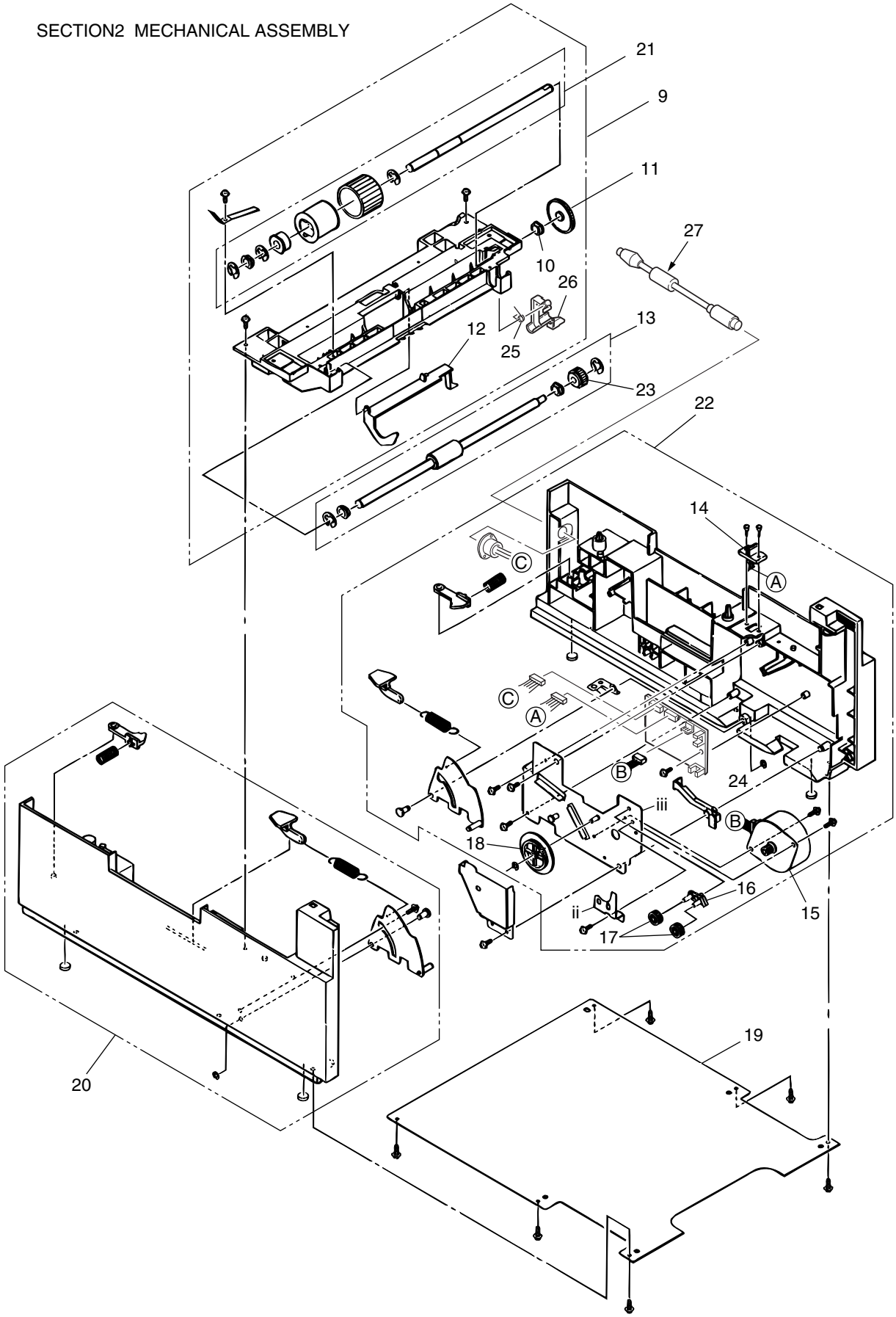
No.	Description	Part Number	Q'ty.	Remark
1	Hopping roller shaft assy		1	
2	One-way clutch gear		1	
3	Stepping motor		1	
4	GRT PCB		1	
5	Cassette assy (2nd tray)		1	
6	DIN8P-DIN8P Connector Cord		1	

2nd Tray ASSEMBLY



SECTION1 CABINET & CASSETTE ASSEMBLY




21
9
11
27
10
26
25
12
13
23
22
14
A
C
C
A
B
24
iii
B
18
16
15
ii
17
19
20

B. 2nd Tray Parts List

No.	Description	Part Number	Q'ty.	Remark
1	Plate, upper		1	
2	Sheet guide assembly		1	
3	Front cover assembly		1	
4	Inner guide assembly		1	
5	Cassette assembly (2nd tray)		1	
6	Separation frame assembly		1	
7	Cover, rear		1	
8	Stick finger		1	
9	Hopping flame assembly		1	
10	Bush, metal (ADF)		1	
11	Gear (z70)		1	
12	Lever, sensor (p)		1	
13	Feed roller assembly		1	
14	Cable & connector		1	
15	Stepping motor		1	
16	Bracket		1	
17	Gear (z24)		2	
18	Gear (z87/z60)		1	
19	Plate, bottom		1	
20	2nd cassette guide (L) assy		1	
21	Hopping roller assembly		1	
22	2nd cassette guide (R) assy		1	
23	One-way clutch gear		1	
24	Board GRT		1	
25	Spring, Tension		1	
26	Lever, sensor (T)		1	
27	DIN8P-DIN8P Connector Cord		1	