

The essentials of imaging

2060 Print System Service Manual

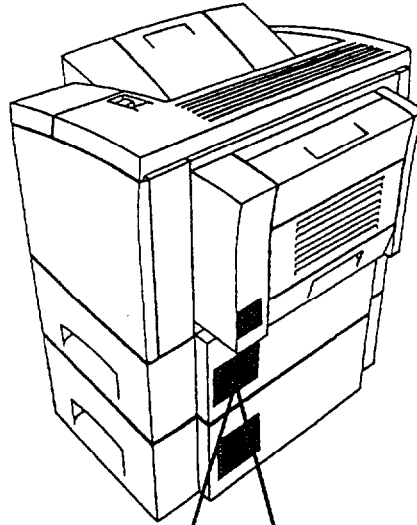


SP - A 3 1 0

Service & Parts Manual

September 1996
Revision C-02

WARNING LABELS



SAFETY INFORMATION

ALL Areas

INTERNAL LASER RADIATION

Maximum radiation power: 8.8×10^{-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..

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Discard **used** batteries according to manufacture's instructions.

Denmark Only

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskifning **må** kun ske med **batteri af samme** fabrikat og type.
Lever det brugte batteri tilbage til leverandøren.

Norway Only

ADVARSEL

Lithiumbatteri-Eksplosjonsfare.
Ved **utskifting** benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres **apparatleverandøren.**

Sweden Only

VARNING

Explosionsfara vid felaktigt **batteribyte.**
Använd samma batterityp **eller** en ekvivalent
typ som rekommenderas av **apparatillverkaren.**
Kassera använt batteri enligt fabrikantens **instruktion.**

VARNING!

Osynlig **laserstrålning** när denna del är **öppnad** och **spärren** är urkopplad.
Behakta ej **strålen.**

Finland Only

VAROITUS

Pristo voi **räjähätä** jos se on **virheellisesti asennettu.**
Vaihda **paristo ainoastaan laitevalmistajan suosittelemaan**
tyyppiin. **Hävitä käytetty paristo valmistajan ohjeiden**
mukaisesti.

VARO!

Avattaessa ja suojalulcitus **ohitettasessa** olet **alittiina näkymättömälle lasersäteilylle.**
Älä katso säteeseen.

New Zealand Only

Warning

“Immediately disconnect the equipment should it become physically damaged, and arrange for its disposal or repair before reconnecting.”

“Disconnect the Telecom Network connection before disconnecting the Power connection prior to relocating the equipment, and reconnect the Power first.”

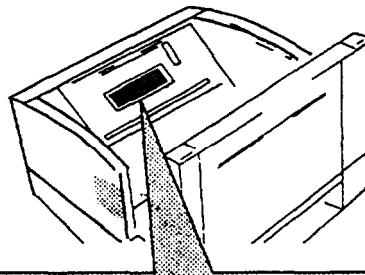
User Instruction (For all users)

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.



注意- ここを開くと有害レーザー放射が露出します。レーザー放射線は、眼を失明させる可能性があります。
CAUTION- INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
VORSICHT- UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHLE AUSSETZEN
ADVARSEL- USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARO! AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTELYLLE ÄLÄ KATSO SÄTEESEEN
ADVARSEL- USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
VARNING- OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD STRÅLEN ÄR FARLIG

PRECAUTIONS

(1) Precautions

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

Be sure to unplug the **printer before** disassembling and **cleaning**.



1. When unplugging **connectors** on the **P.W.B.s** themselves, always make **sure** the power is OFF first.
2. Always unplug **connectors** by holding the connector housing. Pulling on the power cord 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



1. Be sure to handle the Fusing Unit carefully as the unit is still hot for a while after the printer is stopped.
2. Do not disassemble the Imaging Cartridge or the Print Head Unit
3. Use only a Fuse of the indicated rating.

(3) During Operation



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 makes a trial run to be 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 instruments 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**.

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1. PRECAUTION FOR INSTALLATION

I-I. 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
Height	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	120v 60Hz	220V - 240V 50Hz
Voltage fluctuation	±10%	
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 cord should not be cracked or scratched.

2. INSTALLATION

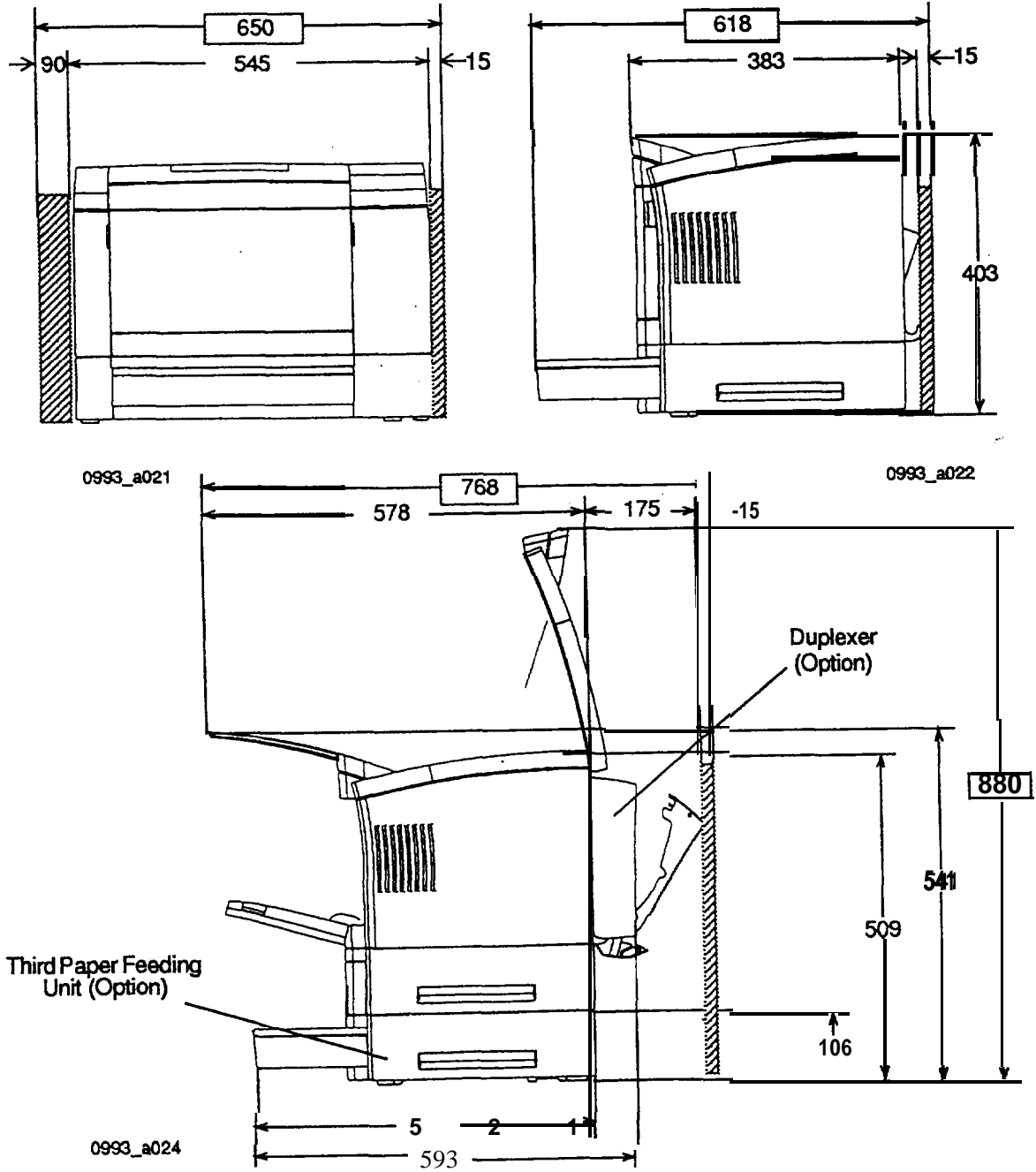
2-1. Connection

The following items should be connected before use.

- Connect the Interface Cable.
- Connect the Power Cord

2-2. 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.



B: GENERAL INFORMATION

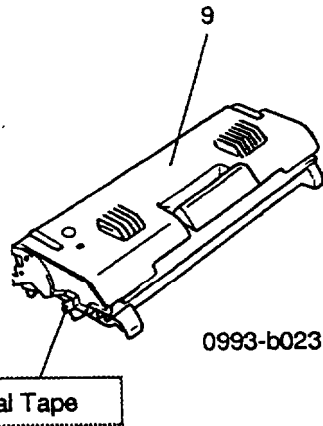
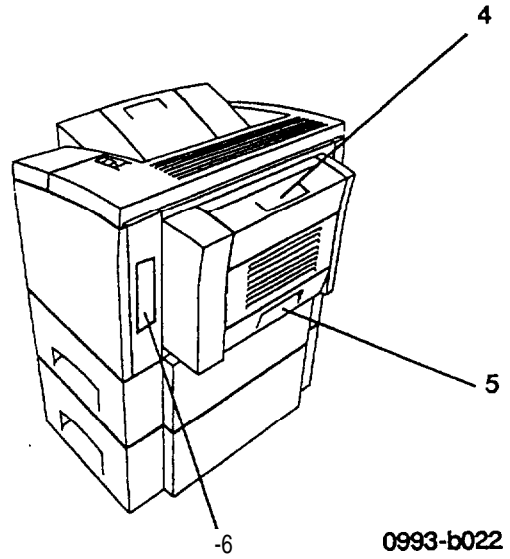
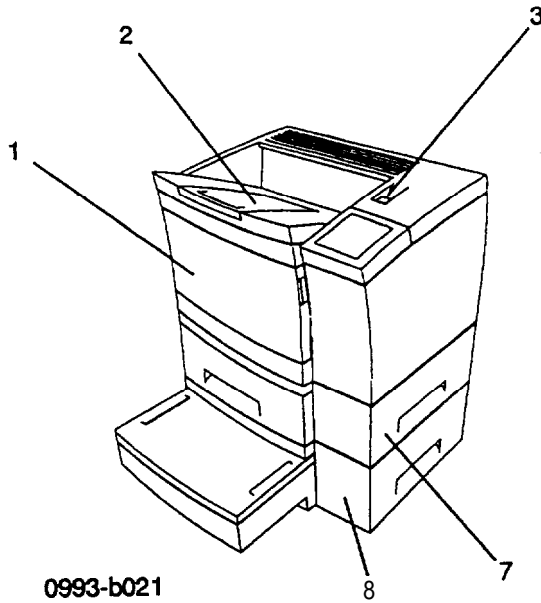
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1. SPECIFICATIONS

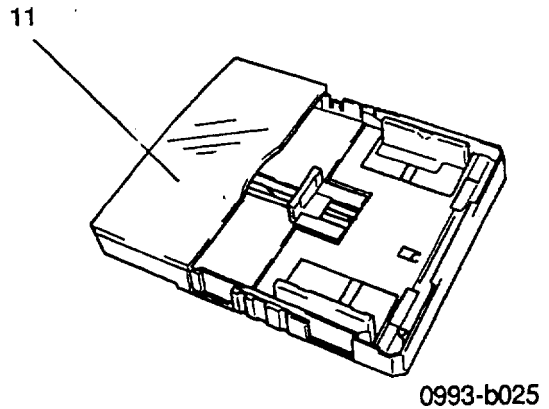
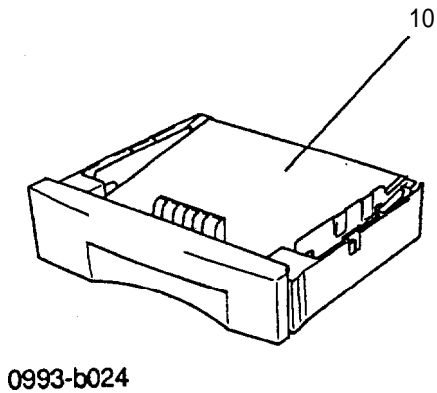
Type	: Desktop Laser Beam Printer
Printing system	: Electrostatic dry powdered imaging system Imaging Cartridge
Exposure system	: Laser Diode + Polygon Mirror scanning
Print density	: 600 dpi
Print Image	: Single print: within 5 mm of paper edge, Multi print: within 7.5 mm of paper edge
Printing time	: Single print 16 sec/ A4 C Duplex print 26 sec/ A4 C
Multi printing time	: Single print 20 sheets/ min/ A4 C Duplex print 12.5 pages/ min/ A4 C
Paper size	: Multi-purpose Tray 92 - 330 mm (W) x 140 - 483 mm (L) A3, A4, A5, B4, B5, Letter, Super B size OHP, Transparency, Letterhead, Postcard, Label Thick Paper (91 - 157g/m ²) : 250 Sheet Cassette 210 - 297 mm (W) x 148 - 432 mm (L) A3 L, A4 L/C, A5 C, B4 L, B5 C, Letter L/C
Paper	: Ordinary Plain Paper (60-90 g/m ²), Recycled Paper (60-90 g/m ²)
Paper Feeding system	: 2 way system 1st Multi-purpose Tray (150 sheets maximum) 2nd Universal Cassette (250 sheets maximum)
Paper Exit system	: Face down (500 sheets maximum/ A4 C)
Warm-up time	: Within 70 seconds/ (when power supplied at 23°C)
System speed	: 93.8 mm/ sec.
Fusing system.	: Heat Roller fusing system
Charging system	: Rotating Charge Brush system
Development	: Fine Micro Toning system
Drum deaning'	: Cleaning Blade
Separating system	: Paper Separator
image Transfer system	: Roller Transfer system
Dimensions	: 545 mm (W) x 383 mm (D) x 403 mm (H) Without Paper Cassette
Weight	: Approx. 24 kg (Without Imaging Cartridge 1.9 kg, Controller 0.5 kg)
Power supply	: AC 120V 60Hz, 220V - 240V 50/60Hz
Power Consumption	: 750 w or less (Operation)/ 120V 200 w or less (Standby)/ 120v 30 w or less (low power)/ 120v
Acoustic Noise	: 53 dB (A) or less (Operation)/ standard type 38 dB (A) or less (Standby)
Monthly Duty Cycle	: 50,000 prints
l. Cartridge operating life	: 10,000 prints or more (when the black-to-white ratio is 5% on multi prints) There is toner empty detection.
Exit Gasses	: Ozone 0.04 mg/m ³ (0.02 ppm or less) Dust 0.25 mg/m ³ or less NO ₂ 5 ppm or less
: Accessories	: Power cord Imaging Cartridge 250 Sheet Cassette (A3/ Super B)

: Options	: 500 Sheet Third Cassette unit 250 Sheet Third Cassette Unit 500 Sheet Cassette (A4/ Letter) 250 Sheet Cassette (A3/ Super B) Duplex Unit
: 250 Sheet Cassette	
Paper	: Ordinary Plain Paper/ Recycled Paper (60-90 g/m ²)
Paper size	: 210 - 297 mm (width) x 148 - 432 mm (length) A3 L, A4 WC. A5 C. B4 C. B5 C, Letter L/C (L: lengthwise. C: crosswise)
Paper Feeding system	: Paper finger system. 250 sheets
: 500 Sheet Cassette	
Paper	: Ordinary Plain Paper/ Recycled Paper (60-90 g/m ²)
Paper size	: A4 C or Letter C (L: lengthwise, C: crosswise)
Paper Feeding system	: Paper finger system, 500 sheets
: Third Cassette Unit	
Paper	: Ordinary Plain Paper/ Recycled Paper (60-90 g/m ²)
Paper size	: A3 L, B4 L, A4 L/C, B5 C, A5 C, Letter L/C
Paper Feeding	: 250 sheet Cassette (250 sheets maximum)
Detecting Paper	: Paper empty: 0 sheet Paper near-empty 1: 50 sheets or less. Paper near-empty 2: 250 sheets
System speed	: 95.6 mm/ sec.
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 C. Unit operating life	: 240,000 sheets or 5 years
: Duplex Unit	
Paper	: Ordinary Plain Paper/ Recycled Paper (64-90 g/m ²)
Paper size	: A3 L, B4 L, A4 L/C, B5 C, A5 C, Letter L/C
System speed	: 95.7 mm/ sec.
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 operating life	: 150,000 sheets or 5 years

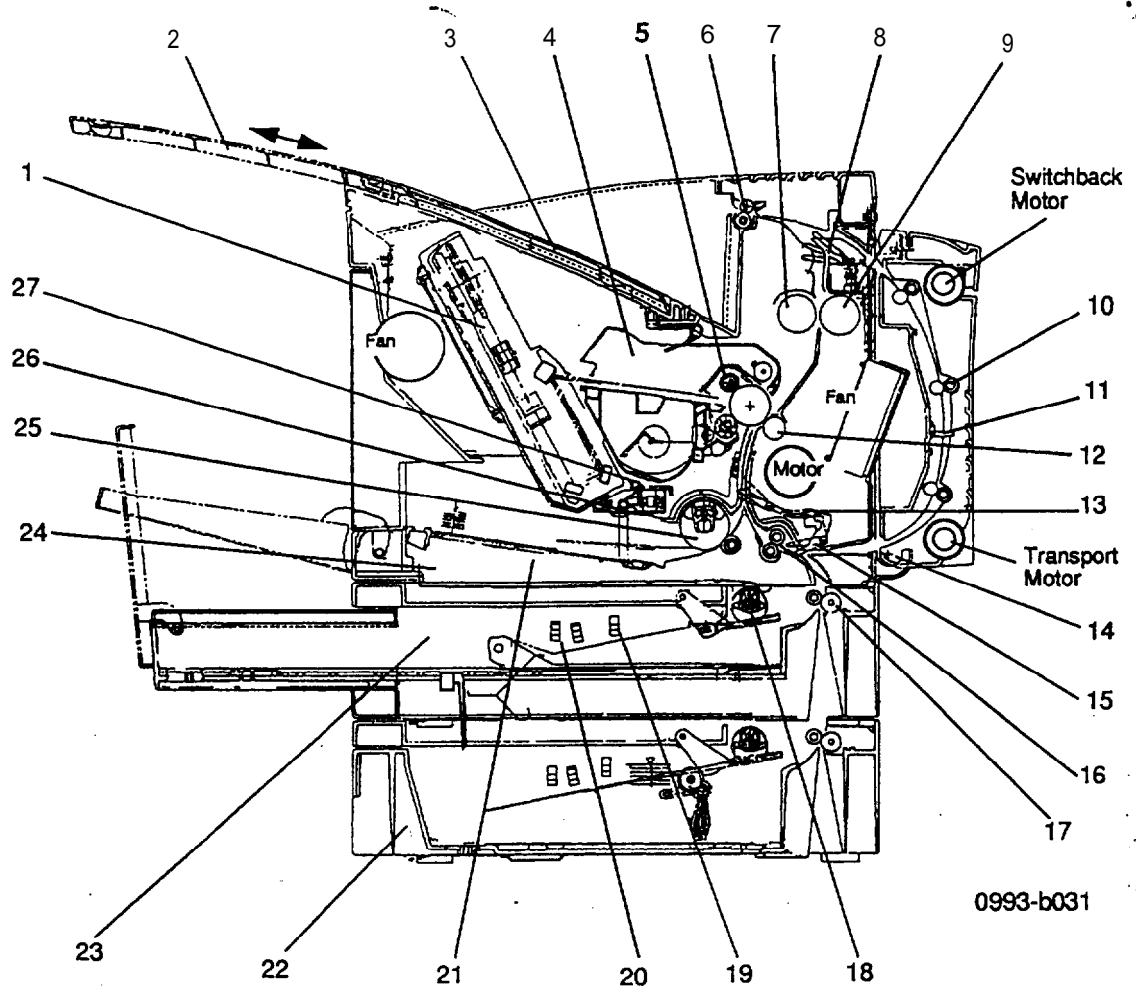
2. PARTS IDENTIFICATION



1. Paper Feed Tray
2. Paper Exit Tray
3. Upper Unit Lock Release Lever
4. Duplex Unit (Option)
5. Duplex Lower Cover
6. Interface Connector
7. **Second** Cassette Unit
8. **Third** Cassette Unit (Option)
9. Imaging **Cartridge**
- 10.500 Sheet Letter Cassette (Option)
- 11.250 Sheet **Cassette**



3. COMPONENT LAYOUT



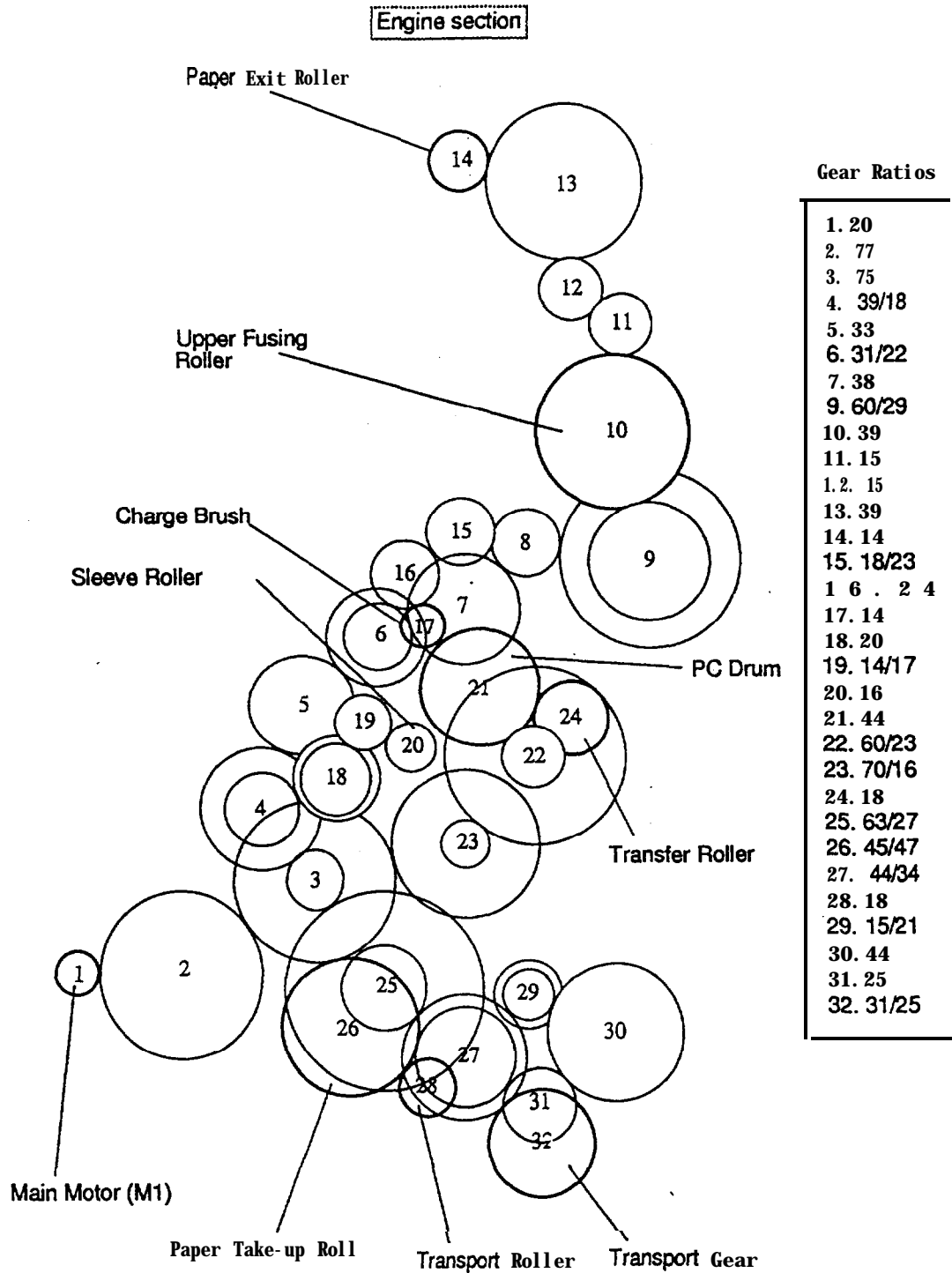
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- | | |
|--------------------------------------|--|
| 1. Print Head Unit | 15. Registration Sensor (PCR1) |
| 2. A3 Exit Tray (stored type) | 16. Registration Roller |
| 3. Paper Exit Tray | 17. 2nd Transport Roller |
| 4. Imaging Cartridge | 18. 2nd Paper Take-up Roller |
| 5. Charge Brush | 19. 2nd Paper Empty Sensor (PE2) |
| 6. Paper Exit Roller | 20. 2nd Paper Near-empty Sensor (PNE2) |
| 7. Upper Fusing Roller | 21. Paper Lifting Plate |
| 8. Paper Exit Sensor (PC3) | 22. 3rd Cassette Unit (Option) |
| 9. Lower Fusing Roller | 23. 2nd Cassette Unit |
| 10. Duplex Transport Roller (Option) | 24. Multi-purpose Tray |
| 11. Duplex Paper Sensor (PC4) | 25. Paper Take-up Roll |
| 12. Image Transfer Roller | 26. Paper Empty Sensor (PE1) |
| 13. Paper Take-up Sensor (PC1) | ↓ Paper Near-empty Sensor (PNE1) |
| 14. Duplex Cover Switch (Option) | 27. Toner Empty Sensor (TE1) |

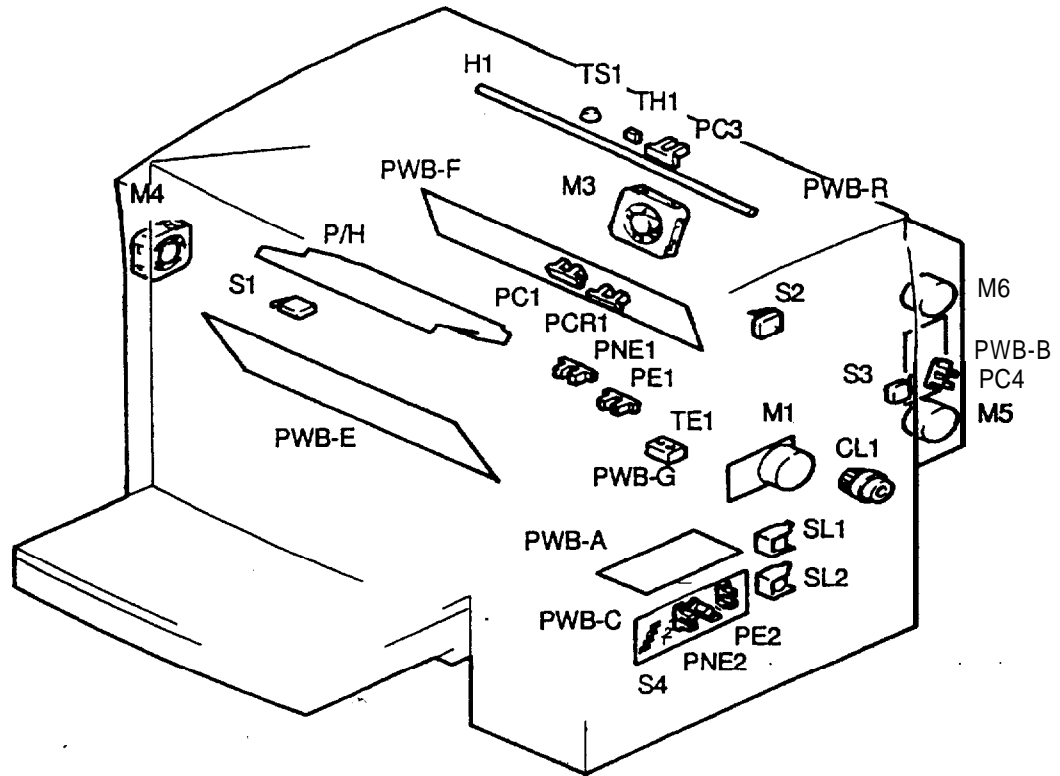
4. GEARS/ ROLLERS ASSIGNMENT

The Main Motor (M1) transmits the drive to the rollers of the printer and the optional 3rd Cassette Unit via each gear. The duplex unit Transport Motor (M5) transmits the drive to rollers of the Duplex Unit.

