OKIDATA®

Service Manual

OL810e
LED Page Printer

Adobe Acrobat printable reference
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09/17/97

Note: This Adobe Acrobat version of the Okidata Service Training Manual was built with the pictures rendered at 300 dpi, which is ideal for printing, but does not view on most displays well.

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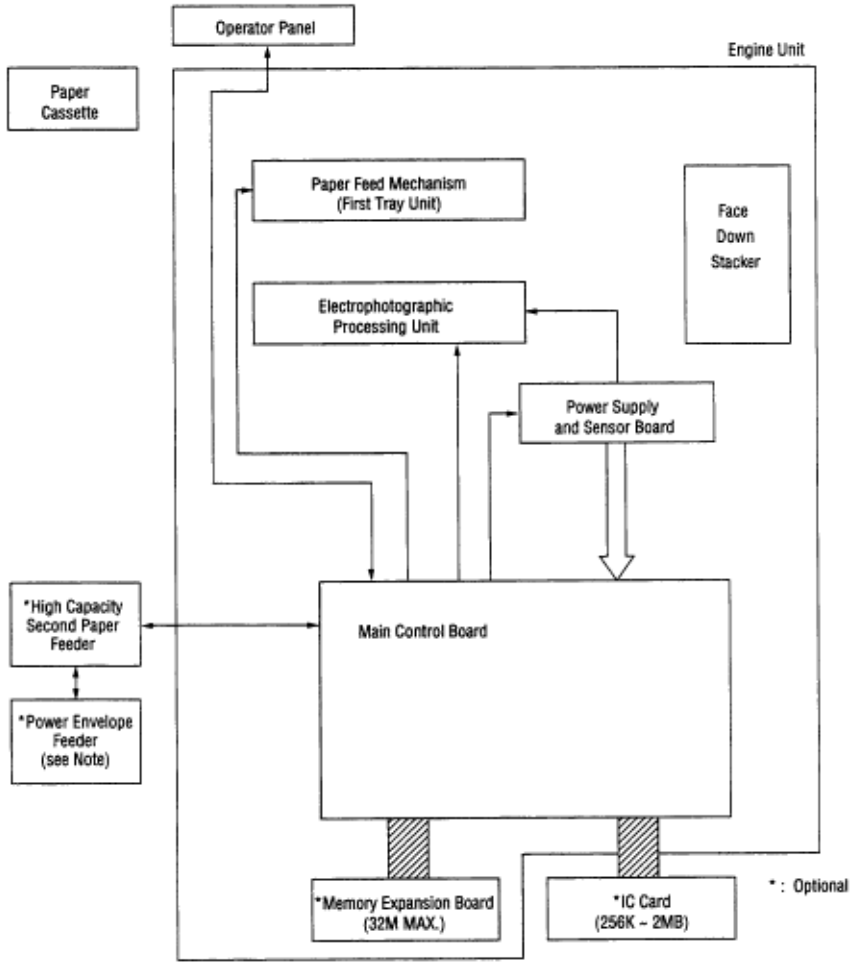
1.1 System Configuration

OL810e consists of control and engine blocks in the standard configuration, as shown in Figure 1-1.

In addition, the options marked with asterisk (*) are available.

Figure 1-1



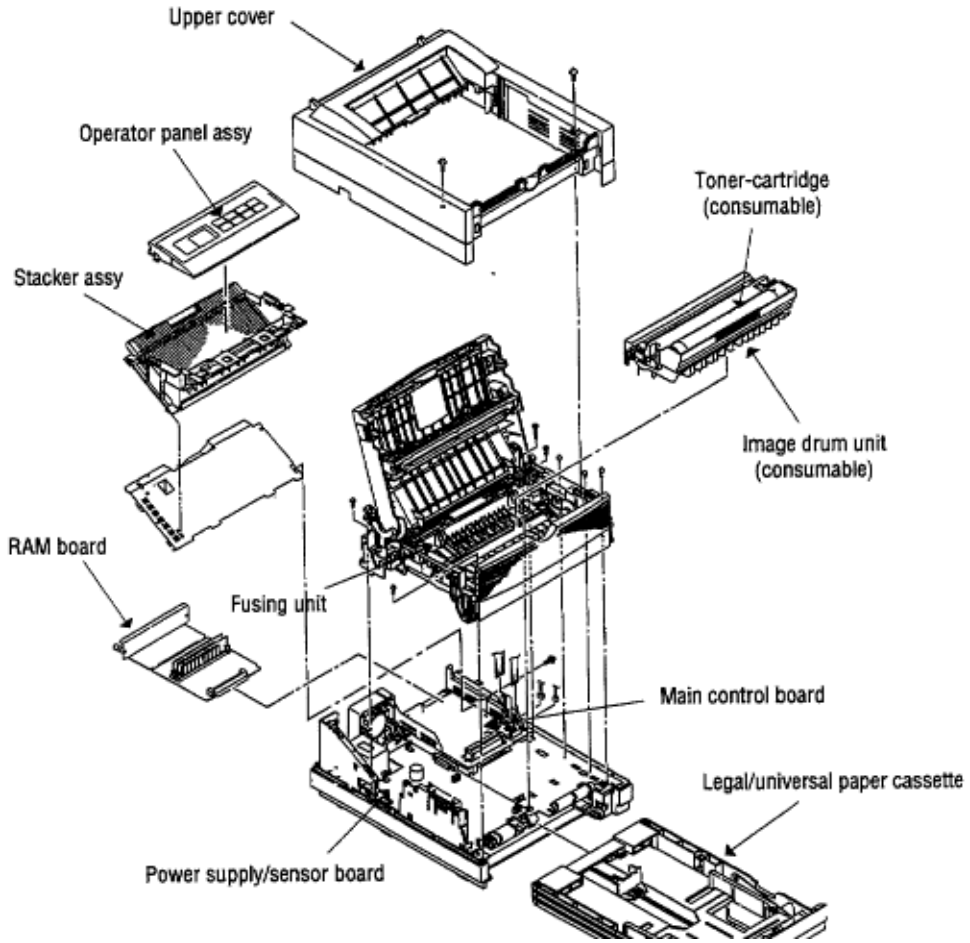
Note: Power Envelope Feeder is compatible with OL400e series printers.

1.2 Printer Configuration

The printer unit consists of the following hardware components:

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

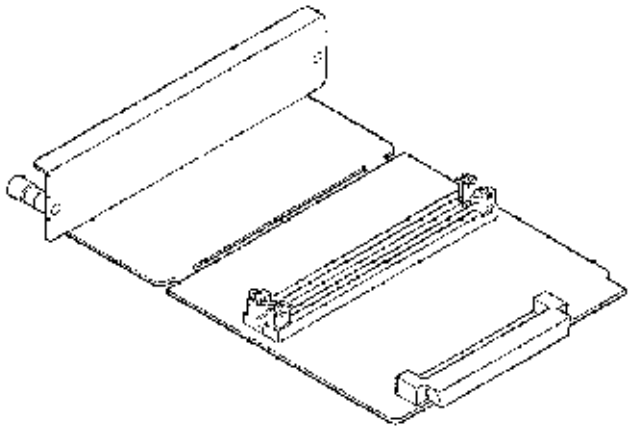
The printer unit configuration is shown in Figure 1-2.



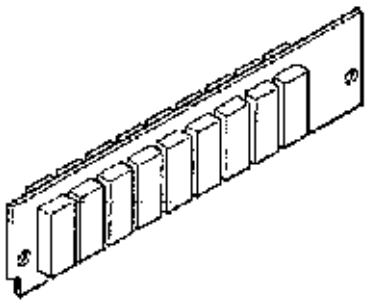
1.3 Optional Configuration

The options shown below are available for use with OL810e. These are available separately from the printer unit.

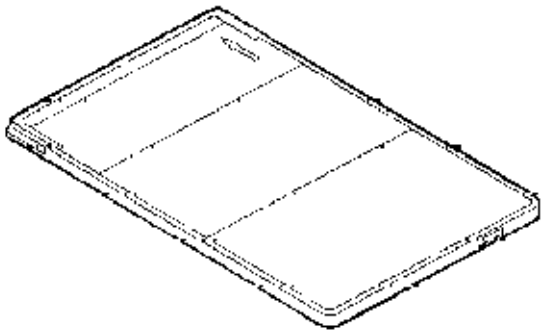
(1) Memory Expansion Board (1MB to 32MB)



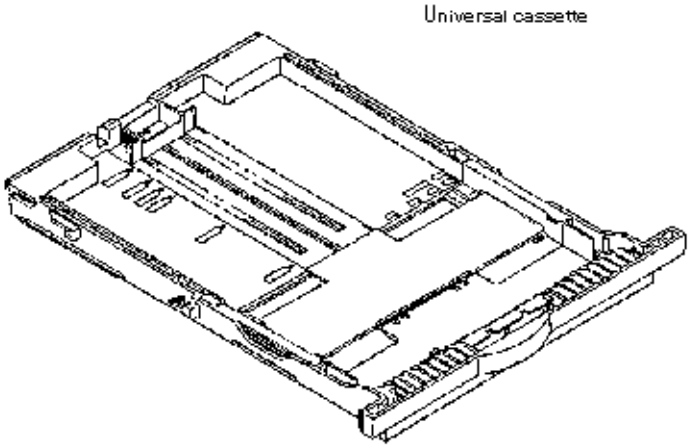
(2) SIMM Memory SIMM memory is available with memory of 1MB (min.) to 16MB (max.). The access time of SIMM memories are 60ns, 70ns, 80ns, and 100ns.



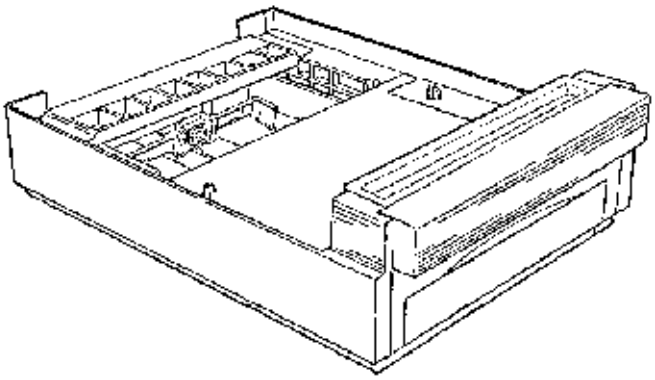
(3) IC Card



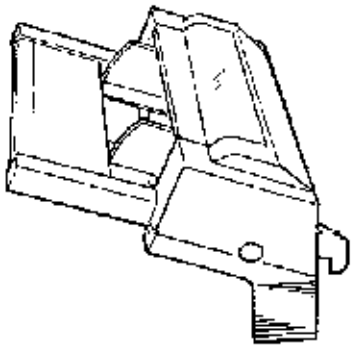
(4) Universal Paper Cassette



(5) High Capacity Second Paper Feeder



(6) Power Envelope Feeder



1.4 Specification

(1) Type Desktop

(2) External dimensions Height 7.9 (200 mm) (excludes protruding Width 12.8 (370 mm) portion) Depth 14.6 (370 mm)

(3) Weight 10 kg

(4) Developing method Dry electrophotography Exposing method LED stationary head

(5) Paper used

<Type>

- Standard paper Xerox 4200 (20 lbs)

- Application paper (manual face-up feed) Label Envelope OHP paper (transparency)

<Size>

- Standard sizes Letter Legal Executive CON-10 Monarch DL C5 COM-9 Envelope A4 A5 B5 (JIS) A6

- Applicable sizes Width: 3.87 to 8.5 (116 to 216 mm) Length: 5.83 to 14 (148 to 355.6 mm)

<Thickness> Automatic feed: 16 to 36 lbs (60 to 135 g/m 2) Manual feed: Label, OHP paper (transparency) Envelope

(6) Printing speed First print: 25 sec. Continuous print: 8 sheets/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 600 x 600 dots/inch

(10) Power input 120 VAC + 5.5%, -15% 230 VAC + 6%, -14% 230 VAC + 10%, -10%

(11) Power consumption Peak: Approx. 600W Typical operation: Approx. 130W Idle: Approx. 41W Power save mode: Approx. 13W

(12) Temperature and humidity During operation: 50 to 90°F (10 to 32°C) In storage: -14 to 112°F (-20 to 50°C)

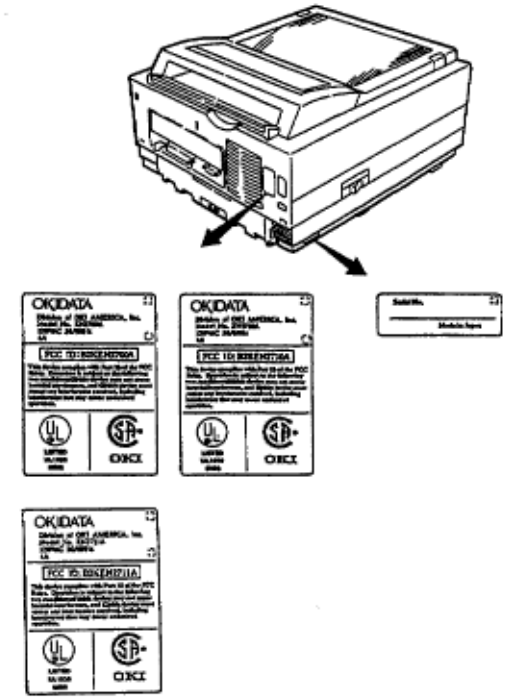
(13) Noise During operation: 48 dB (A) or less Standby: 36 dB (A) or less Quiet mode: 32 dB (A) or less

(14) Consumables Toner cartridge kit 2,000 (5% duty) Image drum cartridge 20,000 (at continuous printing) 15,000 (3 page/job) 10,000 (1 page/job)

1.5 Safety Standards

1.5.1 Certification Label

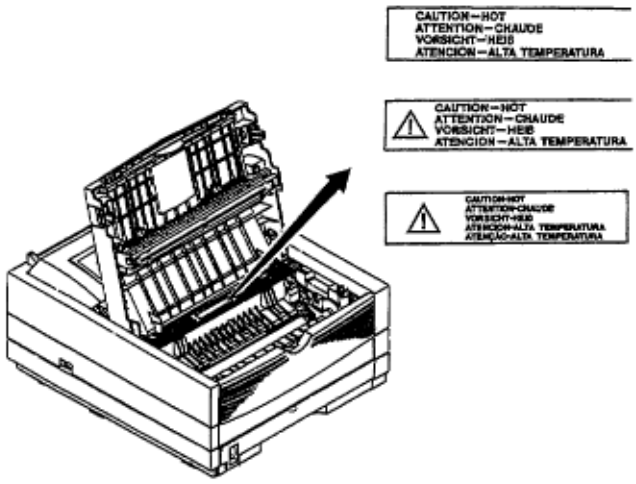
The safety certification and serial number labels are affixed to the printer in the positions described below.



1.5.2 Warning Label

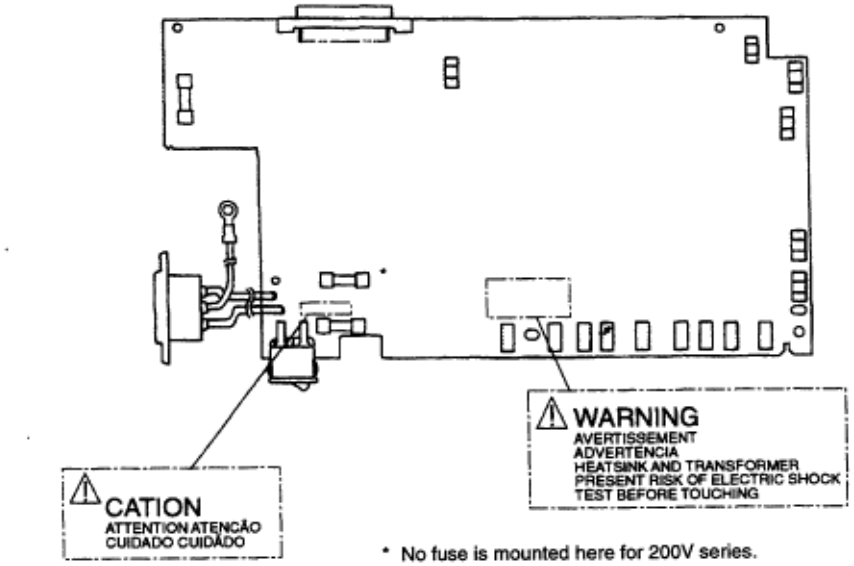
The warning labels are affixed to the sections which may cause bodily injury.

Follow the instructions on warning labels during maintenance.



1.5.3 Warning/Caution Marking

The following warning and caution markings are made on the power supply/sensor 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 color el núcel del transformador pueden producir un choque eléctrico. Compruebe antes de tocar. PORTUGUESE O dissipador de calor e o núcleo do fransiormador apresentam risco de choque elétrico. Teste antes de focar.

ENGLISH Circuits maybe live after fuses open.

FRENCH Il se peut que les circuits soient sous tension une fois que les fusibles ont éfé rerirés.

SPANISH Las circuitos pueden estar activos una vez que se hayan abierio los fusibles.

PORTUGUESE Os circuitos podem estar energizados após os fusiveis se queimarem.*

2. OPERATION DESCRIPTION

OL810e consists of a main control board, a power supply/sensor board, an operator panel, an electrophotographic process mechanism, and revision for illumination of LED head.

The main control board receives data via the host I/F, it then decodes, edits and stores the data in memory. After completing the editing of a single page of data, it references the font memory and generates bit image data, which is transferred to the LED head in one dot line units.

Through the electrophotographic process mechanism, the data is printed on the paper.

The operator panel is used for operations and status display.

OL810e block diagram is shown in Figure 2-1.

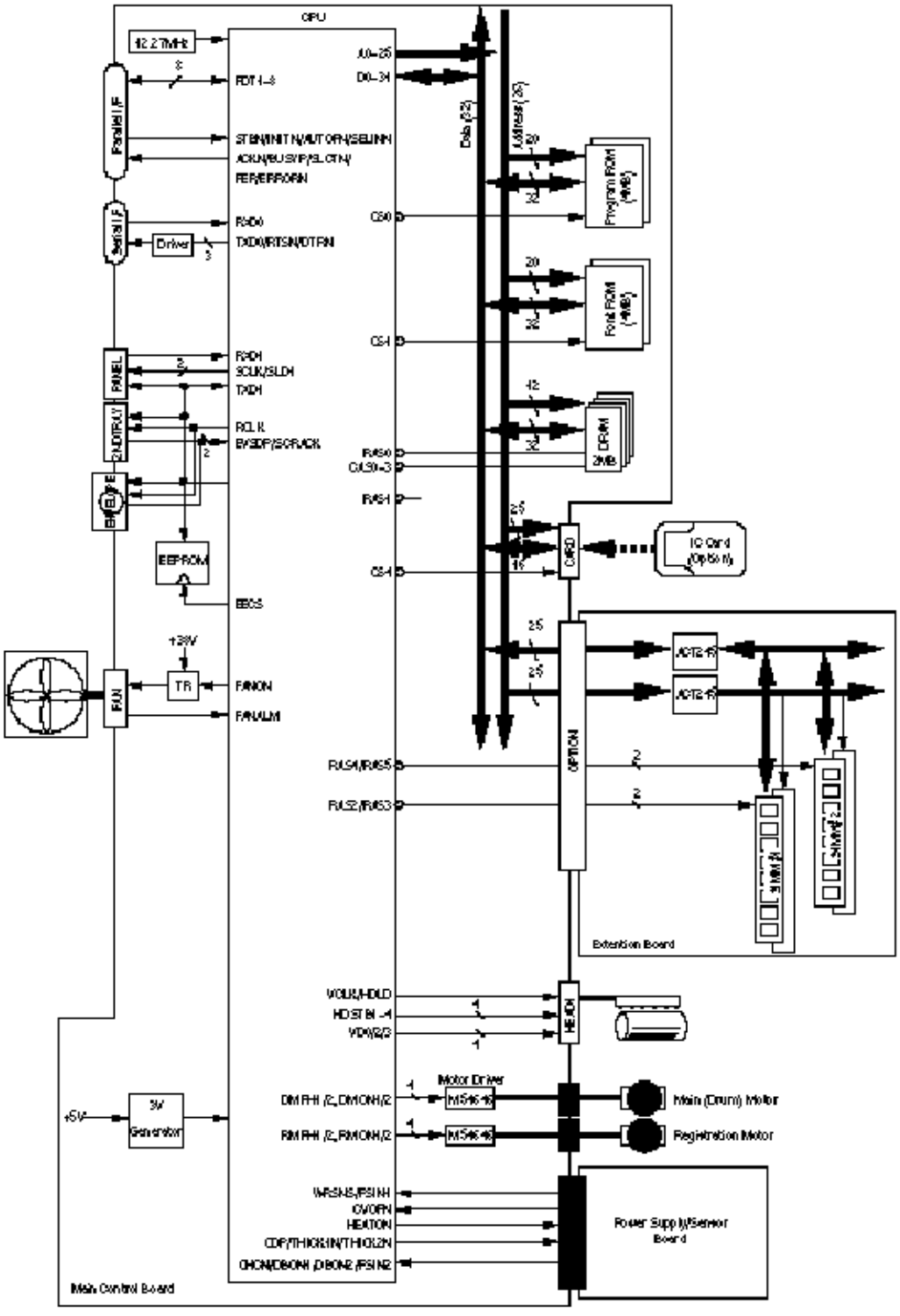


Figure 2-1 OL810e Block Diagram

2.1 Main Control Board

The main control board consists of a single chip CPU, a program ROM, a font ROM, four DRAMs, 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, 32-bit external bus, 25.54-MHz clock, with input frequency from a 12.27-MHz clock) which incorporates the RISC CPU and its peripheral devices, and has the following functions:

Built-in device	Function
Chip select controller Control of ROM, DRAM controller	DRAM and I/O device Bus controller
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 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 and Font ROMs

The Program and Font ROMs store the equipment program and various types of fonts. EPROM or Mask ROM is used as Program and Font ROMs. The mounting locations of these Program and Font ROMs vary depending on the type of the ROMs (for the mounting location see Section 7.4).

(3) DRAM

The DRAM is a 2MB resident memory which is used as a buffer, that stores edited data, image data, DLL data and macro data.

(4) EEPROM

1,024-bit Electrically Erasable PROM (EEPROM), is loaded with the following kinds of 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 a host system via parallel interface which conforms to the Centronics specification.

(6) RS232C Serial Interface

Serial data is sent to and received from a host system via serial interface which conforms to EIA RS232C.

Following items are selectable:

Flow control: DTR HI/DTR LO/XONXOFF/RBSTXON

Baud rate: 300/600/1200/2400/4800/9600/19200

Data bits: 7 BITS/8 BITS

Parity: NONE/EVEN/0DD

Minimum busy: 200 mSEC/1 SEC

2.2 Power Supply/Sensor Boar

The power supply/sensor 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	RS-232C line voltage
+8 V	RS-232C line voltage and PS board supply voltage
+3.3V	LED head supply voltage

(2) High Voltage Power Supply Circuit

This circuit generates the following voltages required for electrophotographic process from +5 V, according to the control sequence from the main 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 clearing roller	

(3) Photosensor

The photosensor mounted on this power supply/sensor board monitors the status of paper being fed through the printer during printing.

The sensor layout diagram is shown in Figure 2-2.

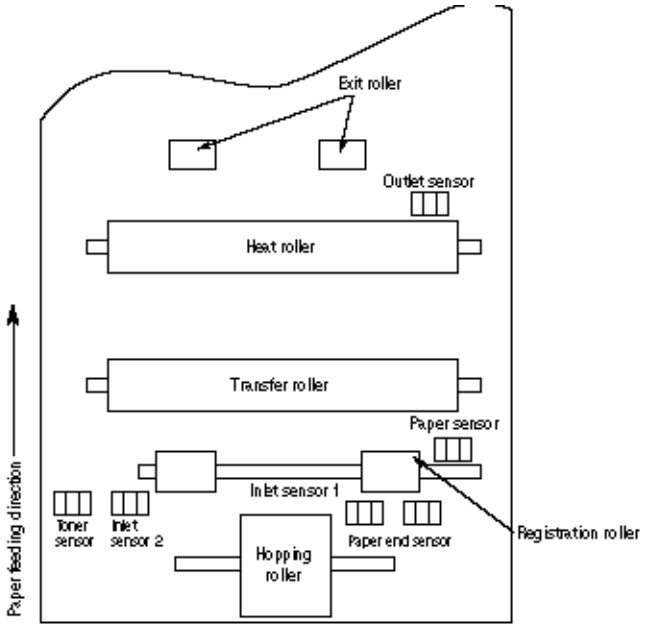


Figure 2-2

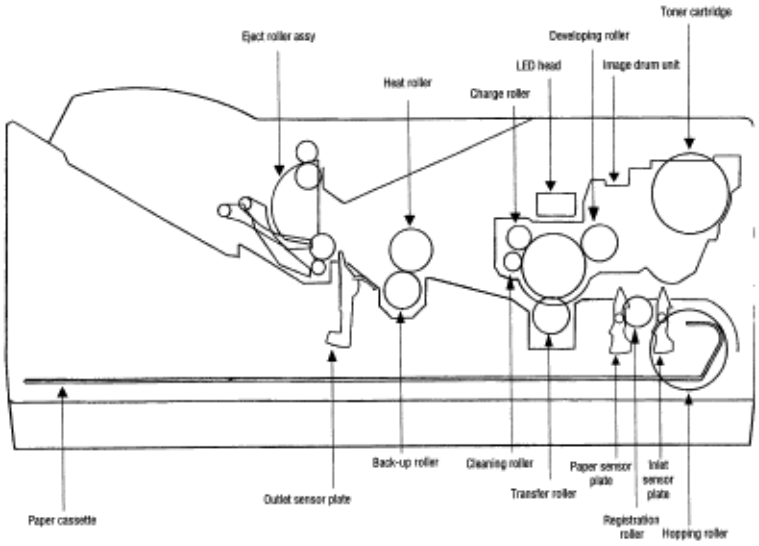
	Function	Sensing state
Inlet sensor 1	Detects the leading part of the paper and gives the monitor timing for switching from hopping operation to feeding operation. Monitors paper feeding situation and paper size based on the paper arrival time and running time.	ON: Paper exists. OFF: No paper exists.
Intel sensor 2	Detects the paper 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 Sensor	- - - - -

2.3 Electrophotographic Process

2.3.1 Electrophotographic Process Mechanism

This mechanism actuates the printing of image data supplied by the main control board on the paper by electrophotographic process.

The layout of the electrophotographic process mechanism is shown in Figure 2-3.



(1) Image Drum Unit

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

(2) Registration Motor

The registration motor is a pulse motor of 48 steps/rotation with two-phase excitement by the signal from the main control board. It drives the hopping and registration rollers via two one-way clutches according to the direction of rotation.

(3) Main (Drum) Motor

The main or drum motor is a pulse motor of 48 steps/rotation with two-phase excitement by the signal from the main control board and is the main motor of this mechanism.

(4) LED Head

Image data for each dot line from the main control board is received by the shift register and latch register. The 4992 LED's 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/sensor board is applied to the heater controlled by the HEATON signal from the main control board. This AC voltage heats the heater. The main control board monitors the heat roller temperature via the thermistor, and regulates the heater roller to keep it at a designated temperature in the menu, depending on the thickness of the paper (tray 1&2: light=165°C, medium light=170°C, medium=175°C, medium heavy and heavy=195°C; manual feeding and power envelope feeder: light=175°C, medium light=180°C, medium=185°C, medium heavy=190°C, heavy=195°C) by connecting or disconnecting the AC voltage supply to the heater.
When an abnormal rise of the heater roller temperature takes place, the thermostat of the heater voltage supply circuit becomes active and forcibly cuts the AC voltage supply.
The temperature setting of the fuser can be changed through operator panel setting.

2.3.2 Electrophotographic Process

The electrophotographic processing is outlined below. The electrophotographic printing process is shown in Figure 2-4.

1 Charging

The surface of the image drum is charged uniformly with a 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 of the image drum surface 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

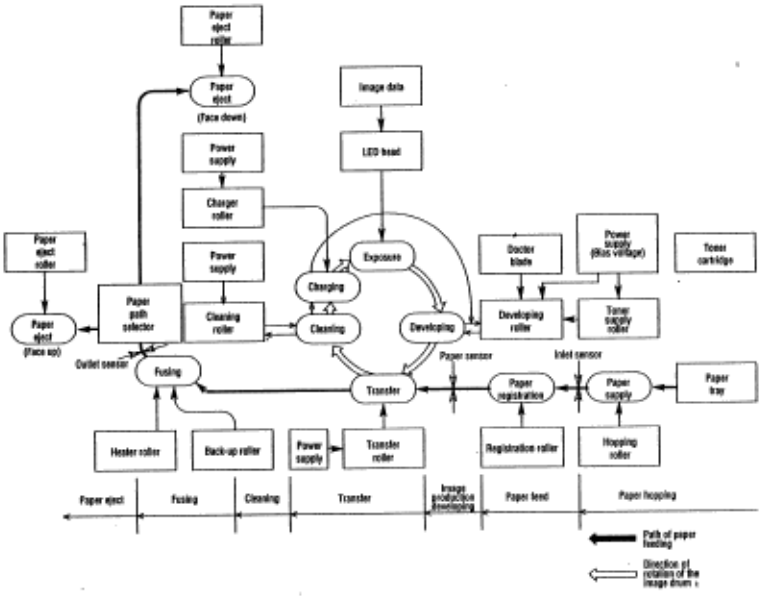
When paper is placed over the image drum surface, the positive charge which is opposite in polarity to that of the toner, is applied to the reverse side of the paper by the transfer roller. The toner is attracted by the positive charge and is transferred onto the paper. This results in the transfer of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

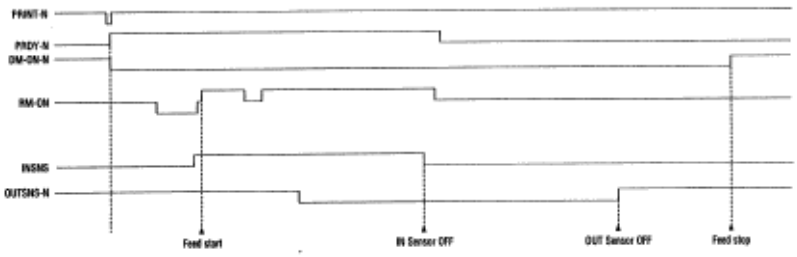
5 Temporary cleaning

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

6 Fusing

The toner image transferred onto the paper is fused to the paper by heat and pressure.
An electrophotographic process timing chart is shown in Figure 2-5.

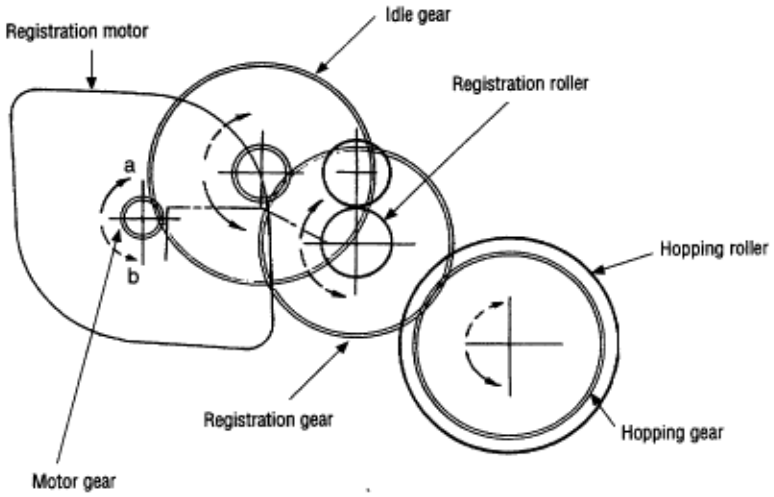




2.3.3 Process Operation Descriptions

(1) Hopping and Feeding

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

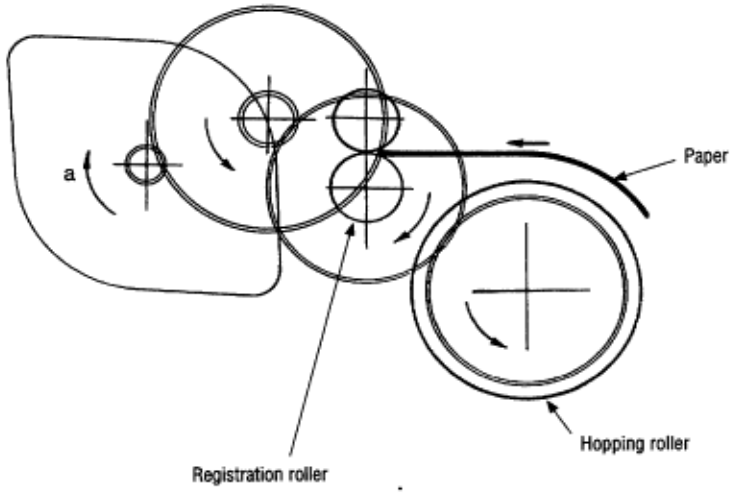


The registration motor turning in direction "a" drives the hopping roller. The registration motor turning in direction "b" drives the registration roller. The registration and hopping gears have one-way bearing, so turning any of these gears in the reverse direction will not transmit the motion to the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

(a) Hopping

1 For hopping, the registration motor turns in direction "a" (clockwise 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 bearing).

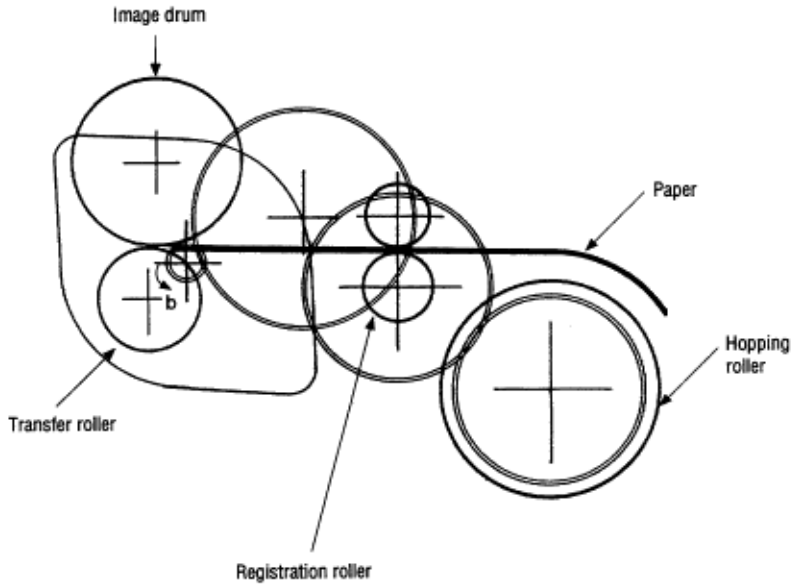
2 After inlet sensor is turned on by the paper advance, the paper is further advanced to a predetermined distance until the paper hits the registration roller (the skew of the paper can thus be corrected).



(b) Feeding

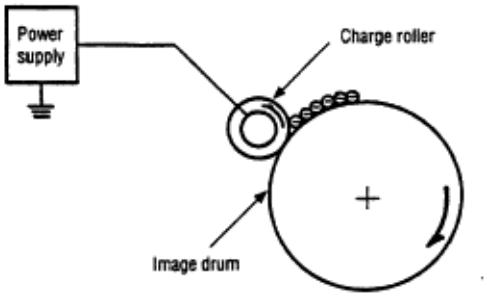
1 When hopping is completed, the registration motor turning in direction "b" (counter-clockwise direction) drives the registration roller to advance the paper (in this case, the hopping gear also turns, but the hopping roller is prevented from turning by the one-way bearing).

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

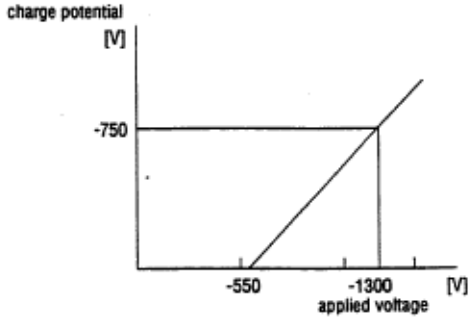


(2) Charging

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

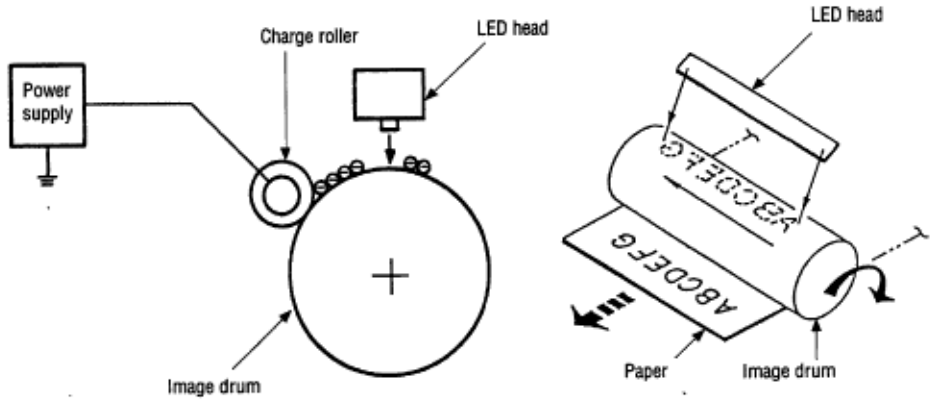


The charge roller is composed of two layers, a conductive layer and a surface protective layer, both having elasticity to secure good contact with the image drum. When the DC voltage applied by the power supply exceeds the threshold value, charging begins. The applied voltage is proportional to the charge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

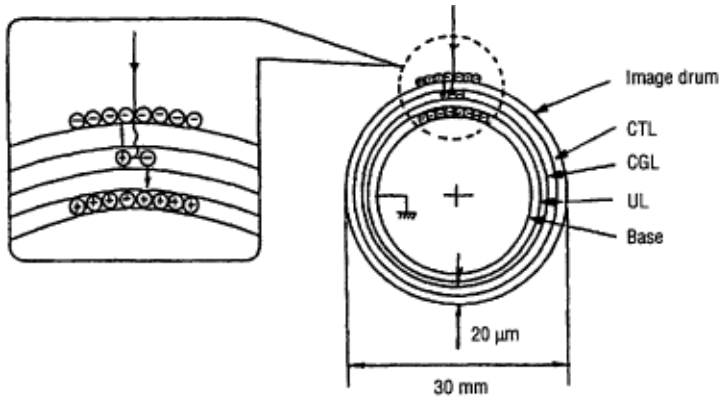


(3) Exposure

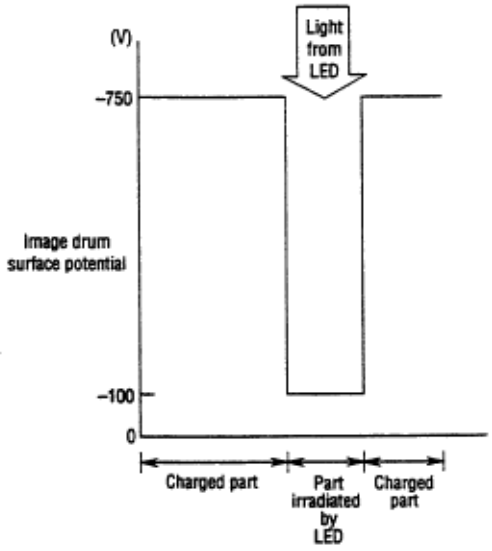
Light emitted by the LED head irradiates the image drum surface with a negative charge. The surface potential of the irradiated portion of the image drum drops, forming an electrostatic latent image associated with the image signal.



