SAFETY INFORMATION

All Areas

INTERNAL LASER RADIATION

Maximum radiation power: 8.8 x 10^{-4} (W)
Wavelength: 770-810 nm

This is a Class IIIb Laser Diode Assy. that has an invisible Laser Beam. The Print Head Unit is NOT A FIELD SERVICE ITEM. Therefore, the Print Head Unit should not be opened under any circumstances.

U.S.A. Only

LASER SAFETY

This LBP printer is certified as a Class 1 laser product under the U.S. **Department of Health and Human Services (DHHS)** Radiation Performance Standard according to the Food, Drug and Cosmetic Act of 1990. This means that the LBP printer does not produce hazardous laser radiation.

Since radiation emitted inside the LBP printer is completely confined within protective housing and external covers, the laser beam cannot escape from the LBP printer during any phase of user operation.

CDRH REGULATIONS

The **Center for Devices and Radiological Health (CDRH)** of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown in the figure indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

CLASSIFICATION OF THE LASER PRODUCT

This product is classified as a Class 1 Laser Product under the CDRH Regulations U.S.A.

For other Countries Users

WARNING: Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

This is a semiconductor laser. The maximum power of the laser diode is 8.8 x 10^{-4}W and the wavelength is 770-810 nm.

For Denmark Users

ADVARSEL: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsttelse for stråling.
Klasse 1 laser produkt der opfylder IEC825 sikkerheds kravene.

For Finland, Sweden Users

VAROITUS!: Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNNING: Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsattas för osynling laserstrålnig, som överskrider gränsen för laserklass 1.

VARO: Avattaessa ja suojalukitus ohitettaessa olet alttiina nakymattomalle lasersateilylle. Aja katso sateeseen.

VARNING: Osynlig laserstråining när denna del är öppnad och spärren är urkopplad. Betrakta ej stråien.

For Norway Users

ADVARSEL: Dersum apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for unsynlig laserstråling som overskrider grensen for laser klasse 1.

Dette er en halvleder laser. Maksimal effeckt til laserdiode er 8.8 x 10^{-4}W og bolgelengde er 770-810 nm.

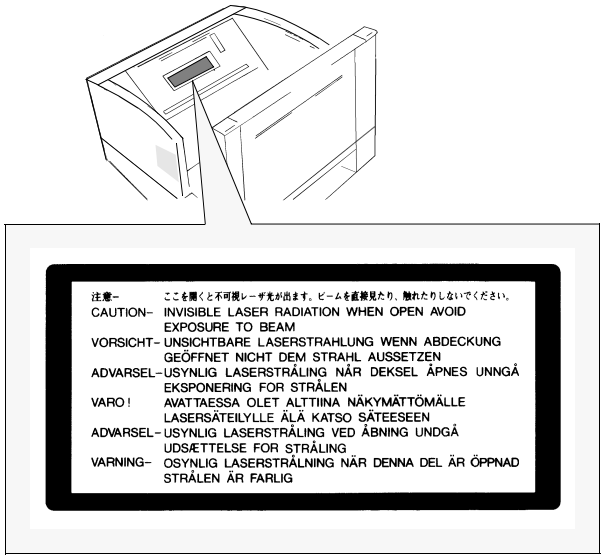
User Instruction (For all users)

The outlet should be located near the printer and should be easily accessible.

Please read the following for your own protection.

⚠ Caution

Opening the cover indicated by the **Caution** label below may expose you to harmful laser radiation which could cause damage or loss of eyesight. **Do not Open the Cover** when the power is on.



PRECAUTIONS

(1) Precautions ⚠ Caution

Refer to D: DISASSEMBLY/ CLEANING for the Disassembly procedure.

1. When unplugging connectors on the P.W.B.s themselves, always make sure the power is OFF first. Be sure to unplug the printer before disassembling and cleaning.
2. Always unplug connectors by holding the connector housing. Pulling on the wires can lead to problems with poor contact.
3. It is recommended that a body ground not be used when carrying out any trouble-shooting procedure. Be sure to ground DC lines to a ground test point on the P.W.B.

(2) At Replacement/ Adjustment/ Cleaning ⚠ Caution

1. Be sure to handle the Fusing Unit carefully. The unit remains hot for a while after the printer is turned off.
2. Do not disassemble the Imaging Cartridge or the Print Head Unit.
3. Do not expose the PC Drum of the Imaging Cartridge to direct sunlight for more than one minute or to room lighting for more than 5 minutes.
4. Turn off the power before removing the Print Head Unit to protect the eyes from possible exposure to the laser beam.
5. Use only a Fuse of the indicated rating.

(3) During Operation ⚠ Caution

1. Keep your hands, clothing, etc. well away from operating or rotating parts.
2. Never touch the terminals of electrical parts or high voltage parts.
3. This printer is using an invisible laser beam. To prevent a laser beam leak, the printer performs a trial run to make sure the covers are in position.

HANDLING THE P.W.B.

Observe the following precautions when handling a P.W.B. with ICs.

(1) During Transportation/ Storage

1. During transport and storage, P.W.B.s should be kept in conductive bags or on mats and not taken out unless absolutely necessary.
2. P.W.B.s should be stored in a place where direct sunlight does not strike them.
3. Do not touch IC terminals with your hands.

(2) At Replacement

1. Before removing connectors from a P.W.B., make sure the printer has been unplugged.
2. When P.W.B.s are taken out of their conductive bags or off their mats, hold them by their edges to avoid touching the terminals or the patterned surfaces.
3. Before installing connectors on a P.W.B., make sure the printer has been unplugged.

(3) At Inspection

1. Avoid checking a P.W.B. with testers; instead, use operating parts of the printer, indicator lamps, and other means to evaluate operational conditions.
2. Be careful not to short-circuit IC terminals when using metal tools or screws.
3. If it is necessary to touch elements on the P.W.B. with your hand, make sure your body is properly grounded.

CONTENTS

A: PRODUCT INSTALLATION

B: GENERAL INFORMATION

C: MECHANICAL/ ELECTRICAL

D: DISASSEMBLY/ CLEANING

E: ADJUSTMENT

F: TROUBLE-SHOOTING

A

A: PRODUCT INSTALLATION

1. PRECAUTIONS FOR INSTALLATION

1-1. Installation Site

When installing the printer, please **avoid the types of locations listed** below, both for safety considerations and to avoid breakdowns.

- **Which is exposed to direct sunlight.**
- **Which is damp or dusty.**
- **Where it may be splashed with water.**
- **Which is tilted or subject to undue vibration.**
- **Where it will be subject to extremely high or low temperature or humidity.**
- **Where it will be subject to sudden fluctuations in either temperature or humidity.**
- **Which is near volatile flammables or corrosive gas.**
- **Which is in the direct air stream of an air conditioner, heater, or ventilator.**
- **Which is near a TV set or radio.**

1-2. Environmental Requirements

In order to make sure the printer functions in good condition, please make sure the ambient environment satisfies the following requirements:

• Temperature: 10 to 35°C	Temperature fluctuation _10°C per hour or less
• Humidity: 15 to 85% RH	Humidity fluctuation of _20% RH per hour or less
• Altitude: 0 - 2500m	Atmospheric pressure 760 hPa or more

1-3. Power Requirements

Do not plug the Power Cord into a power outlet via an extension cord supplying electricity to more than one unit.

- Power source: 120V, 50 - 60Hz or 230V - 240V, 50Hz
- Voltage fluctuation: _10% (for 120V/ PageWorks 20)
- Voltage fluctuation: +6%, -10% (for 230V - 240V/ PagePro 20)
- Frequency fluctuation: _3Hz

When any other electric appliance is sourced from the same power outlet, make sure that the current capacity of the outlet is not exceeded.

- Ensure that the power outlet is not hidden behind any object, allowing the user to immediately unplug the power cord when necessary.
- The power-outlet shall be installed near the equipment and be easily accessible.
- The power cord should not be cracked or scratched.

2. INSTALLATION

2-1. Connection

The following items should be connected before use.

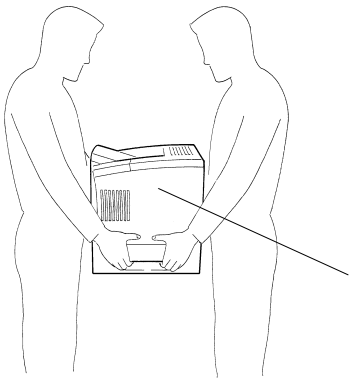
- Connect the Parallel Interface cable.
- Connect the Power cord.

2-2. Moving

⚠ Caution

The printer weighs approximately 37.7 kg (83-3/4 pounds) including the Imaging Cartridge and all Options (500 Sheet Third Cassette Unit, Duplex Unit). Make sure you place it on a desk or table that's strong enough to hold the weight. Don't lift the printer by yourself. Have at least one other person assist you.

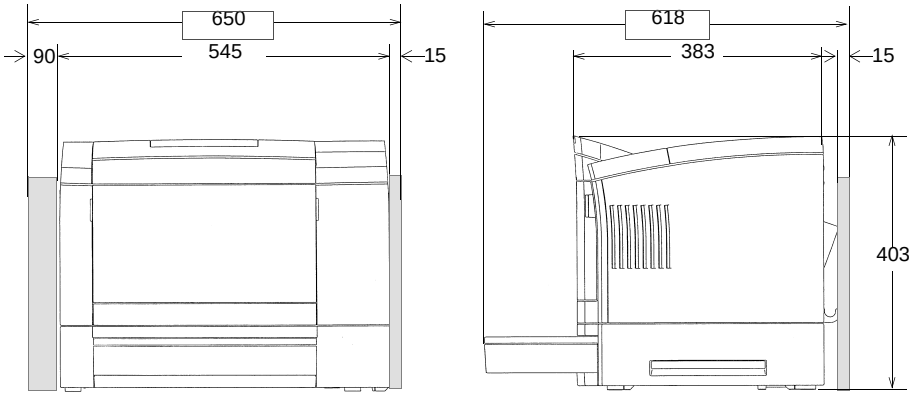
The printer weighs approximately 25.0 kg (54-2/4 pounds) without the Imaging Cartridge, paper and Options. Don't lift the printer by yourself. Have at least one other person assist you.



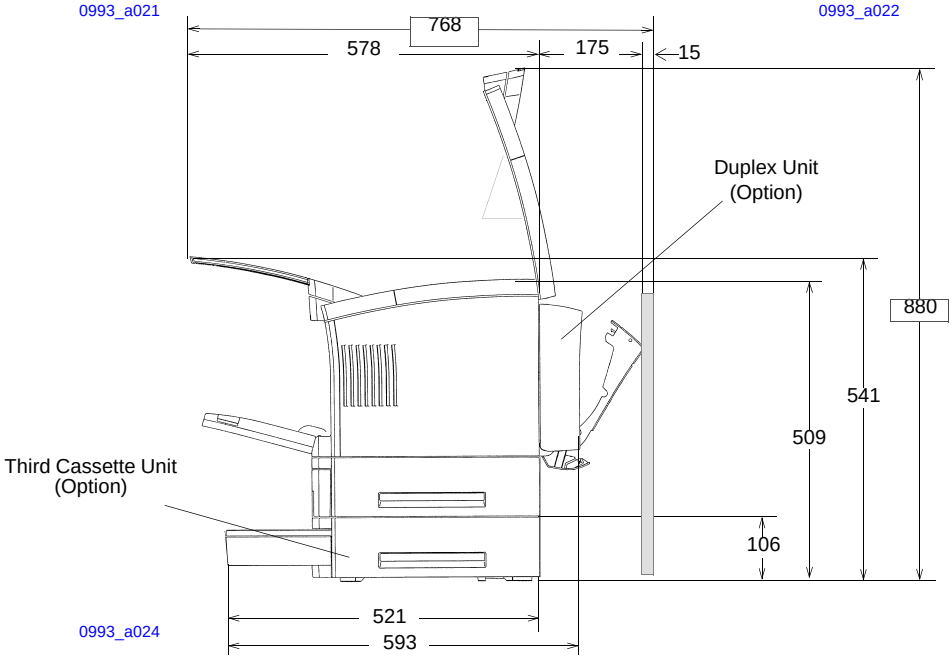
NOTE: This side of the printer is heavier than the other side.

2-3. Space Requirements

NOTE: The Minimum Space requirements for installation of the printer are enclosed in a ☐ . To ensure easy operation, replacement of consumable, and maintenance service jobs, provide the following space for the installation of the printer.



0993_a021 0993_a022



0993_a024

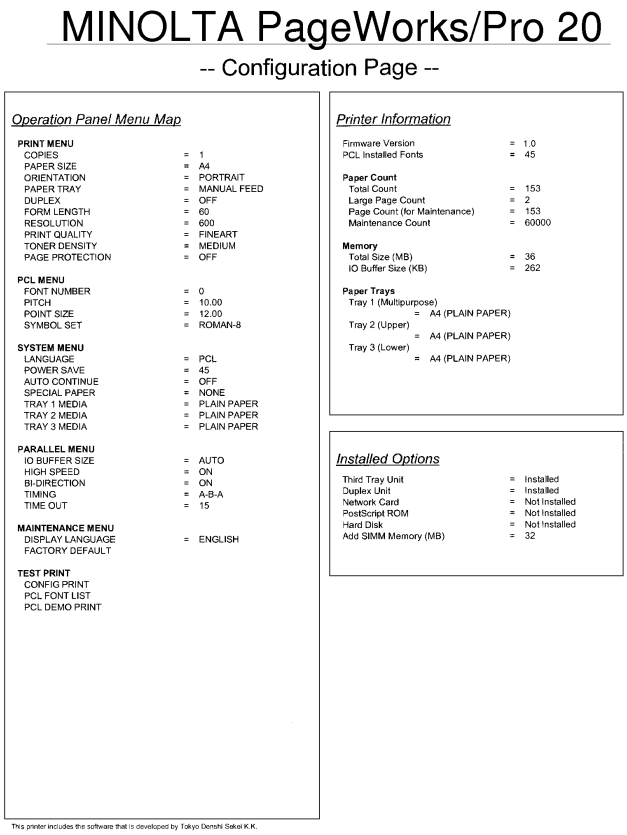
Unit: mm

3. TEST PRINT

Procedure

1. Press the On Line key to go off-line.
2. Press the Menu key, select “TEST MENU”.
3. Press the Item key, select a test print.

   CONFIG PRINT
   PCL FONT LIST
   PCL DEMO PRINT
   [PS CONFIG PRINT] ;/ [PS] is a PS option
   [PS FONT LIST]
   [NETWORK CONFIG] ;/ Network Card option
   [HDD DEMO1] ;/ HDD DEMO SET: ON* in SERVICE MENU
   [HDD DEMO2]
   [HDD DEMO3]
4. Press the Enter/Reset key to start the test print.
5. After word, press the On Line key to return on-line.
6. Example of CONFIG PRINT.



MINOLTA PageWorks/Pro 20

-- Configuration Page --

Operation Panel Menu Map

PRINT MENU

COPIES	=	1
PAPER SIZE	=	A4
ORIENTATION	=	PORTRAIT
PAPER TRAY	=	MANUAL FEED
DUPLEX	=	OFF
FORM LENGTH	=	60
RESOLUTION	=	600
PRINT QUALITY	=	FINEART
TONER DENSITY	=	MEDIUM
PAGE PROTECTION	=	OFF

PCL MENU

FONT NUMBER	=	0
PITCH	=	10.00
POINT SIZE	=	12.00
SYMBOL SET	=	ROMAN-8

SYSTEM MENU

LANGUAGE	=	PCL
POWER SAVE	=	45
AUTO CONTINUE	=	OFF
SPECIAL PAPER	=	NONE
TRAY 1 MEDIA	=	PLAIN PAPER
TRAY 2 MEDIA	=	PLAIN PAPER
TRAY 3 MEDIA	=	PLAIN PAPER

PARALLEL MENU

IO BUFFER SIZE	=	AUTO
HIGH SPEED	=	ON
BI-DIRECTION	=	ON
TIMING	=	A-B-A
TIME OUT	=	15

MAINTENANCE MENU

DISPLAY LANGUAGE	=	ENGLISH
FACTORY DEFAULT		

TEST PRINT

CONFIG PRINT
PCL FONT LIST
PCL DEMO PRINT

This printer includes the software that is developed by Tokyo Denshi Sekei K.K.

Printer Information

Firmware Version	=	1.0
PCL Installed Fonts	=	45

Paper Count

Total Count	=	153
Large Page Count	=	2
Page Count (for Maintenance)	=	153
Maintenance Count	=	60000

Memory

Total Size (MB)	=	36
IO Buffer Size (KB)	=	262

Paper Trays

Tray 1 (Multipurpose) = A4 (PLAIN PAPER)
Tray 2 (Upper) = A4 (PLAIN PAPER)
Tray 3 (Lower) = A4 (PLAIN PAPER)

Installed Options

Third Tray Unit	=	Installed
Duplex Unit	=	Installed
Network Card	=	Not Installed
PostScript ROM	=	Not Installed
Hard Disk	=	Not Installed
Add SIMM Memory (MB)	=	32

(Set print form)
PAPER SIZE
PAPER TRAY

PRINT QUALITY
DUPLEX
TONER DENSITY

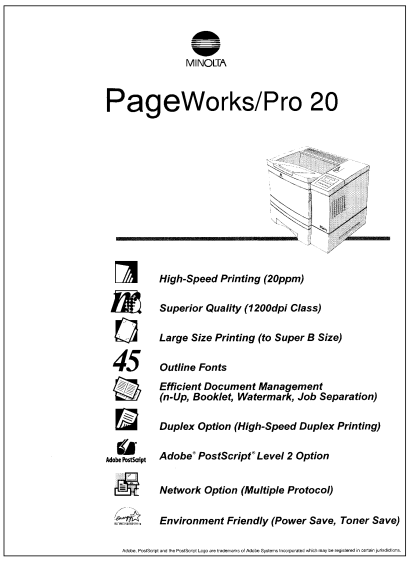
7. Example of PCL Font List.

MINOLTA PageWorks/Pro 20
PCL Typeface List

Internal Scalable Typefaces and Bitmapped Fonts

Typeface	Pitch/Point	Escape Sequence	Font #
Courier	Scale	<esc>(<esc>(s0p h0s0b4099T	000
CG Times	Scale	<esc>(<esc>(s1p v0s0b4101T	001
CG Times Bold	Scale	<esc>(<esc>(s1p v0s3b4101T	002
CG Times Italic	Scale	<esc>(<esc>(s1p v1s0b4101T	003
CG Times Bold Italic	Scale	<esc>(<esc>(s1p v1s3b4101T	004
CG Omega	Scale	<esc>(<esc>(s1p v0s0b4113T	005
CG Omega Bold	Scale	<esc>(<esc>(s1p v0s3b4113T	006
CG Omega Italic	Scale	<esc>(<esc>(s1p v1s0b4113T	007
CG Omega Bold Italic	Scale	<esc>(<esc>(s1p v1s3b4113T	008
Coronet	Scale	<esc>(<esc>(s1p v1s0b4116T	009
Clarendon Condensed	Scale	<esc>(<esc>(s1p v4s3b4140T	010
Univers Medium	Scale	<esc>(<esc>(s1p v0s0b4148T	011
Univers Bold	Scale	<esc>(<esc>(s1p v0s3b4148T	012
Univers Medium Italic	Scale	<esc>(<esc>(s1p v1s0b4148T	013
Univers Bold Italic	Scale	<esc>(<esc>(s1p v1s3b4148T	014
Univers Medium Condensed	Scale	<esc>(<esc>(s1p v4s0b4148T	015
Univers Bold Condensed	Scale	<esc>(<esc>(s1p v4s3b4148T	016
Univers Medium Condensed Italic	Scale	<esc>(<esc>(s1p v5s0b4148T	017
Univers Bold Condensed Italic	Scale	<esc>(<esc>(s1p v5s3b4148T	018
Antique Olive	Scale	<esc>(<esc>(s1p v0s0b4168T	019
Antique Olive Bold	Scale	<esc>(<esc>(s1p v0s3b4168T	020
Antique Olive Italic	Scale	<esc>(<esc>(s1p v1s0b4168T	021
Garamond Antiqua	Scale	<esc>(<esc>(s1p v0s0b4197T	022
Garamond Halbfett	Scale	<esc>(<esc>(s1p v0s3b4197T	023
Garamond Kursiv	Scale	<esc>(<esc>(s1p v1s0b4197T	024
Garamond Kursiv Halbfett	Scale	<esc>(<esc>(s1p v1s3b4197T	025
Marigold	Scale	<esc>(<esc>(s1p v0s0b4297T	026
Albertus Medium	Scale	<esc>(<esc>(s1p v0s1b4362T	027
Albertus Extra Bold	Scale	<esc>(<esc>(s1p v0s4b4362T	028
Arial	Scale	<esc>(<esc>(s1p v0s0b16602T	029
Arial Bold	Scale	<esc>(<esc>(s1p v0s3b16602T	030
Arial Italic	Scale	<esc>(<esc>(s1p v1s0b16602T	031
Arial Bold Italic	Scale	<esc>(<esc>(s1p v1s3b16602T	032
Times New Roman	Scale	<esc>(<esc>(s1p v0s0b16901T	033
Times New Roman Bold	Scale	<esc>(<esc>(s1p v0s3b16901T	034
Times New Roman Italic	Scale	<esc>(<esc>(s1p v1s0b16901T	035
Times New Roman Bold Italic	Scale	<esc>(<esc>(s1p v1s3b16901T	036
Symbol	Scale	<esc>(19M<esc>(s1p v0s0b16686T	037
Wingdings	Scale	<esc>(579L<esc>(s1p v0s0b31402T	038
Courier Bold	Scale	<esc>(<esc>(s0p h0s3b4099T	039
Courier Italic	Scale	<esc>(<esc>(s0p h1s0b4099T	040
Courier Bold Italic	Scale	<esc>(<esc>(s0p h1s3b4099T	041
Letter Gothic	Scale	<esc>(<esc>(s0p h0s0b4102T	042
Letter Gothic Bold	Scale	<esc>(<esc>(s0p h0s3b4102T	043
Letter Gothic Italic	Scale	<esc>(<esc>(s0p h1s0b4102T	044
Line Printer	16.66/8.5	<esc>(8U<esc>(s0p16.66h8.5v0s0b0T	045
Line Printer	16.66/8.5	<esc>(0N<esc>(s0p16.66h8.5v0s0b0T	046
Line Printer	16.66/8.5	<esc>(10U<esc>(s0p16.66h8.5v0s0b0T	047
Line Printer	16.66/8.5	<esc>(11U<esc>(s0p16.66h8.5v0s0b0T	048
Line Printer	16.66/8.5	<esc>(12U<esc>(s0p16.66h8.5v0s0b0T	049
Line Printer	16.66/8.5	<esc>(1U<esc>(s0p16.66h8.5v0s0b0T	050

8. Example of PCL Demo Print



9. Example of Network Config print

7066 Minolta Network Configuration Sheet 1 - 2 of 2
Minolta
Nj, USA/ Germany
Technical Support:
See User's Manual

General

Serial Number:	1716489		
Ethernet Address:	00.40.68.1A.31.09	Cable Type:	10BASE-T
		Link Status:	N/A
F/W Version:	5.04a (9650A)	Polarity:	N/A ;/ Not Applicable
Rx Packets:	0	Tx Packets:	0
Rx Packets Unavailable:	0	Tx Packet Errors:	0
Rx Packet Errors:	0	Tx Packet Retries:	1
Checksum Errors:	0		

Error: ST: Cable not connected. ;/ None

NetWare (ENABLED)

Mode: Unknown ;/ Pserver / Rserver

Print Server Name: MLT1716489

Frame Format: Ethernet 802.2
JetAdmin: Disabled
Trap Destination: 00.00.00.00 : 00.00.00.00.00.00

TCP/IP (ENABLED

IP Address: Using network protocol (198.102.102.254)
IP Address Source: Using network protocol (198.102.102.254)
Boot Protocols: Gleaning RARP BOOTP DHCP
Subnet Mask: 255.255.255.0
Default Gateway Address: 192.168.16.14
Timeout Checking: Enabled ;/ Disabled
Trap Destination: 255.255.255.255

EtherTalk (ENABLED)

Node Address: 003281h
Router Address: 192.168.16.14 ;/ Not Detected
Status: Running

Port 1 Enabled
Printer Name: "MLT 1716489"
Printer Type 1: "LaserWriter"
Zone name: "*"

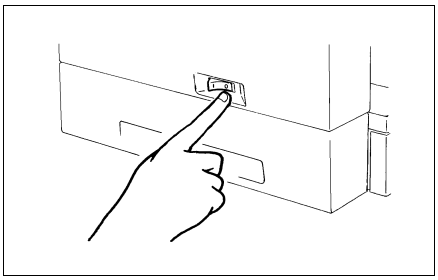
LAN Server (ENABLED)

Port Configuration

Name:
Printer Status: Online
Connected To: printer
Error: None

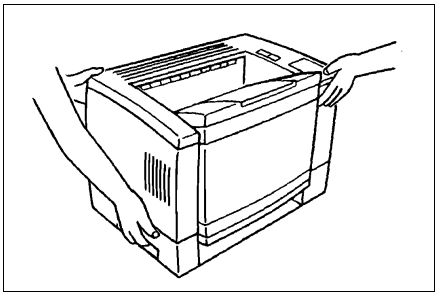
4. OPTION SETUP

4-1. Third Cassette Unit

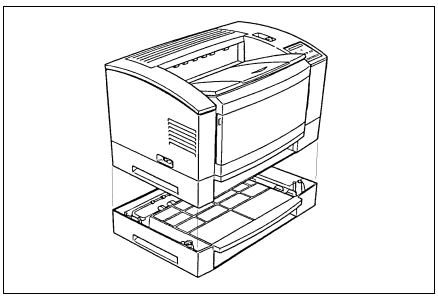


- The Third Cassette makes TRAY3, in addition to TRAY1 (multi-purpose) and TRAY2 (second cassette).

