HP LaserJet 2000
Service Manual
HP 2684 Printer

HEWLETT®
PACKARD

HP Part No. 02684-90903
Printed in USA

NOTICE

Publication History

Changes in text to document updates subsequent to the initial release are supplied in new editions of the manual. The printing history of this manual is given below. The last edition date itemized reflects the machine configuration documented in the manual.

First Edition ..... April 1987

Second Edition ..... November 1987

Third Edition ..... June 1990

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The product related to this manual is no longer in production at Hewlett Packard Co. As a service to our customers, we are supplying you with a photocopy of the original document.

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Product Information

Introduction

The HP LaserJet 2000 printer is the top of the LaserJet printer line. Designed to meet the high performance and heavy-usage needs of the multi-user PC network and minicomputer environments, the LaserJet 2000 offers many features which make it ideally suited as a departmental printer. The printer offers LaserJet family compatibility with increased paper handling speed and memory. The LaserJet 2000's low cost per page and higher print volume capacity make it a great fit in a shared printer environment.

General Applications

The LaserJet 2000 printer is ideal for both business and technical applications such as general line printer formats, accounting reports, office publications, business and technical graphics. The LaserJet 2000 is supported by a wide range of computers, including PCs, minis, and mainframes from IBM, DEC and Wang. There are hundreds of compatible software packages, including PC packages like WordPerfect and MS Word, as well as the top-rated PC networks such as 3COM and Ungermann-Bass, Corvus and Novell; and minicomputer software such as MASS-11, WordPerfect, and Saturn (found on Digital Equipment Corporation and Data General systems).

Features and Benefits

Quick Job Turnaround: At 20 pages per minute (10 ppm for duplex), jobs are printed at better than twice the speed of other LaserJet family printers.

LaserJet Compatibility: The LaserJet 2000 printer offers LaserJet family compatibility–compatible software, formatting, and font cartridges.

Optional Automatic Duplex Printing: Duplex printing cuts paper costs in half!

Extensive Paper Handling: The LaserJet 2000 can print on paper sizes from 8.5 x 11 inches to 11 x 17 inches. This includes legal, ledger, letter, executive, A3 and A4. Dual 250-sheet input cassettes are standard and an optional 2000-sheet paper deck provides user and operator convenience. A 1500-sheet correct-order output tray is a standard offering that is well-suited to a multi-user environment.

Multiple Fonts: The LaserJet 2000 includes 34 resident fonts which are compatible with LaserJet family font cartridges and downloadable soft fonts (see page 1-5).

Low Operating Costs: LaserJet 2000 can be operated at half the cost of desktop laser printers.

Related Documentation

The following manuals provide additional information on the LaserJet 2000 printer:

- P/N 02684-90901 - *LaserJet 2000 Operator's Manual.* Included with every printer, this manual explains all the basic operating procedures, including loading paper, handling toner, using the Control Panel, selecting fonts, and performing routine operator maintenance.
- P/N 02684-90904 - *LaserJet 2000 Technical Reference Manual.* Includes technical information on the use of PCL for the user or programmer interested in controlling the LaserJet 2000 programatically. This manual is also included with each printer.
- P/N 5954-8953 - *LaserJet 2000 Paper Specification Guide.* This is a comprehensive guide to the selection, storage and use of paper. This guide will educate the user in common pitfalls associated with improper choice or use of paper.
- P/N 33447-90928 - *Understanding Paper, the Key to Successful Printing.* This is a **self paced training** guide in all aspects of paper. Use in conjunction with the *Paper Specs Guide.*
- P/N 5954-8952 - *Configuring with DEC VAX Systems.*
- P/N 5954-8956 - *Configuring with DEC VAX via DECserver or DECNET Server.*
- P/N 5954-8951 - *Configuring with Data General MV Systems.*
- P/N 5954-8965 - *Configuring with a 3COM LAN.*
- P/N 5954-8959 - *Configuring with IBM Mainframe Computers.*

Printer Identification

Each printer has an identification plate which lists the model and a serial number. This plate is attached on the back of the printer near the AC power receptacle. The model number is an alphanumeric (such as 2684A). The serial number consists of a four digit prefix, a letter, and a five digit suffix (0000A00000). The prefix is used to indicate design changes. The suffix is a sequential number which increments with each printer.

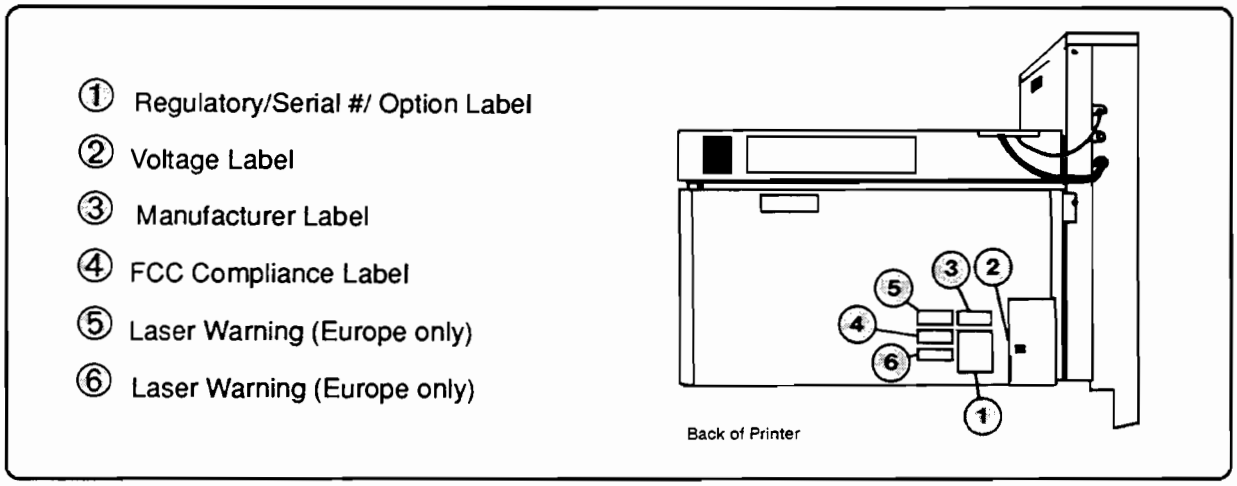


Figure 1-1. Printer ID and Regulatory Label Placements

Printer Specifications

Complete Feature List

Print Quality:

- Excellent Publication Quality Printing.
- Print Resolution - 300 x 300 Dots-Per-Inch.

Graphics:

- 75, 100, 150, and 300 dpi resolutions.
- Standard 300 dpi Full-Page Raster Graphics (8.5 x 11 inch page).

Ideal Shared Office Printer:

- Up to 20 Image/Min Print Speed.
- Cut Sheet Paper.
- Quiet Operation (<57 dBA).
- Targeted for up to a maximum usage of 100,000 pages/month.*
- PCL Software Compatibility.
- LaserJet Font Cartridge compatibility (up to three cartridges simultaneously).
- 32 Character LCD Display.

**100,000 letter or A4 size images. If printing ledger or A3, maximum supported usage is 50,000 per month. Printers shipped prior to May 1, 1990 were rated at 70,000 letter or A4 pages-per-month. For full 100,000 page support, all current Service Notes must be implemented.*

Extensive Paper Handling:

- Dual Input Bins (each holds 250 sheets)
- 2000 Sheet Input Bin (paper deck) * †
- 1500 Sheet Output Tray (correct-order) ‡
- Prints on Six Paper Sizes, Including Legal Size, Ledger Size, A4, and A3
- Automatic Duplex *
- Reject Print Output Tray
- Paper Tray Security

Formatter Features:

- 1.5 Megabyte Standard User RAM
- Expandable Memory (up to 5.5 Megabytes) *
- PCL Compatible
- Patterns and Rules
- Forms Overlay
- User-Definable Macros
- Downloadable Fonts
- Automatic Font and Graphics Rotation
- Job Separation
- Duplex Print Image for Top and Edge Binding *
- Automatic Paper Jam Data Recovery

Available Interfaces:

- RS-232/422 Serial
- Centronics
- Dataproducts Short Line
- Dataproducts Long Line

Note

Interfaces do not come standard with the printer, but are ordered as accessories. Serial interface is not recommended for extensive graphics applications.

** Optional Feature*
†Letter or A4 Paper Sizes Only
‡Letter, Exec, and A4 only (others 750)

Internal Fonts

The following table lists the printer's internal font offering. All internal fonts are selectable from the front panel or by using software commands.

Table 1-1. LaserJet 2000 Internal Fonts

LASERJET 2000 INTERNAL FONTS				SYMBOL SETS										LASERJET FONT COMPATIBILITY	
TYPEFACE	ORIENTATION	POINT	PITCH	ASCII	ROMAN-8	PC-8[1]	PC-8 D/N[2]	ECMA 94	LEGAL	MATH-8	TECHNICAL-7[3]	OEM1[4]	ISO[5]	FONT CARTRIDGE	SOFT FONT
Line Printer	Portrait	8.5	15	•	•	•	•	•				•	•		
			16.66	•	•	•	•	•				•	•	C, F, L, Y	
	Landscape	8.5	15	•	•	•	•	•				•	•		
			16.66	•	•	•	•	•				•	•	A, B, C, L, Y	
Line Draw	Portrait	8.5	16.66												
	Landscape														
	Portrait	12	10											H, U, W, X	
	Landscape													V	
Prestige Elite	Portrait	7	16.66	•	•	•	•	•				•	•	G, H, J	EA
	Landscape			•	•	•	•	•				•	•	G, H	EA
	Portrait	10	12	•	•	•	•	•	•	•	•	•	•	D, G, J, M	EA
	Landscape			•	•	•	•	•	•	•	•	•	•	M	EA
Prestige Elite (Bold)	Portrait	10	12	•	•	•	•	•	•			•	•	D, G, J, M	EA
	Landscape			•	•	•	•	•	•			•	•	M	EA
Prestige Elite (Italic)	Portrait	10	12	•	•	•	•	•	•			•	•	D, G, J, M	EA
	Landscape			•	•	•	•	•	•			•	•	M	EA
Courier	Portrait	10	12	•	•	•	•	•				•	•		
	Landscape			•	•	•	•	•				•	•		
	Portrait	12	10	•	•	•	•	•	•	•	•	•	•	C, H, Y	
	Landscape			•	•	•	•	•	•	•	•	•	•		
Courier (Bold)	Portrait	12	10	•	•	•	•	•	•			•	•	A, C, H, L, Q, Y	
	Landscape			•	•	•	•	•	•			•	•	L, Q	
Courier (Italic)	Portrait	12	10	•	•	•	•	•	•			•	•	A, C, H, L, Q, Y	
	Landscape			•	•	•	•	•	•			•	•	L, Q	
Tms Rmn	Portrait	8	Prop	•	•								•		AD
	Landscape			•	•								•		
	Portrait	10	Prop	•	•								•		AD
	Landscape			•	•								•		
Tms Rmn (Bold)	Portrait	10	Prop	•	•								•		AD
	Landscape			•	•								•		
Tms Rmn (Italic)	Portrait	10	Prop	•	•								•		AD
	Landscape			•	•								•		
Helv (Bold)	Portrait	14	Prop	•	•								•		AD
	Landscape			•	•								•		

[1]The IBM-PC symbol set.
[2]The IBM-PC Danish/Norwegian symbol set.
[3]Digital Equipment Corporation Technical symbol set.
[4]Digital Equipment Corporation International symbol set.
[5]The ISO symbol sets include JIS ASCII, IRV, United Kingdom, French, German, Italian, Chinese, Swedish, Spanish, IBM, Portuguese, Portuguese IBM, Norwegian V1, and Norwegian V2. The non-ISO HP sets, HP German and HP Spanish, are also included.

Printing process

The LaserJet 2000 printer uses dry type electrophotography employing a semiconductor laser and monocomponent toner.

Print Speed

First image less than 22 seconds from receipt of data. Subsequent pages at up to 20 pages-per-minute. Print speed is paper size dependent as well as input source (cassette/PDX) dependent. See table below. Print speed is also affected by image content and printer memory configuration (more memory may increase print speed, particularly when printing graphics). Graphics printing will decrease print speed.

Table 1-2. Images Per Minute

	Simplex Printing		Duplex Printing	
Paper Size	Tray	Paper Deck	Tray	Paper Deck
Letter	20	20	15	20
Legal	13	–	11	–
Ledger	11	–	9	–
Executive	16	–	14	–
A4	20	20	16	20
A3	11	–	10	–

Note

Assumes continuous printing of typical text-only file from one source. Complex graphics or alternating paper feed sources will affect print speed.

Electrical Specifications

Table 1-3. Electrical Specifications

Model (2684XX)	Voltage	Frequency	Amperage
A - D - P	115V ±10%	60Hz ±5%	12A
AA,AB,AQ,AY - DA,DB,DQ,DY-PA,PB,PQ,PY	220V ±10%	50Hz ±5%	6.3A
AU - DU - PU	240V ±10%	50Hz ±5%	5.8A

Power Consumption: All models, approximately 1400 Watts printing.

Dimensions

Table 1-4. Printer Dimensions

Description	Width	Depth	Height	Weight
A Models	137 cm (53.4 in)	64 cm (25 in)	125 cm (48.8 in)	163 kg (358 lbs)
D Models	145 cm (53.5 in)	64 cm (25 in)	125 cm (48.8 in)	204 kg (448 lbs)
P Models	145 cm (53.5 in)	64 cm (25 in)	125 cm (48.8 in)	180 kg (395 lbs)
Packaged for Shipping*	102.6 cm (40 in)	111.5 cm (43.5 in)	135.9 cm (53 in)	277 kg (609 lbs)

* *LaserJet 2000 Model D, including pallet (other models weigh less).*

Paper Sizes and Image Areas

Table 1-5.
Paper Sizes and Image Areas

Size Name	Dimensions	Image Area Size
Letter	8.5 x 11 in	8.1 x 10.6 in
Ledger	11 x 17 in	10.6 x 16.6 in
Legal	8.5 x 14 in	8.1 x 13.6 in
Executive	7.25 x 10.5 in	6.85 x 10.1 in
A4	210 x 297 mm	200 x 287 mm
A3	297 x 420 mm	287 x 410 mm

Printer Options

Models

LaserJet 2000 Model A (2684A):

- 20 Image/Minute Print Speed
- Cut Sheet Paper
- Dual Input Bins (250 sheets each)
- Prints on Six Paper Sizes, Including Legal, Ledger, and A4
- 1500-Sheet Output Tray (correct order)
- Standard 300 dpi Full-Page Raster Graphics (8.5 x 11 inch.)
- 1.5 Megabyte Standard User RAM
- Expandable Memory (up to 5.5 Megabytes)
- LaserJet PLUS Software Compatibility
- LaserJet Cartridge Compatibility (up to 3 cartridges simultaneously)
- Quiet Operation (<57 dBA)
- Paper Tray Security
- 32 Character LCD Display
- Error Output Tray

LaserJet 2000 Model P (2684P): All the above HP 2684A features, plus ...

- 2000-Sheet Input Paper Deck (letter & A4 size only)

LaserJet 2000 Model D (2684D): All the above HP 2684A features, plus ...

- Duplexing capability
- 2000-Sheet Input Paper Deck (letter & A4 size only)

Power Options

LaserJet 2000 Models A,D, and P are supplied in either 115 VAC 60 Hz, or 220/240 VAC 50 Hz power. See Table 1-3 for details.

Field Installable Options

- **26842A** 2000 Sheet Paper Deck Input Bin 115V Upgrade
- **26842AB** 2000 Sheet Paper Deck Input Bin 220/240V Upgrade
- **26843A** RS-232/422
- **26843B** Centronics Interface
- **26843C** Dataproducts Short Line Interface
- **26843D** Dataproducts Long Line Interface
- **26845A** 1 Megabyte memory expansion kit (up to 4 kits can be installed per printer)

Suggested Memory Configurations

This table serves as a guide in determining the approximate amount of printer memory needed to support full-page 300 dot-per-inch graphics capabilities on the LaserJet 2000.

Table 1-6.
Memory Required for Full Page Graphics

Print Mode	Paper Size	Memory Requirements
Single-sided (simplex)	Letter, A4, Exec	standard memory (1.5Mb)
	Legal	standard memory (1.5Mb)
	Ledger, A3	(1) memory kit 26845A
Double-sided (duplex)	Letter, A4, Exec	(1) memory kit 26845A
	Legal	(2) memory kits 26845A
	Ledger, A3	(3) memory kits 26845A

Note

The above memory configuration requirements are intended as a basic memory ordering guide. Applications using soft fonts, electronic forms, or complex desktop publishing may require additional printer memory.

Supplies and Accessories

Paper Cassettes

Table 1-7. Paper Cassettes

Part No.	Type	Orientation	Part No.	Type	Orientation
92282B	Letter	Landscape	92282D	A4	Landscape
92282C	Legal	Portrait	92282E	Executive	Portrait
92282F	Ledger	Portrait	92282G	A3	Portrait

Toner Supplies

Table 1-8. Toner Supplies

Part No.	Description
92282A	Toner. Box contains 2 one-half kilogram bags. Prints approximately 14,000 images per kilogram @ 5% coverage (a typical business letter).
92282P	Toner Disposal Box (package of four) - approximately 40,000 images each.

EP Drum

Table 1-9. EP Drum Ordering

Part No.	Description
R44-0230-000CN	Electrophotographic Drum. Approximately 500,000 Letter or A4 images. NOTE: Warranty coverage on new EP Drums is limited - see page 1-27.)

Paper Specifications

One of the most important considerations in assuring reliable performance of the printer is to select a quality paper. All papers used in the printer should meet the specifications shown in Table 1-10. For additional information on using paper in the LaserJet 2000, refer to the *LaserJet 2000 Paper Specification Guide* P/N 5954-8953 and *Understanding Paper, the Key to Successful Printing* P/N 33447-90928.

General Specifications

Table 1-10. Paper Specifications

Type	Cut sheet
Basis Weight	16 to 24 pound (60 to 90 g/m^2)
Caliper	3.7 to 5.5 mils
Moisture Content	4% to 6% by weight
Cut edge condition	Edges should be cut clean with no visible fray.
Cutting Dimensions	±0.0313 inch of nominal, corners 90° ±4°
Grain	Long grain
Composition	Chemical wood pulp and/or cotton fiber. Maximum ash content 10%. Should not contain large amounts of clay or talc.
Curl	No allowable curl toward side to be imaged.
Electrical Surface Resistivity	2.0 to 15 x 10^{10} ohms (conditioned @ 22° C & 50% RH)
Smoothness	100 to 300 (Sheffield)
Acid Content	5.5 to 7.4 pH (cold extraction)
Fusing Compatibility	Must not scorch, melt, offset or release hazardous emissions when heated to 200° C for 0.1 second.
Wax Pick	12 minimum (Dennison)
Porosity	11 minimum (Gurley)
Opacity	85% minimum
Brightness	83% minimum
Packaging	Polylaminated, moisture proof ream wrap.

Caution

Hole punched or perforated paper, labels, transparency films, and envelopes are not supported on the LaserJet 2000 printer and can cause damage to printer components.

Explanation of Selected Specifications

Paper Weight

Paper weight is an important characteristic to consider because paper that is too light or too heavy may cause misfeeds, mis-stacking, paper jams or excessive mechanical wear to the printer.

Caution

Mixing papers of different weights (or thicknesses) within the same input tray or cassette can cause paper jams due to false Double Feed Detect errors. Using different thickness papers within the same *print job* even if they are loaded into separate input trays can also cause false Double Feed errors unless "Flush Pages" is ON (Formatter PCA, Switch S12-1 ON) and the paper selection commands are preceeded by a printer reset (ESC E) command. *Flush Pages ON may affect printer throughput.*

Quality

The HP LaserJet 2000 printer was designed to use a high quality xerographic (photocopy) paper and can also accommodate some special application papers. Quality paper for laser printers is characterized by uniform physical properties, freedom from dust and lint, accurate cutting to size, and packaging that protects it from moisture and physical damage. Curled or bent edges, spots, excessive dust or lint, wrinkling and inaccurate cutting to size are common paper problems and should be avoided. These problems can be characterized by misfeeding, paper jams, premature wear or illegible printing.

Composition

Paper used in the HP LaserJet 2000 printer should be manufactured from chemical wood pulp and/or cotton fiber. To ensure that paper of a special fiber composition will work properly, always test it before purchasing large quantities. Other components of paper are sizing, fillers, buffers and pigments.

Note

Do not use coated paper or paper containing materials that melt, offset, discolor, vaporize or release hazardous emissions at temperatures of 200°C.

Smoothness

As paper gets rougher, the print output gets broken and rough in appearance. The paper surface should neither have a heavy texture nor a glossy smoothness. Paper with embossed surfaces is not recommended for use in the HP LaserJet printer as spotty printing may occur. Paper with embossed areas only in the leading or trailing edge, or other areas which will not be printed on, may print satisfactorily but is not recommended because of the potential for misfeeding or paper jams.

Curl and Waviness

Curl is the amount of curvature in a piece of paper toward either side of the sheet. It is expressed in inches of the radius of the circle formed by the curled paper. Curl can be expressed as: 1) in-ream curl resulting from the manufacturer's process or 2) post-image curl resulting from the post-printing process. This second type of curvature is due to one surface of paper being exposed to fuser heat, causing it to shrink more than the reverse side. Some papers can have worse problems with in-ream curl and others with post-image curl. To identify in-ream curl problems, open a ream and lay a *fresh sheet* on a flat surface. It should lay flat.

Post-image curl is identified by laying a *newly printed* sheet on a flat surface. It also should lay flat. Avoid excessively curled or wavy paper; misfeeding, paper jams and poor print quality can result.

Felt Side Vs. Wire Side

For most papers, the "top" side of the sheet as it is formed is known as the felt side and the "bottom" is known as the wire side. The wire side of paper is usually the preferred side for simplex printing and most packages of paper will have an arrow showing the direction to load paper so that this side will be printed on.

How to Choose Paper

Buy Paper That Meets Specifications

The first step in choosing paper is to select paper that meets the specifications listed in Table 1-10. Some papers will meet these specifications and still not print well because of variations in the paper manufacturing process and in the environment. However, these specifications still remain the primary consideration when choosing a new type of paper.

Before Purchasing Large Lots of Paper

The second step in choosing paper, particularly when planning a large purchase, is to print a small quantity (we recommend at least two reams) in your particular environment. The way to guarantee purchase of a successful paper that produces quality printed output is to subject it to the room temperature, humidity and printing application in which it will be operating. DO NOT purchase large lots of paper before first testing it! Hewlett-Packard recommends that you ask your paper vendor for a guarantee that the paper sold to you will perform satisfactorily in your laser printer, and that the vendor will assume responsibility for the replacement of any paper that will not print acceptably.

Supported Papers

To obtain the clearest, sharpest images, use high speed copier bond paper, such as Xerox 4024 or Canon NP. Generally these types of papers are manufactured to provide desirable properties for image quality and paper handling. Always test paper prior to purchase to verify that it provides acceptable performance.

For some applications it may be desirable to use cotton paper. Several cotton papers are now being manufactured specifically for laser printing. Hewlett-Packard has tested cotton content papers such as Gilbert Neu-Tech and Neenah N.P. and found the results satisfactory. Generally, as paper weight or surface texture increases, image quality and paper handling deteriorate. Once again, test the paper to verify acceptable performance prior to purchase.

Note

Hewlett-Packard neither warrants nor recommends the use of a particular paper. Paper properties are subject to change by paper manufacturers and Hewlett-Packard has no control over such changes. The entire responsibility as to the quality and performance of paper lies with the customer.

White Paper

Most printing applications use conventional white copier bond. The paper chosen should be free of cuts, tears, grease spots, loose particles, dust, wrinkles, voids and curled or bent edges.

Colored Paper

Colored paper, including pink, yellow, blue, etc., can be used in the LaserJet 2000 printer. Do not use papers where a colored coating has been added after the paper is produced. Pigments used should be able to withstand the fusing temperatures of 200° C (392° F) without deterioration. Colored paper should also meet the same specifications as white paper.

Pre-printed Forms

In addition to problems with multiple feeds and paper jams, there are two special concerns involved in the use of pre-printed forms:

- **Offset:** This is the transfer of ink from the printed form onto the printer, and can contaminate the internal printer mechanism. The principle causes of offset are inks not fully dried, heat generated during the HP LaserJet 2000 printer's fusing process, and the presence of silicone on the fusing rollers.
- **Emissions:** Undesirable emissions can be produced by using paper which has been pre-printed with the wrong types of ink. When these inks are exposed to heat generated during the fusing process they may vaporize, producing gases that may be hazardous to health or damaging to the printer.

To avoid problems with pre-printed forms, observe the following guidelines:

- Forms must be printed with heat-resistant inks that will not melt, vaporize or release hazardous emissions when subject to an environment of approximately 200° C (392° F) for 0.1 second.
- The inks used must have a high oil resistance, especially to silicone oils, and must not be affected by resin components in toner.
- The inks used must not be flammable and should not have adverse effects on any printer rollers.
- When the form is pre-printed, care must be taken not to change the moisture content of the paper being printed or use materials that change the paper's electrical or handling properties. The forms should be sealed in moisture proof wrap to prevent moisture changes during storage.

Unsupported Media

Caution Use of unsupported media on the HP LaserJet 2000 printer may cause problems ranging from paper jamming to physically damaging the EP Drum and other printer components.

Paper With Cutouts or Perforations

Hewlett-Packard **does not support nor recommend using paper with cutouts or perforations** in the HP LaserJet 2000 printer. However, if it is absolutely necessary to print on these papers, care should be taken to conform to the following:

Cutouts. A cutout is defined as any portion of the paper which has been removed, including binder holes, notches, square cuts, etc. Some special considerations about cutouts to note are:

- Cutouts larger than 9.5 mm (0.375 in) diameter or the equivalent area of 71.2 mm^2 (0.1104 in^2) **must not be used.**
- Do not print at a cutout location or closer than 4 mm (0.10 in) to the edge of a cutout.
- Care must be taken in the placement of the cutouts on the page. Some cutout positions will interfere with paper sensor operation. For example, paper punched for use with a standard 3-hole binder may print acceptably. However, if loaded backwards in the paper tray, it will cause jams in the duplex unit. An optical sensor "looks" through the cutout, and because of the location of the hole, senses that the paper is not there. Refer to the Operator's Manual for correct paper loading procedures.
- Load punched hole paper (Letter and A4 size) with the holes at the leading edge.
- Holes should be cut clean without burrs, to avoid multiple feed, paper jams, or contamination problems.
- The cutout paper must conform to the general specifications for plain white xerographic paper.

Perforations. Paper with internal perforations may cause difficulties with misfeeds and paper jams. Pay particular attention to the following points:

- Avoid perforations which run across the page perpendicular to the paper path. When paper is transferred from one set of rollers to the next, a perforation can cause the page to bend downward and miss the pickup point on the next roller.
- DO NOT print closer than 4 mm to a perforation.
- Perforations should be cut from the direction of the image side so that edge trimmings are away from and won't scratch the drum.
- If perforated paper is to be used, the perforations should be cleanly cut. This will help avoid feeding problems.

Other Unsupported Media

DO NOT attempt to print on any of the following:

- Paper that does not meet the specifications listed in this document.
- Recycled paper.
- Extremely shiny, smooth or textured paper.
- Embossed paper.
- Multipart forms.
- Carbonless or coated papers.
- Paper printed with dyes or inks that can't withstand 200° C (392° F).
- Paper that produces hazardous emissions when exposed to 200° C for 0.1 second.
- Paper or paper coatings that melt at 200° C (392° F).
- Paper that offsets or discolors.
- Damaged, wrinkled or irregularly shaped paper.
- Paper containing large amounts of clay or talc.
- Labels (pressure sensitive).
- Overhead transparencies.
- Envelopes.

Loading Paper Correctly

Improperly loaded paper can cause paper feed problems. When loading paper into the HP LaserJet 2000 printer, observe the following guidelines:

- DO NOT use paper that is creased, folded, torn, or is damaged in any way.
- Always discard the top and bottom sheets of a new ream.
- If the package of paper has an arrow on it, load the paper so that the arrows point up.
- Only add paper when the tray is completely empty and DO NOT add small amounts of paper at a time; an air pocket could form between layers increasing the chance of a misfeed.
- Only load into the printer what you will print in one day. Paper left sitting in a tray will take on the temperature and humidity of the surrounding environment.
- DO NOT fan paper. Fanning causes air pockets between sheets which may greatly increase misfeeds.
- DO NOT overfill a paper tray. Use the yellow arrows as a guide.
- DO NOT add or remove paper in an input source while paper is being fed from it. This could cause paper jams.
- DO NOT load different sizes and types of paper in the same tray.
- Reserve the bottom paper tray (250 sheet capacity) for "special" sizes, colors, weights, etc. (The bottom tray can be "locked out" using the "SECURE SOURCE" front panel command.)
- Load letterhead paper with the print facing up and toward the rear of the printer for letter and A4 size, and toward the leading edge for other sizes.
- Keep the wire stop (on top of the output stacker) set for the size of the largest paper to be used. If the stop is set for too small a paper size, an output jam could result.
- Unload the output stacker tray frequently. This will reduce wear on load-bearing parts.

Paper Handling and Storage

Shipping

When paper is shipped through different environments, the entire stack of cartons on the shipping pallet should be plastic wrapped. When shipped across bodies of water, individual cartons should be wrapped as well. Paper should never be shipped in such a manner that it is damaged or folded along the edges.

Stacking

Consider the following guidelines when stacking paper:

- DO NOT store paper directly on the floor; cartons should be placed on a pallet or on shelves.
- DO NOT stack unevenly or more than six cartons high.
- DO NOT store individual reams in such a manner that they will curl or warp along the edges.
- DO NOT place anything on top of paper, whether it is packaged or unpackaged.

Environmental Considerations

Paper should be protected from temperature and humidity extremes. The printer is designed to operate in a wide range of environmental conditions, but for best performance, paper should be stored and used at 20° C (±3°) or 68° F (±5°), with a relative humidity of 50% ±5%. When paper is used in an environment which is outside the ranges of temperature and humidity shown above, follow these guidelines:

- DO NOT leave the paper exposed to humidity or temperature extremes. Any extreme changes in the environment will cause the paper to take on those characteristics if left sitting unwrapped or in the paper feed tray of the printer.
- In the case of humidity extremes, keep paper tightly wrapped in plastic.
- If there is a significant temperature difference between the paper storage area and the printer's operating environment, paper should be allowed to adjust to the temperature in the printer's operating environment before being unwrapped. The greater the temperature difference and the greater the volume of paper, the longer this time period should be. Figure 1-2 gives some guidelines for the amount of time required for a specific amount of paper to change temperature.

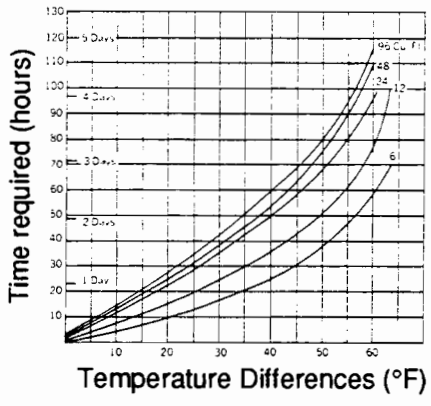


Figure 1-2. Paper Temperature Equalizing

Safety Information

Laser Safety

The HP 2684 Series of printers are listed by Underwriter's Laboratories, Inc. (UL) in the following category with respective guide designation: Electronic Data Processing Equipment (EMRT).

The Canadian Standard Association (CSA) has certified the HP 2684 Series for EDP equipment.

The HP 2684 Series complies with IEC 380 and IEC 435.

The HP 2684 Series of printers have been tested and found to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of the FCC rules. Additionally, these printers are designed to meet European Safety and RFI/EMC standard for Electronic Data Processing Equipment. This includes Germany's VDE 0871 Level B.

The HP 2684 Series are further certified to VDE 0836, VDE 0806, and VBG 93, for laser safety.

The HP 2684 Series has been classified as a BRH Certified Class I Laser Product, safe for office/EDP use. It is necessary to check with local restrictions, safety codes, or reporting requirements in your area. Hewlett-Packard will aid in determining local safety requirements. Any questions concerning regulatory agency compliance should be directed to your local Hewlett-Packard Sales Office.

Warning **While servicing the optical (laser) system of this printer, always install the protective Laser/Scanner Cover before powering ON the printer. The reflected beam, although invisible, can damage your eyes.**

Since the laser beam is invisible, the following label is attached to the Laser/Scanner Cover inside the printer where there is danger of exposure to laser radiation.

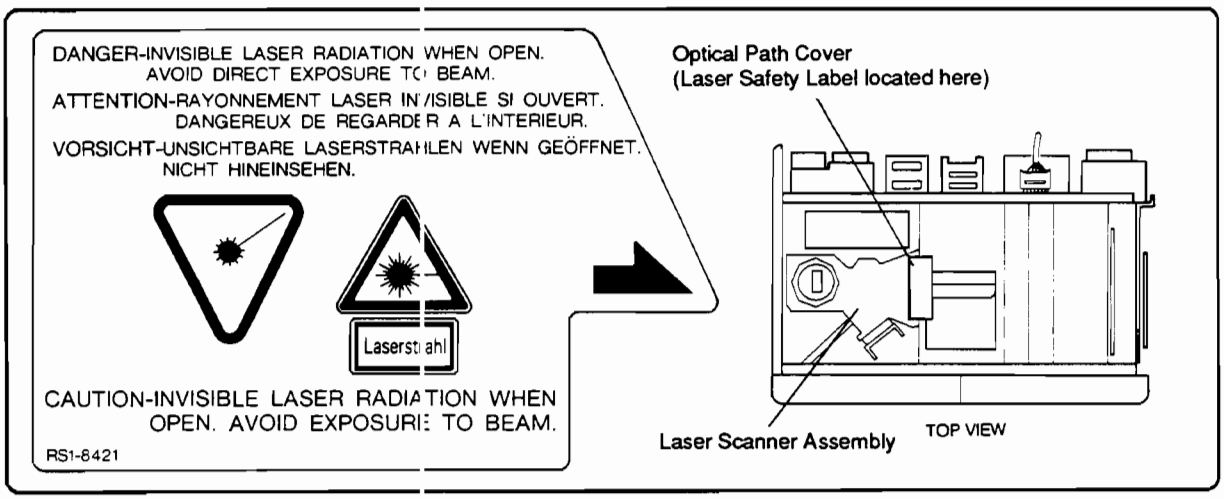


Figure 1-3. Laser Safety Label

In accordance to West German standard VDE0836 (VDE-Bestimmung fur die elektrische Sicherheit von Lasergeraten und anlagen), two servicemen are required to service each unit.

FCC RFI Statement

Warning: This equipment generates and uses radio frequency energy and if not installed and used in strict accordance with the manufacturer's instructions, may cause interference with radio and television reception. The equipment has been type tested and found to be in compliance with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Note

Use of a shielded interface cable is required to comply with the Class A limits in Subpart J of Part 15 of the FCC rules.

The Federal Communications Commission has prepared a booklet entitled *Interference Handbook* (1986) which may be helpful to you. This booklet (stock number 004-000-004505-7) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Laser Statement (Finland)

The following applies to printer operation and servicing in Finland.

T U R V A L L I S U U S Y H T E E N V E T O

LASERTURVALLISUUS

HP 2684AB/DB/PB laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Laitteen on tarkastanut ja tyyppihyväksynyt Suomessa TyÖsuojeluhallitus, TyÖsuojeluhallituksen hyväksyntänumero TSH 2075/6019/87.

Tarkastuksessa laitteen turvallisuusluokka on määrätty valtioneuvoston päätÖksen 472/1985 ja standardin SFS-IEC 825 mukaisesti.

Normaalikäytössä laitteen suojakotelo estää lasersäteen pääsyn laitteen ulkopuolelle.

HUOLTO

Kirjoittimen sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan laserlaitteiden huoltamiseen koulutettu henkilÖ. Tällaiseksi huoltotoimenpiteeksi ei katsota mustekasetin vaihtamista, paperiradan puhdistusta tai muita käyttäjän käsikirjassa käyttäjälle määriteltyjä ylläpitotoimia.

Kirjoittimen turvallisuusluokka muuttuu mikäli sen suojakotelo avataan.

ZZF Declaration Statement (Germany)

The following notice applies to printer operation and servicing in Germany.

Funkentstörung Deutschland

Herstellerbescheinigung

Hiermit wird bescheinigt, daß das Gerät HP 2684 in Übereinstimmung mit den Bestimmungen von Postverfügung 1046/04 funkentstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeight und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Wird das Gerät innerhalb einer Anlage betrieben,

- so muß bei Inanspruchnahme der Allgemeinen Genehmigung FTZ 1046/84 die gesamte Anlage der oben genannten Genehmigung entsprechen.
- die mit einer FTZ-Serienprüfnummer gekennzeichnet ist, und für die eine Betriebsgenehmigung vorliegt oder beantagt wird, so sind in der Regel keine weiteren Schritte nptwendig.

Toner Safety

Toner is a non-toxic substance composed of plastic, iron, and a small amount of pigment. Toner spilled on skin and clothing is best cleaned by removing as much toner as possible with a dry tissue, then washing with cold water. Hot water causes toner to jell and permanently fuse into clothing. Toner tends to break down when it comes into contact with vinyl materials, so avoid contact with vinyl.

Material Safety Data Sheets

A material safety data sheet (MSDS) for toner or any other chemical used in the HP LaserJet 2000 printer is available through Hewlett-Packard's Corporate Product Regulations.

When requesting an MSDS by mail, include your name and mailing address, and the part number of the chemical or the product number of the unit containing the chemical. For example, to obtain an MSDS for toner you must include the product number **92282A**. Mail or phone requests to:

Corporate Product Regulations
3172 Porter Drive
Palo Alto, CA 94304

(415) 857-1501

Ozone Safety

The coronas found in laser printers and photocopiers generate ozone gas (O_3) as a by-product of the image transferring process. Ozone is only generated while the printer is printing. Ozone has a very short life and combines with air molecules within minutes.

Ozone Filter

The printer has an activated charcoal filter to help remove ozone from the printer's exhaust. Replace this filter annually upon regular preventive maintenance (see Chapter 4).

UL Standards

The only existing standard for ozone emission is established by Underwriters Laboratory (UL). All HP LaserJet family printers meet this standard when shipped from the factory.

Regulations

Because ozone can be an irritant, various regulatory agencies have established limits to the amount of ozone to which employees may be exposed. The work place specifications are:

- A person may not be exposed to an average concentration of greater than 0.1 part per million (PPM) of ozone within a period of eight hours.
- At this time, the ACGIH has proposed a ceiling limit of 0.1 PPM for ozone.

Note The employer is responsible for providing a work environment that meets these standards.

Minimizing Ozone Exposure

Almost all ozone concerns arise from abnormal site or operating conditions. The following conditions may generate an ozone complaint:

- Multiple laser printers in a confined area.
- Extremely low relative humidity.
- Poor room ventilation.
- Printer exhaust port directed toward the face of personnel.
- Long, continuous printing combined with any of the above.

Inspect the work environment for the operating conditions listed above if ozone emissions are a problem in the work place. Some people are extremely sensitive to ozone odor. If this is the case, it is advisable to position the printer away from the sensitive user.

Regulatory Labels

The following labels identify regulatory ratings for various printer configurations.

The regulatory label in Figure 1-4 will be attached to a standard unit without a paper deck or duplexing unit (model 2684A). The voltage label of the unit is located near the input power receptacle. 50 Hz units can be reconfigured between 220:240 VAC. 60 Hz units are 115 volt only. (See Table 1-3 for electrical specifications.)

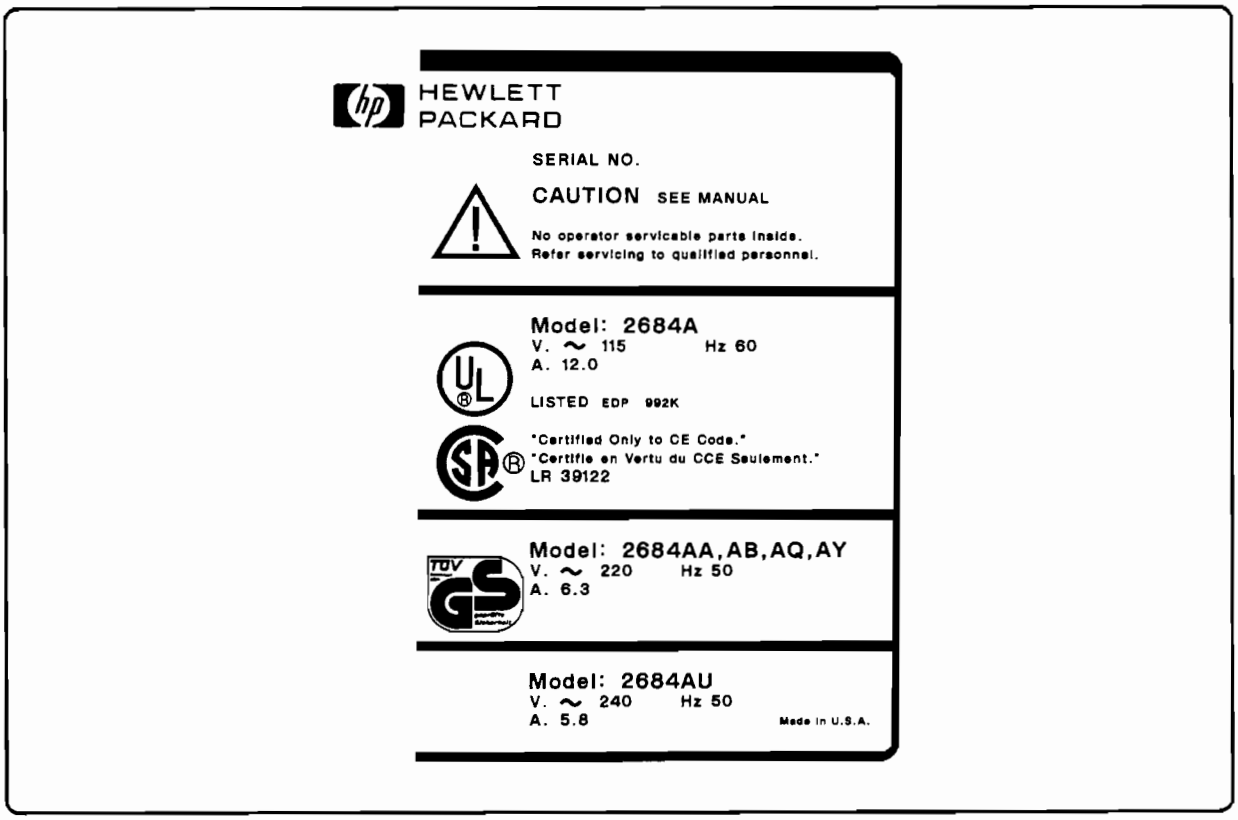


Figure 1-4. Label on 2684 "A" Models

The regulatory label in Figure 1-5 will be attached to a standard unit configured *with an optional paper deck* (model 2684P). The voltage label of the unit is located near the input power receptacle. 50 Hz units can be reconfigured between 220:240 VAC. 60 Hz units are 115 volt only. (See Table 1-3 for electrical specifications.)

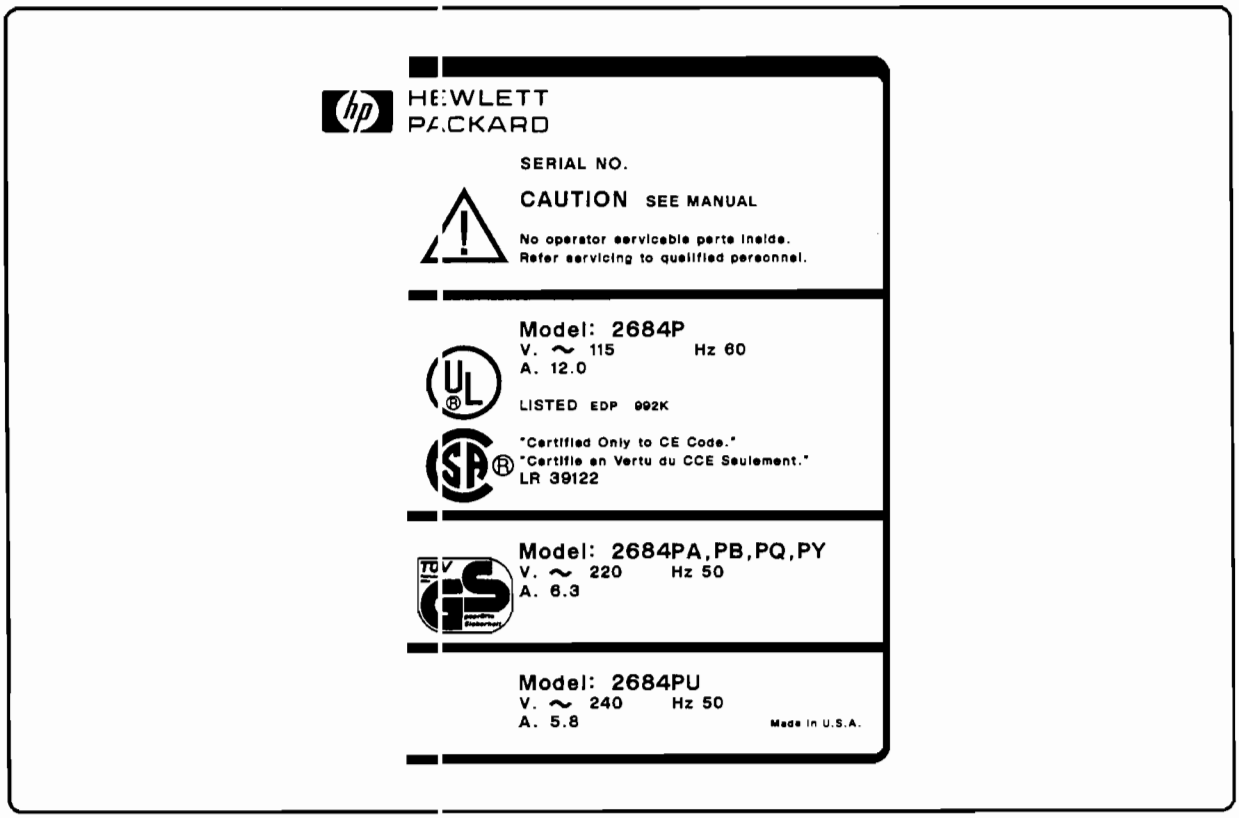


Figure 1-5. Label on 2684 "P" Models

The regulatory label in Figure 1-6 will be attached to a standard unit configured *with an optional paper deck and duplexer* (model 2684D). The voltage label of the unit is located near the input power receptacle. 50 Hz units can be reconfigured between 220:240 VAC. 60 Hz units are 115 volt only. (See Table 1-3 for electrical specifications.)

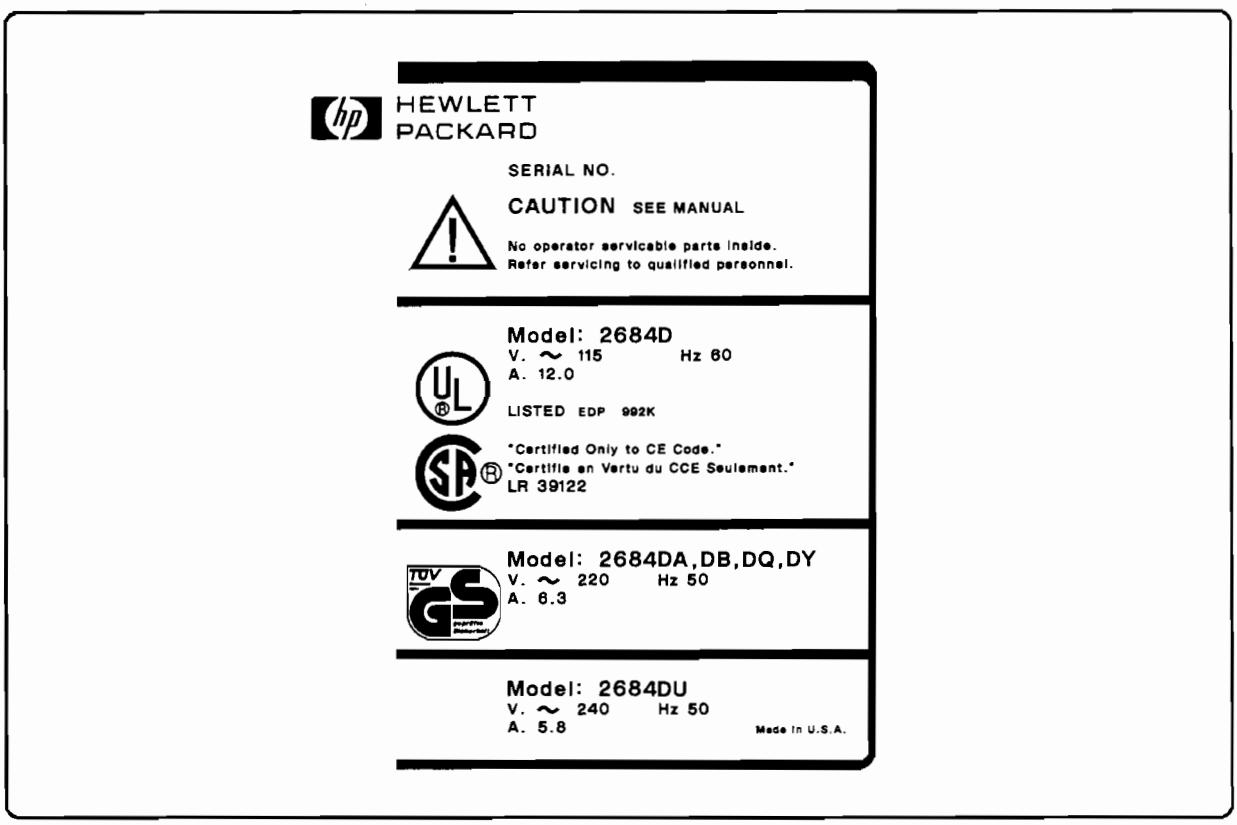
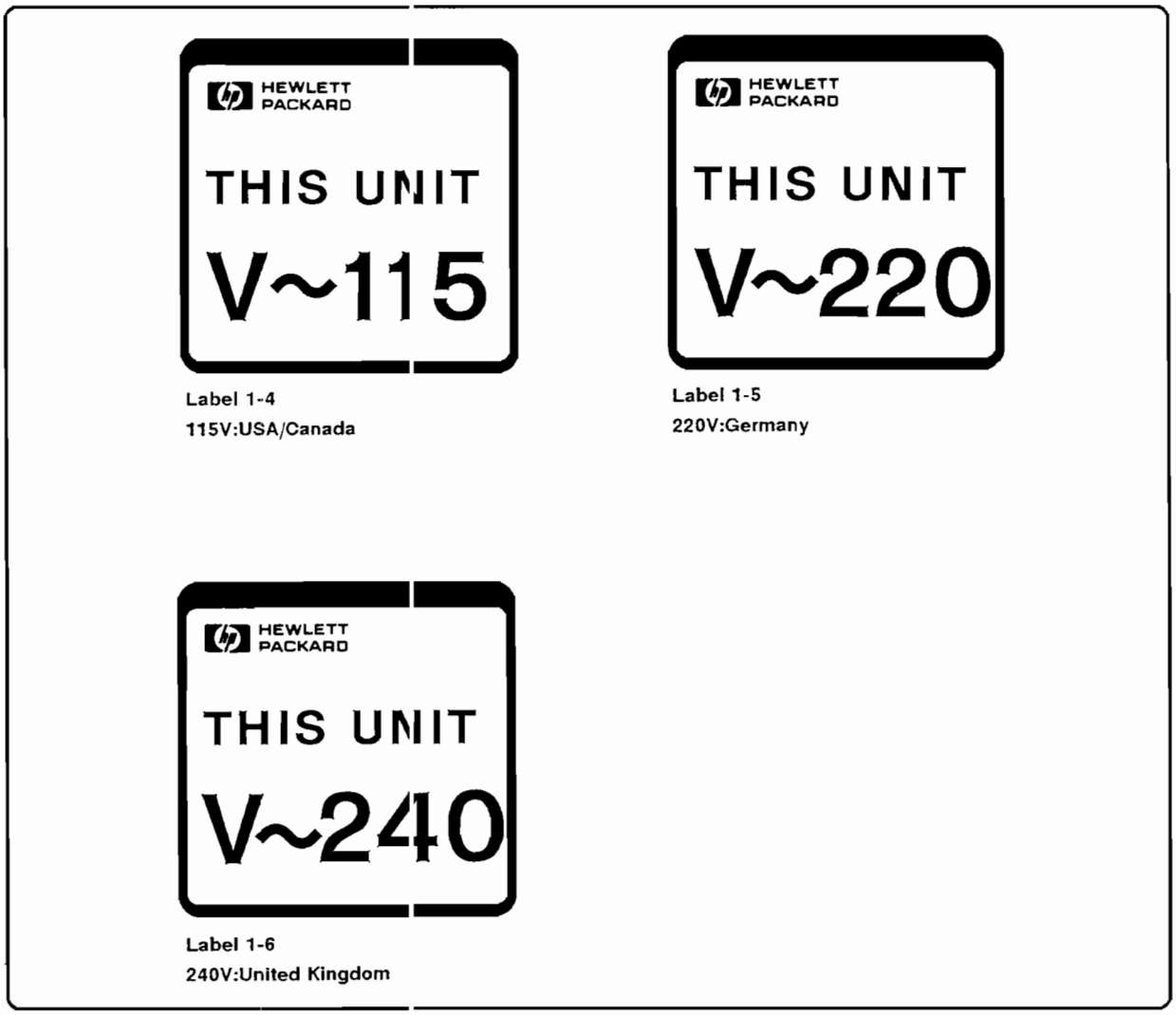


Figure 1-6. Label on 2684 "D" Models

Voltage Labels

Voltage labels identify the voltage requirements of the printer.



Label 1-4
115V:USA/Canada

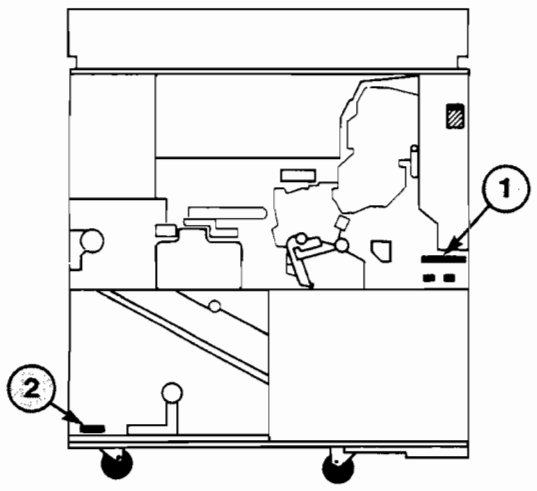
Label 1-5
220V:Germany

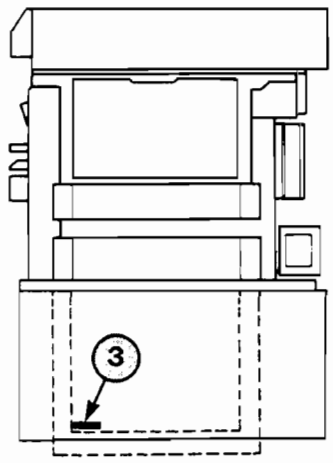
Label 1-6
240V:United Kingdom

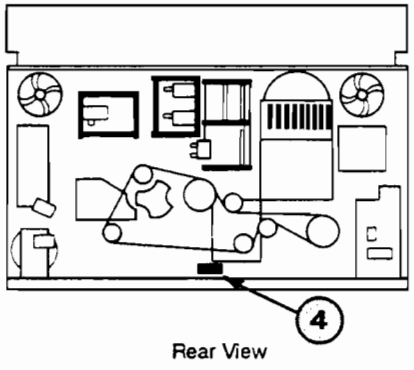
Figure 1-7. Voltage Labels

Canon Serial Number Locations

The Canon serial number locations are shown in Figure 1-8. These serial numbers may need to be referenced before doing field updates.







① Canon print engine serial number (open top front doors).

② Canon duplexer serial number (open bottom front doors).

③ Canon PDX serial number (open PDX doors)

④ HP product serial number (also stamped on regulatory label).

Figure 1-8. Canon Serial Number Locations

Maintenance and Warranty

Operator training is provided at time of installation. The initial 90 days after installation are covered by an on-site warranty which provides parts and labor for repair of defects in workmanship. After this period, repair and maintenance coverage can be continued by contacting the nearest Hewlett-Packard Sales and Service Office, and requesting a Customer Maintenance Agreement.

The Customer Maintenance Agreement offers:

- Extended coverage service plans in most areas.
- Defined response time for maintenance.
- Customer maintenance.

Details on tailoring a service program to meet the customer's particular needs are available through your local HP Sales and Service Office.

Note

Warranty coverage on new EP Drums is limited to DOA occurrences only. Performance and life expectancy of EP Drums is dependant on the usage of paper within recommended specifications and other customer responsibilities over which Hewlett-Packard has no control.

Service Approach

Repair of the printer is based on the component level replacement of mechanical assemblies, and the assembly level replacement of PCAs. The printer's diagnostics serve as an aid in isolating problem areas of the printer. Once the problem is located, the assembly should be replaced without further attempts to identify component failures within the assembly.

Service parts may be ordered from Hewlett-Packard's Support Materials Organization (SMO) or Parts Center Europe (PCE). Part numbers can be found in Chapter 8 of this manual.

The address for SMO and PCE is:

Support Materials Organization
3625 Cincinnati Avenue
Rocklin, California 95677-1297
800-227-8164

Parts Center Europe
Wolf-Hirth Strasse 33
D-7030 Boeblingen, West Germany
0049-7031-140

Consumables may be ordered from Hewlett-Packard's Direct Marketing Division (DMK):

800-538-8787
(in California 408-738-4133)

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Site Planning and Requirements

Introduction

This chapter will help in planning a suitable location for unpacking and installation of the HP LaserJet 2000 printer. Site requirements include:

- General Requirements
- Environmental Considerations
- Electrical Considerations

General Requirements

When selecting the location of the LaserJet 2000 printer, it is necessary to consider the interface cable and power availability. You should also think about the obstacles you might encounter while moving the printer into place. Other considerations include:

- The printer should be located to allow convenient movement of personnel (operators) and material.
- The location should have emergency exits.
- The site must not contain airborne contaminants or corrosive substances that could damage the equipment.
- The printer location must provide for clearance around the printer to allow service access.
- Adequate work space should be provided to allow for personnel traffic, safety and comfort.
- Printers should not be positioned back-to-back as the output air flow from the first printer then becomes the input air flow for the second printer.
- A non-corrosive fire extinguisher must be located in close proximity to the printer.
- The printer is designed for operation in a clean environment, preferably in an area not subject to excessive shocks, vibrations, or a wide range of temperature variations.
- Air conditioning is not required to ensure reliable operation, but the environmental specifications listed on page 2-4 should not be exceeded.

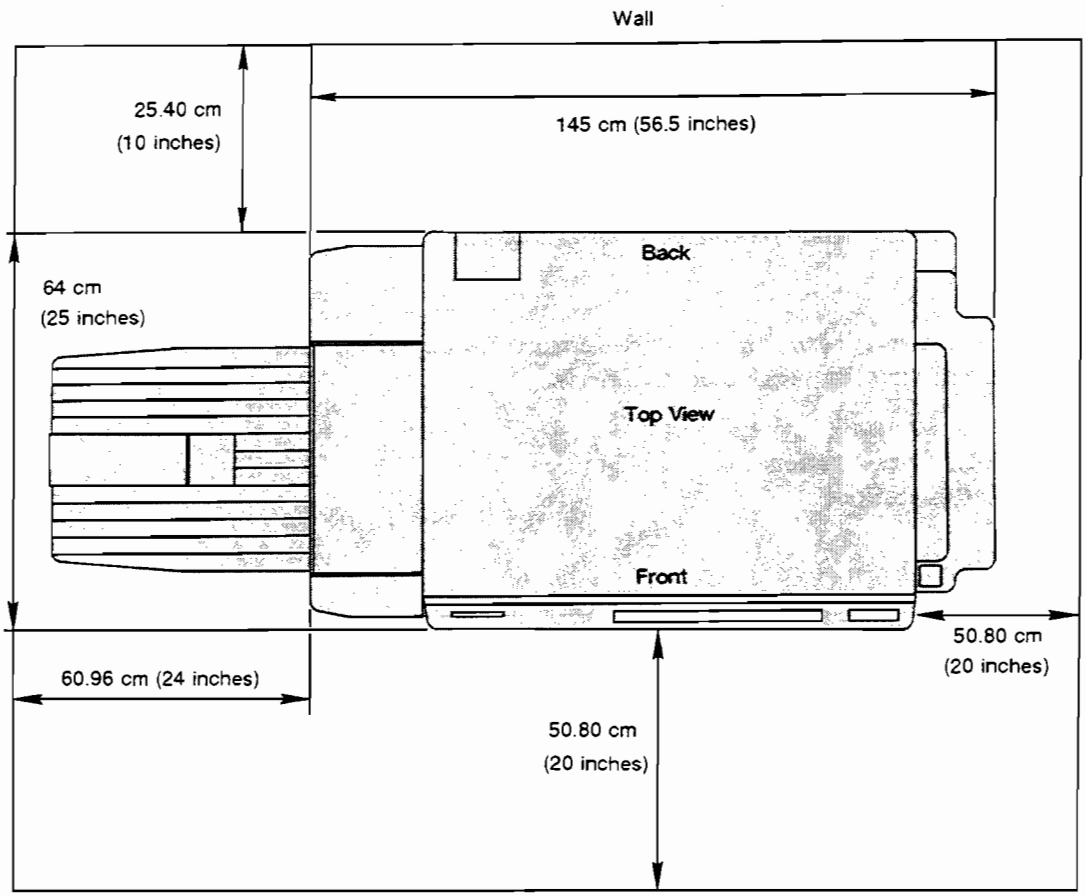

Figure 2-1. Printer Dimensions and Clearance (top view)

Unpacking & Installation Requirements

The printer is shipped bolted to a pallet. The shipping container weighs over 500 pounds and must be handled with care.

Customer should furnish:

- Off loading space (unloading dock).
- Unpacking space (20'×20' recommended).
- Forklift or hand truck capable of **safely** moving a heavy object.

Each printer is shipped with detailed unpacking and installation instructions attached to the shipping container. Chapter 3 contains overview checklists for Unpacking and Installation.

Safety Considerations

The safety considerations to be built into the site are the responsibility of the construction and electrical specialists. These factors include fire warning and control, electrical safety and emergency lighting. In addition, the customer should make the following arrangements:

- Limit the supply of paper in the room to a reasonable amount required for efficient operation of the printer. (However, paper must be stored at the same temperature and relative humidity as the printer for at least 24 hours prior to use, or paper movement problems may occur.)
- Use covered metal waste containers.
- Store containers holding cleaning fluids (especially aerosol cans) in a separate area from the printer room.
- Verify that potentially dangerous environmental conditions do not exist at the site. Such conditions include but are not limited to; excessive dust, vibration, humidity, and magnetic or electric fields.

Environmental Considerations

The HP LaserJet 2000 printer is designed for operation in a clean, traffic-free environment, preferably in an area not subject to excessive shocks, vibrations, or wide ranges of ambient temperature.

Verify that the heating, ventilating and air conditioning equipment necessary to maintain the following temperature and humidity is present at the site:

Temperature:	10 - 32.5° C (50 - 90° F)
Relative Humidity:	20 to 80%
	(Optimum operating humidity is 50% ±5%.)

Note

In addition to maintaining the correct temperature and humidity, adequate ventilation keeps the concentration of ozone gas in the operating environment to a minimum.

Consider the following points before installing the printer:

- Install in a well-ventilated area.
- Install where the temperature and humidity do not change abruptly. Do not position the printer near water sources, humidifiers, air conditioners, refrigerators, or other major appliances.
- Do not expose the printer to direct sunlight, dust, open flames, or ammonia fumes. If the printer is placed near a window, make sure the window has a curtain or blind to block the direct sunlight.
- Install away from walls or other objects. There must be enough space around the printer for proper access and operation (see Figure 2-1).

Electrical Considerations

An adequate source of power for the LaserJet 2000 printer must be provided and the following considerations made:

- Provide convenience outlets.
- Ensure that all wiring conforms to local codes.

Caution 

The LaserJet 2000 printer can draw up to 12 amps (120V models) or 6.3 amps (220-240V models). If the printer is required to share a 15 amp (120V) or 7.5 amp (220-240V) circuit, it is possible that the circuit breaker could trip due to the heavy usage of that circuit.

Power Requirements

Several acceptable configurations may be used to supply AC power to the LaserJet 2000 printer. Proper layout of the power mains is essential for proper and reliable operation of the system. Guidelines for recommended power circuit specifications are provided below. These guidelines should be implemented in accordance with local electrical codes.

- Ensure that an isolated/insulated ground is installed.
- Ensure that a dedicated power line for the computer system and associated LaserJet 2000 printer is installed.
- Verify that the required voltage and amperage is available.
- Ensure that ground leakage current conforms to local electrical codes.

Table 2-1. Electrical Specifications

Model (2684XX)	Voltage	Frequency	Amperage
A - D - P	115V ±10%	60Hz ±5%	12A
AA,AB,AQ,AY - DA,DB,DQ,DY-PA,PB,PQ,PY	220V ±10%	50Hz ±5%	6.3A
AU - DU - PU	240V ±10%	50Hz ±5%	5.8A

Power Consumption: All models, approximately 1400 Watts while printing.

Frequency Limits

The line frequency variation must be maintained at +/-5Hz for both 50 and 60Hz sites as measured at the input power side of the computer when it is powered on.

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3

Installation and Configuration

Introduction

Unpacking and installation of the printer is described in detail in the *LaserJet 2000 Unpacking Instructions* (P/N 02684-90905). These instructions are affixed to the outside of the shipping box. The checklists that follow are included here for a quick reference to the basic steps of unpacking and installation.

Installation and configuration of the I/O cards is described in the *LaserJet 2000 I/O Kit Installation Procedure* (P/N 26843-90901), included with the interface cards. Configuration switch settings are repeated in this chapter for reference.

Installation of optional memory chips is described in the *LaserJet 2000 Expansion RAM Kit Installation Procedure* (P/N 26845-90901).

Note

The HP LaserJet 2000 printer is **not customer installable.** This is due to safety considerations and installation of delicate components (*i.e.* EP Drum and I/O PCA). Installation can be performed by a Hewlett-Packard Service Representative (CE) or a qualified HP dealer Service Representative. To determine who is responsible for installation, refer to a current *Product Support Plan* or *Price List.*

Unpacking Checklist

√ Lift the box off the shipping pallet.
√ Check box for power cables and accessories.
√ Remove the ramps, mounting blocks and shipping brackets from the pallet.
√ Install the ramps on the pallet.
√ Roll the printer down the shipping ramp and off the pallet (2 people).
√ Inventory the shipped items.
√ Remove the four foam shipping pads. Locations: 1)Developer, 2)Vertical Pass area, 3)Stacker/Switchback area and 4)PDX.
√ Remove the metal shipping brackets (two locations, four brackets) Locations: 1)Output Stacker (two brackets), 2)Duplex tray (two brackets).

Installation Checklist

√ Remove the Developing Assembly, the three coronas, the Cleaning Station and the toner catcher.
√ Install the EP Drum (see "EP Drum" on page 6-51 in Chapter 6.)
√ Reinstall the Cleaning Station, the toner catcher, the coronas and the Developing Assembly.
√ Install the PDX Paper Filling door and the paper input cassettes.
√ Install the paper stacker output tray, and the error tray.
√ Install the I/O PCA and any optional memory (refer to the documentation that comes with each).
√ Install the waste toner box.
√ Load toner in the developer. Refer to the procedure in the *LaserJet 2000 Operator's Manual* (P/N 02684-90901).
√ Power the printer ON.
√ Add paper to the upper and lower cassettes and the PDX tray.

Running the Self Tests

After installing the printer, run a Standard Self Test and then a CE Mode Paper Path test, as explained below.

Standard Self Test

Take the printer OFF LINE and press the [SELF TEST] key. The self test function is operated.

CE Mode Paper Path Test

1. Power the printer OFF.
2. Open the access door on the right end of the Formatter and I/O area.
3. On the Formatter PCA, set switch S12-2 CLOSED (see page 6-25 in Chapter 6).
4. Power the printer ON.
5. After warm-up is complete, take the printer OFFLINE.
6. Press the [MENU] key until `SELF TEST: STANDARD` appears.
7. Press the [▲] key to display `PAPER PATH TEST`.
8. Press [SHIFT] to display a small "s" at the right.
9. Press [ENTER] to change the display to an asterisk (*).
10. Press [MENU] to return to `00 PRINTER READY`.
11. Press [SELF TEST]. Twelve pages will print (four from each source, six duplexed).

Note

A complete description of all the printer's self tests can be found in Chapter 5 beginning on page 5-18.

Do not leave the printer in CE Mode!

Configuration

Many configuration functions can be keyed in from the Operator Control Panel. These include: selecting default paper size, securing (or locking out) an input paper tray, setting default print orientation, form length, and fonts.

Hardware configuration values, such as I/O type, baud rate, hand shake protocol, etc. are set using "dip switches" on the Formatter PCA. These switches are contained in two banks, switch S12 and S14. The functions of various S12 and S14 switch settings are shown in the following tables:

Serial (RS 232/422) I/O Card Switch Settings

Table 3-1. Serial (RS232/422): Switch S12

ROCKER #	FUNCTION
1	SET TO OPEN (Flush Pages if CLOSED)
2	SET TO OPEN (CE Mode if CLOSED - DO NOT LEAVE IN CE MODE)
3	SET TO OPEN (RUN-IN Mode if CLOSED - requires S12-2 also closed)
4	SET TO OPEN (Cold Start at power-up if CLOSED)
5	SET TO OPEN
6	SET TO OPEN
7	SET TO OPEN
8	SET TO OPEN

Table 3-2. Serial (RS232/422): Switch S14

ROCKER #	FUNCTION
1	SET TO OPEN
2, 3, 4	Used for baud rate selection: 000 = 300 BAUD 001 = 600 BAUD 010 = 1200 BAUD 011 = 2400 BAUD 100 = 4800 BAUD 101 = 9600 BAUD 110 = 19200 BAUD (1 = Closed, 0 = Open)
5	SET TO OPEN
6	SET TO OPEN
7	SET TO OPEN (Enable CTS if closed)
8	SELECT DTR POLARITY IF DTR IS ENABLED (DTR inverted if closed)
9	DTR handshake enabled if closed
10	SET TO OPEN (0=Robust 1=Don't respond)
11	SET TO CLOSED (LJ compatible)
12	Xon/Xoff protocol enabled if closed

Factory Defaults

The initial factory configuration is: SWITCH S12 - all rockers=OPEN. SWITCH S14 - rockers 2, 4, 8, 9, 11 and 12=CLOSED, 1,3,5,6,7,10=OPEN. This sets serial I/O, 9600 Baud, LaserJet family PCL compatibility.

To change switch settings:

1. Turn the printer OFF.
2. After selecting the proper rocker switch settings, turn the printer ON.
3. When the message `00 PRINTER READY` is displayed, take the printer off-line, then press the SELF TEST key.

   The first page that the self test prints will list the I/O configuration along with a representation of the rockers in switches S12 and S14. "0" means the rocker is OPEN and "1" indicates that the rocker is CLOSED.
4. Use straps E12 on the I/O board near the data cable connector to configure the printer for RS232 or RS422 operation. Place the jumpers on the straps as indicated in Figure 3-1.

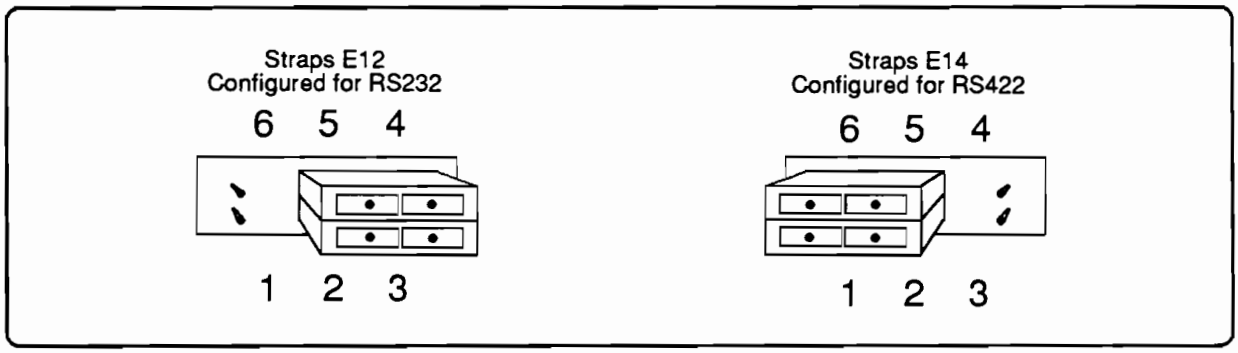

Figure 3-1. RS232 or 422 Strapping

Centronics (parallel) I/O Card Switch Settings

Table 3-3. Centronics (parallel) I/O: Switch S12

ROCKER #	FUNCTION
1	SET TO OPEN (Flush Pages if CLOSED)
2	SET TO OPEN (CE Mode if CLOSED - DO NOT LEAVE IN CE MODE)
3	SET TO OPEN (RUN-IN Mode if CLOSED - requires S12-2 also closed)
4	SET TO OPEN (Cold Start at power-up if CLOSED)
5	SET TO OPEN
6	SET TO OPEN
7	SET TO CLOSED (To select Centronics interface)
8	SET TO OPEN

Table 3-4. Centronics (parallel) I/O: Switch S14

ROCKER #	FUNCTION
1	SET TO OPEN
2	SET TO OPEN
3	SET TO OPEN
4	SET TO OPEN
5	SET TO OPEN (HEX dump mode† - CLOSE to enable)
6	SET TO OPEN
7	SET TO OPEN
8	SET TO OPEN
9	SET TO OPEN
10	SET TO OPEN
11	SET TO OPEN
12	SET TO OPEN

† *Must be in landscape orientation using Line Printer font to get full data print out.*

To change switch settings:

1. Turn the printer OFF.
2. After selecting the proper rocker switch settings, turn the printer ON.
3. When the message 00 PRINTER READY is displayed, take printer off-line then press the (SELF TEST) key.

   The first page that the self test prints will list the I/O configuration along with a representation of the rockers in switches S12 and S14. "0" means the rocker is OPEN and "1" indicates that the rocker is CLOSED.

Dataproducts I/O Card Switch Settings (Short or Long Lines)

Table 3-5. Dataproducts I/O: Switch S12

ROCKER #	FUNCTION
1	SET TO OPEN (Flush Pages if CLOSED)
2	SET TO OPEN (CE Mode if CLOSED - DO NOT LEAVE IN CE MODE)
3	SET TO OPEN (RUN-IN Mode if CLOSED - requires S12-2 also closed)
4	SET TO OPEN (Cold Start at power-up if CLOSED)
5	SET TO OPEN
6	SET TO CLOSED (To select Dataproducts interface)
7	SET TO OPEN
8	Used to set record limiting. Rocker 8 of S12 and rocker 1 of S14 are used together as shown in the next table.

Table 3-6. Dataproducts Record Limiting Configuration

Rocker 8 of S12	Rocker 1 of S14	Record Limit
OPEN	OPEN	No limiting (usual setting)
OPEN	CLOSED	1 record per buffer
CLOSED	OPEN	2 records per buffer
CLOSED	CLOSED	4 records per buffer

Table 3-7. Dataproducts I/O: Switch S14

ROCKER #	FUNCTION
1	Used in conjunction with rocker 8 of S12 to set record limiting (see Table 3-6).
2,3,4 ‡	Demand to check delay (usually set to 001). Set rockers 2 and 3 open, set rocker 4 closed.
5 †	Enable Hex dump mode if closed.
6	Auto CARRIAGE RETURN after VERTICAL TAB if closed.
7	Auto CARRIAGE RETURN after FORM FEED if closed.
8	Auto CARRIAGE RETURN after LINE FEED if closed.
9	Auto LINE FEED after CARRIAGE RETURN if closed.
10 ‡	Parity check enabled if open. Parity check disabled if closed.
11 ‡	Use PI line for 8th data bit if open (Pin 30 & 14)PI. Use D8 line for 8th data bit if closed (Pin 28 & 48)D8.
12 ‡	Enable PI function in the printer if open. Disable PI function if closed.

† *Must be in landscape orientation using Line Printer font to get full data print out.*

‡ *Most DP I/F configurations.*

To change switch settings:

1. Turn the printer OFF.
2. After selecting the proper rocker switch settings, turn the printer ON.
3. When the message `00 PRINTER READY` is displayed, take printer off-line; then press the (SELF TEST) key.

   The first page that the self test prints will list the I/O configuration along with a representation of the rockers in switches S12 and S14. "0" means the rocker is OPEN and "1" indicates that the rocker is CLOSED.

The Dataproducts Long and Short Line interfaces use the same configuration for switches S12 and S14. A host computer with a Long Line driver (up to 500 feet) cannot drive a printer with a Short Line interface, and a host computer with a Short Line interface (up to 50 feet) cannot drive a printer with a Long Line interface.

Note

The *LaserJet 2000 I/O Kit Installation Procedure* (P/N 26843-90901), included with the interface cards, contains further configuration and installation hints for Dataproducts installations.

I/O Cable Pin-Out Assignments

Table 3-8. Serial Cable Pin Assignments

RS232 I/O		RS422 I/O	
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	AA (FRAME GROUND)	1	SHIELD GROUND
2	BA (TRANSMIT DATA)	3	RECEIVE DATA A
3	BB (RECEIVE DATA)	7	SIGNAL GROUND
7	AB (SIGNAL GROUND)	9	TRANSMIT DATA A
20	CD (DATA TERMINAL READY)	10	TRANSMIT DATA B
		18	RECEIVE DATA B

Table 3-9. Centronics (parallel) Cable Pin Assignments

PIN	SIGNAL	PIN	SIGNAL
1	$\overline{\text{STROBE}}$ (INPUT)	19	STROBE RETURN (GND)
2	DATA1 (INPUT)	20	DATA1 RETURN (GND)
3	DATA2 (INPUT)	21	DATA2 RETURN (GND)
4	DATA3 (INPUT)	22	DATA3 RETURN (GND)
5	DATA4 (INPUT)	23	DATA4 RETURN (GND)
6	DATA5 (INPUT)	24	DATA5 RETURN (GND)
7	DATA6 (INPUT)	25	DATA6 RETURN (GND)
8	DATA7 (INPUT)	26	DATA7 RETURN (GND)
9	DATA8 (INPUT)	27	DATA8 RETURN (GND)
10	$\overline{\text{ACKLG}}$ (OUTPUT)	28	ACKLG RETURN (GND)
11	BUSY (OUTPUT)	29	BUSY RETURN (GND)
12	PAPEROUT(OUTPUT)	30	LOGIC GND
13	SELECT (OUTPUT)	31	N.C.
14	LOGIC GND	32	$\overline{\text{NFAULT}}$ (OUTPUT)
15	N.C.	33	N.C.
16	LOGIC GND	34	N.C.
17	CHASSIS GND	35	N.C.
18	+5 VDC (OUTPUT)	36	N.C.

Note

The bar over the signal name indicates that the signal is an inverted signal, such as $\overline{\text{STROBE}}$.

Table 3-1C. Dataproducts Cable Pin Assignments

PIN	SIGNAL	PIN	SIGNAL
1	DATA3	26	N.C. (DAVFU)
2	DATA3 RETURN	27	PARITY ERROR
3	DATA1 RETURN	28	DATA8
4	DATA2 RETURN	29	PARITY
5	ON-LINE RETURN	30	PAPER INSTRUCTION †(D8)
6	READY RETURN	31	BUFFER CLEAR
7	DEMAND RETURN	32	N.C.
8	N.C.	33	N.C.
9	N.C.	34	DATA5
10	N.C. (DAVFU Rtn)	35	DATA7 RETURN
11	PARITY ERROR	36	DATA7
12	N.C.	37	STROBE RETURN
13	PARITY RETURN	38	STROBE
14	PAPER INSTRUCTION RETURN †(D8)	39	SIGNAL GROUND
15	BUFFER CLEAR RETURN	40	DATA4 RETURN
16	N.C.	41	DATA4
17	N.C.	42	DATA6 RETURN
18	DATA5 RETURN	43	DATA6
19	DATA1	44	N.C.
20	DATA2	45	INTERFACE VERIFY RETURN
21	ON-LINE	46	INTERFACE CONNECT(VERIFY)
22	READY	47	N.C.
23	DEMAND	48	DATA8 RETURN
24	N.C.	49	N.C.
25	N.C.	50	N.C.

N.C. = NO CONNECTION

†Some systems call pins 30 & 14 Data8; not to be confused with pins 28 & 48 which are optional "Data8" used in addition to paper instruction.

Host Computer Configuration

Configuration Notes

Several configuration notes are available for host-to-printer configuration, as follows:

- *Configuring with a 3COM LAN* (P/N 5954-8965)
- *Configuring with DEC VAX Systems* (P/N 5954-8952)
- *Configuring with DEC VAX via DECserver or DECNET Server* (P/N 5954-8956)
- *Configuring with Data General MV Systems* (P/N 5954-8951)
- *Configuring with IBM Mainframe Computers* (P/N 5954-8959)

Verifying Host-to-Printer Configuration

Once the printer is installed and configured, verify that the host system is able to communicate with the printer. This can be accomplished by running an application that is known to work with LaserJet compatible printers. As an alternative, there is a BASIC program listing below (also in Appendix A).

BASIC Test Program. The following program is designed to allow the Service Representative to verify communication between the host computer and the printer. This program runs test print pages in duplex from each of the printer's three input sources (upper cassette, lower cassette and PDX). This program can be modified to test non-duplex and non-PDX printers.

```
10 LPRINT CHR$(27)+"E"CHR$(27)+"&ℓ1x1h1S"
20 LPRINT "THIS IS A TEST PRINT FROM THE UPPER TRAY - SIDE 1."
25 LPRINT CHR$(12)+"THIS IS A TEST PRINT FROM THE UPPER TRAY - SIDE 2."
30 LPRINT CHR$(27)+"&ℓ1T"
40 LPRINT CHR$(27)+"&ℓ4H"
50 LPRINT "THIS IS A TEST PRINT FROM THE LOWER TRAY - SIDE 1."
55 LPRINT CHR$(12)"THIS IS A TEST PRINT FROM THE LOWER TRAY - SIDE 2."
60 LPRINT CHR$(27)+"&ℓ1T"
70 LPRINT CHR$(27)+"&ℓ5H"
80 LPRINT "THIS IS A TEST PRINT FROM THE PDX - SIDE 1."
85 LPRINT CHR$(12)"THIS IS A TEST PRINT FROM THE PDX - SIDE 2."
90 LPRINT CHR$(27)+"&ℓ1T"
100 LPRINT CHR$(12);
110 LPRINT CHR$(27)+"Z"
```

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Preventive Maintenance

Introduction

The HP 2684 LaserJet 2000 is a complex electro-mechanical device. Consequently, it needs a thorough periodic check-out to maintain reliable operation and good print quality.

The PM procedures in this chapter follow a logical order, concentrating on one area of the printer at a time, as follows:

1. Rear area assemblies.
2. PDX and Cassette area.
3. EP and Duplex area assemblies.
4. Fuser Assembly.
5. Switchback and Stacker area.

Note

The thorough PM procedure described in this chapter is a lengthy process. One person can spend up to an entire day (8 hours) performing a 200/400K PM, depending on the condition of the printer and how many service notes must be implemented. It is therefore suggested that 2 CE's perform the PM.

After the PM procedures have been followed two or three times with the aid of this manual, you should be able to perform the PM with greater confidence and efficiency by using only the checklist located on page 4-45 . Make copies of the checklist for future use.

It is strongly recommended that all applicable service notes be implemented to maximize reliability, minimize unscheduled service calls, and reduce customer downtime.

Required Materials

Cleaning/Lubricating Solutions

- Isopropyl Alcohol (8500-0059)
- Trichloroethane pads ("Goldwipes") (5062-1776)
- Vactra #2 oil (02682-60549)
- Rubber restorer/cleaner such as Fedron or Texwipe TX134
- High Temperature Grease (6040-0222)
- Silicone Fuser Oil (823924-KT)
- Compressed air with "jet" nozzle (92193Y)
- Teflon based spray lubricant, such as "Triflo" or 3M Brand (no part number, purchase locally). (Neither of these two products contain CFCs.)

Service Tools and Test Equipment

Table 4-1. Tools Required

Tool	Size/Purpose/Desc.	Part Number
Metric Hex Wrenches	1.5, 2.0, 2.5, 3.0, 3.5 mm	
"C"Clip Pliers	For clutches, fuser and switchback.	
Phillips #2 Magnetic Screwdriver	10 inch Stubby, 2 inch	8710-0650
Phillips #1 Magnetic Screwdriver	6 inch	
Needle Nose Pliers		
Spring Removal Tool		
3 test jumpers wired as: ■ Pins 1 and 4 ■ Pins 1 and 6 ■ Pins 1, 4 and 7	Use in DC Controller PCA J101: ■ H.V. adjustment ■ Fuser Error 50 reset ■ Separation Corona adjustment	1252-0690
Vacuum Cleaner	Toner Type	92175D
Laser Power Checker		TKN-0199-000CN
High Voltage Test Drum	To check corona efficiency.	TKN-0411-000CN
Feeler Gauges (Metric)	Deflector SL5 adjustment.	
Digital Multimeter	(with μA resolution).	HP2378A/3466A
Interlock Override Tools	(quantity = 5)	02684-40001
Antistatic Workstation	(wrist strap and mat).	
Flashlight		
Spring scale	For belt tension adjustment.	8750-0039
Small steel metric ruler		8750-0349.0
Protective Drum Sleeve		TKN-0459-000CN

Other Materials

Table 4-2. Other PM Materials

Part Number	Description
9300-0468	Foam Cleaning Swabs
	Regular Cleaning Wipes
5062-1776	Lint-free Wipes
92193G	Rubber Cleaning Gloves
	Permanent Marking Felt Pen or adhesive labels (for marking updated parts)
0470-1675	Petro Wax
	Any service notes referenced on page 4-43.

PM Kit

Following is a list of the parts required to complete a full PM procedure as described in this chapter. We suggest creating this kit for PM usage in addition to the standard service kit:

Table 4-3. PM Kit Contents

Part Number	Description
	Cleaning/Lubricating solutions listed above
1252-0690	Jumpers (3)
02684-40001	Interlock Override Tools (5)
8750-0039	Spring Scale
	Other special tools listed in Table 4-1, page 4-2.
	All service note parts (see Table 4-4, page 4-5).
FF1-7201-000CN	"D" Cassette Pick-Up rollers (14)
FF1-5480 030CN	PDX Separation Friction Strip
FA3-2615-000CN	PDX Pick-up and Separation Rollers (5)
FA2-5541-000CN	Ozone Filter
RG1-0653-090CN	Developer Assembly
FA3-1937-020CN	Drum Separation Claws (3)
FG1-3126-100CN	Cleaner Station Assembly
FA3-0521-000CN	Cleaner Station Cleaner Blade
FA3-0559-000CN	Cleaner Station Side Seal, Front
FA3-0560-000CN	Cleaner Station Side Seal, Rear
FF1-4519-030CN	Cleaner Station Scraper Blade
FF1-4496-040CN	Cleaner Station Cleaning Roller
RG1-0369-080CN	Primary Corona (replace @400K PM)
RG1-1244-000CN	Pretransfer Corona (replace @ 400K PM)
RG1-1245-020CN	Transfer/Separation Corona (replace @ 400K PM)
RF1-0704-000CN	Fuser Cleaning Towel (if assembly upgraded)
RG1-0389-090CN	Fuser Cleaning Assembly (if assembly not upgraded)
FH7-7100-000CN	Fuser Thermistor
FH7-7036-000CN	Fuser Thermoswitch
FA2-1994-000CN	Fuser Separation Claws, Lower (4)
FA3-0698-040CN	Fuser Separation Claw Mount, Upper
FA1-9723-000CN	Fuser Static Eliminator

Table 4-3. PM Kit Contents (continued)

Part Number	Description
FA3-0609-000CN	Duplex Paper Delivery Belts (4)
FA3-0610-000CN	Duplex Feeder Belt Guides (3)
FA3-3269-000CN	Duplex Lower Separation Rollers (4)
FA3-3268-030CN	Duplex Upper Separation Roller
FH7-5051-000CN	Duplex Vertical Pass and Registration Clutches
WG1-0493-000CN	Lamps (Updated)
RA1-2442-000CN	Switchback Static Eliminator
FA3-3319-000CN	Switchback Static Eliminator
RF1-0607-000CN	Switchback Reverse Spring Unit Rollers (4)
XF9-0163-000CN	Switchback Feeder Drive Belt
RF1-0607-000CN	Switchback Exit Spring-back Pressure Rollers (4)
FF1-4771-000CN	Duplex Inlet Spring-back Pressure Rollers (4)
RA1-2585-000CN	Switchback Door Latches
FA3-7453-000CN	Stacker Delivery T-belts (3)
RA1-2532-000CN	Stacker Shaft Unit with Rubber Delivery Rollers
RH7-5007-000CN	Stacker Clutch
FA3-7419-000CN	Stacker Top Cover Spring Rollers (5)
FA3-7418-000CN	Stacker Top Covers Springs (5)
RA1-2524-000CN	Stacker Output Tray Static Eliminators
FA3-3319-000CN	Stacker Output Tray Static Eliminators
XF9-0148-000CN	Stacker Drive Belt
FF1-3872-000CN	AC Driver PCA Resistor Fuse, R311, 47 ohm, $^1/_4$ W
XB1-2400-606CN	Screw, Silver Binding Head
XB1-2400-609CN	Screw, Black Binding Head
XB6-7400-609CN	Screw, Black Washer Head
RF1-0472-030CN	Engine-FM6 (Corona Filter Booster Fan)
FH7-7023-000CN	Photo Interrupt Sensor
RA1-1412-000CN	Sensor Flag Pawl
R44-0230-000CN	EP Drum*
92282A	Toner (2 one-half kilogram bags)*

**EP Drums and Toner are consumables and should not be given to customers. However, you may want to include these in the PM kit for instances where customer has no supply immediately available.*

Table 4-4 lists all the new (updated) parts that are specified in service notes 1 through 11. Add new pages with additional parts as new notes are released.

Table 4-4. Update Parts List (per Service Notes 1-11)

S/N	QTY	PART #	DESCRIPTION
2	1	FH7-50[illegible]5-040CN	PDX Paper Feed Clutch
2	1	02684-6[illegible]7911	PDX Firmware, Rev 7
4	1	RA1-13[illegible]3-020CN	Bearing Hanger
4	1	RA1-26[illegible]7-000CN	Stacker Deflector Guide
4	2	RS1-22[illegible]3-000CN	Bearing Hanger Spring (Switchback)
4	2	FS1-237[illegible]0-000CN	Bushing Return Spring (Switchback)
4	2	3050-08[illegible]3	Flat Washer 4.0 mm
5	4	WG1-04[illegible]93-000CN	Updated Lamp
5	1	RA1-64[illegible]6-020CN	Static Brush (Duplex)
5	1	RA1-71[illegible]5-000CN	Static Brush (Duplex)
6	1	RG1-03[illegible]9-090CN	Fuser Cleaning Towel Assy. (60 Hz)
6	1	RG1-03[illegible]1-090CN	Fuser Cleaning Towel Assy. (50 Hz)
6	1	RA1-53[illegible]1-000KT	Upper Fuser Roller
6	1	FA3-06[illegible]3-030KT	Lower Fuser Pressure Roller
6	6	FA3-06[illegible]3-050CN	Fuser Separation Claws, Upper
7	1	02684-0[illegible]026	"Push Here" Label (Switchback)
7	1	RA1-70[illegible]5-000CN	Switchback Door Interlock Guide
8	1	XF9-02[illegible]2-000CN	Shorter Drive Chain
8	1	RS1-22[illegible]1-000CN	Chain Tension Spring
8	1	RS1-30[illegible]2-000CN	Developer Drive Sprocket (18T)
9	1	02684-6[illegible]011	Laser Unit (Exchange)
10	1	RF1-22[illegible]8-000CN	Deflector Roller
10	1	RA1-70[illegible]6-000CN	Roller
10	1	RA1-70[illegible]3-000CN	Front Swing Plate
10	1	RA1-70[illegible]2-000CN	Rear Swing Plate
10	2	RS1-22[illegible]2-000CN	Tension Spring
10	1	RF1-22[illegible]6-000CN	Front Mounting Plate
10	1	RF1-22[illegible]7-000CN	Rear Mounting Plate
10	2	FS1-054[illegible]2-000CN	22T Gear
10	2	RA1-15[illegible]5-000CN	Washer (Resin)
10	1	RS1-20[illegible]9-000CN	Compression Spring
10	2	RS1-60[illegible]1-000CN	Washer (Rubber)
10	1	FA1-18[illegible]7-000CN	Ring
10	2	RA1-70[illegible]4-000CN	Washer (D-shaped hole)
10	1	FS1-134[illegible]1-000CN	Bushing
10	1	FS1-115[illegible]6-000CN	Bushing
10	2	XD2-11[illegible]0-502CN	E-Ring
10	1	XD2-11[illegible]0-642CN	E-Ring
10	2	XB1-24[illegible]0-609CN	M4 × 6 Screw
10	2	XB1-24[illegible]0-409CN	M4 × 4 Screw
10	2	XB6-24[illegible]0-408CN	Set Screw
11	1	02684-0[illegible]005	Font Cartridge Magazine

PM Setup

1. Open Formatter side panel (see Figure 4-2). Set DIP Switch 2 on SW 12 to closed position and cycle power to enable CE mode.
2. Run "standard" self-test in "continuous" mode for two minutes (hold down (SELF TEST) test key for 5 seconds). To discontinue, press (SELF TEST) once. Save last set of printouts for comparison when PM completed.
3. Record the image counter readings (EP and Duplex, if 2684D) on a copy of the LJ2000 200/400-K PM Checklist (page 4-45).
4. Set menu for "Paper Path" self-test. Run one pass of "Paper Path" self-test. **Save the printouts.**
5. Remove rear cover, override the switch with interlock key, and run one pass of "standard" self-test. Check for operation of fans: FM1, FM2, FM3, FM7 (Figure 4-1). Power OFF the printer and observe spin-down characteristics. Replace any "dead" or "dying" fans.

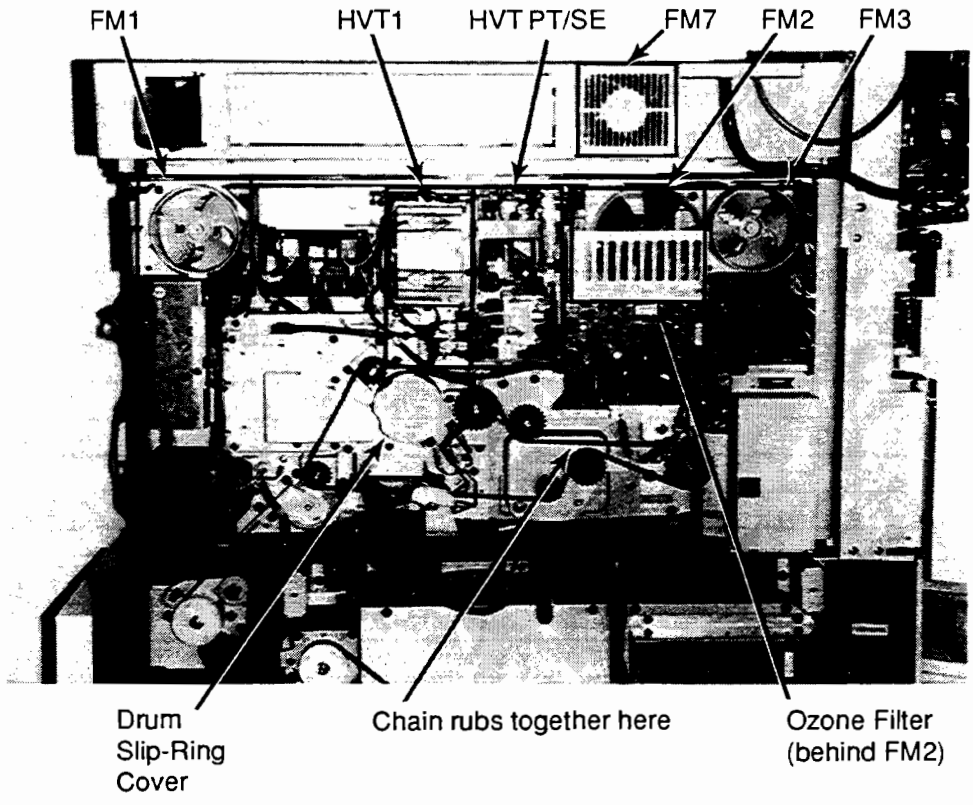

Figure 4-1. Rear Area Assemblies

6. Unplug the printer. Remove the following skins, covers, and assemblies:

Note When removing, place covers face up and place corresponding hardware (screws, etc.) in cover.

a. Rear Cover (done in step 5).

b. Duplex Rear Cover (if "D" model).

c. PDX Dust Cover (if "P" or "D" model, Figure 4-2).

d. PDX Rear Cover (containing clutches and PD/DU PCAs, Figure 4-2).

e. Upper and Lower Cassette Trays (Figure 4-2).

f. Right Panel (containing DC Controller PCA, Figure 4-2).

g. RFI Shield (behind right panel, covering DC Controller area).

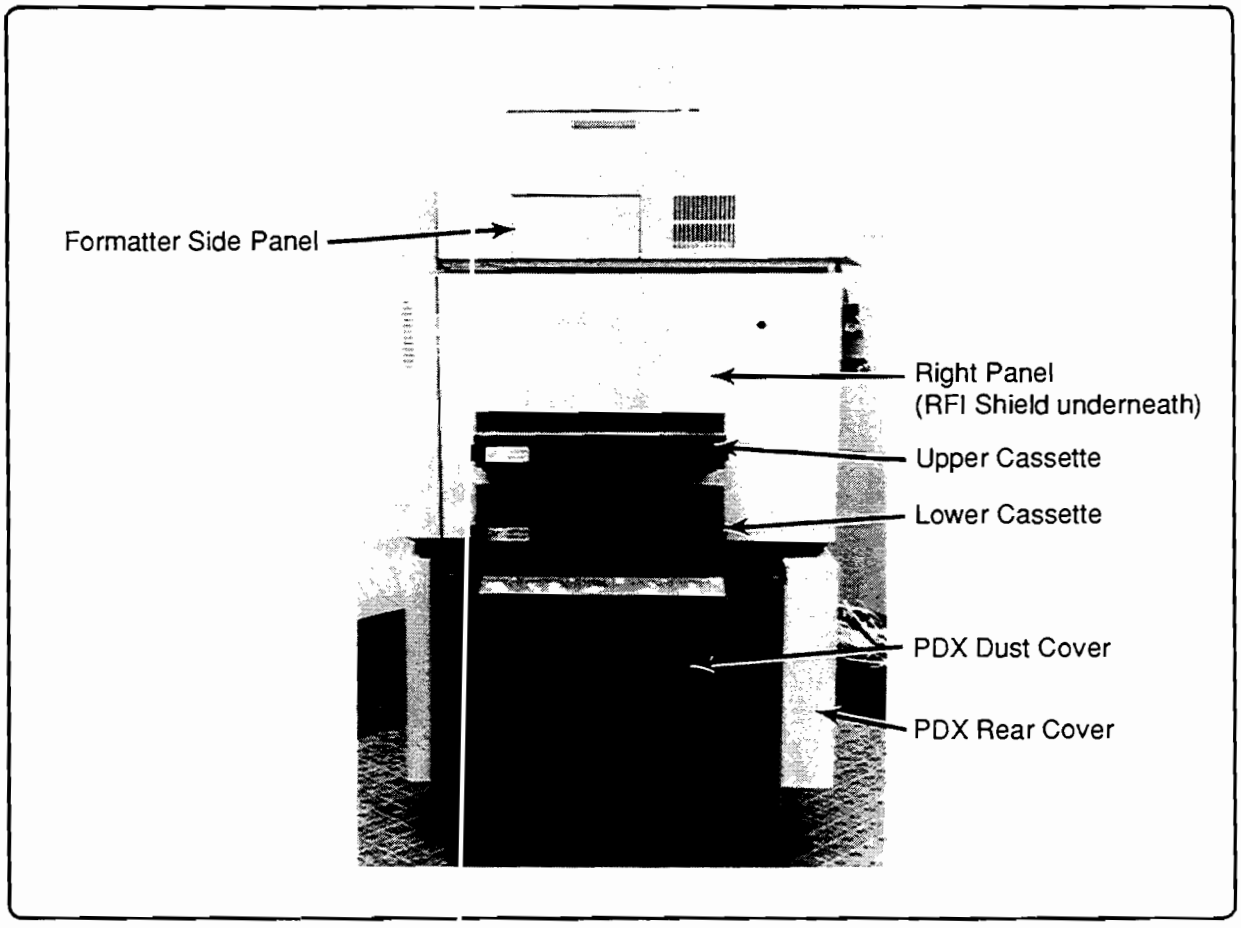

Figure 4-2. Right Side Covers

h. Right Duplex Door (if "D" model) or PDX front cover (sheet metal strip left of PDX, if "P" model). This gives you access to the two mounting screws on the front side of the PDX.

i. Print Engine Internal Cover (black plastic covering upper half of EP Area, two screws, Figure 4-3).

j. Left and Right Front Doors.

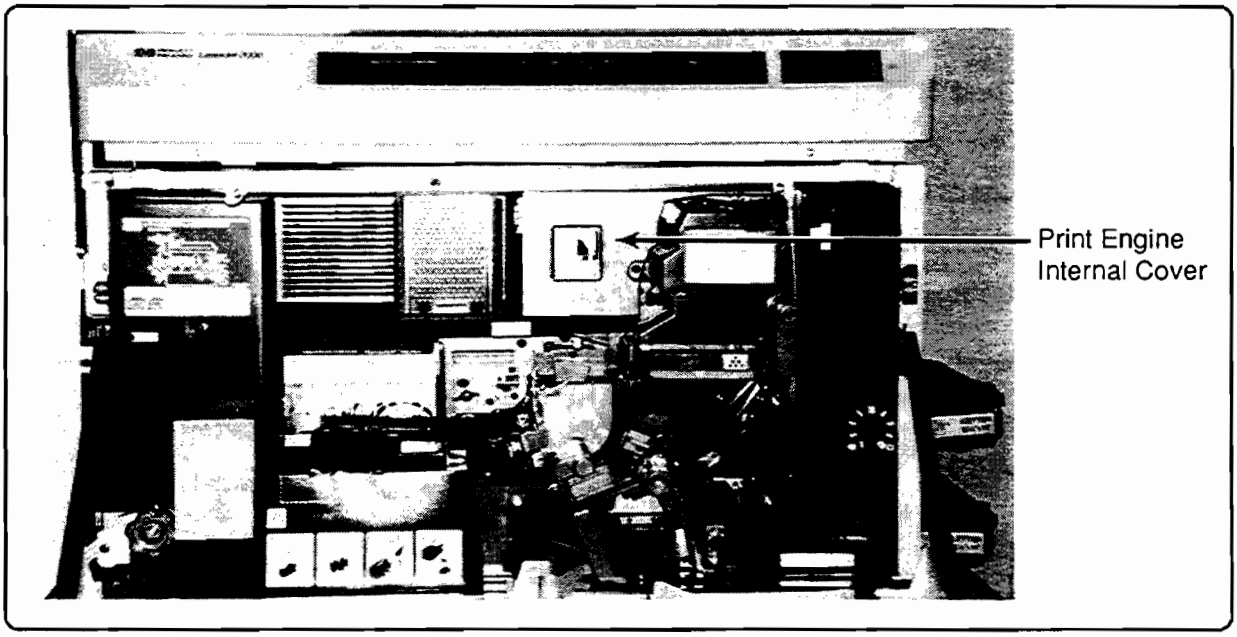

Figure 4-3. Print Engine Internal Cover

k. Switchback Cover (Figure 4-4). See NOTE below.

Note

Open the Switchback assembly, remove the five internal screws, then close the switchback assembly and remove the six external silver screws. Remove the cover.

l. Switchback Access Door Support Strap Screw (Figure 4-4).

m. Lower and Upper Rear Stacker Panels (Figure 4-4).

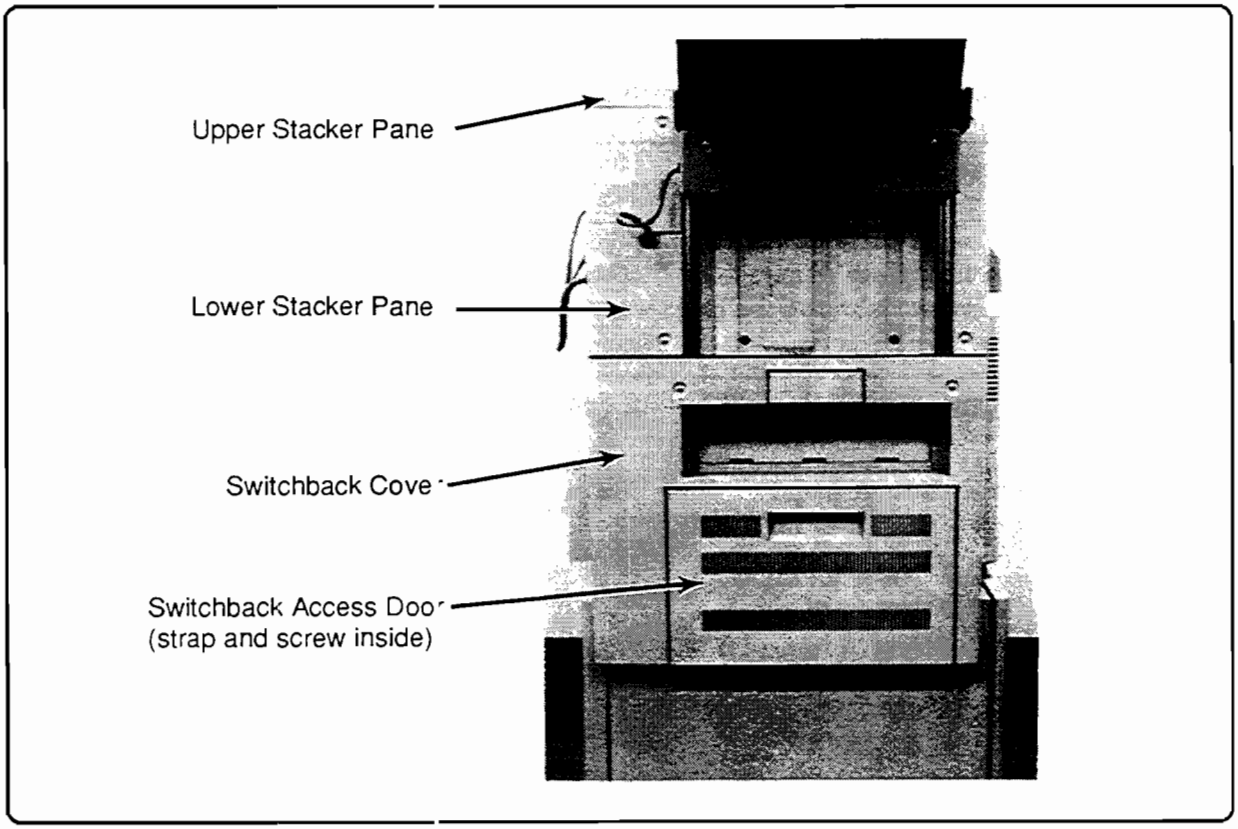

Figure 4-4. Switchback Area Covers

Rear of Main Engine

1. **At 400-K intervals,** replace Ozone Filter, P/N FA2554l-000CN (Figure 4-5):
   a. Remove the HVT PT/SE by removing the two screws on the left and right sides and four connectors. (You will need a 10 inch Phillips screwdriver for easy removal. If not available, first remove HVT1 (Figure 4-1) and then HVT PT/SE.)
   b. Remove the old Ozone Filter (Figure 4-5), and replace with a new one.

Note

If you don't have a magnetic screwdriver, Petro Wax (0470-1675) helps to prevent losing screws.

   c. Reinstall HVT1, if removed, and HVT PT/SE.
2. Check the Print Engine Drive Chain for stretching. Stretched chains can rub between Idler Gear and Tension Idler Gear (Figure 4-1). If chain is stretched or gears worn, perform Service Note 2684-8. Otherwise, lubricate the chain with Vactra 2 oil.

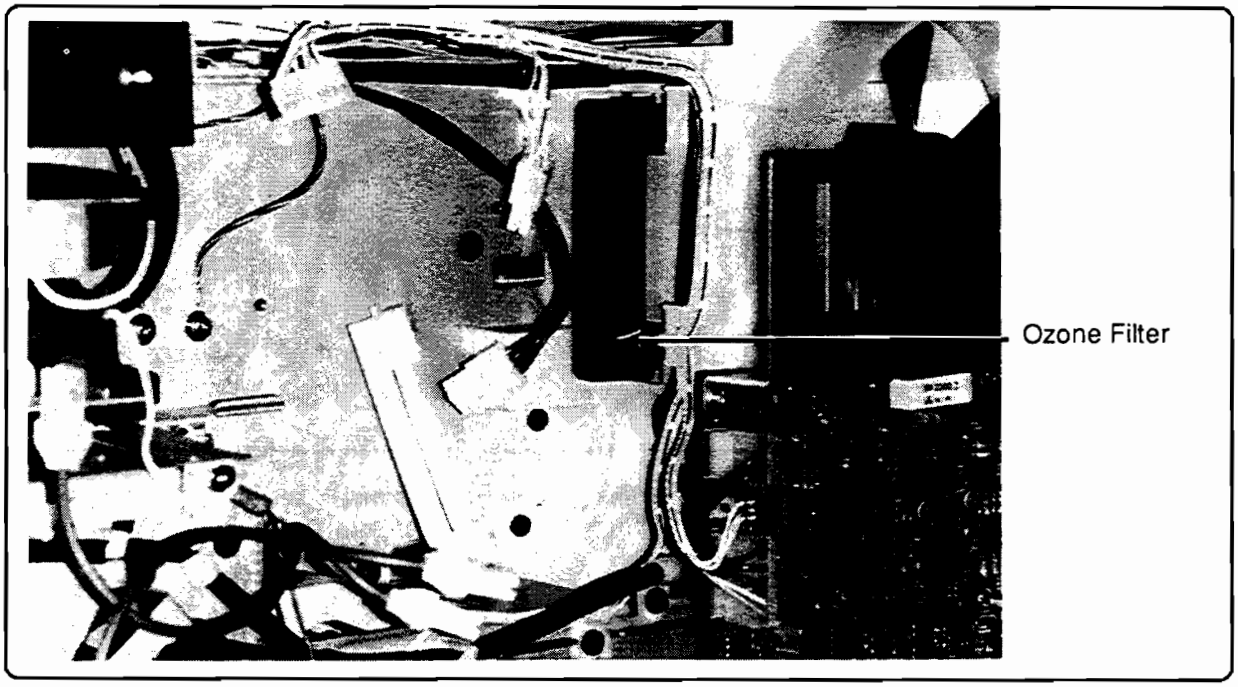

Figure 4-5. Ozone Filter Replacement

3. Check all connectors for solid seating.

Warning **AC voltage is present whenever the printer is connected to an AC outlet. Ensure the printer is unplugged at this point.**

4. Remove the Drum slip-ring cover (Figure 4-1). Clean the upper drum grounding spring (in the cover) with alcohol. Clean the mating surface and the drum wiper chrome tracks with alcohol. Reinstall the cover. Ensure the star washers are installed.
5. Wipe/Vacuum any paper dust or toner.

Rear of Duplex Unit (Duplex Model Only)

Note Perform this procedure every 200-K on Duplex counter, not every PM!

1. Check the drive belts for wear. Deflection should be 10mm when 500g is applied. Use a spring scale. Replace and/or adjust, if necessary (refer to "Duplex Drive Belts" on page 6-146 in Chapter 6).
2. Check the seating of all electrical connectors on the Duplex Drive PCA and the other connectors in the rear duplex area as well.
3. Vacuum/Clean any paper dust or toner.

Cassette Area

1. Remove the Cassette Holder Assemblies, upper/lower (Figure 4-6).

Note

Because the connector to the DC Controller is difficult to remove, the lower Cassette Holder Assembly can be allowed to hang off to the side. Scribe left & right areas of holder assemblies before removal to maintain alignment upon reassembling.

2. Replace Cassette Holder Lamps with upgraded P/N WG1-0493-000CN. **This can save a future service call.**

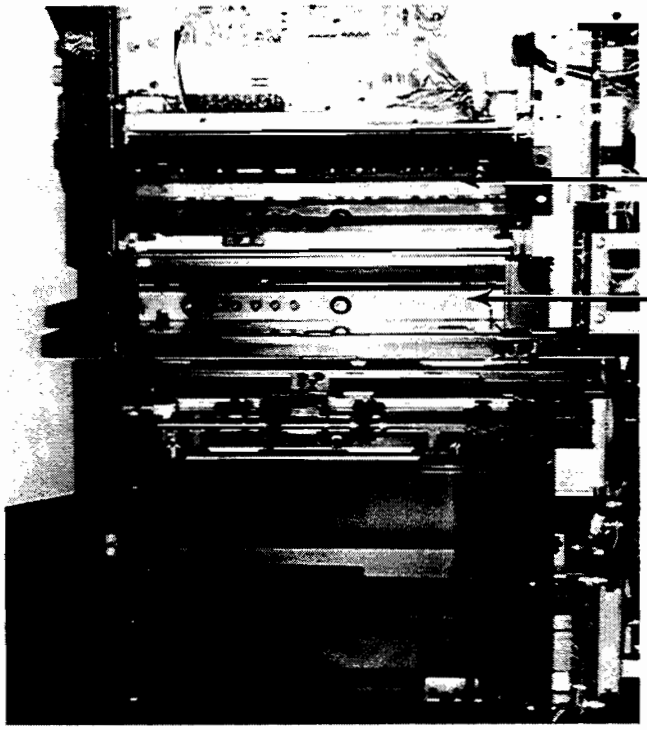

Figure 4-6. Cassette Holder Assemblies

3. Blow out Engine-PS4 with compressed air ("P" & "D" model only). Engine-PS4 is located behind the lower cassette holder (Figure 4-7).

4. Clean Cassette Holders of paper dust. Clean sensor on inside bottom of holder with alcohol and lint-free wipes (clean both holders).

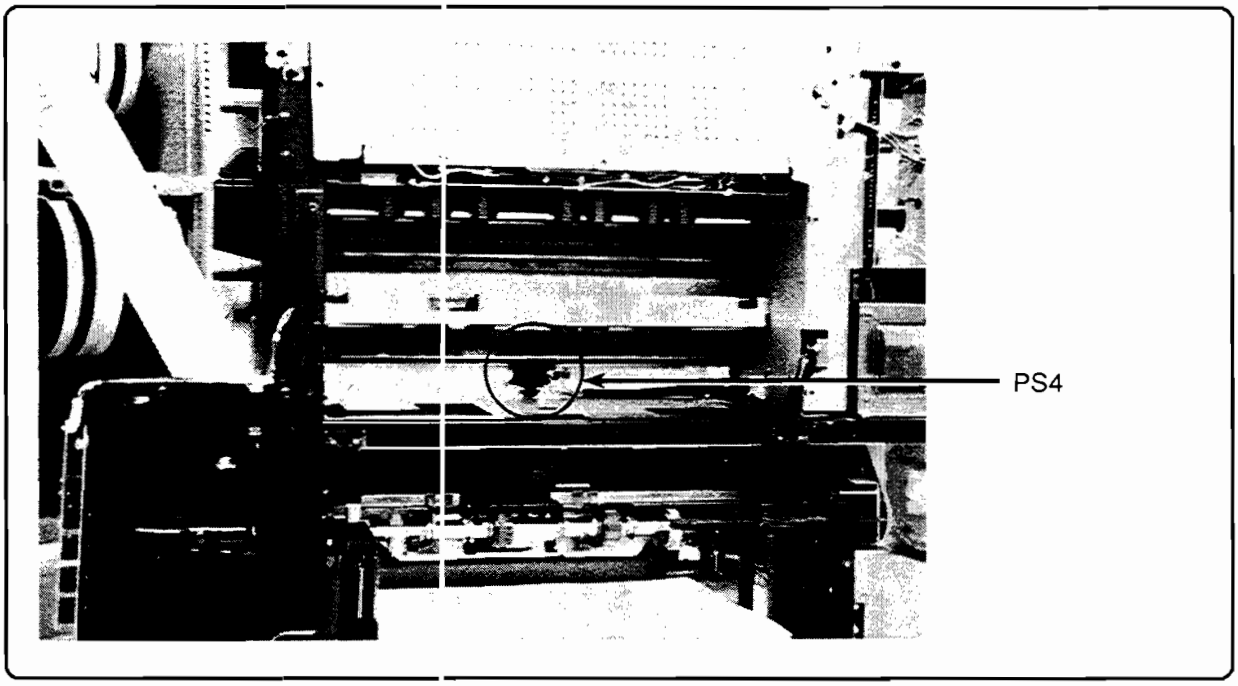

Figure 4-7. Engine PS4 Location

5. Remove Engine-DCPS2 (Figure 4-8).

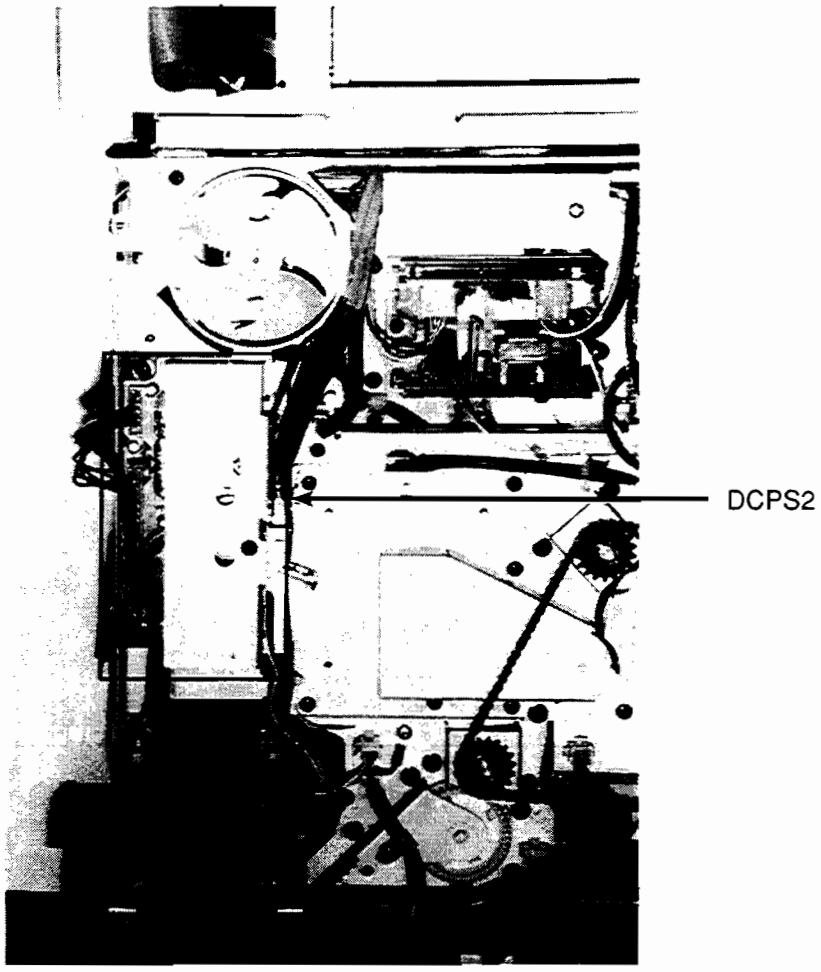

Figure 4-8. Engine-DCPS2 Location

6. Manually trip the solenoid of the upper and lower pick up D-roller clutches (Figure 4-9). Turn the shaft/rollers counter-clockwise (as viewed from the rear of the printer) until you have a good view of the rollers in the cassette area. Inspect the "D" Rollers for wear. At minimum, clean with a Rubber Roller Restorer, otherwise replace all 14 "D" Rollers (P/N FF1-7201-000CN).
7. Reinstall Engine-DCPS2.
8. Reinstall the Cassette Holder assemblies, align with scribed marks, and hand tighten screws (you may need to adjust later).

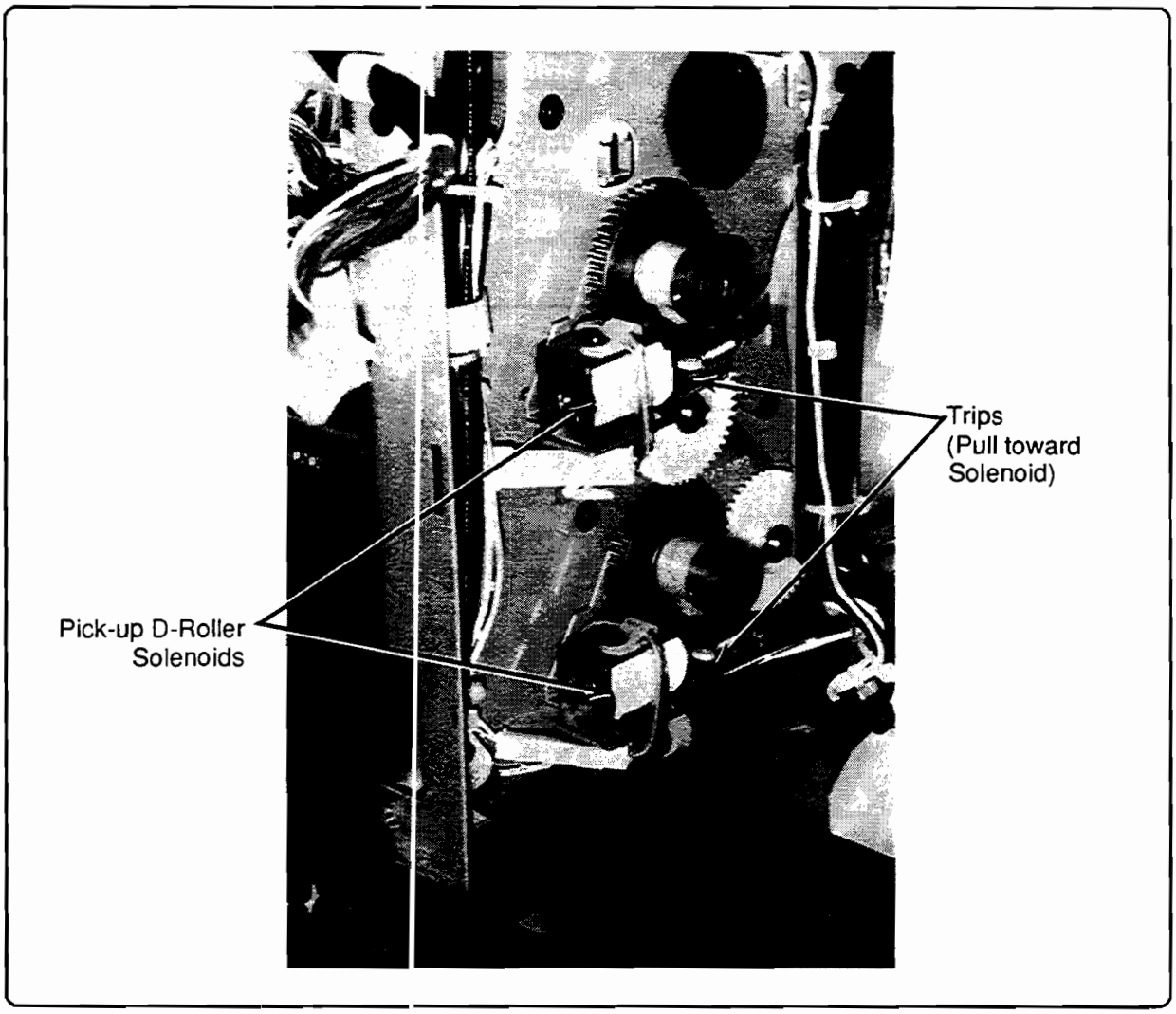

Figure 4-9. Pickup D-Rollers

9. Examine the cassette paper hold-down tabs (see Figure 4-10):

   a. With paper loaded in each cassette tray, examine the fit of the paper hold-down tabs against the paper. Make sure they hold down the paper (compare to one-another as a check). If one or both is not holding the paper properly, adjust by carefully bending to achieve proper fit.

   b. Apply pressure to the spring-loaded paper by pushing the stack of paper to the bottom of the tray. Slowly release pressure and let the paper spring back. Do this several times while examining the paper hold-down tabs. They should travel with the paper without binding. If they bind, adjust (bend) the paper hold-down tabs so they travel freely with the paper.

   c. Remove paper from the cassette trays. Apply pressure to the metal paper platform, depressing fully. Slowly release. Repeat several times and examine for freedom of movement. If the platform binds against the sides of the left and right paper guides (Figure 4-10), loosen the two screws on the bottom of the cassette tray (Figure 4-11) and adjust the one paper guide until the platform moves freely. Tighten the screws, then reinstall the paper in each cassette tray.

   d. Repeat step "b" to ensure that the paper hold-down tabs still move properly with the paper.

   e. Perform the above procedures on both cassette trays.

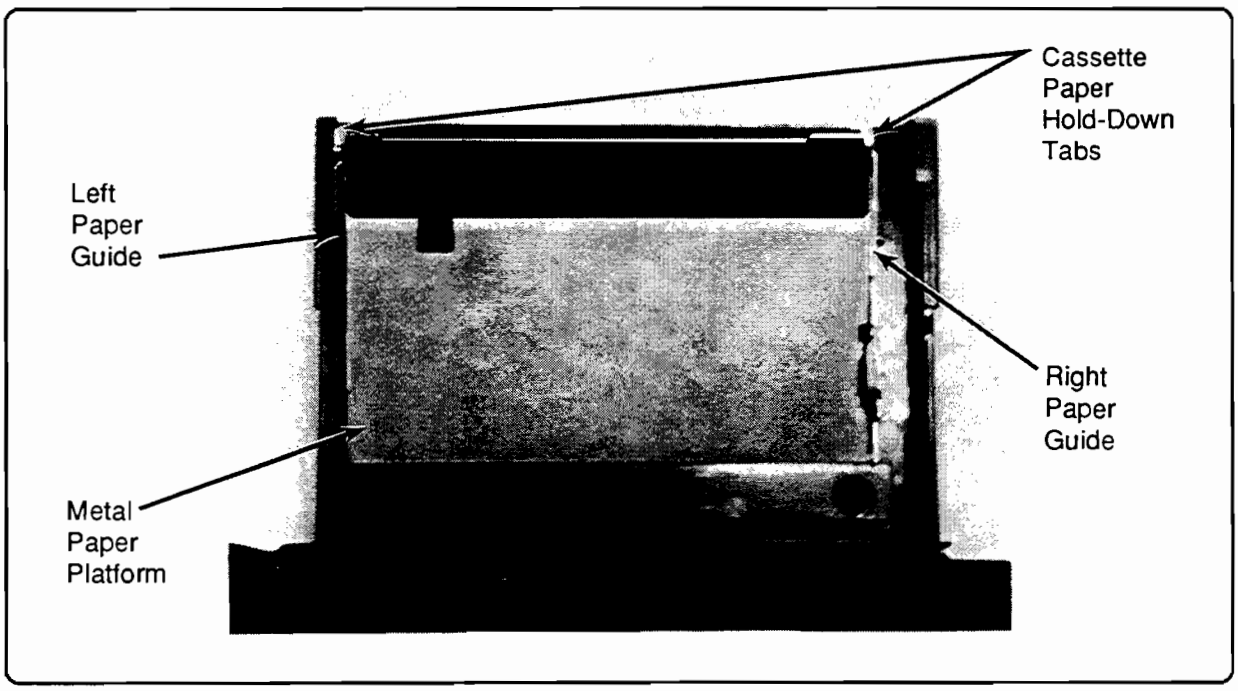

Figure 4-10. Cassette Inspection

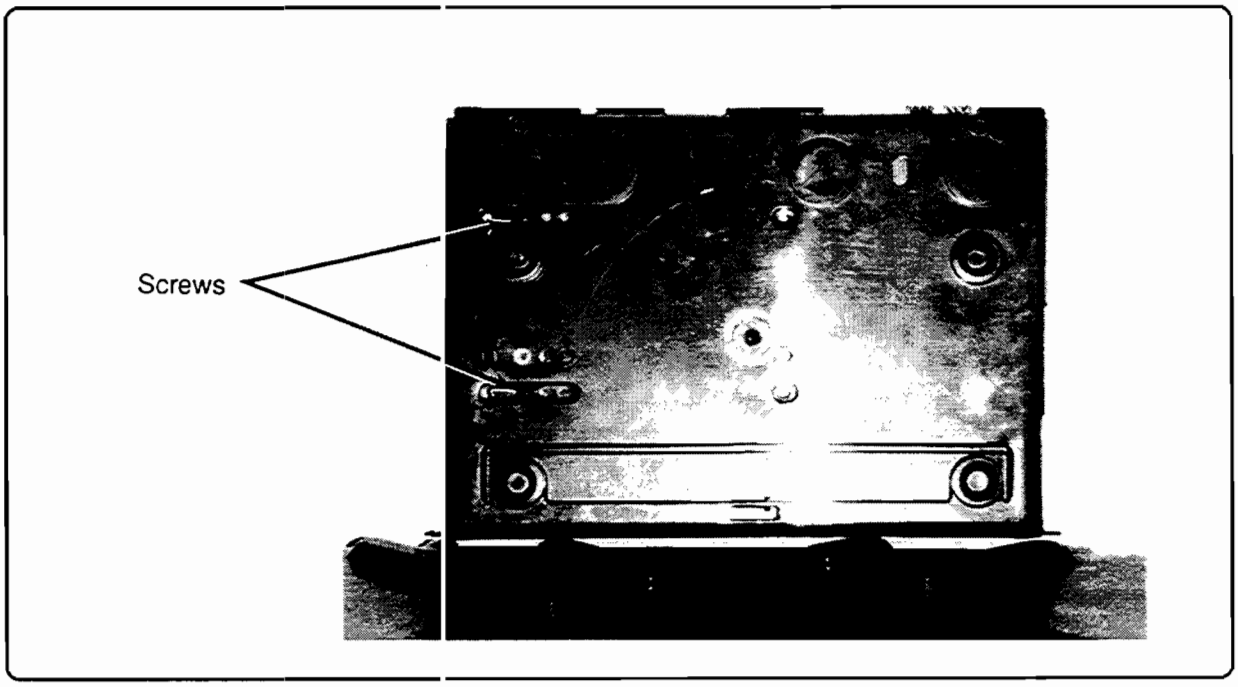

Figure 4-11. Bottom of Cassette

PDX Area (if "P" or "D" model)

1. Scribe the left/right position of the PDX assembly. Remove the PDX unit, if necessary (refer to "PDX Assembly" on page 6-116 in Chapter 6).
2. Carefully lift and pull out the PDX unit only a short way and set it on the floor (don't pull unit out too far as cable length from Main Engine to PDX power supply, under paper deck tray, is limited).
3. If printer serial number is 2XXXA01550 or less, check for revision of Paper Feed Clutch (reference Service Note 2684-2). The Paper Feed Clutch (old and new style) is easily identified by being the only one having a blue connector attached to the PDX Driver PCA (the others are white).

Note For detailed PDX Clutch removal procedures, refer to page 6-126 in Chapter 6.

---

a. Remove the paper feed clutch, if not previously upgraded, and inspect the female inner diameter. The old style clutch was lubricated, bare steel. The new style clutch, P/N FH7-5055-040CN, has a cork-colored insert. If you discover an old style clutch, **replace it with the new style clutch!** If you do not (**only** if you do not have a new style clutch on hand), clean the inner diameter and mating clutch shaft with isopropyl alcohol and lube the shaft with High-Temp Grease, P/N 6040-0222. Replace with a new style clutch on your next visit.

Note

Replacing the clutch **will save a service call.** Lubricating the clutch is a temporary fix. Lubricated old style clutches were twice found to fail again after only 60,000 images of wear.

Never lubricate a new style clutch (clutch with cork-colored insert). They are permanently lubricated at the factory.

---

b. Reassemble the clutch assembly and mount it on the PDX. Mark the sheet metal clutch mounting plate "Feed clutch upgraded with P/N FH7-5055-040CN, month/year, image count = xxxxx" with a permanent marker, or use a pen and label to record the update. This will make it easy for you or another CE to identify an updated clutch without removing the entire assembly on a future visit.

4. If the printer serial number is 2XXXA01550 or less, verify that the PDX CPU PCA firmware is revision 07 or datecode 2816 (marked on the ROM), reference Service Note 2684-2. If not, update with ROM Kit, P/N 02684-67911.

5. Lightly lubricate the paper deck lifter chain below the PDX PCAs lightly with Vactra 2 oil (Figure 4-12).

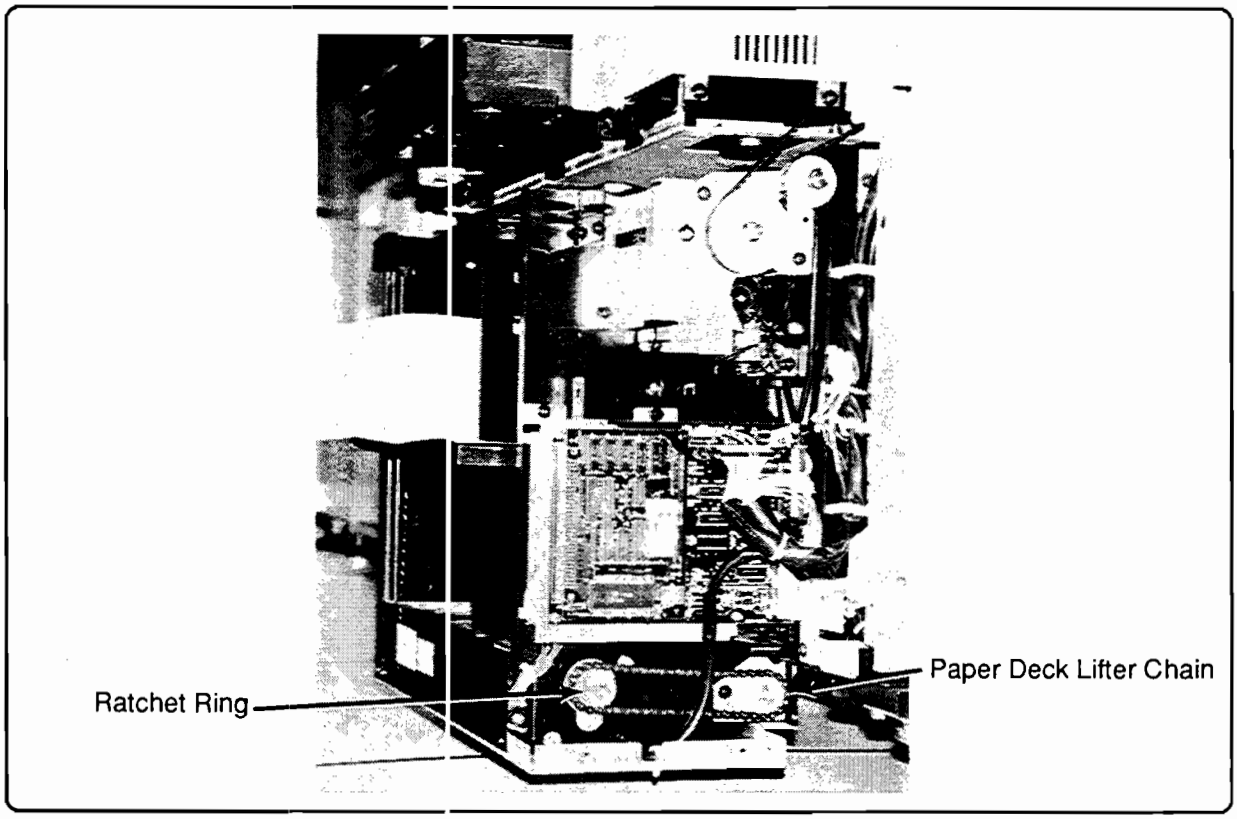

Figure 4-12. Lifter Chain and Ratchet Ring

6. Clean the rubber feed roller with a Rubber Roller Restorer (Figure 4-13).
7. Clean the plastic feed roller with isopropyl alcohol (Figure 4-13).
8. Lubricate the paper deck lifter chains (Figure 4-14) very lightly with Vactra 2 oil. Use a foam swab to reach the chains. Raise deck, lightly lube the length of chain, then lower the deck by pulling on the ratchet ring (Figure 4-12) and lightly lube the length again.
9. Replace the paper pick-up rollers, two for letter size paper or three for A4 size paper (Figure 4-13, P/N FA3-2615-000CN).

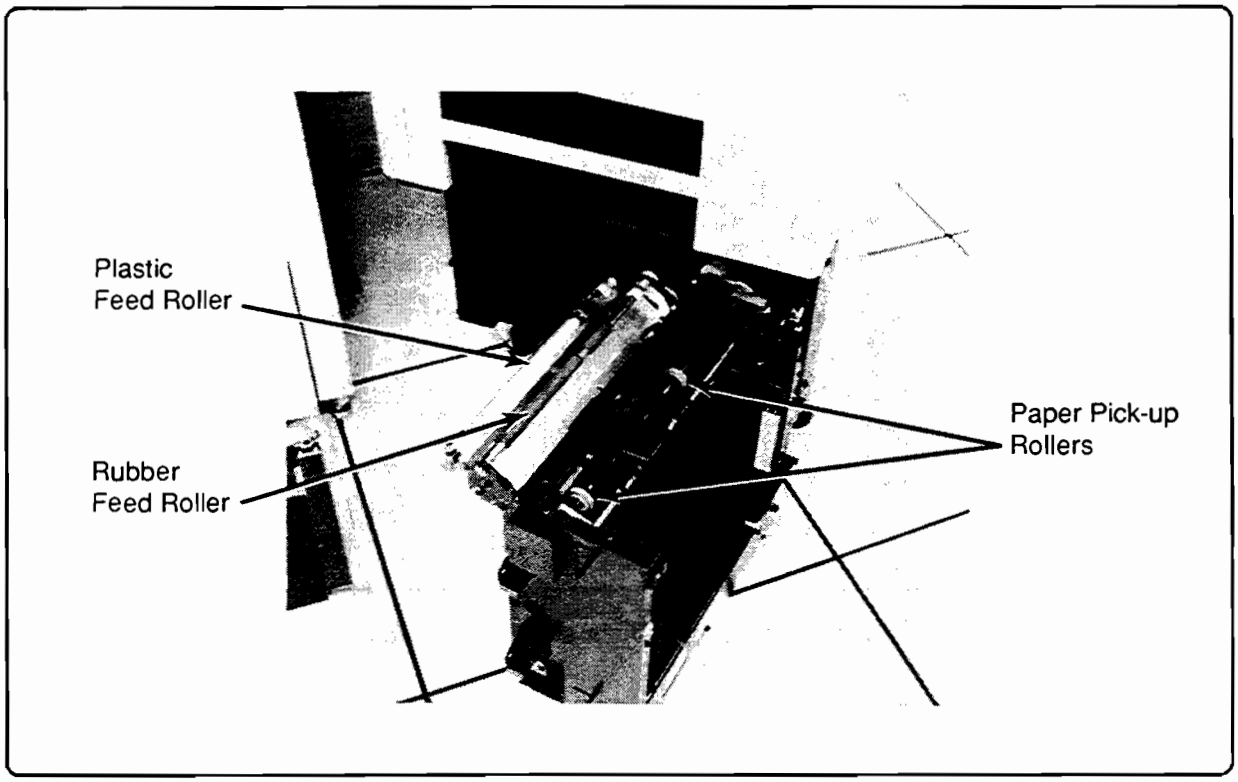

Figure 4-13. PDX Rollers

10. Remove the Separation Roller Friction Strip Plate by removing the two screws (Figure 4-14). Clean with Rubber Roller Restorer or replace if any pads are missing (P/N FF1-5480-030CN). Replace at 400-K intervals regardless of the condition. Do not reinstall in PDX yet.
11. Clean the Separation Rollers (2) with Rubber Roller Restorer. **Replace at 400-K intervals** (P/N FA3-2615-000CN).
12. Reinstall or replace the Separation Roller Friction Strip Plate.

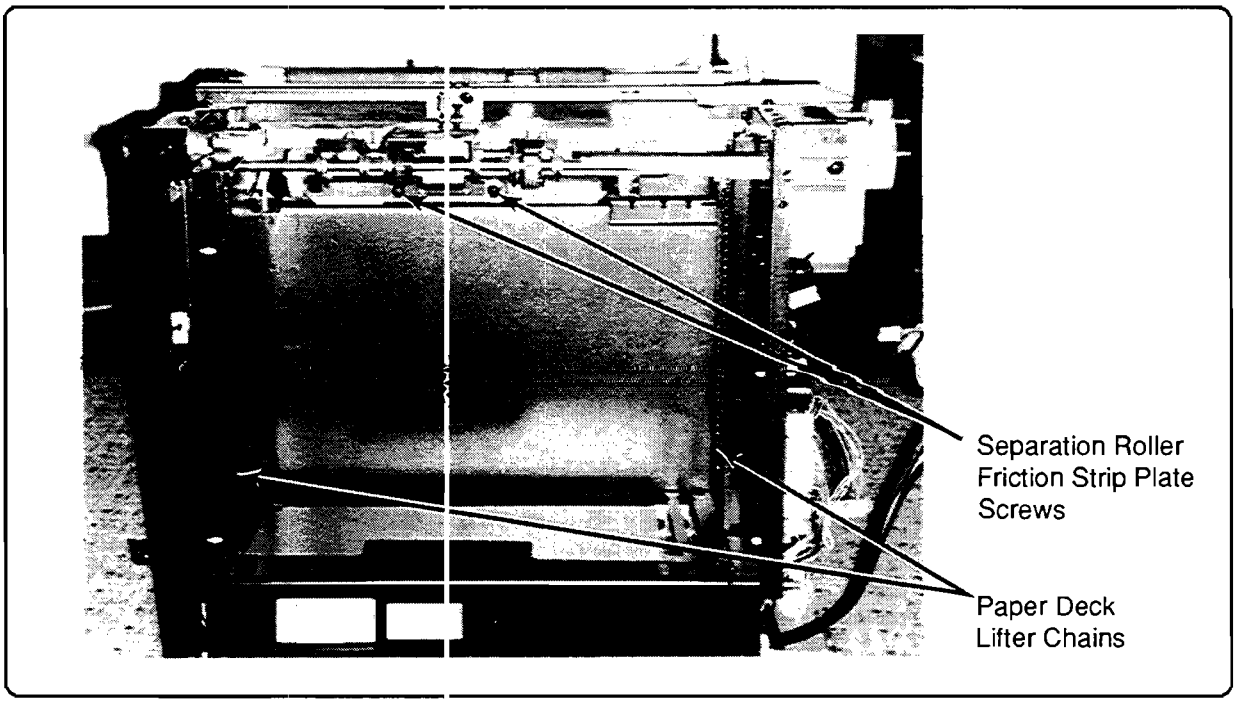

Figure 4-14. Friction Strip and Lifter Chains

13. Inspect paper hold-down tabs (2): Make sure they move freely and are not abnormally bent. Compare to one another as a check, adjust (bend), if necessary. Load a small amount of paper (about one inch thick) in the PDX. Manually lift the paper deck up, just to the point where the paper engages and moves the paper hold-down tabs. Ensure that both hold-down tabs move at the same time and that they do cover and hold down the top stack of the paper. If not, adjust (bend) as required. Lower the Paper Deck by slightly lifting up on the tray and pulling on the ratchet ring (Figure 4-12). Observe that the paper hold-down tabs travel down with the paper. If not, adjust (bend) as necessary.
14. Clean all remaining paper dust, debris, and toner.
15. Reassemble the PDX unit, mount it, aligning with the scribe marks. Tighten the four PDX mounting screws.

Note

On 2684P printers (PDX only - no Duplex), ensure that the green lever located directly below the EP Area Registration Roller green handle is fully latched.

EP Area

1. Remove the following assemblies and set aside:
   a. Developing Assembly
   b. Primary Corona
   c. Pretransfer Corona
   d. Transfer/Separation Corona
   e. Cleaning Station
   f. Toner Catcher (sheet metal)
   g. EP Drum (refer to page 6-51 in Chapter 6)
   h. Waste Toner Receptacle (box)
   i. Waste Toner Assembly (2 Screws, one cable connector)
   j. Drum Separation Claw Assembly (refer to page 6-94, see CAUTION below)

Caution 

When pulling the drum separation claw assembly out, be careful not to break the fragile claw tips.

---

   k. Separation/Transfer Corona Rail Assembly (Figure 4-15 (a)):
      i. Remove screw and pull the pin out (Figure 4-15 (b)).
      ii. Pull assembly towards front to disengage from rear of frame, move to the right, and lift up and out of the EP area. (Removing this assembly allows you access to the Registration Rollers which are located to the right of the Rail Assembly. This is the only way to get to the Registration Rollers!)
2. Clean Registration Rollers with Rubber Roller Restorer. Clean paper dust out of area, then reinstall the Separation/Transfer Rail Assembly.
3. Remove FM6 filter cover and vacuum the filter (Figure 4-15 (c)). If the filter cannot be cleaned, replace it (P/N RF1-042-030CN). Spin the fan to make sure it turns freely. Reinstall the cover.

4. Clean the four delivery belts located in the paper path between the Drum and Fuser (Figure 4-15 (d)):

Caution Use care when cleaning the belts–PS1 interrupt lever extends upward between the first (front) and second belt, toward the drum, and can be easily broken.

Note If the belts look worn or damaged, replace all four instead of carrying out the following cleaning procedure (P/N FA3-0609-000CN).

a. Vacuum the Paper Delivery Belt Assembly area.

b. Saturate a lint free cloth with Rubber Roller Restorer.

c. Clean exposed surface of each belt, one at a time, turning cloth frequently.

d. Grasp each belt at the drum area and pull towards fuser area exposing next uncleaned area of the belt. Clean these newly exposed areas. Repeat until entire belt is clean.

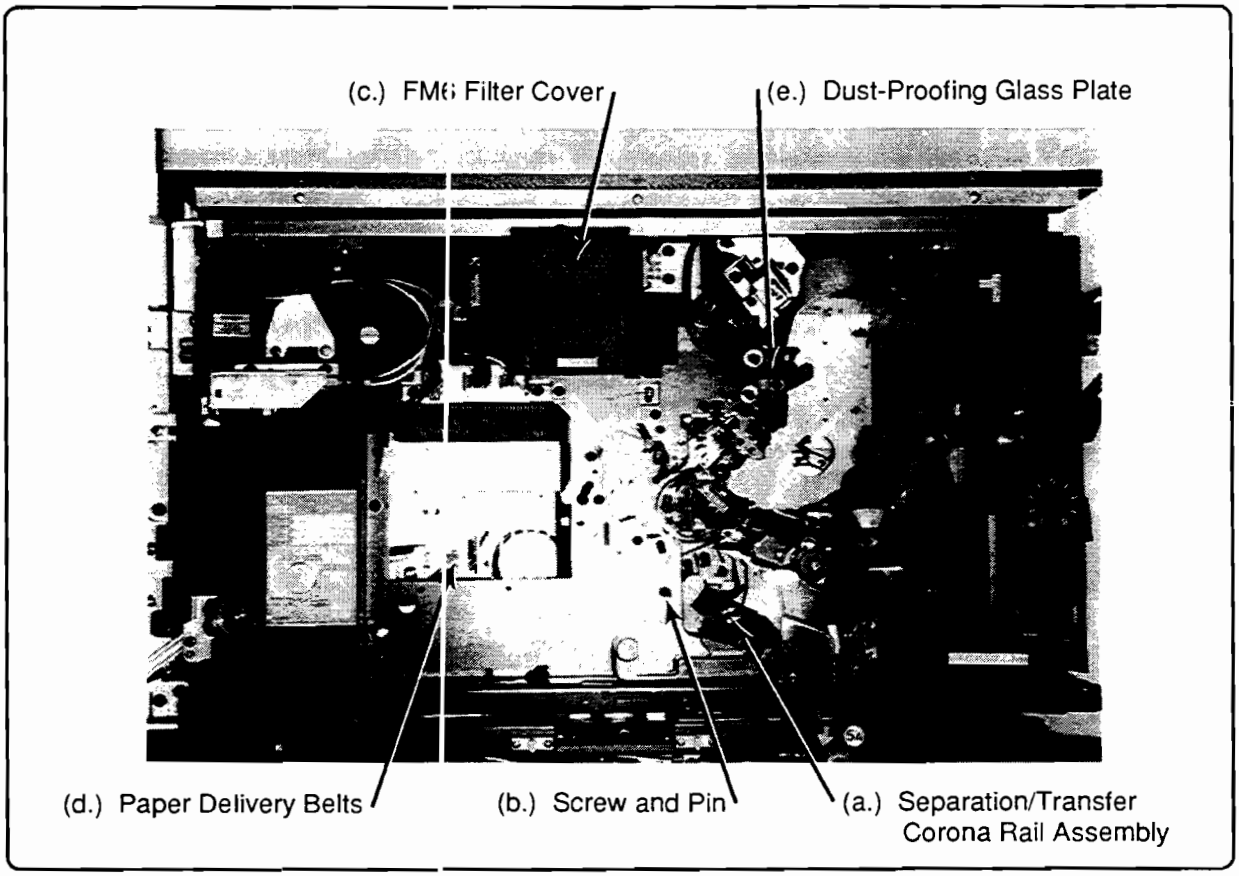

Figure 4-15. EP Area PM Items

5. Inspect the black plastic Feeder Belt Guides (3) between the belts–they may be loose or misaligned. If damaged, replace them (P/N FA3-0610-000CN). Clean with Rubber Roller Restorer.
6. Blow out Engine-PS1 (Drum Separation Sensor) with compressed air.
7. Examine the Drum Separation Claw Assembly:
   a. Scrape excess toner and paper dust off the claws with a fingernail.

Caution

Claws have a black Teflon paint applied to the tips. DO NOT mistake this for baked-on toner and scrape off.

   b. If claw tips look worn or broken, replace all three claws.
   c. Reinstall the assembly and small cover. **Don't forget to plug in the connector.**
8. Disassemble the waste toner assembly by removing the two small, recessed screws and removing the sheet metal bracket from the plastic housing. Clean the sensor with alcohol and a foam swab. Replace the lamp with an updated lamp P/N WG1-0493-000CN.

Note

Replacing the lamp will save a service call!

9. Reassemble the waste toner assembly and reinstall it on the printer frame. Reconnect the cable assembly.
10. **Carefully** pull out the Dust-Proofing Glass (Figure 4-15 (e)) and clean it with alcohol and lint-free wipes. Reinstall.
11. Clean all toner residue from the front and rear ends of the Drum that contact the developer rollers with trichloroethane or Texwipe Goldwipes (recommended).
12. Reinstall the Drum assembly (see NOTE below).

Note

Before reinstallation, remove the Drum Heater (wrapped inside the inner diameter of the Drum - see Figure 6-52, page 6-52). Check to make sure the drum voltage label, located on the Drum's inner diameter, matches the one on the inside of the printer's right side panel (Figure 4-2). In some cases the label will be missing. If it is missing, create your own label and affix it to the panel, transcribing the values indicated on the drum (corona current, VD, VL, and Drum lot #). If the label in the Drum doesn't match the one on the panel, correct the values on the panel to match the values on the Drum.

The Drum is a customer consumable part.

13. Clean the Primary Corona wires and grid with alcohol and a lint-free wipe, and then with a water-dampened lint-free wipe. If the corona can't be cleaned thoroughly or if the wires look damaged, replace the assembly. Reinstall the assembly. **(Replace the Primary Corona at 400-K intervals.)**

14. Clean the Pretransfer Corona HV wire and grid with alcohol and a lint-free wipe. Clean the HV wire and grid again with a water-dampened lint-free wipe. Replace the assembly if it can't be cleaned thoroughly or if the wires look damaged. Reinstall the assembly. **(Replace the Pretransfer Corona at 400-K intervals.)**

15. Clean the Transfer-Separation Corona by first removing the white plastic grid in the corona. Reinstall the corona assembly into the printer. **(Replace the Primary Corona at 400-K intervals.)**

16. Clean the toner catcher and reinstall it.

17. Inspect the Drum Cleaning Station (reference Chapter 6, page 6-64). Perform step a. (200-K intervals) or b. (400-K intervals) below:

Note Most streaking background problems are caused by a dirty or worn cleaning station assembly.

---

a. **At 200-K intervals:**

   i. Check the front and rear tension springs by pressing on the roller. If weak or missing, replace the Cleaning Station assembly.
   ii. Check the condition of gears. Replace the Cleaning Station if damaged.
   iii. Inspect the front and rear side seals (white felt), P/N FA3-0559-000CN (F) and FA3-0560-000CN (R). Vacuum the seals. Replace, if necessary.
   iv. Vacuum the Cleaning Roller, rotate and inspect for damage. If damaged, replace it (P/N FF1-4496-040CN).
   v. Remove the top cover (5 screws). Vacuum as much of the Cleaning Station as possible.
   vi. Rotate the rubber cleaning blade 180-degrees.
   vii. Reinstall the top cover.
   viii. Vacuum the exterior, and reinstall the Cleaner Station in the printer.

b. **At 400-K intervals:** Replace the entire Cleaning Station Assembly (refer to page 6-64 in Chapter 6).

18. Inspect the Developer Assembly:

Note If more than one of the following appears worn, damaged, or missing, replace the Developer Assembly (P/N RG1-0653-090CN).

a. Clean white spacer rollers with trichloroethane or Goldwipe pads.

b. Inspect the roller cleaning pads located directly below the rollers.

c. Lift the developing cylinder cover. Inspect the magnetic cylinder while rotating it by the gear. The layer of toner should be smooth and blemish free. If any irregularities are seen, vacuum the area of toner and wipe the cylinder with a lint-free wipe. **Do not use solvents on the magnetic cylinder!** If damaged (or cannot be cleaned) replace the Developer Assembly.

d. Check the gear on the rear of the Developer Assembly for damage. Also, inspect the Developer Drive Gear at the rear of the Developer Cavity for damage.

e. Clean/Vacuum the Developer Assembly exterior.

f. Clean/Vacuum the Developer Station area, inside the EP area, using care not to scratch the drum.

g. Reinstall the Developer Assembly.

19. Replace or reinstall the waste toner receptacle (box).

20. Vacuum the remaining paper dust and toner from the front of the EP Area.

Front Duplex Area ("D" model only)

1. Replace duplex paper feed assembly static brush with updated version, P/N RA1-6416-020CN (Service Note 2684-5). Put the part number on the brush and mark it "Updated *mo/year,*" so you or another CE will know it has been updated (Figure 4-16). If already updated, inspect for wear and/or missing conductive fibers and replace, if necessary.

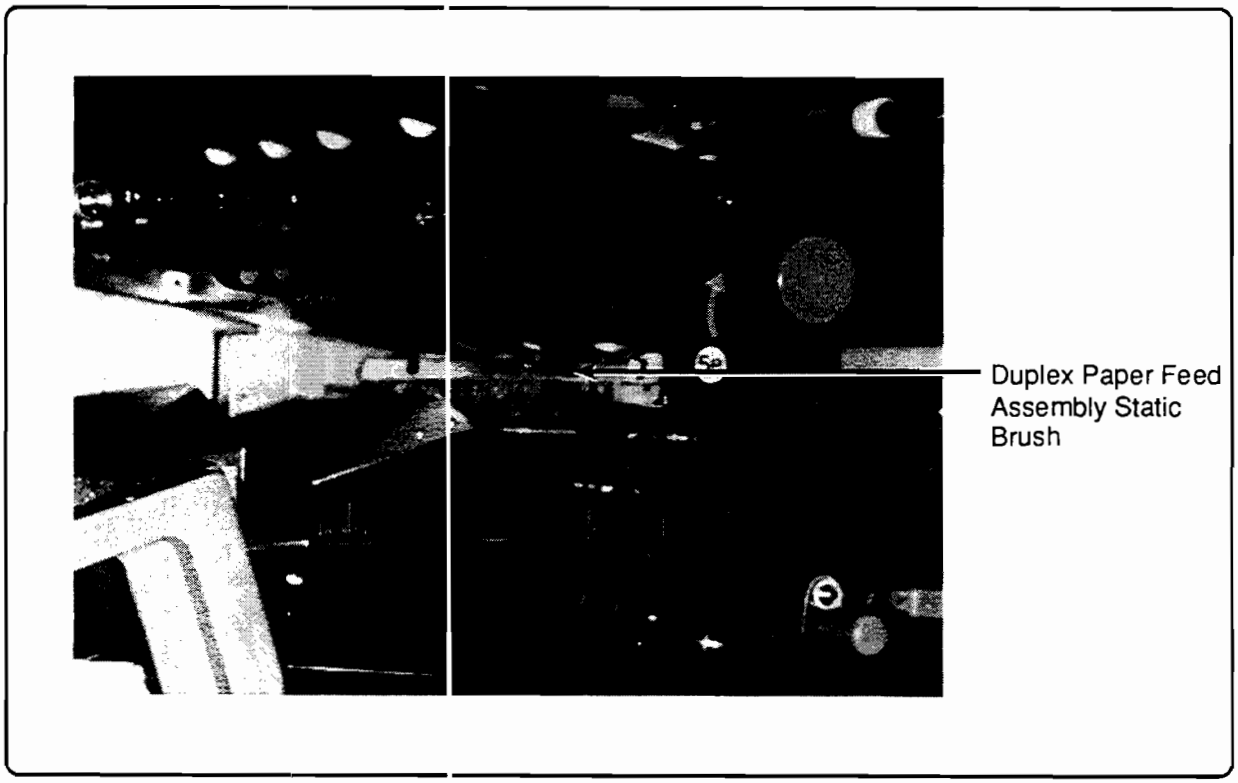

Figure 4-16. Duplex Paper Feed Static Brush

2. Replace the middle guide assembly static brush with updated version, P/N RA1-7155-020CN (Service Note 2684-5). Put the part number on the brush and mark it "Updated *mo/year*" so you or another CE will know it has been updated (Figure 4-17). If already updated, inspect for wear and/or missing conductive fibers and replace, if necessary.

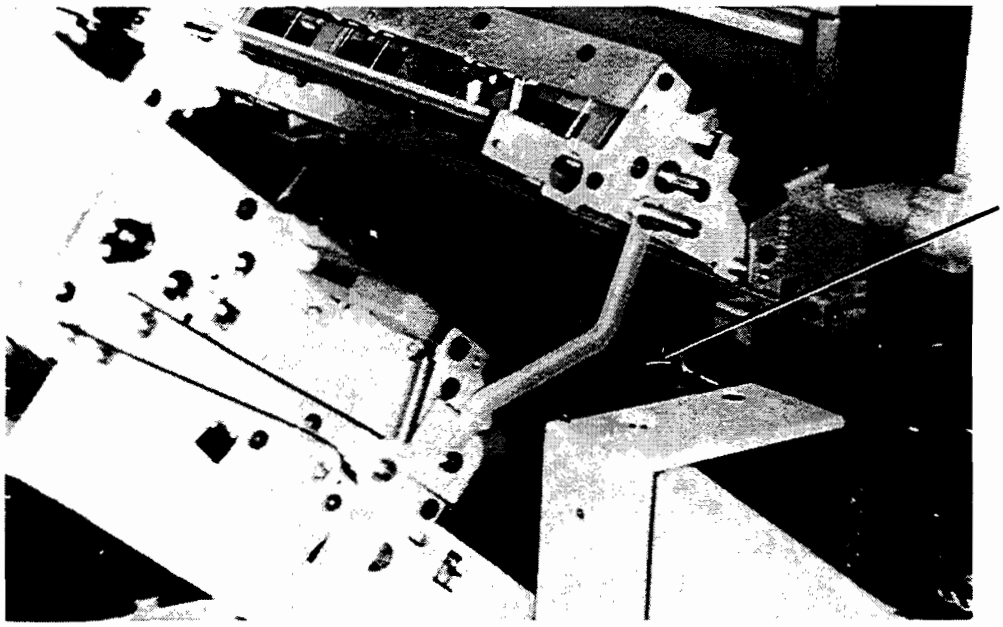

Figure 4-17. Middle Guide Assembly Static Brush

3. Replace holding tray paper sensor lamp, LA1, with updated version, P/N WG1-0493-000CN, per Service Note 2684-5 (Figure 4-18).
4. Vacuum/Clean entire Duplex area.

Note

Steps 5 through 14 to be performed at 200-K intervals as read on the Duplex Counter only.

5. Remove the Feed Belt Assembly (page 6-132), the Holding Tray (page 6-134), and the Duplex Separation Unit (page 6-130).
6. Clean the four Feeder Belts and the four rubber rollers to the left of the Feeder Belts with Rubber Roller Restorer.
7. Clean the four Holding Tray Second Pass Pick-up Rollers with Rubber Roller Restorer (black rubber pads, not plastic). Manually rotate 180 degrees to clean the other side.

8. Replace the four black Lower Separation Rollers (P/N FA3-3269-000CN - reference page 6-137).
9. Replace the white Upper Separation Roller (P/N FA3-3268-030CN, Figure 4-18 -also see page 6-138).
10. Clean the black Second Pass and Duplex Registration Rollers with Rubber Roller Restorer. Clean the white Second Pass and Duplex Registration Rollers with alcohol (Figure 4-18). Reinstall the Separation Unit.

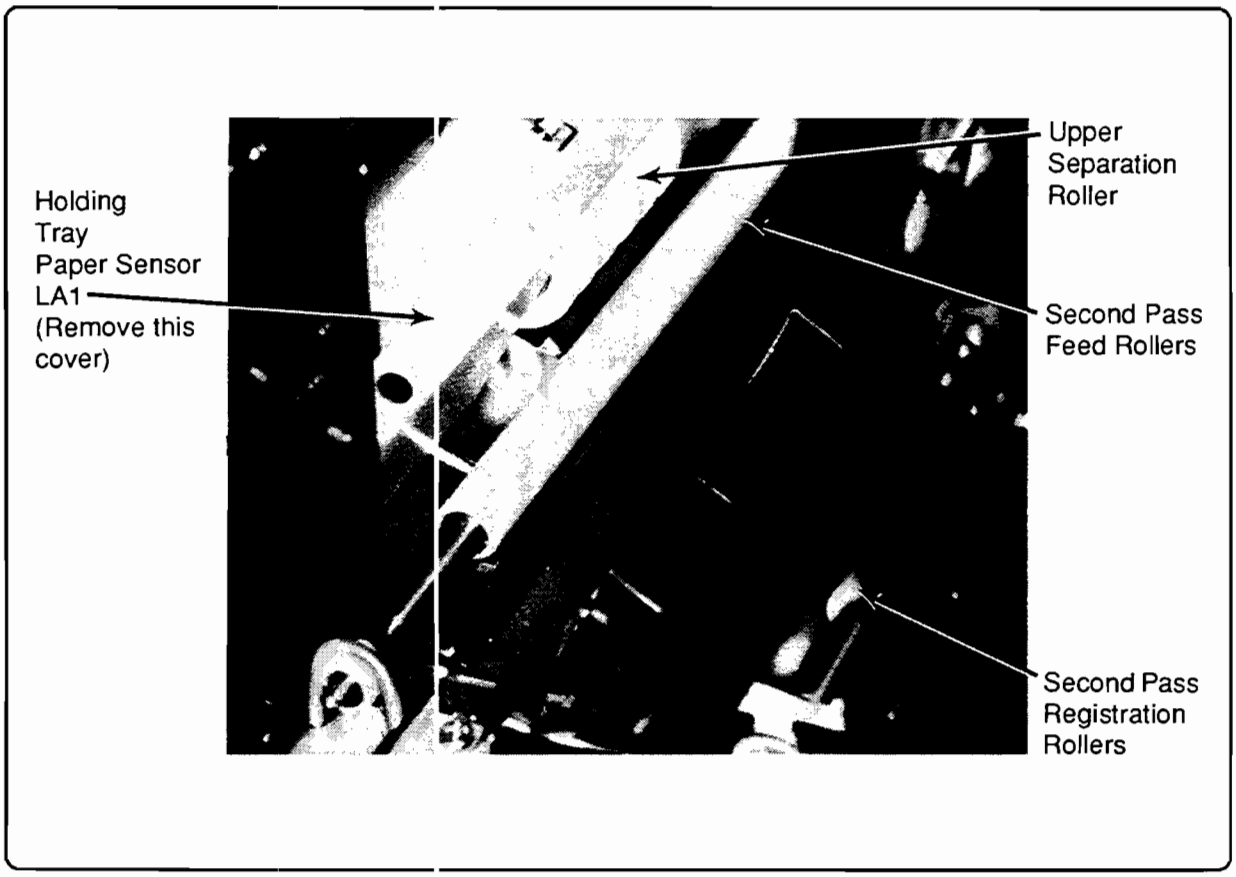

Figure 4-18. Second-pass and Separation Rollers

11. Blow out the pick-up sensor PS3 with compressed air (Figure 4-19).
12. Release the green lever 5A to gain access to both vertical pass rollers. Clean the rubber roller with Rubber Roller Restorer and the plastic roller with alcohol (Figure 4-19).
13. Rotate the Vertical Pass rubber roller clutch shaft (in rear of Duplex unit) to ensure it rotates freely. Replace the clutch if binding (P/N FH7-5051-000CN). Also, check the Duplex Registration Clutch. Replace if binding (P/N FH7-5051-000CN).
14. Blow out the Vertical Pass Paper Sensor (Duplex-PS4) with compressed air (Figure 4-19).
15. Relatch lever 5A.
16. Reinstall the Feed Belt Assembly and the Holding Tray.

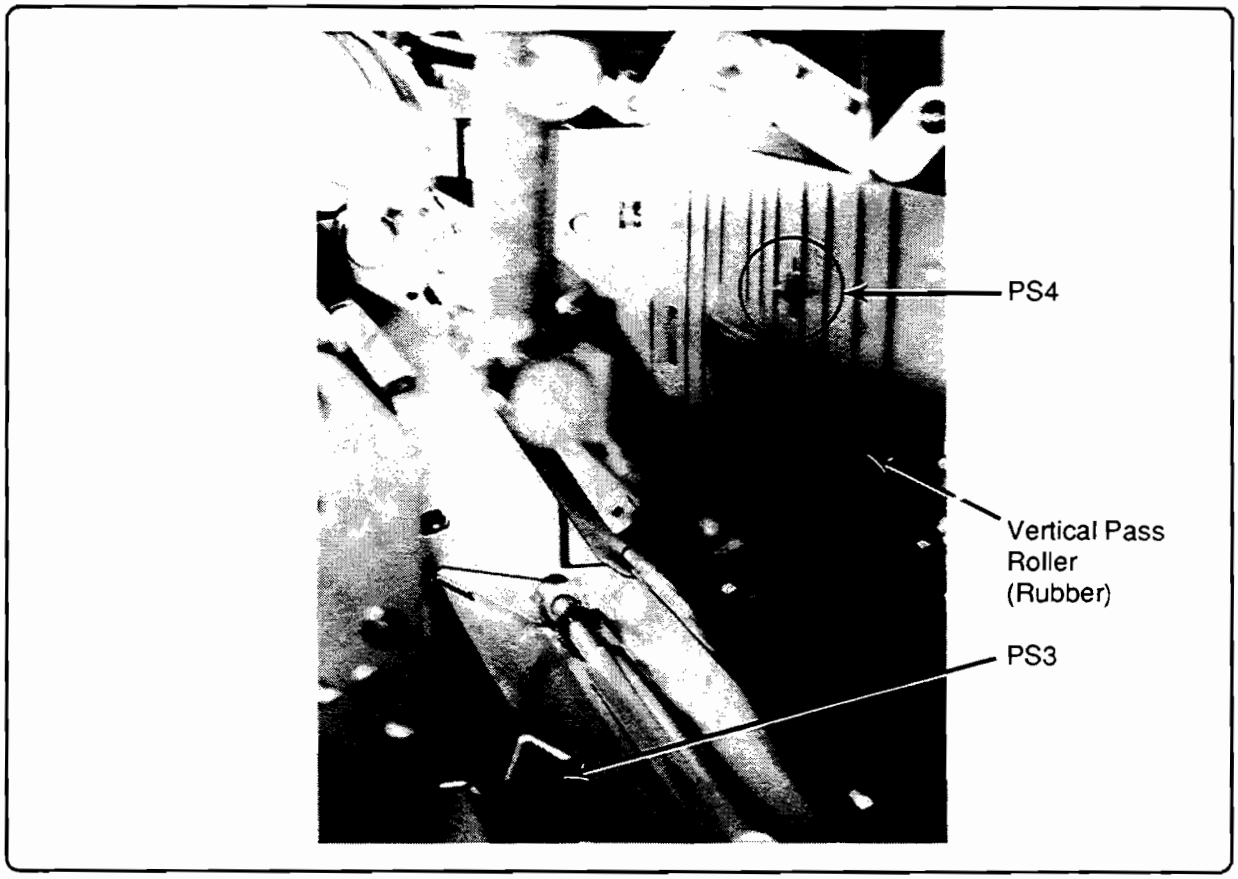

Figure 4-19. Vertical Pass Area

Fuser Assembly

Note

Even though the printer should be turned OFF and unplugged at this point, verify that this is the case, since removing the Fuser Assembly with power applied can blow resistor-fuse R311 (P/N FF1-3872-000CN) on the AC Control PCA.

1. Remove the Fuser Assembly and place on a roomy working surface. The top of the printer is adequate as long as the surface is protected. Use extra self-test printouts, if available, to lay on the printer's surface.
2. Remove the Cleaning Towel Assembly from the Fuser Assembly: unplug the Towel Drive Motor connector and slide the Cleaning Towel Assembly forward while lifting out of the fuser assembly. No screws need to be removed.
   a. **If the Cleaning Towel Assembly has already been updated** to P/N RG1-0389-090CN (ref. Service Note 2684-6A), then replace only the Cleaning Towel (P/N RF1-0704-000CN). See Figure 4-20 to discern between old and new assemblies.
   b. **If the Cleaning Towel Assembly has not been updated,** replace the entire assembly. Place a label on top of the unit, noting that it has been updated.

Caution

If you replace the entire Cleaning Towel assembly, check to make sure that the towel rolls (supply and take-up) are seated in their drive shafts. Packaging/shipping problems have caused the supply roll to jar loose from the shaft. This condition will cause a return service call!

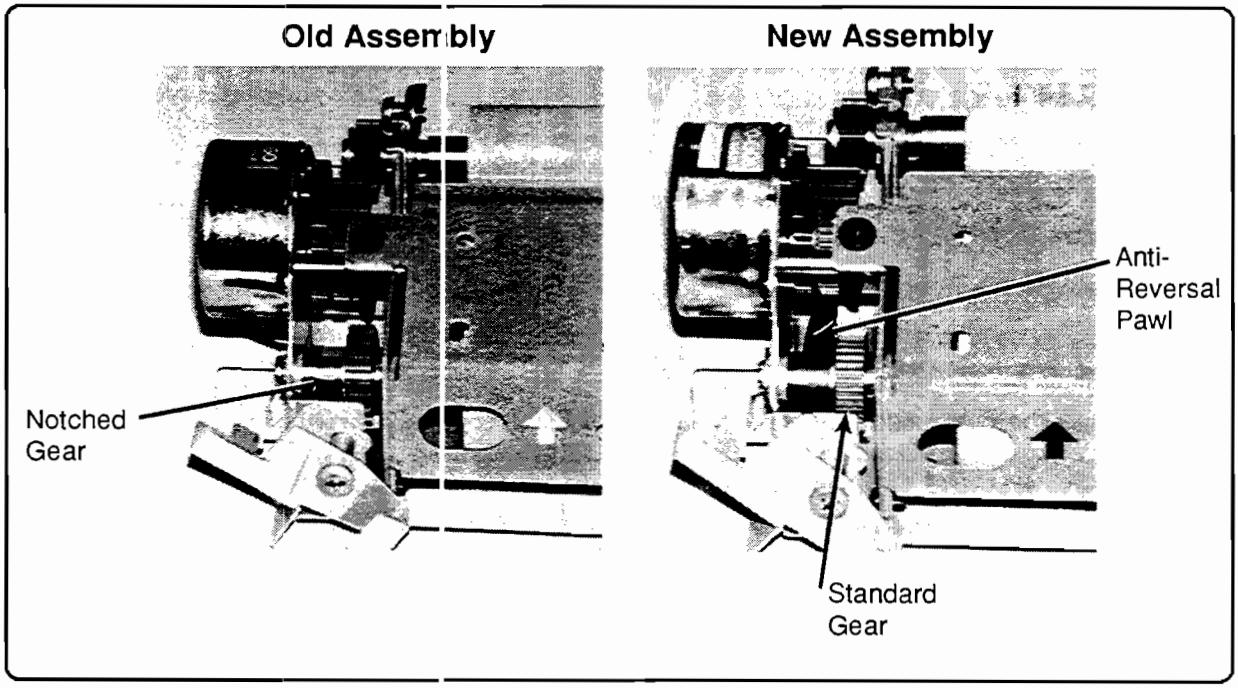

Figure 4-20. Old vs New Cleaning Towel Assemblies

3. Remove the cross member containing the thermoswitch and thermistor (two screws - refer to Figure 6-78 on page 6-70, if necessary). Clean each thermo-component with Goldwipes or trichloroethane. If they are heavily caked with toner, use your fingernail to clean them. Replace if un-cleanable.

4. Check the upper and lower fuser rollers:

   a. The updated upper roller is easy to spot as it is Teflon (grey color). The updated lower roller is more difficult to identify, but is distinguishable from the original roller; the new roller has non-flanged sides and has a thicker mylar coating. **Replace any roller that is not updated.** Refer to page 6-70 for removal procedures and Service Note 2684-6A for update details (upper fuser P/N FA3-0623-030KT).

Note

Refer to Service Note 2684-6A upon updating rollers for applying silicon (fuser) oil, P/N 823924-KT. **Updating the rollers will save a service call.**

Whenever the fuser rollers are replaced, the "Nip Width" must be adjusted. The procedure is found in Chapter 6, on page 6-69. (Note that the adjustment specs are different for Teflon rollers than the older style Canon rollers.)

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   b. If the rollers are already updated, clean the rollers with Rubber Roller Restorer and lint-free wipes. After cleaning, apply the silicon fuser oil.

   c. Clean the paper dust and toner buildup from the black lower paper guide (located at the input of the fuser assembly).

   d. Clean the rubber rollers with Rubber Roller Restorer.

   e. Clean the upper (6) and lower (4) Fuser Separation Claws with your fingernail. If worn or broken, replace upper claws with updated P/N FA3-0683-050CN and/or lower claws with P/N FA2-1994-000CN (reference Service Note 2684-6A). Check for missing or detached claw springs. When checking or replacing upper Fuser Claws, inspect the inside edge of the metal mounting bracket for grooves or nicks. Replace if damaged (P/N FA3-0698-040CN).

   f. Clean fuser Photo Interrupt Sensor (Engine-PS3).

   g. Inspect the Static Eliminator Brush for wear and/or missing conductive fibers. Replace, if necessary (P/N FA1-9723-000CN).

   h. Reassemble the Fuser Unit.

   i. Lube all gears, including the fuser drive gears inside the printer, with High Temperature Grease, P/N 6040-0222.

   j. Reinstall the Fuser Assembly, using care not to bend Engine-PS3 mounting bracket.

Caution

DO NOT FORGET to plug in the connectors. Error 50 and a blown R311 47 ohm resistor will result! NOTE: Error 50 will not be displayed if the printer is in CE Mode.

Switchback Unit

1. Blow paper dust out of the entire switchback area with compressed air or a vacuum. Pay careful attention to dust in the paper path. Avoid dirtying the Fuser Assembly, which you just cleaned, by covering with paper.

Note

In the following step, some rollers can be turned by hand in one direction or the other–both directions in some cases. If they can't be turned by hand, move them by pulling on the switch-back feeder drive belt (Figure 4-21).

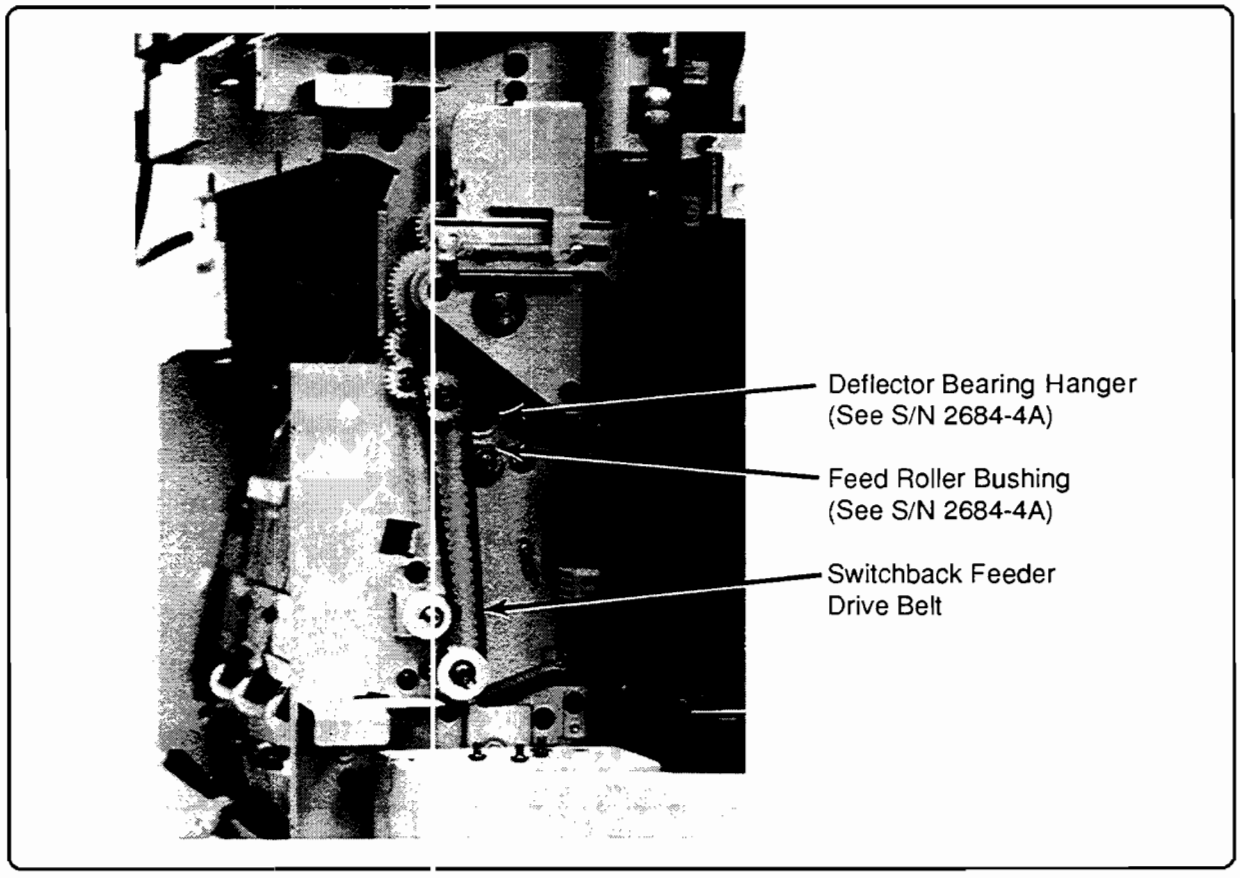

Figure 4-21. Switchback Feeder Drive Belt Area

2. Open the guide door (Figure 4-22) and remove the Inlet Guide by removing the four screws (Figure 4-23). Pull out the Inlet Guide and swing it to the left, being careful not to stress the sensor cable. Position it to rest as shown in Figure 4-24. Removing this guide exposes all rubber feed rollers for easy cleaning! Clean the exposed feed rollers with Rubber Roller Restorer. Blow out Stacker-PS6 on the Inlet Guide with compressed air (Figure 4-24).
3. Inspect Stacker-PS6 and the two correspondingly-sized sensor flag pawls for presence of grooves on the sides of the pawls. Replace if any grooves are found on the side of any pawls (P/N RA1-1412-000CN).

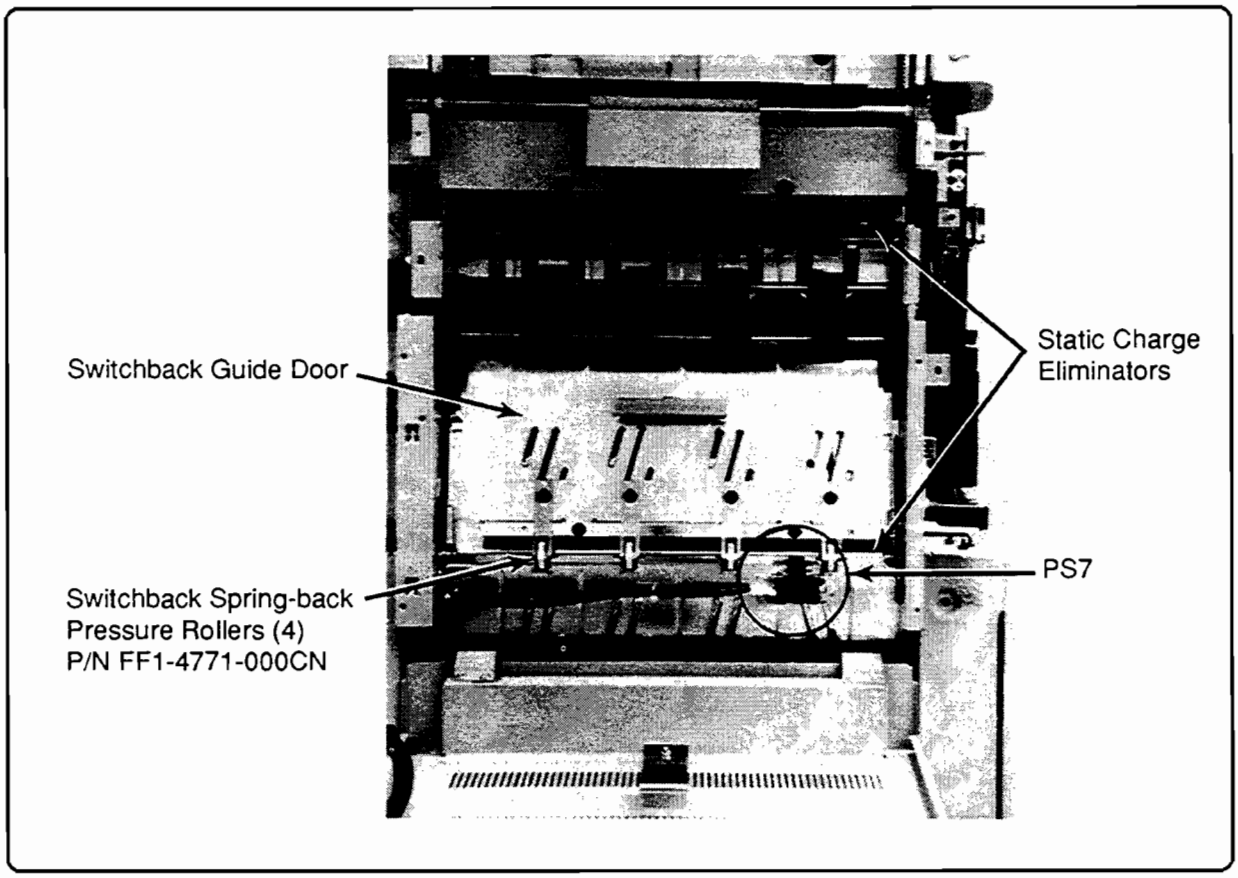

Figure 4-22. Switchback Guide Door Area

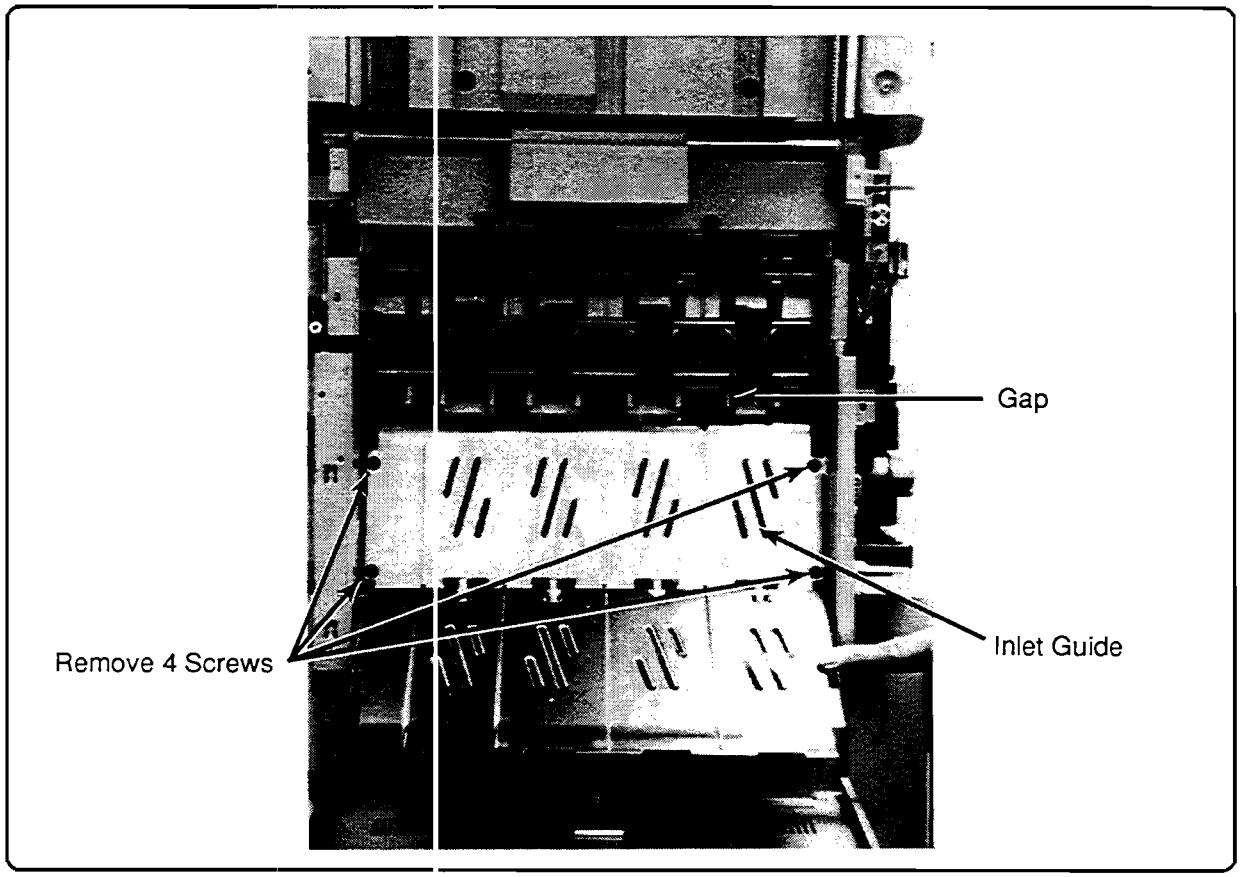

Figure 4-23. Switchback Inlet Guide

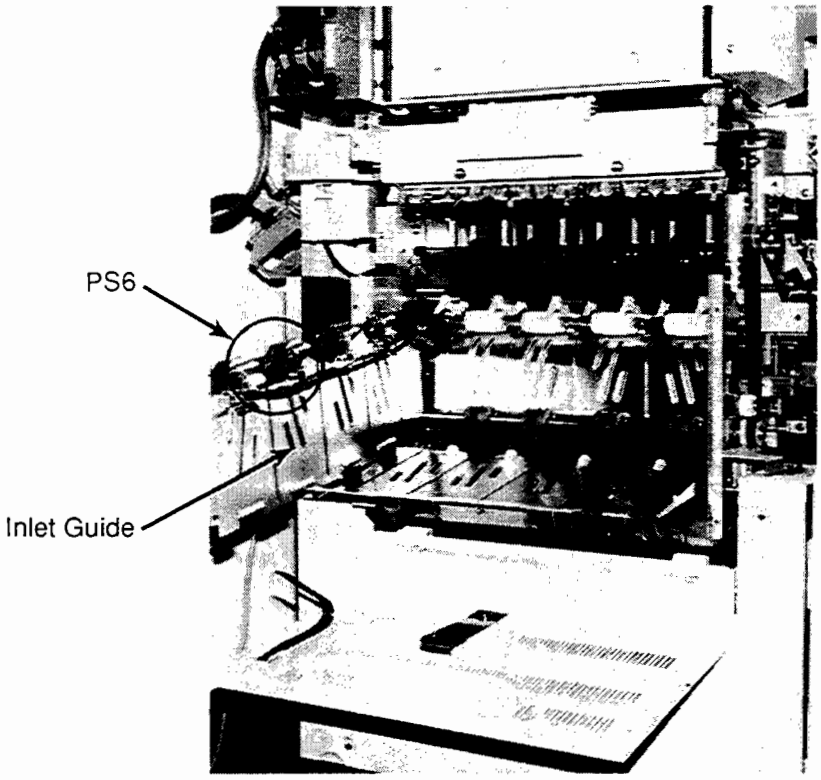

Figure 4-24. Inlet Guide and Stacker-PS6

4. Reinstall the inlet guide (See NOTE below).

Note

When reinstalling the inlet guide, make sure that the gap between the deflectors (Figure 4-23) and inlet guide is even all the way across. "Eyeball" the gap for now–you will fine adjust in Step 9 below. Paper jams can result if gap is uneven.

5. Inspect the Static Charge Eliminator Brushes for wear. Replace, if necessary (Figure 4-22, P/N RA1-2442-000CN & FA3-3319-000CN).
6. Inspect the four Switchback Pressure Rollers which ride on the Reverse Feed Rollers for seating and spring-back tension (Figure 4-22). Clean if dirty with alcohol. Replace if spring-back tension is weak, rollers are damaged, or if they don't turn freely (P/N FF1-4771-000CN).
7. Blow out PS7 with compressed air (Figure 4-22).
8. Inspect the Switchback Feeder Drive Belt for wear and proper tension (Figure 4-21). Replace if worn, P/N XF9-0163-000CN. Adjust to 8mm ±2mm deflection when a force of 300 grams is applied by a Gram Tension Scale. See Chapter 6, page 6-106 if adjustment is necessary.

9. Check the switchback deflector gap by using a feeler gauge, (refer to "Adjustments: Switchback Deflector (SL5)" in Chapter 7). Note that the gap of 2mm ±0.5mm is measured between the deflector guides and the plate when the solenoid plunger (Stacker-SL5) is manually engaged at the plunger. **Do not manually engage the deflectors by pressing on the deflectors themselves.** This is an inaccurate method of measuring the gap. Adjust, if necessary. You may have to readjust the Inlet Guide (removed in step 2, above) for even gap across the surface.

10. Open the Switchback Assembly. Check the four Switchback Exit Spring-back Pressure Rollers (white, Figure 4-25) for spring-back and proper seating. Clean or replace, if necessary (P/N RF1-0607-000CN).

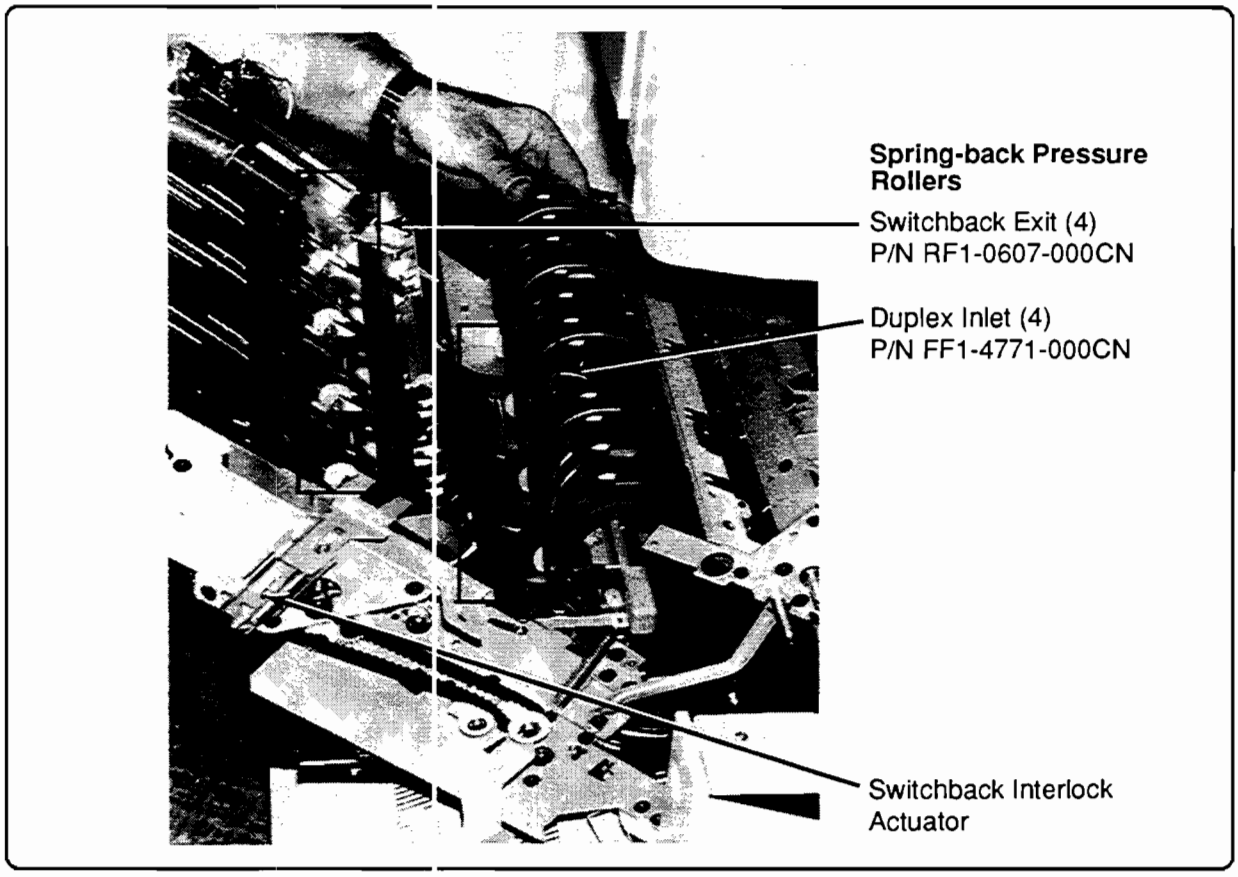

Figure 4-25. Pressure Rollers and Interlock Actuator

11. Inspect the four Duplex Inlet Spring-back Pressure Rollers (Figure 4-25) for spring-back and seating. Clean or replace, if necessary (P/N RF1-0607-000CN).

12. Blow paper dust out of the Duplex Inlet Sensor, Stacker-PS8 (P/N FH7-7023-000CN) with compressed air (Figure 4-26).

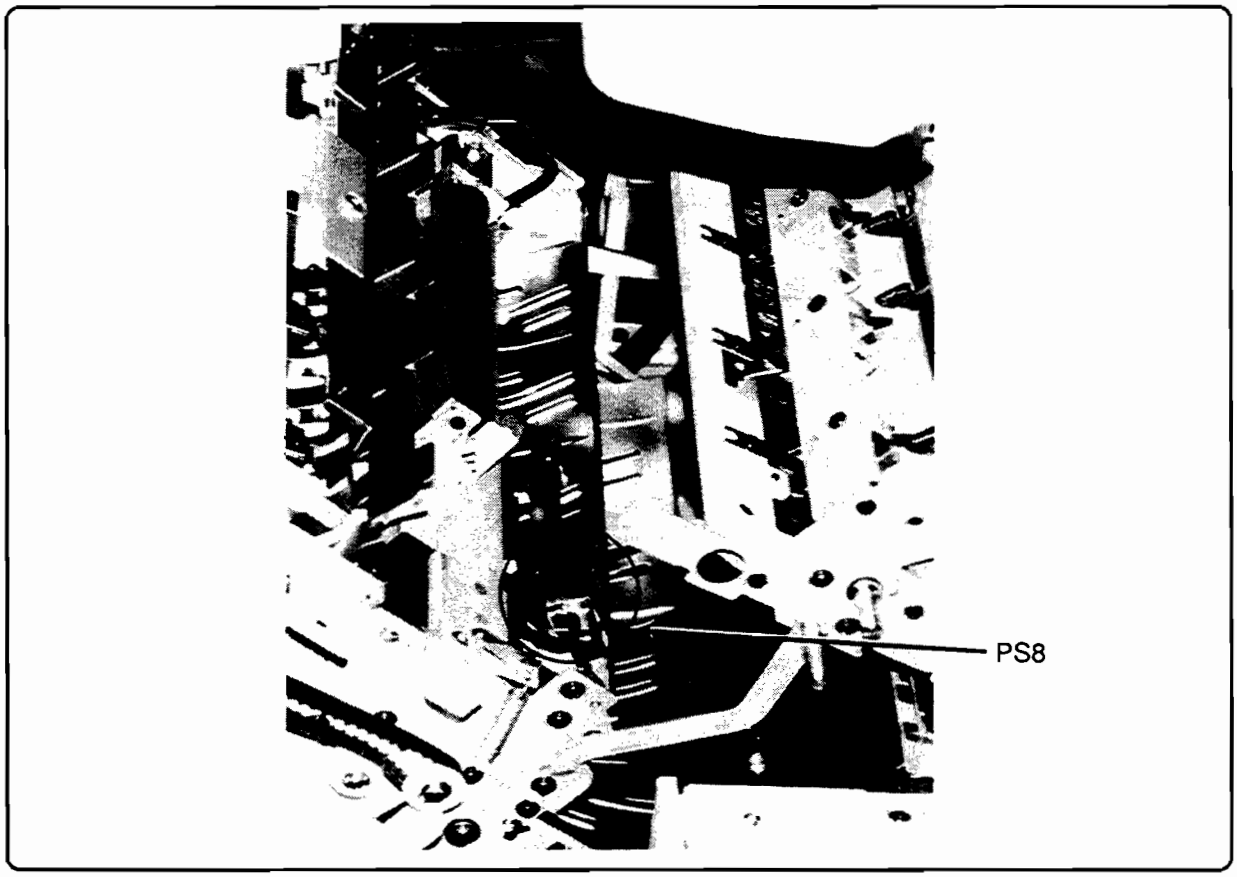

Figure 4-26. Stacker-PS8

13. Inspect the deflector shaft bushings and corresponding feed roller shaft bushings for freedom of movement in their slotted channels and for updated springs (Figure 4-21 and Service Note 2684-4A).

    On older models (serial numbers (XXXXA00850) there was no lubrication and the springs were not strong enough to overcome the consequential binding. If no lubrication is present, lube the slots with High-Temp Grease and move the bushings up and down to distribute it evenly. If the bushings still appear to bind, perform step 9 in Service Note 2684-4 in order to deburr the slots. Replace the springs with the updated versions, P/N RS1-2213-000CN (quantity two) and FS1-2370-000CN (quantity two). Color the springs with a permanent marker so that they can be identified as the updated version, or place a label on the frame near the springs, indicating that they have been updated.

14. Carefully spray all gears, bushings, and bearings on front and rear of Switchback assembly with Triflo or 3M brand Teflon based spray lubricant.

15. Check to see if the new switchback door Interlock Guide has been added, P/N RA1-7035-000CN (reference Service Note 2684-7). It fits over the slotted housing containing the microswitch (Stacker-MS4) on the upper rear side of the switchback assembly.

Note Adding the switchback interlock door guide may save a service call.

16. Open and close the Switchback several times. Check the switchback door latches for proper latching. Replace white nylon latches, P/N RA1-2585-000CN, if not latching properly or worn. If parts are not available you can swap the front/rear latches as a temporary fix.
17. Open and close the switchback assembly again. Check to see that the switchback interlock actuator (Figure 4-25) fits into the slotted guide of the main engine's left front door switch assembly. If it rubs or is not centered in the slot, adjust it so it is centered (loosen screw and move). Manually engage the actuator to make sure it moves freely against its spring tension.
18. Check to see if the "Push Here to Close" label (P/N 02684-00026) has been added to the switchback cover above the opening which fits over the door handle (reference Service Note 2684-7).

Stacker Unit

1. Blow out the following photo sensors with compressed air (reference "Stacker Component Locations" on page 6-12):
   a. Main tray paper sensor (Stacker-PS2, on stacker tray).
   b. Main tray print delivery sensor (Stacker-PS4, in underside of top door).
   c. Paper level sensor (Stacker-PS3, located under top door, it interacts with the front delivery feed T-belt).
2. Inspect the three delivery T-belts (Figure 6-131 on page 6-113). Clean with Rubber Roller Restorer or replace if worn (P/N FA3-7453-000CN). Do the same with the rubber delivery rollers (2) between the belts (P/N RA1-2532-000CN, shaft unit with rollers).
3. Inspect the spring rollers (5) on the underside of the top door for spring-back and wear. Clean with your fingernail or replace, if necessary, (roller is P/N FA3-7419-000CN, spring is P/N FA3-7418-000CN).

Note It may help to remove the top door restraining strap to facilitate access to the rollers.

4. Open the right door, above the Formatter Area, and clean the large plastic rollers with alcohol. Clean the clear rubber rollers with Rubber Roller Restorer. These rollers can be rotated by pulling on the drive belt at the rear of the stacker (Figure 4-27). Replace, if necessary.

5. Inspect the spring rollers (8) on the metal paper guide for spring-back and damage. Clean with alcohol or replace, if necessary. Roller is P/N FA3-7419-000CN; spring is P/N FA3-7418-000CN (items 35 and 36 in Figure 8b-5, page 8b-8).
6. Open the Switchback Assembly and inspect the bottom of the stacker at the stacker paper guide inlet. Use a flashlight and inspect the condition of the clear rubber rollers and corresponding spring-back rollers. Replace any excessively worn part or clean with Rubber Roller Restorer (inlet guides can be separated far enough to reach with hand and cloth–rotate rollers by pulling on the drive belt).
7. Check to see that the static brush (at the stacker input, above the switchback unit) has been replaced with the deflector guide, P/N RA1-2607-000CN (reference Service Note 2684-4A).
8. Inspect the output stacker tray Static Eliminators for wear (missing fibers). Replace with P/N RA1-2524-000CN and FA3-3319-000CN, if necessary.
9. Inspect the drive belt for proper tension and wear. Proper tension is 8mm ±2mm deflection at 300g (see Chapter 6, page 6-106). Replace with P/N XF9-0148-000CN, if necessary.
10. Inspect the delivery belt clutch (**400-K interval only**), Figure 4-27. Remove and inspect for rotational binding. If binding, replace the clutch (P/N RH7-5007-000CN).

Note Delivery belt clutches have been known to fail at 600K.

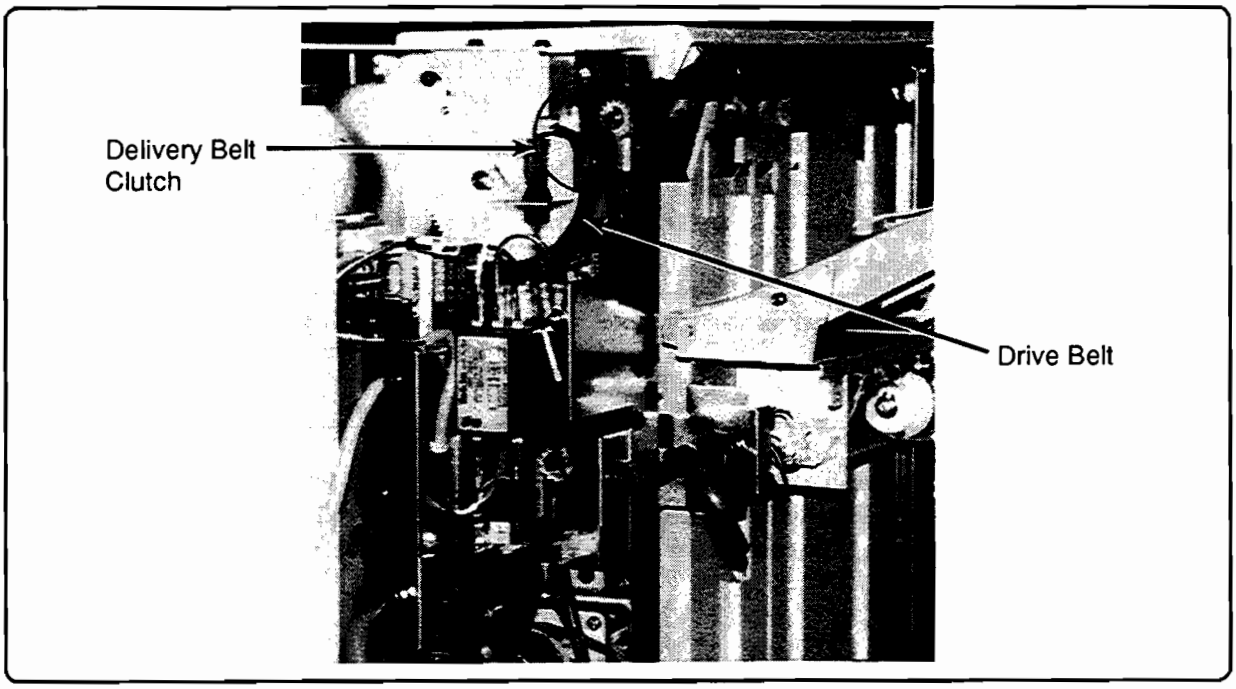

Figure 4-27. Stacker Drive Belt and Delivery Belt Clutch

Final Adjustments

1. Reinstall the following:
   a. Duplex rear cover.
   b. Main engine rear cover.
   c. Upper and lower cassette trays (with paper loaded).
   d. Left and right front doors.

   (Do not install remaining covers at this time.)
2. Place interlock switch override tools in the PDX and Duplex doors (if model "P"or "D").
3. Place paper in the PDX.
4. Open formatter side panel and set dip switch 3 on SW12 to closed position. This enables Run-in mode. (Switch SW12-2 should still be closed for CE mode.)
5. Plug in the printer and turn it ON. While the printer is warming up, pack up your tools and equipment, clean up, and fill out the Gold Book or Log Book.

Note

Many of the LaserJet 2000 printers are connected to "third party" equipment and consequently will not have a Gold or Log Book to record service data. If there is no Gold or Log Book on the site, make one and put it with the printer on your next service call or customer visit. See Log Book sample starting on page 4-47.

6. Inspect the print image quality. Adjust contrast control VR1/SW2 to eliminate any background. (Refer to "Print Quality Troubleshooting" and "Drum Potentials Adjustment" in Chapter 7.)
7. Adjust the leading and trailing edge border registration:
   a. Run a continuous standard self test for two minutes.
   b. Examine the self test print-outs for even borders (leading and trailing edges of the paper, relative to paper travel).
   c. If the borders are uneven, adjust VR101 on the DC Controller PCA until even borders are achieved.

8. Adjust the front and rear border registration on the upper and lower cassettes and the PDX (PDX if option "P" or "D") as follows:
   a. Remove paper from the PDX and lower cassette. Run one pass of Standard Self-Test. Examine borders for even registration. Adjust the upper cassette holder to the front or rear, if necessary.
   b. Remove the upper cassette and reinstall the lower cassette. Run one pass of Standard Self-Test. Examine the front and rear borders for even registration. Adjust the lower cassette holder to the front or rear, if necessary.
   c. Remove the lower cassette and install paper in the PDX. Run one pass of Standard Self-Test. Adjust the PDX unit to the front or rear, if necessary, for even borders on the front and rear.
   d. Tighten the PDX or cassette holder mounting screws.
   e. Save the first page of any of the three self tests above and place it in the log book. Note the image count and date on the printout.
9. Reinstall all remaining covers and reassemble the printer. See note below before proceeding:

Note

When replacing the switchback cover, make sure that the switchback door is closed before mounting the cover. Mount the cover and then install the exterior (6) screws securely. Then open the switchback door and install the internal (6) mounting screws. Mounting the cover while the door is closed helps to align the switchback assembly properly, thus preventing paper jams.

---

10. Run the Paper Path Self Test for five minutes. If jams occur, correct the problem by referring to "Paper Movement Problems" in Chapter 7.
11. Reset DIP switches 2 and 3 of SW12 to the OPEN (ON) position and cycle the power. Return the printer to the customer.

Note

Leaving the printer in CE mode (switch S12-2 set ON) will cause a service call. Errors are not reliably displayed if the printer is run in CE mode.

Service Notes

All service notes through Service Note 2684-11 are included in this list. The service notes are referenced throughout this manual. Extra lines are provided in this list to allow you to keep the list up to date. Fill in the note number and subject as new notes are released.

Table 4-5. Service Note Listing

Note	Subject
2684-01	Centronics data loss
2684-02	PDX Unit improvements
2684-03	Drum damage service hints
2684-04	Switchback service hints
2684-05	Duplex Unit improvements
2684-06A	Fuser Assembly improvements
2684-07	Switchback Unit improvements
2684-08	Improved Print Engine gears and chain
2684-09	Out of focus Laser failures
2684-10	Positive Drive Switchback Mechanism
2684-11	Font Cartridge Magazine for use with HP MasterType Cartridges

Ordering Service Notes

Service Notes can be ordered from Hewlett-Packard's Product Support Division (PRSD). All Service Notes for the HP LaserJet 2000 printer begin with the part number 2684. The address and phone number for PRSD is:

Hewlett-Packard Company
Product Support Division
100 Mayfield Avenue
Mountain View, California 94043

415-968-5600

PM Checklist

On the next page, you will find a "PM Checklist." This checklist was patterned after the HP 2680A "57 Step PM Checklist" that has proven useful.

After you have performed the PM procedures detailed in this chapter several times, you may want to begin using this checklist with limited reference to this chapter.

Make double-sided copies of this checklist for future use.

Note

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LaserJet 2000 200/400–K CE PM CHECKLIST

The following steps directly cross-reference the PM Manual (February, 1990)

Customer: _____ Rotation Count: _____ (EP)

CE: _____ Date: _____ _____ (Duplex)

Serial Number: _____ Jam Count: _____

All steps are to be performed every 200,000 images, unless specified otherwise

I. INTRODUCTION

(see PM Manual)

II. REQUIRED MATERIALS

(see PM Manual)

III. PM SETUP

- ☐ 1. Enable CE Mode
- ☐ 2. Run Standard Self-Test for two minutes
- ☐ 3. Record jam and image counter reading(s)
- ☐ 4. Run one pass of Paper Path Self-Test
- ☐ 5. Check fans FM1, FM2, FM3, and FM7
- ☐ 6. Unplug printer. Remove covers, trays, and doors

IV. PM PROCEDURES

A. Rear of Main Engine

- ☐ 1. *(400-K)* Replace Ozone Filter (FA2-5541-000CN)
- ☐ 2. Lube chain with Vactra 2 or update per S/N #8
- ☐ 3. Check electrical connectors
- ☐ 4. Clean Drum Grounding Spring & Slip Ring w/alcohol
- ☐ 5. Vacuum/wipe area

B. Rear of Duplex Unit ("D" Model only)

NOTE: *Perform when DUPLEX COUNTER is at 200/400-K*

- ☐ 1. Check drive belts for wear/tension(10mm @ 500g)
- ☐ 2. Check connectors
- ☐ 3. Vacuum/clean area

C. Cassette Area

- ☐ 1. Remove Cassette Holders
- ☐ 2. Replace Lamps (WG1-0493-000CN)
- ☐ 3. Blow out PS4
- ☐ 4. Clean Cassette Holders and Sensors
- ☐ 5. Remove DCPS2.
- ☐ 6. Clean "D" Rollers with Rubber Roller Restorer or replace if worn
- ☐ 7. Reinstall DCPS2
- ☐ 8. Reinstall Cassette Holders
- ☐ 9. Examine Hold-Down Tabs. Adjust if necessary

D. PDX Area ("P" and "D" Models)

- ☐ 1. Remove the PDX Unit
- ☐ 2. Update Paper Feed Clutch, if necessary (FH7-5055-040CN -- Service Note 2)
- ☐ 3. Update PDX F/W to REV 07, if necessary (02684-67911 -- Service Note 2)
- ☐ 4. Lubricate rear lifter chain with Vactra 2
- ☐ 5. Clean rubber Feed Roller with Rubber Restorer
- ☐ 6. Clean plastic Feed Roller with alcohol
- ☐ 7. Lubricate the 2 lifter chains lightly with Vactra 2
- ☐ 8. Replace Pick-up Rollers (FA3-2615-000CN)
- ☐ 9. Clean Separation Roller Friction Strip w/Rubber Restorer or replace if needed (FF1-5480-030CN)
- ☐ 10. Separation Rollers -- 200K: Clean or replace (FA3-2615-000CN) -- 400K: Replace
- ☐ 11. Reinstall cleaned or new Friction Strip
- ☐ 12. Inspect Paper Hold-Down Tabs-adjust if needed
- ☐ 13. Vacuum/clean PDX Unit
- ☐ 14. Reassemble/reinstall PDX Unit (Check 2684P handle position)

E. EP Area

- ☐ 1. Remove EP Area assemblies
- ☐ 2. Clean Registration Rollers with Fedron--reinstall Separation/Transfer Corona Rail assembly
- ☐ 3. Vacuum or replace FM6 Filter. Spin the fan
- ☐ 4. Inspect the 4 Delivery Belts. Clean or replace, if necessary (FA3-0609-000CN)
- ☐ 5. Inspect 3 Delivery Belt Guides. Clean or replace if damaged (FA3-0610-000CN)
- ☐ 6. Blow out PS1
- ☐ 7. Clean/replace Drum Separation Claws--reinstall
- ☐ 8. Replace Waste Toner Receptacle Lamp (WG1-0493-000CN), and clean sensor. Reinstall ass'y.
- ☐ 9. Clean Dust-proofing Glass--reinstall
- ☐ 10. Clean front and rear ends of Drum
- ☐ 11. Check Drum label first, then reinstall Drum ass'y. (Replace at 600K--CUSTOMER CONSUMABLE)
- ☐ 12. Primary Corona -- 200-K: Clean or replace (RG1-0369-080CN) -- 400-K: Replace
- ☐ 13. Pre-Transfer Corona -- 200-K: Clean or replace (RG1-1244-000CN) -- 400-K: Replace
- ☐ 14. Transfer/Sep Corona -- 200-K: Clean or replace (RG1-1245-020CN) -- 400-K: Replace

Reinstall new or cleaned coronas

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Figure 4-28. PM Checklist (side one)

☐ 15. Clean Toner Catcher -- reinstall it
☐ 16. Cleaning Station--200-K: Clean, rotate wiper blade
--400-K: Replace entire assembly
Reinstall cleaned or new Cleaning Station
☐ 17. Developer Station: Check for damage or wear and replace the entire assembly if multiple items are worn or damaged. Otherwise, clean assembly
Reinstall cleaned or new Developer Station
☐ 18. Replace or reinstall Waste Toner assembly (box)
☐ 19. Vacuum remaining debris around the EP Area

F. Duplex Area ("D" Model only)

☐ 1. Duplex Paper Feed assembly Static Brush:
-update, if not done (RA1-6416-020CN) (S/N #5)
-replace if worn or fibers missing
☐ 2. Middle Guide assembly Static Brush:
-update, if not done (RA1-7155-000CN) (S/N #5)
-replace if worn or fibers missing
☐ 3. Replace Sensor Lamp, LA1 (WG1-0493-000CN)
☐ 4. Vacuum/Clean the entire Duplex Area

NOTE: *Do steps 5 - 16 when DUPLEX COUNTER is at 200/400-K*

☐ 5. Remove Feed Belt Assembly, Holding Tray, and Duplex Separation Unit (reference Service Manual, 6I-40/46)
☐ 6. Clean Feeder Belts and Rollers (4 ea) with Rubber Restorer
☐ 7. Clean Second-pass Pick-up Rollers with Rubber Restorer
☐ 8. Replace Lower Separation Rollers (4)
☐ 9. Replace Upper Separation Roller
☐ 10. Clean Second Pass & Registration Rollers, plastic & rubber
☐ 11. Blow out PS3
☐ 12. Clean Vertical Pass Rollers, plastic and rubber
☐ 13. Rotate Registration and Verical Pass Rollers (clutch binding)
☐ 14. Blow out PS4
☐ 15. Re-latch Lever 5A
☐ 16. Reinstall Feedbelt Assembly and Holding Tray

G. Fuser Assembly

☐ 1. Remove Fuser assembly
☐ 2. Cleaning Belt assembly:
-replace only belt if ass'y updated(RF1-0704-000CN)
-replace entire assembly if NOT previously updated
(RG1-0389-090CN) (Service Note 6)
☐ 3. Clean Thermistor and Thermoswitch
☐ 4. Fuser Rollers: If new-style, clean and then apply Fuser Oil
-update if old-style (upper: RA1-5301-000KT)
(Sevice Note 6) (lower: FA3-0623-030KT)
☐ 5. Clean black Lower Paper Guide
☐ 6. Clean rubber Rollers with Rubber Roller Restorer
☐ 7. Clean or replace Upper/Lower Separation Claws:
(FA3-0683-050CN(6) / FA2-1994-000CN(4))
☐ 8. Clean PS3
☐ 9. Inspect Static Eliminator (FA1-9723-000CN)
☐ 10. Reassemble Fuser Unit
☐ 11. Lube Gears with High-Temp Grease
☐ 12. Reinstall Fuser assembly (plug in connectors!)

H. Switchback Unit

☐ 1. Blow dust out of entire Switchback Unit
☐ 2. a. Clean all rubber Rollers with Rubber Roller Restorer
b. Inspect for grooves on flag opposite PS6 (on Inlet Guide)
☐ 3. Inspect Upper / Lower Static Eliminators
(RA1-2442-000CN / FA3-3319-000CN)
☐ 4. Inspect Switchback Springback Rollers (FF1-4771-000CN)
☐ 5. Blow out PS7
☐ 6. Inspect Feed Drive Belt for wear(8mm @ 300g)
☐ 7. Adjust Deflector gap if necessary (2mm)
☐ 8. Clean or replace Switchback Exit Springback Rollers
(RF1-0607-000CN)
☐ 9. Clean or replace Duplex Inlet Springback Rollers
(FF1-4771-000CN)
☐ 10. Blow out PS8
☐ 11. Check Deflector and corresponding rollers for ease of movement at shaft ends and updated springs(RS1-2213-000CN(2)/FS1-2370-000CN)
☐ 12. Carefully spray all gears, bushings, & bearings with Triflo
☐ 13. Add interlock Door Guide if necessary
(RA1-7035-000CN) (Service Note 7)
☐ 14. Check door latches. Adjust or replace if needed
☐ 15. Adjust Interlock Actuator, if necessary
☐ 16. Add "Push Here to Close" Label, if necessary
(02684-00026) (Service Note 7)

I. Stacker Unit

☐ 1. Blow out PS2, PS3, and PS4
☐ 2. Clean T-Belts w/Rubber Restorer or replace if needed
☐ 3. Clean Top Door Spring Rollers (5) w/alcohol or replace
☐ 4. Clean large plastic Rollers with alcohol
☐ 5. Clean Paper Guide Spring Rollers(8) w/alcohol or replace
☐ 6. Clean or replace Lower Inlet clear rubber Rollers and Springback Rollers with Rubber Restorer
☐ 7. Update inlet Static Brush with Deflector Guide, if necessary (RA1-2607-000CN) (S/N #4)
☐ 8. Inspect output Static Eliminators (2). Replace both if worn or fibers missing
☐ 9. Adjust or replace Drive Belt (8mm @ 300g)
☐ 10. *(400-K)* Delivery belt Clutch: Check for binding. Replace if needed (RH7-5007-000CN)

V. FINAL ADJUSTMENTS

☐ 1. Reinstall the following: -Duplex Rear Cover ("D" Model)
-Main Engine Rear Cover
-Upper/Lower Cassette Trays
-Left/Right Front Doors
☐ 2. Place Interlock Override Tools in PDX and Duplex right door slots ("P" and "D" Models)
☐ 3. Place paper in the PDX
☐ 4. Enable Run-in Mode (SW3 on Formatter)
☐ 5. Plug in and power-on the printer
☐ 6. Run Standard Self-Test 2 minutes. Examine Box 7 and adjust Laser if needed. If blurry print, update Laser (02684-69011--Warranty) (Service Note 9)
☐ 7. Adjust V-dark
☐ 8. Adjust leading and trailing borders , if necessary, with VR101
☐ 9. Adjust front and rear borders of Upper and Lower Cassettes, and PDX if Model "P" or "D"
☐ 10. Replace all remaining covers
☐ 11. Run Paper Path Self-Test for 5 minutes as a final test
☐ 12. Reset DIP switches to the OPEN position on the Formatter PCA (SW 12) and cycle the power

Figure 4-29. PM Checklist (side two)

Sample: LaserJet 2000 Site Logbook

The following section contains information and forms which can be copied to create site logbooks. Logbooks should be made for customers whose printer is located outside of their computer room or is connected to non-HP equipment. The logbook should be kept on the shelf located below the main print engine of HP 2684A and 2684P (non-duplex) printers. On Duplex (HP 2684D) units, place the logbook under the holding tray in the Duplex Unit.

The logbook sheets should be placed in a flexible binder and separated by tabs labeled as follows:

Table 4-6. Site Logbook

TAB LABEL	COPY FROM PAGE(S)
Operator Maintenance	Page 4-47 - 4-57
User PM Log	Page 4-58
HP Service Log	Page 4-59
Paper Movement Log	Page 4-60
Calling for Service	Page 4-61
Self Test Records	(actual self test pages)

Note

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Operator Maintenance Guide

Contents

Introduction

The LaserJet 2000 printer is engineered to provide a maximum of trouble-free operation. This sophisticated printer requires very little in the way of routine operator maintenance.

Aside from providing a reasonably dust-free operating environment, there are only a few simple tasks that need your attention. In this chapter, we will show you how to perform the maintenance needed to keep your printer in top operating condition.

Caution

The printer requires periodic maintenance (at least every 200,000 images) to be performed by trained service personnel. If this is not performed by trained service personnel, serious damage to the printer can result. See "LaserJet 2000 Support and Services Information," included in the back of the *LaserJet 2000 Operator's Manual.*

The Image Counter

The printer comes equipped with a device that automatically counts how many images have been printed. Many routine preventive maintenance procedures can be scheduled based on the number of images printed since the last maintenance. Use the image counter as your guide. HP recommends that you keep a written log of all operator maintenance, noting the number of images on the counter along with the date of the maintenance.

Figure 1 shows the location of the image counter.

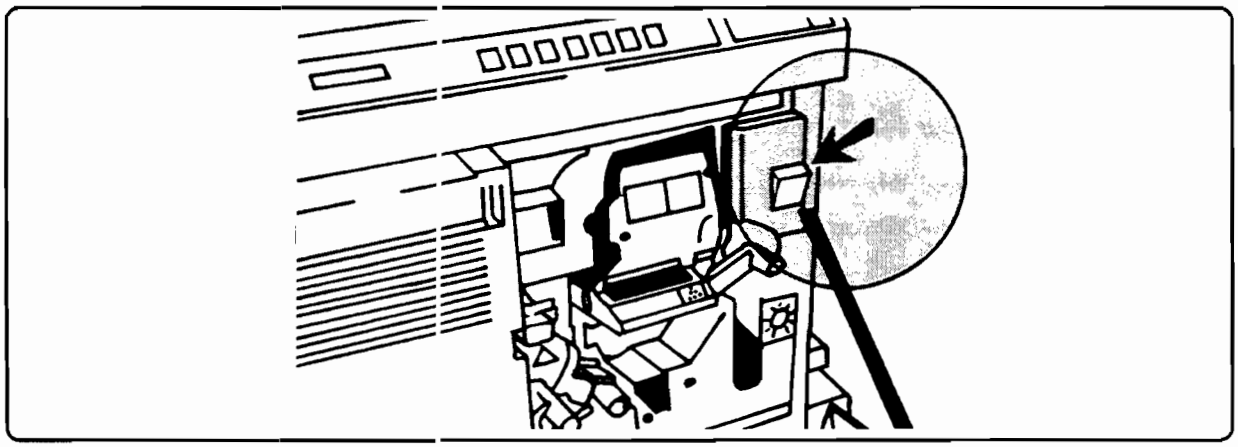


Figure 1. The Image Counter

Note

On LaserJet 2000 Model D (duplex unit) there is a second image counter in the lower duplex paper path. This is used by service personnel.

General Cleanliness

The printer should be installed in an area that is clean and dust free. It is good practice to wipe down all exposed portions of the printer at least once a week, or more frequently as needed.

If toner is accidentally spilled inside the printer, use a damp cloth to remove it.

Caution 

Do not use abrasive or solvent based cleaners on the LaserJet 2000 printer. They may damage the printer's cabinet.

