PrintServer 17 Printer

Service Guide

EK–PRT17–SV. A01

Digital Equipment Corporation
Maynard, Massachusetts

First Printing, May 1993

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Preface

This book is intended to assist the Digital Service engineer repair and service the PrintServer 17 printer in the field environment. Before attempting to use the book, you must attend the specific PrintServer Digital Service training course and all other prerequisite training courses. Section C.1 lists all recommended courses.

Conventions

The following conventions are used throughout this service guide:

Convention	Description
Note:	Notes provide additional information.
Caution:	Cautions emphasize information for preventing damage to the equipment or software.
Warning:	Warnings emphasize information for preventing personal injury.
1. 2. 3.	Numbered steps indicate the recommended sequence of each step within a procedure.
• • •	Bulleted steps allow you to determine which step to do first.
a. b. c.	Alphabetized steps indicate a series of substeps under a bulleted or numeric main step.

About This Service Guide

The following table describes the PrintServer 17 printer Service Guide:

Chapter 1	Describes the physical appearance and functional operation of the printer and provides wiring diagrams and technical overviews of the major circuits.
Chapter 2	Describes the power-on and bootstrap (boot) process and shows the start up page that is printed when boot is successful.
Chapter 3	Describes the function of all keys, indicators, and displays and gives a brief description of the remote error logging facility and the 200K maintenance procedure.
Chapter 4	Describes the field test mode (FTM) and engine drive board test patterns, and describes the N and E query status bytes.
Chapter 5	Contains the start fault isolation procedure (FIP) and On-Line and FTM error listing.
Chapter 6	Contains FIPs for troubleshooting and fixing malfunctions that were identified by an error code or start FIP.
Chapter 7	Contains FIPs for fixing paper path jams.
Chapter 8	Contains FIPs for troubleshooting and fixing image defects.
Chapter 9	Contains the recommended procedure for removing and replacing all field replacable units (FRUs) that are listed in Appendix A.
Chapter 10	Describes the operation of the optional envelope feeder and LCIT. FRU removal and replacement procedures and FIPs are also included in this chapter.
Appendix A	Lists the field replaceable units recommended for the PrintServer 17 printer.
Appendix B	Lists a procedure that should be performed whenever you service the PrintServer 17.
Appendix C	Lists the training, documentation, and tools that you need to perform service on the PrintServer 17 printer.

1

Physical and Functional Description

This chapter provides a physical and functional description of the PrintServer 17 printer.

1.1 Safety Warnings

Note: *The PrintServer 17 printer complies with all United States government safety regulations applicable to ozone gas emissions and laser beam light exposure.*

Laser Safety *The PrintServer 17 printer complies with 21 CFR Chapter 1, Subchapter J, as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard, according to the Radiation Control for Health and Safety Act of 1968. The PrintServer 17 printer does not emit hazardous light because the laser beam is totally enclosed during all modes of customer operation and maintenance.*

Warning: *Use of controls or adjustment procedures other than those specified in this manual may result in hazardous laser light exposure.*

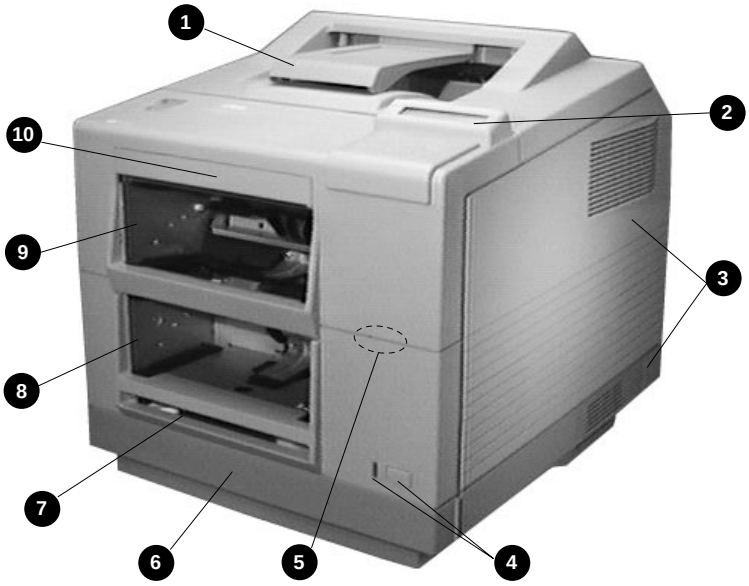
1.2 Physical Description

Figure 1–1 presents a view of the front and right side of the printer. The names and functions of the items are described in Table 1–1.

Table 1–1 Front-Right View

	Component	Function
❶	Face-down stacker	Holds approximately 500 sheets of 20Lb paper. The stack overflow sensor stops the printer.
❷	Operator panel	Contains six multipurpose keys and two status displays. See Chapter 3 for more information.
❸	Upper right-side cover Lower right-side cover	Encloses all the major electronic components.
❹	Front power-on light and switch	Turns on the low-voltage power supplies and starts the printer. The rear panel power switch (see Table 1–2) must be set to on, which is the 1 position.
❺	Hidden switch	Prints one copy of the DC controller test pattern (see Figure 4–3). Holding the switch causes every second copy to offset stack. To press the switch, poke a stiff piece of wire (paper clip) through the hole. The hole is hidden in the groove of the front cover.
❻	Lower front cover controller board	The board is located behind this cover and removed through the front of the printer. The controller board interfaces the Ethernet and print engine to the host and client nodes.
❼	Switchback slot	Allows the sheet to extend out of the printer during the switchpack phase of duplex operation. Jams might occur if the slot is blocked or obstructed.
❽	Lower cassette or LCIT slot	Holds a cassette or the optional LCIT. The LCIT is self powered and controlled. There is no electrical connection to the printer.
❾	Upper cassette slot	Holds the standard cassette described in Section 1.3. When the envelope feeder is installed, a loaded cassette with the special cover must also be installed.
❿	Envelope feeder slot	Accepts the optional envelope feeder, shown in Section 1.3.2. The envelope feeder can hold up to 50 envelopes. It is customer instalable, and requires a special cassette top for correct operation.

Figure 1–1 Components: Front-Right View



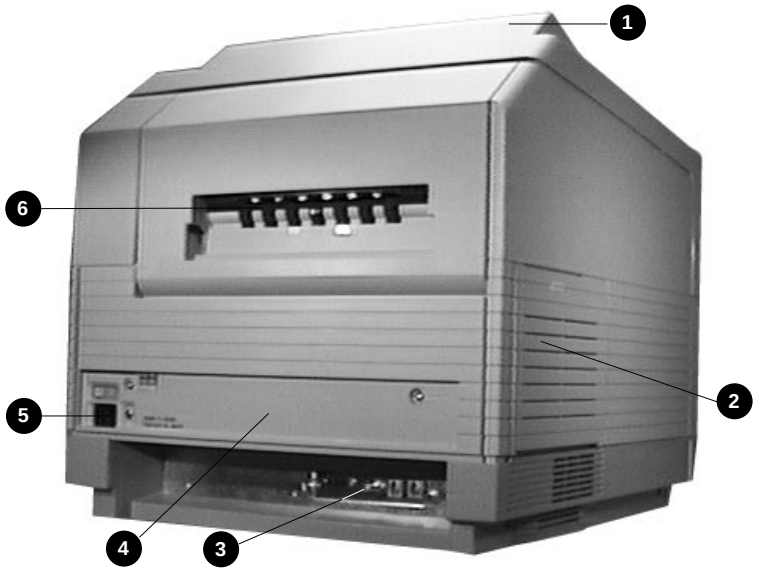
1.2 Physical Description

Figure 1–2 presents a view of the back and left side of the printer. The names and function of the items are described in Table 1–2.

Table 1–2 Rear-Left View

	Component	Function
❶	Top door	Opens for jam clearance and EP-N cartridge replacement.
❷	Duplex jam clearance door	Opens for jam clearance. If the printer has no duplex unit, a metal plate covers the entrance to the empty duplex area.
❸	Rear connector panel	Provides the electrical and mechanical interface to the site's Ethernet. Depending on which daughter board is installed, the rear panel can connect to ThinWire, Thickwire, or twisted pair Ethernet. The two MMJ connectors on the rear connector panel are for the connection of possible future options. The connectors are serial line units (SLU) that interface to the daughter board.
❹	Duplex unit	Provides a paper path to return the sheet to the front of the printer, turn around, and refeed the sheet.
❺	Power cord Main power switch	Connects the site AC line power to the AC drive board within the printer.
❻	Rear face-up stacker	Holds approximately 100 sheets of 20LB paper. There is no overflow sensor for this stack. The stack is also used for printing stiff media that cannot pass through the curved paper path of the face-down stack or duplex unit.

Figure 1–2 Components: Rear-Left View



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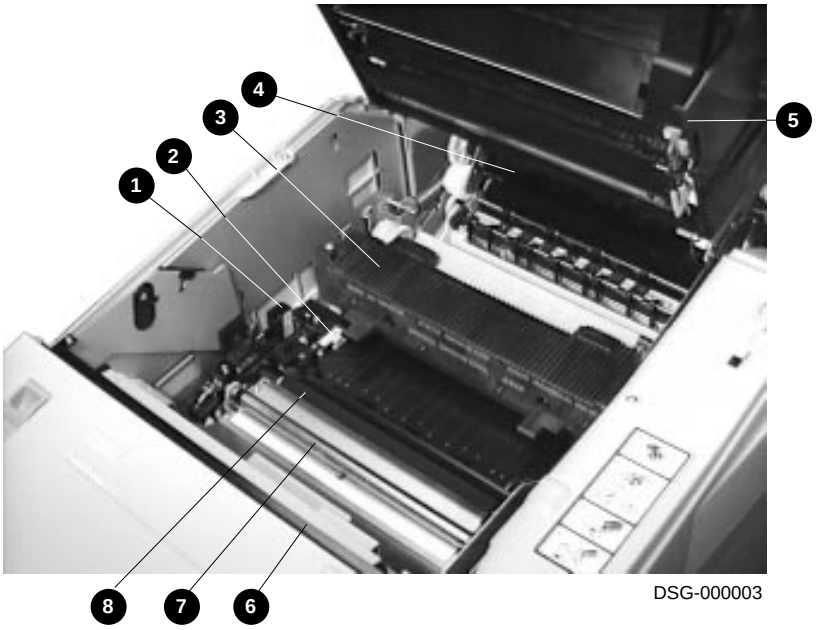
1.2 Physical Description

Figure 1–3 presents a view of the inside of the printer with the top door fully open. The names and functions of the items are described in Table 1–3.

Table 1–3 Internal View

	Component	Function
❶	HVPSA connector block	Connects the high-voltage power supply to the EP-N cartridge. The transfer roller and static eliminator signals run through this block. See Section 1.9 for a circuit HVPSA description.
❷	Density adjustment	Varies the density of the printed image. Sections 1.4.1 and 1.9 describe the operation of this circuit.
❸	Fusing unit	Melts and forces the toner powder into the paper, thus permanently fusing the image to the sheet. The 750-watt halogen element provides rapid heating and powerful pressure springs provide fusing force.
❹	Delivery unit	Ejects paper into the face-down stacker, provides a job offset feature, and is a FRU.
❺	EP-N frame and mirror	Holds the EP-N cartridge and mirror. The mirror deflects the laser beam 90°, through the slot in the EP-N, onto the print drum.
❻	Scanner unit	Contains the laser diode, scanning motor, and optics.
❼	Registration rollers Clutch	Separate to allow easy jam clearance. The operation of the registration rollers, sensor, and clutch control paper feed skew and registration. Registration is the position of the image on the sheet between the leading and trailing edges.
❽	Transfer charging roller	Pulls the toner image off the OPC drum to the sheet of paper. The foam roller is used in place of the traditional charge wire type system. The roller uses less high-voltage and creates very little ozone.

Figure 1–3 Components: Internal View



1.2 Physical Description

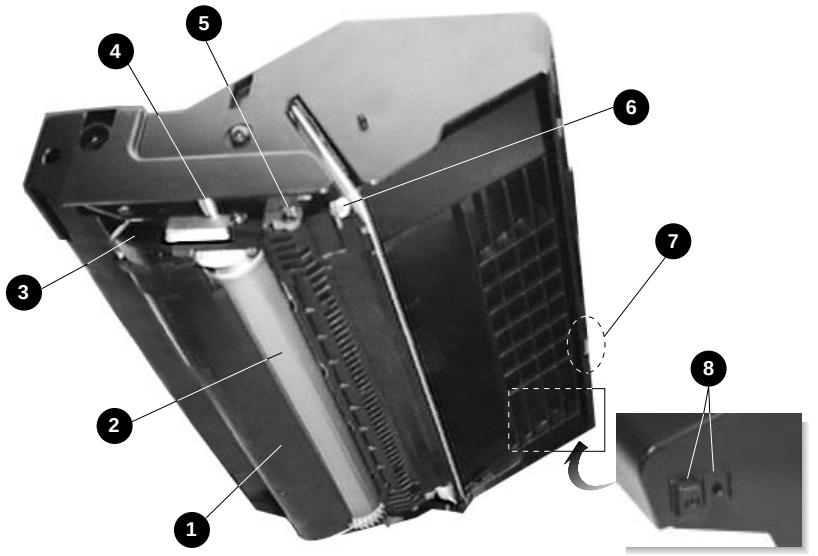
Figure 1–4 shows the EP-N cartridge with the drum protector shutter pulled and held open. The names and functions of the items are described in Table 1–4.

Caution: *Prolonged exposure to light can damage the electrophotographic surface of the print drum.*

Table 1–4 EP-N Cartridge

	Component	Function
❶	Drum shutter	Protects the OPC drum from exposure by closing when the top door opens. When troubleshooting image defects, you might need to open the shutter to examine the surface of the drum.
❷	OPC drum	Charges and discharges as a major component in the xerographic process described in Section 1.4. The organic photoconductor (OPC) drum is part of the EP-N cartridge. Do not expose the OPC to room light for longer than 5 minutes.
❸	Primary charging connector	Connects to the primary charge roller.
❹	Ground connector	Grounds the axle of the OPC drum and provides a return path for charger and sensor current.
❺	Bias charge connector	Connects to the developer roller.
❻	Toner sensor connector	Connects to the toner sensor.
❼	Shutter actuation tang	This tang depresses a linkage that lifts a shutter within the scanner unit. When the top door is open, the shutter blocks the laser beam. When the top door is closed, the laser beam can exit the scanner unit and expose the OPC drum. If the top door is opened while the printer is printing, a false beam detect error might occur.
❽	Sensitivity keys	Actuate the sensitivity levers to adjust the laser beam intensity. The keys are factory installed to compensate for the differences in OPC drum sensitivity. You will always see one or both installed. If you see an EP-N cartridge with no keys, replace that cartridge. See Sections 1.8 and 1.9 for circuit descriptions.

Figure 1–4 EP-N Cartridge



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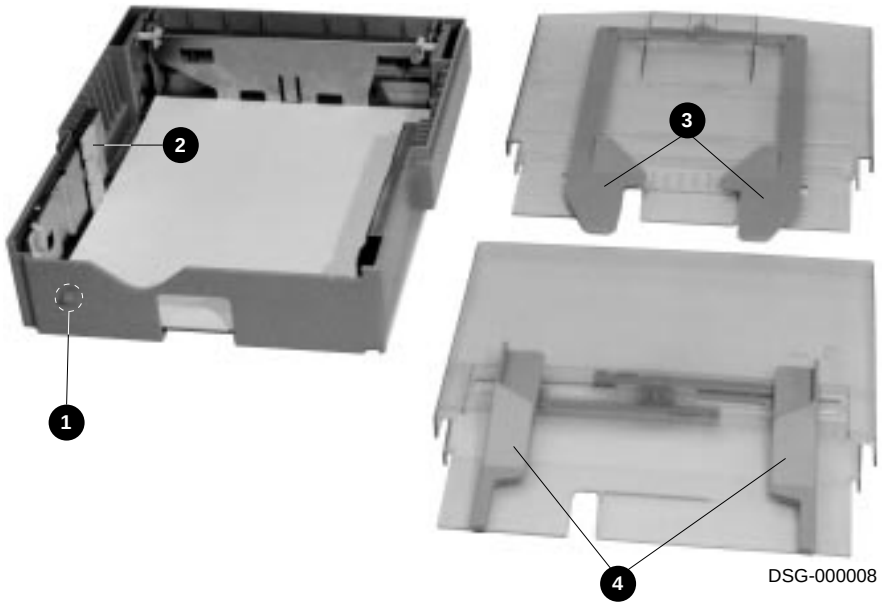
1.3 Media Feeders and Paper Paths

Figure 1–5 shows the PrintServer 17 printer cassette and one of the two cassette covers. Each cassette has paper size keys ❶ and spring loaded paper guide ❷. The keys are not removable and the cassette cannot be modified to accommodate a different size sheet of paper.

The envelope feeding cover ❸ has two spring loaded guides that direct envelopes into the paper feed rollers.

The standard cover has the self-centering manual feeding guides ❹. Because manual feeding is not possible with the PrintServer 17 printer, the manual feeding guides are unused.

Figure 1–5 Cassette and Top Cover



1.3 Media Feeders and Paper Paths

Table 1–5 relates cassette and paper size to cassette key configuration.

Table 1–5 Size-Sensing

Size-Sensing Switches			Cassette Paper Size
1	2	3	Size
ON	ON	ON	Executive
ON	ON	OFF	A4
OFF	OFF	ON	Legal
ON	OFF	OFF	Letter ($8\frac{1}{2}$ by 11 inch)
OFF	OFF	OFF	No cassette in slot

1.3 Media Feeders and Paper Paths

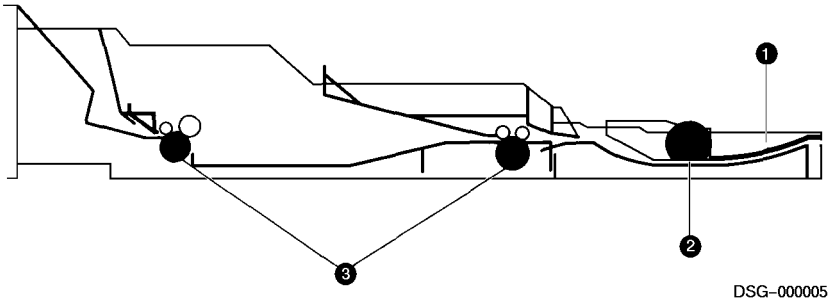
1.3.1 Duplex Unit

Figure 1–6 and Table 1–6 shows the paper path components and the general outline of the optional duplex unit.

Table 1–6 Duplex Unit

	Component	Function
❶	Switchback section	Consists of two movable guides that close to center the paper.
❷	Switchback roller	Operates in both directions. It partially ejects the sheet through the switchback slot, then reverses to push the sheet up into the refeed paper path and rollers.
❸	Duplex entrance rollers	Moves paper from the fusing exit rollers to the switchback section.

Figure 1–6 Duplex Unit Paper Path

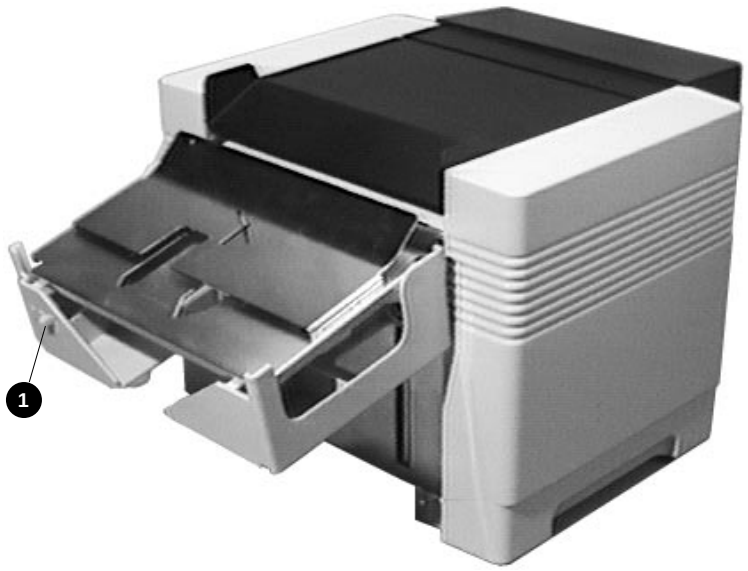


1.3.2 Optional Feeders

The PrintServer 17 printer large capacity input tray (LCIT) and envelope feeder are shown in Figures 1–7 and 1–8.

The LCIT comes in two sizes letter ($8\frac{1}{2}$ by 11 inch), and A4. It installs in the lower cassette slot, is self powered, and self controlled. The only connection to the print engine is the size-sensing keys ❶ on the LCIT nosepiece. See Chapter 10 for more information.

Figure 1–7 Large Capacity Input Tray



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1.3 Media Feeders and Paper Paths

The envelope feeder can hold up to 50 envelopes. When it is attached to the engine, the DC controller board operates and powers the feeder.

Figure 1–8 Envelope Feeder

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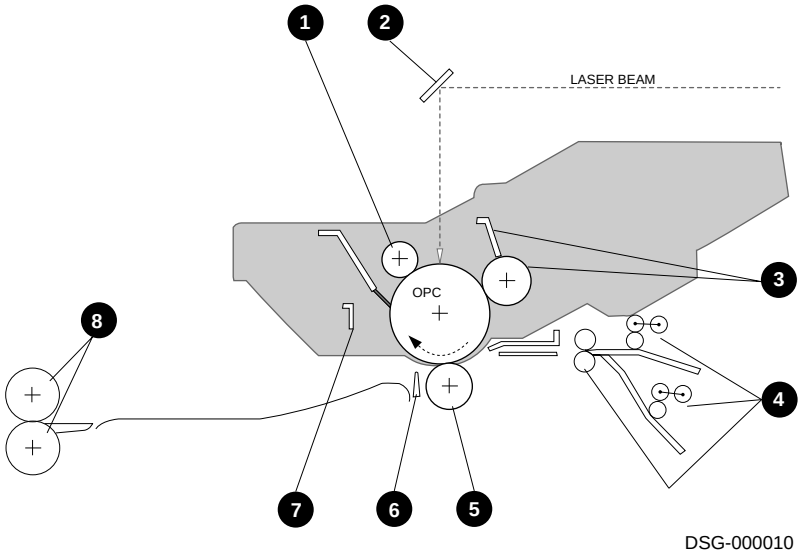
1.4 Xerographic Processes

Figure 1–9 shows the xerographic components of the EP-N cartridge. The components within the shaded area are part of the EP-N cartridge.

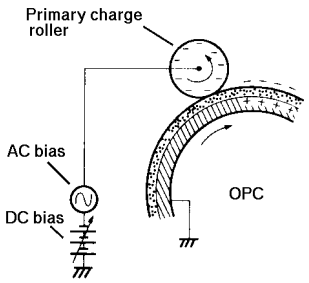
	Process	See Section...
❶	Primary Charging Process	1.4.1
❷	Exposure Process	1.4.2
❸	Development Process	1.4.3
❹	Paper Feed Process	1.4.4
❺	Transfer Process	1.4.5
❻	Static Charge Eliminator	1.4.6
❼	OPC Drum Cleaning	1.4.7
❽	Fusing Heater Control Circuit	1.11

Figure 1–9 Xerographic Imaging Components



1.4 Xerographic Processes

1.4.1 Primary Charging Process

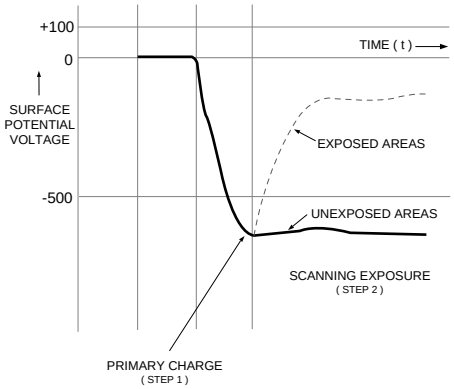


The primary charging roller distributes an even charge across the OPC drum. AC and DC biases charge the primary charging roller. The density adjustment potentiometer provides some adjustment for customers who like a darker print.

The primary charging roller is made of a conductive foam rubber-like compound.

As the OPC drum turns, the primary charge is subjected to the exposure process.

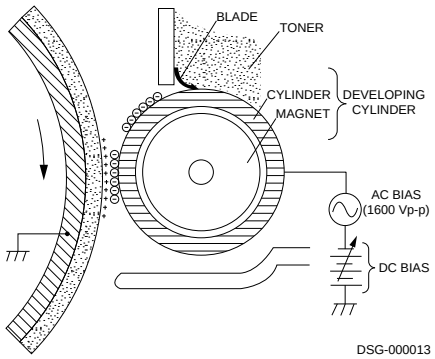
1.4.2 Exposure Process



The data modulated scanning laser beam paints a latent image on the rotating OPC drum. Where the laser exposes the drum, the existing primary charge is neutralized. The primary charge remains in the unexposed areas.

This exposure system is commonly referred to as a **write black system**. The areas exposed to the laser light correspond to the black areas of the test print. The unexposed areas retain the primary charge, failing to attract toner to the drum during the development process.

1.4.3 Development Process



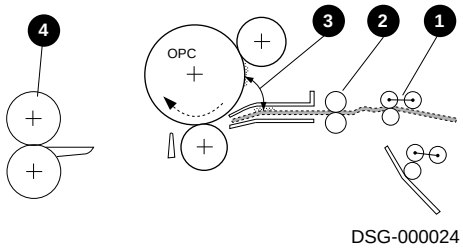
During the development process, the invisible latent image is painted with toner, producing a visible image on the surface of the OPC drum.

The fixed magnet in the developer roller attracts the magnetite-based toner to the surface of the developer roller. The doctor blade scrapes off the excess toner.

The DC bias on the development roller charges the toner particles, while the AC charge both pushes and pulls the charged particles toward the latent image on the surface of the OPC drum.

On the OPC drum, the highly charged unexposed areas repel the toner. The lessor charged, or exposed areas are painted with the toner, thus making the image visible to the naked eye.

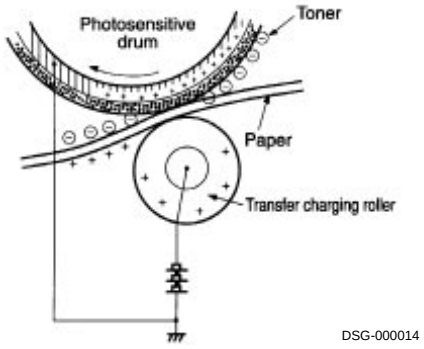
1.4.4 Paper Feed Process



The *PRINT* signal from the controller board initiates a paper feed process. The cassette paper feed rollers ❶ or the refeed rollers move paper into the nip of the registration rollers ❷.

The paper pauses at the registration rollers to allow the OPC drum to rotate into alignment ❸ with the leading edge of the sheet. When aligned, the registration clutch engages and the registration rollers grasp the sheet. The paper is supported and controlled by the nip of the registration rollers, which move the sheet through the transfer area, static elimination area, and on to the nip of the fusing rollers ❹.

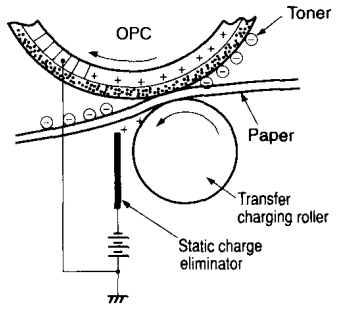
1.4.5 Transfer Process



In the transfer process, the toner image is attracted from the OPC drum to the sheet of paper by the highly charged transfer charging roller. Like the primary charging roller, the transfer roller is made of a conductive foam rubber like compound.

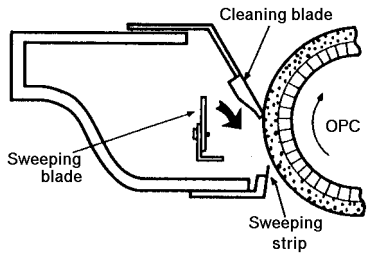
During normal printer operation, the porous surface of the transfer charging roller attracts a small amount of toner, which can degrade the quality of the image. To purge this toner, a reverse polarity is applied during prerotation periods and in between sheets. Frequent jamming and other malfunctions can overwhelm the transfer charging roller cleaning process and cause image defects.

1.4.6 Static Charge Eliminator



The transfer process leaves a powerful static charge that attracts the sheet to the OPC drum. The static charge eliminator reduces the charge, allowing the sheet to separate from the OPC drum. Malfunctions of the static charge eliminator produce the distinctive image defect that is described in Section 8.6

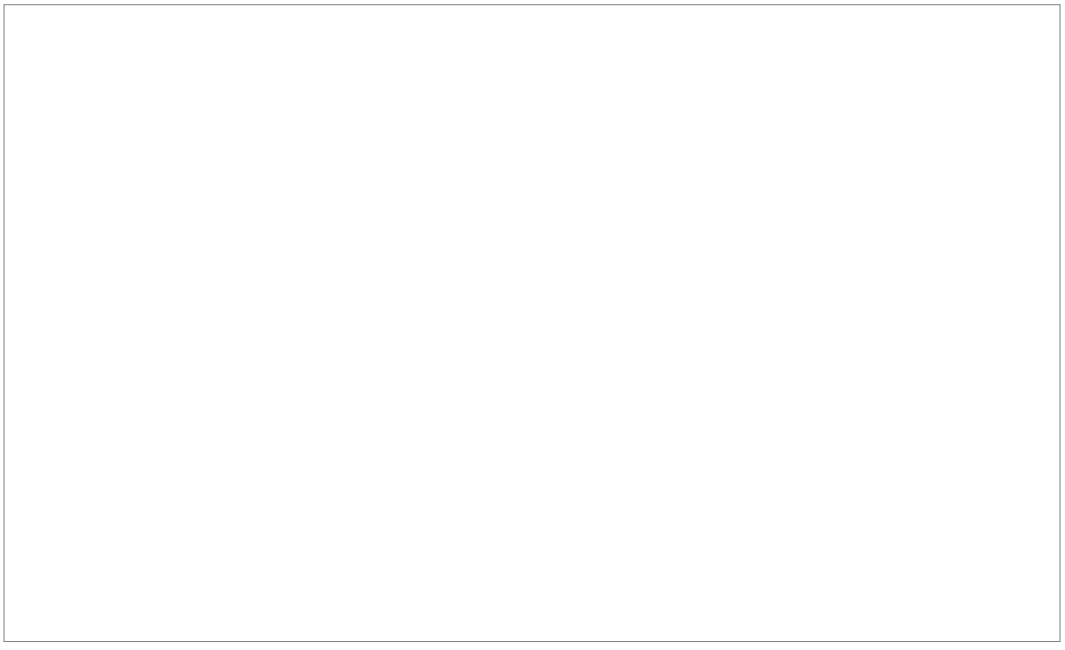
1.4.7 OPC Drum Cleaning



After the toner image is transferred and the sheet travels to the fusing unit, residual toner is cleaned from the OPC drum surface. The cleaning blade scrapes any remaining toner off the OPC drum. The sweeping strip gathers the toner and funnels it into the sweeping blade. The rotating sweeping blade moves the exhausted toner into a reservoir. The toner stays in the reservoir until the customer replaces and discards the EP-N cartridge.

1.4 Xerographic Processes

Notes:



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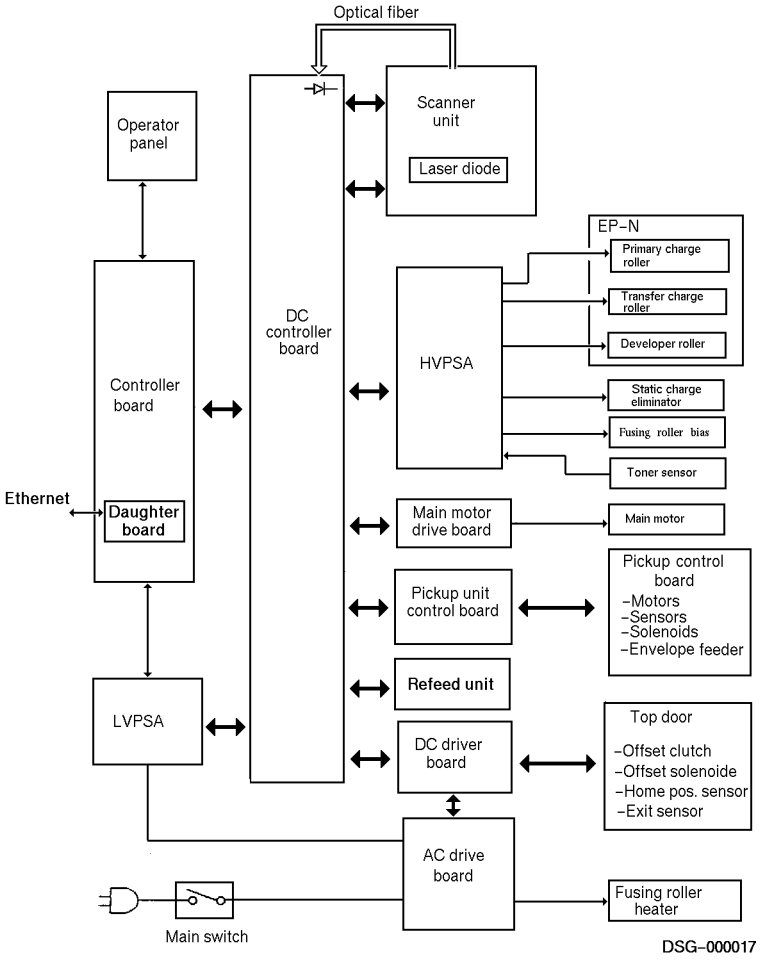
1.5 Electronic Block Diagrams

Figure 1–10 shows the overall block diagram of the PrintServer 17. Wiring diagrams are shown in the five DC controller board diagrams found in Section 1.7.

Figure 1–10 Electronic Control System

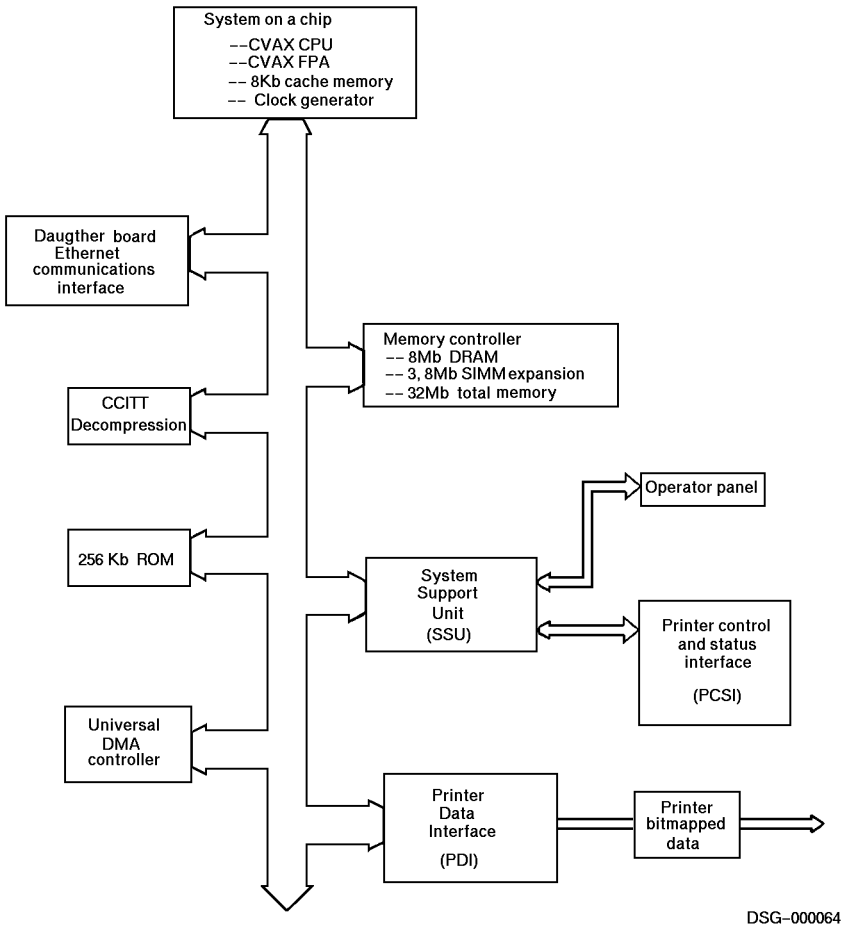


1.6 Controller and Daughter Boards

Figure 1–11 shows a block diagram of the PrintServer 17 controller and daughter boards.

- The system on a chip block operates the controller boards, controls the central bus, and contains two VAX microprocessors.
- The custom memory controller handles the 8-Mb main memory and up to 32-Mb of memory. The memory is expanded by installing one, two, or three 4- or 8-Mb single in-line memory modules (SIMMs).
- The system support unit (SSU) controls the printer and operator panel interface.
- The printer data interface (PDI) contains the bitmapped page data.
- The direct memory access (DMA) controller is used by the PDI and decompression circuits. DMA is a method of reading and writing large blocks of data to memory. DMA bypasses normal single word bus transfers.
- The 256-Kb ROM contains the self-test diagnostics, the bootstrap or boot programs, and various driver programs.
- The Comite Consultatif International de Telegraphie et Telephonie (CCIT) decompression circuits are faster than the software decompression programs.
- The daughter board contains digital and analog communication circuits. It interfaces between the Ethernet and controller board.

Figure 1–11 Controller Block Diagram



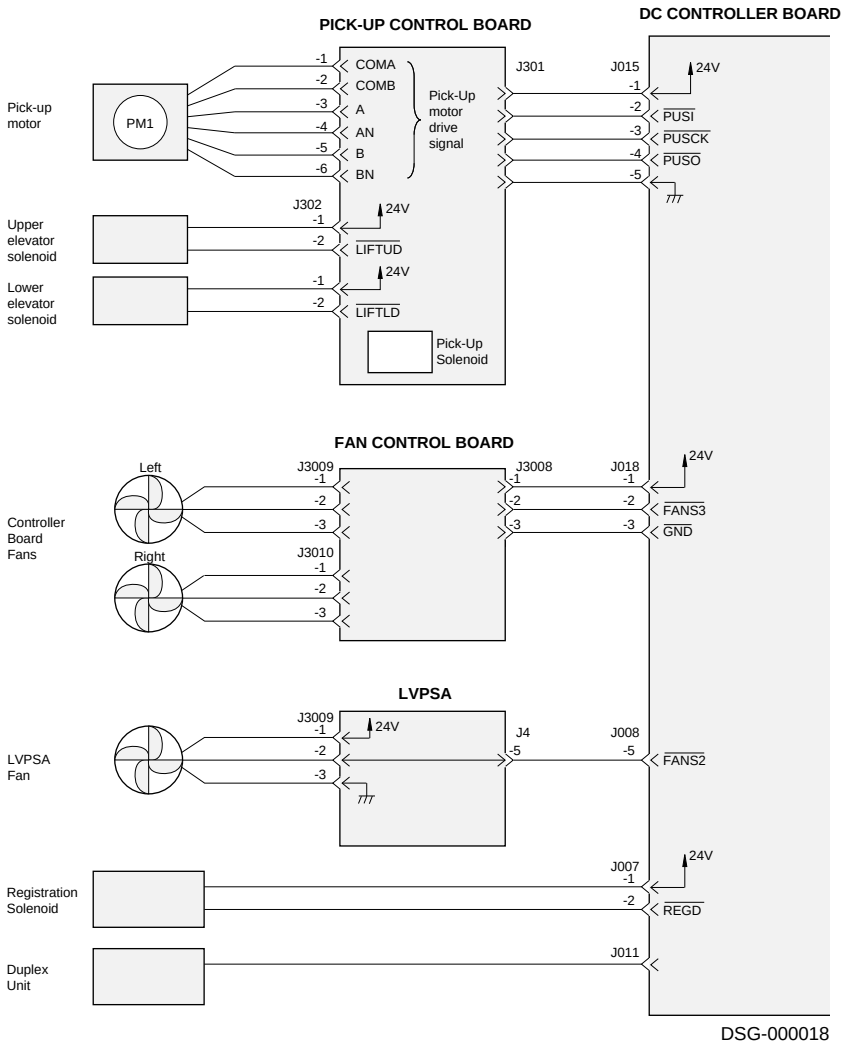
1.7 DC Controller Board Signals

The following illustrations show the wiring diagram of PrintServer 17 printer. All individual devices connect to the DC controller board, which as shown by Figure 1–10, is the central connection point of the electronics system. These devices are sensors, solenoids, motors, and power supplies.

- Figure 1–12, DC Controller Board Diagram 1
- Figure 1–13, DC Controller Board Diagram 2
- Figure 1–14, DC Controller Board Diagram 3
- Figure 1–15, DC Controller Board Diagram 4
- Figure 1–16, DC Controller Board Diagram 5

Figure 10–4 is the wiring diagram for the optional envelope feeder. When installed, the envelope feeder operates as a peripheral to the pickup control board.

Figure 1–12 DC Controller Board Diagram 1



1.7 DC Controller Board Signals

Figure 1–13 DC Controller Board Diagram 2

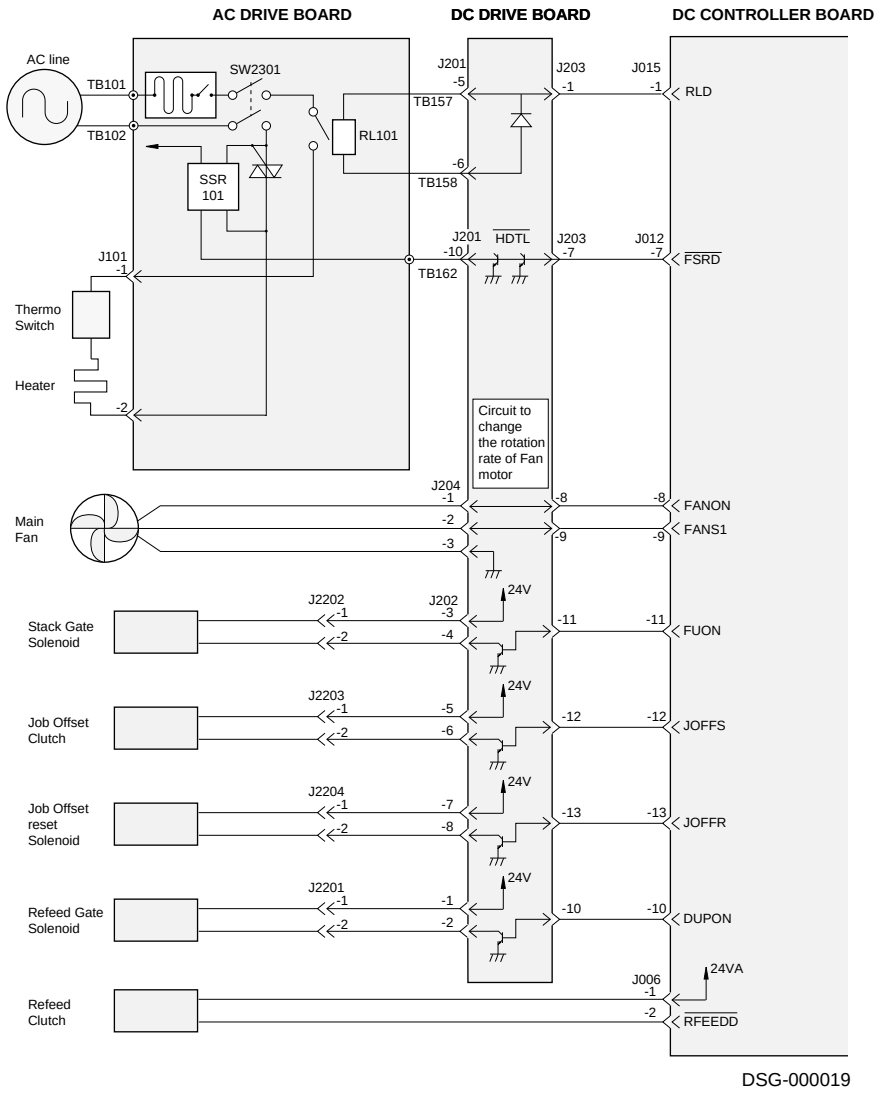


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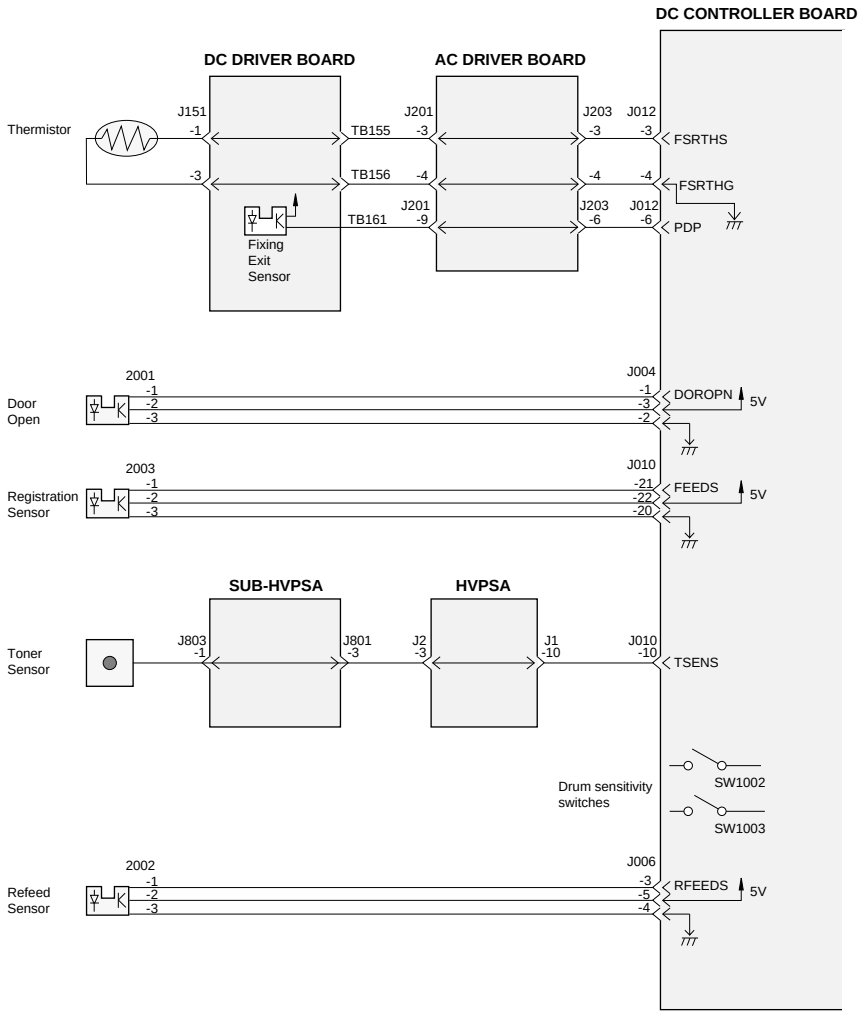
Figure 1–14 DC Controller Board Diagram 3



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1.7 DC Controller Board Signals

Figure 1–15 DC Controller Board Diagram 4

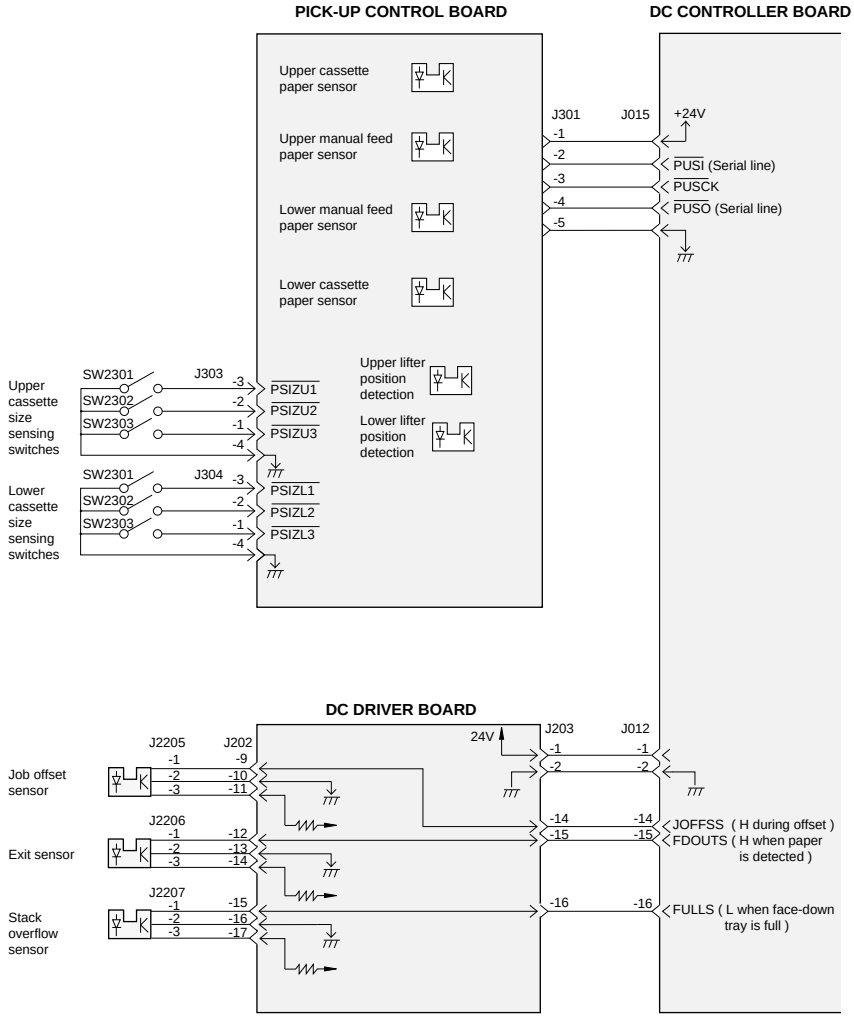

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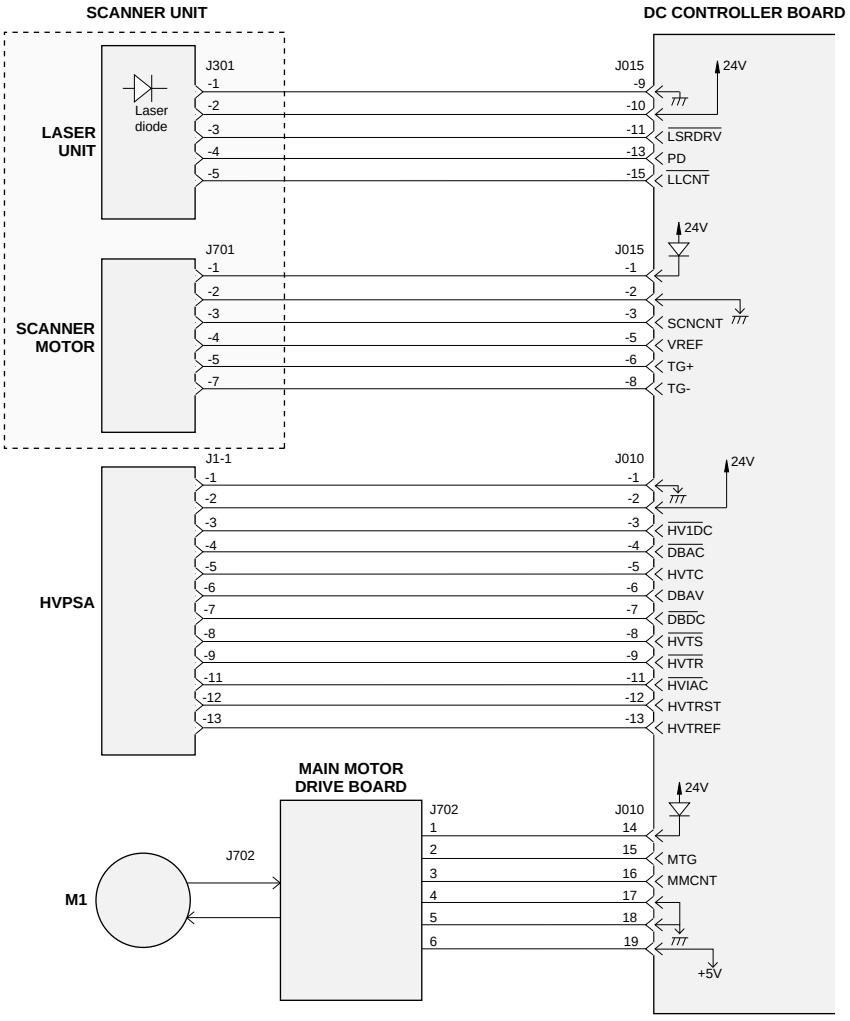
Figure 1–16 DC Controller Board Diagram 5



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1.8 Scanner and Laser Diagram

Figure 1–17 shows scanning hardware and circuitry. When the DC controller board receives a print ($\overline{PRNT}$) signal, it begins a brief initial rotation period. At the end of this period, the DC controller sends a vertical synchronization request ($\overline{VSREQ}$) signal to the controller board. The printing process begins when the controller board sends a vertical synchronization ($\overline{VSYNC}$) signal back to the DC controller. The $\overline{VSREQ}$ and $\overline{VSYNC}$ sequence also occurs between sheets.