1. Turn off the power.
2. Unplug the power cord from the printer.
3. Remove all interface cables from the printer.



4. Lift the printer.



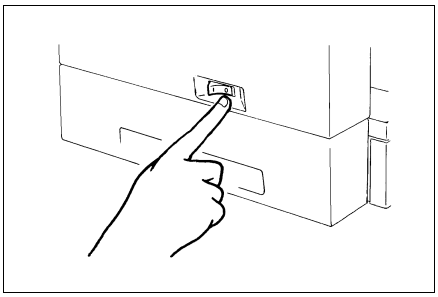
5. Orient the printer correctly with respect to the Third Cassette.
 - Aligning the printer over the Third Cassette, gently place the printer onto the Third Cassette.
 - Fit the pins on the cassette into the holes in the bottom of the printer.

6. Reconnect any interface cables.
   Plug in the power cord.

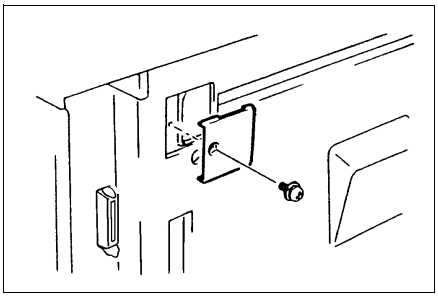
7. Turn on the power.
   Run a CONFIG PRINT test print using paper fed from TRAY3.

4-2. Duplex Unit

- The Duplex Unit allows you to print on both sides of the paper.

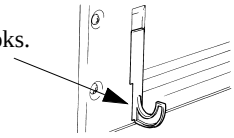


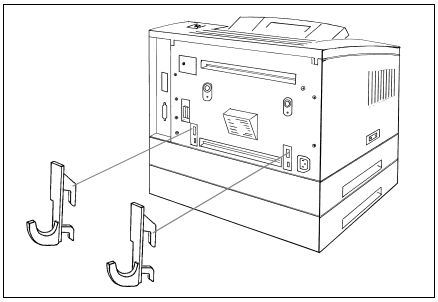
1. Turn off the power.
2. Unplug the power cord from the printer.
3. Remove all interface cables from the printer.



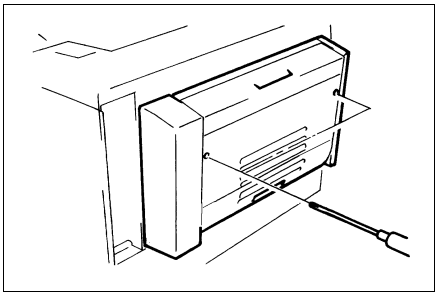
4. Turn the back of the printer.
   Remove the gear cover (one screw).

5. Attach the hooks.





6. Place the Duplex Unit on the hooks.
   - Press the Duplex Unit against the rear cover so that its pins fit into the holes in the rear.

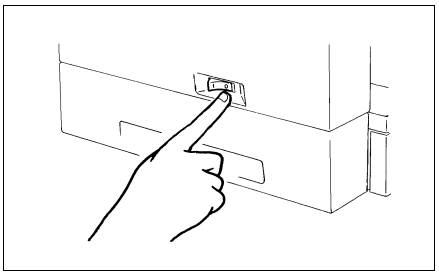


7. Tighten the two screws.

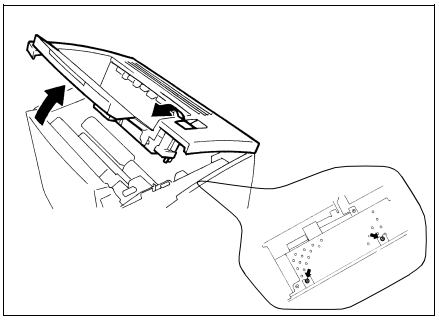
8. Reconnect any interface cables.
   Plug in the power cord.
9. Turn on the power.
   Run a CONFIG PRINT test print feeding paper through the Duplex Unit.

4-3. RAM-SIMM

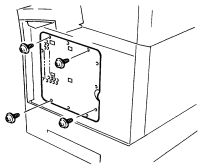
- The extension memory permits easier printing of larger print jobs.

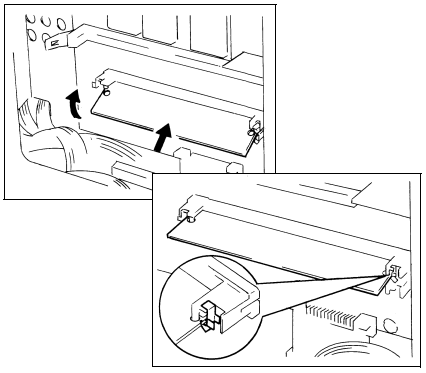


1. Turn off the power.
2. Unplug the power cord from the printer.
3. Remove all interface cables from the printer.



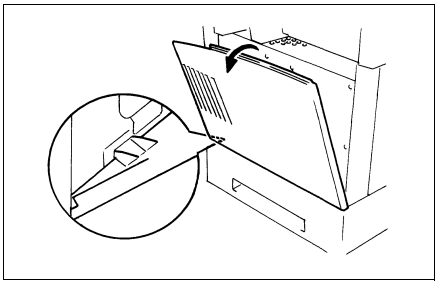
4. Remove the Right Cover. (two screws)
5. Open the shield door. (4 screws)





6. Fit the RAM-SIMMs into SIMM slot 1 (CN3) and then SIMM slot 2 (CN2), in that order. Mount the SIMM with a larger capacity in slot 1. Make sure the SIMM is being mounted in the pin numbers, left 1 to right 72.

   NOTE: RAM is 60ns or less none parity.

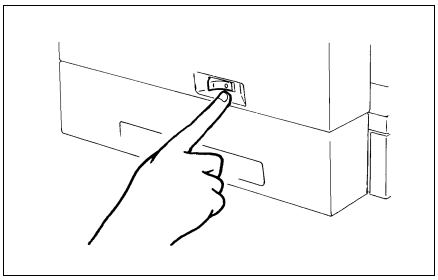


8. Close the shield door.
   Replace the Right Cover.
9. Reconnect any interface cables.
   Plug in the power cord.
10. Turn on the power.
    Run a CONFIG PRINT test print and check the following information on the printout.

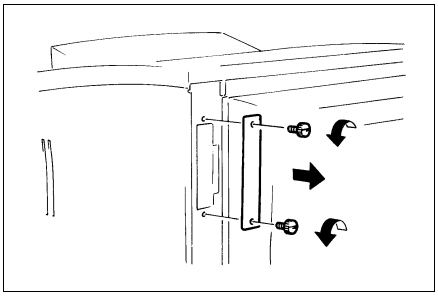
- Printer Information, Memory
  Total Size (MB) = 4 + xx
- Installed Options
  Add SIMM Memory (MB) = xx

4-4. Minolta Network Card

- Network Printing allows a number of PCs to access the printer quite comfortably. It is automatically selected through a parallel interface.

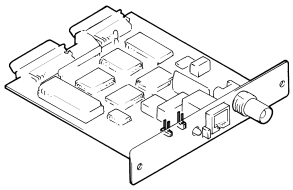


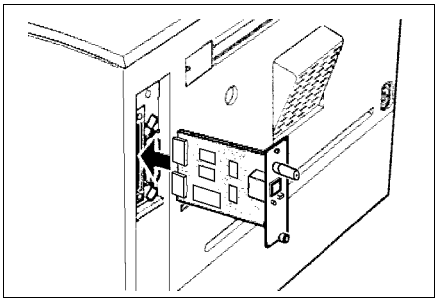
1. Turn off the power.
2. Unplug the power cord from the printer.
3. Remove all interface cables from the printer.



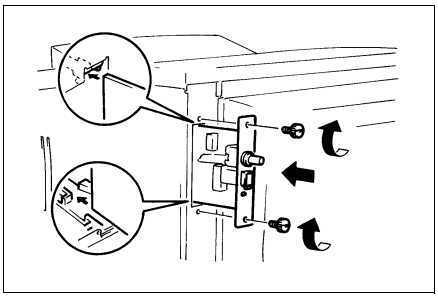
4. Remove the Network Interface cover. (two screws)

Network Card





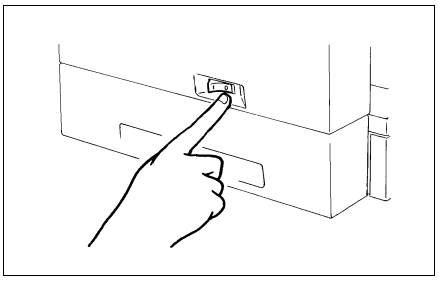
5. Insert the Network Card into the grooves in the interface slot.
 - Make sure that the Card is inserted all the way into the slot.
 - Connect either a twin-axial (RJ-45) or coaxial (BNC) Ethernet cable.



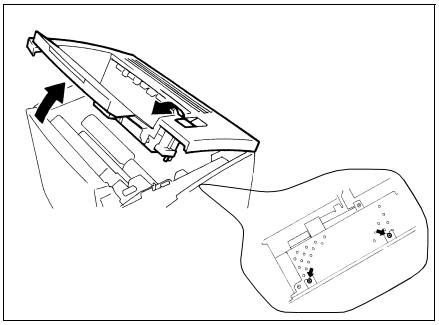
6. Secure the two screws.
7. Reconnect any interface cables.
   Connect the Network cable either the coaxial or twin-axial connector type RJ-45.
   Plug in the power cord.
8. Turn on the power.
   Run a CONFIG PRINT test print or any Network print job.

4-5. PostScript ROM-DIMM

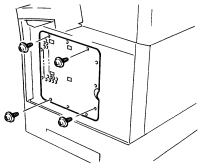
- A PostSclipt interpreter ROM.

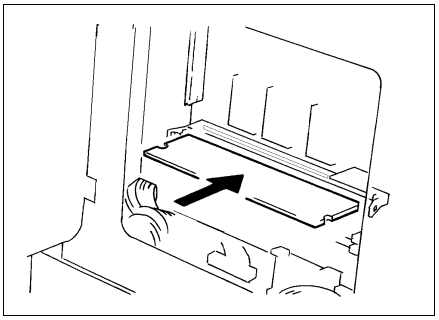


1. Turn off the power.
2. Unplug the power cord from the printer.
3. Remove all interface cables from the printer.

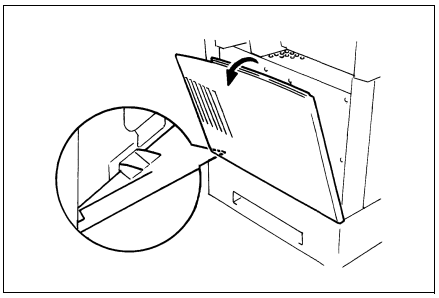


4. Remove the Right Cover. (two screws)
5. Open the shield door. (4 screws)





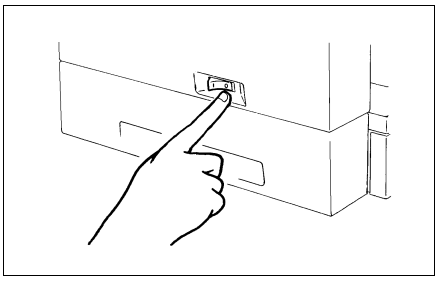
6. Fit the ROM-DIMM into the DIMM slot (CN4).
   - Make sure the DIMM is mounted in the pin numbers, left 1 to right 168.
7. Press the DIMM in firmly until it clicks into place.



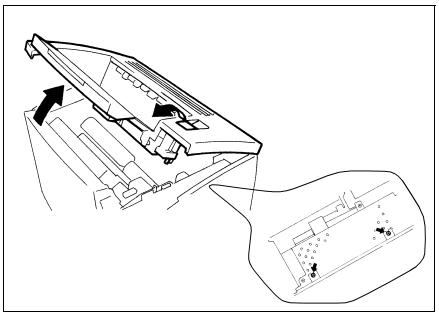
8. Close the shield door.
   Replace the Right cover.
   Reconnect any interface cables.
   Plug in the power cord.
9. Turn on the power.
   Run a PS CONFIG PRINT test print.

4-6. Hard Disk Unit (PS option)

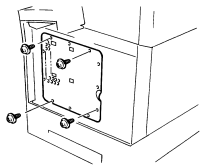
- Supports PostScript operations.

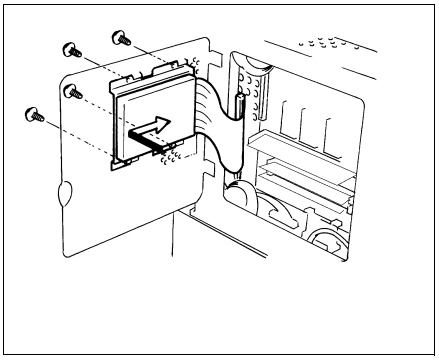


1. Turn off the power.
2. Unplug the power cord from the printer.
3. Remove all interface cables from the printer.



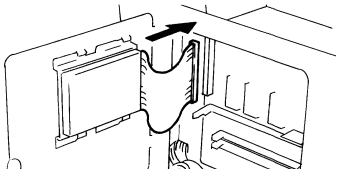
4. Remove the Right Cover. (two screws)
5. Open the shield door. (4 screws)

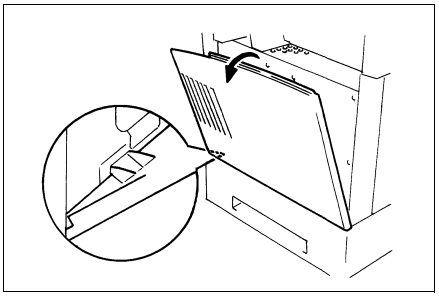




6. Install the HDD. (four screws)

7. Plug the flat cable connector into the HDD and the Controller Board.





8. Close the shield door.
   Replace the Right Cover.
   Reconnect any interface cables.
   Plug in the power cord.

9. Turn on the power.
   Run the HDD DEMO1 test print.

B

B: GENERAL INFORMATION

1. SPECIFICATIONS

Type	: Desktop Laser Beam Printer
Printing system	: Electrostatic dry powdered imaging system + Imaging Cartridge
Exposure system	: Laser Diode + Polygon Mirror scanning
Print resolution	: 600 dpi, smoothing, photo tone mode
Print Image	: Single print within 5 mm of paper edge Duplex print within 7.5 mm of paper edge
Printing time	: Single print 16 sec/ A4 C (C: crosswise) Duplex print 26 sec/ A4 C (option)
Multi printing time	: Multi print 20 sheets/ min/ A4 C Duplex print 12.5 pages/ min/ A4 C (option)
Paper	: Ordinary plain paper (60-90 g/m^2), Recycled paper (60-90 g/m^2) OHP, Transparency, Letterhead, Postcard, Label
Paper size	: A3, A3+, B4, ISO B5, Ledger, Legal, Executive, DL, C5, Com10, Monarch A4, JIS B5, Letter (Crosswise)
Paper feeding system	: 2 way system Tray 1 (multi-purpose) 92 - 330 mm (W) x 140 - 483 mm (L) (150 sheets) 250 Sheet Cassette (A3/Ledger) 210 - 297 mm (W) x 148 - 432 mm (L)
Paper exit system	: Face down (500 sheets maximum/ A4 C/64 g/m^2)
Warm-up time	: Within 70 seconds (when power supplied at 23°C)
System speed	: 93.8 mm/ second
Fusing system	: Heat Roller fusing system
Charging system	: Rotating Charge Brush system
Development	: Fine Micro Toning system
Drum cleaning	: Cleaning Blade system
Separating system	: Paper Separator + curvature separating system
Dimensions	: 545 mm(W) x 383 mm(D) x 403 mm(H) without Paper Cassette 545 mm(W) x 521 mm(D) x 403 mm(H) include 250 Sheet Cassette (A3/Led.)
Weight	: Approximately 25 kg (without Imaging Cartridge 1.9 kg)
Power supply	: AC 120V 50-60Hz, 230-240V 50Hz
Power consumption	: 750 W or less (operation) 200 W or less (standby) 45 W or less (low power)
Acoustic noise	: 53 dB (A) or less (operation) 38 dB (A) or less (standby)
Printer life	: 360,000 prints or 5 years
Imaging Cartridge life	: 10,000 prints or more (when the black-to-white ratio is 5% on multi prints)

Controller

CPU	: NKK NR4645 100MHz
Memory	: ROM 4 MB (Including fonts: 1 bitmap, 35 Intellifont, 10 True Type) RAM 4 MB/ RAM-SIMM 2 slot (maximum 64MB option) ROM-DIMM 1 slot (PS option)
Interface	: IEEE1284 (Compatible, Nibble, ECP) IEEE802.3, Ethernet (IPX/SPX, TCP/IP, NetBIOS, EtherTalk option) EIDE HDD (only use PS option)
Control Panel	: LCD 16 characters x 2 lines, 3 LEDs, 8 keys

Accessories

: Power Cord (only North America)
Imaging Cartridge
500 Sheet Cassette (A4/Letter)
User's Manual
FD x 4 (Win 95 driver, Win 3.1 driver, Status monitor for Win95, Agfa Font Manager and 65 fonts)

Options

: 500 Sheet Third Cassette Unit (A4/Letter)
250 Sheet Third Cassette Unit (A3/Ledger)
500 Sheet Cassette (A4/Letter)
250 Sheet Cassette (A3/Ledger)
Duplex Unit
RAM-SIMM 4, 8, 16, 32 MB/72 pins 60ns or less none parity on market
Minolta Network Card
PostScript (ROM-DIMM)
Hard Disk Unit (2.5" EIDE)

250 Sheet Cassette (A3/Ledger)

Paper	: Ordinary Plain Paper (60-90 g/m^2), Recycled Paper (60-90 g/m^2)
Paper size	: 210 - 297 mm (width) x 148 - 432 mm (length) A3, B4, Ledger, Legal, Executive, A4, JIS B5, ISO B5, Letter
Paper Feeding system	: Paper finger system (250 sheets maximum)

500 Sheet Cassette (A4/Letter)

Paper	: Ordinary Plain Paper (60-90 g/m^2), Recycled Paper (60-90 g/m^2)
Paper size	: A4 or Letter (crosswise)
Paper Feeding system	: Paper finger system (500 sheets maximum)

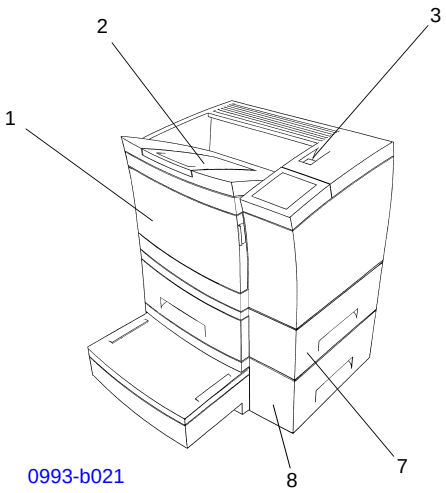
Third Cassette Unit

Paper	: Ordinary Plain Paper (60-90 g/m^2), Recycled Paper (60-90 g/m^2)
Paper Feeding	: 250 Sheet Cassette (A3/Ledger) or 500 Sheet Cassette (A4/Letter)
Power supply	: 5V - 0.1A/ 24V - 0.3A maximum (supplied from printer)
Dimensions	: 545mm (W) x 377mm (D) x 106mm (H)
Weight	: Approx. 5.4 kg (Third Cassette Unit 3.3 kg + 250 Sheet Cassette 2.1 kg)
Third Cassette Unit life	: 150,000 sheets or 5 years

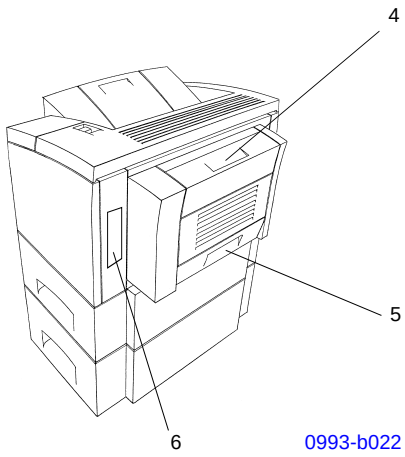
Duplex Unit

Paper	: Ordinary Plain Paper (60-90 g/m^2), Recycled Paper (64-90 g/m^2)
Paper size	: A3, A3+, A4, B4, JIS B5, Ledger, Legal, Letter, Executive
Power supply	: 5V - 0.3A/ 24V - 1.0A maximum (supplied from printer)
Dimensions	: 424mm (W) x 71mm (D) x 244mm (H)
Weight	: Approx. 2.1 kg
Duplex Unit life	: 150,000 sheets or 5 years

2. PARTS IDENTIFICATION



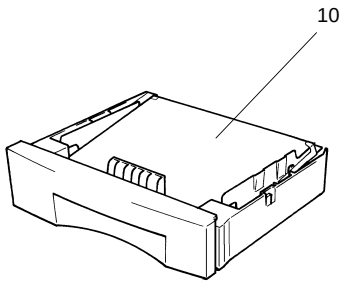
0993-b021



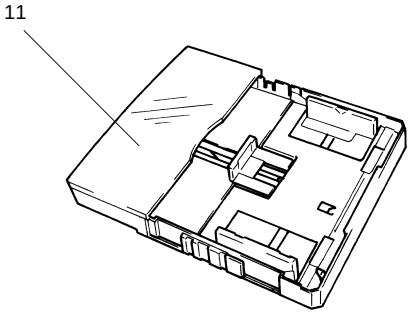
0993-b022

0993-b023

1. Tray 1 (multi-purpose)
2. Paper Exit Tray
3. Upper Unit Lock Release Lever
4. Duplex Unit (option)
5. Duplex Unit Lower Cover
6. Interface Connector
7. Tray 2 (Second Cassette Unit)
8. Tray 3 (Third Cassette Unit option)
9. Imaging Cartridge
10. 500 Sheet Cassette (A4/Letter)
11. 250 Sheet Cassette (A3/ Ledger)(option)



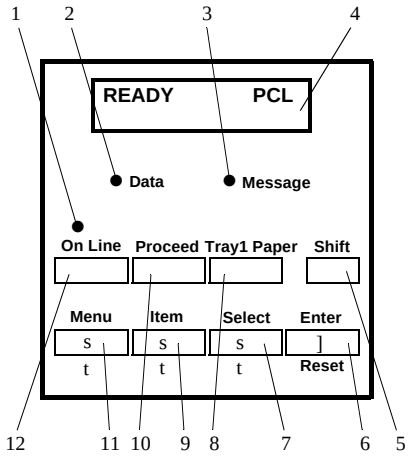
0993-b024



0993-b025

3. CONTROL PANEL

3-1. Control Panel



1. On Line LED
2. Data LED
3. Message LED
4. LCD
5. Shift key
6. Enter/Reset key
7. Select key
8. Tray1 Paper key
9. Item key
10. Proceed key
11. Menu key
12. On Line key

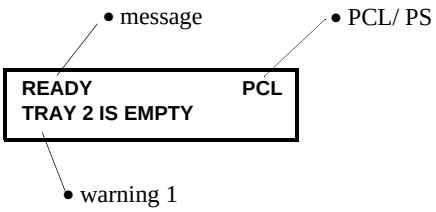
LED's

On Line	: On	: On-line (ready)
	Flashing	: Being off-line
	Off	: Off-line
Data	: On	: Data in memory
	Flashing	: Receiving data
	Off	: No data
Message	: On	: Error or malfunction
	Flashing	: Empty or jam error
	Off	: Waiting

KEY's

On Line	: Changes the on-line/off-line condition. Acts as a stop key.
Proceed	: Commands the printer to continue printing after a Memory Overflow, Job Too Complex, or Paper Size Jam 5 condition is corrected (goes on-line)
Tray1 Paper	: Sets the paper size for the Tray1 (multi-purpose).
Shift	: Item key + Shift key, Select key + Shift key moves back up the respective list. Enter/Reset key + Shift key clears data from the memory.
Menu	: Selects a Menu from the Menu mode.
Item	: Selects an Item from the selected Menu.
Select	: Selects an option from the selected Item. Pressing the key continuously will cause the printer to move quickly through the options.
Enter/Reset	: Sets up the Menu selections. Enter/Reset + Shift cancels a printing job (print data, cache data, I/O buffer) and returns on-line.