Tools Required

Only a few simple tools and materials are needed to clean the printer:

- Lint-free cloths (for printer cabinet)
- Isopropyl alcohol (Do NOT use denatured or other types)
- Foam covered swabs (HP part number 9300-0468 available through HP's Computer Supplies Catalog)
- Small, flat blade screwdriver (optional)

Cleaning the Corona Assemblies

The printer is equipped with three separate **corona assemblies.** These are long metal brackets that support very thin steel wires used to generate an electrical charge. With normal use, the printer's corona assemblies attract a small amount of toner to the surface of the wires. The corona wires should be cleaned at least every 10,000 images. The entire procedure takes only a few minutes, and is described here:

Caution The wires on the Corona Assemblies are FRAGILE. Be careful when handling not to break any strands.

1. Open the printer's left and right upper front doors (there is no need to turn the printer's power off).

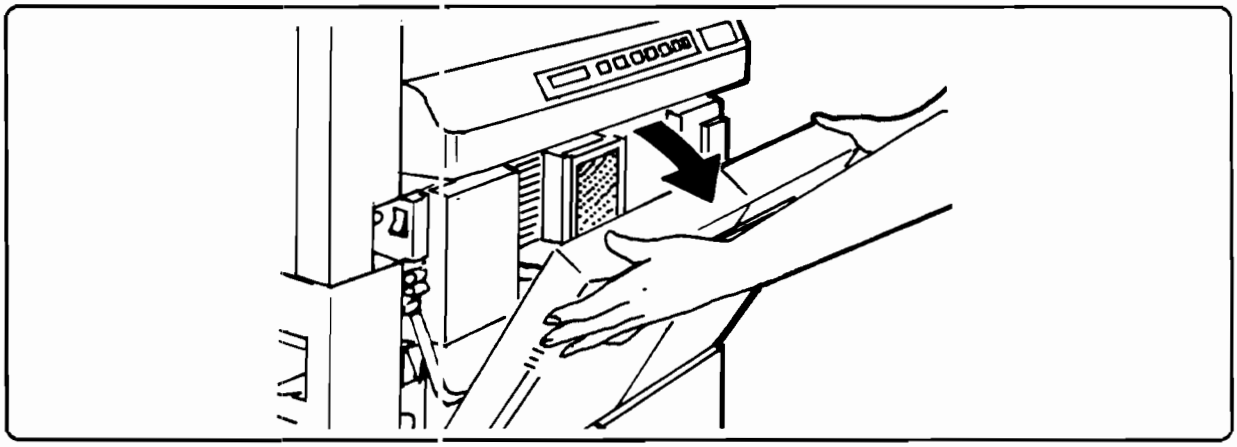


Figure 2. Opening the Front Doors

2. Locate the label pointing to the three coronas (see Figure 3).

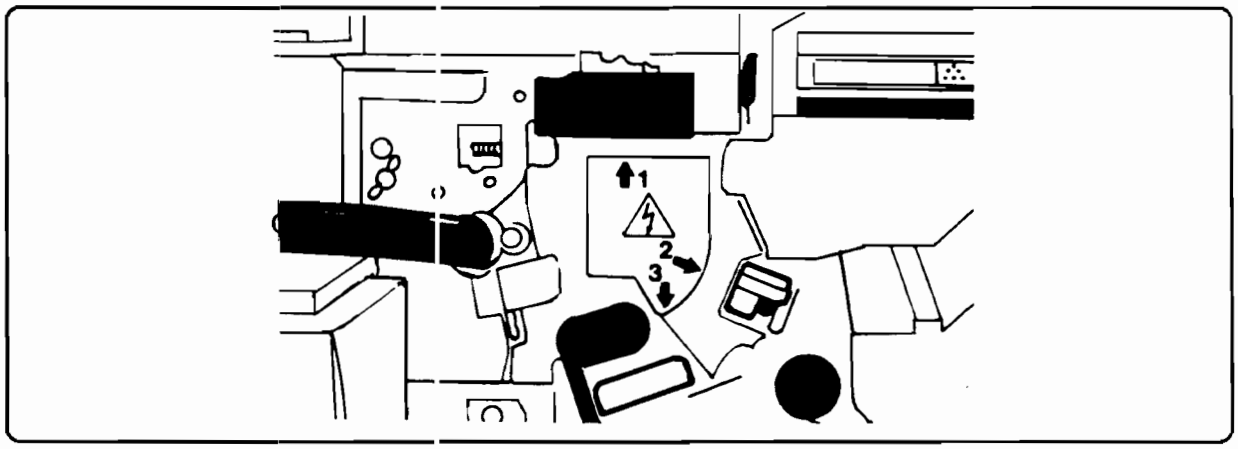


Figure 3. Corona Assembly Locations

Corona #1: Primary Corona

The primary corona assembly is located at the position marked "1" on the inside front of the printer (shown in Figure 3).

1. Grasp the green handle and gently remove the primary corona assembly by pulling it all the way out along its rails (Figure 4).

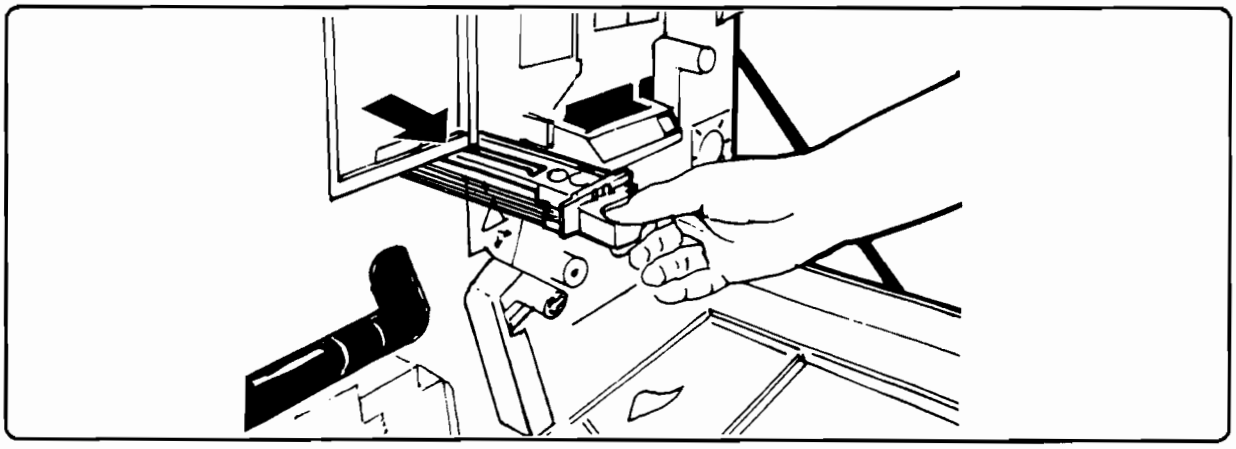


Figure 4. Removing the Primary Corona Assembly

2. Turn the assembly over, and locate the green wire cleaner attached to the handle end of the assembly. Slide the cleaner out away from the end.
3. Clean the corona wires (the inner, single strands) by wiping all the way back and forth with the wire cleaner.
4. Re-affix the wire cleaner to its original location.

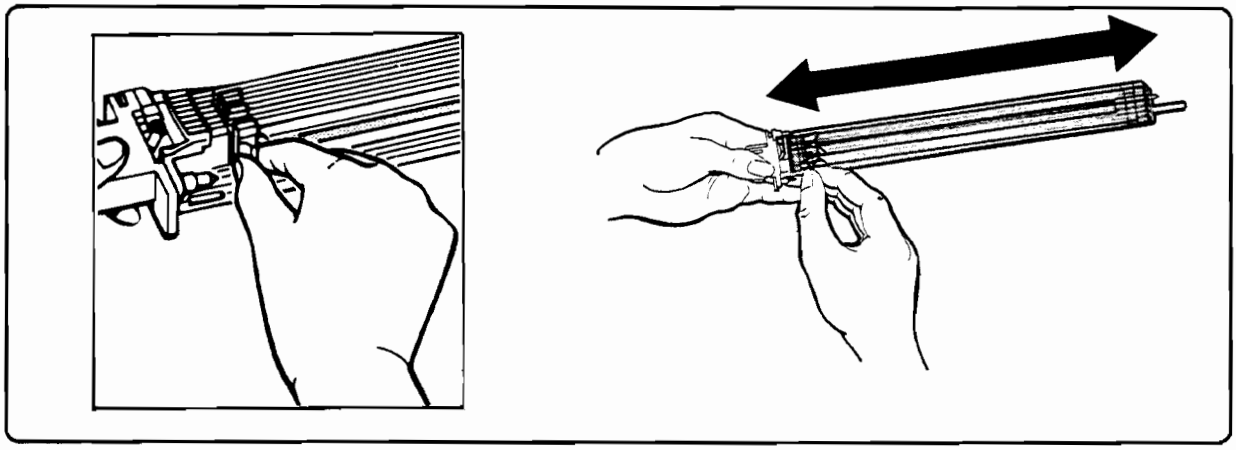


Figure 5. Using the Wire Cleaner

5. Using a foam covered swab (part number 9300-0468) dipped in **isopropyl alcohol,** wipe the grid wires (the outer group of wires) in **one direction only.** Do not wipe back and forth; this will not clean the wires correctly.

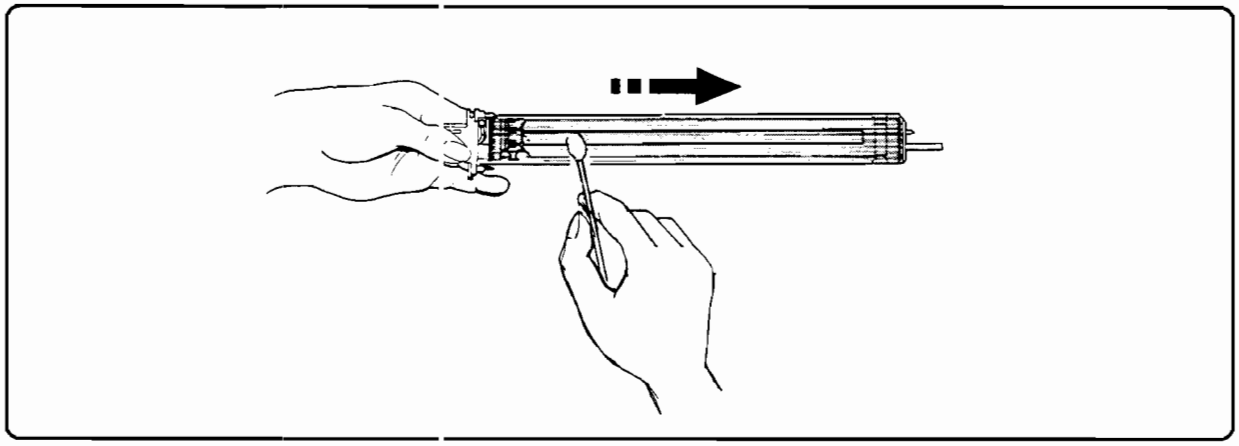


Figure 6. Cleaning the Grid Wires

6. After cleaning, turn the primary corona assembly over (grid wires down) and slide it back into place along its guide rails until it stops (see Figure 7).

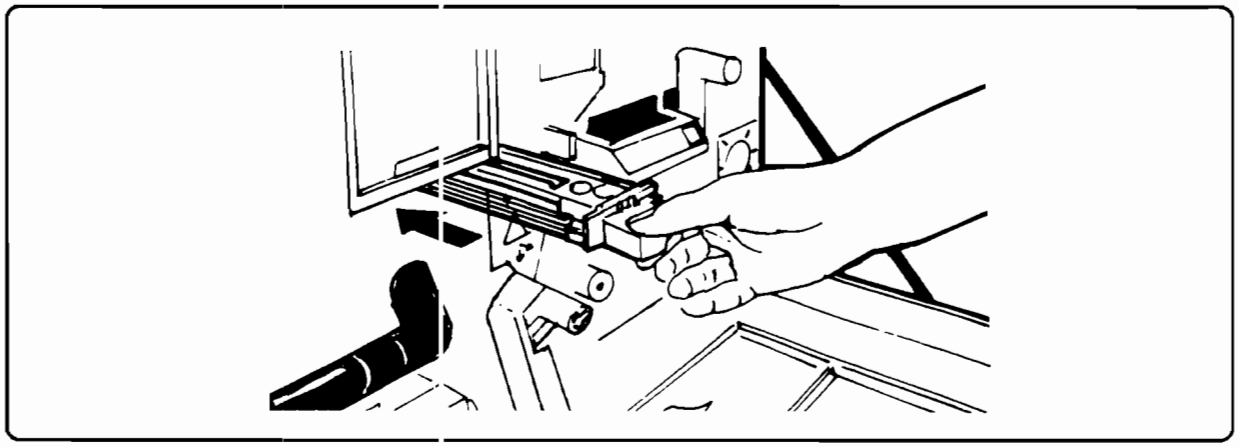


Figure 7. Replacing the Primary Corona

7. Now go to the next step, "Cleaning the Pretransfer Corona".

Corona #2: Pretransfer Corona

The pretransfer corona assembly is located at the position marked "2" on the inside front of the printer.

1. With the printer's front doors opened, grasp the handle on the end of the assembly and remove it by pulling it outward along its guide rails.

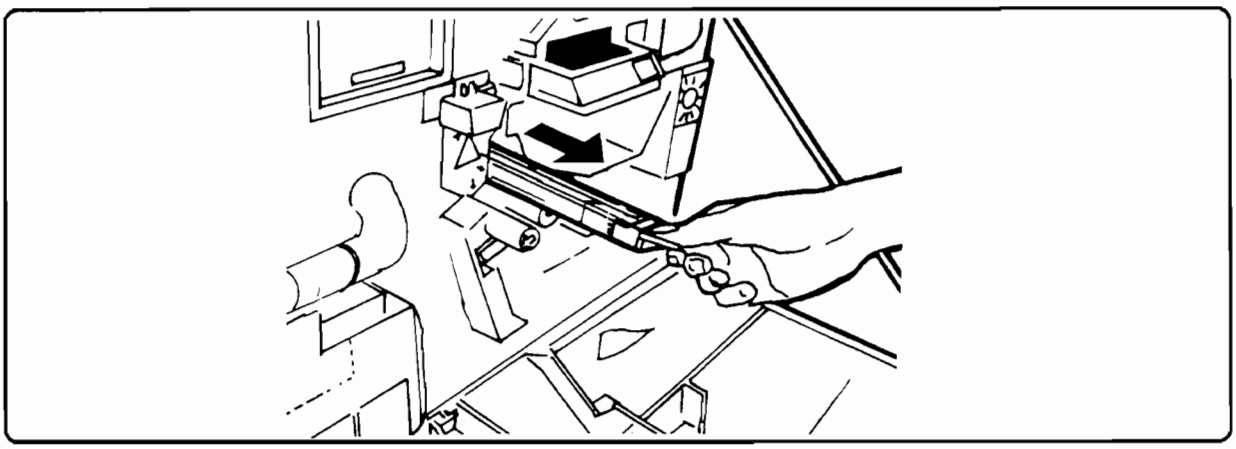


Figure 8. Removing the Pretransfer Corona

2. Using a clean foam covered swab dipped in **isopropyl alcohol,** wipe the outer grid and the inner single strand corona wires in **one direction only.** Do not wipe back and forth; this will not clean the wires correctly.

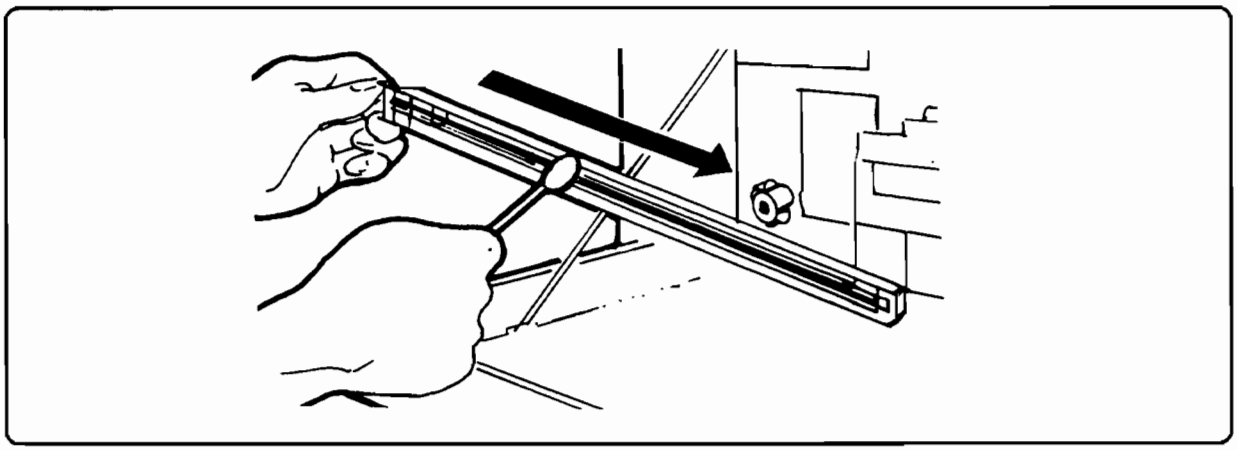


Figure 9. Cleaning the Pretransfer Corona

3. After cleaning, slide the assembly back into place along its guide rails until it stops.
4. Go to the next section "Cleaning the Transfer/Separation Corona."

Corona #3: Transfer/Separation Corona

The transfer/separation corona assembly is located at the position marked "3" on the inside front of the printer.

1. With the printer's left and right front doors opened, grasp the handle on the end of the assembly and remove it by pulling it outward along its guide rails.

Note

You may wish to open the green transfer corona lever by pulling downward and toward the left before removing this corona assembly. Both printer front doors must be opened to do this.

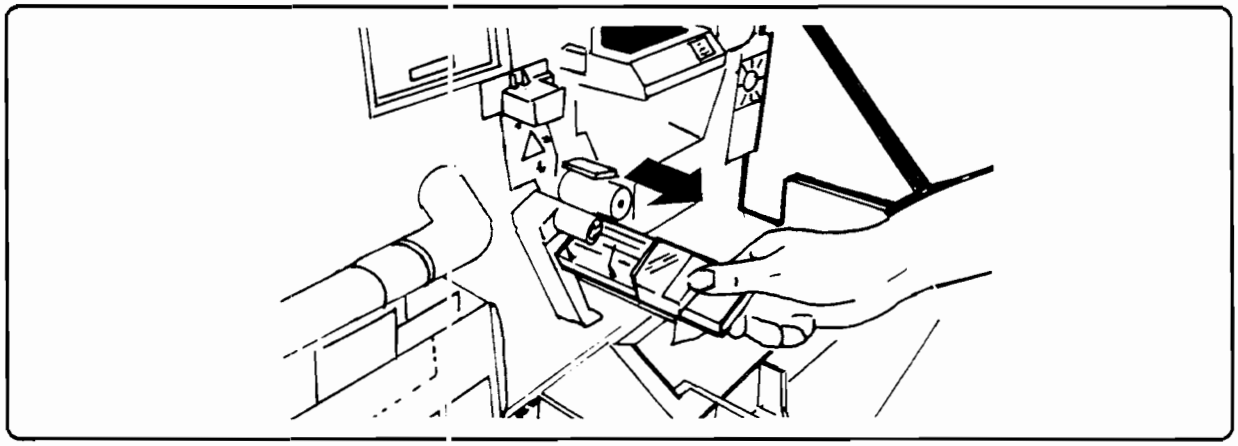


Figure 10 Removing the Transfer/Separation Corona

2. Using a foam covered swab dipped in **isopropyl alcohol,** wipe the corona wires in **one direction only.** DO NOT wipe back and forth; this will not clean the wires correctly.

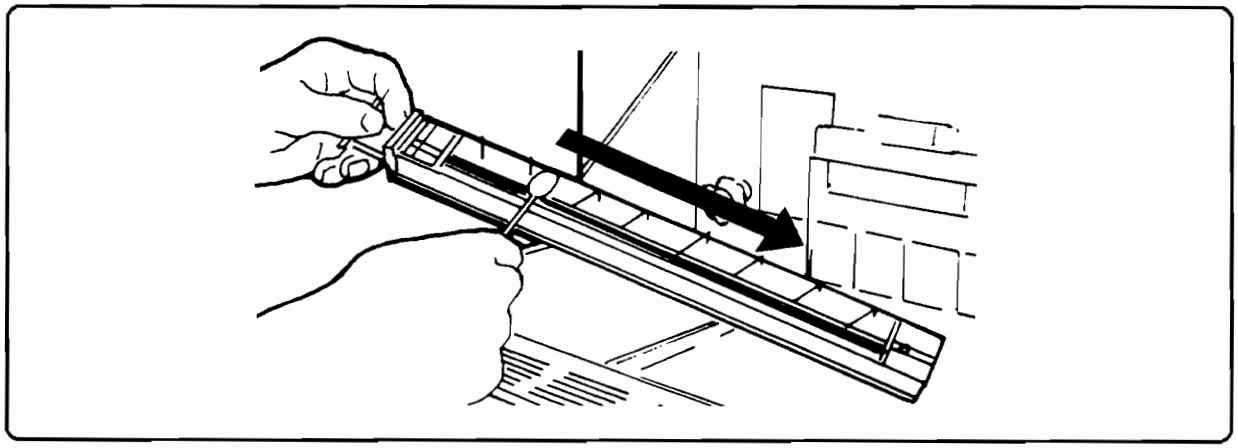


Figure 11. Cleaning the Transfer/Separation Corona

Note

One of the wires has a nylon shield over it. You can clean the wire without removing this shield by wiping between each section. If you do remove the nylon shield, be sure to replace it correctly by lining up the small tabs with the notches in the corona assembly.

3. After cleaning, slide the assembly back into place along its guide rails until it stops.
4. After all three corona assemblies are cleaned, you should clean the Fusing Roller Separation Claws (see next page).

The Fusing Roller Separation Claws

The Fusing Roller Separation Claws help to divert paper away from the heated fusing rollers. The claws are accessed by opening the delivery assembly located on the left end of the printer.

Warning **The fusing roller area gets HOT!**

1. Pull outward on the hand grip of the print delivery assembly door to open (Figure 12). Notice that the inner mechanism providing access to the fusing roller area also opens automatically. The separation claws are now visible.

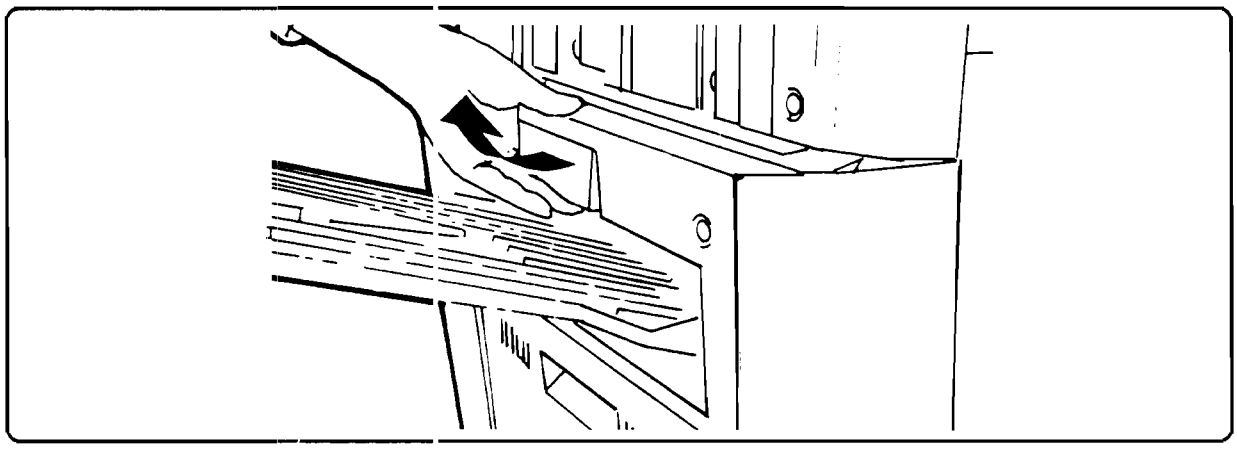


Figure 12. Opening the Print Delivery Assembly

2. Use your fingernail or a flat blade tool such as a small screwdriver to scrape any toner residue off the claws as shown in Figure 13. Be sure to clean all of the claws. There are two rows: an outer row of five black claws, and an inner row of four brown claws.

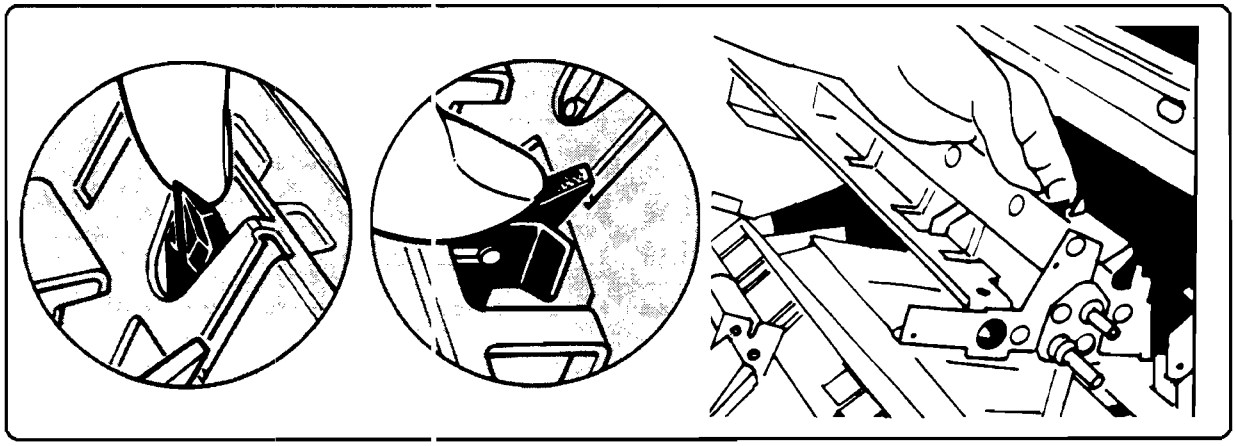


Figure 13. Cleaning the Separation Claws

3. Close the print delivery assembly.

OPERATOR'S 10,000–PAGE MAINTENANCE LOG

Perform the Printer Maintenance procedures every 10,000 pages of use to ensure optimum print quality and reliability. Refer to the section, "User PM Guide."

Call HP Service when your LaserJet 2000 reaches multiples of 200,000 pages of use (see "Calling Service"). An HP Customer Engineer will be dispatched to your site to perform major preventative maintenance work.
THIS WORK IS MANDATORY IN ORDER TO MAINTAIN RELIABLE OPERATION!

DATE	IMAGE (PAGE) COUNTER	INITIALS	DATE	IMAGE (PAGE) COUNTER	INITIALS

AAM cusmlog gal V90

Figure 4-30. Operator's Maintenance Log

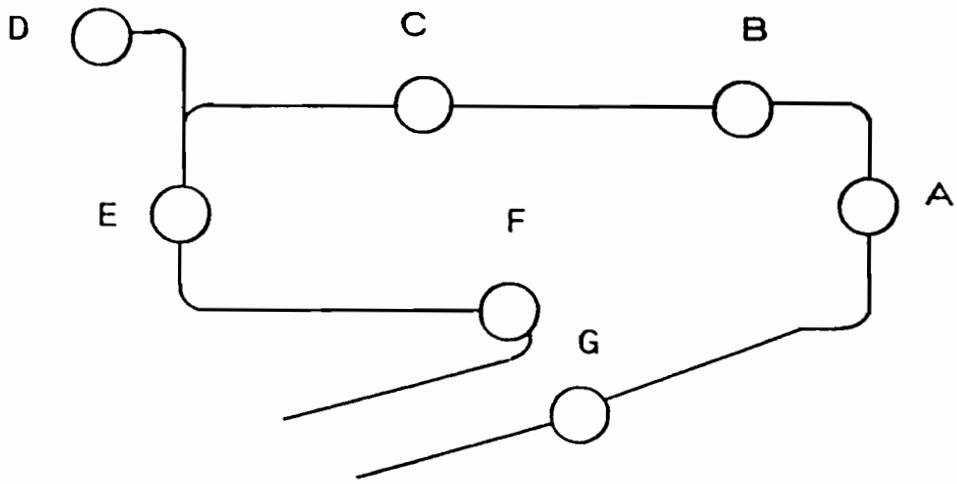
2684 HISTORY LOG

TO BE COMPLETED BY USER | TO BE COMPLETED BY HP

DRUM COUNTER	OPERATOR	HP NOTIFIED DATE/TIME	CUSTOMER SERVICE ORDER NUMBER	DOWN TIME	HP CUSTOMER ENGINEER ON SITE	DATE	TIME
Malfuction Description:			ction Required and Comments:				
Malfuction Description:			ction Required and Comments:				
Malfuction Description:			ction Required and Comments:				
Malfuction Description:			ction Required and Comments:				

Figure 4-31. HP 2684 Service History Log

PAPER JAM DISPLAY



Date/TIME.....

Error Message (13.X).....

Shade in LED's Illuminated.

Image count.....

Source of Paper Jam (PDX or Upper/Lower Tray).....

Simplex or Duplex?.....

Any Paper in Error Tray? Please retain.....

Jam Count (HP Function).....

Figure 4-32. HP 2684 Paper Movement Log

Figure 4-33. How to Place a Service Call

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Functional Overview

Introduction

This chapter reviews the major units of the LaserJet 2000 printer and provides a functional overview of those units. It is designed to provide the Service Representative with a basic understanding of the processes that occur during printing.

Major Functional Units Within The LJ2000 Printer

The printer consists primarily of *five major functional units,* as shown in Figure 5-1. Each of those units are discussed in this chapter.

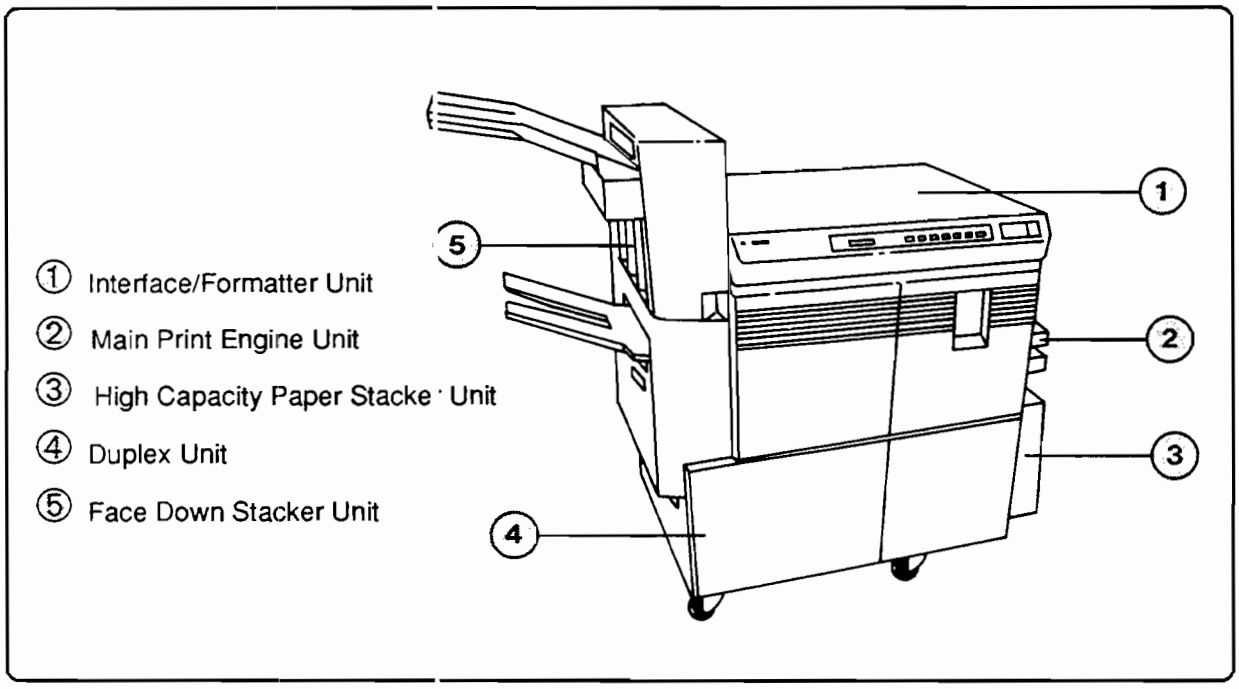


Figure 5-1. LaserJet 2000 Major Functional Units

Printer Block Diagram

A generalized functional block diagram is shown in Figure 5-2.

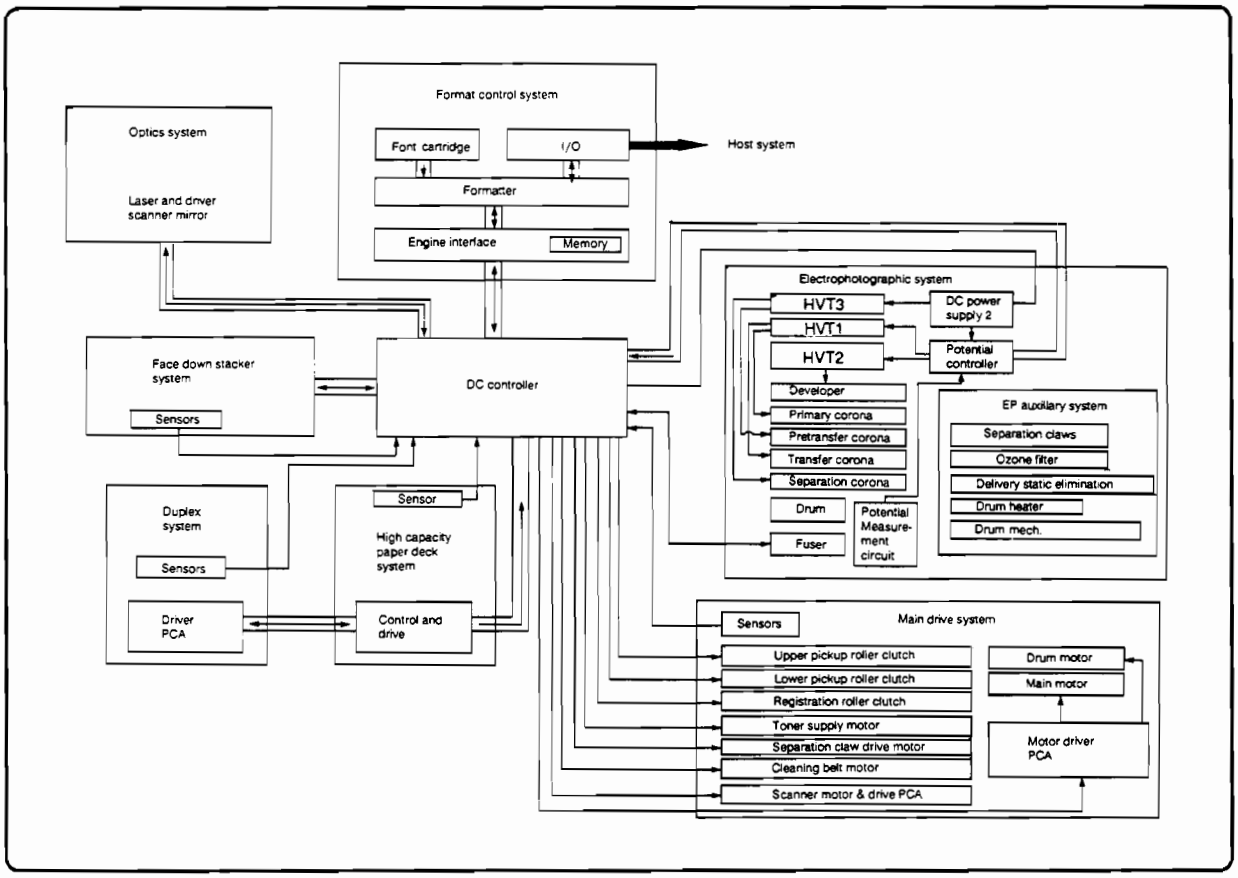


Figure 5-2. LaserJet 2000 Functional Block Diagram

About Troubleshooting

The first priority for problem troubleshooting the LaserJet 2000 printer is to achieve a **functional display panel.** The display messages will simplify troubleshooting in any other area of the printer. Troubleshooting is further classified into the following categories:

- Error Message Troubleshooting
- Paper Movement Problems
- Print Quality Troubleshooting
- System Communication Problems
- Adjustments

Only the DC Power Supply, Formatter PCA, E/I PCA, I/O PCA and the display panel are necessary to complete the basic power-up self test sequence.

Refer to Chapter 7, "Troubleshooting ' for more information.

Cover Interlocks

The HP2684 has four cover interlock systems:

- Print Engine
- Face Down Stacker
- PDX
- Duplex

These interlock systems provide two special functions:

- Disable various parts of the printer to prevent operator injury.
- Provide a feedback method to the DC Controller as to the status of jams and the operator recovery process.

Print Engine Interlocks

The Print Engine has three interlocks (switches):

- The left front door interlock (Engine-DS1) disables all of the AC loads.
- The right front door has three micro switches (Engine-MS1,2,3) which disable the +24 volt loads such as the Laser/Scanner systems, HV systems, and the motor drive systems.
- A rear cover switch (Engine-MS5) is in place to prevent injury from an accidental start-up of one of the drive motors.

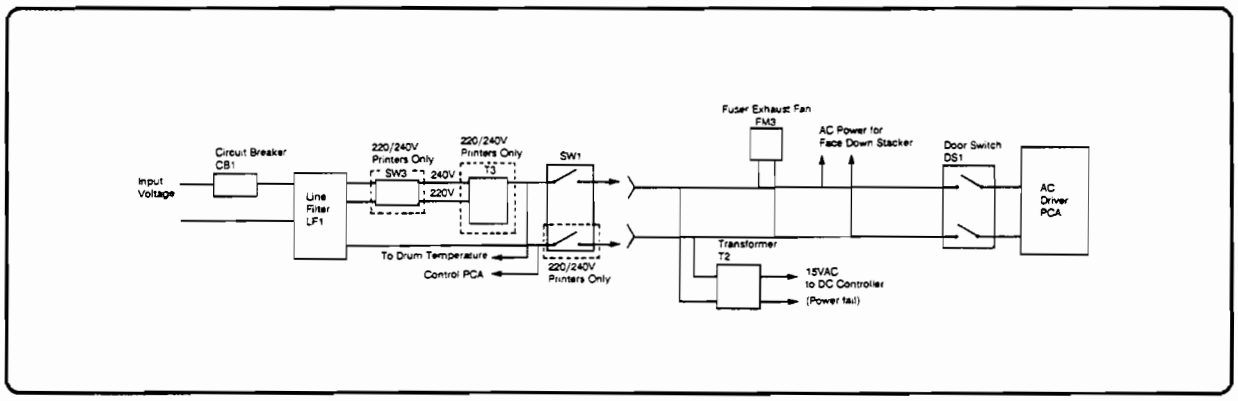


Figure 5-3. Front Door Switch Electrical Overview

Stacker Interlocks

The Face Down Stacker has three door switches (Stacker-MS3,4,5). These switches signal the Stacker Control PCA that a cover is open. The Stacker Control prevents any motor operation and signals the DC Controller, but does not disable any paper sensors. These switches are primarily for jam recovery.

PDX Interlocks

The PDX interlocks are different. Whenever the operator opens the access door, the switch (PDX-MS2) signals the PD/DU PCA and the paper elevator tray is immediately lowered. The DC Controller also signals the PDX when a cover is open in the rest of the printer and this again results in the lowering of the elevator tray. The PDX does not use the paper door switch for jam recovery in any way other than that described previously.

Duplex Interlocks

The Duplex has a single door switch (Duplex-DS1) that removes **all** AC power to the Duplex power supply and hence the Duplex Driver and all DC loads. For this reason every time the Duplex doors are opened, **all paper** must be removed from the Duplex area. The PD/DU PCA and Duplex Driver PCAs lose all communication and have no way to determine where paper is in the Duplex system. When the doors are closed the Duplex tries to initialize the paper path by causing the Duplex drive motor to operate for about 10 seconds while monitoring the paper sensors for jams.

AC/DC Power Distribution

AC Input, Print Engine Power and General Distribution

The main input power (AC) enters the print engine and is distributed to the other areas of the printer from Engine-TB1. The input line has a circuit breaker (Engine-CB1) and a line filter in the rear power module. The input power is then directed to the front main line switch (Engine-SW1) and the drum temperature control circuit.

Warning **AC power is always present on the drum heater connections whenever the line cord is connected to the input source.**

When Engine-SW1 is turned ON, AC power is applied to several loads:

1. Formatter-DCPS1
2. Engine-DCPS1 and DCPS2
3. Stacker-DCPS1
4. PDX-DCPS1
5. Duplex-DCPS1

The table below explains more about each of the DC power supplies.

Table 5-1. DC Power Supplies

UNIT	SUPPLY	CONTROL	LOADS (general)
Format Control System	Formatter-DCPS1	SW1 (Main Line)	All of the Format Control System PCAs (Formatter, E/I, I/O, Memory) & fonts.
Print Engine	Engine-DCPS1	SW1 (Main Line)	+5V, -5V, +24V, Laser, Scanner DC Controller Motor Driver PCAs.
	Engine-DCPS2	MS1 and MS2 front door sw	HV Controller, HV supply PCAs.
Stacker/Switchback	Stacker-DCPS1	SW1 (Main Line)	+24V to ALL stacker loads & PCAs.
PDX	PDX-DCPS1	SW1 (Main Line)	+24V to ALL loads in the PDX except PD/DU PCA.
Duplex	Duplex-DCPS1	SW1, & Duplex front door sw	+24V to ALL loads in the Duplex, inc. the Duplex Driver PCA.

AC Controller/Driver PCA

The AC Controller/Driver PCA has two functions:

- Distribute the AC power to the various AC loads in the Print Engine.
- Monitor the fuser temperature and provide a safety circuit in case of a hardware malfunction.

The AC Controller/Driver PCA is located in the rear, directly above the input power line cord.

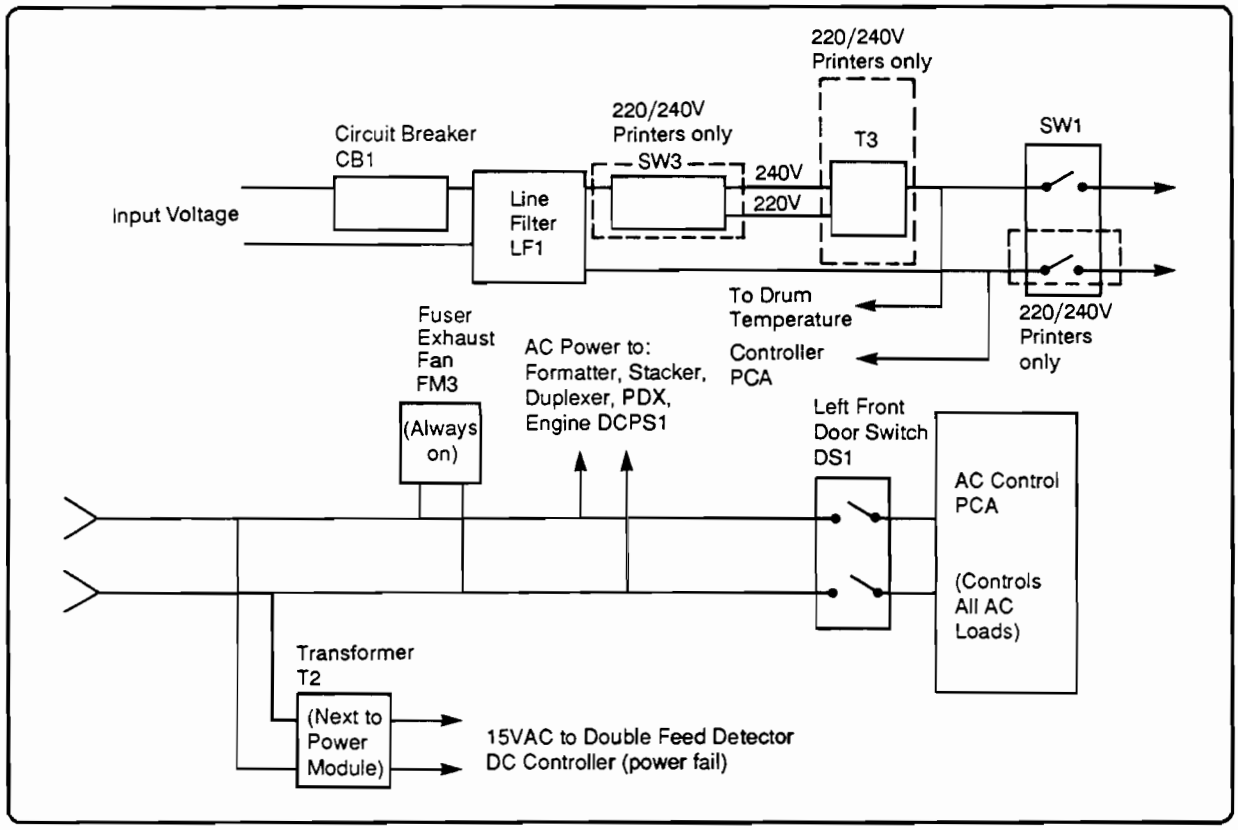


Figure 5-4. AC Voltage Distribution Schematic

The fuser safety circuit is one of the most important features of the printer. One component which must be given special attention is the fusible resistor, R311, (47 ohms, 1/4 watt - Figure 5-5). The value of this resistor has been specifically selected to act as a fuse in the case of a fuser malfunction.

Warning **Do not replace R311 with any other value than 47 OHMS and 1/4 watt. Serious damage to the printer or injury to the operator can result!**

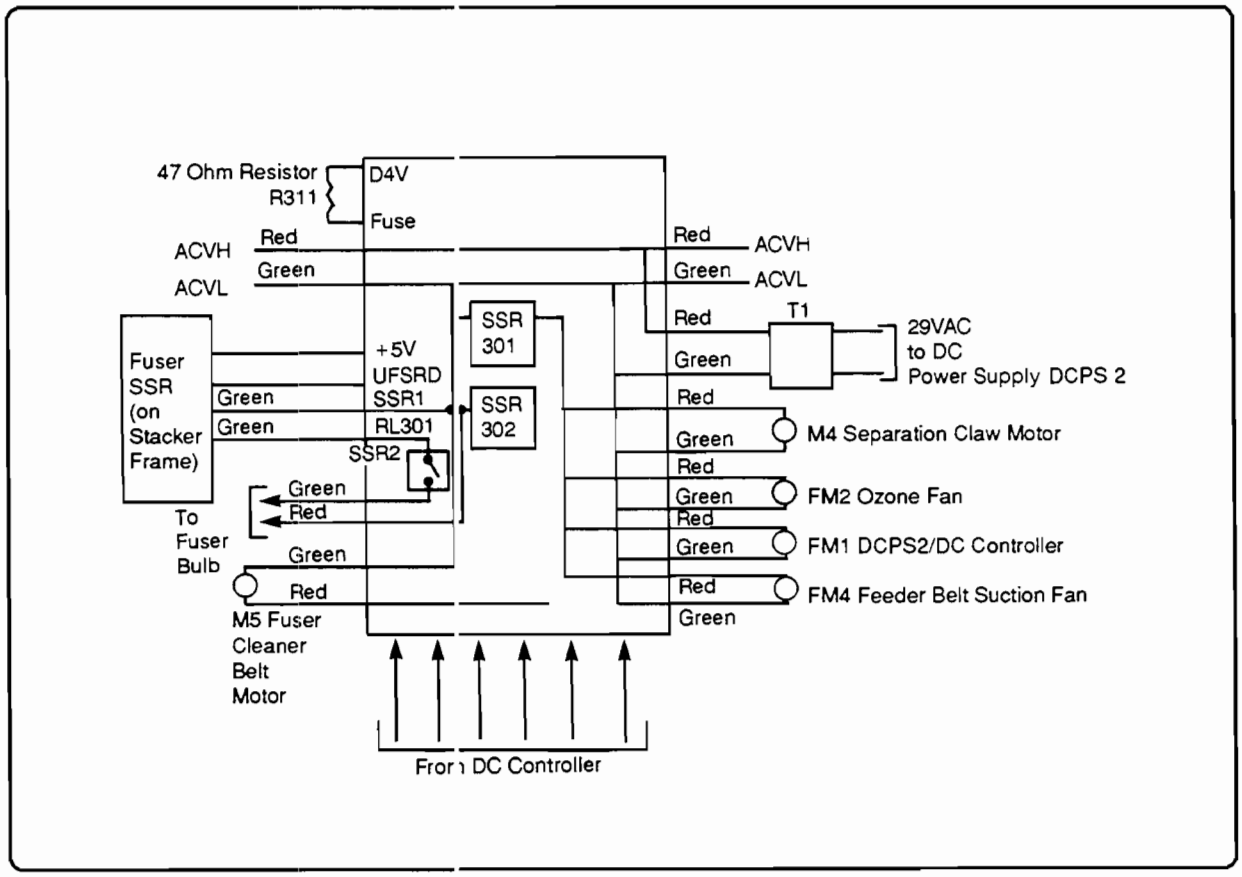


Figure 5-5. AC Controller/Driver PCA Schematic

Formatter Power Supply

The Formatter DC Power Supply receives its AC line voltage from the terminal strip in the Print Engine. This power supply can be strapped for either 120 or 220/240 VAC, and it will operate from 48 to 60 Hz.

Formatter-DCPS1 is active whenever the printer power switch is ON. The power supply voltages are sent to the Formatter PCA where they are redistributed to the various PCAs in the Format Control System.

Note

If a dead printer is encountered, the Format Control System can be disconnected and checked out without the Print Engine. By disconnecting the cable which goes to the DC Controller PCA at DC Controller J109, the I/O PCA, Memory PCA, E/I PCA and Formatter will be tested and the printer should be able to display simple messages and will perform power-up self tests.

Stacker Power Supply

Line voltage supplied from the print engine is stepped down to about 26V by transformer T101 for use by the DC power supply (Stacker-DCPS1) which rectifies and regulates to 24VDC. The 24VDC power is supplied to various loads throughout the Stacker via the Stacker Control PCA.

PDX Power Supply

Line voltage supplied from the printer is stepped down to about 26V by transformer T101 for use by the DC power supply (PDX-DCPS1) which is rectified and regulated to 24VDC.

The 24VDC power is supplied to various loads throughout the PDX via the PDX Control PCA. The PDX Control contains a +10V power supply that operates using the 24VDC supply. The +10V output powers the control circuits of the PDX Control.

The PD/DU PCA operates with +5V supplied from Engine-DCPS1 through the DC Controller PCA (J125).

PDX Overcurrent Protection

The 26V input line of the DC power supply is protected by a 2.5 amp circuit breaker (CB101). If excessive current flows, CB101 trips.

The 24VDC input to the PDX Control is protected by a 2 amp circuit breaker (CB1) to various loads and the +10V power supply circuit. CB1 trips if there is an overcurrent, for example, due to a short-circuit in a load.

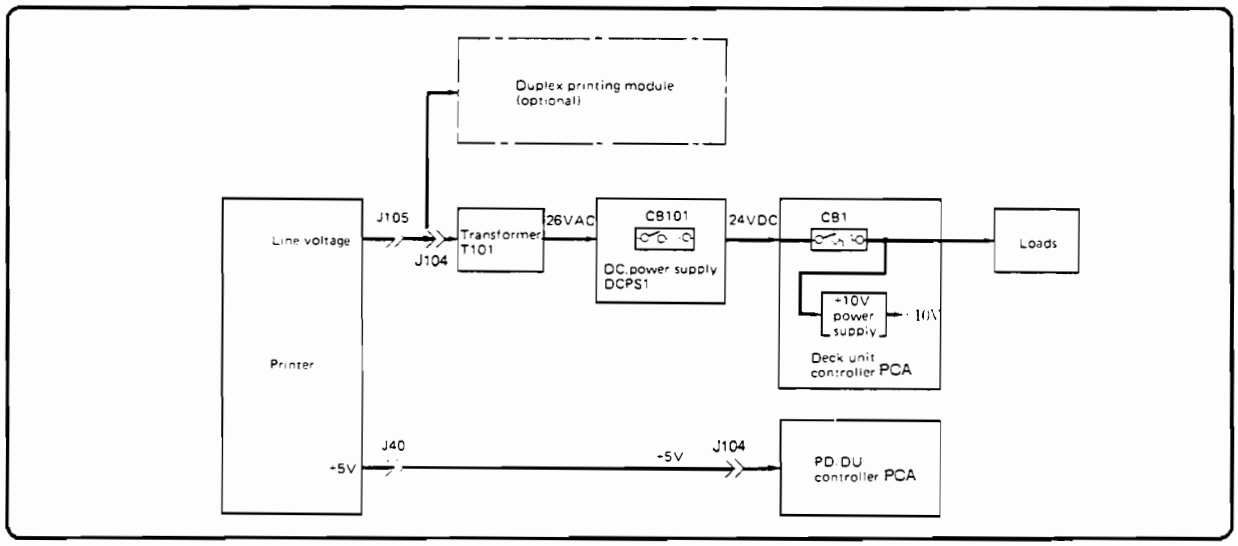


Figure 5-6. PDX Power Supply Overcurrent Chart

Duplex Unit Power Supply

When the printer main power switch is turned ON and the Duplex door switch is enabled, line voltage is supplied through the PIX unit to transformer Duplex-T1 of the duplexing unit where it is stepped down to approximately 40V. This is rectified, smoothed and regulated by the DC power supply (Duplex-DCPS1) to 24VDC which is supplied to the Duplex driver for driving the DC loads such as motors, clutches and solenoids. The Duplex Driver PCA also has a 15V power supply and a 12V power supply. 15VDC is used to power the duplexing unit drive motor speed control circuit on the Duplex Driver PCA and paper sensor Q1 of the holding tray. The 15VDC is dropped by a resistor to 5V for lighting the holding tray paper sensor lamp (Duplex-LA1). The 12VDC is used to power the tacho-generator in the duplexing unit drive motor.

Duplex Overcurrent Protection

The DC power supply (Duplex-DCPS1) is a switching type regulator with an overcurrent protection system that functions automatically if the output current is excessive. If it cuts off, service can be resumed by opening the front door of the duplexing unit (thus switching OFF the door switch (Duplex-SW1), correcting the malfunction and, after one minute or more, closing the door to actuate the door switch again. If the short circuit continues, and power is repeatedly switched on by opening and closing the door, the fuse in the DC power supply may blow.

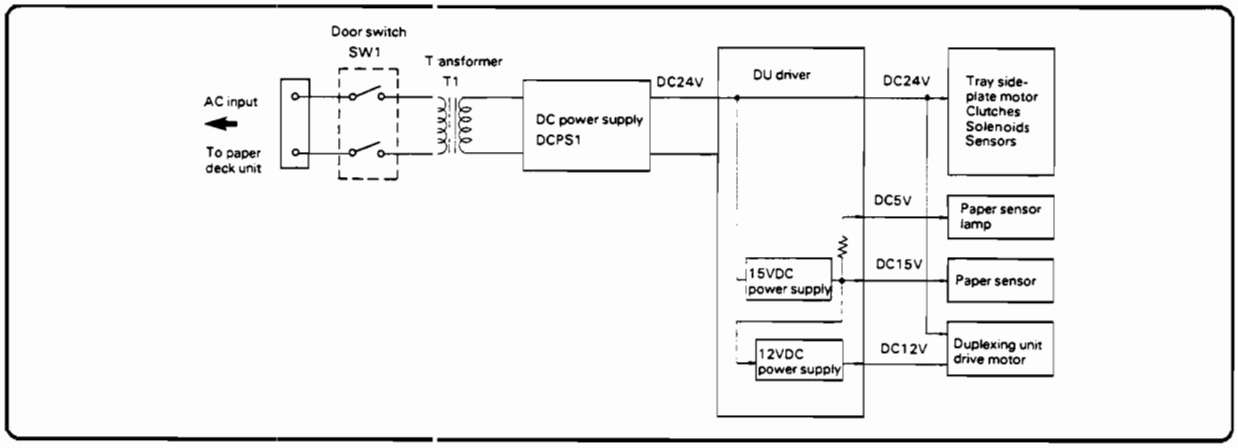


Figure 5-7. Duplex Power Supply Protection Circuit

Interface/Formatter Area

The Format Control System controls all functions of the data handling and host communication. The main parts of the Format Control System are the I/O PCA, Formatter PCA, RAM Memory PCA, Engine Interface PCA (E/I), and the Formatter DC Power Supply.

I/O PCA

The I/O PCA controls the hardware handshake with the host computer system and connects directly to the Formatter PCA. There are two switch banks on the Formatter PCA (S12 and S14) which control the I/O operation. DC power (+ and -12V) for the receiver/driver lines is developed on the Formatter PCA with a DC to DC converter and is supplied to the I/O PCA through it's PCA connector.

The I/O PCA controls data transmission between the host and the Data Processor on the Formatter. The interface type and protocol selection is made via the Formatter switches S-12 and S-14 and transferred to the I/O PCA and verified. With all of the different I/Os available, the Formatter must keep track of which type is installed and adjust it's firmware for proper communications.

Note

Formatter switches S12 and S14 are read on power-up. If the switches are changed, the printer must be powered OFF then ON to read the new switch settings.

The following I/O's are available:

- RS232/422 (selectable)
- Centronics (parallel)
- Data Products parallel short lines
- Data Products parallel long lines

I/O Diagnostic LED

The I/O PCAs have an LED that can be used to diagnose the board's functionality. ON power-up, the I/O PCA runs an internal sub-test. Table 5-2 shows the meaning of various LED states:

Table 5-2. I/O LED Error Conditions

LED	ERROR DESCRIPTION
1 - 2 Hz flash	Interface operating correctly.
5 Hz flash	Passed I/O subtest but failed to communicate with the Formatter (or possibly the external interface).
Steady ON or OFF	Interface failed subtest (I/O RAM, ROM, or SIO/CTC circuit failure likely).

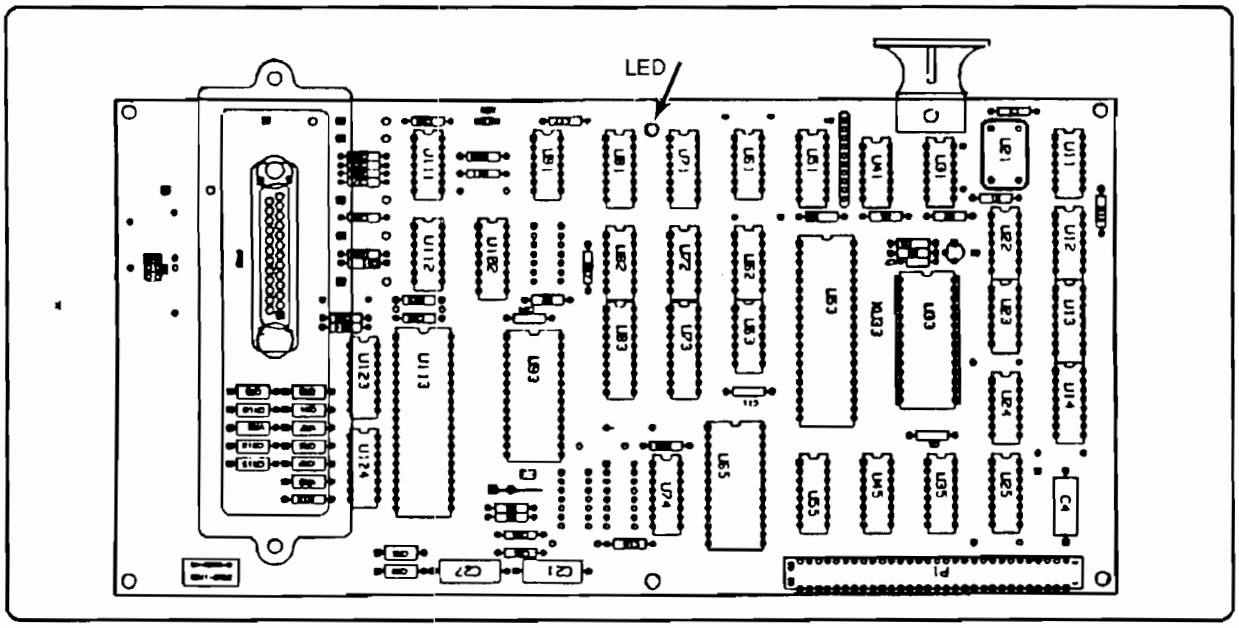


Figure 5-8. I/O PCA Diagnostic LED

Formatter PCA

The Formatter PCA controls all data formatting and print engine functions. The 68000 microprocessor chip with 512 Kbytes of program ROM, 512 Kbytes of local RAM, and 2 Kbytes of non-volatile RAM make up what will be referred to as the Data Processor (DP). The Data Processor is one of several processors that share the Backplane Address and Data Bus.

Other co-processes on the Backplane are the Image Processor, the Memory Refresh, and the Engine Interface. These devices are managed by the Backplane Bus Arbiter. Each device will be serviced when requesting the bus, according to their priority. The Engine Interface has the highest priority followed by the Memory Refresh then the Image Processor.

The Data Processor carries out it's functional duties by communicating with the Front Panel and Host I/O on the local address and data bus, and also communicating with the Engine Interface, Fonts, and RAM through the Backplane Address and Data bus. The only communication between the Data Processor and Image Processor is indirect. The Data Processor will setup image descriptors in Backplane RAM and send the Image Processor the address to retrieve the descriptors. Then the Image Processor will perform it's functional duties based on the descriptors. When the Image Processor tasks are completed, the Data Processor will be interrupted.

The functional duties of the Data Processor are to receive user data from the I/O, interpret the embedded control codes, formulate the data into page intermediate descriptions, and maintain print engine control, through the Engine Interface PCA. The Data Processor will provide, in Backplane RAM, the descriptors for action to be taken by the Image Processor.

The Image Processor is responsible for processing the print image into a bit-mapped format. The Image Processor uses 8 (256 Kbyte) font ROMs containing all of the internal resident fonts in various sizes and styles, and has access to all 5.5 Mbytes of Backplane RAM, which could contain raster graphic and/or downloaded soft fonts or special symbols for use on the page. The Image Processor also has access to three LaserJet compatible font cartridges to expand the Formatter's font library even more.

The Data Processor communicates with the Engine Interface as if it were a separate processor. The Data Processor will set up the register based Engine Interface and maintain communication with the print control and status commands of the print engine. Common print control functions include informing the Engine Interface how many words wide and rows long the page will be, and where to start accessing bit-mapped image data from Backplane RAM. Some typical status communication would be to determine what paper trays are installed and whether or not the paper has reached the drum registration rollers to begin printing.

Another important communication is keeping track of pages throughout the engine. This data is used in the event of a paper jam to assist in recovery.

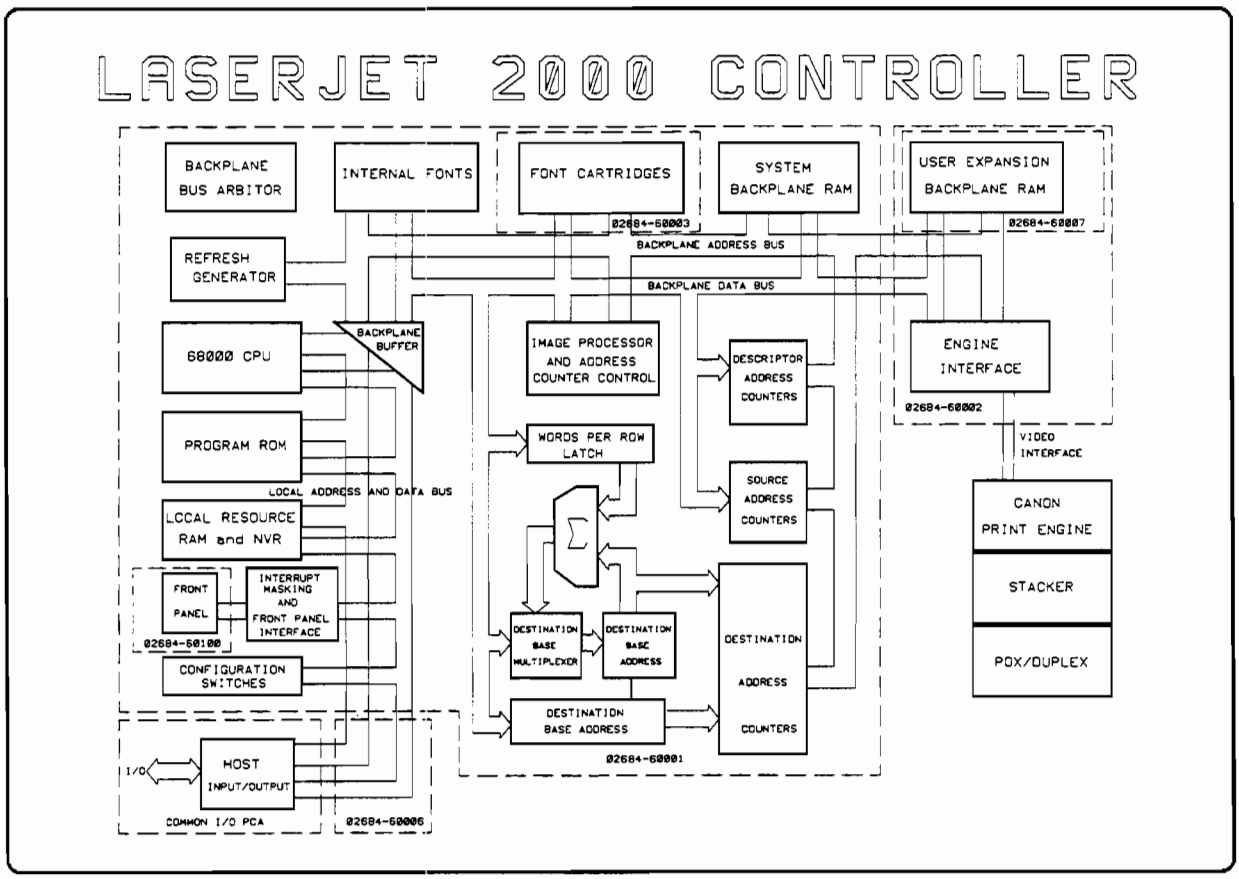


Figure 5-9. LaserJet 2000 Controller

Note

For information on the functions of the Formatter PCA LEDs and switches, refer to "PCA Switch Layouts and LEDs" in Chapter 7.

Memory PCA

The External RAM memory PCA is used to store page data and fonts which may be downloaded from the host. Also raster graphic images are stored in the RAM. 1.5 Mbytes of user addressable RAM are standard in the printer. 500 Kbytes are resident on the Formatter PCA and the external RAM memory PCA comes with 1 Mbyte of RAM installed. The installation of RAM upgrade kits allows the customer to increase the printer memory up to a total of 5.5 Mbyte of RAM (four additional 1 Mbyte kits).

Engine/Interface PCA

All communications from the print engine DC Controller go through the E/I PCA, via hardware handshake, to the Formatter PCA. The E/I PCA also sends the proper signals to the DC Controller PCA to direct or control the paper path selection, data synchronization, and status byte read back. The E/I PCA contains the necessary line buffers and hardware to serialize the data bits and transmit them to the print engine laser system. All communications to/from the print engine are routed through connector J109 on the DC Controller.

The primary function of the Engine Interface (E/I) is to retrieve the bit mapped, word-wide data from the shared backplane memory, synchronize data delivery with the vertical and horizontal aspects of the print engine, and finally to modulate the laser beam with video raster data.

A secondary function of the E/I is to provide command and status links with the print engine and the Formatter (Data Processor). The E/I handles all of the positioning of the top and left margins, line width (in words), strip and page lengths (in dot rows), and strip addresses.

The Formatter has the flexibility to divide up the total page image into strips. Each strip is processed by the Formatter then released to the Engine Interface by sending the Engine Interface the beginning of strip addresses.

The print engine beam detect (BD) signal starts each scan line of video data. PRINT starts all activity in the print engine such as picking the paper out of the tray. VSREQ signals the E/I that the print engine has properly positioned the paper at the drum registration rollers.

The engine control and status commands (duplex, tray selection, etc.) are sent via the bi-directional line (SC, status/command) and are clocked with SCLK. The process begins by the controller sending a control or status command to the engine. The serial data is sent when CBUSY (command busy) is true. The command is then processed by the engine and return status is reviewed serially when SBUSY (status busy) is true. Control and status commands are only active after CPRDY (controller power ready) is true.

The External RAM PCA connects to the E/I PCA and can be accessed by either the E/I or Formatter PCAs.

The major control blocks of the Engine Interface are illustrated in Figure 5-10. The left side of Figure 5-10 shows the input/output signals relating to the engine and the right side shows the input/output signals and buses that relate to the Formatter.

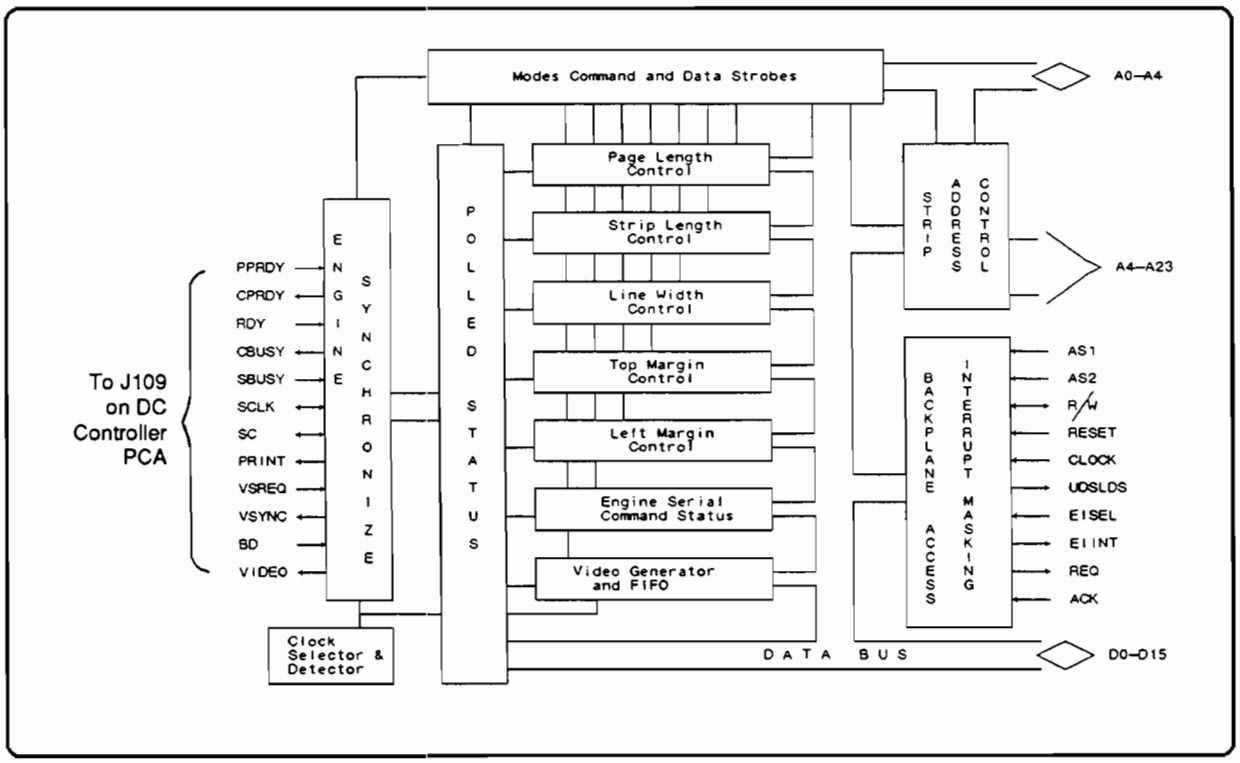


Figure 5-10. Engine Interface Block Diagram

Operator Control Panel

The Control Panel displays the current status of the printer. This is accomplished by illuminating an indicator lamp or displaying a control panel message on the printer's display window. Sometimes the printer uses a combination of these two methods.

The indicator lamps are used to notify you of such common printer conditions as ON LINE to the data source, operator ATTENTION needed, and DATA from the host computer in transmission or buffered in the printer's memory.

At the far left of the control panel, one or two line messages are displayed in response to current printer conditions. The display window also assists you with appropriate messages when you use the control panel (MENU) key.

Indicator Lamps

The control panel's three indicator lamps are:

ONLINE lamp: When lit, this lamp indicates that the printer is ready to receive, or is receiving, data from the host computer. In this mode only the (ONLINE) key is functional.

When flashing, the ONLINE lamp indicates that you have pressed the (ONLINE) key while the printer was printing data. The lamp will go off when the print job is completed.

To turn the printer off-line, press the (ONLINE) key. When the lamp is off, the printer is off-line and cannot receive any data from the host computer. In this mode, the other keys are functional.

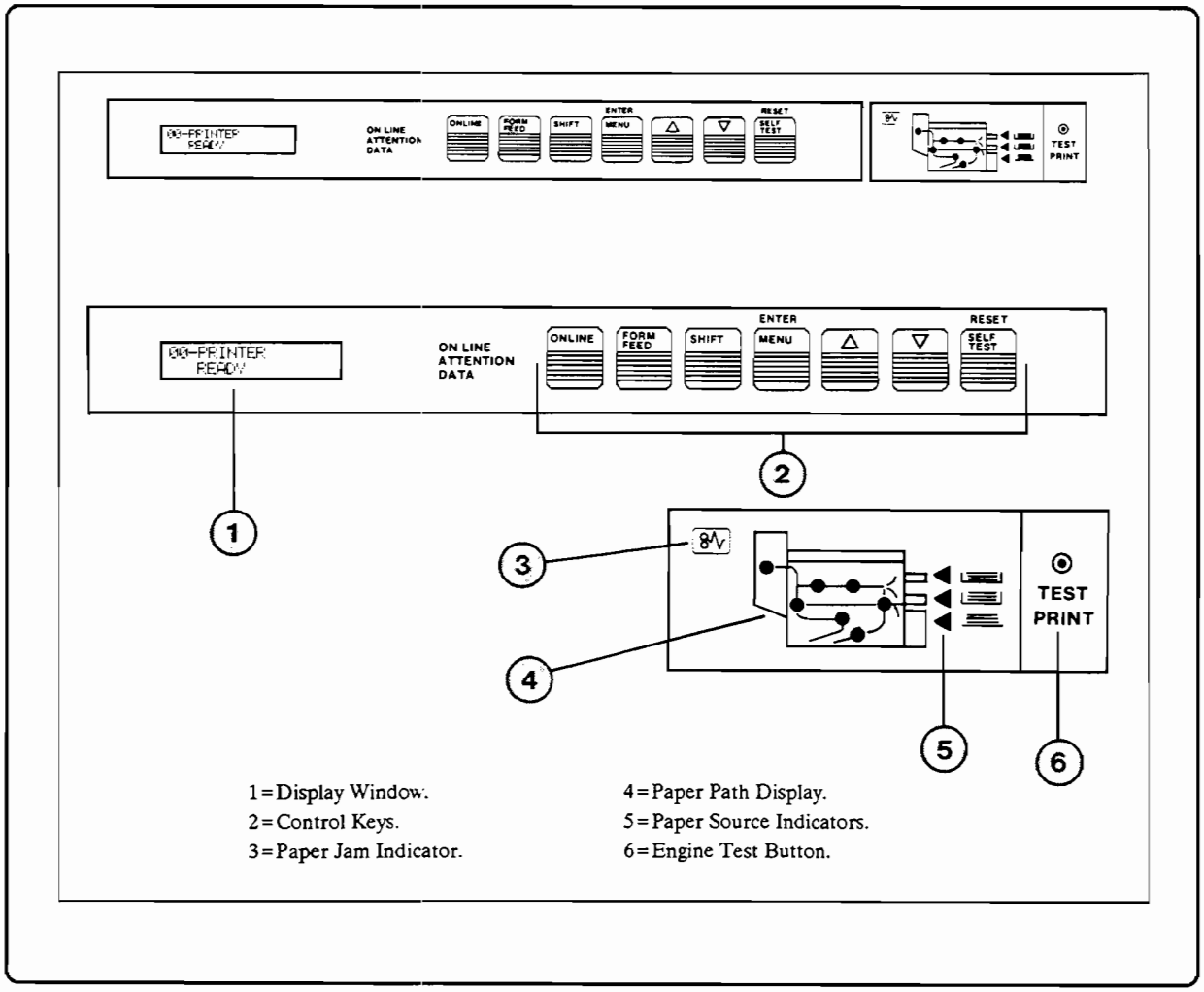
ATTENTION lamp: When lit, this lamp indicates that the printer requires attention. A message that indicates the nature of the problem appears on the display at the far left side of the control panel.

DATA lamp: When lit, this lamp indicates that data is stored within the printer and is waiting to be printed. When the DATA lamp flashes and the ONLINE lamp is lit, data is being received from the host computer.

Keys

In addition to the indicators, the control panel provides several keys that allow you to perform such functions as:

- Take the printer on or off line (ONLINE key).
- Send a form feed command (FORM FEED key).
- Perform a self test on the printer (SELF TEST key).
- Reset the printer (RESET key).
- Configure the printer (limited configuration using the MENU, ENTER, ▲, ▼ and SHIFT keys).



1 = Display Window.
2 = Control Keys.
3 = Paper Jam Indicator.
4 = Paper Path Display.
5 = Paper Source Indicators.
6 = Engine Test Button.

Figure 5-11. Operator Control Panel

Self Tests

Several diagnostic self tests can be run from the Operator Control Panel. All self tests can be run as "one-time only" or as **continuous** self tests. Continuous self tests are invoked by holding the (SELFTEST) key down for about five seconds, until the test number on the display panel changes to 04. Continuous self tests will run until the (ONLINE) key is pressed to exit.

Operator Mode Test

A standard self test is invoked in "operator" (non-CE) mode by taking the printer off-line and pressing the (SELFTEST) key.

Self Test Formatter Information

The following Formatter information is printed on the self test print-out:

1. Operator Control Panel default configuration, including:
   - Default paper size.
   - Secured paper source.
   - Default page orientation.
   - Default form length.
   - Default primary and secondary fonts.
   - Attendance bell on or off.
   - Automatic continuation on or off.
   - Job separation on or off.
2. Firmware datecode.
3. Approximate memory configuration (user memory only, the strip memory and firmware static memory are not counted in this total).
4. An indication whether any font cartridges are installed or not.
5. Installed options, i.e., duplex unit, paper deck (PDX).
6. I/O type and configuration.

CE Mode Tests

When the printer is placed in CE mode, there are a variety of self tests available from the front panel. Table 5-3 (next page) lists these self test and other service functions available by setting switches S12-1 through S12-4 on the Formatter PCA.

Note

When in CE Mode, error messages will not display normally. Always disable CE Mode before returning the printer to the customer.

Table 5-3. Formatter Switch S12 Service Functions

Switch	Function
S12-1	**FP (Flush Pages)** With S12-1 in the "ON" position: 1) all pages will be flushed from the paper path of the printer when an "ESC E" is received and a new Double Feed Detect Sensor reading will be taken from the next sheet fed from any paper source. Leaving this switch set to the "ON" position could severely affect printer throughput.
S12-2	**CE (Customer Engineer)** With S12-2 in the "ON" position, access is granted to CE functions. When in "CE" mode, the printer's JAM COUNT will be displayed on the first page of the standard selftest. In addition, several different stand alone selftests are made available for front panel selection: ■ PAPER PATH: 12 pages are printed, 4 from each source, two of which (from each source) are duplexed. ■ MEMORY REPORT: Shows where data is loaded into the printer's memory. Not useful for troubleshooting. ■ NON-PRINTING: Tests the Formatter's ability to communicate with the print engine. Does not move paper. ■ GLOBAL RAM: Tests the printer's RAM for errors by writing a known pattern and reading it back. Displays failing chip address if error encountered. ■ E/I PCA: Tests the Engine Interface PCA ■ IMAGE PROCESSOR: Tests the Formatter's image processor section. Replace the Formatter PCA if failure is detected. ■ I/O PCA: Tests the installed Input/Output PCA by sending a known pattern through the PCA and looping it back. The above tests are invoked using the MENU and SELF TEST keys.
S12-3	**RI (Run In)** With S12-3 (RI) and S12-2 (CE) both "ON", the printer enters Run In Mode when the printer's PAPER PATH self test is selected from the front panel. Run In Mode prints 180 images (120 pages). 40 pages are printed from each paper source, 20 of which are duplexed. Run In Mode is quite useful when troubleshooting/verifying paper jams.
S12-4	**CS (Cold Start)** When S12-4 (CS) is "ON" and the printer is powered up, the printer will reset all front panel configurations to the default state of: (Letter/A4 paper), Secure Source=OFF, Orientation=Portrait, Form Length=60, Primary/Secondary character set=0, Attendance Bell=ON, Auto-Continue=ON and Job Separation=ON. Additionally, cold starting the printer will reset the JAM COUNT to zero.
S12-5 - 8	Used for installed I/O configuration. See Chapter 3, page 3-3 for proper switch positions.
Switch S14	All S14 switches (1-12) are used for installed I/O configuration. See Chapter 3, page 3-3 for proper switch positions.

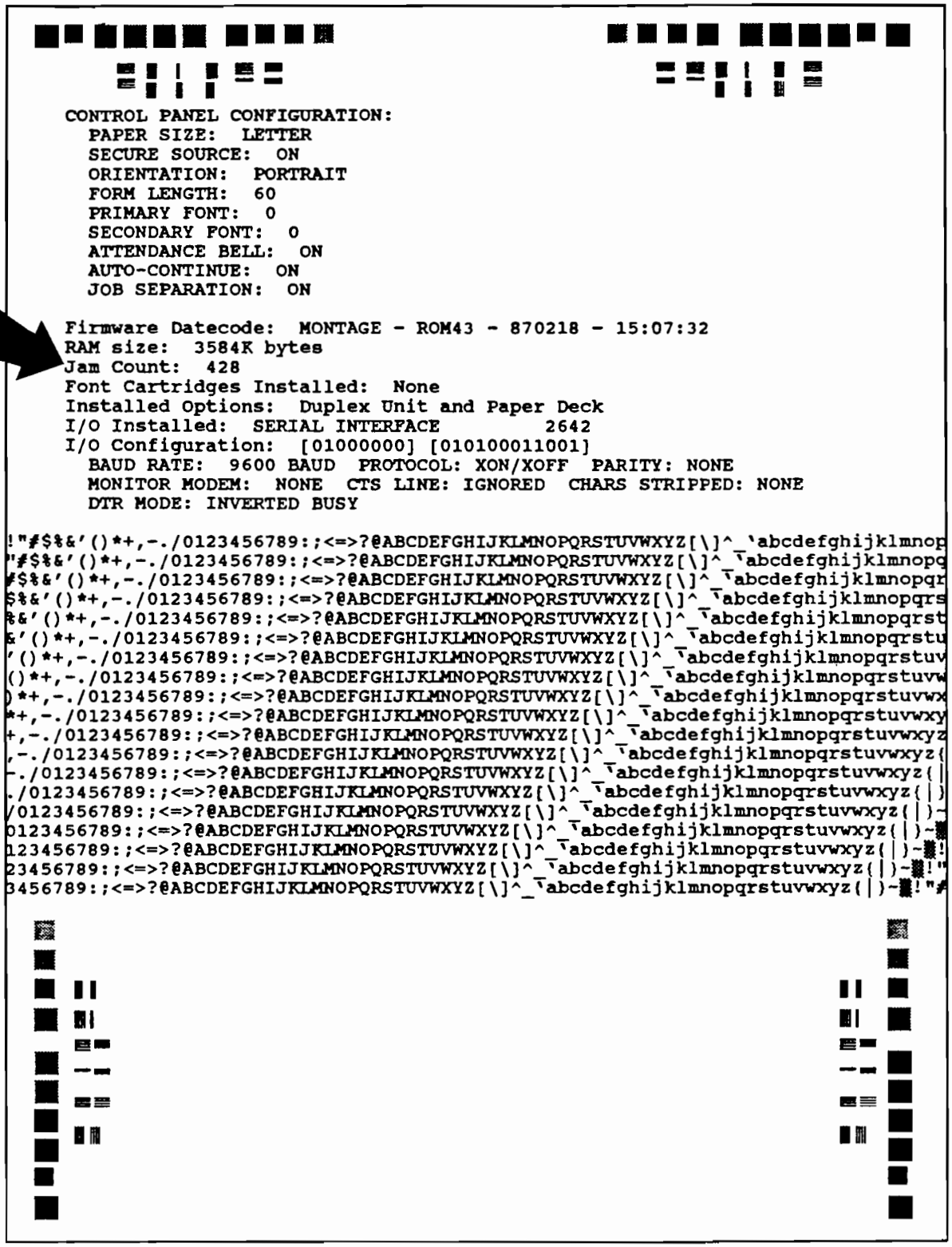


Figure 5-12. Sample CE Mode Standard Self Test (page 1 of 5)

Print Engine Unit

The print engine is comprised of four major systems:

- **The DC Controller System:** This controls all major electrical components of the printer.
- **The Optics System:** This is the laser light source and its associated lenses, mirrors and other circuitry.
- **The Electrophotographic System:** This consists of all the assemblies and components that carry out the actual image exposure, development and fusing.
- **The Auxiliary Systems:** These are such things as fans, filters, drum heater and image counters.

Each of these major systems of the print engine unit are discussed in this section.

Figure 5-13 is a generalized block diagram of the print engine's major PCAs.

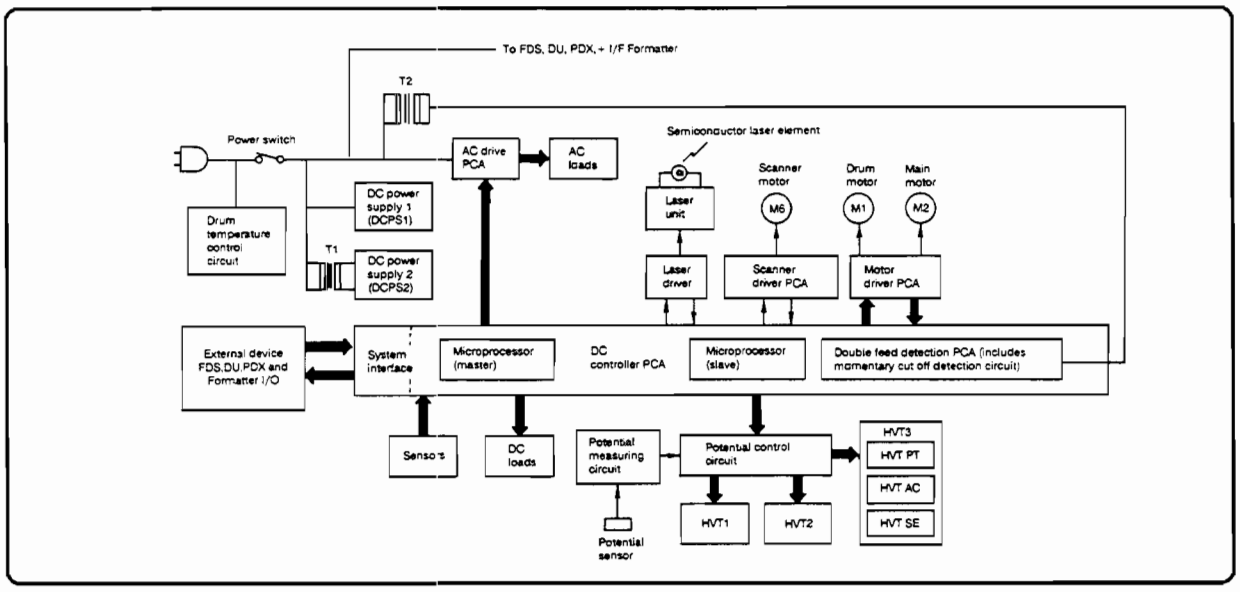


Figure 5-13. Print Engine Major PCAs Overview

DC Controller

The DC Controller system controls all print engine operations; it communicates with and controls the starting/stopping operations of the stacker, PDX and Duplex assemblies. It communicates with the Formatter assembly returning status bytes and executing print commands as required by the application program.

Major electrical components of the printer are controlled by the Master and Slave microprocessors ("CPU Master" and "CPU Slave" PCAs) mounted on the DC Controller PCA. The Master microprocessor controls all of the printer communications. It communicates directly with the Slave microprocessor. It uses an internal serial interface to communicate with the Stacker, PDX/Duplex, and the Jam display panel. The Master microprocessor receives the PRINT command from the Formatter assembly and controls all printer synchronization. The Slave microprocessor directly controls all of the print engine functions; AC loads, laser, scanner, motors, paper path loads, paper sensing, and high voltage systems.

Basic Sequence of Operation

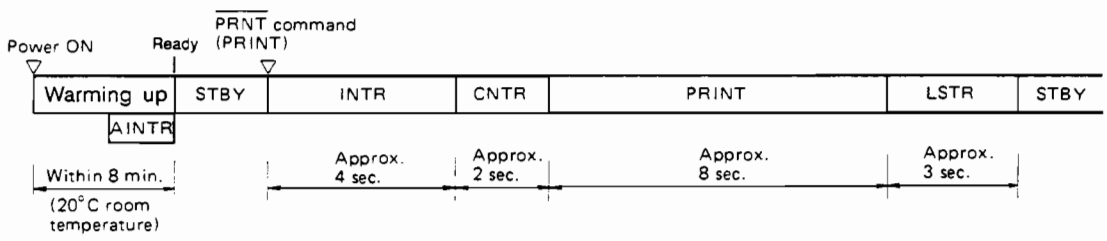
The microprocessor of the DC Controller PCA outputs commands to drive the electrical components of the Print Engine. The microprocessor functions as a sequence controller. When a PRINT command (PRNT) from the Format Control System is received by the DC Controller, it starts the drum motor. When the drum motor rotates, photo interrupter PS2 generates clock pulses. The microprocessor counts the clock pulses to determine elapsed time from starting an operation and outputs drive commands for the electrical components at the required times to synchronize received data to the physical drum location.

Warm-up Period

The warm-up period is the time from switching the Print Engine power ON until the temperatures of the upper fusing roller and the laser unit reach their correct values. The warm-up of the upper fuser roller takes approximately 8 minutes (when the ambient temperature is 20° C (68° F).

When the Print Engine power is switched ON, the upper fusing roller heater and the Peltier element of the Laser assembly are turned ON to begin heating the upper fusing roller and the Laser Unit. At the same time, the scanner motor starts rotating. During the warm-up period, the 02-WARMING-UP message is displayed. The Operators Control Panel is not operational during this period.

When the temperature of the upper fusing roller, the laser unit and the speed of the scanner motor reach their correct values, the display changes to 00-PRINTER READY, provided that no other status is pending. The control panel's keys are now operational and the printer is now "on line."



Note: This sequence is for making a single A4/Letter size print.

Figure 5-14. Warm-up Time Limits

AINTR (Additional Initial Rotation)

The main motor begins turning when the temperature of the upper fusing roller reaches 150°C and continues until it reaches 180°C. This is to assure uniform temperature of the fusing roller surfaces and to prevent cleaning roller marks on the photosensitive drum. This period is called ADDITIONAL INITIAL ROTATION.

STBY (Standby)

When the warm-up period is finished, the 00-PRINTER READY message is displayed. This condition is called STANDBY and indicates that the Print Engine is on-line and ready for printing.

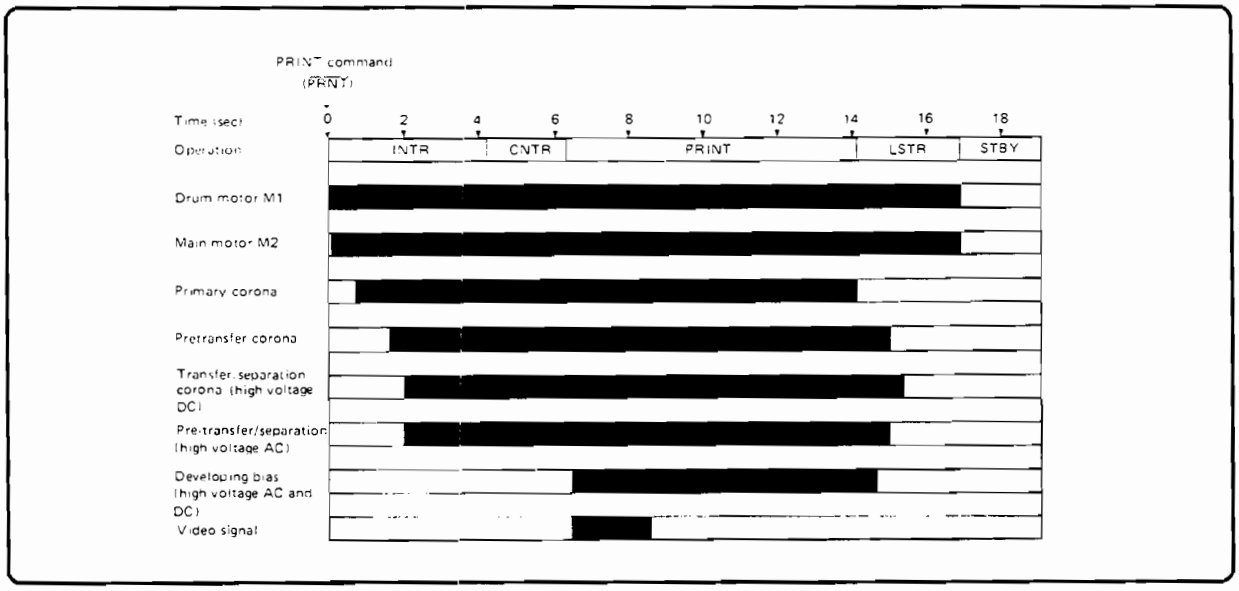


Figure 5-15. Image Formation Sequence

INTR (Initial Rotation)

When the PRNT signal is transmitted from the Format Control System to the DC controller, the DC Controller outputs the DRUM DRIVE command (DRMD) and the PRECONDITIONING EXPOSURE LED ON command (PEXP). These commands start the drum motor and light the preconditioning exposure LEDs. When the drum motor starts rotating, the photosensitive drum and its clock pulse generator also start rotating. The microprocessor counts the clock pulses and outputs the PRIMARY CORONA ON command (HVPR), PRETRANSFER CORONA ON command (HVPTR), TRANSFER CORONA ON command (HVTR), SEPARATION CORONA ON command (HVSE) and the PRETRANSFER/SEPARATION CORONA AC ON command (HVAC). By operating the coronas in the above order, the photosensitive drum is uniformly charged to avoid uneven density of the printed image.

CNTR (Control rotation)

The primary corona current is adjusted automatically during this period so that the photosensitive drum is charged to a uniform surface potential by the primary corona. This prevents variation in the electrostatic latent image due to environmental effects.

PRINT (Rotation)

The DC Controller receives the video signal (VDO) from the Format Control System and converts the signal to the LASER ON signal (LSRON). This is transmitted to the laser driver to cause it to output the LASER DRIVE command (LD) to switch the laser beam ON and OFF. The laser beam is reflected by the prism mirror so that it scans over the photosensitive drum at a constant speed. The laser beam scan produces an electrostatic latent image on the photosensitive drum.

When the electrostatic latent image on the photosensitive drum reaches the developing assembly, the DC Controller outputs the DEVELOPING BIAS (AC) DRIVE command (DBAC). When the DBAC command is output, the DEVELOPING BIAS (DC) CONTROL signal (DBDC, an analog signal) sets the developing bias voltage.

The developing assembly develops the electrostatic latent image with toner to form an image on the drum. The developed toner image is charged by the pretransfer corona to facilitate image transfer, then transferred to a sheet of paper by attraction of the transfer corona applied to the back of the paper.

The paper with the transferred toner image is separated from the photosensitive drum by the separation corona and fused by the fusing assembly. The fused print is delivered to the paper tray. While printing a page, the DC controller checks for another PRNT signal from the Format Control System. If no PRNT signal is received within a specified time, the Print Engine will start the LAST ROTATION period.

LSTR (Last Rotation)

After completion of printing, the DC Controller switches the corona assemblies OFF in the following order; primary, pretransfer and then the transfer/separation corona, after which the drum motor and the preconditioning exposure LEDs are turned OFF. By switching the electrical components OFF in the above order, the photosensitive drum surface is assured of being free of residual static charges to prevent uneven image density in the next printing operation.

Note

There is a CONTROL ROTATION period (CNTR) for every printing cycle within 20 minutes of resetting the microprocessor of the DC Controller, and for the printing cycle after 20 minutes. When there is no CONTROL ROTATION period, the cycle time is reduced by approximately 2 seconds.

The microprocessor is reset in any one of the following cases:

- When the power is switched OFF, then ON.
- When the AC power momentary shut-off detection circuit detects momentary shut-off of the AC power supply (power fail).
- When the microprocessor breakdown detection circuit detects breakdown of the microprocessor.
- When the microprocessor receives a "L" CONTROLLER POWER READY signal ($\overline{\text{CPRDY}}$) (interface signal) from the Format Control System.

However, when the right front door is opened and then closed, that is, the right door switch is turned OFF and ON, there is always CONTROL ROTATION for the immediately following print. (CONTROL ROTATION is made regardless of the time elapsed after resetting the microprocessor.)

Optics System

The video signal (VDO) from the Format Control System is transmitted through the interface circuit of the DC controller PCA to the laser driver circuit. LDC uses the LSRON signal to form the LASER DRIVER signal (LD) that switches the semiconductor laser in the laser unit ON and OFF. The beam is made parallel (collimated) by the collimating lens, then spread somewhat (parallel to the axis of the drum) by the cylindrical lens.

The scanning mirror rotates at constant speed, and successively sweeps the beam across the drum, where it is focused down to a spot by the focusing lens. The laser scans from front to rear of the machine.

The photosensitive drum turns at constant speed, and the laser beam also scans across the drum at constant speed. The beam builds up a pattern of minute dots that generate an electrostatic latent image on the photosensitive drum. This image is developed to a visible image and transferred to paper to make the finished print.

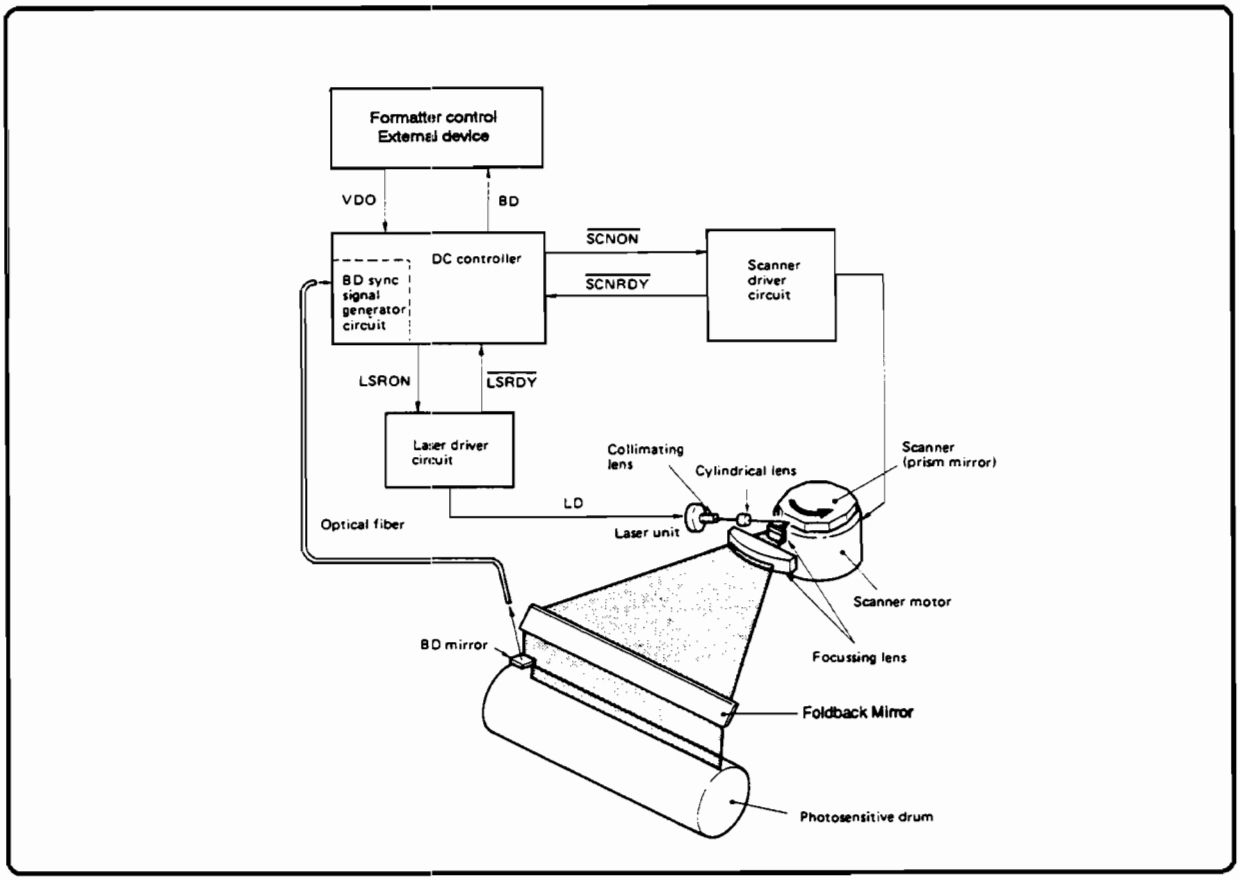


Figure 5-16. Optics System Overview

Image Exposure

The simplest (imaginary) example of image exposure is the case in which the drum motor does not rotate and the laser beam does not scan across the drum, i.e., the laser beam is focused on one point on the drum. See Figure 5-17 (1).

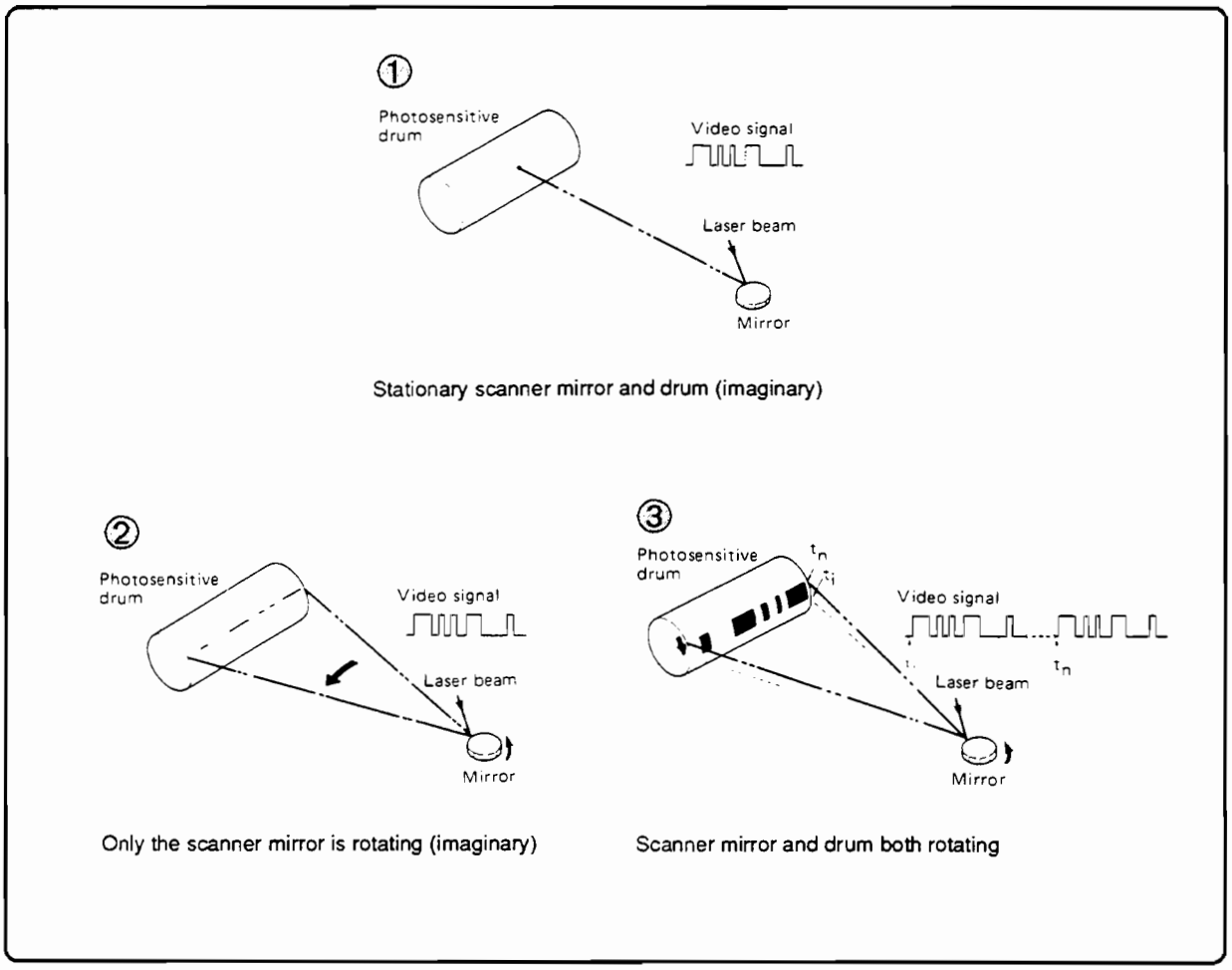


Figure 5-17. Image Exposure

Horizontal Scan

When the scanner mirror is in rotation and the laser beam strikes a face of the scanner mirror, the reflected laser beam scans (shown on the drum) from one end of the drum to the other. A broken line is produced by switching the laser beam on and off during the horizontal scan. (This occurs in response to the video signal.) See Figure 5-17 (2).

Vertical Scan

When the photosensitive drum is also rotating in addition to the horizontal scan (due to the rotating mirror), the laser beam also advances around the drum.

When the laser beam completes one cycle of horizontal scan and returns to the starting position for the next horizontal scan, the surface of the photosensitive drum has been moved by an amount proportional to the drum rotation speed ($^1/_{300}$ inch).

Thus, repeated laser beam scanning across the drum combined with rotation of the drum builds up an optical image on the drum. See Figure 5-17 (3).

Prior to commencement of printing operation, the surface of the photosensitive drum is charged to a positive potential by the primary corona. When laser light strikes the drum during the horizontal and vertical scans described above, the electrostatic charge at that location is neutralized, producing an electrostatic-static latent image on the drum surface.

There is a small fixed beam-detect mirror toward the front of the printer. As the laser beam is swept horizontally toward the starting point for printing a line of data, (the scanning start position) the beam strikes the Beam Detect mirror and is reflected to an optical fiber that transmits the light to the horizontal SYNC signal generator circuit (of the DC Controller PCA), which produces the BEAM HOME POSITION signal (BHP) in response. The BHP signal is shaped and transmitted as the BD signal to the Engine/Interface PCA.

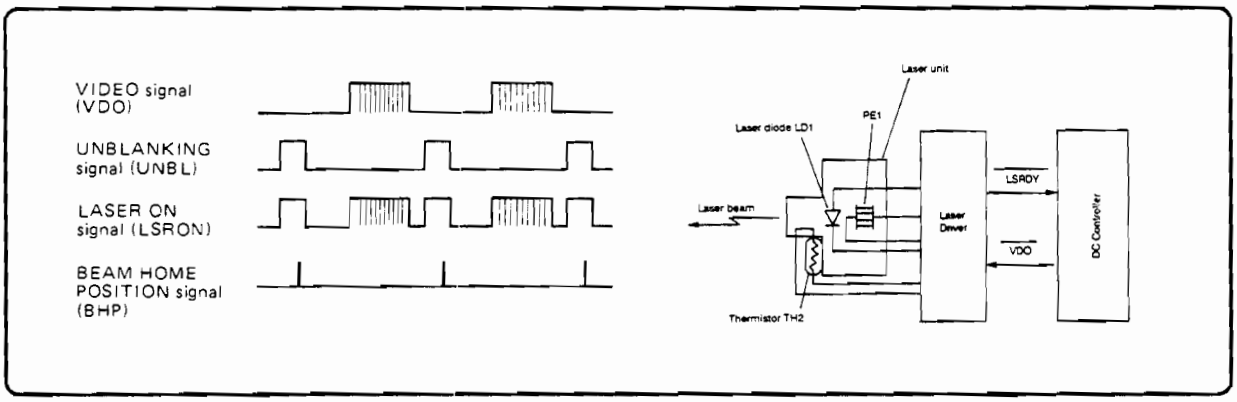


Figure 5-18. Vertical Scan

The semiconductor laser is ON whenever the laser beam is not scanning the drum surface so that the beam can strike the Beam Detect mirror and identify its position. The signal to switch on the laser unit is called the UNBLANKING signal (UNBL) and is produced by the DC Controller. The UNBL signal is combined with the VDO signal from the Format Control System to form the LASER ON signal (LSRON) which is sent to the laser driver to cause it to switch the semiconductor laser device ON and OFF.

Laser Drive

The laser unit comprises a laser diode (LD1), a thermistor (TH2) and a Peltier element (PE1). The laser diode outputs the laser beam when it receives the LASER DRIVE command from the laser driver. To keep the output power of the laser beam constant, a current regulator controls the current through the semiconductor laser.

The temperature of the laser unit is controlled by the Peltier element in order to maintain stable wave- length and output power of the laser beam.

The temperature of the laser unit is sensed by thermistor TH2. The Peltier element releases or absorbs heat depending on the direction of current through it. The laser driver determines the direction and magnitude of the current that should flow through the element to heat or cool the laser unit and thus keep its temperature correct (24 ±1°C).

Regulation of the temperature of the laser unit begins when the power switch is turned ON, and the laser reaches the prescribed temperature within 30 seconds, at which time the LASER READY signal goes "L" ($\overline{\text{LSRDY}}$).

Note

The Peltier element consists of paired semiconductors, or a semiconductor and metal plate. Depending on the direction of current flow across the semiconductor junction, it either generates or absorbs heat at a rate proportional to current flow.

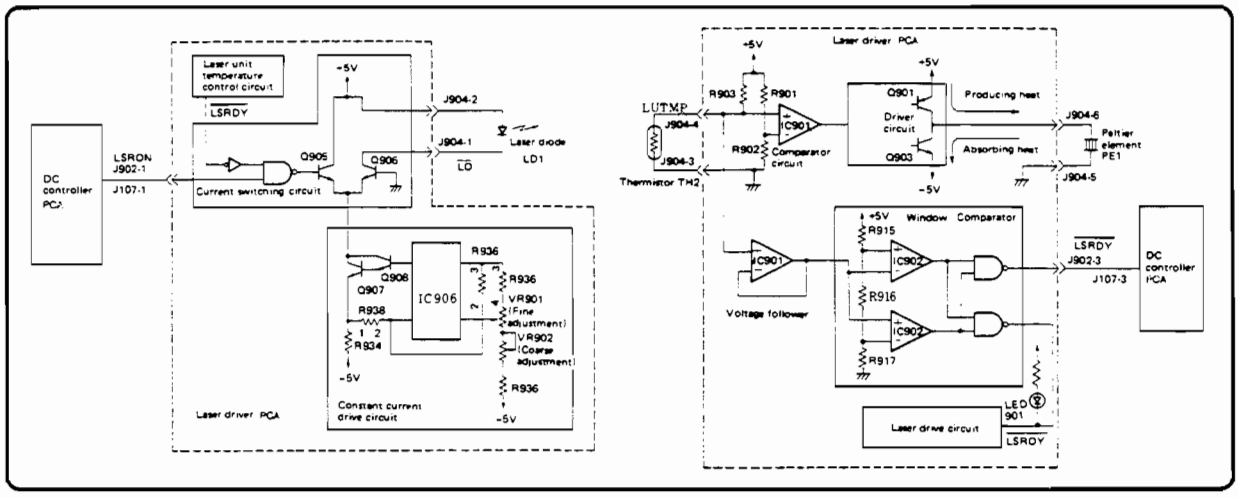


Figure 5-19. Laser Temperature Control Circuit

Scanner Drive Unit

The primary component of the scanner unit is the prism mirror (multiple identical flat mirrors around the periphery of a disc). The mirror disc is mounted on the scanner motor shaft and is driven directly.

The scanner motor is powered by the scanner driver. This operates in response to the SCANNER DRIVE command (SCNON) produced by the DC controller. The scanner motor starts when the Print Engine power switch is turned ON. The motor reaches the correct speed within 30 seconds, and is identified by the SCANNER READY signal going "L" ($\overline{\text{SCNRDY}}$).

Speed of the scanner motor is regulated by the scanner driver, thus maintaining the scanning speed of the laser beam reflected off the mirror faces at a constant speed across the photosensitive drum.

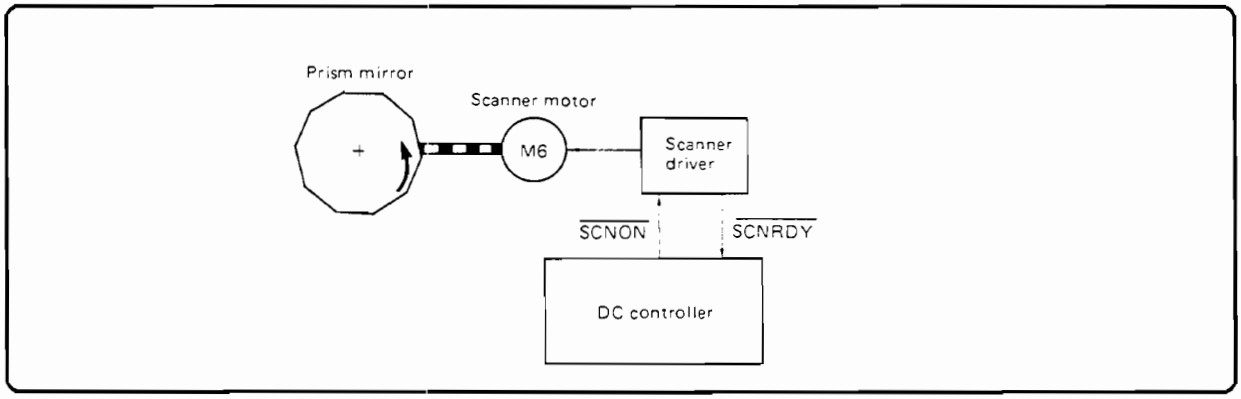


Figure 5-20. Scanner Motor Speed

Electrophotographic System

The Print Engine unit uses an electrophotographic process to form an electrostatic image on the photosensitive drum, develop the image, and transfer the visible image onto paper. The unit consists of the image formation system and the paper pick-up/feed system.

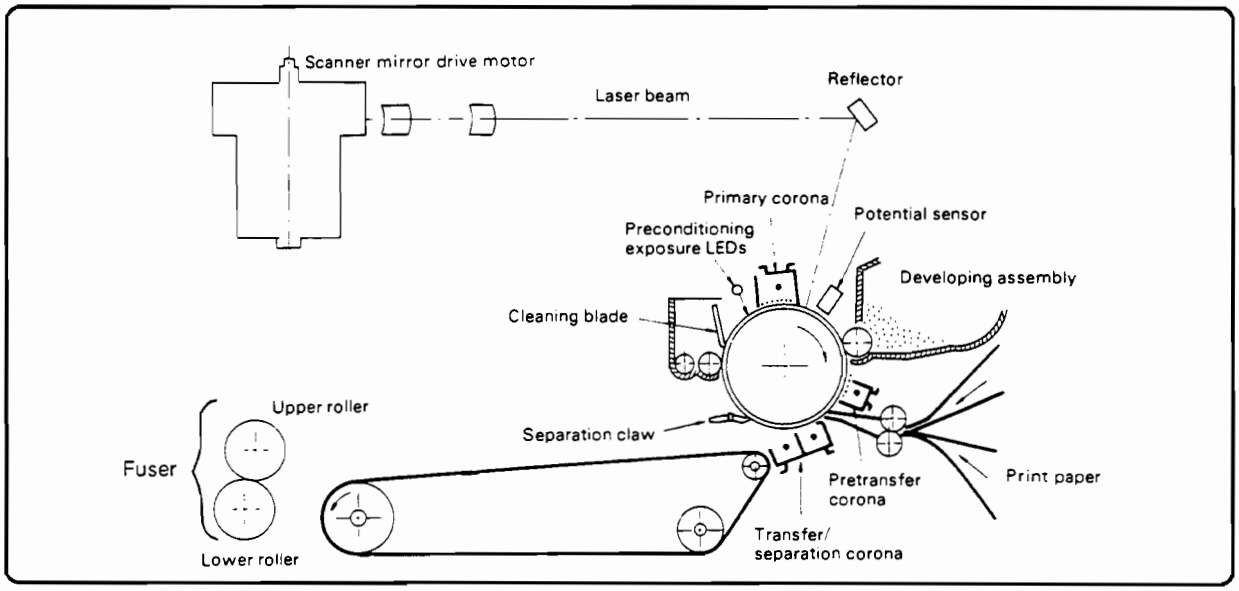


Figure 5-21. Electrophotographic Process Overview

The image formation process can be divided into seven phases with a total of nine distinct steps:

Phase 1 Latent Image Formation Stage
- a. Preconditioning exposure
- b. Primary corona (+)
- c. Scanning exposure

Phase 2 Development Stage
Phase 3 Pretransfer Stage
Phase 4 Transfer Stage
Phase 5 Separation Stage
Phase 6 Fusing Stage
Phase 7 Drum Cleaning Stage

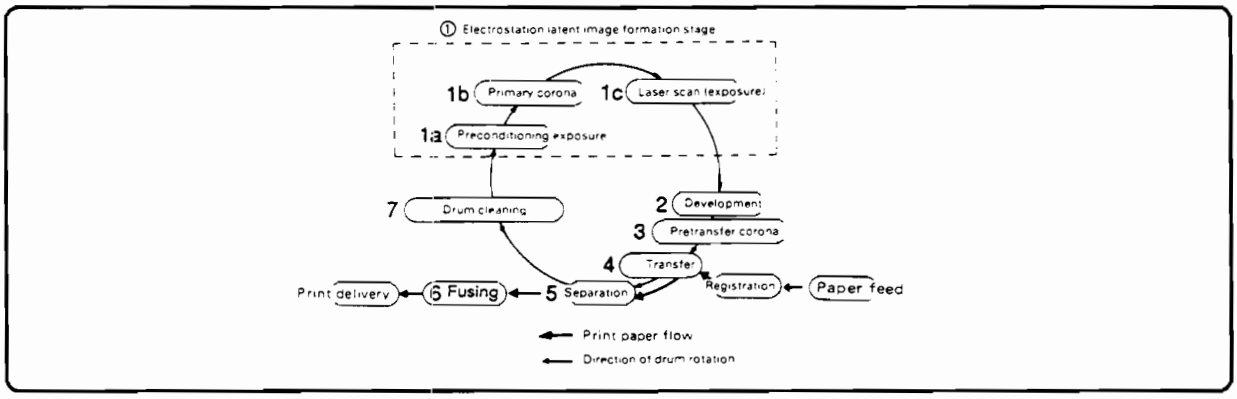


Figure 5-22. Image Formation

The outer surface of the photosensitive drum is a thin seamless layer of sprayed amorphous silicon an organic semiconductive material having photoconductive properties. The base, or core, is aluminum (Figure 5-23).

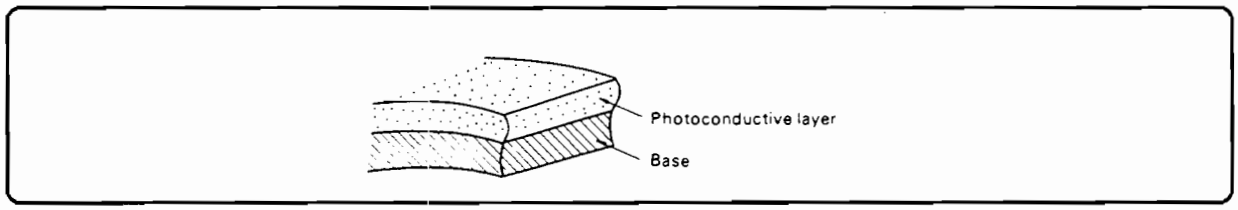


Figure 5-23. Photoconductive Layer

Phase 1: Electrostatic Latent Image Formation

This stage covers the first three steps. At the end of the stage the drum will have a pattern of electrical charges on its surface corresponding to the image of the document being printed. Positive charges representing "dark" areas (non laser exposed) of the original will remain on the drum, while those representing "light" (laser exposed) areas will have been removed. The surface potential control unit assures that the potentials of "dark" (non laser exposed) areas of the latent image are held constant. The drum revolves continuously during printing operation, and each area undergoes a succession of processes. (All processes are taking place simultaneously at different locations around the drum.)

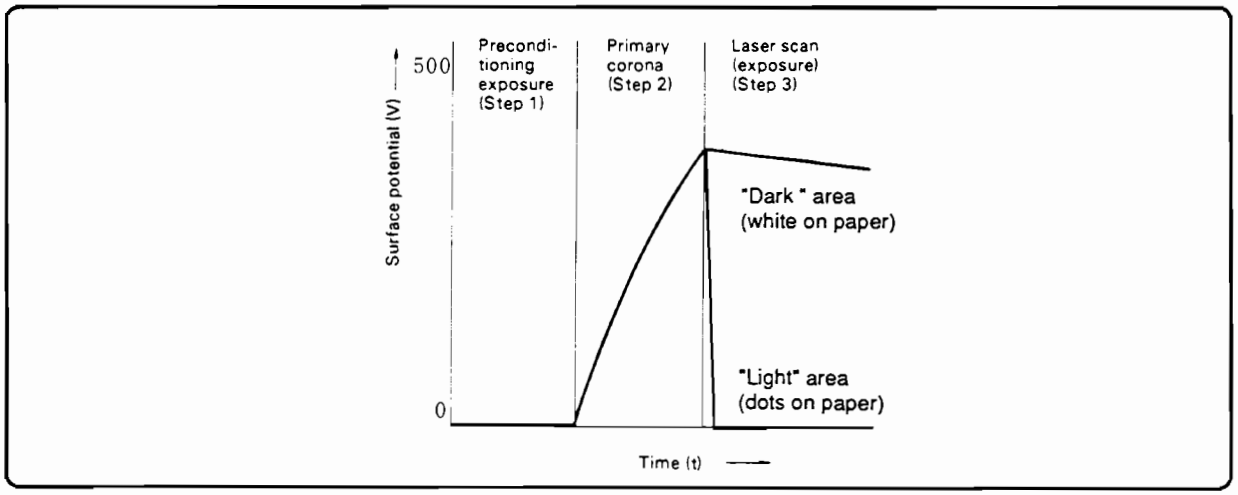


Figure 5-24. Drum Surface Potentials

Phase 1, step a: Preconditioning exposure. As the first step in making an image, residual charges are eliminated from the drum surface by the preconditioning exposure LEDs. This helps make the density of the copy even.

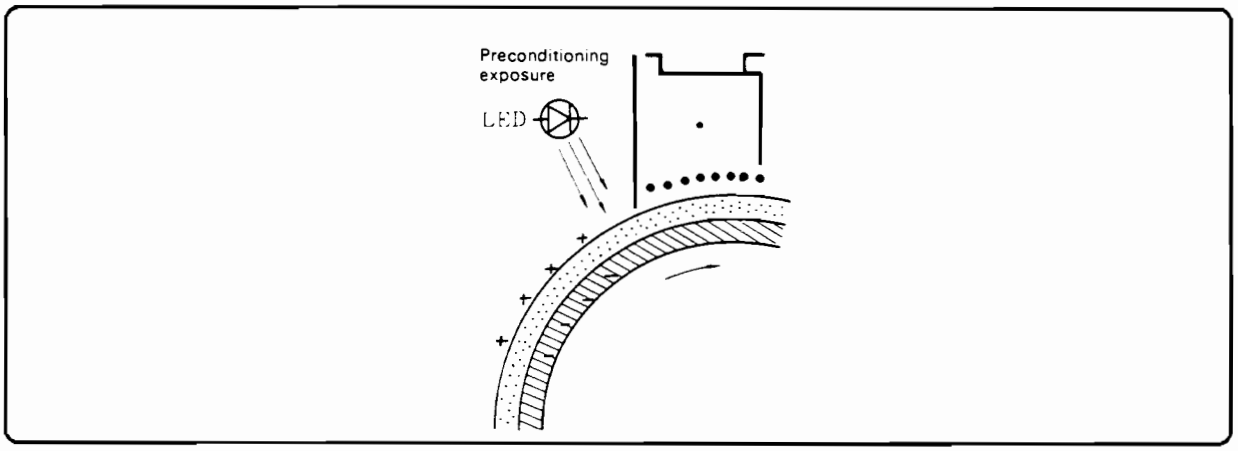


Figure 5-25. Preconditioning Exposure LEDs

Phase 1, step b: Primary corona. The primary corona applies a uniform layer of positive charges over the drum surface.

The potential built up on the drum surface depends on the voltage applied to the corona wire and the potential of the grid. The grid is connected to ground through a varistor located in the corona handle; this holds drum surface potential constant at the varistor breakdown voltage.

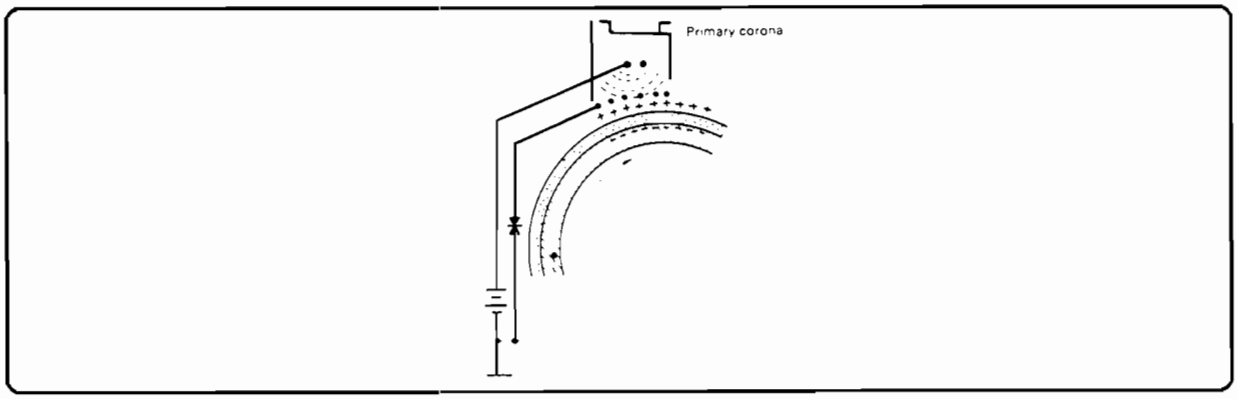


Figure 5-26. Primary Corona Exposure

Phase 1, step c: Scanning exposure. The laser beam scans the drum surface. Where its light strikes the drum, the positive charges are neutralized.

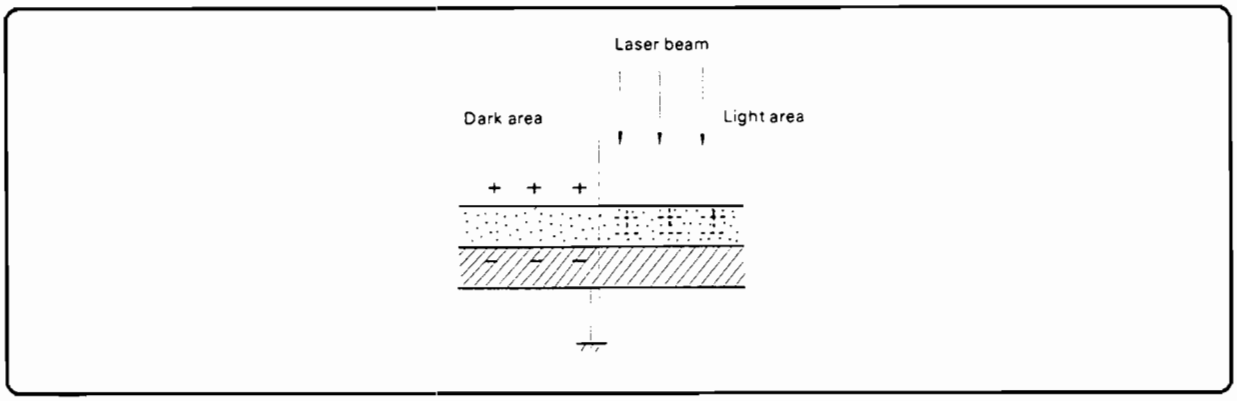


Figure 5-27. Laser Scan Exposure

Phase 2: Development Stage

In this stage, the electrostatic latent image on the drum surface is converted to a visible image of toner particles that adhere to the drum in areas that are "light" (have been discharged). The printer uses the Toner Projection Development method, and a single-component toner powder.

The polarity of the toner particles is the same as the polarity of the primary corona (both positive (+)) so that the toner is attracted to the areas of the drum surface (light areas) where the laser beam has neutralized the charges.

As shown in Figure 5-28, the developing assembly consists of the developing cylinder (a stationary cylindrical magnet surrounded by a non-magnetic revolving sleeve), plus a blade made of magnetic material.

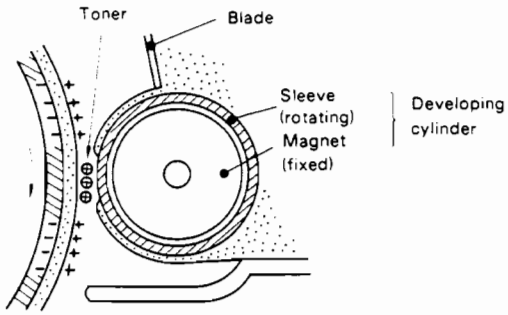


Figure 5-28. Development Stage

The main constituents of the single-component toner are magnetite, resin binder, and pigment. The toner has insulating properties, and is charged to a positive potential by friction with the rotating cylinder.

A concentrated magnetic field develops between the magnet and blade, attracting toner particles (which have magnetic properties) to the gap between them. The toner particles are held virtually immobile in this magnetic field, forming a curtain along the edge of the blade. As the cylinder rotates, this "curtain" skims the toner particles on its surface to a thin, uniform layer (Figure 5-29).

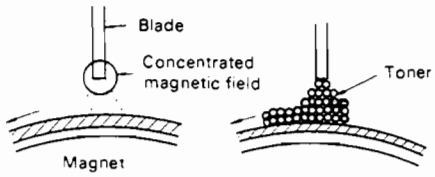


Figure 5-29. The Toner "Curtain"

Developing bias is applied to both the developing cylinder and the blade. Bias is both AC (approx. 1290 Vpp, approx. 1800 Hz) and DC (approx. 280V), applied simultaneously. Consequently, the positive excursion is somewhat greater than the negative.

The AC bias is a square wave, not a sine wave. This allows a lower peak voltage to be used for the same effective voltage and thus reduces the current leakage problem caused by higher peak voltage.

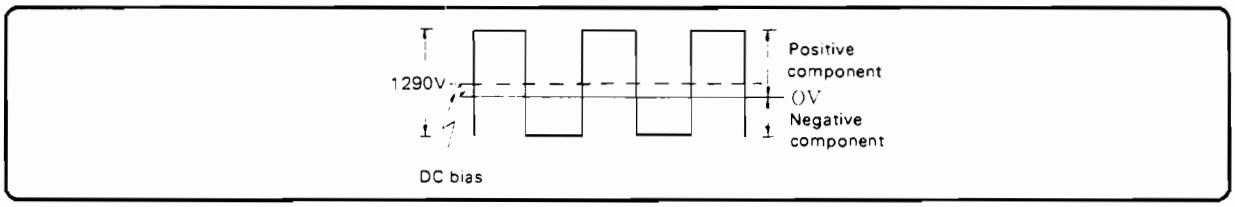


Figure 5-30. DC Bias Signal

During development, toner particles are attracted to the drum at a rate proportional to the relative attraction of the stationary magnet (M) holding toner to the developing cylinder and the net electric field (P). The net electric field (P) is the difference between the drum surface potential (Vs) and the developing bias (Vb+) on the developing cylinder. Toner particles either remain on the drum, or return to the developing cylinder, depending on the relationship of the forces attracting the toner.

When P-M > 0, the toner will be projected to the drum, and when P-M < 0, the toner will return to the developing cylinder.

DC Bias Contrast Selection. Normally set to 5, this knob may be turned toward 1 to increase the image density or toward 9 to decrease the image density. Moving toward 9 will also help decrease background (graying of the white areas of the paper).

AC Bias Select Switch. The Print Engine is equipped with a select switch which permits the AC bias to be switched between approx. 1290 Vpp, 1800Hz (H side) and approx. 1050 Vpp, 1800Hz (L side). The Print Engine is normally used with this switch set on the H side (approx. 1290 Vpp, 1800 Hz - see Figure 5-31).

If background cannot be eliminated by moving the DC bias control knob, setting the switch on the L side helps to reduce background of the image and causes the printed lines to be a little thinner. (This setting should normally be used only in high humidity situations.)

When developing is not taking place, the AC bias is switched OFF and the DC bias is changed to the 0V automatically to prevent toner from adhering to the drum surface.

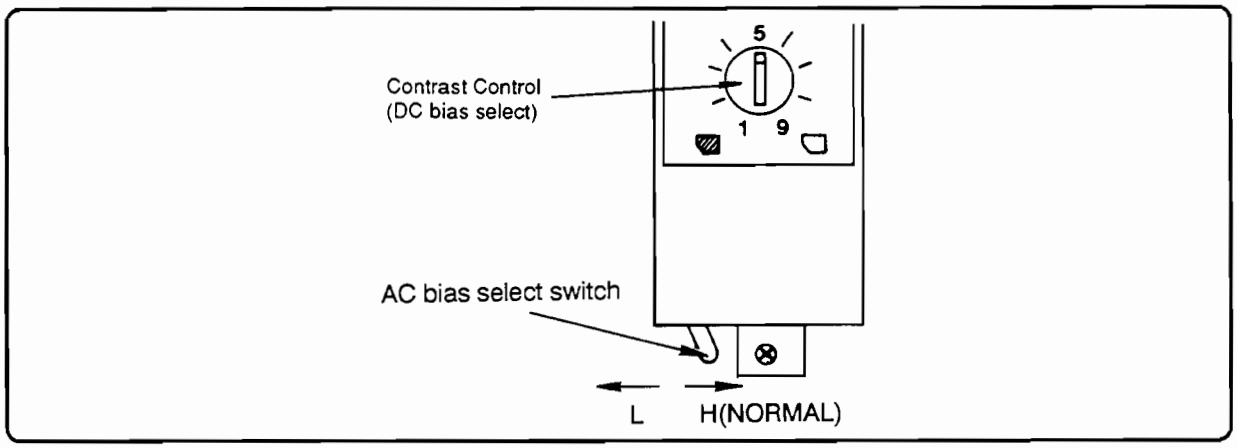


Figure 5-31. AC Bias Select Switch

Developing Assembly. The developing assembly develops the latent image and stores the toner supply. The hopper has a special toner feed magnetic roller that rotates approximately 15.6 turns per minute to feed toner to the developing unit.

The distance between the drum surface and the developing cylinder is determined by the rollers at the ends of the developing shaft.

Note Hopper capacity is two boxes of toner, 1000g. (Toner: 500g/bag)

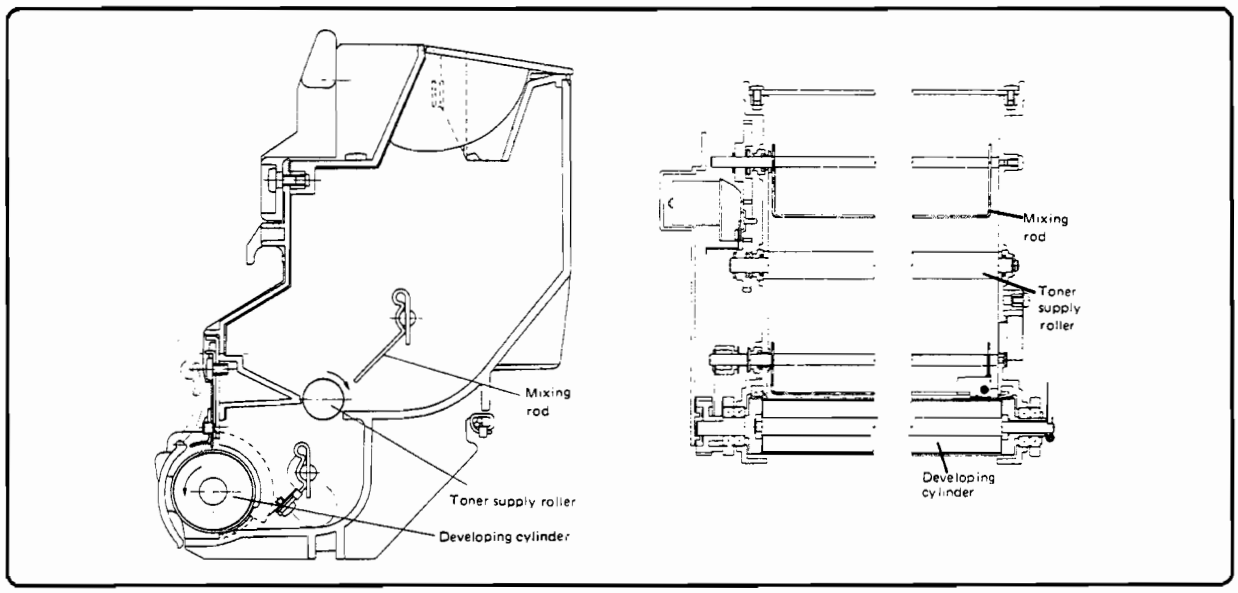


Figure 5-32. Developing Assembly

Phase 3: Pretransfer Stage

The voltage applied to the pretransfer corona wire is approximately midway between the surface potential of areas of the drum where toner is present (low or zero voltage) and the potential where it is absent (positive potential). In other words, the potential of areas with toner particles is raised, while the potential of bare areas is lowered. This raises the efficiency of the following transfer stage, and causes separation of the paper from the drum.

The surface potential developed on the drum is dependent on the potential of the grid of the corona unit. A varistor between the grid and ground limits the maximum drum surface potential to a desired level. This varistor is located in the black drum centering plate.

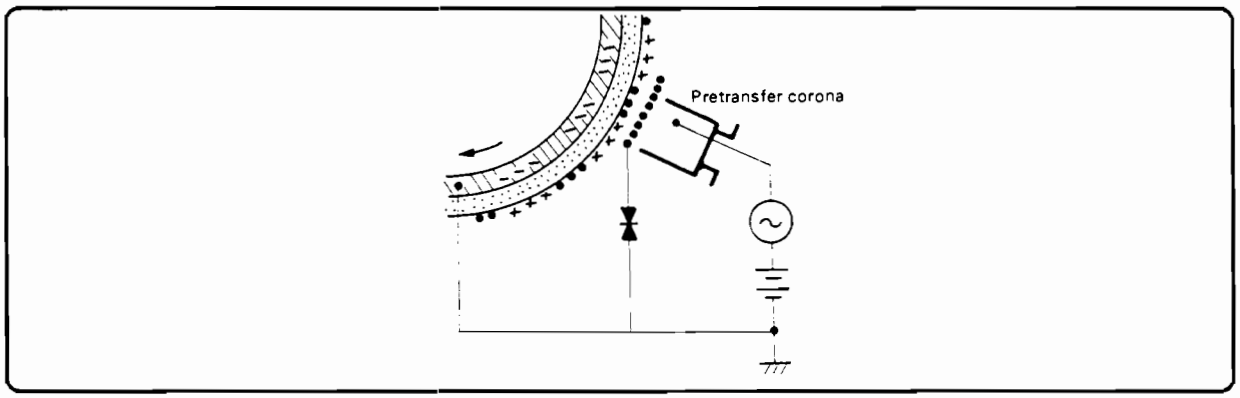


Figure 5-33. Pretransfer Corona

Phase 4: Transfer Stage

The high negative voltage of the transfer corona is applied to the back of the paper, thus negatively charging that side of the sheet and attracting the toner particles on the drum surface to the front of the paper.

To prevent poor transfer, or soiling the back of the paper, the transfer and feeder guides are floated electrically.

Note

Connecting the transfer guide directly to ground would neutralize the charges on the back of the paper, resulting in poor transfer. Even if the transfer guide is floating, the separation corona will prevent toner from transferring to the back of the paper.

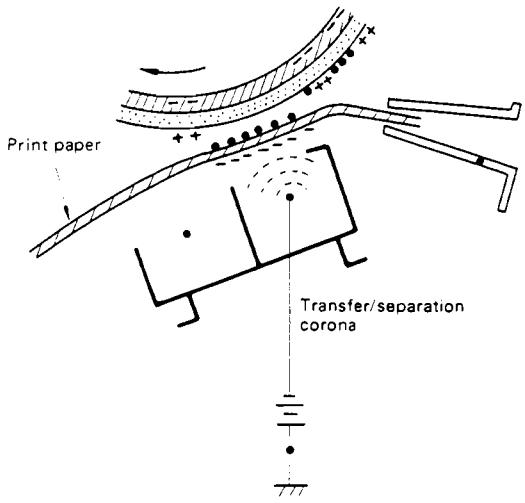


Figure 5-34. Transfer/Separation

Phase 5: Separation Stage

A negative charge is applied to the paper by the transfer corona and the paper is attracted to the surface of the photosensitive drum by static electricity. Discharge of the AC corona (separation corona) with a DC component releases the static force between the drum and the paper, permitting separation of the paper from the drum (Figure 5-35).

There is a backup drum separation system using mechanical "claws" to pick paper off the drum surface in the event the separation corona fails. See "EP Drum Separation" on page 5-62.

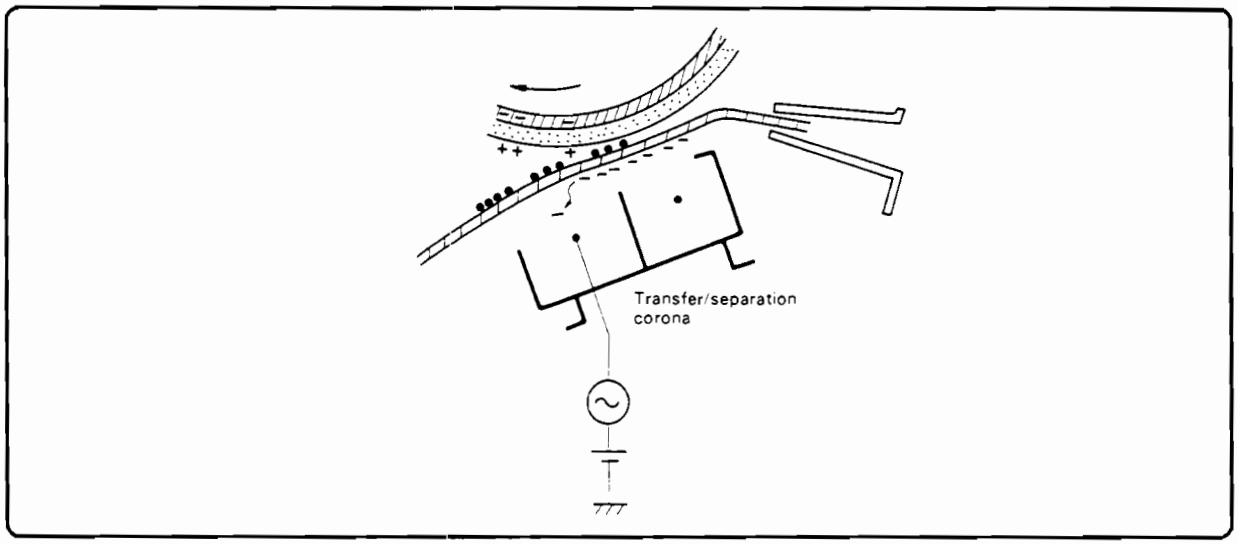


Figure 5-35. Separation (AC + DC bias)

Phase 6: Fusing Stage

In this step, the paper is pressed between two heated rollers to fuse (make permanent) the toner image.

The upper roller comes in contact with a silicone oil-impregnated cleaning belt (pressed into firm contact by a roller) to keep the paper from sticking to it (and causing a jam), and also to prevent toner from adhering to the roller. The take-up mechanism and the pressure roller slowly advance the cleaning belt past the upper roller, cleaning and oiling the roller at the same time.

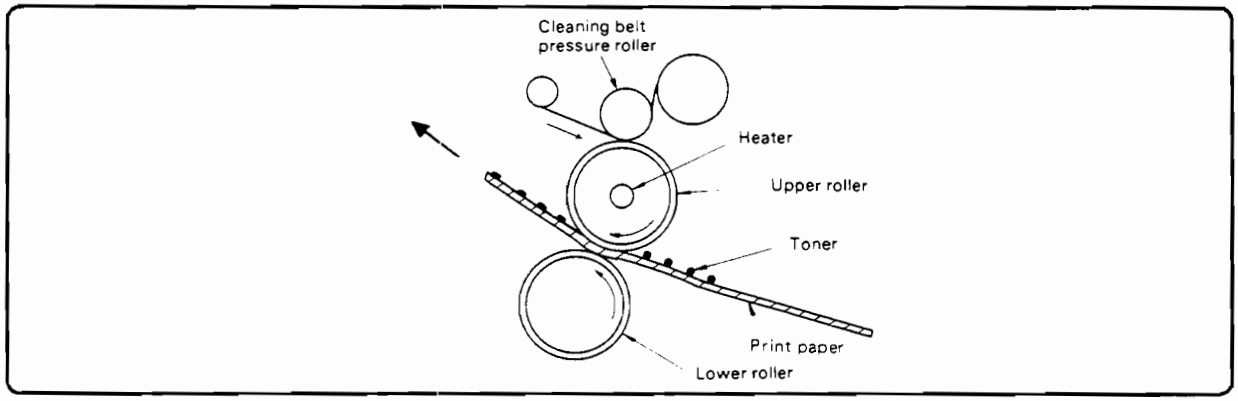


Figure 5-36. Fusing

Fusing System. The temperature of the upper fusing roller is sensed by thermistor TH1, which contacts the roller, and the analog UPPER TEMPERATURE SENSOR signal (URTMP) is transmitted to the DC Controller. Being an analog signal, the amplitude of URTMP varies continuously with the upper roller temperature, high at low temperature to low at high temperature.

The Master microprocessor on the DC Controller PCA reads URTMP through its A/D converter to identify the surface temperature of the upper fusing roller. If the measured temperature is lower than the prescribed value (190 degrees C), the Master microprocessor makes the HEATER ON signal "L" ($\overline{\text{HTRD}}$). $\overline{\text{HTRD}}$ is output from the DC Controller PCA through a buffer (IC148) and transmitted to SSR (Q1) through the AC driver. When HTRD is "L" ($\overline{\text{HTRD}}$), the SSR is ON and the upper roller heater (H1) is energized.

The ambient temperature inside the printer is sensed by thermistor TH101 and the measurement is read by the Master microprocessor through the A/D converter. The upper roller temperature is usually regulated to 190 degrees C. However, if the internal temperature of the printer is below 27 degrees C, the upper roller temperature is held at 200 degrees C for 45 minutes after power ON in order to avoid poor fusing.

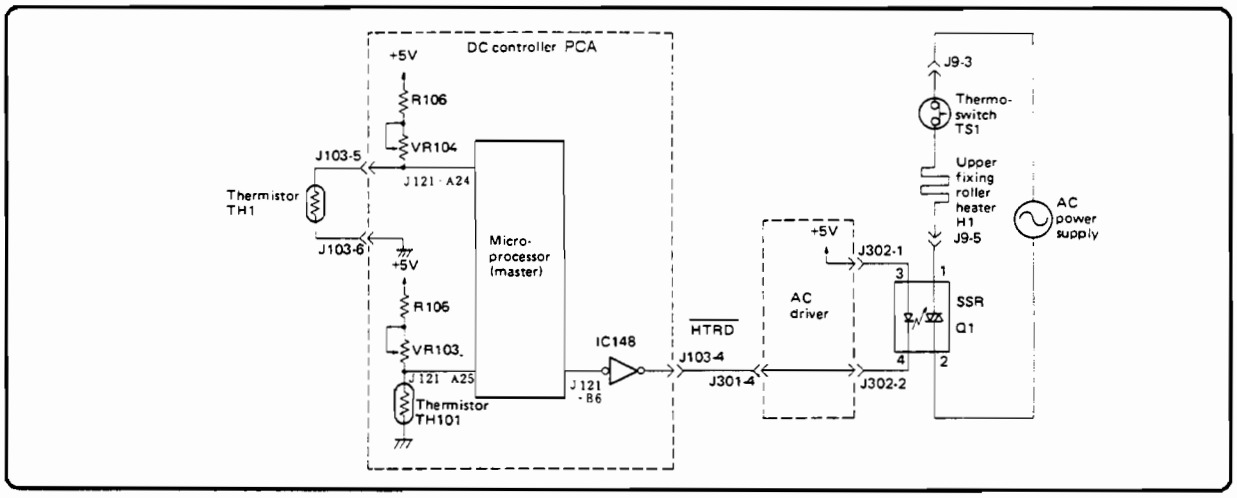


Figure 5-37. Upper Fusing Roller Temperature Control Circuit

Phase 7: Drum Cleaning Stage

The drum cleaning step prepares the drum surface for the next print by scraping any residual toner off with the cleaning blade. The particles scraped from the drum are picked up by the cleaning roller and waste toner feed screw. The feed screw transports them to the waste toner receptacle. `14.2-EMPTY WASTE TONER` is displayed when the quantity of waste toner receptacle exceeds a specified level. *i.e.* The EXCESS WASTE TONER signal (EXWT) goes "H" (positive true). If excess waste toner is detected during printing, the `14.2-EMPTY WASTE TONER` message is displayed.

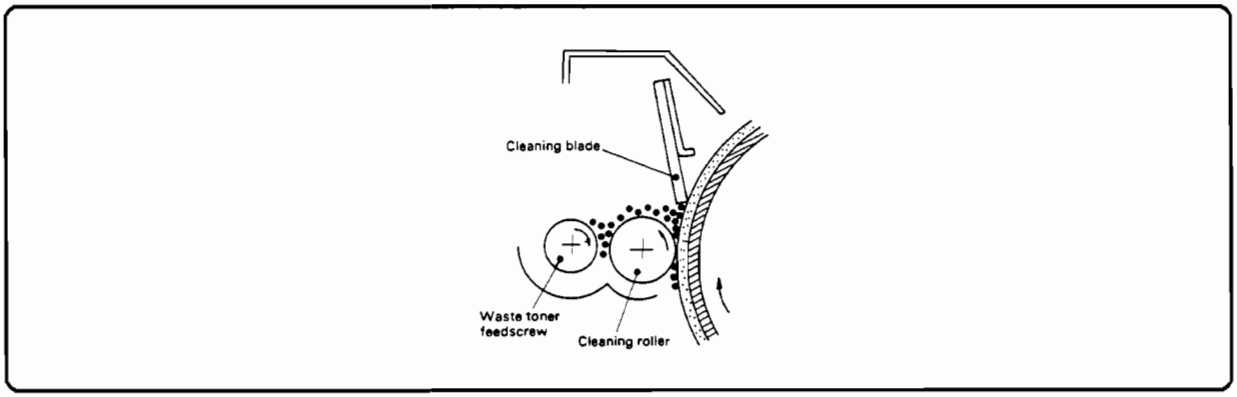


Figure 5-38. Drum Cleaning

Primary Corona High-Voltage Output Circuit

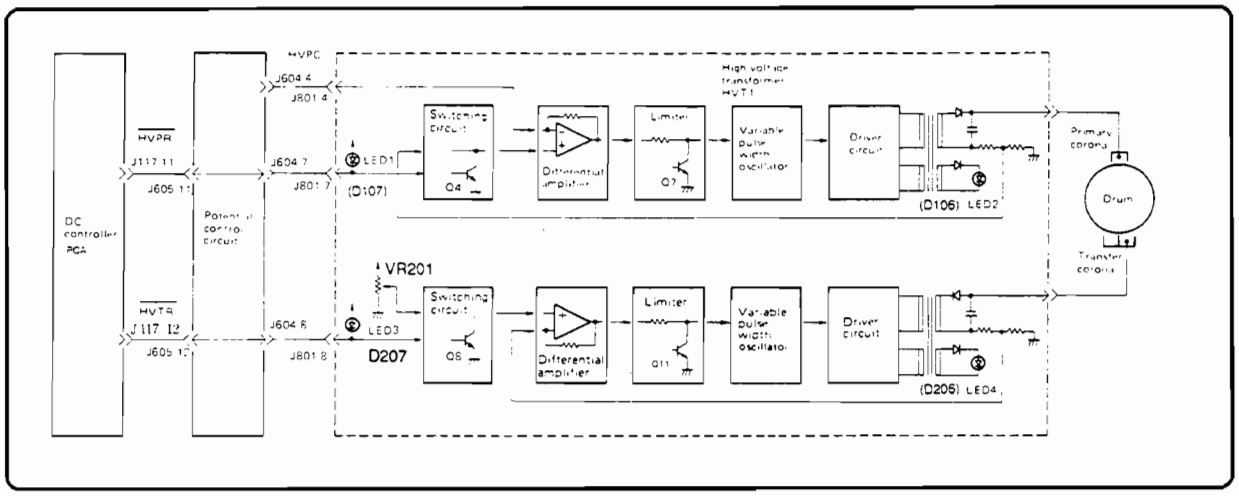


Figure 5-39. Primary Corona HV Output Circuit

When the PRIMARY CORONA ON command ($\overline{\text{HVPR}}$) is "H", Q4 of the switching circuit is ON and the non-inverting input of the differential amplifier is "L". This causes the output of the differential amplifier to be approximately 0V. The variable pulse width oscillator does not operate and the primary corona high-voltage output is OFF.

When $\overline{\text{HVPR}}$ is "L", Q4 of the switching circuit is OFF, and the feedback signal of the primary corona high-voltage output is applied to the non-inverting input of the differential amplifier. The primary corona level control signal (HVPC) from the potential control circuit is applied to the inverting input of the differential amplifier. The voltage of the feedback signal decreases if the corona current increases due to an environmental effect. On the other hand, if the corona current decreases, the voltage of the feedback signal increases. Thus, the output voltage of the differential amplifier is increased or decreased to maintain the constant corona current to suit the amplitude of analog signal HVPC.

The output of the differential amplifier is transmitted through the limiter to the variable pulse width oscillator. When the output of the differential amplifier exceeds a set value, Q7 of the limiter goes ON, preventing the input voltage to the variable pulse width oscillator from exceeding the allowed limit.

Output of the variable pulse width oscillator varies with the (analog) input signal voltage as shown in Figure 5-40, and the high-voltage output varies accordingly.

The driver circuit amplifies the output of the variable pulse width oscillator and drives T1.

The secondary output of T1 is rectified, smoothed, then output to the primary corona assembly.

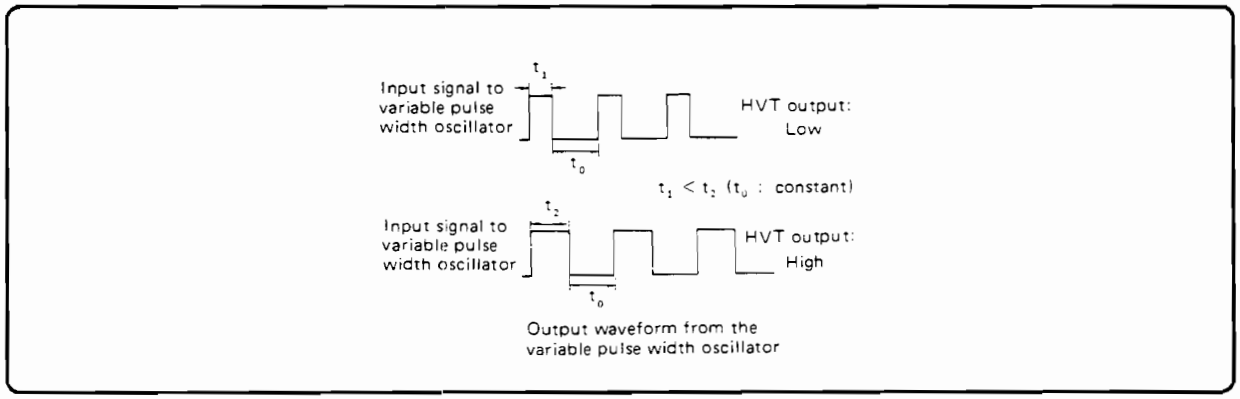


Figure 5-40. Pulse Width Oscillator Wave Forms

Primary LED Indicators. D107 lights at high intensity while $\overline{\text{HVPR}}$ is "L" (from halfway through INITIAL ROTATION to completion of PRINTING ROTATION), and at low intensity at other times.

D106 lights while the primary corona high-voltage output is ON. (It lights when D107 lights at high intensity.)

If D107 does not light normally, the DC controller PCA or the potential control PCA may be faulty.

If D107 lights normally and D106 does not light, a possible cause is the Primary Corona is defective or HVT1 if faulty.

Transfer Corona High-Voltage Output Circuit

When the TRANSFER CORONA ON command ($\overline{\text{HVTR}}$) is "H", Q8 of the switching circuit is ON and the non-inverting input of the differential amplifier is "L". This causes the output of the differential amplifier to be approximately 0V and the transfer corona high-voltage output to be OFF.

When $\overline{\text{HVTR}}$ is "L", Q8 of the switching circuit is OFF, and the reference signal of the transfer corona is applied to the non-inverting input of the differential amplifier.

The feedback signal of the transfer corona high-voltage output is applied to the inverting input of the differential amplifier. The voltage of the (analog) feedback signal increases if the corona current increases, and decreases if the corona current decreases, and the output of the differential amplifier varies proportionally.

Thus the transfer corona high-voltage output current is held constant as in the case of the primary corona.

Transfer LED Indicators. D206 lights at high intensity while $\overline{\text{HVTR}}$ is "L" (from halfway through INITIAL ROTATION to halfway through LAST ROTATION), and at low intensity at other times.

D207 lights when the transfer corona high-voltage output is ON. (It lights when D206 lights at high intensity.) If D206 does not light normally, the DC Controller PCA may be faulty.

If D206 lights normally and D207 does not light, a possible cause is a defective Transfer Corona or HVT1.

Separation/Pretransfer Corona High-Voltage Output Circuit

The separation/pretransfer corona outputs are supplied by high voltage transformer HVT3, and are AC outputs combined with DC bias. The DC bias for the separation corona is supplied by the separation corona high-voltage DC output circuit, and that for the pretransfer corona is supplied by the pretransfer corona high-voltage DC output circuit. Both AC components are supplied by the high-voltage AC output circuit.

Pretransfer Corona High-Voltage DC Output Circuit. When the PRETRANSFER CORONA ON command (HVPTR) is "H", Q4 of the switching circuit is ON and the non-inverting input of the differential amplifier is approximately 0V, the variable pulse width oscillator circuit does not operate, and the high-voltage DC output is 0V.

When HVPTR is "L", Q4 of the switching circuit is OFF, and the feedback signal from the high-voltage DC output is applied to one input of the differential amplifier, the reference signal to the other. The amplifier then gives an analog output proportional to the difference between the two signals.

The output waveform of the variable pulse width oscillator varies with the output (analog) of the differential amplifier. The output of the variable pulse width oscillator is amplified by the driver circuit to drive transfer T1.

The output from the secondary of T1 is doubled and rectified, then output to the high-voltage AC output circuit as DC bias for the pretransfer corona. The feedback signal from the T1 secondary is transmitted to the differential amplifier so that the output voltage can be maintained constant.

Separation Corona High-Voltage DC Output Circuit. The reference voltage select circuit switches the reference voltage to be imputed to the differential amplifier by turning relay RL1 ON or OFF by means of the SEPARATION CORONA STRONG DRIVE command ($\overline{\text{HVSES}}$) to switch the output voltage. Other operation is same as that of the pretransfer corona high-voltage DC output circuit.

The separation corona high-voltage output may be selected in two steps, high and low, by the SEPARATION CORONA STRONG DRIVE command ($\overline{\text{HVSES}}$). The $\overline{\text{HVSES}}$ signal is used to increase the voltage potential of the separation corona to pull the leading edge of the paper from the drum surface; high for simplex printing and low for duplex printing.

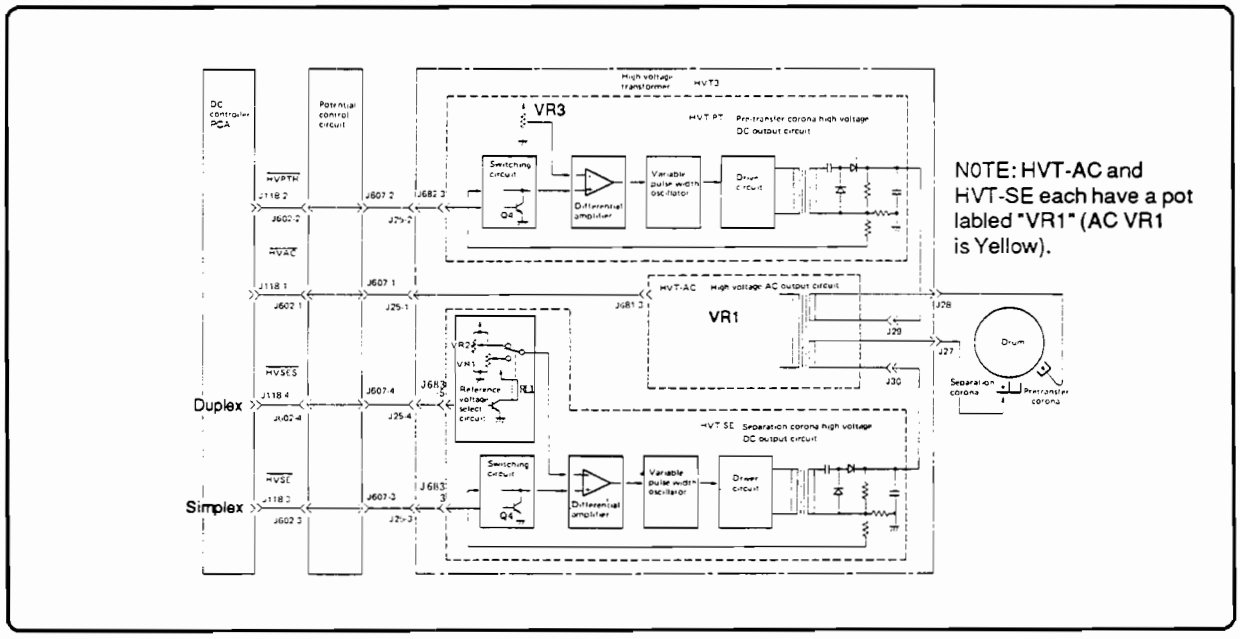


Figure 5-41. Separation/Pretransfer Corona Bias Circuit

Developer Drive Signal

This circuit selects one of two amplitudes of the analog DEVELOPING DC BIAS CONTROL signal (DBC) output from the potential control PCA in response to the level of the DEVELOPING BIAS DRIVE command ($\overline{\text{DBAC}}$).

When $\overline{\text{DBAC}}$ is "H", Q13 is ON, and the amplitude of DBC is a fixed value (approximately 4V, which corresponds to a DC bias of 0V) regardless of the setting of the density control VR.

When $\overline{\text{DBAC}}$ is "L" Q13 is OFF, and the amplitude of DBC is proportional to the setting of the density control VR. DBC varies within a range between approximately 9V and 10V.

Developing Bias Output Circuit. The square wave oscillator always oscillates when the power switch is ON. Its output is amplified by an inverting amplifier and transmitted to the AC bias switching circuit.

When the DEVELOPING BIAS DRIVE command ($\overline{\text{DBAC}}$) is "H", Q4 of the AC bias switching circuit is ON. As a result, the line carrying the square wave is grounded, no signal is applied to the T1 drive circuit, and the AC bias is OFF. When $\overline{\text{DBAC}}$ is "L", Q4 is OFF and the square wave signal is transmitted to the T1 drive circuit.

When the AC bias select switch (SW2) is OFF (left), Q9 of the AC bias switching circuit is ON, and the square wave signal is divided by R11 and R12, resulting in an AC bias of 1,050Vp-p.

When SW2 is ON (right), Q9 is OFF, and the square wave signal is transmitted unaltered to the T1 drive circuit, resulting in an AC bias of 1,290Vp-p. (SW2: AC bias select switch is normally set to the right.)

Q6 and Q7 of the T1 drive circuit are alternately turned ON and OFF as the square wave from the AC switching circuit rises and falls, and the output signal of the T1 drive circuit is stepped up by transformer T1, combined with the DC bias, then supplied to the developing cylinder.

The pulse oscillator always oscillates when the power is ON. Its output signal turns Q10 of the T2 drive circuit ON and OFF, thus providing a regularly varying current in the primary of transformer T2.

The output from the secondary of T2 is rectified by D3, smoothed by C14, then supplied as the DC bias to the developing cylinder.

The DC bias is divided by R33, R34 and R35, and transmitted as a feedback signal to the differential amplifier. The differential amplifier compares the feedback signal with the developing DC bias control signal (DBC). If there is a difference between the signals, the differential amplifier output changes to correct the difference.

Q11 of the T2 drive circuit adjusts the T2 primary drive signal in response to the output of the differential amplifier to maintain the DC bias constant at the value specified by DBC.

The output of the pulse oscillator is also transmitted to the T3 and T4 drive circuits. Each drive circuit turns the primary current of each transformer ON and OFF to provide the regularly varying current required to drive the transformer.

The T3 output is rectified by D2, smoothed, then supplied as −150V power to the potential control circuit. The T4 output is rectified by D9, then smoothed. The secondary coil of T4 is not grounded, and the output of the secondary is supplied as F30VDC (floating) power to the potential measuring circuit.

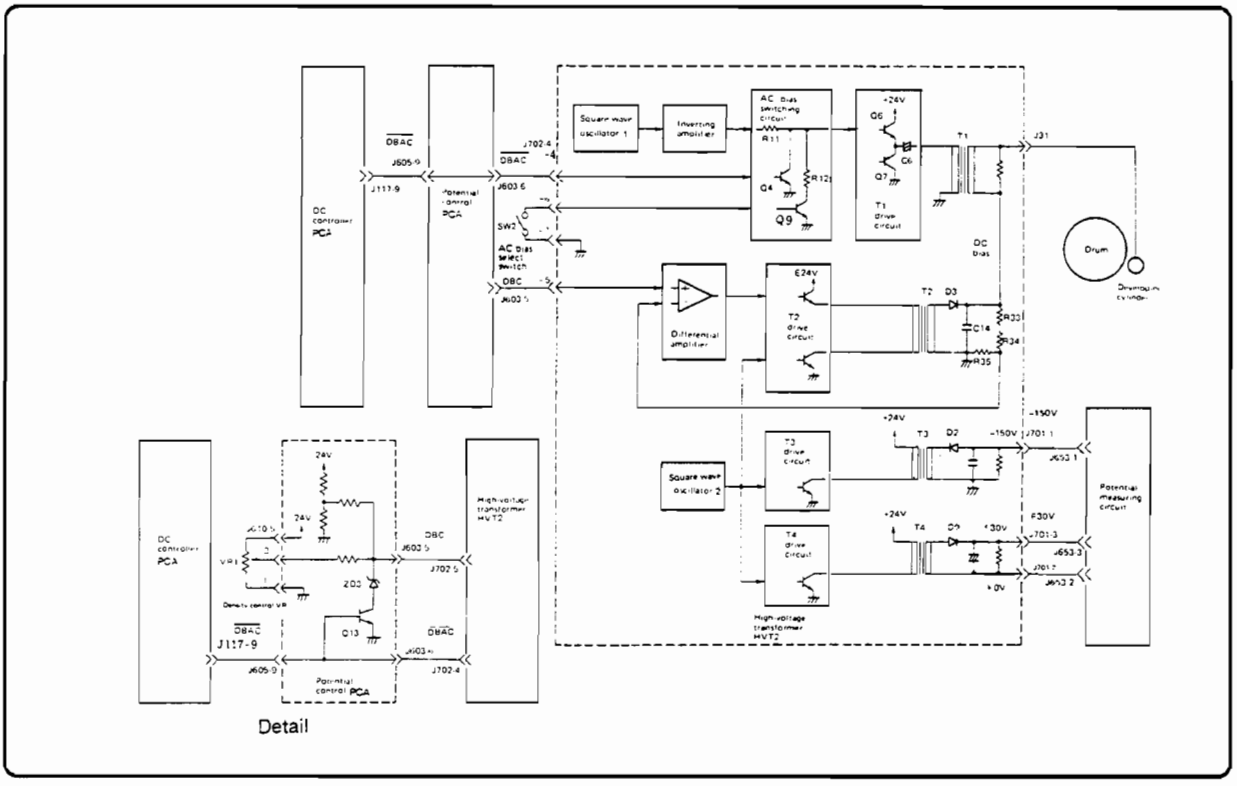


Figure 5-42. Developing Bias Output Circuit

Potential Control Circuit

Figure 5-43 shows the components related to the surface potential control system, the coronas and the high-voltage transformers.

Most print faults can be attributed to one of these parts, so it is important to understand their functions and the procedures for checking them.

Note

The sensor and the potential measuring PCA are supplied as a single unit called the "potential measuring unit". They require critical adjustment with precision instruments, and cannot be adjusted in the field.

The DC controller turns the laser OFF during the CONTROL ROTATION period, and transmits Vd sampling signals to the microprocessor of the potential control circuit.

A block diagram for the circuit related to charging the photosensitive drum and development is shown in Figure 5-44.

The drum surface potential is measured and divided by 300. The divided signal is then modified to a 12V referenced signal by the level-shift circuit in the potential control circuit and converted to a digital signal for use by the microprocessor of the potential control circuit.

If Vd is not correct, the microprocessor adjusts the current from HVT1 through the primary corona.

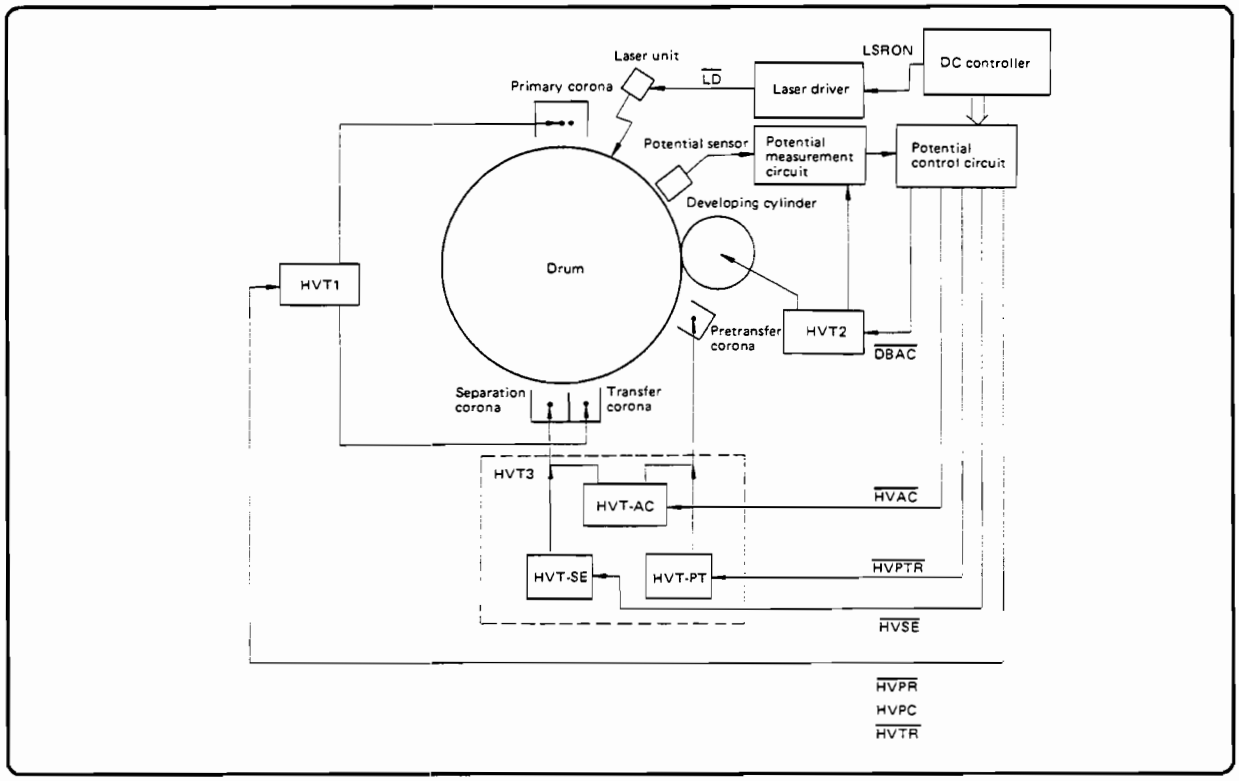


Figure 5-43. Potential Control Circuit

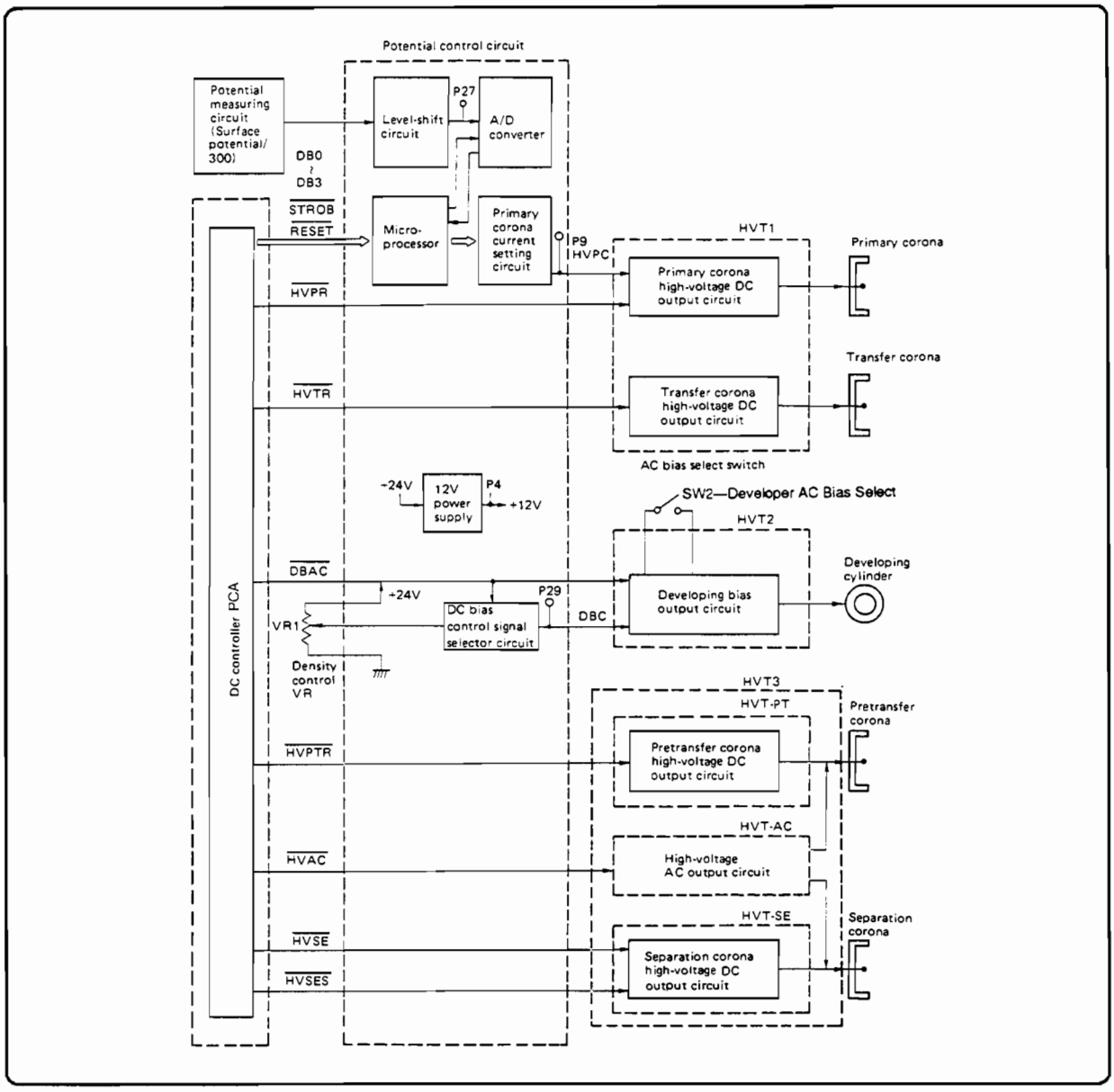


Figure 5-44. Potential Control Circuit

Potential Measuring Circuit

The potential measuring circuit consists of a potential measuring unit, a potential control circuit, and a high-voltage transformer (HVT2). A block diagram for the potential measuring circuit is shown in Figure 5-45.

The -150V power supply and the F30V power supply (floating power supply) in HVT2 are always live when the printer power is ON, and the outputs are supplied to the potential measuring circuit.

This powers the sensor-drive oscillator circuit in the potential measuring circuit. The output of the oscillator (square wave) is applied to one of two piezoelectric elements mounted on the chopper in the sensor, causing the chopper to vibrate.

Charges on the drum (which give the drum its surface potential) induce a voltage in the electrode of the sensor. The vibrating chopper alternately blocks and unblocks the path between the charges and the electrode, so the voltage induced in the electrode rises from zero to maximum and falls back to zero sinusoidally. (The waveform has the shape of AC, but it's amplitude changes when the surface charge changes). This voltage is amplified by the preamplifier in the sensor housing and then transmitted to the filter/gain control circuit on the potential-measuring PCA.

Note

Potential measurement can be disabled using switch SW1 on Potential Control PCA (SW1-OFF = disable). Printer will run at default potential setting.

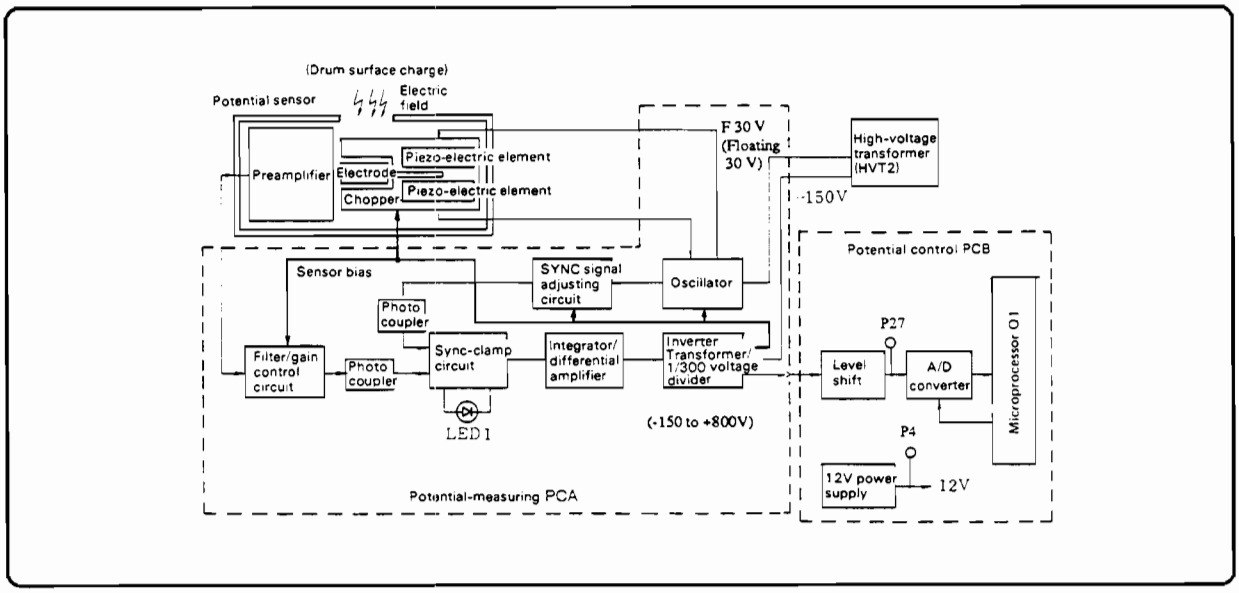


Figure 5-45. Potential Measuring Circuit

A bias voltage is applied to the sensor housing and chopper. The electrode senses any difference between the drum surface potential and the bias voltage, and feeds the difference back to the potential-measuring circuit. The bias is then adjusted until the difference between bias and electrode potentials is zero. The bias then equals the drum surface potential and can be used as a measurement signal. This is called the "null-balance" method of measurement. The output is an analog signal.

The same bias voltage is used as the reference voltage for the oscillator circuit, SYNC signal adjusting circuit, and the filter-gain-control circuit; this means that the reference voltage of these circuits varies continually as the drum potential changes.

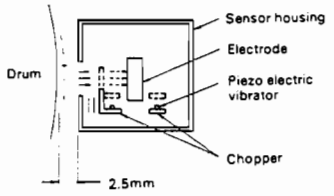


Figure 5-46. Sensor Housing

If a signal is to be transmitted from any of these bias-referenced circuits to a ground-referenced circuit, the signal is passed via a photocoupler, thus transmitting the "information", but eliminating the difference between their "base" voltages.

The filter/gain-control circuit eliminates electrical noise in the AC signal from the sensor preamplifier, amplifies the signal, and transmits it to the sync-clamp circuit through a photocoupler.

Because the output from the sensor is an AC voltage, there is no way to identify the polarity of the drum surface potential solely from the magnitude of the output. (The output would have the same magnitude if the drum potential were 300V higher or 300V lower than the sensor bias; only the phase would be different, by 180 degrees.)

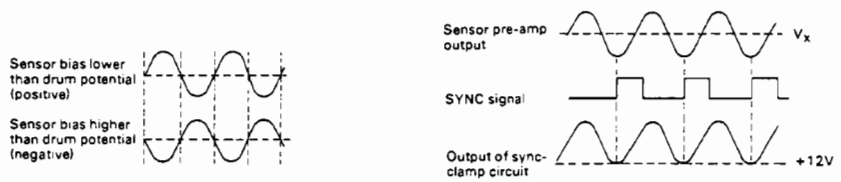


Figure 5-47. Sensor Sine Wave

To distinguish whether the drum potential is higher or lower than the sensor bias voltage, the sync-clamp circuit combines the sensor output (via the filter and gain-control circuit) with the SYNC signal adjusting circuit). This output is also an analog signal.

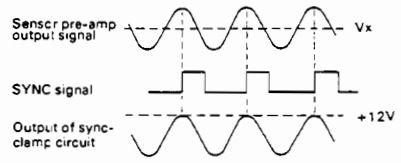


Figure 5-48. SYNC Signal Sine Wave

The output of the sync-clamp circuit is referenced to +12V.

If the sensor bias and drum surface potential are equal, the output of the sync-clamp circuit is +12V. The rising edge of the SYNC signal is adjusted by the SYNC signal adjusting circuit so that it coincides with the point of the output waveform of the sensor pre-amp when it is +12V. (This occurs when the sensor chopper blocks the electrode from the field of the charges on the drum.

The output of the sync-clamp circuit is converted to DC by the integrator and amplified, then applied to the transformer. The transformer output, which is varied over the range -150 and +800V by the signal, is applied to the sensor as the sensor bias. It is also reduced to 1/300 of its original strength by a voltage divider and transmitted to the level-shift circuit of potential control PCA.

The level-shift circuit shifts the signal (0V referenced) to a 12 V-referenced signal which is subsequently doubled and inverted, then transmitted to the A/D converter. This process is shown schematically in Figure 5-49.

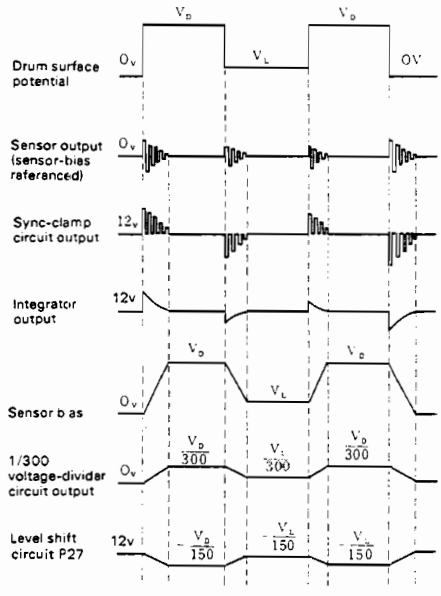


Figure 5-49. Level-Shift Circuit Process

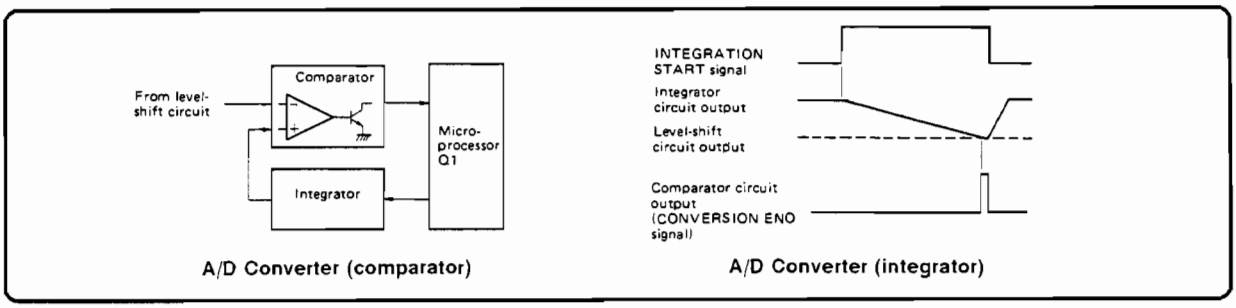


Figure 5-50. A/D Converter (comparator & integrator)

The A/D converter consists of an integrator and a comparator. The integrator receives an INTEGRATION START signal from the microprocessor to start A/D conversion. Voltage of the integrator output signal decreases linearly with time.

The comparator compares the output of the level-shift circuit with the output of the integrator. If the output of the integrator is lower than that of the level-shift circuit, the comparator outputs a CONVERSION END signal.

The microprocessor measures the time between the INTEGRATION START signal and CONVERSION signal to determine the output of the level-shift circuit, and thus the drum surface potential.

Potential Measurement LED Indicators. (Refer to Figure 5-45.)

1. **Checking LED1:** LED1 should always light when the printer power is ON. When LED1 lights, the potential measuring unit is operating correctly.

   If it does not light normally, possible causes are 1) open front door interlocks 2) Engine-DCPS2 is not supplying F30V or 3) the potential measuring unit is faulty.

2. **Use of check pins:** Check pins P-1 and P-2 can be used for checking the potential measuring unit.

Primary Corona Current Control Circuit

During CONTROL ROTATION, the microprocessor of the potential-measuring circuit of the potential control circuit measures drum surface potential Vd produced by the reference primary corona current. This surface potential (Vd) is compared with the reference value set in the service switches in the Potential Control PCA. If it is not correct, the control signal from the microprocessor to the D/A converter is corrected.

The D/A converter output is a pulse signal, the duty cycle of which is varied in response to the control signal from the microprocessor.

The smoothing circuit consists of resistors and capacitors and converts the pulse signal output of the D/A converter to a steady analog signal. The voltage of the signal varies with the duty cycle of the pulse signal.

The output of the smoothing circuit goes to high-voltage transformer HVT1 (via a voltage follower). HVT1 varies the primary corona current in response to the value (analog voltage) of this signal (HVPC)

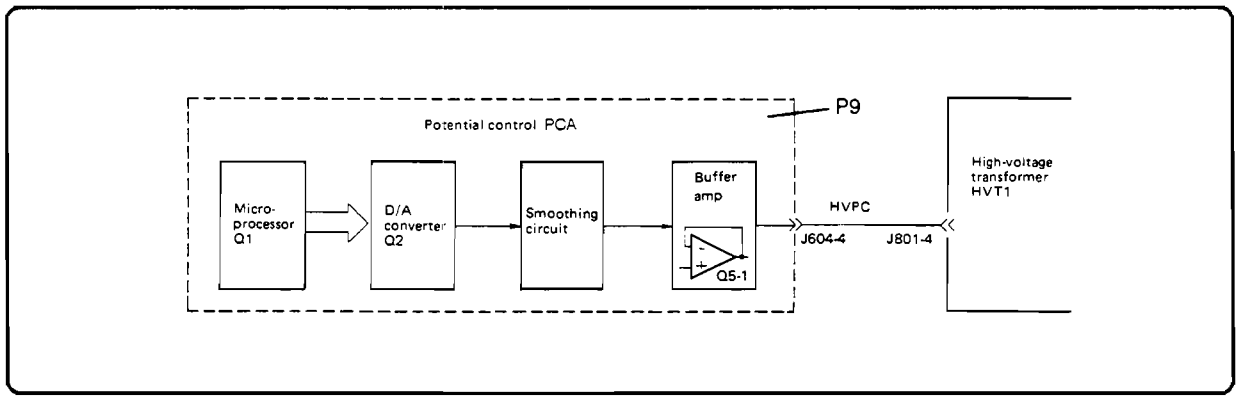


Figure 5-51. Potential Control Circuit

Auxiliary Systems

Fans

The printer uses seven fans, six of which circulate air within the printer to prevent overheating.

Table 5-4. Fan Motor Functions

Fan	Function	Comments
Engine-FM1	DC Power Supply Fan	Removes hot air from the DC Power supply (Engine-DCPS2) and DC Controller PCA.
Engine-FM2	Ozone Fan	Passes air containing ozone (produced by the corona assemblies) through the ozone filter and cools the DC power supply (Engine-DCPS1).
Engine-FM3	Fusing Assembly Fan	Removes hot air from the Fusing assembly. **Powered ON whenever the main power switch is ON.**
Engine-FM4	Feeder Belt Fan	Holds print paper to the print engine Feeder Belt (located inside the Feeder Belt assembly). *This fan is an integral part of the Feeder Belt Assembly and not available separately.*
Engine-FM5	Corona Filter Fan	Causes air to pass through the dust filter to the Primary Corona assembly to prevent build-up of dust on the corona wire.
Engine-FM6	Corona Filter Booster Fan	Supplies air to Engine-FM5.
Engine-FM7	Formatter Area Fan	Cools the Format Control Unit. **Powered ON whenever the main power switch is ON.**

Locations of all the fans are shown in Chapter 6 on page 6-79.

Ozone Filter

An ozone filter in the exhaust fan prevents the escape of ozone (generated by the coronas) from the machine. Catalytic action breaks down the ozone to oxygen.

Drum Heater

Conditions of high humidity tend to make the surface of the drum damp, adversely affecting print quality. A drum heater inside the drum cavity keeps the drum warm, thus preventing the problem.

The temperature near the photosensitive drum is sensed by thermistor TH3, and the analog DRUM TEMPERATURE SENSOR signal (DTMP) is transmitted to the drum temperature control circuit.

The comparator compares the amplitude of DTMP with the reference voltage corresponding to the target temperature (44C). The comparator outputs "L" (negative true) if the temperature around the drum is lower than the target temperature, or "H" (positive true) if it is higher.

The trigger circuit turns Q353 ON and OFF in response to the combination of the comparator output and a signal obtained by full-wave rectifying the AC supply voltage.

When the comparator output is "H" (positive true) Q353 is OFF and no current flows through the primary coil of pulse transformer T351. When the comparator output is "L" (negative true) Q353 turns ON/OFF at the zero cross point of the AC supply voltage, thereby switching the primary current of the pulse transformer ON/OFF. This triggers the gate of triac Q354. Q354 is turned ON, and the drum heater (H2) is energized.

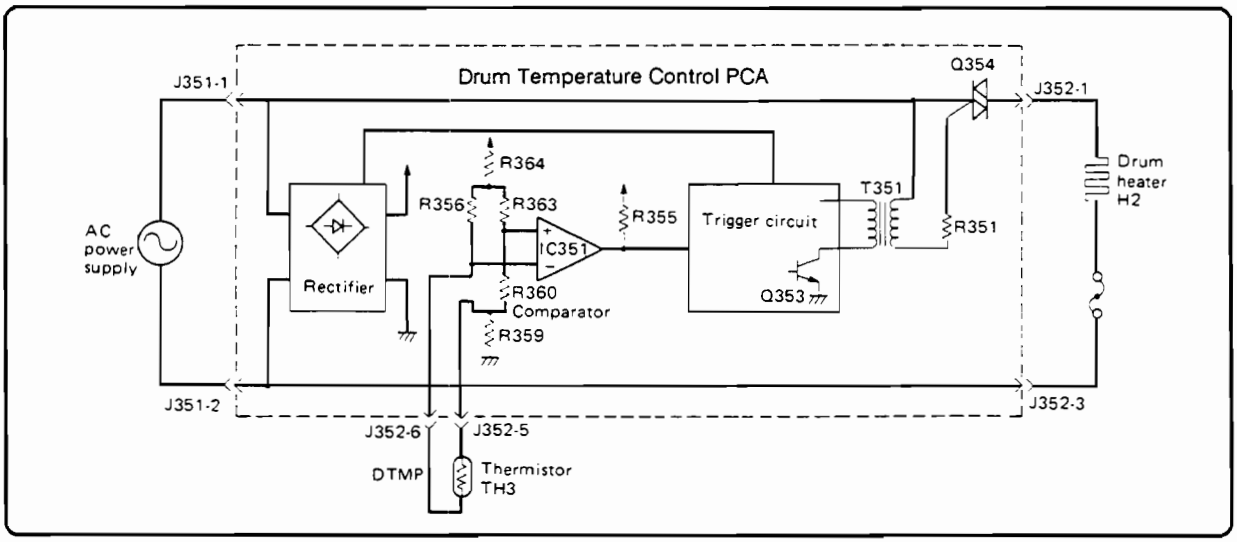


Figure 5-52. Drum Heater

Counters

The HP2684 can have up to two mechanical image counters. All models have the Print Engine counter (upper right corner, inside the right front cover). This counter is incremented for each image that is printed (i.e. total images).

The second counter is in the optional Duplex unit (lower left corner, inside the left front cover). The Duplex counter counts all sheets which are fed into the Duplex unit. As the sheet is fed to the registration roller the Print Engine counter is incremented for the second time as the sheet passes the EP area. For this reason the HP2684 usage is always referred to in "images" and NOT pages or sheets.

Both counters are monitored by the DC Controller and an error code will halt the printer if the counter circuit opens for any reason. The error cannot be reset without correcting the fault and cycling power. These counters cannot be reset in the field without damage to the counter. Should a counter failure occur, the complete assembly must be replaced.

"Toner Empty" Sensing

The microprocessor of the DC Controller PCA reads the TONER EMPTY signal (TEP) from the toner sensor while the toner supply motor is rotating. If TEP goes "L" ($\overline{\text{TEP}}$) while the drum motor is rotating, the toner supply motor is switched ON to supply toner from the hopper to the developing assembly. If TEP is still "L" ($\overline{\text{TEP}}$) even though toner has been supplied for a total of 100 seconds of toner supply motor rotation after TEP goes "L" ($\overline{\text{TEP}}$), the `14.1-ADD TONER` message is displayed and the printer stops printing at the completion of the print cycle.

The 100 seconds period is counted only while the drum motor is rotating; counting is interrupted when the drum motor is not turning (during STANDBY). The 100 seconds count is cleared by turning the power switch or a door switch OFF. After the printer power is switched ON again, counting is started from zero when TEP goes "L" ($\overline{\text{TEP}}$) while the drum motor is rotating.

Because of this 100 second counter, the printer will print approximately 50 pages after the front doors are open before checking the toner empty signal again.

Caution

Running the printer without toner in the developer will cause permanent damage to the EP Drum.

The toner supply motor rotates for 30 seconds from the time when TEP goes "L" ($\overline{\text{TEP}}$) until the `14.1-ADD TONER` Message is displayed. The printer will continue for 100 pages or until the drum motor stops.

Paper Path Systems

The LaserJet 2000 printer has two basic paper paths; the single sided path (or *simplex*) and the double sided (or *duplex*) path. When printing single-sided, paper does not enter the duplex area.

Simplex Paper Transport

All paper moves through the simplex paper path whether the printer is operating in simplex or duplex mode. When printing single sided, paper moves through the following areas:

- Paper input.
- Paper pick-up.
- Paper registration.
- Double feed detection.
- EP Drum and separation.
- Feeder Belt assembly.
- Stacker and switchback assemblies
- Face Down Stacker, or Error Tray

All the components of the paper transport system are controlled by the DC Controller PCA. The main drive motor uses a series of gears and clutches to move paper through the printer.

Jam detection for the complete printer is done from the DC Controller PCA. For jam detection theory refer to "Jam Detection" on page 5-72, in this chapter.

Input Paper Sensing

Operation of Cassette Size Sensors. Inserting a cassette into one of the holders actuates some or all of the switches in the holder. The combination of actuated switches is read by the microprocessor, and used to determine the type of cassette (paper size). If no switch is actuated, there is no cassette in place. The various switch combinations are shown in Figure 5-53. If an unsupported paper size is installed a 59-CASSETTE FAILURE error will be displayed.

Layout / ON/OFF	SW 735 (Front)	SW 731	SW 732	SW 733	SW 734 (Rear)
OFF	Metric paper size cassette	Large cassette	A-size cassette	Standard cassette	No cassette
ON	Inch paper size cassette	Small cassette	B-size cassette	R cassette	Cassette installed

No.	Cassette	Switch				
		SW735	SW731	SW732	SW733	SW734
1	A3	OFF	OFF	OFF	OFF	ON
2	A4	OFF	ON	OFF	OFF	ON
3	N/S	OFF	OFF	ON	OFF	ON
4	N/S	OFF	ON	ON	OFF	ON
5	N/S	OFF	OFF	ON	ON	ON
6	N/S	OFF	ON	ON	ON	ON
7	Ledger	ON	OFF	OFF	OFF	ON
8	Legal	ON	OFF	ON	OFF	ON
9	Letter	ON	ON	OFF	OFF	ON
10	Executive	ON	ON	ON	OFF	ON
11	N/S	ON	OFF	ON	ON	ON
12	No cassette	OFF	OFF	OFF	OFF	OFF

N/S - Not Supported

Figure 5-53. Cassette Size Sensors

Cassettes Paper Out Sensing

Paper out is sensed by an incandescent lamp located above the cassette tray and a photocell below the cassette tray. Whenever paper is present in the tray the light beam is blocked. If the paper supply is empty or the tray is removed, the light will cause the paper empty line to go low (UPEP, upper tray; LPEP, lower tray).

The DC Controller PCA senses paper empty, sends status to the Formatter PCA who in turn displays the `11.X-ADD PAPER` message.

Note

If a lamp burns out, there will be no paper empty message but a paper jam will occur on the last sheet fed. LA2 and Q2 sense paper for the upper tray and LA3 and Q3 sense paper for the lower tray.

PDX Paper Out Sensing

When the paper supply runs out, the sensor arm drops into the hole in the lifter. This causes the sensor arm to interrupt the paper sensor (PDX-PS1) and transmits a PAPER SENSOR SIGNAL (PAPER OUT) to the printer.

Cassettes Pick-up Operation

The cassette pick-up rollers consist of a semicircular rubber "tire" mounted on a crescent-shaped roller, as shown in Figure 5-54. The rubber portion of the roller does not contact the paper except when picking up paper from the cassette. For pick-up, the roller rotates, bringing the rubber part into contact with the paper and feeding the top sheet of paper out of the cassette by friction.

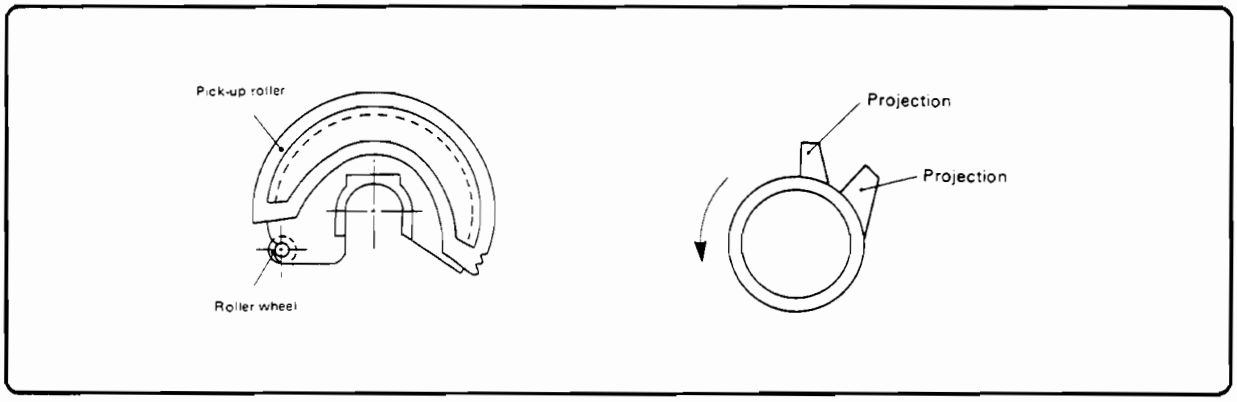


Figure 5-54. Cassette "D" Roller and Solenoid

PDX Pick-up Operation

Paper pick-up and feed are controlled by signals from the PD/DU PCA. The pulley is belt driven with the drive obtained from the print engine. The pulley is connected to the pick-up and feed rollers by the pick-up roller clutch and feed roller clutch (see Figure 5-55).

The brake stops the feed rollers quickly when the paper is at the registration rollers.

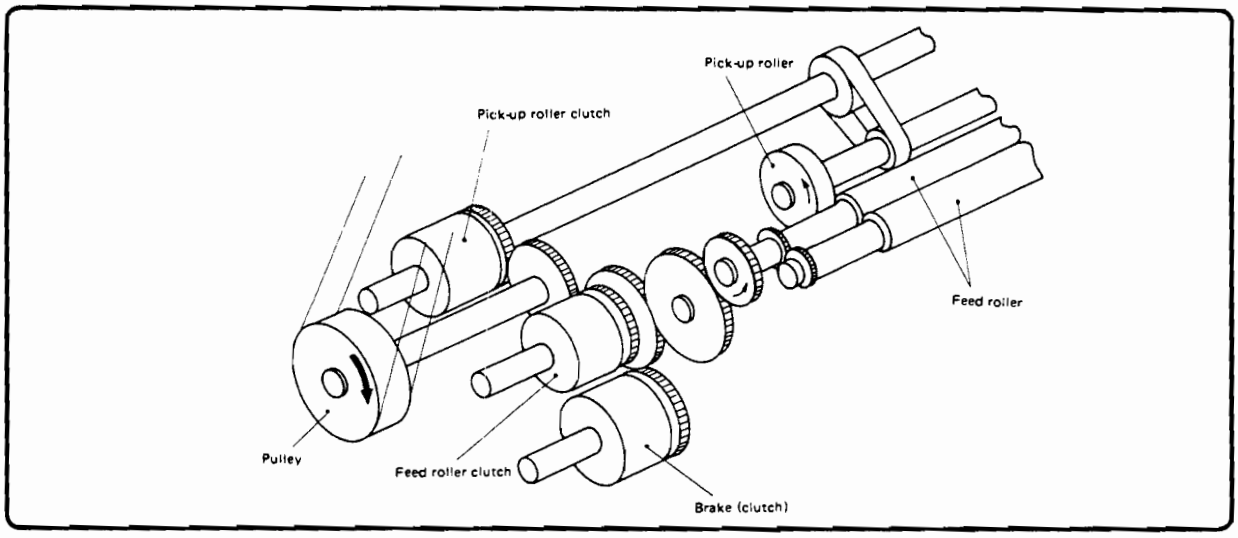


Figure 5-55. Pick-Up Roller/Clutch Operation

Paper Registration

Since the distance between the pick-up rollers and the registration rollers is the same for both the upper and lower cassette holders, the operating sequence is also the same.

Note

The pick-up rollers are driven via a solenoid-operated spring clutch. The input gear is linked to the pick-up rollers for a partial revolution only when the solenoid is actuated or released. (One ON-OFF cycle turns the roller 360 degrees).

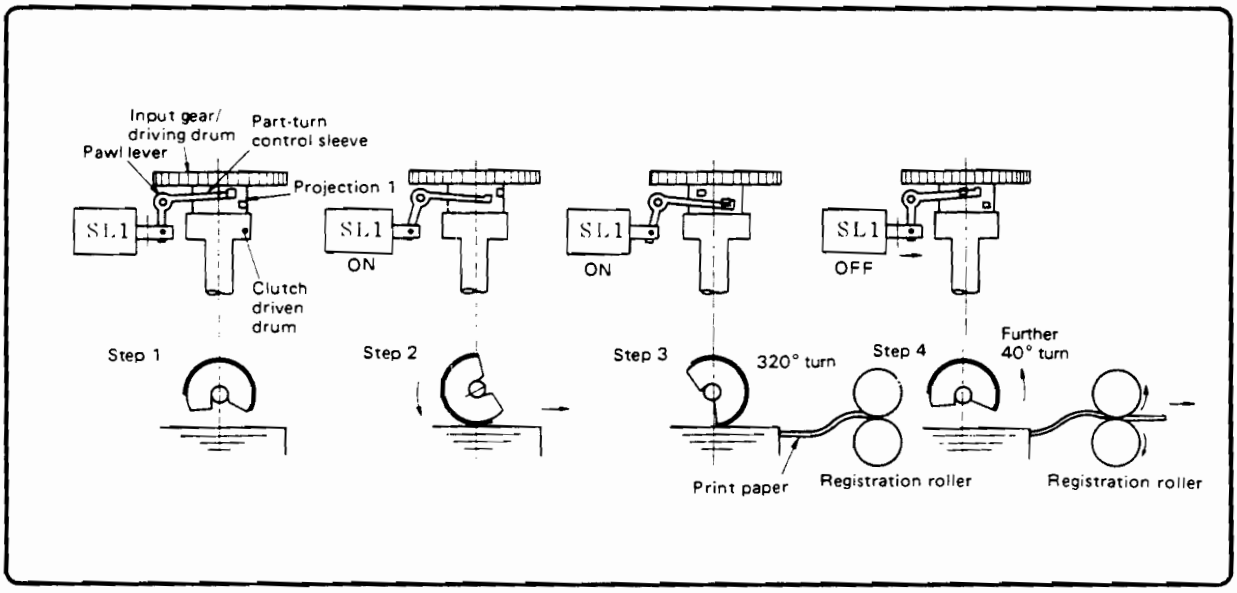


Figure 5-56. Paper Registration

Double Feed Detection

DFD Sensor. The double sheet feed sensor detects if more than one sheet of paper is fed into the print engine at a time. It is located directly above the registration rollers. A lever arm rests directly on the upper registration roller. As paper is input to the registration rollers the upper registration roller moves vertically to allow the paper to move through. The vertical movement of the upper roller causes the lever arm to move which causes the resistance of the precision rheostat to change. The changing of the resistance causes the voltage of the signal line DPSIG (Double Page Signal) to vary. The DPSIG Signal is routed to the Double Feed Detect PCA located on the DC Controller PCA.

When paper goes through the registration rollers the resistance of the rheostat increases which decreases voltage of the DPSIG signal. If more than one sheet of paper is fed through the registration rollers at one time the DPSIG voltage becomes small enough to cause a `25.3-MISPRINT` error to be displayed on the control panel.

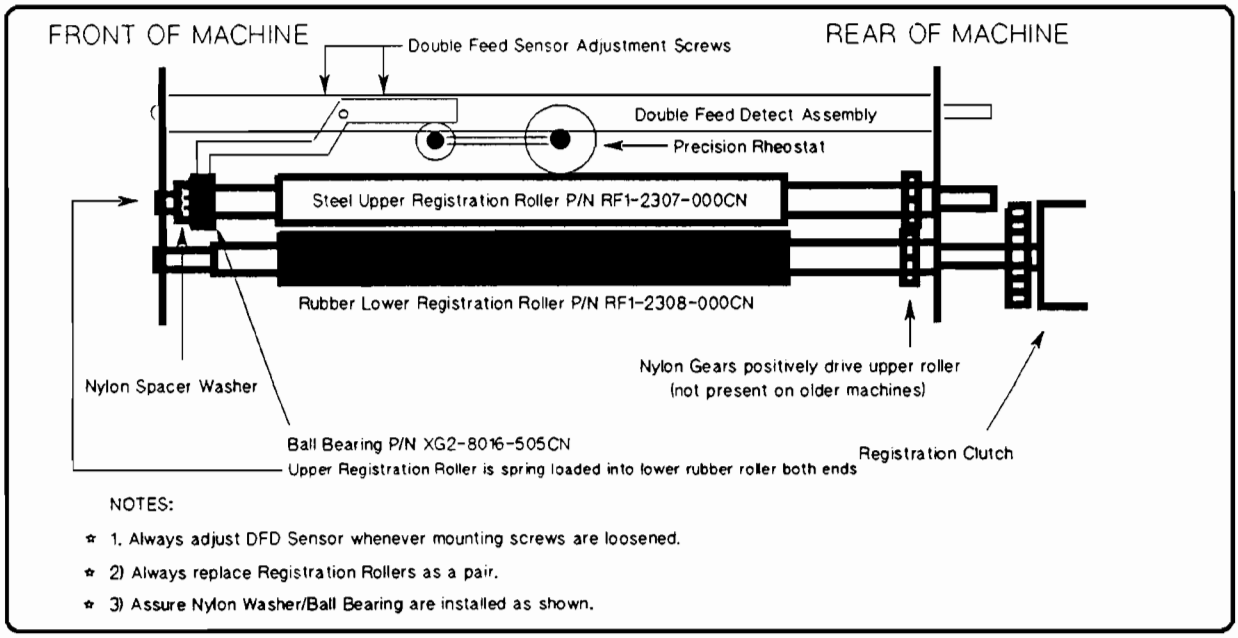


Figure 5-57. Double Feed Detect Assembly

DFD PCA. The Double Feed Detection PCA has three functions:

- Monitors the AC line voltage and signals the DC Controller when there is a power fail situation. This power fail signal is transferred to the Formatter to generate print engine power failure messages.
- Provides the Service Representative with additional test functions to adjust and diagnose the printer.
- Monitors and detects a double sheet feed (two sheets of paper fed into the printer simultaneously) during the printing operation and signals the DC Controller when an error has occurred.

  DFD is only generated at the first sheet fed after power up. It can only be reinitialized by a power off or sending an (ESC) E while in Flush Pages mode (Formatter PCA S12-1 ON).

DSW941 (on DFD PCA). The Double Feed Detect has an 8 position DIP switch (DSW941) that serves several functions such as selecting paper input sources, and disabling certain printer functions such as paper jams and warm up. Figure 5-58 shows a complete list of functions for DSW941.

DS941 SWITCH	WHEN DC CONTROLLER JC101-1, JC101-4 AND J109 ARE NOT CONNECTED	WHEN DC CONTROLLER JC101-1, JC101-4 AND J109 ARE CONNECTED
1	**IF THE PAPER DECK EXTENDER (PDX) IS INSTALLED AND NOT OUT OF PAPER:** LEFT (ON): SELECTS PAPER FEED FROM THE PAPER DECK (PDX). RIGHT (OFF): SELECTS PAPER FEED FROM THE LOWER CASSETTE. **IF THE PAPER DECK EXTENDER (PDX) IS NOT INSTALLED OR OUT OF PAPER:** LEFT (ON): SELECTS PAPER FEED FROM THE UPPER CASSETTE. RIGHT (OFF): SELECTS PAPER FEED FROM THE LOWER CASSETTE.	DS941-1 IS NOT USED
2	LEFT (ON): TURNS THE LASER ON	LEFT (ON): TO CHECK TRANFER CORONA OUTPUT
3	LEFT (ON): WARM UP KILLER ENABLES PRINTING WITHOUT WARM-UP.	LEFT (ON): TO CHECK DEVELOPER BIAS
4 6	DS941-4 AND DS941-6 USED TOGETHER SELECT THE PAPER PATH TO BE TESTED ACCORDING TO THE FOLLOWING CHART: 4 / 6 / PAPER PATH TESTED: 0 / 0 / PRINT ENGINE TO ERROR TRAY 1 / 0 / PRINT ENGINE TO MAIN STACKER TRAY 0 / 1 / PRINT ENGINE TO DUPLEX HOLDING TRAY (IF DUPLEX INSTALLED) 1 / 1 / DUPLEX HOLDING TRAY TO PRINT ENGINE 0 = RIGHT (OFF) 1 = LEFT (ON)	DS941-4: LEFT (ON): TO CHECK EP DRUM POTENTIALS. (Vlight, Vdark, AND Voff) DS941-6: LEFT (ON): TO CHECK PRIMARY CORONA OUTPUT.
5	LEFT (ON): DISABLES PAPER JAM DETECTION IN THE ENTIRE MACHINE.	LEFT (ON): TO CHECK PRETRANSFER, TRANSFER, AND SEPARATION CORONAS OUTPUT.
7	LEFT (ON): ENABLES PRINTING WHEN NOT IN READY STATUS	LEFT (ON): TO CHECK SEPARATION CORONA OUTPUT.
8	LEFT (ON): TEST PRINT. USED TO EXECUTE SWITCH DS941 PAPER MOVEMENT	DS 941-8 NOT USED

NOTE: ASSURE ALL DS941 SWITCHES ARE IN THE RIGHT (OFF) POSITION AFTER SERVICE.

Figure 5-58. DSW941 (on Double Feed Detect PCA)

Note

Connector J109 must be unplugged from the DC Controller PCA to use the DSW941 functions.

EP Drum Separation

The printer is equipped with a Drum Separation Claw unit consisting of three claws mounted on a movable assembly and driven by a motor. In the event of faulty separation corona operation, out-of-spec paper, or two sheets fed together, the paper may not separate from the drum. In this case, the Drum Separation claws peel the paper off before it enters the cleaning unit and jams.

Driven by its motor, the separation claw assembly moves back and forth along the face of the drum to keep the claws from scoring the drum in one place.

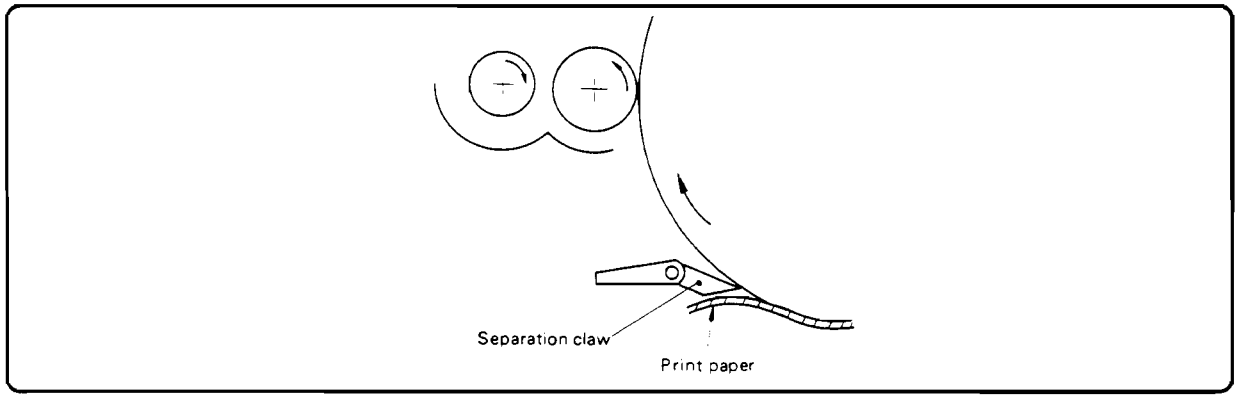


Figure 5-59. Drum Separation Claw

Feeder Assembly

The Feeder Assembly carries the paper from the EP Drum area to the fuser. It consists of the feeder belts themselves, the EP Drum Separation Sensor (Engine-PS1), and a suction fan (Engine-FM4).

Engine-PS1. Located on the EP Drum end of the Feeder Belt, Engine-PS1 is a photo interrupter type sensor with a lever or flag which breaks the infra red beam when a sheet of paper passes the sense arm (Figure 5-60). Engine-PS1 verifies that paper has successfully separated from the drum.

Engine-FM4. With the main motor ON, Engine-FM4 draws air in the direction of the arrow as shown. This attracts print paper to the feeder belt and keeps the paper from skewing (Figure 5-60).

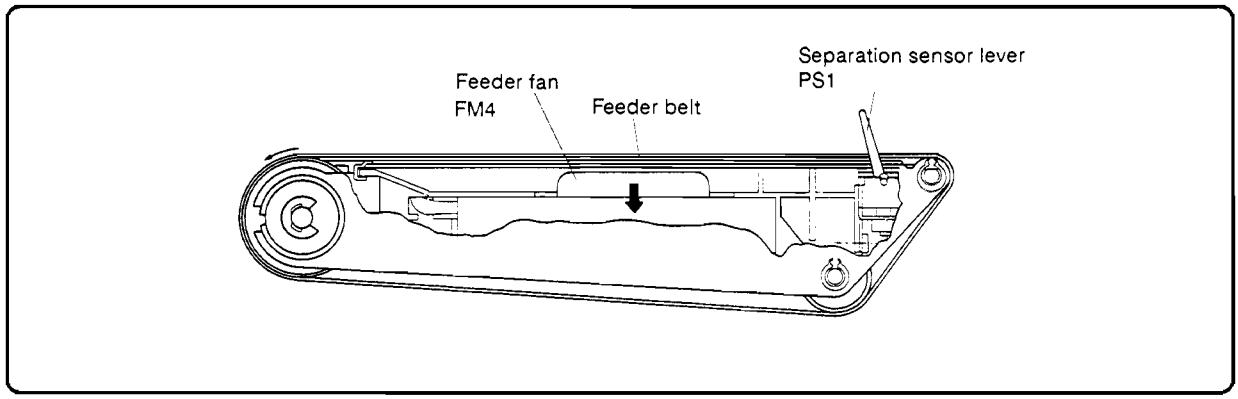


Figure 5-60. Feeder Assembly

Switchback/Stacker Assembly

The stacker consists of three main parts: the switchback feeder, the stacker, and the lifter. The stacker and switchback feeder both have motors (Stacker-M1 and M2) for driving the rollers that feed paper. The lifter has a motor (Stacker-M3) for lifting the main output tray.

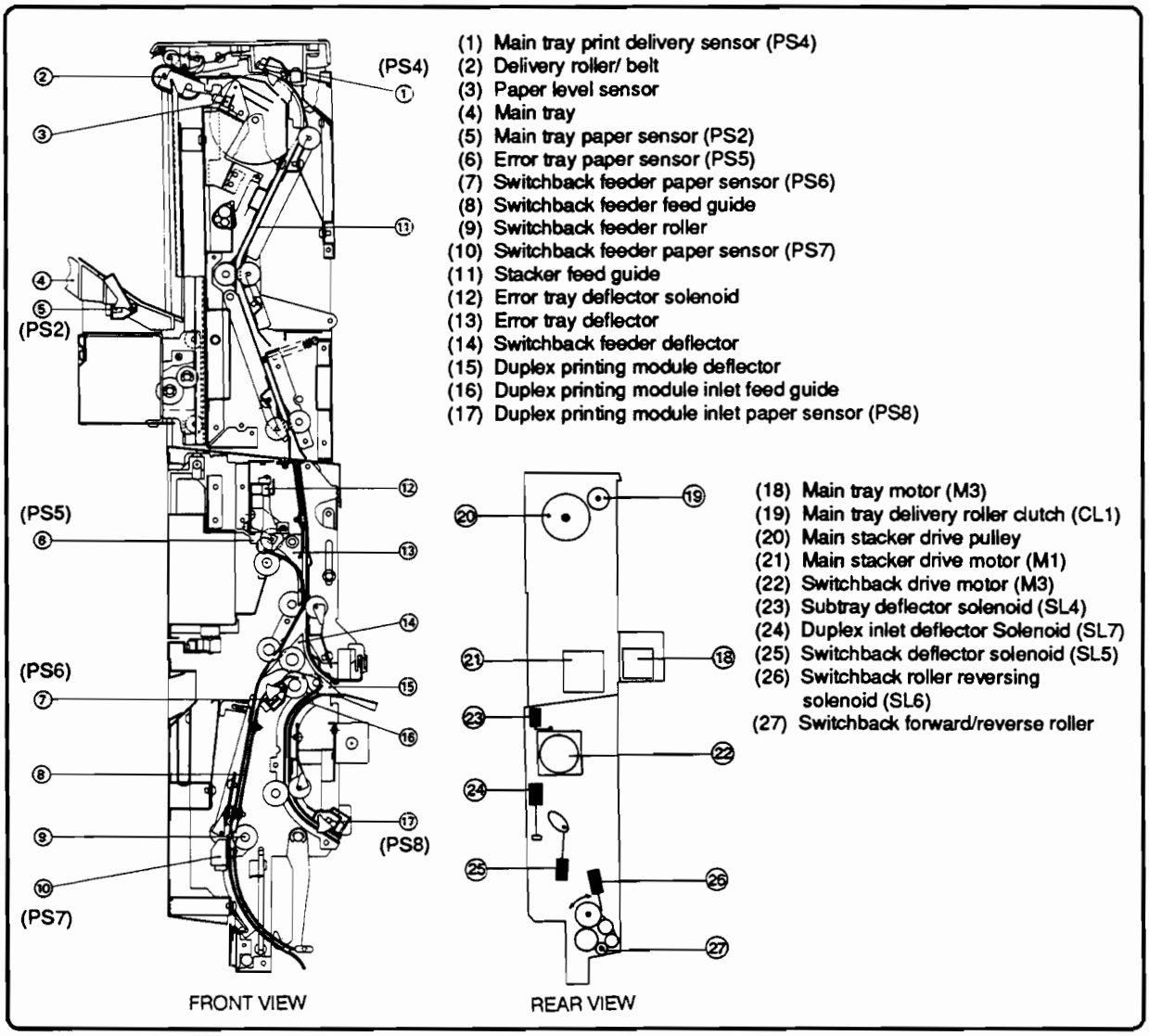


Figure 5-61. Stacker Sectional View

The stacker delivers prints received from the Print Engine to the tray (main or error) that is specified by control signals from the printer. During simplex (single-sided) printing, the stacker sends the paper to the switchback feeder which inverts the prints for face-down delivery to the main tray or the error tray. This allows correct order stacking of print jobs. Prints to be inverted are deflected to the switchback feeder by the triangular-shaped switchback feeder deflectors (Figure 5-62).

The tray to which prints are delivered (main tray or error tray) is determined by the error tray deflector (Figure 5-62).

Main Output Tray. All normal prints are routed to the main output tray. When prints are to be delivered to the main tray, Stacker-SL4 remains OFF when the print clears Stacker-PS6, so the print is fed from the switchback feeder to the stacker.

When the print reaches the stacker main tray print delivery sensor (Stacker-PS4), the delivery roller/belt clutch (Stacker-CL1) goes ON and drives the delivery rollers and belt to deliver the print to the main tray. Stacker-CL1 then goes OFF about 3.5 seconds after the trailing edge of the paper clears Stacker-PS4. When paper clears Stacker-PS4 the data is deleted from the Formatter memory and is no longer available to be recovered (*i.e.* paper jam error recovery).

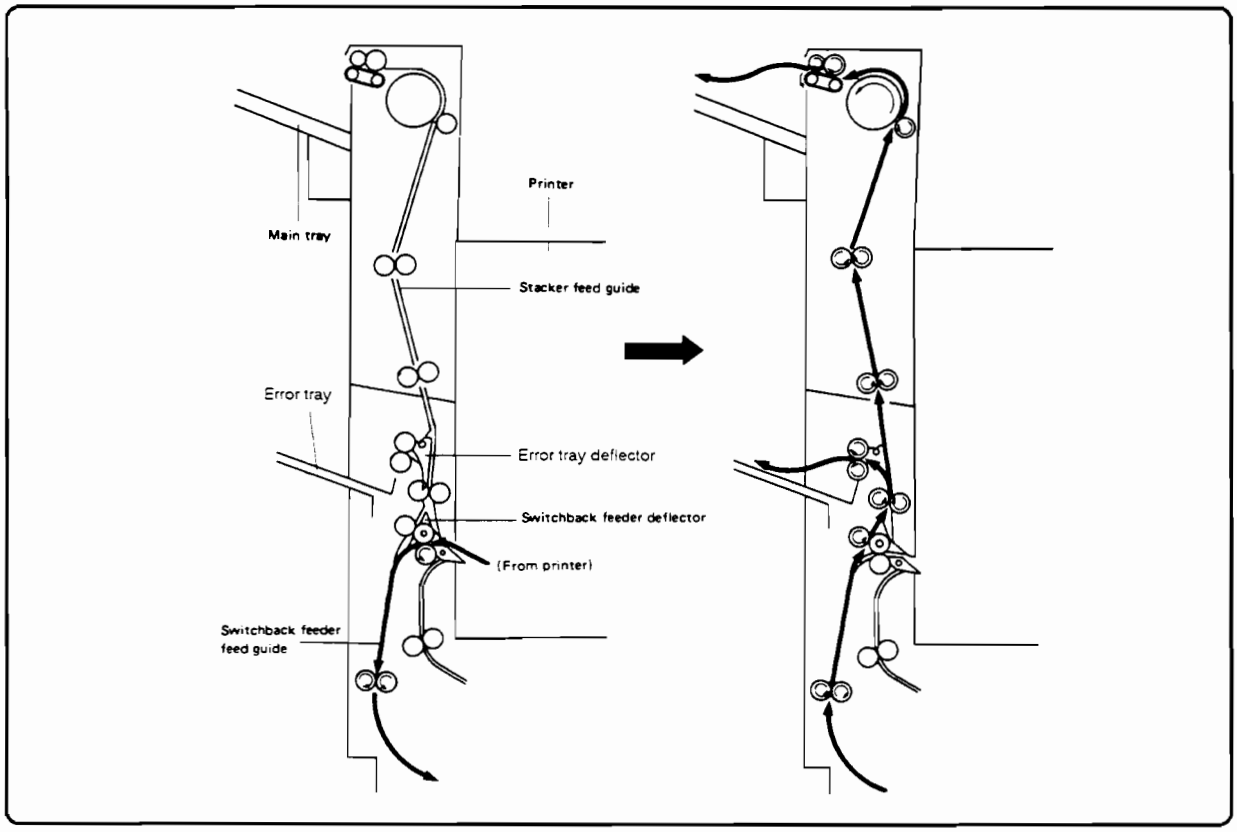


Figure 5-62. Face-Down Stacker Operation (single-sided)

In order to improve the output stack alignment, prints delivered to the main tray float slightly on air from the print alignment fan (FM2). The air blows in the direction indicated by the arrow in Figure 5-63. This reduces friction between the print delivered and the main tray (or between the print delivered and the top sheet in the main tray). In this way the paper is properly aligned, as shown in Figure 5-63.

