XEROX.

Phaser® 8400/8500/8550/8560
Color Printer

XEROX®

Phaser®8400/8500/8550/8560
Color Printer

Warning

The following servicing instructions are for use by qualified service personnel only. To avoid personal injury, do not perform any servicing other than that contained in the operating instructions, unless you are qualified to do so.

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Service Terms

Manual Terms

Various terms are used throughout this manual to either provide additional information on a specific topic or to warn of possible danger present during a procedure or action. Be aware of all symbols and terms when they are used, and always read Note, Caution, and Warning statements.

Common Acronyms:

The following list defines the acronyms that may be found in this manual.

ADC: Automatic Density Control	MCU: Engine Control Board
BTR: Bias Transfer Roller	NCS: Non-Contact Sensor
CRUM: Customer Replaceable Unit Monitor	PHD: Imaging Unit
CTD: Toner Density Control	PL: Corresponds to the FRU Parts List.
ESD: Electrostatic Discharge	ROS: Laser Scanning Unit
IDT: Intermediate Transfer Unit	RTC: Charge Roller

Note

A note indicates an operating or maintenance procedure, practice or condition that is necessary to efficiently accomplish a task.
A note can provide additional information related to a specific subject or add a comment on the results achieved through a previous action.

Caution

A caution indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, results in damage to, or destruction of, equipment.

Warning

A warning indicates an operating or maintenance procedure, practice or condition that, if not strictly observed, results in injury or loss of life.

Product Terms

Caution: A personal injury hazard exists that may not be apparent. For example, a panel may cover the hazardous area.

Danger: A personal injury hazard exists in the area where you see the sign.

Symbols Marked on the Product

Read and obey all posted warning labels. Throughout the printer, warning labels are displayed on potentially dangerous components. As you service the printer, check to make certain that all warning labels remain in place.

 Use caution (or draws attention to a particular component). Refer to the manual(s) for information.

 Hot surface on or in the printer. Use caution to avoid personal injury.

Power Safety Precautions

Power Source

For 115 VAC printers, do not apply more than 135 volts RMS between the supply conductors or between either supply conductor and ground. For 230 VAC printers, do not apply more than 254 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. This manual assumes that the reader is a qualified service technician.

Plug the three-wire power cord (with grounding prong) into a grounded AC outlet only. If necessary, contact a licensed electrician to install a properly grounded outlet. If the product loses its ground connection, contact with conductive parts may cause an electrical shock. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Disconnecting Power

Warning

The power switch does not completely de-energize the printer. You must also disconnect the power cord from the printer's AC inlet. Disconnect the power cord by pulling the plug, not the cord.

Disconnect the power cord in the following cases:

- if the power cord or plug is frayed or otherwise damaged,
- if any liquid or foreign material is spilled into the product,
- if the printer is exposed to any excess moisture,
- if the printer is dropped or damaged,
- if you suspect that the product needs servicing or repair,
- whenever you clean the product.

Electrostatic Discharge (ESD) Precautions

Some semiconductor components, and the respective sub-assemblies that contain them, are vulnerable to damage by Electrostatic discharge (ESD). These components include Integrated Circuits (ICs), Large-Scale Integrated circuits (LSIs), field-effect transistors and other semiconductor chip components. The following techniques will reduce the occurrence of component damage caused by static electricity.

Be sure the power is off to the chassis or circuit board, and observe all other safety precautions.

■ Immediately before handling any semiconductor components assemblies, drain the electrostatic charge from your body. This can be accomplished by touching an earth ground source or by wearing a wrist strap device connected to an earth ground source. Wearing a wrist strap will also prevent accumulation of additional bodily static charges. Be sure to remove the wrist strap before applying power to the unit under test to avoid potential shock.

■ After removing a static sensitive assembly from its anti-static bag, place it on a grounded conductive surface. If the anti-static bag is conductive, you may ground the bag and use it as a conductive surface.

■ Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage some devices.

■ Do not remove a replacement component or electrical sub-assembly from its protective package until you are ready to install it.

■ Immediately before removing the protective material from the leads of a replacement device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

■ Minimize body motions when handling unpacked replacement devices. Motion such as your clothes brushing together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an electro-statically sensitive device

■ Handle IC's and EPROM's carefully to avoid bending pins.

■ Pay attention to the direction of parts when mounting or inserting them on Printed Circuit Boards (PCB's).

Service Safety Summary

General Guidelines

For qualified service personnel only: Refer also to the preceding Power Safety Precautions.

Avoid servicing alone: Do not perform internal service or adjustment of this product unless another person capable of rendering first aid or resuscitation is present.

Use care when servicing with power: Dangerous voltages may exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on. Disconnect power before removing the power supply shield or replacing components.

Do not wear jewelry: Remove jewelry prior to servicing. Rings, necklaces and other metallic objects could come into contact with dangerous voltages and currents.

Warning Labels

Read and obey all posted warning labels. Throughout the printer, warning labels are displayed on potentially dangerous components. As you service the printer, check to make certain that all warning labels remain in place.

Safety Interlocks

Make sure all covers are in place and all interlock switches are functioning correctly after you have completed a printer service call. If you bypass an interlock switch during a service call, use extreme caution when working on or around the printer.

Servicing Electrical Components

Before starting any service procedure, switch off the printer power and unplug the power cord from the wall outlet. If you must service the printer with power applied, be aware of the potential for electrical shock.

Warning

Do not touch any electrical component unless you are instructed to do so by a service procedure.

S7300-02

Servicing Mechanical Components

When servicing mechanical components within the printer, manually rotate drive assemblies, rollers, and gears.

Warning

Do not try to manually rotate or manually stop the drive assemblies while any printer motor is running.

S7300-03

Servicing Heated Components

Warning

This printer uses heat to fuse the image to media. Several components are heated during operation. Turn the printer power off and wait at least 10 minutes for these components to cool before you attempt to service the Fuser or adjacent components.

Regulatory Specifications

Xerox has tested this product to electromagnetic emission and immunity standards. These standards are designed to mitigate interference caused or received by this product in a typical office environment.

United States (FCC Regulations)

The Phaser 8400/8500/8550/8560 complies with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with these instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

■ Reorient or relocate the receiver (device being interfered with).

■ Increase the separation between the printer and the receiver.

■ Connect the equipment into an outlet on a circuit different from that which the receiver is connected.

■ Consult the dealer or an experienced radio/television technician for help.

Any changes or modifications not expressly approved by Xerox could void the user's authority to operate the equipment. To ensure compliance with Part 15 of the FCC rules, use shielded interface cables.

Canada (Regulations)

This Class B digital apparatus comply with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

European Union

The CE mark applied to this product symbolizes Xerox's declaration of conformity with the following applicable Directives of the European Union as of the dates indicated:

$C\epsilon$

- January 1, 1995: Low Voltage Directive 73/23/EEC as amended by 93/68/EEC

- January 1, 1996: Electromagnetic Compatibility Directive 89/336/EEC

- March 9, 1999: Radio & Telecommunications Terminal Equipment Directive 1999/5/EC

This product, if used properly in accordance with the user's instructions, is neither dangerous for the consumer nor for the environment.

To ensure compliance with European Union regulations, use shielded interface cables.

A signed copy of the Declaration of Conformity for this product can be obtained from Xerox.

Manual Organization

The *Phaser 8400/8500/8550/8560 Color Printer Service Manual* is the primary document used for repairing, maintaining, and troubleshooting the printer. Use this manual as your primary resource for understanding the operational characteristics of the printer and all available options. This manual describes specifications, theory, and the diagnosis and repair of problems occurring in the print engine and attached options. Also included are detailed replacement procedures, parts lists, and wiring diagrams.

The *Phaser 8400/8500/8550/8560 Color Printer Service Manual* contains these sections:

Introductory, Safety, and Regulatory Information: This section contains important safety information and regulatory requirements.

Section 1 - General Information: This section contains an overview of the printer's operation, configuration, specifications, and consumables.

Section 2 - Theory of Operation: This section contains detailed functional information on print engine components.

Section 3 - Error Codes and Messages: This section provides detailed troubleshooting procedures for error messages and codes generated by resident diagnostics.

Section 4 - General Troubleshooting: Troubleshooting discussions cover the operation of Power On Self Test (POST), Service Diagnostics, In addition, this section includes troubleshooting methods for situations where no error indicator is available.

Section 5 - Print-Quality Troubleshooting: This section focuses on techniques to correct image quality problems associated with printer output.

Section 6 - Adjustments and Calibrations: This section provides procedures for the adjustment of print engine components.

Section 7 - Cleaning and Maintenance: This section provides periodic cleaning procedures for the printer.

Section 8 - Service Parts Disassembly: This section contains removal procedures for spare parts listed in the Parts List. A replacement procedure is included when necessary.

Section 9 - Parts List: This section contains exploded views of the print engine and option FRUs, as well as part numbers for orderable parts.

Section 10 - Wiring Diagrams: This section contains the plug/jack locations and the wiring diagrams for the print engine.

Appendix A - Reference: This section provides an illustration of the printer's menu structure, a listing of printer status codes, and a list of Service Diagnostics tests.

Contents

1 General Information

2 Theory of Operation

3 Error Messages and Codes

4 General Troubleshooting

5 Print-Quality Troubleshooting

6 Adjustments and Calibrations

7 Cleaning and Maintenance

8 Service Parts Disassembly

9 Parts Lists

10 Wiring Diagrams

Reference

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General Information

Chapter 1

Printer Introduction and Overview

The *Phaser 8400/8500/8550/8560 Color Printer Service Manual* is the primary document used for repairing, maintaining, and troubleshooting the printer.

To ensure understanding of this product, complete the Phaser 8400/8500/8550/8560 Service Training and self-study guide.
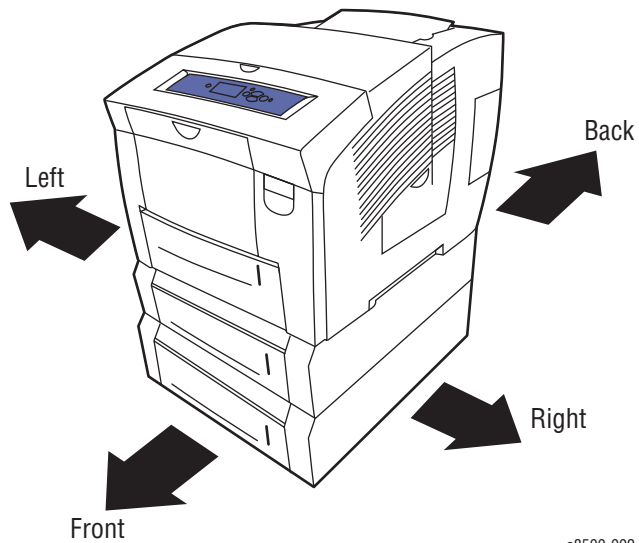
s8500-002

Printer Configurations

The Configuration Card holds configuration information that enables or disables built-in features as described in the following tables.

Features	Phaser 8400 Printer Configurations				
	8400B	8400BD	8400N	8400DP	8400DX
Maximum Print Speed	24	24	24	24	24
Memory	128 MB	256 MB	128 MB	256 MB	256 MB
Hard Drive	No	No	Optional**	Optional**	Standard
PostScript Fonts	137	137	137	137	137
PCL Fonts	81	81	81	81	81
Japanese Fonts*	No	No	Optional	Optional	Optional
Job Pipelining	No	Yes	No	Yes	Yes
Automatic 2-Sided Printing	No	Standard	No	Standard	Standard
100-Sheet Tray 1	Standard	Standard	Standard	Standard	Standard
525-Sheet Tray 2	Standard	Standard	Standard	Standard	Standard
525-Sheet Feeder Tray 3	Optional	Optional	Optional	Optional	Standard
525-Sheet Feeder Tray 4	Optional	Optional	Optional	Optional	Optional
USB, Parallel Connection	Standard	Standard	Standard	Standard	Standard
Ethernet Connection	No	No	Standard	Standard	Standard

* Japanese fonts are provided for applicable countries per special licensing requirements.
** The following features are not included in this configuration: proof print, saved print, secure print, and collation.

	Phaser 8500/8550 Printer Configurations				
Phaser Features	**8500N**	**8500DN**	**8550DP**	**8550DT**	**8550DX**
Maximum Print Speed	24ppm	24ppm	30ppm	30ppm	30ppm
Memory	128 MB	128 MB	256 MB	256 MB	512 MB
Hard Drive	Optional*	Optional*	Optional*	Optional*	Standard
PostScript Fonts	137	137	137	137	137
PCL Fonts	81	81	81	81	81
Job Pipelining	No	No	Yes	Yes	Yes
Automatic 2-Sided Printing	No	Yes	Yes	Yes	Yes
100-Sheet Tray 1	Standard	Standard	Standard	Standard	Standard
525-Sheet Tray 2	Standard	Standard	Standard	Standard	Standard
525-Sheet Feeder Tray 3	No	No	No	Yes	Yes
525-Sheet Feeder Tray 4	No	No	No	No	Yes
USB Connection	Standard	Standard	Standard	Standard	Standard
Ethernet Connection	Yes	Yes	Yes	Yes	Yes

* The following features are included with the Phaser 8500/8550 printers with a hard drive: proof print, saved print, secure print, personal print, and font storage.

	Phaser 8560 Printer Configurations			
Phaser Features	**8560N**	**8560DN**	**8560DT**	**8560DX**
Maximum Print Speed	30 ppm	30 ppm	30 ppm	30ppm
Memory	256 MB	256 MB	512 MB	512 MB
Hard Drive	Optional*	Optional*	Optional*	Standard
PostScript Fonts	137	137	137	137
PCL Fonts	81	81	81	81
Job Pipelining	No	No	Yes	Yes
Automatic 2-Sided Printing	No	Yes	Yes	Yes
100-Sheet Tray 1	Standard	Standard	Standard	Standard
525-Sheet Tray 2	Standard	Standard	Standard	Standard
525-Sheet Feeder Tray 3	No	No	Yes	Yes
525-Sheet Feeder Tray 4	No	No	No	Yes
USB Connection	Standard	Standard	Standard	Standard
Ethernet Connection	Yes	Yes	Yes	Yes

* The following features are included with the Phaser 8560 printers with a hard drive: proof print, saved print, secure print, personal print, and font storage.

Control Panel Configuration

The Control Panel consists of one tricolor LED, a display window, and six functional buttons. These buttons navigate the menu system, perform functions, and select modes of operation for the printer.

LED Indicators

- Green = Ready to Print
- Flashing Green = Receiving, Processing Data, Printing or Power Saver Mode
- Flashing Amber = Warning
- Flashing Red = Error

Control Panel Feature Descriptions

s8500-003

1 Status Indicator LED:
Green: Ready to print.
Yellow: Warning condition, printer continues to print.
Red: Startup sequence or error condition.
Blinking: Printer is busy or warming up.

2 Graphic display indicates status messages and menus.

3 **Cancel** button
Cancels the current print job.

4 **Back** button
Returns to the previous menu item.

5 **Up Arrow** button
Scrolls upward through the menus.

6 **Down Arrow** button
Scrolls downward through the menus.

7 **OK** button
Accepts the selected setting.

8 **Help (?)** or **Information** button
Displays a help message with information about the printer, such as printer status, error messages, and maintenance information.

Menu Maps

The Customer Menu Map helps you navigate the Control Panel menus. The Menu Map's are provided in the Reference section of this manual, see page A-2.

To print the Menu Map:

1. On the Control Panel, select **Information**, and then press the **OK** button.

2. Select **Menu Map**, and then press the **OK** button to print.

The service diagnostic menu map is detailed in Section 4, see "Service Diagnostics" on page 4-4 for more information.

Control Panel Shortcuts

Mode or Menu	Shortcut
Service Tools Menu	From any menu, press and hold the **Up Arrow,** and then **press OK.**
Hidden Service Menu	From the Service Tools menu, press and hold the **Up Arrow,** and then press the **Down Arrow.**
Service (Internal) Diagnostics	**(Phaser 8400)** Hold the **Back** and **Info** button at power up (for about 30 seconds). **(Phaser 8500/8550/8560)** Wait until Control Panel screen turns black, and then press and hold **Back** and **Help** buttons until the message "Beginning Service Mode" displays.
Set Control Panel language	Press and hold the **Cancel** button, and then press the **Help** button.
Bypass protected menus	Press and hold the **Cancel** button, and then press the **Back** button.
Jet Substitution Mode	**(Phaser 8400 only)** To add Jet Substitution Mode to the Print Quality Problems menu: From the Print Quality Problems menu: press and hold the **Up Arrow** button, and then press the **Back** button. **Phaser 8500/8550/8560** have Jet Substitution in the main menu system (under Eliminate Light Stripes).
FTTR (Fast Time To Ready)	Printer goes to the ready state without waiting for thermal temperatures to reach the proper operating values. On power-up, when the Xerox splash screen displays, press and release the **Up Arrow** button, then press the **Down Arrow** button. If the printer detects ink on the drum, the display indicates a warming-up status.

Parts of the Printer

This section shows the main external components of the printer, including interfaces, the electronics module, and the internal sensors.

Front View
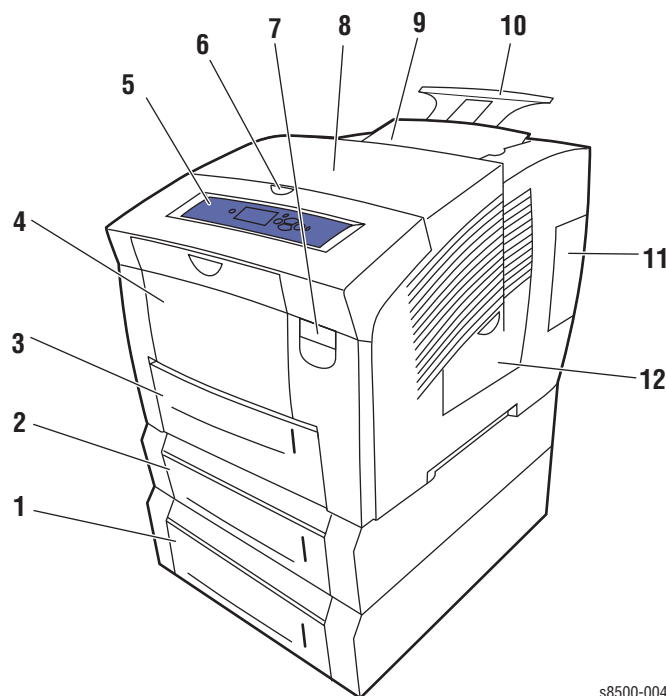
1. Optional 525-Sheet Feeder Tray 4
2. Optional 525-Sheet Feeder Tray 3
3. Tray 2
4. 100-Sheet Tray 1 (MPT)
5. Control Panel
6. Exit Cover release
7. Front Door release
8. Exit Cover
9. Ink Loader/top cover
10. Legal/A4 output tray extension
11. Interface cover
12. Side Door

s8500-004

Right Side View with Printer Interfaces
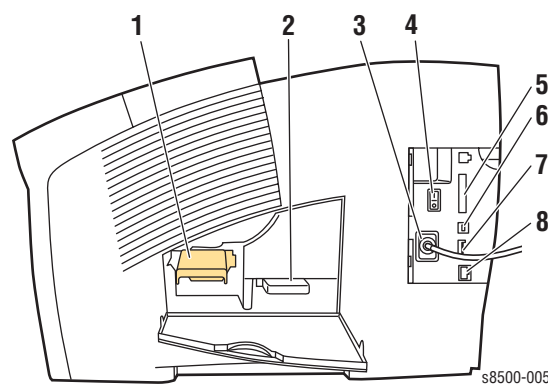
1. Maintenance kit
2. Waste Tray
3. Power Cord connection
4. Power switch
5. Parallel connection (8400 series only)
6. USB connection
7. Configuration Card
8. Ethernet 10/100 Base-T connection

s8500-005

Rear View

The rear view consists of the printer's main electronics and power supply, which are enclosed in a metal case called the Electronics Module. The rear panel allows access to the Electronics Module, RAM, and NVRAM. The printer's Hard Drive is also mounted on the rear panel.

When installing a new electronic module in the printer, the following components need to be transferred from the old board.
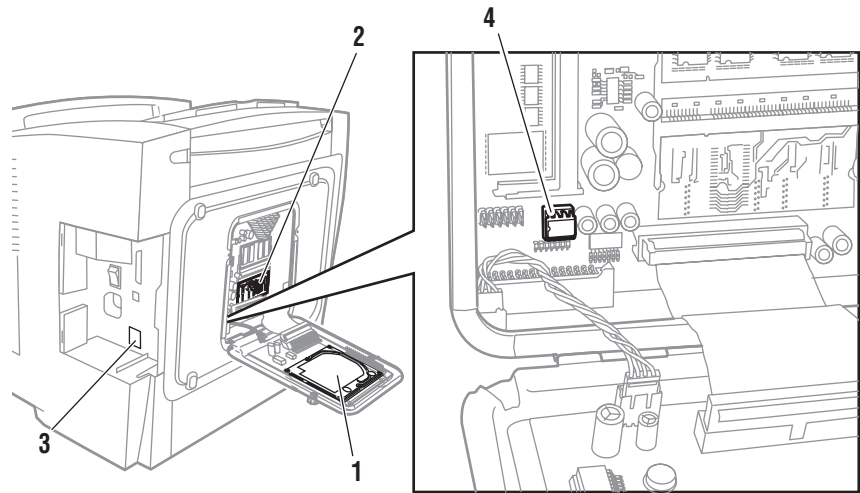
s8500-006

1. Hard Drive (optional)

2. Memory (RAM) DIMM 1 and DIMM 2

3. Configuration Card (Installed from the side under the interface cover.)

4. NVRAM (Configuration Card handles NVRAM differences between models).

Routine Maintenance Items and Consumables
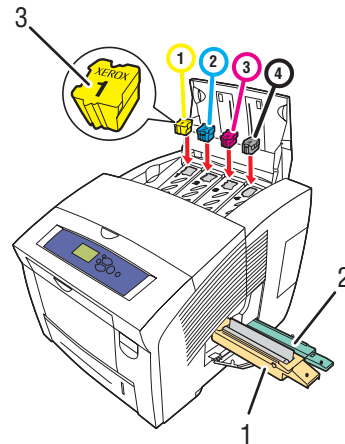
s8500-007

Routine Maintenance Items	Consumable
1. Drum Maintenance Kit	3. Ink
2. Waste tray	

Drum Maintenance Kit life expectancy depends on the kit capacity. For example, the standard-capacity kits produce 10,000 prints regardless of the colors used. Extended-capacity Drum Maintenance Kits for 8400 and 8550/8560 models produce 30,000 pages up to 20% coverage and 20,000 pages when coverage exceeds 20%. Phaser 8500 models do not support the 8550/8560 extended-capacity kit

Routine Maintenance:		Consumable:	
Extended Drum Maintenance Kit (8400, 8550/8560)	30,000 cycles (0-20% coverage) 20,000-30,000 (20-100% coverage)	Ink	(8400) 1140 prints per stick* (8500/8550/ 8560) 1080 prints per stick*
Standard Drum Maintenance Kit	10,000 prints (8400/ 8560). 5500 color, 10,000 B/W prints (8500/8550).		
Waste Tray	Empty every 7 purges.		

*Consumable capacity is based on 5% coverage per color on plain A4 paper.

Note

Phaser 8500 models support only the standard-capacity Drum Maintenance Kit. Phaser 8400 and 8550/8560 models support both the standard- and extended-capacity kits. Phaser 8400 kits and Phaser 8500/8550/8560 kits are not interchangeable.

Printer Specifications

Physical Dimensions and Clearances

Print Engine Only	Value
Width:	422 mm (16.6 in.)
Depth:	514 mm (20.24 in.)
Height:	368 mm (14.48 in.)
Weight:	26.8 kg (59 lb.)
Optional 525-Sheet Feeder	**Value**
Width:	422 mm (16.6 in.)
Depth:	514 mm (20.24 in.)
Height:	132 mm (5.2 in.)
Weight:	5.4 kg (12 lb.)
Minimum Clearances	**Supplemental Information**
Left side and rear - 102 mm (4 in.)	Required for airflow.
Right side - 394 mm (15.5 in.)	Required for maintenance kit and waste tray access, and airflow.
Front - Unrestricted	Required for media tray and jam access.
Top - 559 mm (22 in.) printer only	Required for inkload and jam access.
Bottom - No obstruction between mounting surface and printer	Required for airflow.
Min. install width - 711 mm (28 in.)	Requires placing printer at an angle to remove waste tray.

Print Engine Only	Value

10 cm
(4 in.)

20 cm
(7.5 in.)

56 cm
(22 in.)

10 cm
(4 in.)

40 cm
(15.5 in.)

60 cm
(24 in.)

60 cm
(24 in.)

90 cm
(35 in.)

s8500-141
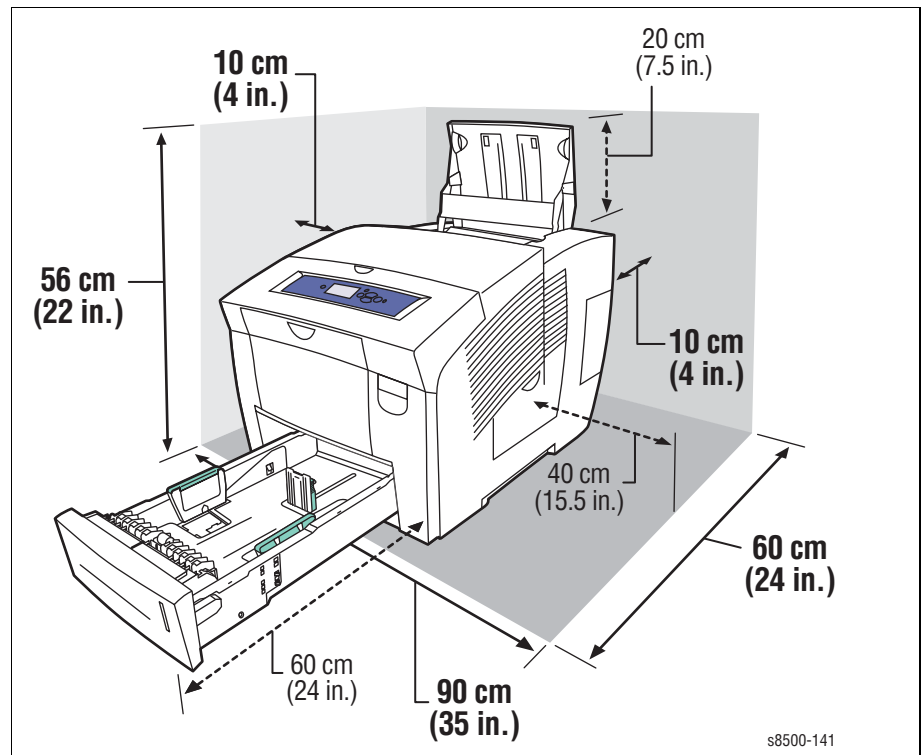
Note

Check that the printer is on a stable, non-vibrating suface. Advise the customer to use care not to shake the printer excessively when loading media or closing the Front Door. During operation, the ink is in liquid form an can spill from the Printhead reservoir resulting in output defects.

Functional Specifications

Characteristic	Specification
Printing Process	Solid-ink
Color Medium	Yellow, cyan, magenta, and black ink sticks, each shape-coded. The printer uses the subtractive color system to produce the colors red, green, and blue.
Operating Modes and Resolutions	**(8400)** Fast Color (300x300 dpi), Standard (300x450 dpi), Enhanced (563x400 dpi), High Resolution/Photo (525x2400) (**8500/8550/8560)** Fast Color (225x400 dpi), Standard (300x450 dpi), Enhanced (525x400 dpi), High Resolution/Photo (525x2400)
Maximum Operating Printing Speed	24 ppm (8400 and 8500 series) 30 ppm (8550 series)
First-Print-Out (Letter/A4)	As low as 6 seconds
Warm-Up Time: From Off (cold start) From Power Saver	12 minutes (8400), 15 minutes (8500/8550/8560) 4 minutes

Electrical Specifications

Characteristic	Specification	
	115 Volt	**230 Volt**
Primary line voltages	90 - 140 VAC	180 - 264 VAC
Primary line voltage frequency range	47 - 63 Hz	47 - 63 Hz
Power consumption	1250 W (peak) - 1000 typical 180 W (idle) 230 W (average during printing)	1250 W (peak) 1000 typical 180 W (idle) 230 W (average during printing)
Energy Star®	43 W	43 W

Environmental Specifications

Nominal Operating Environment	
Temperature	10º - 32º C (50º - 90º F) operating 20º - 25º C (68º - 77º F) Best jam performance
Humidity	10% - 80% RH Non-Condensing operating

Media and Tray Specifications

Paper Size	Paper Type	Paper Weight/Media Type	Any Tray	Tray 1 Only	2-Sided (Duplex)	Single-sided Only
Letter (8.5 x 11 in.) or A4 (210 x 297 mm)	**Plain Paper or Letterhead**	60–120 g/m^2 (16–32 lb. Bond)	I		I	
		121–220 g/m^2 (32–59 lb. Bond)		I		I
	Transparency	Phaser Professional Solid Ink Transparencies	I			I
	Card Stock	100–120 g/m^2 (37–44 lb. Cover)	I		I	
		121–220 g/m^2 (44–80 lb. Cover)		I		I
	Labels	Phaser Color Printing Labels	I			I
	Special	Phaser Professional Solid Ink Business Cards		I		I
		Phaser Professional Solid Ink High Resolution Photo Paper	I			I
		Phaser Premium Postcards		I	I	
		Phaser Weatherproof Paper	I		I	
		Phaser Trifold Brochures		I	I	
Legal (8.5 x 14 in.)		60–120 g/m^2 (16–32 lb. Bond)	I		I	
Executive (7.25 x 10.5 in.) or A5 (148 x 210 mm)		60–120 g/m^2 (16–32 lb. Bond)	I		I	
		121–220 g/m^2 (32–59 lb. Bond)		I		I
Statement (5.5 x 8.5 in.)		60–120 g/m^2 (16–32 lb. Bond)	I		I	
US Folio (8.5 x 13 in.)		60–120 g/m^2 (16–32 lb. Bond)	I		I	
A6 (105 x 148 mm)		60–120 g/m^2 (16–32 lb. Bond)		I		I
B5 ISO (176 x 250 mm)		60–120 g/m^2 (16–32 lb. Bond)	I		I	
B5 JIS (182 x 257 mm)		60–120 g/m^2 (16–32 lb. Bond)	I		I	
Index Cards (3 x 5 in.)				I		I

Paper Size	Paper Type	Paper Weight/Media Type	Any Tray	Tray 1 Only	2-Sided (Duplex)	Single-sided Only
Custom		NOTE Print custom size media from Tray 1 only.				
		Maximum: 216 mm wide x 355 mm long (8.5 in. wide x 14 in. long)		I	I	I
		Minimum: 75 mm wide x 127 mm long (3 in. wide x 5 in. long)		I		I
		Minimum: 139.7 mm wide x 210 mm long (5.5 in. wide x 8.3 in. long)		I	I	
Envelopes	**Any Tray**	#10 Commercial (4.12 x 9.5 in.) DL (110 x 220 mm) C5 (162 x 229 mm)	I I I			I I I
	Tray 1 Only	#5-1/2 (Baronial 4.375 x 5.75 in.) #6-3/4 (3.625 x 6.5 in.) Monarch (3.87 x 7.5 in.) Brochure (6 x 9 in.) A7 (5.25 x 7.25 in.) Choukei 3 Gou (120 x 235 mm) Choukei 4 Gou (90 x 205 mm)		I I I I I I I		I I I I I I I

NOTE Some wrinkling and embossing may occur when printing envelopes. See "Printing" on the User Documentation CD-ROM for information on how to minimize these occurrences.

NOTE 2-sided printing can only be used for paper with widths greater than 5.5 in. (139.7 mm) and lengths greater than 8.3 in. (210.82 mm).