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).

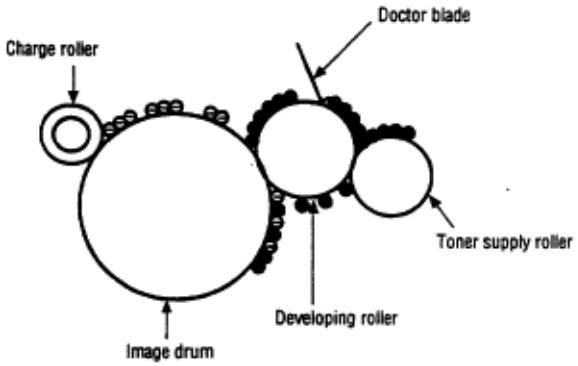


The positive carriers moved to the CTL combine with the negative charges on the image drum surface accumulated by the contact charge of the charge roller, lowering the potential on the image drum surface. The resultant drop in the potential of the irradiated portion of the image drum surface forms an electrostatic latent image on it. The irradiated portion of the image drum surface is kept to about 100 V.

(4) Developing

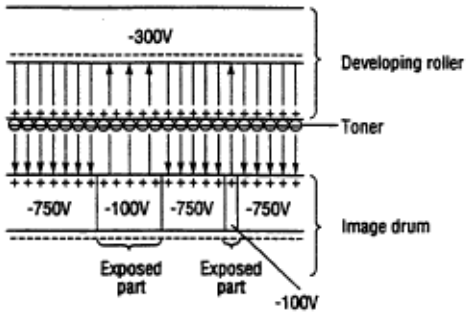
Toner is attracted to the electrostatic latent image on the image drum surface, converting it into a visible toner image. Developing takes place through the contact between the image drum and the developing roller.

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, negative).



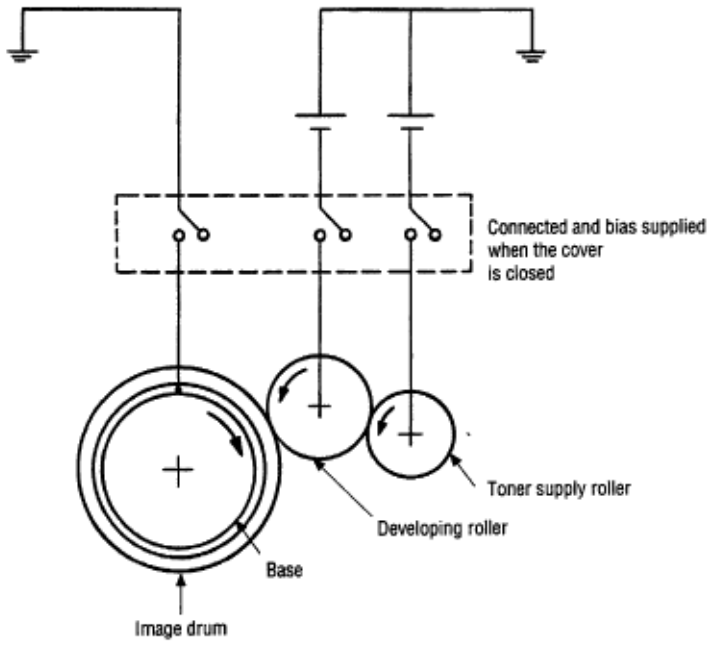
2 The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

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.



An illustration of activities at the contact point of the image drum surface and the developing roller (arrow marks denote the direction of the electrical field).

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

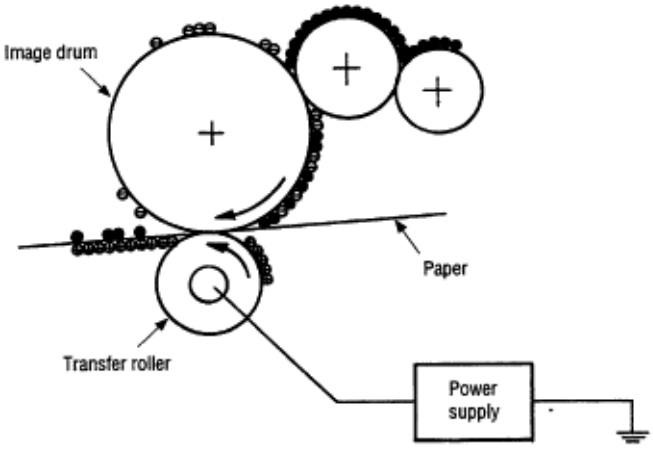


(5) Transfer

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.

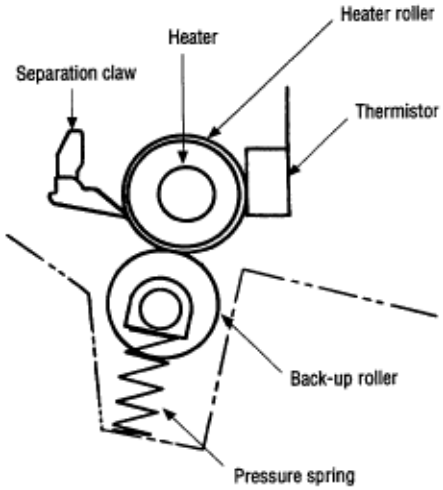


(6) Fusing

When the transfer is completed, the toner image is fused to the paper by heat and pressure as the paper with unfused 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 generates heat.

A thermistor which is in contact with the heater roller regulates the temperature of the heater roller to a designated temperature in the menu, depending on the thickness of the paper (tray 1&2: light=165°C, medium light=170°C, medium=175°C, medium heavy and heavy=195°C/ manual feeding and power envelope feeder: light=175°C, medium light=180°C, medium=185°C, medium heavy=190°C, heavy=195°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 7.52 kg applied by the pressure spring on each side.



(7) Cleaning

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

(8) Cleaning of rollers

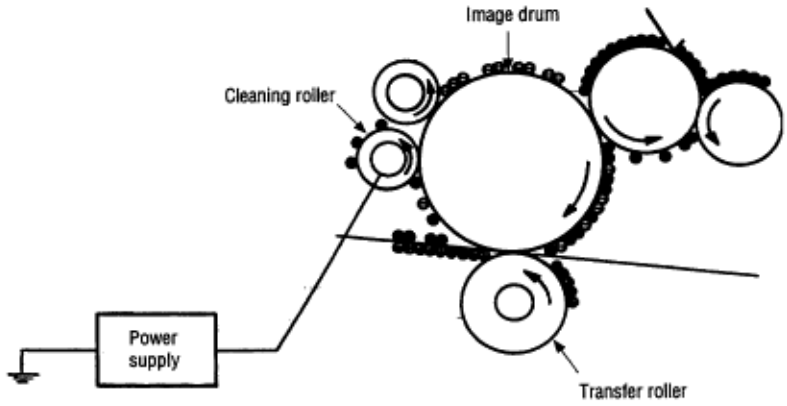
The charge, transfer and cleaning rollers are cleaned for the following cases:

- 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.

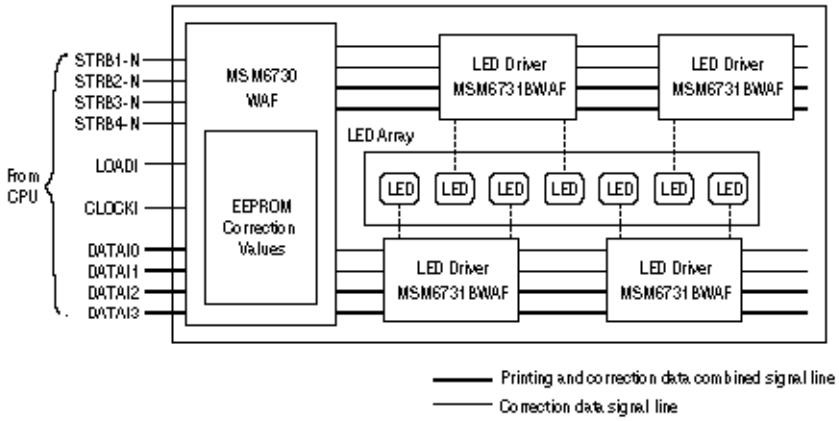
Changes in bias voltage applied to each roller move the attaching toner off the roller to the image drum and return it to the developer.



2.3.4 Revision of LED Head Illumination

An LED correcting head, which is capable of correcting the illumination of the LED for each dot, is being used in this printer. LED illumination correction function of 16 steps is carried out by using an EEPROM which is installed in the LSI that maintains the LED illumination correction values, and an LED correction drivers (MSM6731BWAF) together as a pair.

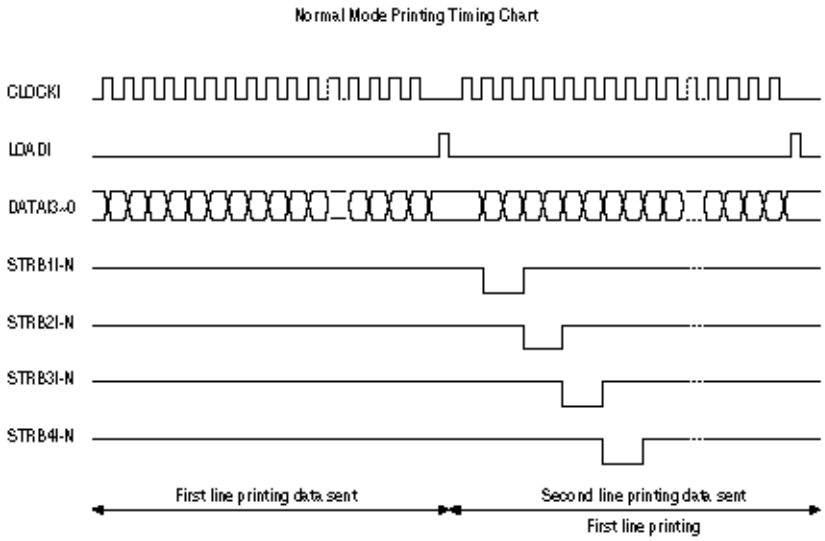
The LED correcting head consists of the correction control LSI (MSM6730WAF), LED drivers (MSM6731BWAF), and an LED array. The block diagram of the LED correcting head is shown below.



The existing LED head receives the printing data from the CPU directly at its LED drivers. With the LED correcting head, a correction control LSI (MSM6730WAF) is connected between the CPU and LED drivers, so the printing data is input to the LED drivers through the correction control LSI. In order to maintain compatibility with the existing LED head, the printing operation of the LED correcting head is carried out through identical sequence.

The LED correcting head is a 600 dpi head, with the LED drivers located on both sides of the LED array with a 300 dpi pitch spacing. The printing and correction data obtained from the CPU through four signal lines are sent to the LED array.

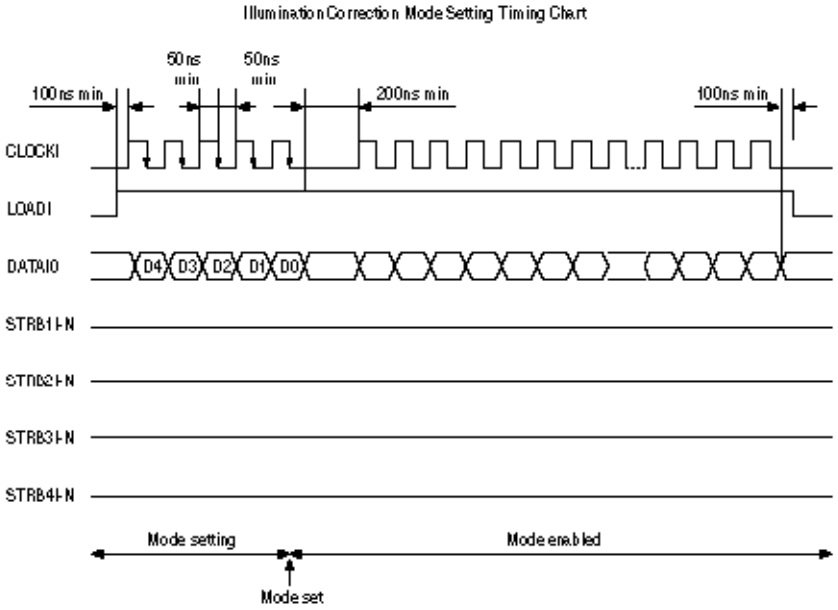
The printing operation timing chart is shown below.



The printing operation is carried out in normal mode. Under ordinary circumstances such as when the power is turned on or when LOADI, signal level is low, the normal mode is enabled.

The printing operation is carried out in the following sequence. First, the printing data DATAI3 through DATAI0 are stored, sequentially shifted, in the shift registers of the LED drivers, by the printing data synchronous clock, CLOCKI. Then the printing data stored in shift registers are latched by the high level pulse of LOADI. The latched printing data turns the LEDs on by STRB1I-N through STRB4I-N and actuates printing.

The mode setting timing chart during illumination correction is shown below.



The mode setting is carried out in the following manner. LOADI is fixed at high level, and DATAI0 which comes up following this is 4-data latched with the timing of the fall of CLOCKI. The illumination correction mode is selected based on the latched 4-data combination. Then the mode becomes valid at the fifth fall of CLOCKI.

The period during which the illumination correction mode is valid is from the fall of the fifth CLOCKI and while the level of LOADI is high. When the level of LOADI becomes low, the illumination correction mode is terminated, and the head returns to the normal mode, which is mode with which the printing is normally carried out.

The LED driver (MSM6731BWAF) corrects the LED illumination by controlling the LED current. The LED illumination can be set in 16 steps, with 7 steps in the direction of illumination increase in relation to the standard value, and 8 steps in the direction of decrease. For this reason, the LED correction data is a 4-bit data for each dot.

The relationship between the LED correction data and LED current correction steps with the LED driver (MSM6731BWAF) used in an LED head is shown below.

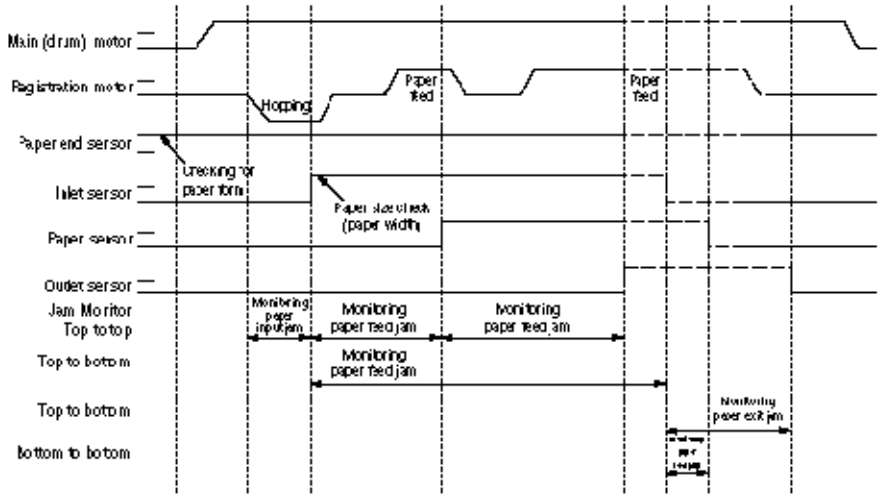
LED Correction Data

Corretion Data				Correction Step	Correction Mode
msb b3	b2	b1	lsb b0		
1	0	0	0	+16%	↑
0	1	1	1	+14%	↑
0	1	1	0	+12%	Correction by
0	1	0	1	+10%	increasing
0	1	0	0	+8%	illumination
0	0	1	1	+6%	↑
0	0	1	0	+4%	↑
0	0	0	1	+2%	↑
0	0	0	0	0%	No correction
1	1	1	1	-2%	↓
1	1	1	0	-4%	↓
1	1	0	1	-6%	Correction by
1	1	0	0	-8%	decreasing
1	0	1	1	-10%	illumination
1	0	1	0	-12%	↓
1	0	0	1	-14%	↓

2.4 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	- 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	- The paper is in contact with the paper sensor when the power is turned on. - The leading edge of the paper does not reach the paper sensor within a predetermined feeding 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 feeding distance after the same has passed over the inlet sensor. - The leading edge of paper does not reach the outlet sensor within a predetermined feeding distance after the paper has reached the paper sensor.
Paper exit jam	- 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 feeding 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	Paper size error - The size of the paper is monitored by the inlet sensor 1. The paper is not detected by the inlet sensor 1 within predetermined feeding 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

Paper Feed Check List

ERROR

Type of error	Monitor	Standard value	Pulse	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	138.0	69.0	_
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	22.0	22.0	-

Unit : mm

Note: Hyphen "-" in the table represents "not checked." Paper Length List

Check range

Type	Paper length	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	400.6
LEGAL 14	355.6	285.2	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	225.4	180.4	270.4
COM-10	241.3	196.3	286.3
DL	220.0	175.0	265.0
C5	229.0	184.0	274.0
Free	148.0 ~ 355.6	103.0	400.6

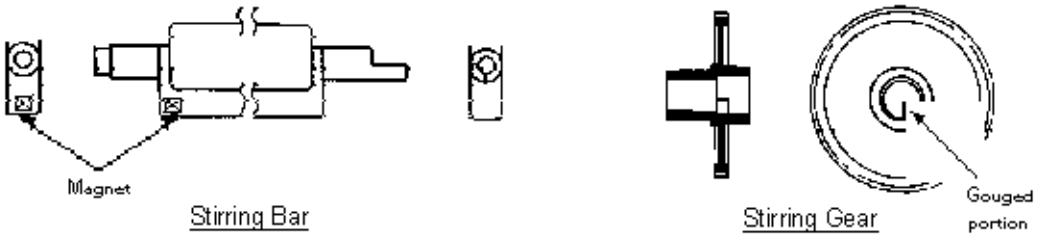
Unit : mm

2.5 Cover Open

When the stacker cover is opened, the cover open microswitch on the power supply/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 main control board to notify that the microswitch is off, and the main control board carries out the cover open process.

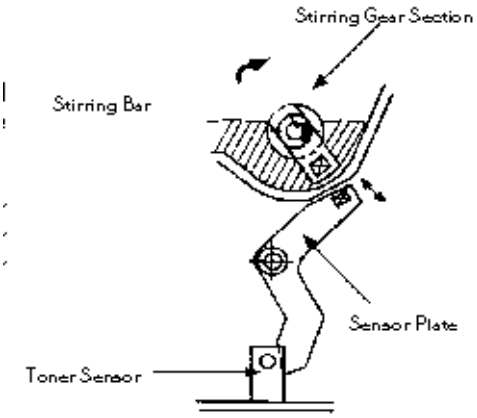
2.6 Toner Low Detection

- 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 gouged portion in the stirring gear.



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

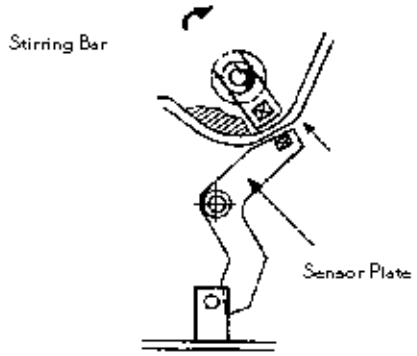
Operation during Toner Full state



- The stirring bar rotates due to the mechanical transmission of energy originating from the interlocking with the stirring gear.

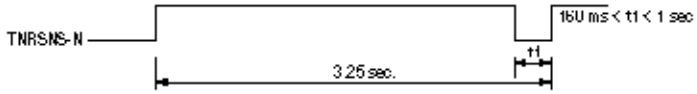
- Even when the magnet on the stirring bar reaches the maximum height, the stirring bar is pushed by the stirring gear, since the other side is being dipped in the toner.

Operation during Toner Low state



- When the stirring bar reaches the maximum height, it falls to the minimum height due to its own weight, since there is no resistance provided by the toner on the other side. Because of this, the time interval during which it is in encounter with the magnet of the sensor plate becomes longer. By monitoring this time interval, Toner Low state can be detected.

TONER FULL state



TONER LOW state

- 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.
- When there is no change with the toner sensor for 2 cycles (3.25 sec. x 2) or more, then the Toner Sensor Alarm is activated.
- The toner sensor is not monitored while the main (drum) motor is in a halt.

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 disassembly procedure.

3.1 Precautions for Parts Replacement

(1) Before starting to replace parts, remove the AC cord and interface cable.

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

i) Turn off ("o") the power switch of the printer

ii) Disconnect the AC inlet plug of the AC cord from the AC receptacle.

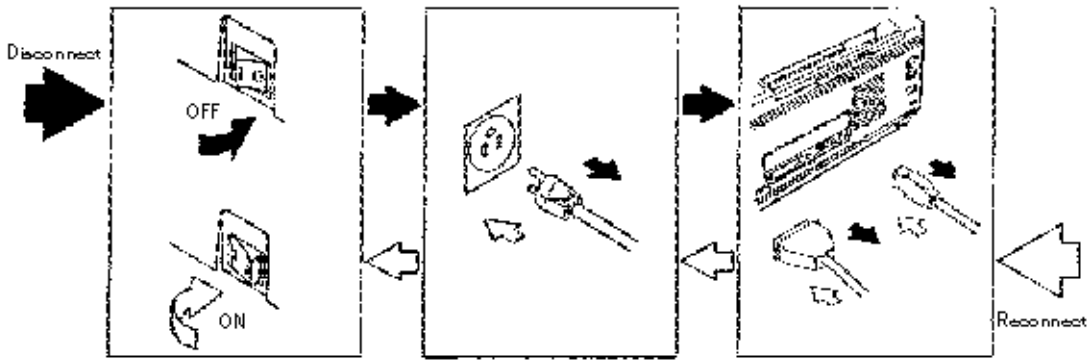
iii) Disconnect the AC cord and interface cable from the printer.

(b) Reconnect the printer in the following procedure.

i) Connect the AC cord and interface cable to the printer.

ii) Connect the AC inlet plug to the AC receptacle.

iii) Turn on ("I") the power switch of the printer.



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

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

(4) Use specified service tools.

(5) When disassembling, follow the laid out sequences. Parts may be damaged if these sequences are not followed.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the original positions during disassembly.

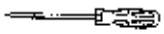
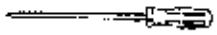
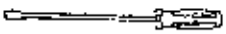
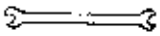
(7) When handling ICs such as microprocessors, ROMs and RAMs, or circuit boards, use proper anti-static procedures.

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

[Service Tools]

The tools required for field replacement of printed circuit boards, assemblies and units are listed in Table 3-1.

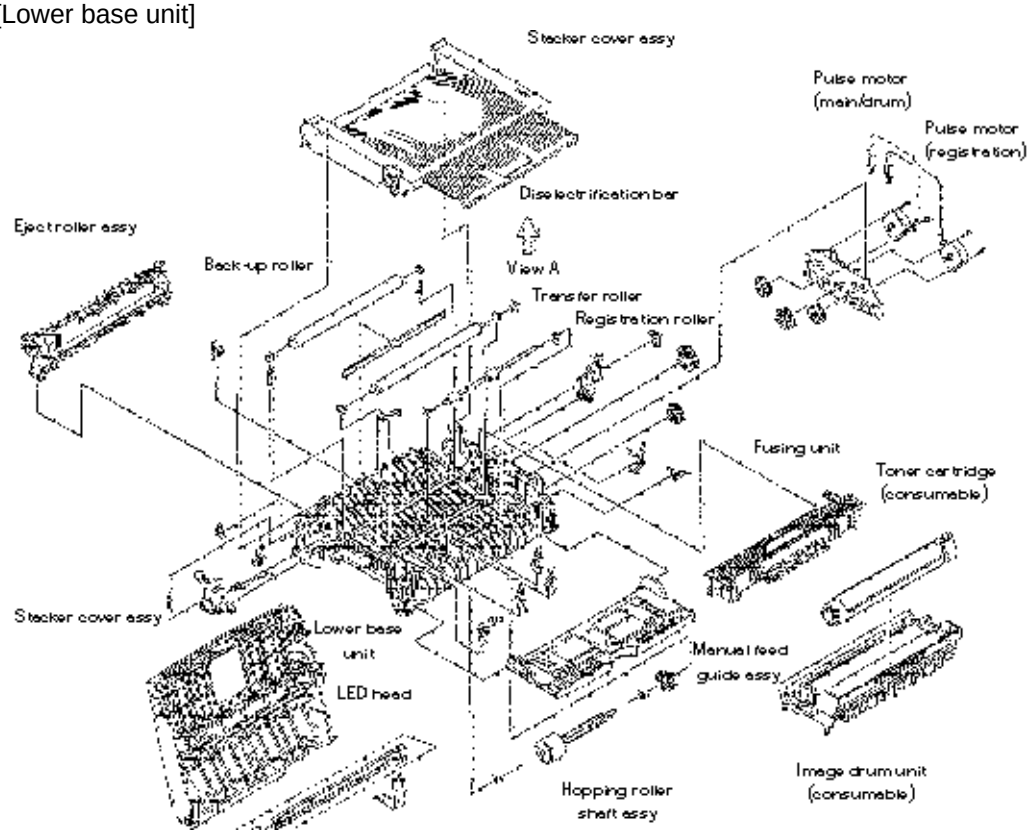
Table 3-1 Service Tools

No.	Service Tools		Q'ty	Application	Remarks
1		No. 1-100 Philps screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philps 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		LCD head cleaner	1	Cleans LCD head	

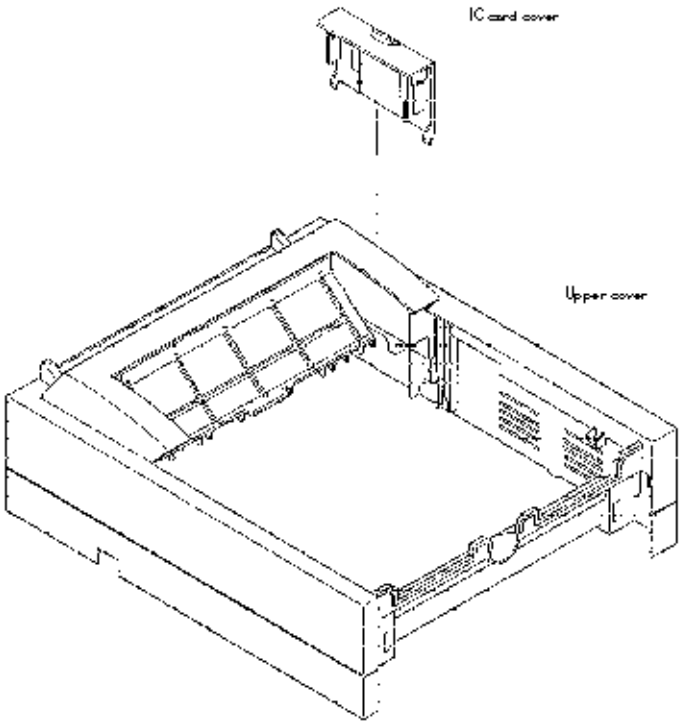
3.2 Parts Layout

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

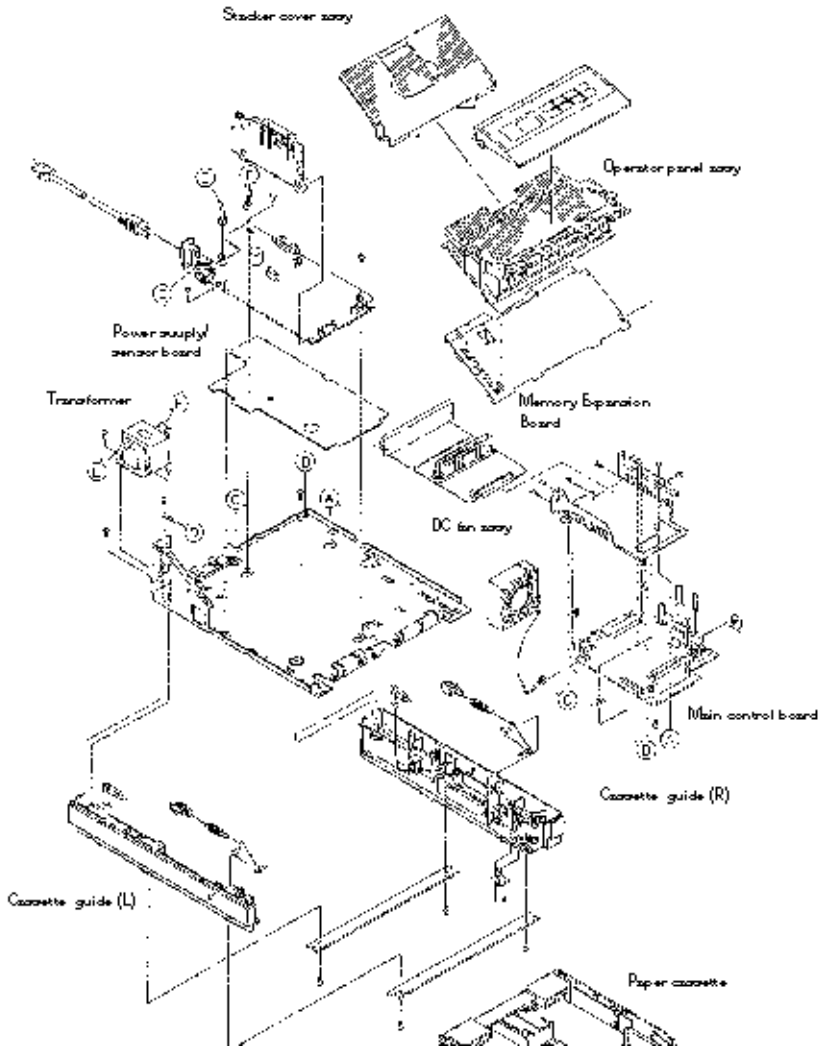
[Lower base unit]



[Upper cover unit]



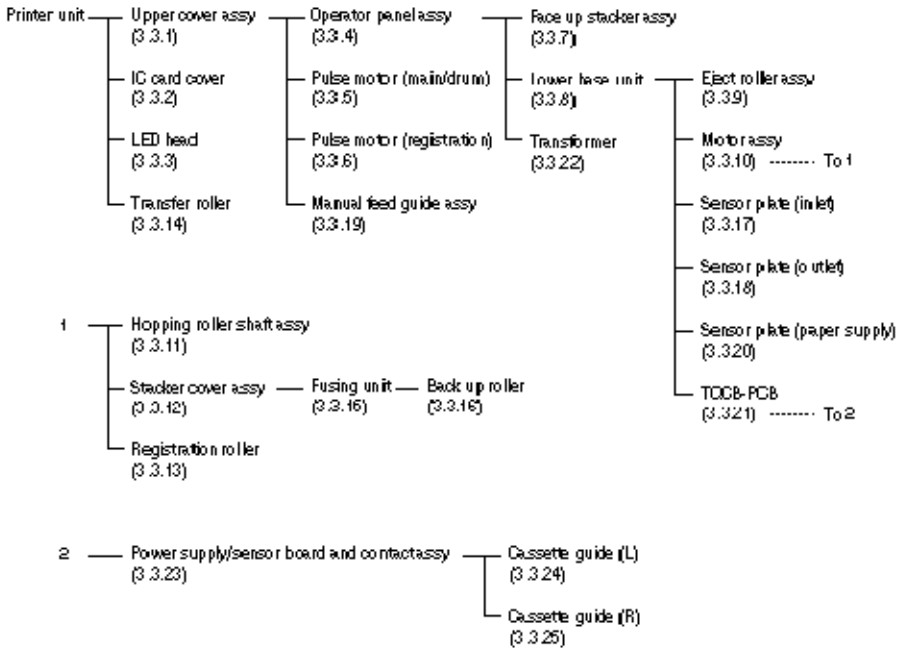
[Base unit]



3.3 How to Change Parts

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

In the parts replacement procedure, those parts marked with the part number inside l with white letters are RSPL parts.



3.3.1 Upper Cover Assy

(1) With the power switch turned off, unplug the AC power cord from the outlet.

(2) Disconnect the interface cable 1.

(3) Open the IC card cover 2, and remove the IC card (option) 3.

(4) Press the knobs 4 on left and right sides and open the stacker cover assy 5.

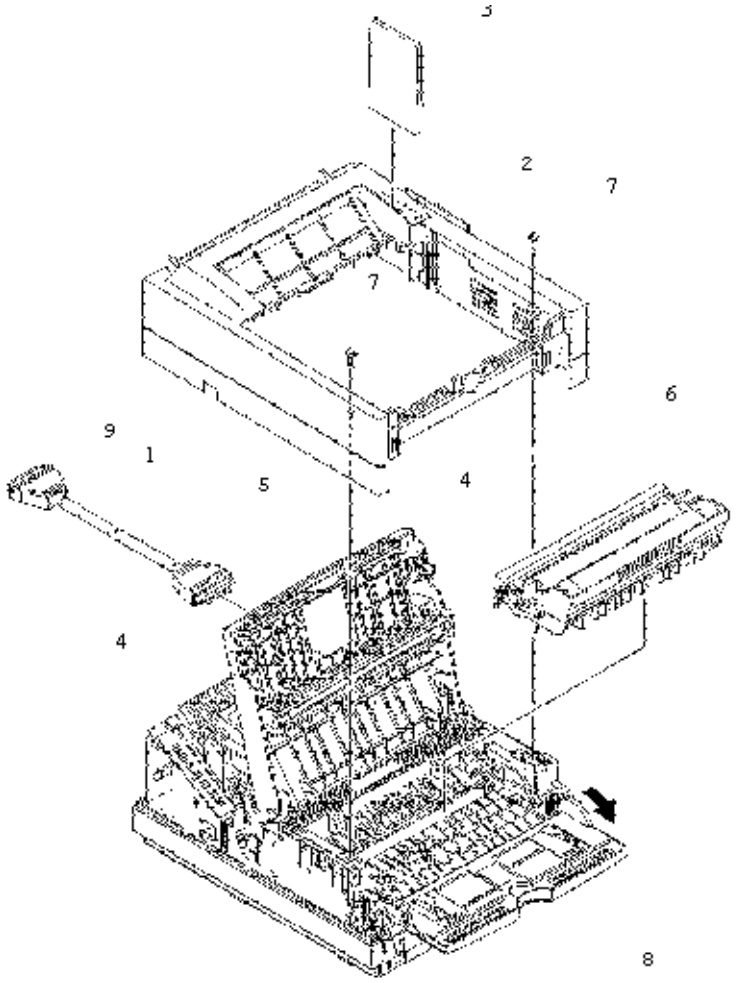
(5) Take out the image drum unit 6.

(6) Remove two screws 7, and open the manual feed guide assy 8. Lift the front side of the upper cover 9 up and unlock the latches at two locations on the back side. Lift and remove the upper cover assy 9.

Notes :

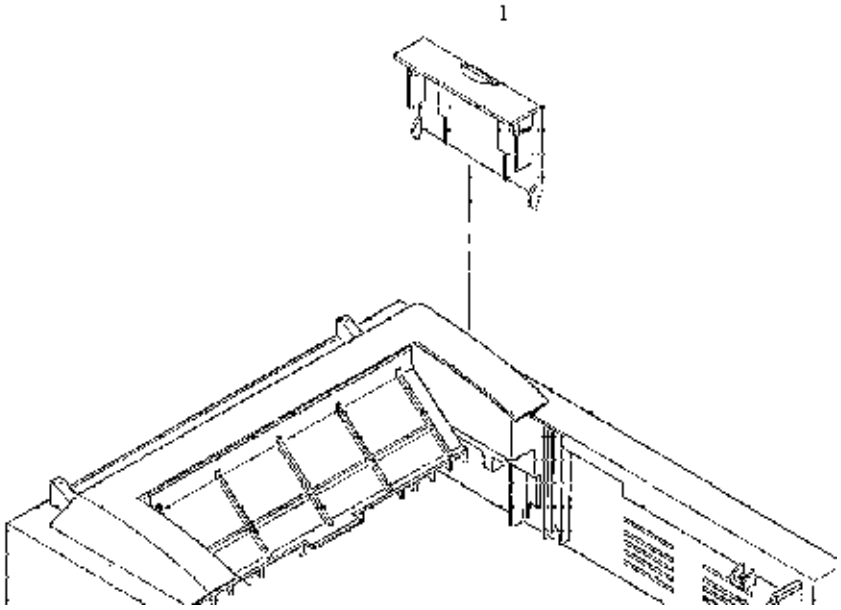
1. When removing or reinstalling the upper cover, be careful not to get the motor cables tangled or caught.

2. When reinstalling the screws 7, be sure to direct the screws into preexisting threads.



3.3.2 IC Card Cover

(1) Open the IC card cover 1, press it from both sides at the hinges in the directions of arrows shown below and remove it.



3.3.3 LED Head

(1) Press the buttons on the left and right sides of the stacker cover 1 and open assy.