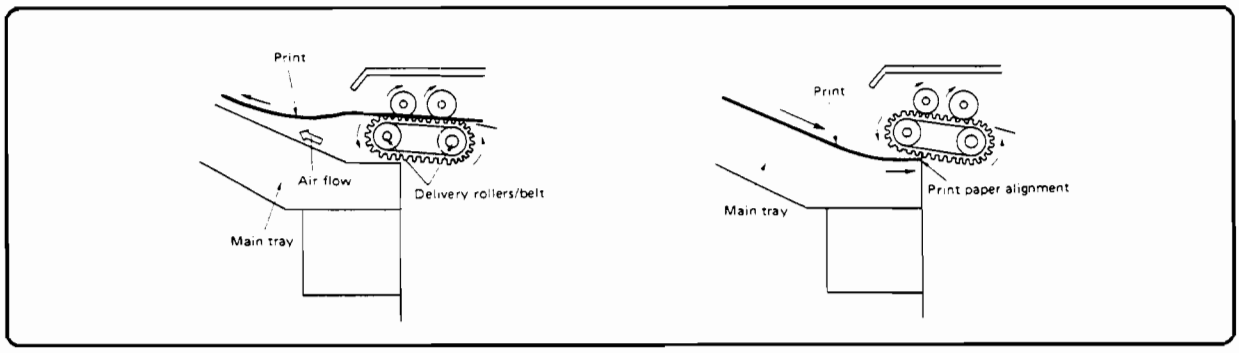


Figure 5-63. Print Delivery and Alignment

Raising/Lowering Main Tray. The main tray is lifted and lowered by the main tray drive motor (Stacker-M3).

When the Stacker Control PCA receives the main tray drive motor (Stacker-M1, M2) $\overline{\text{START}}$ command from the printer, it actuates the tray brake solenoid (Stacker-SL1). This releases the tray brake, which prevents the tray from dropping as paper is stacked onto the tray. Simultaneously, the Stacker Control switches the main tray drive motor (Stacker-M3) ON to lift the main tray.

As the main tray rises, it pushes up the delivery roller/belt unit, moving the signal generating plate attached to the assembly. When the plate blocks the light path inside, paper level sensor Stacker-PS3 sends a signal to the Stacker Control, which then turns OFF Stacker-M3, stopping the main tray (Figure 5-64, upper right).

If Stacker-PS3 does not go ON within about 6 seconds from the time the main tray starts rising, the Stacker Control assumes a malfunction in the lifter and notifies the printer DC Controller by serial signals.

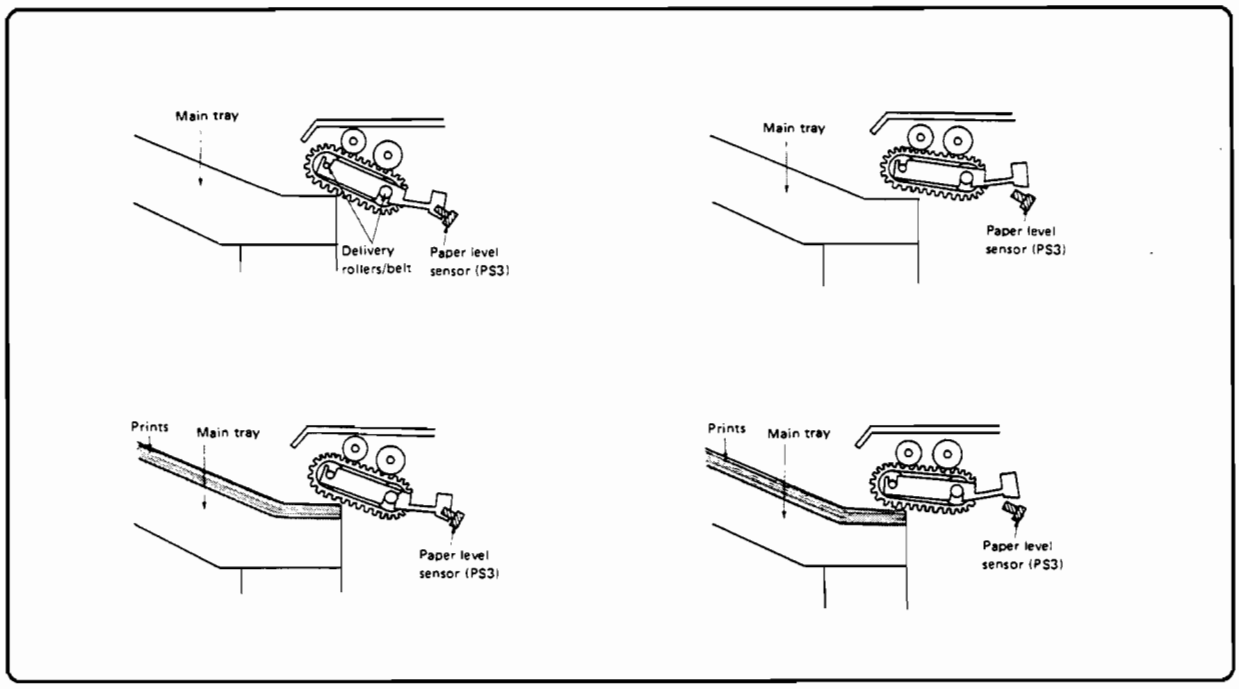


Figure 5-64. Raising/Lowering the Main Tray

After the main tray stops, the Stacker Control turns motor Stacker-M3 ON for about 0.03 second lowering the main tray a few millimeters to make room for stacking several prints, then turns OFF both Stacker-M3 and Stacker-SL1 (Figure 5-64). This stops the main tray in the prescribed position and applies the brake. As more prints are delivered to the main tray, the delivery rollers/belt are pushed upward, Stacker-PS3 eventually goes ON and the main tray is again lowered a few millimeters, as above in Figure 5-64, (lower right).

When the main tray capacity has been reached for the paper size being stacked, a limit switch goes ON (MS1 for smaller paper sizes (letter, A4, exec); MS2 for larger sizes (ledger, legal, A3)). When the limit switch goes ON, the Stacker Control sends serial signals to the printer DC Controller to inform it that the main tray is full. Simultaneously it stops the main tray motor (M3). The DC Controller informs the Formatter PCA which then displays a `15-EMPTY OUTPUT STACKER` message. Refer to Figure 5-65.

When the prints are removed from the main tray, paper sensor PS2 signals that there is no paper on the tray. The printer sends a drive motor $\overline{\text{START}}$ command and the main tray rises again and stops in the position shown in Figure 5-64 (upper left).

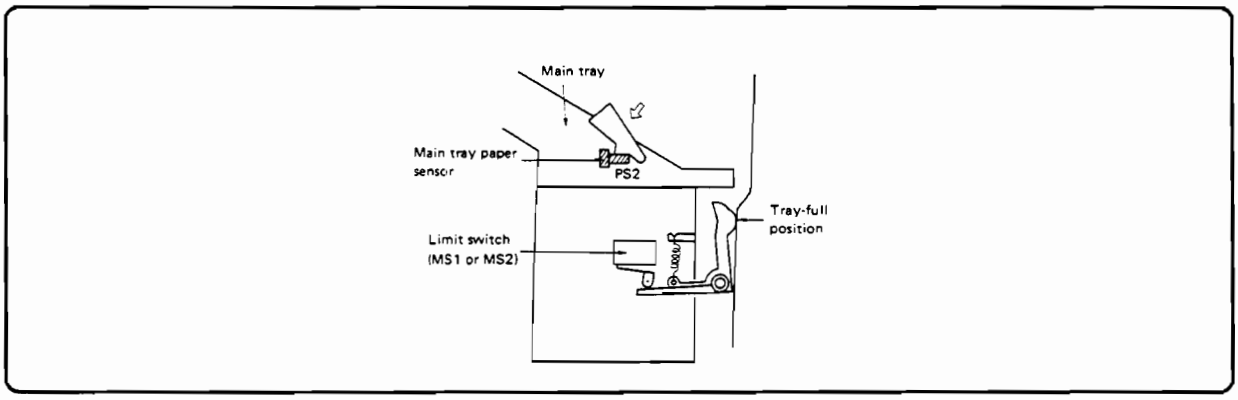


Figure 5-65. Stacker Full Sensing

Error Tray. The error tray is used for stacking of misprints, misfeeds (including double feeds and paper cleared after jams) and print engine self test printouts (using the control panel TEST PRINT button - not the (SELF-TEST) key).

When prints are to be delivered to the error tray, the error tray deflector solenoid (Stacker-SL4) goes ON about 0.3 second after the print clears the switchback feeder paper sensor (Stacker-PS6). This diverts the paper to the error tray. Error tray sensor Stacker-PS5 is activated, informing the stacker controller of the successful operation of the error tray deflector solenoid Stacker-SL4.

Duplex Paper Transport

The duplex system feeds paper back to the Print Engine after simplex printing operation to permit automatic printing onto the reverse side.

Duplex Overview

Paper printed on the first side is delivered to the holding tray of the duplexing unit via duplex entry path of the switchback feeder assembly and the duplex feed belt assembly. The paper is inverted when placed on the duplex holding tray. To print the second side, the paper is picked up from the duplex holding tray, passed through the vertical pass assembly, and fed to the Print Engine via the feeder assembly of the PDX unit. After the second side of the paper has been printed, the paper is delivered to the face down stacker tray. The first side printed is delivered face-down, allowing correct order output without using the switchback unit to invert.

The operations of the electrical components of the duplexing unit are controlled mainly by the PD/DU PCA of the PDX unit. Duplexing can be divided into two operations:

- Delivery of a printed page from the printer to the duplexing unit.
- Feeding paper from the holding tray of the Duplexer to the Print Engine for printing on the reverse side.

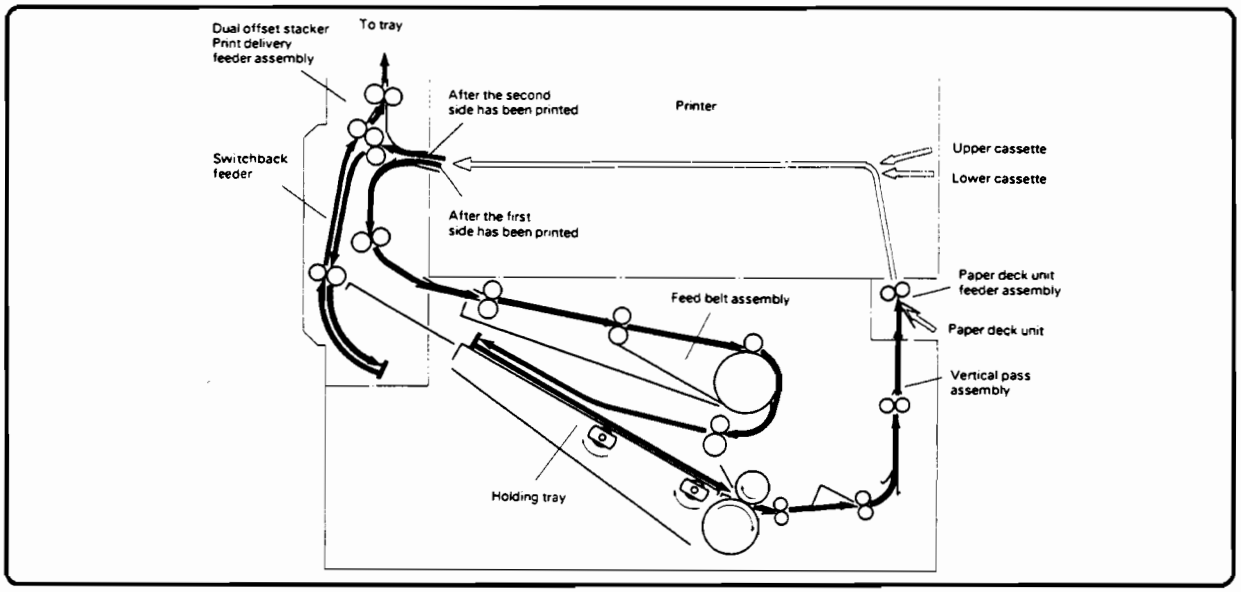


Figure 5-66. Duplex Paper Path Overview

Duplex Entry

The duplex deflector of the switchback feeder assembly deflects the print (printed on the first side) into the duplexing unit.

Duplex Feed Belt

When paper is deflected into the Duplex area, the Duplex Feed Belt is the first assembly it reaches. The paper is fed via the Duplex Feed Belts into the Duplex Holding Tray.

Duplex Holding Tray

Paper is inverted as it enters the Duplex Holding Tray where it stops to await the command to feed back through the print engine for the second pass print operation. Several sheets may be present in the Duplex Holding Tray at any given time.

Holding Tray Side Plate. The side plate, at the rear of the holding tray, is driven by the side-plate drive motor underneath the holding tray. The motor moves the plate by driving the rack attached to the side plate via a reduction gear set. A stepping-type motor is used. The direction and number of rotations are controlled by the phase and number of drive pulses applied to the motor. Drive signals for the motor are output from the PD/DU PCA which drives the motor via the drive circuit of the Duplex driver PCA. As paper enters the duplexer, the side plate motor drives the side plate to its home sensor and then steps out to the correct position for the paper size in use. This happens on the first sheet fed into the duplexer and does not repeat until: a) a new paper size enters the duplexer or b) a new print job is started.

The PD/DU PCA (in the PDX unit) then notifies the printer that the first side has been printed and that the print is ready to be fed back to the printer for the second printing operation. Now the delivery operation from the printer to the duplexing unit is completed.

Duplex Tray Weight. As paper enters the holding tray, the duplex tray weight is in a raised position (aligned with the face of the rollers). The weight lowers onto the paper as soon as it has left the duplex feed belt. When the weight is lowered, it increases the force pressing the stack of prints on the holding tray against the pick-up rollers, thus improving pick-up of the bottom sheet. The weight is lifted by a crank that is turned by the duplexing unit drive motor via a solenoid actuated spring clutch (Figure 5-67).

When the solenoid is actuated, the control ring of the clutch makes a half turn, turning the crank a half turn and lowering the weight. When the solenoid is de-actuated, the control ring makes a half turn, turning the crank a half turn and raising the weight. **Correct weight timing is achieved by proper installation of the duplex transmission drive assembly.** Simultaneous with the weight descending, the second-pass pick-up rollers make a half turn to pick-up the bottom sheet of paper on the holding tray.

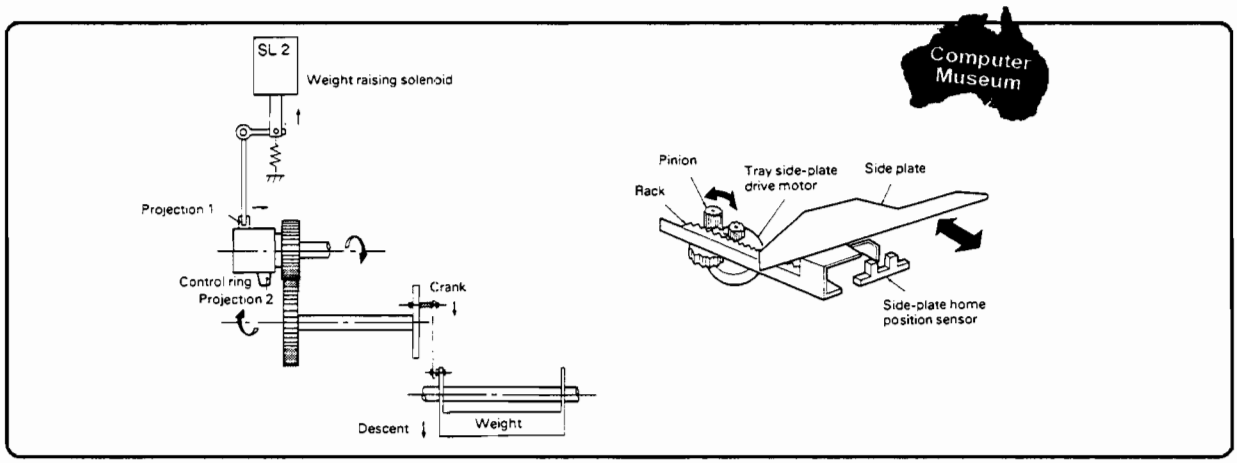


Figure 5-67. Holding Tray Side Plate and Paper Tray Weight & Clutch

Second-pass Pick-up Rollers

The second-pass pick-up rollers pick up prints from the holding tray and feed them to the duplex separation rollers.

The rollers are driven via a solenoid-actuated spring clutch (Figure 5-68). The solenoid is actuated for 0.1 seconds and the spring clutch engages and connects the duplexing unit drive motor to the pick-up rollers. The control ring makes a half turn, then is stopped by the solenoid, so the spring clutch disengages and the pick-up rollers stop after a half turn.

Separation Rollers

When the separation roller clutch is actuated, the duplex separation rollers and second-pass feed rollers rotate. The bottom sheet of paper on the holding tray is picked up by the pick-up rollers and advanced to the separation rollers. The upper roller rotates in the direction opposite to the direction in which the paper is moving, thus preventing double feed by holding back any other sheets drawn along by the bottom sheet (Figure 5-68). The peripheral speed of the upper separation roller is 1/4.5 that of the lower roller. **Both horizontal and vertical adjustments are critical to proper separation roller operation.**

Duplex Registration Rollers

The registration rollers feed a print to the vertical pass feed assembly at a time specified by a drive command.

The registration roller clutch (electromagnetic) turns ON at a specific time after the leading edge of the paper reaches the pick-up sensor, thus connecting the duplexing unit drive motor to the registration rollers.

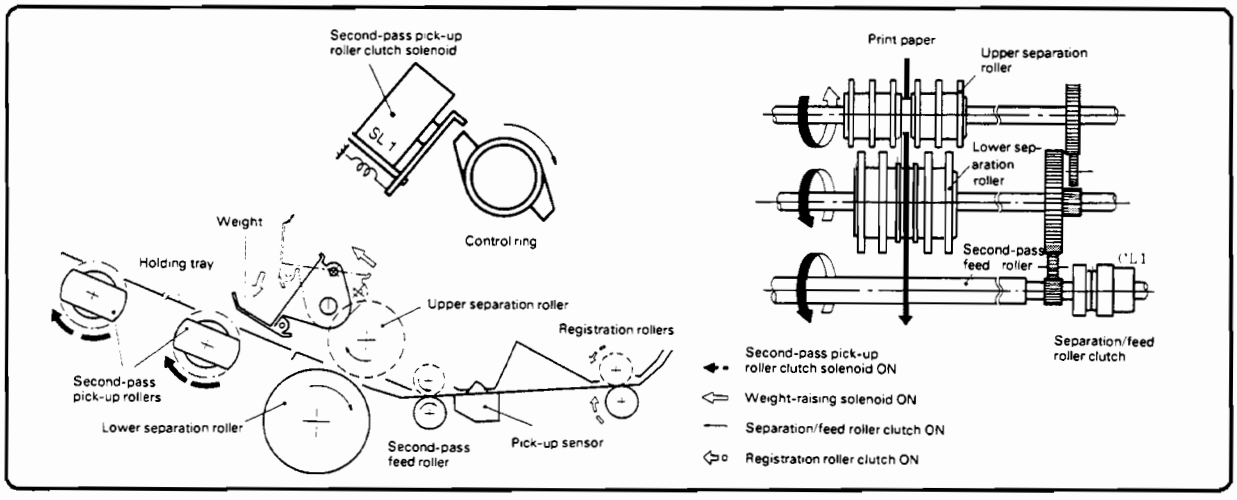


Figure 5-68. Second Pass Paper Pick-up System

Vertical Feed (Pre-registration)

When the PD/DU PCA of the PDX unit receives an AUXILIARY PICK-UP command (AUXPU) from the printer, it actuates the duplex registration roller clutch (Duplex-CL2) and the vertical pass feed roller clutch (Duplex-CL3) to start feeding the print from the vertical pass feed assembly.

Approximately one second later, the PD/DU PCA causes the feed rollers of the PDX unit to rotate. They feed the print from the vertical pass feed assembly to the printer.

Clutches Duplex-CL2 and CL3 are turned OFF after approximately three seconds. Since the duplex registration rollers of the printer are stationary when the print reaches them, the paper arches up slightly and aligns its leading edge with the rollers. This corrects any feed skew. When the PD/DU PCA receives the signal, it turns clutches Duplex-CL2 and CL3 ON again to feed the print to the transfer unit of the printer.

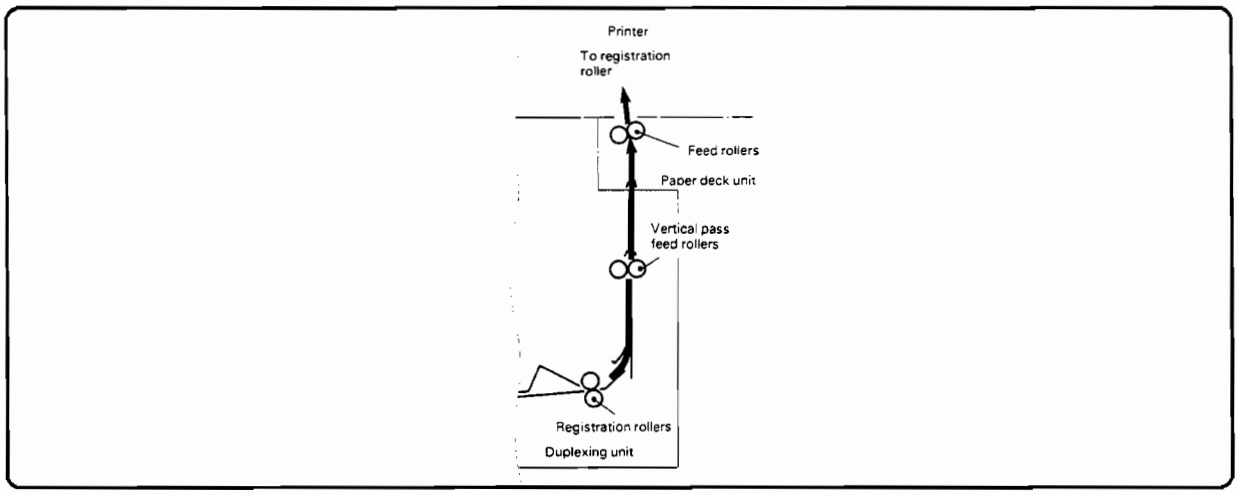


Figure 5-69. Vertical Feed System

Jam Detection

Paper sensors throughout the printer's paper path are used to detect the presence of paper. Jams are detected in one of two ways: 1)Paper is not sensed when it is expected at a given sensor **(Paper Late).** 2)Paper is sensed when it is not expected at a given sensor **(Paper Early).**

Note

Paper jams which occur in the Duplex or Stacker units will frequently cause a jam in the Print Engine immediately afterward. In these cases, there will be two "pings" as the jam occurs; first the jam source will be displayed briefly (*i.e.* `13.3 DUPLEX JAM` or `13.2 OUTPUT JAM`), then the secondary jam, `13.1 PAPER JAM` (Print Engine Jam) will appear a few seconds later. This can make jams in the Stacker or Duplex more difficult to detect unless someone is standing over the display panel at the moment the jam occurs.

For more information about troubleshooting paper jams, see "Paper Movement Problems" in Chapter 7, beginning on page 7-36.

Paper Sensor Locations

Figure 5-70 shows the locations of the various paper sensors throughout the printer.

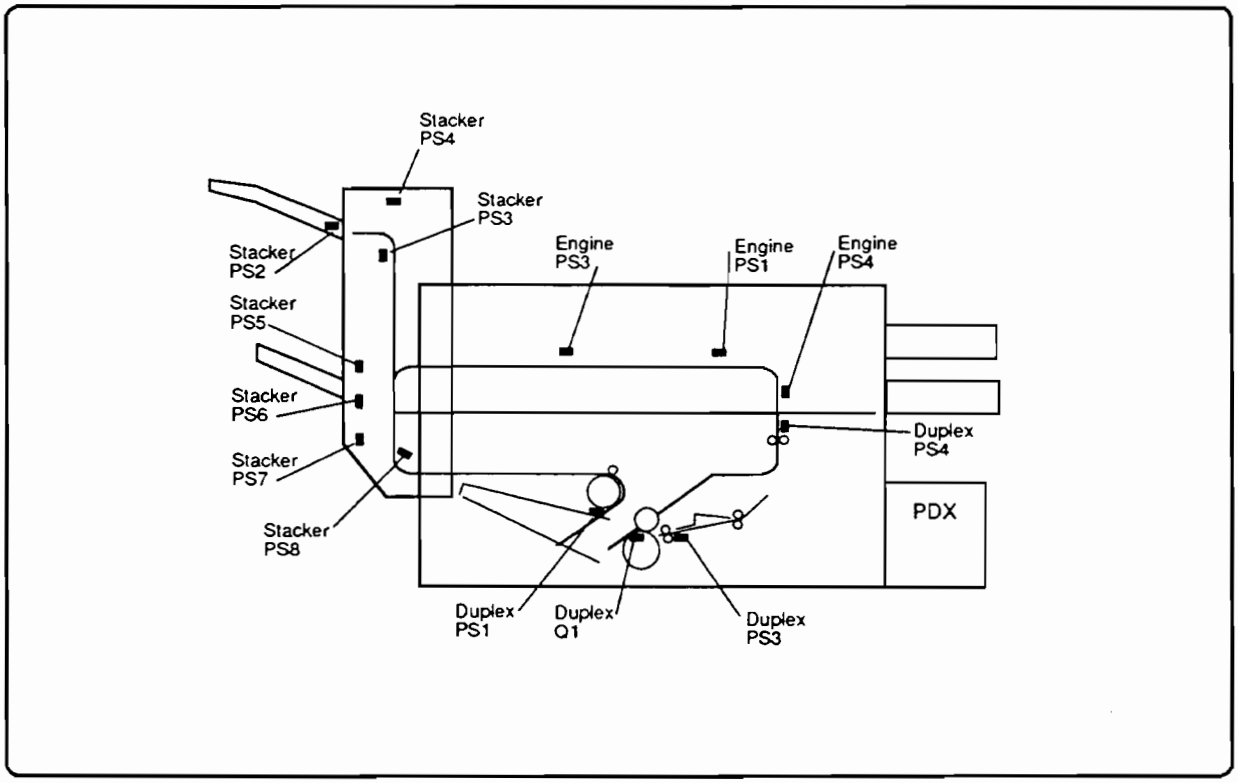


Figure 5-70. Paper Sensor Locations

Paper Path Timing

Figure 5-71 gives an overview of the timing of paper jams in HP2684A (Simplex only, no PDX), 2684P (Simplex only with PDX) and 2684D (Duplex and PDX). Notice that there are timing "windows" (signified by the darkened areas on the charts) when paper is expected to be present in each area of the path. If paper is not sensed when expected, or is sensed when not expected, a jam indication results.

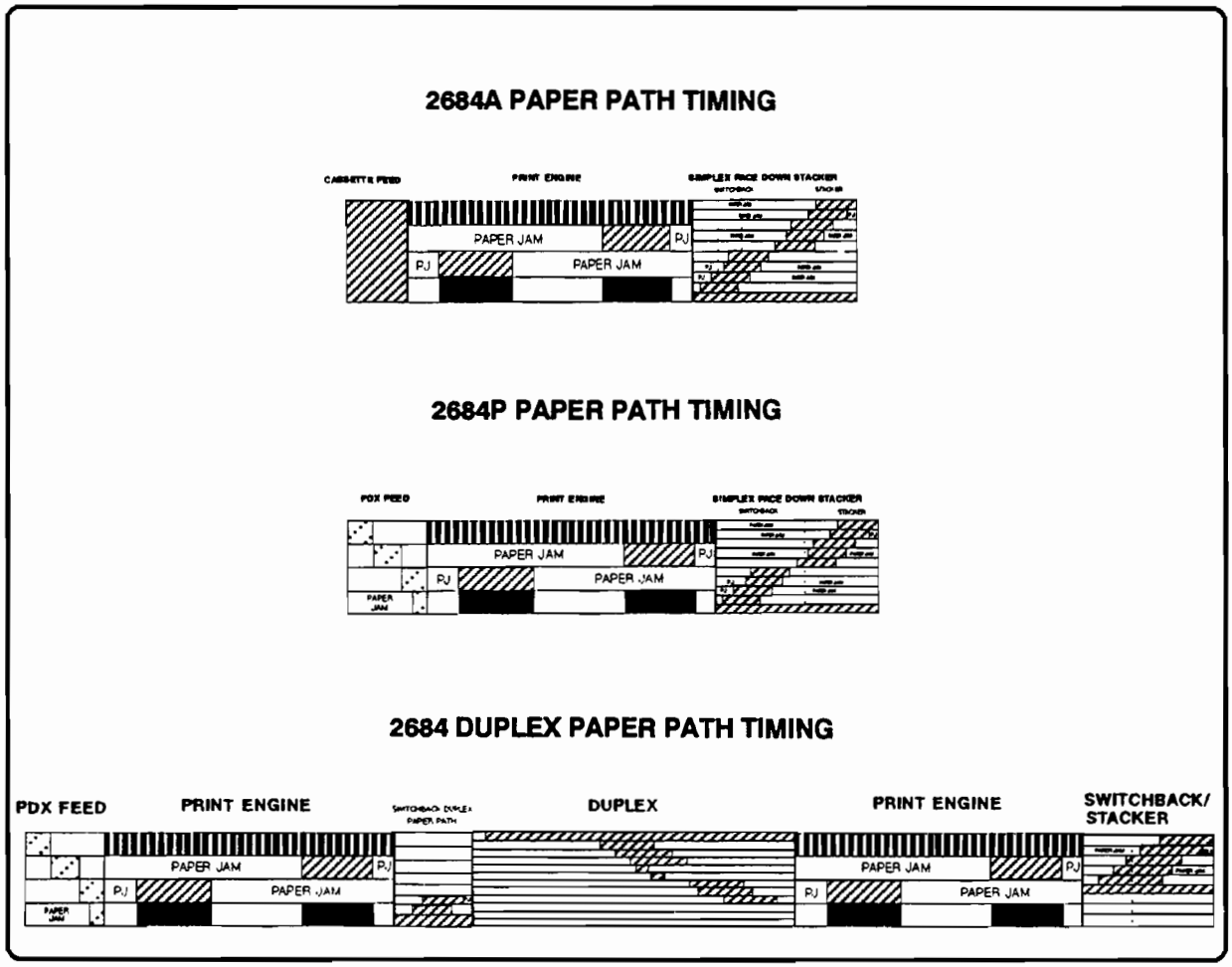


Figure 5-71. Printer Paper Path Timing Overview

Main Print Engine Jam Detection (Error 13.1)

The print engine has two paper sensors which are used for jam detection, Engine-PS1 and Engine-PS3. Both are photo interrupter type with a lever or flag which breaks the infrared beam when a sheet of paper passes the sensor arm. Engine-PS1 detects paper separation from the drum. Engine-PS3 detects paper passing through the fuser unit. The print engine also has a third paper sensor (Engine-PS4) which is used for jam detection **only** if the optional PDX is installed. It is located behind the lower cassette tray slot and detects paper motion from the PDX feed rollers to the print engine registration rollers. The paper sensor signals go directly to the DC Controller PCA.

If a print engine jam occurs (error 13.1), the registration roller clutch and pick-up roller clutch are disengaged. The main motor, drum motor, and fusing upper-roller heater shut off 0.7 sec. later. The jam indicator then flashes.

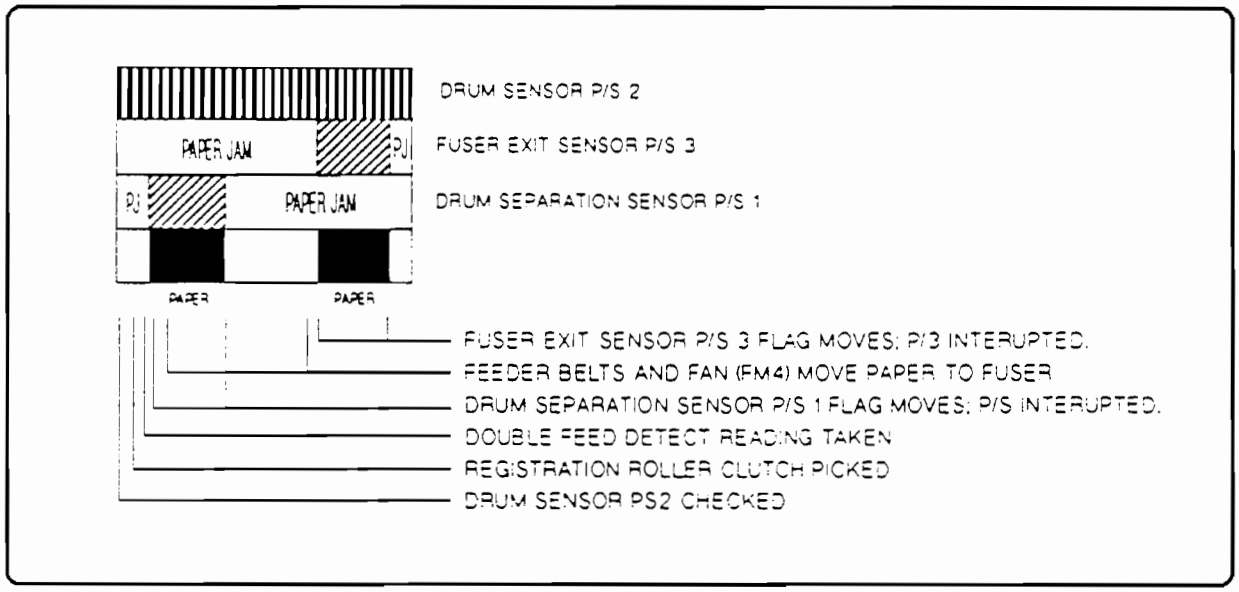


Figure 5-72. Print Engine Timing

Switchback/Stacker Jam Detection (Error 13.2)

When printing simplex (single-sided), each sheet of paper enters and exits the Switchback/Stacker assembly only once. However, when printing duplex (double-sided), paper enters and exits the Switchback portion of the assembly two times; once immediately after fusing the first side, then once again after fusing the second side. As a result, timing considerations for jam detection differs depending on whether printing simplex or duplex. Figure 5-73 and Figure 5-74 show the Switchback/Stacker paper timing in simplex and duplex modes.

Switchback/Stacker Jams - Simplex Printing

When printing in simplex mode, output jams are detected when paper does not reach the switchback feeder sensor (Stacker-PS6) within a certain time after leaving the print engine delivery sensor (Engine-PS3) or does not clear Stacker-PS6 after reaching it (Figure 5-73).

If an output jam occurs (error 13.2), the registration roller clutch and pick-up roller clutch are disengaged. The main motor, drum motor, and fusing upper-roller heater shut off 0.7 sec. later. The jam indicator then flashes.

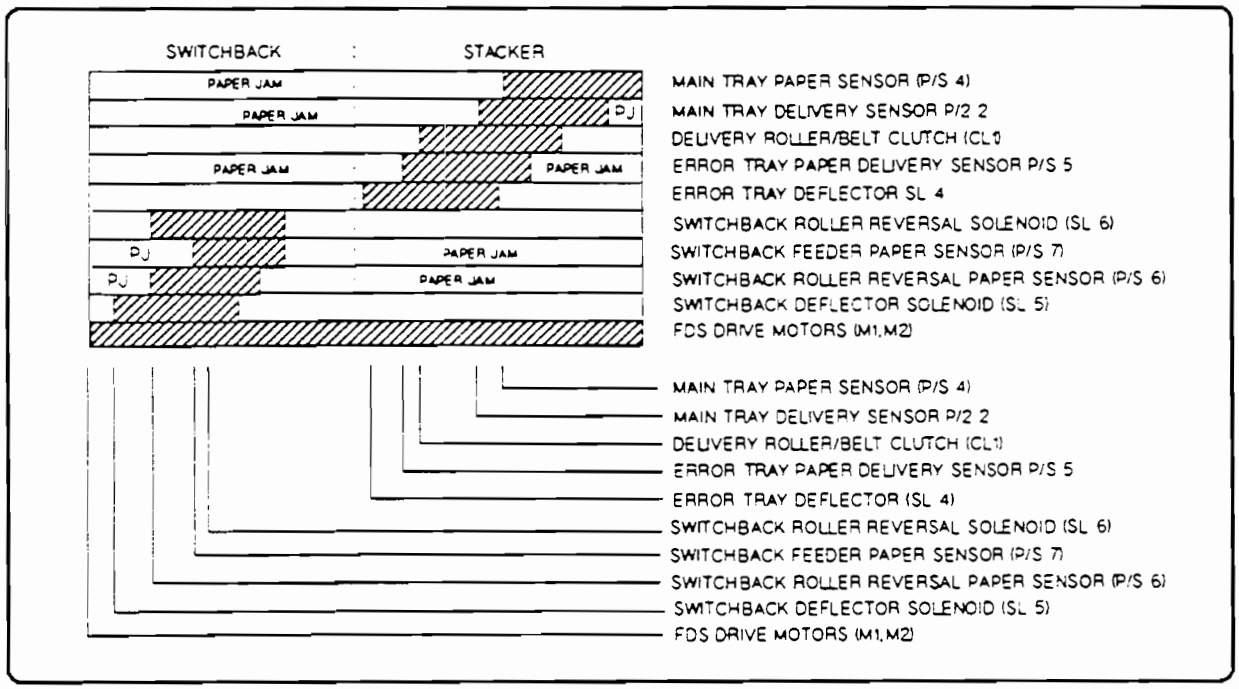


Figure 5-73. Stacker Timing - Simplex Printing

Switchback/Stacker Jams - Duplex Printing

When printing in duplex mode, output jams are detected a print does not reach the stacker print delivery sensor (Stacker-PS4 for the main tray, Stacker-PS5 for the error tray) within a certain length of time after reaching the print engine delivery sensor (Engine-PS3). Jams are also detected when a print does not clear the print delivery sensor within a certain length of time after reaching the sensor (Figure 5-74).

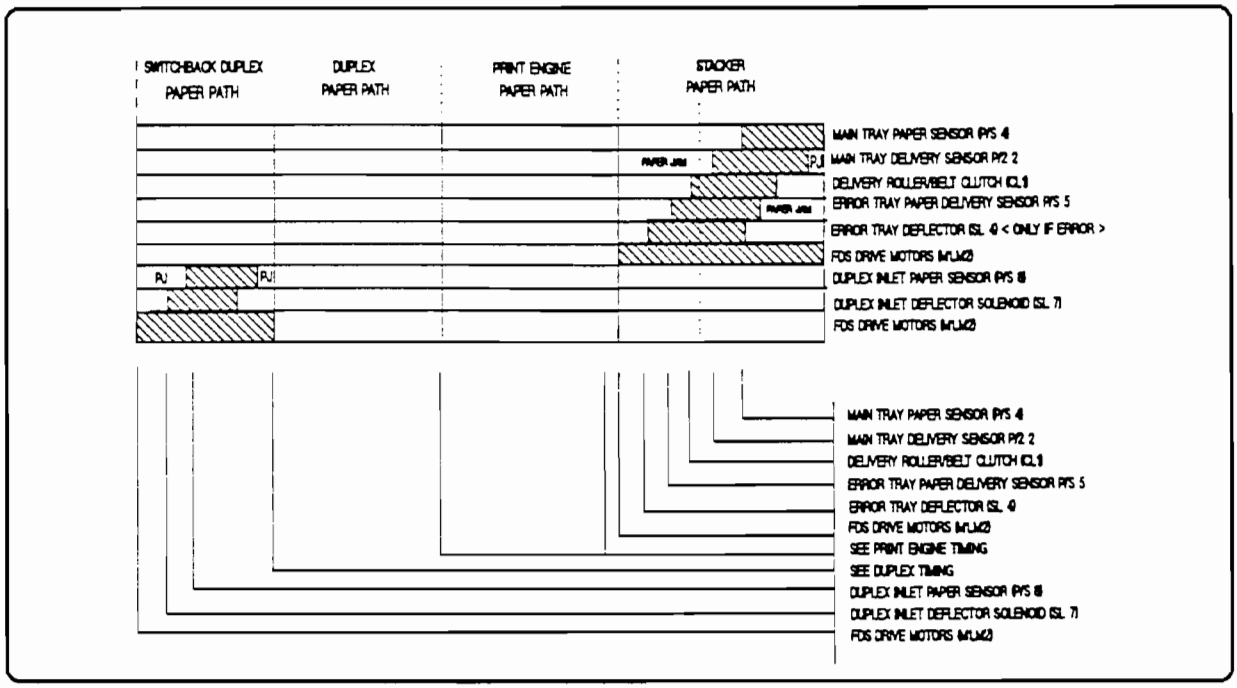


Figure 5-74. Stacker Timing - Duplex Printing

Duplex Jam Detection (Error 13.3)

The PD/DU PCA of the PDX unit checks that paper is moving normally by means of signals from sensors Duplex-PS1, Duplex-PS3 and Duplex-PS4 in the duplexing unit, sensor Stacker-PS8 of the print delivery feeder assembly and sensor Engine-PS4 in the print engine. (These sensors are shown in Figure 5-70 on page 5-72.) When the PD/DU PCA recognizes a jam, it immediately stops the duplexing unit drive motor (Duplex-M1) and notifies the printer of the jam. When the printer receives the signal, the registration roller clutch and pick-up roller clutch are disengaged. The main motor, drum motor, and fusing upper-roller heater shut off 0.7 sec. later. The jam indicator then flashes.

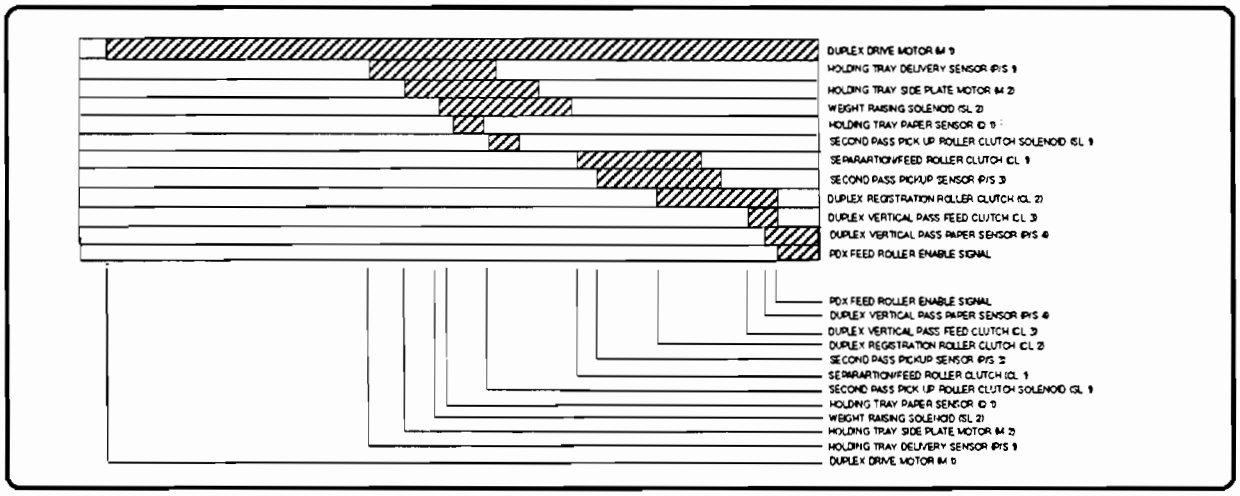


Figure 5-75. Duplex Paper Path Timing

PDX Jam Detection

The printer has an inlet paper sensor (Engine-PS4 in the print engine) to check that print paper is being fed normally to the printer. The inlet paper sensor (Engine-PS4) is attached to the guide plate that guides paper from the PDX unit to the registration rollers of the printer. PAPER SENSOR signal from the sensor is transmitted via the printer to the PD/DU PCA. The microprocessor on the PD/DU PCA reads the signals to check for paper jams. If a paper jam is detected, the microprocessor notifies the printer of jam occurrence via a serial signal.

The microprocessor on the PD/DU PCA checks the signal from the printer inlet paper sensor (Engine-PS4) at the time shown below. If there is no print paper in the sensor unit at that time, a paper jam is identified. Engine-PS4 is also monitored during duplex printing.

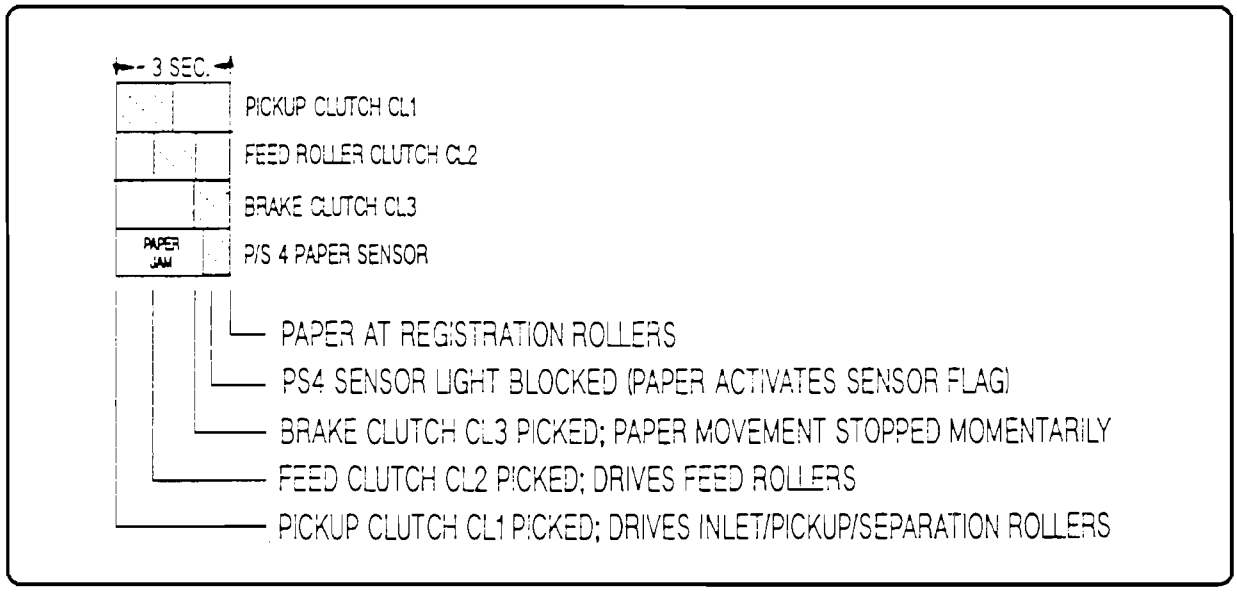


Figure 5-76. PDX Paper Path Timing

Cassette Jam Detection

Cassette input jams are detected when paper does not reach the registration rollers within approximately 1.5 seconds after the "D" roller solenoid (Engine-SL1 or Engine-SL2) are enabled.

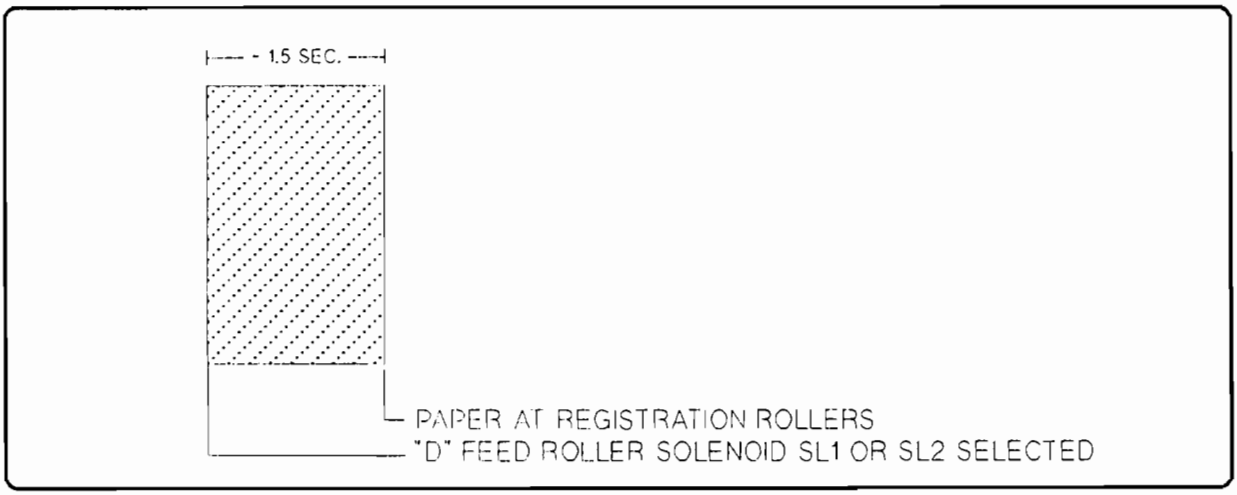


Figure 5-77. Cassette Feed Timing

Static-Charge Elimination

Residual charges remain on the paper and could cause the paper to stack unevenly. Grounded anti-static brushes are located in the following areas to help eliminates these charges:

- Just below the fuser, at the entrance to the duplex path.
- At the entrance to the duplex holding tray.
- On the Stacker top door, just before exiting to the stacker tray.

Main Drive System

The Print Engine uses several motors. These include the drum motor (Engine-M1) for turning the drum, the main motor (Engine-M2), the toner supply motor (Engine-M3) in the developing assembly, the separation claw shuttle motor (Engine-M4) for shuttling the drum separation claw back and forth along the drum to prevent paper from entering the drum cleaning assembly, the cleaning belt motor (Engine-M5) for fusing assembly cleaning-belt take-up, and the scanner motor (Engine-M6) for driving the prism mirror.

Driven components that do not have their own motors are driven by the main motor.

While the drum motor is rotating, clock pulses are generated by the photo interrupter (Engine-PS2) and transmitted to the DC Controller PCA which produce drive commands for individual loads based on these clock pulses and interface signals from the Format Control System.

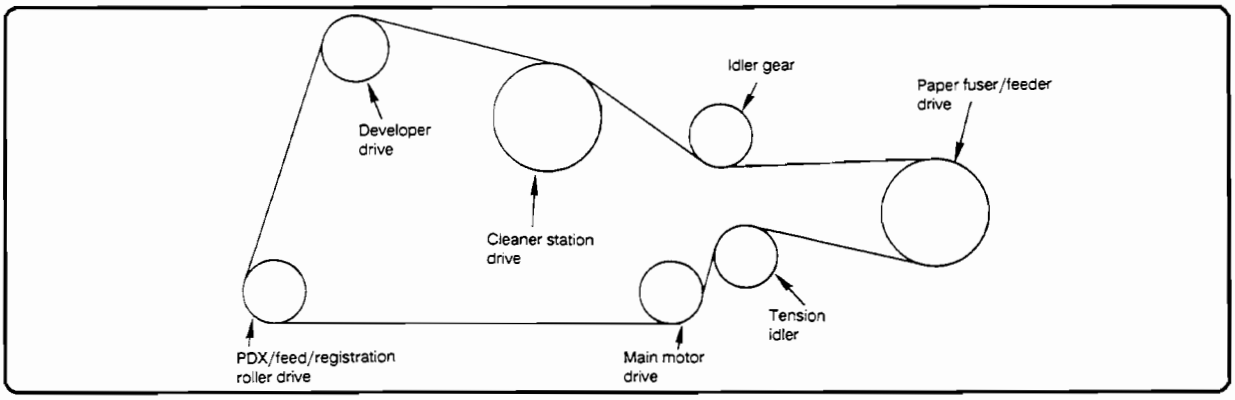


Figure 5-78. Main Drive System Overview

The main print engine drive system consists of the following components:

- Motor Drive PCA
- Main Motor M2
- Drum Motor M1
- Slotted Disk and Sensor PS2
- Chain and Gear Driven Assemblies
- DC Controller PCA

The Motor Drive PCA drives the drum motor (Engine-M1) and main motor (Engine-M2) with +24 Vdc. Both motors have a pulse generator built into them which is monitored by the Motor Drive PCA. The Motor Drive PCA controls the motor speed with a feedback circuit. **When motor speed is correct the motor illuminates the appropriate LED** (LED1 for the drum motor, or LED2 for the main motor). If either motor speed is incorrect the LED will not light, or may flash ON and OFF. If either of the motors have an overload condition, the motor drive PCA will illuminate LED3 (common for Engine-M1 and M2), (see Figure 5-79).

Note

LED1 and/or LED2 on the Motor Driver PCA will be lit when the Drum or Main motor is **up to speed.** It is possible for the motor(s) to be rotating too fast and the LEDs still lit.

The DC Controller PCA controls the start and stop of the motors. DRMD line is used for Engine-M1 (drum motor). MNMD line is used for M2 (main motor). The +24Vdc to power the motors is supplied by Engine-DCPS1. The +24Vdc is switch controlled by the right front door switch (Engine-MS3) and the rear cover interlock switch (Engine-MS5) in order to prevent motor operation when the covers are open.

The drum motor speed is controlled by the Main Drive PCA, but the DC Controller PCA also senses drum motion. The drum drive gear has a slotted disk mounted on the gear head, and motion is sensed by PS2 (CLKP). If the DC Controller does not see a pulse transition within 1 second, an ERROR 54-DRUM MOTOR MALFUNCTION is displayed on the operator display. The DC Controller PCA does not check for drum speed, but checks only for actual drum rotation, and assumes that the Motor Drive PCA is functioning correctly. **Likewise, no error is generated if the main motor is NOT turning at the correct speed.**

The main motor drives all of the paper path assemblies via a series of gears and a continuous drive chain. The drive chain is tensioned with a spring loaded idler gear. The drive chain turns the gear trains for the paper pick-up, registration, PDX, and feed rollers. It also turns the developer assembly; the cleaner assembly; and the fuser and feeder assemblies. The drive chain does not require any special timing when it is removed or replaced.

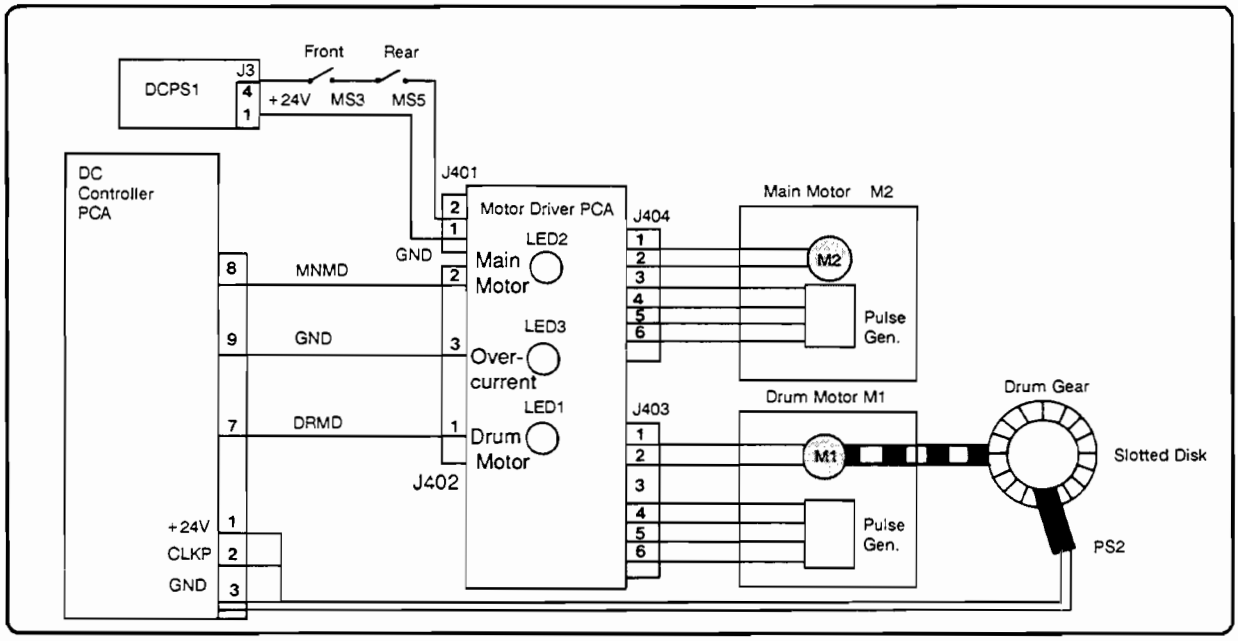


Figure 5-79. Motor Drive System, Block Diagram

PDX Operation

The main electrical operations of the PDX unit are controlled by the PD/DU PCA and deck unit controller.

The PDX Control primarily controls movement of the lifter deck. The microprocessor on the PD/DU PCA accepts signals from sensors at times specified by signals from the Print Engine, and outputs commands to drive various loads. Each load is driven through a driver on the PDX Control PCA. The 5V power to drive the PD/DU PCA is supplied from Engine-DCPS1.

The AC line voltage from the print engine is stepped down by a transformer to operate the 24VDC (DCPS1) power supply. Output of this power supply operates the PDX Control and drives various loads. The 24VDC supplied to the PDX Control is converted to 10VDC on the controller PCA and used by the control circuits in the PDX Control.

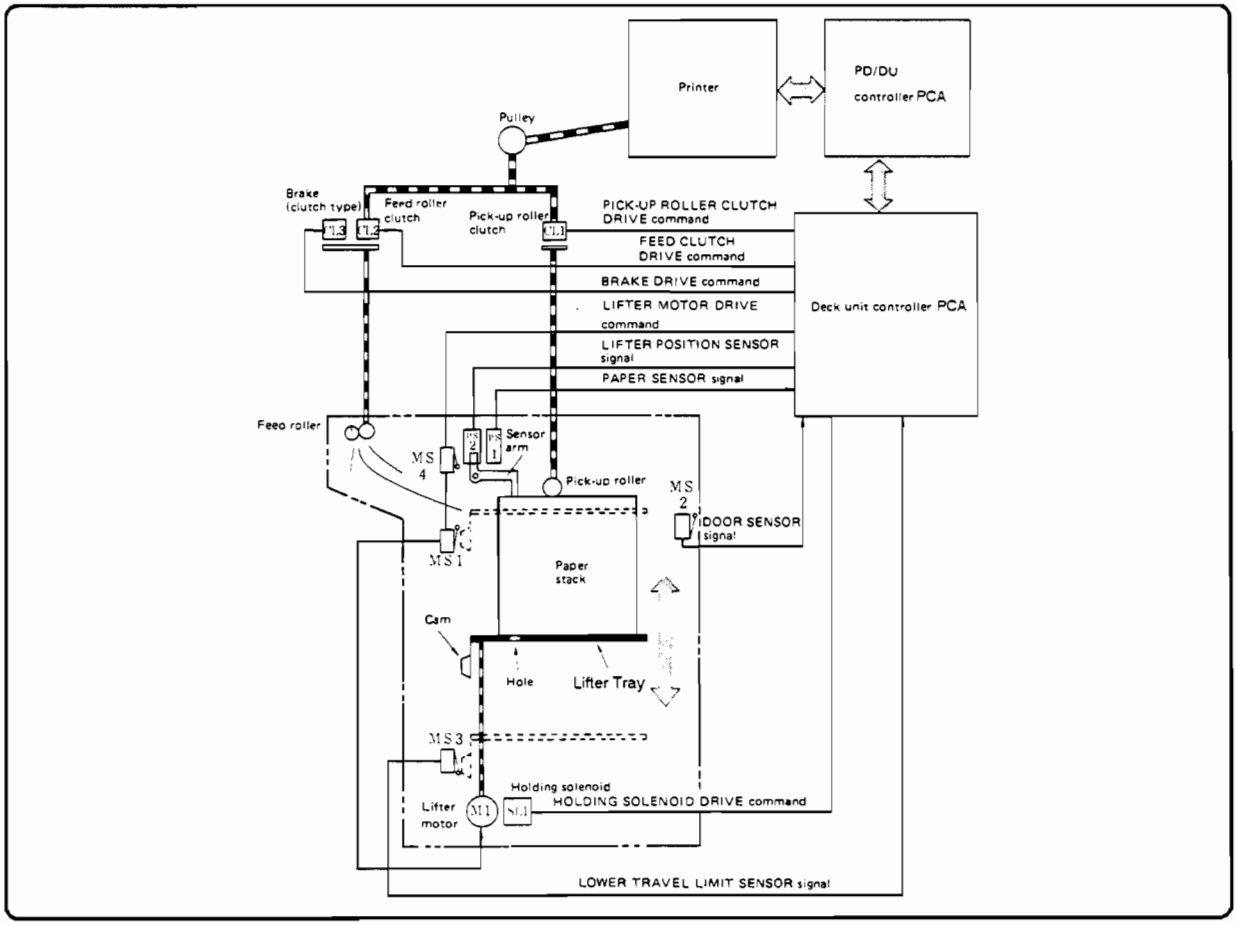


Figure 5-80. Operational Overview (PDX)

PDX Lifter Deck Raising

The lifter is raised and lowered by the lifter motor, a DC motor controlled by controllers, switches, sensors and a solenoid.

The pick-up and feed rollers are driven by the main motor of the Print Engine via a belt, pulleys, and electromagnetic clutches.

The pick-up, feed and brake clutches are operated by signals from the PD/DU PCA via the PDX Control PCA.

The lifter rises when all of the following conditions are met:

- Power is supplied from the printer.
- The PDX door is closed. (MS2 is ON.)
- LIFTER POSITION SENSOR signal is "L" ($\overline{\text{LPOS}}$) *i.e.* The sensor flag is not blocking PDX-PS2.
- The upper travel limit switches (MS1 and MS4) are OFF.
- The LIFTER DRIVER ENABLE SIGNAL from the PD/DU PCA is "L" ($\overline{\text{LIDE}}$).

When about 2mm (about 20 sheets) of print paper have been drawn from the lifter deck, the sensor arm is out of the lifter position sensor (PS2). This generates a Low LIFTER POSITION SENSOR signal that starts the lifter motor, causing the lifter to rise about 2mm. When the lifter motor stops, the holding solenoid prevents the lifter from descending under the weight of the print paper (see Figure 5-80).

PDX Lifter Deck Descending

The lifter descends when all of the following conditions are met:

- Power is supplied from the printer.
- The paper-filling door is open (PDX-MS2 is OFF) or the LIFTER DRIVE ENABLE signal (LIDE) is "H" (positive true).
- The signal from the lower travel limit sensor (PDX-MS3) is "L".

When the lifter descends far enough, the cam attached to the lifter actuates micro switch MS3, cutting power from the lifter motor, so the lifter stops.

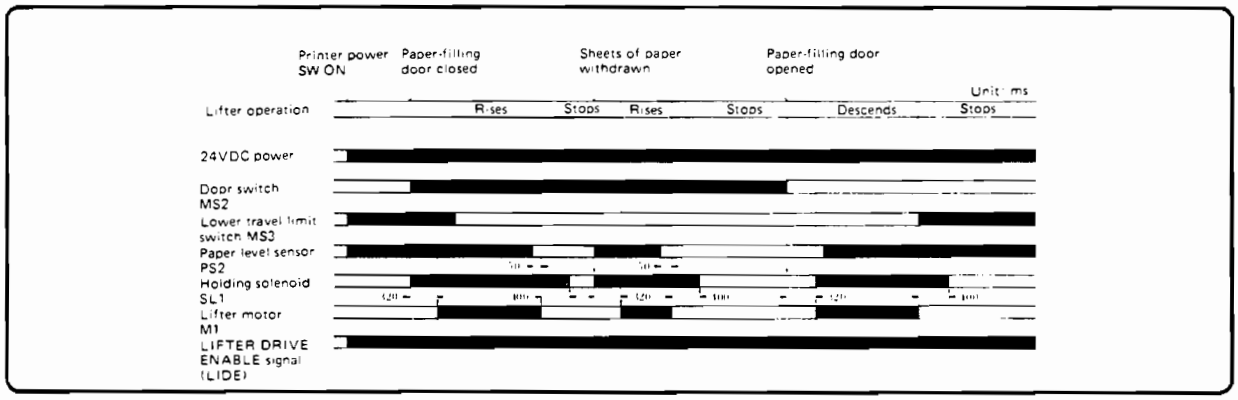


Figure 5-81. Lifter Deck Signal Chart

PDX Lifter Deck Malfunctions

When the lifter rises and the paper pushes the sensor arm upward, the sensor arm interrupts the lifter position sensor (PS2), causing the LIFTER POSITION SENSOR signal to go "H" (positive true) This stops the lifter motor and the lifter stops. If the lifter keeps rising even though the sensor arm has interrupted the lifter position sensor, the lifter is stopped when the sensor arm actuates overrun prevention micro switch MS4. In addition, if the lifter rises when there is no paper, the cam attached to the lifter actuates micro switch MS1 and causes the lifter to stop.

Duplex System

All of the components of the paper transport system shown below are driven by the duplexing unit drive motor (Duplex-M1), except for the side plate of the holding tray, which is driven by its own motor (Duplex-M2). The duplexing unit motor is connected to each of the sub-units via the clutches shown in Figure 5-82. The microprocessor on the PD/DU PCA turns the clutch-actuating solenoids ON and OFF through driver transistors on the DU driver PCA, thus controlling the movement of paper in the duplexing unit.

The microprocessor on the PD/DU PCA also switches the duplexing unit print delivery deflector solenoid, SL7 (located in the print delivery feeder assembly of the face down stacker) ON and OFF.

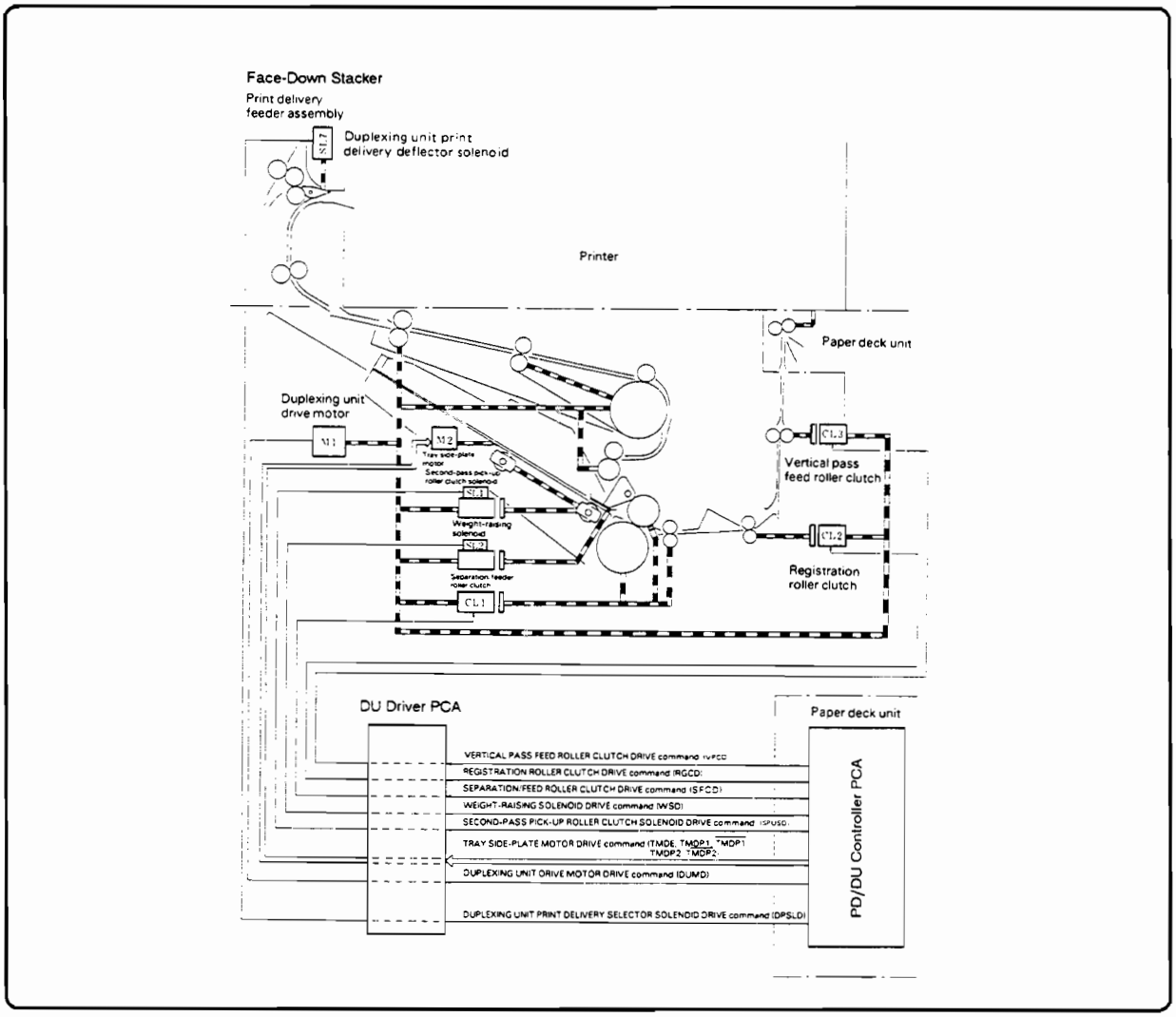


Figure 5-82. Duplex Drive System Motors

PD/DU PCA (DU Functions)

The main electrical operations of the duplexing unit are controlled by the PD/DU PCA in the PDX unit. The microprocessor on the PD/DU PCA accepts signals from the duplexer sensors and outputs drive commands to operate various loads such as motors, clutches and solenoids. The drive circuit of the Duplex driver PCA receives the commands and drives the loads. The Duplex driver PCA also has a circuit to hold the speed of the duplexing unit drive motor constant despite fluctuations in load. All signals from the sensors are transmitted to the PD/DU PCA via the Duplex Driver PCA.

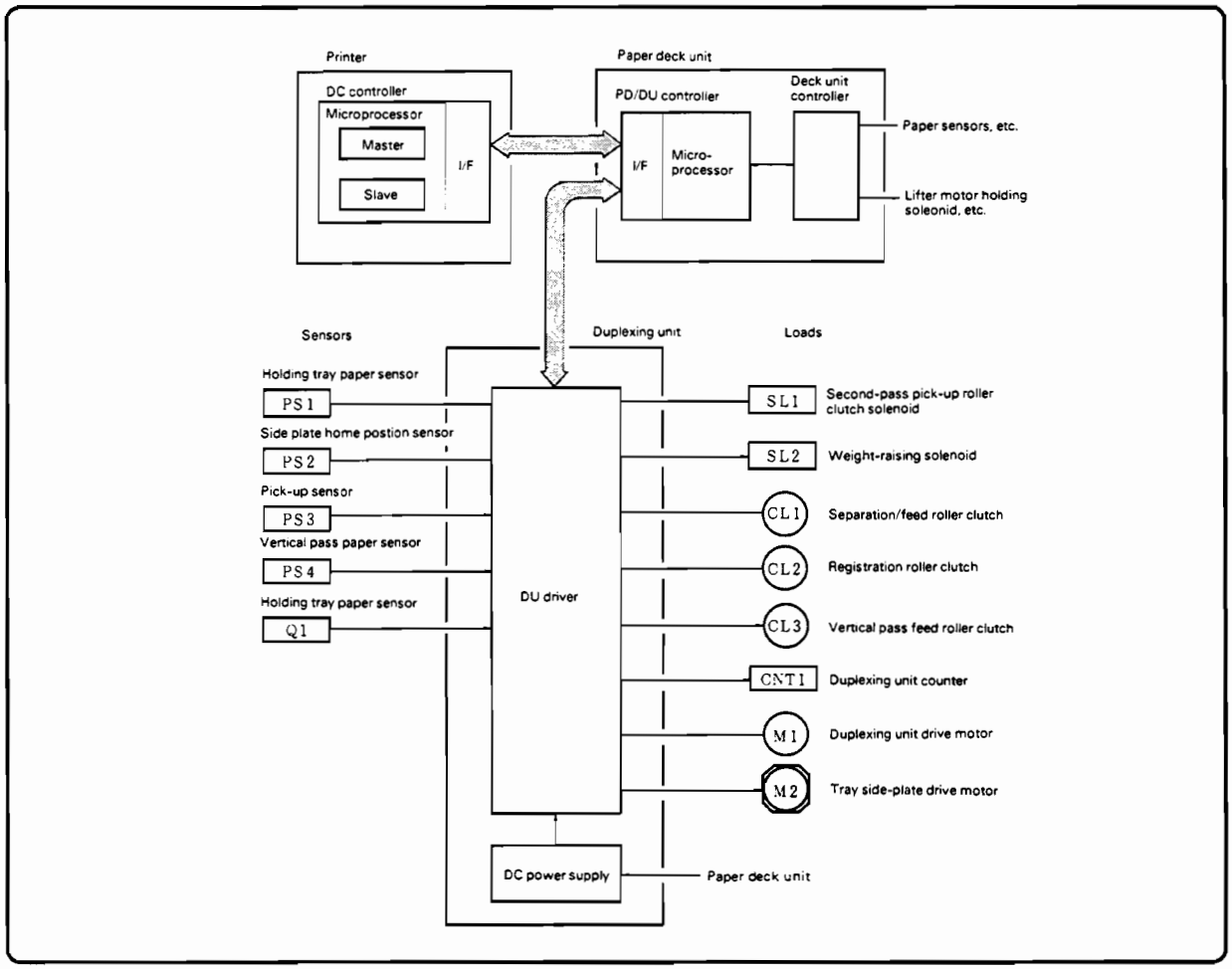


Figure 5-83. Duplex Controller Functions

Single Sided (simplex) Stacker Operation

The stacker delivers prints received from the printer to the tray (main or error) that is specified by control signals from the printer. During single-sided printing, the stacker sends the print to the switchback feeder guide which inverts the paper for delivery to either the main stacker or error tray. Prints to be inverted are deflected to the switchback feeder by the switchback feeder deflector.

The tray to which prints are delivered is determined by the position of the error tray deflector.

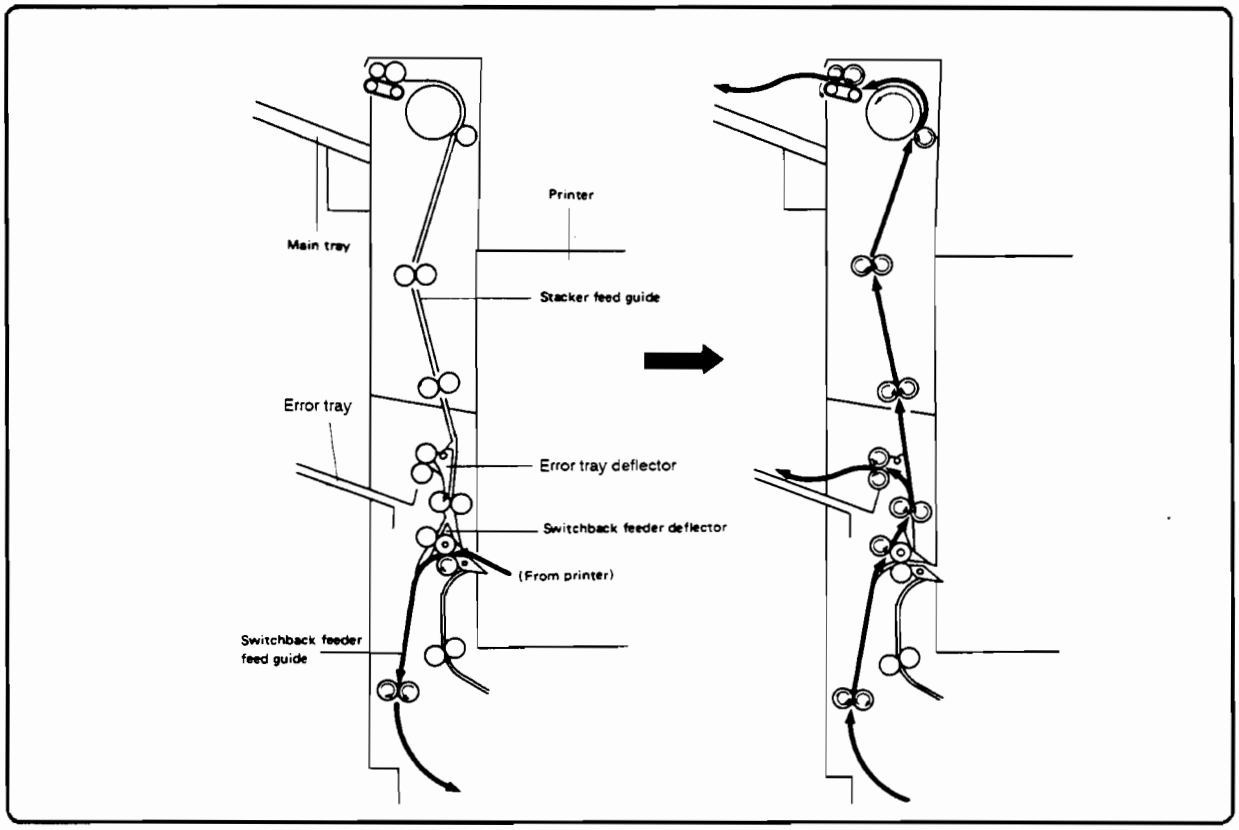


Figure 5-84. Face Down Stacker Operation (simplex printing)

Switchback Feeder Operation

When the print reaches the printer fuser exit sensor Engine-PS3, the switchback feeder deflector solenoid (Stacker-SL5) goes ON and the print is guided to the switchback feeder. About 0.1 second after the trailing edge of the sheet completely passes the switchback feed paper sensor (Stacker-PS6) the roller reverse control solenoid (Stacker-SL6) goes ON and the paper is fed back in the direction from which it came. Stacker-SL6 then goes OFF about 0.2 second after the trailing edge of the paper passes switchback feeder paper sensor 2 (Stacker-PS7). Stacker-SL6 operates a series of gears on a movable plate. In the forward direction (inbound) 2 gears are used to drive the feed roller. In the outbound direction 3 gears are engaged to rotate the feed roller in the opposite direction, moving the sheet out of the switchback very quickly.

Double Sided (duplex) Stacker Operation

The stacker operates as follows when double-sided prints are made using the duplex printing module.

When the first side has been printed, the print received from the printer is fed to the duplex printing module by the duplex printing module deflector.

When double-sided printing is completed, prints received from the printer are delivered face-down directly to the main or error tray; switchback feeding is not used.

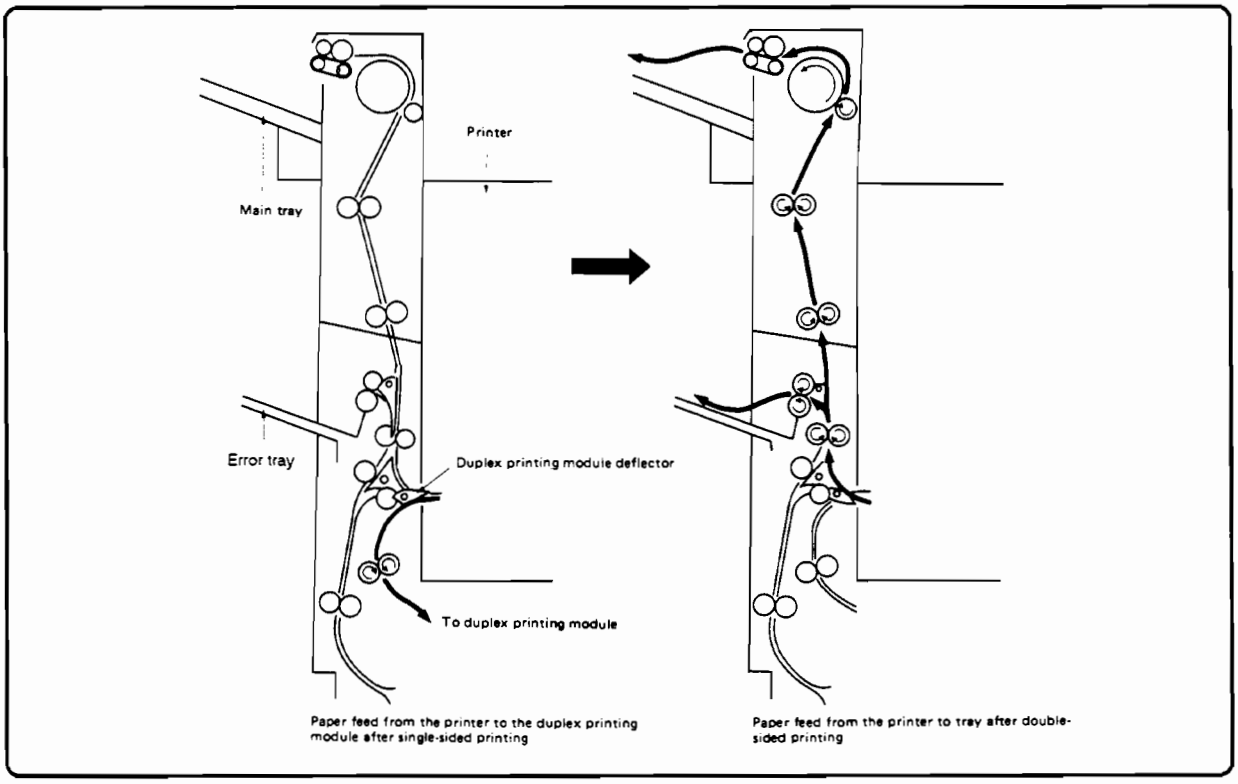


Figure 5-85. Face Down Stacker Operation (duplex printing)

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6

Removal and Replacement

Introduction

This chapter describes removal, replacement and most adjustment procedures for each of the printer's field replaceable components. All components mentioned in this chapter have corresponding part number and ordering information in Chapter 8.

Removal and replacement procedures are categorized by functional areas of the printer. A general overview of the chapter contents follows:

Table 6-1. Removal & Replacement Procedures - General Locations

About Adjustments

There are a large number of possible adjustments that can be performed on the LaserJet 2000 printer. This manual details the procedures for all recommended field adjustments. Adjustment procedures have been included in this chapter as well as in Chapter 7, depending on the nature of the adjustment.

Adjustments in this Chapter

There are several adjustment procedures that are normally performed only when a component is replaced. These adjustments are included in this chapter. There may be occasions when one or more of these adjustments will be required even though the part is not being replaced. Table 6-2 lists Chapter 6 adjustments and the page numbers where they appear.

Table 6-2. Adjustments in This Chapter (alphabetical order)

Adjustment	Page
Cassette Holder Adjustment	Page 6-89
Cleaning Station Components	Page 6-64
Corona Wire Height Adjustment	Page 6-55
Developing Assembly Components	Page 6-60
Duplex Drive Belts	Page 6-146
Duplex Separation Rollers Alignment	Page 6-139
Formatter PCA, SW12 and SW14	Page 6-24
Fuser "Nip Width" Adjustment	Page 6-69
Laser Power Coarse Adjustment	Page 6-48
PDX Door Switch, PDX-MS2	Page 6-119
PDX Front-to-Rear Registration	Page 6-118
PDX Lifter Deck Position Sensor	Page 6-121
PDX Lifter Holding Solenoid	Page 6-129
PDX Paper Friction Strip Plate	Page 6-128
PDX Upper Travel Limit Switch	Page 6-129
Registration Roller Timing	Page 6-36
Stacker Drive Belt	Page 6-111
Switchback Feeder Drive Belt	Page 6-106

Adjustments in Chapter 7

Chapter 7 contains several other adjustment procedures that are normally performed as part of a troubleshooting or PM process. Check the Table of Contents at the front of Chapter 7, under "Adjustments" for a complete listing.

Component Locations

Overview of PCA Locations

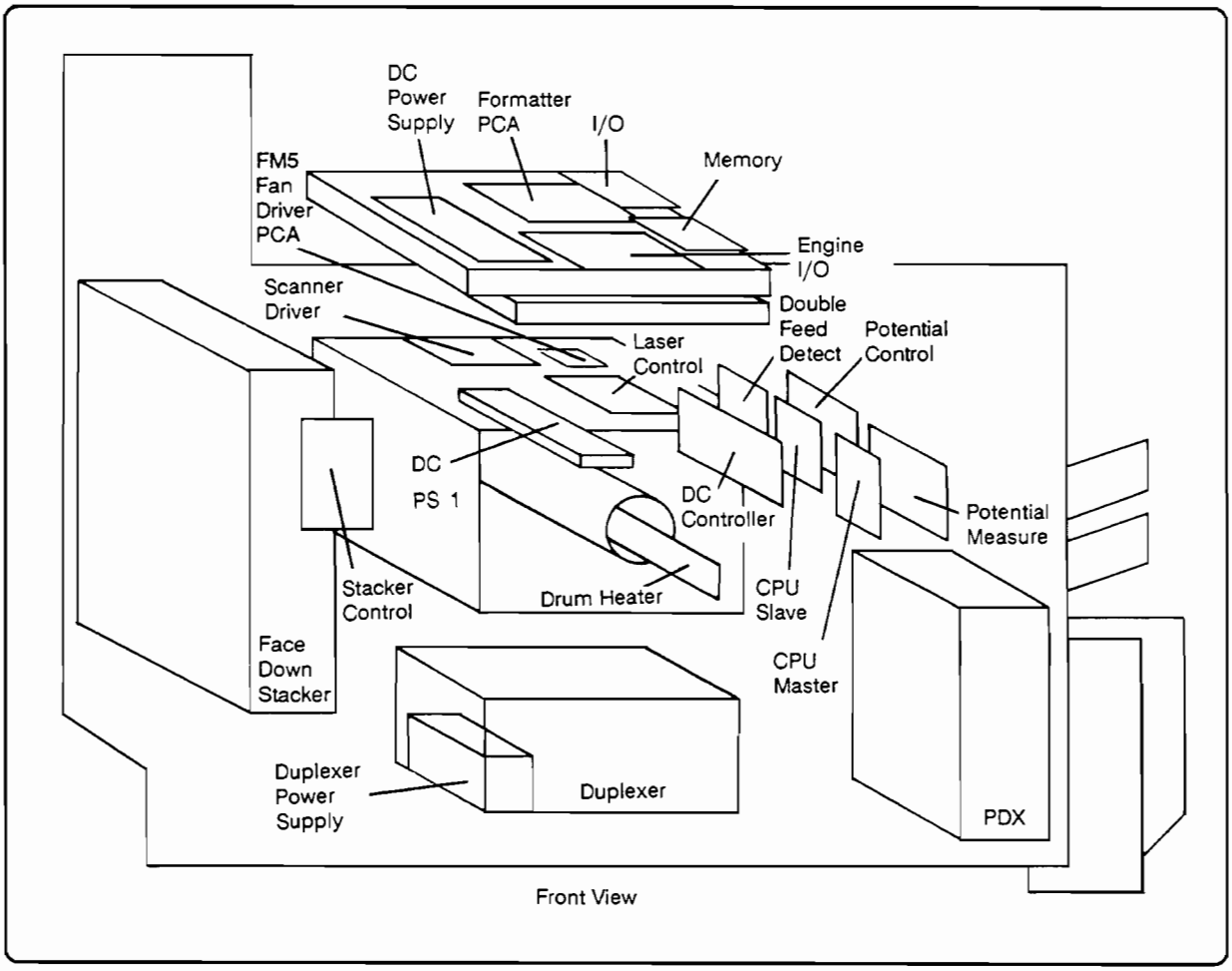


Figure 6-1. PCA Locations - Front View

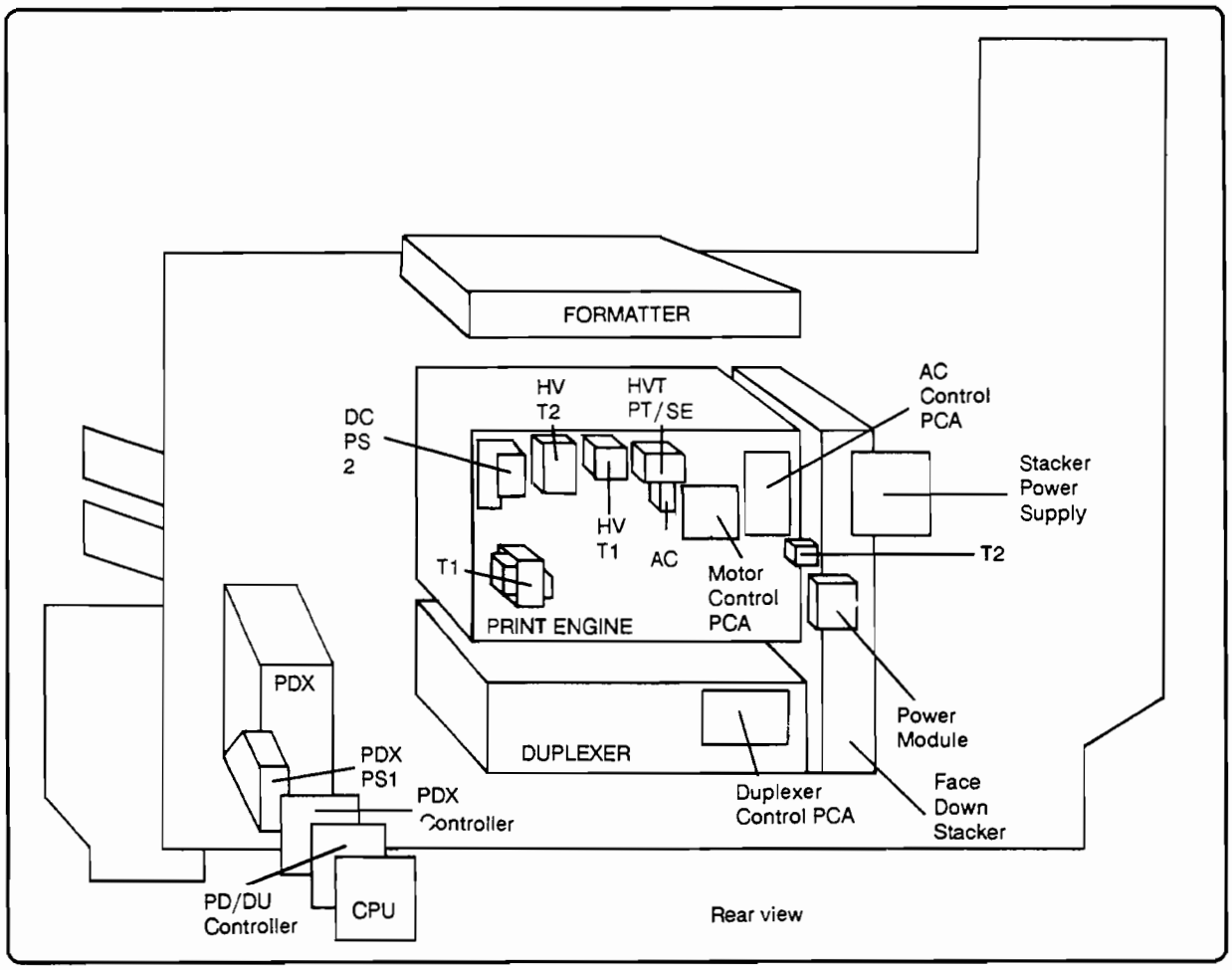
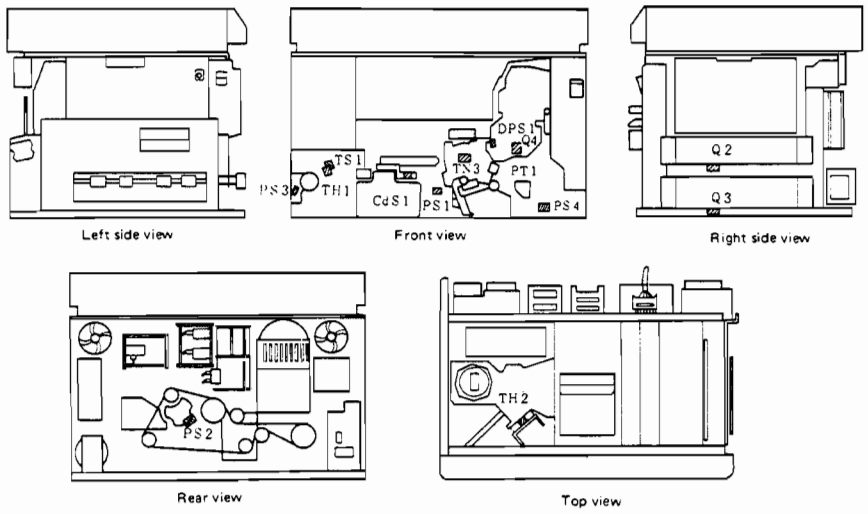


Figure 6-2. PCA Locations - Rear View

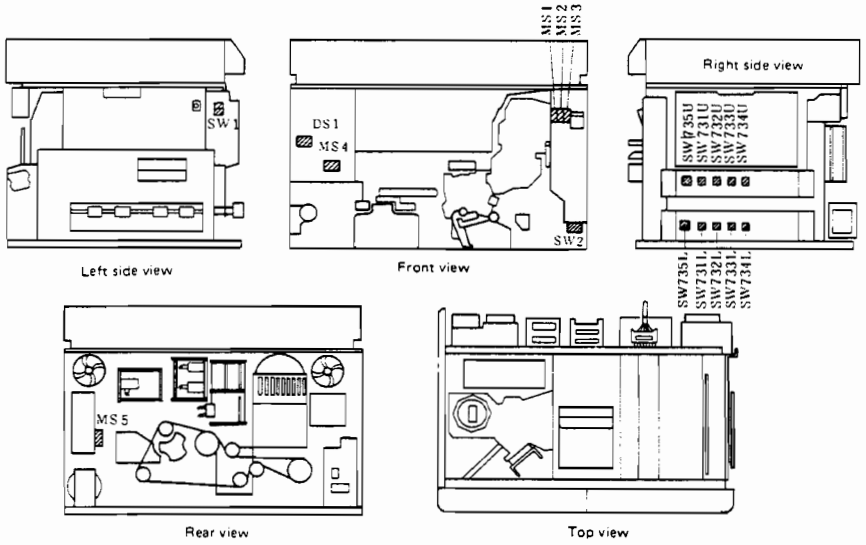
Print Engine Component Locations

Electrical Parts (Print Engine)



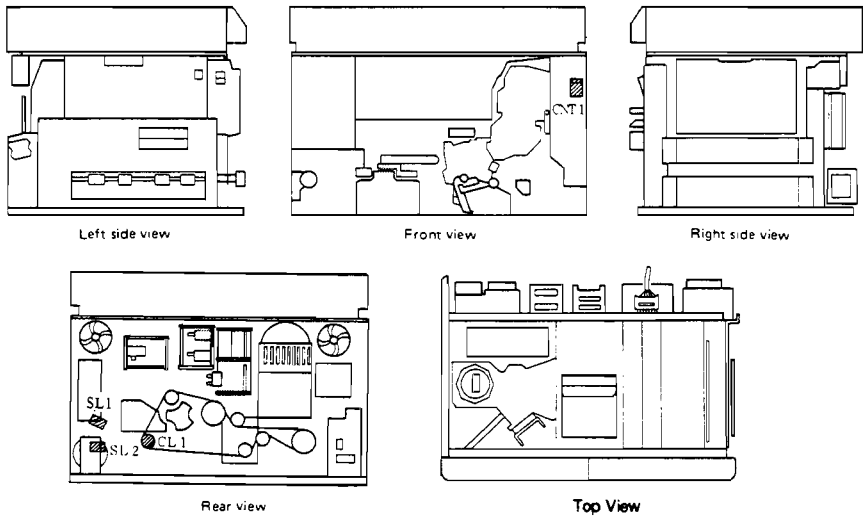
Symbol	Name	Code	Function
	Photo-Interrupter	PS1	Sensing paper separation
		PS2	Generating drum clock pulses
		PS3	Sensing paper in delivery assembly
		PS4	Sensing paper at printer inlet (for the high-capacity paper deck and duplex printing module)
	Photosensor	Q2	Sensing paper in upper cassette
		Q3	Sensing paper in lower cassette
	Thermistor	TH1	**Sensing surface temperature of upper fusing roller**
		TH2	Sensing temperature of laser unit
		TH3	Sensing temperature of drum
	CdS cell	CdS1	Detecting waste toner
	Toner sensor	Q4	Toner sensor
	Thermoswitch	TS1	**Protection from abnormal temperature in fusing** assembly (250 ± 14°C)
	Potential sensor	DPS1	Sensing drum surface potential
	Potentiometer	PT1	Sensing double feed

Figure 6-3. Electrical Parts (Print Engine)



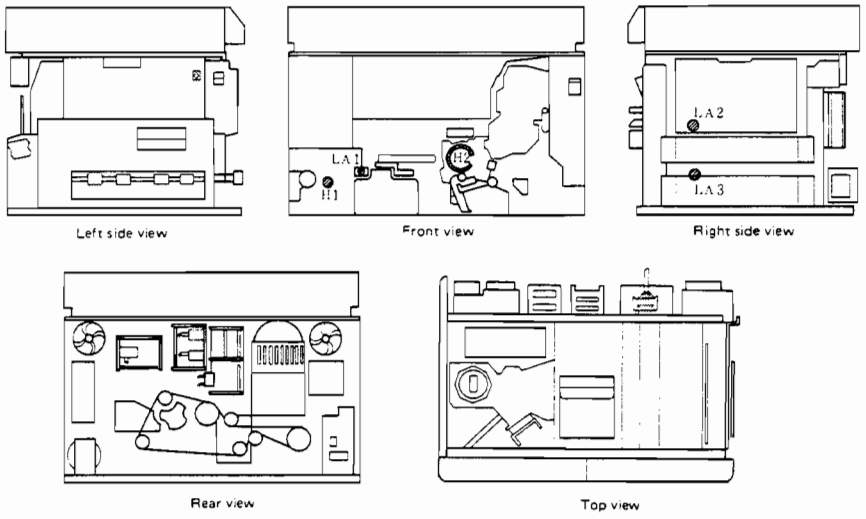
Symbol	Name	Code	Function
	Rocker switch	SW1	Power switch
		SW2	AC bias select switch (1290Vp-p ↔ 1050Vp-p)
	Microswitch	DS1	Left door switch
		MS1	Right door switch
		MS2	Right door switch
		MS3	Right door switch
		MS4	Sensing empty of the cleaning belt of the fusing assembly
		MS5	Rear panel switch: When the rear panel is removed. printing operation is inhibited.
	Switch	SW731L	Sensing size of cassette in lower holder (large/small)
		SW732L	Sensing size of cassette in lower holder (A series/ B series)
		SW733L	Sensing size of cassette in lower holder (standard/universal)
		SW734L	Sensing presence of cassette in lower holder
		SW735L	Sensing size of cassette in lower holder (metric/inch)
		SW731U	Sensing size of cassette in upper holder (large/small)
		SW732U	Sensing size of cassette in upper holder (A series/ B series)
		SW733U	Sensing size of cassette in upper holder (standard/universal)
		SW734U	Sensing presence of cassette in upper holder
		SW735U	Sensing size of cassette in upper holder (metric/inch)

Figure 6-4. Switches (Print Engine)



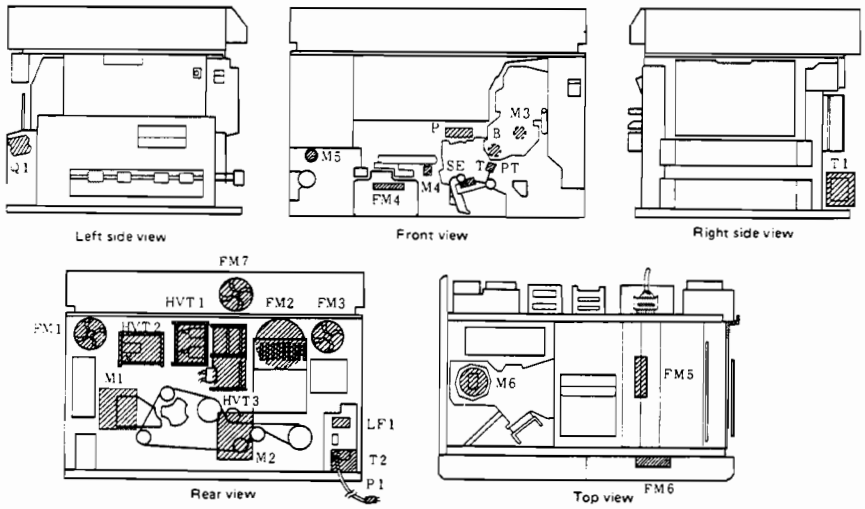
Symbol	Name	Code	Function
CNT	Counter	CNT1	Total counter
SL	Solenoid	SL1 SL2	Operating upper pick-up roller clutch Operating lower pick-up roller clutch
CL	Clutch	CL1	Operating registration rollers

Figure 6-5. Clutches/Counter/Solenoids (Print Engine)



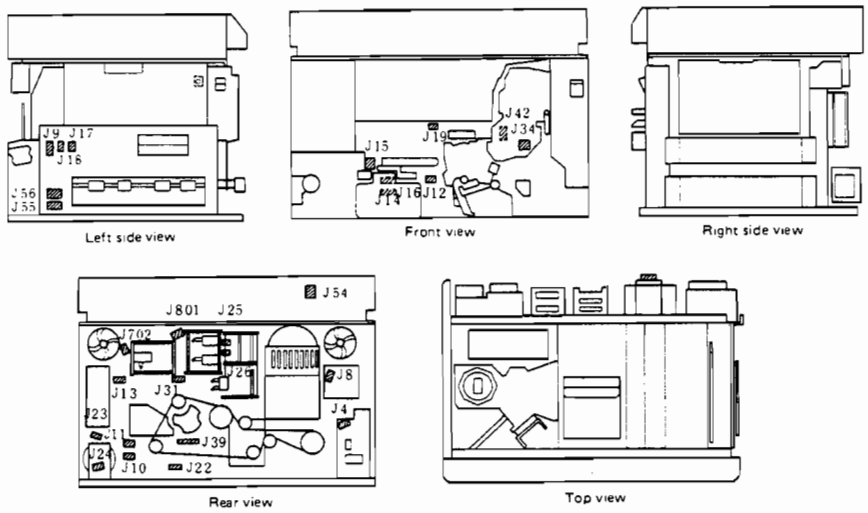
Symbol	Name	Code	Function
	Lamp	LA1	Sensing waste toner (for illuminating CdS1) (6.3V 50mA)
		LA2	Sensing paper in upper cassette (for illuminating Q2) (6.3V 50mA)
		LA3	Sensing paper in lower cassette (for illuminating Q3) (6.3V 50mA)
	Heater	H1	Upper fusing roller heater (750W)
		H2	Drum heater (90W)

Figure 6-6. Lamps/Heaters (Print Engine)



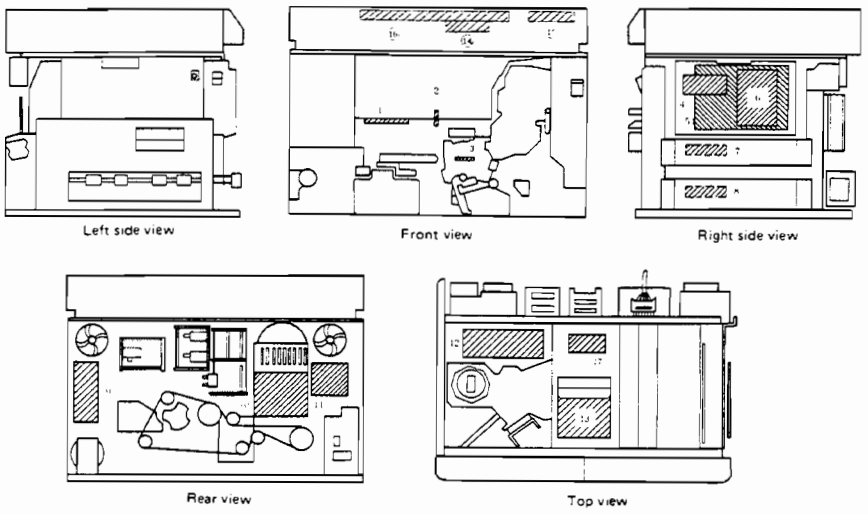
Symbol	Name	Code	Function
	Fan	FM1	Exhaust fan for DC power supplies and DC controller
		FM2	Exhaust fan for DC power supplies (houses ozone filter)
		FM3	Exhaust fan for fusing assembly
		FM4	Feeder-belt suction
		FM5	Circulation Fan
		FM6	External air induction fan
		FM7	Exhausts heat from the interface compartment unit
M	Motor	M1	Drum drive
		M2	Main drive
		M3	Supplying toner to developing assembly
		M4	Driving drum separation claws
		M5	Winding cleaning belt
		M6	Scanner drive
HVT	High-voltage transformer	HVT1	For primary and transfer coronas
		HVT2	For developing bias
		HVT3	For pretransfer and separation coronas
	Transformer	T1	Voltage reduction for 24VDC-C and 5VDC-B power supplies
		T2	Momentary cut off of AC15V sensor
	Plug	P1	For AC power input
LF	Line filter	LF1	To remove electrical noise
	Corona assembly	P	Primary corona
		T	Transfer corona
		PT	Pretransfer corona
		SE	Separation corona
	Developing cylinder	B	Developing bias
	Solid state relay (SSR)	Q1	Controlling upper fusing roller heater

Figure 6-7. Motors/Transformers/Misc (Print Engine)



Connector No.	Number of pins	Connected to
J4	3	AC outlet
J8	2	Exhaust fan (FM3)
J9	5	Fixing assembly
J10	2	Power transformer (T1)
J11	2	Paper deck unit
J12	2	Separation claw drive motor (M4)
J13	2	Power supply exhaust fan (FM1)
J14	2	Feeder suction fan (FM4)
J15	6	Waste toner unit
J16	3	Paper separation sensor (PS1)
J17	2	Fusing assembly thermistor (TH1)
J18	3	Print delivery sensor (PS3)
J19	2	Preconditioning-exposure LED
J22	3	Registration roller clutch (CL1)
J23	2	Upper pick-up roller clutch solenoid (SL1)
J24	2	Lower pick-up roller clutch solenoid (SL2)
J25	4	HVT3 --- potential control PCA
J26	6	HVT3 --- DC power supply
J31	1	HVT2 --- Developing cylinder
J34	3	Developing assembly toner sensor (TS1)
J39	26	Paper deck unit
J42	2	Developing assembly toner supply motor (M3)
J702	8	HVT2
J801	8	HVT1
J54	34	For connection of the stacker (option)
J55	15	
J56	4	

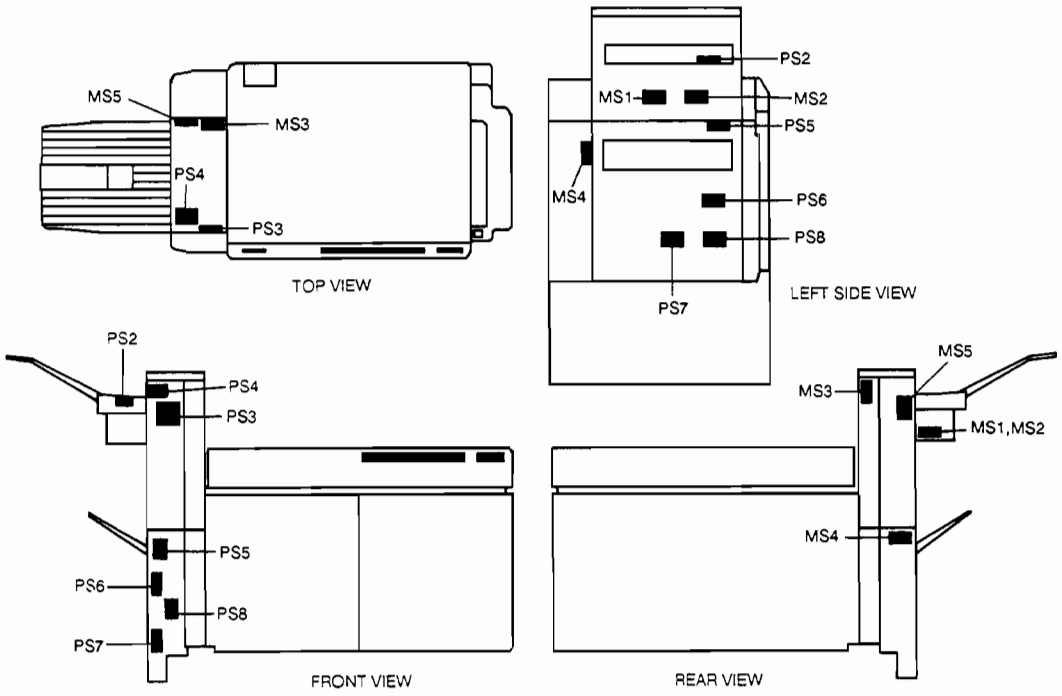
Figure 6-8. Connectors (Print Engine)



No.	Name of PCA	Function
①	DC power supply 1 (DCPS1)	Regulating DC voltage (24VDC, 5VDC, −5VDC)
②	Preconditioning-exposure	For mounting preconditioning-exposure LEDs
③	Drum temperature control	Controlling drum temperature
④	Potential measuring	Measuring drum surface potential
⑤	DC controller	Controlling printing operation
⑥	Potential control	Controlling drum surface potential (controlling primary corona current)
⑦	Cassette size sensing	Sensing presence and size of upper cassette
⑧	Cassette size sensing	Sensing presence and size of lower cassette
⑨	DC power supply 2 (DCPS2)	Regulating DC voltage (24VDC, 5VDC)
⑩	Motor driver	Controlling drum motor and main motor
⑪	AC driver	Controlling fans (FM1, 2 and 4), cleaning-belt drive motor (M5) and separation claw drive motor
⑫	Scanner driver	Controlling scanner motor
⑬	Laser driver	Controlling laser unit
⑭	Display driver	
⑮	Display 1	
⑯	Display 2	
⑰	Circulation fan (FM5) driver	Driving the circulation fan

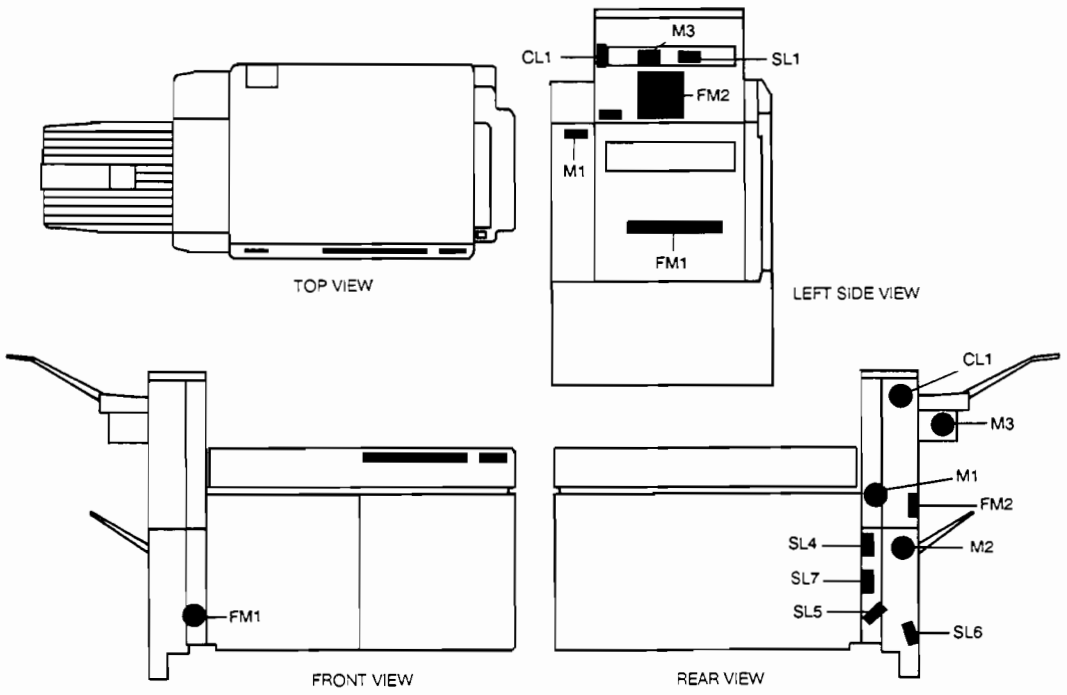
Figure 6-9. PCAs (Print Engine)

Stacker Component Locations



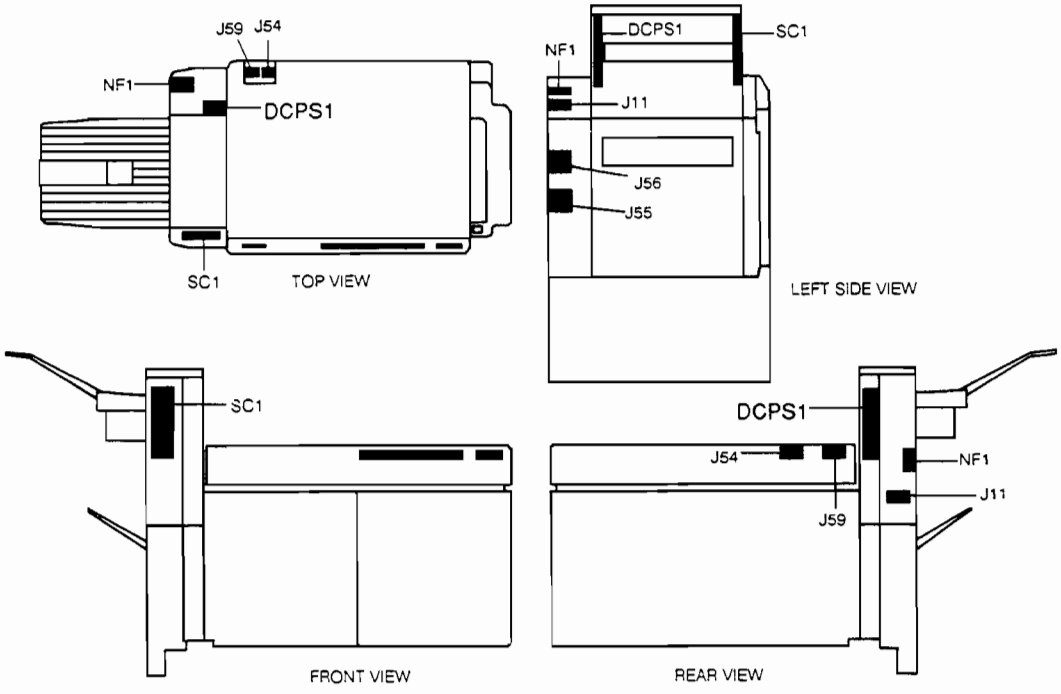
Symbol	Description	Code	Function
	Photointerrupter	PS2	Main tray paper sensor
		PS3	Paper level sensor
		PS4	Main tray print delivery sensor
		PS5	Sub tray print delivery sensor
		PS6	Switchback feeder paper sensor 1
		PS7	Switchback feeder paper sensor 2
		PS8	Duplex printing module inlet paper sensor
MS	Microswitch	MS1	Small size paper limit switch
		MS2	Large size paper limit switch
		MS3	Stacker door switch 1 (upper)
		MS4	Switchback feeder door switch
		MS5	Stacker door switch 2 (lower)

Figure 6-10. Stacker Component Locations



Symbol	Description	Code	Function
M	Motor	M1	Driving stacker
		M2	Driving switchback feeder
		M3	Driving main tray up/down
CL	Clutch	CL1	Driving the delivery rollers/belt
SL	Solenoid	SL1	Driving the tray brake
		SL4	Driving the sub tray deflector
		SL5	Driving the switchback feeder deflector
		SL6	Selecting forward or reverse rotation of the switchback feeder roller
		SL7	Driving the duplex printing module deflector
	Fan	FM1	Cooling
		FM2	Print stacking alignment

Figure 6-11. Motors/Clutches/Solenoids (Stacker)

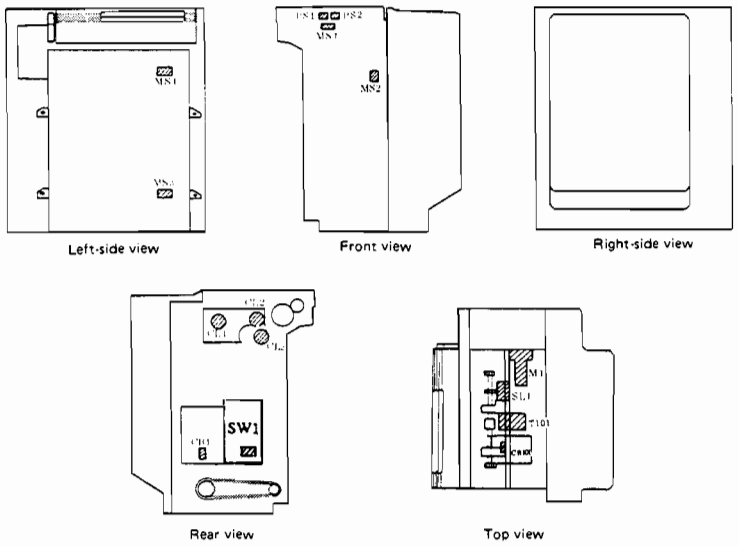


Symbol	Description	Code	Function
SC1	Stacker controller	SC1	Controls operations
DCPS1	DC power supply	DCPS1	Supplies +24VDC
NF1	Noise filter	NF1	Filters out electrical noise

Figure 6-12. PCAs/Noise Filter/DC Power Supply (Stacker)

PDX Component Locations

Electrical Parts (PDX)



Symbol	Description	Code	Purpose
	Circuit breaker	CB1	Protects the 24VDC power supply input line
		CB101	Protects the 24VDC power supply input line
CL	Clutch	CL1	Operates pick-up roller
		CL2	Operates feed roller
		CL3	Acts as feed roller brake
	Transformer	T101	Converts line voltage for 24VDC power supply
M	Motor	M1	Raises/lowers lifter deck
	Photointerrupter	PS1	Senses paper on lifter deck
		PS2	Senses position of top sheet of paper on lifter deck
SL	Solenoid	SL1	Holds lifter in position
	Microswitch	MS1	Senses when lifter at upper travel limit
		MS2	Senses open door
		MS3	Senses lifter at lower travel limit
		MS4	Senses lifter at upper travel limit
		SW1	Selects paper size and duplex jam display/disable

Figure 6-13. Electrical Parts (PDX)

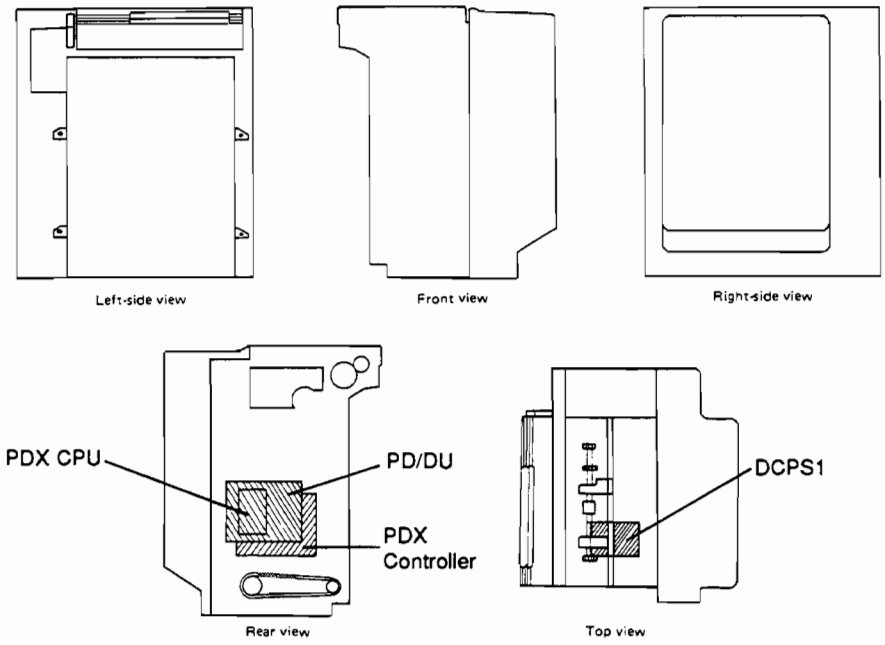
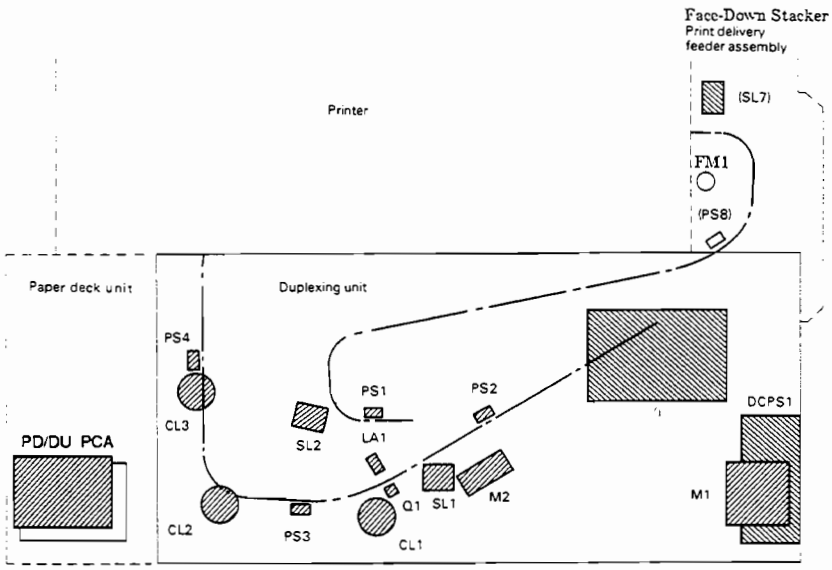


Figure 3-3

Symbol	Description	Code	Purpose
[ ]	PD/DU controller PCA	PD/DU	Controls operations of paper deck unit and duplexing unit
	PDX unit controller PCA	PDX PCA	Controls movement of lifter and loads
	DC power supply	DCPS1	24VDC power supply

Figure 6-14. PCAs/Power Supply (PDX)

Duplexer Component Locations



Symbol	Description	Code	Purpose
M	Duplexing unit drive motor	M1	Powering duplexing unit operation
	Tray side-plate drive motor	M2	Operating tray side plate
SL	Solenoid	SL2	Raising/lowering weight
		SL1	Operating second-pass pick-up rollers
		SL7(Stacker)	
CL	Clutch	CL1	Operating separation/feed rollers
		CL2	Operating registration rollers
		CL3	Operating vertical pass feed rollers
PS	Photointerrupter	PS1	Sensing delivery to holding tray
		PS2	Sensing side plate at home position
		PS3	Sensing pick-up
		PS8(Stacker)	Duplex entry sensor
	Lamp	LA1	Illuminating holding tray paper sensor
Q	Photosensor	Q1	Sensing paper on holding tray
	Switch	SW1	Door switch
	DU driver PCA	①	Regulating duplexing unit driver motor speed, driving tray side-plate motor, clutches and solenoids
	DC power supply	DCPS1	Supplying 24VDC power
	Fan Motor	FM1	Cooling

Figure 6-15. Duplexer Component Locations (Rear View)

Main Printer Covers

Top Cover Removal

The printers top cover must be removed to access the I/O and Formatter area PCAs and assemblies. Remove the top cover as shown on the following pages.

Warning **Components on and around the Formatter power supply have line and high voltage present when the printer's power switch is ON.**

Caution Components in the Formatter and I/O area are susceptible to electrostatic discharge (ESD) damage. Follow proper ESD precautions when working in this area.

1. Open the right and left print engine doors and **loosen** the left and right hold-down screws shown in Figure 6-16.

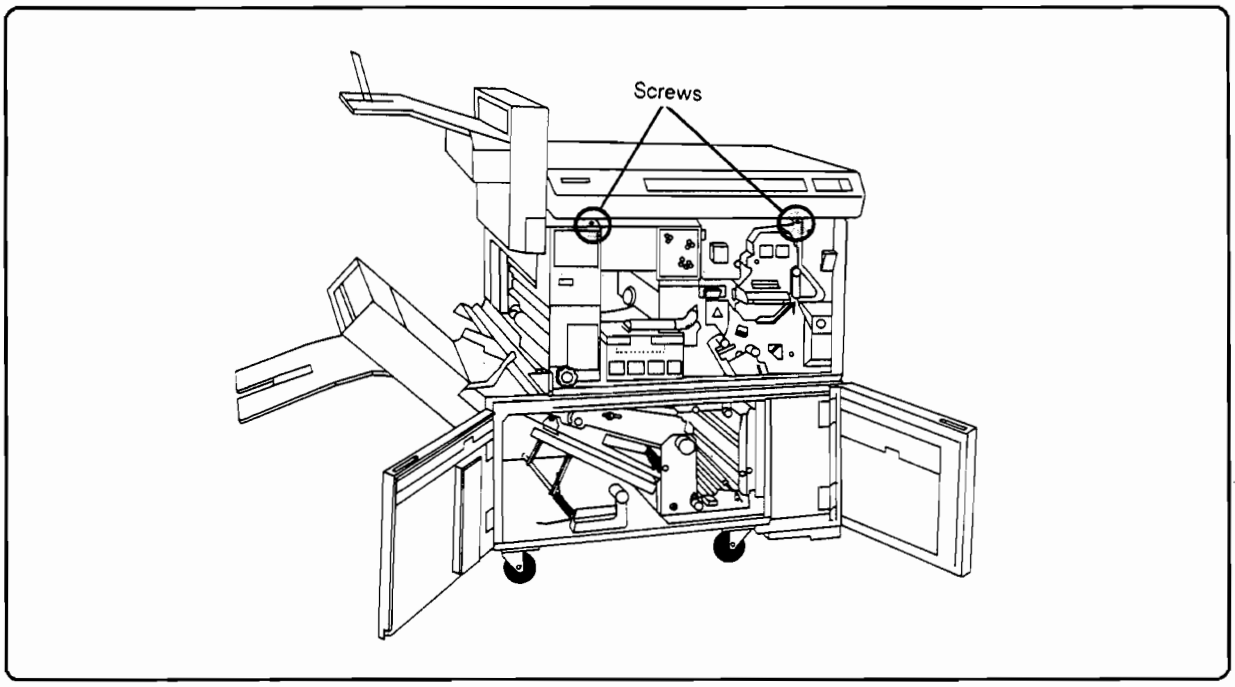


Figure 6-16. Top Cover Hold-down Screws

2. Lift the top section of printer up to open, pushing the rubber stop on the left end inward to release.

3. Remove the left and right frame-to-cover screws (Figure 6-17).

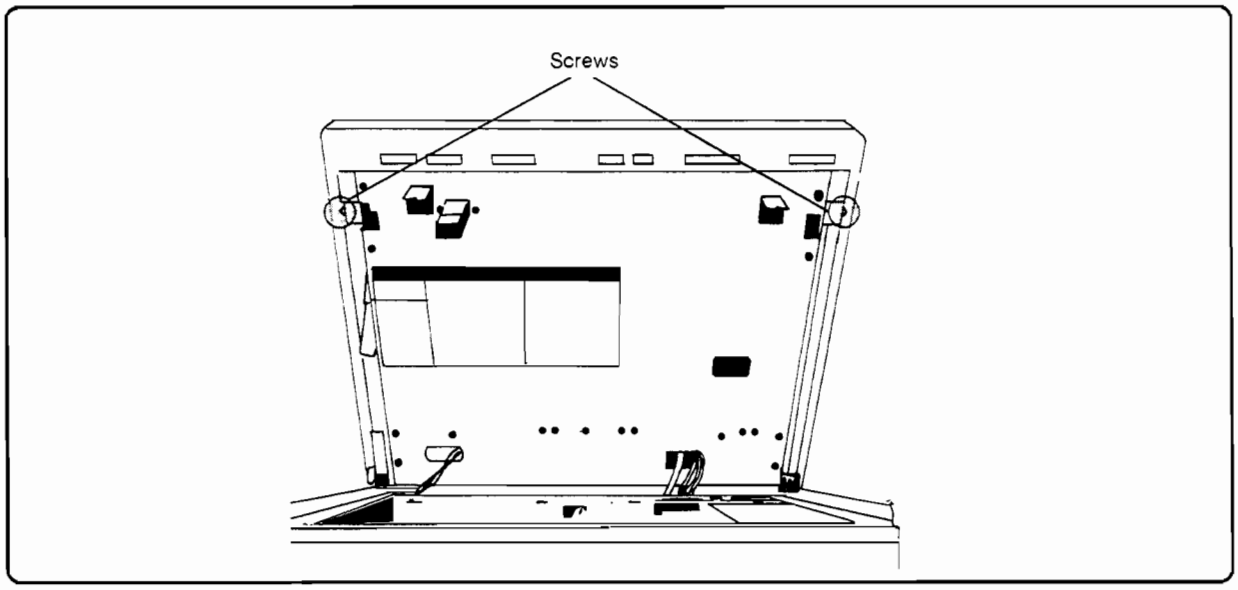


Figure 6-17. Top Cover Side Screws

4. Close the top section of printer by pushing it down until further movement is prevented by the rubber stop. Push inward on rubber stop to fully close.
5. At the back of the top section remove the cable access plate (two screws - see Figure 6-18).

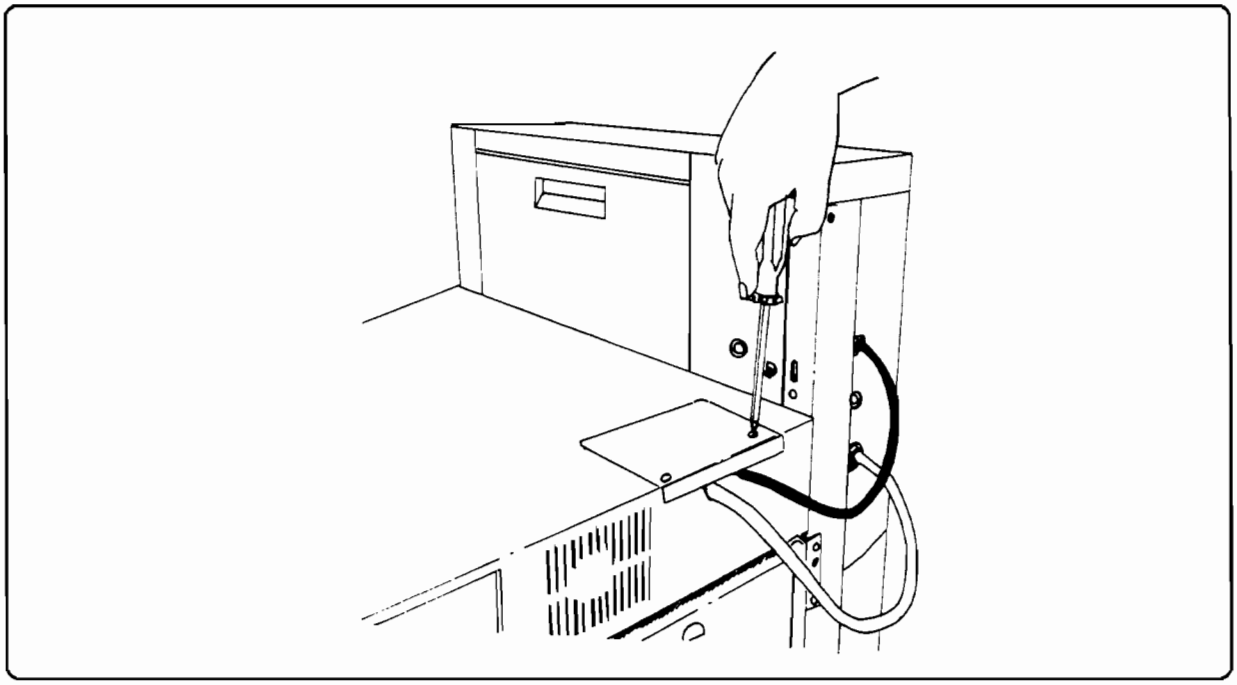


Figure 6-18. Cable Plate Removal

6. Unplug the stacker cable connectors (A and B in Figure 6-19).
7. Remove the screw attaching the ground wire to the connector base (screw #2 in Figure 6-19).
8. Remove the two screws holding the connector plate (#1 and 3 in Figure 6-19).
9. Lift out the sheet metal bracket with power and data cables attached to it.

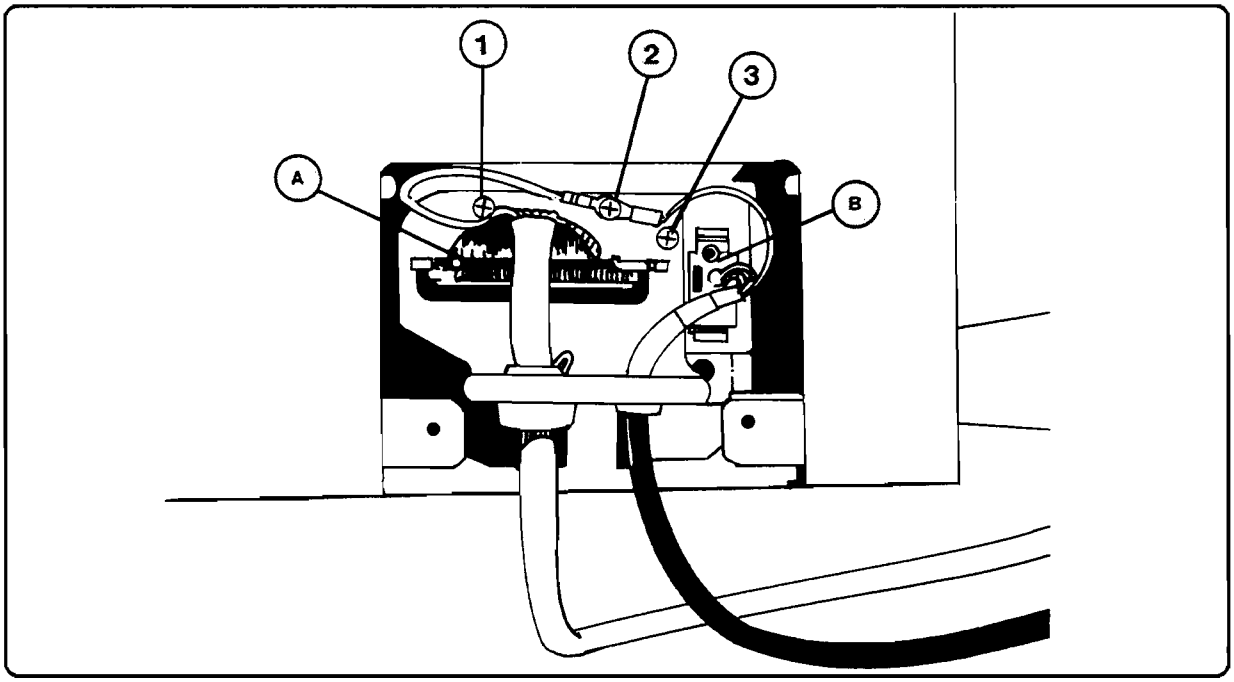


Figure 6-19. Stacker Cables and Plate

10. Remove the four screws (#1 Phillips) holding the I/O connector bracket (Figure 6-20).

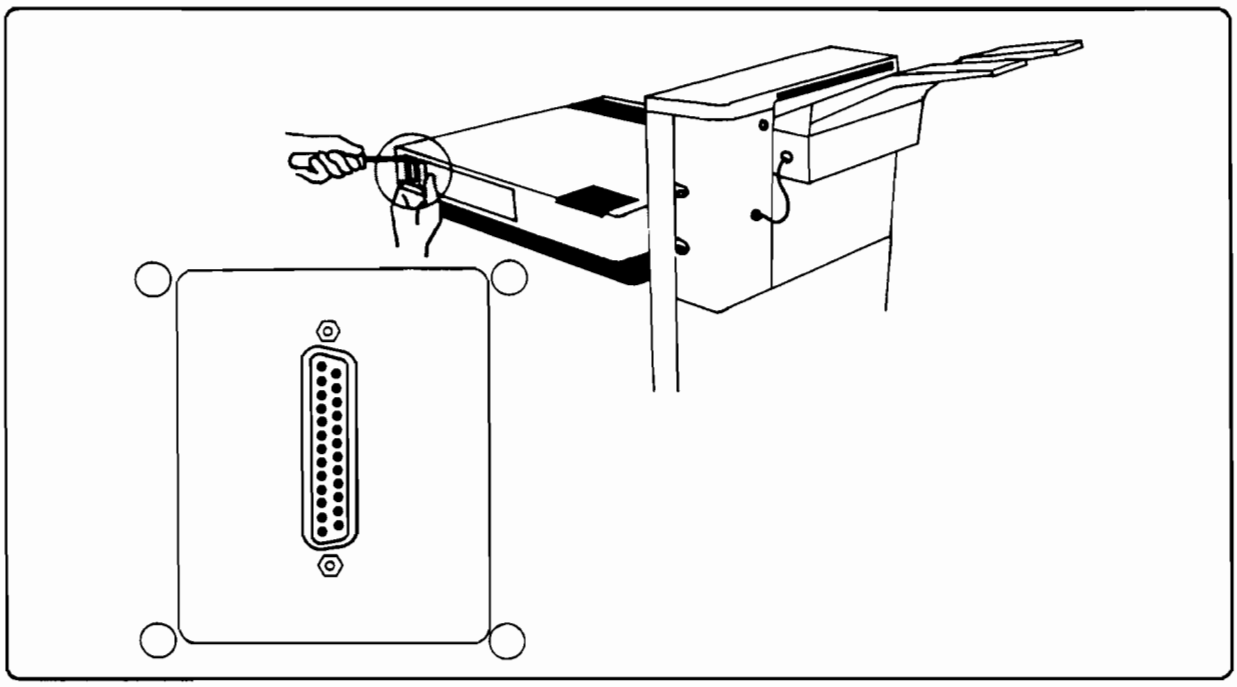


Figure 6-20. I/O Connector Plate

11. Remove the top cover. Pull and lift the cover as shown in Figure 6-21.
12. Set the top cover to the side using care not to scratch it.

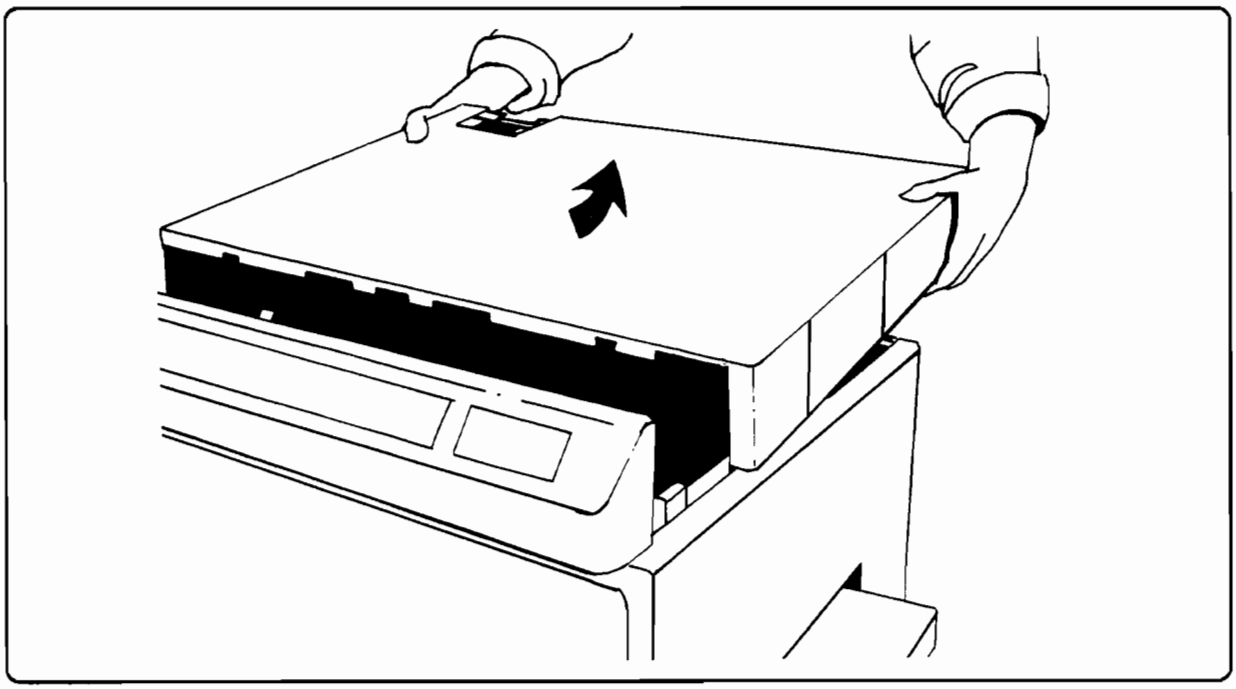


Figure 6-21. Removing the Top Cover

Rear Printer Covers

The rear of the printer has two large covers and a small cable protective cover. The large upper cover protects the rear of the print engine assemblies and the lower cover protects the duplex area assemblies.

Removal - Upper (Print Engine) Cover:

1. Remove the three screws in the small cable protective cover toward the left end.
2. Remove the one remaining screw on the right end.
3. Lift the cover up and off.

Removal - Lower (Duplex Area) Cover:

1. Remove the three screws in the small cable protective cover toward the left end.
2. Remove the two screws that attach the rear PDX cover to the lower cover.
3. Remove the seven remaining screws and lift off the cover.

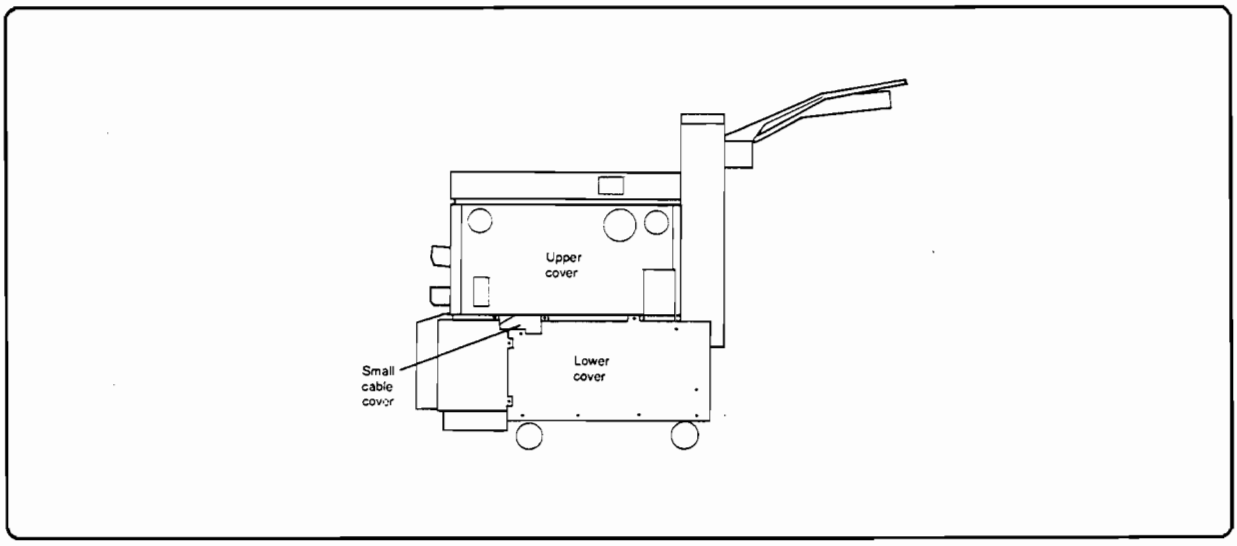


Figure 6-22. Rear Area Covers

Right End Covers

The printer's right end covers must be removed when working on the input paper cassettes or the PDX Assembly.

Left End Covers

The printer's left end covers are removed when working on the Face-down Stacker or Switchback assemblies.

Formatter and I/O Area Assemblies

The Formatter and I/O area contains the following:

- Formatter PCA
- Formatter Power Supply
- Operator Panel
- Display Driver PCA
- Paper Path Display PCA
- Memory PCA
- Engine Interface PCA
- Interface PCA (Serial, Centronics, or Data Products I/O)

These PCAs and assemblies are accessed by removing the printer's top cover. The steps for removing the top cover are shown in "Top Cover Removal," on page 6-18.

Caution 

Components in the Formatter and I/O area are susceptible to electrostatic discharge (ESD) damage. Follow proper ESD precautions when working in this area.

Formatter PCA

The Formatter PCA is located under the top printer cover as shown in Figure 6-23.

Removal:

1. Remove the printer's top cover.
2. Remove the I/O PCA (five screws).
3. Remove the font mounting assembly bracket (four screws).
4. Disconnect control panel and power supply cables. Remove 10 screws holding Formatter PCA.
5. Carefully remove the Formatter PCA.

Replacement: Reverse above procedure.

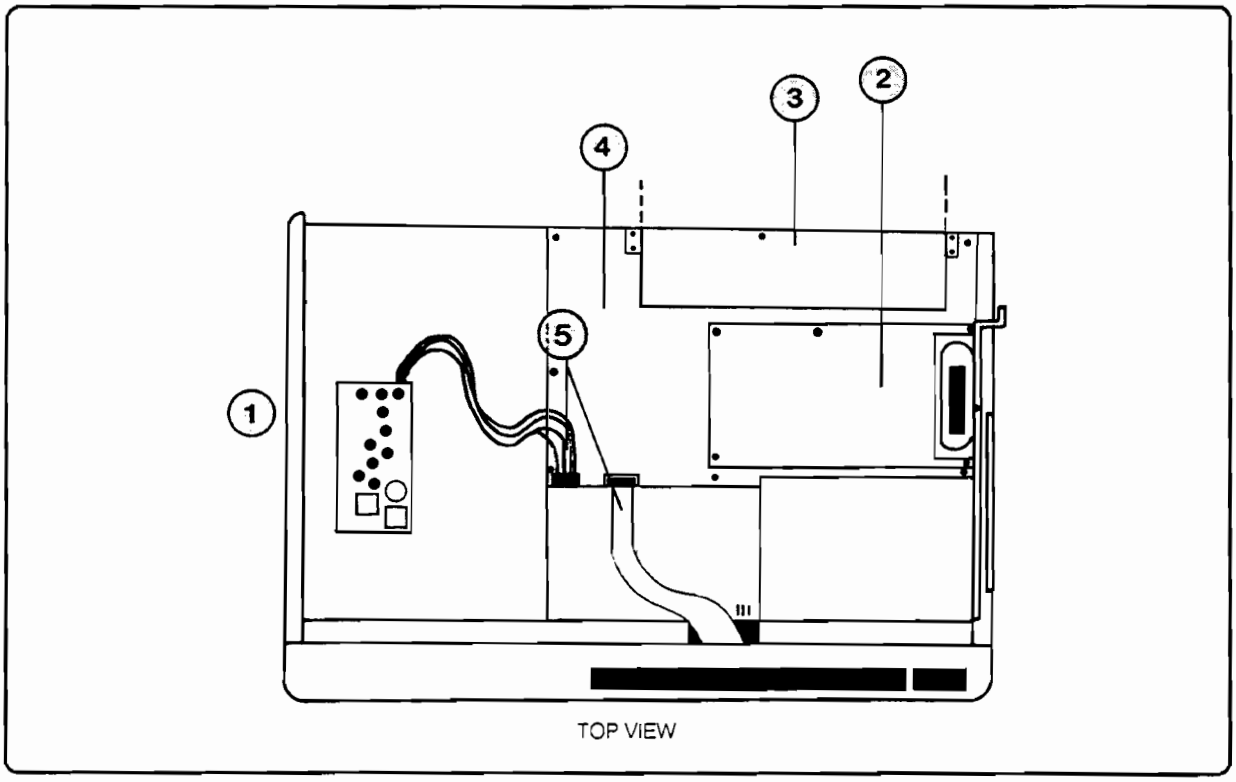


Figure 6-23. Formatter PCA Location

Adjustments:

Switches S12 and S14: There are two dip switches, S12 and S14 located on the Formatter PCA (see Figure 6-24). These switches can be accessed through the flip down panel on the right end of the top cover (Figure 6-25). Switches 1 through 4 on S12 are used to set various service functions. The rest of the switches (S12 5-8 and S14 1-12) are used for setting interface configuration. The Switch positions for service functions are explained in Chapter 5 on page 5-19. The various interface configurations are explained in Chapter 3, starting on page 3-3.

Note

Formatter switches are only read on power up. After changing switches, power the printer OFF then ON to read new switch settings.

Display Intensity Adjustment: The Formatter PCA also has a variable resistor for adjusting the intensity of the two line LCD display on the front panel. See Figure 6-24 for location.

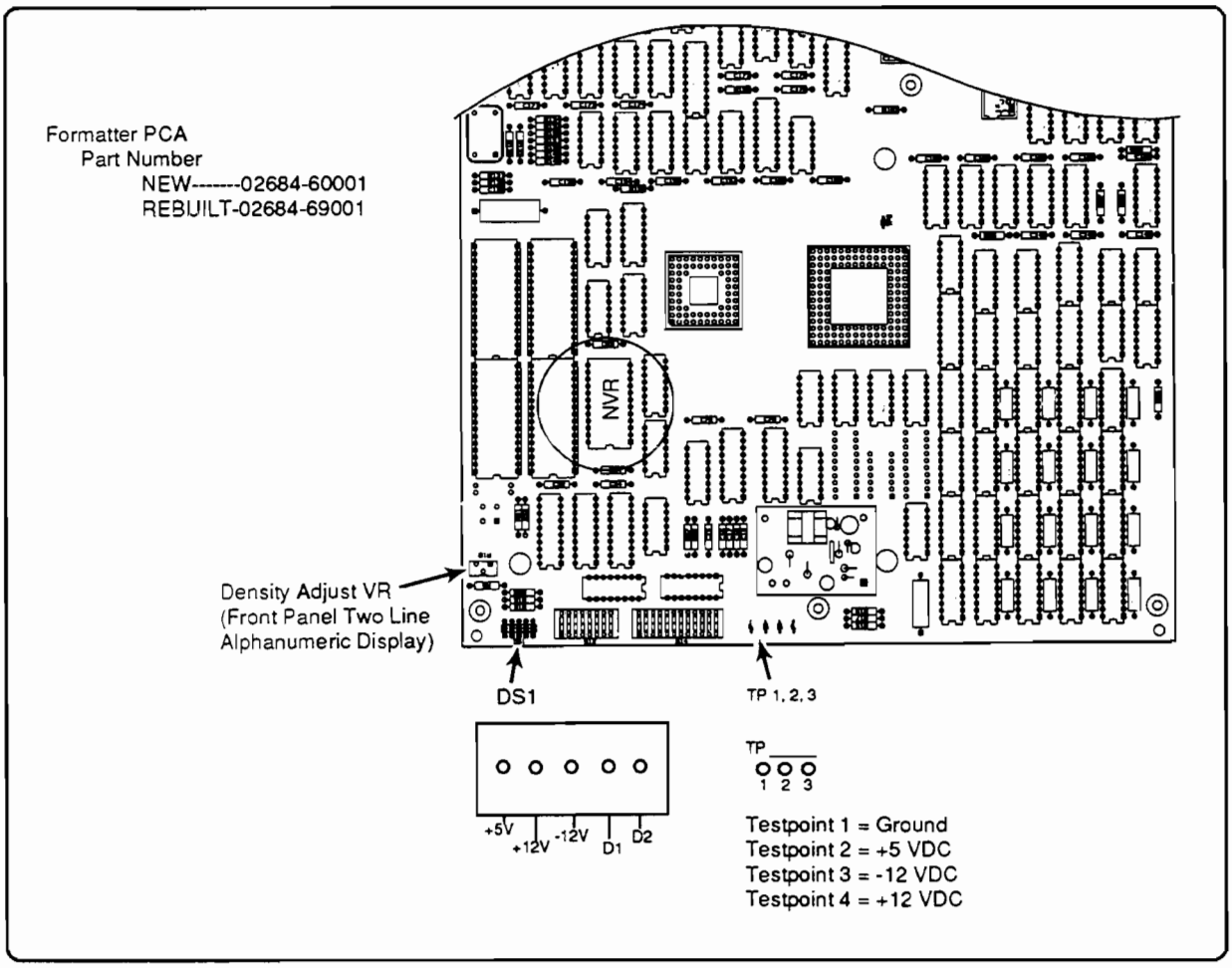


Figure 6-24. Formatter PCA Detail

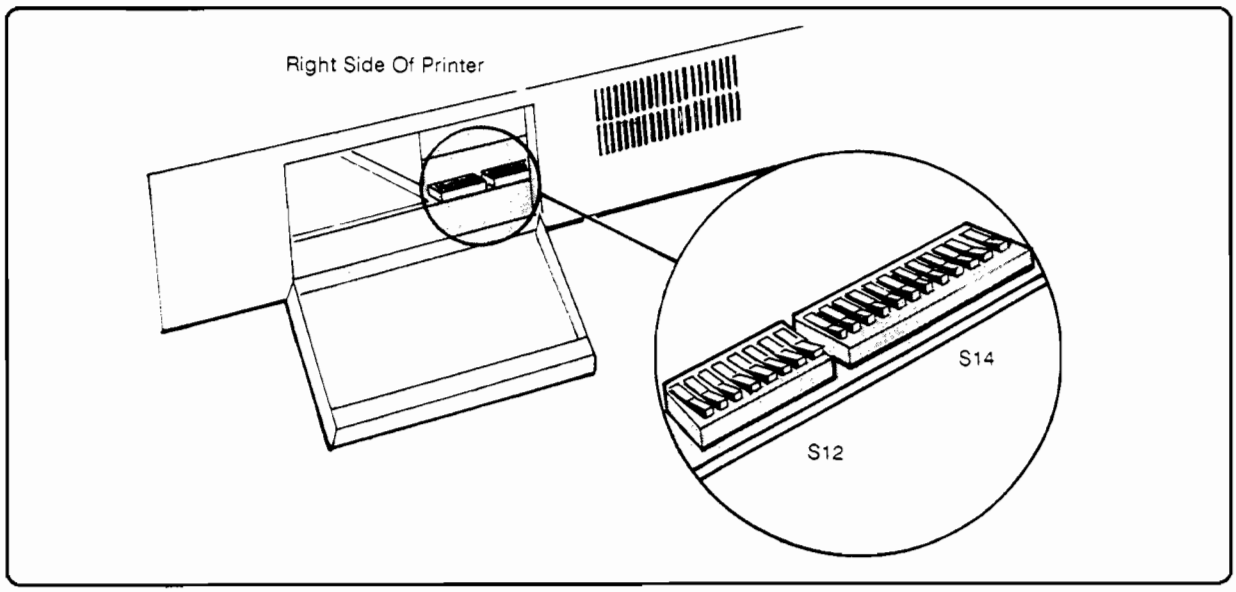


Figure 6-25. Switches S12 and S14

Formatter Power Supply

The Formatter Power Supply PCA is located in the left of the Formatter and I/O area as shown in Figure 6-26.

Warning **The front heat sink on the Formatter power supply has high voltage present when the printer's power switch is ON. (Other areas, such as terminal blocks T1 and T2 also have line-voltage when the printer's power is ON.)**

Removal:

1. Turn the printer's main power switch OFF and disconnect the power cord.
2. Remove the printer's top cover.
3. Disconnect the wiring from the terminal block (TB1). Be sure to note the locations of each wire as shown in Figure 6-26.
4. Remove four screws holding the Formatter Power Supply PCA.

Replacement:

1. Place the W1 jumper on the proper input voltage - 220/240 or 120V (see Figure 6-26).
2. Reverse above procedure. Be sure to place the power supply shield over the front heat sink.

Adjustments: None

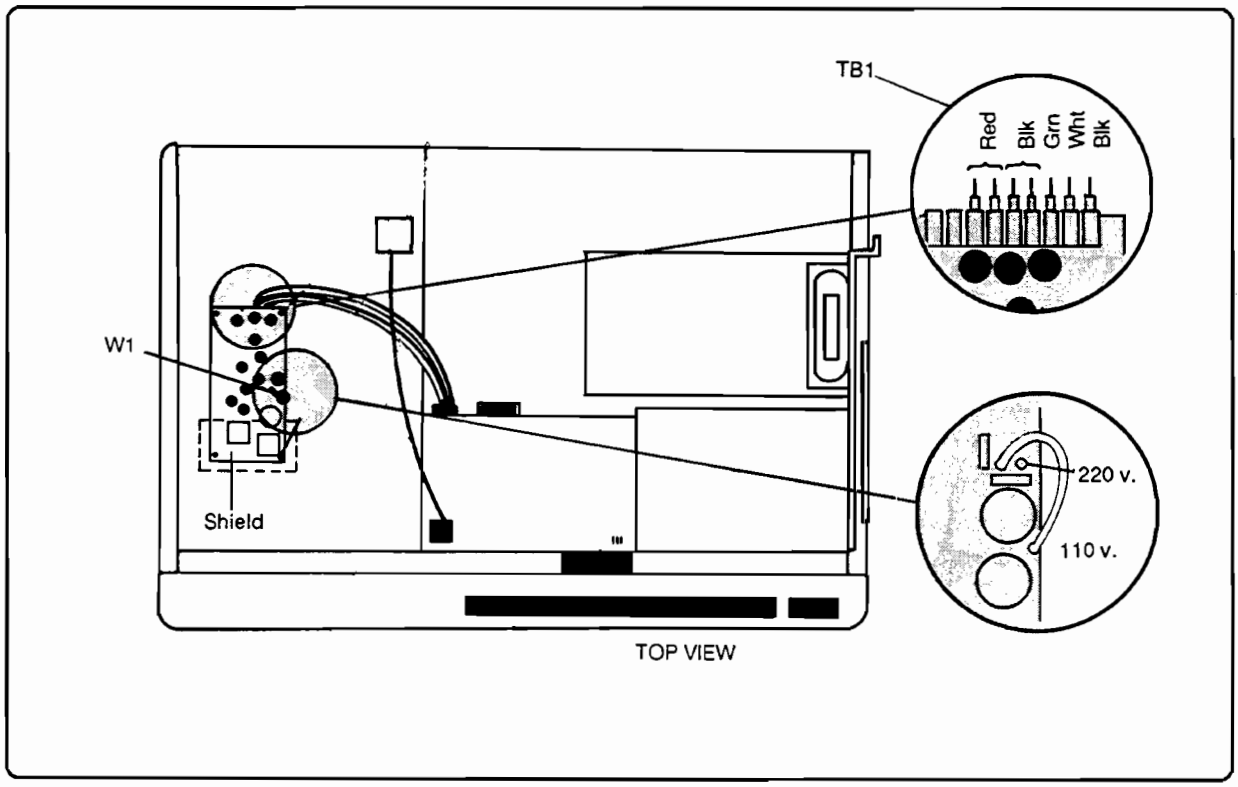


Figure 6-26. Formatter Power Supply PCA

Operator Panel

Removal:

1. Remove the printer's top cover.
2. Remove three screws on the top of and three screws on the bottom of the control panel.
3. Disconnect Operator Panel cable, ground wire (#1 Phillips), and the display driver PCA cable (J104).
4. Remove four screws holding the Operator Panel PCA and replace the PCA.

Replacement: Reverse the above.

Adjustments: None

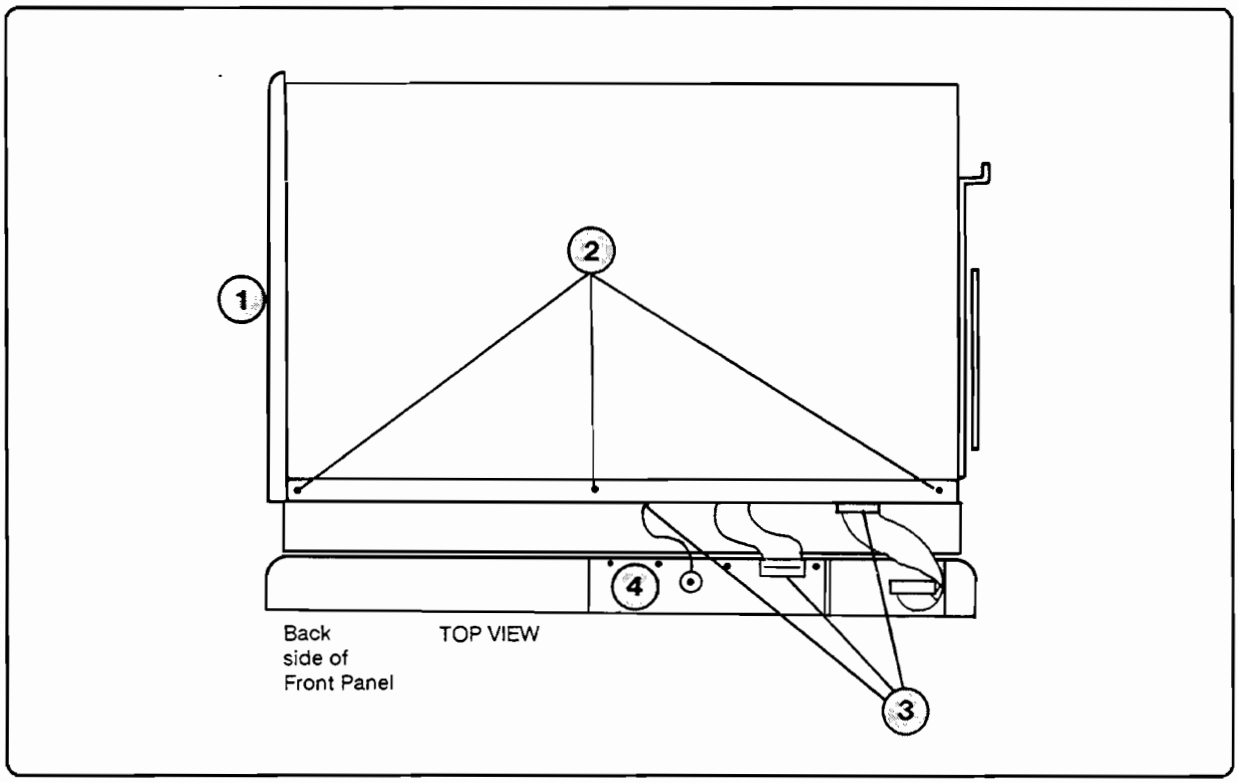


Figure 6-27. Operator Control Panel Location

Display Driver PCA!

Removal:

1. Remove the printer's top cover.
2. Remove the Operator Panel (see "Operator Panel" on page 6-27).
3. Disconnect the display driver cables J501 and J502 (see Figure 6-28).
4. Remove the PCA by squeezing the nylon standoffs and gently pulling outward.

Replacement: Reverse above.

Adjustments: None

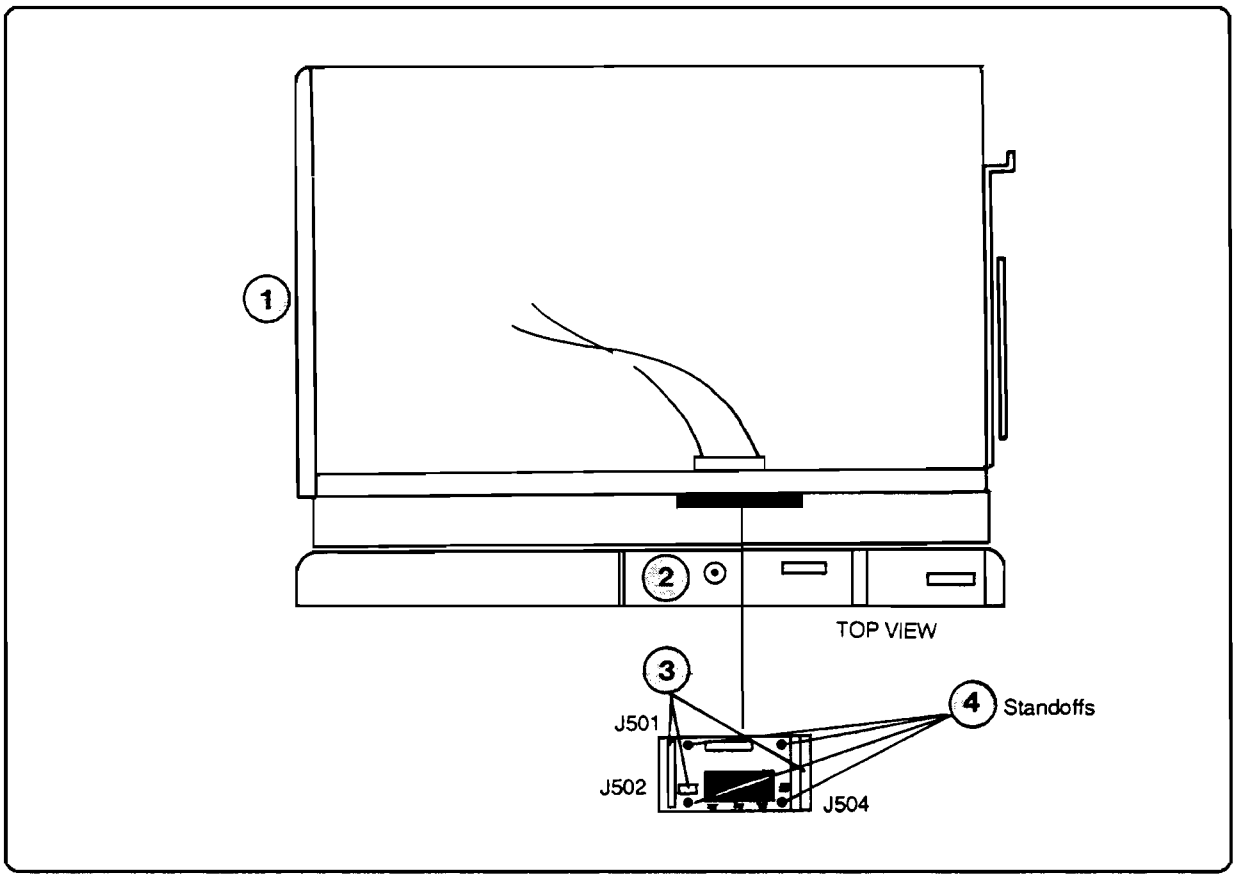


Figure 6-28. Display Driver PCA Removal

Paper Path Display PCA

Removal:

1. Remove the printer's top cover.
2. Remove operator's panel (see "Operator Panel" on page 6-27).
3. Disconnect cable J504 from Display Driver PCA and remove two screws.

Replacement: Reverse above procedure.

Adjustments: None

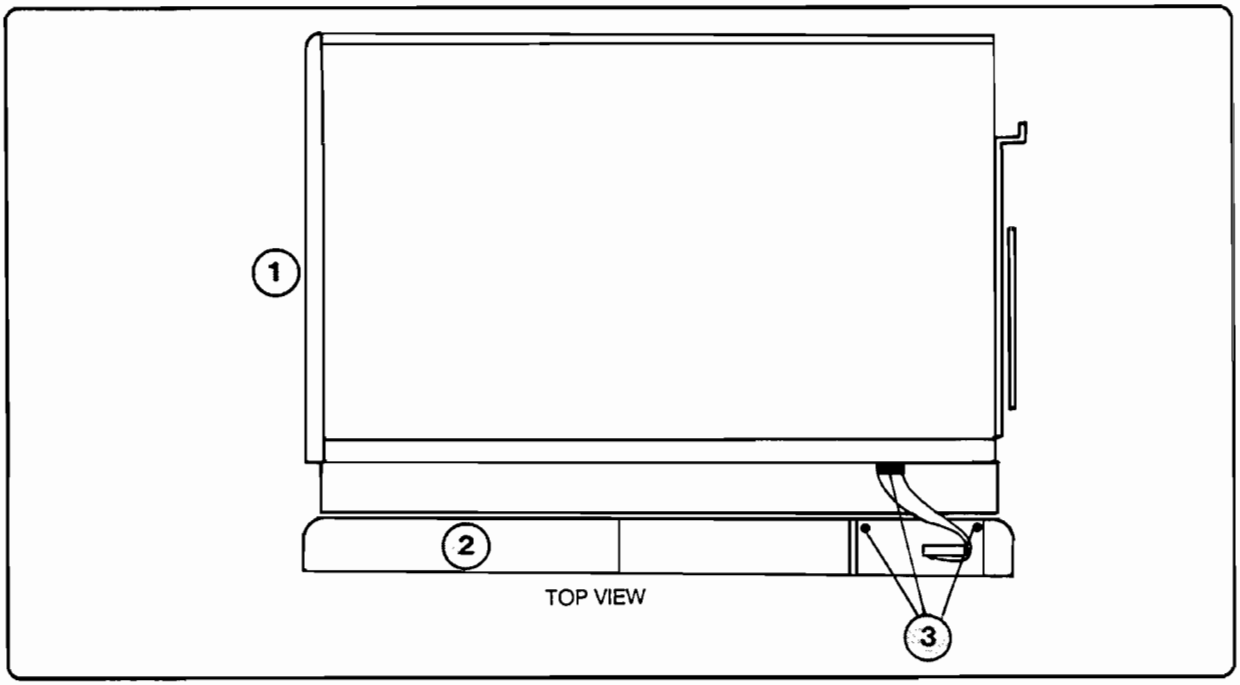


Figure 6-29. Paper Path PCA

Memory PCA

Removal:

1. Remove the printer's top cover.
2. Remove the Memory PCA mounting screws (five ea #1 Phillips long shank - see Figure 6-30).
3. Exercising proper ESD precautions, lift the Memory PCA from the socket.

Replacement: Replace in reverse order. If adding memory chips do so in accordance with the Expansion RAM Installation Procedure (26845-90901 - shipped with memory kits).

Note

The successful installation of a new memory PCA or a memory kit can be verified by initiating a printer self test and checking the print out for proper amount of memory, as shown in Table 6-3.

The following values should be shown on page 1 of the self test under "RAM size:"

Table 6-3. Memory Values

Memory Installed	Self Test Printout Value
Standard (minimum)	1536k bytes
1st Kit	2560k bytes
2nd Kit	3584k bytes
3rd Kit	4608k bytes
4th Kit	5632k bytes

If the self test does not reflect the correct amount of memory, refer to the troubleshooting information under "Error 72 - Global RAM" in Chapter 7.

Adjustments: None

Engine Interface PCA

Removal:

1. Remove the printer's top cover.
2. Remove the Memory PCA (see Figure 6-30).
3. Disconnect cables at J1 and J3 on the EI PCA.
4. Disconnect the display cable (J2) from the Formatter PCA.
5. Remove the three remaining screws (#1 Phillips) on the E/I PCA.
6. Slide the E/I PCA forward and lift to remove.

Replacement: Reverse the above. When reinstalling the E/I PCA, make sure to place the E12 jumper in the zero (0) or right hand position as shown in Figure 6-30.

Adjustments: None

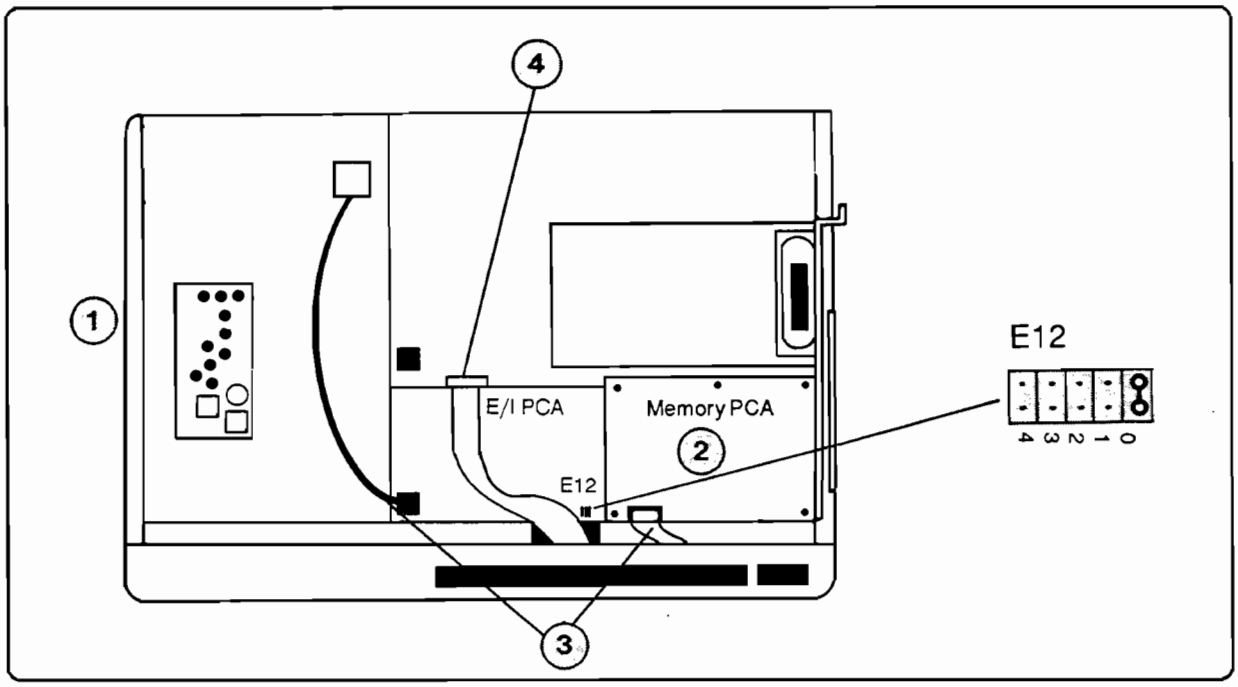


Figure 6-30. Memory and E/I PCA

Interface (I/O) PCA

Removal:

1. Remove the printer's top cover.
2. Disconnect I/O cable from I/O PCA.
3. Remove the five screws securing the Interface PCA to the Formatter PCA.
4. Disconnect the Interface PCA by sliding it forward.

Replacement: Reverse the above.

Adjustments: None

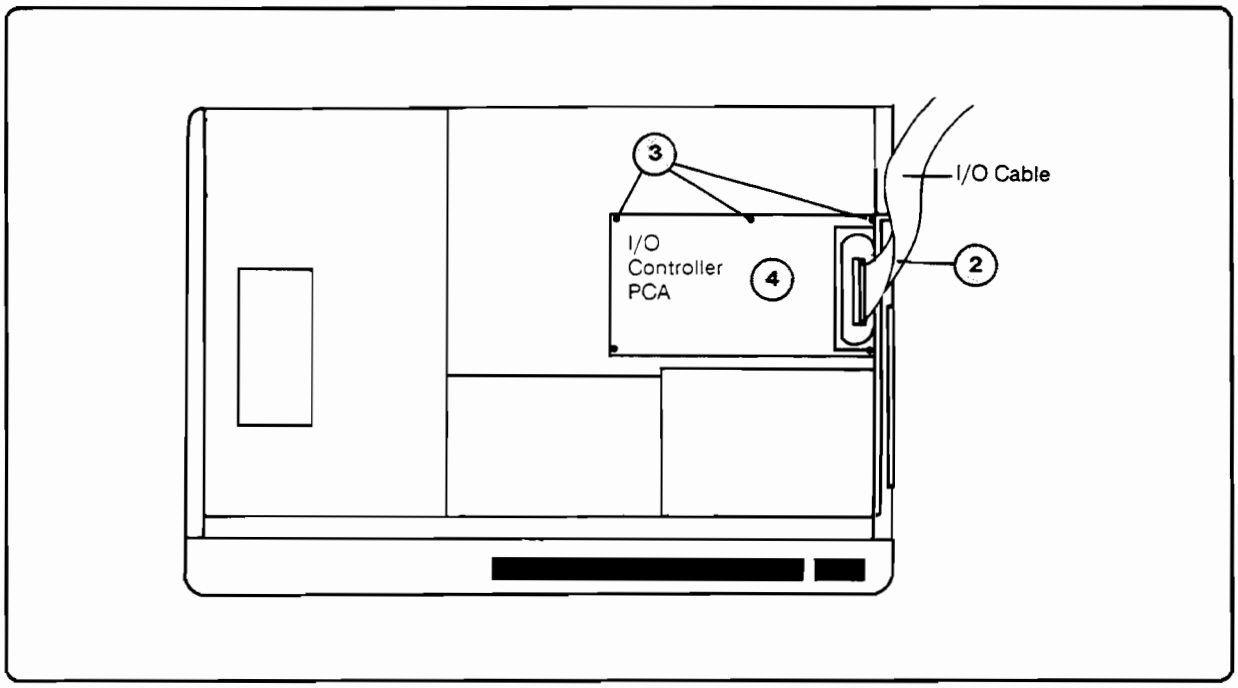


Figure 6-31. Interface PCA

Note

The I/O PCAs have an LED that can be used to diagnose the board's functionality. See "I/O Diagnostic LED" in Chapter 5, page 5-11 for information.

Double Feed Detect PCA (DFD)

The Double Feed Detect PCA is located on the right end of the printer, directly under the Potential Control PCA. There are three similar sized PCAs mounted over the DC Controller PCA. The DFD PCA is on the right (toward the rear of the printer - see Figure 6-32).

Removal:

1. Remove the printer's right side panel.
2. Remove the DC Controller RFI shielding (eight screws).
3. Remove two mounting screws and one ground wire screw to drop down the Potential Control PCA mounting panel. This allows access to the DFD PCA.
4. Unplug two connectors (J901B and J902B).
5. Remove two mounting screws along the left edge.
6. Pull gently outward to unplug the connector along the right edge and remove.

Replacement: Reverse the above.

Adjustments: None

Note

The DFD PCA has a switch (DSW941) that serves several functions such as selecting paper input sources, jam disable and warm-up disable. See Chapter 5, page 5-61 for information.

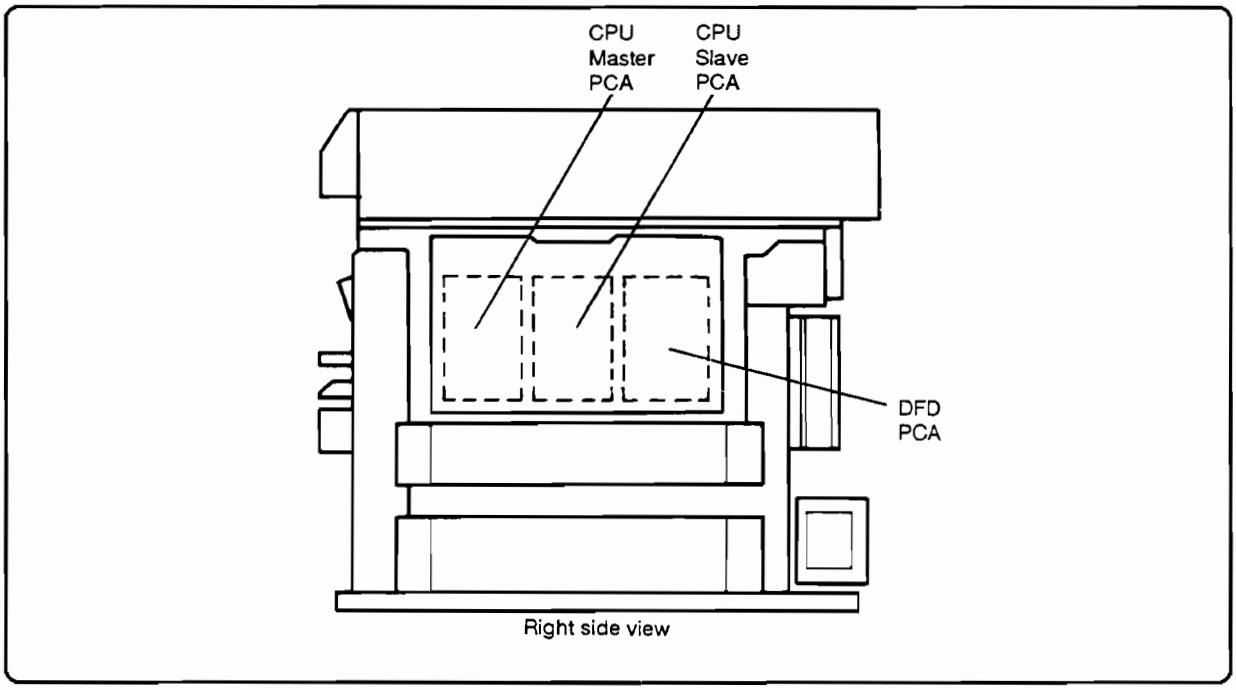


Figure 6-32. DFD and Master/Slave CPU PCAs

Master/Slave CPU PCA

The Master and Slave CPU PCAs are located on the right end of the printer, directly under the Potential Control PCA. There are three similar sized PCAs mounted over the DC Controller PCA. The Master CPU PCA is toward the front of the printer and the Slave CPU PCA is in the center (see Figure 6-32).

Removal:

1. Remove the printer's right side panel.
2. Remove the DC Controller RFI shielding (eight screws).
3. Remove two mounting screws and one ground wire screw to drop down the Potential Control PCA mounting panel. This allows access to the CPU PCAs.
4. Remove two PCA mounting screws along the left edge.
5. Pull gently outward to unplug the connector along the right edge and remove.

Replacement: Reverse the above.

Adjustments: None

DC Controller PCA

The DC Controller PCA is located on the right end of the printer, under the Potential Control PCA. Access to the connectors along the bottom edge of this PCA is gained by removing a portion of the frame that mounts the upper printer cover and Formatter I/O area assemblies.

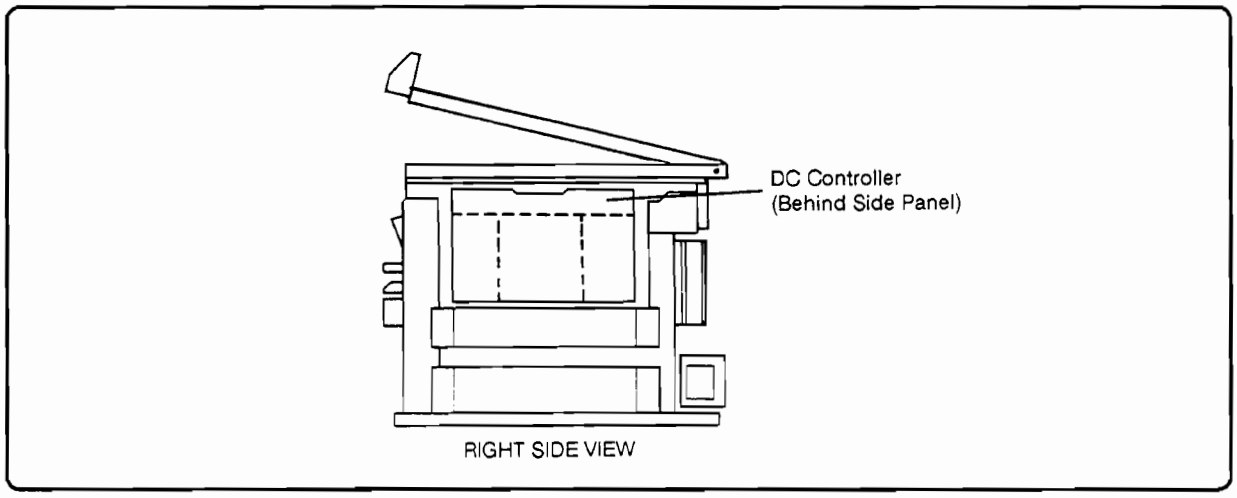


Figure 6-33. DC Controller PCA Location

Removal - DC Controller PCA:

1. Remove right side panel.
2. Remove the printer's top cover (see "Top Cover Removal" on page 6-18).
3. Remove the RFI Shield (eight screws).
4. Remove the two screws that retain the Potential Control PCA and Potential Measuring PCA mounting plate. Rotate the mounting plate down.
5. Remove the CPU Master PCA, CPU Slave PCA, and Double Feed Detect PCA. (see procedures on pages 6-33 and 6-34.
6. With the hinged Formatter I/O area closed, use the access holes toward the rear of the printer to remove the two screws along the right end of the angle steel frame (screws 1 & 2 in Figure 6-34).
7. Open the top area and remove the remaining three screws along the left (front) end of the angle steel frame (screws 3, 4 & 5 in Figure 6-34).
8. Open the top area and carefully pry the angle steel outward to remove from the hinge pin.
9. Remove the one remaining screw securing the painted edge piece along the top edge (screw 6 in Figure 6-34).
10. Remove the four screws holding the metal shield that protects the top of the DC Controller PCA (screws 7, 8, 9 & 10 in Figure 6-34). Remove the shield. This provides excellent access to the connectors along the top edge of the DC Controller PCA.

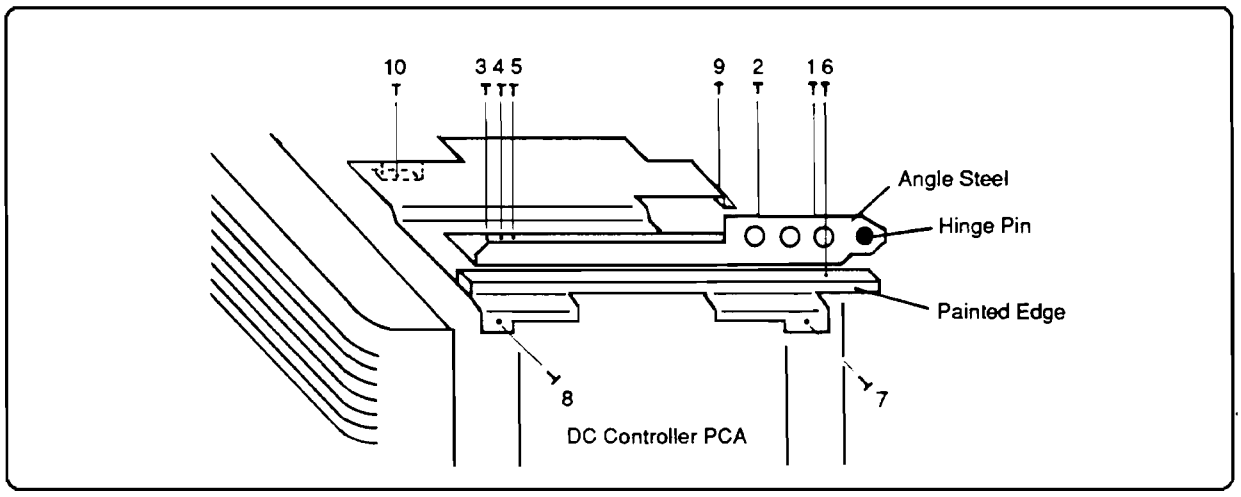


Figure 6-34. DC Controller PCA Removal

11. Unplug as many connectors as can be easily reached along the top edge and down each end of the DC Controller PCA.

Caution

Note that the three-pin connector (J124) at the right top corner has only one pink wire. Do not confuse this with the identical three-pin connector with one black and one white wire that plugs into J902B on the top right edge of the Double Feed Detect PCA.

12. Squeeze the nylon standoffs on the upper left and right corners of the PCA.
13. Tilt the PCA outward and raise slightly to gain better access to the lower connectors.
14. Unplug the remainder of the connectors and slide the PCA up and out.

Replacement - DC Controller PCA:

Reverse the above. Be sure to replace the three-pin connectors at J124 on the DC Controller PCA and J902B on the DFD PCA in the correct locations (see "CAUTION" above).

Adjustments - DC Controller PCA:

Set SW102-1 & 4 ON. Set SW102-2 & 3 OFF (if set incorrectly, SW102 will cause an Error 51, "Beam Detect Malfunction").

Check registration roller timing adjustment and adjust VR101, as follows:

1. Run standard self test.
2. Adjust VR101 for 6.0 ±1mm from the leading edge of the paper to the border. See Figure 6-35.

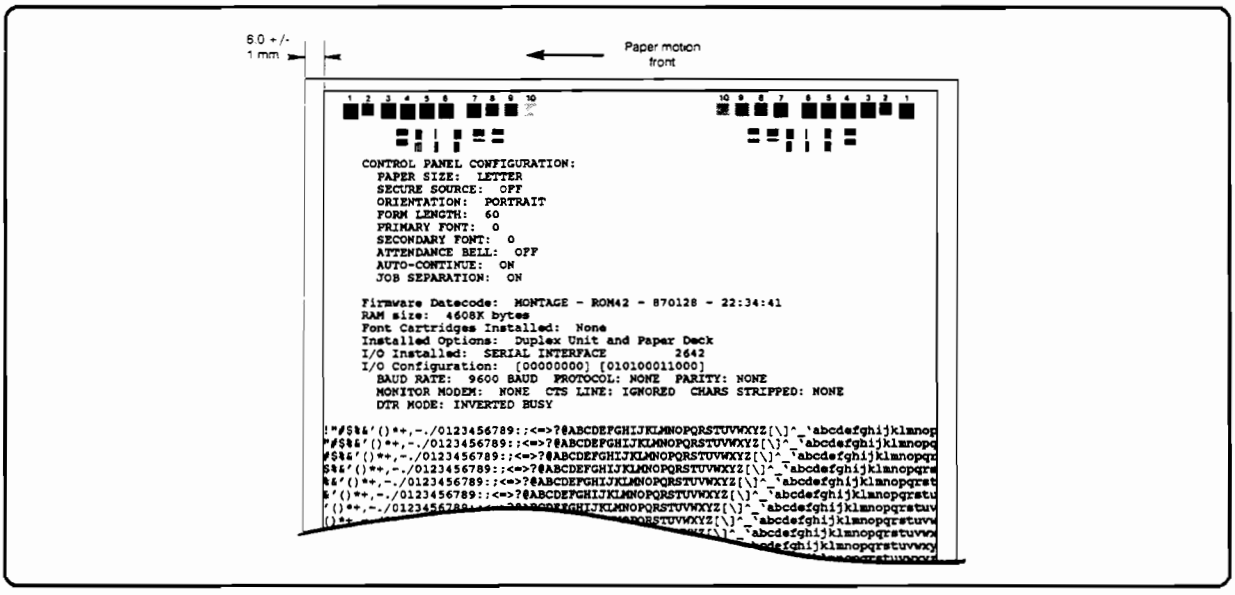


Figure 6-35. Registration Roller Timing

DC Power Supply #1

The DC Power Supply #1 is located in the front of the printer at the top of the open area over the print engine Feeder Belt assembly, and directly above the Waste Toner Box (see Figure 6-36).

Removal:

1. Open the right and left front doors, and remove upper left plastic cover (two screws).
2. Remove the waste toner box, sensor mount and sensor cable (three screws & one connector).
3. Unplug three connectors on Engine-DCPS1.
4. Remove two screws on the power supply mounting brace.
5. Carefully slide power supply forward and down to remove (it is heavy).

Replacement: Reverse the above.

Adjustments: None

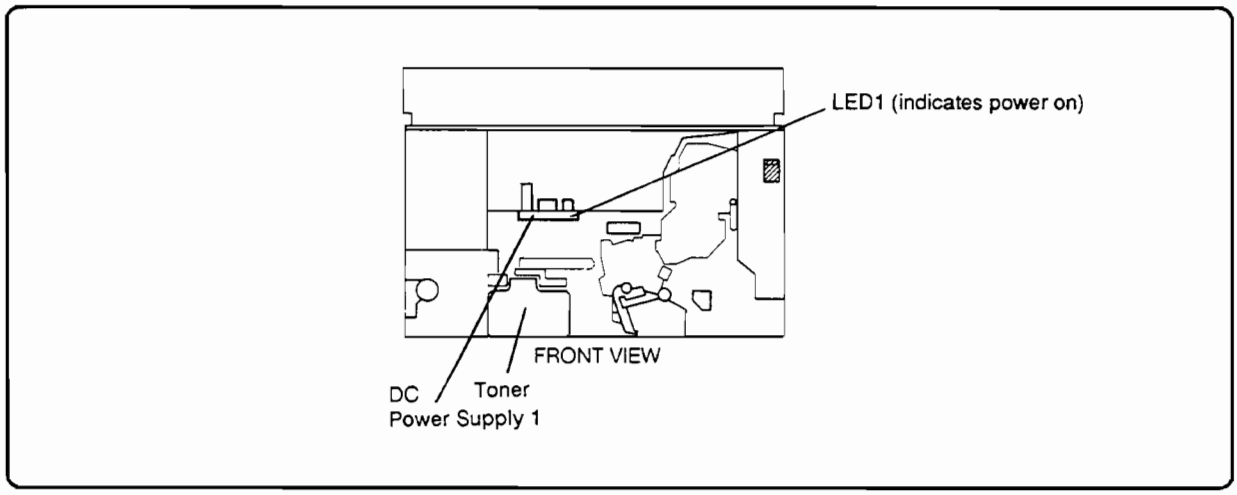


Figure 6-36. DC Power Supply #1

DC Power Supply #2

The DC Power Supply #2 is located behind the rear print engine cover on the left end, directly beneath the DC Power Supply Fan, Engine-FM1 (see Figure 6-37). It is mounted on a sheet metal plate assembly and is replaced as a unit.

1. Remove the PDX cable protector (three screws) if PDX is present.
2. Remove the back printer cover (two screws).
3. Remove paper cassettes; then remove right print engine cover (two screws).
4. Remove the rear cover interlock (one screw).
5. Unplug three connectors (J5, J6 and J7).
6. Remove one screw holding the DC Power Supply assembly to the engine frame and swing the power supply forward and out.

Replacement: Reverse the above.

Adjustments: None

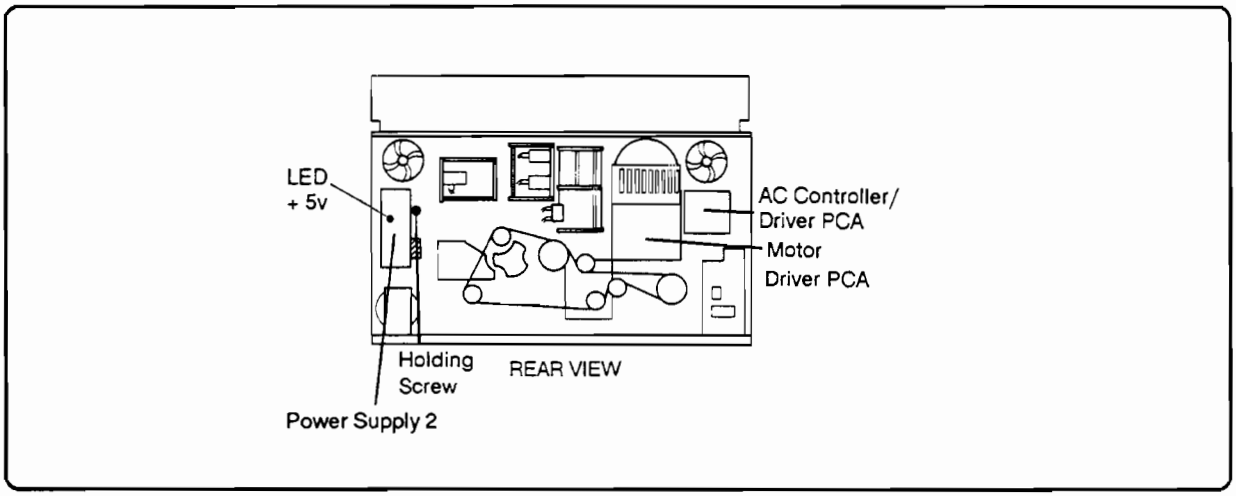


Figure 6-37. DC Power Supply #2

AC Controller/Driver PCA

This PCA is located behind the rear printer cover on the right end, directly above the input power box (see Figure 6-38).

Removal:

1. Remove the rear print engine cover only (three screws).
2. Remove 11 of the 13 connectors on the AC Controller PCA. Leave the lower two (J311 and J302) until step 4.
3. Squeeze the four standoffs and carefully lift the PCA out and upward to access the lower two connectors.
4. Unplug the connectors at J311 and J302.

Replacement: Reverse the above.

Adjustments: None

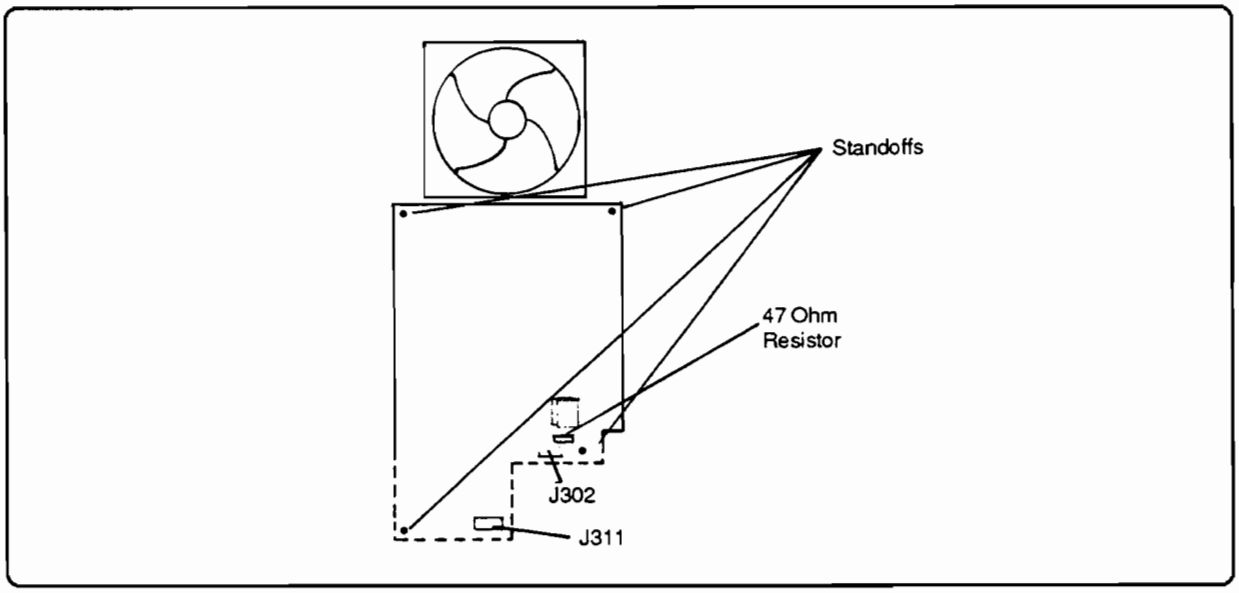


Figure 6-38. AC Controller/Driver PCA

47 OHM Resistor (R311)

The AC Controller/Driver PCA has a resistor (R311) socketed at IJ310 that will blow if the fuser is disconnected or malfunctioning. Figure 6-38 shows the location.

Removal: Using needlenose pliers, unplug the resistor at IJ310.

Replacement: Reverse the above.

Adjustments: None

Counter (Print Engine)

The print engine image counter is located under the right front printer door (see Figure 6-39). The counter's connector is located on the DC Controller PCA and requires removal of the printer's right end panel and RFI shield for replacement.

Removal:

1. Open the print engine right front door.
2. Remove print engine right side panel (two screws).
3. Remove RFI shield (eight screws).
4. Remove two screws holding the Potential Control PCA mounting plate and rotate the plate downward to access the DC Controller PCA.
5. Unplug the counter cable connector (J114). Cut tie wraps.
6. On the front of the printer, remove right hand decorative cover (two screws).
7. Remove one counter mounting screw.

Replacement: Reverse the above.

Adjustments: None

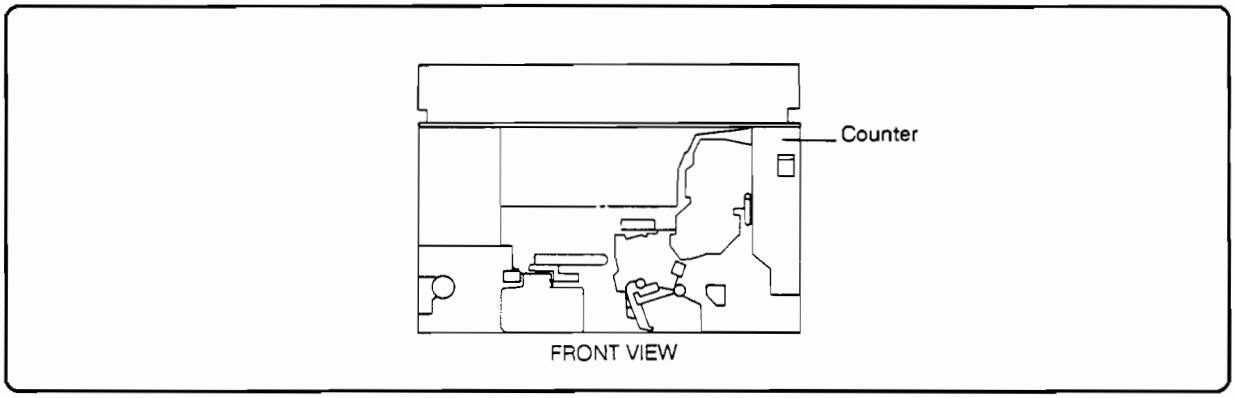


Figure 6-39. Print Engine Counter

Main Power Switch

The printer's main power switch is located on the left end toward the front of the printer. The printer's Output Stacker assembly must be removed to access the switch for replacement.

Removal:

1. Remove the printer's Output Stacker assembly as described in "Upper Stacker Assembly" on page 6-107.
2. Remove the four screws that hold the vertical steel stacker hanger bracket.
3. Remove the left stacker mounting bracket (four screws).
4. Remove the decorative end cover (two screws).
5. Open the printer's right and left front doors, and remove the upper left plastic cover (two screws).
6. Unplug the two connectors from the rear of the switch, noting their locations (wire #1 on the bottom lug, wire #4 on the top - lugs 2 and 3 have no connectors).
7. Open the Switchback assembly door and remove the two screws holding the main power switch.

Replacement: Reverse the above.

Adjustments: None

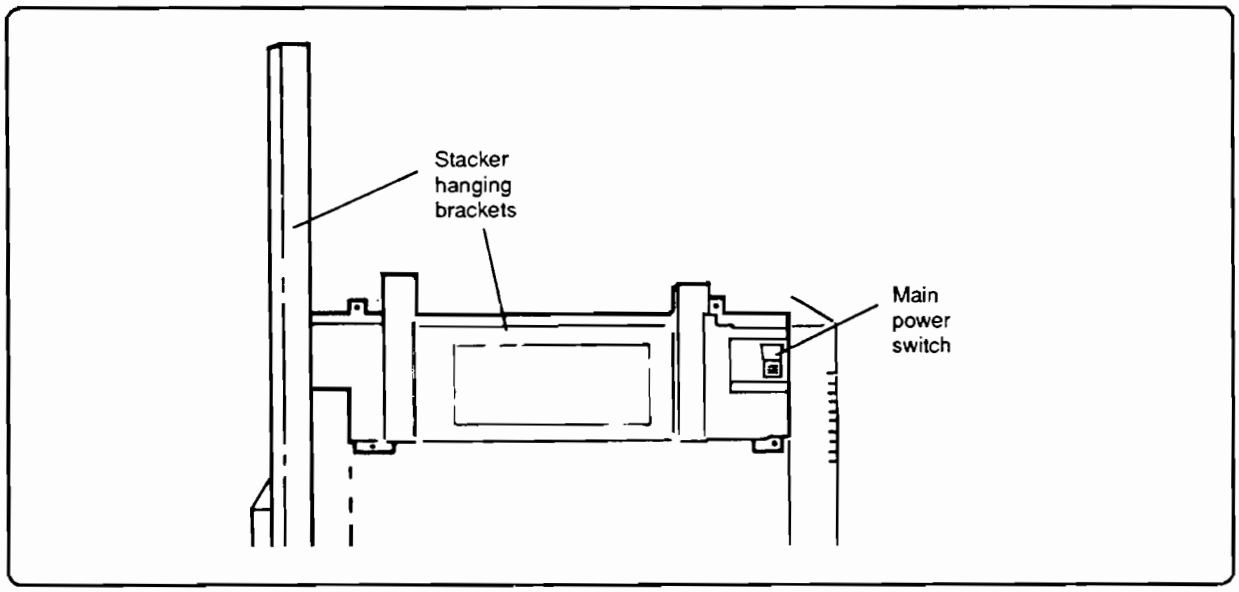


Figure 6-40. Main Power Switch

Laser Optical System

Laser/Scanner Assembly

The Laser/Scanner assembly consists of a Laser Unit, a Scanner Motor and an Optics Unit. The Laser/Scanner assembly is located on the top of the print engine, under the hinged Formatter I/O area assemblies (see Figure 6-41). To access, the top printer cover must be opened. The Laser/Scanner assembly is partially removed as a unit before the Laser Unit or Scanner Motor can be individually replaced.

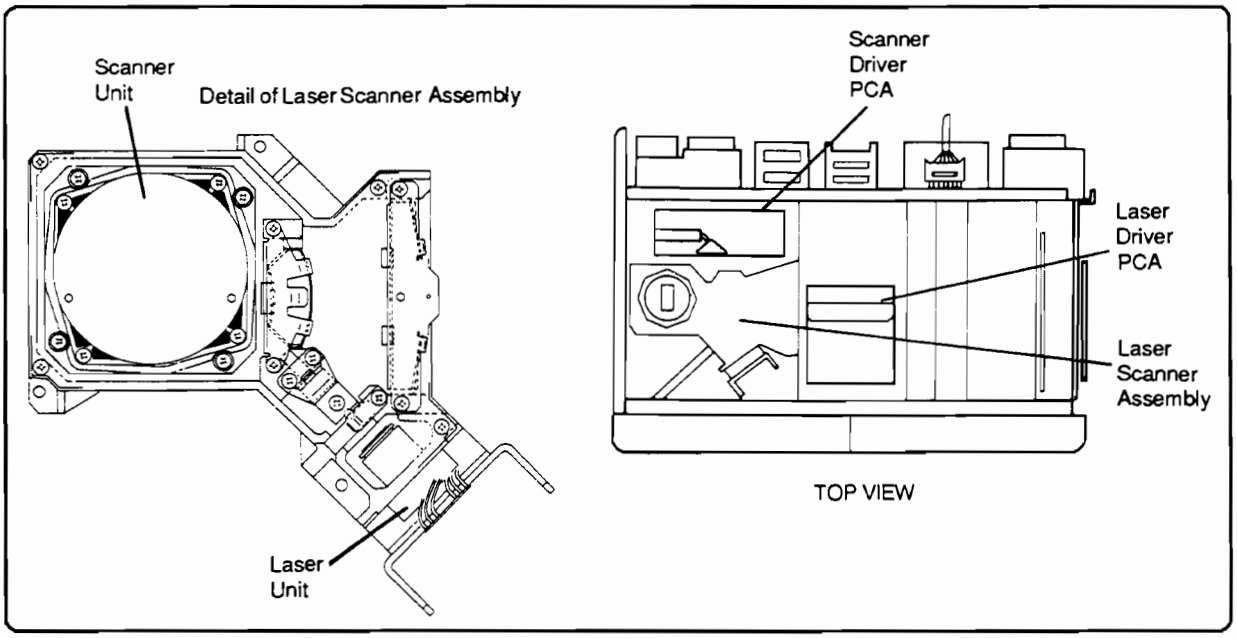


Figure 6-41. Laser/Scanner Assembly

Warning

Be sure to unplug the power cord before replacing the Laser/Scanner assembly or Scanner Unit. Always install the Laser/Scanner Cover before powering ON the printer. The reflected beam, although invisible, can damage your eyes.

Caution

Do not remove the three screws coated with glyptol on the Scanner Unit or the Laser Unit. The four screws on the top cover of the Scanner assembly are also coated with glyptol; however, these must be removed to replace the Scanner Motor.

Removal - Laser/Scanner Assembly:

Note The Laser/Scanner Assembly must be lifted upward from the printer before the Laser Unit can be removed.

1. Loosen the two screws and open the interface compartment unit.
2. Unplug the J202 connector from the scanner driver PCA.
3. Unplug J904 on the Laser Driver PCA.
4. Connect the short-circuiting connector (which comes with the new Laser assembly) to the connector removed from J904.
5. Remove the two screws and detach the laser power checker cover (Figure 6-42).
6. Remove the optical path cover (two screws).

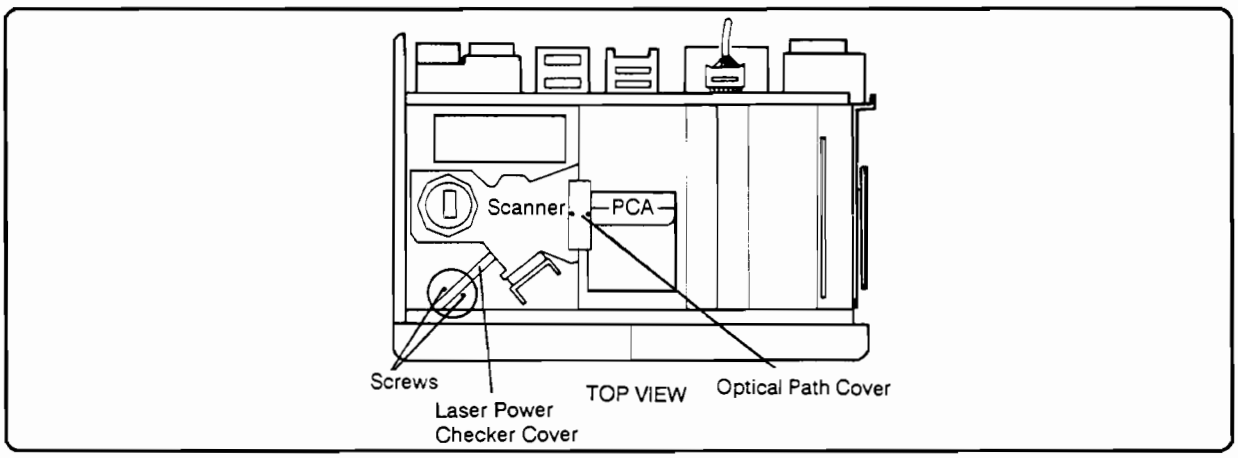


Figure 6-42. Laser/Scanner Area Covers

7. Being careful not to drop the rear screw through the wire routing hole, remove the four screws securing the Laser/Scanner Assembly (Figure 6-43).

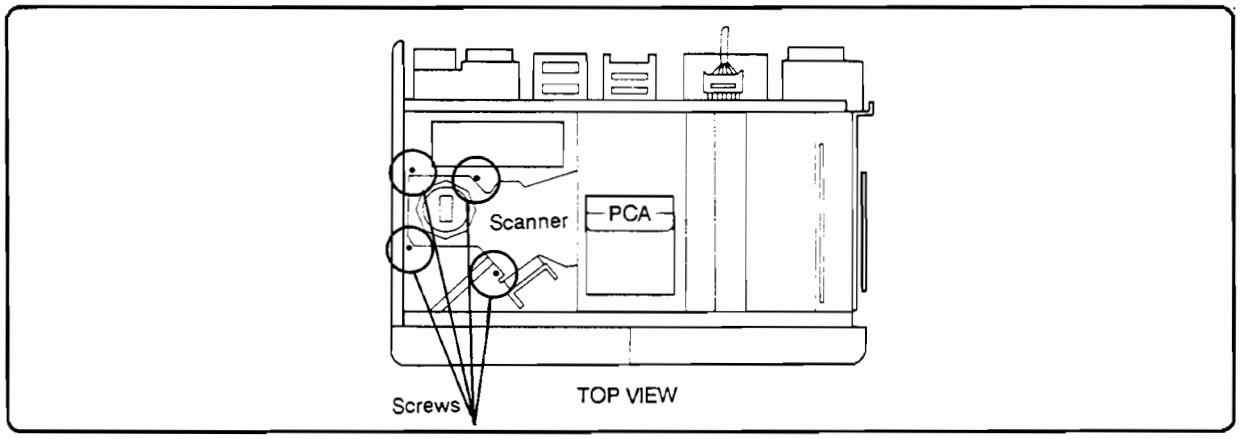


Figure 6-43. Laser/Scanner Mounting Screws

Caution DO NOT LOOSEN the three glyptol coated phillips screws on the Laser Unit. If these screws are loosened then the Laser Unit must be replaced.

8. Tilt the Laser Unit end of the Laser/Scanner Assembly upward and remove the two 3mm socket-head screws. Remove the Laser Unit.
9. If only replacing the Laser Unit and not the Scanner Assembly, reverse the above to replace and skip to "Laser Power Coarse Adjustment" on page 6-48.
10. The Laser/Scanner Assembly can now be lifted out of the printer.

Laser Unit

The Laser Unit is removed as a part of the Laser/Scanner Assembly as described in step 8, above.

Note Whenever the Laser Unit or Laser Driver PCA is replaced, the Laser Power must be adjusted. The procedures for doing so are found in "Laser Power Coarse Adjustment" on page 6-48 and "Drum Potentials Adjustment" in Chapter 7.

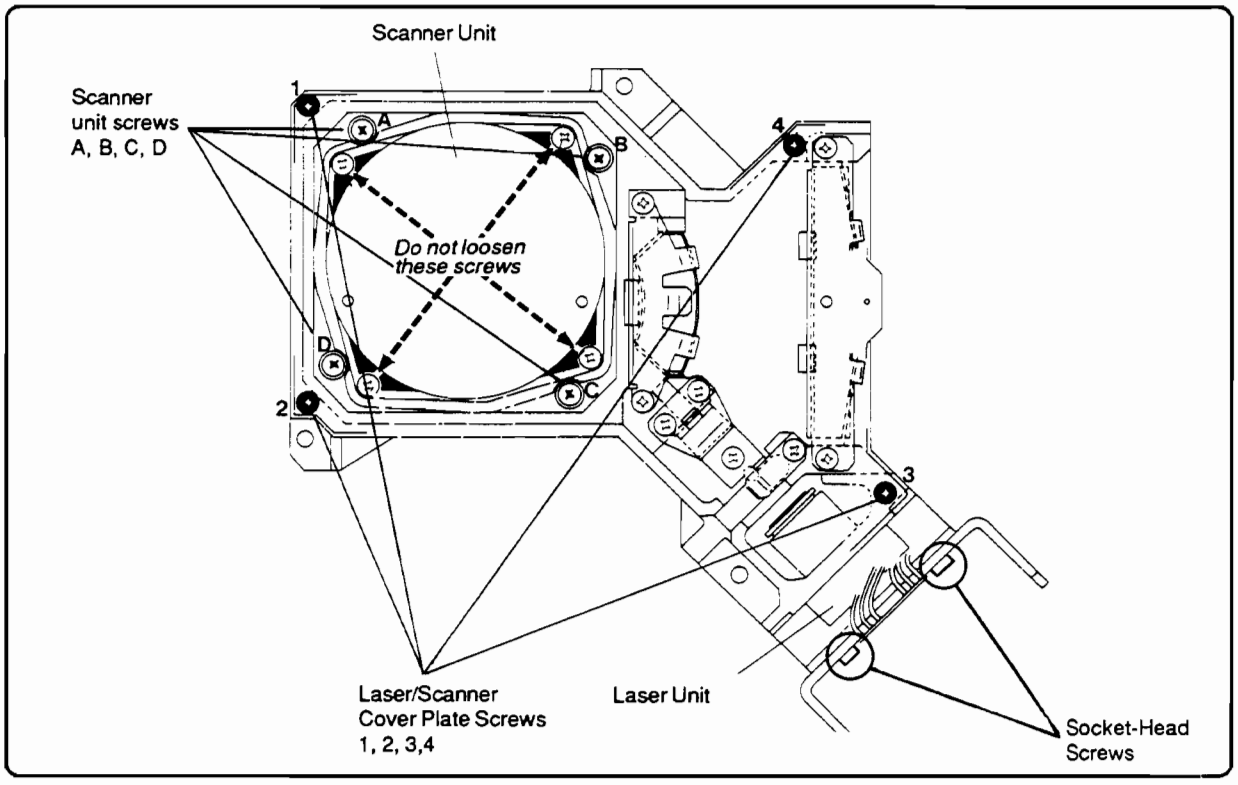


Figure 6-44. Laser and Scanner Unit Removal

Scanner Unit

The Scanner Unit consists of a scanner motor and a prism lens.

Warning  **Unplug the power cord before servicing the Scanner Unit. Failure to do so may expose you to the infrared laser beam and may cause eye injury.**

1. Raise formatter unit to gain access to the Laser/Scanner Assembly.
2. Remove the optical path cover (two screws).
3. Remove the Laser/Scanner Assembly cover plate (four screws) (see Figure 6-44, above).

Caution  The cover plate screws must be removed, although they are coated with glyptol. However, DO NOT remove the glyptol-coated screws on the scanner unit itself. **Do not touch any of the optical components (lenses)** inside the Laser/Scanner Assembly. Use care to prevent dust and debris from getting into the assembly while the cover is off.

4. Remove the four screws holding the Scanner Unit in place (screws A,B,C,and D in Figure 6-44).
5. Unplug the Scanner motor from the Scanner Driver PCA (connector J202) and lift the scanner unit out of the assembly frame.

Replacement: Reverse the above.

Adjustments: None

Laser Driver PCA

The Laser Driver PCA is located under the top section in the center (see Figure 6-45).

Removal:

1. Loosen the two screws and raise the Formatter I/O unit to gain access to the Laser Optics area.
2. Remove four connectors and two screws.
3. Squeeze the two nylon standoffs and remove the PCA.

Replacement: Reverse the above.

Note Ensure that the speed jumper JC901 is in position "C".

Adjustments: Perform the "Laser Power Coarse Adjustment" on page 6-48 and "Drum Potentials Adjustment" in Chapter 7.

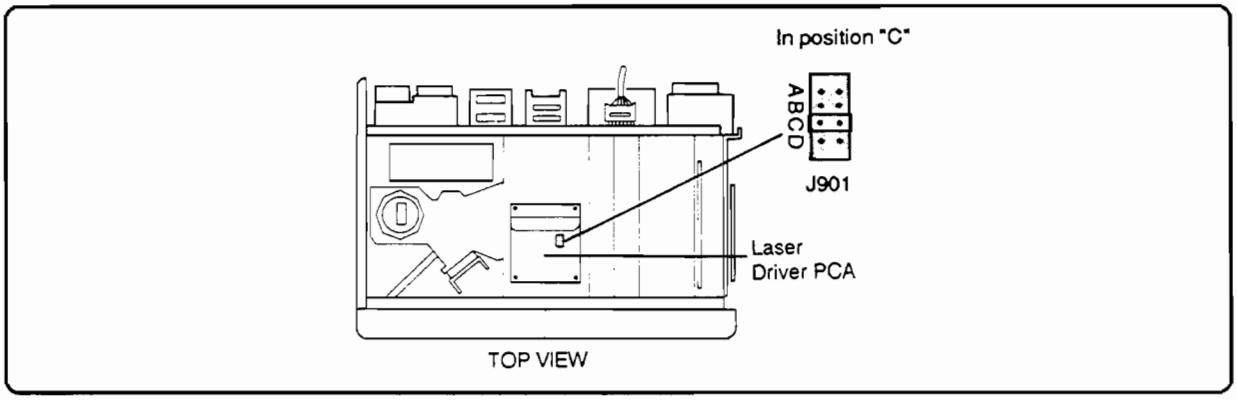


Figure 6-45. Laser Driver PCA

Scanner Driver PCA

The Scanner Driver PCA is located under the top section on the left and behind the Laser/Scanner assembly (see Figure 6-46).

Removal:

1. Unplug the three connectors from the PCA.
2. Remove the four mounting screws from the PCA.
3. Lift to remove.

Replacement: Reverse the above.

Adjustments: None

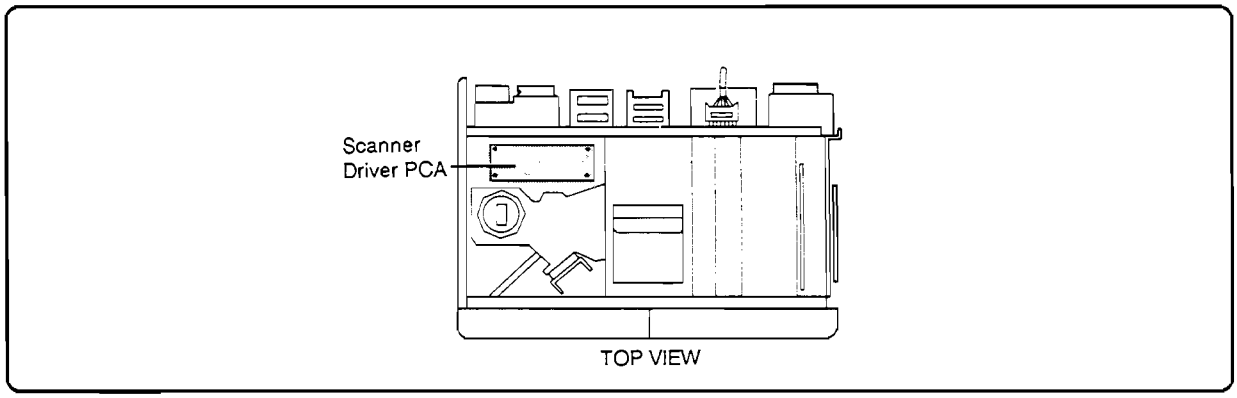


Figure 6-46. Scanner Driver PCA

Laser Power Coarse Adjustment

The maximum laser power must be set whenever the Laser/Scanner Assembly, Laser Driver PCA or Laser Unit is replaced.

Note

This procedure explains the coarse laser power adjustment ONLY. Once this procedure is complete, go to "Drum Potentials Adjustment" in Chapter 7 for fine adjustment of laser power (Vlight).

Tools required:

- Laser Power Checker (TKN-0199-000CN)
- Digital Multimeter

Note

A Developing Assembly must be in place to perform this procedure. This is a laser safety interlock.

Adjustment Procedures:

1. Turn OFF the power and raise the formatter unit for access to the Laser Driver PCA.
2. Remove the right panel from the printer.
3. Remove the DC Controller RFI shielding (eight screws).
4. Remove two mounting screws and one ground wire screw to drop down the Potential Control PCA mounting panel. This allows access to DSW941 on the Double Feed Detect (DFD) PCA.
5. Open the printer front doors and remove the left inner panel (two screws).
6. Loosen the left screw on the laser power checker insertion window cover, then turn the cover clockwise to expose the insertion window (see Figure 6-47).

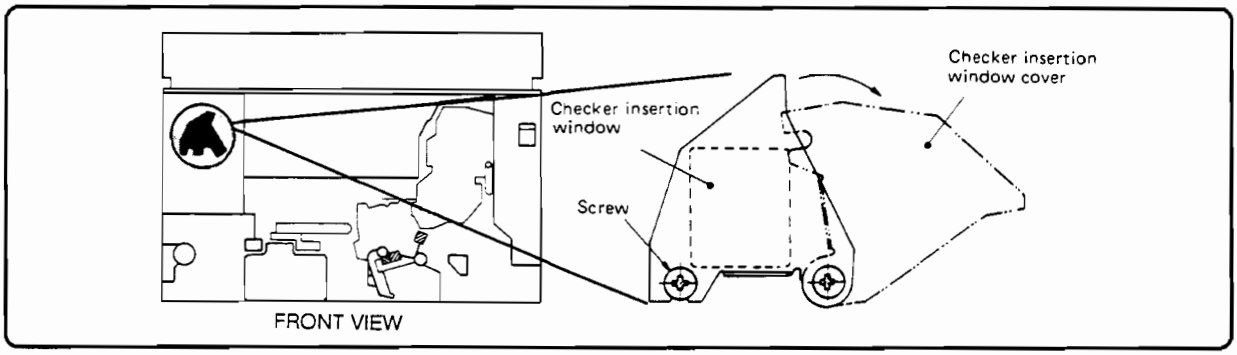


Figure 6-47. Laser Checker Insertion Window

7. Slide the laser power checker into the checker insertion window as shown in Figure 6-48. Ensure that the protective cover is removed from the end of the Laser Power Checker and that the power checker clicks in place solidly.

Note

When the laser power checker has been inserted far enough, you should hear a click. When this occurs, verify that the back of the checker is close to the front side plate of the printer as shown in Figure 6-48.

8. Connect the red and black leads from the Laser Power Checker to the Digital Multimeter and set the range to 200 mV DC (see Figure 6-48).