(Refer to C: MECHANICAL 2-2. 2nd Cassette Unit, 9-2. Duplex Unit.)



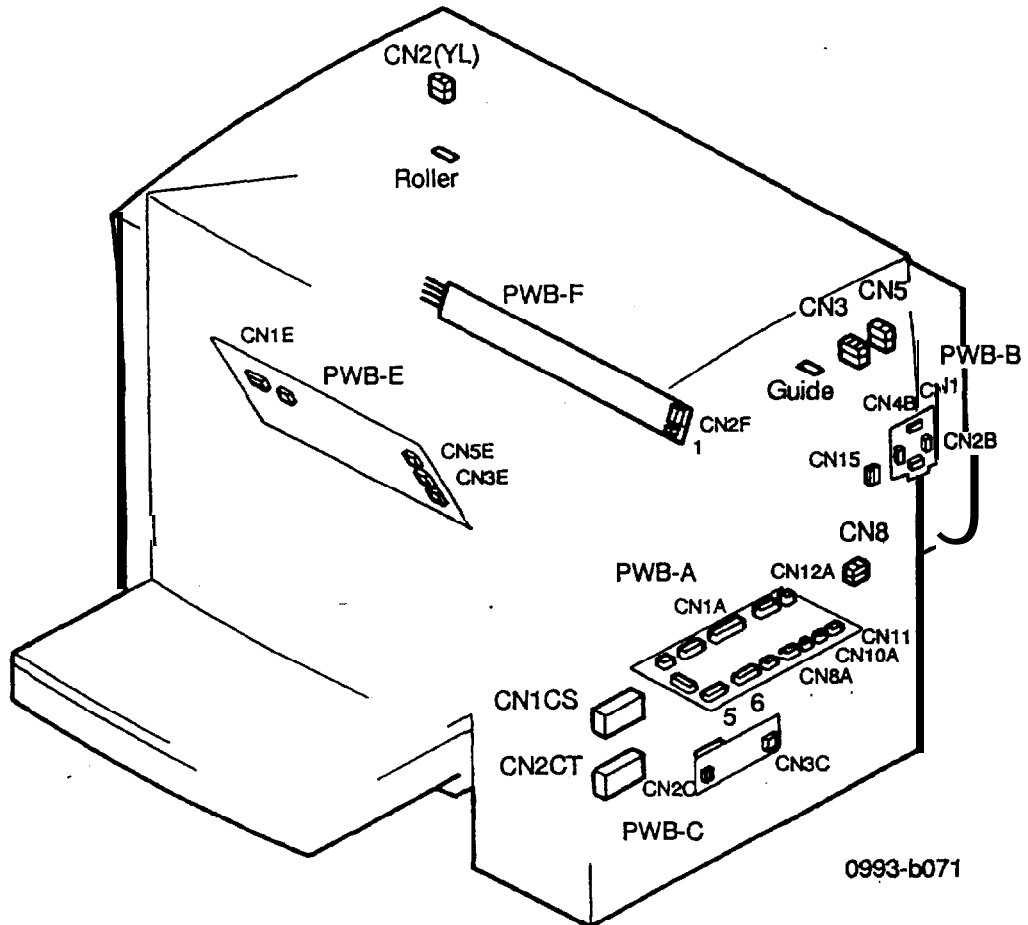
5. ELECTRICAL COMPONENT LAYOUT



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PWB-A	Main control Board	PC1	Paper Take-up Sensor
PWB-C	2nd Cassette Unit Board	PC3	Paper Exit Sensor
PWB-E	Power Unit	PWB-R	Resistor Board
PWB-F	High Voltage Unit	PCR1	Registration Sensor
PWB-G	Toner Empty Board	PE1	Paper Empty Sensor
PWB-R	Resistor Board	PNE1	Paper Near-empty Sensor
M1	Main Motor	PE2	2nd Paper Empty Sensor
M3	Fusing Fan Motor	PNE2	2nd Paper Near-empty Sensor
M4	Power Fan Motor	H1	Heater Lamp
SL1	Paper Take-up Solenoid	TE1	Toner Empty Sensor
SL2	2nd Paper Take-up Solenoid	TH1	Thermistor
CL1	Registration Clutch	TS1	Thermostat
S1	Power Switch	Duplex Unit (Option)	
s2	Interlock Switch	PWB-B	Duplex Control Board
S3	Duplex Cover Switch	M5	Transport Motor
S4	2nd Paper Size Switch	M6	Switchback Motor
		PC4	Duplex Paper Sensor

6. CONNECTORS LAYOUT



(1-
/)

PWB-A	Main Control Board	CN10A	Paper Take-up Sensor
PWB-C	2nd Cassette Unit Board	CN3	Paper Exit Sensor
PWB-E	Power Unit	CN10A	Registration Sensor
PWB-F	High Voltage Unit	CN6A	Paper Empty Sensor
CN5A	Main Motor	CN3A	Paper Near-empty Sensor
CN2F	Fusing Fan Motor	CN8A	2nd Paper Empty Sensor
CN5E	Power Fan Motor	CN8A	2nd Paper Near-empty Sensor
CN2B(PH)	Transport Motor	CN2(YL)	Heater Lamp
CN1 B(PH)	Switch back Motor	CNEA	Toner Empty Sensor
CN12A	Paper Take-up Solenoid	CN5	Thermistor
CN3C	2nd Paper Take-up Solenoid	CN2(YL)	Thermostat
CN8	Registration Clutch	Duplex Unit (Option)	
CN1E	Power Switch	PWB-B	Duplex Control Board
CN3E	Interlock Switch	CN4B	Duplex Cover Switch
CN8A	2nd Paper Size Switch	CN11A	Duplex Paper Sensor, (CN15)

7. SWITCHES/ SENSORS IDENTIFICATION

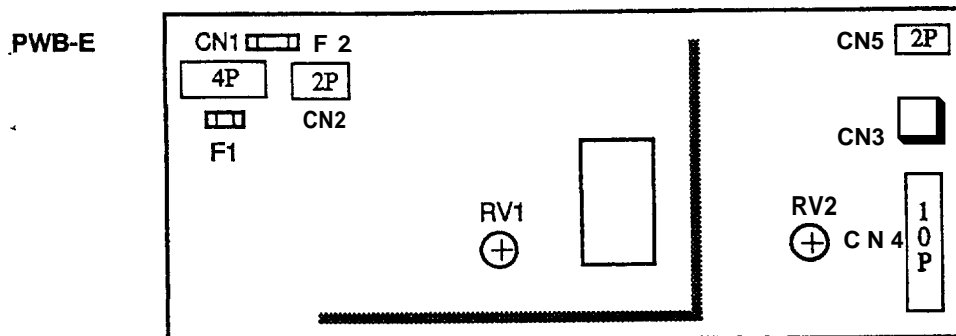
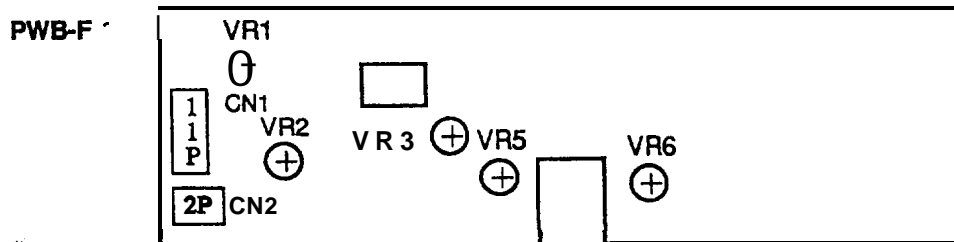
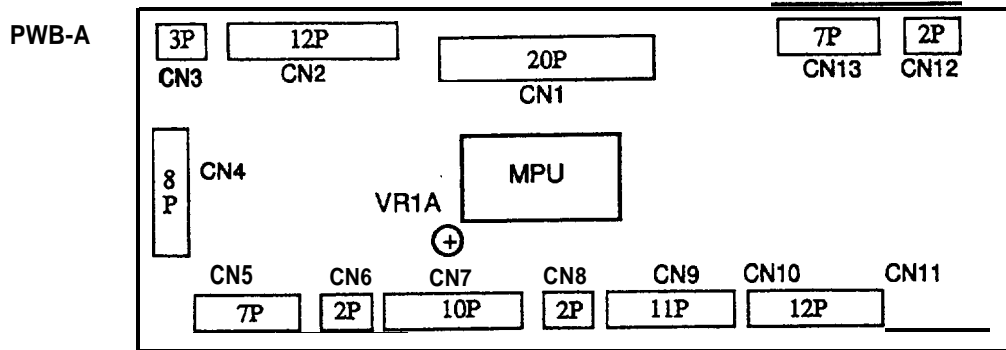
:Printer, Duplex Unit.

Symbol	Name	Function
S1	Power Switch	Turns power ON and OFF.
S2	Interlock Switch	Detects the opening of Upper Cover. And stops, the element.
S3	Duplex Cover Switch (Option)	Detects the opening of Duplex Cover. And stops, the element.
S4	2nd Paper Size Switch	Detects the paper size of 2nd Cassette Unit.
PC1	Paper Take-up Sensor	Detects the timing of paper feeding. Active: "L"
PC3	Paper Exit Sensor	Detects the paper exit of Fusing Unit Active: "H"
PC4	Duplex Paper Sensor (Option)	Detects paper in Duplex Unit. Active: "L"
PCR1	Registration Sensor	Defects the timing of 2nd Cassette Unit. Duplex Unit: "L"
PE1	Paper Empty Sensor	Detects paper empty condition. Active: "H"
PNE1	Paper Near-empty Sensor	Detects 50 sheets of paper. Active: "H"
PE2	2nd Paper Empty Sensor	Detects paper empty of 2nd Cassette Unit. Active: "H"
PNE2-1	2nd Paper Near-empty Sensor	Detects 50 sheets of paper for 2nd Cassette Unit. Active: "H"
PNE2-2	2nd Paper Near-empty Sensor	Detects 250 sheets of paper for 2nd Cassette Unit 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.

8. ELECTRICAL SERVICE PARTS ON P.W. BOARDS

P.W. Boards	Symbol	Function
PWB-A	VR1	Adjusts the Image Registration gap. (Refer to E: Adjustment section.)
PWB-F	VR1-VR6	Factory setting
PWB-E	F1	Fuse (100V) 125V - 5A (230V) 250V - 3.15A
	F2	125V - 12A 250V - 6.3A
	RV1-RV2	Factory setting

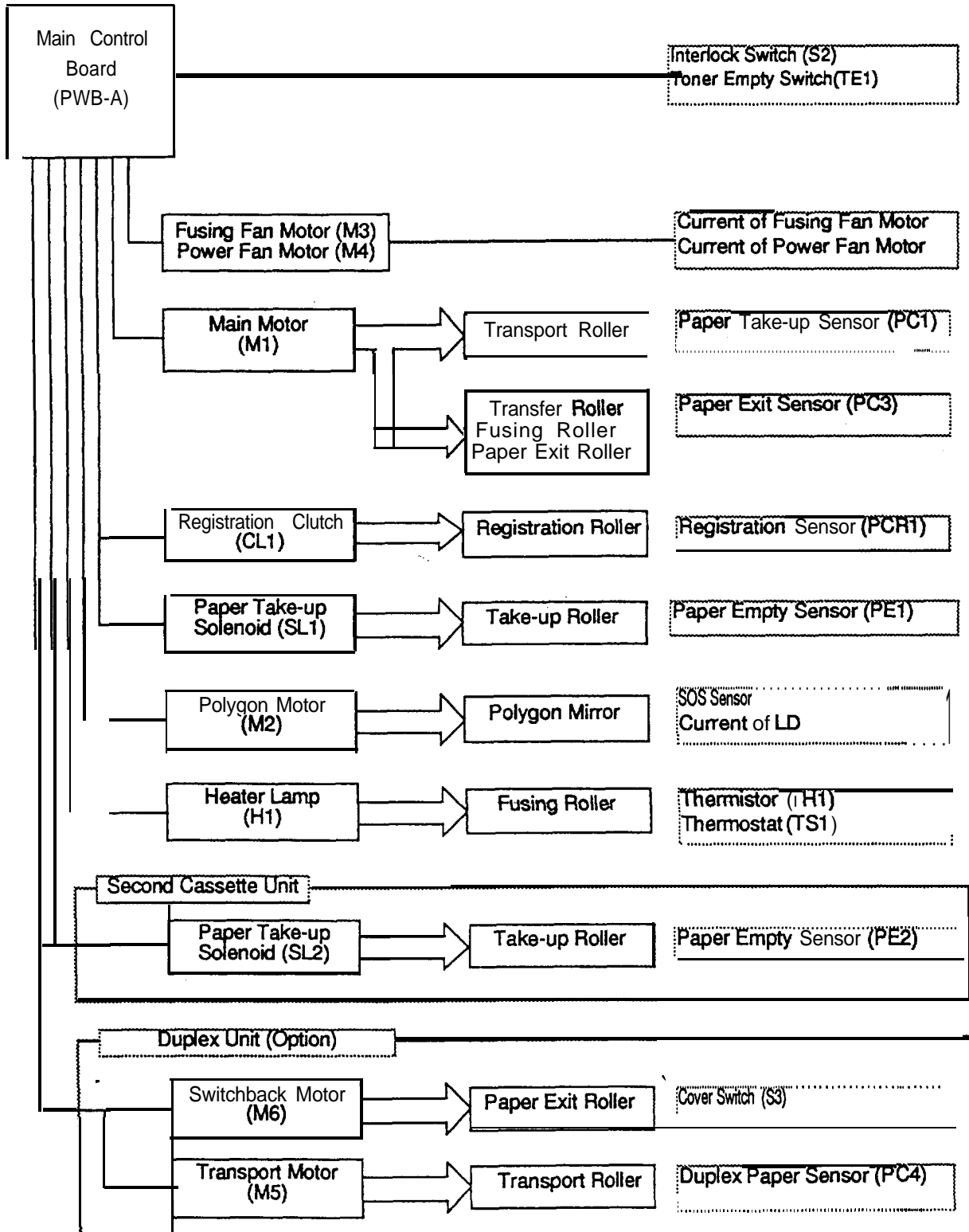
 Do not touch



9. SYSTEM LAYOUT

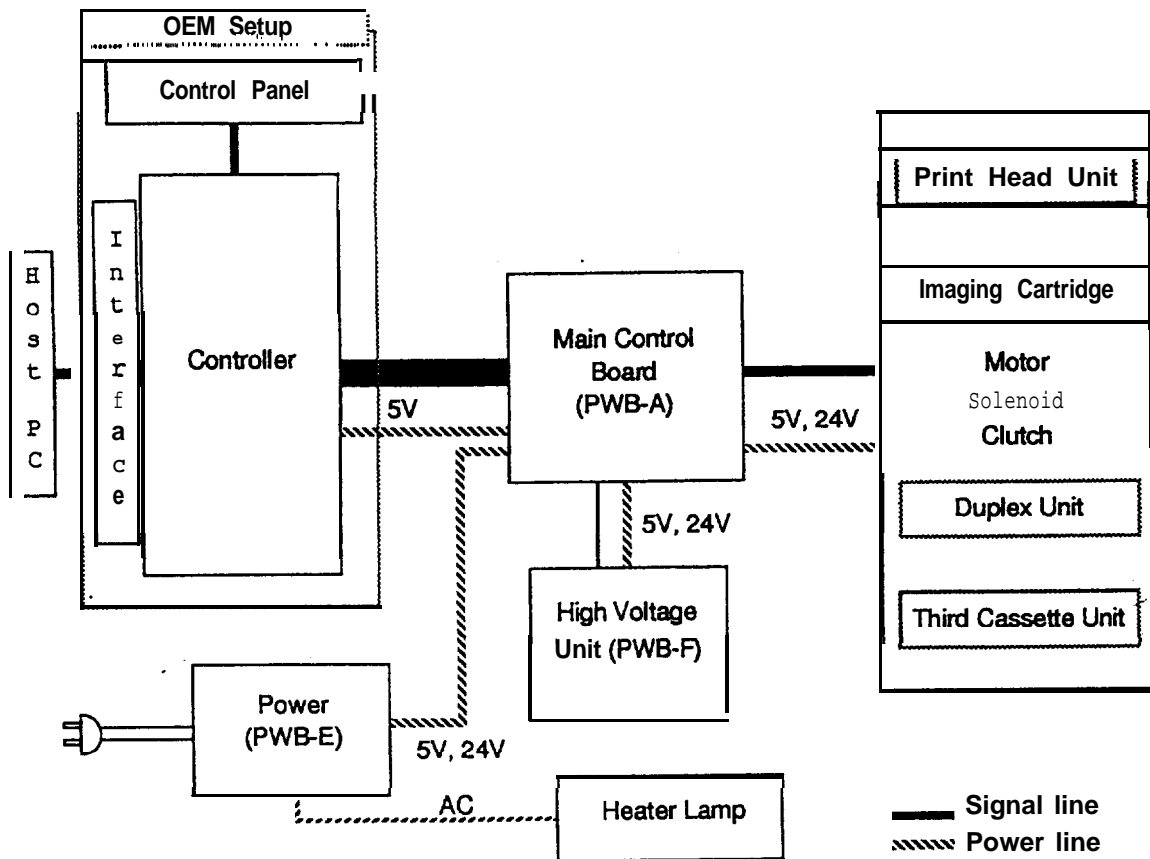
9-1. Drive Section

: Mechanical Control and Sensor Layout



9-2. Electrical Section

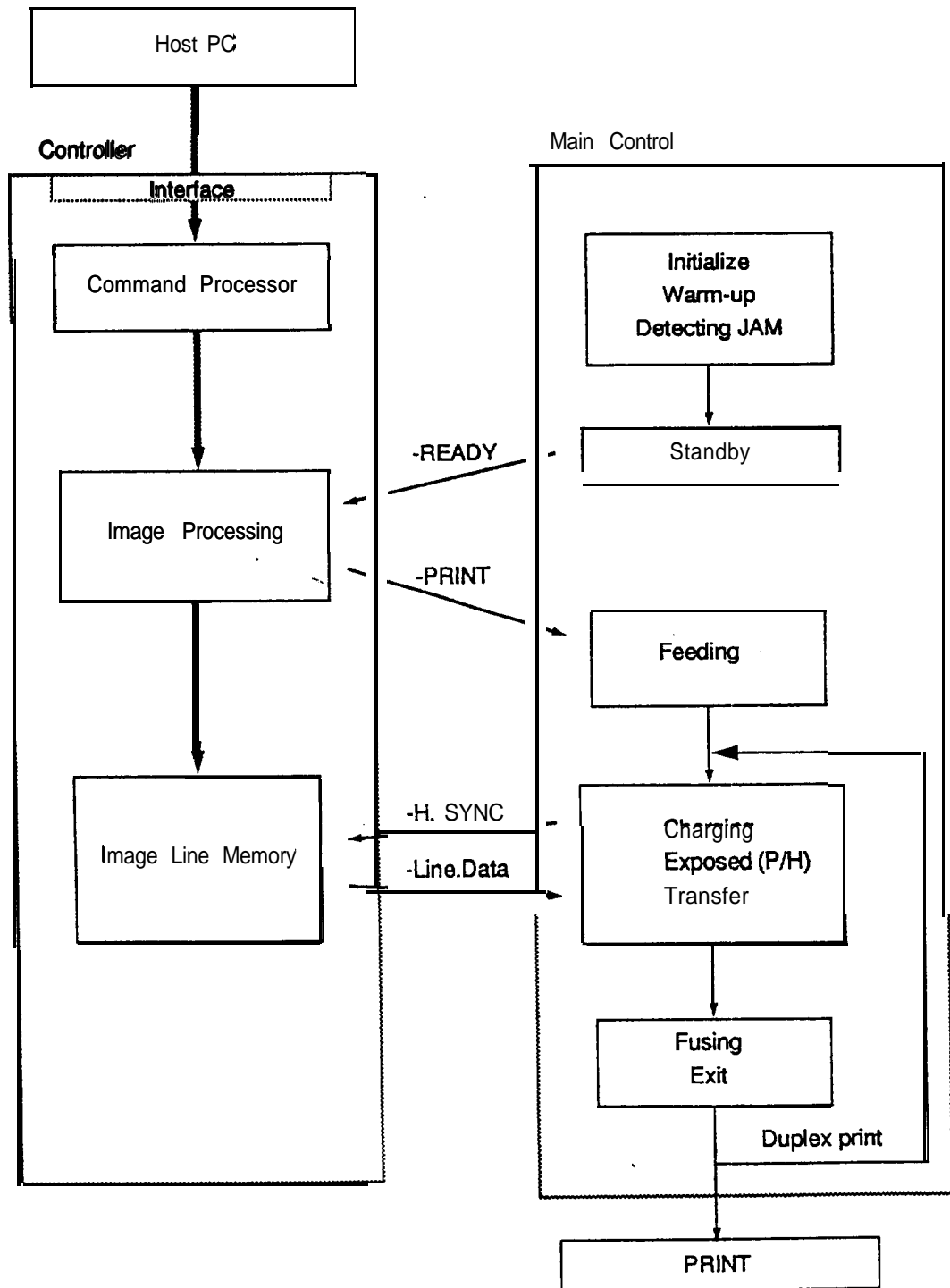
: Power Supply and Signal Transmission



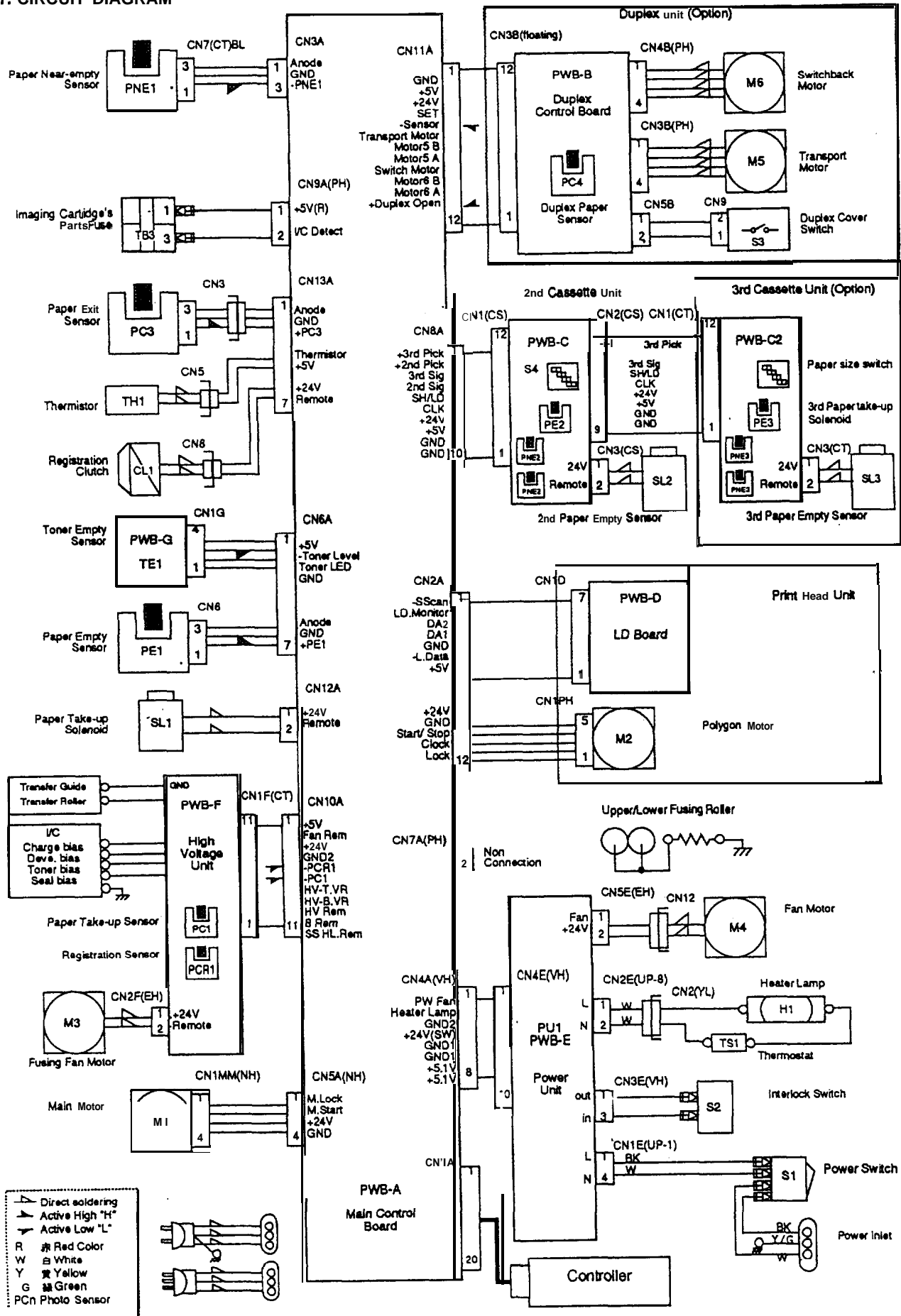
- The Power source supplies DC+5V and DC+24V to the main control board and AC to the Heater Lamp.
- The Printer receives print data from the host PC through an interface.
- The Controller adjusts the size and position of the print data to generate image data. Printing occurs after the image data has 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, and Duplex Unit. Third Cassette Unit.