The scanning motor spins a polygonal mirror to scan the laser beam around the scanning cavity. The DC controller board asserts the $SPOWER$ signal during the prerotation period to start the scanning motor. The lenses focus the beam and alter the speed of the scan, compensating for the flat surface of the print drum.

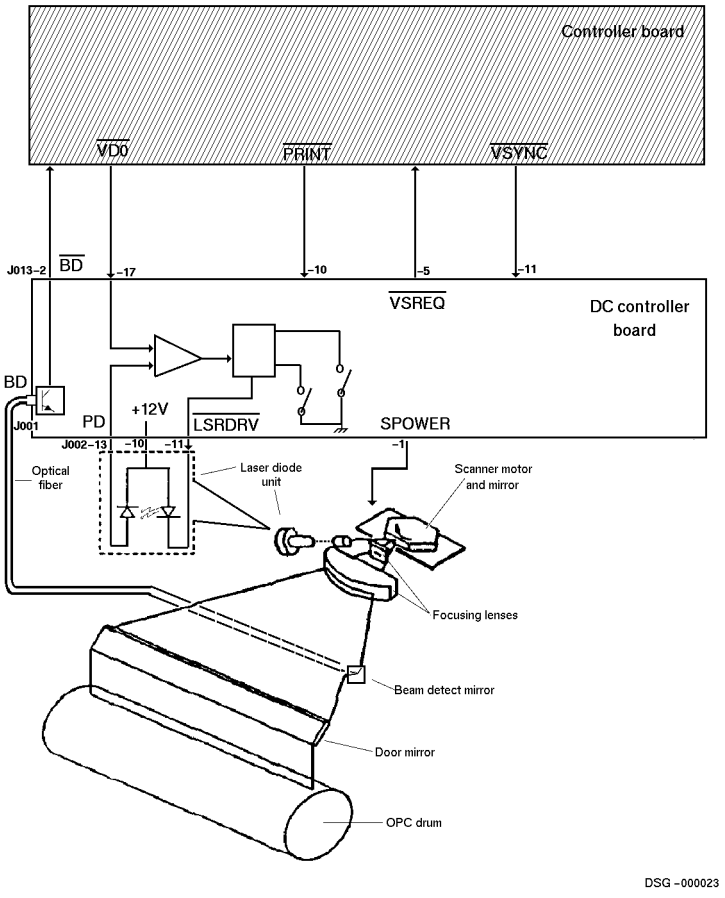
The beam detect circuit synchronizes the start of the print data scan line, thus fixing the position of the image between the sides of the sheet. Before the scanning laser beam hits the OPC drum, it strikes the beam detect mirror. The BD signal is a pulse of light that travels through the optical fiber. The DC controller board converts BD to the electric signal $\overline{BD}$.

When the controller board receives $\overline{BD}$ it transmits one scan line of serial data that is called the video data zero ($\overline{VD0}$) signal.

The DC controller board receives and processes $\overline{VDO}$ and into the $\overline{LSRDRV}$ signal that drives laser diode. The intensity of the $\overline{LSRDRV}$ signal is regulated by the feedback PD signal and by the configuration of the two sensitivity switches. PD is an analog signal that is generated by a photodiode that is positioned adjacent to the laser diode. The sensitivity switches are set by the keys on the installed EP-N cartridge.

1.8 Scanner and Laser Diagram

Figure 1–17 Scanner



1.9 High-Voltage Power Supply Assembly Diagram

Figure 1–18 shows the circuit diagram for the high-voltage power supply assembly (HVPSA).

The HVPSA supplies provides AC coupled with DC bias to the primary charging roller, static eliminator, and upper fusing unit roller. The DC bias varies with the position of the density adjustment. The bias repels toner from the hot fusing roller, preventing toner build-up and eventual image defects. See Section 1.4 for more information.

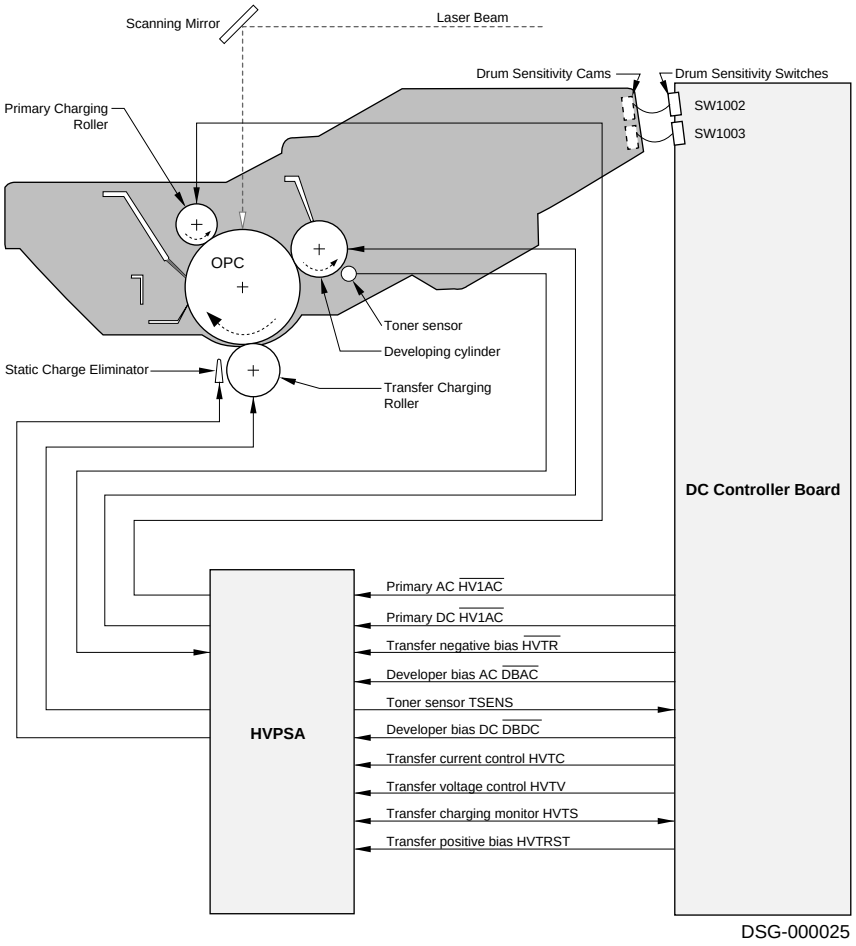
The following three voltages are applied to the transfer charging roller:

- Positive print bias transfers the toner image from the OPC drum to the paper.
- Negative bias cleans the transfer roller of the small amount of toner attracted to it during the print process. The purged toner is repelled from the transfer roller and deposited on the surface of the OPC drum.
- Negative bias applied between pages prevents residual toner on the OPC drum from sticking to the transfer roller.

Figure 1–18 shows the drum sensitivity keys and switches that actuate the sensitivity switch levers. The keys affect the power level of the laser beam and serve as an interlock feature by detecting the presence of an EP-N cartridge. During the manufacturing process, the drum sensitivity is measured. Located on the case of the EP-N cartridge, the sensitivity keys are configured to reflect that measurement.

1.9 High-Voltage Power Supply Assembly Diagram

Figure 1–18 HVPSA Circuit Diagram



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1.10 Low-Voltage Power Supply Diagram

Figure 1–19 shows the circuit diagram for the main switch assembly, AC drive board, and low-voltage power supply assembly (LVPSA). The main power switch provides mechanical interface to the local power line. Under normal operation, this rear panel switch is left on (1) and power is controlled through the front panel power switch.

From the main power switch, power connects to the AC drive board. See Section 9.31 for a photograph of the main switch assembly.

Warning: *To prevent hazardous electrical shock or machine damage, turn off the rear panel 0/1 main power switch and remove the line cord before you service the printer.*

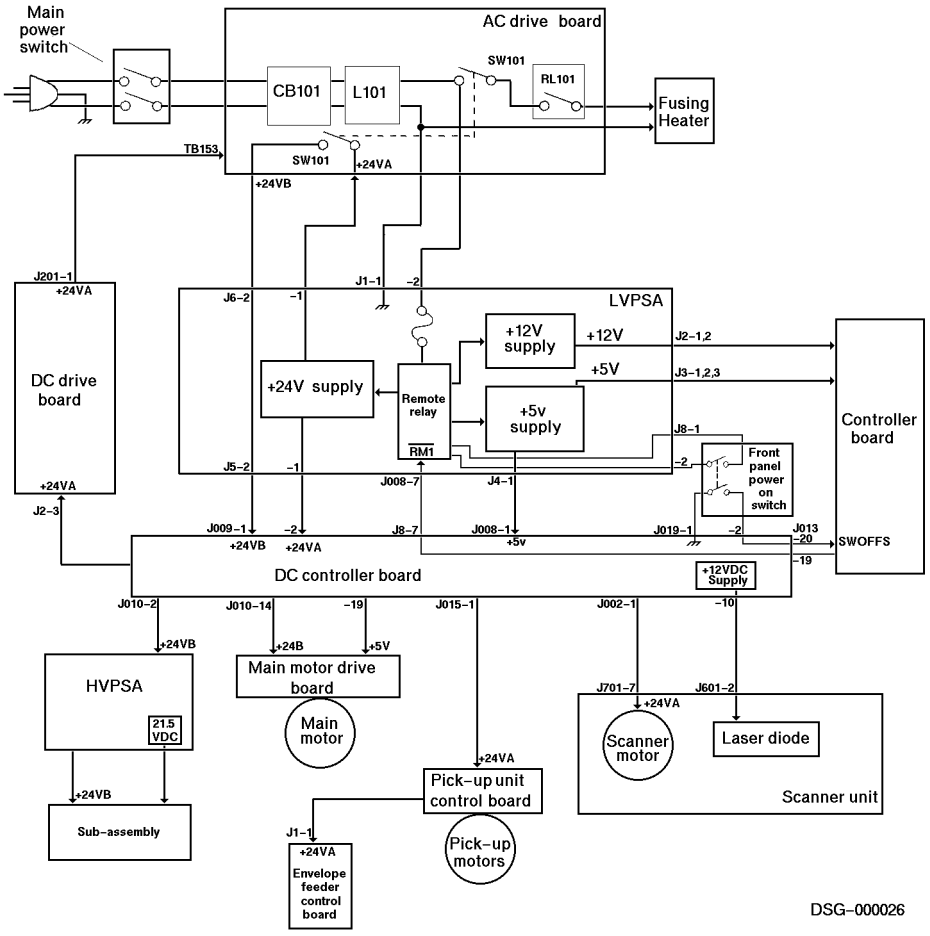
The AC drive board provides line power protection, a dual-purpose interlock switch, and overcurrent protection. The circuit breaker CB101 opens if an AC power short circuit occurs. The inductor L101 keeps electrical noise from the AC power line. RL01 controls the fusing roller temperature, see Section 1.11 for more information.

When the top door opens, both poles of switch SW101 open. One pole interrupts the 24VDC current that drives the main motor and printer relays. The other pole interrupts the flow of AC line current to the fusing unit heater.

The LVPSA provides the +24A, +24B, +12 and +5 volt power supplies to all electronic and electromechanical devices and options of the printer. See Section 9.3 for a photograph of the LVPSA.

1.10 Low-Voltage Power Supply Diagram

Figure 1–19 LVPSA and Power Distribution



1.10.1 Sensing Interlock Conditions

Interlocks are sensed by photointerruptor type sensors, mechanically actuated switches, or in the case of the fusing unit, a hardwire connection that is made when the fusing unit is fully installed.

1.11 Fusing Heater Control Circuit

Figure 1–20 shows the fusing heater control circuits. The shaded (safety circuit) area is discussed in Section 1.11.1 and Figure 1–21. The control circuits operate during normal printer operation. When a malfunction occurs, the safety circuits prevent overheating. Should the control and safety circuits fail to control the heating, the series wired thermal fuse (TP1) will open to permanently interrupt the fusing current.

The resistance of thermistor TH1 is determined by the heat of the upper fusing roller. The DC controller board measures $\overline{FSRTH}$ and calculates the current fusing temperature. The temperature is maintained at 180° C (356° F) during standby and 190° C (374° F) while printing.

The DC controller board pulses $\overline{FSRD}$ on and off to maintain the printing or standby temperature. $\overline{FSRD}$ passes through the DC drive board, emerging as the $\overline{HTDL}$ signal, which operates the zero crossing switch that turns on the fusing current.

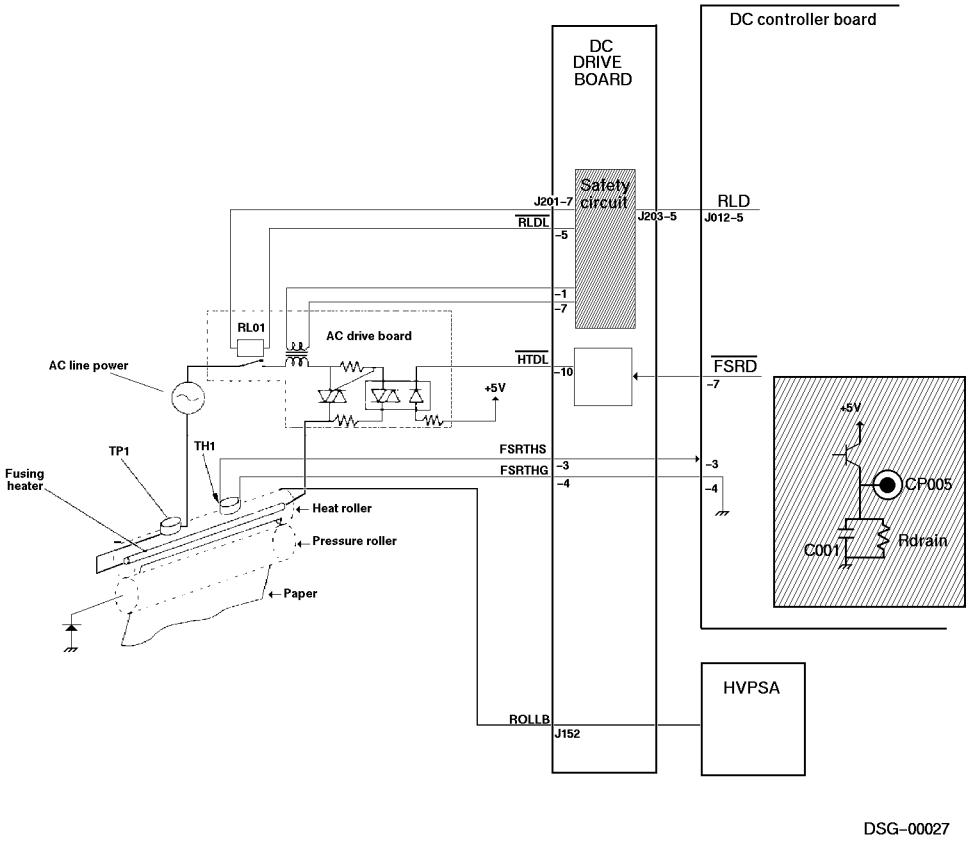
The following temperature malfunctions cause the DC controller board to shut down the heater current and display a fusing unit error message.

- Fails to reach 30° C (86° F) within 30 seconds after the power on or after the top door closes.
- Fails to reach 180° C (356° F) after exceeding 80° C (176° F) within 200 seconds after the power comes on or the top door closes.
- Fails to reach 190° C (374° F) within 200 seconds after power on or top cover closes.
- Fails to maintain 150° C (302° F) during standby or printing.
- Exceeds 215° C (419° F) any time.

When a fusing error occurs, C001, shown in Figure 1–20, is charged to approximately +5VDC. This charge prevents the immediate operation of the fuser circuit even when the malfunction is fixed. C001 only discharges when the power is turned off. If power is turned on before the charge is completely drained, C001 will fully recharge. **The printer must remain off for approximately 30 minutes.**

Caution: *For service reasons only, C001 can be discharged by touching CP005 to the metal chassis ground frame. If you do this, make sure to turn off the power and pull the plug. Failure to power down can damage an expensive DC controller board.*

Figure 1–20 Fusing Heater Control Circuit



1.11 Fusing Heater Control Circuit

1.11.1 Safety Circuits

Figure 1–21 shows a diagram of the fusing unit safety circuits. The safety circuit samples the AC current and applies it to the twin comparators on the DC drive board. The safety circuit opens the serial relay (RL101) if the current is more or less than the prescribed amount.

RL01 is a mechanical relay that opens to interrupt the flow of fusing heater current. During normal operation, RL01 remains closed. The relay opens if the fusing current fails to remain at a nominal value.

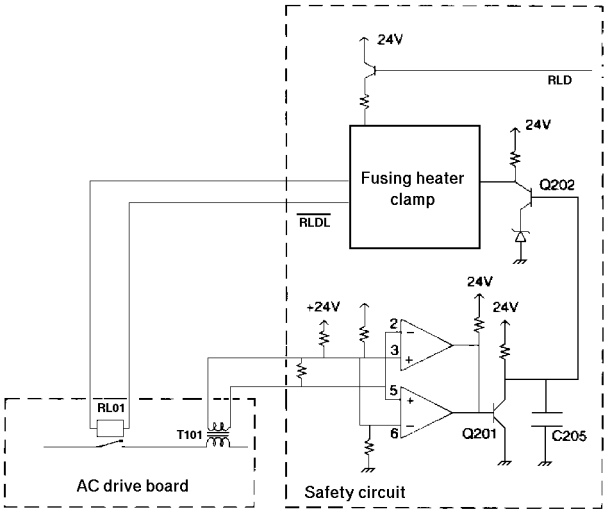
Fusing current flowing through the primary winding of transformer T101 generates a proportional output voltage in the secondary winding. The signal is applied to the dual comparators circuit. If this signal become higher than 15.05 Volts or lower than 11.95 Volts, one of the output pins will go low, shutting off Q201.

When Q201 shuts off, C205 charges and Q202 turns on. This triggers the fusing heater clamp and sets $\overline{RDRL}$ to high.

When the thermistor circuit detects an abnormality, the DC controller board pulls the RLD signal low, which forces the $\overline{RLDL}$ high, thus disabling the fixing heater.

1.11 Fusing Heater Control Circuit

Figure 1–21 Fusing Safety Circuit



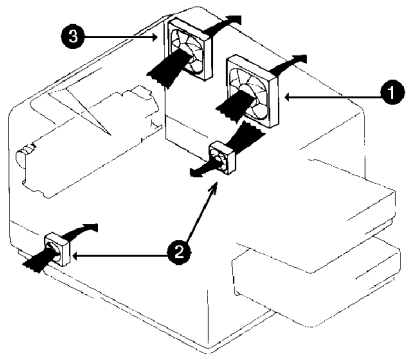
DSG–000028

1.12 Cooling Fans Drive Circuits

Fans used in the PrintServer 17 printer can detect a stalled armature and can signal the stall condition to the DC controller board logic. When a stall is detected, the DC controller board finishes printing and moves any sheets out of the paper path before entering the pause state. To clear a pause state, power the printer off then on.

Figure 1–22 shows the airflow direction for each of the four fans.

Figure 1–22 Cooling Airflow



DSG–000029

❶ The LVPSA fan draws the hot air away from the low-voltage power supply assembly and exhausts it out through the right-side cover vents.

❷ The two controller fans pull external air into the cavity that houses the controller board.

The LVPSA and controller fans constantly operate at full speed.

❸ The main fan draws air from inside the printer over the fusing unit. The hot air is exhausted through vents in the right-side cover.

When the printer is idle, the main fan operates at a slow speed. High speed is used during printing.

2

Power Up and Bootstrap

This chapter describes the power-up and bootstrap.

2.1 Powering Up the Printer

When the AC power is turned on, the self-test diagnostic runs and completely tests the electronic logic elements on the controller, daughter, and DC controller boards.

If the self-test is successful, the bootstrap program downline loads the operating system files from the supporting host into the memory of the controller. If the files load successfully, the bootstrap program runs the operating system.

The operating system then brings the printer to the on-line or Ready state.

Note: *See Section 2.8 for information about fast booting.*

2.2 Step 1: Running the Self Test

When you power up the PrintServer 17 printer, you hear the following sounds and see the indicators and liquid crystal display (LCD) pads light.

- Clicking of various clutches and solenoids
- Low-pitched sound of the main motor, gears, and rollers
- High-pitched whine of the scanner motor
- Soft double thud of the offset job stacker

The operator panel goes blank for a second. The total page count appears at the right-hand side of the LCD, as shown below:

0000373

2.2 Step 1: Running the Self Test

The following countdown numbers appear sequentially on the top row of the LCD:

9,8,7,6,5,4,3,2,1,0

0000373

Do not confuse the countdown numbers with self-test subtest numbers.

Print engine errors do not affect the boot progress. However, if the self-test finds a controller board error, the normal boot process stops. The self-test does not proceed beyond the error.

At this point, press the Active Jobs key to enter field test mode (FTM) and or to fast boot

Notes: *See Section 4.1 for FTM information.*

See Section 2.8 for information fast boot information.

A primitive self-test message is displayed on the controller board display. See Table 3–4 for message translation.

2.3 Step 2: Running the Bootstrap Program

After the self-test has successfully passed or has counted down past zero, the boot program starts, and the Ethernet address is displayed. During the rounding cycle, all the paper path motors and rollers turn.

The Ethernet address display is 12 hexadecimal digits. The system manager needs the Ethernet address to configure the host software.

XX-XX-XX-XX-XX-XX

The message display then shows the firmware version numbers:

C.C F.F L.L

Where: C.C is the controller board firmware revision level
F.F is the revision level of the front panel code
L.L is the revision level of the PCSI firmware

Note: *If C.C is V1.0, install the V1.1 firmware ROMs, as shown in Section 9.7.1.*

The boot program broadcasts boot requests until a supporting host replies. The error message **?54, ?55** or **?4F** is displayed if a reply is not received after a number of boot attempts. One of the following conditions might have occurred or the controller or daughter board might be bad:

- No software connection to the host exists through the Ethernet.
- The host is not on line.

- An incorrect Ethernet address was entered at installation time.
- The software was incorrectly installed or set up.
- An incorrect boot file was received.

See the fault isolation procedure in Section 6.3.

Examine and fix the supporting host or call software support to diagnose the installed PrintServer software.

2.4 Step 3: Downline Loading Software

The supporting host that is physically closest, enabled, and configured replies to the boot request by downline loading boot files to the printer. Downline loading consists of copying files from the supporting host directory, across the Ethernet medium, and into the controller board memory.

Control is passed to the downline loaded boot file, and the following message is displayed:

```
XX-XX-XX-XX-XX-XX
VAX ELN V4.2 LPS17
```

The boot file starts downline loading the operating system files and the following display occurs:

```
VAX ELN V4.2 LPS17
. . . . .
```

If the network is busy, you may see the following:

```
LOADING PrintServer
. . . . .
```

The dots are sequentially displayed after the printer downline loads each of the files, one dot per file. All files must load successfully.

2.5 Step 4: Initializing Software

After successfully completing the downline load, the following message is displayed on the operator panel:

Copyright 1992
Digital Equipment Corp.

Then, the operator panel shows the following software initialization message:

Please Wait...
Initializing...

2.6 Step 5: Printing a Start-Up Page

If enabled, the host sends the start-up page to the printer (Figure 2–1). The system manager can disable printing the start-up page with the following commands:

```
$ SET DEFAULT LPS$SUPPORT
$ RENAME LPS_STARTPAGE.PS LPS_STARTPAGE_SAVE.PS
```

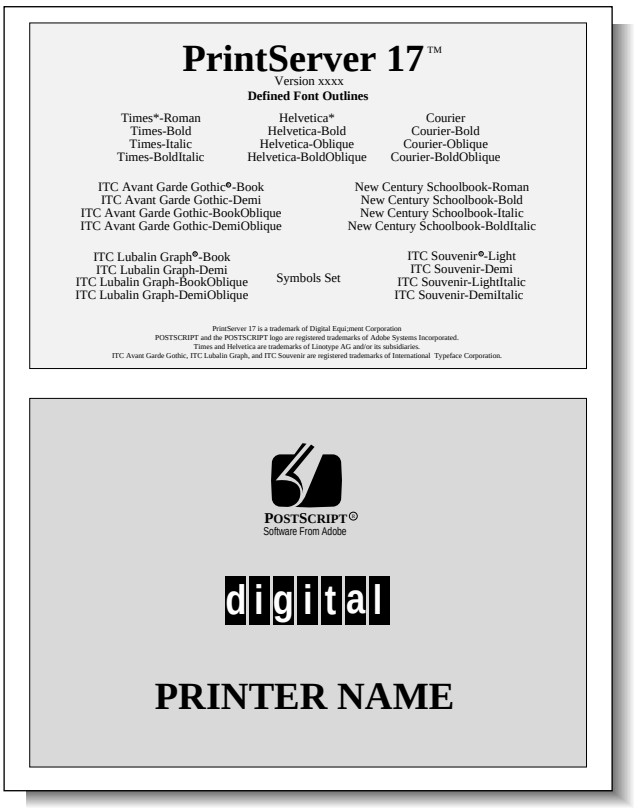
For additional information see the *DEC PrintServer Supporting Host Software for VMS Management Guide* or the *DEC PrintServer Supporting Host Software for ULTRIX Management Guide* .

2.7 Step 6: Displaying the Ready Status

Finally, the operator panel displays one of the following messages:

Ready
or
Single Job Mode-
Press Resume To Continue

Figure 2–1 Start-Up Page



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2.8 Bypassing Memory Testing for a Fast Boot

The memory section of the self test takes about 2 minutes to complete. Software engineers find this wait annoying especially if they must power the printer on and off many times.

Caution: *Do not advise users to use this procedure in place of the normal power up procedure. Memory testing and initialization is necessary for routine on-line printer operation.*

2.8 Bypassing Memory Testing for a Fast Boot

Use the following procedure to bypass memory testing and accomplish a fast boot:

1. Power on the printer and wait for the self-test numbers **9,8** to appear on the display.
2. Press the Active Jobs key, repeatedly, until the FTM prompt appears. See Figure 4–1 for an example of the FTM prompt.
3. Press the Resume key to turn off the FTM prompt.

Note: *This procedure might mislead you in the following ways:*

- *If you fail to press the Active Jobs key in time before the memory test runs.*
  - *Power down and try again.*
- *If you fail to turn off the FTM prompt before the printer enters FTM mode.*
  - *See Section 4.1 for instructions about leaving FTM, or power down and try again.*

3

Operator Panel and Remote Error Log

This chapter describes the switches and indicators on the operator panel and controller board and also discusses the remote error logging facility.

3.1 Operational Mode

The operator panel is used to display information and enter commands. It is a microcomputer system that communicates with the controller board.

In operational mode, the operator panel displays print job status and tells the user to clear jams, close the top door, attend to the input/output trays, or call the operator or Customer Services. In field test mode (FTM), the operator panel is used to run the controller self-test and input field test commands, such as print a test sheet.

3.2 Operator Panel

Figure 3–1 and Table 3–1 show the major sections of the operator panel.

Figure 3–1 Operator Panel

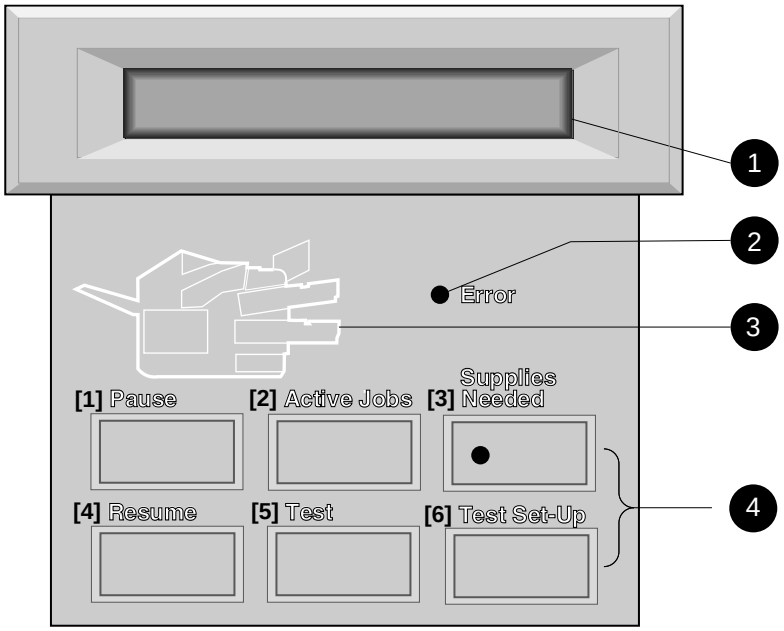


Table 3–1 Operator Panel Functions

	Item	Function
❶	Message display LCD	Also referred to as the LCD, which stands for liquid crystal display. The LCD shows current operational status, operator information, or diagnostic error messages. See Chapter 5 for a listing of most messages. The *PrintServer 17 Printer Operator's Guide* also contains useful information about the message display.
❷	Error indicator	Flashes yellow when an error condition exists.
❸	Graphic display	Shows the selected input and output paper trays and paper jam locations. The indicators on the graphic display have the following meanings: • Green indicates the paper tray selections. • Yellow indicates a paper-out or tray-full condition. • Flashing yellow indicates a paper jam location.
❹	Keypad	The keys perform their labeled function when pressed, such as Pause or Resume. For information about keypad operation, see Section 3.2.1.

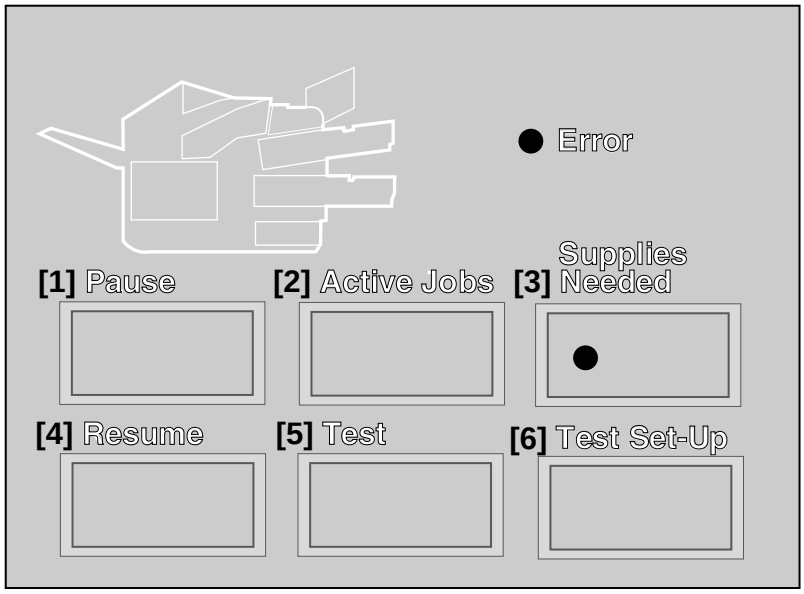
3.2 Operator Panel

3.2.1 Keypad Functions

In operational mode, the keys perform their labeled functions, such as Pause or Resume. In FTM or Test-Page mode, the keys take numeric values.

Figure 3–2 and Table 3–2 show the keys and list the features of the keypad.

Figure 3–2 Operator Panel Keypad



DSG-000244

Table 3–2 Keypad Functions: Operating Mode

Key	Function
[1] Pause	Halts printing and processing, and places the printer off-line. The Pause key works with the Resume key. Pressing Pause at the correct time during self-test invokes the FTM prompt. See Figure 4–1.
[2] Active Jobs	Displays the current CLIENT_NODE::USERNAME, the print job number, and the time the job began. **REGENT::SMITH** **Job 1234 Started 1:34** Press this key during the self-test to enter FTM and bypass the memory test.
[3] Supplies Needed	Consists of an indicator and a key. The indicator lights yellow to inform the operator that a message or messages are waiting to display. Press and release the key to display the first message for 5 seconds. Press and hold the key, to display all waiting messages display. For example: **Perform user maintenance** or **Toner low—See Operator's Guide** If the Supplies Needed indicator is not on, pressing the key displays: **Maintenance needed in xxx pages**
[4] Resume	Cancels the effect of the Pause key. The printer returns on-line and **Ready** appears on the LCD. If the printer is in Single Job Mode, pressing Resume causes the printer to process the next job.
[5] Test	This key is not functional in the PrintServer 17 printer.
[6] Test Set-Up	Puts the keypad in Test Set-Up mode when the printer is paused. Test Set-up Mode is used to reset the maintenance counter after the customer performs the 200K maintenance. See Section 3.5 for maintenance procedure information.

3.3 Controller Board Indicators and Switches

After removing the board cage cover, you can see five LEDs mounted on the edge of the controller board. Four LEDs are yellow; one LED is green.

The green LED indicates the low-voltage power supply unit is supplying +5 volts DC.

The four yellow indicators on the controller board display a binary coded subtest number. Table 3–4 lets you decode the controller board LED display. The subtests run in the order listed.

During error-free operation, the LEDs quickly display a changing countdown as the subtests run. If a fatal error is detected, the subtest loops, causing the displayed subtest number to flash.

The four switches of the switchpack that is mounted on the controller board are disabled and the switches have no effect on the operation of the system. Table 3–3 shows the shipping configuration of the switches.

Table 3–3 Controller Board Switch Pack

1	2	3	4	Action
Off	On	On	On	Normal operational position.

3.3 Controller Board Indicators and Switches

Table 3–4 Controller Board Indicators

LEDs Display	Note
1111	The restart (RST) test is invoked at power-up or by a FTM command
0001	UVROM checksum test
0010	System support chip (SSC) test
0011	Reserved
0100	Floating point unit (FPC) test
0101	Memory sizing test
0110	Memory addressing and data test
0111	Central processing unit (CPU) test
1000	Reserved
1001	Printer data interface (PDI) test
1010	Direct memory access (DMA) test
1011	Second generation Ethernet chip (SGEC) test
1100	UVROM test
1101	Engine or external loopback tests
1110	Operator panel loopback test
1111	Engine status tests
0001	Field test mode (FTM) functions

LED display of 1 means the LED is illuminated.
The left LED is the most significant digit (MSD).
The 1111 (F) and 0001 (1) controller board displays are used twice.

3.4 Using the Remote Error Logging Facility

For random or intermittent jams, ask the customer to enable the remote error logging facility for an extended time period to capture an adequate number of events.

Instructions for enabling and disabling the error logging facility and the location of the event log file are in the *DEC PrintServer Supporting Host Software for VMS Management Guide* or *DEC PrintServer Supporting Host Software for ULTRIX Management Guide* .

3.5 200K Maintenance

The **Perform user maintenance** message is displayed when the 200K counter reaches its limit. Instructions for performing the 200K maintenance procedure are in the *PrintServer 17 Printer Operator's Guide*. The procedure consists of cleaning and replacing the components listed below and resetting the maintenance counter.

The following components are replaced as part of the 200K maintenance procedure:

- Upper and lower pickup rollers.
- Switchback (reversing) roller
- Transfer charge roller
- Fusing unit

After the components are replaced, use one of the following two procedures to reset the 200K counter to zero:

FTM procedure: Press the FTM key sequence (2, 5, 3, 6), as shown in Section 4.3.

On-Line procedure:

1. If the printer is on-line, press the Pause key.
2. Press the Test Setup key to enter test setup.
3. Press the Resume key to display the **Reset maintenance Enter code:** message.
4. Press the 2, 5, 3 keys sequentially.

   The **Paused—Press Resume to continue** message will eventually appear.
5. Press the Resume key to go to on-line operation.

4

Field Test (FTM) and Query Modes

This chapter describes the field test (FTM) and Query modes, and also describes the following miscellaneous functions:

- How to invoke FTM
- The engine board test pattern
- The controller board A and B test patterns

4.1 Entering and Exiting FTM

To invoke the FTM, power on the printer and wait for the self-test numbers **9,8** to appear on the display.

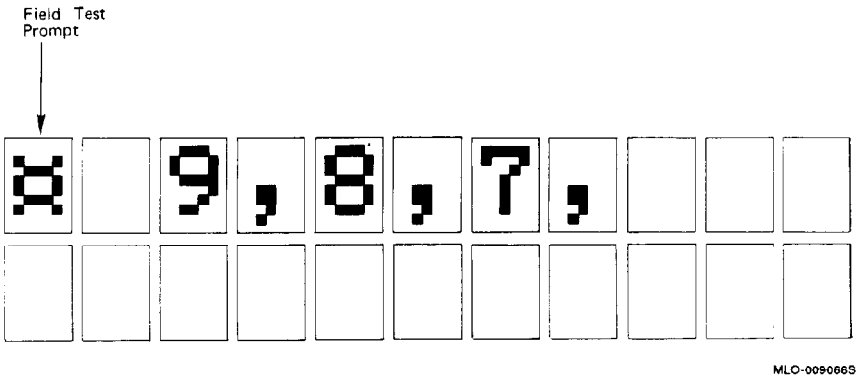
Press one of the following keys repeatedly until you see the FTM prompt appear, as shown in Figure 4–1:

[1]	**Pause**	Enters FTM after completing a full self test
[2]	**Active Jobs**	Speedily enters FTM after completing the self test and bypassing the number 6, memory test.
[4]	**Resume**	to clear the FTM prompt and resume self test and booting. See Section 2.8 for information about fast booting.

After the FTM prompt appears, wait for the self-test countdown and the Ethernet address display to finish before you enter commands. If the self-test finds an error, it displays an error message.

4.1 Entering and Exiting FTM

Figure 4–1 Field Test Prompt



To exit FTM, do one of the following:

- Power the printer off then on.
- Press the Resume [4] key as the countdown is displayed. The FTM prompt disappears.
- Press keys 4 and 6 sequentially to boot the system. This command clears the FTM prompt and starts the self-test and boot process, described in Chapter 2.

4.2 Entering Commands

In FTM, you use the six operator panel keys to enter commands. Keys [1], [2], [3], [4], and [5] are the command keys. Key [6] is the Enter or Return key. The following prompts may appear next to the FTM prompt:

Prompt	Meaning
<	Field test mode is ready to accept commands.
?	You entered a command incorrectly.
::	The command successfully executed.

4.3 Invoking FTM Setup, Tests, and Test Patterns

Table 4–1 explains how to enter query mode and perform various other functions.

Table 4–1 FTM Setup

To Perform This Action	Press Keys	Note
Display firmware version	1, 1, 3, 6	Displays the firmware version codes for the controller board ROM. The codes are discussed in Section 2.3. **Note:** *If C.C is V1.0, install the V1.1 firmware ROMs, as shown in Section 9.7.1*
Display Ethernet address	1, 2, 3, 6	Displays the Ethernet address code, which is discussed in Section 2.3
Initialize the print engine	2, 2, 6	Sends an INIT command to the print engine. This sequence is useful for clearing a variety of soft error conditions that hang up the print engine. If INIT fails to restore operation, try the 5, 3, 6 sequence to obtain an FTM error or power the printer off then on.
Invoke query mode	2, 3, 6	See Section 4.6.
Display the 200K page count	2, 5, 2, 6	Displays the number of prints since the last resetting of the 200K page counter.
Clear 200K page counter	2, 5, 3, 6	Sets the 200K page counter to zero.
Display the total page count	2, 5, 5, 6	Displays the total page count.
Run bootstrap	4, 6	Terminates FTM mode, runs the power-up self-test, and boots the system. Same as powering off then on.

(continued on next page)

4.3 Invoking FTM Setup, Tests, and Test Patterns

Table 4–1 (Cont.) FTM Setup

To Perform This Action	Press Keys	Note
Update and display engine status	5, 3, 6	Reads and evaluates the print engine N and E query bytes and displays the results on the operator panel. **Use this sequence to refresh the error display with current status.** There is no automatic status update. After a corrective action you use this key sequence display fresh status.

The self-test diagnostics run automatically and can be invoked manually by FTM key strokes. At power up, the diagnostics run and test the entire electronics system. Table 4–2 shows how the service engineer can test or exercise specific areas of the electronics system. Both kinds of testing are very thorough, but the specific FTM tests or exercises are more rigorous than the power-up tests.

The self-tests do the following:

- Completely test the electronics elements of the controller, daughter, and optional memory boards.
- Find and select for testing a properly connected and terminated Ethernet port. Only one port can be selected.
- Perform loopback testing on the selected Ethernet port.
- Test the print engine control and status interface (PCSI) and the print engine data interface (PDI).

Error information concerning the print engine motors, sensors, or such is status information and must be analyzed to determine fault. The self-tests test the electronic control boards much more thoroughly then electromechanical devices in the print engine.

4.3 Invoking FTM Setup, Tests, and Test Patterns

Table 4–2 Invoking Self-Tests

To Run This Test	Press Keys	Note
Complete self-test (continuous)	1, 6	Continuously runs the entire self test. The 7,6,5,4,3,2,1,0:: countdown numbers appear on the display. Press Pause to stop. Single external Ethernet loopback[1] testing is performed.
‘x Loopback connectors ‘is Use of)		
Complete self test (once)	1, 1, 6	Same as above but testing stops after one full pass. [1]Single external Ethernet loopback testing is performed.
Processor self-test (once)	1, 2, 6	Displays the 9, 8, :: countdown numbers.
Memory subtest (once)	1, 3, 6	Displays the amount of memory and countdown numbers, for example, 12M 7, 6, 5, 4, 3, 2, ::.
SGEC network test (once)	1, 4, 6	Runs the second generation Ethernet chip (SGEC) test, and displays the 2,1:: countdown numbers. This test is more rigorous and thorough the the self-test version.
		Full external loopback[2] testing is performed. Errors messages will occur on unconnected rear panel ports.
Printer interface test	2, 6	Displays the 4,3,2, :: countdown numbers and tests the communication between the controller and print DC controller boards. Also referred to as the PDI test.
Operator panel test	2, 1, 6	Shows test patterns on the indicators and displays of the operator panel.

[1] Single external Ethernet testing requires that one of the two Ethernet connectors have a loopback connector or a properly terminated Ethernet connected to it. See Section C.3.1 for information about loopbacks and terminators.

[2] Full external loopback testing requires that both Ethernet connectors have loopback or proper termination and that both serial line units have loopback connectors installed. See Section C.3.1 for information about loopbacks and terminators.

4.4 Printing FTM Test Patterns

The PrintServer 17 has the following test patterns that you can use to test printer operation, paper path jams, and image quality. The A and B controller board test patterns reside in the controller board ROM memory. The engine drive board test pattern (see Section 4.5) resides in the DC controller board firmware.

Table 4–3 shows how to select the cassette and output stack.

Table 4–3 Selecting the Cassett and Output Stack

To Select This Tray	Press Keys
Upper cassette	3, 5, 6
Lower cassette (LCIT)	4, 1, 6
Envelope feeder	4, 2, 6
Face-down stacker	4, 3, 6
Side tray (face up)	5, 2, 6

The graphic panel indicators glow green to show selected input cassettes and output stack.

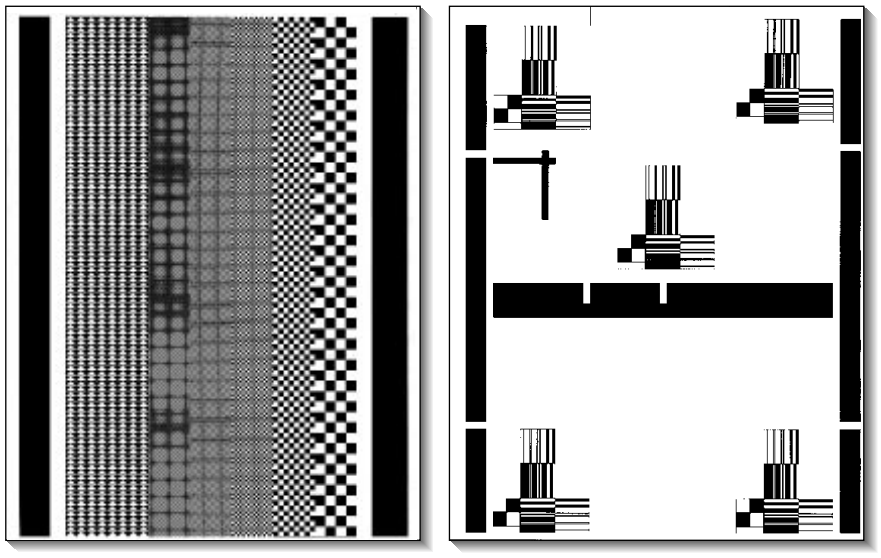
An amber indicator means an error condition is associated with that input or output. For example, no cassette is installed. Error conditions on non-selected devices do not inhibit printing.

Table 4–4 shows how to print the controller board test patterns and Figure 4–2 shows the patterns.

Table 4–4 Printing Test Patterns

To Print	Press Keys
One simplex set of controller board patterns	3, 6
Continuous simplex controller board patterns (Press Pause to stop.)	3, 1, 6
One duplex set of controller board patterns	3, 2, 6
Continuous duplex controller board patterns (Press Pause to stop)	3, 3, 6

Figure 4–2 Controller Board Test Pattern A and B



Pattern A

Pattern B

DSG-000177

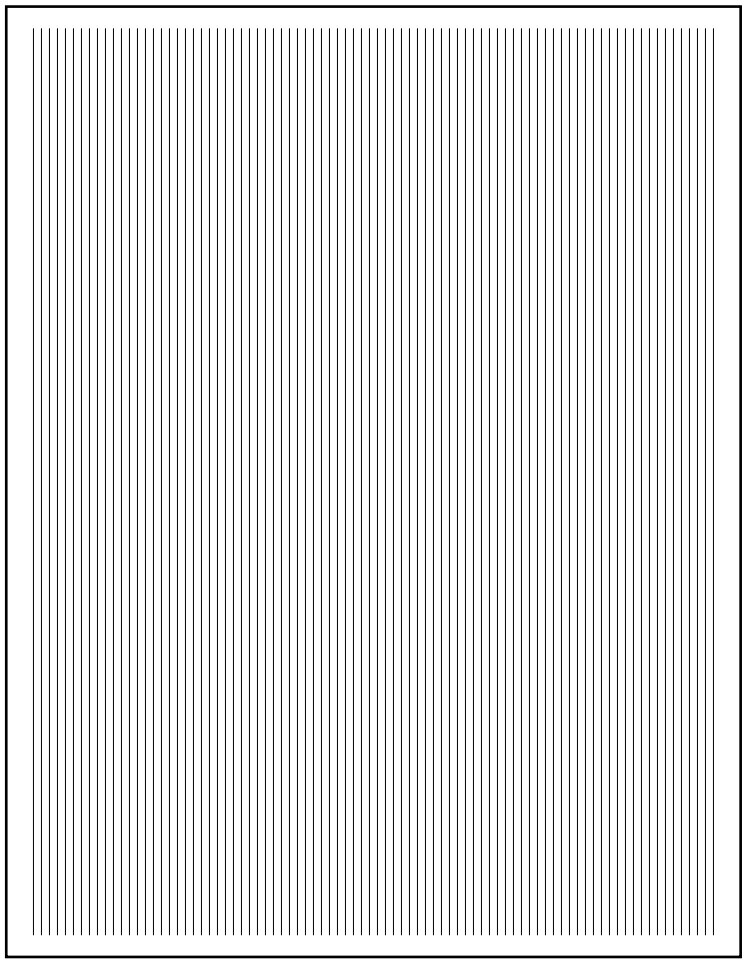
4.5 Engine Board Test Pattern

Figure 4–3 shows the engine board test pattern. No host or FTM-based command can print this pattern. To print the engine board test pattern, press the hidden switch shown in Table 1–1 with a paper clip or some other suitable tool. The DC controller board feeds paper only from the upper cassette, prints a simplex copy, and ejects the sheet into the face-down stacker.

To test the job offset stacker, press and hold the hidden switch to produce continous printing and operation of the job offset stacker. The job offset stacker will operate every other test pattern.

4.5 Engine Board Test Pattern

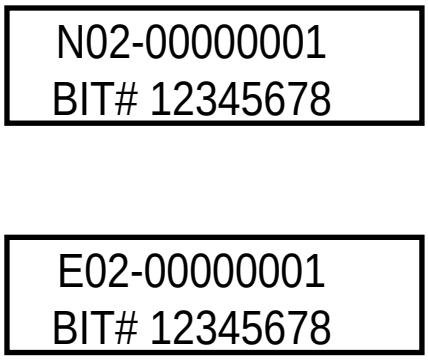
Figure 4–3 Engine Board Test Pattern



MLO-004525P

4.6 Reading the Query Bytes and Bits

Query byte data is the basic data for online or FTM messages. If the software and FTM error messages fail to pinpoint a malfunction, you must read and interpret the query bytes.



The query bytes are a collection of status information that originates in the DC controller board. The status bytes are read by the firmware or software on the controller board. FTM is the firmware. The operating system is downline loaded from the host at boot time.

Some bits are unused or informational. Bit 8 of every byte is an odd parity byte. Unused bits are undefined and are not included in the table.

DSG-000009

The bytes are numbered hexadecimal, appear nonsequentially, and are prefixed with the letter N or E. Be careful when reading the bytes. Do not confuse similarly labeled bytes. For example; bytes N02 and E02.

Do the following to read the query bytes:

- Power up the printer and press the Pause key to enter FTM.
- Press the 2, 3, 6 keys to read and display the bytes.
- Press any key to step forward to the next byte. The bytes are displayed one at a time and all must be viewed.

Tables 4–5 through 4–24 provide a brief explanation of the used bits in the 20-query bytes. The sections pointed to are troubleshooting FIPs and provide a more detailed explanation of the status.