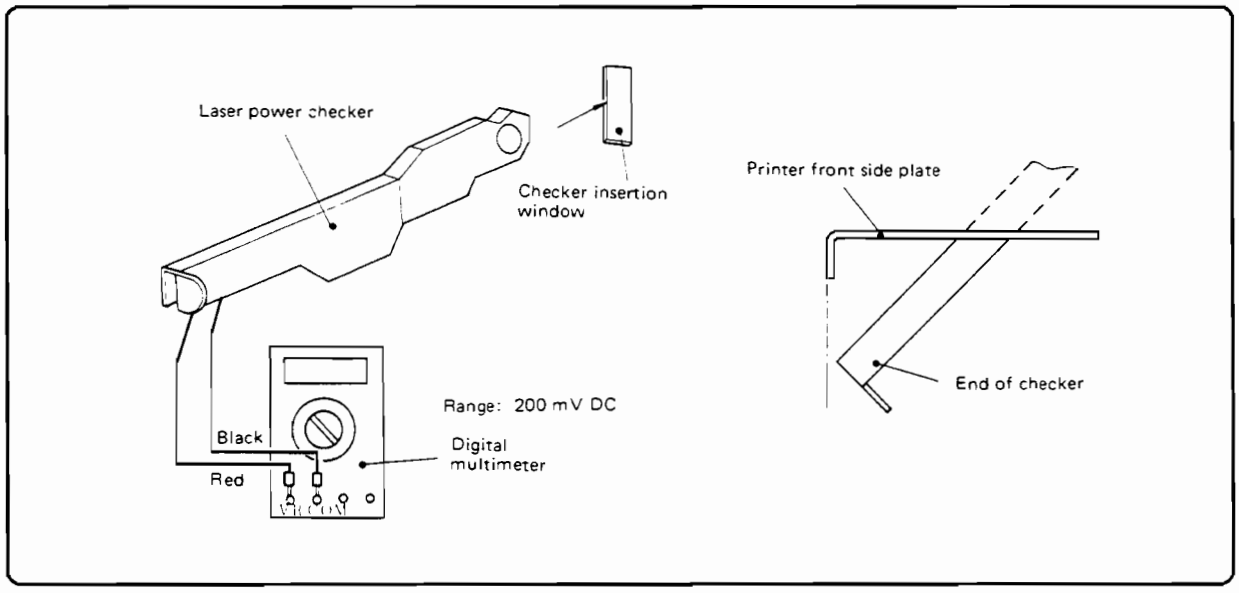


Figure 6-48. Laser Power Checker

9. With power OFF, preset the Laser Driver PCA by turning VR902 (Rough Laser Power) fully counterclockwise (or minimum). Turn VR901 Fine Laser Power fully clockwise (or maximum) until it clicks (see Figure 6-49).

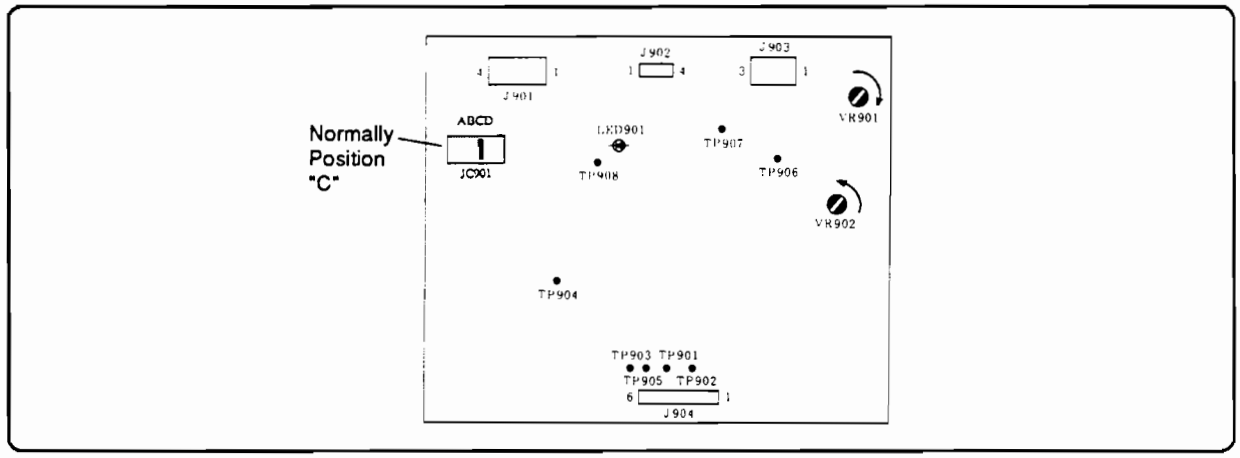


Figure 6-49. VR901 & VR902 (Laser Driver PCA)

10. Unplug connector J109 on the DC Controller PCA.
11. Use a door switch actuating tool (P/N 02684-40001) to defeat the left and right front door interlocks. Switch the power ON.

Caution

Before making the adjustment, check the label on the Laser Unit for the maximum output power. Turn VR902 gradually clockwise while watching the output of the laser power checker. **Be careful to avoid going beyond the maximum power. The laser diode can be destroyed if the maximum power rating is exceeded.**

12. Turn ON DIP switch DSW941-7 and THEN DSW941-2 (first switch 7; then switch 2) on the Double Feed Detect PCA.
13. Turn VR902 on the Laser Driver PCA gradually clockwise as described below, to set maximum laser power as shown on the label on the Laser Unit (*i.e.* "P MAX=XX.X mV"). Adjust to within ±5 mV.

Note

If no laser power is present when adjusting VR902:

a. Check that developer assembly and right and left door interlocks are in place.
b. Turn VR901 CCW one full turn and retry.

14. Adjust VR901 gradually counter-clockwise, while watching the output of the laser power checker, for 15-20mV. This is a preliminary setting for beginning the fine laser power (Vlight) adjustment.
15. Turn OFF the DIP switches DSW941-2 and 7.
16. Remove the laser power checker.
17. Turn the printer's main power OFF.
18. Reconnect J109 on the DC Controller PCA.
19. Proceed to the "Drum Potentials Adjustment" in Chapter 7.

Note

Laser power fine adjustment (Vlight) is performed as part of the "Drum Potentials Adjustment" procedure in Chapter 7.

Electrophotographic System

EP Drum

Warning **Be sure to unplug the power cord before disassembling the printer. AC Line voltage is present at the drum heater when the power cord is connected to the power source, even when the main power switch is OFF!**

Removal:

1. Unplug the printer's power cord.
2. Remove the Developing assembly.
3. Release the lever and remove the Transfer/Separation Corona assembly (Corona #3).
4. Remove the Primary and Pretransfer Corona assemblies (Coronas 1 and 2).
5. Remove the Cleaning assembly (refer to "Cleaning Station Assembly" on page 64).
6. Remove the toner catcher (slide out to the front completely and remove).
7. Remove the two screws and detach the drum centering plate (Figure 6-50).

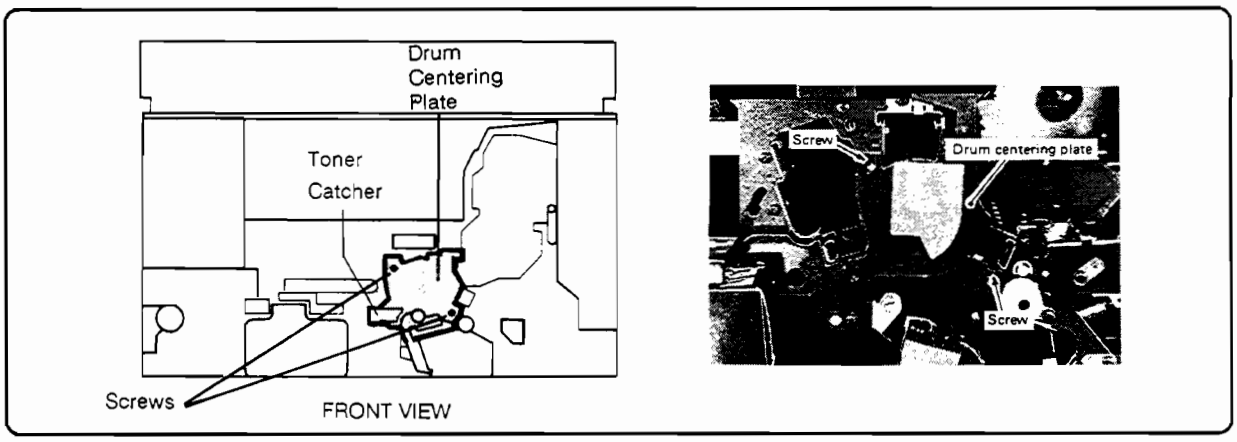


Figure 6-50. Drum Centering Plate

8. Remove the two screws and detach the drum end flange (Figure 6-51).

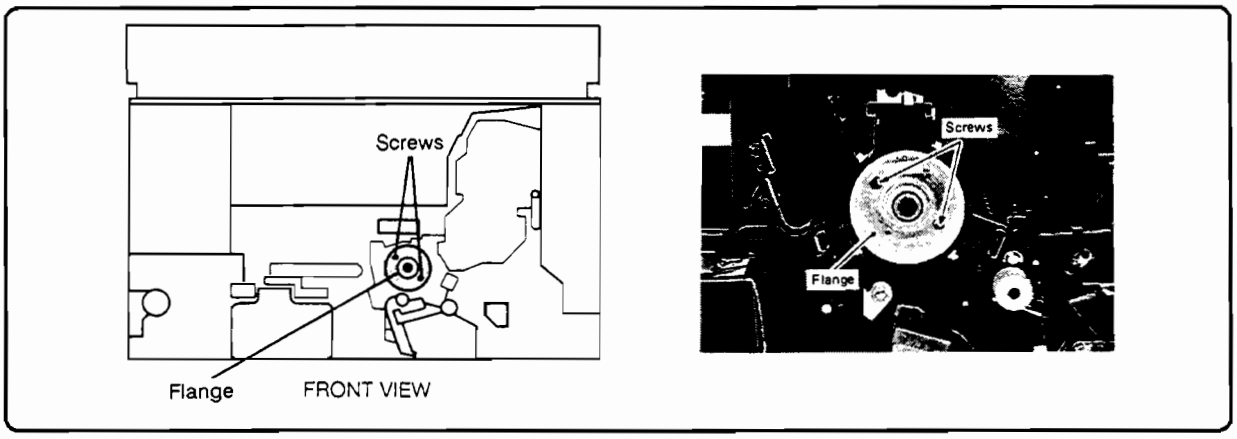


Figure 6-51. Drum Flange

9. Unplug the front connector of the drum temperature control PCA (Figure 6-52).
10. Pull the drum guide to the front as far as it will go, and turn it slightly counter-clockwise until it locks (Figure 6-52).
11. Insert a plastic drum sleeve (P/N TKN-0459-000CN) over the drum to protect it.
12. Withdraw the drum very carefully.
13. Remove the drum heater from the drum (Figure 6-52).

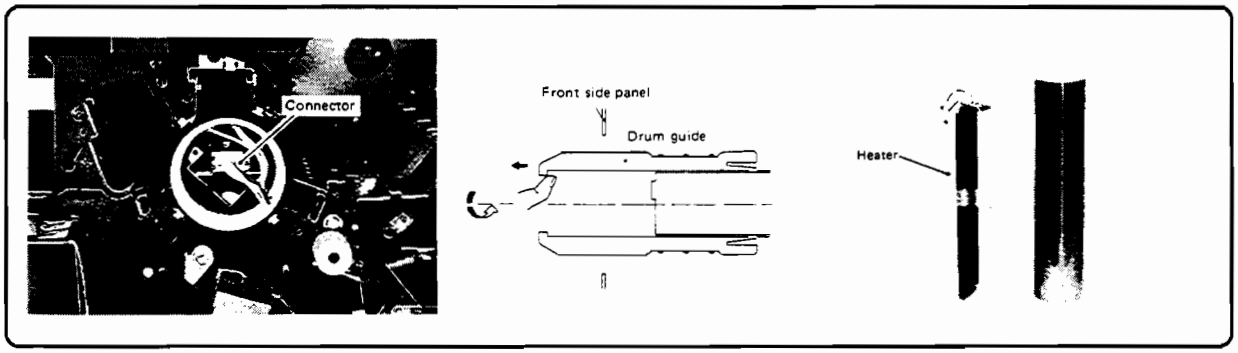


Figure 6-52. Drum Assembly Components

Note

If the Drum is to be reinstalled, it should be kept in the protective sleeve and stored in a dark, dust-free place where it cannot be damaged. If the Drum will not be reinstalled, it can be disposed of normally. **There are no environmental hazards associated with disposing of used EP Drums.**

Replacement - EP Drum:

Before installing a drum, check it carefully to be sure that the drum surface is clean and free of scratches. If the drum needs cleaning, follow the steps on the next page before proceeding.

1. Pull the drum guide to the front as far as it will go, and turn it slightly counter-clockwise until it locks (Figure 6-52).
2. Remove the Drum voltage setting label and affix it to the inside surface of the right hand print engine cover.
3. Insert the removed drum heater into a new drum. Seat the drum heater to the inside machined flange of the drum.

Note

The drum heater is already seated in drums when first installing the printer from the factory. Replacement drums are shipped with a voltage label and protective sleeve, but without drum heaters.

---

4. Reinstall the drum in reverse order (drum removal, above).

Note

Install the drum on the drum guide so that the leads for the heater are in the metal channel of the drum guide (see Figure 6-53).

When the drum is in position on the drum guide, unlock the guide by turning the drum guide clockwise. Push it into the printer.

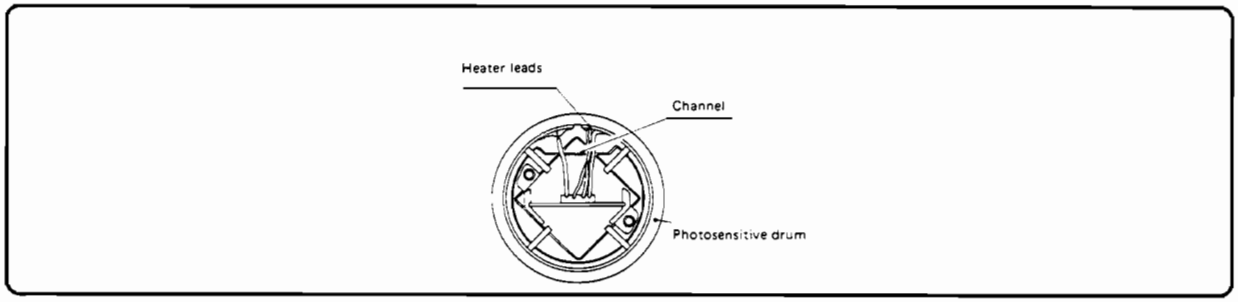


Figure 6-53. Drum Heater Leads

Adjustments:

When installation is complete, proceed to "Drum Potentials Adjustment" in Chapter 7.

Cleaning an EP Drum

If the drum surface is dirty, wipe it gently with lint-free wipes. If toner lumps or other foreign matter cannot be removed by wiping with dry lint free wipes, clean it using the following procedure:

1. Wipe the drum surface with dry lint-free wipe to remove loose toner from the surface.
2. Wipe the drum with lint-free wipe dampened with Trichloroethane (Goldwipes - P/N 5062-1776) to remove fused toner, etc.
3. Wipe the drum clean again with dry lint-free wipe.

Caution

The photosensitive drum will be scratched if it is wiped with any material contaminated with foreign matter, such as metal fragments or grit. Use only clean lint-free wipes.

If the drum is subjected to corona discharge with toner on its surface, insulation breakdown may occur where toner is deposited. Do not make prints with the Cleaning assembly released or permanent drum damage will occur.

Drum Heater PCA

The Drum Heater PCA is located inside the EP Drum. Its replacement requires removal of the Drum, as described on the previous pages.

Warning

Be sure to unplug the power cord before disassembling the printer. AC Line voltage is present at the drum heater when the power cord is connected to the power source, even when the main power switch is OFF!

Removal:

1. Remove the Drum (refer to "EP Drum" page 6-51).
2. Slide the PCA forward and unplug the rear AC Power Connector (Figure 6-54).

Replacement: Reverse the above. Be sure the wires are properly routed through the flat channel and tucked under the PCA when replacing (see Figure 6-54).

Adjustments: None

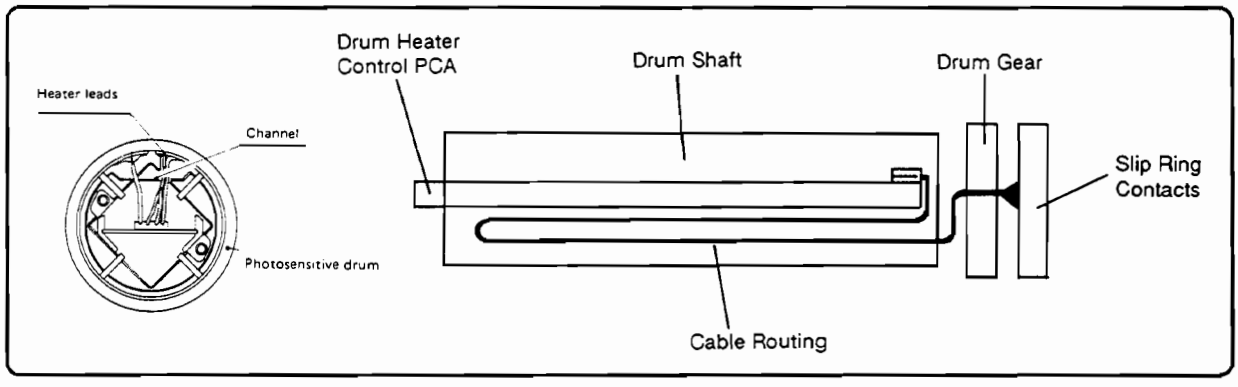


Figure 6-54. Drum Heater PCA

Coronas

Removal:

The three coronas are easily removed from the machine. All can be simply pulled outward along their rails. (Lower the green lever before removing Corona #3 - the Transfer/Separation Corona.)

Replacement: Reverse the above.

Adjustments - Corona Wire Heights: Whenever a corona is replaced, check and adjust the height of the corona wire. Refer to corona wire height label in the lower left section of print engine (left front door - see Figure 6-55).

The height of a corona wire is adjusted by turning the screw at the rear of the Corona assembly. One turn of the screw changes the wire height approximately 0.7mm at that end.

Note

The Pretransfer and Separation Corona assemblies affect the transfer operation. Therefore, wire positions cannot be adjusted independently. DO NOT adjust the Pretransfer and Separation Corona wire heights to anything other than the values specified on the wire height label.

If the Primary Corona is replaced, refer to the drum voltage label and plug the varistor jumper (in the handle of the Primary Corona) in the correct location for the letter indicated on the drum label (either A,B,C,D, or S). **Incorrect jumper settings may cause arcing and damage to the drum.**

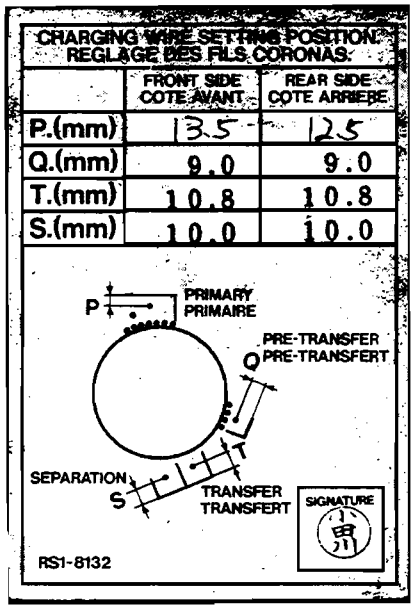


Figure 6-55. Corona Wire Height Adjustments

Preconditioning LED Assembly

1. Disconnect the power cord.
2. From the front of the printer, remove the Developer Assembly and Cleaning Station assembly (refer to "Cleaning Station Assembly" on page 6-64).
3. Remove the EP drum (refer to "EP Drum" on page 6-51).
4. Remove the black upper print engine panel (two screws).
5. Loosen the two screws that secure the Formatter I/O compartment and raise the compartment.
6. From the top of the printer, unplug all connectors from Engine-FM5 Driver PCA (small PCA toward the rear of printer) and the Laser Driver PCA (Figure 6-56). (Neither PCA needs to be removed.)
7. Remove the Optical Path Cover (two screws - Figure 6-56).
8. Remove the four screws securing the Optical Unit Cover (see Figure 6-56). Lift the rear of the cover first, while holding all cables out of the way. **Be careful not to damage the beam detect fiber-optic cable** (Figure 6-56).

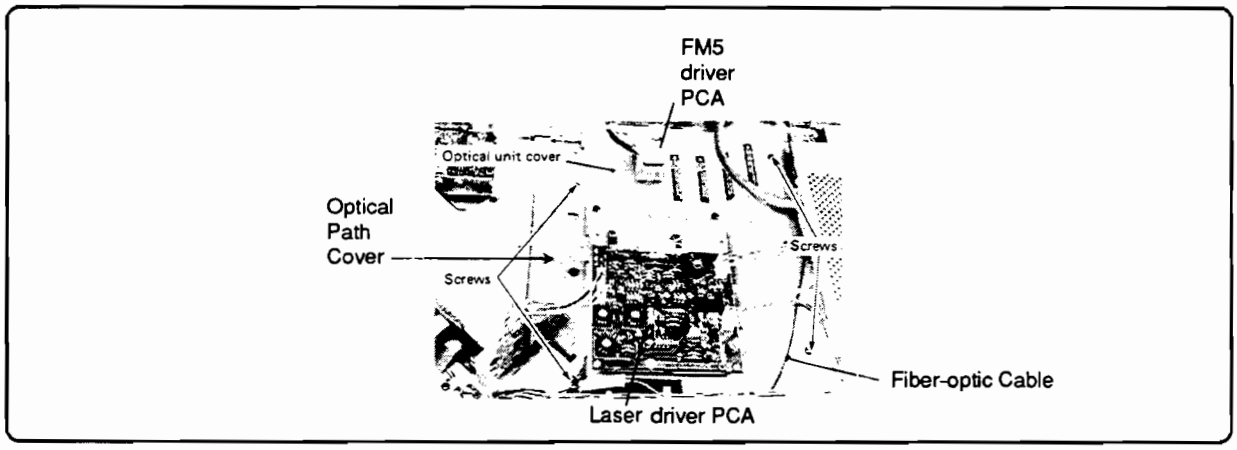


Figure 6-56. Optical Unit Cover

9. Remove the four small-head screws securing the black Engine-FM5 internal duct (three along the right, one in rear). (The rear screw is difficult to see.)
10. Lift the internal duct cover up at the rear and out, again being careful of the wires and beam detect fiber-optic cable.
11. From the front of the printer, remove the two screws holding the Dust Filter/Engine-FM6 assembly. Slide the filter assembly out through the front.

12. From the top of the printer, remove the two screws which are along the left inner floor of the squirrel cage fan housing (Engine-FM5 - Figure 6-57, top view).

Note Figure 6-57 shows the fan removed for clarity. This is not necessary for replacement of the Preconditioning LED assembly.

13. From the front of the printer, unplug the Preconditioning LED connector.
14. Remove the front holding screw for the preconditioning LED (Figure 6-57, front view).
15. Push the Preconditioning LED assembly down to the cleaner station opening; then pull the assembly out through the opening.

Replacement: Reverse the above.

Adjustments: None

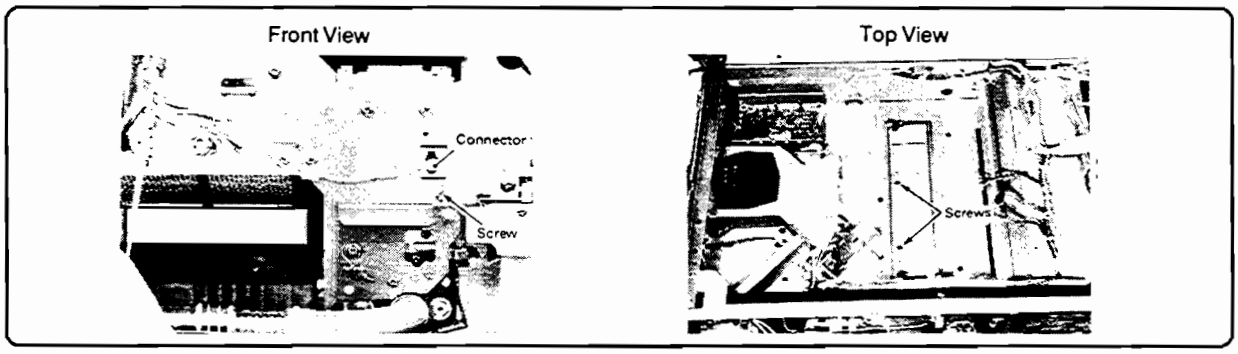


Figure 6-57. Preconditioning LED Removal

Potential Control PCA

The Potential Control PCA is located on the right end of the printer, beneath the right end cover (see Figure 6-58). This PCA and the Potential Sensor and Measurement PCA are mounted on a hinged plate (this PCA is the larger of the two and mounted on the right).

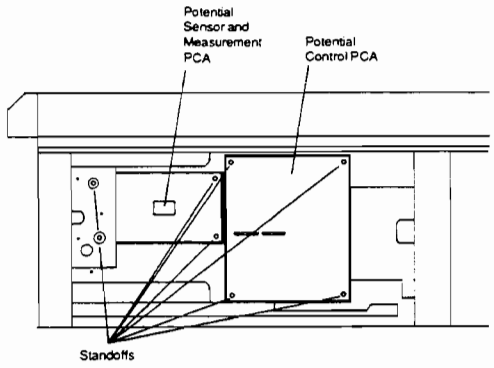


Figure 6-58. Potential Control and Potential Measurement PCAs

Removal:

1. Remove the print engine right panel (two screws).
2. Remove the RFI shield (eight screws).
3. Remove eight connectors from the Potential Control PCA.
4. Squeeze the four nylon standoffs and remove the PCA.

Replacement: Reverse the above

Adjustments: Set switches in accordance with the drum voltage label (see "Drum Potentials Adjustment" in Chapter 7).

Potential Sensor and Measurement PCA

The Potential Sensor and Measurement PCA is located on the right end of the printer, beneath the right end cover (shown in Figure 6-58). This PCA and the Potential Control PCA are mounted on a hinged plate (this PCA is the smaller of the two and mounted on the left).

Note

The Potential Sensor and the Potential Measurement PCA should always be replaced as a set. They are electrically aligned using tools not available for the field.

Removal:

1. Remove the print engine right panel (two screws).
2. Remove the RFI shield (eight screws).
3. Remove the metal guard (one screw).
4. Remove the four connectors from the PCA.
5. Squeeze the four nylon standoffs and remove the PCA.

Replacement: Reverse the above

Adjustments: None

Developing Assembly

The Developing assembly is located beneath the print engine's right front door, and is easily removed and replaced, as follows:

Removal:

1. Open the front right door.
2. Release the Developing assembly by swinging the green lever clockwise.
3. Hold the front handle and gently slide the Developing assembly to the front; then remove the assembly by lifting the top handle.

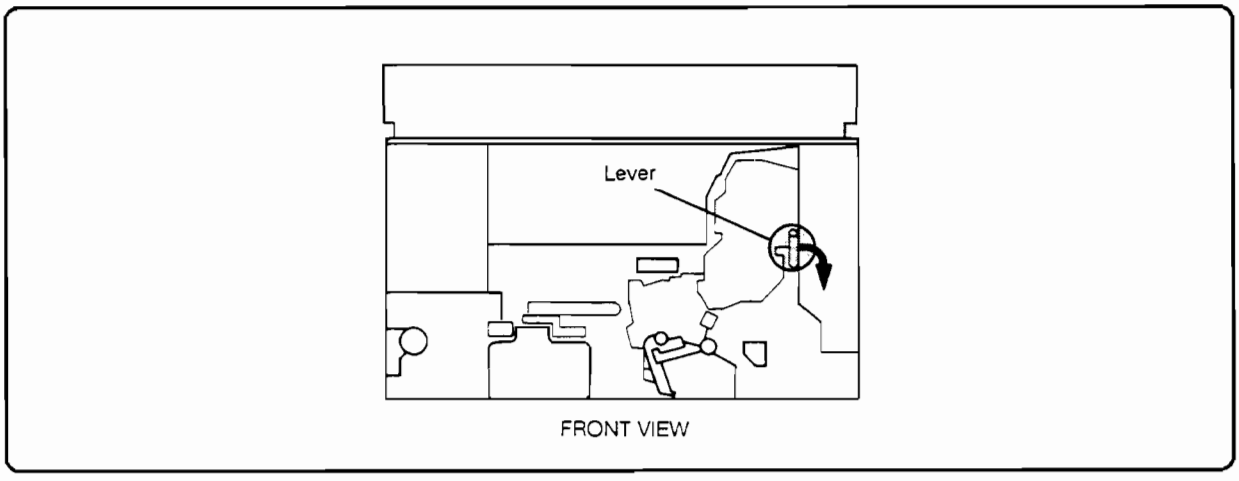


Figure 6-59. Developing Assembly Lever

Replacement - Developing Assembly: Replacement is the reverse of removal, noting the following:

1. When installing the Developing assembly, put it in carefully so that it does not strike other parts.
2. Open the cylinder cover (green lever at lower left corner of assembly); then insert the Developing assembly into the printer.

Note

After the Developing assembly is installed, make a test print to check that the main motor is positively driving the Developing assembly and that the rollers at both ends of the Developing assembly are in positive contact with the drum. (If they are not, the distance between the developing cylinder and drum will be too great and the image will be faint.)

Adjustments: There are no adjustments other than the maintenance items that follow.

Doctor Blade, Developing Cylinder, and Side Seals

The Developing Assembly can be serviced as follows:

1. Remove the Developing assembly from the printer.
2. Remove the three screws and detach the front developer cover.
3. Remove the screw and detach the cylinder cover (Figure 6-60).
4. Remove the two screws and detach the upper cylinder cover (Figure 6-60).

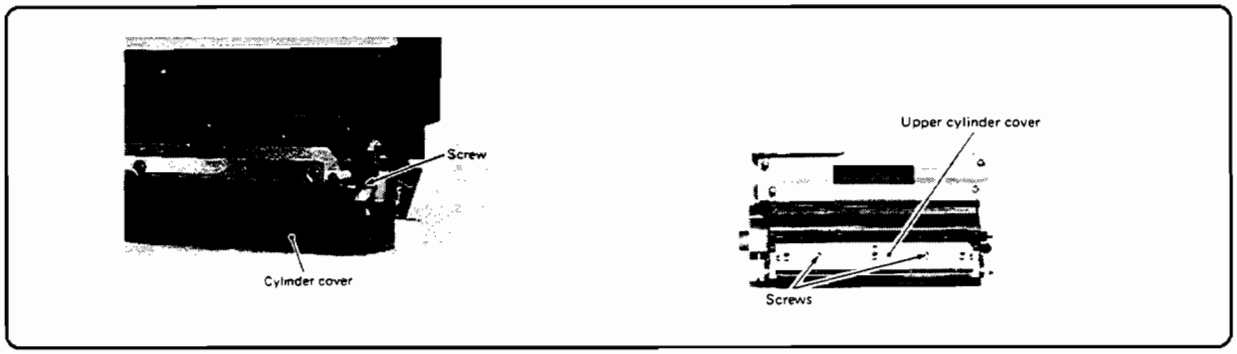


Figure 6-60. Developing Cylinder Covers

5. Remove the four screws and detach the blade (Figure 6-61).

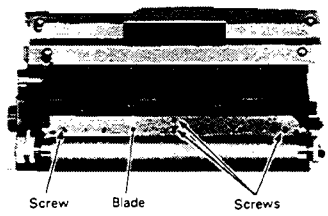


Figure 6-61. Developer Blade Removal

6. Remove the three screws and detach the rear cover (Figure 6-62).

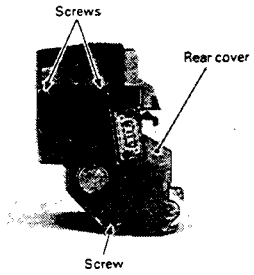


Figure 6-62. Developer Rear Cover Removal

7. Remove the rear grip ring and detach the gear and roller (Figure 6-63).

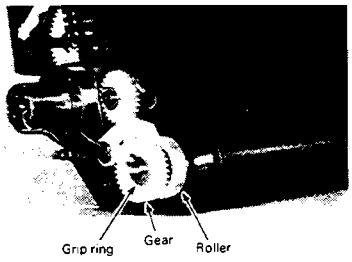


Figure 6-63. Developer Gear and Roller Removal

8. Loosen the nut and bolt squeezing the magnet locating plate onto the shaft of the magnet. Remove the screw mounting the plate; then remove the plate (Figure 6-64).

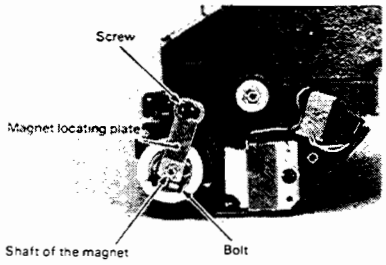


Figure 6-64. Developer Magnet Locating Plate

9. Remove the front grip ring and detach the roller (Figure 6-65).

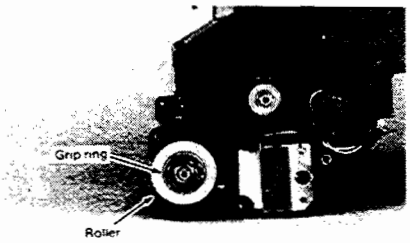


Figure 6-65. Developer Front Grip Ring and Roller Removal

10. Remove the right and left ball bearing and detach the developing cylinder (Figure 6-66).

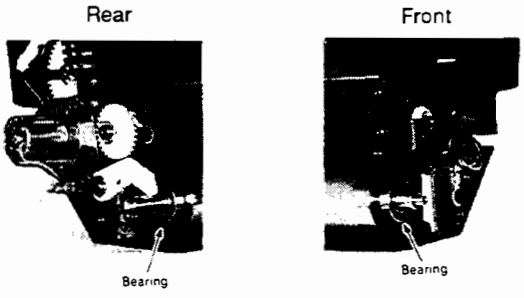


Figure 6-66. Developer Bearing Locations

11. Remove the front and rear side seals from the developer frame (Figure 6-67).

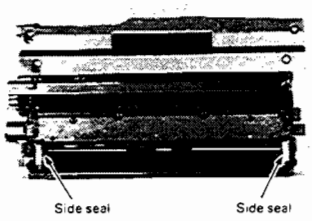


Figure 6-67. Developer Side/Inner Seal Removal

Note

Keep the developing cylinder surface clean and free from fingerprints and oil. If soiled, wipe it with dry lint-free paper. If necessary, use a lint-free paper slightly dampened with alcohol. Do not use trichloroethane (Goldwipes).

While installing the side seals, be careful of the following (refer to Figure 6-68):

1. Be sure to replace both the front and rear side seals at the same time.
2. Align the side seals with the inner wall surface of the Developing assembly.
3. Compress the inner seal so that it will fit into the groove in the side seal.
4. Reassemble the Developing assembly in the reverse order.

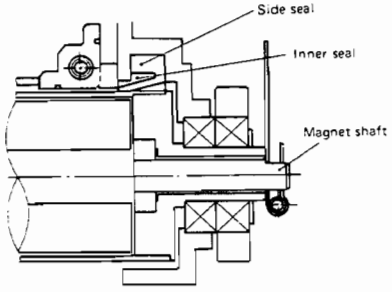


Figure 6-68. Developer Side/Inner Seal Cutaway View

When installing the magnet locating plate, be careful of the following:

1. The internal magnet in the developing cylinder will align itself with the blade when the cylinder is installed.
2. Fasten the magnet locating plate in the position that holds the magnet cylinder shaft and blade in alignment (refer to Figure 6-64 on page 6-62).

Note

Since the magnet locating plate and magnet cylinder shaft are not keyed into a particular alignment, the position of the plate is not always the same as before it was removed.

Cleaning Station Assembly

The Cleaning Station assembly is accessed from the front of the printer. It is located to the left of the EP Drum.

Removal:

1. Open the right and left front doors.
2. Remove the screw to release the flexible tube from the top of the waste toner receptacle (Figure 6-69).
3. Remove the wing screw, slide the Cleaning Station assembly slightly out to the front until it stops; then tilt it counter-clockwise (Figure 6-69).
4. Slide the Cleaning Station assembly gently out to the front and remove it.

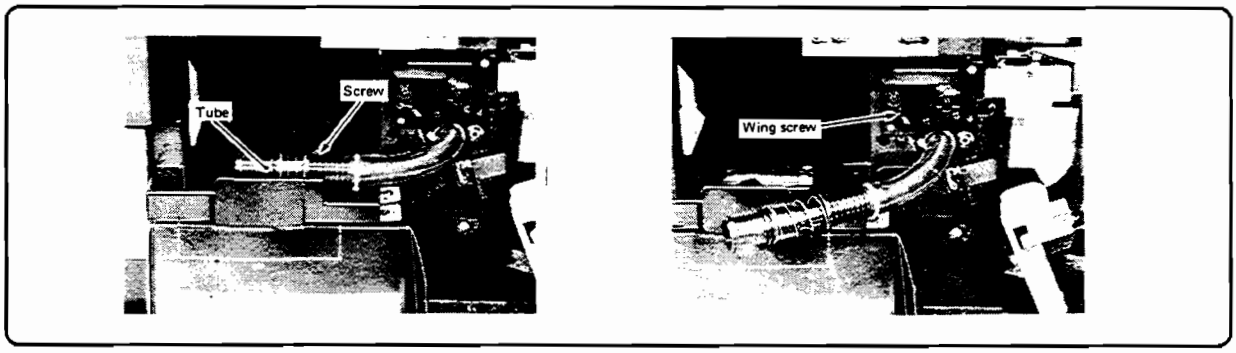


Figure 6-69. Cleaning Station Removal

Replacement: Reverse the above.

Adjustments: None

Note

If a new Cleaning Station assembly is installed, there may be unusual noise near the tube at first. This noise is caused by the feed screw, and will stop when toner is distributed through the area contacted by the feed screw.

The noise can be prevented by putting some toner in the Cleaning Station assembly. (Waste toner can be used for this purpose.)

Cleaning Blade

Removal:

1. Remove the Cleaning Station assembly from the printer.
2. Remove the four screws and detach the Cleaning Station assembly top cover (Figure 6-70).
3. Loosen the five screws holding the blade mounting plate and detach the cleaning blade (Figure 6-70).

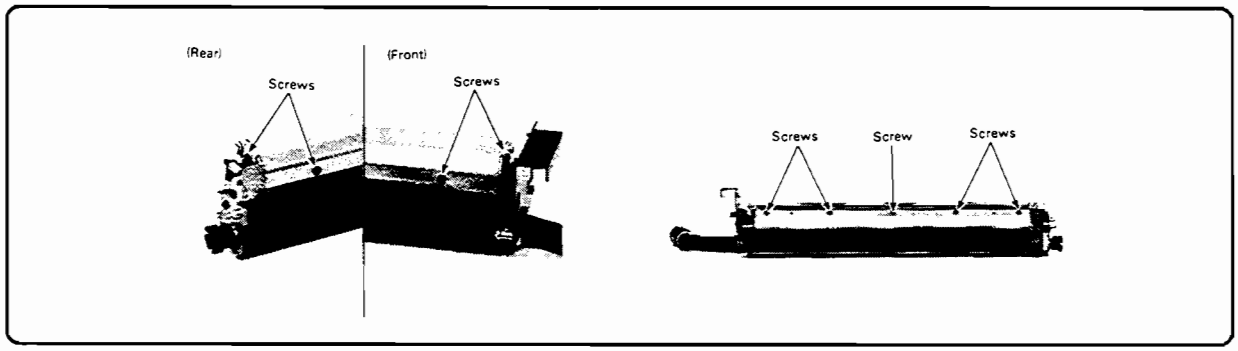


Figure 6-70. Cleaning Blade Screws

Replacement:

Note

Both edges of the cleaning blade can be used (edges 1 or 2 shown in Figure 6-71 ride on the EP Drum surface). Do not reuse a damaged blade.

1. Put the blade against the positioning lip of the blade mounting plate; then tighten the screws of the plate.
2. Make sure that the polyester sheet attached to the backing plate is at the position shown in Figure 6-71.
3. Position the blade in the center of the side seals (Figure 6-71).

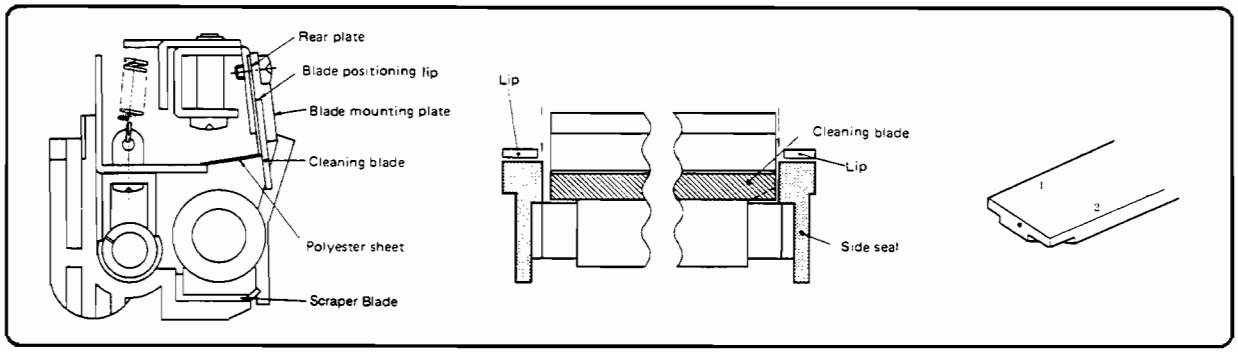


Figure 6-71. Cleaning Blade Installation

4. With your finger, spread toner along the blade edge where it contacts the drum. Also spread toner on each end of the blade where it contacts the side seals. This prevents the blade from being damaged by friction. (This is especially important when installing a new blade edge.)

Adjustments: There is no need to adjust the cleaning blade pressure. If the cleaner is installed as previously described, the correct pressure will be applied.

Side seals

Removal/Replacement:

1. Remove the cleaning assembly from the printer.
2. Peel off the front and rear side seals to remove them from the Cleaning Station assembly.
3. Clean the side plates where the side seals have been in contact using isopropyl alcohol.
4. Remove the backing tape from the new seals.
5. Apply the side seals to the Cleaning Station assembly housing so that the side of the seal just touches the end of the cleaning blade, and the top of the seal contacts the lip on the housing (refer to Figure 6-71).

Adjustments: None

Cleaning roller

Removal:

1. Remove the Cleaning Station assembly from the printer.
2. Remove the front and rear springs of the cleaning roller hanger arms.
3. Remove the two screws and turn the rear positioning plate 90 degrees (Figure 6-72).
4. Remove the grip ring and remove the cleaning roller drive gear (Figure 6-72).

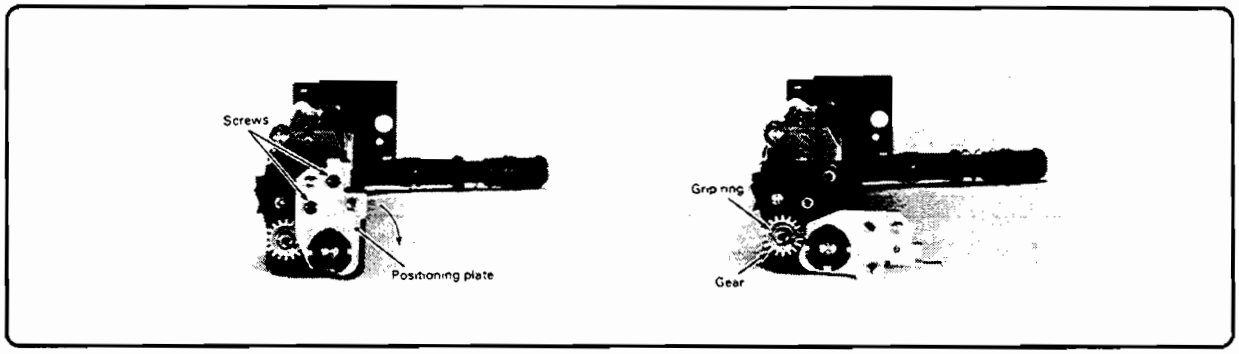


Figure 6-72. Cleaning Roller Screws and Grip Ring

5. Remove the screw and detach the rear hanger arm (Figure 6-73).
6. Remove the e-ring and screw and detach the front arm (Figure 6-73).
7. Remove the right and left side seals and remove the cleaning roller.
8. Remove the seals (felt) from both ends of the cleaning roller shaft and attach them to the new cleaning roller.

Figure 6-73. Cleaning Station Rear Arm and E-Ring Removal

Note Do not touch the rubber parts of the cleaning roller directly. Keep them free from contaminants.

Replacement: Reverse the above. After replacing the cleaning roller and installing the Cleaning Station assembly in the printer, make ten or more overall black A3/Ledger prints.

Adjustments: None

Scraper

Removal:

1. Remove the cleaning roller.
2. Remove the three screws at the bottom of the Cleaning Station assembly and remove the scraper (Figure 6-74).

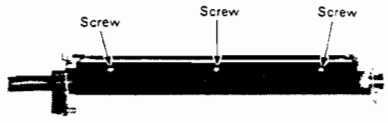


Figure 6-74. Cleaning Station Scraper Replacement

Replacement: Reverse the above. When installing the scraper, make sure that it is mounted straight without bends or waviness. Press the scraper against the Cleaning Station assembly housing; then tighten the screws.

Fusing Assembly

The Fusing Assembly is located on the left end of the print engine and is accessed by opening the Switchback assembly door. The Fusing assembly can be replaced as a unit. Several components are also field replaceable.

Removal:

Caution

Be sure to remove the AC power (unplug) before removing the Fusing Assembly. If AC power is applied while the Fuser is removed, this can blow the resistor fuse R311 on the AC Controller PCA (socketed at IJ310).

1. Open the Switchback assembly door.
2. On the front side of the Switchback assembly, remove the single shoulder screw holding the linkage to the delivery roller door, and slide the linkage off its stud.
3. Close the delivery roller door and unplug the three connectors at the upper left corner of the assembly.
4. Remove the two screws at the bottom corners of the Fusing assembly (Figure 6-75).
5. Pull out the rail below each side of the delivery unit (see Figure 6-75); then slide the assembly out along the rails. Lift the assembly up and out to remove.

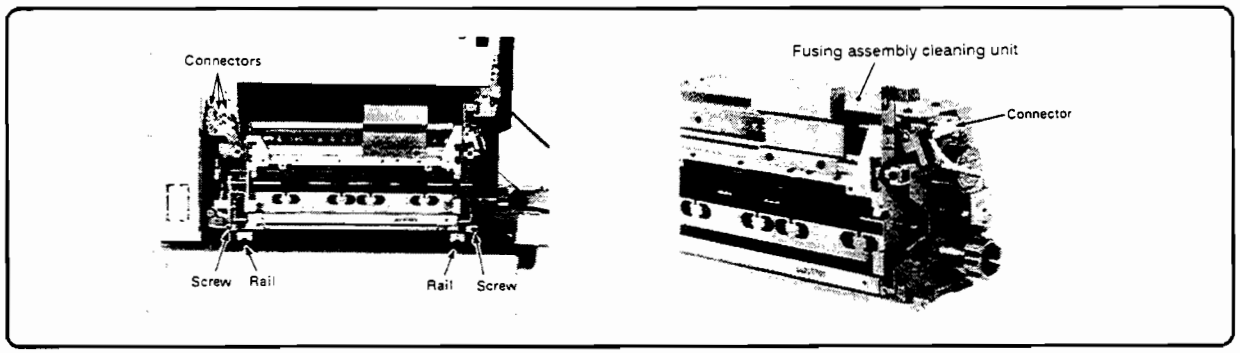


Figure 6-75. Removing the Fusing Assembly

Replacement: Reverse the above.

Nip Width Adjustment

When the Fuser Rollers are replaced, you must adjust the pressure of the upper roller against the lower. The adjustment is called "nip width."

1. Power ON the printer.
2. Wait for printer to display `00-READY`. Wait 15 minutes longer and then run 20 Self Test printouts.
3. Open print engine right and left front doors and remove the Primary Corona (Corona #1).
4. Place interlock override tools in left and right door switched and beam shutter.
5. Press the TEST PRINT button on the right of the display panel.
6. Watch the paper path through the Feeder Belt area. When the leading edge of the paper is entering the Fusing Assembly, power OFF the printer.
7. Turn the Fusing assembly knob slightly clockwise, stop it at that position for 15 seconds; then turn the Fusing assembly knob to deliver the print from the Fusing assembly.
8. Measure the width (nip width) of the glossy toner surface (Figure 6-76). The nip width is normal if the measurements at the middle and ends are the same as Table 6-4.
9. If the measurement is outside the specifications adjust the nuts of the pressure adjusting bolt (Figure 6-76).

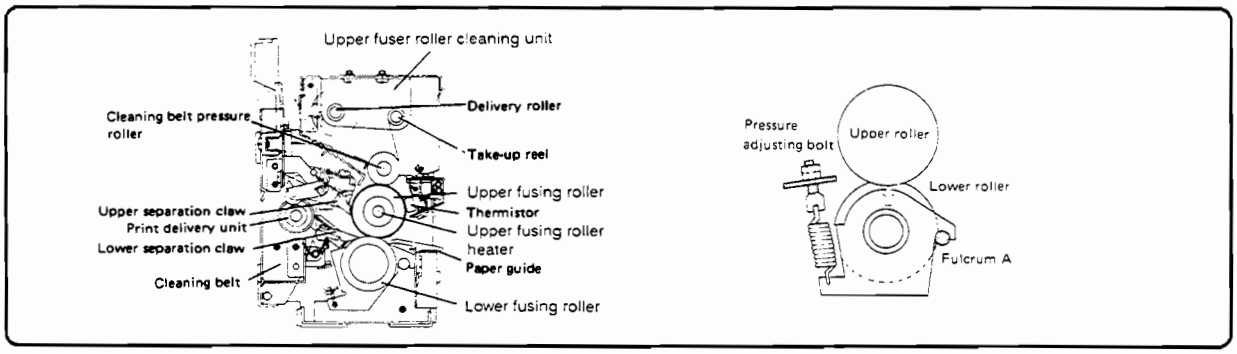


Figure 6-76. Nip Width Adjustment

Table 6-4. Nip Width Measurements

CANON ROLLERS (orange)		TEFLON ROLLERS (grey)	
Reference	**Measurement**	**Reference**	**Measurement**
b	3.5 ±0.5mm	b	4.5 ±0.5mm
a - c	0.5 mm max.	a - c	0.5 mm max.

Heater lamp, upper & lower pressure rollers

Removal:

1. Remove the Fusing assembly from the printer.
2. Unplug the connector for the Cleaning Towel motor and remove the Fusing assembly cleaning unit.
3. Remove the single screw and detach the front electrode (Figure 6-77).
4. Remove the front upper roller heater electrodes (1 screw) and carefully remove the heater lamp.
5. Remove the screw and detach the rear heater contact.

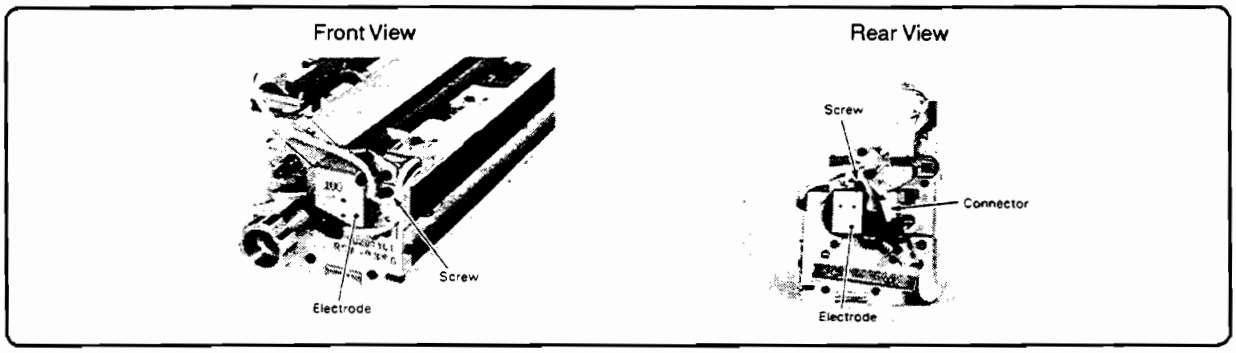


Figure 6-77. Removing the Heater Lamp

Thermoswitch & Thermistor:

6. Remove the two screws and detach the inlet cross member containing the thermoswitch and the thermistor (Figure 6-78).

Upper Fusing Roller:

7. Remove the stop ring and the gear (Figure 6-78).

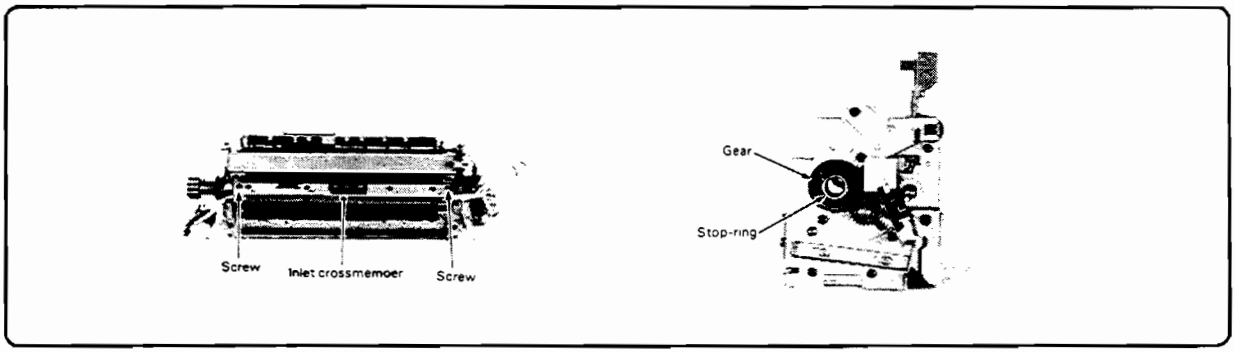


Figure 6-78. Inlet Cross member and Stop Ring Locations

8. Remove the screw and detach the front roller gear (Figure 6-79).
9. Remove the three screws and detach the front bearing and bearing plate (Figure 6-79).
10. Pull the upper roller out through the hole in the front side plate (until the roller is free of the rear bearing) and lift the rear of the roller up and out of the Fusing assembly.

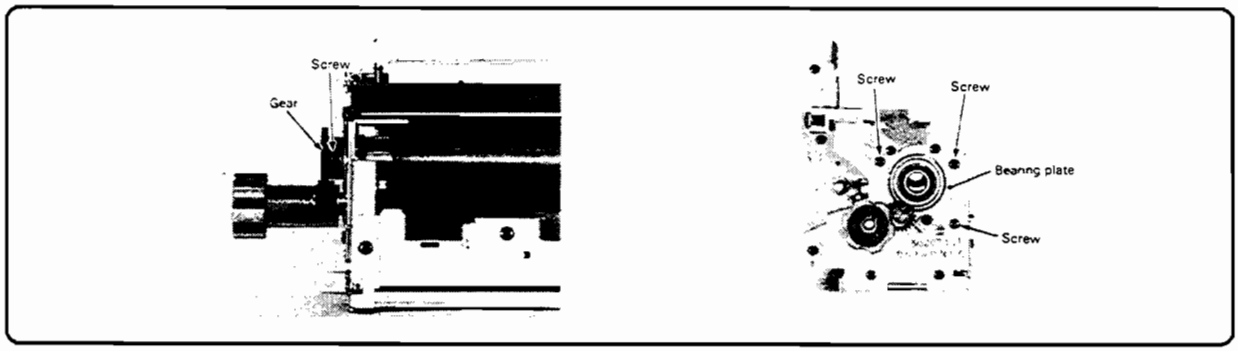


Figure 6-79. Roller Gear and Bearing Plate

Lower Pressure Roller:

11. Remove the paper guide plate by sliding the plate forward to release it from the clips (Figure 6-80).
12. Remove the cross member to facilitate removal of the lower pressure roller (Figure 6-80).
13. Remove the front pressure roller hanger from the pivot stud (do not release the spring) by raising the roller up to release the bearing and hanger (Figure 6-80).
14. Remove the lower pressure roller.

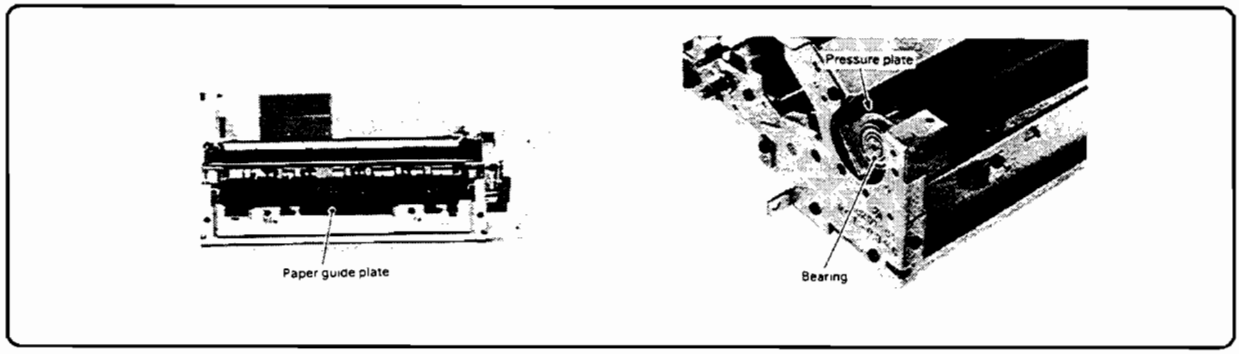


Figure 6-80. Paper Guide and Pressure Plate

Replacement:

Installation of the heater lamp, upper roller and lower roller is the reverse of removal. However, take note of the following:

1. Be careful when handling the upper fusing roller. It is recommended to wrap the roller with print paper to prevent the roller from being stained or scratched.
2. Be sure to install the heater so that the manufacturer's mark is toward the front (see Figure 6-81).

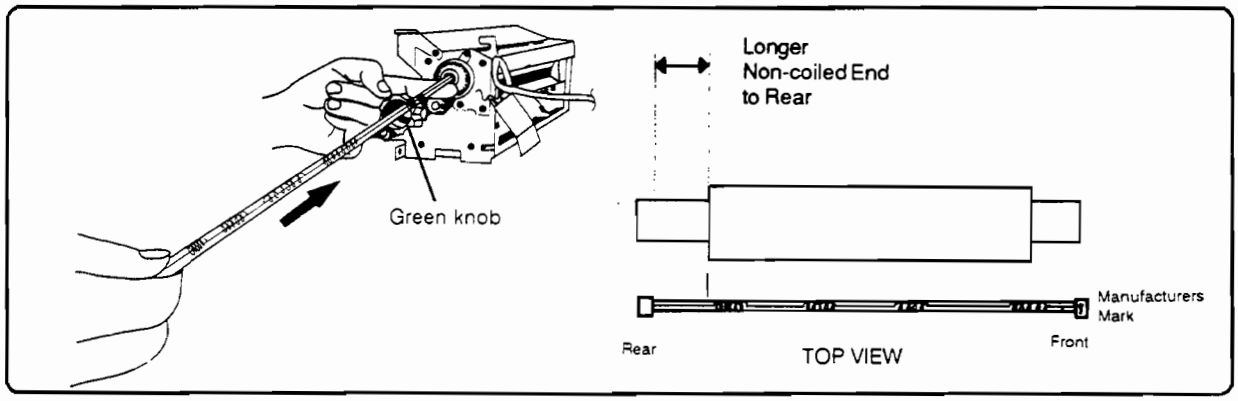


Figure 6-81. Roller Heater Lamp Installation

Caution The heater lamp can be installed backwards, causing poor fusing. Be sure to install correctly.

3. When installing the thermistor, make sure that the sensing face of the thermistor contacts the upper roller surface evenly (Figure 6-82).

Note There is no need to adjust the position of the thermistor. If the thermistor does not contact the surface of the roller evenly, check if the thermistor spring is deformed or if the leads are stretched by the cable clamp.

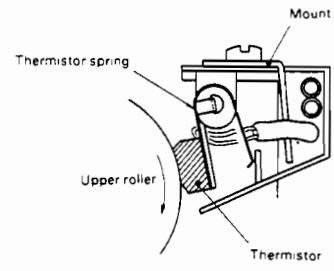


Figure 6-82. Thermistor Installation

4. The thermoswitch opens at 250 ±14° C. Install the thermoswitch so that it is pressed against the surface of the upper roller by the thermoswitch spring as shown in Figure 6-83.

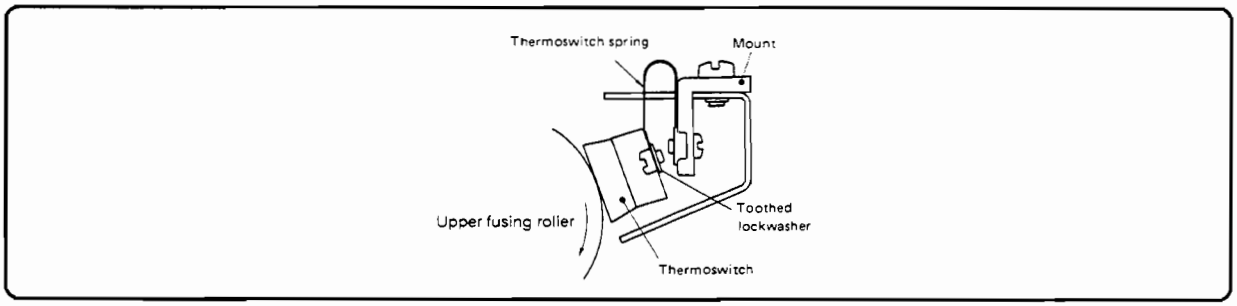


Figure 6-83. Thermoswitch Installation

5. When the assembly is reinstalled, check the fuser pressure roll adjustment (Nip width - refer to page 6-69).

Cleaning Towel Assembly

This unit is located in the upper section of the Fusing assembly and cleans the upper roller by contact with a silicone-oil-impregnated towel. The towel slowly advances to present a fresh surface.

The towel is 19m long. The final 2.5m are colored red to indicate that the towel will soon need to be replaced.

Note

The Cleaning Towel Assembly has been upgraded from older units. The new assembly (P/N RG1-0389-090CN) replaces the notched drive gear with a standard gear and adds an anti-reversal pawl. Refer to Figure 4-20 on page 4-31 (Chapter 4) for a comparison of the two assemblies.

Removal:

1. Remove the Fusing assembly from the printer.
2. Unplug the connector for the Cleaning Towel motor and remove the fusing roller cleaning unit.
3. Remove the two screws and open the towel cover (Figure 6-84).

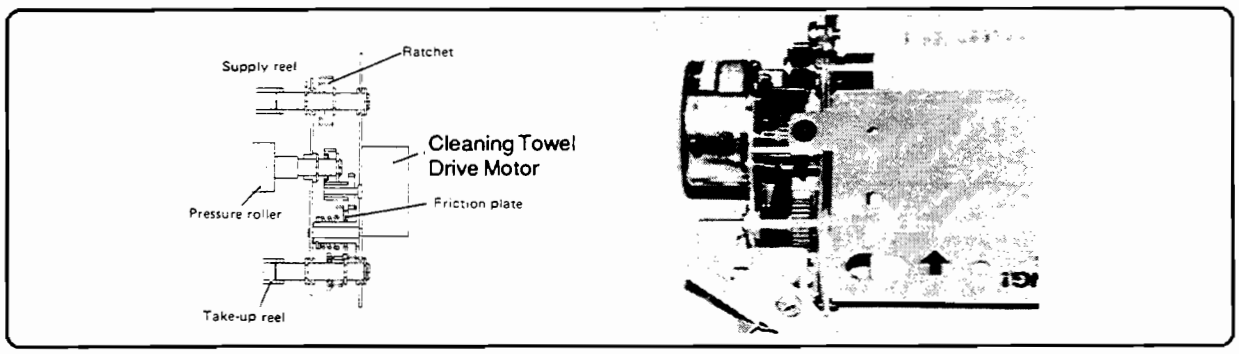


Figure 6-84. Fuser Cleaning Towel Assembly

4. Push the supply and take-up reels to the back against the spring-loaded spindles enough to release them from the front spindles; then lift out reels and towel (Figure 6-85).

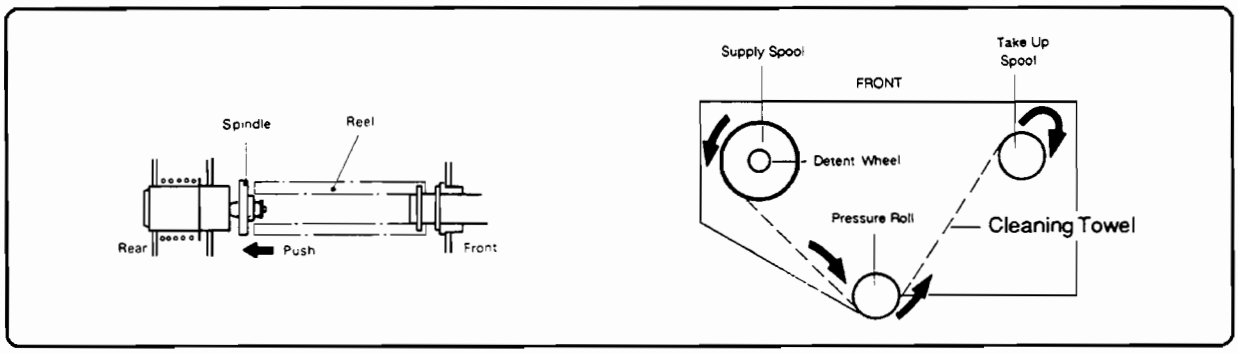


Figure 6-85. Cleaning Towel Removal

Replacement: The towel is supplied as a unit with supply and take-up reels attached. Installation is the reverse of removal:

1. Following the routing shown in Figure 6-85, wind the towel three or four times around the take-up reel, making sure that the part of the towel in contact with the roller is impregnated with oil.
2. Check that the towel is not winding crooked and that it is free of slack and wrinkles, using the detent wheel on the supply spool.

Fuser Separation Claws

Dirty or worn Separation Claws or a claw with a damaged tip may cause not only marks on prints or paper jams, but also may cause scratches on the roller surface. Check and clean the Separation claws every 10,000 images.

Removal - Upper Claws:

1. Open the switchback unit.
2. Remove the screw holding each upper Separation Claw unit and remove the unit (Figure 6-86).
3. Push the claw out of its mounting bracket and remove the claw.

Removal - Lower Claws:

1. Open the switchback unit.
2. Remove the two e-rings on each end of the roller shaft, slide out the plastic bushings and detach the paper guide plate (Figure 6-86).
3. Remove the screw of each lower Separation Claw and remove the claw.

Cleaning: Wipe the Separation Claws with lint-free paper or a dry, soft cloth. If fused toner cannot be removed, wipe it with lint-free paper dampened with alcohol.

Replacement: Reverse the above. Make sure the tension springs are in place against the claws when reassembling.

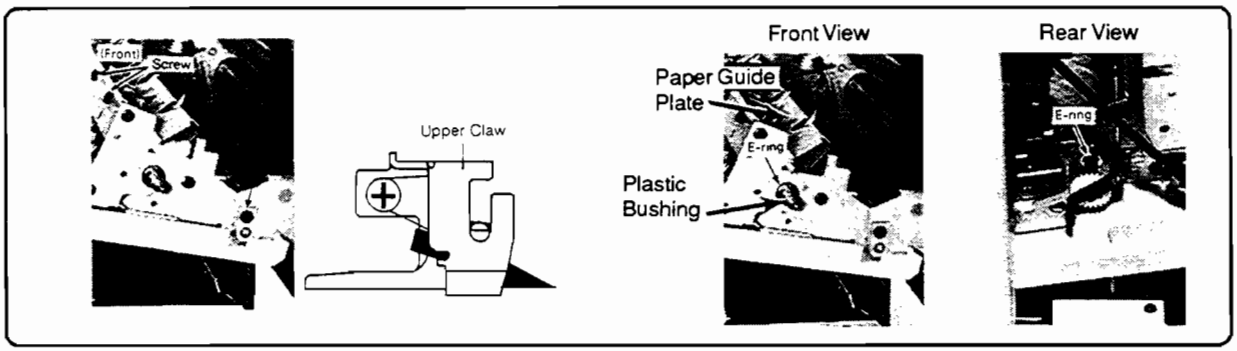


Figure 6-86. Fuser Separation Claws

Fuser Solid State Relay

The fuser solid state relay (SSR) is located on the left end of the print engine, under the left end panel that also covers the main power switch. The printer's Output Stacker assembly must be removed to access the relay for replacement.

Removal:

1. Remove the printer's Output Stacker assembly as described in "Upper Stacker Assembly" on page 6-107.
2. Remove the four screws that hold the vertical steel hanger bar.
3. Remove the stacker mounting bracket (four screws).
4. Remove the print engine left end cover (two screws).
5. Unplug the connectors and remove the mounting screws on the relay.

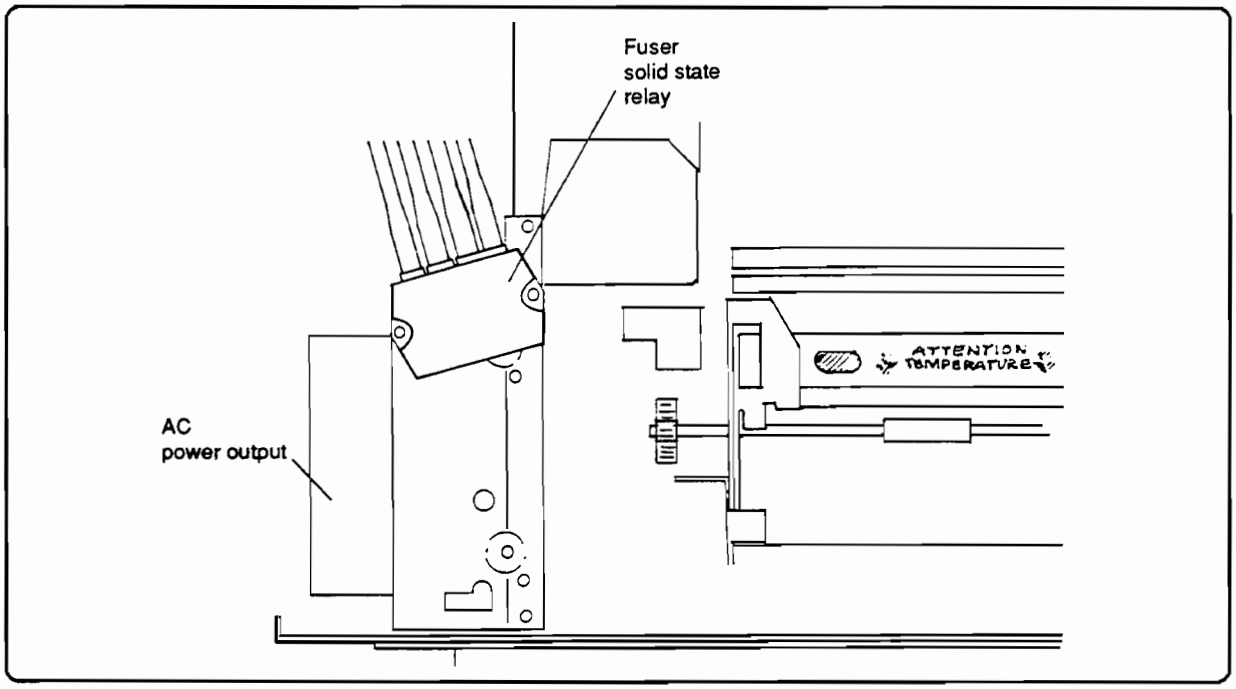


Figure 6-87. Fuser Solid State Relay

High Voltage PCAs

The printer's high voltage (HV) PCAs are located on the rear of the print engine, behind the print engine rear cover, as shown in Figure 6-88.

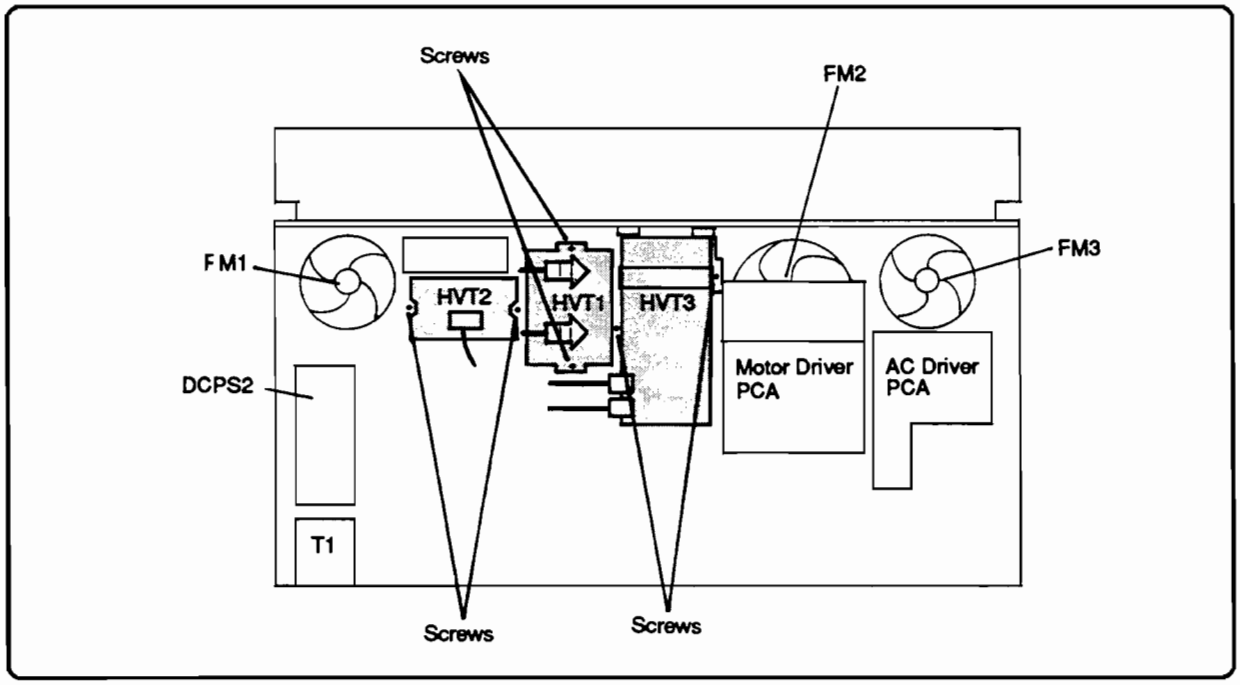


Figure 6-88. HVT PCAs

HVT1

Removal:

1. Remove rear print engine cover.
2. Unplug the two high voltage connectors (T to T & P to P).
3. Remove the ground wire (one screw).
4. Remove the two mounting screws (top and bottom) and slide the HVT1 PCA assembly out.
5. Unplug the control ribbon cable connector.

Replacement: Reverse the above. DO NOT crimp wires between HV PCA and the printer's frame when installing.

Adjustments: High voltage system check and adjustments are located in "EP Process Verification" in Chapter 7.

HVT2

Removal:

1. Remove the rear print engine cover.
2. Unplug the three PCA connectors.
3. Remove two screws (left and right) and the HVT2 PCA assembly.

Replacement: Reverse the above.

Adjustments: High voltage system check and adjustments are located in "EP Process Verification" in Chapter 7.

HVT3 (PT/SE)

Removal:

1. Remove rear print engine cover.
2. Remove four connectors, high voltage (Q to Q & S to S) and 4 pin and 6 pin control cables.
3. Remove one screw on the left side of the assembly and one screw on the right side.
4. Remove the HVT-PT/SE PCA.

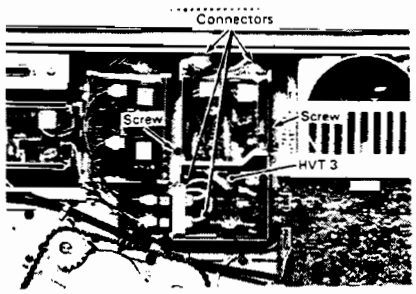


Figure 6-89. HVT PT/SE Removal

Replacement: Reverse the above.

Adjustments: High voltage system check and adjustments are located in "EP Process Verification" in Chapter 7.

Print Engine Auxiliary Systems

The print engine's auxiliary systems consist of seven fan motors (Engine-FM1 - Engine-FM7) and the Ozone Filter.

Fans

Figure 6-90 shows where each fan is located. Table 6-5 explains the function of each fan.

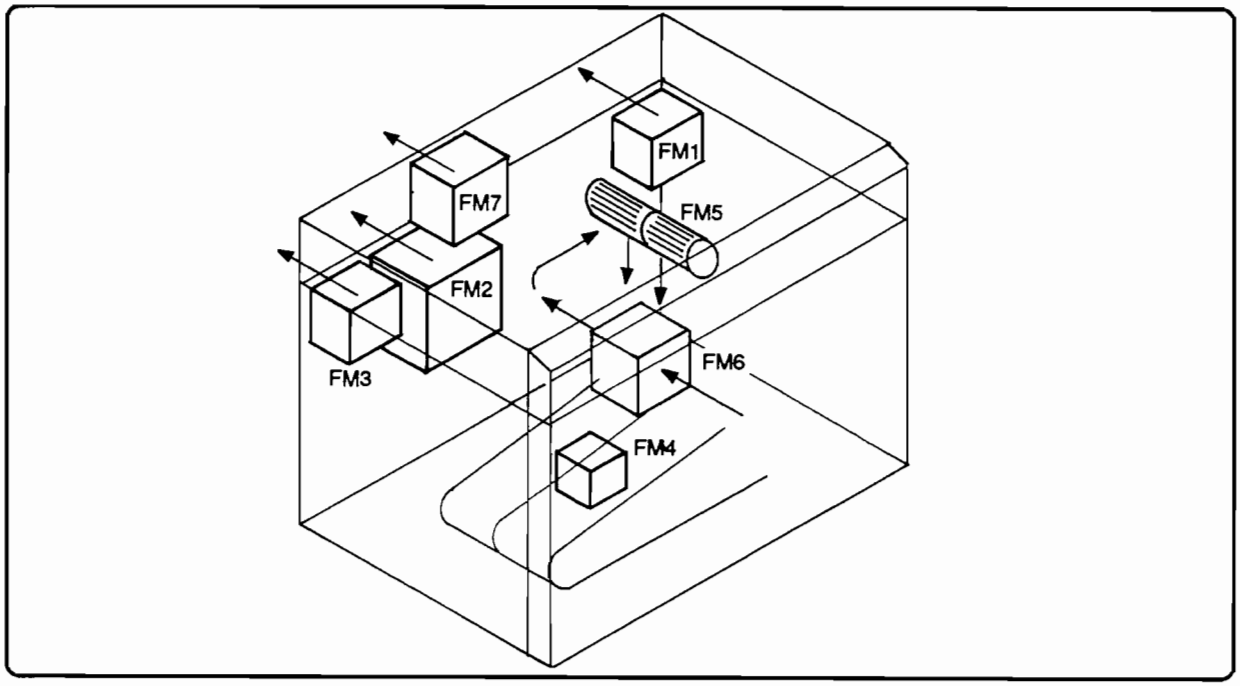


Figure 6-90. Fan Locations

Table 6-5. Fan Motor Functions

Fan	Function	Comments
Engine-FM1	DC Power Supply Fan	Removes hot air from the DC Power supply (Engine-DCPS2) and DC Controller PCA.
Engine-FM2	Ozone Fan	Passes air containing ozone (produced by the corona assemblies) through the ozone filter and cools the DC power supply (Engine-DCPS1).
Engine-FM3	Fusing Assembly Fan	Removes hot air from the Fusing assembly. **Powered ON whenever the main power switch is ON.**
Engine-FM4	Feeder Belt Fan	Holds print paper to the print engine Feeder Belt (located inside the Feeder Belt assembly). *This fan is an integral part of the Feeder Belt Assembly and not available separately.*
Engine-FM5	Corona Filter Fan	Causes air to pass through the dust filter to the Primary Corona assembly to prevent build-up of dust on the corona wire.
Engine-FM6	Corona Filter Booster Fan	Supplies air to Engine-FM5.
Engine-FM7	Formatter Area Fan	Cools the Format Control Unit. **Powered ON whenever the main power switch is ON.**

DC Power Supply Fan (Engine-FM 1)

Removal:

1. Power off the printer.
2. Remove the three screws and detach the rear panel.
3. Remove the two screws and detach the fan cover.
4. Unplug the connector, remove the two screws, and detach Engine-FM1.

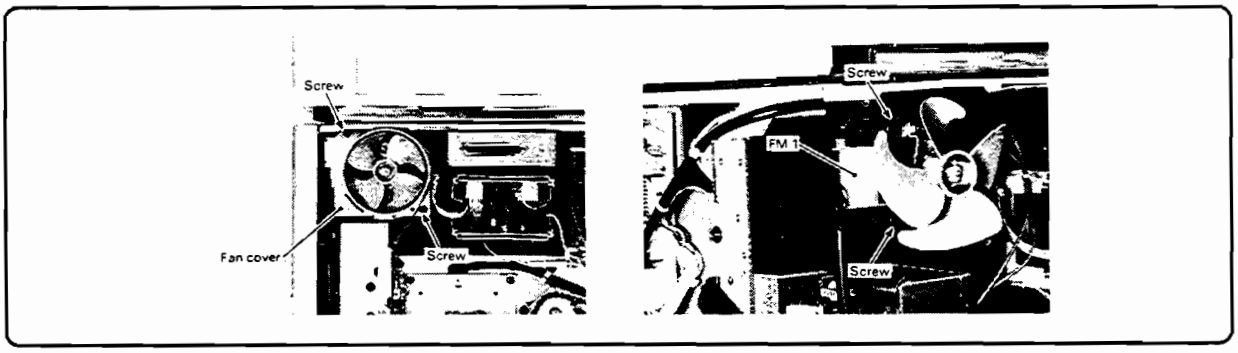


Figure 6-91. Engine-FM1 Removal

Replacement: Reverse the above.

Adjustments: None

Ozone Fan (Engine-FM 2)

Removal:

1. Power off the printer.
2. Remove the three screws and detach the rear panel.
3. Unplug the four connectors, remove the two screws, and detach the Motor Driver PCA.
4. Remove the two screws and detach the fan cover.
5. Unplug the connector, remove the two screws and detach Engine-FM2.

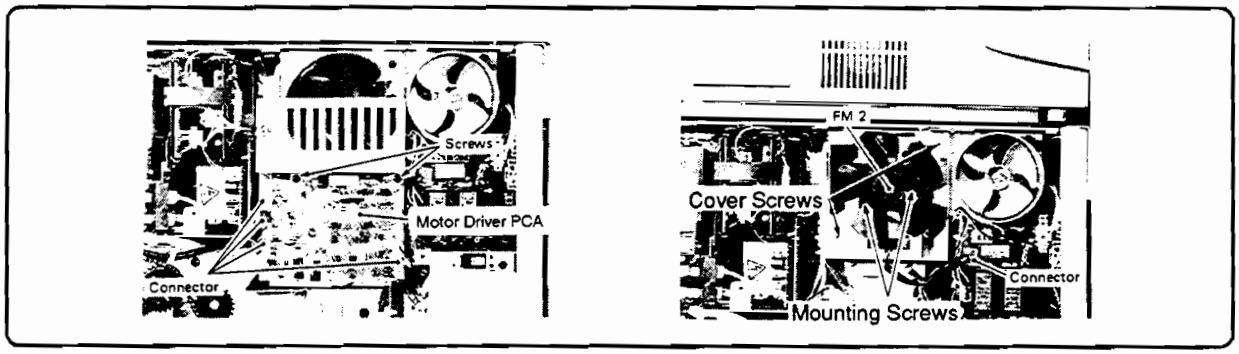


Figure 6-92. Engine-FM2 Removal

Replacement: Reverse the above.

Adjustments: None

Fusing Assembly Fan (Engine-FM 3)

Removal:

1. Power off the printer
2. Remove the three screws and detach the rear panel.
3. Unplug the thirteen connectors and remove the AC driver PCA.
4. Remove the two screws and detach the fan cover.
5. Unplug the connector, remove the two screws and detach Engine-FM3.

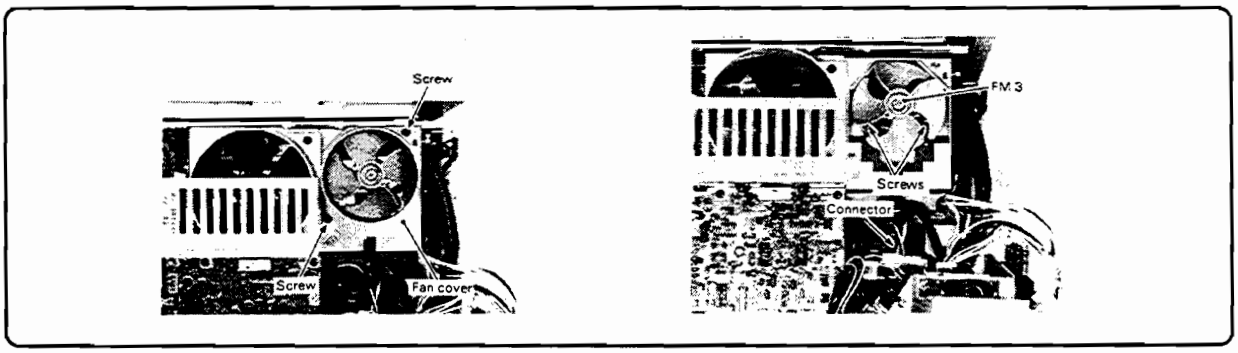


Figure 6-93. Engine-FM3 Removal

Replacement: Reverse the above.

Adjustments: None

Feeder Belt Fan (Engine-FM 4)

This fan is an integral part of the Feeder Belt Assembly and not available separately. If this fan fails, replace the Feeder Belt Assembly (refer to "Feeder Belt Assembly (Print Engine)" on page 6-83).

Corona Filter Fan (Engine-FM 5 - squirrel cage type)

Removal:

1. Power off the printer.
2. Loosen the two screws that secure the Formatter I/O compartment and raise the compartment.
3. Unplug all connectors from Engine-FM5 Driver PCA (small PCA toward the rear of printer) and the Laser Driver PCA (Figure 6-94). (Neither PCA needs to be removed.)
4. Remove the Optical Path Cover (two screws - Figure 6-94).

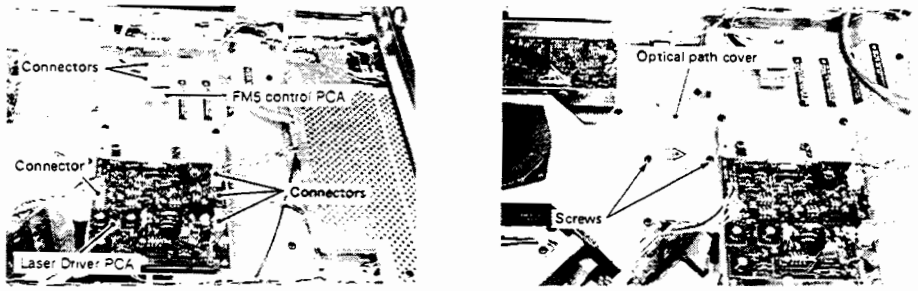


Figure 6-94. Engine-FM5 and Optical Path Cover

5. Remove the four screws securing the Optical Unit Cover (see Figure 6-95). Lift the rear of the cover first, while holding all cables out of the way. **Be careful not to damage the beam detect fiber-optic cable.**
6. Remove the four small-head screws securing the black Engine-FM5 internal duct (three along the right, one in rear). (The rear screw is difficult to see.)
7. Lift the internal duct cover up at the rear and out, again being careful of the wires and beam detect fiber-optic cable.

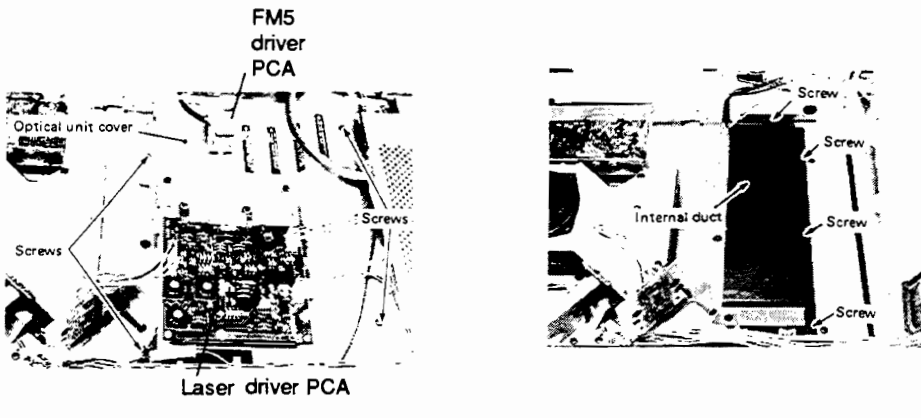


Figure 6-95. Optical Unit Cover and Internal Duct

8. From the front of the printer, remove the two screws holding the Dust Filter/Engine-FM6 assembly. Slide the filter assembly out through the front.
9. Remove the two screws and detach the guide plate (Figure 6-96).

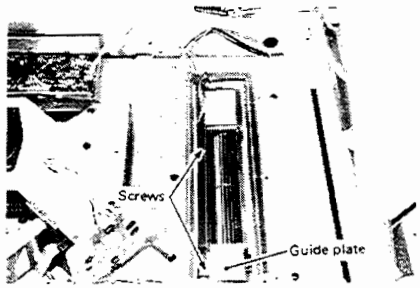


Figure 6-96. Engine-FM5 Guide Plate

10. Shift Engine-FM5 slightly toward the paper delivery unit, turn the fan 90 degrees so that the output port faces up; then take it out.

Replacement: Reverse the above.

Adjustments: None

Corona Filter Booster Fan (Engine-FM 6)

Removal:

1. Power off the printer:
2. Remove the print engine front left inner cover (Figure 6-97).
3. Remove the external air fan duct (two screws).
4. Remove the four screws that hold Engine-FM6 to the external air fan duct.

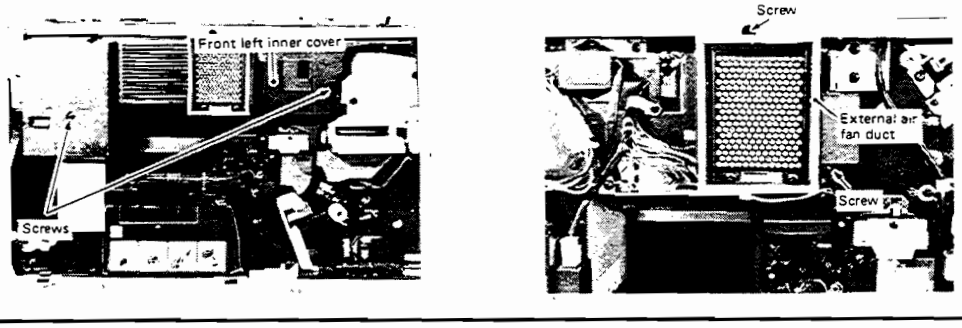


Figure 6-97. Engine-FM6 External Cover and Fan Duct

Replacement: Reverse the above.

Adjustments: None

Corona Dust Filter

Removal:

1. Remove Engine-FM6 as described in "Corona Filter Booster Fan (Engine-FM 6)," above.
2. Remove the two screws that hold the filter assembly in place.
3. Slide the filter assembly out.

Replacement: Reverse the above.

Adjustments: None

Formatter Area Fan (FM 7)

Removal:

1. Power off the printer.
2. Remove the printer's top cover (refer to "Top Cover Removal" on page 6-18).
3. Remove the font mounting assembly bracket (four screws).
4. Unplug the fan cable and remove the wire clip (one screw).
5. Remove the four screws holding the fan to the fan bracket.

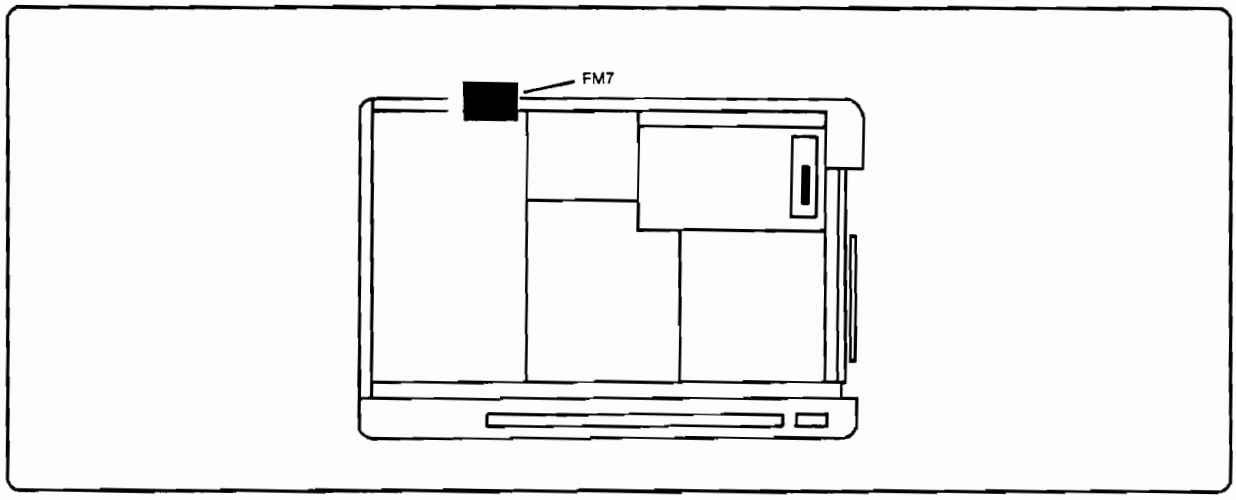


Figure 6-98. Engine-FM7 Location

Ozone Filter

Removal:

1. Disconnect the power cord.
2. Remove the three screws and detach the rear panel.
3. Detach the HVT3 assembly (four connectors, two screws - refer to "HVT3 (PT/SE)" on page 6-78).
4. Push on the edge of the plastic side cover to remove it from the fan housing.
5. Slide the ozone filter carefully toward the left to remove.

Caution Handle the ozone filter carefully because it may crack if excessive force is applied.

Figure 6-99. HVT PT/SE and Ozone Filter Removal

Cassette Holder Assembly

Removal:

1. If removing the lower cassette, open the front door, remove the two screws and detach the front right inner cover (image counter cover).
2. Remove the two screws and detach the right print engine end cover.
3. Remove the RFI shielding (8 screws).
4. Remove the two screws and tip the potential control PCA outward on its hinge pins (Figure 6-100).
5. Unplug the connectors J116 (upper cassette holder) and J113 (lower cassette holder) located along the left of the DC controller PCA (Figure 6-100).

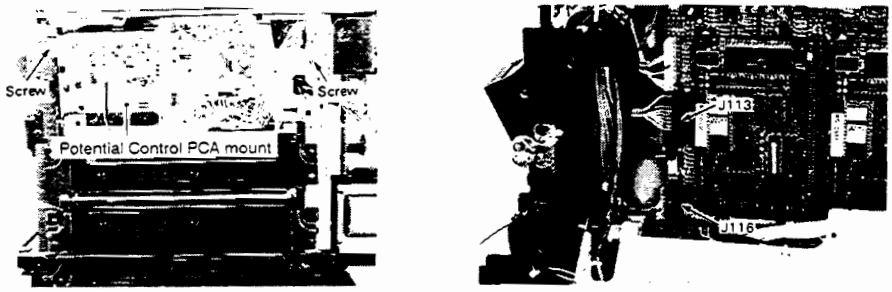


Figure 6-100. Potential Control and DC Controller PCAs

6. Mark the horizontal alignment position of the cassette holders (Figure 6-101).
7. Remove the two screws securing the cassette holder, and remove the cassette holder.

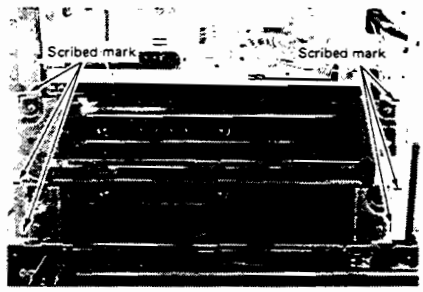


Figure 6-101. Scribe Marks for Cassette Alignment

Replacement: Reverse the above.

Adjustments - Cassette Holder

Cassette holder adjustment affects the printer's front-to-rear registration. Adjustment is measured using a standard self test, as follows:

1. Run self test from the cassette tray to be adjusted.
2. Measure the distance between the front edge (edge toward the front of the printer) and the starting point of the border, as shown below. The distance should be within the range 4.25 ± 1mm.
3. If the border is not within specification, adjust the cassette holders by loosening the two screws that mount the holders to the printer frame and center the holder for the correct border distance.
4. Tighten the two screws.

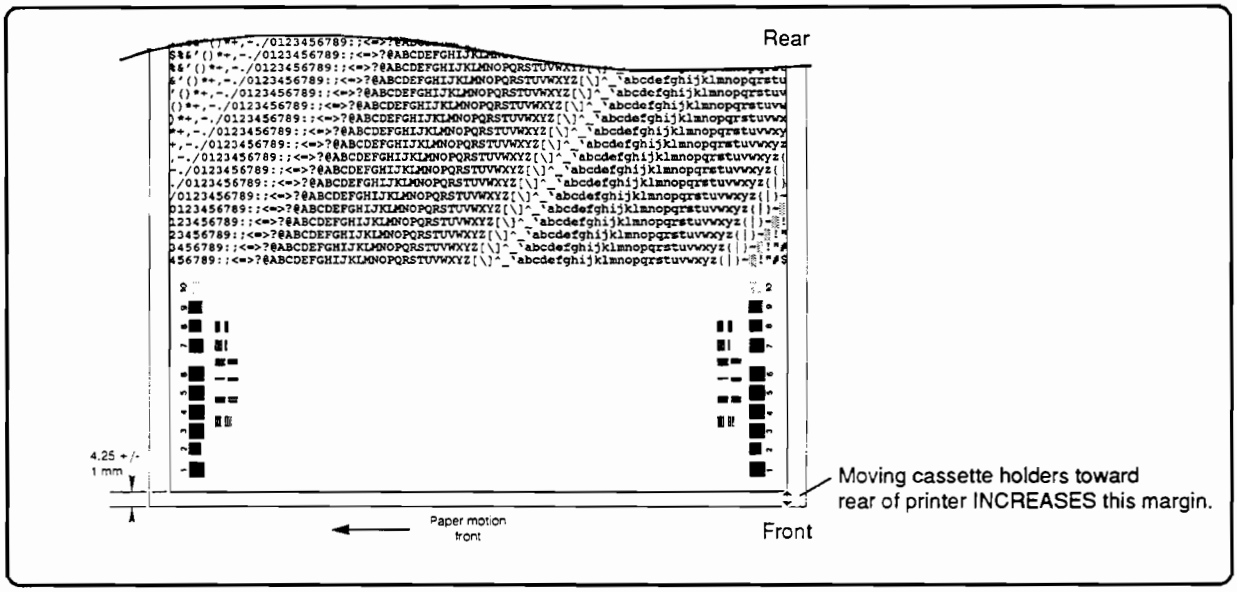


Figure 6-102. Cassette Holder Adjustment

Upper/Lower Cassette Pick-up Rollers

Removal:

1. Power off the printer.
2. Remove the print engine rear cover.
3. Remove the two screws and detach the right end panel.
4. Mark the position and remove the cassette holder (see "Cassette Holder Assembly" page 6-88).
5. Remove the rear cover interlock and the DC Power Supply 2 (Engine-DCPS2) - see "DC Power Supply #2" on page 6-38.
6. Manually trip the solenoid (SL) of the upper/lower pick-up roller clutch (see Figure 6-103).
7. Turn the roller shaft by hand until the mounting screws securing the rollers face the opening of the cassette holder (see Figure 6-103).
8. Remove the screw of each pick-up roller and detach the rollers.

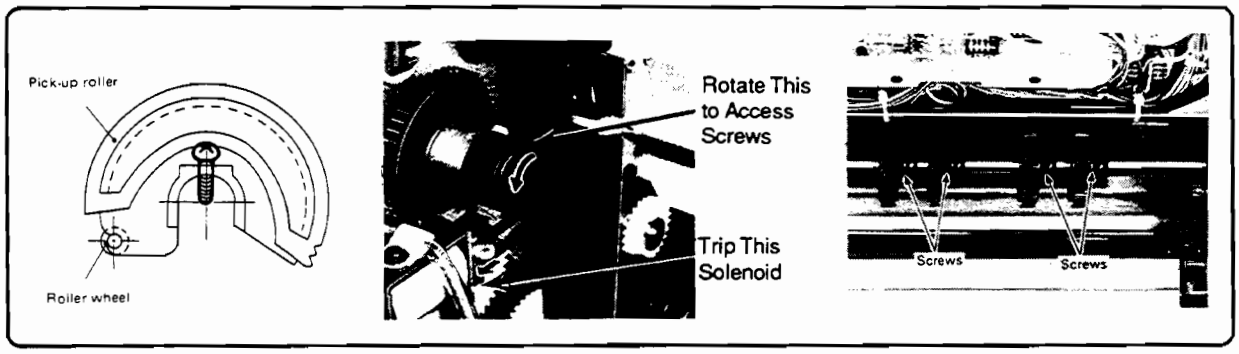


Figure 6-103. Cassette Pick-up Rollers

Replacement: Reverse the above.

Adjustments: None

Pick-up Clutch/Solenoid Assembly (Engine-SL1 or SL2)

Removal:

1. Remove the print engine rear cover.
2. Remove the two screws and detach the right end panel.
3. Remove the rear cover interlock and the DC Power Supply 2 (Engine-DCPS2) - see "DC Power Supply #2" on page 6-38.
4. If the Upper Clutch assembly is to be removed, remove the drive chain and Drum Drive Motor first (refer to "Drum Drive Motor" on page 6-98).

   If the Lower Clutch assembly is to be removed, remove the T2 transformer (two screws) first.
5. Unplug the solenoid connector, remove the holding screw (1.5mm hex-head), and slide the Clutch assembly off of the shaft.

Replacement: Reverse the above. When reinstalling, slide the Clutch assembly on to the shaft and install the holding screw in the **bottom** screw hole for the upper clutch **or in the middle** screw hole for the lower clutch. Manually rotate the clutch shaft into the latched position.

Adjustments: None

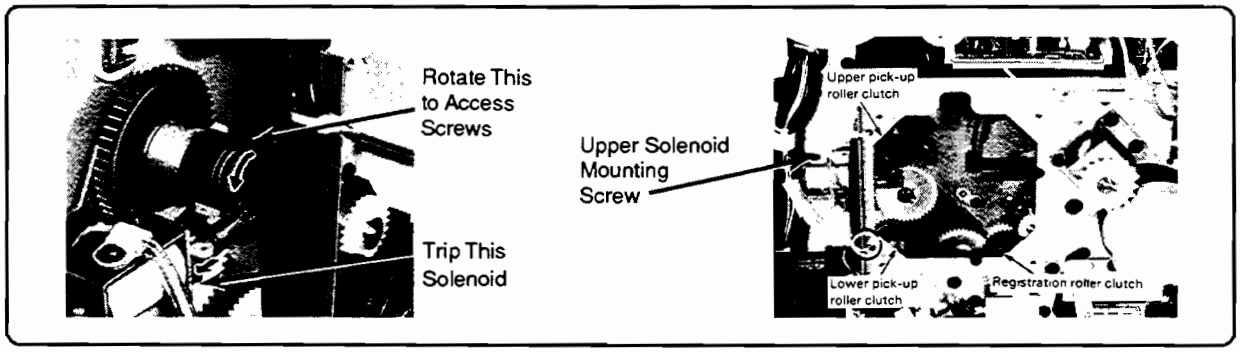


Figure 6-104. Pick-up Clutch/Solenoid Assembly

Double Feed Detect Sensor

Removal:

1. Remove the Developing assembly, and Pretransfer Corona (Corona #2).
2. Remove the plastic developer guide platform (two screws).
3. Remove the print engine rear cover.
4. Remove the Drum Drive Motor and main drive chain (refer to "Drum Drive Motor") on page 6-98.
5. From the rear of the printer, disconnect the DFD Sensor cable.
6. Remove the front sensor holding screws (two screws - see Figure 6-105).
7. Raise the front of the sensor plate up and slide toward the front to remove.

Replacement: Reverse the above.

Adjustments: See "Double Feed Detect Sensor Adjustment" in Chapter 7.

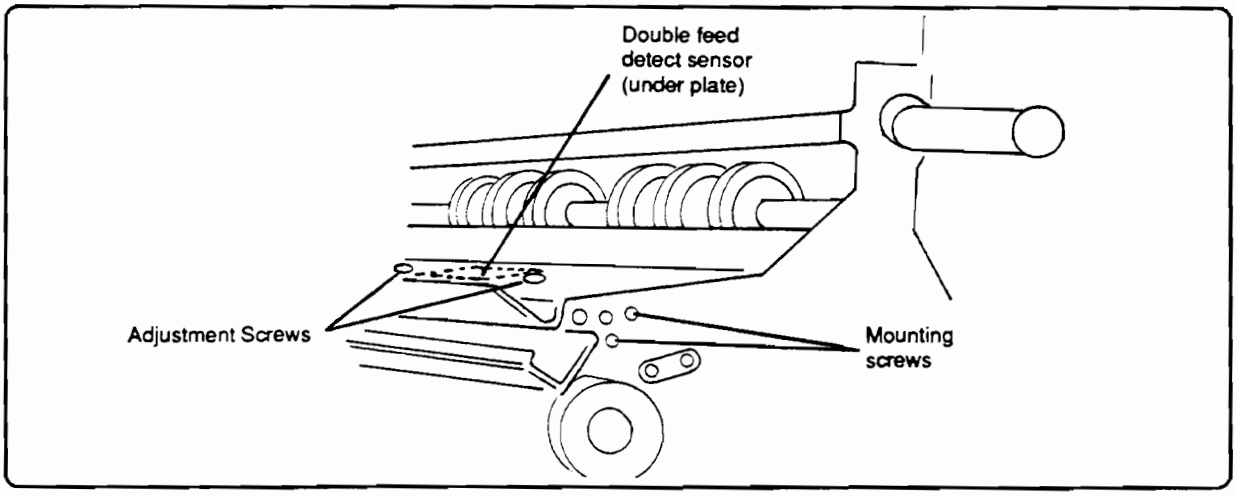


Figure 6-105. Double Feed Detect Sensor

Registration Clutch Assembly

Removal:

1. Remove rear print engine cover.
2. Remove the drive chain and Drum Drive Motor (refer to "Drum Drive Motor" on page 6-98).
3. Remove the PDX connector mounting plate (one screw - see Figure 6-106). Move plate aside for access.
4. Remove the three screws holding the registration Clutch Shaft assembly.
5. Unplug the clutch cable connector.
6. Pull the Clutch Shaft assembly slightly to the rear and remove.

Replacement: Reverse the above.

Adjustments: None

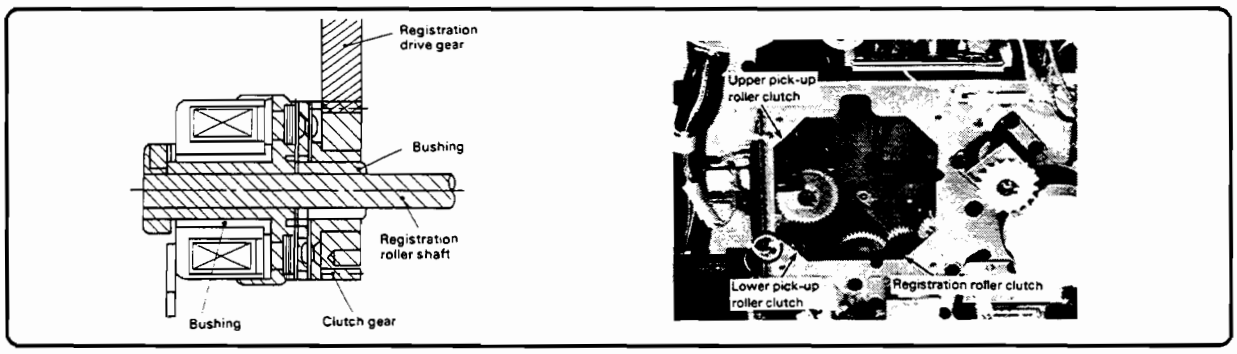


Figure 6-106. Registration Clutch

Registration Rollers

The upper and lower registration rollers should always be replaced as a set. Order both rollers whenever replacing.

1. Remove the Drum Drive Motor (see page 6-98).
2. Remove the Registration Clutch assembly as detailed above.
3. Remove the Double Feed Detect Sensor assembly (on its mounting plate - see page 6-33).
4. Remove the springs from both ends of the upper (steel) Registration Roller.
5. Remove the e-clips from both ends of the upper roller and remove the roller.
6. Remove the e-clips and plastic bushings from both ends of the lower (rubber) roller and remove the roller.

Replacement: Reverse the above. Assure the bearing is placed onto the front end of the upper (steel) roller and the white spacer washer is on the front side of the bearing.

Adjustments: Perform the "Double Feed Detect Adjustment" in Chapter 7.

Drum Separation Claw Assembly

Removal:

1. Power off and unplug the printer.

Warning **Be sure to unplug the power cord before disassembling the printer. AC Line voltage is present at the drum heater when the power cord is connected to the power source, even when the main power switch is OFF!**

2. Remove the toner catcher and EP drum (refer to "EP Drum" on page 6-51).
3. Remove the screw and remove the single screw holding the small black plastic cover ("front lower inner cover" - Figure 6-107).
4. Reach through the Feeder Belt area and unplug the Separation Claw motor connector from the inside rear frame.
5. Remove the Separation Claw holding screw and detach the retaining plate.

Caution When removing, be careful not to damage the fragile tips of the drum Separation Claws.

6. Move the drum Separation Claw unit to the front to free it from its retaining slot; then move it toward the Fusing assembly and out through the access space.

Replacement: Reverse the above. To replace separation claws, detach the holding spring and lift out. (It is good practice to replace all three claws at once.) Be careful not to damage claws when reassembling. Be sure to plug in the claw motor connector.

Adjustments: None

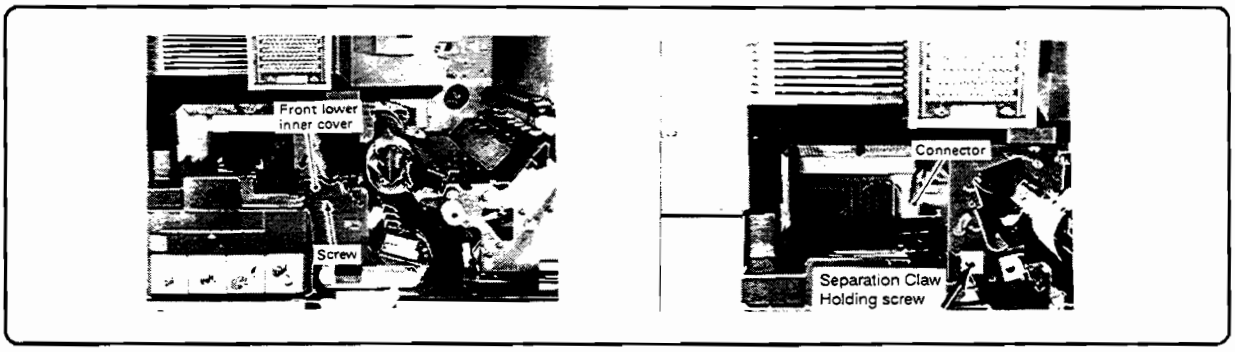


Figure 6-107. Drum Separation Claws

Feeder Belt Assembly (Print Engine)

Removal

1. Remove the Fusing assembly (refer to "Fusing Assembly" on page 6-68).
2. Disconnect one end of the drive unit spring on the left side of the Fusing Assembly (see Figure 6-108).
3. Unplug the two connectors on the left end (see Figure 6-108).
4. Remove the two e-rings, shift the plastic bushings toward the inside.
5. Lift the Drive Gear assembly out of the way and slide the Feeder Belt Assembly out carefully.

Replacement: Reverse the above.

Adjustments: None

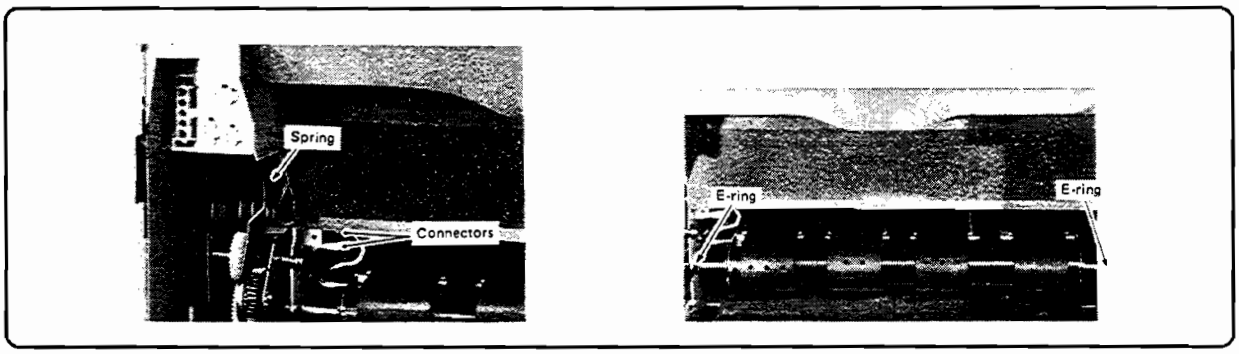


Figure 6-108. Feeder Belt Assembly Removal

Motor Driver PCA

Removal:

1. Remove the print engine's rear panel.
2. Unplug the four connectors.
3. Remove four screws holding the PCA and remove it.

Replacement: Reverse the above.

Adjustments: None (See "Motor Driver PCA" in Chapter 7 for interpretation of Motor Driver LEDs.)

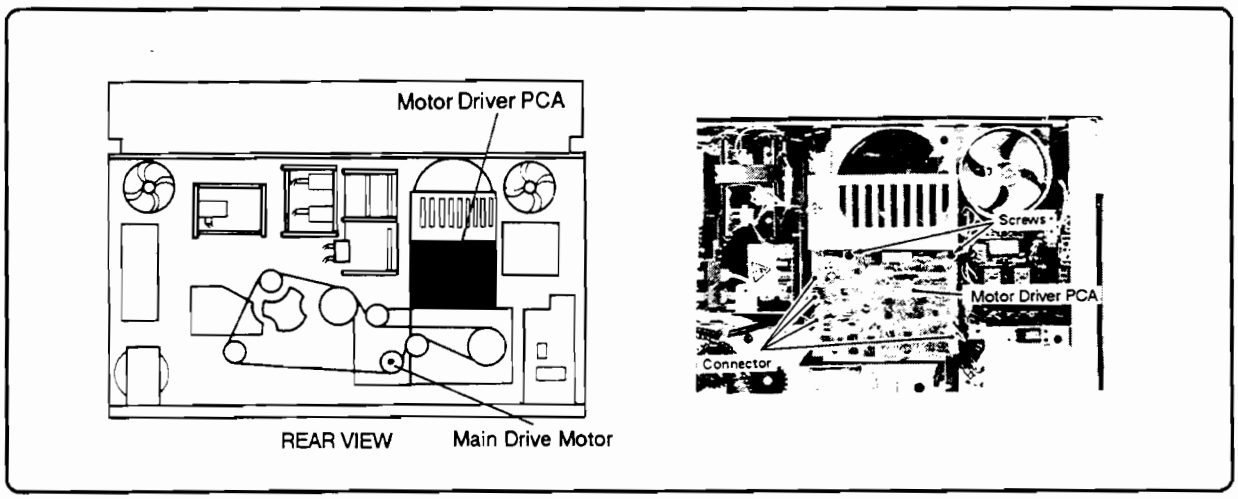


Figure 6-109. Motor Driver PCA

Main Drive Motor

Removal:

1. Remove the print engine's rear panel.
2. Remove the Motor Driver PCA ("Motor Driver PCA").
3. Remove the chain tensioning spring; then remove the chain from the sprocket (Figure 6-110).
4. Remove the four screws and the main drive motor (Figure 6-110).

Replacement: Reverse the above.

Adjustments: None

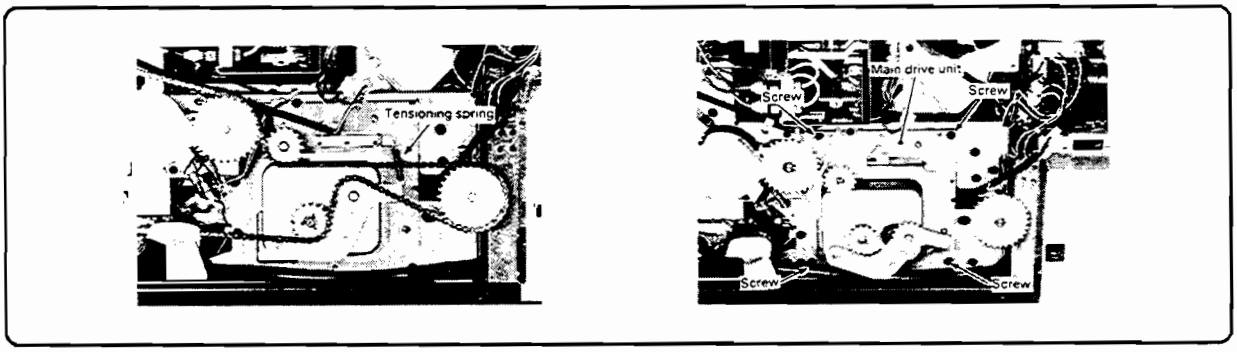


Figure 6-110. Main Drive Motor Removal

Drum Drive Motor

Removal:

1. Remove the print engine's rear panel.
2. Remove the chain tensioning spring; then remove the chain from the sprocket (Figure 6-110).
3. Unplug J403 on the Motor Driver PCA. Remove the two motor cable clamps.
4. Remove the four screws and the Drum Drive Motor.

Replacement: Reverse the above.

Adjustments: None

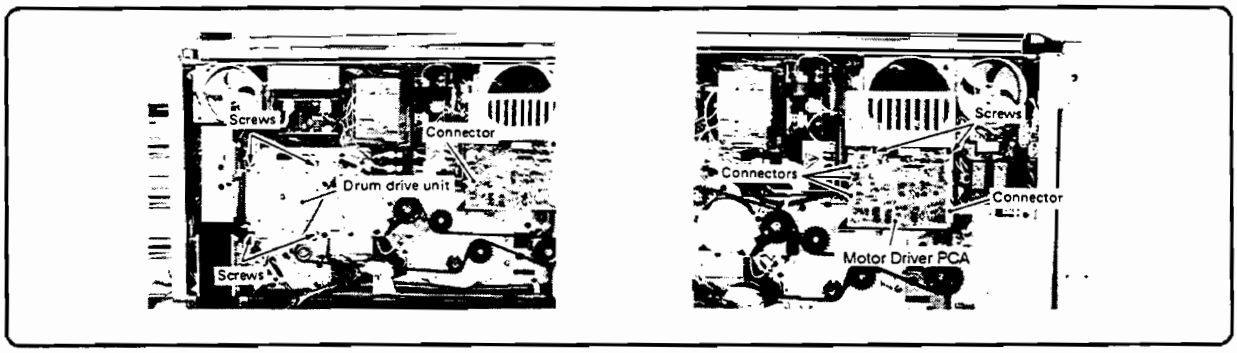


Figure 6-111. Drum Motor Removal

Face Down Stacker Assemblies

Stacker/Switchback Covers

When servicing the Stacker and Switchback assemblies, remove only the cover necessary for the work. Details of removing covers which can be detached simply by removing the mounting screws are omitted.

Figure 6-112 shows the locations of the various covers on the Stacker and Switchback assemblies.

COVERS:

① Rear top cover
② Top door cover
③ Right door cover
④ Front cover
⑤ Lifter cover
⑥ Rear cover
⑦ Switchback cover
⑧ Switchback access cover

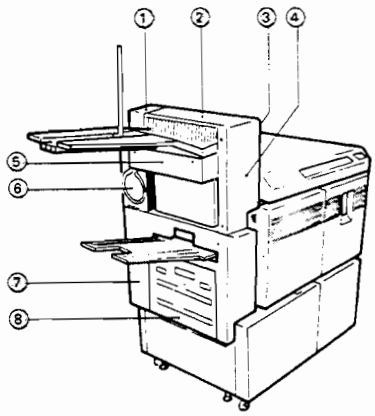


Figure 6-112. Stacker/Switchback External Covers

Removal - Front Cover:

1. Remove the front cover mounting screws (four) and pull the front cover forward to remove it (Figure 6-113).

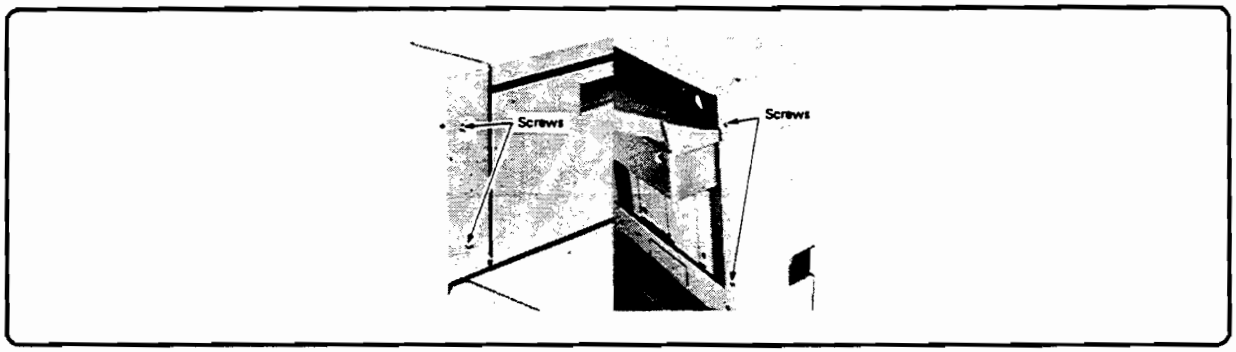


Figure 6-113. Stacker Front Cover Removal

Removal - Top Door:

1. Open the stacker right door. At the extreme upper right corner, remove the screw holding the top door retaining strap (one screw - Figure 6-114).
2. Remove the front cover (four screws).
3. Open the top door; then remove the screw (one) securing the grounding wire of the static charge eliminator and the screws (two) securing the main tray print delivery sensor cover (Figure 6-114).
4. Remove the retaining screw (one) from the front hinge; then lift the door up and toward the front to remove.

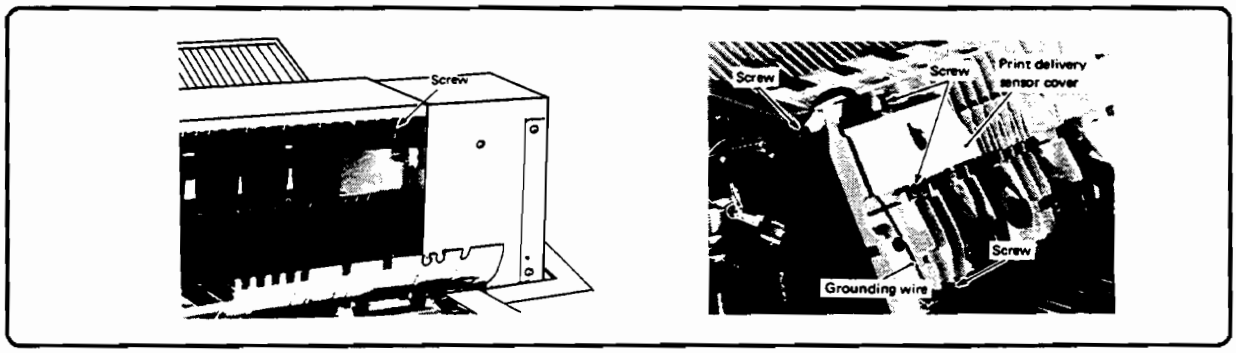


Figure 6-114. Stacker Top Door Removal

Removal - Switchback Cover: When removing the switchback cover, be careful not to bend or torque the Switchback assembly. Remove the inner covers first; then close the switchback and remove the outer screws and cover.

1. Open the switchback assembly.
2. Remove one screw on the right (holding the outer cover), and five screws on the left (holding the inner cover) (Figure 6-115).

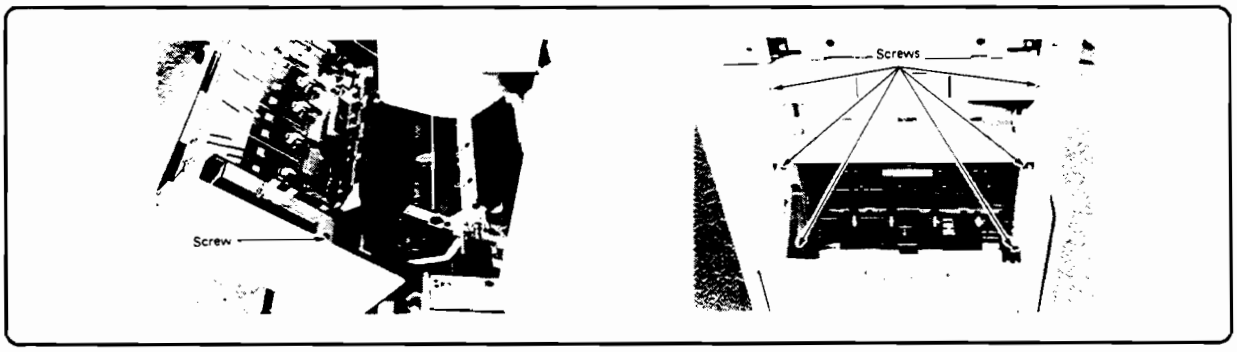


Figure 6-115. Switchback Inner Cover Removal

3. Close the Switchback assembly.
4. Remove the two upper screws on the face of the door.
5. Open the switchback access door and remove the four screws from the face.
6. Carefully tilt the switchback cover out at the top and lift upward and out to remove.
7. If planning to remove the entire Switchback assembly, remove the two screws on the hinge plate and remove the switchback access door.

Replacement: Reverse the above.

Adjustments: None

Switchback Assembly

Removal:

1. Remove the switchback inner and outer covers (see page 6-101).
2. Remove the lower switchback area door (Duplex Drive Motor area).
3. Remove the rear torsion bracket (Figure 6-116).
4. Open the left duplex area door and remove the two screws from the front torsion bracket (Figure 6-116).

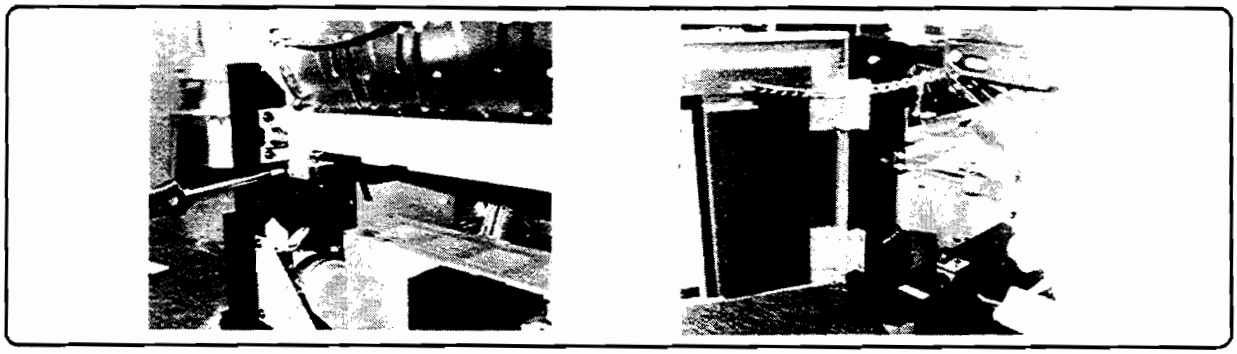


Figure 6-116. Switchback Hanger Brackets and Torsion Bars

5. Unplug the connector that is above the Duplex Drive Motor.
6. Open the Switchback assembly and remove the single screw that holds the linkage to fuser door.
7. While lifting the switchback partially up, lift the two hanger brackets off the hanger shaft.
8. Lower the Switchback assembly gently down to rest on the floor.
9. Unplug the two upper switchback connectors (at rear of the fuser rollers - Figure 6-117).

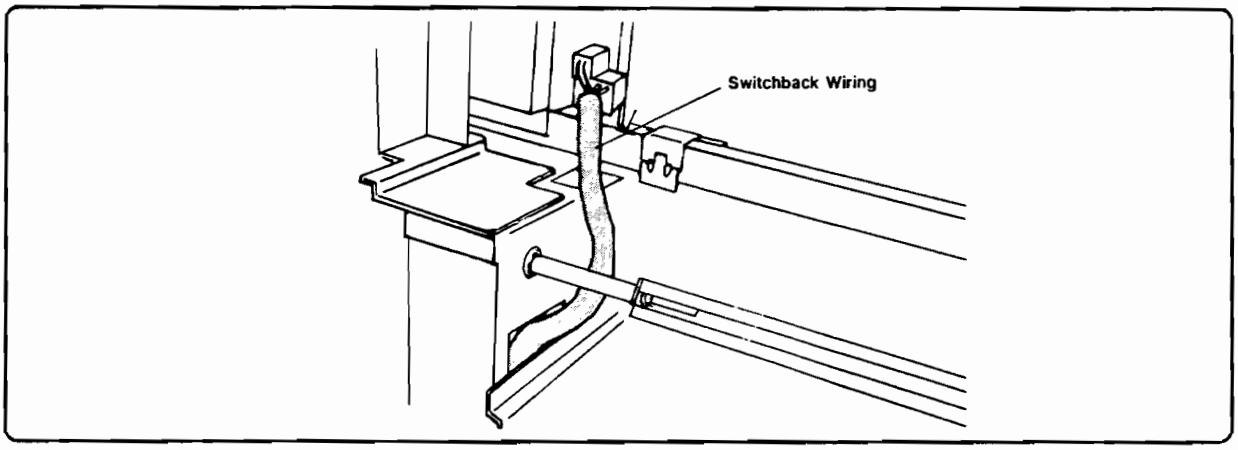


Figure 6-117. Routing the Switchback Wiring

10. Carefully pull the wiring harness up and out.
11. Remove the single screw that holds the axis shaft into the rear holding bracket (Figure 6-118).
12. Slide the axis rod toward the front and out of the rear bracket.
13. Lift the assembly carefully away from the printer.

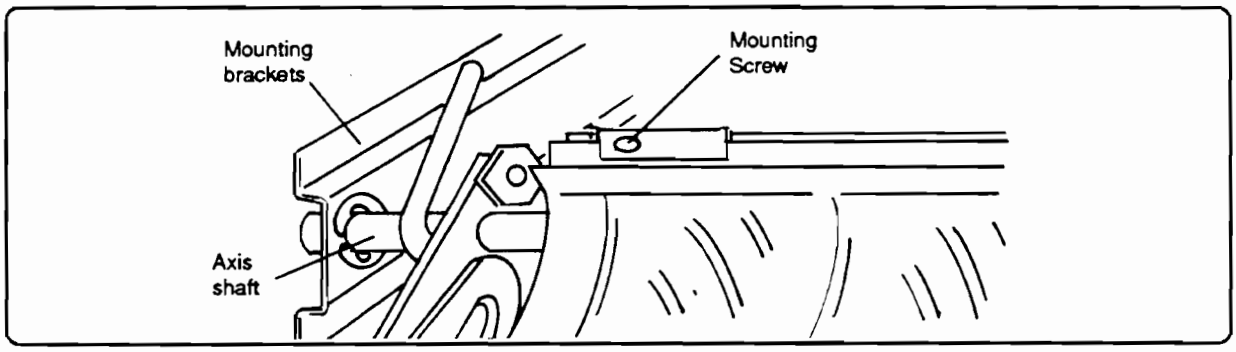


Figure 6-118. Securing the Axis Shaft

Caution Be careful when handling the Switchback Assembly not to twist the assembly frame.

Replacement - Switchback Assembly:

1. Grasp the assembly so that the torsion bars on the lower corners are facing toward the printer (Figure 6-119).
2. Align the axis shaft (just below the torsion bars) with the mounting brackets on the printer frame.

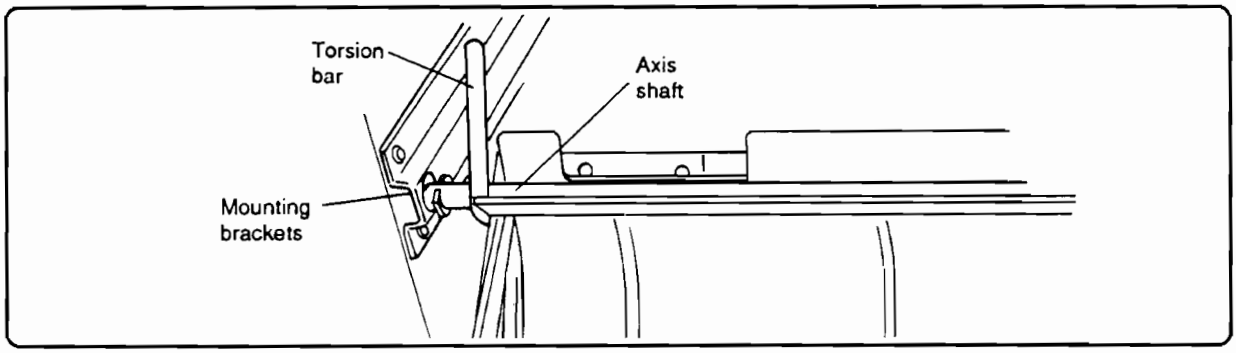


Figure 6-119. Aligning the Switchback Assembly

3. Slide the left axis shaft toward the left until the "e" clip is snug against the left mounting bracket.
4. Insert the screw that secures the left end of the axis shaft (Figure 6-118).
5. Route the switchback wiring harness down so that the lower connector is near the Duplex Drive Motor and the upper two connectors are near their connectors to the upper left of the assembly (Figure 6-117).
6. Plug in the two upper connectors.
7. Carefully raise the Switchback assembly upward to hang the two hanger brackets over their shaft.
8. Connect the linkage between the fuser door and the Switchback assembly; hang it over the pin and replace the shoulder screw.
9. Latch the switchback into the closed position and replace the two torsion bar retainers on the printer chassis (Figure 6-116, page 6-102).
10. Plug in the lower connector near the Duplex Drive Motor, pulling the wiring harness down snugly.
11. Replace the outer main switchback cover. Do not tighten the mounting screws until all are in place; then tighten evenly to prevent distortion.
12. Replace the inner cover (five screws on left, one on right).
13. Close the switchback Assembly and reinstall the switchback access door and restraining strap.
14. Replace the lower cover.

Adjustments: None

Switchback Feeder Drive Motor (Stacker-M2)

Removal:

1. Power off the printer.
2. Remove the inner switchback motor shield (five screws).
3. Remove the switchback feeder cover (seven screws) (Figure 6-120).

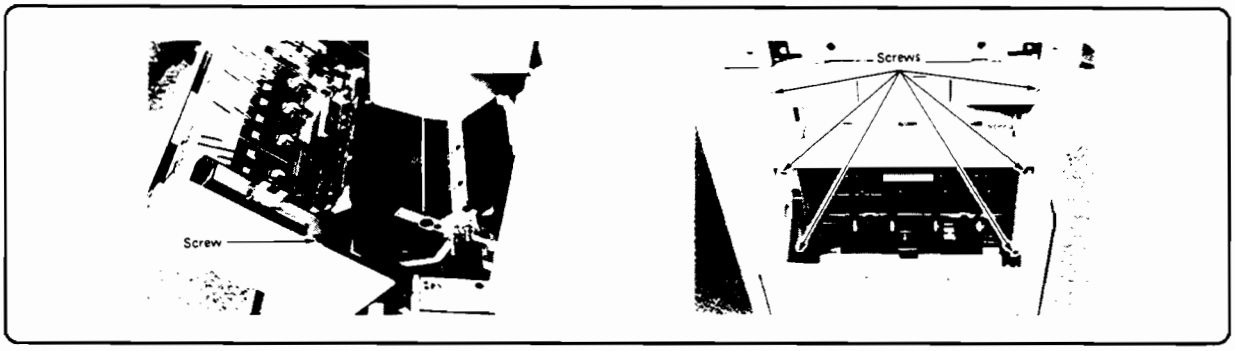


Figure 6-120. Switchback Feeder Cover Removal

4. Remove the three motor mounting screws; then remove the Switchback Feeder motor together with its mounting plate. Unplug the motor control cable (Figure 6-121).
5. Remove the grip ring and take the gear off the drive motor shaft; then remove the four mounting screws and remove the motor together with the motor driver PCA (Figure 6-121).

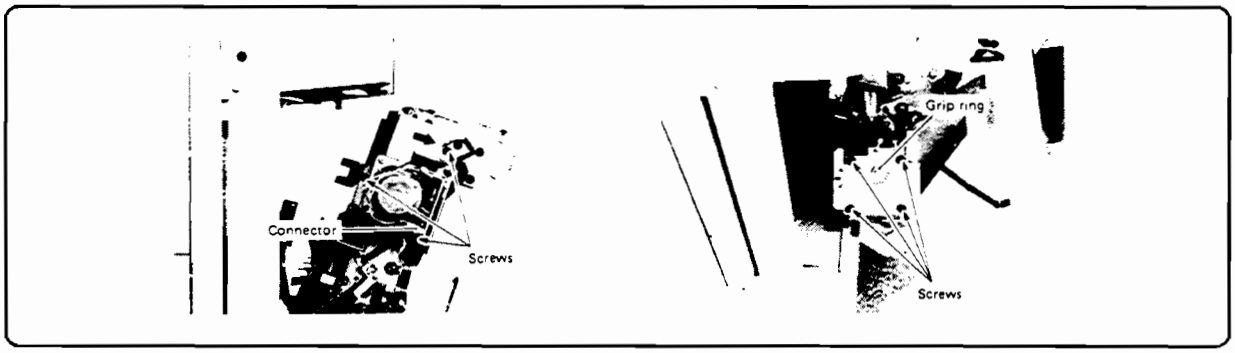


Figure 6-121. Switchback Feeder Motor Removal

Replacement - Switchback Feeder Motor:

Reverse the above. When reinstalling the Switchback Feeder drive motor, position it as follows:

1. Press the motor gear against the switchback feeder gear.
2. Slide the motor 0.2 - 0.3 mm in the direction indicated by the arrow in Figure 6-121; then fasten the motor to the switchback feeder.

Adjustment - Switchback Feeder Drive Belt:

Adjust the tension pulley plate so that the belt is deflected 8 ±2mm when the belt is pressed with a force of 300 grams by a compression spring scale at the point (A) shown in Figure 6-122.

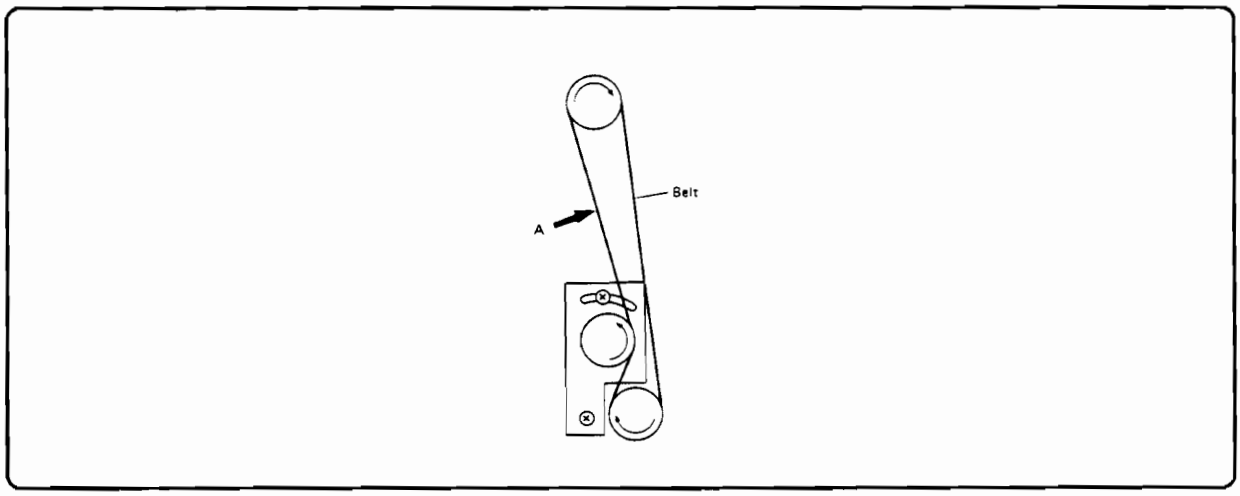


Figure 6-122. Switchback Feeder Drive Belt

Upper Stacker Assembly

1. Loosen the hold-down screws and lift the top section of the printer to open, pushing the rubber stop on the left inward to release.
2. From the laser optics area, remove the two screws that hold the inside of the Stacker assembly (Figure 6-123).
3. Close the upper assembly and remove the cable cover from the top of the printer.
4. Unplug the stacker data and power connectors. Remove the ground wire screw.
5. Remove the two screws from the back side of the vertical arm (Figure 6-123).

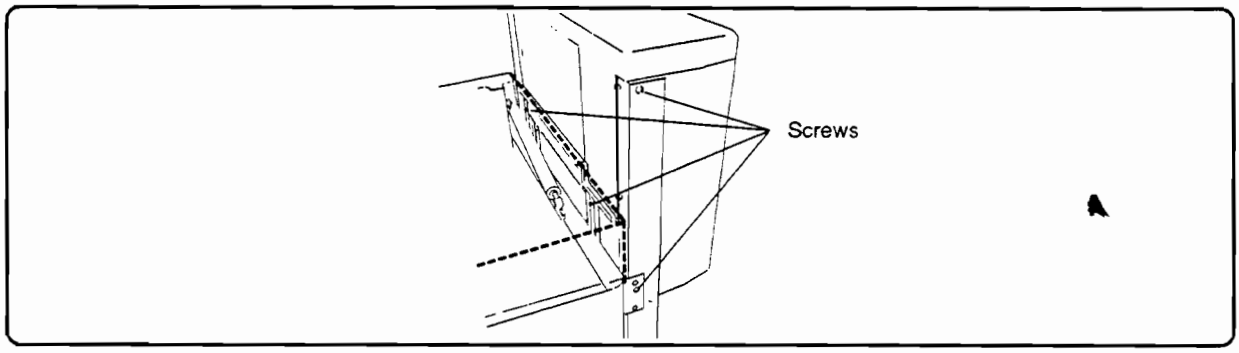


Figure 6-123. Stacker Mounting Screw Locations

6. Standing to the rear of the output tray, grasp the bottom edge of the Stacker assembly and lift gently upward, easing the assembly off the shoulder stud on the rear. (Figure 6-124).

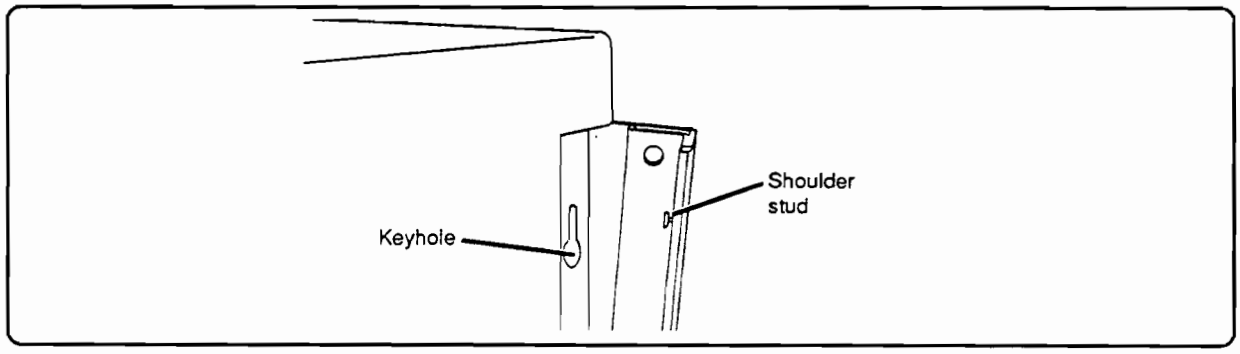


Figure 6-124. Stacker Assembly Removal

Replacement: Reverse the above. When hanging the stacker on its mounting bracket, first hook the right side over its catch; then carefully align the shoulder stud with its keyhole. Push inward and down to hang.

Note If it has been removed, be sure to replace the print engine's left end panel before replacing the stacker hanging brackets.

Adjustments: None

Stacker Controller PCA

Removal:

1. Remove the front cover ("Stacker/Switchback Covers").
2. Unplug the connectors (six) from the Stacker Controller PCA; then remove the four mounting screws (Figure 6-125).

Replacement: Reverse the above.

Adjustments: Set SW101 switches all to the "ON" position.

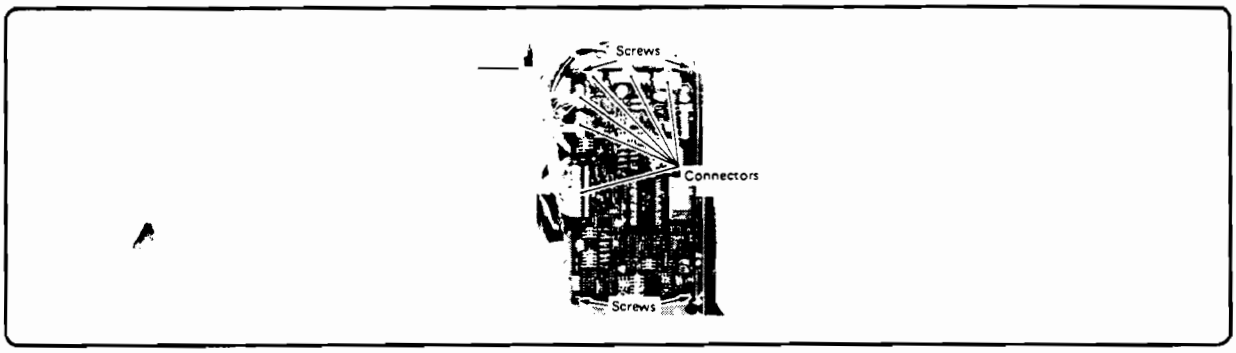


Figure 6-125. Stacker Controller PCA Removal

Stacker/Switchback Area Fans

Duplex Printing Module Inlet Fan (Stacker-FM1)

This is a "squirrel cage" type fan located inside the Switchback assembly, adjacent to the duplex guide plate.

1. Open the switchback feeder.
2. Inside the Switchback assembly, raise the duplex guide plate (green handle); then remove the screws on the front and back sides (one each - Figure 6-126).
3. Turn the fan mount over and remove the two mounting screws.
4. Unplug the connector and remove the fan assembly.

Replacement: Reverse the above.

Adjustments: None

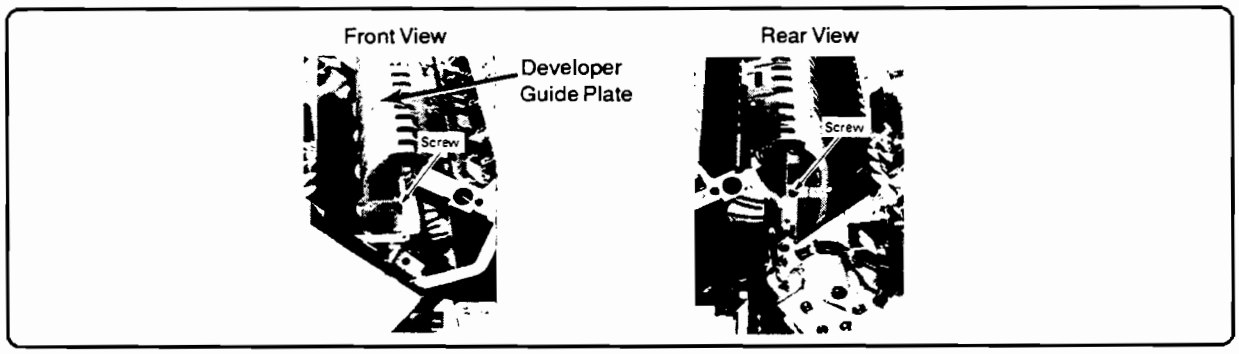


Figure 6-126. Stacker-FM1 Removal

Stacker Fan (Stacker-FM2)

1. Directly beneath the stacker output tray, remove the lifter cover (three screws).
2. Activate the tray brake solenoid (SL1) with one hand, and lower the Lifter assembly by rotating the motor brake gear with the other hand. Lower the lifter to near the bottom.
3. Remove the top two screws from the fan guide plate (Figure 6-127).
4. Gently raise the lifter to its top-most position.
5. Remove the lower three screws from the fan guide plate.
6. Open the Switchback assembly and remove the fan guide plate by sliding it down and out (Figure 6-127).
7. Remove the front cover. Unplug the fan connector and remove the cable clip (cut the cable tie, if necessary).
8. Remove the four fan mounting screws and lift out the fan.

Replacement: Reverse the above.

Adjustments: None

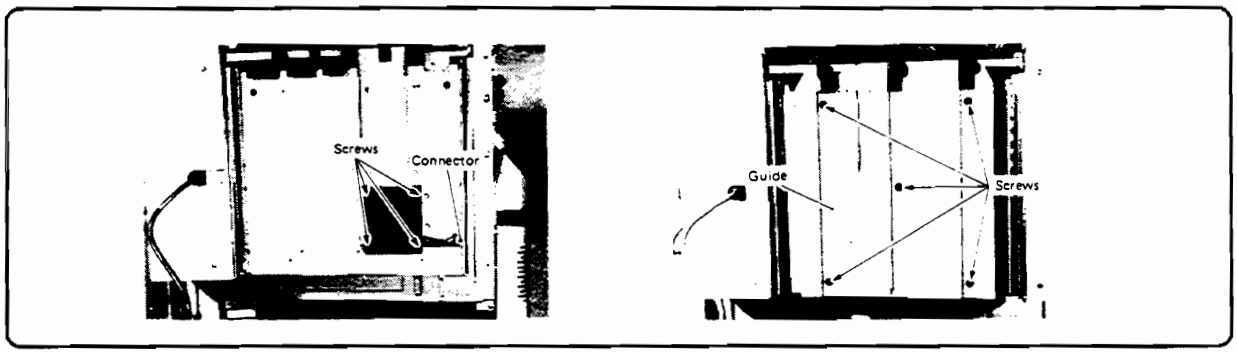


Figure 6-127. Stacker Fan Removal

Stacker Drive Motor (Stacker-M1)

Removal:

1. Disconnect the printer line cord.
2. Remove the rear cover (three screws).
3. Unplug the connector from the noise filter to the stacker power supply (J1).
4. Remove the noise filter mounting plate (three screws) (Figure 6-128).
5. Unplug J2 on the power supply and remove the supply (four screws). Loosen the two mounting screws for the belt tension idler roller; then loosen the stacker roller drive belt.
6. Remove the three motor mounting screws and connector; then remove the stacker drive motor together with its mounting plate (Figure 6-128).
7. Remove the grip ring and then the gear from the stacker drive motor shaft.
8. Remove the four mounting screws; then take the stacker drive motor off its mounting plate.

Replacement: Reverse the above.

Adjustments: When reinstalling the stacker drive motor, adjust the tension of the stacker feed roller drive belt. To do this, tighten the tension pulley plate to the position where the belt deflects 8 ±2mm when the belt is pressed with a force of 300 grams with a spring scale at the point "A" shown in Figure 6-128.

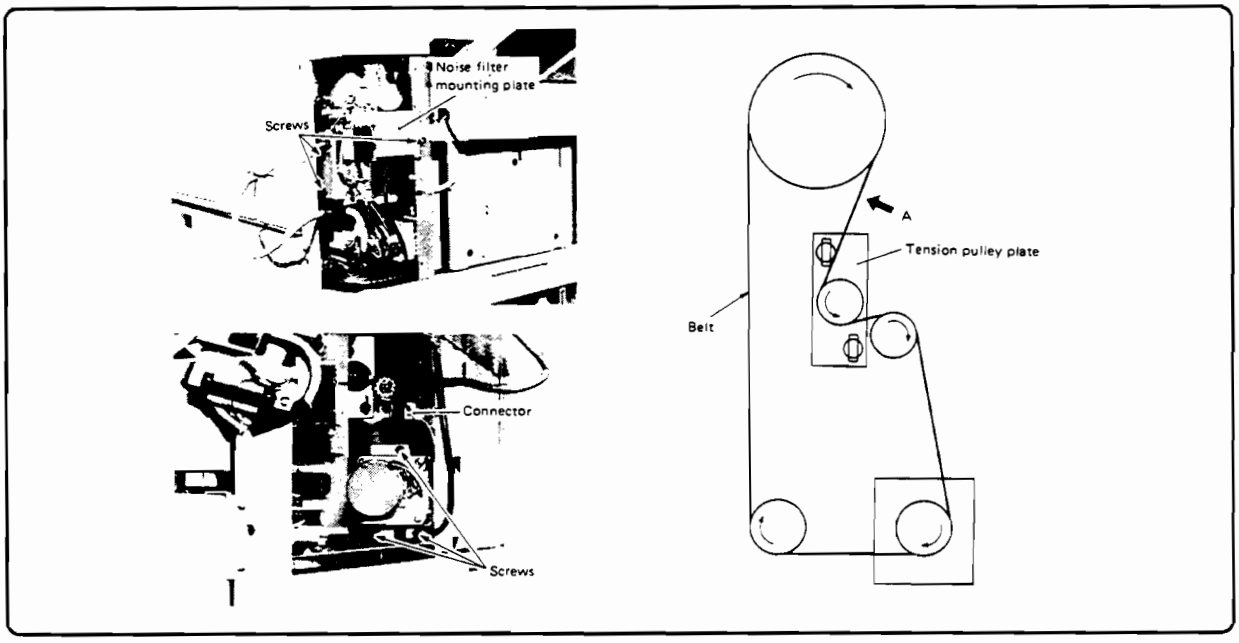


Figure 6-128. Stacker Drive Motor Removal

Lifter Assembly

Removal:

1. Remove the lifter cover (directly under the stacker output tray - three screws).
2. Unplug the lift control connector and the grounding terminal (Figure 6-129).
3. Remove the cable mounting bracket screws (two); then separate the cable mounting bracket from the lifter.
4. Open the Switchback Feeder assembly.
5. Actuate the tray brake solenoid (Stacker-SL1) by hand to release the brake. While holding the tray brake released, turn the tray brake gear by hand to lower the main tray (Figure 6-129). (When the main tray is lowered fully to the bottom, the lifter comes loose from the guide and can be removed.)

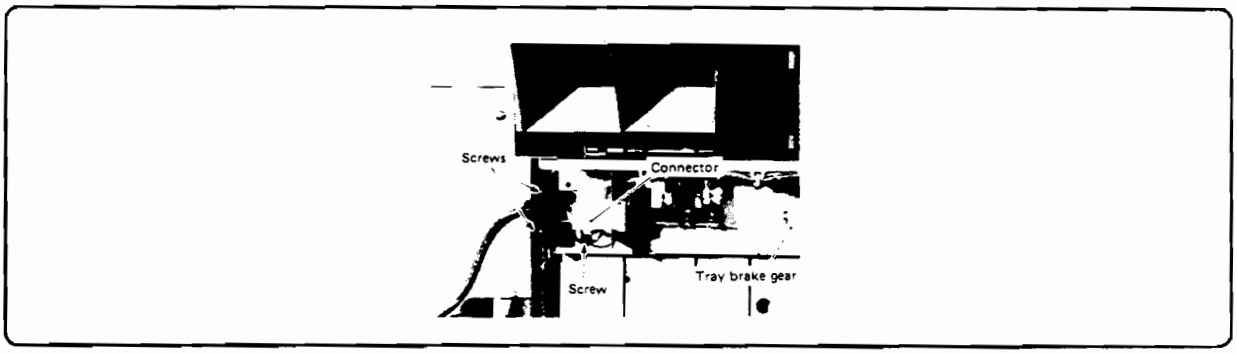


Figure 6-129. Lifter Assembly Removal

Lifter Delivery Rollers

Removal:

1. Remove the front cover (four screws).
2. Open the top door and loosen the screw connecting the green wire ground to the front stacker frame (top center above stacker controller PCA) so that it does not interfere with the delivery roller unit.
3. Remove the mounting screws (two); then remove the delivery roller/belt unit (Figure 6-130).
4. Remove the e-ring; then remove the bushing from the delivery roller/belt shaft.
5. While lifting the delivery roller/belt shaft, apply pressure to the delivery roller clamp plates in the direction indicated in Figure 6-130. This removes them from the delivery roller/belt shaft. (Tractor belt tension is released when the clamp plates are removed from the shaft.)
6. Pull the Tractor belts off the delivery roller/belt shaft.

Replacement: Reverse the above.

Adjustments: None

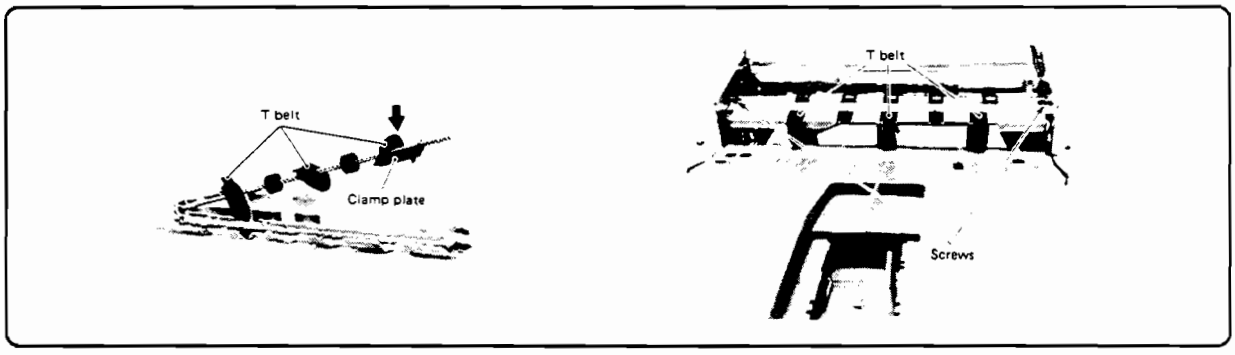


Figure 6-130. Delivery Rollers Removal

Lifter Motor (Stacker-M3)

Removal:

1. Remove the lifter cover (three screws).
2. Remove the Lifter assembly see "Lifter Assembly" on page 6-112.
3. Remove the grip ring and take the gear off the main tray drive motor (Stacker-M3) shaft. Unplug the motor connector (one), remove the four mounting screws, and remove the main tray drive motor.

Replacement: Reverse the above.

Adjustments: None

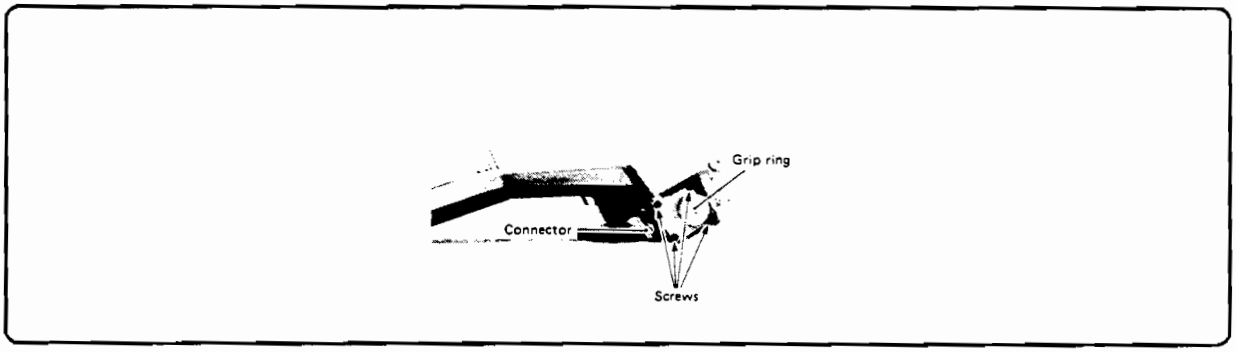
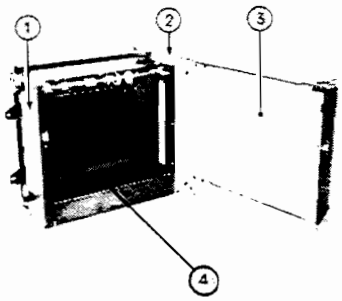


Figure 6-131. Lifter Motor Removal

PDX Area Assemblies

PDX Covers

Figure 6-132 shows the locations of the PDX unit covers.



1 Front inner cover (4)
2 Rear cover (5)
3 Paper filling door
4 Lower cover (2)

Figure 6-132. PDX Doors and Covers

Front Inner Cover (Item 1)

On non-duplex units (HP 2684P): Remove the two screws and detach the front inner cover.

On duplex units (HP 2684D):

1. Remove four screws and detach the inner cover of the duplex printing module together with its right front door.
2. Remove one screw and detach the door chain.
3. Remove four screws and detach the front inner cover (item 1 in Figure 6-132).

Rear Cover (Item 2)

Remove the five screws and detach the PDX rear cover.

Paper-filling Door (Item 3)

Lift upward to remove the door from its hinge pins.

Lower Cover (Item 4)

1. With the printer's power ON, open the paper filler door to lower the lifter tray.
2. Pull upward on the plastic knob to remove the paper size end plate.
3. Raise the lifter tray up to the top.
4. Remove the one screw inside and three on the end face, and lift the cover up and out.

PDX Assembly

Removal:

1. Remove the PDX paper filling door, front inner cover and rear cover (see "PDX Covers" on the previous page).
2. Remove the rear print engine cover.
3. Disconnect the PDX cables from the print engine (AC, DC, data cables and connectors).
4. If duplex is installed, remove the AC cable from the duplex connector (Figure 6-133).
5. Loosen the screw on the tension pulley plate, and remove the drive belt from the pulley (Figure 6-133).

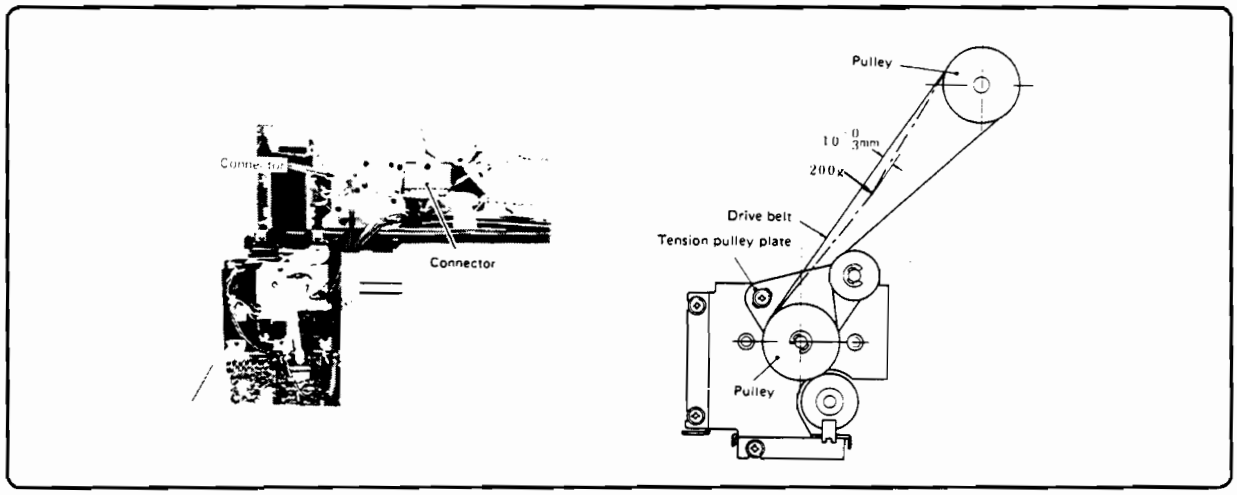


Figure 6-133. PDX Cables and Drive Belt

6. Unplug the connectors from the PDX driver PCA at the PD/DU controller PCA and remove the two screws; then remove the PD/DU controller PCA with its mounting plate (Figure 6-134).

Note

If a long screwdriver (8 inches or more) is used, the mounting screws can be removed without removing the PD/DU Controller PCA.

7. Mark the position of the paper deck unit; then remove the four screws (Figure 6-134).
8. Raise the paper deck unit and remove it from the installation guides.

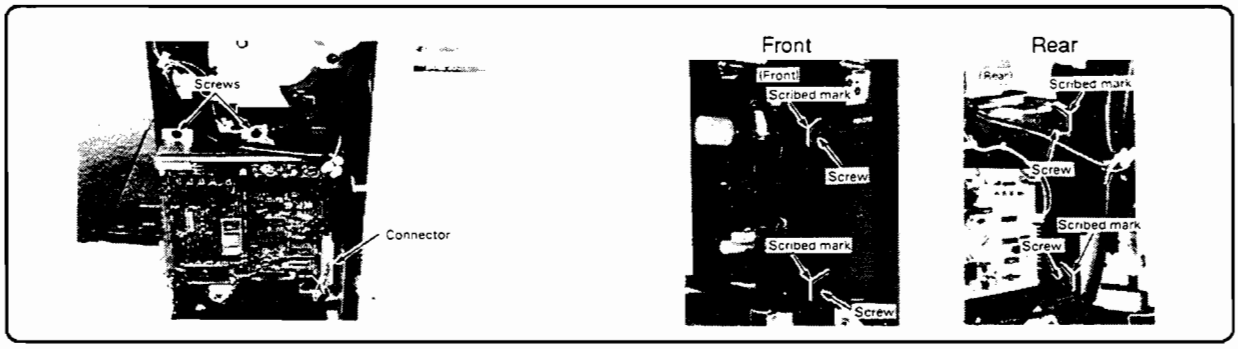


Figure 6-134. Removing PDDU PCA and Marking PDX Position

Replacement - PDX Assembly:

Reverse the above, being careful of the following:

1. Install the paper deck unit in line with the scribed marks.
2. After the paper deck unit has been installed, be sure that the belt tension idler pulley is **under** the belt and **not on top** of the belt.
3. Adjust the tension of the drive belt (Figure 6-133).

Adjustments - PDX Assembly:

If the same PDX Assembly is being reinstalled, be sure to line up the scribed marks when reinstalling. No further adjustment should be necessary.

PDX Unit Front-to-Rear Registration

If a new assembly is installed, or the front-to-rear registration of the PDX unit needs adjusting, follow these procedures.

Note

On duplex units (2684D), the front inner cover (with duplex door) and the rear PDX cover must be removed in order to accomplish this adjustment. On 2684P units, the "L" shaped black cover plate and the rear PDX cover must be removed.

Front-to-rear registration is measured using a standard self test.

1. Run self test from the PDX unit.
2. Measure the distance between the front edge (edge toward the front of the printer) and the starting point of the border, as shown in Figure 6-135. The distance should be within the range 4.25 ± 1mm.
3. Adjust the PDX unit by loosening the four mounting screws and sliding the unit either toward the front or rear (left or right when facing the PDX).

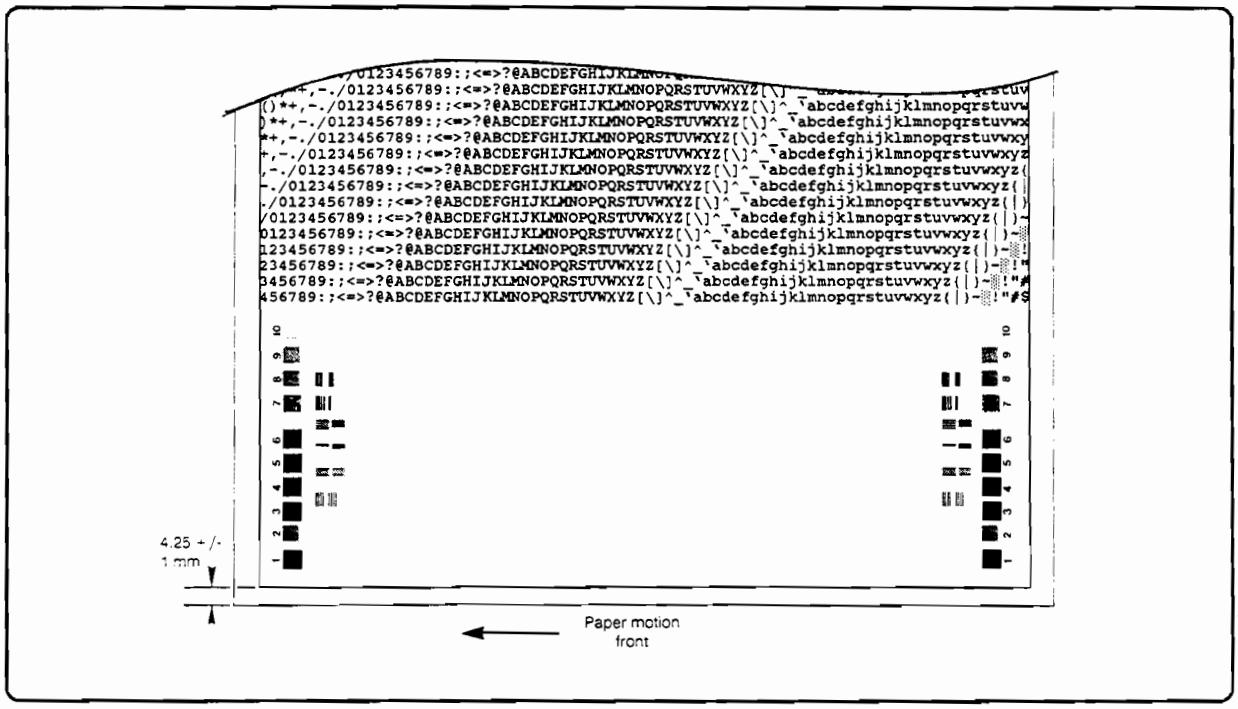


Figure 6-135. PDX Unit Adjustment

PD/DU PCA

Removal:

1. Remove the PDX rear cover and paper door (see "PDX Covers" on page 6-115).
2. Unplug the four connectors on the PD/DU PCA.
3. Remove two screws at the top, tip out the PCA and lift to remove.

Replacement: Reverse the above. Be sure to fit the lower tab into its slot before replacing screws.

Adjustments: None

Door Switch (PDX-MS2)

1. Remove the front inner cover (see "PDX Covers" on page 6-115).
2. Unplug the two connectors and remove one screw.

Replacement: Reverse the above.

Adjustments: Adjust the position of the micro switch mounting plate to ensure that the micro switch (PDX-MS2) is actuated when the door is closed (see Figure 6-136).

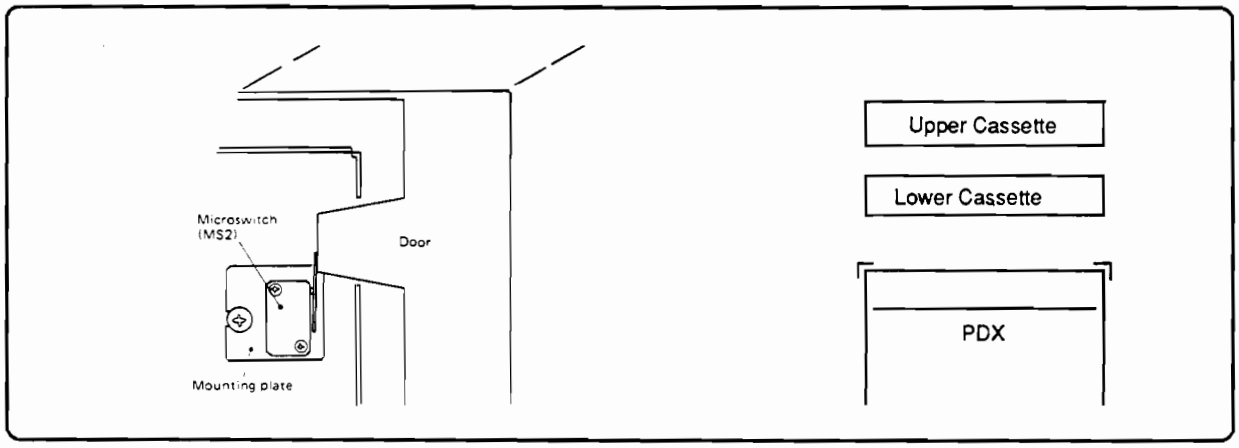


Figure 6-136. PDX Door Switch (PDX-MS2)

Microswitches PDX-MS1 and MS3

These microswitches are located on the inside of the PDX unit and require removal of the unit from the printer to replace.

Removal:

1. Remove the PDX unit as described on page 6-116.
2. On the inside face of the PDX assembly, remove the four screws holding the back (inner) cover in place (Figure 6-137).
3. Unplug the two connectors and remove the mounting screw to replace.

Replacement: Reverse the above.

Adjustments: None

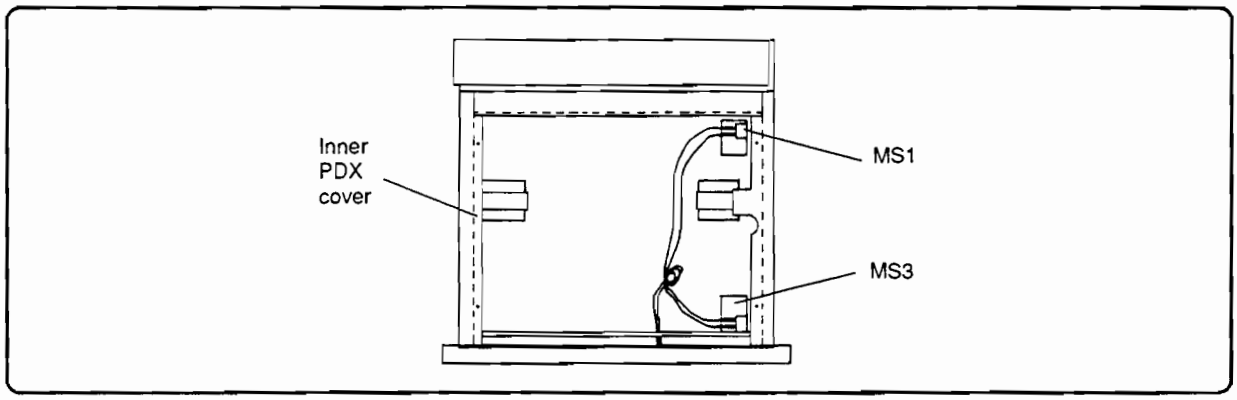


Figure 6-137. PDX-MS1 and PDX-MS3 Removal

Lifter Deck Position Sensor (PDX-PS2)

Removal:

1. Remove the front inner cover (see "PDX Covers" on page 6-115)..
2. Unplug four connectors from the Sensor assembly.
3. Remove one screw on the mounting plate.

Replacement: Reverse the above.

Adjustments - PDX-PS2:

1. Open the paper filling door. Put one sheet of print paper on the lifter deck.
2. Insert the door switch actuator (02684-40001) in the door switch unit.
3. After the lifter has stopped rising, adjust (if necessary) the mounting plate of the lifter deck position sensor so that the distance between the lifter deck and pick-up roller shaft is 15 ±1mm.

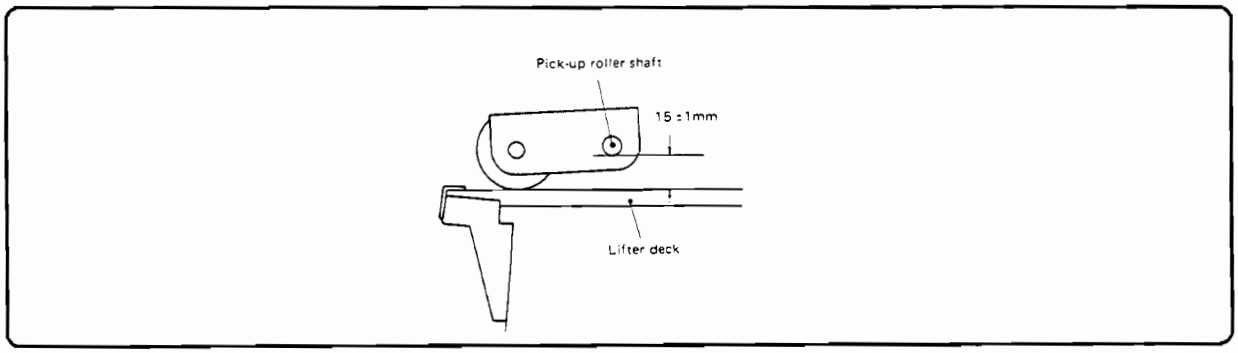


Figure 6-138. PDX PS-2 Adjustment

Lifter Motor

Removal:

1. Remove the paper-filling door and the rear cover.
2. Remove the two screws, slant the top part of the PD/DU controller PCA mounting plate outward, and unplug connector J1 on the deck unit controller PCA (Figure 6-139).
3. Remove the two mounting screws of the lifter motor and remove the chain from the sprocket of the lifter motor (Figure 6-139).

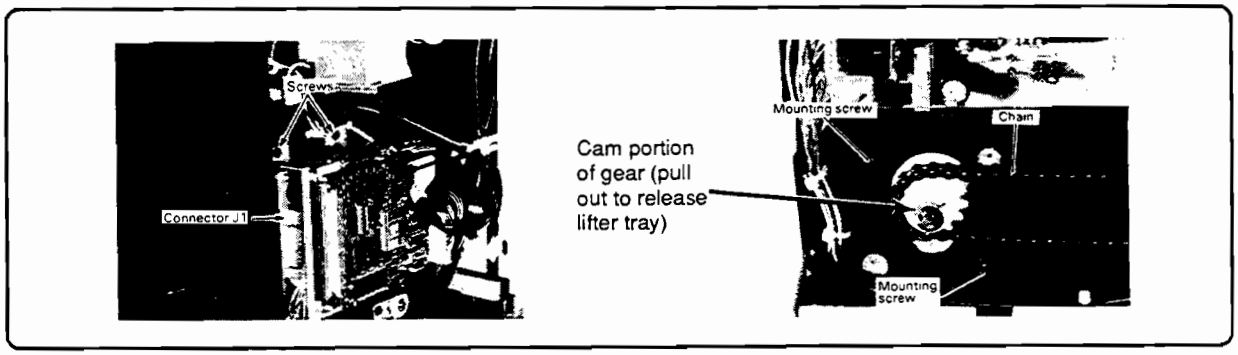


Figure 6-139. PPDU PCA and Lifter Drive Chain

4. With the lifter tray all the way down, pull up on the plastic knob and remove the paper size adjuster end plate.
5. Lift the lifter tray and support it with a screwdriver, as shown in Figure 6-140.
6. Remove the four screws and electrical unit cover Figure 6-140.
7. Unplug the connector and remove the lifter motor.

Figure 6-140. Lifter Motor Removal

Replacement - Lifter Motor:

1. Pass the sprocket on the shaft of the lifter motor through the hole in the rear plate and attach the chain.
2. Attach the lifter motor to the rear plate with the two screws, making sure the chain is taut (Figure 6-139).
3. Connect connector J1 to the deck unit controller PCA, and attach the PD/DU controller PCA mounting plate with the two screws (Figure 6-139).
4. Attach the cover of the electrical unit with the four screws.
5. Remove the screwdriver that was supporting the lifter deck.
6. Switch the printer power ON to lower the lifter deck.
7. Attach the stack end plate.
8. Attach the rear cover and paper-filling door.

Adjustments: None

PDX Power Supply PCA

Removal:

1. Remove the paper filling door and power the printer ON to lower the lifter tray all the way down.
2. Power the printer OFF.
3. Pull up on the plastic knob and remove the paper size adjuster end plate.
4. Raise the lifter tray up (it will stay in place if the motor is connected).
5. Remove the four screws and electrical unit cover (Figure 6-140).
6. Unplug the two connectors and remove the two screws from the PDX Power Supply PCA.

Replacement: Reverse the above.

Adjustments: None

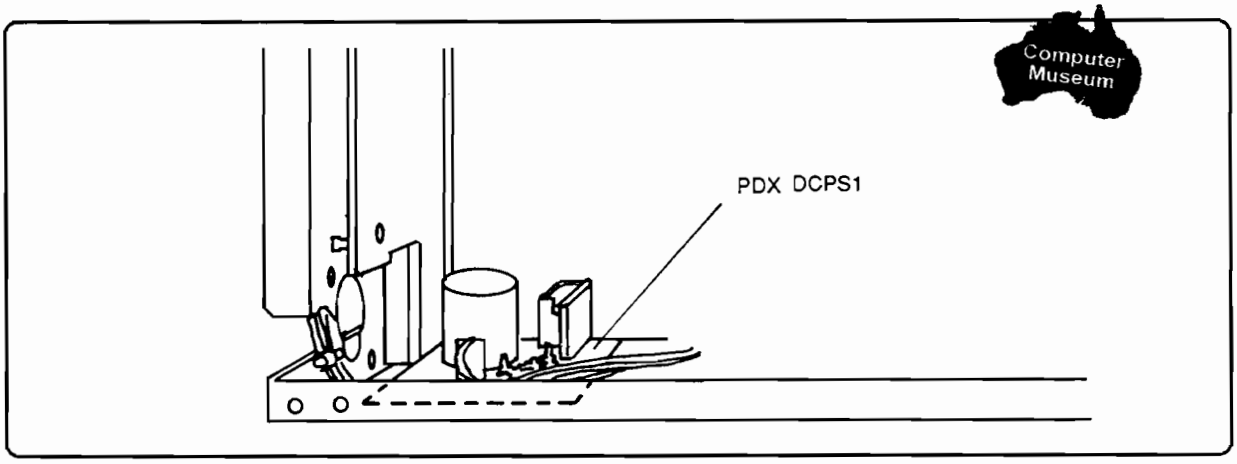


Figure 6-141. PDX Power Supply PCA

PDX Rollers

Pick-up rollers

One-way clutches in the hubs of the pick-up rollers permit the paper to be drawn out by the feed rollers into the printer. When replacing the pick-up rollers, change the roller "tires" only, not the hubs (unless hubs must be replaced).

Removal:

1. With power ON, open the paper filling door and allow the lifter deck to lower completely.
2. Remove the rubber roller from the roller hub by pulling the roller to the side and twisting it off the hub (Figure 6-142).
3. If the hub must be replaced, remove the e-ring and slide the hub off the shaft (Figure 6-142).

Replacement:

To permit the rollers to turn correctly when installing them on the shaft, orient each roller so that the wider flange ("Flange A" in Figure 6-142) faces toward the rear of the deck unit.

Note

Whether replacing the "tires" only, or the entire rollers with the hubs, clean new rollers with Rubber Roller Restorer or Fedron before assembly to prevent paper jams.

Adjustments: None

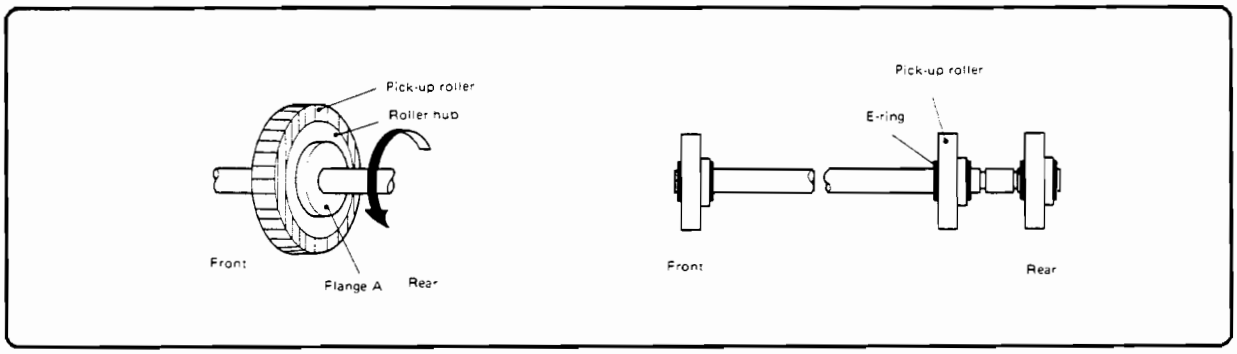


Figure 6-142. PDX Pick-up Rollers

PDX Inlet/Separation Rollers

Removal:

1. With power ON, open the paper filling door and allow the lifter deck to lower completely.
2. Remove the paper friction strip plate (see page 6-128).
3. Disconnect the coil spring at the top of the paper inlet roller plate (Figure 6-143).
4. Remove the two e-rings which retain the bushing in the paper inlet roller plate. Slide the bushing away from the plate to free it from the shafts.
5. Slide the pickup/paper inlet drive belt off of the pulleys.

Caution Do not loosen the pulley drive pins.

---

6. Lift the roller plate off of the drive shaft.
7. Free the paper inlet roller shaft from the plate.
8. Remove the paper inlet roller from the bottom of the plate.
9. Remove the rollers from the hub.

Replacement: Reverse the above. Clean new rollers with Rubber Roller Restorer or Fedron before reassembly. Be sure to install the shaft into the drive belt before installing the plate.

Adjustments: None

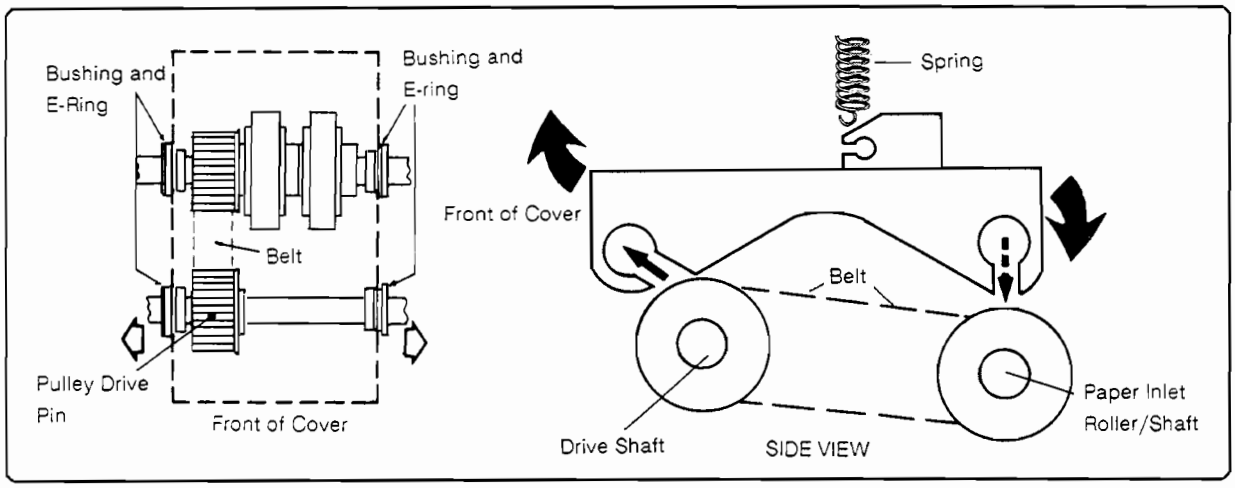


Figure 6-143. PDX Inlet/Separation Rollers

PDX Clutches

Removal:

1. Remove the PDX assembly from the printer (refer to "PDX Assembly" on page 6-115).

Caution When detaching the pulley, use care not to lose the pin inside the pulley (see Figure 6-145, right side).

2. Remove the e-ring and detach the pulley (Figure 6-144).
3. Remove the four (or five) screws and take out the clutch mount (Figure 6-144).
4. Remove the set screws and take out both clutches (Figure 6-145).

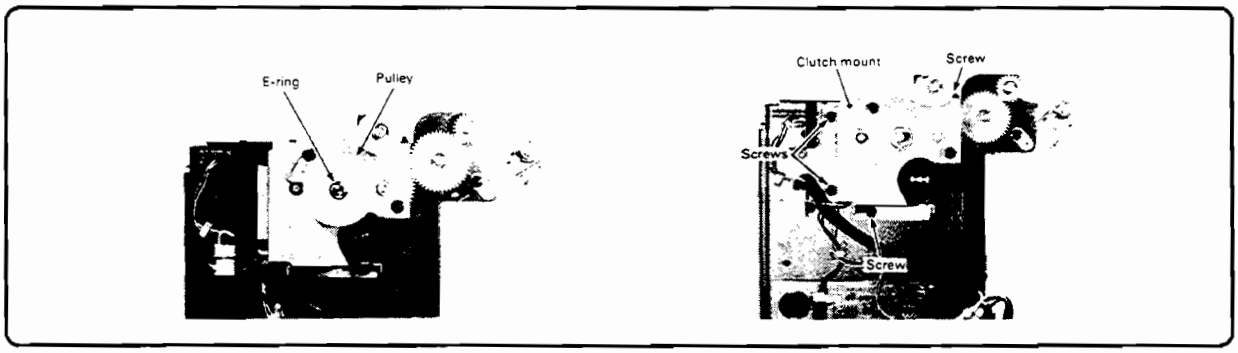


Figure 6-144. Clutch Pulley and Mount

Replacement - Clutches. Reverse the above, paying attention to the following points:

Mounting the clutch: The clutch is (gap A) adjusted at the factory with a spacer shown in Figure 6-145 between the gear unit and coil unit. This gap is set with a spacer which must be installed between the coil and the gear units.

Attaching the clutch mount: When attaching the clutch mount, position the tabs on the clutches as shown (Figure 6-145). Make sure the pick-up roller shaft is centered in the hole (Figure 6-145).

Position of drive pulley: Mount the drive pulley as shown in the right portion of Figure 6-145.

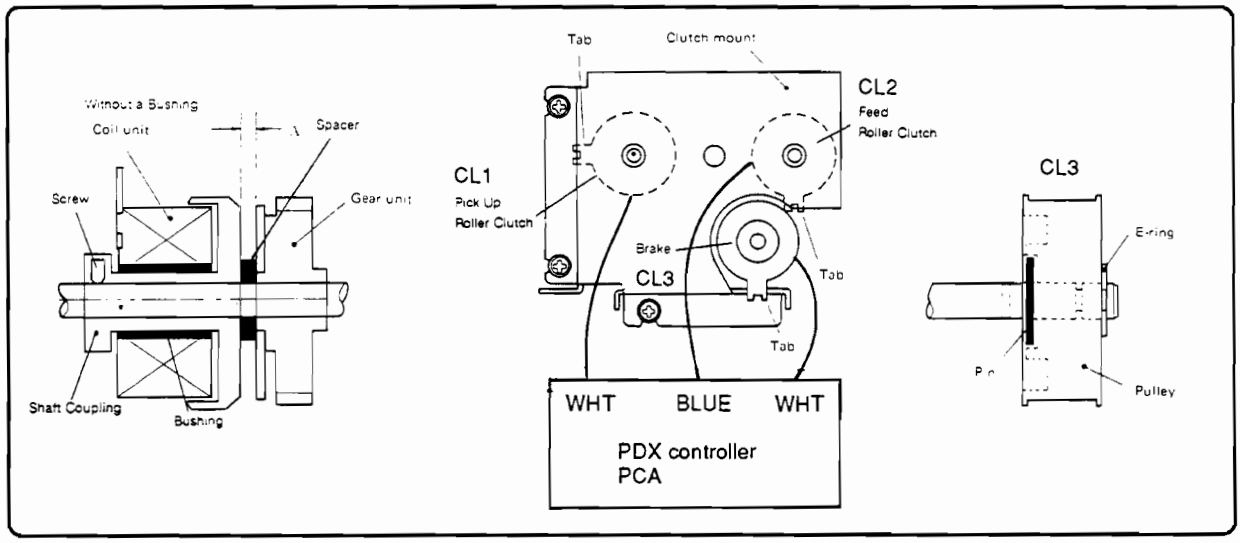


Figure 6-145. PDX Clutch Details

Adjustments: None

Paper Friction Strip Plate

The friction strip plate is used in conjunction with the paper inlet rollers to prevent multiple feeds from the paper deck unit. If multiple feeds occur because the friction strips have become worn, replace them.

Removal:

1. Open the paper filling door and power the printer ON to lower the lifter tray all the way down.
2. After the lifter has descended to its bottom position switch the power OFF.
3. Remove the two screws and the metal plate to which the friction strips are attached (Figure 6-146).

Replacement: Reverse the above. After replacement, load the correct paper and make 50 prints continuously, and check for multiple feed or jams.

Adjustment: Be careful that the paper inlet rollers and friction strips do not interfere with each other. Position the plate so that the strips have the clearances shown in (Figure 6-146).

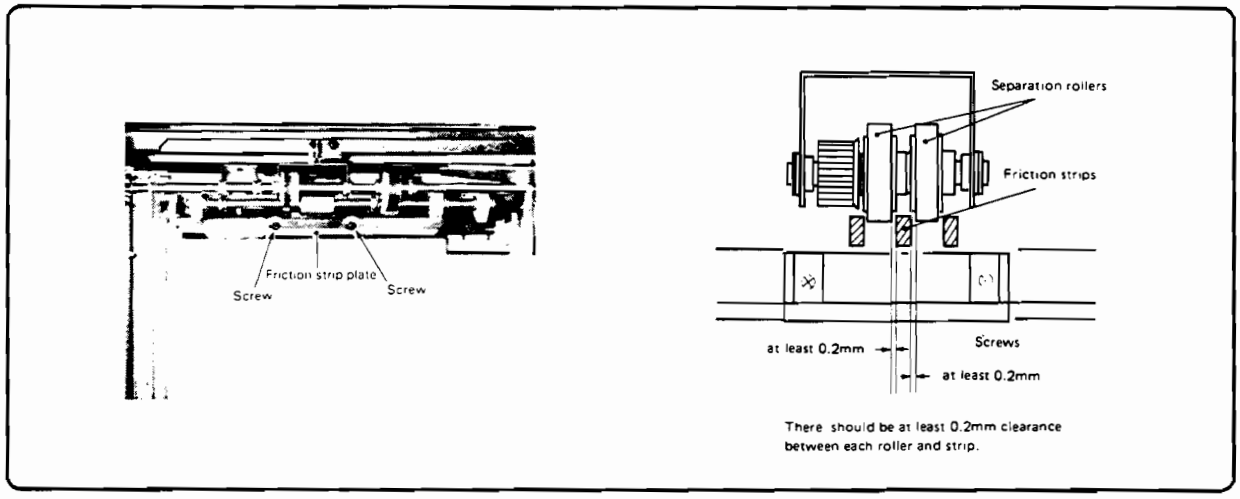


Figure 6-146. PDX Friction Strip Plate

PDX Adjustments

Lifter Holding Solenoid

Adjust the position of the holding solenoid so that the gap between the ratchet and the tip of the pawl is 1.5 +/- 0.5mm when the pawl is pressed toward the solenoid with a finger (Figure 6-147).

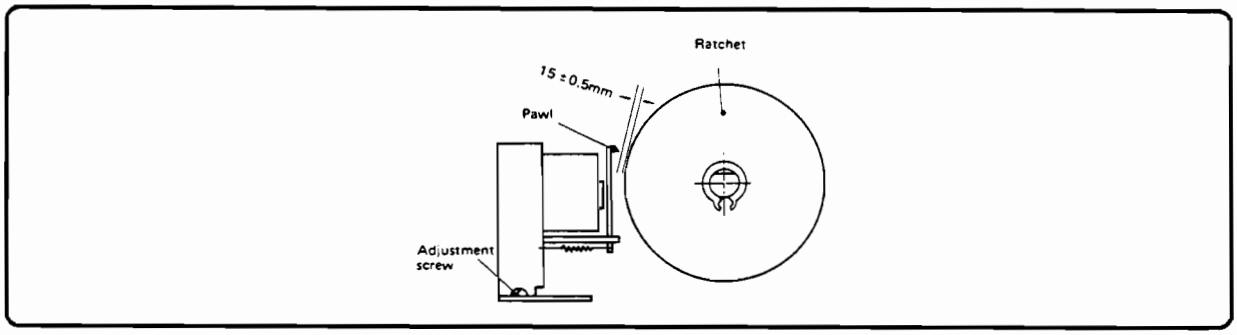


Figure 6-147. Lifter Holder Solenoid Adjustment

Upper Travel Limit Switch (PDX-MS4)

1. Adjust the lifter deck position sensor (PDX-PS2) (page 6-120).
2. Loosen the screw and adjust the upper travel limit switch mounting plate so that the switch is actuated when the sensor arm is raised manually as far as it will go (Figure 6-148).

Drive Belt Tension

Position and secure the tension pulley plate so that the drive belt flexes 10 +0/-3mm when a 200g force is applied to the belt at the midpoint between the pulleys (Figure 6-148).

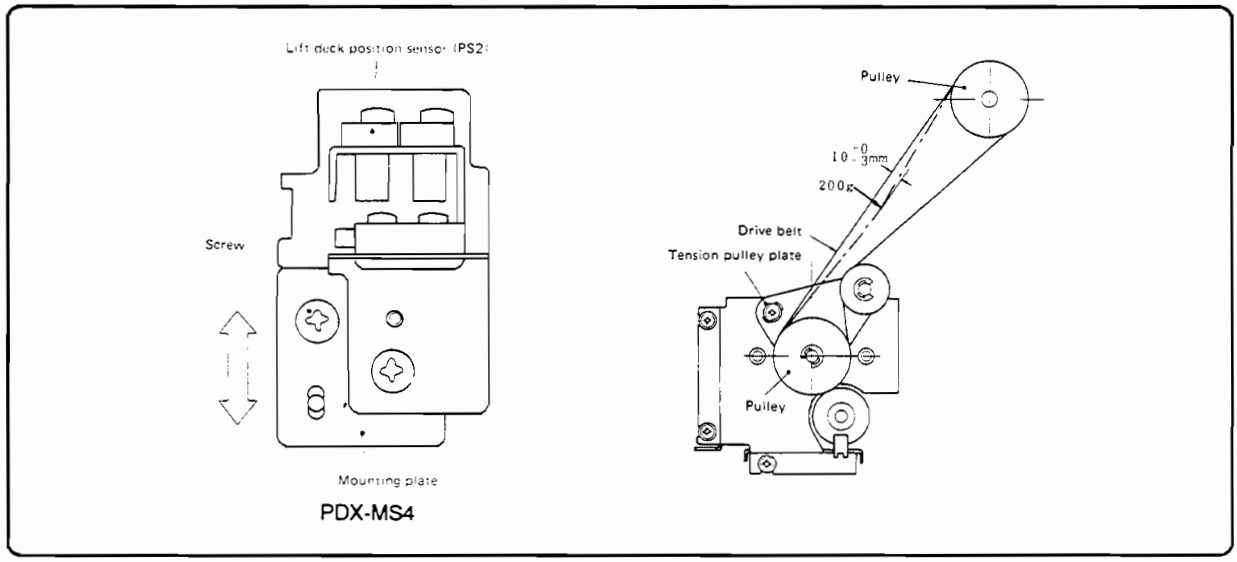


Figure 6-148. PDX-MS4 and Drive Belt Adjustment

Duplex/Separation Assembly

Removal:

1. Remove the lower rear printer cover (see page 6-22).
2. From the rear of the printer, loosen the screws on each of the two belt idler pulleys and remove the duplex drive belts.
3. Remove the three screws securing the "L" shaped cover panel behind the Duplex transmission and remove the panel (Figure 6-149).
4. Remove the screw holding the cable clip to the floor of the duplex area.
5. Unplug the four connectors for the Duplex/Separation Assembly (three on left, one on right).
6. Remove the two screws holding the Duplex/Separation Assembly to the floor of the printer.

Note

If the screw on the right end of the Duplex/Separation Assembly is directly below the solenoid (Figure 6-149), remove the solenoid first (one screw). When replacing the Duplex/Separation Unit, do not use this mounting screw location; use the alternate screw location toward the back of the printer instead (this is a slot instead of a hole in the base of the assembly).

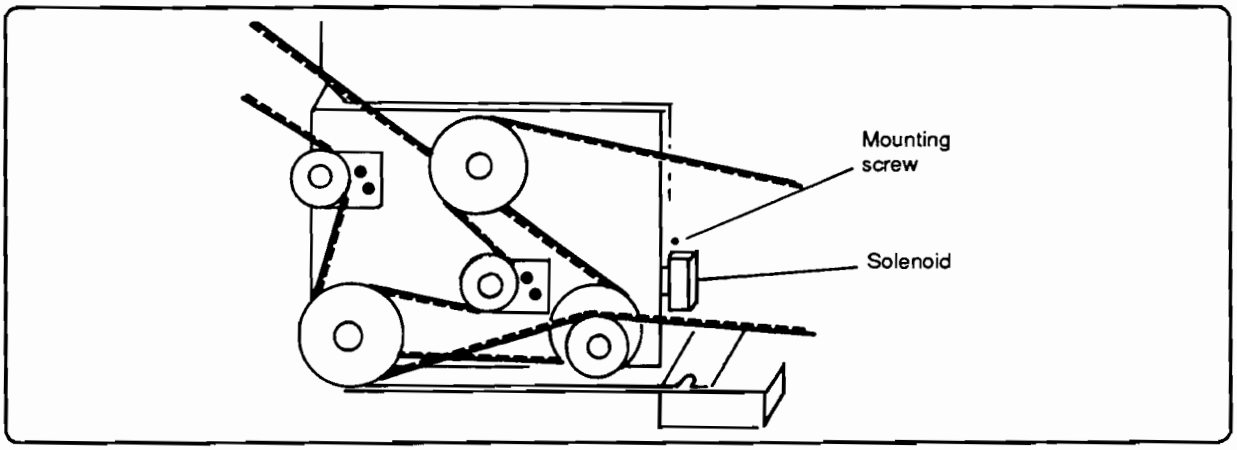


Figure 6-149. Duplex/Separation Unit Removal

7. Open the duplex area doors.
8. Move lever 4A to the left to lower the Duplex Holding Tray assembly.
9. Remove the two screws holding the Lever assembly to the floor of the duplex area (Figure 6-150).
10. Carefully take the tension off the torsion spring, lift the holding tray by hand, and slide the Lever assembly out (Figure 6-150).

Figure 6-150. Holding Tray Release Lever

11. Remove the three screws holding the main part of the assembly on the floor of the area.
12. Lower lever 5A to allow the Vertical Tray Assembly to clear the Duplex/Separation Assembly.
13. Carefully slide the Duplex/Separation Assembly out, making sure to clear the Vertical Tray Assembly and other parts.

Replacement: Reverse the above.

Adjustments: None

Duplex Paper Transport System

Duplex Feed Belt Assembly

Removal:

1. Remove the Duplex/Separation Assembly (see page 6-130).
2. Remove the e-ring, the gear, and the dowel pin (Figure 6-151).

Note

When removing the gear, be sure that the dowel pin does not fall into the drive unit (transmission). It is difficult to remove any small object from inside.

3. Loosen the set screw, shift the collar and remove the bearing from the side plate of the Separation unit (Figure 6-151).
4. Shift the Duplex Feed Belt assembly to the front, and remove the front bearing from the front side plate of the Separation assembly.
5. Raise the Duplex Feed Belt assembly and take it out.

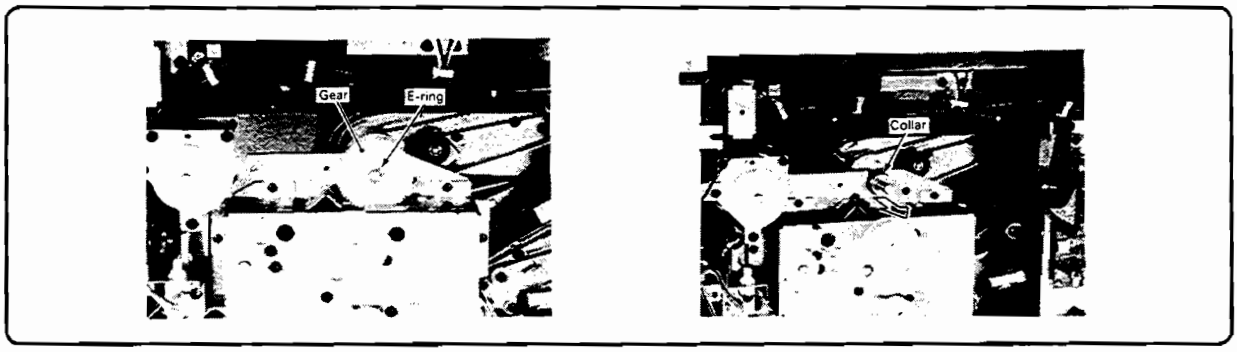


Figure 6-151. Feed Belt Assembly Removal

Duplex Feed Belts

Removal:

1. Remove the Duplex Feed Belt assembly (page 6-132).
2. On the rear of the assembly, remove the e-ring and the bearing (Figure 6-152).
3. Shift the roller shaft to the rear and remove it from the front side plate.
4. On the front of the assembly, remove the e-ring and the bearing from the side plate (Figure 6-152).
5. Shift the roller shaft and rear bearing, and remove.
6. Remove the belt from the roller shaft.

Replacement: Reverse the above.

Adjustments: None

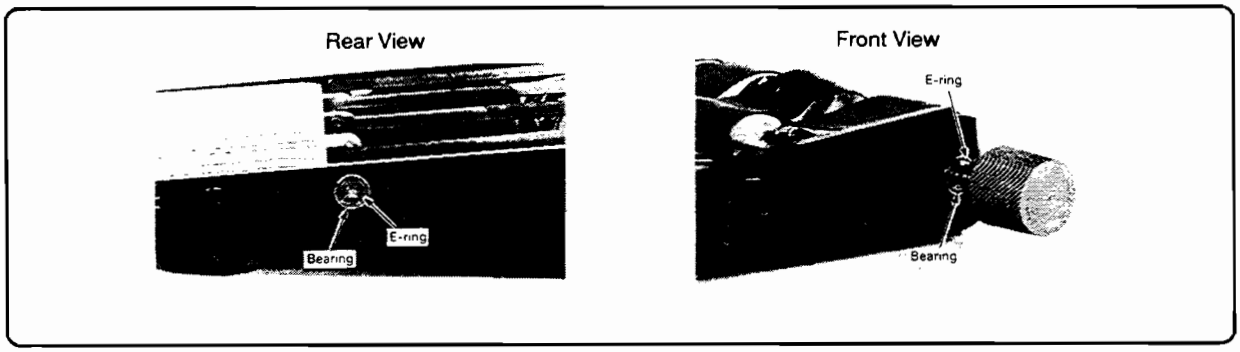


Figure 6-152. Feed Belt Removal

Vertical Pass Feed Assembly

Removal:

1. Remove the Duplex/Separation Assembly (see page 6-130).
2. Unplug the connector and remove the rear holding screw (Figure 6-153).
3. Open the front right door, and turn the guide plate release lever clockwise.
4. Remove the two screws and pull the Vertical Pass Feed assembly out to the front (Figure 6-153).

Replacement: Reverse the above.

Adjustments: None

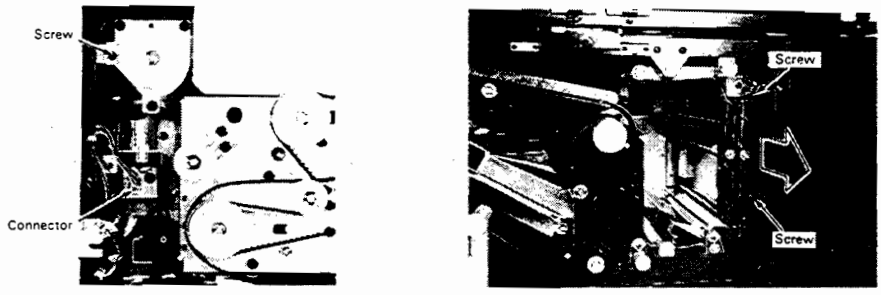


Figure 6-153. Vertical Pass Feed Assembly

Holding Tray

Removal:

1. Remove the Duplex/Separation Assembly (see page 6-130).
2. Loosen the set screw of the collar (Figure 6-154).
3. Remove the two screws and the pivot pin.
4. Remove the holding tray.

Replacement: Reverse the above.

Adjustments: None

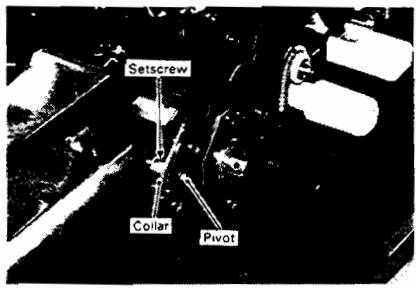


Figure 6-154. Duplex Holding Tray Removal

Holding Tray Side Plate Motor

Removal:

1. Remove the holding tray (see previous section).
2. Remove the four screws and the lower panel (Figure 6-155).
3. Unplug the connector, remove the two screws, and the tray side-plate motor (Figure 6-155).

Replacement: Reverse the above.

Adjustments: None

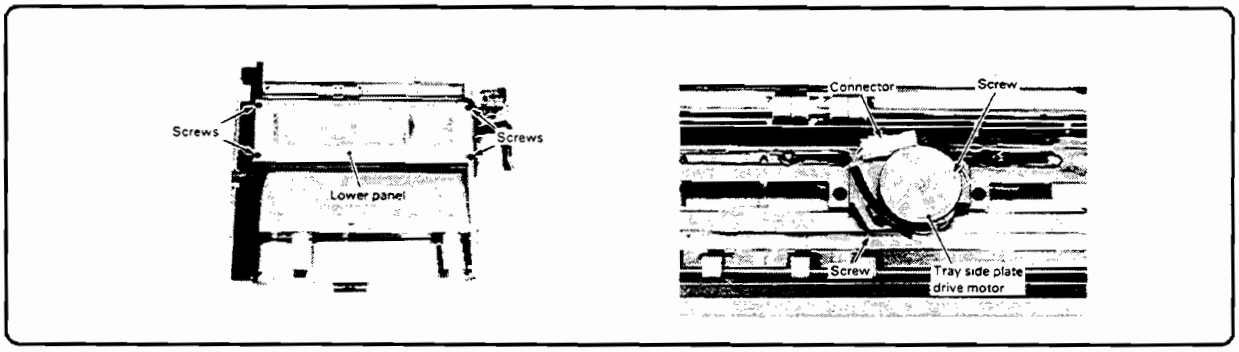


Figure 6-155. Side Plate Motor Removal

Second-pass Pick-up Rollers

Removal:

1. Remove the Duplex Holding Tray (see page 6-134).
2. Remove four screws and detach the lower panel (Figure 6-155).
3. Loosen the screw holding the tension pulley spindle plate (Figure 6-156).
4. Remove the E-ring and remove the front bearing (Figure 6-156).

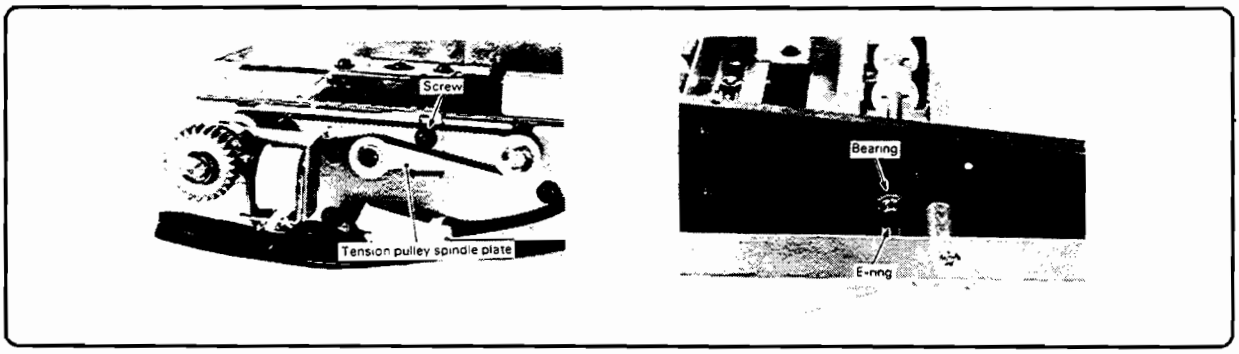


Figure 6-156. Spindle Plate and Front Bearing

5. For each roller, remove the e-ring, push the roller toward the rear enough to allow removal of the retaining dowel pin; then remove the roller (Figure 6-157).
6. Remove the e-ring and remove the front bearing (Figure 6-157).
7. Remove the screw holding the solenoid mount, shift the roller shaft, and remove the bearing from the rear side plate (Figure 6-157).
8. Remove the E-ring on each roller. Push the roller towards the rear to allow removal of the retaining dowel pin and then remove the roller (Figure 6-157).

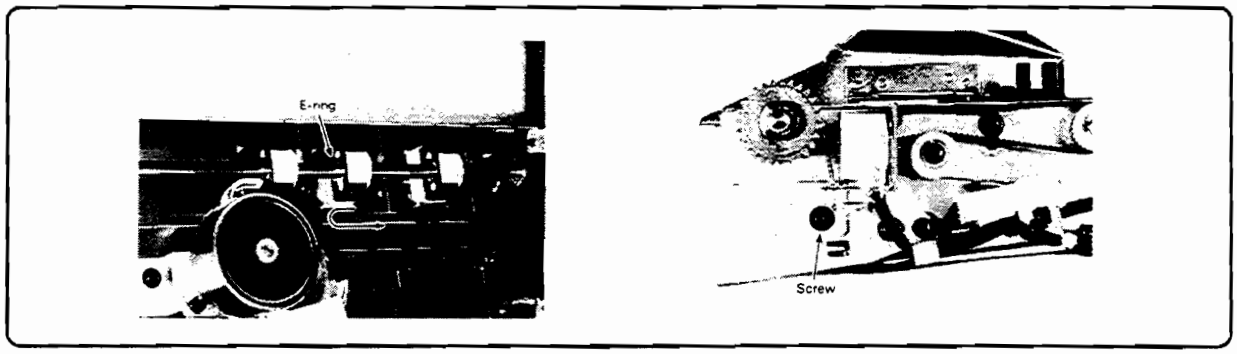


Figure 6-157. Retaining Dowel Pin and Solenoid

Replacement - Second-pass Pick-up Rollers:

Reverse the above, noting the following.

1. There are two types of second-pass pick-up rollers. The rubber shoe of each type is mounted on its hub in a different manner. Use the correct type of roller in each position (refer to Figure 6-158).
2. Install the second-pass pick-up roller shafts under the holding tray so that the two rollers face in the same direction.

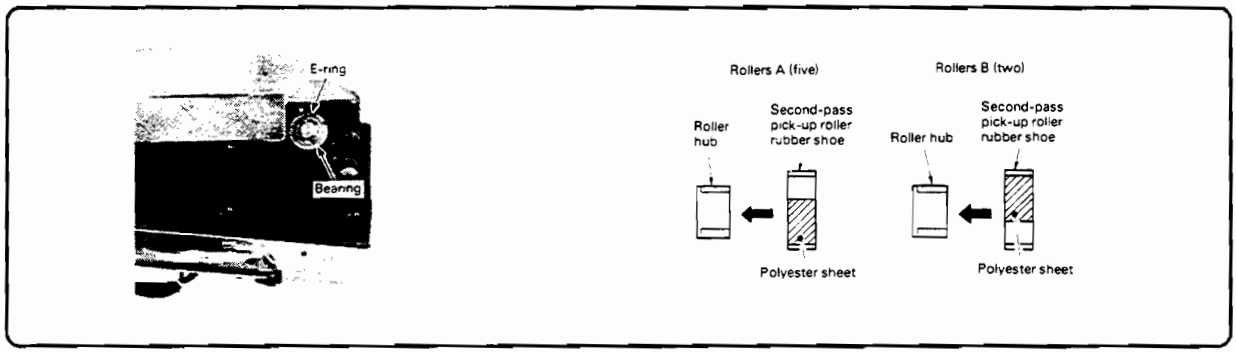


Figure 6-158. Retaining Dowel Pin and Bearing

Adjustments: None

Lower Separation Roller

Removal:

1. Remove the Duplex Holding Tray (see page 6-134).
2. Remove the two screws, and remove the front bearing plate (Figure 6-159).
3. Push the Lower Separation Roller to compress the spring on the shaft; then twist the roller to release it from the spring pin (bayonet mount - see Figure 6-159).
4. Move the Lower Separation Roller shaft forward to release the shaft from the rear bearing, and remove the shaft from the front bearing opening. The roller will remain in position until the shaft is removed (Figure 6-159 and Figure 6-160).

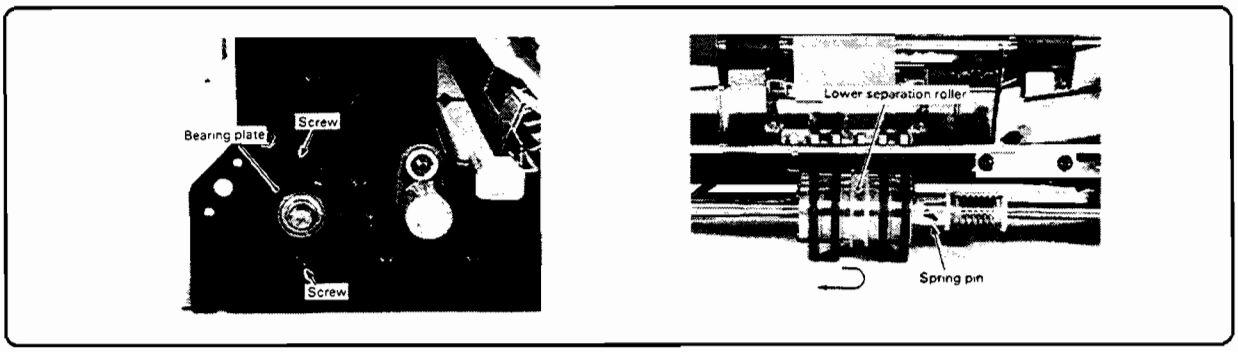


Figure 6-159. Bearing Plate and Spring Pin

5. Remove the Lower Separation Rollers from the shaft or hub (Figure 6-160).

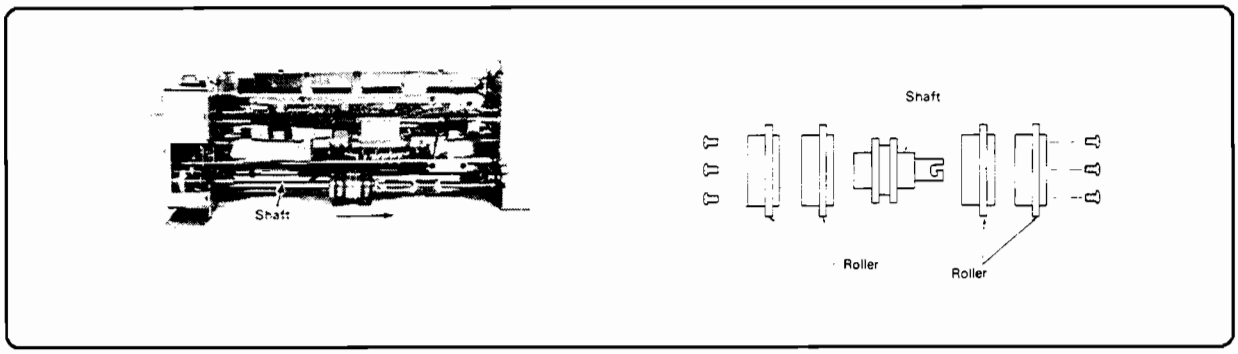


Figure 6-160. Lower Roller Shaft

Replacement: Reverse the above.

Adjustments: Perform the "Duplex Separation Rollers Alignment" on page 6-139.

Upper Separation Roller

Removal:

1. Remove the holding tray (see page 6-134).
2. Loosen the set screw, and remove the collar (Figure 6-161). (The holding tray lamp (LA1) cover plate may be removed for better access to the collar.)
3. Remove the bearings of the Upper Separation Roller shaft from the mounting plate (Figure 6-161).
4. Press the coupling to remove it from the Upper Separation Roller shaft, and remove the Upper Separation Roller shaft (Figure 6-161).
5. Remove the front bearing from the Upper Separation Roller shaft, loosen the two set screws and remove the Upper Separation Roller from the shaft.

Replacement: Reverse the above. Leave the set screw loose until the roller/shaft is in position.

Adjustments: Perform "Duplex Separation Rollers Alignment," shown next.

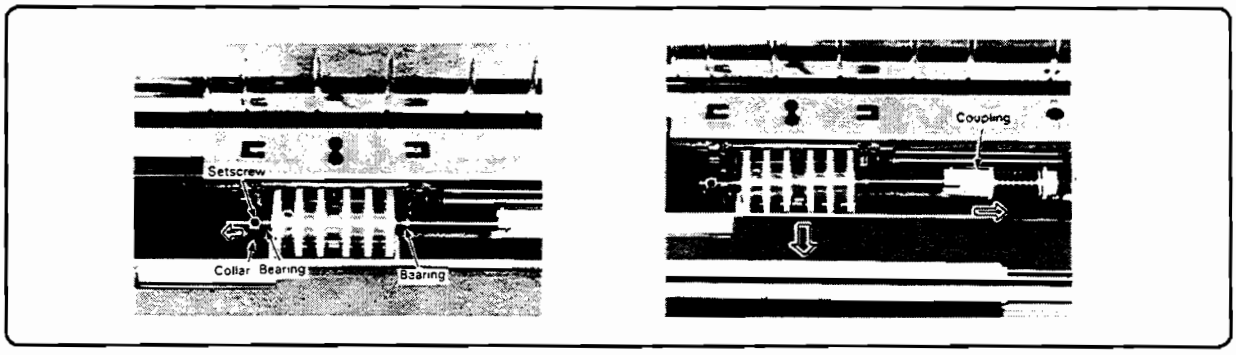


Figure 6-161. Upper Separation Roller Removal

Duplex Separation Rollers Alignment

The horizontal and clearance (vertical) position of the Upper Separation Roller should be adjusted in the following cases:

- The Upper or Lower Separation Roller is replaced.
- Frequent multiple-sheet pick-up from the holding tray.
- Frequent paper jams occur due to poor pick-up from the holding tray.

Adjustment - Horizontal Alignment:

1. Loosen the set screw in the roller hub.
2. Position the Upper Separation Roller so that the rollers are midway between the rollers of the Lower Separation Roller (Figure 6-162).
3. Tighten the set screw.
4. Perform the separation roller clearance adjustment (page 6-140).

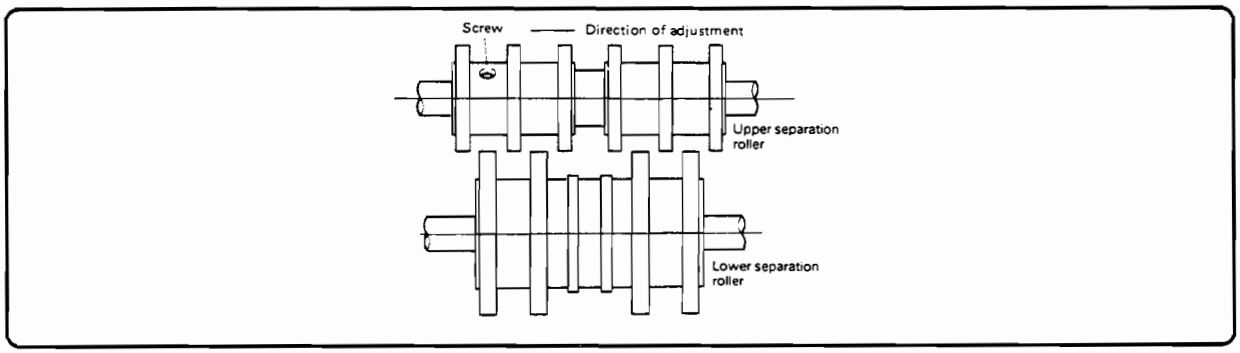


Figure 6-162. Upper Roller Alignment

Adjustment - Upper & Lower Separation Roller Clearance

Tools Required:

- 7mm open end hex wrench
- 3mm Allen wrench
- Torque gauge

Steps:

1. Turn the printer's power switch OFF.
2. Open the left and right front Duplex doors.
3. Swing the release lever CCW to lower the Duplex Holding Tray.
4. Place one sheet of the customer's paper on the Holding Tray, aligning with the front side plate.

Note If customer uses a variety of paper, perform the adjustment with the most commonly used paper. 20 pound high-speed copier bond is preferred.

---

5. Turn the lower separation roller shaft and the knob of the second pass feed roller clockwise to advance the paper until the leading edge emerges from the second pass feed roller (see Figure 6-163, items 3 & 4).

Note Raising the guide plate lever will allow easy viewing of the second pass feed roller and the leading edge of the paper (see Figure 6-163, item 2).

---

6. Use tape to secure the trailing edge of the sheet of paper into the holding tray (roll the front edge of the tape to facilitate removal).
7. Set the holding tray into position by swinging the holding tray release lever clockwise.
8. Eliminate any slack in the paper by turning the second pass feed roller knob clockwise.
9. Attach the torque gauge to the lower separation roller shaft (Figure 6-163, item 3).
10. Rotate the gauge clockwise until the lower separation roller begins to turn. Note the reading on the gauge at that time. This is the separation roller torque.
11. Divide the torque reading by 8.5 to obtain the force measurement. The force measured should be 180 $\pm$10 grams.
12. To adjust the separation roller force:
    a. Loosen the 7mm locking nut (Figure 6-163, item 5).
    b. Turn the height adjusting screw using a 3mm Allen wrench. To increase force, turn clockwise, to decrease force, turn counterclockwise.