Theory of Operation

In this chapter…

- Main Printer Subsystems
- Print Process
- Printer Self-Maintenance
- Configuration Card Personality Parameters

Chapter **2**

Main Printer Subsystems

Transfix System — Drum — Printhead — Ink Loader — Electronics Module — Hard Drive — Configuration Card — Preheater — Drum Maintenance Kit — Wiper Assembly — Waste Tray — Wave Amp

s8500-008
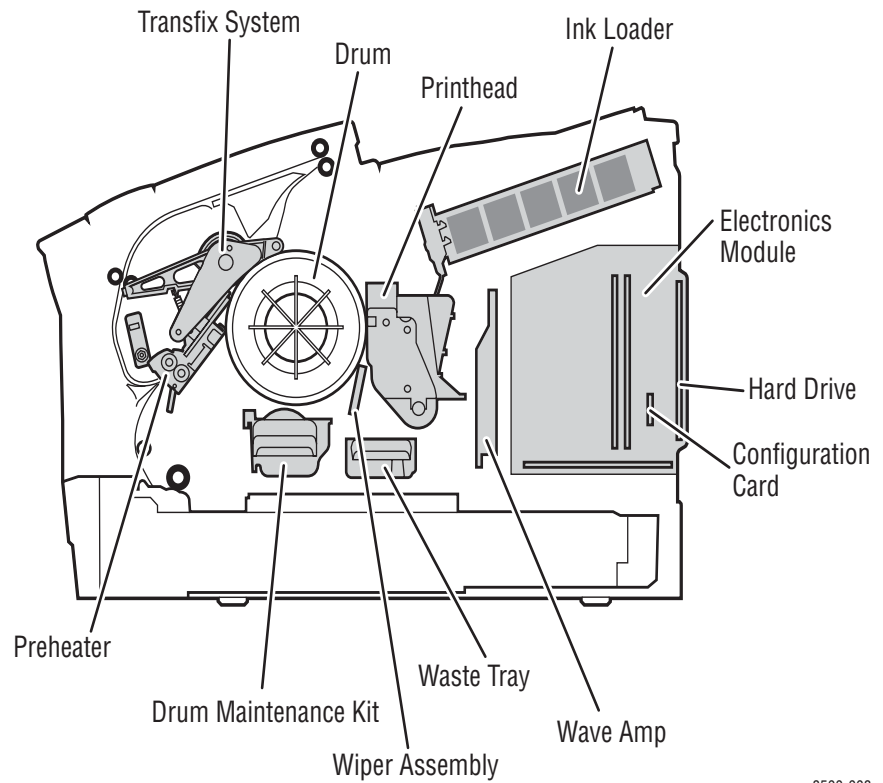
Printer Subsystem Overview

The printer is made up of eight major subsystems, which are described in this section:

- Process Drive
- Media Drive
- Ink Loader
- Printhead
- Drum Maintenance Kit
- Purge System
- Drum Assembly and Transfix Assembly
- Electronics Module

The Process Drive: Transmits torque to two camshafts. The Transfix Camshaft controls the Transfix Roller loading, and the Drum Maintenance Camshaft actuates the Drum Maintenance Kit and Printhead tilt system.

The Media Drive: Controls each roller in the media transport path. The Media Drive consists of a drive motor, a gearbox, two clutches, and a solenoid. The Media Drive motor also controls the movement of the Wiper Blade and headlock mechanism through a gear train and solenoid on the Exit Module.

The Ink Loader: Stores and melts the ink. The melted ink drops into the Printhead ink reservoirs underneath the ink loader.

The Printhead: Delivers ink onto the drum surface to create an image. The Printhead includes 1236 interleaved jets (309 of each primary color) to provide the ability to electronically turn off a weak or missing jet to restore image quality.

The Drum Maintenance Kit: Creates a thin layer of silicone oil on the surface of the Drum prior to printing. The oil keeps the ink from sticking to the Drum's surface and facilitates image transfer to the media.

The Purge System: Uses air pressure and a wiper blade to remove any debris or air bubbles that may be obstructing the Printhead nozzles.

The Drum Assembly and Transfix System: Form the key portion of where imaging takes place. The image is first printed as a "mirror" image on the rotating Drum. A sheet of warmed media feeds from the Preheater and passes between the Drum and the Transfix Roller. The Process Drive gear train then loads the Transfix Module and presses the media to the Drum to adhere the image as the Drum spins in the transfix direction.

The Electronics System: includes the Electronics Module (also known as the E-can); which contains the main board, the image processor board, the power control board, and the power supply board. Distributed in the print engine are: the Wave Amplifier, I/O board, and Drum Heater Relay Board.

Process Drive

A small DC servomotor powers the Process Drive gearbox to rotate the gears to specific positions during the printing process. The Process Drive is able to actuate each camshaft system independently through the use of the swing arm in the gear train.

The rotational direction of the motor controls the operation of the transfix and drum maintenance system. When the process motor rotates in one direction, the swing gear engages the lower gears. When the motor rotates in the opposite direction, the upper gears are engaged.

Since the system is open loop, special attention to the home position of the process drive gears and the mating camshaft gears is critical. The Process Drive gearbox is mechanically keyed upon installation via gear orientations. These gear orientations allow the printer subsystems to self-home during operation. If either the gearbox or cam gears is out of home during installation, the printer does not function properly.

Process Drive   Swing Gear

Imaging Transfix
Transfix Camshaft
Process Motor Gear

Process Motor Gear
Drum Maintenance Camshaft
Drum Maintenance

s8500-009
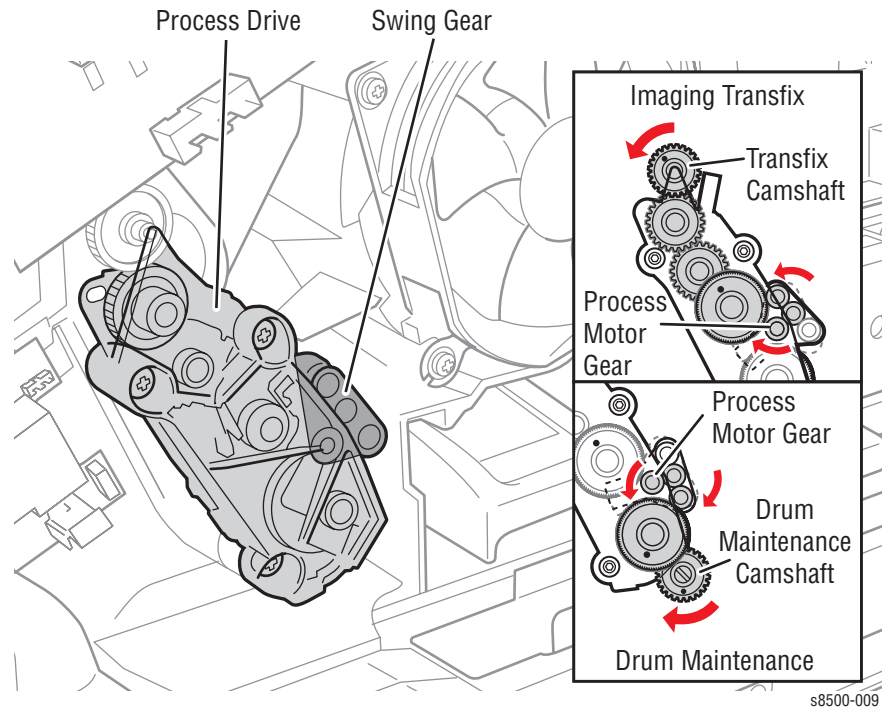
Media Drive

The Media Drive assembly drives each roller in the media transport path. A gear train located behind the motor connects it to the Exit Rollers, which are built into the Exit Module. Gear trains located within the Media Drive, along with two clutches and a solenoid, allow the motor to control the Pick, Take Away, Duplex, and Deskew rollers.

A unique swing gear allows the Pick Roller and Take Away Roller to rotate in the same direction regardless of the direction the motor is rotating.

Motor

Media Path Drive

Swing Gear

Duplex Roller

Deskew Roller

Take Away Roller

Pick Roller
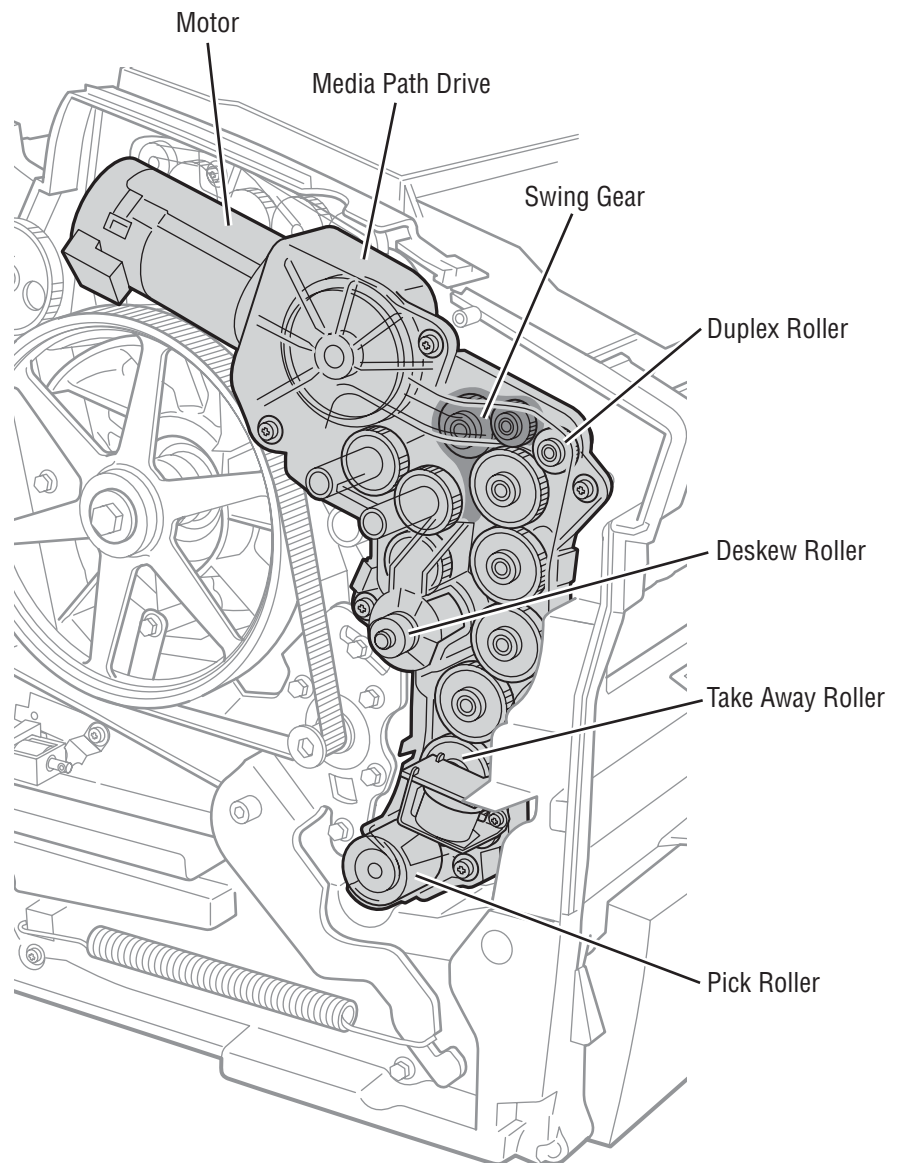
s8500-010

Ink Loader

The Ink Loader consists of four parallel channels with an ink melting element at the end of each channel. Coil springs exert pressure on four ink sticks to load one unique color in each channel. When the Printhead requires ink, the melting element of the appropriate color melts the end of the ink stick. The melted ink drips into the Printhead ink reservoirs. Sensors in the Ink Loader alert the customer to install more ink sticks before the printer completely consumes the current sticks.

If the ink level sensors inside the Printhead detect that the Printhead has run out of ink, but the ink low/out sensors are not activated, the Control Panel reports an "Ink Jam" error. The Phaser 8400 features a single Ink-Out sensor, which activates when there is no ink stick in any of the four ink channels. This condition activates the sensor flag.

The 8500/8550/8560 features an Ink-Out sensor in each ink stick channel. Each sensor determines if the individual channel is empty. The sensors also determine the count of the ink sticks as they pass by the Ink-Out sensor flag.

Ink Loader Door

Ink Stick

Ink Melt Units

Ink Low Sensor

Ink Out Sensor
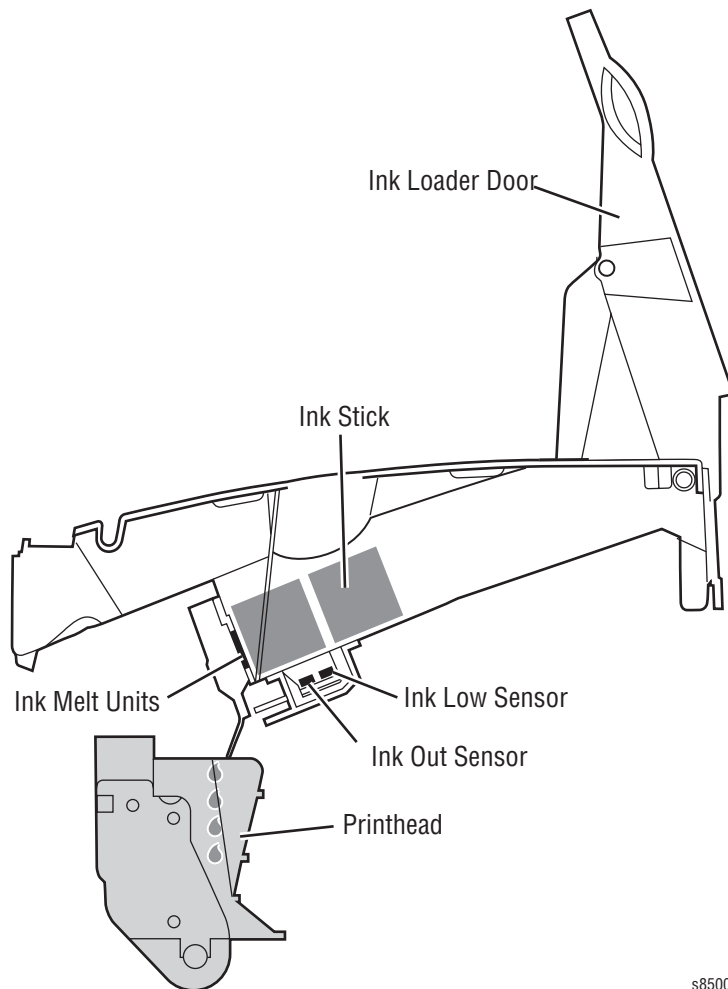
Printhead

s8500-011

Printhead

The Printhead is the heart of the printer, spanning nearly the length of the drum. Using its 1236 jet nozzles (309 jets for each primary color), with a horizontal motion of slightly less than 5 mm (0.2 inches), the Printhead can print the entire image on the rotating drum. The Printhead provides one size ink drop, which is used for all print-quality modes.
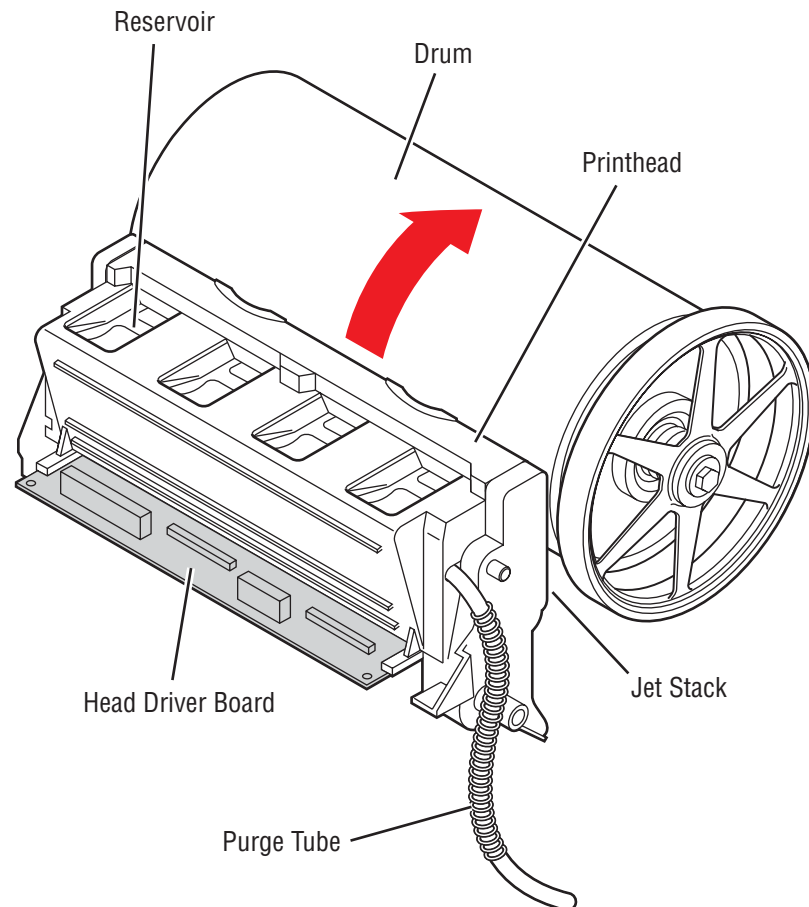
s8500-012
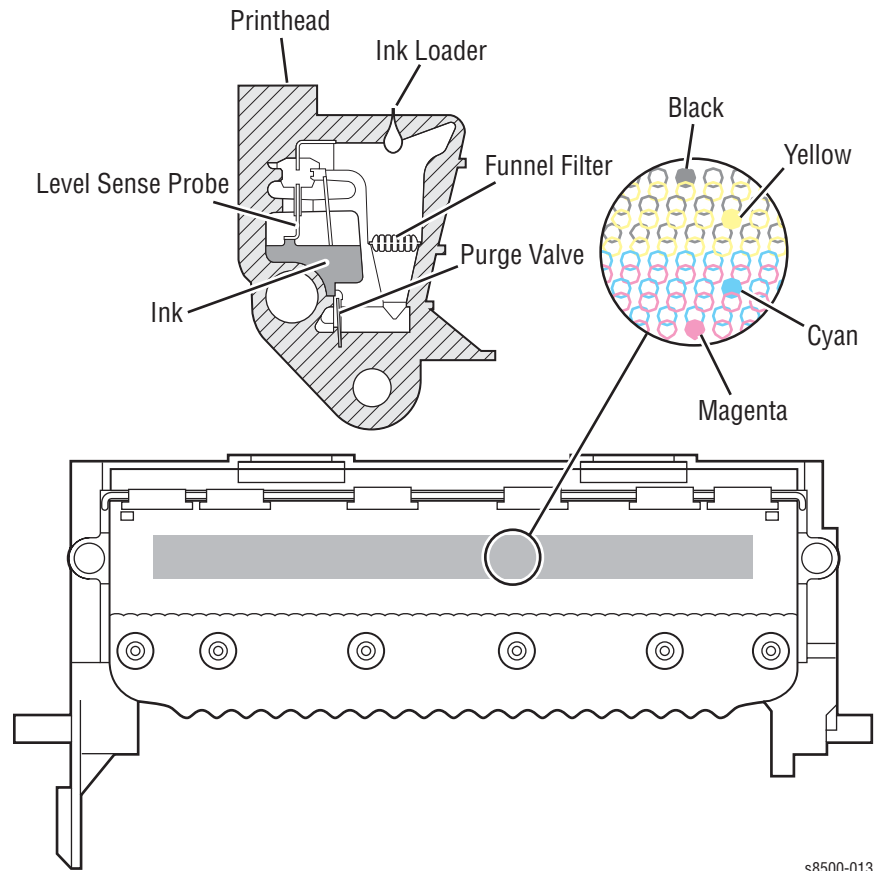
s8500-013

The Printhead's jet stack is fabricated from a stack of chemically etched steel plates which are brazed together to form the jet array. Channels formed by the stacked plates route ink past the 1236 individual, piezo-electric crystal-driven diaphragms, which force the ink in droplets out the 1236 corresponding nozzles. Looking at the Printhead face, the nozzles are arranged in 12 rows, in color order KYKYKYCMCMCM, where K = black, Y = yellow, C = cyan, and M = magenta. During the printing process, the Printhead would only have to travel approximately 14 pixels horizontally to provide complete coverage. However, the Printhead travels much further, depending on print resolution, to interlace each jet with the output of neighboring jets.

The jet array bonds to a cast aluminum ink reservoir, which supplies the molten ink to the jet array. Heaters in the reservoir and the jet array maintain the ink at a printing temperature of about 60 degrees centigrade.
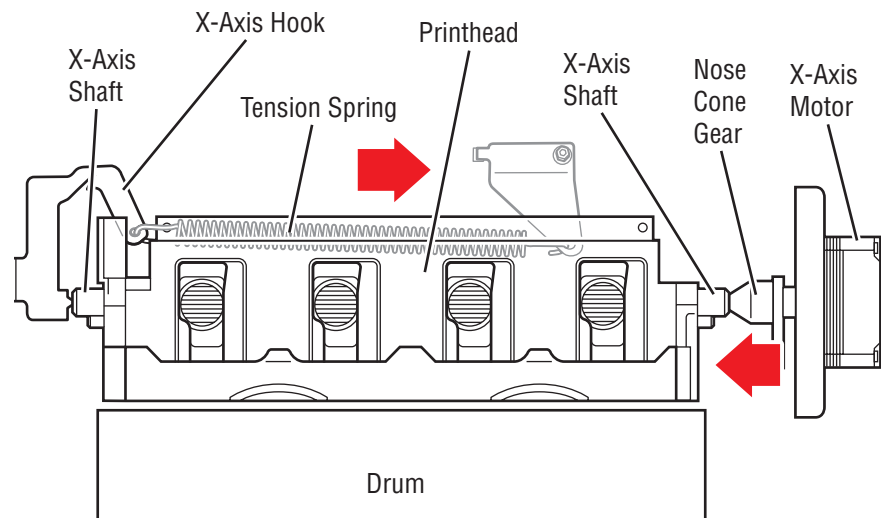
s8500-014

X-Axis or lateral movement of the Printhead is accomplished using a stepper motor driving a fine-thread screw system. The Printhead, mounted to the X-Axis shaft, moves laterally across the surface of the drum.

To find the Printhead home position, the X-Axis system drives the Printhead in an open-loop. The Printhead is driven against the left printer frame for a few seconds, and then reversed a set distance. A tension spring links to the Printhead's left shaft and provides a preloaded tension to allow the Printhead to move smoothly.

Printhead Tilt

The Printhead is able to rotate into four basic positions:

1. Printhead lock / ship position (19.5 degrees): The Printhead restraint pins are resting against the right and left locks. In this position, the Printhead tilt arm/follower is free of the tilt cam, and the head is secured for shipping.

2. Wipe position (12 degrees): The Printhead tilt arm/follower is engaged with the tilt cam, and the head overload spring contact is engaged with the overload spring-plate to provide the correct force for the wiper.

3. Standby position (20.9 degrees): Allows the wiper to clear the Printhead in order to be in the start wipe Printhead position, and also allow the Printhead locks to pivot and lock or unlock the Printhead. In this position, the Printhead tilt arm/follower is engaged at the standby position of the tilt cam.

4. Print position (0 degrees): The Printhead is forward and resting against the right and left head-to-drum buttons. The head-to-drum buttons define the space between the jet stack and the drum.

The tilt cam tilts the head into the basic four positions listed above. The cam has five special features and associated functions:

1. The cam is combined with a missing tooth gear that allows the cam to be inactive in the print position, which frees the process drive to perform other printer operations.

2. The cam has a latching feature to unlatch and latch the missing tooth gear to engage the Printhead tilt drive train.

3. The cam profile has a standby dwell (the portion of the cam that has a constant radius), that holds the Printhead back in the standby position.

4. The cam profile has a wipe dwell the holds the Printhead back in the wipe position.

5. The cam profile increases the power consumption at a specific phase of rotation. This allows the software to identify a power consumption footprint that alerts the printer to a fault when the head is locked in error.

The Printhead is tilted away from the drum and locked for shipping. The Printhead is locked if the head lock indicator is above the level of the output tray. When the Printhead is locked in the shipping position there are three key restraining elements:

1. The Printhead is restrained from rotating from the shipping position by pins extending from both ends of the Printhead into a pocket. These pockets are defined by dampening pads that limit motion to the lockarms that pivot into the lock position, limiting forward motion toward the drum. The wiper carriage holds the locks in the lock position, which are normally spring-loaded in the unlocked position.

2. The Printhead is restrained at the X-Axis shafts by the right and left head restraints that limit motion at both ends of the Printhead.

3. The Printhead is limited to the nominal motion of 1.7 mm in the X-Axis (left / right side motion when the Printhead is back and locked) by the right lock and the left home stop on the left side frame.
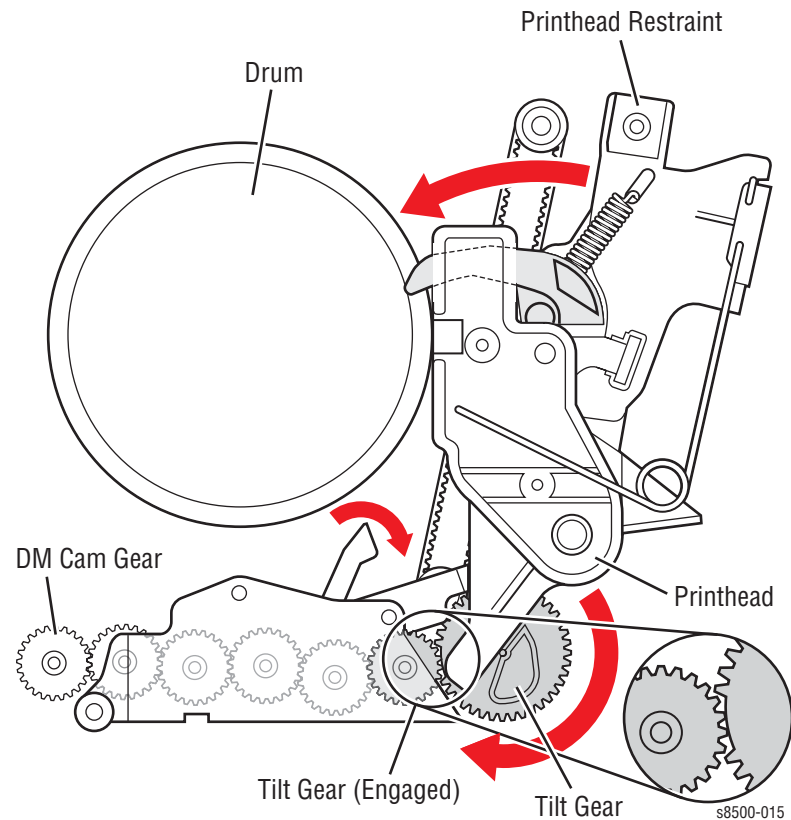
In the print position (0 degrees), the Printhead is forward and rests against the right and left head-to-drum buttons. The head-to-drum buttons define the space between the jet stack and the drum. When the Process Drive is activated, it drives the Drum Maintenance Camshaft to engage the tilt gear train. The tilt cam tilts the Printhead into the print position. The cam is combined with a missing tooth gear that allows the cam to be inactive in the print position, freeing the Process Drive to perform other printer operations.

The cam has a latching mechanism to unlatch and latch the missing tooth gear to engage the Printhead tilt drive train. The cam's latching mechanism also holds the tilt gear in place. A leaf spring applies constant pressure to engage the gear when the latching mechanism is released. The arm of the latching mechanism is inside the frame; the rest is visible, outside the frame. Arrows located on the latching mechanism and on the frame indicate when the Printhead is in print position. When the arrows on the latching mechanism and frame align, the Printhead is in the print position and the tilt gear disengages from the Process Drive. Phaser 8500/8550/8560 printers have a solenoid (Head Tilt Solenoid) that is actuated and deactuated when the tilt cam gear rotates to the respective engaged and disengaged positions.

The latching mechanism is actuated by a small movement of the wiper coupled with the Head Tilt Solenoid. The action of the solenoid ensures that the Head Tilt Gear engages the tilt drive gear. Through a follower gear, the compound gear drives the tilt cam gear clockwise. A cam follower, mounted on the lower end of the tilt arm, follows the rotating tilt cam gear and tilts the Printhead. After one revolution of the tilt gear, the latching mechanism is pulled back into position by the return spring in the 8400, and by the Head Tilt Solenoid in the 8500/8550/8560.

As viewed from the left side of the printer, when the arrows are not aligned, the tilt gear is engaged.

Head Tilt Compond Gear   Tilt Gear Engaged   Tilt Drive Gear
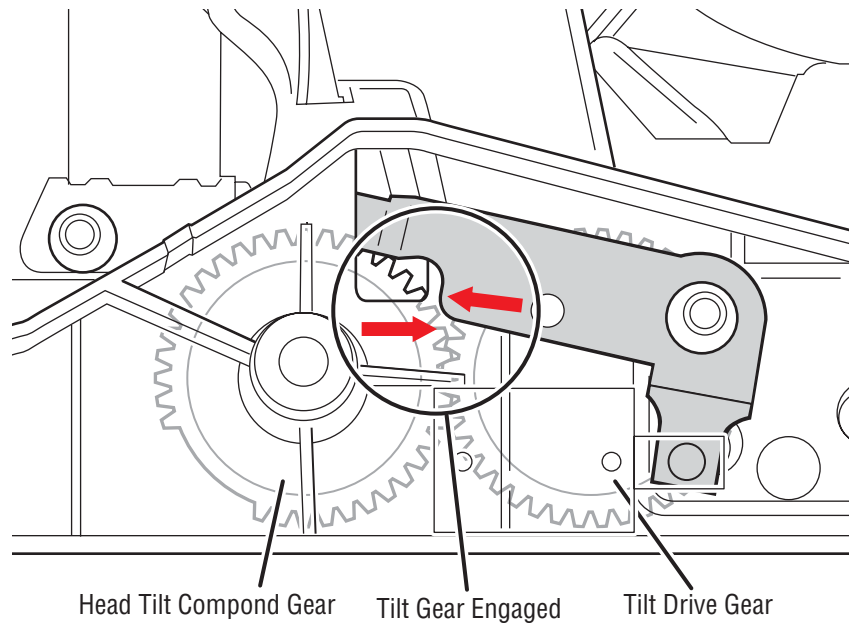
s8500-133

To accommodate Printhead maintenance, the Printhead is tilted back away from the Drum. This creates room for the Wiper Blade to move into position in front of the Printhead faceplate. The Process Drive drives the gears to the tilt compound gear train. The Drum Maintenance Camshaft drives the gear train to tilt the Printhead.

Drum Maintenance Kit

The Drum Maintenance Kit creates a thin layer of silicone oil on the surface of the Drum prior to printing. The oil keeps the ink from sticking to the Drum's surface and facilitates image transfer to the media. The oil is contained in porous foam rollers made from rolled paper/fiber material.

Prior to each print, the Process Motor drives the Drum Maintenance Camshaft to raise the Drum Maintenance Pivot Plate, which raises the oil roller against the rotating Drum. The same camshaft raises a wiper blade to assure that the oil film is smooth and even across the Drum's surface. The Process Drive rotates in one direction. This rotates the Drum Maintenance Camshaft and raises the drum maintenance system to the Drum. The Process Drive then rotates in the opposite direction to lower the drum maintenance system. The blade removes oil and drains it back into the maintenance kit drawer through a felt filter. The oil roller can then reuse the oil. As the Drum completes one rotation, the rotating cam lowers the oil roller and then lowers the blade.

The Drum has a floating deadband; the narrow section of the drum containing excess oil and other debris. The oil bar is left on the drum surface when the blade is removed from the drum. This oil bar location is controlled to keep it outside of the print area.

An EEPROM chip, built-in to the Drum Maintenance Kit, stores the number of oiling cycles performed and the number of prints remaining to track consumable life. At printer startup, four oiling cycles condition the Drum.

Drum

Oil on Drum

Blade

Maintenance Roller

Drum Maintenance Camshaft

Drum Maintenance Pivot Plate
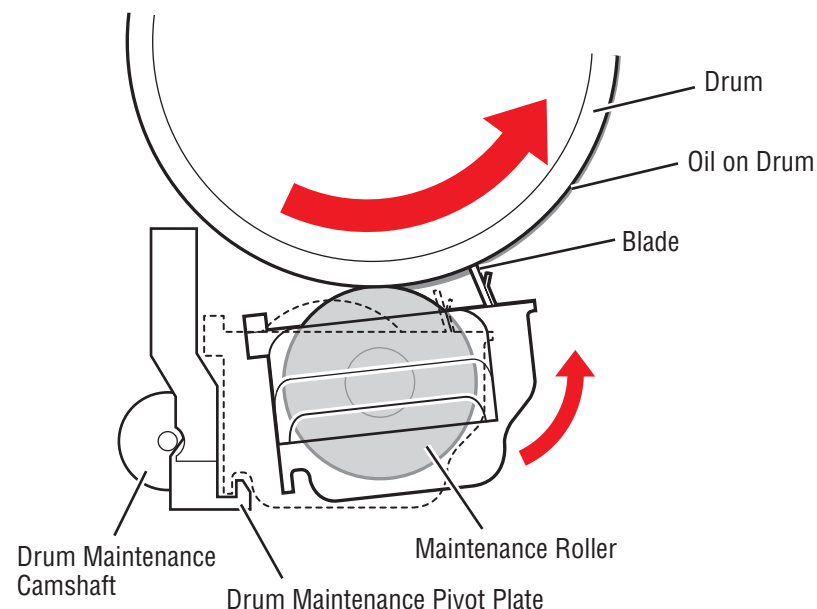
s8500-016

After replacing the Process Drive, Drum Maintenance Pivot Plate or the Drum Maintenance Camshaft (or any component requiring removal of the Process Drive), the printer may experience Front Cover jams from Tray 2. The jam occurs with paper in the Preheater and C3T jam errors (strip flag timeout during transfix) recorded in Jam History. In many cases, Tray 1 (MPT) prints with no jams. These symptoms indicate that the Transfix Load Module is incorrectly timed resulting in a late arrival of the leading edge at the strip flag. The likely cause is the position of the Drum Maintenance Camshaft gear in relation to the Process Drive gear. To correct this problem, see "Timing the Drum Maintenance Camshaft" on page 6-9.

