

Chapter 0
Front Cover

OKIDATA®

OL600e/610e/610ePS
LED PAGE PRINTER

Service Manual

All specifications are subject to change without notice.

Trademark Information

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Chapter 1

%1.1 System Configuration

1.1 System Configuration

OL600e, OL610e and OL610e/PS consist of control and engine blocks in the standard configuration, as shown in In addition, the options marked with an asterisk (*) are available.

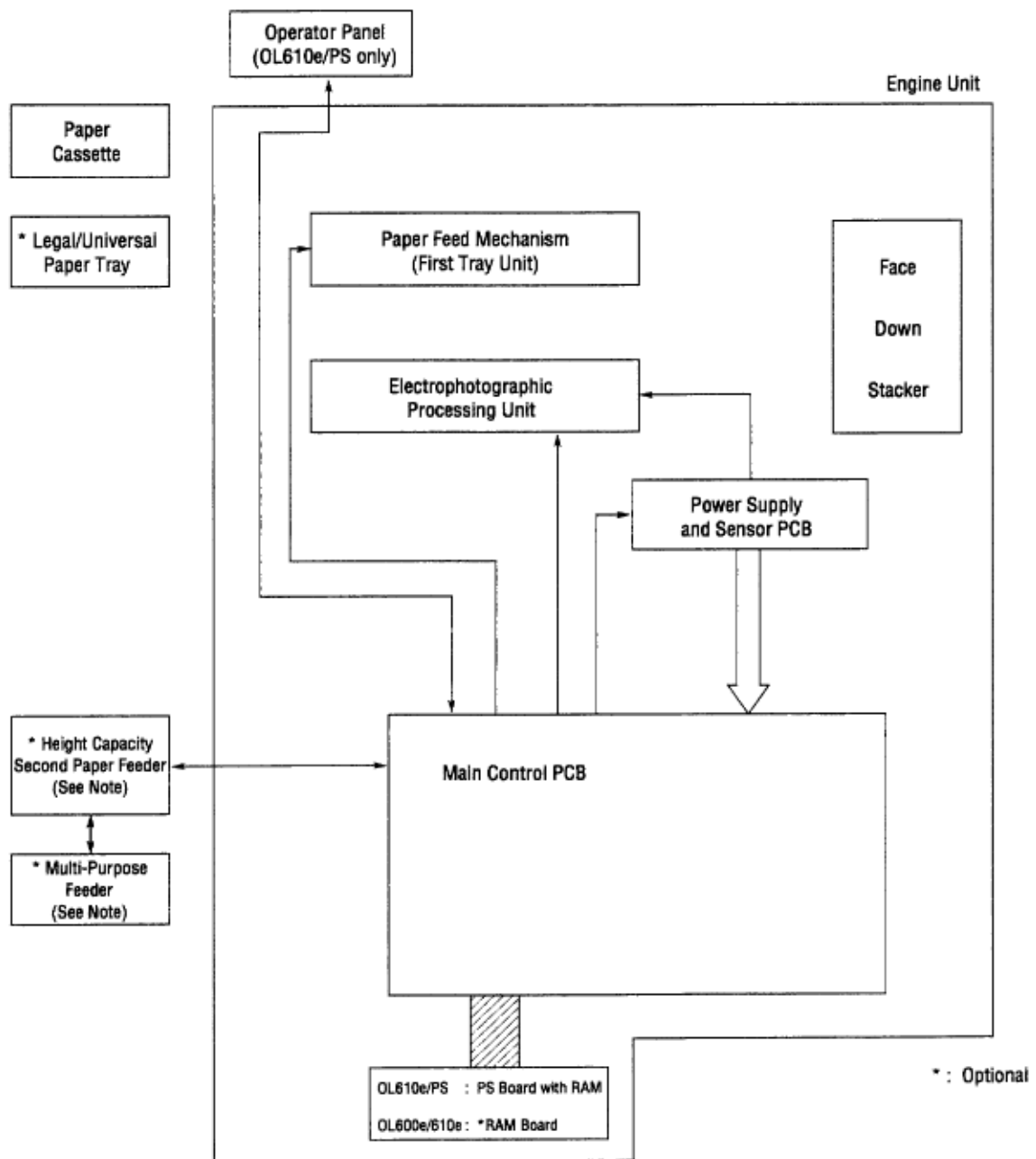


Figure 1-1

1.2 Printer Configuration

1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electrophotographic Processor • Paper Feeder • Main Control PCB • Operator Panel (OL610e/PS) • Power Supply Unit • PS Board (OL610e/PS)

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

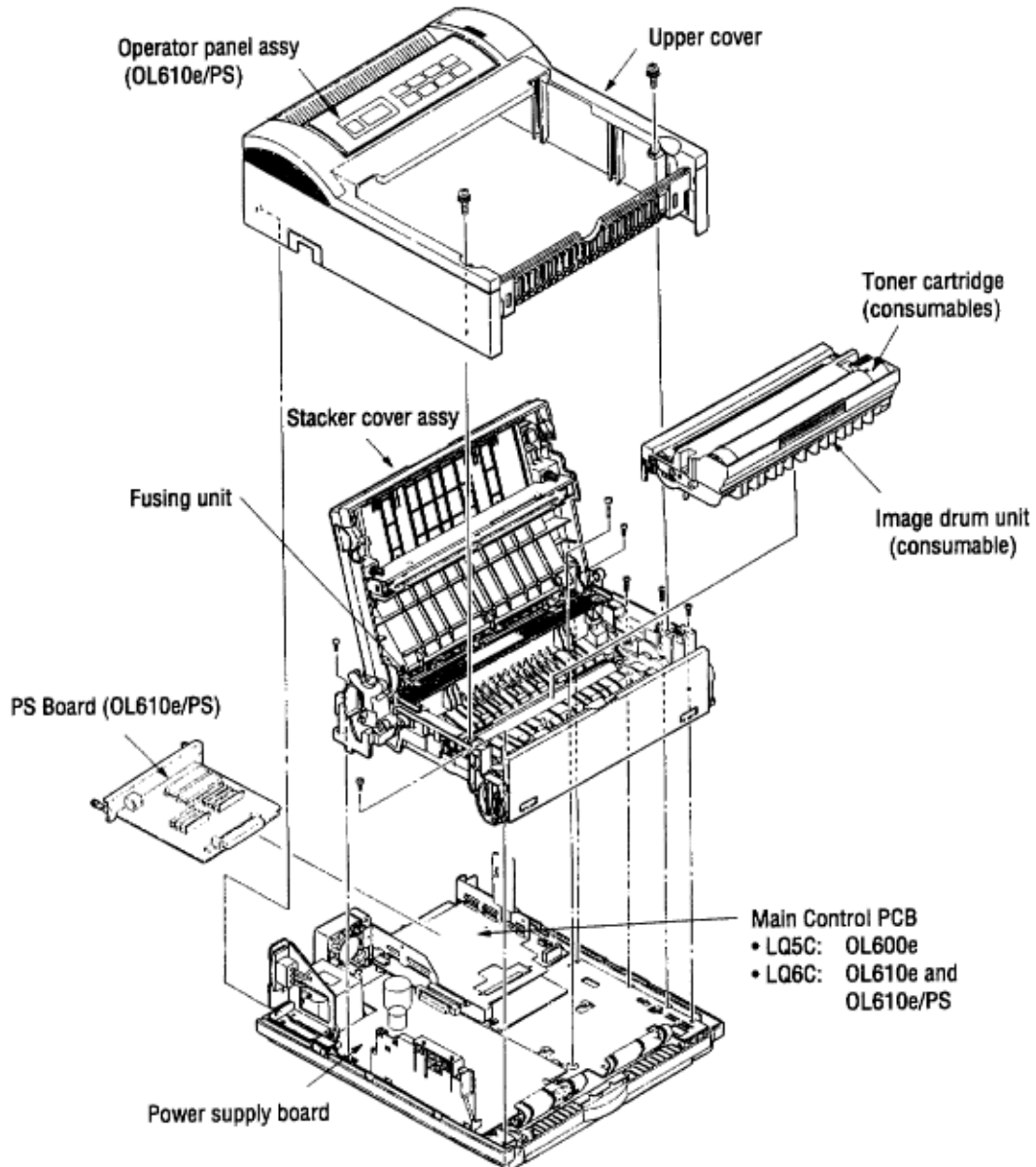


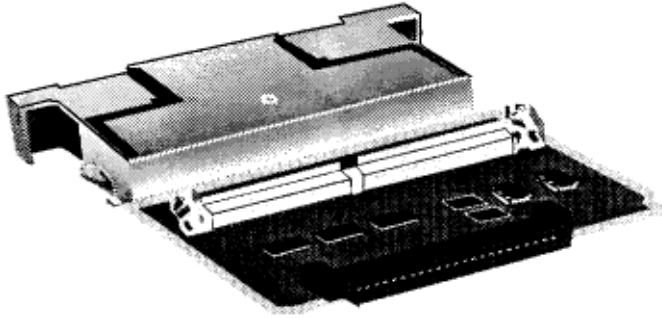
Figure 1-2

1.3 Optional Configuration

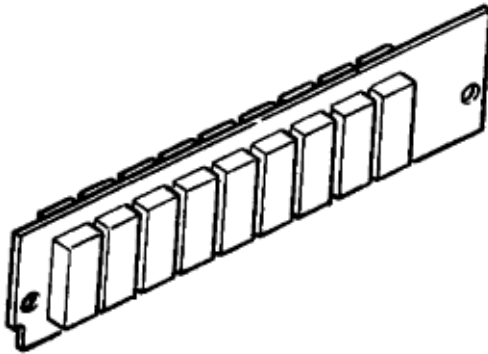
1.3 Optional Configuration

The options shown below are available for use with OL600e, OL610e and OL610e/PS. These are available separately from the printer unit.

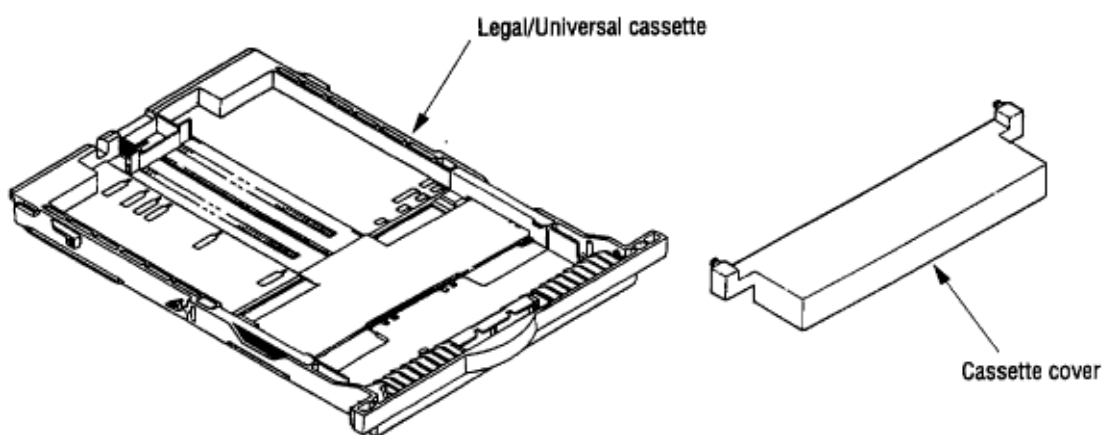
- (1) 1MB Memory Expansion Board (OL600e/610e)



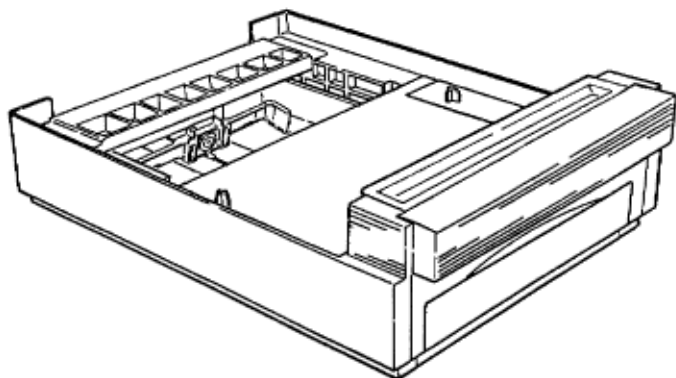
- (2) SIMM (Single In-line Memory Module)



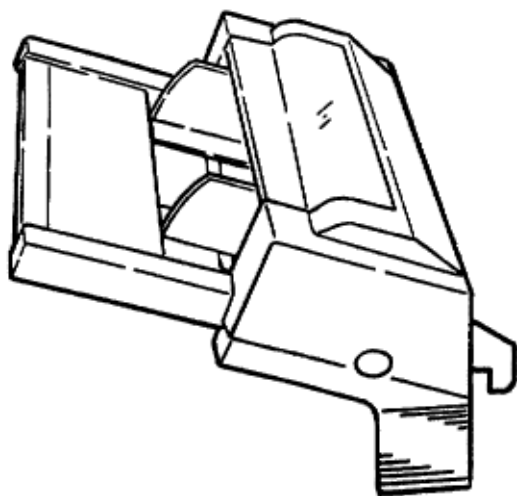
- (3) Legal/Universal Paper Cassette



- (4) High Capacity Second Paper Feeder



(5) Multi-Purpose Feeder



1.4 Specification

1.4 Specification

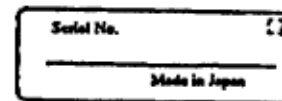
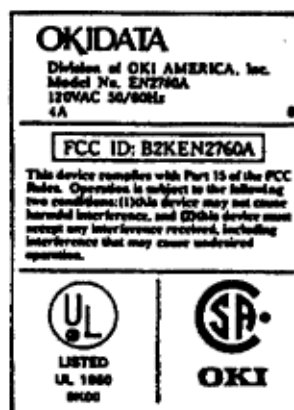
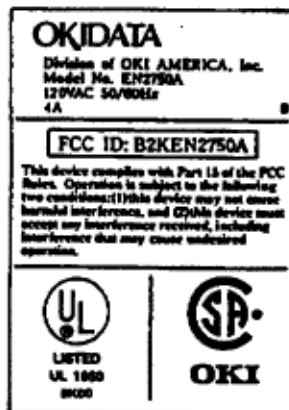
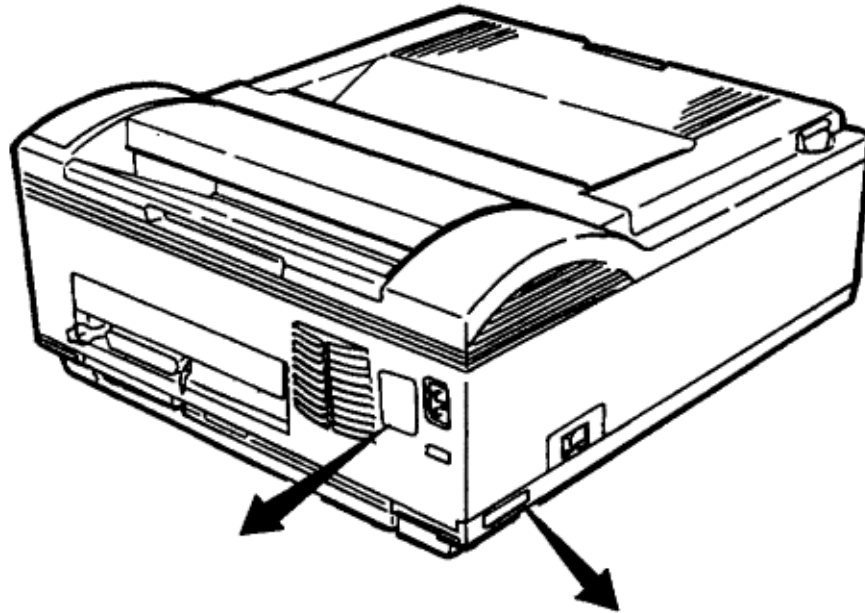
- (1) Type Desktop
 - (2) External dimensions Height 6.3" (160 mm) Width 12.6" (320 mm) Depth 14.17" (360 mm)
 - (3) Weight 8 kg
 - (4) Developing method Dry electrophotography Exposing method LED stationary head
 - (5) Paper used **Type** • Standard paper e.g. Xerox 4200 (20 lbs) • Application paper (manual face-up feed) Label Envelope OHP paper (Transparency)
Size • Standard sizes Letter (ODA) Legal (option) Executive Envelope A4 A5 B5 A6 • Applicable sizes Width: 3.94" to 8.5" (100 to 216 mm) Length: 5.83" to 14" (148 to 355.6 mm)
Thickness Automatic feed: 16 to 24 lbs (60 to 90 g/m²) Manual feed: Label, OHP paper (transparency) Envelope
 - (6) Printing speed First print: 25 sec. Continuous print: 6 pages/min. for letter size paper Warm-up time: 60 sec. [at room temperature 77°F (25°C) and rated voltage (120 VAC)]
 - (7) Paper feeding method Automatic feed or manual feed
 - (8) Paper delivery method Face down/face up
 - (9) Resolution OL600e: 300 x 300 dots/inch OL600e (Hiper-W driver), OL610e, OL610e/PS: 600 x 600 dots/inch
 - (10) Power input 120 VAC +5.5%, 15% (ODA) 230 VAC +15%, 15% (ODA)
 - (11) Power consumption Peak: Approx. 420W Typical operation: Approx. 160W Idle: Approx. 55W Power save mode: Approx. 15W
 - (12) Temperature and humidity During operation: 50 to 90°F (10 to 32°C) In storage: 14 to 110°F (10 to 43°C)
 - (13) Noise During operation: 48 dB (A) or less Standby: 38 dB (A) or less
 - (14) Consumables Toner cartridge kit 2,000 (5% duty) Image drum cartridge 20,000 (at continuous printing) 15,000 (3 pages/job) 10,000 (1 page/job)
-

%1.5 Safety Standards - 1.5.1 Certification Label

1.5 Safety Standards

1.5.1 Certification Label

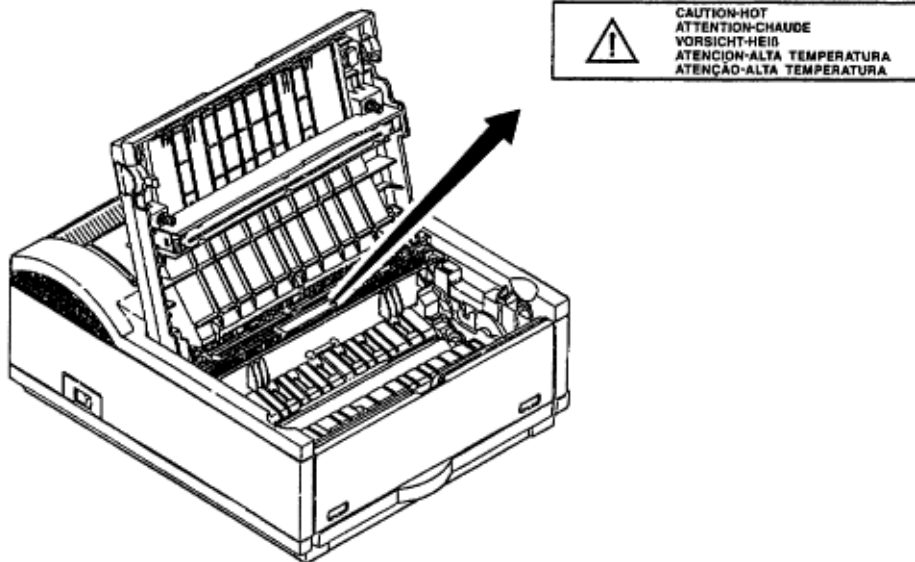
The safety certification label is affixed to the printer at the location shown below.



1.5.2 Warning Labels

1.5.2 Warning Labels

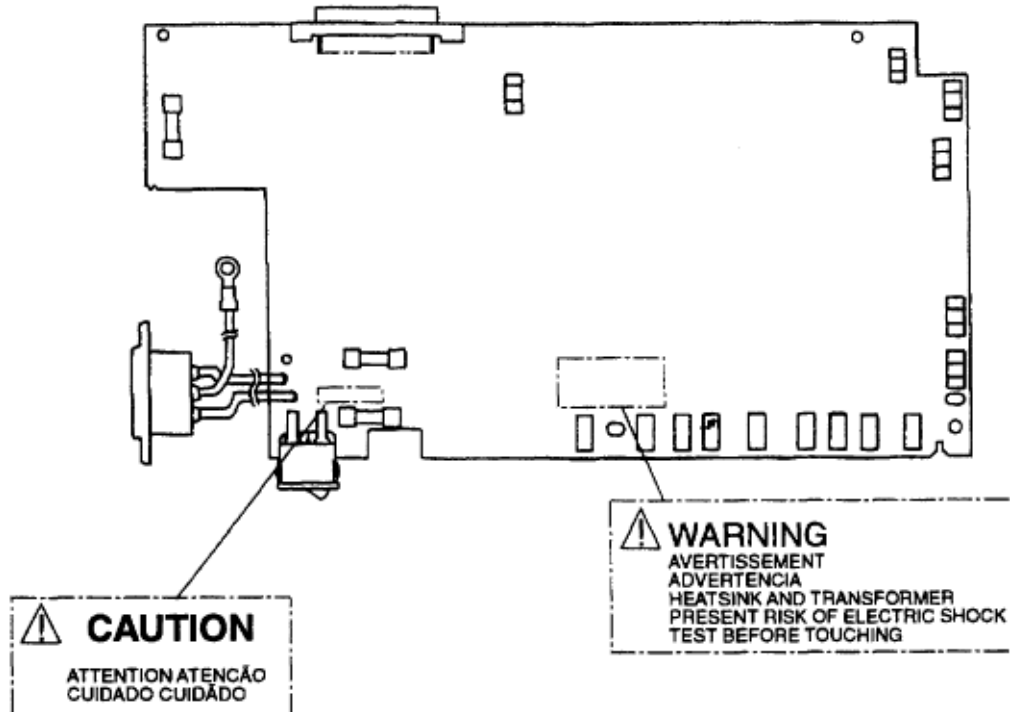
The warning labels are affixed to the sections that may cause bodily injury. Follow the instructions on warning labels during maintenance.



1.5.3 Warning/Caution Markings

1.5.3 Warning/Caution Markings

The following warning and caution markings appear on the power supply board.



ENGLISH Heatsink and transformer core present risk of electric shock. Test before touching. FRENCH Le dissipateur thermique et le noyau du transformateur présentent des risques de choc électrique. Testez avant de manipuler. SPANISH Las disipadores de calor y el núcleo del transformador pueden producir un choque eléctrico. Compruebe antes de tocar. PORTUGUESE O dissipador de calor e o núcleo do transformador apresentam risco de choque elétrico. Teste antes de tocar.

ENGLISH Circuits may be live after fuses open.

FRENCH Il se peut que les circuits soient sous tension une fois que les fusibles ont été retirés.

SPANISH Los circuitos pueden estar activos una vez que se hayan abierto los fusibles.

PORTUGUESE Os circuitos podem estar energizados após os fusíveis se queimarem.

Chapter 2

%Operation Description

2. OPERATION DESCRIPTION

The OL600e, OL610e and OL610e/PS consist of a Main Control PCB, a PostScript board (OL610e/PS), a power supply, and a printer mechanism. The control board and the PostScript board receive data via the host I/F; these then decode, edit and store the data. The data is printed on the paper by means of the electrophotographic process mechanism.

The OL600e and OL610e use proprietary software to control printer operations and status monitoring. The OL610e/PS uses the PostScript language to control printer operations and status monitoring. Figure 2-1 shows the OL600e block diagram.

Figure 2-2 shows the OL610e block diagram.

Figure 2-3 shows the OL610e/PS block diagram.

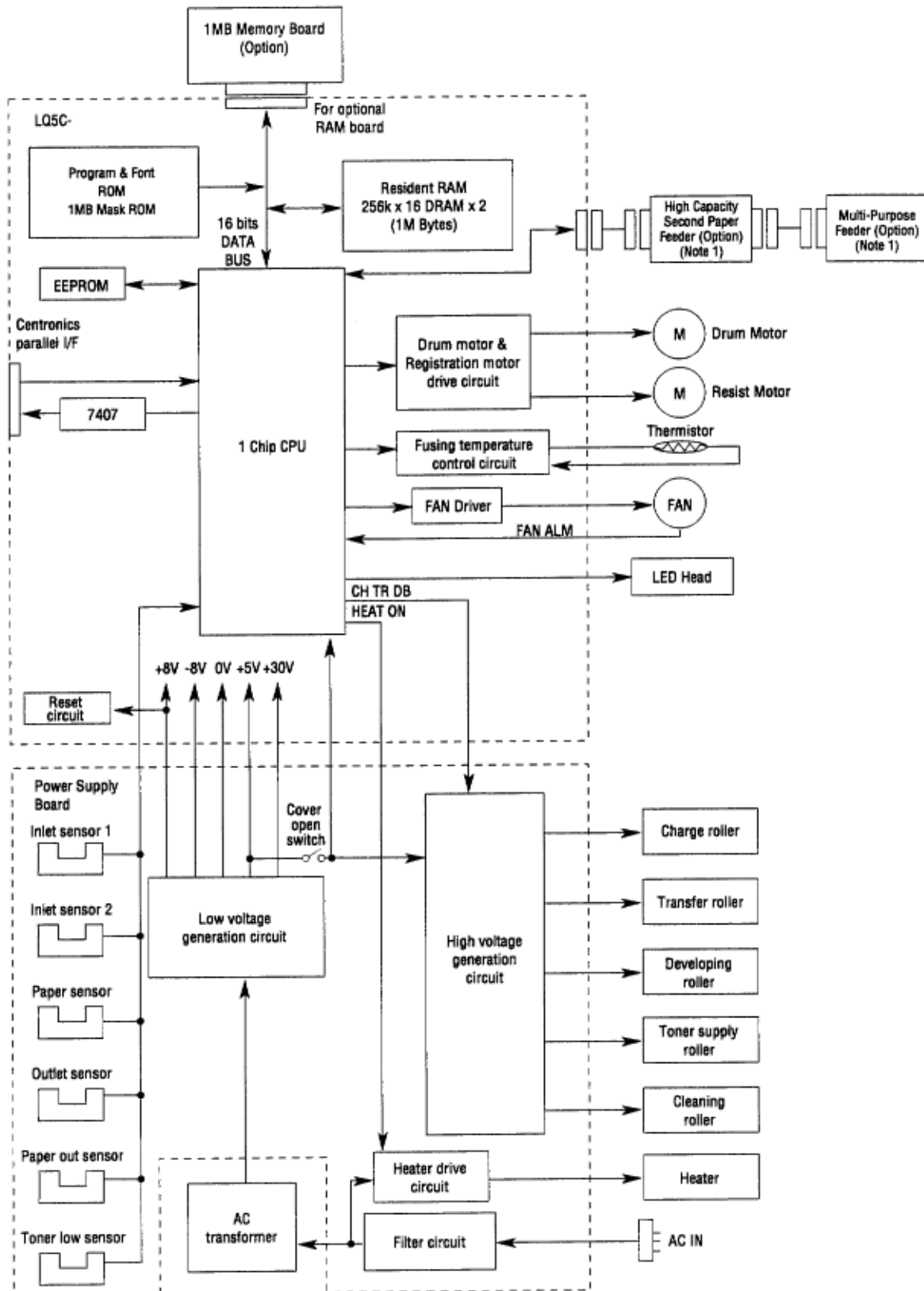


Figure 2-1 OL600e Block Diagram

Figure 2-2 OL610e Block Diagram

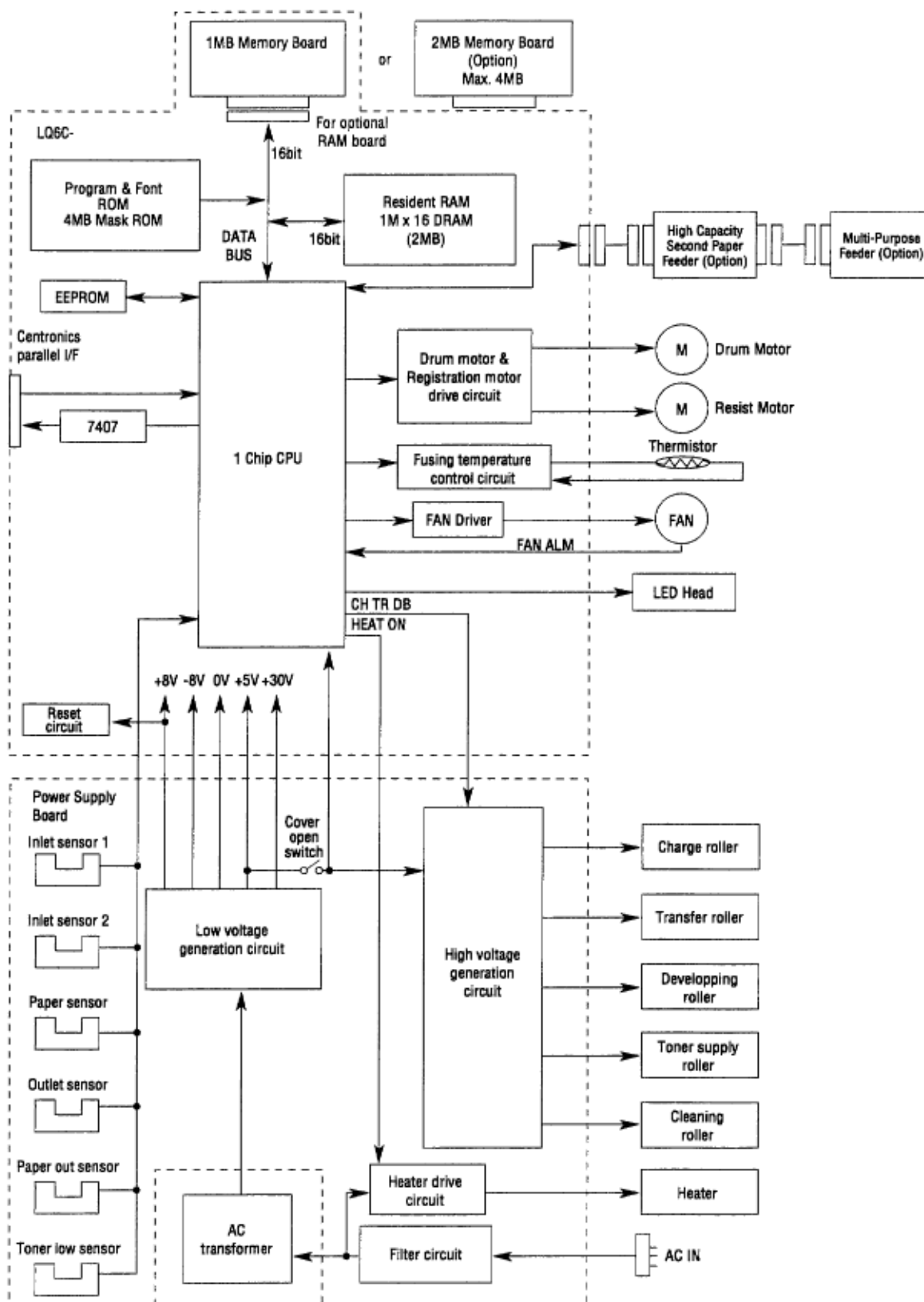


Figure 2-2 OL610e Block Diagram

Figure 2-3 OL610e/PS Block Diagram

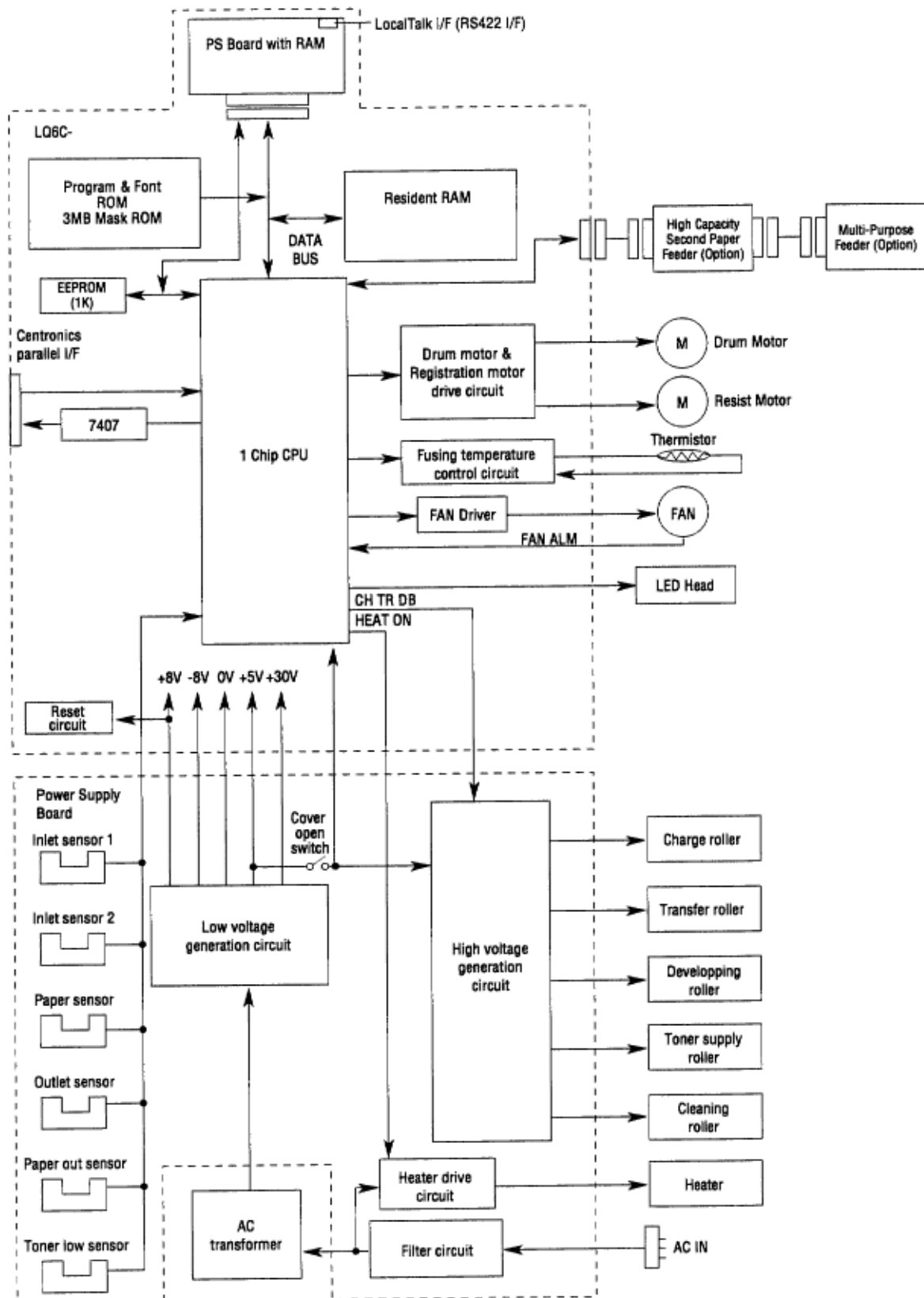


Figure 2-3 OL610e/PS Block Diagram

2.1 Control Board

2.1 Control Board

The control board consists of a single chip CPU, Program & Font ROM, DRAM for the OL600e, two DRAMs for the OL610e, an EEPROM, a host interface circuit, and a mechanism driving circuit.

(1) Single chip CPU

The single chip CPU is a custom CPU (32-bit internal bus, 16-bit external bus, 25.54 MHz clock with input frequency from a 12.27 MHz clock) which incorporates the MIPS 3000 RISC CPU and its peripheral devices, and has the following functions:

Built-in device	Function
Chip select controller Bus controller DRAM controller	Control of ROM, DRAM and I/O device
DMA controller	Transfer of image data from DRAM to video output port
Parallel interface controller	Control of Centronics parallel interface
Serial interface controller	Control of RS-232C serial interface
Video output port LED STB output port	Control of LED head
Timer	Generation of various control timing signals Monitoring of paper running and paper size
Serial I/O port	Control of operator panel EEPROM and options
I/O port	Input and output of sensor and motor signals

(2) Program & Font ROM

OL600e/610e

The Program & Font ROM stores the equipment program and various types of fonts. EPROM or Mask ROM is used for a Program & Font ROM. The mounting location of this Program & Font ROM varies depending on the type of ROM (for the mounting location see 7.2).

OL610e/PS

The Program ROM & Font ROM store the HP4 emulation program and various types of fonts. Mask ROM is used for a Program & Font ROM.

(3) DRAM

OL600e/610e

The DRAM is a resident memory 1MB in the OL600e, 2MB in the OL610e used as a buffer; it stores edited data, image data, DLL data, and macro data.

OL610e/PS

The DRAM is resident memory (2MB on the board plus 0.5MB on the PS board) used as a buffer; it stores edited data, image data, DLL data, and macro data. In PostScript mode, it is used as VM and font cache also.

(4) EEPROM

1,024-bit Electrically Erasable PROM (EEPROM), is loaded with the following data:

- Menu data
- Various counter data (Page counter, Drum counter)
- Adjusting parameters (LED head drive time, print start position, paper feed length)

(5) Parallel Interface

Parallel data is received from the host system via parallel interface which conforms to the Centronics specification. IEEE 1284 specification bi-directional parallel is supported.

%2.2 PS Board (OL610e/PS)

2.2 PS Board (OL610e/PS)

The PS board consists of two Program & Font ROM's, DRAM's, an EEPROM, and a host interface circuit.

(1) Program & Font ROM's

The Program & Font ROMs store the PostScript Level II program and its fonts. Mask ROM is used for the Program & Font ROMs.

(2) DRAM

0.5MB of DRAM's reside on the PS board.

(3) EEPROM

4,096 bit-Electrically Erasable PROM (EEPROM) is mounted on the PS board for storing the PostScript's menu settings.

(4) LocalTalk I/F

AppleTalk protocol data is received from the host system via LocalTalk interface. The block diagram is shown in Figure 2-4.

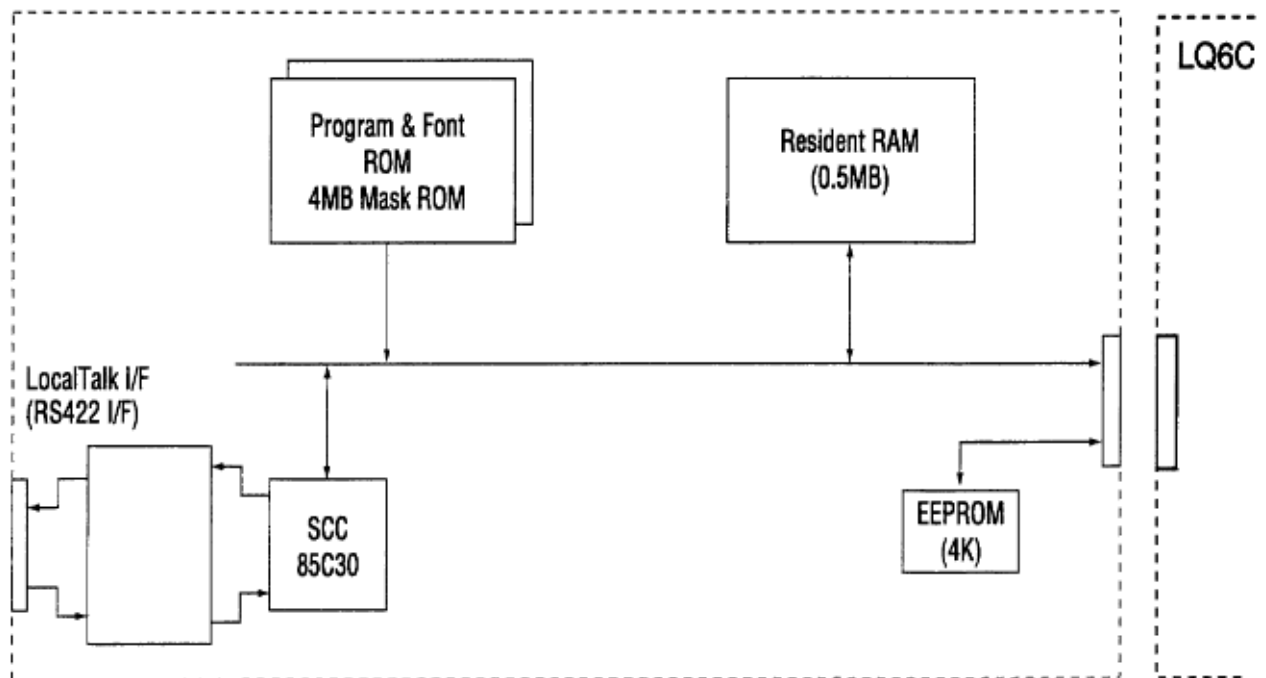


Figure 2-4 PS Board Block Diagram

2.3 Power Supply Board

2.3 Power Supply Board

The power supply board consists of an AC filter circuit, a low voltage power supply circuit, a high voltage power supply circuit, heater drive circuit, and photosensors.

(1) Low Voltage Power Supply Circuit

This circuit generates the following voltages.

Output voltage	Use
+5 V	Logic circuit supply voltage
+30 V	Motor and fan drive voltage and source voltage for high-voltage supply
+8 V	Analog supply voltage
-8 V	PS board and analog circuit supply voltage

(2) High Voltage Power Supply Circuit

This circuit generates following voltages required for electrophotographic process from +5 V, according to the control sequence from the control board. When cover open state is detected, +5 V supply is interrupted automatically to stop the supply of all high-voltage outputs.

Output	Voltage	Use	Remarks
CH	-1.35 KV	Voltage applied to charging roller	
DB	-300 V/+300 V	Voltage applied to developing roller	
SB	-450 V/ 0 V	Voltage applied to toner supply roller	
TR	+500 V to +4 KV/-750 V	Voltage applied to transfer roller	Variable
CB	+400 V	Voltage applied to cleaning roller	

(3) Photosensor

The photosensor mounted on this power supply board monitors the paper running state during printing. The sensor layout diagram is shown in Figure 2-3.

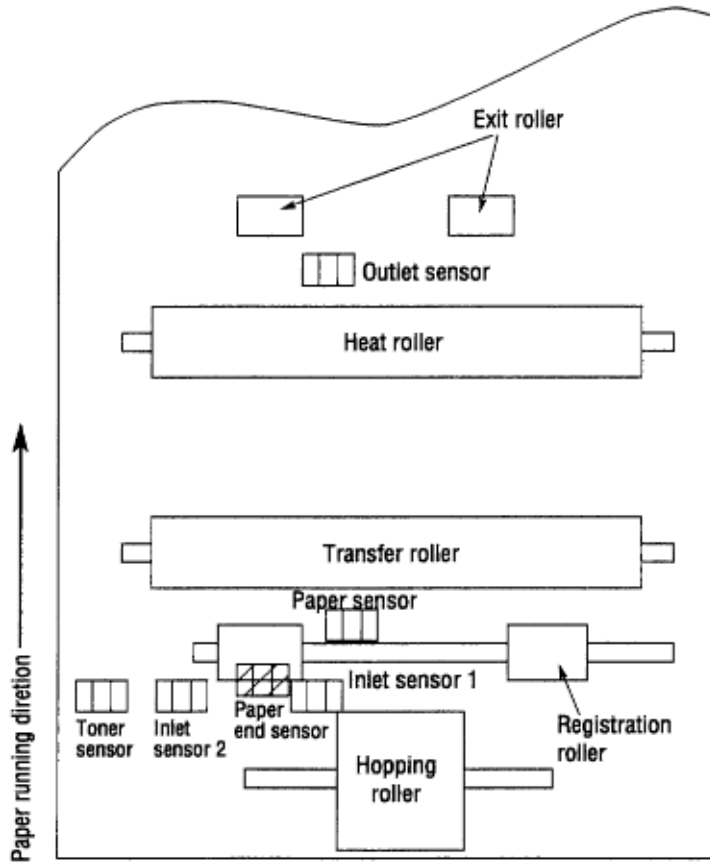


Figure 2.5

Sensor	Function	Sensing state
Inlet sensor 1	Detects the leading edge of the paper and gives the supervision timing for switching from hopping operation to feeding operation. Monitors paper feeding situation and paper size based on the paper arrival time and running time.	ON: Paper exists. OFF: No paper exists.
Inlet sensor 2	Detects the form width.	ON: A4 or larger OFF: Smaller than A4
Paper sensor	Detects the leading portion of the paper. Monitors the paper feeding situation.	ON: Paper exists. OFF: No paper exists.
Outlet sensor	Monitors the paper feeding and size according to the time of arrival to and leaving past the sensor.	ON: Paper exists. OFF: No paper exists.
Paper end sensor	Detects the end of the paper.	ON: Paper exists. OFF: No paper exists.
Toner low sensor	Detects the lack of toner.	- - - - -

2.4 Electrophotographic Process - 2.4.1 Electrophotographic Process Mechanism

2.4 Electrophotographic Process

2.4.1 Electrophotographic Process Mechanism

This mechanism uses the electrophotographic process to print image data supplied by the control board. The layout of the electrophotographic process mechanism is shown in Figure 2-6.

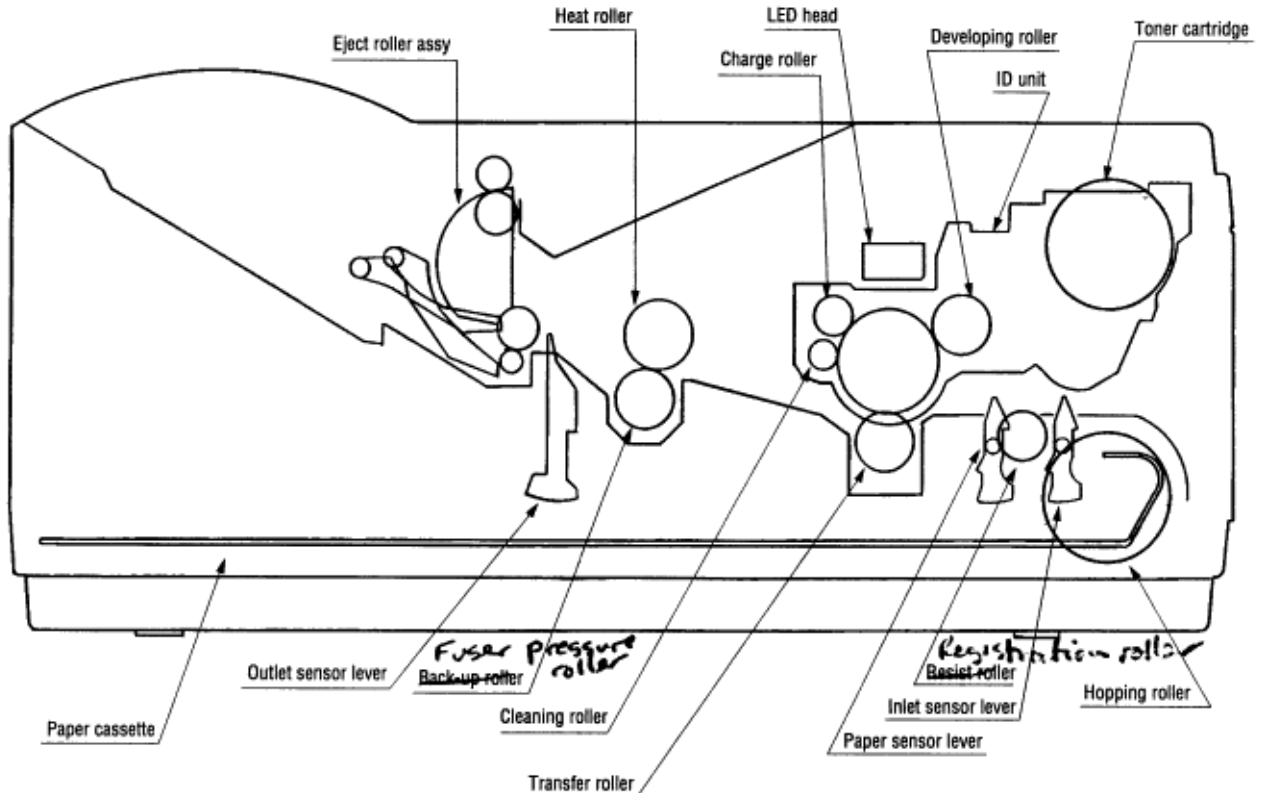


Figure 2-6

(1) Image Drum Unit

The image drum unit consists of a light-sensitive drum, a charger, and a developer. The unit forms a toner image on the sensitive drum, using an electrostatic latent image formed by the LED head.

(2) Registration Motor

The registration motor is a pulse motor of 48 steps/rotation, which is two-phase excited by the signal from the Main Control PCB. It drives the hopping and registration rollers via two one-way clutches according to the direction of rotation.

(3) Drum Motor

The drum motor is a pulse motor of 48 steps/rotation, which is two-phase excited by the signal from the Main Control PCB and is the main motor of this mechanism.

(4) LED Head

Image data for each dot line from the control board is received by the shift register and latch register. The 2560/2496 LEDs are driven to radiate the image data on the image drum.

(5) Fuser

The fuser consists of a heater, a heat roller, a thermistor and a thermostat.

The AC voltage from the power supply board is applied to the heater controlled by the HEATON signal from the control board. This AC voltage heats the heater. The Main Control PCB monitors the heat roller temperature via the thermistor, and regulates the heater roller to a predetermined temperature (165°C) by connecting or disconnecting the AC voltage supply to the heater.

When the temperature of the heater roller rises abnormally, the thermostat of the heater voltage supply circuit becomes active and cuts the AC voltage supply.

%2.4.2 Electrophotographic Process

2.4.2 Electrophotographic Process

The electrophotographic processing is outlined below. Figure 2-7 shows the electrophotographic printing process.

1 Charging

The surface of the image drum is given a uniform negative charge by applying the negative voltage to the charge roller.

2 Exposure

Light emitted from the LED head irradiates the negatively charged surface of the image drum. The surface potential of the irradiated portion becomes lower, forming the electrostatic latent image associated with the print image.

3 Developing and toner recovery

When the negatively charged toner is brought into contact with the image drum, it is attracted to the electrostatic latent image by static electricity, making the image visible.

At the same time, the residual toner on the image drum is attracted to the developing roller by static electricity.

4 Transfer

When paper is placed over the image drum surface, the positive charge which is opposite in polarity to that of the toner, is applied to the reverse side by the transfer roller. The toner is attracted by the positive charge and is transferred onto the paper. This transfers the toner image formed on the image drum onto the paper.

5 Temporary cleaning

Residual toner, which remains on the image drum without being transferred, is evened out by the cleaning roller and is attracted to the cleaning roller by static electricity.

6 Fusing

The transferred toner image is fused to the paper by heat and pressure.

Figure 2-8 shows an electrophotographic process timing chart.