Table 4–5 N40 = Engine Protocol

Bit	If This Bit Is Set to 1...	Refer to Section...
6	If bit 6 is a 1, ignore the remaining query bytes. This byte is only displayed for V1.0 firmware.	6.2.1
8	Odd parity bit	Ignore

Table 4–6 N01 = General Status

Bit	If This Bit Is Set to 1...	Refer to Section...
2	Print request	Informational
3	Paper is moving in the printer	Informational
4	Error during test print. **Press 2, 2, 6 to clear.**	Informational
5	Fusing roller is heating up	Informational
6	Engine is paused.	Informational
7	Print engine error	Table 4–7 Table 4–8
8	Odd parity bit	Ignore

Table 4–7 N02 = Operator Status

Bit	If This Bit Is Set to 1...	Refer to Section...
2	EP-N cartridge is not installed	6.10
4	Cannot feed from selected cassette	Informational
5	Paper jam in paper path	7.1
6	Top door is open	6.14
7	Engine test pattern is printing	Informational
8	Odd parity bit	Ignore

4.6 Reading the Query Bytes and Bits

Table 4–8 N04 = Service Status

Bit	If This Bit Is Set to 1...	Refer to Section...
2	Fusing temperature malfunction	6.6
3	$\overline{BD}$ signal not received	Table 4–21
4	Scanner motor not at speed	6.5
6	Motor error	Table 4–20
8	Odd parity bit	Ignore

Table 4–9 N07 = Print Status

Bit	If This Bit Is Set to 1...	Refer to Section...
2	$\overline{BD}$ signal error.	Informational
3	$\overline{VSYNC}$ signal error	Informational
	Press 2, 2, 6 to clear N07–2 or –3 error.	
8	Odd parity bit	Ignore

Table 4–10 N08 = Re-transmission Status

Bit	If This Bit Is Set to 1...	Refer to Section...
2 MSB 3 4 5 6 7 LSB	Shows the number of sheets requiring transmission after a jam. The number remains until the next jam or power down	
8	Odd parity bit	Ignore

Table 4–11 N0B and N0D = Lower and Upper Cassette Size

Bit	Hexadecimal Cassette Size Code	Refer to Section...
2 MSB	00h = No cassette	6.12
3	01h = A4	
4	04h = Letter	
5	09h = B5	
6	0Ch = Legal	
7 LSB	0Dh = Executive	
8	Odd parity bit	Ignore

Table 4–12 N0E = Duplex Unit Status

Bit	If This Bit Is Set to 1...	Refer to Section...
4	The duplex unit is attached.	6.8
8	Odd parity bit	Ignore

Table 4–13 N15 = Selected Input Feeder

Bit	If This Bit Is Set to 1...	Refer to Section...
2	Upper cassette selected	6.12
3	Lower cassette selected	6.12
4	Envelope feeder selected	6.12
5	Duplex unit selected	6.8
6	Manual feed or overloaded cassette	6.12
8	Odd parity bit	Ignore

Table 4–14 N1C = Duplex unit status

Bit	If This Bit Is Set to 1...	Refer to Section...
3	Duplex unit centering error	6.8
8	Odd parity bit	Ignore

4.6 Reading the Query Bytes and Bits

Table 4–15 N1F = Miscellaneous

Bit	If This Bit Is Set to 1...	Refer to Section...
2	Paper in the duplex unit	Informational
6	Toner out	6.11
7	Facedown tray full (stack overflow)	6.15
8	Odd parity bit	Ignore

Table 4–16 N25 = Envelope Feeder Status

Bit	If This Bit Is Set to 1...	Refer to Section...
2	Upper cassette available (Not necessarily selected)	Informational
3	Lower cassette available (Not necessarily selected)	Informational
4	Envelope feeder is installed	6.13
8	Odd parity bit	Ignore

Table 4–17 N2A = Tray or Feeder Empty Status

Bit	If This Bit Is Set to 1...	Refer to Section...
2	Paper in upper cassette	6.12
3	Paper in lower cassette	6.12
4	Envelope in envelope feeder	6.12
8	Odd parity bit	Ignore

Table 4–18 E02 = Cassette Elevator Status

Bit	If This Bit Is Set to 1...	Refer to Section...
3	Upper cassette elevator error	6.12
4	Lower cassette elevator error	6.12
8	Odd parity bit	Ignore

Table 4–19 E08 = Operator Status 2

Bit	If This Bit Is Set to 1...	Refer to Section...
2	Illegal selection of duplex path during envelope feeding.	6.8
4	Illegal manual feed or overloaded cassette	6.12
8	Odd parity bit	Ignore

Table 4–20 E0D = Motor and Fan Status

Bit	If This Bit Is Set to 1...	Refer to Section...
3	Main motor error	6.7
5	Main fan error	6.9
6	LVPSA fan error	6.9
7	Controller board fans malfunction	6.9
8	Odd parity bit	Ignore

Table 4–21 E13 = Scanner Malfunction

Bit	If This Bit Is Set to 1...	Refer to Section...
2	BD error	6.5
3	Laser error	6.5
8	Odd parity bit	Ignore

Table 4–22 E16 = Scan Line Density

Bit	If This Bit Is Set to 1...	Refer to Section...
	Bits 2 through 7 contain a number.	
8	Odd parity bit	Ignore

4.6 Reading the Query Bytes and Bits

Table 4–23 E19 = Jam Location

Bit	If This Bit Is Set to 1...	Refer to Section...
4	Delivery roller or face-down stacker jam	7.1
5	Duplex entrance jam	7.1
6	Pickup unit jam	7.1
7	Fuser jam	7.1
8	Odd parity bit	Ignore

Table 4–24 E1A = Pre-feeding Status

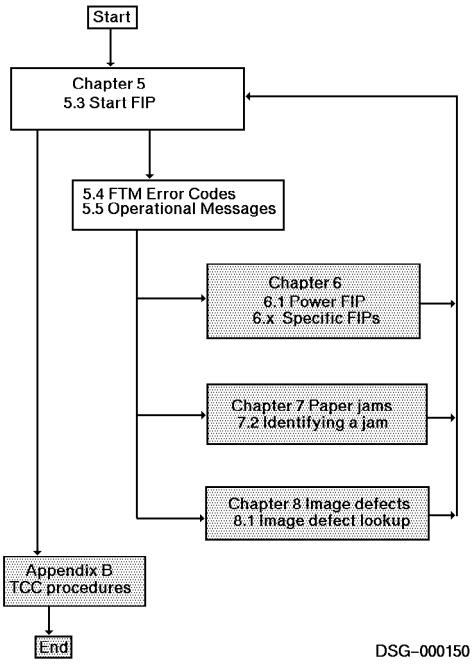
Bit	If This Bit Is Set to 1...	Refer to Section...
2	Prefeed	Informational
8	Odd parity bit	Ignore

5

Start FIPs and Error Codes

5.1 About the FIPs

This chapter contains the start fault isolation procedure (FIP) and lists all the operational and FTM error codes. The FIPs are a collection of yes/no flow charts and tables that provide a way to fix or ensure the correct operation of the hardware. If a problem exists, use the start FIP to isolate the problem and direct you to the next FIP.



5.2 Preliminary Information

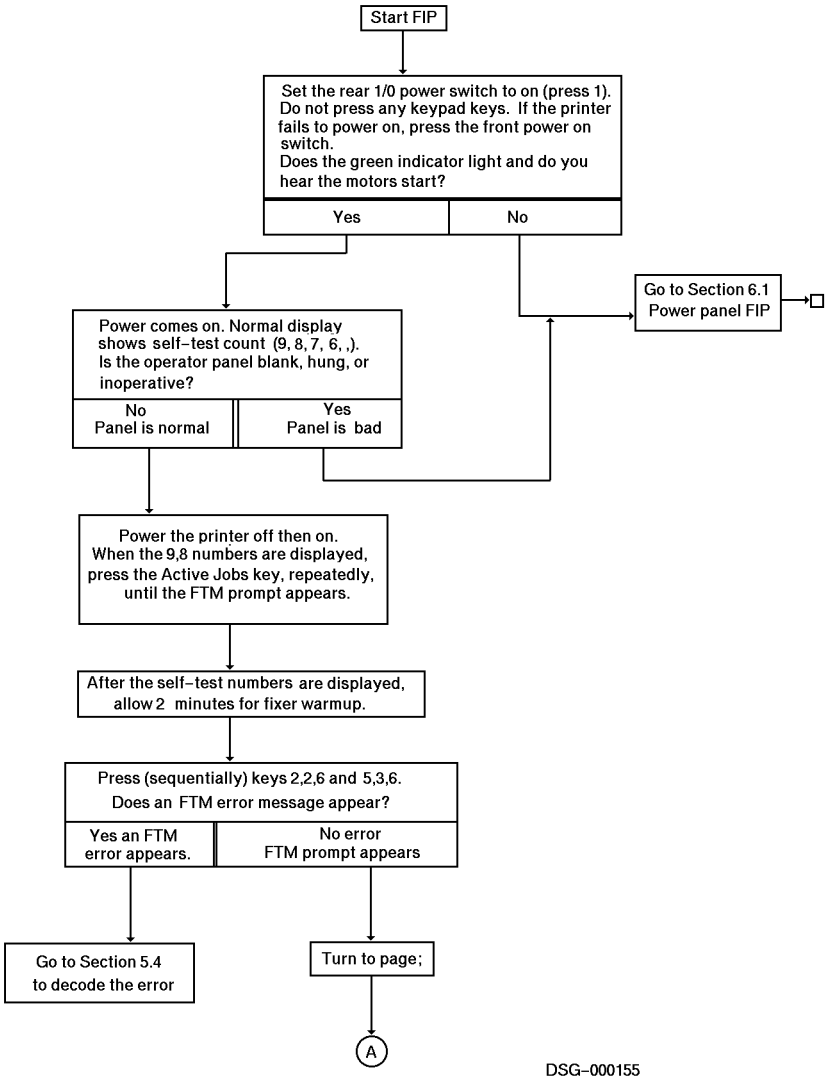
Before using the start FIPs, do the following:

- Record the symptoms, then recycle/reboot the printer.
- Do all steps of the Start FIP shown in Figure 5–1.
- Follow the FIPs in order. The printer is not fixed until you complete the start FIP with no errors.
- After fixing the original problem, perform the TCC procedures listed in Appendix C.
- Keep the following in mind when the FIP tells you to check a signal or power supply voltage:
  - Unless otherwise stated, all voltage readings should be within ±5% of the stated value.
  - Voltage level "low" means 0 to +0.5V.
  - Voltage level "high" means 5V ±0.5V.
- When operating in field test mode (FTM) the operator panel error displays do not automatically update. **Use the following to update the displayed status after each corrective step:**
  1. **Press keys 2, 2, 6** to initialize a engine. If the engine fails to respond to that key sequence, power the printer off and on.
  2. **Press keys 5, 3, 6** to obtain engine status and display an FTM error message.

5.3 Start FIP

See Figure 5–1 to begin the PrintServer 17 printer fault isolation. If symptoms change or the troubleshooting path is not clear, go back to the beginning of the start FIP.

Figure 5–1 Start FIP



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5.3 Start FIP

Figure 5–1 (Cont.) Start FIP

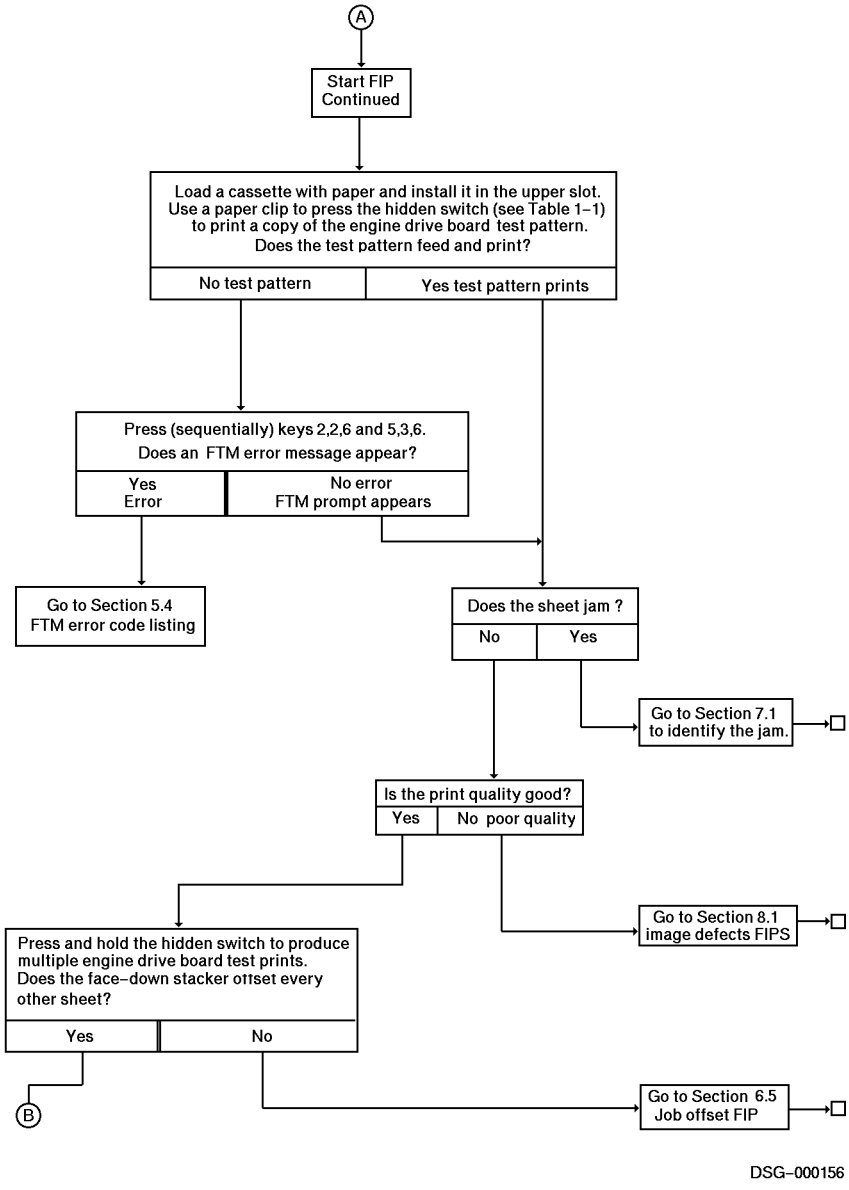

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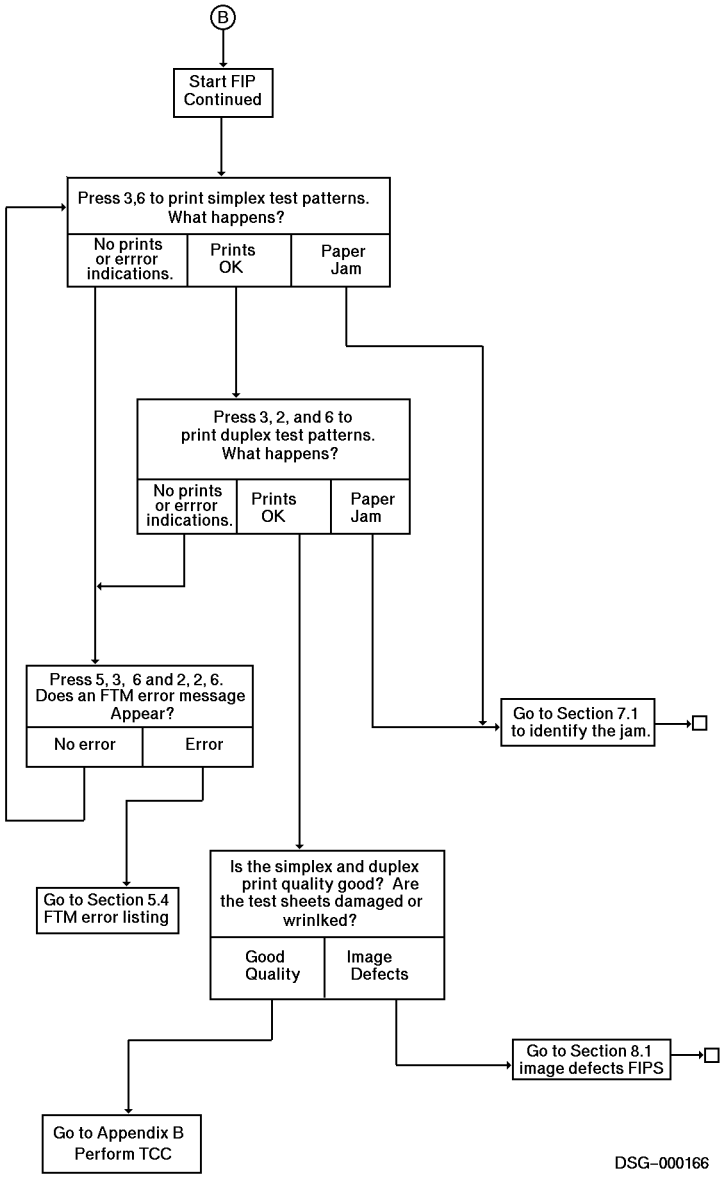
Figure 5–1 (Cont.) Start FIP



5.4 FTM Error Code Listing

Table 5–1 lists error messages by the descending value of the FTM error code. The full column directs you to the appropriate FIP.

The following tables list the same information:

- Table 5–2, Operational (on-line) Messages
- Table 5–3, Operational (on-line) Error Messages

5.4.1 Reading the Error Message

During power-up self-test or Field Test Mode (FTM), the operator panel might display a diagnostic error messages in the following format:

TTXX.EEEE

Where: TT indicates the major group.
XX is an informational identification of the problem area.
EEEE is the unique error code for a particular component.

Table 5–1 FTM Error Code Listing

Display		Query	Description	
FTM	**On-Line**	**byte–bit**	**Brief**	**Full**
00xx.???? to 0Dxx.????	–	–	Any error in this major group indicates a controller, daughter, memory, or Ethernet failure. Make sure the Ethernet is terminated or a loopback connector is installed.	6.2
0Dxx.????	–	–	Print engine control and status interface (PCSI) tests	6.2.1
10xx.????	–	–	Operator panel error	6.1.1
11xx.0010		N01–7	Undefined error Examine query bytes.	4.6
11xx.0012	Paused– Press Resume to continue	N01–6	Motors and fusing unit are off. Examine query bytes.	Informational

(continued on next page)

Table 5–1 (Cont.) FTM Error Code Listing

Display		Query	Description	
FTM	On-Line	byte–bit	Brief	Full
11xx.0014	Print engine is in warm up state	N01–5	Fusing unit takes about 200 second to warm up.	6.6
11xx.0016	–	N01–4	Paper jam. Version V1.0 firmware error. **Press 2,2,6 to clear.** Install version V1.1 firmware.	Section 7.1.1
11xx.0020	–	Ignore	Print engine is paused and fails to respond.	6.2.1
11xx.0024	–	N02–7	Test print	Informational
11xx.0026	Close top cover	N02–6	The top door is open.	6.14
11xx.0028	–	N02–5	Paper jam	7.1
11xx.002A	–	N02–4	Version 1.0 firmware error. Miscellaneous engine error. Examine query bytes. Install V1.1 firmware ROMs.	4.6 6.16
11xx.002C	Check toner cartridge installation	N02–2	EP-N cartridge not installed	6.10
11xx.002E	Hardware Error 1063 Power down immediately Call Customer Services	E0D–3	Main motor error	6.7
11xx.0030	Hardware Error 24 Call Customer Services	N04-4	Scanner motor error	6.5
11xx.0032	Hardware Error 23 Call Customer Services	N04-3	BD signal is missing	6.5
11xx.0034	Hardware Error 22 Call Customer Services	N04–2	Fusing unit error	6.6
11xx.0036	Hardware Error 33 Call Customer Services	N07–3	VSYNC signal is missing. **Press 2, 2, 6** for more information.	Informational
11xx.0038	–	N07–2	BD signal timing error. **Press 2, 2, 6** for more information.	Informational
11xx.003A	Hardware Error 143 Call Customer Services	N1C–3	Duplex unit centering guide error	6.8

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5.4 FTM Error Code Listing

Table 5–1 (Cont.) FTM Error Code Listing

Display		Query	Description	
FTM	**On-Line**	**byte–bit**	**Brief**	**Full**
11xx.003C	Toner low See Operators Guide	N1F–6	Toner out	6.10
11xx.003E		N1F–2	Paper in duplex unit	Informational
11xx.0040	Remove excess media from input cassette	E08–4	Illegal manual feed operation or overloaded cassette	6.12
11xx.0042	–	E08–2	Illegal duplex and envelope feeder selection	Informational
11xx.0044	Hardware Error 1067 Power down immediately Call Customer Services	E0D–7	Controller fan error	6.9
11xx.0046	Hardware Error 1066 Power down immediately Call Customer Services	E0D–6	LVPSA fan error	6.9
11xx.0048	Hardware Error 1065 Power down immediately Call Customer Services	E0D–5	Main fan error	6.9
11xx.004A	Hardware Error 26 Call Customer Services	N04–6	Motor or fan error Examine query byte EOD.	Informational
11xx.004C	Hardware Error 1093 Call Customer Services	E13-3	Laser beam power error	6.5
11xx.004E	Hardware Error 1092 Call Customer Services	E13–2	Scanning malfunction causes BD error	6.5
11xx.0050	Hardware Error 1014 Call Customer Services	E02–4	Lower cassette elevator error	6.12
11xx.0052	Hardware Error 1013 Call Customer Services	E02–3	Upper cassette elevator error	6.12
11xx.0054	Install optional feeder	N25–3	No envelope feeder installed	6.13
11xx.0056	–	N0E–4	No duplex unit installed.	6.8
11xx.0058	Paper jam –open top cover	E19–7	Engine or fuser area	7.1
11xx.005A	Paper jam—clear cassette area Paper jam—duplex reversing area	E19–6	Paper feed jam	7.1

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Table 5–1 (Cont.) FTM Error Code Listing

Display		Query	Description	
FTM	**On-Line**	**byte–bit**	**Brief**	**Full**
11xx.005C	Paper jam—open side door	E19–5	Duplex entrance jam	7.1
11xx.005E	Paper jam—clear top output tray	E19–4	Face down exit area	7.1
1109.0060	Add paper	N2A–3	Lower paper cassette is empty	6.12
1109.0062	Add paper	N2A–2	Upper paper cassette is empty	6.12
1109.0064	Add paper	N2A–4	Envelope feeder is empty	6.13
1109.0066	Insert paper cassette	N0D–2-7	Lower cassette is missing	6.12
1109.0068	Insert paper cassette	N0B–2-7	Upper cassette is missing	6.12
11xx.1002	–	–	PCSI response timeout	6.2.1
11xx.1004	–	–	Engine error during test page printing. **Press 2, 2, 6** and **5, 3, 6,** for more information.	Informational
11xx.1012	–	–	PCSI command timeout	6.2.1

5.5 Operational (on-line) Messages

Table 5–2 lists the operational messages that occur during day-to-day operation. The printer is booted, online, and is processing the customer's printing or commands. The messages inform operator or user of ongoing or impending conditions.

Table 5–2 Operational (on-line) Messages

Message	Explanation and Corrective Action
Print engine is in warmup state	The fusing unit is warming up. This occurs at power up or after a door or cover has been opened. If the message fails to clear, go to Section 5.3 the Start FIP.
Ready	The printer is functioning correctly and is waiting for a job to process.
Processing	The printer is processing one or more jobs.
Printing	The printer is currently printing a page.
Paused— Press Resume to continue	The Pause key has been pressed. Press the Resume key to place the printer back to normal operation (on-line).
Single Job Mode[1]— Press Resume to continue	Indicates the printer is in Single Job Mode. Press the Resume key to process the next job.
Please wait	The selected tray has been inserted into the printer.
Please wait... Initializing...	The printer is initializing
Please wait... clearing paper path	The printer is clearing extra sheets of paper out of the paper path.
No active job	There are no active jobs being processed by the printer.
Deleting current job	The printer is deleting the current job from the queue.
Test page not supported	The PrintServer 17 printer does not support test page operation.

[1]Consult the *DEC PrintServer Supporting Host Software for VMS Management Guide* manual for additional information about using Single Job Mode.

5.6 Operational (on-line) Error Messages

Table 5–3 lists the on-line error messages that during day-to-day operation. The printer is booted, online, and processing the customer's printing or commands. The error messages might disable printing until the operator attends to the condition, for example, add toner, paper, clear a jam, or call Customer Services to have the printer fixed.

Table 5–3 Operational (on-line) Error Messages

Message	Explanation and Corrective Action
Add paper	The selected cassette has run out of paper.
Close top cover	The top cover is open.
Check toner cartridge installation	Toner cartridge is not installed or not seated properly.
Hardware Error nn - Call Customer Services	The printer has a hardware malfunction and needs to be repaired.
Hardware Error nnnn - Power down immediately. Call Customer Services	The printer has a serious hardware malfunction and needs to be repaired.
Install optional feeder	The envelope feeder is selected but not installed.
Insert paper cassette	The selected cassette is not installed.
Maintenance needed in nn pages	Alerts the customer to the up coming 200K maintenance message.
Output tray full	The top output tray is full.
Paper Jam - clear cassette area	Paper jammed during feeding.
Paper Jam - clear top output tray	Paper jammed in the top output tray area.
Paper Jam - open side door	Paper jam in duplex area.
Paper Jam - open top cover	Paper jam in the fusing area.
Paper Jam - optional input device	Jam in the envelope feeder.
Paper Jam - clear paper reversing area	Paper jam in the switchback reversing area.

If the on-line error message fails to clear or reoccurs, go to the Start FIP in Section 5.3.

(continued on next page)

5.6 Operational (on-line) Error Messages

Table 5–3 (Cont.) Operational (on-line) Error Messages

Message	Explanation and Corrective Action
Toner low - see Operator's Guide	The EP-N cartridge should be replaced.
Perform user maintenance	The 200K counter has reached its limit. See Section 3.5 for maintenance information.
Ethernet address ?54 or ?55	There is a configuration problem in the supporting host or malfunction in the Ethernet network. See Section 6.3 for troubleshooting information
Ethernet address ?4F	An unexpected controller board error. See Section 6.3 for troubleshooting information
Fatal software error to reboot cycle power	A software error has occurred. To recover, reboot the system.

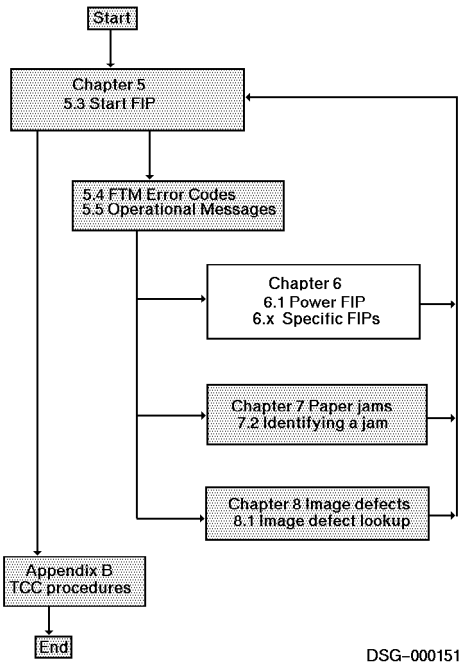
If the on-line error message fails to clear or reoccurs, go to the Start FIP in Section 5.3.

6

Power and Operator Panel FIPs

This chapter provides fault isolation procedures (FIPs) for power supply, operator panel, and other malfunctions that are pointed to by the start FIP or by an FTM error message.

The fault isolation procedures (FIPs) are a collection of yes/no flow charts and tables that provide a way to fix or ensure the correct operation of the hardware. If a problem exists, use the start FIP to isolate the problem and direct you to the next FIP.



6.1 Power FIP

When the printer is working properly, the following sights and sounds occur after power is turned on:

Noises — Fan, high-pitched scanner motor, low-pitched main motor motor gear train, solenoid and clutches.

Actions — Delivery rollers move left and right. The green front panel power on indicators light. The operator panel goes through its self test then displays the permanent page count, and then the 9,8,7,... countdown numbers.

When a power fault occurs, the operator panel error displays might be unreliable or ambiguous. Use the following symptoms, FIPs, and Figure 6–1 to identify and fix a power problem:

	Symptoms	FIP
1.	In addition to the following symptoms, the printer might blow a fuse or circuit breaker that supplies AC line power or might blow CB101 within the printer. • No sounds • Blank operator panel • No power on indicators	Suspect a short or open in the AC line power circuits: 1. If the AC wall power is bad, call the site electrician to restore power. 2. If the power line cord is damaged, replace it. 3. Remove rear panel. Press down the CB101 reset button. If CB101 is blown, you will feel it reset. If CB101 blows when you turn on power, disconnect J1 from the LVPSA and the fusing unit. If CB101 still blows, replace the AC drive board. Reconnect J1 to the LVPSA and the fusing unit one by one. If either FRU causes CB101 to blow, replace that FRU. 4. Use VOM to measure AC line power at the rear of the main switch assembly. If AC is not present, swap the power cord, then the main power switch. 5. Use a VOM to measure AC line voltage at J1-1. If AC voltage is not present, swap the AC drive board. 6. Power down, unplug connector J8, and use a VOM measure the continuity of the front power on switch. If the switch fails to go to 0Ω, replace the front power on unit board. 7. Swap the LVPSA. 8. Swap the DC controller board.

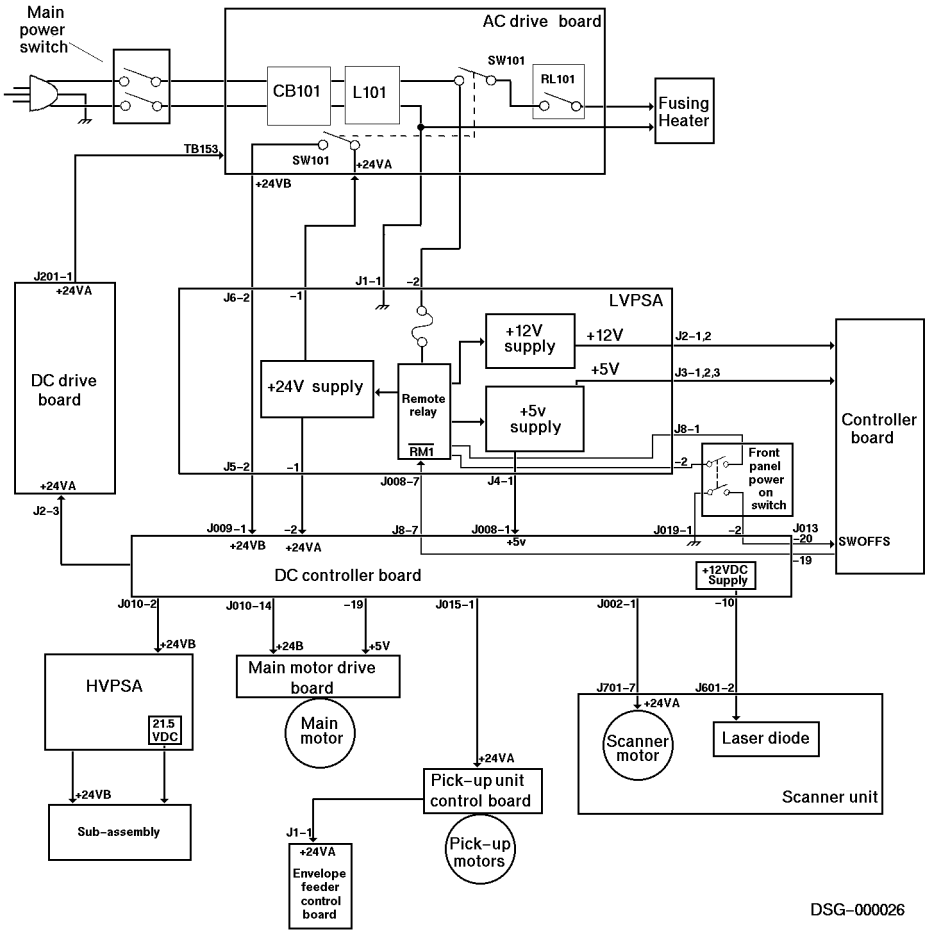
6.1 Power FIP

	Symptoms	FIP
2.	Operator panel is displaying random and erratic FTM error messages. The LVPSA fan may be the only fan that works.	Suspect over heating due to nonoperative controller fans. If the fans are stalled, an error message occurs. 1. Check the following cables and connectors: • J008 on the DC controller board • J4 on the LVPSA 2. Swap the DC controller board 3. Swap the LVPSA
3.	The operator panel display and indicators are hung, blank or ambiguous but power on indicators, sights, and sounds are normal. The engine board test pattern might print if you press the hidden switch.	Symptoms are caused by a loss of +5VDC power, a malfunction of the controller board, or operator panel circuits. 1. Make sure the controller board is fully installed and the two rear panel thumb screws are firmly tightened. 2. Do the following to check the power supply cables that connect the LVPSA to the controller board: a. Make sure the six J3 screws are firmly tightened. b. Use a VOM to measure the +5VDC at the LVPSA screw connectors J3-1, -2, or -3. c. If the measurement fails to read +5VDC, replace the LVPSA. 3. Remove the shield box, as shown in (Section 9.6) and make sure the power cable connector is plugged in and undamaged. 4. Go to Section 6.1.1 and perform the action procedures.

6.1 Power FIP

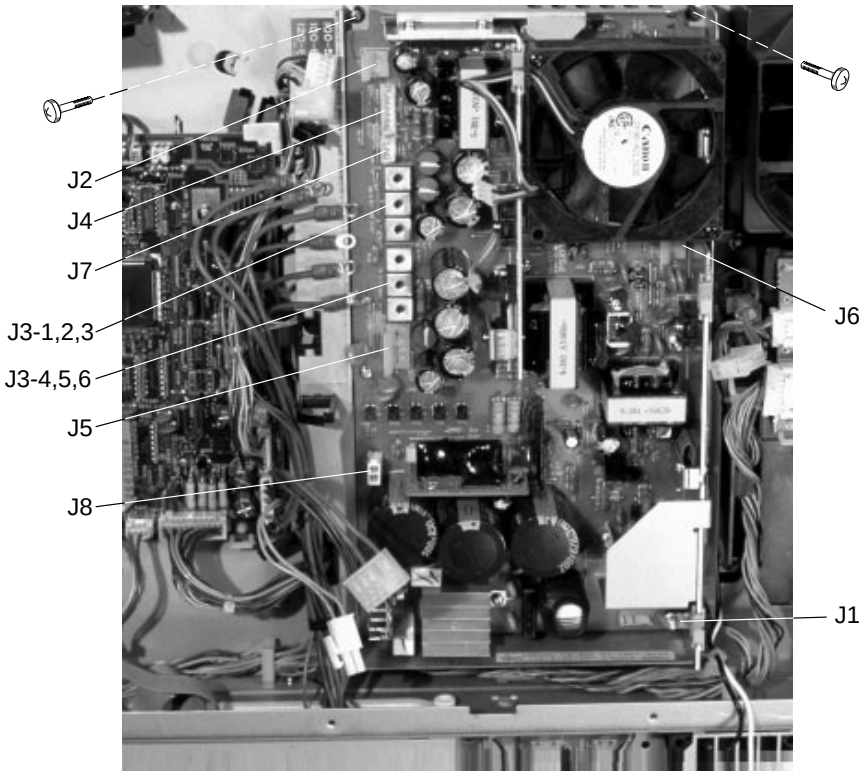
The diagram and photograph in Figure 6–1 are referred to by the above FIPs.

Figure 6–1 Power Distribution FIP



(continued on next page)

Figure 6–1 (Cont.) Power Distribution FIP



6.1 Power FIP

6.1.1 Operator Panel Error

Explanation: Watch the operator panel as you power up the printer. All the liquid crystal display (LCD) segments and indicators sequentially come on.

If the operator panel is blank or hung, go to Section 6.1 and perform the procedure for symptom number 3 to test the +5VDC power supply.

If the self-test detects a malfunction in the operator panel, it might display one of the following FTM error messages:

10xx.0002 10xx.0004

10xx.0006 10xx.0008

10xx.000C 10xx.000E

10xx.0010

Action: Do the following if you have an FTM error message or if you have performed the procedure in Section 6.1 symptom number 3 to test the +5VDC supply:

1. To test the operator panel, power up into the operator panel self-tests, as shown in Section 6.1.1.1.
2. Make sure the operator panel cable is firmly plugged into the operator panel.
3. Remove, inspect, or swap the following:
   a. Controller board
   b. Operator panel
   c. Cable that connects the operator panel to the backplane.
   d. Backplane board

6.1.1.1 Front (Operator) Panel Self Test

The front panel self test is used to manually test keys, indicators, and display of the PrintServer 17 operator panel.

To invoke the front panel self test, press and hold the 1, 2, and 3 keys while turning on the printer power. If successful, you will see the message **Front Panel Self-Test** appear on the display.

- Press 1 to invoke the operator panel test. Wait for the message **ROM passed** or **ROM failed** to appear.
- Press 2 to read the revision code of the operator panel firmware.
- Press 3 to run the LCD and LED test. First, each indicator lights. Then, each of the LCD display cells come on. This pattern repeats continuously. Press 3 to return to the front panel self test.
- Press 4 to run the interface (I/F) test. This test requires a special loopback connector and should not be used in the field. With no loopback connector, you must power the printer off to leave the I/F test.
- Press 5 to perform the key switch test. As you press and hold down each key, the key number appears on the display.

  Press any two keys to return to the front panel self test.

6.2 Controller, Memory, or Ethernet Error

Explanation: Any single FTM error in the range of 00xx???? through 10xx.???? indicates a problem in the controller board or in its connected devices, which are shown in Section 1.6.

- If the controller board is seriously malfunctioning, the operator panel displays might hang, race, or display nonsensical information.
- If a malfunction exists in one of the controller board interfacing devices, one of the following FTM error messages should appear:

FTM Message	Failing Component	Swap
0001.????		Controller board
0002.????	Main memory	Controller board
0003.????	Main or SIMM memory	SIMMs or controller board
00xx.????		Controller board
01xx.????	ROM	Controller board
02xx.????	SSU	Controller board
04xx.????	FPU	Controller board
05xx.????	Memory addressing	SIMMs or controller board
06xx.????	Memory data	SIMMs or controller board
07xx.????	CPU	Controller board
09xx.????	PDI	Controller board
0Axx.????	DMA	Controller board
0Bxx.????	SGEC	Ethernet is not terminated, bad daughter board, or failure of +12VDC.
0B01.0014	SGEC	Ethernet Address ROM is bad.
0Bxx.0084 0Bxx.0086	SGEC	Ethernet loopback or termination failure.
0C01.0014		Daughter board
0Cxx.????	NVRAM	Page count memory

6.2 Controller, Memory, or Ethernet Error

Action: Perform the following steps to fix these errors:

1. Make sure that a properly terminated Ethernet or a Ethernet loopback connector is attached to one of the Ethernet ports on the rear panel of the printer. See Section C.3.1 for information about loopback and terminations.
2. Do the following if 0Bxx.0086 is displayed:
    1. Use a VOM to measure the +12VDC at pin-1 of J2 on the LVPSA.
    2. If the measurements fails to read +12VDC, swap the LVPSA.
    3. Swap the daughter board.
    4. Swap the controller board.
    5. Remove the shield box, as shown in (Section 9.6) and make sure the power cable connector is plugged in and undamaged.
    6. Swap the backplane board.
3. Remove and inspect the controller board. Make sure the daughter board, SIMMs, and Ethernet ROM are fully seated. Check for bent pins on the socket mounted ICs. Replace any damaged components.
4. If the operator panel is hung or frozen, remove the SIMMs and try the power-up self-test.

    If the test passes, replace each SIMM separately until the error reappears. Then swap the bad SIMM.
5. Consider the error message when you determine which of the following FRUs to swap first. If the operator panel is hung or frozen, swap each device.
    - Daughter board
    - SIMMs
    - Controller board
    - Ethernet ROM
    - Page count memory

6.2 Controller, Memory, or Ethernet Error

6.2.1 Engine is Paused (PCSI) FIP

Explanation: The following errors are displayed when the PCSI error occurs in the controller board. A portion of that test communicates externally with the DC controller board.

If the DC controller board, LVPSA, or pick-up unit controller board is disabled, one of the following error messages will appear:

FTM Message	Query Bits
0Dxx.????	Indicates an internal self test failure of the PCSI circuitry on the controller board
11xx.0020	Indicates a failure to communicate with the print engine, problems with the pick-up controller board, or the LVPSA.
11xx.1002	Timeout waiting for response from the PCSI.
11xx.1012	Timeout on command sent to PCSI.

Action: Do the following:

1. Remove the controller board and inspect the cavity and backplane for damage. Fix or repair any damage.
2. Make sure the controller board is fully installed and the holding screws are firmly tightened.
3. Remove the right-side cover and metal shield. Make sure the following connectors are fully seated:
   - J008, J013, and J015 on the DC controller board
   - J4 and J5 on the LVPSA
4. Use the following procedure to test the +24Vdc power supply:
   a. Make sure the top door is closed and latched.
   b. Touch the + lead of a VOM to pins 1 then 2 of J5 on the LVPSA.
   c. If the voltage fails to read 24 ±1.5 VDC, swap the following:
      - DC controller board
      - LVPSA
   d. Touch the + lead of a VOM to pin 1 of J015.
   e. If the voltage fails to read 24 ±1.5 VDC, swap the DC controller board.

5. If you hear the fans and relays cycling on and off with the 11xx.0020 error, suspect the pick up controller board. Examine the connections to the pick up controller board before swapping it.
6. Swap the following parts:
   - LVPSA
   - Pickup unit controller board
   - DC controller board
   - If the 0Dxx.???? error is displayed, swap the daughter board.
   - Controller board
   - Backplane connector
   - Cables that connect the backplane to the DC controller board.

6.3 ?4F, 54?, or ?55 Errors

Explanation: These errors occur after after the self-test diagnostics have successfully passed and the PrintServer 17 is trying to boot:

Error	Brief Explanation
?4F	Hardware error in the controller board.
?54	No response to the boot request. A retry is in progress and the controller board will retry continually.
?55	An incorrect boot file was received from the volunteer. The boot will reinitialize and boot again.

Action:

?4F: A fatal error occurred in the controller board during the boot process and after extensive self-test diagnostics. Suspect an intermittent error or something that just happened coincidentally with the boot process. Do the following:

1. Power the PrintServer 17 off then on. If a hard error exists, an FTM message will appear. Refer to Table 5–1 to interpret the FTM error message.
2. If the self-test passes without an error or if the error only occurs randomly, perform the actions in Section 6.2.

?54 and ?55: No boot file or the wrong boot file is received. Work with the system manager to the make sure of the following:

- The correct Ethernet address is entered and available at the supporting host.
- The host system is available and enabled on the Ethernet.
- The correct version of host software is installed.
- That no LAN bridge boot-request filter is between the host and the printer.
- The VMS proxy setup is correct in the authorization file.
- The VMS logical LPS$SUPPORT points to SYS$SYSDEVICE:[LPS$SERVER].
- The VMS logical LPS$ROOT is defined as SYS$SYSDEVICE:[LPS$SERVER.].
- The downline loaded image files point to LPS$ROOT:[SYS].

- Issue the REPLY/ENABLE command at the operator console terminal, and check for load requests from the printer.
- The network devices are configured correctly. Check the following devices:
  - DELNI
  - DEMPR
  - H4000
  - H4005
  - DESTA
  - DECXM

Note: *Refer to the following documents for additional software troubleshooting information:*

– *DEC PrintServer Supporting Host Software for ULTRIX Installation Guide*

– *DEC PrintServer Supporting Host Software for VMS Installation Guide*

– *DEC PrintServer Supporting Host Software for ULTRIX Management Guide*

– *DEC PrintServer Supporting Host Software for VMS Management Guide*

– *Digital PostScript Printers Programmer's Supplement*

6.4 Job Offset Delivery Unit

Explanation: There are no query bits that record the status of the job offset machinery in the delivery section of the top door. To test the offset function, press and hold the hidden switch to generate continuous copies of the engine board test print. The job offset machinery is functioning correctly when you see the delivery rollers move left to right for every other test print and the test prints offset in the stack.

A latch holds the delivery rollers in the home position. When the DC controller board energizes the job offset reset solenoid, the latch releases. Once released, a coil spring moves the delivery rollers and sheet of paper to the offset position.

After the sheet is ejected into the face-down stacker, the DC controller turns on the job offset clutch. The clutch engages a spiral gear that drives the delivery rollers back to the home position. In the return to home position, the spring is recoiled and the delivery rollers are latched. A photointerruptor sensor is used to detect the position of the spiral gear shaft.

Signal diagram reference: Figure 1–13 and Figure 1–15

Action: Make sure the printer can produce test prints without jamming. If jamming occurs when the job offset function is not used, go to Chapter 7. Do the following procedure to fix a job offset failure:

1. Attempt to manually move the delivery rollers left and right.
2. If the rollers move freely, the solenoid latch has failed. Replace the delivery unit.
3. If the delivery rollers move left and lock or do not move, go to next step.
4. Inspect the following connectors:
   - J202 and J203 on the DC driver board.
   - J012 on the DC controller board.
5. Swap the following:
   - DC controller board
   - DC driver board
   - Delivery unit

6.5 Scanner FIPs

Explanation: The scanner unit contains the beam detect generator, scanner motor, and laser diode.

Warning: *Do not disassemble the scanner unit in the field or you might expose yourself or others to invisible laser light.*

The following error messages are displayed when a malfunction occurs in the scanner circuits:

FTM Message	Query Bits	Meaning
11xx.0030	N04–4 = 1	Scanner motor speed error
11xx.0032	N04–3 = 1	*BD* signal missing
11xx.004C	E13–3 = 1	Laser power error
11xx.004E	E13–2 = 1	*BD* signal is missing

To clear the errors, power the printer off and on.

Signal diagram reference: Figure 1–16 and Figure 1–17

Action: Do the following to correct the error:

1. Open and close the top door. Make sure the door latches securely.
2. Power the printer off then on. Continue on if the problem reoccurs.
3. Inspect the operation of the safety shutter. When the top door closes, a tang on the EP-N cartridge depresses the shutter linkage. This actions lifts the shutter, allowing the laser beam into the scanner cavity.
   - If the EP-N tang is damaged, replace the EP-N cartridge.
   - If the shutter linkage sticks or is damaged, fix or replace it.
4. Remove the right-side cover and metal shield. Make sure that connectors J002 and J001 on the DC controller board are connected.
5. Remove upper front cover. Make sure three scanner connectors are seated and properly plugged in.
6. Swap the DC controller board.
7. Swap the scanner assembly.

6.6 Fusing Unit Error

Explanation: The DC controller board monitors the temperature of the fusing unit rollers through the thermistor resistance. The thermistor is in contact with the heated (upper) fusing roller. Heat from the roller varies the resistance of the thermistor, which alters the current flowing from pin 3 of J012 on the DC controller board.

The thermistor can be tested with an ohmmeter. The resistance is approximately 130–140 KΩ at room temperature and approximately 1.3–1.4 KΩ when hot. See Sections 1.11.1 and 1.11.

On-Line Message	FTM Message	Query Bits
HARDWARE ERROR 22	11xx.0034	N04-2 = 1

Signal diagram reference: Figure 1–13 and Figure 1–14

Warning: *Keep the following precautions in mind when servicing a fusing unit problem:*

- *The fusing unit is hot.*
- *Turn off the power and disconnect the line cord from the printer.*
- *Be careful handling the thermistor or when measuring with test probes. The thermistor is sensitive to rough handling and excessive electrical currents can burn it out.*
- *When the DC controller board detects a fusing error, it shuts down the fusing current and prevents the operation of the main or cassette motors.* ***The printer will not operate for 30 minutes,*** *even if you turn the power off and on.*

Action: Do the following to correct the malfunction:

1. Remove the fusing unit and inspect connector J151, J011, and TB163 that connect the AC drive board to the fusing unit.
2. Swap the fusing unit.

3. Remove the right-side cover and metal shield. Inspect the following connectors and cables:
   - J012 the DC controller board.
   - J203 and J201 on the DC drive board.
4. Swap the following:
   - DC controller board
   - DC drive board
   - AC drive board

6.7 Main Motor Error

Explanation: The following error messages are caused by a malfunction of the main motor, the +24B supply, or of the top door. False error messages can occur if the top door is opened during operation or is not fully latched. Certain failure modes of the top door sensor combined with improper latching can mislead you.

On-Line Message	FTM Message	Query Bits
HARDWARE ERROR 1063	11xx.002E	N0D–3 = 1
Close top cover	11xx.0026	–

Signal diagram reference: Figure 1–16, Figure 1–19, and Figure 6–1

Action: Do the following:

1. Test for a false error.
   a. Turn off the power.
   b. Make sure the top door is securely latched.
   c. Turn on the power.
   d. If error 11xx.002E immediately reappears, go to step 2.
   e. If no error appears, open the top door.
   f. Press keys 5,3,6. If message 11xx.0026, appears close the top door.
   g. Press keys 5,3,6. If message 11xx.0026, fails to clear, go to Section 6.14.
2. Remove the right-side cover and metal shield. Make sure the following connectors are properly connected:
   - J010 on the DC controller board
   - J15 on the J6 on the LVPSA
3. Use the following procedure to test the +24Vdc power supply:
   a. Make sure the top door is closed and latched.
   b. Touch the + lead of a VOM to pins 1 than 2 of J6 on the LVPSA.
   c. If the VOM fails to read 24 ±1.5 VDC, swap the following:
      - AC drive board

- LVPSA

d. Touch the + lead of a VOM to pin 2 of J5. If the VOM reads zero, replace the LVPSA.

   If the VOM reads +24VDC, do the following:

   a. Swap the DC controller board.

   b. Inspect the main motor and the main motor drive board for damage or misconnected electrical plugs.

   c. Swap the main motor control board.

   d. Swap the main motor assembly.

6.8 Duplex Unit FIPs

Explanation: This FIP covers duplex unit malfunctions that cause the following messages:

On-Line Message	FTM Message	Query Bits	Explanation
Hardware error 143	11xx.003A	N1C-3 = 1	Centering guide failure
–	11xx.0042	E08–2	This bit is set to a one when the envelope feeder is installed and the duplex paper path is selected.
–	11xx.0056	N0E–4	This error message occurs when the duplex unit is not installed. This bit is set to a one when the duplex unit is installed.
–	11xx.005A	E19-6	Switchback motor is bad.

Signal diagram reference: Figure 1–12

Action: Do the following:

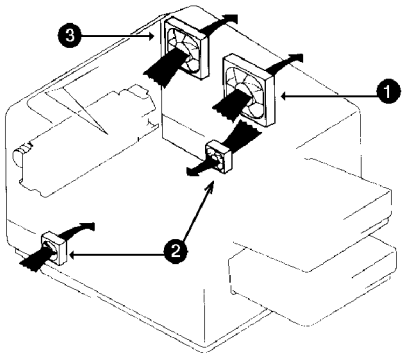
1. Make sure connector J011 on the DC controller board is connected.
2. Remove and inspect the duplex unit. Make sure all connectors are seated and belts are connected. If damaged, replace the duplex unit.
3. Inspect the condition of the engine connector that connects to the duplex unit. If the mounting bracket is bent or the connector damaged, fix or replace the damaged parts.
4. Make sure the duplex unit is fully installed and that all the securing screws are tightened.
5. Swap the duplex unit.
6. Swap the DC controller board.

6.9 Fan 1, 2, or 3 Error

If any one of the four fans stalls for a more than 3 seconds, the print engine pauses. During a pause, the fusing current is turned off and printing is disabled. To display an error message, power up in FTM mode and press the 5, 3, and 6 keys. To clear a fan error, power the printer off then on.

One of the following fan error messages and query bits is displayed when a fan is stalled or electrically disconnected:

	FTM Error	Query Bit	Fan Name
❶	11xx.0046	E0D–6	LVPSA fan
❷	11xx.0044	E0D–7	Left and right controller board fans and the fan board
❸	11xx.0048	E0D–5	Main dual speed fan



DSG–000029

Signal diagram reference: Figure 1–12 and Figure 1–13

Do the following to fix the problem:

1. Replace any fan that sticks, binds, or turns slowly. The main fan operates at a high speed when the fusing unit is on.

   If the fan seems slow or is not turning, turn off the power and manually turn the fan blade. The fan blades should rock gently and turn smoothly with no binding or sticking.