3-2. Condition messages

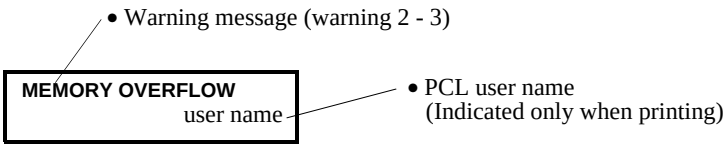


Message:	READY	: A waiting data
	OFFLINE	: Off-line
	PROCESSING	: Processing data
	PRINTING	: Printing data
	IMAGE ADAPT	: Image data adaption: on, compressing data
	BI-CEN OVERFLOW	: Host PC not receiving data from printer
	RESET	: Clearing data in memory
	TRAY1 PAPER	: Setting the Tray1 paper size
	PRINT MENU	: Menu mode
	POWER SAVE	: Power saving mode
	WARMING UP	: Printer warming up
	SELF TEST	: Power-on self-check cycle
Warning 1:	MAINTENANCE REQ	: Printer demands maintenance
	TRAY 2 IS EMPTY	: Tray 2 is paper empty
	TRAY 3 IS EMPTY	: Tray 3 is paper empty
	TONER IS LOW	: Toner is near empty
	TONER EMPTY	: Out of toner
	JOB SEPARATION	: Tray 1 is in page insertion mode

NOTE: TRAY 2 (3) IS EMPTY: Load paper into Tray 2 (or 3).

NOTE: BI-CEN OVERFLOW: This error does not influence printing of the image.

3-3. Warning messages



Warning message:

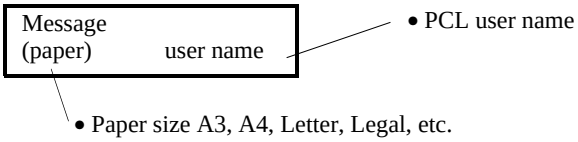
NOTE: The “off” or “time delay” settings for AUTO CONTINUE are in the SYSTEM MENU.

- Off: After a printing error stops the printing cycle, press the Proceed key. The printer returns on-line and printing continues.
- Time Delay: After a set period of time, the printer automatically returns on-line and continues printing data from memory.

Warning 2:	MEMORY OVERFLOW	: Data memory overflow. - The printer needs more memory (optional RAM-SIMM). - Printer begins to print at the press of the Proceed key; Or set up AUTO CONTINUE in the SYSTEM MENU.
	JOB TOO COMPLEX	: Data processing over-run. - Image processing time too longer the printing time of the engine. - This error will not occur if PAGE PROTECTION is ON. - The printer needs more memory (optional RAM-SIMM).
Warning 3:	IMAGE ADAPT	: Before data memory overflow is being compressed for printing. - Results in poor image quality.
	BI-CEN OVERFLOW	: I/O buffer overflow of data sent to host PC. - Image quality will not be affected.

NOTE: The warning message is canceled upon reception of next print data or pressing any key.

3-4. Operator call messages



Message:	MANUAL FEED	: Manually insert a sheet of paper into Tray1.
	LOAD TRAY1	: Load paper into Tray 1.
	LOAD TRAY2	: Load paper into Tray 2.
	LOAD TRAY3	: Load paper into Tray 3.
	LOAD	: Load paper into the any tray.
	LOAD TRAY2 NO TRAY	: Install the cassette into Tray 2.
	LOAD TRAY3 NO TRAY	: Install the cassette into Tray 3.
	OUT OF PAPER ALL TRAYS	: Load paper into the trays.
	COVER OPEN	: Upper unit is open.
	DUPLEX OPEN	: Duplex Cover is open.
	PAPER JAM 1 INPUT	: Misfeed in take-up section.
	PAPER JAM 2 DRUM	: Misfeed in Imaging Cartridge section.
	PAPER JAM 3 OUTPUT	: Misfeed in exit section.
	PAPER JAM 4 DUPLEX	: Misfeed in Duplex.
	PAPER JAM 5 SIZE	: Paper size mismatch.

NOTE: The part of the message display marked “(paper)” in the above example will contain either a paper size or a message.
- Paper sizes: Letter, Legal, Ledger, Exec, C5, DL, Monarc, A4, A3, B4, JIS B5, ISO B5, COM10.
- Messages: Paper Size Error, Paper Empty, Manual Feed.

Paper Feeding:

1. The printer automatically feeds paper when the selected tray is loaded with paper.
2. The paper feeding is stopped if the selected tray is not loaded with paper or when it runs out of paper. The printer resumes the print cycle as soon as paper is added to the tray.
4. Select Tray 1 and Universal for the size. This allows you to use paper of a size different from those specified on the computer screen.
5. In automatic feeding, paper of the sizes specified on the screen are selected in the order of Tray 2, Tray 3, and Tray 1. An empty tray can be loaded with paper during a print cycle. The trays are not automatically selected if SPECIAL PAPER, JOB SEPARATION, or UNIVERSAL is selected.
6. If a misfeed occurs during JOB SEPARATION of Tray 1, printing is not retried.

3-5. Service call messages

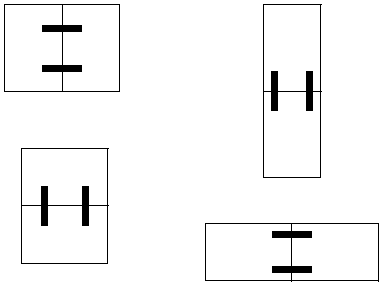
Message (number)

Message:	FATAL ERROR 1 ROM	: System ROM malfunction
	FATAL ERROR 2 PS ROM	: PS ROM-DIMM malfunction
	FATAL ERROR 3 RAM	; System RAM malfunction
	FATAL ERROR 4 SIMM RAM	: RAM-SIMM malfunction, number = slot 0 or 1
	FATAL ERROR 5 EEPROM	: EEPROM malfunction
	FATAL ERROR 6 HARD DISK	: Hard Disk malfunction
	FATAL ERROR 7 NETWORK BOARD	: Network Card malfunction
	FATAL ERROR 8 INTERFACE	: Interface communication error, number = 1: engine, 2: network card
	FATAL ERROR 21 FUSER	: Fusing Unit malfunction
	FATAL ERROR 22 HSYNC	: Laser diode malfunction
	FATAL ERROR 23 POLYGON	: Polygon Motor malfunction
	FATAL ERROR 24 MOTOR	: Main Motor malfunction
	FATAL ERROR 25 FAN	: Fan Motor malfunction

NOTE: Refer to “F: Trouble-shooting”, sections 2-6 through 2-11.

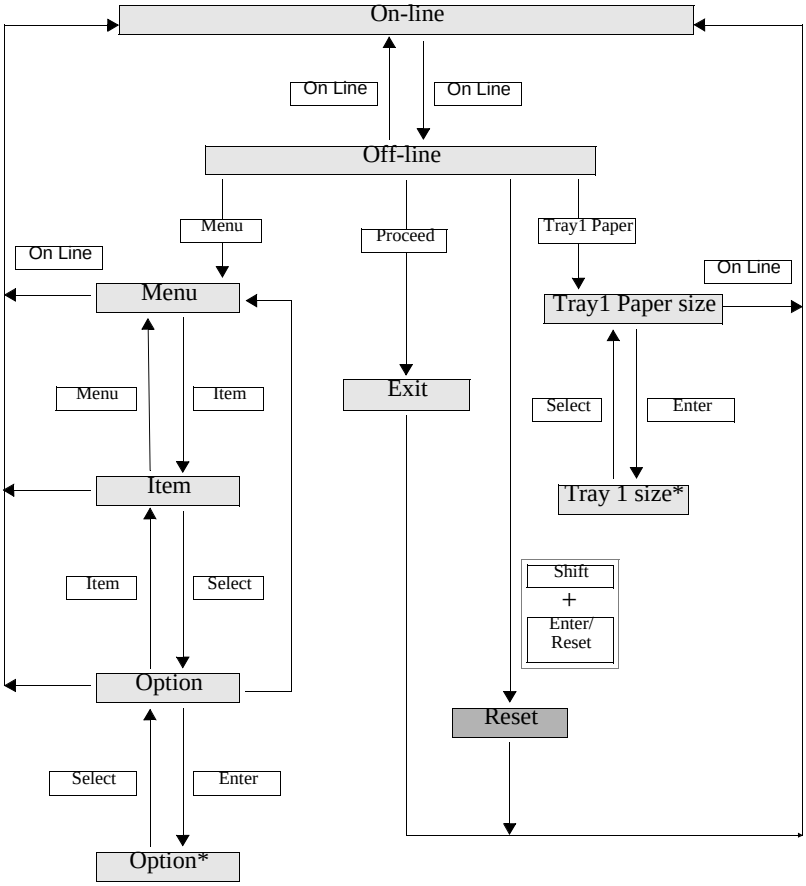
3-6. Duplex printing

1. Portrait long-edge
2. Portrait short-edge
3. Landscape long-edge
4. Landscape short-edge



NOTE: For duplex printing, use paper sizes A4, A3, A3+, B4, JIS B5, Letter, Legal, Ledger, Executive and Universal.
NOTE: The printer needs a minimum of 4MB of memory for Letter or A4 size duplex printing.

3-7. Key Condition Diagram



NOTE:

- Press the On Line key to return on-line from anywhere in the Menu mode.
- The Menu mode cannot be accessed when data is entering or residing in the memory (Data LED on or flashing).
- The printer will automatically return on-line from the error display mode after 30 seconds.

3-8. Menu Tree

*: Default setting []: Option

Tray1 Paper key	Item key	Select key
TRAY 1	TRAY 1	LETTER*, LEGAL, LEDGER, EXEC, C5, DL, MONARC, COM10, A4*, A3, A3+, B4, JIS B5, ISO B5, UNIVERSAL, JOB SEPARATION

Menu key	Item key	Select key
PRINT MENU	COPIES	1 - 999 (1*)
	PAPER SIZE	LETTER*, LEGAL, LEDGER, EXEC, A4*, A3, B4, JIS B5
	ORIENTATION	PORTRAIT*, LANDSCAPE
	PAPER TRAY	TRAY 1, TRAY 2, [TRAY 3], MANUAL FEED, AUTOMATIC*
	[DUPLEX]	OFF*, LONG-EDGE, SHORT-EDGE
	FORMLENGTH	5 - 128 (60*, 64) ;lines
	RESOLUTION	300, 600* ;dpi
	PRINT QUALITY	FINE ART*, TONER SAVE, STANDARD
	TONER DENSITY	EXTRA LIGHT, LIGHT, MEDIUM LIGHT, MEDIUM*, MEDIUM DARK, DARK, EXTRA DARK
	PAGE PROTECTION	OFF*, ON
PCL MENU	FONT NUMBER	0 -50 (o*)
	PITCH	0.44 ~ 99.99 (10.00*)
	POINT SIZE	4.00 ~ 999.75 (12.00*) ;point
	SYMBOL SET	ROMAN-8*, ISO L1, ISO L2, ISO L5, PC-8, PC-8 DN, PC-850, PC-852, PC-8 TK, WIN L1, WIN L2, WIN L5, DESKTOP, PS TEXT, VN INTL, VN US, MS PUBL, MATH-8, PS MATH, VN MATH, PIFONT, LEGAL, ISO 4, ISO 6, ISO 11, ISO 15, ISO 17, ISO 21, ISO 60, ISO 69, WIN 3.0, MC TEXT, SYMBOL, WING
[PS MENU]	JAM RECOVER	ON*, OFF
SYSTEM MENU	LANGUAGE	PCL*, [PS], [AUTO]
	POWER SAVE	0 - 180 (45*)/ 1- 60 (45*) for Europe ;minute
	AUTO CONTINUE	OFF*, 20 SEC, 30 SEC, 60 SEC, 90 SEC, 120 SEC
	SPECIAL PAPER	NONE*, [TRAY 3], TRAY 1
	TRAY1 MEDIA	PLAIN PAPER*, THIN PAPER, TRANSPARENCY, ENVELOPE
	TRAY2 MEDIA	PLAIN PAPER*, THIN PAPER
	[TRAY3 MEDIA]	PLAIN PAPER*, THIN PAPER
PARALLEL MENU	IO BUFFER SIZE	16K, 64K, 256K, 1M, AUTO*
	HIGH SPEED	OFF, ON*
	BI-DIRECTION	OFF, ON*
	TIMING	A-B-A*, A-B, B-A
	[ADOBE PROTOCOL]	STANDARD*, BINARY, TBCP (PS only)
	TIME OUT	5 ~ 300 (15*) ;second
MAINTENANCE MENU	DISPLAY LANGUAGE	ENGLISH*, DEUTSCH, FRANCAIS, ITALIANO, NEDERLANDS, DANSK, ESPAÑOL, CESKY
	FACTORY DEFAULT	<none>
	[SERVICE MESSAGE]	ON, OFF (Display of MAINTENANCE REQ)
[NETWORK MENU]	IP ADDRESS	198.102.102.254 ; user entry.
	SUBNET MASK	255.255.255.0
	GATEWAY	0.0.0.0
	NETWARE FRAME	AUTO(*), ETHERNET-2, IEEE-802.3, IEEE-802.2, SNAP+IEEE-802.3
TEST PRINT	CONFIG PRINT	<none>
	PCL FONT LIST	<none>
	PCL DEMO PRINT	<none>
	[PS CONFIG PRINT]	<none>
	[PS FONT LIST]	<none>
	[NETWORK CONFIG PRINT]	<none>
	[HDD DEMO1]	<none>
	[HDD DEMO2]	<none>
	[HDD DEMO3]	<none>

3-9. Additional Notes

TRAY1 key

When use new type paper, secure the paper size and Tray1 Media under System Menu.

- At the message “TRAY1 IS EMPTY”, load paper into Tray 1 and printing automatically continues.
- When UNIVERSAL is selected, the printer ignores the host PC's paper setting and any paper size can be used in Tray 1.
- When UNIVERSAL is selected and PAPER TRAY is set to AUTOMATIC, Tray 1 is not automatically selected for paper feeding.
- When JOB SEPARATION is selected, Tray1 is page insertion mode. Different paper sizes can be used in Tray 1 and automatic feeding stops when the tray is emptied.
- When JOB SEPARATION is selected, Printer not automatic paper feeding when the after message “TRAY1 PAPER EMPTY”.
- When JOB SEPARATION is selected, the printer ignore “Tray1” of the host PC’s paper tray, paper feeding from Tray in PAPER TRAY and size in PAPER SIZE or the paper feeding from just before use tray and paper size.

PRINT MENU items

PAPER SIZE

- Operation of DOS file copy to printer (print data does not specify the paper size): The printer paper feeding from tray in PAPER TRAY and size in PAPER SIZE or the paper feeding from just before use the paper tray and paper size.
- The default paper size is set through dip switch DS-2 (Letter or A4).

ORIENTATION

- When PORTRAIT or LANDSCAPE is selected, the direction of the image on the paper.

PAPER TRAY

- When Tray 1 is set to JOB SEPARATION, under PAPER TRAY, Tray 1 will not be listed and Tray 2 will be shown in its place.
- If MANUAL FEED is selected, when the data down-loaded from host PC the printer will display the message “Manual Feed” and go off-line. Manually insert the paper into Tray 1 and press the On Line key to start printing.
- When AUTOMATIC is selected, the printer searches in the order of Tray 2, Tray 3, and Tray 1. When the right paper size is found, it proceeds with feeding.
- When AUTOMATIC is not selected, if the printer cannot find the right paper size or tray, the printer stops. Load the right paper size and the printer continues automatically.

RESOLUTION

- Select “300”: Image 300 dpi. ;1 data point to 2 dots.

PRINT QUALITY

- If RESOLUTION is set to 300 dpi, choosing FINE ART will have very little effect on the image quality.
- When TONER SAVE is selected, alternate data bits are cut out to conserve toner consumption.

TONER DENSITY

- The settings of LIGHT, MEDIUM*, DARK, etc., are very precise.

PAGE PROTECTION

- When ON is selected, if the data is complex and hard to process, printing will proceed at a slower rate.

NOTE: The settings of the Print Menu of the host PC supersede the settings of the PRINT MENU of the printer control panel.

PCL MENU items

FONT NUMBER

- The default font is number 0 (Courier) of the resident PCL fonts number 0 - 50.

PITCH

- The character spacing for Courier, Letter Gothic and Line Printer. Each press of the Select key changes the value in +0.01 increments. Hold the Select key down and the value changes in +1.00 increments.

POINT SIZE

- The character size of proportional fonts (1 point = 1/72 inch). Each press of the Select key changes the value in +0.25 increments. Hold the Select key down and the value changes in +1.00 increments.

SYMBOL SET

- Select the desired character or symbol set.

[PS MENU] items

JAM RECOVER

- Set to ON, printing is recovered after a misfeed, but printing is at a slower rate.
- Set to OFF, printing is not recovered after a misfeed but printing is at a faster rate.

SYSTEM MENU items

LANGUAGE

- When AUTO is selected, the printer automatically switches between PCL and PS languages.

POWER SAVE

- Select “0” to disable POWER SAVE. Dip switch DS-3 is ON for European CE mark.
- The printer exits POWER SAVE mode when data is received, any key is pressed, a cassette is pulled out / pushed in, or a cover is opened / closed.

AUTO CONTINUE

- If selected, the printer will automatically continue printing after a set period of time when a “Memory Overflow” or “Job Too Complex” warning occurs.
- When a time delay is set, the printer will automatically return on-line after that time has elapsed.
- When OFF* is selected, the printer stops if one of the above warnings occur.

PAPER

- When Tray 1 or Tray 3 is selected for SPECIAL PAPER, that tray is not automatically selected during printing.
- When Tray 1 is set for JOB SEPARATION or UNIVERSAL, it is not automatically selected during printing.

TRAY1 MEDIA, TRAY2 MEDIA, [TRAY3 MEDIA]

- Select THIN PAPER for paper weight 60-74 g/m^2.

NOTE: After a THIN PAPER print job, the printer automatically resets the tray to PLAIN PAPER*.

PARALLEL MENU items

IO BUFFER SIZE

- Select AUTO* for automatic adjustment of buffer size.

HIGH SPEED

- OFF: Data transfer speed of approx. 111 kB/s ;Centronics compatible mode.
- ON*: When printer data receiving error, this select is OFF.

BI-DIRECTION

- Select ON* for two-way communication between the printer and host PC.
- OFF: Centronics compatible mode.

TIMING

- Select timing A - B - A*: Ack while Busy ;IEEE1284 Mode
- Select timing A - B: Ack in Busy ;IEEE1284 Mode
- Select timing B - A: Ack after Busy ;Centronics compatible Mode

[ADOBE PROTOCOL] (PS option)

- Standard*: Standard Protocol, ASCII character based.
- Binary: Binary communication protocol.
- TBCP: Tagged binary communication protocol.

TIME-OUT

- The period of time between processing blocks of data in a DOS operation.

- For PCL data, a block of data will be printed out during the following time-out. For PS data, no printing occurs during a time-out.

NOTE: For further information on TIME-OUT, see the text file DOS>copy README.TXT >lpt1.

MAINTENANCE MENU items

DISPLAY LANGUAGE

- Select the language of the control panel.

FACTORY DEFAULT

- Returns the printer control panel to the factory-set defaults.
- Does not clear the items of the PARALLEL MENU, NETWORK MENU, SERVICE MENU, and the "Maintenance Required" message setting of the MAINTENANCE MENU.

SERVICE MESSAGE

- When set to ON, the warning message "MAINTENANCE REQ" will appear on the display when needed.
- Set to OFF and press the Enter/Reset key to clear the warning message setting.

[NETWORK MENU] items

- Input the various network settings and press the On Line key to enter them.
- Be sure to get the correct address, subnet mask, gateway and ethernet frame type from the system manager.

NETWARE FRAME

- When set to AUTO, Network Card is automatically selected frame type Ethernet 2, IEEE 802.3, IEEE 802.2 and SNAP+IEEE 802.2.

TEST PRINT items

- Refer to examples in A: Product Installation 3. Test Print items.

Warning Messages

LED o: On-line, d: Data, m: Message. Key O: On Line, T: Tray1, M: Menu, P: Proceed, R: Reset.

Pr.	Message	Condition & Action	o	d	m	O	T	M	P	R
	MEMORY OVERFLOW (user name)	Print data memory overflow. (user name): PCL user name.	-	*	*	x	x	x	O	O
	JOB TOO COMPLEX (user name)	Image processing time too longer the printing time of the engine. (user name): PCL user name.	-	*	*	x	x	x	O	O

LED condition "-": off, "?": undetermined, "*": flashing. Key operation "x": invalid, "O": valid.

Operator Call Messages

LED o: On-line, d: Data, m: Message. Key O: On Line, T: Tray1, M: Menu, P: Proceed, R: Reset.

Pr.	Message	Condition & Action	o	d	m	O	T	M	P	R
10	MANUAL FEED (paper) (user name)	Manually insert paper in Tray1, press On Line key. (paper): Paper size from host PC. (user name): PCL user name.	-	*	*	O	x	x	x	O

Pr.	Message	Condition & Action	o	d	m	O	T	M	P	R
10	LOAD (tray) (paper) (user name) printing	Paper empty. (tray): Load paper on the tray, printing begins. (paper): Paper size from host PC. (user name): PCL user name.	-	*	*	x	O	x	O	O
10	LOAD (tray) (paper) waiting	Make sure the paper tray and paper size are correct in PRINT MENU. (tray): Load paper on the tray. (paper): Paper size from host PC.	-	-	*	x	O	O	x	x
10	LOAD (paper) (user name)	Paper size error when PAPER TRAY = AUTOMATIC. (paper): Paper size from host PC. (user name): PCL user name.	-	*	*	x	O	x	O	O
10	LOAD TRAY2 NO TRAY	Install Tray 2	-	?	*	x	O	O	x	x
10	LOAD TRAY3 NO TRAY	Install Tray 3	-	?	*	x	O	O	x	x
9	OUT OF PAPER ALL TRAYS	No paper in all trays. Set-up any paper tray.	-	?	*	x	O	O	x	x
1	COVER OPEN	Upper cover opened.	-	?	*	x	x	x	x	x
2	DUPLEX OPEN	Duplex cover opened.	-	?	*	x	x	x	x	x
4	PAPER JAM 1 INPUT (user name)	Misfeed at take-up. Correct and close cover. (user name): PCL user name.	-	?	*	x	x	x	x	O
5	PAPER JAM 2 DRUM (user name)	Misfeed at drum. Correct and close cover. (user name): PCL user name.	-	?	*	x	x	x	x	O
6	PAPER JAM 3 OUTPUT (user name)	Misfeed at exit. Correct and close cover. (user name): PCL user name.	-	?	*	x	x	x	x	O
7	PAPER JAM 4 DUPLEX (user name)	Misfeed in duplex. Correct and close cover. (user name): PCL user name.	-	?	*	x	x	x	x	O
8	PAPER JAM 5 SIZE (user name)	Paper size mismatch or double feed paper and no paper in the machine. Make sure the correct paper is in the Tray. This error cannot be detected if the Proceed key is pressed or AUTO CONTINUE is turned on. (user name): PCL user name.	-	?	*	x	x	x	x	O

Pr.	Message	Condition & Action	o	d	m	O	T	M	P	R
3	TONER EMPTY	Imaging Cartridge is no toner. Install the new Imaging Cartridge, power on.	-	?	*	x	O	x	x	x

LED condition "-": off, "?": indeterminacy, "*": flashing. Key operation. "x": invalidity, "O": valid.

NOTE: To cancel a job when a misfeed occurs, press the Shift + Enter/Reset keys.

Service mode

- Refer to E: Adjustment 2. Service Menu.