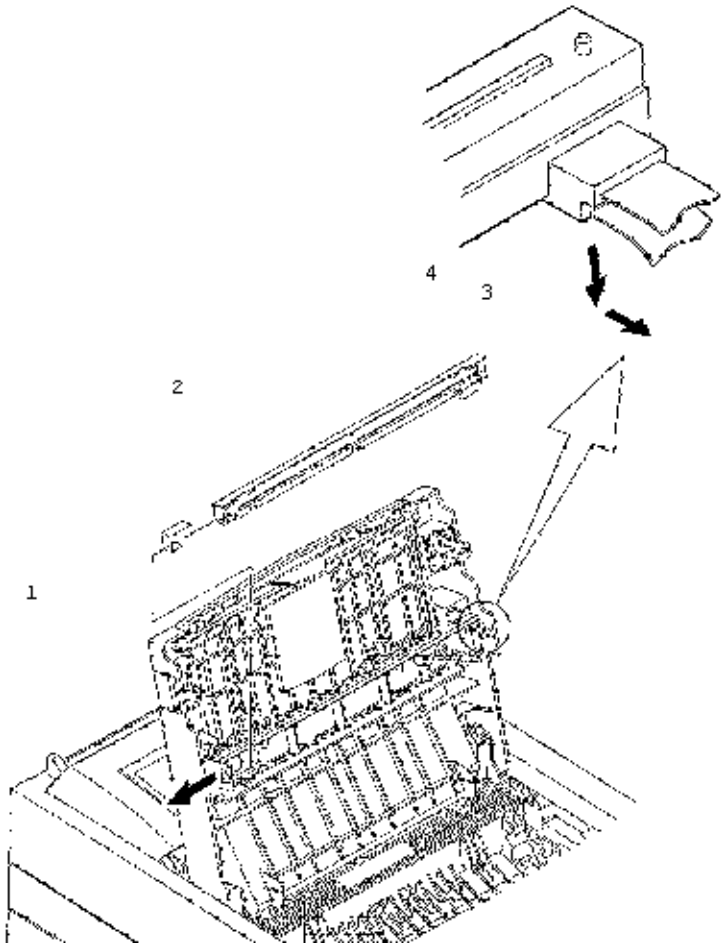
(2) Open the hook section on the left side of the stacker cover and remove the LED head 2.

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

(3) Remove the PC Connector 4 from the LED Head. Do not remove the LED cable 3 from the PC connector.

(4) After mounting the new LED head, re-attach the PC Connector and LED cable.

Note: Set the drive time of the LED head according to the marking on the LED head (see 4.2.1).



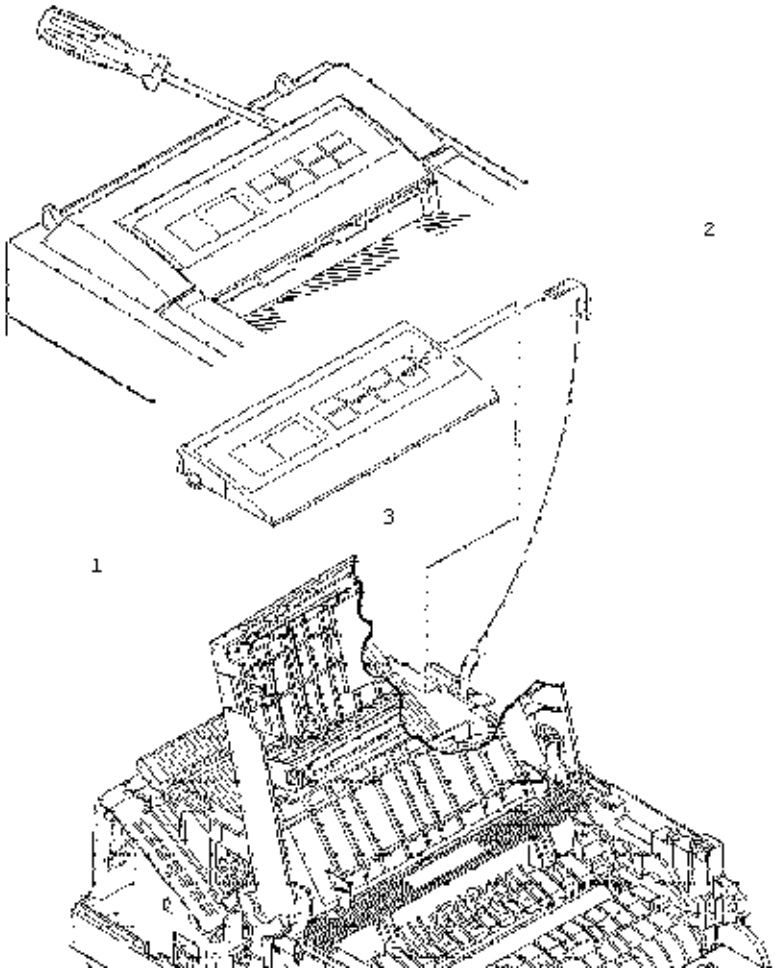
3.3.4 Operator Panel Assy

(1) Use a flat blade screwdriver to unlock the two latches on the Operator Panel from the rear. Lift the operator panel assy 1 from the back and remove it.

NOTE: Use great care as the Operator Panel cable is very short and can be easily damaged.

(2) Remove the Sumi card (operator panel cable) 2 from the connector (CN1) 3.

Note: You can remove the operator panel assy while the upper cover remains installed on the unit.



3.3.5 Pulse Motor (Main/Drum)

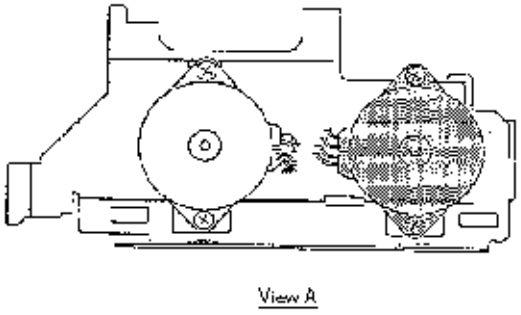
(1) Remove the Operator Panel (see 3.3.4)

(2) Remove the upper cover assy (see 3.3.1).

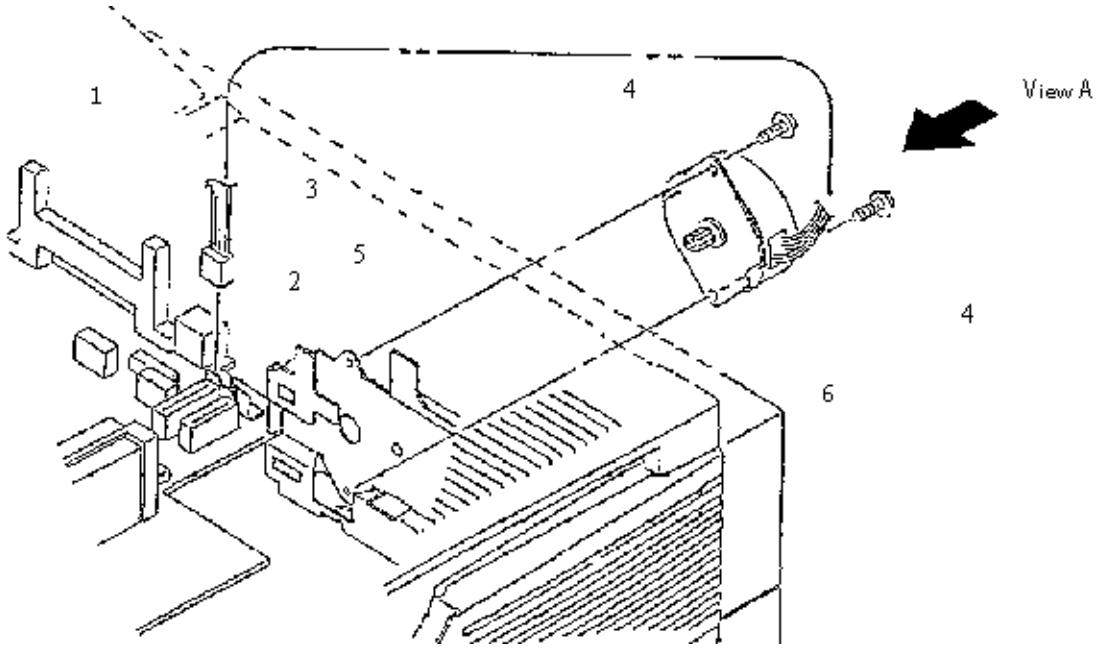
(3) Remove the connector 3 from the connector (DM) 2 of the TQCA-PCB 1.

(4) Remove two screws 4 and remove the pulse motor (main/drum) 6 from the motor bracket 5.

NOTE: To ease access to the bottom screw holding the motor(s) to the bracket, loosen the screws holding the right side of the base unit.



View A



3.3.6 Pulse Motor (Registration)

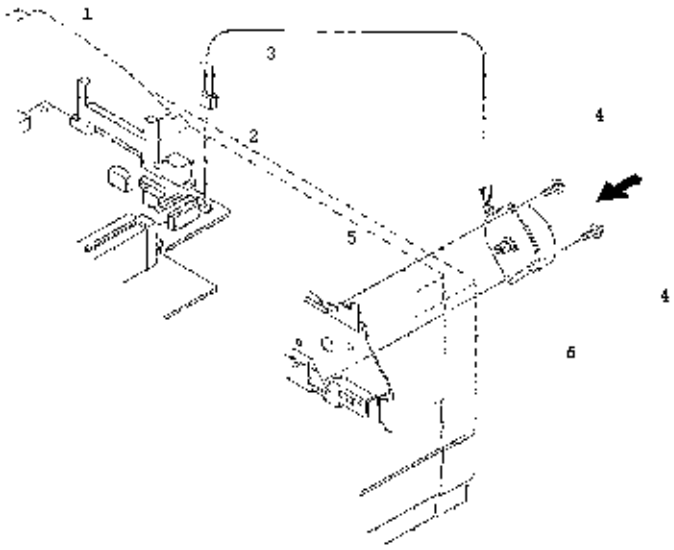
(1) Remove the Operator Panel (see 3.3.4)

(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the connector 3 from the connector (RM) 2 of the TQCA-PCB 1.

(4) Remove two screws 4 and remove the pulse motor (registration) 6 from the motor bracket 5.

NOTE: To ease access to the bottom screw holding the motor(s) to the bracket, loosen the screws holding the right side of the base unit.



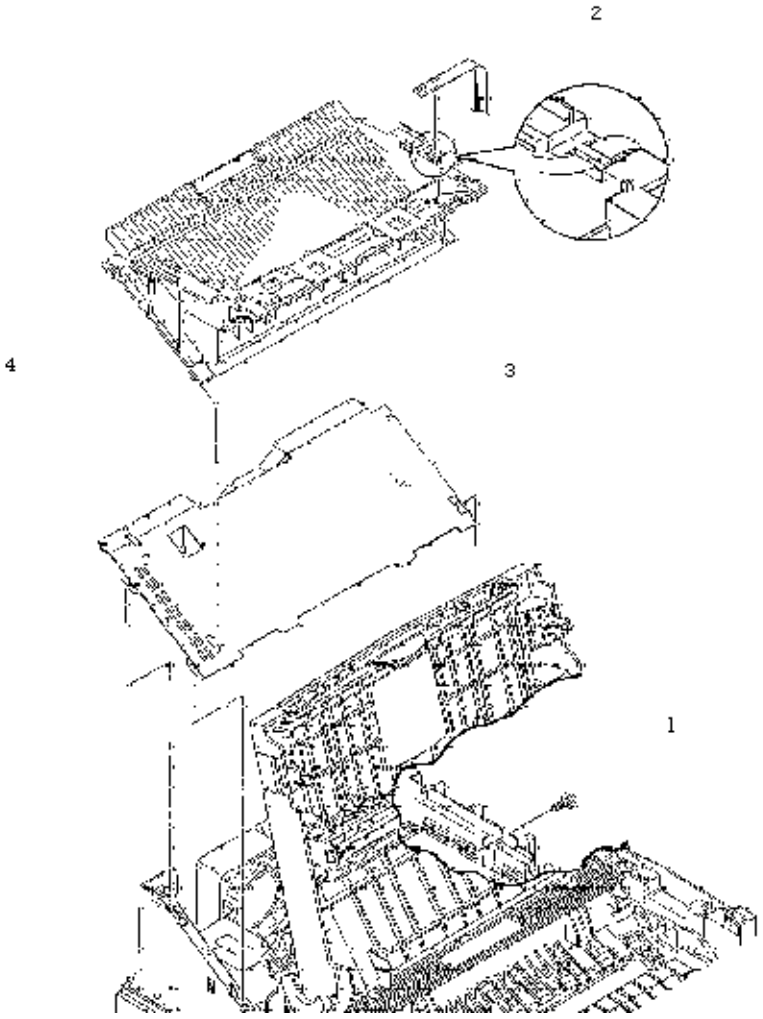
3.3.7 Face Up Stacker Assy

(1) Remove the operator panel assy (3.3.4).

(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the screw 1 and remove the Sumi card (operator panel cable) 2 off the latch section of face up stacker 4. Remove both the shield plate 3 and face up stacker 4 together.

(4) Unlock the latches at two locations, and remove the face up stacker 4.



Partner Exchange (BPX) for any updates to this material. (http://bpx.okidata.com)

3.3.8 Lower Base Unit

(1) Remove the operator panel assy (see 3.3.4).

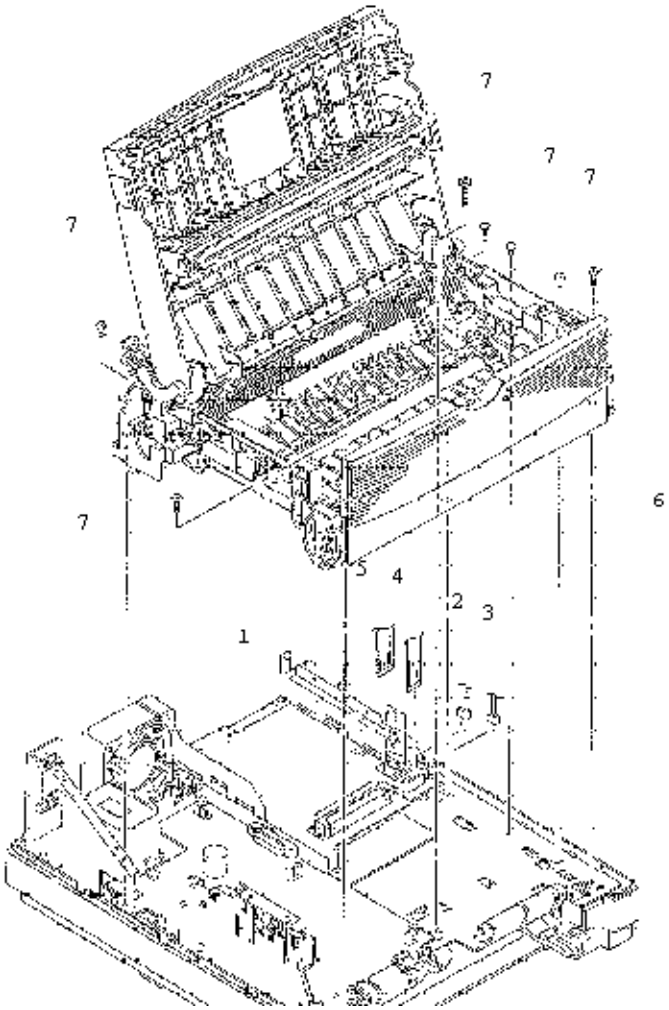
(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the connecting cables 2 and 3 of the pulse motors from the connectors (DM, RM) of the TQCA-PCB 1. NOTE: Mark the cables with the correct re-installation order and location to ease re-assembly.

(5) Remove the LED head cables 4 and 5 from the connectors (HEAD1, HEAD2).

(6) Open the manual feed guide assy, remove seven screws 7, then remove the lower base unit



3.3.9 Eject Roller Assy

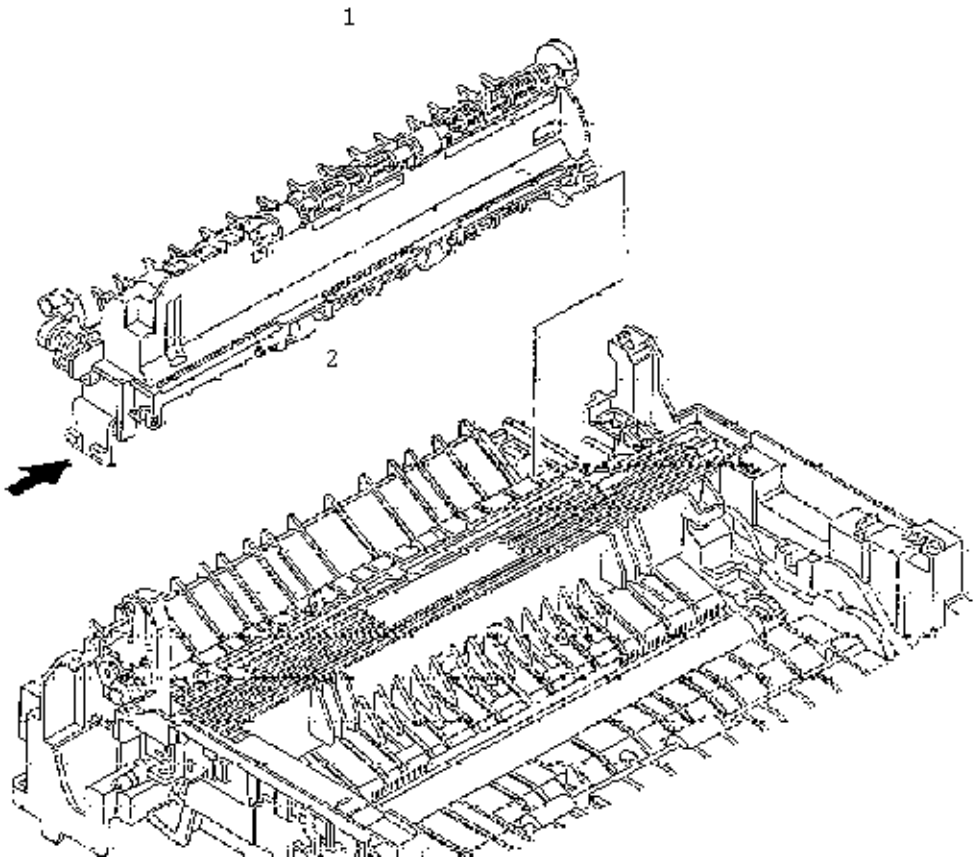
(1) Remove the operator panel assy (see 3.3.4).

(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.8).

(5) Disengage the eject roller assy 1 from the lower base 2 by pressing the latch section of the eject roller assy 1 in the direction of the arrow shown below, and remove the eject roller assy 1.



3.3.10 Motor Assy

(1) Remove the operator panel assy (see 3.3.4).

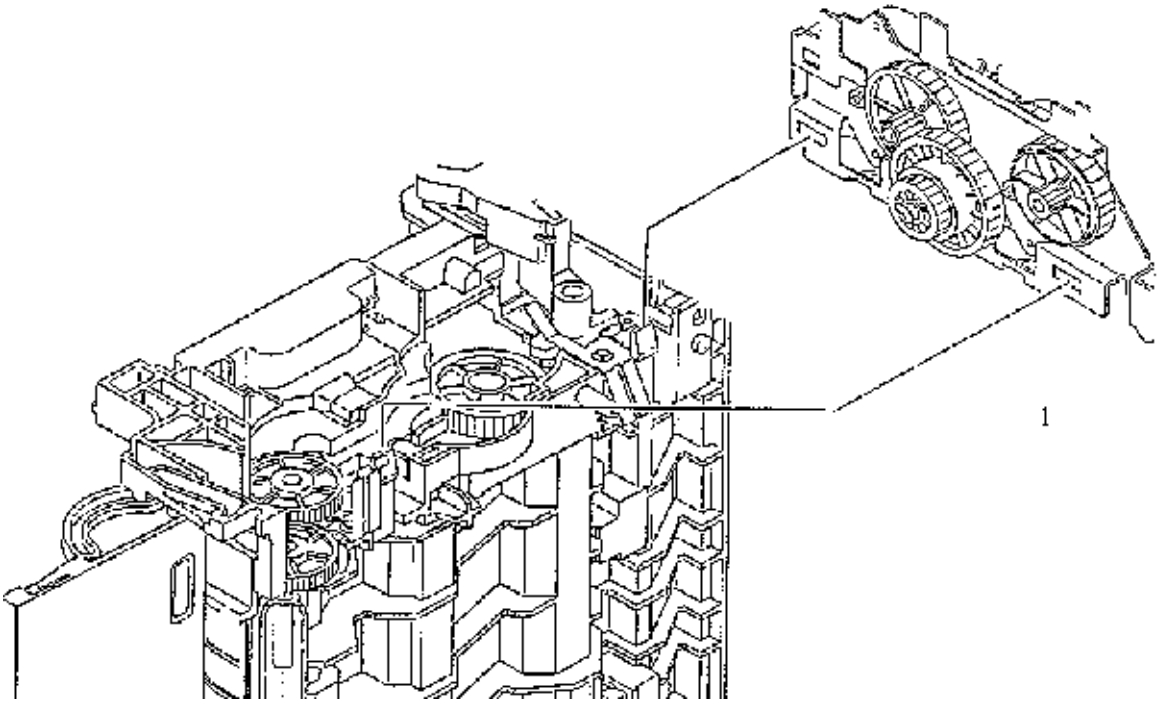
(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.8).

(5) Stand the lower base unit on its side as shown, and unlock two latches, then remove the motor assy 1.

NOTE: Use care as the gears are not permanently mounted onto the mounts/ shafts. Mark and remove motor cables making careful note of orientation and placement.



3.3.11 Hopping Roller Shaft Assy

(1) Remove the operator panel assy (see 3.3.4).

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

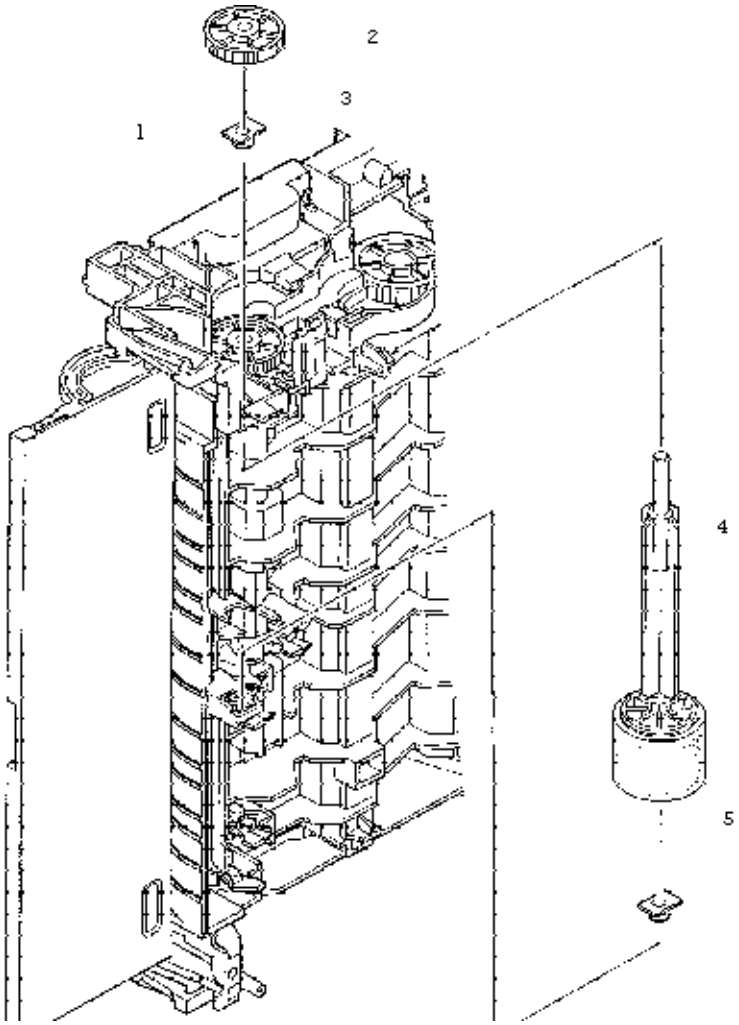
(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.8).

(5) Remove the motor assy (see 3.3.10).

(6) With the lower base unit 1 standing on its side, remove the hopping roller gear 2 and the bearing (A) 3.

(7) Remove the hopping roller shaft assy 4 (the bearing (B) 5 comes off, so be careful not to lose it).



3.3.12 Stacker Cover Assy

(1) Remove the operator panel assy (see 3.3.4).

(2) Remove the upper cover assy (see 3.3.1).

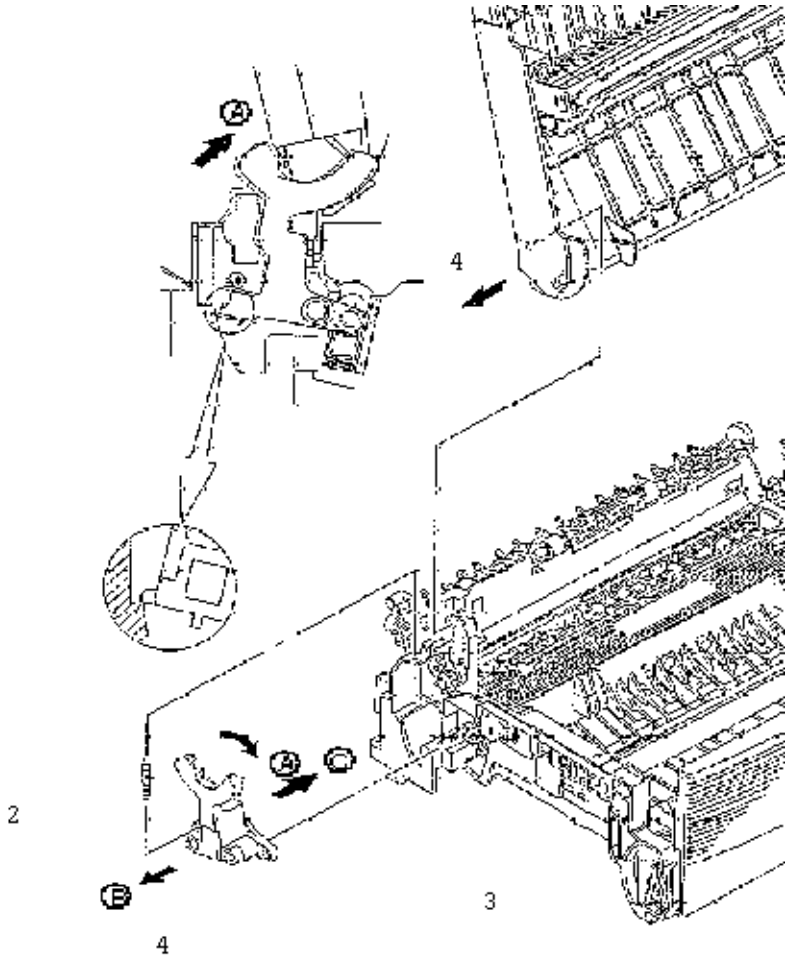
(3) Remove the face up stacker assy (see 3.3.7).

(4) Release the stacker cover assembly from the reset Lever R 1 by gently prying the cover from the reset lever. Remove the reset lever R 1 from the machine.

(5) Release the stacker cover assembly from the reset Lever L. Detach the reset spring 2 from the lower base unit 3, turn the reset lever L 4 in the direction of arrow until it stops, and remove it in the direction of arrow .

(6) Remove the LED Cable from the connector on the Main Logic Board. Unlock the two posts of the lower base unit 3, then remove the stacker cover assy 5.

Note: Use care when removing the Stacker Cover Assembly as the cover close damper is not permanently attached.



3.3.13 Registration Roller

(1) Remove the operator panel assy (see 3.3.4).

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

(3) Remove the face up stacker assy (see 3.3.7).

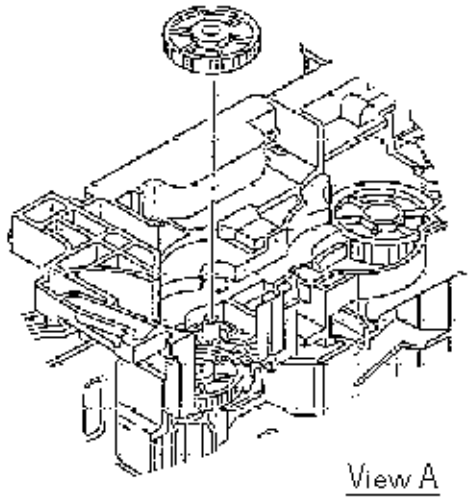
(4) Remove the lower base unit (see 3.3.8).

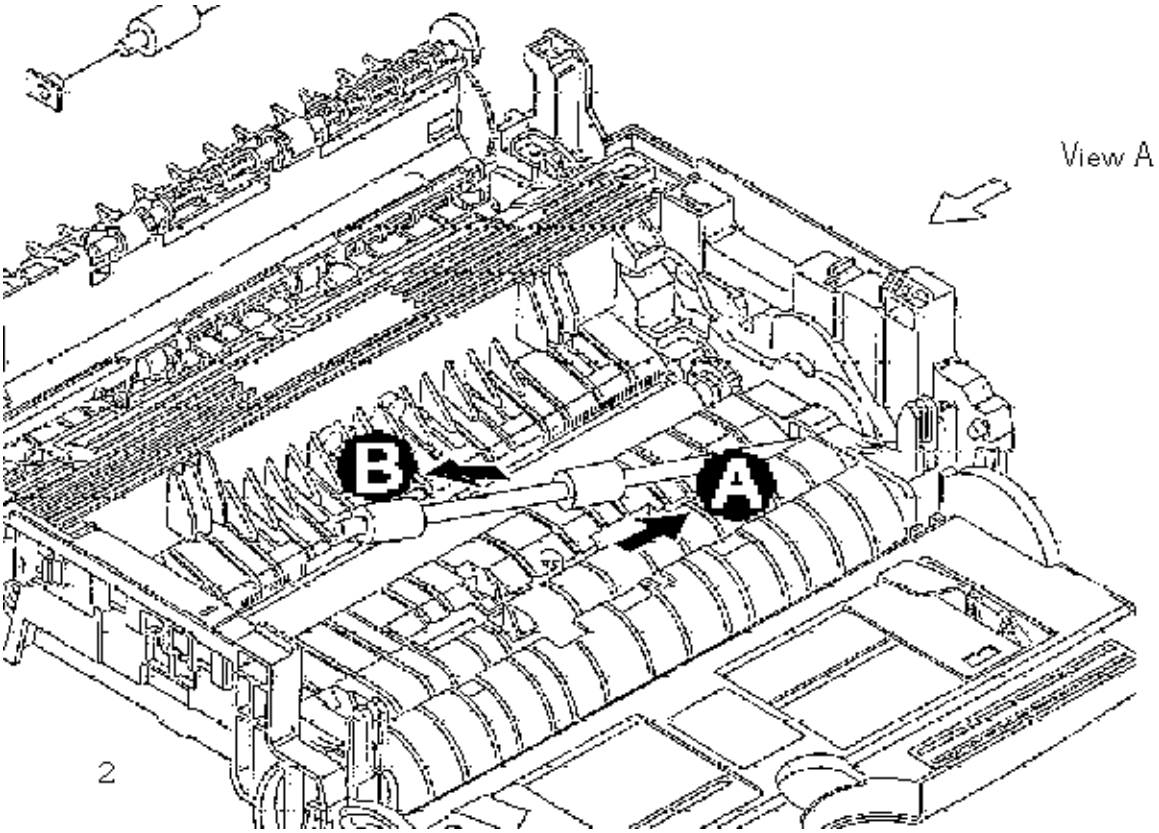
(5) Remove the motor assy (see 3.3.10).

(6) With the lower base unit standing on its side, remove the Registration Roller gear 1.

(7) Press the registration roller 2 in the direction of arrow and lift up the left side of it, then remove the registration roller 2 and the bearing (registration) 3.

(8) Pull out the registration roller 2 in the direction of arrow B.





3.3.14 Transfer Roller

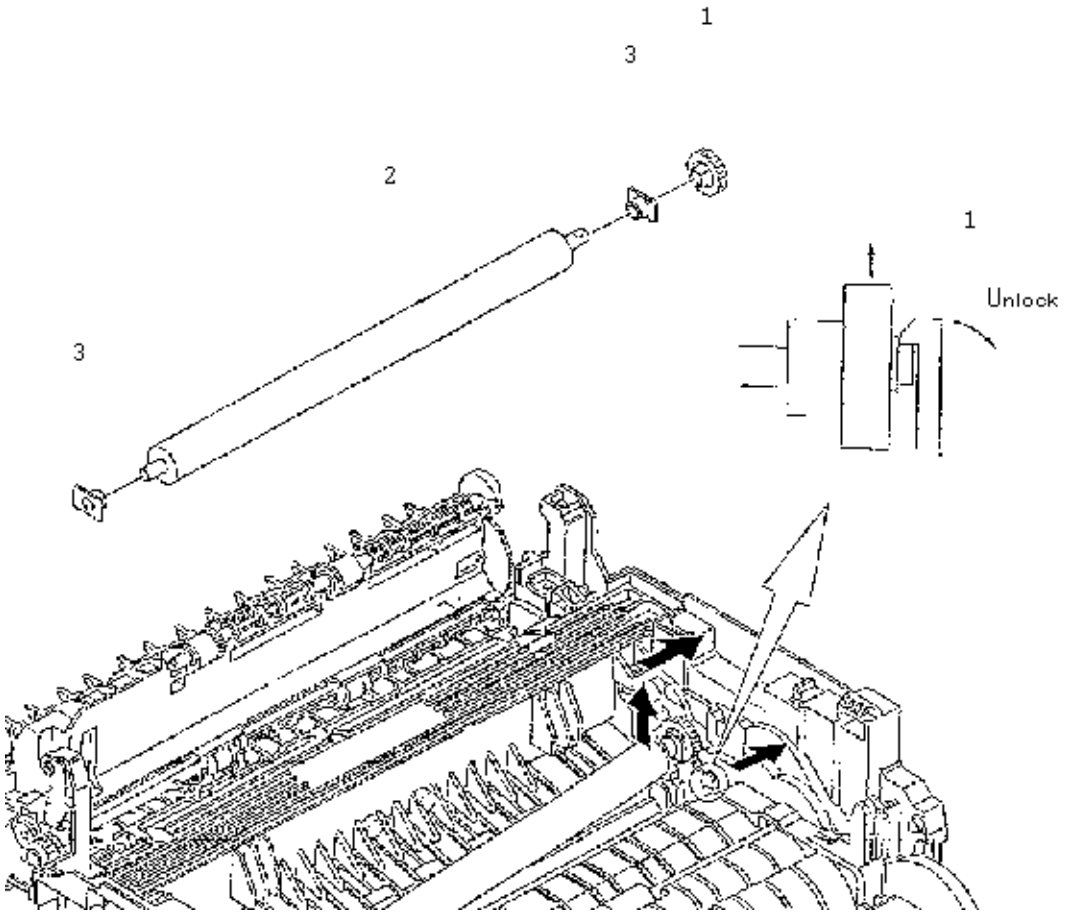
Special Note: Handling the Transfer Roller unnecessarily will cause poor print quality. Do not touch the surface of roller.

(1) With the power switch turned off, unplug the AC cord from the outlet.

(2) Open the stacker cover.

(3) Release the transfer roller gear 1 by unlocking the latch of the main unit (never apply 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 come off also). **NOTE:** Use great care. The bearings are not permanently attached.



3.3.15 Fusing Unit

(1) Remove the operator panel assy (see 3.3.4).

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

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the stacker cover assy (see 3.3.12).

(5) Remove four screws 1, lift and remove the fusing unit 2.

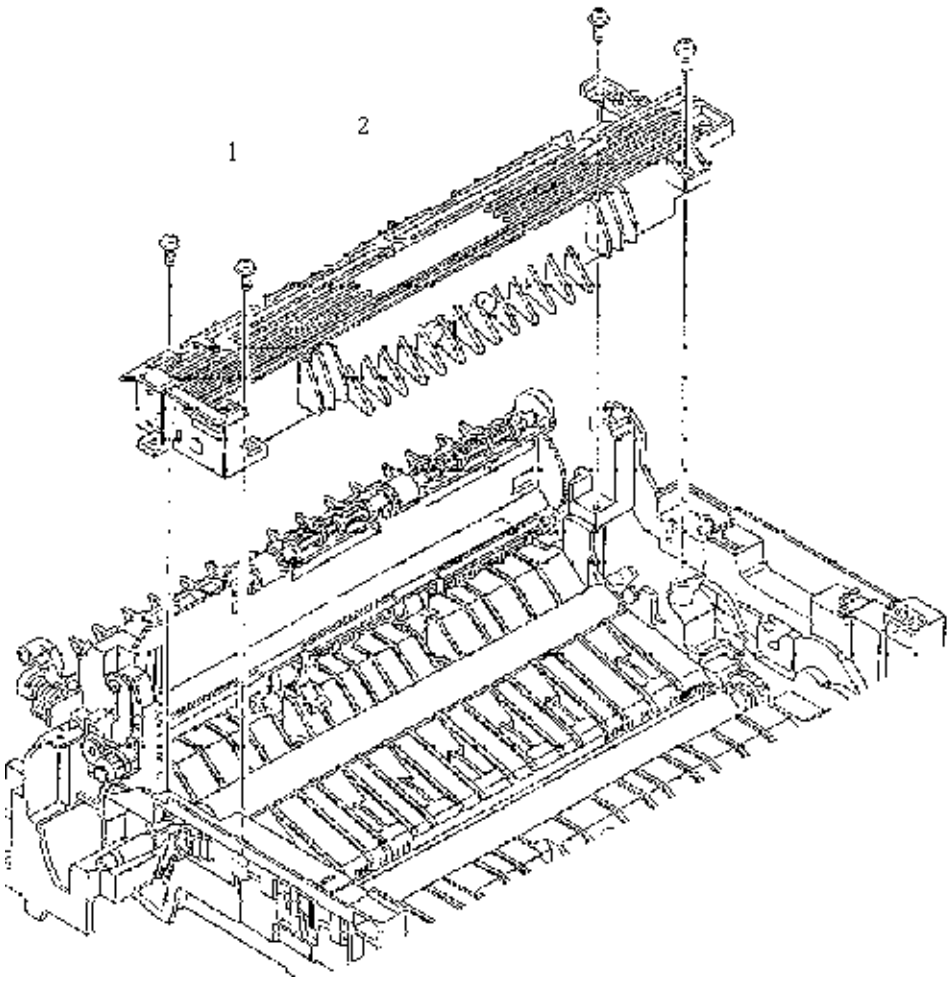
Caution: Fusing unit may be hot. Use care when handling.