Purge System

Proper Printhead operation is dependant on the correct operation of the purge system. The purge system uses air pressure and a Wiper Blade to purge any debris or air bubbles that may be obstructing the Printhead nozzles. The waste ink that is expelled during the purge is funneled into the Waste Tray. Following the purge, a wipe operation is performed on the faceplate using the Wiper Blade. After the wipe, a Cleaning page is printed.

s8500-017
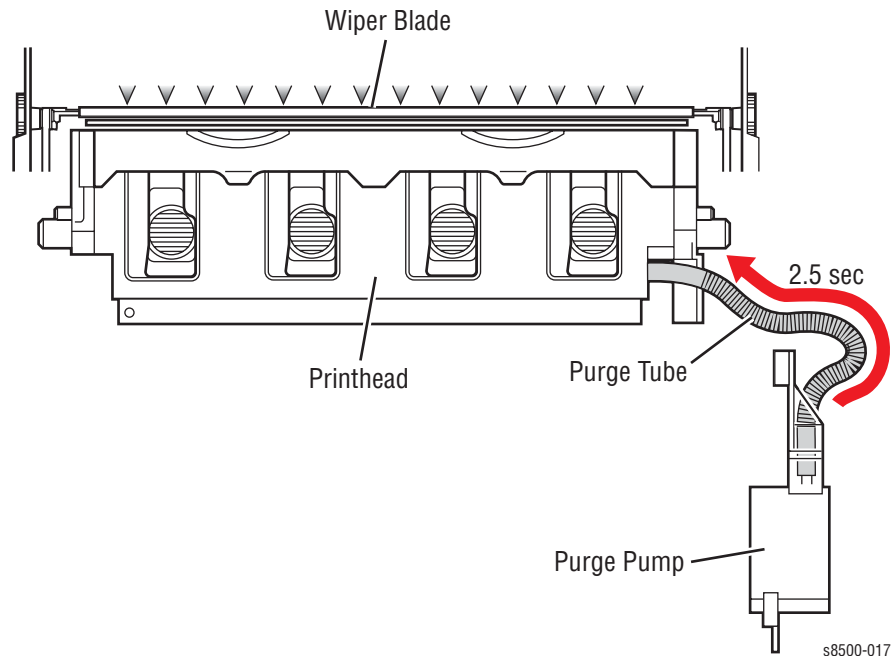
To perform a Printhead maintenance cycle, the Printhead is first tilted away from the Drum, to allow the Wiper Blade to pass by. The Wiper Blade is then raised in front of the Printhead. Wiper movement is driven by the Media Path Drive, by engaging a clutch on the exit shaft of the printer. The Purge Pump applies pressure to the ink reservoir for approximately 2.5 seconds. Valves in the reservoir seal when pressure is applied. The pressurization ejects a small amount of ink from the jets. Following the pressure purge, the Printhead is tilted into the wiper assembly and the wipe cycle begins. The pump runs again with the solenoid for approximately 30 seconds, creating a neutral balance between pressure and ink. The Wiper Blade lowers and wipes excess ink from the jets into the ink Waste Tray. A proper purge will layer the length of the Waste Tray with a single layer of ink about 20 mm wide.

The level of the ink in the reservoir is kept at a constant level. If the purge tubing is pinched, the Printhead may not purge properly. In addition, because the purge tubing also acts as a vent to atmosphere when not purging, a more serious failure may occur if the ink overfills. Overfilling may trap air in the reservoir, which would prevent the melted ink from entering the reservoir.

Warning

When servicing the printer be careful of the purge system as it passes the Printhead. If a damaged Wiper Blade catches on the Printhead, it could propel hot liquid ink upward into your face.

Printhead

Purge Tube

30 Sec

Solenoid Valve

Purge Pump

(Open During Wiper Action)

Wiper

Printhead
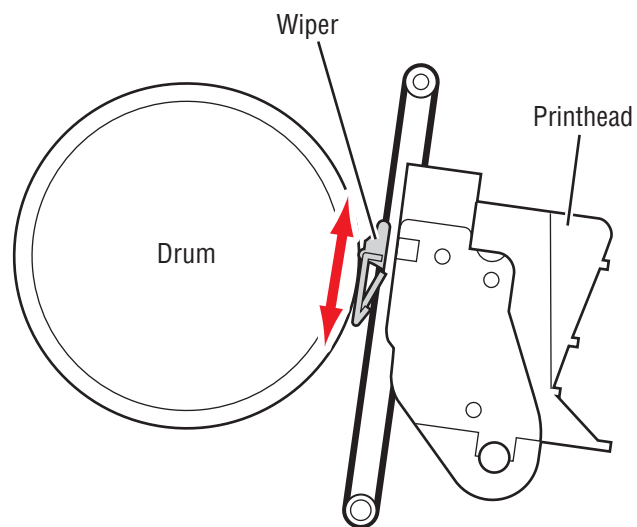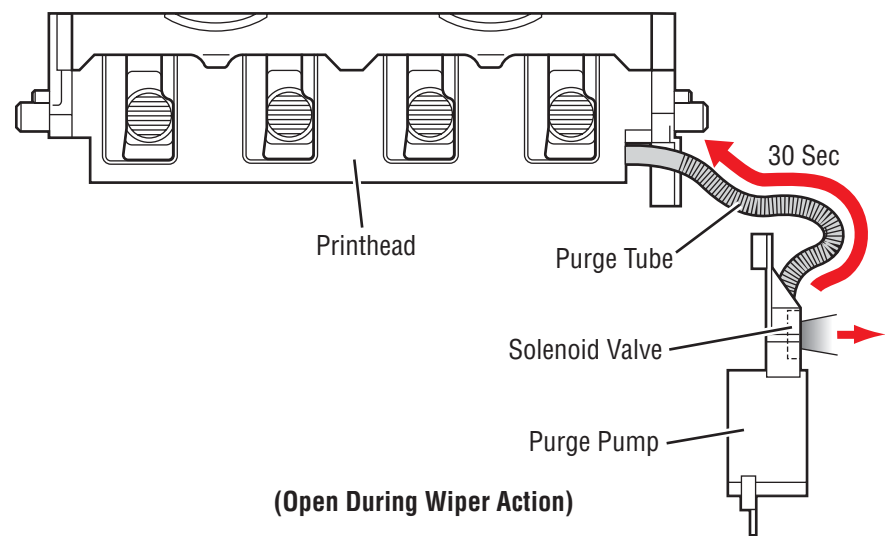
Drum

s8500-018

Drum Assembly And Transfix System

The Drum Assembly and Transfix Module form the key portion of the printer where imaging takes place. The Drum Assembly and Transfix Module are separate, yet interrelated. This section discusses the Drum. The next section provides more detail on the Transfix Module.

In operation, the image is rendered on the rapidly rotating drum. The Preheater heats the media to prepare it for the image transfer process. The heated media is then passed between the Drum (now rotating much more slowly) and the Transfix Roller. The pressure applied by the Transfix Roller transfers the image to the heated media. An encoder disk and sensor on the left end of the Drum monitors the Drum's speed and position.

Tranfix Roller

Paper Path

Preheater

Drum Heater

Drum

s8500-019
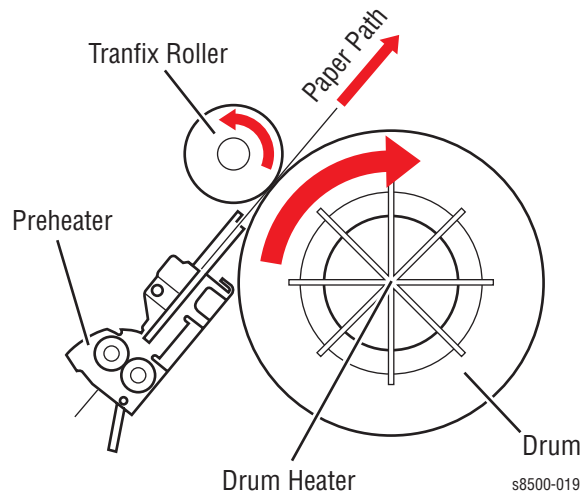
The drum heater heats the surface of the Drum to about 60° C (140° F) for imaging. The drum heater does not rotate. The heater is inside the drum, and is controlled by the Drum Heater Relay Board. The drum heater consists of two resistive heater coils that operate in series for 220 V and in parallel for 110 V operation. The Drum Heater Relay Board controls the series/parallel operation. The Drum Temperature Sensor monitors the drum temperature. The main board interprets the sensor's signal and turns on the drum heater and Drum Fan to heat the Drum, or turns on the Drum fan alone to cool the Drum.

The Y-Axis Motor drives the Drum. Through a single reduction belt drive, the Y-Axis Motor rotates the Drum at a high speed for imaging and a constant low speed for image transfer. The Y-Axis Belt uses an active tension system to allow the pulley to float while the spring actively adjusts the belt tension.

Note

The drum rotates in different directions for each process.

■   Transfix CW

■   Maintenance CCW

■   Printing CCW

Single Reduction Belt Drive

Pulley

Drum Temperature Sensor

CW

Fan

CCW

Air Direction

8400

Y-Axis Motor

Y-Axis
Encoder

8500/8550/
8560

Tension Spring

s8500-020
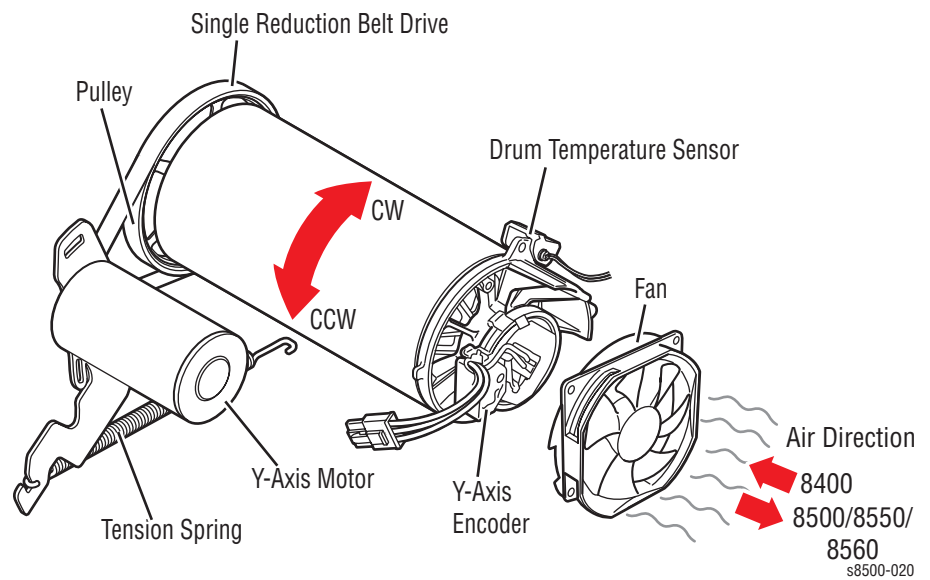
Warning

Always keep your fingers away from the drum drive system; it uses a
closed-loop servo drive system, which is inherently dangerous. Since the
motor speeds up if it senses the drum drive system slowing down, fingers
caught in the drum belts and gears can be severely injured.

Transfix System

The Transfix Roller applies pressure to the back side of the media as it moves between the Transfix Roller and Drum. This pressure transfers the image from the drum to the paper. A set of springs in the Transfix Load Module determines how much pressure the Transfix Roller applies to the Drum. The pressure is uniform across the length of the Transfix Roller to avoid wrinkles and light spots on the prints.

After the Transfix Roller engages, the Drum rotates to advance the media through the transfix process. The Drum continues to advance the media until the Transfix Roller disengages. The action of the Process Drive lifts and lowers the Transfix Roller. The upper gears of the Process Drive move to rotate the Transfix Camshaft to bring the Transfix Roller into contact with the Drum. The gears reverse to rotate the Transfix Roller back to its original position, except when printing from Tray 1 or on envelopes. The transfix load springs and double lever arms increase the force when the Transfix Camshaft engages.

Caution

Never attempt to adjust or increase the transfix pressure on the springs.
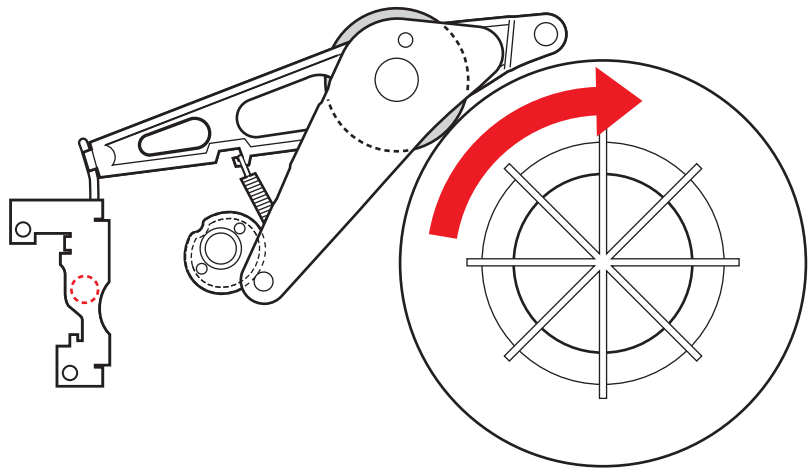
s8500-021

Electronics Module

The Electronics Module includes the main board, the power control board, and the power supply. The Electronics Module is a Field Replaceable Unit (FRU).

Main Board

The main board performs the image processing functions. Communication ports on the board receive the print job image data and convert it to drive signals for the Printhead. The main board also contains the mechanical process controller, which commands the function of the power control board. The main board sends signals through the power control board to the wave amp board, which amplifies the signal that drives the jets on the Printhead. The main board supports Non-Volatile RAM (NVRAM), memory, the hard drive, input/output ports, and the configuration card.

NVRAM: The NVRAM memory device, located on the main board, stores Control Panel defaults, network settings, calibration data, copy counts, usage profile data, and the printer serial number, which is also referred to as the Engine Tracking Number (ETN). When the electronics module is replaced, the NVRAM must be transferred to the main board in the replacement electronics module.

Memory: For Phaser 8400 printers, the main board supports two PC 133 compatible SO-DIMM SDRAM memory modules (128 to 256 MB). Phaser 8500/8550/8560 printers support SIMMs instead of DIMMs. Supported sizes are 128, 256, and 512 MB. Printers ship with a minimum of 128 MB and support a maximum of 1024 MB

Hard Drive Support: A hard drive IDE cable plugs into the main board from the hard drive board. A separate power cable must plug into the power control board from the hard drive board to provide signals and power for the hard drive board.

Input/Output Ports: In the Phaser 8400, the main board provides support for Ethernet (not supported on the B and BD printer configurations), Parallel, and USB 2.0 external I/O interfaces. For the 8500/8550/8560, the main board provides support for Ethernet (all printer configurations), and USB 2.0 external I/O interfaces. The 8500/8550/8560 configurations do not include parallel interfaces.

Configuration Card

The Configuration Card is a thumbnail-sized device that plugs into the side of the Electronics Module. This device stores printer information and interacts with the printer's NVRAM chip. The Configuration Card supports the transfer of printer model and network configuration information from a failed printer to a replacement printer. When replacing the electronics module, you must transfer the Configuration Card to the replacement electronics module.

Information stored on the Configuration Card includes the feature value, ethernet address, and personality parameters. The card reads a combination of feature values and the printer hardware capabilities; this will determine the printer model configuration.You can migrate the Configuration Card from one printer to another to transfer the printer configuration. Feature value and ethernet address are configured at the factory, and are "read only". The feature value is fixed in the Configuration Card and does not change. Ethernet address is stored only on the Configuration Card and cannot be rewritten. The Ethernet address is not written to the NVRAM chip.

Personality parameters are a subset of network configuration parameters, which are populated to the Configuration Card when the customer configures the printer. The personality parameters are copied ("shadowed"), from the main board's NVRAM chip to the Configuration Card during the normal operation of the printer. When the configuration card is inserted into a new printer, the personality parameters on the Configuration Card are written into the NVRAM chip of the new printer. When a printer is powered on, if it contains the Configuration Card of another printer, the personality parameters copy automatically to the NVRAM chip. When removing the Configuration Card for the Phaser 8400, the printer reboots as a B (non-networking) configuration. Refer to the "Configuration Card Personality Parameters" section at the end of this chapter for a detailed list of "shadowed" personality parameters.

Power Control Board

The power control board distributes drive voltages to operate the printer's various motors, solenoids, and clutches. The power control board also provides the interface that returns information from the printer's sensors to the main board. The sensors track mechanical and thermal functions, such as the position and temperature of the Printhead. The power control board also generates regulated +/- 12 V and 5 V from unregulated +/-15 V power.

Power Supply

There are no field adjustments necessary on the power supply. In general, the power supply has two main sections: the AC section and the DC section. In the AC section, power routes to 10 triacs. Under main board logic control, the triacs supply AC power to the 10 heaters in the printer.

Two fuses provide current protection to the triacs. Fuse F2 and F3 protect the power supply from a shorted triac from a defective heater. If the F2 or F3 fuses blow, it is best to replace the Electronics Module (and, of course, the defective heater), rather than the fuse. With the fuse replaced but the triac shorted, AC power may be applied to the heater. However, each time the main board turns on a triac to activate a heater, it is turned on for only a fraction of a second. The main board must constantly re-address each heater it wants to control. If the print engine firmware should fail, the heaters would automatically shut off.

Thermal fuses also protect the printer. A thermal fuse opens in the unlikely event of a "runaway" heater following a hardware failure. The Drum and the Preheater thermal fuses are located on the Preheater. Additional thermal fuses are located on the Printhead and on the ink melting elements.

The DC power supply generates + 3.3 V, +/- 15 V, and +/- 50 V. These voltages provide direct or regulated voltage values to various circuits in the printer. The power control board regulates +/- 15 V to +/- 12 and other voltages. The main board also has regulators providing + 5 V, + 2.5 V, and + 1.8 V. The power supply outputs + 3.3 V in ENERGY STAR mode. Fuse F1 provides protection for the switching power supply in the DC section.

Warning

Do not touch the power supply; AC line voltages are present. The power switch does not disconnect power from the printer. The power switch signals the supply and the printer logic to begin a shutdown sequence.
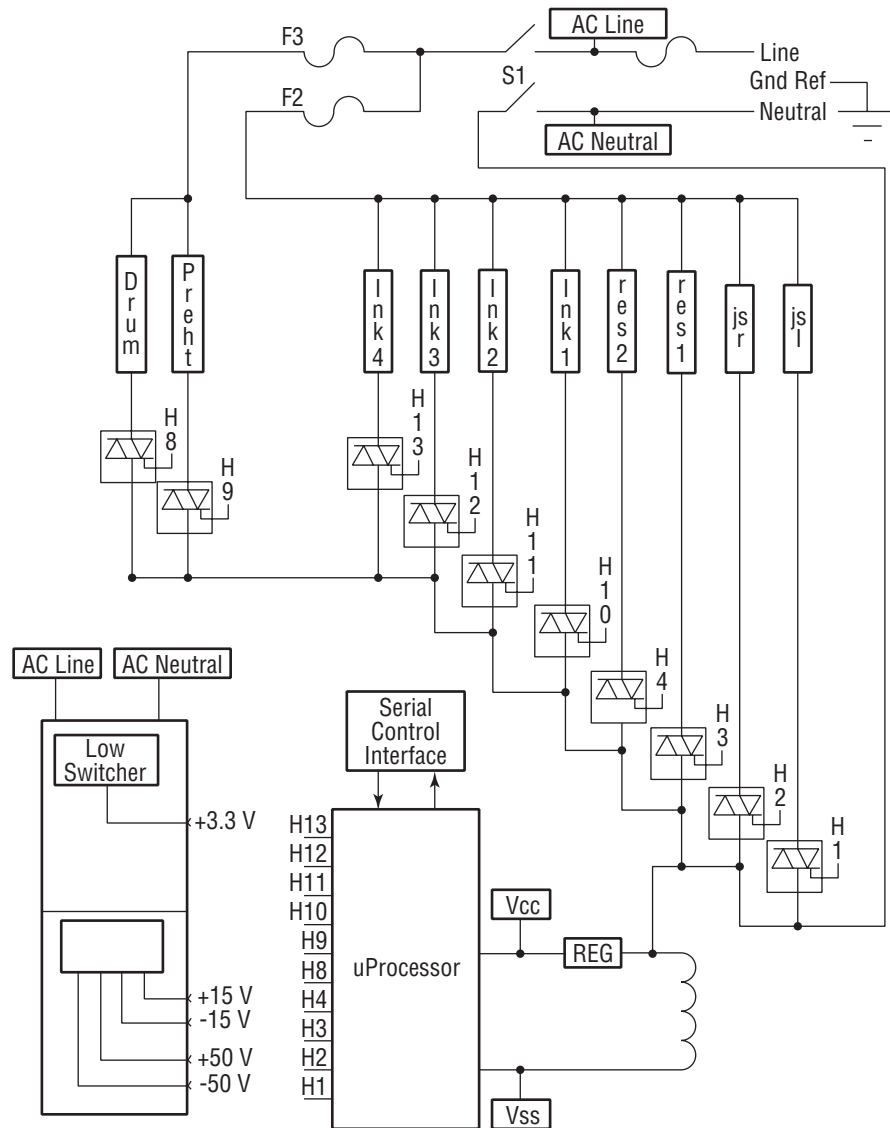
s8500-022

I/O Board

All sensor and switch readings are input into the I/O Board. The I/O Board translates these states into encoded information that it sends over a serial data bus (I/O Board data cable) to the Electronics Module. The Electronics Module has no direct connection to sensors, switches, or solenoids. In order to activate a clutch or solenoid, the Electronics Module sends a command to the I/O Board, which processes the command and activates the appropriate device.

Sensors

Sensors throughout all the major subsystems provide indicators of vital print operations. The following graphic identifies the location of the printer's sensors.

s8500-023
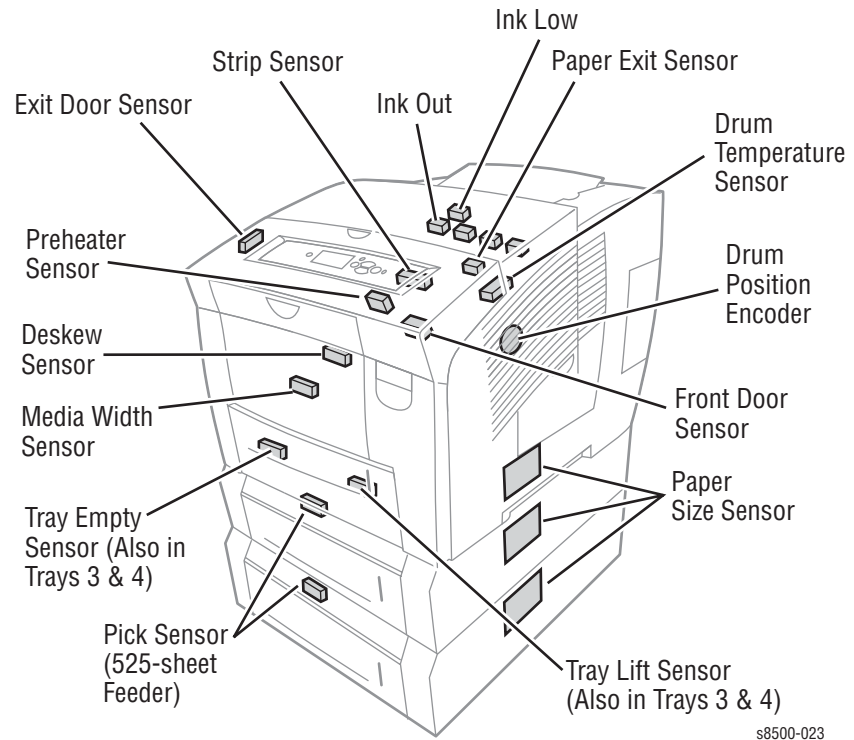
Print Process

Once the printer processes an image and creates a printing bitmap, the print cycle begins. Sensors maintain correct operating temperatures for the Printhead and Drum. Sensors also monitor ink levels in the reservoirs. If necessary, the ink loader adds ink.

At the ready state, the print process consists of the following steps:

■ Drum Preparation

■ Printing

■ Paper Pick

■ Transfixing and Exiting

Warning

Keep your fingers away from the Y-Axis Motor while the motor is in operation. The motor's closed-loop servo system is inherently dangerous.

Drum Preparation

To prepare the Drum, the drum maintenance system applies a thin coating of silicone oil to the surface of the Drum. The Process Drive first rotates the Drum Maintenance Camshaft. As the drum rotates, the cams on the ends of the camshaft push against followers on each side of the drum maintenance system, forcing the oil roller and blade against the Drum. The saturated roller evenly distributes oil on the Drum as it rotates.

Drum

Oil on Drum

Blade

Maintenance Roller

Drum Maintenance Camshaft

Drum Maintenance Pivot Plate
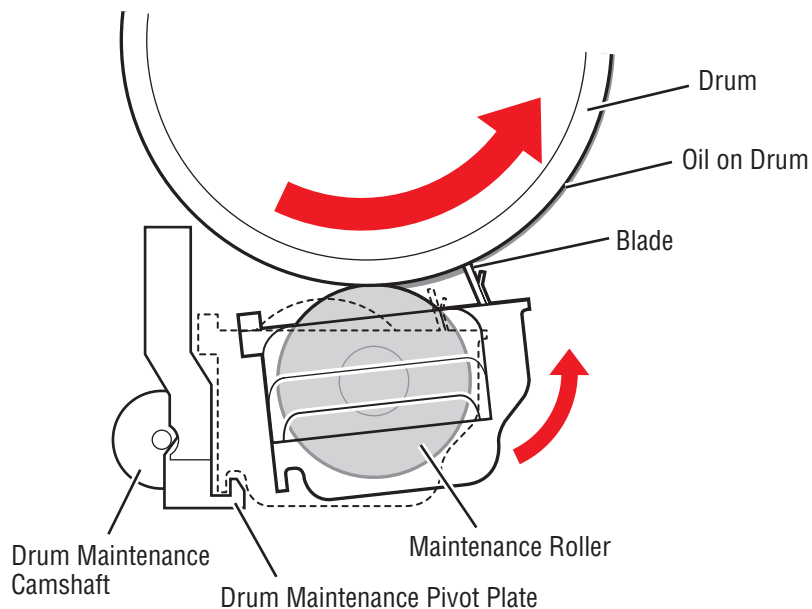
s8500-016

Printing

To print, the Drum rotates at a speed dependent upon print resolution. As the Drum reaches the correct speed, the jets begin to fire to deposit the image on the oiled portion of the Drum. As the jets fire, the Printhead moves from right to left to complete the image on the drum.

When printing, the printer performs a "six-jet interlace", in which each jet lays down a particular number of pixel columns, depending on the print resolution. Each jet lays down one pixel column for each Drum rotation, which varies from eight to 16 rotations, depending on the print resolution. Interlacing "averages out" the variability between jets as it interlaces each jet with other jets. In some test prints, the Printhead moves to the right and lays down 309 parallel bands of ink. Each band is composed of 15 pixel columns of dots from an individual jet.

Jet substitution allows a better performing jet to be used in place of a missing or poorly performing neighboring jet. When the printer is in the jet substitution mode, the Printhead makes a second, right to left movement to deposit the pixel columns of the substituted jets. See "Jet Substitution Mode" on page 6-12.

Paper Pick for Tray 1

To pick a sheet of paper, the Tray 1 solenoid actuates, and the drive gear rotates slightly to engage with the drive train. A bias force from the lift plate against a rotating cam causes the roller to rotate enough so the missing tooth gear engages the drive train. This allows the lift plate and paper stack to rotate against the Pick Roller. The Pick Roller then rotates to pick the paper. A Separator Pad prevents multiple sheets from being picked by the Pick Roller.

Key differences in the Tray 1 pick process include:

■   Increased lift plate force to support heavier paper.

■   100-sheet capacity.

■   Pick Roller to create the buckle for the deskew process.

■   Pick Roller drive to disengage when the door is opened and closed.

■   Pivoting separator pad to prevent it from binding.

Drive Gear   Cam   Pick Roller

Spring Loaded Lift Plate   Separator Pad
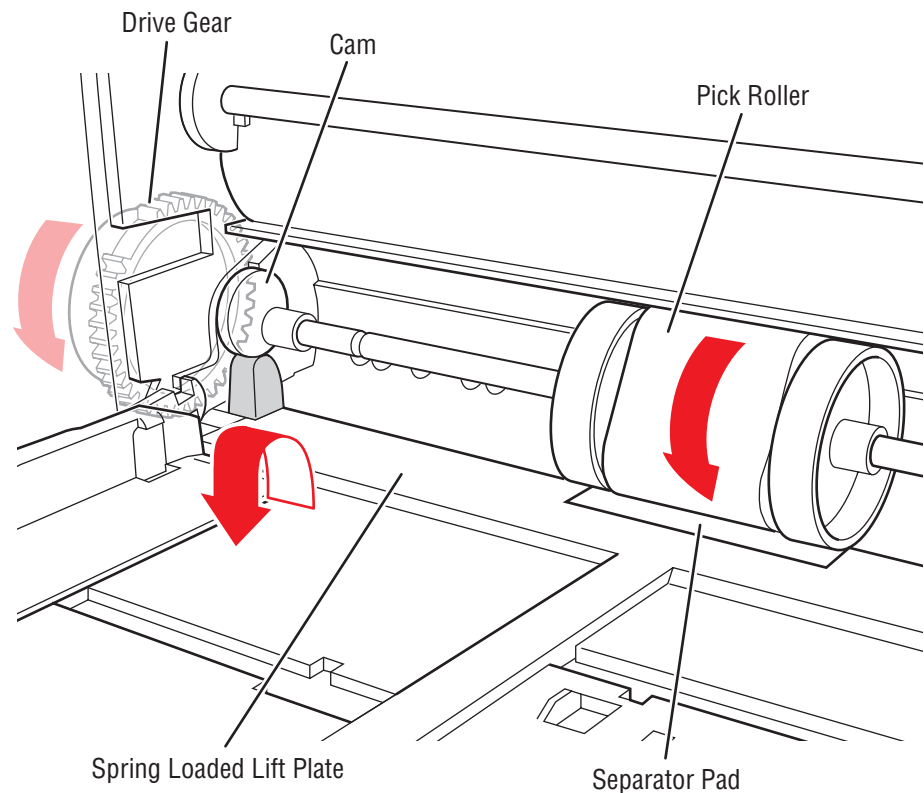
s8500-024

Paper Pick for Trays 2 - 4

Note

> Trays 3 and 4 are 525-Sheet Feeders.

For Trays 2 through 4, the paper pick process is different than the pick process used by Tray 1. To pick a sheet of paper, the Media Path Drive starts, and the pick clutch engages, which turns the Pick Roller and the Nudger Roller. The Nudger Roller advances one sheet of paper forward into the pick nip. The Retard Roller prevents two sheets from advancing. The sheet of paper continues past the Take Away Roller until the sheet completes the deskew process. When using the optional 525-sheet feeder, paper is pre-picked from the tray and staged in the paper path while the printer is printing previous pages.

The deskew process uses a reverse/buckle deskew for all three paper paths. The paper is driven against the non-rotating rollers, which are reversing during simplex, causing a buckle in the paper ensuring the leading edge is straighten to prevent skewing. The deskew rollers do not reverse during duplex printing.

s8500-025
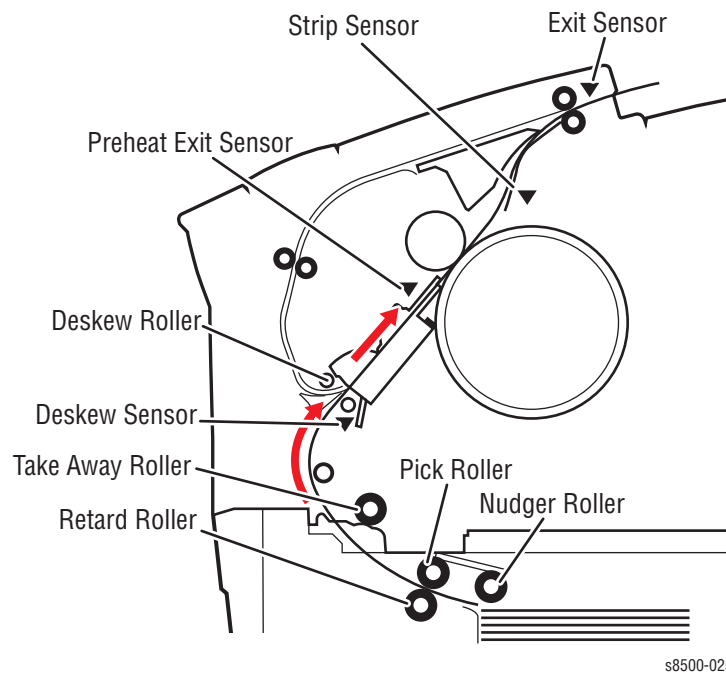
Transfixing and Exiting

Transfixing and exiting consists of four major functions:

1. Staging the paper for rendezvous with the image on the drum and transfix roller nip.

2. Loading the transfix roller and engaging the drum stripper blade assembly.

3. Stripping the paper from the drum.

4. Exiting the paper from the printer, or exiting the paper for (2-sided) duplex printing.

Tripping the preheat exit sensor (see previous illustration) sets up a series of events, which take place on a predetermined schedule. Paper is transported through the Preheater to thermally prepare it for transfixing. The preheat sensor detects the paper's presence, and accurately references the leading edge of the media with the image on the Drum.