IO. Sequence Flow

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



11. CIRCUIT DIAGRAM

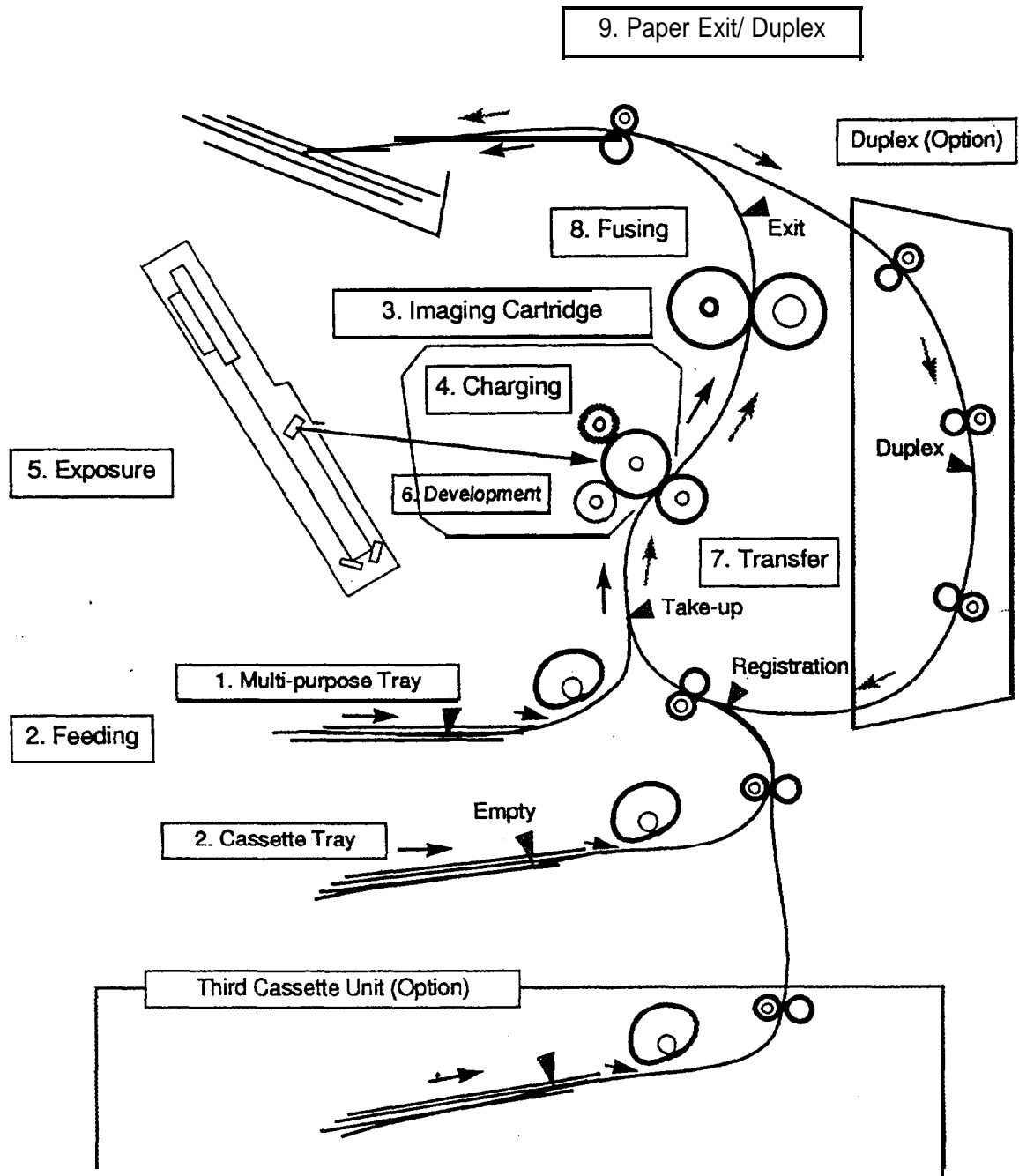




C: MECHANICAL/ ELECTRICAL

1. PRINTING PROCESS	C-1
2. PAPER FEEDING	c-2
2-1. Multi-purpose Tray	C-2
2-2. Second Cassette Tray	C-3
3. IMAGING CARTRIDGE	c-4
4. CHARGING	c-5
5. EXPOSURE (P/H)	c-5
6. DEVELOPMENT	C-6
7. TRANSFER	c-6
8. FUSING	C-7
9. PAPER EXIT/DUPLEX	C-8
9-1. Paper Exit	C-8
9-2. Duplex (Option)	C-8
10. PRINTING SEQUENCE	c-9
10-1. Starting sequence	c-9
10-2. Multiple sequence	C-9
10-3. Ending sequence	c-9
10-4. Duplex Print sequence	c-10
10-5. Power ON sequence	C-10

1. PRINTING PROCESS

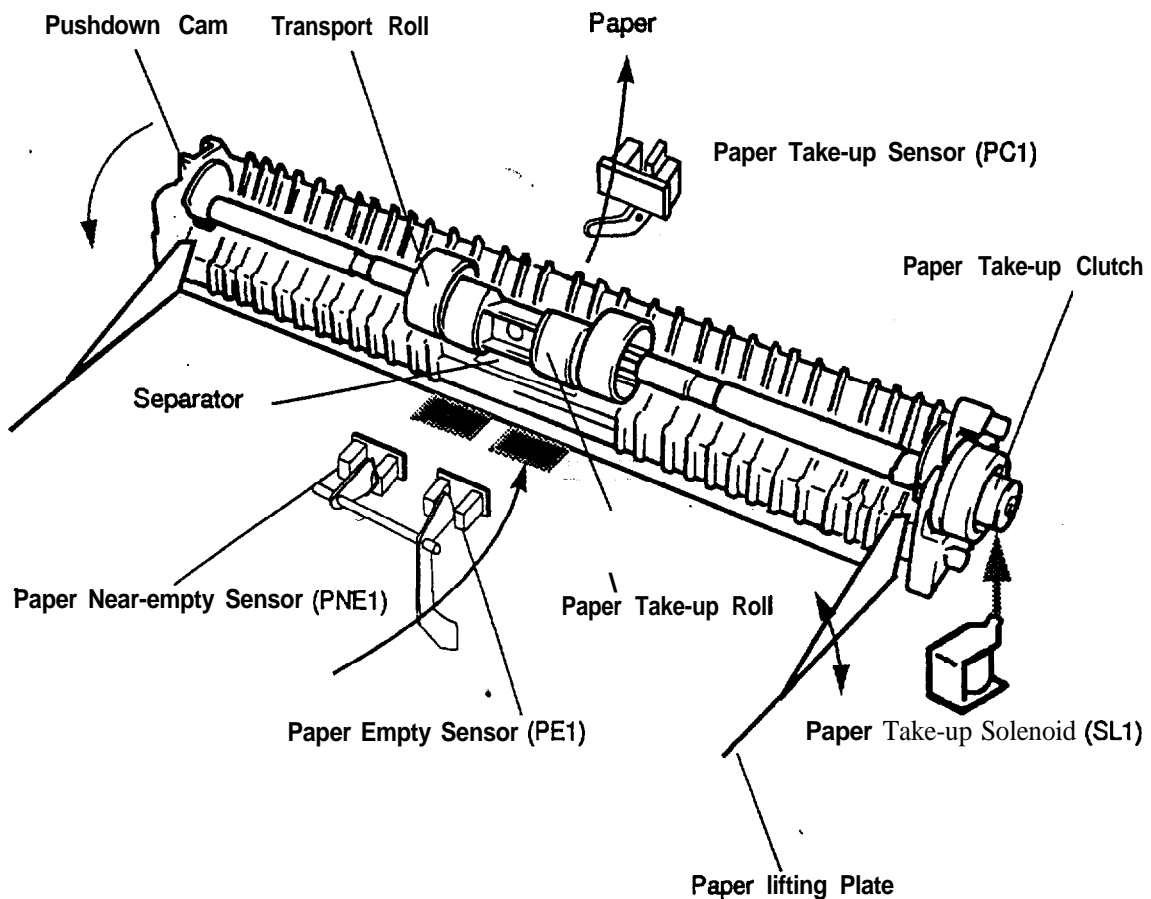


2. PAPER FEEDING

- Paper is fed from either the multi-purpose tray (holding up to 150 sheets of paper) or the 2nd paper tray. **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.
- The paper near-empty sensor (PNE1) detects a condition in which the amount of paper still available for use is 50 sheets or less.

2-1. Multi-purpose Tray

- 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.**



0993-c021

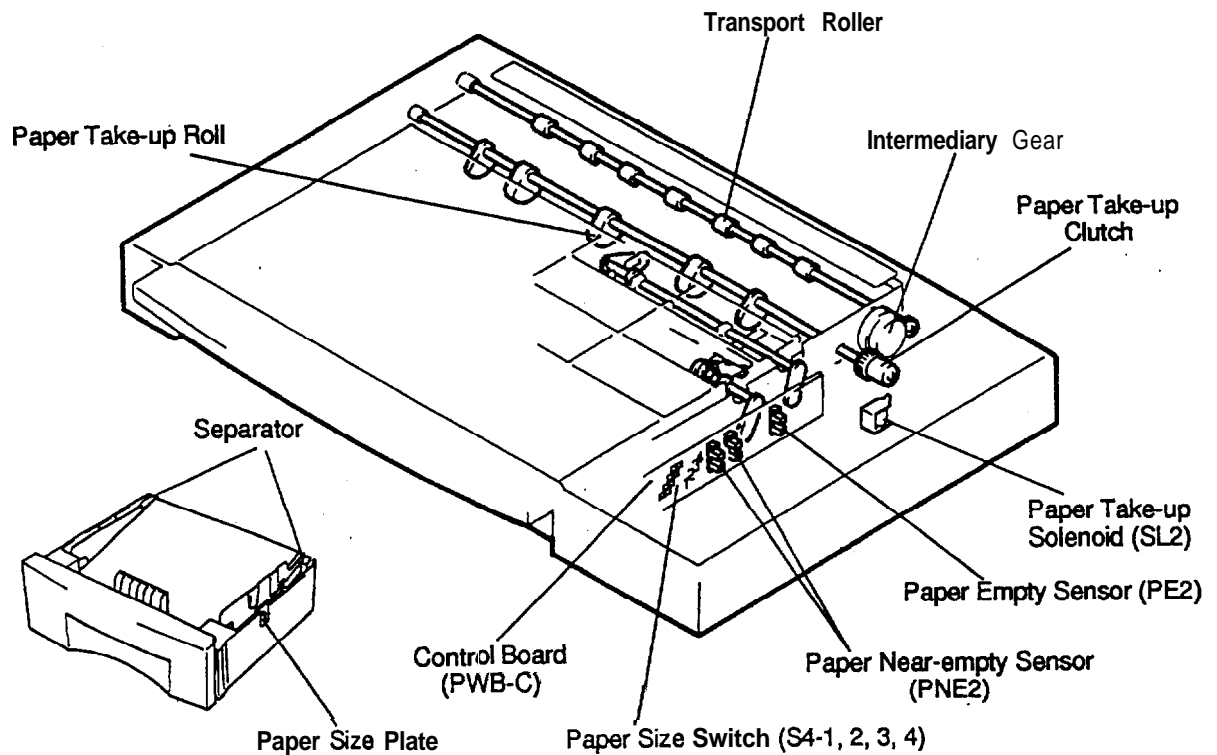
2-2. Second Cassette Tray

- The drive for the **second** paper tray is transmitted from the printer to the intermediary **gear**, paper take-up **clutch**, paper take-up roll, and the **transport roller**.
- The **second** paper tray is **controlled** by the main control board (PWB-A) via the 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.
- The paper near-empty sensor (PNE2) detects a **condition** in which the amount of paper still available for use is 50 sheets **or less** or 250 **or less**. (The optional Third Cassette Unit is **configured** in the same way.)

: 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	Half Letter C
1 1 0 0	Letter L		No Cassette

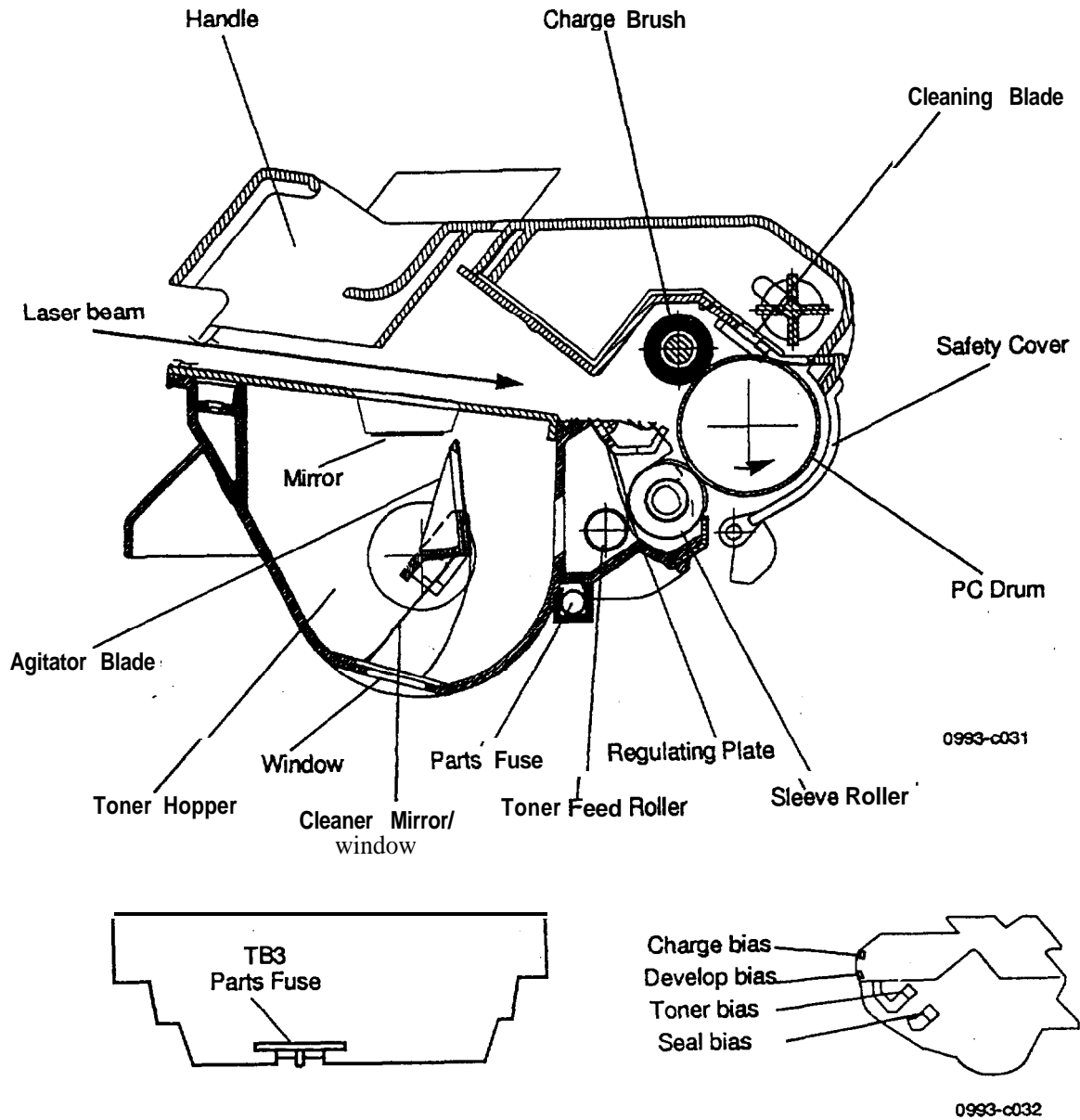
Note: 0: ON, 1: OFF



0993-c022

3. IMAGING CARTRIDGE

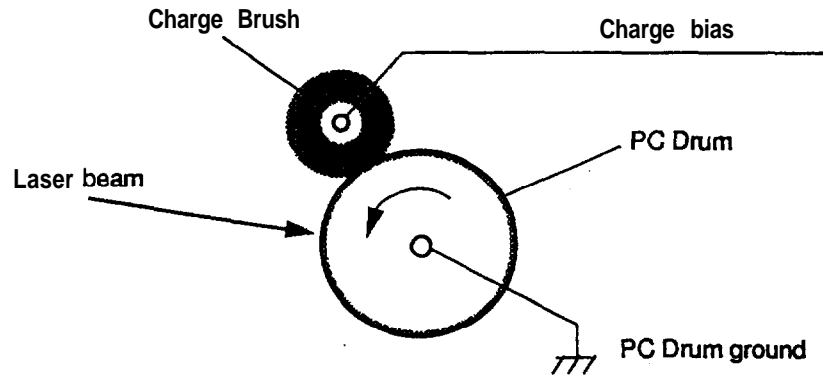
- The illustration below shows the construction of the PC drum charge unit and developing unit.



- 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.
- The parts fuse (TB3) installed in the Imaging Cartridge is evidence that the cartridge is new.

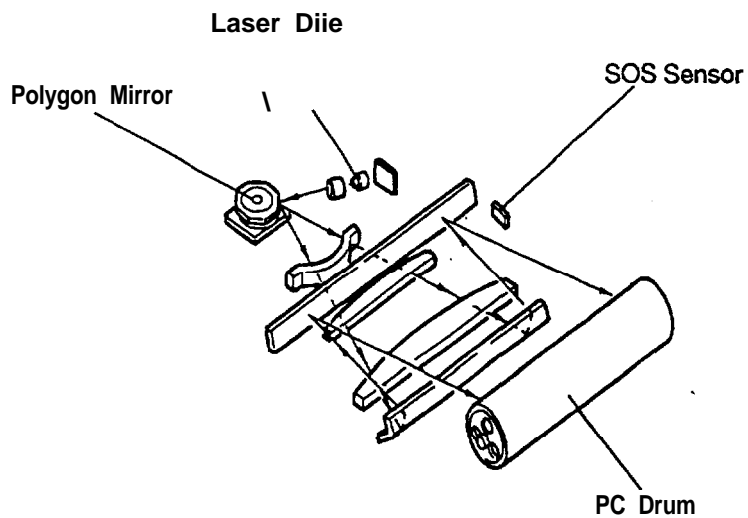
4. CHARGING

- 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)

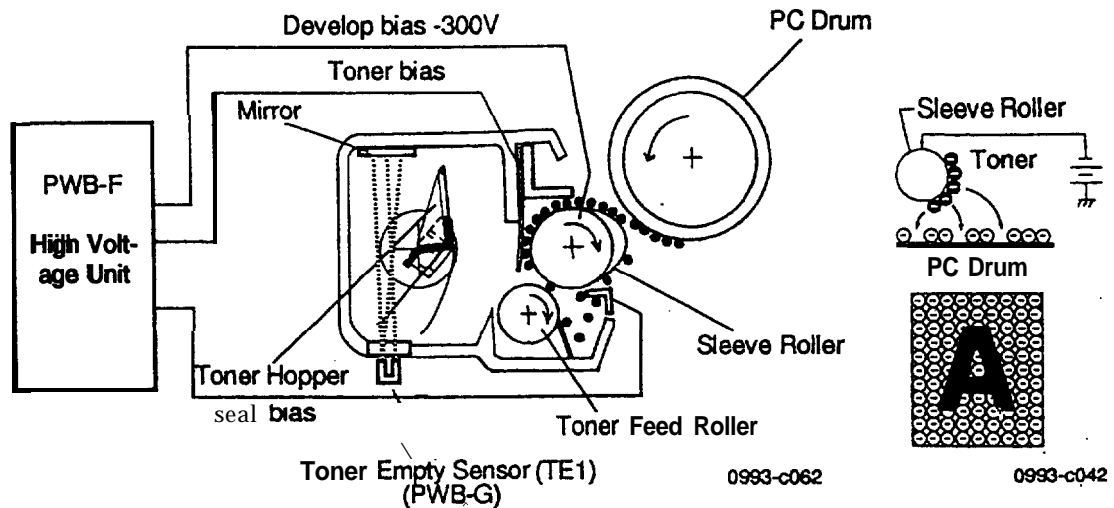
- The print head emits a laser beam to produce an electrostatic latent image on the surface of the PC Drum.
- There is a sensor called the SOS sensor installed that correctly times the illumination of the laser diode with the rotation of the polygon mirror.



0993-c0432

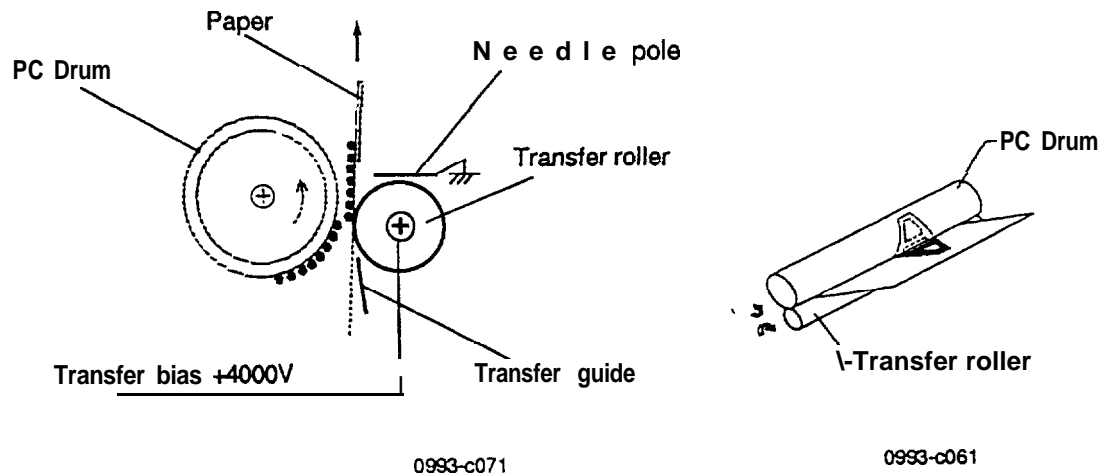
6. DEVELOPMENT

- 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 approx. 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.



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.

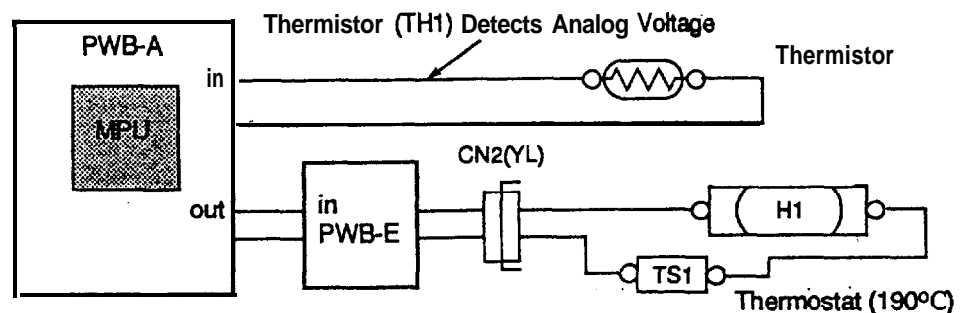


8. FUSING

- 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).

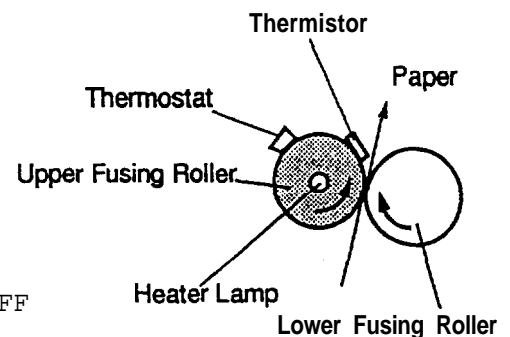
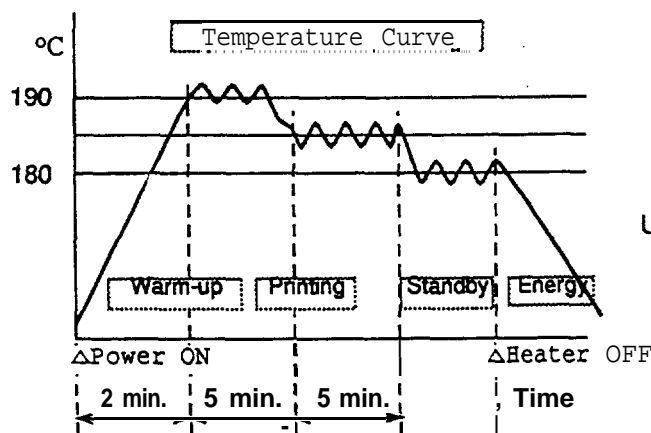
: Fusing Temperature Control Circuit

- The thermistor (TH1) detects the surface temperature of the upper fusing roller and inputs the corresponding analog voltage to MPU.
- The Heater Lamp (H1) is turned ON or OFF by a signal from 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, MPU forces the Heater Lamp OFF.