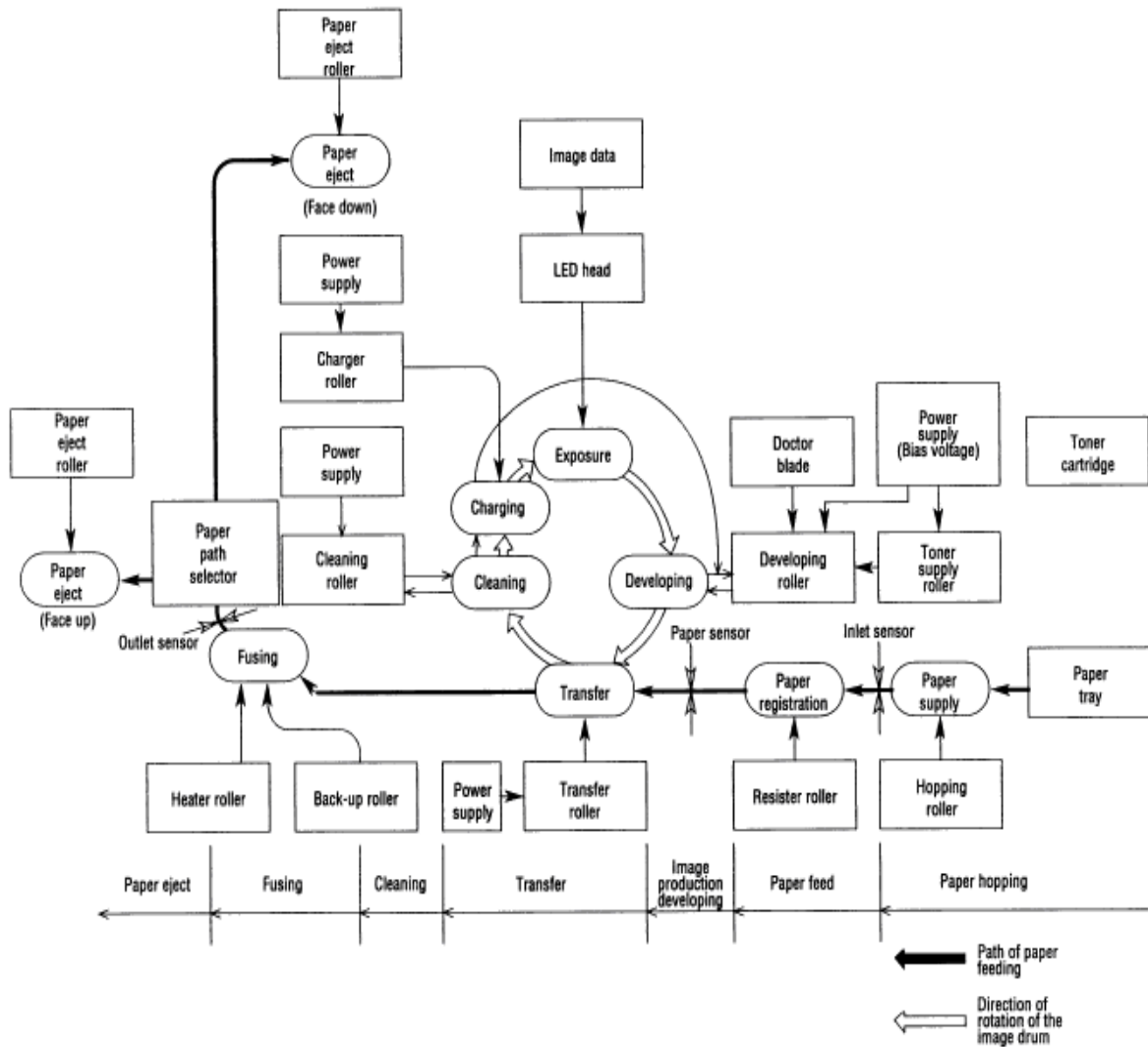


Figure 2-7

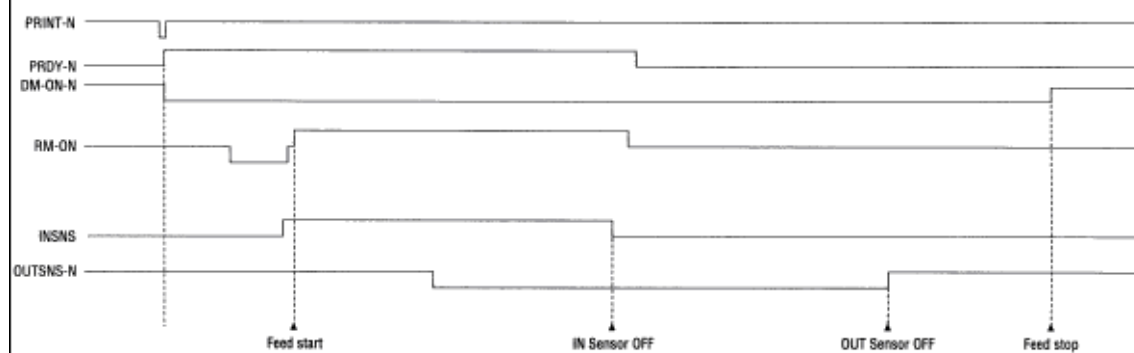


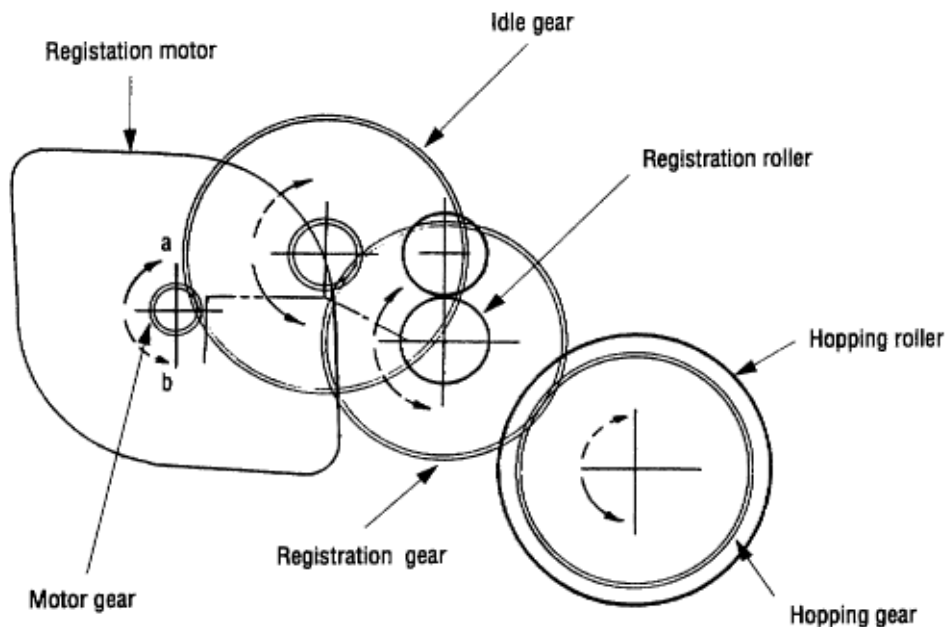
Figure 2-8

2.4.3 Process Operation Descriptions - Hopping and Feeding

2.4.3 Process Operation Descriptions

(1) Hopping and Feeding

Hopping and feeding motions are actuated by a single registration motor in the mechanism as shown below:

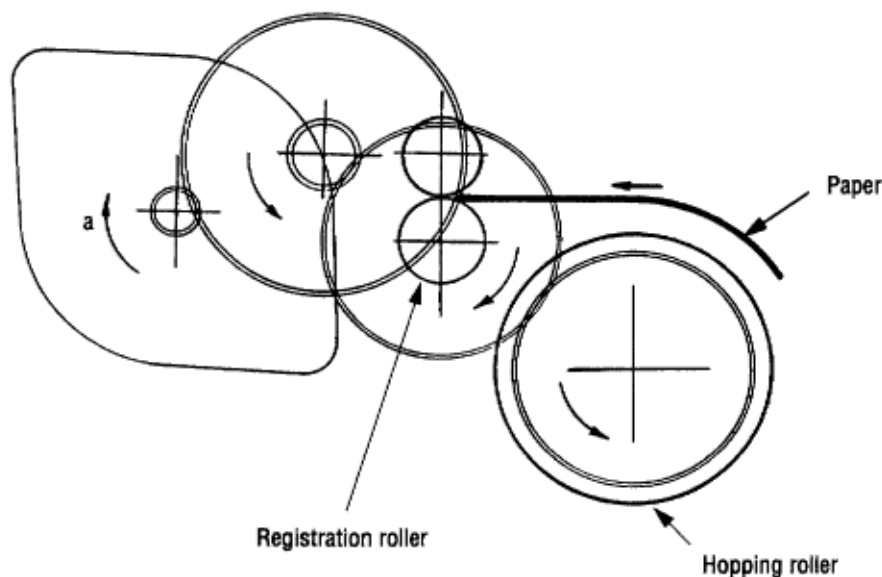


The registration motor turning in direction "a" drives the hopping roller. The registration motor turning in direction "b" drives the registration roller. The registration and hopping gears have one-way bearings, so turning any of these gears in the reverse direction will not transmit the motion to the corresponding roller.

(a) Hopping

1 For hopping, the registration motor turns in direction "a" (CW direction) and drives the hopping roller to advance the paper until the inlet sensor turns on (in this case, the registration gear also turns, but the registration roller is prevented from turning by the one-way bearings).

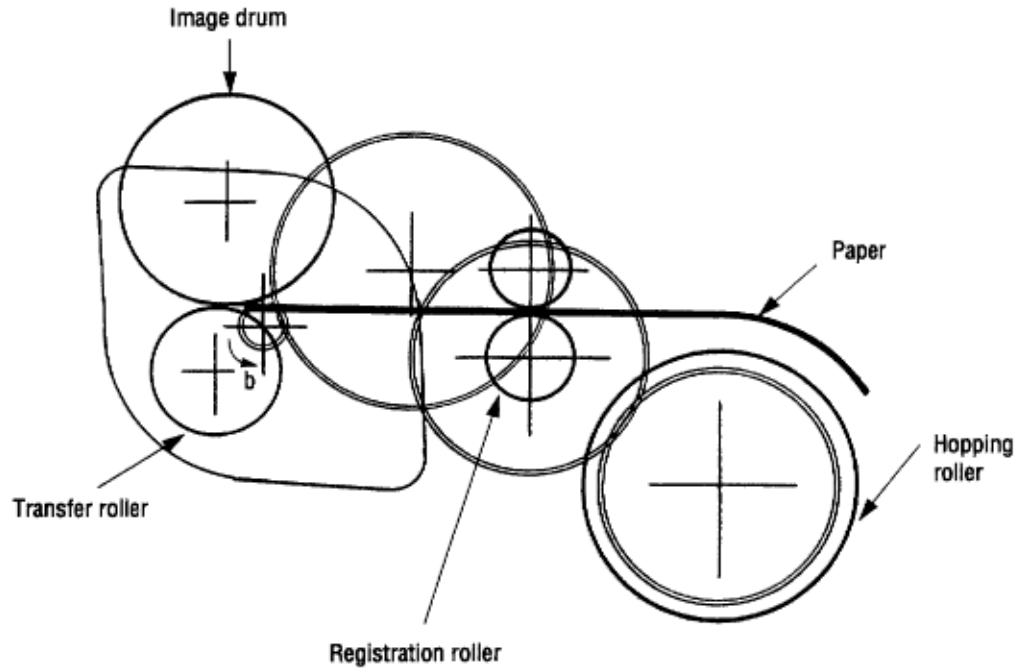
2 After inlet sensor is turned on by the paper advance, the paper is further advanced to a predetermined distance until the paper hits the registration roller (the skew of the paper can thus be corrected).



(b) Feeding

1 When hopping is completed, the registration motor turning in direction "b" (CCW direction) drives the registration roller to advance the paper (in this case, the hopping gear also turns, but the hopping roller is prevented from turning by the one-way bearings).

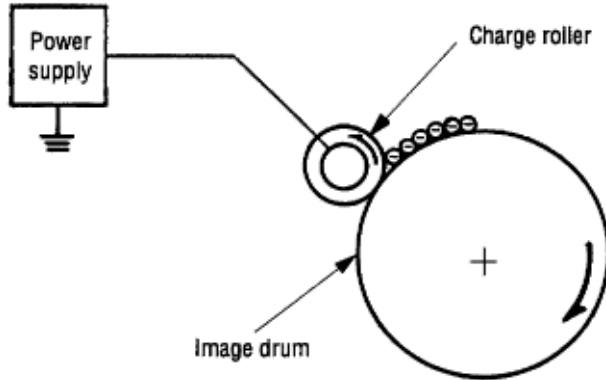
2 The paper is further advanced in synchronization with the print data.



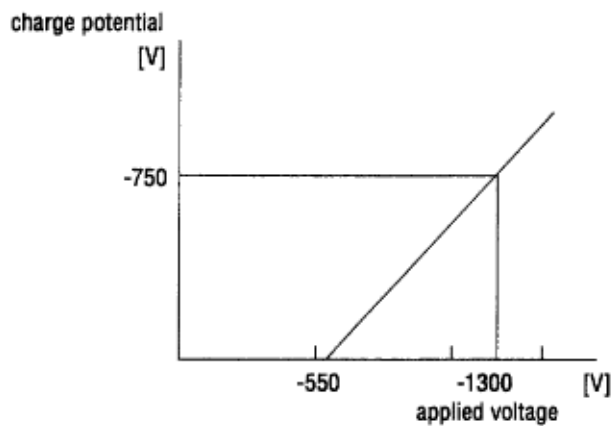
%Charging

(2) Charging

Charging is actuated by the application of the DC voltage to the charge roller that is in contact with the image drum surface.



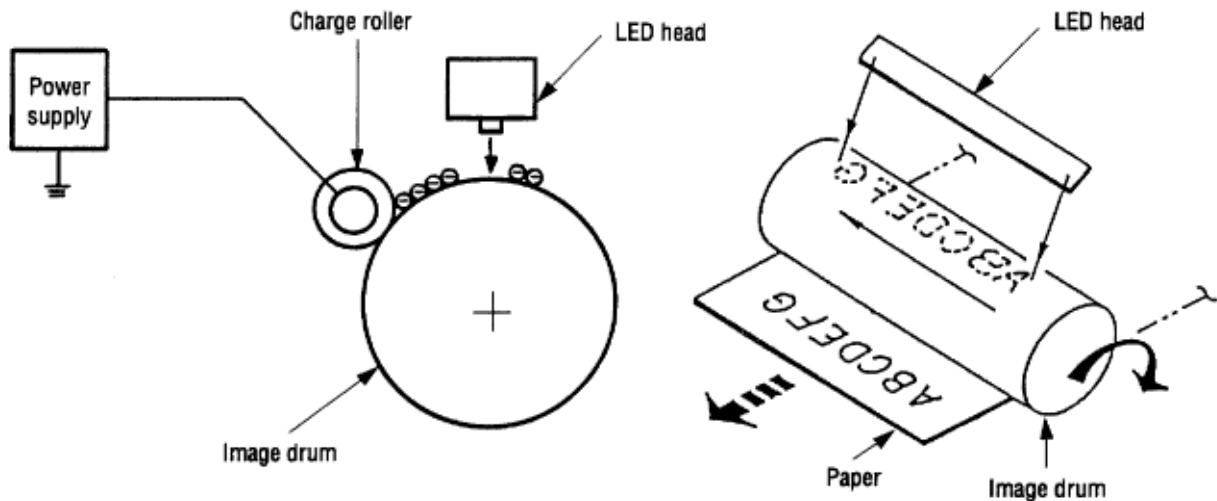
The charge roller consists of two layers: a conductive layer and a surface protective layer, both having elasticity to secure good contact with the image drum. When the DC voltage applied by the power supply exceeds the threshold value, charging begins. The applied voltage is proportional to the charge potential, with an offset of approximately 550V.



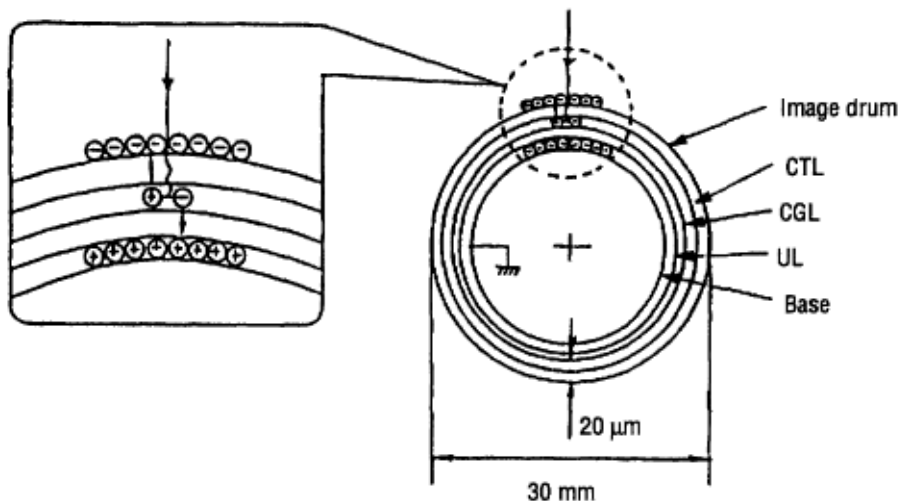
%Exposure

(3) Exposure

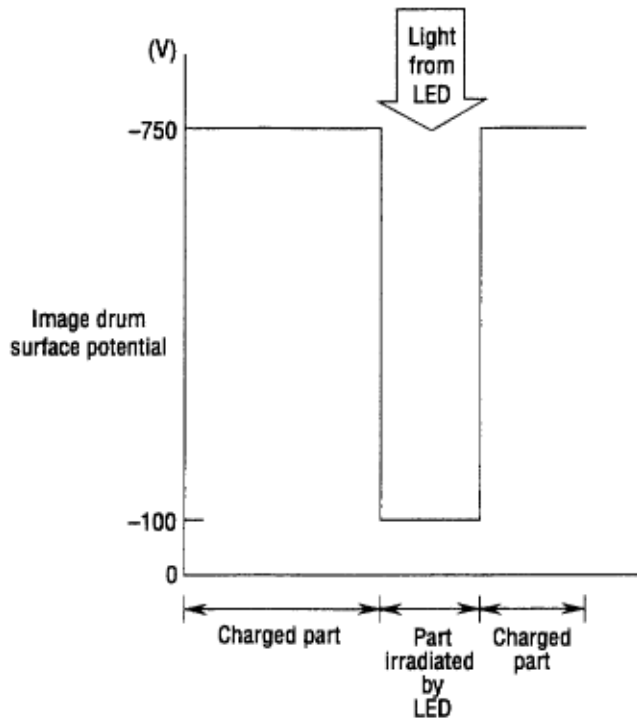
Light emitted by the LED head irradiates the image drum surface with a negative charge. The surface potential of the irradiated portion drops, forming an electrostatic latent image associated with the image signal.



The image drum is coated with an underlayer (UL), a carrier generation layer (CGL), and carrier transfer layer (CTL) on aluminum base. The organic photo-conductor layer (OPC), comprising CTL and CGL, is about 20 μm thick.



The image roller surface is charged to about 750 V by the contact charge of the charge roller. When the light from the LED head irradiates the image drum surface, the light energy generates positive and negative carriers in the CGL. The positive carriers are moved to the CTL by an electrical field acting on the image drum. Likewise, the negative carriers flow into the aluminum layer (ground). The positive carriers moved to the CTL combine with the negative charges on the image drum surface accumulated by the contact charge of the charge roller, lowering the potential on the image drum surface. The resultant drop in the potential of the irradiated portion of the image drum surface forms an electrostatic latent image on it. The irradiated portion of the image drum surface is kept to about 100 V.

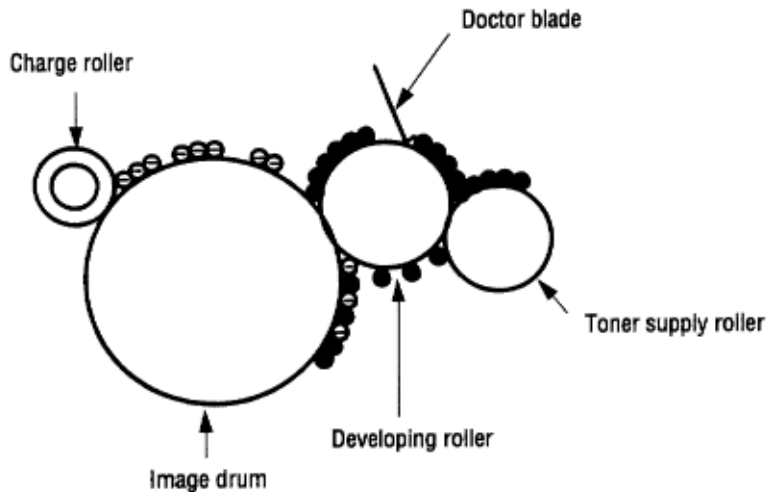


%Developing

(4) Developing

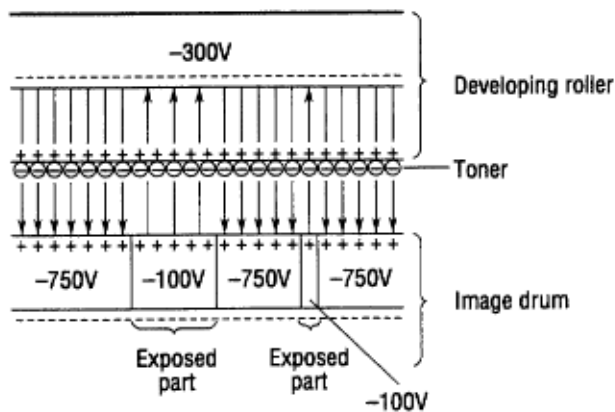
Toner is attracted to the electrostatic latent image on the image drum surface, converting it into a visible toner image. Developing takes place through the contact between the image drum and the developing roller.

1 As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller (the developing roller surface is charged positive and the toner is charged negative).

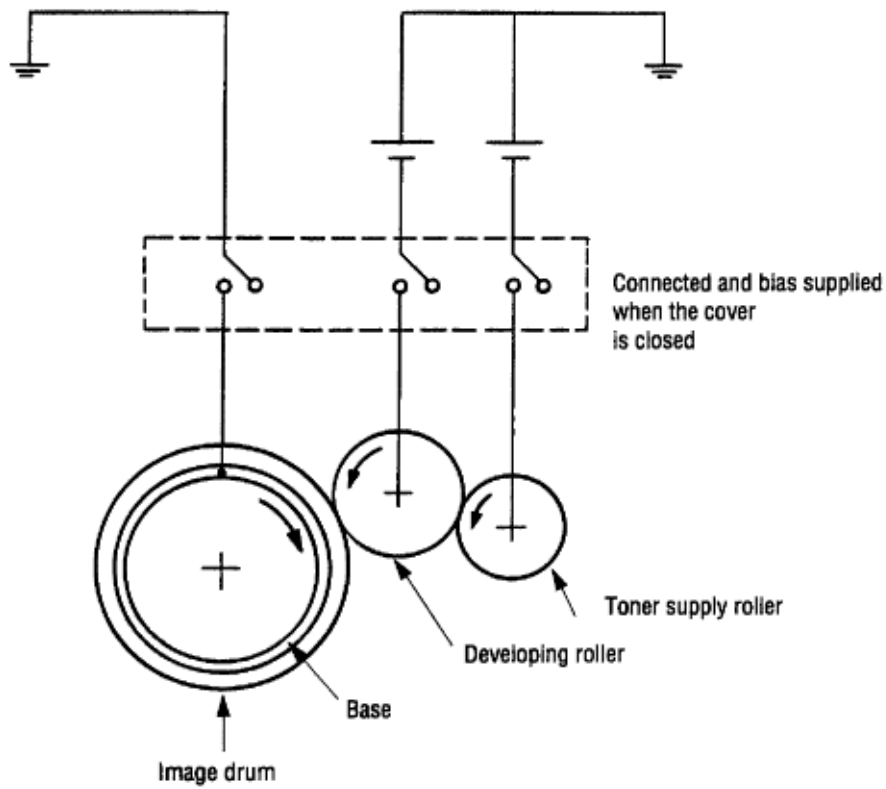


2 The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

3 Toner is attracted to the exposed portion (low-potential part) of the image drum at the contact of the image drum and the developing roller, making the electrostatic latent image visible.



Note: The bias voltage required during the developing process is supplied to the toner supply roller and the developing roller, as shown in the diagram below. 450 VDC is supplied to the toner supply roller, 300 VDC to the developing roller.



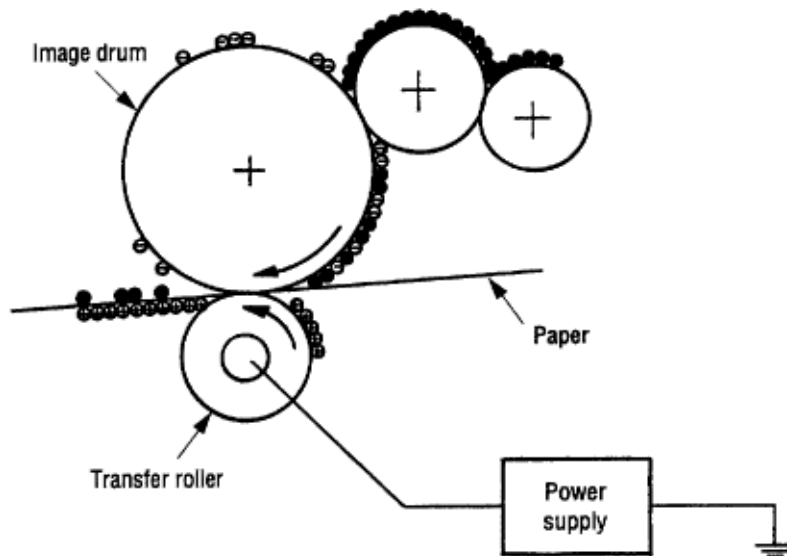
%Transfer

(5) Transfer

The transfer roller is composed of conductive sponge material, and is designed to get the image drum surface and the paper in a close contact.

Paper is placed over the image drum surface, and the positive charge, opposite in polarity to that of the toner, is applied to the paper from the reverse side.

The application of a high positive voltage from the power supply to the transfer roller causes the positive charge inducement on the transfer roller surface, transferring the charge to the paper as it contacts the transfer roller. The toner with negative charge is attracted to the image drum surface, and it is transferred to the upper side of the paper due to the positive charge on the reverse side of the paper.



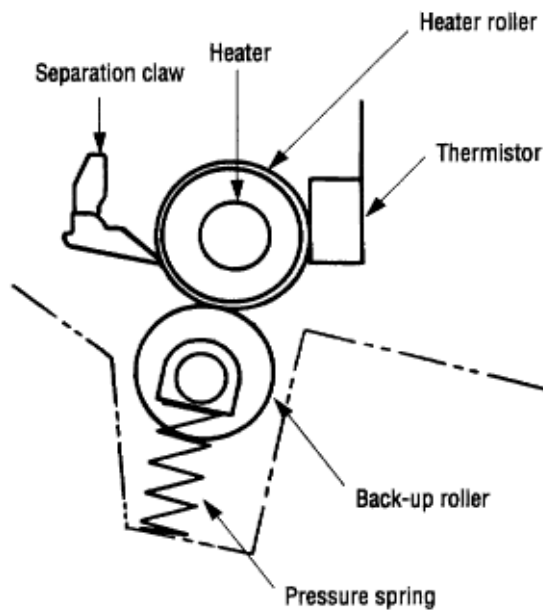
%Fusing

(6) Fusing

When the image transfer is completed, the toner image is fused to the paper by heat and pressure as the paper with the toner image passes between the heater roller and the back-up roller. The heater roller with Teflon coating incorporates a 400W heater (Halogen lamp), which heats the roller.

A thermistor, which is in contact with the heater roller, regulates the temperature of the heater roller at a predetermined level (about 165°C). A safety thermostat cuts voltage supply to the heater off by opening the thermostat in the event of abnormal temperature rises.

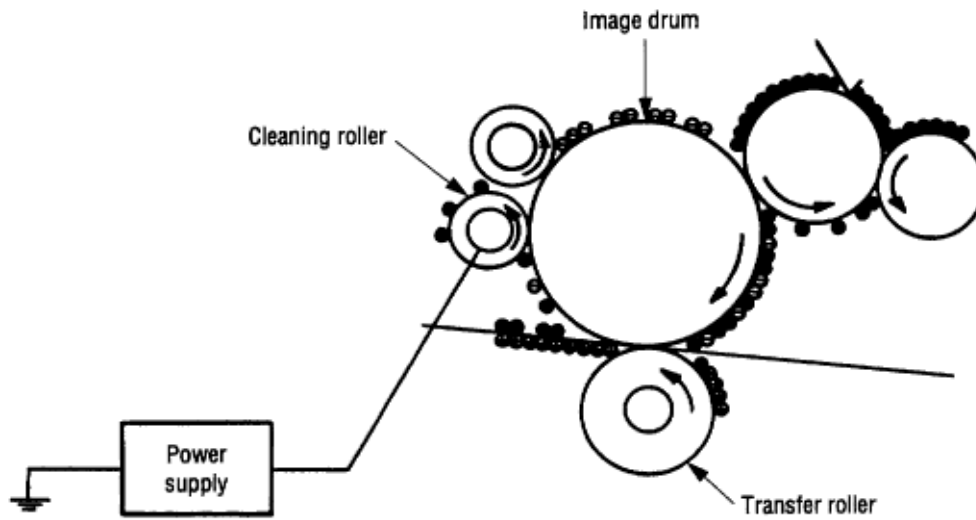
The back-up roller is held under a pressure of 3.8 kg applied by the pressure spring on each side.



%Cleaning

(7) Cleaning

When the transfer is completed, the residual toner left on the image drum is attracted to the cleaning roller by static electricity, and the image drum surface is cleaned.



%Cleaning of rollers

(8) Cleaning of rollers

The charge, transfer and cleaning rollers are cleaned in the following cases:

- Warming up when the power is turned on.
- Warming up after the opening and closing of the cover.
- When the number of sheets accumulated reaches 10 or more, and the printout operation ends.

Cleaning initiated by the user.

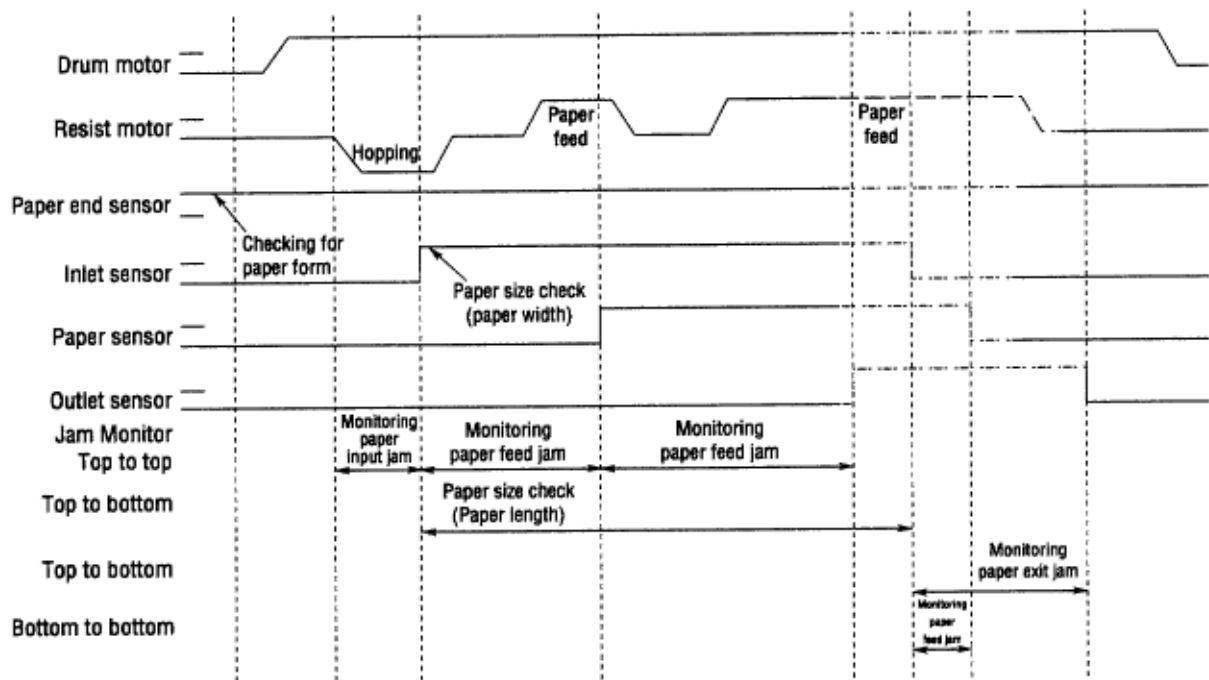
Changes in bias voltage applied to each roller moves the excess toner off the roller to the image drum and returns it to the developer.

2.5 Paper Jam Detection

2.5 Paper Jam Detection

The paper jam detection function monitors the paper condition when the power is turned on and during printing. When any of the following conditions arises, this function interrupts the printing process. If any of the following errors is encountered, printing can be recovered by removing the jammed paper (by opening the upper cover, removing the jammed paper and closing the upper cover).

Error	Cause of error
Paper input jam	<ul style="list-style-type: none">• The paper is in contact with the inlet sensor when the power is turned on.• After hopping operation is attempted three times, the leading edge of the paper does not reach the inlet sensor.
Paper feed jam	<ul style="list-style-type: none">• The paper is in contact with at the paper sensor when the power is turned on.• The leading edge of the paper does not reach the paper sensor within a predetermined distance since the paper has reached the inlet sensor.• The trailing edge of the paper does not pass over the paper sensor within a predetermined distance after the same has passed over the inlet sensor.• The leading edge of paper does not reach the outlet sensor within a predetermined distance after the paper has reached the paper sensor.
Paper exit jam	<ul style="list-style-type: none">• The paper is in contact with the outlet sensor when the power is turned on.• The paper does not pass over the outlet sensor within a predetermined distance after the leading edge of the paper has reached the outlet sensor.• The paper size check for manual feeding finds that the paper size is free size.
Paper size error	<ul style="list-style-type: none">• The size of the paper is monitored by the inlet sensor 1. The paper is not detected by the inlet sensor 1 within predetermined distance.• The inlet sensor 2 detects that the size of the loaded paper is A4 or larger, or smaller than A4. The detected paper size differs from the paper size set by command or menu.• The paper size check for manual feeding finds that the paper size is free size.



Paper Feed Timing Chart

%2.6 Cover Open

2.6 Cover Open

When the stacker cover is opened, the cover open microswitch on the power/sensor board is turned off to cut +5V supply to the high voltage power supply circuit. This results in the interruption of all high-voltage outputs. At the same time, the CVOPN signal is sent to the control board to notify that the microswitch is off, and the control board carries out the cover open process.

Paper Feed Check List

Type of error	Monitor	Standard value	Error	
			Plus	Minus
Paper feed error	Hopping start to In sensor on	72.0	36.0	—
Paper feed jam	In sensor on to Write sensor on	20.0	20.0	—
Paper feed jam	Write sensor on to Out sensor on	140.5	25.0	—
Paper size error	In sensor on to Out sensor on	Depends on the paper length	45.0	45.0
Paper exit jam	Out sensor on to Out sensor off	Depends on the paper length	45.0	45.0
Paper feed jam	In sensor off to Write sensor off	22.2	22.0	—

Note: Hyphen ["-"] in the table indicates that no check is done.

Paper Length List

Type	Paper length	Check range	
		Min.	Max.
A4	297.0	252.0	342.0
A5	210.0	165.0	255.0
B5	257.0	212.0	302.0
LETTER	279.4	234.4	324.4
LEGAL 13	330.2	285.2	375.2
LEGAL 14	355.6	310.6	400.6

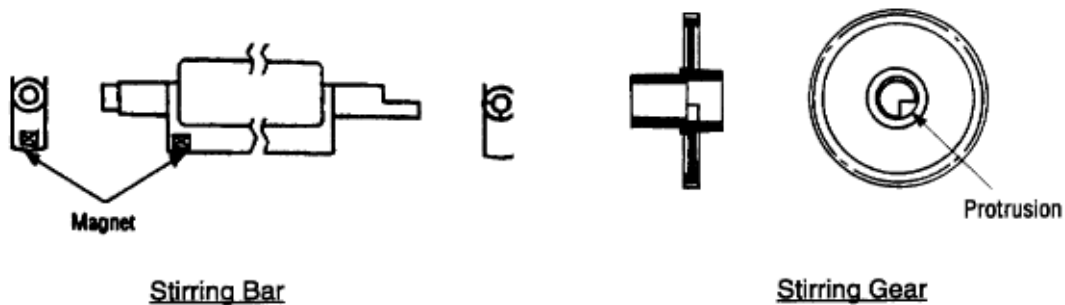
EXEC	266.7	221.7	311.7
A6	148.0	103.0	193.0
Monarch	190.5	145.5	235.5
COM-9			
COM-10	241.3	196.3	286.3
DL	220.0	175.0	265.0
C5	229.0	184.0	274.0
Free	110.0 ~ 355.6	65.0	400.6

%2.7 Toner Low Detection

2.7 Toner Low Detection

• Device

The Toner Low Detection device consists of a stirring gear which rotates at a constant rate, a stirring bar, and a magnet on the stirring bar. The stirring bar rotation is driven by the link to the protrusion in the stirring gear.

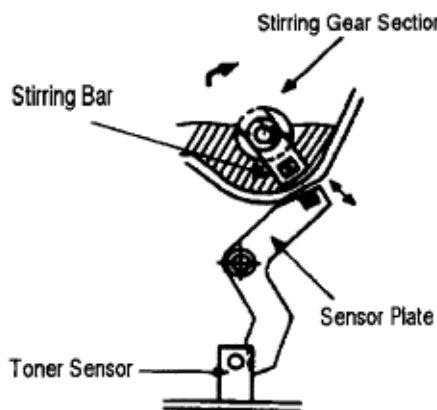


• Operation

Toner Low is detected by monitoring the time interval of the encounter of the magnet set on the sensor lever and the magnet on the stirring bar.

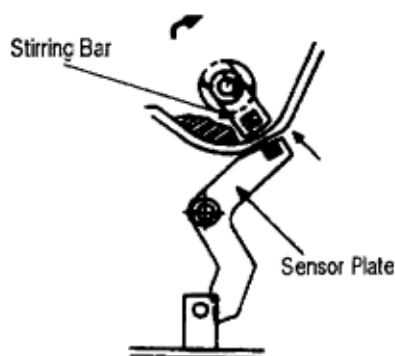
Operation during Toner Full state

- The stirring gear rotates the stirring bar.
- When toner is present, the stirring bar moves through the toner at a constant rate.

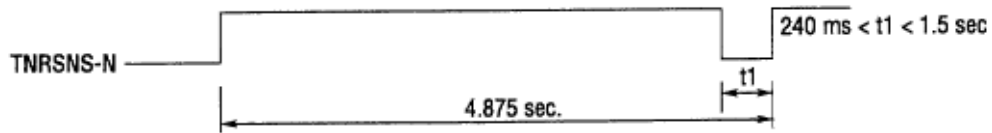


Operation during Toner Low state

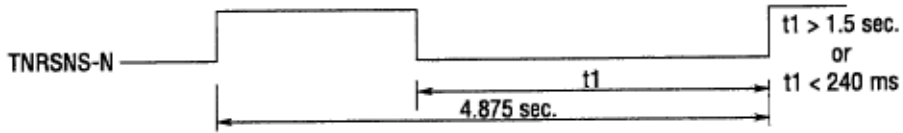
- When toner is low or empty, the stirring bar rises to the maximum height and then falls to the minimum height by its own weight. This increases the time of its encounter with the magnet on the sensor lever. By monitoring this time interval, Toner Low can be detected.
- When the Toner Low state is detected 2 times consecutively, Toner Low is established.
- When the Toner Full state is detected 2 times consecutively, Toner Low is cancelled.



TONER FULL state



TONER LOW state



- When there is no change with the toner sensor for 2 cycles (4.875 sec. x 2) or more, the Toner Sensor Alarm is activated.
 - The toner sensor is not monitored while the drum motor is in halt.
-

Chapter 3

3.1 Precautions for Parts Replacement

3. PARTS REPLACEMENT

The 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 steps of disassembly procedure.

3.1 Precautions for Parts Replacement

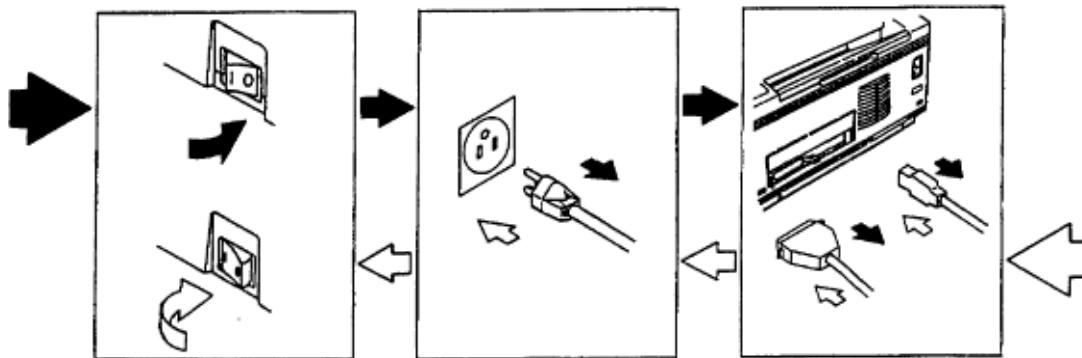
Note: Always use proper anti-static precautions. (1) Before starting the parts replacement, remove the AC power cord and interface cable.

(a) Remove the AC power cord in the following sequence:

i) Turn off ["O"] the power switch of the printer. ii) Unplug the power cord from the AC outlet. iii) Disconnect the power cord and interface cable from the printer.

(b) Reconnect the printer in the following sequence.

i) Connect the AC power cord and interface cable to the printer. ii) Plug the power cord into the outlet. iii) Turn on ("I") the power switch.



(2) Do not try to disassemble as long as the printer is operating normally.

(3) Do not remove parts which do not need to be touched; try to keep disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the procedure in sequence laid out in this manual. 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, ROM's and RAM's, or circuit boards, use proper anti-static precautions.

(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 and units are listed in Table 3-1.

Table 3-1 Service Tools

No.	Service Tools	Q' ty	Place of use	Remarks
1	 No. 1-100 Philips screwdriver	1	2-2.5 mm screws	
2	 No. 2-100 Philips screwdriver	1	3-5 mm screws	
3	 No. 3-100 screwdriver	1		
4	 No. 5-200 screwdriver	1		
5	 Digital multimeter	1		
6	 Pliers	1		
7	 5.0 mm wrench	1		
8	 Handy cleaner	1		
9	 LED Head cleaner	1	Cleans LED head	

3.2 Parts Layout - [Lower base unit]

3.2 Parts Layout

This section describes the layout of main parts of the equipment.

[Lower base unit]

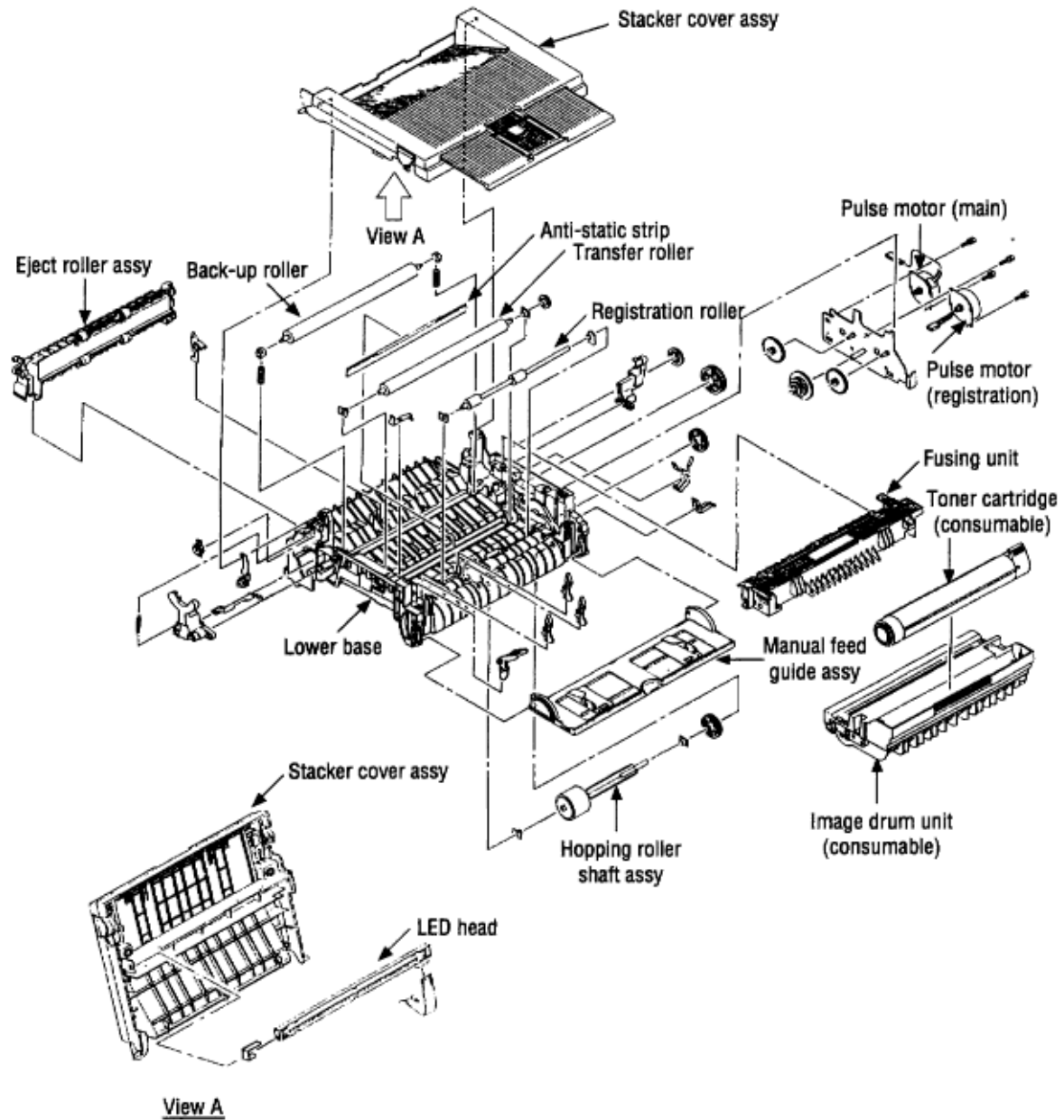


Figure 3-1

%Upper cover unit

[Upper cover unit]

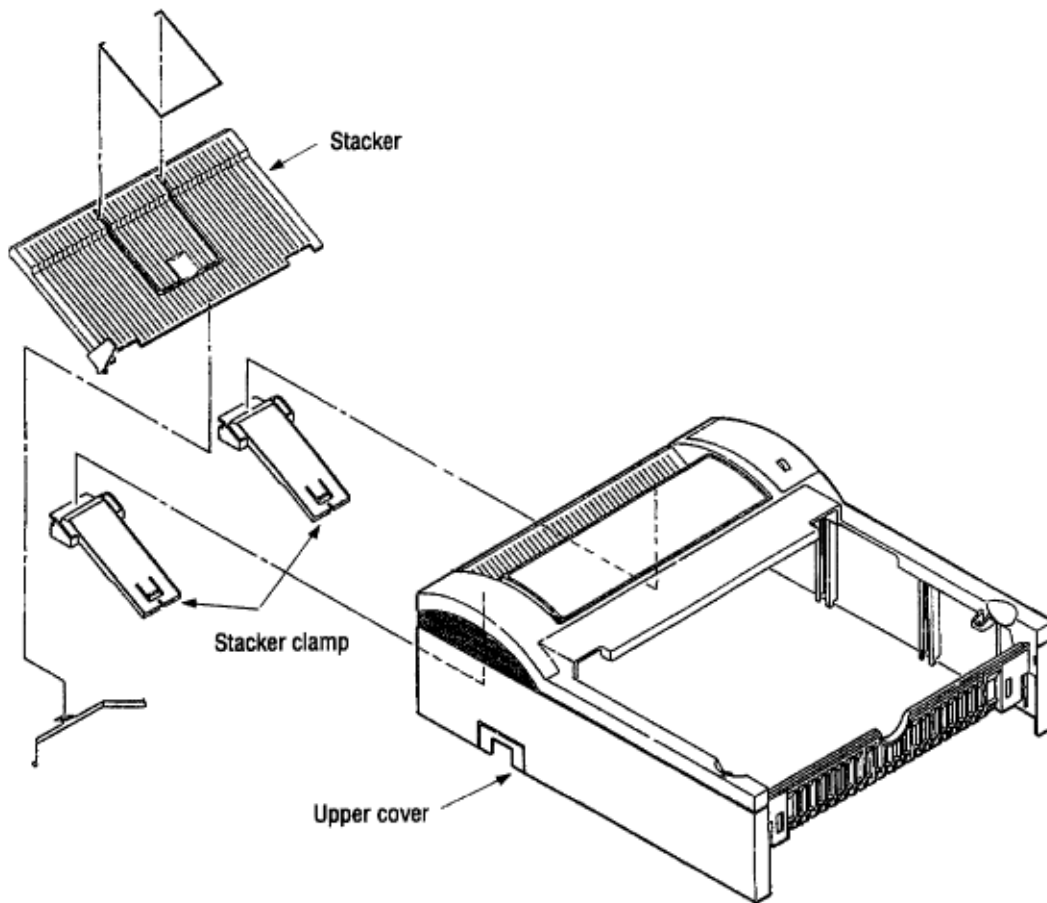


Figure 3-2

%Base unit

[Base unit]

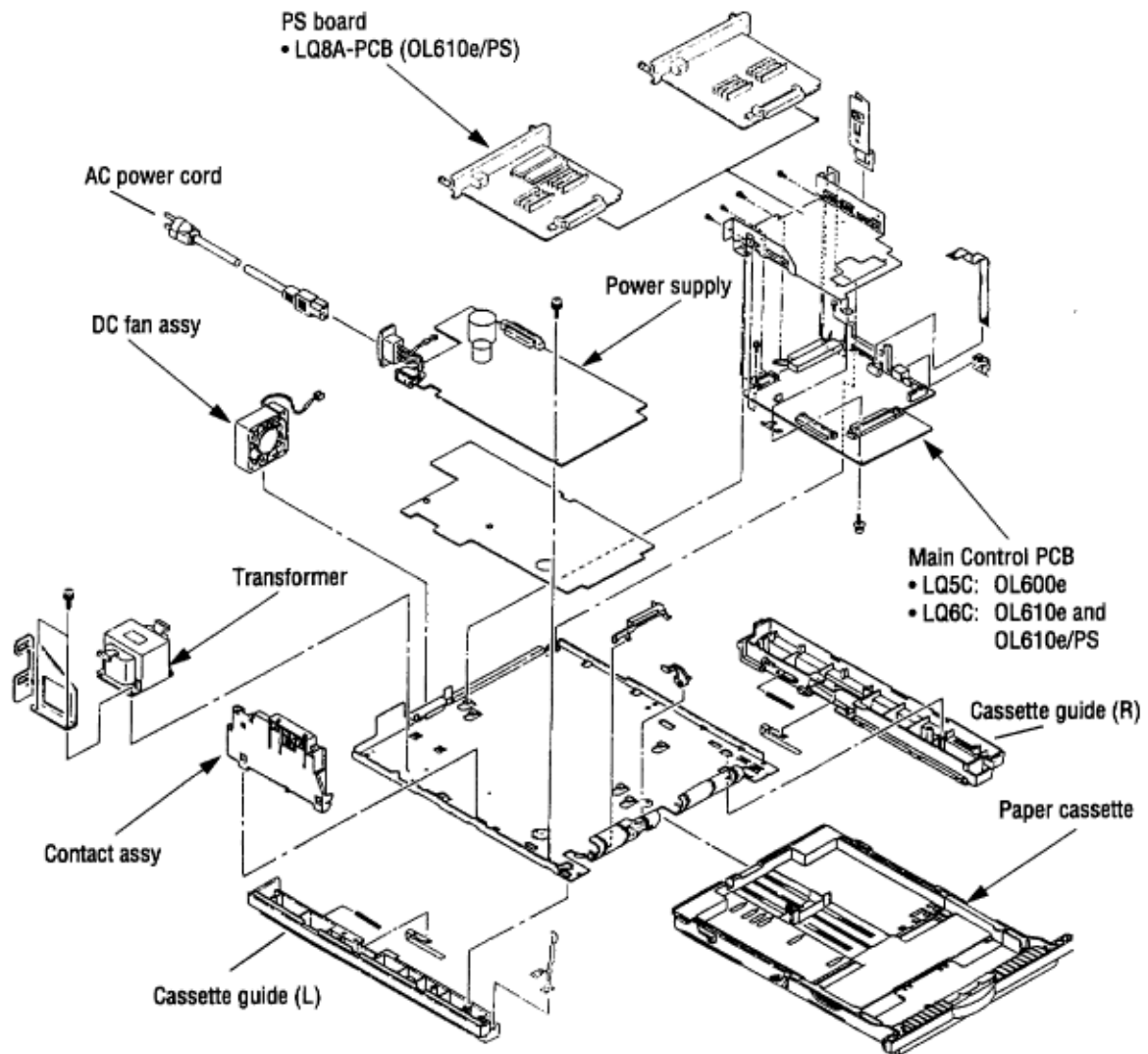
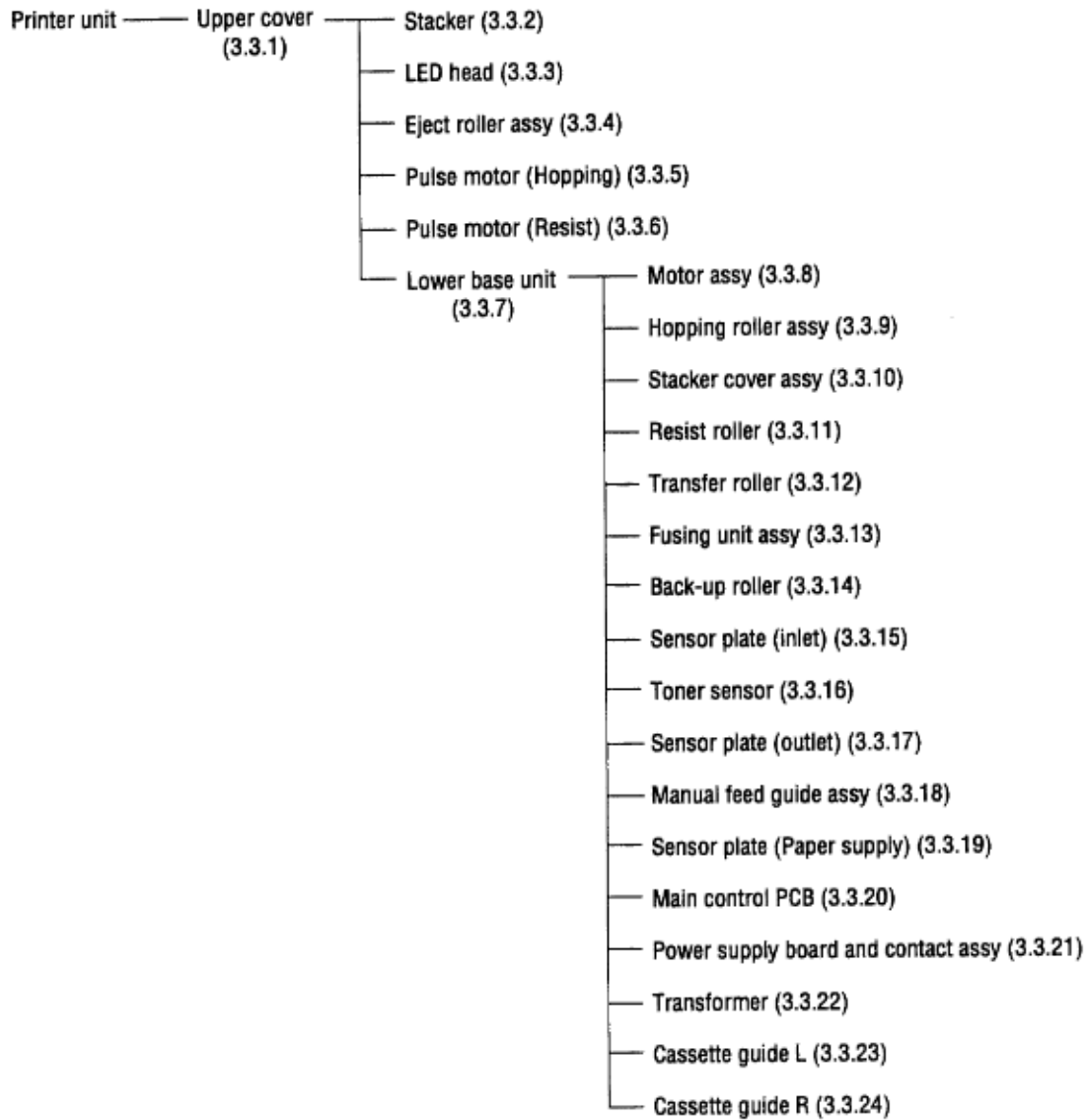


Figure 3-3

3.3 How to Change Parts

3.3 How to Change Parts

This section explains how to change parts and assemblies listed in the disassembly diagram below.