Based on the timing information from the Preheater, the leading edge of the media is advanced to the transfix nip.

Once the media is stopped in the transfix nip, the Process Drive gears move to rotate the Transfix Camshaft to bring the Transfix Roller into contact with the Drum. The Transfix Roller nip applies the load necessary to transfer the image to the media from the Drum.

At the point where the Transfix Roller loads, but before the Drum begins to rotate, the Stripper Solenoid engages. The Stripper Solenoid positions the stripper blade. The solenoid mounts on the Upper Inner Duplex guide and activates the strip solenoid lever, which in turn rotates the Stripper Carriage until it hits the transfix ground pins. This action causes the stripper blade to drop onto the deadband of the Drum.

After the Transfix Roller and the stripper engage, the Drum rotates to advance the media and transfix the image. The stripper blade catches the leading edge of the sheet of media and separates it from the Drum. After the leading edge is beyond the stripper blade, the Stripper Solenoid de-energizes.

When the solenoid is de-energized, the solenoid return spring provides a force to move the solenoid plunger out of the solenoid coil which rotates the Stripper Carriage back to its ready position.

Once the entire image is transferred, the Drum stops rotating and the Process Drive lifts the Transfix Roller. The Media Drive now rotates the Exit Rollers in the correct direction to pull the media out. However, the Deskew Clutch is de energized so the deskew rollers are not driven during transfix. The Exit Rollers deposit the media into the Output Tray, ending the print cycle.

Transfer Roller

Transfix Load Arm

Transfix Load Module

Transfix Load Spring

Transfix Cam

Drum

Process Drive

Transfix Roller Gear

Swing Arm Gear

Transfix Cam

s8500-026

Release Blade

Strip Solenoid

Transfix Roller

Exit Sensor

Preheat Sensor

Strip Sensor

Paper Preheater
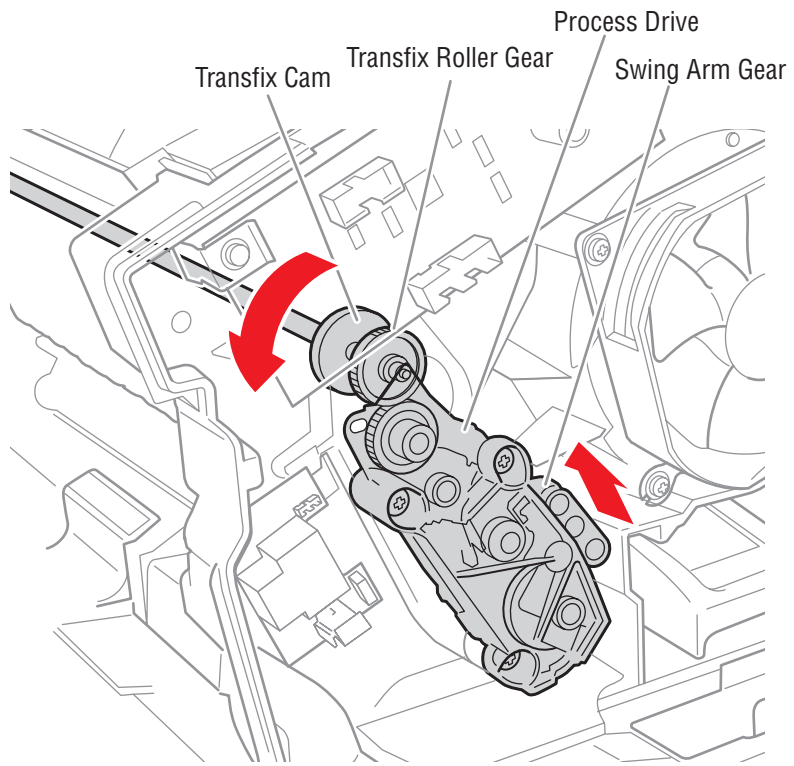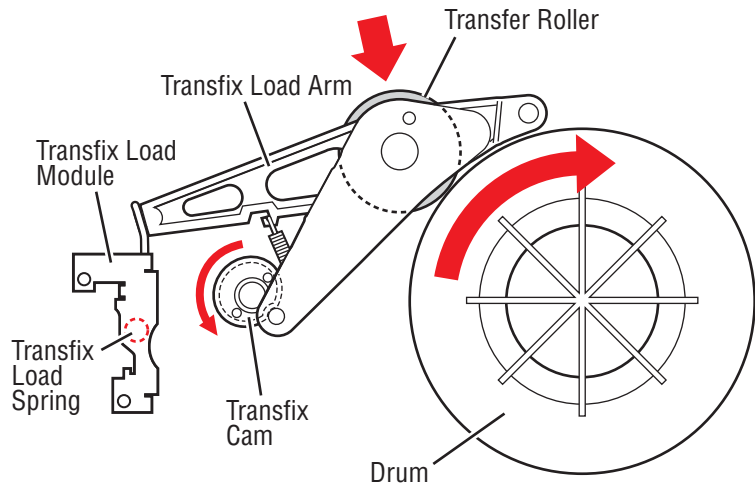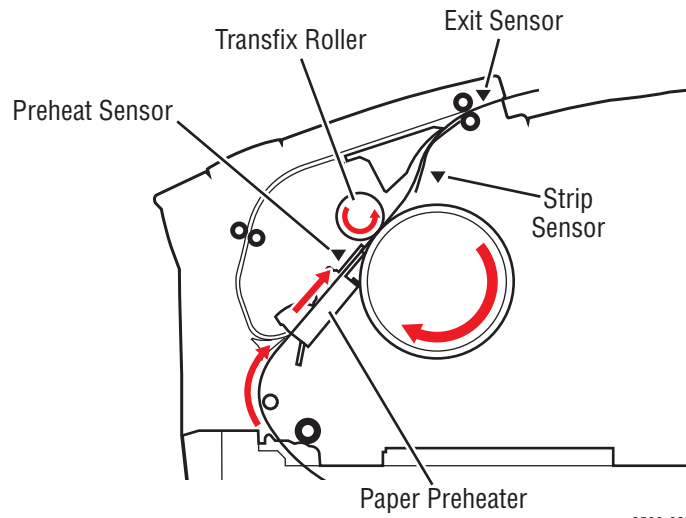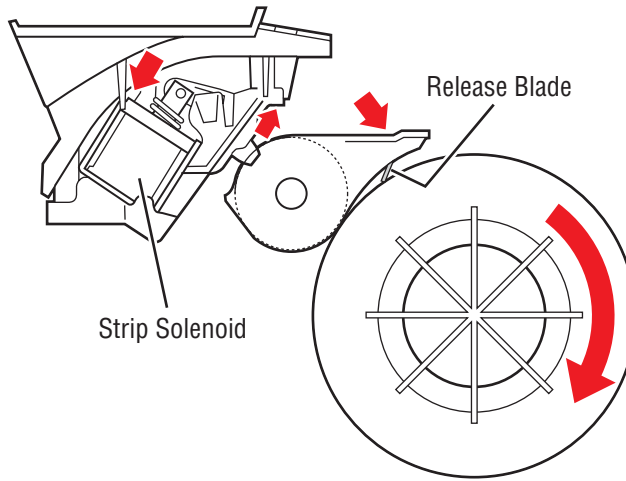
s8500-027

Duplex Printing

When duplex printing, the Exit Rollers pull the media to a predetermined location, such that the trailing edge is adjacent to the Exit Rollers. Then, the Exit Rollers pull the media back into the duplex path. The media deskews against a non-rotating deskew nip. From this point on, the print is processed through the Preheater and transfix system to the Output Tray in the same manner as a single-sided print. Phaser 8500/8550/8560 models include a Preheater Lift Solenoid, mounted to the Transfix Load Module, that increases the physical spacing between the Preheater plates when printing the second side of duplex prints. The increased spacing prevents the paper from rubbing as hard against the plates, which can cause smearing to occur. Since the 8400 models operate at a lower temperature, the solenoid is not needed.
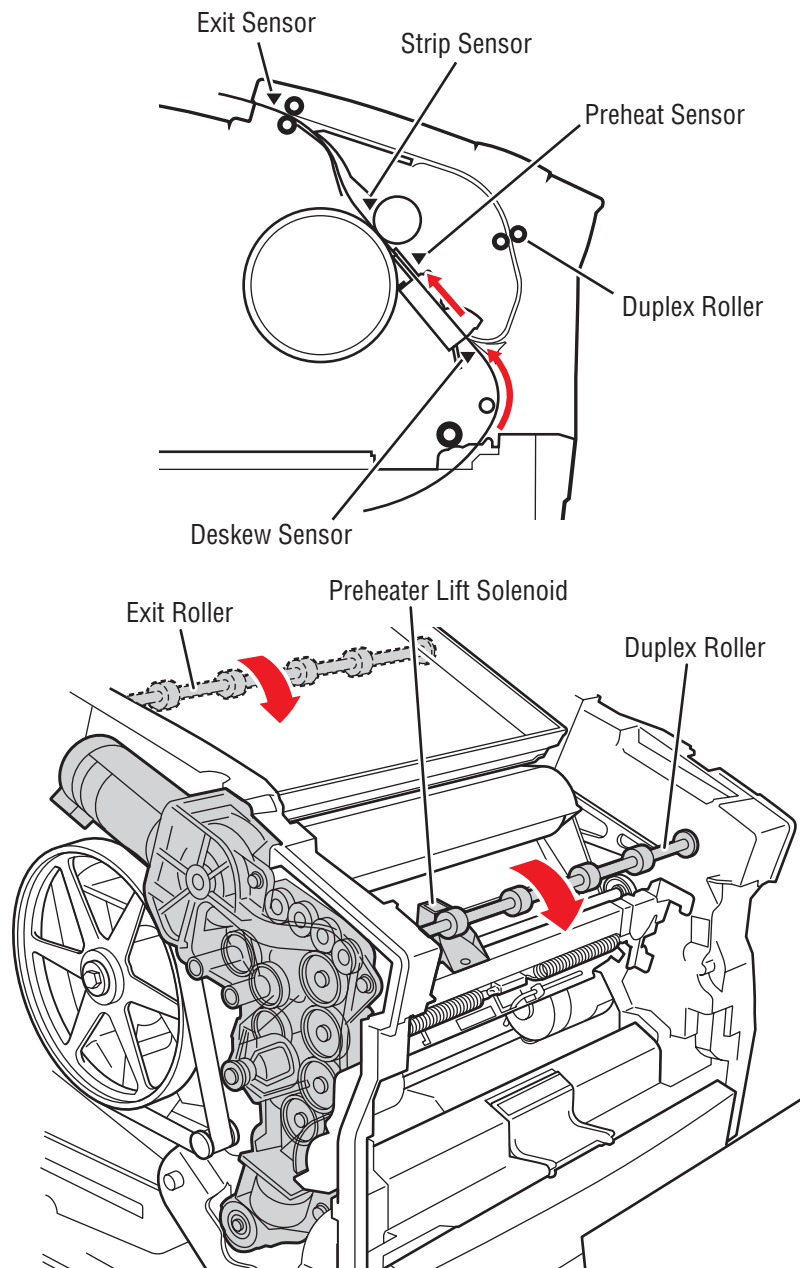
s8500-028

Transfix and Print Speeds

Transfix Speeds

Characteristic	Setpoint, Paper Media			
	Fast Color	**Standard**	**Enhanced**	**High Res/ Photo**
Peak Transfix Speed, Simplex tray feed	20 ips (8400) 25 ips (8500/ 8550/8560)	17 ips (8400) 25 ips (8500/ 8550/8560)	13 ips (8400) 20 ips (8500/ 8550/8560)	7 ips (8400) 10 ips (8500/ 8550/8560)
Peak Transfix Speed, Duplex	5 ips (8400) 10 ips (8500/ 8550/8560)	5 ips (8400 10 ips (8500/ 8550/8560)	5 ips (8400 10 ips (8500/ 8550/8560)	5 ips (8400) 10 ips (8500/ 8550/8560)
Peak Transfix Speed, Legal	20 ips	17 ips	13 ips	7 ips
Peak Transfix Speed, Tray 1	13 ips	7 ips	7 ips	7 ips
First Sheet Transfix Speed	7 ips	7 ips	7 ips	7 ips
	Setpoint, OHP Media			
Peak Transfix Speed	5 ips			

Approximate Print Speeds (8400 Series)

Tray (Source) / Resolution	Simplex, A4 Paper	Auto Duplex, A4 Paper
Tray 1		
Fast Color (300x300 dpi)	10 pages per minute (ppm)	10 sides per minute (spm)
Standard (300x450 dpi)	9 ppm	9 spm
Enhanced (563x400 dpi)	8 ppm	4 spm
High Res/Photo (525 x 2400)	6 ppm	3 spm
PCL 600 x 300 Mode PCL 600 x 600 Mode	6.5 ppm 3 ppm	
Tray 2 - 4		
Fast Color (300 x 300 dpi)	24 ppm	15 spm
Standard (300 x 450 dpi)	18 ppm	13 spm
Enhanced (563 x 400 dpi)	12 ppm	11 spm
High Res/Photo (525x2400)	7 ppm	7 spm
PCL 600 x 300 Mode PCL 600 x 600 Mode	13 ppm 6 ppm	

Approximate Print Speeds (8500/8550/8560)

Tray (Source) / Resolution	Simplex, A4 Paper	Auto Duplex, A4 Paper
Tray 1		
Fast Color (225 x 400 dpi)	12 pages per minute (ppm)	8.5 sides per minute (spm)
Standard (300 x 450 dpi)	9 ppm	7 spm
Enhanced (525 x 450 dpi)	6 ppm	5 spm
High Res/Photo (525 x 2400 dpi)	3.5 ppm	3 spm
PCL 600 x 300 Mode PCL 600 x 600 Mode	6.5 ppm 3 ppm	
Trays 2 - 4		
Fast Color (225 x 300 dpi)	30 ppm	17 spm
Standard (300 x 450 dpi)	24 ppm	14 spm
Enhanced (525 x 450 dpi)	16 ppm	10 spm
High Res/Photo (525 x 2400 dpi)	10 ppm	6 spm
PCL 600 x 300 Mode PCL 600 x 600 Mode	16 ppm 8ppm	

Printer Self-Maintenance

The printer has several automatic or semi-automatic maintenance functions. These functions may be started automatically after a certain number of prints or during printer startup, or they may be started by the customer if a print-quality defect is noted.

■ Printhead Maintenance Cycle (Eliminate Light Stripes)

■ Preheater Cleaning (Remove Print Smears)

■ Transfix Roller Oiling

■ Drum Cleaning (Chase Page)

Printhead Maintenance Cycle (Eliminate Light Stripes)

The Printhead maintenance cleaning cycle removes bubbles or foreign matter that cause a Printhead jet to malfunction. Three basic actions take place during a cleaning cycle:

■ Purging

■ Wiping

■ Printing the Cleaning Page

There is one basic type of cleaning cycle performed by the purge system. The first customer purge and the manufacturing purge consist of two basic cleaning cycles performed sequentially. A cleaning cycle is performed when the printer is first powered on, if the ink reservoir has cooled to the point that a cleaning cycle is triggered. A cleaning cycle is not performed when the printer is coming out of standby mode. Refer to the purge system topic in this chapter for more detail on the Printhead maintenance cycle.

Warning

When servicing the printer be careful of the purge system as it passes the Printhead. If a damaged Wiper Blade catches on the Printhead, it could propel hot liquid ink upward into your face.

Paper Preheater Cleaning (Remove Print Smears)

This customer-initiated cleaning procedure is selected by choosing **Remove Print Smears** on the Control Panel's **Print Quality Problems** menu. This procedure cleans ink out of the Preheater that may have been deposited there. Heavier-weight, high-grade quality paper works best for this procedure. Ink can also be deposited if a jammed print, with ink on it, was pulled backwards through the Preheater.

In the Preheater cleaning cycle, these events take place:

1. The customer selects the **Remove Print Smears** menu item.

2. The printer overheats the Preheater to about 110° C, softening ink trapped inside the Preheater. Ordinarily the Preheater runs at temperatures of between 60° C and 70° C.

3. The printer picks and passes approximately 12-24 sheets of paper through the print path. The first few sheets absorb and remove ink from the Preheater. The printer continues to pass sheets of paper though to cool the Preheater until normal operating temperature is reached. If duplex capability is enabled, 5 sheets of paper go through the simplex path and up to 20 sheets go through the duplex path.

4. The printer returns to the **Print Quality Problems** menu.

Because of the higher paper temperatures involved, this function can clean the Drum of ink deposits caused by a contaminated blade on the Drum Maintenance Kit.

Transfix Roller Oiling

Oiling the Transfix Roller prevents ink from sticking to it. Every 50 prints, the printer performs a Transfix Roller oiling cycle. During this cycle, oil is applied to the Drum as it would be during a print cycle. The Transfix Roller then lowers against the Drum and the Drum rotates, transferring some of the oil to the Transfix Roller. Finally, the Transfix Roller raises to its standby position.

Drum Cleaning - Chase Page

The printer performs a Drum cleaning with a chase page automatically anytime a paper jam occurs. The chase page collects any image, which may not be complete, off the Drum. The printer then attempts to reprint the print that jammed. The chase page is processed the same as a regular print, except that the Drum is not oiled and no image is printed on the drum (since an image is already printed on the Drum).

Configuration Card Personality Parameters

Configuration Card "Shadowed" Personality Parameters

Attribute	Parameter	Size (bytes)
N/A "version" not parameter	version (of the layout of personality parameters)	4
NEST	Base Printer Name	48
NEST	SysAdmin Contact	128 (truncated from 256)
NEST	Printer Location	128 (truncated from 256)
NEST	Asset Identifier	128 (truncated from 256)
IP	Host Name	64
IP	Domain Name	256
IP	Network Mask	4
IP	IP Address	4
IP	Default Gateway	4
IP	BOOTP/DHCP	1
IP	DDNS	1
IP	SMTP Server	256
IP	IP Source	1
IP	TCP/IP	1
IP	AutoIP	1
IP	DHCP Vendor Class ID	48
DNS RESOLVER	Primary Name Server IP Address	4
DNS RESOLVER	Secondary Name Server IP Address	4
DNS RESOLVER	MulticastDNS	1
NBNS (WINS)	Enable	1
NBNS (WINS)	WINS Note Type	1
NBNS (WINS)	Primary WINS Server	4
NBNS (WINS)	Secondary WINS Server	4
Ethernet	Speed	1
HTTP	On	1
HTTP	Information Forwarding	1
HTTP	SMTP Server Automatic	1
HTTP	Legal Settings	1
HTTP	Admin_Password	11
HTTP	Admin_Username	11
HTTP	KeyUser_Password	11

Configuration Card "Shadowed" Personality Parameters (Continued)

Attribute	Parameter	Size (bytes)
HTTP	KeyUser_Username	11
HTTP	Admin_HostAccessList	256
HTTP	KeyUser_HostAccessList	256
Notify	On	1
IPP	Authentication Scheme	1
IPP	IPP user name	11
IPP	IPP password	11
FTP	Login Password	33
Security	Print Hosts	256
AppSocket	On	1
AppSocket	Enabled	1
LPR	On	1
LPR	Enabled	1
FTP	On	1
FTP	Enabled	1
IPP	On	1
IPP	Enabled	1
MIME	On	1
MIME	Enabled	1
EtherTalk	On	1
EtherTalk	Enabled	1
PSERVER	On	1
PSERVER	Enabled	1
PSERVER_IPX	Enabled	1

Notes:
1. "Parallel" and "USB", "On" and "Enabled" parameters have not been identified as personality parameters. They are not tied to networking.

Error Messages and Codes

In this chapter…

Chapter 3

Introduction

This section covers troubleshooting procedures utilizing Control Panel error messages and codes. Some procedures require running Service Diagnostics test functions to verify that a specific printer component is operating correctly. For information on Service Diagnostics and all internal printer test functions see "Service Diagnostics Mode Menu" on page 4-5.

For troubleshooting printer problems not associate with, or displaying, an error code or message, such as startup or power on, media, paper path, print-quality or image problems, and electrical failures, see "General Troubleshooting" on page 4-1 or "Print-Quality Troubleshooting" on page 5-1.

Check the main menu for current data and historical error data.

■ Status Page

■ Usage Profile

■ Fault History

■ Diagnostic History

Power-Up Error Messages and LED Codes

The printer has three sets of tests that are run when first powered on:

■ Built-In Self Tests (BIST)

■ Power On Self Tests (POST)

■ Print Engine Self Tests (PEST)

Note

BIST and POST errors are not stored in the fault history logs.

BIST Error Reporting

BIST verifies basic Electronics Module CPU operation and reports failures by utilizing the rear interface panel PS and PE LEDs. These tests occur immediately at power-up, before POST tests are run or the Control Panel is initialized.

The following table defines the blink patterns associated with a failure.

BIST Error Reporting Blink Pattern Definition Table

PE LED	PS LED	Description
Off or 1 Blink, and then off	Off or 1 Blink, and then off	The power supply could not remain regulated when DC power was applied so it was shut down. Follow the troubleshooting procedures for electrical shorts (see "Miscellaneous Electrical Troubleshooting" on page 56) and check the power supply fuses.
On Solid (dimly)	On Solid (dimly)	Initialization failure. The printer is held in reset mode. This can be caused by an Electronics Module fault or a +3.3 V power supply regulation failure (see "Miscellaneous Electrical Troubleshooting" on page 4-56). See also, "Verifying Power Supply Operation" on page 4-64.
Off	PS and Control Panel 1/2 sec. blink	Boot loader memory test failure. Ensure the printers RAM chips are properly seated and that the correct RAM type for this printer is installed.
1	Rapid blinking	CPU bridge and/or PCI bus is not communicating. Reboot the printer, if the error still occurs, replace the Electronics Module.
2	Rapid blinking	ROM not responding. Reboot the printer, if the error still occurs, replace the Electronics Module.
3	Rapid blinking	Printer hangs during code initialization. 1. Unplug all cables from the Electronics Module. 2. Plug in the power cable. 3. Power on the Electronics Module (system). 4. If the problem still occurs, reseat the RAM DIMMs. 5. Replace the Electronics Module. For disassembly, see "Electronics Module (PL5.0.5)" on page 8-46. For replacement, go to the Parts List on page 9-3.

POST Error Reporting

POST checks the communication paths within the Electronics Module and to other various printer components.

POST testing initializes the Control Panel, and in most cases if an error occurs, a text message is displayed on the Control Panel along with an LED blink code flashing on all three LEDs (Control Panel LED, PS LED and PE LED). If initialization of the Control Panel fails, POST errors will still report using the LED blink patterns. The sum of the flashes equal the error code. If the code has more than 5 flashes, there is a brief pause between each set of 5 flashes to make them easier to count. After all flashes occur within the code, there is a long pause and then the flash pattern repeats.

"Soft" POST errors, that do not prevent the printer from powering up completely, are displayed on the Control Panel for 5 seconds, and then the printer continues through the remainder of POST. There are no rear panel LED codes associated with soft errors. Most soft errors will cause the printer to print a Startup Page with the error message on it.

Note

Before replacing the Electronics Module for any POST errors, do the following:

1. Disconnect all connections to the Electronics Module.

2. Plug in the Power Cord and power on the Electronics Module.

3. If the error blink pattern changes from the original error reported before Step 1, the problem may not be in the Electronics Module, (see "Miscellaneous Electrical Troubleshooting" on page 4-56).

POST Error Reporting Blink Pattern Definition Table

8400 Error Code	PS, PE and Control Panel LEDs (for 8400)	POST Error Type	Description	8500/ 8550/8560 Error Code
01.01	Flutter then 01 blinks	Hard	Bad error code.	21.1
02.01	Flutter then 02 blinks	Hard	Failed machine check.	19.1
02.02	Flutter then 02 blinks	Hard	Printer panic.	19.2
03.01	Flutter only	Soft	ID read failure.	31.1
03.02	Flutter then 03 blinks	Hard	Mismatch.	31.2
03.03	Flutter only.	Soft	Version mismatch.	31.3
03.04	Flutter then 03 blinks	Hard	Access failure.	31.4
04.01	Flutter then 04 blinks	Hard	ID read failure.	23.1
04.02	Flutter then 04 blinks	Hard	ID mismatch.	23.2
04.03	Flutter then 04 blinks	Hard	TMVL mismatch, write/read failed.	23.3
04.04	Flutter then 04 blinks	Hard	TMVH mismatch, write/read failed.	23.4
05.01	Flutter then 05 blinks	Hard	Communications error. PLD I/O Board serial, link down/bad parity.	32.1
05.02	Flutter only	Soft	Communications error. PLD I/O Board serial, mismatch.	32.2

POST Error Reporting Blink Pattern Definition Table (Continued)

8400 Error Code	PS, PE and Control Panel LEDs (for 8400)	POST Error Type	Description	8500/ 8550/8560 Error Code
6.08	N/A	Soft	IDE drive general failure. Reseat IDE cable and power cable. If problem persists, replace the IDE drive. The printer will work without the IDE drive.	6.808
07.01	Flutter only	Soft	Control Panel link is invalid or bad parity.	16.1
07.02	Flutter only	Soft	Control Panel version mismatch.	16.2
08.01	Flutter only	Soft	Control Panel failed to initialize.	16.3
09.01	Flutter only	Soft	Control Panel data path failure.	16.4
10.01	Flutter then 10 blinks	Hard	PLD power control link down.	33.1
10.02	Flutter only	Soft	PLD power control link invalid, mismatch error.	33.2
11.01	Flutter then 11 blinks	Hard	EEPROM read failure. 1. Check EEPROM orientation. 2. Replace EEPROM.	12.1
11.02	Flutter then 11 blinks	Hard	EEPROM write failure. 1. Check EEPROM orientation. 2. Replace EEPROM.	12.2
11.03	Flutter then 11 blinks	Hard	EEPROM re-read failure. 1. Check EEPROM orientation. 2. Replace EEPROM.	12.3
11.04	Flutter then 11 blinks	Hard	EEPROM data failure, mismatch error. 1. Check EEPROM orientation. 2. Replace EEPROM.	12.4
12.xx	Flutter only	Soft	Configuration card test failure. 1. Check card orientation. 2. Reseat then replace the configuration card. **NOTE** Printer will work as a base model (without networking) without the configuration card (8400 only).	
13.01	Flutter then 13 blinks	Hard	PHY reset failure, reset stuck low.	2.1
13.02	Flutter then 13 blinks	Hard	PHY ID error, mismatch error.	2.2
14.xx	Flutter then 14 blinks	Hard	USB errors, N2280 netchip read, write, and mismatch errors, POST hard errors.	19.1
15.01	Flutter then 15 blinks	Hard	CPU interrupt error.	19.3
15.02	Flutter then 15 blinks	Hard	CPU interrupt error, missing CPU interrupts.	19.4
15.03	Flutter then 15 blinks	Hard	CPU interrupt error, IRQ spurious assertion.	19.5

POST Error Reporting Blink Pattern Definition Table (Continued)

8400 Error Code	PS, PE and Control Panel LEDs (for 8400)	POST Error Type	Description	8500/ 8550/8560 Error Code
15.04	Flutter then 15 blinks	Hard	CPU interrupt error, timer no assertion.	19.6
15.05	Flutter then 15 blinks	Hard	CPU interrupt error, spurious assertion.	19.7
15.06	Flutter then 15 blinks	Hard	CPU interrupt error, no assertion.	19.8
15.07	Flutter then 15 blinks	Hard	CPU interrupt error, spurious assertion.	19.11
15.08	Flutter then 15 blinks	Hard	CPU interrupt error, no assertion.	19.12
15.09	Flutter then 15 blinks	Hard	CPU interrupt error, spurious assertion.	19.13
15.10	Flutter then 15 blinks	Hard	CPU interrupt error, no assertion.	
15.11	Flutter then 15 blinks	Hard	CPU interrupt error, IRQ spurious assertion.	
16.01	Flutter only	Soft	Real time clock read failure.	11.1
16.02	Flutter only	Soft	Real-time clock write failure.	11.2
16.03	Flutter only	Soft	Real-time clock re-read failure.	11.3
16.04	Flutter only	Soft	Real-time clock does not tick.	11.4
		Soft	Trickle charge failure	11.5
17.01	Flutter then 17 blinks	Hard	Memory test, less than 128 MB of RAM detected. This is the minimum RAM required. Add more RAM. Reseat the RAM, then replace the RAM.	13.1
18.01	Flutter then 18 blinks	Hard	IPCB ID read failure.	
18.02	Flutter then 18 blinks	Hard	IPCB ID mismatch.	
18.03	Flutter then 18 blinks	Hard	IPCB PCI configuration failure.	
18.04	Flutter only	Soft	IPCB version mismatch.	
19.01	Flutter then 19 blinks	Hard	Check and reseat cables. Replace Hard Drive, if necessary.	

PEST Error Reporting

PEST tests occur after POST tests have been run and PostScript has been initialized. PEST checks the connections and operation of various printer components.

Error codes for PEST tests are displayed on the Control Panel and are all in the 37,XXX.xx series. For troubleshooting PEST error codes, "37,0XX.xx Errors - PEST Faults" on page 3-36.

Fault Code Error Message Troubleshooting

Fault Code Error Reporting

Fault codes are saved to NVRAM and can be retrieved from the printer's fault history.

All procedures that ask for a test to be run are referencing tests from within the "hidden" Service Diagnostics menu. For more information on Service Diagnostics tests, their results, and how to enter into diagnostic mode, see "Service Diagnostics" on page 4-4.

In normal customer mode, the printer will reboot each time an error occurs. If three of the same errors occur within 72 hours, or 1000 pages, the fault is displayed on the printer's Control Panel.

Interpreting Fault Codes

- Failing system (**XX**,yyy.zz)

- Failing subsystem (xx,**YYY**.zz)

- Checksum (xx,yyy.z**Z**

- Type of problem (xx,yyy.**Z**x)

- Print engine copy count when the error occurred (xx,yyy.zz:**123**)

(xx,yyy.4x) Device faults are indicated by a 4 in the tenths place of the fault code.

This indicates a hardware problem. The most common device faults troubleshooting procedures are documented in this section.

(xx,yyy.6x) Program faults are indicated by a 6 in the tenths place of the fault code.

Unfortunately, there are too many program faults to enumerate them all and most program faults will not mean anything unless you are intimately familiar with the code base. Some of the more common program faults are documented in this section.

(xx,yyy.7z) CPU exceptions are indicated by a 7 in the tenths place of the fault code.

The error code indicates both the PowerPC exception number and the region of firmware that was executing when the exception occurred: Engine, PostScript, Network, or Operating System.

Note

A CPU exception can either be caused by hardware or firmware error. Refer to the infoSMART Knowledge Base for descriptions of the most common faults.

1,000.4x Errors - 525-Sheet Feeder Faults

1,001.46: The upper 525-sheet feeder had an overcurrent condition. The lift motor or clutch may be shorted.

1,002.47: The lower 525-sheet feeder had an overcurrent condition. The lift motor or clutch may be shorted.

Troubleshooting Procedure for for 525-Sheet Feeder

Step	Questions or Actions	Yes	No
1	1. Unplug all connectors to the feeder. 2. Remove the feeder and inspect the connector. 3. Replace any damaged connectors either on the feeder or engine. 4. Reseat and reconnect the feeder. Did this correct the problem?	Complete.	Go to Step 2.
2	Inspect the Pick Rollers in the feeder tray(s). Are the rollers damaged, dirty, or not moving freely?	Replace the Pick Assembly.	Go to Step 3.
3	TRun the **Tray [3]/[4] Pick Clutch** test. Does the clutch operate correctly?	Go to Step 4.	Replace the feeder.
4	Run the **Tray [3]/[4] Lift Motor** test. Does the motor operate correctly?	Go to Step 5.	Replace the feeder.
5	Check the feeder wiring to the Electronics Module (J390). Is the wiring defective?	Replace the wiring and go to Step 3.	Replace the feeder.