: Fusing Unit Temperature Control

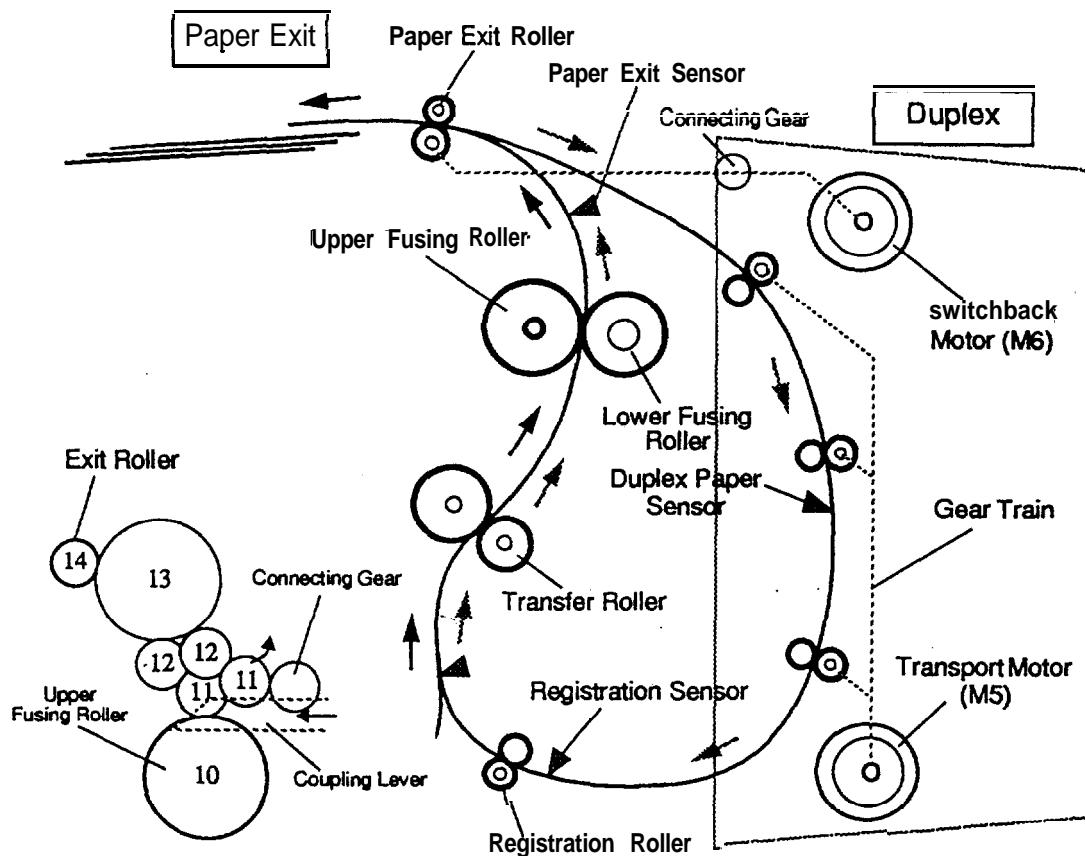
1. During warm-up The printer starts warm-up to attain a temperature of approx. 190°C when the power switch is turned ON.
2. During print cycle On receiving a print command, the printer starts a temperature control cycle to keep the upper fusing roller temperature at approx. 190°C
3. During standby The 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-t. 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



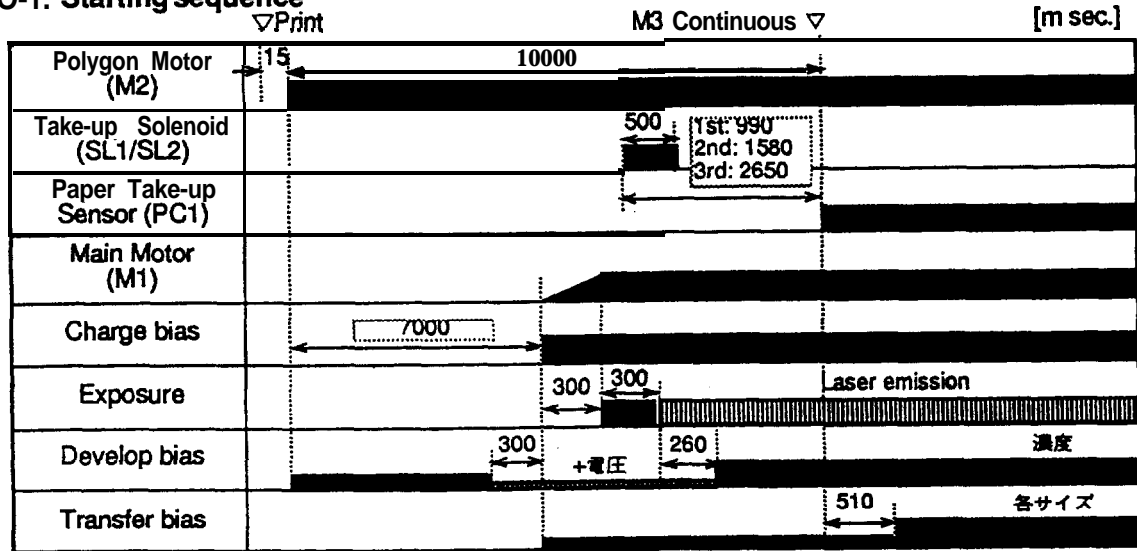
9-2. Duplex (Option)

- 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.

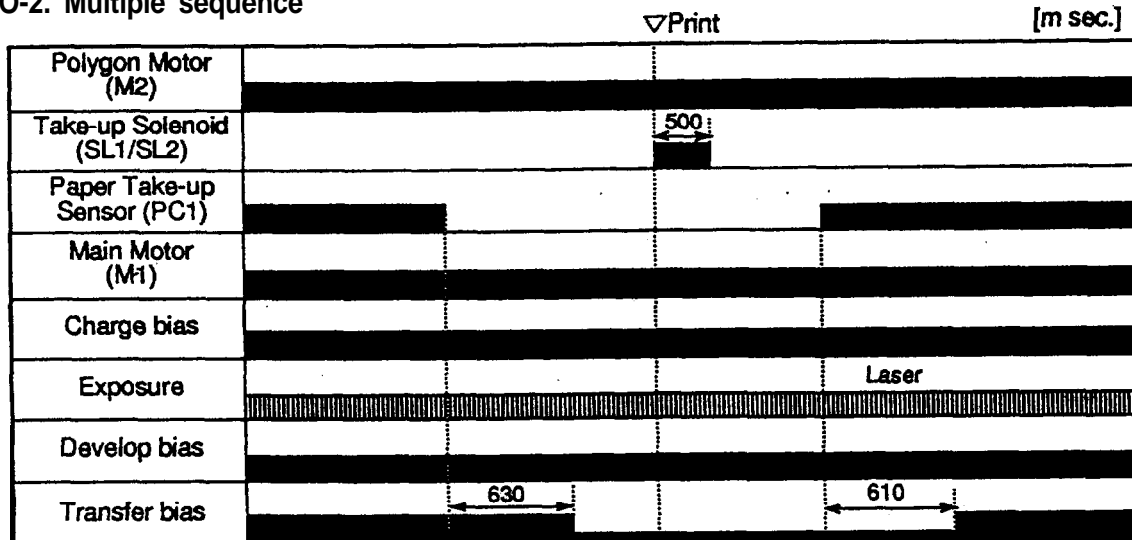
1. When the printing cycle is completed for 1-sided printing, the paper, moving past the exit sensor, is fed out of the printer by the exit roller.
2. When the printing cycle is completed for the front side in 2-sided printing, the paper is fed towards the exit by the exit roller until it moves past 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 to the back side. The paper, having gone through the second print cycle, is fed out of the printer by the exit roller.

IO. PRINTING SEQUENCE

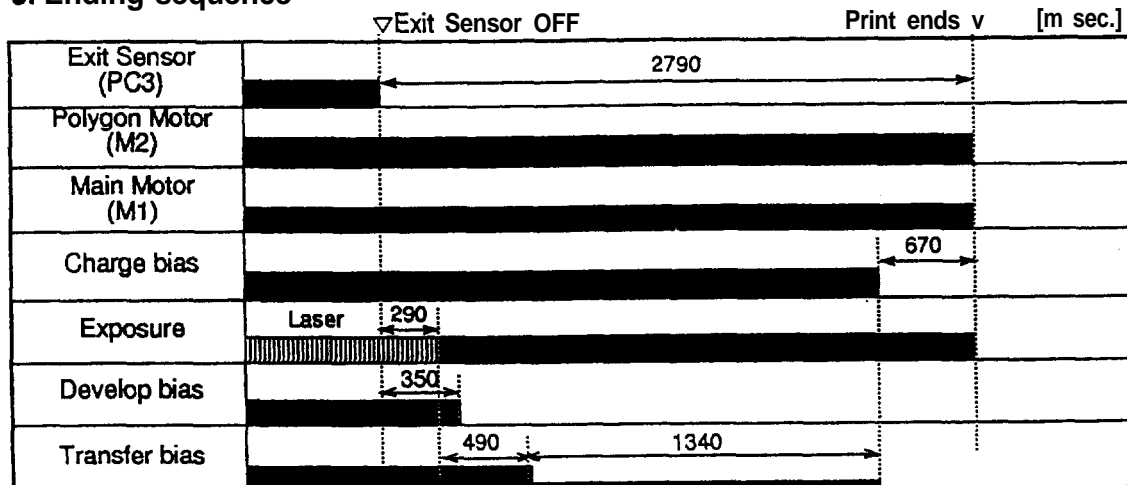
1 O-1. Starting sequence



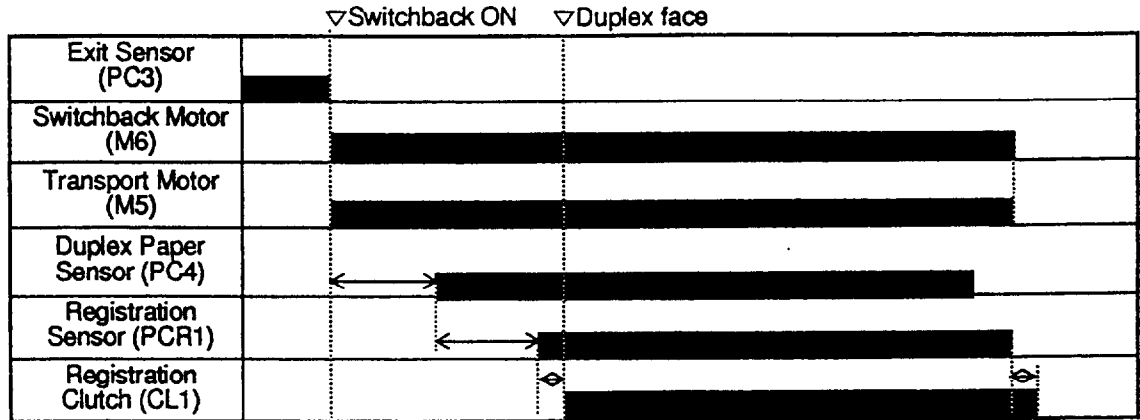
1 O-2. Multiple sequence



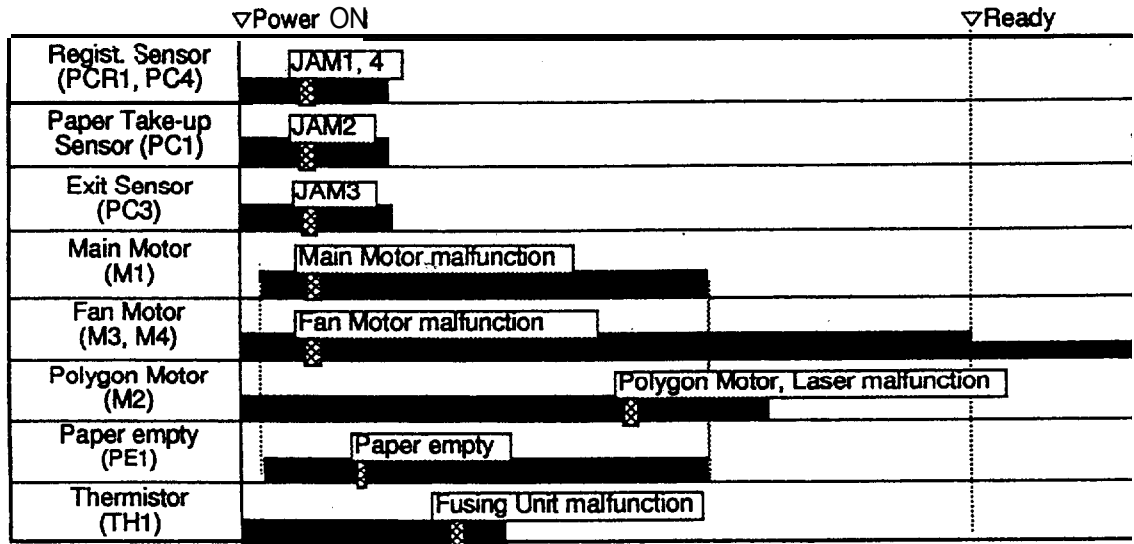
10-3. Ending sequence



1 O-4. Duplex sequence



10-5. Power ON sequence (Trouble Check)



Note: Error check sequence

D: DISASSEMBLY/ CLEANING



1. MAINTENANCE/ INSPECTION	D-1
1-1. Replacement of Parts.....	D-1
1-2. Cleaning Parts	D-1
1-3. Required Service Tools	D-1
2. DISASSEMBLY PROCEDURE	D-2
2-1. Outer cover	D-2
2.2. Fusing unit	D-2
2-3. Image Transfer Unit	D-6
2-4. High Voltage Unit	D-6
2.5. Power Unit	D-7
2-6. Print Head Unit	D-7
2-7. Paper Empty Sensor Assy.	D-8
2-8. Paper Take-up Roll Assy.	D-8
2-9. Registration Roller Assy.	D-8
2-10. Drive Unit	D-9
2-11. Duplex Unit	D-9

1. MAINTENANCE/ INSPECTION

I-I. Replacement of Parts

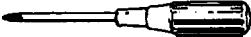
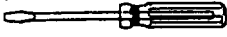
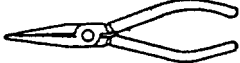
Parts Name	Replacement Cycle
Imaging Cartridge	Multi printing: 10,000 ; intermittent: 8,000 sheets
Paper Take-up Roll	At detection of fault, or, 120,000 sheets of multi printing
Fusing Unit	At detection of fault, or, 120,000 sheets of multi printing
Image Transfer Unit	At detection of fault , or, 120,000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

1-2. Cleaning Parts

Parts Name	Cleaning Procedure
Paper Take-up Roll	Wipe the dust off with a soft cloth dampened with alcohol.
Fusing Roller	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.

I-3. Required Service Tools

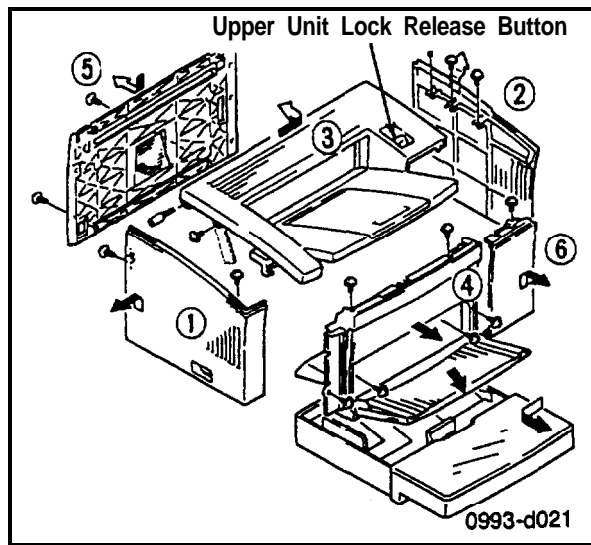
Tools	+Driver (No.2)	-Driver	Needle Nose Pliers
			
Use	Generally use	E-ring	E-ring

Note: Grease: For the Drive Section: **MOLYCORT EMBOL**

2. DISASSEMBLY PROCEDURE

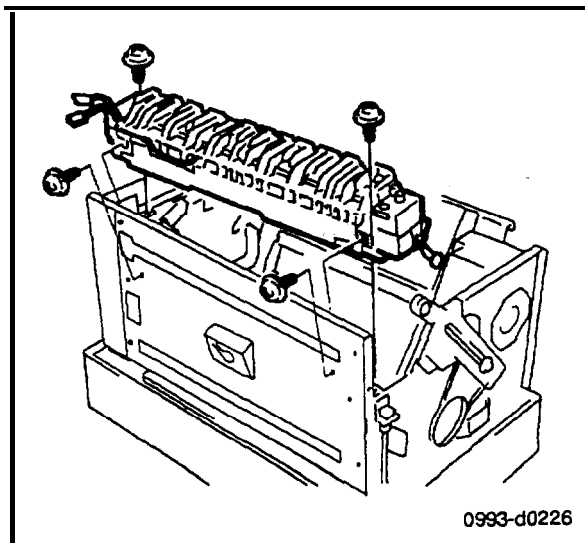
Before starting the disassembly procedure, press the upper unit lock release button to open the Upper Unit. Then, remove the Imaging Cartridge.

2-1. Outer Cover



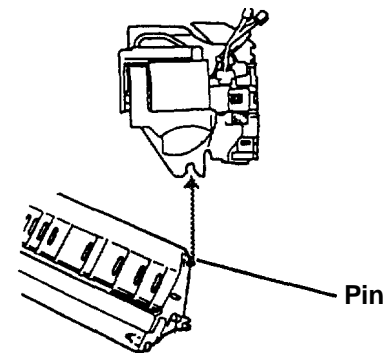
1. Remove the Left Cover. (2 screws)
2. Remove the Right Cover. (3 screws)
3. Remove the Upper Unit. (2 screws)
4. Remove the Right Front Cover. (1 screw)
5. Remove the Front Cover. (6 screws)
6. Remove the Rear Cover. (2 screws)

2-2. Fusing Unit

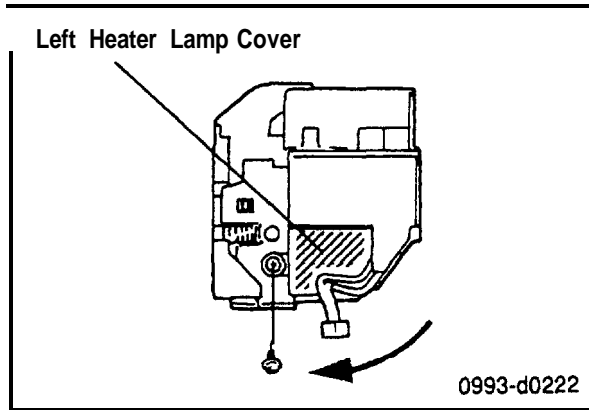


1. Remove the Outer Cover. (Refer to section 2-1.)
2. Remove the Fusing Unit. (4 screws, 3 connectors)

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

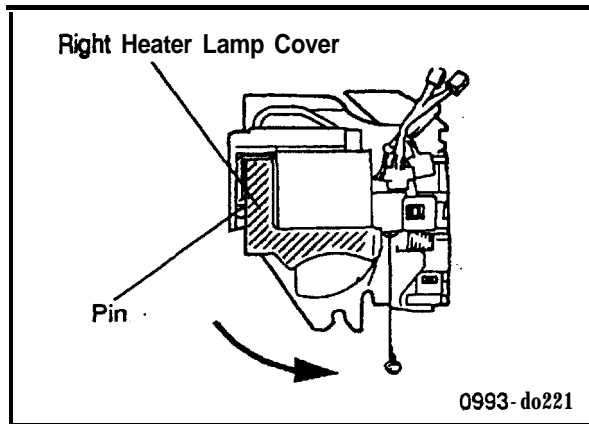


: Heater Lamp Cover



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

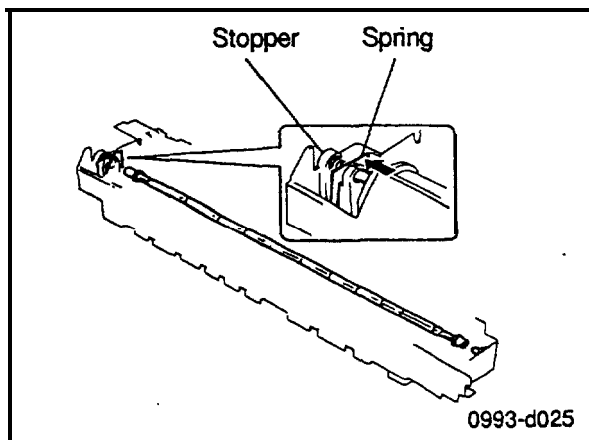
Note: When removing the Left Heater Lamp Cover, turn the Cover in the clockwise direction.



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

Note: When removing the Right Heater Lamp Cover, turn the Cover in the counter clockwise direction.

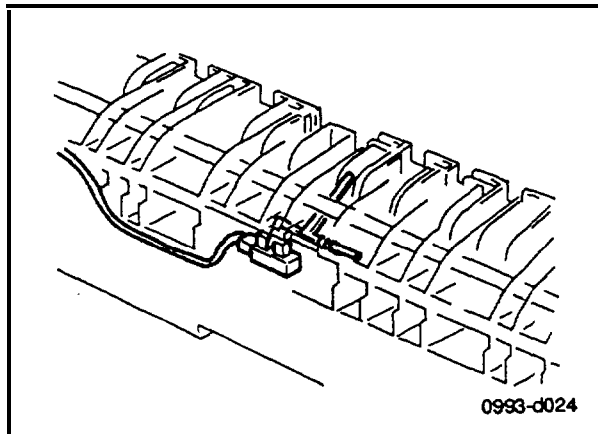
: Heater Lamp



5. Holding the right end of the Heater Lamp, take out the stopper and spring.

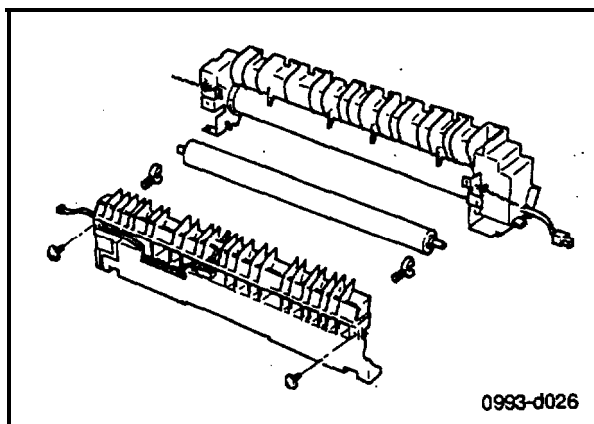
6. Pressing the Heater Lamp in the direction indicate by the arrow, remove it from the heater socket.

: Paper Exit Sensor



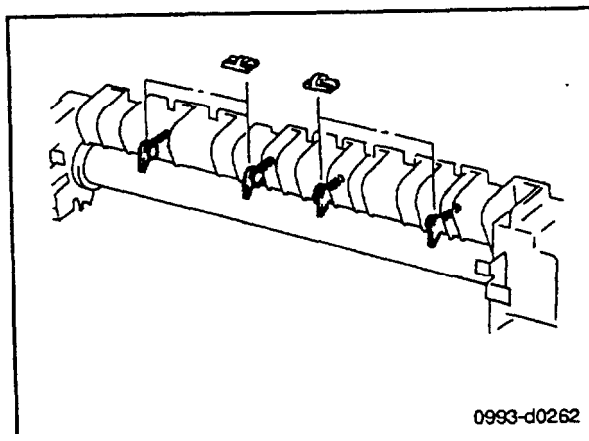
1. Remove the Paper Exit Sensor. (1 connector)
2. Remove the actuator. (1 spring)

: 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.

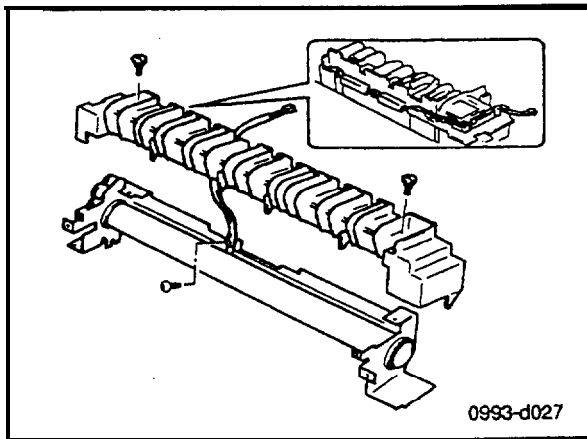
: Separator



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

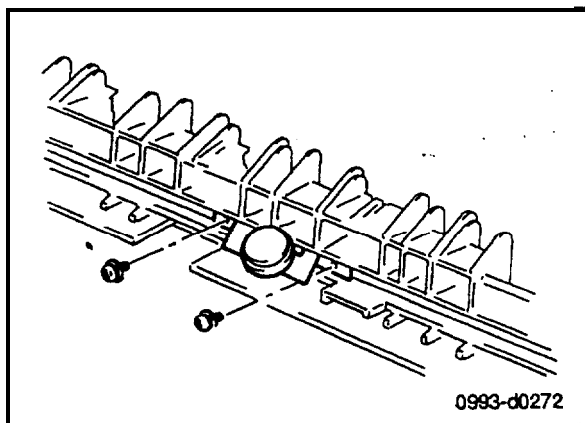
Note: The two paper separator finger stoppers on the right face the opposite direction to the two on the left.