2. Make sure the fan is correctly plugged in.

   - The main fan connects to J204 on the DC driver board. Also check J012 on the DC controller board and J203 on the DC drive board.
   - The LVPSA fan connects to J7 on the LVPSA.
   - The left and right controller board fans connect to the fan control board. Also check the cabling that connects J011 on the DC controller board to J3008 on the fan control board.

3. If the fan is plugged in, swap the fan first, then the board that it is plugged into.

4. Swap the DC controller board.

6.10 EP-N FIP

Explanation: The following messages are displayed when the DC controller board fails to detect the EP-N cartridge sensitivity key or keys. If you see an EP-N cartridge that has no sensitivity keys mounted on the case, replace that EP-N cartridge.

On-Line Message	FTM Message	Query Bits
Check toner cartridge installation	11xx.002C	N02–2 = 1

When the top door is closed, the factory-installed sensitivity key or keys on the EP-N cartridge depress the black plastic linkage on the side bulkhead of the printer. The two-piece cantilevered linkages actuate one or both sensitivity switches which are mounted on the back of the DC controller board.

The DC controller board will clear the error when one of the switches is pressed.

Signal diagram reference: Figure 1–4, Figure 1–14, Figure 1–16, and Figure 1–18

Action: Do the following if the error cannot be cleared:

1. Open the top door and inspect the key and linkages. If there are no keys on the EP-N cartridge, replace the EP-N cartridge.
2. Manually press the two key linkages. Each linkage must move smoothly and you should hear a clicking sound and feel the switch operate.
3. Remove the right-side cover and metal shield and examine the switches and linkages at the top of the DC controller board.
4. Make sure all of the DC controller board mounting screws and the hardware are securely tightened and properly installed. See Section 9.9 for mounting details.
5. Replace the DC controller board.

6.11 Toner Low

Explanation: The *TSEN* goes low when the toner supply is low. The DC controller board detects the signal and sets the query bit. The controller board software reads the bit, sends the status back to the supporting host, and displays the following message:

On-Line Message	FTM Message	Query Bits
Toner low See Operators Guide	11xx.003C	N1F-6 = 1

When the customer installs a new EP-N cartridge, the display clears.

Note: *The following two classes of toner symptoms might occur:*

- *The toner display appears when sufficient toner is present. The customer complains about using too many cartridges.*
- *The display never clears or appears intermittently. The toner message never appears. Printing becomes faint to invisible.*

Signal diagram reference: Figure 1–4, Figure 1–14, Figure 1–16, and Figure 1–18

Action: Do the following:

1. Remove and inspect the EP-N cartridge. If you find any physical damage, burnt or loose contacts, or toner leakage, replace the EP-N cartridge.
2. Inspect the high-voltage connector block. If you find any physical damage or any burnt or bent contacts, replace the HVPSA.
3. Remove the EP-N cartridge and agitate it to break up any toner clumps. If the EP-N cartridge was stored in a cold location, the toner might have absorbed water. Wet toner clumps and produces image defects. If you suspect that incorrect storage is causing the problem, you might assume that all the stored cartridges are damp.
4. Swap the following:
   - EP-N cartridge
   - DC controller board
   - HVPSA

6.12 Cassette or Pickup Unit FIPs

Explanation: The pickup unit holds the upper and lower cassettes, the paper feed rollers, and the elevator. If installed, the pickup unit also holds the optional envelope feeder.

The CPU on the pickup unit control board communicates with the DC controller board. All the pickup unit sensors are mounted on the control board. The elevator solenoids, pickup motor, and envelope feeder are operated by the pickup unit control board.

The pickup motor turns the three paper feed rollers. The main motor turns the gear train that lifts the elevators.

The set of three size-sensing switches detect an installed cassette and read the cassette size key.

The following error messages are associated with a pickup unit malfunction:

Symptoms	FTM Message	Query Bits
Illegal manual feed	11xx.0040	E08–4 = 1
Upper elevator failure	11xx.0052	E02–3 = 1
Lower elevator failure	11xx.0050	E02–4 = 1
Lower cassette is empty	1109.0060	N2A–3
Upper cassette is empty	1109.0062	N2A–2
Envelope feeder is empty	1109.0064	N2A–4, See Section 6.13
Lower cassette is missing	1109.0066	N0B–2 through 7, all =0
Upper cassette is missing	1109.0068	N0D–2 through 7, all =0

The message clears automatically when a full cassette is installed.

Signal diagram reference: Figure 1–12 and Figure 1–15

Action: Do the following to correct the malfunction:

1. If the lower elevator fails to rise when a cassette is installed, make sure that the proper cover is on the cassette. This symptom occurs when the envelope feeder cassette cover (shown in Figure 1–5) is installed on the lower cassette.
2. If the 11xx.0040 message is displayed, do the following:
   - Remove any paper from the manual feed slot that is part of the cassette cover.

- Remove the cassette and make sure that it is not overloaded.

3. Remove the right-side cover and metal shield. Make sure connector J015 is plugged in and fully seated.
4. Remove the upper and lower front covers. Make sure the cable that connects the pickup control board to the DC controller board is plugged in and properly seated.
5. Remove the pickup unit from the printer.
6. Inspect the connectors and gears for any sign of disconnection or damage.
7. Swap the pickup control board.
8. Swap the DC controller board.
9. Swap the pickup unit.
10. If both elevators still fail to lift, the main motor gear train might be damaged. Swap the main motor.

6.13 Envelope Feeder FIP

Explanation: The pickup unit holds and operates the cassettes and the optional envelope feeder.

The DC controller board communicates with the CPU on the pickup control board. The envelope feeder is directly controlled by the pickup control board. See Section 10.4 for a technical description of the envelope feeder.

The following error messages are associated with a envelope feeder malfunction:

On-Line Message	FTM Message	Query Bits
Envelope feeder is empty	1109.0064	N2A–4
Install optional feeder	11xx.0054	N25-3 = 1

The message clears automatically when the envelope feeder is loaded.

Signal diagram reference: Figure 10–4

Action: Do the following to correct the malfunction:

1. Power down the printer.
2. Remove and inspect the envelope feeder. If the connector is damaged, replace the envelope feeder.
3. Swap the envelope feeder.
4. Remove the right-side cover and metal shield. Find connector J015 on the DC controller board. Make sure the connector is plugged in and fully seated.

5. Remove the upper and lower front covers. Make sure the cable that connects the pickup control board to the DC controller board is plugged in and properly seated.
6. Remove the pickup unit from the printer. Inspect the cable and connectors that run from the envelope feeder plug to J306 on the pickup control board. Fix or replace any damaged components.
7. Swap the pickup control board.
8. Swap the DC controller board.
9. Swap the pickup unit.

6.14 Door Open FIP

Explanation: The door open sensor circuit has failed, producing the following display:

On-Line Message	FTM Message	Query Bits
Close top cover	11xx.0026	N02–6 = 1

Note: *Erratic actuation of the top door open signal DOROPN can cause misleading main motor FTM error messages 11xx.002E to display. To clear this message, turn power off and on.*

The top door sensor detects the position of the top door latch. When the door is open or unlatched, the top door sensor sends the *DOROPN* signal through pin 1 of the J004 connector on the DC controller board.

If *DOROPN* is high and the top door not fully latched, constant paper jams occur.

The DC controller board pauses until the *DOROPN* signal is asserted.

Signal diagram reference: Figure 1–14

Action: Do the following:

1. Press the latch release several times to make sure the latch is working properly. If the upper front cover was installed incorrectly, the cover might jam the door latch.
2. Check the DC controller board connector J004. Use the following procedure to test the top door sensor:
   a. Connect the + lead of a VOM to pin 1 of J004.
   b. Open and close the top door.
   c. The VOM reading should toggle between high (open) and low (closed) readings.
   d. If the sensor toggles and holds a steady reading the sensor is good. Suspect the control boards or cabling.
3. Remove the upper front cover and inspect the door open sensor and cable.
4. Swap the door open sensor.
5. Swap the DC controller board.

6.15 Face-Down Stacker Overflow

Explanation: As the face down (upper) output stack fills, the overflow lever lifts. When the sensor linkage pulls the flag clear of the stack overflow photointerruptor sensor, the *FULLS* signal is sent to the DC controller board.

On-Line Message	FTM Message	Query Bits
Output tray full	None	N1F–7 = 1

Signal diagram reference: Figure 1–15

Action: If the error fails to clear after you empty the face-down stack, do the following:

1. Inspect the operation of the stack overflow lever and sensor linkage. The lever is counter-balanced to lightly rest on the paper stack. If the lever sticks or binds, disassemble and fix the sensor linkage.
2. Open the top door and inspect the sensor linkage and connector. Make sure the connector is properly seated on the sensor.
3. Remove the right-side cover and metal shield. Make sure connectors J202 and J302 on the DC driver board are properly connected.

   Make sure connector J012 on the DC controller board is properly connected. Use the following procedure to test the stack overflow sensor:

   a. Connect the + lead of a VOM to pin 1 of the connector that plugs into the sensor.

   b. Lift to maximum and drop the stack overflow lever.

   c. The VOM reading should toggle between high (open) and low (closed) readings.

   d. If the sensor toggles and holds a steady reading, the sensor is good. Suspect the cabling or the control board. Replace the sensor.
4. Swap the following FRUs:
   - Stack overflow sensor
   - DC driver board
   - DC controller board

6.16 Version V1.0 11xx.002A Considerations

Under firmware version V1.0, the 11xx.002A error is displayed whenever a print engine error occurs. This problem is corrected under version V1.1. For improved error displays, it is strongly recommended that you upgrade the firmware.

When the FTM 11xx.002A error code is displayed, press 2,2,6 to display the query bytes. Evaluate the query bytes in the priority shown in Tables 6–1, 6–2, and 6–3.

Table 6–1 Priority 1 Interlock Errors

Byte-Bit	If the Bit Is Set to 1...	Refer to Section...
N02-2	EP-N cartridge is not installed	6.10
N02-5	Paper jam in paper path	7.1
N02-6	Top door is open	6.14
N04-2	Fusing temperature malfunction	6.6
N04-4	Scanner motor not at speed	6.5
N1C-3	Duplex unit centering error	6.8
E02-3 E02-4	Upper and lower cassette elevator error	6.12
E0D-3	Main motor error	6.7
E0D-5	Main fan error	6.9
E0D-6	LVPSA fan error	6.9
E0D-7	Controller board fans malfunction	6.9
E13-2 E13-3	BD or laser error	6.5

6.16 Version V1.0 11xx.002A Considerations

Table 6–2 Priority 2 Interlock Errors

Bit	Hexadecimal Cassette Size Code	Refer to Section...
2 MSB	00h = No cassette	6.12
3	01h = A4	
4	04h = Letter	
5	09h = B5	
6	0Ch = Legal	
7 LSB	0Dh = Executive	

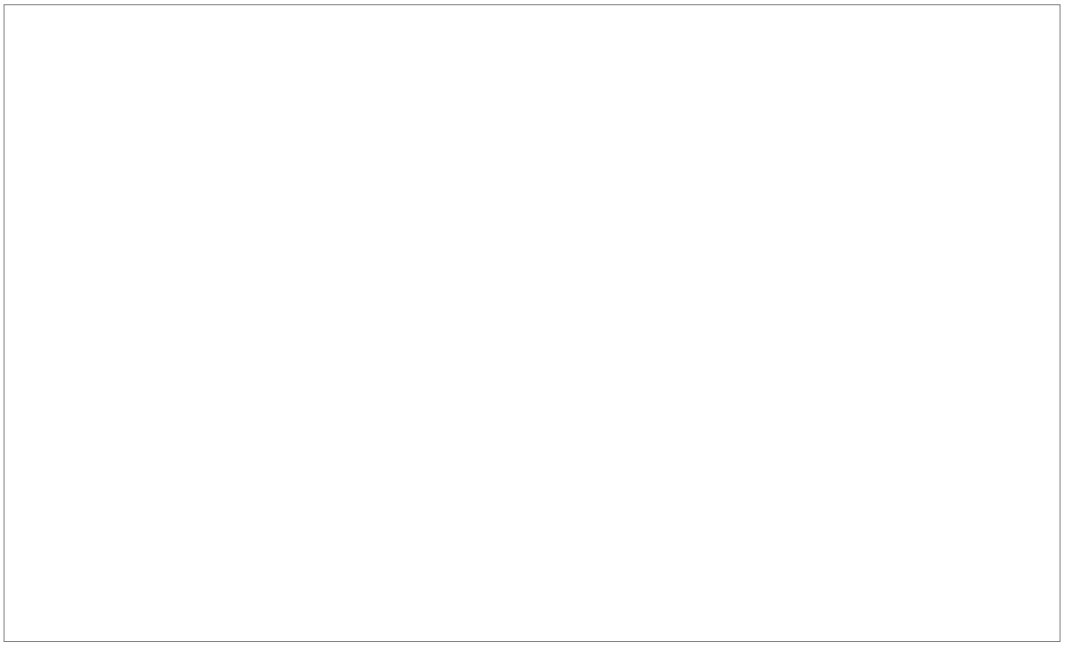
Table 6–3 Priority 3 Interlock Errors

Bit	If the Bit Is Set to 1...	Refer to Section...
2	Paper in upper cassette	6.12
3	Paper in lower cassette	6.12
4	Envelope in envelope feeder	6.12

See Section 4.6 for more information about the query bytes.

6.16 Version V1.0 11xx.002A Considerations

Notes:



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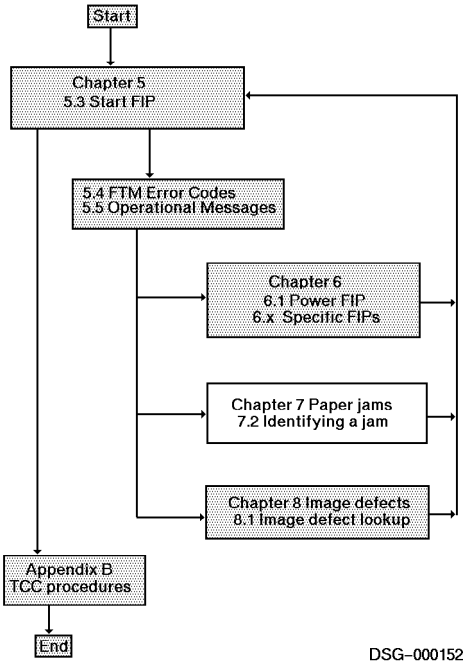
7

Paper Path Jam FIPs

This chapter covers the fault isolation procedures (FIPs) for troubleshooting and repairing paper path jams in the PrintServer 17.

The fault isolation procedures (FIPs) are a collection of yes/no flow charts and tables that provide a way to fix or ensure the correct operation of the hardware. If a problem exists, use the start FIP to isolate the problem and direct you to the next FIP.



7.1 Testing for and Identifying the Jam

The true source of a paper jam must be ascertained before troubleshooting can begin. FTM error messages and operator panel indicators can mislead.

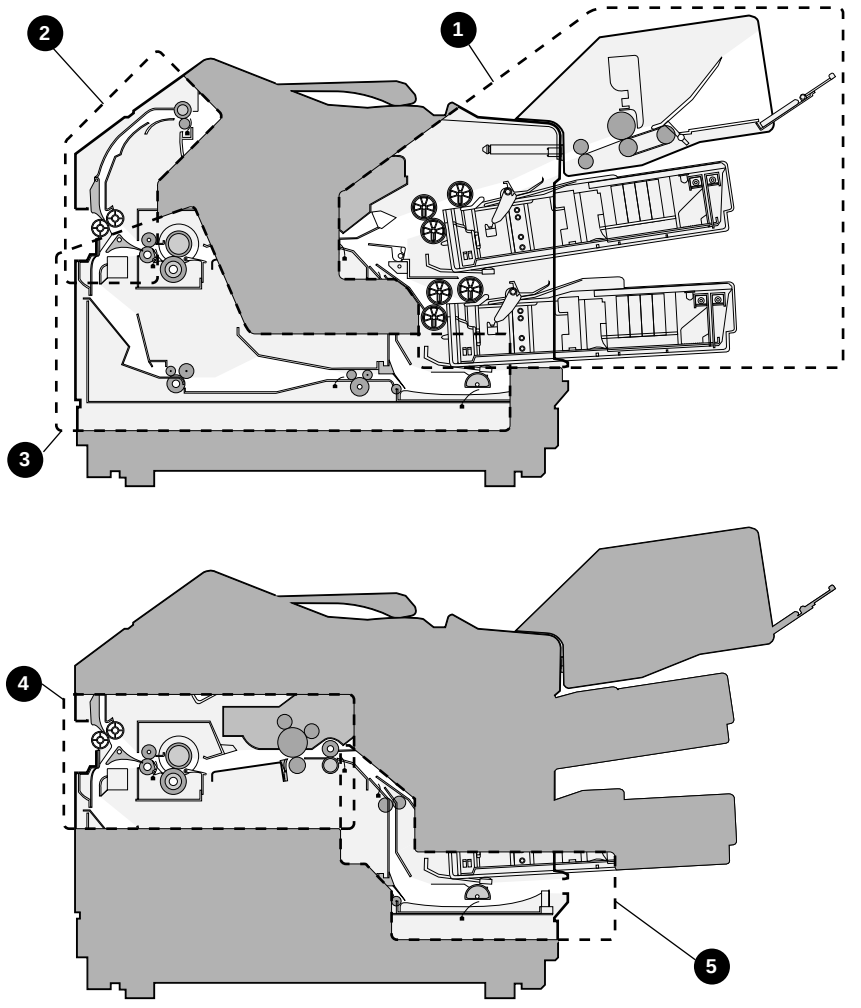
Do the following to test the paper path:

1. Make sure both cassettes are loaded with a representative sample of the customer's paper stock.
2. Power off then on and **press the Active Jobs key to enter the FTM mode.**
3. While you wait for the fusing unit to warm up, consult Section 4.4 for information on how to print test patterns.
4. **Print simplex:** Print simplex controller board test patterns from both cassettes to the rear and face-down stacks. If the envelope feeder is installed, print envelopes as well.
5. **Print duplex:** If no jamming occurs with simplex printing, print duplex copies of the controller board test patterns. See Table 7–1.
   - If a jam occurs and the FTM prompt (no error message) or the 11xx.0016 message is displayed, go to Section 7.1.1 to obtain a true jam message.
   - If a jam occurs accompanied by an FTM error message, look up the error message in Table 7–1 and Figure 7–1 and turn to the recommended FIP.

Table 7–1 Jam Areas

Jam Errors		FIP	
FTM	**Query**	**Section**	**Comments**
1109.005A	E19-6	❶ 7.2	Pick-up and refeed areas
1109.005E	E19-4	❷ 7.4	Face-down and fusing exit areas
1109.005C	E19-5	❸ 7.5	Duplex entrance and fusing exit areas
1109.0058	E19-7	❹ 7.3	Transfer, separation, and fusing exit areas
1109.005C 11xx.005A	E19-5 E19-6	❺ 7.6	Switchback, refeed, and pickup areas

Figure 7–1 Jam Areas



7.1 Testing for and Identifying the Jam

7.1.1 V1.0, 11xx.0016 Considerations

Under version V1.0 of the controller board firmware, jam location error messages were complicated and illogical. After feeding a test sheet, a jam occurs, and the FTM prompt appears with no error message.

Use the following step-by-step procedure to cause the specific error code to appear:

Table 7–2 V1.0 11xx.0016 Error Message

Step	LCD Before	Press Keys	LCD After	Comment
1.	> (blank)	5, 3, 6	> (blank)	Update the jam indicators.
2.	> (blank)	2, 2, 6	> 11xx.0016	Initialize the engine.
3.	> 11xx.0016	5, 3, 6	> 11xx.005A > 11xx.005E > 11xx.005C > 11xx.0058	Obtain current jam location error and return to Table 7–1 for pointer to the correct jam FIP.

When the version V1.0 controller board firmware finds the 11xx.0016 error message, it displays that message and fails to display the more precise jam location code. This problem is fixed in the V1.1 version of the firmware. For improved error displays, upgrade the firmware.

7.1.2 Types of Jams

The following terms are used to describe types of paper path jams:

- Stalled paper jams occur when paper is parked on one of the paper path sensors. The jam indicators and error message appear at power up or without any print commands. After you close the top door or power up, the motor and roller rotation period will move any undetected paper into a paper path sensor and cause a stalled paper jam.
- Phantom jams are a malfunction of the paper path sensor or the circuitry that operates the sensor. Jam message and indicators are displayed but no paper is found. Sticky or damaged sensor linkages are a common cause of phantom jams.
- Misfeeds are referred to as pick-up jams and are covered in Section 7.2.

- Moving paper jams occur when a sheet moves through the paper path and fails to activate the expected paper path sensor.
- Multiple feeds or shingle jams occur when the pickup, feed, and separation rollers fail. See Section 7.2 for fixing multiple feeding problems.

7.1.3 How Jams Are Detected

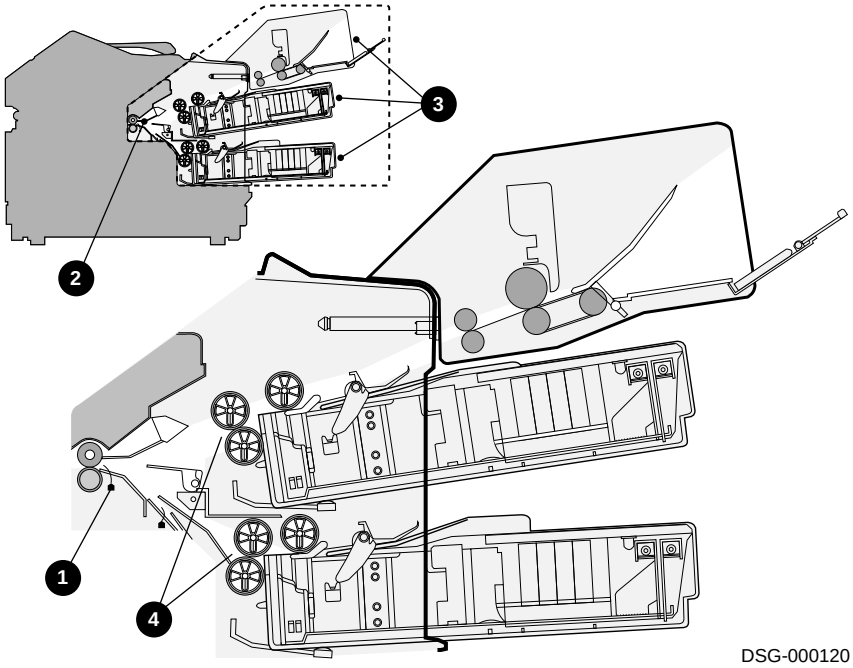
Five photointerruptor sensors monitor sections of the paper path and react to stalled or moving paper sheets. The DC controller board CPU monitors the speed of the main motor and the signal events from the paper path sensors. If the sensor detects a sheet early or late, a jam error condition is initiated. Additionally, the CPU monitors the sensor signals during the rotation periods that occur before printing starts and in between sheets. During these rotation periods, any stalled paper in the printer should move into a paper path sensor, thus causing a jam.

7.2 Pick-up Area Jams and Multiple Feeding

Explanation: Figure 7–2 shows the paper path of the paper pickup or feed area. The 11xx.005A error indicates jams in this area.

Note: *A misleading 11xx.005A FTM error message can occur because of a refeed or switchback area jam. If simplex test sheets can feed without jamming, but paper jams occur when duplex refeeding, go to Section 7.6.*

Figure 7–2 Pick-up Area Jams



A pick-up area jam occurs when the registration sensor ❶ detects stalled or moving paper at the incorrect time, or fails to detect paper on time. This causes the registration indicator ❷ and cassette or envelope feeder indicators ❸ to flash.

The pickup rollers ❹ of the selected cassette pick up and feed a sheet of paper to the registration sensor.

Signal diagram reference: Figure 1–12, Figure 1–14, and Figure 1–15

7.2 Pick-up Area Jams and Multiple Feeding

Action: Use FTM (refer to Section 4.4) to print several test patterns, as shown in Table 4–4. Do the following to fix a pick-up area jam:

1. Open the top door and inspect the paper path. Fix or replace any damaged components or paper path guides.
   - Remove any sheets or torn bits of paper from the paper path.
   - Lift the registration roller plate and inspect the registration sensor lever. The lever must move freely with no sticking or binding.
2. Swap the suspected cassette. Use FTM to select the cassette and print a test sheet.

   If the jamming occurs only with the cassette, inspect the cassette and cassette cover for the following:
   - Inspect all plastic and metal parts.
   - Make sure the spring-loaded guides move smoothly and do not stick or bind.
   - Make sure the rear guide is installed so the leading edge of the paper fits smoothly against the head of the cassette, and that the cassette has not been disassembled and modified.
   - Fix or replace any damaged components.
3. Do the following if the cause of the jam is the cassette slot or when multiple or shingle jams occur:
   - Remove and inspect the paper feed rollers. If the rollers are damaged or the pickup surface is contaminated, replace the paper feed rollers.
   - Use FTM to select the cassette and print a test sheet. Watch the paper feed into the engine. If the feed rollers fail to pick-up, separate, and move the paper into the registration sensor, swap the pickup unit.
4. Swap the following:
   a. DC controller board
   b. Registration sensor
   c. Pick-up unit control board
   d. Pick-up unit

7.3 Transfer, Separation, and Fusing Exit Jams

Explanation: Transfer, separation, and fusing exit jams are also called engine jams. The FTM error code 11xx.0058 indicates this jam area. A false 11xx.0058 error message can occur if the duplex entrance or face-down rollers fail to turn. Figure 7–3 shows the paper path involved in a engine jam.

The following components are involved in the engine jam:

❶ The registration rollers feed paper through the nip of the print drum and transfer roller.

❷ The static eliminator neutralizes the strong charge that holds the sheet to the print drum, allowing the sheet to separate from the drum.

❸ The transport plate directs the sheet into the fusing rollers.

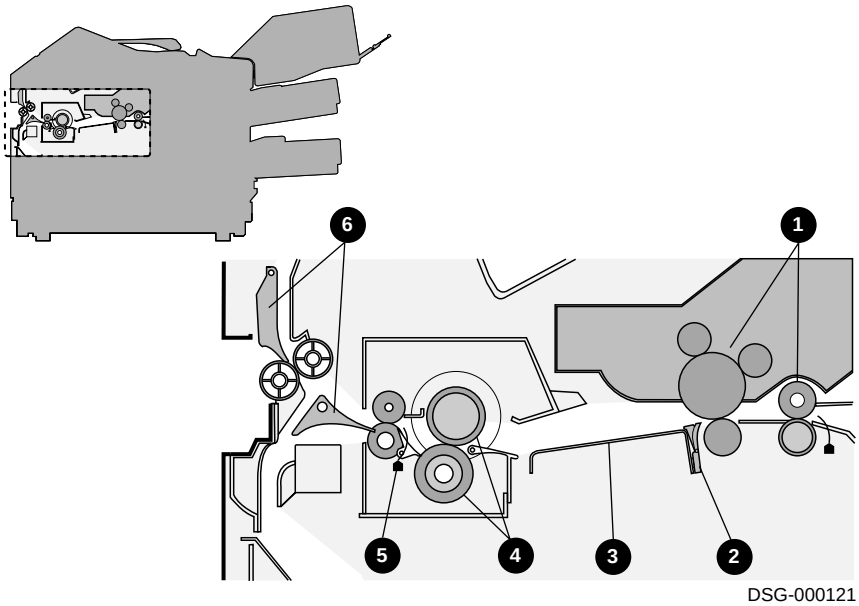
❹ The fusing rollers grab the sheet and fuse the toner.

❺ The fusing exit sensor detects the sheet as it emerges from the fusing rollers. It also detects the trailing edge as it clears the sensor.

❻ The stack and refeed gates direct the sheet to the face-down paper path, the rear exit, or into the duplex entrance (refeed) paper path.

7.3 Transfer, Separation, and Fusing Exit Jams

Figure 7–3 Transfer, Separation, and Fusing Unit Jams



Signal diagram reference: Figure 1–14 and Figure 1–15

Action: Use FTM to print several test patterns, as shown in Table 4–4. Do the following to fix a pick-up area jam:

1. If the fusing exit rollers push the sheet into the nip of the face-down or duplex entrance rollers, the problem might be in one of those areas. Turn to Section 7.5, Duplex Entrance and Fusing Exit Jams or to Section 7.4, Face-Down and Fusing Exit Area Jams.
2. Make sure the xerographic paper is good quality and that the paper is dry and undamaged.
3. When a jam occurs, open the top door to see where the paper stopped in the paper path. From your observation of the paper path, go to one of the following categories:
   - Registration rollers failed to grasp the sheet or failed to turn. Suspect a failure of the registration rollers, clutch, or drive circuit.
     a. Remove and inspect the registration roller unit. If the metal, bearings, pressure springs, or clutch is bent, worn, or rusted, replace the unit.

b. Remove the right-side cover and metal shield. Make sure that connector J007 on the DC controller board is properly connected.

c. Swap the DC controller board.

d. Swap the registration clutch.

e. Swap the main motor assembly.

- Paper wraps or crinkles after the transfer roller, bunches up in the EP-N shutter, or folds up in front of the fusing unit entrance.

  a. Make sure the transfer roller is correctly installed and that the blue locking clip is in place. Inspect the transfer roller drive gear and mounting block. If the gear is damaged, replace the mounting block.

  b. Remove and inspect the EP-N cartridge. If the plastic case is broken or split, if the high-voltage contacts are burnt or mangled, the shutter is stuck or broken, replace the EP-N.

  c. Remove and inspect the registration roller unit. If the metal, bearings, pressure springs, or clutch is bent, worn, or rusted, replace the unit.

  d. Inspect the HVPSA connector block. If the spring contacts are burnt or mangled, replace the HVPSA.

  e. Remove and inspect the transport guide assembly and static eliminator. If the transport is damaged or the static eliminator contacts are burnt or mangled, replace the transport guide assembly.

  f. Swap the DC controller board.

  g. Swap the HVPSA.

- Paper reaches the fusing rollers but fails to enter the nip.

  a. Remove and inspect the fusing unit. Make sure the teeth on all the gears are undamaged and the lever that engages the main motor drive functions correctly. If you notice any damage or wear, replace the fusing unit.

  b. Inspect or swap the main motor transmission gears.

- Paper destructively jams in the fusing unit. Replace the fusing unit.

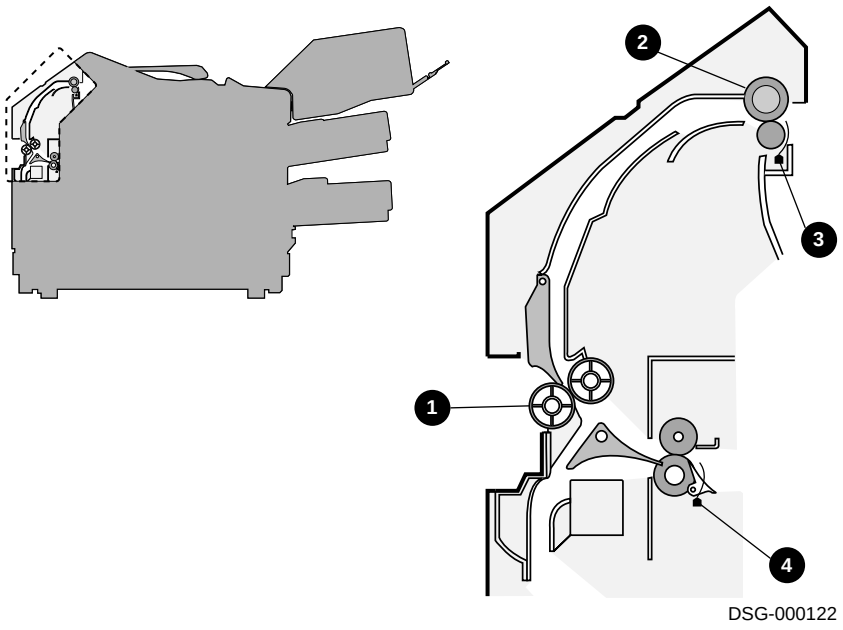
7.3 Transfer, Separation, and Fusing Exit Jams

- Paper stalls in the fusing unit with no crumpling or wrinkling.
  a. Remove and inspect the fusing unit. Make sure the teeth on all the gears are undamaged and the lever that engages the main motor drive functions correctly. If you notice any damage or wear, replace the fusing unit.
  b. Swap the AC drive board and fusing exit sensor.
  c. Swap the DC controller board.
- Paper exits the fusing unit and enters the wrong paper path.
  a. Check the solenoid adjustment, as shown in Section 9.44.1.
  b. Inspect the linkages that connect the stack and refeed solenoids to the gates.
  c. Inspect the stack and refeed gates. The gates should operate smoothly and not stick or bind. Fix or replace any damages part.

7.4 Face-Down and Fusing Exit Area Jams

Explanation: Figure 7–4 shows the face down area paper path indicated by the 11xx.005E FTM error message.

Figure 7–4 Face-Down Exit Area Jams



The active parts of the face-down paper path are the gate unit ❶, delivery rollers ❷, and fixing exit rollers. The rollers are gear driven by the main motor. When the top door is closed, the gear mounted on the top door meshes with the green drive gear to the left side of the fusing unit. Also, a tang on the top door presses a lever that meshes the right-side fusing unit gear to the main motor gear train.

The exit sensor ❸ detects the sheet arriving at and leaving the delivery rollers. The fusing exit sensor ❹ detects the tail end of the sheet as it leaves the fusing unit. It might be difficult to tell a face-down jam from an engine jam.

Signal diagram reference: Figure 1–13 and Figure 1–15

Action: Do the following:

1. Open the top door and inspect the jammed paper. Make sure the jammed paper is driven clear of the big fusing unit rollers. If the sheet stopped or crumpled in the fusing unit, go to Section 7.3.

7.4 Face-Down and Fusing Exit Area Jams

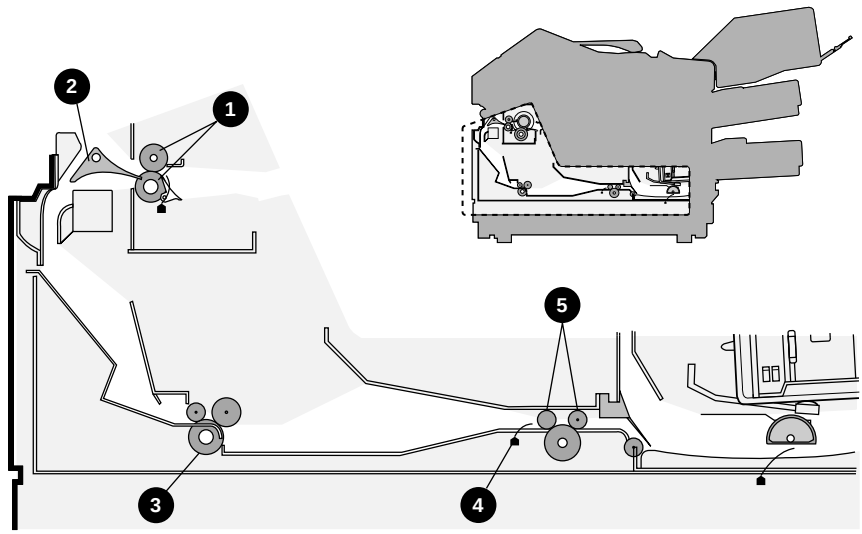
2. Open the top door and inspect the paper guides of the face-down paper path. Fix or replace any damaged components.
3. Inspect the top door gear train. Fix or replace any damaged components.
4. Make sure the following connectors are firmly plugged in:
   - J202 and J203 on the DC driver board
   - J012 on the DC controller board
5. Swap the following components:
   a. DC driver board
   b. DC controller board
   c. Fusing unit
   d. Delivery assembly

7.5 Duplex Entrance and Fusing Exit Jams

Explanation: Figure 7–5 shows the paper path area indicated by the 11xx.005C FTM error messages. A false 11xx.005C message can occur due to a malfunction in the switchback area.

The fusing exit rollers ❶ push the sheet into the refeed gate ❷, which directs it into the first duplex entrance rollers ❸. The duplex entrance rollers grab the sheet and push it into the entrance sensor ❹ and second entrance rollers ❺.

Figure 7–5 Duplex Area Jams



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The first and second entrance rollers are driven from the main motor. The spring-loaded gear on the duplex unit engages a gear on the pickup unit. The pickup unit engages the main motor gears. A clutch in the duplex unit applies power to the second roller drive shaft and first roller drive belt.

Signal diagram reference: Figure 1–12

Action:

1. Open the top door and inspect the jammed paper. Make sure the jammed paper is driven clear of the fusing exit rollers. If the sheet stopped or crumpled in the fusing unit, perform the steps in Section 7.3.
2. Open the side door to see where the sheet stopped. Watch the first entrance roller as you power on the printer.

7.5 Duplex Entrance and Fusing Exit Jams

If the rollers fail to rotate and the sheet failed to enter the first entrance roller, suspect a problem with the mechanical drive from the main motor, pickup, or duplex units.

3. Open the top door and inspect the refeed gate and the paper path that carries the sheet from the fusing exit to the duplex entrance. Fix or replace any damaged components.
4. Remove the duplex unit. Check all connectors, sensor linkages, and paper path guides. Fix any damage or replace the duplex unit. Make sure the connector that mates to the print engine when the duplex unit is installed is in good shape.
5. Swap the following components:
   - Duplex unit and/or duplex unit control board
   - DC controller board
   - Pickup unit (not likely)

7.6 Switchback, Refeed, and Pick-up Area Jams

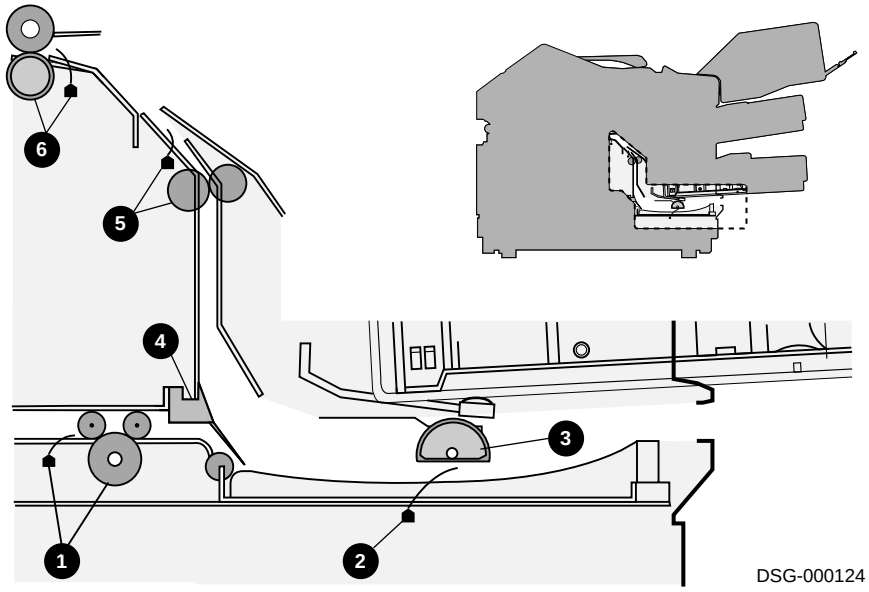
Explanation: Figure 7–6 shows switchback and refeed area paper path. The FTM error code 11xx.005A indicate a jam in this area and also indicates a pick-up area jam or misfeed. Before you suspect a switchback or refeed area problem, make sure that the printer can print in simplex mode without jamming.

After the entrance sensor is actuated, the second entrance rollers ❶ start and drive the paper into the switchback sensor ❷. The switchback roller ❸ rotates to push the trailing edge of the sheet clear of the paper guide ❹. Two mechanical centering plates (not shown) center the sheet.

The switchback roller turns in the opposed direction, pushing the reversed sheet up in to the refeed rollers, which grab the sheet and push it into the refeed sensor ❺ and up to the registration sensor and rollers ❻.

The second entrance and refeed rollers are driven off the main motor. The switchback roller is driven by the switchback motor.

Figure 7–6 Refeed Area Jams



Signal diagram reference: Figure 1–12 and Figure 1–14

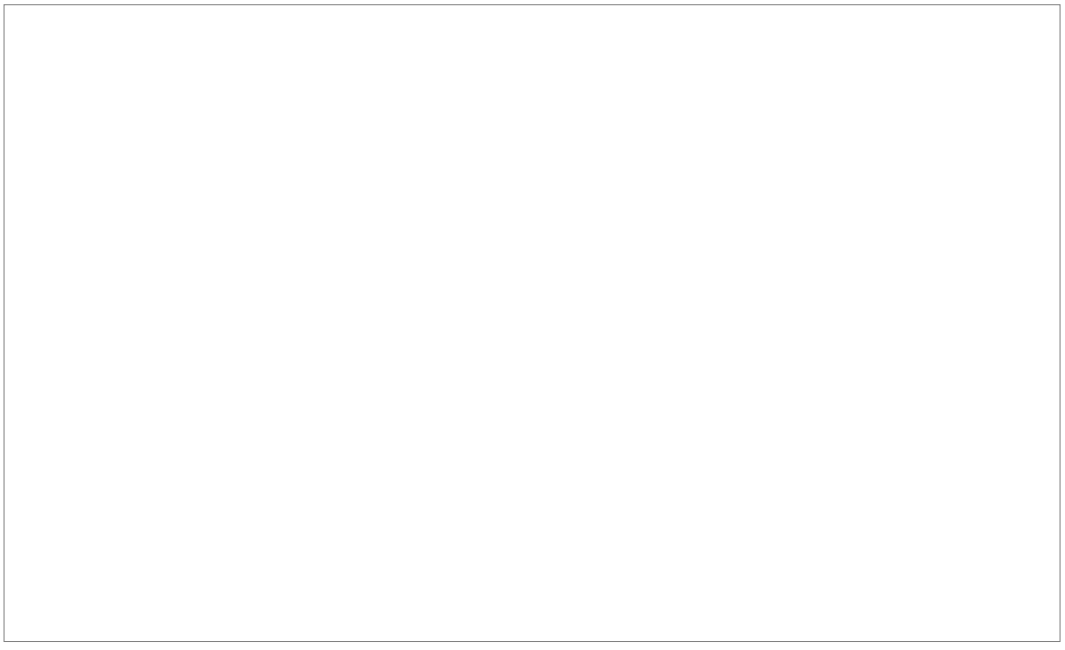
7.6 Switchback, Refeed, and Pick-up Area Jams

Action:

1. Remove the lower cassette. If installed, remove the plate under the lower cassette. Inspect the jam to see where the sheet stopped. If the sheet failed to clear the entrance rollers and is not crumpled, go to Section 7.5 and perform the FIP.
2. Remove the duplex unit. Check all connectors, sensor linkages, and paper path guides. Fix any damage or replace the duplex unit. Make sure the connector that mates to the print engine when the duplex unit is installed is in good condition.
3. Swap the following components:
   - Duplex unit and/or duplex unit control board
   - DC controller board
   - Refeed unit

7.6 Switchback, Refeed, and Pick-up Area Jams

Notes:



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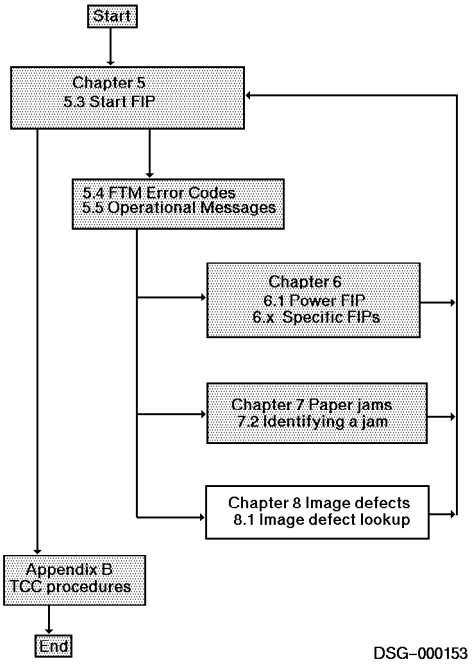
8

Image Defects FIPs

This chapter covers the fault isolation procedures (FIPs) for troubleshooting and fixing image defects in the PrintServer 17.
The fault isolation procedures (FIPs) are a collection of yes/no flow charts and tables that provide a way to fix or ensure the correct operation of the hardware. If a problem exists, use the start FIP to isolate the problem and direct you to the next FIP.



8.1 Image Defects Lookup

To fix a printer that is producing defective images, you must gather as many samples of the defect as possible. Use the FTM controller or engine board test prints to demonstrate the defect. If available, evaluate the customer's printed data.

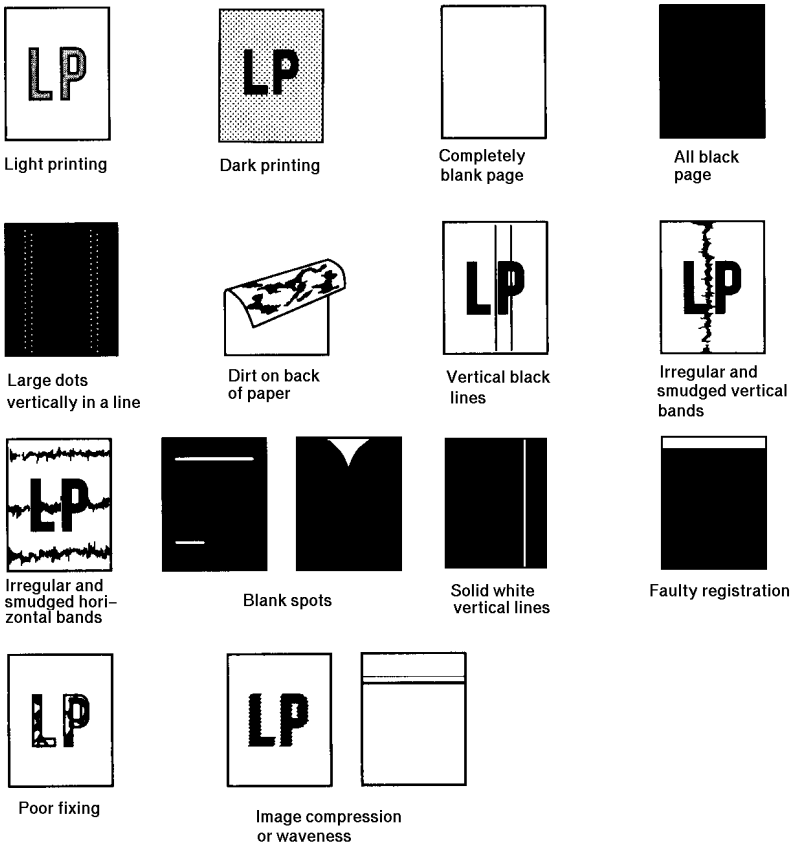
Some defects are obvious; the print is all black or streaked. Other defects are less obvious; the print is too light, too dark, and so on.

Use your evaluations and Table 8–1 and Figure 8–1 to determine which FIP that you should go to.

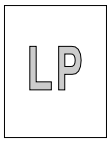
Table 8–1 Image Defects Directory

Defect	Section
Light images	8.2
Dark prints	8.3
Blank (white) prints	8.4
Black prints	8.5
In-line vertical spots	8.6
Dirt on back of page	8.7
Vertical black lines	8.8
Black smudged vertical lines	8.9
Black smudged horizontal bands	8.10
White spots	8.11
Solid white vertical lines	8.12
Leading edge registration	8.13
Poor fusing	8.14
Image distortion	8.15

Figure 8–1 Image Defects Directory



8.2 Light Images



Dark areas look dull and washed out. Text appears gray and not black.

1. Make sure the density adjuster is set to the middle, detented, position.
2. Try fresh dry paper.
3. The toner might be damp or there might be no toner left in the EP-N cartridge. Swap the EP-N cartridge. Investigate why the toner low error failed to display. Write a note into the maintenance log for future troubleshooting.
4. Perform the following test to determine if the image on the print drum is very faint or is dark (normal):
   a. Print a test sheet.
   b. Interrupt the test print by powering off the printer.
   c. Open the top door. Remove the half printed sheet.
   d. Remove the EP-N cartridge.
   e. Open the drum shutter (10 seconds maximum), and examine the image on the drum.
      - If there is a **faint image on the drum:**
        a. Make sure the drum sensitivity switch actuators are free to move. When you press the actuators you can hear the clicking of the switches on the DC controller board.
        b. Inspect the connectors and wiring between J010 on the DC controller board and J1 on the HVPSA.
        c. Swap the HVPSA.
        d. Swap the DC controller board.
      - If there is a **dark normal image on the drum:**
        a. Swap the transfer roller.
        b. Swap the door reflecting mirror.

           Caution: *Cleaning or touching the mirrored surface will scratch and destroy it.*

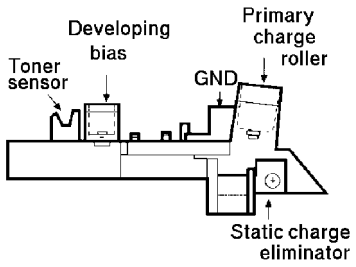
8.3 Dark Prints

LP

Black areas of the text or graphics appear heavy or smudged because too much toner was deposited. Do the following:

1. Make sure the density adjuster is set to the middle or detent position.
2. Swap the EP-N cartridge.
3. Inspect the GND contact of the EP-N cartridge and connector block. See Figure 8–2. Clean any dirt or replace the damaged component.
4. Inspect the connectors and wiring between J010 on the DC controller board and J1 on the HVPSA.
5. Swap the HVPSA.
6. Make sure the drum sensitivity switch actuators move freely. When you press the actuators you can hear the clicking of the switches on the DC controller board.
7. Swap the DC controller board.

Figure 8–2 HVPSA Connector Block



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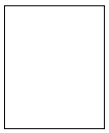
8.4 Blank (White) Prints



No printing appears, the sheet is entirely blank. See Section 1.4 for information about the write black xerography.

There are no high-voltage adjustments. Print copies of the controller board and engine board test patterns for evaluation in the following procedure:

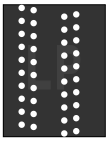
1. If the engine board pattern (Figure 4–3) prints and looks all right, swap the controller board.
2. Swap the EP-N cartridge.
3. Swap the transfer charging roller.
4. Inspect the connectors and wiring between J010 on the DC controller board and J1 on the HVPSA.
5. Inspect the mechanical integrity of the EP-N frame and door mirror.
6. Swap the following in the given order:
   a. HVPSA
   b. DC controller board
   c. Laser scanner unit

8.5 Black Prints

Do the following when the test print is all black:

1. Check the connection and condition of the BD light cable. The cable runs between the scanner unit and J001 on the DC controller board.
2. Swap the following in the given order:
   a. EP-N cartridge
   b. HVPSA
   c. DC controller board
   d. Laser scanner unit

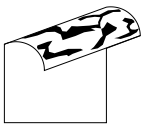
8.6 In-line Vertical Spots



Do the following when rows of white dots appear on a chaotic, muddy, and dark background:

1. Inspect the static charge eliminator for damage, dirt, or loose ground screws. Also inspect the static charge eliminator contacts on the connector block, shown in Figure 8–2.
2. Swap the static eliminator, which is integral to the transport guide assembly.
3. The surface of the transfer roller might be contaminated, swap it.

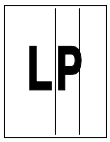
8.7 Dirt on Back of Page



Do the following when toner stains are on the back of the test print:

1. Clean and inspect the transfer charging roller, transfer guide, and fusing unit. Also clean all paper path guides.
2. Inspect the EP-N cartridge for leaking toner. If it leaks, replace it.
3. Inspect the fusing unit. If the lower roller is dirty, replace it.
4. Swap the transfer roller.
5. Swap the DC controller board.