Notes:

1. When reinstalling or removing the fusing unit, tighten or loosen the screws while holding the fusing unit assy 2 down with your hand (it is being pushed up by the fuser pressure roller).

2. When reinstalling the screws 1, be sure to direct the screws into preexisting thread and avoid damaging the threads.

3. Do not apply excessive torque when tightening the screws 1. Stripping these screws will require replacing the entire lower base unit.



3.3.16 Back-up Roller

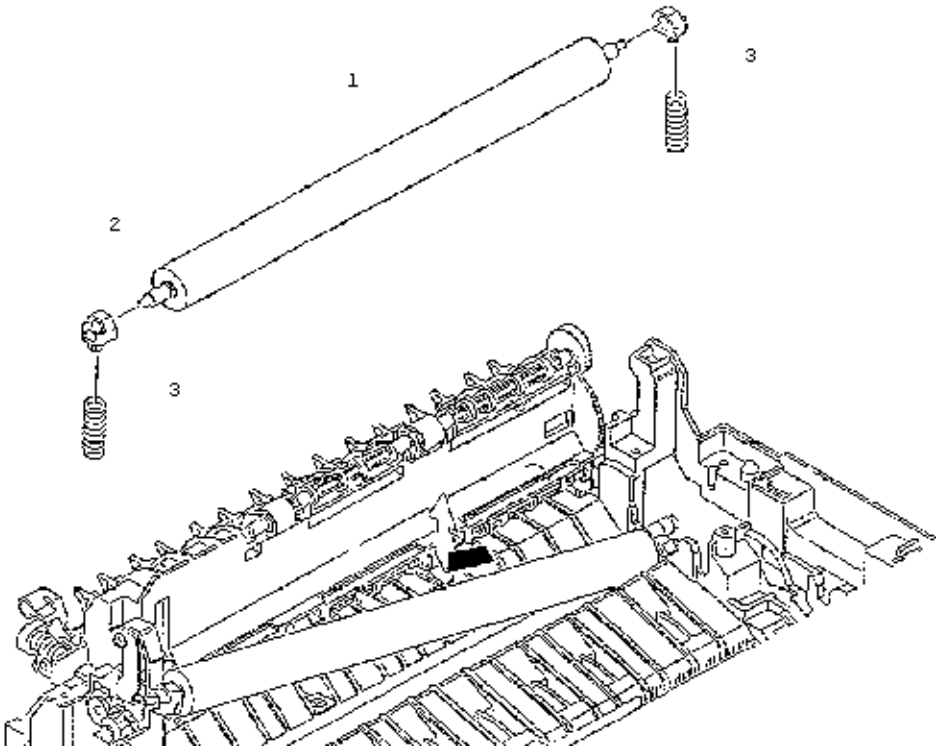
(1) Remove the fusing unit assy (see 3.3.15).

(2) Remove the Lower Base Unit Assembly (see 3.3.8)

(3) Remove the Motor Assembly (see 3.3.10)

(4) Remove the Reset Lever R (see 3.3.12)

(5) Lift the left side of the back-up roller 1, and pull it out to the left side (at this time, two bushings (back-up) 2 and the bias springs (back-up) 3 will also come off).



3.3.17 Sensor Plate (Inlet)

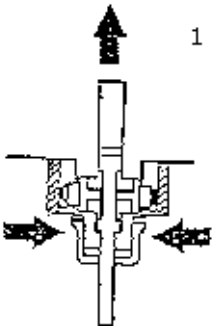
(1) Remove the operator panel assy (see 3.3.4).

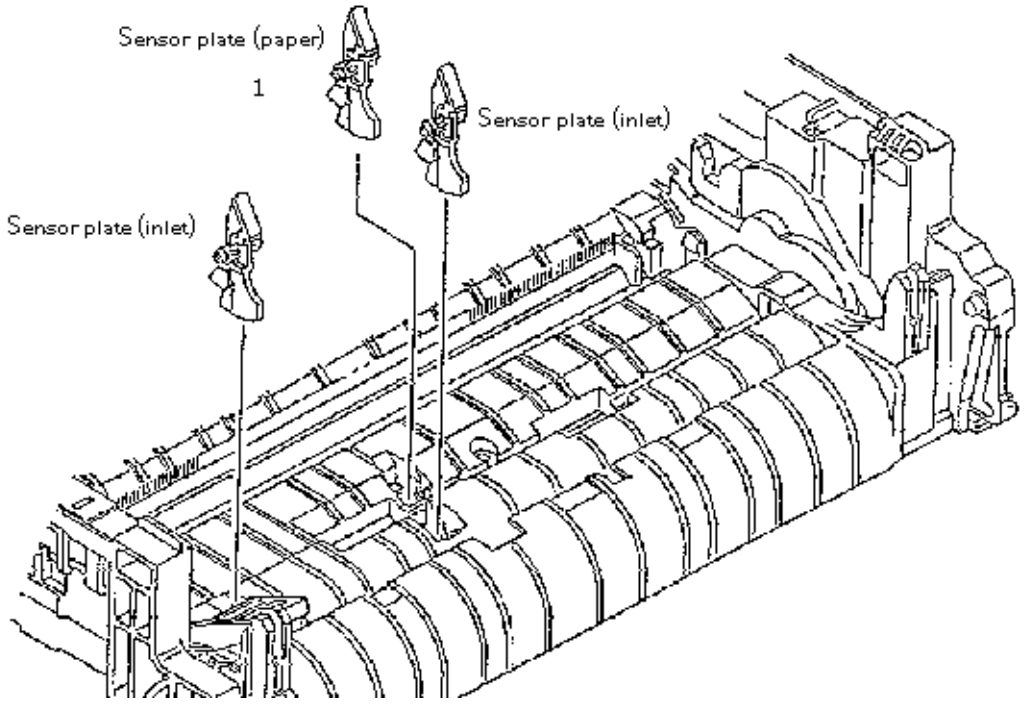
(2) Remove the upper cover (see 3.3.1).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.8).

(5) Press the clamps of three sensor plates (inlet and paper) 1, and remove them by pressing them upward from the bottom.





3.3.18 Sensor Plate (Outlet)

(1) Remove the operator panel assy (see 3.3.4).

(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the eject roller assy (see 3.3.9).

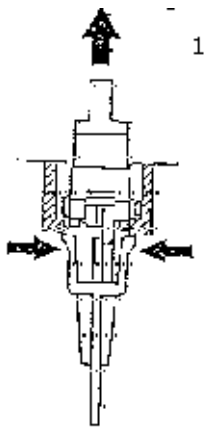
(4) Remove the face up stacker assy (see 3.3.7).

(5) Remove the lower base unit (see 3.3.8).

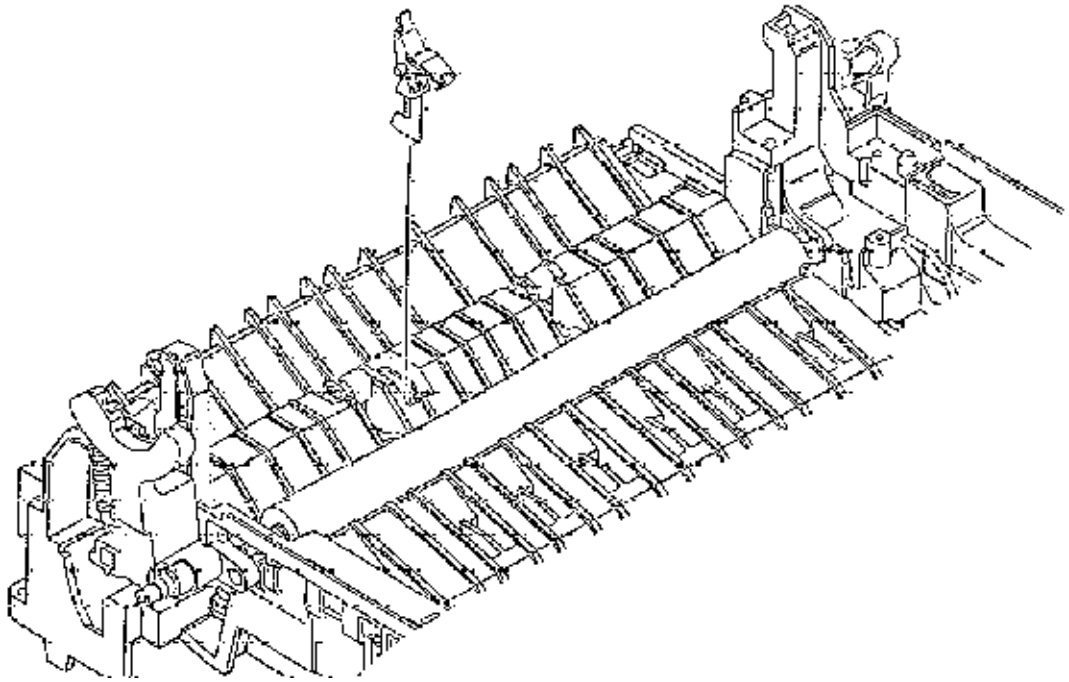
(6) Remove the fusing unit assy (see 3.3.15).

(7) Press the clamps of the sensor plate (outlet) 1, and remove the sensor plate by pushing it up.

NOTE: This is a two part sensor. Use great care when handling.



1

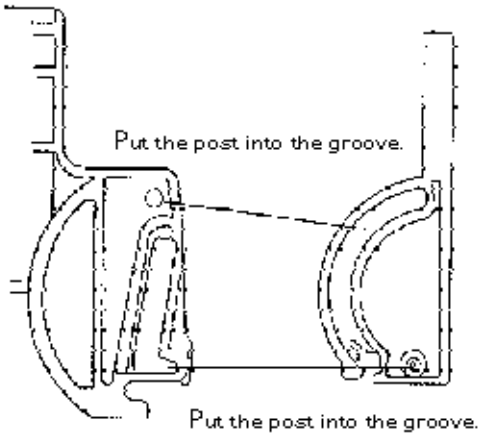


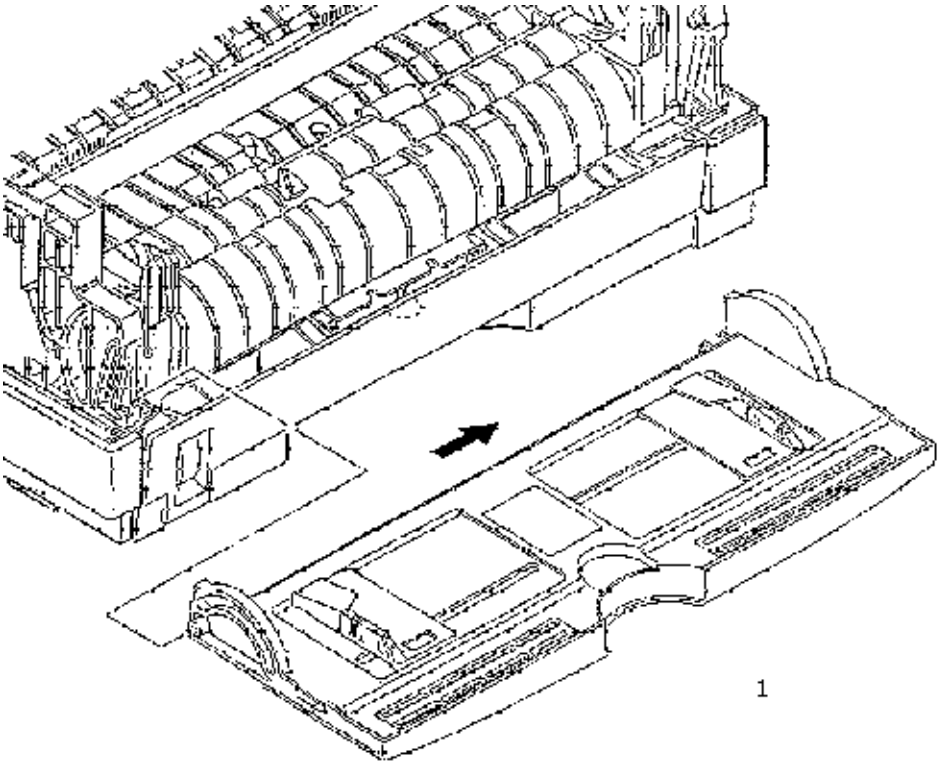
3.3.19 Manual Feed Guide Assy

(1) Remove the Operator Panel Assembly (see 3.3.4)

(2) Remove the upper cover assy (see 3.3.1).

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





3.3.20 Sensor Plate (Paper Supply)

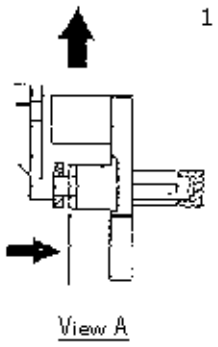
(1) Remove the operator panel assy (see 3.3.4).

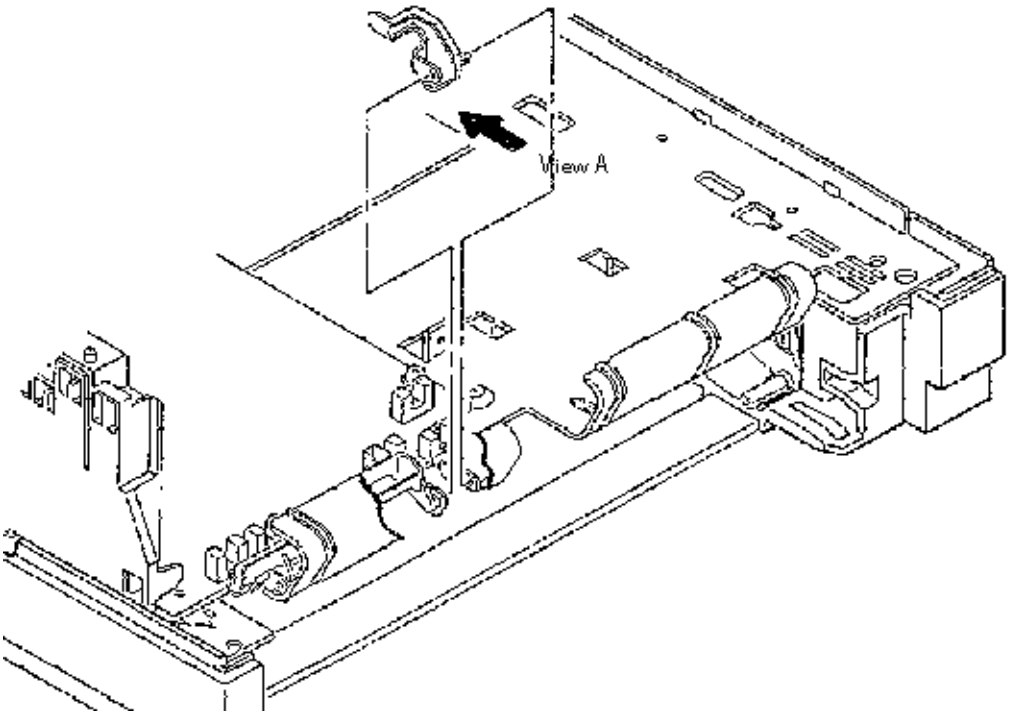
(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.8).
(5) Press the clamps of the sensor plate (paper supply) 1 to unlock the latch, and remove it from

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





3.3.21 TQCB-PCB

(1) Remove the operator panel assy (see 3.3.4).

(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the face up stacker assy (see 3.3.7), and shield plate.

(4) Remove the connector (PSIZE) (2NDTRAY) 5 and 6, LED Head cables, and motor connectors.

(5) Remove three screws 1.

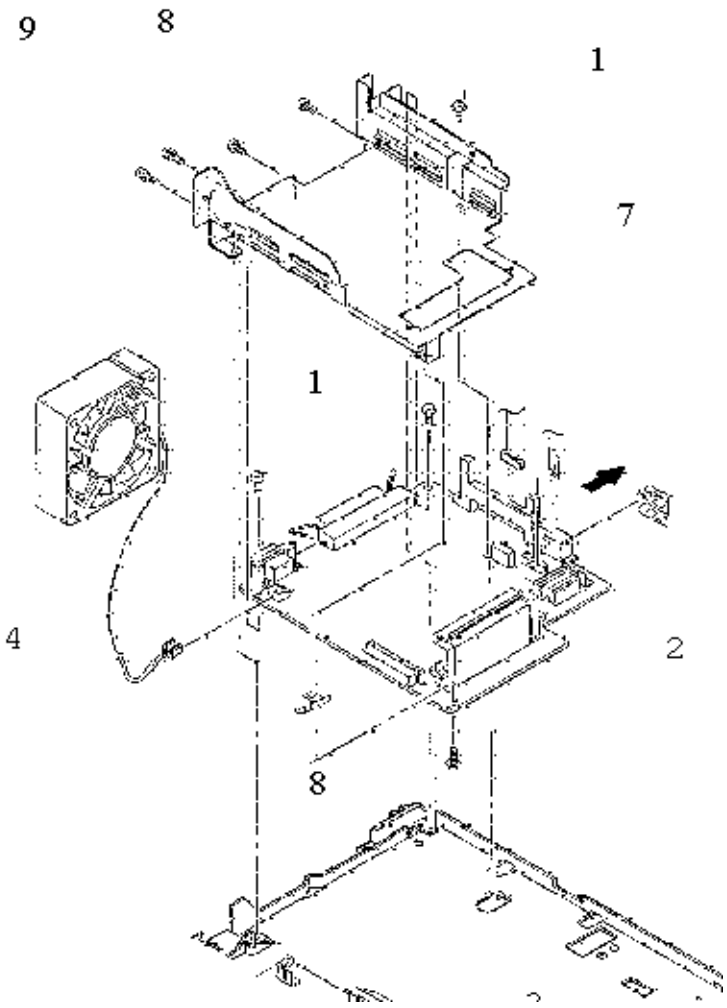
(6) Move the TQCB-PCB 2 in the direction of arrow to disconnect it from the power supply/sensor board 3.

(7) Remove the TQCB-PCB 2, together with the PCB guide plate (remove the fan motor 4 at the same time).

(8) Remove the connector CN1, and disconnect the fan motor 4.

(9) Remove three screws 8 and two nuts 9, and remove the PCB guide plate 7 from the TQCB-PCB 2.

Note: When reinstalling the TQCB-PCB 2 onto the base plate 7, be careful not to bend the base plate (it is desirable to place a block underneath it to prevent bending).



3.3.22 Transformer

(1) Remove the operator panel assy (see 3.3.4).

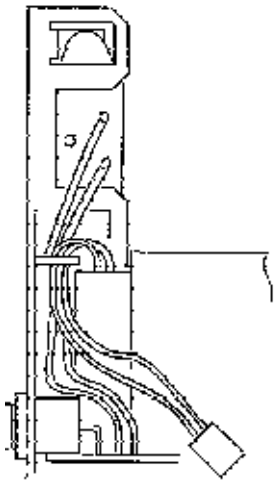
(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the connectors (CN1 and CN2).

(5) Remove two screws 1, and remove the transformer 2.

Note: When reinstalling the transformer, be sure to lay the AC and transformers primary side cables under the divider (see view A diagram below)



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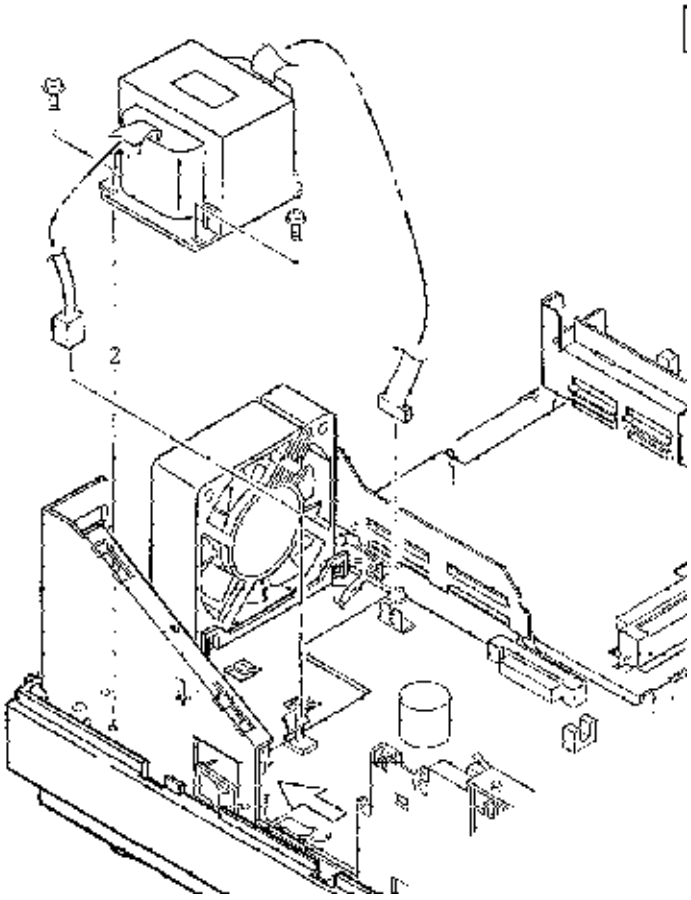


3.3.23 Power Supply/Sensor Board and Contact Assy

(1) Remove the Operator Panel assembly (3.3.4), then remove the upper cover assy (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Remove the TQCA-PCB (See 3.3.21).

(4) Remove the transformer (see 3.3.22).

(5) Remove the AC inlet 1 from the base plate 2.

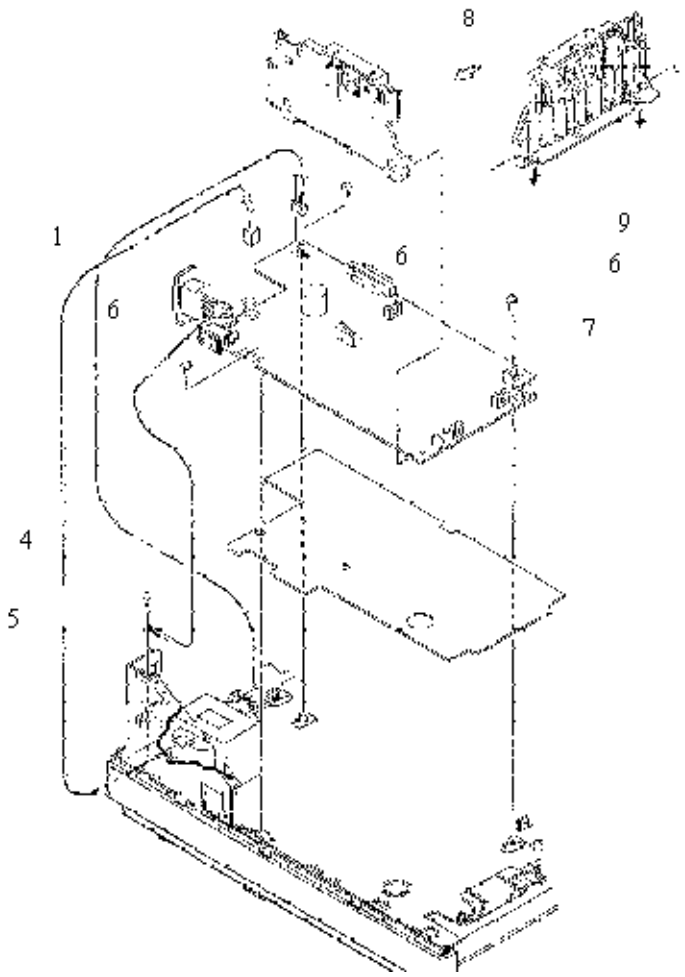
(6) Remove the screw 4 and remove the grounding (earth) wire 5.

(7) Remove three screws 6, and remove the power supply/sensor board 7 and contact assy 8 together.

(8) Unlock two latches 9, and remove contact assy 8 from the power supply/sensor board 7.

Notes :

1. Be careful about the sensor (paper supply) when reinstalling the lower base.
2. Make sure that no excessive force is applied to the power supply switch.
3. When installing the power supply/sensor onto the base plate, be careful not to bend the base plate (it is desirable to place a block underneath it to prevent bending).



3.3.24 Cassette Guide L Assy

(1) Remove the paper cassette.

(2) Remove the Operator Panel Assembly (3.3.4), then remove the upper cover assy (see 3.3.1).

(3) Remove the lower base unit (see 3.3.8).

(4) Remove the TQCA-PCB (see 3.3.22).

(5) Remove the transformer (see 3.3.23).

(6) Remove the power supply/sensor board (see 3.3.24).

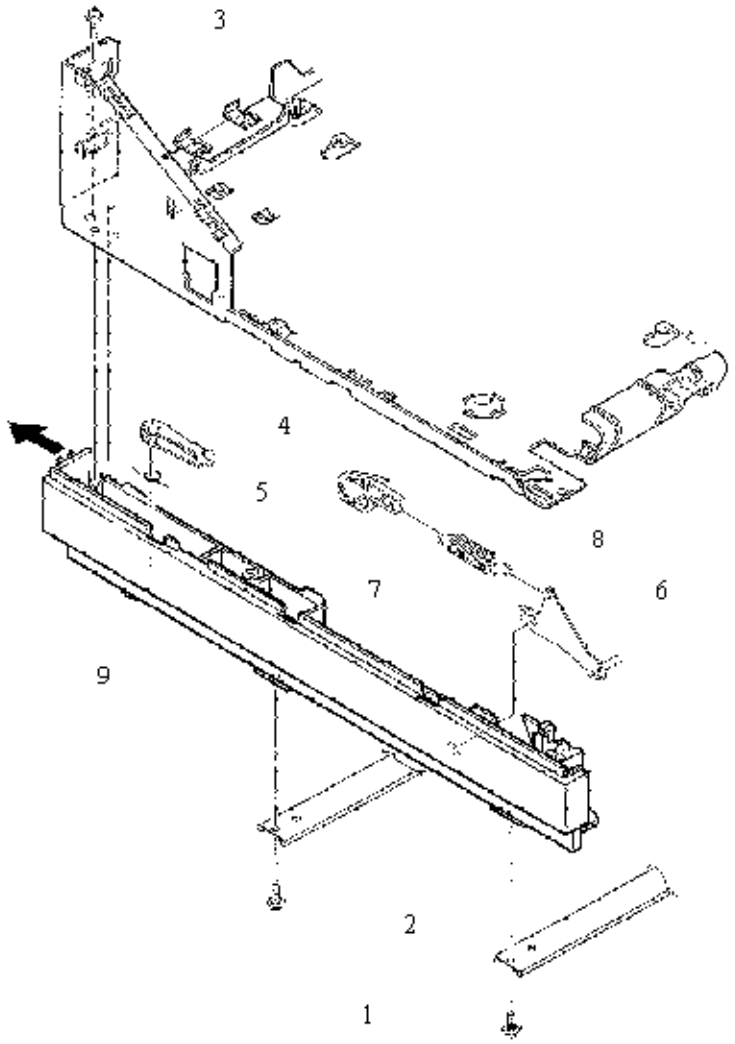
(7) Remove two screws 1, and remove the guide rails 2.

(8) Remove the screw 3, and remove the cassette guide L 9 by shifting it in the direction of the arrow as shown below.

(9) Remove cassette lock lever 4 and torsion spring 5.

(10) Remove cassette lock lever spring 8 then remove the sheet link (L) 6 and link pull lock 7.

Special Note: The serial number sticker is attached to the Cassette Guide Right, Assembly. The serial number sticker must be transfered from the old assembly to the new one.



3.3.25 Cassette Guide R Assy

(1) Remove the paper cassette.

(2) Remove the Operator Panel Assembly (3.3.4), then remove the upper cover assy (see 3.3.1).

(3) Remove the lower base unit (see 3.3.8).

(4) Remove the TQCA-PCB (see 3.3.22).

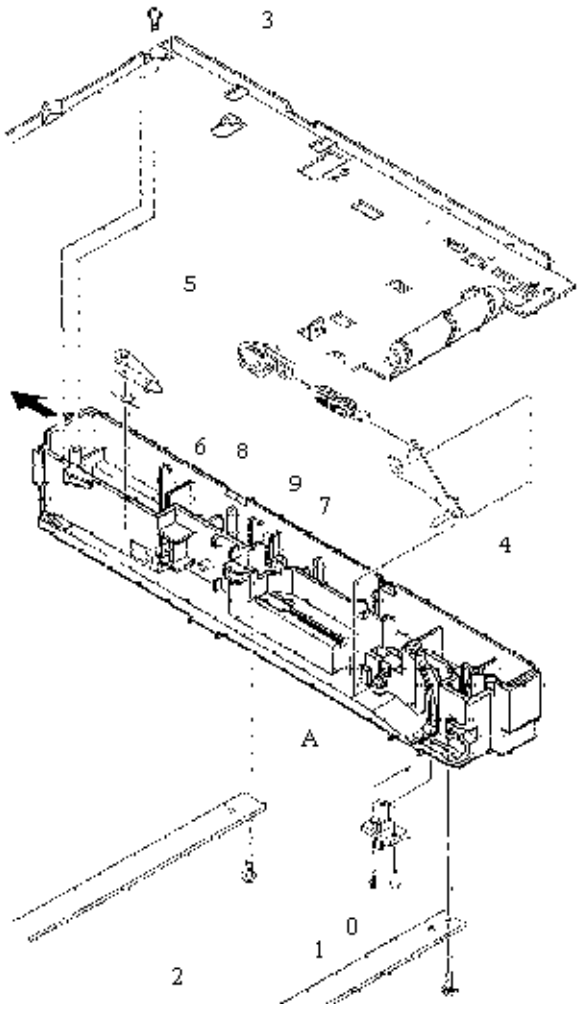
(5) Remove two screws 1, and remove the guide rails 2.

(6) Remove the screw 3, and remove the cassette guide R 4 by shifting it in the direction of arrow.

(7) Remove the cassette lock lever 5 and torsion spring 6.

(8) Remove the cassette lock lever spring 9, then remove the sheet link (R) 7 and link pull block 8.

(9) Remove two screws 0, and remove the square-shaped connector A.



ADJUSTMENT

This chapter provides explanations concerning the adjustment necessary when replacing a part. The adjustment is made by changing the parameter value set in EEPROM on the main control board. The parameter can be set by the key operation from the operator panel. This printer has three kinds of maintenance modes, and it is necessary to select one of the modes when replacing any parts.

4.1.1 User Maintenance Mode

To enter into the user maintenance mode, turn the POWER switch on while holding the MENU key down.

Function

There are five functions as follows:

- Menu reset
- Opepane menu disable
- Hex dump
- X-adjust / Y-adjust
- Drum counter reset

Detailed descriptions of these functions are provided in Appendix D, DIAGNOSTICS TEST.

4.1.2 System Maintenance Mode

Note: This mode is used only by maintenance personnel and it should not be released to the end-users.

To enter into the system maintenance mode, turn the POWER switch on while holding the Recover key down.

Function

There are six functions as follows:

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

Detailed descriptions of these functions are provided in Appendix D, DIAGNOSTICS TEST.

4.1.3 Engine Maintenance Mode

Note: This mode is used only by maintenance personnel, and it should not be released to the end users.

(1) To enter into the engine maintenance mode, turn the power on while holding ENTER and FORM FEED keys down.

(2) Functions of this mode are selected by the menu.

(3) The way to exit out of this mode varies depending on the settings.

(4) There are following engine maintenance modes:

a) Head drive time setting Sets the drive time of the LED head.

b) Head width setting Sets the width of the LED head (39 or 40 chips).

c) Printing start position setting Sets the starting position of printing.

d) Drum count total display The total drum rotation count of the printer, as counted by the engine section, is displayed on the LCD.

e) Drum count display The total image drum rotation count, as counted by the engine section, is displayed on the LCD.

f) Standard tray paper feeding quantity setting Sets the amount of paper to be fed from the standard tray.

g) High Capacity Second Paper Feeder paper feeding quantity setting Sets the amount of paper to be fed from High Capacity Second Paper Feeder.

h) High Capacity Second Paper Feeder downloading table selection Selects the downloading table of High Capacity Second Paper Feeder.

i) Power Envelope Feeder paper feeding quantity setting Sets the amount of paper to be fed from Power Envelope Feeder.

j) Power Envelope Feeder downloading table selection Selects the downloading table of Power Envelope Feeder.

k) Engine Reset All EEPROM areas used by the engine section are reset to factory default values. The followings, however, are not reset:

- Menu Level-1

- Menu Level-2

- Operator Panel Menu Disable/Enable

- LED HEAD No.

- LED HEAD WID

- Page Print Disable/Enable

After reset, the printer returns to normal operating mode.

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

Detailed descriptions of these functions are provided in Appendix D, DIAGNOSTICS TEST.

4.1.4 EEPROM initialization

The corresponding are of the EEPROM is initialized for each event as shown Table 4-1.

Table 4-1

EEPROM area / Event	Manu level 1	Manu level 2	F/W revision area	Information for destination (Factory default)	Engine area	Drum counter	Page counter	X/Y adjust	LED head drive time	Remarks
Menu resetting for user maintenance	○									
EEPROM resetting for system maintenance	○	○								
Engine resetting for engine maintenance					○	○	○			
Firmware revision check error LCD display: EEPROM RESETTING	○	○	○					○		This initialization occurs when the existing ROM is replaced by a ROM whose revision No. is different from the existing ROM.
Engine revision error LCD display: ENGINE RESET					○	○	○		○	This initialization occurs when a new EEPROM is mounted.
Engine ID error LCD display: ENGINE RESET					○	○	○		○	
Setting of data for destination	○	○		○				○		
User information error LCD display: EEPROM RESETTING	○	○		○				○		This resetting occurs when an irregular user information is detected.

○ : Represents initialization

4.2 Adjustment When Replacing a Part

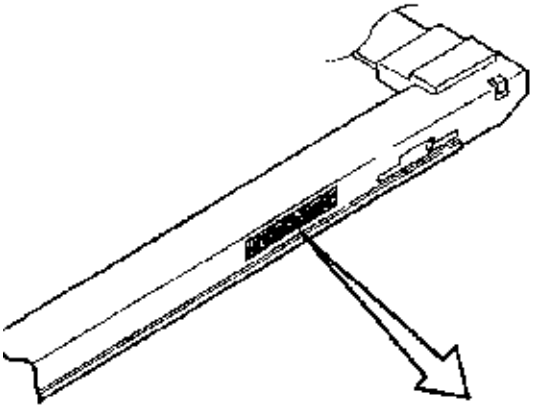
Adjustment is necessary when replacing any of the following parts.

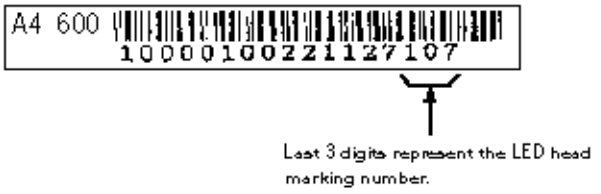
Part Replaced	Adjustment
LED Head	Set the LED head drive time.
Image Drum Cartridge	Reset the image drum counter (refer to User's manual).

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 reset the LED head drive time.

Luminous Intensity Marking Label





Luminous intensity marking
027
|
154

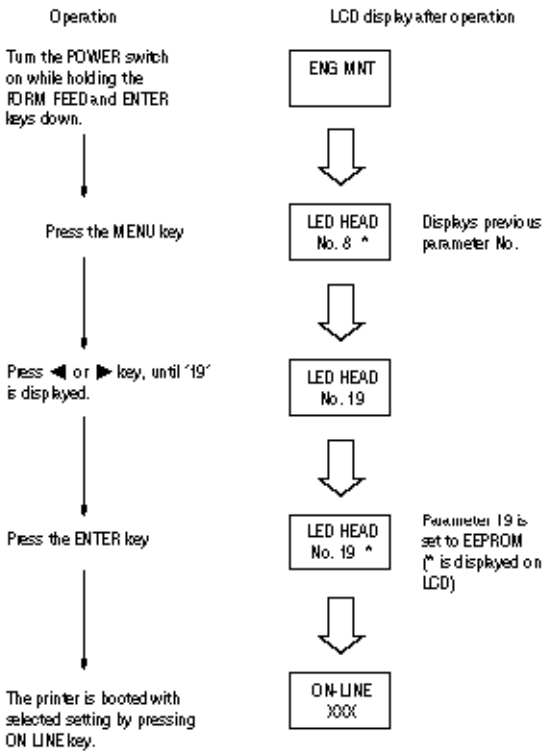
Setting of LED Head Drive Time

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. Corresponding table of luminous intensity marking and drive time parameter

Luminous intensity marking on LED head	Drive time parameter
027 - 028	28
029 - 030	27
031 - 032	26
033 - 035	25
036 - 037	24
038 - 040	23
041 - 043	22
044 - 046	21
047 - 049	20
050 - 052	19
053 - 057	18
058 - 060	17
061 - 064	16
065 - 069	15
070 - 073	14
074 - 079	13
080 - 084	12
085 - 090	11
091 - 096	10
097 - 103	9
104 - 110	8
111 - 118	7
119 - 126	6
127 - 135	5
136 - 144	4
145 - 154	3

b. Setting
Example: Method for setting the parameter to 19 (for a case where the previous parameter setting was 8).



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.		Consumables

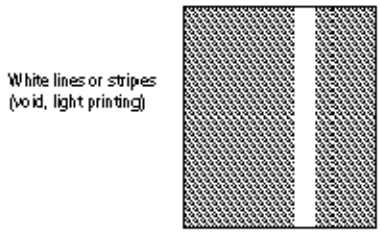
5.2 Cleaning

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 (service tool) to clean inside the printer.
Note: Do not touch the image drum, LED lens array, or LED head connector block. Do not use any solvents.