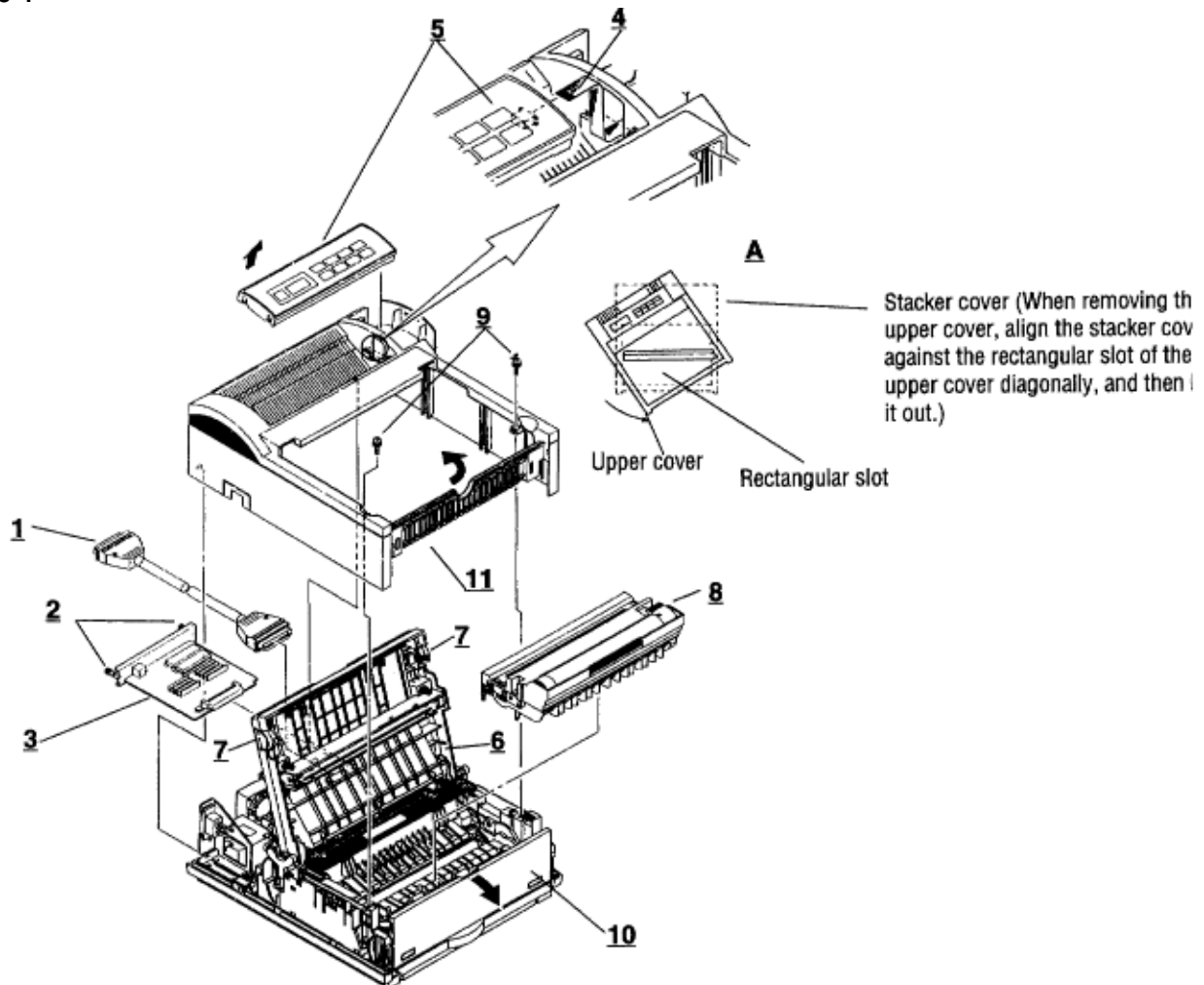
3.3.1 Upper Cover

3.3.1 Upper Cover

- (1) With the power switch turned off, unplug the AC power cord from the outlet.
- (2) Disconnect the interface cable 1.
- (3) Remove two thumb screws 2 and remove the PS board (OL610e/PS) 3.
- (4) If a memory board is installed, remove it.
- (5) On the OL610e/PS, disconnect the flexible cable 4 from the connector (CN1) 5 of the operator panel PCB, and put the cable inside the cover.
- (6) Open the stacker cover assembly 6 by pressing the knobs 7 on the left and right sides.
- (7) Remove the image drum unit 8.
- (8) Remove two screws 9, and open the manual feed guide assy 10. Lift up the front of the upper cover 11 and release the claws at two locations on the back side. Lift the cover straight up one or two inches, rotate the cover about 45 degrees to clear the face-up stacker, then lift the cover completely off of the printer (Detail A).

Note: When removing or installing the upper cover, be careful not to damage the cable 4.

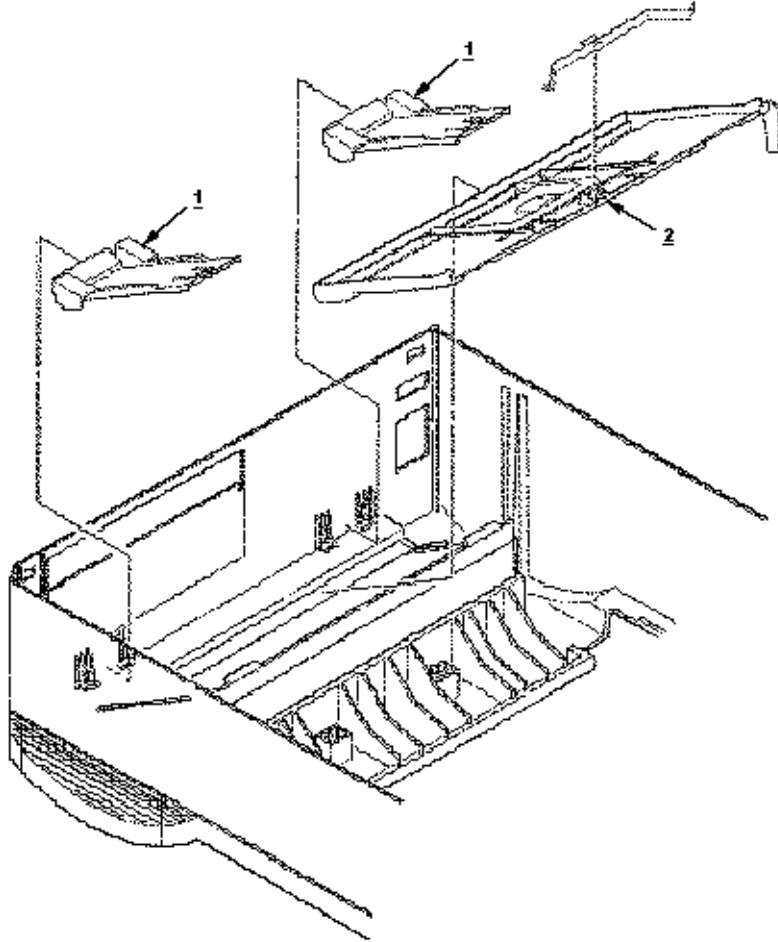
5 4



3.3.2 Stacker

3.3.2 Stacker

- (1) Remove the upper cover. (See 3.3.1)
- (2) Remove two stacker clamps **1** and the stacker **2** by flexing the upper cover.



3.3.3 LED Head

3.3.3 LED Head

(1) Open the stacker cover.

(2) Remove the flexible cable (LED) 1 from the PC connector 2 of the LED head 3.

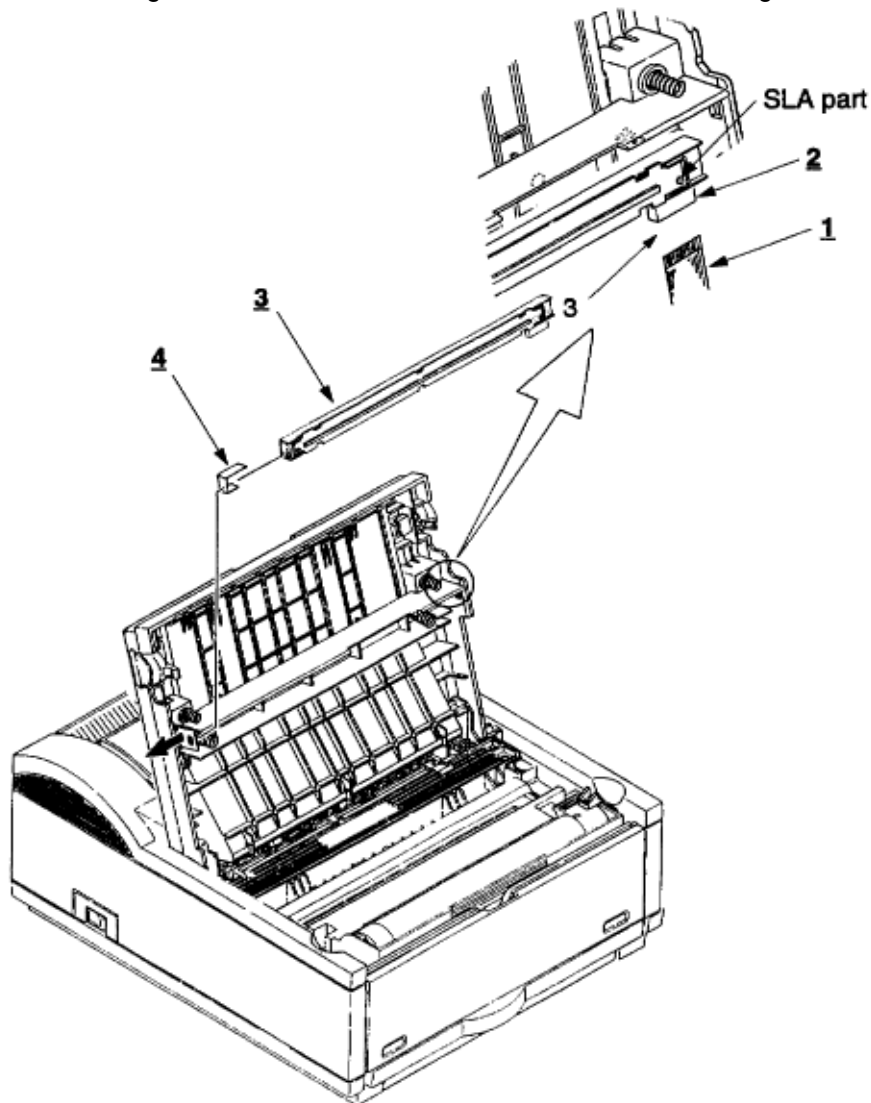
(3) Remove the LED head by flexing the left side of the upper cover away from the retaining clip. **Note:** Be careful to not lose the frame ground clip 4.

Note: • Be sure not to directly touch or push the SLA (lens) part of the LED head.

• After mounting the new LED head, set drive time of the LED head according to the marking on the LED head (see 4.2.1).

• For the installation of the flexible cable (LED) 1, install the PC connector 2 to the flexible cable (LED) 1 first, then connect the LED head 3 to the PC connector.

• When installing a new LED head, be careful not to lose the frame ground clip 4.



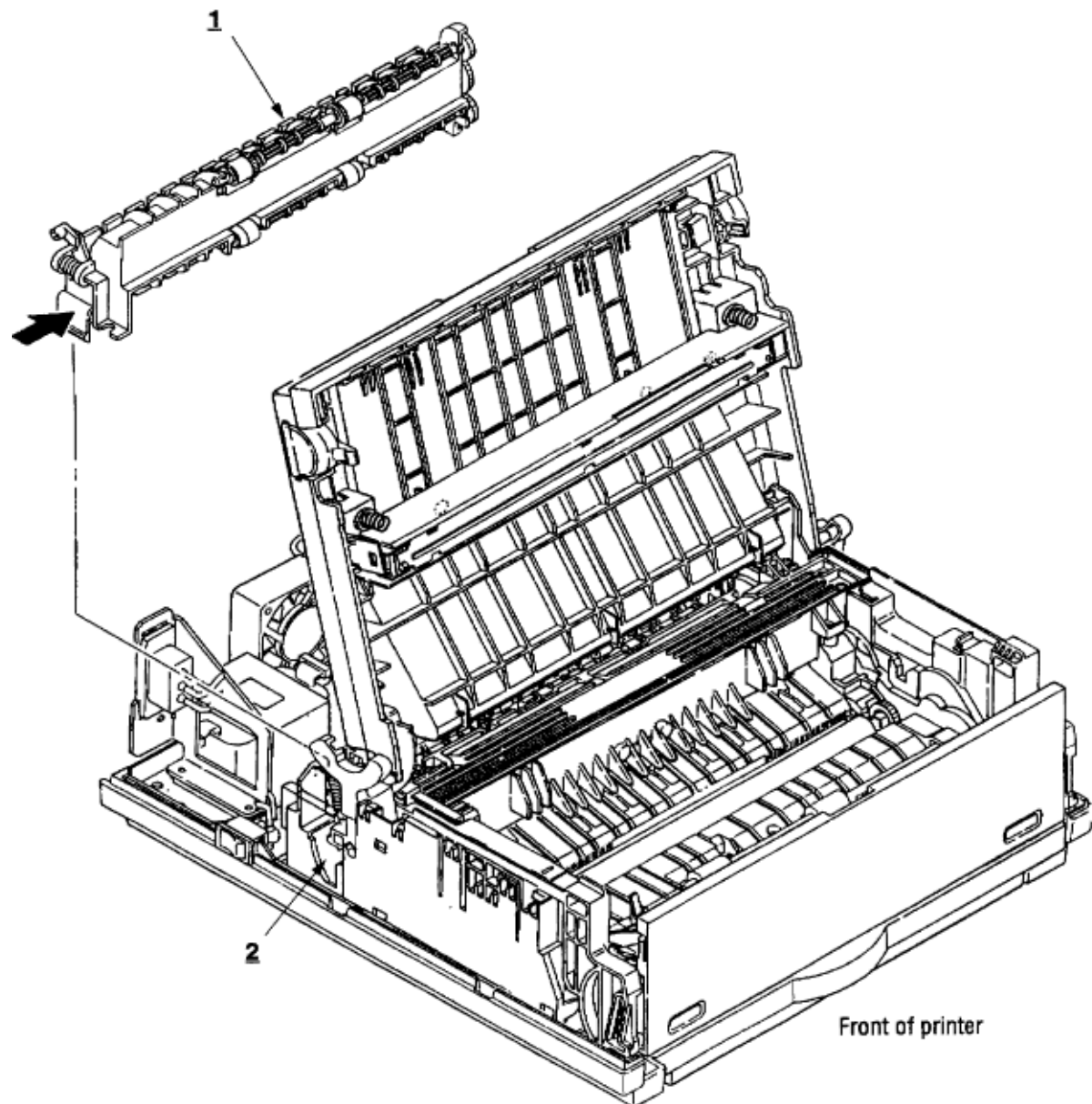
3.3.4 Eject Roller Assy

3.3.4 Eject Roller Assy

(1) Remove the upper cover (see 3.3.1). Leave the face-down stacker open.

(2) Using a small flatblade screwdriver, press the clamp on the left side of the eject roller assy **1** in the direction of the arrow. Detach the eject roller assy from the lower base unit **2**, and remove it.

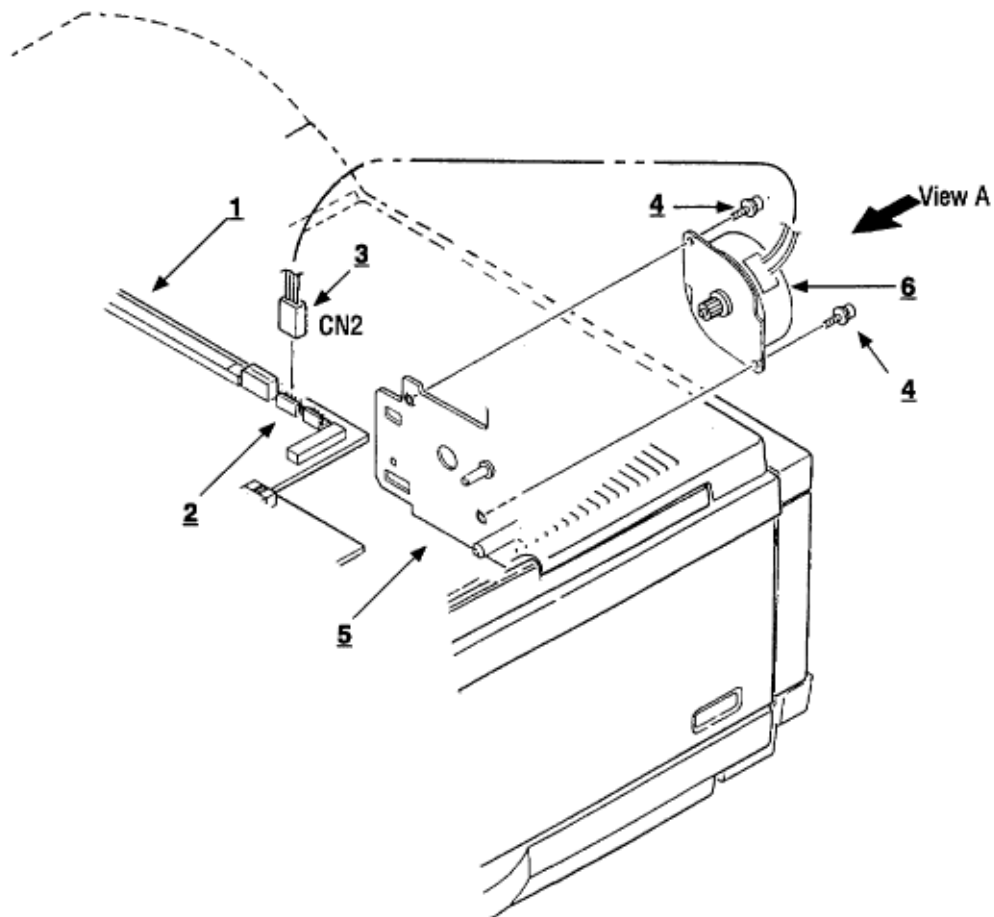
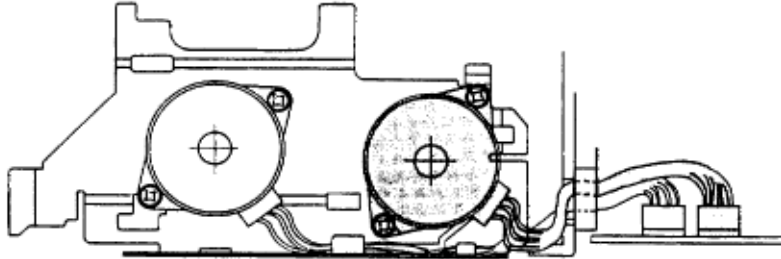
Note: When installing the eject roller, verify that the right side of the roller assembly is properly aligned with the main unit.



3.3.5 Pulse Motor (Main)

3.3.5 Pulse Motor (Main)

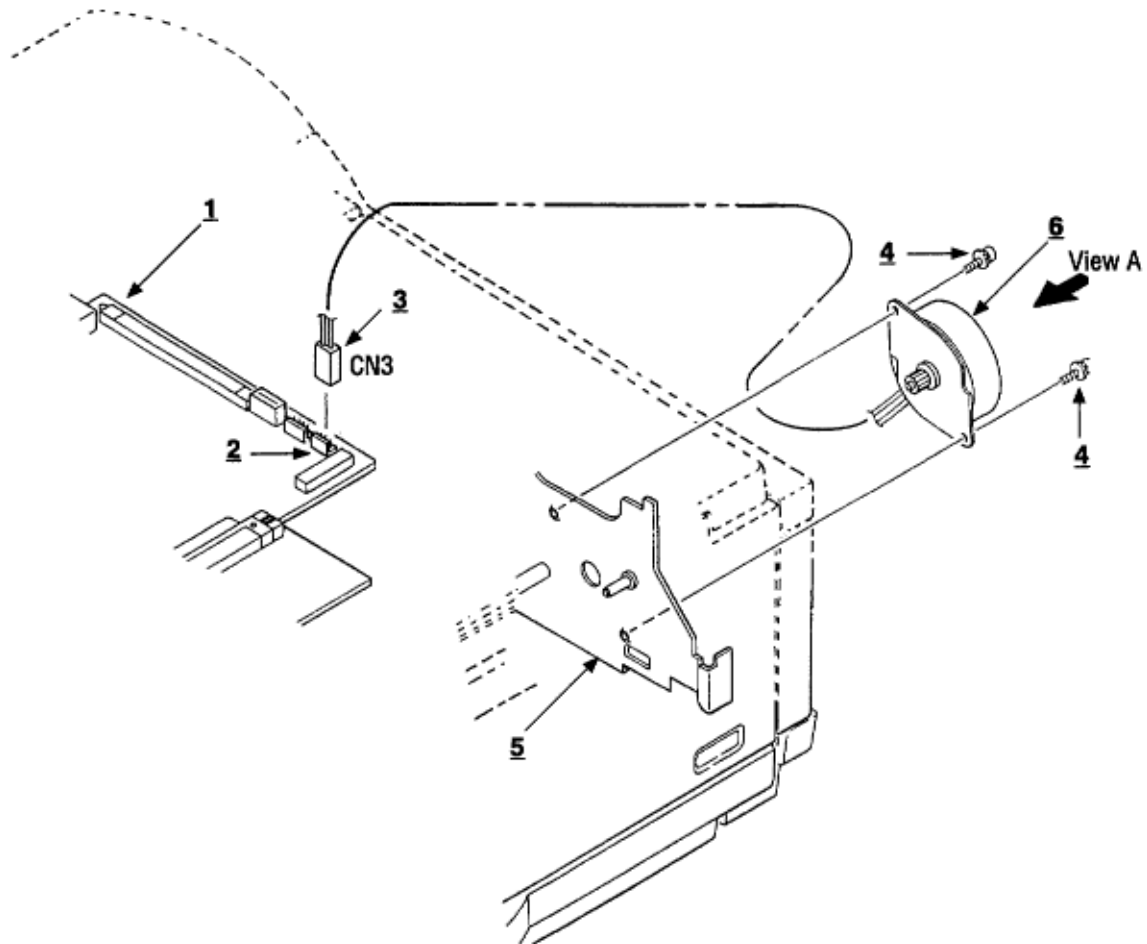
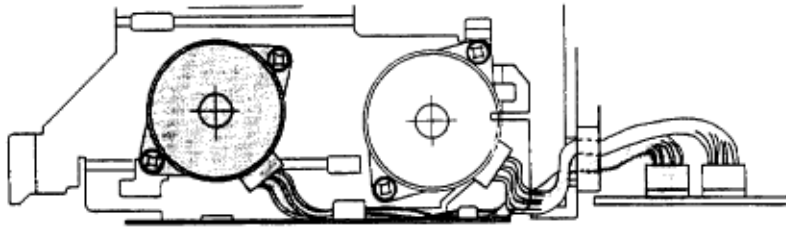
- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the connector 3 from (CN2) 2 of the Main Control PCB 1.
- (3) Remove two screws 4 and remove the pulse motor (main) 6 from the motor bracket 5.



3.3.6 Pulse Motor (Registration)

3.3.6 Pulse Motor (Registration)

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the connector 3 from (CN3) 2 of the Main Control PCB 1.
- (3) Remove two screws 4 and remove the pulse motor (registration) 6 from the motor bracket 5.

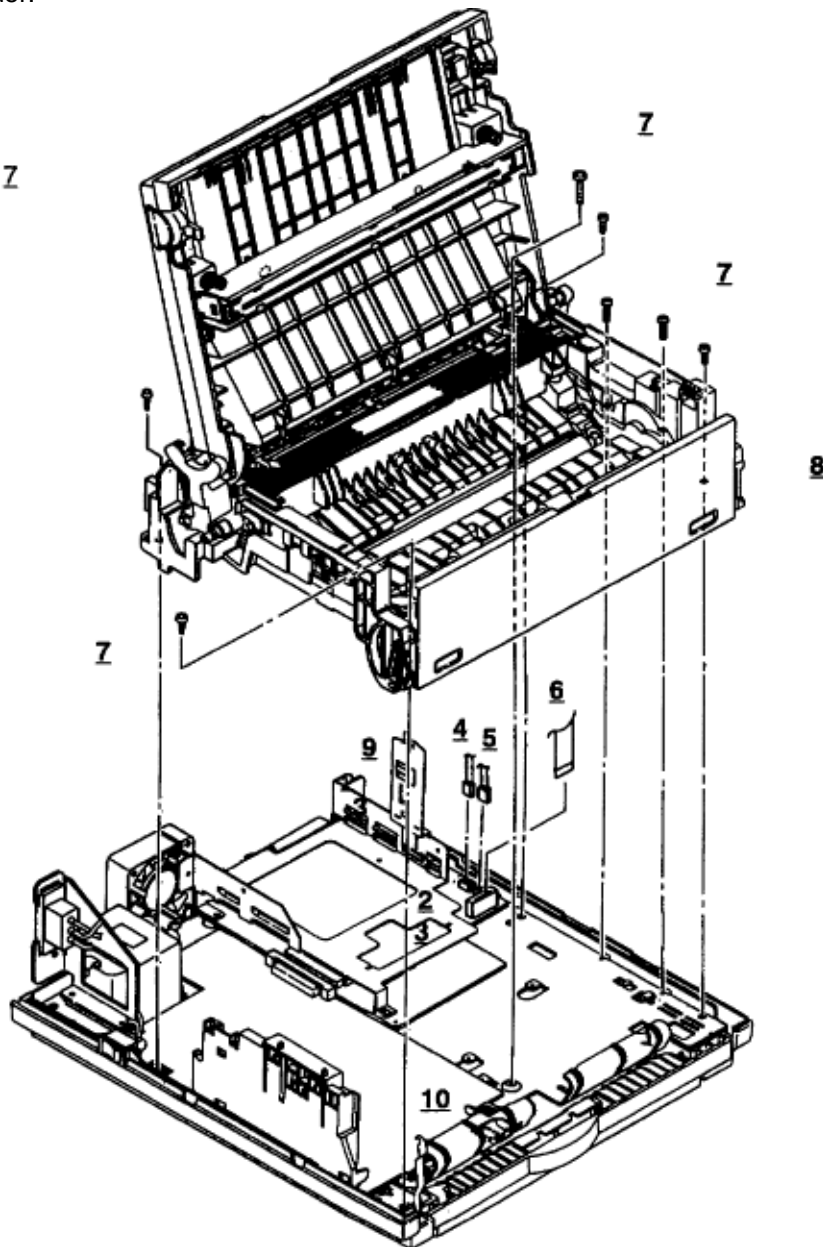


3.3.7 Lower Base Unit

3.3.7 Lower Base Unit

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the connecting cables **4** and **5** of the pulse and main motor from the connectors **2** and **3** of the Main Control PCB **1**.
- (3) Remove the screw **9** from the grounding cable and the metal shield. The screw is located directly above CN1 and the 8-pin DIN connector for the second feeder/multi-purpose feeder.
- (4) Remove the connector **6** of the LED head from the Main Control PCB **1**.
- (5) Remove seven screws **7**, then remove the lower base unit **8**.

Note: Use care when lifting the lower base unit. Do not deform the ground clip **10** for the second sheet feeder.

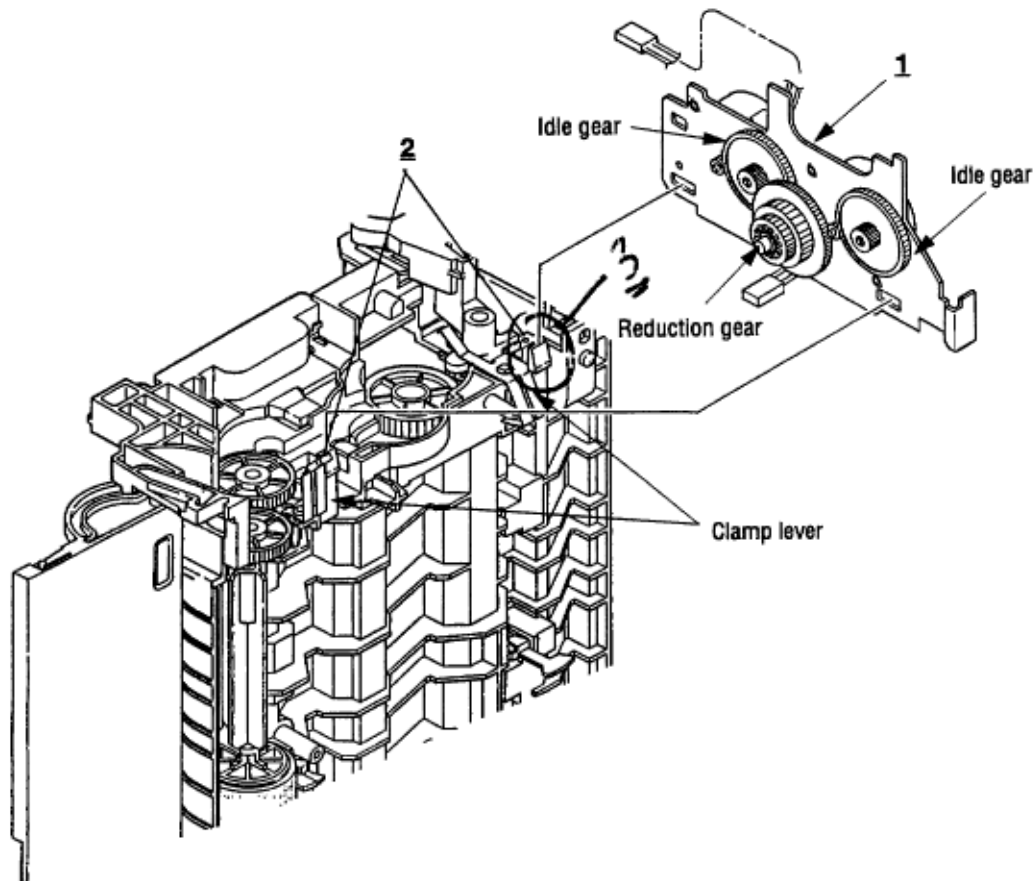


3.3.8 Motor Assy

3.3.8 Motor Assy

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Stand the lower base unit on its left side as shown. Free the pulse and main motor cables from the lower base unit at location 3, and unlock two clamp levers 2; then remove the motor assy 1.

Note: Use special care, because the idle gears and the reduction gear are *not* permanently attached and will become loose.

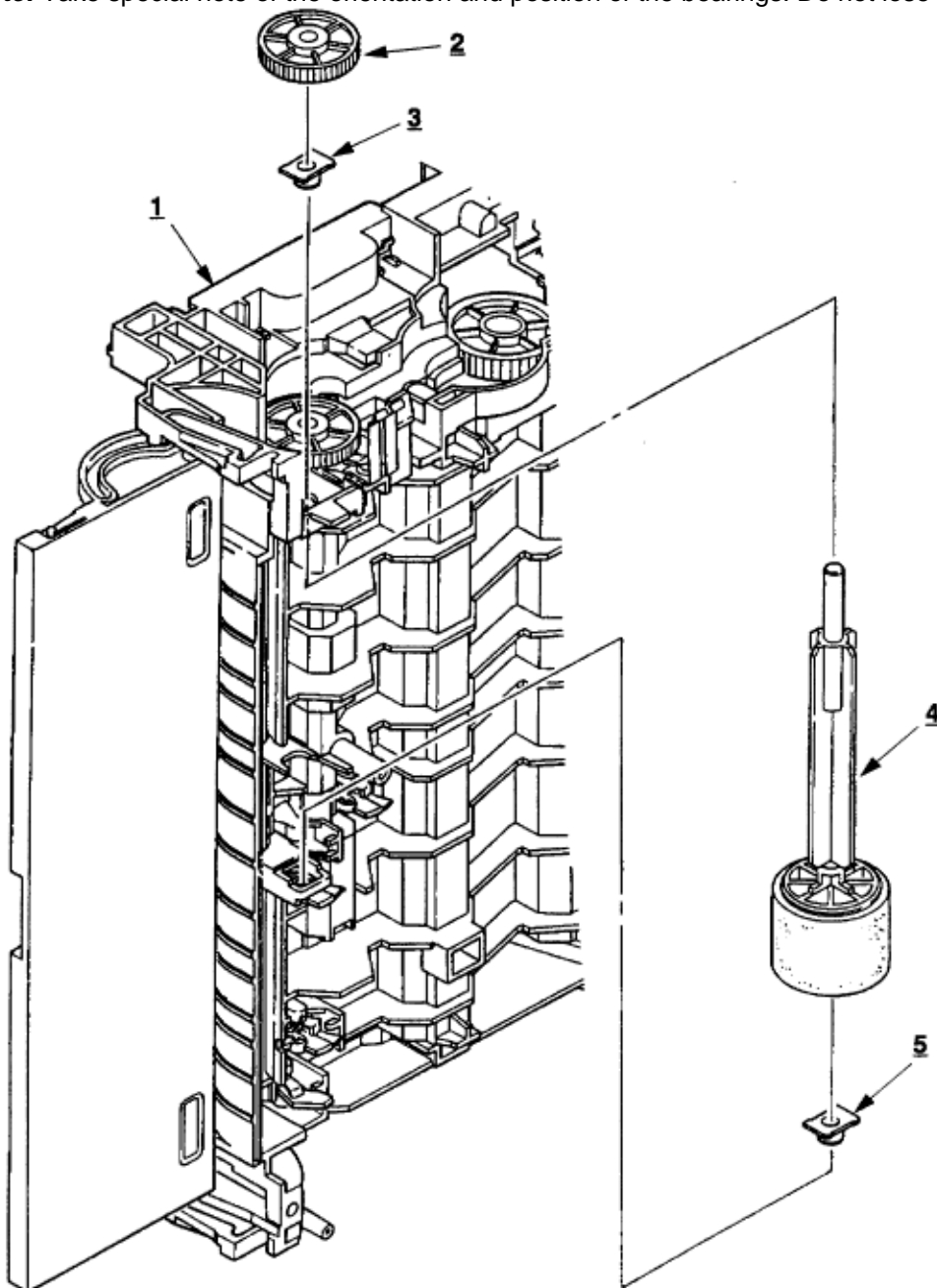


3.3.9 Hopping Roller Assy

3.3.9 Hopping Roller Assy

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Remove the motor assy (see 3.3.8).
- (4) With the lower base unit **1** standing on its side, remove the one-way clutch gear **2** and the bearing (A) **3**, then remove the hopping roller assy **4** and the bearing (B) **5**.

Note: Take special note of the orientation and position of the bearings. Do not lose the bearings.

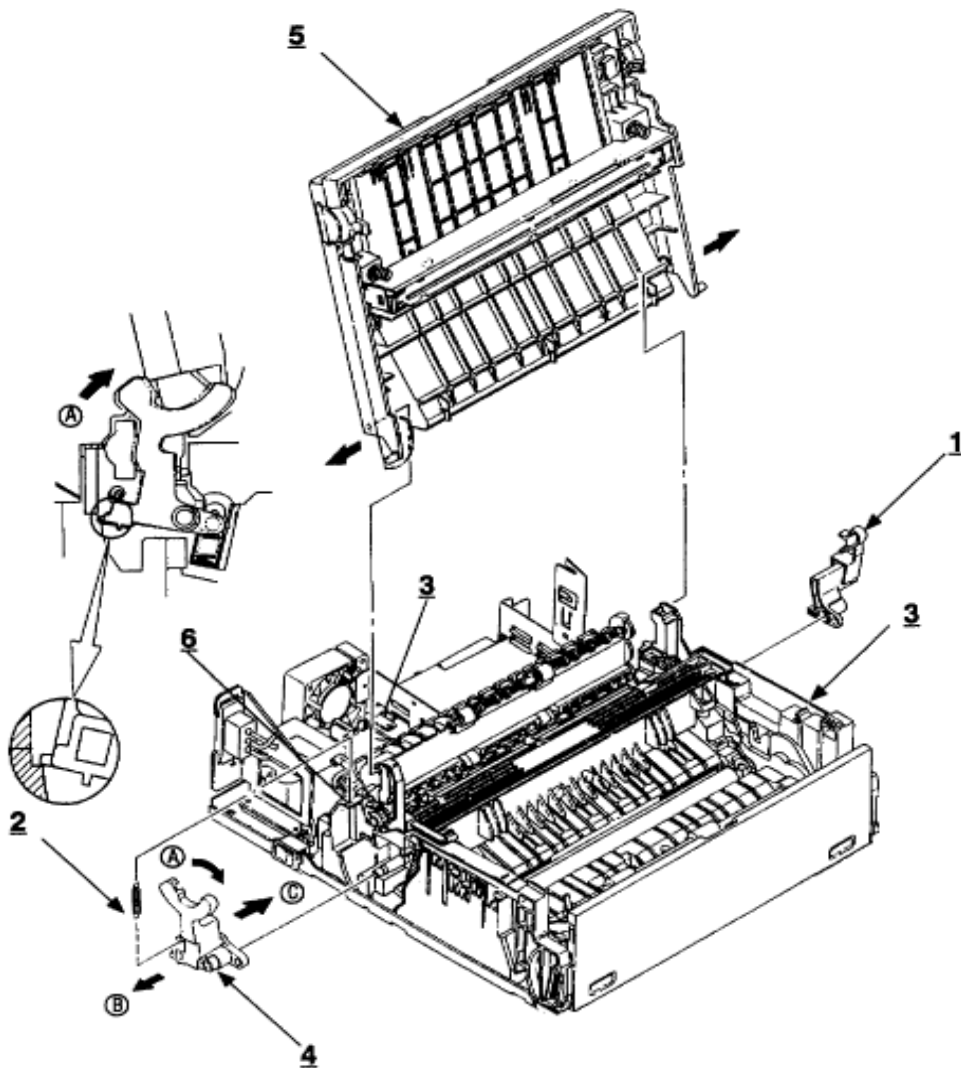


3.3.10 Stacker Cover Assy

3.3.10 Stacker Cover Assy

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the LED head cable from the connector on the Main Control PCB and remove the LED head grounding screw (see 3.3.7, steps 3 & 4).
- (3) Remove the reset lever R 1 . Remove the reset spring 2, then turn L 4 in direction A to release the tabs on the face-down stacker cover assy 5.
- (4) Release two pins of the lower base unit 3, then remove the stacker cover assy 5.

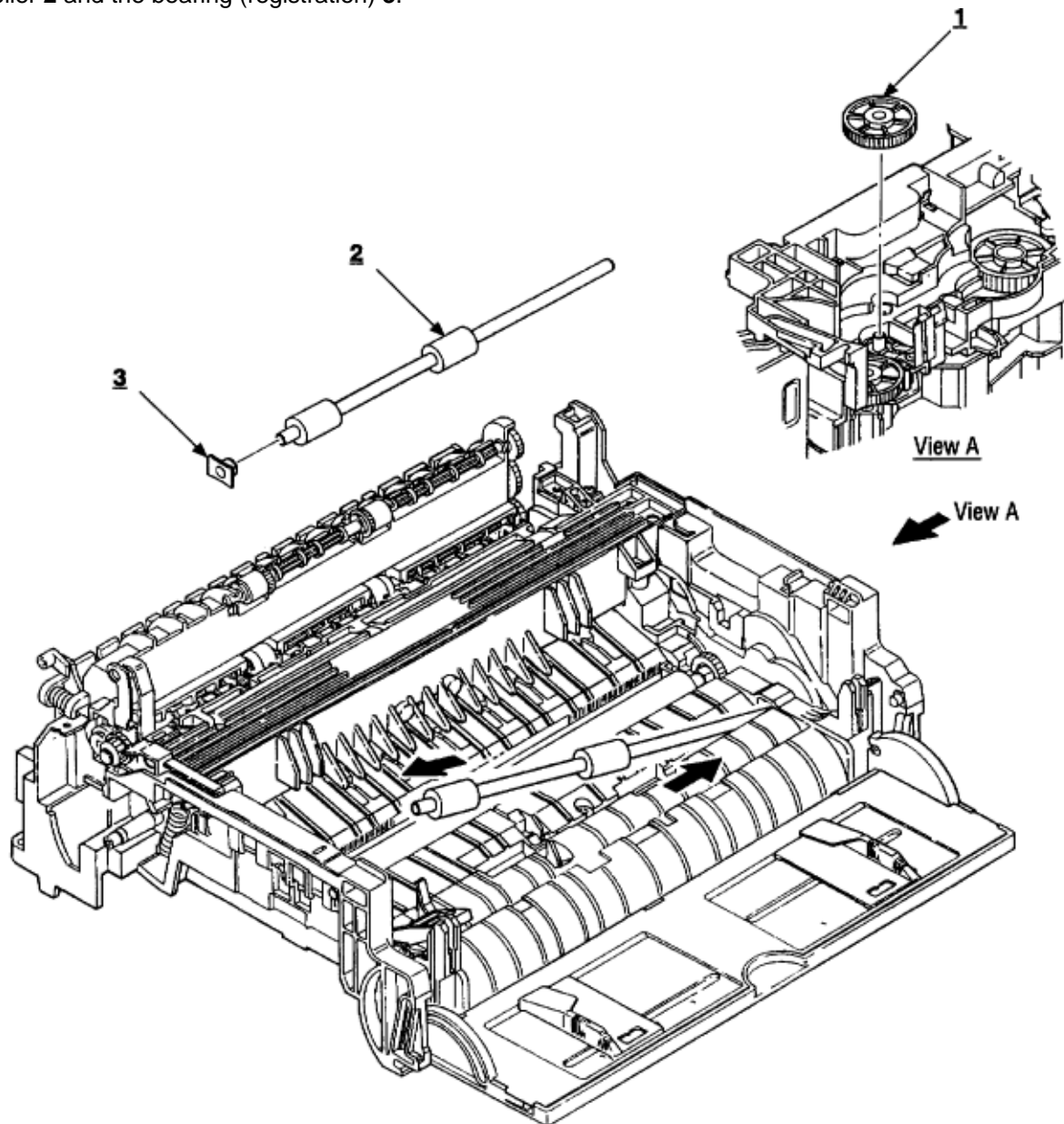
Note: Use care when removing the stacker assy, because the cover close damper 6 is not permanently attached.



3.3.11 Registration Roller

3.3.11 Registration Roller

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Remove the motor assy (see 3.3.8).
- (4) With the lower base unit standing on its side (view A), remove the one-way clutch gear 1.
- (5) Note the placement of the bearing on the left side of the registration roller. Press the registration roller 2 to the right side (in the direction of the arrow as shown) and lift up the left side. Remove the registration roller 2 and the bearing (registration) 3.



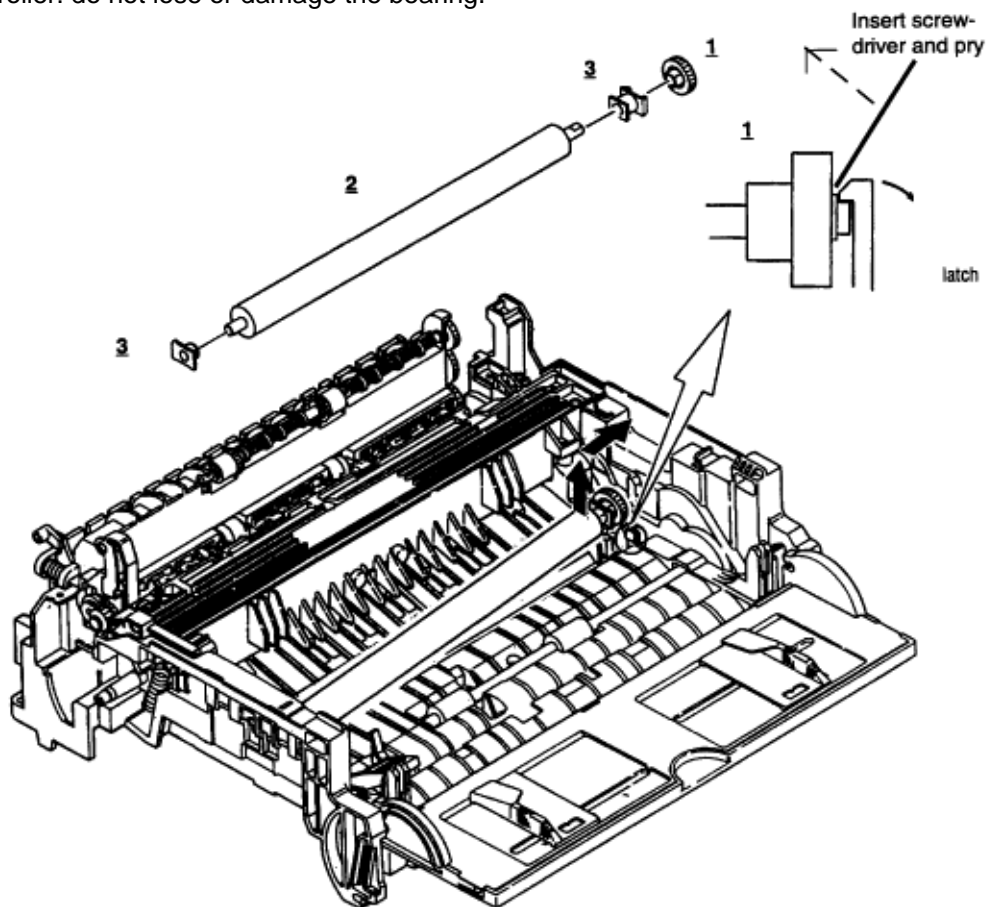
3.3.12 Transfer Roller

3.3.12 Transfer Roller

Special Note: Handling the transfer roller unnecessarily will cause poor print quality. *Do not* touch the surface of the roller.