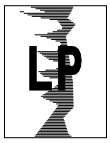
8.8 Vertical Black Lines



Do the following if the test print exhibits well defined black lines that run from leading to trailing edge of the sheet. If the artifact is blotchy or smudged, go to Section 8.10. This malfunction is typically caused by mechanical failure of the EP-N cartridge or the fusing unit.

1. Print a test sheet.
2. Interrupt the test print by powering off the printer.
3. Open the top door. Remove the half printed sheet.
4. Remove the EP-N cartridge.
5. Open the drum shutter (10 seconds maximum), and examine the image on the drum.
   - If the offending band appears on the print drum, replace the EP-N cartridge.
   - If the pattern on the drum is all right, swap the fusing unit.

8.9 Black Smudged Vertical Lines

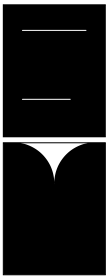


Replace the EP-N cartridge when the test print has black, smudged, and smeared bands running vertically from the leading to trailing edges of the sheet. If the lines are clearly defined, go to Section 8.8.

8.10 Black Smudged Horizontal Bands

Print several test sheets. Line up the test sheets trailing to leading edge. Replace the EP-N cartridge if the bands appear at regular intervals. Replace the fusing unit if the bands appear at irregular intervals.

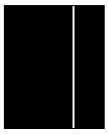
8.11 White Spots



Do the following if white spots appear in the sufficiently black areas of text or graphics. The spots might appear as snow or as one or two large blotchy areas.

1. Try fresh dry paper.
2. Swap the following in the given order:
   a. EP-N cartridge
   b. Transfer charging roller
   c. HVPSA
   d. DC controller board
   e. Laser scanner unit

8.12 Solid White Vertical Lines



Do the following if well defined vertical lines run through the dark areas of text and graphics of the test print:

1. Remove the EP-N cartridge and shake it, as shown in the instructions that are embossed on the EP-N cartridge.
2. Swap the EP-N cartridge.
3. Examine the following components in the path of the laser beam. Look for hair, paper shards, dust, or other foreign matter.
   - The shutters in the case of the EP-N cartridge.
   - The outlet slit of the scanner assembly.
   - The door mirror. Replace the mirror if its surface is contaminated or scratched.

     Caution: *Cleaning or touching the mirrored surface will scratch and destroy it.*
4. Perform the following:
   a. Print a test sheet.
   b. Interrupt the test print by powering off the printer.
   c. Open the top door. Remove the half printed sheet.

8.12 Solid White Vertical Lines

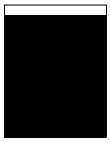
d. Remove the EP-N cartridge.

e. Open the drum shutter (10 seconds maximum), and examine the image on the drum.

f. If the white lines are on the print drum, replace the EP-N cartridge.

5. Inspect the fusing unit rollers. Swap the fusing unit.
6. Swap the transfer roller.

8.13 Leading Edge Registration

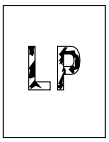


There are no registration or side-to-side image positioning adjustments.

Do the following if an image fails to register at the leading edge of the test sheet, when feeding from a cassette:

1. Make sure a correct type and size paper is being used. See *Digital Laser Printers Guide to Paper and Other Media* for paper specifications.
2. Inspect the cassette for overloading or mechanical damage.
3. Inspect the pickup rollers for damage, wear, or surface contamination.
4. Inspect the coil springs on each end of the upper metal registration roller. The springs apply the force that holds the paper firmly in the registration roller.
5. Inspect the registration rollers for wear or surface contamination.
6. Swap the registration roller assembly.
7. Swap the DC controller board.

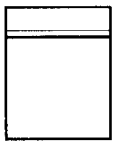
8.14 Poor Fusing



Do the following if the toner can be easily brushed off of the printed test sheet:

1. Make sure a correct type and size paper is being used. See *Digital Laser Printers Guide to Paper and Other Media* for paper specifications.
2. Remove the fusing unit and examine the connectors on the AC drive board.
3. Swap the fusing unit.
4. Inspect the connectors and wiring:
   - J012 on the DC controller board to J203 on the DC drive board.
   - J201 on the DC drive board that connects to the AC drive board.
5. Swap the DC controller board.

8.15 Image Distortion

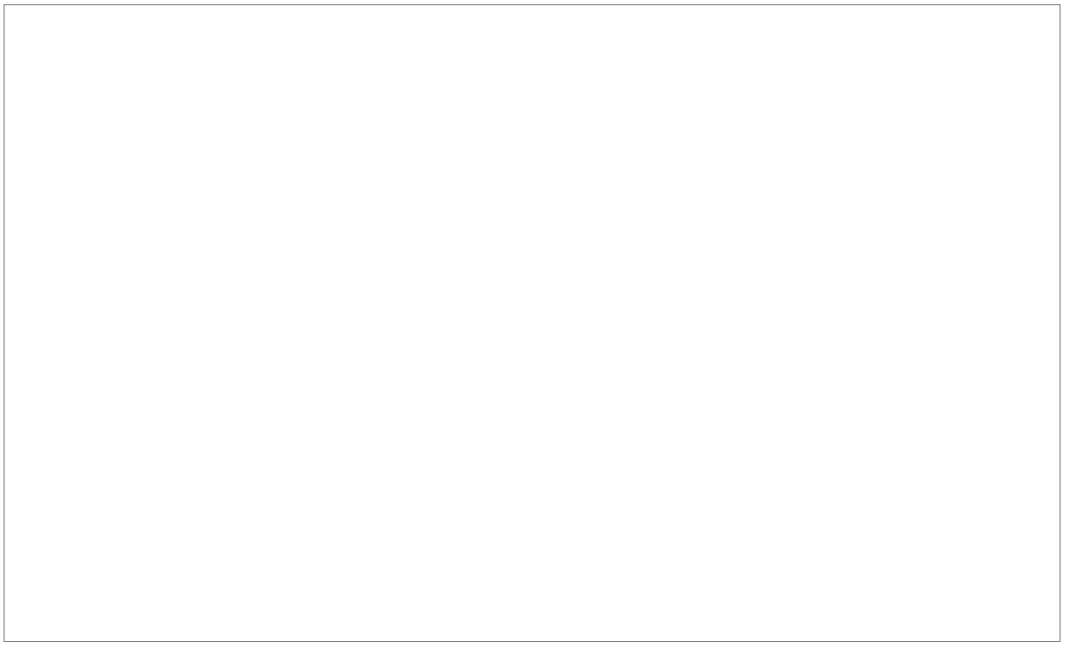


The image appears slightly or grossly compressed.

- Inspect the condition of J001 and J002 on the DC controller board.
- Inspect the condition of the optical cable and connectors.
- Swap the following in the given order:
  a. DC controller board
  b. Laser scanner unit

8.15 Image Distortion

Notes:



DSG-000172

9

Removal and Replacement Procedures

This chapter covers the removal and replacement of field replaceable units (FRUs) of the PrintServer 17.

Warning: *Electrocution or a serious shock hazard exists if you attempt to remove, replace, or service the electrical components of this printer when only the front power switch is turned off.*

Before you remove the covers or right-side metal panels to service the printer, unplug the AC power line cord.

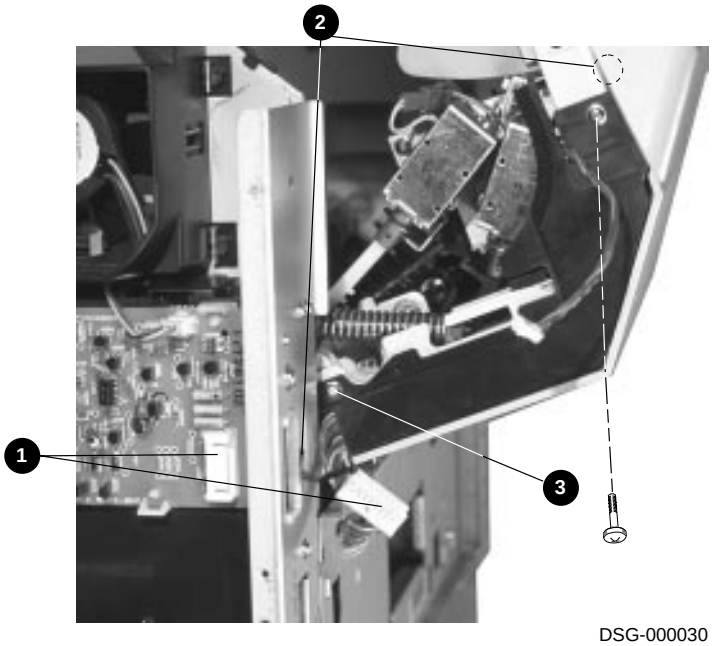
9.1 Assemblies, Delivery and Gate

Use the following procedure to remove and replace the delivery or the gate assemblies from the top door:

1. Remove the following parts:
   a. The rear cover, as shown in Section 9.17.
   b. The right-side lower and upper covers and metal shield, as shown in Section 9.19.
   c. The stack overflow sensor bracket, as shown in Section 9.40.
   d. EP-N cartridge, as shown in Section 9.22.
   e. EP-N frame and door mirror, as shown in Section 9.23.
2. Unplug the 18-pin connector ❶ from the drive board.
3. Release the two cables from the restraint clip ❷.
4. Remove the short ❸ and long screws that secure the raceway to the rails of the top door.

   Caution: *The use of too much force in the next step will damage the plastic raceway pins.*
5. Alternately pry at the pins that hold the raceway to the metal frame rail.

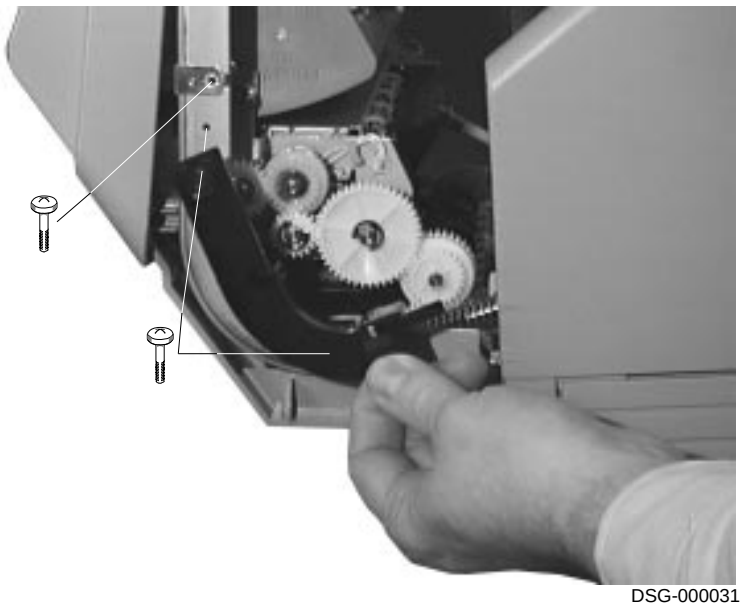
9.1 Assemblies, Delivery and Gate



DSG-000030

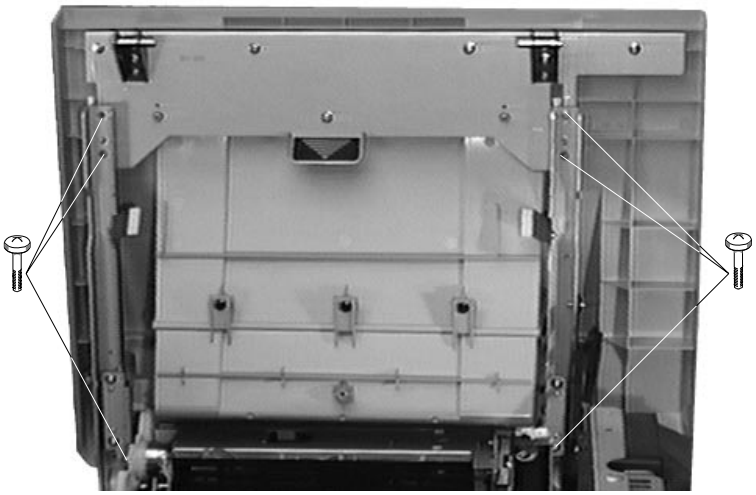
9.1 Assemblies, Delivery and Gate

6. Remove the screw that holds the EMI shield strap to the left rail.
7. Remove the screw that holds the plastic trim to the left hand frame rail.
8. Use a suitable tool to gently release the clips and remove the trim.



DSG-000031

9. Remove the six screws that hold the top cover to the rails.
10. Lift the cover to disengage the three pins that connect the top and rear door covers.
11. Remove the top door cover.
12. Turn to the delivery procedure or the gate unit procedure.

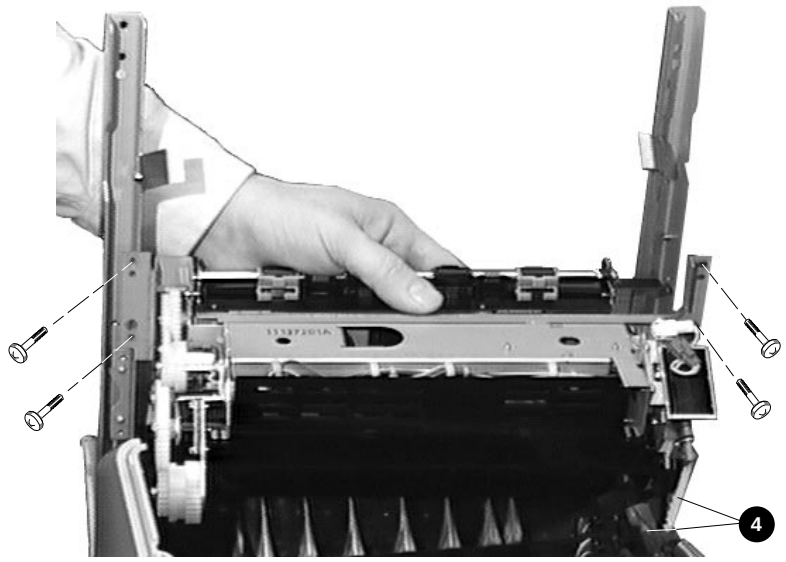


DSG-000032

9.1 Assemblies, Delivery and Gate

Delivery unit procedure:

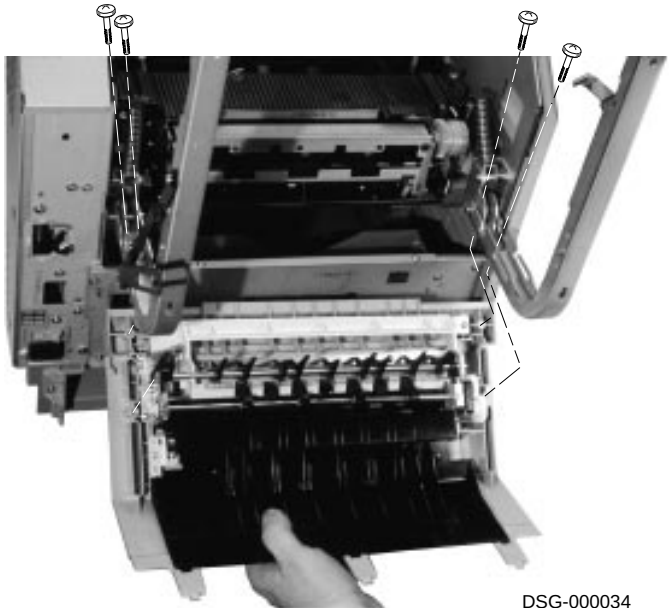
1. Press and unsnap the linkage arms ❹ from the pins on the refeed and stack gates.
2. Remove the four screws holding the delivery unit to the frame rails.
3. Separate the delivery unit from the rails of the top door and remove it.



DSG-000033

Gate unit procedure:

1. Remove the four screws that hold the gate unit to the top cover rails.
2. Remove the gate unit.

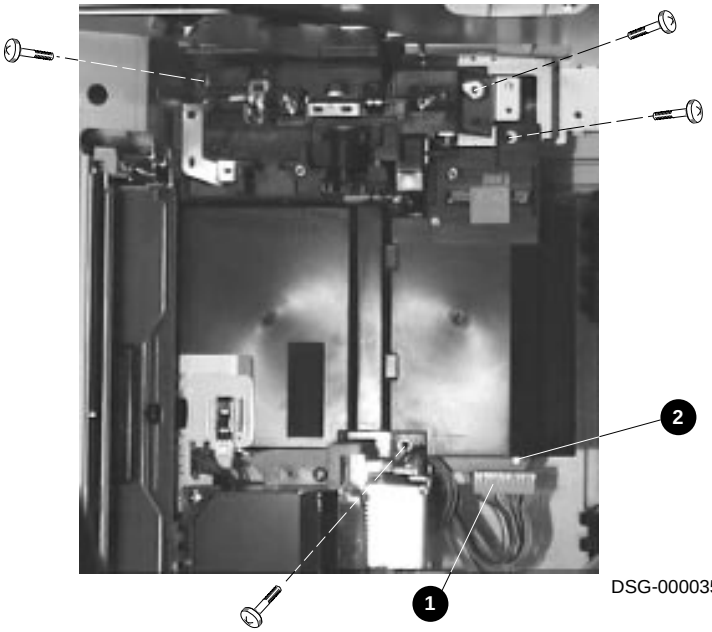


DSG-000034

9.2 Assembly, High-Voltage Power Supply (HVPSA)

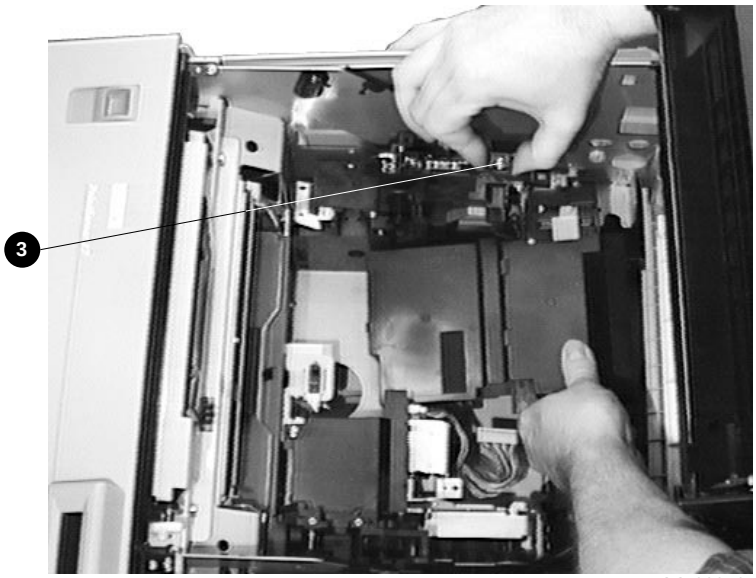
Use the following procedure to remove and replace the HVPSA:

1. Remove the following parts:
   a. Fusing unit, as shown in Section 9.27.
   b. Transport guide assembly, as shown in Section 9.4.
2. Remove the two fat screws that hold the HVPSA to the printer.
3. Remove the two long screws that hold the connector block to the printer. Make sure the two long screws are securely tightened when you reassemble the connector block.
4. Unplug the fusing unit bias connector ❶.
5. Unplug the 13-pin connector ❷ that connects to J010 on the DC controller board.



DSG-000035

6. Pull the HVPSA backwards and lift the connector block over the plastic block ❸.
7. Remove the HVPSA.



DSG-000165

9.3 Assembly, Low-Voltage Power Supply (LVPSA)

Use the following procedure to remove and replace the LVPSA:

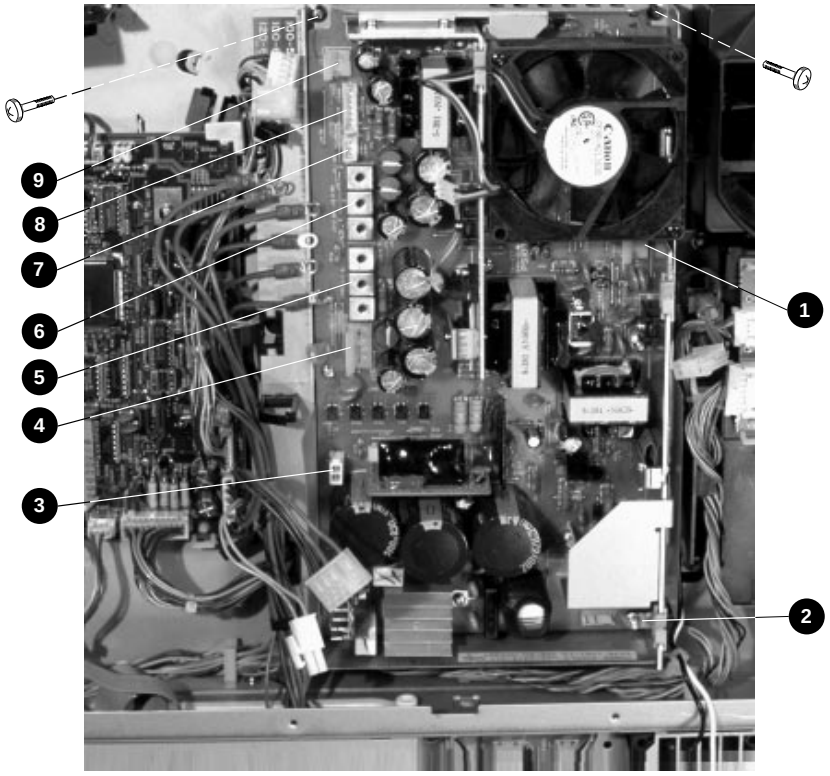
Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the right-side lower and upper covers and metal shield, as shown in Section 9.19.
2. Unplug or disconnect the following connectors:

❶	2-pin J6	AC drive board
❷	3-pin J1	(J1 is not viewable) AC drive board
❸	2-pin J8	Front power on switch
❹	4-pin J5	DC controller board J009
❺	J3-4 J3-5 J3-6	+5VDC ground from the controller board, blue wires
❻	J3-1 J3-2 J3-3	+5VDC supply to the controller board, brown wires
❼	3-pin J7	LVPSA fan lead in
❽	7-pin J4	DC controller board J008
❾	2-pin J2	Controller board

3. Use a suitable tool to release the cable clamp.
4. Remove the two screws that hold the top of the LVPSA to the printer.
5. Remove the LVPSA.
6. If necessary, remove the LVPSA fan, as shown in Section 9.25.

9.3 Assembly, Low-Voltage Power Supply (LVPSA)

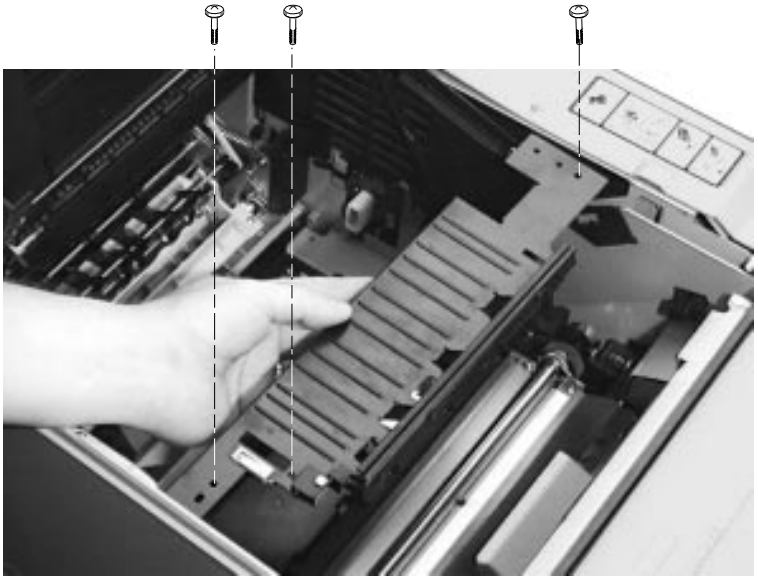


DSG-000036

9.4 Assembly, Transport Guide

Use the following procedure to remove and replace the transport guide assembly. The static charge eliminator is replaced with the transport guide assembly.

1. Remove the fusing unit, as shown in Section 9.27.
2. Remove the three screws that hold the transport guide assembly to the printer.
3. Lift and remove the transport guide assembly.



DSG-000071

Notes:

DSG-000172

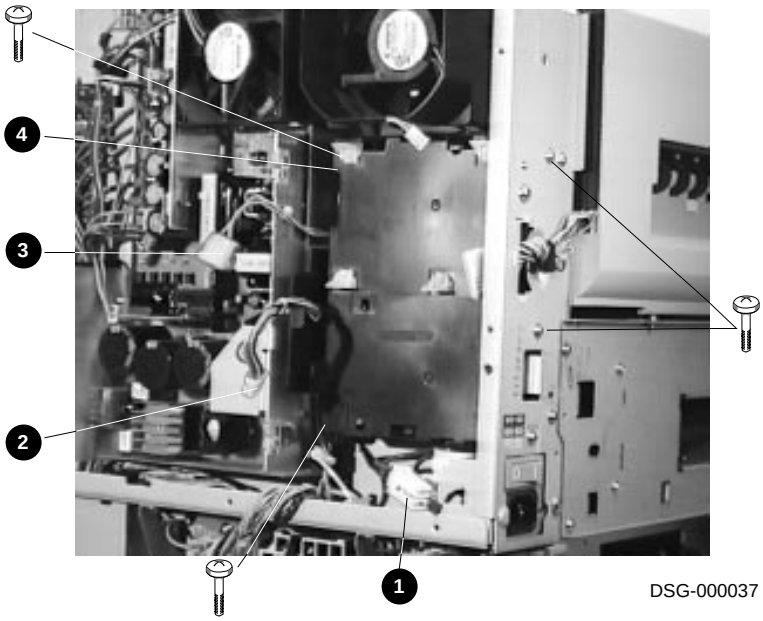
9.5 Board, AC (Fusing Unit) Drive

Use the following procedure to remove and replace the AC drive board:

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the following parts:
   a. The right-side lower and upper covers and metal shield, as shown in Section 9.19.
   b. Rear cover, as shown in Section 9.17.
   c. Fusing unit, as shown in Section 9.27.
   d. DC drive board, as shown in Section 9.10.
2. Unplug the following connectors:
   ❶ 2-pin main switch connector that connects to the AC drive board
   ❷ 2-pin J1 LVPSA connector that connects to TB103 on the AC drive board
   ❸ 2-pin J6 LVPSA connector that connects to TB151 of the AC drive board
   ❹ 1-pin J152 connector, which is the HVPSA fusing unit bias connector
3. Remove the two screws that hold the bracket to the internal bulkhead.
4. Remove the two screws that hold the bracket to the rear cover.
5. Remove the bracket that holds the AC drive board.
6. Pinch back the four clips ❺ and remove the AC drive board.

9.5 Board, AC (Fusing Unit) Drive



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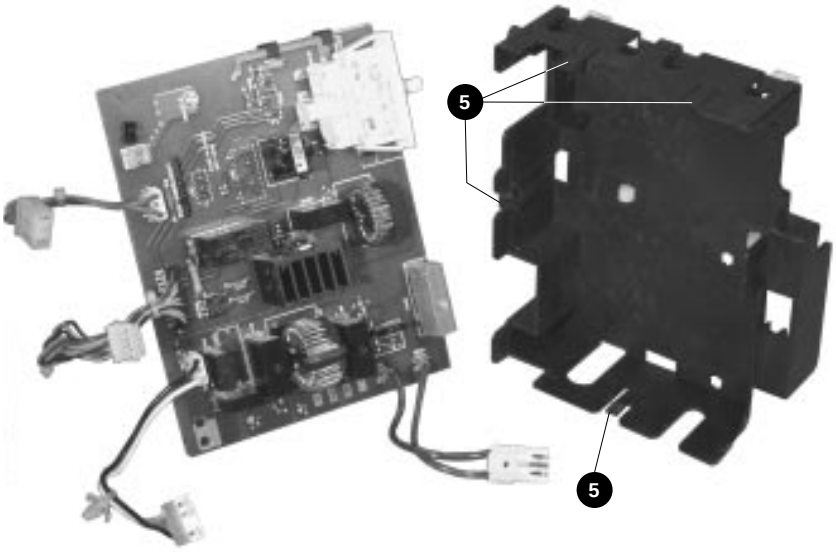
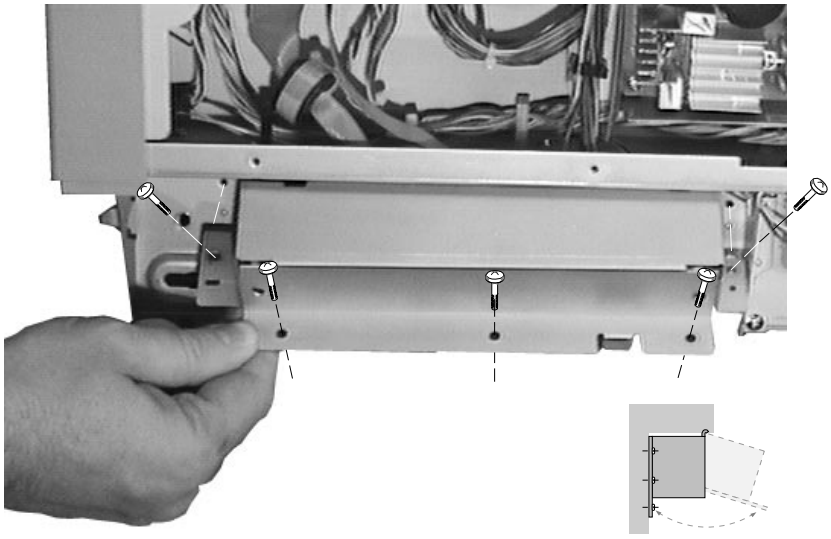


DSG-000038

9.6 Board, Backplane

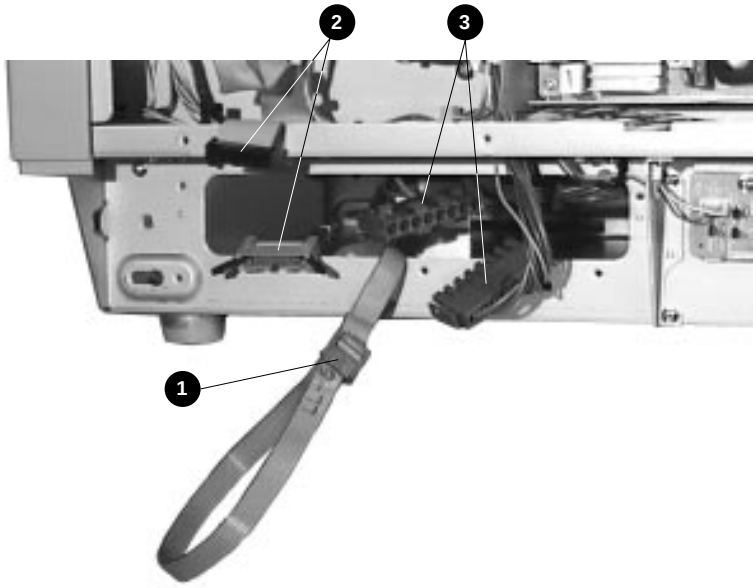
Use the following procedure to remove and replace the backplane board that connects the controller board to the LVPSA, operator panel, and DC controller board:

1. Remove the following:
   a. The controller board, as shown in Section 9.7.
   b. The right-side lower and upper covers and metal shield, as shown in Section 9.19.
2. Remove the five screws that hold the shield box to the metal bulkhead.
3. Swing the box up while pushing backwards to remove the it from the metal frame.



DSG-000136

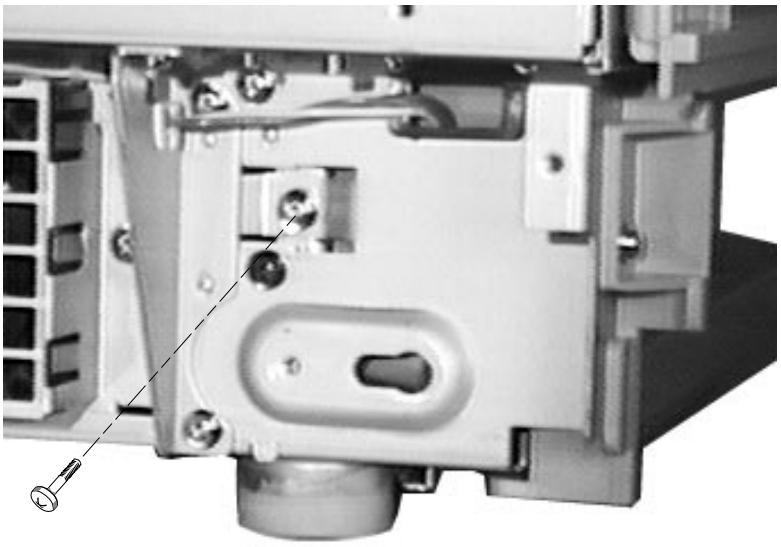
4. Unplug the following connectors:
   - ❶ The 10-pin operator panel cable
   - ❷ The 20-pin controller board connector
   - ❸ The 8-pin power cable connector
5. Thread the three cables into the controller board cavity.



DSG-000137

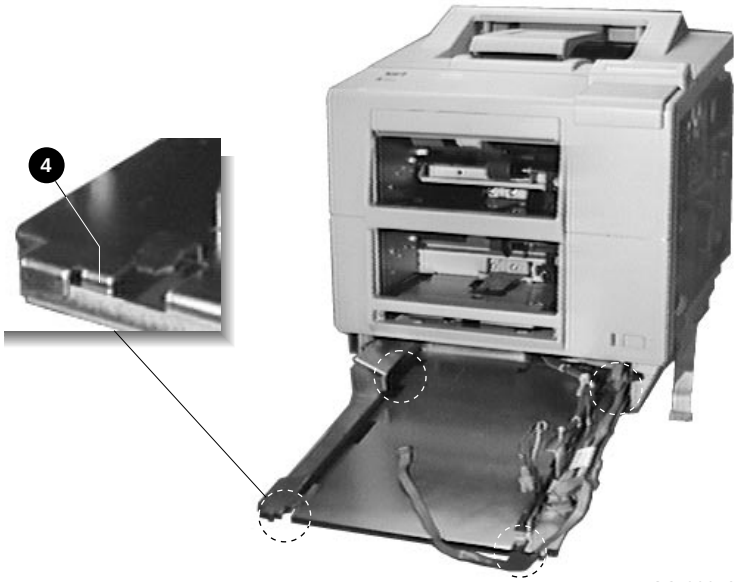
9.6 Board, Backplane

6. Remove the screw that secures the rear of the controller board holder.



DSG-000160

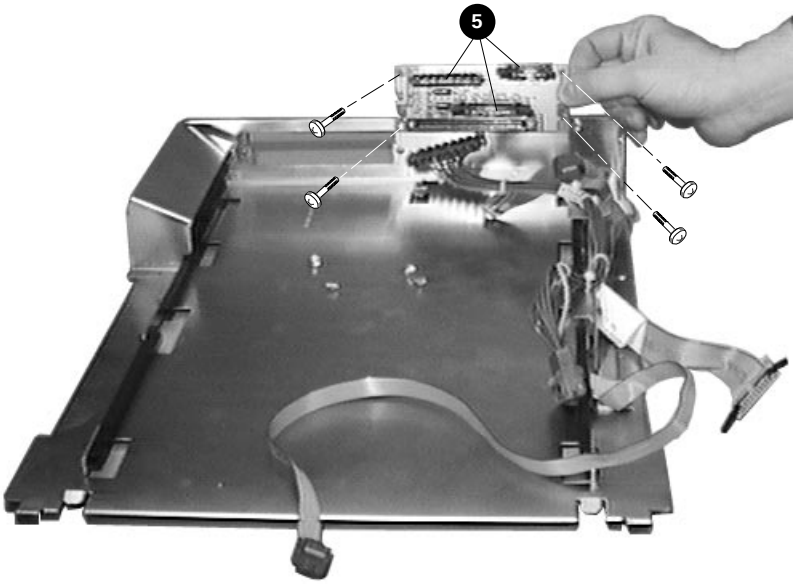
7. Move the printer to the edge of the table.
8. Lift the front of the controller board holder until the tabs ❹ clear the ridge and allow the removal of the controller board holder.
9. Carefully pull the controller board holder out of the printer until the it locks in the frame tab.
10. Drop and lift the controller board holder to disengage and remove it.



DSG-000138

9.6 Board, Backplane

11. Unplug the three connectors ❺ from the controller board backplane.
12. Remove the four screws that hold the controller board backplane to the metal controller board holder.



DSG-000139

9.7 Board, Controller

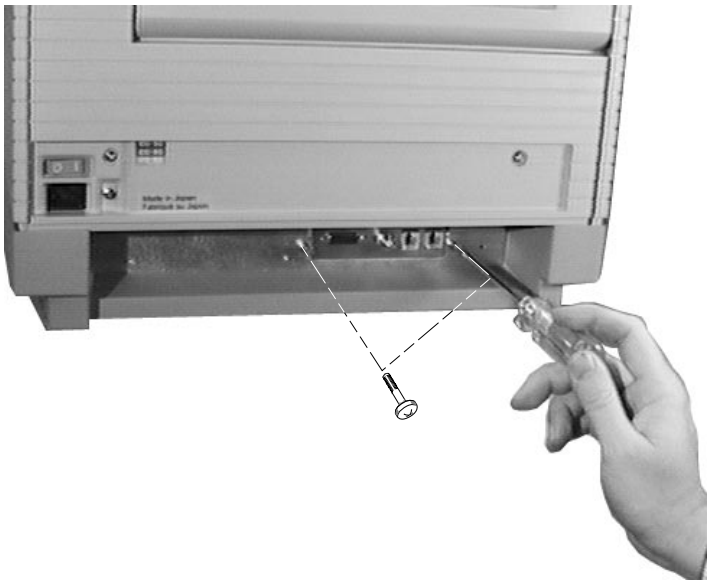
Use the following procedure to remove and replace the controller board:

If you replace the controller board, make sure to swap the SIMMs, the page count memory, and the Ethernet address IC, as shown in Sections 9.7.1, 9.15, and 9.8.

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

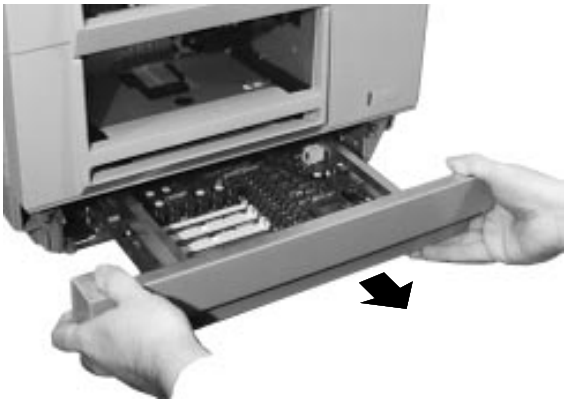
Caution: *Use the standard antistatic equipment and procedures when you handle the sensitive electronic boards.*

1. Disconnect the power cord and Ethernet cable from the rear panel.
2. Loosen the two screws until they disconnect or no longer feel attached.



DSG-000047

3. Grasp each side of the lower plastic cover and withdraw the controller board.

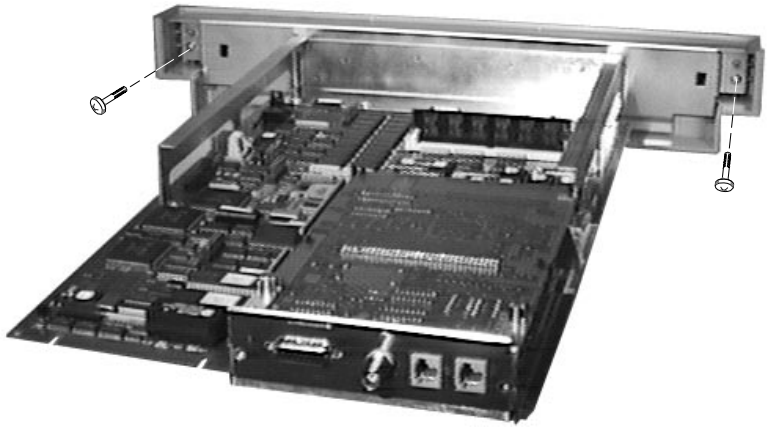


DSG-000307

4. Remove the two screws that hold the lower plastic cover to the metal frame.
5. Remove the lower plastic cover.
6. When you replace the controller board, make sure the four switchpack switches are set to the following factory configurations:

Table 9–1 Controller Board Switch Pack

1	2	3	4	Action
Off	On	On	On	Normal operational position.



DSG-000131

9.7 Board, Controller

9.7.1 Page Count Memory, Ethernet Address, and ROM ICs

Use the following procedure to remove and replace the integrated circuits (IC)s that store the page count information, Ethernet address, and controller board firmware.

- Whenever you replace a controller board, move the page count and Ethernet address ICs to the new board.
- Upgrade the V1.0 controller board firmware to V1.1 by replacing the two controller board ROMs.

Caution: *Use the standard antistatic equipment and procedures when you handle the sensitive electronic boards.*

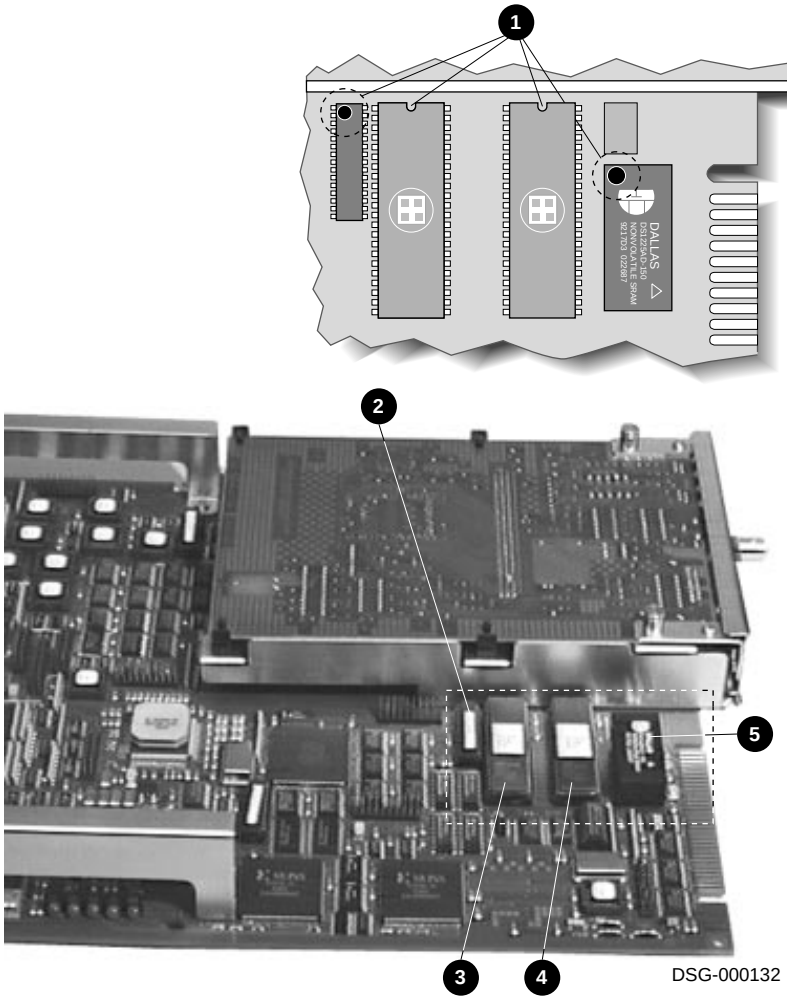
1. Remove the controller board, as shown in Section 9.7.
2. Use a suitable tool to loosen and extract the IC. Be careful to not bend any of the pins or gouge any components.

   After installation of the IC, make sure that each IC pin aligns with the socket and that no pins are bent.

   When you reinstall the ICs, make sure the dimple that identifies pin-1 is positioned as shown ❶.

   - The **Ethernet IC:** ❷ is an 8-pin socket-mounted device.
   - The **two firmware ICs:** are 40-pin ICs labeled as 1 and 0. Install 1 in the indicated socket ❸ and 0 in the indicated socket ❹.
   - The **page count IC:** ❺ is a 28-pin socket-mounted device.

9.7 Board, Controller

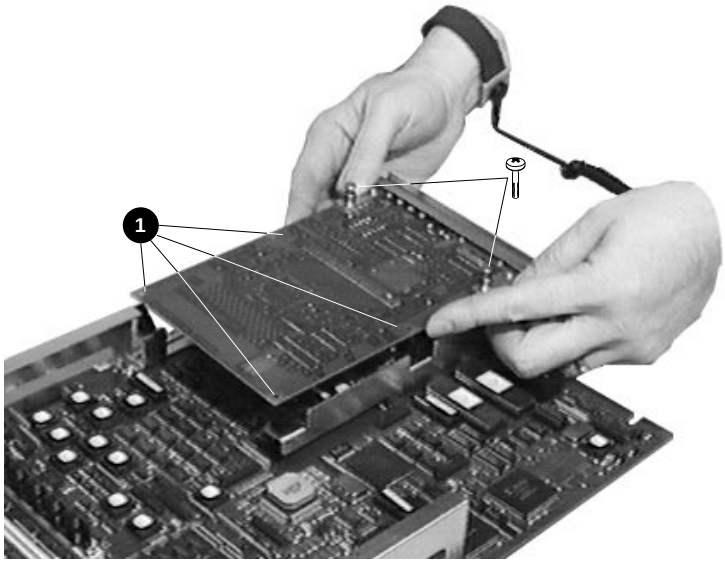


9.8 Board, Daughter

Use the following procedure to remove and replace the daughter board from the controller board:

Caution: *Use the standard antistatic equipment and procedures when you handle the sensitive electronic boards.*

1. Remove the controller board, as shown in Section 9.7.
2. Loosen the two captive screws that hold the daughter board to the frame of the controller board.
3. Release the four clips ❶ while lifting each side of the daughter board. Rock the daughter board to disengage the pins and connector.
4. Lift and remove the daughter board.



DSG-000135

Notes:

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9.8 Board, Daughter

9.9 Board, DC Controller

Use the following procedure to remove and replace the DC controller board:

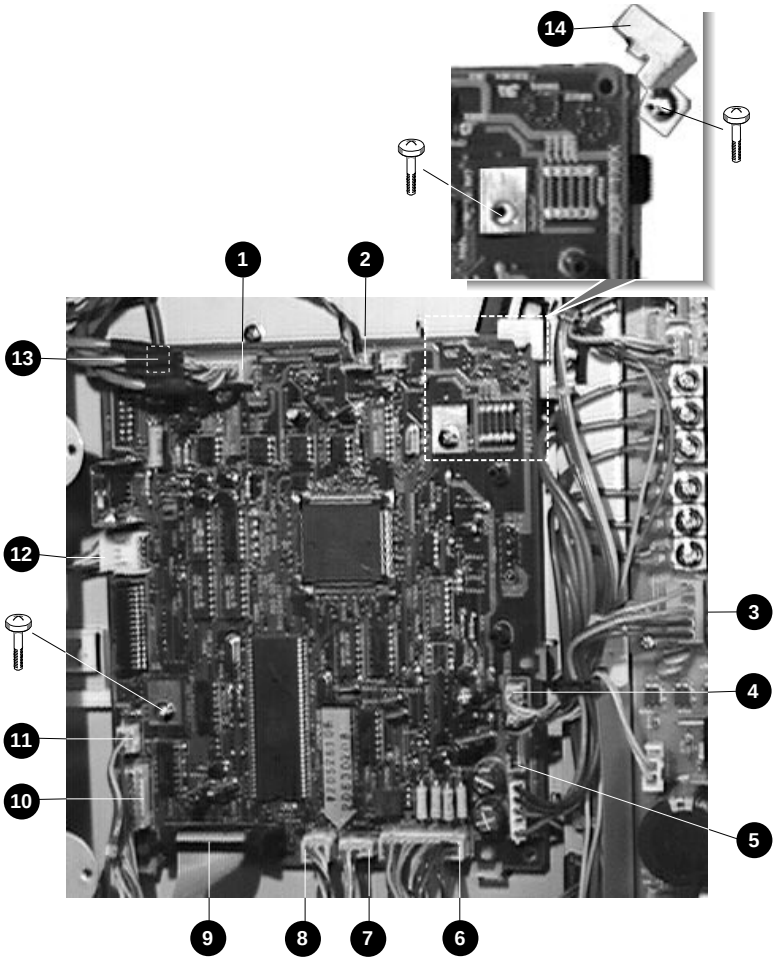
Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the right-side lower and upper covers and metal shield, as shown in Section 9.19.
2. Unplug the following connectors from the DC controller board:

	Unplug	It connects to
❶	16-pin J002	Scanning unit
❷	3-pin J004	Top door sensor
❸	2-pin J007	Registration clutch
❹	7-pin J008	LVPSA
❺	4-pin J5 (LVPSA)	J009 on DC controller board
❻	22-pin J010	HVPSA and main motor
❼	3-pin J018	Controller fan control board
❽	6-pin J011	To duplex unit
❾	20-pin J013	Controller board cable
❿	16-pin J012	DC drive board cable
⓫	3-pin J019	Front panel power on switch and LEDs
⓬	5-pin J015	Pickup control board cable
⓭	J001	Fiber optic connector to scanning unit

3. Remove the two screws that hold the DC controller board to the printer.
4. Loosen the screw that holds the alignment bracket ⓮ to the printer.
5. Disengage the alignment bracket from the DC controller board and swivel it out of the way: tighten the screw to secure it.
6. Find and release the four clips that hold the DC controller board.
7. Remove the DC controller board.

9.9 Board, DC Controller



9.10 Board, DC drive

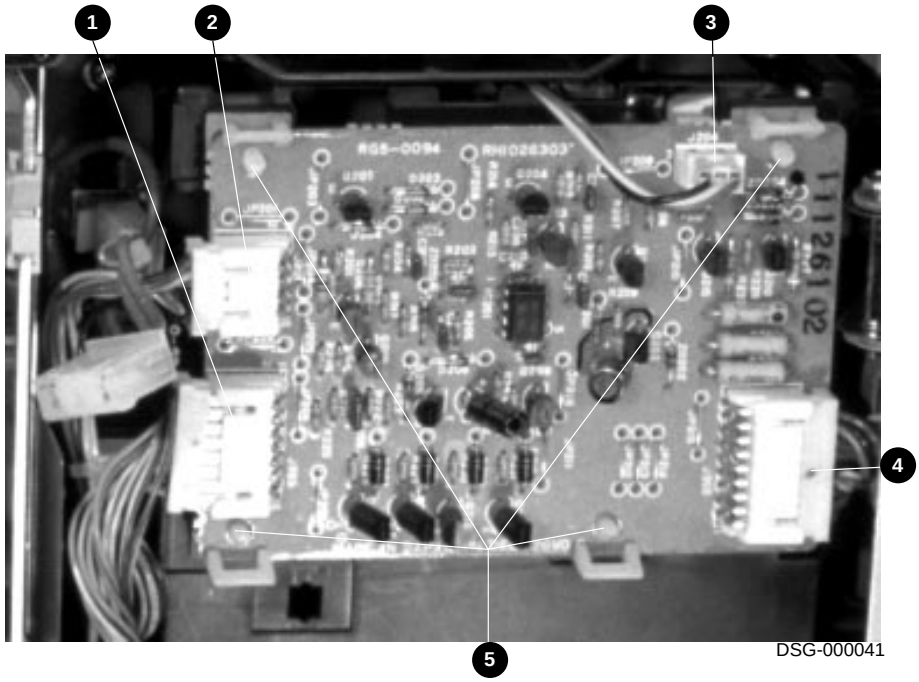
Use the following procedure to remove and replace the DC drive board:

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the right-side lower and upper covers and metal shield, as shown in Section 9.19.
2. Unplug the following connectors from the DC drive board:

❶	16-pin J203	DC controller board
❷	10-pin JP201	AC drive board
❸	3-pin J204	Main fan lead-in
❹	18-pin J202	Top door electronics

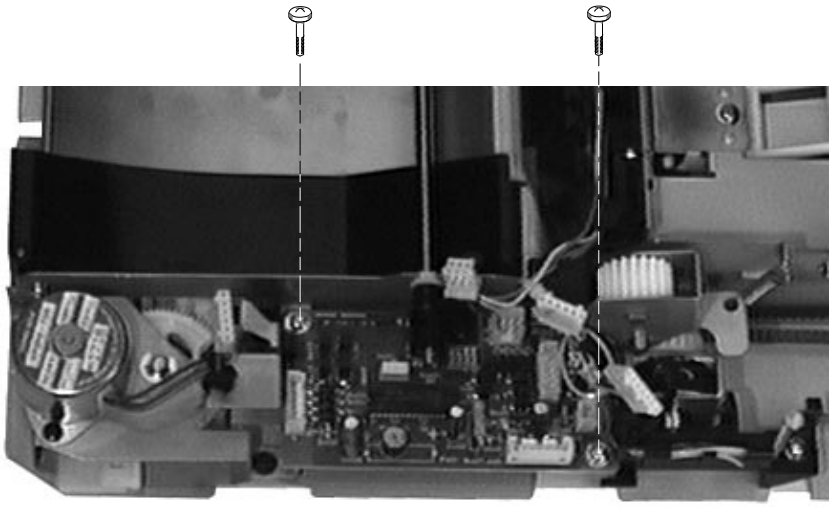
3. Pull back the four clips ❺ and remove the DC drive board.