1,0XX.6x Errors - 525-Sheet Feeder Program Faults

1. Reseat the printer on the feeder.

2. Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65).

3. Reset NVRAM.

4. Replace the feeder.

2,0XX.4x Errors - I/O Circuit Board Fault

2,001.47: The print engine cannot detect the presence of the I/O Board.

Troubleshooting Procedure for I/O Board

Step	Questions or Actions	Yes	No
1	Are all I/O Board connections properly seated?	Go to Step 3.	Go to Step 2.
2	Reseat the connections and power On the printer. Does the error persist?	Go to Step 3.	Complete.
3	Test the wiring from I/O board J840 to the power control board J800.	Replace the I/O Board.	

2,0XX.6x Errors - I/O Board Program Faults

2,001.69: The Electronics Module failed to initialize.

2,002.61: This fault code indicates a problem with the printer program. The engine firmware was unable to initialize the queues used for inter-task communication.

2,003.62: This fault code indicates a problem with the printer program. The engine firmware was unable to start the Service Diagnostics tasks.

2,004.63: Failure to start the print engine in suspend mode.

2,005.64: This fault code indicates a problem with the printer program. ROM could not be opened for reading (idiags).

2,006.65: This fault code indicates a problem with the printer program. ROM could not be loaded (idiags).

2,007.66: This fault code indicates a problem with the printer program (idiags) entry point cannot be found.

- **a.** Reset NVRAM and retest.
- **b.** Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65).
- **c.** Replace the EEPROM chip.
- **d.** Reboot the printer.

2,008.67: Configuration card is missing.

2,009.68: Configuration card is bad.

2,010.69: Configuration card is blank.

2,011.61: Configuration card is for the wrong product.

2,012.62: Configuration card is an invalid model.

- **a.** Turn off printer.
- **b.** Verify that configuration card is correct card for printer.
- **c.** Insert or replace configuration card.
- **d.** Turn on printer.
- **e.** If problem continues, replace the Electronics Module.

3,0XX.6x Errors - IPC Program Faults

There is a communication problem between the engine and PostScript regions.

    a.   Reset NVRAM, and then retest.

    b.   Replace the EEPROM chip.

4,0XX.4x Errors - Process Control System Fault

4,017.47: This fault code indicates a problem with the process control system. The ambient temperature is considered too cold to warm up the printer (less than 10° C).

4,018.48: This fault code indicates a problem with the process control system. The Printhead temperature dropped below the head cleaning needed threshold.

4,020.41: This fault code indicates a problem with the process control system. Declared when the printer is booted in FTTR (Fast Time to Ready) mode and the head/wiper contact flag is set in NVRAM. The printer cannot run in FTTR mode with the head/wiper in contact because it would be unwise to separate the two when the printer is cold (could tear wiper.) Service requested that this be a device fault in order to alert the service person to this condition.

4,021.42: This fault code indicates a problem with the process control system. Declared when the printer is booted in FTTR mode and the Drum is dirty. Cleaning the Drum when very cold could increase the chance of gluing media to the Drum surface around the stripper fingers. Service requested that this be a device fault in order to alert the service person to this condition.

Troubleshooting Procedure for Process Control System

Step	Questions and Actions	Yes	No
1	1. Verify the temperature of the room where the printer is located (see "Environmental Specifications" on page 1-12). 2. Is the room temperature too cold? 3. Ensure the printer is acclimated to the room temperature. Did this correct the problem?	Complete.	Go to Step 2.
2	Run the **Monitor Heaters tests** with all heaters **ON**. Are the heaters operating correctly and within specification?	Replace the Electronics Module.	Go to Step 3.
3	Inspect the harness to the failed heater. Is the harness damaged?	Replace the harness.	Replace the problem component.

4,024.42: This fault code indicates a problem with the wiper. The wiper is not aligned properly and engaged the headtilt while in the waste lock position.

Troubleshooting Procedure for 4,024 Error Code

Step	Questions and Actions	Yes	No
1	Ensure the Process Drive is correctly homed as described in "Homing the Process Drive Train" on page 6-8.	Is the problem fixed?	Go to Step 2.
2	Run the **Check Wiper Alignment** test. Did the test fail?	Perform the Wiper Alignment Procedure and test again. Go to Step 3 if the test fails again.	Go to Step 3.
3	Run the **Wiper Drive** test. Did the test fail?	Go to Step 4.	Go to Step 6.
4	Inspect the wiper drive and wiper lock system. Look for ink in the belts. Is the wipe system operating correctly?	Go to Step 5.	Replace the problem component.
5	Inspect the Head Maintenance Clutch. Is there any oil or contamination?	Clean the interior of the system and replace clutch if necessary.	Go to Step 6.
6	Run the **Head Maintenance Clutch** test. Is the Head Maintenance Clutch operating correctly?	Replace in this order: ■ Exit Module ■ Media Drive ■ Wiper Blade	Replace the Head Maintenance Clutch.

4,025.46: This fault code indicates a problem with the process control system. Cannot successfully home the transfix mechanism.

Troubleshooting Procedure for 4,025 Error Code

Step	Questions and Actions	Yes	No
1	1. Check for obstructions around the Printhead. Look for ink shards in gears of the tilt drive. 2. If the Printhead is obstructed, remove any obstruction from the system and reboot. Did this fix the problem?	Complete.	Go to Step 2.
2	Check the Printhead harness routing. Is the wiring blocking the Printhead?	Re-route all wiring to the Printhead.	Go to Step 3.

Troubleshooting Procedure for 4,025 Error Code (Continued)

Step	Questions and Actions	Yes	No
3	Remove the Waste Tray and Printhead and look for ink build-up. Is there ink build-up anywhere in the printer?	Clean any ink or debris which may be restricting movement of the drive train or Printhead.	Go to Step 4.
4	1. Check the Process Drive for damage. 2. Ensure the gears are correctly aligned (see "Homing the Process Drive Train" on page 6-8). Is the Process Drive damaged?	Replace the Process Drive.	Go to Step 5.
5	Check the nose cone alignment on the X-Axis Motor. Is the nose cone misaligned with the Printhead shaft?	Correct alignment of the nose cone.	Go to Step 6.
6	1. Check the X-Axis Motor connector for damage. 2. Run the **X-Axis Motor** test to check the X-Axis Motor current. Did the test fail?	Replace the X-Axis Motor.	Go to Step 7.
7	Run the **Tilt Drive** test. Did the test fail?	Replace the Process Drive.	

4,0XX.6x Errors - Process Control Software Fault

1. Reset NVRAM and then retest.
2. Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65).
3. Replace the EEPROM chip.
4. Reboot the printer.

5,0XX.4x Errors - Y-Axis Sub-System Fault

5,001.41: The Drum turned one full revolution without seeing the Drum home sensor activate.

5,002.42: The Y-Axis encoder is not working properly or the Drum has stalled.

5,003.43: There is a general problem with the Y-Axis sub-system.

5,004.44: Y-Axis fault_general fail problem with Drum motion sub-system.

Troubleshooting Procedure for Y-Axis Sub-System

Step	Questions and Actions	Yes	No
1	From the Service Diagnostic **Monitor Menu**, run the **Y-Axis Encoder** test. Did the test pass?	Go to Step 2.	Go to Step 3.
2	Inspect the Y-Axis Motor connector. Is the wiring faulty?	Replace the harness or Y-Axis Motor.	Go to Step 4.
3	Inspect the encoder harness. Is the harness faulty?	Replace the harness.	Replace the Drum Assembly.
4	1. Run the **Y-Axis Drive** test. 2. Check the current values. Are the values within normal operating range?	Go to Step 5.	Replace the Y-Axis Motor.
5	1. Run the **Y-Axis Belt Tension** test. 2. Check the current values. Are the values within the normal operating range?	Go to Step 6.	Replace the Y-Axis belt.
6	Run the **Y-Axis Motor** test. Did the tests pass?	Replace the Drum Assembly.	Replace the Y-Axis Motor.

5,0XX.6x Errors - Program Faults

5,001.63: There is a problem with the Y-Axis sub-system.

5,005.67: If not in the home or idle state, the system faults out. Software fault.

5,006.68: Software fault.

5,007.60: Software fault.

5,008.61: PostScript failed to fill the race buffer during imaging. Software fault.

5,009.62: There were errors during imaging. Possible jets on/off outside of the deadband area. Software fault.

   a. Reset NVRAM and retest.
   b. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).
   c. Replace the EEPROM chip.
   d. Reboot the printer.

6,0XX.4x Errors - X-Axis Fault

6,000.41: An X-Axis Motor current error occurred.

Troubleshooting Procedure for X-Axis Motor

Step	Questions and Actions	Yes	No
1	1. Inspect the Printhead power cable and heater wiring. 2. Verify the Printhead travels smoothly from left to right. 3. Ensure the Printhead does not bind due to ink spills. Is Printhead movement restricted?	Go to Step 2.	Go to Step 3.
2	Clear the obstruction restricting Printhead movement. Did this correct the problem?	Complete.	Go to Step 3.
3	Inspect the X-Axis Motor harness. Is the wiring damaged?	Replace the harness.	Go to Step 4.
4	Use Service Diagnostics to test the **X-Axis drive**. Did the test fail?	Replace the X-Axis Motor.	Replace the Electronics Module.

6,0XX.6x Errors - Program Faults

6,001.64: The X-Axis task received an unexpected message.

6,002.65: Attempt to home the X-Axis from a state where homing is not allowed.

6,008.62: Attempt to use the X-Axis drive without initializing it.

6,011.65: Attempt to service the X-Axis while not in the appropriate state.

6,013.67: Unknown X-Axis program fault.

6,017.62: An attempt was made to drive the X-Axis using the wrong server.

6,018.63: An attempt was made to move with the X-Axis uninitialized.

6,019.64: An attempt was made to move the X-Axis from a homeless state.

6,023.68: Could not allocate memory for X-Axis home parameters.

6,025.66: An attempt was made to home with the X-Axis uninitialized.

6,032.68: Could not find a solution to the described home motion profile.

6,033.60: Could not allocate memory for X-Axis move parameters.

   a. Reset NVRAM, and then retest.

   b. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).

7,0XX.4x Errors - Process Motor Gearbox Faults

7,002.44: There is a problem with the process motor sub-system. The process motor stalled during operation.

Troubleshooting Procedure for 7,002 Error Code

Step	Questions and Actions	Yes	No
1	Verify the Process Drive system is properly homed, see "Homing the Process Drive Train" on page 6-8. Did this resolve the problem?	Complete.	Go to Step 2.
2	Use Service Diagnostics to run the **Tilt Axis Drive** test. Did the test fail?	Go to Step 3.	Go to Step 4.
3	1. Check for and remove any obstructions in the Process Drive. 2. Ensure the Process Drive gears are correctly aligned. Are the gears damaged?	Replace the Process Drive.	Go to Step 4.
4	Use Service Diagnostics to run the **Process Motor** test. Did the test fail?	Replace the Process Drive.	Go to Step 5.
5	Use Service Diagnostics to run the **Transfix Drive Slow** test. Did the test fail?	Verify the transfix cams are not damaged. Replace problem component.	Replace the Process Drive.

7,006.xx: The Head Tilt Solenoid is not activating the Head Tilt Gear, or the Printhead is not tilting properly.

Troubleshooting Procedure for 7,006 Error Code

Step	Questions and Actions	Yes	No
1	Ensure the Process Drive system is correctly homed as described in "Homing the Process Drive Train" on page 6-8.	Is the problem fixed?	Go to Step 2.
2	Reboot the printer. Is the solenoid activating the Head Tilt Gear?	Go to Step 4.	Go to Step 3.
3	Is ink blocking Head Tilt Gear motion? Is the tilt-head latch properly installed?	Clean or reinstall the head-tilt and start over with Step 1.	Go to Step 4.

Troubleshooting Procedure for 7,006 Error Code (Continued)

Step	Questions and Actions	Yes	No
4	Review instructions for 7,008.xx and 7,010.xx fault codes.		Follow recommended actions for error codes and reboot the printer.

7,0XX.4x Errors- Printhead Tilt Faults

The 7,007.49, 7,008.41, 7009.42, and 7,010.43 errors indicate that the Printhead was unable to tilt normally on its axis. Possible causes include:

■ The printer was powered off in the middle of a cleaning cycle and the Wiper Blade has frozen to the Printhead.

■ A Drum Maintenance Camshaft lobe is broken and holding the Drum Maintenance Kit's oil roller against the Drum when it should be retracted to its home position.

■ Process Drive not being aligned correctly.

■ A damaged Printhead Restraint.

■ Ink spilled in the Roll Block preventing proper Printhead motion.

■ Ink or other debris under the Printhead preventing proper motion.

■ The Wiper Assembly not being aligned correctly or ink spilled in the wiper tracks.

■ The Head Tilt Gear not being homed correctly.

■ The X-Axis Motor nose cone not being installed correctly.

■ The ferrite torrid on the Printhead interface cable has slipped behind the Printhead causing the Printhead to bind when it tilts backwards.

■ The black plastic shroud on the back of the Printhead is snapped off and binding the Printhead when it tilts back.

Caution

After servicing the printer, manually set the following assemblies to their home position before powering on the printer. See Section 6 for instructions on setting these components to their home positions.

■ Printhead (tilted forward and disengaged from Printhead tilt gear)

■ Head Tilt Gear (disengaged from Process Drive train; arrows on left frame point to each other)

■ Wiper Assembly (bottom of travel)

■ Process Drive (holes on Transfix Camshaft and Drum Maintenance Camshaft line up with marks on frame, large gears within assembly line up with holes in Process Drive housing)

7,007.49: The process motor stalled while tilting the head.

Troubleshooting Procedure for 7,007 Error Code

Step	Questions and Actions	Yes	No
1	1. Check the Printhead wire routing. 2. Remove the Printhead and inspect the Printhead tilt and drive gears for ink spills. 3. Re-route the wiring. 4. Clean around the gears and Printhead. Did this correct the problem?	Complete.	Go to Step 2.
2	To ensure Process Drive is correctly aligned, homed, and free from damage, see "Homing the Process Drive Train" on page 6-8. Did this correct the problem?	Complete.	Replace the Process Drive.

7,008.41: The head tilt is not engaged, or the Printhead is stuck in the tilt position by the tilt arms.

Troubleshooting Procedure for 7,008 Error Code

Step	Questions and Actions	Yes	No
1	Reboot the printer. Did this correct the problem?	Go to Step 2.	Complete.
2	1. Check the printer for ink spills on the HeadTilt Gear and the drive train. 2. Clean and reboot the printer. Did this correct the problem?	Complete.	Go to Step 3.
3	Check that the Printhead moves properly left and right.	Go to Step 4.	Remove any obstructions or replace any defective parts.
4	Ensure the Process Drive is correctly aligned and homed (see "Homing the Process Drive Train" on page 6-8). Are the gears damaged?	Replace the Process Drive.	Go to Step 5.
5	1. Check the Process Drive for obstructions or damaged. 2. Remove any obstructions. Is the gearbox damaged?	Replace the Process Drive.	Go to Step 6.
6	Use Service Diagnostics to run the **Tilt Axis Drive** test. Did the test fail?	Replace the Process Drive.	Go to Step 7.
7	Use Service Diagnostics to run the **Head Maintenance Wiper Clutch** test. Did the test fail?	Replace the Head Maintenance Clutch.	Go to Step 8.

Troubleshooting Procedure for 7,008 Error Code (Continued)

Step	Questions and Actions	Yes	No
8	Perform the Wiper Alignment procedure (see "Wiper Alignment Procedure" on page 6-2). Did this correct the problem?	Complete.	Go to Step 9.
9	Use Service Diagnostics to run the **Wiper Drive** test. Did the test fail?	Inspect the wiper drive system and replace any defective parts.	Complete.

7,009.42: The Printhead is tilted back but not properly restrained in the park arms.

Troubleshooting Procedure for 7,009 Error Code

Step	Questions and Actions	Yes	No
1	Check that the right and left Printhead Restraints operate correctly and are not damaged.	Complete.	Go to Step 2.
2	Check that the Wiper Assembly is aligned correctly (see "Wiper Alignment Procedure" on page 6-2).	Complete.	Go to Step 3.
3	1. Check the Printhead wire routing. 2. Remove the Printhead and clean around the Printhead tilt gears. Did this correct the problem?	Complete.	Go to Step 4.
4	Check that the Process Drive gears are correctly aligned and homed (see "Homing the Process Drive Train" on page 6-8). Did this correct the problem?	Complete.	Go to Step 5.
5	Replace the Process Drive. Did this correct the problem?	Complete.	Go to Step 6
6	Use Service Diagnostics to run the **Head Maintenance Wiper Clutch** test. Did the test fail?	Replace the Head Maintenance Clutch.	Go to Step 7.
7	Use Service Diagnostics to run the **Wiper Drive** test. Did the test fail?	Inspect the maintenance drive system, replace any defective parts.	Replace the Exit Module.

7,010.43: The Printhead is stuck in the tilted position, or is not able to tilt forward to the print position, due to problems.

7,011.44: This is a soft fault and will not halt the printer.

7,012.45: The Drum transfix is not in home position, after the return home motion has been completed.

7,014.47: The Printhead is not locked in the head tilt restraint spring.

7,015.48: The head tilt restraint spring is out of place.

Troubleshooting Procedure for 7,010 to 7,015 Error Code

Step	Questions and Actions	Yes	No
1	Reboot the printer. Did this correct the problem?	Complete.	Go to Step 2.
2	Do the Printhead Restraints rotate correctly?	Go to Step 3.	Repair or replace the Printhead Restraints.
3	1. Has ink spilled ink around the Printhead that prevents the Printhead from moving to its center position? You should be able to push the Printhead right to left.	Clean the Printhead area.	Go to Step 5.
4	Is the Printhead stuck to the Wiper Blade?	Start the printer in diagnostics mode and run idiags test Exercise Heater - toggle Printhead heaters to soften the ink. Manual separate the wiper and Printhead. Set them in their home positions.	Go to Step 4.
5	Does the X-Axis Motor drive the Printhead to its center position (so it can tilt forward)?	Go to step 6.	Troubleshoot the X-Axis drive.
6	1. Check the Process Drive for obstructions or damaged. 2. Ensure the gears are correctly aligned and homed. 3. Verify the process shaft and drive module shaft are at their home positions. Did this correct the problem?	Complete.	Go to Step 7.
7	Has ink spilled on the Head Tilt Gear on its drive train (near left side of the Printhead)?	Clean the gears.	Go to Step 8.

Step	Questions and Actions	Yes	No
8	Use Service Diagnostics to run the **Head Maintenance Wiper Clutch** test. Did the test fail?	Replace the Head Maintenance Clutch.	Go to Step 9.
9	1. Align the Wiper Assembly (page 6-2). 2. Use Service Diagnostics to run the **Wiper Drive** Test. Did the test fail?	Replace the Exit Module.	Go to Step 10.
10	1. Use Service Diagnostics to run the **Load Maintenance Clutch** test. Did the test fail?	Inspect the maintenance drive system, replace any defective parts.	Go to step 11.
11	Verify the Head Tilt Gear engages. You can manually set the Head Tilt Gear. Is the gear engaged properly?	Go to Step 12.	Set the Head Tilt Gear.
12	Use Service Diagnostics to run the **Tilt Axis Drive** test. Did the test fail?	Replace the Process Drive.	Go to Step 13.
13	Use Service Diagnostics to run the **Process Motor** test. Did the test fail?	Replace the Process Drive.	

7,0XX.6x Errors - Program Faults

1. Reset NVRAM and retest.
2. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).

8,0XX.xx Errors - Wiper/Media Drive Faults

8,005.48: The Media Drive stalled while moving the Wiper to home position.

8,006.49: The Wiper cannot verify the home position.

8,007.41: The Wiper stalled finding home.

8,008.42: The Wiper stalled while trying to move away from home position.

8,009.43: The Media Drive stalled while moving without the Head Maintenance Clutch engaged.

8,015.49: The Media Drive stalled while moving the cap/wipe to park position.

8,025.41: The Media Drive stalled while moving the cap/wipe from park position.

8,035.42: The Media Drive stalled while moving the cap/wipe Up.

8,045.43: The Media Drive stalled while moving the cap/wipe Down.

8,055.44: The Media Drive stalled while engaging headtilt.

Troubleshooting Procedure for Wiper/Media Gearbox

Step	Questions and Actions	Yes	No
1	Check for obstructions in the Wiper Assembly path. Is the Wiper Assembly obstructed by the Printhead or wiring?	Clear any obstructions.	Go to Step 2.
2	For an **8,005.48** error: 1. Check for paper in the paper path that is adding drag to the rollers. Look for paper or wiring interfering with the take away roller. 2. Remove the Tray 1 Pick Solenoid to view the meshing of the Take Away Roller's gears to the Media Drive Assembly. Did this correct the problem?	Complete.	Go to Step 5.
3	For an **8,007.41** error: Check for a missing KL-clip securing the Head Maintenance Clutch. Replace if missing. Did this correct the problem?	Complete.	Go to Step 5.
4	For an **8,009.43** error: 1. Ensure that there is no paper in the paper path adding drag to the rollers. 2. Ensure the Media Drive Assembly is fully seated and correctly installed. 3. Remove the Tray 1 Pick Solenoid to view the meshing of the take away roller's gears to the Media Drive Assembly. 4. Ensure the feed rollers are properly engaged in the drive gears. Did this correct the problem?	Complete.	Replace the Media Drive Assembly.
5	Run the **Wiper Drive** test. Did the test pass?	Go to Step 6.	Go to Step 7.

Troubleshooting Procedure for Wiper/Media Gearbox (Continued)

Step	Questions and Actions	Yes	No
6	Run the **Wiper Alignment** test (see "Wiper Alignment Procedure" on page 6-2). Did the test pass?	Go to Step 8.	Go to Step 7.
7	1. Inspect the wiper system for improper operation, obstructions, or damage (broken gear or belt). Look for ink in the Wiper Belt channels. 2. Ensure the wiper system is properly aligned (see "Wiper Alignment Procedure" on page 6-2). Did this correct the problem?	Complete.	Go to Step 8.
8	Run the **Head Maintenance Clutch** test. Did the test pass?	Go to Step 9.	Replace the Head Maintenance Clutch.
9	Is the head lock mechanism on the right end of the Exit Module functioning properly?	Go to Step 10.	Replace the Exit Module.
10	Are there obstructions or spilled ink on the Wiper Blade, the Head Tilt Gear drive path, or under the Printhead? Is the Waste Tray overfilled?	Clean the inside of the printer and retest.	

8,0XX.6x Errors - Program Faults

1. Reset NVRAM, and then retest.
2. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).

9,0XX.xx Errors - Ink Loader Faults

9,000.44: Ink Loader device fault

9,005.49: The cyan ink melt heater is On, but ink is not dripping.

9,006.41: The magenta ink melt heater is On, but ink is not dripping.

9,007.42: The yellow ink melt heater is On, but ink is not dripping.

9,008.43: The black ink melt heater is On, but ink is not dripping.

9,015.4x through 9,018 (8500/8550/8560 only): When the Ink Loader door is opened to clear an ink jam, the following codes are recorded: 9,01x.41, where x= 5 for cyan, 6 for magenta, 7 for yellow, and 8 for black.

9,025.4x through 9, 028 (8500/8550/8560 only): When the inkloader door is opened for a second time, the following codes are recorded: 9,02x.41, where x= 5 for cyan, 6 for magenta, 7 for yellow, and 8 for black.

9,035.43 through 9,038 (8500/8550/8560 only): Ink count sensor flags are stuck after melting 2.5 ink sticks. The following codes are recorded: 9,03x.41, where x= 5 for cyan, 6 for magenta, 7 for yellow, and 8 for black.

Features on the bottom of genuine Xerox ink sticks actuate the Ink Out Sensor located at the forward end of each ink channel of the Ink Loader. The sensor indicates the passage of ink to provide a count of ink consumption.

Damaged or non-genuine ink sticks may not reliably actuate the sensors. This can lead to false Ink Out messages as well as Ink Stick count faults. Using 8400 model ink in a 8500/8550/8560 models will also cause 9,03x.4x ink stick count faults.

Troubleshooting Procedure for Ink Loader

Step	Questions and Actions	Yes	No
1	Is the ink Genuine Xerox? Are they the correct sticks for the model?	Go to Step 2.	1. Advise customer. 2. Replace the Ink with Xerox Ink. 3. Run **Clear ISC Fault** test to clear the error. The **Clear ISC Fault** is located in the Internal Diagnostics Function menu.
2	Manually verify that the ink stick is able to advance in the ink loader chute. Check for broken or wrong type ink sticks.	Go to Step 3.	1. Remove any blockage and/or replace the ink stick. 2. Replace the Ink Loader. 3. Run **Clear ISC Fault** test to clear the error.

Troubleshooting Procedure for Ink Loader (Continued)

Step	Questions and Actions	Yes	No
3	Test the Ink Count Sensor by running the **Monitor Sensors** test in Service Diagnostics. Insert the clean, eraser end of a pencil thru the lowermost oval slot in the Ink Loader. Actuate the appropriate sensor by sliding the pencil down the white channel guide until the sensor is tripped. If the sensor is functional, a state change appears on the Control Panel as *<color>* Ink Present H. When released, the reading changes to L. The test only displays a reading when a sensor change occurs. If a flag is stuck, no reading is displayed. Did the test pass?	Check for defects in the genuine Ink Sticks. If no defects are found, go to Step 4. Replace ink if necessary.	Replace the Ink Loader.
4	Test the ink melt heaters. Run the appropriate **Ink Melt [1, 2, 3, 4] Heater** test. 1 = Yellow 2 = Cyan 3 = Magenta 4 = Black Did the test pass?	Replace the Printhead.	1. Replace the Ink Loader. 2. Run **Clear ISC Fault** test to clear the error.

Note

Xerox is not financially responsible for the incorrect operation of its products caused by the use of non- Xerox ink.

9,009.44 and 9,00X.6x Errors - Program Faults

9,009.44: This fault indicates a device failure attempting to access NVRAM.

a. Reset NVRAM and retest.

b. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).

11,0XX.xx Errors - Electronics Module Interface Fault

11,001.47: Upper 525-sheet feeder broken serial link detected.

11,002.41: Lower 525-sheet feeder broken serial link detected.

11,002.48: Lower 525-sheet feeder broken serial link detected.

11,003.42: Control Panel broken serial link detected.

11,003.49: Control Panel broken serial link detected.

11,004.41: Control Panel or I/O Board broken serial link detected.

11,004.43: I/O Board broken serial link detected.

11,005.42: Power control broken serial link detected.

11,005.44: Power control broken serial link detected.

11,006.43: Printhead broken serial link detected.

11,006.45: Printhead broken serial link detected.

11,007.44: PCI error detected.

11,008.45: The DMA hardware is not responding.

11,009.46: Communication timeout failure detected.

11,010.47: Hardware version mismatch.

11,010.48: Hardware version mismatch.

11,011.48: Software version mismatch.

11,012.49: The power control PLD does not match the expected version.

11,013.41: I/O PLD version mismatch.

11,014.42: Control Panel version mismatch.

11,015.43: Printhead PLD version mismatch.

11,016.44: Lower 525-sheet feeder PLD version mismatch.

11,017.45: Upper 525-sheet feeder PLD version mismatch.

11,018.46: Titan version mismatch.

Troubleshooting Procedure for Electronic Module Interface

Step	Questions and Actions	Yes	No
1	Ensure ground integrity for the printer. Did this resolve the error?	Complete.	Go to Step 2.
2	1. Inspect and reseat all connectors. 2. Inspect the gray cable between the I/O board and the Electronics Module. 3. Ensure the cables are properly dressed in the wiring raceway as detailed in the wiring diagram section of this manual. Did this correct the problem?	Complete.	Go to Step 3.
3	Reset NVRAM and retest. Did this resolve the problem?	Complete.	Go to Step 4.
	■ 11, 001.47 and 11,017.45		Replace Tray Lift Motor or the Electronics Module.
	■ 11,002.48 and 11, 016.44		Replace the optional tray (or check wiring).
	■ 11,003.49 and 11,0014.42		Replace the I/O board.
	■ 11,004.41 and 11,013.41		Replace the I/O board or the Control Panel.
	■ 11,006.43 and 11,015.43		Replace the Printhead.
	■ 11,009.46		Replace the I/O board or the Electronics Module.
	■ For all other 11,000.4x errors:		Replace the Electronics Module.

11,100.60 Errors - Temperature Error

The root problem for this error is temperature sensitivity with the power supply's opto-isolator chips. Check that the room temperature does not exceed specifications and the fans run correctly. If OK, then replace the Electronics Module.

12,000.60 Errors - Program Faults

1. Reset NVRAM and retest.
2. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).

13,0XX.xx Errors - Thermal Faults

13,000.48: Thermal fault.

Troubleshooting Procedures for Error Code 13,000 (Printhead)

Step	Questions and Actions	Yes	No
1	Ensure ground integrity for the printer. Did this correct the problem?	Complete.	Go to Step 2.
2	Reset NVRAM and retest. Did this correct the problem?	Complete.	Go to Step 3.
3	Check and reseat all data cables to the Printhead. Did this correct the problem?	Complete.	Replace the Printhead.

13,003.42:

13,007.46:

Troubleshooting Procedures for 13,003 to 13,007 Error Code

Step	Questions and Actions	Yes	No
1	Ensure ground integrity for the printer. Did this correct the problem?	Complete.	Go to Step 2.
2	Reset NVRAM and retest. Did this correct the problem?	Complete.	Replace in this order: ■ NVRAM ■ Electronics Module

13,008.47: The Drum heater is too hot.

13,010.49: The Drum heater took too long to reach its setpoint.

Troubleshooting Procedure for 13,008 to 13,010 Error Code (Drum Heater)

Step	Questions and Actions	Yes	No
1	Check that the ambient room temperature is within specifications (see "Environmental Specifications" on page 1-12). Is the room too cold or too hot?	Advise customer.	Go to Step 2.
2	Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65). Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	Is the error code associated with an overheat condition?	Go to Step 4.	Go to Step 6.
4	Verify clearance for adequate air flow. Are any of the vents blocked?	Advise customer.	Go to Step 5.
5	Using Service Diagnostics, run the **Drum Fan Motor** test. Did the test pass?	Go to Step 6.	Replace the Drum Fan and/or the harness.
6	Check the Electronics Module Fan. Is the fan operating correctly?	Go to Step 7.	Replace the Electronics Module Fan.
7	Using Service Diagnostics, run the **Drum Temperature Sensor** test. Did the test pass?	Go to Step 8.	Replace the Drum Temperature Sensor.
8	Using Service Diagnostics, run the **Drum Heater** test. Did the test pass?		Replace the Drum Temperature Sensor.
9	Check continuity of the F0130 fuse on the Preheater. Is the fuse blown?	Replace the Preheater.	

13,067.43: The Drum Temperature Sensor circuit is open.

13,069.45: The Drum Temperature Sensor circuit is shorted.

13,071.47: The Drum Temperature Sensor returned a bad reading, or the reading was corrupted by ESD (Electrostatic Discharge).

Troubleshooting Procedure for 13,067 to 13,071 Error Code (Drum Thermistor)

Step	Questions and Actions	Yes	No
1	Using Service Diagnostics, run the **Drum Temperature Sensor** test. Did the test pass?	Go to Step 2.	Replace the Drum Temperature Sensor.
2	Inspect the sensor wiring harness. Is the wiring free from defects? Is the wiring correctly routed through the pass-thru and not pinched against the Drum?	Replace the Drum Temperature Sensor.	Replace the sensor harness.

13,072.48: The Preheater got too hot.

13,074.41: The Preheater took too long to reach its setpoint.

13,131.44: The Preheater thermistor circuit is open.

13,133.46: The Preheater thermistor circuit is shorted.

13,135.48: The Preheater thermistor returned a bad reading, or the reading was corrupted by ESD.

Troubleshooting Procedure for 13,072 to 13,135 Error Code (Preheater)

Step	Questions and Actions	Yes	No
1	Check that the ambient room temperature is within specifications (see "Environmental Specifications" on page 1-12). Is the room too cold or too hot?	Advise customer.	Go to Step 2.
2	Run the **Preheater** test. Did the test pass?	Replace the I/O Board.	Go to Step 3.
3	Check the wiring from the Preheater. Is the wiring connected and intact?	Replace the Preheater.	Replace the harness.

13,136.49: The Printhead left jetstack heater is too hot.

13,138.42: The Printhead left jetstack heater took too long to reach its setpoint.

13,195.45: The Printhead left jetstack thermistor circuit is open.

13,197.47: The Printhead left jetstack thermistor circuit is shorted.

13,199.49: The Printhead left jetstack thermistor returned a bad reading, or the reading was corrupted by ESD.