: Thermistor



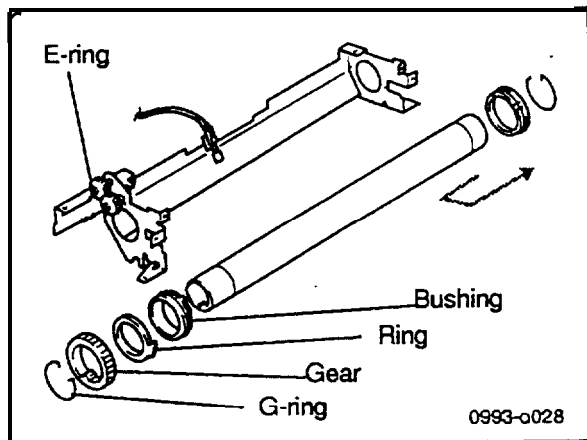
1. Remove the front Fusing Cover. (2 screws, 1 harness)
2. Remove the Thermistor. (1 screw)

: Thermostat



1. Remove the Thermostat. (2 screws)

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

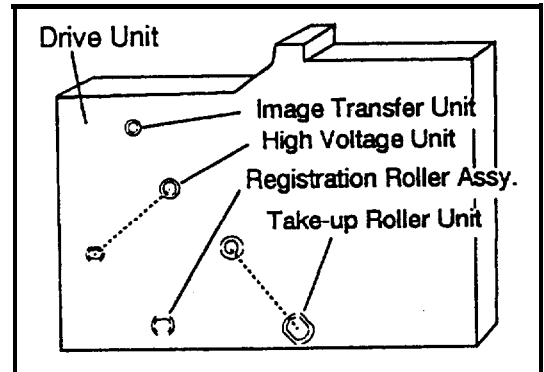
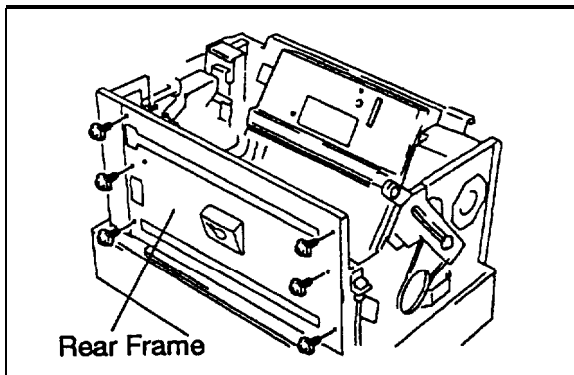


1. Remove the G-ring.
2. Remove the Gear, Ring, Bushing.
3. Remove the Upper Fusing Roller as indicated by the arrow.
4. Remove the Gear. (1 E-ring)

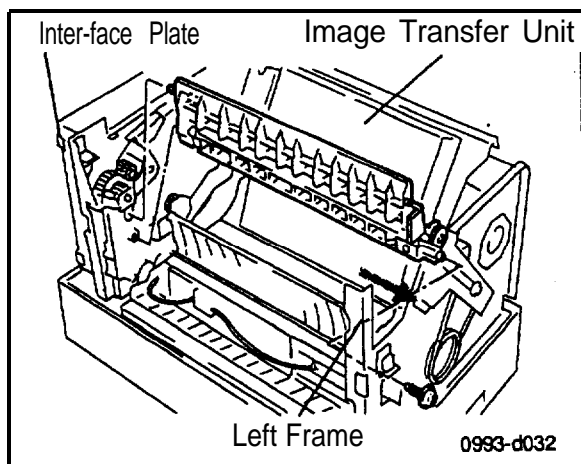
Note: When disassembling/ reassembling the Transfer Unit, High Voltage Unit, Registration Roller Assy. and Paper Take-up Roller Unit, please note **that** each has a peg that fits into a hole in the **Right** Frame and a screw that secures the unit in the Left Frame.

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

2-3. Image Transfer Unit



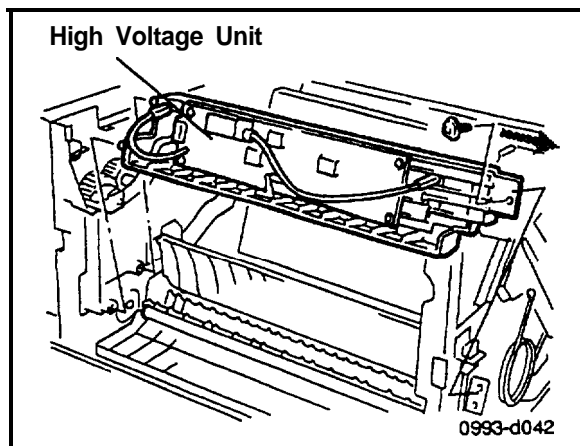
1. Remove the Outer Cover. (Refer to sect. 2- 1)
2. Remove the Fusing Unit. (Refer to sect. 2-2)
3. Remove **the** Rear Frame. (6 screws, 1 connector)
4. Remove **the** Image Transfer Unit. (1 **screw**)



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 Transfer Roller with the hand.

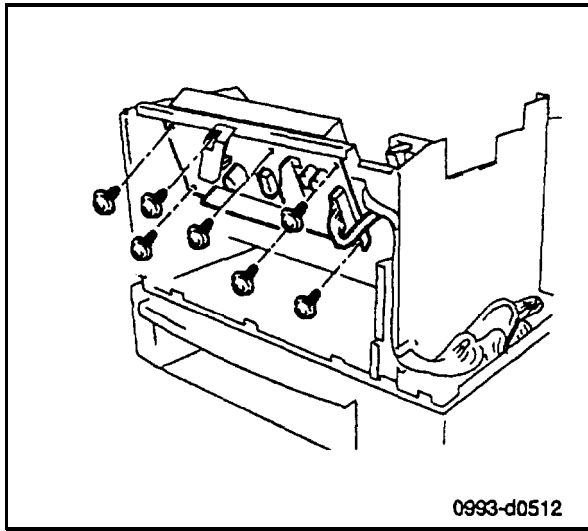
2-4. High Voltage Unit



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)

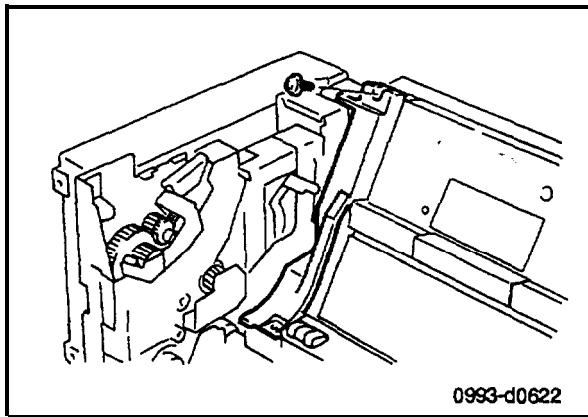
Note: Pulling the High Voltage Unit in the direction indicated by the arrow, remove it.

2-5. Power Unit



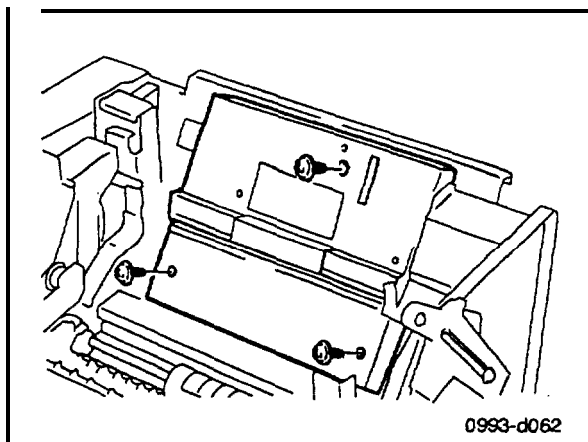
1. Remove the Outer Cover. (Refer to sect. 2-1)
2. Remove the Power Unit. (6 screws, 5 connectors)

2-6. Print Head Unit



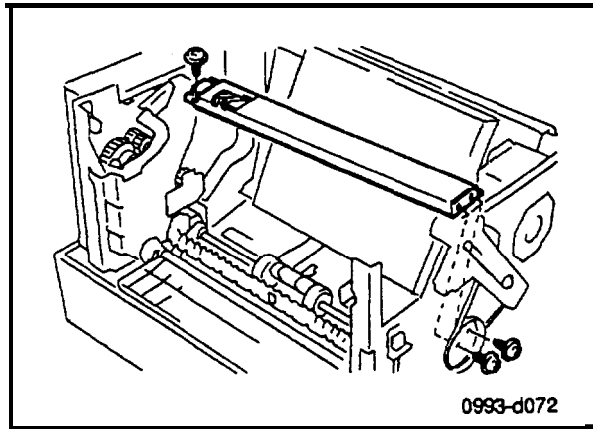
1. Remove the Outer Cover. (Refer to sect. 2-1)
2. Remove the Harness Cover. (2 screws)

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



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

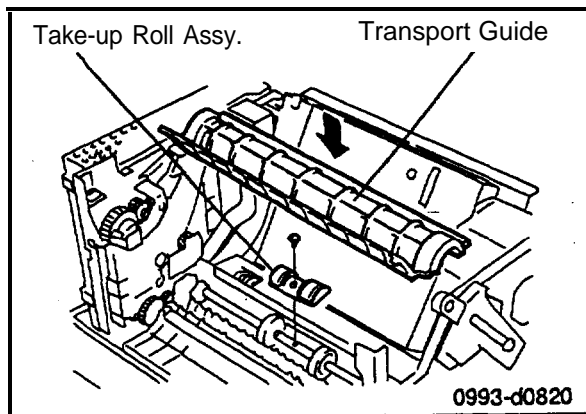
2-7. Paper Empty Sensor Assy.



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 Assy. (3 screws, 2 connectors)

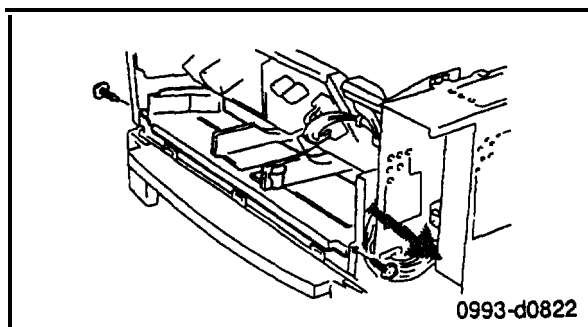
Note: After reinstallation, Secure the harness in the wire saddle.

2-8. Paper Take-up Roll Assy.



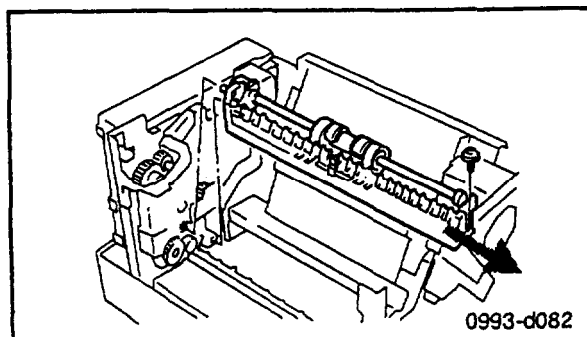
1. Remove the Paper Empty Sensor Assy. (Refer to sect. 2-7)
2. Pulling up, remove the Transport Guide.
3. Remove the Paper Take-up Roll Assy. (1 screw)

2-9. Registration Roller Assy.



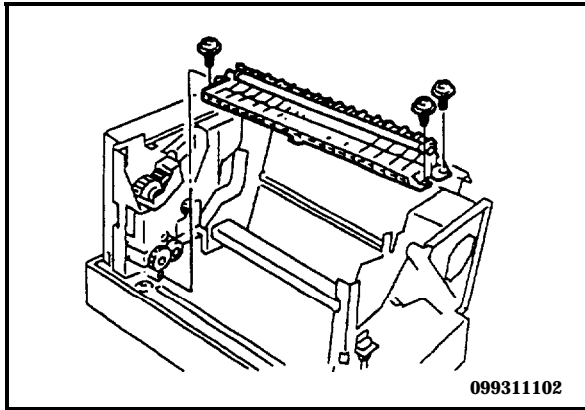
1. Remove the Outer Cover. (Refer to sect. 2-1)
2. Remove the Fusing Unit. (Refer to sect. 2-2)
3. Remove the Transfer Unit. (Refer to sect. 2-3)
4. Remove the High Voltage Unit. (Refer to sect. 2-4)
5. Remove the Paper Empty Sensor Assy. (Refer to sect. 2-7)
6. Remove the Paper Lifting Plate. (1 screws)

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



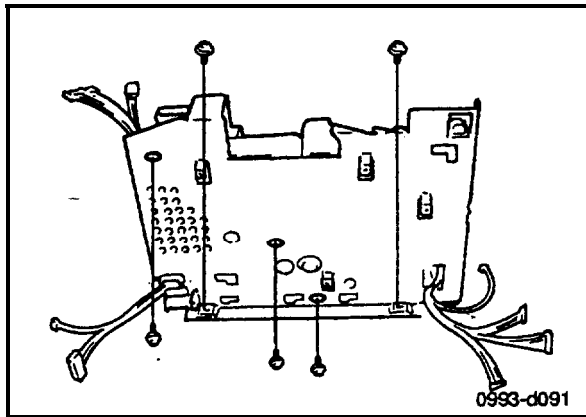
7. Remove the Paper Take-up Roller Unit. (1 screw)

Note: Slide the unit in the direction of the arrow to unlock it from the tight drive unit of the printer.



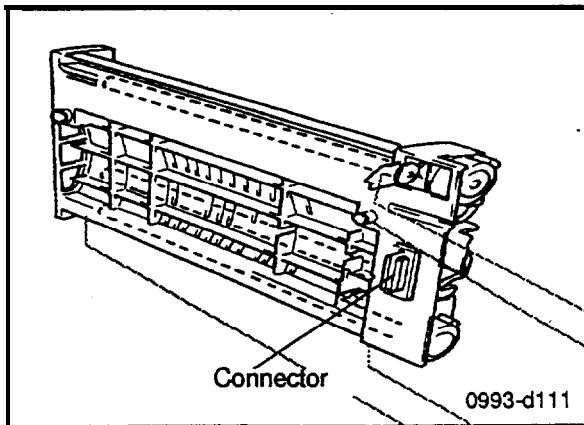
8. Remove the Registration Roller Assy. (3 screws)

2-10. Drive Unit



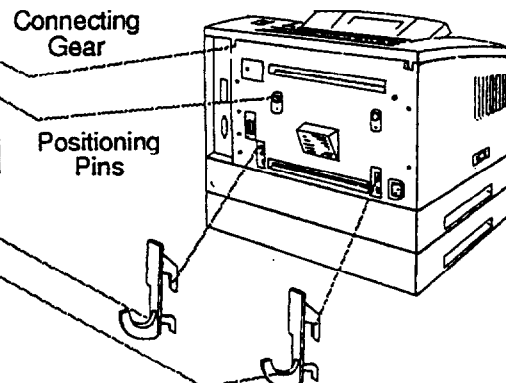
1. Remove the Outer Cover. (Refer to sect. 2-1)
2. Remove the Fusing Unit (Refer to sect. 2-2)
3. Remove the Transfer Unit (Refer to sect. 2-3)
4. Remove the High Voltage Unit (Refer to sect. 2-4)
5. Remove the Paper Empty Sensor Assy. (Refer to sect. 2-7)
6. Remove the Registration Roller Assy. (Refer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

2-11. Duplex Unit



1. Loosen 2 screws.
2. Remove the Duplex Unit

Note: At reinstallation, position the two positioning pins, coupling gear, and coupling connector correctly.



CAUTION

Turn OFF the Power Switch. When mounting or removing the Duplex Unit.

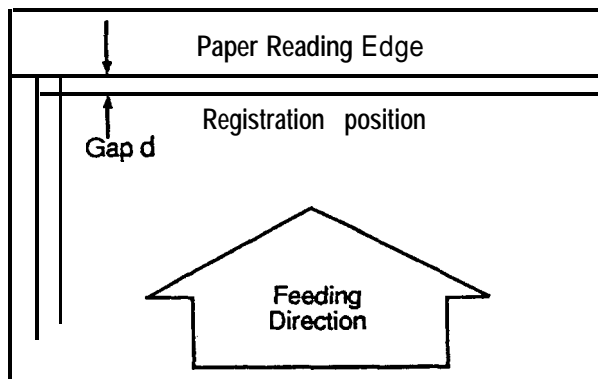
E: ADJUSTMENT



1. IMAGE REGISTRATION E - 1

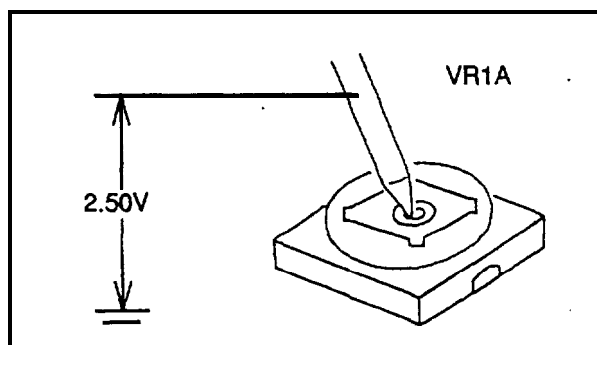
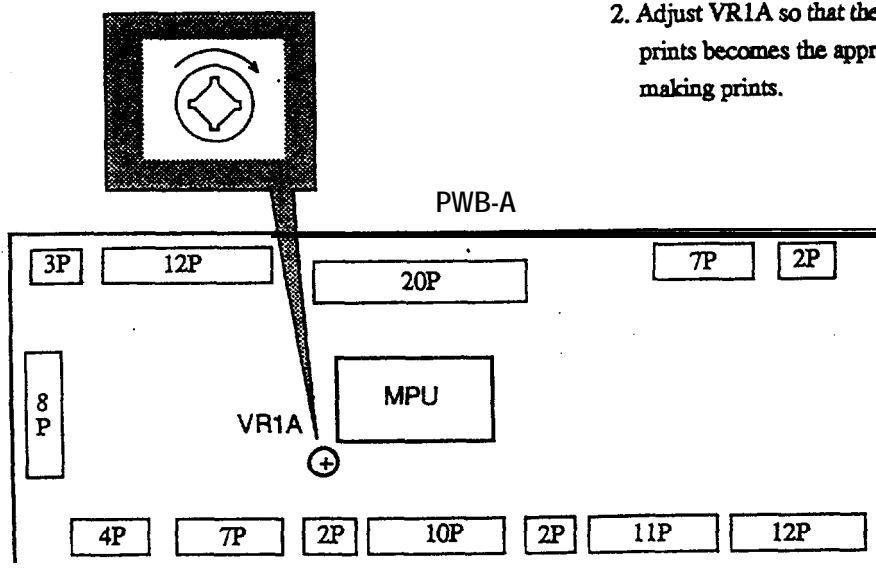
1. IMAGE REGISTRATION

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



1. Remove the Light Front Cover. (Refer to the D: Disassembly/ Cleaning item 2-1)

2. Adjust VR1A so that the Registration Gap d on the prints becomes the appropriate distance while making prints.



3. Another adjustment.
Adjust the VR1A so that the Voltage is 250V between VR1A and ground terminal.

F: TROUBLESHOOTING

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1. JAM DETECTION

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

I-I. 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** the Multi-purpose tray, the Paper Take-up Sensor (**PC1**) is in the deactivated state approx. 1.6 sec. after the Paper Take-up Roll has started **turning (JAM1)**.
2. When paper is fed from the 2nd paper tray, the Registration Sensor (**PCR1**) is in the deactivated state approx. 1.4 sec. (approx. 2.5 sec. for the **Third Cassette Unit**) after **the** Paper Take-up Roll has started **turning (JAM1)**.
3. **When** paper is fed **from** the 2nd paper tray, **the** Paper Take-up Sensor (**PC1**) is **in the** deactivated state approx. 1.0 sec. after the leading edge of **the** paper has reached **the** Registration Sensor (**PCR1**) (**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 (JAM2)**.
5. **The Paper Take-up Sensor (PC1) is 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) (JAM2)**.
6. **The Paper Exit Sensor (PC3) is in the deactivated state approx. 2.3 sec. after the leading edge of the paper has reached the Paper Take-up Sensor (PC1) (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) (JAM3)**.
8. **The Paper Exit Sensor (PC3) is in the activated state when the Power is turned ON, or the Upper unit is closed a Duplex cover is closed (JAM3)**.
9. The Duplex Paper Sensor (**PC4**) is in the deactivated state approx. 2.7 sec. after the **Switchback motor** of the Duplex unit has been **energized (JAM4)**.
10. **The Registration Sensor (PCR1) is in the deactivated state approx. 1.1 sec. after the leading edge of the paper has reached the Duplex Paper Sensor (PC4) (JAM4)**.
11. When paper is fed **from** the Duplex, **the** Paper Take-up Sensor (**PC1**) is in the **deactivated** state approx. 1.0 sec. after **the** leading edge **of** the paper has reached **the** Registration Sensor (**PCR1**) (**JAM4**).
12. The Duplex Paper Sensor (**PC4**) is in the **activated** state **when the Power is turned ON, or the Upper unit is closed a Duplex cover is closed (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 (JAM1, JAM4)**.

: JAM Resetting Procedure

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

1-2. Fusing Unit malfunction

The printer considers ~~that there~~ is a fusing malfunction when any of the following four conditions is 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 exceed **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 more than **240°C** while the fusing temperature is being controlled.

13. Laser malfunction

The laser output level is adjusted ~~before~~ printing.

A laser fault is detected if the output level cannot ~~be~~ adjusted to the ~~specified~~ value.

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 ~~de-energized~~ within **10.0 sec.** after the motor has been energized.
2. When the Polygon Motor is ON, the lock signal switches ON then remains OFF for more than **1 sec.**
3. The SOS signal is not output during printing time.-

1-5. 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.

I-6. 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.

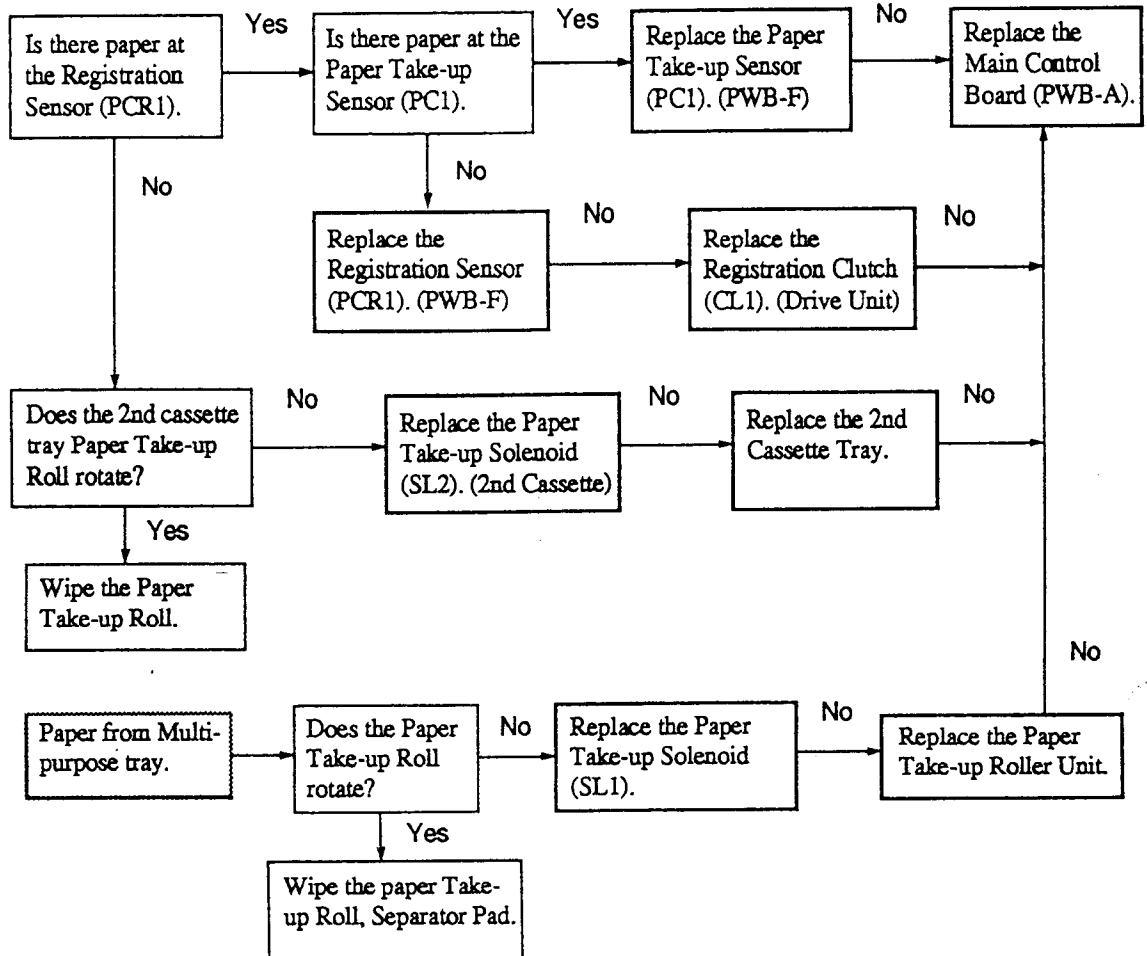
: Malfunction Resetting Procedure

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

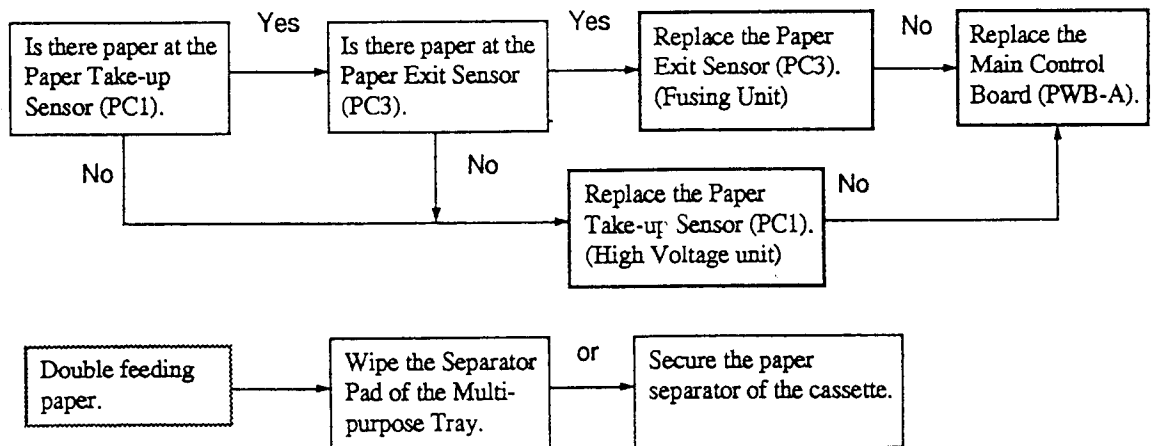
2. ACTION FOR DETECTED JAM OR MALFUNCTION

Note: Its position and perform the appropriate JAM1-4 trouble-shooting procedure before removing the jammed paper.