9.11 Board, Duplex Controller

Use the following procedure to remove and replace the controller board that operates the duplex unit:

1. Remove the duplex unit, as shown in Section 9.21.
2. Unplug the five connectors from the duplex unit controller board.
3. Remove the two screws that hold the board to the duplex unit.
4. Remove the duplex controller board.



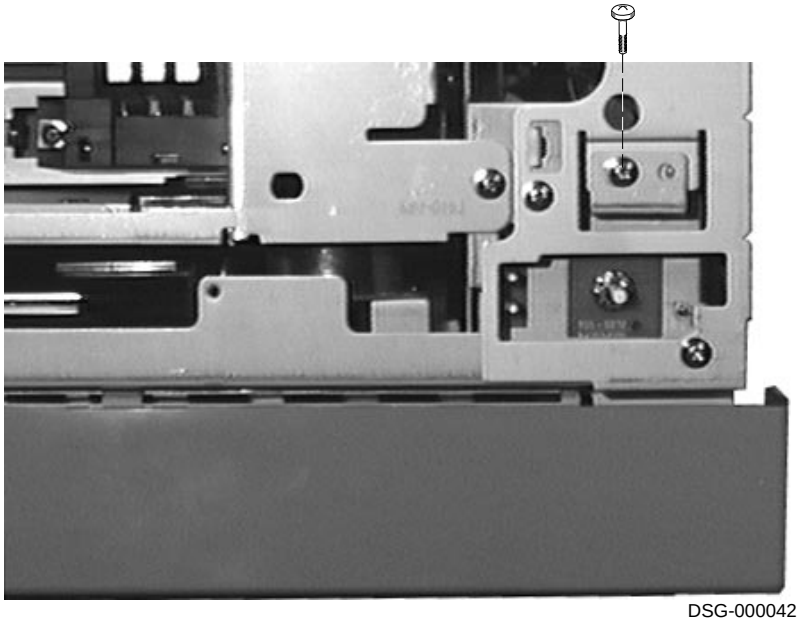
DSG-000134

9.12 Board, Front Power-On Unit

Use the following procedure to remove and replace the front power-on unit:

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the following parts:
   a. The right-side lower and upper covers and metal shield, as shown in Section 9.19.
   b. Remove the upper and lower front covers, as shown in Section 9.20 and 9.16.
2. Disconnect the 3-pin connector from J019 on the DC controller board.
3. Disconnect the 2-pin connector from J8 on the LVPSA.
4. Remove the screw that holds the unit to the printer.
5. Remove the front power-on unit.



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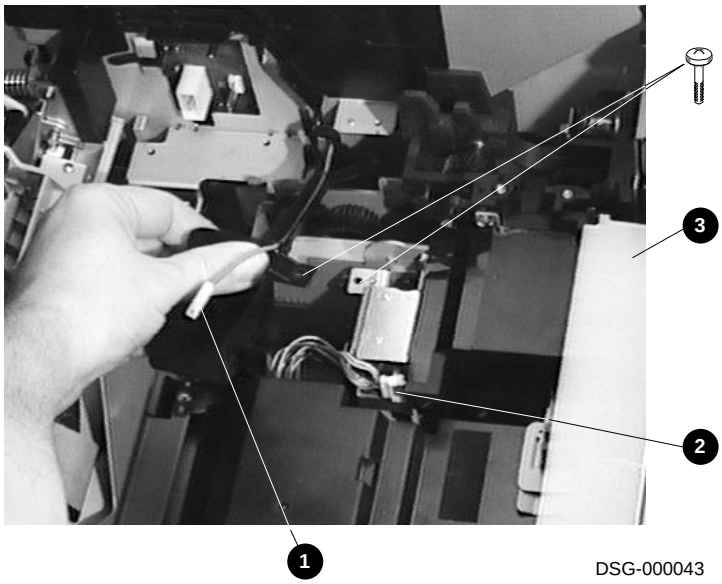
9.13 Board, Main Motor Drive

Use the following procedure to remove and replace the main motor drive board:

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the following parts:
   a. Fusing unit, as shown in Section 9.27.
   b. Transport guide assembly, as shown in Section 9.4.
   c. Transfer roller and registration roller unit, as shown in Section 9.34.
2. Unplug the fusing unit bias connector ❶.
3. Remove the screw that holds the raceway to the printer.
4. Lift the raceway and wire and swing them away from the main motor.
5. Unplug the 6-pin (J702) connector ❷.
6. Lift the lower guide plate ❸ to gain access to the plastic motor shield.



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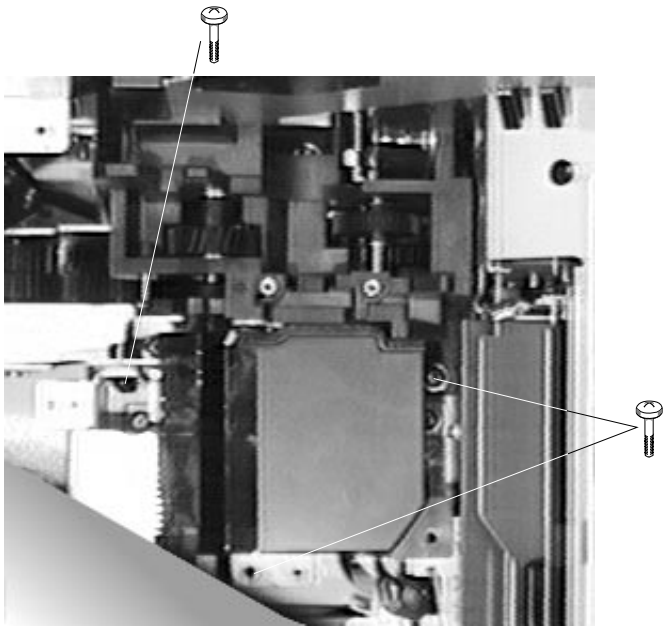
9.13 Board, Main Motor Drive

7. Remove the two screws that hold the plastic motor shield to the floor of the printer.
8. Lift and remove the plastic motor shield.
9. Remove the screw that holds the bracket of the motor control board to the chassis.
10. Unplug and remove the main motor control board.
11. If you are removing the main motor unit, turn to Section 9.29 to continue.



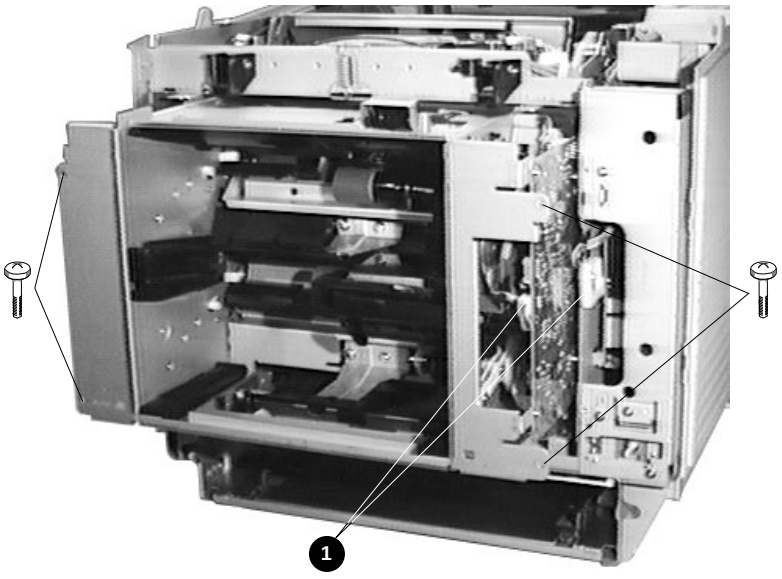
DSG-000044

9.14 Board, Pickup Unit and Controller

Use the following procedure to remove and replace the pickup unit or the pickup controller board:

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. **Pickup unit:** Remove the upper and lower front covers, as shown in Sections 9.20 and 9.16.
2. Unplug the 5-pin connector ❶ that connects to J015 on the DC controller board.
3. Remove the four screws that hold the pickup unit to the engine.
4. Pull the pickup unit forward on its rails and remove it.



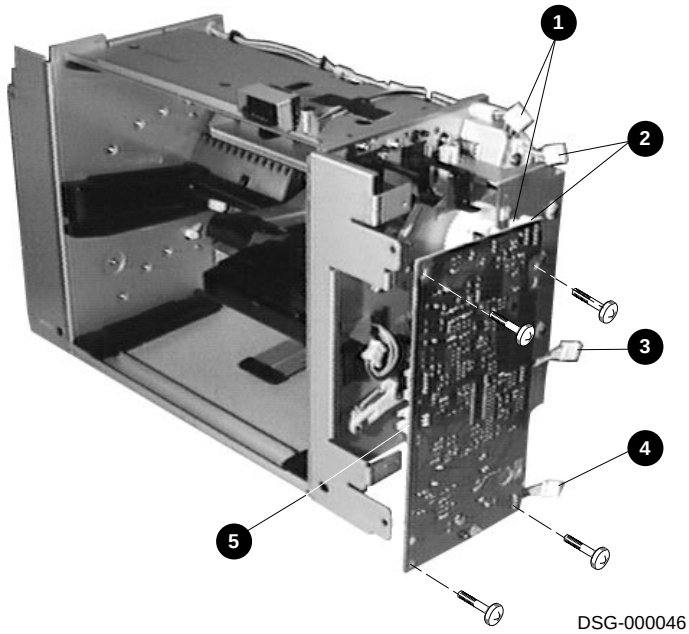
DSG-000045

9.14 Board, Pickup Unit and Controller

5. Disconnect the following:

	Unplug	It connects to
❶	5-pin J306	Envelope feeder connector
❷	4-pin J302	Upper and lower elevator solenoids
❸	3-pin J303	Upper size switches
❹	4-pin J304	Lower size switches
❺	6-pin J305	Pickup motor

6. Remove the four screws.
7. Extract the pickup controller board from the alignment pins and remove it.

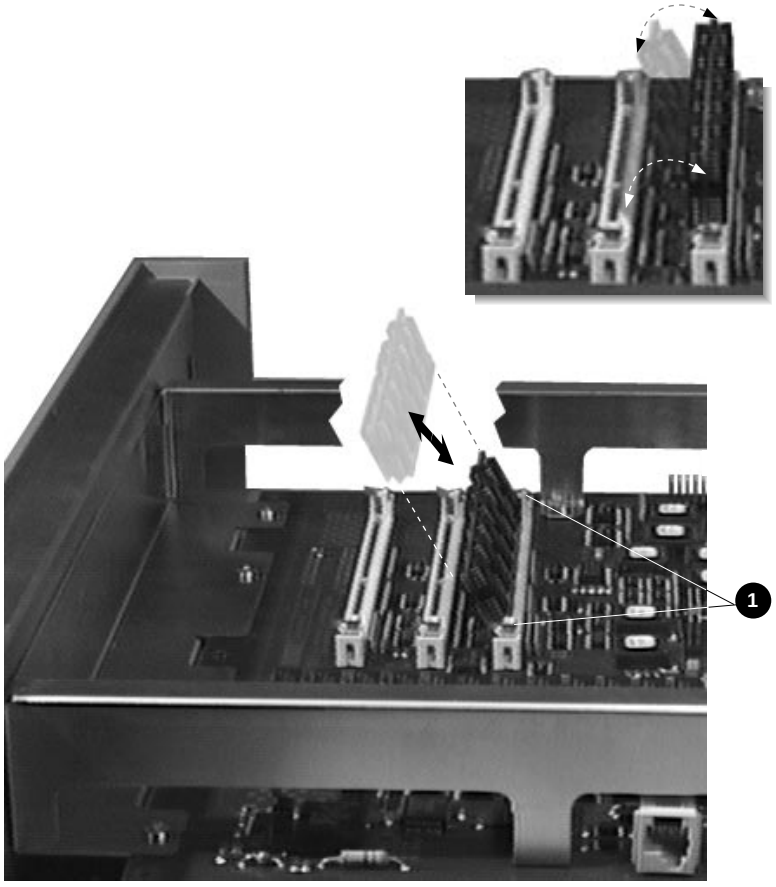


9.15 Board, SIMM

Use the following procedure to remove and replace the single inline memory module (SIMM) from the controller board:

Caution: *Use the standard antistatic equipment and procedures when you handle the sensitive electronic boards.*

1. Remove the controller board, as shown in Section 9.7.
2. Press the release pins ❶ until the SIMM springs forward in the mounting socket.
3. Lift and remove the SIMM.



DSG-000133

9.15 Board, SIMM

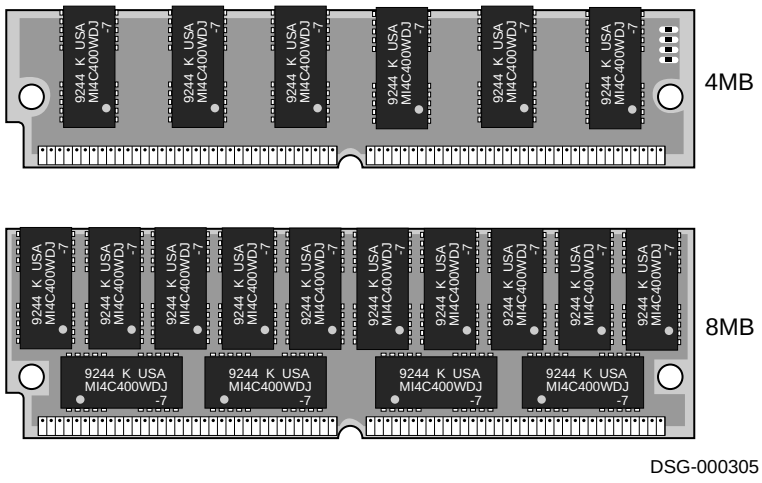
9.15.1 Replacing the SIMMs

The SIMM sockets are labeled J14, J15, J17.

Always install a a new SIMM in the lowest numbered empty socket. Never install a 4-Mb SIMM in a lower numbered socket than a 8-Mb SIMM. For example, if two SIMMs (one 4- and one 8-Mb) SIMMs are to be installed, place the the 8-Mb SIMM in socket J14 and the 4-Mb SIMM in socket J15. Socket J17 is empty.

Figure 9–1 shows the 4- and 8-Mb SIMMs that expand the available memory in the PrintServer 17 printer.

Figure 9–1 4- and 8-Mb SIMMs

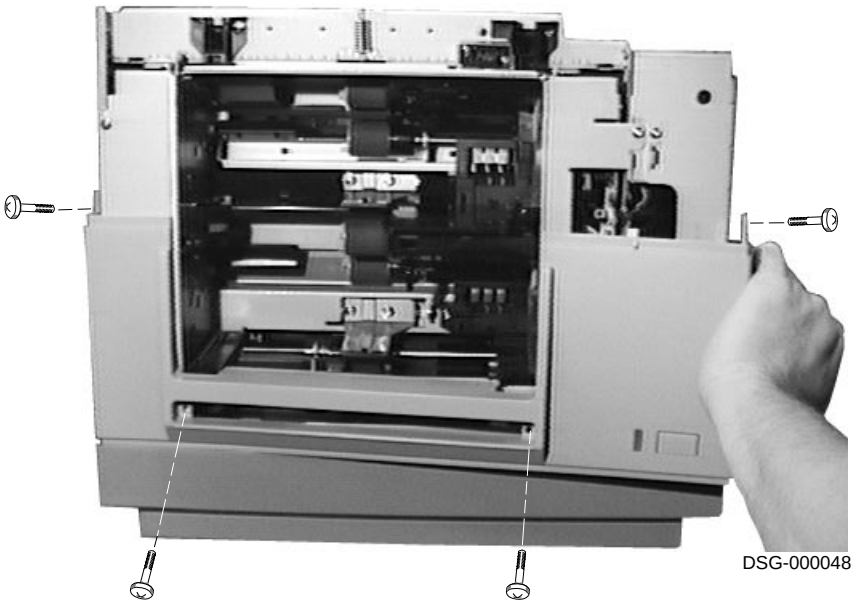


DSG-000305

9.16 Cover, Lower Front

Use the following procedure to remove and replace the lower front cover:

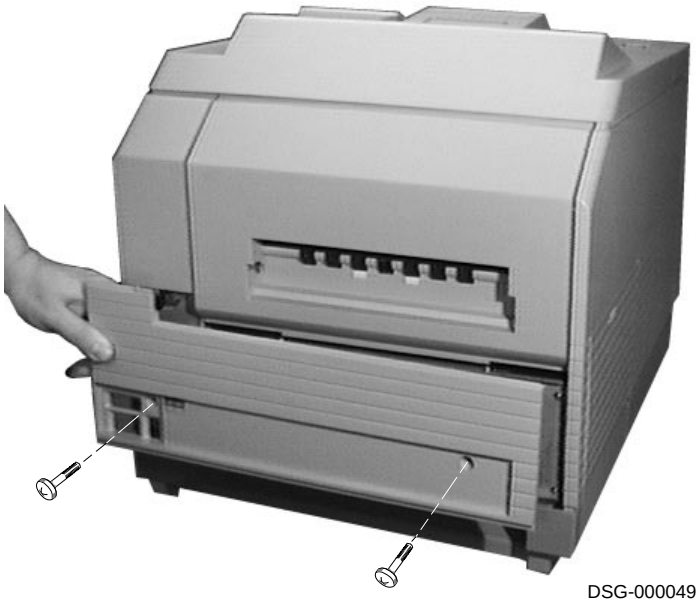
1. Remove the upper front cover, as shown in Section 9.20.
2. Remove the two screws on each side of the refeed slot.
3. Remove the left and right side screws.
4. Pull one side out to disengage the plastic clips and remove the lower front cover.



9.17 Cover, Rear

Use the following procedure to remove and replace the rear cover:

1. Unplug and remove the line cord.
2. Remove the two screws that hold the rear cover to the printer.
3. Remove the rear cover.



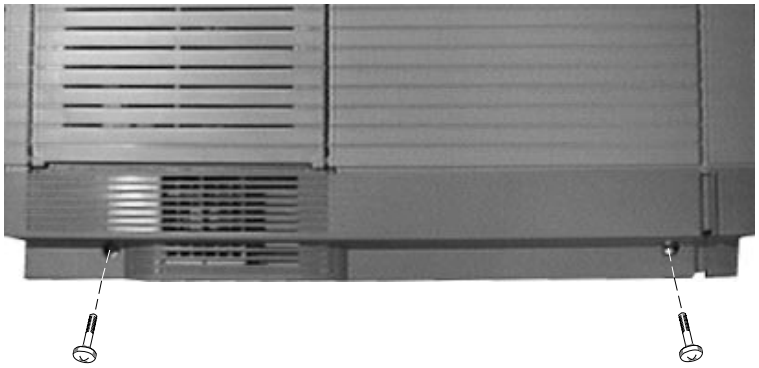
DSG-000049

9.18 Covers, Left-Side Lower or Upper

Use the following procedure to remove and replace the left cover or lower left cover:

Left-Side Lower Cover:

1. Remove the two screws that hold the left lower cover to the printer.
2. Remove the left lower cover.

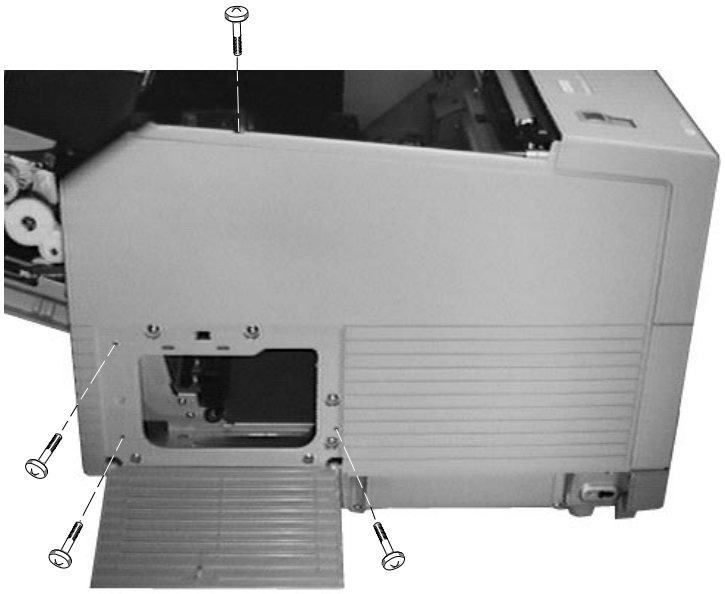


DSG-000050

9.18 Covers, Left-Side Lower or Upper

Left-Side Upper Cover:

1. Open the top door.
2. Remove the left lower cover, as shown in the preceding section.
3. Remove the four screws that hold the left cover to the printer.
4. Lift the rear cover upwards to disengage the plastic clips from the front cover.
5. Remove the left cover.



DSG-000051

9.19 Covers, Right-Side Lower, Upper or Metal Shield

Use the following procedure to remove and replace the right-side covers and shield. You must remove the lower cover before the upper cover can be removed. The metal shield is under the upper cover.

Warning: *Electrocution or a serious shock hazard exists if you attempt to remove, replace, or service the electrical components of this printer when only the front power switch is turned off.*

Before you remove the covers or right-side metal panels to service the printer, unplug the AC power line cord.

1. Remove the two screws that hold the right lower cover to the printer.
2. Remove the right lower cover.

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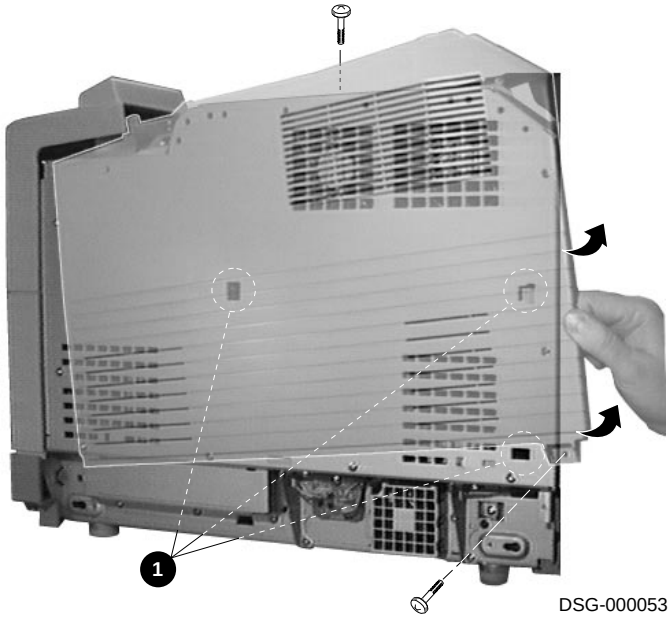
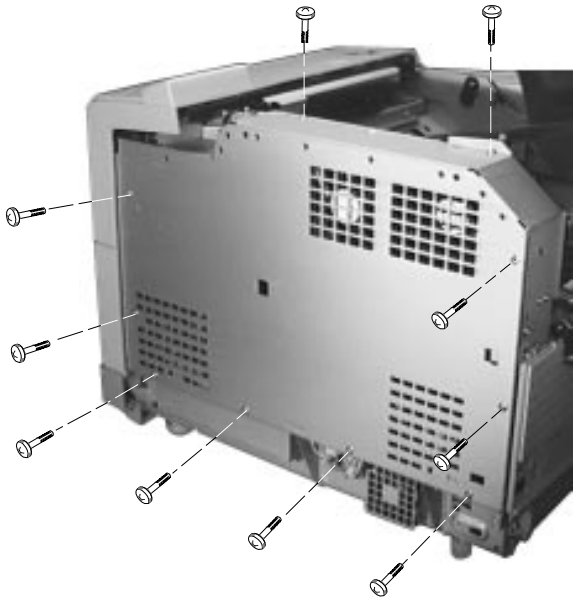
9.19 Covers, Right-Side Lower, Upper or Metal Shield

3. Open the top door.
4. Remove the two screws that hold the right-side cover to the printer.
5. Lift the rear of the cover upwards to disengage the plastic clips ❶ from the metal shield.
6. Remove the right side cover.



7. Remove the 10 screws that hold the metal cover to the printer.
8. Lift and remove the metal shield.



DSG-000054

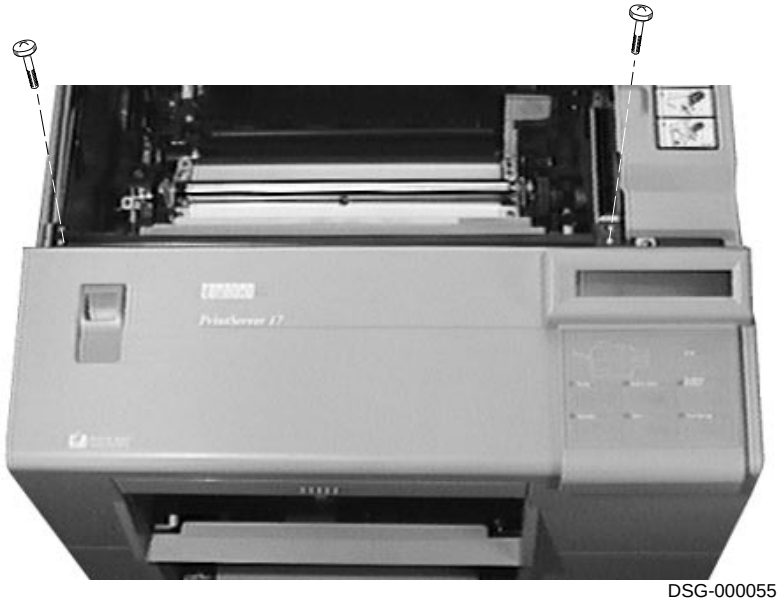
9.20 Covers, Upper Front

Use the following procedure to remove and replace the upper front covers:

Caution: *Remove all screws before attempting to remove the cover.*

1. Open the top door.
2. Remove the two screws that hold the metal bracket to the chassis.

   Caution: *After replacing the upper front cover and before you replace the two screws, make sure that the top door release latch is working properly, as shown in Section 9.20.1. If the top door is closed and the latch fails to open it, replace the printer.*



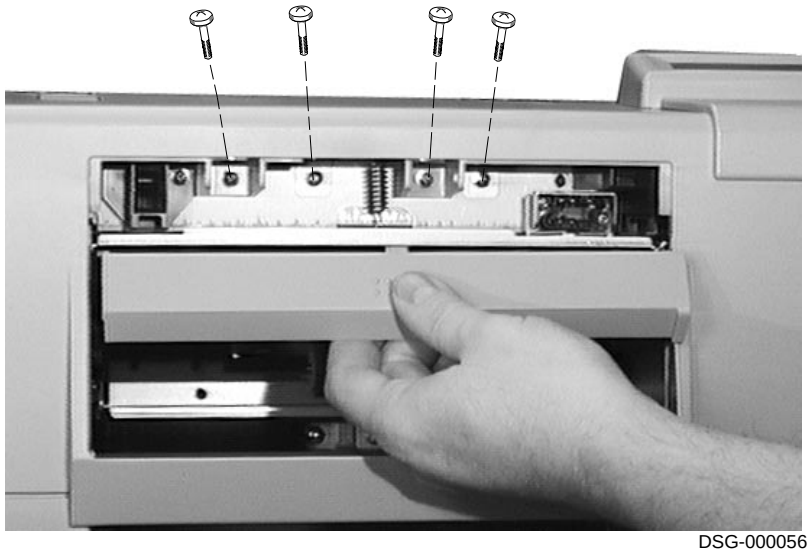
DSG-000055

3. If an envelope feeder is installed, remove it as shown in Section 9.24.

   Otherwise, push against the dot pattern, pull down, and remove the envelope feeder cover.

4. Remove the four screws that hold the cover to the chassis.

   Caution: *Make sure to remove all four screws to prevent damaging the soft metal grounding straps when the cover is removed.*



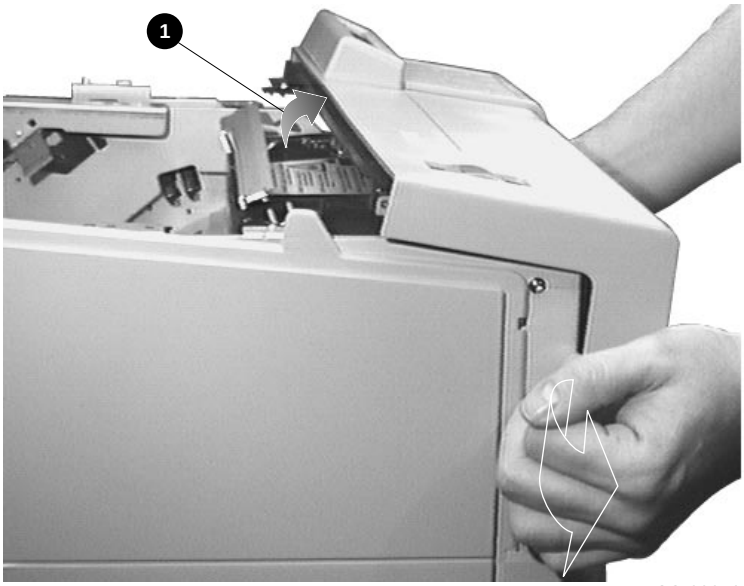
DSG-000056

9.20 Covers, Upper Front

5. Use the following steps to remove the cover:
   a. Lift up and disengage the top left side ❶ of the cover.

      When replacing the upper front cover on the chassis, make sure the door latch is connected as shown in Section 9.20.1.

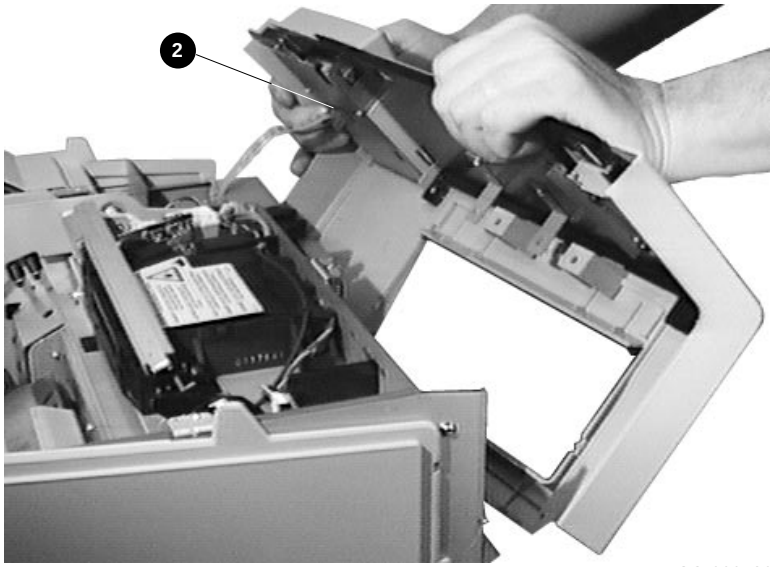
   b. Slide your hand down and pry out the left side until the snaps release.



DSG-000169

c. Lift and wiggle the cover to completely disengage the plastic snaps.

d. Unplug the 10-pin cable ❷ from the operator panel and remove the upper front cover.



DSG-000130

9.20 Covers, Upper Front

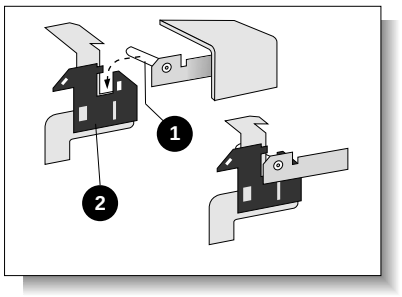
9.20.1 Replacing the Upper Front Cover

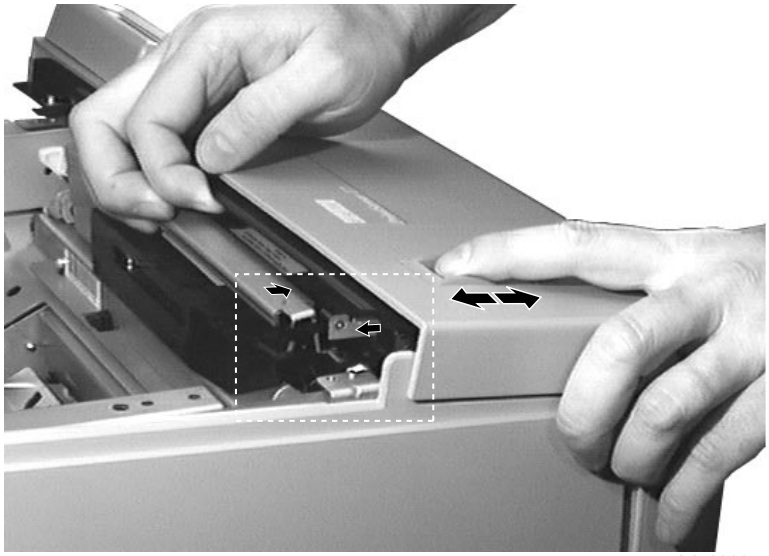
To replace the upper front cover, reverse the removal procedure shown in Section 9.20.1, but make sure to perform the following procedure before closing the top door of the printer:

Caution: *Before you close the top door, make sure the release latch is working. If the top door is closed on a inoperative latch, replace the printer.*

1. As you install the upper front cover on the chassis, make sure the door latch linkage pin ❶ is properly seated in the saddle ❷.
2. Make sure that when you actuate the door release, the latch works with it.

Caution: *If the top door is closed and the latch fails to open it, replace the printer.*



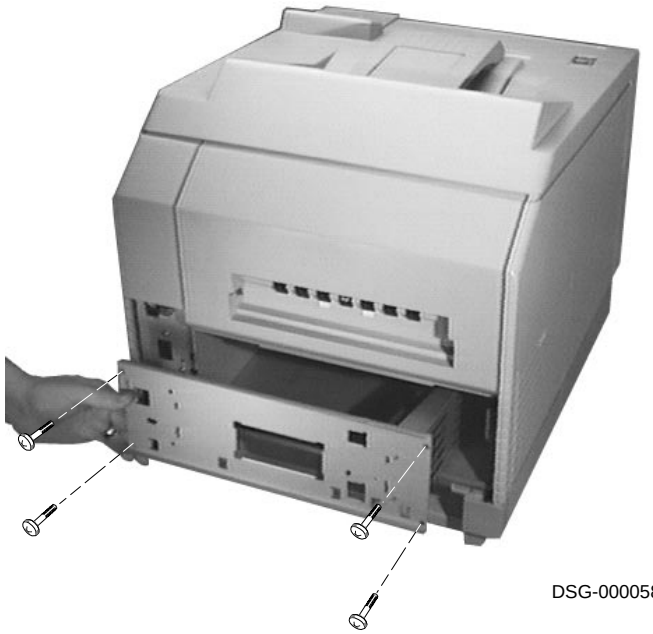


DSG-000057

9.21 Duplex Unit or Blockoff Plates

Use the following procedure to remove and replace the optional duplex unit or stiffener plate from the PrintServer 17 printer. If the printer is to operate as a simplex unit, install the blockoff plates before operation.

1. Remove the rear cover, as shown in Section 9.17.
2. If you are not removing or replacing the blockoff plates, go to the step 3. Otherwise do the following:
   a. Remove the four screws holding the blockoff plate to the printer.
   b. Remove the blockoff plate.



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9.21 Duplex Unit or Blockoff Plates

c. Loosen the screw that holds the front blockoff plate. Slide the screw to the left.

d. Lift and remove the front blockoff plate.

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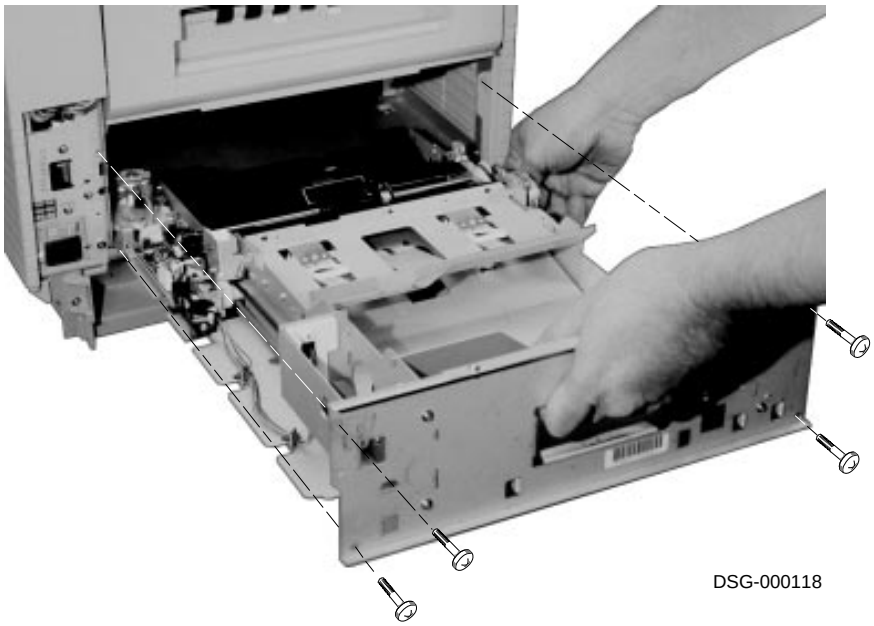
3. Remove the four screws that hold the duplex unit to the printer.
4. Slide out the duplex unit to the first stop.
5. Lift the unit and slide it out of the printer.



9.22 EP-N Cartridge

Use the following procedure to remove and replace the EP-N cartridge:

Caution: *Prolonged exposure to light can damage the electrophotographic surface of the print.*

1. Open the top door.
2. Grasp the EP-N cartridge, as shown, and remove it from the top door.
3. When installing a new EP-N cartridge, it is a good habit to shake or agitate it. This will evenly distribute the toner and brake up any lumps that might have formed during storage. Instructions for shaking the EP-N are embossed on the cartridge top. This shaking is also performed to fix certain image defects caused by lumping toner.

DSG-000059

9.23 EP-N Frame and Door Mirror

Use the following procedure to remove and replace the frame that holds the EP-N cartridge and the door mirror from the top door:

1. Remove the EP-N cartridge, as shown in Section 9.22.
2. Remove the screw that holds top door rail brace.

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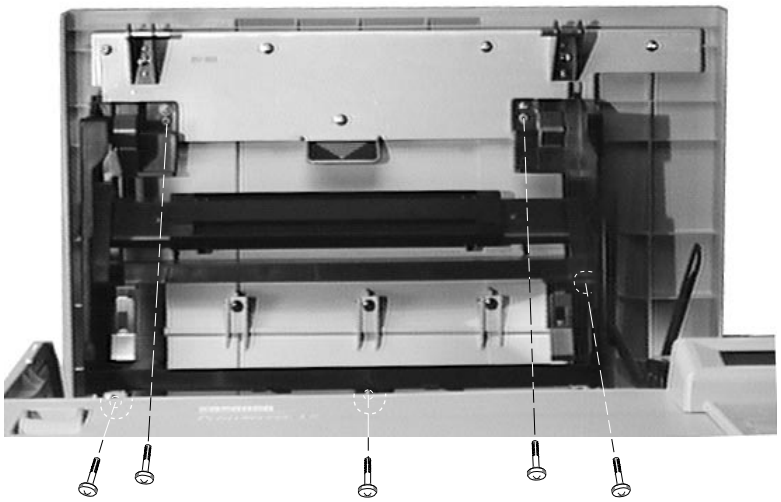
9.23 EP-N Frame and Door Mirror

3. Remove the five screws that hold the frame to the top door.



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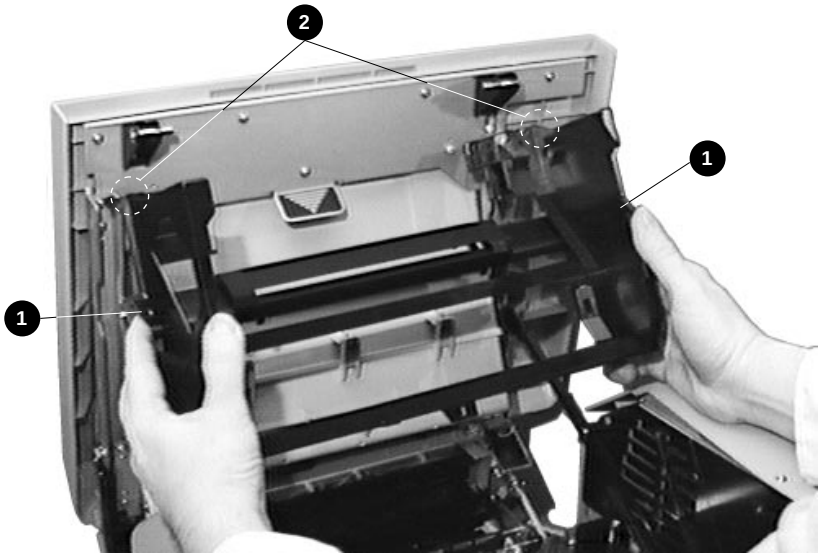
4. Hold each end of the mirror bracket ❶ while you swing up the EP-N frame.
5. To remove the frame, lift and disengage the front hooks ❷ from the top door.



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9.23 EP-N Frame and Door Mirror

6. Disengage the mirror bracket from the posts it rides on in the frame and remove the mirror bracket.

   After you replace the mirror bracket, make sure each end of the bracket moves freely on the springs. If the bracket sticks or binds, it may be installed backwards (end for end) or the frame might be warped.

   Caution: *Do not clean the mirror. Replace the mirror if it is dirty or damaged.*

DSG-000063

9.24 Envelope Feeder

Use the following procedure to remove and replace the optional envelope feeder:

Caution: *Turn power off before you install the envelope feeder.*

1. Press in on the plastic dots ❶ and pull the cover down.
2. Remove the upper cassette.
3. Remove the single sheet feeding cassette cover.

DSG-000065

9.24 Envelope Feeder

4. Install the special envelope feeder cover on the cassette ❷.
5. Install the cassette in the upper slot.
6. Insert the alignment dowels into the receptors, and push the feeder completely in.

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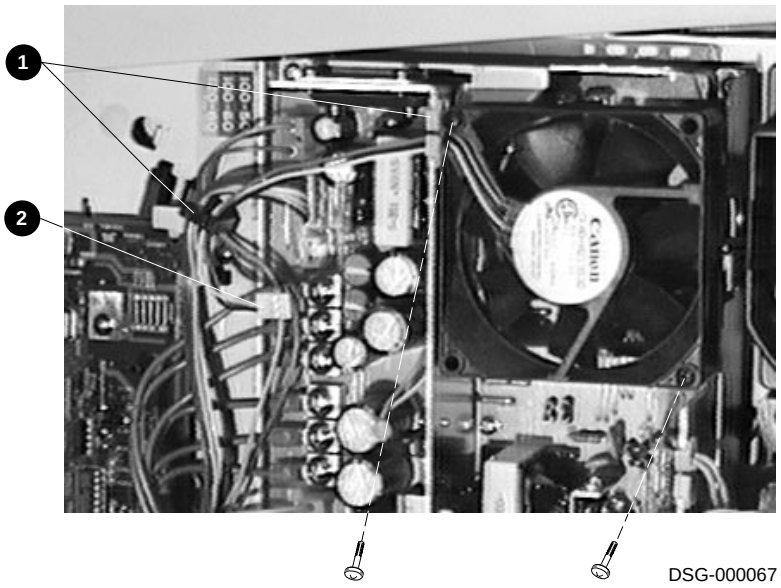
9.25 Fans, LVPSA or Main

Use the following procedures to remove and replace the main or the LVPSA fans:

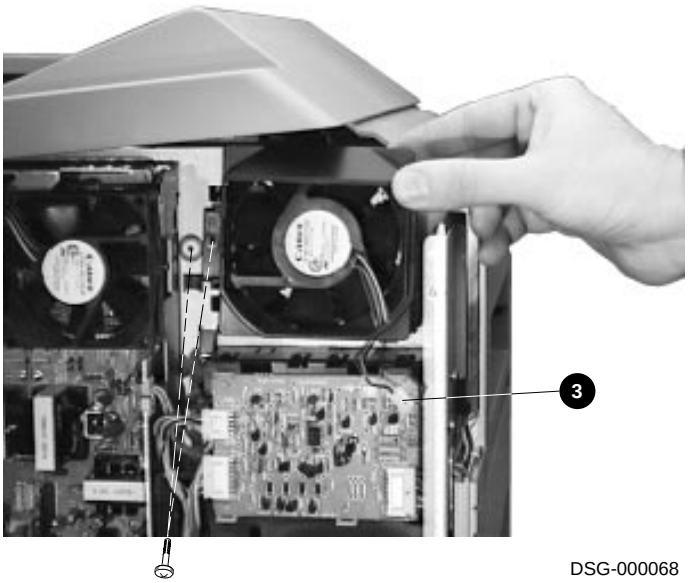
Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the right-side lower and upper covers and metal shield, as shown in Section 9.19.
   - **Removing and replacing the LVPSA fan**
     a. Unplug the 3-pin connector ❶ from J7 on the LVPSA board.
     b. Remove the two screws that hold the fan to the LVPSA.
     c. Remove the lead in cable from the two wire restraints ❷.
     d. Remove the LVPSA fan.



9.25 Fans, LVPSA or Main

- **Removing and replacing the main fan:**
  a. Unplug the 3-pin connector ❸ from J204 on the DC drive board.
  b. Remove the screw that holds the fan shroud to the printer and remove the shroud.
  c. Press in the clips and remove the main fan from the shroud.



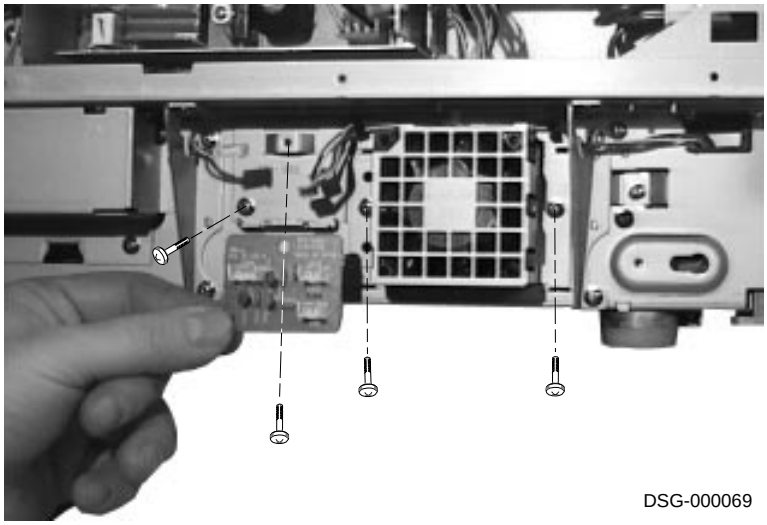
DSG-000068

9.26 Fans, Control Board and Controller

Use the following procedure to remove and replace the right-side controller fan or control board. The left and right controller fans cool the cavity that houses the controller board of the PrintServer 17 printer. See Section 9.26.1 for removing and replacing the left-side fan.

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the right-side lower cover, as shown in Section 9.19.
2. Disconnect the three control board connectors, J3008, J3010, and 3009. When replacing the control board, no harm is done if you switch the J3010 and J3009 plugs.
3. Remove the three screws and remove the right fan and bracket.
4. Use a small screwdriver to slightly bend back the soft metal restraint tabs.
5. Remove the right-side bracket and fan. Before reinstalling the fan, bend the tabs inward; then press the fan into the bracket until it snaps securely into place.



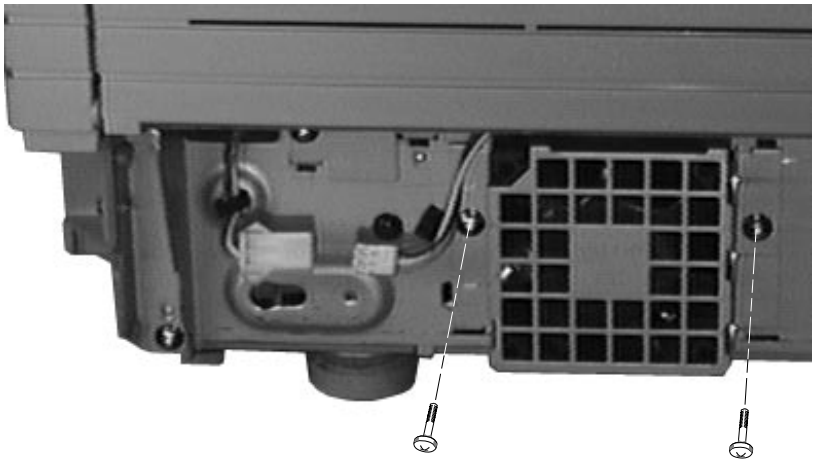
DSG-000069

9.26 Fans, Control Board and Controller

9.26.1 Left Controller Fan

Use the following procedure to remove and replace the left controller fan:

1. Remove the left lower cover, as shown in Section 9.18.
2. Remove the two screws that hold the fan bracket to the printer.
3. Remove the left-side bracket and fan. Before reinstalling the fan, bend the tabs inward; then press the fan into the bracket until it snaps securely into place.