Troubleshooting Procedure for 13,136 to 13,199 Error Code (Printhead)

Step	Questions and Actions	Yes	No
1	Check that the ambient room temperature is within specifications (see "Environmental Specifications" on page 1-12). Is the room too cold or too hot?	Advise customer.	Go to Step 2.
2	Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65). Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	Use Service Diagnostics to run the **Left Jetstack Temperature** test. Did the test pass?	Go to Step 4.	Replace the Printhead.
4	Check and reseat all wiring to the Printhead. Did this correct the problem?	Complete.	Replace the Printhead.

13,200.41: The Printhead right jetstack heater is too hot.

13,202.43: The Printhead right jetstack heater took too long to reach its setpoint.

13,259.46: The Printhead right jetstack thermistor circuit is open.

13,261.48: The Printhead right jetstack thermistor circuit is shorted.

13,263.41: The Printhead right jetstack thermistor returned a bad reading, or the reading was corrupted by ESD.

Troubleshooting Procedure for 13,200 to 13,263 Error Code (Printhead)

Step	Questions and Actions	Yes	No
1	Check that the ambient room temperature is within specifications (see "Environmental Specifications" on page 1-12). Is the room too cold or too hot?	Advise customer.	Go to Step 2.
2	Ensure the ground integrity (see "Ensuring Ground Integrity" on page 4-65). Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	Run the **Right Jetstack Temperature** test. Did the test pass?	Go to Step 4.	Replace the Printhead.
4	Check and reseat all wiring to the Printhead. Did this correct the problem?	Complete.	Replace the Printhead.

13,264.42: The Printhead reservoir heater got too hot.

13,266.44: The Printhead reservoir heater took too long to reach its setpoint.

13,323.47: The Printhead reservoir thermistor circuit is open.

13,325.49: The Printhead reservoir thermistor circuit is shorted.

13,327.42: The Printhead reservoir thermistor returned a bad reading, or the reading was corrupted by ESD.

Troubleshooting Procedure for 13,264 to 13,327 Error Code (Printhead)

Step	Questions and Actions	Yes	No
1	Check that the ambient room temperature is within specifications (see "Environmental Specifications" on page 1-12). Is the room too cold or too hot?	Advise customer.	Go to Step 2.
2	Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65). Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	Run the Printhead **Reservoir Temperature** test. Did the test pass?	Go to Step 4.	Replace the Printhead.
4	Check and reseat all wiring to the Printhead. Did this correct the problem?	Complete.	Replace the Printhead.

13,328.43: The ink loader CYAN heater is too hot.

13,330.45: The ink loader CYAN heater took too long to reach its setpoint.

13,387.48: The ink loader CYAN thermistor circuit is open.

13,389.41: The ink loader CYAN thermistor circuit is shorted.

13,391.43: The ink loader CYAN thermistor returned a bad reading, or was corrupted by ESD.

13,392.44: The ink loader MAGENTA heater is too hot.

13,394.46: The ink loader MAGENTA heater took too long to reach its setpoint.

13,451.49: The ink loader MAGENTA thermistor circuit is open.

13,453.42: The ink loader MAGENTA thermistor circuit is shorted.

13,455.44: The ink loader MAGENTA thermistor returned a bad reading, or ESD corruption.

13,456.45: The ink loader YELLOW heater got too hot.

13,458.47: The ink loader YELLOW heater took too long to reach its setpoint.

13,515.41: The ink loader YELLOW thermistor circuit is open.

13,517.43: The ink loader YELLOW thermistor circuit is shorted.

13,519.45: The ink loader YELLOW thermistor returned a bad reading, or ESD corruption.

13,520.46: The ink loader BLACK heater got too hot.

13,522.48: The ink loader BLACK heater took too long to reach its setpoint.

13,579.42: The ink loader BLACK thermistor circuit is open.

13,581.44: The ink loader BLACK thermistor circuit is shorted.

13,583.46: The ink loader BLACK thermistor returned a bad reading, or ESD corruption.

Troubleshooting Procedure for 13,326 to 13,583 Error Code (Ink Loader)

Step	Questions and Actions	Yes	No
1	Check that the ambient room temperature is within specifications (see "Environmental Specifications" on page 1-12). Is the room too cold or too hot?	Advise customer.	Go to Step 2.
2	Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65). Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	Inspect and reseat the wiring to the ink loader. Check for open wires. Did this correct the problem?	Go to Step 4.	Replace the I/O board or the Combined Right Cable.
4	Run the appropriate **Ink Melt** test. 1 = Yellow 2 = Cyan 3 = Magenta 4 = Black Did the test pass?		Replace the Ink Loader.

13,000.6x Errors - Program Faults

13,001.62: Thermals failed to read from printer NVRAM.

13,002.63: Value is not in valid range.

13,003.64: Thermal control task received an unexpected message.

13,004.65: Thermal control task was expecting initialization message, but received other.

13,005.66: Thermal code tried to command a segment ID that did not exist.

13,006.67: Thermal code tried to command a segment ID that did not exist.

13,007.68: Thermal power manager task was expecting initialization message, but received other.

13,008.60: Thermal power manager task received an unexpected message.

    a. Reset NVRAM and retest.

    b. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).

19,0XX.xx Errors - Printhead Calibration faults.

19,001.46: HFD server failed due to NVRAM operation. This fault only occurs when the printer is set in manufacturing mode. Program fault.

19,002.47: Attempted to perform a Printhead operation without the Printhead NVRAM data being loaded.

19,003.48: Scale and offset error is too large. The voltages measured have more than a 20% error from their expected values. Something is wrong with the Electronics Module or the Wave Amplifier.

19,004.40: The Printhead and the Electronics Module do not match. Contact escalated Service Support Representative for information to clear fault.

19,005.41: A posssible static discharge from the Pick Clutch to the Electronics Module.Characterized by:

- 19,005.41 error code displayed on the Control Panel

- Printer hangs while printing with the Electronics Module Fan on full

- Low humidity

- Occasional Jam Behind the Front Cover messages, usually accompanied by error 19,005.41 in Fault History

To prevent these discharges, a Grounding Clip (P/N 650442700) was added between the Y-Axis Motor mount and the Pick Clutch. Check that this clip is installed and contacts the metallic portion of the Pick Clutch.

s8560-270
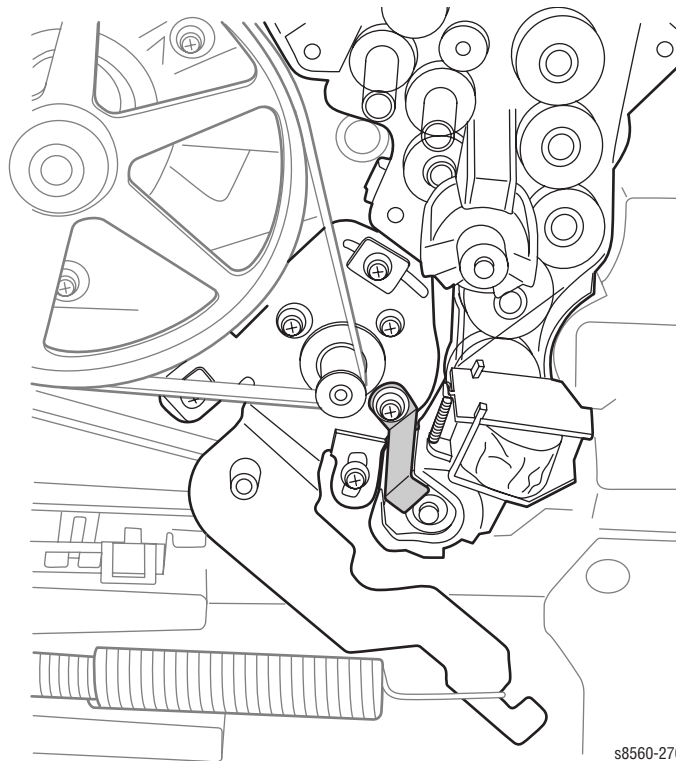
Note

> The Grounding Clip is factory installed in later versions of 8500/8550 models and in all 8560 models.

19,005.63: Wave Amplifier overcurrent. This error can occur in too-low humidity environments. Printer self-resets.

Troubleshooting Procedure for Printhead Calibration

Step	Questions and Actions	Yes	No
1	For 19,005.41 errors: Check that the Ground Clip (650442700) is properly installed at the Y-Axis Motor mounting and contacts the metallic portion of the Pick Clutch. Is the Ground Clip properly installed?	Go to Step 2.	Correct or replace the Ground Clip.
2	Check and reseat all wiring to the Printhead. Did this correct the problem?	Complete.	Replace in this order: ■ Printhead ■ Electronics Module

19,0XX.6x Errors - Waveform Program Faults

19,001.68 thru 19,039.61: Waveform Printhead calibration program faults.

   a. Reset NVRAM, and then retest.

   b. Replace the NVRAM chip.

   c. Replace the Printhead.

21,000.69 Errors - Diagnostic Code Version Mismatch

The diagnostic firmware does not match the engine firmware. Update the diagnostic firmware for the printer. If a code updated ROM daughter board is installed on the main board, remove the board so the printer boots using the main board's code and diagnostics.

22,0XX.6x Errors - Jam Codes

For jam codes, "Jam Codes" on page 3-48.

23,0XX.6x Errors - NVRAM Fault

   1. Reset NVRAM, and then retest.

   2. Replace the NVRAM.

26,0XX.6x Errors - Printing Faults

Reboot the printer if one of these faults occur.

26,962.6x Errors - "Fall Out" Code

Check the previous error in the fault history and troubleshoot that code.

27,0XX.6x Errors - Profile Library

Ensure the ground integrity of the printer (see "Ensuring Ground Integrity" on page 4-65).

29,0XX.6x Errors - Jam Manager

1. Reset NVRAM, and then retest.
2. Replace the NVRAM.

31,0XX.4x Errors - Mechanical Initialization Jam

The Media Drive motor stalled while moving the media path drive train. Look for interference or debris in the paper path. Check/test Media Drive motor.

31,001.40: Mechanical initialization jam fault.

Troubleshooting Procedure for Mechanical Unit Jam

Step	Questions and Actions	Yes	No
1	Check that all the main tray paper path sensor wires are clear of the Take Away Rollers. Are any wires damaged?	Replace the wiring harness.	Go to Step 2.
2	Are the Take Away Rollers dirty, contaminated, or damaged?	Replace the Take Away Rollers.	Go to Step 3.
3	Run the **Paper Path Drive** test. Did the test pass?	Go to Step 5.	Go to Step 4.
4	Run the **Media Drive Motor** test. Does the Media Drive Motor run extremely fast?	Replace the Media Drive Assembly.	Go to Step 5.
5	1. Remove the Media Drive Assembly and manually rotate each paper path roller. 2. Identify any roller that may be binding and causing drag. 3. Repair or replace as necessary. Did this correct the problem?	Complete.	If the path is clear of debris and the rollers rotate normally, replace the Media Drive Assembly.

31,0XX.6x Errors - Program Faults

1. Reset NVRAM, and then retest.
2. Ensure ground integrity for the printer (see "Ensuring Ground Integrity" on page 4-65).

33,0XX.xx Errors - Tray Manager Device Faults

33,001.42: Tray 1 width value too low.

33,002.43: Tray 1 width value too high.

Troubleshooting Procedure for Tray 1

Step	Questions and Actions	Yes	No
1	Check the wiring and connectors from the Front Door to the I/O Board. Are the wires connected properly?	Go to Step 2.	Replace the harness.
2	Run the **Test Tray 1 Width Sensor** test. Did the test pass?	Replace the I/O board.	Replace the Front Door.

34,0XX.xx Errors - Printhead NVRAM Faults

34,001.43: An error occurred while attempting read/write access to the Printhead calibration partition in NVRAM. The Printhead cable may be unplugged.

34,002.44: An error occurred while attempting read/write access to the Printhead ink data partition in NVRAM.

34,003.45: An error occurred while attempting read/write access to the Printhead data partition in NVRAM.

34,004.46: An error occurred while accessing the Printhead NVRAM hardware for the purpose of initialization. The Printhead cable may be unplugged.

Troubleshooting Procedure for Printhead NVRAM

Step	Questions and Actions	Yes	No
1	Check and reseat all wiring to the Printhead. Did this correct the problem?	Complete.	Replace in this order: ■ Printhead ■ Electronics Module

36,000.40 Errors - Drum Maintenance Faults

Troubleshooting Procedure for Drum Maintenance

Step	Questions and Actions	Yes	No
1	Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-65). Did this correct the problem?	Complete.	Go to Step 2.
2	Ensure the Process Drive system is correctly homed as described in "Homing the Process Drive Train" on page 6-8.	Complete.	Go to Step 3.
3	1. Check the Drum Maintenance Pivot Plate for cracks. 2. Check the Drum Maintenance Camshaft rollers for damage or improper movement. 3. If the Drum Maintenance Pivot Plate or cam rollers are faulty, replace. Did this correct the problem?	Complete.	Go to Step 4.
4	Use Service Diagnostics to run the **Drum Maintenance/Transfix Home** test. Use Service Diagnostics to run the **Drum Maintenance Drive** test.	If either test fails, replace the Process Drive.	

36,001.67 Errors - Drum Maintenance Fault

1. Replace the Drum Maintenance Pivot Plate.

2. Replace the Drum Maintenance Kit.

36,002.44 Errors - Drum Maintenance Program Fault

Printer can't write to Drum Maintenance Kit.

1. Ensure the Drum Maintenance Kit sits correctly in the Drum Maintenance Pivot Plate.

2. Replace the Drum Maintenance Kit.

3. Replace the Drum Maintenance Pivot Plate.

37,0XX.xx Errors - PEST Faults

AC power supplied by power sources such as uninterruptible power supplies (UPSs) or DC-to-AC inverter systems may not supply correct voltage to properly power up the printer. Likewise, other devices sharing the same AC circuit can cause AC voltage sags that cause the printer to fail its AC heater PEST tests (Print Engine Self Test). The printer may produce any of the following disconnected heater errors:

■ Printhead jet-stack 37,002.47 or 37,003.48

- Reservoir heater, 37,004.40 or 37,005.41

- Drum heater error 37,006.42

- Preheater error 37,008.44

- Ink melters errors 37,009.45 thru 37,013.40

The printer includes several heaters powered by AC. The printer itself can power up despite insufficient or irregular AC voltage but it may fail its AC heater tests. This is due the test not measuring sufficient current flowing through the heater at the moment the test runs.

Devices sharing the printer's AC circuit shared, such as a laser printer, a coffee maker, or a space heater, may be placing heavy intermittent demand on the AC circuit. This sudden inductive demand creates momentary AC voltage sag that causes the PEST test to fail.

Verify the AC power source prior to troubleshooting these errors. For wiring diagrams to aid in diagnosing PEST faults, see "Wiring Diagrams" on page 10-1.

8400/8500/8550/8560 PEST Description

37,001.46: **Generic PEST error.** Something went wrong during the PEST process.

37,002.47: **PEST Error - Printhead Left jetstack disconnect.** The left jetstack is not drawing the expected power from the supply.

37,03.48: **PEST - Printhead Right jetstack disconnect.** The right jetstack is not drawing the expected power from the supply.

37,004.40: **PEST - Printhead Reservoir 0 disconnect.** Reservoir 0 is not drawing the expected power from the supply.

37,005.41: **PEST - Printhead Reservoir 1 disconnect.** Reservoir 1 is not drawing the expected power from the supply.

37,006.42: **PEST - Drum disconnect.** The Drum heater is not drawing the expected power from the supply.

37,008.44: **PEST - Preheater disconnect.** The Preheater is not drawing the expected power from the supply.

	8400 PEST Description	**8500/8550/8560 PEST Description**
37,009.45:	**Inkmelt 0 (Yellow) disconnect.** The inkmelt heater is not drawing the expected power from the supply.	**All ink melters** are disconnected. All ink melters are not drawing the expected power. Check to see if the ink melter's AC cable is connected.
37,010.46:	**Inkmelt 1 (Cyan) disconnect.** The inkmelt heater is not drawing the expected power from the supply.	**Inkmelt 0 (Yellow) disconnect.** The inkmelt heater is not drawing the expected power from the supply.
37,011.44:	**Inkmelt 2 (Magenta) disconnect.** The inkmelt heater is not drawing the expected power from the supply.	**Inkmelt 1 (Cyan) disconnect.** The inkmelt heater is not drawing the expected power from the supply.

	8400 PEST Description	**8500/8550/8560 PEST Description**
37,012.48:	**Inkmelt 3 (Black) disconnect.** The inkmelt heater is not drawing the expected power from the supply.	**Inkmelt 2 (Magenta) disconnect.** The inkmelt heater is not drawing the expected power from the supply.
37,013.40:		**Inkmelt 3 (Black) disconnect.** The inkmelt heater is not drawing the expected power from the supply.

Troubleshooting Procedure for Heaters

Step	Questions and Actions	Yes	No
1	Check the wiring running from the problem component to the Printhead. Is the wiring damaged?	Replace the wiring harness.	Go to Step 2.
2	Run the appropriate diagnostic test: **37,002.47** = **Left Jetstack Heater** **37,003.48** = **Right Jetstack Heater** **37,004.40**, **37,005.41 = Reservoir Heaters** Did the test pass?		Replace the Printhead.
3	Run the appropriate diagnostic test: **37,006.42** = **Drum Heater** Did the test pass?		Replace the Drum Assembly.
4	Run the appropriate diagnostic test: **37,008.44** = **Preheat Heater** Did the test pass?		Replace the Preheater.
5	Run the appropriate diagnostic test: **37,009.45** = (8500/8550/8560) **All melters** = (8400) **Ink Melt 1** **37,010.46** = (8500/8550/8560) **Ink Melt 1** = (8400) **Ink Melt 2** **37,011.47** = (8500/8550/8560) **Ink Melt 2** = (8400) **Ink Melt 3** **37,012.48** = (8500/8550/8560) **Ink Melt 3** = (8400) **Ink Melt 4** **37,013.48** = (8500/8550/8560) **Ink Melt 4** Did the test pass?		Replace the Ink Loader.

	8400 PEST Description	**8500/8550/8560 PEST Description**
37,013.40:	**Electronics module cooling fan disconnect.** The electronics cooling fan is not drawing the expected power from the supply.	

	8400 PEST Description	**8500/8550/8560 PEST Description**
37,014.41:	**Drum Fan disconnect.** The Drum Fan is not drawing the expected power.	**Electronics Module Fan Disconnect.** The Electronics Module Fan is not drawing the expected power.
37,015.42:		**Drum Fan disconnect.** The Drum Fan is not drawing the expected power.

Troubleshooting Procedure for Fans

Step	Questions and Actions	Yes	No
1	Run the appropriate diagnostic test: **37,013.40** = (8400) **Electronics Fan** **37,014.40** = (8500/8550/8560) **Electronics Fan** **37,014.41** = (8400) **Drum Fan** **37,015.41** = (8500/8550/8560) **Drum Fan** Did the test pass?	Go to Step 2.	Go to Step 2.
2	Check the wiring for the problem fan. Is the wiring damaged?	Replace the harness.	Replace the fan.

	8400 PEST Description	**8500/8550/8560 PEST description**
37,016.43:	**PEST 50 V power supply test.** For Phaser 8400 printers, the 50 V power supply is loaded with the Head Maintenance clutch, and then tested.	**50 V power supply test.** The power supply is loaded with the Head Maintenance, Deskew, and the Pick Clutches. Check the 50 V on the Power supply. Or, ensure that the cables are not plugged into any of the clutches. The expected power from the supply is not being drawn. This error may be caused by a power supply that is faulty or shorted by some other 50 V device. Check the 50 V on the Power supply. Or, ensure that the cables are not plugged into the clutch.

50V Power Supply Fault Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Check for a short in the Electronics Module. **NOTE** Damage to circuits within the Electronics Module may occur if the power supply capacitors are not allowed to fully discharge. **NOTE** It is possible that the power supply is not shorted, but instead is out of spec and can lead to an error condition. 1. Measure the 50 V power supply output. The test point is located on the power control board below the main board RAM DIMMs. 2. Is the power supply within specification? 3. Turn Off the printer and wait 30 seconds for the capacitors to discharge.	Go to Step 2.	Go to Step 2.
2	1. Unplug the following Electronics Module connectors. This step disconnects all other external circuits so the Electronics Module can be tested alone: ■ Power Control to I/O board (J800 - gray ribbon cable on right side) ■ Power Control right (J400 – 16 wire, multi-color) ■ Printhead data interface (J130 – gray ribbon cable on top side) ■ Wave amp signal (J790) short gray ribbon cable located on left side) ■ Printhead power connector ■ Power Control left (J390 – 34 wire, multi-color) ■ Y-Axis motor (J280) 2. Turn on power to the printer. Do the PE and PS indicators (near the power switch) flash momentarily?	Go to Step 3.	Replace the Electronics Module.
3	1. Turn off the printer and wait 30 seconds for power supply capacitors to discharge. 2. Plug in the power control to I/O board connector (J800). 3. Turn on power to the printer. Do the PE and PS indicators flash momentarily?	Go to Step 4.	Go to Step 5
4	If the 50V Power Supply LED (viewed thru the cooling grill below the power cord receptacle) illuminates, the short is on one of the external devices you unplugged earlier. In this case, systematically turn off the printer, plug a wiring harness back in, and turn the printer on until the 50V supply fails (see "Measuring DC Power Supply Voltages" on page 65). Replace the defective part. Retest the printer.		

50V Power Supply Fault Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
5	To isolate the problem to the I/O Board or its related cabling, unplug these I/O Board connectors. ■ Umbilical Right J1 ■ Waste Tray Sense J110 ■ Stripper Solenoid J250 ■ Paper Tray Sense J610 ■ Ink load Signal J910 ■ DMU Sense J860 ■ Drum Thermistor J870 ■ Exit Module J680 ■ Heater Relay Control J950 Test the resistance of the I/O board to Pin1 of J270. Is the resistance still less than 1K ohm?	Replace the I/O Board.	Go to Step 6.
6	1. Plug in the I/O Board connectors one at a time and retest the resistance. 2. Replace components until you find one that creates a short at J270, Pin 1. Find any shorted components?	Leave power on to ensure the problem is fixed.	Go to Step 7.
7	Connect the Wave Amp. Any problems?	Leave power On to ensure the problem is fixed.	Go to Step 8.
8	Connect the Printhead.	Apply power and retest.	Complete.

	8400 PEST Description	8500/8550/8560 PEST description
37,017.44:	**Deskew Clutch Disconnect.** The Deskew Clutch is not drawing the expected power.	**Head Maintenance Clutch Disconnect.** The Head Maintenance Clutch is not drawing the expected power.
37,018.45:	**Main Tray Pick Clutch disconnect.** The Main Tray Pick Clutch is not drawing the expected power.	**Main Tray Deskew Clutch Disconnect.** The Main Tray Deskew Clutch is not drawing the expected power.
37,019.46:	**Tray 1 Pick Solenoid Disconnect.** The tray 1 Pick Solenoid is not drawing the expected power.	**Main Tray Pick Clutch Disconnect.** The Main Tray Pick Clutch is not drawing the expected power.
37,020.47:	**Strip Solenoid disconnect.** The strip solenoid is not drawing the expected power.	**Tray 1 Pick Solenoid Disconnect.** The Tray 1 Pick Solenoid is not drawing the expected power.
37,021.48:		**Strip Solenoid disconnect.** The Strip Solenoid is not drawing the expected power from the supply.

	8400 PEST Description	8500/8550/8560 PEST description
37,022.40:		**Preheat Solenoid Disconnect**. The Preheat Solenoid is not drawing the expected power from the supply.
37,023.41:		**Head Tilt Solenoid Disconnect.** The Head Tilt Solenoid is not drawing the expected power from the supply.

Solenoid or Clutch Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Run the appropriate diagnostic test: ■ **37,017.44** = **Head Maintenance Clutch** ■ **37,018.45** = **Deskew Clutch** ■ **37,019.46** = (8500/8550/8560) **Main tray pick Clutch** ■ **37,019.46** =(8400) **Pick Solenoid** ■ **37,020.47** = (8500/8550/8560) **Multipurpose Pick Solenoid** ■ **37,020.47** = (8400) **Strip Solenoid** ■ **37,021.48** = (8500/8550/8560) **Strip Solenoid** ■ **37,022.40** = (8400) **Preheat Solenoid** ■ **37,023.41** = (8500/8550/8560) **Head Tilt Solenoid** Did the test pass?	Go to Step 3.	Go to Step 2.
2	Check the wiring for the affected clutch or solenoid. Is the wiring damaged?	Replace the harness.	Replace the affected component.

8400	8500/8550/8560	PEST Description
37,021.48:	**37,024.48:**	**Tray 1 elevator disconnect.** The main tray elevator is not drawing the expected power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Run the **Tray 2 Lift Motor** test. Did the test pass?	Replace the Electronics Module.	Go to Step 2.
2	Check the wiring to the Tray 2 Lift Motor. Is the wiring damaged?	Replace the wiring harness	Replace the Tray Lift Motor.

8400	8500/8550/ 8560	8400 PEST Description
37,022.40:	**37,025.43:**	**Pressure pump motor disconnect.** The Purge Pump is not drawing the expected power.

Troubleshooting Procedure for Purge Pump

Step	Questions and Actions	Yes	No
1	Run the **Pressure Pump Motor** test. Did the test pass?	Replace the Electronics Module.	Go to Step 2.
2	Check the Purge Pump wiring. Is the wiring damaged?	Replace the Purge Pump.	

8400	8500/8550/ 8560	PEST Description
37,023.41:	**37,026.44**	**Purge valve disconnect.** The purge valve is not drawing the expected power from the supply.

Troubleshooting Procedure for Purge Valve

Step	Questions and Actions	Yes	No
1	Run the **Purge Vent Solenoid** test. Did the test pass?	Go to Step 2.	Replace the Purge Pump.
2	Check the Purge Pump wiring. Is the wiring damaged?	Replace the defective wiring or the Purge Pump.	

8400	8500/8550/ 8560	PEST Description
37,024.42:	**37,027.45:**	**Drum Heater Relay Board disconnect.** Both Drum heater relay coils are not drawing the expected power.
37,025.43:	**37,028.46:**	**Drum heater relay A disconnect.** The Drum heater A coil is not drawing the expected power from the supply.
37,026.44:	**37,029.47:**	**Drum heater relay B disconnect.** The Drum heater B coil is not drawing the expected power from the supply.

Troubleshooting Procedures for Drum Heater Relay Board

Step	Questions and Actions	Yes	No
1	Run the **Drum Heater Relay** test. Did the test pass?	Replace the Electronics Module.	Go to Step 2.
2	Check the wiring for damage.	Replace the Drum Heater Relay Board.	

8400	8500/8550/ 8560/8560	PEST Description
37,027.45:	37,030.48:	**X-Axis Motor disconnect.** The X-Axis motor is not drawing the expected power.
37,028.46:	37,031.40:	**X-Axis Motor disconnect.** The X-Axis motor (first phase) is not drawing the expected power.
37,029.47:	37,032.41:	**X-Axis Motor short.** The X-Axis motor is drawing too much power.
37,030.48:	37,033.42:	**X-Axis Motor disconnect**. The X-Axis motor (second phase) is not drawing the expected power.
37,031.40:	37,034.43:	**X-Axis Motor short.** The X-Axis motor is drawing too much power.

Troubleshooting Procedure for X-Axis Motor

Step	Questions and Actions	Yes	No
1	Run the **X-Axis Drive** test. Did the test pass?	Replace the Electronics Module.	Go to Step 2.
2	Check the X- Axis Motor wiring.	Replace the X-Axis Motor.	

8400	8500/8550/ 8560	PEST Description
37,032.41:	37,035.44:	**Y-Axis Motor disconnect.** The Y-Axis motor is not drawing the expected power.
37,033.42:	37,036.45:	**Y-Axis Motor short.** The Y-Axis motor is drawing too much power.

Troubleshooting Procedure for Y-Axis Motor

Step	Questions and Actions	Yes	No
1	1. Remove any obstructions interfering with Drum rotation. 2. Inspect the Drum and ensure the Drum rotates smoothly, if not replace the Drum Assembly and retest. Did this correct the problem?	Complete.	Go to Step 2.
2	Disconnect the Y-Axis Belt. Does the Y-Axis Motor shaft rotate smoothly?	Go to Step 3.	Replace the Y-Axis Motor.
3	1. Reconnect the Y-Axis Belt. 2. Run the **Y-Axis Motor** test. Did the test pass?	Replace the Electronics Module.	Go to Step 4.
4	Check the wiring for damage.	Replace the Y-Axis motor.	

8400	8500/8550/8560	PEST Description
37,034.43:	37,037.46:	**Media Drive motor disconnect.** The Media Drive is not drawing the expected power.
37,035.44:	37,038.47:	**Media Drive motor short.** The Media Drive is drawing too much power.

Troubleshooting Procedure for Media Drive

Step	Questions and Actions	Yes	No
1	Run the **Media Path Motor** test. Did the test pass?	Replace the Electronics Module.	Go to Step 2.
2	Check the wiring for damage.	Replace the Media Drive Assembly.	

8400	8500/8550/8560	PEST Description
37,036.45:	37,039.48:	**Process motor disconnect.** The Process Drive is not drawing the expected power.
37,037.46:	37,040.40:	**Process motor short.** The Process Drive is drawing too much power.

Troubleshooting Procedure for Process Drive

Step	Questions and Actions	Yes	No
1	Do the Process Drive gears, Transfix Camshaft, and Drum Maintenance Camshaft rotate freely?	Go to Step 2.	Look for drag in the rollers or replace the Process Drive.
2	Run the **Process Motor** test. Did the test pass?	Replace the Electronics Module.	Go to Step 3.
3	Check the wiring for damage.	Replace the Process Drive.	

	8400 PEST Description	8500/8550/8560 PEST Description
37,038.47:	The power supply did not reset properly. Reset may be disconnected.	
37,039.48:	Power supply +5 volt over limit.	
37,040.40:	Power supply +5 volt under limit.	
37,041.41:	Power supply +1.8 volt over limit.	The power supply did not reset properly. Reset may be disconnected.
37,042.42:	Power supply +1.8 volt under limit.	
37,043.43:	Power supply +2.5 volt over limit.	Power supply +2.5 volt over limit.
37,044.44:	Power supply +2.5 volt under limit.	Power supply +2.5 volt under limit.
37,045.45:	Power supply +3.3 volt over limit.	Power supply +3.3 volt over limit.
37,046.46:	Power supply +3.3 volt under limit.	Power supply +3.3 volt under limit.
37,047.47:	Power supply +12 volt over limit.	Power supply +12 volt over limit
37,048.48:	Power supply +12 volt under limit	Power supply +12 volt under limit
37,049.40:	Power supply -12 volt over limit.	Power supply -12 volt over limit.
37,050.41:	Power supply -12 volt under limit.	Power supply -12 volt under limit.
37,051.42:	Power supply current over limit.	Power supply current over limit.
37,052.43:	Power supply current under limit.	Power supply current under limit.
37,053.44:	Power supply +50 volt over limit.	Power supply +50 volt over limit.
37,054.45:	Power supply +50 volt under limit.	Power supply +50 volt under limit.
37,055.46:	Power supply -50 volt over limit.	Power supply -50 volt over limit.

	8400 PEST Description	**8500/8550/8560 PEST Description**
37,056.47:	Power supply -50 volt under limit.	Power supply -50 volt under limit.
37,057.48:	Power supply +15 volt over limit.	Power supply +15 volt over limit.
37,058.40:	Power supply +15 volt under limit.	Power supply +15 volt under limit.
37,059.41:	Power supply -15 volt over limit.	Power supply -15 volt over limit.
37,060.42:	Power supply -15 volt under limit.	Power supply -15 volt under limit.
37,061.43:	Power supply high switch will not activate. 12, 15, and 50 volt missing. This may be due to a short or disconnected power supply reset line.	Power supply +5 volt over limit.
37,062.44:	Vss measurement too low. The Printhead power cable may be disconnected. **NOTE** Later version Printheads feature a lock connector on the printhead data cable	Power supply +5 volt under limit.
37,063.45:	Vpp measurement too low. The Printhead power cable may be disconnected. **NOTE** Later version Printheads feature a lock connector on the printhead data cable	Power supply high switch will not activate. 12, 15, and 50 volt missing. This may be due to a short or disconnected power supply reset line.
37,064.46:		Vss measurement too low. The Printhead power may be disconnected.
37,065.47:		Vpp measurement too low, Printhead power may be disconnected. Wave amp drive cable may be damaged or disconnected at head driver board or wave amp board.
37,066.48:		The Wave Amp may be shorted. Check the Wave Amp drive cable (lifted ends of conductors).

Troubleshooting Procedure for Power Supply

Step	Questions and Actions	Yes	No
1	Run the **Voltages** check test. Did the test pass?	Go to Step 2.	Replace the Electronics Module.
2	Check the Printhead power cable. Is the wiring damaged or not connected?	Reseat or replace the wiring.	Replace the Wave Amp.