5.2.1 Cleaning of LED Lens Array

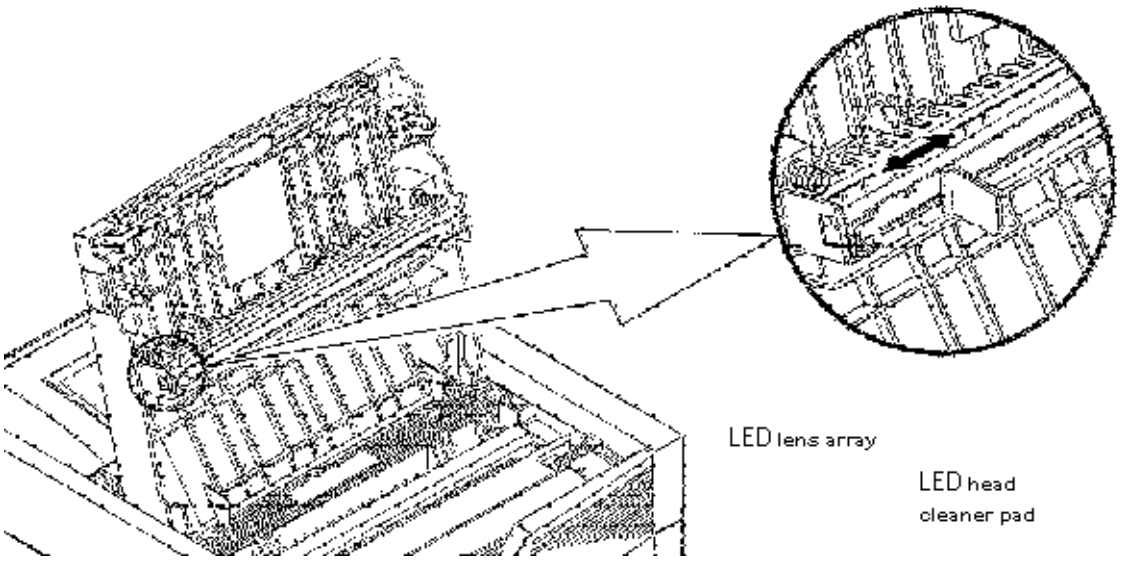
Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page, as shown below.

Note: The LED lens array must be cleaned with an LED head cleaner. Led Lens cleaner pads are included with replacement toner cartridges.



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

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



(2) Throw the cleaner pad away.

Cleaning Page Function

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

(1) While the printer is in off-line mode, press both the left and right arrow keys simultaneously for at least 2 seconds. The printer enters the cleaning mode.

(2) The LCD displays "CLEANING" on the upper line, and on the lower line, "MANUAL LETTER REQUEST" is displayed, scrolling one character width at a time from right to left "LETTER" on the lower line may instead be "A4" depending on the printer designation. While the lower line scrolls the message, the message on the upper line remains fixed in place.

When the above messages appear on the LCD, the user can verify that the printer has entered the cleaning mode and that it is requesting insertion of a letter (or A4) size paper into the manual feederslot.

(3) Insert a sheet of paper into the manual feeder slot.

(4) Toner attached to the image drum is transferred onto the inserted sheet, and the sheet is ejected with the toner residues printed. While this process is going on, the LCD displays "CLEANING PRINT" message.

(5) The printer returns to off-line mode.

Lubrication

5.3.1 General Information Lubrication should performed once a year or as needed.
Use Lithium Grease.

When applying the grease, do not over-lubricate.

Do NOT allow lubrication 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 stepper motor	3.3.5 page 3 -11
Gear on the shaft of the registration motor	3.3.6 page 3 -12
Teeth of the reduction gear	3.3.10 page 3 -16
Inside of bearings, hopping roller shaft assy.	3.3.11 page 3 -17
Hopping roller shaft	3.3.11 page 3 -17
Inside of the pivot points of the reset levers	3.3.12 page 3 -18
Gear on the damper stacker arm	3.3.12 page 3 -18
Stacker cover damper gear	3.3.12 page 3 -18
Transfer roller gear	3.3.14 page 3 -20
Inside of Bearings of the transfer roller	3.3.14 page 3 -20
Ends of the pressure roller shaft	3.3.16 page 3 -22

6. TROUBLESHOOTING PROCEDURES

As always, whenever dealing with static sensitive devices use good anti-static procedures and practices.

6.1 Troubleshooting Tips

(1) Check the Troubleshooting section in the Printer Handbook.

(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

(1) Is the printer being run in proper ambient conditions?

(2) Are supplies (toner) and routine replacement part (image drum cartridge) being replaced properly?

(3) Is the printing paper normal (acceptable quality)?

(4) Is the image drum cartridge being loaded properly?

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.

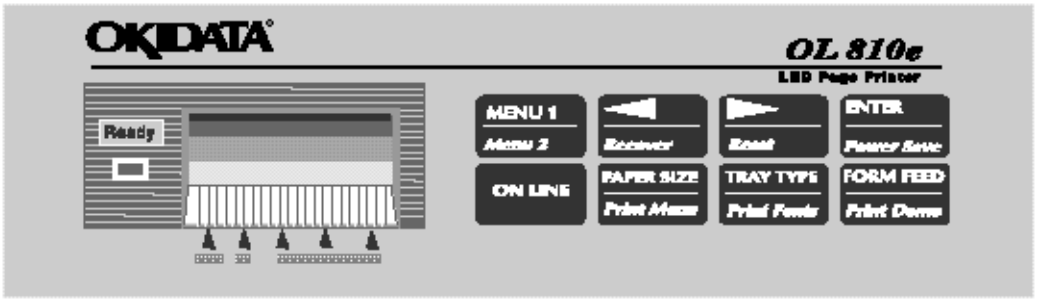
(3) Use caution when handling the fusing unit as it attains very high temperatures during operation.

(4) Do not expose the image drum to light for longer than 5 minutes at room temperature.

6.4 Preparation for Troubleshooting

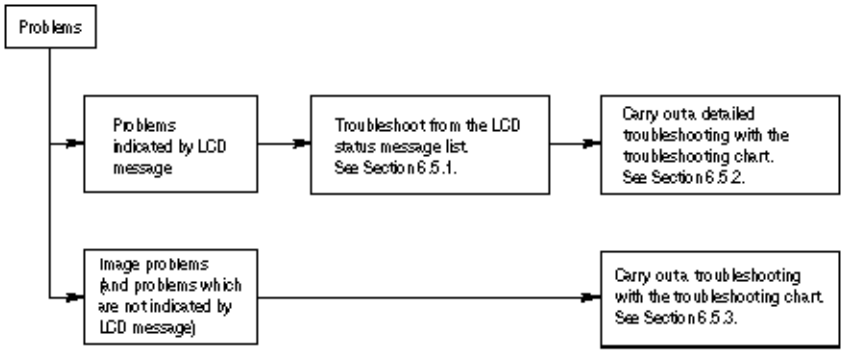
(1) Operator panel display

The operating status of the printer is displayed by the liquid crystal display (LCD) of the operator panel. Take proper corrective action as directed by messages which are being displayed on the LCD.



6.5 Troubleshooting Flow

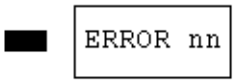
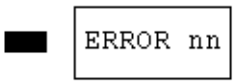
Should there be a problem with the printer, carry out troubleshooting according to the following procedure flow:



6.5.1 LCD status message/problem list

The status and problems which may be displayed by messages on the LCD are listed in Table 6-1.

Category	LCD status message	Problem or status	Remedy
Controller errors	ERROR On aaaaaaaa	An error occurred in the controller. n = Exception Code aaaaaaa = Error Address Code(nn) Error 1 ~ 3 Reserved D ~ F Reserved 4 Address Error Exception (Load command, command fetch) 5 Address Error Exception (Store command) 6 Bus Error Exception (Command fetch) 7 Bus Error Exception (Load command, store command) 8 System Call Extension 9 Break Point Exception A Reserved Instruction Exception B Coprocessor Unusable Exception C Arithmetic Overflow Exception	Normal operation cannot be ensured. off, then back on to restart. If normal operation is not recovered procedure, replace the main control board.
	CARD FORMAT	A checksum error occurred when a card was inserted.	Turn the power off, then back on If a card other than those for OL series is being inserted, no error is displayed and the inserted card is ignored.

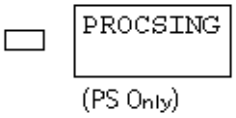
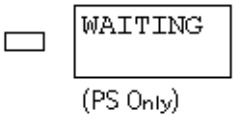
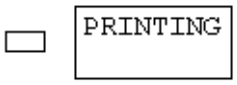
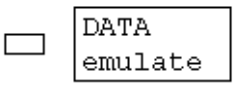
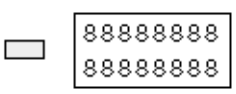
		An error occurred in the controller.	Turn the power off, then back on. If normal operation is not recovered by this restart procedure, use the following actions.
		Code(nn) Error	Remedy (nn)

		On A failure occurred in the controller. n = Exception Code	Replace the main control board.
		10 An error was detected by program ROM check.	Replace the main control board.
		20 An error was detected by font ROM check.	Replace the main control board.
		30 An error was detected by resident RAM check.	Replace the main control board.
		40 An error was detected by EEPROM check.	Replace the EEPROM or main control
		50 An error was detected by optional software ROM check.	Check the optional software ROM board for proper connection or replace it.
		60 An error was detected by optional RAM check.	- Check the optional RAM board for proper connection. - Check the mounting position of short plugs and additional RAM chips (see Section 7.4). - Replace the optional RAM board.
		70 A failure occurred with the Fan motor.	- Check the fan motor for proper connection and for any presence of foreign matter in the fan. See Section 6.5. 2-6). - Replace the fan or the main control board.
		71 A failure occurred with the fuser (timeout error etc.).	See Section 6.5.2 - 4.
		72 A failure occurred with the fuser (thermistor open error).	See Section 6.5.2 - 4.
		73 A failure occurred with the fuser (thermistor short error).	See Section 6.5.2 - 4.
		74 SSIO Error	- Check the connection between the main control board and the power supply/sensor board. - Replace the main control board or sensor board.
		80 I/F timeout occurred between the main control board and the operator panel.	Check the operator panel for proper connection. - Replace the flexible cable, operator panel or main control board.

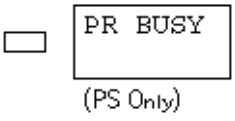
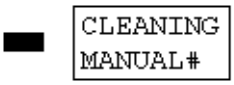
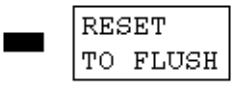
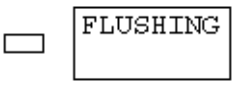
			the main control board. - Turn the power off, then back on again. - Replace the main control board.
		F6 IPT2 program error F7 IPT1 program error	

	#REQUEST	The paper size may be one of the followings: tray: TRAY1, TRAY2, FEEDER Paper: LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, COM-9, COM-10, MONARCH, DL ENV, C5 ENV.	

	MANUAL #REQUEST	Manual loading of paper indicated by the first line message is requested. The paper size one of the followings: LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, FREE SIZE, COM-10, MONARCH, DL ENV, C5 ENV	Load the requested paper in the manual tray
Optional card error	CARD ERROR	While the power was on, card was inserted or removed.	- Turn the power off, insert the card, then turn the power back on to recover from the error. - Replace the card.
Buffer overflow	REC BUFF OVERFLOW	The receive buffer is overflowing.	- Press the operator panel RECOVER key on the operator panel to release the error display. - Change the setting of the host or printer so that the host can detect the busy status of the printer. Resend the data from the host to the printer. - Replace the interface cable or main control board.
	MEMORY OVERFLOW	The page buffer is overflowing because it received too much data for printing on the page. Macro buffer is overflowing. The DLL buffer is overflowing.	- Press the RECOVER key to release the error display. - Install additional optional RAM board or reduce the print data.
	PRINT OVERRUN	The printer overrun because the print data is too complicated to be printed.	- Press the RECOVER key on the operator panel to release the error display. - Simplify page data formatting.

		PostScript mode only. The printer is processing data.	Normal operation.
		PostScript mode only. The printer is in the middle of a job and waiting for data to be processed.	Normal operation.
		The printer is printing a page.	Normal operation.
		The printer is processing data in the on-line mode. Ready ON: The data that is not printed remains in the buffer. Ready flashing: The printer is receiving data. emulate: HP4, AUT, PS2, WIN, HEX	Normal operation.
		All fonts of the printer are being printed during self-test.	Normal operation.
		The current menu setting is being printed. Ready ON: Executed by command entry. Ready flashing: Executed by key operation.	Normal operation.
		Message displayed when the power is turned on. When the power is turned on, the LEDs are turned on for approximately 1 second, conducting a test to verify the conditions of the LEDs and LCD.	Normal operation.

	■ INITIAL- IZING	Message displayed to indicate that the controller is undergoing an initialization when the power is turned on. This message is displayed after the turning on of the LEDs as described above.	
	■ RESET TO SAVE	Message displayed to indicate that in order to reflect the changes in the menu to the editing environment, RESET must be executed. This message is displayed when the printer is unable to conduct automatic reset due to the existence of temporary attributes such as DLL/Macro/User Pattern/User Symbol Set.	Normal operation.
	■ SWITCH- ING	Message displayed to indicate that the change of emulation is taking place. This message is displayed when the PostScript option board is installed in the printer and the following operations are carried out: (1) The emulation of the printer language is changed in the menu and then exit from the menu is carried out. (2) The emulation is switched by command while the printer is in on-line mode.	Normal operation.
	□ PRINT DEMO	The demo page is being printed. Ready LED on: Executed by command entry. Ready LED blinking: Executed by key operation.	Normal operation.
	□ CPYnn/mm	When the number of copies being printed is two or more, the number of copies being printed is displayed. This message is displayed together with another message on the first line.	

		PostScript mode only. This message is displayed when ON LINE key is pressed while the printer is processing a job, if the JOB RESET menu is off. The printer goes off-line after completing the job.	Normal operation.
		This message is displayed when the printer is performing the cleaning print.	Normal operation.
		Manual loading of paper indicated by the second line message is being requested for cleaning. The paper size (#) may be one of the followings: #: LETTER REQUEST, A4 SIZE REQUEST	Normal operation.
		PostScript mode only. This message is displayed when ON LINE key is pressed while the printer is processing a job, if the JOB RESET menu is on. Even while this message is being displayed, the printer continues to process the job normally. RESET TO FLUSH (PS Only)	- Press ON LINE key again. The printer goes back to on-line mode a process the job. - Press Reset key. The job is cancelled.
		PostScript mode only. This message is displayed during cancelling of a job. The message goes off when the job cancellation is completed.	Normal operation.
		The data which remained unprinted in the buffer is deleted and the printer is initialized to user default settings. The temporary DLLs, macros and user pattern are deleted.	Normal operation.

	■ RESET TO SAVE	This message is displayed when the printer cannot reset automatically to exit from the menu because there are data and DLL's and macros having temporary attributes when the printer is changed from set mode to another mode.	Normal operation.
	▭ TONERLOW	Toner is running out. This message is displayed together with another message on the first line. Normal operation can be continued.	Replace the toner cartridge.
	▭ TONERSNS	A fault occurred with the toner sensor. This message is displayed together with another message on the first line. Normal operation can be continued.	Replace the power supply/sensor board.
	▭ CHG DRUM	This message is displayed together with another 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 Printer Handbook).
	▭ NO PS	Unavailable printer language was designated by PJL command (warning).	- To clear, press Recover key when "CLEARABLE WARNINGS=ON" is being selected in the MENU. - Check the host program.
	▭ PWR SAVE	The printer is in the power-saving mode. This message is displayed together with another message on the first line.	Normal operation.

	■ ERROR PS AcobePS (PS only)	PostScript mode only. This message appears when the interpreter detects an error while a job is being processed. The remainder of the job is ignored.	- Check the printer setting of the host. - Check the printer job data to see if there is any unsupported or illegal operation in the data.
	▭ ERROR TONERSNS (PS only)	PostScript mode only. This message appears when the toner sensor error is detected, when the drum counter is under 30.	Replace the power supply/sensor board.

6.5.2 LCD message troubleshooting

If the problems cannot be corrected by using the LCD status message/problem 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
5.	SSIO (Synchronous Serial Input/Output) error I/F timeout (no response) between the printer and an optional tray (High Capacity Second Paper Feeder, Power Envelope Feeder).	⑤
6.	Fan error	⑥

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

• Turn the power off, then back on.

Is all 8's message being displayed by the LCD display? [88888888 / 88888888]

No — Is the AC cord being connected properly?

• No — Connect the AC cord properly.

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

Ⓐ

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

No — Correct the connection.

• Yes — Go to 1-1.

Yes — Is +8 V being applied between Pins 23 and 24 (GND) of POWER connector?
Pin 23 : 0 V
Pin 24 : +8 V

• No — Go to Ⓑ

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

• No — Connect the flexible cable properly.

Yes — Replace the operator panel assy or flexible cable.

Has the problem been solved?

• No — Replace the main control board.

Yes — End

Yes — Is [INITIAL-IZING] message being displayed by the LCD display?

• No — Replace the main control board.

Yes — Is [ON-LINE XXX] message being displayed by the LCD display?

XXX: HP4, AUT, PS2, WIN, HEX

• No — Take actions according to the LCD status message/problem list (see Section 6.5.1 for corrective actions).

Yes End

1 - 1

Take the measurement of the following voltage readings at connector CN2 on the power supply/sensor board:

Voltage between Pins 1 and 3: ... about 32.5 V AC
Voltage between Pins 5 and 6: ... about 9.2 V AC
Are the voltages within the normal range?

Yes Is fuse F3 on the power supply/sensor board blown?

• No Replace the power supply/sensor board.

• Yes Replace fuse F3 (if it blows again, check the resistance of the registration and main/drum motors. If it is faulty, replace motors or replace the power supply/sensor board or main control board).

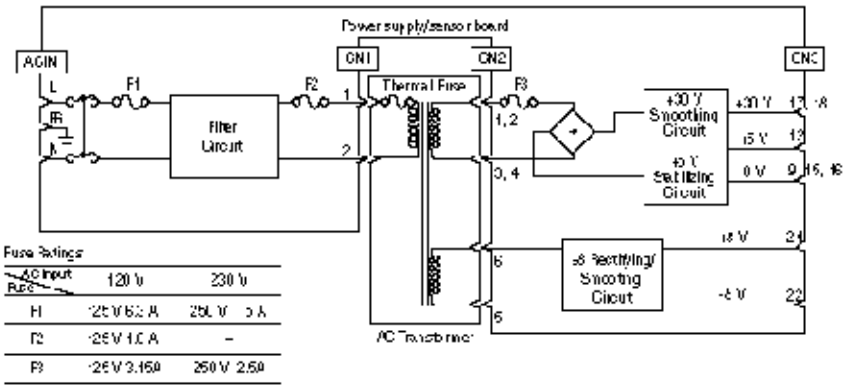
No Is the AC input voltage output between Pins 1 and 2 of connector CN1 on the power supply/sensor board normal?

• Yes Replace the AC transformer.

No Is fuse F1 or F2 on the power supply/sensor board blown?

• No Replace the power supply/sensor board.

Yes Replace blown fuse F1 or F2 (if is blows again, replace the power supply/ sensor board).



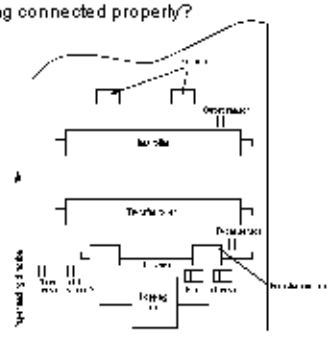
Fuse Ratings

AC Input Rate	120 V	230 V
F1	125 V 6.3 A	250 V 3.15 A
F2	125 V 1.0 A	–
F3	125 V 3.15A	250 V 2.5A

Figure 6-1 Low-voltage Power Supply Block Diagram

2 - 1 Paper input jam

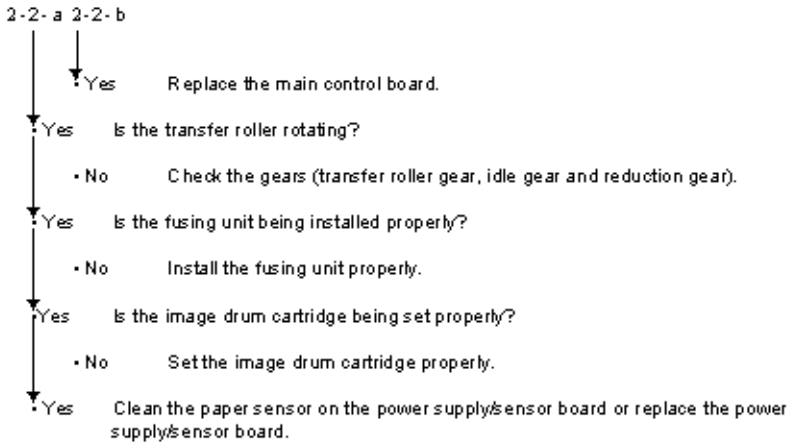
- Does the JAM error occur when the power is turned on?
  - Yes: Is the paper at the inlet sensor?
    - Yes: Remove the paper.
    - No: Is the operation of the inlet sensor plate normal (moves freely when it is touched)?
      - No: Replace the inlet sensor plate.
      - Yes: Clean the inlet sensor on the power supply/sensor board, or replace the power supply/sensor board.
  - No: Does the JAM alarm occur after paper feeding?
    - Yes: Is the paper fed to the inlet sensor plate?
      - Yes: Is the operation of the input sensor plate normal (moves freely when it is touched)?
        - No: Replace the inlet sensor plate.
        - Yes: Clean the inlet sensor on the power supply/sensor board or replace the power supply/sensor board.
      - No: Replace the hopping roller rubber or tray.
    - No: Is the hopping roller rotating?
      - Yes: Set the paper tray properly.
      - No: Is the registration motor rotating?
        - Yes: Replace the one-way clutch gear of the hopping roller assembly.
        - No: Is RM connector on the main control board being connected properly?
          - No: Connect RM connector properly.
          - Yes: Is the coil resistance (normal resistance: both between Pins 1 and 2, as well as Pins 3 and 4 are about 10.5 Ω) of the registration motor normal?
            - No: Replace the registration motor.
            - Yes: Replace the main control board.



2 - 2 Paper feed jam

- Does the paper feed jam occur when the power is turned on?
  - Yes — Is the paper on the paper sensor plate?
    - Yes — Remove the paper.
    - No — Is the operation of the paper sensor plate normal (moves freely when it is touched)?
      - No — Replace the paper sensor plate.
      - Yes — Replace the power supply/sensor board.
  - No — Has the paper reached the paper sensor plate?
    - No — Is the registration roller rotating?
      - No — Replace the one-way clutch gear of the hopping roller assembly.
      - Yes — Is the image drum cartridge being set properly?
        - No — Set the image drum cartridge properly.
        - Yes — Check the hopping roller assembly or tray.
    - Yes — Has the paper reached the outlet sensor plate?
      - Yes — Is the operation of the outlet sensor plate normal (moves freely when it is touched)?
        - No — Replace the outlet sensor plate.
        - Yes — Clean the outlet sensor on the power supply/sensor board or replace the power supply/sensor board.
      - No — Is the main/drum motor rotating?
        - No — Is DM connector on the main control board being connected properly?
          - No — Connect DM connector properly.
          - Yes — Is the coil resistance (normal resistance: both between Pins 1 and 2, as well as Pins 3 and 4 are about 8.7Ω) of the main/drum motor correct?
            - No — Replace the main/drum motor.

2-2-a 2-2-b

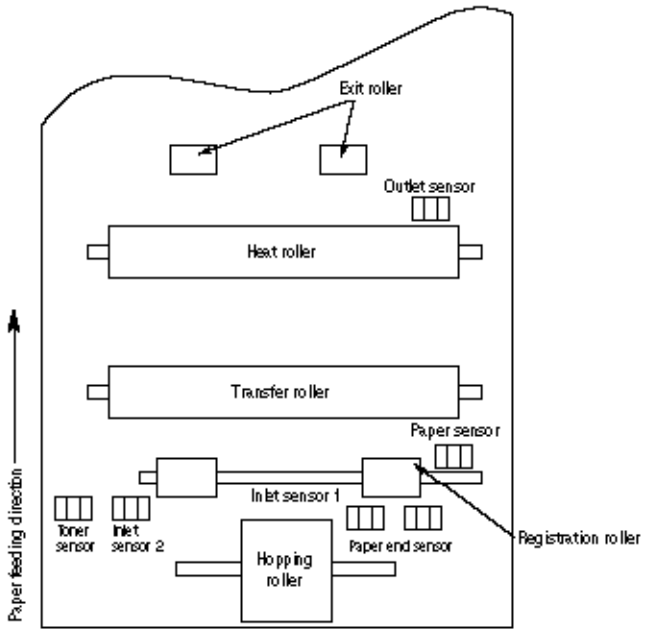


2 - 3 Paper exit jam

- Does the paper exit jam error occur when the power is turned on?
  - Yes — Is the paper on the outlet sensor plate?
    - Yes — Remove the paper.
    - No — In the operation of the outlet sensor plate normal (moves freely when it is touched)?
      - No — Replace the outlet sensor plate.
      - Yes — Clean the outlet sensor on the power supply/sensor board or replace the power supply/sensor board.
  - No — Is the face-up stacker pulled out completely from the printer or, pushed into the printer completely?
    - No — Pull the face-up stacker out of the printer completely or push it into the printer completely.
  - Yes — Is the eject roller assembly being installed properly?
    - No — Install the eject roller assembly properly.
  - Yes — Has the coil spring come off the eject roller assembly?
    - Yes — Install the coil spring to the eject roller assembly.
  - No — Replace the eject roller assembly.

3 Paper size error

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



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

Turn the power off, then back on again.

Yes — Is the thermistor open or shorted? Measure the resistance between thermistor contacts (heater contacts 120Ω/3Ω or 240Ω/10Ω, and thermistor contacts 220Ω at room temperature) (see Fig. 6-2 or Section 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?

- No: Adjust the contacts of the contact assembly.

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

- Yes: Check the thermistor contacts or replace the main control board or the fusing unit.

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

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

Yes — Check the heat contacts of the fusing unit and the contact assembly for poor contact (see Fig. 6-4 contact ⑬).

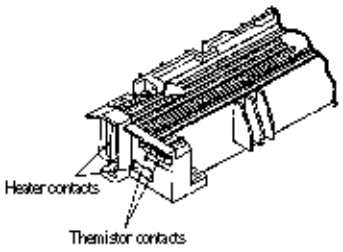
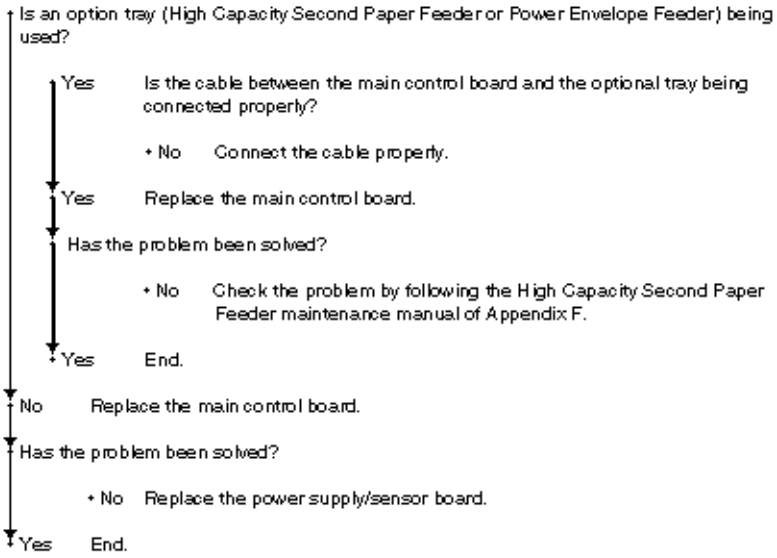


Fig. 6-2

5 Synchronous serial I/O error (ERROR 74) or I/F timeout between printer and optional tray (ERROR 81)



6 Fan error (ERROR 70)

Is the fan rotating?

- Yes — Replace the main control board.

No — Is FAN connector CN1 on the main control board being connected properly?

- No — FAN connector properly.

Yes — Replace the fan or main control board (check coil resistance of the fan, see Section 7.3).

6.5.3 Image troubleshooting

Procedures for troubleshooting for 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 Ⓐ)	1
Dark background density (Figure 6-3 Ⓑ)	2
Blank paper is output (Figure 6-3 Ⓒ)	3
Black vertical belts or stripes (Figure 6-3 Ⓓ)	4
Cyclical defect (Figure 6-3 Ⓔ)	5
Printer voids	6
Poor fusing (images are blurred or peels off when the printed characters and images on the paper are touched by hand)	7
White vertical belts or streaks (Figure 6-3 Ⓕ)	8

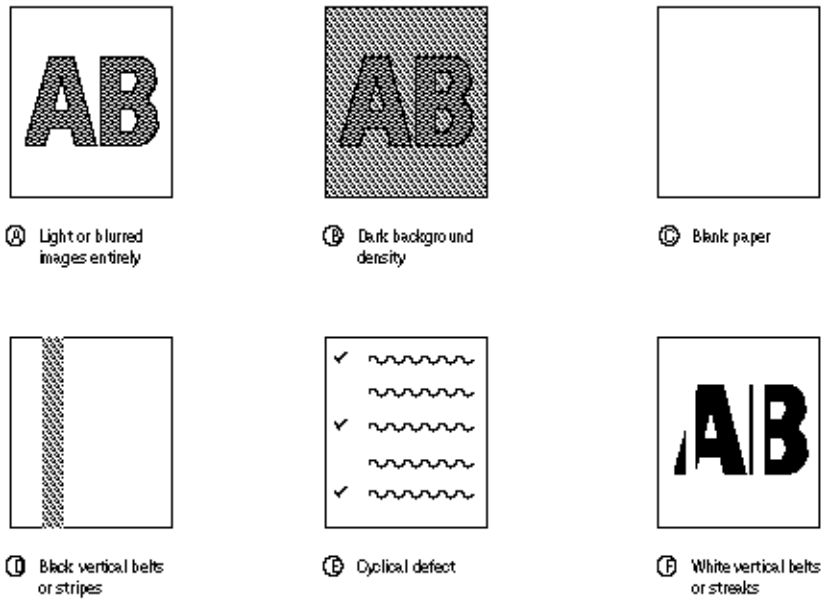


Figure 6-3

1 Images are light or blurred entirely.

Is toner low (is the TONER LOW message displayed)?

- Yes — Supply toner.

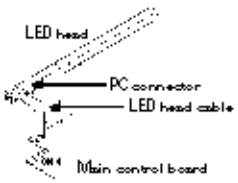
No — Is paper of the specified grade being used?

- No — Use paper of the specified grade.

Yes — Is the lens surface of the LED head dirty?

- Yes — Clean the lens.

No — Is the LED head being installed properly (check the HEAD1 and HEAD2 connectors of the main control board and PC connector on the LED head for proper connection)?



- No — Install the LED head properly.

Yes — Is the contact plate of the transfer roller in contact with the contact assembly of the power supply/ sensor board properly (see Fig. 6-5)?

- No — Adjust the contact plate of the transfer roller to make a proper contact with the power supply/sensor board and shaft of the transfer roller.

Yes — Are the contact of the developing roller and the contact of the toner supply roller of the image drum cartrige in contact with the contact assembly properly (see Fig. 6-4 Ⓐ and Ⓑ)?

- No — Adjust the contacts of the developing and toner supply roller to make a proper contact with the contact assembly.

Yes — Replace the transfer roller.

Has the problem been solved?

- Yes — End

No — Replace the image drum cartridge.

Has the problem been solved?

- Yes — End

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

No — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?

- No — Replace the back-up roller or bias spring.

Yes — Replace the main control board or power supply/sensor board.

2 Dark background density

Has the image drum been exposed to external light?

- Yes: Install the image drum in the printer and wait about 30 minutes.

No: Perform the cleaning page function (see Section 5.2.2).

Has the problem been solved?

- Yes: End.

No: Is the heat roller of the fusing unit dirty?

- Yes: Clean the heat roller.

No: Is the contact of the cleaning roller of the image drum cartridge in contact with the contact assembly properly (see Fig. 6-4)?

- No: Adjust the contact of the cleaning roller to make a proper contact with the contact assembly.

Yes: Replace the image drum cartridge.

Has the problem been solved?

- Yes: End

Note: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see Printer Handbook).

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

3 Blank paper is output.

- Is the LED head being connected properly (check the HEAD1 and HEAD2 connectors on the main control board and PC connector on the LED head)?
  - No — Connect the LED head properly or replace the head cable(s).
- Yes — Is the contact of the image drum cartrige in proper contact with the ground contact properly (see Fig. 6-4 Ⓓ)?
  - No — Adjust the ground contact (Drum) of the contact assembly.
- Yes — Replace the LED head.
- Has the problem been solved?
  - Yes — End

    Note: After replacing the LED head, set the printer to 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 board or power supply/sensor board.

4 Black vertical belts or stripes

Perform the cleaning page function (see Section 5.2.2).

Has the problem been solved?

- Yes End.

No Replace the image drum cartridge.

Has the problem been solved?

- Yes End

Note: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see Printer Handbook).

Clean the LED lens array of the LED head.

Has the problem been solved?

- Yes End.

No Replace the LED head.

Has the problem been solved?

- Yes End

Note: After replacing the LED head, set the printer to 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 board or power supply/sensor board.

5 Cyclical defect

	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: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see Printer Handbook).

6 Prints 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/sensor board and the shaft of the transfer roller properly.

Yes — Replace the transfer roller.

Has the problem been solved?

- Yes — End

No — Is the tension between the back-up roller (7.52kg) and the surface of fusing roller normal?

- No — Replace the back-up roller or bias spring.

Yes — Are the contacts of the toner supply roller, developing roller, image drum and charging roller in proper contact with the contact assy (see Fig. 6-4 Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ)?

- No — Adjust the contacts so that they touch the contact assy properly.

Yes — Replace the image drum cartridge.

Has the problem been solved?

- Yes — End

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

No — Is the LED head being installed properly (check HEAD1 and HEAD 2 connectors on the main control board and PC Connector on the LED head)?

- No — Install the LED head properly.

Yes — Replace the LED head or the head cable(s).

Has the problem been solved?

Yes — End

Note: After replacing the LED head, set the printer to 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 board or power supply/sensor board.

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

Is paper of the specified grade being used?

- No — Use paper of the specified grade.

Yes — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?

- No — Replace the back-up roller or bias spring.

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

- 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 solved?

- Yes — End

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

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/sensor board (see Fig. 6-5)?

- No — Adjust the contact plate to make a proper contact with the power supply/sensor board.

Yes — Replace the transfer roller.

Has the problem been solved?

- Yes — End

No — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?

- No — Replace the back-up roller or bias spring.

Yes — Is the LED head being installed properly (check HEAD1 and HEAD2 connectors on the main control board and PC connector on the LED head)?

- No — Install the LED head properly.

Yes — Replace the LED head.

Has the problem been solved?

- Yes — End

Note: After replacing the LED head, set the printer to 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).

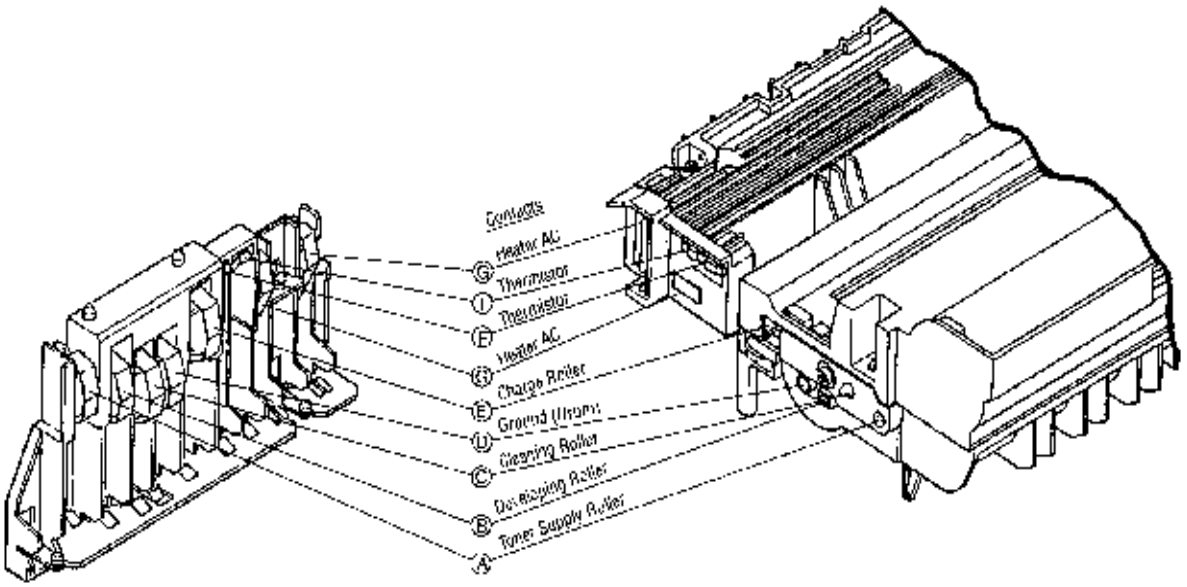
Yes — Replace the image drum cartridge.

Has the problem been solved?

- Yes — End

Note: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key. Reset the drum counter (see Printer Handobook).