13. Lower the holding tray (turn release lever counterclockwise).
14. Remove the tape used to secure the paper to the holding tray.
15. Advance the paper 20 to 30 mm by turning the second pass feed roller knob clockwise.
16. Repeat the measurement and adjustment procedures (steps 6 through 15), until three consecutive measurements are within the specification (180 ± 10 grams).
17. Tighten the locking nut and measure the force again to ensure that it remains correct.

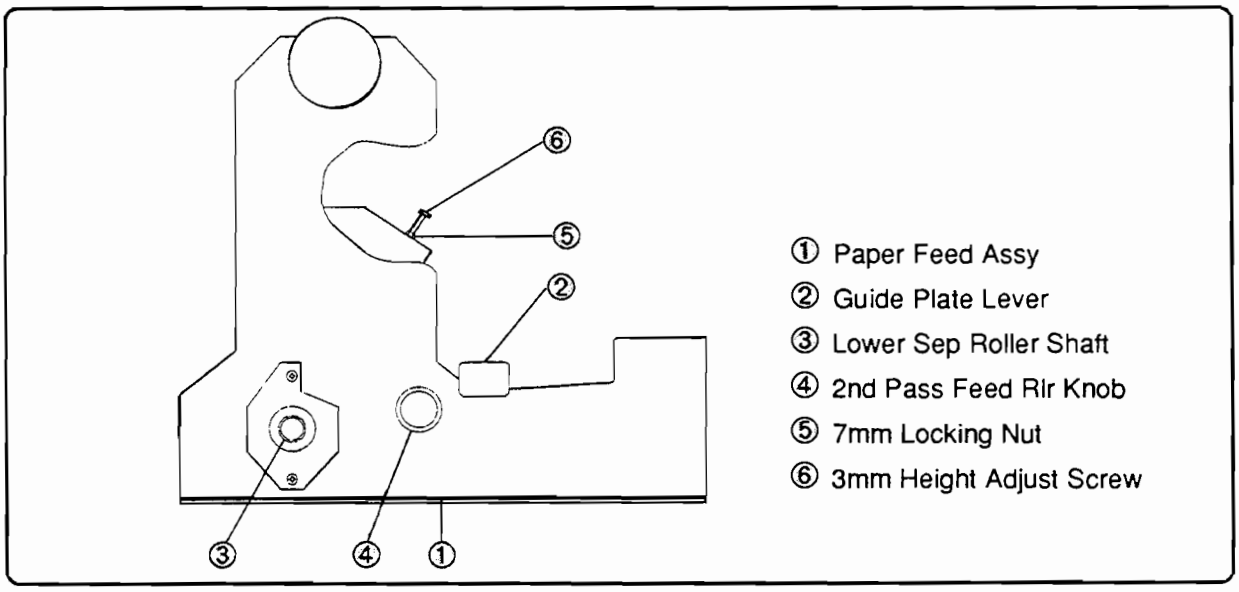


Figure 6-163. Duplex Separation Rollers Clearance Adjustment

Duplex Registration Clutch

Removal:

1. Remove the set screw on the clutch collar (Figure 6-164).
2. Slide the collar and clutch off the shaft.

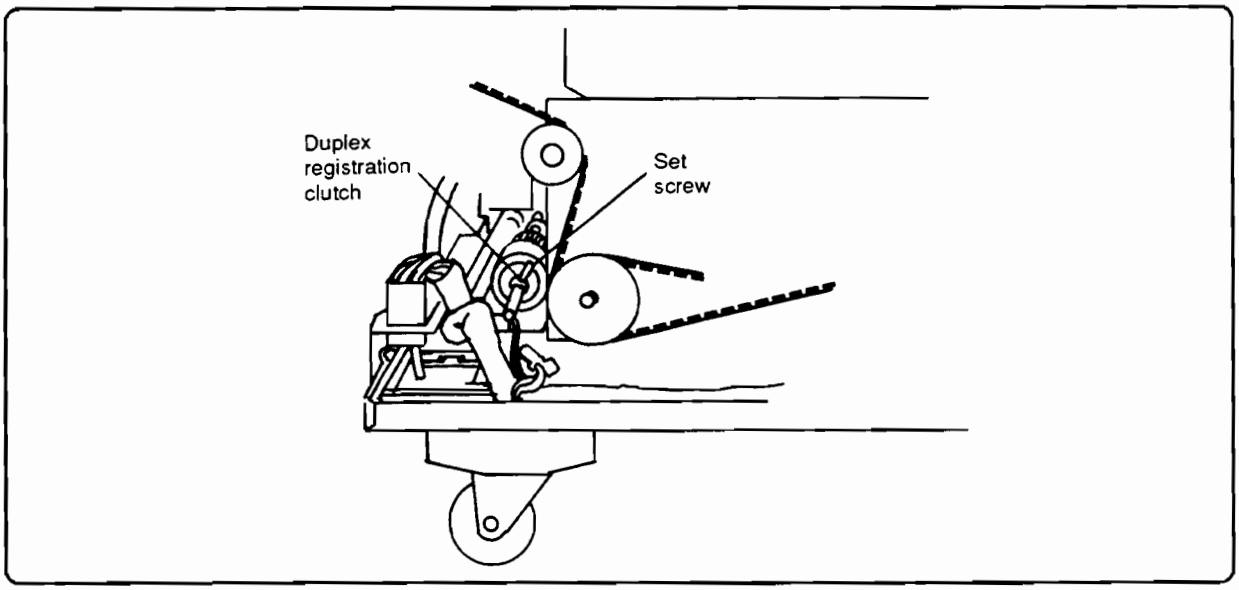


Figure 6-164. Duplex Registration Clutch

Replacement: Reverse the above.

Adjustments: None

Duplex Drive Motor

Removal:

1. Remove the lower cover below the switchback assembly, and the duplex lower) rear cover (page 6-22).
2. Unplug the connector of the duplexing unit drive motor (Figure 6-165).
3. Remove the two screws and shift the tension pulley spindle plate 2 to release tension. Remove the drive belt (Figure 6-165).

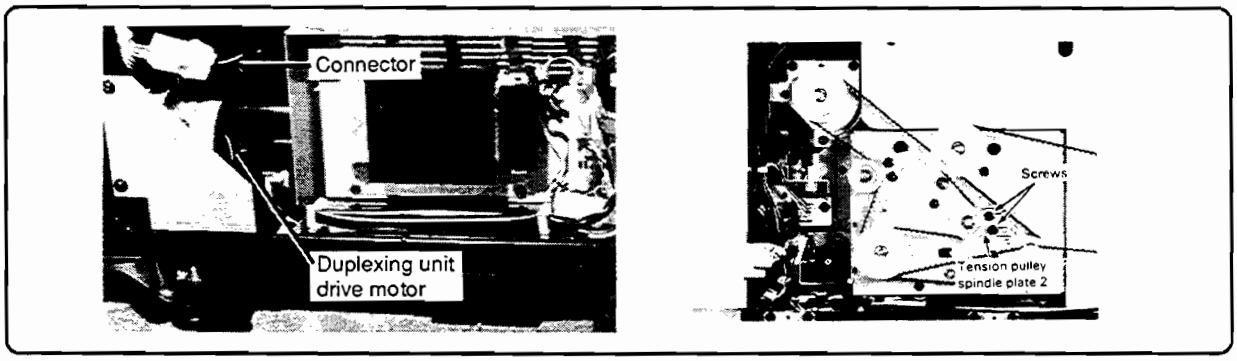


Figure 6-165. Duplex Motor Connector and Belt

4. Remove the e-ring, and remove the pulley and dowel pin (Figure 6-166).
5. Remove the four screws, and remove the duplexing unit drive motor (Figure 6-166).

Replacement: Reverse the above.

Adjustments: After the duplexing unit drive motor is installed, adjust the tension of drive belt 2 (refer to "Duplex Drive Belts" on page 6-146).

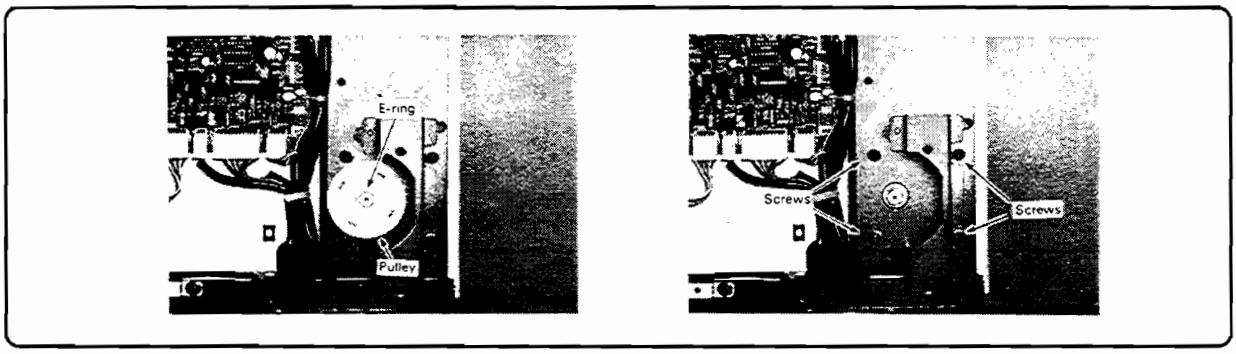


Figure 6-166. Duplex Motor Removal

Duplex Drive Unit (Transmission Assembly)

The drive unit uses gears and clutches to connect the duplexing unit drive motor to various mechanisms. Also included in the drive unit are a spring clutch to raise/lower the weight, a solenoid and a clutch to engage the pick-up rollers.

Removal:

1. Remove the duplex rear cover (refer to page 6-22).
2. Loosen the two screws, move the tension pulley spindle plates 1 and 2, and remove drive belts 1 and 2 (Figure 6-167).
3. Remove the three screws, and remove the rear inner panel (Figure 6-167).

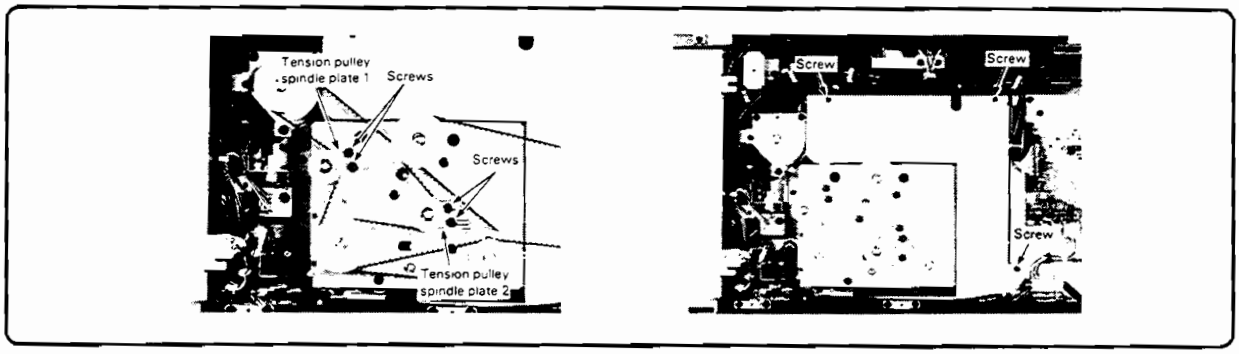


Figure 6-167. Drive Belts and Inner Panel

4. Unplug the connector, remove the four to six screws, and remove the drive unit (Figure 6-168).

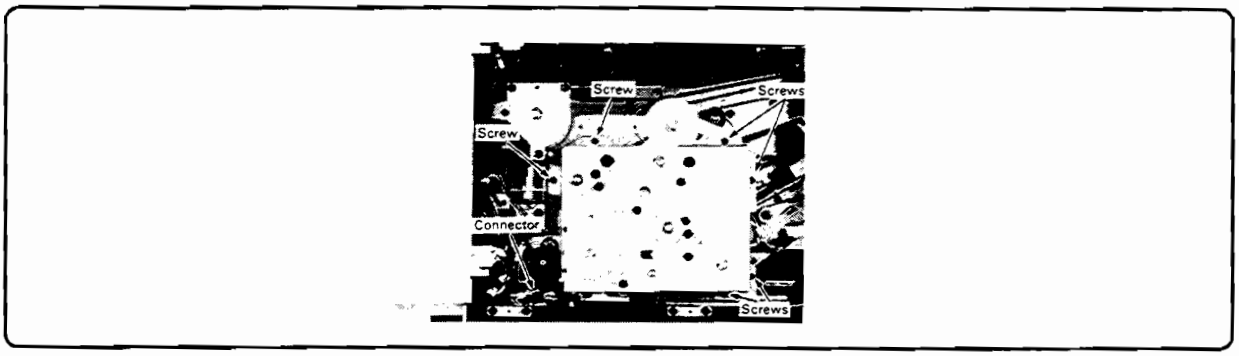


Figure 6-168. Drive Mounting Screws and Connector

Replacement - Duplex Transmission:

Reverse the above. However, if the weight plate is not aligned with the control ring of the weight-operation clutch, print paper on the holding tray may contact the weight plate, resulting in duplex jams. To prevent this problem, use the following procedure to position the weight plate.

1. Open the right and left front doors, and lower the holding tray by swinging the holding tray release lever counter-clockwise.
2. Turn the weight-raising gear slowly until the weight plate rises to its top height of travel (Figure 6-169).
3. Turn the pulley shown in Figure 6-169 clockwise until the projection of the control ring of the weight-control clutch comes against the control arm.
4. With the parts aligned as described, install the drive unit onto the Separation unit.
5. To check the timing of the drive pulley and weight after assembly, turn the pulley clockwise and the weight should raise; turn counter-clockwise and the weight should lower (Figure 6-169).

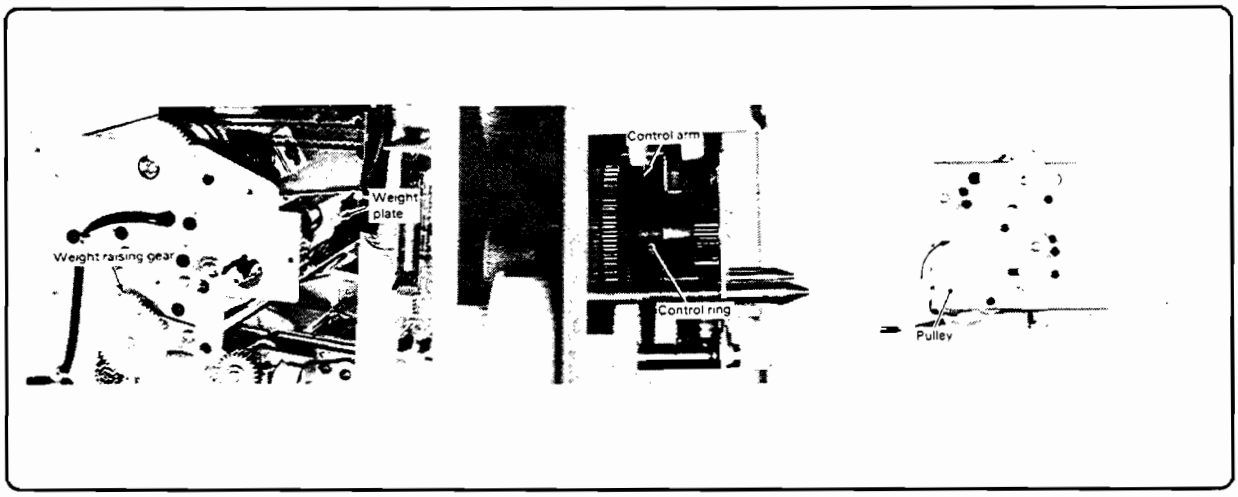


Figure 6-169. Weight Plate Alignment

Adjustments: Refer to the next section for adjustment of the Duplex Drive Belts.

Duplex Drive Belts

Removal: Drive belt #2 must be removed prior to drive belt #1 removal. Remove either belt by first loosening the screw on the tension pulley spindle plate (Figure 6-170).

Replacement: Reverse the above (install belt 1, then belt 2).

Adjustment:

Adjust the position of the tension pulley spindle plates so that the drive belt is deflected 10mm when a force of 500g is applied with a spring scale to the belt at the position shown in Figure 6-170).

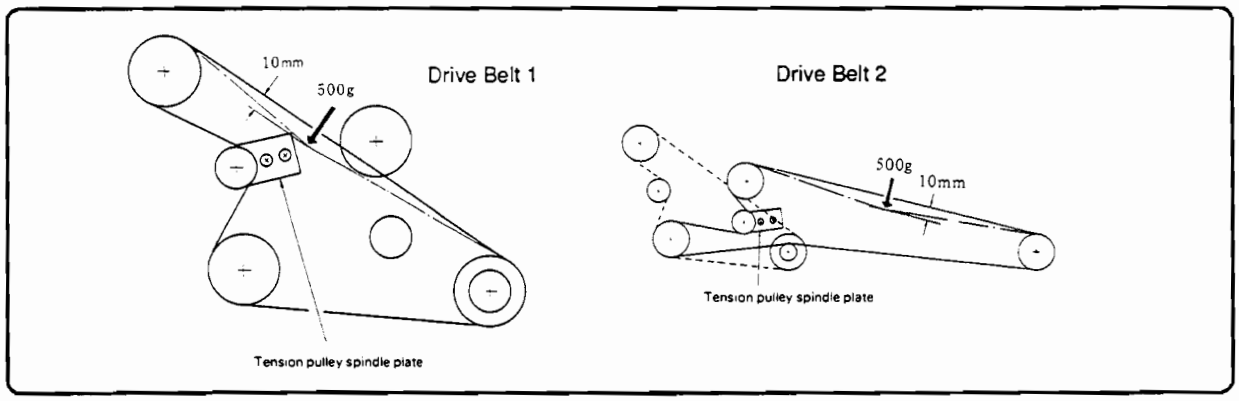


Figure 6-170. Duplex Drive Belts - Routing and Adjustment

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Troubleshooting

Introduction

The first priority for problem troubleshooting the LaserJet 2000 printer is to achieve a **functional display panel.** The display messages will simplify troubleshooting in any other area of the printer. Troubleshooting is further classified into the following categories:

Table 7-1. Removal & Replacement Procedures - General Locations

Note

Some adjustment procedures are located in this chapter and some are located in Chapter 6 "Removal & Replacement." See "Adjustments" on page 7-104 for an explanation.

Caution

Before attempting any troubleshooting, verify that the printer **is not in CE Mode.** When in CE Mode, the display panel will read `00-PRINTER READY` even though there may be error conditions, making troubleshooting impossible.

To verify that the printer is not in CE Mode, open the small I/O area access panel on the right upper end of the printer. Check switch bank S12 on the Formatter PCA. Switch 2 should be OPEN (off). See Chapter 6, Figure 6-25, "Switches S12 and S14" on page 6-25 for exact location.

Formatter switches S12 and S14 are only read on power up. Power OFF then ON to allow the printer to read switches. Verify current mode of switch positions by inspecting page 1 of the self test.

Using the Troubleshooting Tables

A detailed troubleshooting flow process is used in this chapter to help diagnose problems with the LaserJet 2000 printer. When using the troubleshooting tables, **proceed sequentially through each step,** moving down to later steps only when directed there.

For diagnostic purposes, printer problems are divided into five major categories, shown in Figure 7-1, below. An "Adjustments" section contains adjustment procedures that are indicated in response to some specific printer problem. When troubleshooting any printer problem, begin with the chart below and proceed to the page indicated for detailed flows.

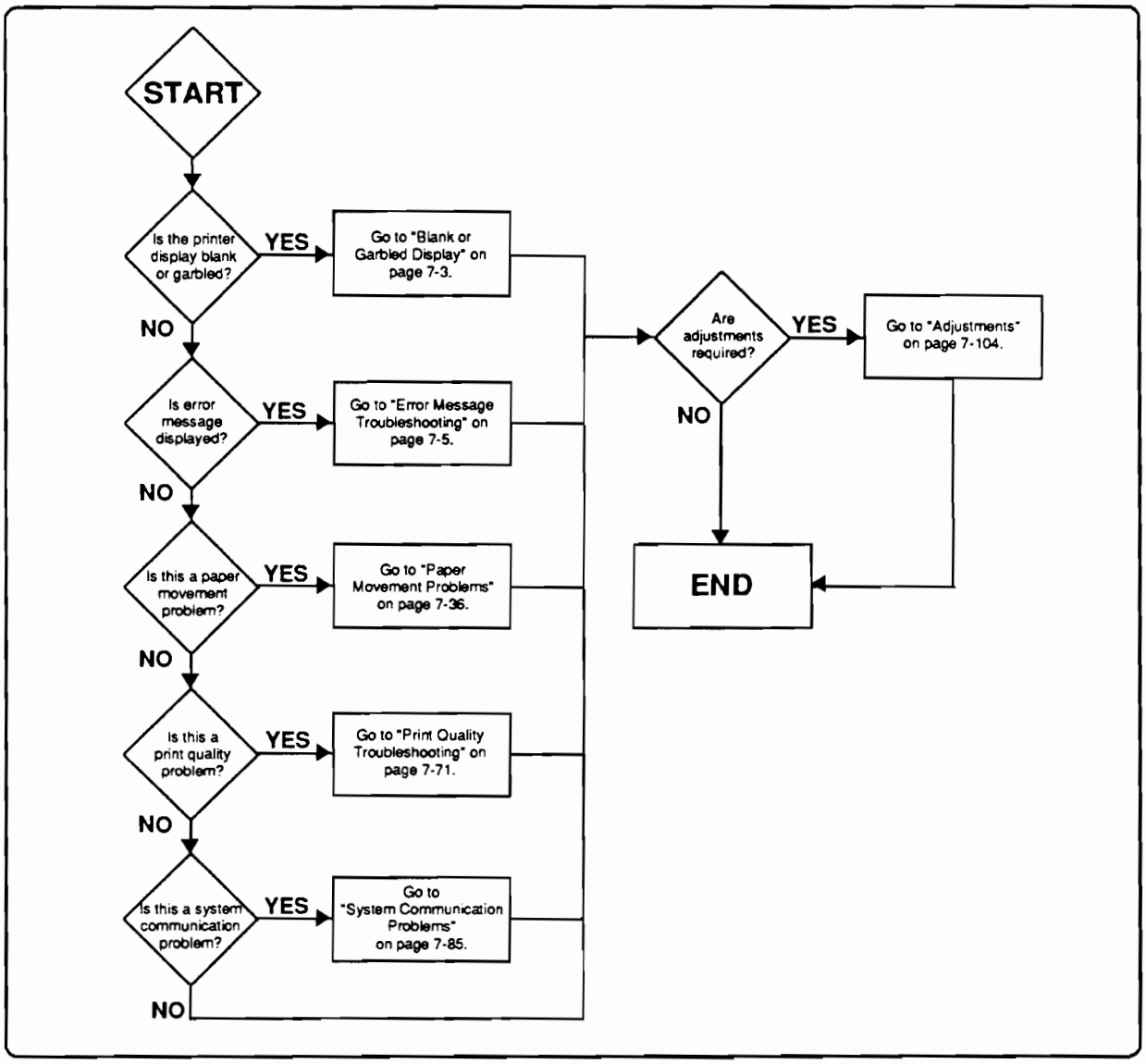


Figure 7-1. LaserJet 2000 Troubleshooting Flow

Blank or Garbled Display

Set up: This troubleshooting procedure assumes that the power cord is connected to an AC source and that the printer's main power switch is ON. The operator's display panel is either **blank** or **garbled.**

Table 7-2. Blank or Garbled Display - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Is exhaust fan Engine-FM3 (located directly above the power input module) operating?	YES	Skip to step 7.
		NO	Go to step 2.
2	Verify there is correct AC voltage at the input power receptacle. Voltage okay?	YES	Go to step 3.
		NO	Inform customer.
3	Check circuit breaker CB1 on input power module. Is breaker tripped?	YES	Reset breaker.
		NO	Go to step 4.
4	Is there AC present on the EP Drum heater slip ring connectors?	YES	Go to step 5.
		NO	Check/replace line filter and connector J4.
5	Is there AC at both sides of the main power switch when ON?	YES	Go to step 6.
		NO	Replace main power switch Engine-SW1.
6	Recheck fan motor Engine-FM3. It should be turning and the printer's panel should now be functional. Problem solved?	YES	End.
		NO	Go to step 7.
7	Open the I/O Access Door at the right end of the printer and check the 5 LEDs on the Formatter PCA. All LEDs ON?	YES	Go to step 8 (next page).
		NO	Skip to step 9 (next page).

Table 7-2. Blank or Garbled Display - Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
8	Open the I/O access door. While watching the display panel, turn the potentiometer VR1 (on the Formatter PCA) clockwise. This adjustment increases the display intensity. Does the display look normal?	YES NO	Problem solved. Go to step 9.
9	Remove the printer's top cover and disconnect J5 from the Formatter PCA. Measure the voltage between TB1-5 and TB1-6 on the Formatter Power Supply. Is the voltage approximately +5VDC?	YES NO	Skip to step 11. Go to step 10.
10	Check TB1-1 and TB1-2. Is AC line voltage present on the Formatter Power supply?	YES NO	If AC is present, and 5VDC is not (step 9), replace the Formatter Power Supply PCA. Reseat connectors and check wiring. Go to step 11.
11	Reconnect J5 on the Formatter PCA. Measure the voltages on TP1 for +5VDC, TP3 for -12VDC, and TP4 for +12VDC. Observe LED DS1 (Formatter PCA, next to SW12). Are all voltages correct **and** LED DS1 ON?	YES NO	Replace 1) the Display PCA and 2) the Formatter PCA. Go to step 12.
12	While checking voltages and watching LED DS1 as in step 12, disconnect the I/O PCA, the E/I PCA, the Display ribbon cable, and any font cartridges. Does voltage or LED comes back?	YES NO	Replace the component disconnected just before voltage returned. If voltage or LED does not come back, replace the Formatter PCA.

Error Message Troubleshooting

Error Message Quick Reference Table

Following is a complete listing of printer display messages, along with an explanation of their meaning and suggested responses. Where possible, the entire remedy is described in this table. If the diagnosis and/or remedy requires more information, a page number is shown in the right hand column.

Note

Before attempting any troubleshooting, verify that the printer **is not in CE Mode.** To check, open the small I/O area access panel on the right upper end of the printer. Check switch bank S12 on the Formatter PCA. Switch 2 should be OFF (open). See Chapter 6, Figure 6-25, "Switches S12 and S14" on page 6-25 for exact location.

Table 7-3. LaserJet 2000 Display Messages

MESSAGE	EXPLANATION/REMEDY	MORE INFO
[size].1 ADD *[size]* UPPER TRAY	User/software request for a paper size that is not present, or printer has depleted all sources of a selected size. *[size]* can be any of the following: L (letter), E (executive memo), LL (legal), LG (ledger), A4, and A3. Add correct size paper to the upper paper tray. Press (RESET) to reset the error message. If message remains, check paper sensor microswitches at upper paper tray.	See Figure 7-2 on page 7-16.
[size].2 ADD *[size]* LOWER TRAY	Same as above but applies to the lower paper tray.	(see above)
[size].3 ADD *[size]* PAPER DECK	Same as above but applies to the high capacity paper deck (PDX). If paper is present and this message remains, verify switches SW1-3 and SW1-4 on the PD/DU Controller PCA are set for the correct size paper (switch setting must match control panel default paper size - either A4 or letter). Refer to page 7-99 for proper switch settings.	None
00-PRINTER READY	Ready to print.	None
02-WARMING UP	Fuser and drum are warming up. If does not change to 00-PRINTER READY in 8 minutes, ensure the printer is not in CE Mode.	None
03-LOSS OF CONFIGURATION	Non-volatile RAM chip failure. Replace U54 on the Formatter PCA.	None
04-CONTINUOUS SELF TEST	(SELF TEST) key has been held down for 5 seconds or more. Printer will continuously generate the self test pattern selected on the front panel. Press (ONLINE) to cancel.	None
05-INTERNAL SELF TEST	Executing the non-printing portion of self test. Message is present for several seconds until message 06-PRINTING SELF TEST appears.	None

Table 7-3. LaserJet 2000 Display Messages (continued)

MESSAGE	EXPLANATION/REMEDY	MORE INFO
06-PRINTING SELF TEST	Executing the printing portion of self test.	None
06-ENGINE TEST PRINT	Results from pressing the "TEST PRINT" button located on the far right end of the control panel (or SW 101 on the DC Controller PCA). Tests the print engine isolated from the Formatter and I/O.	None
07-PRINTER RESET	A control panel reset has been initiated (using (RESET) key). Clears all data from the printer's memory and resets all host system configured settings to those default values previously assigned by means of the (MENU) key.	None
08-PRINTER COLD RESET	A "cold reset" or "cold start" has been initiated in one of two ways: 1)by holding down the (ONLINE) key while turning on the power switch (cold reset) or 2) switch S12-4 set ON (closed) while turning on the power switch (cold start). Resets the printer to factory defaults: paper size=letter/A4, secure source=off, orientation=portrait, form length=60, primary/secondary font=000, attendance bell=on, auto continue=on, job separation=on. In addition the "cold start" (using SW12-4) resets the jam count that is displayed on the CE mode self test. The control panel "cold reset" **does not reset** the jam count.	None
10.1-PRINTER DOOR OPEN	One or more of the print engine doors are open.	Page 7-10
10.2-OUTPUT DOOR OPEN	One or more of the output stacker doors are open.	Page 7-12
10.3-DUPLEX DOOR OPEN	One or more of the duplex area doors are open.	Page 7-13
11.1-ADD PAPER UPPER TRAY	The upper tray, although not currently selected for printing, is out of paper.	Page 7-14
11.2-ADD PAPER LOWER TRAY	The lower tray, although not currently selected for printing, is out of paper.	Page 7-14
11.3-ADD PAPER PAPER DECK	The high capacity paper deck (PDX), although not currently selected for printing, is out of paper.	Page 7-17
13.1 *[2] [3]* - *[LOCATION]* JAM	A jam has occurred within any one of the three areas. Error 13.1-PAPER corresponds to the primary print engine paper path, error 13.2-OUTPUT corresponds to the Stacker/Switchback output path, and error 13.3-DUPLEX corresponds to the duplex paper path. Remove all jammed pages, press (ONLINE) to resume operation. If jams continue, refer to "Paper Movement Problems."	Page 7-36
13.4-CLEAR DUPLEX UNIT	Paper has been detected in the duplex holding tray. Remove paper and close duplex doors to continue.	Page 7-65
14.1-ADD TONER	The developer is out (or nearly out) of toner. Add toner.	Page 7-18
14.2-EMPTY WASTE TONER	Toner disposal box is full (or nearly full). Replace with an empty box.	Page 7-20

Table 7-3. LaserJet 2000 Display Messages (continued)

MESSAGE	EXPLANATION/REMEDY	MORE INFO
15-EMPTY OUTPUT STACKER	The Face Down Stacker is full. Empty stacker.	Page 7-21
20-MEMORY OVERFLOW	Printer ran out of memory while receiving print data. Page image was not completed - possible data loss. Auto-continue mode or (ONLINE) key will cause a form feed and continue. Reduce RAM data (downloaded soft fonts, macros, etc) or add memory kits. Run Self Test to verify all installed memory is present.	See error 72
21-PRINT OVERRUN	Printer could not process the page data in the time allowed. Too complex data for formatter. Page image was not completed - possible data loss. Auto-continue mode or (ONLINE) key will cause a form feed and continue. Simplify the page layout. If error persists replace: 1)E/I PCA then 2)Formatter PCA.	None
22-DATA OVERRUN	Printer could not keep pace with the rate of data transmission. Page image was not completed - possible data loss. Auto-continue mode or (ONLINE) key will cause a form feed and continue. Check the I/O configuration. If error persists replace: 1)I/O PCA then 2)Formatter PCA.	None
25.1-BEAM DETECT ERROR	Beam detect "jitter" (laser scan out of frequency limits). Printer will route all pages currently in paper path to error tray and recover. If error persists, see Error 51 remedy.	Page 7-26
25.2-NO VIDEO HANDSHAKE	A missing VSYNC has been reported by the DC Controller. Printer will route all pages currently in paper path to error tray and recover. Check for AC input power problems. If error persists, replace 1)DC Controller PCA, then 2)E/I PCA.	None
25.3-MISPRINT	Double Feed error. Printer will route all pages currently in paper path to error tray and recover. Possible causes include improper paper loading, mixing paper thicknesses within one print job, out of spec paper (especially paper with perforations causing varying thickness) and misadjusted DFD sensor. If sheets of paper are stuck together, replace the paper with a fresh package. Check for dirt or toner buildup on registration rollers. Check cabling. Check the DFD adjustment as described on page 7-123. If errors persist replace: 1)DFD Sensor (adjust when replacing) then 2)DFD Sensor PCA.	Page 7-123
50-FUSER MALFUNCTION	Fusing system failure. Possible causes include fuser bulb, fuser thermistor (TH1), fuser thermoswitch (TS1), fuser relay (SSR), DC Controller PCA, fuse resistor (R311), and AC power source.	Page 7-22

Table 7-3. LaserJet 2000 Display Messages (continued)

MESSAGE	EXPLANATION/REMEDY	MORE INFO
51-BEAM DETECT MALFUNCTION	Laser beam failure. Possible causes include: 1)beam shutter not open, 2)incorrectly set SW102 on DC Controller PCA, 3)laser power adjustment, 4)Laser Unit failure, 5)Laser Driver PCA, 6)Foldback Mirror adjustment, 7)moisture condensation on Beam Detect Mirror, 8)DC Controller PCA.	Page 7-26
52-SCANNER MALFUNCTION	Scanner Motor malfunction. Possible causes include Scanner Motor, Scanner Driver PCA, DCPS1, DC Controller PCA.	Page 7-28
53-TEMP CIRCUIT MALFUNCTION	Laser temperature control failure. Possible causes include the Laser Unit and Laser Driver PCA.	Page 7-26
54-DRUM MOTOR MALFUNCTION	The EP Drum Drive Motor has malfunctioned. Possible causes include connectors, dirty drum sensor Engine-PS2 or slotted disk, the Drum Motor and the Motor Driver PCA, DCPS1, DC Controller PCA.	Page 7-29
56-MAIN COUNTER MALFUNCTION	The Main Image Counter has malfunctioned. Possible causes include the Counter and the DC Controller PCA.	Page 7-30
57-DUPLEX COUNTER MALFUNCTION	The Duplex Image Counter has malfunctioned. Check the wiring and connection to J408 on the Duplex Driver PCA. If connection is good, replace the Duplex Counter. If error persists replace the Duplex Driver PCA.	None
58-OUTPUT UNIT FAILURE	This message is caused by a communication failure on the print engine serial command/data bus. Possible fail items are Stacker-DCPS1, Stacker Control PCA and cabling.	Page 7-31
59-CASSETTE FAILURE	Possible causes include improperly installed cassette, lamp and/or photosensor failure, DC Controller, Formatter, or E/I PCA. Refer to troubleshooting for Errors 11.1 and 11.2.	Page 7-14
60-PRINTER POWER LINE UNSTABLE	Engine/Formatter communication failed. PPRDY line. Possible causes include faulty connection/cable, disconnected J109 on DC Controller PCA, DC Power Supply (DCPS1), DC Controller and E/I PCA.	Page 7-32
61-ENGINE READY LINE UNSTABLE	Engine/Formatter communication failed. RDY line. Possible causes include faulty connection/cable, disconnected J109 on DC Controller PCA, DC Power Supply (DCPS1), DC Controller and E/I PCA.	Page 7-32
62-PRINTER POWER FAILURE	Power failure on the AC line. Possible causes include faulty connection/cable, disconnected J109 on DC Controller PCA, failing print engine transformer (Engine-T1), DC Controller and E/I PCA.	Page 7-32
63-ENGINE COMMUNICATION FAILURE	E/I PCA lost communication with the print engine. Possible causes include faulty connection/cable, disconnected J109 on DC Controller PCA, failing transformer (Engine-T2), DC Controller PCA, DFD PCA and E/I PCA.	Page 7-32

Table 7-3. LaserJet 2000 Display Messages (continued)

MESSAGE	EXPLANATION/REMEDY	MORE INFO
64-BAD ENGINE INTERRUPT	The E/I PCA has received an interrupt from the print engine without valid status. Cycle power. If error persists replace: 1)DC Controller PCA then 2)E/I PCA.	None
65-I/O FAILURE	The I/O PCA has failed or is not installed. Cycle power. If error persists replace: 1)I/O PCA, and 2)Formatter PCA.	None
66-I/O CONFIG FAILURE	I/O PCA configuration not correct. Verify that the Formatter I/O switches are set correctly (refer to "Configuration" in Chapter 3). Cycle power. If error persists replace: 1)I/O PCA then 2)Formatter PCA.	None
67-PROTOCOL ERROR	I/O PCA protocol incorrect. Verify that the Formatter I/O switches are set correctly (refer to "Configuration" in Chapter 3). Cycle power. If error persists, replace the I/O PCA.	None
68-IMAGE PROCESS MALFUNCTION	Formatter PCA has failed. Cycle power. If error persists replace the Formatter PCA.	None
70-SYSTEM FAULT *[FFFF]*	A firmware failure has been detected. (The error 70-SYSTEM FAULT 02AE signifies that a font cartridge has been removed with power ON.) Cycle power. If error persists replace: 1)Formatter PCA, 2)E/I PCA, 3)Memory PCA.	None
71-ROM CRC ERROR	A ROM checksum error has been detected in the Formatter. Cycle power. If error persists replace the Formatter PCA.	None
72-GLOBAL RAM *[FFFFFFFF FFFF]* (address + data bits)	A RAM error has been detected on the Formatter or Memory PCA. Possible causes include 1) RAM chip failure, 2)Memory PCA and 3)Formatter PCA. Refer to Table 7-20 to identify location of the failed component using the hex address and data bits.	Page 7-34
73-ENGINE I/F *[XXXX]*	An E/I PCA failure has been detected. Cycle power. If error persists replace: 1)E/I PCA then 2)DC Controller PCA.	None
74-LOCAL RAM FAILURE	RAM failure detected at power on. Cycle power. If error persists replace the Formatter PCA.	None
75-INTERRUPT TEST FAILURE	Formatter interrupt mask circuitry failure. Cycle power. If error persists replace the Formatter PCA.	None
76-LOCAL RAM BAD REFRESH	RAM failure detected. Cycle power. If error persists replace the Formatter PCA.	None
77-CONTROL PANEL MALFUNCTION	Error in control line circuitry or in RAM. Cycle power. If error persists replace: 1)Control Panel Assembly, then 2)Formatter PCA.	None
PF (power fail)	Possible causes include AC line problems, E/I PCA, and Transformer Engine-T3.	Page 7-32

Expanded Error Troubleshooting

The tables that follow provide more detailed troubleshooting of selected error messages. Use these tables as you would a conventional **flow chart,** answering each question before moving on as directed.

Error 10.1 - "PRINTER DOOR OPEN"

Set up: Error message `10.1-PRINTER DOOR OPEN` is displayed. All doors and covers are **closed.** Gain access to the DC Controller PCA by removing the right end cover and RFI shield.

Table 7-4. Error 10.1 Will Not Reset - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Is the stacker interlock bracket bent so that it does not engage left front door switch Engine-DS1?	YES	Straighten or replace bracket.
		NO	Go to step 2.
2	Is LED 104 on the DC Controller PCA (top, left corner) ON?	YES	Go to step 3.
		NO	Skip to step 7.
3	Is the developer assembly installed? (supplies +24V at J105-5 and J105-6 on the DC Controller PCA)	YES	Go to step 4.
		NO	Install the assembly and close all printer doors.
4	Is there 24VDC on J124-1 of the DC Controller PCA?	YES	Replace the DC Controller PCA.
		NO	Go to step 5.
5	Check cable connections from J6 on DCPS2 to J124 on DC Controller PCA. Okay?	YES	Replace DCPS2.
		NO	Reseat connectors, replace if necessary.
6	Does error 10.1 persist?	YES	Replace DC Controller PCA.
		NO	Problem solved.
7	Check the right front door switch (Engine-MS3). Okay?	YES	Go to step 8.
		NO	Replace Engine-MS3.
8	Check the rear cover switch (Engine-MS5). Okay?	YES	Go to step 9 (next page).
		NO	Replace Engine-MS5.

Table 7-4. Error 10.1 Will Not Reset - Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
9	Is AC line voltage present at left door switch (Engine-DS1)?	YES	Go to step 10.
		NO	Check wiring and connectors. If good, check for AC input from the main power switch.
10	Does the fuser cleaning towel interlock (on front of fuser, white/black two-wire molex connector and mechanical linkage) interfere with Engine-DS1 (left front door switch) operation?	YES	Repair or replace interlock.
		NO	Go to step 11.
11	Is circuit breaker CB1 on Engine-DCPS2 tripped?	YES	Reset. On Engine-DCPS2, unload supply at connector J5 (HVT3), then at J6 (DC Controller PCA) retrying operation until the breaker does not trip (to identify the bad load). Replace the component disconnected just before breaker stopped tripping. If breaker still trips, replace Engine-DCPS2.
		NO	Go to step 12.
12	Is there 28VAC at input of Engine-DCPS2.	YES	Go to step 13.
		NO	Verify that there is AC output at J312 on the AC Driver PCA. If not, replace the AC Driver PCA.
13	Check for shorted or open loads on J5 and J6 of Engine-DCPS2. Okay?	YES	Go to step 14.
		NO	Replace Engine-DCPS2.
14	Does error 10.1 persist?	YES	Replace Engine-T1.
		NO	Problem solved.

Error 10.2 - "OUTPUT DOOR OPEN"

Set up: Error message `10.2 -OUTPUT DOOR OPEN` is displayed. All doors and covers are **closed.**

Table 7-5. Error 10.2 - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Is the stacker interlock bracket bent so that it does not engage Switchback left rear microswitch Stacker-MS4?	YES	Straighten or replace bracket. Assure that the funnel bracket (interlock guide) is in place (per Service Note 2684-07).
		NO	Go to step 2.
2	Remove connector J56 (on switchback assembly). Measure the resistance between pins 1 & 2. Resistance should be zero ohms with assembly open. Manually close the left rear Switchback Door Switch (Stacker-MS4) and observe that resistance is infinity. Okay?	YES	Go to step 3.
		NO	Check cabling to switch. Replace Switchback Door Switch (Stacker-MS4).
3	Remove connector J104 on Stacker Control PCA. Measure the resistance between pins 1 & 2 at the connector. With the Stacker top cover opened, the reading should be zero. Close the cover and verify the reading is infinity. Okay?	YES	Go to step 4.
		NO	Check cabling to switch. Replace top cover switch (Stacker-MS3).
4	Repeat step 3 using pins J104-3 & J104-4 on the Stacker Control PCA. With the Stacker top cover opened, the reading should be zero. Close the cover and verify the reading is infinity. Okay?	YES	Go to step 5.
		NO	Check cabling to switch. Replace side cover/guide plate switch (Stacker-MS5).
5	Retry printer operation. Is `10.2-OUTPUT DOOR OPEN` message still displayed?	YES	Go to step 6.
		NO	Problem solved.
6	Check cables and mechanical alignments of doors and switches. Retry printer operation. Is `10.2-OUTPUT DOOR OPEN` message still displayed?	YES	Replace Stacker Control PCA.
		NO	Problem solved.

Error 10.3- "DUPLEX DOOR OPEN"

Set up: Error message `10.3 -DUPLEX DOOR OPEN` is displayed. All doors and covers are **closed.**

Table 7-6. Error 10.3 - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Remove the duplex area rear covers. Turn the power switch OFF and ON. On the Duplex Control PCA, measure TP404 (+24VDC) and TP403 (+15VDC) using TP401 as GND. Voltages okay?	YES	Skip to step 5.
		NO	Go to step 2.
2	Check for AC line voltage from the print engine (J105) to the duplex door switch via J106/J421. (J105 is the lower of 2 Molex connectors next to transformer Engine-T1.) Line voltage okay?	YES	Go to step 3.
		NO	Check wiring and connectors. Trace AC input problem backwards to the Formatter Power Supply PCA (see "Blank or Garbled Display" on page 7-3).
3	With the duplex door switch (Duplex-SW1) depressed (duplex doors closed) check for AC line voltage across both sides of the switch. (Duplex-SW1 is located on the **rear** of the printer, in the upper center of duplex area.) Switch okay?	YES	Go to step 4.
		NO	Replace the door switch Duplex-SW1.
4	Check for +24 VDC at J424 on the Duplex-DCPS1. Okay?	YES	Go to step 5.
		NO	Replace Duplex-DCPS1.
5	Retry printer operation. Is `10.3-DUPLEX DOOR OPEN` message still displayed?	YES	Replace the DU Driver PCA. Go to step 6.
		NO	Problem solved.
6	Retry printer operation. Is `10.3-DUPLEX DOOR OPEN` message still displayed?	YES	Replace the PD/DU Control PCA.
		NO	Problem solved.

Error 11.1, 11.2 or 59 "ADD PAPER" or "CASSETTE FAILURE"

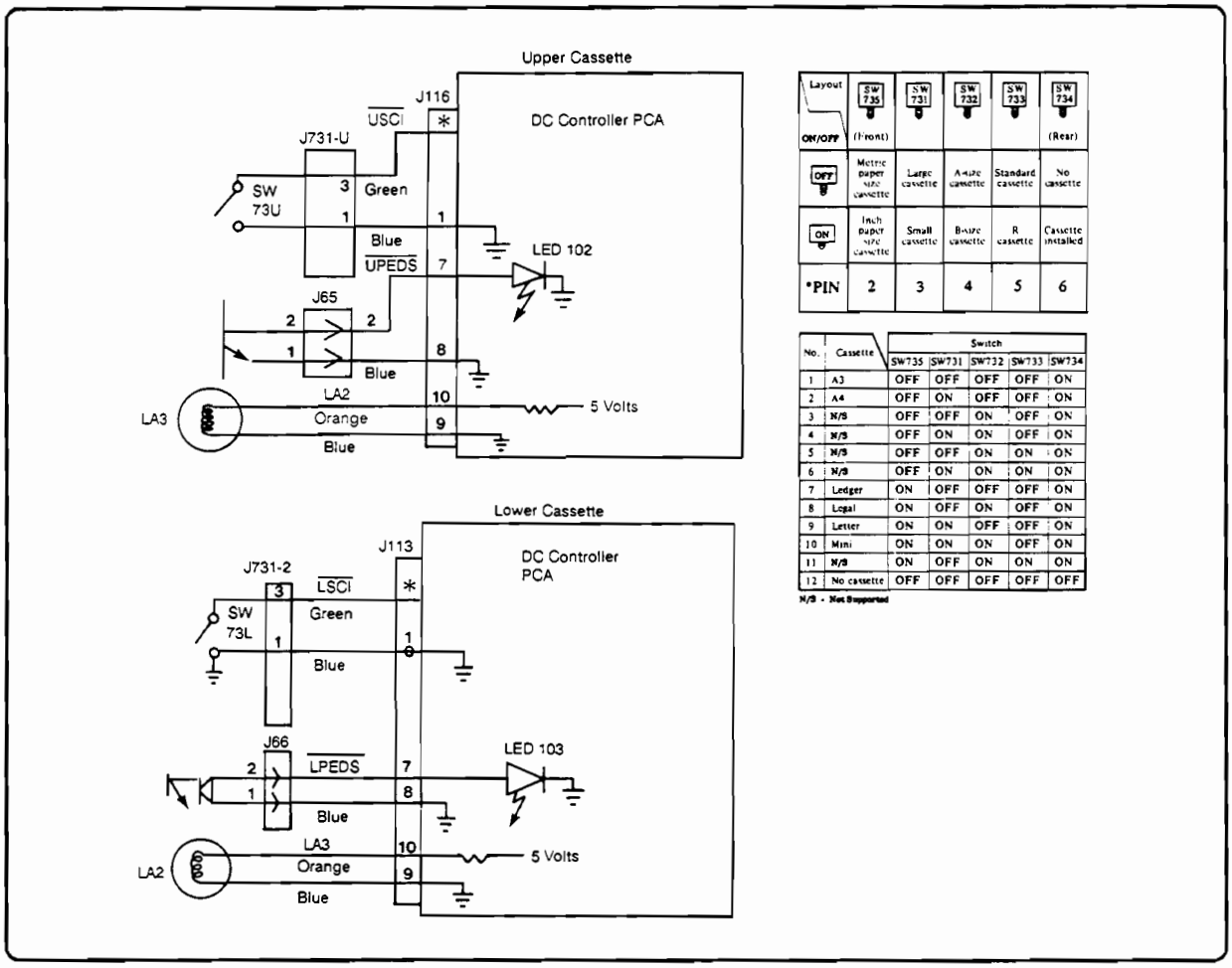
Set up: Error message `11.1 or 11.2 ADD PAPER` or `59-CASSETTE FAILURE` is displayed. Paper is present in the appropriate cassette and the cassette is inserted fully. Gain access to the DC Controller PCA by removing the right end cover and RFI shield.

Table 7-7. Error 11.1 or 11.2 Will Not Reset - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	When power is switched ON, are LED 102 and 103 on the DC Controller PCA ON?	YES	Go to step 2.
		NO	Check cable J109 to the DC Controller PCA from the E/I PCA. If good, skip to step 4.
2	Remove the cassette holder (do not disconnect the wiring) and turn power switch ON. With the digital multimeter (DMM) set to the 20VDC range, connect the (+) probe to J116-6 (for upper cassette) or J113-6 (for lower cassette). Connect the (-) probe to J116-1 (upper cassette) or J113-1 (lower cassette). Depress the cassette detection switch (the rearmost switch). Does the voltage read approximately 4.9V?	YES	Go to step 3.
		NO	Check wiring between J731 on the cassette size PCA and J116 or J113 on the DC Controller PCA. If wiring is okay, replace the cassette switch.
3	With the DMM set to 20VDC, connect the (+) probe to J116-7 (upper cassette) or J113-7 (lower cassette) and the (-) probe to TP102 (GND). Depress the cassette detection switch (rearmost switch). Block the light reading aperture of sensor Q2 (upper) or Q3. Does the voltage reading change from approximately 4.2V to approximately 4.9V?	YES	Go to step 4.
		NO	Check wiring to J116 or J113. Replace photosensor Q2 (upper) or Q3 (lower).
4	Retry printer operation. Is `ADD PAPER` message still displayed?	YES	Replace the DC Controller PCA.
		NO	Problem solved.
5	Retry printer operation. Is `ADD PAPER` message still displayed?	YES	Replace the E/I and/or the Formatter PCA.
		NO	Problem solved.

Table 7-8. Error 11.1 or 11.2 will not come on - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Are the paper detector lamps (LA2, LA3) in the cassette holder unit lit?	YES	Go to step 2.
		NO	Check wiring from the DC Controller PCA to the lamps. If okay, replace the faulty lamp or lamp socket.
2	Insert empty cassettes in the upper and lower cassette holders. When power is ON, are LEDs 102 and 103 on the DC Controller PCA lit?	YES	Skip to step 4.
		NO	Go to step 3.
3	With the DMM set to 20VDC, connect the (+) probe to J116-7 (upper cassette) or J113-7 (lower cassette) and the (-) probe to TP102 (GND). Depress the cassette detection switch (rearmost switch). Block the light reading aperture of sensor Q2 (upper) or Q3. Does the voltage reading change from approximately 4.2V to approximately 4.9V?	YES	Go to step 4.
		NO	Check wiring to J116 or J113. Replace photosensor Q2 (upper) or Q3 (lower).
4	Retry printer operation with no paper in cassette. Is ADD PAPER message now being displayed properly?	YES	Problem solved.
		NO	Replace the DC Controller PCA.
5	Retry printer operation. Is ADD PAPER message now being displayed properly?	YES	Problem solved.
		NO	Replace the E/I and/or the Formatter PCA.



Layout / ON/OFF	SW 735 (Front)	SW 731	SW 732	SW 733	SW 734 (Rear)
OFF	Metric paper size cassette	Large cassette	A-size cassette	Standard cassette	No cassette
ON	Inch paper size cassette	Small cassette	B-size cassette	R cassette	Cassette installed
*PIN	2	3	4	5	6

No.	Cassette	Switch				
		SW735	SW731	SW732	SW733	SW734
1	A3	OFF	OFF	OFF	OFF	ON
2	A4	OFF	ON	OFF	OFF	ON
3	N/S	OFF	OFF	ON	OFF	ON
4	N/S	OFF	ON	ON	OFF	ON
5	N/S	OFF	OFF	ON	ON	ON
6	N/S	OFF	ON	ON	ON	ON
7	Ledger	ON	OFF	OFF	OFF	ON
8	Legal	ON	OFF	ON	OFF	ON
9	Letter	ON	ON	OFF	OFF	ON
10	Mini	ON	ON	ON	OFF	ON
11	N/S	ON	OFF	ON	ON	ON
12	No cassette	OFF	OFF	OFF	OFF	OFF

N/S : Not Supported

Figure 7-2. Upper and Lower Paper Cassette

Error 11.3 "ADD PAPER PAPER DECK"

Set up: Error message `11.3 ADD PAPER PAPER DECK` is displayed. Paper is present in the PDX lifter deck and the PDX door is closed. Gain access to the PDX Control PCA by removing the Plexiglass PDX cover and the panel it mounts on. (PCA is mounted directly beneath the PD/DU PCA and on the PDX Driver PCA.)

Note

If the printer is inadvertently left in CE Mode, the error message `11.3- ADD PAPER PAPER DECK` may be displayed when the fault condition is not related. Before troubleshooting, verify that the printer is not in CE Mode.

Table 7-9. Error 11.3 Will Not Reset - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Check the paper size switches on SW1 of the PD/DU Control PCA. Valid settings are **LETTER:** SW3=1(up) SW4=1(up), **A4:** SW3=0(down) SW4=1(up). Are switches correct?	YES NO	Go to step 2. Set switches correctly. Retry printer operation.
2	With paper loaded, close the PDX door. Elevator should raise paper and stop. Measure back of connector J3 pins 1 & 2 on the PDX Control PCA (pin 1 is GND). Voltage should be approximately 0V (zero volts). Open PDX door and observe that when try drops, voltage should increase to approximately 10V. Are voltages correct?	YES NO	Go to step 3. Check wiring to sensor (PDX-PS1). If wiring okay, replace sensor.
3	Retry printer operation. Is `11.3 ADD PAPER` message still displayed?	YES NO	Replace the PDX Control PCA, then the PD/DU Control PCA. Problem solved.

Error 13.X - Paper Movement Errors

Paper movement problems can cause error the following error messages: `13.1-PAPER JAM`, `13.2-OUTPUT JAM`, `13.3-DUPLEX JAM` AND `13.4-CLEAR DUPLEX UNIT`. These errors are discussed in detail in the section "Paper Movement Problems," beginning on page 7-36.

Error 14.1 - "ADD TONER"

Set up: Error message `14.1-ADD TONER` is displayed. Adequate supply of toner is present in the developer. OR–error *will not come on* when toner is low.

Table 7-10. Error 14.1 Will Not Reset - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Is the problem such that the error `14.1` *does not come on when toner supply is empty?*	YES	Replace 1)Toner Sensor, 2)Developer Assembly, 3)DC Controller PCA.
		NO	Go to step 2.
2	With the digital multimeter (DMM) set to the 20VDC range, connect the (+) probe to J105-1 (+12V) and the (-) probe to J105-3 (0V) on the DC Controller PCA. Press the TEST PRINT button on the display panel. Does the meter read approximately 23.5V?	YES	Go to step 3.
		NO	Check the contact of the connectors on the DC Controller PCA. If okay, replace the DC Controller PCA.
3	Remove the Developer Assembly and agitate the toner supply to check for non-operation of the toner stirring rod. Cycle power and retry printer operation. Does the error 14.1 persist?	YES	Go to step 4 (next page).
		NO	Check the stirring rod drive mechanism. Repair or replace the Developer Assembly if necessary.

Table 7-10. Error 14.1 Will Not Reset - Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
4	On the Developer, remove the rear developer cover to gain access to the toner sensor. Make sure the toner sensor mounting plate is full of toner and reinstall the Developer. Connect the (+) probe of the DMM to J105-2 (TEP) and the (-) probe to TP102 (GND) on the DC Controller PCA. Press the TEST PRINT button on the display panel. Does the meter read approximately 23.5V?	YES	Go to step 5.
		NO	Check the wiring from the DC Controller PCA to the toner sensor (Engine-TS1). If wiring is okay, replace the toner sensor. NOTE: 24V=toner OK. 0V=ADD TONER.
5	Cancel the TONER LOW indication by opening and closing the right front door. Printer will print 100 pages before toner message will display again after opening front door. Connect the (+) probe of the DMM to J105-4 (DVMD) and the (-) probe to TP102 (GND) on the DC Controller PCA. Make 20 continuous prints. Approximately 40 seconds after the drum motor starts to rotate, does the voltage reading change from approximately 24VDC to approximately 1VDC?	YES	Check the wiring and connectors between the toner supply motor (Engine-M3) and the DC Controller PCA. If satisfactory, replace the toner supply motor.
		NO	Replace the DC Controller PCA.

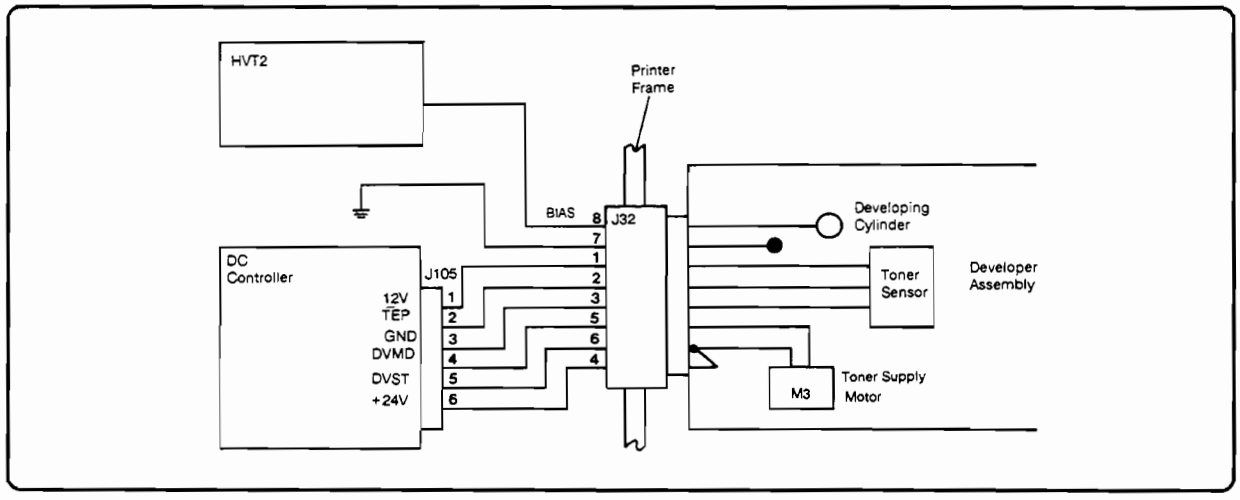


Figure 7-3. Toner Sensor Circuit

Error 14.2 - "EMPTY WASTE TONER"

Set up: Error message `14.2-EMPTY WASTE TONER` is displayed. Waste toner disposal box is empty (or nearly empty). OR–error `14.2` *will not come on* when waste toner box is full.

Table 7-11. Error 14.2 - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Open the left and right front printer doors and insert the acutator tools in the interlocks. Check the waste toner sensor lamp (LA1). Is the lamp clean and lit?	YES	Go to step 2.
		NO	Clean or replace the lamp.
2	With the DMM set to the 20VDC range, connect the (+) probe to TP 113 (TNFS) on the DC Controller PCA and the (-) probe to TP 102 (GND). Is the voltage approximately 2V when the waste toner sensor CdS1 is blocked by hand, and approximately 0V when the lamp illuminates the CdS1 cell fully?	YES	Go to step 3.
		NO	Clean the sensor surface and check the wiring from CdS1 to the DC Controller PCA. If satisfactory, replace CdS1.
3	Retry operation. Does the problem persist?	YES	Replace the DC Controller PCA.
		NO	Problem solved.

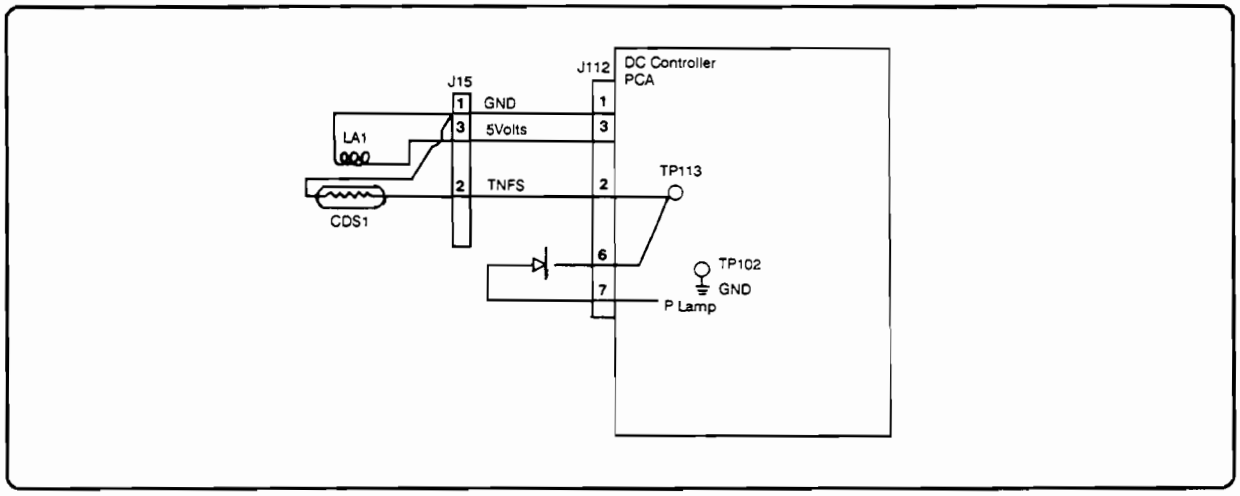


Figure 7-4. Waste Toner Sensor Circuit

Error 15 - "EMPTY OUTPUT STACKER"

Set up: Error message 15-EMPTY OUTPUT STACKER is displayed. No paper is in the Face Down Output Stacker.

Table 7-12. Error 15 - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Remove connector J103 from the Stacker Control PCA. Measure the resistance across J103-8 and J103-9 with the stack empty and raised to its upmost position. The resistance should be 0 ohms. Disengage the Stacker-MS1 switch (small size paper limit switch) manually and assure the reading is infinity. Follow the same procedure using pins 10 & 11 and Stacker-DS2 switch (large size paper limit switch). Are measurements okay?	YES NO	Go to step 2 Replace defective switch(es).
2	With no paper present in the output tray, connect a meter between pins 6 & 7 on J103 of the Stacker Control PCA and observe an approximate zero voltage reading. Manually move sensor flag or place paper into the output tray. The voltage should increase to 5V. Are measurements okay?	YES NO	Go to step 3 Verify cabling to the sensor. If cabling okay, replace the sensor.
3	Retry operation. Is 15-EMPTY OUTPUT STACKER still displayed?	YES NO	Replace the Stacker Control PCA. Problem solved.

Error 50 - "FUSER MALFUNCTION"

Set up: Error message `50-FUSER MALFUNCTION` is displayed. **Power OFF the printer before proceeding.**

Table 7-13. Error 50 - Fuser Malfunction Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	With the printer's power OFF, remove the fuser assembly and measure the resistance between the plug J9-3 and front fuser bulb contact (see Figure 7-7 on page 7-25). Is the resistance 5 ohms or less?	YES NO	Go to step 2 Replace the fuser bulb. Reinstall the fuser assembly and cables and skip to step 7.
2	Measure the resistance between J9-5 and the front fuser contact (see Figure 7-7 on page 7-25). Is resistance 5 ohms or less?	YES NO	Inspect for bad cables and bad or loose fuser bulb contacts. Reinstall the fuser assembly and go to step 3. Replace the thermoswitch TS1. Reinstall the fuser assembly and cables, and skip to step 7.
3	1. With the printer's power OFF, reset the error message by connecting a jumper between JC101-1 and JC101-6 on the DC Controller PCA for about five seconds. 2. With the DMM set to 20VDC, connect the (+) probe to J103-5 (URTEMP) and the (-) probe to J103-6 (GND) on the DC Controller PCA. 3. Power ON the printer and quickly record the voltage reading. After 1 or 2 minutes, record the voltage reading again. (See Figure 7-6 on page 7-24.) Was the second voltage reading less than the initial reading?	YES NO	Go to step 4 Check all cabling between the Fuser assembly and the DC Controller PCA. If okay, replace the thermistor TH1 on the Fuser assembly. Skip to step 7.
4	Power OFF the printer and remove J9 near the rear of the fuser assembly. Measure the resistance between J9-3 and J9-5 on the plug end (fuser lamp assembly cable - see Figure 7-7 on page 7-25). Is the resistance greater than 5 ohms?	YES NO	Skip to step 6. Go to step 5.

Table 7-13. Error 50 - Fuser Malfunction Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
5	Power OFF the printer and measure the resistance between J314-1 and J314-3 on the AC Driver PCA (see Figure 7-8 on page 7-25). Is the resistance greater than 5 ohms?	YES	Replace the AC Driver PCA. Skip to step 7.
		NO	Replace the Solid State Relay on the stacker frame (relay is shorted). Skip to step 7.
6	With the digital multimeter (DMM) set to the 20VDC range, measure the voltage between J301-1 and J301-4 on the AC Driver PCA just after power is applied to the printer (all cover interlocks closed - see Figure 7-8, page 7-25). Does the voltage read approximately 4.7VDC?	YES	Go to step 7.
		NO	Check cabling between the J301 on the AC Driver PCA and J128 on the DC Controller PCA. If okay, replace the DC Controller PCA. Skip to step 8.
7	Power OFF the printer. Remove R311 (47 ohm resistor) and measure the resistance (see Figure 7-8, page 7-25). Is the resistance 47 ± 5 ohms?	YES	Go to step 8.
		NO	Replace the defective resistor R311. Go to step 8.
8	With the printer's power OFF, reset the error message by connecting a jumper between JC101-1 and JC101-6 on the DC Controller PCA for about five seconds. Remove the jumper, verify fuser cable connectors are plugged in and power ON the printer (NOTE: Be sure printer is not in CE Mode or errors will not be displayed.) Is the error 50 - FUSER MALFUNCTION still displayed?	YES	The AC input power source is suspect. Refer to "Printer Power Problems" on page 7-32.
		NO	Problem solved.

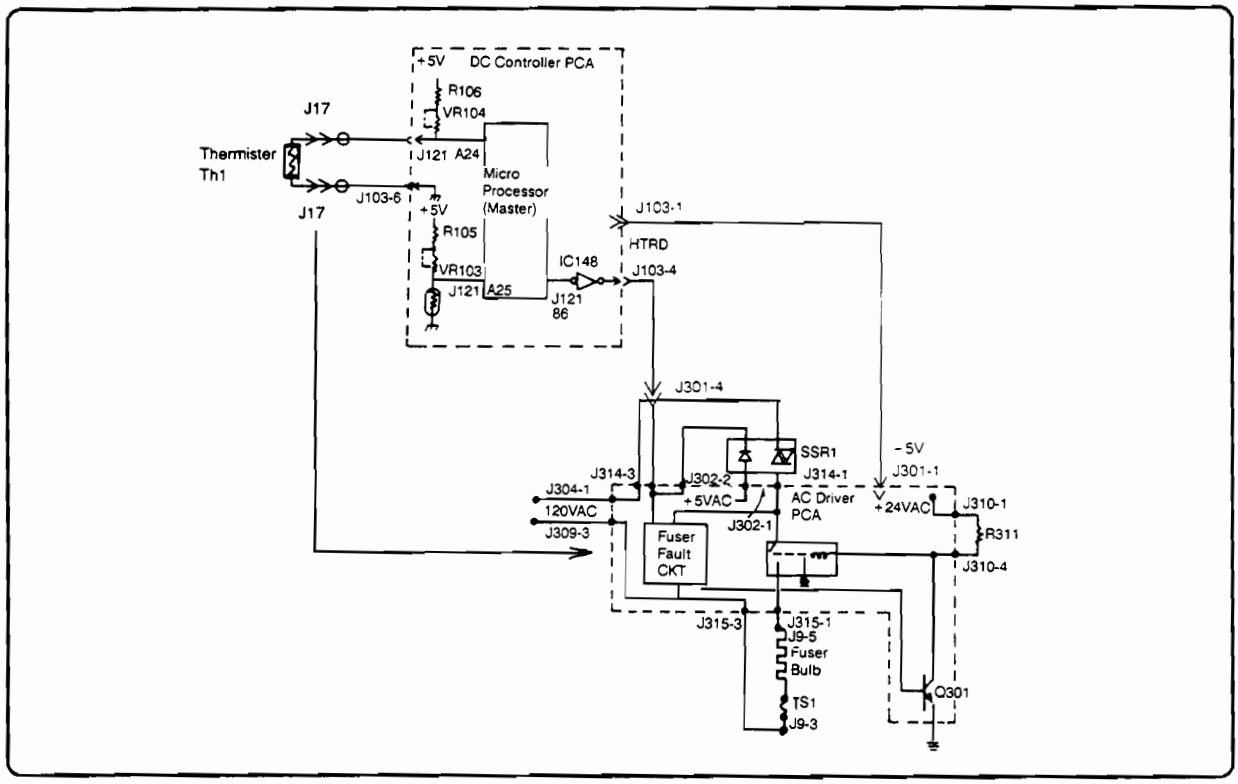


Figure 7-5. Fuser Section

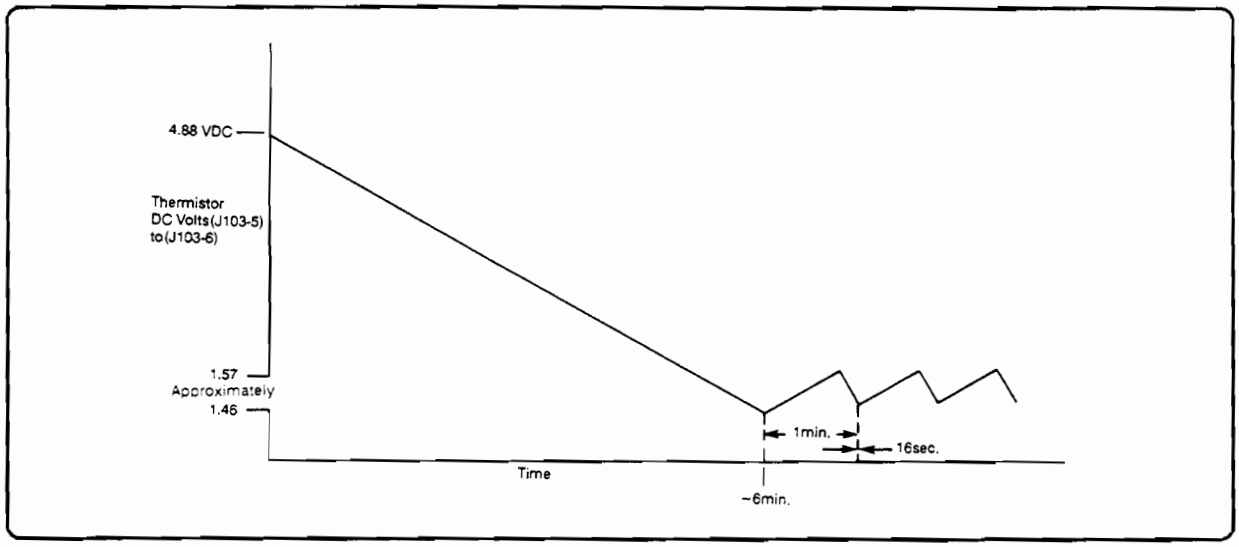


Figure 7-6. Thermistor Voltage at J103-5&6 on DC Controller PCA

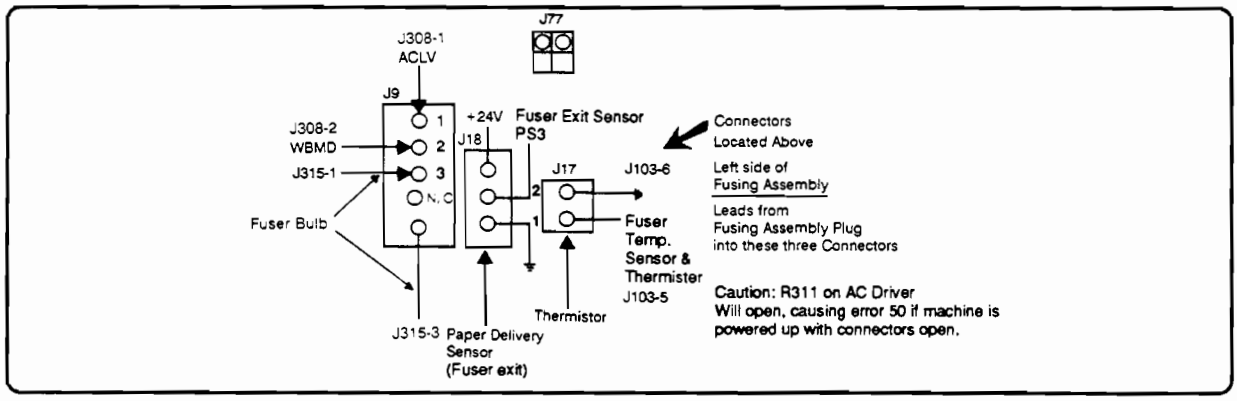


Figure 7-7. Fusing System Connectors

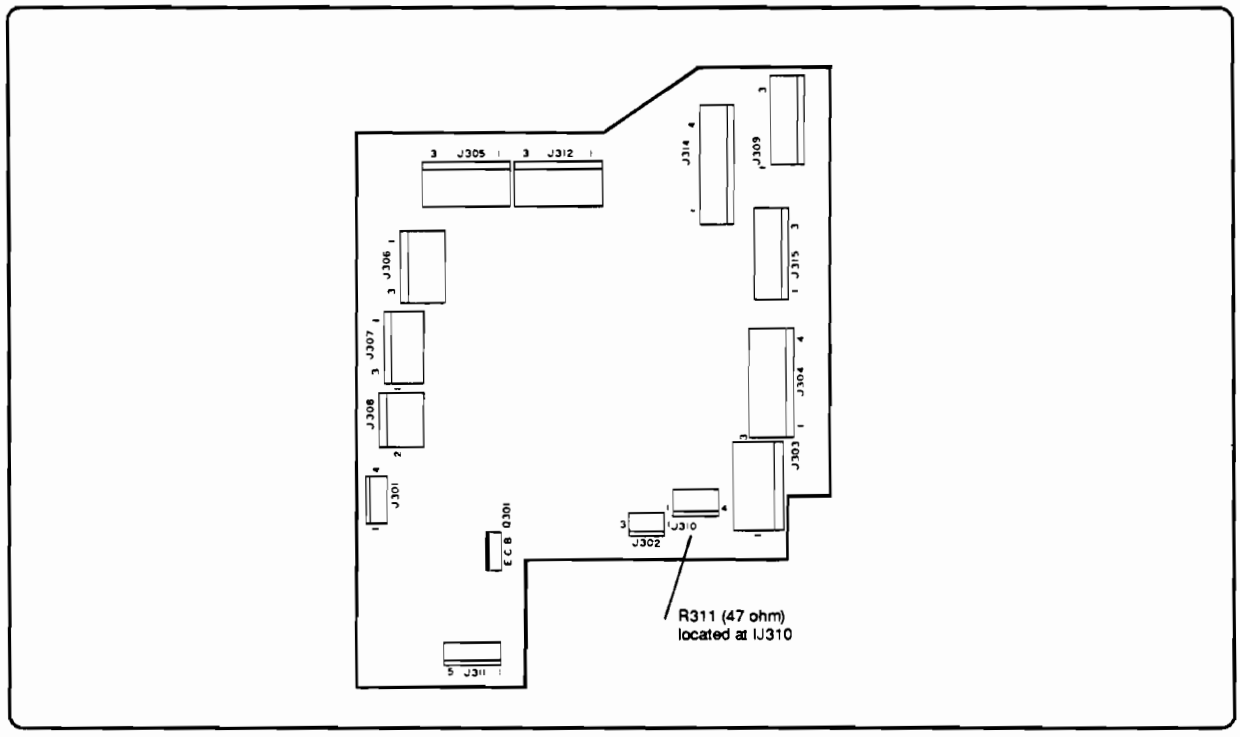


Figure 7-8. AC Driver PCA

Error 51 or 53 - "BEAM DETECT" or "TEMP CIRCUIT MALFUNCTION"

Set up: Error message `51-BEAM DETECT MALFUNCTION` or `53-TEMP CIRCUIT MALFUNCTION` is displayed.

Either of these error conditions can be indicative of a laser power problem. Laser power is the most important element in the formation of a good solid character image. Thus print quality is directly effected by the level or intensity of the laser beam. The spot size and concentricity create a character image with the proper amount of overlap to fill in the gaps in the solid areas and lines.

This flow chart should be used for troubleshooting the laser/optics system.

Note Laser Shutter must be interlocked whenever front doors are opened.

Table 7-14. Error 51 or 53 - Beam Detect or Temp Circuit Malfunction

Step	Check	Result	Instruction/measure
1	Which error is displayed (51 or 53)?	Error 51 Error 53	Go to step 2. Go to step 3.
2	Has the printer just been installed or moved after having been in a cold environment?	YES NO	The problem is probably due to condensation buildup on the beam detect mirror. Wait 30-60 minutes for the printer to warm up and try again. Go to step 3.
3	Does LED 901 on the Laser Driver PCA light within 40 seconds after power is turned ON?	YES NO	Check SW102 on the DC Controller PCA for position 3 OFF and 4 ON. Check JC901 on the Laser Driver PCA - a jumper should be installed in position "C." If both okay, go to step 4. Skip to step 5.
4	Verify that the Laser power is set correctly (perform the "Laser Power Coarse Adjustment," Chapter 6, page 6-48 and the "Drum Potentials Adjustment," this chapter, page 7-112). Is Laser power okay?	YES NO	Skip to step 6 (next page). Adjust and retry operation.

Step	Check	Result	Instruction/measure
5	Set the digital multimeter (DMM) to the 2VDC range. On the Laser Driver PCA, connect the (+) probe to TP901 and the (-) probe to TP902 (GND). When the power is switched ON, does the reading change slowly to between 1.5 and 1.8V?	YES	Replace the Laser Driver PCA and adjust the power level (see page 6-48).
		NO	Replace the Laser Unit and adjust the power level (see page 6-48).
6	Set the DMM to the 20VDC range. On the DC Controller PCA, connect the (+) probe to J107-1 (LSRON) and the (-) probe to TP102 (GND). Turn the power switch ON. Observe the DMM while turning On switch DSW941-2 on the DC Controller PCA. Does the reading change from approximately 0.2V to approximately 3.5V when the switch is operated?	YES	Perform the Foldback Mirror Adjustment, as described on page 7-125. Retry printer operation. If error persists, replace the Laser Driver PCA, then the Laser Unit.
		NO	Replace the DC Controller PCA.

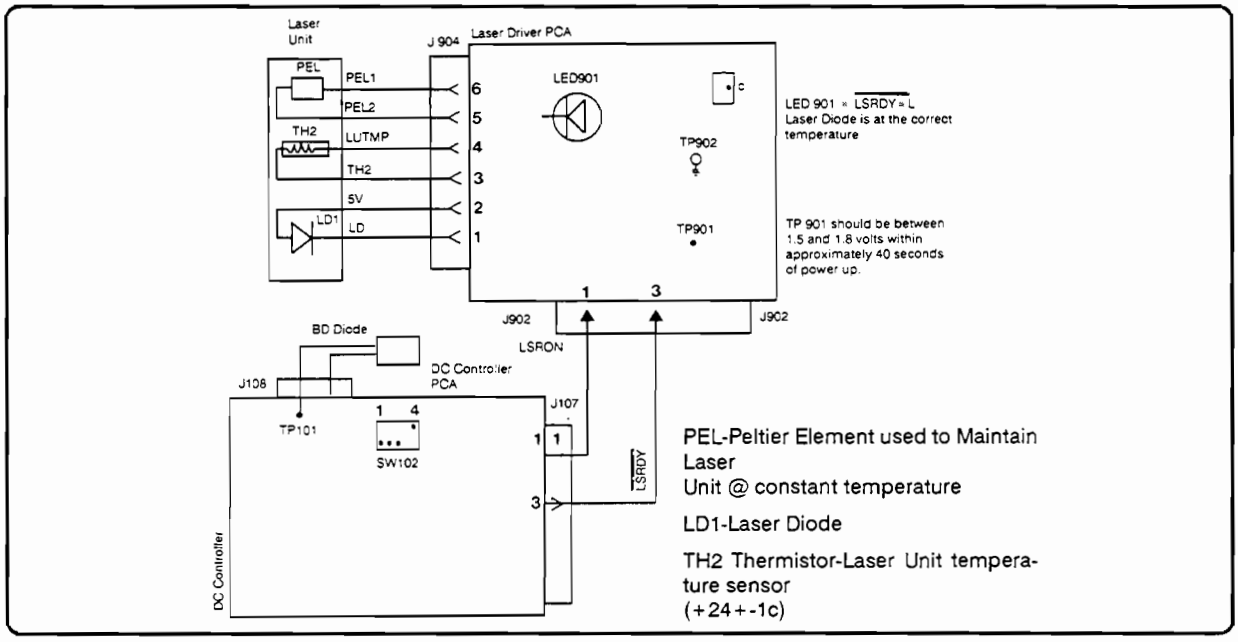


Figure 7-9. Laser & Temperature Control Circuit

Error 52 - "SCANNER MALFUNCTION"

Set up: Error message `52-SCANNER MALFUNCTION` is displayed.

Table 7-15. Error 52 - Scanner Malfunction

Step	Check	Result	Instruction/measure
1	Check LED 201 on the Scanner Driver PCA. Does the LED light within 40 seconds after the power is switched ON?	YES	Check the wires and connectors between the Scanner Driver and DC Controller PCAs. If the scan lines "jitter," replace the Scanner Motor and/or Scanner Driver PCA. If the scan lines are normal, replace the DC Controller PCA.
		NO	Go to step 2.
2	Set the digital multimeter to the 20VDC range. Connect the (+) probe to J107-8 (SCNON) and the negative probe to TP102 (GND) on the DC Controller PCA. When the power is switched ON is the reading approximately 0V?	YES	Check the wiring and connectors between the Scanner Driver PCA and the Scanner Motor. If wiring okay, replace the Scanner Motor or Scanner Driver PCA.
		NO	Replace the DC Controller PCA.

Note

Engine-DCPS1 LED1 should come ON on DCPS1 as soon as the power switch is turned ON, regardless of the condition of door interlocks. Engine-DCPS1 immediately supplies +24V to the Scanner Driver PCA.

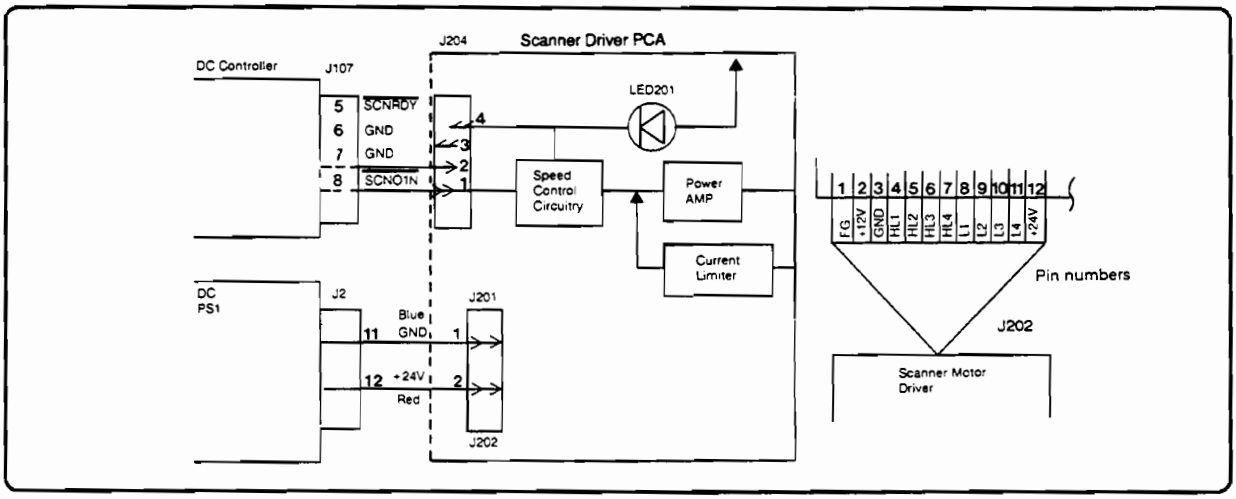


Figure 7-10. Scanner Motor Circuitry

Error 54 - "DRUM MOTOR MALFUNCTION"

Set up: Error message 54-DRUM MOTOR MALFUNCTION is displayed. (This section can also be used to troubleshoot paper jams due to drum motor speed problems.)

Table 7-16. Error 54 - Drum Motor Malfunction

Step	Check	Result	Instruction/measure
1	With the printer's back cover removed, press the TEST PRINT button and watch the drive chains. Does the Main Motor try to rotate?	YES	Go to step 2.
		NO	Go to "Main Motor Rotation Problems", page 7-70.
2	Does the drum rotate when TEST PRINT button is pressed?	YES	Go to step 3.
		NO	Skip to step 4.
3	Does LED1 on the Motor Driver PCA light when Drum Motor is rotating?	YES	Drum Motor is okay. Check the drive system for wear.
		NO	Skip to step 7.
4	Reset error 54 by powering the printer OFF then ON. Press the TEST PRINT button on the display panel. Does LED3 on the Motor Driver PCA light when the Drum Motor is supposed to start rotating?	YES	Check if the EP Drum is jammed. Replace any defective parts. If not jammed, skip to step 6.
		NO	Go to step 5.
5	Check Drum sensor Engine-PS2: With the back cover off and rear safety interlock **open,** connect a digital multimeter to TP108 (+) and TP102 (-) on the DC Controller PCA. Turn the gear of the EP Drum slightly by hand. Does the voltage reading change from approximately 4.9V to 0V (or 0V to 4.9V)?	YES	Go to step 6.
		NO	Check the Drum Clock Pulse Generator (Engine-PS2). If it is dirty, clean it, if not, replace it.
6	Set the DMM to the 200VDC range. Connect the (+) probe to J401-3 and the (-) probe to J401-1 on the Motor Driver PCA. Does the meter read +24V?	YES	Go to step 7.
		NO	Check the wiring from J401 to door switch Engine-MS3 and the rear interlock Engine-MS5.
7	Reset error 54 by powering the printer OFF then ON. Set the DMM to the 20VDC range. Connect the (+) probe to J403-2 and the (-) probe to J403-1 on the Motor Driver PCA. Press the TEST PRINT button on the display panel. Does the meter read approximately 14V?	YES	Replace the Drum Motor.
		NO	Go to step 8.
8	Reset error 54 by powering the printer OFF then ON. Set the DMM to the 20VDC range. Connect the (+) probe to J402-1 and the (-) probe to J402-3 on the Motor Driver PCA. Press the TEST PRINT button on the display panel. Does the meter reading change from approximately 2.5V to 0V?	YES	Check the wiring and connectors to Drum Motor. If okay, replace the Motor Driver PCA.
		NO	Check connector J104 on the DC Controller PCA. If connector is okay, replace the DC Controller PCA.

Error 56 - "MAIN COUNTER MALFUNCTION"

Set up: Error message `56-MAIN COUNTER MALFUNCTION` is displayed.

Table 7-17. Error 56 - Main Counter Malfunction

Step	Check	Result	Instruction/measure
1	Reset error 56 by powering the printer OFF then ON. Set the DMM to the 20VDC range. Connect the (+) probe to J114-1 and the (-) probe to J114-2 (total counter) on the DC Controller PCA. Press the TEST PRINT button on the display panel. Does the meter reading change at about the same time that the pick-up rollers start to rotate?	YES NO	Replace the main image counter. Replace the DC Controller PCA.

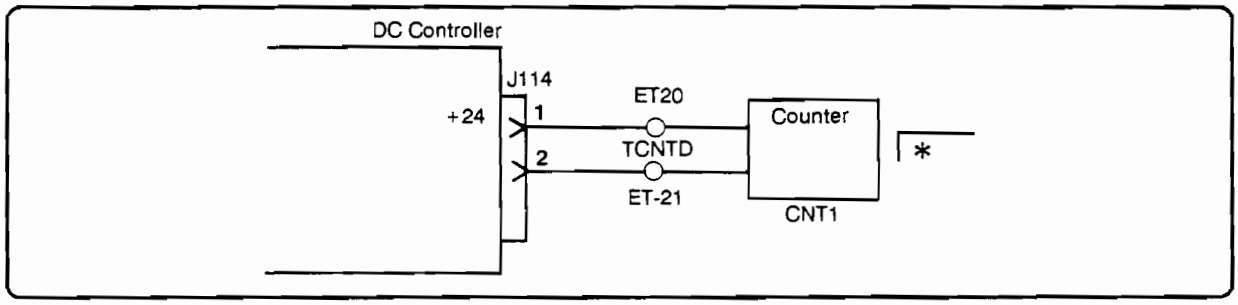


Figure 7-11. Main Image Counter Circuit

Error 58 - "OUTPUT UNIT FAILURE"

This message is caused by a communication failure between the DC Controller and Stacker Control PCAs.

Set up: Error message `58-OUTPUT UNIT FAILURE` is displayed. OR–error `58` *will not come on* (no message on display, but Stacker does not function or lifter tray lowers continuously).

Table 7-18. Error 58 - Output Unit Failure

Step	Check	Result	Instruction/measure
1	Is Stacker malfunctioning with **no error displayed?**	YES	Skip to step 4.
		NO	Go to step 2.
2	Check LED1 on the Stacker Control PCA (see Figure 7-34 on page 7-102). Is LED1 lit?	YES	Skip to step 6.
		NO	Go to step 3.
3	On the rear of the stacker, measure the line filter pins 1 & 2 for line voltage. Is proper line voltage present?	YES	Go to step 4.
		NO	Verify the cabling between Engine-TB2 and the stacker power supply. If cabling okay, replace the line filter.
4	Measure the voltage between pins J2-2 and J2-3 on the Stacker-DCPS1. Does the voltage read 24 ±1VDC? (NOTE: Lower than 23VDC can cause stacker malfunctions.)	YES	Go to step 5.
		NO	Check for a blown fuse on Stacker-DCPS1. If okay, replace Stacker-DCPS1.
5	Measure the voltage between pins J101-2 and J101-3 on the Stacker Control PCA. Does the voltage read 24 ±1VDC? (NOTE: Lower than 23VDC can cause stacker malfunctions.)	YES	Go to step 6
		NO	Verify the cabling between the Stacker Control PCA and Stacker-DCPS1. If cabling okay, go to step 6.
6	On the Stacker Control PCA, use TP101 as GND and measure the voltage at TP102 (for +5VDC) and TP103 (for +24VDC). Are both voltages correct?	YES	No problem indicated. Restart printer operations. If error persists, replace: 1)Stacker Control PCA then 2)Stacker-DCPS1.
		NO	Check cabling and connections. If okay, replace the Stacker Control PCA.

Error 60, 61, 62, 63 or PF - Printer Power Problems

Set up: Error message 60-PRINTER POWER LINE UNSTABLE, 61-ENGINE READY LINE UNSTABLE, 62-PRINTER POWER FAILURE, 63-ENGINE COMMUNICATION FAILURE or PF - POWER FAIL is displayed. The AC line cord is connected and power switch is ON. Both front doors, switchback assembly and rear cover are closed.

Table 7-19. Error 60, 61, 62, 63 and PF - Printer Power Problems

Step	Check	Result	Instruction/measure
1	Are LEDs 101, 105 and 106 on the DC Controller PCA all ON? (see Figure 7-20, page 7-89)	YES	Check cabling from J109 on the DC Controller PCA to J1 on the E/I PCA. If cabling okay, go to step 2.
		NO	Go to step 4.
2	Check for 15VAC across J902-1 and J902-3 on the Double Feed Detect PCA. 15VAC present?	YES	Replace the Double Feed Detect PCA.
		NO	Go to step 3.
3	Check input/output AC to Engine-T2. Okay?	YES	Go to step 4.
		NO	Replace Engine-T2.
4	Is LED1 on the Engine-DCPS1 ON?	YES	Check cabling between J101 on the DC Controller PCA and J2 & J3 of Engine-DCPS1. If cabling all good, replace the DC Controller PCA and retry operation.
		NO	Go to step 5.
5	With J2 and J3 of Engine-DCPS1 disconnected, does LED1 come ON?	YES	Locate the defective load: ■ Slave CPU PCA ■ Scanner Driver PCA ■ Laser Driver PCA ■ Motor Driver PCA ■ Engine-FM7 ■ DC Controller PCA If a defective assembly is found, replace and retry operation. If no defective assembly found, go to step 6.
		NO	Go to step 6.
6	Check AC input to J1 on Engine-DCPS1. AC input okay?	YES	Replace Engine-DCPS1
		NO	Locate AC input problem (refer to "Blank or Garbled Display" troubleshooting, on page 7-3).

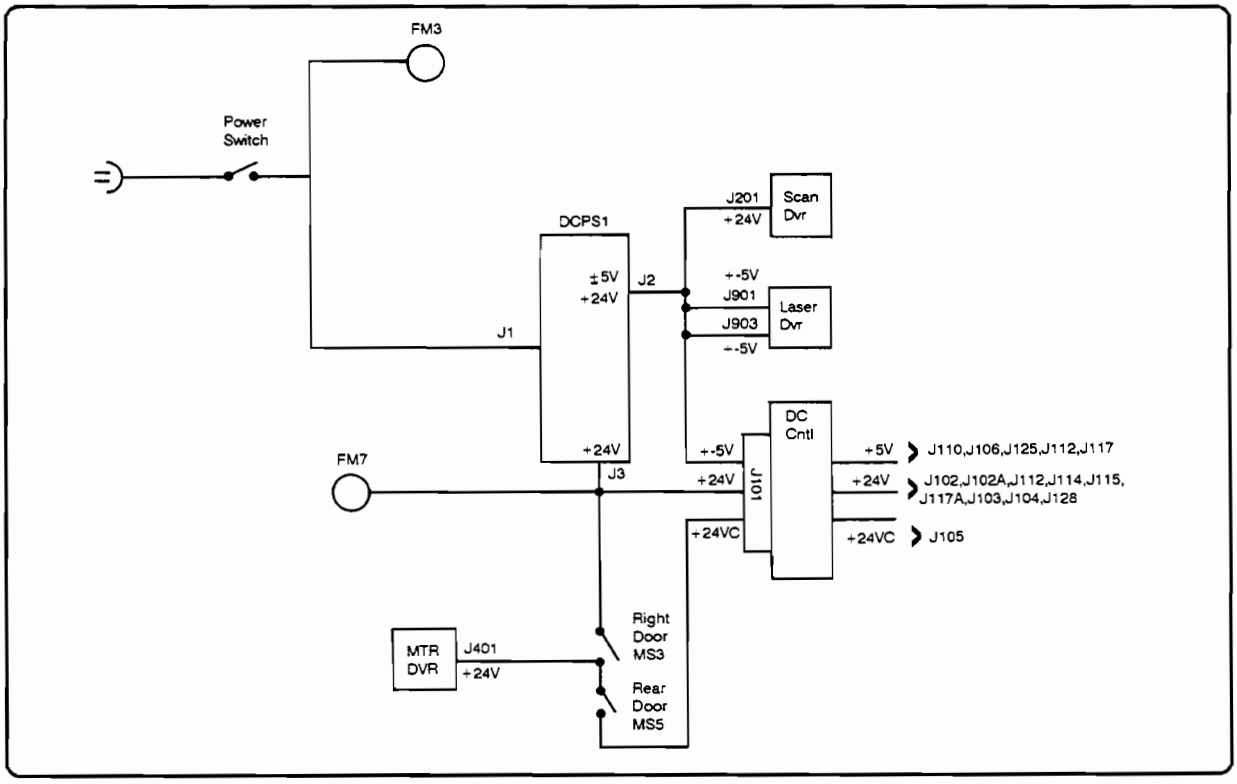


Figure 7-12. Engine-DCPS1 Schematic

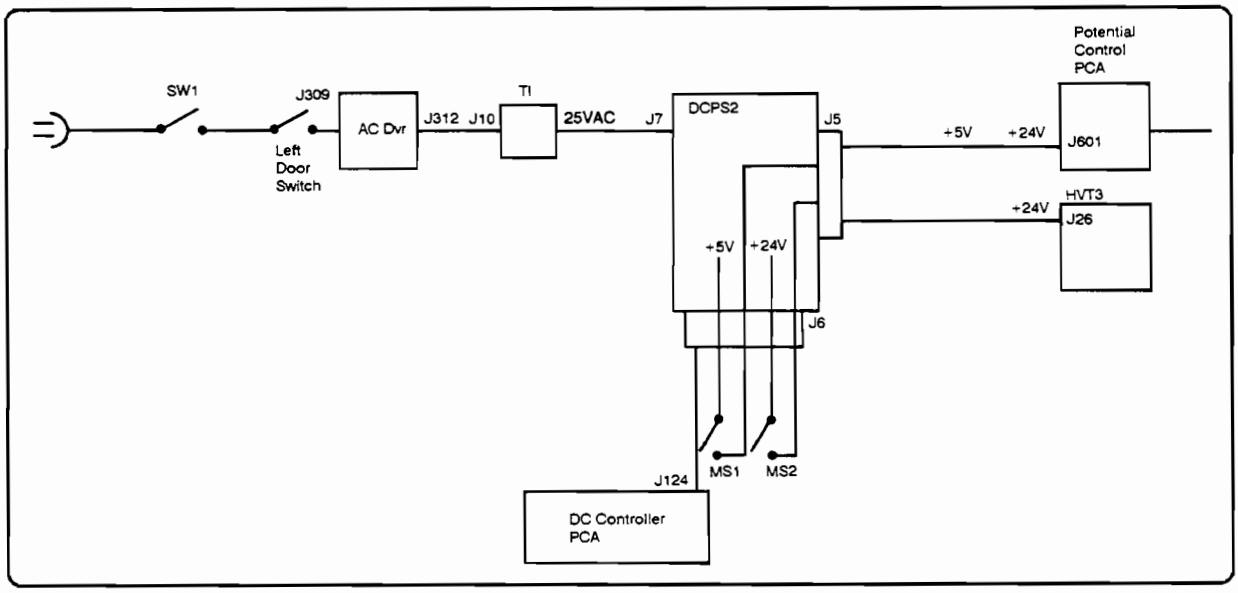


Figure 7-13. Engine-DCPS2 Schematic

Error 72 - "GLOBAL RAM"

Table 7-20 helps to identify the location of a failed memory or PAL chip.

Table 7-20. Memory Chip ID Chart

ADDRESS (RANGE)	HEX 4	HEX 3	HEX 2	HEX 1	PAL	TOTAL MEMORY
A00000--A7FFFE	U23	U36	U52	U64	U78	5632 Kbyte
A80000--AFFFFE	U22	U32	U51	U58	U78	5632 Kbyte
B00000--B7FFFE	U21	U34	U37	U63	U77	4608 Kbyte
B80000--BFFFFE	U11	U31	U41	U61	U77	4608 Kbyte
C00000--C7FFFE	U12	U35	U42	U62	U67	3584 Kbyte
C80000--CFFFFE	U13	U33	U43	U53	U67	3584 Kbyte
D00000--D7FFFE	U14	U24	U44	U54	U66	2560 Kbyte
D80000--DFFFFE	U15	U25	U45	U55	U66	2560 Kbyte
E00000--E7FFFE*	U16	U26	U46	U56	U65	1536 Kbyte*
E80000--EFFFFE*	U17	U27	U47	U57	U65	1536 Kbyte*

*=factory installed memory

Note

To ensure accurate error display information ALL memory ICs must be installed in their designated locations.

The Formatter PCA has 500Kbyte of factory installed memory. If an address is less than AOOOOO, replace the Formatter PCA.

Using the Memory Chip ID Chart. For example, if the display reads as follows:

```
72 - GLOBAL RAM
00BE97AC   0400
```

In the above example, the first six digits (00BE97AC) indicate the **address** of the suspect component. This is used in the leftmost column of Table 7-20. The second set of digits (0400) are the **hex data** which are used in the second through fifth column in Table 7-20.

Address BE97AC is in the address range from B80000 to BFFFFE. Find the row corresponding to this address range.

Next, look at the hex data bits (second set of 4 digits) shown on the display. In the example above these are 0400. Any non-zero digit in the hex data indicates a suspect part. The columns of the hex data are numbered from right to left (4321). In the above example, the "4" is the only non-zero digit, and it is in the "HEX 3" space. This corresponds to the column "HEX 3" on Table 7-20. The intersection of the row and column indicate that U31 is probably bad. Check that the part is properly installed before replacing it.

If all four of the HEX data digits are non-zero then the PAL corresponding to the address range may be bad. Inspect and/or replace it.

Failed PAL Chips. The processor starts at the top of memory and works downward when checking to see how much memory is installed. Thus if the bad PAL is the one at the bottom of the address space then the processor will not report a failure but will instead give a self test print out value that is one megabyte less than it is supposed to be. For this reason, you should run a self test after installing the memory to verify that the installed memory value corresponds to the number of kits installed. If it is less, check the PAL.

For example: There are four memory kits installed (the factory installed kit plus three expansion kits) so the self test should indicate 4608 Kbytes of installed memory. But instead the self test indicates 3584 Kbytes are installed, which is one megabyte less than actual, so PAL U77 should be checked since this is the PAL corresponding to the last kit installed.

Paper Movement Problems

It is extremely important when diagnosing paper movement problems, especially paper jams, to ensure the following are implemented:

- **Customer education** in importance of using good quality paper, in proper response to paper movement problems, and in use of a historical log.
- **Obtain maximum information** from the customer relative to paper use and problems. This can be gathered by telephone and on-site.

If the above is applied consistently, fault diagnosis will be made much easier.

Note

Before meaningful paper movement history can be obtained, the printer must be configured with CE Mode and Auto-Continue OFF.

Customer Education

The objective of customer education is to:

- Provide useful knowledge of proper paper handling, appropriate media, etc.
- Reduce the number of unnecessary service calls.
- Designate a customer focus person to be responsible for the day-to-day operation of the printer.
- Provide the service representative with a focus person to provide concise information when printer is faulty.
- Reduce printer downtime.

aper Specifications

- For maximum performance, use quality high speed copier bond.
- All media should be tested for satisfactory performance before purchasing in quantity.
- See "Paper Specifications" in Chapter 1 or the *LaserJet 2000 Paper Specifications Guide* (P/N 5954-8953) for detailed information on what types of paper to use and things to avoid.

Paper Care

Keep the following important points in mind when educating the customer on proper care and handling of paper:

- Let paper stabilize for at least 24 hours in print room environment before using.
- Keep paper in ream wrappers until required. Take covers off boxes to help stabilize.
- Date code boxes and use in first-in first-out order.
- Load only enough paper in printer for the current day's printing.

Paper Handling

- Do not fan paper before loading.
- Discard any damaged sheets from the top and bottom of each ream.
- Inspect ream for damage - discard any damaged sheets.
- Load paper preferred side up (arrow up).
- Load paper in cassettes and PDX according to directions in Operator's Manual

Customer "Paper Movement Log Sheet"

Chapter 4 includes a sample log sheet for the customer to use in case of paper movement problems. This sheet is provided to insert into the customer's LaserJet 2000 Site Logbook. Copy this sheet along with the other pages at the end of Chapter 4 (starting on page 4-47) to make up the logbook.

Evaluating Paper Movement Problems by Telephone

When assigned a paper movement problem, call the customer to discuss the difficulty. Try to obtain as much information as possible, to provide a clear understanding of the paper movement problems. Careful questioning may identify a customer created problem which can be resolved over the phone. The following questions should be asked:

1. What paper jam error has occurred on the operator's display (13.X)?
2. Which of the paper path display indicators are illuminated?
3. What is the frequency of jams?

   It is important the determine the frequency of paper jams ASAP. Until the jam count can be recorded (using a CE Mode self test), ask the customer to record the image count between paper jams.
4. Does the customer know which paper input source the sheets were feeding from at the time (PDX or Upper/Lower Cassettes)?
5. Was simplex or Duplex being used at the time of the jam?
6. Did the customer clear all sheets out of the printer and attempt to run the job again?
7. If paper began moving and then a paper jam occurred, was it the same 13.X error and were the same indicators illuminated as the previous jam?
8. What type of paper is used (*e.g.* heavy, light, punched holes, perforated paper, recycled, extremely shiny/smooth, embossed, carbonless, coated, transparencies or envelopes)? Refer to paper specifications in Chapter 1.
9. If paper is suspect, ask the customer to try quality 20 pound (80 g/m^2) high speed copier bond paper, if they have any. How does this paper perform?
10. Is there any paper in the Error Tray (misprints)? Are two different weights (thicknesses) of paper being used? Please retain samples for CE.
11. Ask customer to open fuser/switchback, check fuser rollers for scoring/damage (refer to Service Note 2684-06).
12. If there is paper jammed in the Output Stacker area does the paper appeared skewed as it enters the Face Down Stacker Tray?
13. Does customer know the monthly image count?
14. Has anything changed, i.e paper supplier, storage of paper, printer moved to another location, new operators, etc?

Evaluating Paper Movement Problems On-Site

The following steps may help determine how or why a paper movement problems are occurring. If these guidelines are adopted a clearer understanding will be attained in a relatively short time.

1. Unless there is an obvious cause to the paper jam fault, the first important task is to establish the Jam Rate and the Usage levels. These figures will substantiate a valid paper jam problem.
2. If customer is using paper jam log sheets, analyze the error messages and jam indicators illuminated at the time of the recorded jam. Is there any pattern?
3. If the customer has not kept any records, instruct them to do so. Ask one person at the site to be *responsible* for the printer. This person should agree to record all events on the LaserJet 2000.
4. Place the printer in CE Mode (Formatter SW12-2 ON), power OFF then ON, run standard Self-Test. This will provide you with a paper jam count figure. Also record the total image count. This establishes a base line to work from.
5. Is the printer exceeding monthly usage rates and is there an unacceptable Jam Rate Count? (If in doubt contact an SSE.)
6. Try to reproduce the reported paper movement problem:
   a. Use RUN-IN test (Set switches 2 & 3 on Formatter PCA CLOSED).
   b. Select `PAPER PATH` self test from front panel and run. This test will print 180 images (120 pages), 40 images from each input source, 20 of which are duplexed.
7. If a paper jam arises, note the error message (`13.X`), Paper Path Display LEDs illuminated, paper jam count, and image count on the Paper Jam Log Sheet. Carefully remove jammed paper while noting location and quantity. Are any damaged? Is there any evidence of paper slippage?
8. Error 13.4 CLEAR DUPLEX UNIT is many times caused by burnout of the Duplex Holding Tray sensor bulb.
9. Is the customer using non-supported paper (*i.e.* heavy or light, shiny, coated, embossed, perforated, punched holes, recycled, carbonless)? Refer customer to the *LaserJet 2000 Paper Specifications Guide* (P/N 5954-8953). Satisfactory media performance is the sole responsibility of the customer. The customer should test all papers before purchasing in quantity.
10. Remove paper from Upper/lower Cassette and PDX Trays, inspect leading edge of paper for damage.
11. If you suspect a problem with the customer's paper, initiate a controlled test using 20 pound (80 g/m^2) high speed copier bond. Compare with results obtained from customer's paper. Any conclusions?

Note

When on a paper movement service call, always bring some quality 20 pound (80 g/m^2) high speed copier bond to test in parallel with the customer's media.

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12. Show the customer who is responsible for the printer exactly how to load paper, ask them to limit the number of printer operators to an absolute minimum, with the object of reducing customer caused paper jams.
13. Check the printer's operating environment. Is it acceptable? How is the media stored? Can this be a contributing factor to the paper movement problems? Ask customer to date boxes and cycle them in sequence.
14. **Always ensure the printer is not in CE Mode before leaving site (Formatter S12-2 OPEN).**

Paper Path LED Identification

The Paper Path display below appears on the Operator's Front Panel.

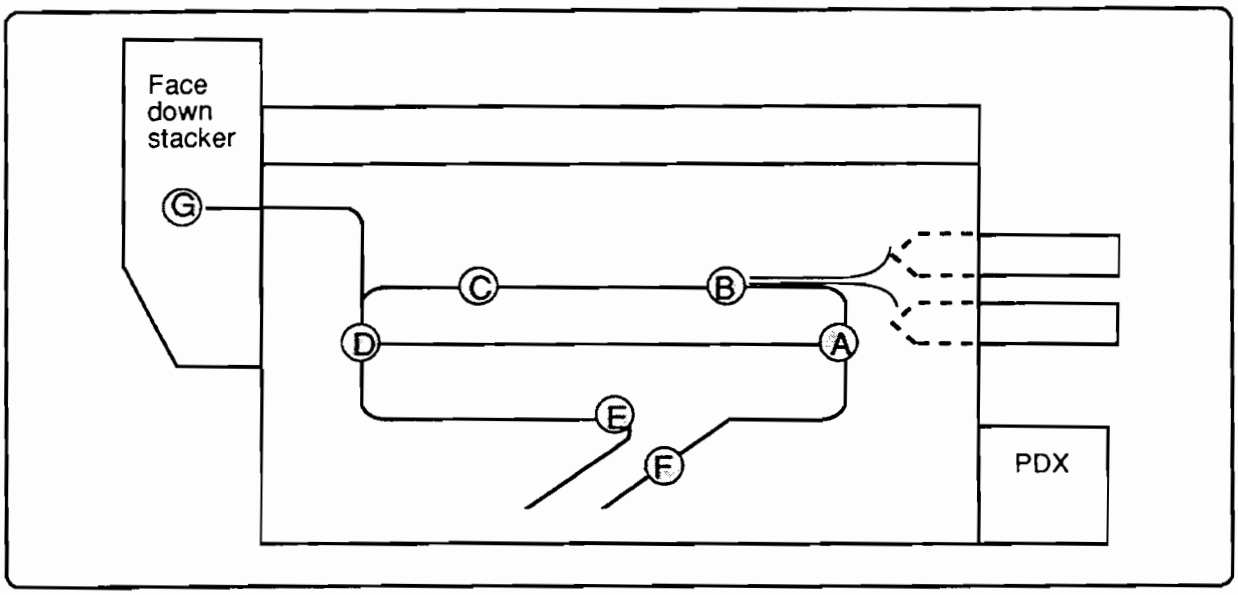


Figure 7-14. Paper Path Display Panel

The internal paper sensors associated with the LEDs on the front panel paper path display are listed in Table 7-21, on the next page.

Table 7-21. Paper Path LED & Sensor Locations

REF	JAM LOCATION	ERROR MESSAGE	SENSOR NUMBER & NAME
LED A	PRINT ENGINE	13.1-PAPER JAM	Engine-PS4 Paper Inlet Sensor (PDX or Duplex Units only)
LED B	PRINT ENGINE	13.1-PAPER JAM	Engine-PS1 Separation Sensor
LED C	PRINT ENGINE	13.1-PAPER JAM	Engine-PS3 Fuser Delivery Sensor
LED D	STACKER DUPLEX	13.3-DUPLEX JAM	Stacker-PS8 Duplex Unit Inlet Sensor Duplex-PS1 Holding Tray Delivery Sensor
LED E	DUPLEX	13.4 CLEAR DUPLEX UNIT	Duplex-Q1 Holding Tray Sensor
LED F	DUPLEX	13.3-DUPLEX JAM	Duplex-PS3 2nd Pass Pick-up Sensor
LED G	STACKER	13.2-OUTPUT JAM	Stacker-PS4 Main Tray Print Delivery Sensor Stacker-PS5 Sub-Tray Print Delivery Sensor Stacker-PS6 Switchback Feeder Paper Sensor 1 Stacker-PS7 Switchback Feeder Paper Sensor 2

Note

There are three paper sensors that will not cause a paper path LED to illuminate when they are manually "tripped." The paper jam indicator is illuminated but no paper path display LEDs are lit. These sensors are: Engine-PS1, Stacker-PS8 and Duplex-PS4.

Paper Sensor Locations

Figure 7-15 shows the locations of the various paper sensors throughout the printer. Notice that the paper sensor numbers repeat for each of the three main printer components (Print Engine, Stacker and Duplexer). To prevent confusion, this manual places the component name in front of the sensor number (such as Engine-PS1, Stacker-PS1 and Duplex-PS1).

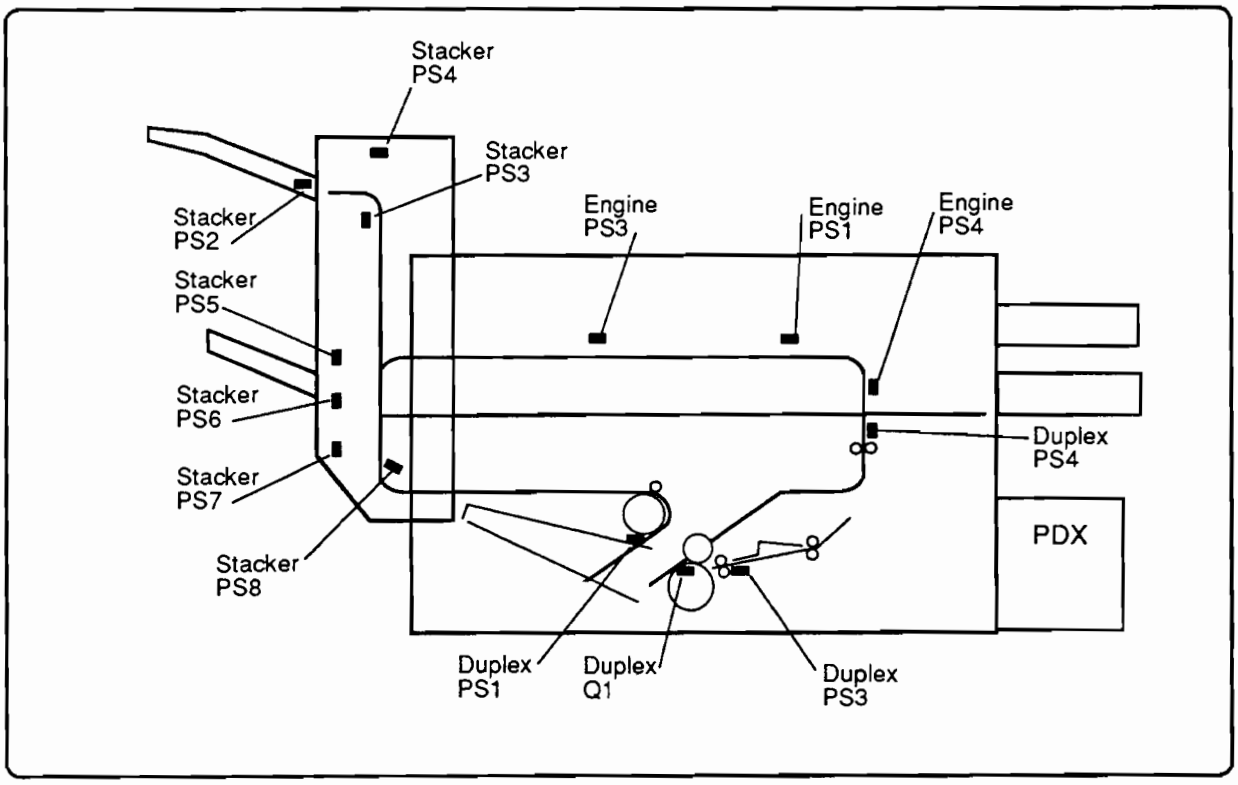


Figure 7-15. Paper Sensor Locations

Note

Paper jams which occur in the Duplex or Stacker units will frequently cause a jam in the Print Engine immediately afterward. In these cases, there will be two "pings" as the jam occurs; first the jam source will be displayed briefly (*i.e.* `13.3 DUPLEX JAM` or `13.2 OUTPUT JAM`), then the secondary jam, `13.1 PAPER JAM` (Print Engine Jam) will appear a few seconds later. This can make jams in the Stacker or Duplex more difficult to detect unless someone is standing over the display panel at the moment the jam occurs.

If in doubt about whether the jam is indeed a Duplex jam, use the procedure under "Duplex Jam Locations" on page 7-59. A display code of zero indicates the jam is not in the Duplex Unit. Any other display indicates the cause of the jam was definitely in the Duplex Unit.

If the display reads `13.1-PAPER JAM` but you suspect that the problem is really an "output" jam, watch the control panel while running test prints to see if the message `13.2-OUTPUT JAM` is displayed momentarily before changing to `13.1`.

Paper Movement Troubleshooting

The flow chart below is provided to help you get started in troubleshooting recurring paper movement problems in the LaserJet 2000 printer. The basic approach is to narrow down the possibilities as to the cause of recurring jams. Portions of the paper path are ruled out through a process of elimination.

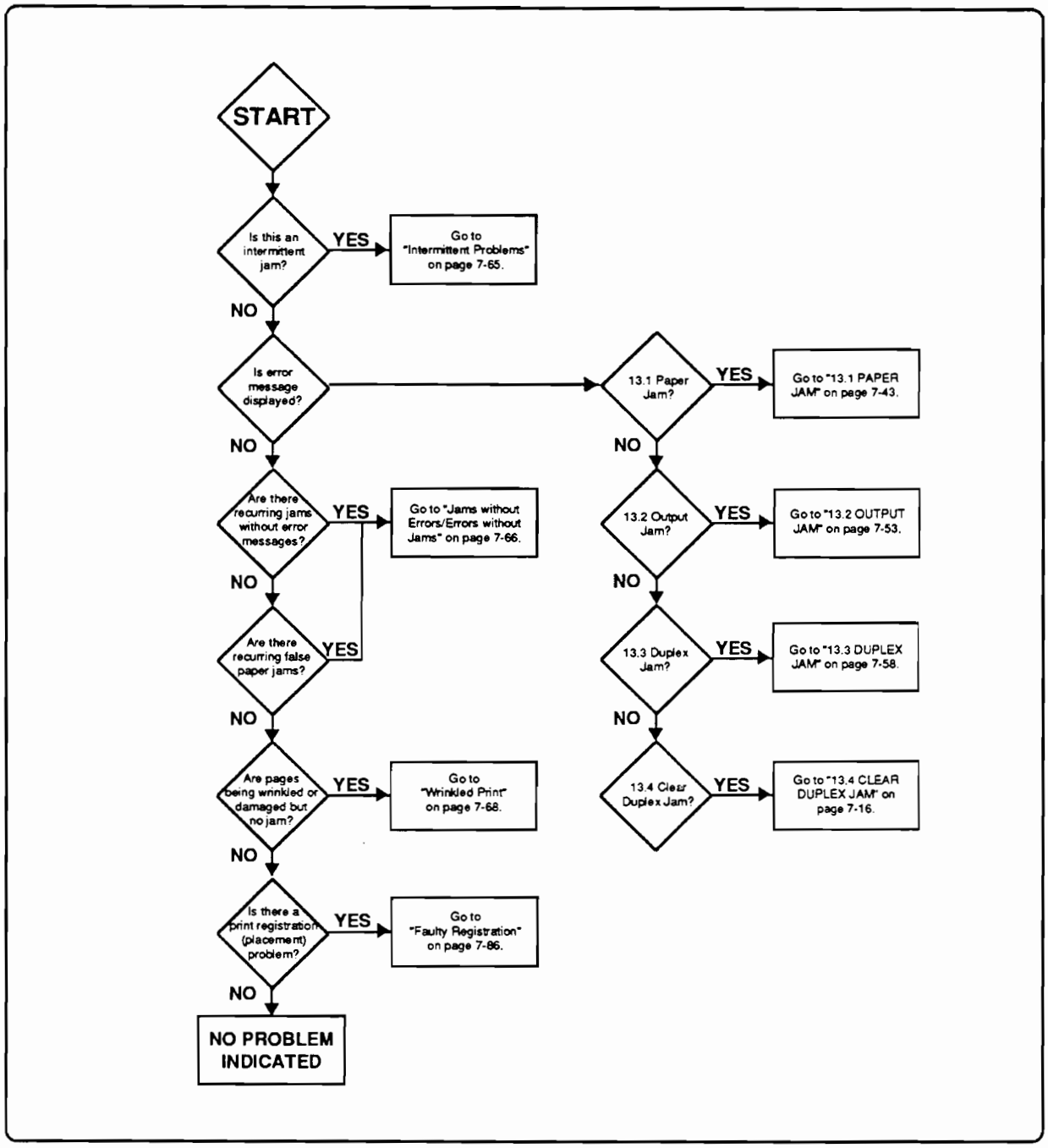


Figure 7-16. Paper Jam Troubleshooting Flow

Error 13.1: Print Engine Paper Jam

Set up: Recurring error message `13.1 PRINTER PAPER JAM` is displayed. Before proceeding, see the NOTE at the bottom of page 7-42.

Table 7-22. Error 13.1 - Print Engine Paper Jam - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Remove the Upper and Lower Cassettes, close the PDX door (feed from PDX). Press TEST PRINT button. Does the paper jam?	YES	Go to step 2.
		NO	Go to step 2.
2	Open the PDX door, install the Lower Cassette only (feed from Lower Cassette). Press TEST PRINT button. Does the paper jam?	YES	Go to step 3.
		NO	Go to step 3.
3	Remove the Lower Cassette, install the Upper Cassette only (feed from Upper Cassette). Press TEST PRINT button. Does the paper jam?	YES	Go to step 4.
		NO	Skip to step 5.
4	Did paper jam on all three input sources? (Steps 1, 2 and 3=YES.)	YES	Skip to step 7.
		NO	Go to step 5
5	Did paper jam from PDX only? (Step 1=YES, steps 2 & 3=NO.)	YES	Go to "PDX Input Jams," page 7-45.
		NO	Go to step 6
6	Did paper jam in either or both Cassettes only? (Steps 2 and/or 3=YES, step 1=NO.)	YES	Go to "Cassette Input Jams," page 7-47.
		NO	Go to "Intermittent Problems" on page 7-66.
7	Set switches 1 & 2 on the Stacker Control PCA to OFF (disables Stacker jams). Press TEST PRINT button. Does the paper jam?	YES	Go to step 8.
		NO	Stacker/Switchback, or Duplex inlet jam. Go to "Output Paper Jams" on page 7-54.
8	Set switch DSW941-5 on the Double Feed Detect PCA ON (jam disable). Press TEST PRINT button. Does the paper jam?	YES	Obstruction jam. Go to "Obstruction Jams" on page 7-48.
		NO	Timing (electrical) jam. Go to "Electrical Jams" on page 7-49.

Note

In each of the steps above, try several TEST PRINT pages before assuming there is no paper jam. If the printer is not jamming consistently, go to "Intermittent Paper Movement Problems" on page 7-66.

Be sure to return any switches to normal positions after testing.

PDX Input Jams

Set up: Recurring jams which have been diagnosed as occurring in the PDX input area (see Table 7-22). Recurring error message `13.1-PRINTER PAPER JAM` is displayed.

Table 7-23. PDX Input Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	On the PDX Control PCA, measure test point CP1 for 10VDC (use test point CP2 for GND). Voltage correct?	YES	Skip to step 3.
		NO	Go to step 2.
2	Check pin J4-1 on the PDX Control PCA (use J4-2 for GND). Is reading approximately +24VDC?	YES	Replace the PDX Control PCA.
		NO	Check wiring back to J18 on PDX-DCPS1. If input voltages and wiring are okay, replace PDX-DCPS1.
3	Is the main drive belt to the print engine broken?	YES	Replace the drive belt.
		NO	Go to step 4.
4	With paper loaded, close the PDX door. Lifter deck should raise paper and stop. With the digital multimeter (DMM) set to the 20VDC range, connect the (+) probe to J3-2 and the (-) probe to J3-1 (GND) on the PDX Control PCA. Open the PDX door and observe the reading change from approximately 0V to +10VDC. Are voltages correct?	YES	Go to step 5.
		NO	Replace the Paper Out Sensor (PDX-PS1).
5	With paper loaded, close the PDX door. Lifter deck should raise paper and stop. With the digital multimeter (DMM) set to the 20VDC range, connect the (+) probe to J3-5 and the (-) probe to J3-4 (GND) on the PDX Control PCA. Open the PDX door and observe that when lifter deck drops, the reading drops from approximately 6V to 0V. Are voltages correct?	YES	Go to step 6.
		NO	Verify wiring then replace the Deck Position Sensor (PDX-PS2).
6	Remove the lower PDX cover to access the PDX elevator motor and brake solenoid. Ground pin 8 of connector J2 using TP-CP2 as ground. Does solenoid engage?	YES	Go to step 7 (next page).
		NO	Verify wiring then replace the Brake Solenoid (PDX-SL1).

Table 7-23. PDX Input Jams - Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
7	Remove paper feed main drive belt from PDX. Ground pin 7 of connector J5 on the PDX Control PCA (use TP-CP2 as ground). Manually rotate PDX main drive pulley and assure the pick-up rollers rotate. Remove ground and rollers should stop. Do rollers rotate?	YES NO	Go to step 8. Verify wiring then replace the Pick Clutch (PDX-CL1).
8	Remove paper feed main drive belt from PDX. Ground pin 9 of connector J5 on the PDX Control PCA (use TP-CP2 as ground). Find large plastic drive gear and assure gear will not rotate manually. Remove the ground and verify gear rotates. Does Brake Clutch function correctly?	YES NO	Go to step 9. Verify wiring then replace the Brake Clutch (PDX-CL3).
9	Remove paper feed main drive belt from PDX. Ground pin 8 of connector J102 on the PD/DU Control PCA (use TP1 as ground). Manually rotate the PDX main drive pulley and assure feed rollers rotate. Remove ground and assure the feed rollers do not rotate. Does Feed Clutch function correctly?	YES NO	Go to step 10. Verify wiring then replace the Feed Clutch (PDX-CL2) see Service Note 2684-02.
10	With power ON, insert a folded strip of paper into the PDX input paper guide (green latch "5A" below the registration roller area). The sensor is toward the center of the paper path. Close the paper guide. The corresponding LED ("LED A") should come ON. Does the LED come ON?	YES NO	Go to step 11. Verify wiring from Engine-PS4 to the DC Controller PCA. Clean the sensor and retry operation. If failures continue, replace the sensor Engine-PS4.
11	Perform the PDX PM procedures in Chapter 4, page 4-18. Retry PDX operation. Do jams continue?	YES NO	Replace the PDX Control PCA, then the PD/DU Control PCA. Problem solved.

Cassette Input Jams

Set up: Recurring jams isolated to the Upper and/or Lower Paper Cassettes (see Table 7-22, page 7-44). Recurring error message `13.1-PRINTER PAPER JAM` is displayed.

Table 7-24. Cassette Input Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Remove the suspected cassette and check the paper sensor bulb. Is it lit?	YES	Go to step 2.
		NO	Replace bulb and retry operation.
2	Is the paper curled, wavy or otherwise out-of-spec?	YES	Check the paper storage conditions (and the printer's operating environment). Instruct the customer about use of good quality paper (see Chapter 1) and in proper storage and conditioning of paper (see "Paper Handling and Storage" in Chapter 1). Replace the paper with quality 20 pound (80 g/m^2) high speed copier bond and retry operation.
		NO	Go to step 3.
3	Are the Cassettes loaded and inserted properly?	YES	Go to step 4.
		NO	Instruct the customer in proper paper loading and Cassette insertion.
4	Replace the Cassette with a different Cassette and retry operation. Does the paper jam?	YES	Go to step 5.
		NO	The problem is in the original Cassette. Perform the PM steps for Cassettes on page 4-16 in Chapter 4. Retry operation. If not successful, replace the Cassette.
5	Perform the "Cassette Area" PM procedures beginning on page 4-12 in Chapter 4. Retry operation. Do paper jams still occur?	YES	Go to Table 7-27, "Pick-up Jams" on page 7-50.
		NO	Problem solved.

Obstruction Jams

Set up: Recurring jams diagnosed as **obstruction** jams using Table 7-22, page 7-44. Recurring error message `13.1-PRINTER PAPER JAM` is displayed. When a jam occurs, open the printer and note the location of the leading edge of the sheet of paper that is furthest along in the paper path.

Table 7-25. Obstruction Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Is the paper as far as the Switchback or Duplex assembly?	YES	This is an Output Jam or a Duplex Jam. Go to "Output Paper Jam" on page 7-54 (if paper is in Switchback or Stacker), or "Duplex Area Jams" on page 7-59 (if paper is in Duplex area).
		NO	Go to step 2.
2	Is the leading edge of the jammed paper as far as the Fuser/Print Delivery area?	YES	Go to "Jams in Fusing/Print Delivery Area" on page 7-53.
		NO	Go to step 3.
3	Is the leading edge of the jammed paper as far as the EP Separation or Feeder Belt area?	YES	Go to "Jams in Drum Separation/Feeder Belt Area" on page 7-52.
		NO	Go to step 4.
4	Is the leading edge of the jammed paper as far as the Registration Roller area?	YES	Go to "Jams in Registration Roller Area" on page 7-51.
		NO	Go to step 5.
5	Is the leading edge of the jammed paper as far as the Pick-up Roller area?	YES	Go to "Jams in Pick Up Roller Area" on page 7-50.
		NO	Input paper problem, go back to "Print Engine Paper Jams" on page 7-44.

Electrical Jams

Set up: Recurring jams diagnosed as **electrical** jams using Table 7-22, page 7-44. Recurring error message `13.1-PRINTER PAPER JAM` is displayed.

Causes of "electrical jams" include those shown in Table 7-26:

Table 7-26. Electrical Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Check the Registration Clutch (Engine-CL1): Set the digital multimeter to the 200VDC range. Connect the (+) probe to connector J22-1 and the (-) probe to J22-3 on the registration clutch. When the TEST PRINT button on the display panel is pressed, does the meter reading change from approximately 0V to 23V after print paper is picked up?	YES	Check the connectors. If satisfactory, replace the registration roller clutch (Engine-CL1).
		NO	Check TP112 on DC Controller PCA. If 24VDC is present, check the wiring to the Registration Clutch. If 24VDC is not present, go to step 2.
2	Check paper sensor Engine-PS1: Set the digital multimeter to the 20VDC range. On the DC Controller PCA, connect the (+) probe to TP107 and the (-) probe to TP102. When the TEST PRINT button on the display panel is pressed, after print paper is picked up, does the meter reading change once from approximately 4.9V to 0V and then back to 4.9V?	YES	Go to step 3.
		NO	Check wiring and connectors. If satisfactory, replace the paper sensor Engine-PS1.
3	Check paper sensor Engine-PS3: Open the Fuser door and interrupt Engine-PS3 with paper. Does paper path LED C on the front panel light?	YES	Go to step 4.
		NO	Check wiring and connectors. If satisfactory, replace the paper sensor Engine-PS3.
4	Check the Drum and Main motors for proper speeds: LEDs 1 and 2 on Motor Driver PCA should be ON. Are LEDs 1 & 2 ON?	YES	Go to step 5.
		NO	Replace faulty motor (LED1=Drum Motor, LED2=Main Motor). Retry printer operation.
5	Check Separation Corona for proper operation. Go to "EP Process Verification" on page 7-105. Is corona functioning correctly?	YES	If jams persist, go to "Obstruction Jams" on page 7-48.
		NO	Replace faulty component(s) as directed. Retry printer operation. If jams persist, go to "Obstruction Jams" on page 7-48.

Jams in Pick Up Roller Area

Set up: Recurring jams in the paper pick up rollers area. Recurring error message `13.1-PRINTER PAPER JAM` is displayed.

Table 7-27. Pick Up Roller Area Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Does paper jam when fed from both the Upper and Lower Cassettes?	YES	Go to step 2.
		NO	Go to step 3.
2	Does the leading edge of the paper reach the registration rollers?	YES	Go to "Jams in Registration Roller Area" on page 7-51.
		NO	Go to step 3.
3	Remove the Cassette Cover, press the TEST PRINT button and watch the pick-up rollers. Do they rotate?	YES	Perform the "Cassette Area" PM procedures beginning on page 4-12 in Chapter 4. Retry operation. Replace the Cassette if necessary.
		NO	Go to step 4.
4	Does the pick-up roller clutch (SL1 or SL2) operate?	YES	Check the position of the solenoid. If okay, check the spring clutch. Replace any necessary part.
		NO	Go to step 5.
5	With the DMM still set to the 200VDC range, connect the probes to the DC Controller PCA as follows: Upper Cassette: J102-3 (+) and J102-4 (-) Lower Cassette: J102-5 (+) and J102-6 (-) Press TEST PRINT. Does the reading change from approximately 0V to 23V at the time when pick-up should begin?	YES	Replace the Upper or Lower Pick-up Roller Clutch Solenoid (SL1 or SL2).
		NO	Replace the DC Controller PCA.

Jams in Registration Roller Area

Set up: Recurring jams in the Registration Roller area. Recurring error message `13.1-PRINTER PAPER JAM` is displayed.

Table 7-28. Registration Roller Area Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Set the digital multimeter to the 200VDC range. Connect the (+) probe to connector J22-1 and the (-) probe to J22-3 on the Registration Roller Clutch. When the TEST PRINT button on the display panel is pressed, does the meter reading change from approximately 0V to 23V after print paper is picked up?	YES	Check the connectors. If satisfactory, replace the Registration Roller Clutch (Engine-CL1)
		NO	Go to step 2.
2	Set the digital multimeter to the 200VDC range. Connect the (+) probe to connector J102-1 and the (-) probe to J102-2 on the DC Controller PCA. When the TEST PRINT button on the display panel is pressed, does the meter reading change from approximately 0V to 23V after print paper is picked up?	YES	Check for a bad cable connection between J102 and J22 on the Registration Roller Clutch. Replace as necessary.
		NO	Replace the DC Controller PCA.

Jams in Drum Separation/Feeder Belt Area

Set up: Recurring jams in the Drum Separation/Feeder Belt area. Recurring error message `13.1-PRINTER PAPER JAM` is displayed.

Table 7-29. Drum Separation/Feeder Belt Area Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Check paper sensor Engine-PS1: Set the digital multimeter to the 20VDC range. On the DC Controller PCA, connect the (+) probe to TP107 and the (-) probe to TP102. When the TEST PRINT button on the display panel is pressed, after print paper is picked up, does the meter reading change once from approximately 4.9V to 0V and then back to 4.9V?	YES NO	Go to step 2. Check wiring and connectors. If satisfactory, replace the paper sensor Engine-PS1.
2	Perform the "EP Process Verification" page 7-105. Are the Transfer and Separation Coronas are working properly, and the HVT3 outputs normal?	YES NO	Go to step 3. Adjust or replace the Corona or HVT assemblies as necessary.
3	Are the tips of the Drum Separation Claws damaged, worn or dirty?	YES NO	Replace the Drum Separation Claws. Go to step 4.
4	Are the pick-up and registration operations functioning properly? (Perform the check-out procedures on pages 7-50 and 7-51.)	YES NO	Go to step 5. Repair or replace faulty components as directed.
5	Are all four Feeder Belts clean and driven positively?	YES NO	Go to step 6. Perform the "EP Area" PM procedures beginning on page 4-22 in Chapter 4.
6	Is the Feeder Belt Fan (Engine-FM4) functioning? (ground J103-2 to turn fan ON to check)	YES NO	If jams persist, try the procedures under "Jams in Fusing/Print Delivery Area" on page 7-53. Replace the Feeder Belt Assembly, Engine-FM4. If still not functioning, replace the AC Driver PCA.

Jams in Fusing/Print Delivery Area

Set up: Recurring jams in the Fusing/Print Delivery area. Recurring error message `13.1-PRINTER PAPER JAM` is displayed.

Table 7-30. Jams in Fusing/Print Delivery Area Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Does paper being used meet all paper specifications given in Chapter 1?	YES	Go to step 2.
		NO	Instruct the customer in use of paper that meets spec (refer to Chapter 1). Replace the paper with quality 20 pound (80 g/m^2) high speed copier bond and retry operation.
2	Are there toner marks or deposits on the Fuser inlet paper guide?	YES	Clean the guide and check to see if toner is leaking from the Cleaning Assembly.
		NO	Go to step 3.
3	Are the lower fuser rollers dirty or damaged?	YES	Clean or replace rollers.
		NO	Go to step 4.
4	Check the fuser Separation Claws. Are any claws dirty, worn, or broken at the tip?	YES	Clean dirty claws. Replace worn or damaged claws. Instruct operators in proper PM procedures.
		NO	Go to step 5.
5	Check Fuser Delivery Sensor Engine-PS3: Open the Fuser door and interrupt Engine-PS3 with paper. Does paper path LED C on the front panel light?	YES	Go to step 6.
		NO	Check wiring and connectors. If satisfactory, replace the paper sensor Engine-PS3.
6	Check that sensor Engine-PS3 is not being triggered by vibrations in the printer: Set the digital multimeter (DMM) to the 20VDC range. On the DC Controller PCA, connect the (+) probe to TP106 and the (-) probe to TP102. With the power ON, open the lower stacker door. Remove the linkage to the switchback door (one screw) and close the Fuser assembly to return the sensor flag to its normal state. Vibrate the printer while watching the DMM. Does the meter show any voltage reading?	YES	The sensor flag is rubbing on the edge of the sensor. Bend the sensor bracket so the flag rests in the center of the sensor or replace Engine-PS3.
		NO	End of this chart. If jams persist, go to "13.2-Output Paper Jams" on page 7-54.
			Check wiring and connectors. If satisfactory, replace the paper sensor Engine-PS3.

Error 13.2: Output Paper Jam

Set up: Recurring error message `13.2 OUTPUT PAPER JAM` is displayed.

Table 7-31. Error 13.2 - Output Paper Jam - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Does the `13.2-OUTPUT JAM` occur at power up, even though there is no paper in paper path?	YES	Check for a damaged female pin on J55 in the Fuser area. Locate the two Molex connectors just to the left (rear) of the left (rear) Fuser mounting screw. The larger of the two (3 X 5 pins) is J55.
		NO	Go to step 2.
2	Set SW101-2 on the Stacker Control PCA OFF (disable Switchback). Run standard Self Test. Does paper jam?	YES	Go to step 3.
		NO	Problem is in the Switchback assembly. Go to "Jams in Switchback Area" on page 7-57.
3	Set SW101-1 on the Stacker Control PCA OFF (disable Stacker jam detection). Run standard Self Test. Does paper jam?	YES	Go to step 4.
		NO	This is a Stacker Electrical Jam. Go to "Jams in Main Stacker Area" on page 7-55, paying particular attention to the sensors.
4	With the power ON, open the lower stacker door. Remove the linkage to the switchback door (one screw) and close the Fuser assembly. Insert interlock keys in front left door switch Engine-DS1 and the rear stacker door switch, Stacker-MS4. On the Stacker Control PCA, remove connector J102 (ignore the Error 58 message). The Stacker and Switchback is effectively removed from print operation. Press TEST PRINT. Does paper jam?	YES	This is a print engine paper jam. Reconnect J102 and Fuser linkage. Go to "Print Engine Paper Jam" on page 7-44.
		NO	This is a Stacker Obstruction Jam. Reconnect J102 and Fuser linkage. Go to "Jams in Main Stacker Area" on page 7-55, paying particular attention to the mechanical components.

Jams in Main Stacker Area

Set up: Recurring jams isolated to the Face-Down Output (Main) Stacker area. Recurring error message `13.2 OUTPUT PAPER JAM` is displayed.

Table 7-32. Jams in Main Stacker Area - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	On the Stacker Control PCA, measure TP102 for +5VDC and TP103 for +24VDC (use TP101 for GND). Are voltages correct?	YES NO	Go to step 2. Go to troubleshooting flow "Error 58 - Output Unit Failure" on page 7-31.
2	With the digital multimeter (DMM) set to 20VDC, connect the (+) probe to J106-5 and the (-) probe to J106-6 (GND). With the Main Tray Delivery Sensor (Stacker-PS4) disengaged (no paper), reading should be approximately 0V. Depress the sensor and voltage should be approximately 5V. Are voltages correct?	YES NO	Go to step 3. Verify cabling to sensor. Replace sensor (Stacker-PS4) if cabling okay.
3	Connect a jumper from TP101 (GND) to J105-2 on the Stacker Control PCA. Manually rotate the delivery rollers. With the jumper in place, the Delivery Roller Clutch (Stacker-CL1) should be engaged, causing resistance to the movement. Removing the jumper will disengage the clutch and allow free movement. Does clutch operate correctly?	YES NO	Go to step 4. Verify that J105-2 has 24VDC present. If present, replace the Delivery Roller Clutch (Stacker-CL1). (If 24V not present, replace the Stacker Control PCA.)
4	Connect a jumper from TP101 (GND) to J105-3 on the Stacker Control PCA. Does the Stacker Main Motor (Stacker-M1) rotate?	YES NO	If motor runs during the verification but not during normal operation, replace the Stacker Control PCA. Go to step 5 (next page). If motor does not go on during verification test or during normal operation (self test), check cabling then replace Stacker Main Motor (Stacker-M1).

Table 7-32. Jams in Main Stacker Area - Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
5	Connect a jumper from TP101 (GND) to J105-6 on the Stacker Control PCA. Does the Stacker Fan (Stacker-FM2) go on?	YES	If fan motor runs only during the verification but not during normal operation, replace the Stacker Control PCA. Go to step 6.
		NO	If fan motor does not go on during verification test or during normal operation (self test), check cabling then replace Stacker Fan (Stacker-FM2).
6	Does paper jam when paper is directed to the Error Tray (*i.e.* during a misprint)?	YES	Check the Error Tray Delivery sensor, Engine-PS5. Check for a damaged female pin on J55 in the Fuser area. Locate the two Molex connectors just to the left (rear) of the left (rear) Fuser mounting screw. The larger of the two (3 X 5 pins) is J55.
		NO	Go to step 7.
7	Does paper jam with the leading edge just entering the Main Tray (no paper damage) during a paper path test (engine test) or misprint?	YES	The paper has been incorrectly sent to the Main Tray instead of the Error Tray. Possible cause is malfunctioning Error Tray Deflector Solenoid (Stacker-SL4). Go to step 8.
		NO	Skip to step 9.
8	Connect a jumper from ground to J55-2. Does Error Tray Deflector Solenoid (Stacker-SL4) engage?	YES	If solenoid works only during the verification but not during normal operation, replace the Stacker Control PCA. Go to step 9.
		NO	If solenoid does not go on during verification test or during normal operation (self test), check cabling then replace Stacker-SL4.
9	Retry printer operation. Do Output Jams continue to occur?	YES	Re-check all cabling and mechanical parts. Perform the "Stacker Unit" PM procedures beginning on page 4-39. If jams persist, replace the Stacker Control PCA.
		NO	Problem solved.

Jams in the Switchback Area

Set up: Recurring jams isolated to the Switchback assembly area. Recurring error message 13.2 OUTPUT PAPER JAM is displayed.

Note

Before using this troubleshooting, you should have isolated the jam location to the Switchback area using SW 102-2 (Disable Switchback) (see step 2 in Table 7-31 on page 7-54.

Table 7-33. Jams in Switchback Area - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Open the smaller Switchback access door and press the (SELF TEST) key to run a standard self test. Watch the paper as it enters and exits the Switchback. Is the paper skewed as it enters or exits the Switchback? (NOTE: If paper enters switchback, but does not reverse direction, go to step 5.)	YES NO	Go to step 2. Skip to step 3.
2	Perform the "Switchback Unit" PM procedures in Chapter 4 beginning on page 4-33. Were any worn or damaged parts found?	YES NO	Repair or replace any worn or damaged parts. Go to step 3.
3	Retry printer operation. Is PAPER JAM message still displayed?	YES NO	Go to step 4. Problem solved.
4	Does paper enter the switchback correctly, but instead of reversing direction, paper is driven down onto the floor of the Duplex unit?	YES NO	Faulty Switchback sensor Stacker-PS7 or Stacker-PS6. Skip to step 6 (next page) to check. Go to step 5.
5	On the Stacker Control PCA, measure TP102 for +5VDC and TP103 for +24VDC (use TP101 for GND). Are voltages correct?	YES NO	Go to step 6 (next page). Go to troubleshooting flow "Error 58 - Output Unit Failure" on page 7-31.

Table 7-33. Jams in Switchback Area - Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
6	With the digital multimeter (DMM) set to 20VDC, connect the (+) probe to J55-11 and the (-) probe to J55-12 (GND) on the Switchback Assembly. With no paper in the Switchback assembly, the reading should be approximately 0V. Move sensor Stacker-PS6; the reading should change to approximately +5V. Repeat the above procedure using pins J55-14 (+) and J55-15 (-) and sensor Stacker-PS7. Are voltages correct?	YES NO	Go to step 7. Check cabling; if okay replace faulty sensor.
7	Connect a jumper from ground to J55-9 on the Switchback assembly. Does the Roller Reverse Solenoid engage?	YES NO	Go to step 8. If solenoid does not go on during verification test or during normal operation (self test), check cabling then replace Roller Reverse Solenoid (Stacker-SL6). If solenoid engages only during the verification but not during normal operation, replace the Stacker Control PCA.
8	Connect a jumper from ground to J56-4 on the Switchback assembly. Does the Switchback Feed Motor (Stacker-M2) go on?	YES NO	Go to step 9. If motor does not go on during verification test or during normal operation (self test), check cabling then replace Switchback Feed Motor (Stacker-M2). If motor runs only during the verification but not during normal operation, replace the Stacker Control PCA.
9	Retry printer operation. Do Output Jams continue to occur?	YES NO	Re-check all cabling and mechanical areas. Replace the Stacker Control PCA. If still not successful, perform the steps under "Jams in Main Stacker Area," on page 7-55. Problem solved.

Error 13.3: Duplex Area Jam

Set up: Recurring error message 13.3 DUPLEX PAPER JAM is displayed.

Note

Paper jams which occur in the Duplex or Stacker units will frequently cause a jam in the Print Engine immediately afterward. In these cases, there will be two "pings" as the jam occurs; first the jam source will be displayed briefly (*i.e.* 13.3 DUPLEX JAM or 13.2 OUTPUT JAM), then the secondary jam, 13.1 PAPER JAM (Print Engine Jam) will appear a few seconds later. This can make jams in the Stacker or Duplex more difficult to detect unless someone is standing over the display panel at the moment the jam occurs.

If in doubt about whether the jam is indeed a Duplex jam, go through these procedures to verify.

To isolate the location of duplex area jams, perform the procedure under "Duplex Jam Locations," below. Go to Table 7-34, "Duplex Jam Location Matrix" and identify the location. Then proceed to the appropriate troubleshooting flow, as directed in the "GO TO" column in Table 7-34.

Duplex Jam Locations

PROCEDURE: With the message, 13.3 DUPLEX JAM displayed, remove the lower left rear printer cover to access the PD/DU Control PCA. Set switches SW1-5 and SW1-6 ON. This enables LEDs A, D, E and F (shown in Figure 7-17 to display an error code. This error code gives the location of the jam in the Duplex Unit.

The Paper Path display below appears on the Operator's Front Panel.

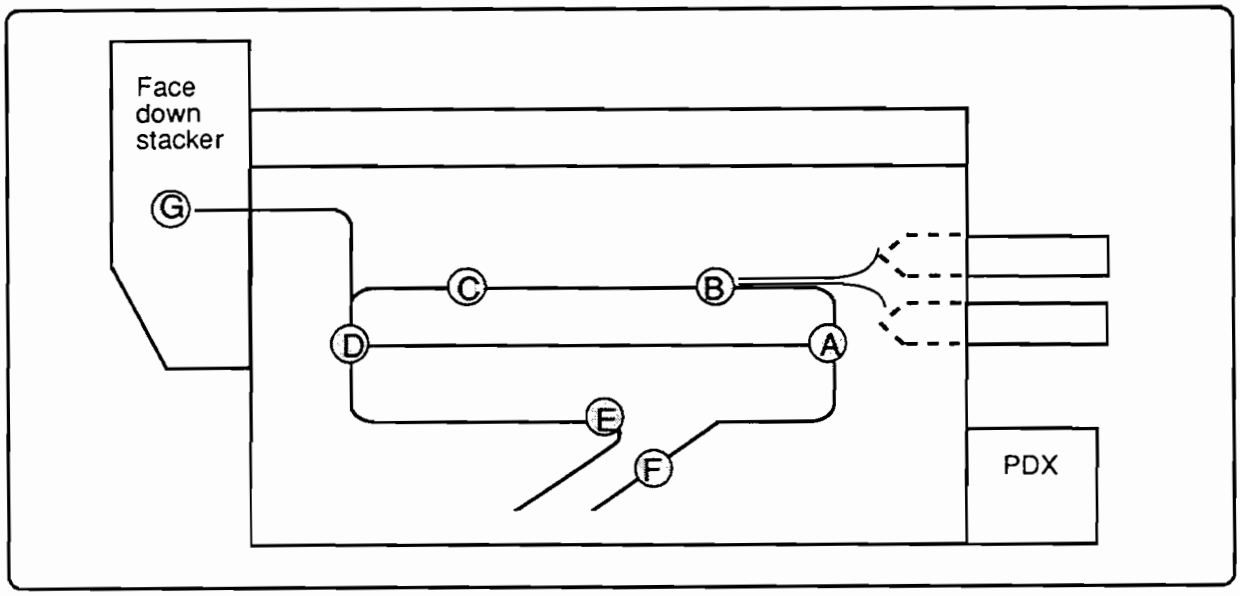


Figure 7-17. Paper Path Display Panel

Use Table 7-34 to determine the location of a jam based on the "error code" produced using the above method.

Table 7-34. Duplex Jam Location Matrix

LED D	LED E	LED F	LED A	Area (Fig 7-18)	Jam Location	GO TO:
0	0	0	0		Not a Duplex jam. Go to "Print Engine Jam."	Page 7-44.
1	0	0	0	1	Duplex Unit Inlet Jam.	Page 7-61.
0	1	0	0	2	Holding Tray Delivery Jam: delay to tray.	Page 7-62.
1	1	0	0	2	Holding Tray Delivery Jam: build-up in tray.	Page 7-62.
0	0	1	0	2	Holding Tray Jam - general.	Page 7-62.
1	0	1	0	3	Second Pass Pick-up Jam.	Page 7-63.
0	1	1	0	4	Vertical Pass Jam.	Page 7-64.
1	1	1	0	4	Paper Inlet to Print Engine: fed from Duplex.	Page 7-64.
0	0	0	1	4	Paper Inlet to Print Engine: fed from PDX.	Page 7-45.

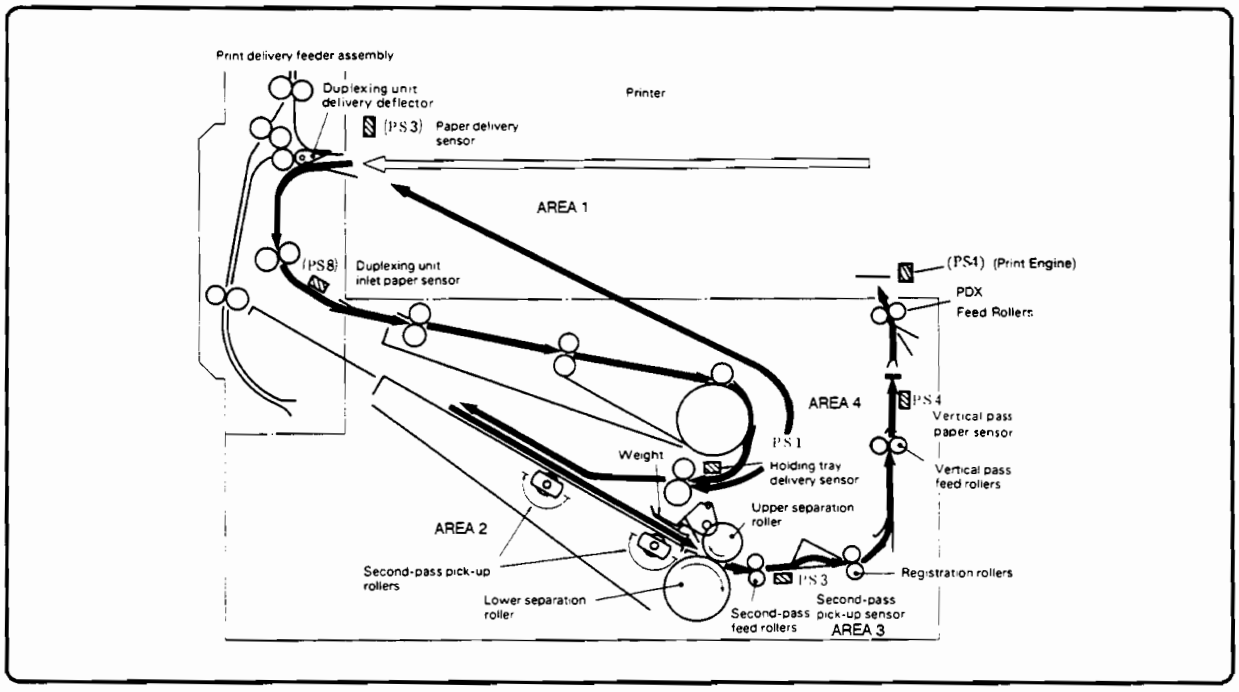


Figure 7-18. Duplex Paper Jam Areas

Duplex Unit Inlet Jam (Area 1)

Set up: Recurring error message 13.3 DUPLEX PAPER JAM is displayed. Jam location diagnosed in this area (see "Duplex Jam Locations" on page 7-59).

Table 7-35. Duplex Unit Inlet Jam - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	With power ON, listen to the area near the Stacker Power Supply (Stacker-DCPS1 - upper rear stacker area). Is the Stacker Power supply making a constant "ticking" sound?	YES	This is a symptom of a failing power supply. Replace Stacker-DCPS1.
		NO	Go to step 2.
2	Set the digital multimeter to the 200VDC range. Connect the (+) probe to J411-2 and the (-) probe to J411-1 on the Duplex Driver PCA. Does the meter read 24 ±1VDC?	YES	Go to step 3.
		NO	Check the wiring between J411 on the Duplex Driver PCA and J424 on Duplex-DCPS1. Check for input AC voltage to Duplex-DCPS1. If okay, replace Duplex-DCPS1.
3	Actuate the sensor flag on Stacker-PS8. Does LED407 on the Duplex Driver PCA goes ON and OFF when sensor is actuated and released?	YES	Go to step 4.
		NO	Check wiring between sensor and connector J409 pins 1, 2 & 3. If okay, replace Stacker-PS8.
4	Place a sheet of paper on the print delivery belts. Manually move the sheet toward the holding tray while watching LED405 on the Duplex Driver PCA. Does LED405 go ON as paper enters the sensor and OFF when it leaves?	YES	Go to step 5.
		NO	Check wiring between sensor and connector J406 pins 6, 7 & 8. If okay, replace Duplex-PS1
5	On the Duplex Driver PCA, connect a jumper from TP402 (GND) to TP405 (DUMD). Is the Duplex Drive Motor (Duplex-M1) activated?	YES	Go to step 6.
		NO	Replace the Duplex Driver PCA and the Duplex Drive Motor (Duplex-M1).
6	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J409-9 (DPSLD). Is the Duplex Print Delivery Deflector Solenoid (Duplex-SL7) activated?	YES	Go to step 7.
		NO	Replace the solenoid Duplex-SL7.
7	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J409-7 (DIFMD). Is the Duplex Inlet Fan Motor (Duplex-FM1) activated?	YES	Go to step 8.
		NO	Replace the fan motor Duplex-FM1.
8	Retry printer operation. Does error 13.3-DUPLEX JAM persist?	YES	Perform the Duplex Area PM procedures beginning on page 4-27. Carefully inspect all parts for toner build-up, wear, or damage. If jams persist, go to "Area 2" (next page).
		NO	Problem solved.

Holding Tray Delivery and Holding Tray Jams (Area 2)

Set up: Recurring error message `13.3 DUPLEX PAPER JAM` is displayed. Jam location diagnosed in this area (see "Duplex Jam Locations" on page 7-59).

Table 7-36. Holding Tray Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Set the digital multimeter to the 200VDC range. Connect the (+) probe to J411-2 and the (-) probe to J411-1 on the Duplex Driver PCA. Does the meter read approximately 24V?	YES	Go to step 2.
		NO	Check the wiring between J411 on the Duplex Driver PCA and J424 on Duplex-DCPS1. If input AC is okay, replace Duplex-DCPS1.
2	Insert a sheet of paper in the Side Plate Home Position Sensor (Duplex-PS2). Does LED403 on the Duplex Driver PCA go ON when the sensor is blocked?	YES	Go to step 3.
		NO	Check wiring from J410 on the Duplex Driver PCA to sensor. If okay, replace Duplex-PS2.
3	Actuate the sensor flag on the Second Pass Pick-up Sensor (Duplex-PS3). Does LED402 on the Duplex Driver PCA (and LED-E on the Paper Path Display) go ON when sensor is actuated?	YES	Go to step 4.
		NO	Check wiring between sensor and connector J406 pins 1, 2 & 3. If okay, replace Duplex-PS3.
4	On the Duplex Driver PCA, connect a jumper from TP402 (GND) to TP405 (DUMD). Is the Duplex Drive Motor (Duplex-M1) activated?	YES	Go to step 5.
		NO	Replace the Duplex Drive Motor (Duplex-M1).
5	Place a mark on the large green knob in the Duplex Unit and time the rotation during printing. Does one rotation of the knob take approximately 2 seconds?	YES	Go to step 6.
		NO	If one rotation takes longer than 2.5 seconds, replace the Duplex Drive Motor (Duplex-M1).
6	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J404-1 (SFCD). Is the Separation Feed Roller Clutch (Duplex-CL1) activated?	YES	Go to step 7.
		NO	Replace the Separation Feed Roller Clutch (Duplex-CL1).
7	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J404-3 (WSD). Is the Weight Raising Solenoid (Duplex-SL2) activated?	YES	Go to step 8.
		NO	Replace the Weight Raising Solenoid (Duplex-SL2).
8	Retry printer operation. Does error `13.3-DUPLEX JAM` persist?	YES	Perform the Duplex Area PM procedures in Chapter 4, page 4-27. Carefully inspect all parts for toner build-up, wear, or damage. Repair or replace as needed. If jams persist, go to Area 3 troubleshooting (next page).
		NO	Problem solved.

Second Pass Pick-up Jam (Area 3)

Set up: Recurring error message 13.3 DUPLEX PAPER JAM is displayed. Jam location diagnosed in this area (see "Duplex Jam Locations" on page 7-59).

Table 7-37. Second Pass Pick-up Jam - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Verify Duplex Separation Rollers alignment and clearance (see Chapter 6, page 6-139). Retry printer operation. Does error 13.3-DUPLEX JAM persist?	YES NO	Go to step 2. Problem solved.
2	Set the digital multimeter to the 200VDC range. Connect the (+) probe to J411-2 and the (-) probe to J411-1 on the Duplex Driver PCA. Does the meter read approximately 24V?	YES NO	Go to step 3. Check the wiring between J411 on the Duplex Driver PCA and J424 on the Duplex Power Supply (Duplex-DCPS1). Check for input AC voltage to Duplex-DCPS1. If okay, replace Duplex-DCPS1.
3	Actuate the sensor flag on the Second Pass Pick-up Sensor (Duplex-PS3). Does LED402 on the Duplex Driver PCA (and LED-E on the Paper Path Display) go ON when sensor is actuated?	YES NO	Go to step 4. Check wiring between sensor and connector J406 pins 1, 2 & 3. If okay, replace Duplex-PS3.
4	On the Duplex Driver PCA, connect a jumper from TP402 (GND) to TP405 (DUMD). Is the Duplex Drive Motor (Duplex-M1) activated?	YES NO	Go to step 5. Replace the Duplex Driver PCA and the Duplex Drive Motor (Duplex-M1).
5	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J404-1 (SFCD). Is the Separation Feed Roller Clutch (Duplex-CL1) activated?	YES NO	Go to step 6. Replace the Separation Feed Roller Clutch (Duplex-CL1).
6	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J406-4 (GGCD). Is the Registration Roller Clutch (Duplex-CL2) activated?	YES NO	Go to step 7. Replace the Registration Roller Clutch (Duplex-CL2).
7	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J410-1 (SPUSD). Is the Second Pass Pick-up Roller Solenoid (Duplex-SL1) activated?	YES NO	Go to step 8. Replace the Second Pass Pick-up Roller Solenoid (Duplex-SL1).
8	Retry printer operation. Does error 13.3-DUPLEX JAM persist?	YES NO	Perform the Duplex Area PM procedures in Chapter 4 beginning on page 4-27. Carefully inspecting all parts for toner build-up, wear, or damage. Repair or replace as needed. If jams persist, go to Area 4 troubleshooting (next page). Problem solved.

Vertical Pass and Paper Inlet to Print Engine Jams (Area 4)

Set up: Recurring error message `13.3 DUPLEX PAPER JAM` is displayed. Jam location diagnosed in this area (see "Duplex Jam Locations" on page 7-59).

Table 7-38. Vertical Pass and Paper Inlet Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Set the digital multimeter to the 200VDC range. Connect the (+) probe to J411-2 and the (-) probe to J411-1 on the Duplex Driver PCA. Does the meter read approximately 24V?	YES	Go to step 2.
		NO	Check the wiring between J411 on the Duplex Driver PCA and J424 on the Duplex Power Supply (Duplex-DCPS1). Check for input AC voltage to Duplex-DCPS1. If okay, replace Duplex-DCPS1.
2	Actuate the sensor flag on the Vertical Pass Paper Sensor (Duplex-PS4). Does LED408 on the Duplex Driver PCA go ON when sensor is actuated?	YES	Go to step 3.
		NO	Check wiring between sensor and connector J407 pins 1, 2 & 3. If okay, replace Duplex-PS4.
3	Insert a sheet of paper in the inlet to the print engine from the Vertical Pass area to activate printer inlet paper sensor (Engine-PS4). Does LED-D on the paper path display come ON?	YES	Go to step 4.
		NO	Check wiring between sensor and connector J117 on the DC Controller PCA. If okay, replace Engine-PS4.
4	On the Duplex Driver PCA, connect a jumper from TP401 (GND) to J407-4 (VPCD). Is the Vertical Pass Feed Roller Clutch (Duplex-CL3) activated?	YES	Go to step 5.
		NO	Replace the Vertical Pass Feed Roller Clutch (Duplex-CL3).
5	Retry printer operation. Does error `13.3-DUPLEX JAM` persist?	YES	Perform the Duplex Area PM procedures in Chapter 4 beginning on page 4-27. Carefully inspecting all parts for toner build-up, wear, or damage. Repair or replace as needed. If jams persist, replace 1)Vertical Pass Clutch, 2) Duplex Registration Clutch, 3)Duplex Driver PCA.
		NO	Problem solved.

Error 13.4 - "CLEAR DUPLEX UNIT"

Set up: Error message 13.4-CLEAR DUPLEX UNIT is displayed. No paper is present in the duplex unit. Gain access to the Duplex Control PCA by removing the rear duplex area cover. Open duplex doors and defeat interlocks with the duplex door interlock "key" attached to the lower front face of the Duplex Separation assembly (one screw).

Table 7-39. Error 13.4 Will Not Reset - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Is the duplex lamp Duplex-LA1 lit?	YES NO	Go to step 2. Replace lamp. If still not lit, check wiring between lamp and connector J405 (DU Driver PCA).
2	With a sheet of paper, block the light sensor Duplex-Q1 (in the lower front corner of the duplex holding tray). LED 409 (RPES) on the DU Driver PCA and the center duplex LED on the operator's panel should light. Both LEDs should go off when paper is removed. Do LEDs function properly?	YES NO	Go to step 3. Check wiring between sensor and connector J405 (DU Driver PCA). If good, replace sensor Duplex-Q1.
3	Retry printer operation. Is 13.4 CLEAR DUPLEX UNIT message still displayed?	YES NO	Replace the DU Driver PCA. Problem solved.

Intermittent Paper Movement Problems

Intermittent paper jams are difficult to diagnose since paper does not jam consistently or always in the same area. Likely causes of high intermittent jam rates are:

- Paper out of spec (refer to "Paper Specifications" in Chapter 1).
- Paper handling and/or loading procedures not correct (refer to "Paper Specifications" in Chapter 1 and "Paper Movement Problems" on page 7-36).
- Poor Operator and/or CE PM practices, leaving worn or dirty parts. If printer is experiencing intermittent jams, and paper is ruled out as the cause, perform the complete PM procedures in Chapter 4, "Preventive Maintenance".

To assist in diagnosing intermittent jams, use the "Run In" mode self-test described in "Self Tests" in Chapter 5, page 5-18. Also refer to "Evaluating Paper Movement Problems On-Site" on page 7-39.

Table 7-40 lists some of the possible causes of intermittent jams. These cases were taken from known field failures.

Table 7-40. Intermittent Paper Jams - Troubleshooting Flow

Description	Possible Cause/Remedy
Paper skews intermittently from PDX (every 50-500 pages).	Uneven tension between the PDX registration rollers due to a loose pivot pin plate (see screw K63 which secures item 14 in Figure 8c-3 Chapter 8, page 8c-5). Tighten the loose screw.
Paper jams or skews as paper exits the EP Drum area. Occurs about every 5 sheets from PDX, very intermittent from Lower Cassette, no failures from Upper Cassette.	Small, hard rubber substance stuck to one of the Registration Rollers. Clean the Registration Rollers.
Paper jam between EP Drum and Fuser. Paper pauses or twists just before entering the fuser rollers. Most of the time paper stops just before entering the Fuser Rollers but can be partly into Fuser or halfway up Stacker unit.	Toner buildup on Fuser inlet paper guide. Buildup is only visible when guide is removed and held up to light. As paper enters Fuser, leading edge catches on the buildup, slowing the paper or twisting it. Clean lower paper guide.
Intermittent jams in separation area (near EP Drum).	Separation Corona not functioning due to shorted Pretransfer Corona (both have common power supply). Perform EP Process Verification procedure, beginning on page 7-105.
Intermittent Duplex Jams.	Use the Duplex Jam Location procedure (page 7-59), as well as Duplex PM procedures (Chapter 4). Typical known causes have been faulty/loose connections on clutches/solenoids and worn or misadjusted rollers, etc.

Paper Jams Without Errors / Errors Without Real Paper Jam

There can be instances when paper jams without causing an Error condition, or when there may be a false PAPER JAM message displayed, with no real paper jam problem. Use Table 7-41 to troubleshoot these conditions.

Set up: Recurring error message 13.X [LOCATION] JAM is displayed without any real paper jams, or recurring paper jams without creating an error message.

Table 7-41. Jams Without Errors or False Jams - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Remove the Double Feed Sensor PCA from the DC Controller PCA to gain access to test points. With a digital multimeter (DMM) set to 20VDC, connect the (+) probe to TP107 (PDP1) and the (-) probe to TP102 (GND) on the DC Controller PCA. Activate the Separation Sensor, Engine-PS1. Does voltage change from approximately 4.9V to 0V when Engine-PS1 is activated?	YES NO	Go to step 2. Check wiring from Engine-PS1 to the DC Controller PCA. If okay, replace Engine-PS1.
2	Block and un-block the Delivery Sensor Engine-PS3. Does LED C on the paper path display light when sensor is blocked?	YES NO	Go to step 3. Check wiring from Engine-PS3 to the DC Controller PCA. If okay, replace Engine-PS3.
3	Verify that the Pre-transfer Corona is not "arcing" (shorted), by performing the "EP Process Verification" procedure beginning on page 7-105. Retry operation. Does problem persist?	YES NO	Go to step 4. Problem solved.
4	Does 13.2-OUTPUT JAM occur at power up, even though there is no paper in paper path?	YES NO	Go to step 5 Skip to step 6.
5	On the Stacker Control PCA, turn switch 101-1 OFF (left). This disables stacker jams. Retry operation. Does error 13.2-OUTPUT JAM persist?	YES NO	Go to step 6 (next page). Check all stacker sensors for proper operation. Replace as needed. Also check for a damaged pin on connector J55 in the Fuser area. (Locate the two Molex connectors just to the left (rear) of the left (rear) Fuser mounting screw. The larger of the two (3 X 5 pins) is J55.)

Table 7-41.
Jams Without Errors or False Jams - Troubleshooting Flow (continued)

Step	Check	Result	Instruction/measure
6	Is the an error message 13.3-DUPLEX JAM with no LED on, no real jam, error remains even after cycling power.	YES	Check sensor Stacker-PS8 (Duplex Inlet Paper Sensor) for paper or paper particle under sensor, causing false jams.
		NO	Go to step 7.
7	Is there no error message but three Duplex Jam LEDs are ON continuously (upon installation or replacement of PD/DU Control PCA)?	YES	Dip switches on PD/DU Control PCA have been left in factory position. Check switches and set SW 1 and 2 OFF.
		NO	Go to step 8.
8	Is jam indicator and LED A (from sensor Engine-PS4) ON at power up, accompanied by either 13.1 PRINT JAM (if in simplex), 13.3 DUPLEX JAM (if in duplex) or 56-MAIN COUNTER MALFUNCTION?	YES	Check for +24VDC coming in to the DC Controller PCA at J101-2. If voltage is low - no real paper jam, replace Engine-DCPS1.
		NO	Go to step 9.
9	Are there false paper jams in the fuser area, with intermittent flickering of LED C (from sensor Engine-PS3)?	YES	Remove Fuser assembly and adjust the sensor plate Engine-PS3 so the paper flag moves into the sensor without paper in the sensor.
		NO	Go to step 10.
10	Are there false jams in the Duplex Holding Tray (paper enters holding tray and then jam occurs)?	YES	Verify Duplex Separation Rollers alignment and clearance (see Chapter 6, page 6-139). Check for customer using punched hole paper (hole aligns with tray paper sensor giving false jam indication).
		NO	Go to step 11.
11	Does paper jam when printing Duplex with no buckled or damaged sheets, paper in Duplex Holding Tray is found to be stopped about one inch above the holding tray light sensor, or is paper found to be on top of the Holding Tray Weight?	YES	Check the Duplex Holding Tray Weight for correct operation. Remove the Duplex Dive Unit (transmission) and replace, verifying proper alignment of the weight (refer to Chapter 6, starting on page 6-144).
		NO	Go to step 12.
12	Retry printer operation. Does problem persist?	YES	Replace the DC Controller PCA.
		NO	Problem solved.

Wrinkles in Print

Set up: Printed sheets have creases or wrinkles (without creating an error message).

Table 7-42. Wrinkles in Print - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Try a fresh ream of quality, 20 pound (80 g/m^2) high speed copier bond. Is problem eliminated?	YES	Instruct the customer in proper use and storage of paper that meets spec (refer to Chapter 1). Order Paper Specifications Guide (P/N 5954-8953) for customer.
		NO	Go to step 2.
2	Open the left and right print engine doors and use the interlock keys to defeat the front door interlocks. Press the TEST PRINT button and watch as paper passes through the feeder belt area. Is paper wrinkled before it reaches the fuser?	YES	Go to step 3.
		NO	Skip to step 5.
3	Watch as paper is picked from the PDX or Cassette. Is paper picked properly?	YES	Skip to step 5.
		NO	Go to step 4.
4	Perform the "Cassette Area" PM procedures beginning on page 4-12 in Chapter 4 (or to "PDX Area" PM beginning on page 4-18). Replace any worn or damaged parts. Retry operation. Does wrinkled print still occur?	YES	Go to step 5.
		NO	Problem solved.
5	Open the smaller Switchback access door and press the [SELF TEST] key to run a standard self test. Watch the paper as it moves through the Switchback. Is the paper skewed as it enters or exits the Switchback?	YES	Go to step 6.
		NO	Skip to step 7.
6	Perform the "Stacker Unit" PM procedures beginning on page 4-39, replacing any worn or damaged parts. Retry operation. Does wrinkled print still occur?	YES	Go to step 7.
		NO	Problem solved.
7	Check the "nip width" adjustment. (Use procedure in Chapter 6, page 6-69. Retry printer operation. Does wrinkled print still occur?	YES	Go to step 8.
		NO	Problem solved.
8	Check the Upper and Lower Fuser Rollers. Are they damaged or worn?	YES	Replace the Upper and Lower Fuser Rollers.
		NO	Perform the entire PM procedure in Chapter 4.

Main Motor Rotation Problems

This section is included to assist in troubleshooting problems with the Print Engine Main Motor. Use this procedure if you suspect that the Main Motor does not rotate at the proper speed.

Table 7-43. Main Motor Rotation Problems - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Does the Main Motor (Engine-M2) rotate when the TEST PRINT button is pressed?	YES	Go to step 2.
		NO	Skip to step 3.
2	Does LED2 on the Motor Driver PCA light when the Main Motor is operating?	YES	No problem in motor. Check drive gears and chains.
		NO	Go to step 3.
3	Does LED3 on the Motor Driver PCA light (more than one second) when the TEST PRINT button is pressed (when Main Motor should start rotation)?	YES	Check if main Motor is overloaded, causing a stalled condition (check drive gears and chains for free movement, excessive tightness, etc.).
		NO	Go to step 4.
4	With a digital multimeter (DMM) set to the 200VDC range, connect the (+) probe to J401-3 and the (-) probe to J401-1 on the Motor Driver PCA. When the TEST PRINT button is pressed, does the voltage read approximately 24V?	YES	Go to step 5.
		NO	Check the wiring from J401 to the door switch Engine-MS3.
5	With the DMM set to the 20VDC range, connect the (+) probe to J404-2 and the (-) probe to J404-1 on the Motor Driver PCA. When the TEST PRINT button is pressed, does the voltage read approximately 14V?	YES	Replace the Main Motor.
		NO	Go to step 6.
6	With the DMM set to the 20VDC range, connect the (+) probe to J402-2 and the (-) probe to J402-3 on the Motor Driver PCA. When the TEST PRINT button is pressed, does the voltage change from approximately 2.5V to 0V?	YES	Check the wiring and connectors between the Main Motor and the Motor Driver PCA. If wiring is okay, replace the Motor Driver PCA.
		NO	Check connector J104 on the DC Controller PCA. If the connector is okay, replace the DC Controller PCA.

Print Quality Troubleshooting

The approach to print quality troubleshooting is as follows:

1. Verify that **paper** is not causing the problems (see "Verify Paper," below).
2. Study the printed output to see if the problem causes **repetitive marks** (page 7-72) or **random/spurious dots or marks** (see page 7-73).
3. Identify the general type of problem by its symptom, grouped into one of the following major categories:
   a. **Missing images** (including blank pages and all black pages).
   b. **Streaks and lines** (including white or dark lines in either direction on the page).
   c. **Background Problems** (including repetitive or random marks and dots).
   d. **Print density problems** (including light or dark overall density, and uneven print density)
   e. **Blurred images** (including blurred print in either the front-to-back (scan line) or leading to trailing edge directions).

Verify Paper

By far the most frequent cause of print quality problems in the LaserJet 2000 printer is due to the paper that is being used. No particular brand or type of paper can be guaranteed to produce one hundred percent consistent results. However, HP has tested some of the more popular papers and recommends that, if possible, Xerox 4024 or Canon NP be used for troubleshooting print quality problems. If Xerox 4024 or Canon NP are not available, use an alternate high speed copier bond that meets or exceeds the specifications given in Chapter 1.

Repetitive Marks

Marks or defects that are repeated at regular intervals can be traced to specific components within the printer. This is accomplished by measuring the distance between the recurring defect and relating that to the circumference of various rollers and drums within the paper path. Check the print image for repetitive marks indicating faults in the assemblies listed below:

Table 7-44. Repetitive Marks Spacing

Defective Part	Spacing	
Registration Rollers	5 cm	1 $^{5}/_{16}$ inch
Developing Assembly	10 cm	2 $^{5}/_{8}$ inch
Cleaning Assembly	6.4 cm	2 $^{1}/_{2}$ inch
EP Drum	25 cm	9 $^{7}/_{8}$ inch
Fuser Roller	13.5 cm	5 $^{1}/_{2}$ inch
Duplex Roller	5 cm	1 $^{5}/_{16}$ inch

Refer to the Image Defect print samples in Appendix C for examples of repetitive defects.

Random or Spurious Dots/Marks

Random spots can have any of several causes, as follows:

Table 7-45. Random or Spurious Dots or Marks

Cause	Remedy
Toner catcher.	Inspect and clean if necessary.
Loose toner.	Check and clean all paper path and guides.
Cleaning Station	Check the cleaning blade. Rotate if necessary (life=200K to each surface). Each edge of the blade is clearly marked with a "1" or a "2." If a "2" appears on the cleaning blade, replace it. Replace Cleaner Station if the cleaning blade, side seals, or cleaning roller does not cure the problem.
Developer Assembly	Check for even toner "brush" on the developing cylinder. If brush is not formed evenly, wipe developer roller with lint-free wipe. Check that toner supply is full, is HP toner, and is free of lumps. Replace Developer Assembly if defective.
Dirty coronas and/or EP area	Check and clean all coronas, EP Drum, Developer and Cleaner Assemblies
Drum separation claws.	Remove Drum Separation Claws Assembly. Clean claws if necessary.
Fuser area.	Check Fuser Rollers and guides for leftover toner from previous jams. Clean if necessary.
Other causes	Refer to the image defect examples in Appendix C for possible matching image quality examples. These examples will help to diagnose the causes of various print quality problems.

Table 7-46. Preconditioning Exposure LEDs Do Not Light

Step	Check	Result	Instruction/measure
1	Remove the Cleaning Assembly, Primary Corona, and Pretransfer Corona. Unlock the Developing Assembly and use the interlock keys to defeat the front door interlocks. When the TEST PRINT button is pressed, look through the hole of the Cleaning Assembly. Do all the preconditioning exposure LEDs light?	YES	Preconditioning LEDs okay.
		NO	If one or more (but not all) LEDs are lit, replace the LED array. If NO LEDs are lit, go to step 2.
2	Set a digital multimeter to the 200VDC range. Connect the (+) probe to J112-10 (+24V) and the (-) probe to J112-11 (PEXLD) on the DC Controller PCA. When the TEST PRINT switch on the display panel is pressed, does the reading change from approximately 0V to 24V?	YES	Check the wiring and connectors between J112 and the Preconditioning Exposure LED array. If okay replace the LED array.
		NO	Replace the DC Controller PCA.

Initial Image Fault Diagnostics

The following table serves as an initial diagnostic tool for troubleshooting print quality problems. Generalized cause and remedy suggestions are included here. More detailed print quality troubleshooting procedures can be found beginning on the next page.

Table 7-47. Initial Image Fault Diagnostic Matrix

SYMPTOMS							
Missing Image	Streaks Lines	Back-ground	Light Density	Dark Density	Uneven Density	Blurred Image	CAUSE/REMEDY
•	•	•			•		Check the Primary Corona Assembly.
		•	•	•			Replace: 1) Potential Measuring Unit, 2) Potential Control PCA, 3)Laser power adjust (VD & VL).
•		•					Perform "EP Process Verification," page 7-105.
•		•	•	•			Check: 1) DC Controller PCA, then 2) Line voltage.
	•		•		•		Check the Dust Proofing glass plate. Clean or replace.
•			•	•		•	Check and repair or replace: 1)Laser Unit, 2)Laser Driver PCA.
			•				Go to Table 7-49, page 7-76.
		•	•			•	Check and repair or replace the EP Drum Heater.
	•	•	•		•		Check the surface of the EP Drum for scratches. Clean and/or replace.
		•	•		•		Check the Developer Assembly for correct roller pressure against drum.
			•		•		Check the Toner Sensor (not sensing toner out)? Replace if needed.
	•	•	•	•	•		Check toner. Non HP toner? Purge Developer & replenish with HP Toner.
		•	•				Check the DC Controller PCA signal output. Repair or replace if needed.
	•	•				•	Check Pretransfer corona. Clean and/or replace.
			•		•		Check Transfer/Separation corona. Clean and/or replace.
			•		•	•	Check the transfer guide. Adjust position if needed.
	•					•	Check the cleaner station roller and scraper. Repair or replace.
	•						Check: 1)Cleaning Station cleaner blade, 2)Fuser Rollers for scratches, 3)Fuser Cleaning towel (replace every 200K), 4)Fuser Separation Claws (for wear or toner buildup).

Print Density Problems

If print quality is seen as a density problem, such as light or dark text, background, variations in text density or black or white pages, check the following before proceeding:

Table 7-48. Print Density Problems

Cause	Remedy
Media	Verify that paper being used meets all specifications given in Chapter 1. If paper is heavy or light, shiny, coated, embossed, or unusual in any way, refer customer to paper specs guide. If you suspect a problem with the customer's paper, initiate a controlled test using known good media such as Xerox 4024 or Canon NP (or equivalent quality high speed copier bond). Compare with results obtained from customer's paper.
Cleaner Station	Check and clean the Cleaner Station "doctor" (wiper) blade, felt end seals, rollers. Replace the Cleaner Station if necessary.
Developer Assembly	1)Check the developer roller operation. 2)Check for proper gear mesh with the driver motor and chain. 3)Check for even toner "brush" on the developing cylinder. If brush is not formed evenly, wipe developer roller with lint-free wipe. 4)Check that toner supply is full, is HP toner, and is free of lumps.
Other causes	Refer to the image defect examples in Appendix C for possible matching image quality examples.

Light Print Density

Use this troubleshooting to pinpoint the cause of overall light print density.

Table 7-49. Light Print Density - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Check the EP Drum. Is it warm?	YES	Go to step 2.
		NO	Verify AC voltage is present at slip ring contacts (back of EP Drum). Replace the Drum Heater and Drum Heater PCA.
2	Are the Transfer/Separation Corona assemblies clean and inserted correctly?	YES	Go to step 3.
		NO	Check and clean the corona wires. Insert the corona assemblies securely.
3	Are the HVT1, 2, 3 outputs normal? (Refer to "EP Process Verification" and "Drum Potential Procedures" beginning on page 7-105.)	YES	Go to step 4.
		NO	Adjust or replace any necessary components.
4	Pull the Developing Assembly out from the printer, open the toner filler lid and check inside. Is there an adequate supply of toner?	YES	Go to step 5.
		NO	Add toner. If print quality improves and no TONER LOW message was displayed, go to "Error 14.1 ADD TONER," on page 7-18.
5	Is toner supply distributed evenly inside Developer Assembly?	YES	Go to step 6.
		NO	Agitate the toner supply. If print quality improves, check toner stirring rod drive mechanism. Repair or replace the Developer Assembly.
6	Is the Developing Assembly seating properly (held firmly against the EP Drum Assembly by two pressure cams on the Developer release spindle?	YES	Go to step 7.
		NO	Repair or replace the pressure cams, if necessary (items 49 and 50 in Figure 8a-4).
7	Check for even toner "brush" on the developing cylinder. Is toner brush formed evenly?	YES	Go to step 8.
		NO	Polish the developer roller with lint-free wipe. Reinstall Developer assembly and retry operation. If problem persists, replace the "Doctor Blade" (see Chapter 6, page 6-60).
8	Are all Preconditioning Exposure LEDs working properly? (Refer to page 7-73.)	YES	Go to step 9.
		NO	Repair as directed.
9	Retry operation. Does problem persist?	YES	Replace Developer Assembly.
		NO	Problem solved.

Density Difference (front to back)

Use this troubleshooting to pinpoint the cause of uneven print density from the front to back of the printer (across scan line direction).

Table 7-50. Density Difference Front to Back - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Check the Primary Corona and Transfer/Separation Corona wire height adjustments and functionality using the "EP Process Verification," page 7-105. Are coronas functioning correctly?	YES NO	Go to step 2. Clean, adjust or replace as described in "EP Process Verification" on page 7-105.
2	Is the dust proofing glass plate dirty or fogged?	YES NO	Clean with glass cleaner and dry thoroughly before replacing. Go to step 3.
3	Check the Developing Cylinder. Does toner coat ("brush") the cylinder evenly?	YES NO	Go to step 4. Polish the Developing Cylinder surface with a dry lint-free wipe. Clean or replace the "Doctor Blade" as described in Chapter 6, page 6-60).
4	Are all Preconditioning Exposure LEDs working properly (refer to "Preconditioning Exposure LEDs Do Not Light" on page 7-73)	YES NO	Go to step 5. Perform the troubleshooting procedure as directed (Page 7-73).
5	Remove the Developer Assembly and check the surface of the EP Drum. Are the ends of the drum free of toner buildup?	YES NO	Go to step 6. Clean the drum and check the side seals of the drum Cleaning Station and Developer Assemblies (see Chapter 6, page 6-59 to 6-67). Replace any parts as necessary.
6	Is the front edge of the print image lighter than the back?	YES NO	Turn the front adjusting screw of the Primary Corona counter-clockwise $^3/_4$ turn and retry operation. Go to step 7.
7	Perform entire "EP Process Verification" and "Drum Potentials Adjustments" (starting on page 7-105). Retry operation. Is print quality acceptable?	YES NO	Problem solved. Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.

Streaks and Lines

Grouped here are the following symptoms:

- Narrow White Lines (leading to trailing edge) - Page 7-78.
- Narrow White Lines (front to back) - Page 7-79.
- Dark Lines - Page 7-80.
- Soiled reverse side (stains on back) - Page 7-81.

Narrow White Lines (leading to trailing edge)

Use this troubleshooting to diagnose the cause of narrow white lines across the width of the page (in the direction of the paper path, from leading to trailing edge).

Table 7-51.
Narrow White Lines (leading to trailing edge) - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Are the fusing rollers scratched or damaged?	YES	Check the upper and lower fuser separation claws. Clean or replace as necessary. Replace the fusing rollers.
		NO	Go to step 2.
2	Is the dust proofing glass plate dirty or fogged?	YES	Clean with glass cleaner and dry thoroughly before reinserting.
		NO	Go to step 3.
3	Check the Developing Cylinder. Does toner coat ("brush") the cylinder evenly?	YES	Go to step 4.
		NO	Polish the Developing Cylinder surface with a dry lint-free wipe. If problem persists, replace the "Doctor Blade" as described in Chapter 6, page 6-60). .
4	Is there any foreign matter anywhere in the paper feed path?	YES	Remove the foreign matter.
		NO	Go to step 5.
5	Is there any foreign matter on the surface of the EP Drum?	YES	Remove the foreign matter and clean the Drum.
		NO	Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.

Narrow White Lines (front to back)

Use this troubleshooting to diagnose the cause of narrow white lines down the length of the page (in the scan line direction, from the front toward the back of the printer).

Table 7-52. Narrow White Lines (front to back) - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Use SW101 on DC Controller PCA to print a solid black pattern. Do the narrow white lines appear at intervals of approximately 10 cm ($2^5/_8$ in)?	YES	Check/clean the white spacer rollers of the Developing Assembly. Clean/clean toner build-up on front and back edge of EP Drum using "Goldwipes" (trichlorethane).
		NO	Go to step 2.
2	Do the narrow white lines appear at intervals of approximately 25 cm ($10^7/_8$ in)?	YES	Check the EP Drum. Clean or replace as needed.
		NO	Go to step 3.
3	Perform the "EP Process Verification" and "Drum Potentials" procedures starting on page 7-105. Retry operation. Does problem persist?	YES	Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.
		NO	Problem solved.

Dark Lines

Use this troubleshooting to diagnose the cause of dark lines across the page (in either direction).

Table 7-53. Dark Lines - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Does the dark line(s) run in the direction of the paper path (leading to trailing edge)?	YES	Go to step 2.
		NO	Skip to step 3.
2	Check the Drum Cleaning Blade in the Cleaning Station Assembly. Is it worn or damaged?	YES	Replace the cleaning blade, or Cleaner Station Assembly.
		NO	Go to step 3.
3	Check the Primary Corona and Pretransfer Corona assemblies using the "EP Process Verification" on page 7-105.) Are coronas adjusted and functioning correctly?	YES	Go to step 4.
		NO	Clean, adjust or replace as described in "EP Process Verification" on page 7-105.
4	Check the Developing Cylinder. Does toner coat ("brush") the cylinder evenly?	YES	Go to step 5.
		NO	Polish the developer roller with lint-free wipe. Reinstall Developer assembly and retry operation. If problem persists, replace the "Doctor Blade" as described in Chapter 6, page 6-60). .
5	Is the EP Drum surface scratched?	YES	Check the cleaning roller and scraper. If okay, replace the EP Drum.
		NO	Go to step 6.
6	Check the Drum Separation Claws. Is there toner buildup or damage?	YES	Clean or replace the Drum Separation Claws.
		NO	Go to step 7.
7	Does the dark line appear in the scan line direction (front to back) on an intermittent basis?	YES	Go to step 8.
		NO	Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.
8	Set "Mode" SW1 of the Potential Control PCA to the OFF (right) position (this disables automatic potential measurement). Retry operation. Does the problem persist?	YES	Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.
		NO	Replace the Potential Sensor Measurement PCA.

Soiled reverse side (stains on back)

Use this troubleshooting to diagnose the cause of streaks, lines or smudges on the back side of the page. This could include either or both sides of duplexed pages. To verify this is a reverse side problem, run simplex pages using Self Test.

Table 7-54. Soiled Reverse Side - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Do marks occur at intervals of approximately 5 cm ($1^5/_{16}$ in)?	YES	Check the Registration Rollers. If dirty, clean the rollers and skip to step 4.
		NO	Go to step 2.
2	Check the cleaning roller. Is there any sign of toner leakage from either end of the roller?	YES	Replace the side seals of the Drum Cleaning assembly (see Chapter 6, page 6-66). Clean the toner catcher.
		NO	Go to step 3.
3	Check the Developing Assembly. Is there any sign of toner leakage from either end of the developing cylinder?	YES	Replace the side seals of the Developing assembly, (see Chapter 6, page 6-60). Clean the front and back EP Drum edges with "Goldwipes" (trichlorethane).
		NO	Go to step 4.
4	Check the Fuser Cleaning Towel assembly. Does the cleaning towel have length remaining? Is it winding correctly? Is it cleaning the Fuser rollers correctly?	YES	Go to step 5.
		NO	Replace the Fuser Cleaning Towel or the Cleaning Towel Assembly.
5	Check and clean the lower Fuser delivery guide and lower Fuser delivery roller. Are the marks eliminated?	YES	Problem solved.
		NO	Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.

Missing Image (including blank or black print)

Missing images can include partial image missing, all blank print, or all black print. This troubleshooting assumes that paper meets all specs, and that there are no error messages displayed. If errors are present, go to "Error Message Troubleshooting" on page 7-5.

Table 7-55. Missing Image - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Use the (SELF TEST) key to run a standard self test, then use the TEST PRINT button to run a print engine test. Does the problem occur on both tests?	YES	Go to step 2.
		NO	If the problem occurs only on the standard (SELF TEST) (and on print data sent from the host computer), the likely cause is in the Formatter. Replace the Formatter PCA.
2	Is there a partial image with portions missing or very light?	YES	Go to "Light Print Density" troubleshooting on page 7-76.
		NO	Go to step 3.
3	Check connector J109 on the DC Controller PCA. Are pins okay (not bent) and connection good?	YES	Go to step 4.
		NO	Straighten pins and/or replace connector/wiring.
4	Check the Primary Corona assembly. Is it clean and installed correctly?	YES	Go to step 5.
		NO	Reinstall securely. Replace if necessary.
5	Check the Transfer/Separation Corona assembly. Is it clean, securely seated and latched into position?	YES	Go to step 6.
		NO	Reinstall securely. Replace if necessary.
6	Perform the "EP Process" and "Drum Potentials" procedures, starting on page 7-105. Does problem persist?	YES	Go to step 7.
		NO	Problem solved.
7	Check the Developer assembly. Does the developer roller rotate during printing?	YES	Go to step 8.
		NO	Check/repair the developer drive mechanism.
8	Check the Developer Bias Potential (control circuit). Refer to "HV Test Chart" on page 7-103, replacing any necessary parts. Retry operation. Does problem persist?	YES	Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.
		NO	Problem solved.

Blurred (unsharp) Image

Blurred images can be in either the front-to-back (scan line) or leading to trailing edge direction.

Table 7-56. Blurred Image - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Check Laser power per Service Note 2684-09. Retry operation. Does problem persist?	YES	Go to step 2.
		NO	Problem solved.
2	Perform the "EP Process Verification" and "Drum Potentials Adjustment" procedures beginning on page 7-105. Retry operation. Does the problem persist?	YES	Go to step 3.
		NO	Problem solved.
3	Check the Developing Cylinder. Does toner coat ("brush") the cylinder evenly?	YES	Skip to step 5.
		NO	Polish the developer roller with lint-free wipe. Retry operation. If problem persists, replace the "Doctor Blade" as described in Chapter 6, page 6-60). Go to step 4. .
4	Is toner supply distributed evenly inside Developer Assembly?	YES	Go to step 5.
		NO	Agitate the toner supply. If print quality improves, check toner stirring rod or replace Developer Assembly.
5	Is the Developing Assembly seating properly (held firmly against the EP Drum Assembly by two pressure cams on the Developer release spindle?	YES	Go to step 6.
		NO	Repair or replace the pressure cams (items 49 and 50 in Chapter 8, Figure 8a-4).
6	Check the Developer Bias Potential (control circuit). Refer to "HV Test Chart" on page 7-103, replacing any necessary parts. Retry operation. Does problem persist?	YES	Go to step 7.
		NO	Problem solved.
7	Check the position and cleanliness of the Coronas and mounting assemblies. Okay?	YES	Go to step 8.
		NO	Clean, reinstall or replace.
8	Clean the surface of the EP Drum. Does the image improve?	YES	Check/replace the cleaning blade on the Cleaning Assembly.
		NO	Go to step 9.
9	Check the EP Drum. Is it warm?	YES	Return to "Initial Image Fault Diagnostics" on page 7-74 to retry troubleshooting.
		NO	Verify AC voltage is present at the slip ring contacts (back of EP Drum). Replace the Drum Heater & Drum Heater PCA.

Faulty Registration

If the registration is incorrect, the print image will not be placed properly on the page. To check for faulty registration, run a control panel (SELF TEST). All four borders that make up the box around the self test should be approximately the same distance from the edge of the paper.

Table 7-57. Faulty Registration - Troubleshooting Flow

Step	Check	Result	Instruction/measure
1	Run a control panel standard (SELF TEST). Check the distance of the borders. Are the "front" and "back" borders approximately the same distance from the front and back edges of the page?	YES	Go to step 2.
		NO	If feeding from a Cassette, go to page 6-89 to adjust Cassette front-to-rear registration. If feeding from the PDX, go to page 6-118 to adjust PDX front-to-rear registration.
2	Are the "leading" and "trailing" borders approximately the same distance from the front and back edges of the page?	YES	No registration problem.
		NO	Go to step 3.
3	Feed paper from one input source at a time to isolate the problem to one or more input sources. Does problem occur from all input sources?	YES	Go to step 4.
		NO	Isolate to either the PDX or Cassettes. If a PDX input problem, check the PDX pick-up and feeder roller clutches. If problem occurs from paper cassettes, verify that the paper hold-down tabs operate normally. (Perform the "PDX Area" or "Cassette Area" PM procedures in Chapter 4 (page 4-12 and 4-18)
4	On the DC Controller PCA, adjust VR101 CW to increase leading edge margin and CCW to decrease. Does border distance improve?	YES	Problem solved.
		NO	Go to "PDX Input Jams" page 7-45 or "Cassette Input Jams" page 7-47.

System Communication Problems

System communication problems can cause a wide range of symptoms,making them somewhat difficult to diagnose. Whenever system problems are suspected, follow the procedures below in order to prevent unnecessary parts replacements and lost time. Due to the high number of different interface combinations this troubleshooting flow cannot cover all possible errors, but it can provide general direction to help diagnose the problem quickly.

The I/O PCA diagnostics are run at power-up. Any hardware errors will halt the printer with an error code. Any **major** I/O configuration settings which are wrong will also cause an error message. Some I/O selections will not cause an error, but will still impair host computer to printer communications. Examples of this type of error include incorrect baud rate, incorrect RS 232/422 jumpers or addressing.

System Communication Troubleshooting

If system communication problems are suspected, use the following procedure to troubleshoot:

1. Run a copy of the standard Self Test and verify that all of the I/O configuration settings are correct for the desired interface. Refer to "Configuration" on page 3-3.
2. Verify that the BAUD rate and the RS232/422 jumpers are set correctly.
3. Verify proper I/O cable connections, both at the printer and at the host connectors. If the cable was specially made and has never worked, check pin assignments and continuity (see "I/O Cable Pin-Out Assignments" on page 3-8.
4. Verify that the printer is properly configured in the host software with the proper term-types, address, and priorities. The host must be operating the printer with a supported "LaserJet compatible" software driver program. (Refer to "Host Computer Configuration" on page 3-10.
5. If the application program cannot select specific printer features such as duplex, do the following:
   a. Set CE Mode (Formatter PCA, SW12-2 ON).
   b. Select Paper Path Self Test from the control panel.
   c. Load paper into ALL trays and the PDX (if installed).
   d. Operate the Paper Path Self Test. 180 images will be printed for one complete pass on a duplex printer. (This will confirm if all paper paths are functional.)
6. If a specific application program will not operate a particular escape sequence, refer to the LaserJet 2000 Technical Reference manual for proper format. Refer the customer to their software vendor for further support.
7. If the host computer is able to run BASIC programs, try the "Sample Test Program" in Appendix A to verify the interface and printer functionality.
8. If the printer's interface system is at fault, replace the I/O PCA and/or interface cable.

PCA Switches and LEDs

The LaserJet 2000 printer has over 26 printed circuit assemblies (PCAs). Many of these PCAs have diagnostic light emitting diodes (LEDs), switches and variable resistor potentiometers (POTs). This section shows the location and function of the many of these. The PCAs included here, in alphabetical order are:

Table 7-58. PCAs

PCA	Page
DC Controller PCA	Page 7-87
Double Feed Detect (DFD) PCA	Page 7-89
Duplex (DU) Controller PCA	Page 7-91
Formatter PCA	Page 7-92
HVT1/HVT2 PCA	Page 7-94
HVT3 (PT/SE) PCA	Page 7-95
I/O PCA	Page 7-96
Laser Driver PCA	Page 7-97
Motor Driver PCA	Page 7-98
PD CPU and PDX Control PCAs	Page 7-98
PD/DU PCA	Page 7-99
Potential Control PCA	Page 7-100
Potential Measurement PCA	Page 7-101
Scanner Driver PCA	Page 7-101
Stacker Control PCA	Page 7-102

Note

Some LEDs may glow faintly even when they should be OFF. This is due to leakage current, and is not a defect.

Field adjustable potentiometers appear in this manual in black, like this:  Field Adjustable

Factory adjusted potentiometers (do NOT adjust) appear in white, like this  Factory Adjusted

DC Controller PCA

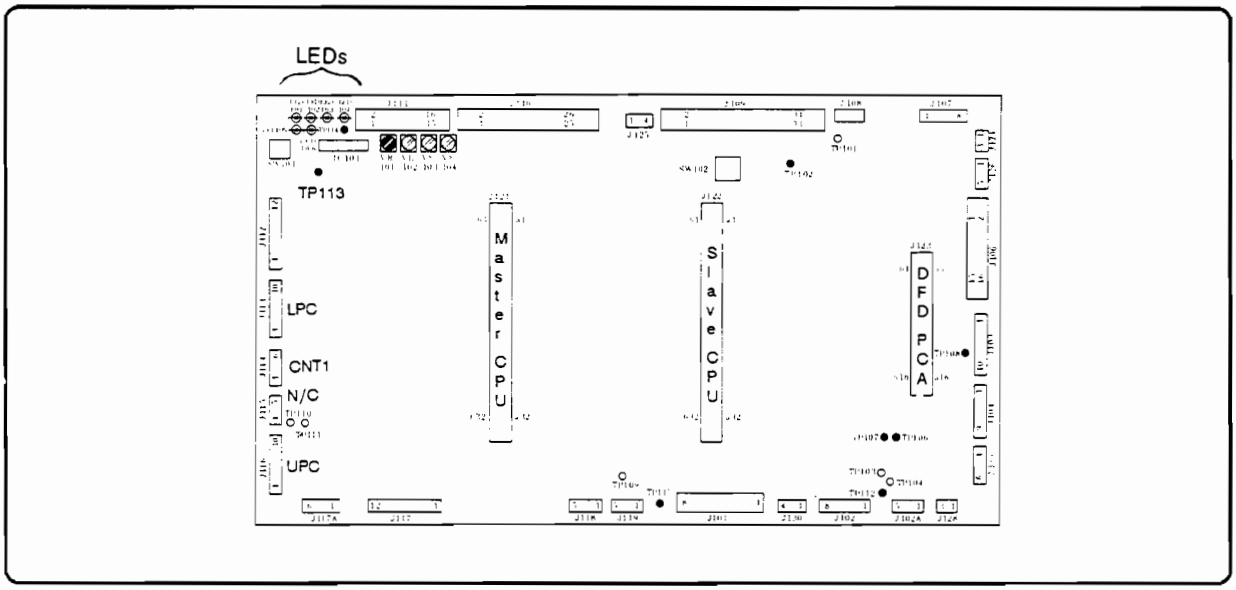


Figure 7-19. DC Controller PCA

Table 7-59. DC Controller PCA - Component Functions

LED	MEANING
LED101	Lights when 5V power is being supplied.
LED102	Lights when there is no paper in Upper Cassette ($\overline{\text{UPEP}}$=LOW).
LED103	Lights when there is no paper in Lower Cassette ($\overline{\text{LPEP}}$=LOW).
LED104	Lights when right front door and rear panel is closed and 24V power is being supplied.
LED105	Lights when 24V power is being supplied.
LED106	Lights when -5V power is being supplied.
SWITCH	**FUNCTION/SETTING**
SW101	Used to run black and white test pattern.
SW102	Factory settings: 1=ON, 2=OFF, 3=OFF, 4=ON. Switches 3 and 4 **must be correct** or Beam Detect Failure will occur. (Switches 1 & 2 are not critical.)
POT	**FUNCTION/ADJUSTMENT**
VR101	Used to adjust Leading Edge Registration. Turn CW to increase leading margin.

Table 7-59. DC Controller PCA - Component Functions (continued)

TEST POINT	PURPOSE
TP101	Beam Detect
TP102	0V (GND)
TP103	To check LASER ON signal.
TP104/105	Factory use only.
TP106	To check Drum Separation Sensor (PS1).
TP107	To check Fuser Exit Sensor (PS3).
TP108	To check drum clock sensor (PS2).
TP109/111	Factory use only.
TP112	To check registration clutch drive signal (RGCD).
TP107	To check waste toner receptacle CdS cell.
TP114/115	0V (GND)
J119-1	Ground (GND)
J119-2	+5V
J119-3	-5V
J119-4	+24V
J119-5	+24Vc

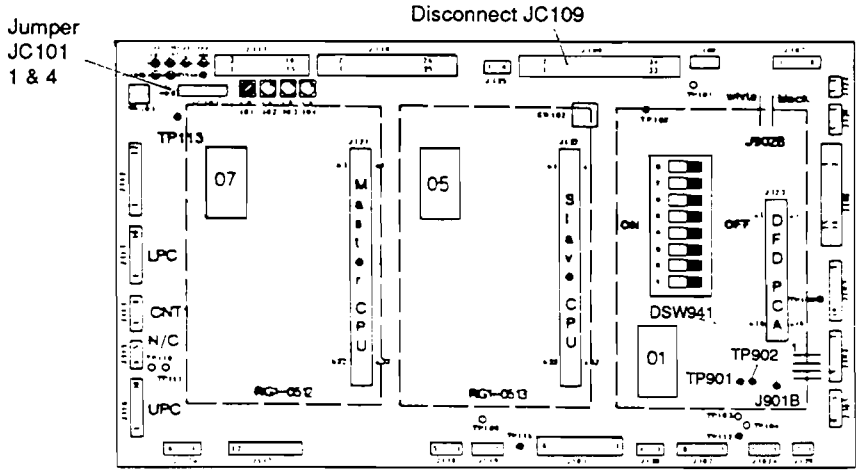


Figure 7-20. Double Feed Detect PCA

Table 7-60. DC Controller PCA - Component Functions

SWITCH	FUNCTION/SETTING
DSW941	Serves several functions as shown in Figure 7-21 on the following page.
TEST POINT	**PURPOSE**
TP901	Used to adjust the Double Feed Detect sensor.
TP902	Used to adjust the Double Feed Detect sensor.
TP903-906	.Not used.
J901B-1	Used to adjust the Double Feed Detect. sensor.

Note

Many of the functions of DSW941 switches are dependent on connectors JC101-1 , JC101-4 and J109 of the DC Controller PCA being disconnected.

The Double Feed Detect has an 8 position DIP switch (DSW941) that serves several functions such as selecting paper input sources, and disabling certain printer functions such as paper jams and warm up. Figure 7-21 shows a complete list of functions for DSW941.

DS941 SWITCH	WHEN DC CONTROLLER JC101-1, JC101-4 AND J109 ARE NOT CONNECTED	WHEN DC CONTROLLER JC101-1, JC101-4 AND J109 ARE CONNECTED
1	**IF THE PAPER DECK EXTENDER (PDX) IS INSTALLED AND NOT OUT OF PAPER:** LEFT (ON): SELECTS PAPER FEED FROM THE PAPER DECK (PDX). RIGHT (OFF): SELECTS PAPER FEED FROM THE LOWER CASSETTE. **IF THE PAPER DECK EXTENDER (PDX) IS NOT INSTALLED OR OUT OF PAPER:** LEFT (ON): SELECTS PAPER FEED FROM THE UPPER CASSETTE. RIGHT (OFF): SELECTS PAPER FEED FROM THE LOWER CASSETTE.	DS941-1 IS NOT USED
2	LEFT (ON): TURNS THE LASER ON	LEFT (ON): TO CHECK TRANFER CORONA OUTPUT
3	LEFT (ON): WARM UP KILLER ENABLES PRINTING WITHOUT WARM-UP.	LEFT (ON): TO CHECK DEVELOPER BIAS
4 6	DS941-4 AND DS941-6 USED TOGETHER SELECT THE PAPER PATH TO BE TESTED ACCORDING TO THE FOLLOWING CHART: 4 / 6 / PAPER PATH TESTED: 0 / 0 / PRINT ENGINE TO ERROR TRAY 1 / 0 / PRINT ENGINE TO MAIN STACKER TRAY 0 / 1 / PRINT ENGINE TO DUPLEX HOLDING TRAY (IF DUPLEX INSTALLED) 1 / 1 / DUPLEX HOLDING TRAY TO PRINT ENGINE 0 = RIGHT (OFF) 1 = LEFT (ON)	DS941-4: LEFT (ON): TO CHECK EP DRUM POTENTIALS. (Vlight, Vdark, AND Voff) DS941-6: LEFT (ON): TO CHECK PRIMARY CORONA OUTPUT.
5	LEFT (ON): DISABLES PAPER JAM DETECTION IN THE ENTIRE MACHINE.	LEFT (ON): TO CHECK PRETRANSFER, TRANSFER, AND SEPARATION CORONAS OUTPUT.
7	LEFT (ON): ENABLES PRINTING WHEN NOT IN READY STATUS	LEFT (ON): TO CHECK SEPARATION CORONA OUTPUT.
8	LEFT (ON): TEST PRINT. USED TO EXECUTE SWITCH DS941 PAPER MOVEMENT	DS 941-8 NOT USED

NOTE: ASSURE ALL DS941 SWITCHES ARE IN THE RIGHT (OFF) POSITION AFTER SERVICE.

Figure 7-21. DSW941 (on Double Feed Detect PCA)

Note

Connector J109 must be unplugged from the DC Controller PCA to use the DSW941 functions.

Duplex (DU) Controller PCA

LEDs on the DU Controller PCA can be used in troubleshooting Duplex paper sensor problems. They are helpful in verifying that sensors are working.

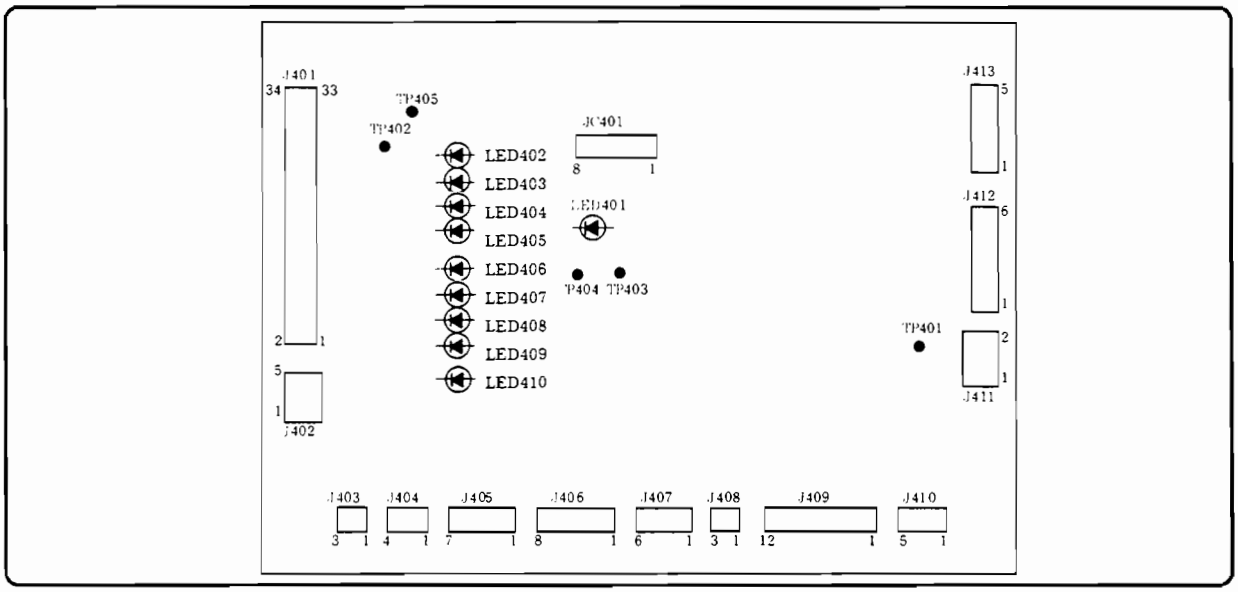


Figure 7-22. DU Controller PCA - LED/Switch Layout

Table 7-61. DU Controller PCA - Component Functions

LED	MEANING
LED401	+5V
LED402	Duplex-PS3 Second pass pick-up (RPS)
LED403	Duplex-PS2 Side plate home position sensor (HPS)
LED404	No connection/not used (MPOS)
LED405	Duplex-PS1 Holding Tray delivery sensor (IPOS)
LED406	No connection/not used (RPOS) - Always ON
LED407	Stacker-PS8 Duplex inlet paper sensor (RIS)
LED408	Duplex-PS4 Vertical Pass paper sensor (VTPS)
LED409	Duplex-Q1 Holding Tray paper sensor (RPES)
LED410	No connection/not used (OLSD)
TEST POINT	**PURPOSE**
TP401	0V (GND)
TP402	0V (GND)
TP403	15V power supply indicator
TP404	24V power supply indicator
TP405	Operates Duplex Unit Motor when TP405 connected to GND.
JC401-1	24V power supply indicator
JC401-2	15V power supply indicator
JC401-3–7	For factory check.
JC401-8	0V (GND)

Formatter PCA

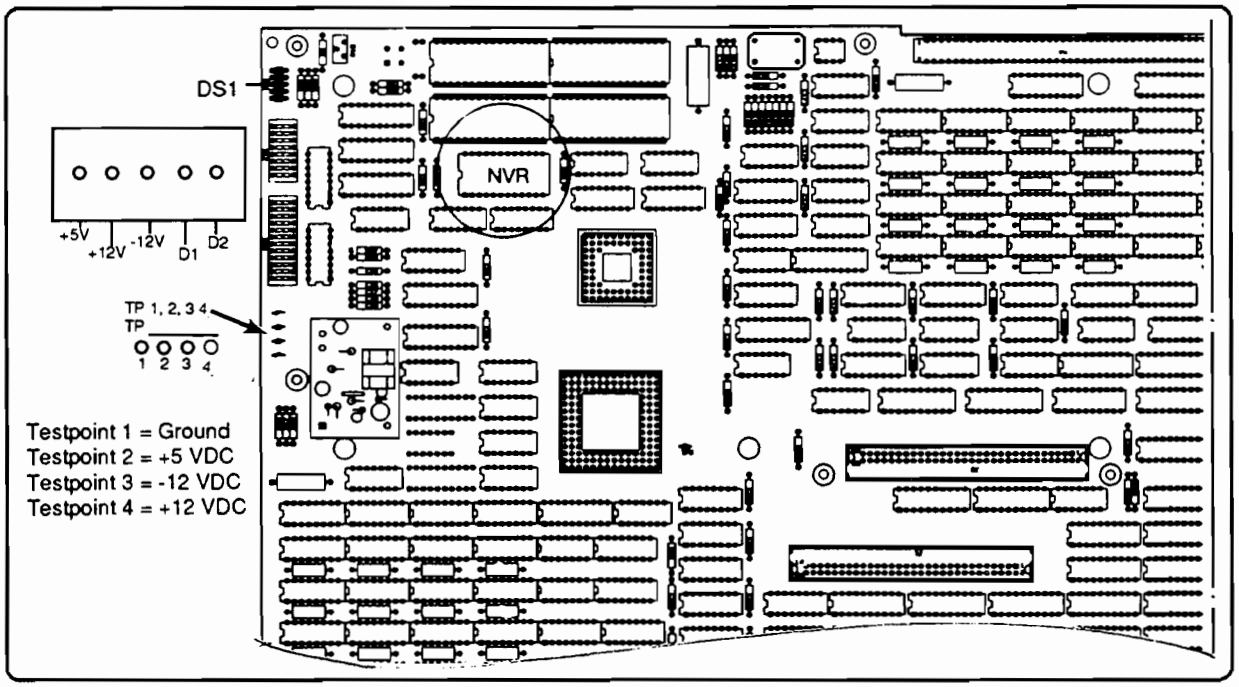


Figure 7-23. Formatter PCA

Table 7-62. Formatter PCA - Component Functions

LED	MEANING
DS1	Five LEDs. All ON when Formatter is functional.
SWITCH	**FUNCTION/SETTING**
SW12	Selects various service functions as well as interface configuration (see next page).
SW14	Specifies interface configuration (see next page).
POT	**FUNCTION/ADJUSTMENT**
VR1	Used to adjust intensity of the front panel LCD display. Turn CW to increase intensity.
TEST POINT	**PURPOSE**
TP1	Ground
TP2	+5VDC
TP3	-12VDC
TP4	+12VDC

See Table 7-63 on the next page for detailed information about S12 and S14 functions.

Table 7-63. Formatter S12 and S14 Functions

Switch	Function
S12-1	**FP (Flush Pages)** With S12-1 in the "ON" position: 1) all pages will be flushed from the paper path of the printer when an "ESC E" is received and a new Double Feed Detect Sensor reading will be taken from the next sheet fed from any paper source. Leaving this switch set to the "ON" position could severely affect printer throughput.
S12-2	**CE (Customer Engineer)** With S12-2 in the "ON" position, access is granted to CE functions. When in "CE" mode, the printer's JAM COUNT will be displayed on the first page of the standard self test. In addition, several different stand alone self tests are made available for front panel selection: ■ PAPER PATH: 12 pages are printed, 4 from each source, two of which (from each source) are duplexed. ■ MEMORY REPORT: Shows where data is loaded into the printer's memory. Not useful for troubleshooting. ■ NON-PRINTING: Tests the Formatter's ability to communicate with the print engine. Does not move paper. ■ GLOBAL RAM: Tests the printer's RAM for errors by writing a known pattern and reading it back. Displays failing chip address if error encountered. ■ E/I PCA: Tests the Engine Interface PCA ■ IMAGE PROCESSOR: Tests the Formatter's image processor section. Replace the Formatter PCA if failure is detected. ■ I/O PCA: Tests the installed Input/Output PCA by sending a known pattern through the PCA and looping it back. The above tests are invoked using the MENU and SELF TEST keys.
S12-3	**RI (Run In)** With S12-3 (RI) and S12-2 (CE) both "ON", the printer enters Run In Mode when the printer's PAPER PATH self test is selected from the front panel. Run In Mode prints 180 images (120 pages). 40 pages are printed from each paper source, 20 of which are duplexed. Run In Mode is quite useful when troubleshooting/verifying paper jams.
S12-4	**CS (Cold Start)** When S12-4 (CS) is "ON" and the printer is powered up, the printer will reset all front panel configurations to the default state of: (Letter/A4 paper), Secure Source=OFF, Orientation=Portrait, Form Length=60, Primary/Secondary character set=0, Attendance Bell=ON, Auto-Continue=ON and Job Separation=ON. Additionally, cold starting the printer will reset the JAM COUNT to zero.
S12-5 - 8	Used for installed I/O configuration. See Chapter 3, page 3-3 for proper switch positions.
Switch S14	All S14 switches (1-12) are used for installed I/O configuration. See Chapter 3, page 3-3 for proper switch positions.

HVT1/HVT2 PCA

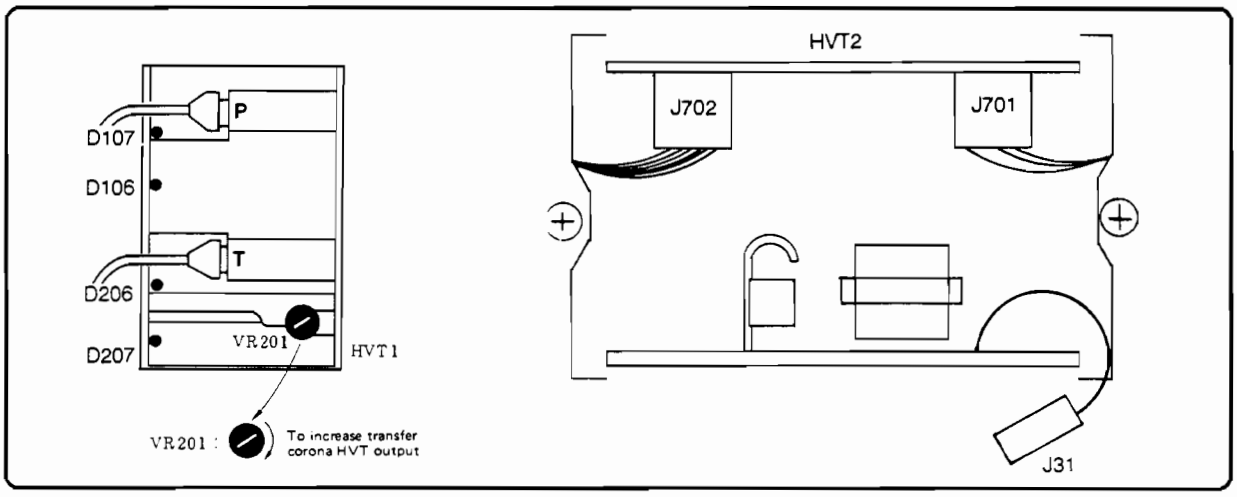


Figure 7-24. HVT1/HVT2

Table 7-64. HVT1 - Component Functions

LED	MEANING
D107	Verifies input to HVT1 from the DC Controller to enable Primary Corona Circuitry.
D106	Output side of Primary Corona transformer.
D206	Output side of Transfer Corona transformer.
D207	Verifies input signal from DC Controller to enable Transfer Corona Circuitry.
POT	**FUNCTION/ADJUSTMENT**
VR201	Used to adjust Transfer Corona output. Turn CW to increase output.

Note

When adjusting corona outputs, always use a high voltage test drum (see "EP Process Verification," page 7-105). Turn POTS clockwise (CW) to increase output, counter clockwise (CCW) to decrease.

HVT3 (PT/SE) PCA

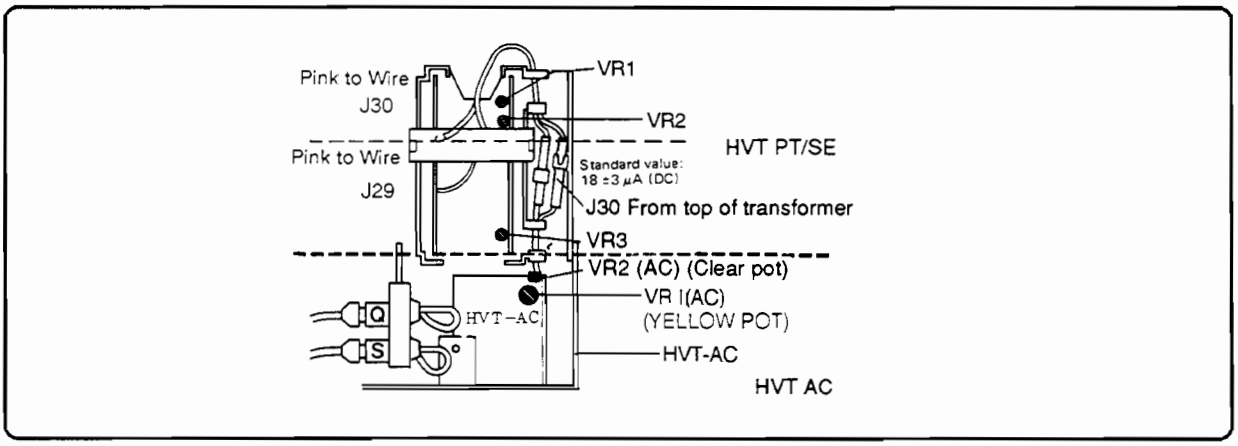


Figure 7-25. HVT3

Note

There are two POTS called "VR1" and two called "VR2" in the following list. The first (upper) POTS are located toward the top of the HVT3 (PT/SE) assembly and is for adjusting DC corona output. The second (lower - VR1=yellow, VR2=clear) are toward the bottom of HVT3 (PT/SE) and are for adjusting AC corona output.

When adjusting corona outputs, always use a high voltage test drum (see "Drum Potentials Adjustment," page 7-112). Turn POTS clockwise (CW) to increase output, counter clockwise (CCW) to decrease.

Table 7-65. HVT3 (PT/SE) - Component Functions

POT	FUNCTION/ADJUSTMENT
VR1 (small upper green)	Used to adjust Separation Corona DC output for double-sided printing. Turn CW to increase output.
VR2 (small middle green)	Used to adjust Separation Corona DC output. Turn CW to increase output.
VR3 (small lower green)	Used to adjust Pretransfer Corona DC output. Turn CW to increase output.
VR1 (lower yellow)	Used to adjust AC output for both Pretransfer and Separation Coronas. Turn CW to increase output.
VR2 (lower clear)	Use only if unable to achieve proper AC current adjustment using VR1 (lower yellow).

I/O PCA

The I/O PCAs have an LED that can be used to diagnose the board's functionality. On power-up, the I/O PCA runs an internal sub-test. Table 7-66 shows the meaning of various LED states after power-up self test:

Table 7-66. I/O LED Error Conditions

LED1 STATUS	DESCRIPTION
1 - 2 Hz flash	Interface operating correctly.
5 Hz flash	Passed I/O subtest but failed to communicate with the printer (or possibly the external interface).
Steady ON or OFF	Interface failed subtest (I/O RAM, ROM, or SIO/CTC circuitry failure likely).

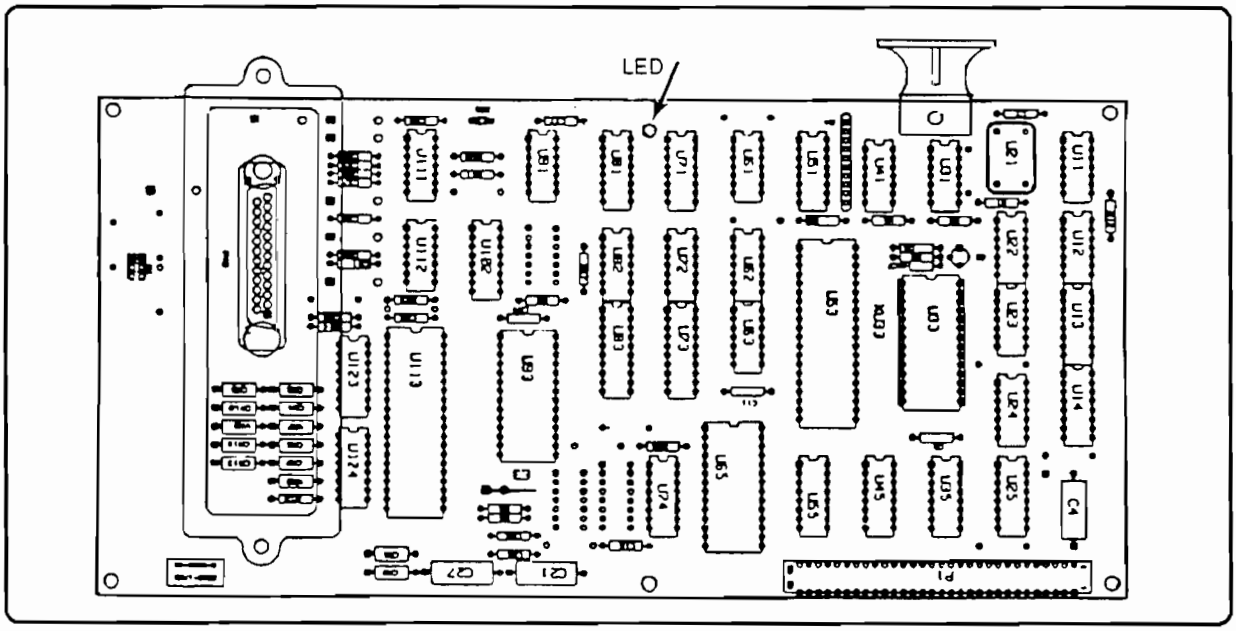


Figure 7-26. I/O PCA Diagnostic LED

Laser Driver PCA

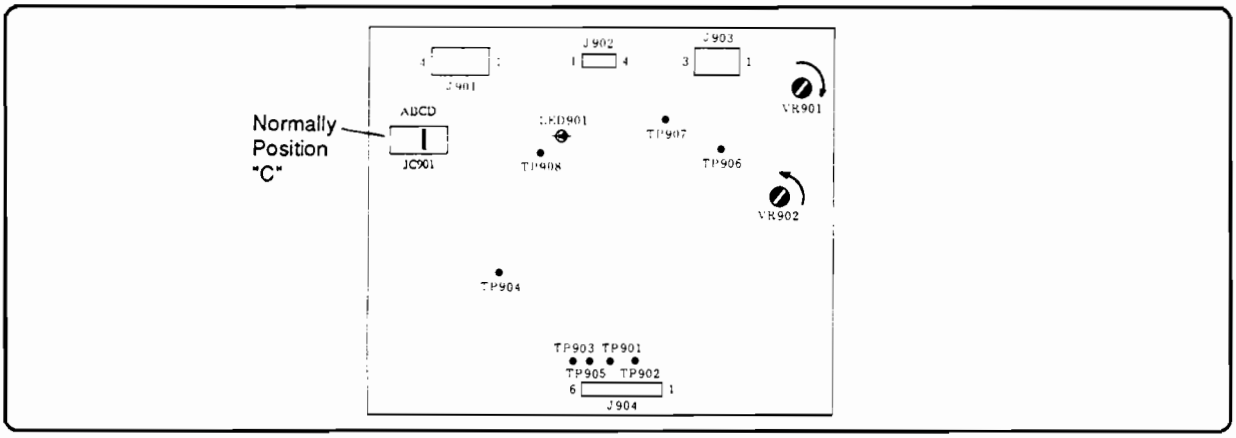


Figure 7-27. Laser Driver PCA

Note

JC901 should always have a jumper attached in position "C."