Media type

- Plain paper: 75 - 157 g/m^2
- Thin paper: 60 - 74 g/m^2
- Manual feed: Select the media (plain paper, thin paper, transparency, envelope) for Tray1.

NOTE: The printer can automatically change the media setting of a tray before printing each page, but cannot change the fusing temperature also. (The fusing temperature is usually adjusted for each media type.)

[Duplex print]

- Do not duplex print on envelope (ISO B5, Com10, C5, DL, Monarc).
- When the printer receives a duplexing print job, but does not have a duplex unit, each side of the page is printed out sequentially on separate sheets of paper.
- When "Memory Overflow" is indicated, install an optional RAM-SIMM.
- When the messages "Memory Overflow", "Job Too Complex" or "Paper Empty" occur, press the Enter/Reset key (the message "Paper Jam4, Duplex" will appear), remove the paper from the duplex, and close the cover. The printer should indicate "Ready". Press the Proceed key to continue the print job. The print out may contain missing or garbled data.
- The printing sequence for each page of a duplex print job is 2, 4, 1, 6, 3, 8, 5, 10 . . . For 3 sheets: page 2, 2, 1, 2, 1, 4, 1, 4, 3 . . .
- The 1st page printing on the under face.

Page Insertion Mode (Job Separation)

- The print of a misfeed page cannot be recovered.
- When Tray 1 is empty, the message "Load Tray 1 Paper" appears. Load paper onto Tray 1.
- The Counters count up one for each page printed in JOB SEPARATION paper.
- When Tray 1 is set to JOB SEPARATION, Tray1 selected in PAPER TRAY automatic change the Tray2.
- With AUTOMATIC in PAPER TRAY selected, Tray 1 it is not automatically selected during printing.
- When MANUAL FEED under PAPER TRAY is selected for Tray 1, Tray 1 automatically returns to the JOB SEPARATION setting after the manual feed job is finished.

NOTE: When PAPER TRAY is set to UNIVERSAL, the printer not detected the paper size for Tray 1.

Paper Size error

- When the messages "Load (tray) (paper)" or "Load (paper)" appear, load the correct size paper into the indicated tray.
- Press the Proceed key and paper is fed from the same tray as before the error.
- The paper size cannot be detected when the Proceed key is pressed.

NOTE: When the host PC selects Tray 3, but Tray 3 is not installed, the tray set under PAPER TRAY is used. During a print job, the previously used tray is selected.

Paper empty error

When the message “Load (tray) (paper)” appears, the printer stops and goes off-line.

- Press the Proceed key and paper is fed from the same tray as before.
- Press the Shift + Enter/Reset keys to reset the printer and go on-line.
- When the indicated paper size is loaded onto the indicated tray, the printer continues printing.
- When the paper empty condition occurs in a tray not set under PAPER TRAY, the message “Tray 2 (or 3) Is Empty” appears. If the cassette is missing, the printer displays “Load (tray) No Tray”.

Manual Feed

The printer displays the message “Manual Feed (paper)” and goes off-line when the data is received.

- Manually insert a sheet of the indicated paper into Tray 1, press the On Line key, and printing begins.
- When paper runs out (paper empty), press the On Line key to restart printing.
- Paper Jam: Start of print is after the Jam has been cleared, close the Upper Unit or the Duplex Cover.
- There is no paper size detection after a “Paper Jam 5, Size” is reset.
- Does not page insertion at the after manual feed print.

NOTE: Press the Shift + Enter/Reset keys to reset the printer and go on-line.

Engine error

- When the “Paper Jam 5, Size” error occurs, check the paper size and open and close the Upper Unit.
- Printing is always recovered after a misfeed for PCL data.
- Printing is only recovered after a misfeed if JAM RECOVER is set to ON for PS data.

Interface error

- When the message “Bi-Cen Overflow” (I/O buffer overflow) appears, printing continues. The printer goes to “Ready” at the press of any key or the reception of the next job data.
- When data comes in from both the parallel and network ports, the printer automatically selects the port at which data is detected first.
- While printing from one port, data is received from the other port and stored in the I/O buffer until the buffer is filled.
- Centronics I/F error: Set-up High Speed = “OFF”, Bi-Direction = “OFF”, Timing = “B-A”.

Memory error

- The “Image Adapt” problem and its data compression occur before a “Memory Overflow” problem. The data compression (1/8) is irreversible and results in poor image quality.
- Printing continues when a “Memory Overflow” problem occurs. After the printing job, press any key to go to “Ready”. To receive new data, press the Proceed key or set up AUTO CONTINUE under SYSTEM MENU. Resolution 600 dpi to 300 dpi in PRINT MENU.
- “Job Too Complex” means a data processing over-time has occurred. Image processing time is too long for the printing time of the engine. Set PAGE PROTECTION = ON in the PRINT MENU and retry the printing job.
- The printer needs more memory (optional RAM-SIMM).

Memory

- Page protection OFF*: band memory is 384kB (128kB x 3), other memory is data + work area, cache.
- Page protection ON: page buffer 1 page, no band memory.

- Main memory

Memory	4MB	8MB	12MB	16MB	32MB
Data + Work					
I/O buffer	16kB	64kB	256kB	256kB	256kB

NOTE: Network I/O buffer: 16kB, Cache memory is cleared at the end of the job.

- Option and memory

Paper size	A4/ Letter	A3/ Ledger	A3+		
Duplex PCL	4 MB	8 MB	8 MB		
Duplex PS	12 MB	24 MB	28 MB		
Single PCL	4 MB	4 MB	4 MB		
Single PS	8 MB	12 MB	16 MB		

Language

- PCL5e/ monochrome Printer Control Language/ de facto standard by Hewlett Packerd Inc.
- PostScript Level 2/ de facto standard by copyright Adobe Systems Incorporated.

Performance of PageWorks/Pro 20

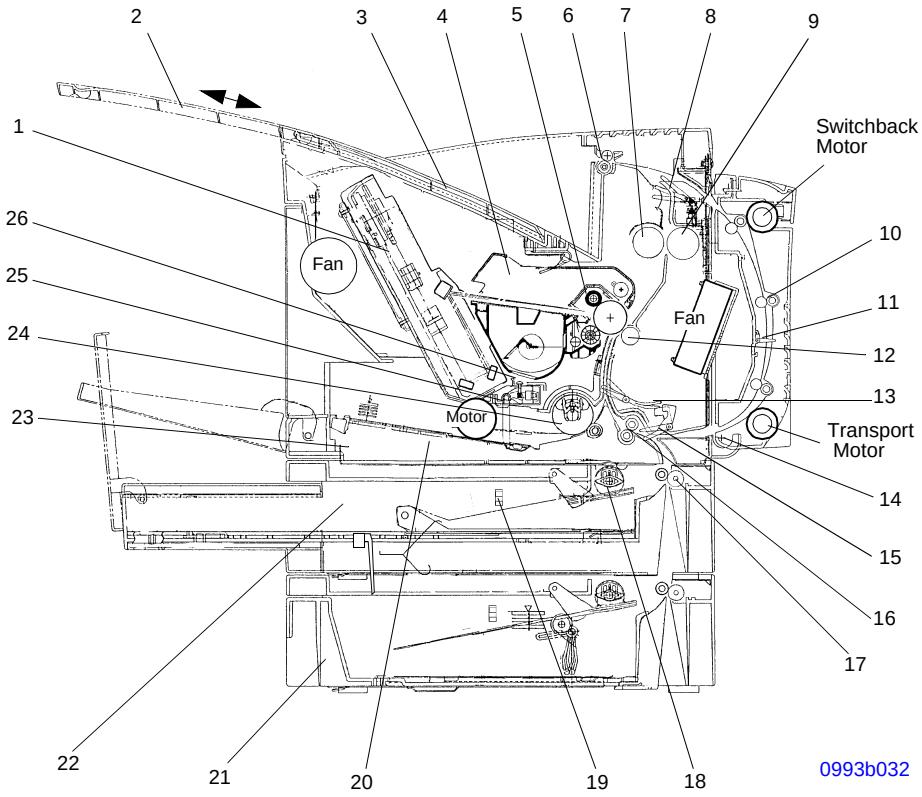
- Print speed	DOS mode	copy command	Genoa	1 page	1 sheet
maximum					
average					

- Driver speed

max.	equal
average	like
2-up/4-up	above
watermark	adjust

- Memory efficiency: J4v same view/ 1 page 1 sheet
- Image quality: LJ4v same rank ; J4v, LJ4v/ Hewlett Packerd Inc.

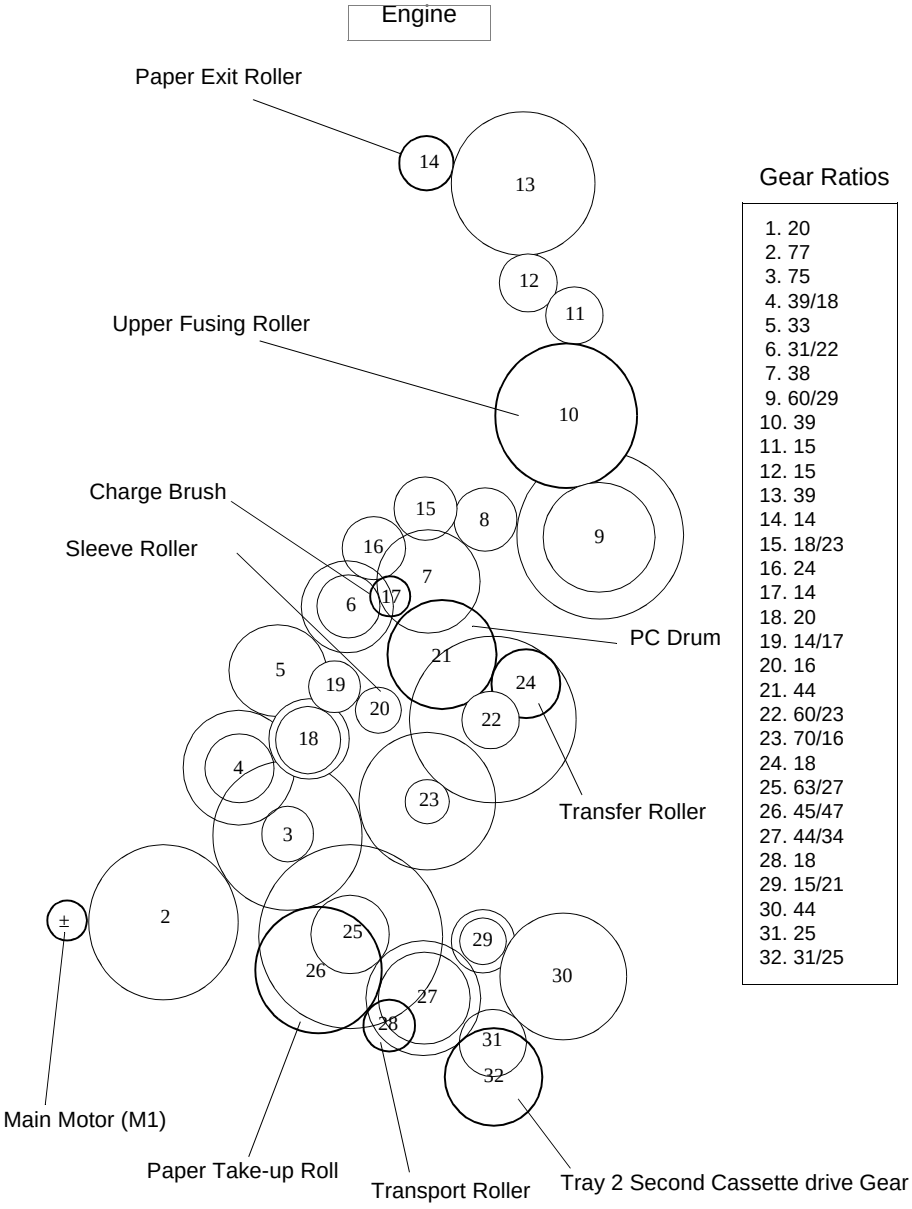
4. COMPONENT LAYOUT



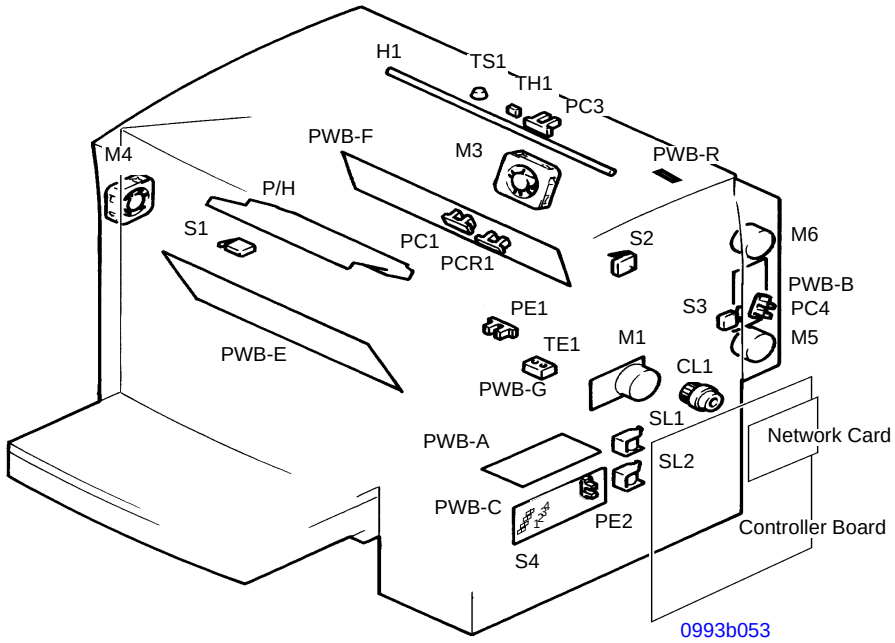
1. Print Head Unit
2. A3 Exit Tray (Extender)
3. Paper Exit Tray
4. Imaging Cartridge
5. Charge Brush
6. Paper Exit Roller
7. Upper Fusing Roller
8. Paper Exit Sensor (PC3)
9. Lower Fusing Roller
10. Duplex Transport Roller (Option)
11. Duplex Paper Sensor (PC4)
12. Image Transfer Roller
13. Paper Take-up Sensor (PC1)
14. Duplex Cover Switch (Option)
15. Registration Sensor (PCR1)
16. Registration Roller
17. 2nd Transport Roller
18. 2nd Paper Take-up Roller
19. 2nd Paper Empty Sensor (PE2)
20. Paper Lifting Plate
21. Tray 3 (Third Cassette Unit option)
22. Tray 2 (Second Cassette Unit)
23. Tray 1 (multi-purpose)
24. Paper Take-up Roll
25. Paper Empty Sensor (PE1)
26. Toner Empty Sensor (TE1)

5. GEARS/ ROLLERS ASSIGNMENT

The Main Motor (M1) transmits the drive to the rollers of the printer and the optional Third Cassette Unit via each gear. The duplex unit Transport Motor (M5) transmits the drive to the rollers of the Duplex Unit. (Refer to C: MECHANICAL/ ELECTRICAL item 2-2. Tray 2, 9-2. Duplex Unit.)



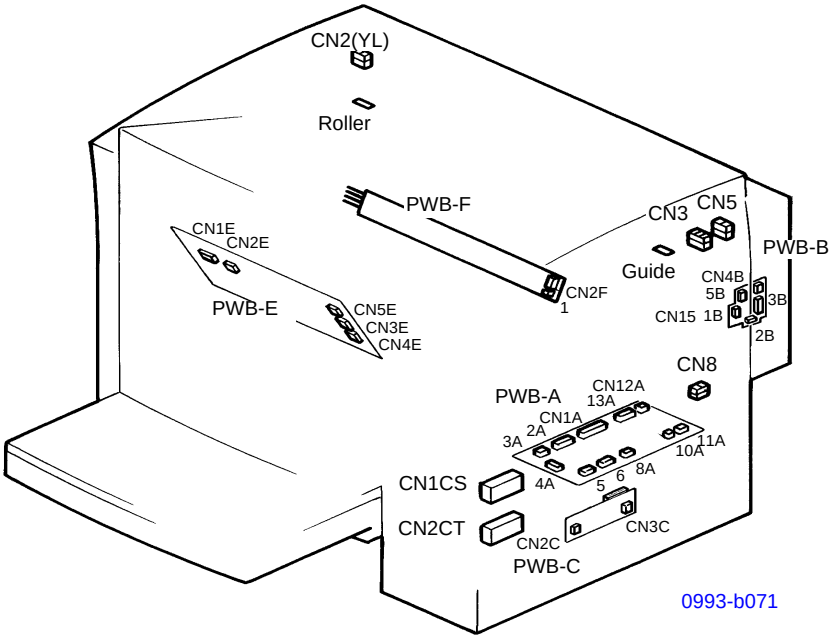
6. ELECTRICAL COMPONENT LAYOUT



PWB-A : Main Control Board
PWB-C : Tray 2 Control Board
PWB-E : Power Unit
PWB-F : High Voltage Unit
PWB-G : Toner Empty Board
PWB-R : Resistor Board
M1 : Main Motor
M3 : Fusing Fan Motor
M4 : Power Fan Motor
SL1 : Paper Take-up Solenoid
SL2 : 2nd Paper Take-up Solenoid
CL1 : Registration Clutch
S1 : Power Switch
S2 : Interlock Switch
S4 : 2nd Paper Size Switch
PC1 : Paper Take-up Sensor
PC3 : Paper Exit Sensor
PCR1 : Registration Sensor
PE1 : Paper Empty Sensor
PE2 : 2nd Paper Empty Sensor
H1 : Heater Lamp
TE1 : Toner Empty Sensor
TH1 : Thermistor
TS1 : Thermostat
Network Card: (option)

Duplex Unit (option)
PWB-B : Duplex Control Board
M5 : Transport Motor
M6 : Switchback Motor
S3 : Duplex Cover Switch
PC4 : Duplex Paper Sensor

7. CONNECTORS LAYOUT



PWB-A : Main Control Board
PWB-C : Tray 2 Control Board
PWB-E : Power Unit
PWB-F : High Voltage Unit
CN5A : Main Motor
CN2F : Fusing Fan Motor
CN5E : Power Fan Motor
CN2B(PH): Transport Motor
CN1B(PH): Switchback Motor
CN12A : Paper Take-up Solenoid
CN3C : 2nd Paper Take-up Solenoid
CN8 : Registration Clutch
CN1E : Power Switch
CN3E : Interlock Switch
CN8A : 2nd Paper Size Switch

CN10A : Paper Take-up Sensor
CN3 : Paper Exit Sensor
CN10A : Registration Sensor
CN6A : Paper Empty Sensor
CN8A : 2nd Paper Empty Sensor
CN2(YL) : Heater Lamp
CN6A : Toner Empty Sensor
CN5 : Thermistor
CN2(YL) : Thermostat

Duplex Unit (Option)

PWB-B : Duplex Control Board
CN4B : Duplex Cover Switch
CN11A : Duplex Paper Sensor

8. SWITCHES/ SENSORS IDENTIFICATION

- Printer, Duplex Unit.

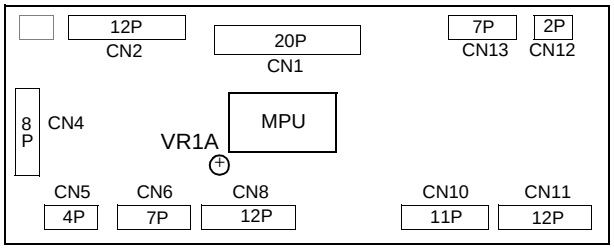
Symbol	Name	Function
S1	Power Switch	Turns power on and off.
S2	Interlock Switch	Detects the opening of Upper Unit and stops printer operation.
S3	Duplex Cover Switch (Option)	Detects the opening of Duplex Cover and stops printer operation.
S4	Tray 2 Paper Size Switch	Detects the paper size of Tray 2.
PC1	Paper Take-up Sensor	Detects the timing of paper feeding. Active: “L”
PC3	Paper Exit Sensor	Detects the paper exiting Fusing Unit. Active: “H”
PC4	Duplex Paper Sensor (Option)	Detects paper in Duplex Unit. Active: “L”
PCR1	Registration Sensor	Detects the timing of paper feeding from Tray 2 or Duplex Unit. Active: “L”
PE1	Paper Empty Sensor	Detects paper empty condition. Active: “H”
PE2	Tray 2 Paper Empty Sensor	Detects paper empty condition of Tray 2. Active: “H”
TE1	Toner Empty Sensor	Detects toner empty condition. Active: “L”
TH1	Thermistor	Detects the temperature of Upper Fusing Roller.
TS1	Thermostat	Cuts off the current to Heater Lamp when temperature is exceeded.

9. ELECTRICAL SERVICE PARTS ON P.W. BOARDS

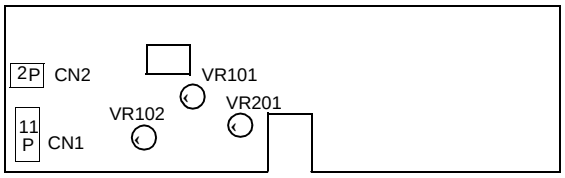
P.W.Boards	Symbol	Function
PWB-A	VR1A	Adjusts the Image Registration margin. (Refer to E: Adjustment)
PWB-F	VR102-VR201	Factory setting
PWB-E	F1	Fuse (100V) 125V - 5A°°(230V) 250V - 3.15A
	F2	125V - 12A°° 250V - 6.3A
	RV1 - RV2	Factory setting

Do not touch

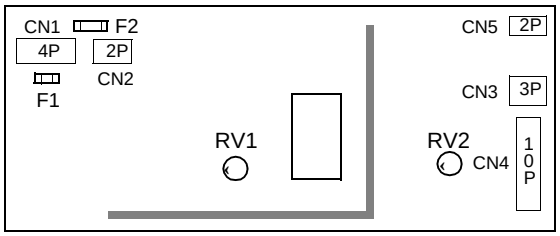
PWB-A



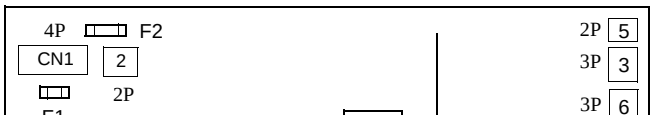
PWB-F



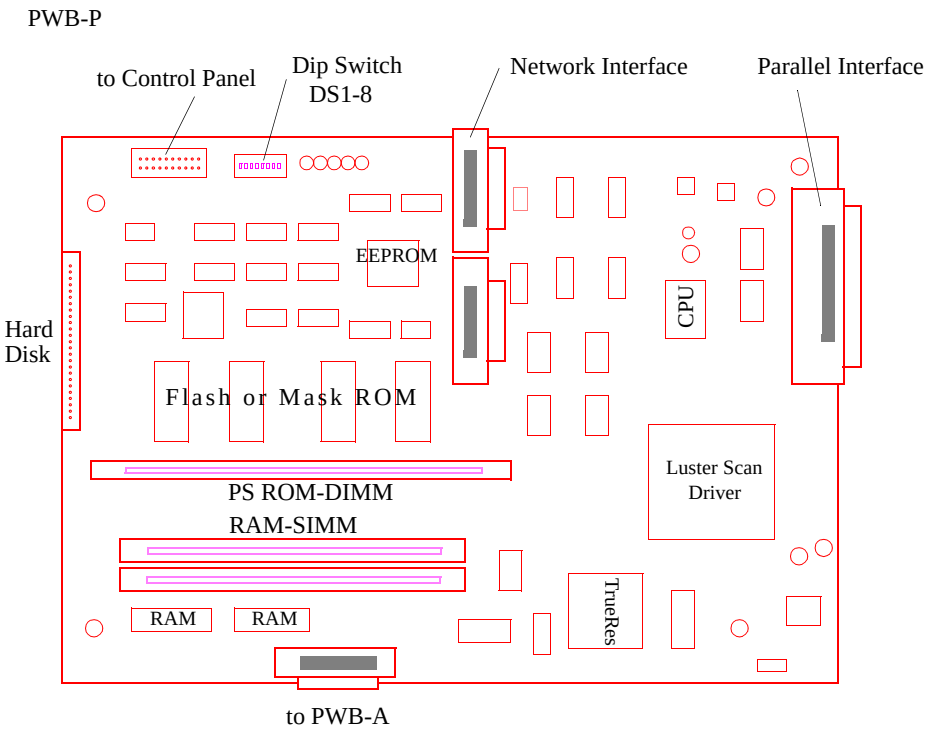
PWB-E



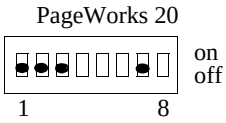
PWB-E

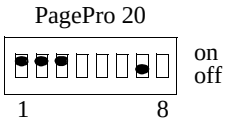


Controller Board



Dip Switch





DS-1: Printer name (Off: PageWorks 20 / On: PagePro 20); TEST PRINT title name.
Parallel port Plug & Play printer name.
PostScript Option product name, printer name.