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


Contacts
G Heater AC
I Thermistor
E Thermistor
H Heater AC
F Charge Roller
D Ground (Drum)
C Cleaning Roller
B Developing Roller
A Toner Supply Roller

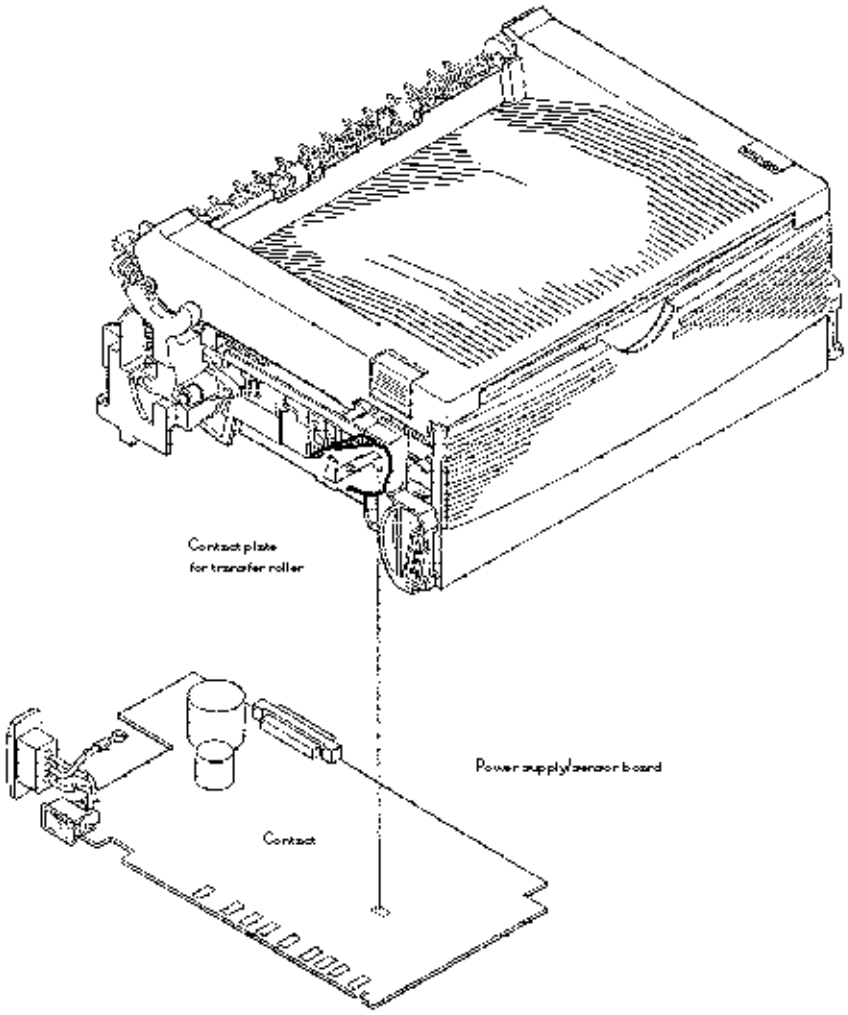
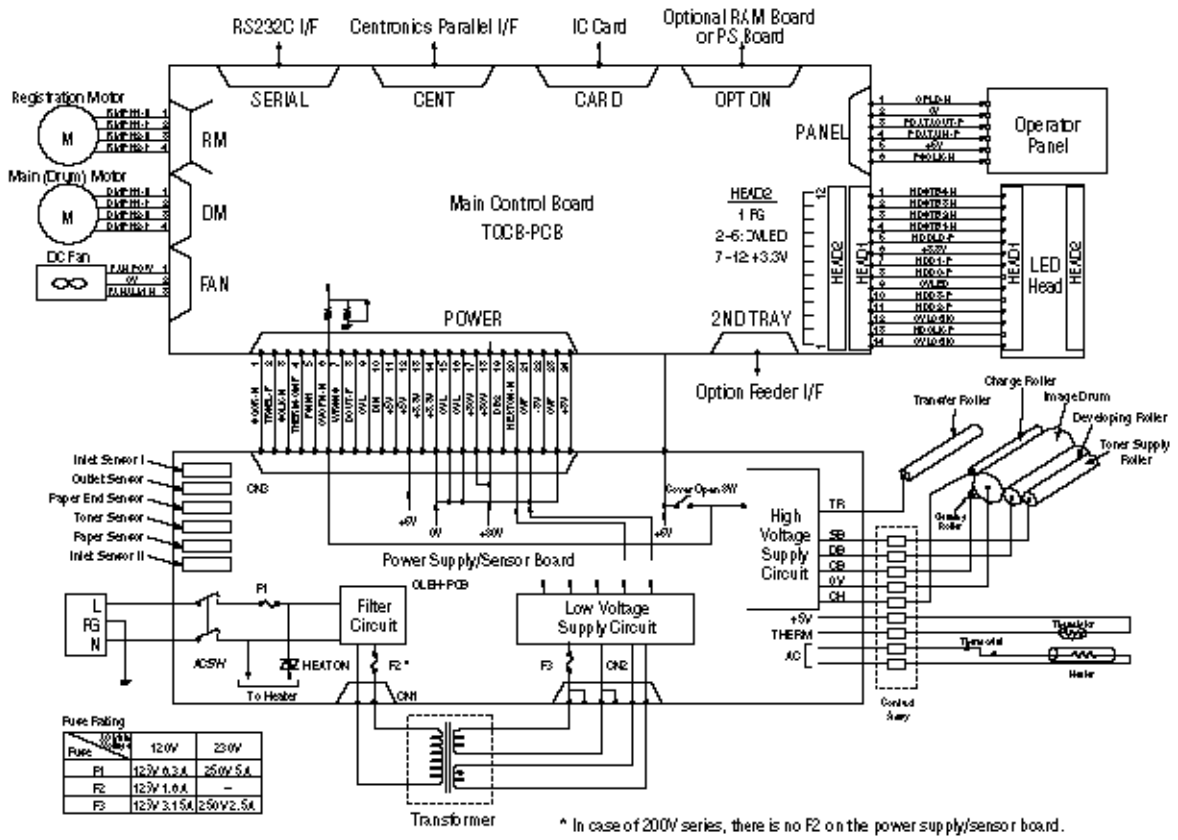


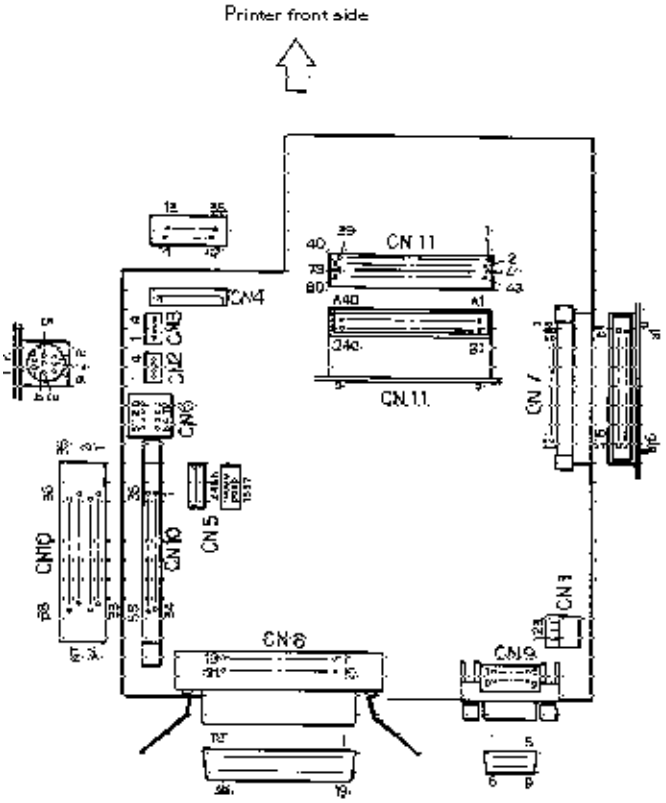
Figure 6-5

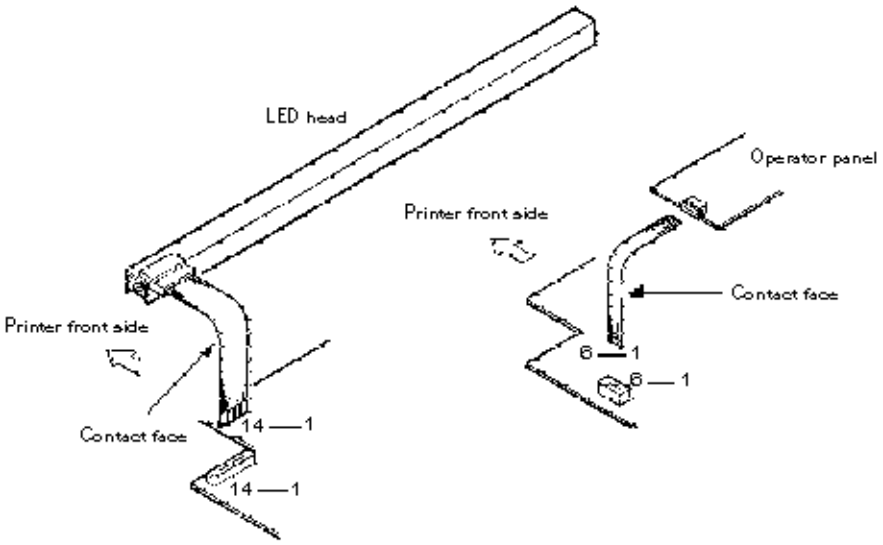
7.1 Interconnect Signal Diagram



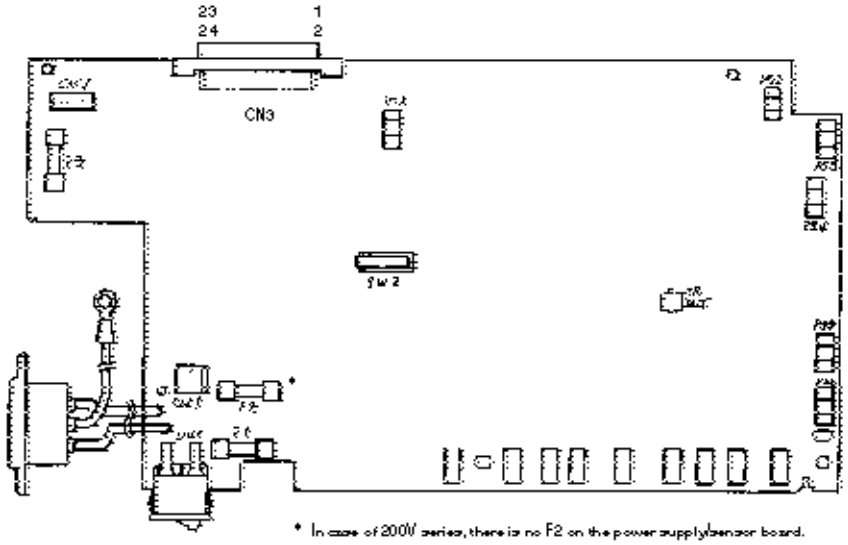
7.2 PCB Layout and Connector Signal List

(1) Main Control Board (TQCB-PCB)





(2) Power Supply/Sensor Board



FAN Pin Assignment (To fan motor)

		PIN NO.	I/O*	Signal	Description
Opening	1	1	O	FANPOW	Power supply for fan driving
	2	2	C	0V	Ground
	3	3	I	FANALM_N	Fan alarm

DM Pin Assignment (To main/drum motor)

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

Rotary direction Clockwise viewed from the output axis.

* I: In
O: Out
C: Common

RM Pin Assignment (To registration motor)

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

* I: In
O: Out

Excitation sequence

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

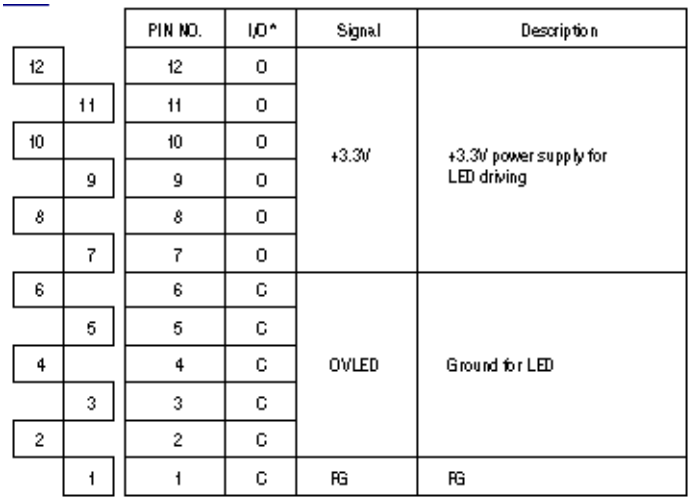
Rotary direction Clockwise viewed from the output axis.

HEAD1 Pin Assignment (To LED head)

		PIN NO.	I/O*	Signal	Description
1		1	O	HDSTB4-N	Strobe 4
	2	2	O	HDSTB3-N	Strobe3
3		3	O	HDSTB2-N	Strobe 2
	4	4	O	HDSTB1-N	Strobe 1
5		5	O	HDDLD-P	Load
	6	6	O	+3.3V	+3.3V power supply for LED driving
7		7	O	HDD1-P	Data 1
	8	8	O	HDD0-P	Data 0
9		9	C	OVLED	Ground for LED
	10	10	O	HDD3-P	Data 3
11		11	O	HDD2-P	Data 4
	12	12	C	OVLOGIC	Ground for logic
13		13	O	HDCLK-P	Clock
	14	14	O	OVLOGIC	Ground for logic

* O: Out
C: Common

HEAD2 Pin Assignment (To LED head)



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

* O: Out
C: Common

PANEL Pin Assignment (To operator panel)

		PIN NO.	I/O*	Signal	Description
1		1	O	OPLD-N	Load
	2	2	C	0V	Logic groud
3		3	U	PDATAOUT-P	Data output
	4	4	I	PDATAIN-P	Data input
5		5	C	5V	+5V power supply
	6	6	O	PSCLK	Clock

* I: In
U: Out
C: Common

2ND TRAY Pin Assignment (To option feeder I/F)

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

* I: In
O: Out
C: Common

Power Pin Assignment

		Pin No.	Signal	I/O*	Description	Pin No.	Signal	I/O*	Description
2	1	2	TRSEL-P	O	TR control switch	1	SOCR-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	+3.3V	I	LED head supply voltage	13	+3.3V	I	LED head 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	HEATDN-N	O	Heater on	19	DB2	O	DB/SB on
22	21	22	-8V	I	RS232C line voltage and PS board supply voltage	21	OVP	C	Logic ground
24	23	24	+8V	I	RS232C line voltage	23	OVP	C	Logic ground

* O: Out
I: In
C: Common

CENT Pin Assignment

		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 bit0	20	C	SG	Ground
3	21	3	C	DATA2-P	Data bit1	21	C	SG	Ground
4	22	4	C	DATA3-P	Data bit2	22	C	SG	Ground
5	23	5	C	DATA4-P	Data bit3	23	C	SG	Ground
6	24	6	C	DATA5-P	Data bit4	24	C	SG	Ground
7	25	7	C	DATA6-P	Data bit5	25	C	SG	Ground
8	26	8	C	DATA7-P	Data bit6	26	C	SG	Ground
9	27	9	C	DATA8-P	Data bit7	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	Not connected	33	C	SG	Ground
16	34	16	C	SG	Ground	34		NC	Not connected
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

* O: Out
I: In
C: Common

SERIAL Pin Assignment (To RS232C)

		PIN NO.	I/O*	Signal	Description
	1	1		CD	Connected to 0V via resistance (5.6K)
6		2	I	RxD	Receive data
	2	3	O	TxD	Send data
7		4	O	DTR	Data terminal ready
	3	5	C	SG	Ground
8		6	I	DSR	Connected to 0V via resistance (5.6K)
	4	7	O	RTS	Request to send
9		8	I	CTS	Connected to 0V via resistance (5.6K)
	5	9		NC	Not connected

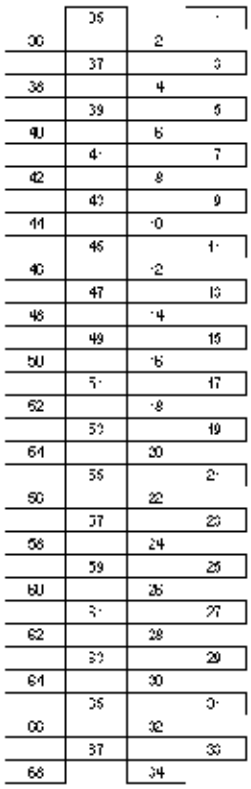
* I: In
O: Out
C: Common

Note: Cross connection is applied to the host system.

Host (9 male pin)		Printer (female pin)	
(I) CD	1	1	CD (I)
(I) RxD	2	2	RxD (I)
(O) TxD	3	3	TxD (O)
(O) DTR	4	4	DTR (O)
SG 5 5 SG	5	5	SG
(I) DSR	6	6	DSR (I)
(O) RTS	7	7	RTS (O)
(I) CTS	8	8	CTS (I)
(I) RI	9	9	NC

CARD Pin Assignment

- CARD Pin Assignment
  (To IC card)



Pin No.	I/O*	Signal	Description	Pin No.	I/O	Signal	Description
1	O	GND	Ground	35	O	GND	Ground
2	O	D03-P	Data bit3	36		CD1-N	Card detection
3	O	D04-P	Data bit4	37	O	D11-P	Data bit11
4	O	D05-P	Data bit5	38	O	D12-P	Data bit12
5	O	D06-P	Data bit6	39	O	D13-P	Data bit13
6	O	D07-P	Data bit7	40	O	D14-P	Data bit14
7	I	CE1-N	Card enable	41	O	D15-P	Data bit15
8	O	A10-P	Address bit10	42	O	CE2-N	Card enable
9	O	OE-N	Output enable	43	O	RFS4-N	Not connected
10	O	A11-P	Address bit11	44		RFU	Not connected
11	O	A09-P	Address bit9	45		RFU	Not Connected
12	O	A08-P	Address bit8	46	O	A17-P	Address bit17
13	O	A13-P	Address bit13	47	O	A18-P	Address bit18
14	O	A14-P	Address bit14	48	O	A19-P	Address bit19
15	O	WE-NOPSW-N	Write enable	49	O	A20-P	Address bit20
16	I	RLYRESY-N	Not connected	50	O	A21-P	Address bit21
17	I	VCC	+5V power supply	51	O	VCC	+5V power supply
18	O	VPP1	Not connected	52	O	VPP2	Not connected
19	O	A16-P	Address bit16	53	O	A22-P	Address bit22
20	O	A15-P	Address bit15	54	O	A23-P	Address bit23
21	O	A12-P	Address bit12	55	O	A24-P	Address bit24
22	O	A07-P	Address bit7	56	O	A25-P	Address bit25
23	O	A06-P	Address bit6	57		RFU	Not connected
24	O	A05-P	Address bit5	58		RFU	Not connected
25	O	A04-P	Address bit4	59		RFU	Not connected
26	O	A03-P	Address bit3	60		RFU	Not connected
27	I	A02-P	Address bit2	61	O	RFS-N	Selection of attribute memory
28	O	A01-P	Address bit1	62		WD2	Pull up to +5V
29	O	A00-P	Not connected	63		WD1	Pull up to +5V
30	O	D00-P	Data bit0	64	O	D08-P	Data bit8
31	O	D01-P	Data bit1	65	O	D09-P	Data bit9
32	O	D02-P	Data bit2	66	O	D10-P	Data bit10
33	I	WP-P	Not connected	67		CD2-N	Card detection
34	O	GND	Ground	68		GND	Ground

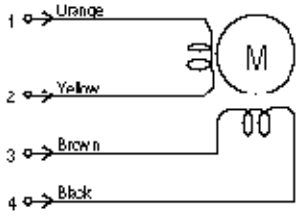
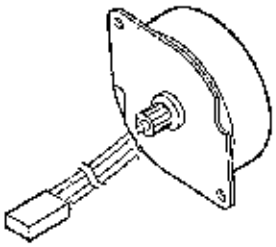
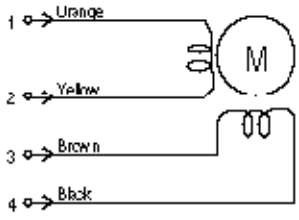
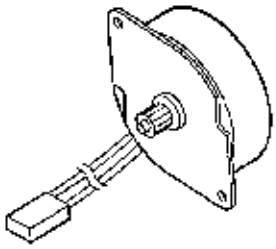
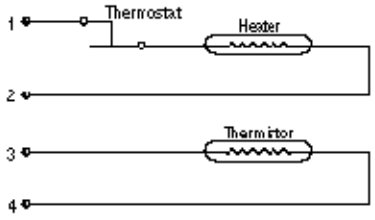
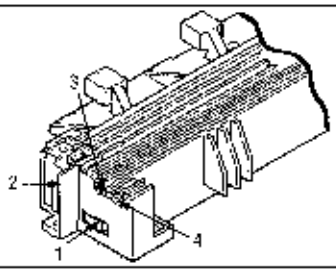
* I: In
O: Out
O: Common

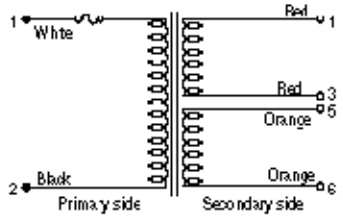
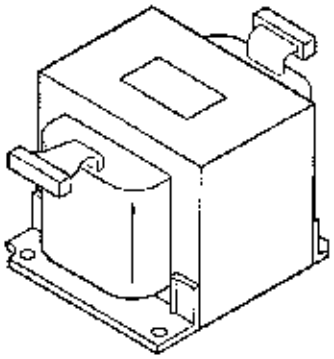
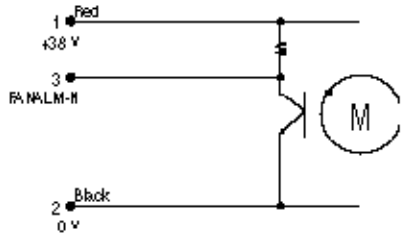
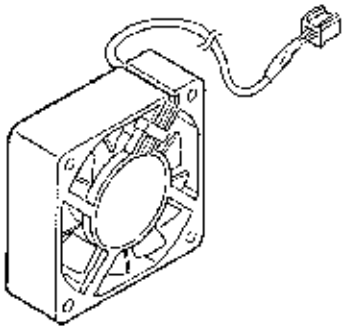
OPTION Pin Assignment

- OPTION Pin Assignment
  (To option RAM or PS board)

Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
0	O	A0	Address bit 0	51	C	D16	Data bit 16
02	G	0V	Logic ground	52	G	LU	Data bit 0
03	O	A1	Address bit 1	53	C	D17	Data bit 17
04	O	A2	Address bit 2	54	O	D1	Data bit 1
06		+3.3V	Not connected	56	C	D18	Data bit 18
08	O	A3	Address bit 3	58	C	D2	Data bit 2
0A	O	A4	Address bit 4	5A	G	D19	Data bit 19
0C	C	0V	Logic ground	5C	C	D3	Data bit 3
0E	O	A5	Address bit 5	5E	O	D20	Data bit 20
10	O	A6	Address bit 6	60	C	D4	Data bit 4
11	C	+5V	Logic power supply	61	C	D21	Data bit 21
12	G	A7	Address bit 7	62	G	D5	Data bit 5
13	O	A8	Address bit 8	63	C	D22	Data bit 22
14	O	0V	Logic ground	64	O	D6	Data bit 6
16	O	A9	Address bit 9	65	C	D23	Data bit 23
18	O	A10	Address bit 10	68	C	D7	Data bit 7
1A	G	+5V	Logic power supply	6A	G	D24	Data bit 24
1B	O	A11	Address bit 11	6B	C	D8	Data bit 8
1C	O	A12	Address bit 12	6C	O	D25	Data bit 25
20	C	0V	Logic ground	70	C	D9	Data bit 9
21	O	A13	Address bit 13	71	C	D26	Data bit 26
22	G	A14	Address bit 14	72	G	D10	Data bit 10
23	C	+5V	Logic power supply	73	C	D27	Data bit 27
24	O	A15	Address bit 15	74	O	D11	Data bit 11
26	O	A16	Address bit 16	75	C	D28	Data bit 28
28	C	0V	Logic ground	78	C	D12	Data bit 12
2A	G	A17	Address bit 17	7A	G	D29	Data bit 29
2B	O	A18	Address bit 18	7B	C	D13	Data bit 13
2C	O	+5V	Logic power supply	7C	O	D30	Data bit 30
30	O	A19	Address bit 19	80	C	D14	Data bit 14
31	O	A20	Address bit 20	81	C	D31	Data bit 31
32	G	0V	Logic ground	82	G	D15	Data bit 15
33	O	A21	Address bit 21	83	O	DRAS2-N	DRAM select 2
34	O	A22	Address bit 22	84	O	DUAS0-N	DRAM select 0
36	O	A23	Address bit 23	85	O	DRAS1-N	DRAM select 1
38	O	A24	Address bit 24	88	O	DRAS3-N	DRAM select 3
3A	G	A25	Address bit 25	8A	G	DUAS0-N	DUAS0
3C	C	0V	Logic ground	8B	O	DCAS2-N	DCAS2
3D	O	CS1-N	ROM/SRAM select 0	8C	O	DUAS1-N	DCAS1
40	O	CS1-N	ROM/SRAM select 1	90	O	DCAS0-N	DCAS0
41	O	CS2-N	ROM/SRAM select 2	91	O	RD-N	RD-N
42	G	CS3-N	DUMMY/SRAM select 3	92	G	WR-N	WR-N
43	O	SCRREQ-P	SCC send request	93	I	INT1-N	Interrupt request 1
44	O	0V	Logic ground	94	I	INT2-N	Interrupt request 2
46	O	SCSREQ-P	SCC receive request	95	O	EECS-N	EEPROM select
48	O	IOSO-N	I/O select 0	98	O	EECLK	EEPROM clock
4A	G	IOS1-N	I/O select 1	9A	G	EDATA	EEPROM data
4B	O	DREQ-N	Not connected	9B	I	DREQY-N	Data request
4C	O	-5V	RS232C line voltage and PS board supply voltage	9C	O	+5V	RS232C line voltage
50			Not connected	100	G	RESET-N	Reset signal

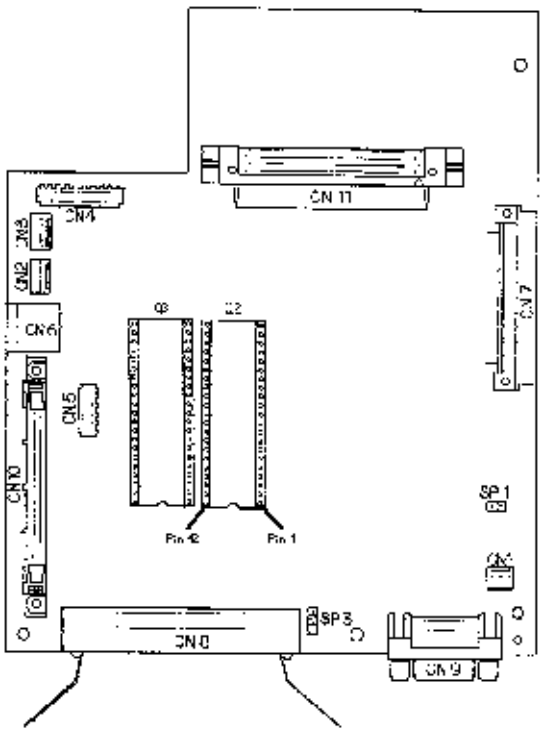
7.3 Resistance Check

Unit	Circuit Diagram	Illustration	Resistance
Registration motor			Between Pins 1 and 2: 105Ω Between Pins 3 and 4: 32Ω
Main/drum motor			Between Pins 1 and 2: 8.7Ω Between Pins 3 and 4: 8.7Ω
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 Pins1 and2: 8.4Ω (120V) 28.6Ω (230V) Secondary side Between Pins1 and3: 0.9Ω Between Pins5 and6: 1.0Ω (120V) 1.4Ω (230V)
Fan			Between Pins1 and2: 335Ω

7.4 Short Plug Setting

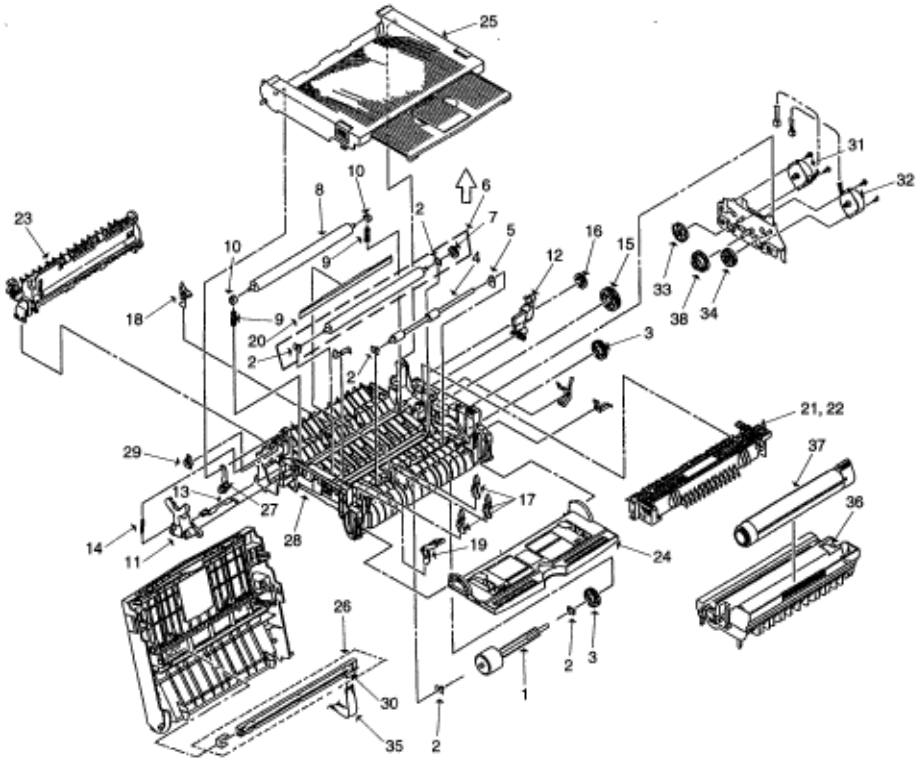
(1) Main Control Board (TQCB-PCB)



Short plug settings

Short plug	Plug setting	Description	Factory setting
T1	Provided	Debug mode	Not provided
T1	Not provided	Normal	Not provided
T2	A	+5 V is supplied to Pin 18 of Centronics parallel I/F connector.	A side
T2	B	+5 V is not supplied to Pin 18 Centronics parallel I/F connector.	A side

Lower Base Unit



No.	Name/Rating	Part No.	USE	Remarks	ODA Part No.
1	Hopping roller shaft assy	3PA4122-1295G001	1	*	50219601
2	Bearing	4PP4083-6022P2	5	*	51607402
3	Hopping roller one-way clutch gear	4PB4083-6024P1	2	*	51228901
4	Registration roller	3PB4083-6030P1	1	*	53342501
5	Bearing (registration)	4PP4083-6031P1	1	*	51607501
6	Transfer roller assy	3YB4083-6246G1	1		53347001
7	Transfer roller gear	4YB4083-7640P1	1	*	

8	Back-up roller	3PB4083-6064P2	1	*	53343701
9	Bias spring	4PP4083-7620P1	2	*	50929301
10	Back-up roller bushing	4PP4083-6052P1	2	*	51607601
11	Reset lever L	3PP4083-6053P1	1	*	50805801
12	Reset lever R	3PP4083-6054P1	1	*	50805901
13	Cover open switch arm	3PP4083-6058P1	1	*	53068901
14	Stacker cover reset spring	4PP4083-6057P1	1	*	50924201
15	Fuser roller idle gear	4PP4083-6080P1	1	*	51229101
16	Eject roller idle gear	4PP4083-6081P1	1	*	51229201
17	Sensor plate (inlet)	4PP4083-6083P1	3	*	51010701
18	Sensor plate (outlet)	4PA4083-6025G1	1		51010802
19	Toner sensor (adhesion)	4PP4083-6086G1	1	*	50405501
20	Diselectrification bar	4PB4083-3182P3	1	*	51010903
21	Fusing unit assy	2YX4083-6100G1	1	120V*	50217501
22	Fusing unit assy	2YX4083-6100G6	1	230V*	50217502
23	Eject roller assy	2PA4083-7680G1	1		50409401
24	Manual feed guide assy	2PA4128-1149G1	1		51017201
25	Face down stacker cover assy	2PA4128-1134G1	1		53074301
26	LED head assy	4YA4116-1224G1	1		56111901
27	Stacker cover damper arm	4PP4083-6191G1	1	*	53069101
28	Lower base	2PP4083-6801G1	1	*	50217601
29	Stacker cover damper	4PB4083-6197P1	1	*	51229401
30	PC Connector	224A1286P0260	1		56730960
31	Pulse motor (main/drum)	4PB4083-7615P1	1		56512001

32	Pulse motor (registration)	4PB4083-7616P1	1		56510701
33	Pulse motor (main/drum) Idle Gear	3PP4083-7618P1	1		51235901
34	Pulse motor (registration) idle gear	3PP4083-7619P1	1		51236001
35	Flexible cord (12)	238A1071P0013	1		56629113
36	Image drum kit	4YA4083-7300G2	1	Consumable*	56116801
37	Toner cartridge kit	4YA4083-6400G2	1	Consumable*	52107201
38	Reduction gear	3PP4083-7617P1	1		
39	FG plate (O.P.)	4PP4083-7663P1	1		53347201

* Those parts marked with an asterisk in the remarks column are common parts with OL400e, OL410e and OL410e (PS).

Upper cover unit

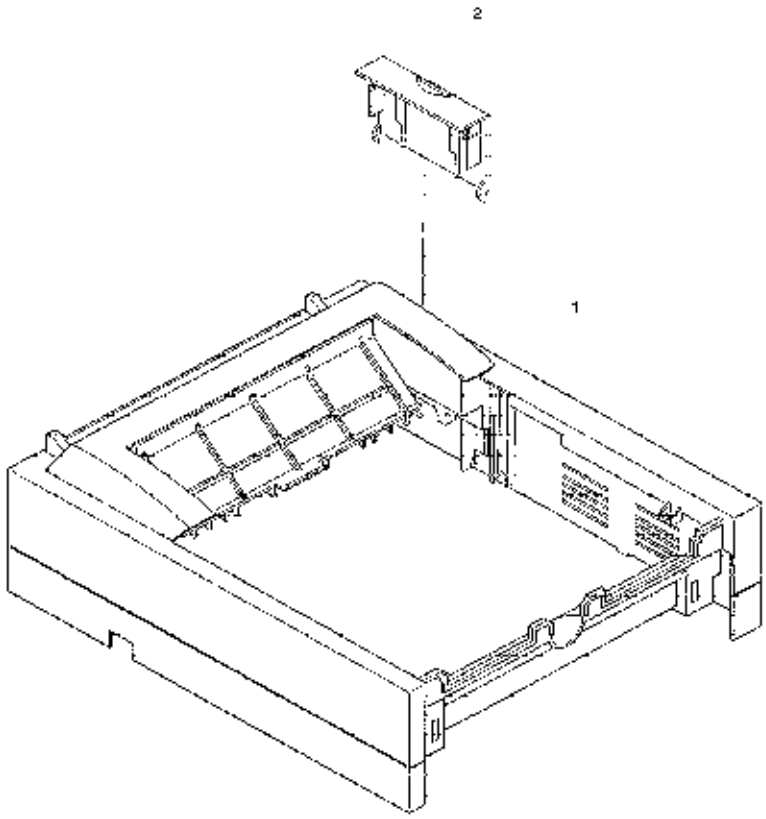
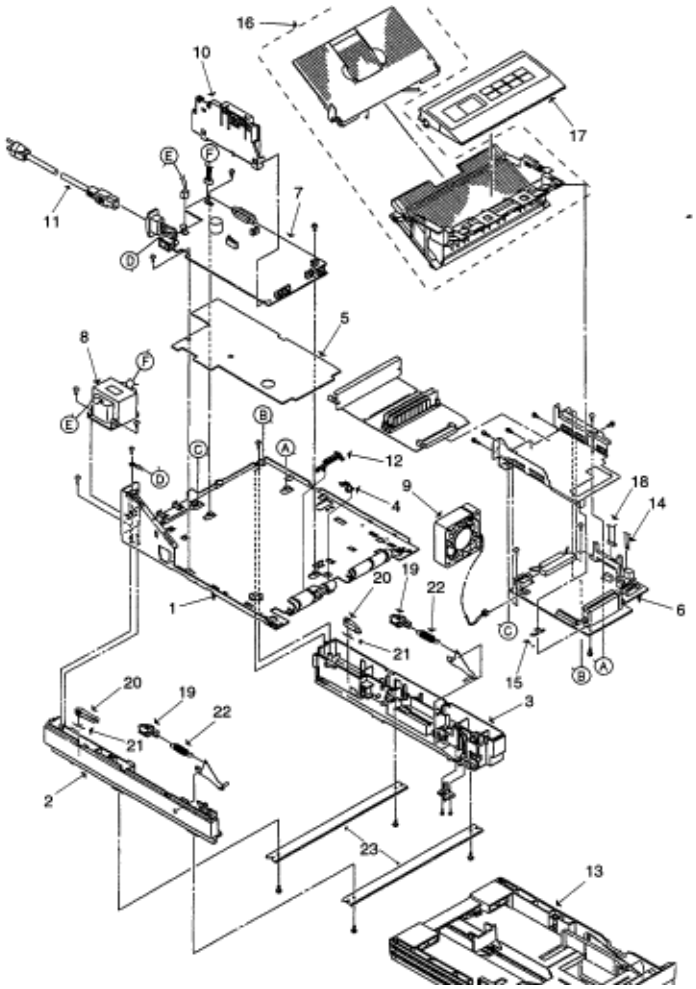


Table 8-2 Upper cover unit

No.	Name/Rating	Part No.	USE	Remarks	ODA Part No.
1	Upper cover	1PP4128-1133P1	1		53074501
2	IC card cover	2PP4128-1155P1	1		53074401

Base Unit 2



No.	Name/Rating	Part No.	USE	Remarks	ODA Part No.
1	Base plate (adhesion)	2PP4083-7672G1	1		51017501
2	Cassette guide (L) assy	3PP4083-7670G1	1		51017301
3	Cassette guide (R) assy	3PP4083-7671G1	1		51017401
4	Sensor plate (paper supply)	4PP4083-6082P1	1	*	51011401
5	Insulator	3PB4083-6144P1	1	*	51709401

6	Main control board (TQCB-PCB)	4YA4046-1662G1	1	w/o ROM	55078301
6	Main control board (TQCC-PCB	4YA4046-1681G1	1	w/o ROM	55080101
7	Power supply/sensor board	4YA4049-7100G1	1	120V	56414101
7	Power supply/sensor board	4YA4049-7100G2	1	230V	56414102
8	Transformer	4YB4049-7082P1	1	120V	56414201
8	Transformer	4YB4049-7083P1	1	230V	56414001
9	Fan motor	270A2167P001	1		56512301
10	Contact assy	3PA4083-6090G1	1	*	56730001
11	AC cord	3YS4011-1315P1	1	120V*	56609701
11	AC cord	3YS4011-1266P1	1	220~240V*	56624301
12	Cassette sensor plate	3PP4083-6154P1	1	*	51011501
13	Paper cassette	1PA4083-7700G1	1	Option	70028101
14	Flexible cord (operator panel)	238A1071P0001	1		56629110
15	Earth plate	4PP4083-6137P1	1	*	51011601
16	Face up stacker cover assy	2PA4128-1143G1	1		50110301
17	Operator panel assy	4YA4083-7690G1	1		50110401
18	SUMI card assy	4YX4046-1656G1	1		
19	Link pull block	4PP4122-1170P1	2		53345201
20	Cassette lock lever	3PP4083-7653P1	2		50808401
21	Cassette lock lever spring	4PP4083-7655P1	2		50929501
22	Sheet spring	4PP4083-7666P1	2		50929901
23	Beam	3PP4083-7660P1	2		51608801

RS-232C SERIAL INTERFACE

1) Connector

- Printer side : 9-pin plug Type DELC-J9PAF-21L9 (made by Nihon Kouku Denshi) or equivalent - Cable side : 9-pin receptacle Type DE-9SF-N (made by Nihon Kouku Denshi) Shell Type DE-C4-J6 (made by Nihon Kouku Denshi) or equivalent

Note: Plug shall be securable with a lock screw.