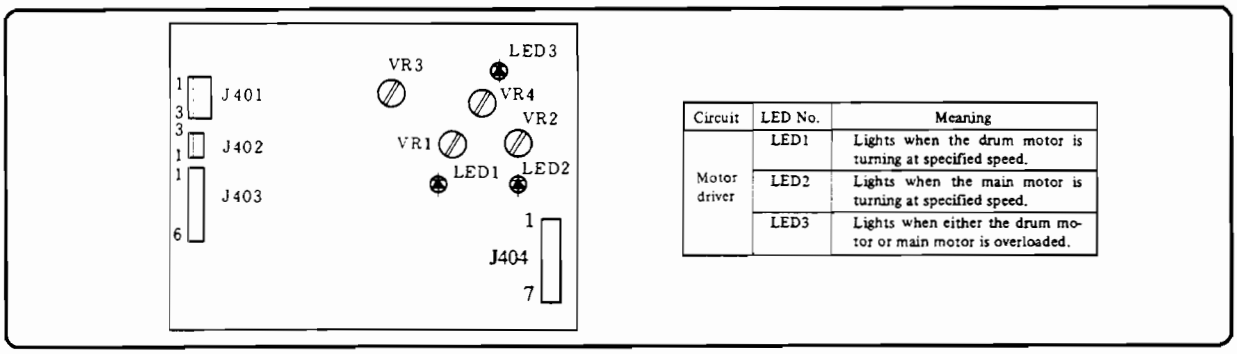
Table 7-67. Laser Driver PCA - Component Functions

LED	MEANING
LED901	Lights to indicate laser diode is at correct temperature (LSRDY = L).
TEST POINT	**PURPOSE**
TP901	To check TH2 signal.
TP902	0V (GND)
TP903	Used for factory check.
TP904	Used for factory check.
TP905	Used for factory check.
TP906	Used to confirm -5VDC power supply ON.
TP907	Used to confirm +5VDC power supply ON.
POT	**FUNCTION/ADJUSTMENT**
VR901	Used to adjust Vlight (fine laser power). Turn CW to increase laser power.
VR902	Used to adjust laser power (coarse adjust). Turn CW to increase laser power.

Note

When adjusting laser power, always use the laser power checker and a digital multimeter (see "Drum Potentials Adjustment" on page 7-112). Adjust VR902 whenever replacing Laser Unit. Adjust VR901 whenever performing Drum Potential Adjustment procedure.

Motor Driver PCA



Circuit	LED No.	Meaning
Motor driver	LED1	Lights when the drum motor is turning at specified speed.
	LED2	Lights when the main motor is turning at specified speed.
	LED3	Lights when either the drum motor or main motor is overloaded.

Figure 7-28. Motor Driver PCA

Table 7-68. Motor Driver PCA - Component Functions

LED	MEANING
LED1	Lights when the Drum Motor is turning at the proper speed.
LED2	Lights when the Main Motor is turning at the proper speed.
LED3	Lights when either the Drum Motor or the Main Motor is overloaded.

Note None of the POTS on the Motor Driver PCA (VR1 - VR4) are field adjustable.

PDX CPU and PDX Control PCAs

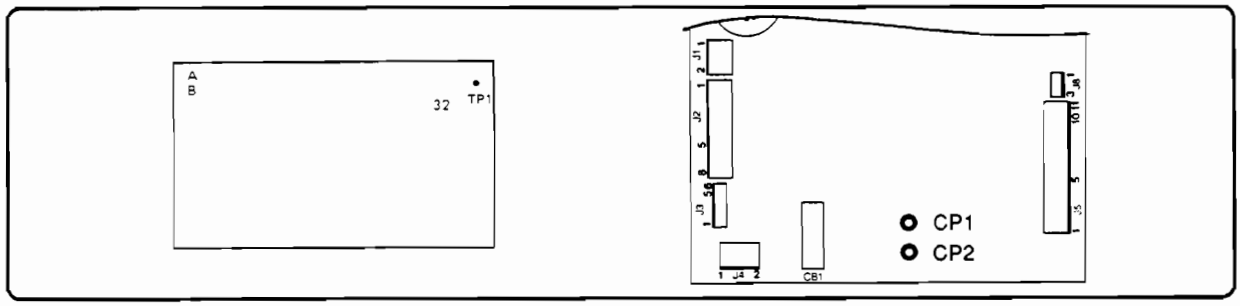


Figure 7-29. PD CPU PCA

Table 7-69. PDX CPU PCA and PDX Control PCA - Component Functions

PD CPU PCA		PDX Control PCA	
TEST POINT	PURPOSE	TEST POINT	PURPOSE
TP1	0V (GND)	CP1	+10VDC
		CP2	0V (GND)

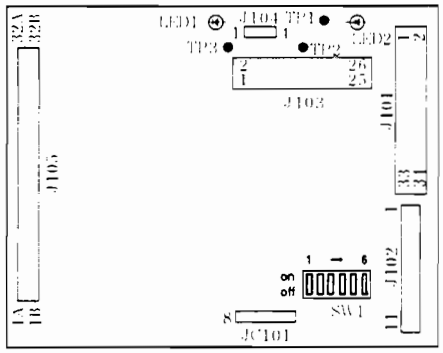


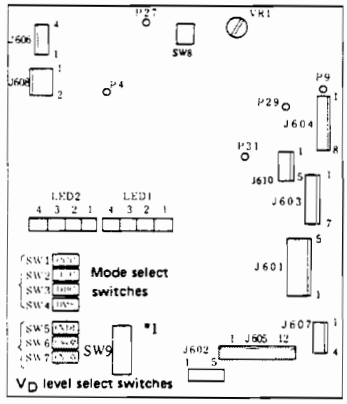
Figure 7-30. PD/DU PCA

Table 7-70. PD/DU PCA - Component Functions

LED	MEANING
LED1	When duplex printing, this LED lights when a first-side printed page is in the Vertical Pass feeder. (If Duplex is not installed, LED1 is always ON.)
LED2	Lights when +5V is supplied.
SWITCH	**FUNCTION/SETTING**
SW1-1	Factory check. Normal position=OFF.
SW1-2	Factory check. Normal position=OFF.
SW1-3*	Paper size. Normal position=ON (for Letter or A4).
SW1-4*	Paper size. Settings: Letter=ON, A4=OFF.
SW1-5	Jam disable - PDX and Duplex (for isolating jam locations). Normal position=OFF.
SW1-6	Duplex Jam display. Normal position=OFF.
TEST POINT	**PURPOSE**
TP1	0V (GND)
TP2	To check +5V power supply voltage.
TP3	To check clock pulses (10MHz) for the microprocessor.
JC101-1	For factory check.
JC101-2	For factory check.
JC101-3	To check the Duplex door switch signal.
JC101-4	To check the microprocessor reset signal.
JC101-5	For factory check.
JC101-6	For factory check.

**Switches SW1-3 and SW1-4 must be set for the correct default size paper, matching whatever is configured from the operator control panel.*

Potential Control PCA



DPI	SW9	
	1	Off
	2	On
	3	On
	4	Off

Figure 7-31. Potential Control PCA

Note

LEDs and switches on the Potential Control PCA are used in setting the EP Drum Surface Potentials. This page contains only a very brief overview of switch and LED functions. For details, see "Drum Potentials Adjustment" beginning on page 7-105.

Table 7-71. Potential Control PCA - Component Functions

LED	MEANING
LED1	Bank of four LEDs used to indicate Drum surface potentials, in conjunction with LED2 and SW8. (See conversion charts on page 7-117.)
LED2	Bank of four LEDs used to indicate Drum surface potentials, in conjunction with LED1 and SW8. (See conversion charts on page 7-117.)
SWITCH	**FUNCTION/SETTING**
SW1-SW4	Mode Select Switches. Used to set various potential control modes. Normal position = ALL SWITCHES ON (to left). See Figure 7-43, "Mode Select Switches 1,2,3,4" on page 7-116 for details.
SW5-SW7	Vdark level select switches. Used in conjunction with SW8 (range selection). Positions determine drum surface potential voltages. See Figure 7-42, "Vdark Switches 5,6,7,8" on page 7-115 for details.
SW8	Range selection switch. Setting determines the range of Vdark selection switches SW5-SW7.
SW9	Factory use only. **Not field adjustable.** Normal settings: 1=OFF, 2=ON, 3=ON, 4=OFF (right is ON, left is OFF).

Potential Measurement PCA

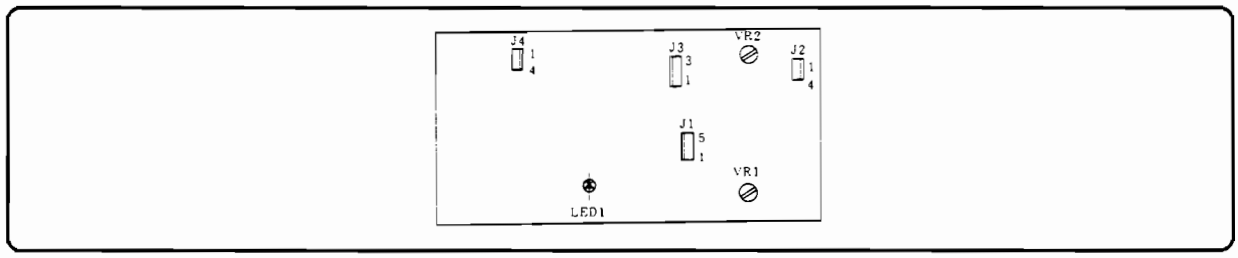


Figure 7-32. Potential Measurement PCA

Table 7-72. Potential Measurement PCA - Component Functions

LED	MEANING
LED1	Lights when the potential sensor is functioning normally and all door interlocks are closed.

Scanner Driver PCA

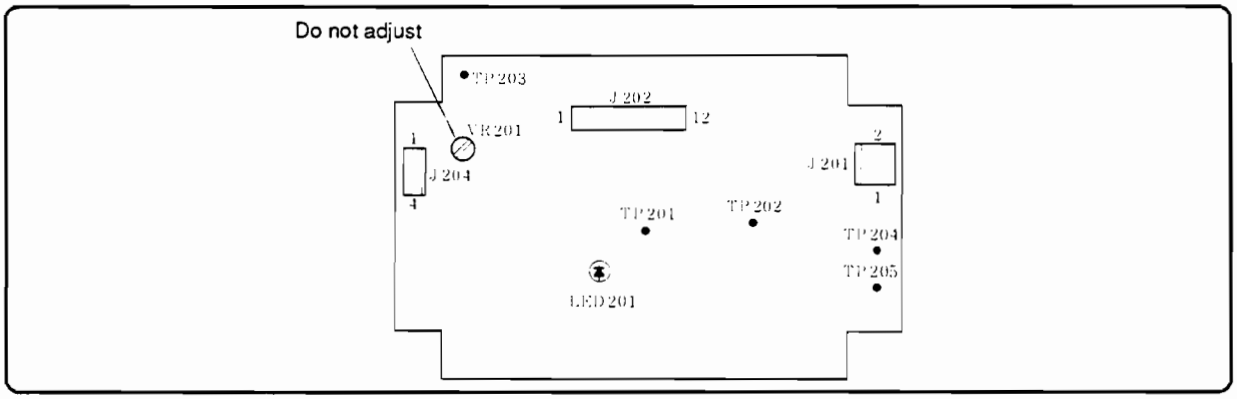


Figure 7-33. Scanner Driver PCA - Component Functions

Table 7-73. Scanner Driver PCA - Component Functions

LED	MEANING
LED201	Lights when the Scanner Motor is at the correct speed. ($\overline{\text{SCNRDY}}$ = LOW).
TEST POINT	**PURPOSE**
TP201	For factory check.
TP202	For factory check.
TP203	For factory check.
TP204	0V (GND)
TP205	+8V

Stacker Control PCA

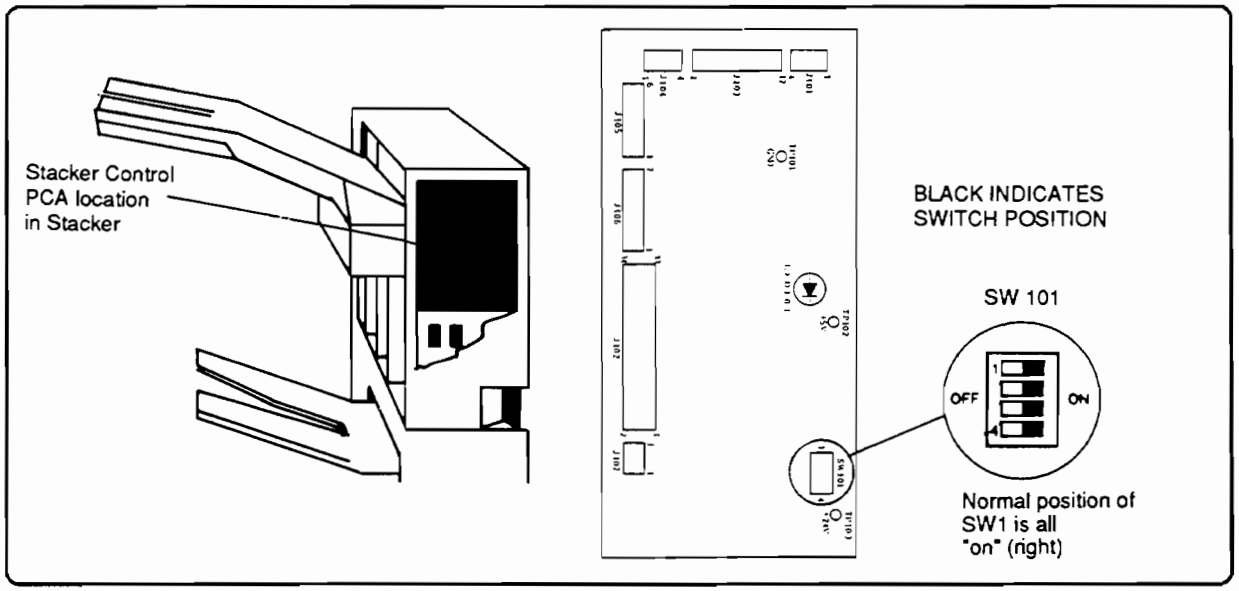


Figure 7-34. Stacker Control PCA

Table 7-74. Stacker Control PCA - Component Functions

LED	MEANING
LED101	Lights when +5V is supplied.
SWITCH	**FUNCTION/SETTING**
SW101-1	Setting OFF disables jam detection in the stacker. Used in diagnosing jams. Normal position=ON (right).
SW 101-2	Setting OFF disables switchback feeding. Used in diagnosing jams and for "emergency" disabling of face-down stacking. Normal position=ON (right).
SW 101-3	Factory use only. Normal position=ON (right).
SW 101-4	Factory use only. Normal position=ON (right).
TEST POINT	**PURPOSE**
TP101	0V (GND)
TP102	For checking +5V.
TP103	For checking +24V.

HV Test Chart

Table 7-75. HV Test Chart

HV Test	Checkpoint	Normal Condition	Cause of Failure
Potential Sensing or Control Circuit	LED1 on the Potential Measurement PCA	Lights immediately after the power is switched on (when all door interlocks closed).	1. Potential Sensor & Measurement PCA 2. Print Engine PS2
Potential Sensing or Control Circuit	Change in voltage between P27 and P4 (12V) on Potential Control PCA	Does voltmeter reading change within the range 0-4 during printing. The voltage reading is smaller for a dark print than for a light print.	1. Potential Sensor & Measurement PCA 2. Pot. Cont. PCA 3. HVT1 4. DC Controller PCA
Primary Corona Current Control Circuit	D107 and D106 on the IIVT1 assembly	Lights from the beginning of INITIAL rotation until the last rotation. All other times the LEDs are OFF or low intensity.	1. DC Controller PCA 2. Pot. Cont. PCA 3. HVT1
Primary Corona Current Control Circuit	Voltage between P9 and GND on Potential Control PCA.	Approx 9V during printing with the CCC switch OFF (SW1).	1. Pot. Cont. PCA 2. HVT1 3. Primary Corona
Transfer Corona Current control Circuit	D206 on the IIVT1 assembly	Lights brightly from the beginning of initial rotation until the LAST rotation. All other times the LED is OFF or low intensity.	1. Pot. Cont. PCA 2. HVT1 3. Primary Corona
Transfer Corona Current control Circuit	D207 on the IIVT1 assembly	(same as above)	1. DC Controller PCA 2. Pot. Cont. PCA
Pretransfer Corona Circuit	NONE. The IIVT test drum must be used to check current failures	See "EP Process Verification" on page 7-105.	1. Short in Transfer Corona 2. HVT1
Separation Corona Circuit	(same as above)	(same as above)	1. Corona Assembly 2. HVT-PT/SE 3. DC Controller PCA 4. Pot. Cont. PCA
Developing Bias Control Circuit	Voltage between J603-4 (24V) and J603-6 (DBAC) on the Potential Control PCA	Approx 23V during print rotation and approx 10V all other times.	1. Pot. Cont. PCA 2. HVT2 3. DC Controller PCA
Developing Bias Control Circuit	Voltage between P29 and J603-3 (GND) on the Potential Cont. PCA	Approx 9V during PRINT rotation, 3.8V all other times.	1. HVT2 2. Pot. Cont. PCA 3. DC Controller PCA

Adjustments

This section contains procedures for adjustments that are normally performed as part of a troubleshooting process. Adjustments located here include:

Table 7-76. Adjustments in This Chapter

Adjustments in Chapter 6

There are several adjustment procedures that are normally performed only when a component is replaced. These adjustments are included in the Chapter 6, "Removal and Replacement." There may be occasions when one or more of these adjustments will be required even though the part is not being replaced. Table 7-77 lists these other adjustments and the page numbers where they appear.

Table 7-77. Adjustments in Chapter 6 (in alphabetical order)

EP Process Verification

Introduction

This procedure checks all areas of the EP process, and should be used whenever a problem is suspected in the EP process area. Proper sequence would be to perform this EP Process Verification procedure first, then perform the Drum Potential/New Drum Installation procedure. This will ensure that all areas of the EP process are checked, adjusted and verified.

The following steps MUST be performed in sequential order. This procedure follows a logical progression through the EP process from beginning to end. Once this procedure is begun, follow it through to the end to assure all areas of the EP process are checked and adjusted to specification. This procedure will check the Preconditioning LEDs, Primary, Pretransfer and Transfer/Separation Coronas and associated power supplies.

Tools Required

The required tools for this adjustment are:

- High Voltage Test Drum (P/N TKN-0411-000CN). Consists of aluminum drum with red lead attached, black test lead with clip, and bronze colored end plate. Clear plastic spacers should be glued into the ends of each drum (larger spacer to the rear) to prevent short circuit on drum.
- Digital multimeter (capable of microamp (μA) resolution). Suggested meters: HP2378A or HP3466A
- Two jumper connectors (P/N 1252-0690) wired as follows:
  - Pin 1 and 4 connected
  - Pin 1, 4, and 7 connected
- Test lead with small alligator clips at both ends.
- 2 Cover Interlock Keys (P/N 02684-40001).
- Drum Protective Sleeve (P/N TKN-0459-000CN)
- Small Steel Metric Ruler (P/N 8750-0349)
- #2 Phillips Screwdriver

Step 1: Setup

a. Power OFF the printer.

b. Remove the AC line cord from the printer or the AC outlet.

c. Remove the rear print engine cover. **Do NOT install the rear interlock** (this will prevent the HV test drum from rotating when installed).

d. Open the front right and left doors. Remove all Coronas, Toner Catcher, Cleaning Station, Developer Assembly and the EP Drum. Use a protective sleeve (beige plastic sleeve, P/N TKN-0459-000CN) when removing the drum and leave the sleeve installed on the drum until the drum is reinstalled.

e. Check the wire height of all coronas and compare the measured value with the correct height for this machine as stated on the Corona Wire Height Label (located on the machine front plate to right of the green fuser knob).

Note

Corona wire heights are different for each machine and need to be verified whenever beginning this procedure to assure the distance from wire to drum is correct. This can severely affect the ability of the corona to charge the drum. See Chapter 6, page 6-55 for Corona Wire Height Adjustment procedure.

---

f. Clean all coronas wires and both sides of the Primary Grid Wires and Pretransfer Grid Wires with alcohol and lint free wipe. Clean both sides of the grids until the lint free wipe no longer shows any residue.

g. Install the High Voltage Test Drum, P/N TKN-0411-000CN. Assure the clear plastic spacers are present in each end before installing, and assure the red lead attached to the HV Test Drum exits the printer through the Cleaner Station area so it will not affect these adjustments. Install the bronze colored HV Drum end cap (two screws), and install the black plastic drum locater end cap (two screws).

h. Connect the red lead (from the HV Test Drum) to the positive side of the DMM. Connect the black lead to the negative side of the DMM and secure the clip end to the large Allen bolt below and to the right of the EP area.

i. Remove the right cover panel, RFI cover, and the two screws holding the Potential Measurement and Control PCA fold down panel.

j. Remove DC Controller Connector J109. (Error 60, 61, 62, or 63 may occur when power is applied, ignore these errors during this procedure.) Install the test jumper (P/N 1252-0690) with pins 1 and 4 connected to JC101 on the DC Controller (see Figure 7-35).

k. Reinstall the AC line cord into the printer or AC outlet. Power ON the printer.

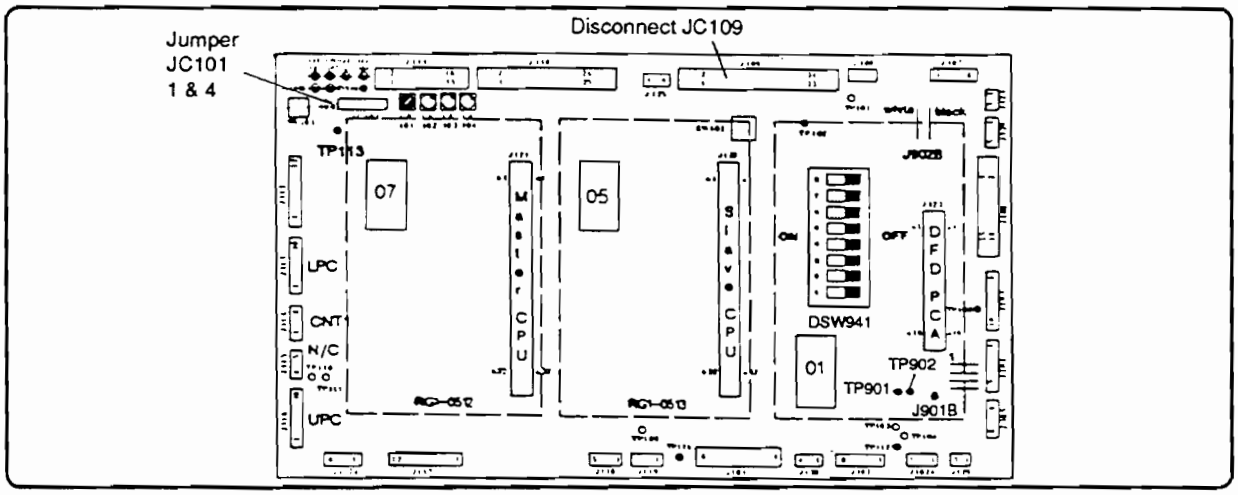


Figure 7-35. DC Controller PCA

Note

During this procedure assure the DMM is set properly for either AC or DC range as requested! Also, if you listen carefully when turning on the different coronas with DSW941, you can usually hear the corona turning on (high pitched hum). After performing this procedure numerous times, you may be able to discern the difference between a good or bad corona by the difference in the audible noise when turning a corona on!

Step 2: Preconditioning LED Check

a. Install the LEFT front door interlock ONLY. **Do NOT install right interlock, or test drum will rotate!**

b. Look up into the printer through the opening for the Cleaning Station and press the TEST PRINT button on the front panel (white button directly to the right of the paper jam display). Do ALL the red Preconditioning LEDs come on?

YES–Preconditioning LEDs OK, go to step 2(c) below.

NO–No LEDs light - Go to "Preconditioning Exposure LEDs Do Not Light" on page 7-73.

NO–One or more LEDs do not light - Replace LED Array Assembly (see Chapter 6, page 6-56).

c. Power OFF the unit to reset the DC Controller (turn off the LEDs).

Step 3: Transfer Corona Check

a. Install ONLY the Transfer/Separation Corona. Latch Transfer/Separation Corona handle into operating position.

b. Power ON the printer.

c. Set the DMM for 200μA (microamps) DC range.

d. Install the RIGHT door interlock. Both right and left interlocks should be installed at this point.

e. Set switch DSW941-2 left (ON) to activate the Transfer Corona (see Figure 7-35).

f. Measure the DC microamp current: Does the DMM read -70 ($\pm$4)μA DC?

YES–Go to Step 4, "Transfer Corona Check."

NO–Adjust VR201 on HVT1 to -70μA DC. Check the resistance between the lower transfer guide and the printer chassis. Resistance should be greater than zero. (The lower transfer guide should have a "floating ground." Check if the guide is in direct contact with metal parts such as the side plate of the Feeder Assembly. Adjust as necessary. See NOTE below.

g. Switch OFF DSW941-2. Power OFF the printer. End Transfer Check.

HVT1 PRIMARY/TRANSFER SUPPLY LEDs	
LED 107	ENABLE PRIMARY FROM DC CONTROLLER
LED 106	PRIMARY TRANSFORMER OUTPUT
LED 206	TRANSFER TRANSFORMER OUTPUT
LED 207	ENABLE TRANSFER FROM DC CONTROLLER

HVT1 ADJUSTMENTS	
VR 201	TRANSFER CORONA OUTPUT ADJUSTMENT

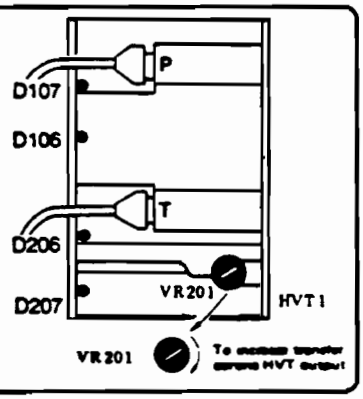


Figure 7-36. HVT1 LEDs and Adjustment

Note

If no current is measured, check the following:

- Is the DMM **in microamp DC range?** (Assure the DMM is capable of microamp resolution - typical CE meters will NOT read microamps.)
- Assure LED1 on the Potential Measurement PCA (directly left of Potential Control PCA) is ON. If not, assure interlocks are really making contact and that Engine-DCPS1 is operational.
- Assure JC101 pins 1 and 4 are effectively jumpered together with test jumper P/N 1252-0690. Use of other means (paper clips, dip switches, etc.) has caused JC101 connector to distort (necessitating replacement of the DC Controller PCA).
- Replace Transfer/Separation Corona and retry Transfer Corona Check (Step 3).
- Replace HVT1 and retry the Transfer Corona Check (Step 3).
- Replace the DC Controller PCA and restart this procedure at step 3 (above).

Step 4: Separation Corona Check

a. On the HVT3 (PT/SE) Corona Supply: Disconnect the pink wire that comes from the top of the assembly (HVT SE section) at J30. Ground the lower section of the wire (from HVT AC) at the larger clear connector with a test lead with small alligator clips on both ends. **Do not use the Motor Drive PCA heat sink - it is not at ground potential.** See Figure 7-37.

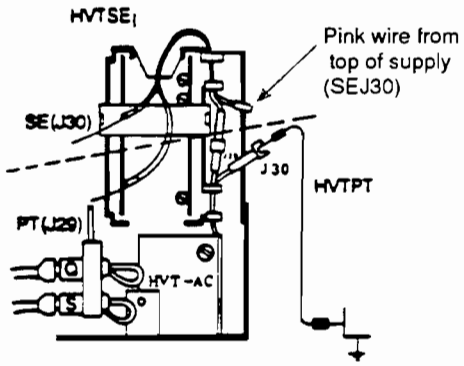


Figure 7-37. Grounding HVT SE J30

b. The Transfer/Separation Corona should still be installed and latched into operating position. Set the DMM for 200μA (microamps) AC range.

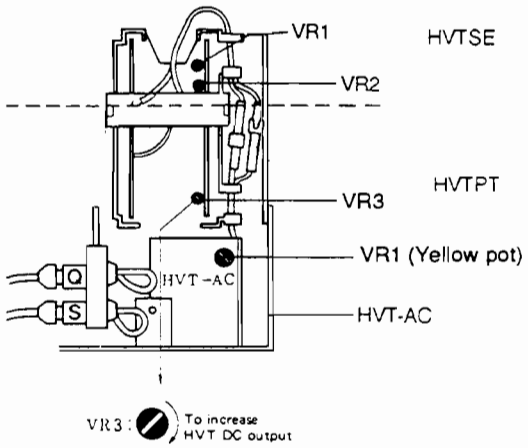
c. Power ON the printer.

d. Place Switch DSW941-5 and DSW941-7 left (ON).

e. Measure the Separation Corona AC current: Does the DMM read 70 ($\pm$3)μA AC?

YES–Go to step 4(f) (next page).

NO–Adjust VR1 (AC) (yellow potentiometer) on the HVT3 (PT/SE) Supply. If unable to adjust: 1)turn VR1 (AC) $^1/_4$ turn CCW from full CW and adjust VR2 (AC) (clear POT mounted sideways above VR1-AC) until 70 ($\pm$3)μA is achieved, 2)replace the Transfer/Separation Corona *or* 3) replace HVT3 and restart at step 3.



HVT3 PT/AC ADJUSTMENTS	
VR1	Adjust Duplex Separation Corona II
VR2	Adjust Simplex Separation Corona II
VR3	Adjust Pretransfer Corona II
VR1(AC)	Adjust AC Level

Figure 7-38. HVT3 (PT/SE) HV Supply

f. Switch DSW941-5 and 7 right (OFF). Power OFF the printer.

g. Reconnect J30 on HVT3 (PT/SE) Corona Supply.

h. Power ON the printer.

i. Set the DMM for 200 μA (microamp) DC range.

j. Switch ON (left) DSW941-5 and DSW941-7.

k. Measure the Separation Corona DC current: Does the DMM read 18 ($\pm$2)μA DC?

YES–Go to step 4(l) below.

NO–Adjust VR2(SE) (middle small green pot on the HVT3 (PT/SE) Corona Power Supply (see Figure 7-38 for location). If unable to adjust, replace the Transfer/Separation Corona *or* HVT3 (PT/SE) Supply and restart at step 3, "Transfer Corona Check."

l. Switch OFF (right) DSW941-5 and 7.

m. Power OFF the printer.

n. Remove the test jumper linking JC101 1 & 4 on the DC Controller PCA.

o. Install a test jumper linking JC101 1, 4, and 7 on the DC Controller PCA.

p. Power ON the printer.

q. Switch ON (left) DSW941-5 &7.

r. Measure the Separation Corona DC current: Does the DMM read 13 ($\pm$2)μA DC?

YES–Go to step 4(s) below.

NO–Adjust VR1 (PT/SE) (uppermost small green pot) on the HVT3 (PT/SE) Corona Supply. See Figure 7-38 for location. If unable to adjust, replace the Transfer/Separation corona *or* HVT3 (PT/SE) and restart at step 3, "Transfer Corona Check."

s. Switch OFF (right) DSW941-5 & 7. Power OFF the printer.

t. Remove test jumper linking JC101 pins 1, 4, & 7 on DC Controller.

u. Remove the Transfer/Separation Corona.

Step 5: Pretransfer Corona Check

a. Install test jumper linking JC101 1 & 4 on the DC Controller PCA.

b. Install the Pretransfer Corona ONLY.

c. Power ON the printer.

d. Switch ON (left) DSW941-5 & 7.

e. Measure the Pretransfer Corona current: Does the DMM read 18 ($\pm$3)μA DC?

YES–Go to step 5f below.

NO–Adjust VR3 (lower small green pot) on HVT3 (PT/SE) Corona Power Supply (see Figure 7-38 for location. If unable to adjust, replace Pretransfer Corona *or* HVT3 (PT/SE) and restart at step 3, "Transfer Corona Check."

f. Switch OFF (right) DSW941-5 & 7.

g. Remove the Pretransfer Corona.

Step 6: Primary Corona Check

a. Install the Primary Corona (#1) ONLY in the machine.

b. Switch ON (left) DSW941-6.

c. Measure the Primary Corona current: Does the DMM read 185 ($\pm$20)μA DC?

YES–Go to Step 7.

NO–The primary Corona current is not adjustable. Try the following:

1) Adjust the Primary Corona wire height (refer to page 6-55) and reenter this procedure at Step 6, "Primary Corona Check."
2) Replace the Primary Corona and reenter this procedure at Step 6, "Primary Corona Check."
3) Replace HVT1. Restart this procedure at Step 3, "Transfer Corona Check."
4) Check Primary Corona Grid grounding contact on right side of Primary Corona handle for good contact.
5) Replace the DC Controller PCA.

Step 7: Drum Potential Preparation

a. Power OFF the printer. Install rear print engine cover. Remove the AC line cord from the printer *or* the wall receptacle. Record the Vdark, Vlight, and Primary Corona jumper position from the customer's EP drum.

b. Remove the High Voltage Test Drum and reinstall the customer's EP drum. Reinstall all coronas, Toner Catcher, Cleaning Station, and Developer assemblies.

c. Proceed to the "Drum Potentials Adjustment" on the next page.

Note

To assure all areas of the EP process are functioning properly, the Vdark, Vlight, and Voff need to be verified *or* set properly per the "Drum Potentials" procedure.

Drum Potentials Adjustment

Introduction

Each Electrophotographic Drum (EP Drum) is individually tested at the factory for optimum setting of the drum potentials. When a new drum is installed, these drum potentials, (Vdark, Vlight, and Voff), need to be individually set on each machine to match the characteristics of the drum.

There is a label attached to the inside of each EP Drum listing the settings for that drum, and an extra label is provided in the carton with each new drum; this extra label should be attached to the inside of the right print engine cover in the space provided (see Figure 7-39).

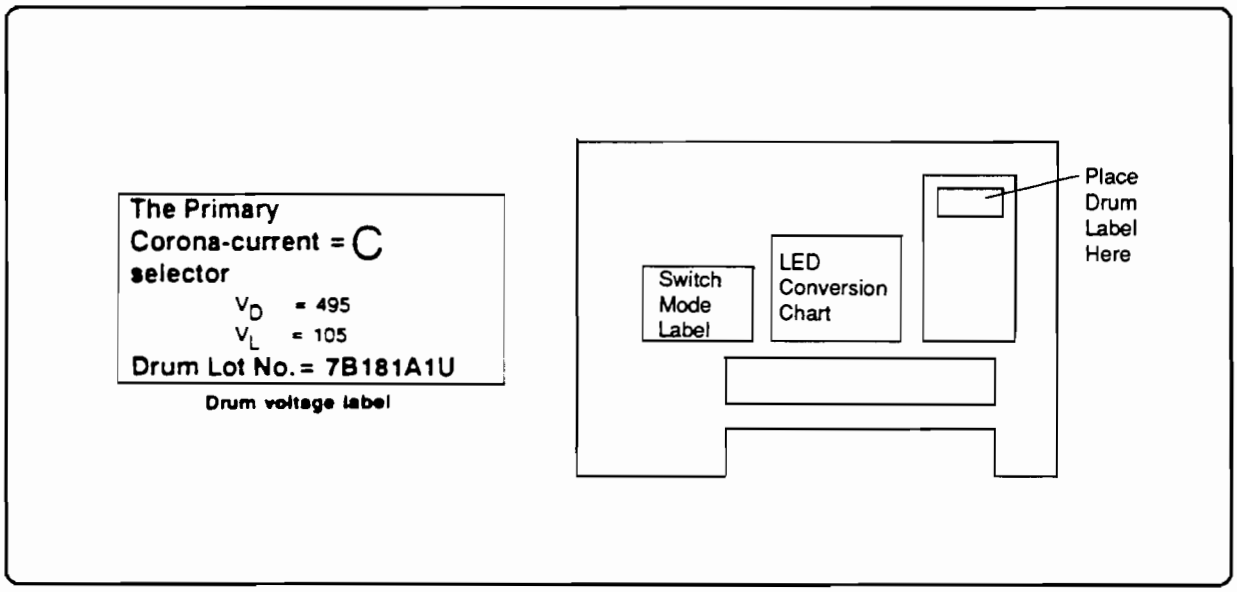


Figure 7-39. Drum Label Example

Note

Drum potentials are created by the Primary Corona; whenever a print quality problem is experienced, **the EP Process Verification Procedure should be performed before setting the drum potentials** to assure all coronas are operating efficiently.

Whenever a Laser Unit or a Laser Driver PCA is replaced, the laser power must be adjusted to an initial "coarse" adjustment before using this procedure to "fine adjust" laser power (Vlight). If a Laser Unit or a Laser Driver PCA has been replaced, perform the procedure for "Laser Power Coarse Adjustment" in Chapter 6, page 6-48 before proceeding.

Figure 7-40 (next page) provides a quick overview of the Drum Potential Procedure.

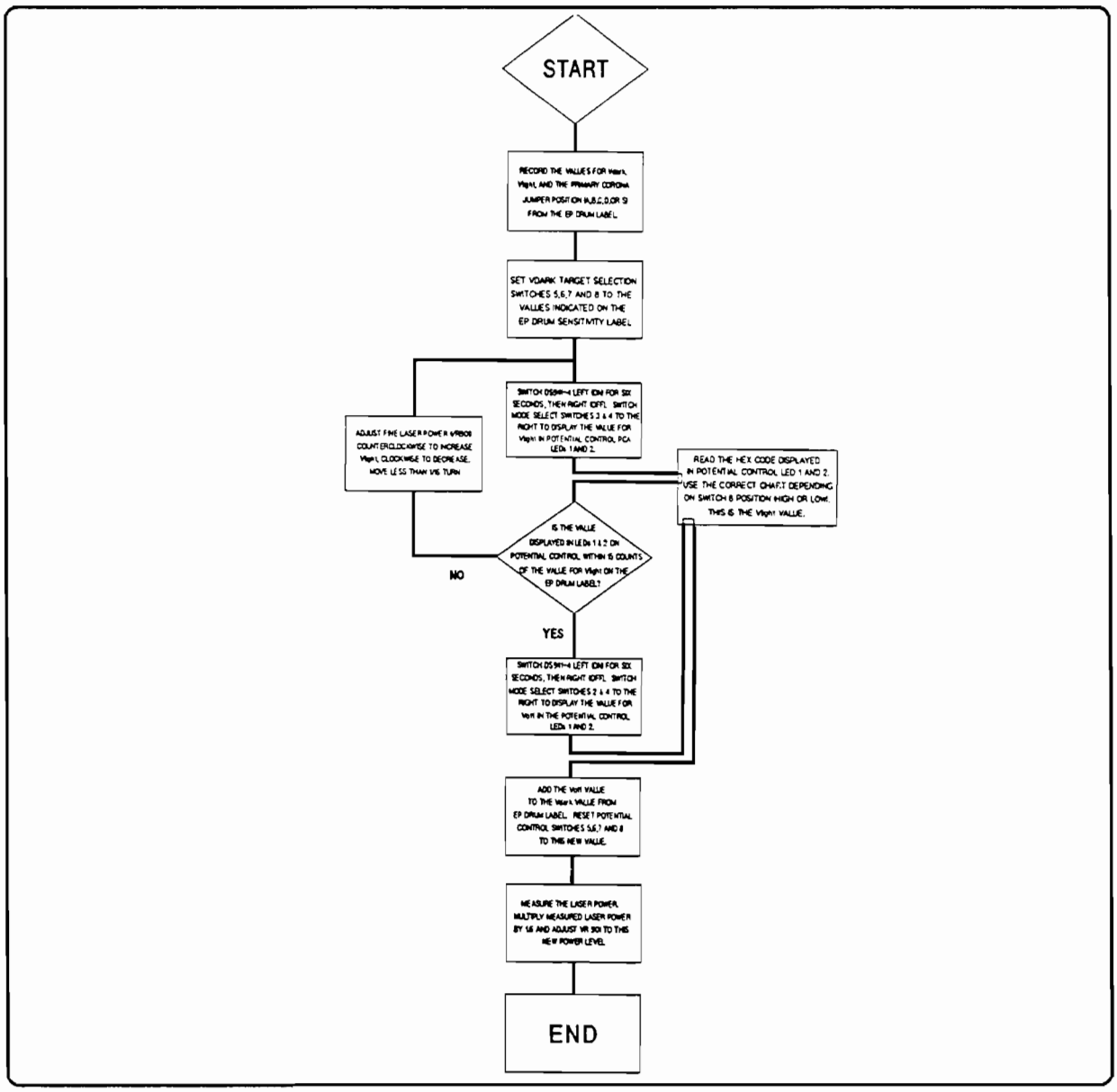


Figure 7-40. Flowchart of Drum Potential Procedure

Note

When the Mode Select switches are set to Automatic (all left), the drum potentials are measured by switching Double Feed Detect PCA switch DSW941-4 ON (left) for six seconds, then switching it OFF (right). After DSW941-4 is toggled for six seconds, move the Mode Select switches to the correct position for the drum potential you wish to display in the Potential Control LEDs after the drum stops moving.

Procedure

1. Power OFF the printer.
2. Record the values for Vdark, Vlight, and the Primary Corona Jumper settings from the EP Drum label. See Figure 7-39.
3. Remove the Primary Corona and ensure the jumper in the Primary Corona handle is set to the correct position (A, B, C, D, or S) per the label inside the EP Drum. Clean the Primary Corona wires and both sides of the grid with alcohol and lint-free wipes. Reinstall the Primary Corona in the printer and close the front covers.

Caution If the Primary Corona Jumper is in the wrong position the EP Drum may be damaged.

---

4. Remove the print engine right side panel, RFI cover, and the two screws securing the Potential Measurement and Control PCA fold down panel. Verify that the drum label on the right side panel matches the label inside the EP Drum being tested (see Figure 7-39).
5. Ensure the print engine rear cover is in place *or* the interlock is in place to defeat the rear cover safety switch.
6. Disconnect J109 on the DC Controller (see Figure 7-41).
7. Install the test jumper to link JC101-1 to JC101-4 on the DC Controller. See Figure 7-41 for location.

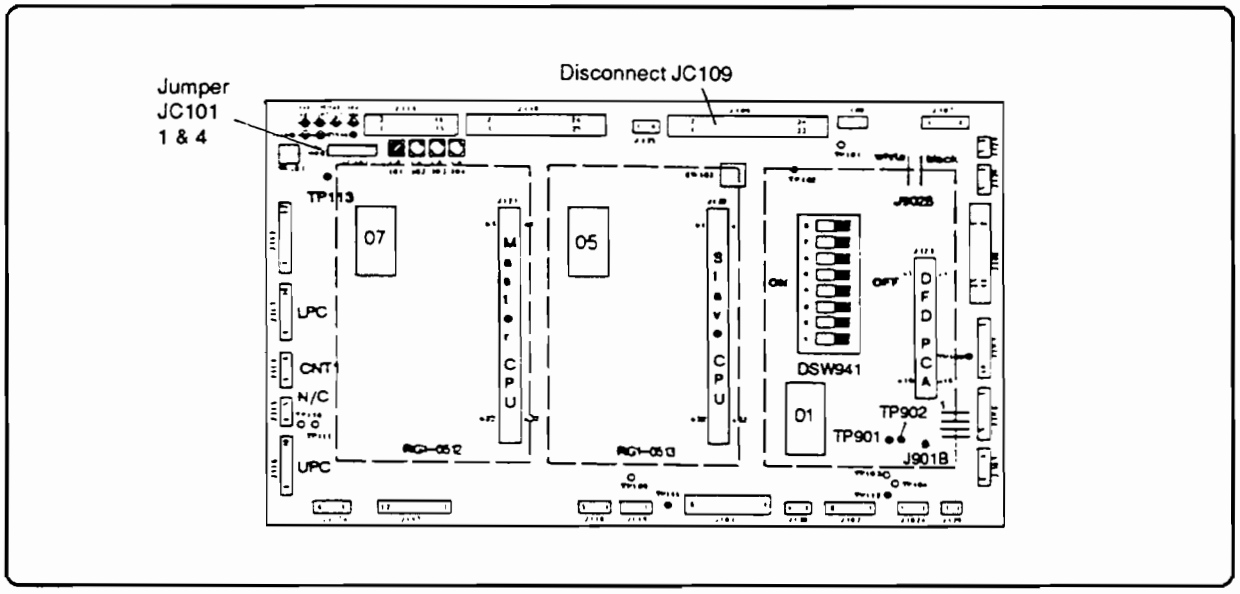


Figure 7-41. DC Controller J109

8. Adjust the VD Target Select switches (SW 5, 6, 7 and 8) on the Potential Control PCA to the value for Vdark given on the EP Drum Label. See Figure 7-42 for location and switch settings (note that switches 5, 6, & 7 change values depending on the setting of switch 8).

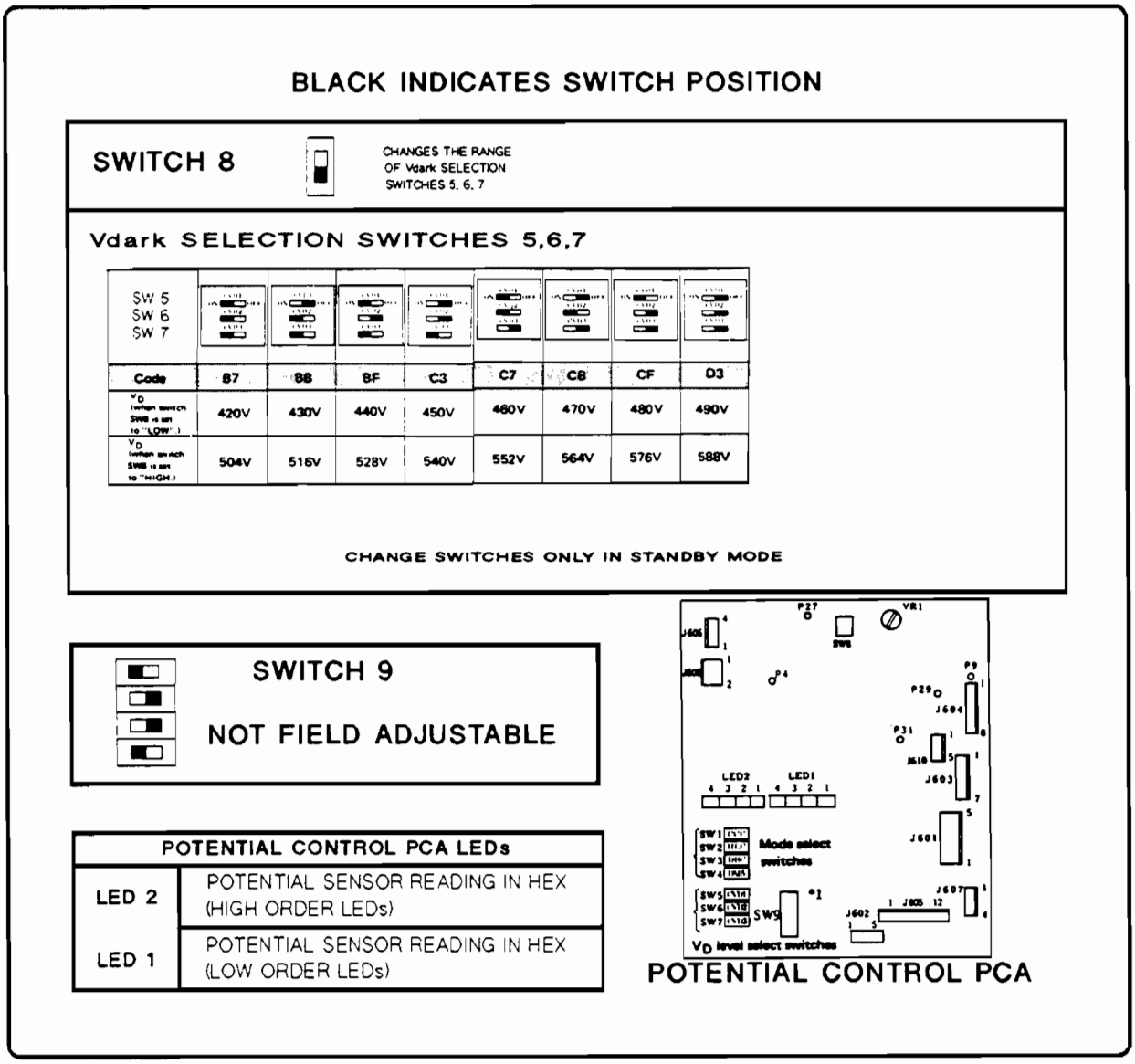


Figure 7-42. Potential Control PCA and Vdark Switches 5, 6, 7 & 8.

9. Ensure the Mode Select switches (SW 1, 2, 3, 4) are set to automatic control (SW 1-4 all set to left - see Figure 7-43).

Note

Setting the Mode Select switches to Non-Automatic disables the Potential Sensor and Potential Measurement PCA. The Potential Control PCA will then ignore any readings from the Potential Sensor and maintain the value of Vdark to the setting of switches 5 through 8. This can be helpful when troubleshooting a defective Potential Sensor or Potential Measurement PCA.

Caution A Developer Assembly must be in place before applying power.

10. Power ON the printer. Wait at least 10 minutes for the EP Drum Heater to bring the EP Drum up to operating temperature.

Note Ensure left and right front door interlocks are defeated if doors are open. Verify by checking LED1 on Potential Measurement PCA is ON. Do NOT PROCEED if LED1 is not ON. If LED1 is not ON, try a control panel TEST PRINT. If a self test prints, the Potential Sensor and Measurement PCA are not functioning. If a self test does not print, there is an open interlock.

Ensure the laser shutter interlock is also in place if printer front doors are open.

11. Switch DSW941 941-4 (on the Double Feed Detect PCA) left (ON) for at least 6 seconds, then place it right (OFF). See Figure 7-41.
12. Set the Mode Select switches 3 and 4 to the right to display the value of Vlight. See Figure 7-43.

CHANGE SWITCHES ONLY IN STANDBY MODE
BLACK INDICATES SWITCH POSITION

MODE SELECT SWITCHES 1, 2, 3, 4

MODE SELECT	AUTOMATIC CONTROL	DISABLE POTENTIAL SENSOR	PRESENT SURFACE POTENTIAL DISPLAYED IN LED 2 & 1	Vdark DISPLAYED IN LED 2 & 1	Voff DISPLAYED IN LED 2 & 1	Vlight DISPLAYED IN LED 2 & 1
LED 2-1	LIGHTS WHEN PRIMARY CORONA REACHES MAXIMUM OUTPUT					

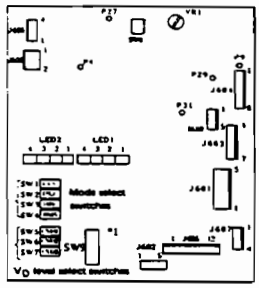
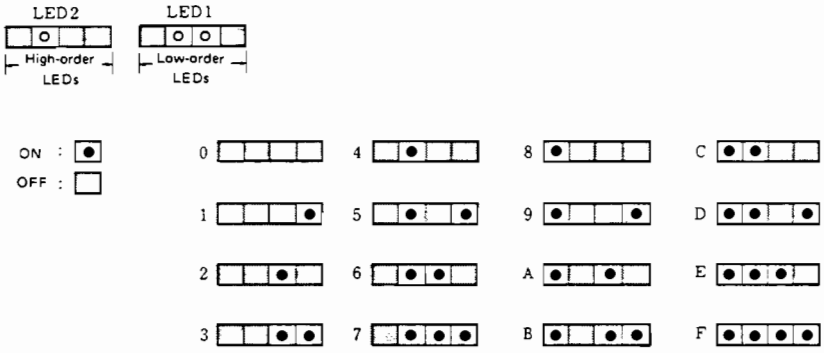


Figure 7-43. Potential Control PCA Mode Select Switches 1, 2, 3, 4

13. Read the value of Vlight from LED 2 (high order) and LED 1 (low order) on the Potential Control PCA. Use the correct chart in Figure 7-44 depending on the setting of switch 8 (up/high or down/low).



LED Chart (SW8 = high)

LED1 Lower-order LEDs

LED2 High-order LEDs

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	-45	-42	-39	-36	-33	-30	-27	-24	-21	-18	-15	-12	-9	-6	-3	0
1	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
2	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96
3	99	102	105	108	111	114	117	120	123	126	129	132	135	138	141	144
4	147	150	153	156	159	162	165	168	171	174	177	180	183	186	189	192
5	195	198	201	204	207	210	213	216	219	222	225	228	231	234	237	240
6	243	246	249	252	255	258	261	264	267	270	273	276	279	282	285	288
7	291	294	297	300	303	306	309	312	315	318	321	324	327	330	333	336
8	339	342	345	348	351	354	357	360	363	366	369	372	375	378	381	384
9	387	390	393	396	399	402	405	408	411	414	417	420	423	426	429	432
A	435	438	441	444	447	450	453	456	459	462	465	468	471	474	477	480
B	483	486	489	492	495	498	501	504	507	510	513	516	519	522	525	528
C	531	534	537	540	543	546	549	552	555	558	561	564	567	570	573	576
D	579	582	585	588	591	594	597	600	603	606	609	612	615	618	621	624
E	627	630	633	636	639	642	645	648	651	654	657	660	663	666	669	672
F	675	678	681	684	687	690	693	696	699	702	705	708	711	714	717	720

LED Chart (SW8 = Low)

LED1 Lower-order LEDs

LED2 High order LEDs

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	-37.5	-35	-32.5	-30	-27.5	-25	-22.5	-20	-17.5	-15	-12.5	-10	- 7.5	- 5	- 2.5	0
1	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40
2	42.5	45	47.5	50	52.5	55	57.5	60	62.5	65	67.5	70	72.5	75	77.5	80
3	82.5	85	87.5	90	92.5	95	97.5	100	102.5	105	107.5	110	112.5	115	117.5	120
4	122.5	125	127.5	130	132.5	135	137.5	140	142.5	145	147.5	150	152.5	155	157.5	160
5	162.5	165	167.5	170	172.5	175	177.5	180	182.5	185	187.5	190	192.5	195	197.5	200
6	202.5	205	207.5	210	212.5	215	217.5	220	222.5	225	227.5	230	232.5	235	237.5	240
7	242.5	245	247.5	250	252.5	255	257.5	260	262.5	265	267.5	270	272.5	275	277.5	280
8	282.5	285	287.5	290	292.5	295	297.5	300	302.5	305	307.5	310	312.5	315	317.5	320
9	322.5	325	327.5	330	332.5	335	337.5	340	342.5	345	347.5	350	352.5	355	357.5	360
A	362.5	365	367.5	370	372.5	375	377.5	380	382.5	385	387.5	390	392.5	395	397.5	400
B	402.5	405	407.5	410	412.5	415	417.5	420	422.5	425	427.5	430	432.5	435	437.5	440
C	442.5	445	447.5	450	452.5	455	457.5	460	462.5	465	467.5	470	472.5	475	477.5	480
D	482.5	485	487.5	490	492.5	495	497.5	500	502.5	505	507.5	510	512.5	515	517.5	520
E	522.5	525	527.5	530	532.5	535	537.5	540	542.5	545	547.5	550	552.5	555	557.5	560
F	562.5	565	567.5	570	572.5	575	577.5	580	582.5	585	587.5	590	592.5	595	597.5	600

Figure 7-44. Potential Control PCA LED Conversion Charts

14. If Vlight is within ±15 of the value specified on the EP Drum Label, proceed to step 16.
15. If Vlight IS NOT within ±15 of the value specified on the EP Drum Label:
    a. Remove the black plastic Print Engine Inner Cover (2 screws) to gain access to VR901 on the Laser Driver PCA. Insert laser shutter interlock again.
    b. Adjust VR901 clockwise to decrease Vlight and counterclockwise to increase Vlight. Move VR901 **very little** ($^1/_{16}$ turn or less)!
    c. Set the Mode Select switches 1 through 4 to automatic (all left) and go back to step 11 (see Figure 7-45.

Note

If VR901 is moved too far the laser will be shut off resulting in a Vlight reading approaching the Vdark reading (≈500 counts). If this occurs, perform Steps 20 through 22, then adjust VR901 to 15mV. After adjusting the laser to 15mV, set switches DSW941-7 & 2 OFF (right), power OFF the printer, reinsert the JC101-1 & 4 jumper, and **reenter this procedure at step 11.** Be sure you have placed an interlock onto the Laser Shutter when front doors are opened!

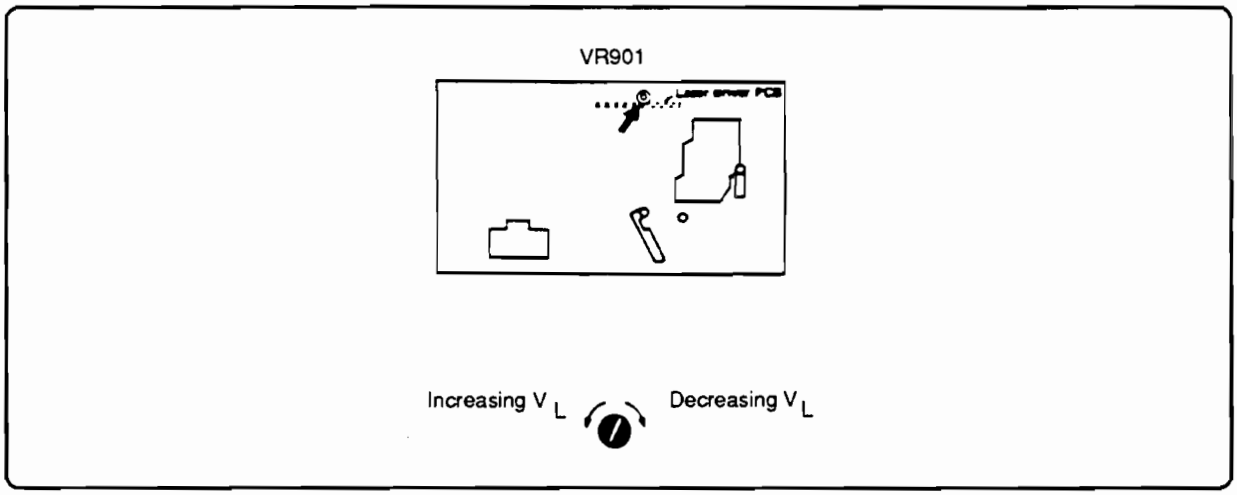


Figure 7-45. Laser Driver PCA Vlight Adjustment

16. Set the Mode Select switches to automatic (all left). Switch DSW941-4 ON (left) for six seconds.
17. Set the Mode Select switches 2 & 4 to the right to read Voff. See Figure 7-44 to interpret LED readout.

Note

The value read from the LEDs should range from -20 to +20. If the value read does not fall within ±20, look for a problem in the Potential Control or High Voltage systems.

18. Add the measured Voff to the Vdark measurement from the drum label. (EXAMPLE: Voff=-10, plus Vdark=480, equals 470.) Reset Potential Control Switches 5, 6, 7, and 8 to the calculated value of the measured Voff plus Vdark. Set darkness as close as possible to Voff plus Vdark. (EXAMPLE: Voff=-2.5, plus Vdark=480, Voff + Vdark = 477.5, set Vdark to 480.)
19. Set Potential Control Mode Switches 1 through 4 all left (setting to automatic control of drum potentials—normal position).
20. Power OFF the printer and remove the JC101-1 to JC101-4 jumper.
21. Insert the laser power checker tool fully into the laser channel until a slight "click" is heard. Insert Interlocks in both front doors.
22. Power ON the printer. Set Double Feed Detect PCA switch DSW941 941-7 left (ON), then DSW941 941-2 left (ON).

Note

The Developer Assembly must be in place for the laser to be turned on with DSW941 switch 2. This is a **safety interlock;** the laser will not go on without the Developer Assembly in place.

23. Take a reading of the laser power.
24. Multiply the laser power level read from the meter by 1.6, then adjust VR901 on the Laser Drive PCA to this value.
25. Set DSW941-7 and 2 OFF (right). All DSW941 switches should be OFF (right).
26. Power OFF the printer, remove the laser power tool.
27. Attach J109 on the DC Controller PCA and reinstall all covers.

Stacker/Switchback Adjustments

Error Tray Deflector (SL4)

This adjustment serves to position the error tray deflector solenoid (SL4).

1. While pushing the guide plate in the direction of the arrow indicated in Figure 7-46, position the solenoid so that the distance between the front end of the error tray deflector and the guide plate is 1 mm or more when the solenoid plunger is pushed in with a finger.
2. Secure the solenoid in this position with the screws. Be sure that when the solenoid is released, that the deflector fingers are below the lower feed guide plate.

Note

Make this adjustment with the switchback feeder opened. Normal solenoid stroke is approximately 3 mm.

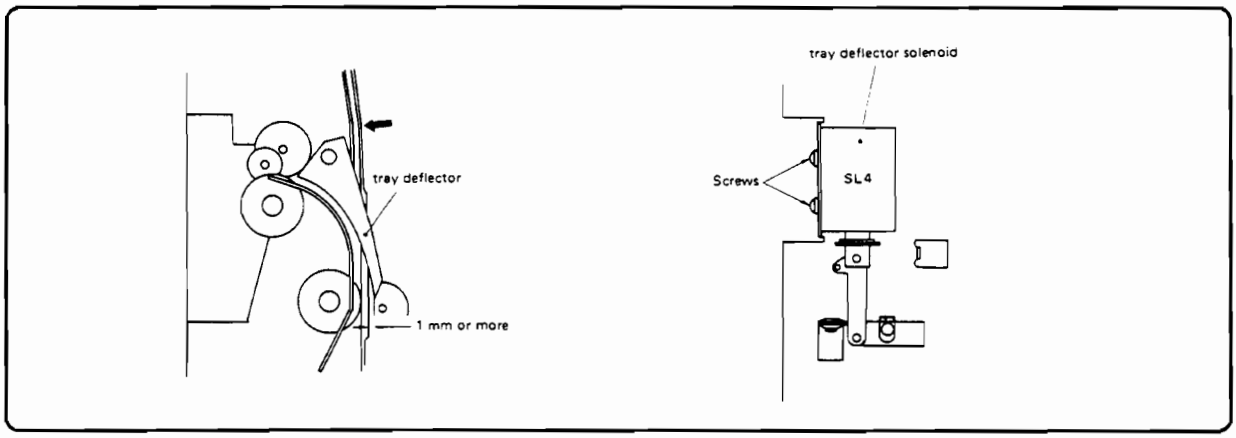


Figure 7-46. Error Tray Front/Rear View

Switchback Deflector (SL5)

This is a critical adjustment to prevent Switchback area paper movement problems.

1. Position the solenoid so that the distance between the surface of the switchback feeder triangular deflector and the guide plate is 1.0 ±0.5mm when the solenoid plunger is pushed in with a finger.
2. Loosen the solenoid mounting screws and adjust the mounting plate as necessary (Figure 7-47).
3. Ensure that the gap is uniform (front to back). If not, check the roller/deflector shaft bushing and bearings for binds. Deburr and lubricate if necessary.
4. Verify that the deflector returns to rest position with its return spring (see Service Note 2684-4).

Note

Verify that intermediate roller bearing plate in Figure 7-47 does not move in the direction indicated by the arrows when the plunger of solenoid SL5 is pushed in by hand.

Normal solenoid stroke is approx 3mm.

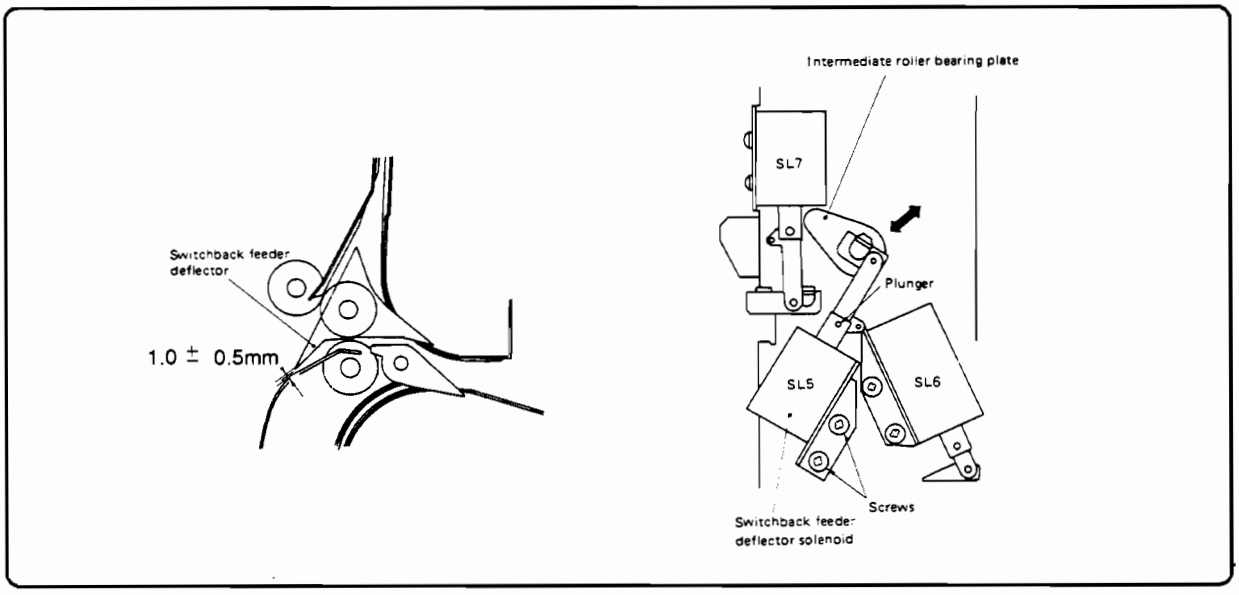


Figure 7-47. Deflector Front/Rear View

Roller Reverse Rotation

Loosen the solenoid mounting screws and position the solenoid so that the solenoid stroke is 4.0± 0.5 mm, then fasten it with the screws (Figure 7-48).

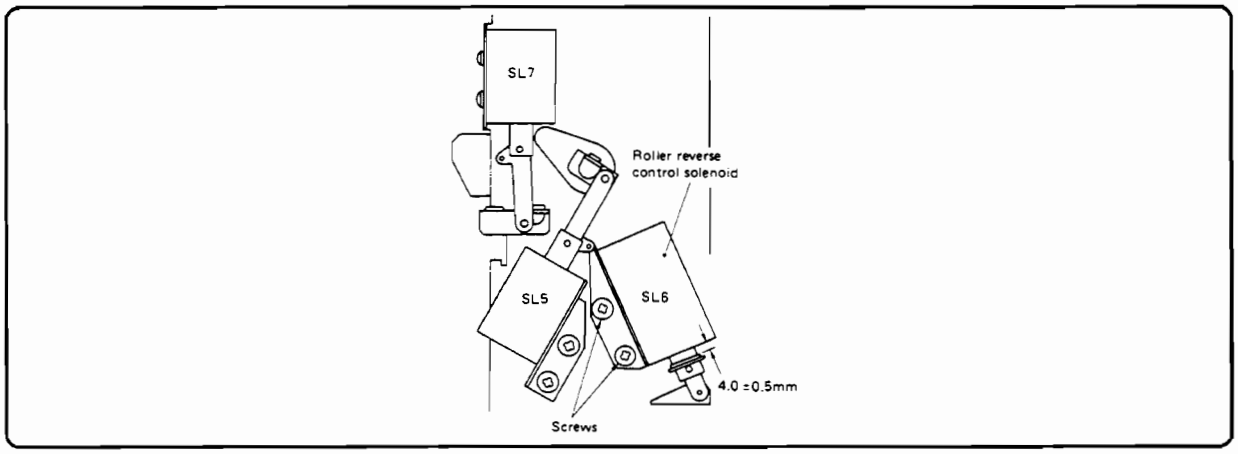


Figure 7-48. Roller Reverse Rotation - Rear View

Duplex Printing Deflector (SL7)

While pushing the guide plate in the direction of the arrow indicated in Figure 7-49, position the solenoid so that the distance between the front end of the duplex printing deflector and the paper guide is 1mm or greater. Loosen the solenoid mounting screws and position as necessary.

Note

Ensure that the deflector is below the lower paper guide when the solenoid is released. Make this adjustment with the Switchback Feeder opened. Normal solenoid stroke is approximately 5 mm.

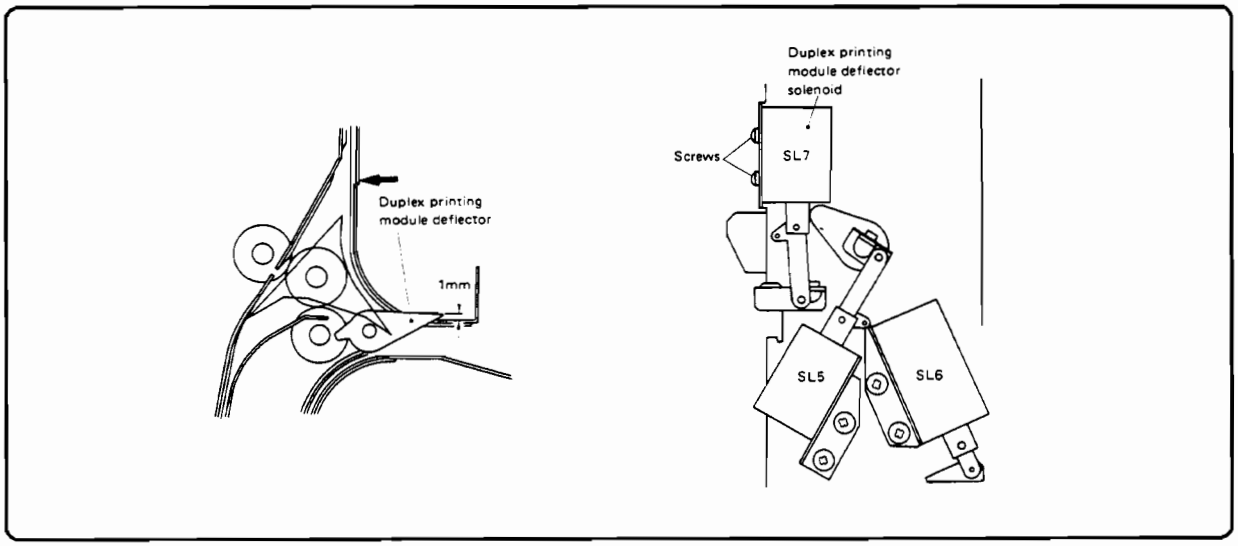


Figure 7-49. Duplex Printing Deflector Front/Rear View

Double Feed Detect Sensor Adjustment

The Double Feed Detect Sensor, P/N RG1-0420-000CN, requires verification anytime it is removed or the sensor bracket mounting screws have been loosened inadvertently. There is enough play in the sensor bracket mounting screws to effectively disable the sensor, resulting in undetected double feeds from any paper source. This can also result in false 25.3 MISPRINT errors being displayed. This adjustment is especially important when different weights or types of paper are in use from different paper sources.

Symptoms

- Undetected double feed:

  Paper jams with two sheets in one location or very close to each other (the sheets may separate after initially double feeding).

- False 25.3 MISPRINT errors are displayed using similar weight paper (*e.g.* 24 pound in the cassettes / 20 pound in the PDX).

- When duplex printing:

  Duplex printed pages out of sequence; no error message displayed. This results from the double feed successfully making it to the duplex holding tray, and then being separated by the separation rollers. The "extra" sheet is typically found in the 5A area (the Vertical Pass Assembly) and the resulting "duplex pages out of sequence" will not be seen until the next print job uses the duplex mode.

Verification Procedure

Refer to Figure 7-20 on page 7-89 for locations of components mentioned below.

The formula X $\pm$.05 = $^1/_2$ Y is used to verify/adjust the Double Feed Sensor, where:

Y = Digital multimeter (DMM) reading taken between TP901 and J901-1.
X = DMM reading between TP901 and TP902 on DFD PCA.

1. Remove cover to gain access to the Double Feed Detect PCA. The DFD PCA is the rightmost (toward the rear of the printer) piggyback PCA on the DC Controller looking from the PDX.
2. The reading between J901B pin 1 and TP 901 is the value, "Y". Remove the J901B connector from the DFD PCA. J901B is in the lower right area of the DFD PCA.
3. Place the positive lead of the DMM on pin 1 of the exposed male pins of J901B on the DFD PCA. Pin 1 is the top pin of five male pins.
4. Place the black lead onto TP901 on the DFD PCA. TP901 is directly to the left of J901B (1 inch away) next to TP902. Look for the yellow collar denoting test points: TP901 is to the left of TP902.
5. Take a DC voltage reading. EXAMPLE: A typical reading would be 4.90 volts DC. This is the value "Y". Y = 4.90; therefore $^1/_2$ Y = 2.45 VDC.
6. Move the positive lead from pin 1 of J901B to TP902.
7. Reconnect J901B to the DFD PCA.
8. The reading taken between TP901 and TP902 is "X". X should equal $^1/_2$ Y. If the reading between TP901 and TP902 is not within $\pm$.05VDC, adjustment of the DFD Sensor is required. In our example (Y=4.90) "X" should equal 2.45$\pm$.05

Double Feed Sensor Adjustment

1. Clean the rubber registration roller before adjusting. (A buildup of paper residue can cause a false reading and a misadjusted DFD Sensor!)
2. Open the right front cover and remove the Developer Assembly.
3. Locate the Double Feed Detect mounting bracket (metal plate directly below the Developer area - see Figure 7-50).
4. Locate the two Allen screws approximately 2 inches apart toward the front of the Double Feed bracket. Loosen the front screw (2mm Allen required).
5. Adjust the rear screw (2.5mm Allen) while watching the DMM to obtain the correct value for "X".
6. Tighten the front screw. Turn the green registration roller knob while watching the DMM to verify the average value of "X" is within ±.05 VDC. Repeat by loosening the front screw and readjusting the rear screw if necessary to maintain an average reading within the ±.05 specification.

Note

If "X" cannot be adjusted (maximum value is ≈2.90 VDC), loosen the DFD bracket mounting screws and reposition the bracket. Typically, pushing down on the bracket when tightening the screws will allow correct adjustment. If problems obtaining the value "X" persist, remove the DFD bracket, turn it over and push on the white lever while watching the DMM to verify that the value of "X" changes and is smoothly operating. Replace the DFD Sensor if not smoothly operating. Pushing down on the bracket, move the bracket left/right until the displayed value is as low as possible and tighten the mounting screws. Return to the adjustment procedure.

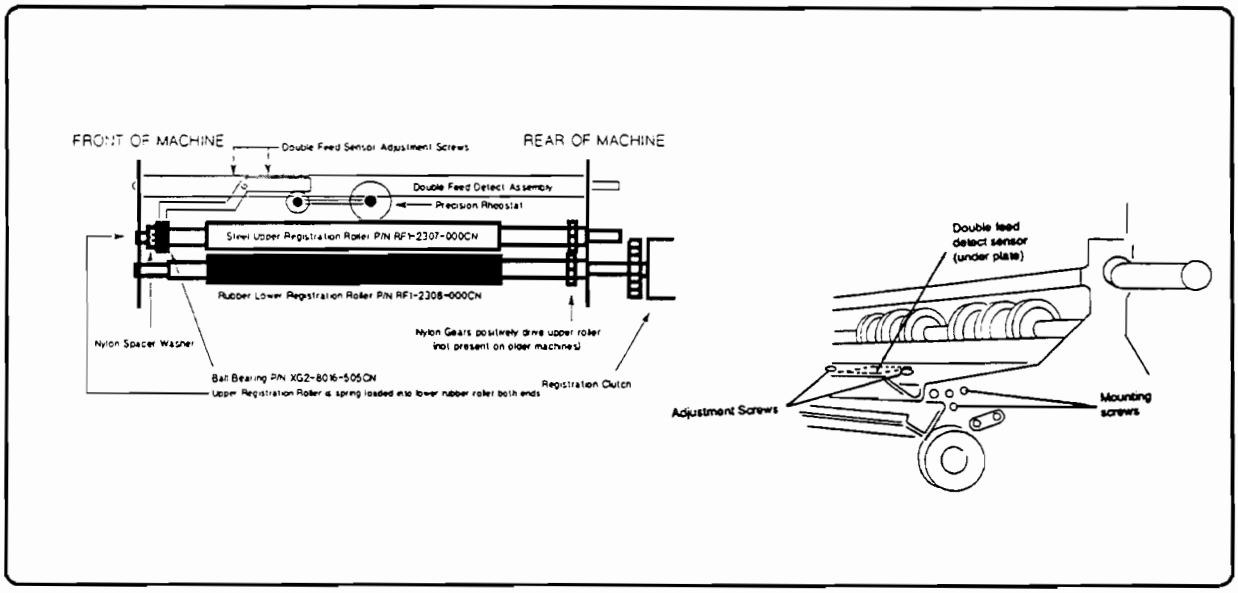


Figure 7-50. Double Feed Detect Sensor Adjustment

Foldback Mirror Adjustment

The Foldback Mirror reflects the laser beam downward onto the surface of the EP Drum. If the Foldback Mirror is out of adjustment, it will cause a51-BEAM DETECT error or, in less extreme cases, light print density. This adjustment requires an oscilloscope.

1. Open both Print Engine front doors. Override the left door, right door and laser shutter interlocks (use interlock key P/N 02684-40001).
2. Connect an oscilloscope probe to TP101 (BEAM DETECT) on the DC Controller PCA (use TP102 for GND).
3. Turn ON DSW941-7 first (READY KILLER) and DSW941-2 next (LASER ON). NOTE: Developer must be in place.
4. Turn the adjustment screw as close as possible to a maximum of 1.5mV DC (see Figure 7-51).

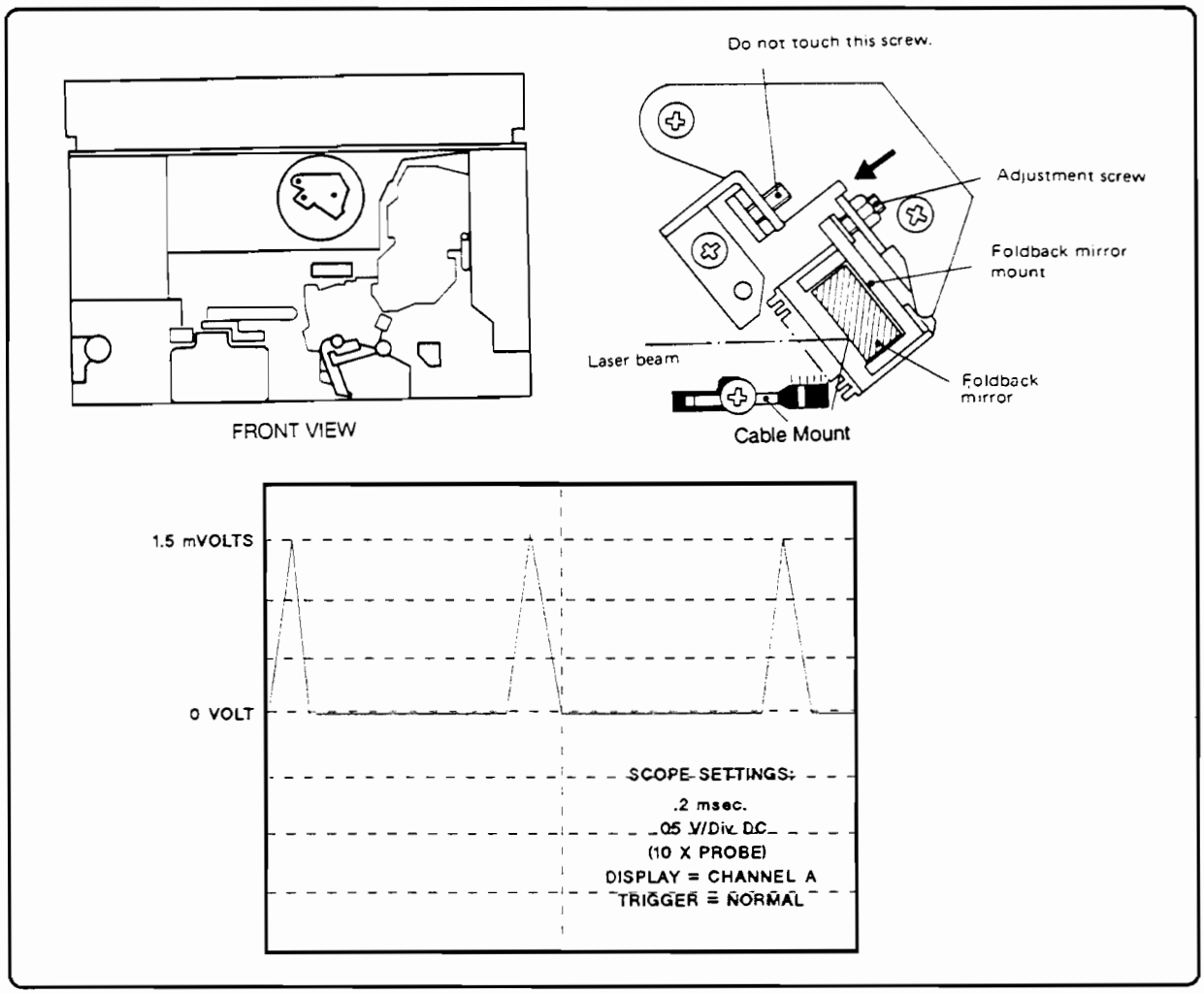


Figure 7-51. Foldback Mirror Adjustment

8a

Parts Lists & Illustrations
PRINT ENGINE

Figures

Tables

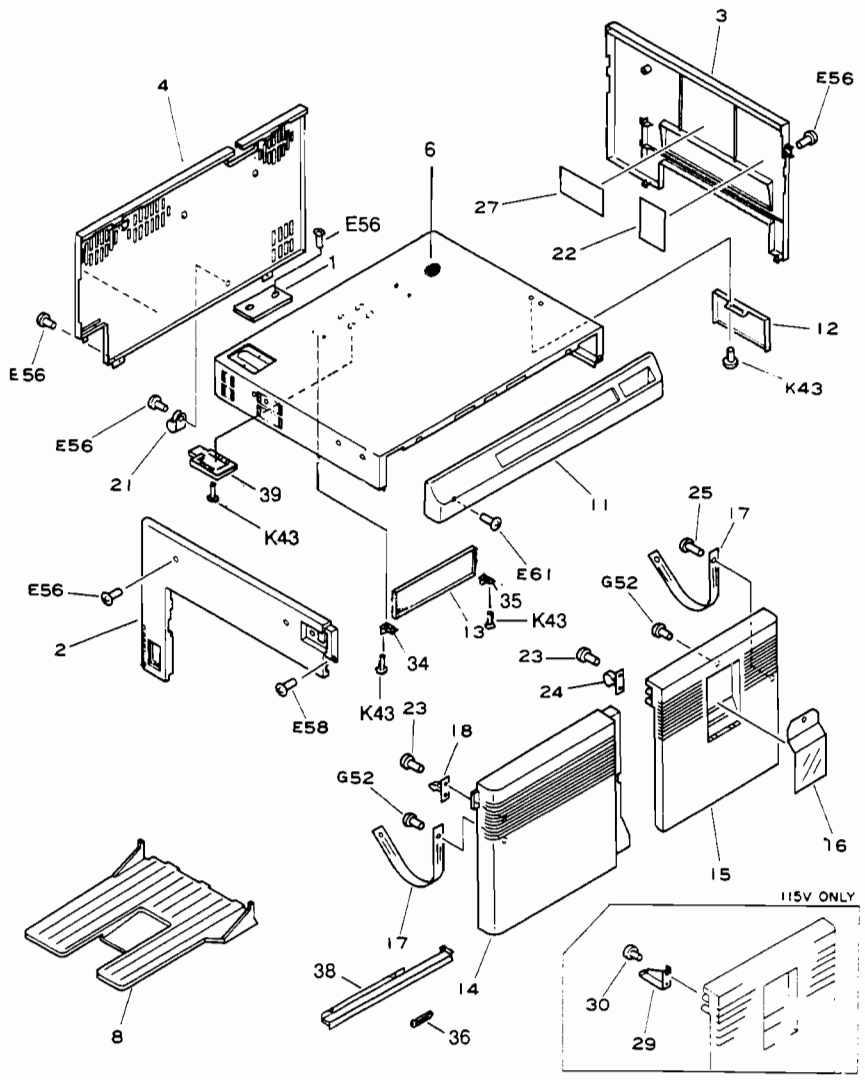


Figure 8a-1. External Covers and Panels

Table 8a-1. External Covers and Panels

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-3736-000CN	1	S	CAP, COVER, UPPER
2	RA1-2656-000CN	1	S	PANEL, LEFT
3	RA1-2653-000CN	1	S	PANEL, RIGHT
4	RA1-2654-000CN	1	S	COVER, REAR
6	RA1-3735-000CN	1	S	COVER, TOP
7	RF9-0201-000CN	1	S	PANEL, DELIVERY
8	FA3-0264-000CN	1		TRAY, PRINT
9	FA3-0265-000CN	1	S	TAPE, DOOR
11	RA1-2649-000CN	1	S	COVER, DISPLAY
12	RA1-3734-000CN	1	S	COVER, BLANKING
13	RA1-3742-000CN	1	S	PLATE, UPPER, BLANKING
14	RF1-0701-020CN	1	S	DOOR, FRONT,LEFT
15	RF1-0700-000CN	1	S	DOOR, FRONT, RIGHT
16	FA3-0875-000CN	1	S	COVER
17	FA2-1594-000CN	2	S	STRAP, OPEN DOOR SUPPORT
18	FA3-0890-000CN	3	S	LATCH, ROLLER-ACTION (STRIKE)
20	RS1-8241-000CN	1	S	INSTRUCTION, LABEL
21	X62-6863-000CN	1	S	CLAMP, CABLE, 5N
22	RS1-8266-030CN	1	S	LABEL, SURFACE POTENTIAL (115V/220V)
23	XA9-0027-000CN	6	S	SCREW, M3X8
24	XZ9-0124-000CN	2	S	LATCH, ROLLER-ACTION (STRIKE)
25	XA9-0029-000CN	1	S	SCREW, M4X10
27	FS1-8423-000CN	1	S	LABEL, CODE
29	FA3-0316-000CN	1	S	PLATE (115V)
30	XA9-0028-000CN	2	S	SCREW, M4X8
32	FS1-9003-000CN	2	S	SCREW, STEPPED, M4
39	XZ9-0212-000CN	2	S	CATCH, MAGNET

S = special order part

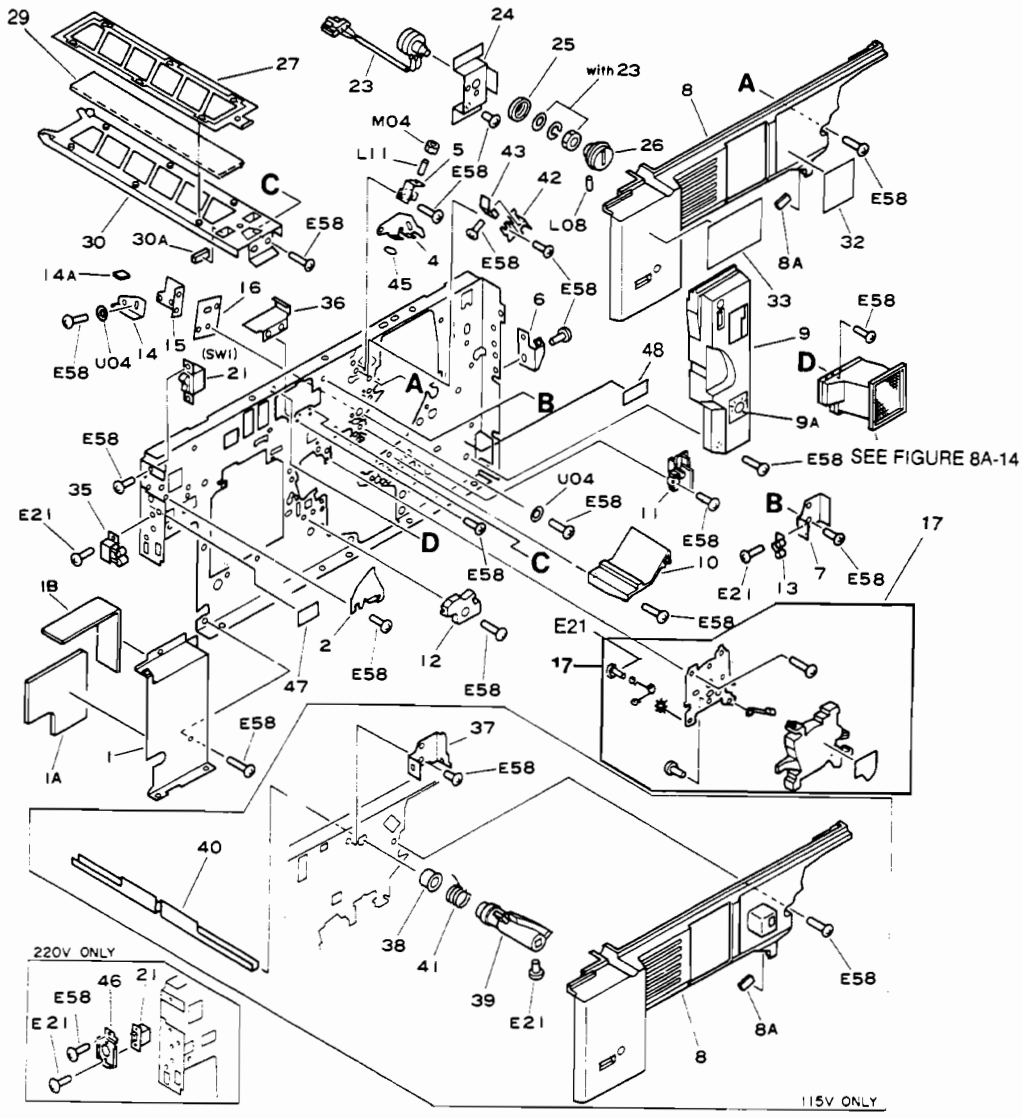


Figure 8a-2. Machine Front Plate

Table 8a-2. Machine Front Plate

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FF1-4454-000CN	1	S	PLATE
1A	FA3-0212-000CN	1	S	SHEET, INSULATION (A)
1B	FA3-0213-000CN	1	S	SHEET, INSULATION (B)
2	FA3-0222-000CN	1	S	PLATE, COVER
4	FA3-0227-000CN	1	S	PLATE
5	FA3-0228-000CN	1	S	PLATE
6	FA3-0251-000CN	1	S	PLATE, MOUNT
7	FA3-0252-000CN	1	S	MOUNT, CATCH
8	RF1-0470-000CN	1	S	COVER, INTERNAL, LEFT 220 V
	RF1-0603-000CN	1	S	COVER, INTERNAL, LEFT 115 V
8A	FA3-0254-000CN	1	S	RETAINER, DUST-PROOF GLASS
9	RF1-0292-000CN	1	S	COVER, INTERNAL, RIGHT
9A	RS1-8103-000CN	1	S	LABEL
10	FA3-0284-000CN	1	S	GUIDE, DEVELOPER
11	FA3-0289-000CN	1	S	GUIDE, CYLINDER, COVER
12	FA3-0291-000CN	1	S	COVER, SMALL
13	XZ9-0125-000CN	3	S	LATCH, ROLLER-ACTION (CATCH)
14		1	N	MOUNT, B.D. MIRROR, 1
14A	RN1-4003-000CN	1	S	MIRROR, BEAM DETECT
15		1	N	MOUNT, B.D. MIRROR, 2
16		1	N	MOUNT, B.D. MIRROR, 3
17	FG1-3909-000CN	1		PLATE, SHAFT END ASSEMBLY
21	WD3-0024-000CN	1		SWITCH, BREAKER, 120VAC 60 HZ
	WC1-0110-000CN	1		SWITCH, BREAKER, 220/240VAC 50 H
23	RF1-0347-000CN	1		RESISTOR, VARIABLE
24	RA1-1291-000CN	1	S	MOUNT, VR
25	RA1-1292-000CN	1	S	SPACER
26	RA1-1863-000CN	1	S	DIAL, EXPOSURE CONTROL
27	RF1-1135-000CN	1	S	COVER, FILTER
29	RA1-1198-020CN	1		FILTER, CORONA
30	RF1-0302-000CN	1	S	MOUNT, FILTER
30A	RA1-1200-000CN	2	S	SEAL
31	FS1-8403-000CN	1	S	LABEL, "WARNING, HIGH VOLTAGE"
33	RS1-8561-000CN	1	S	LABEL, "JAM" (115/220V)
35	XZ9-0029-000CN	2	S	LATCH, ROLLER-ACTION (CATCH)
36	RA1-1197-000CN	1	S	PLATE, GUIDE
37	FA3-0309-000CN	1	S	MOUNT, CATCH (115V)
38	FA3-0311-000CN	1	S	BUSHING (115V)
39	FA3-0312-000CN	1	S	CAM, SHUTTER (115V)

S = special order part

N = not available for replacement

Table 8a-2. Machine Front Plate (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
40	FA3-0313-000CN	1	S	SHUTTER (115V)
41	FA3-0315-000CN	1	S	SPRING, TORSION (115V)
42	FA3-0331-000CN	1	S	HOOK
43	FA3-0332-000CN	1	S	SPRING, LEAF
45	FA3-0389-000CN	1	S	RING, FELT
46	FA3-0884-000CN	1	S	MOUNT, SWITCH
47	FS1-8373-000CN	1	S	LABEL, BRH (115V)
48	RS1-8075-000CN	1	S	LABEL, BRH (220V)
49	RS1-8455-000CN	1	S	LABEL, DEV. BIAS
50	RS1-8296-000CN	1	S	LABEL, CLEARING JAMS
51	FG1-3909-000CN	1	S	SHAFT END UNIT

S = special order part

N = not available for replacement

NOTES:

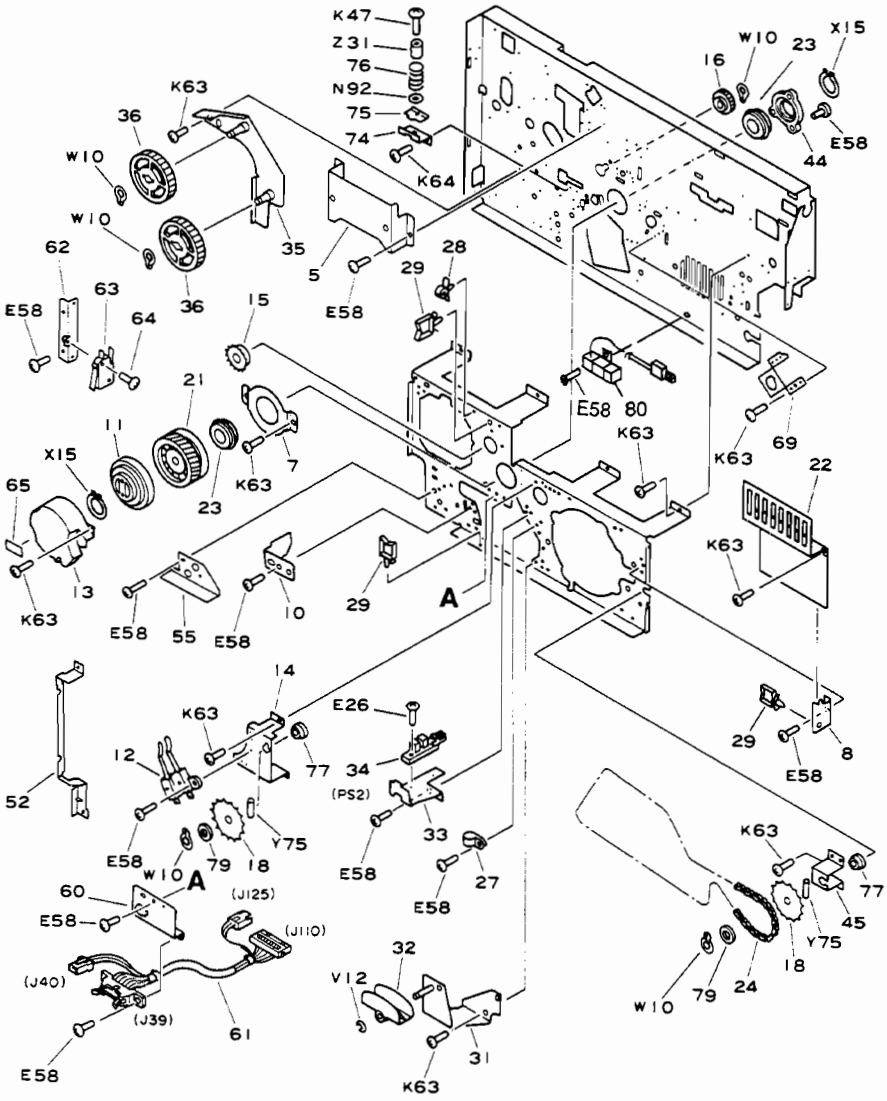


Figure 8a-3. Machine Rear Plate (1 of 2)

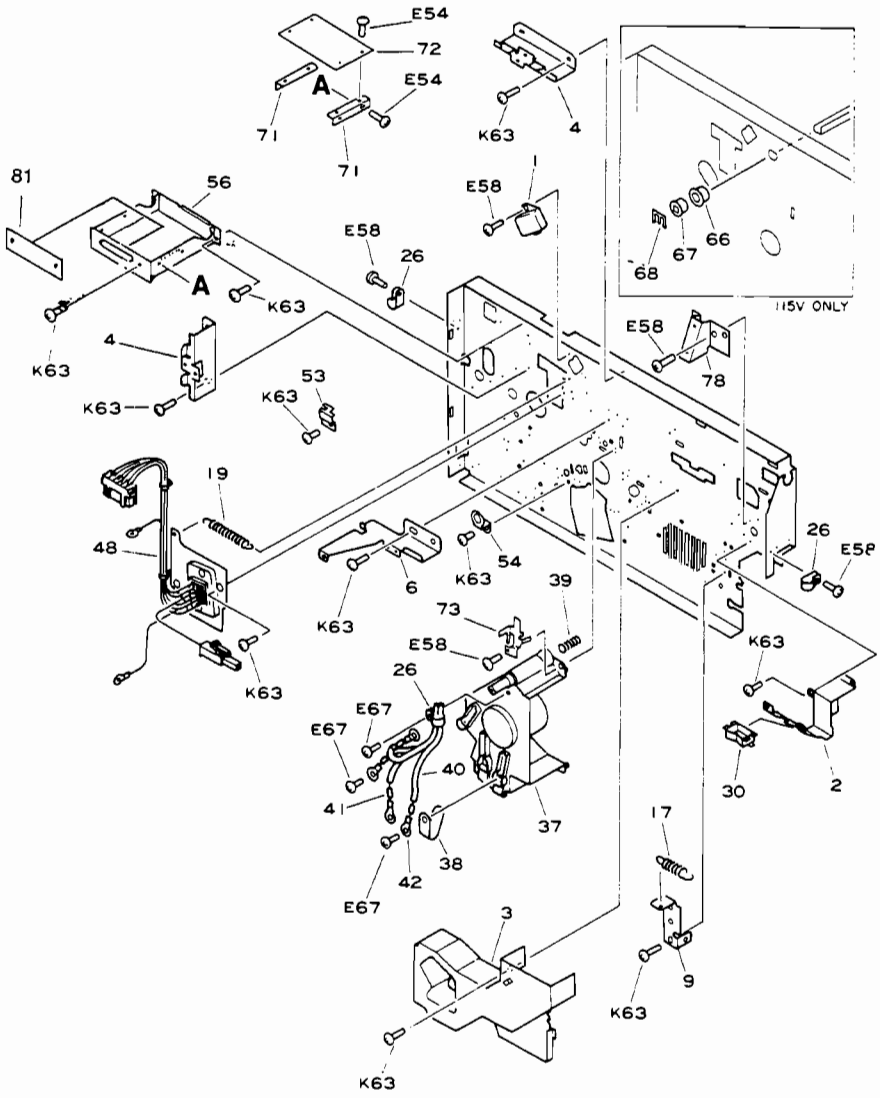


Figure 8a-3. Machine Rear Plate (2 of 2)

Table 8a-3. Machine Rear Plate

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-0229-000CN	1	S	COVER, MIRROR
2	RA1-2666-000CN	1	S	MOUNT, CONNECTOR, FUSER
3	RA1-1288-000CN	1	S	DUCT
4	FA3-0237-000CN	2	S	PLATE, MOUNT
5	FA3-0238-000CN	1	S	PLATE, MOUNT
6	FA3-0239-030CN	1	S	PLATE, MOUNT
7	FA3-0244-000CN	1	S	HOUSING
8	FA3-0246-000CN	1	S	PLATE, MOUNT
9	FA3-0248-000CN	1	S	PLATE
10	FA3-0250-000CN	1	S	PLATE, STOPER, CLUTCH
11	RA1-7025-000CN	1		RING, SLIP
12	FA3-0859-040CN	1		CONNECT, BRUSH, ELECTRODE
13	FF1-4490-000CN	1	S	COVER, SLIP RING
14	FA3-0728-000CN	1	S	SUPPORT, SHAFT
15	RS1-3003-020CN	2		SPROCKET, IDLER, 24T
16	FS2-0038-000CN	1		GEAR, 24T
17	FS1-2908-000CN	1	S	SPRING, TENSION
18	RS1-3004-020CN	2		SPROCKET, CLEANER/FUSER, 29T
19	FS1-2022-000CN	1	S	SPRING, TENSION
20	FS1-9002-000CN	3	S	SCREW, STEPPED, M4
21	RG1-1123-000CN	1		GEAR, 108T
22	RH6-3014-020CN	1		MOTOR, DRIVE PCA
23	XG9-0126-000CN	2	S	BEARING, BALL
24	XF9-0212-000CN	1		CHAIN, ROLLER
26	X62-6866-000CN	6	S	CLAMP, CABLE, 5N
27	X62-6866-000CN	6	S	CLAMP, CABLE, 2N
28	X62-9188-000CN	3	S	CLIP, WIRE HOLDER (NYLON)
29	WT2-0132-000CN	6	S	CLIP, CABLE, 1NS
30	WT2-0204-000CN	2	S	CLIP, WIRE

S = special order part

Table 8a-3. Machine Rear Plate (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
31	FF1-4439-000CN	1	S	PLATE, SPINDLE
32	FA3-0736-000CN	1	S	GUIDE, ROLLER CHAIN
33	FA3-0734-000CN	1	S	PLATE, MOUNT
34	FH7-7038-000CN	1		PHOTO-INTERRUPTER UNIT
35	FF1-4438-000CN	1	S	ARM, GEAR SPINDLE
36	FS1-0512-000CN	2		GEAR, 50T
37	FA3-0465-030CN	2	S	DUCT
38	FA3-0466-000CN	2	S	SPRING, REAR
39	FS1-2940-000CN	2	S	SPRING, COMPRESSION
40	FH2-0041-000CN	4	S	CABLE, HIGH VOLTAGE
41	VR9-3341-000CN	4	S	RESISTOR, 10KOHM, 1/2W
42	X62-6888-000CN	4	S	TERMINAL, RING, 4.34MM
44	RA1-2116-000CN	1		CAM
45	RA1-1268-000CN	1	S	SUPPORT, SHAFT, FUSER
48	RG1-0582-000CN	1	S	DEVELOPING CABLE ASSEMBLY
52	RA1-1533-000CN	1	S	GUIDE, WIRING
53	FA3-0320-000CN	1	S	PLATE
54	FA3-0321-000CN	1	S	PLATE, GROUNDING
55	FA3-0302-000CN	1	S	PLATE, BLIND
56	RA1-1263-000CN	1	S	MOUNT, CONNECTOR
60	RA1-1331-000CN	1	S	MOUNT, CONNECTOR
61	RF1-0446-000CN	1	S	CABLE, PDX I/F
62	FA3-0841-000CN	1	S	MOUNT, MICROSWITCH
63	WC4-0063-000CN	1	S	MICROSWITCH
64	XO7-4014-090CN	2	S	SCREW
65B	FS1-8307-000CN	2	S	LABEL, "PLUG WARNING"
66	FA3-0311-000CN	1	S	BUSHING (115V)
67	FA3-0314-000CN	1	S	BUSHING (115V)
68	FA2-8361-000CN	1	S	RETAINER (115V)
69	FA3-0247-000CN	1	S	MOUNT, BEARING
70	RA1-2043-000CN	1	S	PLATE, GROUNDING
71	RA1-2614-000CN	1	S	MOUNT, PLATE
72	RA1-2615-000CN	1	S	HOUSING, CONNECTOR
73	RA1-2662-000CN	1	S	SPRING, LEAF
74	RA1-1224-000CN	1	S	PLATE
75	RA1-1553-000CN	1	S	GUIDE
76	RS1-2039-000CN	1	S	SPRING, COMPRESSION
77	FA1-3224-000CN	2	S	BUSHING
78	RA1-1675-000CN	1	S	HOLDER, TERMINAL
79	RA1-2637-000CN	2	S	WASHER, RUBBER
80	RF1-0499-000CN	1	S	RESISTER, 10K0HM 10W
81	RA1-3732-000CN	1	S	COVER, MOUNT, CONNECTOR

S = special order part

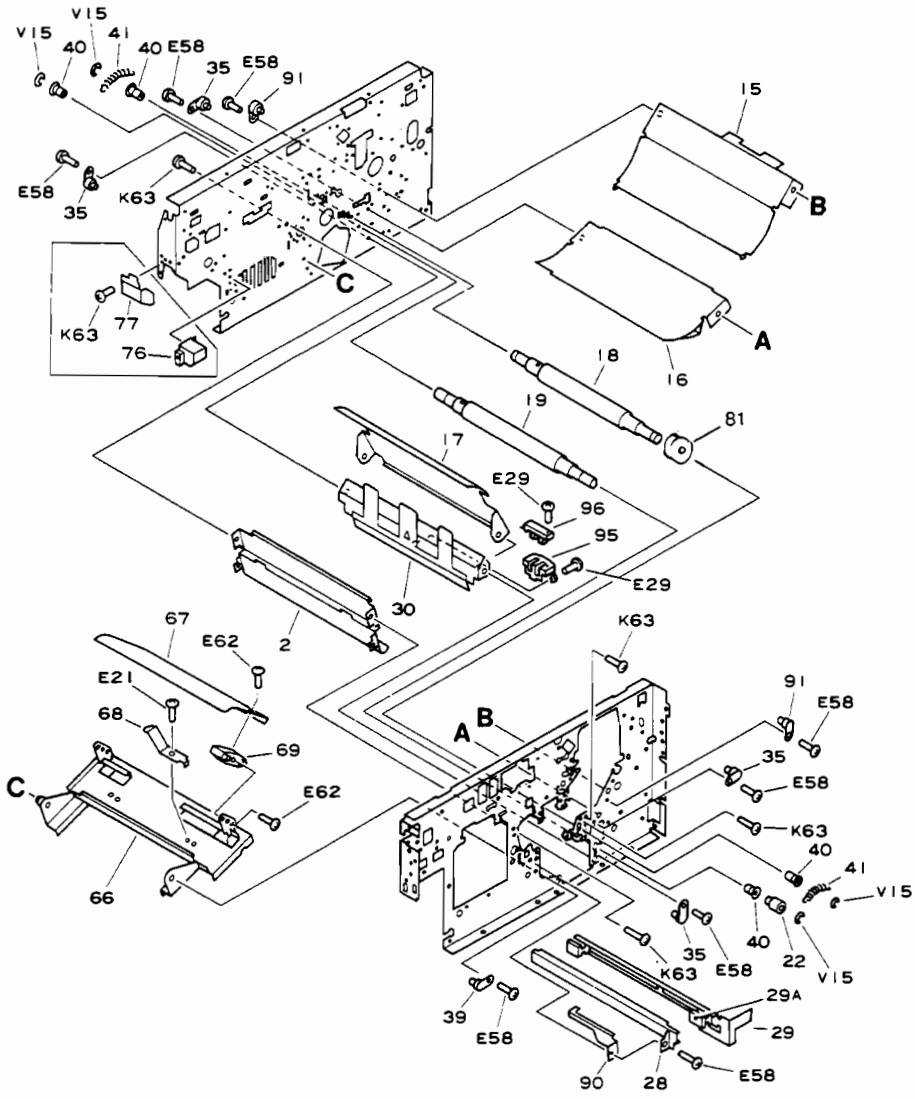


Figure 8a-4. Internal Components (1 of 4)

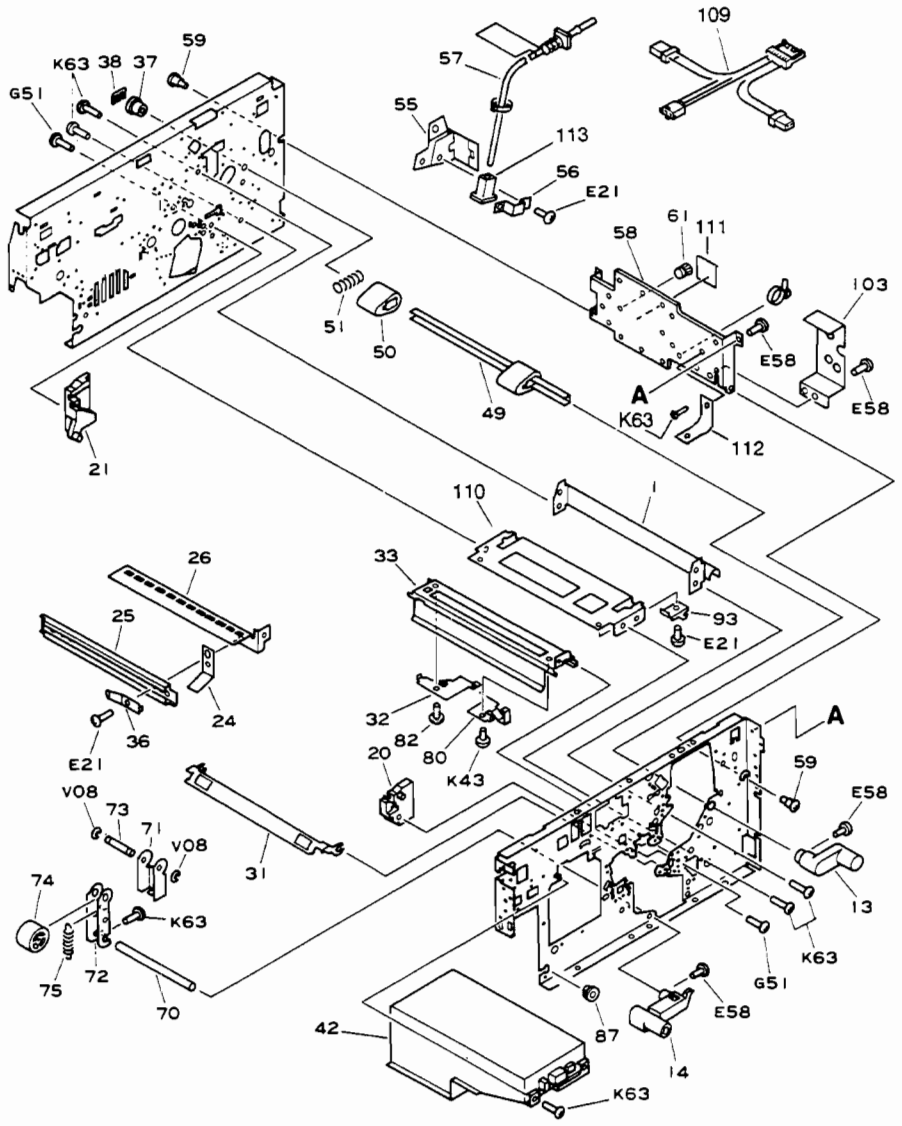


Figure 8a-4. Internal Components (2 of 4)

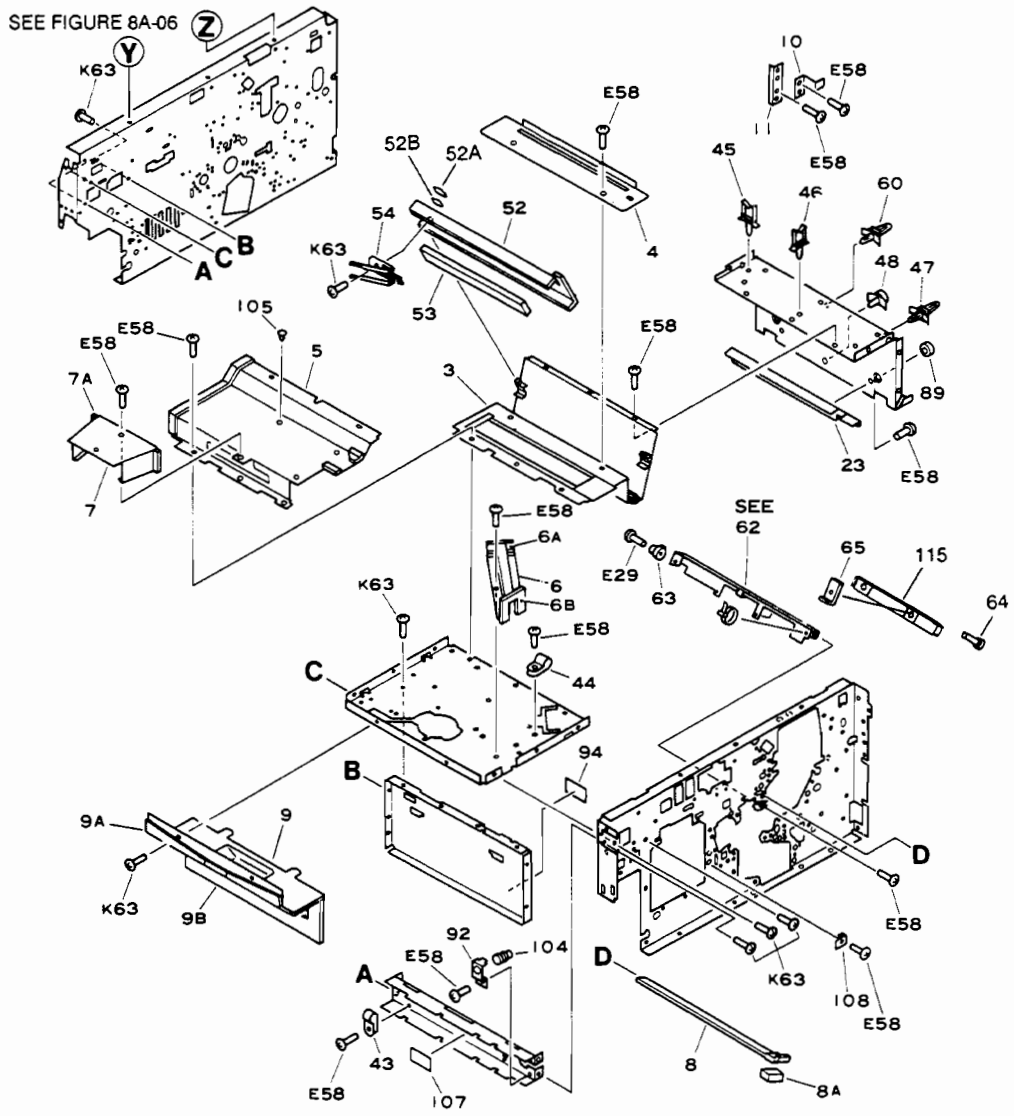


Figure 8a-4. Internal Components (3 of 4)

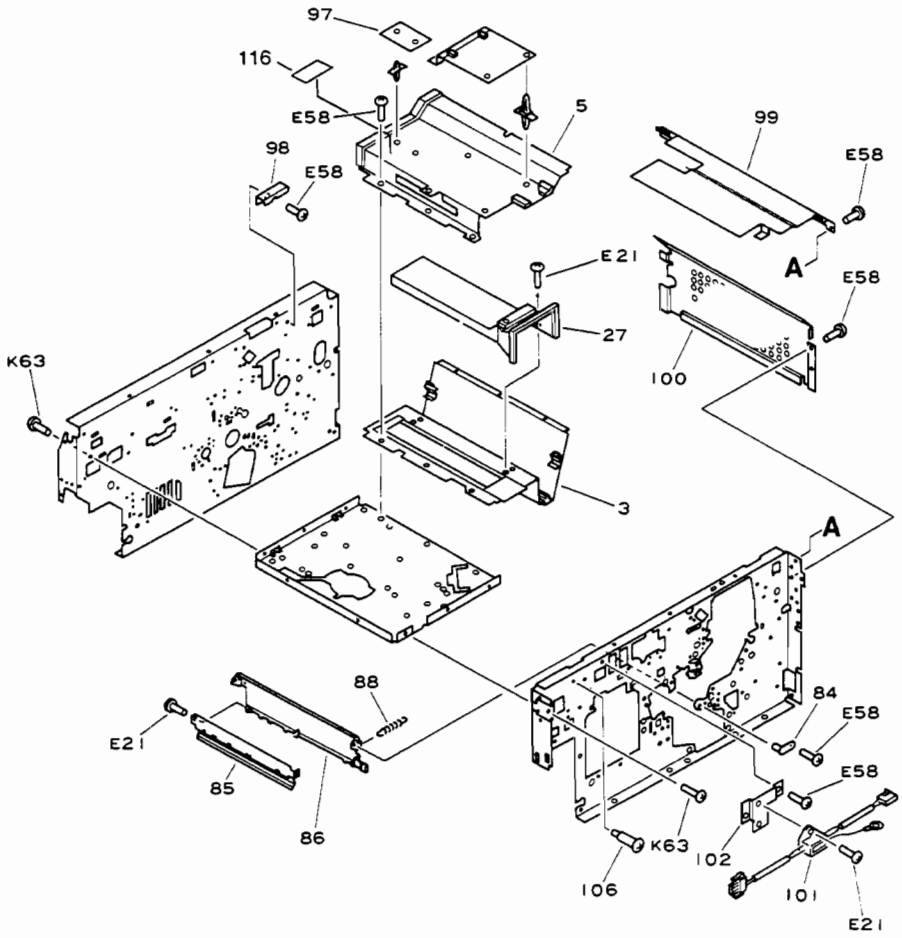


Figure 8a-4. Internal Components (4 of 4)

Table 8a-4. Internal Components

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1		1	N	RAIL, DEVELOPING ASSEMBLY
2		1	N	GUIDE, CLEANING ASSEMBLY
3	RA1-1274-000CN	1	S	PLATE, SCANNER
3A	FA3-0240-000CN	2	S	CUSHION
4	FA3-0215-020CN	1	S	PLATE, DUST-PROOF
5	RF1-0310-060CN	1	S	PLATE
6	FF1-4457-050CN	1	S	PLATE
6A	FA3-0220-050CN	1	S	SEAL (A)
6B	FA3-0221-050CN	1	S	SEAL (B)
7	FF1-4458-050CN	1	S	PLATE, COVER
7A	FA3-0224-040CN	2	S	SEAL
8	FF1-4418-040CN	1		GLASS, DUST PROOF
9	RF1-0306-000CN	1	S	PLATE, DUCT, UPPER
10	FA3-0267-000CN	1	S	PLATE, DOOR SWITCH PUSHER
11	FA3-0268-000CN	1	S	MOUNT, DOOR SWITCH PUSHER
12	FA3-0269-000CN	2	S	SPRING, REAF
13	FA3-0271-000CN	1	S	HANDLE, DEVELOPER RELEASE
14	FA3-0272-000CN	1	S	HANDLE, FEEDER RELEASE
15	RA1-3743-030CN	1	S	PLATE, GUIDE, PICK-UP, UPPER
16	FA3-0274-000CN	1	S	PLATE, GUIDE, PICK-UP, MIDDLE
17	FA3-0275-000CN	1	S	PLATE, GUIDE, PICK-UP, LOWER
18*	RF1-2307-000CN	1		ROLLER, UPPER
19*	RF1-2308-000CN	1		ROLLER, LOWER
20	FA3-0278-000CN	1	S	GUIDE, BLOCK, FRONT
21	FA3-0279-000CN	1	S	GUIDE, BLOCK, REAR
22	FA3-0280-000CN	1	S	KNOB
23	FA3-0283-000CN	1	S	GUIDE, DEVELOPER RIGHT
24	FA3-0285-000CN	2	S	SPRING, LEAF

S = special order part

N = not available for replacement

* = replace as a set

Table 8a-4 Internal Components (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
25	FA3-0286-000CN	1	S	RAIL, TRANSFER CORONA ASSEMBLY A
26	FA3-0287-000CN	1	S	RAIL, TRANSFER CORONA ASSEMBLY B
27	RF1-0486-040CN	1	S	INTAKE DUCT
28	FA3-0292-000CN	1	S	RAIL
29	FF1-4500-040CN	1		RAIL
29A	FA3-0294-000CN	2	S	SLIDER
30	FF1-4527-000CN	1	S	PLATE, GUIDE 3. RIGHT
31	FF1-4529-000CN	1	S	PLATE, PAPER GUIDE, UPPER
32	RA1-1211-000CN	1	S	SPRING, LEAF
33	RF1-0353-000CN	1	S	RAIL, PRIMARY
35	FA2-1534-000CN	8	S	PIN, GUIDE
36	FA2-3182-000CN	3	S	SPRING, LEAF
37	FA2-7380-000CN	1	S	BUSHING
38	FA2-9221-000CN	1	S	STOPPER
39	FF1-4474-000CN	1	S	SHAFT
40	FS1-1119-000CN	10	S	BUSHING
41	FS1-2370-000CN	2	S	SPRING, TENSION
42	RH3-0035-030CN	1		DCPS1 POWER SUPPLY 120 VAC
	RH3-0036-030CN	1		DCPS1 POWER SUPPLY 220/240VAC
43	X62-6859-000CN	3	S	CLAMP, CABLE
44	X62-6866-000CN	3	S	CLAMP, CABLE, 2N
45	WT2-0110-000CN	5	S	CLIP, 2N
46	WT2-0244-000CN	3	S	CLIP, CABLE, 1NS
47	WT2-0233-000CN	8	S	SUPPORT, PCA
48	VT2-0002-040CN	2	S	SUPPORT SPACER
49	FA3-0270-000CN	1	S	SPINDLE, PRESSER
50	FA2-8579-000CN	2	S	CAM, PRESSURE
51	FS2-2225-000CN	4	S	SPRING, COMPRESSION
52		1	N	MOUNT
53	FN1-4092-000CN	1	S	MIRROR

S = special order part

N = not available for replacement

Table 8a-4. Internal Components (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
54	FA3-0387-000CN	1	S	SPRING, LEAF
55	FA3-0395-000CN	1	S	MOUNT
56	FA3-0396-000CN	1	S	PLATE
57	RF1-0604-020CN	1		CABLE, FIBER OPTIC
58	RA1-1290-000CN	1	S	MOUNT, POTENTIAL CONTROL PCA
59	FS1-9004-000CN	2	S	SCREW, STEPPED, M4
60	VT2-0001-004CN	8	S	SUPPORT, PCA
61	WT2-0264-000CN	5	S	CARD SPACER
62		1	N	PLATE, MOUNT
63	FA1-4446-000CN	1	S	PIN, GUIDE
64	XA9-0040-000CN	2	S	SCREW, INSUL., TRUSS HEAD.M4X20
65	FA3-0467-000CN	2	S	PLATE
66		1	N	FRAME, TRANSFER
67	FF1-4476-000CN	1	S	PLATE, PAPER GUIDE, LOWER
68	FA3-0600-000CN	2	S	SPRING, LEAF
69	FA3-0602-000CN	2	S	BLOCK, GUIDE
70	FA3-0604-000CN	1	S	SHAFT, LEVER
71		1	N	PLATE, SLIDE, A
72		1	N	PLATE, SLIDE, B
73	FA1-9880-000CN	1	S	SHAFT, HANDLE, LATCH/RELEASE
74	FS1-6071-000CN	1	S	ROLLER, PRESSER
75	FS1-2941-000CN	1	S	SPRING, TENSION
76		1	N	PLATE, CONNECTOR
77	FA3-0888-000CN	1	S	COVER, CONNECTOR, UPPER
80	RA1-1212-000CN	1	S	SPRING, LEAF
81	XG2-8016-505CN	1	S	BALL BEARING
82	XB1-2300-309CN	2	S	SCREW, MACHINE TRUSS HEAD
84	FA1-9546-000CN	1	S	PLATE, PIN
85	FF1-4895-000CN	1	S	PLATE, GUIDE 3, LOWER

S = special order part

N = not available for replacement

Table 8a-4. Internal Components (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
86	FF1-4502-000CN	1	S	PLATE, GUIDE 3, LEFT
87	FS1-1117-000CN	1	S	BUSHING
88	FS2-2137-000CN	1	S	SPRING, TENSION
89	VT2-0002-003CN	2	S	SPACER, SUPPORT
90	FA3-0304-000CN	1	S	PLATE, GROUNDING
91	FF1-4703-000CN	2	S	PLATE, PIN
92	FA3-0756-000CN	1	S	PLATE, LAMP MOUNTING
93	FA3-0329-020CN	1	S	HOOK
94	FA2-2538-040CN	1	S	LABEL, "HIGH TEMP WARNING"
95	FF1-4795-000CN	1	S	MOUNT, PHOTOINTERRUPTER
96	FH7-7023-000CN	1		PHOTOINTERRUPTER
97	RH6-3022-000CN	1	S	FAN MOTOR, DRIVER PCB
98	RA1-2124-000CN	1	S	GUIDE, WIRING
99	RA1-2044-000CN	1	S	PLATE, SHIELD, UPPER
100	RA1-2045-000CN	1	S	PLATE, SHIELD, LOWER
101	RF1-0716-000CN	1	S	FILTER, NOISE
102	RA1-2667-000CN	1	S	MOUNT, NOISE FILTER
103	RA1-2663-000CN	1	S	COVER, CAPACITOR
104	WG1-0209-000CN	1	S	LED
105	XZ9-0214-000CN	1	S	PLUG
106	FS1-9007-000CN	1	S	SCREW, STEPPED, M4
107	FS1-8495-000CN	1	S	LABEL
108	FA3-0290-000CN	1	S	PLATE
109	RF1-0449-000CN	1		POTENTIAL SENSOR CABLE
115	FA3-0578-000CN	1	S	COVER POTENTIAL SENSOR

S = special order part

N = not available for replacement

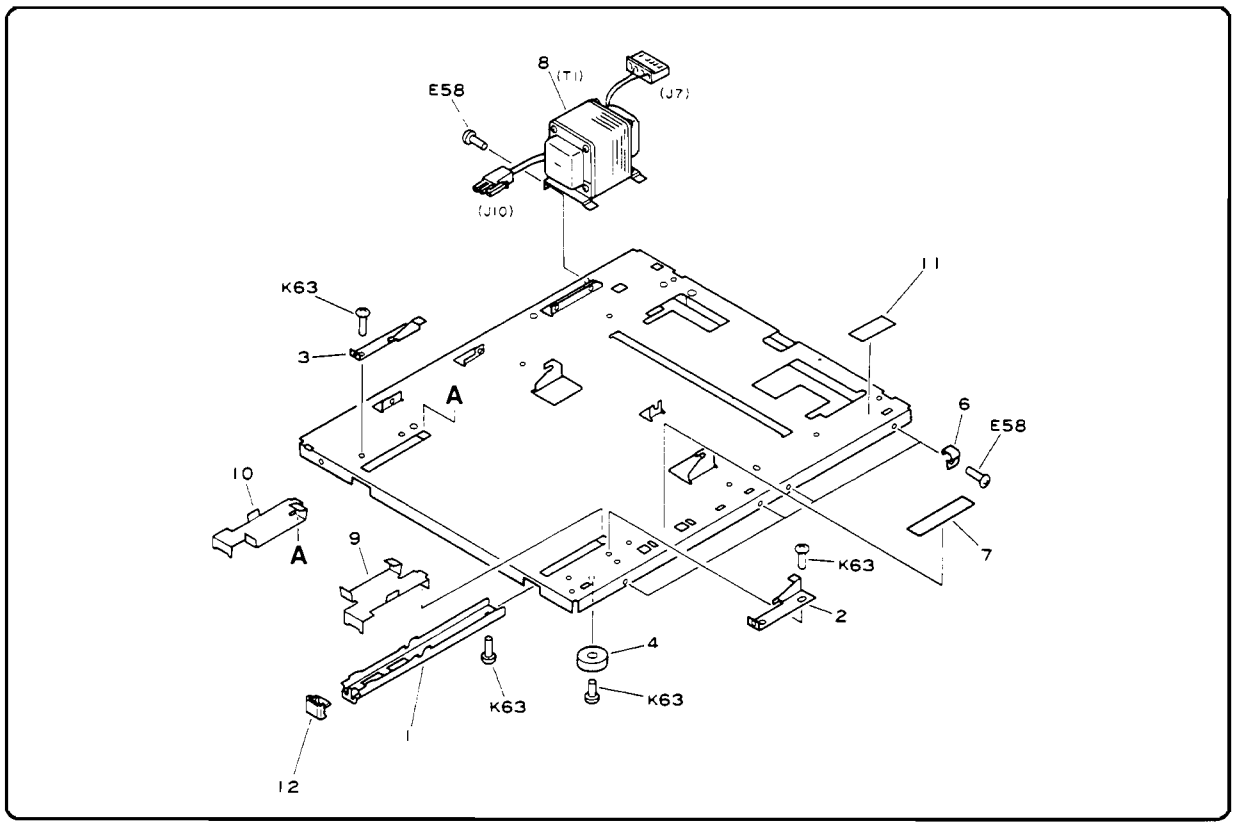


Figure 8a-5. Machine Bottom Plate

Table 8a-5. Machine Bottom Plate

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1		4	N	HANDLE
2		1	N	PLATE, GUIDE, FRONT
3		1	N	PLATE, GUIDE, REAR
4		4	N	FOOT, COPIER BODY, RUBBER
5		1	N	SHAFT
6	FA3-0256-000CN	4	S	HINGE, FRONT DOOR
7		1	N	PLATE
8	FA3-0173-000CN	1	S	TRANSFORMER, 115V 60HZ
	RH3-0031-000CN	1	S	TRANSFORMER, 220/240V
9	FA3-0233-000CN	1	S	GUIDE, FUSER, FRONT
10	FA3-0234-000CN	1	S	GUIDE, FUSER, REAR

S = special order part

N = not available for replacement

NOTES:

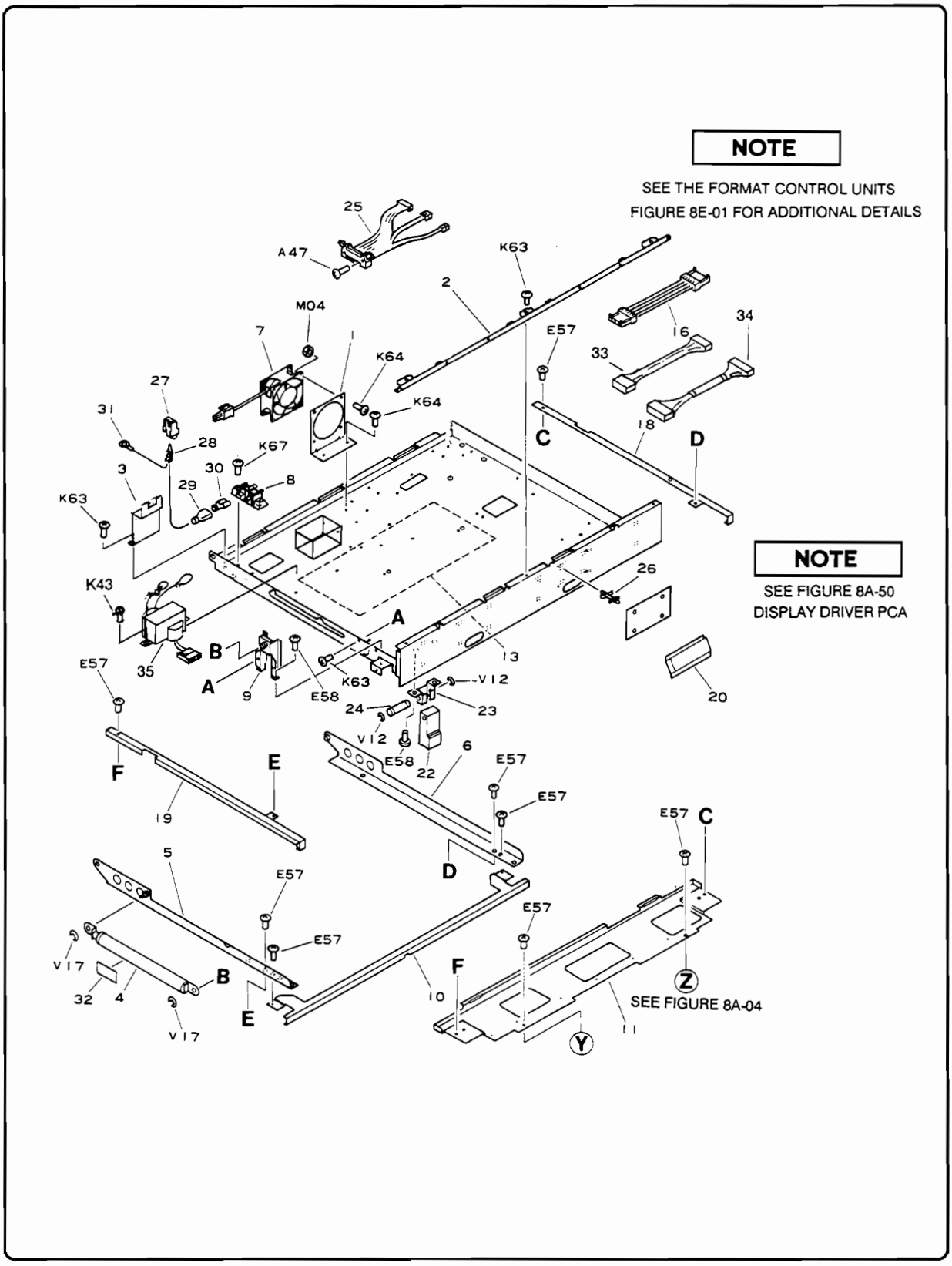


Figure 8a-6. Interface Compartment Unit

Table 8a-6.
Interface Compartment Unit

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-1257-000CN	1	S	MOUNT, FAN
2	RA1-1299-000CN	1	S	MOUNT, COVER, DISPLAY
3	RA1-3737-000CN	1	S	MOUNT, CONNECTOR, AC
4	XZ9-0052-000CN	1		DAMPER, GAS
5	RF1-0283-000CN		S	MOUNT, DAMPER, 1
6	RF1-0284-000CN		S	MOUNT, DAMPER, 2
7	RH7-1055-000CN	1		FAN MOTOR
8	RH5-0025-000CN	1	S	TERMINAL
9	RF1-0282-000CN	1	S	PLATE, PIVOT
10	RF1-0565-000CN	1	S	COVER, UPPER, FRONT
11	RF1-0564-000CN	1	S	COVER, UPPER
13	RS1-8519-000CN	1	S	LABEL
16	RF1-0448-000CN	1	S	CABLE 2, DISPLAY
18	RA1-2652-000CN	1	S	COVER, UPPER, RIGHT
19	RA1-2655-000CN	1	S	COVER, UPPER, LEFT
20	RG1-0904-000CN	1		DISPLAY ASSEMBLY
22	RA1-1568-000CN	1	S	FOOT, RUBBER
23	RA1-1569-000CN	1	S	MOUNT, RUBBER
24	RA1-1570-000CN	1	S	PIN, PIVOT, FOOT
25	RG1-0551-000CN	1	S	STACKER I/F CABLE
26	WT2-0274-000CN	4	S	SUPPORT, PCB
27	WS4-0062-000CN	1	S	CONNECTOR, 3P
28	WS4-0073-000CN	3	S	SOCKET, CONTACT, 14-20AWG
29	WT1-0029-000CN	6	S	SLEEVE, FASTON 250
30	X62-5334-000CN	6	S	SOCKET, FASTON 250, 14-18AWG
31	X62-9151-000CN	1	S	TERMINAL, RING
32	RS1-8292-000CN	1	S	LABEL, "GAS DAMPER"
33	RF1-0346-000CN	1		CABLE 1, DISPLAY
34	RH2-5039-000CN	1		CABLE, E/I TO DC CONT
35	RH3-0051-000CN	1	S	TRANSFORMER 120 VAC
	RH3-0052-000CN	1	S	TRANSFORMER 220/240 VAC

S = special order part

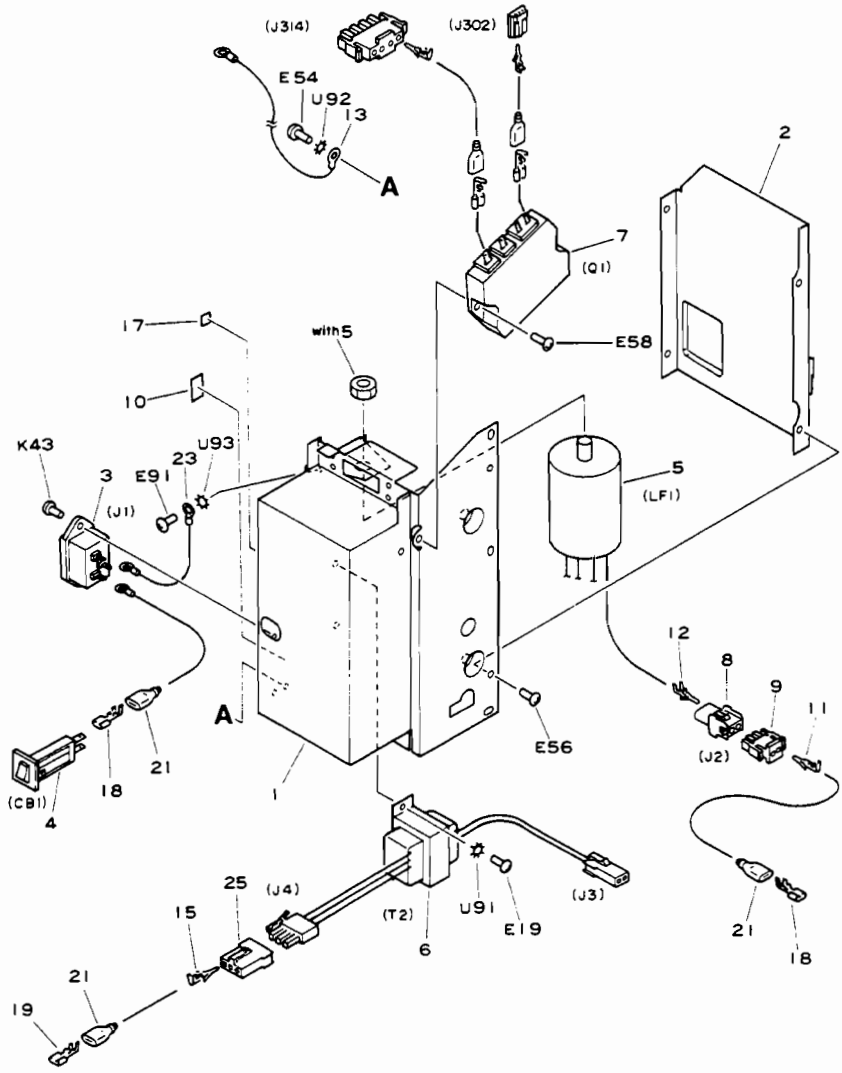


Figure 8a-7. Power Cord Terminal Assembly (120V)

Table 8a-7. Power Cord Terminal Assembly (120V)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0902-000CN		S	POWER CORD ASSEMBLY (120V)
1	RA1-3750-000CN	1	S	MOUNT, CORD
2	RA1-1671-000CN	1	S	COVER, CORD
3	WS5-0021-000CN	1	S	CONNECTOR, POWER SUPPLY
4	WD3-0080-000CN	1		BREAKER, CIRCUIT, 250VAC 15A
5	FH7-9040-000CN	1	S	FILTER, NOISE
6	RH3-0028-000CN	1	S	TRANSFORMER, POWER 120 VAC
7	FH4-5007-000CN	1		SSR, SF12DC-M1U SSR
8	WS4-0060-000CN	1	S	CONNECTOR, 2P, FEMALE
9	WS4-0059-000CN	1	S	CONNECTOR, 2P, MALE
10	FA2-5438-000CN	1	S	LABEL
11	WS4-0075-000CN	4	S	PIN, CONTACT, 14-20AWG
12	WS4-0073-000CN	2	S	SOCKET, CONTACT, 14-20AWG
15	WS4-0218-000CN	4	S	SOCKET, CONTACT, 18-22AWG
17	FA9-0023-000CN	1	S	LABEL
18	X62-5334-000CN	6	S	SOCKET, FASTON 250, 14-18AWG
19	WT1-0017-000CN	2	S	SOCKET, FASTON 250, 16-20AWG
21	WT1-0029-000CN	8	S	SLEEVE, FASTON 250
23	WT1-0259-000CN	1	S	TERMINAL, RING
25	VS2-0053-003	1	S	CONNECTOR, 3P, FEMALE

S = special order part

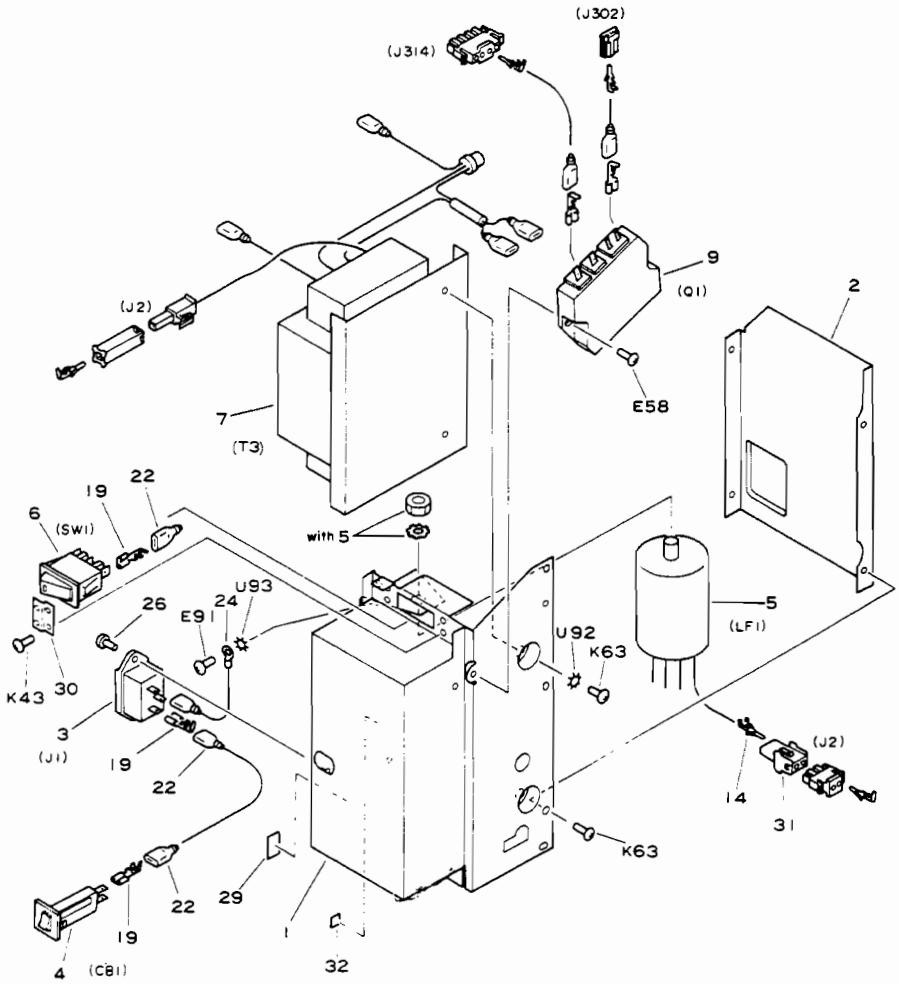


Figure 8a-8. Power Cord Terminal Assembly (220/240V)

Table 8a-8. Power Cord Terminal Assembly (220/240 V)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0903-000CN	1	S	POWER CORD ASSEMBLY (220/240V)
1	RA1-3750-000CN	1	S	MOUNT, CORD
2	RA1-1671-000CN	1	S	COVER, CORD
3	WS5-0026-000CN	1	S	CONNECTOR, POWER SUPPLY
4	WD3-0081-000CN	1		BREAKER, CIRCUIT, 250VAC 8A
5	FH7-0071-000CN	1	S	FILTER, NOISE
6	WC1-0113-000CN	1	S	SWITCH, ROCKER
7	RH3-0027-000CN	1	S	TRANSFORMER, 220/240V 50HZ
9	RH4-0046-000CN	1		SSR,SF12DC-H1 SSR
14	WS4-0073-000CN	1	S	SOCKET, CONTACT, 14-20AWG
19	X62-5334-000CN	12	S	SOCKET, FASTON 250, 14-18AWG
22	WT1-0029-000CN	14	S	SLEEVE, FASTON 250
24	X62-9151-000CN	1	S	TERMINAL, RING
29	FF1-4500-000CN	1	S	RAIL

S = special order part

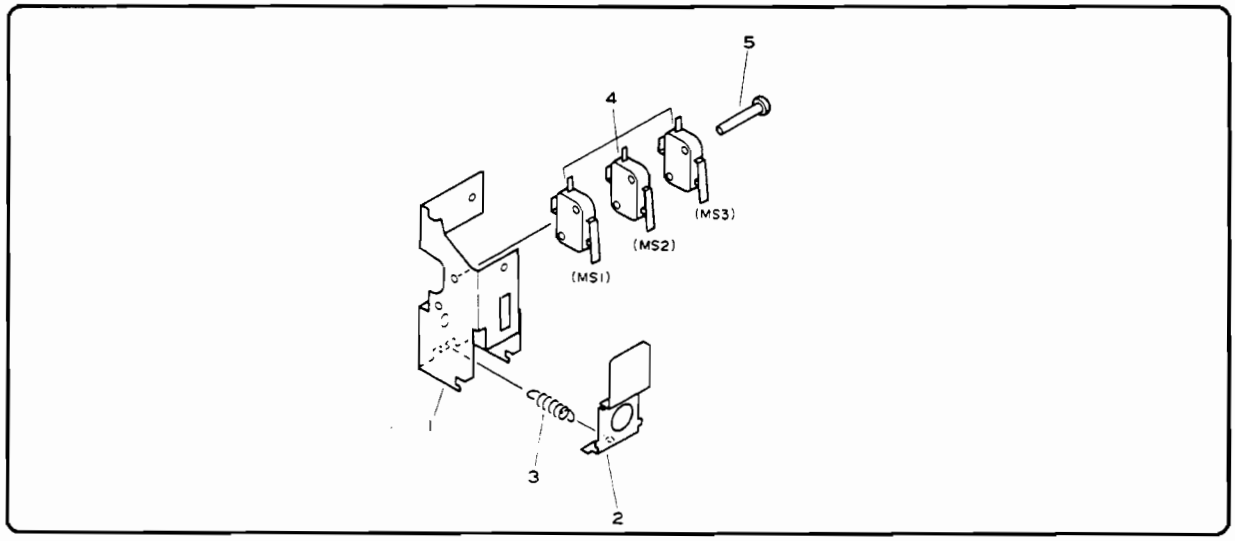


Figure 8a-9. Door Switch (DC Line) Assembly

Table 8a-9. Door Switch (DC Line) Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3187-000CN	1		DOOR SWITCH ASSEMBLY
4	WC4-0114-000CN	1		MICROSWITCH

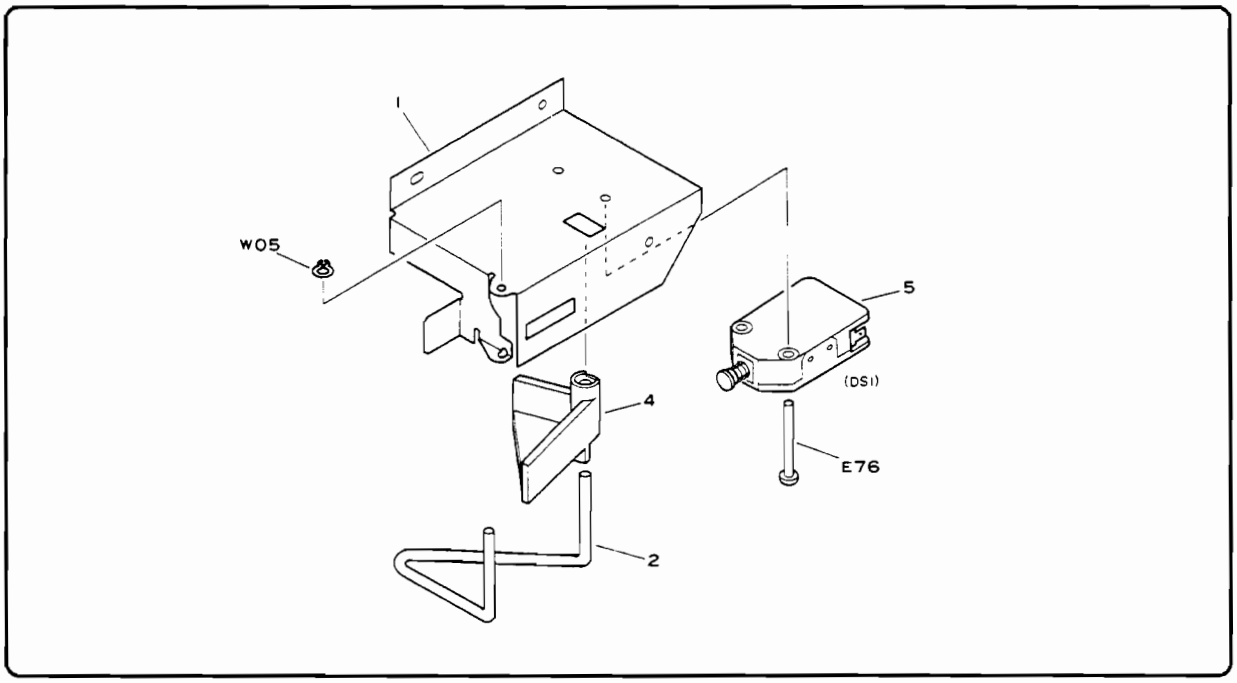


Figure 8a-10. Door Switch (AC Line) Assembly

Table 8a-10. Door Switch (AC Line) Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3183-000CN	1		DOOR SWITCH ASSEMBLY
5	WC2-0063-000CN	2		SWITCH, MICRO

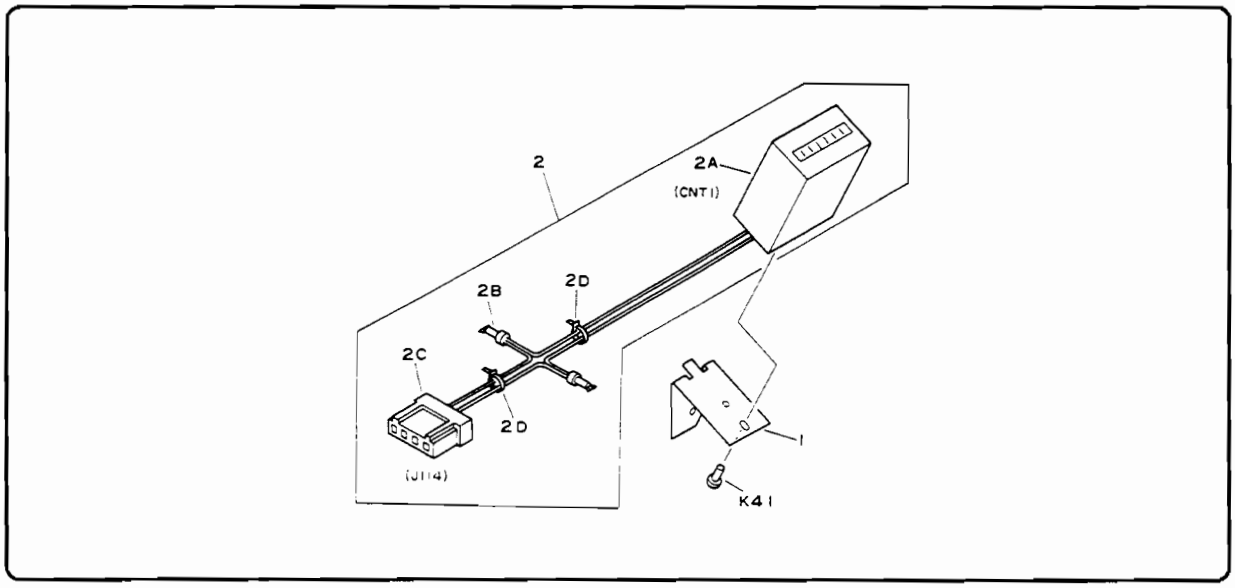


Figure 8a-11. Counter Assembly

Table 8a-11. Counter Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-0754-000CN	1	S	MOUNT, COUNTER
2	FF1-4452-000CN	1		COUNTER

S = special order part

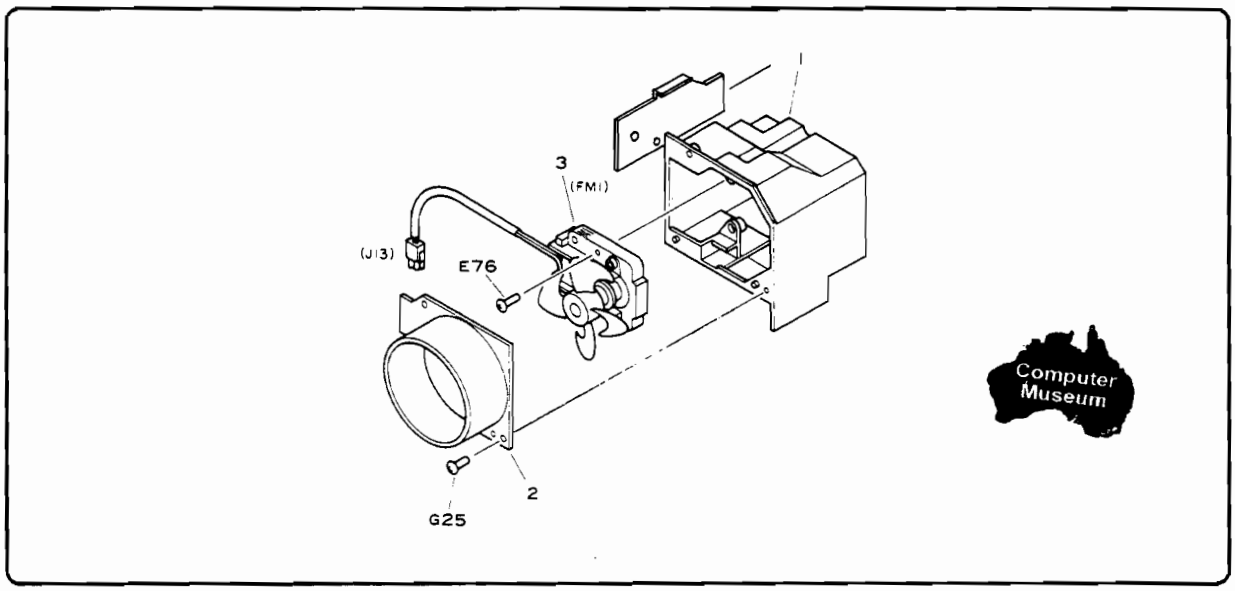


Figure 8a-12. Cooling Fan Assembly

Table 8a-12. Cooling Fan Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3164-000CN	1		COOLING FAN ASSEMBLY 115 VAC
	FG1-3165-000CN	1		COOLING FAN ASSEMBLY 220/240 VA

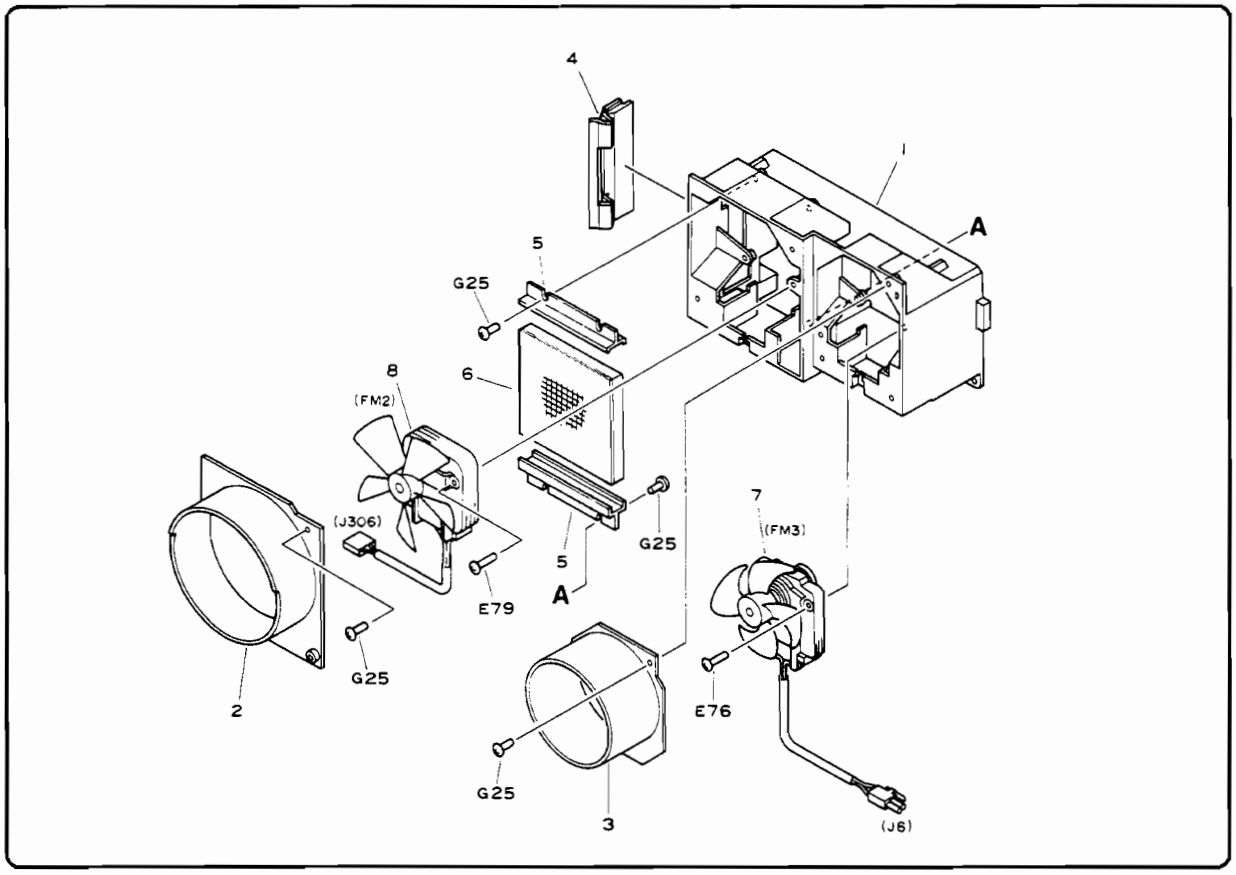


Figure 8a-13. Exhaust Fan Assembly

Table 8a-13. Exhaust Fan Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3160-000CN	1		EXHAUST FAN ASSEMBLY (120V)
	FG1-3161-000CN	1		EXHAUST FAN ASSEMBLY (220V)
6	FA2-5541-000CN	1		OZONE FILTER

NOTES:

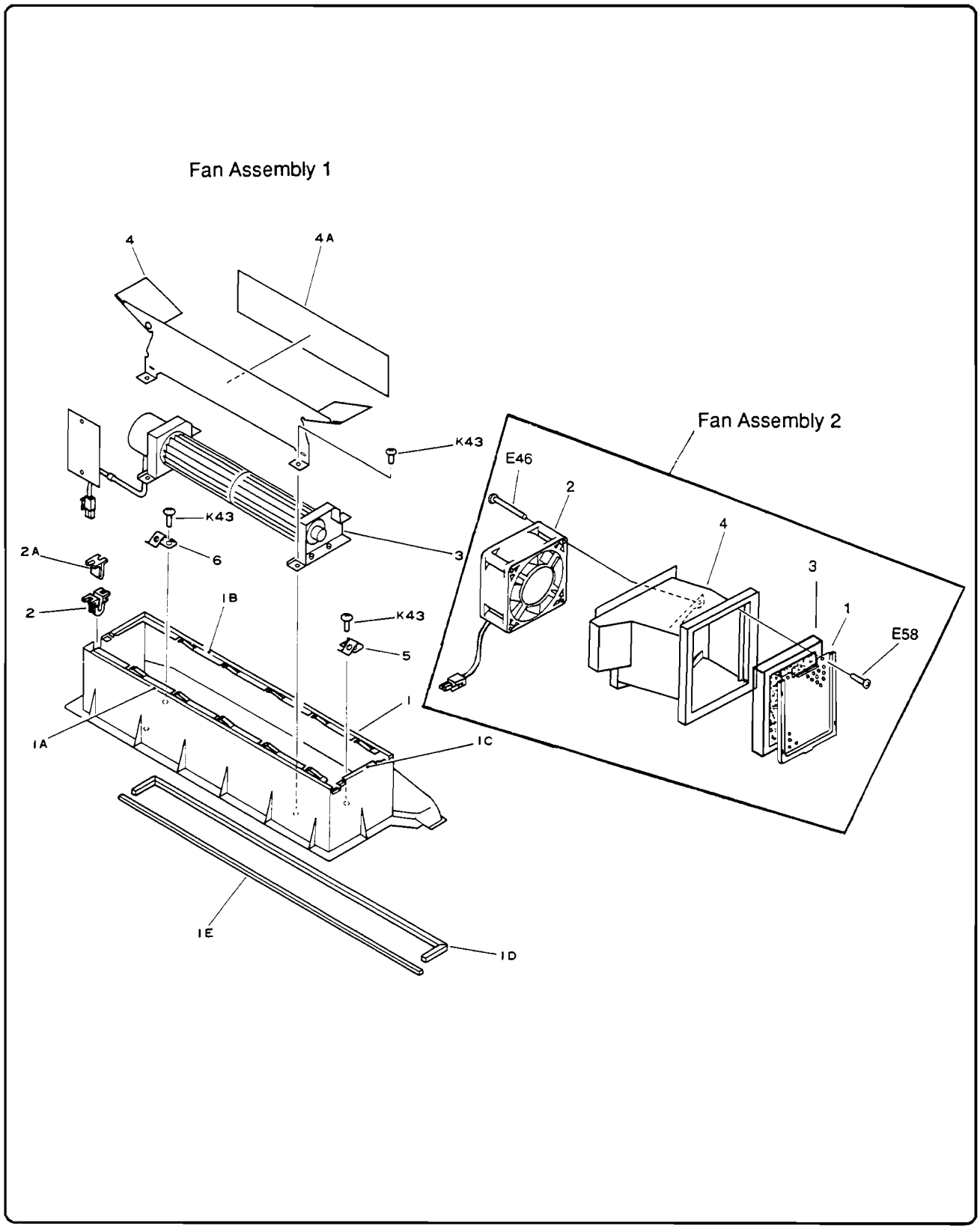


Figure 8a-14. Corona Filter Intake Fan Assemblies 1 & 2

Table 8a-14. Corona Filter Intake Fan Assembly 1

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0418-000CN	1	S	INTAKE FAN ASSEMBLY
3	RF1-0396-000CN	1		MOTOR, FAN AND DRIVER PCA

Table 8a-14. Corona Filter Intake Fan Assembly 2

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG9-0202-050CN	1	S	INTAKE FAN ASSEMBLY 2
1	RF1-0472-030CN	1	S	FILTER, COVER
2	RH7-1024-030CN	1	S	FAN/MOTOR UNIT
3	RA1-1557-020CN	1	S	FILTER, AIR
4	RF1-0473-000CN	1	S	DUCT, FAN

S = special order part

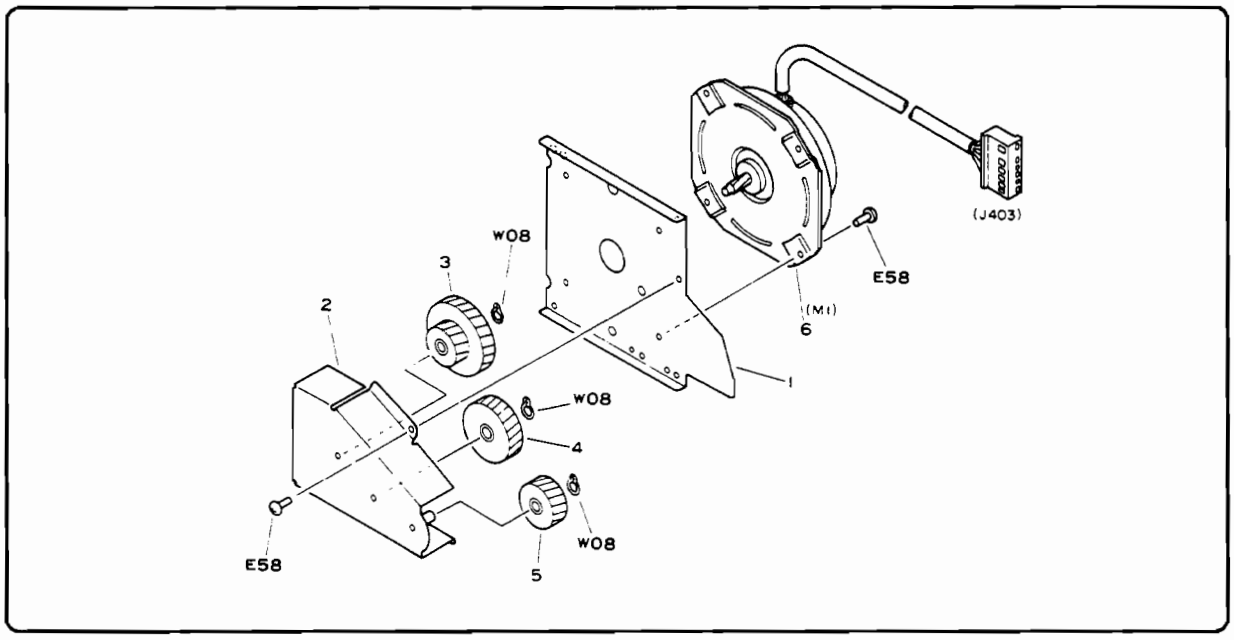


Figure 8a-15. Drum Motor Assembly

Table 8a-15. Drum Motor Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0515-000CN	1		DRUM MOTOR ASSEMBLY

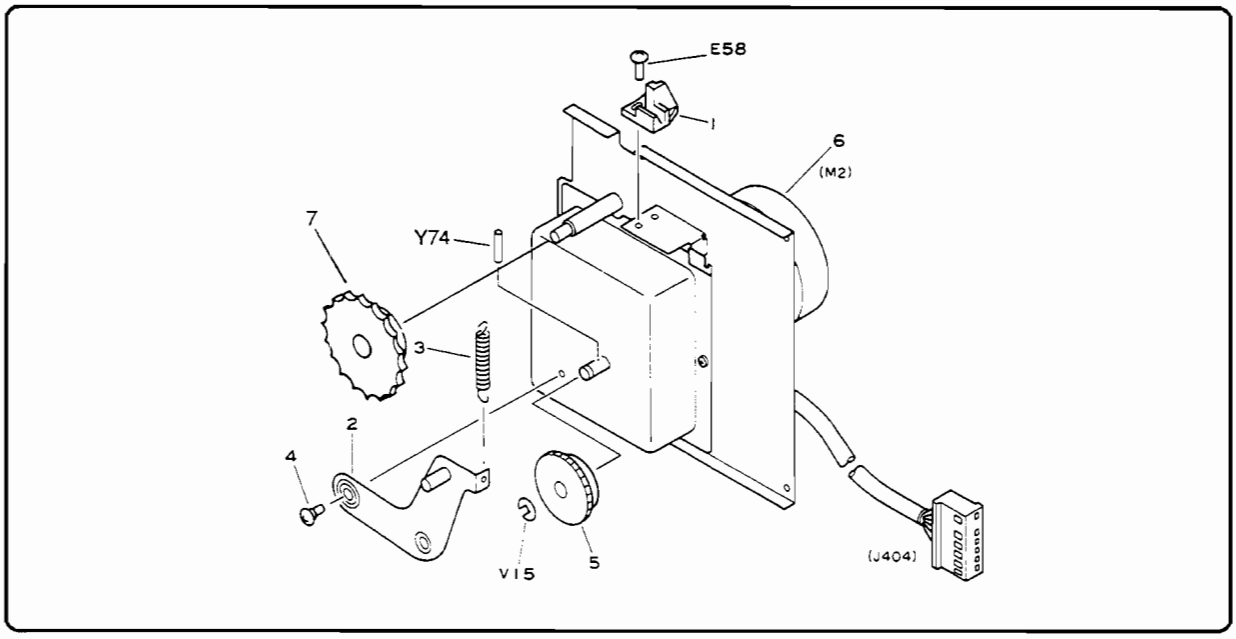


Figure 8a-16. Main Motor Assembly

Table 8a-16. Main Motor Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0376-000CN	1		MAIN MOTOR ASSEMBLY
3	FS9-2907-000CN	1		TENSION SPRING (ORIGINAL)
3	RS1-2221-000CN	1		TENSION SPRING (NEW)
5	RS1-3001-020CN	1		SPROCKET, 16T
7	RS1-3003-020CN	2		GEAR, 24T IDLER

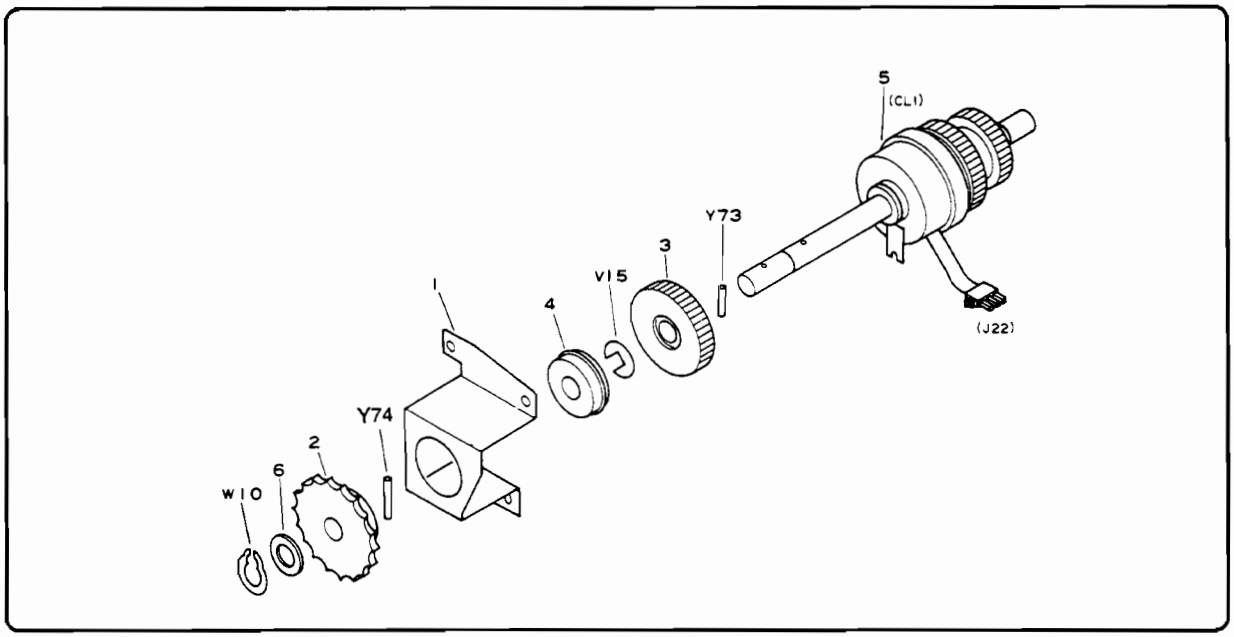


Figure 8a-17. Registration Drive Assembly

Table 8a-17. Registration Drive Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0621-000CN	1		REGISTRATION DRIVE ASSEMBLY
2	RS1-3022-000CN	1		SPROCKET, 18T
5	FH7-5049-000CN	1		CLUTCH, ELECTROMAGNETIC

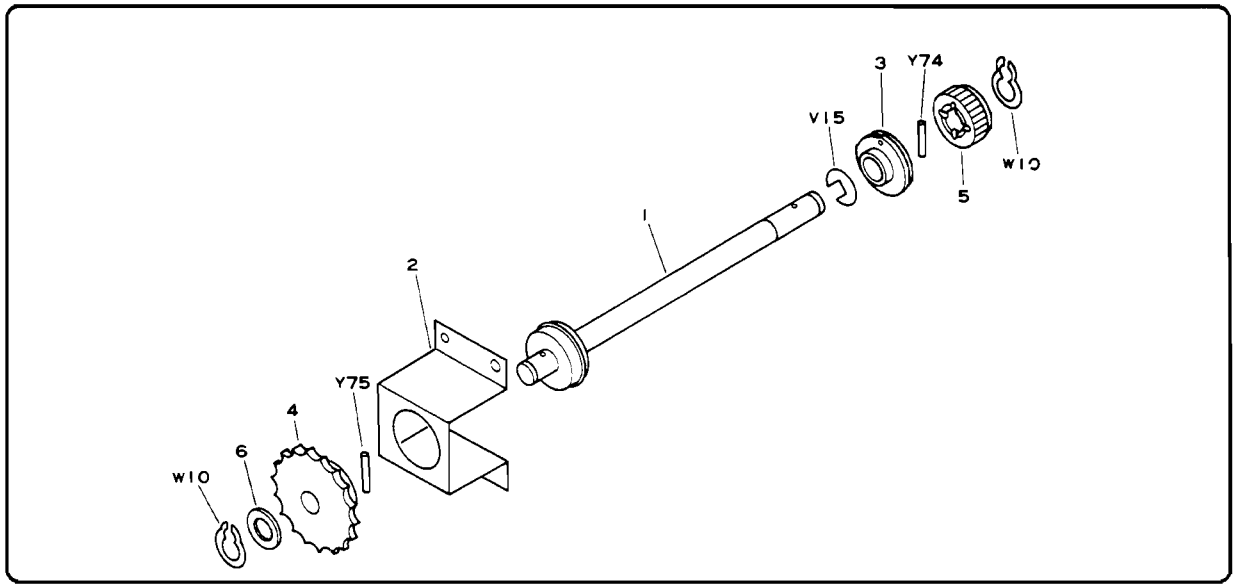


Figure 8a-18. Developing Unit Drive Assembly

Table 8a-18. Developing Unit Drive Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0622-000CN	1		DEVELOPING UNIT DRIVE ASSEMBLY
4	RS1-3022-000CN	1		SPROCKET, 18T

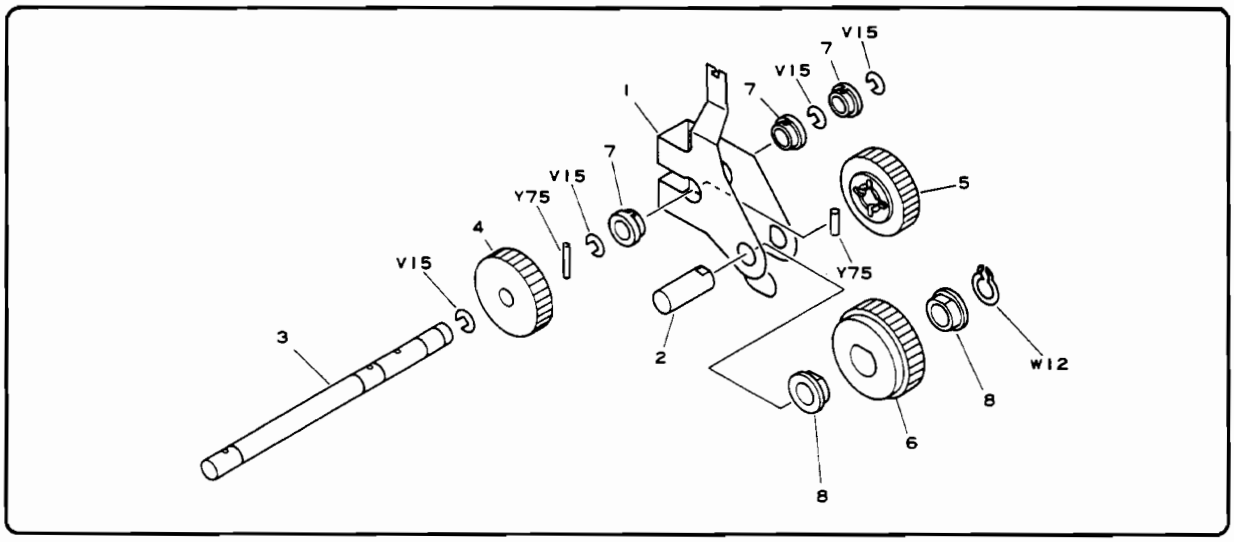


Figure 8a-19. Fuser Unit Drive Assembly

Table 8a-19. Fuser Unit Drive Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0419-000CN	1	S	FUSER UNIT DRIVE ASSEMBLY
1	FA3-0730-000CN	1	S	ARM, GEAR MOUNTING
2	FA3-0731-000CN	1	S	SHAFT, GEAR
3	RA1-1267-000CN	1	S	SHAFT, DRIVE FUSER ASSEMBLY
4	FS2-0006-000CN	1	S	GEAR, 32T
5	FS2-0007-000CN	1	S	GEAR, 32T
6	FS1-0406-000CN	1	S	GEAR, 38T
7	FS1-1046-000CN	3	S	BUSHING
8	FS1-1118-000CN	2	S	BUSHING

S = special order part

See figure 8A-03 for Drive Gear and Bearings.

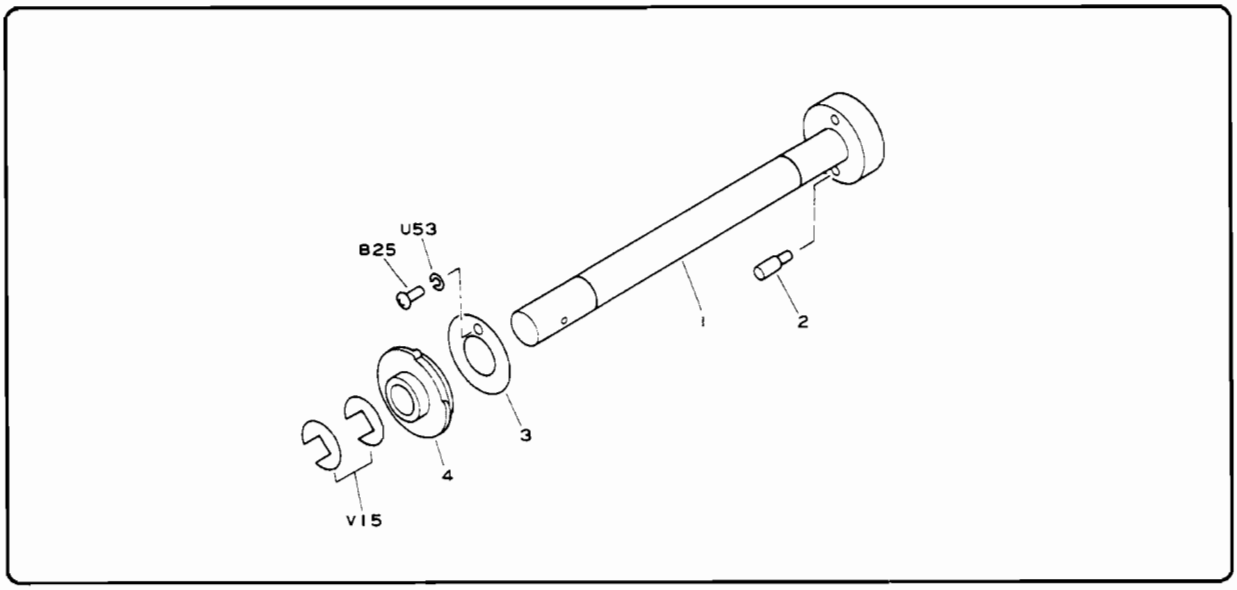


Figure 8a-20. Cleaner Unit Drive Assembly

Table 8a-20. Cleaner Unit Drive Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3155-000CN	1		CLEANER UNIT DRIVE ASSEMBLY

See 8A-03 for Drive Gear and Bearing

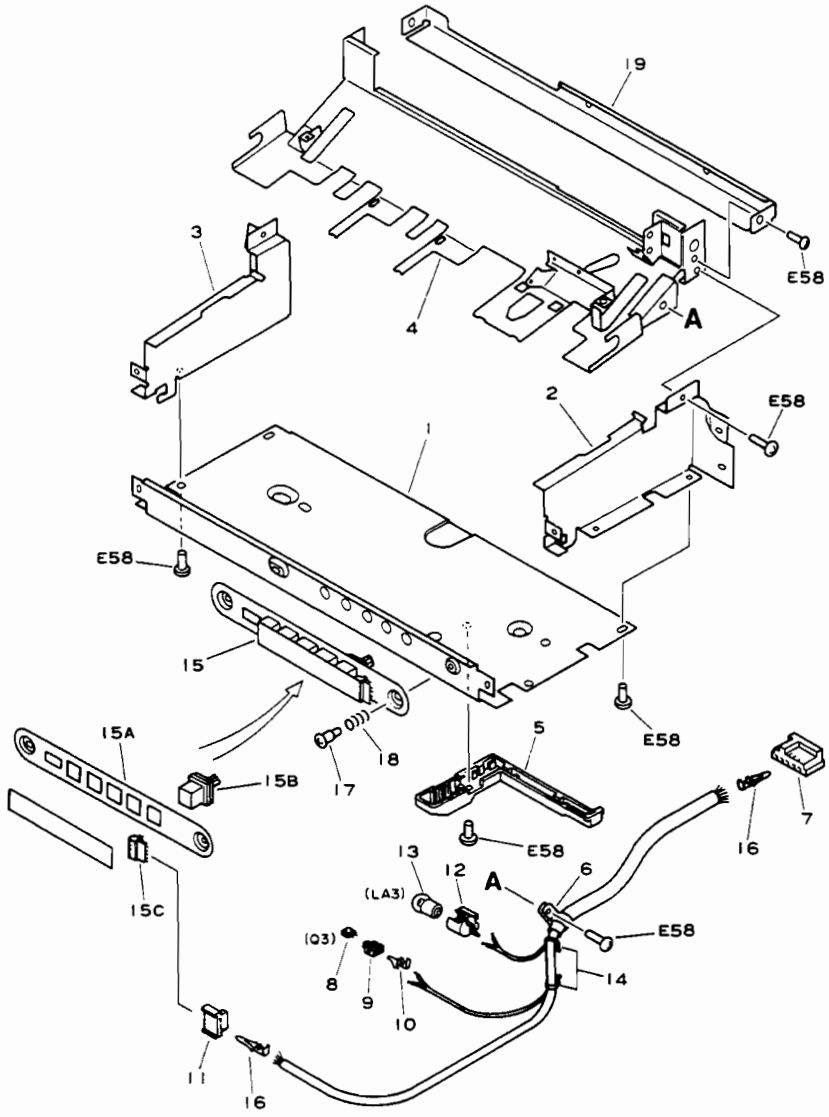


Figure 8a-21. Cassette Holder Assembly

Table 8a-21. Cassette Holder Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-1279-000CN	1	S	PLATE, BASE
2	FA3-0593-000CN	1	S	PLATE, FRONT
3	FA3-0594-000CN	1	S	PLATE, REAR
4	RA1-4333-000CN	1	S	CROSS MEMBER
5	FA3-0603-000CN	1	S	COVER, SENSOR
6	X62-6863-000CN	1	S	CLAMP, CABLE, 5N
7	WS3-0435-010CN	1	S	CONNECTOR, 10P
8	WG3-0029-000CN	1		PHOTO TRANSISTOR,PN-205
9	WS3-1022-000CN	1	S	SOCKET, LED
10	WS3-0924-000CN	2	S	PIN CONTACT
11	WS3-0432-006CN	1	S	CONNECTOR, 6P
12	WG9-0003-000CN	1	S	SOCKET, BULB
13	WG1-0093-000CN	1		LAMP, 6.3V 50MA
14	WT2-0030-000CN	2	S	TIE, CABLE
15	RG1-0374-000CN	1		CASSETTE SIZE SENSING UNIT
16	WS3-0437-000CN	1	S	CONTACT
17	FS1-9004-000CN	2	S	SCREW, STEPPED, M4
18	FS2-2284-000CN	2	S	SPRING, COMPRESSION
19	RF1-0703-000CN	1	S	CROSSMEMBER

S = special order part

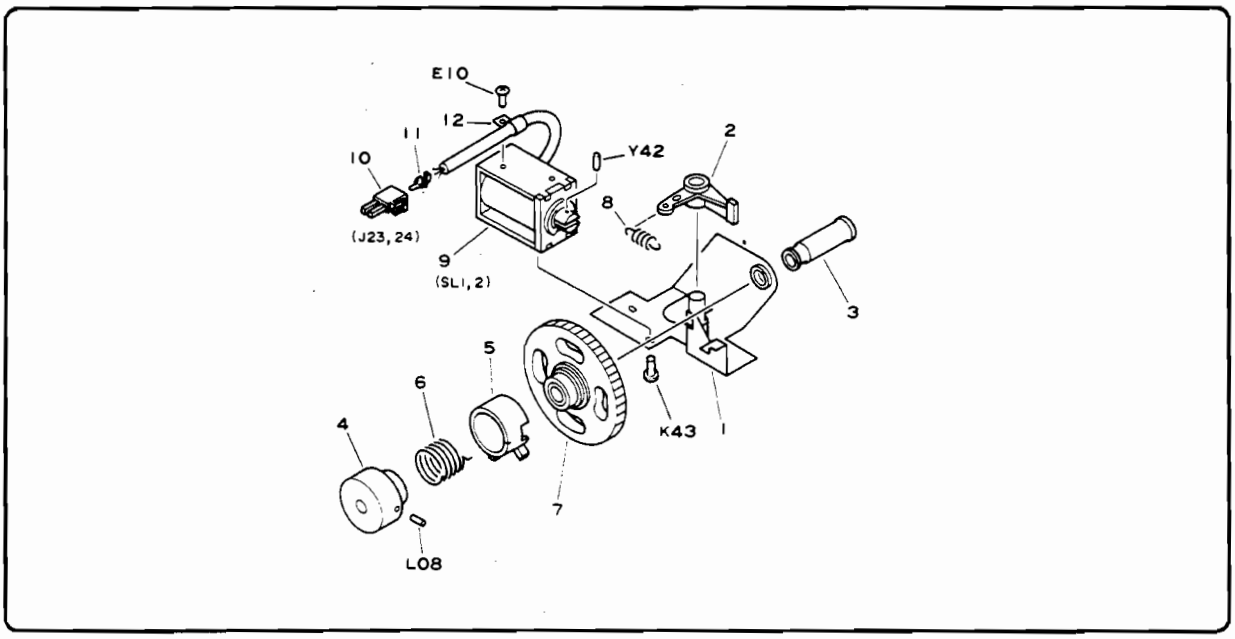


Figure 8a-22. Paper Feed Clutch Assembly

Table 8a-22. Paper Feed Clutch Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3130-000CN	2		PAPER FEED CLUTCH ASSEMBLY

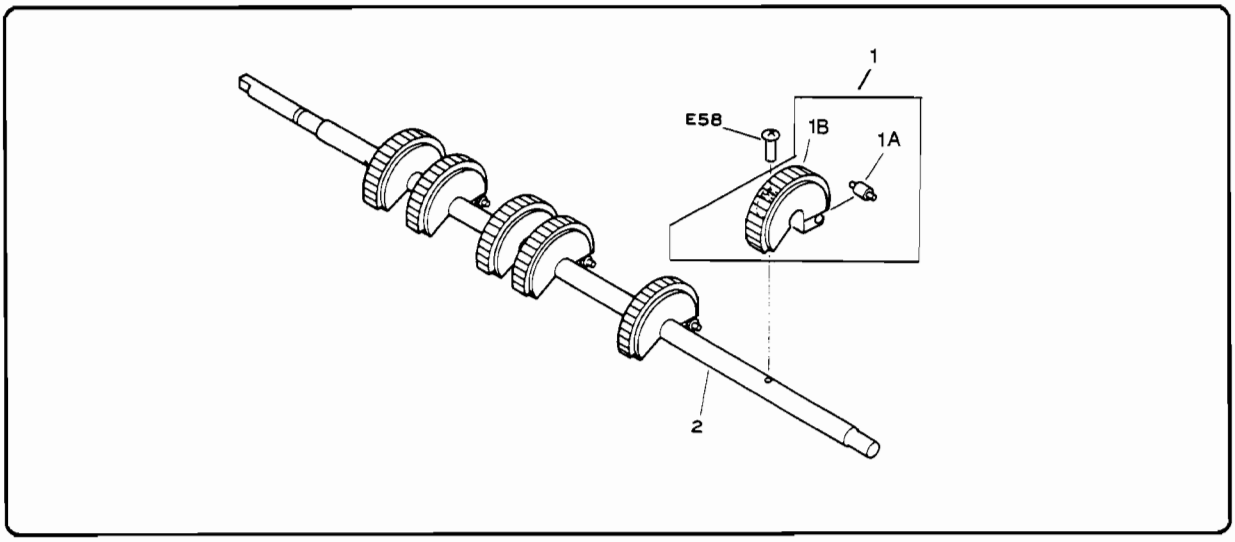


Figure 8a-23. Pickup Roller Assembly

Table 8a-23. Pickup Roller Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RF1-1122-000CN	6		ROLLER ASSEMBLY, PAPER PICKUP
1A	FA2-8227-000CN	6		ROLLER, PRESSURE
1B	RF1-1122-000CN	6		ROLLER, PAPER PICKUP
2	FA3-0580-000CN	1	S	SHAFT, PICKUP ROLLER

S = special order part

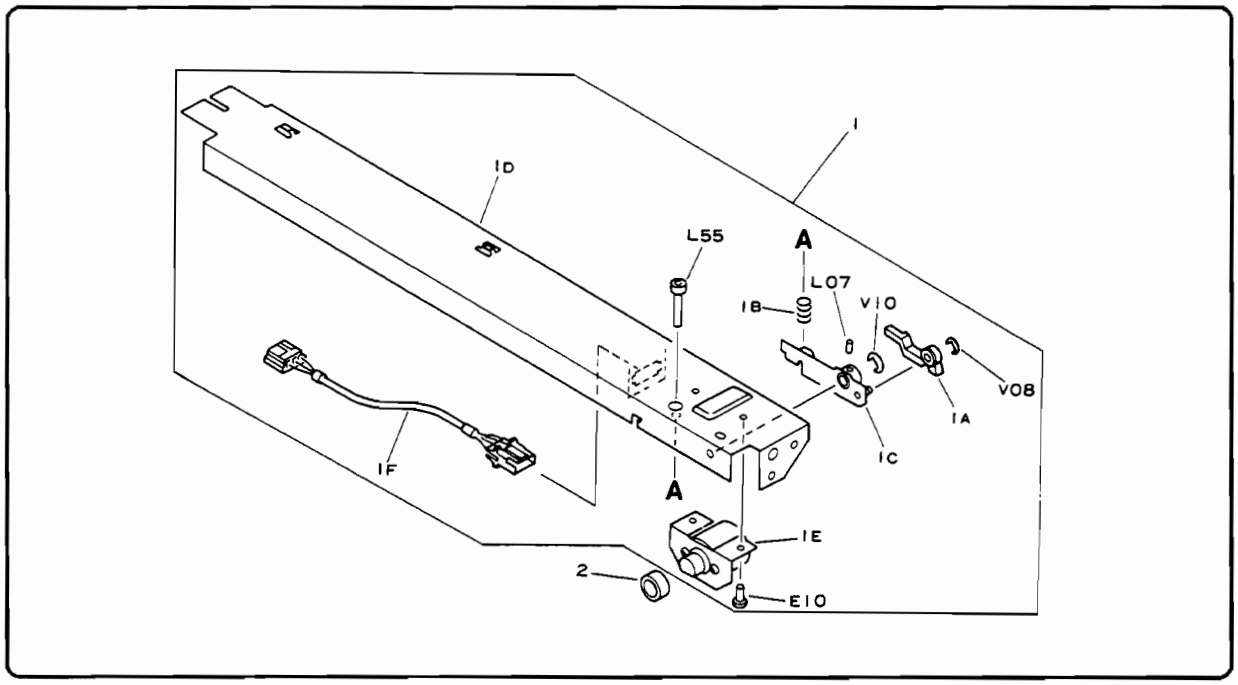


Figure 8a-24. Double Feed Detecting Assembly

Table 8a-24. Double Feed Detecting Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0420-000CN	1		DOUBLE FEED DETECTING ASSY

NOTES:

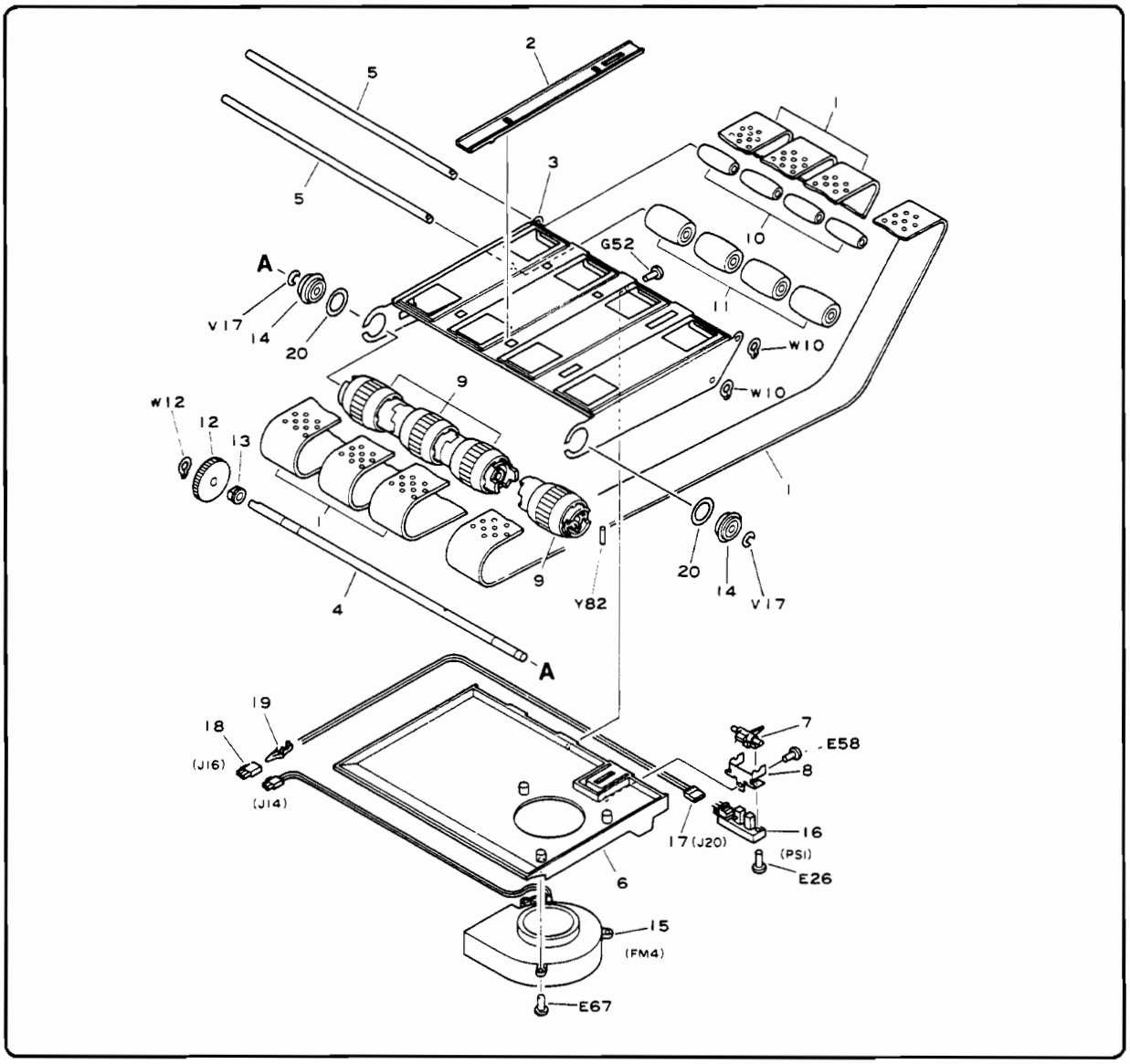


Figure 8a-25. Feeder Assembly

Table 8a-25. Feeder Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3137-050CN	1		FEEDER ASSEMBLY 115 VAC
	FG1-3138-050CN	1		FEEDER ASSEMBLY 220/240 VAC
1	FA3-0609-000CN	4		BELT, CONVEYOR
2	FA3-0610-000CN	3		RIBBED GUIDE
7	FA3-0615-000CN	1		LEVER, SENSOR
8	FA3-0616-000CN	1		MOUNT, SENSOR
16	FH7-7023-000CN	1		PHOTO-INTERRUPTER UNIT

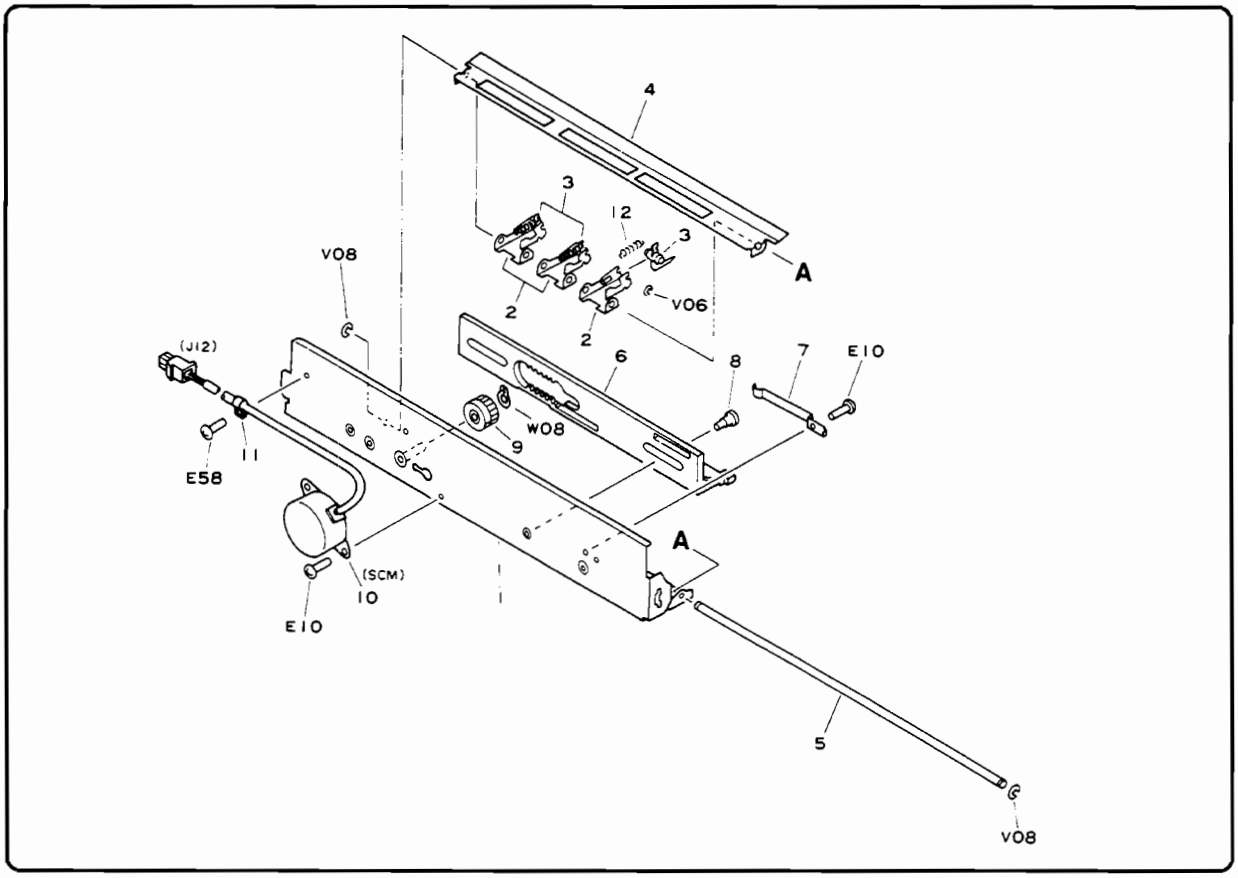


Figure 8a-26. Separation Claw Assembly

Table 8a-26. Separation Claw Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FF1-4499-000CN	1		MOUNT PLATE
2	FA3-0419-000CN	3		CLAW MOUNT
3	FA3-1937-020CN	3		SEPARATION CLAW
4	FA3-0421-000CN	1		PLATE
5	FA3-0440-000CN	1		SHAFT
6	FA3-0441-020CN	1		MOUNT PLATE
7	FA3-0456-000CN	1		LEAF SPRING
8	FS1-9004-000CN	2		STEPPED SCREW (M4)
9	FS2-0164-000CN	1		GEAR, 8T/35T
10	FH7-1259-000CN	1	100V	MOTOR, 100VAC 50/60HZ, W/GEAR
10	FH7-1260-000CN	1	115V	MOTOR, 115VAC 60HZ, W/GEAR
10	FH7-1261-000CN	1	220V	MOTOR, 220VAC 50HZ, W/GEAR
11	X62-6866-000CN	1		CABLE CLAMP
12	FS2-2204-000CN	3		SPRING, TENSION

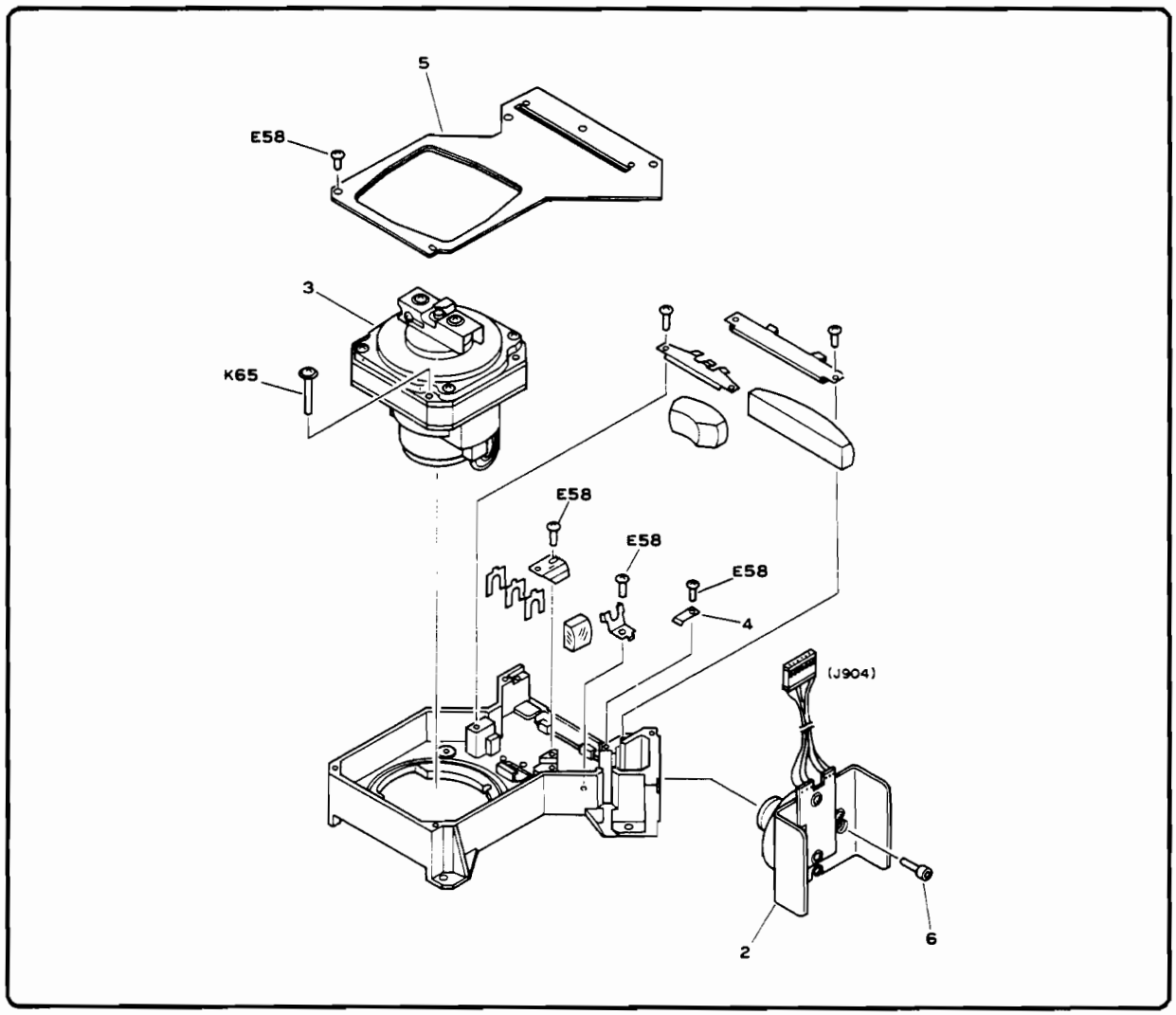


Figure 8a-27. Laser Scanning Assembly

Table 8a-27. Laser Scanning Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG0-0039-000CN	1		LASER/SCANNER ASSEMBLY
2	FG0-0225-000CN	1		LASER UNIT
3	RG0-0040-000CN	1		SCANNER MOTOR UNIT
6	XB7-1040-259CN	2	S	SCREW, ALLEN HEAD, M4X25

S = special order part

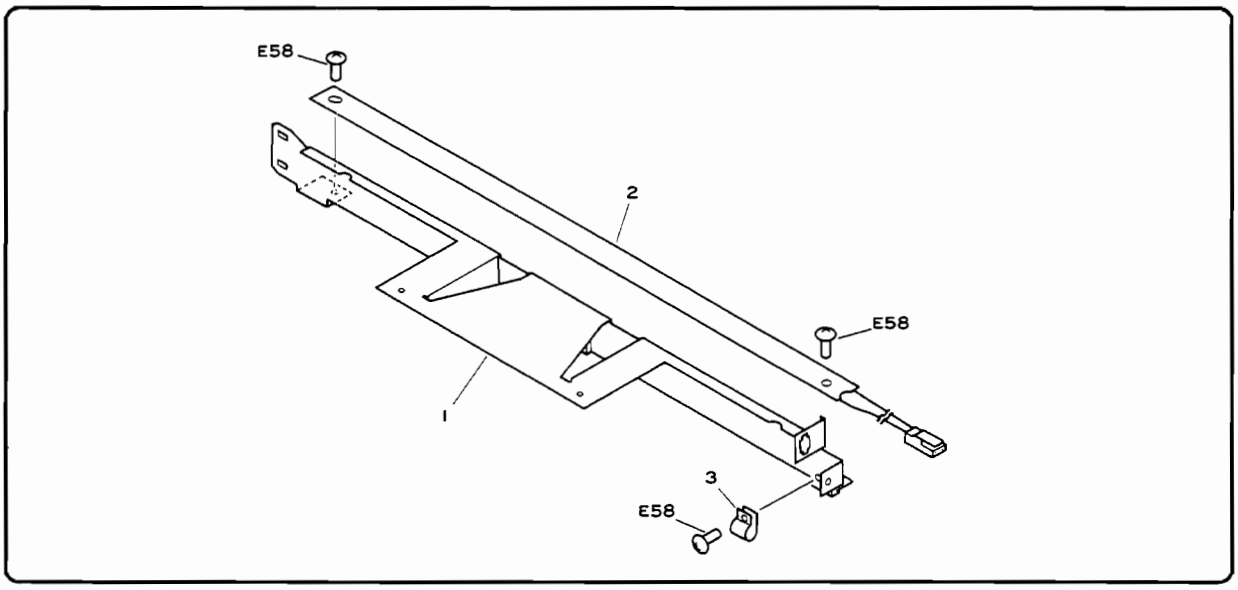


Figure 8a-28. Preconditioning Exposure Lamp Assembly

Table 8a-28. Preconditioning Exposure Lamp Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0368-030CN	1		PRECOND EXPOSURE LAMP ASSY

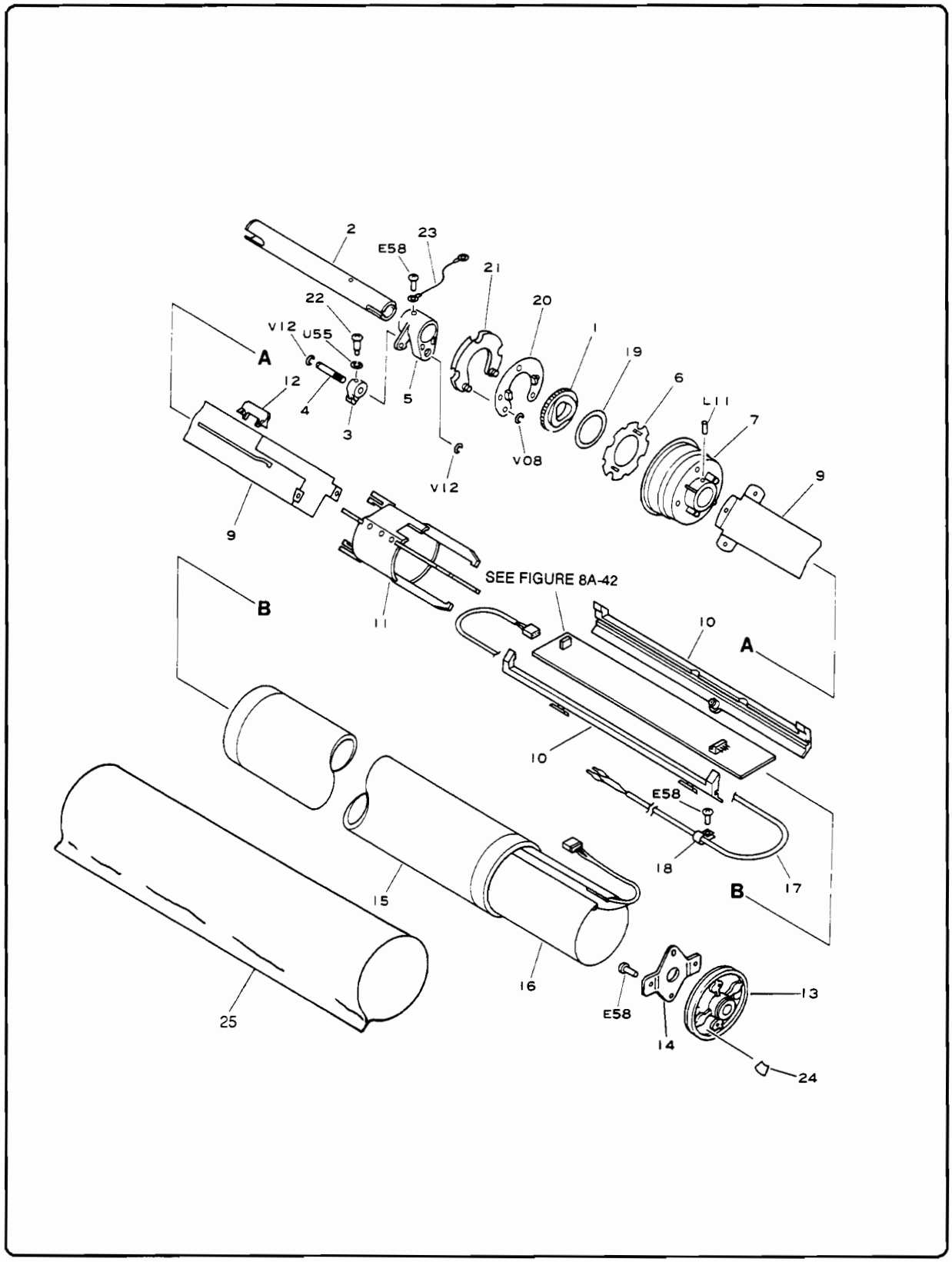


Figure 8a-29. Drum Assembly and Drum Shaft

Table 8a-29. Drum Assembly and Drum Shaft

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	NPN	RF		DRUM ASSEMBLY AND DRUM SHAFT
1	RA1-2108-000CN	1	S	GEAR (80 T) CAM
2	RA1-2114-020CN	1	S	SHAFT, DRUM
3	RA1-2106-000CN	1	S	ARM, CAM FOLLOWER
4	RA1-2105-000CN	1	S	SHAFT, GEAR
5	RA1-2107-000CN	1	S	HOLDER, LEVER
6	RA1-2110-000CN	1	S	FOLLOWER, CAM (B)
7	RA1-2115-020CN	1	S	FLANGE, REAR
9	RA1-1324-030CN	1	S	GUIDE, DRUM
10	FA3-0848-000CN	1	S	RAIL, GUIDE
11	FA3-0849-000CN	1	S	RAIL, DRUM, FRONT
12	FA3-0850-000CN	1	S	GUIDE, DRUM, REAR
13	RA1-4600-000CN	1	S	FLANGE, FRONT
14	FA3-0853-000CN	1	S	PLATE, SPRING
15	R44-0230-000CN	1		DRUM, PHOTOSENSITIVE
16	FH7-4143-070CN	1		HEATER, DRUM, 90W, 115VAC
	FH7-4144-070CN	1		HEATER, DRUM, 90W, 220VAC
17	FF1-4517-000CN	1	S	HARNESS, WIRING
18	X62-6856-000CN	1	S	CABLE, CLAMP, 4N
19	RS1-6006-000CN	1	S	WASHER
20	RA1-2109-000CN	1	S	FOLLOWER, CAM (A)
21	RF1-0508-000CN	1	S	FLANGE (SPRING)
22	RS1-9004-000CN	1	S	SCREW, STEPPED
23	RF1-0563-000CN	1	S	WIRE, GROUNDING
24	RS1-8417-000CN	1	S	LABEL
25	TKN-0459-000CN	1		PROTECTIVE DRUM SLEEVE, 50 EA

S = special order part

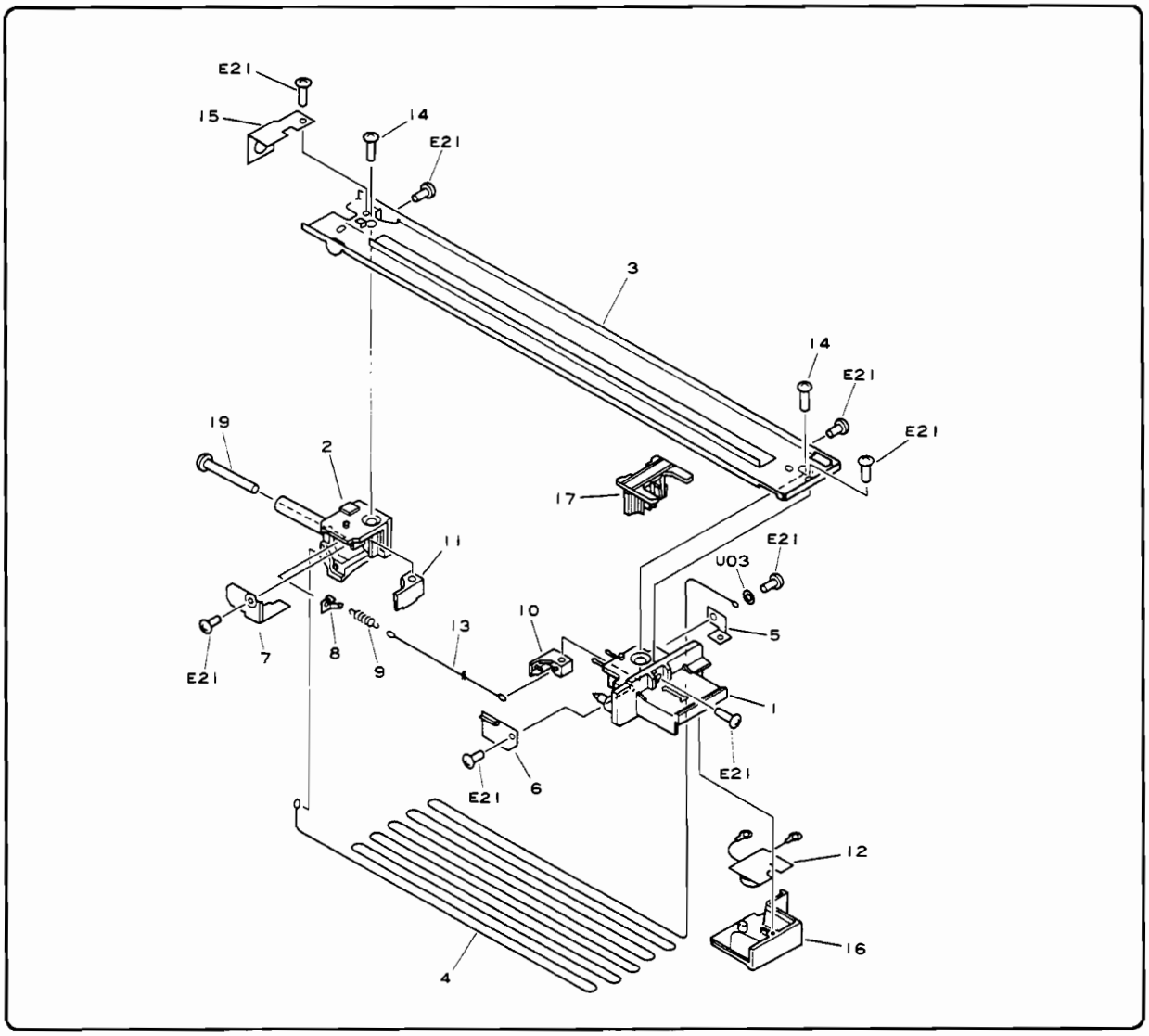


Figure 8a-30. Primary Corona Unit

Table 8a-30. Primary Corona Unit

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0369-080CN	1		PRIMARY CORONA UNIT
4	FY3-0040-000CN	AR	S	WIRE, CORONA, 0.6MM (100M SPOOL)

S = special order part

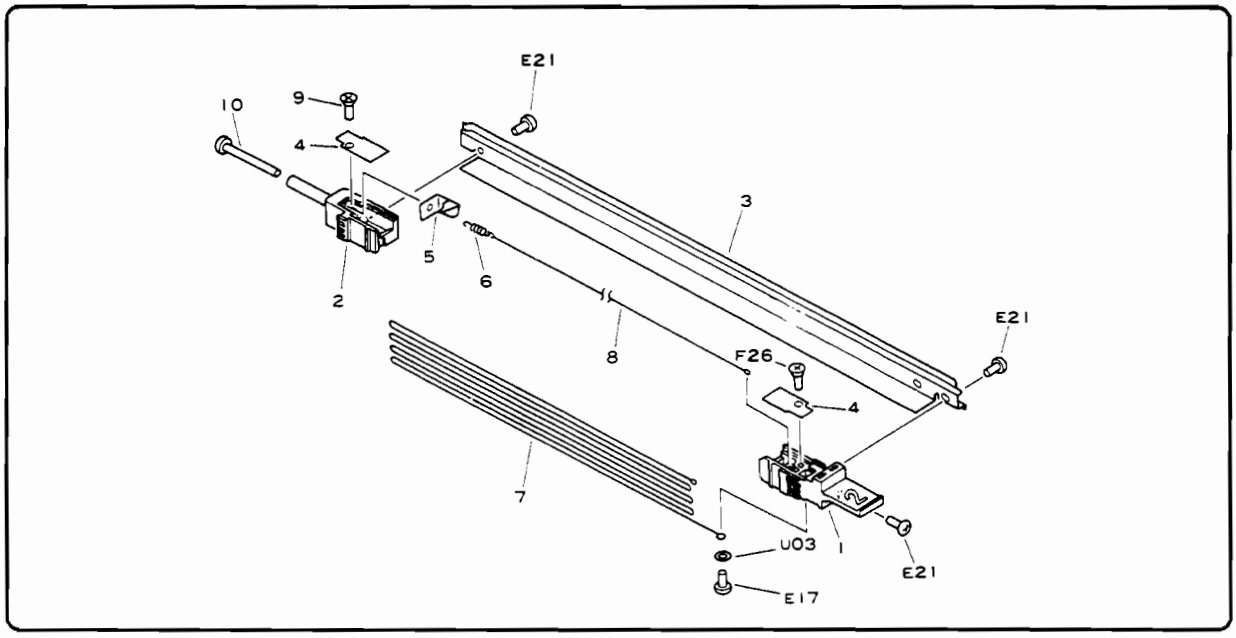


Figure 8a-31. Pretransfer Corona Assembly

Table 8a-31. Pretransfer Corona Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-1244-000CN	1		PRETRANSFER CORONA ASSEMBLY
	FY3-0040-000CN	AR	S	WIRE, CORONA 0.06MM (100M SPOOL)

S = special order part

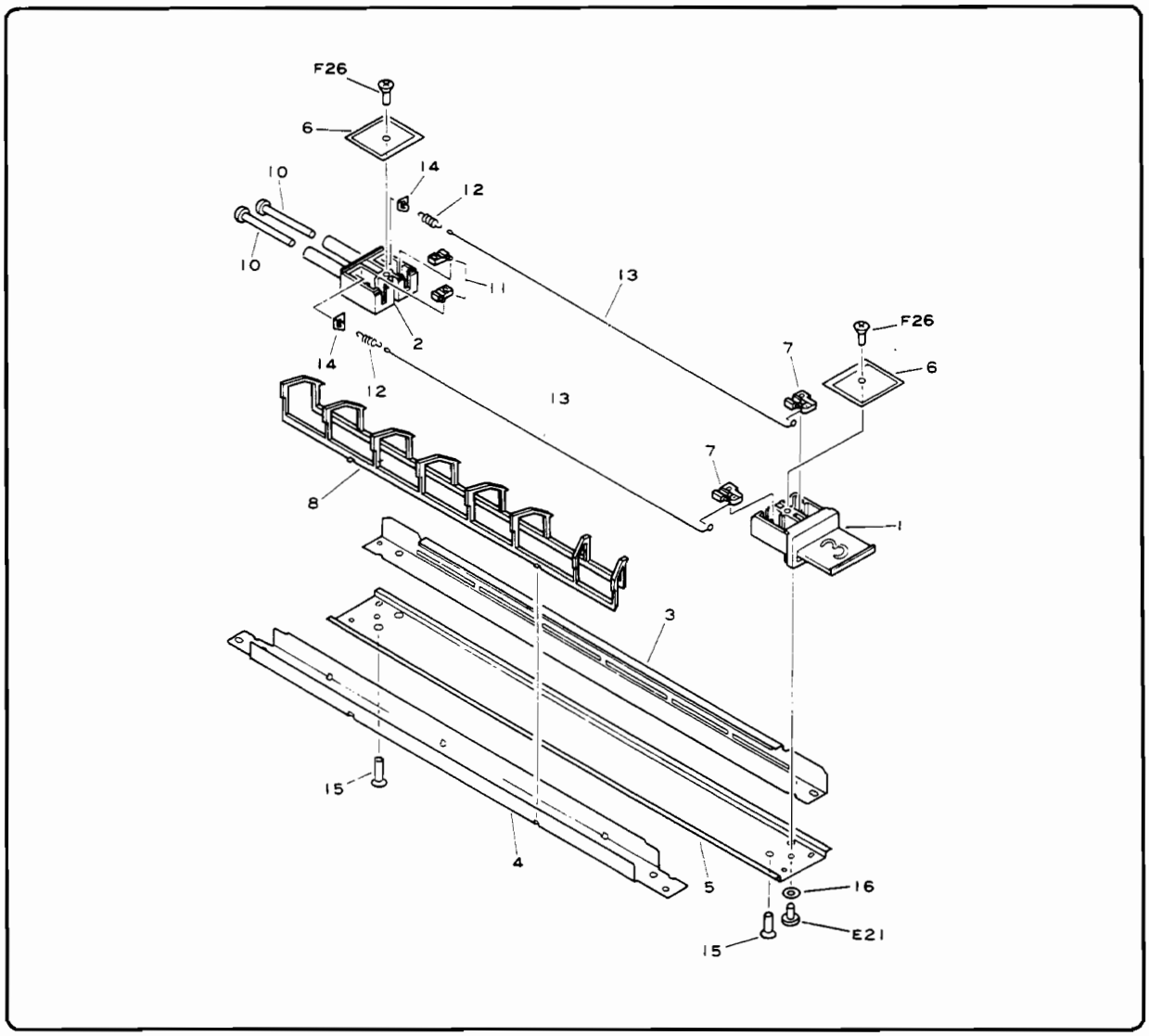


Figure 8a-32. Transfer/Separation Corona Assembly

Table 8a-32. Transfer/Separation Corona Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-1245-020CN	1		TRANSFER/SEPARATE CORONA ASSY
	FY3-0040-000CN	AR	S	WIRE, CORONA 0.06MM (100M SPOOL)

S = special order part

NOTES:

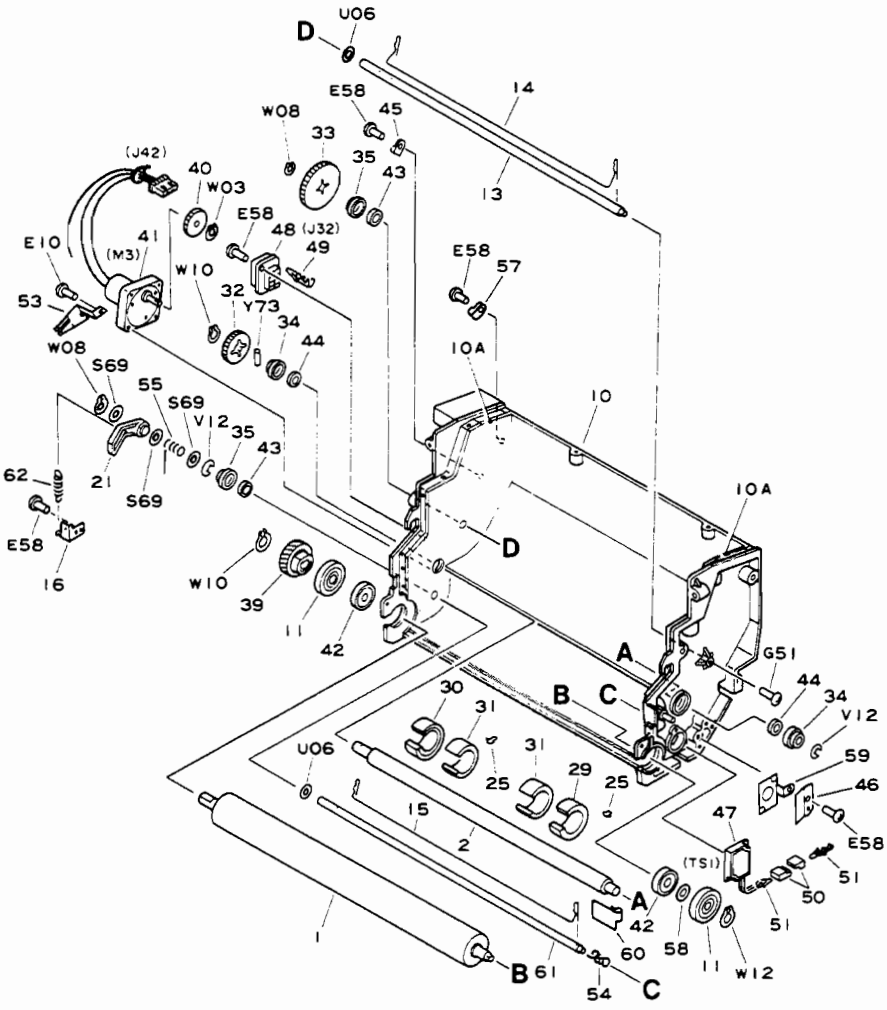


Figure 8a-33. Developing Assembly (1 of 2)

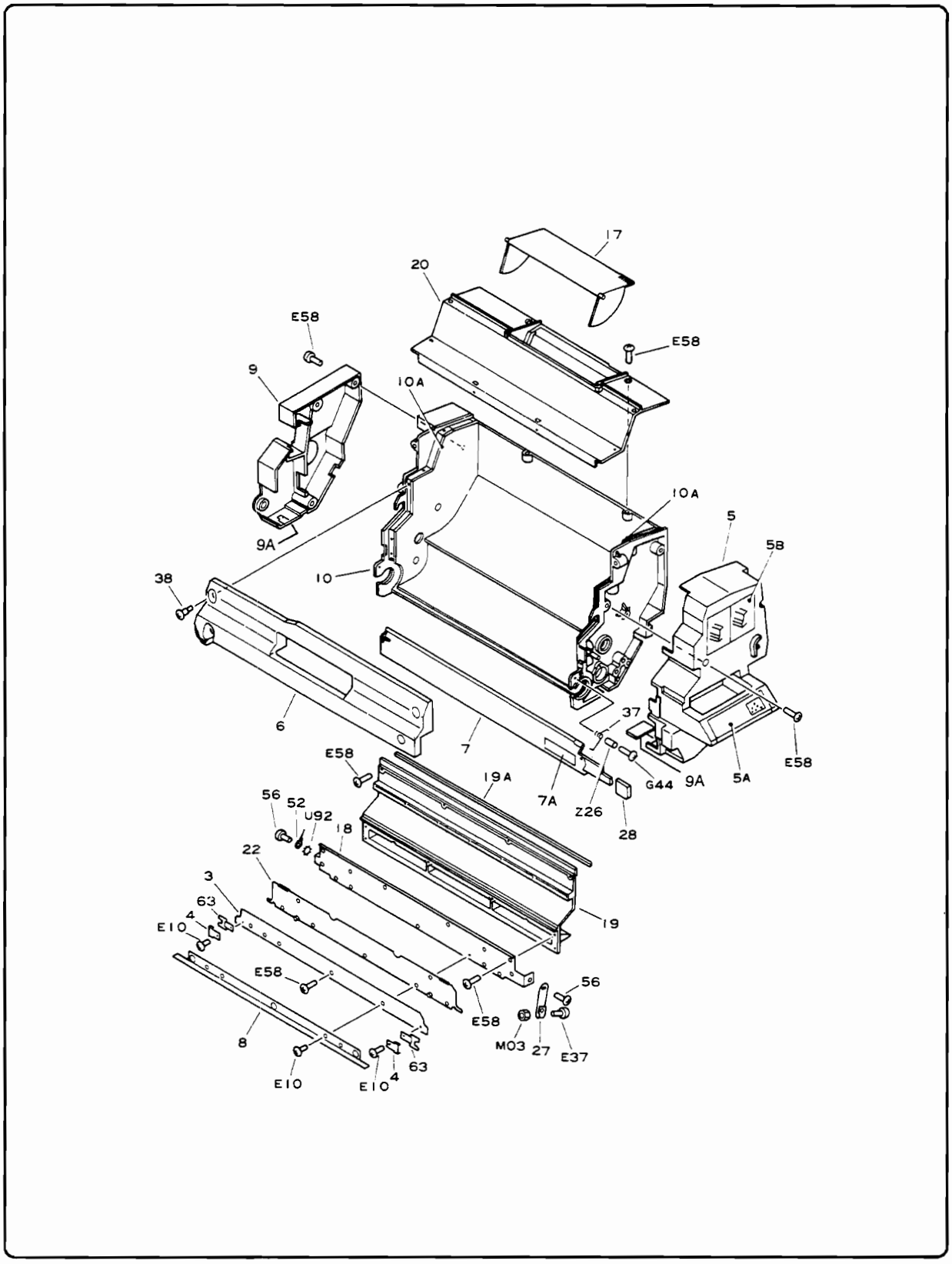


Figure 8a-33. Developing Assembly (2 of 2)

Table 8a-33. Developing Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0653-090CN	1		DEVELOPING ASSEMBLY
1	RA1-2618-000CN	1		CYLINDER, DEVELOPING
2	FA3-0472-000CN	1	S	MAGNETIC ROLLER
3	FA3-0473-000CN	1	S	BLADE
4	FA3-0476-000CN	2	S	SCRAPER
5	FF1-5407-030CN	1		HANDLE, FRONT
6	FA3-0478-000CN	1	S	HANDLE, UPPER
7	FA3-0479-000CN	1		COVER, CYLINDER
7A		1	N	LABEL
8		1	N	COVER, CYLINDER, UPPER
9		1	N	COVER, REAR
9A	FA3-0514-020CN	2		ROLLER, CLEANER PAD
10		1	N	CONTAINER, DEVELOPING
10A		2	N	SEAL (1)
11	RA1-4687-000CN	2		ROLLER, SPACER, DEV, CYLINDER
12		1	N	RATCHET
13		1	N	SHAFT, STIRRING
14		1	N	ROD, STIRRING, UPPER
15		1	N	ROD, STIRRING, LOWER
16		1	N	PLATE, MOUNTING
17	FA3-0497-000CN	1		LID, UPPER

S = special order part

N = not available for replacement

Table 8a-33. Developing Assembly (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
18		1	N	STAY, LOWER
19		1	N	STAY, MIDDLE
19A		1	N	SEAL, (2)
20		1	N	STAY, UPPER
21		1	N	ARM, RATCHET
22		1	N	PLATE, BLADE ADJUSTING
23		1	N	CLAW, RATCHET
24		1	N	STOPPER
25		2	N	SEAL
26		1	N	PLATE, WIPER
26A		1	N	WIPER
27		1	N	PLATE, MAGNET LOCATING
28		1	N	CAP
29	FA3-2252-000CN	1		SEAL, FRONT
30	FA3-2253-000CN	1		SEAL, REAR
31	FA3-2254-000CN	2		SEAL, INTERNAL
32		1	N	GEAR, 28T
33		1	N	GEAR, T45
34		2	N	BUSHING
35		2	N	BUSHING
36		1	N	SPRING, TENSION
37		1	N	SPRING, TORSION
38		4	N	SCREW, STEPPED M4
39	FS2-0029-000CN	1		GEAR, 33T
40	FS2-0030-000CN	1		GEAR, 22T
41	FH7-1239-000CN	1		MOTOR, DC24V
42		2	N	BEARING, BALL
43		2	N	SEAL, OIL
44		2	N	SEAL, OIL
45		1	N	CLAMP, CABLE, 4N
46		1	N	SPRING, LEAF, SENSOR
47	FH7-7031-020CN	1		SENSOR, TONER
48		1	N	CONNECTOR, 8P, MALE
49		7	N	CONTACT, 18-24AWG
50		1	N	CONNECTOR, 3P
51		3	N	PIN, CONTACT 22-28 AWG
52		1	N	TERMINAL, RING, 4.34MM
53		1	N	SPRING, EARTH

N = not available for replacement

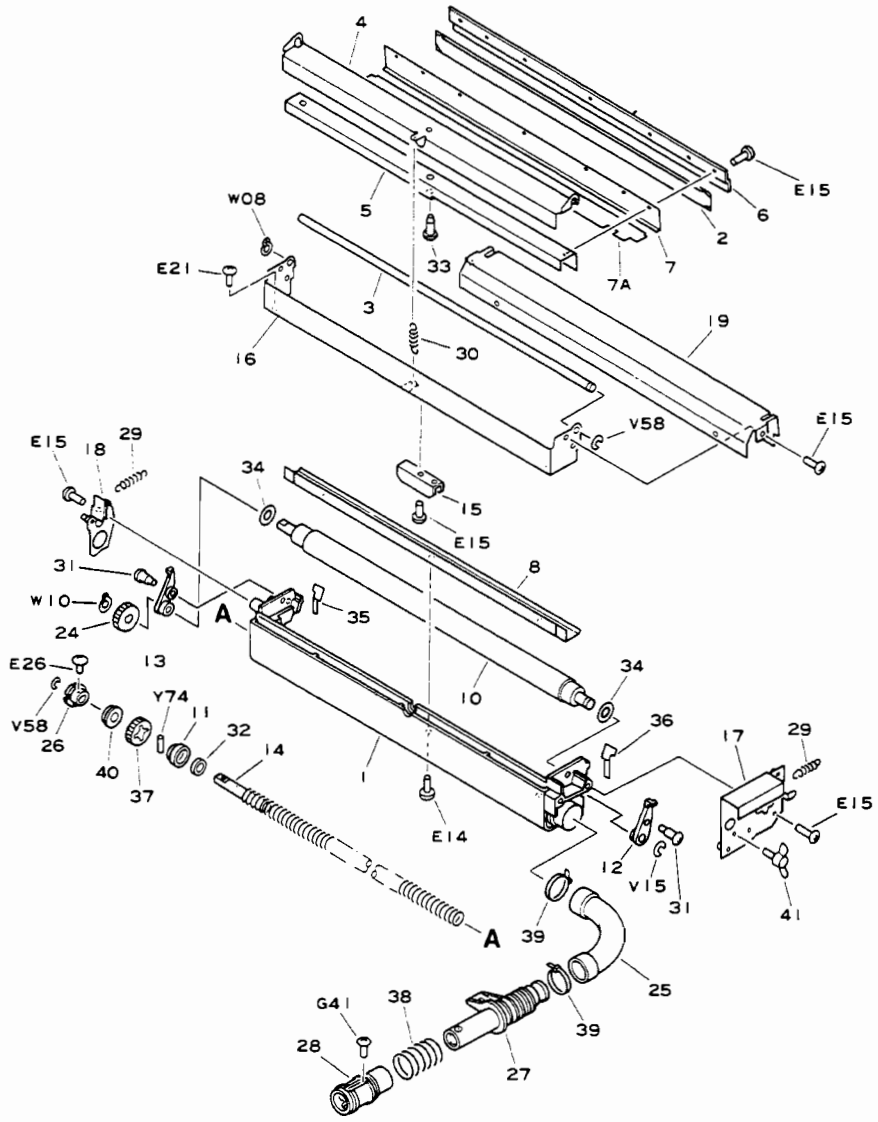


Figure 8a-34. Drum Cleaning Assembly

Table 8a-34. Drum Cleaning Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3126-100CN	1		DRUM CLEANING ASSEMBLY
1			N	HOUSING
2	FA3-0521-000CN	1		BLADE, CLEANING
3		1	N	SHAFT
4		1	N	PLATE
5		1	N	RETAINER, BLADE
6		1	N	RETAINER, BLADE
7		1	N	PLATE, BLACKING
8	FF1-4519-030CN	1		SCRAPER
9		1	N	BRUSH
10	FF1-4496-000CN	1		CLEANING ROLLER
11		1	N	BUSHING
12		1	N	ARM, ROLLER, FRONT
13		1	N	ARM, ROLLER, REAR
14		1	N	FEEDSCREW, TONER
15		1	N	GUIDE, FEEDSCREW
16		1	N	PLATE
17		1	N	PLATE, POSITIONING, FRONT
18		1	N	PLATE, POSITIONING, REAR
19		1	N	PLATE
24		1	N	GEAR, 16T
25		1	N	HOSE
26		1	N	BUSHING
27		1	N	PIPE
28		1	N	COVER, PIPE
29		1	N	SPRING, TENSION
30		1	N	SPRINT, TENSION
31		1	N	SCREW, STEPPED
33		1	N	SCREW, STEPPED, M4
34		2	N	SEAL, ROLLER
35	FA3-0560-000CN	1		SEAL, REAR
36	FA3-0559-000CN	1		SEAL, FRONT
37		1	N	GEAR, 19T
38		1	N	SPRING, COMPRESSION
39		2	N	TIE, CABLE
40		1	N	BEARING, BALL
41	XA9-0118-000CN	1	S	WING NUT

S = special order part

N = not available for replacement

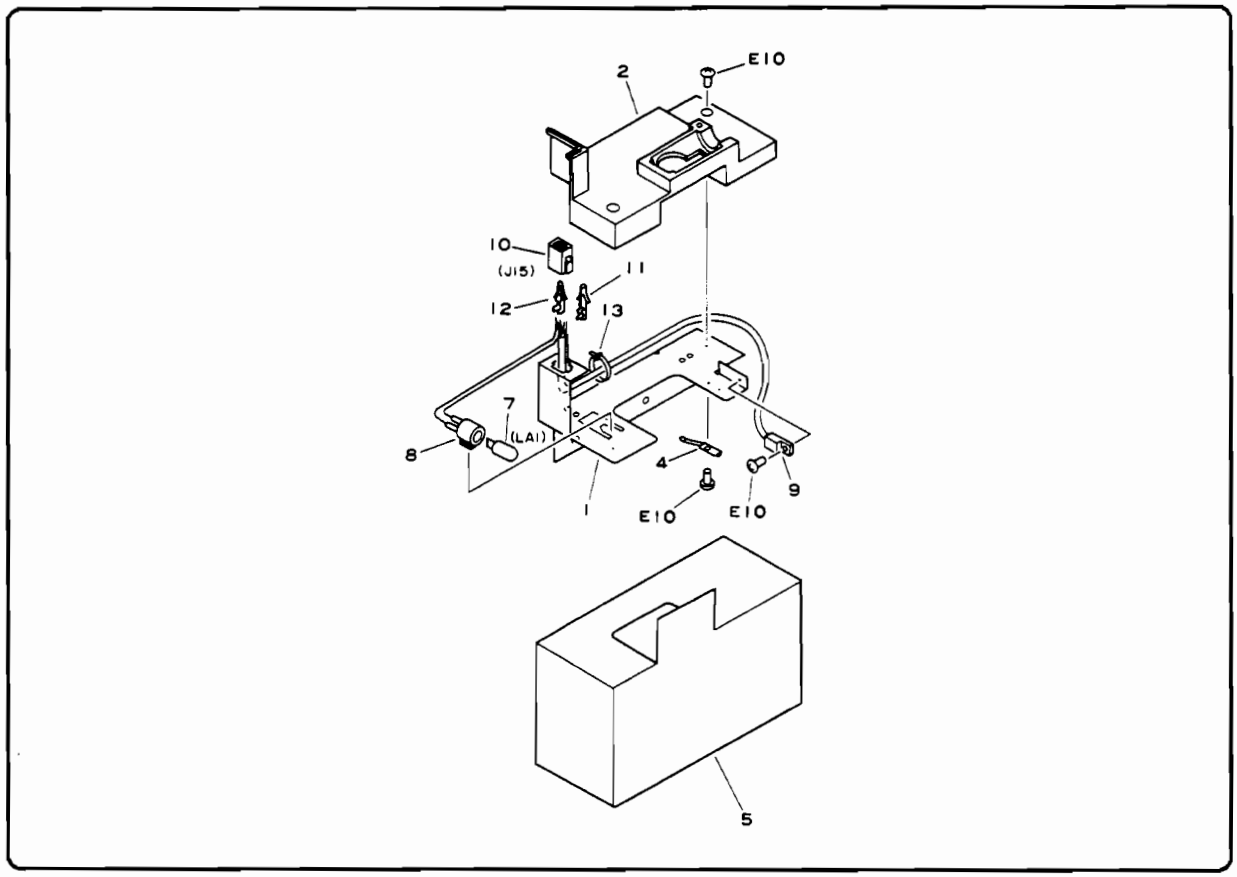


Figure 8a-35. Waste Toner Receptacle Assembly

Table 8a-35. Waste Toner Receptacle Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3128-000CN		1	WASTE TONER RECEPTACLE ASSY
5	92282P	1		WASTE TONER SCREEN
7	WG1-0093-000CN	1		LAMP
9	FH7-7056-000CN	1		CDS CELL RECEPTOR

S = special order part

N = not available for replacement

NOTES:

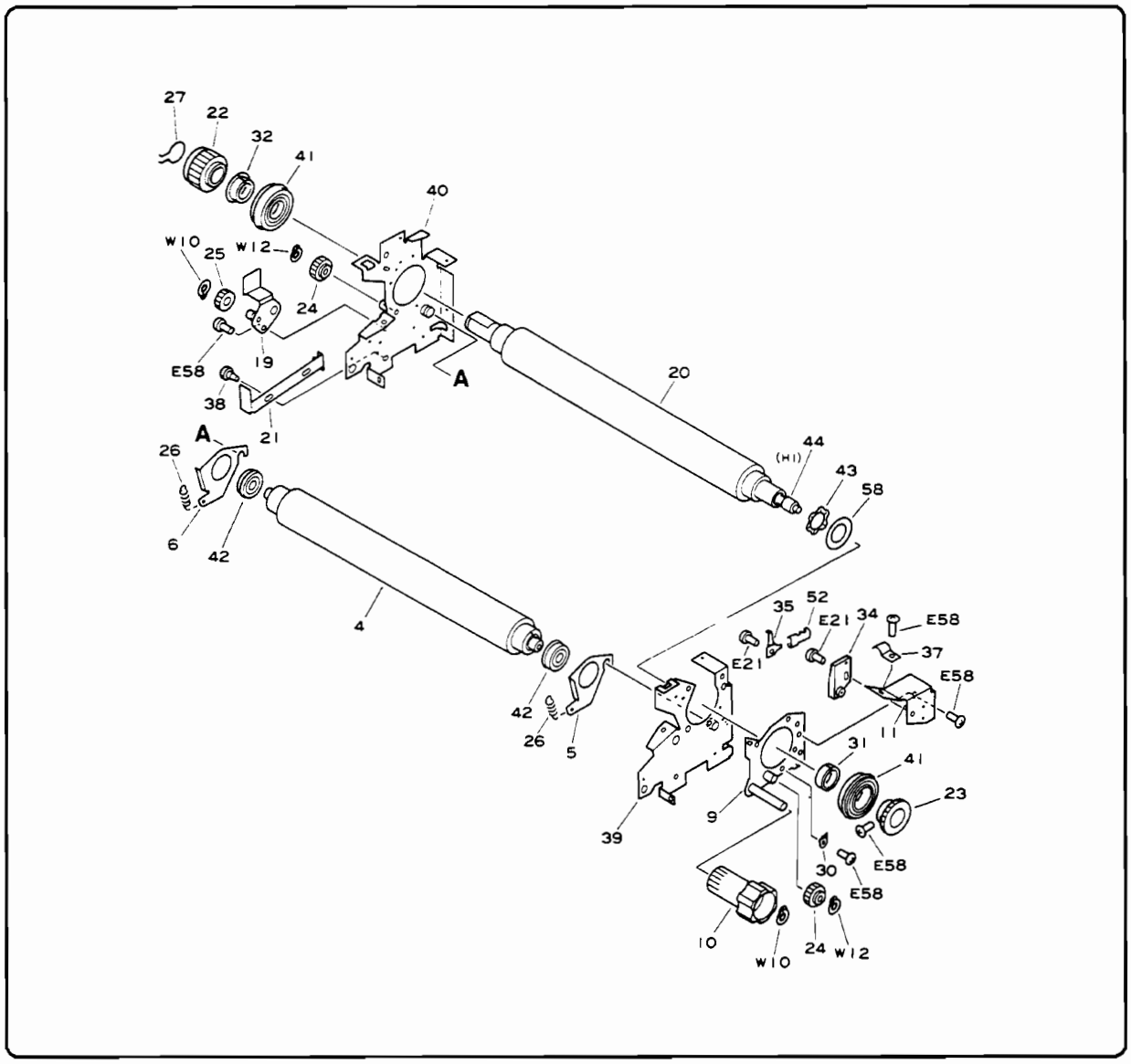


Figure 8a-36. Fuser Assembly (1 of 2)

Note

See page 8a-72 for fuser delivery assembly.