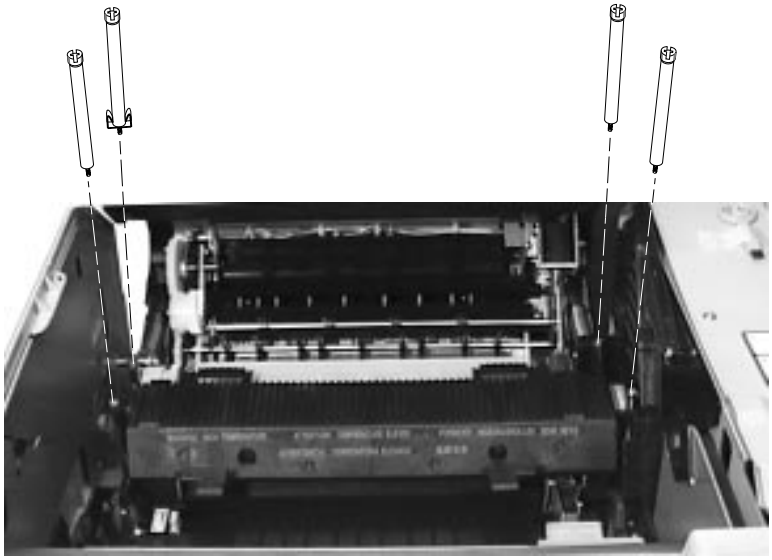
DSG-000070

9.27 Fusing Unit

Use the following procedure to remove and replace the fusing unit:

Warning: *Turn power off and allow the fusing unit to cool before you handle it. The fusing unit is hot and might cause a minor burn.*

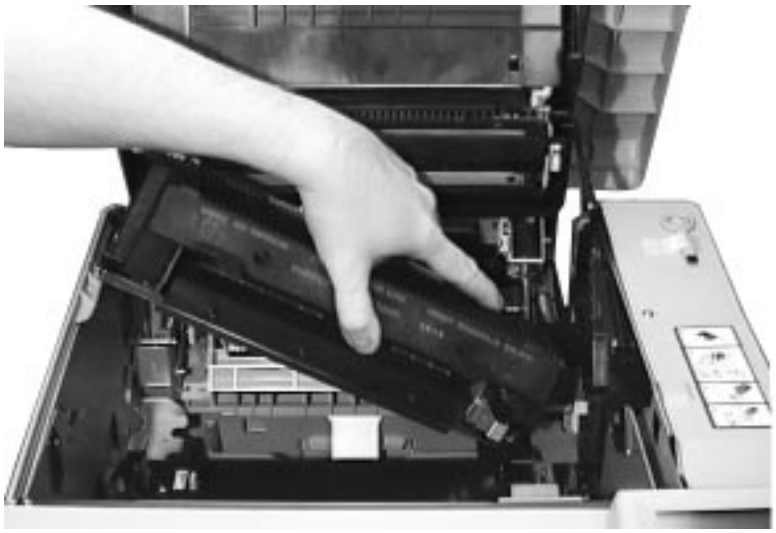
1. Open the top door of the printer.
2. Use a flat head screw driver to loosen the four bolts that hold the fusing unit to the floor of the printer.



DSG-000073

9.27 Fusing Unit

3. Disconnect the fusing unit from the AC drive board by sliding it left.
4. Lift and remove the fusing unit.



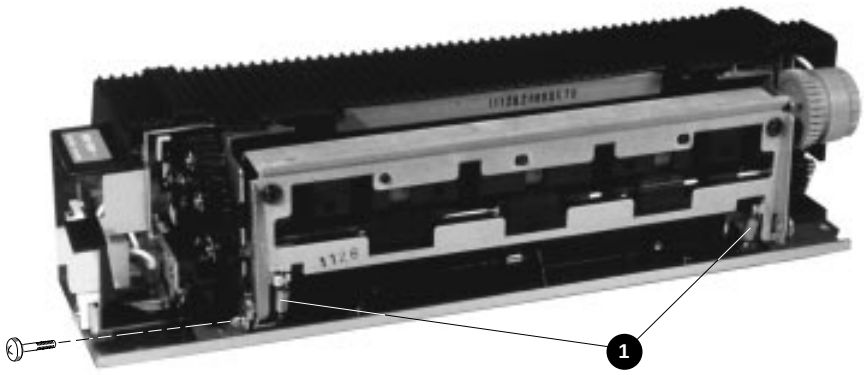
DSG-000075

9.27.1 Fusing Exit Assembly

Use the following procedure to remove and replace the fusing exit assembly from the fusing unit:

Warning: *Turn power off and allow the fusing unit to cool before you handle it. The fusing unit is hot and might cause a minor burn.*

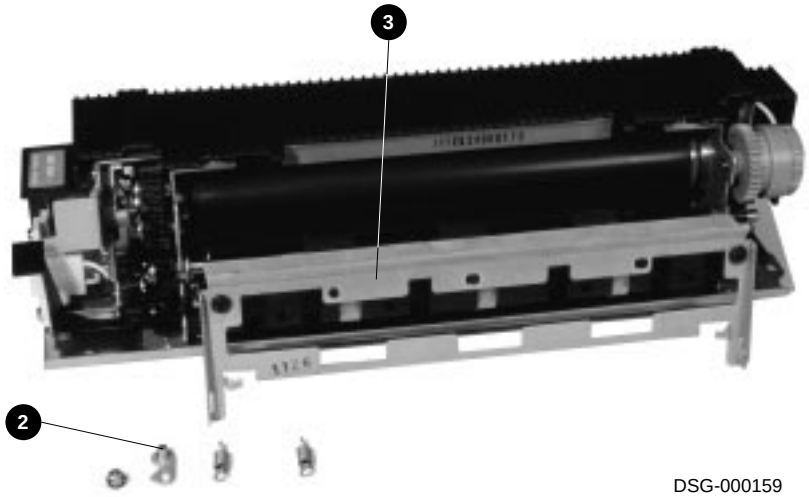
1. Remove the fusing unit, as shown in Section 9.27.1.
2. Use needlenose pliers to remove the two coil springs ❶.
3. Remove the screw that holds the hinge-pin plate.



DSG-000158

9.27 Fusing Unit

4. Remove the hinge pin plate ❷.
5. Remove the exit assembly ❸.

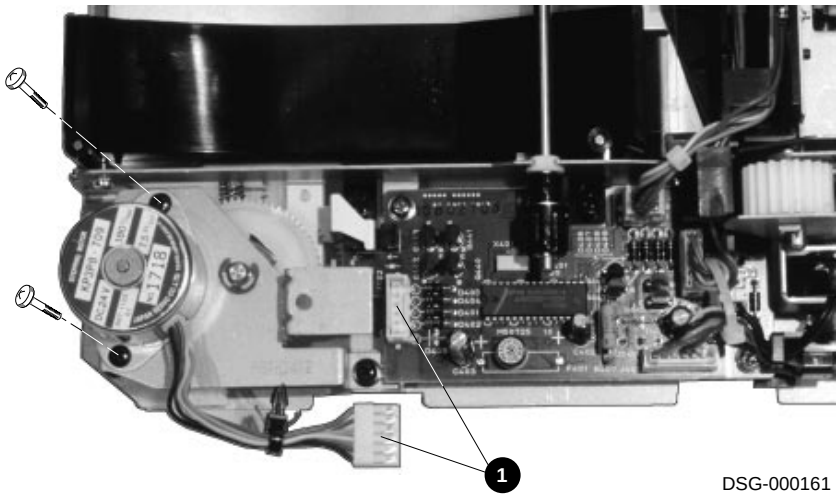


DSG-000159

9.28 Motor, Centering Guides

Use the following procedure to remove and replace the motor that drives the centering guides of the duplex unit:

1. Remove the duplex unit, as shown in Section 9.21.
2. Unplug J402 ❶ from the duplex controller board.
3. Remove the clamp that holds the motor lead-in wires to the frame.
4. Remove the two screws that hold the motor to the frame, and remove the motor.



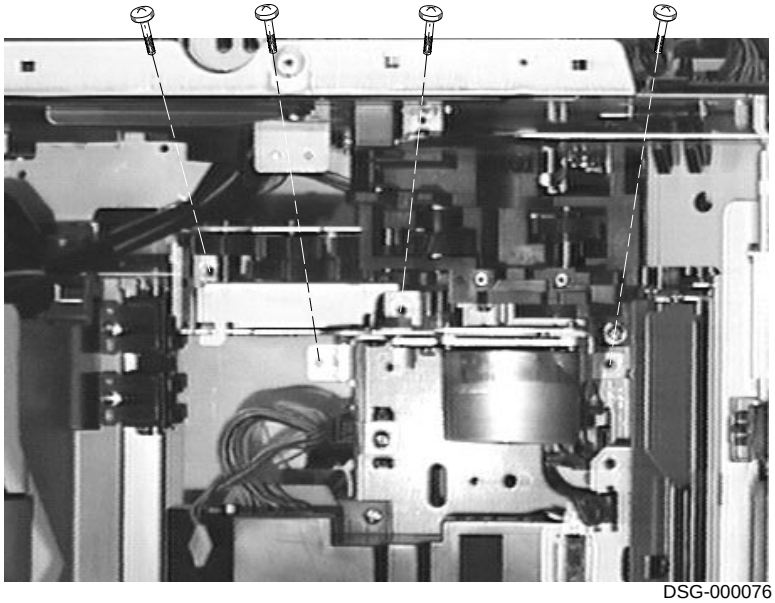
DSG-000161

9.29 Motor, Main Unit

Use the following procedure to remove and replace the main motor unit and main motor:

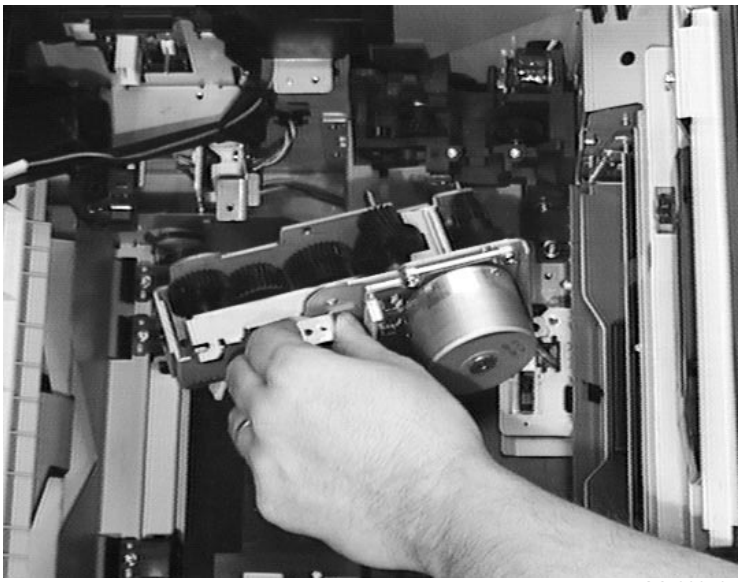
Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. To gain access to the unit, you must remove the main motor drive board and the other components detailed in step 1 of Section 9.13.
2. Remove the four screws that hold the unit to the printer.



DSG-000076

3. Wiggle the main motor unit to disengage it.
4. Remove the main motor unit.

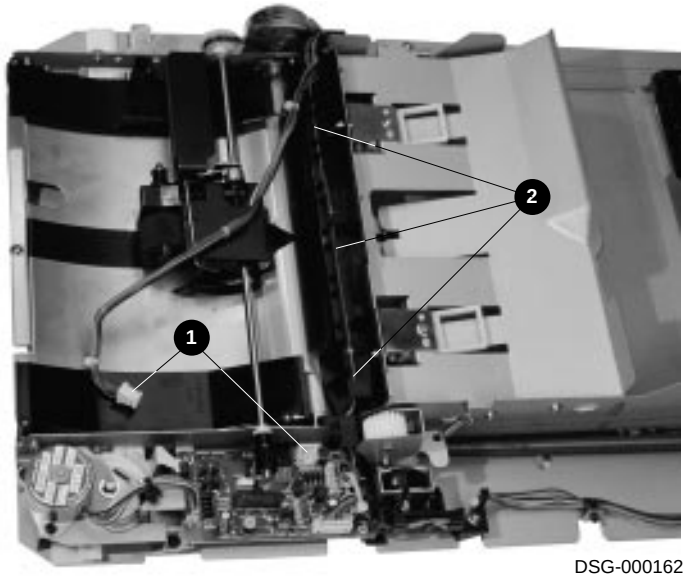


DSG-000164

9.30 Motor, Switchback Roller

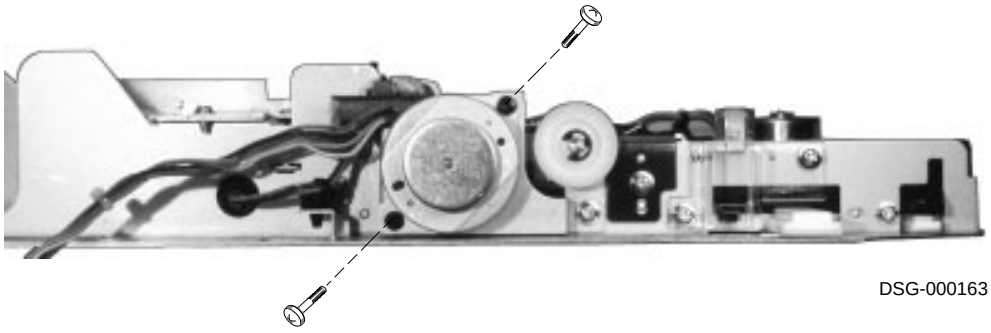
Use the following procedure to remove and replace the motor that drives the switchback roller from the duplex unit:

1. Remove the duplex unit, as shown in Section 9.21.
2. Unplug J403 ❶ from the duplex controller board.
3. Remove the cable from the black plastic raceway ❷. If you find the cable is restrained by plastic tie-wraps, carefully cut the tie-wraps to remove the cable.



DSG-000162

4. Remove the two screws that hold the switchback motor to the frame and remove the motor.



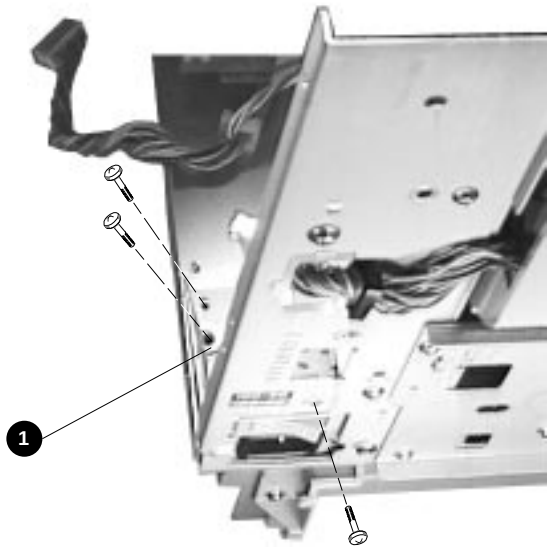
DSG-000163

9.31 Main Switch Assembly

Use the following procedure to remove and replace the main switch assembly:

Warning: *Unplug the AC power line before you remove, replace, or service this component.*

1. Remove the following parts:
   a. The right-side lower and upper covers and metal shield, as shown in Section 9.19.
   b. Rear cover, as shown in Section 9.17.
   c. Fusing unit, as shown in Section 9.27.
   d. DC drive board, as shown in Section 9.10.
   e. AC drive board, as shown in Section 9.5.
2. Remove the screws that hold the assembly to the rear cover and to the floor of the printer.
3. Remove the switch assembly.
4. When you replace the switch assembly, make sure the green ground wire ❶ is firmly tightened under the screw.

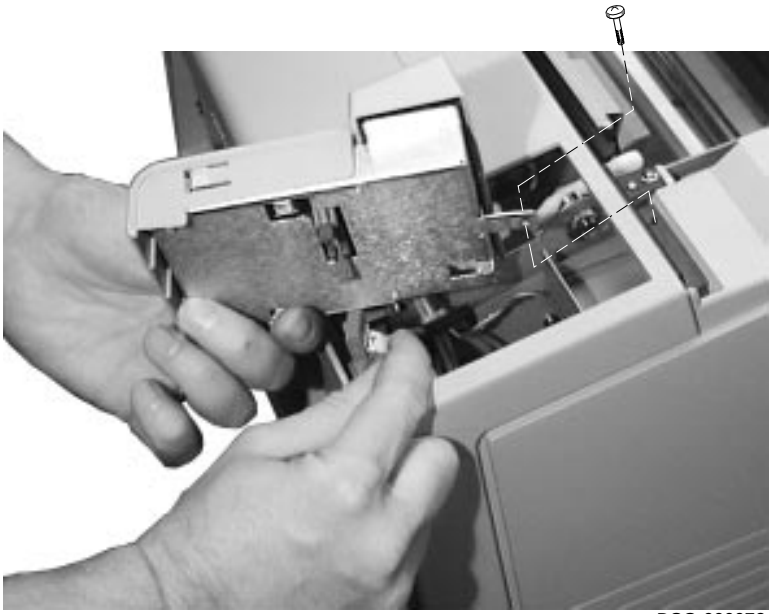


DSG-000077

9.32 Panel, Operator

Use the following procedure to remove and replace the operator panel:

1. Remove the screw that holds the operator panel to the printer.
2. Slide the panel out to gain access to the underside.
3. Unplug the 10-pin connector and remove the operator panel.



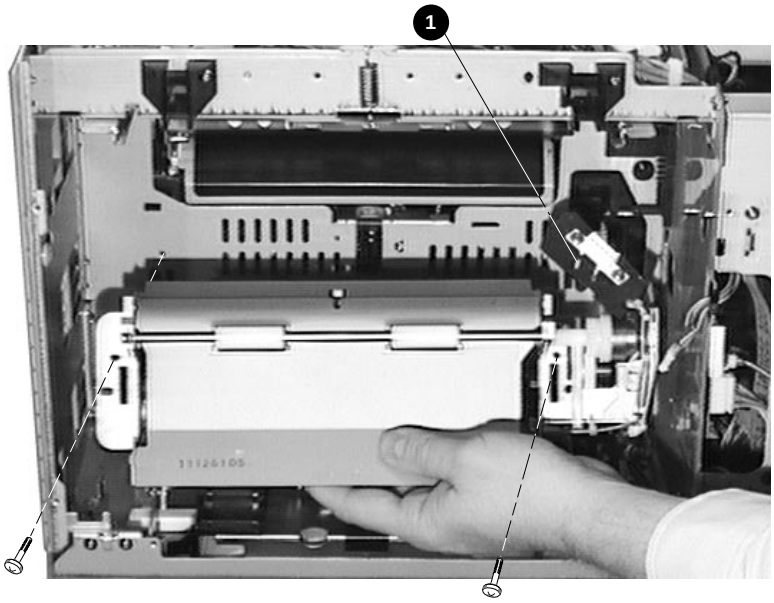
DSG-000078

9.33 Refeed Unit and Sensor

Use the following procedure to remove and replace the refeed unit or the refeed sensor:

1. Remove the pickup unit, as shown in Section 9.14.
2. Pinch and release the plastic latch ❶ that holds the refeed connector.
3. Remove the refeed connector.
4. Remove the two screws that hold the refeed unit to the printer and remove the unit.

If you intend to remove and replace the refeed sensor, turn to the next page.

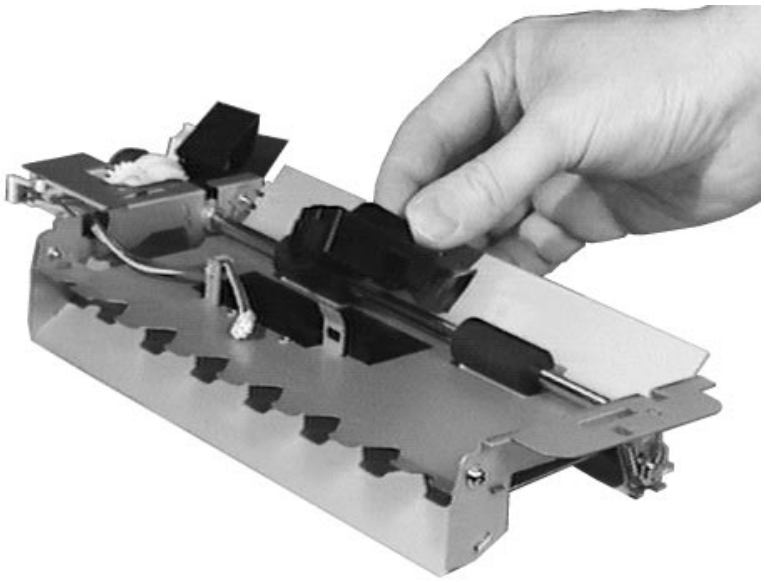


DSG-000079

9.33 Refeed Unit and Sensor

Refeed Sensor

1. Place the refeed unit on a work surface.
2. Unplug the 3-pin connector from the sensor.
3. Gently press on the metal tab until the sensor housing can be lifted up. When replacing the housing, the tab might require a very slight bend to firmly hold the sensor housing.
4. Remove the sensor housing.



DSG-000080

9.33 Refeed Unit and Sensor

5. Push back the two clips and wiggle the sensor up and out of the housing.

DSG-000081

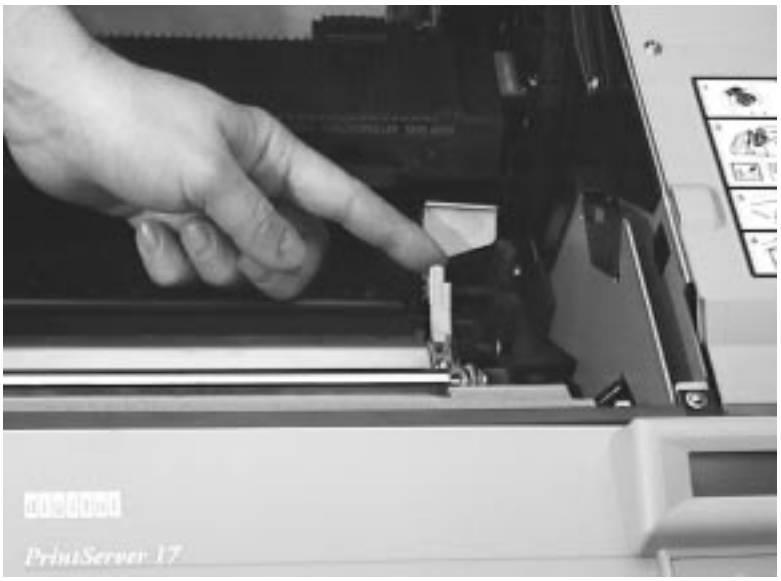
9.34 Roller, Registration Unit and Transfer

Use the following procedures to remove and replace the transfer roller or the registration rollers unit:

Caution: *Do not touch the surface of the transfer roller. The performance or lifespan of the roller might be degraded by the oils or salts commonly found on fingers.*

Transfer roller:

1. Open the top door.
2. Remove the blue restraint clip.



DSG-000082

9.34 Roller, Registration Unit and Transfer

3. Hold the transfer roller's left-end and slide the bearing end to the right.
4. Carefully lift and remove the transfer roller by its ends.

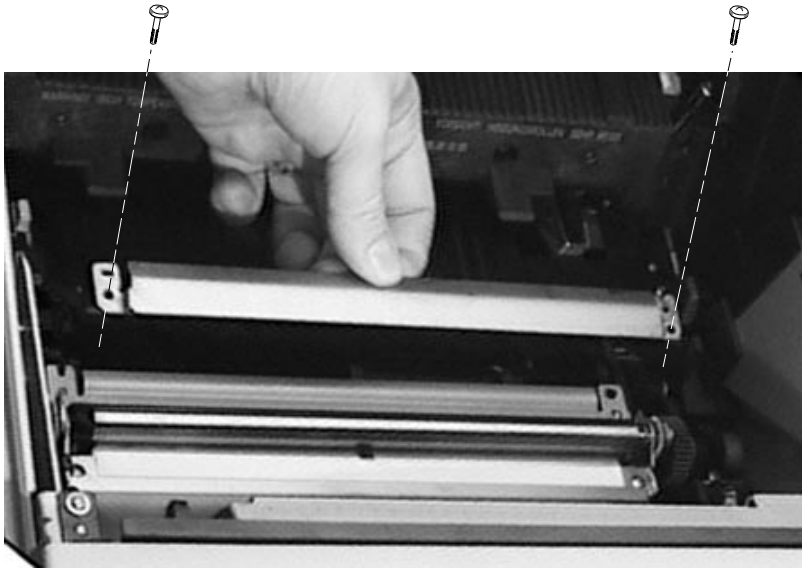
Continue to remove the registration rollers assembly.

DSG-000083

9.34 Roller, Registration Unit and Transfer

Registration Roller Unit

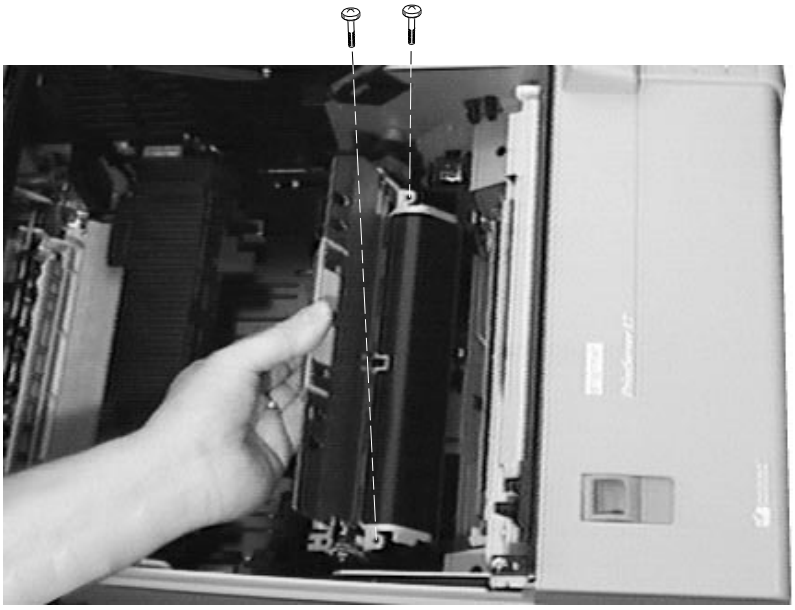
1. Remove the two screws that hold the transfer guide to the registration roller unit.
2. Remove the transfer guide. When you install the transfer guide, do not confuse the alignment and screw holes. One alignment hole is oblong and must mount over the plastic alignment post.



DSG-000084

9.34 Roller, Registration Unit and Transfer

3. Lift the upper guide plate and remove the two screws that hold the registration rollers to the main blocks.
4. Lift the lower guide plate and lift and remove the registration roller unit.



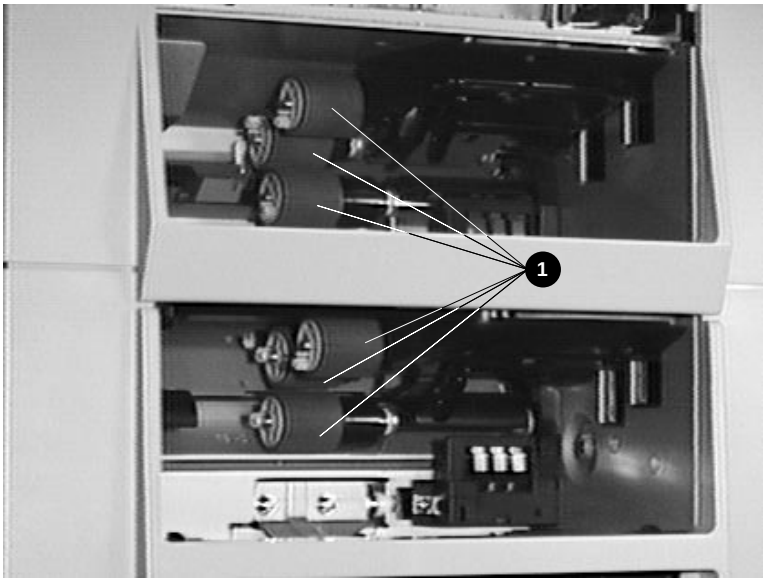
DSG-000085

9.35 Rollers, Upper and Lower Cassette Pickup

Use the following procedure to remove and replace the paper feed rollers from the upper or lower cassette cavity:

1. Remove the upper and lower cassettes.

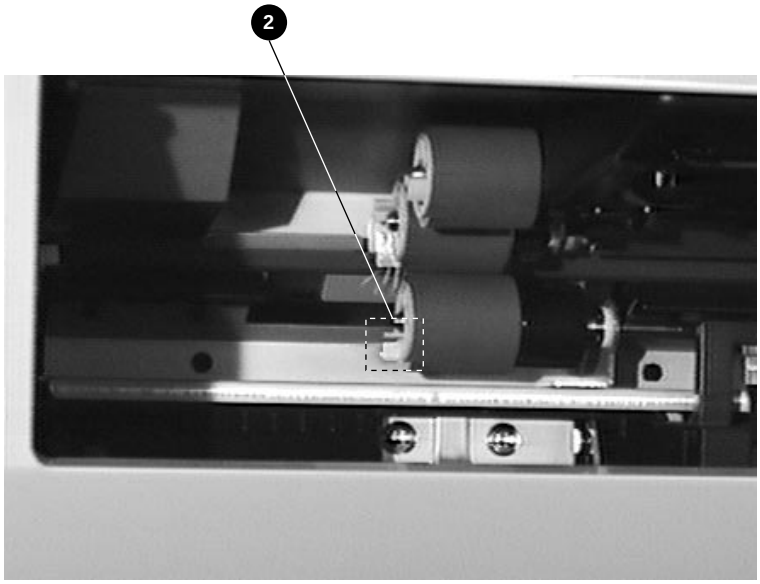
   Caution: *Do not touch the surface of the paper feed rollers* ❶*. The performance or life span of the roller might be degraded by the oils or salts commonly found on fingers.*



DSG-000086

9.35 Rollers, Upper and Lower Cassette Pickup

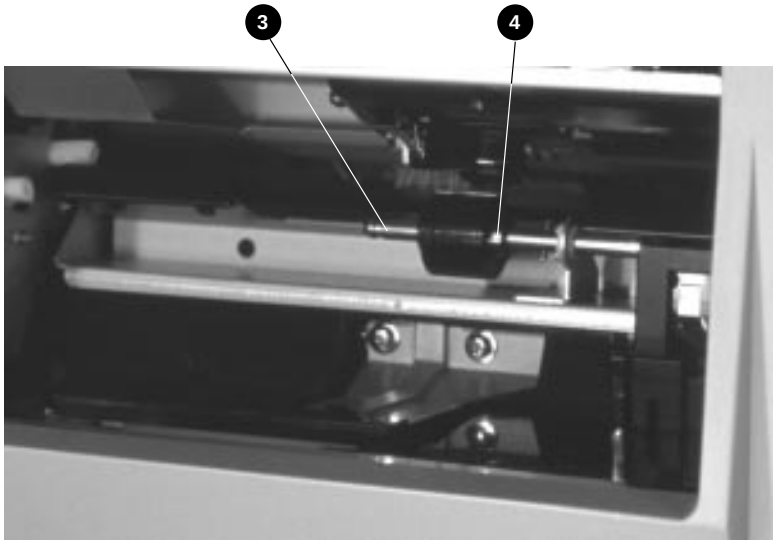
2. Pinch together the release clip ❷ and slide the roller off the shaft.



DSG-000087

9.35 Rollers, Upper and Lower Cassette Pickup

Note: *Normally, the black spring clutch should not be removed from the separation roller shaft. When mounted correctly, the plastic ❸ engages the pickup roller and the metal end ❹ engages a pin on the drive shaft.*



DSG-000088

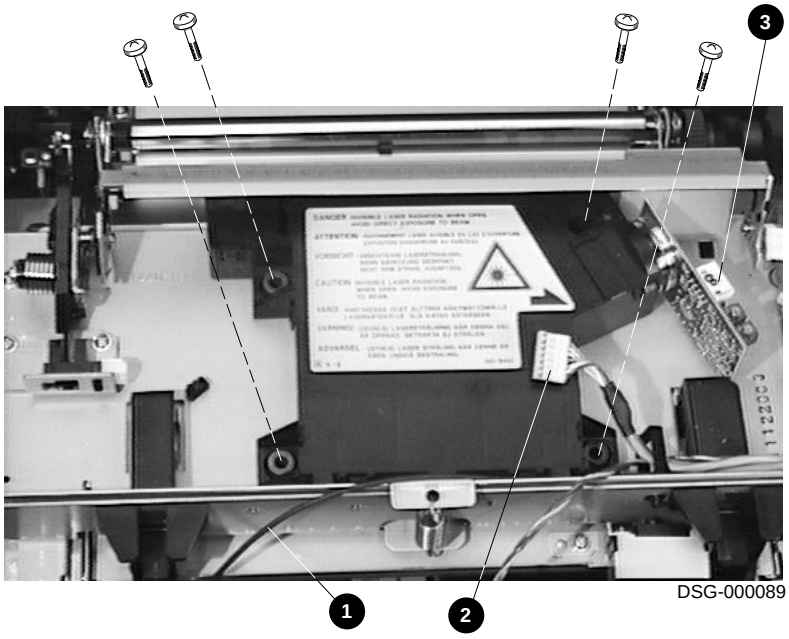
9.36 Scanner Unit

Use the following procedure to remove and replace the scanner unit:

1. Remove the upper front cover, as shown in Section 9.20.
2. Unplug the following:

   ❶ Fiber optic beam detect cable
   ❷ 7-pin connector that operates the scanner motor
   ❸ 5-pin connector the operates the laser

3. Remove the four screws that hold the scanner unit to the printer.
4. Lift and disengage the scanner unit from the alignment pins.
5. Wiggle the scanner unit out from underneath the door latch bar.



DSG-000089

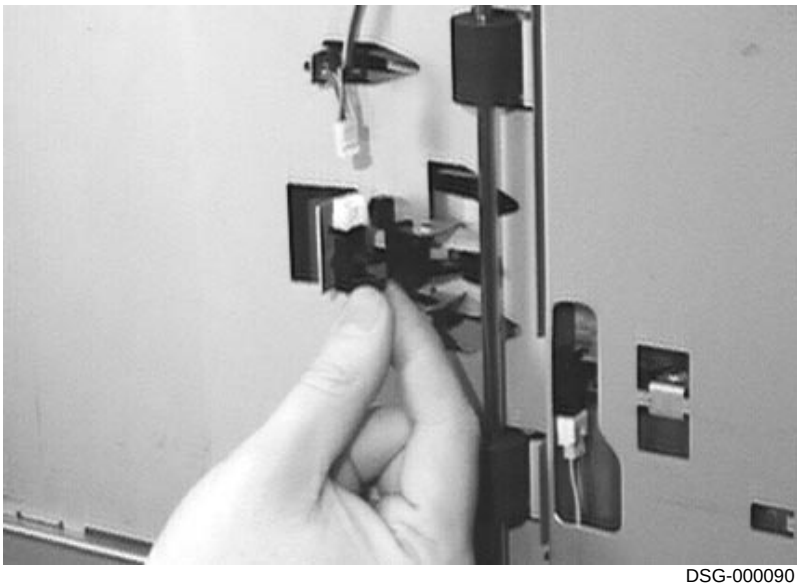
9.37 Sensors, Duplex Feed or Switchback

Use the following procedure to remove and replace the switchback or the feed sensor from the optional duplex unit:

1. Remove the following parts:
   a. Rear cover, as shown in Section 9.17.
   b. Duplex unit, as shown in Section 9.21

Feed sensor:

1. Unplug the 3-pin connector from the feed sensor.
2. Pinch the three clips and work the sensor off the bracket. Do not allow the sharp metal to cut the soft plastic clips.
3. Remove the duplex feed sensors.

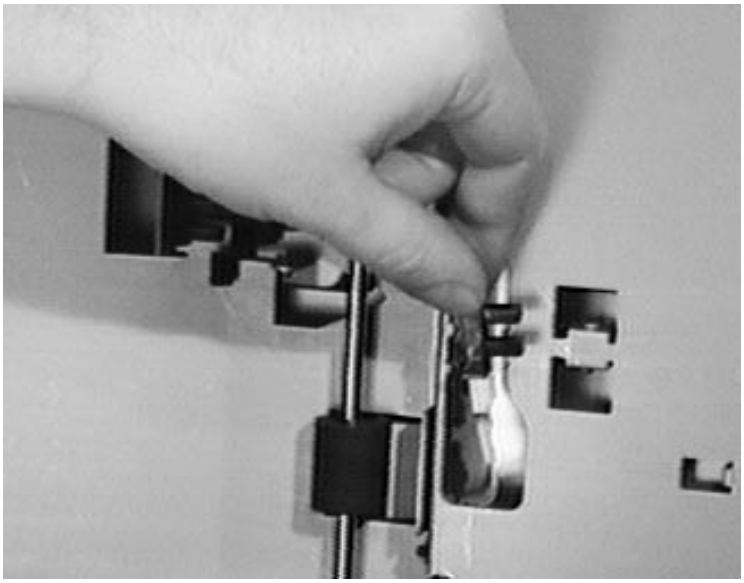


DSG-000090

9.37 Sensors, Duplex Feed or Switchback

Switchback sensor:

1. Unplug the 3-pin connector from the switchback sensor.
2. Pinch the three clips and work the sensor off the bracket. Do not allow the sharp metal to cut the soft plastic clips.
3. Remove the duplex switchback sensors.

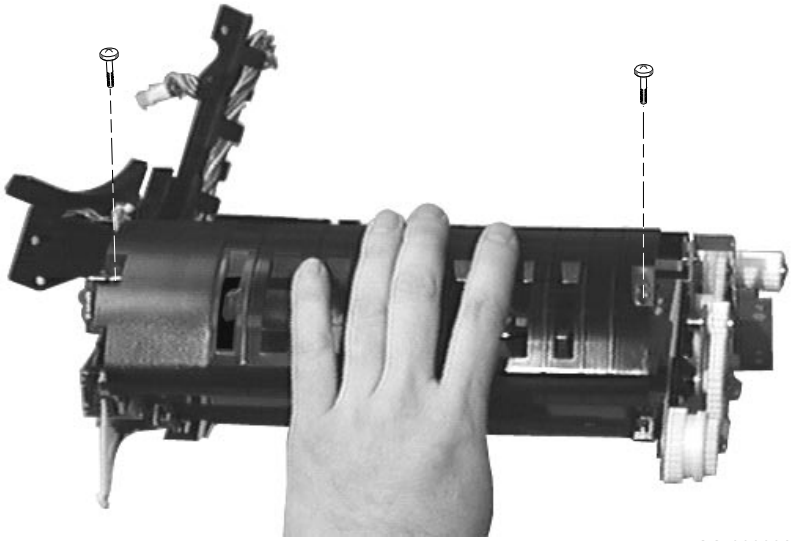


DSG-000091

9.38 Sensors, Offset or Exit

Use the following procedure to remove and replace the the offset or the exit sensor from the delivery unit:

1. Remove the following parts:
   a. EP-N cartridge, as shown in Section 9.22.
   b. EP-N frame and door mirror, as shown in Section 9.23.
   c. Delivery unit, as shown in Section 9.1.
2. Position the delivery section, as shown, on a work surface.
3. Remove the two shoulder screws that hold the paper guide to the delivery unit.
4. Lift and unhook the paper guide.

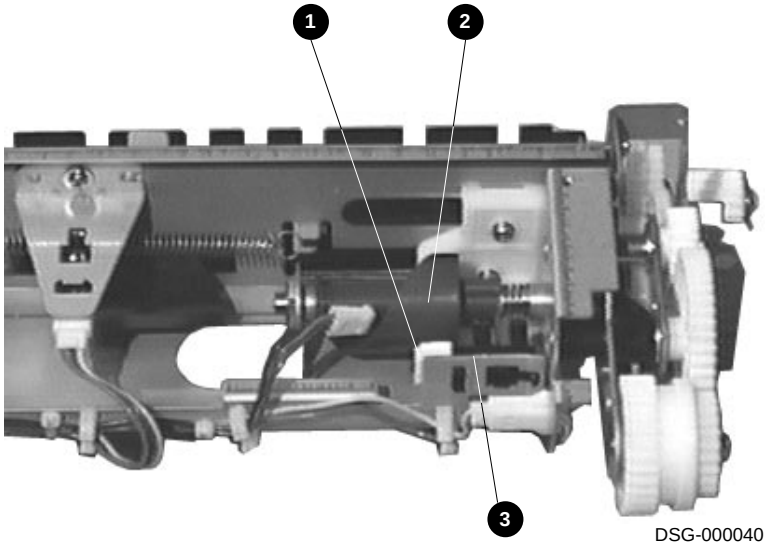


DSG-000092

9.38 Sensors, Offset or Exit

Offset sensor:

1. Disconnect the 3-pin connector ❶ from the offset sensor.
2. Turn the offset cam ❷ to move the sensor flag away from the sensor.
3. Pinch the three clips ❸ and remove the offset sensor.

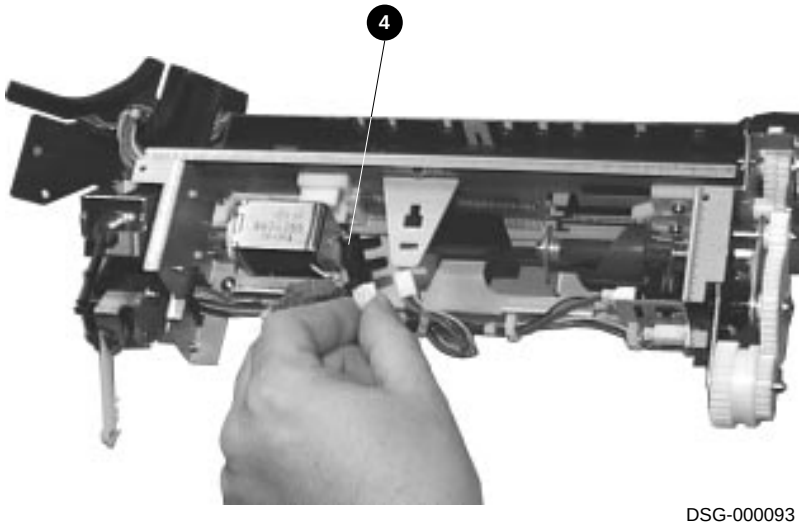


DSG-000040

9.38 Sensors, Offset or Exit

Exit sensor:

1. Disconnect the 3-pin connector ❹ from the exit sensor.
2. Pinch the three clips and remove the exit sensor.

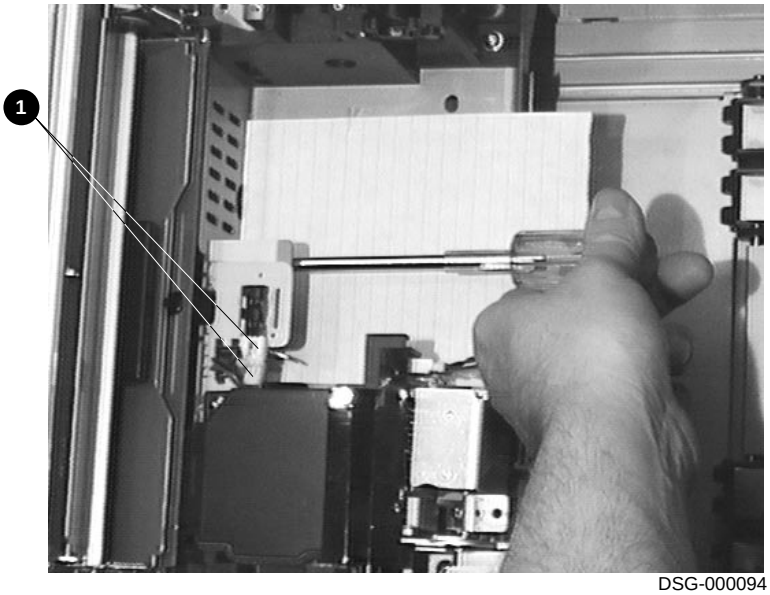


DSG-000093

9.39 Sensor, Registration

Use the following procedure to remove and replace the registration sensor:

1. Remove the following parts:
   a. Fusing unit, as shown in Section 9.27.
   b. Transport guide assembly, as shown in Section 9.4.
   c. Transfer roller and registration roller unit, as shown in Section 9.34.
   d. HVPSA, as shown in Section 9.2.
2. Disconnect the 3-pin connector ❶ from the sensor.
3. Tape a piece of stiff paper over the chassis hole to keep parts from falling into the duplex unit.
4. Remove the screw that holds the HVPSA guide bracket.



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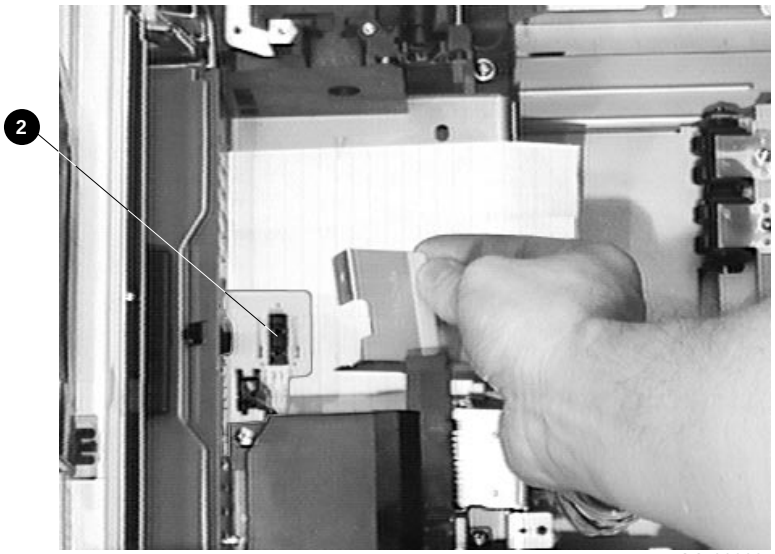
5. Twist the bracket to unlock and remove it.
6. Release the clips ❷ that hold the sensor to the chassis.
7. Remove the registration sensor.



DSG-000095

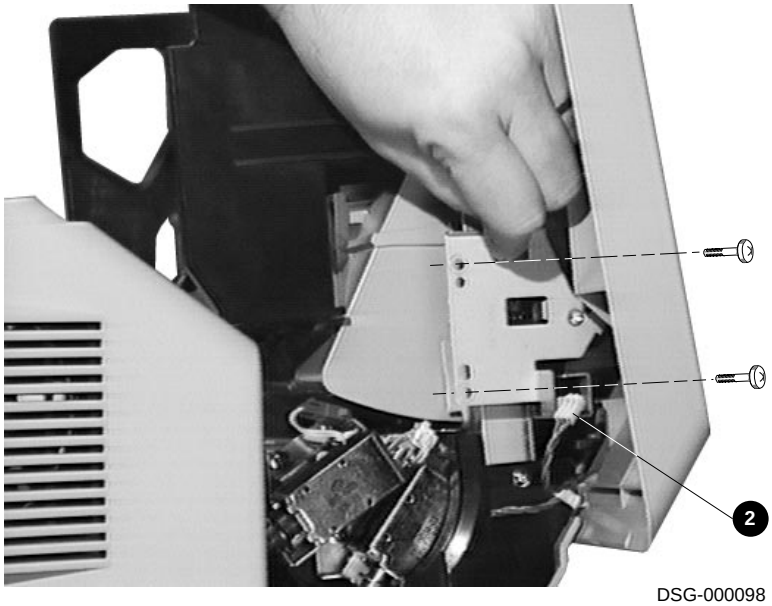
9.40 Sensor, Stack Overflow

Use the following procedure to remove and replace the stack overflow sensor:

1. Pull and disconnect the paper holder arm ❶ from the linkage.
2. Push the linkage to the left to disengage and remove the linkage.
3. Open the top door.

DSG-000097

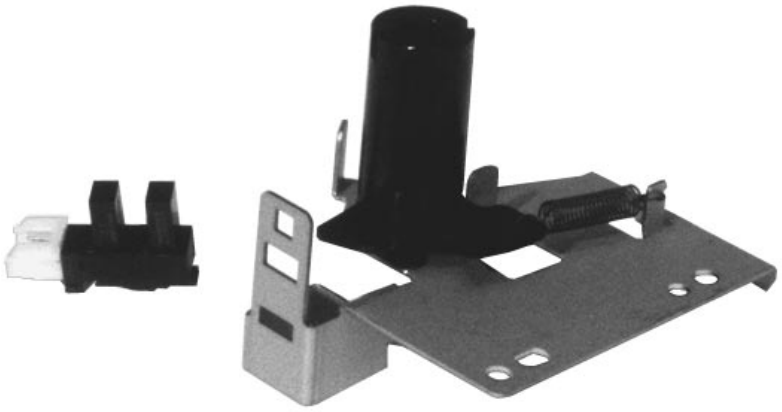
4. Disconnect the 3-pin sensor connector ❷.
5. Remove the two screws that hold the bracket to the door rails and remove the bracket.



DSG-000098

9.40 Sensor, Stack Overflow

6. Pinch the three plastic snaps together and remove the stack sensor.

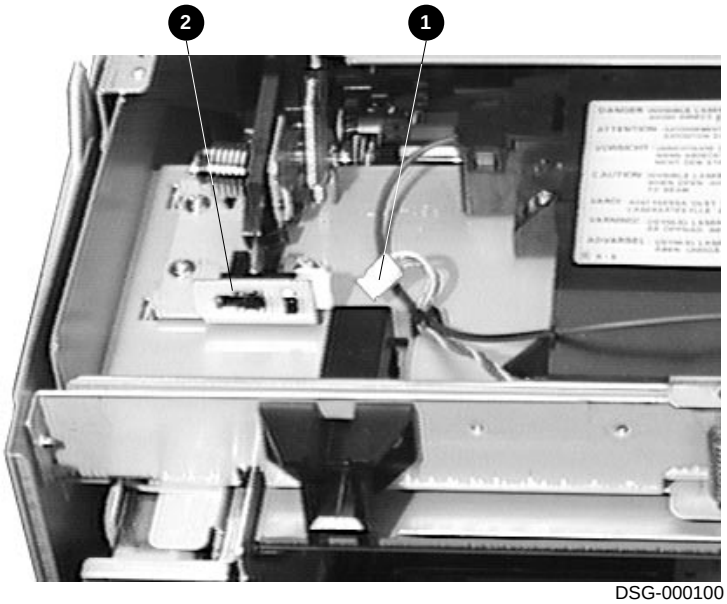


DSG-000099

9.41 Sensor, Top Door Sensor

Use the following procedure to remove and replace the top cover open sensor:

1. Remove the upper front cover, as shown in Section 9.20.
2. Disconnect the 3-pin connector ❶.
3. Unsnap the three plastic clips ❷ to release the sensor from the bracket.
4. Press down the door latch and remove the sensor.

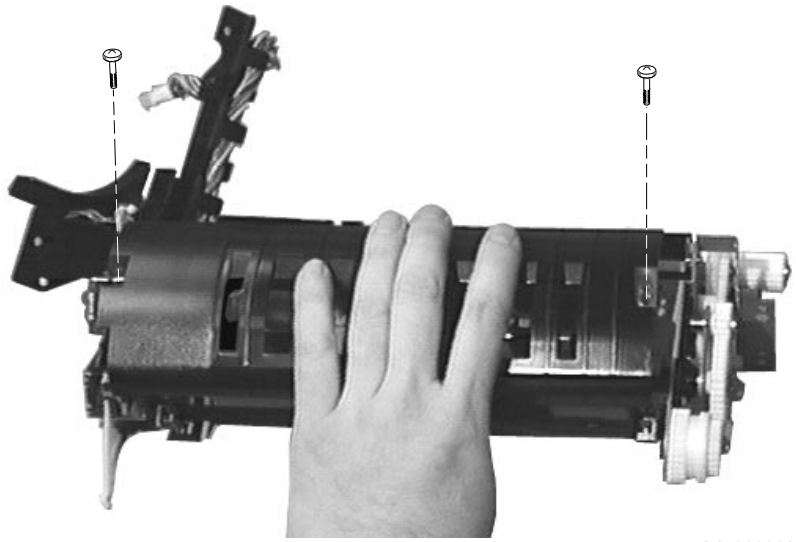


DSG-000100

9.42 Solenoid, Offset

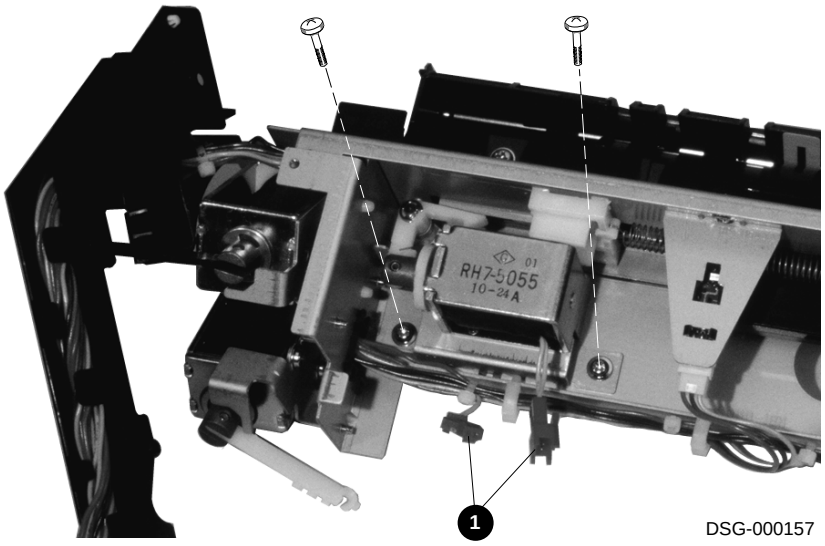
Use the following procedure to remove and replace the solenoid that latches the delivery rollers in the offset home position:

1. Remove the following parts:
   a. EP-N cartridge, as shown in Section 9.22.
   b. EP-N frame and door mirror, as shown in Section 9.23.
   c. Delivery unit, as shown in Section 9.1.
2. Position the delivery section, as shown, on a work surface.
3. Remove the two shoulder screws that hold the paper guide to the delivery unit.
4. Lift and unhook the paper guide.