Jam Codes

The printer stores the most recent 20 events in Jam History. To access this information for 8400 models (in Customer Mode), press and hold the red **Cancel** button, followed by pressing the **OK** button when the jam code/ message displays. When **Service Tools** is displayed, release both keys. Next, scroll to **Jam History** and press **OK** to display the most recent jam list.

Phaser 8500/8550/8560 models have improved jam reporting. When the printer is in a jam condition (in Customer Mode), pressing **HELP** displays the jam code. The jam code contains 4-digits compared to the 3-digit codes produced by 8400 models. The fourth digit indicates one of the following:

■ The tray number at which the jam occurred (1, 2, 3, or 4).

■ The jam occurred while processing a chase page (5).

■ The jam occurred when generating a duplex print (6)

If the Jam code is still not visible by pressing **HELP** when in customer mode, press and hold the red **Cancel** button, followed by pressing the **OK** button when the jam code/message displays. When **Service Tools** is displayed, release both keys. Then, scroll to **Jam History** and press **OK** to display the most recent jam list

Note

Jam History is not accessible from Service Diagnostics. It is only accessible from Customer Mode.

.
Jam Code Key Table

Process Event 8400	Process Event 8500/8550/8560	Basis for Jam	Printer State	8500/8550/8560
A Deskew Flag **B** Preheat Flag **C** Strip Flag **D** Exit Flag **E** Tray 1 Width Sensor **F** Front Door Event **G** Tray 2 Media Sensor **H** Tray 3 Media Sensor **J** Tray 4 Media Sensor **K** Exit Flag **M** Paper Path Motor **N** Y-Axis Motor **P** Process Motor **T** Exit Cover Event **V** Tray 2 Event **W** Tray 3 Event **X** Tray 3 Pick Flag **Y** Tray 4 Event **Z** Tray 4 Pick Flag	**A** Deskew Flag **B** Preheat Flag **C** Strip Flag **D** Exit Flag **E** Tray 1 Media Present **F** Front Door Event **G** Exit Cover **H** Tray 3 Media Sensor **J** Tray 4 Paper Sensor **M** Paper Path Motor **N** Y-Axis Motor **P** Process Motor **Q** DMU Missing **T** Exit Cover Event **U** Pipeline Resource **V** Tray 2 Event **W** Tray 3 Event **X** Tray 3 Pick Flag **Y** Tray 4 Event **Z** Tray 4 Pick Flag	**2** Sensor Event **3** Timeout **4** Motor Stall **5** Motor Position **6** Length Short **7** Length Long	**A** Printer 1st Init - Abnormal Shutdown **B** Printer 1st Init - Normal Shutdown **C** Mechanical Recovery **D** Warmup **E** Ready **F** Fault **G** Auto Drum Maintenance **H** Printhead Maintenance **J** Printhead Purge **K** Oil Transfix Roller **L** Standby **Print Process Substates** **M** Pick from Tray 2 **N** Pick from Tray 3 **P** Pick from Tray 4 **Q** Pick from Tray 1 **R** Pick from Duplex **S** Stage for Transfix **T** Transfix **V** Print Drum Maintenance **W** Imaging **X** Exit **Z** Shutdown	**1** - Tray 1 **2** - Tray 2 **3** - Tray 3 **4** - Tray 4 **5** - Chase page **6** - Duplex

Jam Code Definition Table

Not all jam code combinations are documented in this manual, only the codes that occur most commonly.

Note

The following table only shows the 3-digit jam code. For Phaser 8500/8550/8560, a 4th digit represents the tray number (5 represents a chase page and 6 represents duplex). Numbers following the 4th digit represent the page count:

Jam Code Troubleshooting Procedures

A2C   Deskew sensor in unexpected state during mechanical recovery.

1. Check the Drum Maintenance Kit NVRAM contacts during the oiling process for continuity.
2. Instruct customer to remove media from Tray 1 before opening the Front Door.
3. Replace the pivot arm.

Jam Code Troubleshooting Procedures (Continued)

A2E	Deskew sensor in unexpected state at ready. 1. Ensure ground integrity, see page 4-65. 2. Replace Tray 1 Pick Solenoid.
A2F	Deskew Sensor in unexpected state. 1. Ensure ground integrity of the printer, see page 4-65. 2. Verify all doors and covers are fully closed and not moving during printing.
A2J	Deskew flag sensor event during head purge.
A2K	Deskew sensor in an unexpected state during a transfix roller oiling.
A2M	The deskew flag tripped unexpectedly while picking paper from Tray 2.
A2N	The deskew flag tripped unexpectedly while picking paper from Tray 3.
A2P	The deskew flag tripped unexpectedly while picking paper from Tray 4.
A2S	Deskew sensor in unexpected state during media stage for transfix.
A2Q	The deskew flag tripped unexpectedly while picking paper from Tray 1. 1. Try using different, supported media. 2. Ensure the paper guides are snug against the media in the tray. 3. Push up on Tray {2 - 4} Nudger Roller until captured by the actuator arm. 4. Run the following diagnostic tests, Deskew Flag, Tray {2-4} Pick Clutch and the Tray {2-4} Solenoid. 5. Ensure ground integrity of the printer, see page 4-65. 6. Verify all doors and covers are fully closed and not moving during printing. 7. Replace the Tray {2 - 4} Pick Clutch. 8. Replace the Retard Roller. 9. Replace the Preheater.
A3G **A3M** **A3N** **A3P** **A3Q**	Deskew Sensor time-out during an auto Drum maintenance cycle. The deskew flag timed out waiting for the paper picked from Tray 2. The deskew flag timed out waiting for the paper picked from Tray 3 The deskew flag timed out waiting for the paper picked from Tray 4. The deskew flag timed out waiting for the paper picked from Tray 1. 1. Verify media is appropriate for the tray. 2. Verify the tray is not overfilled and the guides are positioned correctly. 3. Check for obstructions in the paper path. 4. Test the appropriate Tray Solenoid. 5. Test the appropriate Tray Pick Clutch. 6. Ensure the Take Away Rollers are in good condition. 7. Test the Take Away Roller using the diagnostic Paper Path Drive test. 8. Replace the appropriate Separator Pad. 9. Replace the Pick Assembly.

Jam Code Troubleshooting Procedures (Continued)

A3R	Deskew Sensor time-out during movement from Exit Roller to deskew roller when duplexing print. 1. \Ensure the media is appropriate for two-sided printing. Not too short, not too smooth. Check printer specifications. 2. Inspect the condition of the exit and the duplex rollers. 3. Check the Front Door for obstructions or damage, replace if necessary. 4. Test operation of the exit and the duplex rollers using diagnostic Duplex Paper Lead Edge Times test. 5. Test the Deskew Sensor using the diagnostic Sensors test.
B2C	Preheater exit sensor unexpected state during mechanical recovery. 1. Clear jam and let printer finish mechanical recovery. 2. Ensure ground integrity of the printer, see page 4-65.
B2F	Preheater exit sensor in unexpected state during fault.
B2S	Preheater exit sensor in unexpected state during stage. 1. Ensure ground integrity of the printer, see page 4-65. 2. Check the Drum Maintenance Kit NVRAM contacts during the oiling process for continuity. 3. Check the Waste Tray. 4. Replace the Preheater.
B2M	The preheat flag tripped unexpectedly while picking paper from Tray 2.
B2N	The preheat flag tripped unexpectedly while picking paper from Tray 3.
B2P	The preheat flag tripped unexpectedly while picking paper from Tray 4.
B2Q	The preheat flag tripped unexpectedly while picking paper from Tray 1. 1. Test the preheat flag using the diagnostic Sensors test. 2. Ensure ground integrity of the printer, see page 4-65.
B3M	The preheat flag timed out waiting for the paper picked from Tray 2.
B3N	The preheat flag timed out waiting for the paper picked from Tray 3.
B3P	The preheat flag timed out waiting for the paper picked from Tray 4
B3Q	The preheat flag timed out waiting for the paper picked from Tray 1.
B3S	Preheater sensor timed out during stage.
B3T	Preheater exit sensor timed out during transfix. 1. Verify the media is appropriate for the tray. 2. Check for paper path obstructions, ensure the preheater plate moves freely. 3. Replace the Tray 1 Separator Pad Assembly. 4. Run diagnostics to test the preheat flag. 5. Ensure the deskew rollers are in good condition. 6. Run the Deskew Clutch test. 7. Run the Paper Path Drive test. 8. Replace the preheater, then retest
C2C	Strip flag unexpected event during mechanical recovery.
C2D	Strip flag unexpected state during warm-up.
C2E	Strip flag unexpected event during printer ready.

Jam Code Troubleshooting Procedures (Continued)

C2F   Strip flag unexpected event during fault.

C2K   Strip flag unexpected event during transfix roller oiling.

C2M   The strip flag actuated unexpectedly when paper picked from Tray 2.

C2N   The strip flag actuated unexpectedly when paper picked from Tray 3.

C2P   The strip flag actuated unexpectedly when paper picked from Tray 4.

C2Q   The strip flag actuated unexpectedly when paper picked from Tray 1.

C2R   Strip flag unexpected event during pick from the duplex path.

C2T   Strip flag unexpected event during transfix.
   1. Ensure ground integrity of the printer, see page 4-65.
   2. Check the paper tray for overfill.
   3. Run the Stripper sensor test.
   4. Inspect the stripper blade for damage or debris.
   5. Run the Paper Lead Edge Times test.
   6. Replace the stripper carriage assembly.

C2X   Strip flag unexpected event during exit.
   1. Ensure the media is not too thick and that it is supported by the printer.
   2. Use a less glossy media.
   3. Ensure the guides in the tray are snug against the media.
   4. If the Drum maintenance unit is near the end of its life, replace it.
   5. Clean and inspect the exit rollers.
   6. Run the Paper Path Drive test.

C3M   The strip flag timed out waiting for the paper picked from Tray 2.

C3N   The strip flag timed out waiting for the paper picked from Tray 3.

C3P   The strip flag timed out waiting for the paper picked from Tray 4.

C3Q   The strip flag timed out waiting for the paper picked from Tray 1.

C3T   **NOTE** After replacing the Process Drive, Drum Maintenance Pivot Plate or the Drum Maintenance Camshaft (or any component requiring removal of the Process Drive), the printer may experience Front Cover jams from Tray 2. The jam occurs with paper in the Preheater and C3T jam errors (strip flag timeout during transfix) recorded in Jam History. In many cases, Tray 1 (MPT) prints with no jams.

   These symptoms indicate that the Transfix Load Module is incorrectly timed resulting in a late arrival of the leading edge at the strip flag. The likely cause is the position of the Drum Maintenance Camshaft gear in relation to the Process Drive gear. To correct this problem, see "Timing the Drum Maintenance Camshaft" on page 6-9.

   Strip flag time-out during transfix.
   1. Ensure media is correct size and type for the tray. If envelope jam, try a different style.
   2. Check the Drum Maintenance Kit for proper operation, replace if necessary.
   3. Ensure the Process Drive is correctly homed, see page 6-8.
   4. Ensure the Stripper Carriage moves freely, run the Stripper Contact test.
   5. Run the Transfix Drive Slow and Transfix Drive Fast tests.

C3X   Strip flag time-out during exit.
   1. Open the Exit Cover and ensure the springs for the idler rollers are present and installed correctly (they should be the same for all 5 rollers).
   2. Verify the metal bar is installed on top of the exit guide.

Jam Code Troubleshooting Procedures (Continued)

C5X	Print pulled back into transfix nip during exit.
	1. Ensure the media is not too thick and that it is supported by the printer.
	2. Use a less glossy media.
	3. If the Drum maintenance unit is near the end of its life, replace it.
	4. Clean and inspect the exit rollers.
	5. Ensure the Process Drive is correctly homed.
	6. Run the Paper Path Drive test.
	7. Replace the Lower Exit Guide.
D2D	Exit flag unexpected event during warm-up.
D2M	The exit flag actuated unexpectedly when paper picked from Tray 2.
D2N	The exit flag actuated unexpectedly when paper picked from Tray 3.
D2P	The exit flag actuated unexpectedly when paper picked from Tray 4.
D2Q	The exit flag actuated unexpectedly when paper picked from Tray 1.
D2R	The exit flag actuated unexpectedly when duplexing.
D2T	The exit flag actuated unexpectedly when transfixing.
	1. Ensure ground integrity of the printer, see page 4-65.
	2. Run the Sensors test to test the exit sensor.
	3. Run the Paper Lead Edge Times test.
	4. Replace problem component.
D2X	The exit flag actuated unexpectedly exit.
	1. Ensure the media is not too thick and that it is supported by the printer.
	2. Use a less glossy media.
	3. If the Drum Maintenance Kit is near the end of its life, replace it.
	4. Clean and inspect the exit rollers.
	5. Check the exit flag for proper installation or damage, replace if necessary.
	6. Run the diagnostic Paper Path Drive test.
	7. Replace problem component.
D3C	Exit flag time-out during mechanical recovery.
D3M	Exit flag timed out following Tray 2 Pick.
D3N	Exit flag timed out following Tray 3 Pick.
D3P	Exit flag timed out following Tray 4 Pick.
D3Q	Exit flag timed out following Tray 1 Pick.
D3R	Exit flag timed out during duplexing.
D3T	Exit flag time-out during transfix.
	1. Inspect the exit path for obstructions.
	2. Inspect and clean the exit roller, ensure the exit roller rotates.
	3. Inspect and clean the stripper blade.
	4. Replace the Drum maintenance unit.
	5. Run the diagnostic Paper Path Drive test.
E2D	Tray 1 width sensor during warm-up.
E2E	Tray 1 width sensor during

Jam Code Troubleshooting Procedures (Continued)

E2Q	Tray 1 width sensor during Tray 1 pick.
	1. Examine the Tray 1 width guides for proper movement and ensure the side guides are not being adjusted while printing.
	2. Ensure the Front Door is closed and the wiring is connected and seated.
	3. Run the Tray 1 Sensor test.
	4. Inspect the Tray 1 wiring to the I/O board.
	5. Replace the I/O board, then retest.
F2D	The Front Door open flag unexpectedly tripped while warming up.
F2F	The Front Door open flag unexpectedly tripped while in a fault state.
F2M	The Front Door open flag unexpectedly tripped during a pick from Tray 2.
F2N	The Front Door open flag unexpectedly tripped during a pick from Tray 3.
F2P	The Front Door open flag unexpectedly tripped during a pick from Tray 4.
F2Q	The Front Door open flag unexpectedly tripped during a pick from Tray 1.
F2R	The Front Door open flag unexpectedly tripped while duplexing.
F2S	Front Door sensor unexpectedly actuated while staging for transfix.
F2T	The Front Door open flag unexpectedly tripped during transfix.
F2V	The Front Door open flag unexpectedly tripped during Drum oiling.
F2W	The Front Door open flag unexpectedly tripped while imaging during a print job.
F2X	Front Door sensor unexpectedly actuated during exit.
	1. Ensure the media is supported.
	2. Ensure ground integrity of the printer, see page 4-65.
	3. Run the diagnostic Sensors test to test the door sensor.
	4. Check that the doors and covers are properly closed and seated.
	5. Run the Door Sensor test.
G2M	Tray 2 removed during pick from Tray 2.
H2N	Tray 3 was removed during pick from Tray 3.
J2M	Tray 4 was removed during pick from Tray 4.
J2P	Tray 4 Media Present Sensor event pick from Tray 4.
M2C	Media Drive had an unexpected event during mechanical recovery.
M4A	Media Drive stalled during an abnormal printer shutdown.
M4B	Media Drive stalled during a normal printer shutdown.
M4C	Media Drive stalled during mechanical recovery.
M4D	Media Drive stalled during printer warm-up.
M4E	Media Drive stalled while the printer was in its ready state.
M4F	Media Drive stalled while the printer was in a fault state.
M4G	Media Drive stalled during an auto Drum maintenance cycle.
M4H	Media Drive stalled during Printhead maintenance.
M4J	Media Drive stalled during a Printhead purge.
M4K	Media Drive stalled during an oil transfix roller cycle.

Jam Code Troubleshooting Procedures (Continued)

M4L	Media Drive stalled while the printer was in standby mode.
M4M	Media Drive stalled while the printer picked from Tray 2.
M4N	Media Drive stalled while the printer picked from Tray 3.
M4P	Media Drive stalled while the printer picked from Tray 4.
M4Q	Media Drive stalled while the printer picked from Tray 1.
M4R	Media Drive stalled while the printer duplexed the print.
M4S	Media Drive stalled while the printer staged the print for transfix.

M4T	Media Drive stalled during transfix.
	1. Verify the media in the tray is supported by the printer.
	2. Inspect the paper path for obstructions.
	3. Run the Paper Drive Power test.
	4. Run the Media Path Motor and Shafts test.
	5. Replace the media path drive assembly.

N2T	Y-Axis Motor event during transfix (Tray 1 only - probably a multi-pick).
	1. Verify the media in the tray is supported by the printer.
	2. Try heavier media.
	3. Inspect Tray 1 Separator Pad. Replace if necessary.
	4. Send a snippet to turn off the multi-pick detection code.
	5. Run the Y-Axis Motor test, replace if necessary.
	6. Run the Voltages test, replace the power supply if necessary.

N2W	Y-Axis Motor event during imaging. Probably a software fault. Ensure ground integrity of the printer, see page 4-65.

N4A	Y-Axis Motor stalled on power-up following an abnormal printer shutdown.
N4B	Y-Axis Motor stalled on power-up following a normal printer shutdown.
N4C	Y-Axis Motor stalled during mechanical recovery.
N4D	Y-Axis Motor stalled during an printer warm-up.
NFE	Y-Axis Motor stalled while the printer was in its ready state.
N4F	Y-Axis Motor stalled while the printer was in a fault state.
N4G	Y-Axis Motor stalled during an auto Drum maintenance cycle.
N4H	Y-Axis Motor stalled while the printer performed Printhead maintenance.
N4J	Y-Axis Motor stalled while the printer performed Printhead purge.
N4K	Y-Axis Motor stalled while the printer performed an oil transfix roller cycle.
N4L	Y-Axis Motor stalled while the printer was in standby mode.
N4S	Y-Axis Motor stalled while the printer staged for transfix.
N4T	Y-Axis Motor stalled while the printer transfixed the print.
N4V	Y-Axis Motor stalled during a Drum maintenance cycle.
N4W	Y-Axis Motor stalled while the printer imaged the Drum.

Jam Code Troubleshooting Procedures (Continued)

N4X	Y-Axis Motor stalled while the print exited the printer.

1. Check the media, generally label, trifold or envelopes cause this error.
2. Try running fewer sheets through the tray.
3. Ensure the Process Drive is correctly aligned, refer to "Homing the Process Drive Train" on page 6-8.
4. Run the Check Y-Axis Motor test, replace if necessary.
5. Run the Belt Slip test.
6. Replace the Tray 1 Separator Pad.
7. Replace the Process Drive.

N5T	Y-Axis motor out of position while the printer transfixed the print.
N5W	Y-Axis motor out of position while the printer imaged the Drum.

1. Inspect the Y-Axis drive belt.
2. Run the Check Drum Y-Axis Encoder test.
3. Run the Check Drum Y-Axis Drive test.
4. Run the Check Drum Y-Axis Belt Slip test.
5. Replace the Y-Axis motor or Drum assembly if necessary.

N6T	Y-Axis motor media short during transfix. The media was measured to be shorter than it was believed to be.

1. Measure the media to verify it matches the selected length.
2. Ensure ground integrity of the printer, see page 4-65.
3. Run the Check Drum Y-Axis Encoder test.
4. Pull the preheater and check the preheater flag for ink or paper interference.
5. Replace the preheater.

Legal size paper from Tray 4 in standard print mode may buckle. Use slower print mode.

N7T	Y-Axis motor media long during transfix. The media was measured to be longer than it was believed to be.

1. Measure the media to verify it matches the selected length.
2. Try heavier media.
3. Try loading only a few sheets. Some photo media may require running one sheet at a time.
4. Run the diagnostic Check Drum Y-Axis Encoder test.
5. Replace the Pick Assembly and retard roller.
6. Run the clean ink smears and check the preheater exit flag for debris.
7. Remove the paper preheater and ensure that the exit flag does not interfere with the assembly. Replace the Paper Preheater if all else checks out.

P4A	Process motor stalled on abnormal shutdown.
P4B	Process motor stalled on power-up following a normal printer shutdown.
P4C	Process motor stalled during mechanical recovery.
P4D	Process motor stalled during an printer warm-up.
P4E	Process motor stalled while the printer was in its ready state.
P4F	Process motor stalled while the printer was in a fault state.

Jam Code Troubleshooting Procedures (Continued)

P4G	Process motor stalled while the printer performed an auto Drum maintenance cycle.
P4H	Process motor stalled while the printer performed Printhead maintenance.
P4J	Process motor stalled while the printer performed Printhead purge.
P4K	Process motor stalled while the printer performed an oil transfix roller cycle.
P4L	Process motor stalled while the printer was in standby mode.
P4S	Process motor stalled while the printer staged for transfix.
P4T	Process motor stalled while the printer transfixed the print.
P4V	Process motor stalled while the printer performed a print Drum maintenance cycle.
P4W	Process motor stalled while the printer imaged the Drum.
P4X	Process motor stalled while the print exited the printer.

1. Ensure the media is supported.
2. Verify that the Process Drive Gearbox is correctly aligned and homed.
3. Run the Process Motor test.
4. Replace the process motor if necessary.
5. Run the Transfix Fast and Slow tests.
6. Replace the transfix camshaft and load arms if necessary.
7. Run the Tilt Drive test, replace if necessary.
8. Replace the Process Drive.

T2A	The Exit Cover open flag unexpectedly tripped while the printer was performing an abnormal shutdown.
T2B	The Exit Cover open flag unexpectedly tripped while the printer was performing a normal shutdown.
T2C	The Exit Cover open flag unexpectedly tripped while the printer was performing a mechanical recovery.
T2D	The Exit Cover open flag unexpectedly tripped while the printer was warming up.
T2E	The Exit Cover open flag unexpectedly tripped while the printer was ready.
T2F	The Exit Cover open flag unexpectedly tripped while the printer was in a fault state.
T2G	The Exit Cover open flag unexpectedly tripped while the printer was performing an automatic Drum maintenance cycle.
T2H	The Exit Cover open flag unexpectedly tripped while the printer was performing a Printhead maintenance cycle.
T2J	The Exit Cover open flag unexpectedly tripped while the printer was performing a Printhead purge cycle.
T2K	The Exit Cover open flag unexpectedly tripped while the printer was performing a transfix oiling cycle.
T2L	The Exit Cover open flag unexpectedly tripped while the printer was in Standby mode.

Jam Code Troubleshooting Procedures (Continued)

T2M	The Exit Cover open flag unexpectedly tripped when the printer picked from Tray 2.
T2N	The Exit Cover open flag unexpectedly tripped when the printer picked from Tray 3.
T2P	The Exit Cover open flag unexpectedly tripped when the printer picked from Tray 4.
T2Q	The Exit Cover open flag unexpectedly tripped when the printer picked from Tray 1.
T2R	The Exit Cover open flag unexpectedly tripped while the printer was duplexing.
T2S	The Exit Cover open flag unexpectedly tripped while the paper was staging for the transfix cycle.
T2T	The Exit Cover open flag unexpectedly tripped while the print was being transfixed.
T2X	The Exit Cover open flag unexpectedly tripped while the printer was ejecting the print.
T2Z	The Exit Cover open flag unexpectedly tripped while the printer was shutting down.
	1. Ensure the media is supported.
	2. Ensure ground integrity of the printer, see page 4-65.
	3. Run the Monitor Sensors test.
	4. Inspect the door switch for damage and proper operation.
	5. Check the Drum maintenance unit to ensure it is functioning properly and the blade is not covered with ink debris.
	6. Replace the Drum maintenance unit.
	7. Replace the transfix roller.
V2D	Tray 2 media size sensor unexpectedly activated during warm-up.
V2E	Tray 2 media size sensor unexpectedly activated during printer ready.
V2F	Tray 2 media size sensor unexpectedly activated while printer was in a fault state.
V2K	Tray 2 media size sensor unexpected event during oil transfix.
V2L	Tray 2 media size sensor unexpectedly activated while the printer was in standby.
V2M	Tray 2 media size sensor unexpectedly activated while picking from Tray 2.
V2N	Tray 2 media size sensor unexpectedly activated while picking from Tray 3.
V2P	Tray 2 media size sensor unexpectedly activated while picking from Tray 4.
V2Q	Tray 2 media size sensor unexpectedly activated while picking from Tray 1.
V2R	Tray 2 media size sensor unexpectedly activated while duplexing.
V2S	Tray 2 media size sensor unexpectedly activated while paper staged for print.
V2T	Tray 2 media size sensor unexpectedly activated while transfixing the print.
V2V	Tray 2 media size sensor unexpectedly activated while print Drum maintenance cycle was being performed.
V2W	Tray 2 media size sensor unexpectedly activated during printer imaging.

Jam Code Troubleshooting Procedures (Continued)

V2X	Tray 2 media size sensor unexpectedly activated while exiting print.

1. Ensure ground integrity of the printer, see page 4-65.
2. Ensure the Tray 2 paper guides are correctly set.
3. Run the Monitor Sensors test to test the media size sensor.
4. Replace the media size sensor board.
5. Replace the pivot arm.

W2D	Tray 3 media size sensor unexpectedly activated during warm-up.
W2E	Tray 3 media size sensor unexpectedly activated during printer ready.
W2F	Tray 3 media size sensor unexpectedly activated while printer in fault state.
W2L	Tray 3 media size sensor unexpectedly activated while printer in standby.
W2M	Tray 3 media size sensor unexpectedly activated while picking from Tray 2.
W2N	Tray 3 media size sensor unexpectedly activated while picking from Tray 3.
W2P	Tray 3 media size sensor unexpectedly activated while picking from Tray 4.
W2Q	Tray 3 media size sensor unexpectedly activated while picking from Tray 1.
W2R	Tray 3 media size sensor unexpectedly activated while duplexing.
W2V	Tray 3 media size sensor unexpectedly activated while print Drum maintenance cycle being performed.
W2W	Tray 3 media size sensor unexpectedly activated during printer imaging.
W2S	Tray 3 media size sensor unexpectedly activated while paper staged for print.
W2T	Tray 3 media size sensor unexpectedly activated while transfixing the print.
W2X	Tray 3 media size sensor unexpectedly activated event while exiting print.

1. Ensure ground integrity of the printer, see page 4-65.
2. Ensure the paper guides are correctly set.
3. Run the Monitor Sensors test to test the media size sensor.
4. Replace the 525-Sheet Feeder.

W4N	Tray 3 motor stall during pick from Tray 3.
W4P	Tray 3 motor stall during pick from Tray 4.
W4S	Tray 3 motor stall during pick from Tray 3.

1. Ensure ground integrity of the printer, see page 4-65.
2. Ensure the paper guides are correctly set.
3. Run the Monitor Sensors test to test the media size sensor.
4. Replace the 525-Sheet Feeder.

X2A	Tray 3 pick flag triggered unexpectedly during abnormal shutdown.
X2B	Tray 3 pick flag triggered unexpectedly on power-up following normal shutdown.
X2C	Tray 3 pick flag triggered unexpectedly during mechanical recovery.
X2D	Tray 3 pick flag triggered unexpectedly during warm-up.
X2E	Tray 3 pick flag triggered unexpectedly during printer ready.

Jam Code Troubleshooting Procedures (Continued)

X2F	Tray 3 pick flag triggered unexpectedly while printer was in a fault state.
X2L	Tray 3 pick flag triggered unexpectedly while printer in standby.
X2M	Tray 3 pick flag triggered unexpectedly while picking from Tray 2.
X2N	Tray 3 pick flag triggered unexpectedly while picking from Tray 3.
X2P	Tray 3 pick flag triggered unexpectedly while picking from Tray 4.
X2Q	Tray 3 pick flag triggered unexpectedly while picking from Tray 1.
X2R	Tray 3 pick flag triggered unexpectedly while duplexing.
X2S	Tray 3 pick flag triggered unexpectedly while transfixing.
X2V	Tray 3 pick flag triggered unexpectedly while print Drum maintenance cycle was being performed.
X2W	Tray 3 pick flag triggered unexpectedly during printer imaging.
X2X	Tray 3 pick flag triggered unexpectedly while exiting print.
	1. Ensure ground integrity of the printer, see page 4-65.
	2. Ensure the paper guides are correctly set.
	3. Run the Monitor Sensors test to test the media size sensor.
	4. Replace the 525-Sheet Feeder.
	5. Replace the pivot arm.
X3D	Tray 3 pick flag sensor timed out during warm-up.
X3E	Tray 3 pick flag sensor timed out during wile printer ready.
X3F	Tray 3 pick flag sensor timed out while printer in fault state.
X3L	Tray 3 pick flag sensor timed out while printer in standby.
X3M	Tray 3 pick flag sensor timed out while picking from Tray 2.
X3N	Tray 3 pick flag sensor timed out while picking from Tray 3.
X3P	Tray 3 pick flag sensor timed out while picking from Tray 4.
X3Q	Tray 3 pick flag sensor timed out while picking from Tray 1.
X3R	Tray 3 pick flag sensor timed out while duplexing.
X3S	Tray 3 pick flag sensor timed out while paper staged for print.
X3T	Tray 3 pick flag sensor timed out while transfixing the print.
X3V	Tray 3 pick flag sensor timed out while the printer Drum maintenance cycle was being performed.
X3W	Tray 3 pick flag sensor timed out while printer imaging.

Jam Code Troubleshooting Procedures (Continued)

X3X   Tray 3 pick flag sensor timed out while exiting print.

1. Verify the paper loaded in Tray 3 is supported media.
2. Reduce the amount of media in the tray and reposition the guides to fit firmly against the media.
3. Inspect and/or clean the pick roller assembly.
4. Run the Tray 3 Pick Shaft test.
5. Ensure ground integrity of the printer, see page 4-65.
6. Push up on the nudger roller until it is captured by the actuator arm.
7. Run the Pick Clutch test, replace the pick clutch.
8. Run the Media Path Drive test.
9. Replace the pick roller assembly.
10. Replace the Tray 3 525-sheet feeder.

Y2D   Tray 4 media size sensor unexpectedly activated during warm-up.

Y2E   Tray 4 media size sensor unexpectedly activated during printer ready.

Y2F   Tray 4 media size sensor unexpectedly activated while printer in fault state.

Y2L   Tray 4 media size sensor unexpectedly activated while printer in standby.

Y2M   Tray 4 media size sensor unexpectedly activated while picking from Tray 2.

Y2N   Tray 4 media size sensor unexpectedly activated while picking from Tray 3.

Y2P   Tray 4 media size sensor unexpectedly activated while picking from Tray 4.

Y2Q   Tray 4 media size sensor unexpectedly activated while picking from Tray 1.

Y2R   Tray 4 media size sensor unexpectedly activated while duplexing.

Y2S   Tray 4 media size sensor unexpectedly activated while paper staged for print.

Y2T   Tray 4 media size sensor unexpectedly activated while transfixing the print.

Y2V   Tray 4 media size sensor unexpectedly activated while the printer Drum maintenance cycle was being performed.

Y2W   Tray 4 media size sensor unexpectedly activated while printer imaging.

Y2X   Tray 4 media size sensor unexpectedly activated while exiting print.

1. Ensure ground integrity of the printer, see page 4-65.
2. Ensure the paper guides are correctly set.
3. Run the Monitor Sensors test to test the media size sensor.
4. Replace the Tray 4 525-Sheet Feeder.
5. Replace the pivot arm.

Z2A   Tray 4 pick flag triggered unexpectedly during abnormal shutdown.

Z2B   Tray 4 pick flag triggered unexpectedly during normal shutdown.

Z2C   Tray 4 Pick flag triggered unexpectedly during mechanical recovery.

Z2D   Tray 4 pick flag triggered unexpectedly during warm-up.

Z2E   Tray 4 pick flag triggered unexpectedly while printer ready.

Z2F   Tray 4 pick flag triggered unexpectedly while printer in fault state.

Z2L   Tray 4 pick flag triggered unexpectedly while printer in standby.