See page 8b-18 for switchback/fuser linkage.

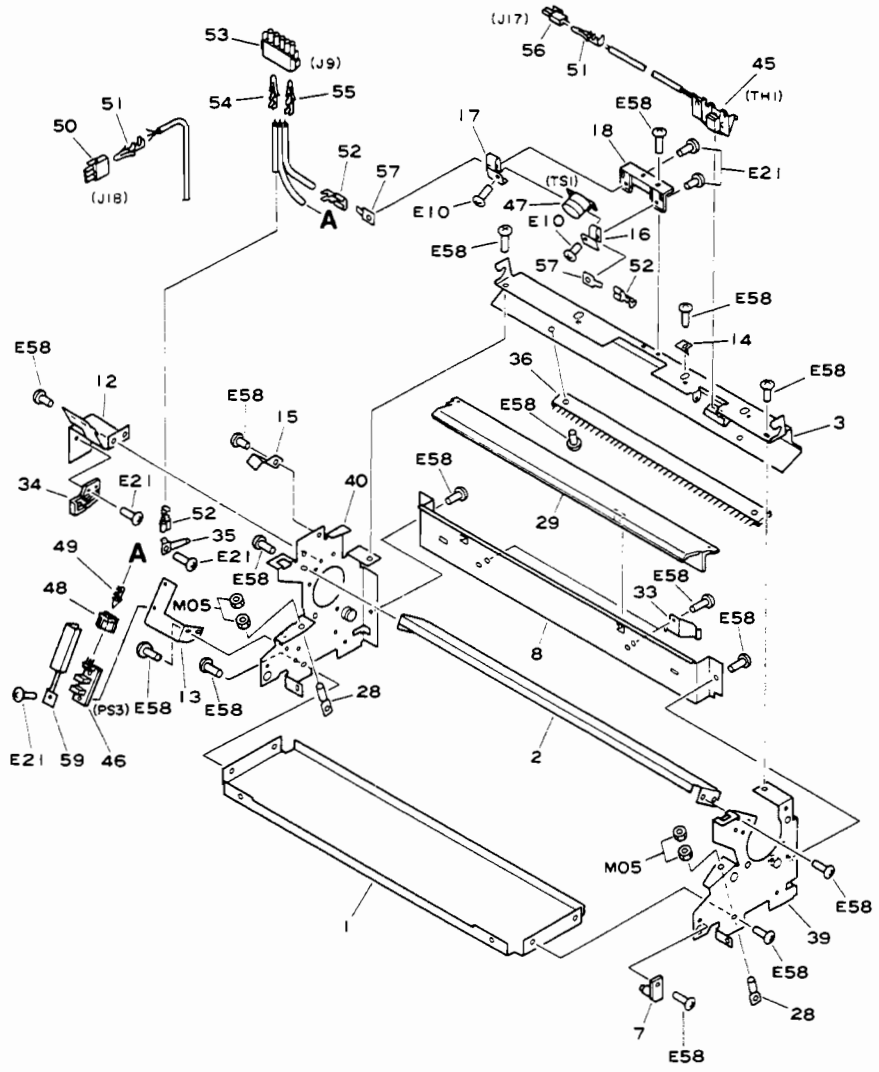


Figure 8a-36. Fuser Assembly (2 of 2)

Table 8a-36. Fuser Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-1002-200CN	1		FUSER ASSEMBLY (115V)*
	RG1-1003-200CN	1		FUSER ASSEMBLY (220V/240V)*
1		1	N	PLATE, BASE
2		1	N	PLATE, LEFT
3		1	N	PLATE, RIGHT
4	FA3-0623-030CN	1		ROLLER, LOWER
5		1	N	ARM, ROLLER LIFTING (FRONT)
6		1	N	ARM, ROLLER LIFTING (REAR)
7		2	N	PLATE, DELIVERY
8		1	N	MOUNT, GUIDE
9		1	N	PLATE
10		1	N	KNOB
11		1	N	PLATE, FRONT, HEATER SUPPORT
12		1	N	PLATE, REAR, HEATER SUPPORT
13		1	N	MOUNT, SENSOR
14		3	N	CLAMP, CORD (1)
15		1	N	CLAMP, CORD (2)
16		1	N	SPRING, LEAF, THERMOSWITCH
17		1	N	SPRING, LEAF, THERMOSWITCH (B)
18		1	N	MOUNT, THERMOSWITCH
19		1	N	PLATE
20	RA1-5301-000CN	1		ROLLER, UPPER
21		1	N	PLATE, RELEASE
22	FS2-0031-000CN	1		GEAR, 40T
23	FS1-0419-000CN	1		GEAR, 34T
24	FS2-0404-000CN	2		GEAR, 22T
25	FS1-0542-000CN	1		GEAR, 22T
26	RS1-2020-000CN	2		SPRING, TENSION
27		1	N	CLIP

N = not available for replacement

Note

Fuser assembly PART NUMBER includes the Fuser Cleaner assembly (Figure 8a-38) and the Fuser Delivery assembly (Figure 8a-37).

Table 8a-36. Fuser Assembly (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
28		2	N	HANGER, ROLLER PRESSURE SPRING
29		1	N	GUIDE, PAPER, LOWER
30		4	N	RETAINER, BEARING
31		2	N	BUSHING
32		1	N	WASHER
33		2	N	SPRING, LEAF
34		2	N	MOUNT
35	FA2-5968-000CN	2		HEATER CONTACT
36		1	N	ELIMINATOR
37		1	N	CLAMP
38		2	N	SCREW, STEPPED
39		1	N	PLATE, FRONT
40		1	N	PLATE, REAR
41	XG9-0103-000CN	2		BEARING, BALL
42	XG9-0053-000CN	2		BEARING, BALL
43	X71-9799-000CN	1		WASHER, WAVE
44	RH7-4014-000CN	1		HEATER,115V 750W
	RH7-4015-000CN	1		HEATER,220V 750W
45	FH7-7100-000CN	1		THERMISTOR
46	FH7-7023-000CN	1		PHOTO-INTERRUPTER UNIT
47	FH7-7036-000CN	1		THERMOSWITCH, 250 C
48		3	N	SOCKET, CONTACT 20-30AWG
49		3	N	SOCKET, CONTACT, 20-3-AWG
50		1	N	CONNECTOR, 3P, MALE
51		5	N	PIN, CONTACT, 22-26AWG
52		2	N	SOCKET, FASTON 187, 18-20AWG
53		1	N	CONNECTOR, 5P, FEMALE
54		3	N	PIN, CONTACT, 14-20AWG
55		2	N	PIN, CONTACT, 18-24AWG
56		1	N	CONNECTOR, 2P, MALE
57		2	N	TERMINAL, THERMOSWITCH

N = not available for replacement

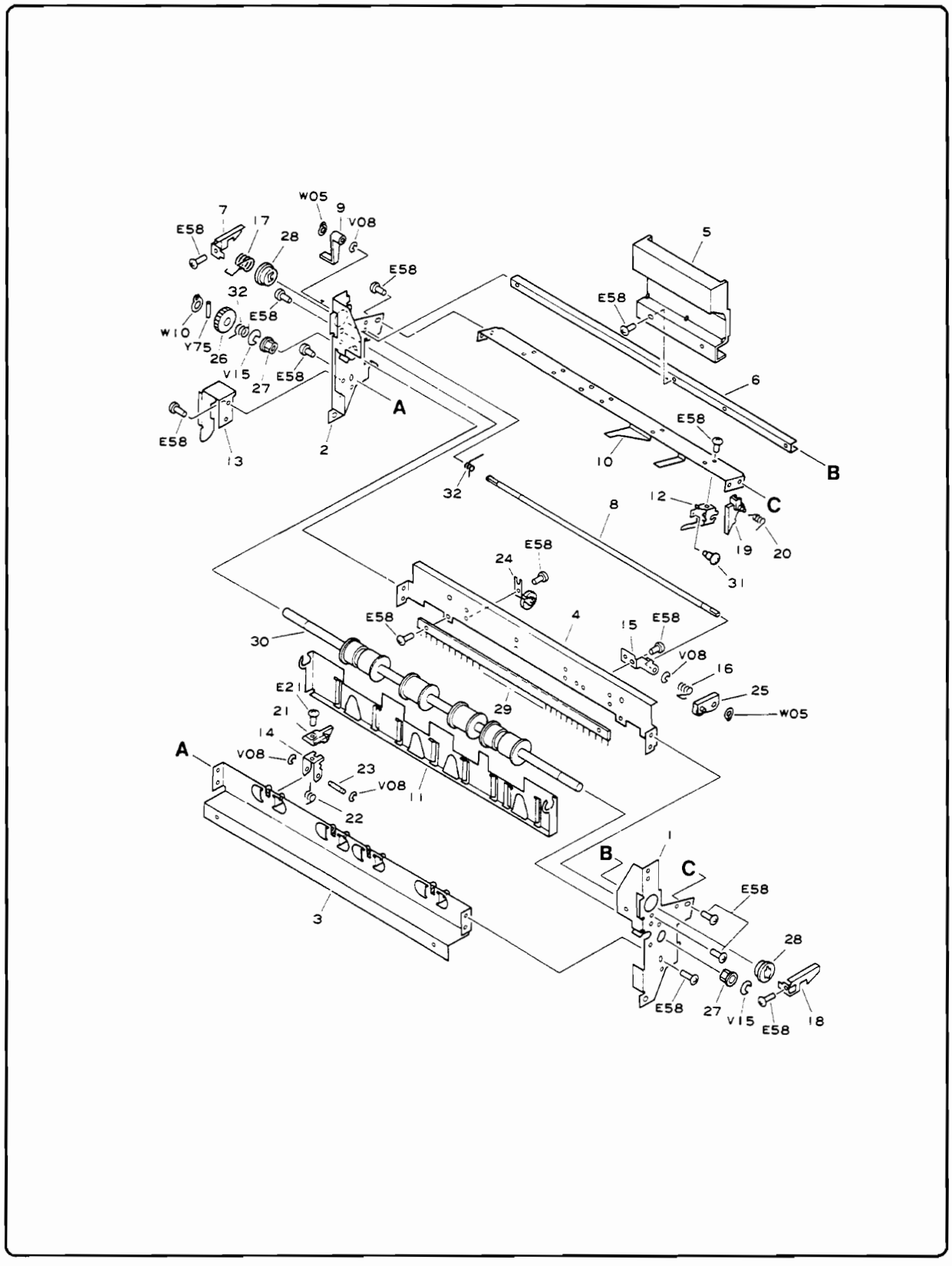


Figure 8a-37. Fuser Delivery Assembly

Table 8a-37. Fuser Delivery Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-1001-000CN	1		FUSER DELIVERY ASSEMBLY
12	FA3-0698-040CN	5		MOUNT, SEPARATION CLAW, UPPER
19	FA3-0683-050CN	6		SEPARATION CLAW, UPPER
20	FA3-0684-000CN	6		SPRING, TORSION
21	FA2-1994-000CN	4		SEPARATION CLAW (LOWER)
22	FA3-0704-000CN	4		SPRING, TORSION
29	FA1-9723-000CN	1		ELIMINATOR, STATIC CHARGE
30	FF1-4518-000CN	1		SHAFT, DELIVERY ROLLER

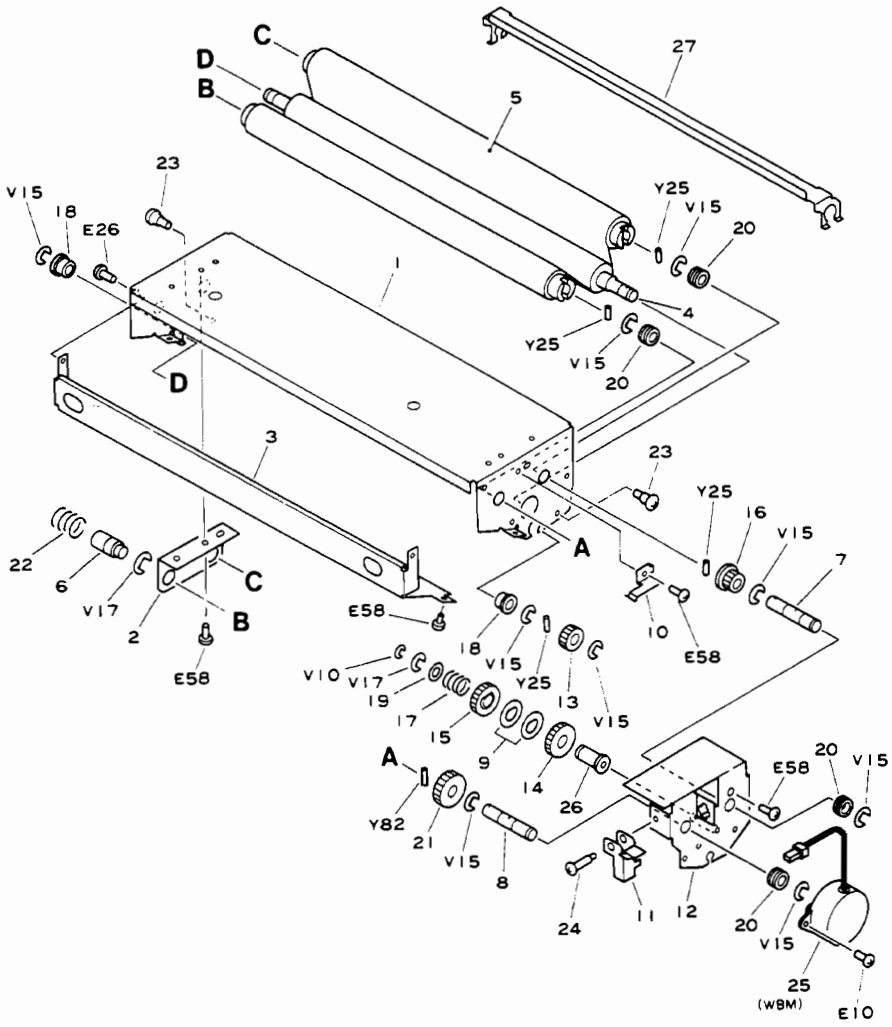


Figure 8a-38. Fuser Cleaner Assembly

Table 8a-38. Fuser Cleaner Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0389-060CN	1		FUSER CLEANER ASSEMBLY (115V)
	RG1-0391-060CN	1		FUSER CLEANER ASSEMBLY (220V)
1		1	N	MOUNT
2		1	N	PLATE, MOUNTING
3		1	N	PLATE, CLEANING BELT GUIDE
4	FA3-0672-000CN	1	S	ROLLER, PRESSURE CLEANING BELT
5	RF1-0704-000CN	1		REEL, CLEANING BELT SUPPLY
5A		1	N	REEL, TAKE-UP, CLEANING BELT
6		2	N	SHAFT, WEB RELEASE
7		1	N	SHAFT, DRIVE, TAKE-UP REEL
8		1	N	SHAFT, DRIVE
9		2	N	PLATE
10		1	N	SPRING, LEAF
11		1	N	PLATE
12		1	N	PLATE, MOUNTING
13		1	N	GEAR, 27T
14		1	N	GEAR, 39T
15		1	N	GEAR, 40T
16		1	N	GEAR, 22T
17		1	N	SPRING, COMPRESSION
18		2	N	BUSHING
19		1	N	WASHER
20		4	N	BUSHING
21		1	N	WHEEL, RATCHET
22		2	N	SPRING, COMPRESSION
23		2	N	SCREW,STEPPED, M4
24		1	N	SCREW, STEPPED, M4
25		1	N	MOTOR, 115V, 1.5W
	RH7-1019-000CN	1	N	MOTOR, 220V, 1.5W

S = special order part

N = not available for replacement

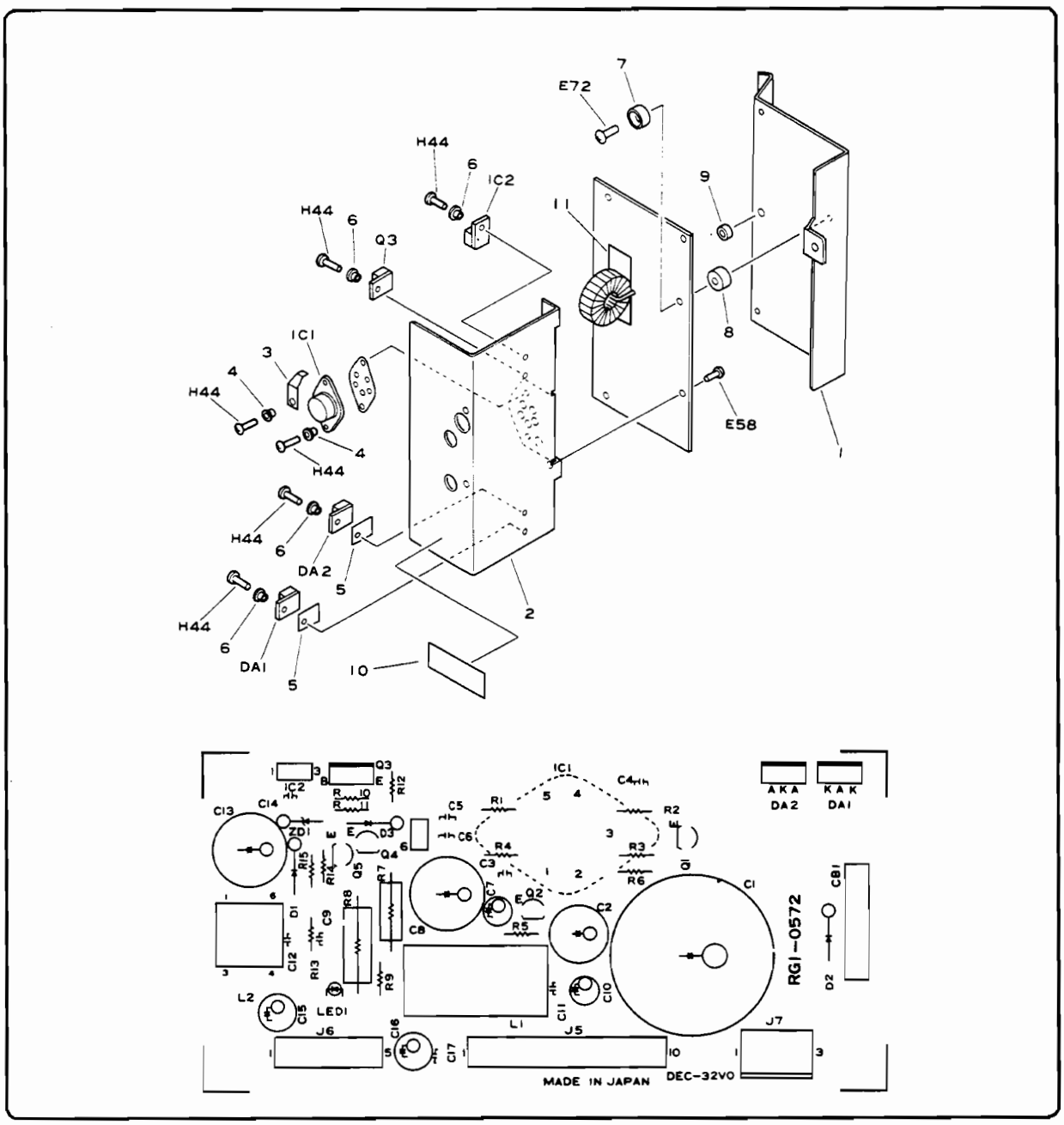


Figure 8a-39. DC Power Supply 2 PCA Assembly

Table 8a-39. DC Power Supply 2 PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0572-000CN	1		DC POWER SUPPLY 2 PCA ASSEMBLY

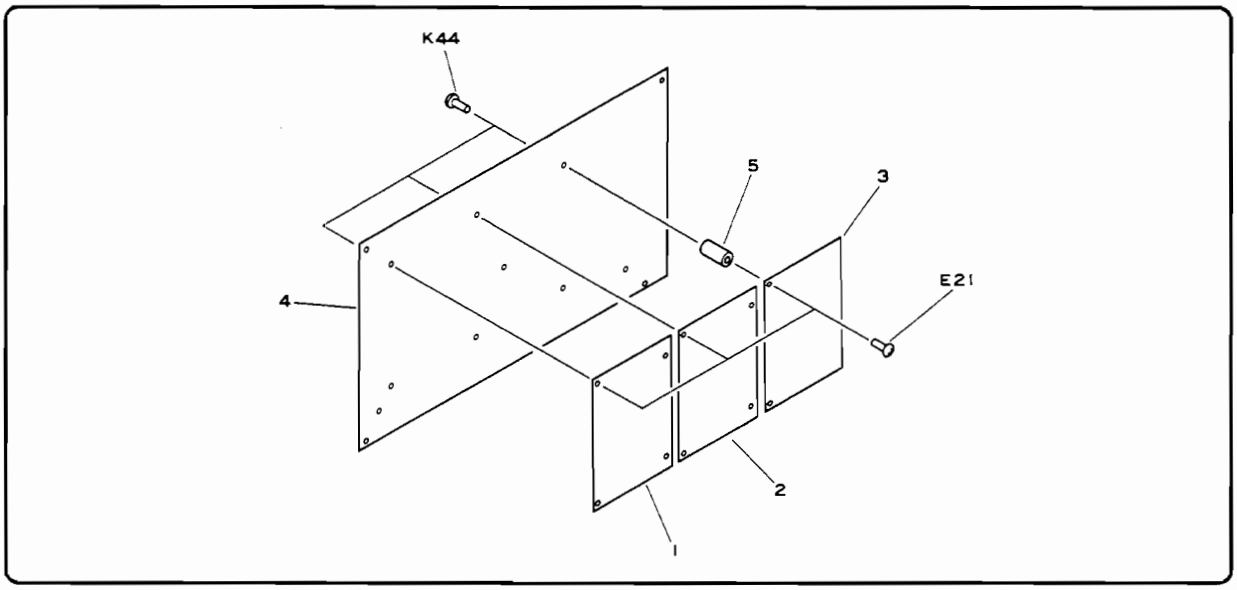


Figure 8a-40. DC Control PCA Assembly

Table 8a-40. DC Control PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0878-000CN	1	S	DC CONTROL ASSEMBLY
1	RG1-0512-040CN	1		CPU BD. (MASTER) ASSEMBLY
2	RG1-0513-040CN	1		CPU BD. (SLAVE) ASSEMBLY
3	RG1-0514-040CN	1		DOUBLE FEED DET. PCA ASSEMBLY
4	RG1-0508-040CN	1		MOTHERBOARD ASSEMBLY
5	RS1-7003-000CN	6	S	SPACER

S = special order part

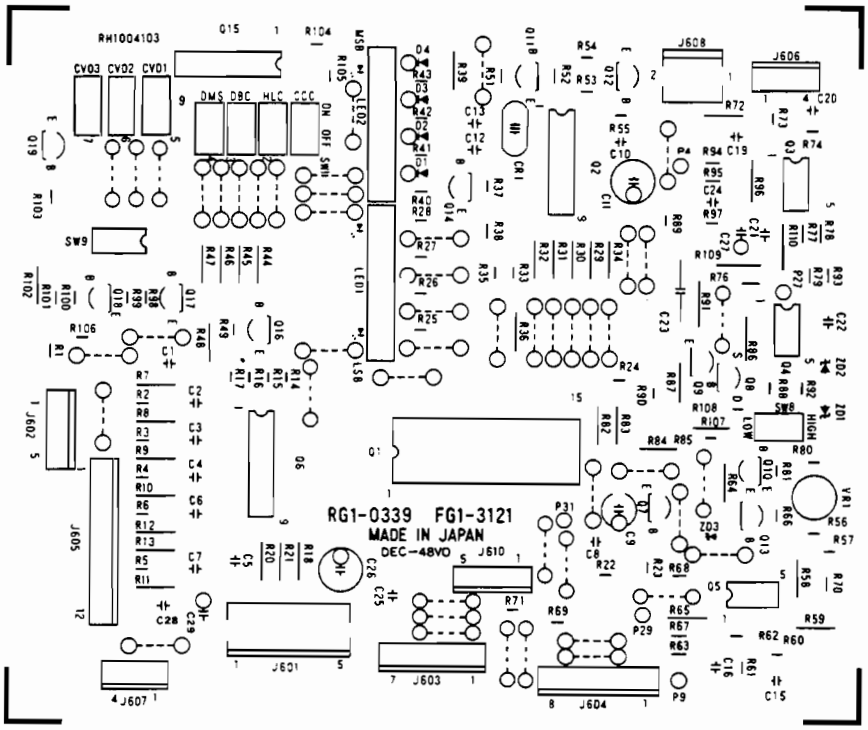


Figure 8a-41. Potential Control PCA Assembly

Table 8a-41. Potential Control PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0339-030CN	1		POTENTIAL CONTROL PCA ASS'Y

S = special order part

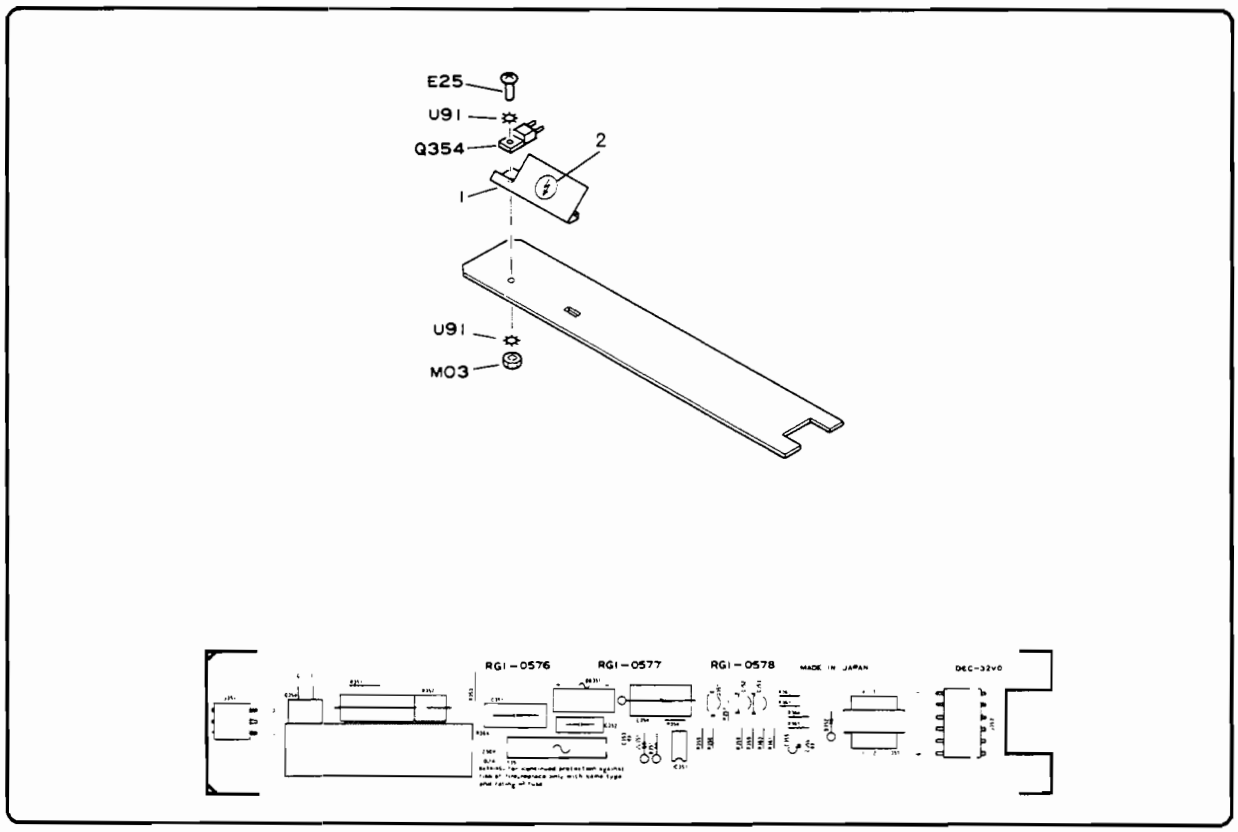


Figure 8a-42. Drum Temperature Cont. PCA Assembly

Table 8a-42. Drum Temperature Cont. PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0577-000CN	1		DRUM TEMPERATURE CONTROL PCA ASSEMBLY (115V)
	RG1-0578-000CN	1		DRUM TEMPERATURE CONTROL PCA ASSEMBLY (220V)

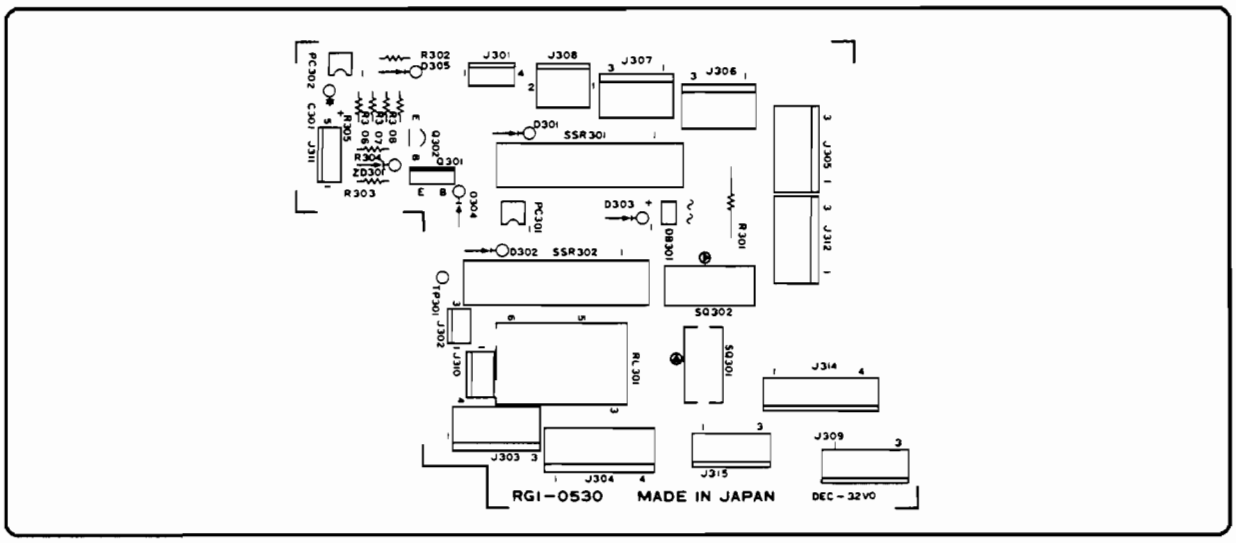


Figure 8a-43. AC Driver PCA Assembly

Table 8a-43. AC Driver PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0530-000CN	1		AC DRIVER PCA ASSEMBLY 115V
	RG1-0531-000CN	1		AC DRIVER PCA ASSEMBLY 220V
R311	FF1-3872-000CN	1		FUSE RESISTOR 47 OHM 1/4 WATT

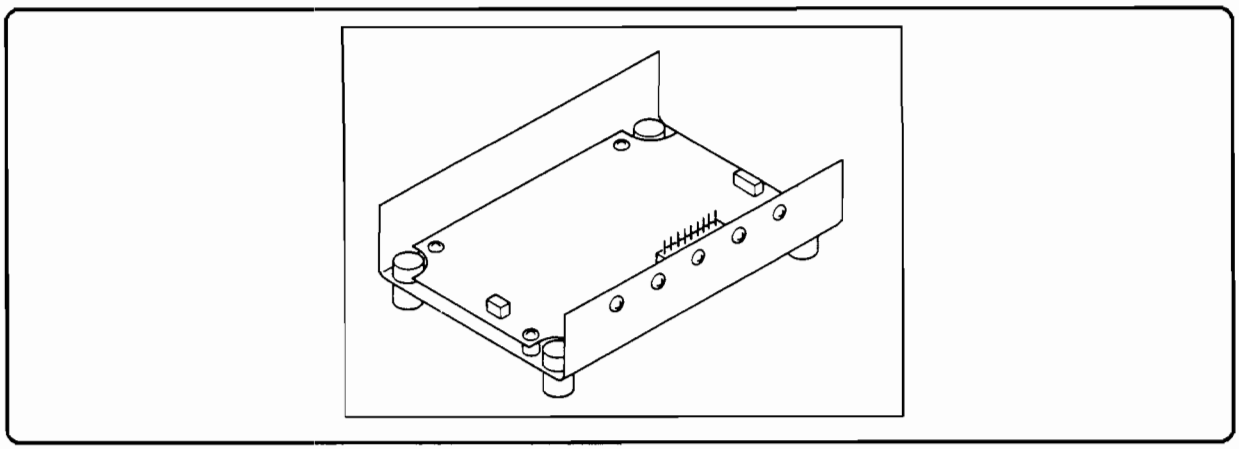


Figure 8a-44. Scanner Driver PCA Assembly

Table 8a-44. Scanner Driver PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RH6-3016-000CN	1		SCANNER DRIVER PCA ASS'Y

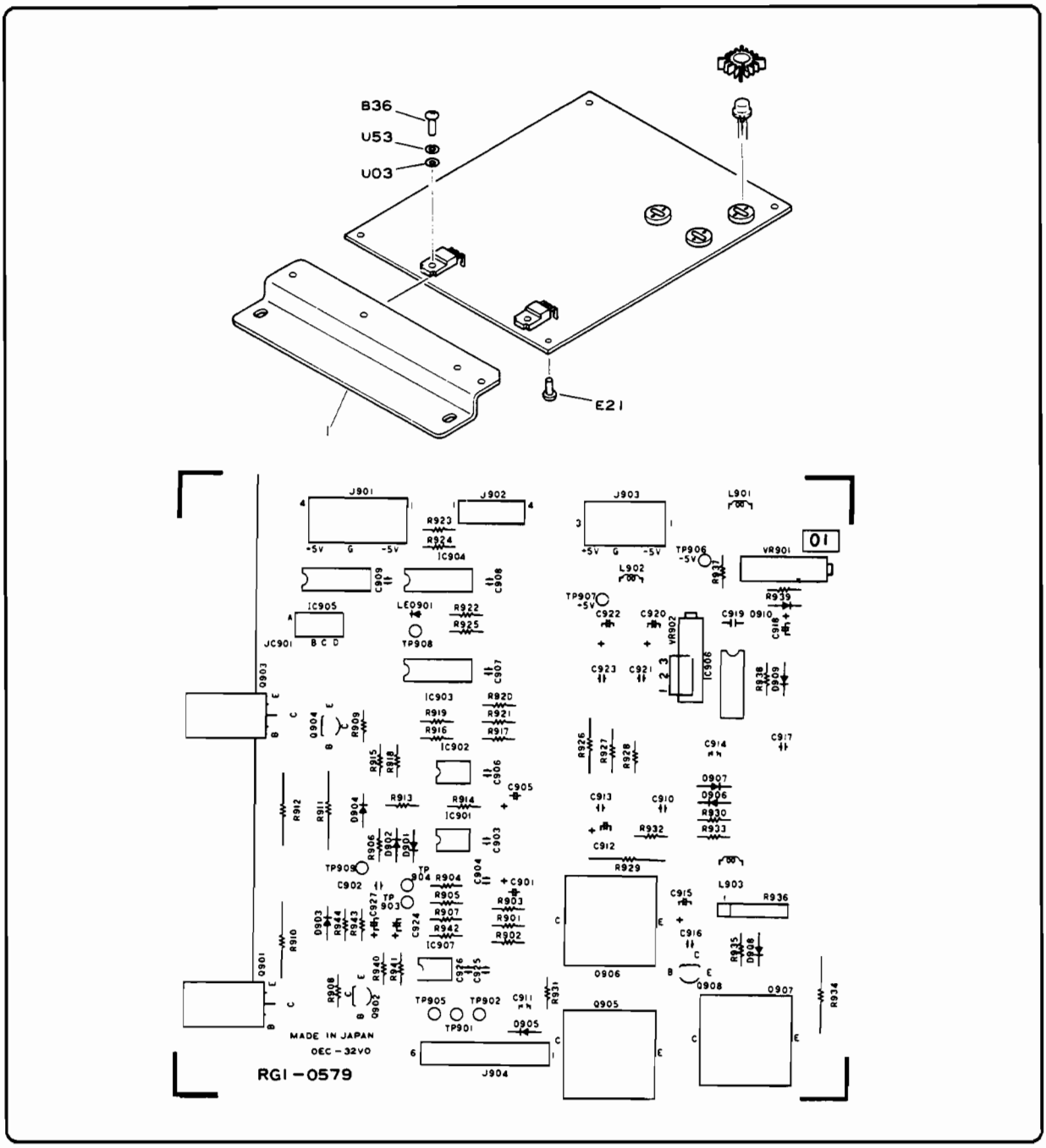


Figure 8a-45. Laser Driver PCA Assembly

Table 8a-45. Laser Driver PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0579-030CN	1		LASER DRIVER PCA ASSEMBLY

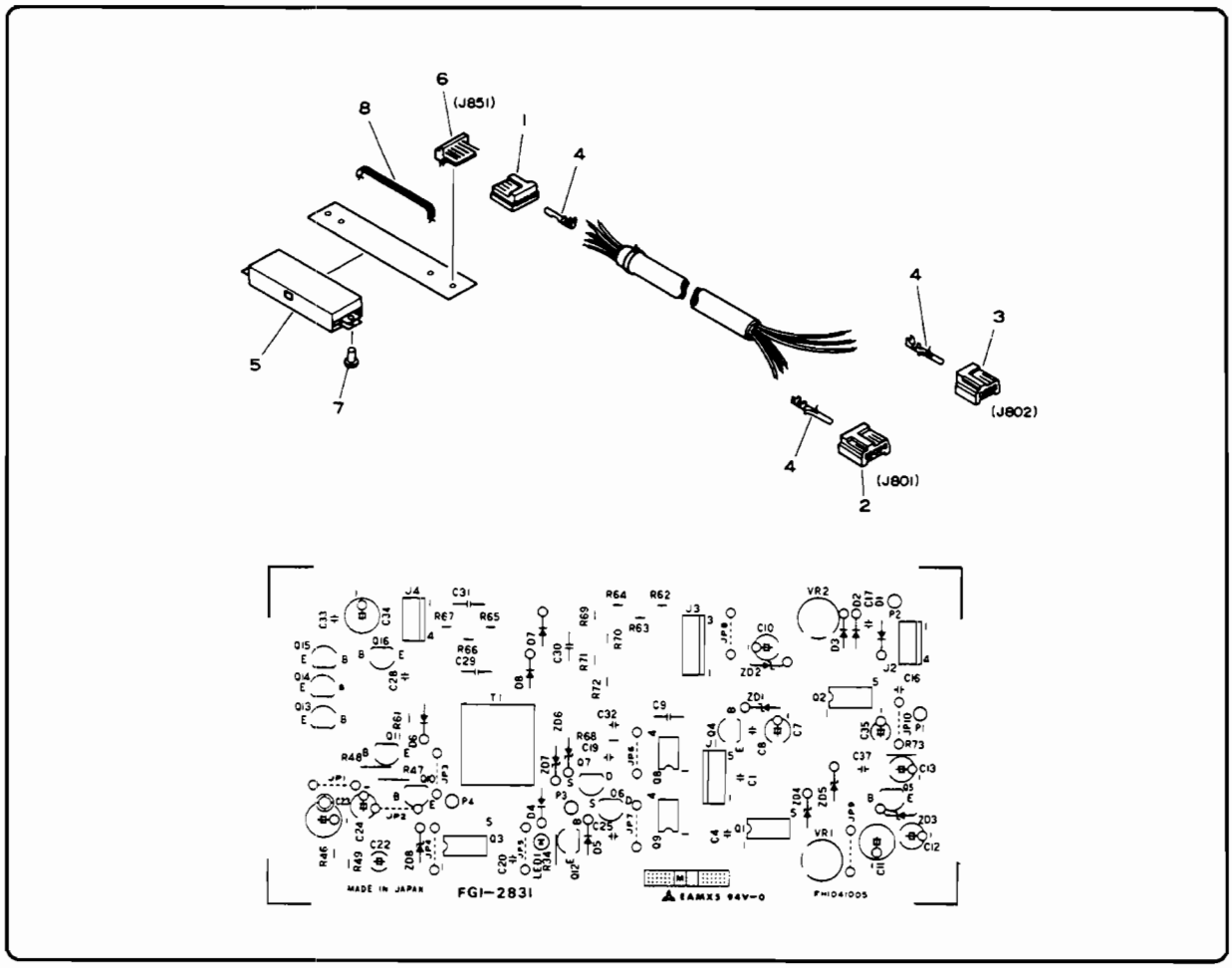


Figure 8a-46. Potential Sensing Assembly

Table 8a-46. Potential Sensing Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3123-050CN	1		POTENTIAL SENSING ASSEMBLY

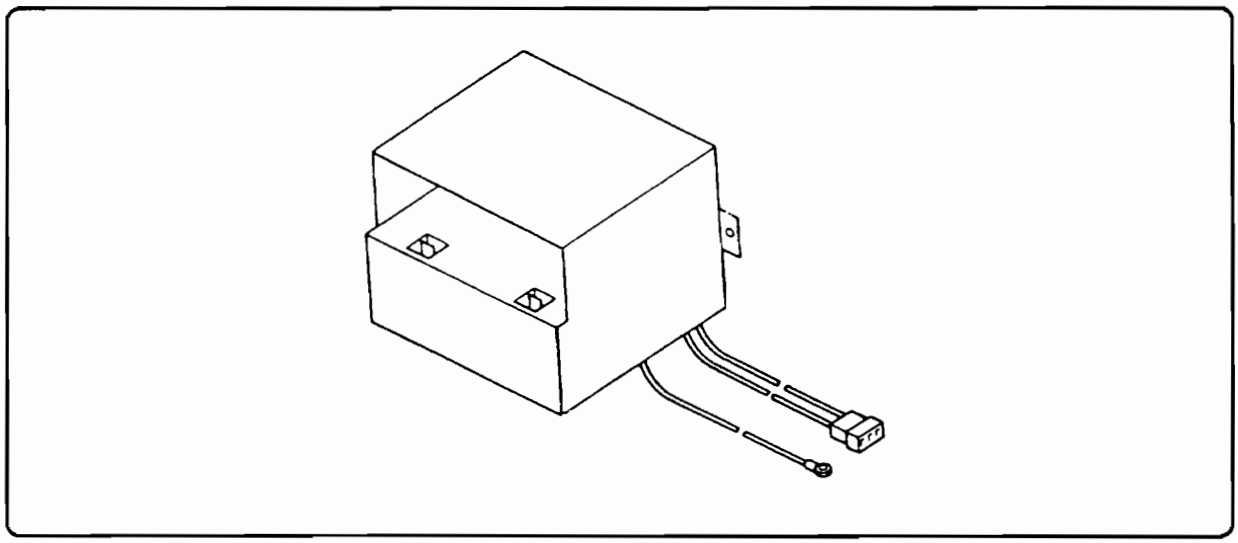


Figure 8a-47. H.V. Transformer Assembly 1

Table 8a-47. H.V. Transformer Assembly 1

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FH3-5120-000CN	1		H.V. TRANSFORMER ASSEMBLY 1

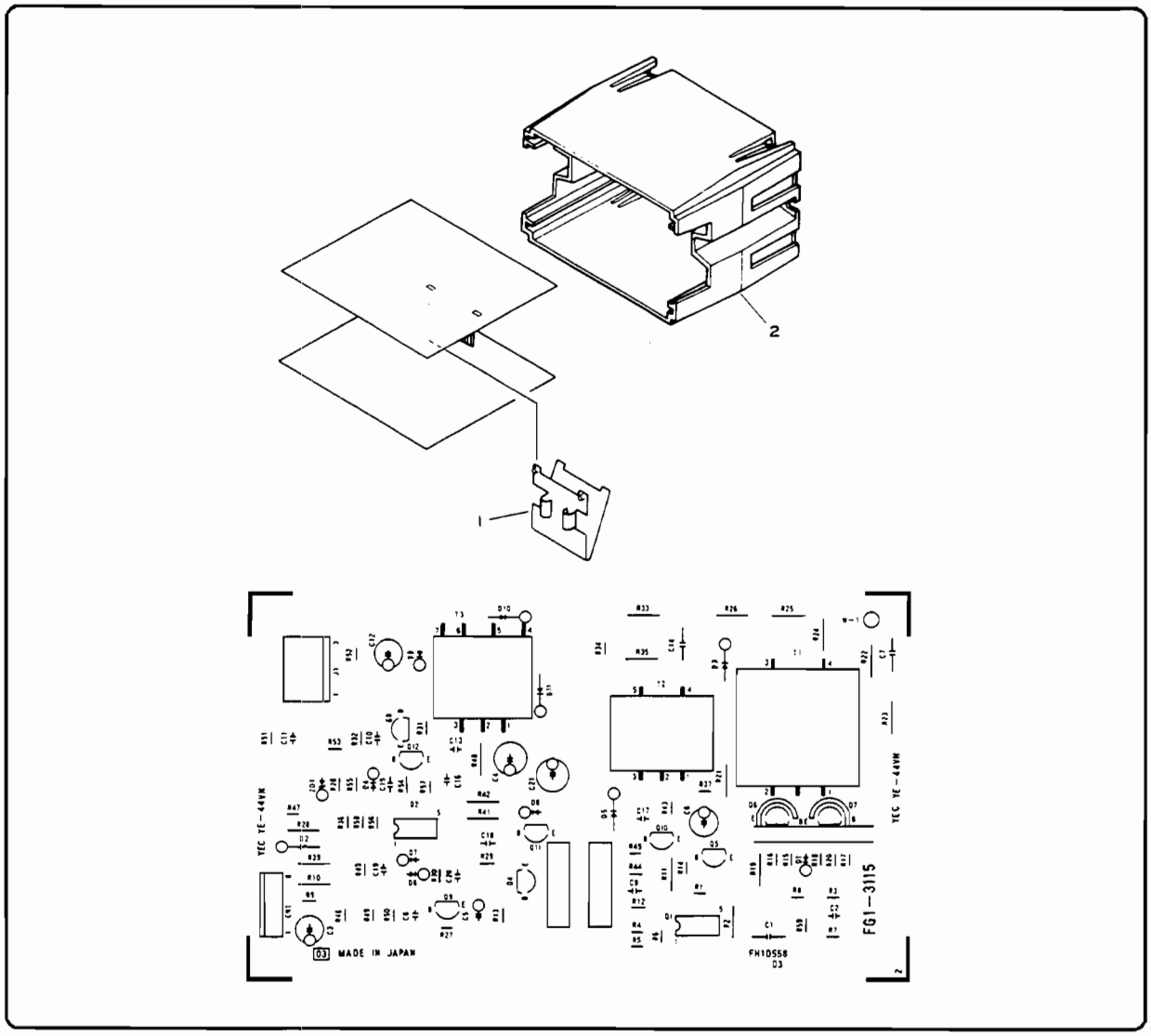


Figure 8a-48. H.V. Transformer Assembly 2

Table 8a-48. H.V. Transformer Assembly 2

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-3115-040CN	1		H.V. TRANSFORMER ASSEMBLY 2

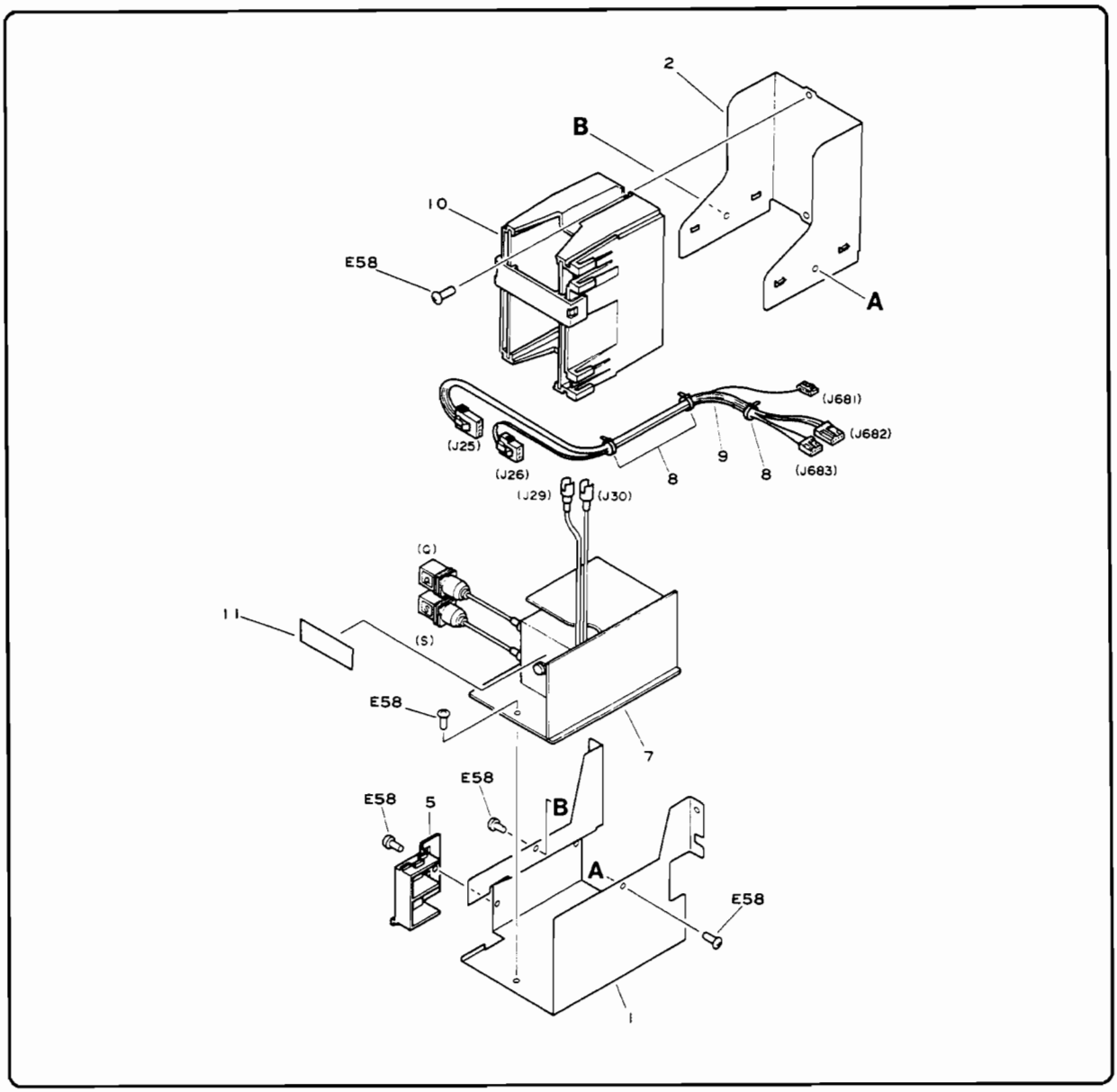


Figure 8a-49. H.V. PT/SE Assembly (HVT3)

Table 8a-49. H.V. PT/SE Assembly (HVT3)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	FG1-4326-050CN	1		H.V. PT/SE ASSEMBLY

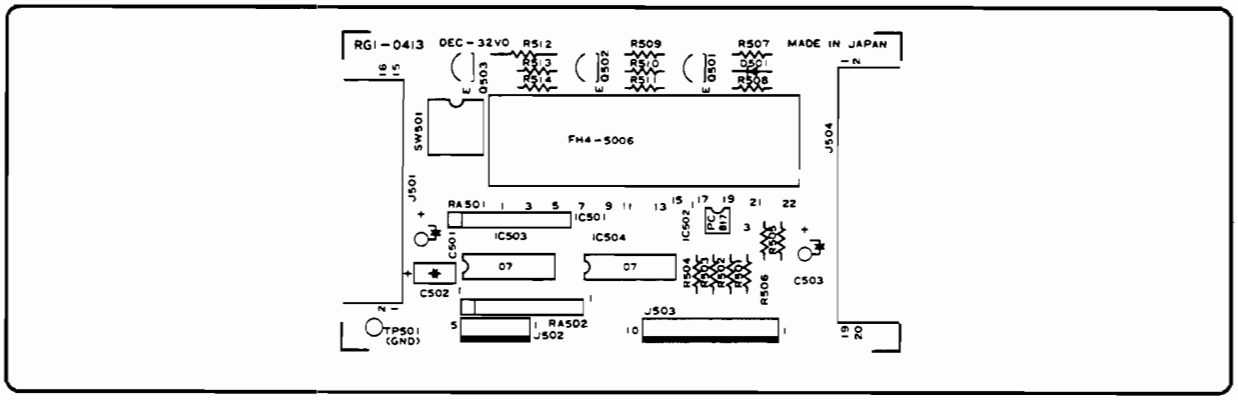


Figure 8a-50. Display Drive PCA Assembly

Table 8a-50. Display Drive PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0413-000CN	1		DISPLAY DRIVE PCA

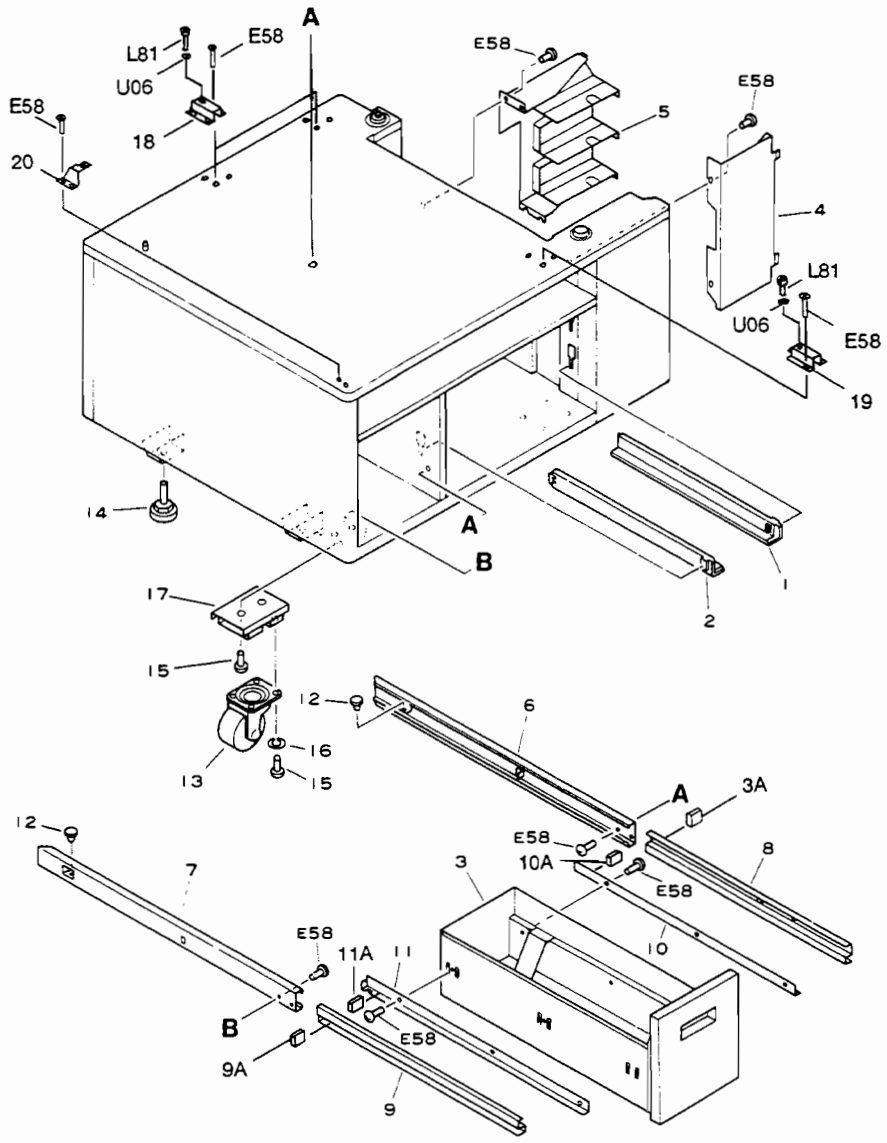


Figure 8a-51. Pedestal

Table 8a-51. Pedestal

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
A	R43-0501-000CN			PEDESTAL ASSY (W/O SIDE COVER)
1	RA1-3727-000CN	1	S	PLATE, GUIDE, RIGHT
2	RA1-3728-000CN	1	S	PLATE, GUIDE, LEFT
12	FA3-0866-000CN	2	S	PIN, LATCH
13	XZ9-0036-000CN	4	S	CASTER
14	FA3-7819-000CN	2	S	BOLT, HEIGHT ADJUSTING
15	XB1-2601-009CN	32	S	SCREW, MACH, TRUSS HEAD, M6X10
16	XD1-3100-607CN	32	S	WASHER, SPRING
17	RA1-5421-000CN	4	S	HOLDER, CASTER
18	FA3-7821-000CN	2	S	PLATE, MOUNTING, 1
19	RA1-4683-000CN	1	S	PLATE, MOUNTING, 2
20	RA1-4684-000CN	1	S	PLATE, MOUNTING, 3
N/I	R43-0502-000CN	1	S	RIGHT SIDE COVER

S = special order part

N = not available for replacement

N/I = not illustrated

8b

Parts Lists & Illustrations
FACE-DOWN STACKER

Figures

Tables

NOTES:

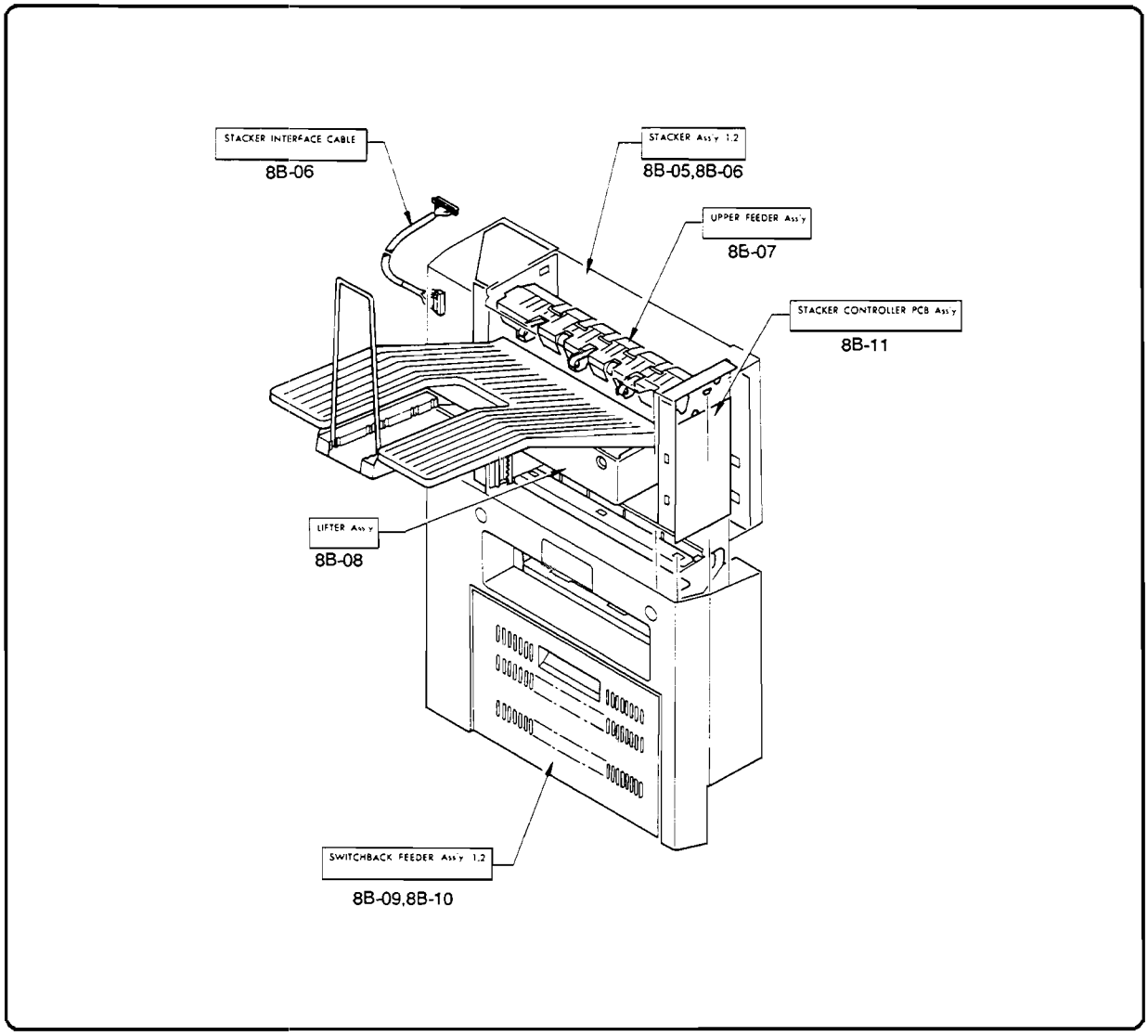


Figure 8b-1. Face-Down Stacker Assembly

Table 8b-1. Face-Down Stacker Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	R43-0851-000CN	1		Face-Down Stacker Assembly

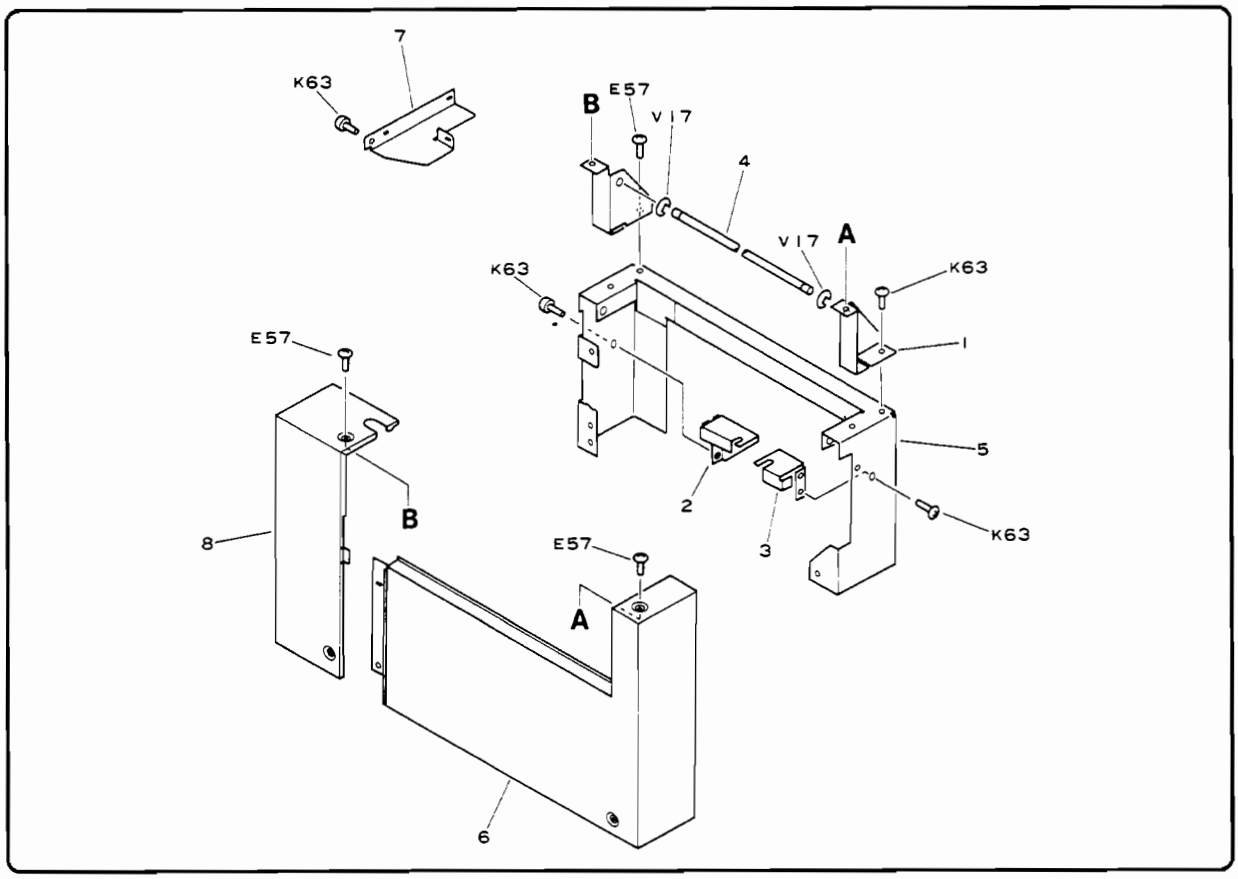


Figure 8b-2. Mounting Hardware (for pedestal)

Table 8b-2. Mounting Hardware (for pedestal)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-2454-000CN	2	S	BRACKET, SHAFT MOUNTING
2	RA1-2455-000CN	1	S	MOUNT, LEFT, SPRING
3	RA1-2456-000CN	1	S	MOUNT, RIGHT, SPRING
4	RA1-2457-000CN	1	S	ROD, PIVOT
5	RA1-2458-000CN	1	S	PLATE, MOUNTING
6	RA1-2459-000CN	1	S	COVER, RIGHT
7	RA1-2460-000CN	1	S	BRACKET
8	RA1-2510-000CN	1	S	COVER LEFT
9	RS1-8294-000CN	1	S	LABEL, CLEARING JAMS

S = special order part

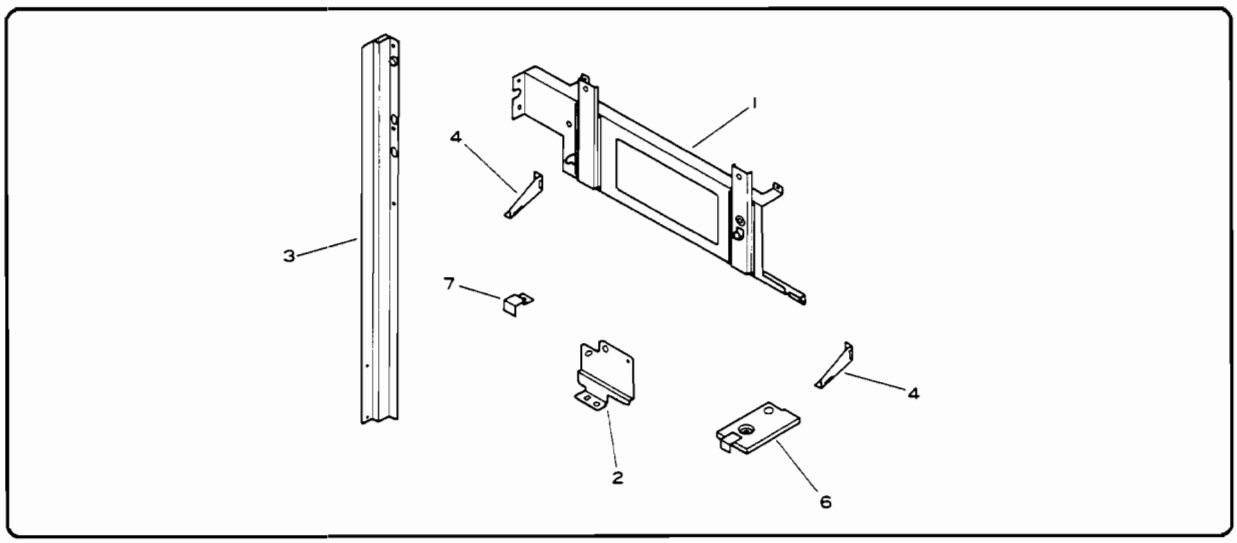


Figure 8b-3. Mounting Hardware (for duplex printing module)

Table 8b-3. Mounting Hardware (for duplex printing module)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-2452-020CN	1	S	BRACKET, RIGHT
2	RA1-2453-000CN	1	S	BRACKET, LEFT
3	RF1-0615-000CN	1	S	BRACKET, REAR
4	RA1-2511-000CN	2	S	BRACKET, LIFTER ASS'Y
5	FS1-8969-000CN	1	S	LABEL
6	RA1-2544-000CN	S	S	COVER, FRONT, UPPER
7	RA1-2545-000CN	S	S	PLATE, PANEL
N/I	FA3-5536-000CN			SPRING MOUNT, RIGHT
N/I	FA3-5537-000CN			SPRING MOUNT, LEFT

S = special order part

N/I = not illustrated

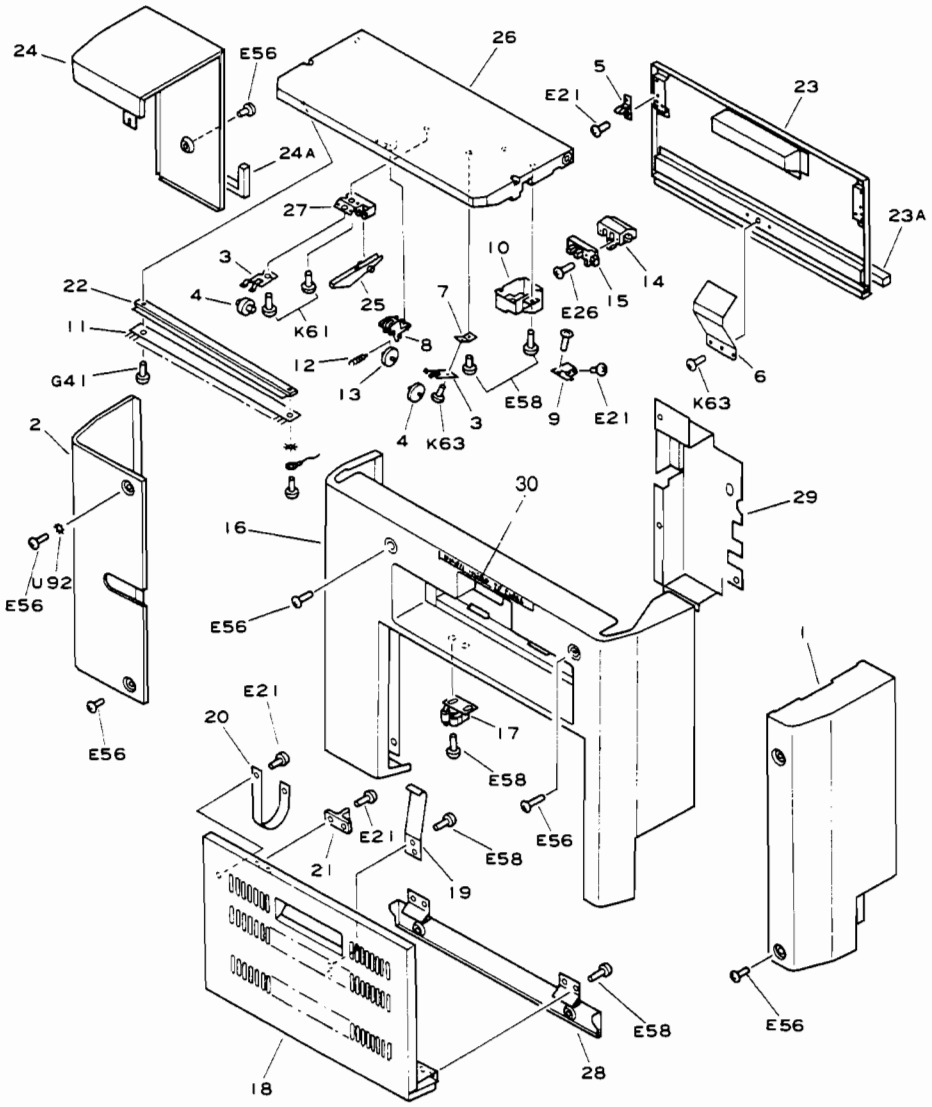


Figure 8b-4. External Covers, Panels, Etc.

Table 8b-4. External, Covers, Panels, etc.

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-2497-030CN	1	S	PANEL, FRONT
2	RA1-2499-000CN	1	S	PANEL, LOWER, REAR
3	FA3-7418-000CN	5		SPRING, ROLLER HOLDER
4	FA3-7419-000CN	5		ROLLER
5	FA3-0890-000CN	2	S	LATCH, ROLLER-ACTION (STRIKE)
6	RA1-2509-000CN	1	S	SPRING, LEAF
7	FA3-7435-000CN	3		SPRING, LEAF
8	FA3-7454-000CN	3		ARM, ROLLER
9	FA3-7559-000CN	1		BRACKET, SENSOR MOUNT
10	FA3-7560-000CN	1		MOUNT, SENSOR
11	FA3-3319-000CN	1	S	ELIMINATOR, STATIC CHARGE
12	FS2-2253-000CN	3		SPRING, TENSION
13	FA3-7563-000CN	3		ROLLER, PINCH
14	RG1-0424-020CN	1		MOUNT, PHOTOINTERRUPTER
15	FH7-7023-000CN	1		PHOTOINTERRUPTER
16	RA1-2586-000CN	1	S	COVER, PRINT DELIVERY PORT
17	XZ9-0029-000CN	2	S	LATCH, ROLLER-ACTION (CATCH)
18	RA1-2605-000CN	1	S	DOOR, PRINT DELIVERY PORT
19	RA1-1502-000CN	1	S	SPRING LEAF
20	FA3-9305-000CN	1	S	STRAP, DOOR SUPPORT
21	FA3-0890-000CN	2	S	LATCH, ROLLER-ACTION (STRIKE)
22	RA1-2524-000CN	1		ELIMINATOR, STATIC CHARGE, B
23	RF1-0626-000CN	1	S	DOOR, RIGHT
23A	RA1-2514-000CN	1	S	GASKET
24	RF1-0627-000CN	1	S	PANEL, REAR, UPPER
24A	RA1-2515-000CN	1	S	GASKET
25	RA1-2512-000CN	2		HOLDER, PAPER
26	RA1-2465-040CN	1		GUIDE, UPPER
27	FA3-7572-000CN	2		MOUNT, ROLLER, SPRING
28	RA1-2588-000CN	1	S	HINGE, DELIVERY PORT PANEL
29	RA1-2594-000CN	1	S	COVER, REAR
30	02684-00026	1		DECAL, "PUSH HERE TO CLOSE"
N/I	RA1-7035-000CN	1		SB DOOR GUIDE (FUNNEL ASSY)

S = special order part

N/I = not illustrated

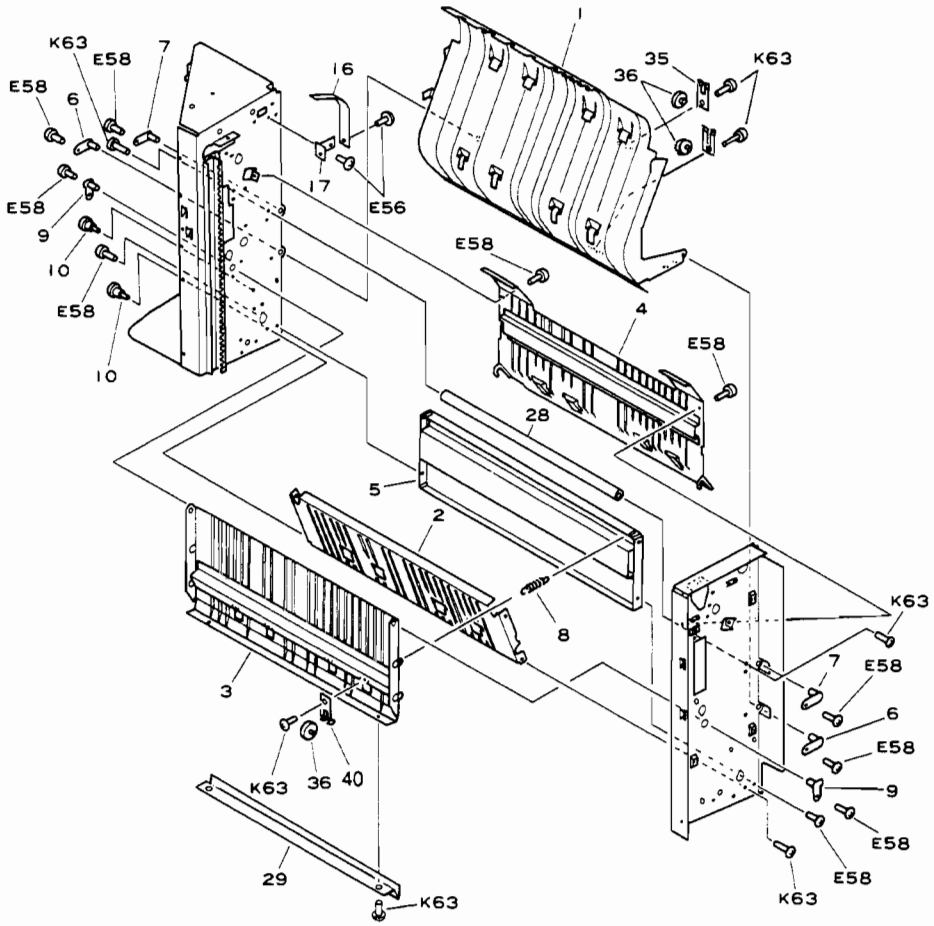


Figure 8b-5. Stacker Assembly 1 (1 of 2)

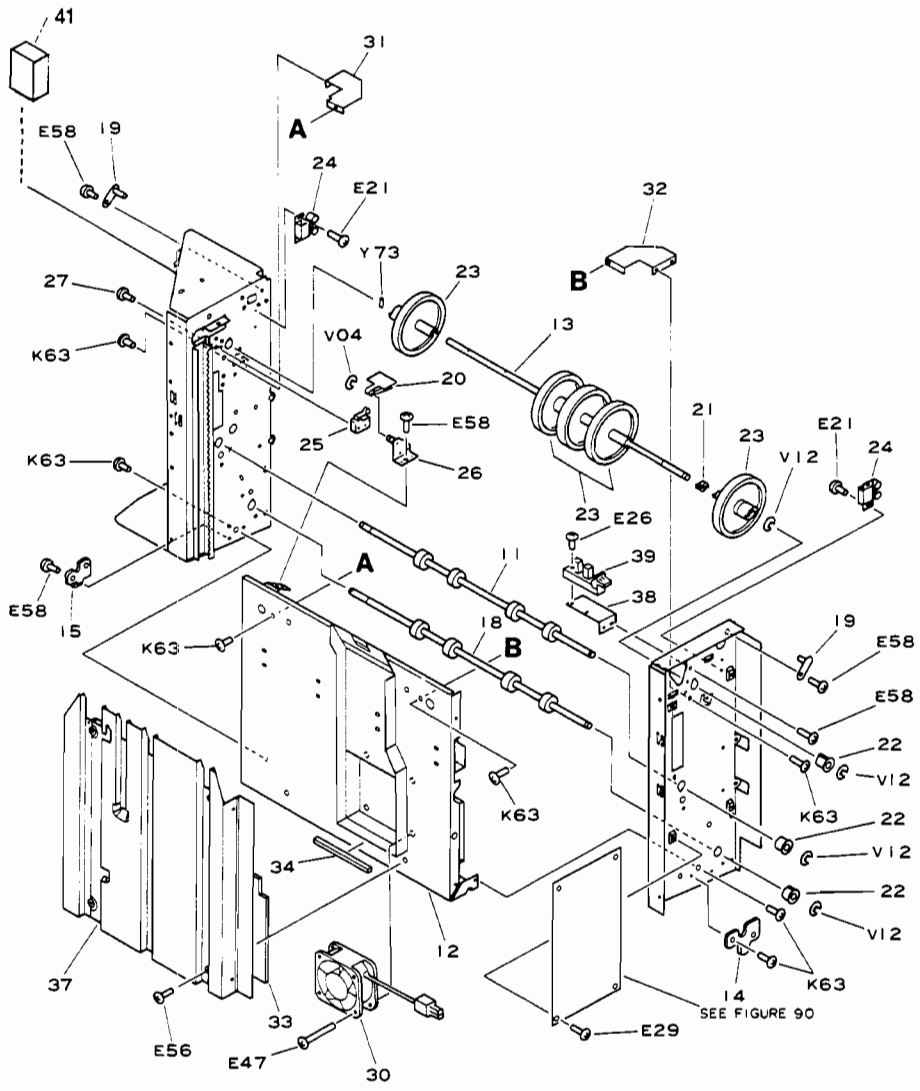


Figure 8b-5. Stacker Assembly 1 (2 of 2)

Table 8b-5. Stacker Assembly 1

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-2463-000CN	1	S	GUIDE, RIGHT, UPPER
2	RA1-2470-000CN	1	S	GUIDE, LOWER, A
3	RA1-2471-000CN	1	S	GUIDE, LOWER B
4	RA1-2472-000CN	1	S	GUIDE, LEFT, UPPER
5	RA1-2477-000CN	1	S	PLATE, RIGHT
6	RF1-0622-000CN	2		PLATE, PIN
7	RF1-0623-000CN	2		PLATE, PIN
8	RS1-2065-000CN	2		SPRING, TENSION
9	FA1-9546-000CN	2		PLATE, PIN
10	FS1-9053-000CN	2	S	SCREW, STEPPED, M4
11	RA1-2467-000CN	1	S	ROLLER,SHAFT
12		1	N	PLATE, LEFT
13	RA1-2475-000CN	1	S	SHAFT, ROLLER
14	RA1-2485-000CN	1	S	PLATE, FRONT
15	RA1-2486-000CN	1	S	PLATE, REAR
16	RA1-2502-000CN	1	S	STRAP, DOOR SUPPORT
17	RA1-2503-000CN	1	S	BRACKET
18	RA1-2563-000CN	1	S	ROLLER, SHAFT
19	FA3-7429-000CN	2		PLATE, PIN
20	RA1-2562-000CN	2		ACTUATOR, MICROSWITCH
21	FA3-7423-000CN	1	S	SPACER
22	FS1-1187-000CN	4	S	BUSHING
23	FA3-7422-000CN	5		ROLLER
24	XZ9-0029-000CN	2	S	LATCH, ROLLER-ACTION (CATCH
25	WC4-0151-000CN	2		MICROSWITCH
26	RF1-0613-000CN	2	S	MOUNT, MICROSWITCH
27	XB1-2201-000CN	4	S	SCREW, M2
28	RA1-2516-000CN	1	S	CROSSBAR
29	RA1-2607-000CN	1	S	DEFLECTOR PLATE
30	RH7-1065-000CN	1		FAN, 24VDC
31	RA1-2526-000CN	1	S	PLATE, A
32	RA1-2527-000CN	1	S	PLATE, B
33	RA1-2570-000CN	1	S	SEAL
34	RA1-2571-000CN	2	S	SEAL
35	FA3-7418-00NCN	4	S	SPRING, ROLLER HOLDER
36	FA3-7419-000CN	12	S	ROLLER
37	RF1-0625-000CN	1	S	GUIDE
38	RA1-2506-OOOCN	1	S	MOUNT SENSOR
39	FH7-7023-000CN	1	S	PHOTOINTERRUPTER
40	RA1-2564-000CN	8	S	SPRING, ROLLER HOLDER
41	RH3-0037-000CN	1		DC POWER SUPPLY 115V
41	RH3-0030-000CN	1		DC POWER SUPPLY, 220/240V

S = special order part N = not available for replacement

NOTES:

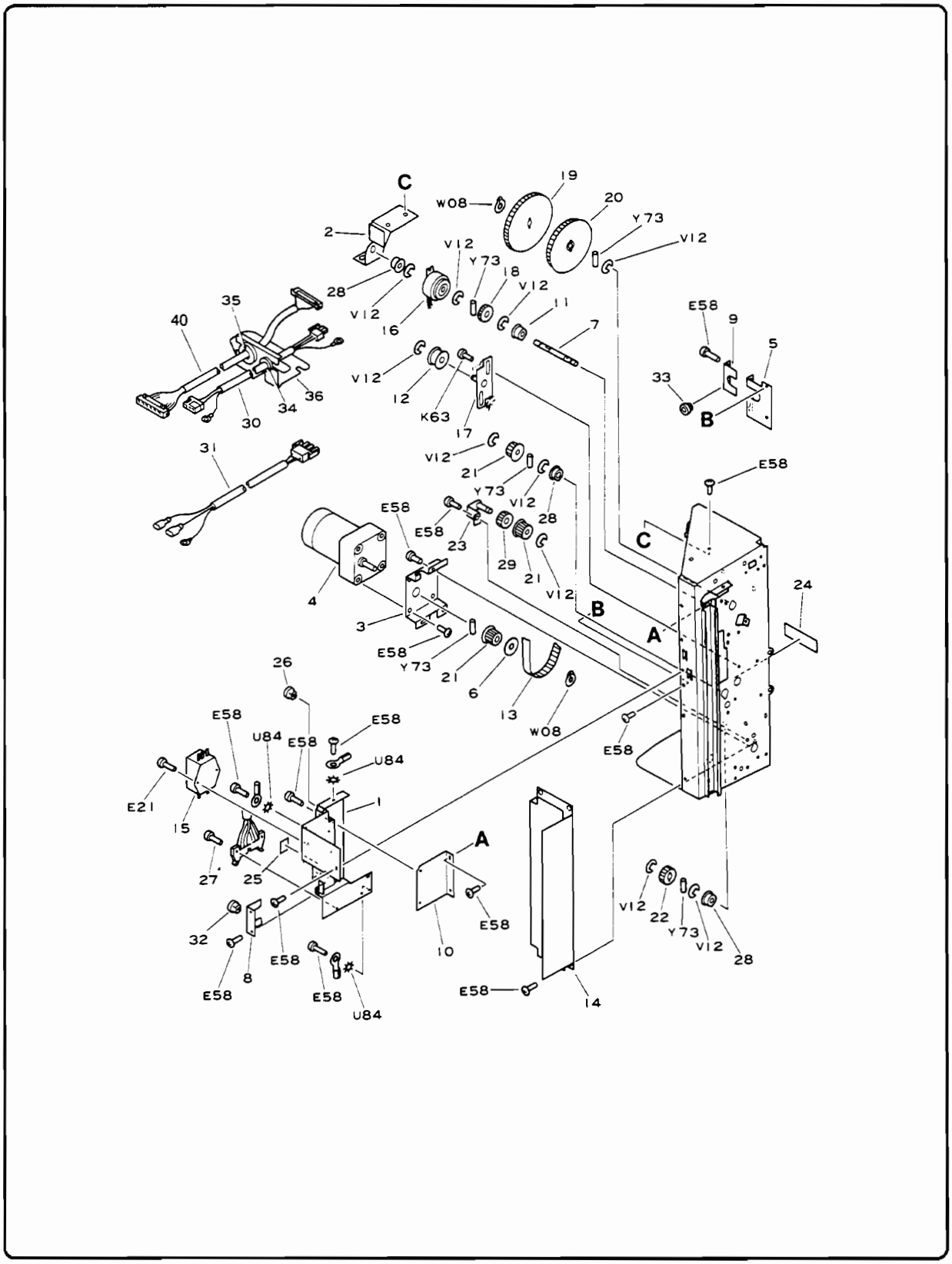


Figure 8b-6. Stacker Assembly 2

Table 8b-6. Stacker Assembly 2

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-2466-000CN	1	S	BRACKET, CABLE MOUNTING
2	RA1-2474-000CN	1	S	BRACKET, GEAR UNIT
3	RA1-2479-000CN	1	S	MOUNT, MOTOR
4	RH7-1032-000CN	1		MOTOR, 24VDC
5	RA1-2482-000CN	1	S	PLATE, CABLE MOUNTING
6	RA1-2483-000CN	1		FLANGE, PULLEY
7	RA1-2484-000CN	1	S	SHAFT, DRIVE
8	RA1-2504-000CN	1	S	RETAINER, CABLE 1
9	RA1-2505-000CN	1	S	RETAINER, CABLE 2
10	RA1-2507-000CN	1	S	PLATE, MOUNTING
11	FS1-1187-000CN	1	S	BUSHING
12	FA3-3210-000CN	1		PULLEY
13	XF9-0148-000CN	1		BELT, TIMING
15	WK3-0078-000CN	1		FILTER, NOISE 220/240V
16	RH7-5007-000CN	1		CLUTCH, ELECTROMAGNETIC 24VDC
17	RF1-0610-000CN	1	S	PLATE, SPINDLE
18	FS2-0382-000CN	1		GEAR 0T
19	FS2-0389-000CN	1		GEAR 20T
20	FS1-3160-000CN	1		PULLEY 48T
21	FS1-3159-OOOCN	3		PULLEY, 12T
22	FS2-0391-000CN	1		GEAR, 20T
23	FF1-6548-000CN	1	S	PLATE, SPINDLE
24	96-9558-000CN	1	S	LABEL
25	FA2-5438-000CN	1	S	LABEL GROUNDING
26	X62-9681-000CN	2	S	BUSHING
27	XB1-2201-009CN	2	S	SCREW, M2
28	FS1-1187-000CN	4	S	BUSHING
29	FS2-0377-000CN	1		GEAR 20T
30	RG1-0707-000CN	1	S	LIFTER TRAY CABLE
31	RH2-5059-000CN	1	S	CORD, POWER (220V)
	RH2-5060-000CN	1		CORD, POWER (115V)
32	X62-6825-000CN	1	S	BUSHING, STRAIN RELIEF
33	X62-9225-000CN	1	S	BUSHING, STAIN RELIEF
34	X62-6990-000CN	1	S	BUSHING, STRAIN RELIEF
35	X62-6825-000CN	1	S	BUSHING, STRAIN RELIEF
36	RA1-4681-000CN	1	S	PLATE, CABLE
40	RG1-0706-000CN	1		STACKER INTERFACE CABLE

S = special order part

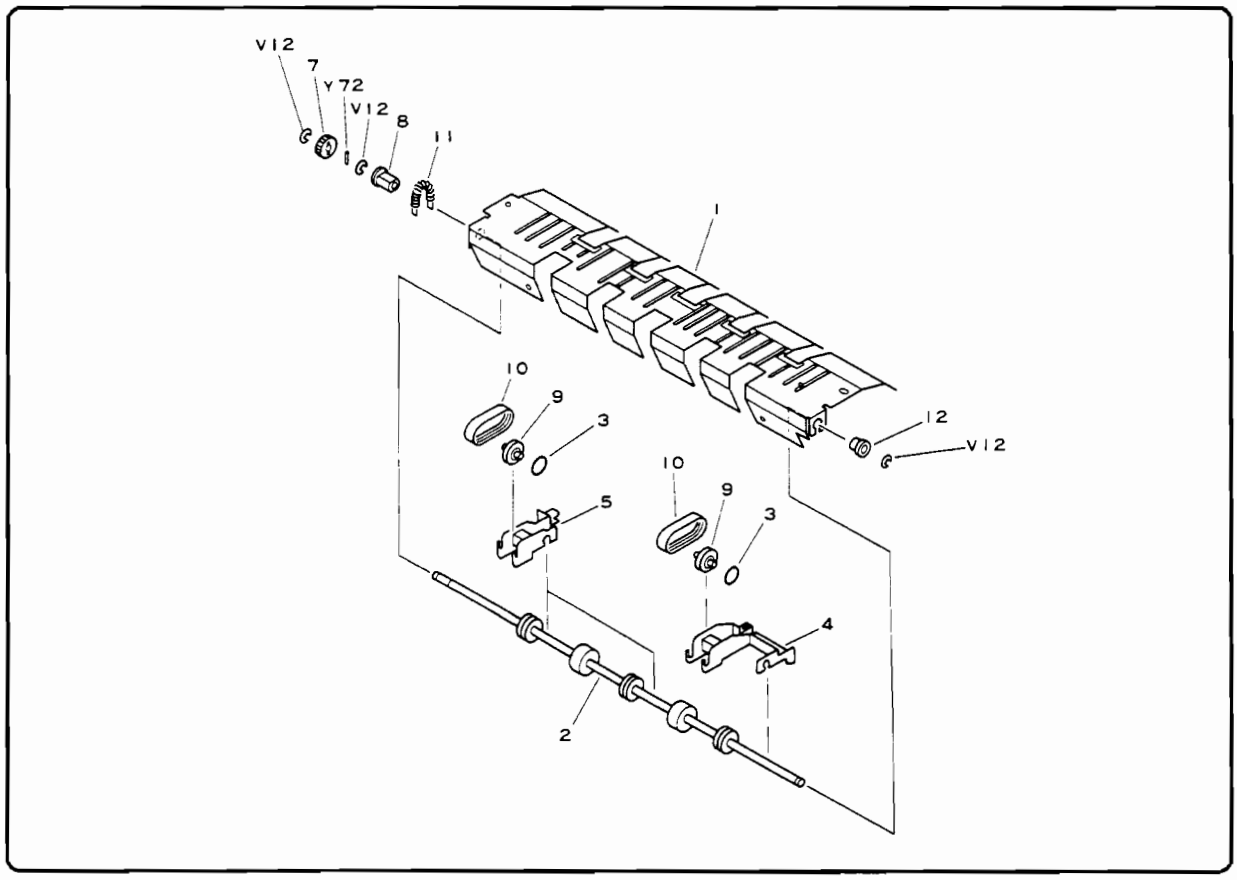


Figure 8b-7. Upper Feeder Assembly

Table 8b-7. Upper Feeder Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0684-020CN	1		UPPER FEEDER ASSEMBLY
1		1	N	GUIDE, LOWER
2	RA1-2532-000CN	1	S	ROLLER, DELIVERY
3	FA3-7462-000CN	6		RING, RUBBER
4	RA1-2539-020CN	1		ARM, SENSING, 1
5	FA3-7448-000CN	2		ARM, SENSING 2
7	RS1-0068-000CN	1	S	GEAR, 16T
8	RS1-1006-000CN	1	S	BUSHING
9	FA3-7450-000CN	3		ROLLER
10	FA3-7453-000CN	3		BELT, 118MM
11	FS1-2370-000CN	1	S	SPRING, TENSION
12	FS1-1187-000CN	1	S	BUSHING

S = special order part

N = not available for replacement

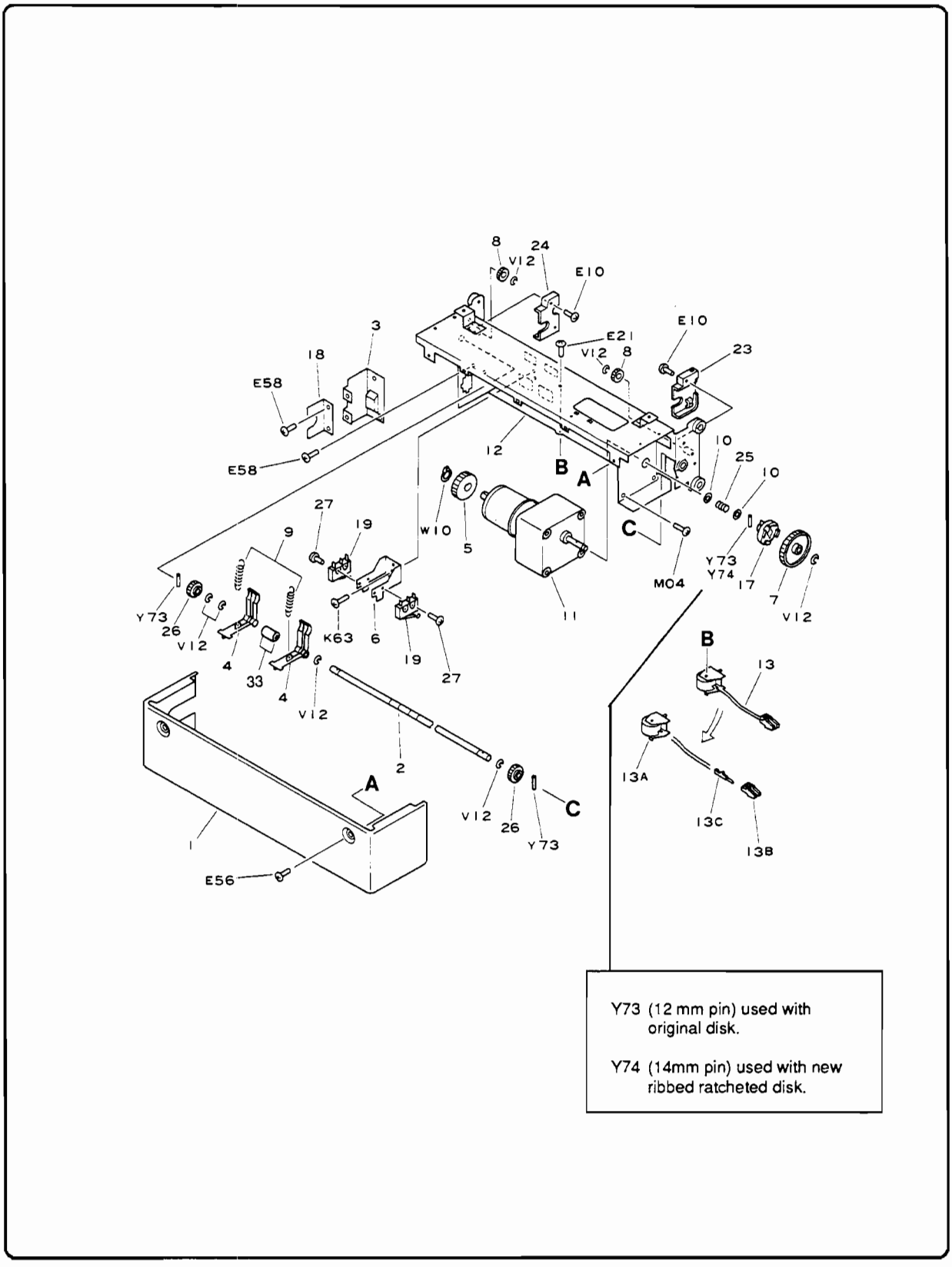


Figure 8b-8. Lifter Assembly (1 of 2)

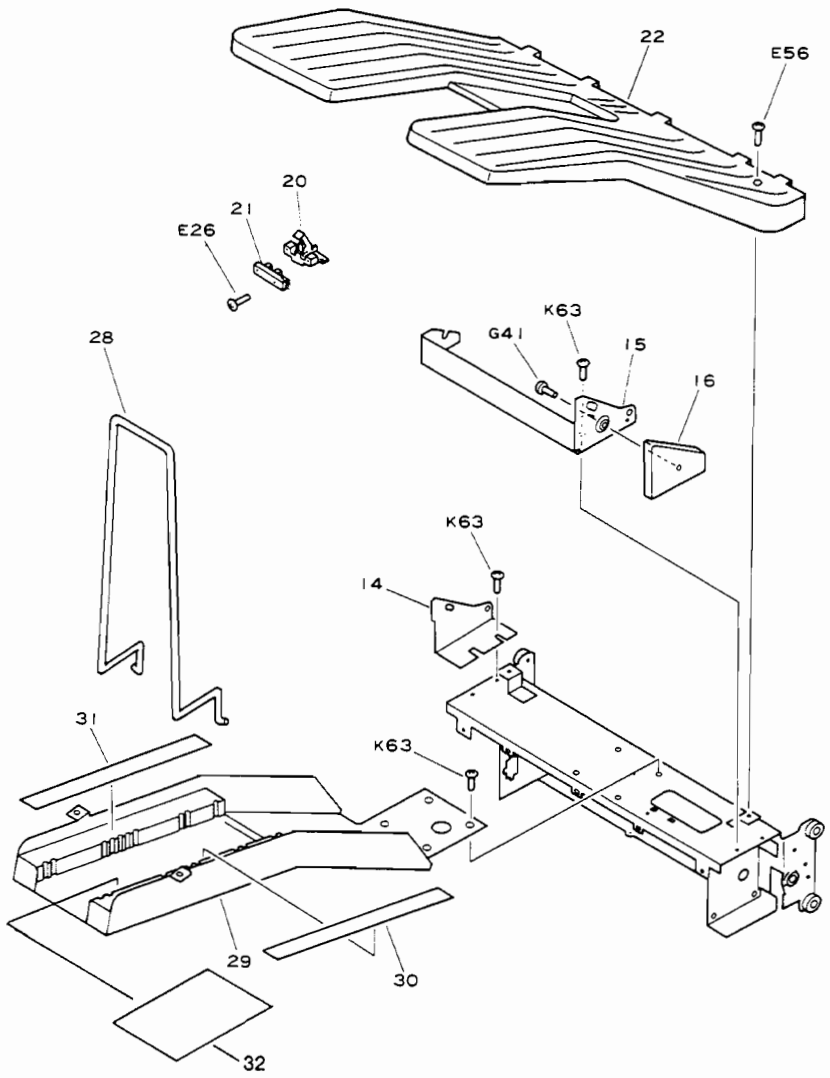


Figure 8b-8. Lifter Assembly (2 of 2)

Table 8b-8. Lifter Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
00	RG1-0685-030CN	1		LIFTER ASSEMBLY
1	RA1-2548-000CN	1	S	COVER, LIFTER
2	RA1-2550-000CN	1	S	SHAFT
3	RA1-2552-000CN	1	S	PLATE, CABLE MOUNTING
4	RA1-2553-000CN	2		ACTUATOR, SWITCH
5	RA1-2554-000CN	1		RATCHET, BRAKE
6	RA1-2555-000CN	1	S	MOUNT, MICROSWITCH
7	RS1-0069-000CN	1		GEAR, 40T
8	RS1-0070-000CN	2		GEAR, 16T
9	RS1-2076-000CN	2		SPRING, TENSION
10	RS1-6020-000CN	2		SPACER
11	RH7-1033-000CN	1		MOTOR 24VDC
12	RF1-0614-000CN	1	S	LIFTER, SUB TRAY
13	RF1-0677-000CN	1		SOLENOID, LIFER BRAKE
14	RA1-2557-000CN	1	S	SUPPORT, TRAY, REAR
15	RA1-2558-000CN	1	S	SUPPORT, TRAY FRONT
16	RA1-2559-000CN	1	S	COVER, TRAY, SUPPORT
17	RA1-2560-020CN	1		DISK, RACHET
18	RA1-2505-000CN	1	S	RETAINER, CABLE 2
19	WC4-0151-000CN	2		MICROSWITCH
20	RF1-0616-000CN	1		PLATE, SIGNAL GENERATING
21	FH7-7023-000CN	1		PHOTOINTERRUPTER
22	RA1-2546-000CN	1		TRAY, STACKER
23	FA3-7473-000CN	1	S	COVER, GEAR, FRONT
24	FA3-7474-000CN	1	S	COVER, GEAR, REAR
25	FA3-3908-000CN	1		SPRING, COMPRESSION
26	RS1-0078-000CN	2		GEAR, 22T
27	XB1-2201-009CN	4	S	SCREW, M2
28	RA1-2540-000CN	1		BAR, STOP
29	RF1-1161-000CN	1	S	PLATE STOP
30	RS1-8463-000CN	1	S	LABEL SIZE FRONT
31	RS1-8464-000CN	1	S	LABEL SIZE REAR
32	RA1-2565-000CN	1	S	SHEET
33	XZ9-0223-000CN	1	S	SPACER

S = special order part

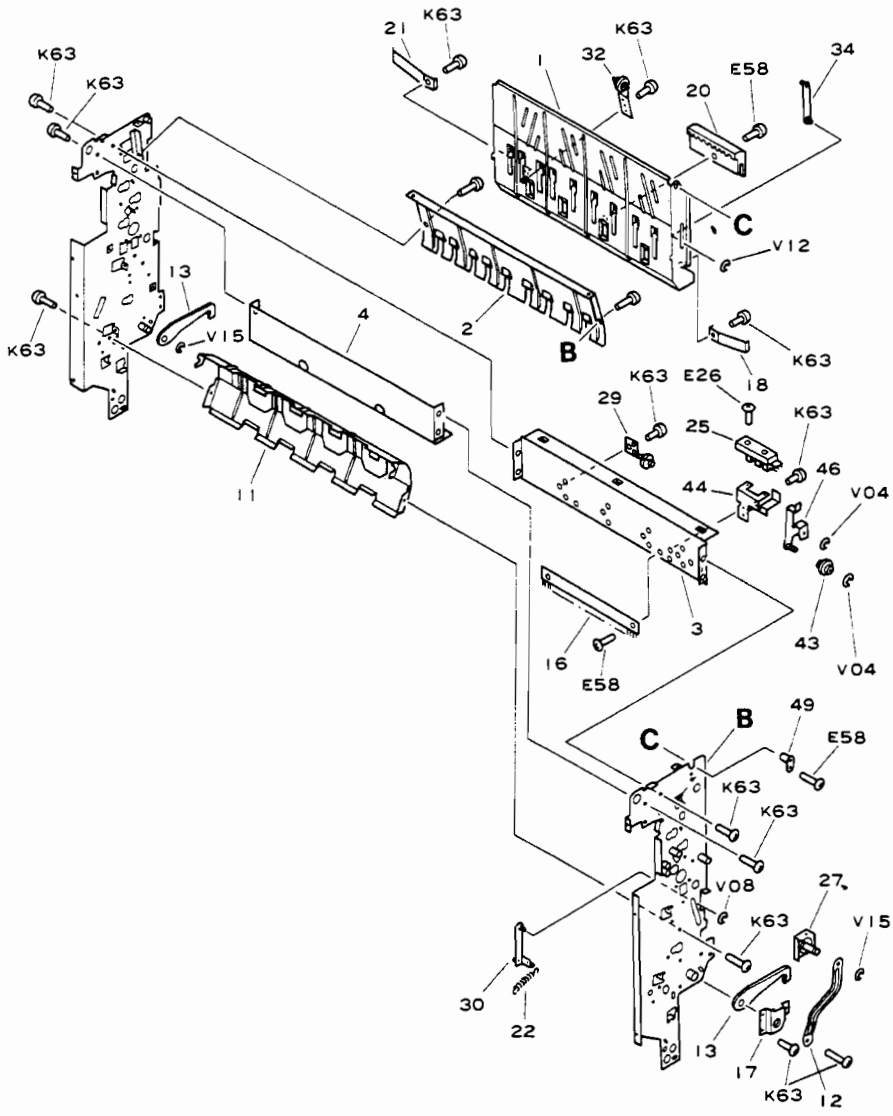


Figure 8b-9. Switchback Feeder Assembly 1 (1 of 2)

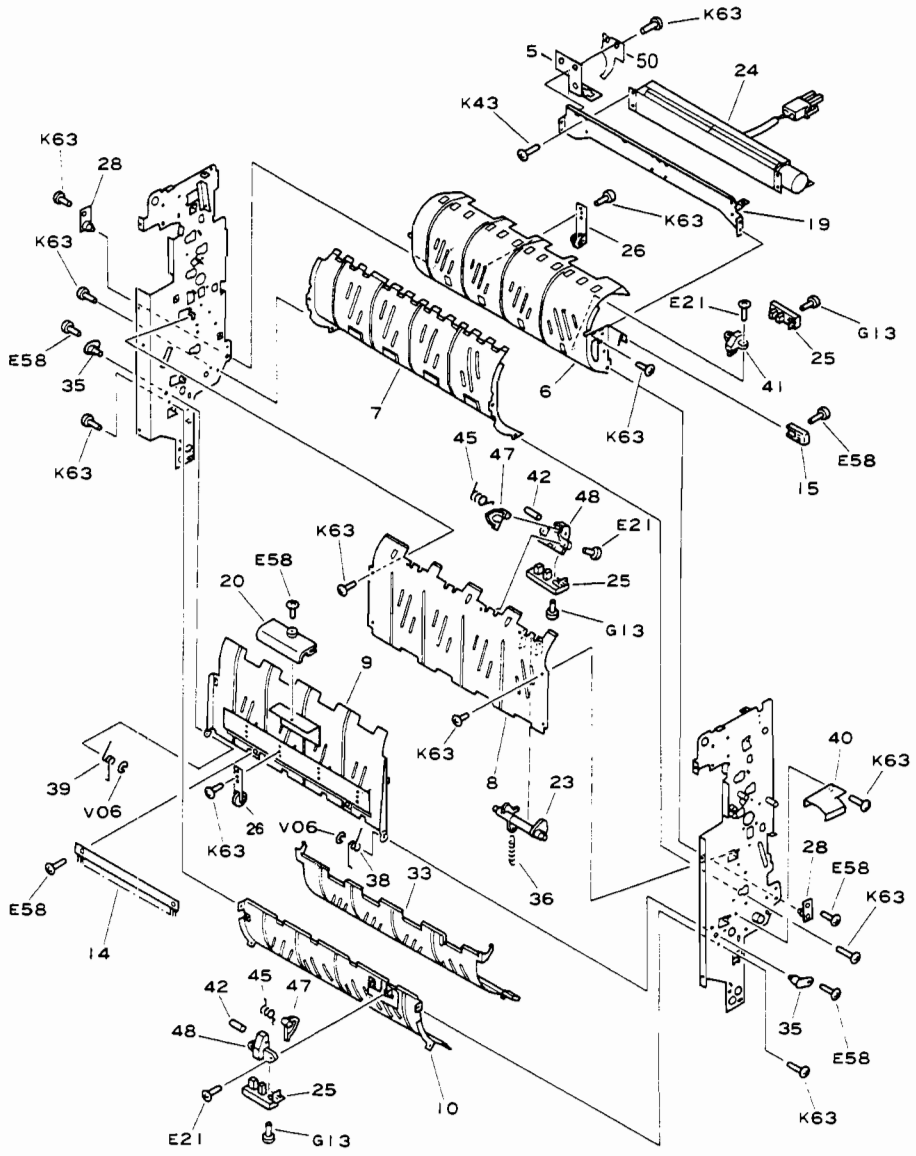


Figure 8b-9. Switchback Feeder Assembly 1 (2 of 2)

Table 8b-9. Switchback Feeder Assembly 1

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-2572-000CN	1	S	GUIDE, FRONT
2	RA1-2575-000CN	1	S	GUIDE, REAR
3	RA1-2576-000CN	1	S	PLATE, UPPER, RIGHT
4	RA1-2578-000CN	1	S	PLATE, UPPER, LEFT
5	RA1-2590-000CN	1	S	BRACKET
6	RA1-1355-040CN	1	S	GUIDE, FEEDER, F RONT
7	RA1-1356-030CN	1	S	GUIDE, FEEDER, REAR
8	RA1-1357-000CN	1	S	GUIDE, INLET
9	RA1-1358-000CN	1	S	GUIDE
10	RA1-1360-040CN	1	S	GUIDE, REAR, LOWER
11	RA1-1361-000CN	1	S	GUIDE, REAR, PAPER DELIVERY
12	RA1-1404-000CN	1	S	LINK
13	RA1-2437-000CN	1		LATCH
14	RA1-2442-000CN	1		ELIMINATOR, STATIC CHARGE
15	FA3-3285-000CN	1	S	KNOB
16	FA3-3319-000CN	1		ELIMINATOR, STATIC CHARGE, A
17	FA3-5567-000CN	1	S	MOUNT, LATCH, FRONT
18	FA3-5573-000CN	1	S	SPRING LEAF
19	FA3-5578-000CN	1	S	MOUNT, FAN
20	FA3-5579-000CN	2	S	GRIP, GUIDE, DELIVERY
21	FA3-5583-000CN	1	S	SPRING LEAF
22	FS2-2195-000CN	1	S	SPRING, TENSION
23	RA1-2595-000CN	4		FLAPPER
24	RH7-1031-000CN	1		FAN, 10VDC

S = special order part

Table 8b-9. Switchback Feeder Assembly 1 (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
25	FH7-7023-000CN	4		PHOTOINTERRUPTER
26	RF1-4771-000CN	4		ROLLER/SPRING UNIT
27	FF1-5246-000CN	1		PLATE, PIN
28	FF1-5249-000CN	2		PLATE, PIN
29	FF1-5251-000CN	4		ROLLER/SPRING UNIT
30	FF1-5252-000CN	1	S	LINK
32	RF1-0607-000CN	4		ROLLER/SPRING UNIT
33	RF1-0345-000CN	1	S	GUIDE, FRONT, LOWER
34	RF1-0617-000CN	1	S	LINK
35	RF1-0624-000CN	2		PLATE, PIN
36	RS1-2135-000CN	4		SPRING, TENSION
37	RF1-0632-000CN	4		ROLLER
38	RS1-2077-000CN	1	S	SPRING, TORSION
39	RS1-2078-000CN	1	S	SPRING, TORSION
40	RA1-2598-000CN	2	S	PLATE
41	FF1-4795-000CN	1		MOUNT, PHOTOINTERRUPTER
42	FA3-3413-000CN	1		AXLE
43	FA1-4851-000CN	1	S	ROLLER PAPER, SENSOR
44	FF1-5254-000CN	1	S	MOUNT, SENSOR
45	FS2-2051-000CN	2	S	SPRING TORSION
46	RF1-1152-000CN	1	S	LEVER, SIGNAL GENERATING
47	RA1-1412-000CN	2	S	PLATE SIGNAL GENERATING
48	FA2-3411-000CN	2	S	COVER, PHOTOINTERRUPTER
49	RF1-0620-000CN	1	S	PLATE, PIN
50	RA1-4710-000CN	1	S	SPRING LEAF

S = special order part

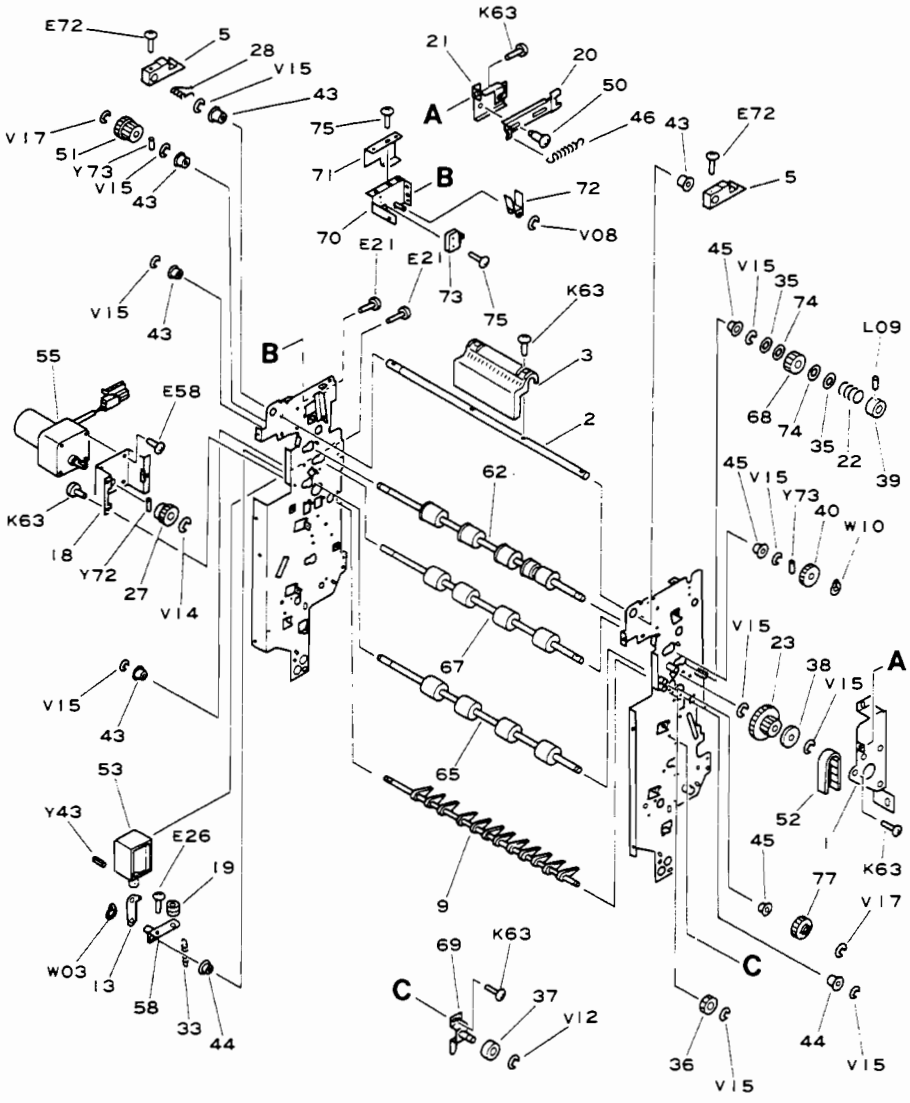


Figure 8b-10. Switchback Feeder Assembly 2 (1 of 2)

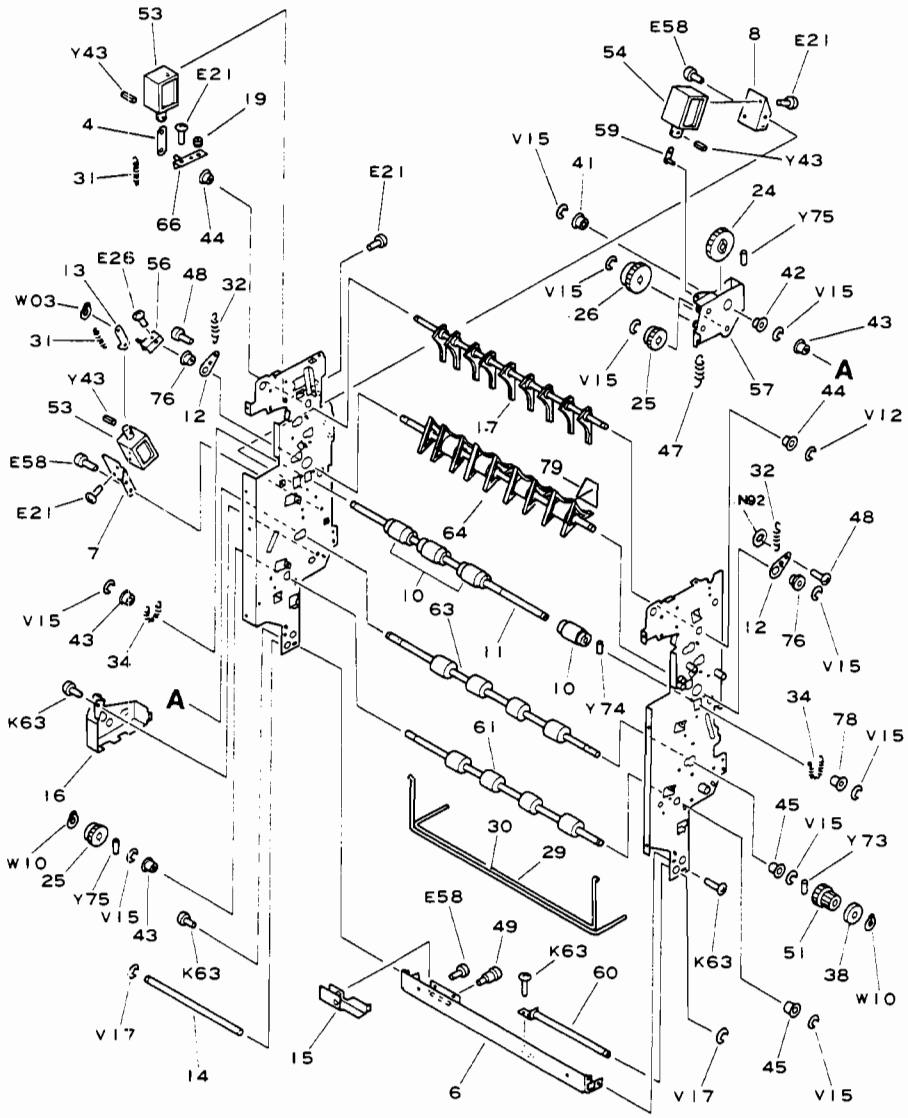


Figure 8b-10. Switchback Feeder Assembly 2 (2 of 2)

Table 8b-10. Switchback Feeder Assembly 2

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-2577-000CN	1	S	PLATE, GEAR
2	RA1-2579-000CN	1	S	SHAFT, LATCH RELEASE
3	RA1-2580-000CN	1	S	GRIP
4	RA1-2584-000CN	1	S	LINK
5	RA1-2585-000CN	2		LATCH
6	RA1-1363-000CN	1	S	CROSSMEMBER, LOWER
7	RA1-1364-000CN	1	S	MOUNT, SOLENOID
8	RA1-1365-000CN	1	S	MOUNT, SOLENOID
9	RA1-1366-000CN	1		DEFLECTOR
10	RA1-1373-000CN	4		ROLLER
11	RA1-1375-000CN	1	S	SHAFT
12	RA1-1383-020CN	2	S	ARM, DEFLECTOR
13	RA1-1384-000CN	2	S	LINK
14	RA1-1387-000CN	1	S	AXLE
15	RA1-1390-000CN	1	S	LINK, A
16	RA1-1393-000CN	1	S	COVER GEAR
17	RA1-1402-000CN	1		DEFLECTOR, DELIVERY
18	RA1-1407-000CN	1	S	MOUNT, MOTOR
19	RA1-0932-000CN	4		CUSHION, RUBBER
20	RA1-2433-000CN	1		ACTUATOR
21	RA1-2616-000CN	1	S	MOUNT, ACTUATOR
22	RS1-2069-000CN	1	S	SPRING, COMPRESSION
23	RS1-0022-000CN	1		PULLEY/GEAR, 12T/36T
24	RS1-0023-000CN	1		GEAR, 38TT
25	RS1-0024-000CN	3		GEAR, 23T
26	RS1-0025-000CN	1		GEAR, 32T
27	RS1-0031-000CN	1		GEAR, 25T
28	RS1-2021-000CN	1	S	SPRING, TORSION
29	RS1-2023-000CN	1	S	SPRING, TORSION A
30	RS1-2024-000CN	1	S	SPRING, TORSION, B
31	RS1-2025-000CN	3		SPRING, TENSION
32	RS1-2213-000CN	2		SPRING TENSION
33	RS1-2036-000CN	1		SPRING, TENSION
34	FS1-2370-000CN	2		SPRING, TENSION
35	RS1-6021-000CN	2	S	RING RUBBER
36	RS1-0082-000CN	2		GEAR, 16T
37	FA3-3139-000CN	1	S	PULLEY
38	FA3-5561-000CN	2	S	FLANGE, PULLEY
39	FA1-1837-000CN	2	S	COLLAR

S = special order part

Table 8b-10. Switchback Feeder Assembly 2 (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
40	FS1-0542-000CN	3	S	GEAR, 22T
41	FS1-1046-000CN	1	S	BUSHING
42	FS1-1080-000CN	1	S	BEARING, BALL
43	FS1-1119-000CN	7	S	BUSHING
44	FS1-1340-000CN	4	S	BUSHING
45	FS1-1341-000CN	8	S	BUSHING
46	FS1-2523-000CN	1	S	SPRING, TENSION
47	FS1-2605-000CN	1	S	SPRING TENSION
48	FS1-9002-000CN	2	S	SCREW, STEPPED,M4
49	FS1-9003-000CN	1	S	SCREW, STEPPED, M4
50	FS1-9076-000CN	2	S	SCREW, STEPPED, M4
51	FS2-0132-000CN	2		PULLEY/GEAR 22T/12T
52	XF9-0163-000CN	1		BELT, TIMING
53	RH7-5004-000CN	3		SOLENOID, 24VDC
54	FH7-5030-000CN	1		SOLENOID, 24VDC
55	RH7-1028-000CN	1		MOTOR, 24VDC
56	RF1-0313-020CN	1	S	ARM, DEFLECTOR
57	RF1-0314-000CN	1	S	PLATE, DRIVE MOUNTING
58	RF1-0315-000CN	1	S	ARM, DEFLECTOR
59	RF1-0316-000CN	1	S	LINK
60	RF1-0321-000CN	1	S	AXLE
61	RF1-0324-000CN	1		ROLLER, FEED
62	RF1-0325-000CN	1		ROLLER/SHAFT DELIVERY
63	RF1-0327-000CN	1		ROLLER, FEED
64	RF1-0328-040CN	1		DEFLECTOR
65	RF1-0329-040CN	1		ROLLER/SHAFT, FEED
66	RF1-0344-000CN	1	S	ARM, DEFLECTOR
67	RF1-0674-000CN	1		ROLLER/SHAFT, FEED
68	RF1-0673-000CN	1	S	GEAR, 22T
69	RF1-0618-000CN	1	S	PLATE, SPINDLE
70	RF1-0609-000CN	1	S	MOUNT, SWITCH, LOWER
71	RA1-2600-000CN	1	S	MOUNT, SWITCH, UPPER
72	RA1-2602-000CN	1		ACTUATOR, MICROSWITCH
73	WC4-0151-000CN	1		MICROSWITCH
74	XD9-0071-000CN	2	S	WASHER
75	XB1-2201-009CN	3	S	SCREW, M2
76	XG3-8012-355CN	2	S	BEARING, BALL
77	RS1-0163-000CN	1	S	GEAR, 22T
78	FA1-0056-000CN	1	S	BUSHING
79	RA1-2589-000CN	1	S	SHEET MYLAR

S = special order part

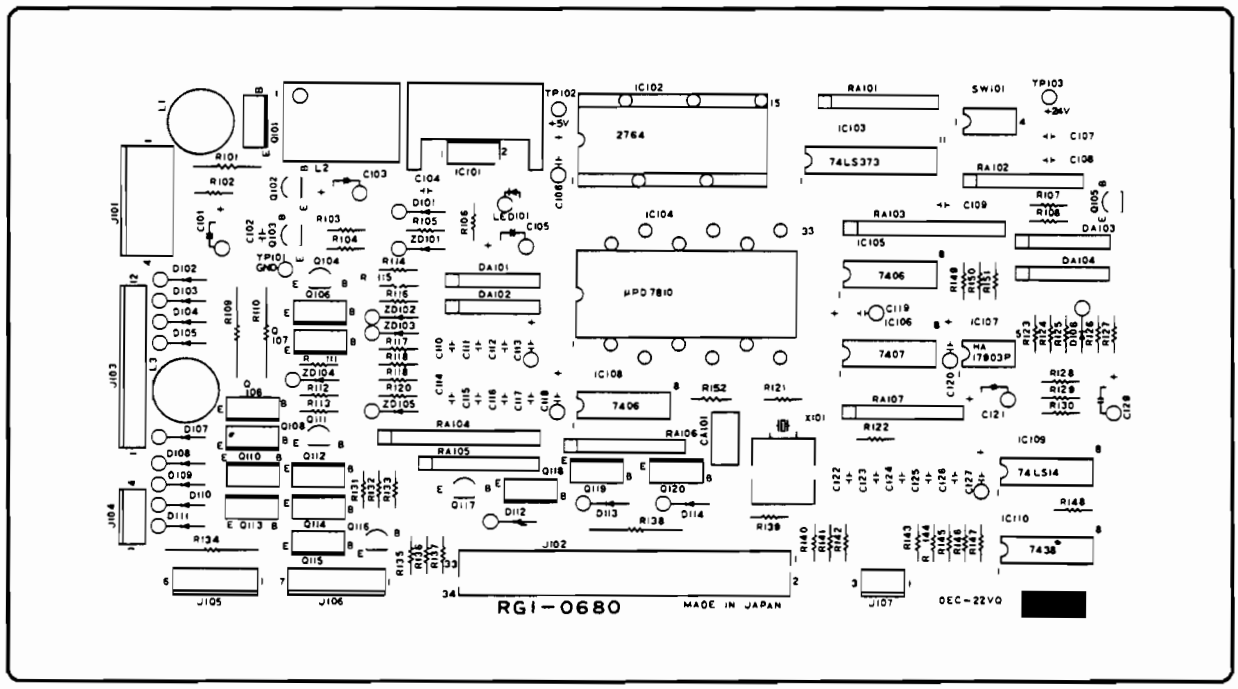


Figure 8b-11. Stacker Controller PCA Assembly

Table 8b-11. Stacker Controller PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RG1-0680-000CN	1		STACKER CONTROLLER PCA

8c

Parts List & Illustrations
HIGH CAPACITY PAPER DECK (PDX)

Figures

Tables

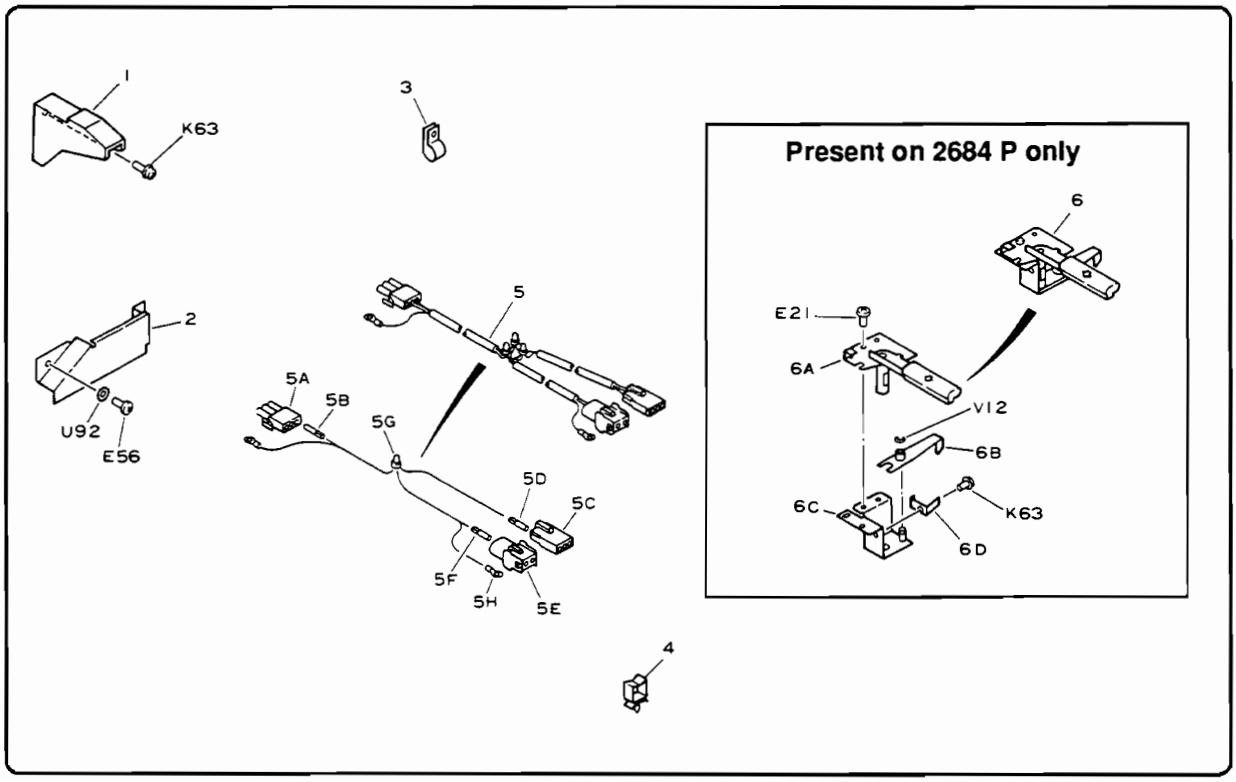


Figure 8c-1. Mounting Hardware

Table 8c-1. Mounting Hardware

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-3900-000CN	2	S	GUIDE
2	RA1-3725-000CN	1	S	COVER
3	X62-6856-000CN	1	S	CLAMP, CABLE 4N
4	WT2-0110-000CN	2	S	CLIP
5	RG1-0627-000CN	1	S	AC CABLE ASSEMBLY
5A	VS4-0001-002CN	1	S	CONNECTOR, 2P MALE
5B	WS4-0219-000CN	2	S	PIN, CONTACT 18-22AWG
5C	VS4-0002-003CN	1	S	CONNECTOR, 3P,FEMALE
5D	WS4-0217-000CN	3	S	SOCKET, CONTACT, 18-22AWG
5E	WS4-0060-000CN	1	S	CONNECTOR, 2P, FEMALE
5F	WS4-0074-000CN	2	S	SOCKET, CONTACT, 18-24AWG
5G	X62-9041-000CN	3	S	SPLICE, CLOSED END
5H	X62-6765-000CN	2	S	TERMINAL RING, 4.434MM
6	FG1-4024-030CN	1	S	LATCH ASSEMBLY

S = special order part

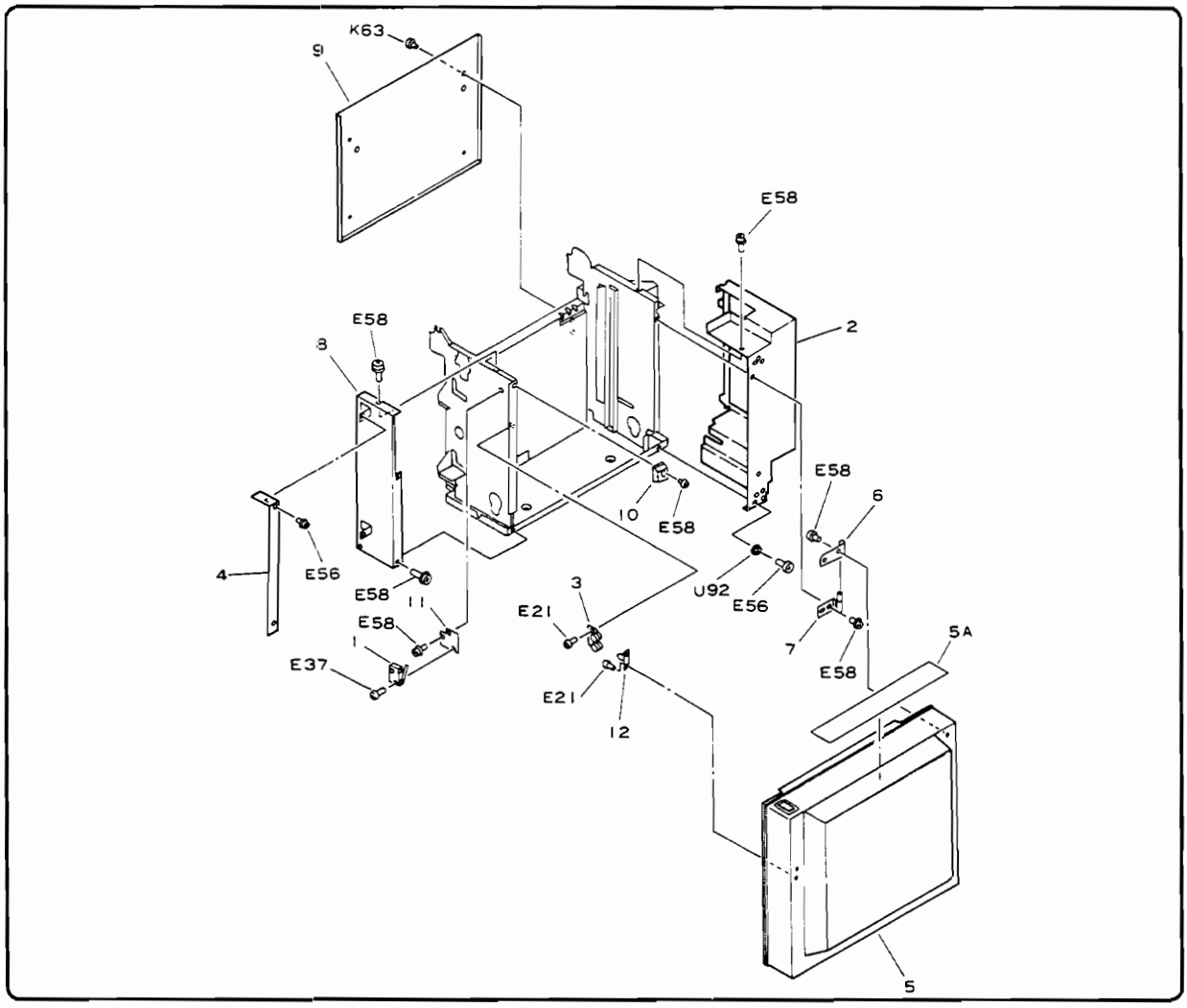


Figure 8c-2. Main Unit - Exterior

Table 8c-2. Main Unit - Exterior

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	R43-0421-000CN	1		PDX ASSEMBLY
1	WC4-0059-000CN	1		SWITCH, MICRO
2	RA1-3724-000CN	1	S	COVER, REAR
3	XZ9-0125-000CN	1	S	LATCH, ROLLER-ACTION (CATCH)
4	FA3-5103-000CN	1	S	COVER, FRONT (OUT)
5	FF1-4655-000CN	1		DOOR, PAPER FILLING
5A	FA3-3901-000CN	1	S	LABEL, OPERATION
6	FA3-3885-000CN	2		HINGE, DOOR
7	FA3-3886-000CN	2		HINGE, DOOR
8	FA3-3888-000CN	1	S	COVER, FRONT (IN)
9	FA3-3893-000CN	1	S	PANEL, LEFT
10	FA3-3895-000CN	1	S	GUIDE, DOOR
11	FA3-3898-000CN	1	S	PLATE, DOOR SWITCH
12	XZ9-0124-000CN	1	S	LATCH, ROLLER-ACTION (STRIKE)

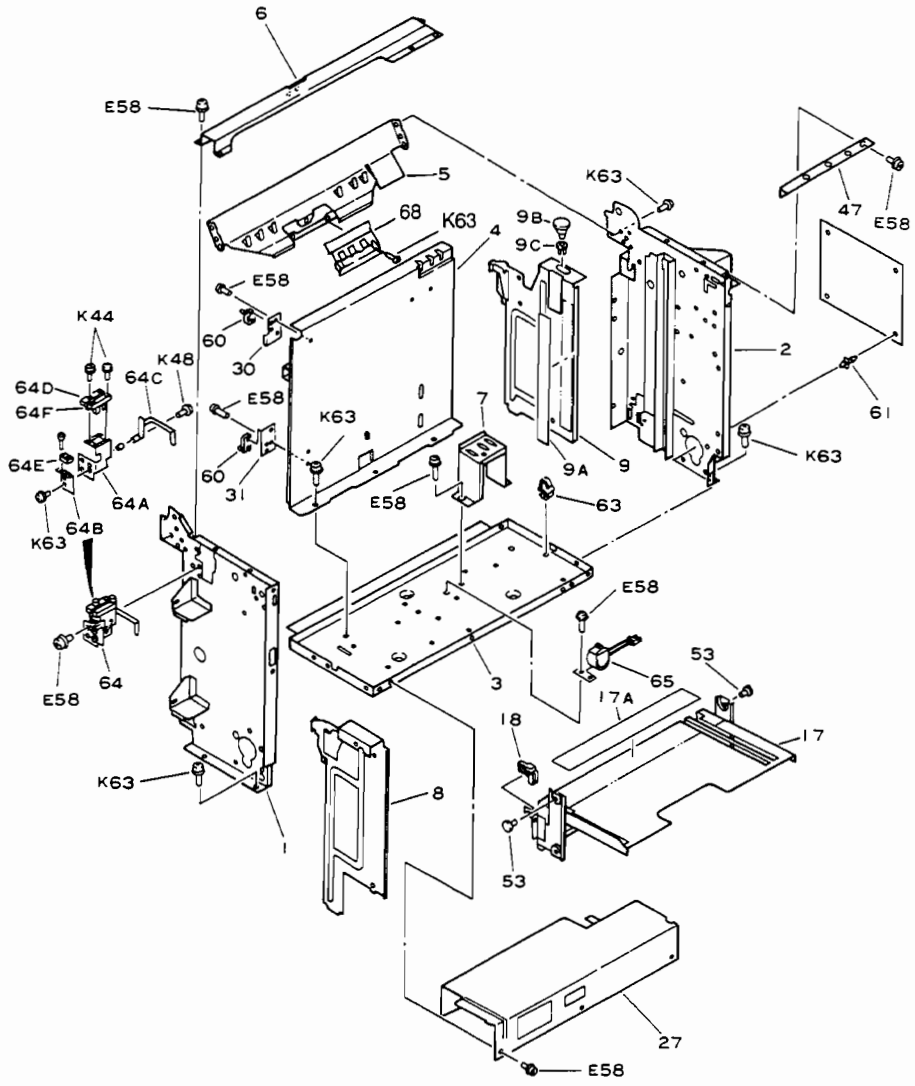


Figure 8c-3. Main Unit - Internal (1 of 2)

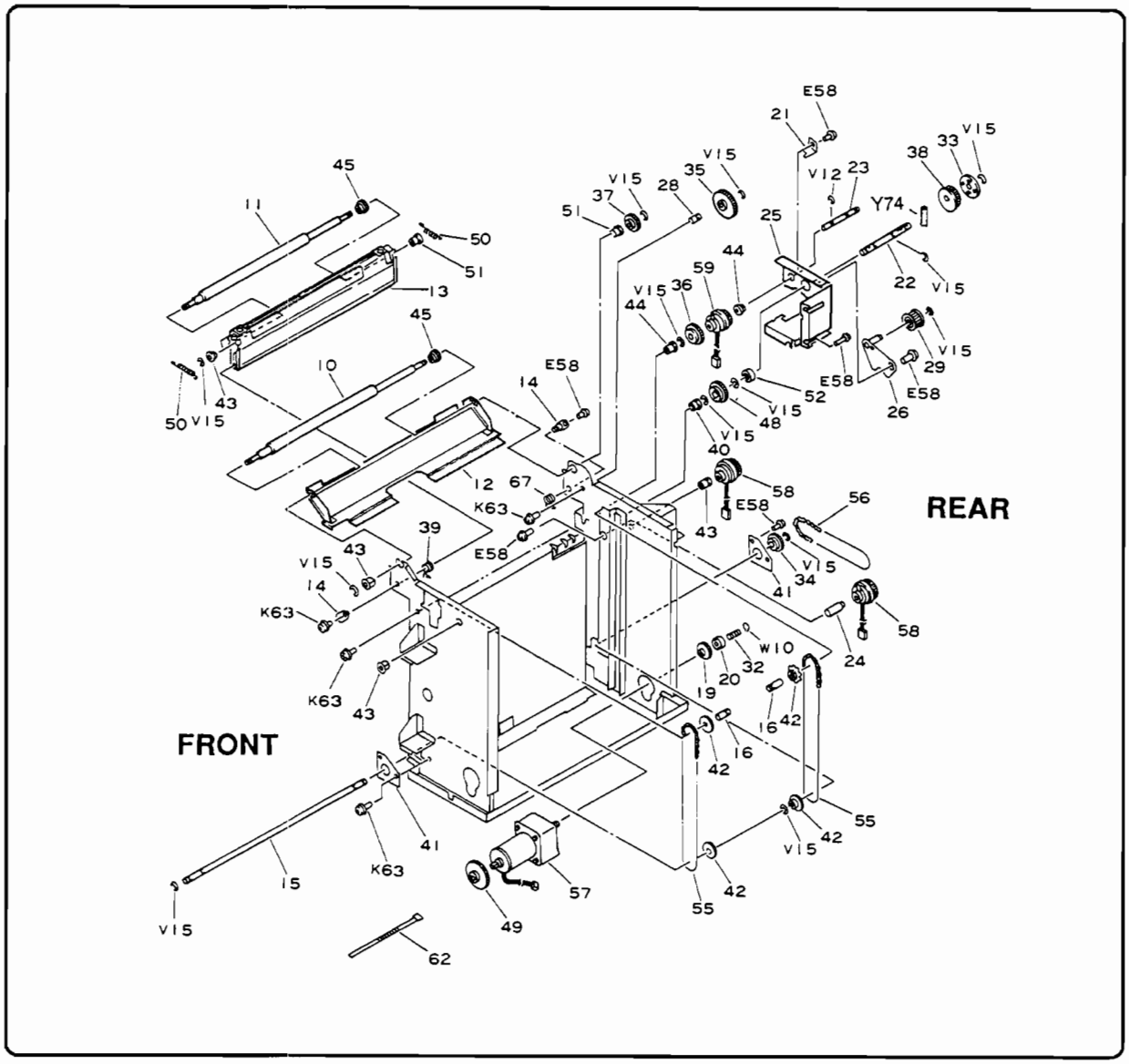


Figure 8c-3. Main Unit - Internal (2 of 2)

Note

When installed on duplex machines (2684P), item 39 is deleted.

Table 8c-3. Main Unit - Internal

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-3851-000CN	1	S	PLATE, FRONT FRAME
2	FA3-3852-000CN	1	S	PLATE, REAR FRAME
3	FA3-3853-000CN	1	S	PLATE, BASE
4	FA3-3854-000CN	1	S	PLATE, LEFT FRAME
5	FA3-3855-000CN	1	S	PLATE, CENTER
6	FA4-2528-000CN	1	S	CROSSMEMBER
7	FA3-3859-000CN	1	S	HOLDER, GUIDE
8	FF1-6892-000CN	1	S	PLATE, GUIDE, FRONT
9	RF1-1302-000CN	1	S	PLATE, STACK END
9A	FA2-6567-000CN	1	S	LABEL, PAPER HEIGHT, LIMIT
9B	XZ9-0038-000CN	1	S	PLUNGER, SNAP-KNOB
9C	XZ1-9608-000CN	1	S	BUSHING, SNAP-KNOB
10	FA3-3864-050CN	1		ROLLER, REGISTRATION, RUBBER
11	FA3-3865-000CN	1		ROLLER, REGISTRATION
12	FA3-3866-000CN	1	S	PLATE, GUIDE, UPPER
13	FA3-3867-000CN	1	S	PLATE, GUIDE, LOWER
14	FF1-5287-000CN	2	S	PLATE, PIN
15	FA3-3871-000CN	1	S	SHAFT, LIFTER DRIVING
16	FA3-3872-000CN	2	S	AXLE, LIFTER CHAIN IDLERSPRKT
17	FF1-4654-000CN	1	S	DECK, PAPER LIFTING
17A	FA2-7526-000CN	1	S	STRIP, FRICTION
17B	FA2-6512-000CN	1	S	STRIP 1, FRICTION
17C	FA2-6513-000CN	1	S	STRIP 2, FRICTION
17D	FA2-6554-000CN	1	S	STRIP 3, FRICTION
17E	FA3-3902-000CN	1	S	LABEL, PAPER SIZE
18	FA3-3874-000CN	1	S	CAM, LIFTER
19	FA3-3875-000CN	1	S	SPROCKET, 14T
20	FA3-3876-000CN	1	S	RATCHET, RING
21	FA3-3878-000CN	1	S	STOP
22	FA3-3879-020CN	1	S	SHAFT DRIVE PULLY
23	FA3-3880-000CN	1	S	SHAFT, CLUTCH
24	FA3-3881-000CN	1	S	SHAFT BRAKE
25	FA3-3882-000CN	1	S	MOUNT, CLUTCH
26	FF1-4659-000CN	1	S	PLATE, TENSIONER SPROCKET
27	FA3-3892-000CN	1	S	COVER
28	FA3-3915-000CN	1	S	SPINDLE, IDLER GEAR

S = special order part

Table 8c-3. Main Unit - Internal (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
29	FA3-2788-000CN	1	S	PULLEY
30	FA3-3905-000CN	1	S	PLATE, SWITCH, UPPER
31	FA3-3906-000CN	1	S	PLATE, SWITCH, LOWER
32	FA3-3908-000CN	1	S	SPRING COMPRESSION
33	FA3-2790-000CM	1	S	FLANGE, PULLEY
34	FS1-3067-000CN	1	S	SPROCKET 14T
35	FS2-0143-000CN	1	S	GEAR, 46T
36	FS2-0144-000CN	1	S	GEAR, 46T
37	FS2-0145-000CN	1	S	GEAR 23T
38	FS1-3057-000CN	1	S	PULLEY, 30T
39	FS1-3127-000CN	1	S	SPRING TORSION (2684P only)
40	FS1-1186-000CN	1	S	BUSHING
41	FA2-6522-000CN	2	S	PLATE, BALL BEARING RETAINER
42	FS1-0759-000CN	4	S	SPROCKET 14T
43	FS1-1119-000CN	4	S	BUSHING
44	FS1-1213-000CN	3	S	BUSHING
45	96-0093-000CN	2	S	GEAR 32T
47	FF1-3732-000CN	1	S	PLATE, PAPER-WIDTH ADJUSTING
48	FS1-0578-000CN	1	S	GEAR, 32T
49	FA2-6523-000CN	1	S	WHEEL, RATCHET
50	FS1-2370-000CN	2	S	SPRING, TENSION
51	FA1-0056-000CN	2	S	BUSHING
52	XG9-0013-000CN	1	S	BEARING BALL
53	XG9-0091-000CN	4	S	ROLLER C
54	XG2-8022-705CN	2	S	BEARING BALL
55	XF1-1110-012CN	2	S	CHAIN ROLLER
56	XF1-1105-211CN	1	S	CHAIN
57	FH7-1272-000CN	1		MOTOR
58	FH7-5054-000CN	2		CLUTCH, ELECTROMAGNETIC
59	FH7-5055-040CN	1		CLUTCH, ELECTROMAGNETIC
60	WC4-0084-000CN	2		MICROSWITCH
61	VT2-0001-006CN	4	S	SUPPORT, PCA
62	WT2-0030-000CN	13	S	TIE, CABLE
63	WT2-0247-000CN	6	S	CLIP, CABLE
64	FG1-3703-000CN	1		LEVEL, SENSOR UNIT
65	FG1-3705-000CN	1		SOLENOID ASSEMBLY
67	FS1-3128-000CN	1	S	SPRING TORSION
68	FF1-5480-000CN	1		SEPARATION FRICTION STRIP

S = special order part

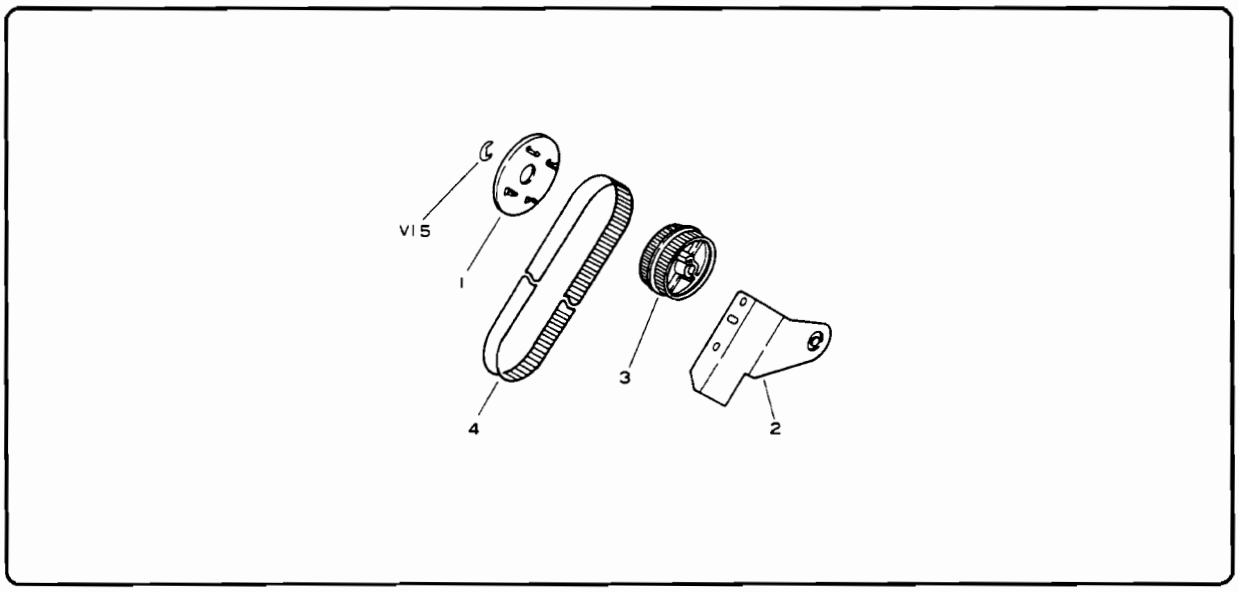


Figure 8c-4. Drive Transmission Assembly

Table 8c-4. Drive Transmission Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-2790-000CN	1	S	FLANGE, PULLEY
2	FF1-4894-000CN	1	S	MOUNT, PULLEY
3	FS1-3039-040CN	1		GEAR/PULLEY, 48T/30T
4	XF9-0108-000CN	1		BELT, TIMING

S = special order part

NOTES:

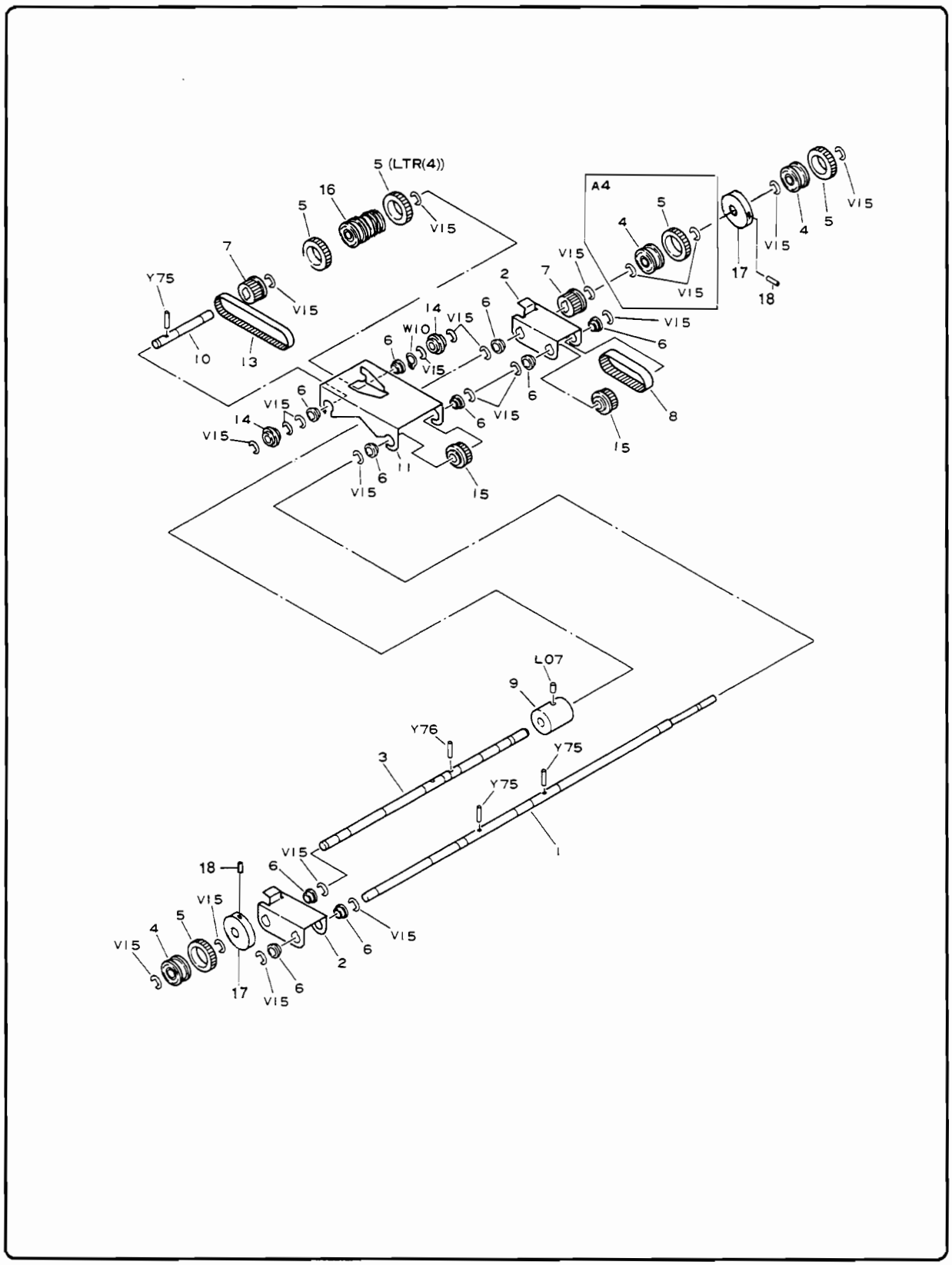


Figure 8c-5. Paper Pick-up Roller Assembly

Table 8c-5. Paper Pick-up Roller Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RGI-0537-000CN	1		PAPER PICK UP ROLLER ASSEMBLY
1	FA3-3912-000CN	1	S	SHAFT, PAPER PICK-UP ROLLER
2	FA3-3913-000CN	2	S	ARM, SWING, PICK-UP ROLLER (S)
3	FA2-6590-000CN	1	S	SHAFT, FEED ROLLER
4	FA3-3918-000CN	5		HUB, PICK-UP ROLLER
5	FA3-2615-020CN	5		ROLLER, PICK-UP
6	FS1-1189-000CN	10	S	BUSHING
7	RS1-0032-000CN	2	S	PULLEY, XL 12Z
8	XF9-0069-000CN	1		BELT TIMING
9	FA2-6593-000CN	1	S	WEIGHT
10	FA3-3922-000CN	1	S	SHAFT PICK-UP ROLLER IDLER
11	FA3-3926-000CN	1	S	ARM, SWING, PICK-UP ROLLER (L)
13	XF9-0119-000CN	1		BELT, TIMING
14	FA3-3857-000CN	2	S	ROLLER, OUT CREASE
15	RS1-0033-000	2	S	PULLEY, XL 16Z
16	FA3-3929-000CN	1	S	HUB PICK-UP ROLLER
17	RA1-6037-000CN	2	S	WEIGHT (LTR ONLY)
18	XB6-2300-609CN	2	S	SETSCREW HEX SKT. M3X6

S = special order part

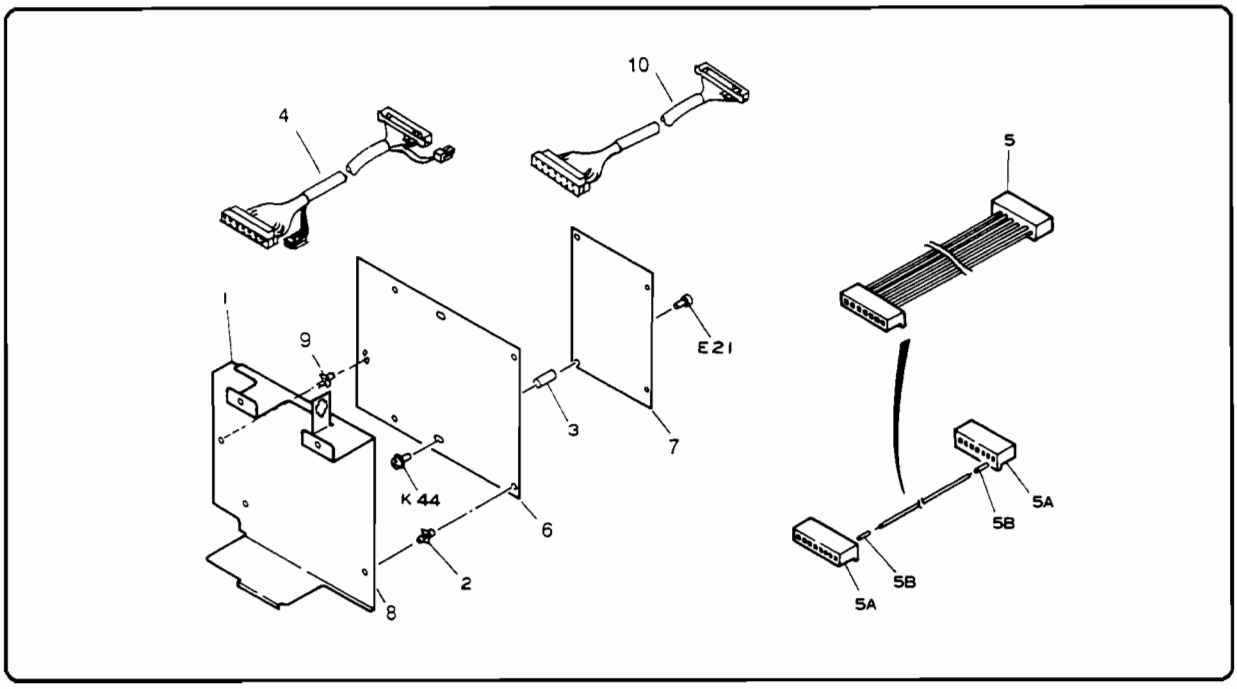


Figure 8c-6. PD/DU Controller Assembly

Table 8c-6. PD/DU Controller Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	RA1-1526-000CN	1	S	BRACKET, PD/DU
2	VT2-0001-003CN	4	S	SUPPORT, PCA
3	RS1-7003-000CN	2	S	SPACER
4	RF1-0403-000CN	1	S	CABLE ASSEMBLY
5	FF1-4509-000CN	1	S	CABLE ASSEMBLY
5A	VS3-0044-011CN	2	S	CONNECTOR, PCA, 11P
5B	WS3-0916-000CN	20	S	SOCKET, CONTACT, 18-24AWG
6	RG1-0527-000CN	1		PD/DU CONTROLLER PCA ASSEMBLY
7	RG1-0403-080CN	1		CPU PCA ASSEMBLY
8	RG1-0573-000CN	1		PDX DRIVER PCA
9	VT2-0002-006CN	1	S	SUPPORT PCB
10	FF1-5258-000CN	1	S	CABLE ASSEMBLY

S = special order part

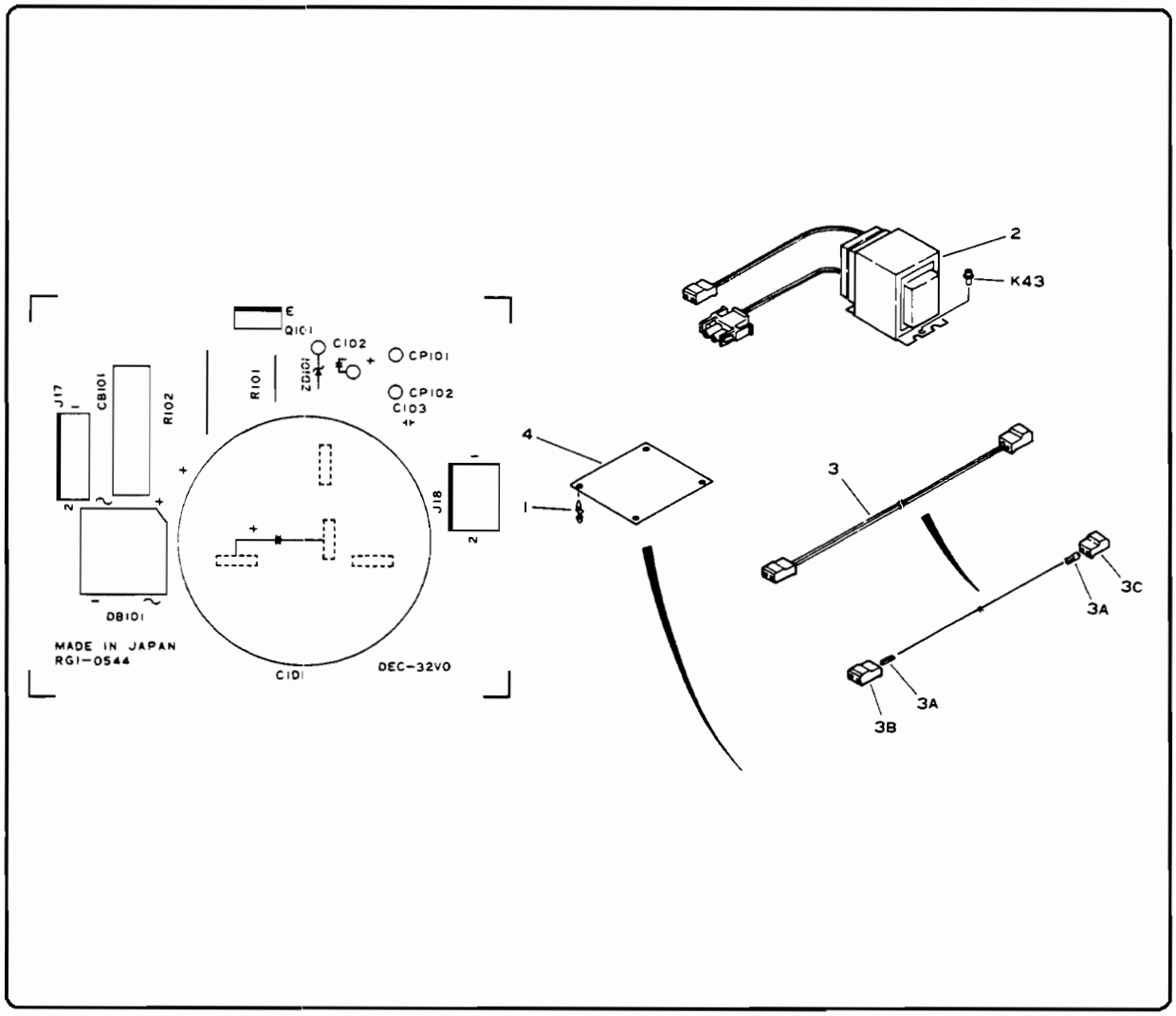


Figure 8c-7. Power Supply Assembly

Table 8c-7. Power Supply Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	VT2-0006-006CN	2	S	SUPPORT PCA
	FH3-0156-000CN	1		TRANSFORMER POWER (115V/60Hz)
2	RH3-0033-000CN	1		TRANSFORMER POWER (220V/50Hz)
3	FF1-4638-000CN	1	S	24V CABLE ASSEMBLY
3A	WS3-0916-000CN	4	S	SOCKET, CONTACT 18-24AWG
3B	VS3-0047-002CN	1	S	CONNECTOR, PCA 2P FEMALE
3C	VS3-0044-002CN	1	S	CONNECTOR, PCA, 2P FEMALE
4	RG1-0544-000CN	1		DC24V POWER SUPPLY PCA ASSEMBLY

S = special order part

8d

Parts List & Illustrations
DUPLEX UNIT

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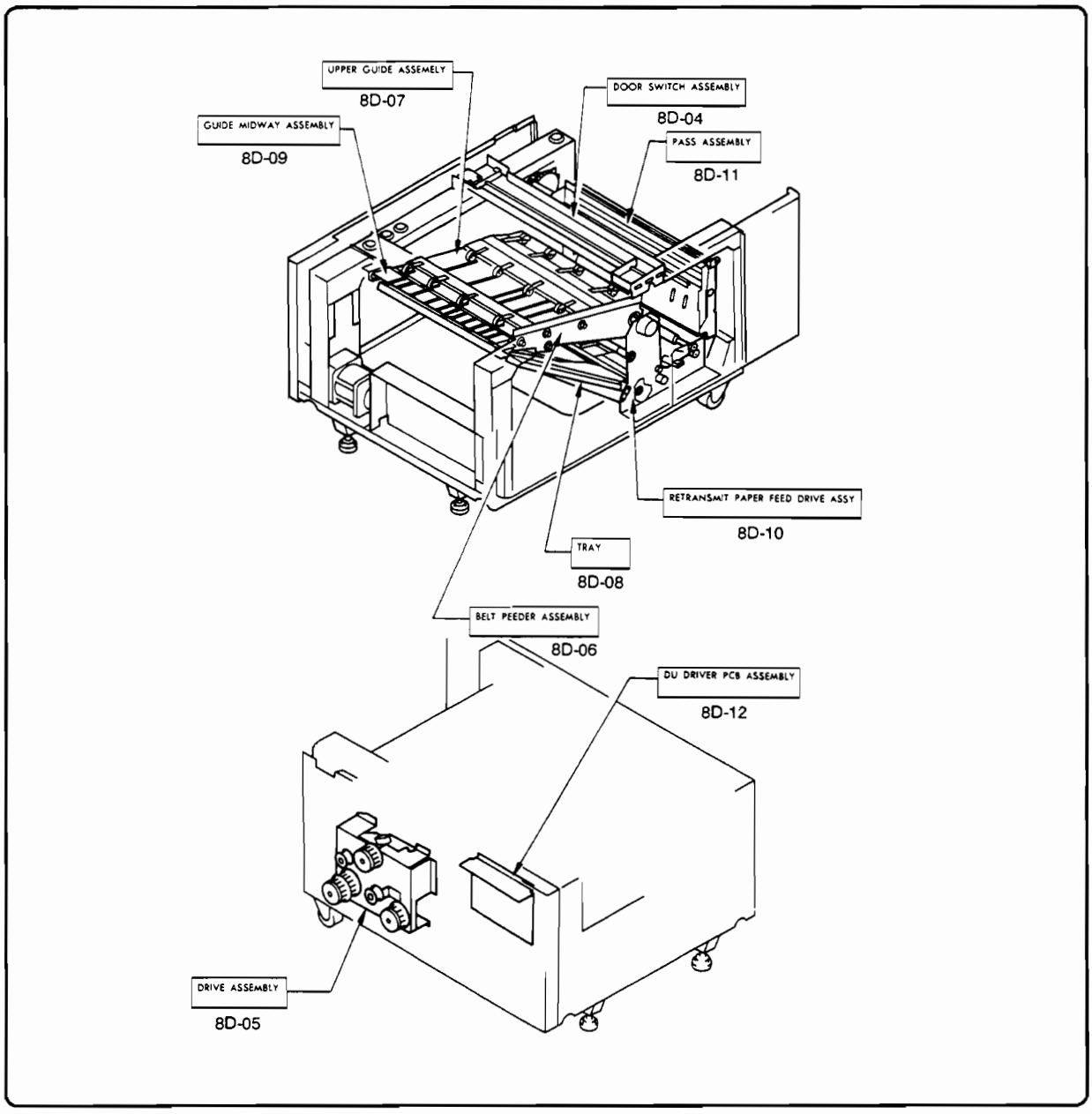

Figure 8d-1. Duplex Assembly

Table 8d-1. Duplex Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	R43-0321-000CN	1		Duplex Assembly

NOTES:

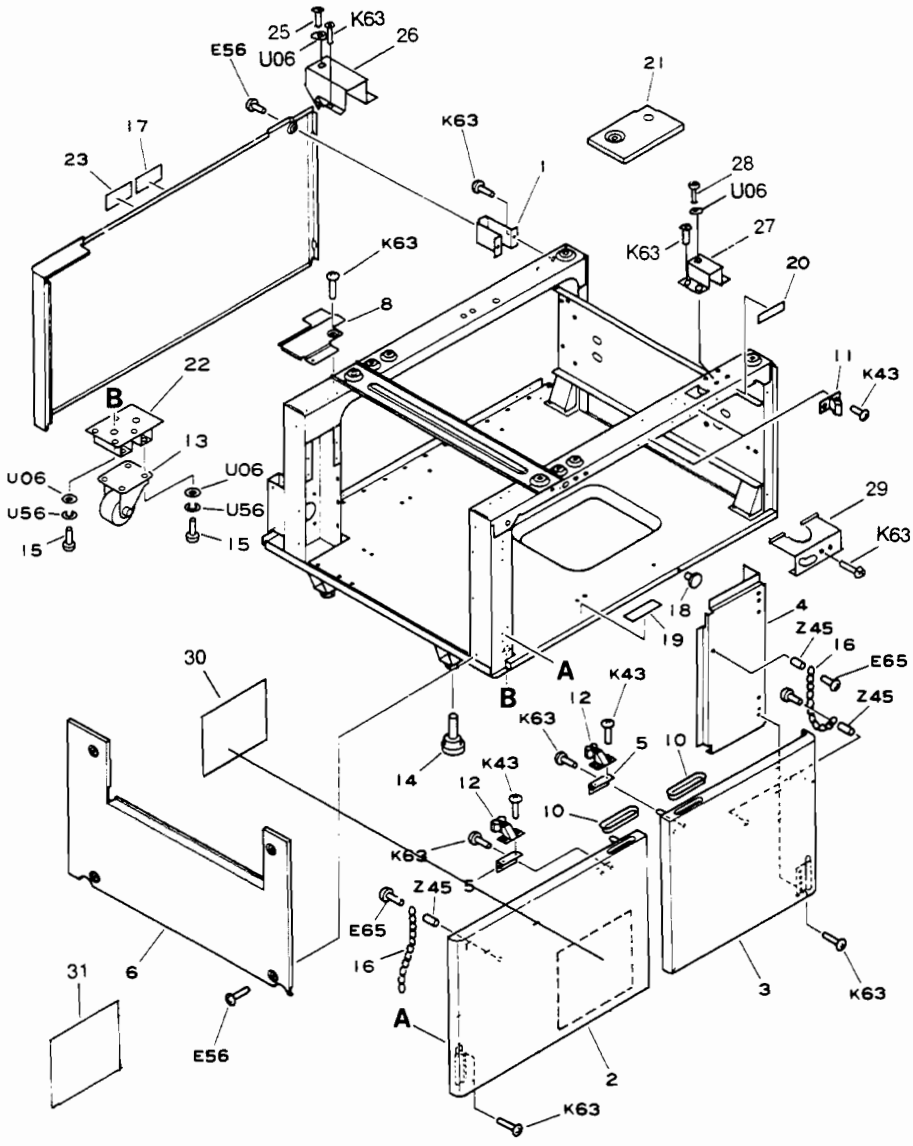

Figure 8d-2. External Panels and Covers

Table 8d-2. External Panels and Covers

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-5508-000CN	2	S	MOUNT, UPPER, REAR, PANEL
2	RA1-3718-000CN	1	S	PANEL, FRONT, LEFT
3	RA1-3719-000CN	1	S	PANEL, FRONT RIGHT
4	FA3-5521-000CN	1	S	PLATE, FRONT RIGHT
5	FA3-5522-000CN	2	S	MOUNT, DOOR CATCH
6	RF1-0776-000CN	1	S	PANEL, LEFT
7	RA1-3720-000CN	1	S	PANEL, REAR
8	RA1-3721-000CN	1	S	PANEL, REAR UPPER
9	RF1-0669-000CN	1	S	FRAME, PEDESTAL
10	RA1-3722-000CN	2	S	INSERT, FINGER GRIP
11	FA3-0890-000CN	2	S	STRIKE, LATCH, ROLLER-ACTION
12	XZ9-0029-000CN	2	S	CATCH, LATCH, ROLLER-ACTION
13	XZ9-0036-000CN	4	S	CASTER
14	FA3-7819-000CN	2	S	ADJUSTER, HEIGHT
15	XA9-0304-000CN	16	S	SCREW, M4X6
16	FA3-2888-000CN	2	S	CHAIN, DOOR
18	XD9-0069-000CN	1	S	STOP
19	FS1-8375-000CN	1	S	LABEL
20	FS1-8378-000CN	1	S	LABEL
21	RA1-3717-000CN	1	S	COVER, FRONT, UPPER
22	RA1-5421-000CN	4	S	MOUNT, CASTER
23	RS1-8624-000CN	1	S	LABEL, FCC
24	RS1-8294-000CN	1	1	LABEL, DOOR
25	XB7-1060-089CN	3	S	SCREW, ALLEN HEAD M6X8
26	FA3-7820-000CN	1	S	PLATE, SUPPORT
27	FA3-7821-000CN	1	S	PLATE, SUPPORT
28	XB7-1060-089CN	3	S	SCREW, ALLEN HEAD M6X8
29	RA1-4732-000CN	1	S	PLATE, SUPPORT
30	RS1-8295-OOOCN	1	S	LABEL, JAM STANDARD
31	RS1-8295-020CN	1	S	LABEL, JAM DU/PDX UNIT

S = special order part

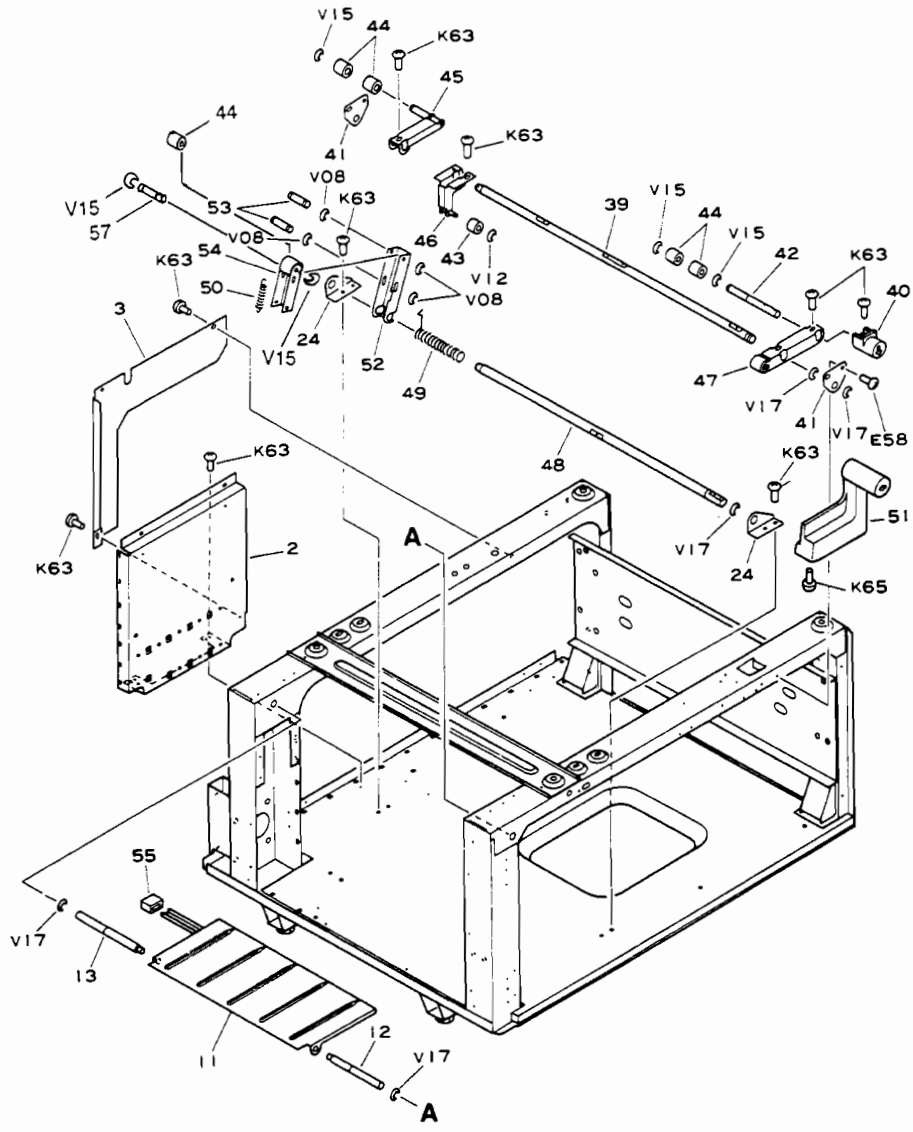

Figure 8d-3. Internal Components (1 of 2)

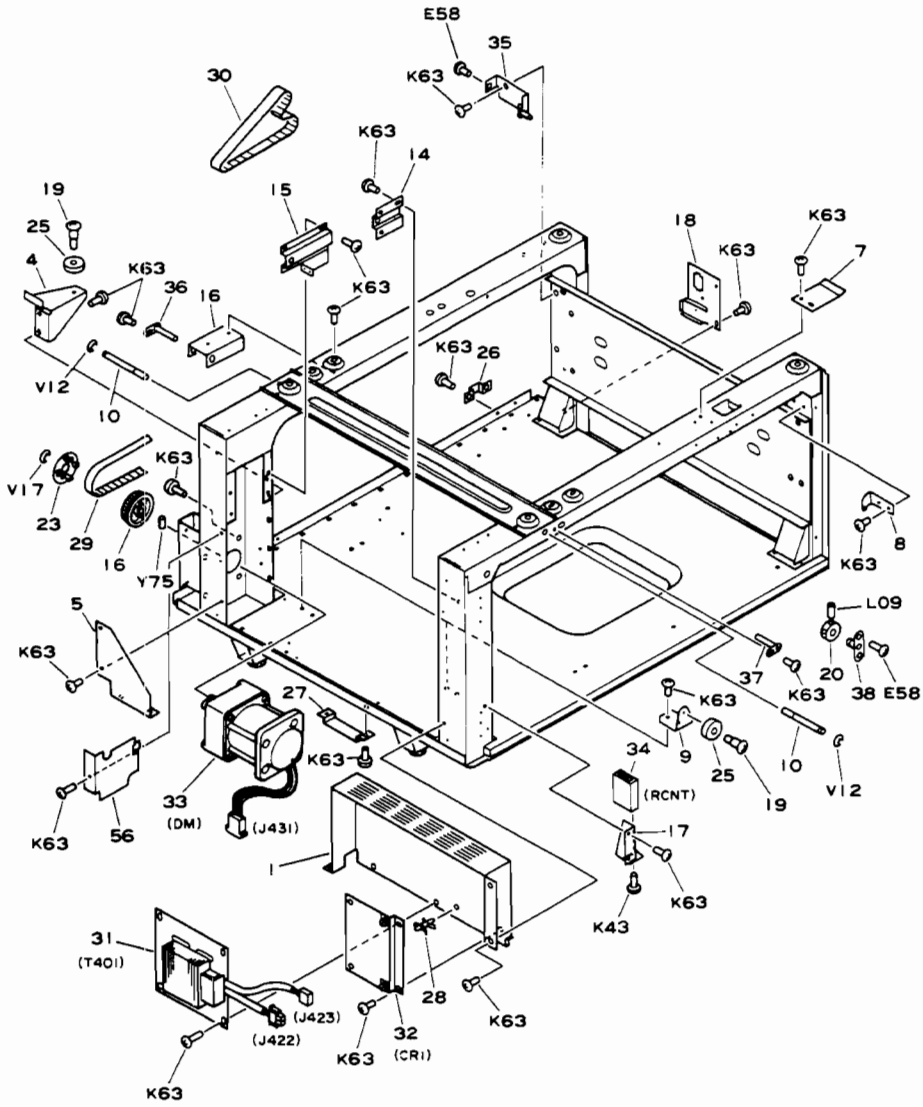

Figure 8d-3. Internal Components (2 of 2)

Table 8d-3. Internal Components

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-5502-000CN	1	S	MOUNT, PCA 115V
	RA1-1511-000CN	1	S	MOUNT PCA 220/240V
2	FA3-5503-000CN	1	S	PLATE, LEFT REAR
3	FA3-5504-000CN	1	S	PLATE, RIGHT REAR
4	FA3-5505-000CN	1	S	STOP, BELT FEEDER
5	FA3-5507-000CN	1	S	PLATE, REINFORCEMENT
6	FA3-5526-000CN	2	S	PLATE, ADJUSTMENT
7	FA3-5509-000CN	1	S	SPRING, LEAF
8	FA3-5511-000CN	2	S	SUPPORT, VERTICAL FEED GUIDE
9	FA3-5512-000CN	2	S	MOUNT, TRAY STOP
10	FA3-5513-000CN	2	S	AXLE
11	FA3-5514-000CN	1	S	PLATE, LONG PAPER SUPPORT
12	FA3-5515-000CN	1	S	AXLE, FRONT
13	FA3-5516-000CN	1	S	AXLE, REAR
14	RA1-1512-000CN	1	S	SUPPORT, FRONT
15	RA1-1513-000CN	1	S	SUPPORT, REAR
16	FS1-3058-000CN	1	S	PULLEY, 30T
17	FA3-5529-000CN	1	S	MOUNT, COUNTER
18	FA3-5531-000CN	1	S	PLATE, CONNECTOR MOUNTING
19	FS1-9004-000CN	3	S	SCREW, STEPPED, M4
20	FA2-1753-000CN	1	S	COLLAR
23	FA3-2790-000CN	1	S	FLANGE, PULLEY
24	FA3-3367-000CN	2	S	MOUNT, SHAFT
25	FA3-3230-000CN	3	S	STOP
26	FA3-3352-000CN	3	S	MOUNT, SORTER

S = special order part

Table 8d-3. Internal Components (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
27	FA3-3370-000CN	1	S	FITTING, SHIPPING
28	VT2-0006-004CN	4	S	SUPPORT, PCA
29	XF9-0112-000CN	1		BELT, TIMING
30	XF9-0113-000CN	1		BELT, TIMING
31	FH3-0109-000CN	1	S	TRANSFORMER, 115V 60HZ
	RH3-0032-000CN	1	S	TRANSFORMER, 220 240V 50HZ
32	FH3-5091-000CN	1		DC POWER SUPPLY, 120V
	FH3-5092-000CN	1		DC POWER SUPPLY 220/240V
33	RH7-1023-000CN	1		MOTOR
34	FF1-5272-000CN	1		COUNTER
35	FF1-5239-000CN	2	S	SUPPORT, VERTICAL FEED GUIDE
36	FF1-5240-000CN	1	S	PIN, REAR
37	FF1-5241-000CN	1	S	PIN, FRONT
38	FF1-4810-000CN	1	S	PLATE, PIVOT
39	FA3-5714-000CN	1	S	SHAFT, LEVER, UPPER
40	FA3-5715-000CN	1	S	HANDLE
41	FA3-5716-000CN	1	S	PLATE, SHAFT MOUNT
42	FA3-5717-000CN	1	S	SHAFT, ROLLER, FRONT
43	FS1-6087-000CN	1	S	ROLLER
44	FA3-3383-000CN	6	S	ROLLER, ROCK ARM
45	FF1-5235-000CN	1	S	LEVER, REAR
46	FF1-5236-000CN	1	S	LEVER, RELEASE
47	FF1-5237-000CN	1	S	LEVER, CONTROL
48	FA3-5721-000CN	1	S	SHAFT, LEVER
49	FA3-5722-000CN	1	S	SPRING, TORSION
50	FS2-2194-000CN	1		SPRING, TENSION
51	FA3-3403-000CN	1	S	ARM, TRAY
52	FA3-3404-000CN	1	S	ARM
53	FA3-3405-000CN	1	S	PIN
54	FA3-3401-000CN	1	S	ARM, TRAY, LOWER
55	FA3-5534-000CN	1	S	CUSHION
56	FA3-5535-000CN	1	S	PLATE, BLANKING PLATE
57	FA4-6266-000CN	1	S	SHAFT, ARM ROLLER

S = special order part

NOTES:

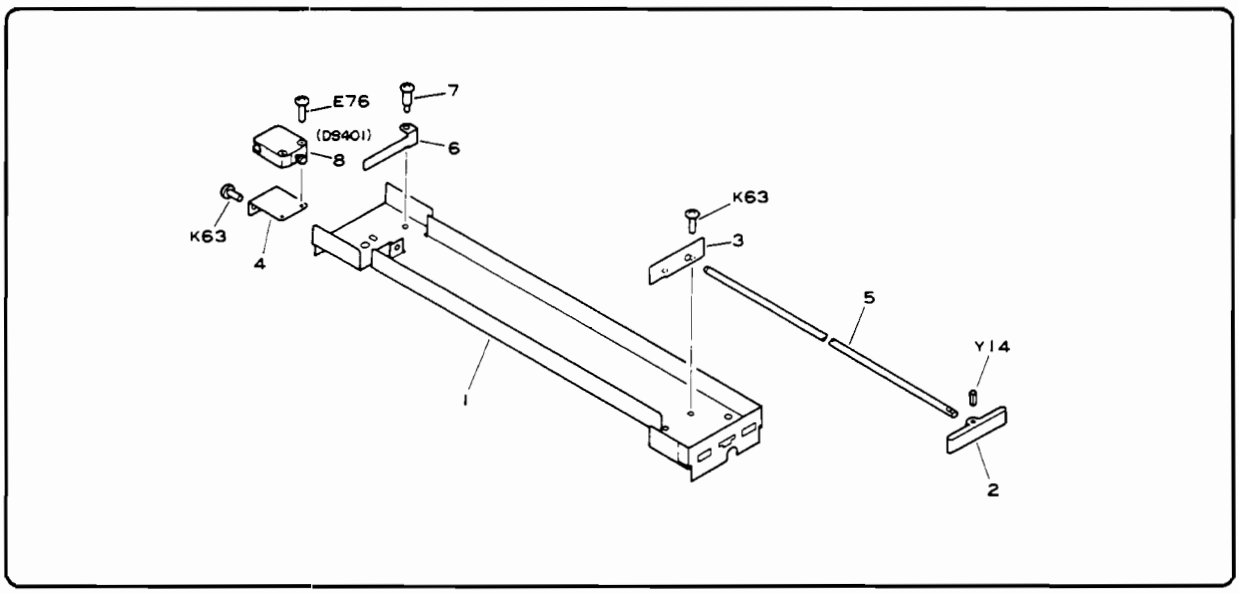

Figure 8d-4. Door Switch Assembly

Table 8d-4. Door Switch Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-5726-000CN	1	S	MOUNT, DOOR SWITCH
2	FA3-5727-000CN	1	S	LEVER
3	FA3-5728-000CN	1	S	SUPPORT, ROD
4	FA3-5729-000CN	1	S	MOUNT, SWITCH
5	FA3-5730-000CN	1	S	PUSHROD
6	FA3-5731-000CN	1	S	ARM, SWITCH ACTUATING
7	FS1-9005-000CN	1	S	SCREW, STEPPED, M4
8	WC2-0063-000CN	1		MICROSWITCH

S = special order part

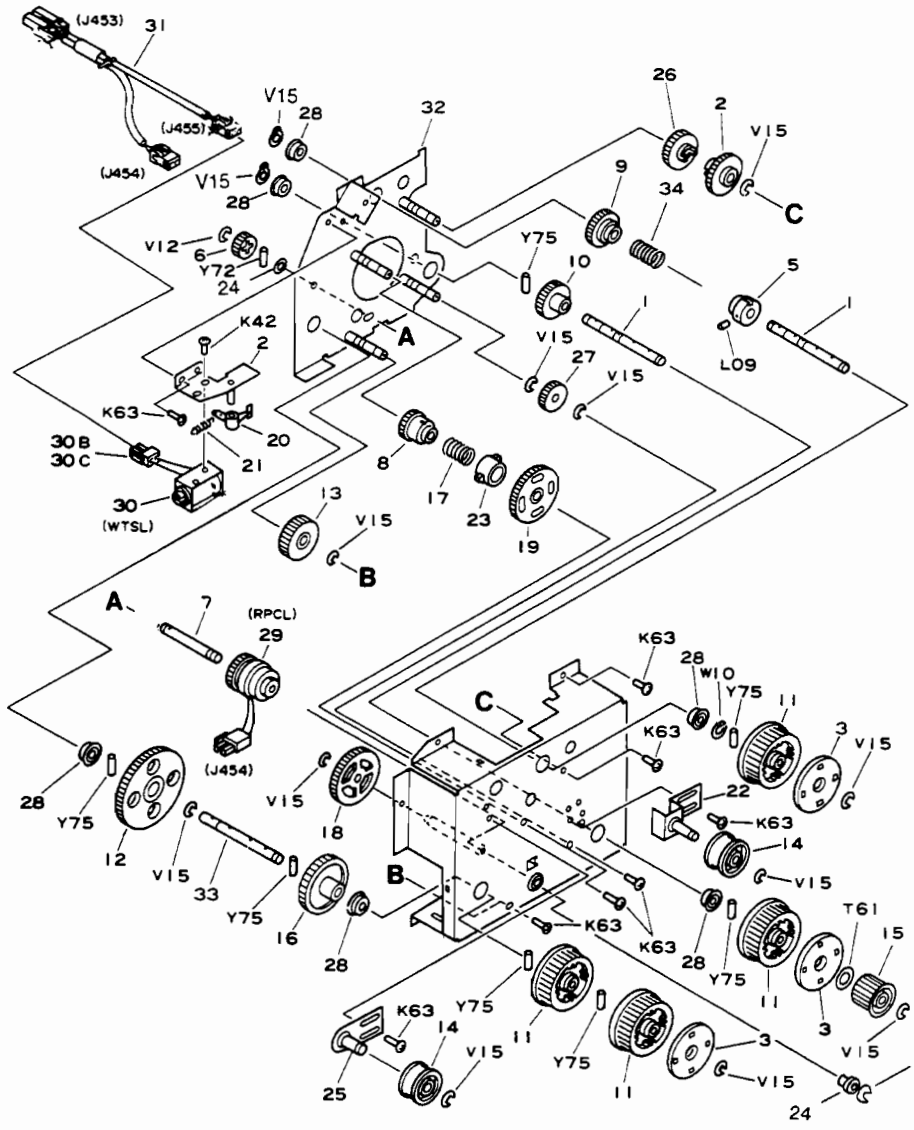

Figure 8d-5. Drive Assembly

Table 8d-5. Drive Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0434-000CN	1		DRIVE ASSEMBLY
1		2	N	SHAFT
2		1	N	GEAR, 35T
3	FA3-2790-000CN	3		FLANGE, PULLEY
5		1	N	DRUM, CLUTCH, DRIVEN
6		1	N	GEAR, 16T
7		1	N	SHAFT, CLUTCH
8		1	N	BAR, ADJUST
9		1	N	GEAR, 32T
10		1	N	GEAR, 27T
11	FS1-3057-000CN	4		PULLEY, 30T
12		1	N	GEAR, 64T
13		1	N	GEAR, 32T
14	FA3-2788-000CN	2		PULLEY, IDLER
15		1	N	PULLEY, 20T
16		1	N	GEAR, 32T
17		1	N	SPRING, TORSION
18		1	N	GEAR, 48T
19		1	N	GEAR, CLUTCH
22		1	N	PLATE, SPINDLE, PULLEY
23		1	N	RATCHET RING, ROTATION
24		1	N	BUSHING
25		1	N	PLATE, SPINDLE, PULLEY
26		1	N	GEAR, 30T
27		1	N	GEAR, 22T
28		6	N	BEARING, BALL
29	FH7-5051-000CN	1	S	CLUTCH, ELECTROMAGNETIC
30	RF1-1123-000CN	1		SOLENOID
31		1	N	WIRE ASSEMBLY
32		1	N	MOUNT
33		1	N	SHAFT, HARNESS
34		1	N	SPRING, CLUTCH

S = special order part

N = not available for replacement

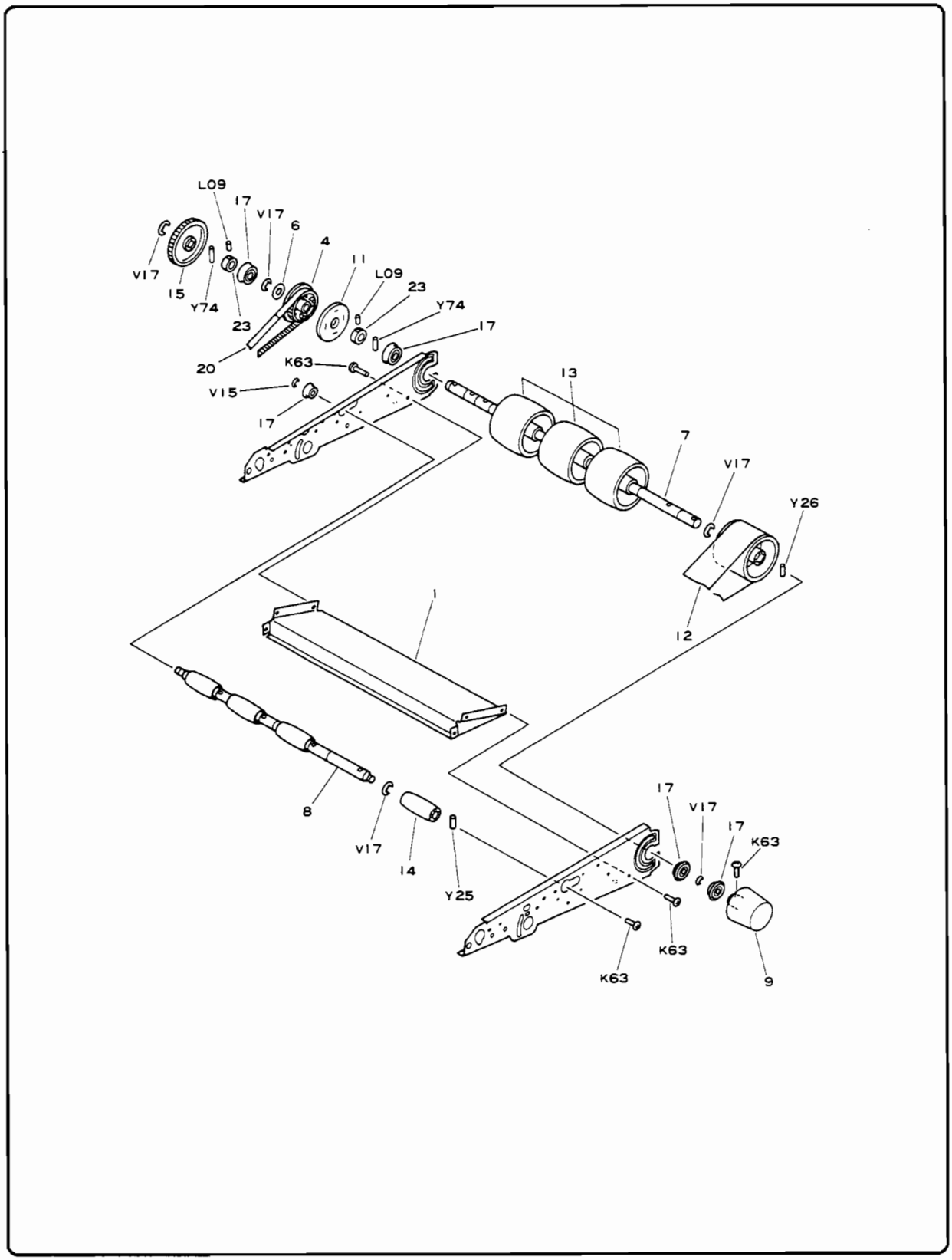

Figure 8d-6. Belt Feeder Assembly (1 of 2)

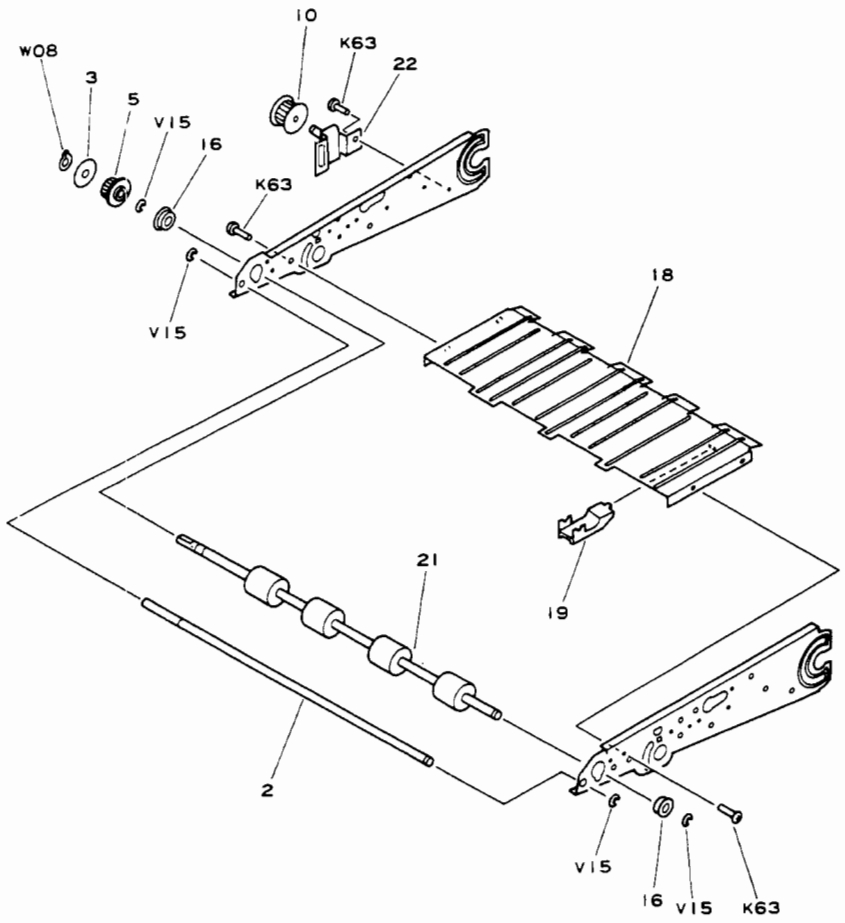

Figure 8d-6. Belt Feeder Assembly (2 of 2)

Table 8d-6. Belt Feeder Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0432-000CN	1		BELT FEEDER ASSEMBLY
1		1	N	GUIDE, PAPER
2		1	N	BAR
3		1	N	FLANGE, PULLEY
4		1	N	PULLEY, 29T
5		1	N	PULLEY, 10T
6		1	N	SHIM
7		1	N	SHAFT, PULLEY
8		1	N	SHAFT, PULLEY
9		1	N	KNOB
10		1	N	PULLEY
11		1	N	FLANGE, PULLEY
12	FA3-3196-000CN	4		BELT, FEED (1 SET OF 4 PIECES)
13		4	N	PULLEY, FEED BELT
14		4	N	PULLEY
15		1	N	GEAR, 61T
16		6	N	BEARING, BALL
17		4	N	BEARING, BALL
18		1	N	GUIDE
19		5	N	GUIDE, ROLLER, LOWER
20	XF9-0129-000CN	1		BELT, TIMING
21		1	N	ROLLER, PAPER FEED
22		1	N	PLATE, SPINDLE
23		2	N	COLLAR