DS-2: Paper size default (Off: LETTER / On: A4); Tray1 Paper default.
PRINT MENU - PAPER SIZE default.
PRINT MENU - FORM LENGTH (Off: 60 / On: 64).
Printer MIB (Off: inch / On: metric).

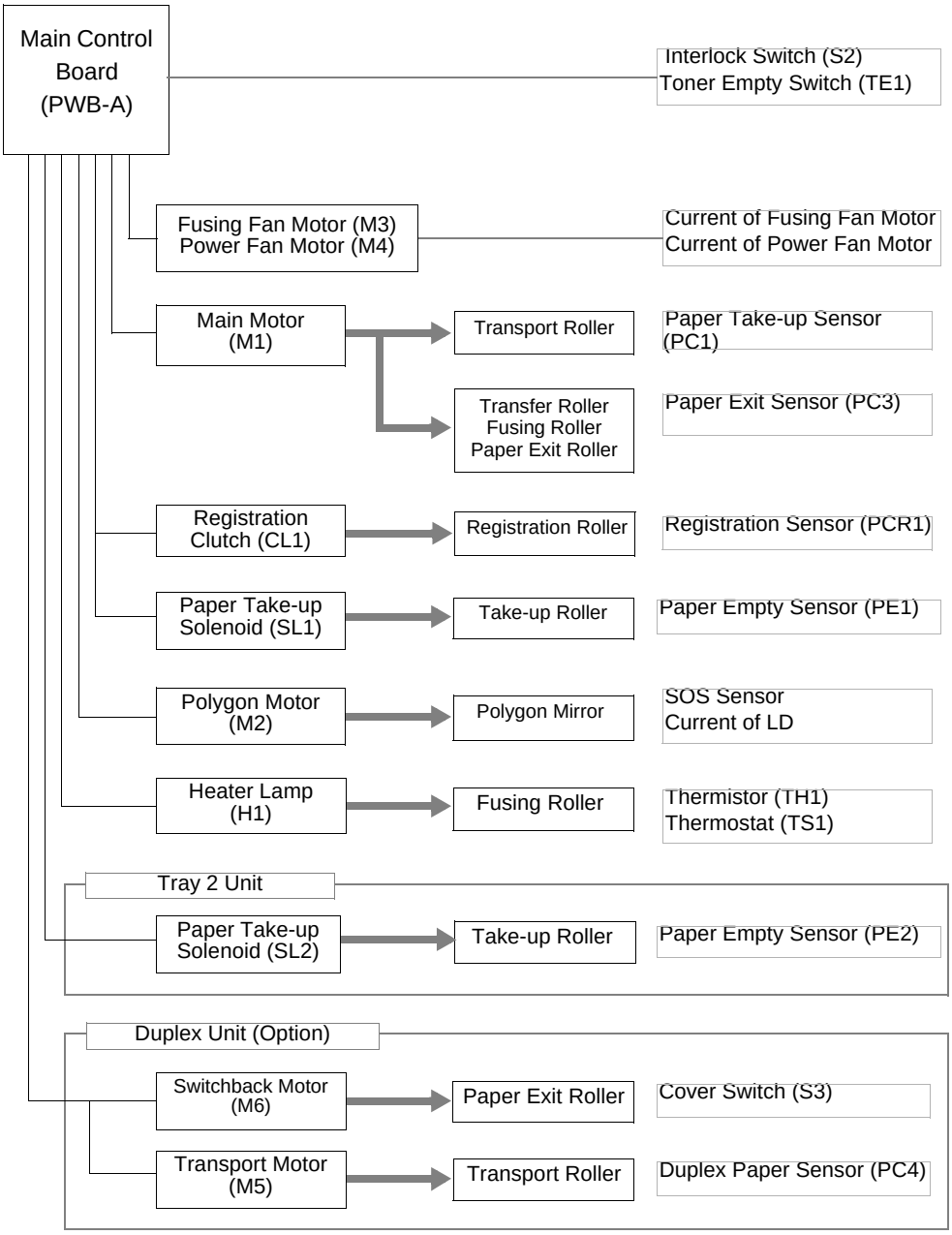
DS-3: Wait for power save (Off: PageWorks 20 / On: PagePro 20); Time selection.
Off: 0 - 180 minutes (default is 45; 0 is no power save).
On: 1 - 60 minutes (default is 45; for CE/Europe, power save cannot be turned off).

DS-7: EEPROM default (Off: User setting / On: Factory standard).
On: The factory defaults are copied at power-on when EEPROM's ID is unlike the ROM's ID. Off: Normal use.

10. SYSTEM LAYOUT

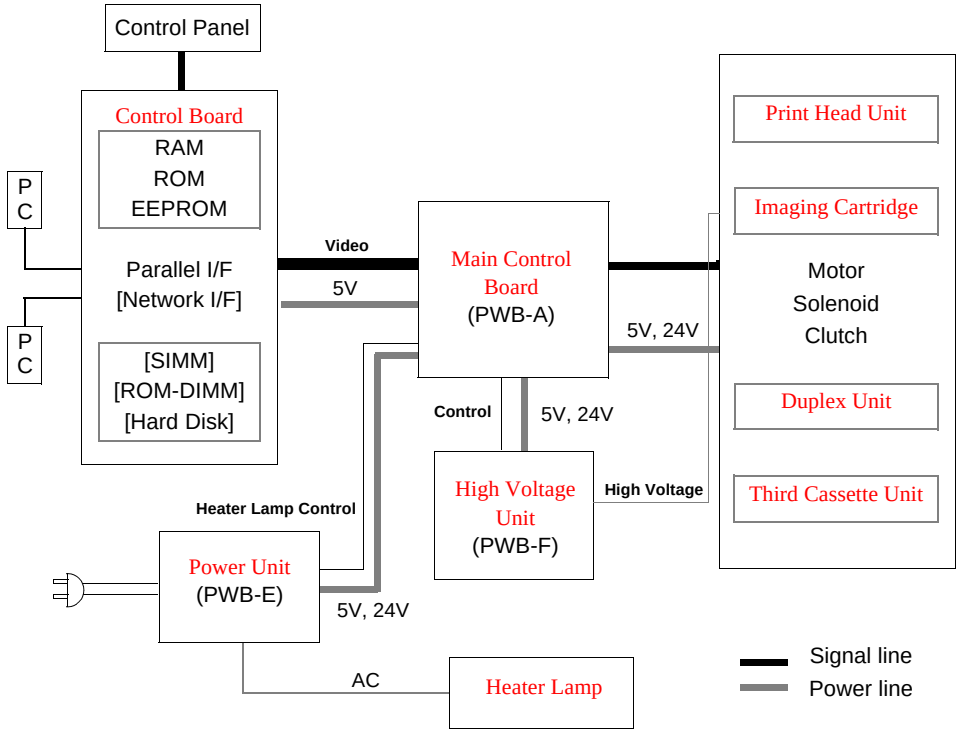
10-1. Drive Section

Mechanical Control and Sensor Layout



10-2. Electrical Section

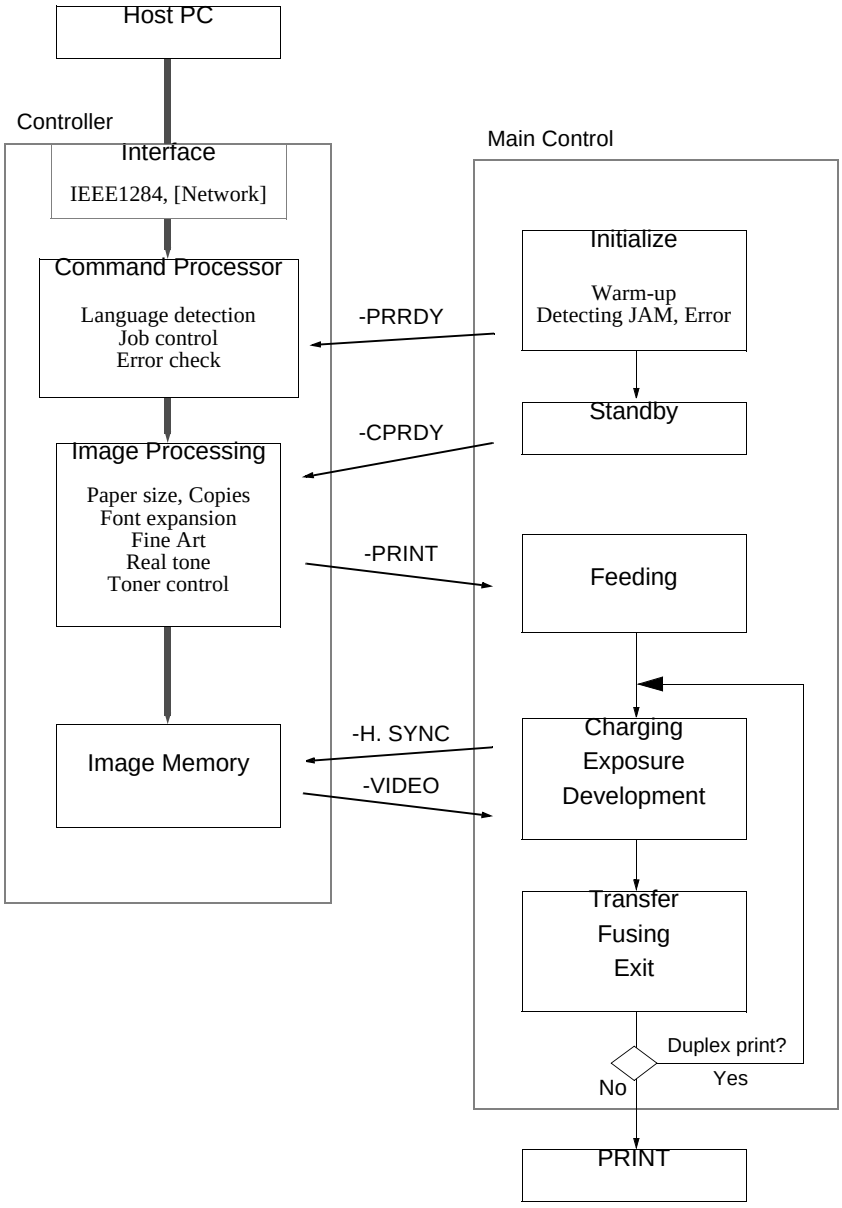
Power Supply and Signal Transmission



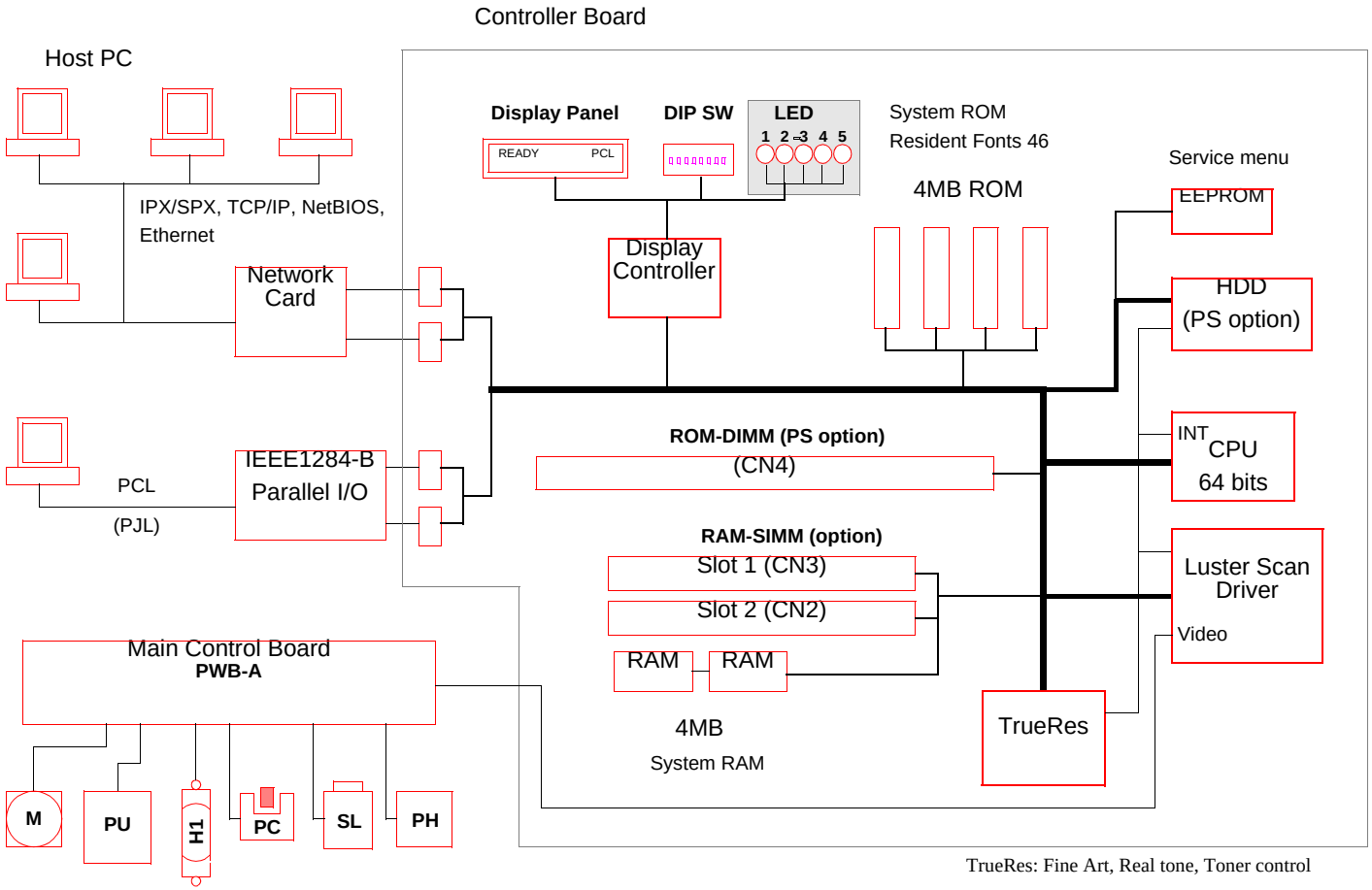
- The Power source supplies DC+5V and DC+24V to the main control board and AC to the Heater Lamp.
- The Printer receives print data from the host PC through an interface.
- The Controller adjusts the size and position of the print data to generate image data. Printing occurs after the image data has been transmitted to the Print Head unit via the main control board.
- The main control board controls the various parts of the engine, Print Head unit, Duplex Unit and Third Cassette Unit (Tray 3).

11. SEQUENCE FLOW

To carry out printing cycles, signals are transferred between the controller, main control and engine as shown below.



12. BLOCK DIAGRAM

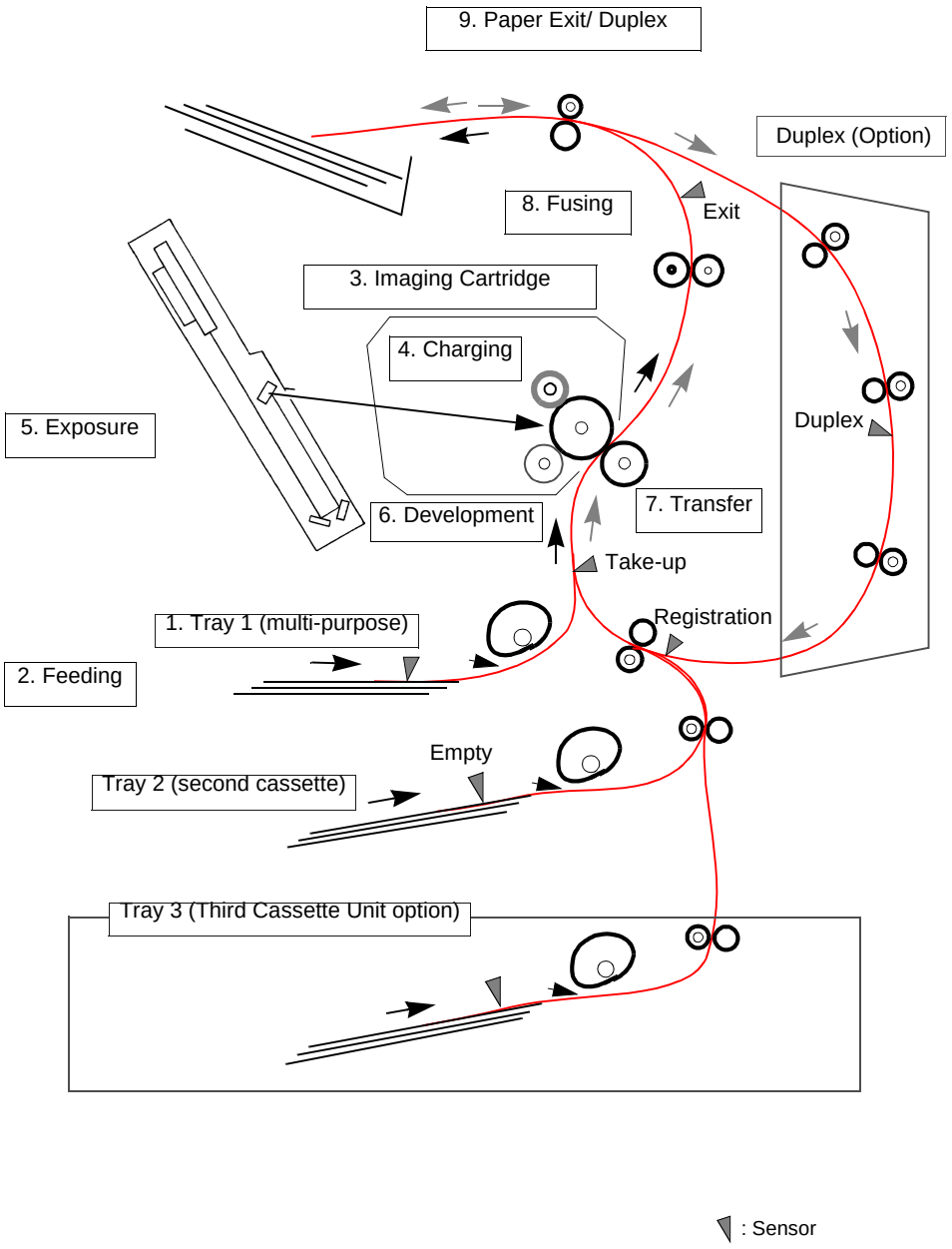


TrueRes: Fine Art, Real tone, Toner control

C

C: MECHANICAL/ ELECTRICAL

1. PRINTING PROCESS

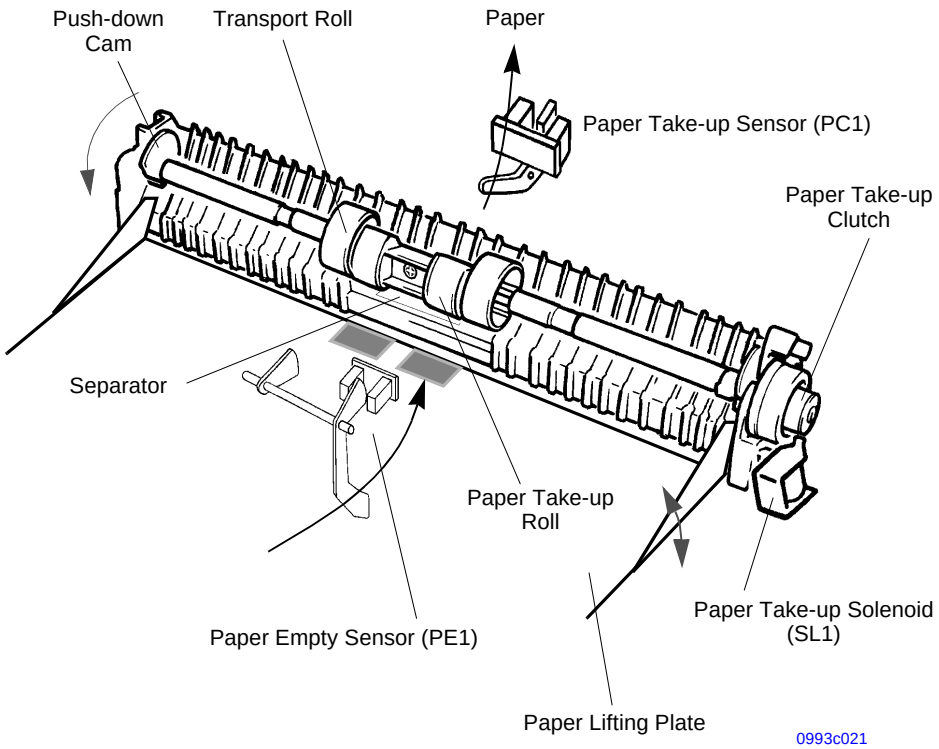


2. PAPER FEEDING

- Paper is fed from either Tray 1 (holding up to 150 sheets of paper) or Tray 2, commonly called the universal cassette (holding up to 250 sheets of paper). (The optional Third Cassette Unit may be installed to serve as a fixed cassette capable of holding 500 sheets of paper or a universal cassette capable of holding 250 sheets of paper.)
- The Paper take-up roll takes up a sheet of paper and the transport roller feeds it to the PC drum.
- The signal indicating that the paper take-up sensor (PC1) is activated is used to determine the starting position of the image.

2-1. Tray 1 (multi-purpose)

- The drive is transmitted from the main drive motor (M1) to the paper take-up clutch (one-way clutch), paper take-up roll, and the push-down cam.
- When the paper take-up solenoid (SL1) is energized, the paper take-up roll and push-down cam turn one complete turn. As the push-down cam turns, the paper lifting plate is raised so that the paper take-up roll can take up one sheet of paper. The friction with the separator pad ensures that only one sheet of paper is taken up at a time by the paper take-up roll.



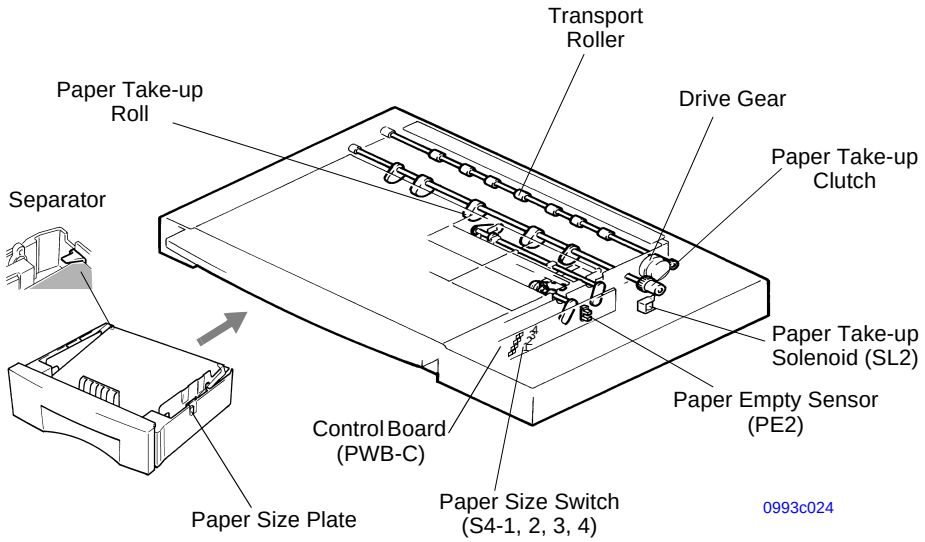
2-2. Tray 2 (Second Cassette Unit)

- The drive for the second paper tray is transmitted from the printer to the drive gear, paper take-up clutch, paper take-up roll, and the transport roller.
- Tray 2 is controlled by the main control board (PWB-A) via the Tray 2 control board (PWB-C).
- When the paper take-up solenoid (SL2) is energized, the paper take-up roll is turned one complete turn to take up a sheet of paper and the transport roller feeds it to the PC drum. The paper separator fingers prevent the second and subsequent sheets of paper from being taken up with the first one.
- The paper size switches (S4-1, 2, 3 and 4) on the control board (PWB-C) detect the size of the paper loaded in the tray. The combinations in which these switches are turned on and off are listed below to represent corresponding paper sizes.