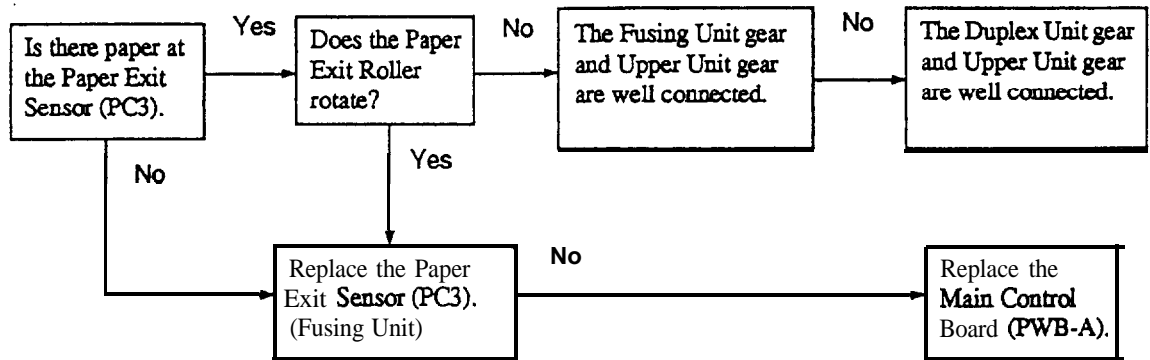
2-1. JAM1



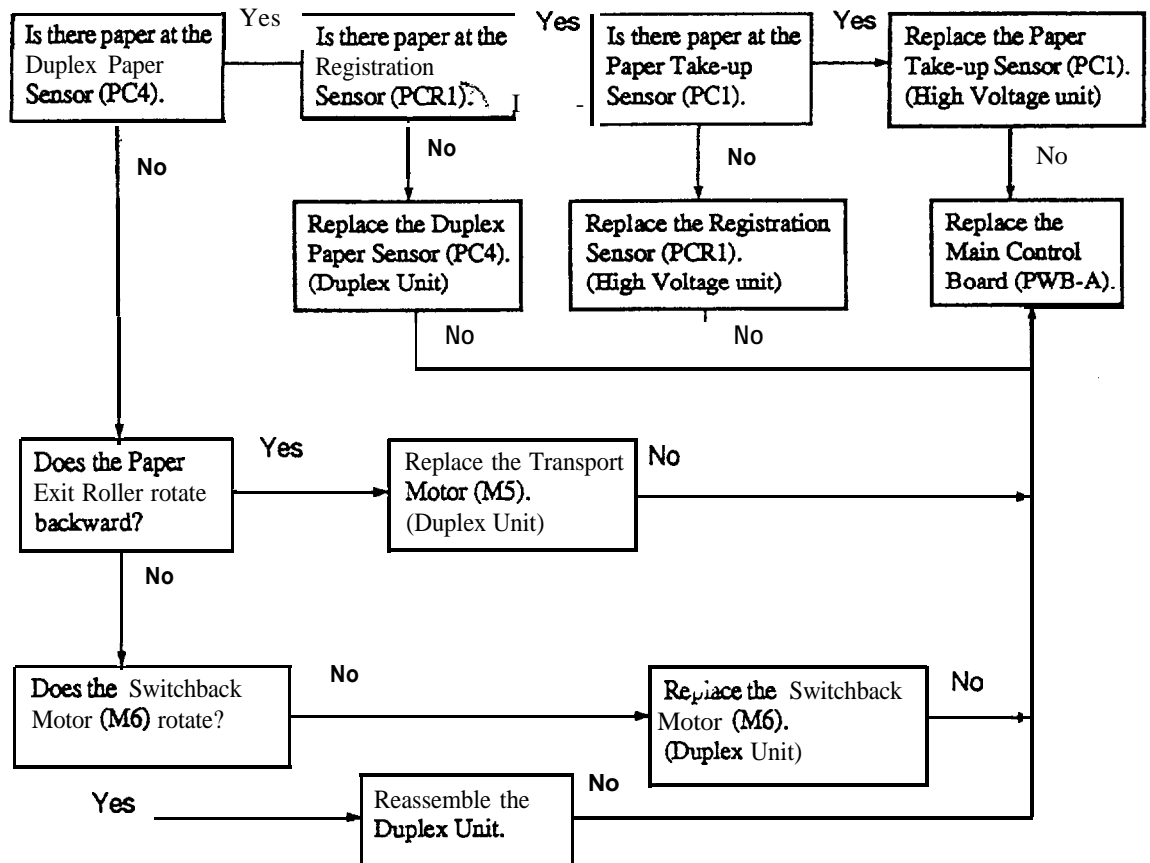
2-2. JAM2



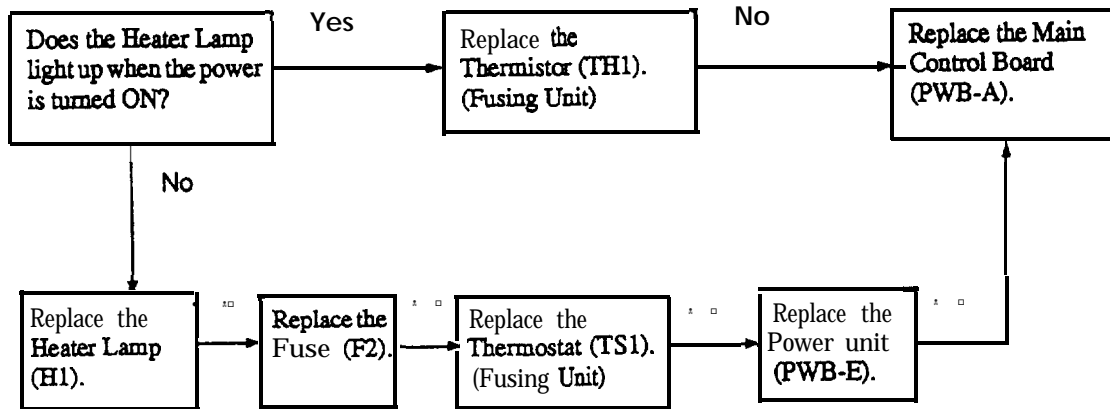
2-3. JAM3



2-4. JAM4

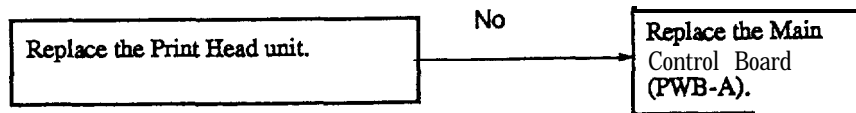


2-5. Fusing Unit malfunction

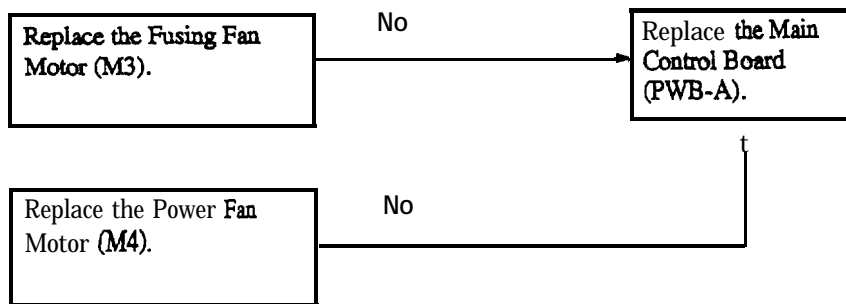


2-6. Laser malfunction (Refer to section 2-7. Polygon Motor malfunction)

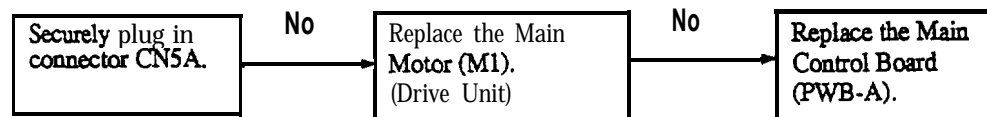
2-7. Polygon Motor malfunction



2-8. Fan Motor malfunction

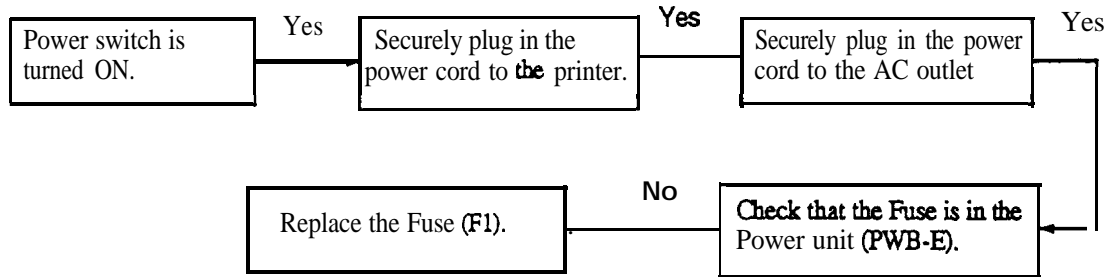


2-9. Main Motor malfunction

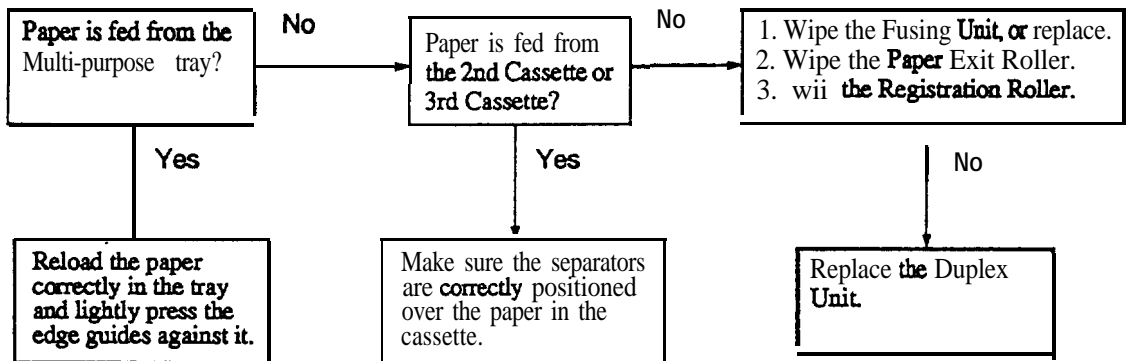


3. OTHER DETECTED TROUBLE

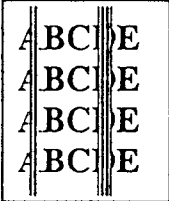
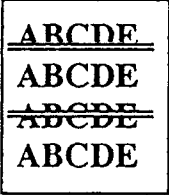
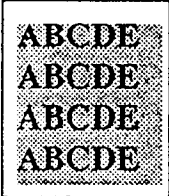
3-1. No Power


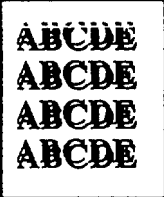


3-2. Skew



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.
	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	Replace the Print Head.
	Poor image transfer	Replace the High Voltage unit (PWB-F).
Low Image Density	Toner empty	Change the Imaging Cartridge.
		Defective PC Drum
End of PC Drum life		Replace the Imaging Cartridge.

Symptom	Cause	Action
<p data-bbox="342 302 496 359">No Image (Blank/ Black)</p> 	High developing bias	Replace the High Voltage unit (PWB-E). Replace the Imaging Cartridge.
	Low developing bias	Replace the High Voltage unit (PWB-E). Change the Imaging Cartridge.
<p data-bbox="354 695 501 726">Offset Image</p> 	Improper transfer	Clean the Transfer unit or the Fusing unit.
	Improper transport	Wipe the dust off of the Fusing Roller. —

micro@ac3008

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np

Tue Apr 16 14:02:02 1996

NeWSprint 2.5 Rev B (J 2.5 Rev B)

Openwin library 3

NeWSprint interpreter 210.0

Print Messages ,

Page 1 of 1

Broken Pipe

#0993 PARTS MANUAL (MINOLTA-QMS)

PREFACE 前書き

1. The part numbers listed in Parts Manual are those which were assigned to the parts making up the machine at the time the machine was originally introduced onto the market.
2. Parts whose numbers are preceded by an asterisk in the Index Column on the List Page are parts to be used in only certain market areas. Therefore, please check the number in the Area column on the List Page and then compare it with the numbers given in the Area Chart on page II to find out which part number is applicable to your own area.
NOTE: Parts for only certain Market Areas: The part numbers for these parts vary according to market area. In other cases, these parts are used in only restricted areas.
3. The Index Number on the List Page is composed of two numbers and two letters. Generally, only A is used as the first letter of the two letters. However, sometimes B, C, D, etc. are used when one part in the illustration, such as an electrical part or a part which varies according to market area, has two or more part numbers. The second of the two letters represents the modification history of that part.
4. The Area Number is listed in the Area Column for only those parts used in certain market areas. This Area Number represents the area listed opposite to it in the Chart given on Page II. Parts having no Area Number listed in the Area Column can be used in all market areas.
5. In the exploded views in this parts manual parts (Screws & Washes, etc...) which are indicated with a "four-digit" numbers are listed in numerical order in the section 'SCREWS AND WASHERS'. Please check these "four-digit" numbers with the part numbers ("ten-digit" number) which should be used for ordering the parts.
6. All parts numbers consist of "ten-digits" which should all be quoted when ordering a part. The price of parts can be obtained by referring to the "Parts Price List" which is separately issued.
7. All information contained in this parts manual is subject to change.

PARTS MANUAL

1. パーツマニュアルには、販売当初の機械をしていている部品が記載されています。
2. リスト部の表示番号に※印がある部品は仕向部品ですので、地域No.をⅡページの地域No.対比表で照合して、国内の部品番号を使用してください。
注) 仕向部品………地域により部品番号が異なる、または、一部地域にだけ使用されている部品。
3. リスト部の表示番号は、部品図の番号をあらわす2桁の数字と2桁の補助記号より構成されています。
補助記号の1桁目は、一般にはAだけです。仕様部品、電気部品のように1つの部品図で複数の部品番号をあらわしている場合にA、B、C、…となっています。補助記号の2桁目は部品の変更経歴をあらわしています。
4. リスト部の地域No.は仕向部品にだけ記載されており、Ⅱページでその部品の使用されている地域をあらわしています。地域No.のないものは全地域使用部品です。
5. ネジ・ワッシャー類は、数字4桁の表示番号を使用しています。ネジ・ワッシャー部で照合の上、10桁の部品番号を使用してください。
6. 部品番号は10桁で構成されています。注文は必ず10桁の部品番号を使用してください。
7. このパーツマニュアルの内容は予告なく変更されることがあります。

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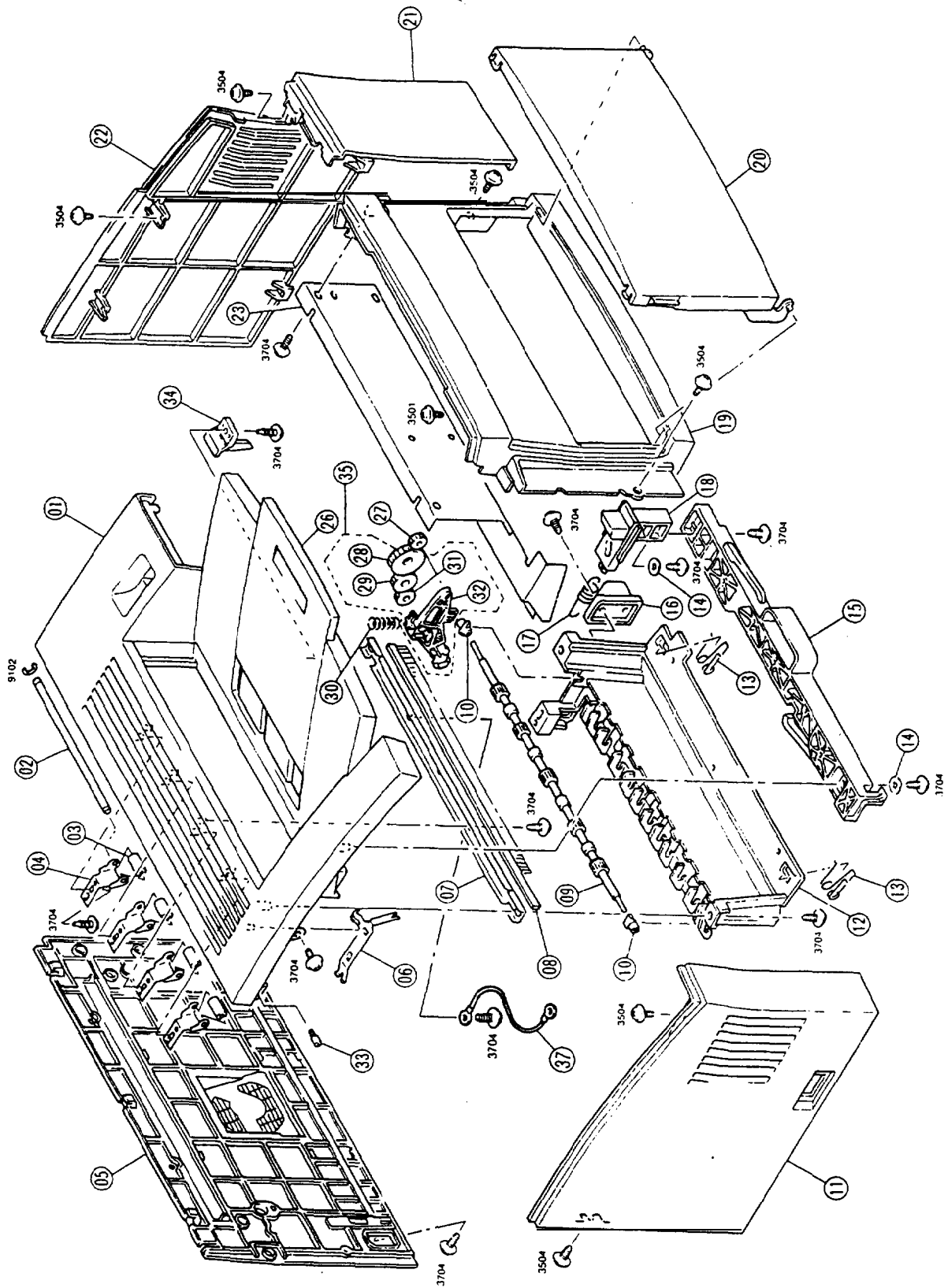
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SEPTEMBER 1996

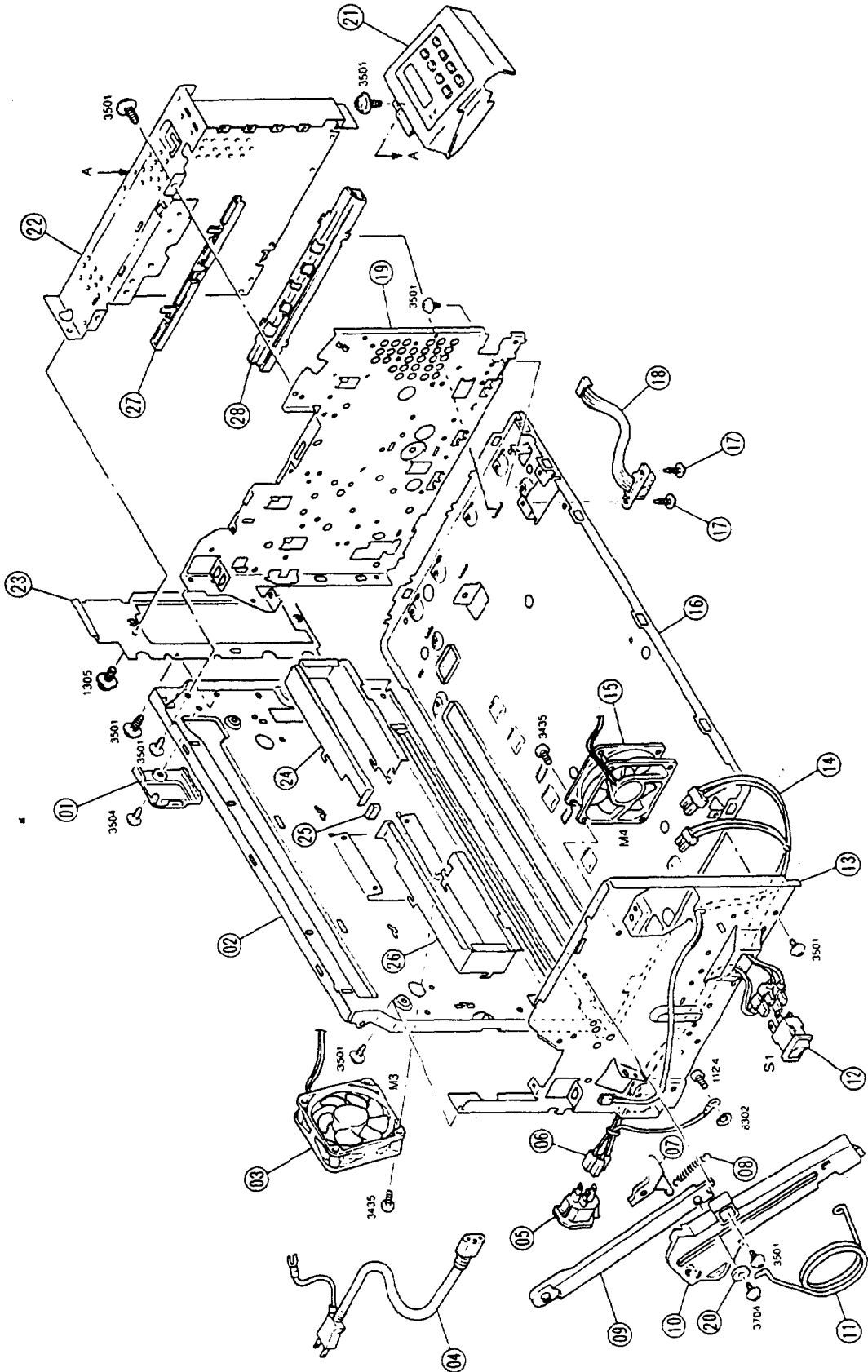
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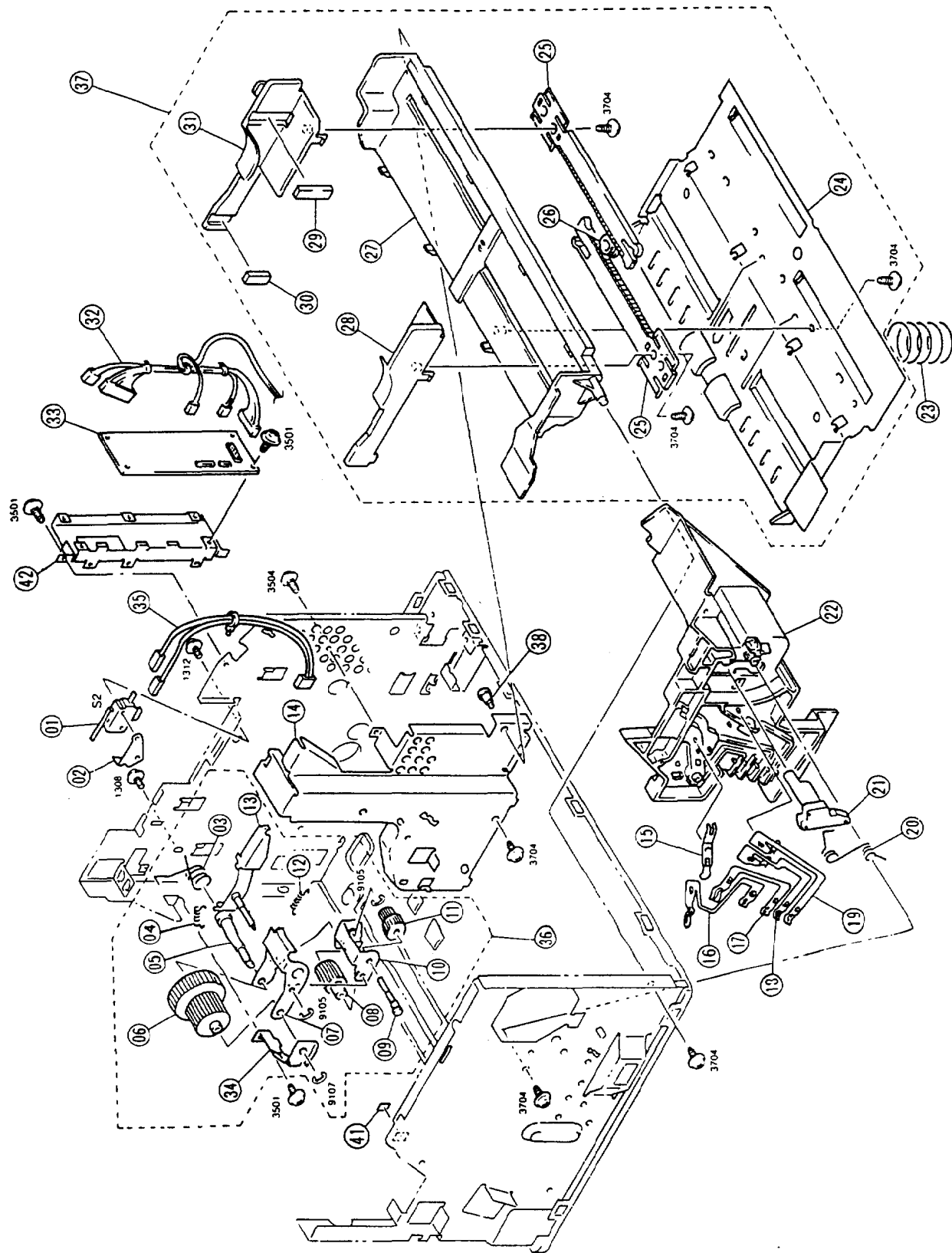
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01AA	0993-1001-02	TOP COVER	1			37AA	993-6823-01	harness	1		
02AA	0993-3222-01	SHAFT	1								
03AA	0993-3220-01	ROLL	4								
04AA	0993-3221-01	HOLDER	4								
05AA	0993-1010-03	GEAR COVER	1								
06AA	0993-3214-01	GROUND PLATE	1								
07AA	0993-1015-01	REINFORCE PLATE	1								
08AA	0993-3213-01	NEUTRALIZING BRUSH	1								
09AA	0993-3203-01	ROLLER	1								
10AA	0993-3204-01	WASHING	2								
11AA	0993-1003-01	GEAR COVER	1								
12AA	0993-1620-02	COVER	1								
13AA	0993-1014-01	WASHER	2								
14AA	1200-1521-02	WASHER	3								
15AA	0993-2017-01	LOCK LEVER	1								
16AA	0993-1016-02	LEVER	1								
17AA	0993-2009-01	TENSION SPRING	1								
18AA	0993-1021-01	LEVER	1								
19AA	0993-1004-03	FRONT COVER	1								
20AA	0993-1005-01	TRAY	1								
21AA	0993-1009-01	FRONT COVER-RT	1								
22AA	0993-1002-02	RIGHT COVER	1								
23AA	0993-2304-01	COVER	1								
24AA	0993-1006-01	TRAY	1								
27AA	0993-3208-01	GEAR 14T	1								
28AA	0993-3209-01	GEAR 39T	1								
29AA	0993-3210-01	GEAR 26T	1								
30AA	0993-3205-01	PRESSURE SPRING	1								
31AA	0993-3211-01	GEAR 17T	1								
32AA	0993-3206-01	LEVER	1								
33AA	1100-1212-04	SHOULDER SCREW	1								
34AA	0993-1011-01	ACTUATOR	1								
35AA	0993-0754-01	GEAR ASSY	1								