DSG-000092

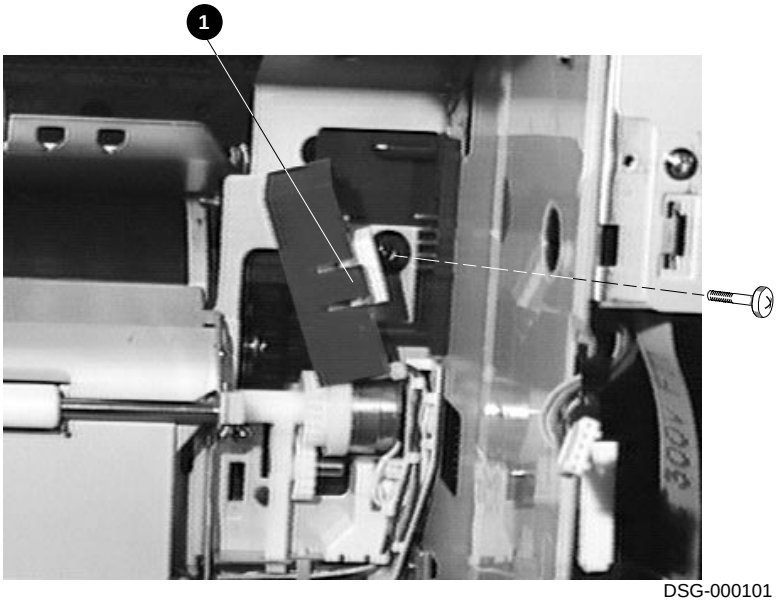
5. Unplug the 2-pin connector ❶ that connects the solenoid into the wire harness.
6. Remove the two screws that hold the solenoid bracket to the metal frame.
7. Lift and remove the offset solenoid.



9.43 Solenoid, Registration Clutch

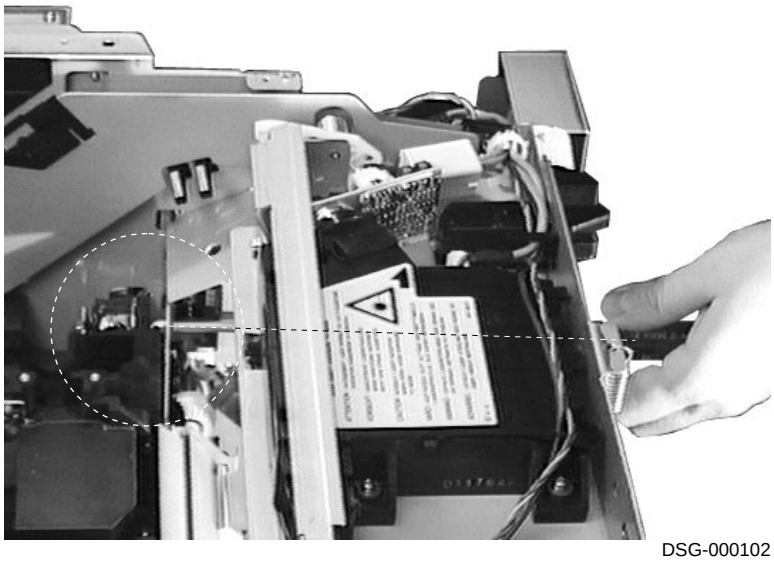
Use the following procedure to remove and replace the registration clutch solenoid:

1. Remove the following parts:
   a. The right-side lower and upper covers and metal shield, as shown in Section 9.19.
   b. The DC controller board, as shown in 9.9.
   c. Upper and lower front covers and the pickup unit, as shown in Sections 9.20, 9.16, and 9.14.
   d. Registration roller unit, as shown in Section 9.34.
2. Unsnap and pull back the connector block ❶ to the access the the solenoid screw.



DSG-000101

3. Remove the solenoid screw.



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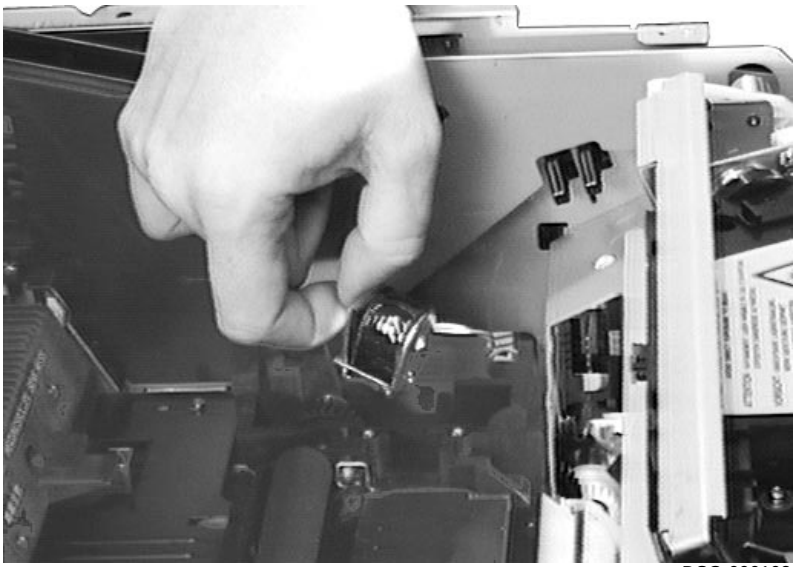
9.43 Solenoid, Registration Clutch

4. Remove the registration solenoid.



DSG-000103

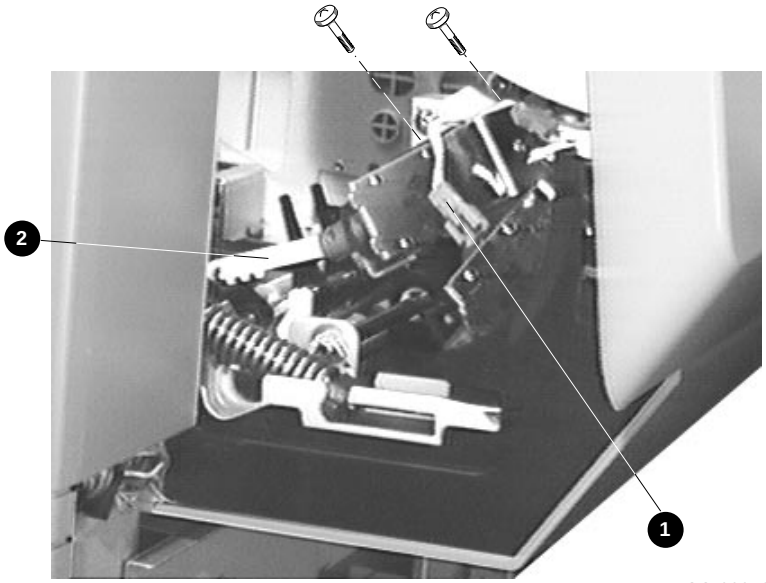
9.44 Solenoids, Refeed or Stack Gate

Use the following procedure to remove and replace the solenoids that actuate the refeed or stack gates:

1. Remove the EP-N cartridge, as shown in Section 9.22.
2. Remove the screw that holds top door rail brace.
3. After replacing the refeed or stack gate solenoid, adjust it as shown in Section 9.44.1.

Refeed solenoid:

1. Pinch the clip and disconnect the 2-pin connector ❶ from the wire harness.
2. Press and unsnap the linkage arm from the pin ❷ on the refeed gate.
3. Remove the two screws that hold the bracket to the printer and remove the solenoid.

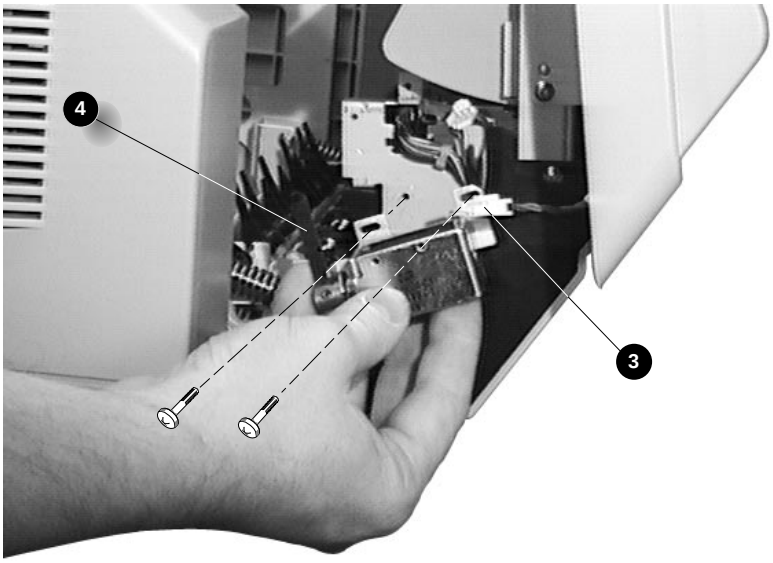


DSG-000104

9.44 Solenoids, Refeed or Stack Gate

Stack gate solenoid:

1. Remove the refeed solenoid, as shown above.
2. Pinch the clip and disconnect the 2-pin connector ❸ from the wire harness.
3. Press and unsnap the linkage arm from the pin ❹ on the stack gate.
4. Remove the two screws that hold the solenoid bracket to the printer.
5. Remove the refeed gate solenoid.



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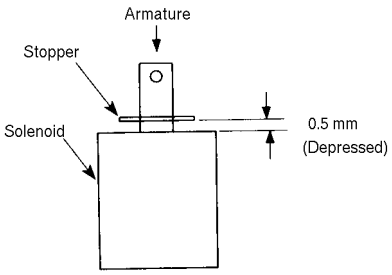
9.44.1 Solenoid Adjustment

After replacing or disturbing the refeed or stack gate solenoid, use the following procedure to adjust it:

1. Make sure the actuation lever (not shown) that connects to the armature is connected to the stack or refeed gate.
2. Gently press the armature closed.
3. Insert a feeler gauge to measure the gap.
4. Make sure the stopper comes within 0.5 mm (0.0193 in) of the solenoid top, when the armature is fully depressed.
5. If the gap is too wide or too narrow, loosen the solenoid mounting screws and adjust the solenoid.

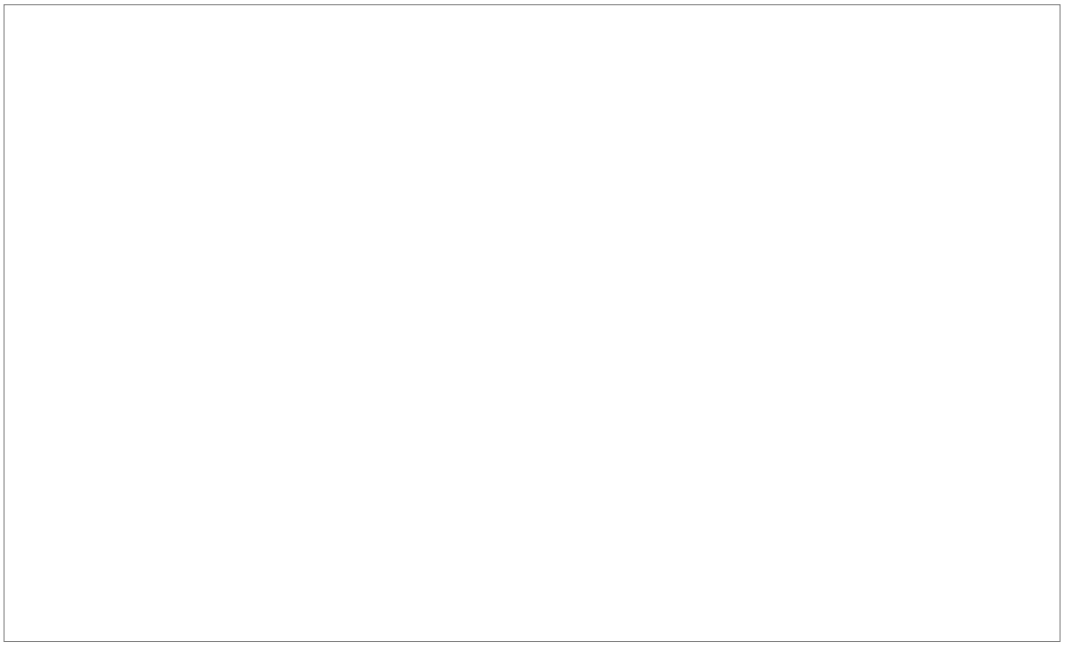
Figure 9–2 Solenoid Adjustment



DSG–000106

9.44 Solenoids, Refeed or Stack Gate

Notes:



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10

Optional Feeders

This chapter describes the PrintServer 17 printer large capacity input tray (LCIT) and the envelope feeder. Troubleshooting and FRU removal and replacement are also discussed. Both devices are optional equipment, can be purchased separately and installed by the customer.

10.1 LCIT Physical and Functional Description

The LCIT plugs into the lower cassette slot and can hold up to 1500 sheets of paper.

The LCIT comes in two different configurations or sizes. The $8\frac{1}{2}$ x 11 inch letter-size LCIT is equipped for the 110 VAC power environment. The A4-size LCIT is equipped for 220 VAC power. The keys on the LCIT nosepiece define the LCIT size as A4 or letter.

The customer must replace the feed rollers every 100,000 sheets. A replacement procedure is on the top cover of the LCIT and can be found in Section 10.3.

The LCIT does not connect to the electronic controller boards in the PrintServer 17 printer. All LCIT functions are controlled by the LCIT controller board.

The feeder works best with 16, 20, or 24 pound xerographic paper. Testing is recommended for other types of paper, forms, or envelopes.

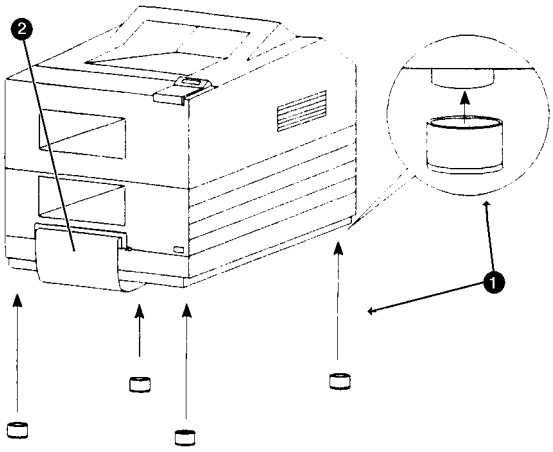
10.1 LCIT Physical and Functional Description

Table 10–1 and Figure 10–1 identify the LCIT components.

Table 10–1 LCIT Components

❶	Foot extenders	When installed over the permanent legs, the extenders lift the LCIT slightly to correctly align the nosepiece to the lower cassette slot.
❷	Duplex guide	The guide deflects the sheet as it emerges from the duplex switchback slot.
❸	Line power unit	The LCIT is powered by a 24VDC, 600 milliamper power source the plugs into the site's 110/220 AC line power.
❹	24VDC connector	This connector accepts the low-voltage connector end of the line power unit.
❺	Door	The door swings open to allow for paper loading. Opening or closing the door causes elevator motion.
❻	Top cover	Covers the paper supply and swings open for access to paper feed rollers.

10.1 LCIT Physical and Functional Description



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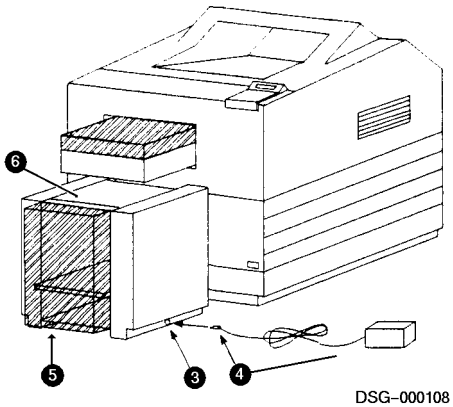


DSG–000108

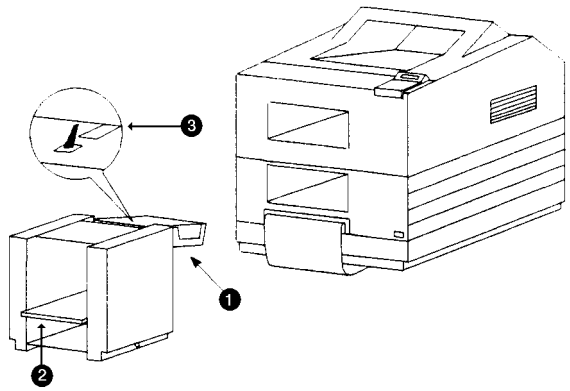
10.1 LCIT Physical and Functional Description

Table 10–2 and Figure 10–2 identify the LCIT nosepiece and elevator.

Table 10–2 Nosepiece and Elevator

❶	Nosepiece	The nosepiece is actually a false cassette front complete with paper size keys.
❷	Elevator	Elevator motion is directed by the door switch. When the door is opened, the elevator descends. When closed, the elevator rises. The upper and lower limit switches control the extent of elevator travel.
❸	Nosepiece sensor	The nosepiece sensor controls paper feeds. When the nosepiece is empty, the LCIT controller board turns on the paper feed motor. The paper feed rollers feed a sheet into the metal nosepiece guide.

Figure 10–2 Nosepiece and Elevator



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10.2 Sheet Feeder Troubleshooting

The LCIT is a field replaceable unit; if it malfunctions, replace the entire unit. The only removable and replaceable parts are the paper feed rollers. Use the following procedure to determine if the LCIT works correctly:

1. Remove the LCIT from the PrintServer 17 printer. Place the LCIT on a table close to an AC line plug.
2. Plug the round power connector into the printer.
3. Plug the power supply into the AC power line. You may see the elevator start moving, or paper feeding.
   - When you open the door, the elevator descends.
   - When you close the door, the elevator rises.
4. The elevator will rise to the upper limit and feed a single sheet of paper into the nosepiece.
5. When you remove the sheet, the LCIT will feed a second sheet and so on until the paper supply runs out.
6. After feeding the last sheet, the LCIT will feed a nonexistent sheet and time out waiting for the signal from the nosepiece sensor. This time-out causes the LCIT to lower the elevator.

Table 10–3 describes the LCIT troubleshooting symptoms and corrective actions.

Table 10–3 LCIT Troubleshooting

Symptom	Comment
No elevator motion	If the elevator fails to rise or descend when the door is opened or closed, suspect power supply problems. 1. Check the site AC power line requirements. 2. Check for +30 to 35 VDC at the center point of power connector. 3. Replace the LCIT.

(continued on next page)

10.2 Sheet Feeder Troubleshooting

Table 10–3 (Cont.) LCIT Troubleshooting

Symptom	Comment
Elevator fails to rise	When the door is closed, the elevator fails to rise but the elevator descends normally. 1. Inspect the linkage that actuates the door switch. 2. Replace the LCIT.
Rising elevator fails to stop	The upper limit switch fails to operate. The switch is actuated by a pin that is attached to the right feed roller suspension. 1. Inspect the action and condition of the suspension pressure spring. If the pressure is weak or the suspension binds, fix or replace the LCIT. 2. Replace the LCIT.
Raised elevator fails to feed or elevator raises, feeds once, and lowers	This symptom occurs normally when the nosepiece sensor detects a sheet of paper. 1. Examine the linkage that actuates the nosepiece sensor. The sensor lever must protrude through the upper plate and the linkage spring action must be positive. 2. Lift the metal nosepiece and inspect the sensor mounting bracket and plastic tabs. 3. If you see any damage, replace the LCIT.
Elevator lowers, fails to stop	This symptom indicates a failure of the lower limit switch. Replace the LCIT.
Elevator raises, then drops	This symptom indicates damage has occurred in the gears or elevator motor. Replace the LCIT.

(continued on next page)

Table 10–3 (Cont.) LCIT Troubleshooting

Symptom	Comment
Incomplete feeds cause paper jams	Remove the LCIT and watch the paper feed. The leading edge of the sheet must feed to within $\frac{1}{4}$ inch (6.35 mm) of the edge of the feed plate. 1. Check the action of the left and right feed roller pressure springs by lifting and dropping the suspensions. If the pressure feels weak or the suspension binds, replace the LCIT. 2. Inspect the surface of the feed rollers. Replace the rollers if you find the surface deteriorated or contaminated by oil or grease. 3. Make sure that one or both of the feed rollers are not installed backwards. See Section 10.3 for information about feed rollers.
Paper skews during feeds	1. Perform all steps listed for jamming above. 2. Inspect the action of the paper guide (snubbers). If the guides stick, bind, or appear damaged, replace the LCIT.

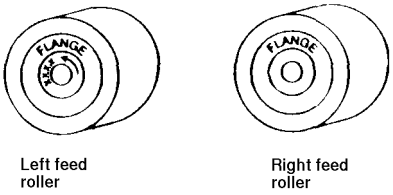
10.3 Removing and Replacing LCIT Feed Rollers

‘x Removal and replacement procedures ‘is LCIT rollers)

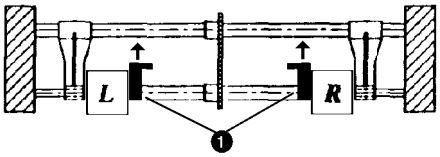
Use the following procedure to remove and replace the paper feed rollers from the LCIT:

Caution: *Do not contaminate the surface of the paper feed rollers with fingerprints or grease. Contamination may cause skew or misfeeds.*

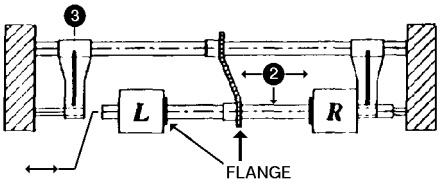
10.3 Removing and Replacing LCIT Feed Rollers



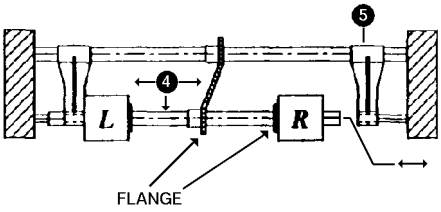
1. Locate the new left and right feed rollers according to the markings shown. The four X marks identify the left feed roller. The right roller has no such mark. Position the new feed rollers next to the LCIT.



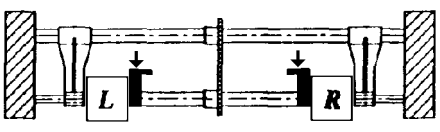
2. Remove both blue retaining ❶ rings by pulling them in the direction shown.



3. Slide the shaft ❷ to the right to remove it from the left arm ❸.
4. Slide the old roller left and remove it from the shaft.
5. Install the new roller on the shaft. The word "flange" on the roller must point toward the chain drive.
6. Slide the shaft to the left into the left arm.



7. Slide the shaft ❹ left to remove it from the right arm ❺.
8. Slide the old roller right to remove it from the shaft.
9. Install the new roller on the shaft. The word "flange" on the roller must point toward the chain drive.
10. Slide the shaft into the right arm.



11. Replace the blue retaining rings on the shaft.

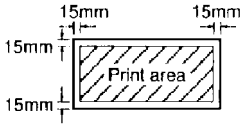
10.4 Envelope Feeder

Figure 1–8 shows the PrintServer 17 envelope feeder. It is installed by the customer. To troubleshoot or fix the envelope feeder, swap the whole unit. There are no field replacable parts.

10.4.1 Envelope Printing Information

The following information applies to printing envelopes with the optional PrintServer 17 envelope feeder:

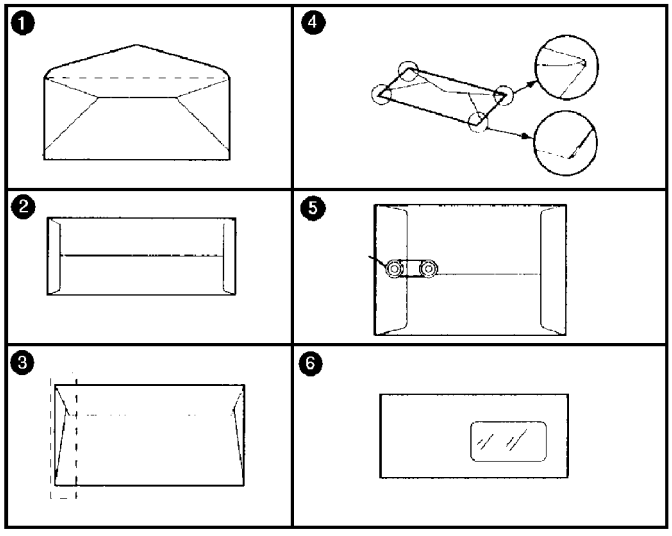
- Make sure the special cassette cover is installed on the upper cassette. See the installation instructions in Section 10.4.
- Insert the envelopes into the feeder face-up.



Do not print within the 15 mm (0.590 in) of the edge of the envelope.

- Duplex printing cannot be selected.
- Use the rear, faceup, paper stack to avoid wrinkling.
- Do not feed envelopes that are wrinkled or sealed or have:

  ❶ Unfolded flaps
  ❷, ❸ End folds as shown
  ❹ Corners formed as shown
  ❺ Hasps or snaps
  ❻ Transparent windows



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10.4 Envelope Feeder

When the envelope feeder is attached to the engine, the DC controller board operates and powers the feeder. See Section 9.24 for installation instructions.

❶ The envelope sensor detects when the feeder is empty or loaded.

❷ To feed an envelope, the printer turns on the feed motor.

❸ The belt and pickup roller feed envelopes from the bottom of the stack. The belt and pickup roller are geared together and operate by a solenoid clutch. When the clutch opens, the paper feed roller turns and the front of the belt swings into the envelope stack.

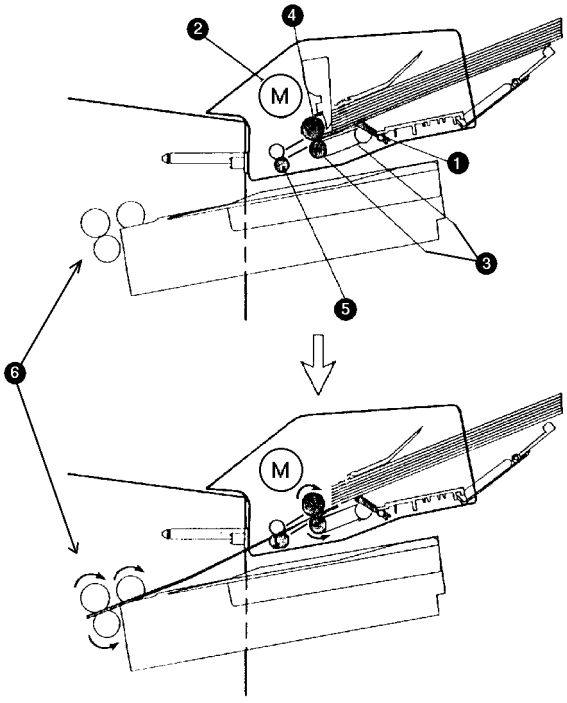
❹ The separation roller pushes double feeds back into the stack.

❺ The upper and lower feed rollers move the envelope down to the upper cassette feed rollers.

❻ The upper cassette feed rollers move the envelope into the registration sensor and rollers.

10.4 Envelope Feeder

Figure 10–3 Envelope Feeder Components



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10.4.2 Technical Description

J11 connects the pickup and envelope feeder controller boards. It can be seen at the rear of the envelope feeder.

J015 connects the pickup unit and DC controller boards. The envelope feeder CPU is operated by the CPU on the pickup controller board.

The following functions are on the envelope feeder control board:

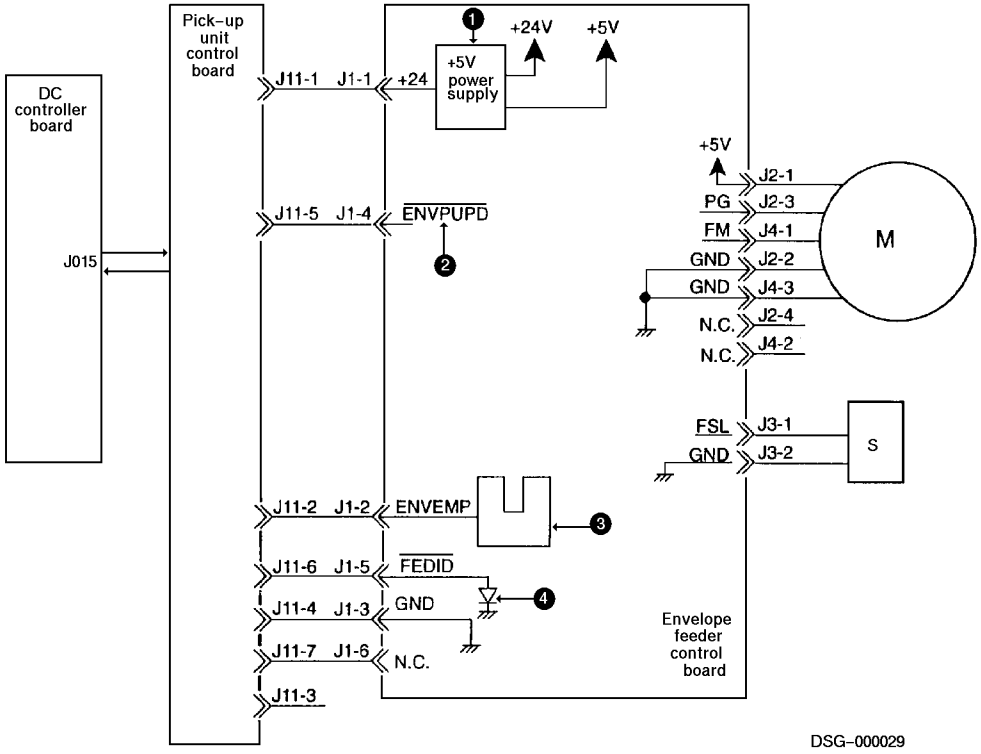
❶ The power supply block produces the +5VDC power that operates the electronic logic circuits and the motor. +24VDC operates the paper feed clutch solenoid and the light source for the photointerruptor device.

❷ The $\overline{ENVPUPD}$ signal controls the motor and the solenoid. When the signal is low, the motor turns for about 3.5 seconds and the solenoid is energized for about 1.0 second.

❸ The $ENVEMP$ signal goes high when envelopes are loaded.

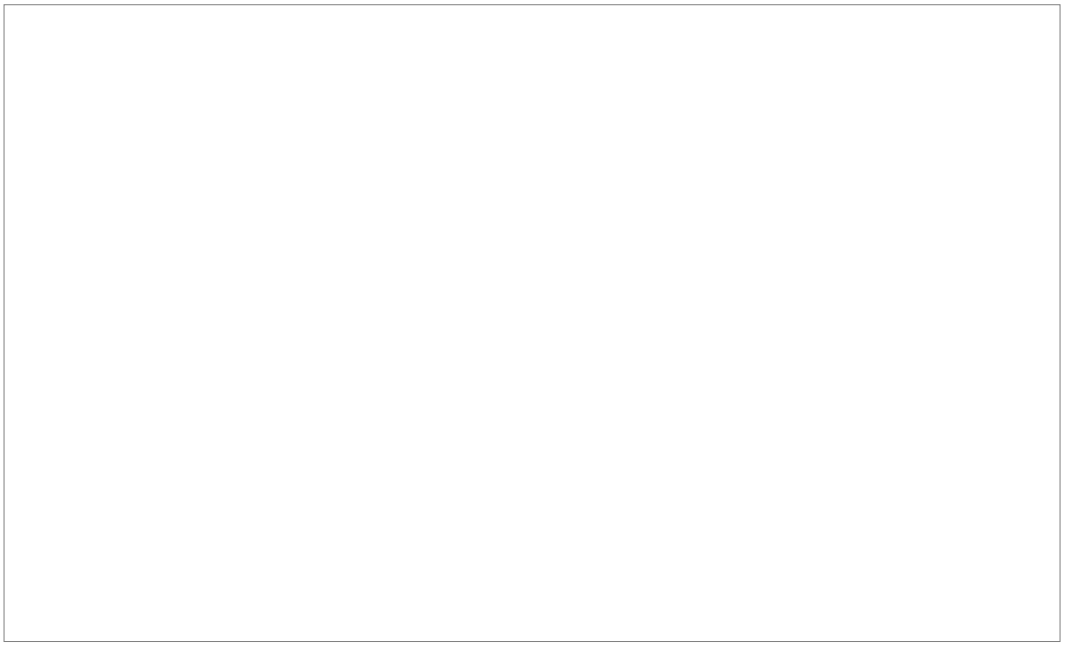
❹ The $\overline{FEDID}$ signal is pulled low when the envelope feeder is correctly installed.

Figure 10–4 Envelope Feeder Block Diagram



10.4 Envelope Feeder

Notes:



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A

Recommended Spares Listing

This appendix contains the recommended spares lists (RSL) for the PrintServer 17 printer.

A.1 Recommended Spares List

Table A–1 identifies the spare parts that are stocked for servicing the printer. If you need a part that is not on the RSL, consult the *PrintServer 17 Illustrated Parts Breakdown* for the part number or order information.

Table A–1 Recommended Spares Listing

FRU Name	FRU Number	R&R Procedure Section Number
Assembly, delivery and offset	29–30593–01	9.1
Assembly, high–voltage power supply (HVPSA)	FD–37679–01	9.2
Assembly, low-voltage power supply (LVPSA)	29–30594–01[1] 29–30598–01[2]	9.3
Assembly, Main switch	29–30602-01	9.31
Assembly, transport guide	29–30592–01	9.4
Board, AC drive	FD–28556–01[1] 29–30599–01[2]	9.5
Board, daughter ThinWire and ThickWire	70–30844–03	

[1] 120 volt operation

[2] 220 volt operation

(continued on next page)

A.1 Recommended Spares List

Table A–1 (Cont.) Recommended Spares Listing

FRU Name	FRU Number	R&R Procedure Section Number
Board, daughter ThinWire and TwistedPair	70–30844–04	9.8
Board, DC controller	29–30605–01	9.9
Board, DC drive	29–30601–01	9.10
Board, duplex controller	29–30608–01	9.11
Board, front power-on unit	29–30590–01	9.12
Board, memory options	**See Table A–2, Option Spares**	
Board, motor drive	29–30591–01	9.13
Board, pick-up controller	29–30629–01	9.14
Board, control fan	29–30606-01	9.26
Board, controller	70–30825–01	9.7
Cable, fiber optic (beam detect)	29–30614–01	9.36
Cassette pickup unit	FD–37677–01	9.14
Cassette pickup roller drive	FD–37841–01	9.14
Cassettes	**See Table A–2, Option Spares**	
Cover, left side	29–30708–01	9.18
Duplex unit	**See Table A–2, Option Spares**	
Duplex unit clutch	29–30607–01	
Envelope feeder	**See Table A–2, Option Spares**	
EP-N cartridge guide (frame)	29–30611–01	9.23
Kits, customer maintenance	**See Table A–2, Option Spares**	
Kit, EP-N cartridge	**See Table A–2, Option Spares**	
Fan, LVPSA	29–30596–01	9.25
Fan, left and right controller	29–30595–01	9.26
Fan, main	FD–31388–01	9.25
Fusing unit	29–30597–01[1] 29–30600–01[2]	9.27

[1] 120 volt operation

[2] 220 volt operation

(continued on next page)

Table A–1 (Cont.) Recommended Spares Listing

FRU Name	FRU Number	R&R Procedure Section Number
Fusing exit assembly	29–30618–01	9.27.1
Laser scanner unit	FD–31374–01	9.36
LCIT	**See Table A–2, Option Spares**	
Mirror, top door	29–30612–01	9.23
Motor, main (motor and gear assembly)	FD–31376–01	9.29
Motor, duplex switchback	29–30616–01	9.28
Motor, duplex centering guides	29–30617–01	9.30
Panel, operator	70–30295–01	9.32
Roller, refeed unit and sensor	29–30603–01	9.33
Roller, transfer	FD–37676–01	9.34
Roller, upper/lower feed	FD–37674–01	9.35
Rollers, registration assembly	29–30604–01	9.34
Sensor, top cover open Sensor, registration Sensor, offset home position Sensor, exit Sensor, duplex entrance Sensor duplex switchback Sensor, refeed Sensor, stack overflow	FD–37577–01	9.36 9.39 9.38 9.38 9.37 9.33 9.40
Solenoid, refeed	29–30623–01	9.44
Solenoid, stack gate	29–30622–01	9.44
Solenoid, registration clutch	29–30619–01	9.43
Solenoid, delivery assembly	29–30707–01	9.42
Stack overflow lever Stack overflow pivot	29–30706–01 29–30613–01	9.40

A.1 Recommended Spares List

Table A–2 identifies the spare parts numbers for the PrintServer 17 optional equipment.

Table A–2 Option Spares

FRU Name	FRU Numbers		Remove and Replace Procedure Section
Cassette, Legal	LPS1X–LA	29–30712–01	
Cassette, A4	LPS1X–LB	29–30711–01	
Cassette, Executive	LPS1X–LE	29–30710–01	
Cassette, Letter	LPS1X–LT	29–30709–01	
Duplex unit	LPS1X–UB	30–39829–01	9.21
Envelope feeder	LPS1X-EF	30-39748-01	9.24
Kits, customer maintenance	LPS1X–AB LPS1X–AC	22–11641–01[1] 22–11641–02[2]	–
Kit, EP-N cartridge	LPS1X–AA	22–11640–01	9.22
LCIT, A4 size, no power cord	LPS1X–BA	30–39859–02	–
LCIT paper feed roller kit		22–11772–01	10.3
LCIT, extender legs		29–30842–01	10–1
LCIT, letter size, no power cord	LPS1X-A3	30–39859–01	–
LCIT power cord (Universal)		30–41028–01–A01	–
SIMM 4-Mb	LPS1X–UC	ME524–DE	9.15
SIMM 8-Mb	LPS1X–UD	ME534–DE	9.15
V1.1 ROM 0		23–251E8–00	9.7.1
V1.1 ROM 1		23–252E8–00	9.7.1

[1] 120 volt operation

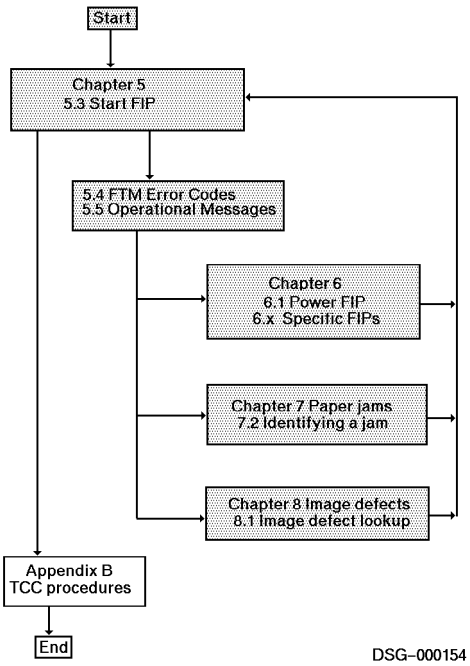
[2] 220 volt operation

B

Total Call Concept (TCC)

This appendix covers the total call concept (TCC) for the PrintServer 17.

The fault isolation procedures (FIPs) are a collection of yes/no flow charts and tables that provide a way to fix or ensure the correct operation of the hardware. If a problem exists, use the start FIP to isolate the problem and direct you to the next FIP.



B.1 TCC Procedure

The TCC procedure is part of every printer service call. It involves inspecting for damage, wear, and tear and cleaning the inside and outside of the printer. TCC works by reducing the number of calls.

To clean the paper path, use the a clean lint-free cloth and the special vacuum cleaner specified in Section C.3. Use a damp sponge to clean the covers and external components.

While cleaning, look for broken plastic or metal components or for any signs of damage.

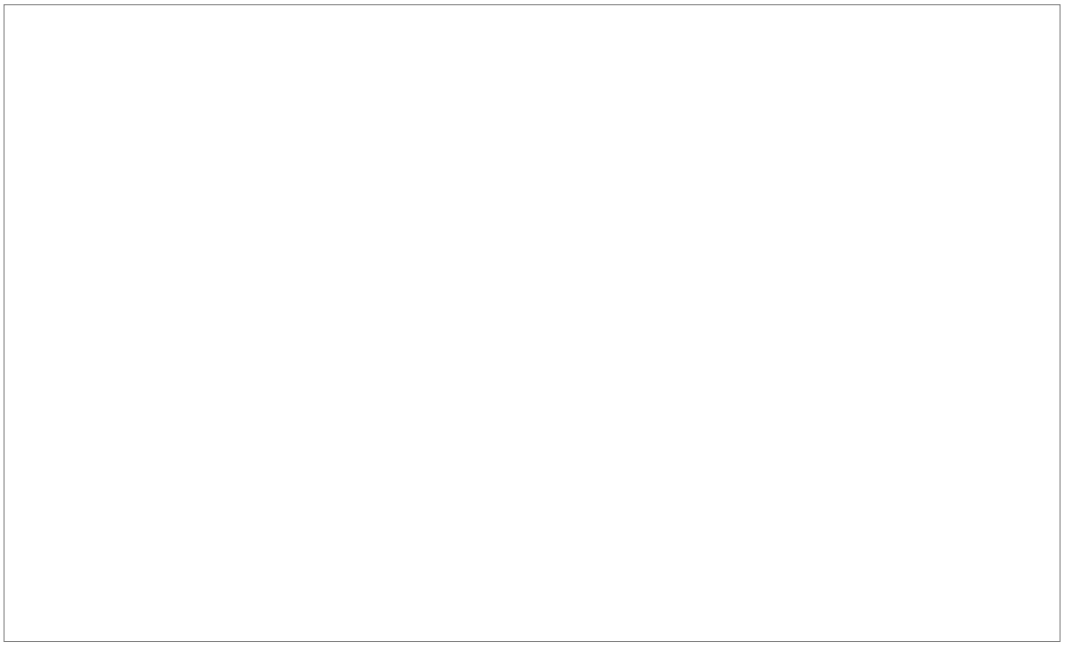
Perform the following procedure every time you are called to service the PrintServer 17 printer:

1. Discuss the operation of the printer with the customer.
2. Power on the printer. If the C.C portion of the revision code display is V1.0, install the V1.1 firmware ROMs, as shown in Section 9.7.1.
3. Print several test prints that use each paper path, input device, and output tray. If any of the following conditions occur, fix the problem:
   - Abnormal noise(s) during printing
   - Inconsistent print density or smeared images.
   - Black specks in the background
   - Image skew
   - Leading edge registration
   - Fusing failure
   - Wrinkling, edge damage, or any other form of paper damage
   - Dirt or toner on the back of the sheet
4. Inspect the all the paper path rollers for the following:
   - Surface contamination, uneven wear, dirt, or damage
   - Broken or disconnected pressure springs
   - Defective or unsecured bearings
5. Inspect and clean the following. Use the vacuum and a clean, damp, lint-free rag:
   - Prefuser transport
   - Static charge eliminator

6. Remove the fusing unit and place it on a work surface to clean the following:
   - Fusing entrance and exit guides
   - Fusing separation pawls
7. Clean the fork and face-up delivery gates.
8. Clean the face-up exit rollers.
9. Clean the face-down delivery rollers.
10. Clean the external covers.
11. Repeat the test prints until the printer is performing flawlessly.
12. Power on the printer and allow the printer to boot.
13. Make sure the printer boots and goes on-line. **Ready** appears on the LCD display.
14. Enter the following information in the maintenance log:
    - The nature of the original problem
    - All parts replaced
    - Any observation that you believe would be helpful to a future service person.
    - The current page count

B.1 TCC Procedure

Notes:



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C

Training, Documentation, and Tools

This appendix contains training, tools, and documentation information.

C.1 Training

Before attempting to use this book and repair the printer, you must attend the specific Digital Education training course and all other prerequisite training courses.

Table C–1 gives the ordering numbers and information about the courses.

Table C–1 Training

Number	Description
EY–N836E–P0	PrintServer 17 printer SPI/lab training course is offered at FTC A and B sites worldwide.
	United States Training Prerequisite Courses
EY–7629E–IV	Hardcopy and video specialist core course
EY–5528E–IV	Laser safety and printer concepts course
	Europe and GIA Training Prerequisite Courses
EY–2830E–IV	Data Communication Fundamentals
EY–2239E–IV	Hardcopy Theory
EY–2423E–IV	Laser Printer Concepts
EY–2424E–IV	Laser Concepts and Safety

C.2 Documentation Ordering Information

Table C–2 lists the ordering numbers for this service guide and for other related PrintServer 17 printer documentation.

Table C–2 Documentation

EK–LPSML–MG. A01	*PrintServer 17 Printer Maintenance Log*
12–39532–01	Pouch for the Maintenance Log
EK–PRTSV–DK. A01	*PrintServer 17 Printer Service Documentation kit*
EK–PRT17–SV. A01	*PrintServer 17 Printer Service Guide*
EK–PRT17–DK. A01	*PrintServer 17 Printer Documentation Kit (User documentation)*
EK–PRT17–FC. A01	*PrintServer 17 Printer User Feature Card*
EK–PRT17–UP. A01	*PrintServer 17 Printer Memory Upgrade Installation Guide*
EK–PRT17–DN. A01	*PrintServer 17 Printer Daugther Board Installation Guide*
EK–PRT17–EC. A01	*PrintServer 17 Printer Envelope Feeder Installation and User's Guide*
EK–LPS32–UG. A01	*PrintServer Printers User's Guide*
EK–PRT17–OG. A01	*PrintServer 17 Printer Operator's Guide*
EK–PRT17–IN. A01	*PrintServer 17 Printer Installation Guide*
EK–LPS17–IP. A01	*PrintServer 17 Illustrated Parts Breakdown*
AA–PBWHA–TE	*Digital ANSI-Compliant Printing Protocol Level 3 Programming Supplement*
AA–PBWFA–TE	*PostScript Translators Reference Manual for ReGIS and Tektronix 4010/4014*
EK–LASER–GD	*Digital Laser Printers Guide to Paper and Other Media*

C.3 Tools

Table C–3 lists the ordering number of the tools that are needed to service the PrintServer 17 printer in the field.

Table C–3 Tools

Number	Description
29–26106–00	50-Hz terminal tool kit
29–26109–00	60-Hz terminal tool kit
29–11762–00	Antistatic kit
29–26259–00	Vacuum[1] and attachments, 200 volts
29–25526–00	Vacuum[1] and attachments, 120 volts
29–26017–00	Filter bags and filter shell
29–26234–00	Cleaning kit
29–27340–01	Terminal tool kit
H225	50Ω ThinWire terminator, shown in Figure C–2
12–25083–01	6-pin serial line unit loopback connector, shown in Figure C–3
12–22196–02	ThickWire loopback connector, shown in Figure C–1
12–35619–01	Twisted pair MMJ loopback connector, shown in Figure C–1

[1] Special vacuum cleaner for toner powder

C.3 Tools

C.3.1 Loopback and Terminators

During power on self-test, only one Ethernet connector is externally tested. The first properly terminated or loopbacked connector that is found is tested and is used for booting. The other Ethernet connector and both SLUs are ignored.

During the FTM invoked SGEC self-test, both Ethernet connectors and both SLUs connectors are externally tested.

Figure C–1 show the loopback connectors. Loopback connectors replace the twisted pair or ThickWire cables.

Figure C–1 Twisted Pair and ThickWire Loopback

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Figure C–2 shows a tee connector with two 50Ω terminators. When connected together and attached, this combination terminates the ThinWire connector, provides loopback for FTM tests, and simulates the operational interconnection.

Operational connection consists of the tee, one 50Ω terminator, and a properly terminated ThinWire.

Figure C–2 Ethernet Tee Loopback

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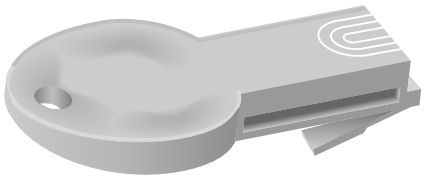
Figure C–3 shows the SLU loopback connector. The SLUs are only tested during the FTM SGEC test. For an error-free test, both SLU connectors must have an SLU loopback installed.

Figure C–3 Serial line unit (SLU) Loopback



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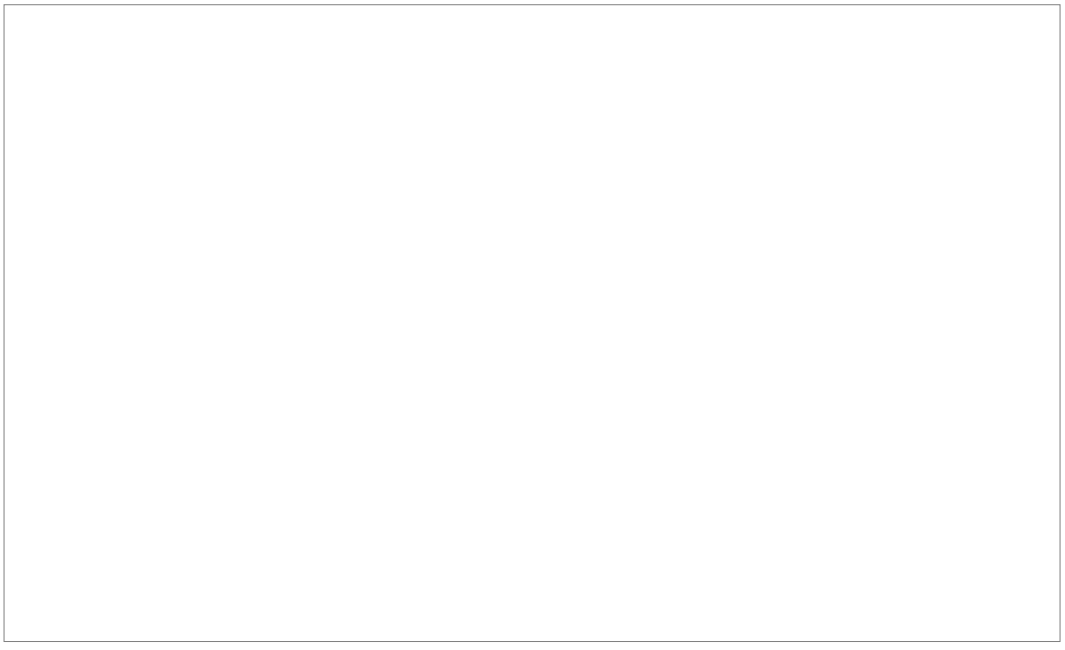
C.3 Tools

Notes:



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