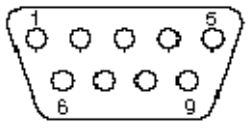
2) Cable
- Cable length : 6 ft (1.8 m) max. (cable shall be shielded.)

Note: Cable is not supplied with the printer, and is not available from Oki.

3) Interface signal

Pin No	Signal Name	Abbreviation	Signal Direction	Description
1	-			(Not used)
2	Received Data	RD	→ PR	Received data
3	Transmitted Data	TD	← PR	Transmitted data
4	Data Terminal Ready	DTR	← PR	Data terminal ready
5	Signal Ground	SG		Signal ground
6	-			(Not used)
7	Request To Send	RTS	← PR	Request To Send
8	-			(Not used)
9	-			(Not used)

- Connector Pin Arrangement



(As viewed from the cable side)

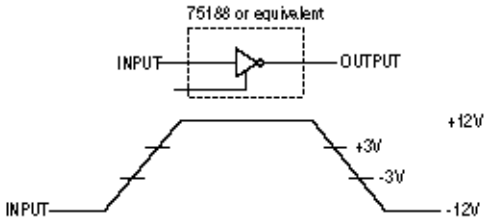
4) Signal Level

MARK polarity : -3V to -15V (LOGIC = 1)

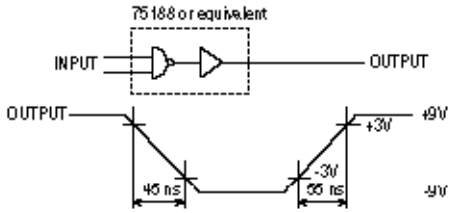
SPACE polarity : +3V to +15V (LOGIC = 0)

5) Interface Circuit

a) Receiving Circuit



b) Sending Circuit



Note: The signal levels described above is for the case where 3K W x 15pF is connected to the terminal.

6) Receive Margin

37% min. at all reception rates.

7) Communications Protocol

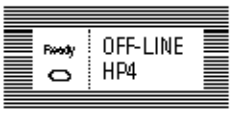
a) READY/BUSY protocol b) X-ON/X-OFF protocol

Interface Parameter Setting

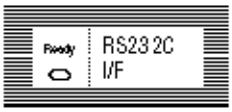
The following settings are possible by pressing the ENTER key, after selecting the display contents of the LCD of the operator panel by using the ◀ and ▶ keys.

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

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

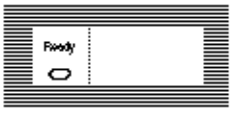


Keep the MENU key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press the MENU key 9 times.



"RS232C I/F" is displayed on the LCD.

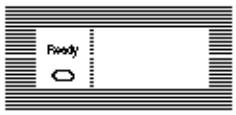
Press the ENTER key.



Item	Flow CTL
Contents of Display	Function
DTR HI	SPACE-READY
DTR LO	MARK-READY
XONXOFF	
RBSTXON	Sending at intervals of 1 sec.

Factory Setting: DTR HI

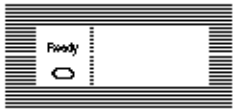
Press the MENU key.



Item	Baud Rate
Contents of Display	Function
300	300 baud
600	600 baud
1200	1200 baud
2400	2400 baud
4800	4800 baud
9600	9600 baud
19200	19200 baud

Factory Setting: 9600 baud

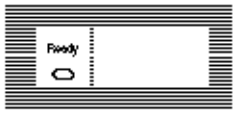
Press the MENU key.



Item	Bit Length
Contents of Display	Function
8 BITS	8 bits
7 BITS	7 bits

Factory Setting: 8 bit

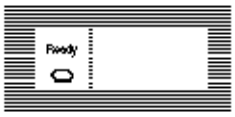
Press the MENU key.



Item	Parity
Contents of Display	Function
NONE	No parity
EVEN	Even parity
ODD	Odd parity

Factory Setting: NONE

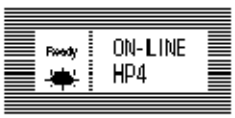
Press the MENU key.



Item	Minimum BUSY Time
Contents of Display	Function
200 m SEC	200 ms
1 SEC	1 sec (1000 ms)

Factory Setting: 200 m SEC

Press the ON LINE key.



Setting completed.

CENTRONICS PARALLEL INTERFACE

1) Connector

- Printer side : 36-pin receptacle (single port) Type 57RE-40360-730B-D29A (made by Daiichi Denshi), CN-AX05841A36AT (made by Ougat) or equivalent - Cable side : 36-pin plug Type 57-30360 (made by Daiichi Denshi) or equivalent Plug-552274-1 (AMP), 552073-1 (AMP) or equivalent

2) Cable

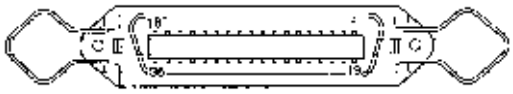
- Cable length : 6 ft (1.8 m) max. (A Shielded cable composed of twisted pair wires is recommended for noise prevention.)

Note: Interface Cable is not supplied with the printer.

3) Table of Parallel I/F Signals

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

- Connector pin arrangement



4) Signal Level

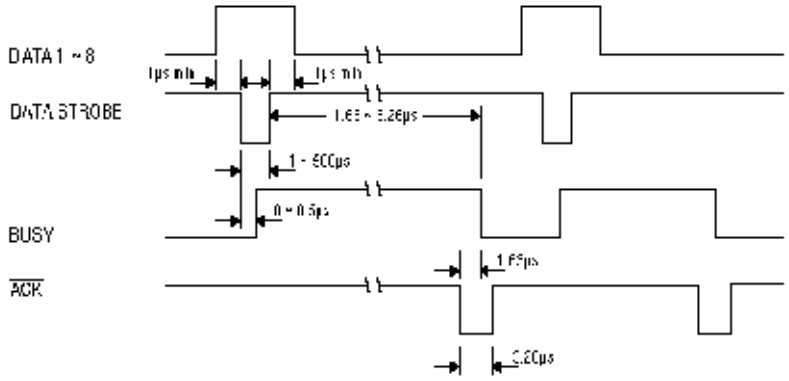
- LOW : 0 V to +0.8 V
- HIGH : +2.4 V to 5.0 V

5) Specifications

Item	Description
Mode	Compatibility mode, Nibble mode, ECP mode
Data bit length	8 bits (in the compatibility mode)
Input prime	Valid/Invalid
Receive buffer	8K, 20K, 60K, 100K, 1M Bytes
Control	Handshaking control is performed in each mode. Data received from the host is stored in the receive buffer. Busy control is performed. Signal lead control is performed.

6) Timing Charts

Data receiving timing

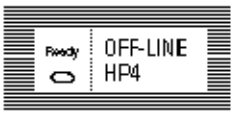


Interface Parameter Setting

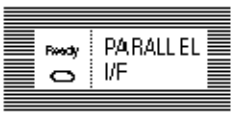
The following settings are possible by pressing the ENTER key, after selecting the display contents of the LCD of the operator panel by using the ◀ and ▶ keys.

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

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

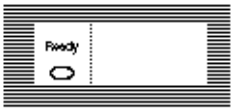


Keep the MENU key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press the MENU key 8 times.



"PARALLEL I/F" is displayed on the LCD.

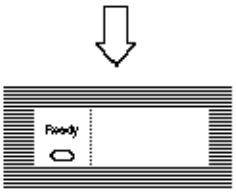
Press the ENTER key.



Item	Data Transfer Speed
Contents of Display	Function
HIGH	High speed
MEDIUM	Normal speed

Factory Setting: NONE

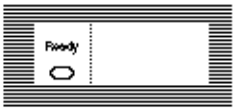
Press the MENU key.



Item	Direction of Data Transfer
Contents of Display	Function
ENABLE	Bi-directional data transmission
DISABLE	Uni-directional data transmission

Factory Setting: ENABLE

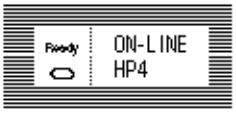
Press the MENU key.



Item	I-PRIME
Contents of Display	Function
OFF	I-PRIME signal ignored
ON	I-PRIME signal effective

Factory Setting: OFF

Press the ON LINE key.

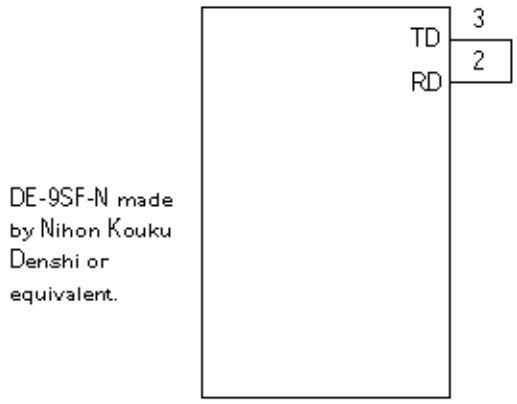


Setting completed.

XXX: HP4, AUT, PS2, WIN or HEX

Loop Test (RS-232C Interface)

1) Connect the test connector



Test Connector Connection Diagram

2) Select "LOOP Test" in the system maintenance mode. The codes transmitted from the TD signals are comparatively checked with the data received from the RD signals. If any error occurs, the error message is displayed on the LCD.

1. Maintenance Modes

- The maintenance modes consist of the user maintenance mode which are released to the user, and the system and engine maintenance modes in the maintenance personnel level not released to the user.

- Press the MENU key to update each category. The operation returns to the first category after updating the last category, in a loop.

- Press the Enter key to select the function being displayed.

- To exit from any of these modes during a category display, press the Recover or ON LINE key and the operation mode will start.

1.1 User Maintenance Mode

- To enter the user maintenance mode, turn the power on while keeping the MENU key pressed down.

- This mode uses the menu for function selection.

- The user maintenance mode provides the following functions:

(1) Hex Dump

- The data received from the host is printed in hexadecimal notation.

- Printing is activated 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 selecting the off-line mode by pressing the ON LINE key. Automatic activation of printing even when the received data is less than one page is possible by selecting the Auto Eject function on the menu).

- The only way to exit from this mode is by turning the power off.

(2) Menu Reset

- All settings for Menu level-1 are reset to factory default values. The menus for all executable emulations, including options, are reset to factory default values.

- The operation mode starts automatically upon completion of resetting.

(3) Drum Counter Reset

- This function resets the drum life data when the user replaces the image drum unit.

- The operation mode starts automatically upon completion of resetting.

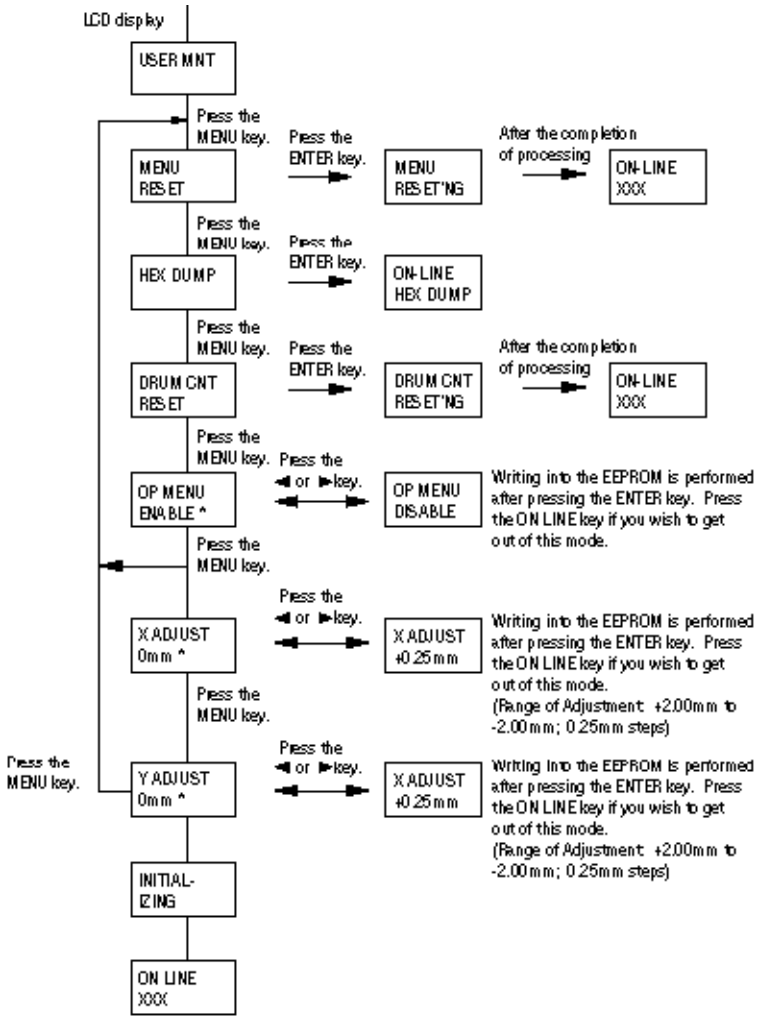
(4) X-Adjust / Y-Adjust

- 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 the operation panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).



1.2 System Maintenance Mode

- To enter the system maintenance mode, turn the power on while keeping the Recover key pressed down.

- This mode adopts the menu for function selection.

- The system maintenance mode 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 performed even when another interface is being selected in Menu level-2.

- Installation of the loop connector is necessary for the loop test (refer to Appendix C, LOOP TEST (RS-232C INTERFACE)).

- 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 on the LCD.

- Press the ON LINE key to cancel this mode.

(5) EEPROM Reset

- All EEPROM areas, including Menu level-2 are set 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

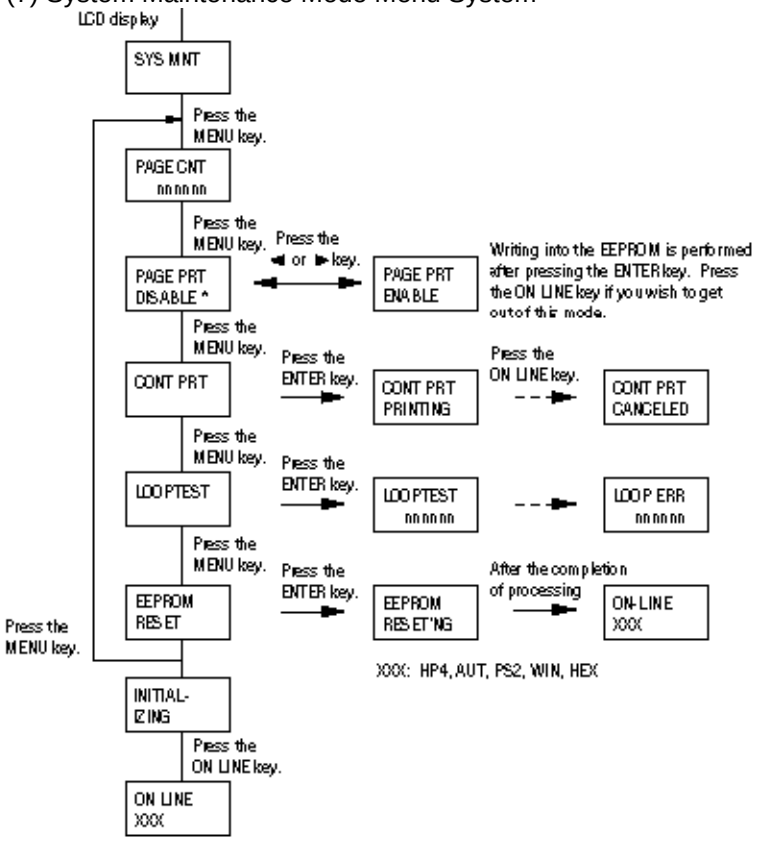
- Transition to the operation mode occurs upon completion of resetting.

- Press the MENU key to update each category. The operation returns to the first category after updating the last category, in a loop.

(6) HIPER Windows Display

- The "HIPER-WIN" display in the Menu level-1 can be enabled or disabled.

(7) System Maintenance Mode Menu System



1.3 Engine Maintenance Mode

- The engine maintenance mode is activated when the power is turned ON while keeping the FORM FEED key and ENTER key pressed down.

- This mode adopts the menu for function selection.

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

- The engine maintenance mode provides the following functions:

(1) Head Drive Time Setting

- Sets the drive time of the LED head.

(2) Head Wide Setting

- Do not change the default setting.

(3) Printing Start Position Setting

- Sets the printing start position.

(4) Drum Count Total Display

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

(5) Drum Count Display

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

(6) Factory Adjustment (for High Capacity Second Paper Feeder/Power Envelope Feeder)

- Do not change the factory default settings.

(7) Engine Reset

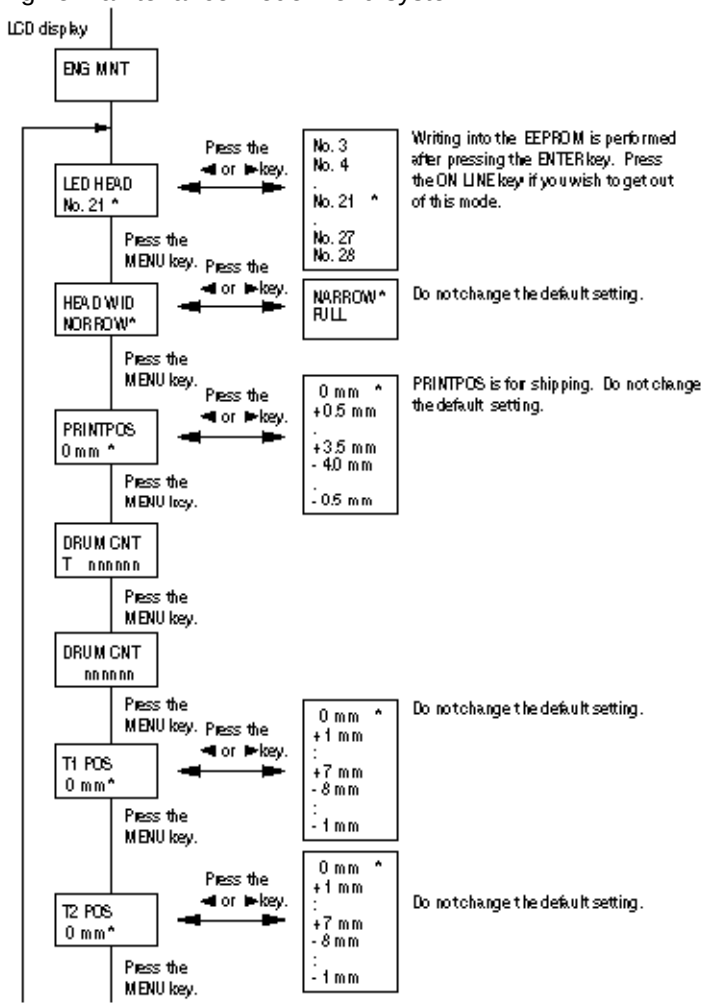
- All EEPROM areas used by the engine block are reset to factory default values.

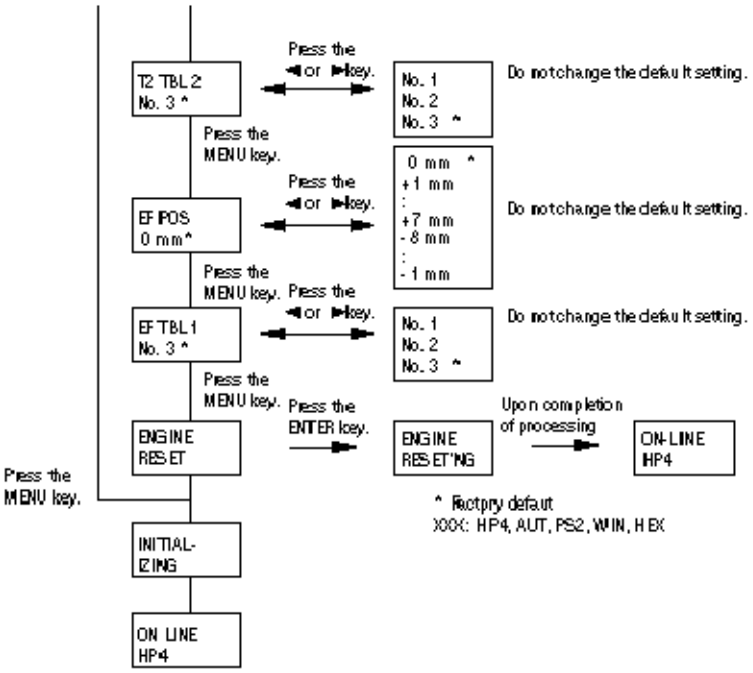
- The following items are excluded:

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.

- Engine maintenance mode menu system





1.4 User Factory Set Operation

- Switching of ODA, OEL, and Non-Europe users settings is possible through the user factory set operation.

- The user factory set operation is performed by turning the power on while keeping both the MENU key and the or key pressed down.

(1) ODA Factory Set Operation:

Turn the power on while keeping the MENU key and key press down.

(2) OEL Factory Set Operation:

Turn the power on while keeping the MENU key and key pressed down.

(3) Non-Europe Factory Set Operation

- For Non-Europe 1 (Australia, etc.), turn the power on while keeping the MENU key and FORM FEED key pressed down.

- For Non-Europe 2 (Singapore, etc.), turn the power on while keeping the MENU key and PRINT MENU key pressed down.

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

Note: At the time of shipment from the factory, settings corresponding to the destination are mode at the factory.

1.1 Functions

This 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.

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/m 2)
- For labels 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.

External View and Component Names

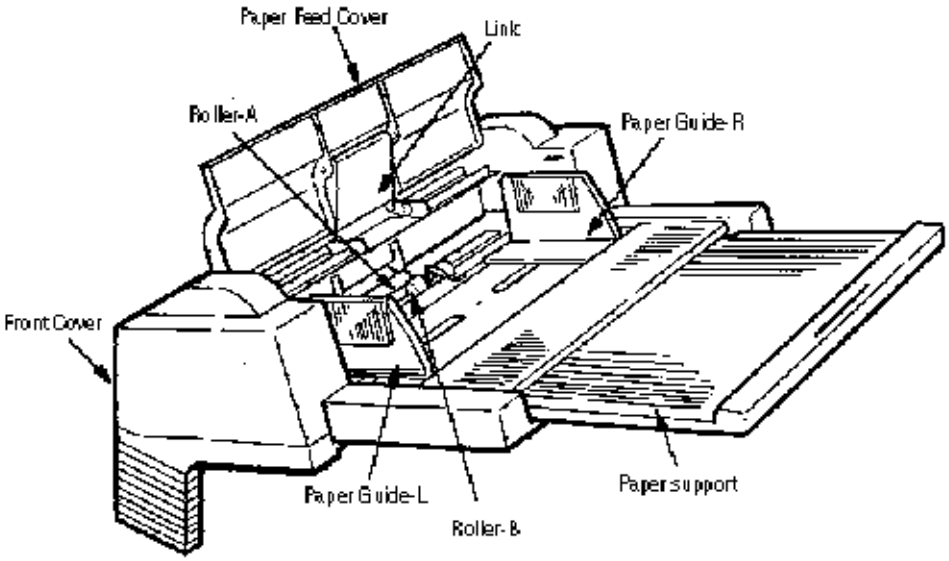


Fig. 1-1

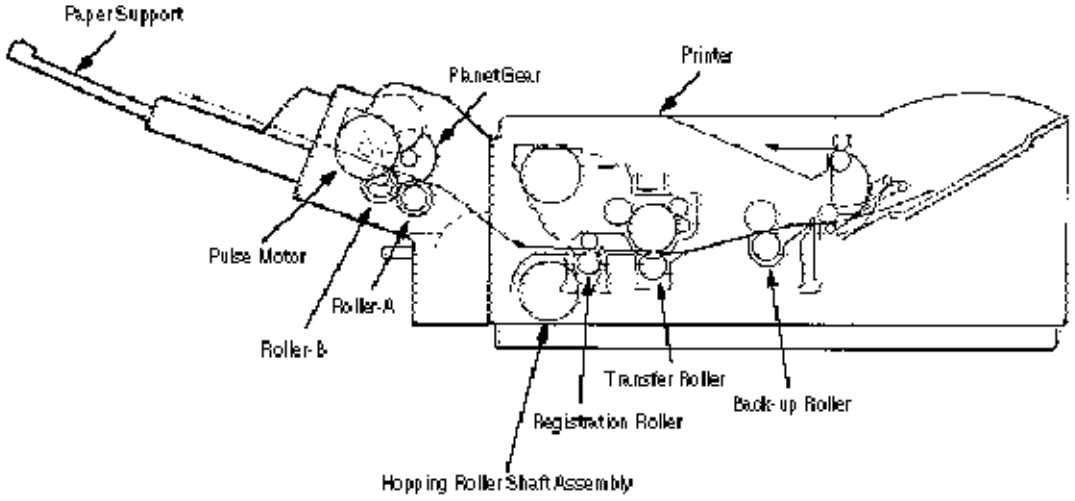
2. MECHANISM DESCRIPTION

2.1 General Mechanism

The Multi-Purpose Feeder feeds the envelopes and 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 transmitted to rotate roller-A and B. The envelope or paper is delivered from the separator into the printer.
Once delivered into the printer, the envelope or 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 envelope or paper being set, one sheet at a time. After the envelope or paper is set in the Multi-Purpose Feeder, the pulse motor moves the envelope or paper and a single envelope or paper caught by the separator is fed into the printer.



Parts Layout

This section describes the layout of the main components.

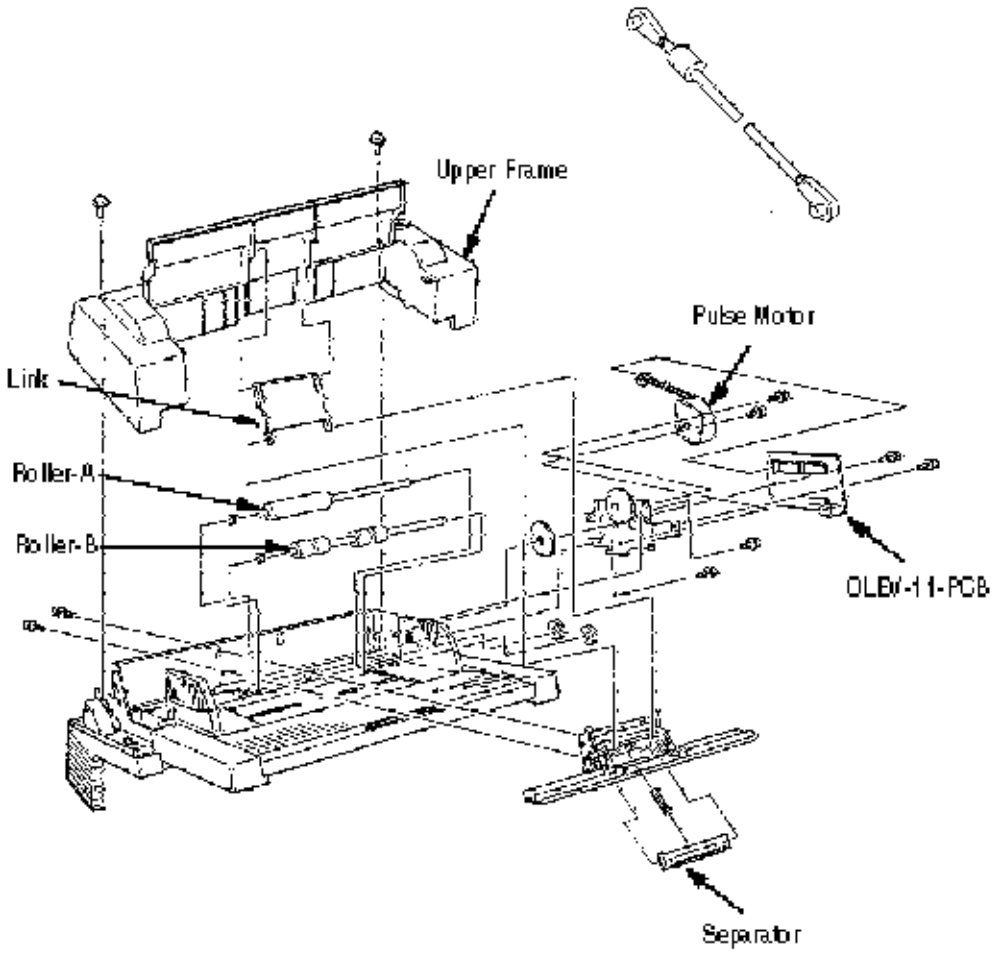


Fig. 3-1

Parts Replacement Methods

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

Multi-Purpose Feeder Link (3.3.1)

Separator (3.3.2)

OLEV-11-PCB (3.3.3)

Pulse motor (3.3.4)

Planet gear (3.3.5)

Roller-A (3.3.6)

3.3.1 Link

(1) Power off the printer, remove the interface and power cables.

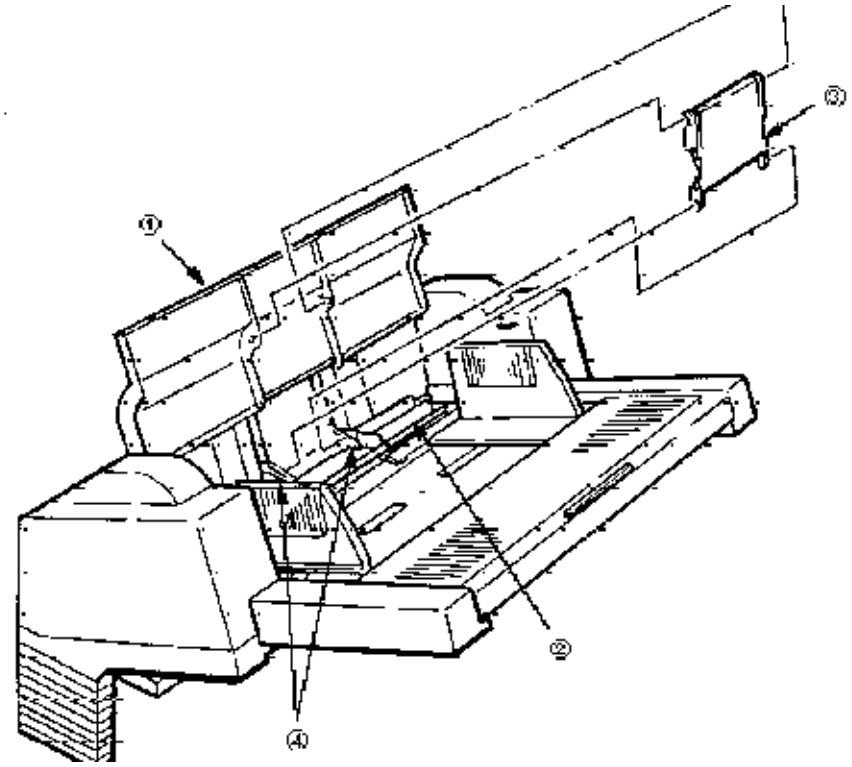
(2) Remove the feeder from the printer.

(3) Open paper feed cover 1, and disengage the paper feed cover 1 and link 3, while lifting the paper hold 2.

(4) Remove the paper hold 2 off the arm 4.

(5) Disengage the link 3 from the arm 4, and remove it.

* Be careful not to deform the link and arm.



3.3.2 Separator

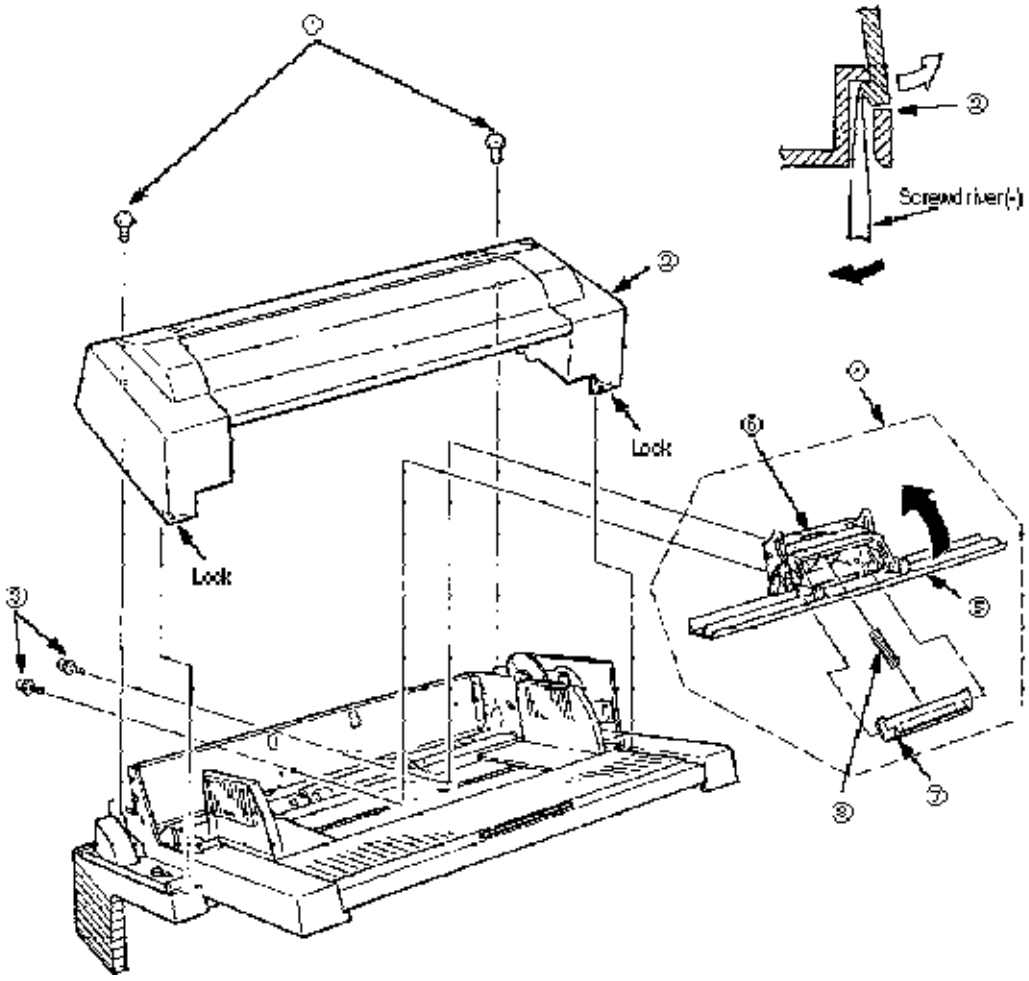
(1) Turn the printer power switch off O and remove the connector cable. Remove the feeder from the printer.

(2) Disengage the link and paper feeder cover (see 3.3.1).

(3) Remove 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 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).



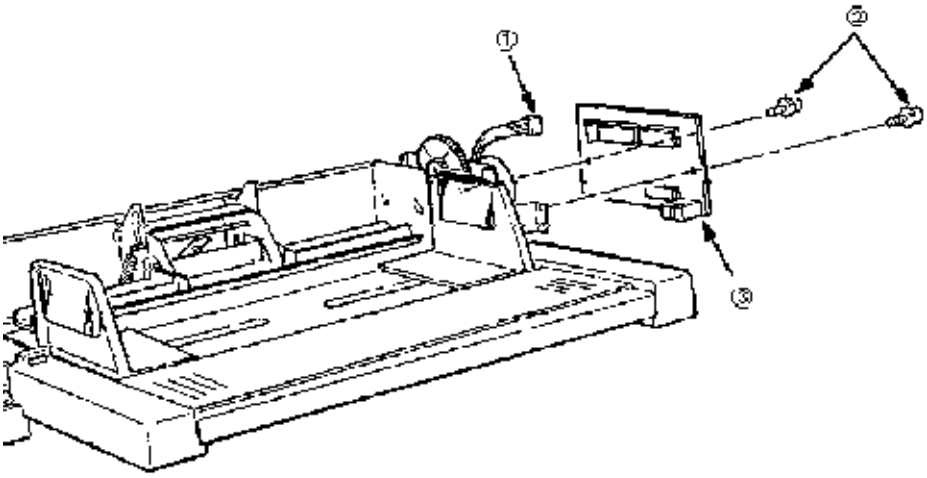
3.3.3 OLEV-11-PCB

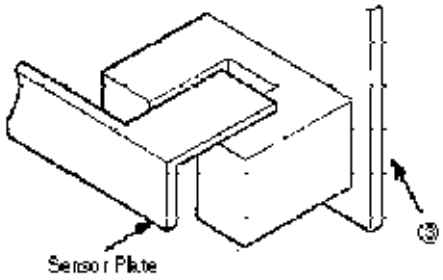
(1) Remove the upper frame (see 3.3.2 steps (1) through (3)).

(2) Remove the connector 1.

(3) Remove 2 screws 2, and remove the OLEV-11 PCB 3.

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



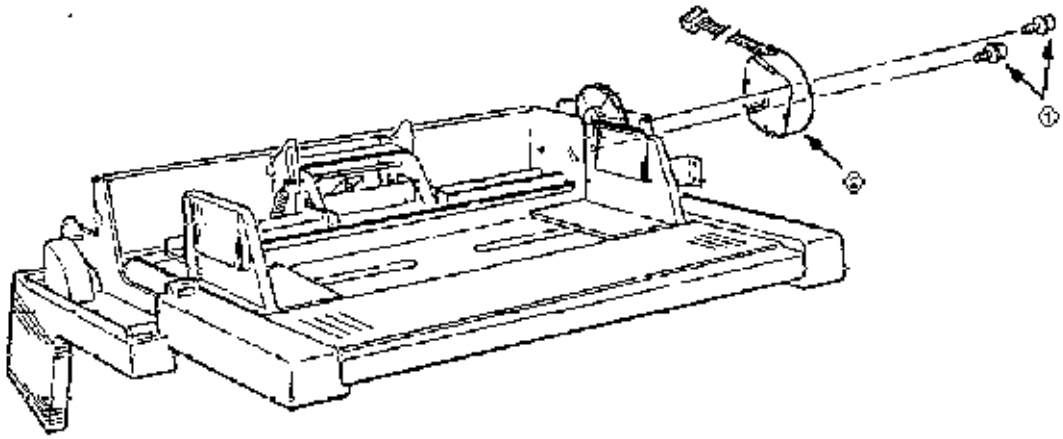


3.3.4 Pulse Motor

(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 2 screws 1, and remove the pulse motor 2.