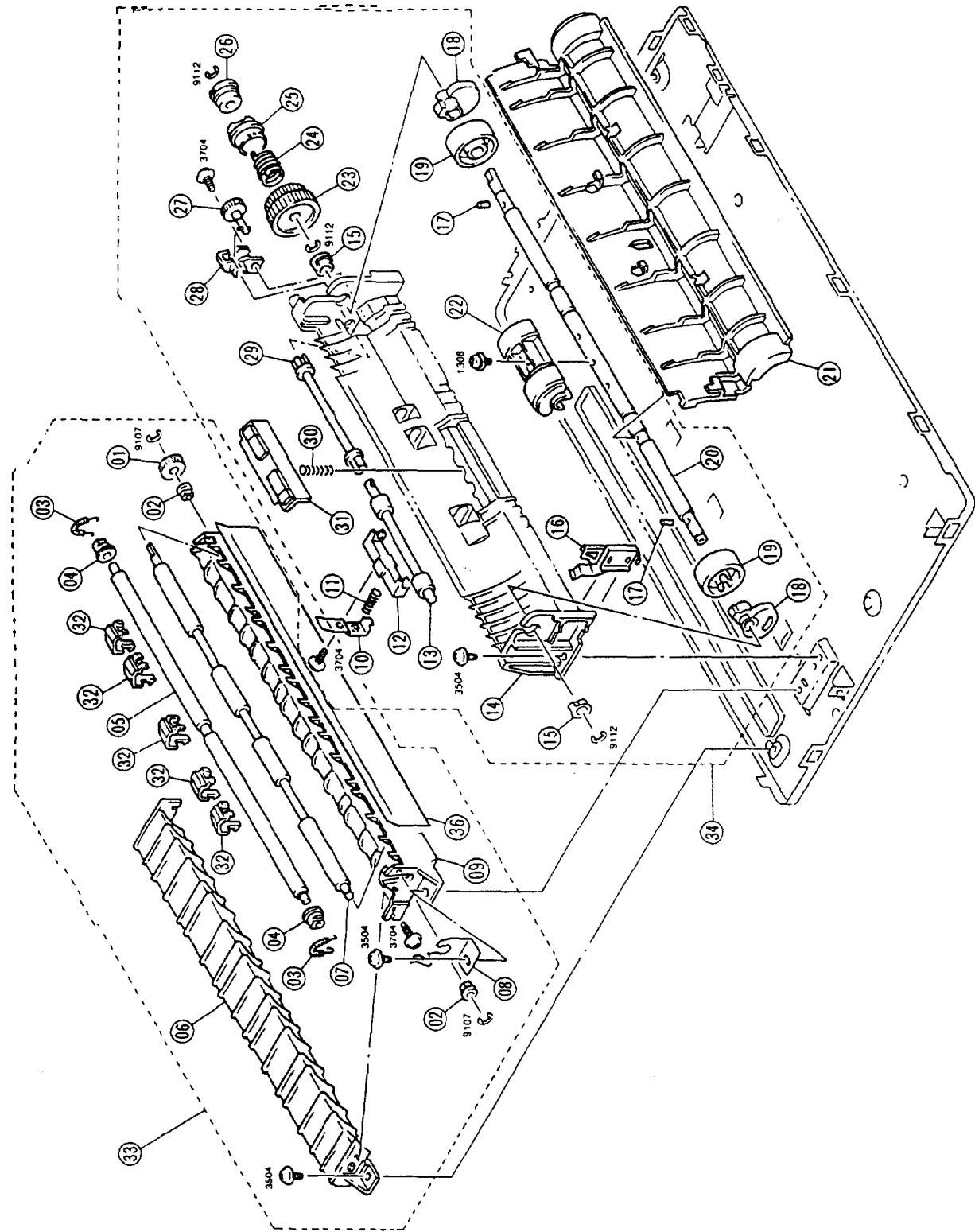


INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	INDEX 表示番号	AREA 地域	REMARKS 備考	QTY 数量	PART NO. 部品番号	PART NAME 部品名	QTY 数量	AREA 地域	REMARKS 備考
01AA	1993-1017-01	COVER				1					
02AA	1993-2004-02	REAR FRAME				1					
03AA	1993-6104-01	FAN MOTOR	(M3)			1					
*04AA	1981-4510-11	POWER CORD				1					
*04BA	1981-4310-31	POWER CORD				1					
*04CA	1981-4310-71	POWER CORD				1					
05AA	1983-5920-13	SOCKET				1					
06AA	1993-6801-01	HARNES				1					
07AA	1993-2012-01	LEVER				1					
08AA	1993-2013-01	TENSION SPRING				1					
09AA	1993-2014-01	STOPPER				1					
10AA	1993-2016-01	HOLDER				1					
11AA	1993-2015-02	TORX SPRING				1					
12AA	1993-6301-01	SCREW	(S1)			1					
13AA	1993-2003-02	LEFT FRAME				1					
14AA	1993-6802-02	HARNES				1					
15AA	1993-6103-01	FAN MOTOR	(M4)			1					
16AA	1993-2001-02	BASE PLATE				1					
17AA	1978-2067-01	SHOULDER SCREW				2					
18AA	1993-6824-01	HARNES				1					
19AA	1993-2002-01	RIGHT FRAME				1					
20AA	1200-1521-02	WASHER				1					
21AA	1993-0109-02	CONTROL PANEL				1					
22AA	1993-2601-02	SHIELD PLATE				1					
23AA	1993-2602-02	REAR FRAME-RT				1					
24AA	1993-2042-02	DUCT				1					
25AA	1993-2044-01	SEAL				1					
26AA	1993-2043-02	DUCT LEFT				1					
27AA	1993-2606-01	GUIDE RAIL				1					
28AA	1993-2607-01	GUIDE RAIL				1					

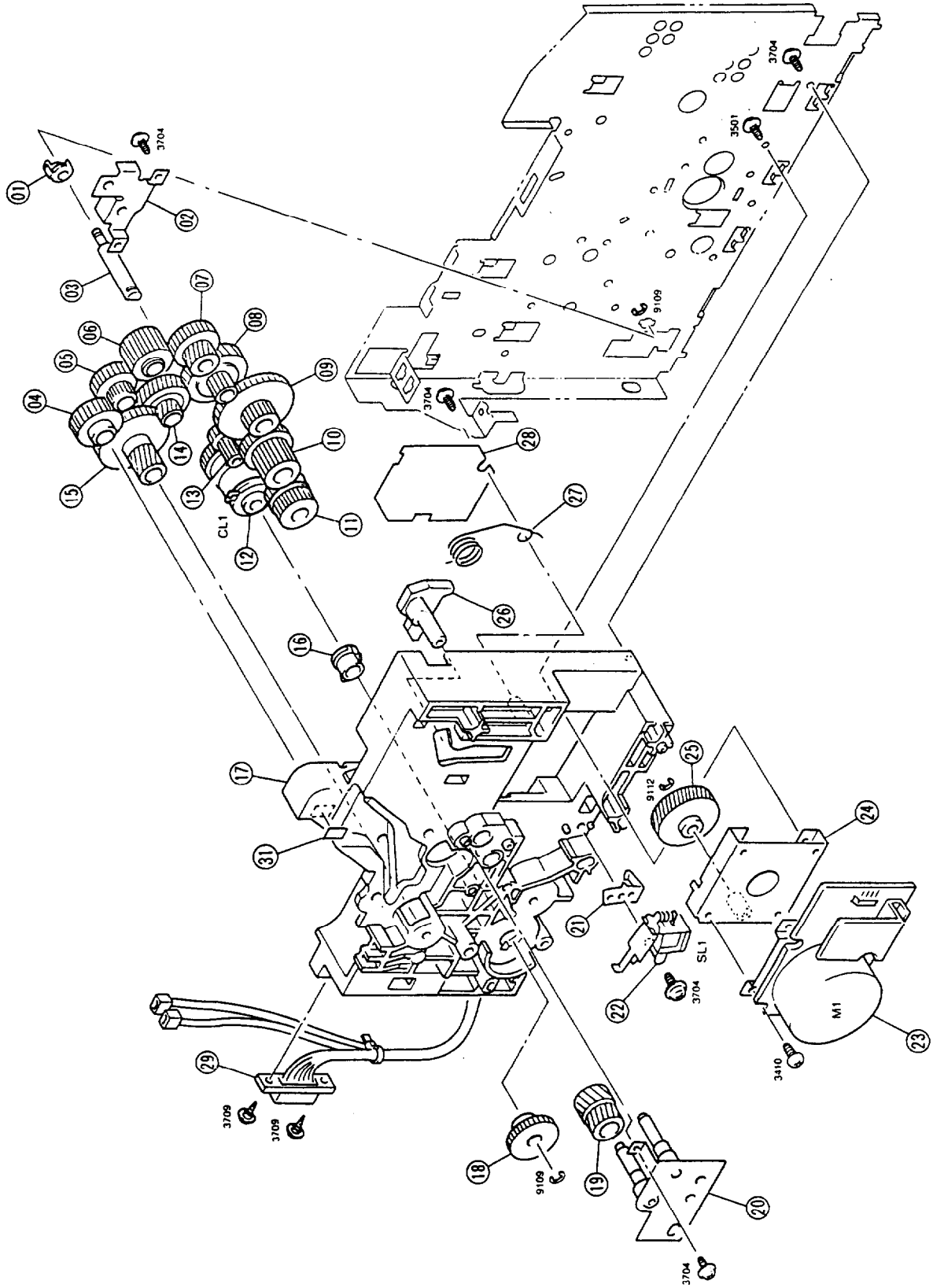


INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	QTY 数量	AREA 色域	REMARKS 備考	INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	QTY 数量	AREA 色域	REMARKS 備考
01AA	9331-2310-21	MICROSWITCH	1			33BA	1993-0111-02	PM BOARD-A	1	'000	
02AA	0957-2320-01	BRACKET	1			34AA	1993-2530-01	HOLD PLATE	1		
03AA	0993-2533-01	TORSION SPRING	1			35AA	1993-6818-01	HARNESS	1		
04AA	0993-2531-02	TENSION SPRING	1			36AA	1993-0755-02	LOCKING PLATE ASSY	1		
05AA	0993-2518-01	STUD	1			37AA	1993-0361-02	PAPER GUIDE ASSY	1		
06AA	0993-2517-01	GEAR 29/60T	1			38AA	1157-3615-01	SHOULDER SCREW	1		
07AA	0993-2525-01	PLATE	1			41AA	1052-7257-01	LABEL YELLOW	1		
08AA	0993-2516-01	GEAR 2 4T	1			42AA	3993-2608-02	BRACKET	1		
09AA	0993-2538-01	PLATE	1								
10AA	0993-2537-01	PLATE	1								
11AA	0993-2540-01	GEAR 18/23T	1								
12AA	0993-2539-01	TENSION SPRING	1								
13AA	0993-0203-13	AXLE PLATE	1								
14AA	0993-2005-01	FRAME	1								
15AA	0993-2022-01	TERMINAL	1								
16AA	0993-2021-01	TERMINAL	1								
17AA	0993-2024-01	TERMINAL	1								
18AA	0993-2025-01	TERMINAL	1								
19AA	0993-2023-01	TERMINAL	1								
20AA	0993-2034-02	TORSION SPRING	1								
21AA	0993-2026-01	GUIDE	1								
22AA	0993-2020-02	GUIDE	1								
23AA	0993-3016-01	PRESSURE SPRING	1								
24AA	0993-0752-01	FRAMING PLATE	1								
25AA	0993-3036-02	PACK GEAR	2								
26AA	0957-3104-01	GEAR 14T	1								
27AA	0993-3003-03	GUIDE	1								
28AA	0993-3030-02	GUIDE-LFT	1								
29AA	0993-3033-01	REGULATOR	1								
30AA	0993-3032-01	REGULATOR	1								
31AA	0993-3029-02	GUIDE-RI	1								
32AA	0993-6805-02	HARNESS	1								
33AA	0993-0110-02	PM BOARD-A	1								

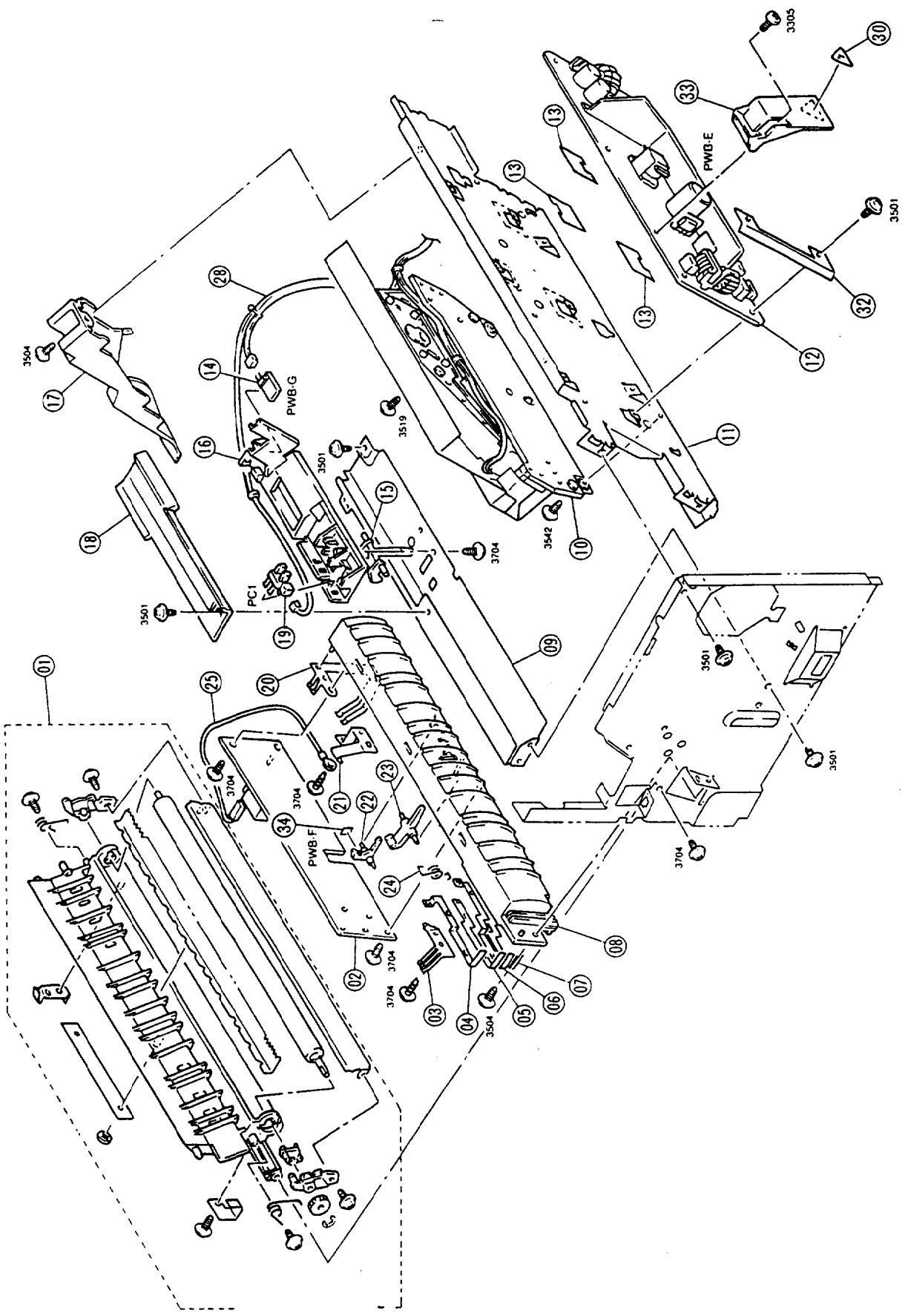
4 PAPER TAKE-UP SECTION II 給紙部 II



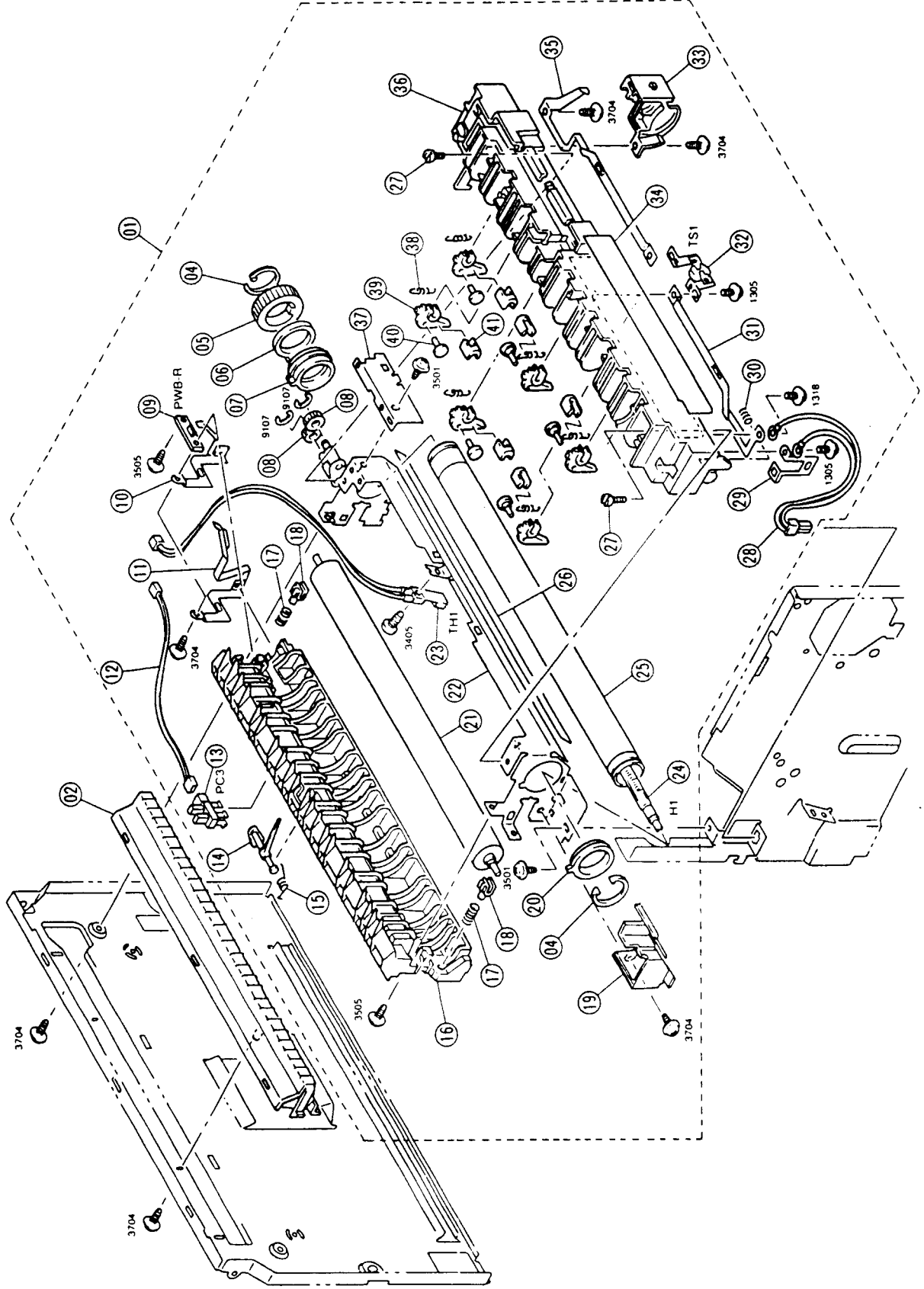
INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名称	QTY 数量	AREA 地域	REMARKS 備考	INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名称	QTY 数量	AREA 地域	REMARKS 備考
01AA	0993-3510-01	GEAR 2ST	1			34AA	0993-0401-02	PAPER TAKE-UP UNIT	1		
02AA	0993-3520-01	BUSHING	2			36AA	0993-3523-01	SHEET	1		
03AA	0993-3518-01	TENSION SPRING	2								
04AA	0993-3511-01	BUSHING	2								
05AA	0993-3508-01	ROLLER	1								
06AA	0993-3504-01	GUIDE	1								
07AA	0993-3509-01	ROLLER	1								
08AA	0993-3512-01	GROUND PLATE	1								
09AA	0993-3503-01	GUIDE	1								
10AA	0993-3035-01	SET PLATE	1								
11AA	0993-3018-01	PRESSURE SPRING	1								
12AA	0993-3023-01	SUPPORT	1								
13AA	0993-3002-01	ROLLER	1								
14AA	0993-3028-02	GUIDE	1								
15AA	0993-3009-01	BUSHING	2								
16AA	0993-3024-01	PLATE SPRING	1								
17AA	0957-3040-01	PIN	2								
18AA	0993-3008-01	CAM	2								
19AA	0993-3006-01	ROLL	2								
20AA	0993-3020-02	SHAFT	1								
21AA	0993-3501-05	GUIDE	1								
22AA	0993-3001-01	ROLLER	1								
23AA	0993-3010-01	GEAR 45/47T	1								
24AA	0993-3039-01	CLUTCH SPRING	1								
25AA	0957-3015-01	RATCHET	1								
26AA	0993-3022-01	BOSS	1								
27AA	0993-3014-02	GEAR 20T	1								
28AA	0993-3013-01	BUSHING	1								
29AA	0993-3021-02	JOINT	1								
30AA	0993-3017-02	PRESSURE SPRING	1								
31AA	0993-0751-01	SEPARATOR	1								
32AA	0993-3521-01	COVER	5								
33AA	0993-0411-01	PAPER TRANSPORT UNI	1								



INDEX 表示番号	-PART NO. 部品番号	PART NAME 部品名	QTY 数量	AREA 地域	REMARKS 備考	INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	QTY 数量	AREA 地域	REMARKS 備考
01AA	1993-2523-01	BUSHING	1								
02AA	1993-2521-01	COVER	1								
03AA	1993-2529-01	STUD	1								
04AA	1993-2515-01	GEAR 38T	1								
05AA	1993-2519-01	GEAR 22/31T	1								
06AA	1993-2508-01	GEAR 33T	1								
07AA	1993-2506-01	GEAR 18/39T	1								
08AA	1993-2503-01	GEAR 17/75T	1								
09AA	1993-2510-01	GEAR 27/63T	1								
10AA	1993-2511-01	GEAR 33/34T	1								
11AA	1993-2514-01	GEAR 25/31T	1								
12AA	1993-6205-01	CLUTCH	1					(CL1)			
13AA	1993-2512-01	GEAR 15/21T	1								
14AA	1993-2504-01	GEAR 16/70T	1								
15AA	1993-2505-01	GEAR 23/60T	1								
16AA	1993-2524-01	BUSHING	1								
17AA	1993-2501-13	COVER	1								
18AA	1993-2513-01	GEAR 44T	1								
19AA	1993-2507-01	GEAR 19/20T	1								
20AA	1993-0202-01	BRACKET	1								
21AA	1993-2536-01	GROUND PLATE	1								
22AA	1993-6204-01	SOLENOID	1					(SL1)			
23AA	1993-6101-01	MOTOR	1					(M1)			
24AA	1993-0201-01	BRACKET	1								
25AA	1993-0151-01	GEAR 77T	1								
26AA	1993-2026-01	GUIDE	1								
27AA	1993-2035-01	TORSION SPRING	1								
28AA	1993-2040-01	BRACKET	1								
29AA	1993-6825-01	HARNES	1								
31AA	1052-7257-01	LABEL YELLOW	1								