Paper size Switch

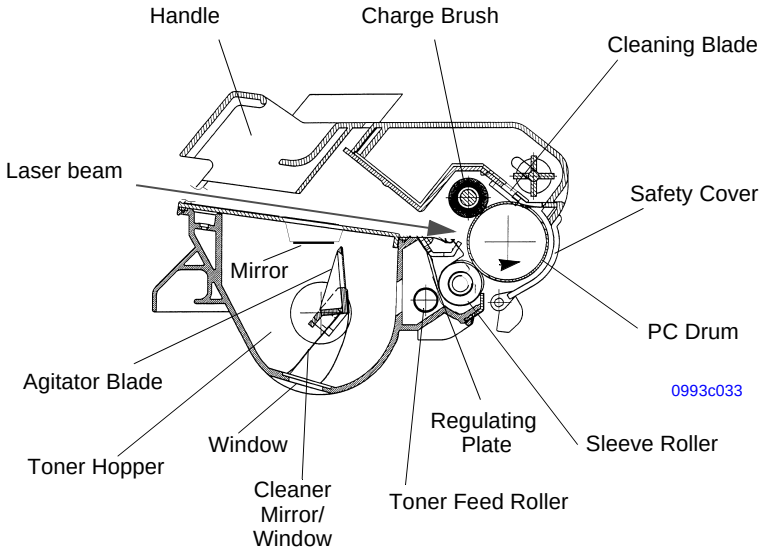
S4- 4,3,2,1	Paper	S4- 4,3,2,1	Paper
1 1 1 1	No Cassette	1 0 0 1	Executive L
1 1 1 0	Ledger L	0 0 1 0	Letter C
1 1 0 1	A3 L	0 1 0 0	A4 C
1 0 1 0	B4 L	1 0 0 0	G. Letter C
0 1 0 1	Legal L	0 0 0 1	B5 C
1 0 1 1	G. Legal L	0 0 1 1	A5 C
0 1 1 0	A4 L	0 1 1 1	Invoice C
1 1 0 0	Letter L		No Cassette

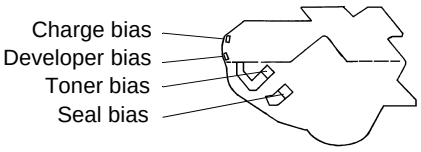
NOTE: 0: on, 1: off, C: crosswise, L: lengthwise



3. IMAGING CARTRIDGE

- The illustration below shows the construction of the PC drum charge unit and developing unit.



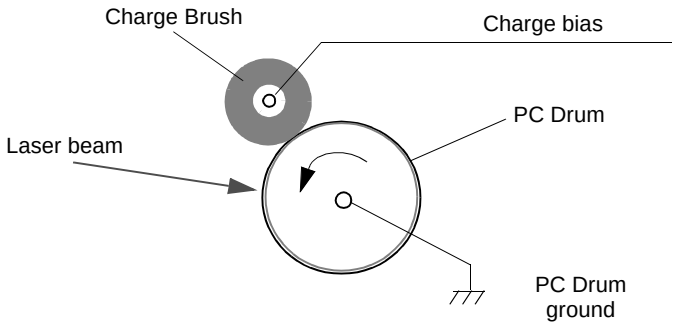


0993-c032

- The PC drum is charged by the PC drum charge brush.
- The laser beam from the print head produces an electrostatic latent image on the surface of the PC drum.
- The agitator blade of the toner hopper agitates toner and the toner feed roller feeds the toner to the sleeve roller.
- The toner regulating plate regulates the amount of toner fed to the sleeve roller.
- The sleeve roller feeds toner to the electrostatic latent image formed on the surface of the PC drum.
- Toner remaining on the surface of the PC drum is cleaned off by the cleaning blade.
- The mirror/ window cleaner wipes toner off the mirror and window used for detection of a toner-empty condition.

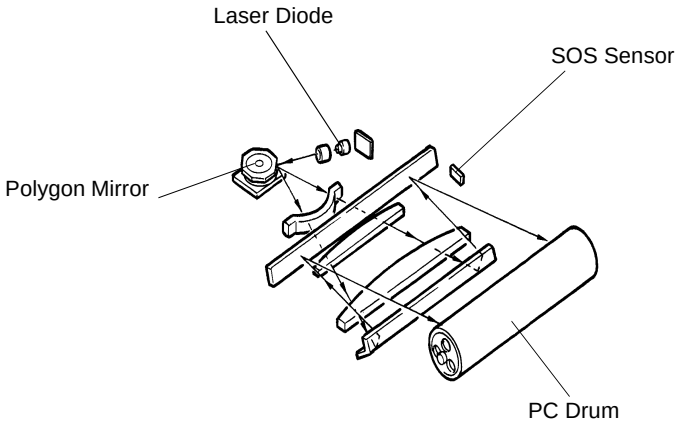
4. CHARGING

- A rotary brush is used to charge the PC Drum by static electricity before laser exposure. It applies charge directly to the PC Drum at a low voltage and therefore the amount of ozone produced is only negligible.



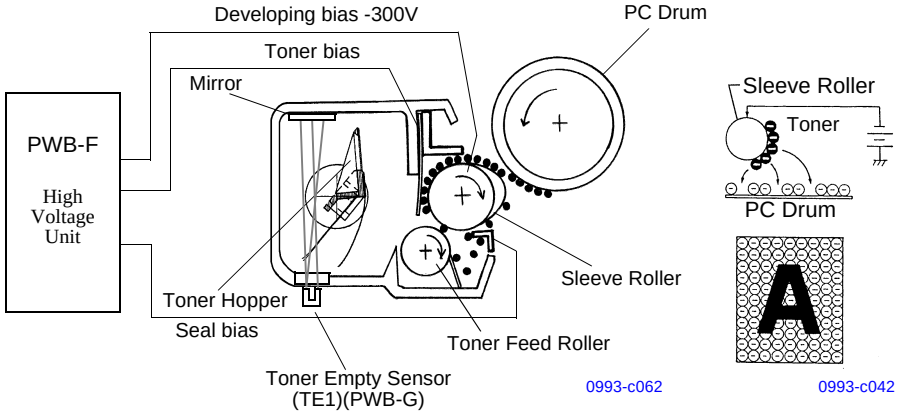
5. EXPOSURE (P/H)

- The print head emits a laser beam to produce an electrostatic latent image on the surface of the PC Drum.
- There is a sensor called the SOS sensor installed that correctly times the illumination of the laser diode with the rotation of the polygon mirror.



6. DEVELOPMENT

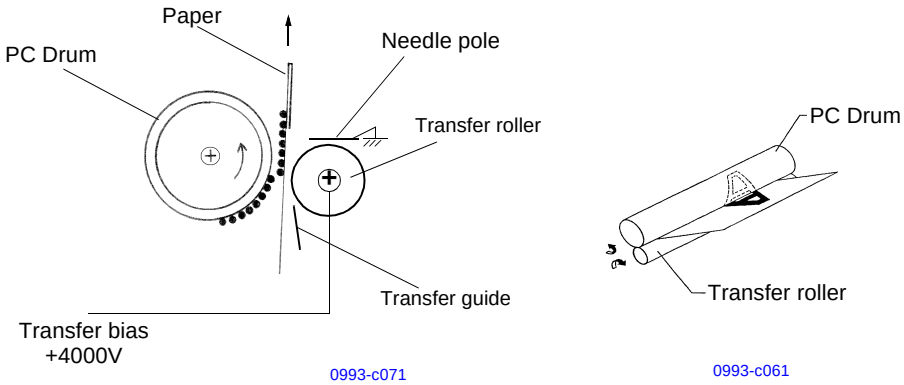
- The developing unit feeds toner to the electrostatic latent image on the surface of the PC drum to produce a visible toner image.
- When the print cycle is started and the Main drive motor (M1) is energized, the surface potential of the PC drum is approximately 0V. The sleeve roller voltage is made positive to prevent toner from sticking to the 0V areas.
- The LED on PWB-G emits light which is then reflected off the mirror inside the toner hopper for use in the detection of a toner-empty condition. Readings are taken while the Main drive motor is turning.



0993-c062 0993-c042

7. TRANSFER

- The image transfer roller transfers the toner image on the surface of the PC drum onto the paper. A comb electrode removes static electricity remaining on the paper.



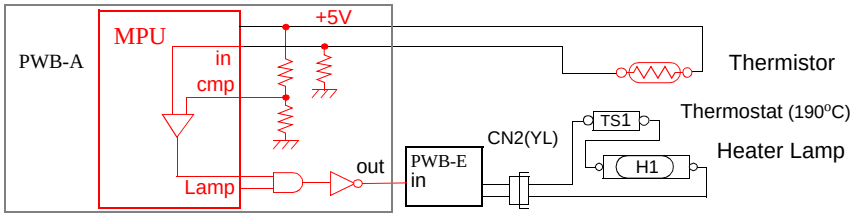
0993-c071 0993-c061

8. FUSING

- The fusing unit permanently fixes the toner image onto the paper. This is accomplished by a heated roller. The upper fusing roller, which is heated by a Heater Lamp built into it, melts the toner and then the upper and lower fusing rollers press the melted toner into the paper.
- The thermistor (TH1) detects the temperature of the upper fusing roller for fusing temperature control.
- The thermostat (TS1) turns off as it senses an abnormally high temperature, thereby cutting off current to the Heater Lamp (H1).

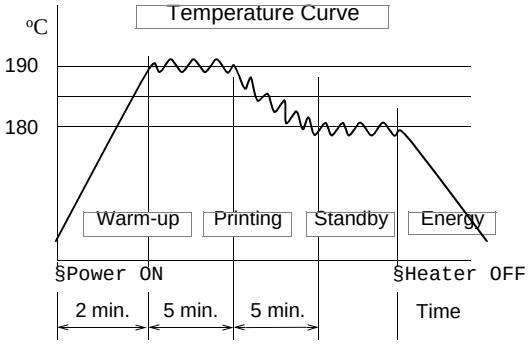
Fusing Temperature Control Circuit

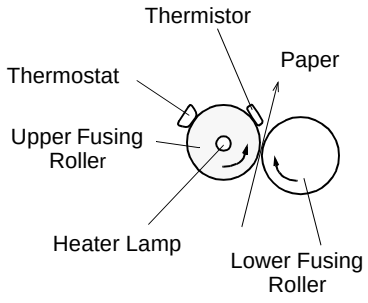
- The thermistor (TH1) detects the surface temperature of the upper fusing roller and inputs the corresponding analog voltage to the MPU.
- The Heater Lamp (H1) is turned on or off by a signal from the MPU output according to the temperature detected by the thermistor, thereby controlling the temperature of the upper fusing roller.
- When the thermistor detects an abnormally high temperature, the MPU forces the Heater Lamp OFF.



Fusing Unit Temperature Control

1. During warm-up : The printer starts warm-up to attain a temperature of approx. 190°C when the power switch is turned on.
2. During print cycle : On receiving a print command, the printer starts a temperature control cycle to keep the upper fusing roller temperature at approx. 190°C.
3. During standby : The upper fusing roller temperature is maintained at approx. 180°C.
4. Energy saving : The controller signal turns off the Heater Lamp.

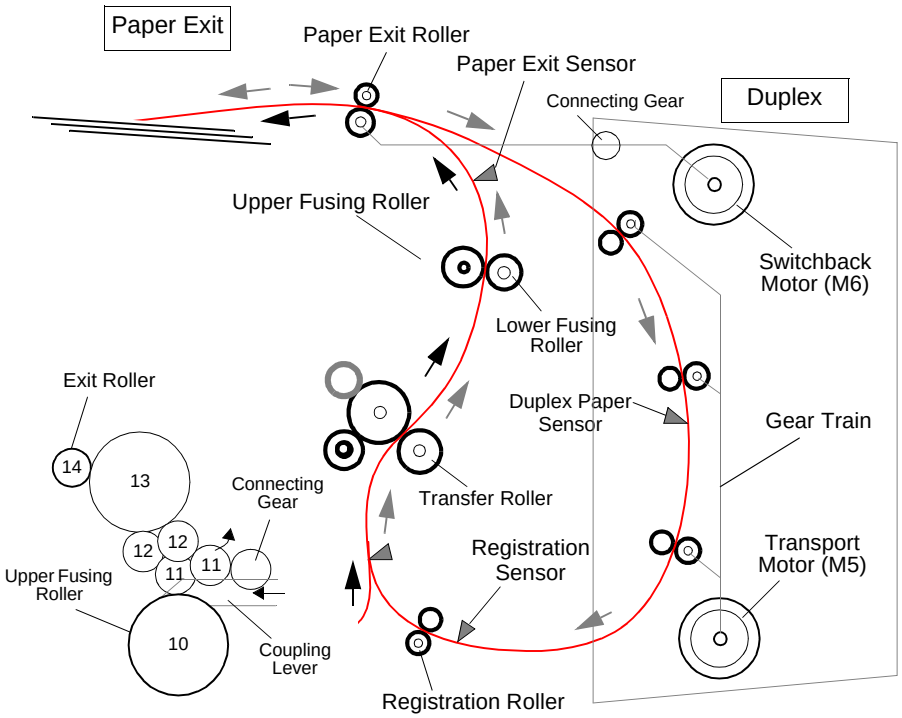




9. PAPER EXIT/ DUPLEX

9-1. EXIT

- The paper exit roller receives its drive from the Main Drive Motor (M1) via a gear train. The paper is fed onto the exit tray with its printed side down.



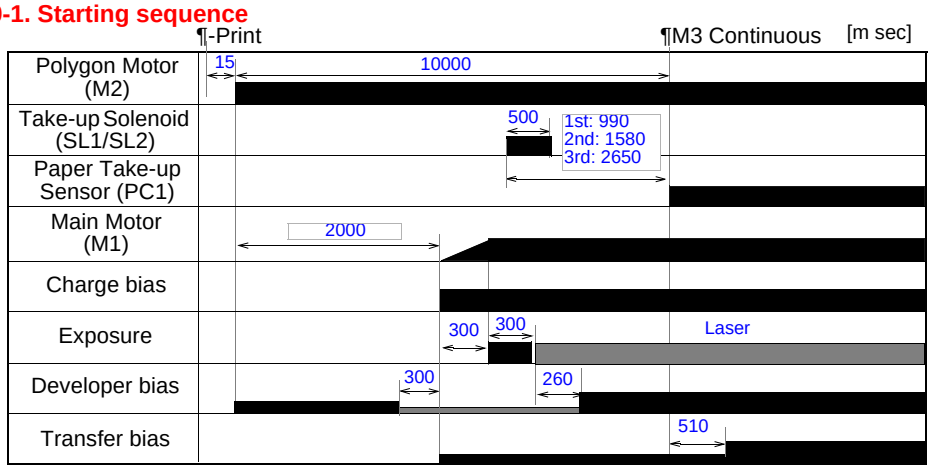
9-2. Duplex (Option)

- When the duplex unit is mounted on the printer, the exit roller is connected to the switchback motor (M6) by way of the coupling lever and gear.

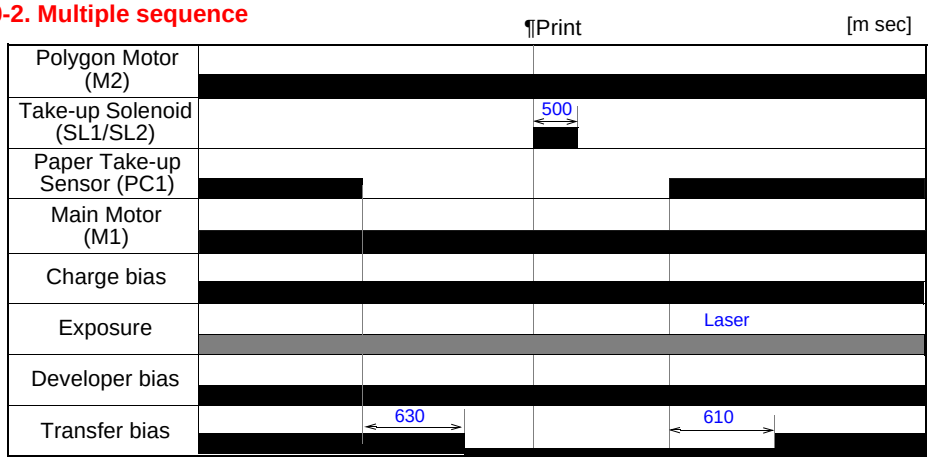
1. When the printing cycle is completed for 1-sided printing, the paper, moving past the exit sensor, is fed out of the printer by the exit roller.
2. When the printing cycle is completed for the front side in 2-sided printing, the paper is fed towards the exit by the exit roller until it moves past the exit sensor. When the paper moves past the exit sensor, the switchback motor (M6) is turned backward, feeding the paper back to the duplex paper take-up area. The transport motor (M5) then transports the paper up to the registration roller. Skew in paper is corrected by the registration sensor and then the registration roller feeds the paper to the image transfer section for printing on the back side. The paper, having gone through the second print cycle, is fed out of the printer by the exit roller.

10. PRINTING SEQUENCE

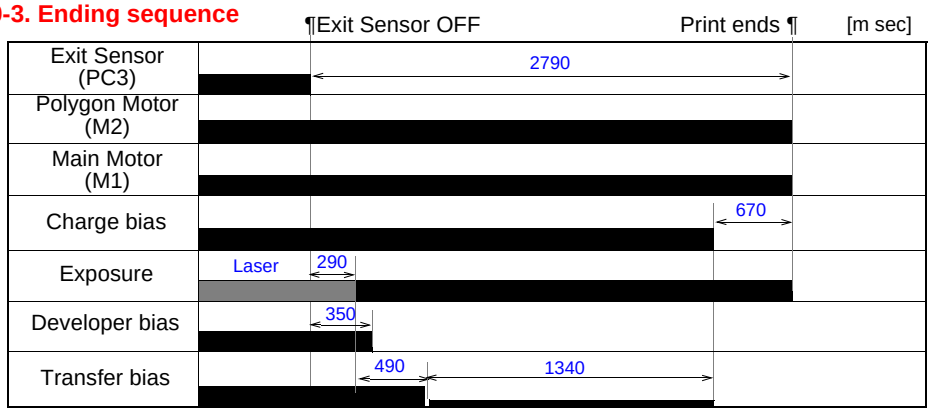
10-1. Starting sequence



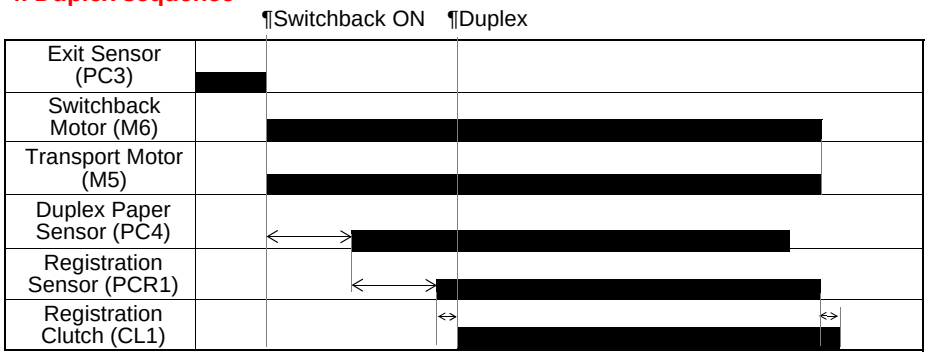
10-2. Multiple sequence



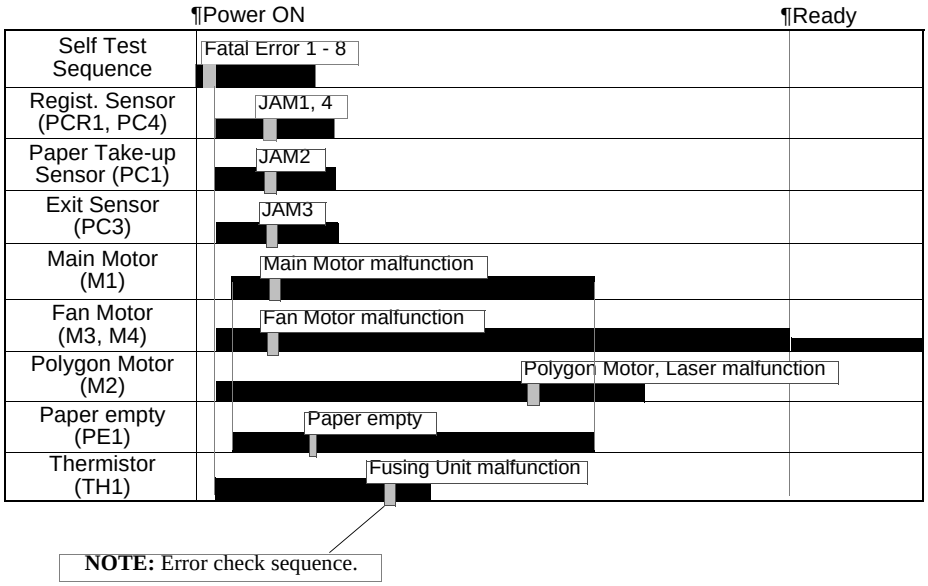
10-3. Ending sequence



10-4. Duplex sequence



10-5. Power ON sequence (Trouble Check)



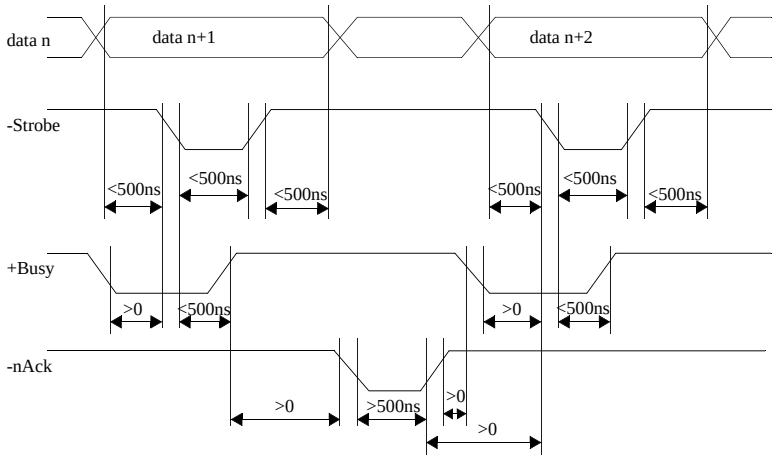
11. PARALLEL INTERFACE

11-1. Connector pin assignments (IEEE1284-B)

No.	Item	No.	Item	No.	Item
1	Strobe (HostClk)	13	Select (Xflag)	25	S.Gnd (D6)
2	DA1	14	AutoFd (HostAck)	26	S.Gnd (D7)
3	DA2	15	Not defined	27	S.Gnd (D8)
4	DA3	16	Logic Gnd	28	S.Gnd/ PE, Select, Ack
5	DA4	17	Chassis Gnd	29	S.Gnd/ Busy, Fault
6	DA5	18	Peripheral Logic High	30	S.Gnd/aFd, selIn, Init
7	DA6	19	S.Gnd (Strobe)	31	Init (Reverse Request)
8	DA7	20	S.Gnd (D1)	32	Fault (PeriphRequest)
9	DA8	21	S.Gnd (D2)	33	N.C
10	Ack (PeriphClk)	22	S.Gnd (D3)	34	N.C
11	Busy (PeriphAck)	23	S.Gnd (D4)	35	N.C
12	PError (AckReverse)	24	S.Gnd (D5)	36	SelectIn (1284Active)

NOTE: D-sub full size 36 pin connector. Compatibility mode and (ECP mode).

11-2. Compatibility mode handshake timing values



D: DISASSEMBLY/ CLEANING

D

1. MAINTENANCE/ INSPECTION

1-1. Replacement of Parts

Parts Name	Replacement Cycle
Imaging Cartridge	Multi printing: 10,000; intermittent: 8,000 sheets
Paper Take-up Roll	At detection of fault, or, 120,000 sheets of multi printing
Fusing Unit	At detection of fault, or, 120,000 sheets of multi printing
Image Transfer Unit	At detection of fault, or, 120,000 sheets of multi printing

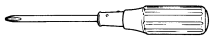
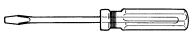
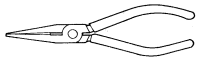
NOTE: Printer has an electric total counter.
- Replacement Cycle: 120,000 to 60,000 sheets of single printing.

1-2. Cleaning Parts

Parts Name	Cleaning Procedure
Paper Take-up Roll	Wipe the dust off with a soft cloth dampened with alcohol.
Image Transfer Roller	Wipe the surface with a dry piece of soft cloth.

NOTE: Do not touch the surface of the Image Transfer Roller with the hand.