- (1) With the power switch turned off, unplug the AC power cord from the outlet.
- (2) Open the stacker cover.
- (3) From the top of the machine, release TR gear 1 by unlocking the latch 4 of the main unit with a small flathead screwdriver (never apply an excessive force when unlocking the latch).
- (4) Lift the right side of the transfer roller 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 and right sides of the transfer roller 2 will release themselves).

Note: Use great care: the bearings are not permanently attached. **Note:** Use care when removing the roller: do not lose or damage the bearing.



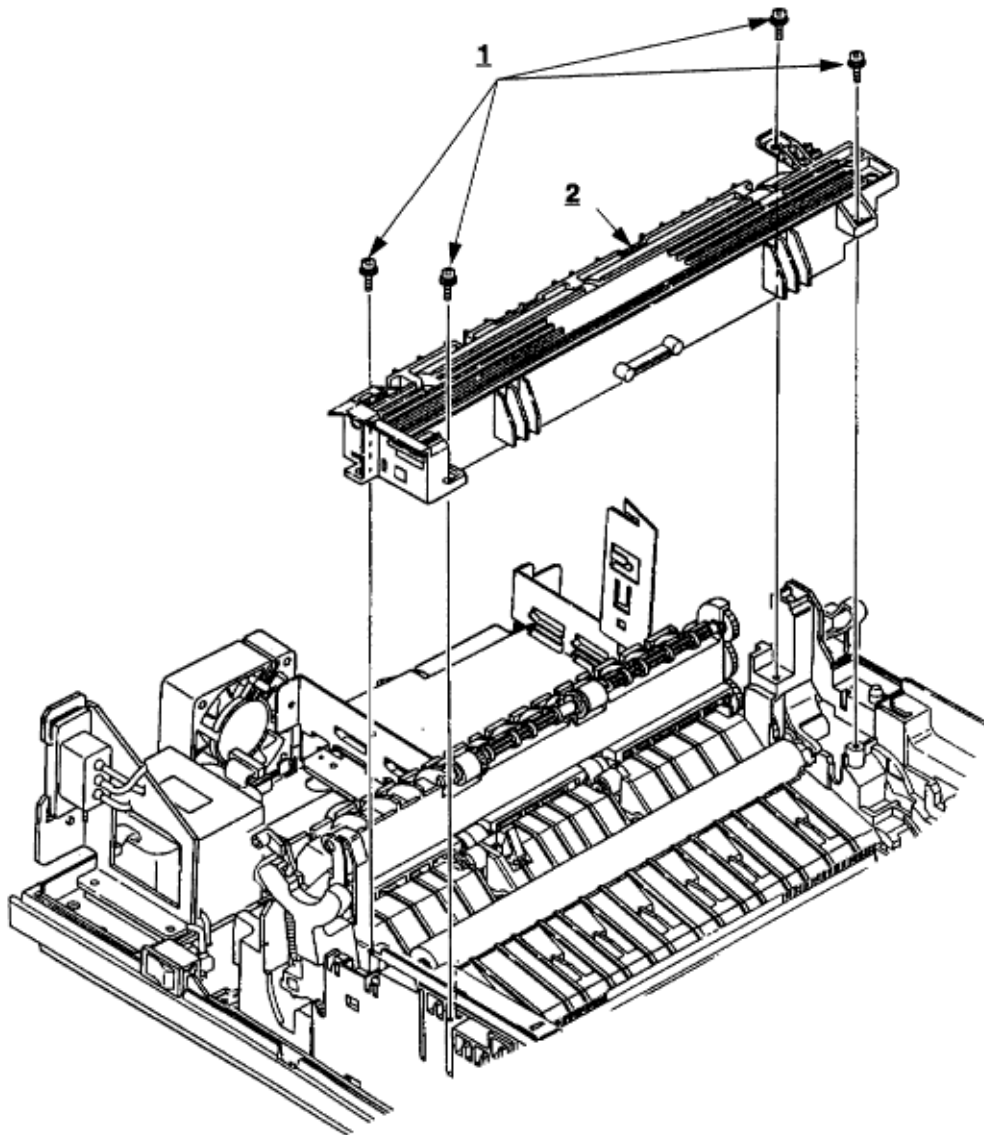
3.3.13 Fusing Unit Assy

3.3.13 Fusing Unit Assy

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the stacker cover assy (see 3.3.10).
- (3) Remove four screws 1 and remove the fusing unit 2.

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

Notes: • When installing or removing the fusing unit assy, tighten or loosen the screws while holding the fusing unit down with your hand. • When reinstalling screws 1, be sure to direct the screws into the pre-existing hole to avoid damaging the threads. • Do not apply excessive torque when tightening the screws 1; if these screws are stripped, the entire lower unit assembly must be replaced. • When reinstalling the fuser, insert the left side first, then lower the right side into place.

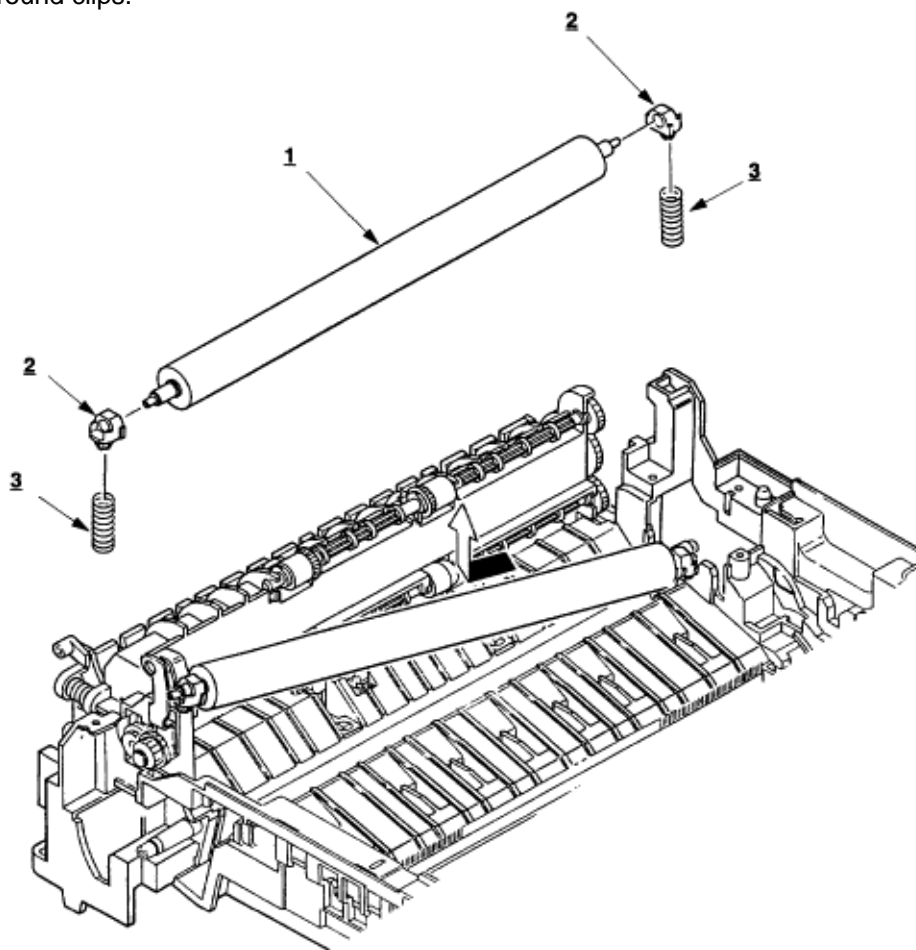


3.3.14 Fusing Pressure Roller

3.3.14 Fusing Pressure Roller

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the stacker cover assy (see 3.3.10).
- (3) Remove the lower base unit (see 3.3.7).
- (4) Remove the fusing unit assy (see 3.3.13).
- (5) Remove the motor assy (see 3.3.8).
- (6) Remove the reset lever R (see 3.3.10 for location). Press down on the fusing pressure roller to take pressure off of the reset lever R.
- (7) Lift the right side of the fusing pressure roller **1**, and pull it out to the right side (at this time, two bushings **2** and the bias springs **3** will release themselves).

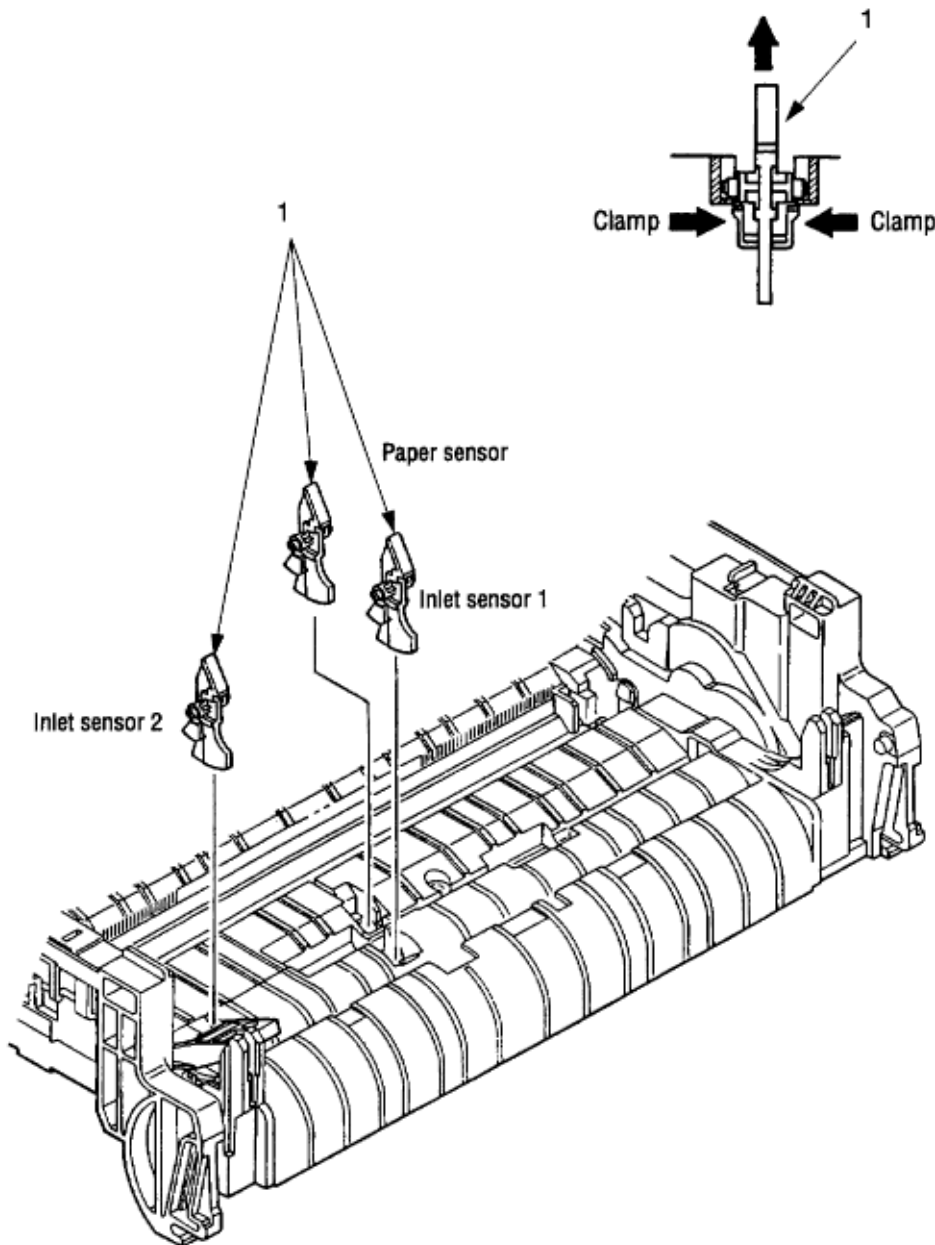
Note: • Do not bend or lose springs. • Note the orientation and position of the bearings, springs, and ground clips.



3.3.15 Sensor Plate (Inlet)

3.3.15 Sensor Plate (Inlet)

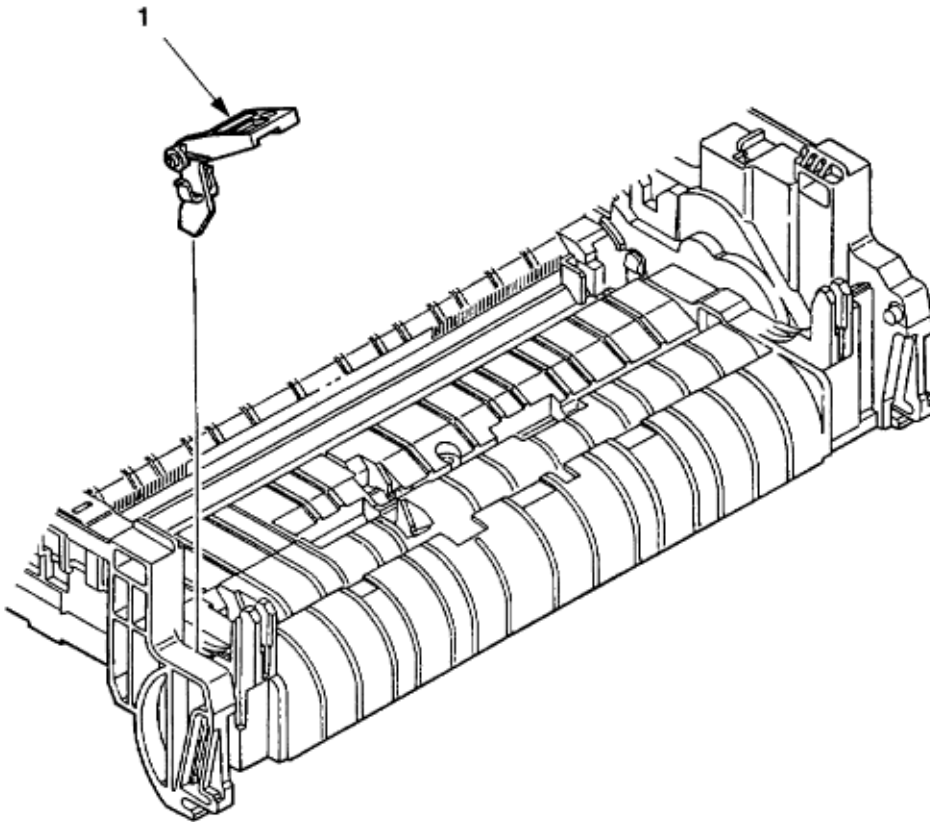
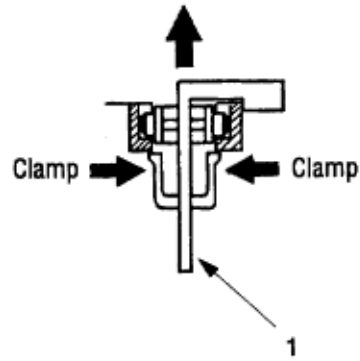
- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Press the clamps of three sensor plates (inlet) 1, and remove the sensor plates by pressing them upward from the bottom side.



3.3.16 Toner Sensor (Adhesion)

3.3.16 Toner Sensor (Adhesion)

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Press the clamp of the toner sensor 1, and remove the sensor by pushing it up from the bottom.

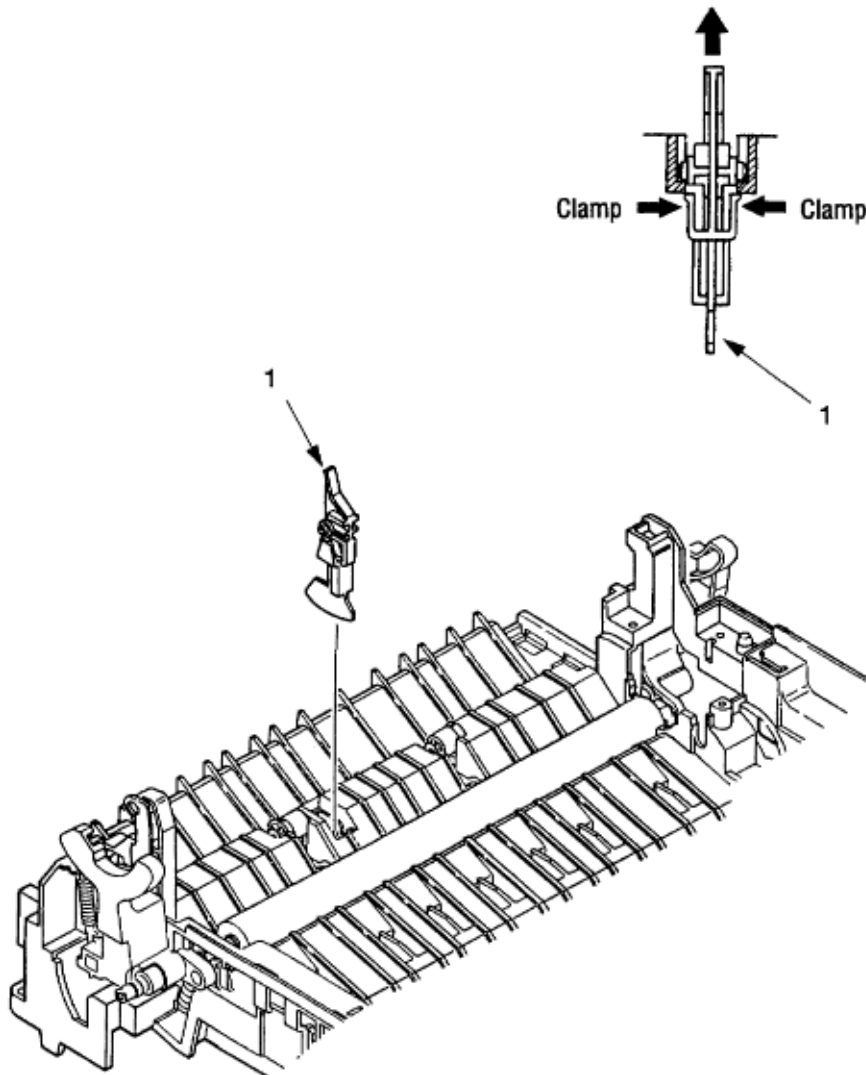


3.3.17 Sensor Plate (Outlet)

3.3.17 Sensor Plate (Outlet)

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the eject roller assy (see 3.3.4).
- (3) Remove the lower base unit (see 3.3.7).
- (4) Remove the fusing unit assy (see 3.3.13).
- (5) Press the clamp of the sensor plates (outlet) 1, and remove the sensor plate by pushing it up from the bottom.

Note: This is a two-part sensor. Use great care when handling/replacing.



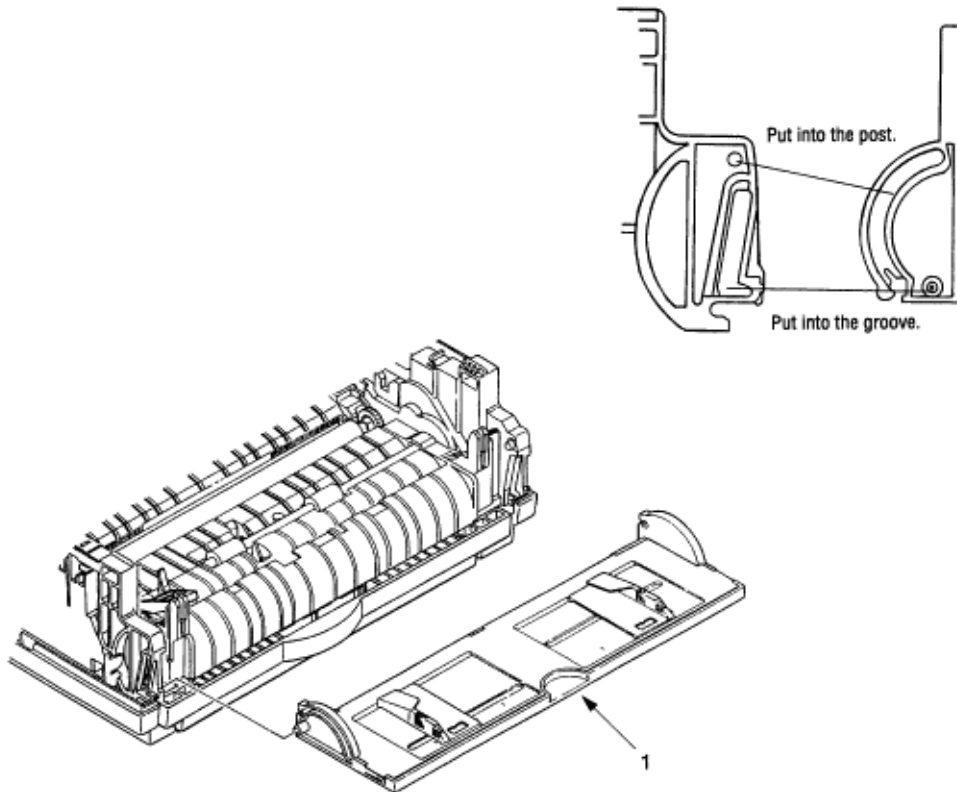
3.3.18 Manual Feed Guide Assy

3.3.18 Manual Feed Guide Assy

(1) Remove the upper cover (see 3.3.1).

(2) Open the manual feed guide assembly **1**, and release the engagement on both sides with the main unit by carefully bending the manual feed guide assy **1**.

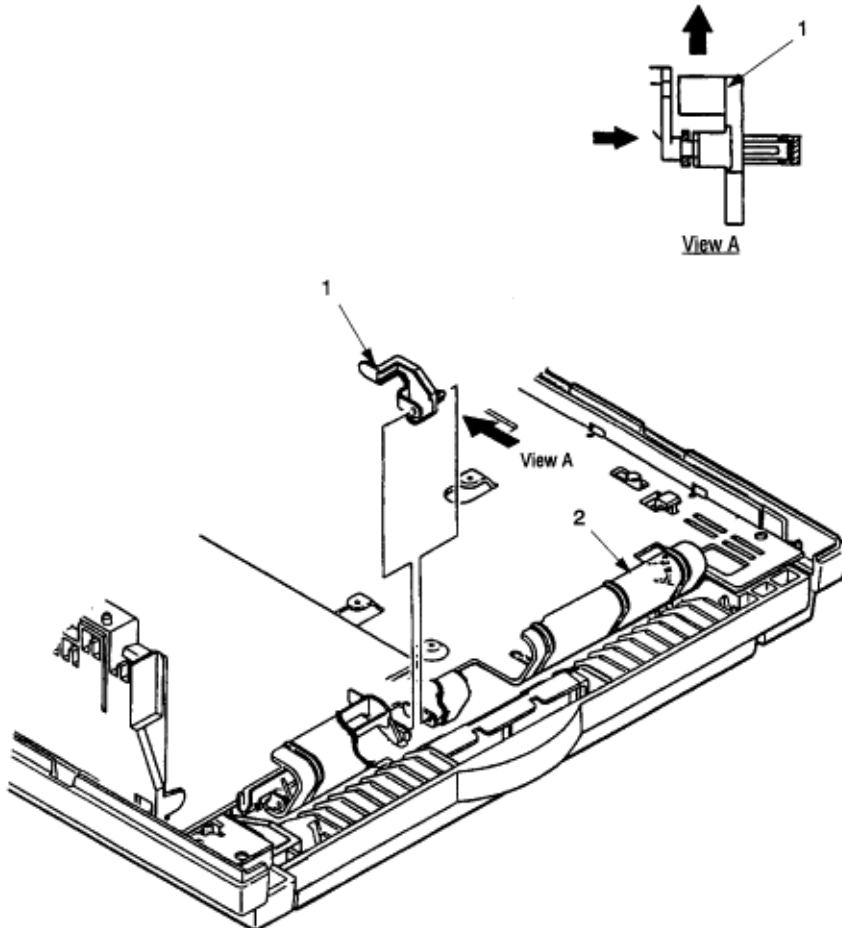
Note: When re-mounting, verify the proper the engagements as shown in the diagram.



3.3.19 Sensor Plate (Paper Supply)

3.3.19 Sensor Plate (Paper Supply)

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Press the clamp of the sensor plate (paper supply) 1, and remove it from the base plate 2.



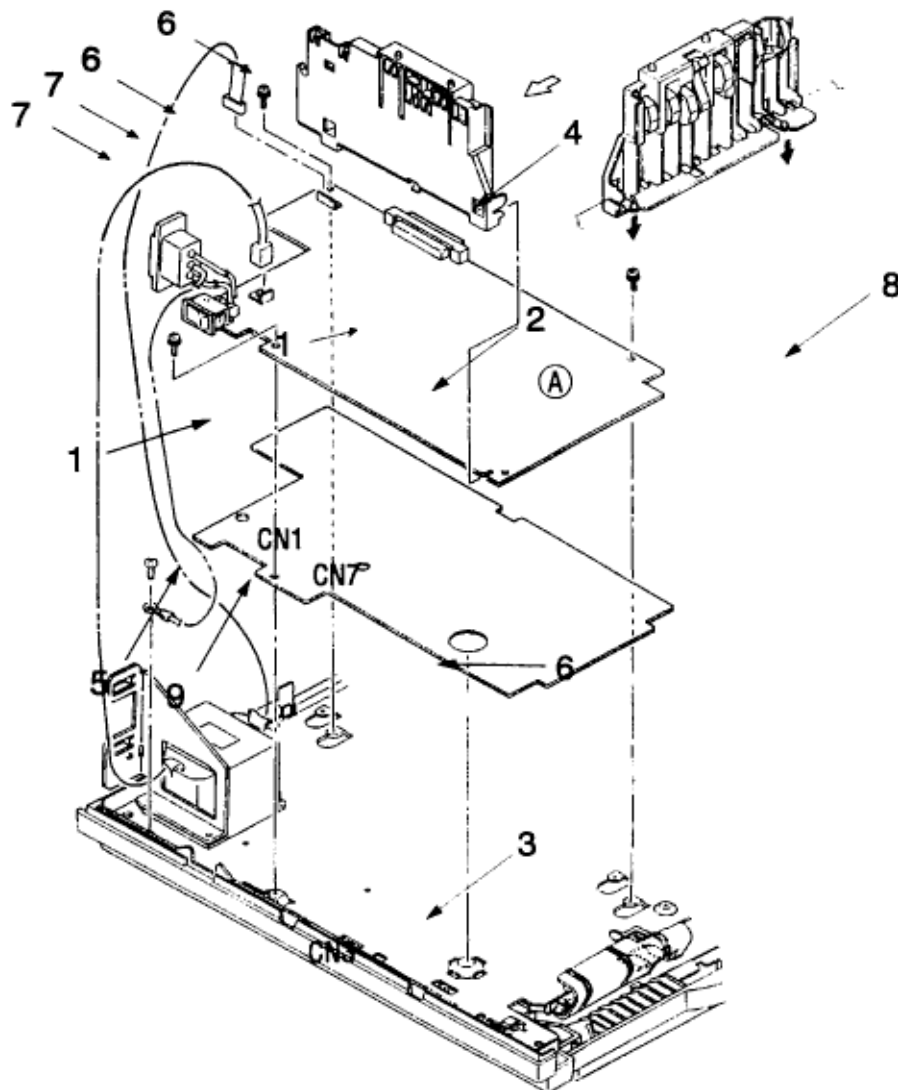
3.3.20 Main Control PCB

3.3.20 Main Control PCB

• The Main Control PCB is different for each model. OL600e : LQ5C-PCB OL610e and OL610e/PS : LQ6C-PCB

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Remove two screws 1.
- (4) Move the Main Control PCB 2 in the direction of arrow A to disconnect it from the power supply board 3.
- (5) Disconnect the LED head cable, the fan motor connector 5, the main motor connector CN2, and the registration motor connector CN3 from the Main Control PCB CN1. On the OL610e/ PS, disconnect the operator panel cable. Then remove the Main Control PCB 2 together with the PCB guide plate 4
- (6) Remove three screws 6 and two posts 7, and remove the PCB guide plate 4 from the Main Control PCB 2. Do not bend or lose ground plate 9.

Note: All user settings are lost when the main logic board is changed.

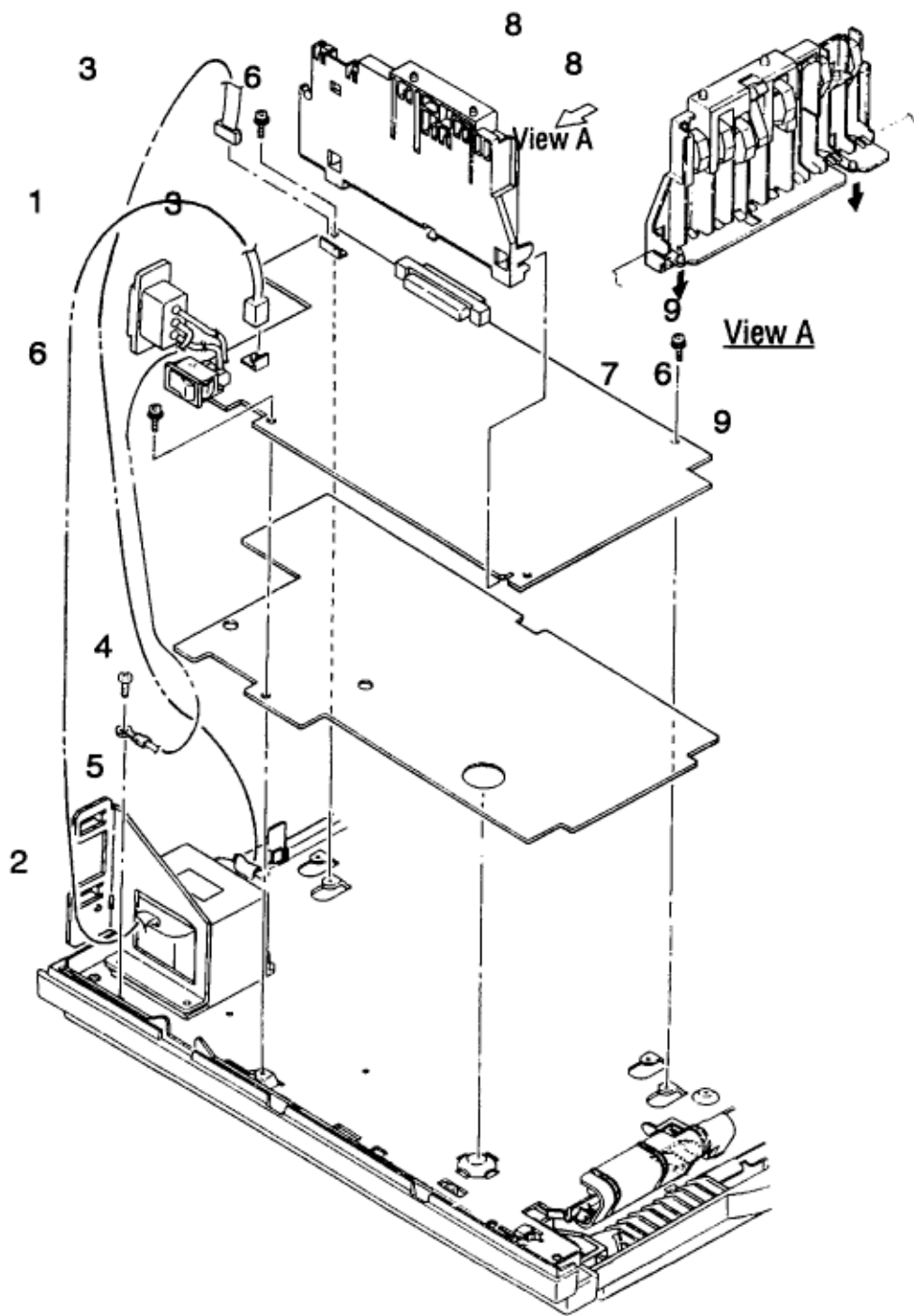


%3.3.21 Power Supply Board and Contact Assy

3.3.21 Power Supply Board and Contact Assy

- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.7).
- (3) Remove the Main Control PCB (see 3.3.20).
- (4) Remove the AC inlet **1** from the inlet holder **2**, and remove the connector **3** of the transformer from CN1.
- (5) Remove the screw **4**, and remove the ground cable **5**.
- (6) Remove three screws **6**, and remove the power supply board **7** and contact assembly **8** at the same time.
- (7) Unlock two claws **9**, and remove the contact assembly **8** from the power supply board **7**.

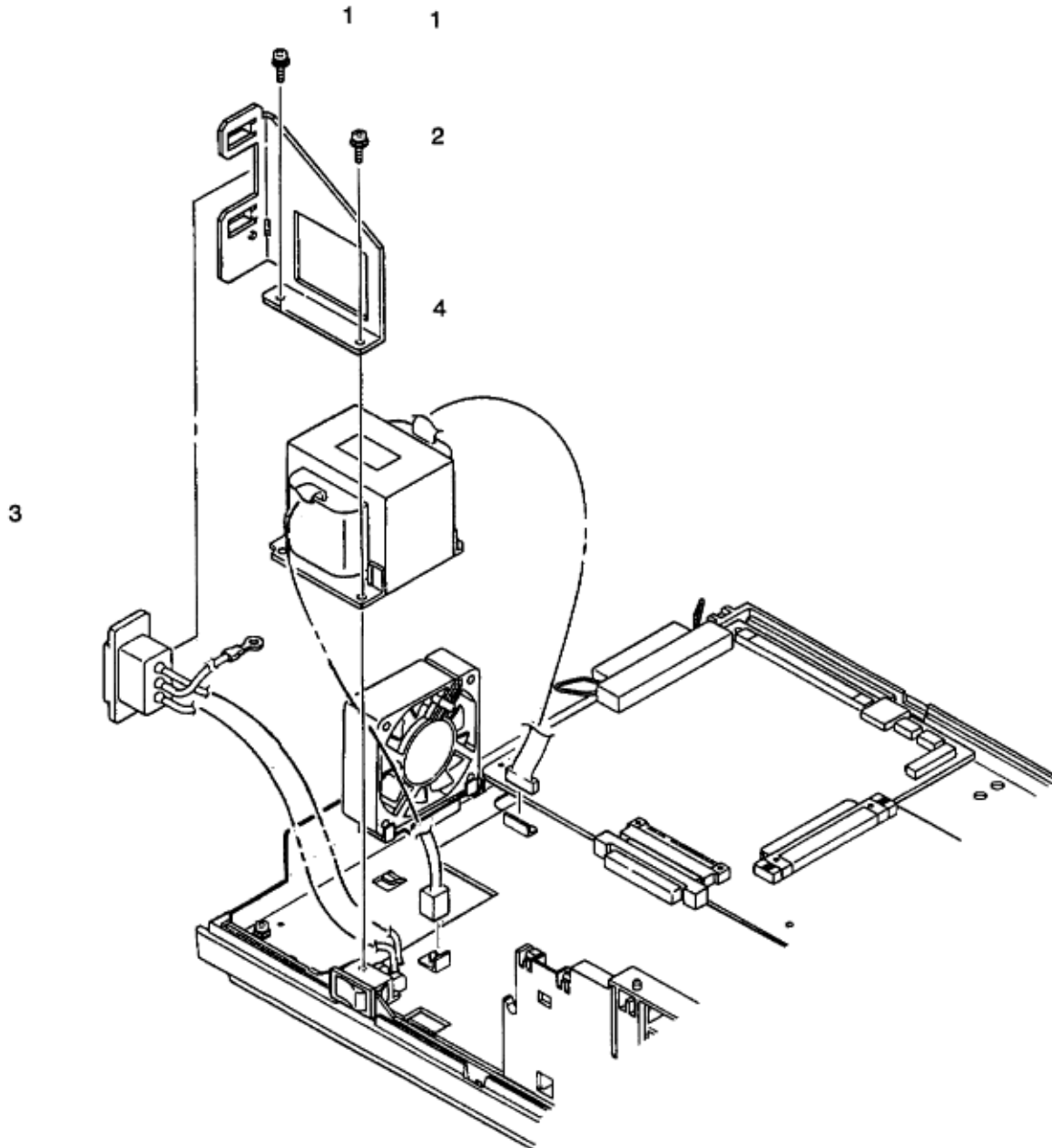
Notes: • When mounting the lower base unit, be careful around the paper end sensor. • Do not apply excessive force to the power switch during reassembly. • When reinstalling the power supply/sensor board onto the base plate, be careful not to bend the mounting tabs **10** on the base plate.



3.3.22 Transformer

3.3.22 Transformer

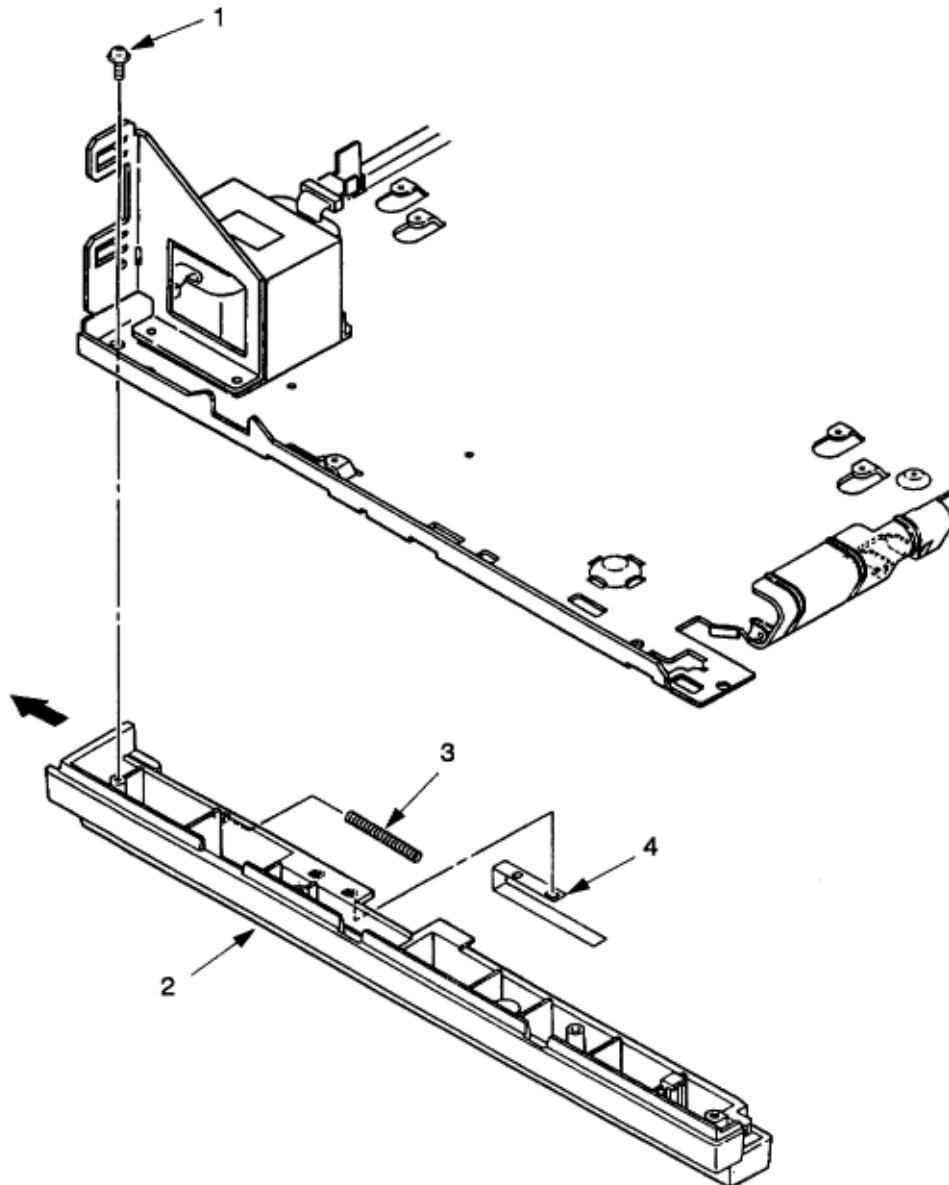
- (1) Remove the upper cover (see 3.3.1).
- (2) Remove the lower base unit (see 3.3.8).
- (3) Remove the connectors (CN1 and CN2).
- (4) Remove the inlet 3 from the inlet holder 2.
- (5) Remove two screws 1, and remove the inlet holder 2 and the transformer 4.



3.3.23 Cassette Guide L

3.3.23 Cassette Guide L

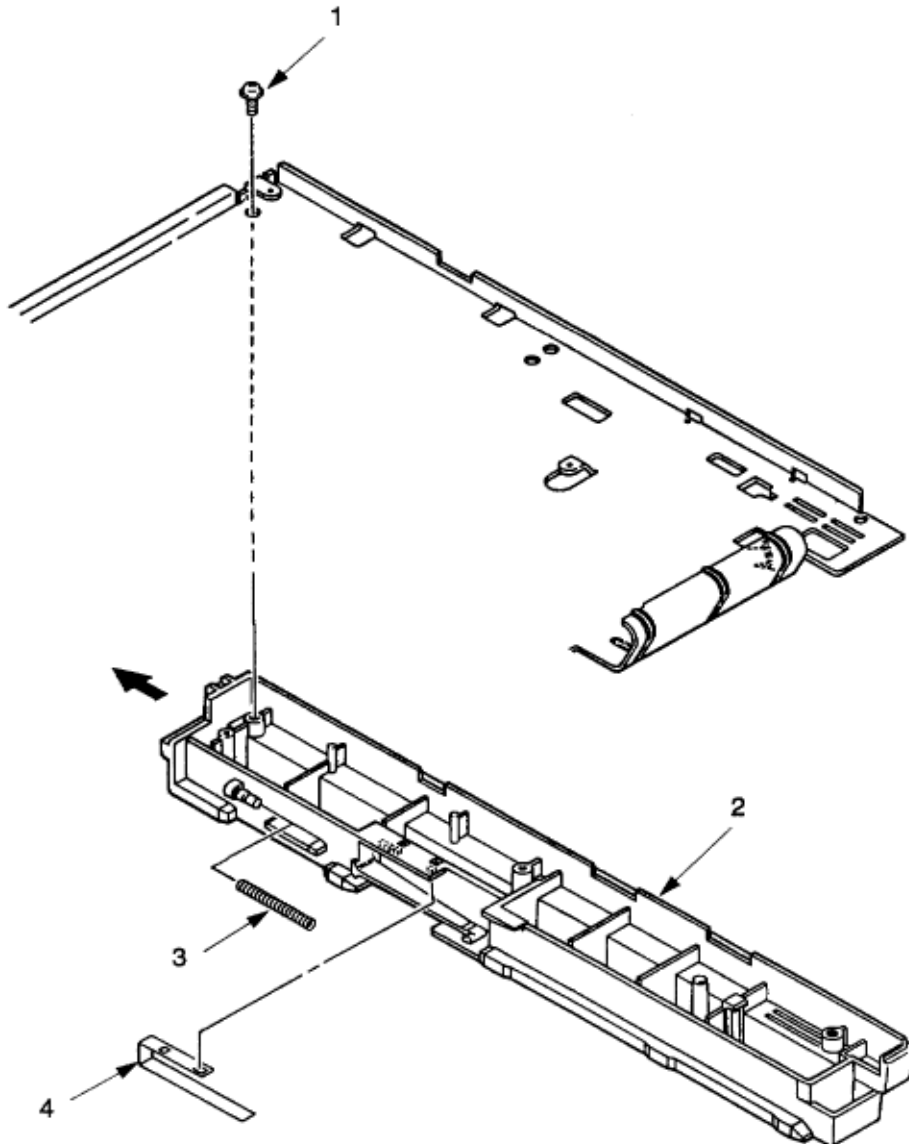
- (1) Remove the paper cassette.
- (2) Remove the upper cover (see 3.3.1).
- (3) Remove the lower base unit (see 3.3.8).
- (4) Remove the Main Control PCB (see 3.3.21).
- (5) Remove the power supply board (see 3.3.22).
- (6) Remove the screw **1**, and remove the cassette guide L **2** by shifting it in the direction of the arrow.
- (7) Detach the eject spring **3**, and remove the support spring **4** from the cassette guide L **2**.



3.3.24 Cassette Guide R

3.3.24 Cassette Guide R

- (1) Remove the paper cassette.
- (2) Remove the upper cover (see 3.3.1).
- (3) Remove the lower base unit (see 3.3.8).
- (4) Remove the Main Control PCB (see 3.3.21).
- (5) Remove the screw 1, and remove the cassette guide R 2 by shifting it in the direction of the arrow.
- (6) Pull the eject spring 3 out of the cassette guide R 2, then remove the support spring 4.



Chapter 4

%4.1 Maintenance Menus and Functions

4. ADJUSTMENT

This chapter describes the adjustments necessary when replacing a part. The adjustments are made by changing the parameter value set in EEPROM on the Main Control PCB. The parameter can be set from the operator panel (OL610e/PS only) or from the DOS Operator Panel software (OL600e, OL610e only) .

4.1 Maintenance Menus and Functions

4.1.1 User Maintenance MenuOL610e/PS

End-users can use this mode. To enter the user maintenance menu, turn the printer on while holding down the MENU button.

Functions:

- Hex dump • Drum counter reset
- Menu reset • Operator panel menu disable
- X-adjust / Y-adjust

Detailed descriptions of these functions are provided in Appendix C, Software Diagnostics & Adjustments.

4.1.2 System Maintenance MenuOL610e/PS

Note: Only service personnel should use this mode; it should not be released to end-users.

To enter the system maintenance menu, turn the printer on while holding down the RECOVER key.

Functions:

- Page count display • Loop test
- Page count printing enable/disable • EEPROM reset
- Rolling ASCII continues printing

Detailed descriptions of these functions are provided in Appendix C, Software Diagnostics & Adjustments.

4.1.3 Engine Maintenance MenuOL610e/PS

Note: Only service personnel should use this mode; it should not be released to end-users.

To enter the engine maintenance menu, turn the printer on while holding down the FORM FEED and ENTER buttons.

Functions:

- Head drive time setting • Drum count total display
- Printing start position setting • Engine reset
- Drum count display • Factory adjustment

Note: "Printing start position setting" is for shipping. Do not change its default value.

Detailed descriptions of these functions are provided in Appendix C, Software Diagnostics & Adjustments.

4.1.4. DOS Operator PanelOL600e, OL610e

(1) Settings Tab

At the DOS Prompt, enter OL600, then click on Settings.

Functions:

- Reset EEPROM, Menu, Drum count
- Print position adjust

Detailed descriptions of these functions are provided in Appendix C, Software Diagnostics & Adjustments.

(2) Service Tab

Note: Only service personnel should use this mode; it should not be released to end-users.

Functions:

- Head Drive Time • Revision information
- Climate • Count information
- Market Place At the DOS Prompt, enter OL600 \S , then click on Service.

Detailed descriptions of these functions are provided in Appendix C, Software Diagnostics & Adjustments.

4.2 Adjustment When Replacing a Part

4.2 Adjustment When Replacing a Part

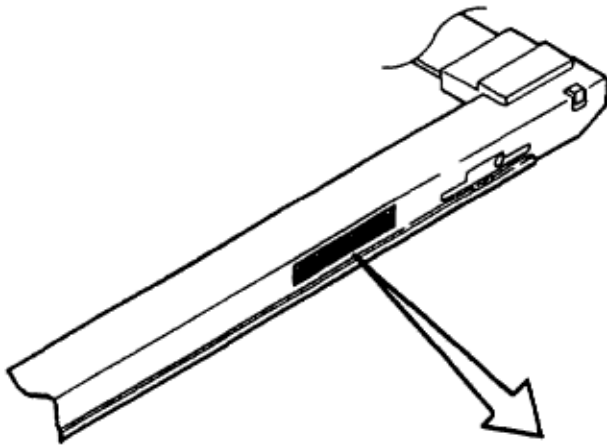
Adjustment is necessary when replacing any one of the following parts.

Part Replaced	Adjustment
LED Head	Set the LED head drive time.
Image Drum Cartridge	Reset the image drum counter (refer to User's manual).

4.2.1 Setting of LED Head Drive Time

Note: When the luminous intensity marking of the replacement LED head (new part) is same as that of the removed LED head (old part), do not set the LED head drive time.

- Luminous Intensity Marking Label



Last 3 digits represent the LED head marking number.

Luminous intensity marking
100
313

- Setting of LED Head Drive Time

Drive time of the LED head is set by setting the parameter of drive time of EEPROM according to the luminous intensity marking on the LED head.

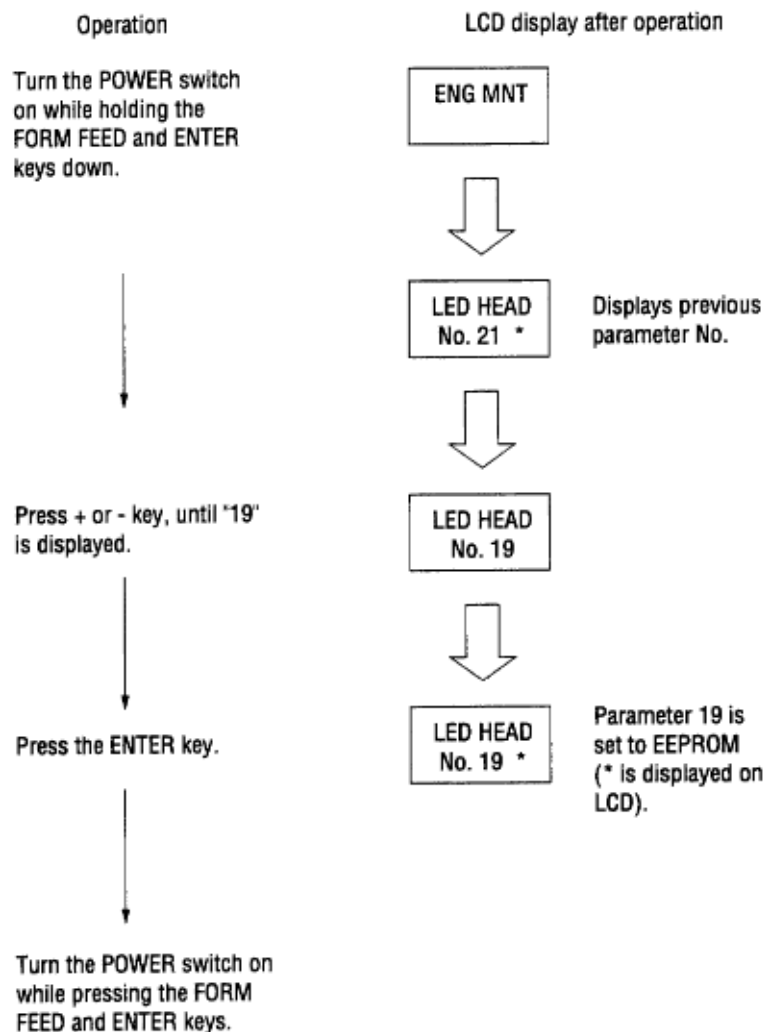
a. Table of luminous intensity marking and drive time parameter

Luminosity intensity marking on LED head	Drive Time parameter	Luminosity intensity marking on LED head	Drive time parameter

056-062	34	132-142	23
063-065	33	143-154	22
066-069	32	155-167	21
070-076	31	168-180	20
077-082	30	181-195	19
083-088	29	196-211	18
089-096	28	212-228	17
097-104	27	229-247	16
105-112	26	248-268	15
113-121	25	169-290	14
122-131	24	291-313	13

b. Setting

Example: Method for setting the parameter to 19 (for case where the previous parameter setting was 21). **OL610e/PS**



OL600e, OL610e

1. At the DOS prompt, enter OL600 /S, then click on Service tab. 2. On the Head Drive Time listbox, click the up arrow until 19 shows in the box. 3. Click OK.