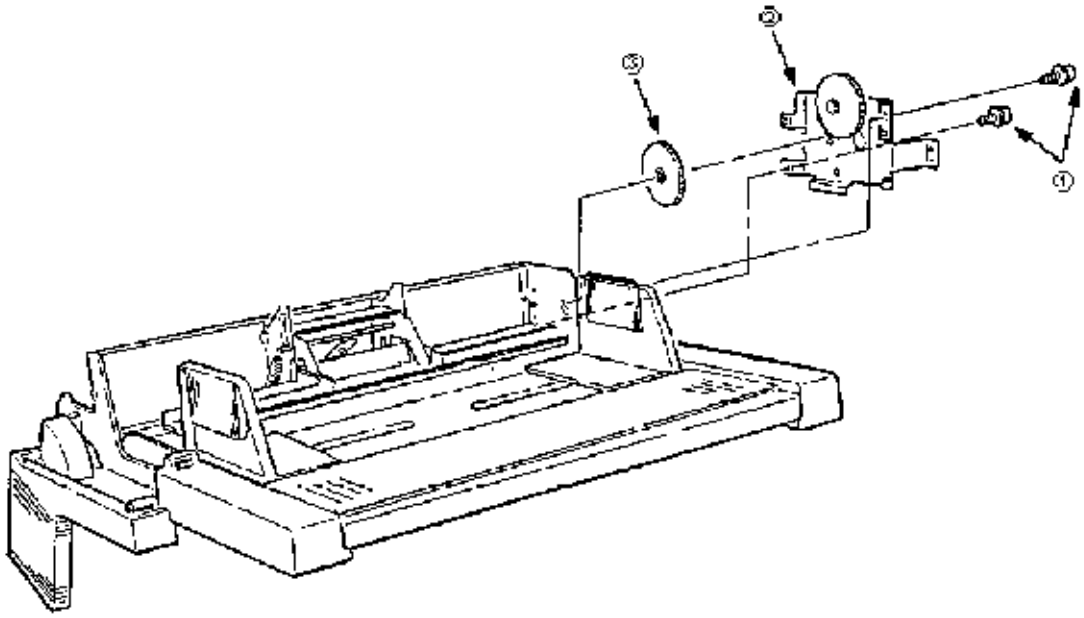


3.3.5 Planet Gear

(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 2 screws 1, and remove the motor bracket assembly 2 and planet gear 3.



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 plate.

(1) Remove the upper frame (see 3.3.2 steps (1) through (3)).

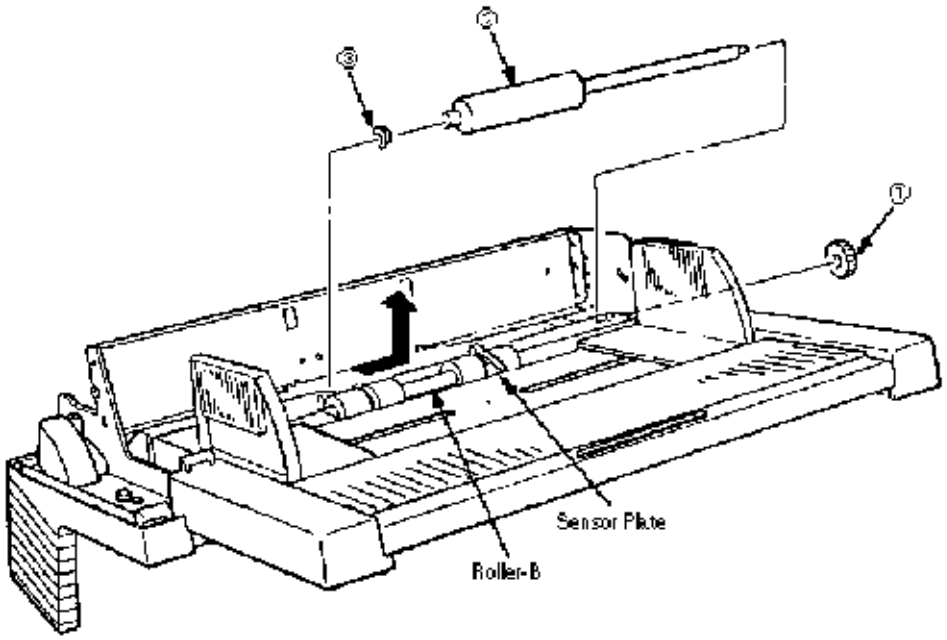
(2) Remove the separator assembly (see 3.3.2).

(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 (the bearing 3 also comes off while you are doing this, so be careful not to lose it).



TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic Troubleshooting section in the Printer Handbook.

(2) Obtain detailed information concerning the problem from the user.

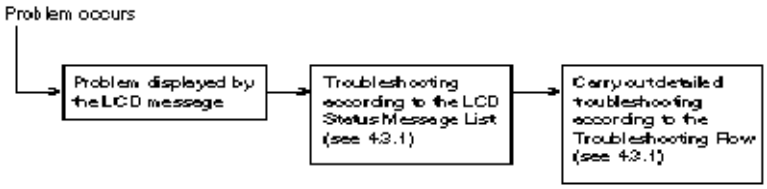
(3) Go through checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Check the display on the Operator Panel

4.3 Troubleshooting Method

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



4.3.1 LCD Status Message List

The listing of the status and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Classification	LCD Status Message	Description	Recovery method
Jam error	FEEDER INPUT JAM FEEDER SIZE ERR FEEDER EXIT JAM	Notifies of occurrence of jam while the paper is being fed from Multi-Purpose Feeder	• 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, go through the Trouble-shooting.
Paper size error	FEEDER SIZE ERR	Notifies of incorrect size paper feeding from Multi-Purpose Feeder.	• 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	FEEDER PAPEROUT	Notifies of no paper state of the Multi-Purpose Feeder.	• Load the paper in Multi-Purpose Feeder.

Paper Inlet Jam

- Does paper jam at the inlet when the power is turned on?

  - YES Is the paper located above the sensor plate (inlet)?

    - YES Remove the paper.

  - NO Is the sensor plate (inlet) operating normally?

    - NO Replace the sensor plate (inlet).

  - YES Replace the power supply/sensor board or inlet sensor.

- NO When the paper is fed in, does the paper inlet jam occur?

    - YES Is the paper being fed to above sensor plate (inlet)?

        - YES Is the sensor plate (inlet) operating normally?

            - NO Replace the sensor plate (inlet).

        - YES Clean the inlet sensor on the power supply/sensor board or replace the power supply/sensor board or inlet sensor.

    - NO Replace the roller-A or roller-B.

- NO Are the roller-A and roller-B rotating?

    - YES Set the paper properly.

- NO Is the pulse motor turning?

    - YES Replace the planet gear.

- NO Is the connector cable being connected properly?

    - NO Connect the connector cable properly.

- YES Check the coil resistance (approx. 32W) of the pulse motor. Is it normal?

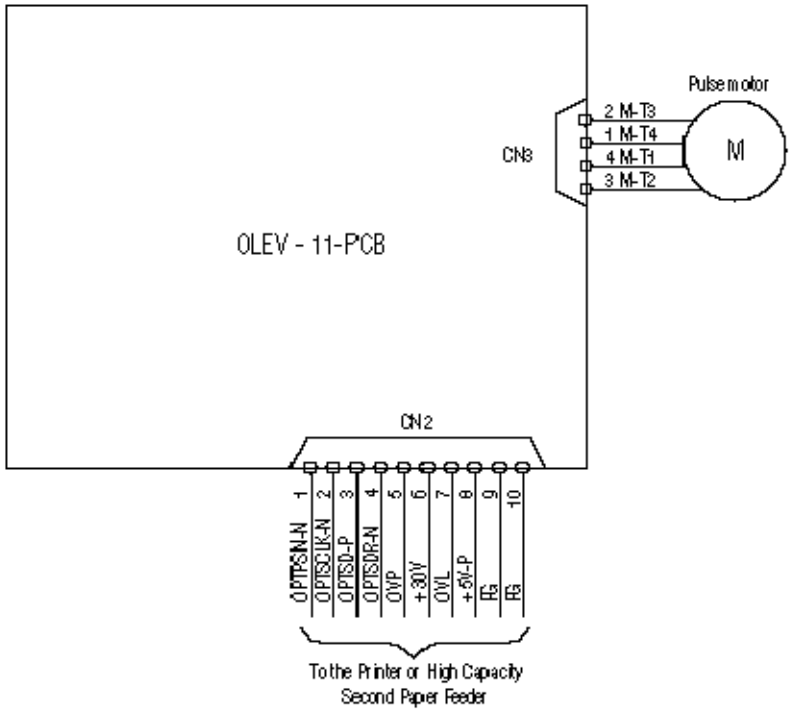
    - NO Replace the pulse motor.

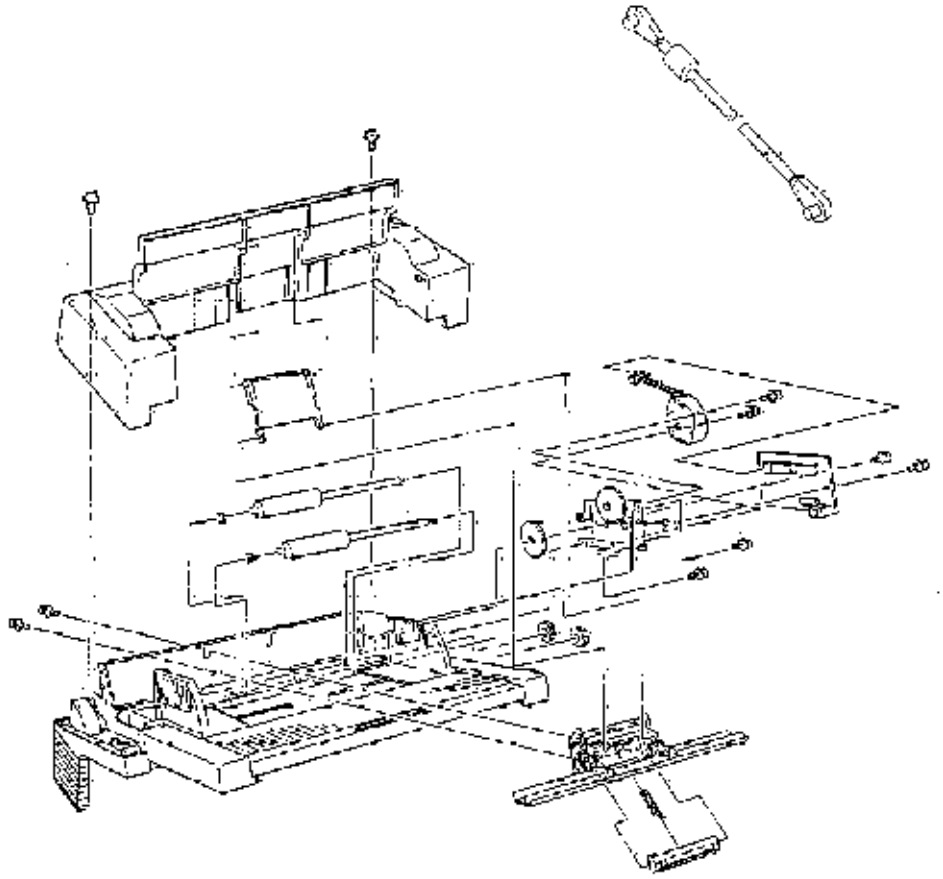
- YES Replace the OLEV-11-PCB.

---

5. CONNECTION DIAGRAM

5.1 Interconnection Diagram





No.	Description	OKI-J Part No.	ODA Part No.	Qty	Remark
1	Roller-A	3PB4083-5514P1		1	
2	Roller-B	3PB4083-5524P1		1	
3	Planet gear	4PP4083-5520P1		1	
4	Link	3PP4083-5540P1		1	
5	Separator	4PP4083-5544G1		1	
6	Pulse motor	4PB4083-6075P1		1	Same as printer unit.
7	OLEV-11-PCB	4YA4121-1014G11		1	

8	Connector cable	3YS4011-3141P3		1	
9	Separator assy	3PA4083-5549G1		1	

Second Paper Mech. Paper Specifications

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

- 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/m 2)

- Paper setting quantity: 500 sheets of paper weighing 64 g/m 2

External View and Component Names

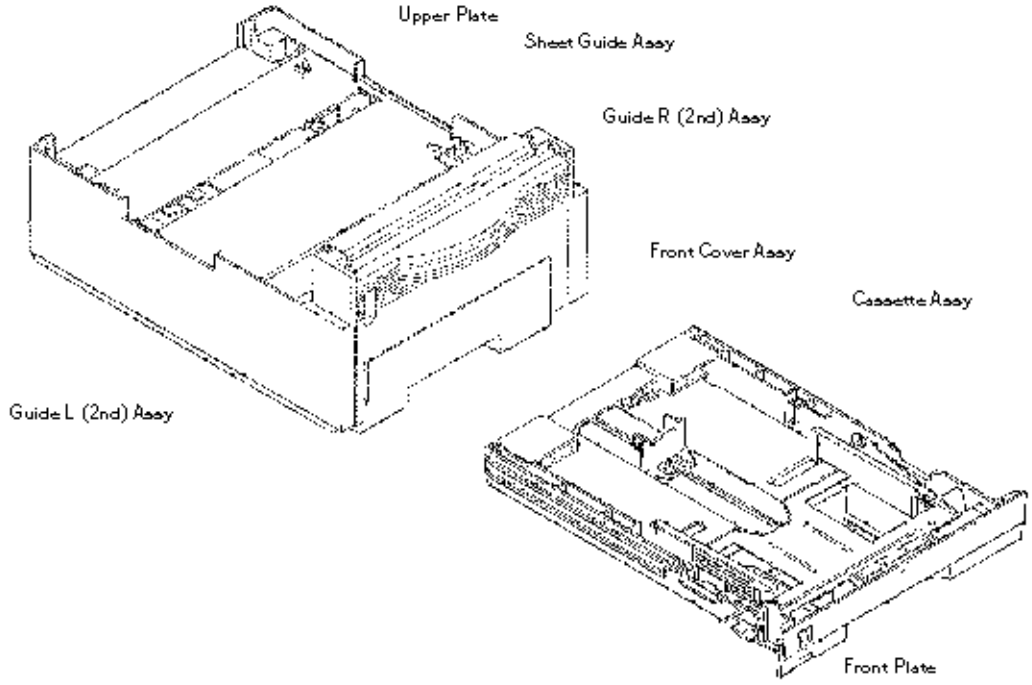


Fig. 1-1 External View and Component Names

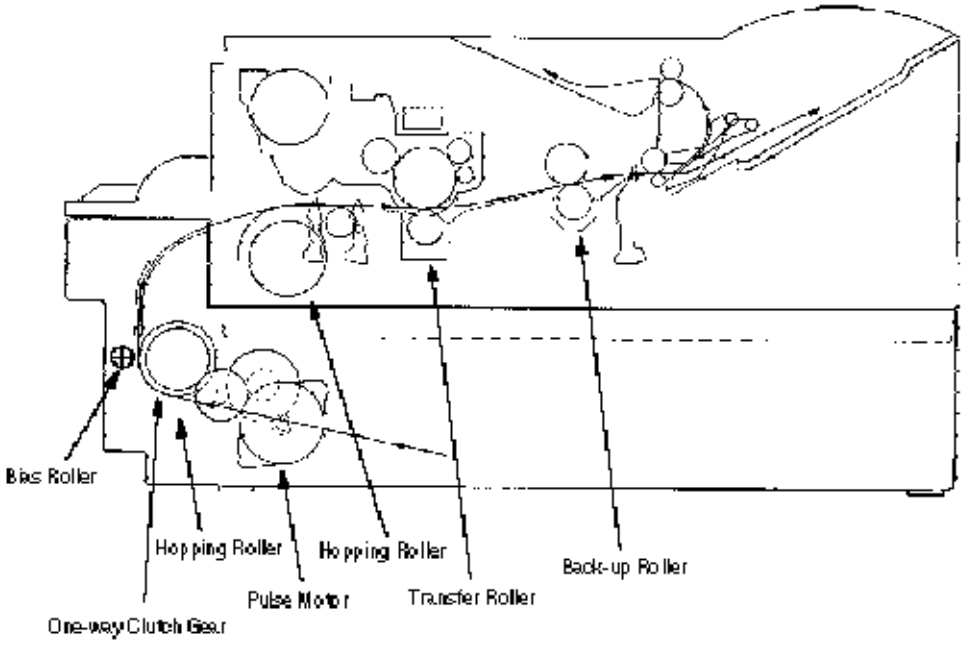
MECHANISM DESCRIPTION

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, and this motion is transmitted to rotate the one-way clutch of the hopping frame assembly. The paper is delivered from the hopper into the printer through the turning of the hopping roller and feed roller.
Once delivered into the printer, the paper is then controlled and fed through by pulse motor (registration) of the printer.

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, carrying forward only a single sheet caught by the brake shoe at a time.

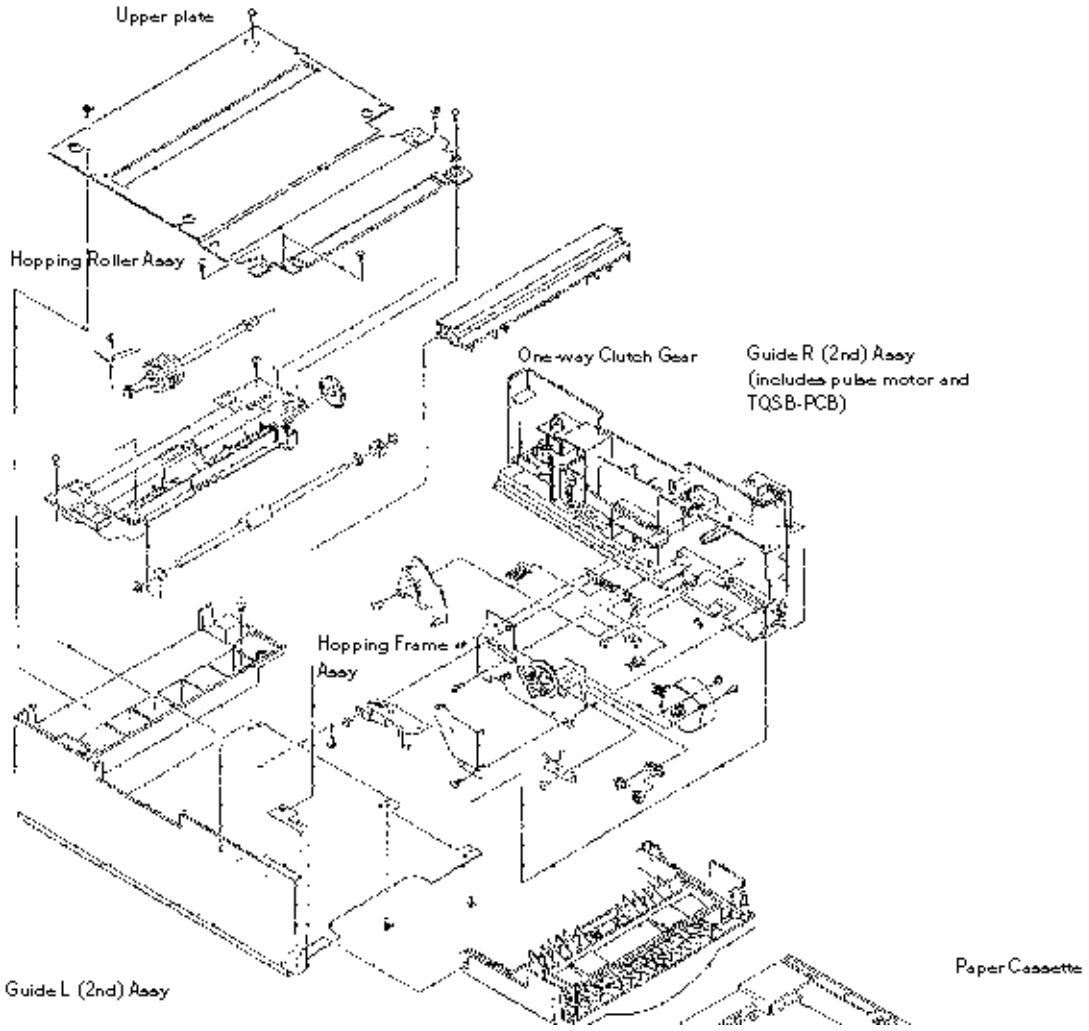


PARTS REPLACEMENT

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.

Parts Layout

This section describes the layout of the main components.



Parts Replacement Methods

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

High Capacity Paper Feeder Pulse motor (hopping) (3.3.1)

TQSB-PCB (3.3.2)

Hopping roller assy and One-way clutch gear (3.3.3)

3.3.1 Pulse Motor (Hopping)

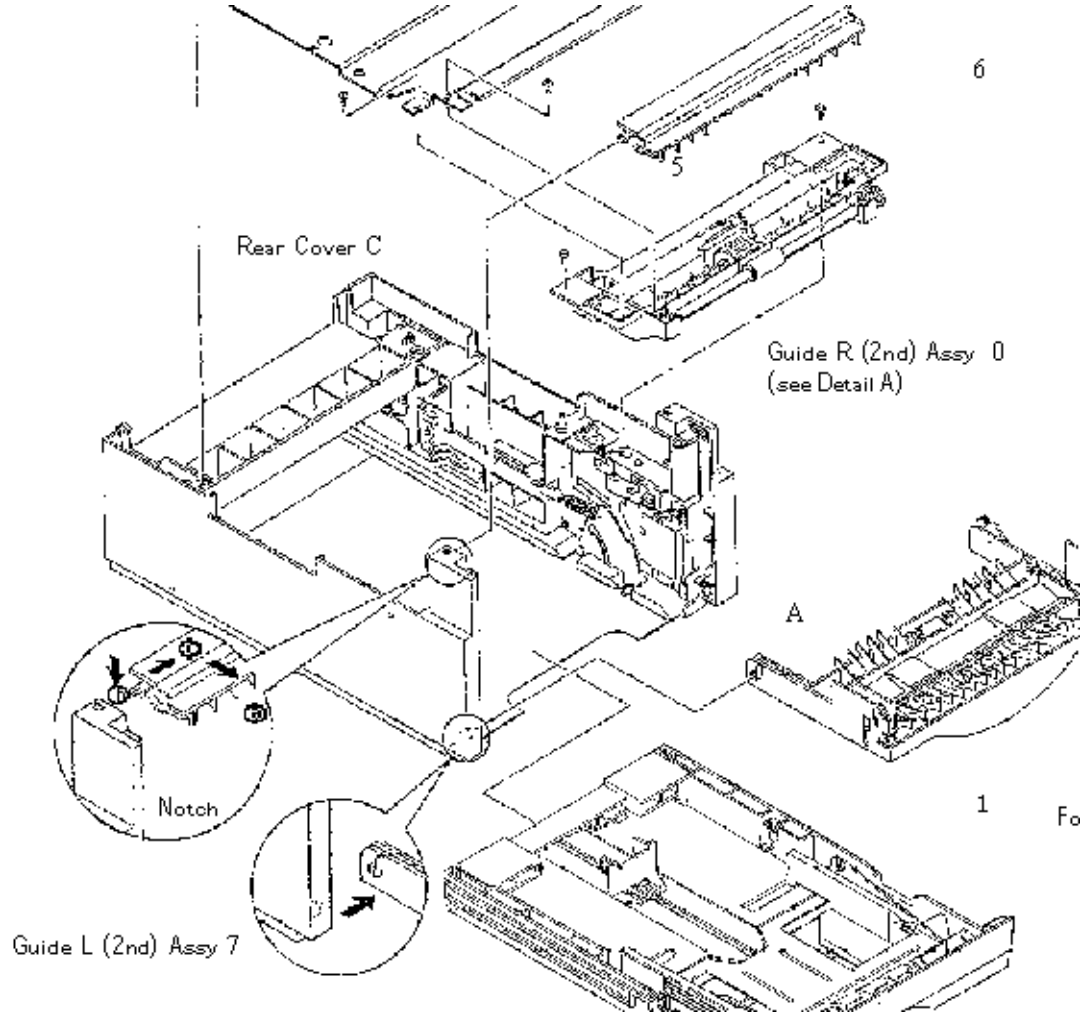
(1) Turn the printer power switch off, pull out the AC cord from the outlet. Remove the printer off High Capacity Second Paper Feeder.

(2) Take the paper cassette assy 1 out of High Capacity Second Paper Feeder.

(3) Remove six screws 2 and remove the upper plate 3. Remove two screws 5 and remove the hopping frame assy 6.

(4) Remove the front cover assy 4 off the guide boss on the guide L (2nd) assy 7 by bending the guide L (2nd) assy 7 in the direction of arrow shown in the magnified view below.

(5) Pull the sheet guide assy 8 in the direction of arrow and also push in the direction of arrow to unlock the notch, and bring the sheet guide assy 8 in the direction of arrow



to remove the sheet guide assy 8.

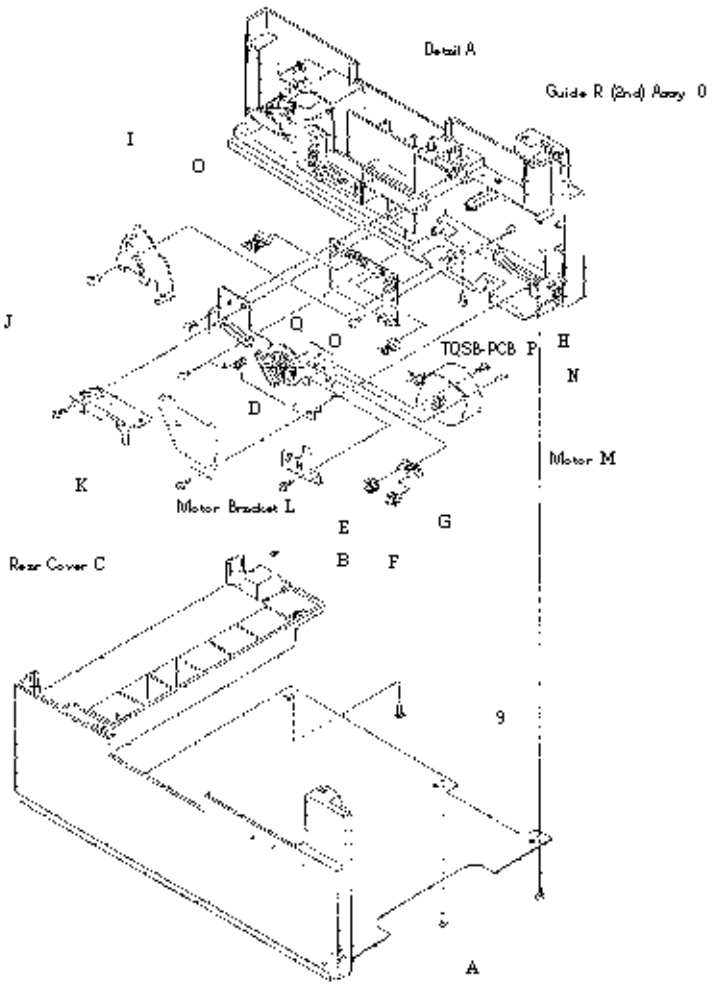
(6) Remove three screws 9 which are holding the guide R (2nd) assy 0 to the bottom plate A. Remove the screw B which is keeping the rear cover C and guide R (2nd) assy 0. Remove the guide R (2nd) assy 0.

(7) Remove the protect (M) D, guide bracket E, planet gears F and planet gear bracket G.

(8) Remove the E-ring H which is keeping the sheet link I on the guide R (2nd) assy 0, and pull out the hinge stand J.

(9) Remove three remaining screws K which are keeping the motor on the motor bracket L, and remove the connector off the motor M.

(10) Remove two screws N on the motor M.



3.3.2 TQSB-PCB

(1) Remove the pulse motor (see 3.3.1).

(2) Remove the connector O from the TQSB-PCB P.

(3) Remove the screw Q and remove the TQSB-PCB P.

Note: Refer to Detail A in the previous page.

3.3.3 Hopping Roller Assy and One-way Clutch Gear

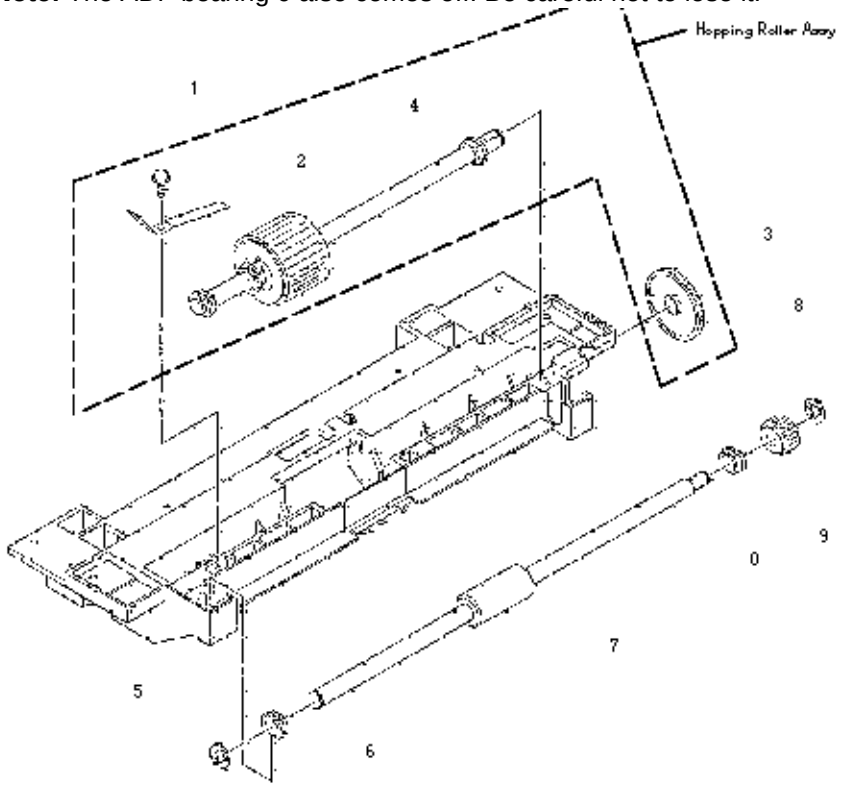
(1) Follow up to step (3) of 3.3.1 and remove the hopping frame assy.

(2) Remove the screw 1 and remove the earth plate 2. Remove the gear 3 and remove the hopping roller 4.

(3) Take out the feed roller 7. Remove the E-ring 5 and ADF bearing 6 on the left side of feed roller 7.

(4) Remove the E-ring 8 and remove the one-way clutch gear 9 on the right side of the feed roller 0.

Note: The ADF bearing 0 also comes off. Be careful not to lose it.



4. TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic checking items provided in the Printer Handbook.

(2) Obtain detailed information concerning the problem from the user.

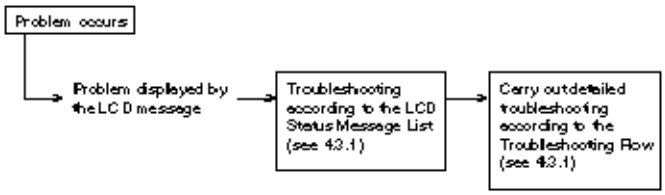
(3) Go through checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the Operator panel The status of the problem is displayed on the LCD (Liquid Crystal Display) on the Operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

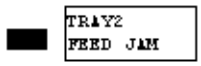
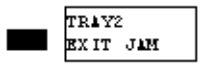
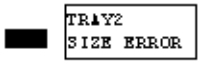
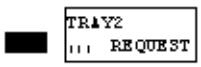
4.3 Troubleshooting Method

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

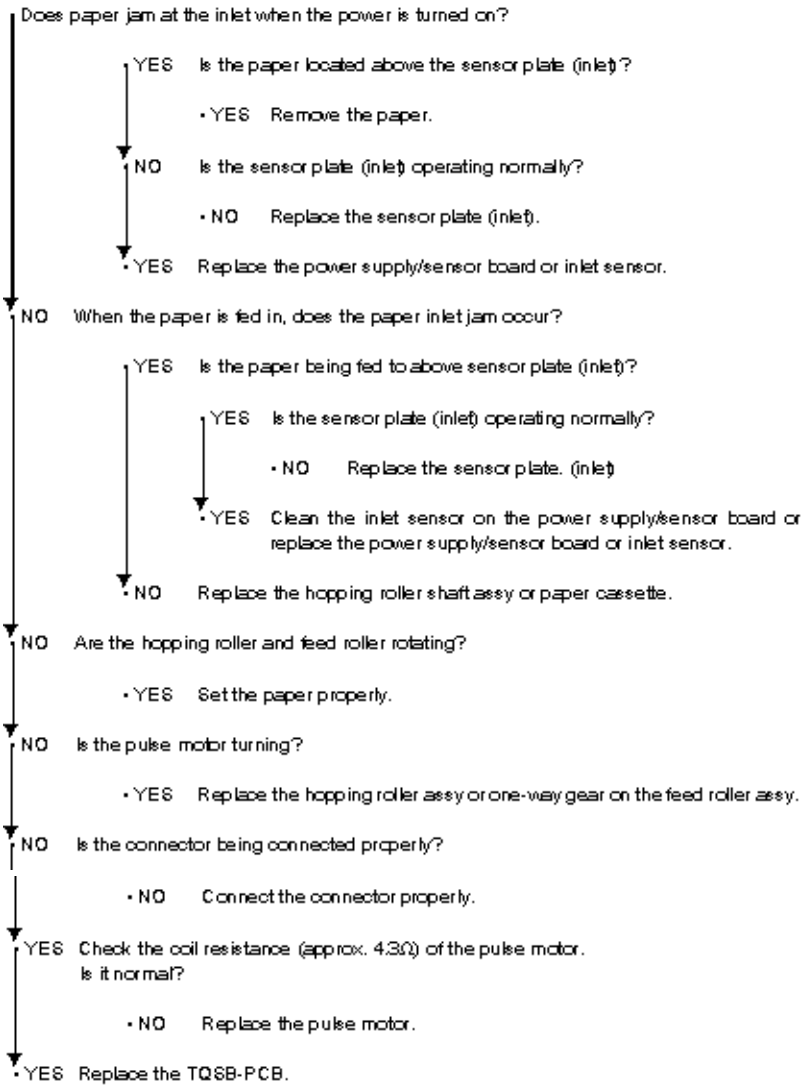


4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

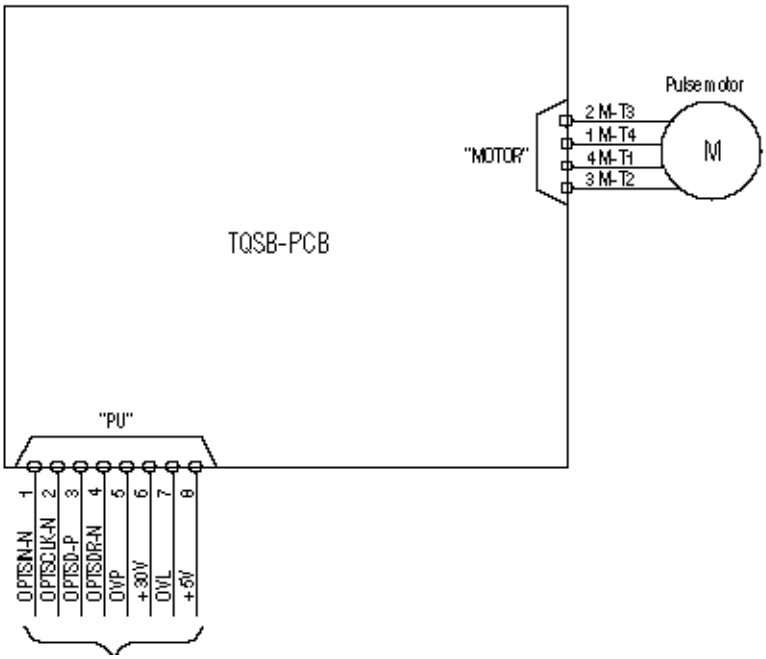
Classification	LCD Status Message	Description	Recovery method
Jam error (feeding)		Notifies occurrence of jam while the paper is being fed from High Capacity Second Paper Feeder.	• Check the paper in the High Capacity Second Paper Feeder. Carry out the recovery printing by opening and closing the cover, and turn the error display off. • When the problem occurs frequently, go through the Trouble shooting.
Jam error (ejection)		Notifies occurrence of jam while the paper is being ejected from the printer.	• Check the paper in the printer. Carry out the recovery printing by opening and closing the cover, and turn the error display off.
Paper size error		Notifies of incorrect size paper feeding from High Capacity Second Paper Feeder.	• Check the paper in the High Capacity Second Paper Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening and closing the cover, and turn the error display off.
Tray paper out		Notifies of no paper state of the High Capacity Second Paper feeder.	• Load the paper in High Capacity Second Paper Feeder.
Paper size request	 !!! : Paper size (A4, Letter, Legal, etc.)	Notifies of correct paper size for the High capacity Second Paper Feeder.	• Load the requested size paper in the High Capacity Second Paper Feeder.

Paper Inlet Jam

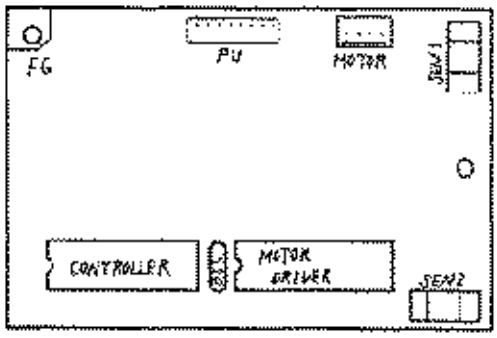


5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



Second Paper Mech. PCB Layout TQSB-PCB



Second Paper Mech. Parts List