1-3. Required Service Tools

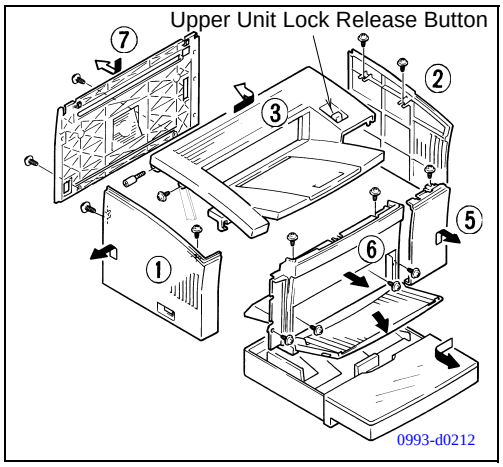
Tools	+ Driver (No. 2)	- Driver	Needle Nose Pliers
			
Use	General use	E-ring	E-ring

NOTE: Grease for the drive section: MOLYCORT EM-50L/ Dow Coorning Inc.

2. DISASSEMBLY PROCEDURE

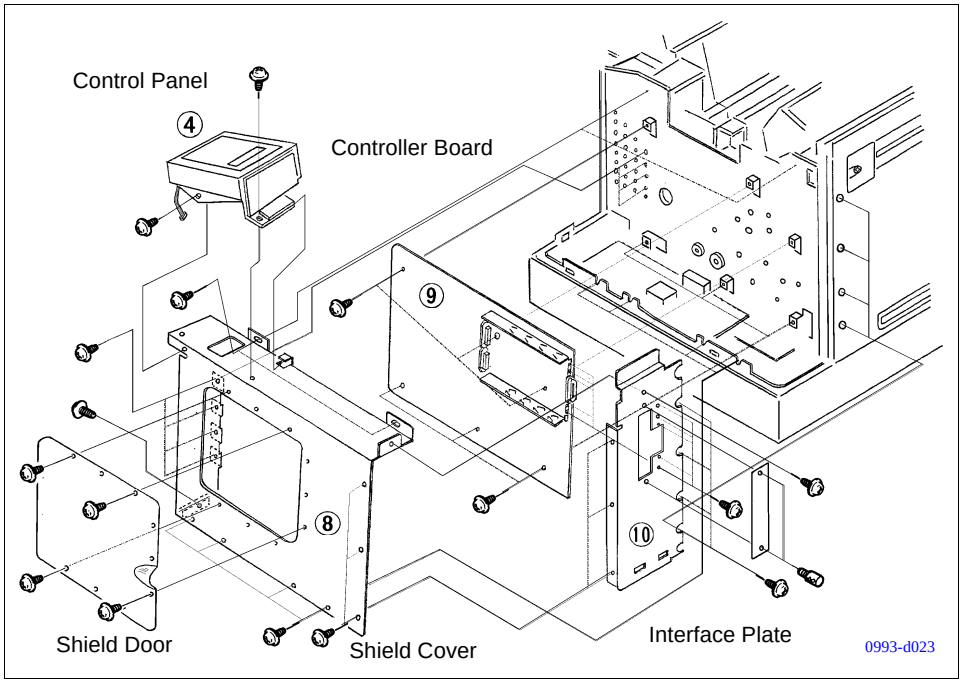
NOTE: Before starting the disassembly procedure, press the upper unit lock release button to open the Upper Unit. Then, remove the Imaging Cartridge.

2-1. Outer Covers

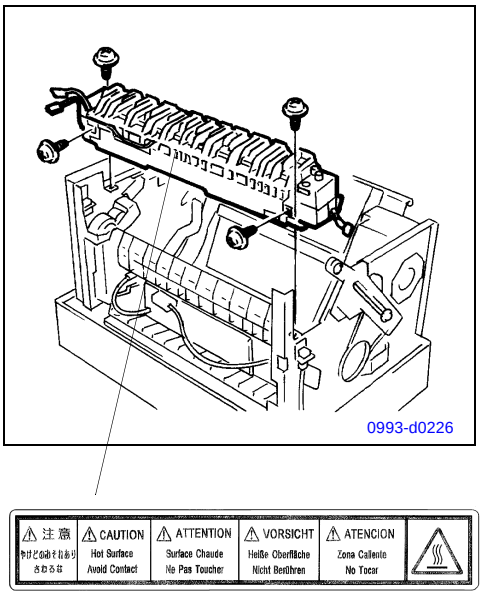


1. Remove the Left Cover. (2 screws)
2. Remove the Right Cover. (2 screws)
3. Remove the Upper Unit. (2 screws)
4. Remove the Control Panel. (2 screws, 1 connector)
5. Remove the Right Front Cover. (1 screw)
6. Remove the Front Cover. (6 screws)
7. Remove the Rear Cover. (2 screws)
8. Remove the Shield Cover. (15 screws)
9. Remove the Controller Board + Interface Plate. (10 screws)

   NOTE: 10. Remove the Interface Plate before the Shield Cover. (13 screws)

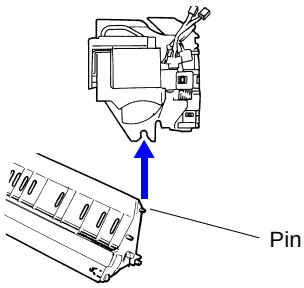


2-2. Fusing Unit

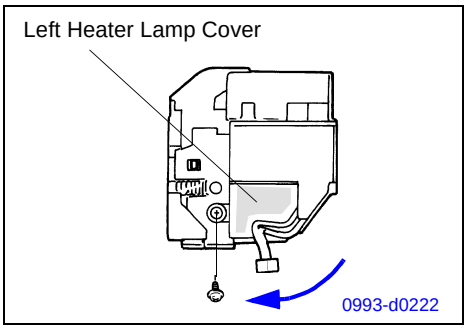


1. Remove the Outer Covers. (Refer to sect. 2-1.)
2. Remove the Fusing Unit. (4 screws, 3 connectors)

NOTE: When reassembling the Fusing Unit, adjust the position of the Image Transfer Unit.

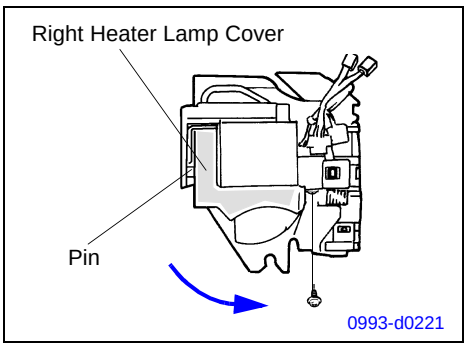


Heater Lamp Cover



3. Remove the Left Heater Lamp Cover. (1 screw)

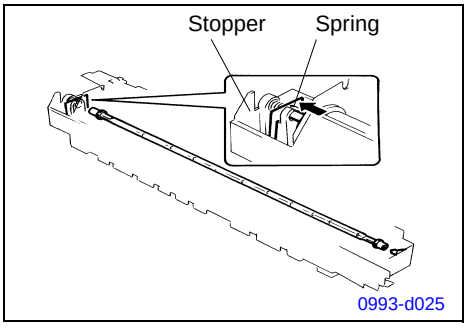
NOTE: When removing the Left Heater Lamp Cover, turn the Cover in the clockwise direction.



4. Remove the Right Heater Lamp Cover. (1 screw)

NOTE: When removing the Right Heater Lamp Cover, turn the Cover in the counterclockwise direction.

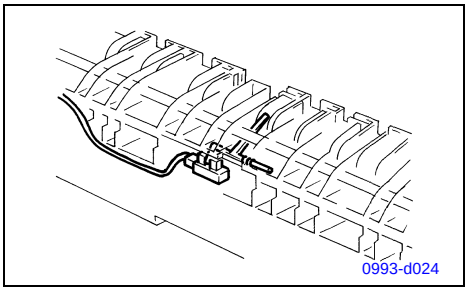
Heater Lamp



5. Holding the right end of the Heater Lamp, take out the stopper and spring.
6. Pressing the Heater Lamp in the direction indicate by the arrow, remove it from the heater socket.

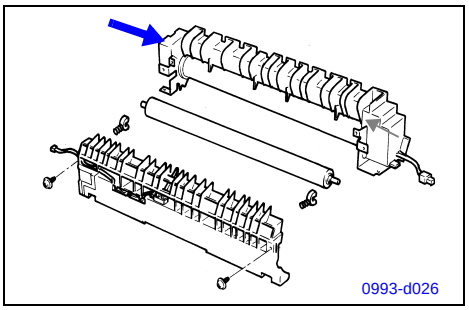
NOTE: Be sure not to touch the lamp surface with bare hands.

Paper Exit Sensor



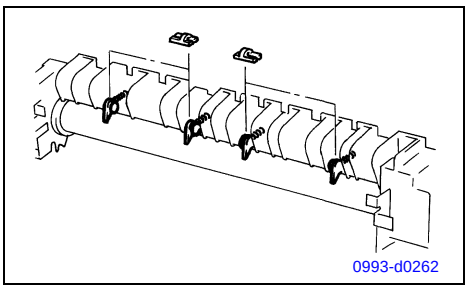
1. Remove the Paper Exit Sensor. (1 connector)
2. Remove the actuator. (1 spring)

Lower Fusing Roller



1. Remove the Rear Fusing Cover. (2 screws)
2. Push the lock stopper in the direction indicated by the arrow and remove the Lower Fusing Roller.

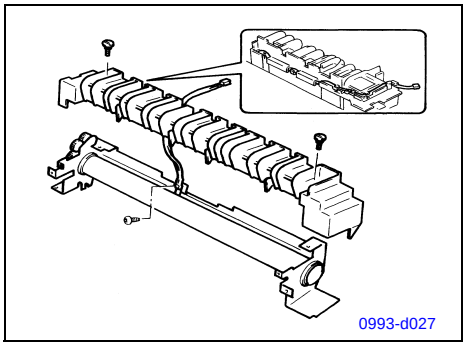
Separator



1. Release the stoppers of the separator.
2. Pulling and sliding, remove the stoppers.

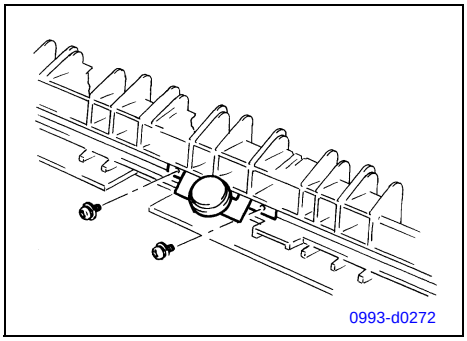
NOTE: The two paper separator finger stoppers on the right face the opposite direction to the two on the left.

Thermistor



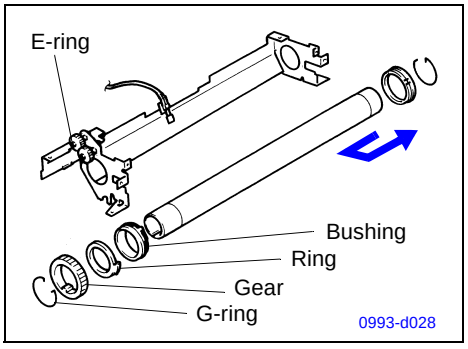
1. Remove the front Fusing Cover. (2 screws, 1 harness)
2. Remove the Thermistor. (1 screw)

Thermostat



1. Remove the Thermostat. (2 screws)

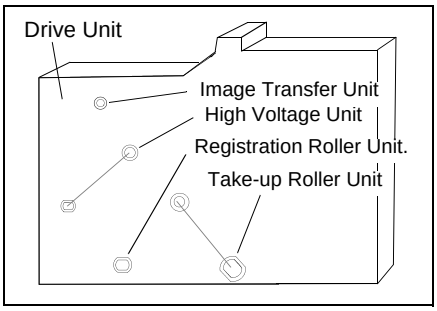
Upper Fusing Roller, Gear, G-ring, E-ring



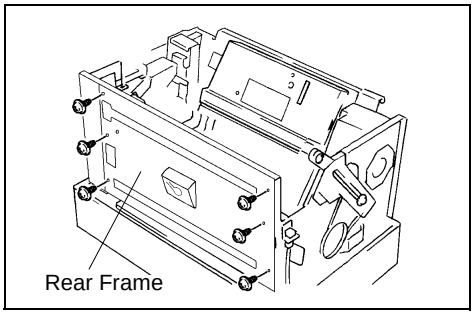
1. Remove the G-ring.
2. Remove the Gear, Ring, Bushing.
3. Remove the Upper Fusing Roller as indicated by the arrow.
4. Remove the Gear. (1 E-ring)

NOTE: When disassembling/ reassembling the Transfer Unit, High Voltage Unit, Registration Roller Unit. and Paper Take-up Roller Unit, please note that each has a peg that fits into a hole in the Right Frame and a screw that secures the unit in the Left Frame.

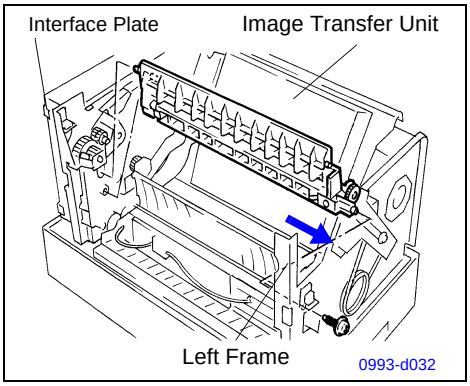
- Release each unit from the Drive Unit when removing the unit.



2-3. Image Transfer Unit



1. Remove the Outer Cover. (Refer to sect. 2-1.)
2. Remove the Fusing Unit. (Refer to sect. 2-2.)
3. Remove the Rear Frame. (6 screws, 1 connector)

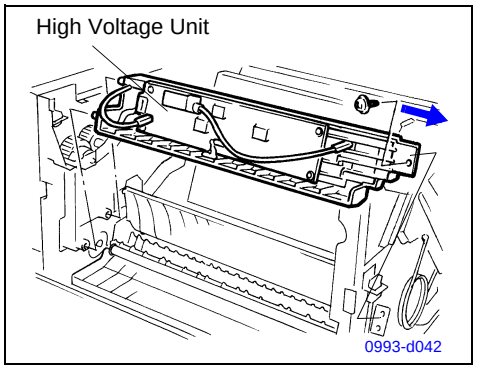


4. Remove the Image Transfer Unit. (1 screw)

NOTE: With the Left Frame open, release the Transfer Unit. Pulling the Transfer Unit in the direction indicated by the arrow, remove it.

NOTE: Don't touch the surface of the Image Transfer Roller with the hand.

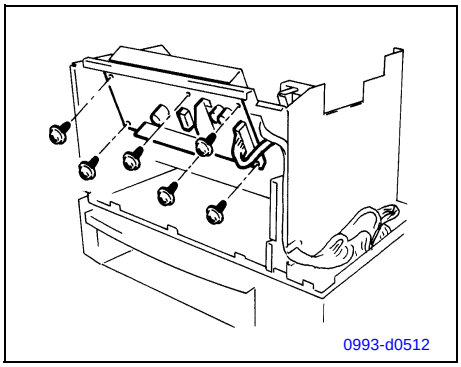
2-4. High Voltage Unit



1. Remove the Outer Cover. (Refer to sect. 2-1.)
2. Remove the Fusing Unit. (Refer to sect. 2-2.)
3. Remove the Transfer Unit. (Refer to sect. 2-3.)
4. Remove the High Voltage Unit. (1 screw, 1 connector)

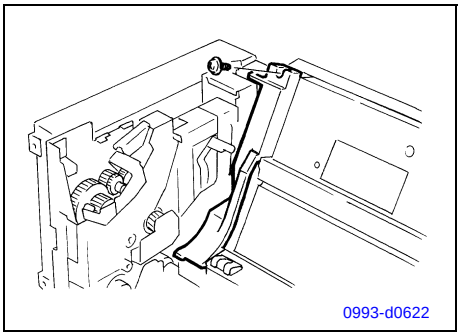
NOTE: Pulling the High Voltage Unit in the direction indicated by the arrow, remove it.

2-5. Power Unit



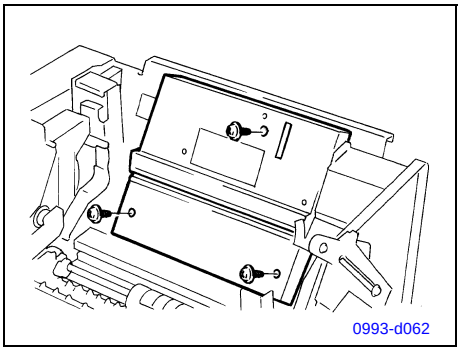
1. Remove the Outer Cover. (Refer to sect. 2-1.)
2. Remove the Power Unit. (6 screws, 5 connectors)

2-6. Print Head Unit



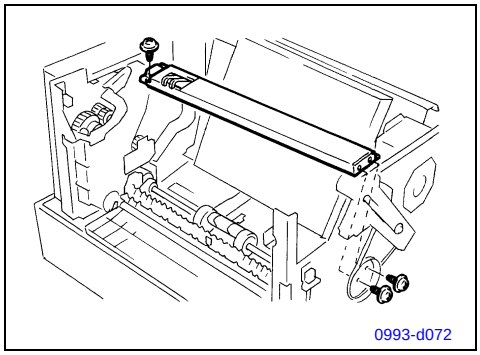
1. Remove the Outer Cover. (Refer to sect. 2-1.)
2. Remove the Harness Cover. (2 screws)

NOTE: Pulling the harness cover to the right, remove it.



3. Remove the Print Head Unit. (3 screws, 1 connector)

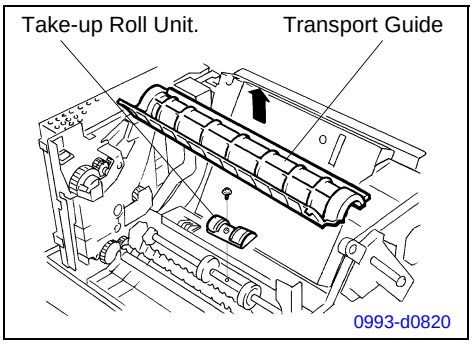
2-7. Paper Empty Sensor Unit



1. Remove the Outer Cover. (Refer to sect. 2-1.)
2. Remove the Harness Cover. (Refer to sect. 2-6.)
3. Remove the Paper Empty Sensor Unit. (3 screws, 2 connectors)

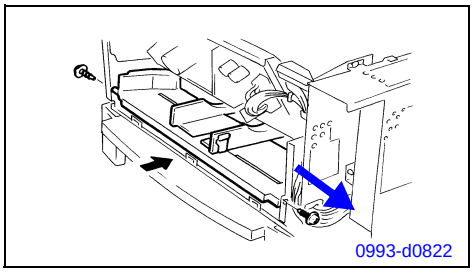
NOTE: After reinstallation, secure the harness in the wire saddle.

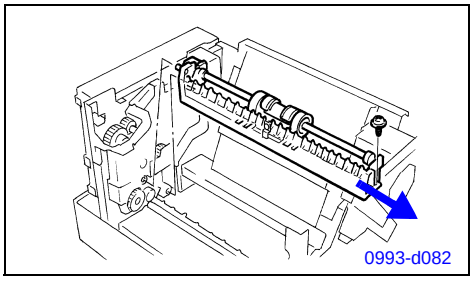
2-8. Paper Take-up Roll Unit.



1. Remove the Paper Empty Sensor Unit. (Refer to sect. 2-7.)
2. Pulling up, remove the Transport Guide.
3. Remove the Paper Take-up Roll Unit. (1 screw)

2-9. Registration Roller Unit.



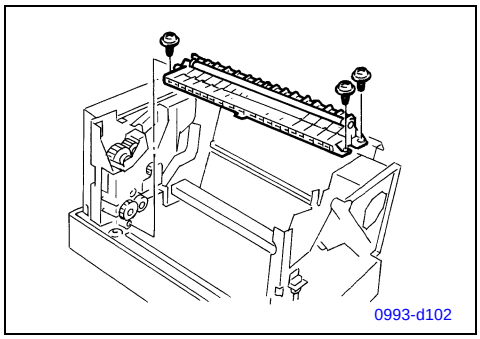


1. Remove the Outer Cover. (Refer to sect. 2-1.)
2. Remove the Fusing Unit. (Refer to sect. 2-2.)
3. Remove the Transfer Unit. (Refer to sect. 2-3.)
4. Remove the High Voltage Unit. (Refer to sect. 2-4.)
5. Remove the Paper Empty Sensor Unit. (Refer to sect. 2-7.)
6. Remove the Paper Lifting Plate. (1 screw)

NOTE: Move the printer Left Frame in the direction of the arrow to unlock the plate from the frame.

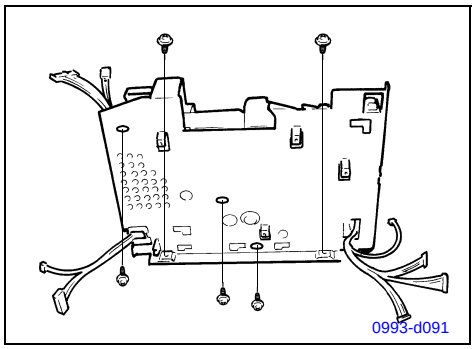
7. Remove the Paper Take-up Roller Unit. (1 screw)

NOTE: Slide the unit in the direction of the arrow to unlock it from the right drive unit of the printer.



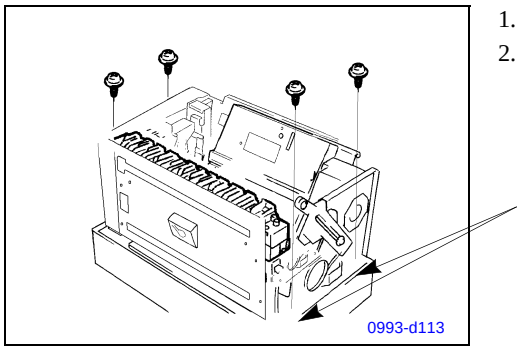
8. Remove the Registration Roller Unit. (3 screws)

2-10. Drive Unit



1. Remove the Outer Cover. (Refer to sect. 2-1.)
2. Remove the Fusing Unit. (Refer to sect. 2-2.)
3. Remove the Transfer Unit. (Refer to sect. 2-3.)
4. Remove the High Voltage Unit. (Refer to sect. 2-4.)
5. Remove the Paper Empty Sensor Unit. (Refer to sect. 2-7.)
6. Remove the Registration Roller Unit. (Refer to sect. 2-8.)
7. Remove the Drive Unit. (5 screws, 7 connectors)

2-11. Tray 2 (Second Cassette Unit)



1. Loosen 4 screws.
2. Remove the Second Cassette Unit.

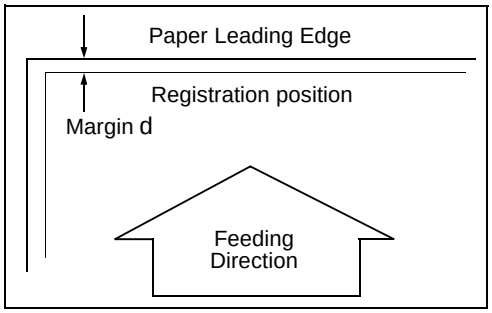
NOTE: At reinstallation, position the 4 positioning pins, coupling gear, and coupling connector correctly.

E: ADJUSTMENT

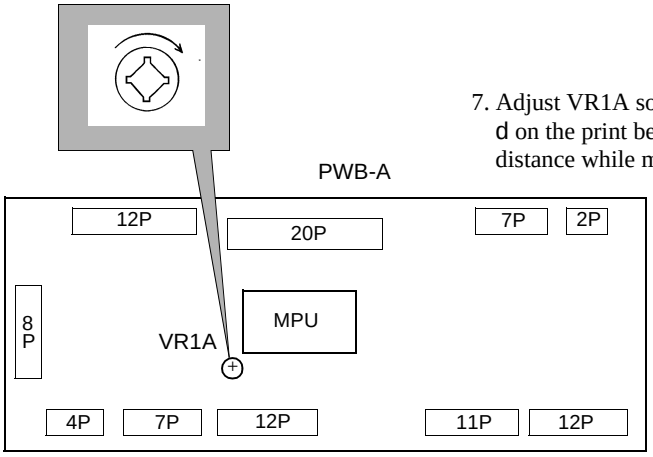
E

1. IMAGE REGISTRATION

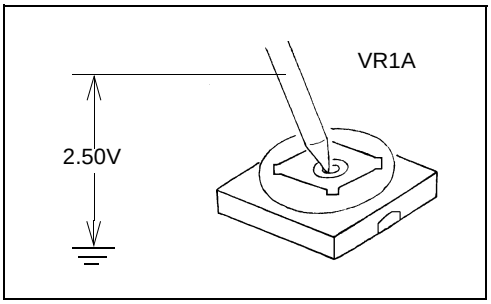
After the Main Control Board (PWB-A) is replaced, adjust the margin by following the procedure described below.