Chapter 5

5.1 Periodical Replacement Parts

5. PERIODICAL MAINTENANCE

5.1 Periodical Replacement Parts

The parts are to be replaced periodically as specified below:

Part name	Condition for replacement	Cleaning	Remarks
• Toner cartridge	About 2,000 sheets of paper have been printed.	• LED head.	Consumables
• Image drum cartridge	About 20,000 sheets of paper have been printed.	• LED head.	Consumables

5.2 Cleaning

5.2 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 handy cleaner (vacuum) to clean inside the printer.

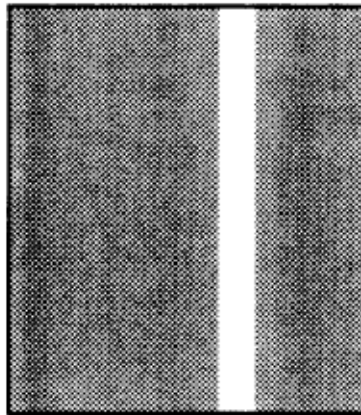
Note: Do not touch the image drum, LED lens array, or LED head connector block. Do not use solvents.

5.2.1 Cleaning the LED Lens Array

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

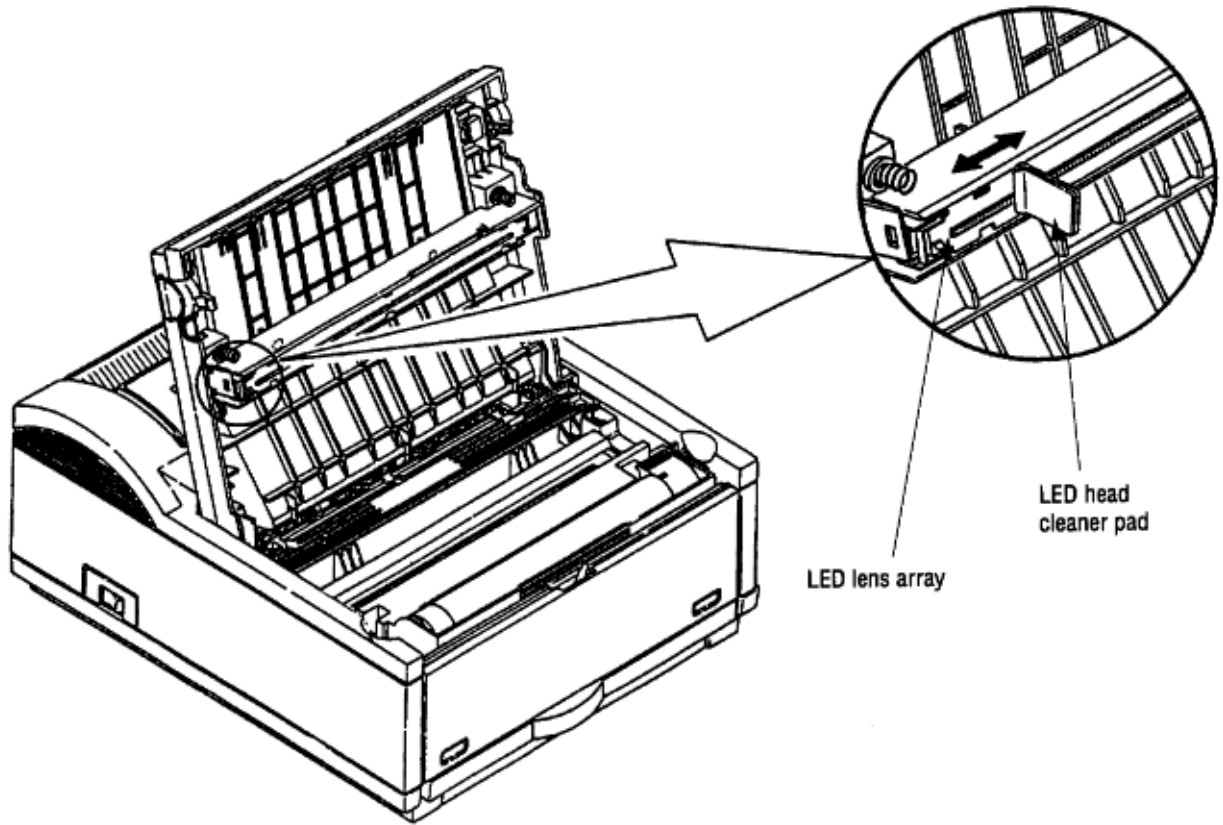
Note: The LED lens array must be cleaned with an LED head cleaner, provided with each toner replacement kit.

**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.

5.3 Lubrication

5.3 Lubrication

5.3.1 General Information

Lubricate once a year or as needed. Use Lithium Grease. Do not over-lubricate. Do *not* allow lubricant to contact the surface of any rollers or paper guides. Lubricate the items listed in the table below.

Item	Disassembly Procedure
Gear on the shaft of the main pulse motor	Section 3.3.5
Gear on the shaft of the registration motor	Section 3.3.6
Teeth of the reduction gear	Section 3.3.8
Inside of bearings, hopping roller assy.	Section 3.3.9
Hopping roller shaft	Section 3.3.9
Inside of the pivot points of the reset levers	Section 3.3.10
Gear on the damper stacker arm	Section 3.3.10
Stacker cover damper gear	Section 3.3.10
Transfer roller gear	Section 3.3.12
Inside of bearings of the transfer roller	Section 3.3.12
Ends of the back-up roller shaft	Section 3.3.14

Chapter 6

6 Troubleshooting - 6.1 Troubleshooting Tips

6. TROUBLESHOOTING PROCEDURES

Note: Be sure to use proper anti-static practices when handling electrostatically sensitive components.

6.1 Troubleshooting Tips

- (1) Check the troubleshooting section in the users manual and soft manual.
 - (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.
-

%6.2 Points to Check before Correcting Image Problems

6.2 Points to Check before Correcting Image Problems

- (1) Is the printer being used in proper ambient conditions?
 - (2) Are supplies (toner) and routine replacement parts (image drum cartridge) being replaced properly?
 - (3) Does the paper being used meet specifications?
 - (4) Is the image drum cartridge installed properly?
-

%6.3 Tips for Correcting Image Problems

6.3 Tips for Correcting Image Problems

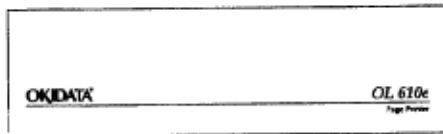
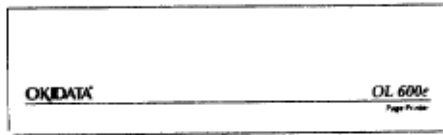
- (1) Do not touch, or bring foreign matter into contact with the surface of the image drum.
 - (2) Do not expose the image drum to direct sunlight.
 - (3) Keep hands away from the fuser unit as it heats up during operation.
 - (4) Do not expose the image drum to light for longer than 5 minutes at room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

%6.4 Preparation for Troubleshooting

6.4 Preparation for Troubleshooting

(1) Operator panel display

The failure status of the printer is displayed on the software-based Status Monitor (OL600e/ 610e) or on the liquid crystal display (LCD) of the operator panel (OL610e/PS). Take proper corrective action as directed by messages.



Status message display

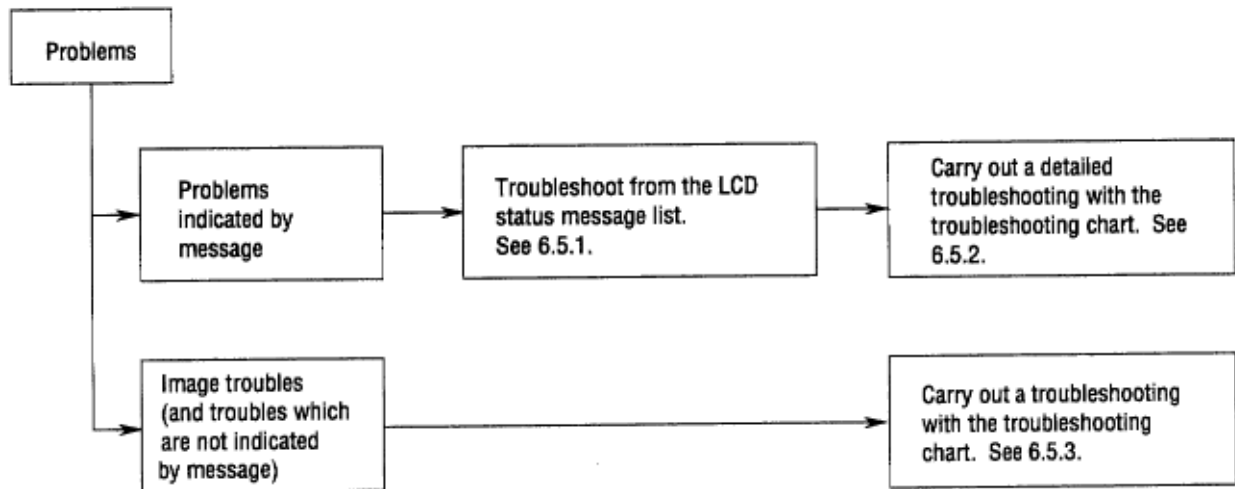
Ready LED display



6.5 Troubleshooting Flow

6.5 Troubleshooting Flow

Should there be a problem with the printer, troubleshoot according to the following procedure flow:



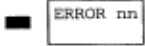
%6.5.1 Status Message/Trouble List

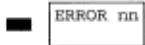
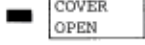
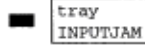
6.5.1 Status Message/Trouble List

Table 6-1 lists status messages and remedies. The messages are listed as they appear on the LCD display of the OL610e/PS. For the OL600e and OL610e, similar messages appear in the Status Monitor window.

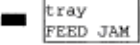
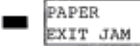
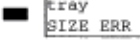
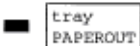
Category	LCD status message	Trouble or status	Remedy
Controller errors		An error occurred in the controller. n = Exception Code aaaaaaa = Error Address	<ul style="list-style-type: none"> Normal operation cannot be ensured. Turn the power off, then back on to restart. If normal operation is not recovered by this restart procedure, replace the Main Control PCB.
		An error occurred in the controller.	<ul style="list-style-type: none"> Turn the power off, then back on to recover from the error. If the normal operation is not recovered by this restart procedure, use the following remedial actions.



Category	LCD status message	Trouble or status		Remedy
Controller errors		Code (nn)	Error	Remedy
		0n	A fault occurred in the controller. n = Exception Code	Replace the Main Control PCB.
		10	An error was detected by program ROM check.	Replace the Main Control PCB.
		20	An error was detected by font ROM check.	Replace the Main Control PCB.
		30	An error was detected by resident RAM check.	Replace the Main Control PCB.
		40	An error was detected by EEPROM check.	<ul style="list-style-type: none"> Replace the EEPROM or Main Control PCB. EEPROM
		50	An error was detected by optional software ROM check.	Check the optional software ROM board for proper connection or replace it.


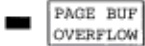
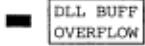
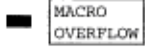

Category	LCD status message	Trouble or status		Remedy
Controller errors		Code (nn)	Error	Remedy
		60	An error was detected by optional RAM check.	<ul style="list-style-type: none"> – Check the optional RAM board for proper connection. – Check the mounting position of short plugs and additional RAM chips (see 7.4). – Replace the option RAM board.
		70	A fault occurred in the Fan motor.	<ul style="list-style-type: none"> – Check the fan motor for proper connection and for any presence of foreign matter in the fan (see 6.5.2-5). – Replace the fan or the Main Control PCB.
		71	A fault occurred in the fuser (timeout error etc.).	See 6.5.2 - 4 .
		72	A fault occurred in the fuser (thermistor open error).	See 6.5.2 - 4 .
		73	A fault occurred in the fuser (thermistor short error).	See 6.5.2 - 4 .
		74	Power supply board SSIO I/F error	
		80	I/F timeout occurred between the Main Control PCB and the operator panel.	<ul style="list-style-type: none"> – Check the operator panel for proper connection. – Replace the flexible cable, operator panel or Main Control PCB.

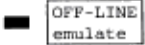
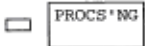
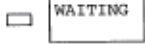
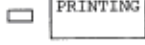
Category	LCD status message	Trouble or status		Remedy
Controller errors		Code (nn)	Error	Remedy
		81	I/F timeout occurred between the Main Control PCB and the optional tray (2nd tray, envelope feeder, etc.).	Check the optional tray for proper connection.
		90	A watchdog timer timeout occurred.	<ul style="list-style-type: none"> – Turn the power off, then back on to recover from the error. – Replace the Main Control PCB.
Cover open		The upper cover was opened.		<ul style="list-style-type: none"> – Close the cover to release the error display. – If the display does not change after this procedure, replace the power supply board.
Jam errors		A jam occurred during paper hopping from the tray being displayed . tray: TRAY 1, TRAY 2, FEEDER		<ul style="list-style-type: none"> – Check the paper in the cassette. Open and then close the cover. When the cover is closed, recovery printing is carried out and the error display is released. – If this error occurs frequently, see 6.5.2., 2-1.

%Status Message/Trouble List - Continued

Category	LCD status message	Trouble or status	Remedy
Jam errors		<p>A jam occurred during paper feeding after completion of paper hopping from the tray being displayed.</p> <p>tray: TRAY 1, TRAY 2, FEEDER</p>	<ul style="list-style-type: none"> – Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is carried out and the error display is released. – If this error occurs frequently, see 6.5.2, 2-2.
		<p>Jam occurred during paper ejecting.</p>	<ul style="list-style-type: none"> – Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is carried out and the error display is released. – If this error occurs frequently, see 6.5.2, 2-3.
Paper size error		<p>Paper of improper size is being fed from the tray being displayed.</p> <p>tray: TRAY 1, TRAY 2, FEEDER</p>	<ul style="list-style-type: none"> – Check the paper in the tray or check to see if more than one sheet of paper were being fed simultaneously. – Set the designated paper in the tray. – Open the cover, then close it to carry out recovery printing and release the error display. – If this error occurs frequently, see 6.5.2, 3.
Tray paper out		<p>The tray being displayed has run out of paper.</p> <p>tray: TRAY 1, TRAY 2, FEEDER</p>	<p>Load paper in the tray.</p>

Category	LCD status message	Trouble or status	Remedy
Size error		<p>Loading of paper indicated by the second line message to the first line's tray is requested.</p> <p>tray: TRAY 1, TRAY 2, FEEDER</p> <p>#: LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, FREE SIZE</p>	<p>Load the requested paper in the tray.</p>
		<p>Manual loading of paper indicated by the second line message is requested. The paper size one of the followings:</p> <p>#: LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, FREE SIZE, COM-10, MONARCH, DL ENV, C5 ENV</p>	<p>Load the requested paper in the manual tray.</p>

Category	LCD status message	Trouble or status	Remedy
Buffer overflow	 (for OL610e/PS, in HP 4 mode)	The receive buffer is overflowing.	<ul style="list-style-type: none"> Press the operator panel RECOVER key to release the error display. Change the setting of the host or printer so the host can detect the busy status of the printer. Resend the data from the host to the printer. Replace the interface cable or control board.
	 (for OL610e/PS, in HP 4 mode)	The page buffer is overflowing because it received too much data for printing on the page.	<ul style="list-style-type: none"> Press the operator panel RECOVER key to release the error display. Install additional optional RAM board or reduce the print data.
	 (for OL610e/PS, in HP 4 mode)	The DLL buffer is overflowing.	<ul style="list-style-type: none"> Press the operator panel RECOVER key to release the error display. Install additional optional RAM board or reduce the DLL data.
	 (for OL610e/PS, in HP 4 mode)	Macro buffer is overflowing.	<ul style="list-style-type: none"> Press the operator panel RECOVER key to release the error display. Install additional optional RAM board or reduce the macros.
		The printer overrun because the print data is too complicated to be printed.	<ul style="list-style-type: none"> Press the operator panel RECOVER key to release the error display. Simplify page data formatting.

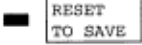



Category	LCD status message	Trouble or status	Remedy
Daily status		The printer is in the off-line mode. The second line indicates the emulation. emulate: HP4, AdobePS	Normal operation.
	 (OL610e/PS only)	Post Script mode only. The printer is processing data	
	 (OL610e/PS only)	Post Script mode only. The printer is in the middle of a job and waiting for data to be processed.	
		The printer is printing a page.	


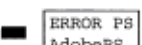
%Status Message/Trouble List - Continued

Category	LCD status message	Trouble or status	Remedy
Daily status	<input type="checkbox"/> DATA HP4 (for OL610e/PS, in HP 4 mode)	<p>The printer is processing data in on-line mode.</p> <p>Ready ON: The data that is not printed remains in the buffer.</p> <p>Ready flashing: The printer is receiving data.</p>	Normal operation.
	<input type="checkbox"/> PRINT FONTS	All fonts of the printer are being printed during self-test.	
	<input type="checkbox"/> PRINT MENU	<p>The current menu setting is being printed.</p> <p>Ready ON: Executed by command entry.</p> <p>Ready flashing: Executed by key operation.</p>	

Category	LCD status message	Trouble or status	Remedy
Daily status	<input type="checkbox"/> PRINT DEMO	The demo page is being printed.	Normal operation.
	<input type="checkbox"/> CPYrnn/mnn (for OL610e/PS, in HP 4 mode)	<p>When the number of copies being printed is two or more, the number of copies being printed is displayed.</p> <p>This message is displayed together with another message on the first line.</p>	
	<input type="checkbox"/> PR BUSY (OL610e/PS only)	<p>Post Script mode only</p> <p>This message is displayed when ON-LINE key is pressed when the printer is processing the job, if the JOB RESET menu is OFF.</p> <p>The printer will go off-line after completing the job.</p>	

Category	LCD status message	Trouble or status	Remedy
Daily status	<input checked="" type="checkbox"/> RESET TO FLUSH (OL610e/PS only)	<p>Post Script mode only</p> <p>This message is displayed when ON-LINE key is pressed while the printer is processing the job, if the JOB RESET menu is ON.</p> <p>Even while this message is being displayed, the printer continues to process processing the job normally.</p>	<ul style="list-style-type: none"> - Press ON-LINE key again The printer goes back to on-line mode and continues processing the job. - Press RESET key. The job is cancelled.
	<input type="checkbox"/> FLUSHING (OL610e/PS only)	<p>Post Script mode only</p> <p>This message is displayed during cancelling of a job.</p> <p>The message goes off when the job cancellation is completed.</p>	Normal operation.
	<input checked="" type="checkbox"/> RESET (for OL610e/PS, in HP 4 mode)	<p>The data which remained unprinted in the buffer is deleted and the printer is initialized to user default settings.</p> <p>Temporary DLLs and macros are deleted.</p>	

Category	LCD status message	Trouble or status	Remedy
Daily status	 (for OL610e/PS, in HP 4 mode)	This message is displayed when the printer cannot reset automatically to exit from the menu because there are data, DLLs, and macros having temporary attributes when the printer is changed from set mode to other mode.	Normal operation.
		Toner is running out. This message is displayed together with other message on the first line. Normal operation can continue.	- Replace the toner cartridge.
		A fault occurred in the toner sensor. This message is displayed together with other message on the first line. Normal operation can continue.	- Replace the power supply board.
		This message is displayed together with other message on the first line. Normal operation can be continued.	- Replace the image drum cartridge. - After replacing the drum cartridge, reset the drum counter (refer to the User's Manual).

Category	LCD status message	Trouble or status	Remedy
Daily status		The printer is in the power-saving mode. This message is displayed together with other message on the first line.	Normal operation.
	 (OL610e/PS only)	PostScript mode only This message will appear when the interpreter detects an error during a job processing. The remainder of the job will be ignored.	- Check the printer setting of the host. - Check the printer job data to see if there is any un-supported or illegal operation in the data.

%6.5.2 Message Troubleshooting

6.5.2 Message Troubleshooting

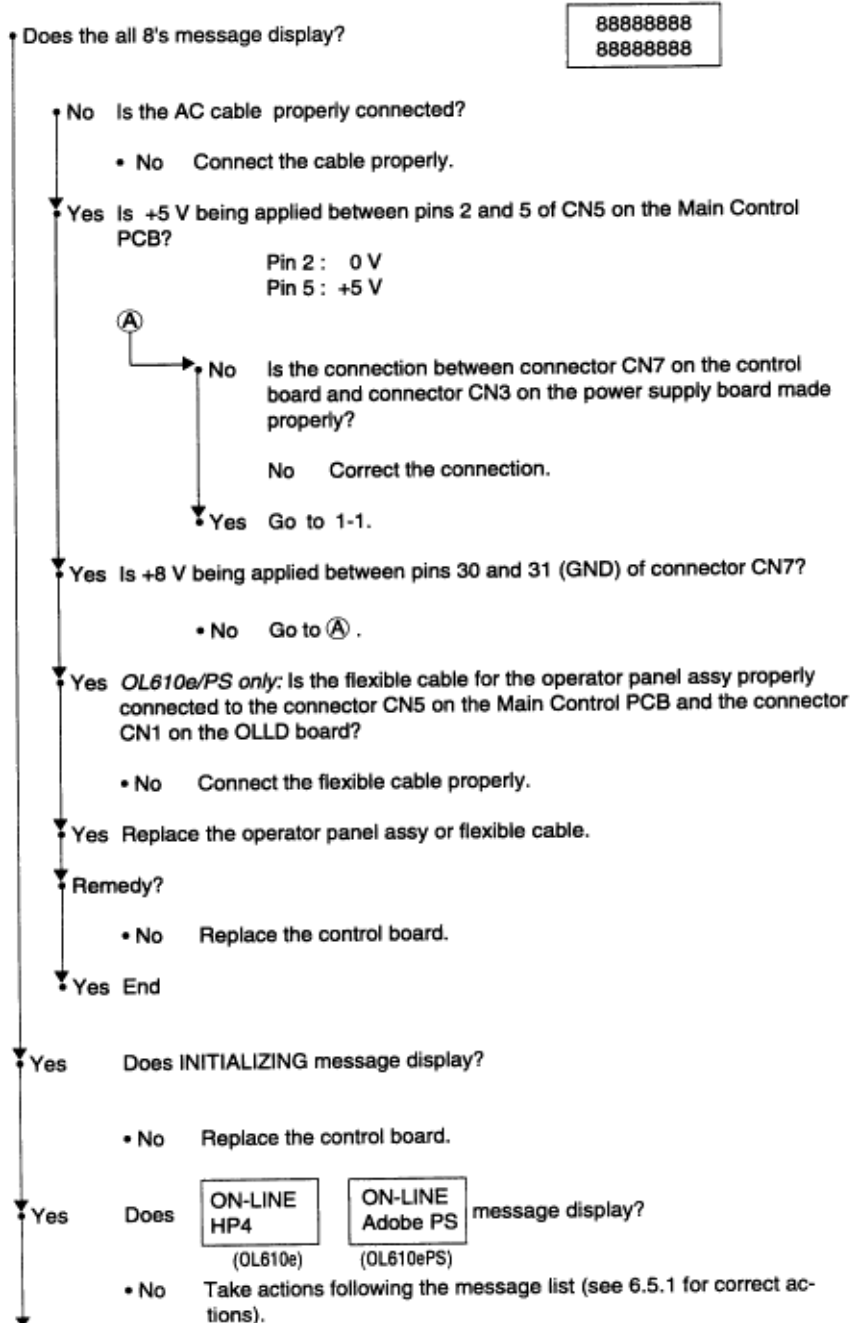
If the problems are not correctable by using the message trouble list, follow the troubleshooting flowcharts given here to deal with them.

No.	Trouble	Flowchart number
1.	The printer does not work normally after the power is turned on.	1
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	4
5.	Fan error	5

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

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

- Turn the power off, then back on.



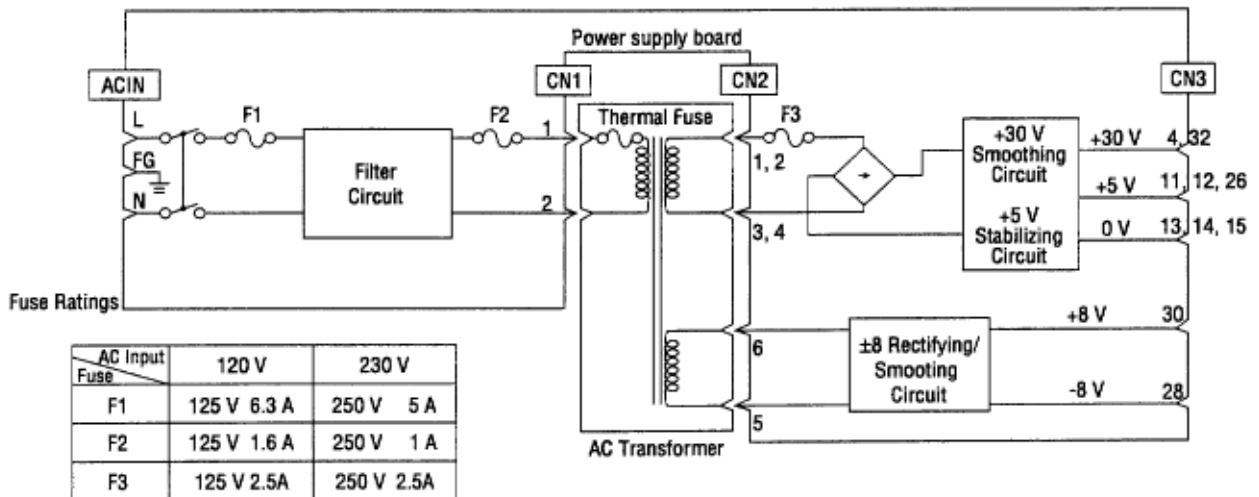
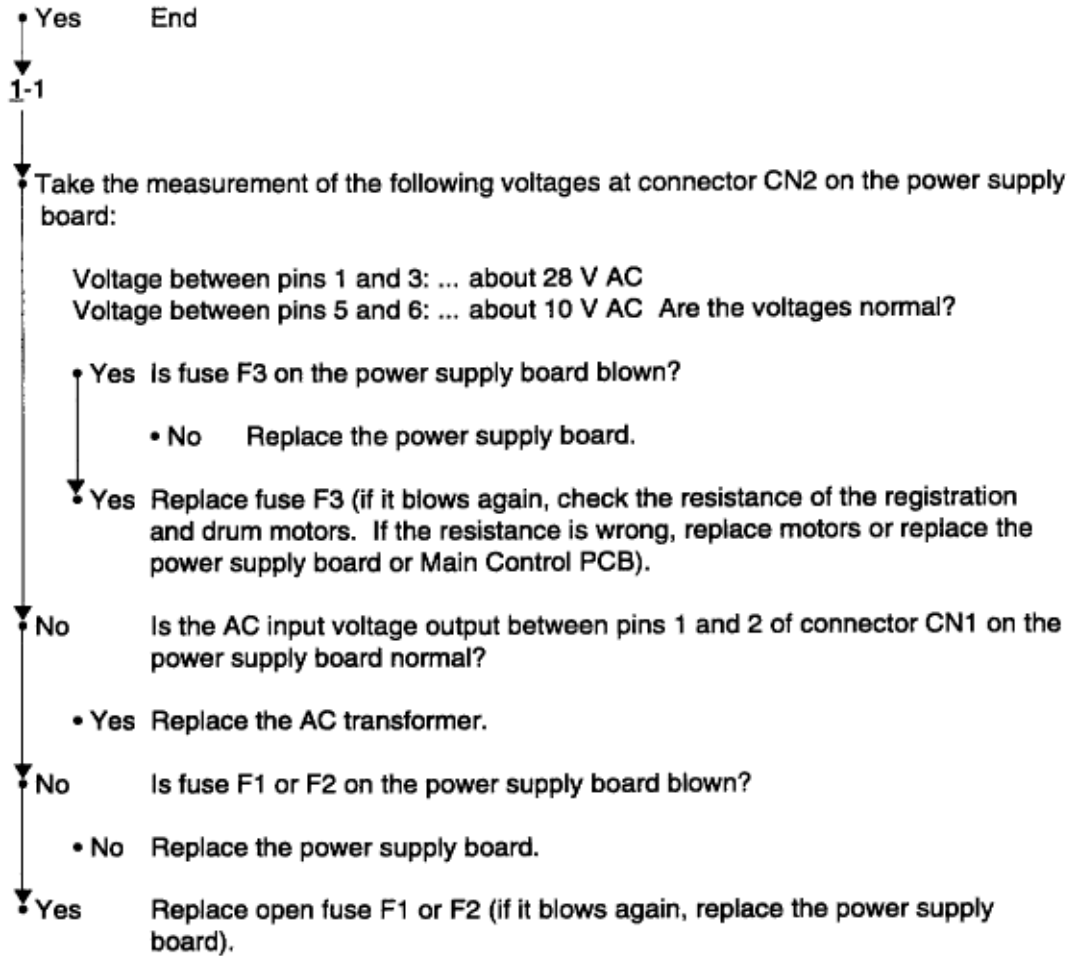
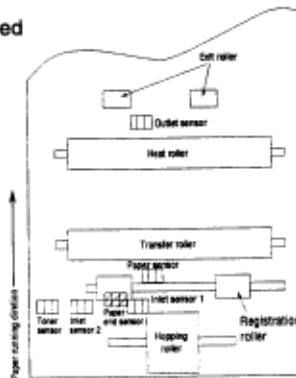
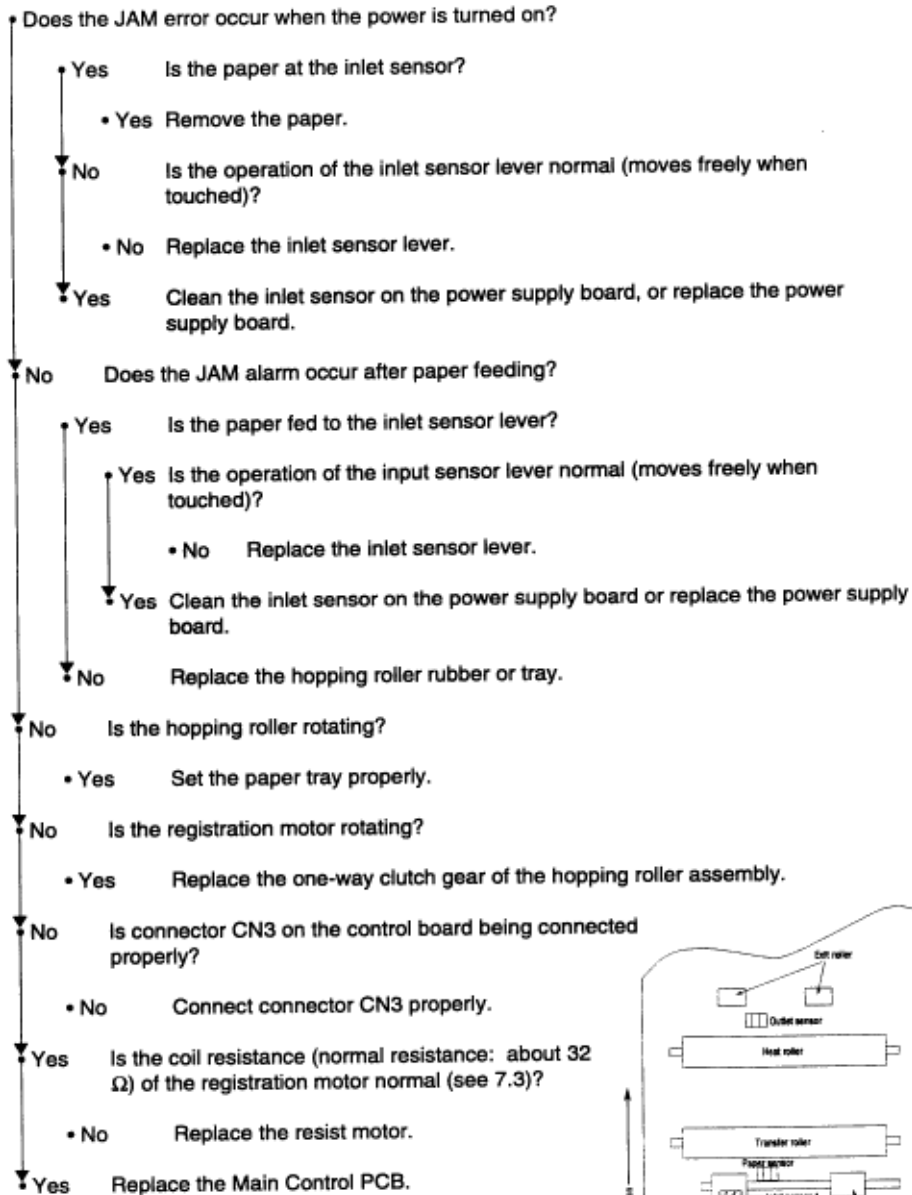


Figure 6-1 Low-voltage Power Supply Block Diagram

%[JAM error] 2-1 Paper input jam

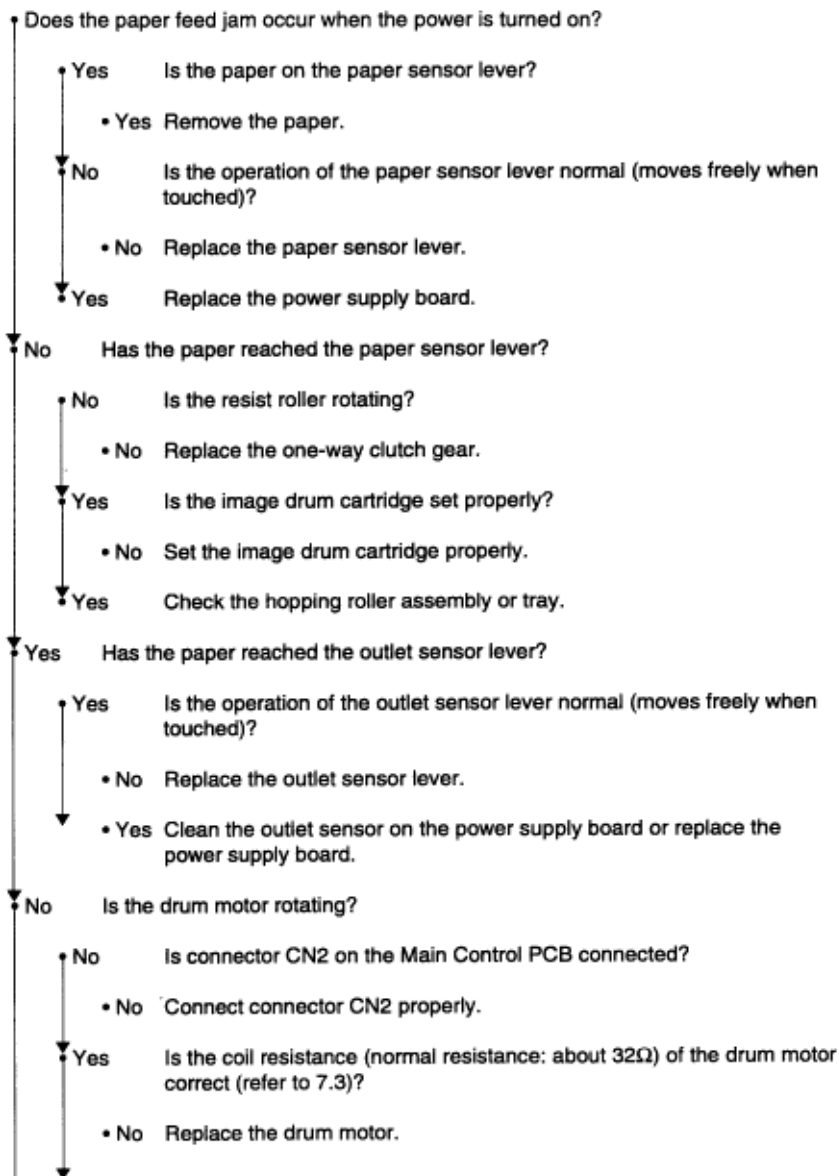
[JAM error] 2-1 Paper input jam

2-1 Paper input jam

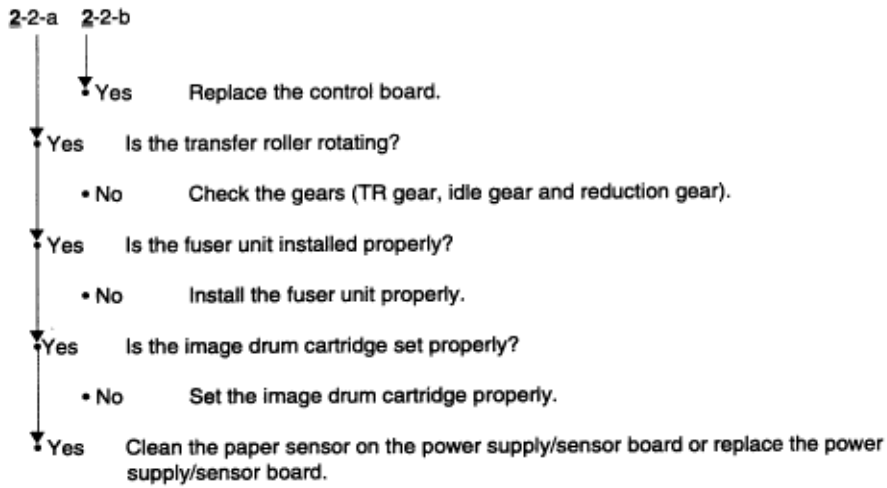


%[JAM error] 2-2 Paper feed jam

[JAM error] 2-2 Paper feed jam

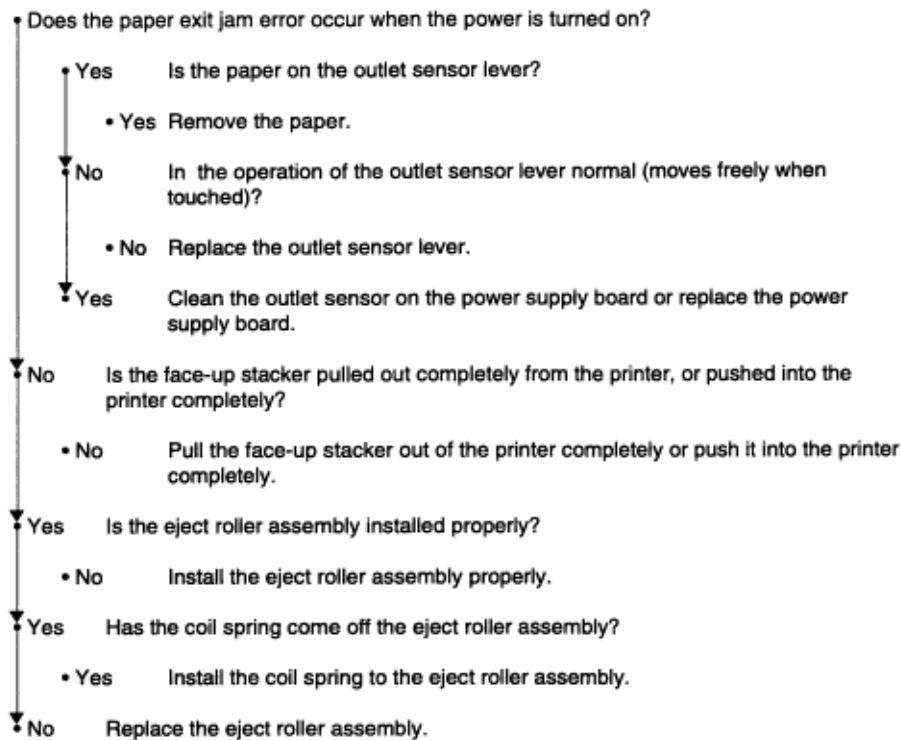


2-2-a 2-2-b



%[JAM error] 2-3 Paper exit jam

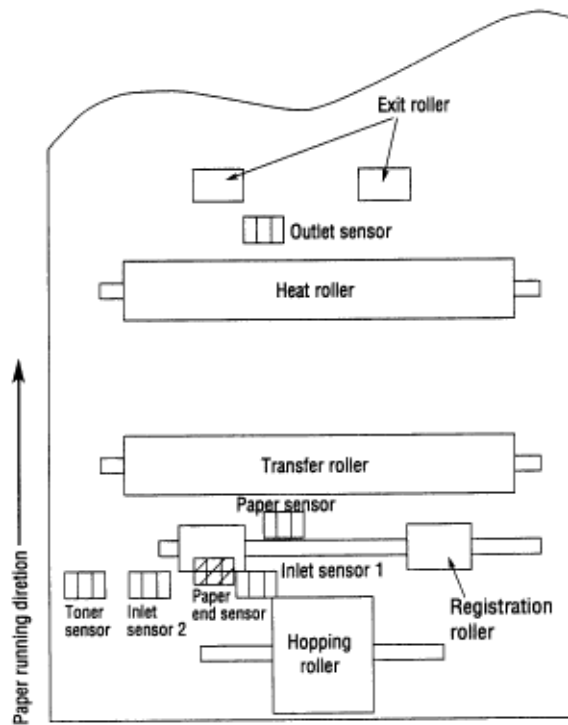
[JAM error] 2-3 Paper exit jam



%3 Paper size error

3 Paper size error

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



%4 Fusing unit error (ERROR 71) (ERROR 72) (ERROR 73)

4 Fusing unit error (ERROR 71) (ERROR 72) (ERROR 73)

- Turn the power off, then back on.

• Does the fusing unit error occur immediately?

- Yes Is the thermistor open or shorted? Measure the resistance between thermistor contacts (about 220k Ω at room temperature) (see Fig. 6-2 or see 7.3).

- Yes Replace the fusing unit.

- No Do the thermistor contacts touch the contact assembly properly when the fusing unit is mounted in the printer (see Fig. 6-4 contact (F))?

- No Adjust the contact.

- Yes Replace the Main Control PCB or power supply board.

• No Does the fusing unit error occur about 60 seconds after the power is turned on?

- No Check the thermistor for poor contact or replace the Main Control PCB.

• Yes Turn the power off, then back on.

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

- Yes Check thermistor contacts or replace the Main Control PCB or the fuser unit.

• No Is the heater or the thermostat open? Measure the resistance between the heater contacts (normal resistance: about 0 Ω) (see Fig. 6-2 or see 7.3).

- Yes Replace the fusing unit.

• No Is the AC voltage being supplied to the contacts for the heater of the contact assembly? (Refer Fig. 6-2)

- No Replace the Main Control PCB or the power supply board.

• Yes Check the heat contact of the fusing unit and the contact assembly for poor contact (see Fig. 6-4 contact (G)).

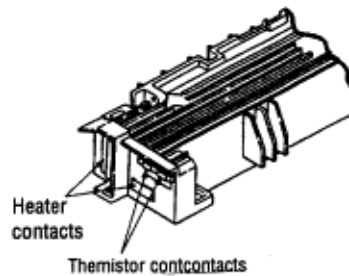
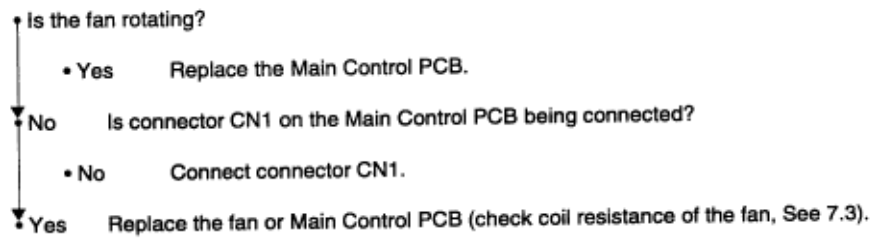


Figure 6-2

%5 Fan error (ERROR 70)

5 Fan error (ERROR 70)



%6.5.3 Image Troubleshooting

6.5.3 Image Troubleshooting

Procedures for troubleshooting for the cases of abnormal image printouts are explained below. Figure 6-3 below shows typical abnormal images.

Problem	Flowchart number
Images are light or blurred entirely (Figure 6-3, A)	1
Dark background density (Figure 6-3, B)	2
Blank paper is output (Figure 6-3, C)	3
Black vertical stripes (Figure 6-3, D)	4
Cyclical defect (Figure 6-3, E)	5
Print voids	6
Poor fusing (images are blurred or peeled off when touched by hands)	7
White vertical streaks (Figure 6-3, F)	8



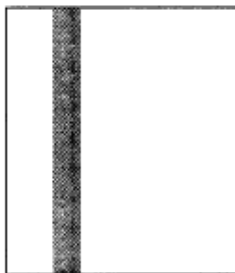
(A) Light or blurred images entirely



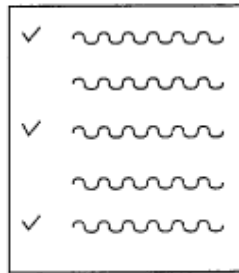
(B) Dark background density



(C) Blank paper



(D) Black vertical stripes



(E) Cyclical defect

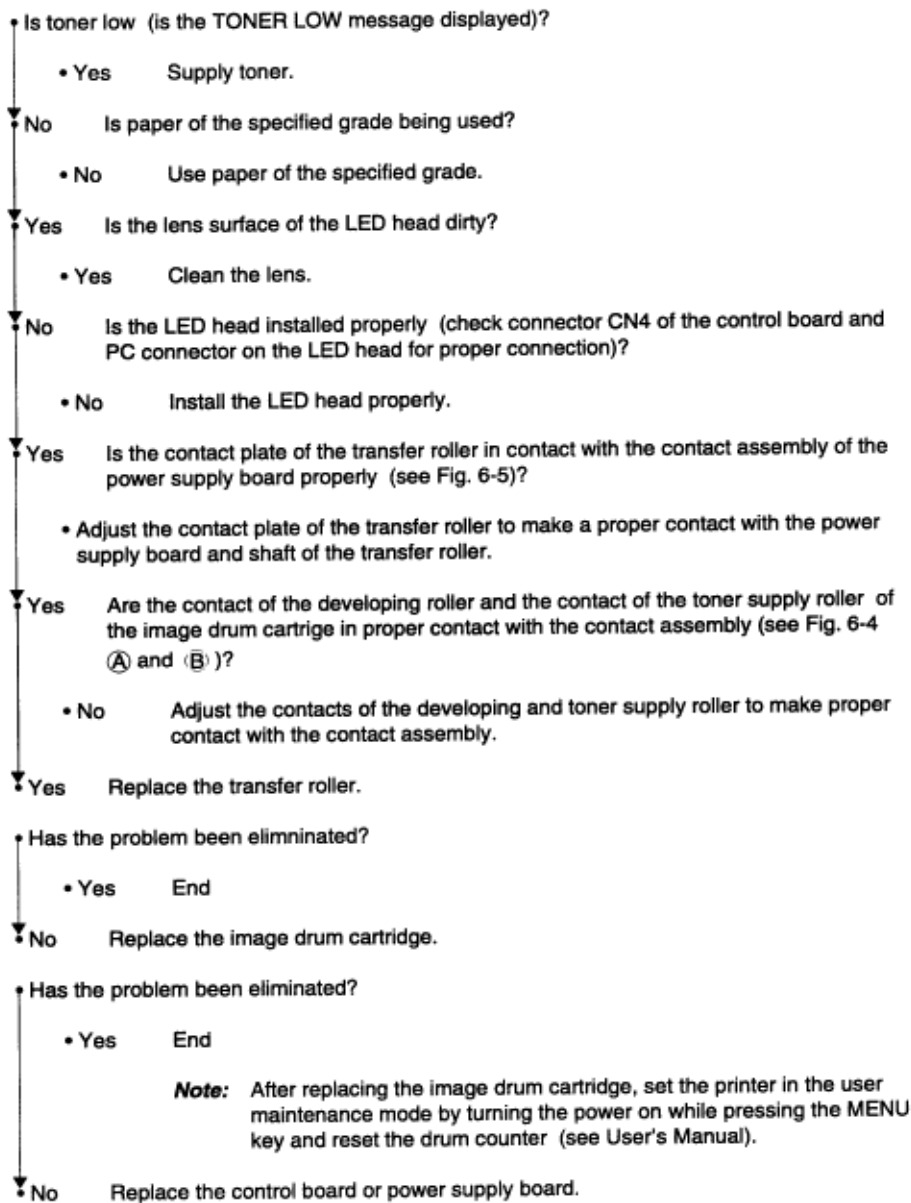


(F) White vertical belts or streaks

Figure 6-3

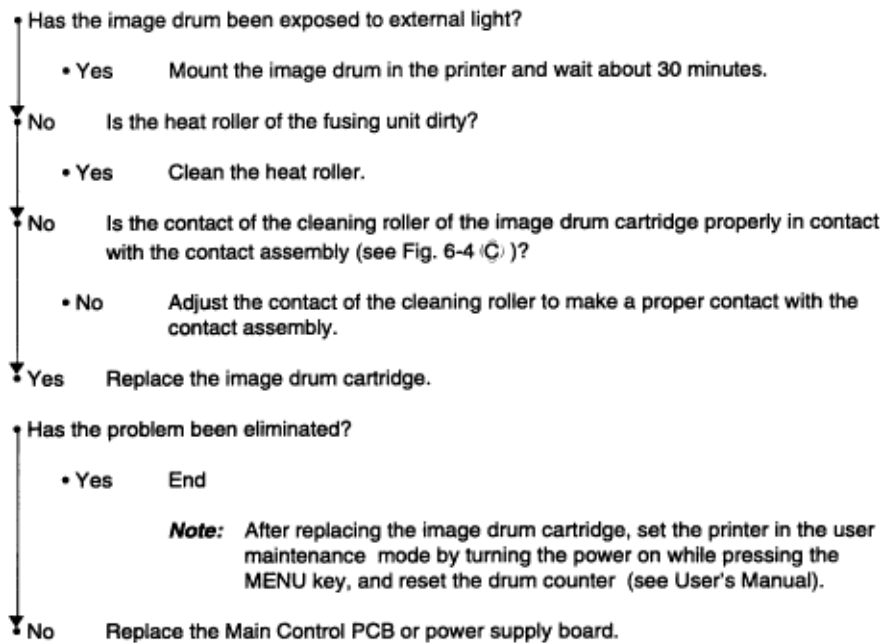
%1 Images are light or blurred entirely.

1 Images are light or blurred entirely.



%2 Dark background density

2 Dark background density



%3 Blank paper is output.