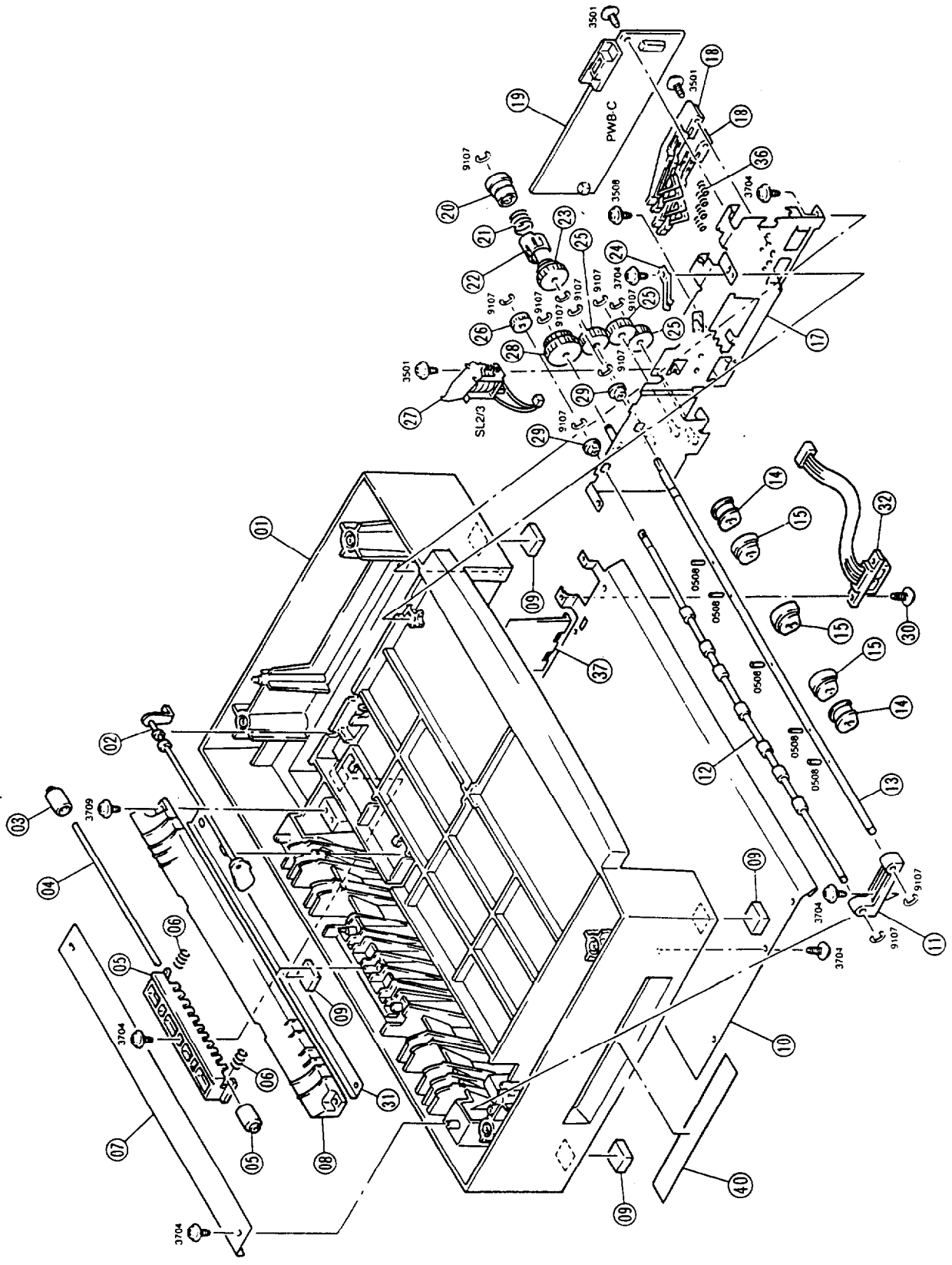


INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	称	QTY 員数	AREA 地域	REMARKS 備考	INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	称	QTY 員数	AREA 地域	REMARKS 備考
01AA	0993-0331-04	TRANSFER UNIT		1									
02AA	0993-6203-01	PWB-FU(WITH IC)	(PWB-F)	1									
03AA	0993-3513-01	TERMINAL		1									
04AA	0993-3514-01	TERMINAL		1									
05AA	0993-3515-01	TERMINAL		1									
06AA	0993-3516-01	TERMINAL		1									
07AA	0993-3517-01	TERMINAL		1									
08AA	0993-3502-01	GUIDE		1									
09AA	0993-2038-01	BRACKET		1									
10AA	0993-0534-03	PRINT HEAD UNIT		1									
11AA	0993-2018-01	MOUNTING PLATE		1									
*12AA	0993-6201-01	PWB-FU(WITH IC)	(PWB-E)	1	0524								
*12BA	0993-6202-01	PWB-FU(WITH IC)		1	2612								
13AA	0993-2041-01	SHEET		3									
14AA	0993-0107-01	PC BOARD-C(WITH IC)	(PWB-G)	1									
15AA	0993-3027-01	ACTUATOR		1									
16AA	0993-2030-01	HOLDER		1									
17AA	0993-2033-01	COVER		1									
18AA	0993-2930-03	COVER		1									
19AA	9335-1410-31	PHOTO INTERRUPTER	(PC1)	1									
20AA	0993-4111-01	GROUND PLATE		1									
21AA	0993-4115-01	TERMINAL		1									
22AA	0993-3506-01	ACTUATOR		1									
23AA	0993-3505-02	ACTUATOR		1									
24AA	0993-3507-01	TORSION SPRING		1									
25AA	0993-6817-01	HARNES		1									
28AA	0993-6826-01	HARNES		1									
30AA	0953-7409-01	LABEL		1									
32AA	0993-2309-01	COVER		1									
*33AA	0993-2308-01	COVER		1	0524								
34AA	0993-3524-01	SHIELD PLATE		1									



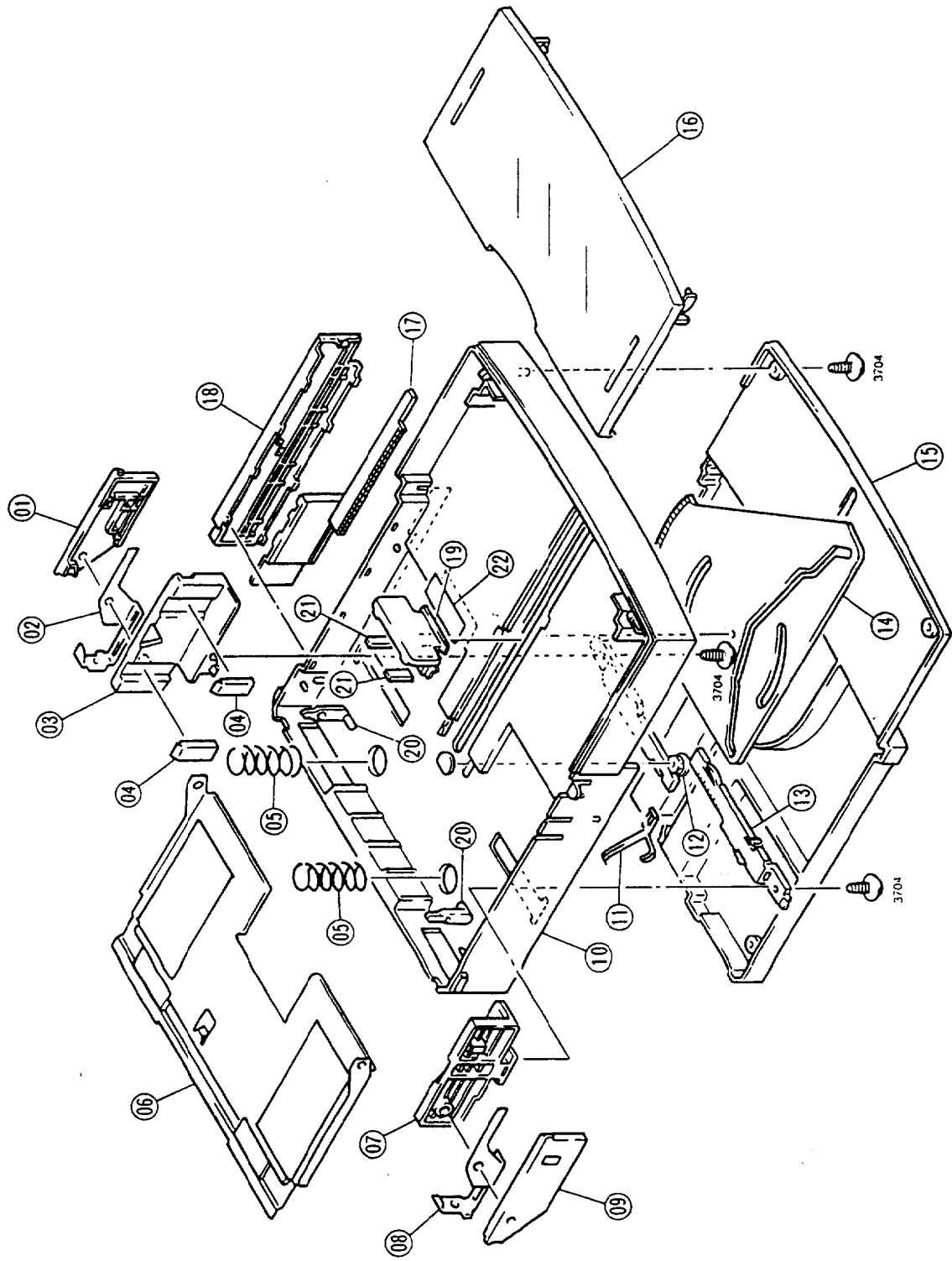
INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	QTY 数量	AREA 地域	REMARKS 備考	INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名	QTY 数量	AREA 地域	REMARKS 備考
*01AA	0993-0341-06	FUSING UNIT フイニングユニット	1	0600		31AA	0993-5515-01	TERMINAL ターミナル	1		
*01BA	0993-0343-04	FUSING UNIT フイニングユニット	1	2520		32AA	0978-6701-02	THERMOSTAT サーモスタット	1	2520	
*01CA	0993-0345-04	FUSING UNIT フイニングユニット	1	2612		33AA	0993-5519-01	COVER-RT カバー	1	2612	(TS1)
02AA	0993-3216-02	GUIDE ガイド	1			34AA	0993-5550-01	SHEET シート	1		
04AA	0993-5529-01	C-RING Cリング	2			35AA	0993-5513-01	TERMINAL ターミナル	1		
05AA	0993-5512-01	GEAR 39T ギア	1			36AA	0993-5507-02	HOLDER ホルダー	1		
06AA	0993-5537-01	BUSHING ブッシング	1			37AA	0993-5536-01	REINFORCE PLATE 強化板	1		
07AA	0993-5533-01	BUSHING ブッシング	1			38AA	0993-5523-01	TENSION SPRING テンションスプリング	6		
08AA	0993-5524-01	GEAR 15T ギア	2			39AA	0993-5518-01	SEPARATOR セパレーター	6		
09AA	0993-0105-01	PC BOARD-R(NO IC) プリント基板R(無IC)	1			40AA	0957-5527-02	SEPARATOR ROLL セパレーターロール	6		
10AA	0993-5543-01	TERMINAL ターミナル	1			41AA	0993-5542-02	STOPPER ストッパー	6		
11AA	0993-5532-01	TERMINAL ターミナル	1								
12AA	0993-6809-01	HARNESS ハーネス	1								
13AA	9335-1410-31	PHOTO INTERRUPTER フォトインタラプター	1								
14AA	0993-5516-01	ACTUATOR アクチュエーター	1								
15AA	0972-5519-01	TORSION SPRING トルションスプリング	1								
16AA	0993-5505-15	FRAME-RR フレーム	1								
17AA	0993-5521-01	PRESSURE SPRING 圧力スプリング	2								
18AA	0993-5535-01	BUSHING ブッシング	2								
19AA	0993-5520-01	COVER カバー	1								
20AA	0993-5534-01	BUSHING ブッシング	1								
21AA	0993-5502-01	FUSING ROLLER-LWR フイニングローラー下	1								
22AA	0993-5504-01	FRAME-FMT フレーム	1								
23AA	0993-6702-01	HELMISTOR ヘルミスター	1								
*24AA	0993-6501-01	TUBE LAMP チューブランプ	1	0600						0600	
*24BA	0993-6502-01	TUBE LAMP チューブランプ	1	2520						2520	
*24CA	0993-6503-01	TUBE LAMP チューブランプ	1	2612						2612	
25AA	0993-5501-01	FUSING ROLLER-UPR フイニングローラー上	1								
26AA	0993-5522-01	SHEET シート	1								
27AA	0993-5538-01	SHOULDER SCREW 肩部ネジ	2								
28AA	0993-6804-01	HARNESS ハーネス	1								
29AA	0993-5514-01	TERMINAL ターミナル	1								
30AA	0993-5530-01	PRESSURE SPRING 圧力スプリング	1								

8 2ND/3RD BIN UNIT 下段給紙ユニット

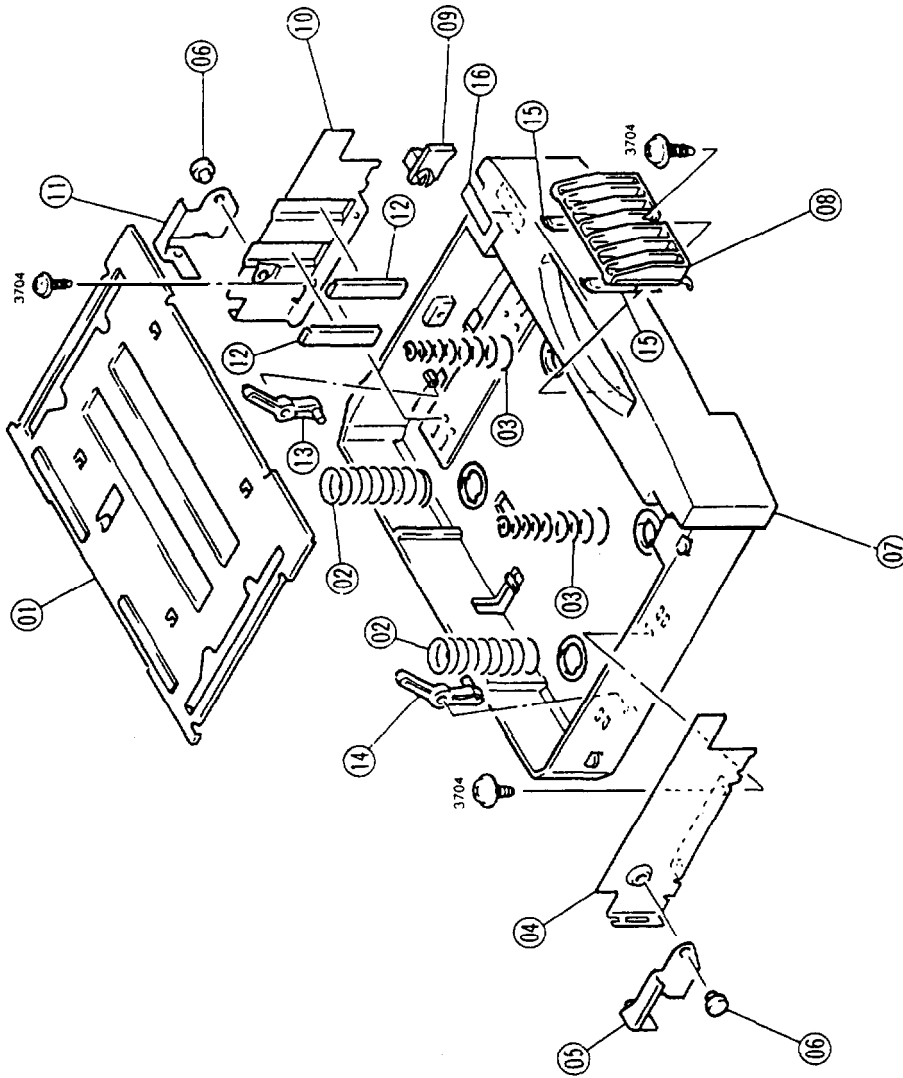


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01AA	4156-3921-01	COVER-RT カバールイフト	1								
02AA	4156-3907-02	PAWL パウル	1								
03AA	4156-3903-04	GUIDE-RT ガイドライト	1								
04AA	4156-3916-01	REGULATOR レギュレーター	2								
05AA	4156-3917-01	PRESSURE SPRING 圧縮ばね	2								
06AA	4156-0751-01	LIFTING PLATE リフトプレート	1								
07AA	4156-3904-03	GUIDE-LFT ガイドラフト	1								
08AA	4156-3908-02	PAWL パウル	1								
09AA	4156-3919-01	COVER-LFT カバーラフト	1								
10AA	4156-3901-03	CASSETTE BODY カセットボディ	1								
11AA	4156-3920-02	GROUND PLATE グラウンドプレート	1								
12AA	4156-3913-01	GEAR 14T ギア14T	1								
13AA	4156-3909-01	RACK GEAR ラックギア	2								
14AA	4156-3910-02	DETECTING PLATE 検出プレート	1								
15AA	4156-3915-01	COVER カバー	1								
16AA	4156-3914-01	LID カバー	1								
17AA	4156-3911-01	RACK GEAR ラックギア	1								
18AA	4156-3918-03	COVER カバー	1								
19AA	4156-3912-01	REGULATING PLATE 調整プレート	1								
20AA	4156-3906-03	LOCK LEVER ロックレバー	2								
21AA	4156-3922-01	REGULATOR レギュレーター	2								
22AA	4156-7301-01	LABEL ラベル	1								

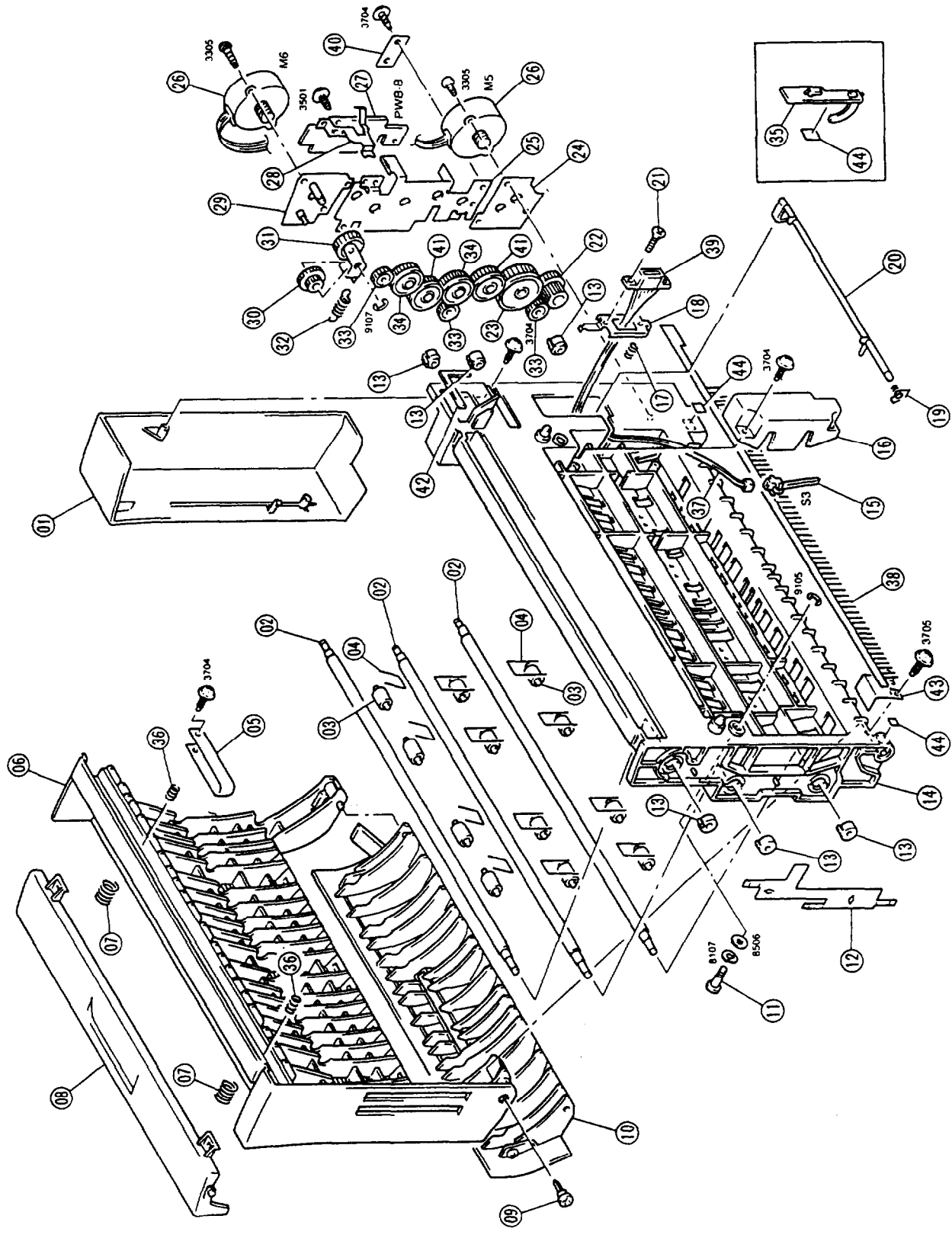
9 UNIVERSAL CASSETTE ユニバーサルカセット



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01AA	156-3921-01	COVER-RT 右カバー	1								
02AA	156-3907-02	PAWL 爪	1								
03AA	156-3903-04	GUIDE-RT 右ガイド	1								
04AA	156-3916-01	REGULATOR 調整器	2								
05AA	156-3917-01	PRESSURE SPRING 圧力バネ	2								
06AA	156-0751-01	LIFTING PLATE 上げ板	1								
07AA	156-3904-01	GUIDE-LFT 左ガイド	1								
08AA	156-3908-01	PAWL 爪	1								
09AA	156-3919-01	COVER-LFT 左カバー	1								
10AA	156-3901-01	CASSETTE BODY カセット本体	1								
11AA	156-3920-01	GROUND PLATE 接地板	1								
12AA	156-3913-01	GEAR 1&T ギア1&T	1								
13AA	156-3909-01	RACK GEAR ラックギア	2								
14AA	156-3910-01	DETECTING PLATE 検出板	1								
15AA	156-3915-01	COVER カバー	1								
16AA	156-3914-01	LID 蓋	1								
17AA	156-3911-01	RACK GEAR ラックギア	1								
18AA	4156-3918-01	COVER カバー	1								
19AA	156-3912-01	REGULATING PLATE 調整板	1								
20AA	156-3906-03	LOCK LEVER ロックレバー	2								
21AA	156-3922-01	REGULATOR 調整器	2								
22AA	156-7301-01	LABEL ラベル	1								



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01AA	4156-0752-01	LIFTING PLATE	1								
02AA	0933-3907-01	PRESSURE SPRING	2								
03AA	4156-3714-01	PRESSURE SPRING	2								
04AA	4156-3704-01	REGULATING PLATE	1								
05AA	4156-3708-02	PAWL	1								
06AA	4156-3706-01	STOPPER	2								
07AA	4156-3701-04	CASSETTE BODY	1								
08AA	4156-3709-02	REGULATING PLATE	1								
09AA	4156-3710-02	DETECTING PLATE	1								
10AA	4156-3703-01	REGULATING PLATE	1								
11AA	4156-3707-02	PAWL	1								
12AA	4156-3722-01	GUIDE	2								
13AA	4156-3712-02	LOCK LEVER	1								
14AA	4156-3713-02	LOCK LEVER	1								
15AA	4156-3715-01	REGULATOR	2								
16AA	4156-7302-01	LABEL	1								

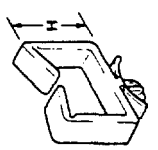


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01AA	4157-3604-03	COVER	1			34AA	4157-3623-01	GEAR 37T	2		
02AA	4157-3611-02	ROLLER	3			35AA	4157-3641-01	HOOK	2		
03AA	4157-3614-01	ROLLER	12			36AA	4157-3610-01	PRESSURE SPRING	2		
04AA	4157-3612-01	SPRING	12			37AA	4157-6802-01	HARNESS	1		
05AA	4157-3609-02	STOPPER	1			38AA	4157-3618-01	NEUTRALIZING BRUSH	1		
06AA	4157-3602-01	COVER	1			39AA	4157-6803-02	HARNESS	1		
07AA	4157-3606-01	PRESSURE SPRING	2			40AA	4157-3617-01	BRACKET	1		
08AA	2157-3605-02	COVER	1			41AA	4157-3620-01	GEAR 37T	2		
09AA	4157-3615-01	SHOULDER SCREW	2			42AA	4157-3640-01	SEAL	1		
10AA	4157-3603-03	COVER	1			43AA	4157-3616-01	GROUND PLATE	1		
11AA	4157-3608-01	SHOULDER SCREW	2			44AA	0807-7121-01	LABEL	4		
12AA	4157-3634-01	GROUND PLATE	1								
13AA	4157-3613-02	BUSHING	6								
14AA	4157-3601-02	BASE	1								
15AA	4157-6301-01	SWITCH	1		(S3)						
16AA	4157-3607-01	COVER	1								
17AA	4157-3619-01	PRESSURE SPRING	1								
18AA	4157-3638-01	BRACKET	1								
19AA	4157-3633-02	TORSION SPRING	1								
20AA	4157-3632-01	ACTUATOR	1								
21AA	0928-1018-01	SHOULDER SCREW	2								
22AA	4157-3622-01	GEAR 20/43T	1								
23AA	4157-3627-01	GEAR 46T	1								
24AA	4157-3636-02	HEAT-SINK	1								
25AA	4157-3631-01	BEAT-SINK	1								
26AA	4157-6101-01	MOTOR	2		(M5/6)						
27AA	4157-0101-02	PC BOARD-B(WITH IC)	1		(PUB-8)						
28AA	4157-3635-02	GROUND PLATE	1								
29AA	4157-0201-01	HEAT-SINK	1								
30AA	4157-3625-01	GEAR 11/38T	1								
31AA	4157-0202-01	GEAR 22T	1								
32AA	4157-3628-02	TENSION SPRING	1								
33AA	4157-3621-01	GEAR 20T	3								

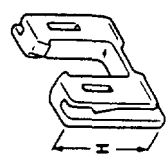
12 WIRING ACCESSORIES AND JIGS 配線部品・治具 PARTS MANUAL

INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名称	QTY 数量	AREA 地域	REMARKS 備考
02BA	9384-1310-81	WIRING SADDLE 6.4H	17		
02CA	9384-1900-64	WIRING SADDLE 13.0H	2		
02DA	9384-1900-65	WIRING SADDLE 18.0H	3		
03AA	9384-2600-11	EDGE COVER 26H	1		
04AA	9384-2800-36	EDGE COVER 15H	4		
04BA	9384-2010-21	EDGE COVER 8.5H	1		

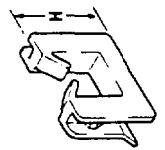
02









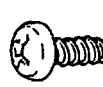

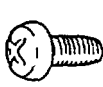


03



04



13 SCREWS AND WASHERS ネジ・ワッシャー部 PARTS MANUAL

INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名称	ILLUST 図	INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名称	ILLUST 図	INDEX 表示番号	PART NO. 部品番号	PART NAME 部品名称	ILLUST 図
0508	9752-2010-50	PIN ピン		810	9710-0400-13	SPRING WASHER スプリングワッシャー					
1124	9642-0408-21	SCREW ネジ		8302	9712-0400-13	WASHER ワッシャー					
1305	9646-0306-13	SCREW ネジ		8504	9716-0400-01	WASHER ワッシャー					
1308	9646-0308-13										
1312	9646-0316-13										
1318	9646-0408-13										
3305	9732-0308-13	TAPPING SCREW タッピングネジ		9102 9108 9107	9721-0200-01 9721-0300-01 9721-0400-01	RETAINING RING リテーニングリング					
3405	9733-0310-13	TAPPING SCREW タッピングネジ		9101 9112	9721-0500-01 9721-0600-01						
3410	9733-0408-13										
3435	9733-0330-13										
3501	9735-0306-13	TAPPING SCREW タッピングネジ									
3504	9735-0308-13										
3505	9735-0310-13										
3508	9735-0408-13										
3519	9735-0312-13										
3542	9735-0320-13										
3704	9739-0308-13	TAPPING SCREW タッピングネジ									
3705	9739-0306-13										
3709	9739-0310-13										

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