1. Remove the Right Cover. (2 screws)
2. Remove the Control Panel. (2 screws, 1 connector)
3. Remove the Right Front Cover. (1 screw)
4. Remove the Front Cover. (6 screws)
5. Remove the Rear Cover. (2 screws)
6. Remove the Shield Cover. (15 screws)
   (Refer to D: Disassembly / Cleaning item 2-1. Outer Covers)



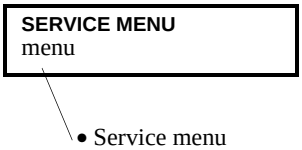
7. Adjust VR1A so that Registration Margin d on the print becomes the appropriate distance while making prints.



8. Another adjustment.
   Adjust VR1A so that the Voltage is 2.50V between VR1A and the ground terminal.

2. SERVICE MENU

When the power is turned on while holding down the On Line and Enter/Reset keys, the Service Menu is displayed in the off-line mode after the machine has gone through the self-test and warming-up cycles. To exit from the service mode, press the On Line key. Service menu added head of common menu. Press On Line key end of this menu go on-line.



- Service menu

TOTAL COUNT	: xxxxxxx 7-digit number
LARGE SIZE COUNT	: xxxxxxx 7-digit number
PAGE COUNT	: xxxxxxx 7-digit number, RESET OK
MAINT COUNT	: xxxxxxx 7-digit number, (0120000*)
HDD DEMO SET	: OFF*, ON

TOTAL COUNT

xxxxxxx 7-digit number indicating total prints.

LARGE SIZE COUNT

xxxxxxx 7-digit number indicating total prints for A3, A3+ and Ledger.

NOTE: When TRAY1 is set to “UNIVERSAL”, there is no count.

PAGE COUNT

xxxxxxx 7-digit number indicating total pages produced for maint count. Press the Select key to show the message “RESET OK?” and press the Enter/Reset key to reset the count to zero.

MAINT COUNT

0120000*: This is the number of prints before the next maintenance is to be performed. This number can be increased by +1000 when the Select key is pressed and decreased by -1000 when the Shift and Select keys are pressed at once. When the Enter/Reset key is pressed, the number is marked with an asterisk (*), which indicates that the number has been confirmed.

HDD DEMO SET

OFF*: No HDD DEMO set.
If ON is selected, the item “HDD DEMO PRINT” is shown in the TEST PRINT menu.

3. ROM UPGRADE

⚠ Caution

Do not try this function, When no UPGRADE. Delete the program.

1. Binary File

File Names	Contents
1. ?m7401.dlb	/* OS Driver */
2. ?em5e.dlb	/* PCL Core */
3. ?fontrom.dlb	/* Font.data */
4. diram.dlb	/* ? */
5. m7401lut.dlb	/* TrueRes Look up table */
6. cpux4.dlb	/* CPU set data */

NOTE: File numbers are used down-loading sequence.

2. Transfer Files

(1) Turn the power off.

- To enter the upgrade mode, press the Menu key + Select key and turn on the power.
- The panel display will read:

  Tmax Down-loader

  "READY"

(2) Binary files are transferred from the parallel interface.

- Binary files 1 to 6 are transferred one at a time.
- Each time a file has been transferred, check that the message “Complete” appears on the control panel.
- When transferring files from the host computer, use the following command format:

  >copy/b m7401.dlb lpt1
- After the transfer, check that “Complete” appears on the control panel.
- Secure the "READY" on LCD.
- Transfer the next file:

  >copy/b em5e.dlb lpt1
- Check that “Complete” appears on the control panel.
- Repeat this sequence for the remaining files.

NOTE: These are the file names and file number used down-loading sequence.
However, the file name may change over time.
If printer is error, turn the power off for 3 second and then back on.

3. Run a CONFIG PRINT test print.

Check the printout for the following under Printer Information:

Firmware Version = Ver. x.xx

F: TROUBLE-SHOOTING

F

1. TROUBLE DETECTION

NOTE: This printer detects the following misfeeds and malfunctions. When any of these trouble conditions are detected, all printer elements are brought to a stop except the fan motor.

1-1. JAM detection

A misfeed may be classified into one of four categories, JAM1, JAM2, JAM3 and JAM4 as detailed below.

1. When paper is fed from Tray 1 (multi-purpose tray) and the Paper Take-up Sensor (PC1) has NOT been activated, approx. 1.6 sec. after the Paper Take-up Roll has started turning, the machine determines that a Jam 1 condition has occured **(JAM1).**
2. When paper is fed from Tray 2 (second cassette) and the Registration Sensor (PCR1) has not been activated, approx. 1.4 sec. (approx. 2.5 sec. for the Third Cassette Unit) after the Paper Take-up Roll has started turning, the machine determines that a Jam 1 condition has occurred. **(JAM1).**
3. When paper is fed from Tray 2, the Paper Take-up Sensor (PC1) has NOT been activated, approx. 1.0 sec. after the leading edge of the paper has reached the Registration Sensor (PCR1), the machine determines that a Jam 1 condition has occurred. **(JAM1).**
4. The Paper Take-up Sensor (PC1) is in the activated state when the power is turned on, or the Upper Unit is closed or Duplex Cover is closed, the machine determines that a Jam 2 condition exsists. **(JAM2).**
5. The Paper Take-up Sensor (PC1) remains in the activated state, the period of time equivalent to the paper size plus 2.8 sec. after the leading edge of the paper has reached the Paper Take-up Sensor (PC1), **the machine determines that a Jam 2 condition has occurred (JAM2).**
6. The Paper Exit Sensor (PC3) has NOT been activated, approx. 2.3 sec. after the leading edge of the paper has reached the Paper Take-up Sensor (PC1), the machine determines that a Jam 2 condition has occurred **(JAM2).**
7. The Paper Exit Sensor (PC3) is in the activated state, approx. 2.3 sec. after the trailing edge of the paper has moved past the Paper Take-up Sensor (PC1), the machine determines that a Jam 3 condition has occurred **(JAM3).**
8. The Paper Exit Sensor (PC3) is in the activated state when the power is turned on, or the Upper Unit is closed or Duplex cover is closed, the machine determines that a Jam 3 condition exists **(JAM3).**
9. The Duplex Paper Sensor (PC4) has NOT been activated, approx. 2.7 sec. after the Switchback motor of the Duplex Unit has been energized, the machine determines that a Jam 4 condition has occurred **(JAM4).**
10. The Registration Sensor (PCR1) has NOT been activated, approx. 1.1 sec. after the leading edge of the paper has reached the Duplex Paper Sensor (PC4), the machine determines that a Jam 4 condition has occurred. **(JAM4).**

11. The Paper Take-up Sensor (PC1) has NOT been activated, approx. 1.0 sec. after the leading edge of the paper has reached the Registration Sensor (PCR1), the machine determines that a Jam 4 condition has occurred **(JAM4).**
12. The Duplex Paper Sensor (PC4) is in the activated state when the power is turned on, or the Upper Unit is closed or Duplex cover is closed, the machine determines that a Jam 4 condition exists **(JAM4).**
13. The Registration Sensor (PCR1) is in the activated state when the power is turned on, or the Upper Unit is closed or Duplex cover is closed, the machine determines that a Jam1 or Jam 4 condition exists **(JAM1, JAM4).**

JAM Resetting Procedure

After the misfeed has been cleared, close the Upper Unit or the Duplex Cover.

1-2. Fusing Unit malfunction

The printer considers that there is a fusing unit malfunction when any of the following five conditions has been detected.

1. The temperature of the upper fusing roller (as measured with the thermistor) is such that the change in the thermistor voltage is 0.1V or less over a period between 12 sec. to 30 sec. after warm-up has started (with the fusing roller temperature being 160°C or less).
2. The fusing roller temperature does not reach 190°C for a 120 sec. period after warm-up has started.
3. The fusing roller temperature becomes less than 140°C in the standby state.
4. The fusing roller temperature becomes less than 150°C during a printing cycle.
5. The fusing roller temperature remains at/or exceeds 240°C, for an extended period.

1-3. Laser malfunction

The laser output level is adjusted before printing, while the fusing temperature is being controlled. A laser fault is detected if the output level cannot be adjusted to the specified value during this time period.

1-4. Polygon Motor malfunction

The printer considers that there is a polygon motor malfunction when any of the following three conditions is detected.

1. The polygon motor lock signal has NOT been output to the CPU within 10.0 sec. after the motor has been energized.
2. When the Polygon Motor is on, the lock signal switches from ON, and then turns OFF for more than 1 sec.
3. The SOS (Start of Scan) signal is not output during printing.

1-5. Main Motor malfunction

The printer considers that there is a main drive motor malfunction when any of the following two conditions is detected.

1. The main drive motor lock signal (connector CN5A-1) remains off for a continuous 1.0 sec. period.
2. The main drive motor lock signal (connector CN5A-1) is off 1.0 sec. after the Main drive motor has been energized.

1-6. Fan Motor malfunction

The printer considers that there is a fan motor malfunction when any of the following two conditions is detected.

1. A fusing fan motor malfunction is detected when the voltage used to detect the fusing fan motor current remains 360/230 mV or less (high speed/ low speed) for a continuous 0.5 sec. period.
2. A power supply fan motor malfunction is detected when the voltage used to detect the power supply fan motor current remains 170/150 mV or less (high speed/ low speed) for a continuous 0.43 sec. period.

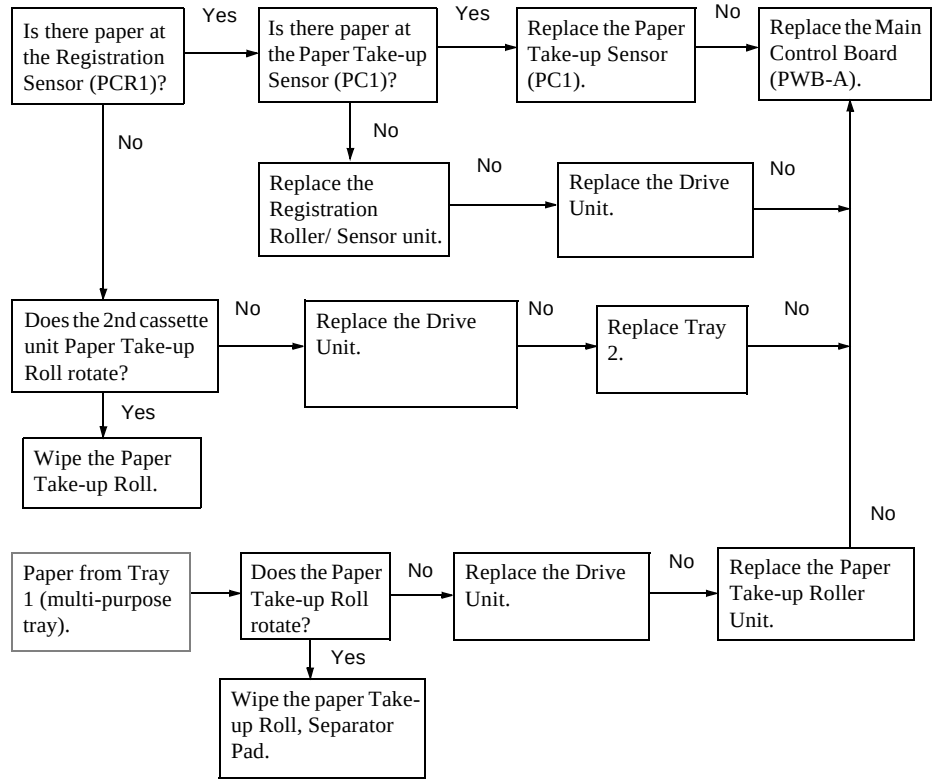
Malfunction Resetting Procedure

After the malfunction has been cleared, turn the Power OFF for 3 sec. and then back ON.

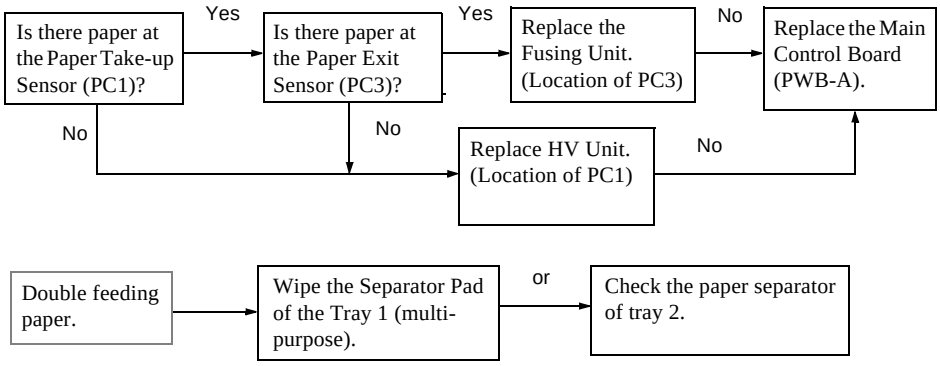
2. ACTION FOR DETECTED JAM OR MALFUNCTION

NOTE: First determine the location of the paper misfeed and perform the appropriate JAM1-5 trouble-shooting procedure before removing the misfeed paper.

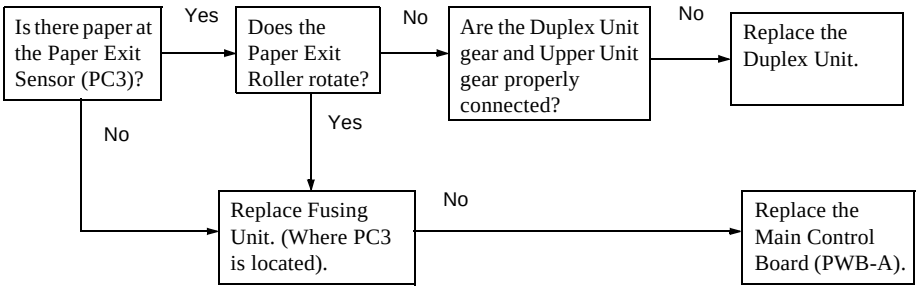
2-1. JAM1



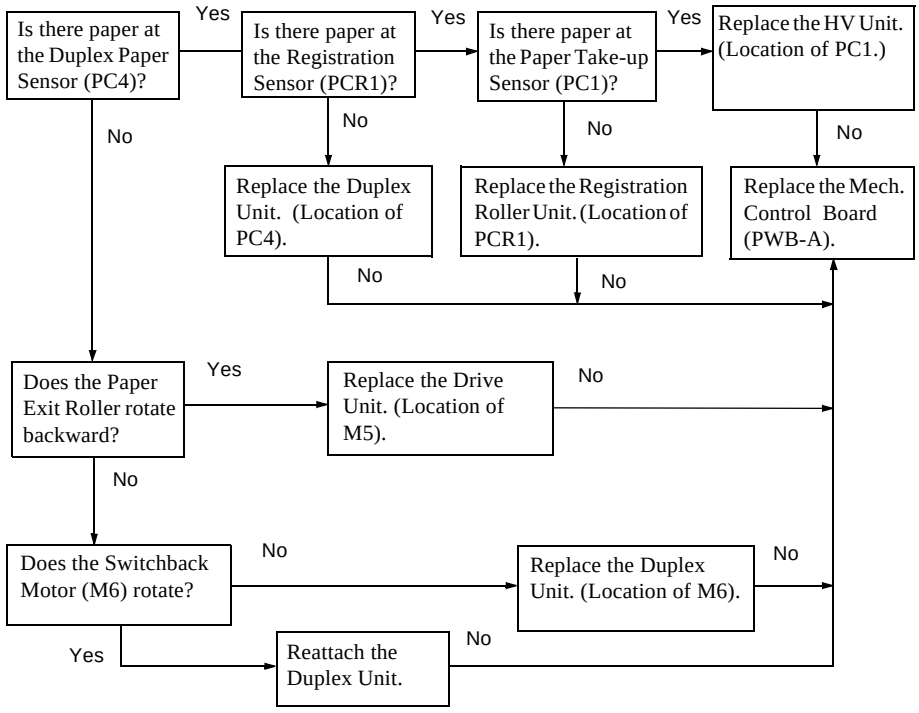
2-2. JAM2



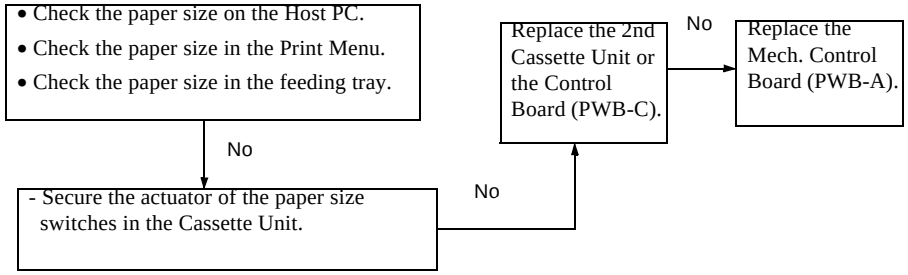
2-3. JAM3



2-4. JAM4



2-5. JAM5 size miss match (Paper Size Error)



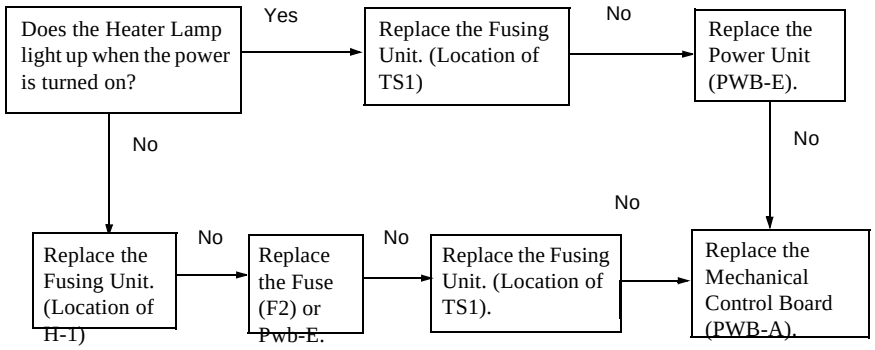
2-6. Service call (Fatal error 1 - 8)

NOTE: When the printer detects the following malfunctions, all of the printer elements are brought to a stop except the Fan motor.

Message	Condition
FATAL ERROR 1 ROM	System ROM malfunction. Replace Main Controller Board Pwb-P
FATAL ERROR 2 PS ROM	PS ROM-DIMM malfunction. Replace Main Controller Board (Pwb-P)
FATAL ERROR 3 RAM	System RAM malfunction. Replace Main Controller Board (Pwb-P)
FATAL ERROR 4 SIMM RAM (number)	Data memory RAM-SIMM malfunction number = SIMM slot number. Replace Memory SIMM.
FATAL ERROR 5 EEPROM	EEPROM malfunction. Replace Main Controller Board (Pwb-P)
FATAL ERROR 7 NETWORK BOARD	Network Card malfunction. Replace network Card
FATAL ERROR 8 INTERFACE (number)	Network interface or engine interface malfunction. number = 1: engine, 2: Network Card. Replace 1= Pwb-A and/or Main Controller Board (Pwb-P). 2= Replace Network Card and/or Main Controller Board (Pwb-P).

NOTE: FATAL ERROR 7 occurs, the Network Config Print is printed out and the printer goes off-line (stops).
- Check the General section of the printout for the message “Error: Cable not connected”.
- Check for communication errors.

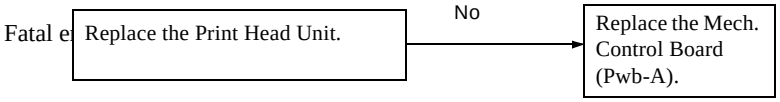
2-7. Fusing Unit malfunction (Fatal error 21)



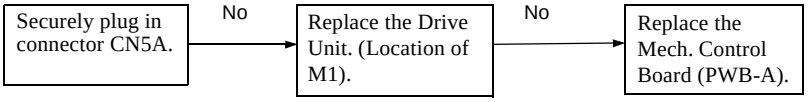
2-8. Laser malfunction (Fatal error 22)

Check CN-2----NO---->. Replace Print Head and/or Mechanical Control Board (Pwb-A)

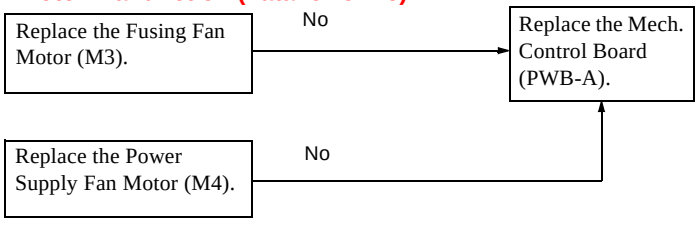
2-9. Polygon Motor malfunction (Fatal error 23)



2-10. Main Motor malfunction (Fatal error 24)

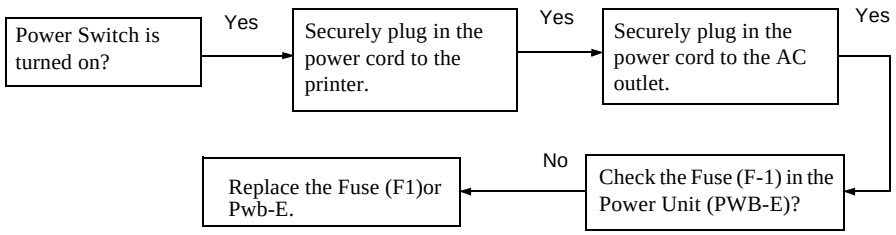


2-11. Fan Motor malfunction (Fatal error 25)

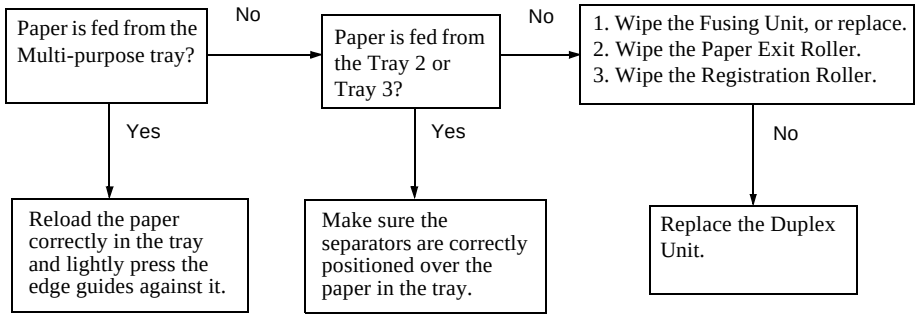


3. OTHER DETECTED TROUBLE

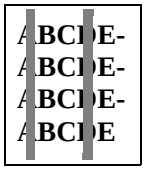
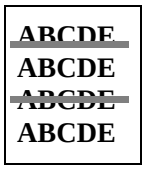
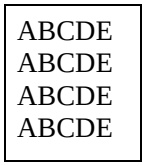
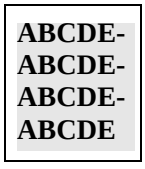
3-1. No Power

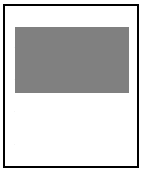
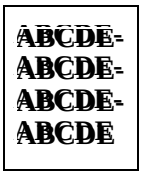


3-2. Skew



4. IMAGE QUALITY TROUBLE

Symptom	Cause	Action
Black/ White Lines 	Dust, lint in the optical system	Clean the Print Head Unit window. Replace the Print Head Unit.
	Dust, lint in the Transfer Unit	Wipe the surface of the Transfer Roller. Replace the Transfer Unit
	Scratch on the PC Drum	Replace the Imaging Cartridge.
Horizontal Lines 	Dust on the gear	Clean the Gear. Replace the Drive Unit.
	Uneven Polygon Motor Speed	Replace the Print Head. Replace Mech. Control Board (Pwb-A).
Low Image Density 	Poor image transfer	Replace High Voltage Unit. (PWB-F)
	Toner empty	Change the Imaging Cartridge.
Foggy Background 	Defective high voltage	Replace the High Voltage Unit. (PWB-F) Check the paper size, and check the TRAY1-3 MEDIA SETTING in system menu.
	End of PC Drum life	Replace the Imaging Cartridge.

Symptom	Cause	Action
No Image (Blank/ Black) 	High developing bias	Replace the High Voltage Unit (PWB-F). Replace the Imaging Cartridge.
	Low developing bias	Replace the High Voltage Unit (PWB-F). Change the Imaging Cartridge.
Offset Image 	Improper transfer	Clean the Transfer Unit. Wipe the dust off of the Fusing Roller.
	Poor Fusing.	Replace the Fusing Unit. Replace the Mech. Control Board (Pwb-A)