3 Blank paper is output.

• Is the LED head being connected properly (check connector CN4 on the Main Control PCB and PC connector on the LED head)?

- No Connect the LED head properly or replace the head cable.

▼ Yes Is the contact of the image drum cartridge in proper contact with the ground contact (see Fig. 6-4 (D))?

- No Check the ground contact of the image drum cartridge.

▼ Yes Replace the LED head.

• Has the problem been eliminated?

- Yes End

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time if the luminous rating of the old LED head and new the LED head are different (see 4.2).

▼ No Replace the Main Control PCB or power supply board.

%4 Black vertical belts or stripes

4 Black vertical belts or stripes

- Replace the image drum cartridge.

• Has the problem been removed?

- Yes End

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see User's Manual).

• No Replace the LED head.

• Has the problem been eliminated?

- Yes End

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time if the luminous rating of the old LED head and the new LED head are different (see 4.2).

• No Replace the Main Control PCB or power supply board.

%5 Cyclic error

5 Cyclic error

	Frequency	Remedy
Image drum	3.71 (94.2 mm)	Replace or clean the image drum cartridge.
Developing roller	1.66 (44.4 mm)	Replace the image drum cartridge.
Toner supply roller	2.27 (57.8 mm)	Replace the image drum cartridge.
Charging roller	1.56 (39.6 mm)	Replace the image drum cartridge.
Cleaning roller	1.24 (31.4 mm)	Replace the image drum cartridge.
Transfer roller	2.01 (51.0 mm)	Replace the transfer roller.
Heat roller	2.47 (62.8 mm)	Replace the fusing unit assy.
Back-up roller	2.72 (69.08 mm)	Replace the back-up roller.

Notes:

1. After replacing the image drum cartridge, reset the drum counter.
 - 2 After replacing the fusing unit assy, reset the fuser counter. *OL610e/PS*: See 4.1.
-

%6 Print voids

6 Print voids

• Is the contact plate of the transfer roller in proper contact with the power supply/sensor board (see Fig. 6-5)?

- No Adjust the contact plate so that it touches the power supply board and the shaft of the transfer roller properly.

↓ Yes Replace the transfer roller.

• Has the problem been eliminated?

- Yes End

↓ No Are the contacts of the toner supply roller, developing roller, image drum and charging roller in proper contact with the contact assy (see Fig. 6-4 (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 eliminated?

- Yes End

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see User's Manual).

↓ No Is the LED head installed properly (check connector CN4 on the Main Control PCB 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 eliminated?

- Yes End

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time (see 4.2).

↓ No Replace the Main Control PCB or power supply board.

%7 Poor fusing

7 Poor fusing

- Is paper of the specified grade being used?

↓
• No Use paper of the specified grade.

- ↓ Yes Is the spring of the back-up roller normal?

↓
• No Replace the spring.

- ↓ Yes Is the contact of the fusing unit assy in proper contact with the contact assy (see Fig. 6-4 (G))?

↓
• No Adjust the contact of the fusing unit assy to make a proper contact with the contact assembly.

- ↓ Yes Replace the fusing unit assy.

- Has the problem been eliminated?

↓
• Yes End

↓ No Replace the Main Control PCB or power supply board.

%8 White vertical belts or streaks

8 White vertical belts or streaks

• Are 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 board (see Fig. 6-5)?

• No Adjust the contact plate to make a proper contact with the power supply board.

↓ Yes Replace the transfer roller.

• Has the problem been eliminated?

• Yes End

↓ No Is the LED head being installed properly (check CN4 connector on the Main Control PCB and PC connector on the LED head)?

• No Install the LED head properly.

↓ Yes Replace the LED head.

• Has the problem been eliminated?

• Yes End

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time (see 4.2).

↓ Yes Replace the image drum cartridge.

• Has the problem been eliminated?

• Yes End

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key. Reset the drum counter (see User's Manual).

↓ No Replace the Main Control PCB or power supply board.

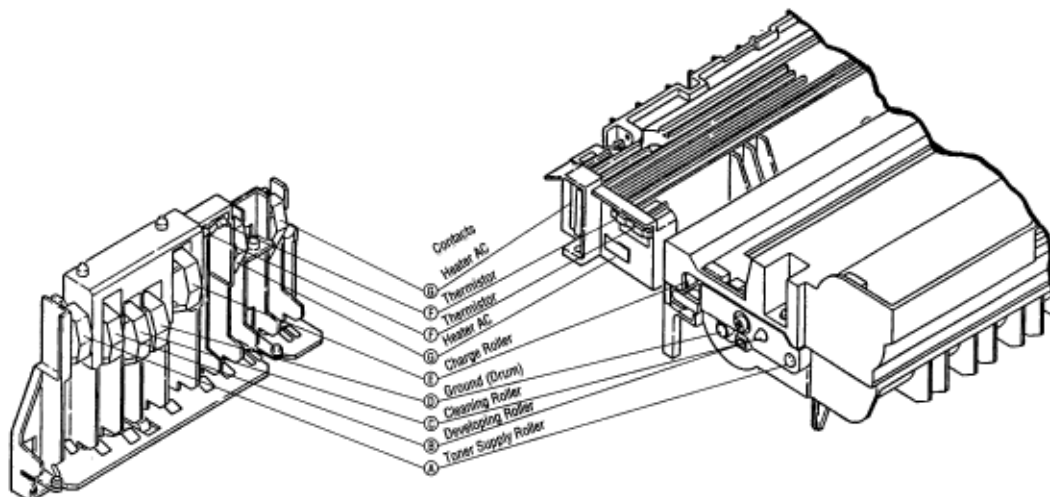


Figure 6-4

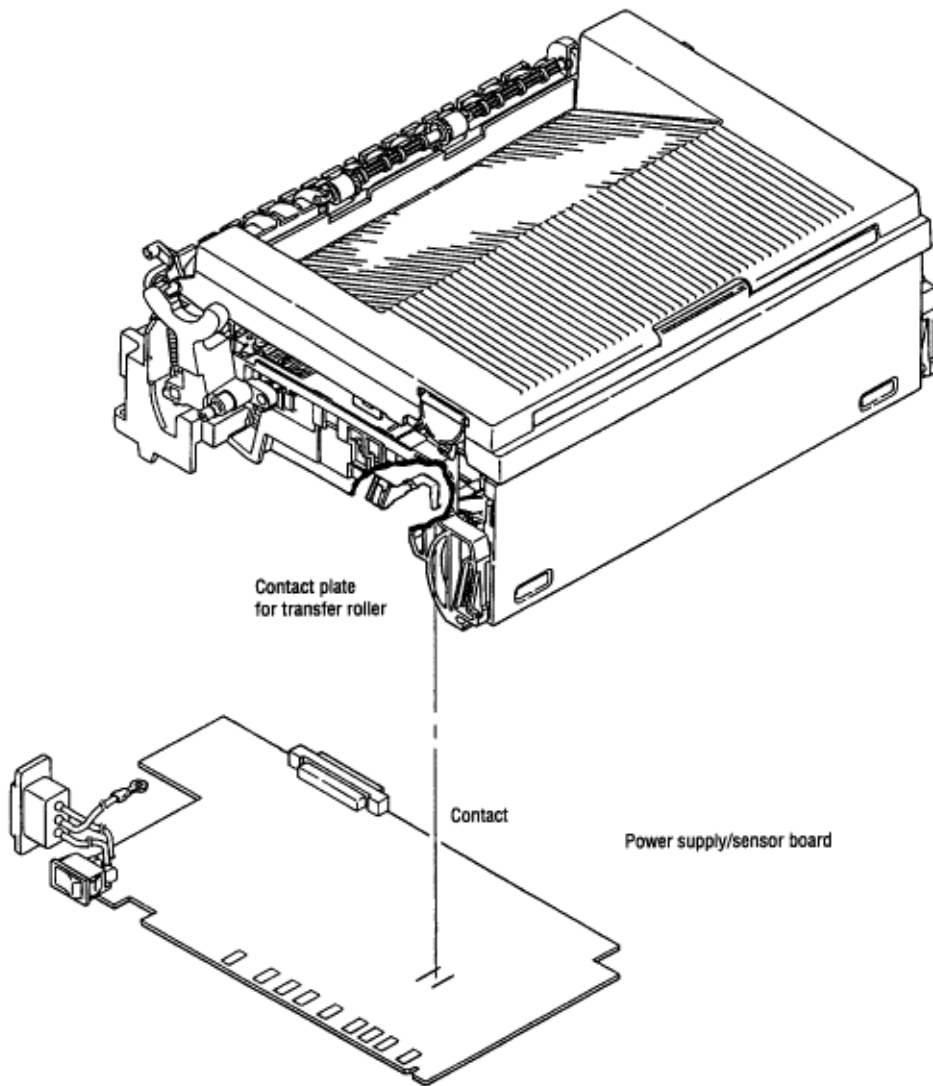


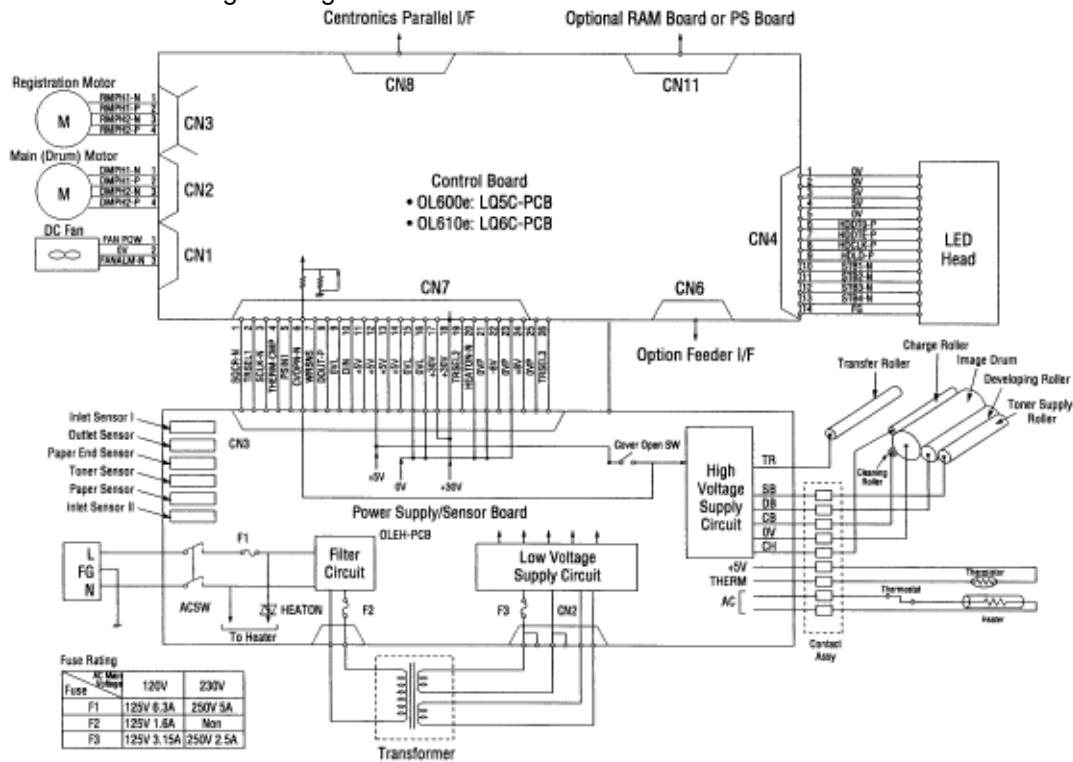
Figure 6-5

Chapter 7

7.1 Interconnect Signal Diagram

7. WIRING DIAGRAM

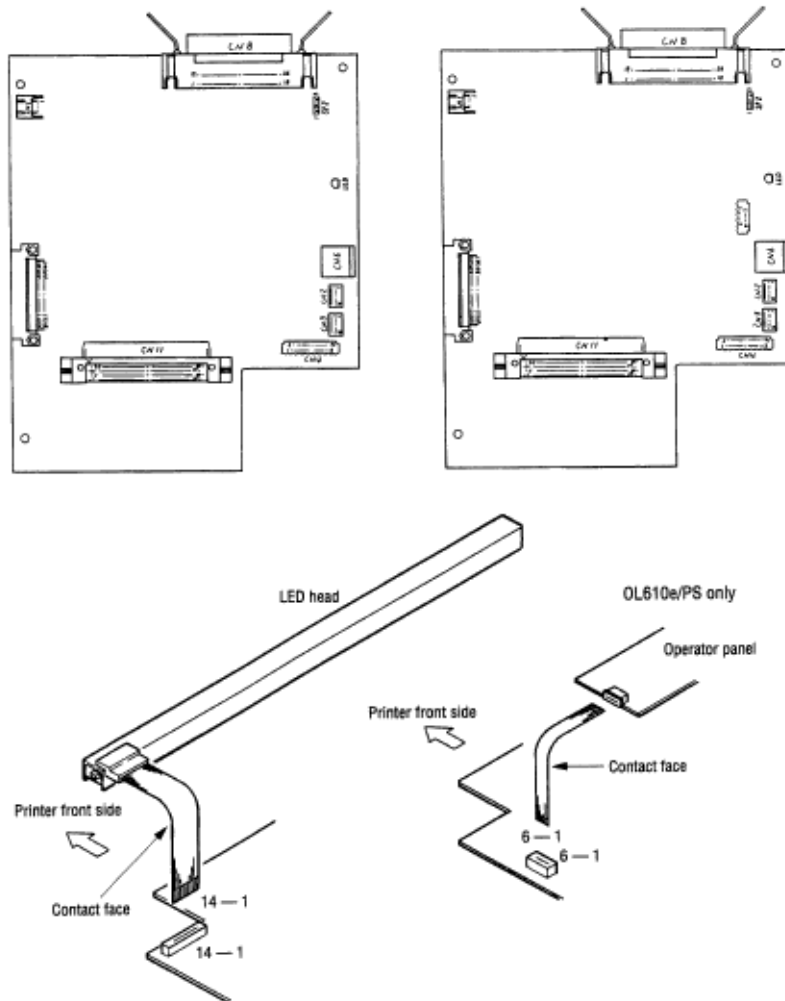
7.1 Interconnect Signal Diagram



%7.2 PCB Layout and Connector Signal List - (1) Control Board

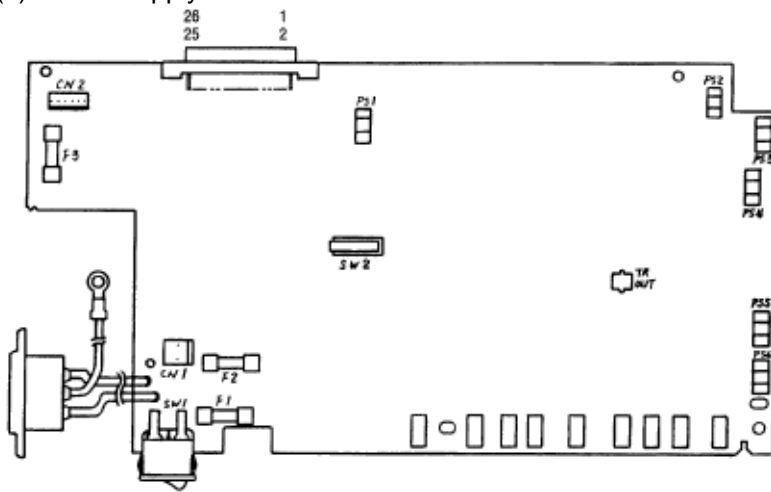
7.2 PCB Layout and Connector Signal List

(1) Control Board • OL600e : LQ5C-PCB • OL610e and OL610e/PS : LQ6C-PCB



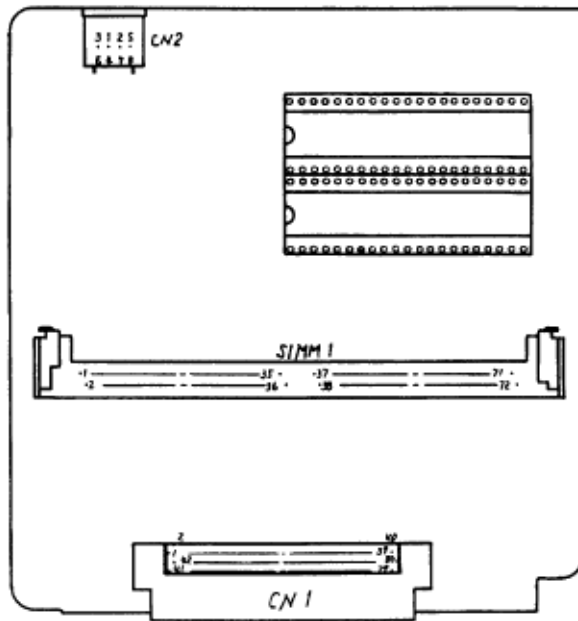
%(2) Power Supply Board

(2) Power Supply Board



%(3) PS Board (LQ8A-) (OL610e/PS)

(3) PS Board (LQ8A-) (OL610e/PS)



%CN1 Pin Assignment To Fan motor

- CN1 Pin Assignment To Fan motor

		PIN NO.	I/O	Signal	Description
Opening	1	1	O	FANPOW	Power supply for fan driving
	2	2	C	OV	Ground
	3	3	I	FANALM-N	Fan alarm

%CN2 Pin Assignment To Drum motor

- CN2 Pin Assignment To Drum motor

	PIN NO.	I/O	Signal	Description
1	1	0	DMPH1-N	Coin 1-N
2	2	0	DMPH1-P	Coin 1-P
3	3	0	DMPH2-N	Coil 2-N
4	4	0	DMPH2-P	Coil 2-P

Excitation sequence

PIN NO.	Line Color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Turning direction Clockwise when viewed from the output axis.

<i>I/O Legend</i> I = In O = out C = Common

%CN3 Pin Assignment To Registration motor

- CN3 Pin Assignment To Registration motor

	PIN NO.	I/O	Signal	Description
1	1	0	RMPH1-N	Coin 1-N
2	2	0	RMPH1-P	Coin 1-P
3	3	0	RMPH2-N	Coil 2-N
4	4	0	RMPH2-P	Coil 2-P

Excitation sequence

PIN NO.	Line Color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Turning direction Clockwise as viewed from the output axis.

<i>I/O Legend</i>
I = In
O = out
C = Common

%CN4 Pin Assignment To LED head

- CN4 Pin Assignment To LED head

	PIN NO.	I/O	Signal	Description
1	1	C	0V	Ground for LED
	2	C	0V	Ground for LED
3	3	O	5V	+5V power supply for LED driving
	4	O	5V	+5V power supply for LED driving
5	5	C	0V	Logic ground
	6	O	HDDT0-P	Data
7	7	O	HDDT1-P	Data
	8	O	HDCLK-P	Clock
9	9	C	HDLD-P	Load
	10	O	STB1-N	Strobe1
11	11	O	STB2-N	Strobe 2
	12	O	STB3-N	Strobe 3
13	13	O	STB-4	Strobe 4
	14	C	FG	FG

I/O Legend

I = In

O = out

C = Common

%CN6 Pin Assignment To Option feeder

- CN6 Pin Assignment To Option feeder

PIN NO.	I/O	Signal	Description
1	O	OPTPSIN-N	Paper sense 1
2	O	SPTSCLK-N	Clock
3	C	OPTSDR-N	Data
4	I	OPRSDR-N	OPT send data ready
5	C	OVP	Analog ground
6	O	30V	+30V power supply
7	C	0V	Logic ground
8	O	5V	+5V power supply

5	8
2	7
1	4
3	6

I/O Legend

I = In

O = out

C = Common

%Power Pin Assignment

Power Pin Assignment
(To power supply board)

Pin No.	Signal	I/O	Description	Pin No.	Signal	I/O*	Description		
2	1	2	TRSEL1	O	TR control switch	1	SQCR-N	I	Sequence clear signal of serial I/F
4	3	4	THERM-CMP	I	Heater temperature	3	SCLK-N	I	Clock signal of serial I/F
6	5	6	CVOPN-N	I	Cover open (+30V)	5	PSIN1	I	Paper sense
8	7	8	DOUT-P	O	Serial data output	7	WRSNS	I	Reading of paper edge
10	9	10	DIN	I	Serial data input	9	OVL	C	Ground for logic
12	11	12	+5V	I	Logic circuit supply voltage	11	+5V	I	Logic circuit supply voltage
14	13	14	+5V	I	Logic circuit supply voltage	13	+5V	I	Logic circuit supply voltage
16	15	16	OVL	C	Logic ground	15	OVL	C	Logic ground
18	17	18	+30V	I	Motor and fan drive voltage and source voltage for high voltage supply	17	+30V	I	Motor and fan drive voltage and source voltage for high voltage supply
20	19	20	HEATON-N	O	Heater on	19	TRSEL2	O	TR control switch
22	21	22	-8V	I	RS232C line voltage and PS board supply voltage	21	OVP	C	Power ground
24	23	24	+8V	I	RS232C line voltage	23	OVP	C	Power ground
26	25	26	TRSEL3	O	TR control switch	25	OVP	C	Power ground

I/O Legend

I = In

O = out

C = Common

%CN8 Pin Assignment

CN8 Pin Assignment
Centro Parallel

		Pin No.	I/O*	Signal	Description	Pin No.	I/O	Signal	Description
1	19	1	I	STROBE-N	Strobe	19	C	SG	Ground
2	20	2	C	DATA1-P	Data bit 0	20	C	SG	Ground
3	21	3	C	DATA2-P	Data bit 1	21	C	SG	Ground
4	22	4	C	DATA3-P	Data bit 2	22	C	SG	Ground
5	23	5	C	DATA4-P	Data bit 3	23	C	SG	Ground
6	24	6	C	DATA5-P	Data bit 4	24	C	SG	Ground
7	25	7	C	DATA6-P	Data bit 5	25	C	SG	Ground
8	26	8	C	DATA7-P	Data bit 6	26	C	SG	Ground
9	27	9	C	DATA8-P	Data bit 7	27	C	SG	Ground
10	28	10	O	ACK-N	Acknowledge	28	C	SG	Ground
11	29	11	O	BUSY-P	Busy	29	C	SG	Ground
12	30	12	O	PE-P	paper end	30	C	SG	Ground
13	31	13	O	SEL-P	Select	31	I	IPRIME-N	Input prime
14	32	14	I	AUTOFEED-N	Auto feed	32	O	FAULT-N	Fault
15	33	15		NC		33	C	SG	Ground
16	34	16	C	SG	Ground	34		NC	
17	35	17	C	FG		35	O	HILEVEL	Always kept high
18	36	18	O	P-LOGIC-H	+5V power supply	36	I	SELIN-N	Select in

I/O Legend

I = In

O = out

C = Common

%CN11 Pin Assignment

CN11 Pin Assignment
To Option board

01		41	
	02		42
03		43	
	04		44
05		45	
	06		46
07		47	
	08		48
09		49	
	10		50
11		51	
	12		52
13		53	
	14		54
15		55	
	16		56
17		57	
	18		58
19		59	
	20		60
21		61	
	22		62
23		63	
	24		64
25		65	
	26		66
27		67	
	28		68
29		69	
	30		70
31		71	
	32		72
33		73	
	34		74
35		75	
	36		76
37		77	
	38		78
39		79	
	40		80

Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
01	O	-8V	-8V power supply	41	C	0V	Logic ground
02	C	0V	Logic ground	42	C	0V	Logic ground
03	C	0V	Logic ground	43	C	SSTXD-P	EEPROM data
04		NC		44	O	EEPRMCLK-P	EEPROM clock
05		NC		45	O	EEPRMCS1-P	EEPROM select
06	C	0V	Logic ground	46	O	+5V	+5V power supply
07	C	0V	Logic ground	47	I	INT2-N	Interrupt request 2
08	I	INT1-N	Interrupt request 1	48	O	IOS1-N	I/O select 1
09	O	IOS0-N	I/O select 0	49	O	CS3-N	ROM select 3
10	O	CS2-N	ROM select 2	50		NC	
11	O	CS4-N	ROM select 4	51	O	DDRAS1-N	OL610ex only, OL600ex: NC
12		NC		52	O	RESET-N	Reset signal
13	I	SCSREO-P	SCC receive request	53		NC	
14	I	SCRREO-P	SCC send request	54	O	A22-P	Address bit 22
15	O	A08-P	Address bit 8	55	O	A07-P	Address bit 7
16	O	A06-P	Address bit 6	56	O	A01-P	Address bit 5
17	O	A04-P	Address bit 4	57	O	A03-P	Address bit 3
18	O	A02-P	Address bit 2	58	O	A05-P	Address bit 1
19	O	A00-P/ORE-N	OR write enable	59	O	A21-P	Address bit 21
20	O	A20-P	Address bit 20	60	O	A19-P	Address bit 19
21	O	A17-P	Address bit 17	61	O	DCAS0-N	DCAS0
22	O	DCAS1-N	DCAS1	62	O	RD-N	RD-N
23	O	A18-P	Address bit 18	63	O	A16-P	Address bit 16
24	O	A15-P	Address bit 15	64	O	A14-P	Address bit 14
25	O	A13-P	Address bit 13	65	C	0V	Logic ground
26	O	+5V	+5V power supply	66	O	A12-P	Address bit 12
27	O	A11-P	Address bit 11	67	O	A10-P	Address bit 10
28	O	A09-P	Address bit 9	68	O	WR-N	WR-N
29	O	DRAS2-N	DRAM select 2	69	O	DRAS3-N	DRAM select 3
30	C	DRAN4-N	DRAM select 4	70	O	DRAS5-N	DRAM select 5
31	C	D07-P	Data bit 7	71	C	D06-P	Data bit 6
32	C	D05-P	D06-P Data bit 5	72	C	D04-P	Data bit 4
33	C	D02-P	D02-P Data bit 2	73	C	D03-P	Data bit 3
34	C	D00-P	D00-P Data bit 0	74	C	D01-P	Data bit 1
35	C	0V	Logic ground	75	O	+5V	+5V power supply
36	C	D14-P	Data bit 14	76	C	D15-P	Data bit 15
37	C	D12-P	Data bit 12	77	C	D13-P	Data bit 13
38	C	D11-P	Data bit 11	78	C	D10-P	Data bit 10
39	C	D09-P	Data bit 9	79	C	D08-P	Data bit 8
40		NC		80	C	0V	Logic ground

%PS Board (OL610e/PS)

PS Board (OL610e/PS) • CN1 Pin Assignment To LocalTalk (RS422)

5	8
2	7
1	4
3	6

PIN NO.	I/O	Signal	Description
1	NC	NC	
2	I	SYNC	Not used
3	O	TXD-	Transmit data -
4	C	SG	Signal ground
5	I	RXD-	Receive data -
6	O	TXD+	Transmit data +
7	NC	NC	
8	I	RXD+	Receive data +

%PS Board (OL610e/PS)

PS Board (OL610e/PS)
CN2 Pin Assignment
To Main Control PCB

Pin No.	IO	Signal	Description	Pin No.	IO	Signal	Description		
41	01	01	I	-6V	-6V power input	41	C	0V	Logic ground
42	02	02	C	0V/P	Analog ground	42	C	0V	Logic Ground
43	03	03	C	0V	Logic ground	43	I	SETRD-P	EEPROM data
44	04	04	NC	NC		44	I	EEPROMCLK-P	EEPROM clock
45	05	05	NC	NC		45	I	EEPROMCS1-P	EEPROM 1 select
46	06	06	C	0V	Logic ground	46	I	+6V	+6V power input
47	07	07	C	0V	Logic Ground	47	O	INT2-N	Interrupt request 2
48	08	08	O	INT1-N	Interrupt request 1	48	I	IO01-N	IO select 1
49	09	09	I	IO00-N	IO select 0	49	I	CS3-N	ROM/DRAM select 3
50	10	10	I	CS2-N	ROM/DRAM select 2	50	NC	NC	
51	11	11	NC	NC		51	NC	NC	
52	12	12	O	DRDY-N	Data read	52	I	CLRST-N	Clear reset
53	13	13	O	SCRREQ-P	SOC receive request	53	NC	NC	
54	14	14	O	SCRREQ-P	SOC send request	54	NC	NC	
55	15	15	I	A06-P	Address bit 6	55	I	A07-P	Address bit 7
56	16	16	I	A05-P	Address bit 5	56	I	A06-P	Address bit 6
57	17	17	I	A04-P	Address bit 4	57	I	A05-P	Address bit 5
58	18	18	I	A03-P	Address bit 3	58	I	A04-P	Address bit 4
59	19	19	I	A02-P	Address bit 2	59	I	A03-P	Address bit 3
60	20	20	I	A01-P	Address bit 1	60	I	A02-P	Address bit 2
61	21	21	I	A00-P	Address bit 0	61	I	A01-P	Address bit 1
62	22	22	I	DCAS1-N	DCAS1	62	I	DCAS0-N	DCAS0
63	23	23	I	A18-P	Address bit 18	63	I	RD-N	RD-N
64	24	24	I	A15-P	Address bit 15	64	I	A18-P	Address bit 18
65	25	25	I	A13-P	Address bit 13	65	I	A16-P	Address bit 16
66	26	26	I	+5V	+5V power input	66	C	0V	Logic ground
67	27	27	I	A12-P	Address bit 12	67	I	A15-P	Address bit 15
68	28	28	I	A11-P	Address bit 11	68	I	A14-P	Address bit 14
69	29	29	I	DRAS2-N	DRAM select 2	69	I	DRAS3-N	DRAM select 3
70	30	30	I	DRAN4-N	DRAM select 4	70	I	DRAS5-N	DRAM select 5
71	31	31	C	D07-P	Data bit 7	71	C	D06-P	Data bit 6
72	32	32	C	D05-P	Data bit 5	72	C	D04-P	Data bit 4
73	33	33	C	D03-P	Data bit 3	73	C	D03-P	Data bit 3
74	34	34	C	D00-P	Data bit 0	74	C	D01-P	Data bit 1
75	35	35	C	0V	Logic ground	75	I	+5V	+5V power input
76	36	36	C	D14-P	Data bit 14	76	C	D15-P	Data bit 15
77	37	37	C	D12-P	Data bit 12	77	C	D13-P	Data bit 13
78	38	38	C	D11-P	Data bit 11	78	C	D10-P	Data bit 10
79	39	39	C	D09-P	Data bit 9	79	C	D08-P	Data bit 8
80	40	40	NC	NC		80	NC	NC	

%7.3 Resistance Check

7.3 Resistance Check

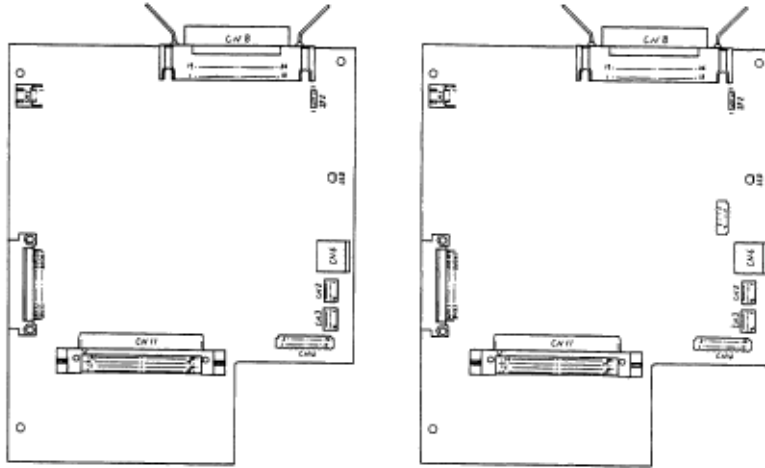
Unit	Circuit Diagram	Illustration	Resistance
Registration motor			Between pins 1 and 2: 18.6Ω Between pins 3 and 4: 18.6Ω
Main (drum) motor			Between pins 1 and 2: 12.6Ω Between pins 3 and 4: 12.6Ω
Fusing Unit			Between pins 1 and 2: 120V 3Ω 240V 10Ω Between pins 3 and 4: 220KΩ (at room temperature)

Unit	Circuit Diagram	Illustration	Resistance
Transformer			Primary side Between pins 1 and 2: 56.8Ω (OEL) 14.8Ω (ODA) Secondary side Between pins 1 and 3: 1.3Ω Between pins 5 and 6: 1.2Ω
Fan			

7.4 Short Plug Setting

7.4 Short Plug Setting

(1) Control Board • OL600e : LQ5C-PCB • OL610e and OL610e/PS : LQ6C-PCB



Note: Q3 is mounted on PLCW-3 PCB only.

- Short plug settings

Short plug	Plug setting	Description	Factory setting
SP2	A	+5 V is supplied to pin 18 of Centronics parallel I/F connector.	A-side
	B	High level is supplied to pin 18 Centronics parallel I/F connector.	

Chapter 8

%8.1 Lower Base Unit

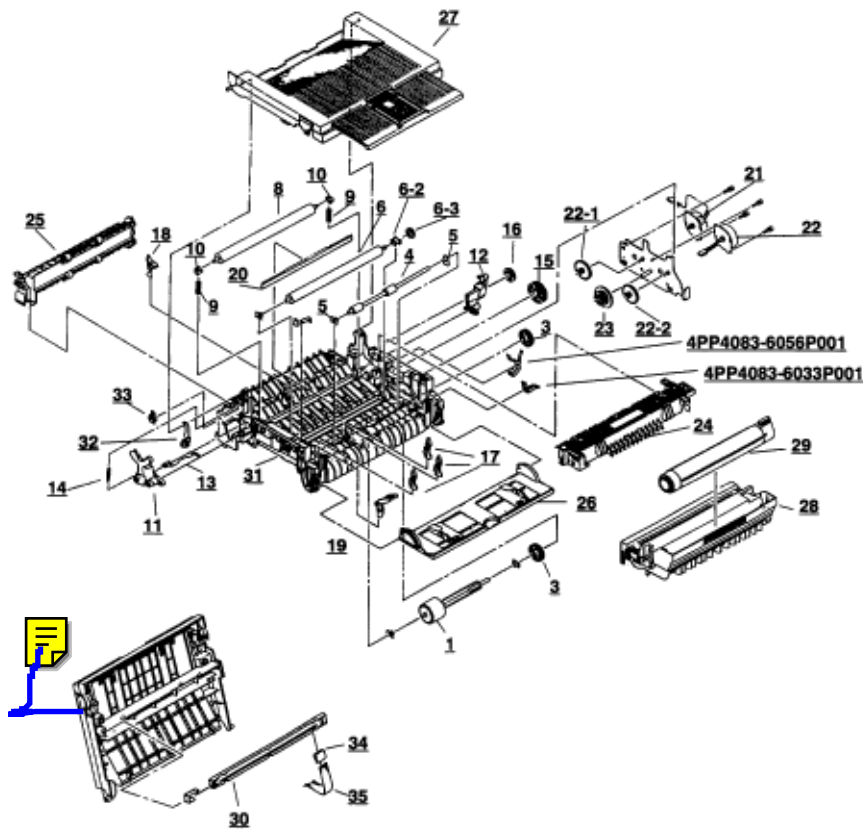


Figure 8-1 Lower Base Unit

Table 8-1 Lower Base Unit

No.	Name/Rating	Part No.	USE		Remarks
			OL600e	OL610e	
1	Hopping roller shaft assy	3PP4083-6020P1	1	1	
1	Hopping roller rubber	4PB4122-1280P1	1	1	
2	Bearing	4PP4083-6022P2	4	4	51607402
3	Gear, one-way clutch	4PB4083-6024P1	2	2	51228901
4	Registration roller	3PB4083-6030P1	1	1	53342501
5	Bearing (Registration)	4PP4083-6031P1	1	1	51607501
6	Transfer roller	3YB4083-7640P4	1	1	50409304
6-2	Bearing TR	3PP4083-6289P1	1	1	51609001
6-3	TR Gear	3PP4083-6290P1	1	1	51236601

8	Back-up roller	3PB4083-6064P2	1	1	53343702
9	Bias spring	4PP4083-7620P1	2	2	50929301
10	Bush, pressure roller	4PP4083-6052P1	2	2	51607601
11	Reset lever L	3PP4083-6053P1	1	1	50805801
12	Reset lever R	3PP4083-6054P1	1	1	50805901
13	Cover open arm	3PP4083-6058P1	1	1	53068901
14	Stacker cover reset spring	4PP4083-6057P1	1	1	50924201
15	Fuser roller idle gear	4PP4083-6080P1	1	1	51229101
16	Eject roller idle gear	4PP4083-6081P1	1	1	51229201
17	Sensor plate (Inlet, paper)	4PP4083-6083P1	3	3	51010701
18	18	4PA4083-6025G1	1	1	51010802
19	Toner sensor (Adhesion)	4PP4083-6086G1	1	1	
20	Anti-static strip	4PB4083-3182P3	1	1	51010903
21	Pulse motor, main/drum	4PB4076-6150P1	1	1	56513201
22	Pulse motor, registration	4PB4076-6151P1	1	1	56513301
22-1	Pulse motor main idle gear	3PP4076-6145P1	1	1	51236701
22-2	Pulse motor registration gear	3PP4076-6146P1	1	1	51236801
23	Reduction gear	3PP4076-6147P1	1	1	51236901
24	Fusing unit, 120V	2YX4083-6100G5	1	1	50217505
	Fusing unit, 230V	2YX4083-6100G6	1	1	50217506
25	Eject roller assy	2PA4083-6120G2	1	1	53342802
26	Manual feed guide assy	2PA4083-6130G1	1	1	51011001
27	Face down stacker cover assy	2PA4083-6160	1	1	53069001
28	Image drum kit	4YA4083-7300G2	1	1	Consumable
29	Toner cartridge kit	4YA4083-6400G2	1	1	Consumable
30	LED head	3YX4083-6245G3	1		56111203
	LED head	3YX4083-6245G4		1	
31	Lower base	2PP4083-6801G2	1	1	50217602
32	Stacker cover damper arm	4PP4083-6191G1	1	1	53069101
33	Stacker cover damper gear	4PB4083-6197P1	1	1	51229401
34	PC connector	224A1286P0140	1	1	56730001
35	Flexible cable (LED head)	4YX4121-1025G2	1	1	56629001
36	Connector, PC	4PP4083-6173P1	1	1	56730201

%8.2 Upper cover unit

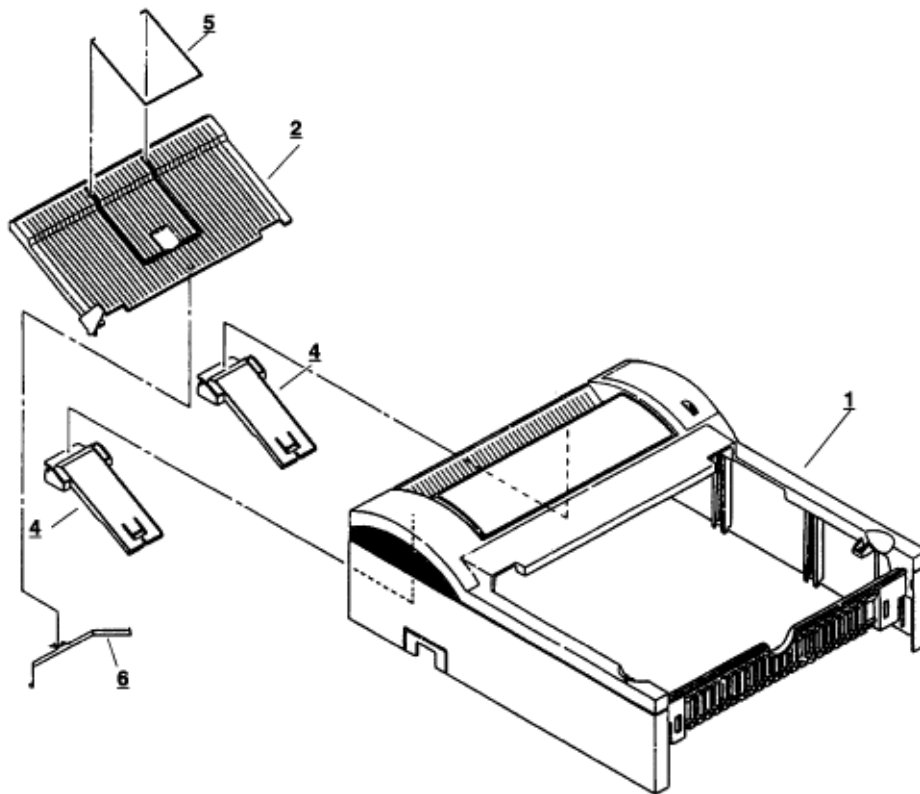


Figure 8-2 Upper cover unit

Table 8-2 Upper cover unit

No.	Name/Rating	Part No.	USE	Remarks
1	Upper cover	2PP4083-6808G1	1	53070301
2	Stacker	1PP4094-7814P1	1	50101301
3	Stacker clamp	3PP4094-7816P1	2	50708001
4	Guide wire	4PB3517-1567P1	1	51013801
5	Leaf spring	3PP3517-1601P1	1	

8.3 Base unit

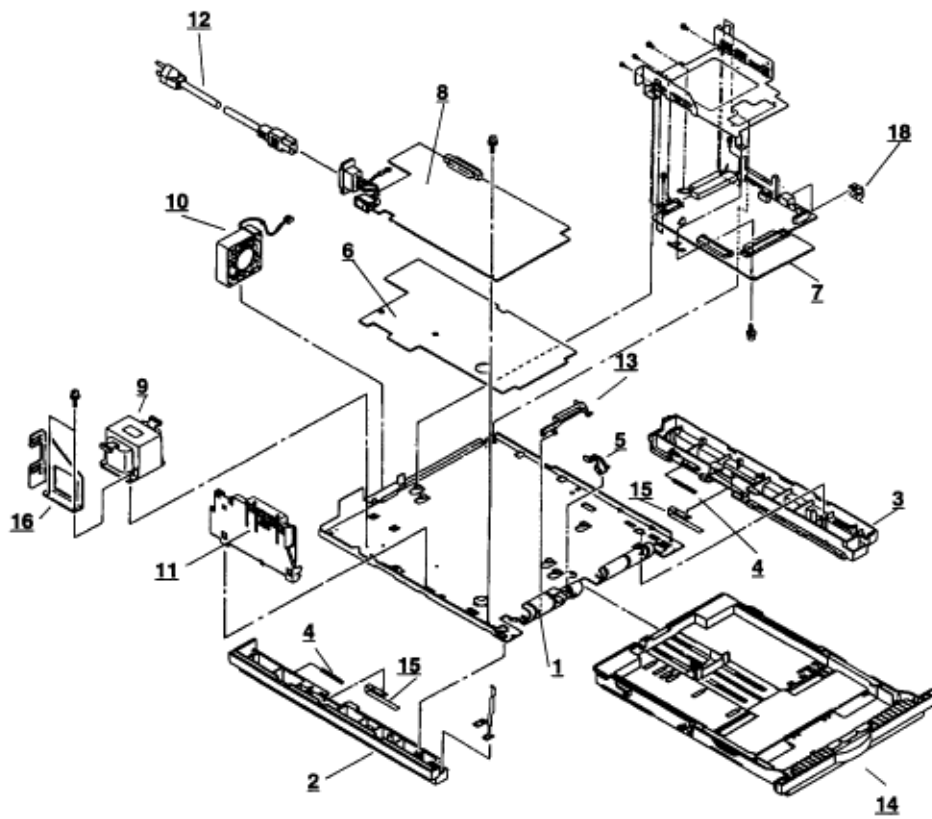


Figure 8-3 Base unit
Table 8-3 Base unit

No.	Name/Rating	Part No.	USE		Remarks
			OL600e	OL610e	
1	Base plate	2PP4083-6809G1	1	1	50217602
2	Cassette guide L	3PP4083-6802G1	1	1	51011201
3	Cassette guide R	3PP4083-6803G1	1	1	51011301
4	Cassette eject spring	4PP4083-6152P1	2	2	50924401
5	Sensor plate (paper end)	4PP4083-6082P1	1	1	51011401
6	Insulator	3PB4083-6144P1	1	1	51709401
7	Control board (LQ5C)	4YA4046-1670G11	1		55079811
	Control board (LQ6C)	4YA4046-1671G11		1	
8	Power supply board, 120V	4YA4049-7101G01	1	1	56414901
	Power supply board, 230V	4YA4049-7101G02	1	1	56414902
9	Transformer, 120V	4YB4049-7032P3	1	1	56414703

	Transformer, 230V	4YB4049-7033P3	1	1	56415003
10	Fan motor	4PB4076-6152P1	1	1	56513401
11	Contact assy	3PA4083-6090G1	1	1	56730001
12	AC cord, 120V		1	1	56609701
	AC cord, 220240V		1	1	56624301
	AC cord, U.K.		1	1	56624501
13	Cassette sensor plate	3PP4083-6154P1	1	1	51011501
14	Paper cassette	4YA4083-6260G2	1	1	
15	Support spring	4PP4083-6153P1	2	2	50924501
16	Inlet holder	4PP4083-6145P1	1	1	50516301
17	Ground plate	4PP4083-6137P1	1	1	51011601

Appendix A

%Centronics Parallel Interface

1) Connector

- Printer side : 36-pin receptacle (single port) Type 57-40360-12-D56 (made by Daiichi Denshi) 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

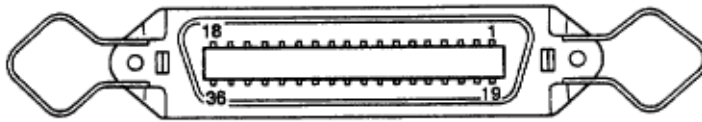
2) Cable

- Cable length : 6 ft (1.8 m) max.
- A Shielded cable composed of twisted pair wires is required for FCC compliance.
- IEEE-1284-compatible cable is required for use with DOS and Windows printer control software.

Note: Cable is not supplied.

Pin No.	Signal name	Signal direction	Functions
1	DATA STROBE	→ PR	Parallel data sampling strobe
2	DATA BIT - 1		
3	DATA BIT - 2		
4	DATA BIT - 3		
5	DATA BIT - 4	→ PR	PR Parallel input data
6	DATA BIT - 5		
7	DATA BIT - 6		
8	DATA BIT - 7		
9	DATA BIT - 8		
10	ACKNOWLEDGE	← PR	Completion of data input or end of functioning
11	BUSY	← PR	During print processing or during alarm
12	PAPER END	← PR	End of paper
13	SELECT	← PR	Select state (ON-LINE)
14	AUTOFEED	→ PR	Auto feed
15	-		(Not used)
16	0V		Signal ground
17	CHASSIS GROUND		Chassis ground
18	+5V	← PR	50 mA max.
19	⋮		
	0V		Signal ground
30	⋮		
31	INPUT TRIME	→ PR	Initializing signal
32	FAULT	← PR	End of paper or during alarm
33	0V		Signal ground
34	-		(Not used)
35	HILEVEL	← PR	High level (3.3 kΩ)
36	SELIN	→ PR	Select in

- Connector pin arrangement

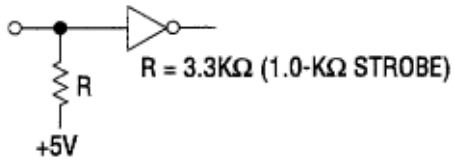


4) Signal Level

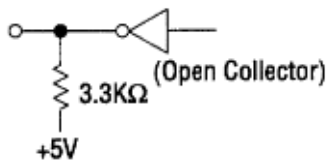
- LOW : 0 V to +0.8 V • HIGH : +2.4 V to 5.0 V

5) Interface Circuit

a) Receiving Circuit

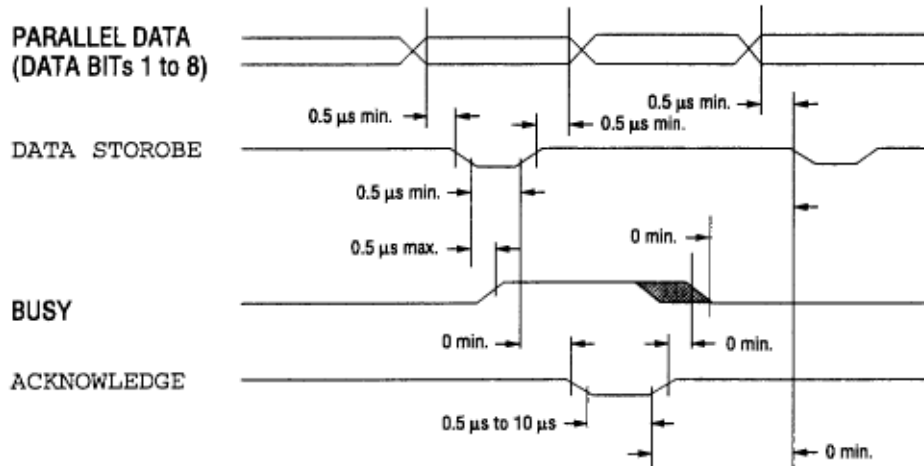


b) Sending Circuit

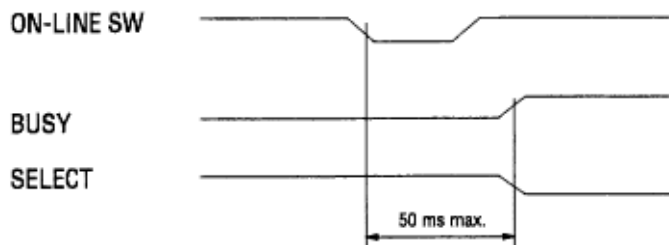


6) Timing Charts

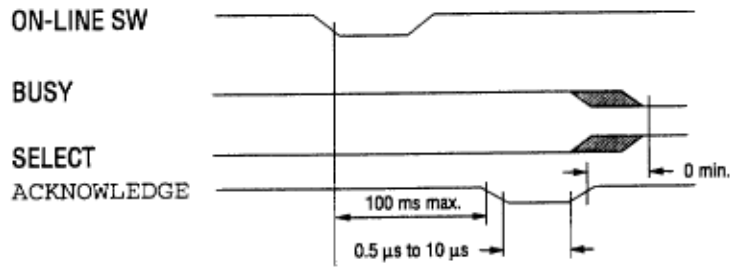
a) Data Receiving Timing



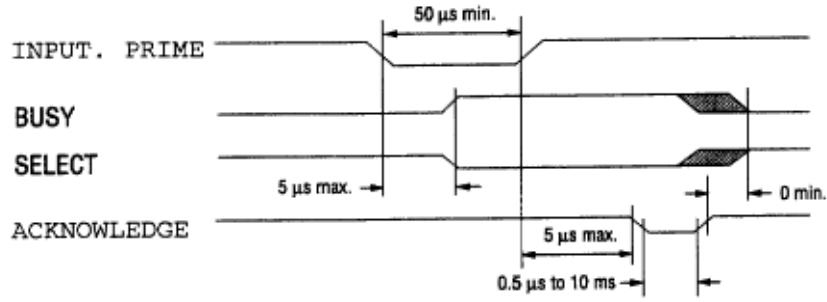
b) On-line ® off-line switching timing by ON-LINE SW (HP4 emulation)



c) Off-line ® on-line switching timing by ON-LINE SW (HP4 emulation)



d) INPUT PRIME timing (when set to the effective INPUT PRIME signal on HP4 emulation)



%Appendix B LOCALTALK (RS422) SERIAL INTERFACE

(OL610e/PS only)

Appendix B LOCALTALK (RS422) SERIAL INTERFACE (OL610e/PS only)

1) Connector

- Printer side : 8-pin mini DIN receptacle Type TCS7187-01-201 (made by HOSHIDEN) or equivalent
- Cable side : 8-pin mini DIN plug Type TCP7180-01-110 (made by HOSHIDEN) or equivalent

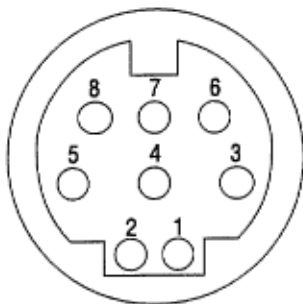
2) Cable

- To be shielded cable
- Cable length LocalTalk Defined max. length : 1,000 ft. (305 m)--maximum length for a LocalTalk network. Recommended max. length : 10 ft. (3 m) (For noise prevention) RS422 : 6 ft. (1.8 m) max.