N = not available for replacement

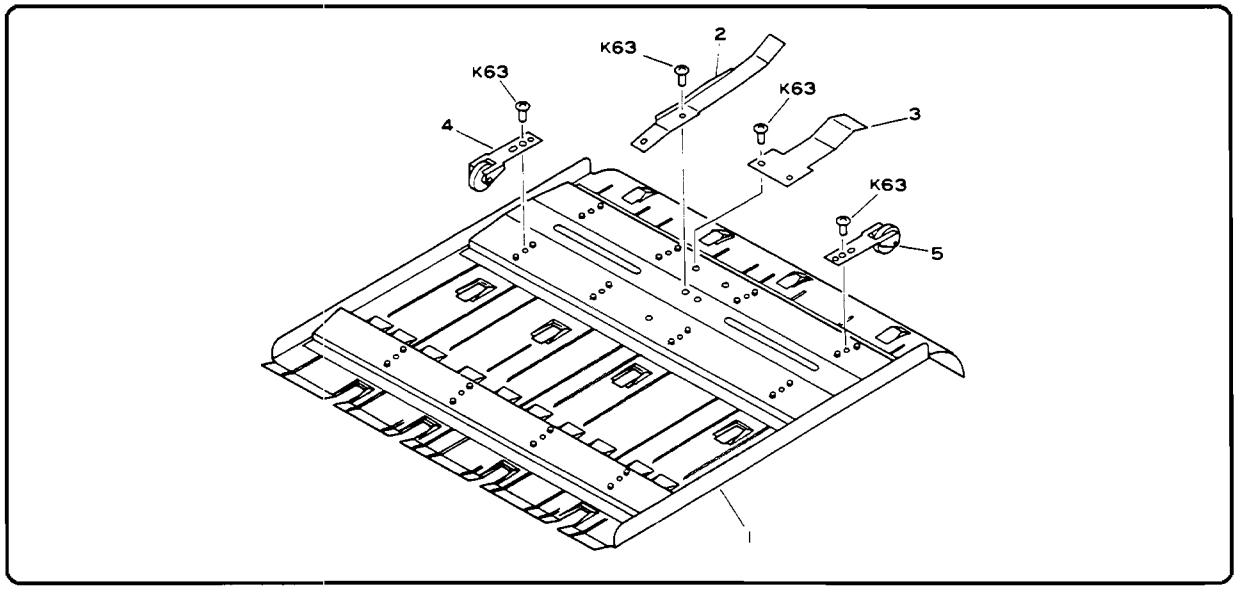

Figure 8d-7. Upper Guide Assembly

Table 8d-7. Upper Guide Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-5681-000CN	1	S	GUIDE, UPPER
2	FA3-5682-000CN	1	S	PLATE, GUIDE UPPER
3	FA3-5683-000CN	1	S	ARM, SWITCH ACTUATING
4	FF1-4771-000CN	8		ROLLER/ARM UNIT
5	RF1-0607-000CN	4		ROLLER/ARM UNIT

S = special order part

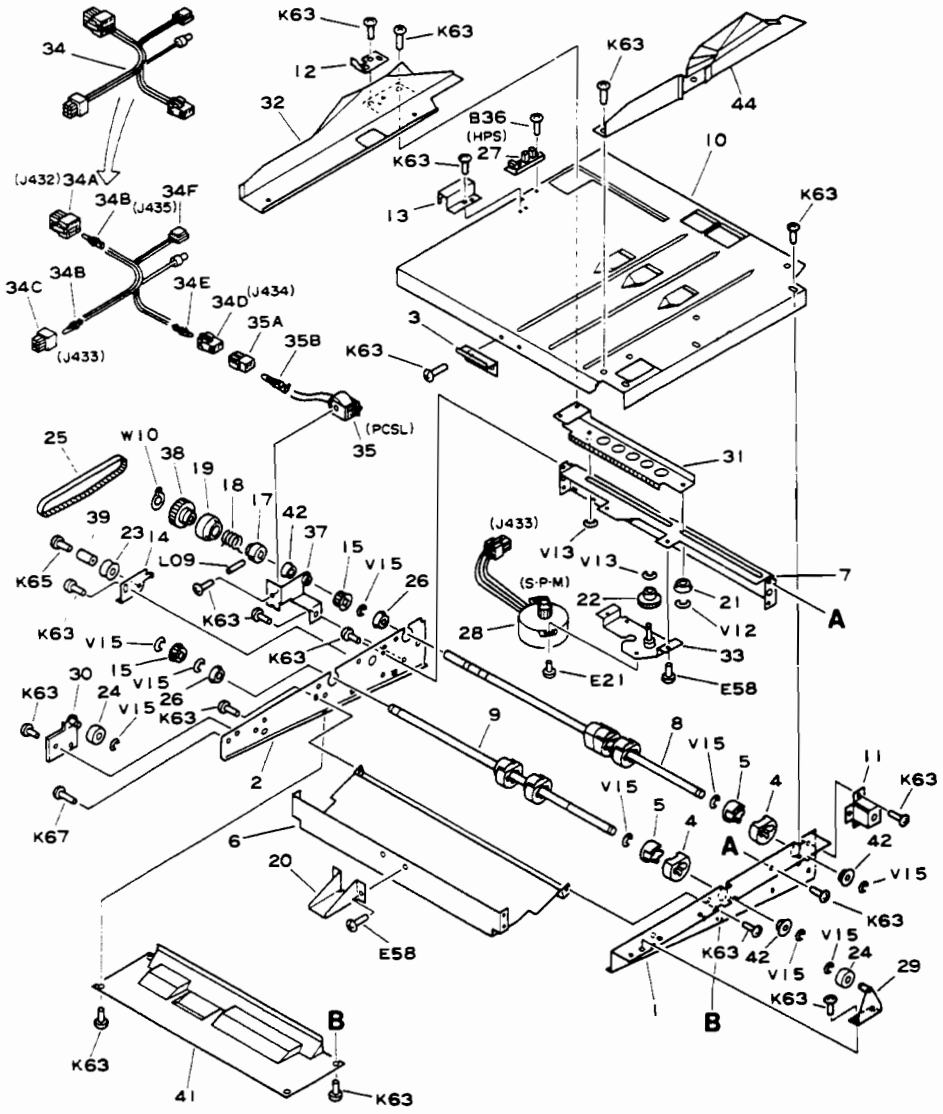

Figure 8d-8. Holding Tray Assembly

Table 8d-8. Holding Tray Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0433-000CN	1		HOLDING TRAY ASSEMBLY
1		1	N	PLATE, FRAME, FRONT
2		1	N	PLATE, FRAME, REAR
3		1	N	PLATE
4	RA1-1516-000CN	7		HUB, ROLLER
5	RA1-1517-000CN	7		ROLLER
6		1	N	CROSSMEMBER, TRAY
7		1	N	MOUNT, MOTOR
8		1	N	SHAFT, ROLLER, A
9		1	N	SHAFT, ROLLER, B
10		1	N	TRAY, HOLDING
11		1	N	PIVOT, HOLDING TRAY
12		1	N	PLATE, ADJUSTMENT
13		1	N	COVER, CONNECTOR
14		1	N	PLATE, IDLER PULLEY MOUNT
15		2	N	PULLEY, 28T
16		1	N	SPRING, COMPRESSION
17		2	N	DRUM, CLUTCH, DRIVEN
18		1	N	SPRING, TORSION CLUTCH
19		1	N	RING, CLUTCH ACTION
20		2	N	PLATE, ROLLER CONTACT
21		3	N	SPACER
22		1	N	GEAR, 44T/16T
23		1	N	PULLEY, IDLER, TIMING BELT
24		2	N	ROLLER
25	XF9-0089-000CN	1		BELT, TIMING

N = not available for replacement

Table 8d-8. Holding Tray Assembly (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
26		2	N	BEARING, BALL
27	FH7-7023-000CN	1		PHOTO-INTERRUPTER UNIT
28	FH7-1283-000CN	1		MOTOR
29		1	N	PLATE, SPINDLE, FRONT
30		1	N	PLATE, SPINDLE, REAR
31		1	N	PLATE, RACK
32		1	N	GUIDE, REAR
33		1	N	PLATE, SPINDLE
34		1	N	WIRE HARNESS
34A		1	N	CONNECTOR, 12P, MALE
34B		10	N	PIN, CONTACT, 22-26AWG
34C		1	N	CONNECTOR, 6P, FEMALE
34D		1	N	CONNECTOR, 2P, FEMALE
34E		7	N	SOCKET, CONTACT, 22-26AWG
34F		1	N	CONNECTOR, 3P
35	FF1-5274-000CN	1		SOLENOID
35A		1	N	CONNECTOR, 2P, MALE
35B		2	N	PIN, CONTACT, 22-26AWG
36		1	N	SCREW, INSUL.
37		1	N	MOUNT, CLUTCH
38		1	N	GEAR, 27T
39		1	N	SPACER
41		1	N	COVER, LOWER
42		3	N	BUSHING
43		1	N	ROLLER, LEAF SPRING
44		1	N	GUIDE, FRONT

N = not available for replacement

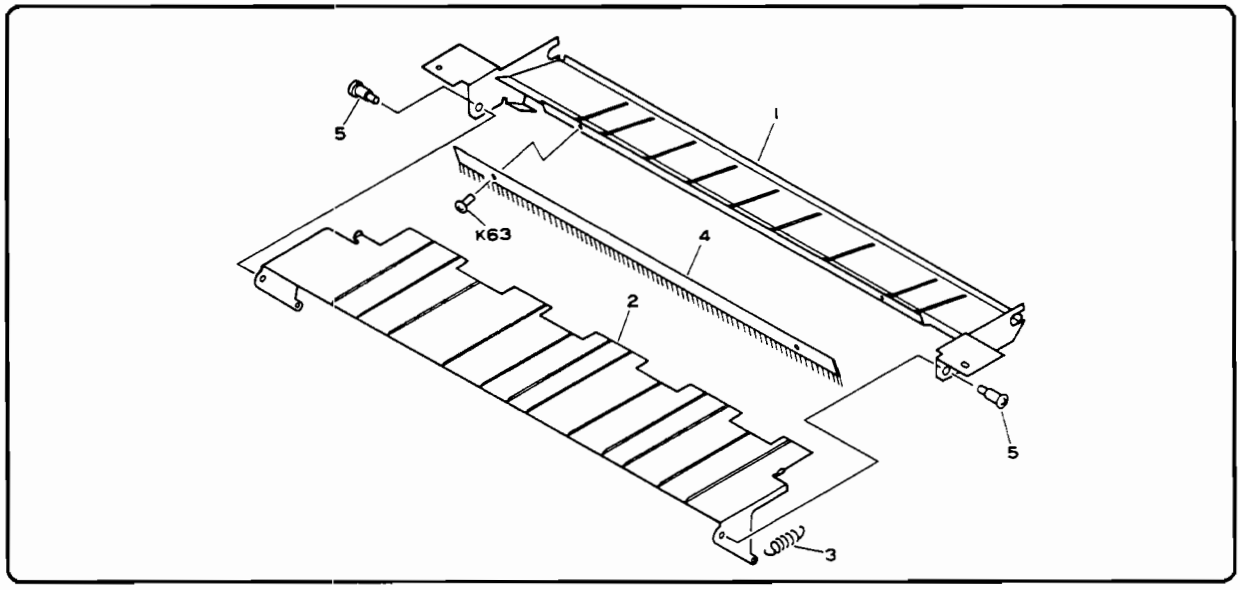

Figure 8d-9. Middle Guide Assembly

Table 8d-9. Middle Guide Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	FA3-5611-000CN	1	S	GUIDE, UPPER
2	RF1-0606-000CN	1	S	GUIDE, LOWER
3	FS2-2196-000CN	2	S	SPRING, TENSION
4	RA1-7155-000CN	1		ELIMINATOR, STATIC CHARGE
5	FS1-9004-000CN	2	S	SCREW, STEPPED, M4

S = special order part

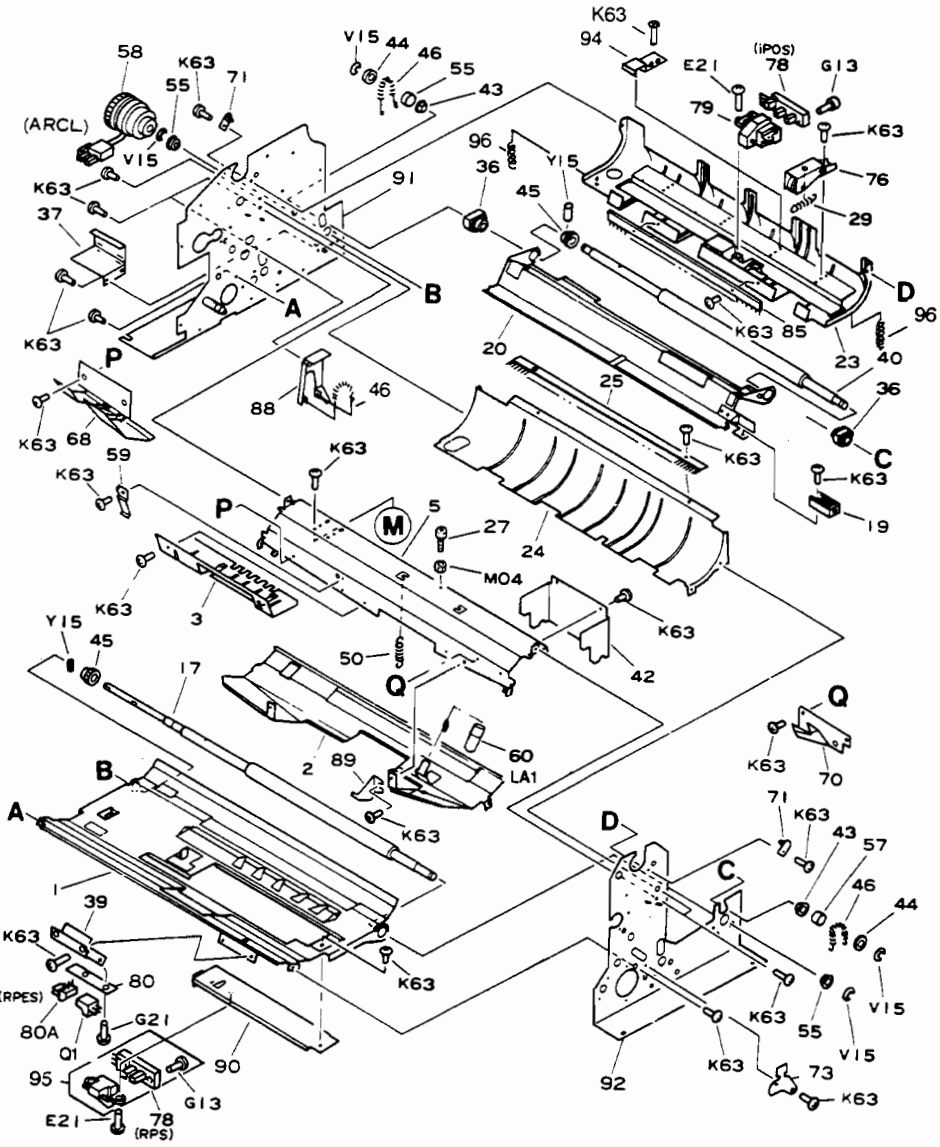

Figure 8d-10. Paper Feed Assembly (1 of 2)

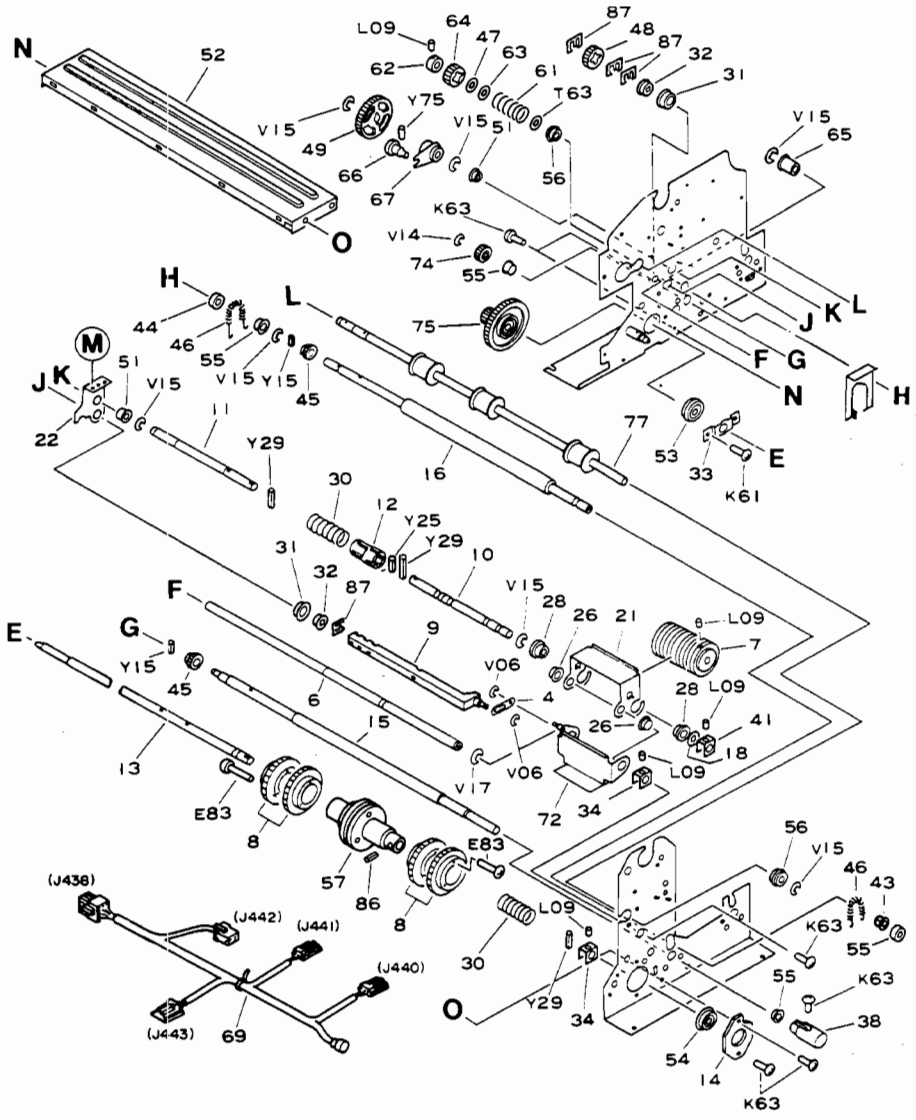

Figure 8d-10. Paper Feed Assembly (2 of 2)

Table 8d-10. Paper Feed Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0441-020CN	1		PAPER FEED ASSEMBLY
1		1	N	GUIDE, LOWER
2		1	N	GUIDE, ENTRY
3		1	N	GUIDE
4		1	N	LINK
5		1	N	CROSSMEMBER
6	FA3-3265-000CN	1	S	SHAFT, WEIGHT
7	FA3-3268-030CN	1		ROLLER, UPPER SEPARATION
8	FA3-3269-000CN	4		ROLLER, STACK LOWER SEPARATION
9	FF1-6754-000CN	1	S	CRANK, WEIGHT-RAISING
10	FA3-3274-000CN	1	S	SHAFT, UPPER SEP. ROLLER
11	FA3-3275-000CN	1	S	SHAFT, DRIVE, UP. SEP. ROLLER
12	FA3-3276-000CN	1	S	COUPLING
13	FA3-3277-000CN	1	S	SHAFT, DRIVE, LOW, SEP. ROLLER
14	FA3-3279-000CN	1	S	RETAINER, BEARING
15	FA3-3280-000CN	1	S	ROLLER, PAPER FEED
16	FA3-3281-000CN	1	S	ROLLER, PAPER FEED
17	FA3-5651-000CN	1	S	ROLLER, REGISTRATION
18	FS1-6089-000CN	1	S	WASHER
19	FA3-3285-000CN	1	S	KNOB
20		1	N	GUIDE, UPPER
21	FA3-3288-000CN	1	S	MOUNT, UPPER SEP. ROLLER
22	FA3-3289-000CN	1	S	MOUNT, UPPER SEP. ROLLER
23		1	N	GUIDE
24		1	N	GUIDE
25	RA1-6416-020CN	1	S	ELIMINATOR, STATIC CHARGE
26	FS1-1338-000CN	2	S	BUSHING
27	FA3-3318-000CN	1	S	SCREW, M4X19, SOCKET HEAD CAP
28	XG3-8014-403CN	2	S	BUSHING
29	FS2-2069-000CN	3	S	SPRING TENSION
30	FS2-2063-000CN	2	S	SPRING, COMPRESSION

S = special order part

N = not available for replacement

Table 8d-10. Paper Feed Assembly (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
31	FS1-1237-000CN	2	S	BUSHING
32	FA2-8244-000CN	2	S	BUSHING
33	FA3-3299-000CN	1	S	RETAINER, BEARING
34	FA4-6276-000CN	2	S	RETAINER
35	FS1-6112-000CN	2	S	SPACER
36	FA3-3302-000CN	2	S	CAM. GUIDE
37		1	N	PLATE, BRAKE MOUNTING
38	FA3-3287-000CN	1	S	KNOB
39	FA3-3304-000CN	1	S	MOUNT, PHOTO-INTERRUPTER
40	FA3-5653-000CN	1	S	ROLLER, REGISTRATION
41	FA4-6267-000CN	1	S	RETAINER
42	FA3-3307-000CN	1	S	COVER, BULB
44	FS1-6107-000CN	4	S	SPACER
45	FS2-0150-000CN	4	S	GEAR, 32T
46	FS2-2065-000CN	4	S	SPRING, TENSION
47	RA1-1575-000CN	2	S	ARM, FRICTION
48	FS1-0916-000CN	1	S	GEAR, 22T
49	FS1-0218-000CN	1	S	GEAR, 48T
50	FS1-2011-000CN	2	S	SPRING, TENSION
51	FS1-1119-000CN	2	S	BUSHING
52		1	N	CROSSMEMBER
53	XG9-0013-000CN	1	S	BEARING, BALL
54	XG9-0016-000CN	1	S	BEARING, BALL
55	XG3-8012-355CN	4	S	BEARING, BALL
56	XG9-0094-000CN	2	S	BEARING, BALL
57	FA3-3308-000CN	1	S	HUB ROLLER
58	FH7-5051-000CN	1	S	CLUTCH, ELECTROMAGNETIC
59	FA3-3316-000CN	1	S	SPRING, LEAF
60	WG1-0493-000CN	1		LAMP, 6.3V 50MMA (LA1)
61	RS1-2063-000CN	1	S	SPRING
62	87-4383-000CN	1	S	COLLAR

S = special order part

N = not available for replacement

Table 8d-10. Paper Feed Assembly (continued)

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
63	XD9-0071-000CN	2	S	WASHER
64	FS1-0483-000CN	1	S	CABLE, HARNESS
65	FS1-1343-000CN	1	S	BUSHING
66	FS1-9073-000CN	1	S	SCREW, STEPPED
67	FF1-5357-000CN	1	S	ARM, STOP
68		1	N	PLATE, GUIDE, AUXILIARY (1)
69	RF1-0596-000CN	1	S	CABLE, HARNESS
70		1	N	PLATE, GUIDE, AUXILIARY (2)
71	FF1-4759-000CN	2	S	PLATE, PIN
72	FF1-4736-000CN	1	S	WEIGHT
73	FA3-5654-000CN	1		PLATE BLANKING
74	FF1-4811-000CN	1	S	GEAR, 16T
75	FS2-0103-000CN	1	S	GEAR, 60T/16T
76	FF1-5090-000CN	3	S	ROLLER/ARM
77	RA1-1531-000CN	1	S	SHAFT, FEEDER ROLLER
78	FH7-7023-000CN	2		PHOTO-INTERRUPTER UNIT
79	RG1-0424-020CN	2		CASE, SENSOR
80	FG1-3618-000CN	1		PCA, RESIDUAL PAPER SENSING
80A	WS3-0531-000CN	1		PIN ASSEMBLY, 3P
80B	WG8-0108-000CN	1		PHOTO SENSOR (Q1)
82	XG2-8012-357CN	2	S	BEARING
85	RA1-6416-000CN	1	S	ELIMINATOR, STATIC CHARGE
86	XD3-1300-182CN	1	S	PIN, SPRING
87		4	N	RETAINER
88		1	N	PLATE, SPRING HANGER
89		1	N	PLATE, RIB
90		1	N	PLATE, GUIDE, SENSOR
91		1	N	PLATE, REAR, FRAME
92		1	N	PLATE, FRONT, FRAME
93		1	N	PLATE, SPRING HANGER
94		1	N	PLATE, COVER
95	FG1-3612-000CN	1	S	SENSOR ASSEMBLY
96		1	N	SPRING TENSION

S = special order part

N = not available for replacement

NOTES:

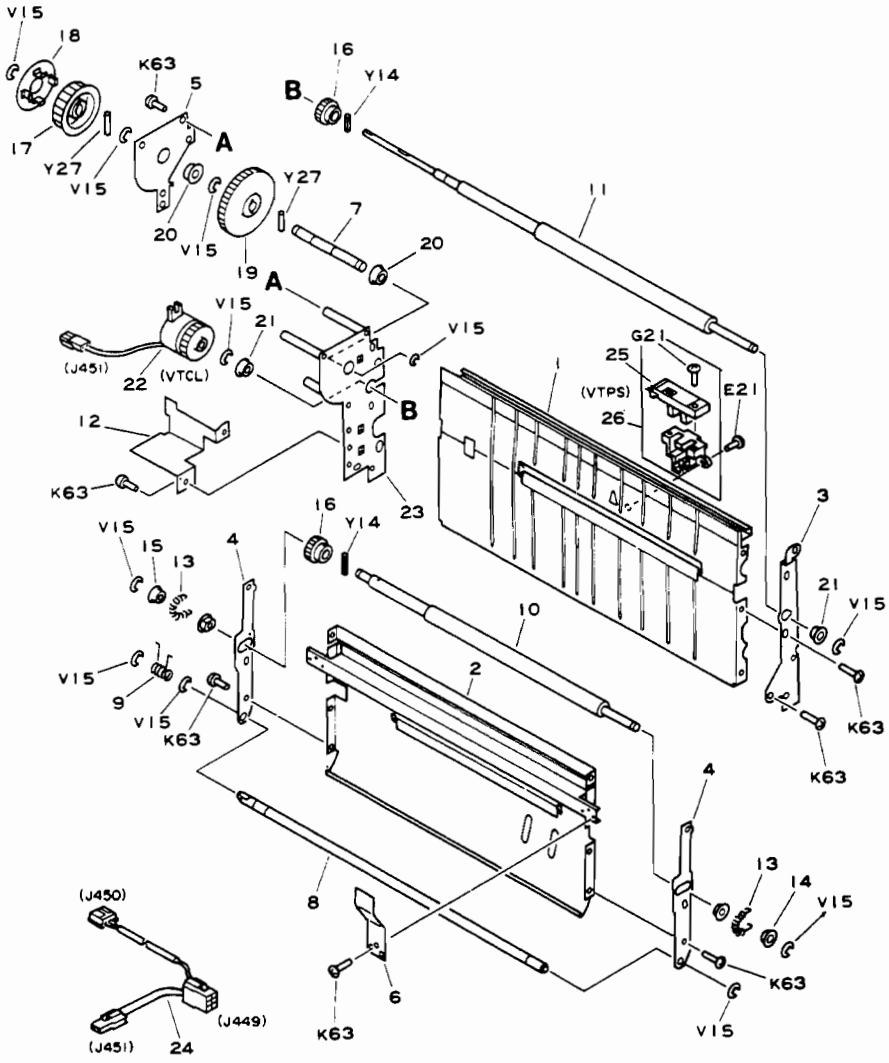

Figure 8d-11. Vertical Pass Assembly

Table 8d-11. Vertical Pass Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0648-000CN	1		VERTICAL PASS ASSEMBLY
1		1	N	GUIDE
2		1	N	GUIDE, PIVOTED
3		1	N	GUIDE, PLATE (F)
4		2	N	GUIDE, PLATE
5		1	N	PLATE
6	FA3-5697-000CN	2	S	SPRING, LEAF
7	FA3-5698-000CN	1	S	AXLE, FEED ROLLER DRIVE GEAR
8	FA3-5699-000CN	1	S	AXLE, VERT. FEED GUIDE MOUNT
9	FA3-5700-000CN	1	S	SPRING, TORSION
10	FA2-1878-000CN	1		ROLLER, VERTICAL FEED GUIDE
11	FA3-5702-000CN	1		ROLLER, VERTICAL FEED GUIDE
12		1	N	MOUNT, CONNECTOR
13	FS1-2370-000CN	2	S	SPRING, TENSION
14	FS1-1157-000CN	1	S	BUSHING
15	FA1-0056-000CN	1	S	BUSHING
16	96-0093-000CN	2	S	GEAR, 32T
17	FS1-3057-000CN	1	S	PULLEY, 30T
18	FA3-2790-000CN	1	S	FLANGE, PULLEY
19	FS2-0147-000CN	1	S	GEAR, 64T
20	XG9-0094-000CN	2	S	BUSHING
21	XG3-8012-355CN	2	S	BUSHING
22	FH7-5051-000CN	1	S	CLUTCH, ELECTROMAGNETIC
23		1	N	GUIDE PLATE (R)
24	RF1-0594-000CN	1	S	WIRE HARNESS
25	FH7-7023-000CN	1		PHOTO-INTERRUPTER
26	FG1-3612-000CN	1		SENSOR ASSEMBLY

S = Special order part

N = not available for replacement

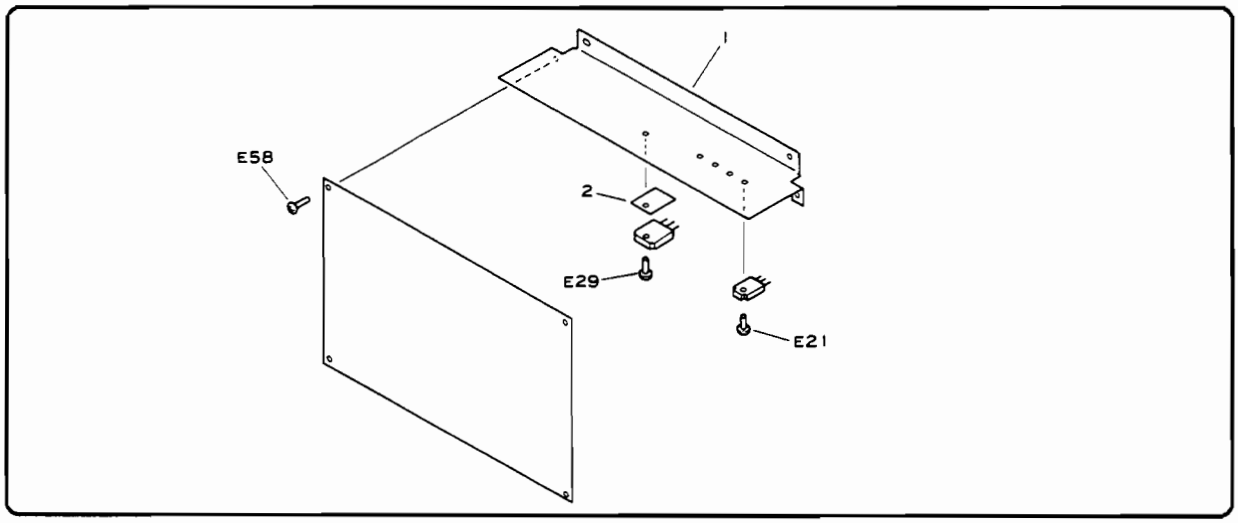

Figure 8d-12. DU Driver PCA Assembly

Table 8d-12. DU Driver PCA Assembly

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
	RG1-0547-000CN	1		DU DRIVER PCA

8e

Parts Lists & Illustrations
FORMATTER & I/O AREA ASSEMBLIES

Figures

Tables

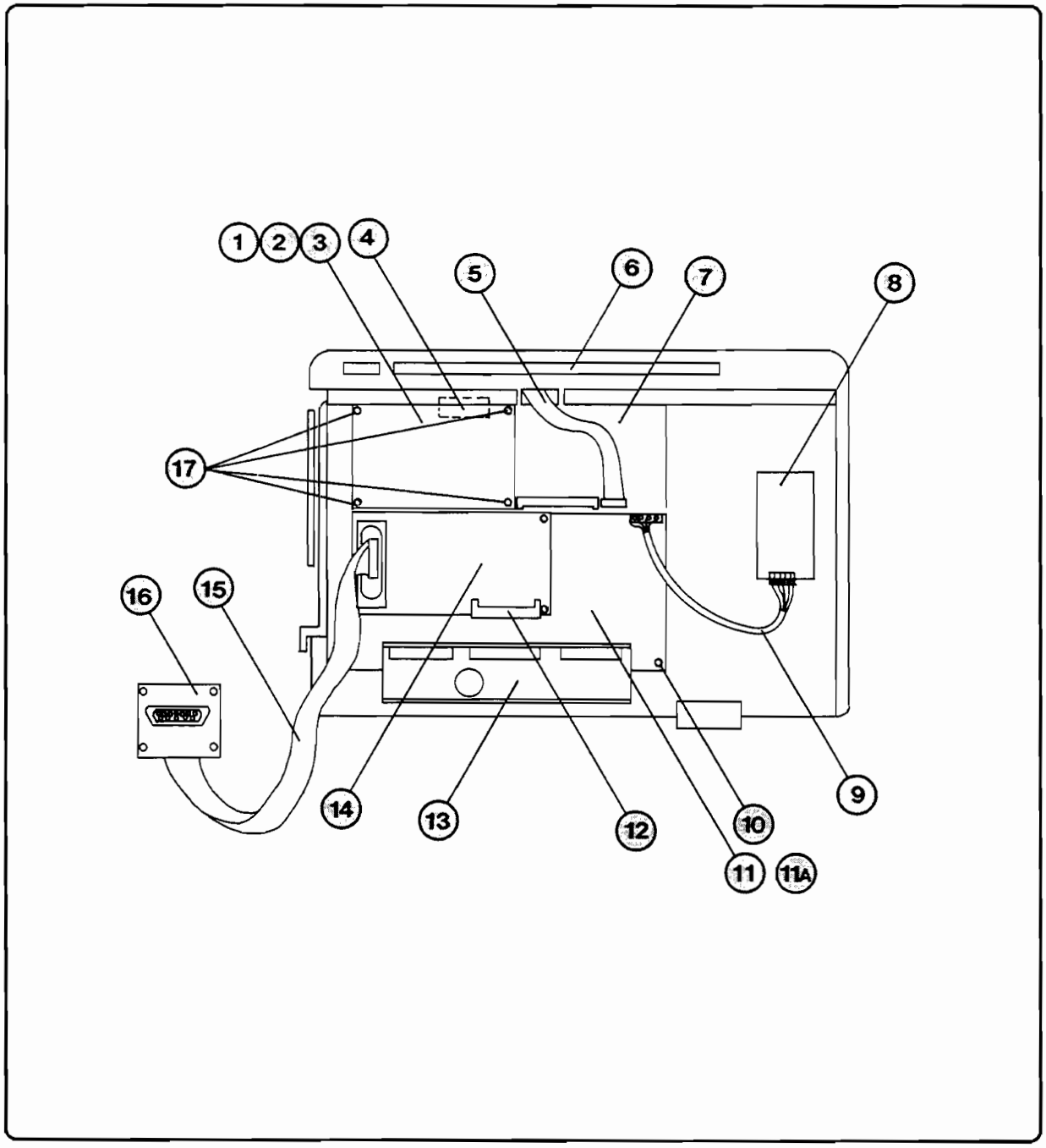

Figure 8e-1. Formatter & I/O Area Assemblies

Table 8e-1. Formatter & I/O Area Assemblies

REF	PART NUMBER	QTY	NOTES	DESCRIPTION
1	02684-60007	1		PCA, MEMORY
2	1818-4036	A/R		CHIP, MEMORY
3	02684-60131	A/R		CHIP, PAL
4	RH2-5039-000CN	1		CABLE, DATA (E/I TO DC)
5	02684-60107	1		CABLE, FRONT PANEL
6	02684-60100	1		ASSY, CONTROL PANEL
6a	02684-40003	1		KEYCAP: ONLINE
6b	02684-40004	1		KEYCAP: FORM FEED
6c	02684-40005	1		KEYCAP: SHIFT
6d	02684-40006	1		KEYCAP: MENU
6e	02684-40007	1		KEYCAP: UP ARROW
6f	02684-40008	1		KEYCAP: DWN ARROW
6g	02684-40009	1		KEYCAP: SELFTEST
7	02684-60002	1		PCA, ENGINE INT
8	02684-60101	1		ASSY, POWER SUPPLY
9	02684-60102	1		ASSY, POWER SUPPLY CA
10	XB1-1300-807CN	17		SCREW, PCA MOUNT M3X8
11	02684-60001	1		PCA, FORMATTER
11A	1818-4093	1		NVR Chip - U54
12	02684-60006	1		PCA, I/O CARD CONN
13	02684-60003	1		PCA, FONT CARTRIDGE CONN
14	(see below)	1		**PCA, I/O:**
14	5062-1703			-RS232/422 (SERIAL)
14	5062-0478			-CENTRONICS
14	5061-1715			-DATAPRODUCTS (L/L)
14	5061-1714			-DATAPRODUCTS (S/L)
15	(see below)	1		**CABLE, I/O:**
15	02684-60104			-RS232/422 (SERIAL)
15	02684-60105			-CENTRONICS
15	02684-60106			-DATAPRODUCTS
16	(see below)	1		**PLATE, I/O ADAPTER:**
16	02684-00003			-RS232/422 (SERIAL)
16	02684-00002			-CENTRONICS
16	02684-00004			-DATAPRODUCTS
17	9515-1888	5		SCREW, PCA MOUNT M3X45

A/R = As required (based on number of memory upgrade kits).

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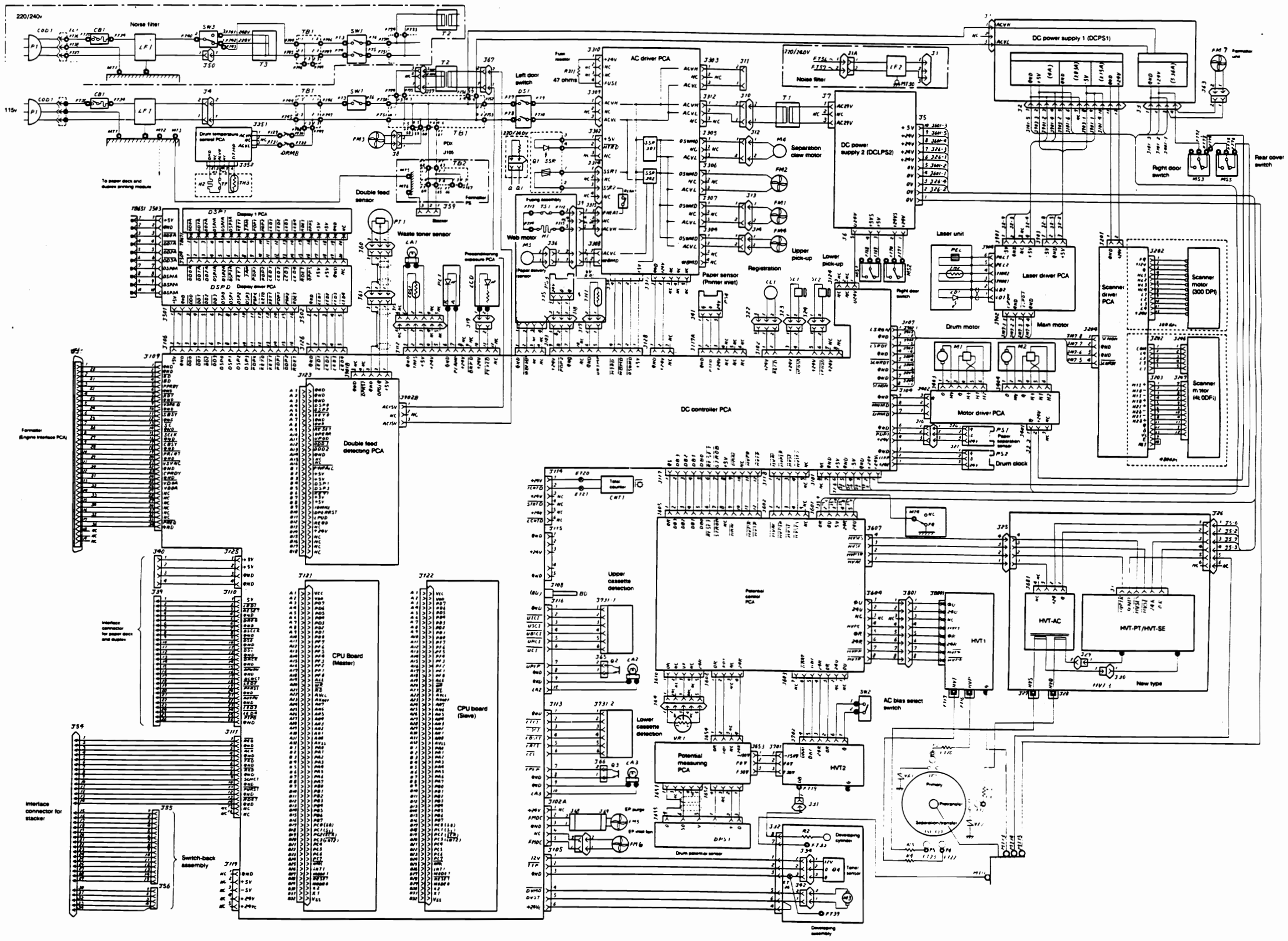
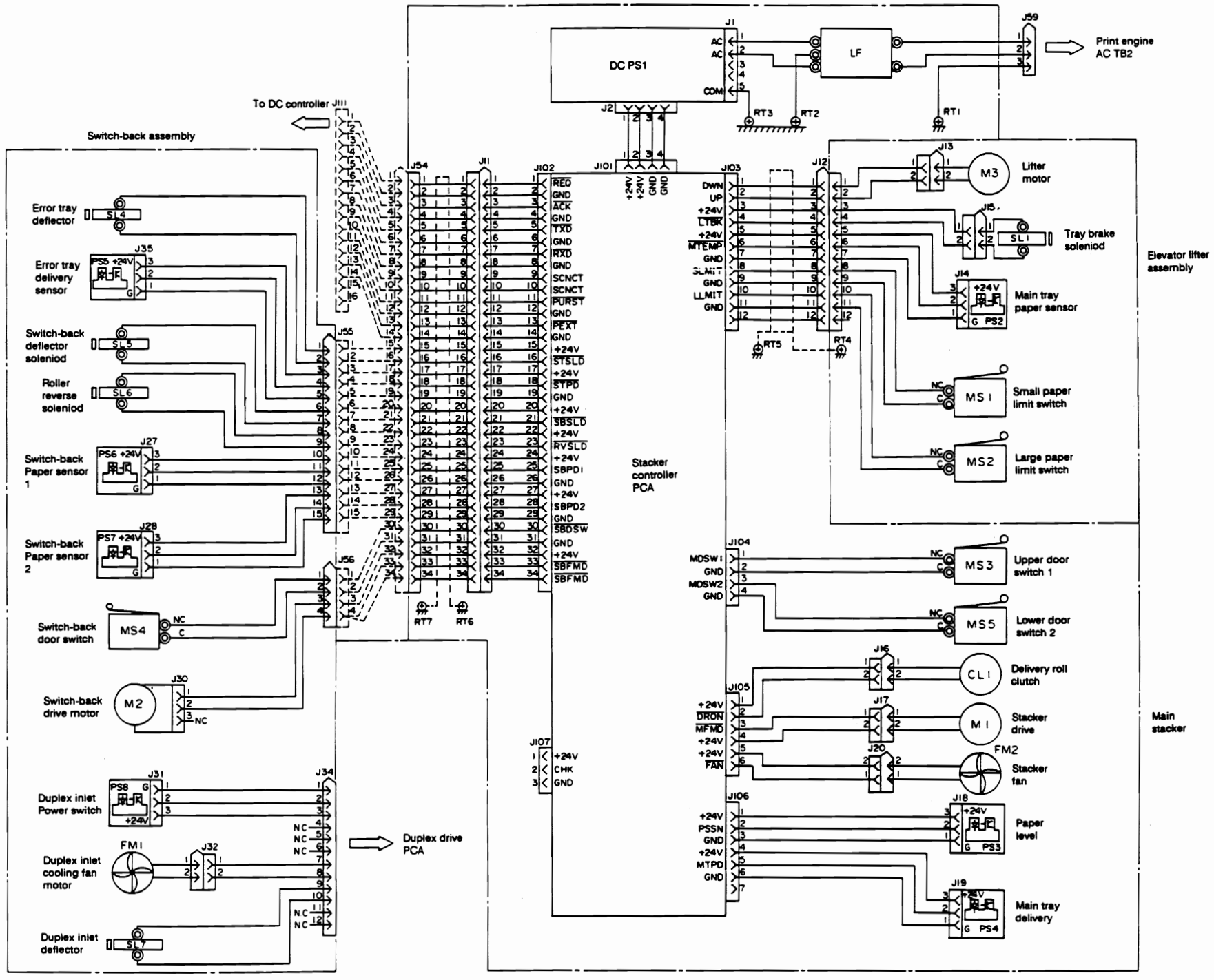
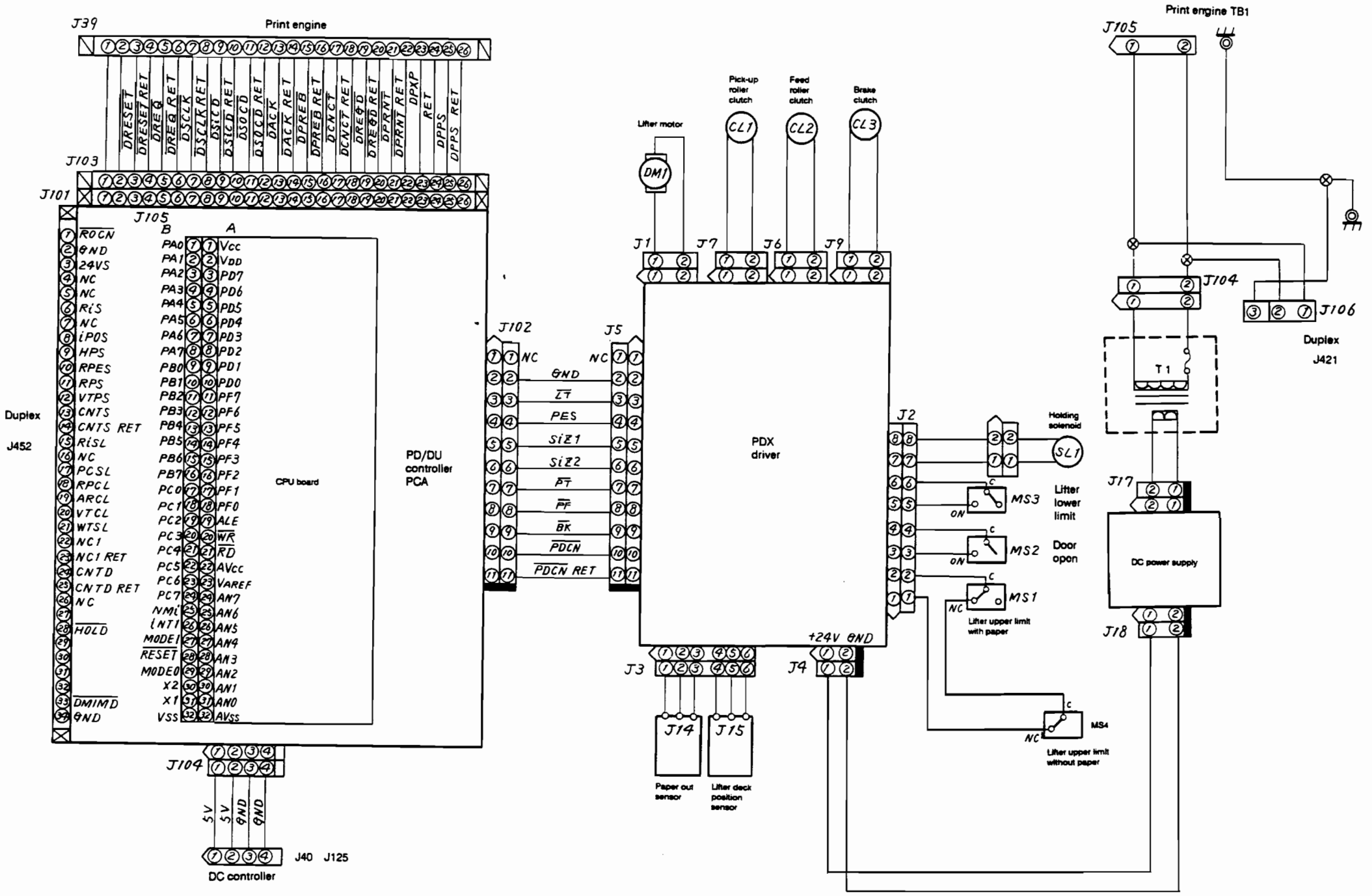
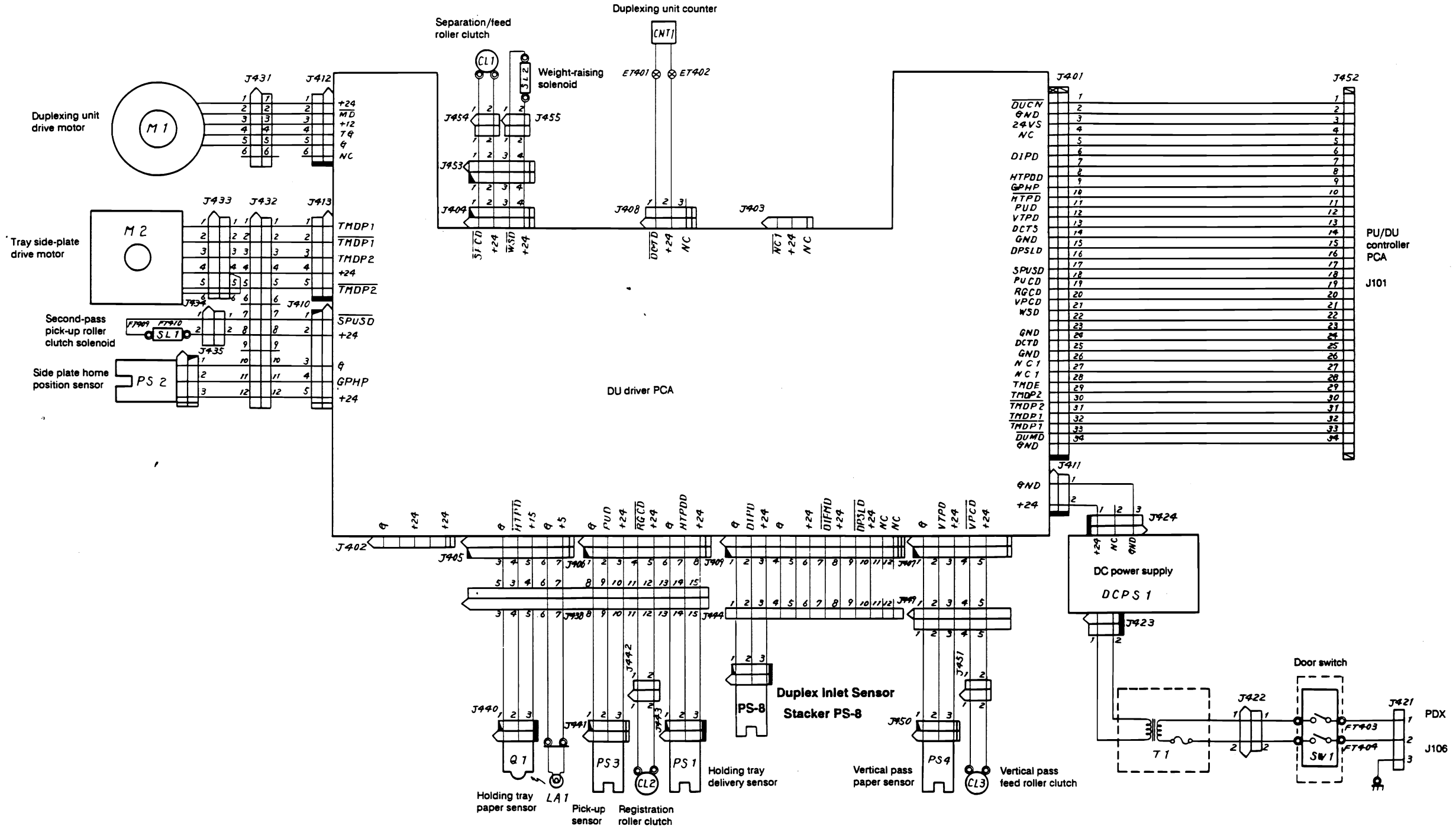
Wiring Diagrams

Contents

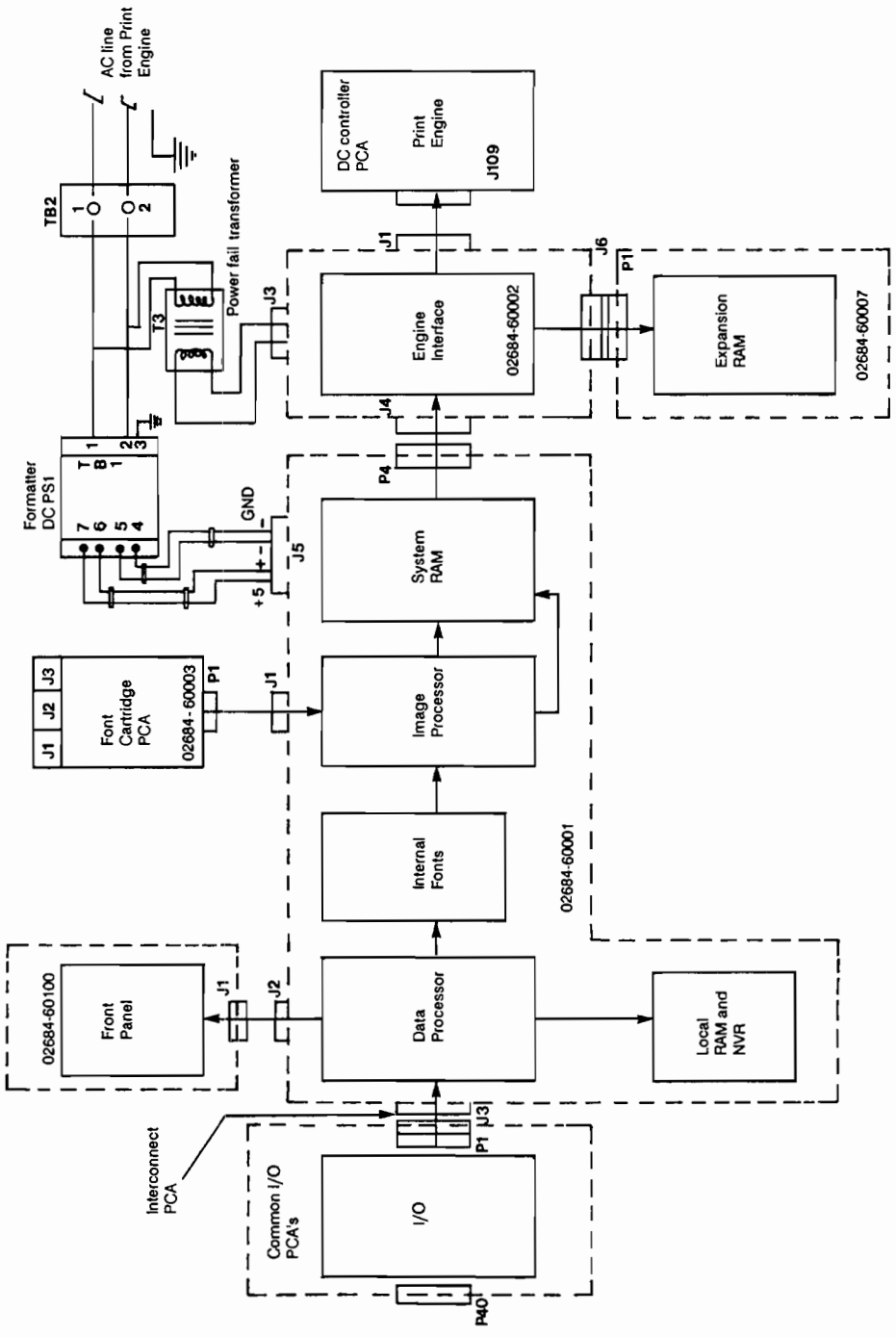

220/240v
115v
Noise filter
DC power supply 1 (DCPS1)
DC power supply 2 (DCLPS2)
AC driver PCA
DC controller PCA
Left door switch
Double feed sensor
Waste toner sensor
Web motor
Paper sensor (Printer inlet)
Registration
Upper pick-up
Lower pick-up
Separation claw motor
Laser unit
Laser driver PCA
Drum motor
Main motor
Motor driver PCA
Scanner driver PCA
Scanner motor (300 DPI)
Scanner motor (400 DPI)
Right door switch
Rear cover switch
Display 1 PCA
Display 2 PCA
Drum temperature sensor PCA
Formatter (Engine interface PCA)
Double feed detecting PCA
CPU Board (Master)
CPU board (Sleve)
Interface connector for paper deck and duplex
Interface connector for stacker
Switch-back assembly
Upper cassette detection
Lower cassette detection
Potential control PCA
Potential measuring PCA
HVT1
HVT2
HVT-AC
HVT-PT/HVT-SE
New type
AC bias select switch
Developing cylinder
Toner sensor
Developing assembly
Drum assembly sensor
Drum clock


To DC controller J11
Switch-back assembly
Error tray deflector
Error tray delivery sensor
Switch-back deflector soleniod
Roller reverse soleniod
Switch-back Paper sensor 1
Switch-back Paper sensor 2
Switch-back door switch
Switch-back drive motor
Duplex inlet Power switch
Duplex inlet cooling fan motor
Duplex inlet deflector
Duplex drive PCA
DC PS1
LF
Print engine AC TB2
Stacker controller PCA
Lifter motor
Tray brake soleniod
Elevator lifter assembly
Main tray paper sensor
Small paper limit switch
Large paper limit switch
Upper door switch 1
Lower door switch 2
Delivery roll clutch
Stacker drive
Stacker fan
Paper level
Main tray delivery
Main stacker


J39
Print engine
J103
J101
J105
DRESET
DRESET RET
DREQ
DREQ RET
DSCLK
DSCLK RET
DSTD
DSTD RET
DSTCD
DSTCD RET
DACK
DACK RET
DPREB
DPREB RET
DCNCT
DCNCT RET
DREQD
DREQD RET
DPRNT
DPRNT RET
DPXP
RET
DPPS
DPPS RET
B
A
ROCN
GND
24VS
NC
NC
RES
NC
PPOS
HPS
RPES
RPS
VTPS
CNTS
CNTS RET
RISL
NC
PCSL
RPCL
ARCL
VTCL
WTSL
NC1
NC1 RET
CNTD
CNTD RET
NC
HOLD
DMIMD
GND
PA0 PA1 PA2 PA3 PA4 PA5 PA6 PA7
PB0 PB1 PB2 PB3 PB4 PB5 PB6 PB7
PC0 PC1 PC2 PC3 PC4 PC5 PC6 PC7
NMI
INT1
MODE1
RESET
MODE0
X2
X1
VSS
Vcc
VDD
PD7 PD6 PD5 PD4 PD3 PD2 PD1 PD0
PF7 PF6 PF5 PF4 PF3 PF2 PF1 PF0
ALE
WR
RD
AVcc
VAREF
AN7 AN6 AN5 AN4 AN3 AN2 AN1 AN0
AVSS
Duplex
J452
CPU board
PD/DU controller PCA
J102
J5
NC
GND
LT
PES
SIZ1
SIZ2
PT
PF
BK
PDCN
PDCN RET
PDX driver
Lifter motor
DM1
Pick-up roller clutch
CL1
Feed roller clutch
CL2
Brake clutch
CL3
J1
J7
J6
J9
J3
J4
+24V GND
J2
Holding solenoid
SL1
MS3
Lifter lower limit
ON
MS2
Door opon
MS1
Lifter upper limit with paper
NC
MS4
Lifter upper limit without paper
J14
J15
Paper out sensor
Lifter deck position sensor
J104
5V
5V
GND
GND
J40 J125
DC controller
Print engine TB1
J105
J104
J106
Duplex
J421
T1
J17
DC power supply
J18


Duplexing unit drive motor
M1
Tray side-plate drive motor
M2
Second-pass pick-up roller clutch solenoid
SLT
Side plate home position sensor
PS2
Separation/feed roller clutch
CL1
Weight-raising solenoid
SL2
Duplexing unit counter
CNT1
ET401
ET402
DU driver PCA
PU/DU controller PCA
J101
DC power supply
DCPS1
Duplex Inlet Sensor
Stacker PS-8
PS-8
Holding tray paper sensor
Q1
LA1
Pick-up sensor
PS3
Registration roller clutch
CL2
PS1
Holding tray delivery sensor
Vertical pass paper sensor
PS4
Vertical pass feed roller clutch
CL3
Door switch
SW1
T1
PDX
J106

Formatter/Engine Interface/Display



How to read the part numbers

Screw part numbers (except socket head cap screws)

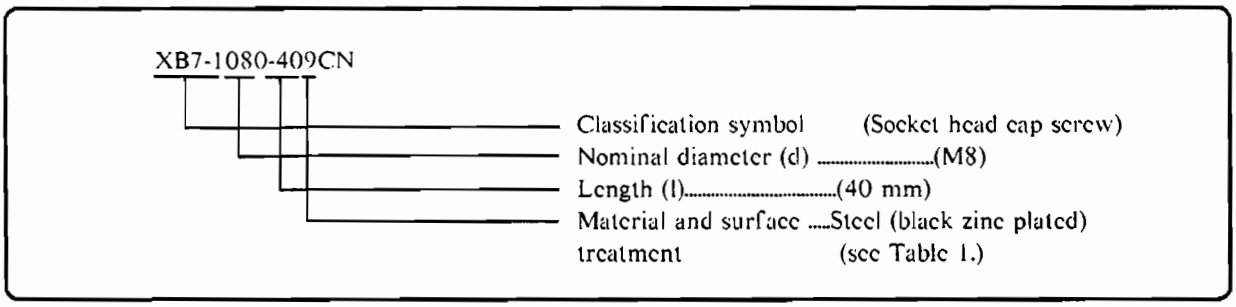


Figure B-2. Machine Screw Part Numbers

Socket head cap screw part numbers

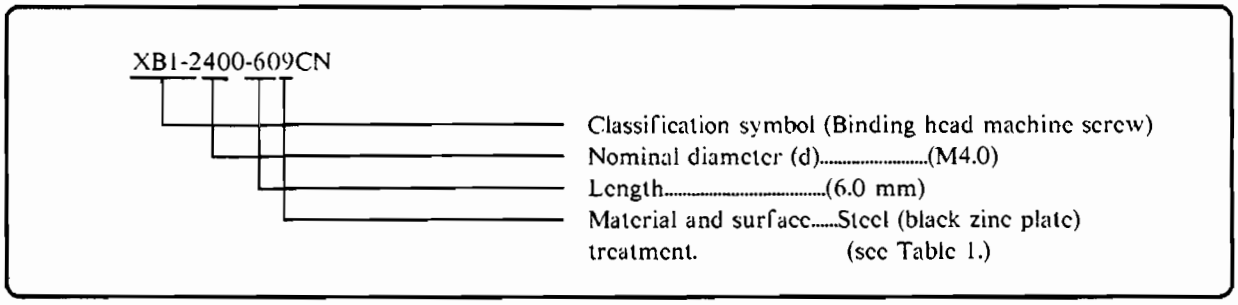


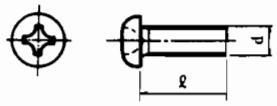
Figure B-3. Socket Head Cap Screw Part Numbers

Table B-1. Screw Material and Surface Treatment

No.	Material	Surface Treatment	Color
1	Stainless	Blackened	Black
2	Stainless	Without surface treatment	Silver
3	Brass	Nickel plated	Silver
4	Brass	Black nickel plated	Black
5	Steel	Zinc plated	Yellow
6	Steel	Nickel and chrome plated	Silver
7	Steel	Nickel plated	Silver
8	Steel	Phosphated	Black
9	Steel	Black zinc plated	Black

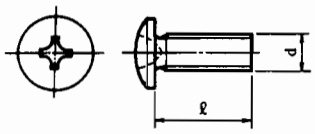
Screws

Table B-2. Pan Head Machine Screws



KEY NO.	PART NUMBER
B25	XB1-1300-509CN
B27	XB1-1300-606CN
B29	XB1-1300-609CN
B32	XB1-1300-807CN
B33	XB1-1300-809CN
B36	XB1-1301-009CN
B39	XB1-1301-209CN
B42	XB1-1301-609CN
B43	XB1-1302-009CN
B44	XB1-1302-507CN
B51	XB1-1400-602CN
B53	XB1-1400-604CN
B54	XB1-1400-609CN
B56	XB1-1400-807CN
B57	XB1-1400-809CN
B58	XB1-1401-009CN
B60	XB1-1401-207CN
B61	XB1-1401-609CN
B63	XB1-1402-503CN
B64	XB1-1403-009CN
B82	XB1-1501-209CN

Table B-3. Binding Head Machine Screws



KEY NO.	PART NUMBER
E01	XB1-2200-403CN
E03	XB1-2200-407CN
E04	XB1-2200-409CN
E06	XB1-2300-403CN
E07	XB1-2300-404CN
E08	XB1-2300-406CN
E10	XB1-2300-409CN
E11	XB1-2300-502CN
E12	XB1-2300-503CN
E13	XB1-2300-504CN
E14	XB1-2300-506CN
E15	XB1-2300-509CN
E16	XB1-2300-601CN
E17	XB12300-604CN
E19	XB1-2300-606CN
E21	XB1-2300-609CN
E22	XB1-2300-801CN
E23	XB1-2300-804CN
E25	XB1-2300-807CN
E26	XB1-2300-809CN
E29	XB1-2301-009CN
E30	XB1-2301-202CN
E31	XB1-2301-204CN
E32	XB1-2301-209CN
E33	XB1-2301-603CN
E34	XB1-2301-604CN
E37	XB1-2301-609CN
E38	XB1-2302-003CN
E41	XB1-2302-009CN
E42	XB1-2302-503CN
E44	XB1-2302-509CN
E45	XB1-2303-003CN
E46	XB1-2303-009CN
E47	XB1-2303-509CN
E48	XB1-2304-507CN
E50	XB1-2400-409CN
E51	XB1-2400-506CN

Table B-3. Binding Head Machine Screws (continued)

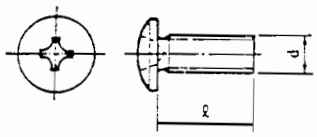
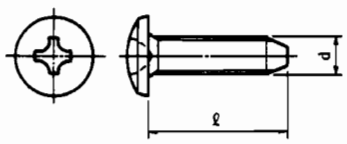
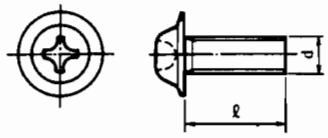
	E52	XB1-2400-509CN
	E53	XB1-2400-602CN
	E54	XB1-2400-603CN
	E55	XB1-2400-604CN
	E56	XB1-2400-606CN
	E57	XB1-2400-607CN
	E58	XB1-2400-609CN
	E60	XB1-2400-804CN
	E61	XB1-2400-806CN
	E62	XB1-2400-809CN
	E63	XB1-2401-002CN
	E64	XB1-2401-004CN
	E65	XB1-2401-006CN
	E66	XB1-2401-007CN
	E67	XB1-2401-009CN
	E68	XB1-2401-203CN
	E69	XB1-2401-204CN
	E70	XB1-2401-206CN
	E71	XB1-2401-207CN
	E72	XB1-2401-209CN
	E73	XB1-2401-602CN
	E74	XB1-2401-604CN
	E75	XB1-2401-606CN
	E76	XB1-2401-609CN
	E78	XB1-2402-006CN
	E79	XB1-2402-009CN
	E81	XB1-2402-509CN
	E83	XB1-2403-009CN
	E84	XB1-2403-505CN
	E85	XB1-2404-009CN
	E90	XB1-2500-609CN
	E91	XB1-2500-809CN
	E93	XB1-2501-009CN
	E94	XB1-2501-609CN
	E95	XB1-2502-009CN
	E96	XB1-2502-509CN
	E98	XB1-2504-009CN
	E99	XB1-2505-009CN

Table B-4. Self-tapping Screws



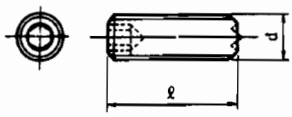
KEY NO.	PART NUMBER
G31	XB3-2260-509CN
G41	XB3-2300-609CN
G43	XB3-2300-809CN
G44	XB3-2302-009CN
G51	XB3-2400-609CN
G52	XB3-2400-809CN
G53	XB3-2401-009CN
G54	XB3-2401-209CN
G55	XB3-2402-009CN

Table B-5. Washer Head Machine Screws



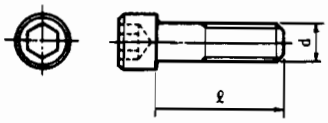
KEY NO.	PART NUMBER
K02	XB6-7201-009CN
K20	XB6-7260-409CN
K21	XB6-7260-509CN
K41	XB6-7300-409CN
K42	XB6-7300-509CN
K43	XB6-7300-609CN
K44	XB6-7300-809CN
K45	XB6-7301-009CN
K46	XB6-7301-209CN
K47	XB6-7301-609CN
K48	XB6-7302-009CN
K49	XB6-7303-009CN
K61	XB6-7400-409CN
K62	XB6-7400-509CN
K63	XB6-7400-609CN
K64	XB6-7400-809CN
K65	XB6-7401-009CN
K66	XB6-7401-209CN
K67	XB6-7401-609CN
K68	XB6-7402-009CB
K69	XB6-7402-509CN
K81	XB6-7500-609CN
K82	XB6-7500-809CN
K83	XB6-7501-009CN
K84	XB6-7501-609CN
K85	XB6-7502-009CN

Table B-6. Hex Socket Setscrews



KEY NO.	PART NUMBER
L01	XB6-1400-608CN
L02	XB6-2300-408CN
L03	XB6-2300-508CN
L04	XB6-2300-608CN
L07	XB6-2400-408CN
L08	XB6-2400-508CN
L09	XB6-2400-608CN
L10	XB6-2400-808CN
L11	XB6-2401-008CN
L14	XB6-2500-508CN
L16	XB6-2500-808CN
L23	XB6-2601-008CN

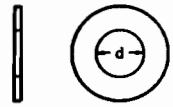
Table B-7. Socket Head Cap Screws



KEY NO.	PART NUMBER
L52	XB7-1030-069CN
L53	XB7-1030-089CN
L54	XB7-1030-109CN
L55	XB7-1030-129CN
L56	XB7-1030-169CN
L58	XB7-1030-259CN
L62	XB7-1040-069CN
L63	XB7-1040-089CN
L64	XB7-1040-109CN
L65	XB7-1040-129CN
L66	XB7-1040-169CN
L67	XB7-1040-209CN
L68	XB7-1040-259CN
L72	XB7-1050-109CN
L73	XB7-1050-129CN
L74	XB7-1050-169CN
L75	XB7-1050-209CN
L77	XB7-1050-309CN
L81	XB7-1060-109CN
L82	XB7-1060-129CN
L83	XB7-1060-169CN
L86	XB7-1060-309CN
L92	XB7-1080-169CN
L95	XB7-1100-209CN

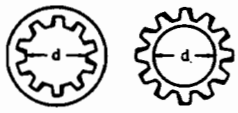
Washers

Table B-8. Plain Washers and Ring Washers



KEY NO.	PART NUMBER
N92	XD1-1104-135CN
U01	XD1-2100-207CN
U03	XD1-2100-307CN
U04	XD1-2100-407CN
U05	XD1-2100-507CN
U06	XD1-2100-607CN
U07	XD1-2100-807CN
U08	XD1-2100-007CN

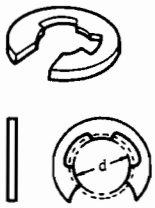
Table B-9. Toothed Lock Washers



KEY NO.	PART NUMBER
U81	XD1-4100-202CN
U83	XD1-4100-302CN
U84	XD1-4100-402CN
U85	XD1-4100-502CN
U86	XD1-4100-602CN
U87	XD1-4100-802CN
U91	XD1-4200-302CN
U92	XD1-4200-402CN
U93	XD1-4200-502CN
U94	XD1-4200-602CN
U95	XD1-4200-802CN

Rings

Table B-10. Retaining Rings

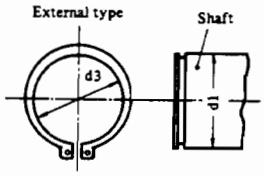


KEY NO.	PART NUMBER
V04	XD2-1100-172CN
V06	XD2-1100-242CN
V07	XD2-1100-282CN
V08	XD2-1100-322CN
V09	XD2-1100-372CN
V10	XD2-1100-402CN
V11	XD2-1100-422CN
V12	XD2-1100-502CN
V13	XD2-1100-582CN
V14	XD2-1100-602CN
V15	XD2-1100-642CN
V16	XD2-1100-742CN
V17	XD2-1100-802CN

Table B-11. Grip Rings

KEY NO.	PART NUMBER
W01	XD2-2100-202CN
W03	XD2-2100-302CN
W05	XD2-2100-402CN
W07	XD2-2100-502CN
W08	XD2-2100-602CN
W10	XD2-2100-802CN
W12	XD2-2101-002CN

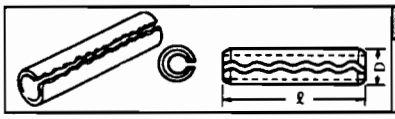
Table B-12. C Rings



KEY NO.	PART NUMBER
X01	XD2-3100-102CN
X03	XD2-3100-122CN
X06	XD2-3100-148CN
X07	XD2-3100-152CN
X10	XD2-3100-168CN
X11	XD2-3100-172CN
X13	XD2-3100-182CN
X15	XD2-3100-202CN
X16	XD2-3100-208CN
X18	XD2-3100-228CN
X20	XD2-3100-258CN
X24	XD2-3100-308CN

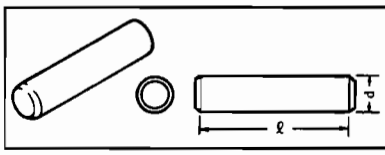
Pins

Table B-13. Spring and Dowel Pins



KEY NO.	PART NUMBER
Y14	XD3-1160-122CN
Y25	XD3-1200-122CN

Table B-14. Dowel Pins



KEY NO.	PART NUMBER
Y73	XD3-2200-122CN
Y74	XD3-2200-142CN
Y75	XD3-2200-162CN

C

Image Defect Examples

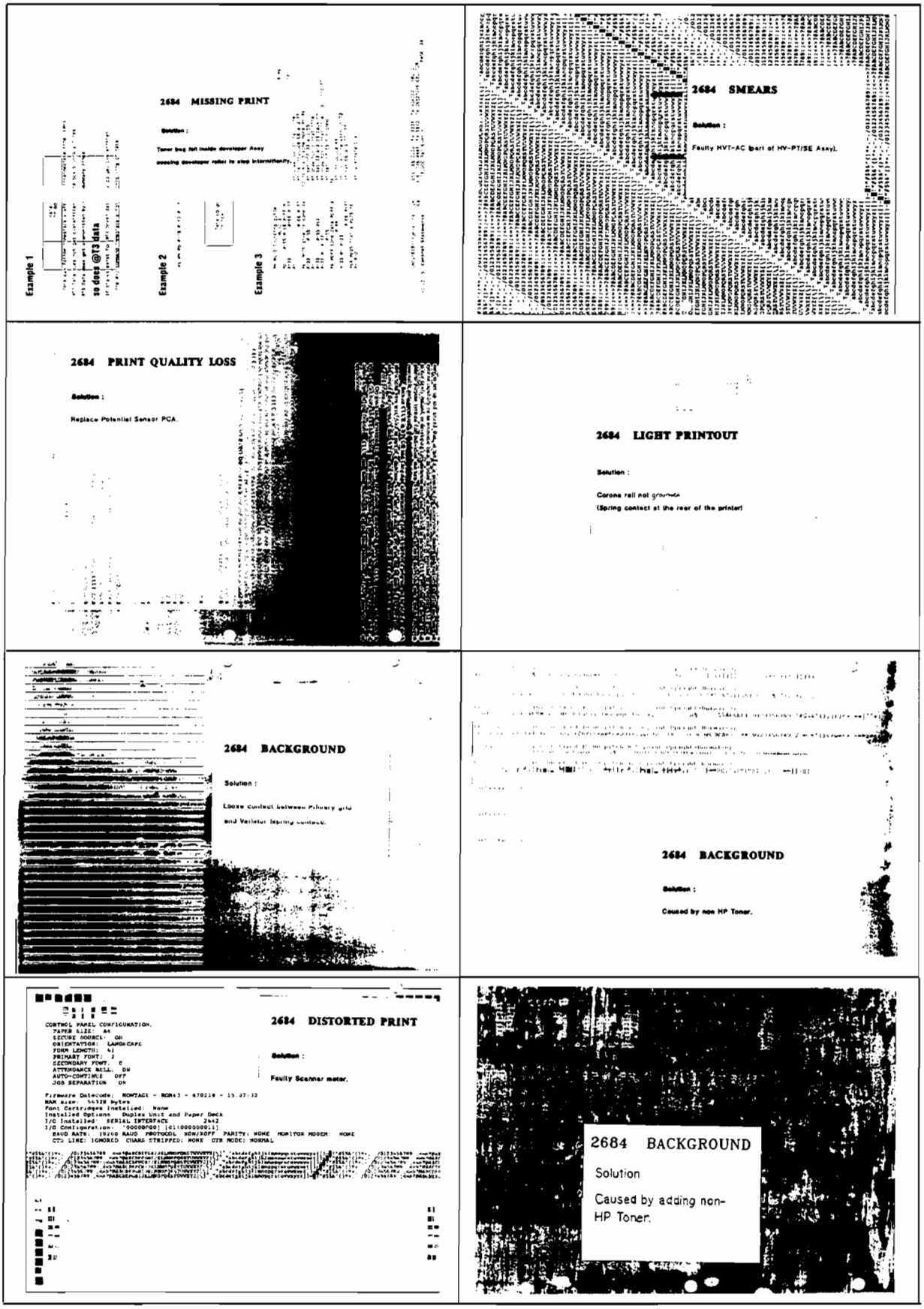
Use the examples on these pages to help in identifying common print quality problems. Find an example that closely approximates your print image problem, then refer to the information shown to help troubleshoot the possible cause.

Send in Your Image Defect Samples

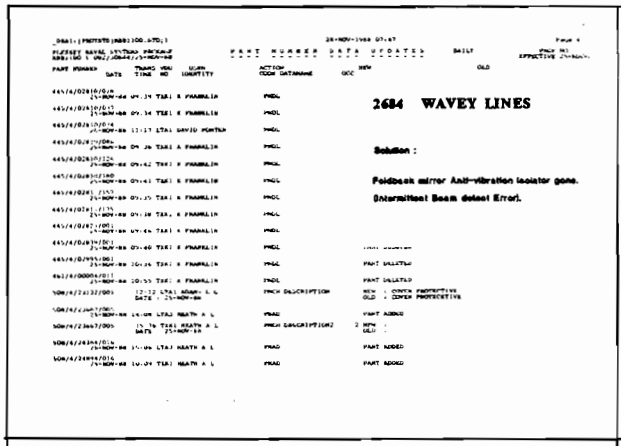
If you encounter a print quality problem that you are able to resolve, help us share that information by sending an example printout of the problem. Write a description of the problem and explanation of the cause and remedy on the back.

Mail to:

Hewlett-Packard
Network Printer Operation
LaserJet 2000 Technical Support–M.S. 507
P.O. Box 15
Boise, Idaho 83707-9934
USA



C-2 Image Defect Examples

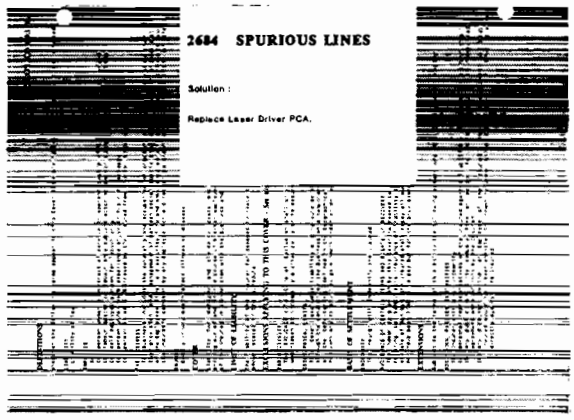


2684 WAVEY LINES

Solution :

Foldback mirror Anti-vibration isolator gone.

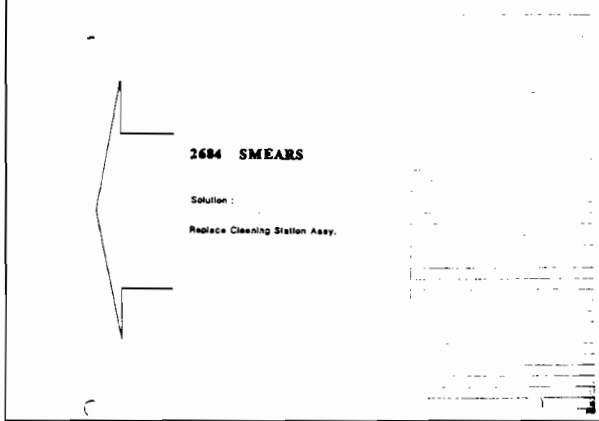
Intermittent Beam detect Error).



2684 SPURIOUS LINES

Solution :

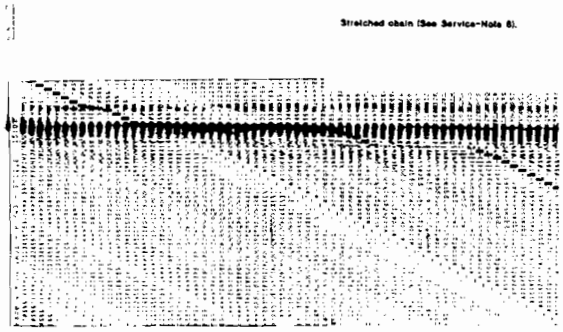
Replace Laser Driver PCA.



2684 SMEARS

Solution :

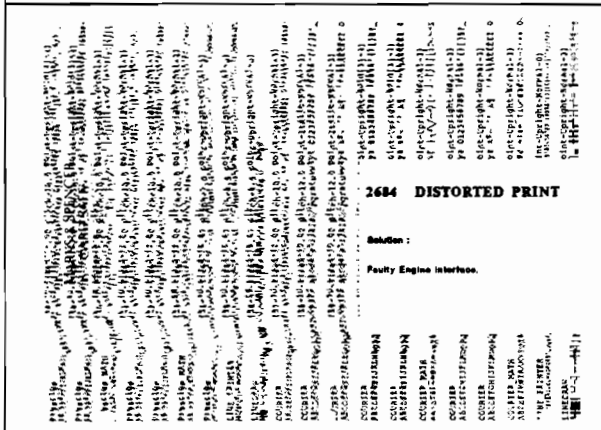
Replace Cleaning Station Assy.



2684 COMPRESSED PRINT

Solution :

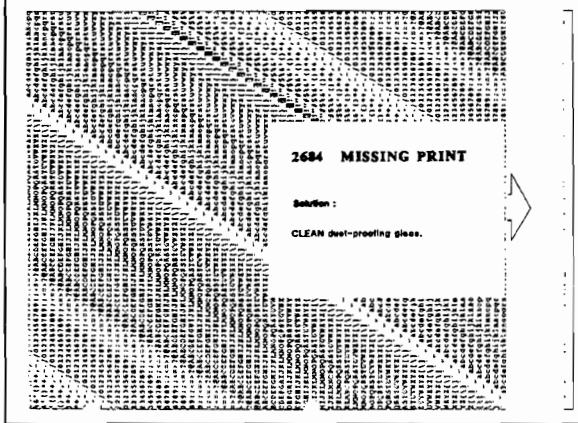
Stretched obain (See Service-Note 8).



2684 DISTORTED PRINT

Solution :

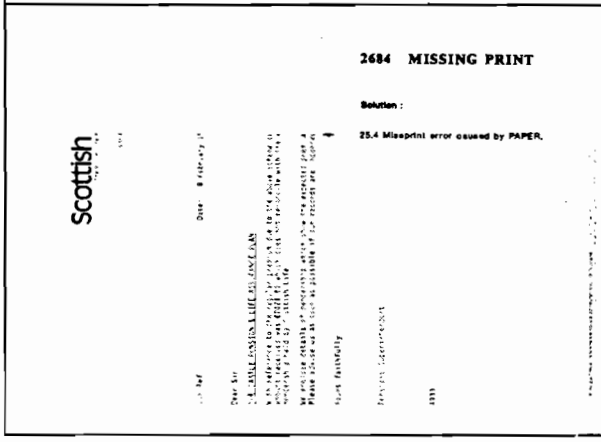
Faulty Engine interface.



2684 MISSING PRINT

Solution :

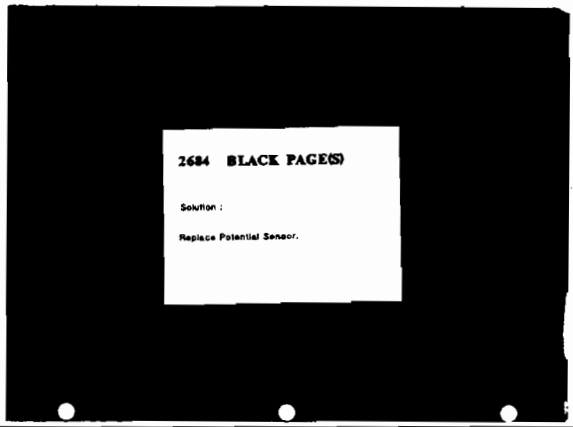
CLEAN dust-proofing glass.



2684 MISSING PRINT

Solution :

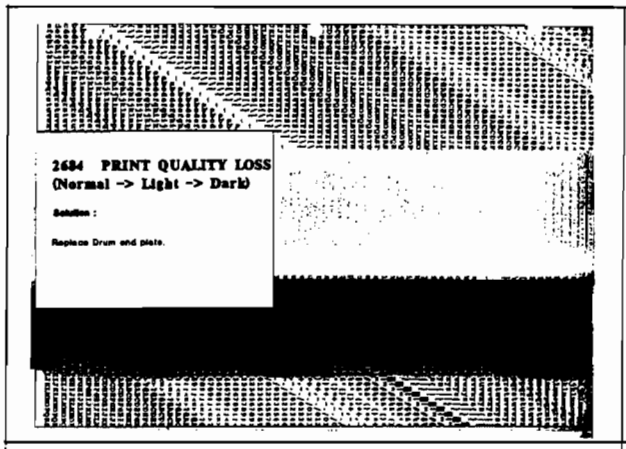
25.4 Misaprint error caused by PAPER.

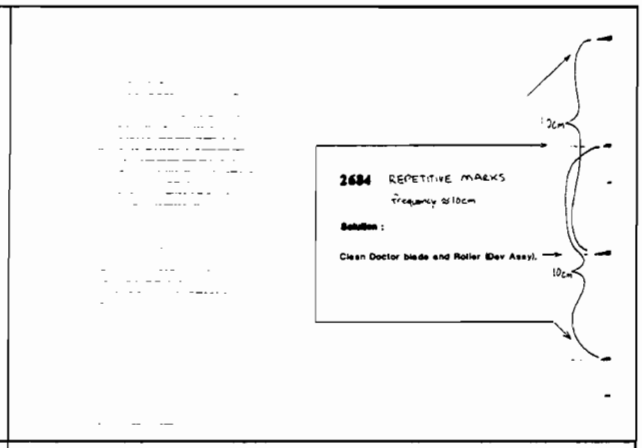


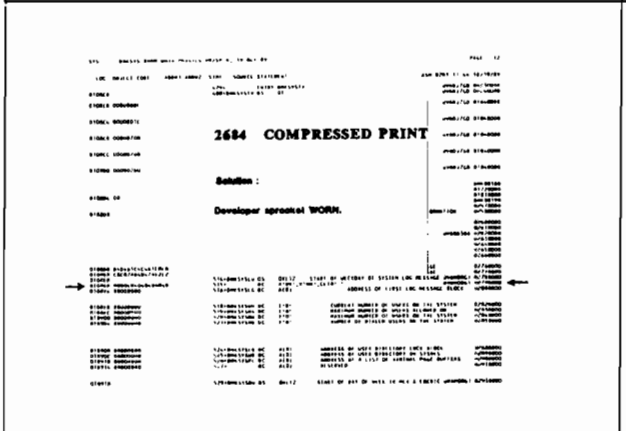
2684 BLACK PAGE(S)

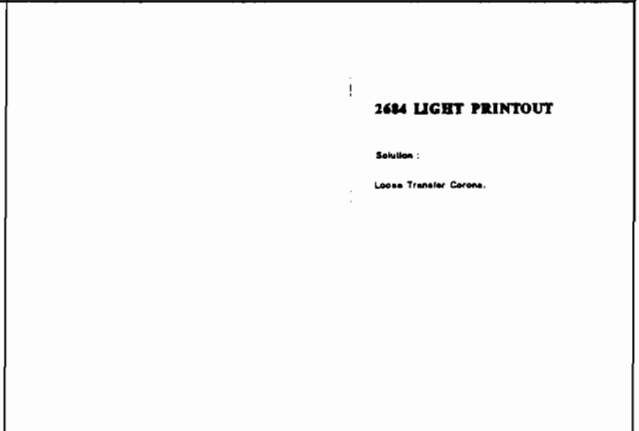
Solution :

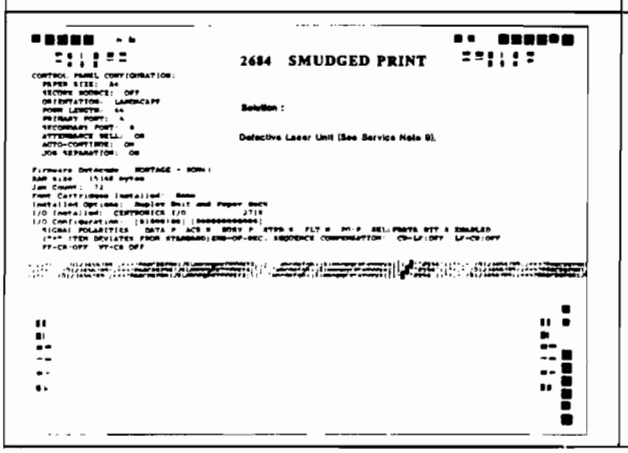
Replace Potential Sensor.

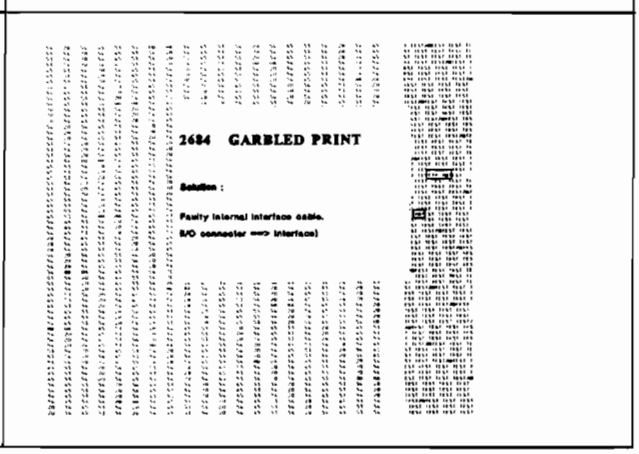

2684 PRINT QUALITY LOSS
(Normal -> Light -> Dark)
Solution :
Replace Drum and plate.

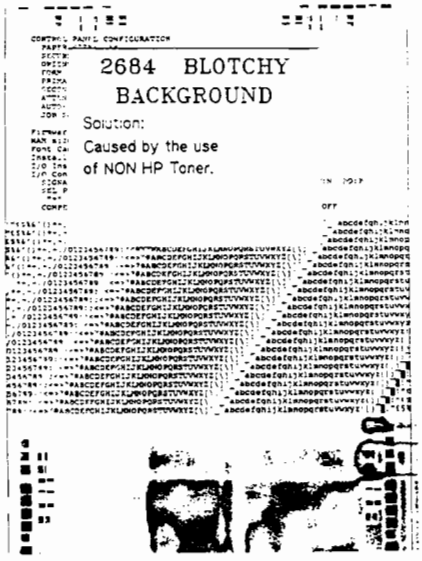

2684 REPETITIVE MARKS
Frequency @10cm
Solution :
Clean Doctor blade and Roller (Dev Assy).
10cm
10cm

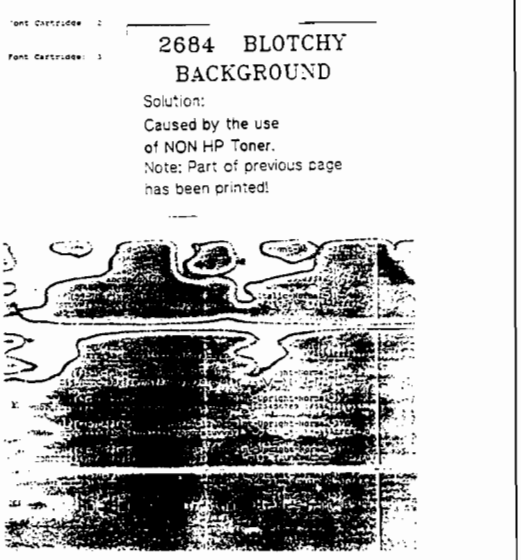

2684 COMPRESSED PRINT
Solution :
Developer sprocket WORN.

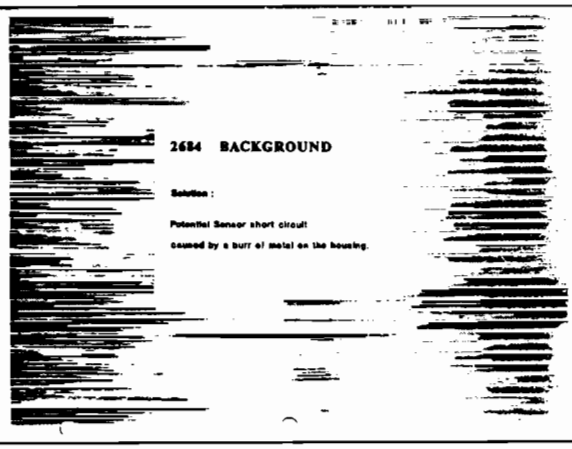

2684 LIGHT PRINTOUT
Solution :
Loose Transfer Corona.


2684 SMUDGED PRINT
Solution :
Defective Laser Unit (See Service Note 9).


2684 GARBLED PRINT
Solution :
Faulty internal interface cable.
S/O connector ==> interface)


2684 BLOTCHY
BACKGROUND
Solution:
Caused by the use
of NON HP Toner.


2684 BLOTCHY
BACKGROUND
Solution:
Caused by the use
of NON HP Toner.
Note: Part of previous page
has been printed!


2684 BACKGROUND
Solution :
Potential Sensor short circuit
caused by a burr of metal on the housing.

Parts Index

How to use the Parts Index

Use this index to locate parts in Chapter 8, "Parts and Diagrams." Each part is listed numerically by part number and includes a part description, as well as table and page locations.

Table P-1.

PART NUMBER	DESCRIPTION	TABLE	PAGE
02684-00002	CENTRONICS PLATE, I/O ADAPTER	Tbl 8e-1	Pg. 8e-3
02684-00003	RS232/422 (SERIAL) PLATE, I/O ADAPTER	Tbl 8e-1	Pg. 8e-3
02684-00004	DATAPRODUCTS PLATE, I/O ADAPTER	Tbl 8e-1	Pg. 8e-3
02684-00026	DECAL, "PUSH HERE TO CLOSE"	Tbl. 8b-4	Pg. 8b-7
02684-40003	KEYCAP: ONLINE	Tbl 8e-1	Pg. 8e-3
02684-40004	KEYCAP: FORM FEED	Tbl 8e-1	Pg. 8e-3
02684-40005	KEYCAP: SHIFT	Tbl 8e-1	Pg. 8e-3
02684-40006	KEYCAP: MENU	Tbl 8e-1	Pg. 8e-3
02684-40007	KEYCAP: UP ARROW	Tbl 8e-1	Pg. 8e-3
02684-40008	KEYCAP: DWN ARROW	Tbl 8e-1	Pg. 8e-3
02684-40009	KEYCAP: SELFTEST	Tbl 8e-1	Pg. 8e-3
02684-60001	PCA, FORMATTER	Tbl 8e-1	Pg. 8e-3
02684-60002	PCA, ENGINE INT	Tbl 8e-1	Pg. 8e-3
02684-60003	PCA, FONT CARTRIDGE CONN	Tbl 8e-1	Pg. 8e-3
02684-60006	PCA, I/O CARD CONN	Tbl 8e-1	Pg. 8e-3
02684-60007	PCA, MEMORY	Tbl 8e-1	Pg. 8e-3
02684-60100	ASSY, CONTROL PANEL	Tbl 8e-1	Pg. 8e-3
02684-60101	ASSY, POWER SUPPLY	Tbl 8e-1	Pg. 8e-3
02684-60102	ASSY, POWER SUPPLY CA	Tbl 8e-1	Pg. 8e-3
02684-60104	RS232/422 (SERIAL) CABLE, I/O	Tbl 8e-1	Pg. 8e-3
02684-60105	CENTRONICS CABLE, I/O	Tbl 8e-1	Pg. 8e-3
02684-60106	DATAPRODUCTS CABLE, I/O	Tbl 8e-1	Pg. 8e-3
02684-60107	CABLE, FRONT PANEL	Tbl 8e-1	Pg. 8e-3
02684-60131	CHIP, PAL	Tbl 8e-1	Pg. 8e-3
1818-4036	CHIP, MEMORY	Tbl 8e-1	Pg. 8e-3
1818-4093	NVR Chip - U54	Tbl 8e-1	Pg. 8e-3
5061-1714	DATAPRODUCTS (S/L) I/O PCA	Tbl 8e-1	Pg. 8e-3
5061-1715	DATAPRODUCTS (L/L) I/O PCA	Tbl 8e-1	Pg. 8e-3
5062-0478	CENTRONICS I/O PCA	Tbl 8e-1	Pg. 8e-3
5062-1703	RS232/422 (SERIAL) I/O PCA	Tbl 8e-1	Pg. 8e-3
87-4383-000CN	COLLAR	Tbl. 8d-10	Pg. 8d-25

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
92282P	WASTE TONER SCREEN	Tbl. 8a-35	Pg. 8a-66
9515-1888	SCREW, PCA MOUNT M3X45	Tbl 8e-1	Pg. 8e-3
96-0093-000CN	GEAR, 32T	Tbl. 8c-3	Pg. 8c-7
96-0093-000CN	GEAR, 32T	Tbl. 8d-11	Pg. 8d-29
96-9558-000CN	LABEL	Tbl. 8b-6	Pg. 8b-13
FA1-0056-000CN	BUSHING	Tbl. 8c-3	Pg. 8c-7
FA1-0056-000CN	BUSHING	Tbl. 8b-10	Pg. 8b-25
FA1-0056-000CN	BUSHING	Tbl. 8d-11	Pg. 8d-29
FA1-1837-000CN	COLLAR	Tbl. 8b-10	Pg. 8b-24
FA1-3224-000CN	BUSHING	Tbl. 8a-3	Pg. 8a-13
FA1-4446-000CN	PIN, GUIDE	Tbl. 8a-4	Pg. 8a-20
FA1-4851-000CN	ROLLER PAPER, SENSOR	Tbl. 8b-9	Pg. 8b-21
FA1-9546-000CN	PLATE, PIN	Tbl. 8a-4	Pg. 8a-20
FA1-9546-000CN	PLATE, PIN	Tbl. 8b-5	Pg. 8b-10
FA1-9723-000CN	ELIMINATOR, STATIC CHARGE	Tbl. 8a-37	Pg. 8a-73
FA1-9880-000CN	SHAFT, HANDLE, LATCH/RELEASE	Tbl. 8a-4	Pg. 8a-20
FA2-1534-000CN	PIN, GUIDE	Tbl. 8a-4	Pg. 8a-19
FA2-1594-000CN	STRAP, OPEN DOOR SUPPORT	Tbl. 8a-1	Pg. 8a-5
FA2-1753-000CN	COLLAR	Tbl. 8d-3	Pg. 8d-8
FA2-1878-000CN	ROLLER, VERTICAL FEED GUIDE	Tbl. 8d-11	Pg. 8d-29
FA2-1994-000CN	SEPARATION CLAW (LOWER)	Tbl. 8a-37	Pg. 8a-73
FA2-2538-040CN	LABEL, "HIGH TEMP WARNING"	Tbl. 8a-4	Pg. 8a-21
FA2-3182-000CN	SPRING, LEAF	Tbl. 8a-4	Pg. 8a-19
FA2-3411-000CN	COVER, PHOTOINTERRUPTER	Tbl. 8b-9	Pg. 8b-21
FA2-5438-000CN	LABEL, GROUNDING	Tbl. 8a-7	Pg. 8a-27
FA2-5438-000CN	LABEL, GROUNDING	Tbl. 8b-6	Pg. 8b-13
FA2-5541-000CN	OZONE FILTER	Tbl. 8a-13	Pg. 8a-34
FA2-5968-000CN	HEATER CONTACT	Tbl. 8a-36	Pg. 8a-71
FA2-6512-000CN	STRIP 1, FRICTION	Tbl. 8c-3	Pg. 8c-6
FA2-6513-000CN	STRIP 2, FRICTION	Tbl. 8c-3	Pg. 8c-6
FA2-6522-000CN	PLATE, BALL BEARING RETAINER	Tbl. 8c-3	Pg. 8c-7
FA2-6523-000CN	WHEEL, RATCHET	Tbl. 8c-3	Pg. 8c-7
FA2-6554-000CN	STRIP 3, FRICTION	Tbl. 8c-3	Pg. 8c-6
FA2-6567-000CN	LABEL, PAPER HEIGHT, LIMIT	Tbl. 8c-3	Pg. 8c-6
FA2-6590-000CN	SHAFT, FEED ROLLER	Tbl. 8c-5	Pg. 8c-11
FA2-6593-000CN	WEIGHT	Tbl. 8c-5	Pg. 8c-11
FA2-7380-000CN	BUSHING	Tbl. 8a-4	Pg. 8a-19
FA2-7526-000CN	STRIP, FRICTION	Tbl. 8c-3	Pg. 8c-6
FA2-8227-000CN	ROLLER, PRESSURE	Tbl. 8a-23	Pg. 8a-47
FA2-8244-000CN	BUSHING	Tbl. 8d-10	Pg. 8d-25
FA2-8361-000CN	RETAINER (115V)	Tbl. 8a-3	Pg. 8a-13
FA2-8579-000CN	CAM, PRESSURE	Tbl. 8a-4	Pg. 8a-19

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA2-9221-000CN	STOPPER	Tbl. 8a-4	Pg. 8a-19
FA3-0173-000CN	TRANSFORMER, 115V 60HZ	Tbl. 8a-5	Pg. 8a-22
FA3-0212-000CN	SHEET, INSULATION (A)	Tbl. 8a-2	Pg. 8a-7
FA3-0213-000CN	SHEET, INSULATION (B)	Tbl. 8a-2	Pg. 8a-7
FA3-0215-020CN	PLATE, DUST-PROOF	Tbl. 8a-4	Pg.8a-18
FA3-0220-050CN	SEAL (A)	Tbl. 8a-4	Pg.8a-18
FA3-0221-050CN	SEAL (B)	Tbl. 8a-4	Pg.8a-18
FA3-0222-000CN	PLATE, COVER	Tbl. 8a-2	Pg. 8a-7
FA3-0224-040CN	SEAL	Tbl. 8a-4	Pg.8a-18
FA3-0227-000CN	PLATE	Tbl. 8a-2	Pg. 8a-7
FA3-0228-000CN	PLATE	Tbl. 8a-2	Pg. 8a-7
FA3-0229-000CN	COVER, MIRROR	Tbl. 8a-3	Pg. 8a-12
FA3-0233-000CN	GUIDE, FUSER, FRONT	Tbl. 8a-5	Pg. 8a-22
FA3-0234-000CN	GUIDE, FUSER, REAR	Tbl. 8a-5	Pg. 8a-22
FA3-0237-000CN	PLATE, MOUNT	Tbl. 8a-3	Pg. 8a-12
FA3-0238-000CN	PLATE, MOUNT	Tbl. 8a-3	Pg. 8a-12
FA3-0239-030CN	PLATE, MOUNT	Tbl. 8a-3	Pg. 8a-12
FA3-0240-000CN	CUSHION	Tbl. 8a-4	Pg.8a-18
FA3-0244-000CN	HOUSING	Tbl. 8a-3	Pg. 8a-12
FA3-0246-000CN	PLATE, MOUNT	Tbl. 8a-3	Pg. 8a-12
FA3-0247-000CN	MOUNT, BEARING	Tbl. 8a-3	Pg. 8a-13
FA3-0248-000CN	PLATE	Tbl. 8a-3	Pg. 8a-12
FA3-0250-000CN	PLATE, STOPER, CLUTCH	Tbl. 8a-3	Pg. 8a-12
FA3-0251-000CN	PLATE, MOUNT	Tbl. 8a-2	Pg. 8a-7
FA3-0252-000CN	MOUNT, CATCH	Tbl. 8a-2	Pg. 8a-7
FA3-0254-000CN	RETAINER, DUST-PROOF GLASS	Tbl. 8a-2	Pg. 8a-7
FA3-0256-000CN	HINGE, FRONT DOOR	Tbl. 8a-5	Pg. 8a-22
FA3-0264-000CN	TRAY, PRINT	Tbl. 8a-1	Pg. 8a-5
FA3-0265-000CN	TAPE, DOOR	Tbl. 8a-1	Pg. 8a-5
FA3-0267-000CN	PLATE, DOOR SWITCH PUSHER	Tbl. 8a-4	Pg.8a-18
FA3-0268-000CN	MOUNT, DOOR SWITCH PUSHER	Tbl. 8a-4	Pg.8a-18
FA3-0269-000CN	SPRING, REAF	Tbl. 8a-4	Pg.8a-18
FA3-0270-000CN	SPINDLE, PRESSER	Tbl. 8a-4	Pg. 8a-19
FA3-0271-000CN	HANDLE, DEVELOPER RELEASE	Tbl. 8a-4	Pg.8a-18
FA3-0272-000CN	HANDLE, FEEDER RELEASE	Tbl. 8a-4	Pg.8a-18
FA3-0274-000CN	PLATE, GUIDE, PICK-UP, MIDDLE	Tbl. 8a-4	Pg.8a-18
FA3-0275-000CN	PLATE, GUIDE, PICK-UP, LOWER	Tbl. 8a-4	Pg.8a-18
FA3-0278-000CN	GUIDE, BLOCK, FRONT	Tbl. 8a-4	Pg.8a-18
FA3-0279-000CN	GUIDE, BLOCK, REAR	Tbl. 8a-4	Pg.8a-18
FA3-0280-000CN	KNOB	Tbl. 8a-4	Pg.8a-18
FA3-0283-000CN	GUIDE, DEVELOPER RIGHT	Tbl. 8a-4	Pg.8a-18
FA3-0284-000CN	GUIDE, DEVELOPER	Tbl. 8a-2	Pg. 8a-7

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA3-0285-000CN	SPRING, LEAF	Tbl. 8a-4	Pg.8a-18
FA3-0286-000CN	RAIL, TRANSFER CORONA ASSEMBLY A	Tbl. 8a-4	Pg. 8a-19
FA3-0287-000CN	RAIL, TRANSFER CORONA ASSEMBLY B	Tbl. 8a-4	Pg. 8a-19
FA3-0289-000CN	GUIDE, CYLINDER, COVER	Tbl. 8a-2	Pg. 8a-7
FA3-0290-000CN	PLATE	Tbl. 8a-4	Pg. 8a-21
FA3-0291-000CN	COVER, SMALL	Tbl. 8a-2	Pg. 8a-7
FA3-0292-000CN	RAIL	Tbl. 8a-4	Pg. 8a-19
FA3-0294-000CN	SLIDER	Tbl. 8a-4	Pg. 8a-19
FA3-0302-000CN	PLATE, BLIND	Tbl. 8a-3	Pg. 8a-13
FA3-0304-000CN	PLATE, GROUNDING	Tbl. 8a-4	Pg. 8a-21
FA3-0309-000CN	MOUNT, CATCH (115V)	Tbl. 8a-2	Pg. 8a-7
FA3-0311-000CN	BUSHING (115V)	Tbl. 8a-3	Pg. 8a-13
FA3-0311-000CN	BUSHING (115V)	Tbl. 8a-2	Pg. 8a-7
FA3-0312-000CN	CAM, SHUTTER (115V)	Tbl. 8a-2	Pg. 8a-7
FA3-0313-000CN	SHUTTER (115V)	Tbl. 8a-2	Pg. 8a-8
FA3-0314-000CN	BUSHING (115V)	Tbl. 8a-3	Pg. 8a-13
FA3-0315-000CN	SPRING, TORSION (115V)	Tbl. 8a-2	Pg. 8a-8
FA3-0316-000CN	PLATE (115V)	Tbl. 8a-1	Pg. 8a-5
FA3-0320-000CN	PLATE	Tbl. 8a-3	Pg. 8a-13
FA3-0321-000CN	PLATE, GROUNDING	Tbl. 8a-3	Pg. 8a-13
FA3-0329-020CN	HOOK	Tbl. 8a-4	Pg. 8a-21
FA3-0331-000CN	HOOK	Tbl. 8a-2	Pg. 8a-8
FA3-0332-000CN	SPRING, LEAF	Tbl. 8a-2	Pg. 8a-8
FA3-0387-000CN	SPRING, LEAF	Tbl. 8a-4	Pg. 8a-20
FA3-0389-000CN	RING, FELT	Tbl. 8a-2	Pg. 8a-8
FA3-0395-000CN	MOUNT	Tbl. 8a-4	Pg. 8a-20
FA3-0396-000CN	PLATE	Tbl. 8a-4	Pg. 8a-20
FA3-0419-000CN	CLAW MOUNT	Tbl 8a-26	Pg. 8a-51
FA3-0421-000CN	PLATE	Tbl 8a-26	Pg. 8a-51
FA3-0440-000CN	SHAFT	Tbl 8a-26	Pg. 8a-51
FA3-0441-020CN	MOUNT PLATE	Tbl 8a-26	Pg. 8a-51
FA3-0456-000CN	LEAF SPRING	Tbl 8a-26	Pg. 8a-51
FA3-0465-030CN	DUCT	Tbl. 8a-3	Pg. 8a-13
FA3-0466-000CN	SPRING, REAR	Tbl. 8a-3	Pg. 8a-13
FA3-0467-000CN	PLATE	Tbl. 8a-4	Pg. 8a-20
FA3-0472-000CN	MAGNETIC ROLLER	Tbl. 8a-33	Pg. 8a-62
FA3-0473-000CN	BLADE	Tbl. 8a-33	Pg. 8a-62
FA3-0476-000CN	SCRAPER	Tbl. 8a-33	Pg. 8a-62
FA3-0478-000CN	HANDLE, UPPER	Tbl. 8a-33	Pg. 8a-62
FA3-0479-000CN	COVER, CYLINDER	Tbl. 8a-33	Pg. 8a-62
FA3-0497-000CN	LID, UPPER	Tbl. 8a-33	Pg. 8a-62
FA3-0514-020CN	ROLLER, CLEANER PAD	Tbl. 8a-33	Pg. 8a-62

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA3-0521-000CN	BLADE, CLEANING	Tbl. 8a-34	Pg. 8a-65
FA3-0559-000CN	SEAL, FRONT	Tbl. 8a-34	Pg. 8a-65
FA3-0560-000CN	SEAL, REAR	Tbl. 8a-34	Pg. 8a-65
FA3-0578-000CN	COVER POTENTIAL SENSOR	Tbl. 8a-4	Pg. 8a-21
FA3-0580-000CN	SHAFT, PICKUP ROLLER	Tbl. 8a-23	Pg. 8a-47
FA3-0593-000CN	PLATE, FRONT	Tbl. 8a-21	Pg. 8a-45
FA3-0594-000CN	PLATE, REAR	Tbl. 8a-21	Pg. 8a-45
FA3-0600-000CN	SPRING, LEAF	Tbl. 8a-4	Pg. 8a-20
FA3-0602-000CN	BLOCK, GUIDE	Tbl. 8a-4	Pg. 8a-20
FA3-0603-000CN	COVER, SENSOR	Tbl. 8a-21	Pg. 8a-45
FA3-0604-000CN	SHAFT, LEVER	Tbl. 8a-4	Pg. 8a-20
FA3-0609-000CN	BELT, CONVEYOR	Tbl. 8a-25	Pg. 8a-50
FA3-0610-000CN	RIBBED GUIDE	Tbl. 8a-25	Pg. 8a-50
FA3-0615-000CN	LEVER, SENSOR	Tbl. 8a-25	Pg. 8a-50
FA3-0616-000CN	MOUNT, SENSOR	Tbl. 8a-25	Pg. 8a-50
FA3-0623-030CN	ROLLER, LOWER	Tbl. 8a-36	Pg. 8a-70
FA3-0672-000CN	ROLLER, PRESSURE CLEANING BELT	Tbl. 8a-38	Pg. 8a-75
FA3-0683-050CN	SEPARATION CLAW, UPPER	Tbl. 8a-37	Pg. 8a-73
FA3-0684-000CN	SPRING, TORSION	Tbl. 8a-37	Pg. 8a-73
FA3-0698-040CN	MOUNT, SEPARATION CLAW, UPPER	Tbl. 8a-37	Pg. 8a-73
FA3-0704-000CN	SPRING, TORSION	Tbl. 8a-37	Pg. 8a-73
FA3-0728-000CN	SUPPORT, SHAFT	Tbl. 8a-3	Pg. 8a-12
FA3-0730-000CN	ARM, GEAR MOUNTING	Tbl. 8a-19	Pg. 8a-42
FA3-0731-000CN	SHAFT, GEAR	Tbl. 8a-19	Pg. 8a-42
FA3-0734-000CN	PLATE, MOUNT	Tbl. 8a-3	Pg. 8a-13
FA3-0736-000CN	GUIDE, ROLLER CHAIN	Tbl. 8a-3	Pg. 8a-13
FA3-0754-000CN	MOUNT, COUNTER	Tbl. 8a-11	Pg. 8a-32
FA3-0756-000CN	PLATE, LAMP MOUNTING	Tbl. 8a-4	Pg. 8a-21
FA3-0841-000CN	MOUNT, MICROSWITCH	Tbl. 8a-3	Pg. 8a-13
FA3-0848-000CN	RAIL, GUIDE	Tbl. 8a-29	Pg. 8a-55
FA3-0849-000CN	RAIL, DRUM, FRONT	Tbl. 8a-29	Pg. 8a-55
FA3-0850-000CN	GUIDE, DRUM, REAR	Tbl. 8a-29	Pg. 8a-55
FA3-0853-000CN	PLATE, SPRING	Tbl. 8a-29	Pg. 8a-55
FA3-0859-040CN	CONNECT, BRUSH, ELECTRODE	Tbl. 8a-3	Pg. 8a-12
FA3-0866-000CN	PIN, LATCH	Tbl. 8a-51	Pg. 8a-89
FA3-0875-000CN	COVER	Tbl. 8a-1	Pg. 8a-5
FA3-0884-000CN	MOUNT, SWITCH	Tbl. 8a-2	Pg. 8a-8
FA3-0888-000CN	COVER, CONNECTOR, UPPER	Tbl. 8a-4	Pg. 8a-20
FA3-0890-000CN	LATCH, ROLLER-ACTION (STRIKE)	Tbl. 8a-1	Pg. 8a-5
FA3-0890-000CN	LATCH, ROLLER-ACTION (STRIKE)	Tbl. 8b-4	Pg. 8b-7E)
FA3-0890-000CN	LATCH, ROLLER-ACTION (STRIKE)	Tbl. 8b-4	Pg. 8b-7
FA3-0890-000CN	STRIKE, LATCH, ROLLER-ACTION	Tbl. 8d-2	Pg. 8d-5

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA3-1937-020CN	SEPARATION CLAW	Tbl 8a-26	Pg. 8a-51
FA3-2252-000CN	SEAL, FRONT	Tbl. 8a-33	Pg. 8a-63
FA3-2253-000CN	SEAL, REAR	Tbl. 8a-33	Pg. 8a-63
FA3-2254-000CN	SEAL, INTERNAL	Tbl. 8a-33	Pg. 8a-63
FA3-2615-020CN	ROLLER, PICK-UP	Tbl. 8c-5	Pg. 8c-11
FA3-2788-000CN	PULLEY, IDLER	Tbl. 8c-3	Pg. 8c-7
FA3-2788-000CN	PULLEY, IDLER	Tbl. 8d-5	Pg. 8d-13
FA3-2790-000CM	FLANGE, PULLEY	Tbl. 8c-3	Pg. 8c-7
FA3-2790-000CN	FLANGE, PULLEY	Tbl. 8c-4	Pg. 8c-8
FA3-2790-000CN	FLANGE, PULLEY	Tbl. 8d-3	Pg. 8d-8
FA3-2790-000CN	FLANGE, PULLEY	Tbl. 8d-11	Pg. 8d-29
FA3-2790-000CN	FLANGE, PULLEY	Tbl. 8d-5	Pg. 8d-13
FA3-2888-000CN	CHAIN, DOOR	Tbl. 8d-2	Pg. 8d-5
FA3-3139-000CN	PULLEY	Tbl. 8b-10	Pg. 8b-24
FA3-3196-000CN	BELT, FEED (1 SET OF 4 PIECES)	Tbl. 8d-6	Pg. 8d-16
FA3-3210-000CN	PULLEY	Tbl. 8b-6	Pg. 8b-13
FA3-3230-000CN	STOP	Tbl. 8d-3	Pg. 8d-8
FA3-3265-000CN	SHAFT, WEIGHT	Tbl. 8d-10	Pg. 8d-24
FA3-3268-030CN	ROLLER, UPPER SEPARATION	Tbl. 8d-10	Pg. 8d-24
FA3-3269-000CN	ROLLER, STACK LOWER SEPARATION	Tbl. 8d-10	Pg. 8d-24
FA3-3274-000CN	SHAFT, UPPER SEP. ROLLER	Tbl. 8d-10	Pg. 8d-24
FA3-3275-000CN	SHAFT, DRIVE, UP. SEP. ROLLER	Tbl. 8d-10	Pg. 8d-24
FA3-3276-000CN	COUPLING	Tbl. 8d-10	Pg. 8d-24
FA3-3277-000CN	SHAFT, DRIVE, LOW, SEP. ROLLER	Tbl. 8d-10	Pg. 8d-24
FA3-3279-000CN	RETAINER, BEARING	Tbl. 8d-10	Pg. 8d-24
FA3-3280-000CN	ROLLER, PAPER FEED	Tbl. 8d-10	Pg. 8d-24
FA3-3281-000CN	ROLLER, PAPER FEED	Tbl. 8d-10	Pg. 8d-24
FA3-3285-000CN	KNOB	Tbl. 8b-9	Pg. 8b-20
FA3-3285-000CN	KNOB	Tbl. 8d-10	Pg. 8d-24
FA3-3287-000CN	KNOB	Tbl. 8d-10	Pg. 8d-25
FA3-3288-000CN	MOUNT, UPPER SEP. ROLLER	Tbl. 8d-10	Pg. 8d-24
FA3-3289-000CN	MOUNT, UPPER SEP. ROLLER	Tbl. 8d-10	Pg. 8d-24
FA3-3299-000CN	RETAINER, BEARING	Tbl. 8d-10	Pg. 8d-25
FA3-3302-000CN	CAM. GUIDE	Tbl. 8d-10	Pg. 8d-25
FA3-3304-000CN	MOUNT, PHOTO-INTERRUPTER	Tbl. 8d-10	Pg. 8d-25
FA3-3307-000CN	COVER, BULB	Tbl. 8d-10	Pg. 8d-25
FA3-3308-000CN	HUB ROLLER	Tbl. 8d-10	Pg. 8d-25
FA3-3316-000CN	SPRING, LEAF	Tbl. 8d-10	Pg. 8d-25
FA3-3318-000CN	SCREW, M4X19, SOCKET HEAD CAP	Tbl. 8d-10	Pg. 8d-24
FA3-3319-000CN	ELIMINATOR, STATIC CHARGE	Tbl. 8b-9	Pg. 8b-20 A
FA3-3319-000CN	ELIMINATOR, STATIC CHARGE	Tbl. 8b-4	Pg. 8b-7
FA3-3352-000CN	MOUNT, SORTER	Tbl. 8d-3	Pg. 8d-8

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA3-3367-000CN	MOUNT, SHAFT	Tbl. 8d-3	Pg. 8d-8
FA3-3370-000CN	FITTING, SHIPPING	Tbl. 8d-3	Pg. 8d-9
FA3-3383-000CN	ROLLER, ROCK ARM	Tbl. 8d-3	Pg. 8d-9
FA3-3401-000CN	ARM, TRAY, LOWER	Tbl. 8d-3	Pg. 8d-9
FA3-3403-000CN	ARM, TRAY	Tbl. 8d-3	Pg. 8d-9
FA3-3404-000CN	ARM	Tbl. 8d-3	Pg. 8d-9
FA3-3405-000CN	PIN	Tbl. 8d-3	Pg. 8d-9
FA3-3413-000CN	AXLE	Tbl. 8b-9	Pg. 8b-21
FA3-3851-000CN	PLATE, FRONT FRAME	Tbl. 8c-3	Pg. 8c-6
FA3-3852-000CN	PLATE, REAR FRAME	Tbl. 8c-3	Pg. 8c-6
FA3-3853-000CN	PLATE, BASE	Tbl. 8c-3	Pg. 8c-6
FA3-3854-000CN	PLATE, LEFT FRAME	Tbl. 8c-3	Pg. 8c-6
FA3-3855-000CN	PLATE, CENTER	Tbl. 8c-3	Pg. 8c-6
FA3-3857-000CN	ROLLER, OUT CREASE	Tbl. 8c-5	Pg. 8c-11
FA3-3859-000CN	HOLDER, GUIDE	Tbl. 8c-3	Pg. 8c-6
FA3-3864-050CN	ROLLER, REGISTRATION, RUBBER	Tbl. 8c-3	Pg. 8c-6
FA3-3865-000CN	ROLLER, REGISTRATION	Tbl. 8c-3	Pg. 8c-6
FA3-3866-000CN	PLATE, GUIDE, UPPER	Tbl. 8c-3	Pg. 8c-6
FA3-3867-000CN	PLATE, GUIDE, LOWER	Tbl. 8c-3	Pg. 8c-6
FA3-3871-000CN	SHAFT, LIFTER DRIVING	Tbl. 8c-3	Pg. 8c-6
FA3-3872-000CN	AXLE, LIFTER CHAIN IDLERSPRKT	Tbl. 8c-3	Pg. 8c-6
FA3-3874-000CN	CAM, LIFTER	Tbl. 8c-3	Pg. 8c-6
FA3-3875-000CN	SPROCKET, 14T	Tbl. 8c-3	Pg. 8c-6
FA3-3876-000CN	RATCHET, RING	Tbl. 8c-3	Pg. 8c-6
FA3-3878-000CN	STOP	Tbl. 8c-3	Pg. 8c-6
FA3-3879-020CN	SHAFT DRIVE PULLY	Tbl. 8c-3	Pg. 8c-6
FA3-3880-000CN	SHAFT, CLUTCH	Tbl. 8c-3	Pg. 8c-6
FA3-3881-000CN	SHAFT BRAKE	Tbl. 8c-3	Pg. 8c-6
FA3-3882-000CN	MOUNT, CLUTCH	Tbl. 8c-3	Pg. 8c-6
FA3-3885-000CN	HINGE, DOOR	Tbl. 8c-2	Pg. 8c-3
FA3-3886-000CN	HINGE, DOOR	Tbl. 8c-2	Pg. 8c-3
FA3-3888-000CN	COVER, FRONT (IN)	Tbl. 8c-2	Pg. 8c-3
FA3-3892-000CN	COVER	Tbl. 8c-3	Pg. 8c-6
FA3-3893-000CN	PANEL, LEFT	Tbl. 8c-2	Pg. 8c-3
FA3-3895-000CN	GUIDE, DOOR	Tbl. 8c-2	Pg. 8c-3
FA3-3898-000CN	PLATE, DOOR SWITCH	Tbl. 8c-2	Pg. 8c-3
FA3-3900-000CN	GUIDE	Tbl. 8c-1	Pg. 8c-2
FA3-3901-000CN	LABEL, OPERATION	Tbl. 8c-2	Pg. 8c-3
FA3-3902-000CN	LABEL, PAPER SIZE	Tbl. 8c-3	Pg. 8c-6
FA3-3905-000CN	PLATE, SWITCH, UPPER	Tbl. 8c-3	Pg. 8c-7
FA3-3906-000CN	PLATE, SWITCH, LOWER	Tbl. 8c-3	Pg. 8c-7
FA3-3908-000CN	SPRING COMPRESSION	Tbl. 8c-3	Pg. 8c-7

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA3-3908-000CN	SPRING, COMPRESSION	Tbl. 8b-8	Pg. 8b-17
FA3-3912-000CN	SHAFT, PAPER PICK-UP ROLLER	Tbl. 8c-5	Pg. 8c-11
FA3-3913-000CN	ARM, SWING, PICK-UP ROLLER (S)	Tbl. 8c-5	Pg. 8c-11
FA3-3915-000CN	SPINDLE, IDLER GEAR	Tbl. 8c-3	Pg. 8c-6
FA3-3918-000CN	HUB, PICK-UP ROLLER	Tbl. 8c-5	Pg. 8c-11
FA3-3922-000CN	SHAFT PICK-UP ROLLER IDLER	Tbl. 8c-5	Pg. 8c-11
FA3-3926-000CN	ARM, SWING, PICK-UP ROLLER (L)	Tbl. 8c-5	Pg. 8c-11
FA3-3929-000CN	HUB PICK-UP ROLLER	Tbl. 8c-5	Pg. 8c-11
FA3-5103-000CN	COVER, FRONT (OUT)	Tbl. 8c-2	Pg. 8c-3
FA3-5502-000CN	MOUNT, PCA 115V	Tbl. 8d-3	Pg. 8d-8
FA3-5503-000CN	PLATE, LEFT REAR	Tbl. 8d-3	Pg. 8d-8
FA3-5504-000CN	PLATE, RIGHT REAR	Tbl. 8d-3	Pg. 8d-8
FA3-5505-000CN	STOP, BELT FEEDER	Tbl. 8d-3	Pg. 8d-8
FA3-5507-000CN	PLATE, REINFORCEMENT	Tbl. 8d-3	Pg. 8d-8
FA3-5508-000CN	MOUNT, UPPER, REAR, PANEL	Tbl. 8d-2	Pg. 8d-5
FA3-5509-000CN	SPRING, LEAF	Tbl. 8d-3	Pg. 8d-8
FA3-5511-000CN	SUPPORT, VERTICAL FEED GUIDE	Tbl. 8d-3	Pg. 8d-8
FA3-5512-000CN	MOUNT, TRAY STOP	Tbl. 8d-3	Pg. 8d-8
FA3-5513-000CN	AXLE	Tbl. 8d-3	Pg. 8d-8
FA3-5514-000CN	PLATE, LONG PAPER SUPPORT	Tbl. 8d-3	Pg. 8d-8
FA3-5515-000CN	AXLE, FRONT	Tbl. 8d-3	Pg. 8d-8
FA3-5516-000CN	AXLE, REAR	Tbl. 8d-3	Pg. 8d-8
FA3-5521-000CN	PLATE, FRONT RIGHT	Tbl. 8d-2	Pg. 8d-5
FA3-5522-000CN	MOUNT, DOOR CATCH	Tbl. 8d-2	Pg. 8d-5
FA3-5526-000CN	PLATE, ADJUSTMENT	Tbl. 8d-3	Pg. 8d-8
FA3-5529-000CN	MOUNT, COUNTER	Tbl. 8d-3	Pg. 8d-8
FA3-5531-000CN	PLATE, CONNECTOR MOUNTING	Tbl. 8d-3	Pg. 8d-8
FA3-5534-000CN	CUSHION	Tbl. 8d-3	Pg. 8d-9
FA3-5535-000CN	PLATE, BLANKING PLATE	Tbl. 8d-3	Pg. 8d-9
FA3-5536-000CN	SPRING MOUNT, RIGHT	Tbl. 8b-3	Pg. 8b-5
FA3-5537-000CN	SPRING MOUNT, LEFT	Tbl. 8b-3	Pg. 8b-5
FA3-5561-000CN	FLANGE, PULLEY	Tbl. 8b-10	Pg. 8b-24
FA3-5567-000CN	MOUNT, LATCH, FRONT	Tbl. 8b-9	Pg. 8b-20
FA3-5573-000CN	SPRING LEAF	Tbl. 8b-9	Pg. 8b-20
FA3-5578-000CN	MOUNT, FAN	Tbl. 8b-9	Pg. 8b-20
FA3-5579-000CN	GRIP, GUIDE, DELIVERY	Tbl. 8b-9	Pg. 8b-20
FA3-5583-000CN	SPRING LEAF	Tbl. 8b-9	Pg. 8b-20
FA3-5611-000CN	GUIDE, UPPER	Tbl. 8d-9	Pg. 8d-21
FA3-5651-000CN	ROLLER, REGISTRATION	Tbl. 8d-10	Pg. 8d-24
FA3-5653-000CN	ROLLER, REGISTRATION	Tbl. 8d-10	Pg. 8d-25
FA3-5654-000CN	PLATE BLANKING	Tbl. 8d-10	Pg. 8d-26
FA3-5681-000CN	GUIDE, UPPER	Tbl. 8d-7	Pg. 8d-17

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA3-5682-000CN	PLATE, GUIDE UPPER	Tbl. 8d-7	Pg. 8d-17
FA3-5683-000CN	ARM, SWITCH ACTUATING	Tbl. 8d-7	Pg. 8d-17
FA3-5697-000CN	SPRING, LEAF	Tbl. 8d-11	Pg. 8d-29
FA3-5698-000CN	AXLE, FEED ROLLER DRIVE GEAR	Tbl. 8d-11	Pg. 8d-29
FA3-5699-000CN	AXLE, VERT. FEED GUIDE MOUNT	Tbl. 8d-11	Pg. 8d-29
FA3-5700-000CN	SPRING, TORSION	Tbl. 8d-11	Pg. 8d-29
FA3-5702-000CN	ROLLER, VERTICAL FEED GUIDE	Tbl. 8d-11	Pg. 8d-29
FA3-5714-000CN	SHAFT, LEVER, UPPER	Tbl. 8d-3	Pg. 8d-9
FA3-5715-000CN	HANDLE	Tbl. 8d-3	Pg. 8d-9
FA3-5716-000CN	PLATE, SHAFT MOUNT	Tbl. 8d-3	Pg. 8d-9
FA3-5717-000CN	SHAFT, ROLLER, FRONT	Tbl. 8d-3	Pg. 8d-9
FA3-5721-000CN	SHAFT, LEVER	Tbl. 8d-3	Pg. 8d-9
FA3-5722-000CN	SPRING, TORSION	Tbl. 8d-3	Pg. 8d-9
FA3-5726-000CN	MOUNT, DOOR SWITCH	Tbl. 8d-4	Pg. 8d-11
FA3-5727-000CN	LEVER	Tbl. 8d-4	Pg. 8d-11
FA3-5728-000CN	SUPPORT, ROD	Tbl. 8d-4	Pg. 8d-11
FA3-5729-000CN	MOUNT, SWITCH	Tbl. 8d-4	Pg. 8d-11
FA3-5730-000CN	PUSHROD	Tbl. 8d-4	Pg. 8d-11
FA3-5731-000CN	ARM, SWITCH ACTUATING	Tbl. 8d-4	Pg. 8d-11
FA3-7418-000CN	SPRING, ROLLER HOLDER	Tbl. 8b-4	Pg. 8b-7
FA3-7418-00NCN	SPRING, ROLLER HOLDER	Tbl. 8b-5	Pg. 8b-10
FA3-7419-000CN	ROLLER	Tbl. 8b-4	Pg. 8b-7
FA3-7419-000CN	ROLLER	Tbl. 8b-5	Pg. 8b-10
FA3-7422-000CN	ROLLER	Tbl. 8b-5	Pg. 8b-10
FA3-7423-000CN	SPACER	Tbl. 8b-5	Pg. 8b-10
FA3-7429-000CN	PLATE, PIN	Tbl. 8b-5	Pg. 8b-10
FA3-7435-000CN	SPRING, LEAF	Tbl. 8b-4	Pg. 8b-7
FA3-7448-000CN	ARM, SENSING 2	Tbl. 8b-7	Pg. 8b-14
FA3-7450-000CN	ROLLER	Tbl. 8b-7	Pg. 8b-14
FA3-7453-000CN	BELT, 118MM	Tbl. 8b-7	Pg. 8b-14
FA3-7454-000CN	ARM, ROLLER	Tbl. 8b-4	Pg. 8b-7
FA3-7462-000CN	RING, RUBBER	Tbl. 8b-7	Pg. 8b-14
FA3-7473-000CN	COVER, GEAR, FRONT	Tbl. 8b-8	Pg. 8b-17
FA3-7474-000CN	COVER, GEAR, REAR	Tbl. 8b-8	Pg. 8b-17
FA3-7559-000CN	BRACKET, SENSOR MOUNT	Tbl. 8b-4	Pg. 8b-7
FA3-7560-000CN	MOUNT, SENSOR	Tbl. 8b-4	Pg. 8b-7
FA3-7563-000CN	ROLLER, PINCH	Tbl. 8b-4	Pg. 8b-7
FA3-7572-000CN	MOUNT, ROLLER, SPRING	Tbl. 8b-4	Pg. 8b-7
FA3-7819-000CN	ADJUSTER, HEIGHT	Tbl. 8d-2	Pg. 8d-5
FA3-7819-000CN	BOLT, HEIGHT ADJUSTING	Tbl. 8a-51	Pg. 8a-89
FA3-7820-000CN	PLATE, SUPPORT	Tbl. 8d-2	Pg. 8d-5
FA3-7821-000CN	PLATE, MOUNTING, 1	Tbl. 8a-51	Pg. 8a-89

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FA3-7821-000CN	PLATE, SUPPORT	Tbl. 8d-2	Pg. 8d-5
FA3-9305-000CN	STRAP, DOOR SUPPORT	Tbl. 8b-4	Pg. 8b-7
FA4-2528-000CN	CROSSMEMBER	Tbl. 8c-3	Pg. 8c-6
FA4-6266-000CN	SHAFT, ARM ROLLER	Tbl. 8d-3	Pg. 8d-9
FA4-6267-000CN	RETAINER	Tbl. 8d-10	Pg. 8d-25
FA4-6276-000CN	RETAINER	Tbl. 8d-10	Pg. 8d-25
FA9-0023-000CN	LABEL	Tbl. 8a-7	Pg. 8a-27
FF1-3732-000CN	PLATE, PAPER-WIDTH ADJUSTING	Tbl. 8c-3	Pg. 8c-7
FF1-3872-000CN	FUSE RESISTOR 47 OHM 1/4 WATT	Tbl. 8a-43	Pg. 8a-80
FF1-4418-040CN	GLASS, DUST PROOF	Tbl. 8a-4	Pg.8a-18
FF1-4438-000CN	ARM, GEAR SPINDLE	Tbl. 8a-3	Pg. 8a-13
FF1-4439-000CN	PLATE, SPINDLE	Tbl. 8a-3	Pg. 8a-13
FF1-4452-000CN	COUNTER	Tbl. 8a-11	Pg. 8a-32
FF1-4454-000CN	PLATE	Tbl. 8a-2	Pg. 8a-7
FF1-4457-050CN	PLATE	Tbl. 8a-4	Pg.8a-18
FF1-4458-050CN	PLATE, COVER	Tbl. 8a-4	Pg.8a-18
FF1-4474-000CN	SHAFT	Tbl. 8a-4	Pg. 8a-19
FF1-4476-000CN	PLATE, PAPER GUIDE, LOWER	Tbl. 8a-4	Pg. 8a-20
FF1-4490-000CN	COVER, SLIP RING	Tbl. 8a-3	Pg. 8a-12
FF1-4496-000CN	CLEANING ROLLER	Tbl. 8a-34	Pg. 8a-65
FF1-4499-000CN	MOUNT PLATE	Tbl 8a-26	Pg. 8a-51
FF1-4500-000CN	RAIL	Tbl. 8a-8	Pg. 8a-29
FF1-4500-040CN	RAIL	Tbl. 8a-4	Pg. 8a-19
FF1-4502-000CN	PLATE, GUIDE 3, LEFT	Tbl. 8a-4	Pg. 8a-21
FF1-4509-000CN	CABLE ASSEMBLY	Tbl. 8c-6	Pg. 8c-12
FF1-4517-000CN	HARNESS, WIRING	Tbl. 8a-29	Pg. 8a-55
FF1-4518-000CN	SHAFT, DELIVERY ROLLER	Tbl. 8a-37	Pg. 8a-73
FF1-4519-030CN	SCRAPER	Tbl. 8a-34	Pg. 8a-65
FF1-4527-000CN	PLATE, GUIDE 3. RIGHT	Tbl. 8a-4	Pg. 8a-19
FF1-4529-000CN	PLATE, PAPER GUIDE, UPPER	Tbl. 8a-4	Pg. 8a-19
FF1-4638-000CN	24V CABLE ASSEMBLY	Tbl. 8c-7	Pg.8c-13
FF1-4654-000CN	DECK, PAPER LIFTING	Tbl. 8c-3	Pg. 8c-6
FF1-4655-000CN	DOOR, PAPER FILLING	Tbl. 8c-2	Pg. 8c-3
FF1-4659-000CN	PLATE, TENSIONER SPROCKET	Tbl. 8c-3	Pg. 8c-6
FF1-4703-000CN	PLATE, PIN	Tbl. 8a-4	Pg. 8a-21
FF1-4736-000CN	WEIGHT	Tbl. 8d-10	Pg. 8d-26
FF1-4759-000CN	PLATE, PIN	Tbl. 8d-10	Pg. 8d-26
FF1-4771-000CN	ROLLER/ARM UNIT	Tbl. 8d-7	Pg. 8d-17
FF1-4795-000CN	MOUNT, PHOTOINTERRUPTER	Tbl. 8a-4	Pg. 8a-21
FF1-4795-000CN	MOUNT, PHOTOINTERRUPTER	Tbl. 8b-9	Pg. 8b-21
FF1-4810-000CN	PLATE, PIVOT	Tbl. 8d-3	Pg. 8d-9
FF1-4811-000CN	GEAR, 16T	Tbl. 8d-10	Pg. 8d-26

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FF1-4894-000CN	MOUNT, PULLEY	Tbl. 8c-4	Pg. 8c-8
FF1-4895-000CN	PLATE, GUIDE 3, LOWER	Tbl. 8a-4	Pg. 8a-20
FF1-5090-000CN	ROLLER/ARM	Tbl. 8d-10	Pg. 8d-26
FF1-5235-000CN	LEVER, REAR	Tbl. 8d-3	Pg. 8d-9
FF1-5236-000CN	LEVER, RELEASE	Tbl. 8d-3	Pg. 8d-9
FF1-5237-000CN	LEVER, CONTROL	Tbl. 8d-3	Pg. 8d-9
FF1-5239-000CN	SUPPORT, VERTICAL FEED GUIDE	Tbl. 8d-3	Pg. 8d-9
FF1-5240-000CN	PIN, REAR	Tbl. 8d-3	Pg. 8d-9
FF1-5241-000CN	PIN, FRONT	Tbl. 8d-3	Pg. 8d-9
FF1-5246-000CN	PLATE, PIN	Tbl. 8b-9	Pg. 8b-21
FF1-5249-000CN	PLATE, PIN	Tbl. 8b-9	Pg. 8b-21
FF1-5251-000CN	ROLLER/SPRING UNIT	Tbl. 8b-9	Pg. 8b-21
FF1-5252-000CN	LINK	Tbl. 8b-9	Pg. 8b-21
FF1-5254-000CN	MOUNT, SENSOR	Tbl. 8b-9	Pg. 8b-21
FF1-5258-000CN	CABLE ASSEMBLY	Tbl. 8c-6	Pg. 8c-12
FF1-5272-000CN	COUNTER	Tbl. 8d-3	Pg. 8d-9
FF1-5274-000CN	SOLENOID	Tbl. 8d-8	Pg. 8d-20
FF1-5287-000CN	PLATE, PIN	Tbl. 8c-3	Pg. 8c-6
FF1-5357-000CN	ARM, STOP	Tbl. 8d-10	Pg. 8d-26
FF1-5407-030CN	HANDLE, FRONT	Tbl. 8a-33	Pg. 8a-62
FF1-5480-000CN	SEPARATION FRICTION STRIP	Tbl. 8c-3	Pg. 8c-7
FF1-6548-000CN	PLATE, SPINDLE	Tbl. 8b-6	Pg. 8b-13
FF1-6754-000CN	CRANK, WEIGHT-RAISING	Tbl. 8d-10	Pg. 8d-24
FF1-6892-000CN	PLATE, GUIDE, FRONT	Tbl. 8c-3	Pg. 8c-6
FG0-0225-000CN	LASER UNIT	Tbl. 8a-27	Pg. 8a-52
FG1-3115-040CN	H.V. TRANSFORMER ASSEMBLY 2	Tbl. 8a-48	Pg. 8a-85
FG1-3123-050CN	POTENTIAL SENSING ASSEMBLY	Tbl. 8a-46	Pg. 8a-83
FG1-3126-100CN	DRUM CLEANING ASSEMBLY	Tbl. 8a-34	Pg. 8a-65
FG1-3128-000CN	WASTE TONER RECEPTACLE ASSY	Tbl. 8a-35	Pg. 8a-66
FG1-3130-000CN	PAPER FEED CLUTCH ASSEMBLY	Tbl. 8a-22	Pg. 8a-46
FG1-3137-050CN	FEEDER ASSEMBLY 115 VAC	Tbl. 8a-25	Pg. 8a-50
FG1-3138-050CN	FEEDER ASSEMBLY 220/240 VAC	Tbl. 8a-25	Pg. 8a-50
FG1-3155-000CN	CLEANER UNIT DRIVE ASSEMBLY	Tbl. 8a-20	Pg. 8a-43
FG1-3160-000CN	EXHAUST FAN ASSEMBLY (120V)	Tbl. 8a-13	Pg. 8a-34
FG1-3161-000CN	EXHAUST FAN ASSEMBLY (220V)	Tbl. 8a-13	Pg. 8a-34
FG1-3164-000CN	COOLING FAN ASSEMBLY 115 VAC	Tbl. 8a-12	Pg. 8a-33
FG1-3165-000CN	COOLING FAN ASSEMBLY 220/240 VAC	Tbl. 8a-12	Pg. 8a-33
FG1-3183-000CN	DOOR SWITCH ASSEMBLY	Tbl. 8a-10	Pg. 8a-31
FG1-3187-000CN	DOOR SWITCH ASSEMBLY	Tbl. 8a-9	Pg. 8a-30
FG1-3612-000CN	SENSOR ASSEMBLY	Tbl. 8d-10	Pg. 8d-26
FG1-3612-000CN	SENSOR ASSEMBLY	Tbl. 8d-11	Pg. 8d-29
FG1-3618-000CN	PCA, RESIDUAL PAPER SENSING	Tbl. 8d-10	Pg. 8d-26

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FG1-3703-000CN	LEVEL, SENSOR UNIT	Tbl. 8c-3	Pg. 8c-7
FG1-3705-000CN	SOLENOID ASSEMBLY	Tbl. 8c-3	Pg. 8c-7
FG1-3909-000CN	SHAFT END UNIT	Tbl. 8a-2	Pg. 8a-8
FG1-3909-000CN	PLATE, SHAFT END ASSEMBLY	Tbl. 8a-2	Pg. 8a-7
FG1-4024-030CN	LATCH ASSEMBLY	Tbl. 8c-1	Pg. 8c-2
FG1-4326-050CN	H.V. PT/SE ASSEMBLY	Tbl. 8a-49	Pg. 8a-86
FH2-0041-000CN	CABLE, HIGH VOLTAGE	Tbl. 8a-3	Pg. 8a-13
FH3-0109-000CN	TRANSFORMER, 115V 60HZ	Tbl. 8d-3	Pg. 8d-9
FH3-0156-000CN	TRANSFORMER POWER (115V/60Hz)	Tbl. 8c-7	Pg.8c-13
FH3-5091-000CN	DC POWER SUPPLY, 120V	Tbl. 8d-3	Pg. 8d-9
FH3-5092-000CN	DC POWER SUPPLY 220/240V	Tbl. 8d-3	Pg. 8d-9
FH3-5120-000CN	H.V. TRANSFORMER ASSEMBLY 1	Tbl. 8a-47	Pg. 8a-84
FH4-5007-000CN	SSR, SF12DC-M1U SSR	Tbl. 8a-7	Pg. 8a-27
FH7-0071-000CN	FILTER, NOISE	Tbl. 8a-8	Pg. 8a-29
FH7-1239-000CN	MOTOR, DC24V	Tbl. 8a-33	Pg. 8a-63
FH7-1259-000CN	MOTOR, 100VAC 50/60HZ, W/GEAR	Tbl 8a-26	Pg. 8a-51
FH7-1260-000CN	MOTOR, 115VAC 60HZ, W/GEAR	Tbl 8a-26	Pg. 8a-51
FH7-1261-000CN	MOTOR, 220VAC 50HZ, W/GEAR	Tbl 8a-26	Pg. 8a-51
FH7-1272-000CN	MOTOR	Tbl. 8c-3	Pg. 8c-7
FH7-1283-000CN	MOTOR	Tbl. 8d-8	Pg. 8d-20
FH7-4143-070CN	HEATER, DRUM, 90W, 115VAC	Tbl. 8a-29	Pg. 8a-55
FH7-4144-070CN	HEATER, DRUM, 90W, 220VAC	Tbl. 8a-29	Pg. 8a-55
FH7-5030-000CN	SOLENOID, 24VDC	Tbl. 8b-10	Pg. 8b-25
FH7-5049-000CN	CLUTCH, ELECTROMAGNETIC	Tbl. 8a-17	Pg. 8a-40
FH7-5051-000CN	CLUTCH, ELECTROMAGNETIC	Tbl. 8d-10	Pg. 8d-25
FH7-5051-000CN	CLUTCH, ELECTROMAGNETIC	Tbl. 8d-11	Pg. 8d-29
FH7-5051-000CN	CLUTCH, ELECTROMAGNETIC	Tbl. 8d-5	Pg. 8d-13
FH7-5054-000CN	CLUTCH, ELECTROMAGNETIC	Tbl. 8c-3	Pg. 8c-7
FH7-5055-040CN	CLUTCH, ELECTROMAGNETIC	Tbl. 8c-3	Pg. 8c-7
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8a-25	Pg. 8a-50
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8a-4	Pg. 8a-21
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8b-4	Pg. 8b-7
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8b-5	Pg. 8b-10
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8b-8	Pg. 8b-17
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8b-9	Pg. 8b-21
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8d-10	Pg. 8d-26
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8d-11	Pg. 8d-29
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8a-36	Pg. 8a-71
FH7-7023-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8d-8	Pg. 8d-20
FH7-7031-020CN	SENSOR, TONER	Tbl. 8a-33	Pg. 8a-63
FH7-7036-000CN	THERMOSWITCH, 250 C	Tbl. 8a-36	Pg. 8a-71
FH7-7038-000CN	PHOTO-INTERRUPTER UNIT	Tbl. 8a-3	Pg. 8a-13

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FH7-7056-000CN	CDS CELL RECEPTOR	Tbl. 8a-35	Pg. 8a-66
FH7-7100-000CN	THERMISTOR	Tbl. 8a-36	Pg. 8a-71
FH7-9040-000CN	FILTER, NOISE	Tbl. 8a-7	Pg. 8a-27
FN1-4092-000CN	MIRROR	Tbl. 8a-4	Pg. 8a-19
FS1-0218-000CN	GEAR, 48T	Tbl. 8d-10	Pg. 8d-25
FS1-0406-000CN	GEAR, 38T	Tbl. 8a-19	Pg. 8a-42
FS1-0419-000CN	GEAR, 34T	Tbl. 8a-36	Pg. 8a-70
FS1-0483-000CN	CABLE, HARNESS	Tbl. 8d-10	Pg. 8d-26
FS1-0512-000CN	GEAR, 50T	Tbl. 8a-3	Pg. 8a-13
FS1-0542-000CN	GEAR, 22T	Tbl. 8a-36	Pg. 8a-70
FS1-0542-000CN	GEAR, 22T	Tbl. 8b-10	Pg. 8b-25
FS1-0578-000CN	GEAR, 32T	Tbl. 8c-3	Pg. 8c-7
FS1-0759-000CN	SPROCKET 14T	Tbl. 8c-3	Pg. 8c-7
FS1-0916-000CN	GEAR, 22T	Tbl. 8d-10	Pg. 8d-25
FS1-1046-000CN	BUSHING	Tbl. 8a-19	Pg. 8a-42
FS1-1046-000CN	BUSHING	Tbl. 8b-10	Pg. 8b-25
FS1-1080-000CN	BEARING, BALL	Tbl. 8b-10	Pg. 8b-25
FS1-1117-000CN	BUSHING	Tbl. 8a-4	Pg. 8a-21
FS1-1118-000CN	BUSHING	Tbl. 8a-19	Pg. 8a-42
FS1-1119-000CN	BUSHING	Tbl. 8a-4	Pg. 8a-19
FS1-1119-000CN	BUSHING	Tbl. 8c-3	Pg. 8c-7
FS1-1119-000CN	BUSHING	Tbl. 8b-10	Pg. 8b-25
FS1-1119-000CN	BUSHING	Tbl. 8d-10	Pg. 8d-25
FS1-1157-000CN	BUSHING	Tbl. 8d-11	Pg. 8d-29
FS1-1186-000CN	BUSHING	Tbl. 8c-3	Pg. 8c-7
FS1-1187-000CN	BUSHING	Tbl. 8b-5	Pg. 8b-10
FS1-1187-000CN	BUSHING	Tbl. 8b-6	Pg. 8b-13
FS1-1187-000CN	BUSHING	Tbl. 8b-6	Pg. 8b-13
FS1-1187-000CN	BUSHING	Tbl. 8b-7	Pg. 8b-14
FS1-1189-000CN	BUSHING	Tbl. 8c-5	Pg. 8c-11
FS1-1213-000CN	BUSHING	Tbl. 8c-3	Pg. 8c-7
FS1-1237-000CN	BUSHING	Tbl. 8d-10	Pg. 8d-25
FS1-1338-000CN	BUSHING	Tbl. 8d-10	Pg. 8d-24
FS1-1340-000CN	BUSHING	Tbl. 8b-10	Pg. 8b-25
FS1-1341-000CN	BUSHING	Tbl. 8b-10	Pg. 8b-25
FS1-1343-000CN	BUSHING	Tbl. 8d-10	Pg. 8d-26
FS1-2011-000CN	SPRING, TENSION	Tbl. 8d-10	Pg. 8d-25
FS1-2022-000CN	SPRING, TENSION	Tbl. 8a-3	Pg. 8a-12
FS1-2370-000CN	SPRING, TENSION	Tbl. 8a-4	Pg. 8a-19
FS1-2370-000CN	SPRING, TENSION	Tbl. 8c-3	Pg. 8c-7
FS1-2370-000CN	SPRING, TENSION	Tbl. 8b-10	Pg. 8b-24
FS1-2370-000CN	SPRING, TENSION	Tbl. 8b-7	Pg. 8b-14

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FS1-2370-000CN	SPRING, TENSION	Tbl. 8d-11	Pg. 8d-29
FS1-2523-000CN	SPRING, TENSION	Tbl. 8b-10	Pg. 8b-25
FS1-2605-000CN	SPRING TENSION	Tbl. 8b-10	Pg. 8b-25
FS1-2908-000CN	SPRING, TENSION	Tbl. 8a-3	Pg. 8a-12
FS1-2940-000CN	SPRING, COMPRESSION	Tbl. 8a-3	Pg. 8a-13
FS1-2941-000CN	SPRING, TENSION	Tbl. 8a-4	Pg. 8a-20
FS1-3039-040CN	GEAR/PULLEY, 48T/30T	Tbl. 8c-4	Pg. 8c-8
FS1-3057-000CN	PULLEY, 30T	Tbl. 8c-3	Pg. 8c-7
FS1-3057-000CN	PULLEY, 30T	Tbl. 8d-11	Pg. 8d-29
FS1-3057-000CN	PULLEY, 30T	Tbl. 8d-5	Pg. 8d-13
FS1-3058-000CN	PULLEY, 30T	Tbl. 8d-3	Pg. 8d-8
FS1-3067-000CN	SPROCKET 14T	Tbl. 8c-3	Pg. 8c-7
FS1-3127-000CN	SPRING TORSION (2684P only)	Tbl. 8c-3	Pg. 8c-7
FS1-3128-000CN	SPRING TORSION	Tbl. 8c-3	Pg. 8c-7
FS1-3159-OOOCN	PULLEY, 12T	Tbl. 8b-6	Pg. 8b-13
FS1-3160-000CN	PULLEY 48T	Tbl. 8b-6	Pg. 8b-13
FS1-6071-000CN	ROLLER, PRESSER	Tbl. 8a-4	Pg. 8a-20
FS1-6087-000CN	ROLLER	Tbl. 8d-3	Pg. 8d-9
FS1-6089-000CN	WASHER	Tbl. 8d-10	Pg. 8d-24
FS1-6107-000CN	SPACER	Tbl. 8d-10	Pg. 8d-25
FS1-6112-000CN	SPACER	Tbl. 8d-10	Pg. 8d-25
FS1-8307-000CN	LABEL, "PLUG WARNING"	Tbl. 8a-3	Pg. 8a-13
FS1-8373-000CN	LABEL, BRH (115V)	Tbl. 8a-2	Pg. 8a-8
FS1-8375-000CN	LABEL	Tbl. 8d-2	Pg. 8d-5
FS1-8378-000CN	LABEL	Tbl. 8d-2	Pg. 8d-5
FS1-8403-000CN	LABEL, "WARNING, HIGH VOLTAGE"	Tbl. 8a-2	Pg. 8a-7
FS1-8423-000CN	LABEL, CODE	Tbl. 8a-1	Pg. 8a-5
FS1-8495-000CN	LABEL	Tbl. 8a-4	Pg. 8a-21
FS1-8969-000CN	LABEL	Tbl. 8b-3	Pg. 8b-5
FS1-9002-000CN	SCREW, STEPPED, M4	Tbl. 8a-3	Pg. 8a-12
FS1-9002-000CN	SCREW, STEPPED, M4	Tbl. 8b-10	Pg. 8b-25
FS1-9003-000CN	SCREW, STEPPED, M4	Tbl. 8a-1	Pg. 8a-5
FS1-9003-000CN	SCREW, STEPPED, M4	Tbl. 8b-10	Pg. 8b-25
FS1-9004-000CN	SCREW, STEPPED, M4	Tbl. 8a-21	Pg. 8a-45
FS1-9004-000CN	SCREW, STEPPED, M4	Tbl. 8a-4	Pg. 8a-20
FS1-9004-000CN	SCREW, STEPPED, M4	Tbl. 8d-9	Pg. 8d-21
FS1-9004-000CN	SCREW, STEPPED, M4	Tbl. 8d-3	Pg. 8d-8
FS1-9004-000CN	SCREW, STEPPED, M4	Tbl 8a-26	Pg. 8a-51
FS1-9005-000CN	SCREW, STEPPED, M4	Tbl. 8d-4	Pg. 8d-11
FS1-9007-000CN	SCREW, STEPPED, M4	Tbl. 8a-4	Pg. 8a-21
FS1-9053-000CN	SCREW, STEPPED, M4	Tbl. 8b-5	Pg. 8b-10
FS1-9073-000CN	SCREW, STEPPED	Tbl. 8d-10	Pg. 8d-26

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
FS1-9076-000CN	SCREW, STEPPED, M4	Tbl. 8b-10	Pg. 8b-25
FS2-0006-000CN	GEAR, 32T	Tbl. 8a-19	Pg. 8a-42
FS2-0007-000CN	GEAR, 32T	Tbl. 8a-19	Pg. 8a-42
FS2-0029-000CN	GEAR, 33T	Tbl. 8a-33	Pg. 8a-63
FS2-0030-000CN	GEAR, 22T	Tbl. 8a-33	Pg. 8a-63
FS2-0031-000CN	GEAR, 40T	Tbl. 8a-36	Pg. 8a-70
FS2-0038-000CN	GEAR, 24T	Tbl. 8a-3	Pg. 8a-12
FS2-0103-000CN	GEAR, 60T/16T	Tbl. 8d-10	Pg. 8d-26
FS2-0132-000CN	PULLEY/GEAR 22T/12T	Tbl. 8b-10	Pg. 8b-25
FS2-0143-000CN	GEAR, 46T	Tbl. 8c-3	Pg. 8c-7
FS2-0144-000CN	GEAR, 46T	Tbl. 8c-3	Pg. 8c-7
FS2-0145-000CN	GEAR 23T	Tbl. 8c-3	Pg. 8c-7
FS2-0147-000CN	GEAR, 64T	Tbl. 8d-11	Pg. 8d-29
FS2-0150-000CN	GEAR, 32T	Tbl. 8d-10	Pg. 8d-25
FS2-0164-000CN	GEAR, 8T/35T	Tbl 8a-26	Pg. 8a-51
FS2-0377-000CN	GEAR 20T	Tbl. 8b-6	Pg. 8b-13
FS2-0382-000CN	GEAR 0T	Tbl. 8b-6	Pg. 8b-13
FS2-0389-000CN	GEAR 20T	Tbl. 8b-6	Pg. 8b-13
FS2-0391-000CN	GEAR, 20T	Tbl. 8b-6	Pg. 8b-13
FS2-0404-000CN	GEAR, 22T	Tbl. 8a-36	Pg. 8a-70
FS2-2051-000CN	SPRING TORSION	Tbl. 8b-9	Pg. 8b-21
FS2-2063-000CN	SPRING, COMPRESSION	Tbl. 8d-10	Pg. 8d-24
FS2-2065-000CN	SPRING, TENSION	Tbl. 8d-10	Pg. 8d-25
FS2-2069-000CN	SPRING TENSION	Tbl. 8d-10	Pg. 8d-24
FS2-2137-000CN	SPRING, TENSION	Tbl. 8a-4	Pg. 8a-21
FS2-2194-000CN	SPRING, TENSION	Tbl. 8d-3	Pg. 8d-9
FS2-2195-000CN	SPRING, TENSION	Tbl. 8b-9	Pg. 8b-20
FS2-2196-000CN	SPRING, TENSION	Tbl. 8d-9	Pg. 8d-21
FS2-2204-000CN	SPRING, TENSION	Tbl 8a-26	Pg. 8a-51
FS2-2225-000CN	SPRING, COMPRESSION	Tbl. 8a-4	Pg. 8a-19
FS2-2253-000CN	SPRING, TENSION	Tbl. 8b-4	Pg. 8b-7
FS2-2284-000CN	SPRING, COMPRESSION	Tbl. 8a-21	Pg. 8a-45
FS9-2907-000CN	TENSION SPRING (ORIGINAL)	Tbl. 8a-16	Pg. 8a-39
FY3-0040-000CN	WIRE, CORONA 0.06MM (100M SPOOL)	Tbl. 8a-31	Pg. 8a-57
FY3-0040-000CN	WIRE, CORONA 0.06MM (100M SPOOL)	Tbl. 8a-32	Pg. 8a-58
FY3-0040-000CN	WIRE, CORONA, 0.6MM (100M SPOOL)	Tbl. 8a-30	Pg. 8a-56
R43-0321-000CN	DUPLEX ASSEMBLY	Tbl. 8d-1	Pg. 8d-2
R43-0421-000CN	PDX ASSEMBLY	Tbl. 8c-2	Pg. 8c-3
R43-0501-000CN	PEDESTAL ASSY (W/O SIDE COVER)	Tbl. 8a-51	Pg. 8a-89
R43-0502-000CN	RIGHT SIDE COVER	Tbl. 8a-51	Pg. 8a-89
R43-0851-000CN	FACE-DOWN STACKER ASSEMBLY	Tbl. 8b-1	Pg. 8b-3
R44-0230-000CN	DRUM, PHOTOSENSITIVE	Tbl. 8a-29	Pg. 8a-55

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RA1-0932-000CN	CUSHION, RUBBER	Tbl. 8b-10	Pg. 8b-24
RA1-1197-000CN	PLATE, GUIDE	Tbl. 8a-2	Pg. 8a-7
RA1-1198-020CN	FILTER, CORONA	Tbl. 8a-2	Pg. 8a-7
RA1-1200-000CN	SEAL	Tbl. 8a-2	Pg. 8a-7
RA1-1211-000CN	SPRING, LEAF	Tbl. 8a-4	Pg. 8a-19
RA1-1212-000CN	SPRING, LEAF	Tbl. 8a-4	Pg. 8a-20
RA1-1224-000CN	PLATE	Tbl. 8a-3	Pg. 8a-13
RA1-1257-000CN	MOUNT, FAN	Tbl. 8a-6	Pg. 8a-25
RA1-1263-000CN	MOUNT, CONNECTOR	Tbl. 8a-3	Pg. 8a-13
RA1-1267-000CN	SHAFT, DRIVE FUSER ASSEMBLY	Tbl. 8a-19	Pg. 8a-42
RA1-1268-000CN	SUPPORT, SHAFT, FUSER	Tbl. 8a-3	Pg. 8a-13
RA1-1274-000CN	PLATE, SCANNER	Tbl. 8a-4	Pg.8a-18
RA1-1279-000CN	PLATE, BASE	Tbl. 8a-21	Pg. 8a-45
RA1-1288-000CN	DUCT	Tbl. 8a-3	Pg. 8a-12
RA1-1290-000CN	MOUNT, POTENTIAL CONTROL PCA	Tbl. 8a-4	Pg. 8a-20
RA1-1291-000CN	MOUNT, VR	Tbl. 8a-2	Pg. 8a-7
RA1-1292-000CN	SPACER	Tbl. 8a-2	Pg. 8a-7
RA1-1299-000CN	MOUNT, COVER, DISPLAY	Tbl. 8a-6	Pg. 8a-25
RA1-1324-030CN	GUIDE, DRUM	Tbl. 8a-29	Pg. 8a-55
RA1-1331-000CN	MOUNT, CONNECTOR	Tbl. 8a-3	Pg. 8a-13
RA1-1355-040CN	GUIDE, FEEDER, FRONT	Tbl. 8b-9	Pg. 8b-20
RA1-1356-030CN	GUIDE, FEEDER, REAR	Tbl. 8b-9	Pg. 8b-20
RA1-1357-000CN	GUIDE, INLET	Tbl. 8b-9	Pg. 8b-20
RA1-1358-000CN	GUIDE	Tbl. 8b-9	Pg. 8b-20
RA1-1360-040CN	GUIDE, REAR, LOWER	Tbl. 8b-9	Pg. 8b-20
RA1-1361-000CN	GUIDE, REAR, PAPER DELIVERY	Tbl. 8b-9	Pg. 8b-20
RA1-1363-000CN	CROSSMEMBER, LOWER	Tbl. 8b-10	Pg. 8b-24
RA1-1364-000CN	MOUNT, SOLENOID	Tbl. 8b-10	Pg. 8b-24
RA1-1365-000CN	MOUNT, SOLENOID	Tbl. 8b-10	Pg. 8b-24
RA1-1366-000CN	DEFLECTOR	Tbl. 8b-10	Pg. 8b-24
RA1-1373-000CN	ROLLER	Tbl. 8b-10	Pg. 8b-24
RA1-1375-000CN	SHAFT	Tbl. 8b-10	Pg. 8b-24
RA1-1383-020CN	ARM, DEFLECTOR	Tbl. 8b-10	Pg. 8b-24
RA1-1384-000CN	LINK	Tbl. 8b-10	Pg. 8b-24
RA1-1387-000CN	AXLE	Tbl. 8b-10	Pg. 8b-24
RA1-1390-000CN	LINK, A	Tbl. 8b-10	Pg. 8b-24
RA1-1393-000CN	COVER GEAR	Tbl. 8b-10	Pg. 8b-24
RA1-1402-000CN	DEFLECTOR, DELIVERY	Tbl. 8b-10	Pg. 8b-24
RA1-1404-000CN	LINK	Tbl. 8b-9	Pg. 8b-20
RA1-1407-000CN	MOUNT, MOTOR	Tbl. 8b-10	Pg. 8b-24
RA1-1412-000CN	PLATE SIGNAL GENERATING	Tbl. 8b-9	Pg. 8b-21
RA1-1502-000CN	SPRING LEAF	Tbl. 8b-4	Pg. 8b-7

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RA1-1511-000CN	MOUNT PCA 220/240V	Tbl. 8d-3	Pg. 8d-8
RA1-1512-000CN	SUPPORT, FRONT	Tbl. 8d-3	Pg. 8d-8
RA1-1513-000CN	SUPPORT, REAR	Tbl. 8d-3	Pg. 8d-8
RA1-1516-000CN	HUB, ROLLER	Tbl. 8d-8	Pg. 8d-19
RA1-1517-000CN	ROLLER	Tbl. 8d-8	Pg. 8d-19
RA1-1526-000CN	BRACKET, PD/DU	Tbl. 8c-6	Pg. 8c-12
RA1-1531-000CN	SHAFT, FEEDER ROLLER	Tbl. 8d-10	Pg. 8d-26
RA1-1533-000CN	GUIDE, WIRING	Tbl. 8a-3	Pg. 8a-13
RA1-1553-000CN	GUIDE	Tbl. 8a-3	Pg. 8a-13
RA1-1557-020CN	FILTER, AIR	Tbl. 8a-14	Pg. 8a-37
RA1-1568-000CN	FOOT, RUBBER	Tbl. 8a-6	Pg. 8a-25
RA1-1569-000CN	MOUNT, RUBBER	Tbl. 8a-6	Pg. 8a-25
RA1-1570-000CN	PIN, PIVOT, FOOT	Tbl. 8a-6	Pg. 8a-25
RA1-1575-000CN	ARM, FRICTION	Tbl. 8d-10	Pg. 8d-25
RA1-1671-000CN	COVER, CORD	Tbl. 8a-7	Pg. 8a-27
RA1-1671-000CN	COVER, CORD	Tbl. 8a-8	Pg. 8a-29
RA1-1675-000CN	HOLDER, TERMINAL	Tbl. 8a-3	Pg. 8a-13
RA1-1863-000CN	DIAL, EXPOSURE CONTROL	Tbl. 8a-2	Pg. 8a-7
RA1-2043-000CN	PLATE, GROUNDING	Tbl. 8a-3	Pg. 8a-13
RA1-2044-000CN	PLATE, SHIELD, UPPER	Tbl. 8a-4	Pg. 8a-21
RA1-2045-000CN	PLATE, SHIELD, LOWER	Tbl. 8a-4	Pg. 8a-21
RA1-2105-000CN	SHAFT, GEAR	Tbl. 8a-29	Pg. 8a-55
RA1-2106-000CN	ARM, CAM FOLLOWER	Tbl. 8a-29	Pg. 8a-55
RA1-2107-000CN	HOLDER, LEVER	Tbl. 8a-29	Pg. 8a-55
RA1-2108-000CN	GEAR (80 T) CAM	Tbl. 8a-29	Pg. 8a-55
RA1-2109-000CN	FOLLOWER, CAM (A)	Tbl. 8a-29	Pg. 8a-55
RA1-2110-000CN	FOLLOWER, CAM (B)	Tbl. 8a-29	Pg. 8a-55
RA1-2114-020CN	SHAFT, DRUM	Tbl. 8a-29	Pg. 8a-55
RA1-2115-020CN	FLANGE, REAR	Tbl. 8a-29	Pg. 8a-55
RA1-2116-000CN	CAM	Tbl. 8a-3	Pg. 8a-13
RA1-2124-000CN	GUIDE, WIRING	Tbl. 8a-4	Pg. 8a-21
RA1-2433-000CN	ACTUATOR	Tbl. 8b-10	Pg. 8b-24
RA1-2437-000CN	LATCH	Tbl. 8b-9	Pg. 8b-20
RA1-2442-000CN	ELIMINATOR, STATIC CHARGE	Tbl. 8b-9	Pg. 8b-20
RA1-2452-020CN	BRACKET, RIGHT	Tbl. 8b-3	Pg. 8b-5
RA1-2453-000CN	BRACKET, LEFT	Tbl. 8b-3	Pg. 8b-5
RA1-2454-000CN	BRACKET, SHAFT MOUNTING	Tbl. 8b-2	Pg. 8b-4
RA1-2455-000CN	MOUNT, LEFT, SPRING	Tbl. 8b-2	Pg. 8b-4
RA1-2456-000CN	MOUNT, RIGHT, SPRING	Tbl. 8b-2	Pg. 8b-4
RA1-2457-000CN	ROD, PIVOT	Tbl. 8b-2	Pg. 8b-4
RA1-2458-000CN	PLATE, MOUNTING	Tbl. 8b-2	Pg. 8b-4
RA1-2459-000CN	COVER, RIGHT	Tbl. 8b-2	Pg. 8b-4

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RA1-2460-000CN	BRACKET	Tbl. 8b-2	Pg. 8b-4
RA1-2463-000CN	GUIDE, RIGHT, UPPER	Tbl. 8b-5	Pg. 8b-10
RA1-2465-040CN	GUIDE, UPPER	Tbl. 8b-4	Pg. 8b-7
RA1-2466-000CN	BRACKET, CABLE MOUNTING	Tbl. 8b-6	Pg. 8b-13
RA1-2467-000CN	ROLLER,SHAFT	Tbl. 8b-5	Pg. 8b-10
RA1-2470-000CN	GUIDE, LOWER, A	Tbl. 8b-5	Pg. 8b-10
RA1-2471-000CN	GUIDE, LOWER B	Tbl. 8b-5	Pg. 8b-10
RA1-2472-000CN	GUIDE, LEFT, UPPER	Tbl. 8b-5	Pg. 8b-10
RA1-2474-000CN	BRACKET, GEAR UNIT	Tbl. 8b-6	Pg. 8b-13
RA1-2475-000CN	SHAFT, ROLLER	Tbl. 8b-5	Pg. 8b-10
RA1-2477-000CN	PLATE, RIGHT	Tbl. 8b-5	Pg. 8b-10
RA1-2479-000CN	MOUNT, MOTOR	Tbl. 8b-6	Pg. 8b-13
RA1-2482-000CN	PLATE, CABLE MOUNTING	Tbl. 8b-6	Pg. 8b-13
RA1-2483-000CN	FLANGE, PULLEY	Tbl. 8b-6	Pg. 8b-13
RA1-2484-000CN	SHAFT, DRIVE	Tbl. 8b-6	Pg. 8b-13
RA1-2485-000CN	PLATE, FRONT	Tbl. 8b-5	Pg. 8b-10
RA1-2486-000CN	PLATE, REAR	Tbl. 8b-5	Pg. 8b-10
RA1-2497-030CN	PANEL, FRONT	Tbl. 8b-4	Pg. 8b-7
RA1-2499-000CN	PANEL, LOWER, REAR	Tbl. 8b-4	Pg. 8b-7
RA1-2502-000CN	STRAP, DOOR SUPPORT	Tbl. 8b-5	Pg. 8b-10
RA1-2503-000CN	BRACKET	Tbl. 8b-5	Pg. 8b-10
RA1-2504-000CN	RETAINER, CABLE 1	Tbl. 8b-6	Pg. 8b-13
RA1-2505-000CN	RETAINER, CABLE 2	Tbl. 8b-6	Pg. 8b-13
RA1-2505-000CN	RETAINER, CABLE 2	Tbl. 8b-8	Pg. 8b-17
RA1-2506-OOOCN	MOUNT SENSOR	Tbl. 8b-5	Pg. 8b-10
RA1-2507-000CN	PLATE, MOUNTING	Tbl. 8b-6	Pg. 8b-13
RA1-2509-000CN	SPRING, LEAF	Tbl. 8b-4	Pg. 8b-7
RA1-2510-000CN	COVER LEFT	Tbl. 8b-2	Pg. 8b-4
RA1-2511-000CN	BRACKET, LIFTER ASS'Y	Tbl. 8b-3	Pg. 8b-5
RA1-2512-000CN	HOLDER, PAPER	Tbl. 8b-4	Pg. 8b-7
RA1-2514-000CN	GASKET	Tbl. 8b-4	Pg. 8b-7
RA1-2515-000CN	GASKET	Tbl. 8b-4	Pg. 8b-7
RA1-2516-000CN	CROSSBAR	Tbl. 8b-5	Pg. 8b-10
RA1-2524-000CN	ELIMINATOR, STATIC CHARGE, B	Tbl. 8b-4	Pg. 8b-7
RA1-2526-000CN	PLATE, A	Tbl. 8b-5	Pg. 8b-10
RA1-2527-000CN	PLATE, B	Tbl. 8b-5	Pg. 8b-10
RA1-2532-000CN	ROLLER, DELIVERY	Tbl. 8b-7	Pg. 8b-14
RA1-2539-020CN	ARM, SENSING, 1	Tbl. 8b-7	Pg. 8b-14
RA1-2540-000CN	BAR, STOP	Tbl. 8b-8	Pg. 8b-17
RA1-2544-000CN	COVER, FRONT, UPPER	Tbl. 8b-3	Pg. 8b-5
RA1-2545-000CN	PLATE, PANEL	Tbl. 8b-3	Pg. 8b-5
RA1-2546-000CN	TRAY, STACKER	Tbl. 8b-8	Pg. 8b-17

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RA1-2548-000CN	COVER, LIFTER	Tbl. 8b-8	Pg. 8b-17
RA1-2550-000CN	SHAFT	Tbl. 8b-8	Pg. 8b-17
RA1-2552-000CN	PLATE, CABLE MOUNTING	Tbl. 8b-8	Pg. 8b-17
RA1-2553-000CN	ACTUATOR, SWITCH	Tbl. 8b-8	Pg. 8b-17
RA1-2554-000CN	RATCHET, BRAKE	Tbl. 8b-8	Pg. 8b-17
RA1-2555-000CN	MOUNT, MICROSWITCH	Tbl. 8b-8	Pg. 8b-17
RA1-2557-000CN	SUPPORT, TRAY, REAR	Tbl. 8b-8	Pg. 8b-17
RA1-2558-000CN	SUPPORT, TRAY FRONT	Tbl. 8b-8	Pg. 8b-17
RA1-2559-000CN	COVER, TRAY, SUPPORT	Tbl. 8b-8	Pg. 8b-17
RA1-2560-020CN	DISK, RACHET	Tbl. 8b-8	Pg. 8b-17
RA1-2562-000CN	ACTUATOR, MICROSWITCH	Tbl. 8b-5	Pg. 8b-10
RA1-2563-000CN	ROLLER, SHAFT	Tbl. 8b-5	Pg. 8b-10
RA1-2564-000CN	SPRING, ROLLER HOLDER	Tbl. 8b-5	Pg. 8b-10
RA1-2565-000CN	SHEET	Tbl. 8b-8	Pg. 8b-17
RA1-2570-000CN	SEAL	Tbl. 8b-5	Pg. 8b-10
RA1-2571-000CN	SEAL	Tbl. 8b-5	Pg. 8b-10
RA1-2572-000CN	GUIDE, FRONT	Tbl. 8b-9	Pg. 8b-20
RA1-2575-000CN	GUIDE, REAR	Tbl. 8b-9	Pg. 8b-20
RA1-2576-000CN	PLATE, UPPER, RIGHT	Tbl. 8b-9	Pg. 8b-20
RA1-2577-000CN	PLATE, GEAR	Tbl. 8b-10	Pg. 8b-24
RA1-2578-000CN	PLATE, UPPER, LEFT	Tbl. 8b-9	Pg. 8b-20
RA1-2579-000CN	SHAFT, LATCH RELEASE	Tbl. 8b-10	Pg. 8b-24
RA1-2580-000CN	GRIP	Tbl. 8b-10	Pg. 8b-24
RA1-2584-000CN	LINK	Tbl. 8b-10	Pg. 8b-24
RA1-2585-000CN	LATCH	Tbl. 8b-10	Pg. 8b-24
RA1-2586-000CN	COVER, PRINT DELIVERY PORT	Tbl. 8b-4	Pg. 8b-7
RA1-2588-000CN	HINGE, DELIVERY PORT PANEL	Tbl. 8b-4	Pg. 8b-7
RA1-2589-000CN	SHEET MYLAR	Tbl. 8b-10	Pg. 8b-25
RA1-2590-000CN	BRACKET	Tbl. 8b-9	Pg. 8b-20
RA1-2594-000CN	COVER, REAR	Tbl. 8b-4	Pg. 8b-7
RA1-2595-000CN	FLAPPER	Tbl. 8b-9	Pg. 8b-20
RA1-2598-000CN	PLATE	Tbl. 8b-9	Pg. 8b-21
RA1-2600-000CN	MOUNT, SWITCH, UPPER	Tbl. 8b-10	Pg. 8b-25
RA1-2602-000CN	ACTUATOR, MICROSWITCH	Tbl. 8b-10	Pg. 8b-25
RA1-2605-000CN	DOOR, PRINT DELIVERY PORT	Tbl. 8b-4	Pg. 8b-7
RA1-2607-000CN	DEFLECTOR PLATE	Tbl. 8b-5	Pg. 8b-10
RA1-2614-000CN	MOUNT, PLATE	Tbl. 8a-3	Pg. 8a-13
RA1-2615-000CN	HOUSING, CONNECTOR	Tbl. 8a-3	Pg. 8a-13
RA1-2616-000CN	MOUNT, ACTUATOR	Tbl. 8b-10	Pg. 8b-24
RA1-2618-000CN	CYLINDER, DEVELOPING	Tbl. 8a-33	Pg. 8a-62
RA1-2637-000CN	WASHER, RUBBER	Tbl. 8a-3	Pg. 8a-13
RA1-2649-000CN	COVER, DISPLAY	Tbl. 8a-1	Pg. 8a-5

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RA1-2652-000CN	COVER, UPPER, RIGHT	Tbl. 8a-6	Pg. 8a-25
RA1-2653-000CN	PANEL, RIGHT	Tbl. 8a-1	Pg. 8a-5
RA1-2654-000CN	COVER, REAR	Tbl. 8a-1	Pg. 8a-5
RA1-2655-000CN	COVER, UPPER, LEFT	Tbl. 8a-6	Pg. 8a-25
RA1-2656-000CN	PANEL, LEFT	Tbl. 8a-1	Pg. 8a-5
RA1-2662-000CN	SPRING, LEAF	Tbl. 8a-3	Pg. 8a-13
RA1-2663-000CN	COVER, CAPACITOR	Tbl. 8a-4	Pg. 8a-21
RA1-2666-000CN	MOUNT, CONNECTOR, FUSER	Tbl. 8a-3	Pg. 8a-12
RA1-2667-000CN	MOUNT, NOISE FILTER	Tbl. 8a-4	Pg. 8a-21
RA1-3717-000CN	COVER, FRONT, UPPER	Tbl. 8d-2	Pg. 8d-5
RA1-3718-000CN	PANEL, FRONT, LEFT	Tbl. 8d-2	Pg. 8d-5
RA1-3719-000CN	PANEL, FRONT RIGHT	Tbl. 8d-2	Pg. 8d-5
RA1-3720-000CN	PANEL, REAR	Tbl. 8d-2	Pg. 8d-5
RA1-3721-000CN	PANEL, REAR UPPER	Tbl. 8d-2	Pg. 8d-5
RA1-3722-000CN	INSERT, FINGER GRIP	Tbl. 8d-2	Pg. 8d-5
RA1-3724-000CN	COVER, REAR	Tbl. 8c-2	Pg. 8c-3
RA1-3725-000CN	COVER	Tbl. 8c-1	Pg. 8c-2
RA1-3727-000CN	PLATE, GUIDE, RIGHT	Tbl. 8a-51	Pg. 8a-89
RA1-3728-000CN	PLATE, GUIDE, LEFT	Tbl. 8a-51	Pg. 8a-89
RA1-3732-000CN	COVER, MOUNT, CONNECTOR	Tbl. 8a-3	Pg. 8a-13
RA1-3734-000CN	COVER, BLANKING	Tbl. 8a-1	Pg. 8a-5
RA1-3735-000CN	COVER, TOP	Tbl. 8a-1	Pg. 8a-5
RA1-3736-000CN	CAP, COVER, UPPER	Tbl. 8a-1	Pg. 8a-5
RA1-3737-000CN	MOUNT, CONNECTOR, AC	Tbl. 8a-6	Pg. 8a-25
RA1-3742-000CN	PLATE, UPPER, BLANKING	Tbl. 8a-1	Pg. 8a-5
RA1-3743-030CN	PLATE, GUIDE, PICK-UP, UPPER	Tbl. 8a-4	Pg.8a-18
RA1-3750-000CN	MOUNT, CORD	Tbl. 8a-7	Pg. 8a-27
RA1-3750-000CN	MOUNT, CORD	Tbl. 8a-8	Pg. 8a-29
RA1-4333-000CN	CROSS MEMBER	Tbl. 8a-21	Pg. 8a-45
RA1-4600-000CN	FLANGE, FRONT	Tbl. 8a-29	Pg. 8a-55
RA1-4681-000CN	PLATE, CABLE	Tbl. 8b-6	Pg. 8b-13
RA1-4683-000CN	PLATE, MOUNTING, 2	Tbl. 8a-51	Pg. 8a-89
RA1-4684-000CN	PLATE, MOUNTING, 3	Tbl. 8a-51	Pg. 8a-89
RA1-4687-000CN	ROLLER, SPACER, DEV, CYLINDER	Tbl. 8a-33	Pg. 8a-62
RA1-4710-000CN	SPRING LEAF	Tbl. 8b-9	Pg. 8b-21
RA1-4732-000CN	PLATE, SUPPORT	Tbl. 8d-2	Pg. 8d-5
RA1-5301-000C	ROLLER, UPPER	Tbl. 8a-36	Pg. 8a-70
RA1-5421-000CN	HOLDER, CASTER	Tbl. 8a-51	Pg. 8a-89
RA1-5421-000CN	MOUNT, CASTER	Tbl. 8d-2	Pg. 8d-5
RA1-6037-000CN	WEIGHT (LTR ONLY)	Tbl. 8c-5	Pg. 8c-11
RA1-6416-000CN	ELIMINATOR, STATIC CHARGE	Tbl. 8d-10	Pg. 8d-26
RA1-6416-020CN	ELIMINATOR, STATIC CHARGE	Tbl. 8d-10	Pg. 8d-24

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RA1-7025-000CN	RING, SLIP	Tbl. 8a-3	Pg. 8a-12
RA1-7035-000CN	SB DOOR GUIDE (FUNNEL ASSY)	Tbl. 8b-4	Pg. 8b-7
RA1-7155-000CN	ELIMINATOR, STATIC CHARGE	Tbl. 8d-9	Pg. 8d-21
RF1-0282-000CN	PLATE, PIVOT	Tbl. 8a-6	Pg. 8a-25
RF1-0283-000CN	MOUNT, DAMPER, 1	Tbl. 8a-6	Pg. 8a-25
RF1-0284-000CN	MOUNT, DAMPER, 2	Tbl. 8a-6	Pg. 8a-25
RF1-0292-000CN	COVER, INTERNAL, RIGHT	Tbl. 8a-2	Pg. 8a-7
RF1-0302-000CN	MOUNT, FILTER	Tbl. 8a-2	Pg. 8a-7
RF1-0306-000CN	PLATE, DUCT, UPPER	Tbl. 8a-4	Pg.8a-18
RF1-0310-060CN	PLATE	Tbl. 8a-4	Pg.8a-18
RF1-0313-020CN	ARM, DEFLECTOR	Tbl. 8b-10	Pg. 8b-25
RF1-0314-000CN	PLATE, DRIVE MOUNTING	Tbl. 8b-10	Pg. 8b-25
RF1-0315-000CN	ARM, DEFLECTOR	Tbl. 8b-10	Pg. 8b-25
RF1-0316-000CN	LINK	Tbl. 8b-10	Pg. 8b-25
RF1-0321-000CN	AXLE	Tbl. 8b-10	Pg. 8b-25
RF1-0324-000CN	ROLLER, FEED	Tbl. 8b-10	Pg. 8b-25
RF1-0325-000CN	ROLLER/SHAFT DELIVERY	Tbl. 8b-10	Pg. 8b-25
RF1-0327-000CN	ROLLER, FEED	Tbl. 8b-10	Pg. 8b-25
RF1-0328-040CN	DEFLECTOR	Tbl. 8b-10	Pg. 8b-25
RF1-0329-040CN	ROLLER/SHAFT, FEED	Tbl. 8b-10	Pg. 8b-25
RF1-0344-000CN	ARM, DEFLECTOR	Tbl. 8b-10	Pg. 8b-25
RF1-0345-000CN	GUIDE, FRONT, LOWER	Tbl. 8b-9	Pg. 8b-21
RF1-0346-000CN	CABLE 1, DISPLAY	Tbl. 8a-6	Pg. 8a-25
RF1-0347-000CN	RESISTOR, VARIABLE	Tbl. 8a-2	Pg. 8a-7
RF1-0353-000CN	RAIL, PRIMARY	Tbl. 8a-4	Pg. 8a-19
RF1-0396-000CN	MOTOR, FAN AND DRIVER PCA	Tbl. 8a-14	Pg. 8a-37
RF1-0403-000CN	CABLE ASSEMBLY	Tbl. 8c-6	Pg. 8c-12
RF1-0446-000CN	CABLE, PDX I/F		
RF1-0448-000CN	CABLE 2, DISPLAY	Tbl. 8a-6	Pg. 8a-25
RF1-0449-000CN	POTENTIAL SENSOR CABLE	Tbl. 8a-4	Pg. 8a-21
RF1-0470-000CN	COVER, INTERNAL, LEFT 220 V	Tbl. 8a-2	Pg. 8a-7
RF1-0472-030CN	FILTER, COVER	Tbl. 8a-14	Pg. 8a-37
RF1-0473-000CN	DUCT, FAN	Tbl. 8a-14	Pg. 8a-37
RF1-0486-040CN	INTAKE DUCT	Tbl. 8a-4	Pg. 8a-19
RF1-0499-000CN	RESISTER, 10K0HM 10W	Tbl. 8a-3	Pg. 8a-13
RF1-0508-000CN	FLANGE (SPRING)	Tbl. 8a-29	Pg. 8a-55
RF1-0563-000CN	WIRE, GROUNDING	Tbl. 8a-29	Pg. 8a-55
RF1-0564-000CN	COVER, UPPER	Tbl. 8a-6	Pg. 8a-25
RF1-0565-000CN	COVER, UPPER, FRONT	Tbl. 8a-6	Pg. 8a-25
RF1-0594-000CN	WIRE HARNESS	Tbl. 8d-11	Pg. 8d-29
RF1-0596-000CN	CABLE, HARNESS	Tbl. 8d-10	Pg. 8d-26
RF1-0603-000CN	COVER, INTERNAL, LEFT 115 V	Tbl. 8a-2	Pg. 8a-7

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RF1-0604-020CN	CABLE, FIBER OPTIC	Tbl. 8a-4	Pg. 8a-20
RF1-0606-000CN	GUIDE, LOWER	Tbl. 8d-9	Pg. 8d-21
RF1-0607-000CN	ROLLER/ARM UNIT	Tbl. 8d-7	Pg. 8d-17
RF1-0607-000CN	ROLLER/SPRING UNIT	Tbl. 8b-9	Pg. 8b-21
RF1-0609-000CN	MOUNT, SWITCH, LOWER	Tbl. 8b-10	Pg. 8b-25
RF1-0610-000CN	PLATE, SPINDLE	Tbl. 8b-6	Pg. 8b-13
RF1-0613-000CN	MOUNT, MICROSWITCH	Tbl. 8b-5	Pg. 8b-10
RF1-0614-000CN	LIFTER, SUB TRAY	Tbl. 8b-8	Pg. 8b-17
RF1-0615-000CN	BRACKET, REAR	Tbl. 8b-3	Pg. 8b-5
RF1-0616-000CN	PLATE, SIGNAL GENERATING	Tbl. 8b-8	Pg. 8b-17
RF1-0617-000CN	LINK	Tbl. 8b-9	Pg. 8b-21
RF1-0618-000CN	PLATE, SPINDLE	Tbl. 8b-10	Pg. 8b-25
RF1-0620-000CN	PLATE, PIN	Tbl. 8b-9	Pg. 8b-21
RF1-0622-000CN	PLATE, PIN	Tbl. 8b-5	Pg. 8b-10
RF1-0623-000CN	PLATE, PIN	Tbl. 8b-5	Pg. 8b-10
RF1-0624-000CN	PLATE, PIN	Tbl. 8b-9	Pg. 8b-21
RF1-0625-000CN	GUIDE	Tbl. 8b-5	Pg. 8b-10
RF1-0626-000CN	DOOR, RIGHT	Tbl. 8b-4	Pg. 8b-7
RF1-0627-000CN	PANEL, REAR, UPPER	Tbl. 8b-4	Pg. 8b-7
RF1-0632-000CN	ROLLER	Tbl. 8b-9	Pg. 8b-21
RF1-0669-000CN	FRAME, PEDESTAL	Tbl. 8d-2	Pg. 8d-5
RF1-0673-000CN	GEAR, 22T	Tbl. 8b-10	Pg. 8b-25
RF1-0674-000CN	ROLLER/SHAFT, FEED	Tbl. 8b-10	Pg. 8b-25
RF1-0677-000CN	SOLENOID, LIFER BRAKE	Tbl. 8b-8	Pg. 8b-17
RF1-0700-000CN	DOOR, FRONT, RIGHT	Tbl. 8a-1	Pg. 8a-5
RF1-0701-020CN	DOOR, FRONT,LEFT	Tbl. 8a-1	Pg. 8a-5
RF1-0703-000CN	CROSSMEMBER	Tbl. 8a-21	Pg. 8a-45
RF1-0704-000CN	REEL, CLEANING BELT SUPPLY	Tbl. 8a-38	Pg. 8a-75
RF1-0716-000CN	FILTER, NOISE	Tbl. 8a-4	Pg. 8a-21
RF1-0776-000CN	PANEL, LEFT	Tbl. 8d-2	Pg. 8d-5
RF1-1122-000CN	ROLLER ASSEMBLY, PAPER PICKUP	Tbl. 8a-23	Pg. 8a-47
RF1-1122-000CN	ROLLER, PAPER PICKUP	Tbl. 8a-23	Pg. 8a-47
RF1-1123-000CN	SOLENOID	Tbl. 8d-5	Pg. 8d-13
RF1-1135-000CN	COVER, FILTER	Tbl. 8a-2	Pg. 8a-7
RF1-1152-000CN	LEVER, SIGNAL GENERATING	Tbl. 8b-9	Pg. 8b-21
RF1-1161-000CN	PLATE STOP	Tbl. 8b-8	Pg. 8b-17
RF1-1302-000CN	PLATE, STACK END	Tbl. 8c-3	Pg. 8c-6
RF1-2307-000CN	ROLLER, UPPER	Tbl. 8a-4	Pg.8a-18
RF1-2308-000CN	ROLLER, LOWER	Tbl. 8a-4	Pg.8a-18
RF1-4771-000CN	ROLLER/SPRING UNIT	Tbl. 8b-9	Pg. 8b-21
RF9-0201-000CN	PANEL, DELIVERY	Tbl. 8a-1	Pg. 8a-5
RG0-0039-000CN	LASER/SCANNER ASSEMBLY	Tbl. 8a-27	Pg. 8a-52

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RG0-0040-000CN	SCANNER MOTOR UNIT	Tbl. 8a-27	Pg. 8a-52
RG1-0339-030CN	POTENTIAL CONTROL PCA ASS'Y	Tbl. 8a-41	Pg. 8a-78
RG1-0368-030CN	PRECOND EXPOSURE LAMP ASSY	Tbl. 8a-28	Pg. 8a-53
RG1-0369-080CN	PRIMARY CORONA UNIT	Tbl. 8a-30	Pg. 8a-56
RG1-0374-000CN	CASSETTE SIZE SENSING UNIT	Tbl. 8a-21	Pg. 8a-45
RG1-0376-000CN	MAIN MOTOR ASSEMBLY	Tbl. 8a-16	Pg. 8a-39
RG1-0389-060CN	FUSER CLEANER ASSEMBLY (115V)	Tbl. 8a-38	Pg. 8a-75
RG1-0391-060CN	FUSER CLEANER ASSEMBLY (220V)	Tbl. 8a-38	Pg. 8a-75
RG1-0403-080CN	CPU PCA ASSEMBLY	Tbl. 8c-6	Pg. 8c-12
RG1-0413-000CN	DISPLAY DRIVE PCA	Tbl. 8a-50	Pg. 8a-87
RG1-0418-000CN	INTAKE FAN ASSEMBLY	Tbl. 8a-14	Pg. 8a-37
RG1-0419-000CN	FUSER UNIT DRIVE ASSEMBLY	Tbl. 8a-19	Pg. 8a-42
RG1-0420-000CN	DOUBLE FEED DETECTING ASSY	Tbl. 8a-24	Pg. 8a-48
RG1-0424-020CN	MOUNT, PHOTOINTERRUPTER	Tbl. 8b-4	Pg. 8b-7
RG1-0424-020CN	CASE, SENSOR	Tbl. 8d-10	Pg. 8d-26
RG1-0432-000CN	BELT FEEDER ASSEMBLY	Tbl. 8d-6	Pg. 8d-16
RG1-0433-000CN	HOLDING TRAY ASSEMBLY	Tbl. 8d-8	Pg. 8d-19
RG1-0434-000CN	DRIVE ASSEMBLY	Tbl. 8d-5	Pg. 8d-13
RG1-0441-020CN	PAPER FEED ASSEMBLY	Tbl. 8d-10	Pg. 8d-24
RG1-0508-040CN	MOTHERBOARD ASSEMBLY	Tbl. 8a-40	Pg. 8a-77
RG1-0512-040CN	CPU BD. (MASTER) ASSEMBLY	Tbl. 8a-40	Pg. 8a-77
RG1-0513-040CN	CPU BD. (SLAVE) ASSEMBLY	Tbl. 8a-40	Pg. 8a-77
RG1-0514-040CN	DOUBLE FEED DET. PCA ASSEMBLY	Tbl. 8a-40	Pg. 8a-77
RG1-0515-000CN	DRUM MOTOR ASSEMBLY	Tbl. 8a-15	Pg. 8a-38
RG1-0527-000CN	PD/DU CONTROLLER PCA ASSEMBLY	Tbl. 8c-6	Pg. 8c-12
RG1-0530-000CN	AC DRIVER PCA ASSEMBLY 115V	Tbl. 8a-43	Pg. 8a-80
RG1-0531-000CN	AC DRIVER PCA ASSEMBLY 220V	Tbl. 8a-43	Pg. 8a-80
RG1-0544-000CN	DC24V POWER SUPPLY PCA ASSY	Tbl. 8c-7	Pg.8c-13
RG1-0547-000CN	DU DRIVER PCA	Tbl 8d-12	Pg. 8d-30
RG1-0551-000CN	STACKER I/F CABLE	Tbl. 8a-6	Pg. 8a-25
RG1-0572-000CN	DC POWER SUPPLY 2 PCA ASSEMBLY	Tbl. 8a-39	Pg. 8a-76
RG1-0573-000CN	PDX DRIVER PCA	Tbl. 8c-6	Pg. 8c-12
RG1-0577-000CN	DRUM TEMP CONTROL PCA (115V)	Tbl. 8a-42	Pg. 8a-79
RG1-0578-000CN	DRUM TEMP CONTROL PCA (220V)	Tbl. 8a-42	Pg. 8a-79
RG1-0579-030CN	LASER DRIVER PCA ASSEMBLY	Tbl. 8a-45	Pg. 8a-82
RG1-0582-000CN	DEVELOPING CABLE ASSEMBLY	Tbl. 8a-3	Pg. 8a-13
RG1-0621-000CN	REGISTRATION DRIVE ASSEMBLY	Tbl. 8a-17	Pg. 8a-40
RG1-0622-000CN	DEVELOPING UNIT DRIVE ASSEMBLY	Tbl. 8a-18	Pg. 8a-41
RG1-0627-000CN	AC CABLE ASSEMBLY	Tbl. 8c-1	Pg. 8c-2
RG1-0648-000CN	VERTICAL PASS ASSEMBLY	Tbl. 8d-11	Pg. 8d-29
RG1-0653-090CN	DEVELOPING ASSEMBLY	Tbl. 8a-33	Pg. 8a-62
RG1-0680-000CN	STACKER CONTROLLER PCA	Tbl. 8b-11	Pg. 8b-26

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RG1-0684-020CN	UPPER FEEDER ASSEMBLY	Tbl. 8b-7	Pg. 8b-14
RG1-0685-030CN	LIFTER ASSEMBLY	Tbl. 8b-8	Pg. 8b-17
RG1-0706-000CN	STACKER INTERFACE CABLE	Tbl. 8b-6	Pg. 8b-13
RG1-0707-000CN	LIFTER TRAY CABLE	Tbl. 8b-6	Pg. 8b-13
RG1-0878-000CN	DC CONTROL ASSEMBLY	Tbl. 8a-40	Pg. 8a-77
RG1-0902-000CN	POWER CORD ASSEMBLY (120V)	Tbl. 8a-7	Pg. 8a-27
RG1-0903-000CN	POWER CORD ASSEMBLY (220/240V)	Tbl. 8a-8	Pg. 8a-29
RG1-0904-000CN	DISPLAY ASSEMBLY	Tbl. 8a-6	Pg. 8a-25
RG1-1001-000CN	FUSER DELIVERY ASSEMBLY	Tbl. 8a-37	Pg. 8a-73
RG1-1002-200CN	FUSER ASSEMBLY (115V)*	Tbl. 8a-36	Pg. 8a-70
RG1-1003-200CN	FUSER ASSEMBLY (220V/240V)*	Tbl. 8a-36	Pg. 8a-70
RG1-1123-000CN	GEAR, 108T	Tbl. 8a-3	Pg. 8a-12
RG1-1244-000CN	PRETRANSFER CORONA ASSEMBLY	Tbl. 8a-31	Pg. 8a-57
RG1-1245-020CN	TRANSFER/SEPARATE CORONA ASSY.	Tbl. 8a-32	Pg. 8a-58
RG9-0202-050CN	INTAKE FAN ASSEMBLY 2	Tbl. 8a-14	Pg. 8a-37
RGI-0537-000CN	PAPER PICK UP ROLLER ASSEMBLY	Tbl. 8c-5	Pg. 8c-11
RH2-5039-000CN	CABLE, E/I TO DC CONT	Tbl. 8a-6	Pg. 8a-25
RH2-5039-000CN	CABLE, DATA (E/I TO DC)	Tbl 8e-1	Pg. 8e-3
RH2-5059-000CN	CORD, POWER (220V)	Tbl. 8b-6	Pg. 8b-13
RH2-5060-000CN	CORD, POWER (115V)	Tbl. 8b-6	Pg. 8b-13
RH3-0027-000CN	TRANSFORMER, 220/240V 50HZ	Tbl. 8a-8	Pg. 8a-29
RH3-0028-000CN	TRANSFORMER, POWER 120 VAC	Tbl. 8a-7	Pg. 8a-27
RH3-0030-000CN	DC POWER SUPPLY, 220/240V	Tbl. 8b-5	Pg. 8b-10
RH3-0031-000CN	TRANSFORMER, 220/240V	Tbl. 8a-5	Pg. 8a-22
RH3-0032-000CN	TRANSFORMER, 220 240V 50HZ	Tbl. 8d-3	Pg. 8d-9
RH3-0033-000CN	TRANSFORMER POWER (220V/50Hz)	Tbl. 8c-7	Pg.8c-13
RH3-0035-030CN	DCPS1 POWER SUPPLY 120 VAC	Tbl. 8a-4	Pg. 8a-19
RH3-0036-030CN	DCPS1 POWER SUPPLY 220/240VAC	Tbl. 8a-4	Pg. 8a-19
RH3-0037-000CN	DC POWER SUPPLY 115V	Tbl. 8b-5	Pg. 8b-10
RH3-0051-000CN	TRANSFORMER 120 VAC	Tbl. 8a-6	Pg. 8a-25
RH3-0052-000CN	TRANSFORMER 220/240 VAC	Tbl. 8a-6	Pg. 8a-25
RH4-0046-000CN	SSR,SF12DC-H1 SSR	Tbl. 8a-8	Pg. 8a-29
RH5-0025-000CN	TERMINAL	Tbl. 8a-6	Pg. 8a-25
RH6-3014-020CN	MOTOR, DRIVE PCA	Tbl. 8a-3	Pg. 8a-12
RH6-3016-000CN	SCANNER DRIVER PCA ASS'Y	Tbl. 8a-44	Pg. 8a-81
RH6-3022-000CN	FAN MOTOR, DRIVER PCA	Tbl. 8a-4	Pg. 8a-21
RH7-1019-000CN	MOTOR, 220V, 1.5W	Tbl. 8a-38	Pg. 8a-75
RH7-1023-000CN	MOTOR	Tbl. 8d-3	Pg. 8d-9
RH7-1024-030CN	FAN/MOTOR UNIT	Tbl. 8a-14	Pg. 8a-37
RH7-1028-000CN	MOTOR, 24VDC	Tbl. 8b-10	Pg. 8b-25
RH7-1031-000CN	FAN, 10VDC	Tbl. 8b-9	Pg. 8b-20
RH7-1032-000CN	MOTOR, 24VDC	Tbl. 8b-6	Pg. 8b-13

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RH7-1033-000CN	MOTOR 24VDC	Tbl. 8b-8	Pg. 8b-17
RH7-1055-000CN	FAN MOTOR	Tbl. 8a-6	Pg. 8a-25
RH7-1065-000CN	FAN, 24VDC	Tbl. 8b-5	Pg. 8b-10
RH7-4014-000CN	HEATER,115V 750W	Tbl. 8a-36	Pg. 8a-71
RH7-4015-000CN	HEATER,220V 750W	Tbl. 8a-36	Pg. 8a-71
RH7-5004-000CN	SOLENOID, 24VDC	Tbl. 8b-10	Pg. 8b-25
RH7-5007-000CN	CLUTCH, ELECTROMAGNETIC 24VDC	Tbl. 8b-6	Pg. 8b-13
RN1-4003-000CN	MIRROR, BEAM DETECT	Tbl. 8a-2	Pg. 8a-7
RS1-0022-000CN	PULLEY/GEAR, 12T/36T	Tbl. 8b-10	Pg. 8b-24
RS1-0023-000CN	GEAR, 38TT	Tbl. 8b-10	Pg. 8b-24
RS1-0024-000CN	GEAR, 23T	Tbl. 8b-10	Pg. 8b-24
RS1-0025-000CN	GEAR, 32T	Tbl. 8b-10	Pg. 8b-24
RS1-0031-000CN	GEAR, 25T	Tbl. 8b-10	Pg. 8b-24
RS1-0032-000CN	PULLEY, XL 12Z	Tbl. 8c-5	Pg. 8c-11
RS1-0033-000	PULLEY, XL 16Z	Tbl. 8c-5	Pg. 8c-11
RS1-0068-000CN	GEAR, 16T	Tbl. 8b-7	Pg. 8b-14
RS1-0069-000CN	GEAR, 40T	Tbl. 8b-8	Pg. 8b-17
RS1-0070-000CN	GEAR, 16T	Tbl. 8b-8	Pg. 8b-17
RS1-0078-000CN	GEAR, 22T	Tbl. 8b-8	Pg. 8b-17
RS1-0082-000CN	GEAR, 16T	Tbl. 8b-10	Pg. 8b-24
RS1-0163-000CN	GEAR, 22T	Tbl. 8b-10	Pg. 8b-25
RS1-1006-000CN	BUSHING	Tbl. 8b-7	Pg. 8b-14
RS1-2020-000CN	SPRING, TENSION	Tbl. 8a-36	Pg. 8a-70
RS1-2021-000CN	SPRING, TORSION	Tbl. 8b-10	Pg. 8b-24
RS1-2023-000CN	SPRING, TORSION A	Tbl. 8b-10	Pg. 8b-24
RS1-2024-000CN	SPRING, TORSION, B	Tbl. 8b-10	Pg. 8b-24
RS1-2025-000CN	SPRING, TENSION	Tbl. 8b-10	Pg. 8b-24
RS1-2036-000CN	SPRING, TENSION	Tbl. 8b-10	Pg. 8b-24
RS1-2039-000CN	SPRING, COMPRESSION	Tbl. 8a-3	Pg. 8a-13
RS1-2063-000CN	SPRING	Tbl. 8d-10	Pg. 8d-25
RS1-2065-000CN	SPRING, TENSION	Tbl. 8b-5	Pg. 8b-10
RS1-2069-000CN	SPRING, COMPRESSION	Tbl. 8b-10	Pg. 8b-24
RS1-2076-000CN	SPRING, TENSION	Tbl. 8b-8	Pg. 8b-17
RS1-2077-000CN	SPRING, TORSION	Tbl. 8b-9	Pg. 8b-21
RS1-2078-000CN	SPRING, TORSION	Tbl. 8b-9	Pg. 8b-21
RS1-2135-000CN	SPRING, TENSION	Tbl. 8b-9	Pg. 8b-21
RS1-2213-000CN	SPRING, TENSION	Tbl. 8b-10	Pg. 8b-24
RS1-2221-000CN	SPRING, TENSION (NEW)	Tbl. 8a-16	Pg. 8a-39
RS1-3001-020CN	SPROCKET, 16T	Tbl. 8a-16	Pg. 8a-39
RS1-3003-020CN	GEAR, 24T IDLER	Tbl. 8a-16	Pg. 8a-39
RS1-3003-020CN	SPROCKET, IDLER, 24T	Tbl. 8a-3	Pg. 8a-12
RS1-3004-020CN	SPROCKET, CLEANER/FUSER, 29T	Tbl. 8a-3	Pg. 8a-12

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
RS1-3022-000CN	SPROCKET, 18T	Tbl. 8a-17	Pg. 8a-40
RS1-3022-000CN	SPROCKET, 18T	Tbl. 8a-18	Pg. 8a-41
RS1-6006-000CN	WASHER	Tbl. 8a-29	Pg. 8a-55
RS1-6020-000CN	SPACER	Tbl. 8b-8	Pg. 8b-17
RS1-6021-000CN	RING RUBBER	Tbl. 8b-10	Pg. 8b-24
RS1-7003-000CN	SPACER	Tbl. 8a-40	Pg. 8a-77
RS1-7003-000CN	SPACER	Tbl. 8c-6	Pg. 8c-12
RS1-8075-000CN	LABEL, BRH (220V)	Tbl. 8a-2	Pg. 8a-8
RS1-8103-000CN	LABEL	Tbl. 8a-2	Pg. 8a-7
RS1-8241-000CN	INSTRUCTION, LABEL	Tbl. 8a-1	Pg. 8a-5
RS1-8266-030CN	LABEL, SURFACE POTENTIAL (115V/220V)	Tbl. 8a-1	Pg. 8a-5
RS1-8292-000CN	LABEL, "GAS DAMPER"	Tbl. 8a-6	Pg. 8a-25
RS1-8294-000CN	LABEL, CLEARING JAMS	Tbl. 8b-2	Pg. 8b-4
RS1-8294-000CN	LABEL, DOOR	Tbl. 8d-2	Pg. 8d-5
RS1-8295-020CN	LABEL, JAM DU/PDX UNIT	Tbl. 8d-2	Pg. 8d-5
RS1-8295-OOOCN	LABEL, JAM STANDARD	Tbl. 8d-2	Pg. 8d-5
RS1-8296-000CN	LABEL, CLEARING JAMS	Tbl. 8a-2	Pg. 8a-8
RS1-8417-000CN	LABEL	Tbl. 8a-29	Pg. 8a-55
RS1-8455-000CN	LABEL, DEV. BIAS	Tbl. 8a-2	Pg. 8a-8
RS1-8463-000CN	LABEL SIZE FRONT	Tbl. 8b-8	Pg. 8b-17
RS1-8464-000CN	LABEL SIZE REAR	Tbl. 8b-8	Pg. 8b-17
RS1-8519-000CN	LABEL	Tbl. 8a-6	Pg. 8a-25
RS1-8561-000CN	LABEL, "JAM" (115/220V)	Tbl. 8a-2	Pg. 8a-7
RS1-8624-000CN	LABEL, FCC	Tbl. 8d-2	Pg. 8d-5
RS1-9004-000CN	SCREW, STEPPED	Tbl. 8a-29	Pg. 8a-55
TKN-0459-000CN	PROTECTIVE DRUM SLEEVE, 50 EA	Tbl. 8a-29	Pg. 8a-55
VR9-3341-000CN	RESISTOR, 10KOHM, 1/2W	Tbl. 8a-3	Pg. 8a-13
VS2-0053-003	CONNECTOR, 3P, FEMALE	Tbl. 8a-7	Pg. 8a-27
VS3-0044-002CN	CONNECTOR, PCA, 2P FEMALE	Tbl. 8c-7	Pg.8c-13
VS3-0044-011CN	CONNECTOR, PCA, 11P	Tbl. 8c-6	Pg. 8c-12
VS3-0047-002CN	CONNECTOR, PCA 2P FEMALE	Tbl. 8c-7	Pg.8c-13
VS4-0001-002CN	CONNECTOR, 2P MALE	Tbl. 8c-1	Pg. 8c-2
VS4-0002-003CN	CONNECTOR, 3P,FEMALE	Tbl. 8c-1	Pg. 8c-2
VT2-0001-003CN	SUPPORT, PCA	Tbl. 8c-6	Pg. 8c-12
VT2-0001-004CN	SUPPORT, PCA	Tbl. 8a-4	Pg. 8a-20
VT2-0001-006CN	SUPPORT, PCA	Tbl. 8c-3	Pg. 8c-7
VT2-0002-003CN	SPACER, SUPPORT	Tbl. 8a-4	Pg. 8a-21
VT2-0002-006CN	SUPPORT PCA	Tbl. 8c-6	Pg. 8c-12
VT2-0002-040CN	SUPPORT SPACER	Tbl. 8a-4	Pg. 8a-19
VT2-0006-004CN	SUPPORT, PCA	Tbl. 8d-3	Pg. 8d-9
VT2-0006-006CN	SUPPORT PCA	Tbl. 8c-7	Pg.8c-13
WC1-0110-000CN	SWITCH, BREAKER, 220/240VAC 50 HZ	Tbl. 8a-2	Pg. 8a-7

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
WC1-0113-000CN	SWITCH, ROCKER	Tbl. 8a-8	Pg. 8a-29
WC2-0063-000CN	MICROSWITCH	Tbl. 8d-4	Pg. 8d-11
WC2-0063-000CN	MICROSWITCH	Tbl. 8a-10	Pg. 8a-31
WC4-0059-000CN	MICROSWITCH	Tbl. 8c-2	Pg. 8c-3
WC4-0063-000CN	MICROSWITCH	Tbl. 8a-3	Pg. 8a-13
WC4-0084-000CN	MICROSWITCH	Tbl. 8c-3	Pg. 8c-7
WC4-0114-000CN	MICROSWITCH	Tbl. 8a-9	Pg. 8a-30
WC4-0151-000CN	MICROSWITCH	Tbl. 8b-10	Pg. 8b-25
WC4-0151-000CN	MICROSWITCH	Tbl. 8b-5	Pg. 8b-10
WC4-0151-000CN	MICROSWITCH	Tbl. 8b-8	Pg. 8b-17
WD3-0024-000CN	SWITCH, BREAKER, 120VAC 60 HZ	Tbl. 8a-2	Pg. 8a-7
WD3-0080-000CN	BREAKER, CIRCUIT, 250VAC 15A	Tbl. 8a-7	Pg. 8a-27
WD3-0081-000CN	BREAKER, CIRCUIT, 250VAC 8A	Tbl. 8a-8	Pg. 8a-29
WG1-0093-000CN	LAMP	Tbl. 8a-35	Pg. 8a-66
WG1-0093-000CN	LAMP, 6.3V 50MA	Tbl. 8a-21	Pg. 8a-45
WG1-0209-000CN	LED	Tbl. 8a-4	Pg. 8a-21
WG1-0493-000CN	LAMP, 6.3V 50MMA (LA1)	Tbl. 8d-10	Pg. 8d-25
WG3-0029-000CN	PHOTO TRANSISTOR,PN-205	Tbl. 8a-21	Pg. 8a-45
WG8-0108-000CN	PHOTO SENSOR (Q1)	Tbl. 8d-10	Pg. 8d-26
WG9-0003-000CN	SOCKET, BULB	Tbl. 8a-21	Pg. 8a-45
WK3-0078-000CN	FILTER, NOISE 220/240V	Tbl. 8b-6	Pg. 8b-13
WS3-0432-006CN	CONNECTOR, 6P	Tbl. 8a-21	Pg. 8a-45
WS3-0435-010CN	CONNECTOR, 10P	Tbl. 8a-21	Pg. 8a-45
WS3-0437-000CN	CONTACT	Tbl. 8a-21	Pg. 8a-45
WS3-0531-000CN	PIN ASSEMBLY, 3P	Tbl. 8d-10	Pg. 8d-26
WS3-0916-000CN	SOCKET, CONTACT 18-24AWG	Tbl. 8c-7	Pg.8c-13
WS3-0916-000CN	SOCKET, CONTACT, 18-24AWG	Tbl. 8c-6	Pg. 8c-12
WS3-0924-000CN	PIN CONTACT	Tbl. 8a-21	Pg. 8a-45
WS3-1022-000CN	SOCKET, LED	Tbl. 8a-21	Pg. 8a-45
WS4-0059-000CN	CONNECTOR, 2P, MALE	Tbl. 8a-7	Pg. 8a-27
WS4-0060-000CN	CONNECTOR, 2P, FEMALE	Tbl. 8a-7	Pg. 8a-27
WS4-0060-000CN	CONNECTOR, 2P, FEMALE	Tbl. 8c-1	Pg. 8c-2
WS4-0062-000CN	CONNECTOR, 3P	Tbl. 8a-6	Pg. 8a-25
WS4-0073-000CN	SOCKET, CONTACT, 14-20AWG	Tbl. 8a-6	Pg. 8a-25
WS4-0073-000CN	SOCKET, CONTACT, 14-20AWG	Tbl. 8a-7	Pg. 8a-27
WS4-0073-000CN	SOCKET, CONTACT, 14-20AWG	Tbl. 8a-8	Pg. 8a-29
WS4-0074-000CN	SOCKET, CONTACT, 18-24AWG	Tbl. 8c-1	Pg. 8c-2
WS4-0075-000CN	PIN, CONTACT, 14-20AWG	Tbl. 8a-7	Pg. 8a-27
WS4-0217-000CN	SOCKET, CONTACT, 18-22AWG	Tbl. 8c-1	Pg. 8c-2
WS4-0218-000CN	SOCKET, CONTACT, 18-22AWG	Tbl. 8a-7	Pg. 8a-27
WS4-0219-000CN	PIN, CONTACT 18-22AWG	Tbl. 8c-1	Pg. 8c-2
WS5-0021-000CN	CONNECTOR, POWER SUPPLY	Tbl. 8a-7	Pg. 8a-27

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
WS5-0026-000CN	CONNECTOR, POWER SUPPLY	Tbl. 8a-8	Pg. 8a-29
WT1-0017-000CN	SOCKET, FASTON 250, 16-20AWG	Tbl. 8a-7	Pg. 8a-27
WT1-0029-000CN	SLEEVE, FASTON 250	Tbl. 8a-6	Pg. 8a-25
WT1-0029-000CN	SLEEVE, FASTON 250	Tbl. 8a-7	Pg. 8a-27
WT1-0029-000CN	SLEEVE, FASTON 250	Tbl. 8a-8	Pg. 8a-29
WT1-0259-000CN	TERMINAL, RING	Tbl. 8a-7	Pg. 8a-27
WT2-0030-000CN	TIE, CABLE	Tbl. 8a-21	Pg. 8a-45
WT2-0030-000CN	TIE, CABLE	Tbl. 8c-3	Pg. 8c-7
WT2-0110-000CN	CLIP	Tbl. 8c-1	Pg. 8c-2
WT2-0110-000CN	CLIP, 2N	Tbl. 8a-4	Pg. 8a-19
WT2-0132-000CN	CLIP, CABLE, 1NS	Tbl. 8a-3	Pg. 8a-12
WT2-0204-000CN	CLIP, WIRE	Tbl. 8a-3	Pg. 8a-12
WT2-0233-000CN	SUPPORT, PCA	Tbl. 8a-4	Pg. 8a-19
WT2-0244-000CN	CLIP, CABLE, 1NS	Tbl. 8a-4	Pg. 8a-19
WT2-0247-000CN	CLIP, CABLE	Tbl. 8c-3	Pg. 8c-7
WT2-0264-000CN	CARD SPACER	Tbl. 8a-4	Pg. 8a-20
WT2-0274-000CN	SUPPORT, PCA	Tbl. 8a-6	Pg. 8a-25
X62-5334-000CN	SOCKET, FASTON 250, 14-18AWG	Tbl. 8a-6	Pg. 8a-25
X62-5334-000CN	SOCKET, FASTON 250, 14-18AWG	Tbl. 8a-7	Pg. 8a-27
X62-5334-000CN	SOCKET, FASTON 250, 14-18AWG	Tbl. 8a-8	Pg. 8a-29
X62-6765-000CN	TERMINAL RING, 4.434MM	Tbl. 8c-1	Pg. 8c-2
X62-6825-000CN	BUSHING, STRAIN RELIEF	Tbl. 8b-6	Pg. 8b-13
X62-6825-000CN	BUSHING, STRAIN RELIEF	Tbl. 8b-6	Pg. 8b-13
X62-6856-000CN	CLAMP, CABLE, 4N	Tbl. 8a-29	Pg. 8a-55
X62-6856-000CN	CLAMP, CABLE 4N	Tbl. 8c-1	Pg. 8c-2
X62-6859-000CN	CLAMP, CABLE	Tbl. 8a-4	Pg. 8a-19
X62-6863-000CN	CLAMP, CABLE, 5N	Tbl. 8a-1	Pg. 8a-5
X62-6863-000CN	CLAMP, CABLE, 5N	Tbl. 8a-21	Pg. 8a-45
X62-6866-000CN	CLAMO, CABLE	Tbl 8a-26	Pg. 8a-51
X62-6866-000CN	CLAMP, CABLE, 2N	Tbl. 8a-3	Pg. 8a-12
X62-6866-000CN	CLAMP, CABLE, 2N	Tbl. 8a-4	Pg. 8a-19
X62-6866-000CN	CLAMP, CABLE, 5N	Tbl. 8a-3	Pg. 8a-12
X62-6888-000CN	TERMINAL, RING, 4.34MM	Tbl. 8a-3	Pg. 8a-13
X62-6990-000CN	BUSHING, STRAIN RELIEF	Tbl. 8b-6	Pg. 8b-13
X62-9041-000CN	SPLICE, CLOSED END	Tbl. 8c-1	Pg. 8c-2
X62-9151-000CN	TERMINAL, RING	Tbl. 8a-6	Pg. 8a-25
X62-9151-000CN	TERMINAL, RING	Tbl. 8a-8	Pg. 8a-29
X62-9188-000CN	CLIP, WIRE HOLDER (NYLON)	Tbl. 8a-3	Pg. 8a-12
X62-9225-000CN	BUSHING, STAIN RELIEF	Tbl. 8b-6	Pg. 8b-13
X62-9681-000CN	BUSHING	Tbl. 8b-6	Pg. 8b-13
X71-9799-000CN	WASHER, WAVE	Tbl. 8a-36	Pg. 8a-71
XA9-0027-000CN	SCREW, M3X8	Tbl. 8a-1	Pg. 8a-5

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
XA9-0028-000CN	SCREW, M4X8	Tbl. 8a-1	Pg. 8a-5
XA9-0029-000CN	SCREW, M4X10	Tbl. 8a-1	Pg. 8a-5
XA9-0040-000CN	SCREW, INSUL., TRUSS HEAD.M4X20	Tbl. 8a-4	Pg. 8a-20
XA9-0118-000CN	WING NUT	Tbl. 8a-34	Pg. 8a-65
XA9-0304-000CN	SCREW, M4X6	Tbl. 8d-2	Pg. 8d-5
XB1-1300-807CN	SCREW, PCA MOUNT M3X8	Tbl 8e-1	Pg. 8e-3
XB1-2201-000CN	SCREW, M2	Tbl. 8b-5	Pg. 8b-10
XB1-2201-009CN	SCREW, M2	Tbl. 8b-10	Pg. 8b-25
XB1-2201-009CN	SCREW, M2	Tbl. 8b-6	Pg. 8b-13
XB1-2201-009CN	SCREW, M2	Tbl. 8b-8	Pg. 8b-17
XB1-2300-309CN	SCREW, MACHINE TRUSS HEAD	Tbl. 8a-4	Pg. 8a-20
XB1-2601-009CN	SCREW, MACH, TRUSS HEAD, M6X10	Tbl. 8a-51	Pg. 8a-89
XB6-2300-609CN	SETSCREW HEX SKT. M3X6	Tbl. 8c-5	Pg. 8c-11
XB7-1040-259CN	SCREW, ALLEN HEAD, M4X25	Tbl. 8a-27	Pg. 8a-52
XB7-1060-089CN	SCREW, ALLEN HEAD M6X8	Tbl. 8d-2	Pg. 8d-5
XB7-1060-089CN	SCREW, ALLEN HEAD M6X8	Tbl. 8d-2	Pg. 8d-5
XD1-3100-607CN	WASHER, SPRING	Tbl. 8a-51	Pg. 8a-89
XD3-1300-182CN	PIN, SPRING	Tbl. 8d-10	Pg. 8d-26
XD9-0069-000CN	STOP	Tbl. 8d-2	Pg. 8d-5
XD9-0071-000CN	WASHER	Tbl. 8b-10	Pg. 8b-25
XD9-0071-000CN	WASHER	Tbl. 8d-10	Pg. 8d-26
XF1-1105-211CN	CHAIN	Tbl. 8c-3	Pg. 8c-7
XF1-1110-012CN	CHAIN ROLLER	Tbl. 8c-3	Pg. 8c-7
XF9-0069-000CN	BELT TIMING	Tbl. 8c-5	Pg. 8c-11
XF9-0089-000CN	BELT, TIMING	Tbl. 8d-8	Pg. 8d-19
XF9-0108-000CN	BELT, TIMING	Tbl. 8c-4	Pg. 8c-8
XF9-0112-000CN	BELT, TIMING	Tbl. 8d-3	Pg. 8d-9
XF9-0113-000CN	BELT, TIMING	Tbl. 8d-3	Pg. 8d-9
XF9-0119-000CN	BELT, TIMING	Tbl. 8c-5	Pg. 8c-11
XF9-0129-000CN	BELT, TIMING	Tbl. 8d-6	Pg. 8d-16
XF9-0148-000CN	BELT, TIMING	Tbl. 8b-6	Pg. 8b-13
XF9-0163-000CN	BELT, TIMING	Tbl. 8b-10	Pg. 8b-25
XF9-0212-000CN	CHAIN, ROLLER	Tbl. 8a-3	Pg. 8a-12
XG2-8012-357CN	BEARING	Tbl. 8d-10	Pg. 8d-26
XG2-8016-505CN	BEARING, BALL	Tbl. 8a-4	Pg. 8a-20
XG2-8022-705CN	BEARING, BALL	Tbl. 8c-3	Pg. 8c-7
XG3-8012-355CN	BEARING, BALL	Tbl. 8b-10	Pg. 8b-25
XG3-8012-355CN	BEARING, BALL	Tbl. 8d-10	Pg. 8d-25
XG3-8012-355CN	BUSHING	Tbl. 8d-11	Pg. 8d-29
XG3-8014-403CN	BUSHING	Tbl. 8d-10	Pg. 8d-24
XG9-0013-000CN	BEARING BALL	Tbl. 8c-3	Pg. 8c-7
XG9-0013-000CN	BEARING, BALL	Tbl. 8d-10	Pg. 8d-25

Table P-1. (continued)

PART NUMBER	DESCRIPTION	TABLE	PAGE
XG9-0016-000CN	BEARING, BALL	Tbl. 8d-10	Pg. 8d-25
XG9-0053-000CN	BEARING, BALL	Tbl. 8a-36	Pg. 8a-71
XG9-0091-000CN	ROLLER C	Tbl. 8c-3	Pg. 8c-7
XG9-0094-000CN	BEARING, BALL	Tbl. 8d-10	Pg. 8d-25
XG9-0094-000CN	BUSHING	Tbl. 8d-11	Pg. 8d-29
XG9-0103-000CN	BEARING, BALL	Tbl. 8a-36	Pg. 8a-71
XG9-0126-000CN	BEARING, BALL	Tbl. 8a-3	Pg. 8a-12
XO7-4014-090CN	SCREW	Tbl. 8a-3	Pg. 8a-13
XZ1-9608-000CN	BUSHING, SNAP-KNOB	Tbl. 8c-3	Pg. 8c-6
XZ9-0029-000CN	CATCH, LATCH, ROLLER-ACTION	Tbl. 8d-2	Pg. 8d-5
XZ9-0029-000CN	LATCH, ROLLER-ACTION (CATCH)	Tbl. 8b-4	Pg. 8b-7
XZ9-0124-000CN	LATCH, ROLLER-ACTION (STRIKE)	Tbl. 8c-2	Pg. 8c-3
XZ9-0125-000CN	LATCH, ROLLER-ACTION (CATCH)	Tbl. 8c-2	Pg. 8c-3
XZ9-0125-000CN	LATCH, ROLLER-ACTION (CATCH)	Tbl. 8a-2	Pg. 8a-7
XZ9-0212-000CN	CATCH, MAGNET	Tbl. 8a-1	Pg. 8a-5
XZ9-0214-000CN	PLUG	Tbl. 8a-4	Pg. 8a-21
XZ9-0223-000CN	SPACER	Tbl. 8b-8	Pg. 8b-17

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