3) Interface signal

Pin No.	Signal Name	Abbreviation	Signal Direction	Description
1				(Not used)
2	Sync. signal	SYNC	← PR	(Not used)
3	Transmit data minus	TxD-	← PR	Transmit data minus polarity
4	Signal ground	SG		Signal ground
5	Receive data minus	RxD-	→ PR	Receive data minus polarity
6	Transmit data plus	TxD+	← PR	Transmit data plus polarity
7				(Not used)
8	Receive data plus	RxD+	→ PR	Receive data plus polarity

• Connector Pin Arrangement



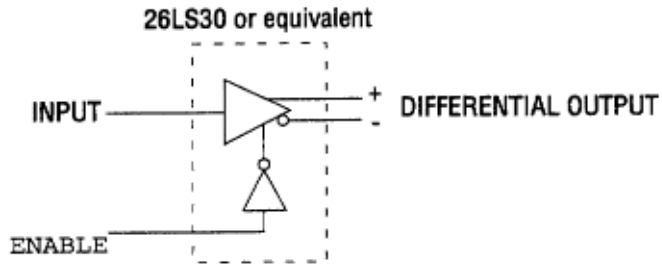
(As viewed from the cable side)

4) Signal level

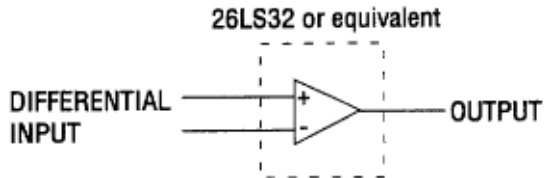
Differential output : $\pm 5V$ Differential input : $\pm 7V$

5) Interface circuit

a) Receiving circuit



b) Transmitting circuit



6) Receive margin

7) Communication protocol • LocalTalk I/F LocalTalk protocol • RS422 I/F X-ON/X-OFF protocol

8) Interfacing parameter setting OL610e/PS

The following settings are possible by pressing



key after selecting the display contents of the LCD of the operator panel by using



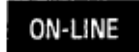
and



keys.

Settings are retained even when the printer power is turned off.

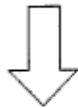
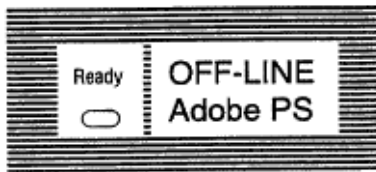
By pressing



key, menu setting mode is completed and the printer returns to ON-LINE state.

%a) LocalTalk « RS422 switching

a) LocalTalk « RS422 switching



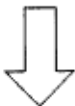
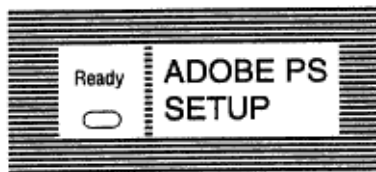
Press



key for 2 seconds to enter the menu mode (level 2), then press



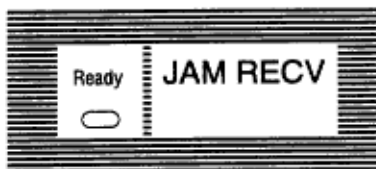
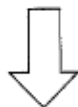
key, 7 times.



Press



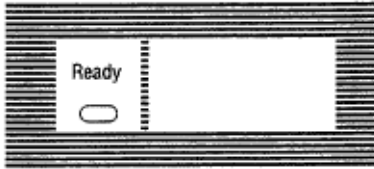
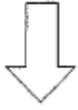
key.



Press

MENU 1
Menu 2

key, 6 times.



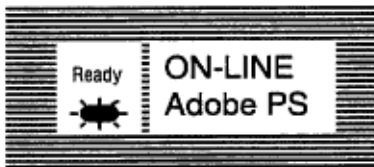
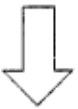
Item	ACTIV 422
Selection	Function
LOCALTK	LocalTalk I/
RS422	RS422 I/F

Factory Setting: LOCALTK

Press

ON-LINE

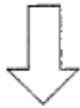
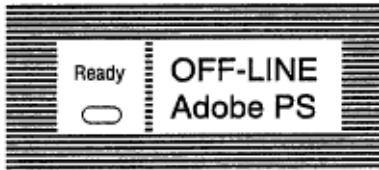
key



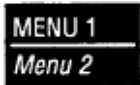
Setting completed.

%b) RS422 I/F parameter setting

b) RS422 I/F parameter setting



Keep

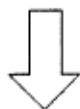
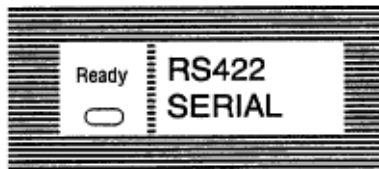
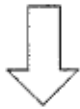


key down for more than 2 seconds and bring the printer into menu setting mode (level 2).

Next, press



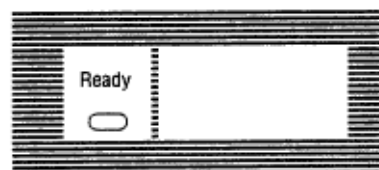
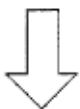
key, 8 times.



Press



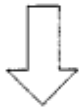
key.



Item	BAUDRATE
------	----------

Selection	Function
300	300 baud
600	600 baud
1200	1200 baud
2400	2400 baud
4800	4800 baud
9600	9600 baud
19200	19200 baud
38400	38400 baud

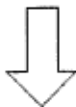
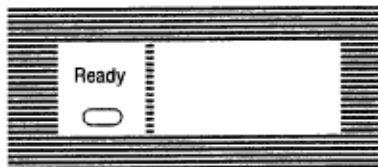
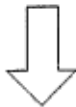
Factory Setting: 9600 baud



Press



key.



Item	DATABITS
Selection	Function
8 BITS	8 bit length
7 BITS	7 bit length

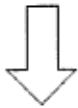
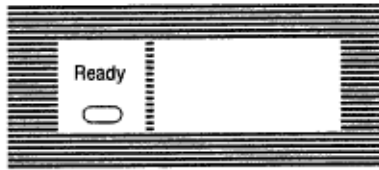
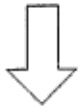
7 bit length

Factory Setting: 8 bit

Press



key.



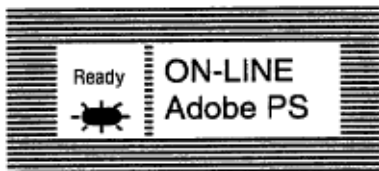
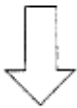
Item	PARITY
Selection	Function
NONE	No parity
EVEN	Even parity
ODD	Odd parity

Factory Setting: No parity

Factory Setting: 8 bit
Press



key.



Setting completed.

Appendix C

%1. Maintenance Menus OL610e/PS

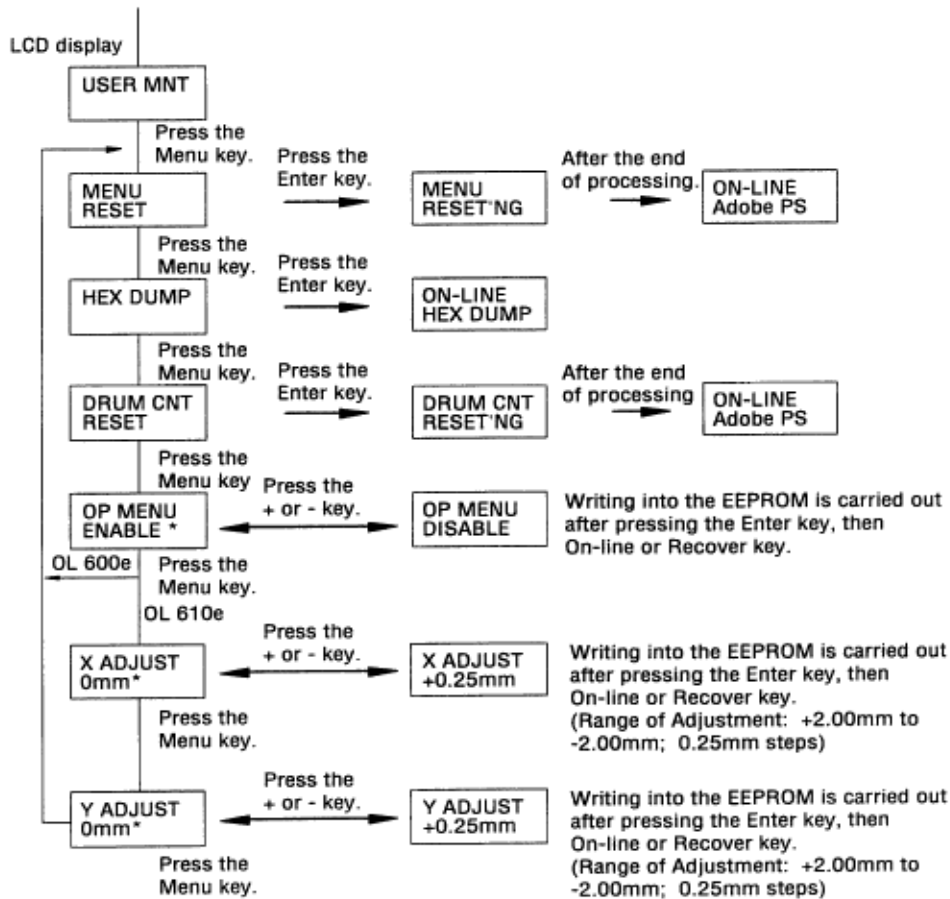
Appendix C Software Diagnostics and Adjustments

1. Maintenance Menus OL610e/PS

- These menus are available on the *OL610e/PS only* see Section 2 for the equivalents for other models.
- The maintenance menus consist of the user maintenance menu available to the user, and the system and engine maintenance menus, for service personnel only.
- Press the Menu key to update each category. The operation returns to the first category after updating the last category.
- Press the Enter key to select or execute the function being displayed.
- To exit from any of these menus during category display, press the RECOVER or ON-LINE key and the operation mode will start.

1.1 User Maintenance Menu

- To enter the user maintenance menu, turn the power on while holding down the Menu key.
- The user maintenance menu provides the following functions:
 - (1) Hex Dump • The data received from the host is sent to the printer in hexadecimal notation.
 - Printing starts automatically when the received data exceeds one page. If the received data is less than one page, printing can be activated manually by pressing the Form Feed key after changing to the OFF LINE mode. To print automatically even when the received data is less than one page, select the Auto Eject function on the menu.
 - To exit from this menu, turn the power off.
 - (2) Menu Reset • All settings for Menu level-1 are reset to the factory default values.
 - The menus for all available emulations, including options, are reset to the factory default values.
 - The operation mode starts automatically when the menu reset is complete.
 - (3) Drum Counter Reset • This function resets the drum life data when the user replaces the image drum unit.
 - The operation mode starts automatically when the reset is complete.
 - (4) X-Adjust / Y-Adjust
 - This function sets the first character printing position on the first line.
 - The operation mode starts automatically upon completion of resetting.
 - (5) Operator Panel Menu Disable
 - This function is for enabling and disabling of the operation panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).



%1.2 System Maintenance Menu

1.2 System Maintenance Menu

- The system maintenance menu is activated when the power is turned on while holding down the Recover key.

- The system maintenance menu provides the following functions:

(1) Page Count Display

- The total number of pages counted at the engine block is displayed on the LCD.

(2) Page Count Printing Enable/Disable

- This function allows the selection to include (enable) or exclude (disable) the total number of printed pages counted at the engine block at the time of menu printing.

(3) Rolling ASCII Continuous Printing

- The rolling ASCII pattern is printed continuously for various engine tests.

- Press the ON-LINE key to cancel this mode.

(4) Loop Test

- The loop test is for testing the serial I/F functions without connecting the printer to the host.

- The data is sent and received by loop back in the loop test.

- The loop test is carried out even when another interface is selected in Menu level-2.

- Installation of the loop connector is necessary for the loop test.

- The realtime loop count is displayed on the LCD.

- When an error occurs in the course of the test, the corresponding error message is displayed.

- Press the ON-LINE key to cancel this mode.

(5) EEPROM Reset

- All EEPROM areas, including Menu level-2 are reset to the factory default values.

- The following items are excluded:

Head drive time setting

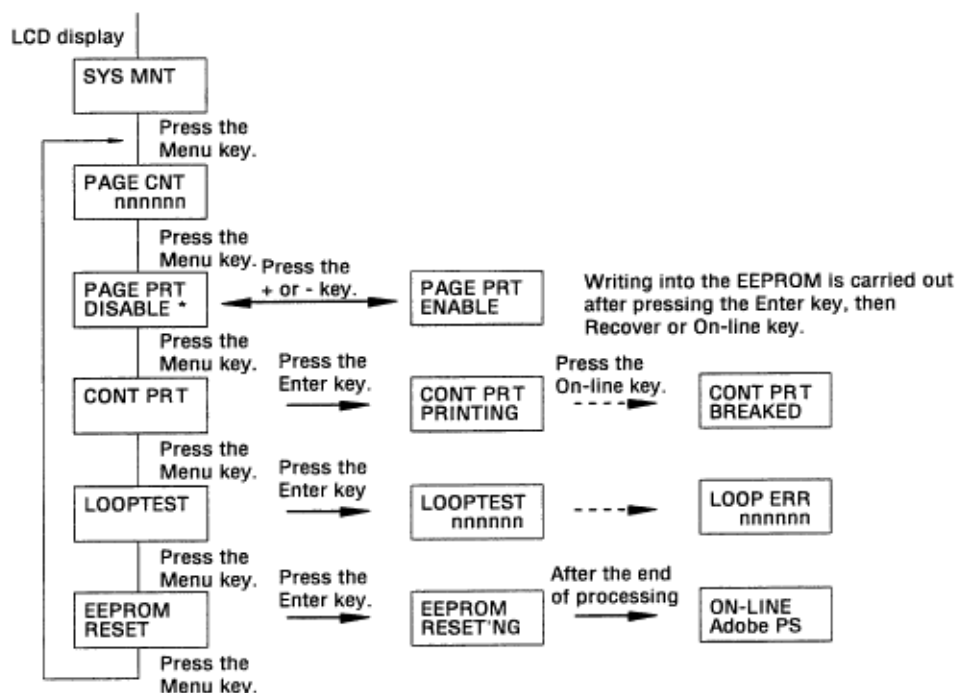
Fine adjustment of printing start position

Standard tray paper feed amount setting

- Transition to the operation mode occurs upon completion of resetting.

- Press the Menu key to update each category. The operation returns to the first category after updating the last category.

Fig. C-1: System Maintenance Menu System



%1.3 Engine Maintenance Menu

1.3 Engine Maintenance Menu

- The engine maintenance menu is activated when the power is turned on while holding down the Form Feed key and the Enter key.

- The method for exit from this menu depends on the setting.

- The engine maintenance menu provides the following functions:

(1) Head Drive Time Setting

- Sets the drive time of the LED head.

- For setting instructions, see page 4-3.

(2) Printing Start Position Setting

- Sets the printing start position.

(3) Drum Count Total Display

- Displays on the LCD the total number of drum revolutions of the unit, counted at the engine block.

(4) Drum Count Display

- Displays on the LCD the total number of EP drum revolutions counted at the engine block.

(5) Factory Adjustment (for High Capacity Second Paper Feeder/Multi-Purpose Feeder)

- Do not change the default settings.

(6) Engine Reset

- All EEPROM areas used by the engine block are reset to the factory default values.

- The following items are excluded:

Menu level-1

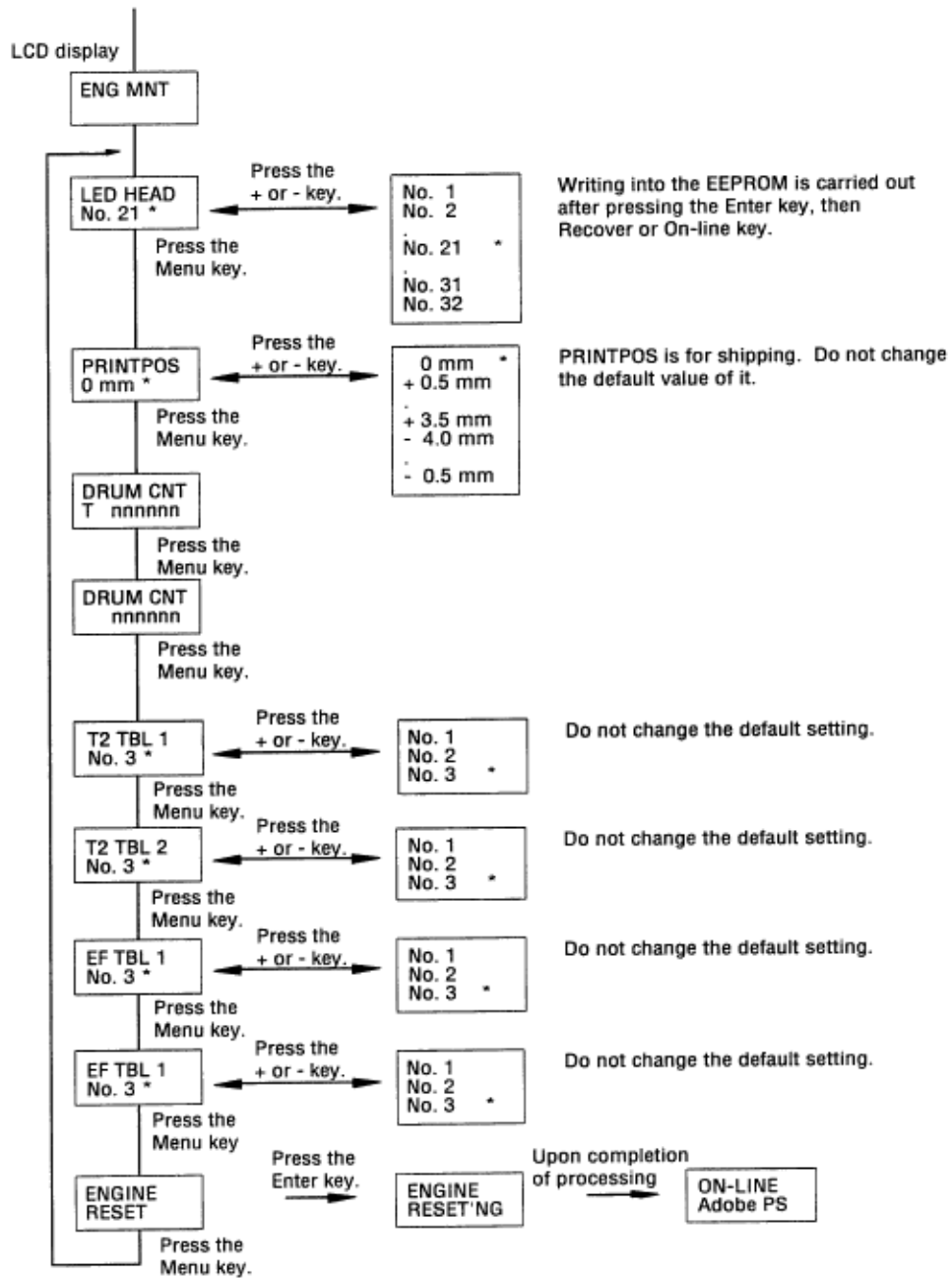
Menu level-2

Operator panel menu disable/enable

Page print disable/enable

- Transition to the operation mode occurs upon completion of resetting.

Fig C-2: Engine Maintenance Menu System



%1.4 Factory User Setting Operation

1.4 Factory User Setting Operation

- These procedures allow switching to ODA, OEL, and Non-Europe user settings .

(1) Factory ODA Setting:

Turn the power on while holding down the Menu key and the NEXT+ key.

(2) Factory OEL Setting:

Turn the power on while holding down the Menu key and the LAST- key.

(3) Factory Non-Europe Setting:

Turn the power on while holding down the Menu key and the FORM FEED key.

- After executing a factory user setting operation, set the EEPROM areas which are for other than the engine block, to the factory default values.

Note 1: units are set for the intended destination at the time of shipment from the factory.

%2. DOS Software Operating Panel OL600e & OL610e - 2.1 Settings

Tab

2. DOS Software Operating Panel OL600e & OL610e

- The diagnostic and adjustment controls on the DOS Operating Panel are on the **Settings** tab, available to the end user, and the **Service** tab, available to service personnel only.
- The Operating Panel uses Windows-type controls and displays.

2.1 Settings Tab

- Selected controls on the **Settings** tab perform adjustment and resetting functions. This tab is available to the end user.

- At the DOS prompt, enter OL600. When the Operator Panel appears, click on Settings or press the ALT and S keys.

2.1.1. Reset Item

- Click on the item to be reset, then click on Reset.

- (1) EEPROM • Resets all EEPROM areas, including Menu level-2, to the factory default values. • The following items are *not* reset:

Head drive time setting

Fine adjustment of printing start position

Standard tray paper feed amount setting

- (2) Menu • Resets all level-1 menu settings to factory default values, including all available emulations and options.

- (3) Drum Count • Resets the drum life data. Perform this function whenever the image drum is replaced.

2.1.2. Print Position Adjust

- Adjusts the horizontal and vertical printing position of the first character of the first line on the page.

- Range of settings: -2.00mm to +2.00mm, in 0.25mm increments.

- Selected desired setting from list boxes.
-

%2.2 Service Tab ?

2.2 Service Tab • This portion of the DOS Operator Panel is available to service personnel only.

- At the DOS prompt, enter: OL600 \S. When the Operator Panel appears, click on Service or press the ALT and e keys.

(1) Head Drive Time

- Sets the drive time of the LED head using a scroll bar.
- For setting instructions, see page 4-3.

(2) LED Array

- Leave at default setting 2560 Dots.
- Alternate setting is for future development.

(3) LED Wires

- Leave at default setting 1 Wire.
- 2 Wire setting is for future development.
- Incorrect setting (2 Wire) causes two copies of the page image to be printed side by side.

(4) Climate

- Adjusts fuser for environmental conditions.
- Settings: +1 (default), 0, 1.

(5) Print Start Position

- This setting is for shipping do not change it.

(6) Market Place

- Set at the factory for the region the unit will be shipped to: ODA (US default): North & South America
OEL: Europe Non-Europe 1: Australia Non-Europe 2: Singapore, Far East
- Must be set to ODA for proper default settings for language, symbol set, page size, etc.
- If incorrectly set, menu page will read "OL600ex" or "OL610ex."

(7) Revision Information

- Displays revision/code numbers for the firmware, the engine, and the CPU.
- This information may be needed to determine the applicability of product updates and procedures outlined in Product Bulletins.

(8) Count Information

- Displays usage information as follows: *Drum*: Number of revolutions of the image drum currently installed in the unit. *Drum Total*: Total number of revolutions of the unit. *Page*: Total number of pages printed by the unit.
-

Appendix D

%Multi-Purpose Feeder Maintenance Preface

Appendix D Multi-Purpose Feeder Maintenance

PREFACE

This Service Manual Appendix is intended for service personnel. It describes the field maintenance procedures for the Multi-Purpose Feeder option for OL600e Series LED Page Printers.

Refer to the Multi-Purpose Feeder Instruction Sheet and Printer Handbook for equipment handling and operation.

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1. OUTLINE

1. OUTLINE

1.1 Functions

This optional Multi-Purpose Feeder is installed on the front section of the printer, and it supplies paper automatically through the operation of pulse motor, which is driven by signals sent from the printer. The main functions are:

• Paper that can be used:

Paper Types • Standard Paper: Xerox 4200 (20-lb) • Special Paper: OHP sheets (for PPC), label sheets (PPC sheets) * Not guaranteed for OHP sheets with attachments on the edge or reverse side. • Cut Sheet Size: Letter, Executive, A4, A5, B5, A6 Special Size: Width 87 to 216mm Length 148 to 297mm

Weight and Thickness • 16-lb to 32-lb (60~128 g/m²) • For Label and OHP Sheets: Label sheets: 0.1 to 0.15mm OHP sheets: 0.08 to 0.11mm

* When using sheets which exceed 24-lb, make sure that the paper exits through the face-up route.

1.2 External View and Component Names

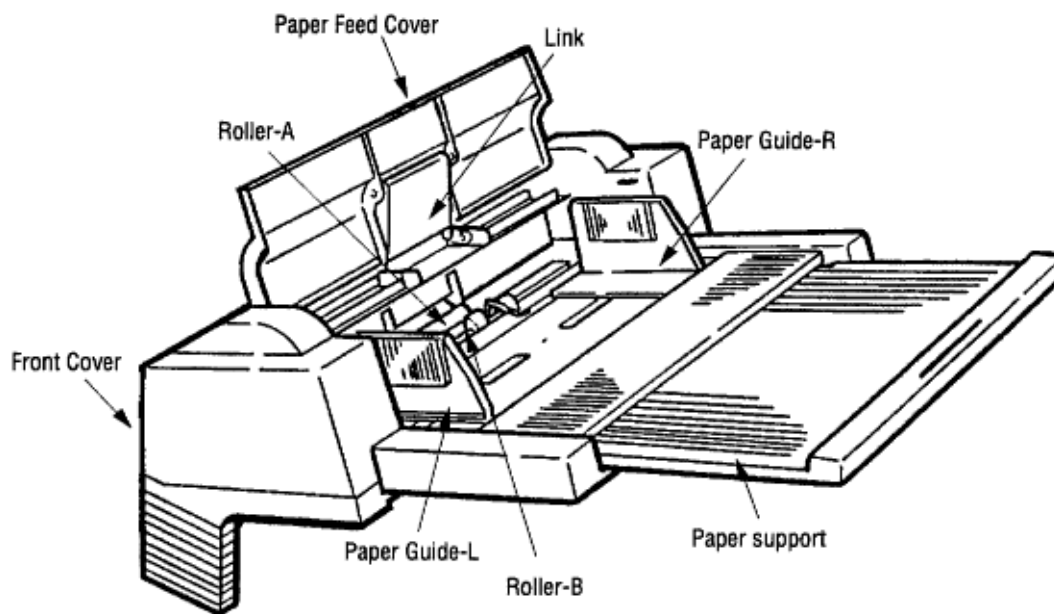


Figure 1-1

2. MECHANISM DESCRIPTION

2. MECHANISM DESCRIPTION

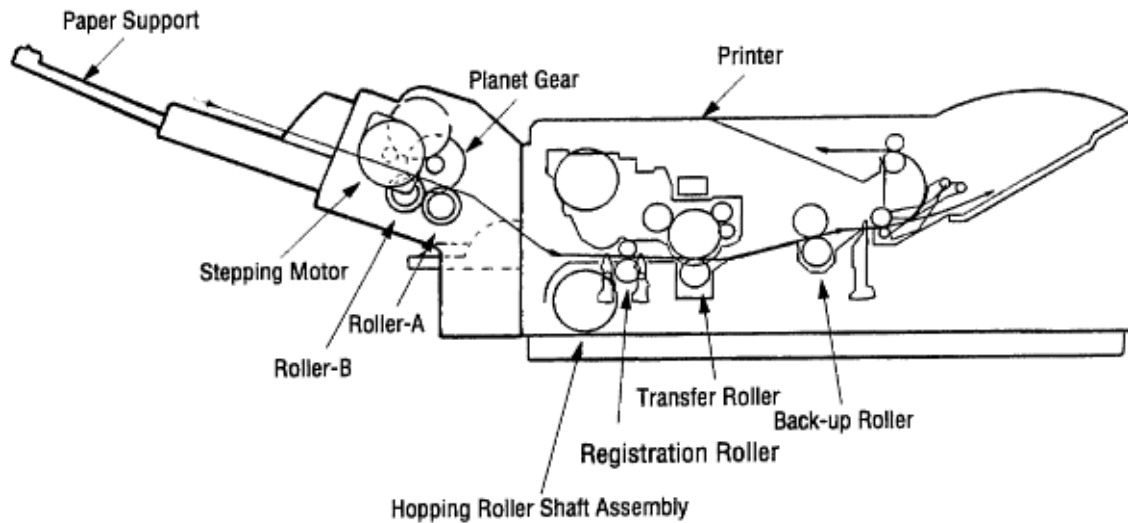
2.1 General Mechanism

The Multi-Purpose Feeder feeds the paper into the printer by receiving the signal from the printer, which drives the pulse motor inside the Multi-Purpose Feeder, and this motion is conveyed to rotate roller-A and B. The paper is delivered from the separator into the printer.

Once delivered into the printer, the paper is then controlled and fed through by pulse motor (Registration) of the printer.

2.2 Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time. After the paper is set in the Multi-Purpose Feeder, the pulse motor moves the paper and a single paper caught by the separator is fed into the printer.



3. PARTS REPLACEMENT - 3.1 Precautions Concerning Parts

Replacement

3. PARTS REPLACEMENT

This section covers the procedures for the disassembly, reassembly and installations in the field. This section describes the disassembly procedures, and for reassembly procedures, basically proceed with the disassembly procedures in the reverse order.








3.1 Precautions Concerning Parts Replacement **Note:** Always use good anti-static methods. (1) Parts replacements must be carried out, by first turning the printer power switch off [O] and removing the Multi-Purpose Feeder from the printer. (2) Do not disassemble the Multi-Purpose 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) Use only specified service tools. (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 gloves, which may generate static electricity.

(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service tools	Q'ty	Place of use	Remarks
1	 No. 1-100 Philips screwdriver	1	2 ~ 2.5 mm screws	
2	 No. 2-100 Philips screwdriver	1	3 ~ 5 mm screws	
3	 NO. 3-100 screwdriver	1		
4	 NO. 5-200 screwdriver	1		
5	 Digital multimeter	1		
6	 Pliers	1		
7	 Handy cleaner	1		

3.2 Parts Layout

3.2 Parts Layout

This section describes the layout of the main components.

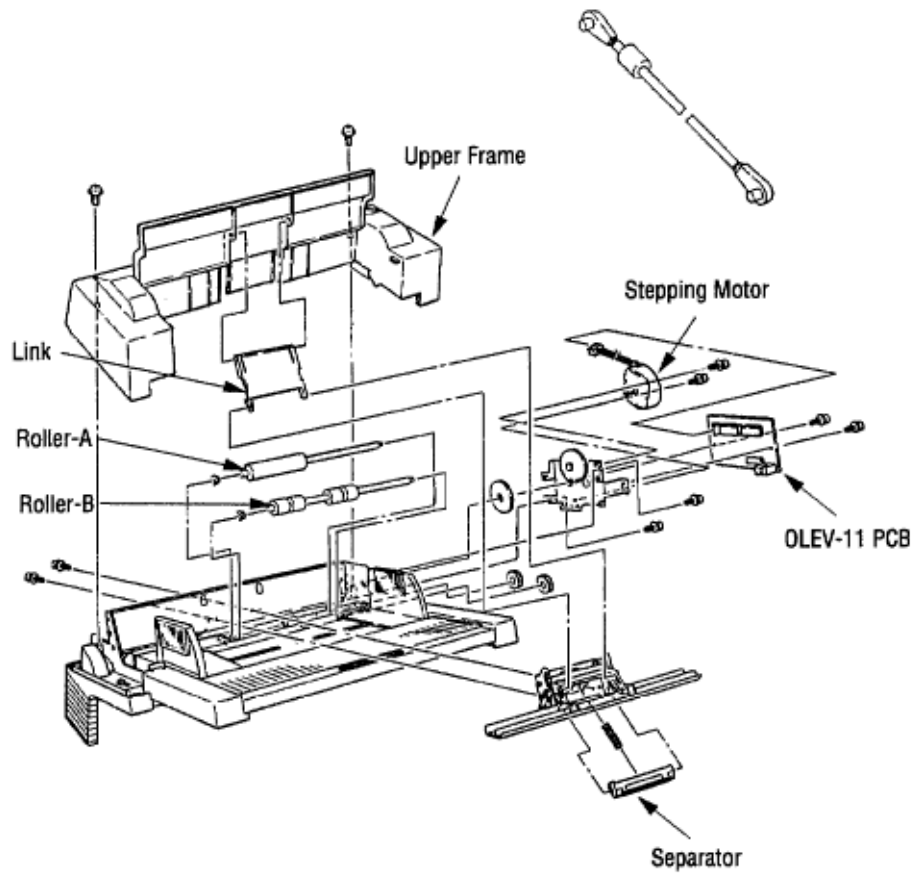
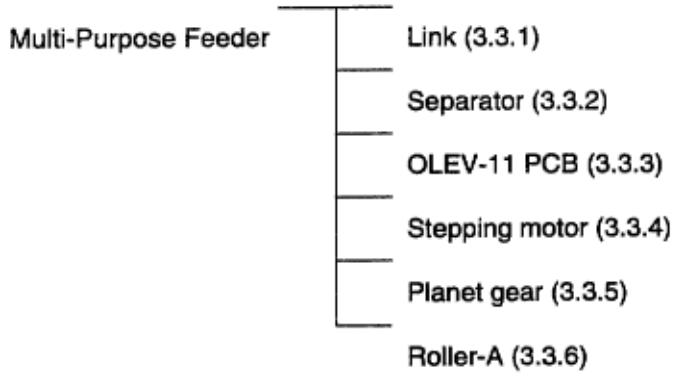


Figure 3-1

3.3 Parts Replacement Methods - 3.3.1 Link

3.3 Parts Replacement Methods

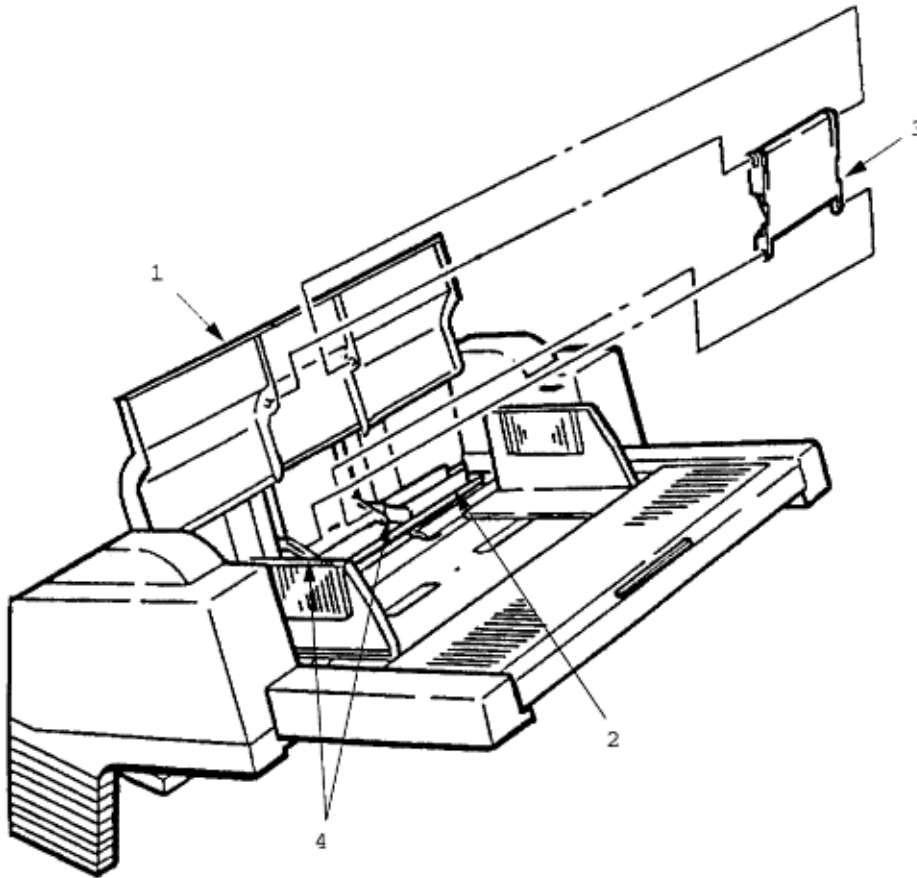
This section describes the parts replacement methods for the components listed in the disassembly order diagram below.



3.3.1 Link

(1) Open paper feed cover 1, and disengage the paper feed cover 1 and Link 3, while lifting the paper hold 2. (2) Remove the paper hold 2 off the arm 4. (3) Disengage the link 3 from the arm 4, and remove it.

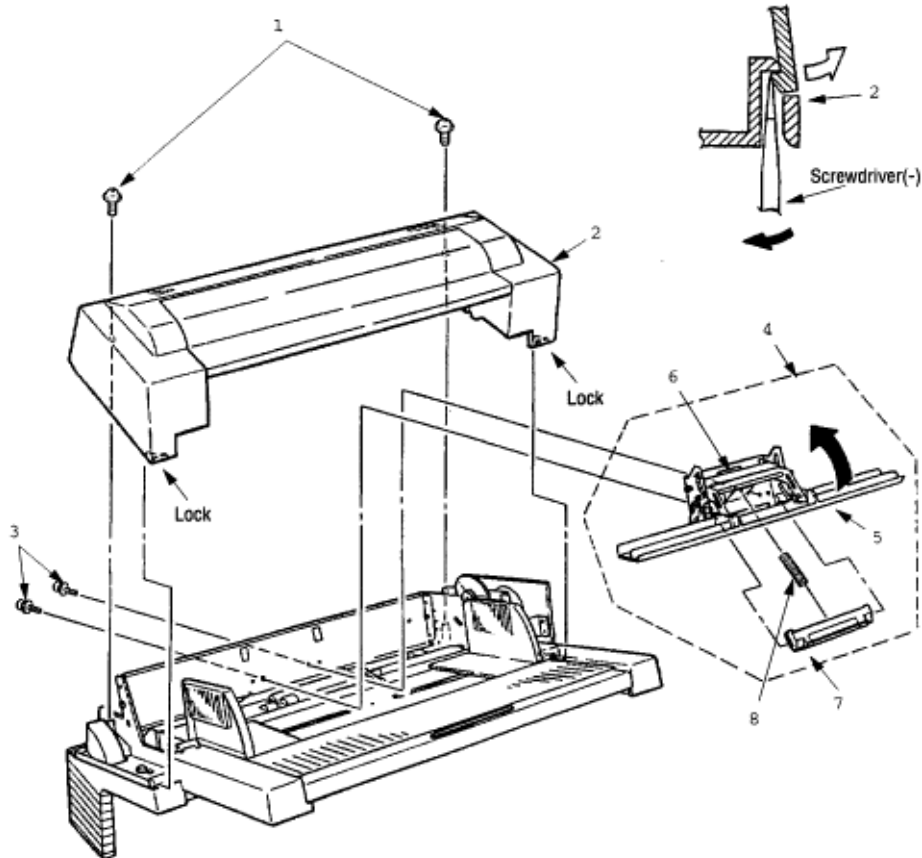
* Be careful not to damage the link and arm.



3.3.2 Separator

3.3.2 Separator

(1) Turn the power switch off [O] and remove the connector cord. (2) Disengage the link and paper feeder cover (see 3.3.1). (3) Remove the 2 screws 1, disengage the locks at 2 locations on the upper frame 2 with a screwdriver, and remove the upper frame 2. (4) Remove the 2 screws 3, and take out the separator assembly 4. (5) Disengage the separator 7 from the separator bracket 6 while lifting the paper hold 5, and take out the separator. (Be careful not to lose the spring 8 when you are doing this).

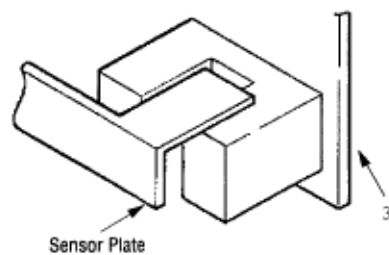
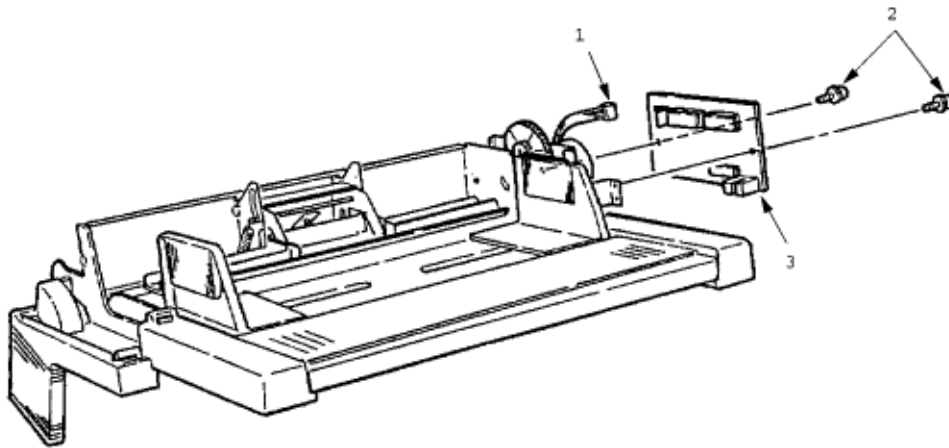


3.3.3 OLEV-11 PCB

3.3.3 OLEV-11 PCB

(1) Remove the upper frame (see 3.3.2 steps (1) through (3)). (2) Remove the connector 1. (3) Remove the 2 screws 2, and remove the OLEV-11 PCB 3.

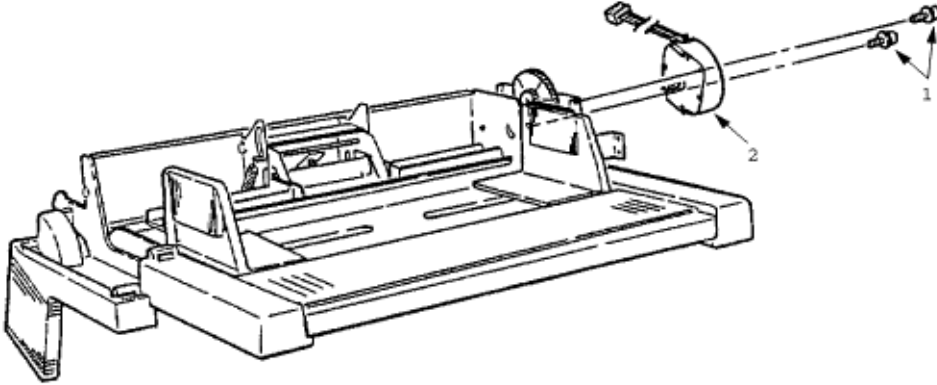
When mounting the printed circuit board, be careful to make sure that the sensor plate is set correctly.



3.3.4 Pulse Motor

3.3.4 Pulse Motor

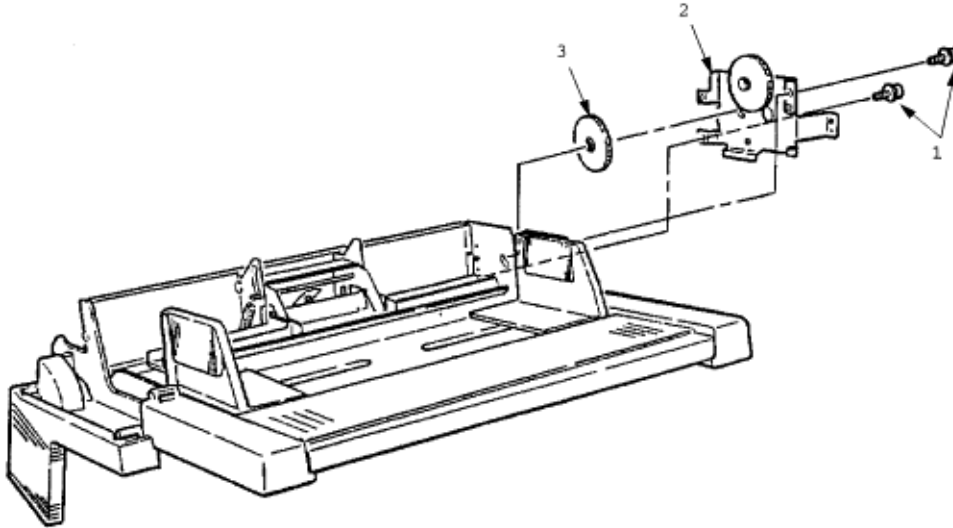
- (1) Remove the upper frame (see 3.3.2 steps (1) through (3)). (2) Remove the OLEV-11 PCB (see 3.3.3).
(3) Remove the 2 screws **1**, and remove the stepping motor **2**.



3.3.5 Planet Gear

3.3.5 Planet Gear

- (1) Remove the upper frame (see 3.3.2 steps (1) through (3)).
- (2) Remove the OLEV-11 PCB (see 3.3.3).
- (3) Remove the 2 screws **1**, and remove the motor bracket assembly **2** and planet gear **3**.

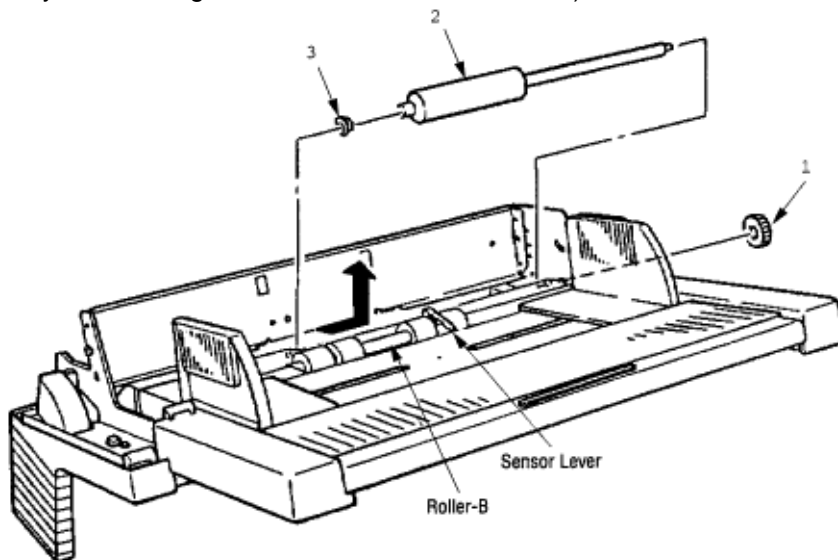


3.3.6 Roller-A and -B

3.3.6 Roller-A and -B

While only the removal procedure for roller-A is described here, the removal procedure for roller-B is basically same. When removing roller-B, however, be careful not to deform the sensor lever.

(1) Remove the upper frame (see 3.3.2 steps (1) through (3)). (2) Remove the separator assembly (see 3.3.2). (3) Remove the OLEV-11 PCB (see 3.3.3). (4) Remove the motor bracket (see 3.3.5). (5) Remove the gear 1. (6) Shift the roller-A 2 to the right, lift it on its left side and slide it out (bearing 3 also comes off while you are doing this, so be careful not to lose it).



%4. TROUBLESHOOTING - 4.1 Precautions Prior to Troubleshooting

4. TROUBLESHOOTING

4.1 Precautions Prior to Troubleshooting

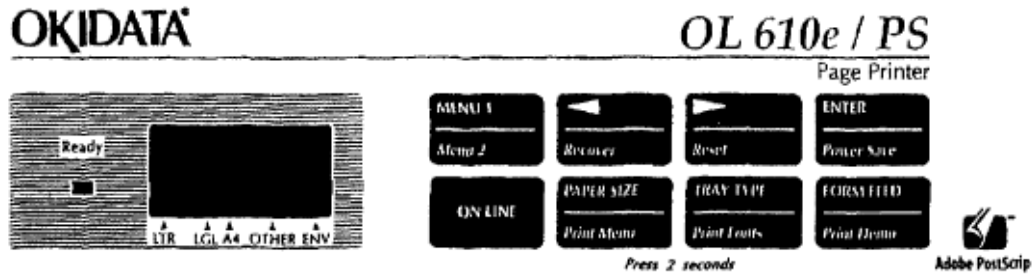
(1) Go through the basic checking items provided in the Operator Guide. (2) Obtain detailed information concerning the problem from the user. (3) Go through the checking in the conditions similar to that in which the problem occurred.

%4.2 Preparations for Troubleshooting

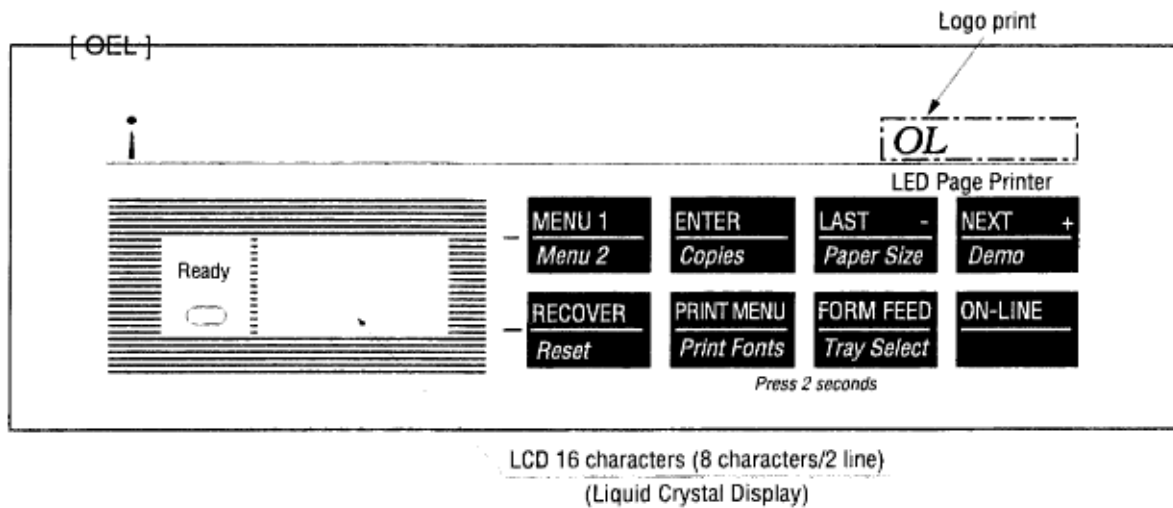
4.2 Preparations for Troubleshooting

(1) Display on the operator panel The status of the problem is displayed on the operator panel (OL610e/PS) or in the printer control software (other models). Go through the appropriate troubleshooting procedures according to the messages displayed.

[ODA]



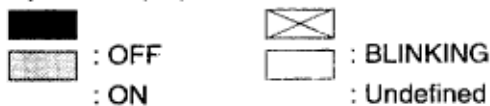
[OEL]



Ready LED display

Status message display

Ready LED display

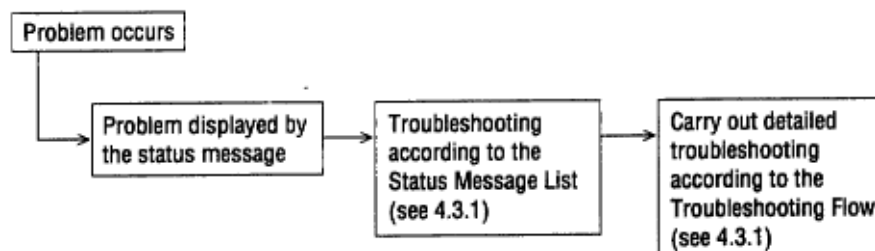


Logo print
OL600e
OL600ex
OL610e
OL610ex

4.3 Troubleshooting Method




4.3 Troubleshooting Method

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

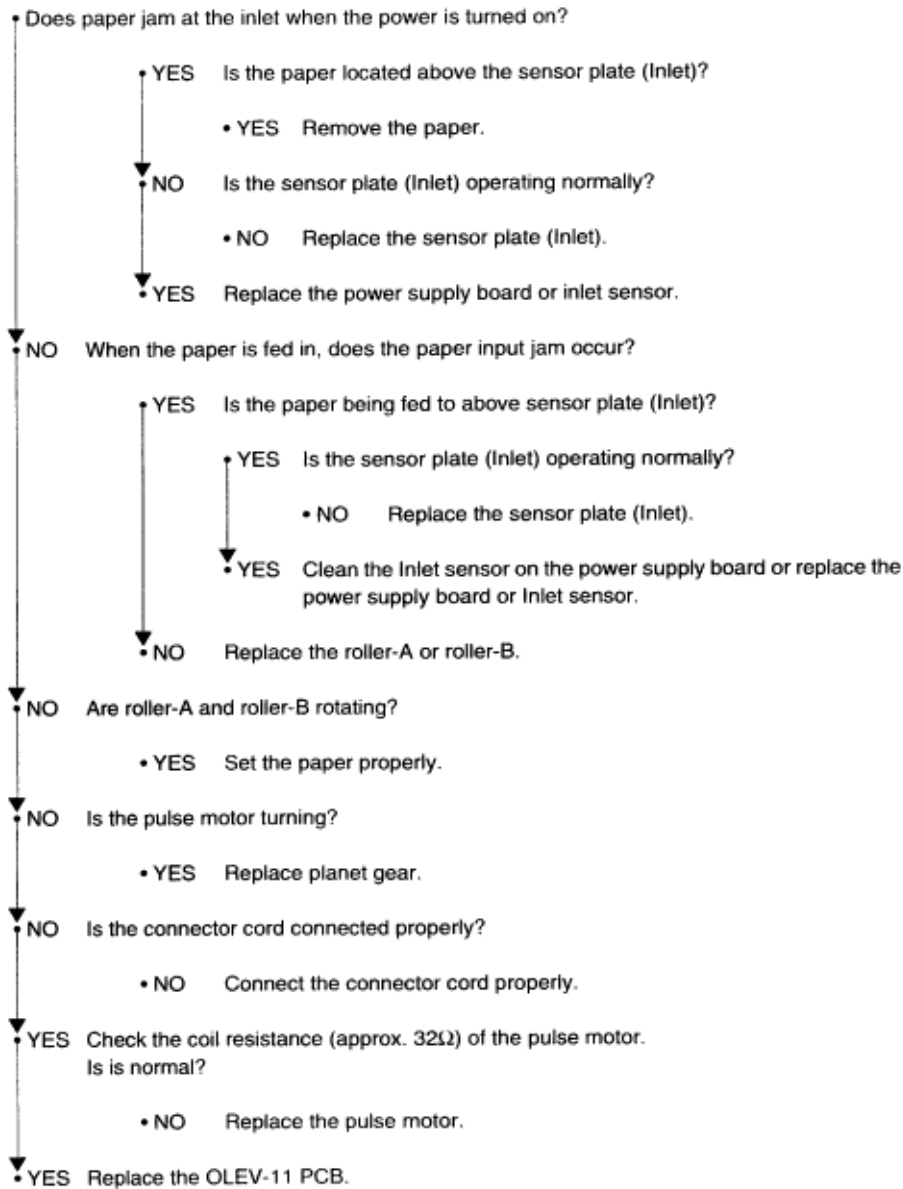


4.3.1 Status Message List

Table 6-1 lists status messages and error recovery procedures. Messages are listed as they appear on the LCD display of the OL610e/PS. For the OL600e and OL610e, similar messages appear in the Status Monitor window.

Classification	LCD Status Message	Description	Recovery method
Jam error	 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEED PAPER INPUT JAM</div> <p style="text-align: center;">or</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEEDER FEED JAM</div>	Notifies of occurrence of jam while the paper is being fed from Multi-Purpose Feeder	<ul style="list-style-type: none"> • Check the paper in the Multi-Purpose Feeder. Carry out the recovery printing by opening and closing the cover, and turn the error display off. • When the problem occurs frequently, to through the Troubleshooting.
Paper size error	 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEEDER SIZE ERR</div>	Notifies of incorrect size paper feeding from Multi-Purpose Feeder.	<ul style="list-style-type: none"> • Check the paper in the Multi-purpose Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening and closing the cover, and turn the error display off.
Tray paper out	 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEEDER PAPEROUT</div>	Notifies that there is no paper in the Multi-Purpose Feeder.	<ul style="list-style-type: none"> • Load paper in Multi-Purpose Feeder.

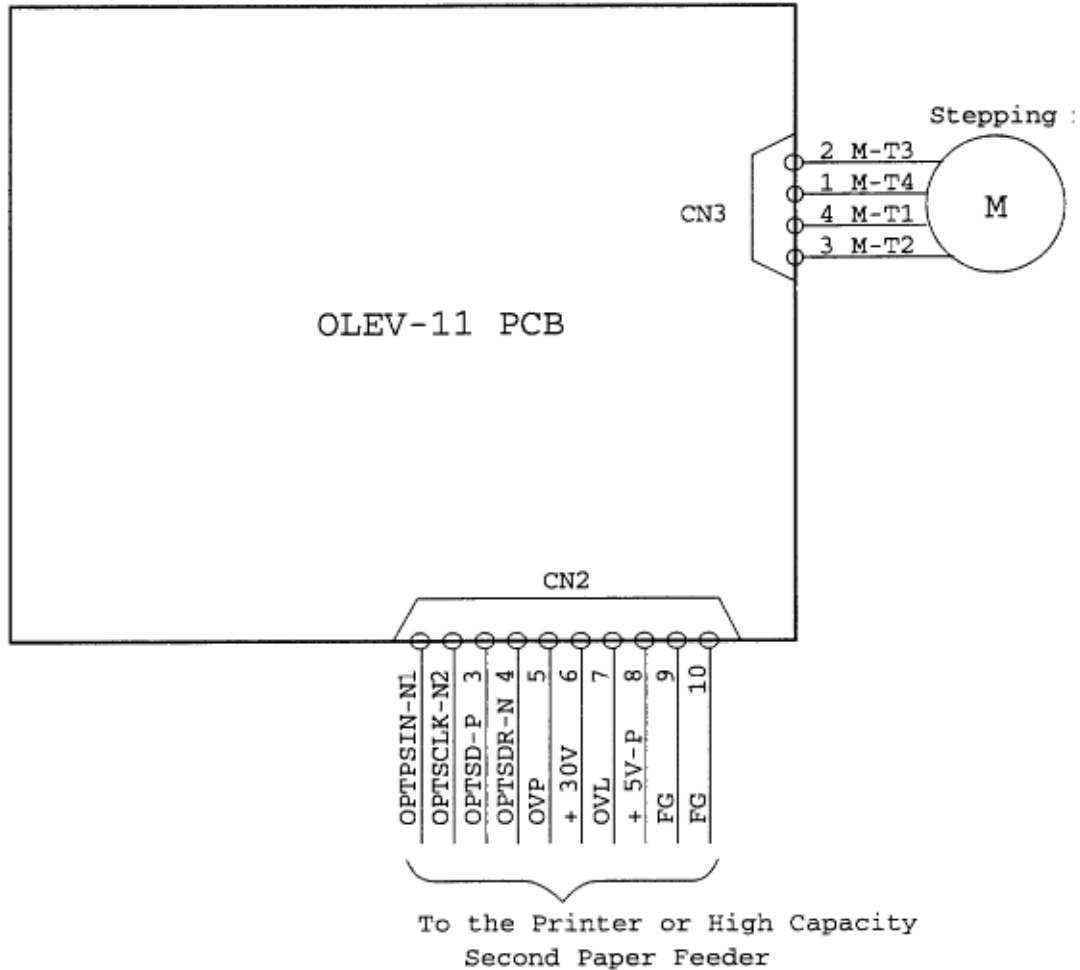
- (JAM error)



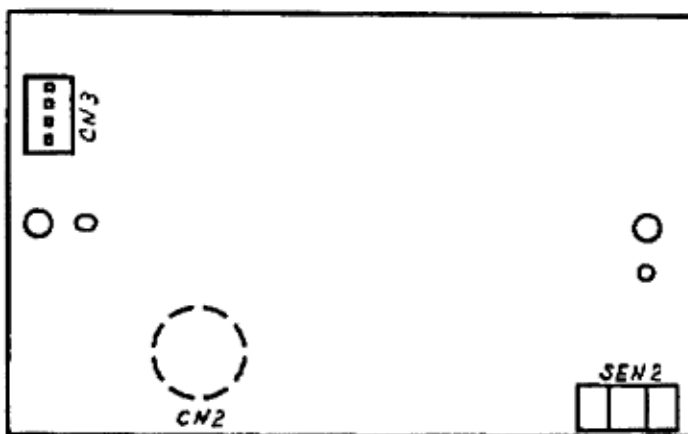
%5. CONNECTION DIAGRAM

5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout OLEV-11 PCB



%6. PARTS LIST

6. PARTS LIST

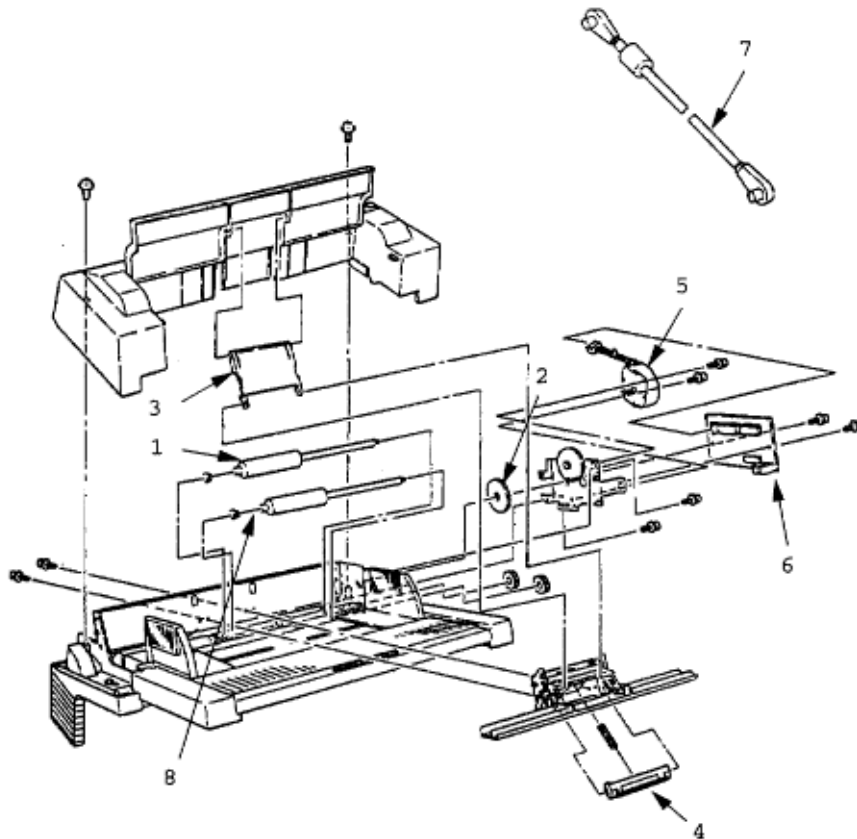


Figure 6-1 Multi-Purpose Feeder

Table 6-1 Multi-Purpose Feeder

No.	Description	Oki-J Part No.	ODA Part No.	Qty	Remark
1	Roller-A	3PB4083-5514P1	50409201	1	
2	Planet gear	4PP4083-5520P1	51229601	1	
3	Link	3PP4083-5540P1	53344101	1	
4	Separator	4PP4083-5544G1	5334201	1	
5	Pulse motor	Pulse motor	56510701	1	Same as printer unit.
6	OLEV-PCB	OLEV-PCB	55074811	1	
7	Connection cord	3YS4011-3141P1	56631201	1	
8	Roller-B	3PB4083-5523P1	53343901	1	
9	Separator assy	3PA4083-5549	53347101	1	Includes 3 and 4 above.

Appendix E

%High Capacity Second Paper Feeder Maintenance

- Preface

Appendix E High Capacity Second Paper Feeder Maintenance

PREFACE

This Service Manual Appendix Manual is intended for service personnel. It describes the field maintenance procedures for the High Capacity Second Paper Feeder option for OL600e Series LED Page Printers.

Refer to the Second Paper Feeder Instruction Sheet and the Printer Handbook for equipment handling and operation.

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1. OUTLINE

1. OUTLINE

1.1 Functions

The printer is mounted on top of this High Capacity Second Paper Feeder, and it supplies paper automatically through the operation of pulse motor (Hopping), which is driven by signals sent from the printer. The main functions are:

- Paper that can be used:

Paper Type • 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: A4, A5, B5, Letter, Executive, Legal13, Legal14 • Special Size: Paper Width: 87 to 216mm Paper length: 190 to 355.6mm

Weight • 16-lb to 24-lb (60 to 90 g/m²)

- Paper setting quantity: 250 sheets of paper weighing 64 g/m²

1.2 External View and Component Names

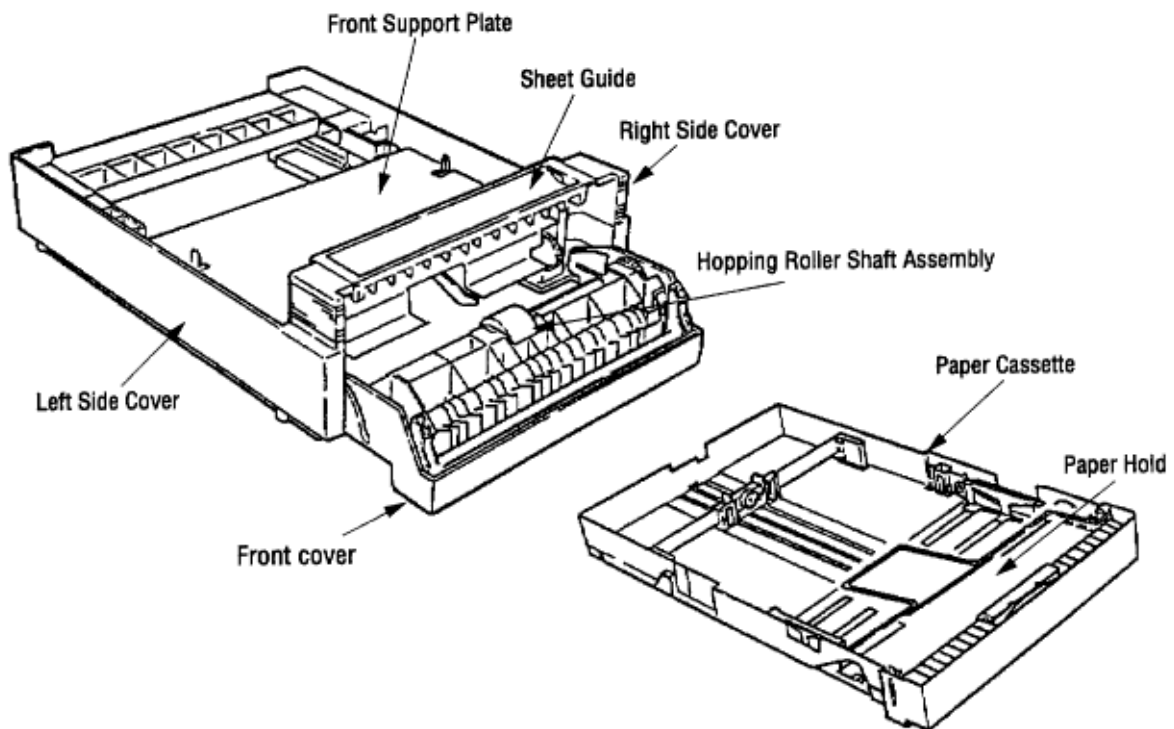


Figure 1-1 External View and Component Names

2. MECHANISM DESCRIPTION

2. MECHANISM DESCRIPTION

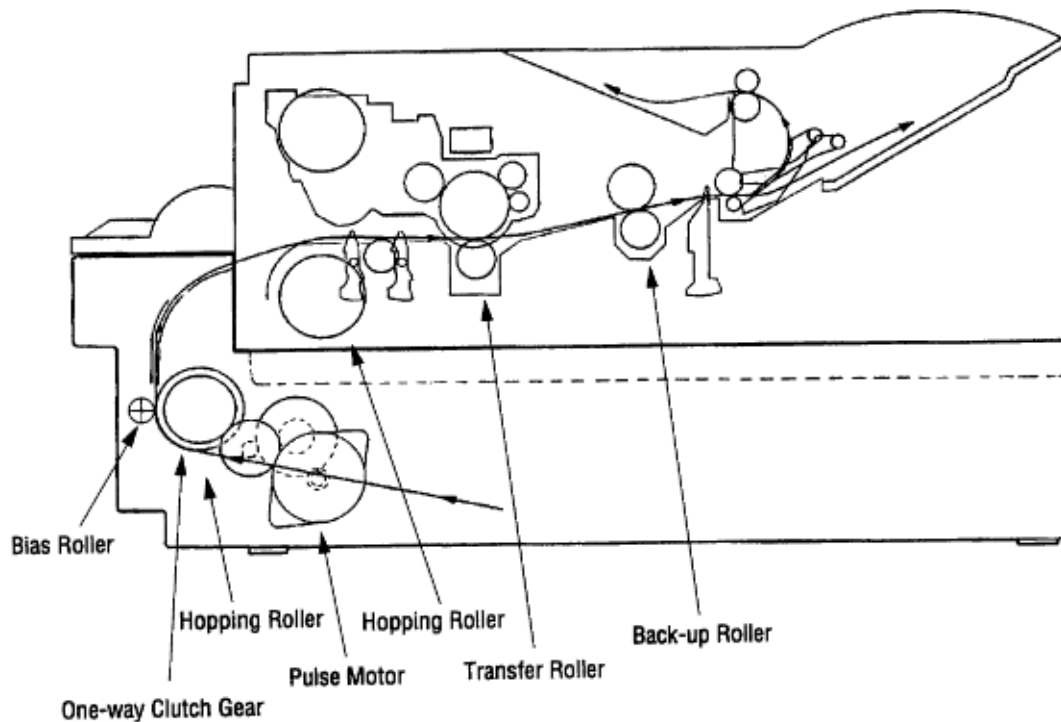
2.1 General Mechanism

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. This motion is conveyed to rotate the one-way clutch of the hopping shaft assembly. The paper is delivered from the hopper into the printer through the turning of the hopping shaft assembly.

Once delivered into the printer, the paper is then controlled and fed through by pulse motor (Registration) of the printer.

2.2 Hopper Mechanism

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



3. PARTS REPLACEMENT - 3.1 Precautions Concerning Parts

Replacement

3. PARTS REPLACEMENT

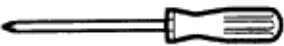






This section covers the procedures for the assembly, disassembly and installations in the field. This section describes the disassembly procedures; for assembly procedures, basically proceed with the disassembly procedures in the reverse order.

3.1 Precautions Concerning Parts Replacement Always use good anti-static procedures. (1) Parts replacements must be carried out, by first turning the printer power switch off [O] and then removing the High Capacity Second Paper Feeder from the printer. (2) Do not disassemble the High Capacity Second 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 gloves, which may generate static electricity. (8) Do not place the printed circuit boards directly on the equipment or floor.

Service Tools

Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service tools	Q'ty	Place of use	Remarks
1	 No. 1-100 Philips screwdriver	1	2 ~ 2.5 mm screws	
2	 No. 2-100 Philips screwdriver	1	3 ~ 5 mm screws	
3	 NO. 3-100 screwdriver	1		
4	 NO. 5-200 screwdriver	1		
5	 Digital multimeter	1		
6	 Pliers	1		
7	 Handy cleaner	1		

3.2 Parts Layout

3.2 Parts Layout

This section describes the layout of the main components.

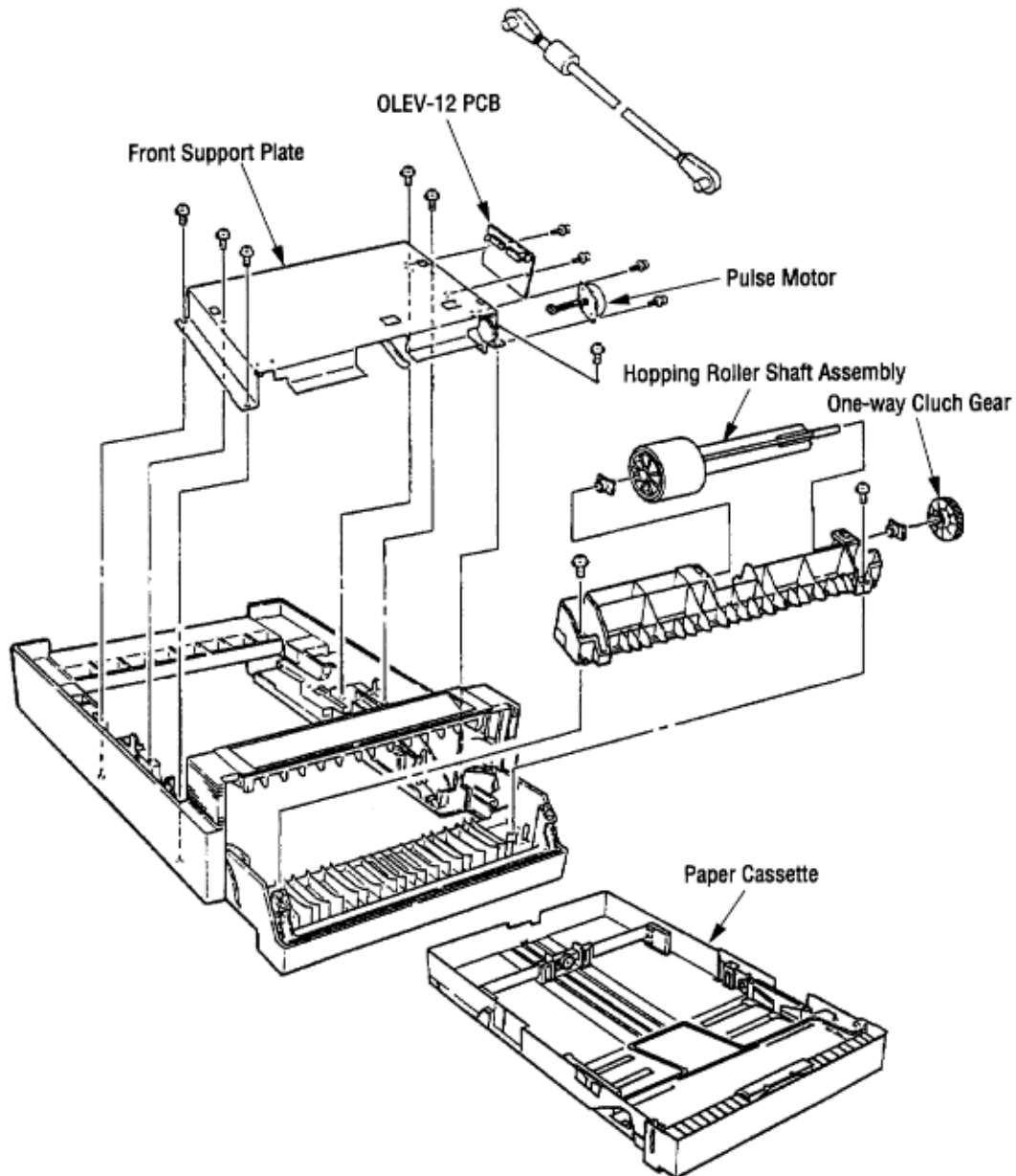
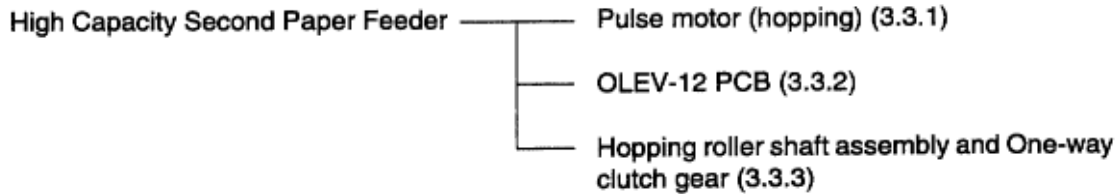


Figure 3-1

3.3 Parts Replacement Methods - 3.3.1 Pulse Motor (Hopping)

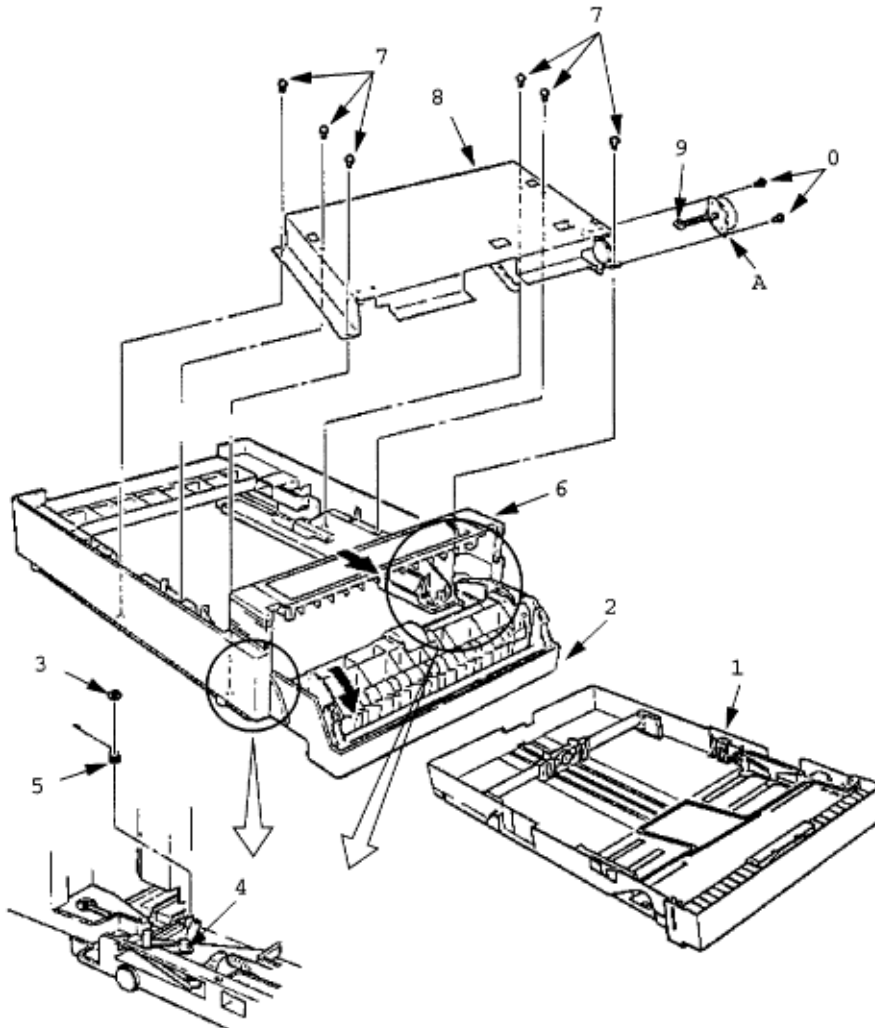
3.3 Parts Replacement Methods

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



3.3.1 Pulse Motor (Hopping)

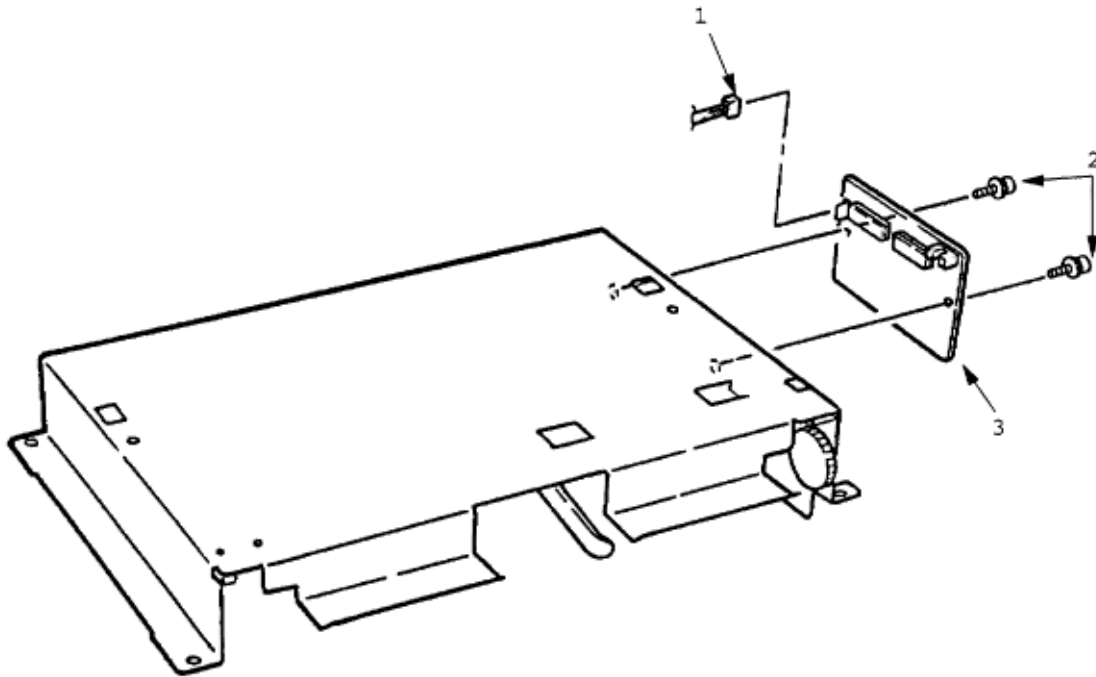
(1) Turn the printer power switch off [O] and remove the interface cable. (2) Remove the paper cassette 1. (3) Open the Front cover 2, stand the High Capacity Second Paper Feeder vertically and remove the 2 E-clamps 3. (4) Remove the 2 levers 4, and remove the tension springs 5. (5) Pull out the sheet guide 6 to the front. (6) Remove the 6 screws 7, and remove the front support plate 8. (7) Remove the connector 9 and the 2 screws 10, and remove the pulse motor 11.



3.3.2 OLEV-12 PCB

3.3.2 OLEV-12 PCB

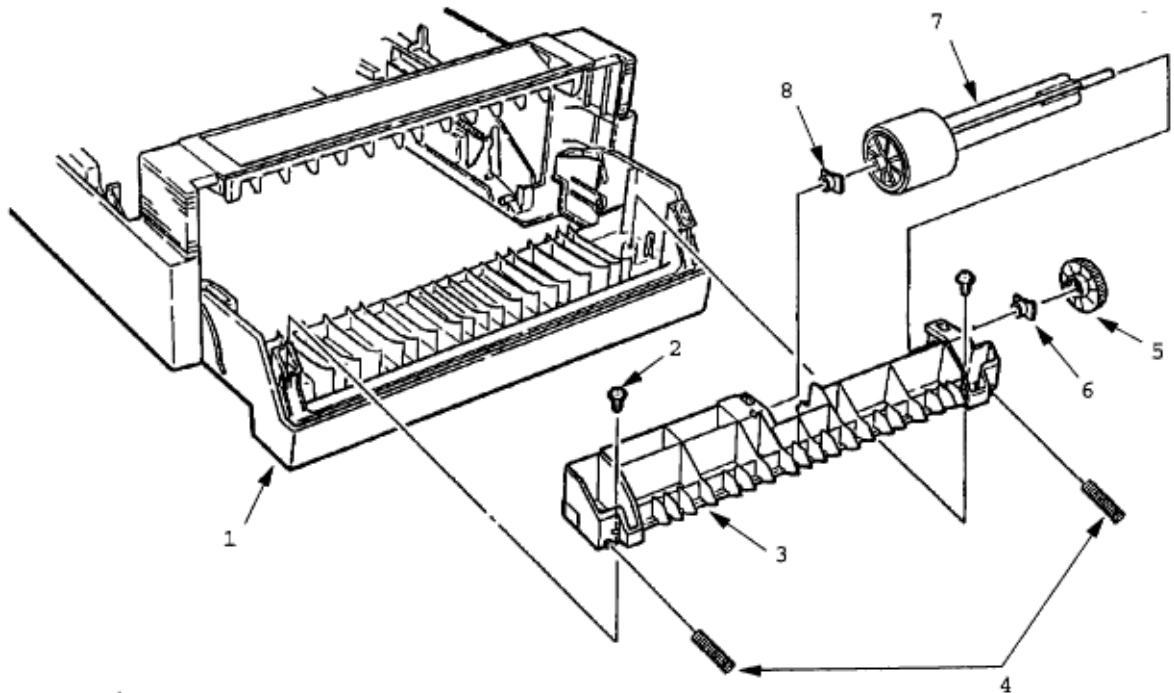
(1) Remove the front support plate (see 3.3.1 steps (1) through (6)). (2) Remove the connector 1, and the 2 screws 2, then remove the OLEV-12 PCB 3.



3.3.3 Hopping Roller Shaft Assembly and One-way Clutch Gear

3.3.3 Hopping Roller Shaft Assembly and One-way Clutch Gear

(1) Open the front cover 1. (2) Remove the 2 screws 2, and remove the hopping roller frame 3 (be careful not to lose the Springs 4 when you do this, since it comes off). (3) Remove the One-way clutch gear 5. (4) Remove the bush-A 6, and remove the hopping roller shaft assembly 7 (be careful not to lose the bush-B 8 when you do this, since it comes off).



%4. TROUBLESHOOTING - 4.1 Precautions Prior to Troubleshooting

4. TROUBLESHOOTING

4.1 Precautions Prior to Troubleshooting

(1) Go through the basic checking items provided in the Operator Guide. (2) Obtain detailed information concerning the problem from the user. (3) Go through the checking in the conditions similar to that in which the problem occurred.

%4.2 Preparations for Troubleshooting

4.2 Preparations for Troubleshooting

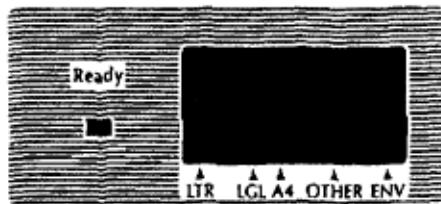
(1) Display on the Operator panel The status of the problem is displayed on the LCD (Liquid Crystal Display) on the Operator panel of the OL610e/PS , and in the Status Monitor software display on other models. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

[ODA]

OKIDATA

OL 610e / PS

Page Printer

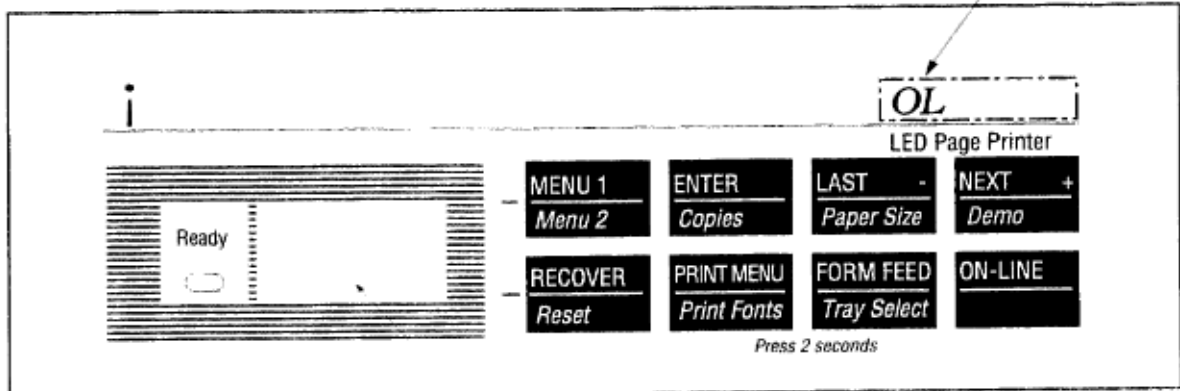


Press 2 seconds



[OEL]

Logo print



Press 2 seconds

LCD 16 characters (8 characters/2 line)
(Liquid Crystal Display)

[Non-Europe]


Status message display

Ready LED display

 : OFF

 : ON

 : BLINKING

 : Undefined

Logo print

OL600e

OL600ex

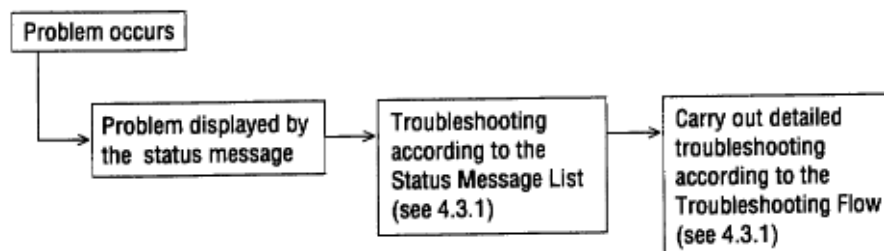
OL610e

OL610ex

4.3 Troubleshooting Method




4.3 Troubleshooting Method

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

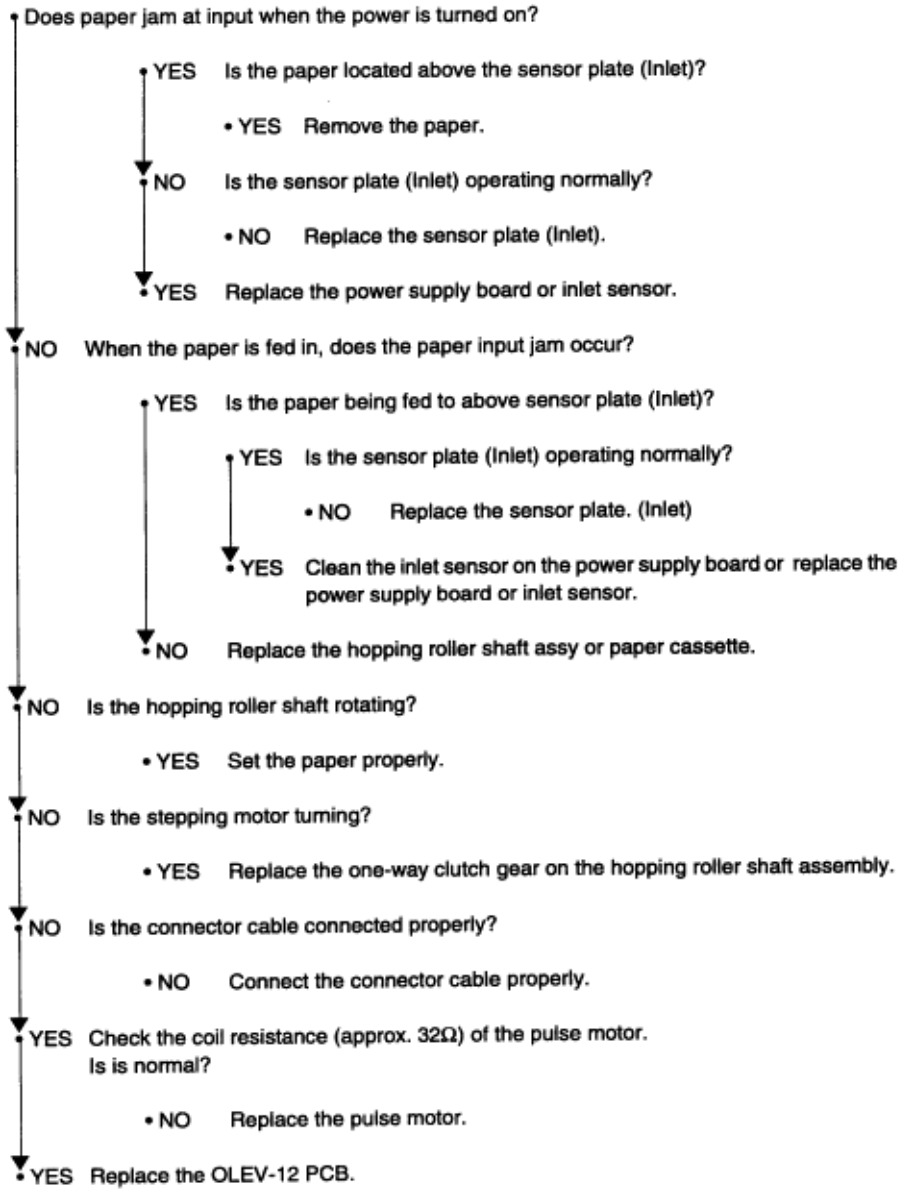


4.3.1 LCD Status Message List

Table 4-1 lists status messages and recovery procedures. Messages are listed as they appear on the LCD display of the OL610e/PS. For the OL600e and OL610e, similar messages appear in the Status Monitor window.

Classification	Status Message	Description	Recovery method
Jam error	 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEED PAPER INPUT JAM</div> or <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEEDER FEED JAM</div>	Indicates occurrence of jam while the paper is being fed from High Capacity Second Paper Feeder	<ul style="list-style-type: none"> • 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, to through the Troubleshooting.
Paper size error	 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEEDER SIZE ERR</div>	Indicates incorrect size paper feeding from High Capacity Second Paper Feeder.	<ul style="list-style-type: none"> • 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, and turn the error display off.
Tray paper out	 <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 2px;">FEEDER PAPEROUT</div>	Indicates no paper or paper cassette state of the High Capacity Second Paper Feeder.	<ul style="list-style-type: none"> • Load the paper or paper cassette in High Capacity Second Paper Feeder.

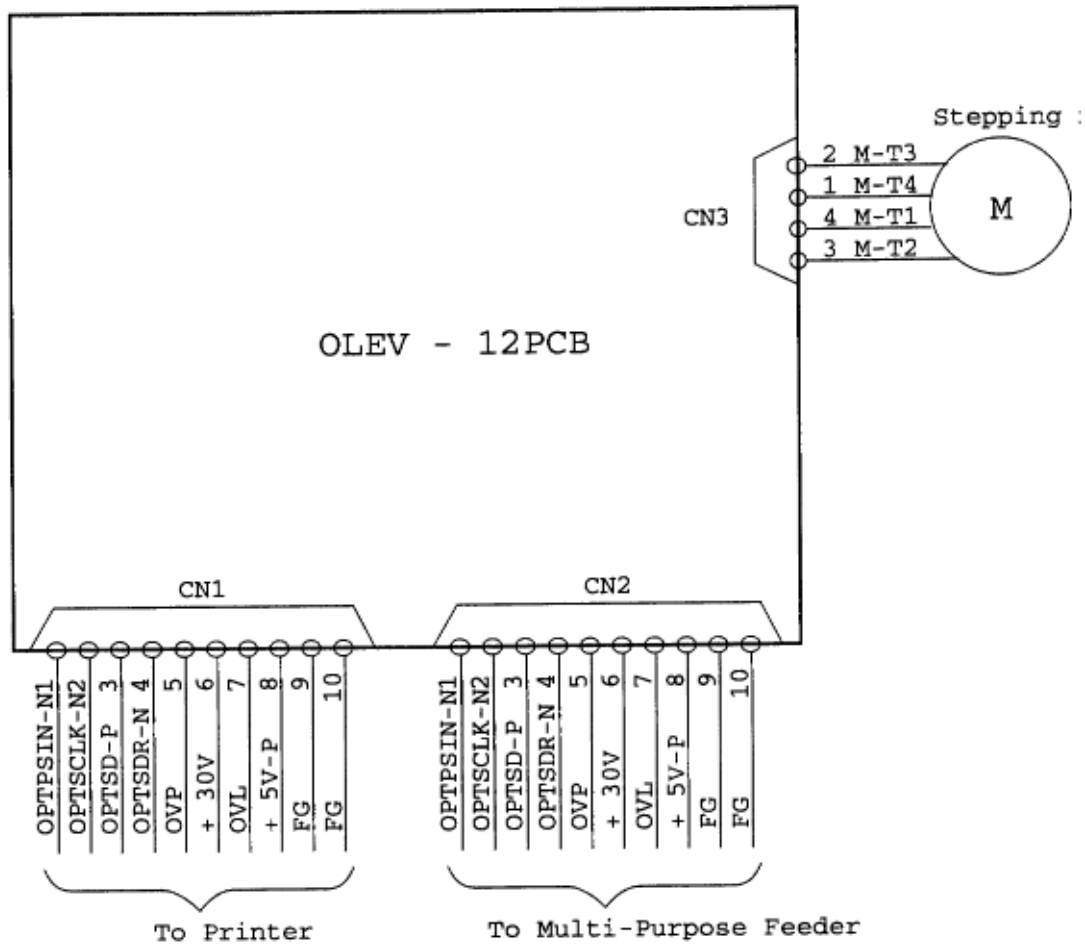
- (JAM error)



%5. CONNECTION DIAGRAM

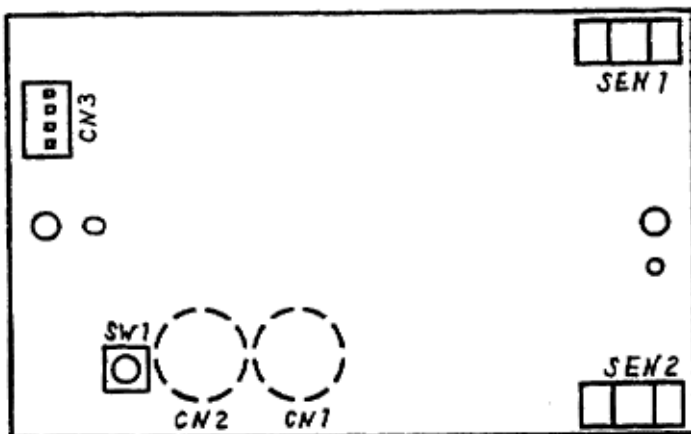
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

OLEV-12 PCB



%6. PARTS LIST

6. PARTS LIST

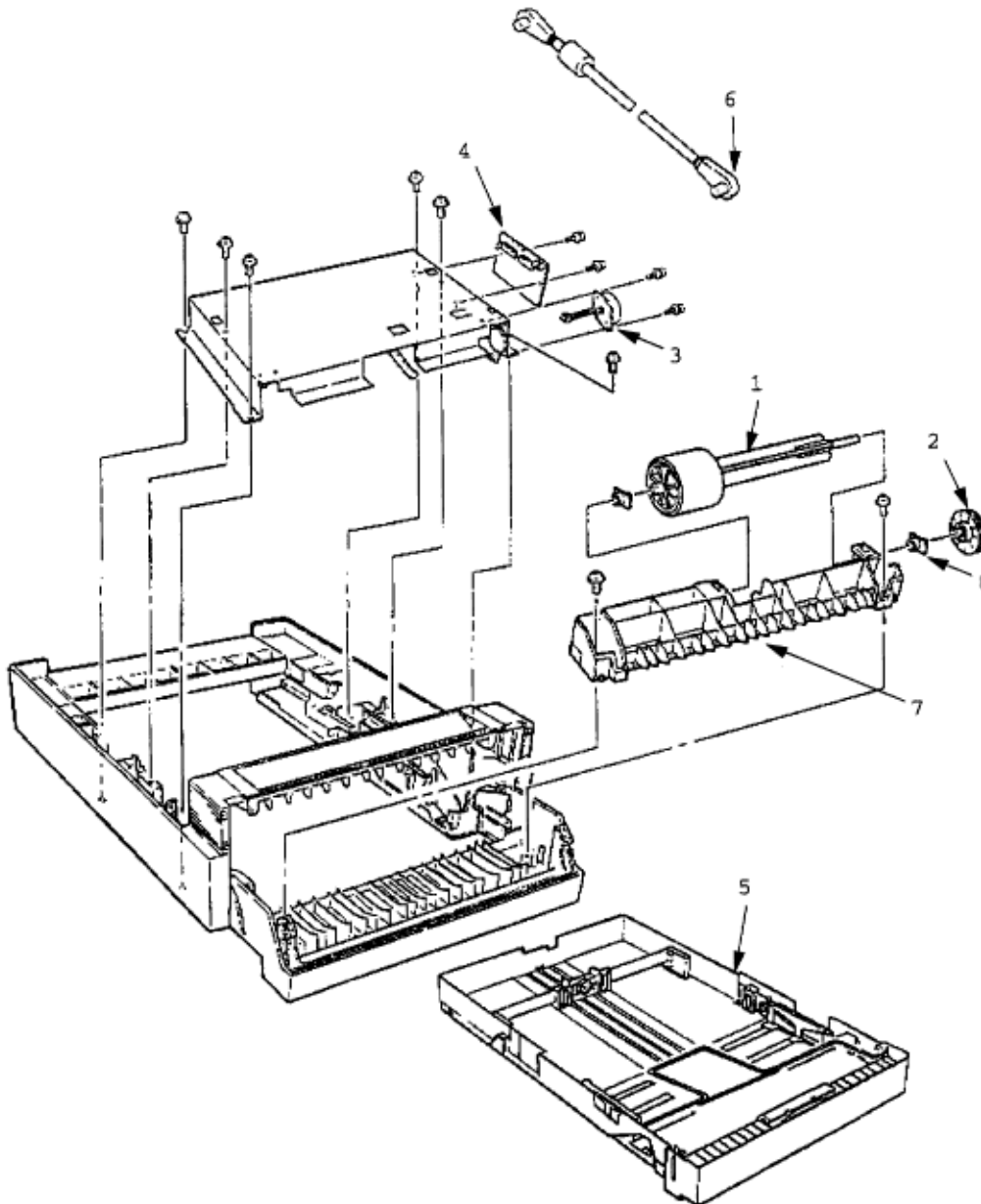


Figure 6-1 High Capacity Second Paper Feeder
Table 6-1 High Capacity Paper Feeder

No.	Description	Oki-J Part No.	ODA Part No.	Qty	Remark
1	Hopping roller shaft assembly	3PA4083-6019G1	51112601	1	Same as the printer unit.
2	One-way clutch gear	4PB4083-6024P1	51228901	1	Same as the printer unit.
3	Pulse motor	4PB4083-6075P1	56510701	1	Same as the printer unit.

4	OLEV-12 PCB	4YA4121-1014G12	55074812	1	
5	Paper cassette	4YA4083-6270G2	50109910	1	
6	Connection cord	3YS4011-3140P3	56631101	1	
7	Hopping roller frame	1PP4083-5605P1	53345901	1	
8	Bearing	4PP4083-6022P2	51607402	2	Same as the printer unit.

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