Jam Code Troubleshooting Procedures (Continued)

Z2M	Tray 4 pick flag triggered unexpectedly while pick from Tray 2.
Z2N	Tray 4 pick flag triggered unexpectedly while pick from Tray 4.
Z2P	Tray 4 pick flag triggered unexpectedly while pick from Tray 4.
Z2Q	Tray 4 pick flag triggered unexpectedly while pick from Tray 1.
Z2R	Tray 4 pick flag triggered unexpectedly while duplexing.
Z2S	Tray 4 pick flag triggered unexpectedly while paper staged for print.
Z2T	Tray 4 pick flag triggered unexpectedly while transfixing the print.
Z2V	Tray 4 pick flag triggered unexpectedly while the printer Drum maintenance cycle was being performed.
Z2W	Tray 4 pick flag triggered unexpectedly during printer imaging.
Z2Z	Tray 4 pick flag triggered unexpectedly while exiting print.
	1. Ensure ground integrity of the printer, see page 4-65. 2. Run the Monitor Sensors test to test the media size sensor. 3. Replace the 525-Sheet Feeder. 4. Replace the pivot arm.
Z3B	Tray 4 pick flag sensor timed out during normal shutdown.
Z3D	Tray 4 pick flag sensor timed out during warm-up.
Z3E	Tray 4 pick flag sensor timed out during wile printer ready.
Z3F	Tray 4 pick flag sensor timed out while printer in fault state.
Z3L	Tray 4 pick flag sensor timed out while printer in standby.
Z3M	Tray 4 pick flag sensor timed out while pick from Tray 2.
Z3N	Tray 4 pick flag sensor timed out while pick from Tray 4.
Z3P	Tray 4 pick flag sensor timed out while pick from Tray 4.
Z3Q	Tray 4 pick flag sensor timed out while pick from Tray 1.
Z3R	Tray 4 pick flag sensor timed out while duplexing.
Z3V	Tray 4 pick flag sensor timed out while the printer Drum maintenance cycle was being performed.
Z3W	Tray 4 pick flag sensor timed out while printer imaging.
Z3S	Tray 4 pick flag sensor timed out while paper staged for print.
Z3T	Tray 4 pick flag sensor timed out while transfixing the print.
Z3Z	Tray 4 pick flag sensor timed out while exiting print.
	1. Verify the paper loaded in Tray 4 is the correct size and type. 2. Inspect/clean the pick roller assembly. Replace if necessary. 3. Run the Tray 4 Pick Shaft test 4. Replace the Tray 4 525-Sheet Feeder.

General Troubleshooting

Chapter 4

Introduction

This chapter covers the general start-up, Power On Self Test (POST), and power supply operations of the printer to aid in troubleshooting problems not associated with a Control Panel error message or error code. For troubleshooting problems associated with an error code or Control Panel error message, notes on how to use the troubleshooting procedure tables, and how to use service diagnostics, see Chapter 3 "Error Messages and Codes" on page 3-1. The Printer Status page also contains useful troubleshooting information. This page provides general printer information, life information for all consumables, printhead cleaning and power cycles, and jam and error code information.

Troubleshooting procedures will isolate a problem to a specific component or subassembly, in some cases including the wiring harness. If you go through the procedures in a troubleshooting table and still are unable to solve the problem, re-read the Theory of Operations for the problem area and ensure that you understand how that section of the printer is supposed to function.

Hidden Service Menu

The Hidden Service Menu provides access to a large group of information pages and functions usable for diagnosing and correcting printer malfunctions and accessing special features. Display the Hidden Service Menu as follows:

1. On the Control Panel, press the **Down Arrow** button to select **Troubleshooting** and then press **OK**.

2. Press the **Down Arrow** button to select **Service Tools,** and then press **OK**.

3. While pressing and holding down the **Up Arrow** button, press the **Down Arrow** button to display the Hidden Service Menu.

Menu Item	Description
Test Prints	See "Analyzing Service Test Prints" on page 5-34 for a complete explanation of each test print available.
Startup Page	Prints a page with basic configuration and networking information.
Eliminate Light Stripes	Performs a cleaning procedure to remove light stripes in prints; this process will take about 5 minutes.
Fault History	Displays available information regarding the last 15 faults reported by a test and/or the print engine.
Jam History	Displays available information regarding the last 20 Jams reported by a test and/or the print engine.
Diagnostic History	Displays a list of all recent diagnostic tests.
Enter Diagnostic Mode	See "Service Diagnostics Mode Menu" on page 4-5 for a complete explanation of each function.

Menu Item	Description
Reset NVRAM	Provides access to reset the printer back to its factory-default settings and erase all network settings. If possible, print the Configuration Page before resetting NVRAM.
Power Saver Timeout	Selects the Power Saver Timeout, the amount of time the printer must be idle before changing to Power Saver low-energy consumption mode, per ENERGY STAR\256 guidelines.
Reset Printer	Resets all items in the Printer Controls menu to their default values.
Head Adjust	This is for manufacturing or engineering use only.
Adjust X-Axis scale	This is for manufacturing or engineering use only.
Drift Compensation	This is for manufacturing or engineering use only.
Head-to-Drum Adjust	This is for manufacturing or engineering use only.
Wiper adjust (8500)	Adjusts the tension on the wiper blade (for engineering use only).
Purge adjust (8500)	When replacing a purge pump different than the manufactured pump, you may need to adjust the amount of pressure in the pump using this menu item.
Reset Ink Loader (8500)	Resets the ink loader ink stick count.
Service Usage Profile	Prints pages with detailed printer-usage information.
Print OCR Usage Profile	Prints using a font optimized for FAX.
Engine Copy Count	Displays engine copy count.
Head Serial Number	Displays the printhead serial number.
Head Cal Date	Displays the date the printhead was calibrated.
Head Version	Displays the printhead version.
Engine Firmware Version	Displays the engine firmware version.
2-Sided Printing Oil Chase	Enables a chase page to follow a 2-sided printing job.
Envelope Oil Chase	Enables a chase page to follow an envelope print job.
Center Image (8400)	Centers the image by adjusting the margin (not operational).
Exit	Exits the Hidden Service Diagnostics Menu and returns to the previous menu.

Service Diagnostics

The printer has built-in diagnostics to aid in troubleshooting. Service Diagnostics provides tests for sensors, motors, switches, clutches, fans and solenoids. Service Diagnostics also contains functions to report printer status and some NVRAM access.

Note

Tests listed without a typical value range for 8400/8500/8550/8560 models, indicates that no documented typical range exists. Use the test to observe if the system being tested is capable of performing the desired tested action.

Service Diagnostics are executed through the Control Panel by a certified service technicians only. Service Diagnostics are invoked one of two ways:

Entering Service Diagnostics without a Reboot:

This method of entering diagnostics is to allow customers to be diverted to Service Diagnostics in order to perform some tests.

1. Display the Hidden Service Menu as described in "Hidden Service Menu" on page 4-2.
2. Scroll down to **Enter Diagnostics** and press the **OK** button.

Entering Service Diagnostics by a Reboot (8400):

1. Turn the printer power Off.
2. Press and hold the **Back** and **Help** buttons.
3. Turn the power On and hold the **Back** and **Help** buttons for approximately 30 seconds until the Control Panel indicates **Diagnostic Menu**.

Entering Service Diagnostics by a Reboot (8500/8550/8560):

1. Turn the printer power On.
2. Wait for the **Xerox** logo to begin moving across the display.
3. Before the logo is centered on the display (stops moving), press and hold the **Back** and **Help** buttons on the Control Panel.
4. Hold both buttons until the display reads **Beginning Service Mode Initialization**. Release the buttons and the printer reboots into service mode with the Service Diagnostics menu displayed.

Service Diagnostic Control Panel Button Descriptions

Button	Function
Back	Returns to the prior higher level menu structure, if available. Cancels the display of test results on the Control Panel. If help text is displayed on the Control Panel, pressing BACK will restore the current menu item and remove the help text.
Cancel	Cancels certain functions of the printer.
Help	Provides help information, if available. Press any key to advance through the help text.
Up	Scrolls up one menu item within a menu list. This control does not 'wrap'. Used to increment data in tests requiring user input.
Down	Scrolls down one menu item within test results. This control does not 'wrap'.
OK	Enters the highlighted menu. Executes the current test item.

NOTE Pressing any key may cause an abort if allowed by the test being performed. A power cycle is used to arbitrarily stop a test.

Service Diagnostics Mode Menu

This mode can be entered from the Hidden Service Menu. All diagnostics are available in this mode.

The printer reboots after entering or exiting all diagnostic modes. The printer will keep the printer thermals hot during diagnostics to avoid unnecessary cleaning cycles. If a diagnostic test runs into a problem while initializing the heaters a message will display, "Test Fault, can't warm up - press any button", you can still continue to run diagnostics under this condition.

Note

> If the heaters are On while entering diagnostics, they will remain On while diagnostics are being run. If the heaters are Off while entering diagnostics, they will remain Off. Utilize the Exercise Heaters function if it is necessary to turn On/Off the heaters.

Service Diagnostics Menu Map

Service Diagnostics Menu Map

Menu		Description
Main Menu		Displays general help text describing the general operation of the Control Panel/menu system.
Development Menu		A temporary submenu containing some development functions and access to tests still under development.
Return to Customer Mode		Exits service diagnostics and runs through POST to Ready.
Check Menu	Check All Activators Menu Shafts Menu Fans Menu Heaters Menu Paper Path Menu Drive Menu Drum Menu (8500) Motors Menu Misc. Menu	See the individual table descriptions starting on page 4-10 for all Check/ Activator menu items.
Monitor Menu		Functions for monitoring mechanical measurements.
	Sensors	Monitors all mechanically activated sensors except for the Control Panel buttons. Whenever a state change is detected it appears on the Control Panel.
	Encoders	Monitors each of the non-temperature analog sensors (Tray 1 width ~495 = narrow, ~7486 = wide, Y, Media Path, and Process motor encoders).
	Temps	Monitors each of the thermal sensors. Shows the current thermal control loop setpoint (first value) and the current sensor temperature (second value).
	Heaters	Monitors each of the heaters. Shows if the heater is currently enabled (first value) and what percentage of maximum power is currently allocated (second value).
	Line Voltage	Monitors line voltage as seen by the power supply. Reports max and min values.
	Control Panel Buttons	Monitors Control Panel buttons and reports button presses.

Service Diagnostics Menu Map (Continued)

Menu		Description
Exercise Menu		Functions for causing mechanical actions which may then be observed. Press a Control Panel button to stop the test
	Activators Menu	Pulses the activator to cause it to generate some sound or motion.
	Exercise All	Cycles each of the listed activators 4 times in sequence.
	Tray 1 Pick Solenoid	Cycles the activator repeatedly.
	Tray 2 Pick Clutch	Cycles the activator repeatedly.
	Tray 3 Pick Clutch	Cycles the activator repeatedly. If not installed generates an "Option not detected" message.
	Tray 4 Pick Clutch	Cycles the activator repeatedly. If not installed generates an "Option not detected" message.
	Deskew Clutch	Cycles the activator repeatedly.
	Pre-heater Solenoid (8500/8550/8560)	Cycles the Preheater Solenoid.
	Strip Solenoid	Cycles the activator repeatedly.
	Tilt Solenoid (8500/ 8550/8560)	Cycles the Head Tilt Solenoid.
	Head Maintenance Clutch	Cycles the activator repeatedly.
	Purge Vent Solenoid	Cycles the activator repeatedly.
	110V/220V Drum Heater Relay(s)	Cycles the activator repeatedly.
Exercise Motors/Shafts Menu		These functions drive the motor or shaft to generate observed motion without making substantial change to the printer's state. Press a Control Panel button to stop the test.
	Exercise All	Cycles each of the listed motors/ shafts 3 times in sequence.
	Process Motor	Cycles the motor/shaft repeatedly.
	Y-Axis Motor	
	X-Axis Motor	
	Purge Pump Motor	
	Drum Fan Motor	
	Media Path Motor Fan Motor	
	Media Path Motor & Shafts	
	Transfix Cam Shaft	

Service Diagnostics Menu Map (Continued)

Menu		Description
	Drum Maintenance Cam Shaft	Cycles the motor/shaft repeatedly.
	Deskew Shaft	
	Wiper Shaft	
	Tray 1 Pick Shaft	
	Tray 2 Pick Shaft	
	Tray 2 Lift Motor	
	Tray 3 Pick Shaft	Cycles the motor/shaft repeatedly. If not installed generates an "Option not detected" message.
	Tray 4 Pick Shaft	
	Tray 3 Lift Motor	
	Tray 3 Motor & Shafts	
	Tray 4 Pick Shaft	
	Tray 4 Lift Motor	
	Tray 4 Motor & Shafts	
Exercise Heaters Menu		Allows the heaters to forced to an ON or OFF condition or to be toggled from one condition to the other. Also, provide monitoring to observe the resulting heater power or temperature.
	Monitor heaters	Monitors heater power.
	Monitor Temperatures	Monitors heater temperature.
	All Heaters On	Turns all heaters On.
	All Heaters Off	Turns all heaters Off
	Toggle Printhead Heaters	Toggles Printhead heaters to opposite state.
	Toggle Preheat Heater	Toggles Preheater heater to opposite state.
	Toggle Drum Heater	Toggles drum heater.
	Toggle Ink Melt Heaters	Toggles ink melt heaters to opposite state. There is a melt heater for each of the four colors.
Control Panel Display		Exercises the Control Panel LCD/LED outputs.
	Cycle LED	Cycles the LED through a red/ Yellow/Green sequence.
	Set display dark	Sets the LCD display dark.
	Test backlight	Changes the display backlight from off to max.
	Set display light	Sets the LCD display light.

Service Diagnostics Menu Map (Continued)

Menu		Description
Function Menu		Functions for commanding more complex actions by portions of the printer mechanism.
	Initialize Mechanism	Performs a power up mechanical initialization sequence.
	Print DMU Blot	Raises the DM unit up against the Drum, then does a Chase sequence. The result is an oil print of the contact of the DM unit with the Drum (about 2/3 of the way down the page).
	Display Fault History	Displays the contents of the Fault History NVRAM. **NOTE** Jam History can only be accessed from customer mode. There is no way to access the information Service Diagnostics Mode.
	Access PE NVRAM Parameters	Provides read/write access to selected PE NVRAM parameters.
	Clear Fault History	Clears Fault History NVRAM.
	Clear ISC Fault	Resets the Ink Stick Count (ISC) fault condition. To avoid a reoccurrence, check the ink shapes and the ink stick flags.
	Clear PS NVRAM	Clears the PS NVRAM to be rebuilt with defaults at the next power up.
	Clear PE NVRAM	Clears the PE NVRAM to be rebuilt with defaults at the next power up.
	Set PE NVRAM to Defaults	Sets the PE NVRAM parameters to the default values.

Check Menu Definition Tables

A submenu containing a set of extensive tests that return measured mechanism parameters for comparison against stated limits.

Refer to the table associated with each test for their normal operating ranges. In cases where insufficient baseline data is available, the **Typical Values** have been left blank. All results from tests that move paper through the printer were collected using 24 lb. bond paper.

Note

Collect 2 or 3 samples of the test data before deciding on a course of action. Many of the tests rely on mechanical positions and slight changes can effect the results. Ensure that the printer is not out of paper, ink or maintenance kit life. The diagnostics routines are not designed to address all of these conditions consistently. If a test result differs significantly from the typical values defined in the following tables, check the entire system containing the problem component to ensure a problem within the system is not influencing the test results.

To access the Check Menus enter Service Diagnostics and go to **Check Menu** --> **Check Activators Menu**.

Note

The **Check All** selection will run all check tests, taking 1.5 hours to complete and is not for use by field technicians.

Check / Activators Menu

The Head Maintenance Clutch test gathers data on the performance of the Head Maintenance Clutch coil.

Head Maintenance Clutch

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Peak Power (watts)	3.0 to 5.9	3.2 to 6.3	Reports the max power value.
1	Average Power (watts)	2.8	2.2 to 3.5	Reports the average power.

The Deskew Clutch test gathers data on the performance of the Deskew Clutch coil.

Deskew Clutch

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Peak Power (watts)	2.5 to 5.3	3.0 to 5.8	Reports the profile max power.
1	Average Power (watts)	2.2 to 5.3	1.5 to 3.0	Reports the average power.

Gathers data on the performance of the Tray 1 Pick Solenoid coil and flapper.

Tray 1 Pick Solenoid

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Peak Power (watts)	20.0 to 30	20 to 25	Reports the max power value.
1	Average Power (watts)	20.0 to 30	19 to 26	Reports the average power.
2	Min Power (watts)	-5.0 to -0.4		Reports the min power following power off.
3	Peak Power Time (sec)	0.05 to 0.19		Reports time after solenoid on that peak power occurred.
4	Initial Average Power (watts)	17 to 26		Reports the average power following power on.

Gathers data on the performance of the pick clutch coil for Trays 2 through 4. The same type of clutch is used for each tray.

Tray 2, Tray 3, Tray 4, Pick Clutch

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Peak Power (watts)	2.5 to 5.5	3.0 to 6.0	Reports max power value.
1	Average Power (watts)	2.5 to 5.5	2.0 to 6.5	Reports the average power.

Gathers data on the performance of the stripper solenoid coil and plunger.

Strip Solenoid

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Peak Power (watts)	8.0 to 15	22 to 27	Reports the max power value.
1	Average Power (watts)	8.0 to 15	20.0 to 30.0	Reports the average power.

Gathers data on the performance of the purge vent solenoid coil.

Purge Vent Solenoid

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Peak Power (watts)	0.5 to 1.2	-.12 to 1.2	Reports the max power value.
1	Average Power (watts)	0.4 to 1.2	.15 to 1.2	Reports the average power.

Gathers data on the performance of the drum heater dual relay assembly by energizing each relay for a short time and capturing the resulting power draw.

Drum Heater Relay

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	220 V Coil Peak Power (watts)		.2 to 1.2	Reports the max power value.
1	220 V Coil Average Power (watts)		.2 to 1.2	Reports the average power.
2	220 V Coil Min Power (watts)		.2 to .45	Reports the min power following power off.
3	220 V Coil Peak Power Time (sec)			Reports time after solenoid power on that the peak power occurred.
4	220 V Coil Initial Average Power (watts)		.2 to .45	Reports the average power following power on.
5	110 V Coil Peak Power (watts)		.2 to 1.0	Reports the max power value.

Drum Heater Relay (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
6	110 V Coil Average Power (watts)		.2 to 1.0	Reports the average power during the constant portion of the profile.
7	110 V Coil Min Power (watts)		.2 to .45	Reports the min power following power off.
8	110 V Coil Peak Power Time (sec)			Reports time after solenoid power on that the peak power occurred.
9	110 V Coil Initial Average Power (watts)			Reports the average power following power on.

Check Shafts Menu

Runs the Media Path Drive train and engages the Deskew Clutch on the fly then disengages the clutch. The test is repeated in both directions to determine clutch characteristics, steady state drive requirements, bearing status, etc

Deskew Shaft

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Time to CCW On peak fe (sec).	0.01 to 0.04	.01 to .04	Reports how long it takes the MP motor servo system to react to the sudden addition of the deskew shaft load. Larger values may show a slipping/slow to engage clutch.
1	CCW On peak fe.	540 to 750	2.0 to 8.0	Reports peak effort needed to accelerate the deskew shaft load. A smaller value could indicate a slipping clutch.
2	CCW On fe settling time (sec).	0.017 to 0.21	0 to .2	Reports the time it takes the MP motor servo system to "settle down" after the sudden addition of the deskew shaft load. A longer time could indicate a looseness in the deskew shaft assembly or a slipping clutch.

Deskew Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
3	CCW On average fe.	250 to 600	1.0 to 2.5	Reports the average effort required to rotate the deskew shaft in the CCW direction at a constant velocity. An unusual value could indicate a difference in the composition and/or number of the rollers, the nip pressure, or out of range mechanical dimensions due to wear or contamination (such as paper dust increasing the effective diameter of a roller).
4	CCW On fe ripple.	115 to 360	0 to 2.0	Reports the variation of effort required to rotate the deskew shaft in the CCW direction at a constant velocity. A larger value could indicate particles in the gears or non uniform contamination of a roller (causing a lump).
5	CCW Off fe settling time (sec).	0.010 to 0.20	0 to .5	Reports the time it takes the MP motor servo system to "settle down" after the sudden release of the deskew shaft load. A larger value can indicate a slow to release or dragging clutch.
6	Time to CW On peak fe (sec).	0.010 to 0.06	0 to .05	Reports a time that indicates how long it takes the MP motor servo system to react to the sudden addition of the deskew shaft load. Larger values may indicate a slipping or slow to engage clutch.
7	CW On peak fe.	-950 to -450	-7.0 to -2.0	Reports the peak effort required to accelerate the deskew shaft load. A smaller value could indicate a slipping clutch.

Deskew Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
8	CW On fe settling time (sec).	0.010 to 0.20	0 to .2	Reports the time it takes the MP motor servo system to "settle down" after the sudden addition of the deskew shaft load. A longer time could indicate a looseness in the deskew shaft assembly or a slipping clutch.
9	CW On average fe.	-610 to -220	-3 to 1.3	Reports the average effort required to rotate the deskew shaft in the CW direction at a constant velocity. An unusual value could indicate a difference in the composition and/or number of the rollers, the nip pressure, or out of range mechanical dimensions due to wear or contamination (such as paper dust increasing the effective diameter of a roller).
10	CW On fe ripple.	110 to 400	-2.25 to -1.0	Reports the variation of effort required to rotate the deskew shaft in the CW direction at a constant velocity. A larger value could indicate particles in the gears or non uniform contamination of a roller (causing a lump).
11	CW Off fe settling time (sec).	0.010 to 0.20	.01 to .05	Reports the time it takes the MP motor servo system to "settle down" after the sudden release of the deskew shaft load. A larger value could indicate a dragging or slow to release clutch.

Check Paper Path Menu

Runs the Media Path Drive train and engages the Head Maintenance Clutch on the fly then disengages the clutch. The test is repeated in both directions to determine clutch characteristics, steady state drive requirements, bearing status, etc.

Wiper Shaft

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Time to CCW On peak fe (sec).	0.009 to 0.16	.02 to 1.0	Reports how long it takes the MP motor servo system to react to the sudden addition of the wiper shaft load. Larger values may indicate a slipping or slow to engage clutch.
1	CCW On peak fe.	25 to 100	.015 to 1.4	Reports the peak effort required to accelerate the wiper shaft load. A smaller value could indicate a slipping clutch.
2	CCW On fe settling time (sec).	-2.1 to 0.25	-.03 to .3	Reports the time it takes the MP motor servo system to "settle down" following the sudden addition of the wiper shaft load. A longer time could indicate a looseness in the wiper shaft assembly or a slipping clutch.
3	CCW On average fe.	10 to 50	-.1 to 0	Reports the average effort required to rotate the wiper shaft in the CCW direction at a constant velocity. An unusual value could indicate a difference in the composition and/or number of the rollers, the nip pressure, or out of range mechanical dimensions due to wear or contamination (such as paper dust increasing the effective diameter of a roller).

Wiper Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
4	CCW On fe ripple.	25 to 100	.08 to .31	Reports the variation of effort needed to rotate the wiper shaft in the CCW direction at a constant velocity. A larger value could indicate particles in the gears or non uniform contamination of a roller (causing a lump).
5	CCW Off fe setting time (sec).	0.004 to 0.15	.015 to .20	Reports the time it takes the MP motor servo system to "settle down" after the sudden release of the wiper shaft load. A larger value may show a dragging or slow to release clutch.
6	Time to CW On peak fe (sec).	0.005 to 0.20	.02 to .045	Reports how long it takes the MP motor servo system to react to the sudden addition of the wiper shaft load. Larger values may indicate a slipping or slow to engage clutch.
7	CW On peak fe.	-275 to -10	-.15 to 0.4	Reports the peak effort required to accelerate the wiper shaft load. A smaller value could indicate a slipping clutch.
8	CW On fe settling time (sec).	-10 to 1	-.04 to .23	Reports the time it takes the MP motor servo system to "settle down" following the sudden addition of the wiper shaft load. A longer time could indicate a looseness in the wiper shaft assembly or a slipping clutch.

Wiper Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
9	CW On average fe.	-50 to 15	.02 to .2	Reports the average effort required to rotate the wiper shaft in the CW direction at a constant velocity. An unusual value could indicate a difference in the composition and/or number of the rollers, the nip pressure, or out of range mechanical dimensions due to wear or contamination (such as paper dust increasing the effective diameter of a roller).
10	CW On fe ripple.	20 to 75	0 to .4	Reports the variation of effort needed to rotate the wiper shaft in the CW direction at a constant velocity. A larger value may show particles in the gears or non uniform contamination of a roller (causing a lump).
11	CW Off fe settling time (sec).	-5 to .01	.02 to .22	Reports the time it takes the MP motor servo system to "settle down" after the sudden release of the wiper shaft load. A larger value could indicate a dragging or slow to release clutch.

Runs the Media Path Drive train and engages the Tray 1 Pick SAolenoid on the fly. The Pick Shaft goes through two full revolutions while drive requirements are determined.

Tray 1 Pick Shaft

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Off average MP fe. (mpts).	800 to 1500		Reports the average MP fe during the run in interval before the pick shaft is engaged.

Tray 1 Pick Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
1	On response time. (sec).	-1.5 to 0.95		Reports the time between pick solenoid activation and a detectable response from the MP drive system indicating that pick shaft engagement. A higher value of R1 could indicate that the missing tooth gear engaged more slowly than usual, which could be a problem with the lift plate spring tension, the condition of the sliding surfaces between the cams and the followers, drag on the pick shaft, or problems with the drive gears (missing teeth, etc.).
2	Initial average MP fe. (mpts).	-1 to 1400		Reports the average MP fe immediately following the pick shaft engagement. A higher value of R2 could indicate extra friction between the cams and the lift plate followers (wear, contamination, etc.), as well as high lift plate spring tension or higher shaft bearing drag. Also, if the missing tooth gear did not kick forward and engage, this value would be unchanged from R0.
3	Transition MP fe min. (mpts).	750 to 1800		Reports the minimum MP fe value at the transition point between breaking separator pad contact and the continued depression of the lift plate. Value reflects the effort needed to rotate the pick shaft and compress the lift spring. A higher value of R3 could show higher cam/bearing friction and/or lift plate spring strength.

Tray 1 Pick Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
4	Contact average fe.	120 to 2000		Reports the average MP fe while the pick roller is contacting the separator pad. This value should reflect the coefficient of friction between the separator pad and the pick roller. This value may be effected by contamination or glazing.
5	Pushdown MP fe max.	750 to 2000		Reports the peak MP fe during the interval when the pick cams are depressing the lift plate. A higher value here could indicate issues with the cam surfaces or the spring compression force.
6	Final average MP fe. (mpts).	900 to 1500		Reports the average MP fe following the re latching of the missing tooth gear. This value should be the same as R0 if the missing tooth gear successfully relatched.

Test is the same for each pick shaft although for Tray 2 the Media Path Drive motor is used and for the 525-sheet feeders the corresponding pick/transport motor is used. Test determines if the shaft can be driven by the clutch, if the nudger rollers are being driven, and the pick pad/nudger roller friction.

Tray 2, Tray 3, and Tray 4 Pick Shaft

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Time to On peak fe (sec).			Reports how long it takes the MP motor servo system to react to the sudden addition of the Tray 2 pick shaft load. Larger values may indicate a slipping or slow to engage clutch.
1	On peak fe.			Reports the peak effort required to accelerate the Tray 2 pick shaft load. A smaller value could indicate a slipping clutch.

Tray 2, Tray 3, and Tray 4 Pick Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
2	On fe settling time (sec).			Reports the time it takes the MP motor servo system to "settle down" after the sudden addition of the Tray 2 pick shaft load. A longer time could indicate looseness in the Tray 2 pick shaft assembly or a slipping clutch.
3	On average fe.			Reports the average effort needed to rotate the Tray 2 pick shaft in the pick direction at a constant velocity. An unusual value could indicate a binding shaft, missing pressure springs, hard/dirty rollers, extra friction in the pick truck assembly.
4	On fe ripple.			Reports the variation of effort required to rotate the Tray 2 pick shaft in the pick direction at a constant velocity. A larger value could indicate particles in the gears or non uniform contamination of a roller (causing a lump).
5	Off fe settling time (sec).			Reports the time it takes the MP motor servo system to "settle down" after the sudden release of the Tray 2 pick shaft load. A larger value could indicate a dragging or slow to release clutch.
6	Time to lift plate up (sec).			Reports the time between the activation of the Tray 2 lift motor and the detection of the raised lift plate. Out of range values may indicate a problem with the lifting mechanism (which could effect the following friction measurement), or media left in the tray.

Tray 2, Tray 3, and Tray 4 Pick Shaft (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
7	Plate lifted average fe.			Reports the peak effort required to drive the pick shaft when the nudger roller is in contact with the separator pad. A smaller value could indicate a slipping clutch, missing nudger assembly pressure spring, or glazed/dirty roller/pad.

Test picks paper from selected tray (test currently supports picking from Tray 2 only) and moves it through either the simplex or duplex paper path to determine paper path power requirements.

Paper Drive Power

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Tray			Reports the tray picked from.
1	Paper Size			Reports the media size picked.
2	Unused			
3	Unused			
4	Tray 2 Pick Average Power (watts)			Reports average power over the pick interval (begin pick to Deskew Sensor).

Paper is picked and moved through either simplex or duplex paper path to determine leading edge arrival time at each paper path sensor. R values have alternate definitions or are unused depending on the pick tray and if simplex or duplex path was selected.

Paper Lead Edge Times

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
Common				
0	Tray			Reports the tray from which the test paper was picked
1	Paper Size			Reports the size of the picked paper.

Paper Lead Edge Times (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
Tray 4 Pick				
2	Tray 4 Pick Interval (us)			Reports the interval from the time the engine software is commanded to start the tray 4 pick process until the Tray 4 Pick sensor activates.
3	Tray 4 Transport Interval (us)			Reports the interval from the Tray 4 Pick sensor activation until the Tray 3 Pick sensor activates.
4	Tray 3 Transport Interval (us)			Reports the interval from the Tray 3 Pick sensor activation until the Deskew sensor activates.
Tray 3 Pick				
2	Unused			
3	Tray 3 Pick Interval (us)			Reports the interval from the time the engine software is commanded to start the tray 3 pick process until the Tray 3 Pick sensor activates.
4	Tray 3 Transport Interval (us)			Reports the interval from the Tray 3 Pick sensor activation until the Deskew sensor activates.
Tray 2 Pick				
2	Unused			
3	Unused			
4	Tray 2 Pick Interval (us)			Reports the interval from the time the engine software is commanded to start the tray 2 pick process until the Deskew sensor activates.
Tray 1 Pick				
2	Unused			
3	Unused			
4	Tray 1 Interval (us)			Reports the interval from the time the engine software is commanded to start the tray 1 pick process until the Deskew sensor activates.

Paper Lead Edge Times (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
Common				
5	Stage Interval (us)			Reports the interval from the time the engine software is commanded to start the stage process until the Preheat sensor activates. (part way through the stage paper motion).
6	Transfix Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Strip sensor activates. (part way through the paper transfix motion).
7	Exit Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Exit sensor activates (part way through the paper transfix motion).
Simplex Path				
8	Exited Interval (us)			Reports the interval from the time the engine software is commanded to start the exit process until the Exit sensor deactivates.

Paper is picked and moved through either the simplex or duplex paper path to determine the paper trailing edge arrival time at each paper path sensor. R values have alternate definitions or are unused depending on the pick tray and if simplex or duplex path was selected.

Paper Trail Edge Times

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
Common				
0	Tray			Reports the tray from which the test paper was picked.
1	Paper Size			Reports the picked media size.

Paper Trail Edge Times (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
Tray 4 Pick				
2	Tray 4 Pick Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the tray 4 pick process until the Tray 4 Pick sensor deactivates.
Tray 3 Pick				
3	Tray 3 Pick Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the tray 3 pick process until the Tray 3 Pick sensor deactivates.
Tray 2 Pick				
2	Unused			
3	Unused			
Tray 1 Pick				
2	Unused			
3	Unused			
Common				
4	Deskew Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Deskew sensor deactivates. (part way through the paper transfix motion).
5	Preheat Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Preheat sensor deactivates. (part way through the paper transfix motion).
6	Strip Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the exit process until the Strip sensor deactivates (part way through the paper exit motion).

Paper Trail Edge Times (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
Simplex Path				
7	Exit Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the duplex pick process until the Exit sensor deactivates.

Paper is picked and moved through either the simplex paper path to determine the paper trailing edge bounce interval at each paper path sensor. R values have alternate definitions or are unused depending on the pick tray and if simplex or duplex path was selected.

Paper Sensor Bounce Times

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
Common				
0	Tray			Reports the tray from which the paper was picked.
1	Paper Size			Reports picked media size.
Tray 4 Pick				
2	Tray 4 Pick Bounce Interval (us)			Reports the interval during which the Tray 4 Pick sensor bounces following the passage of the paper trailing edge.
Tray 3 Pick				
3	Tray 3 Pick Bounce Interval (us)			Reports the interval during which the Tray 3 pick sensor bounces following the passage of the paper trailing edge.
Tray 2 Pick				
2	unused			
3	unused			
Tray 1 Pick				
2	unused			
3	unused			
Common				
4	Deskew Bounce Interval (us)			Reports the interval during which the Deskew sensor bounces following the passage of the paper trailing edge.

Paper Sensor Bounce Times (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
5	Preheat Bounce Interval (us)			Reports the interval during which the Preheat sensor bounces following the passage of the paper trailing edge.
6	Strip Bounce Interval (us)			Reports the interval during which the Strip sensor bounces following the passage of the paper trailing edge.
7	Exit Bounce Interval (us)			Reports the interval during which the exit sensor bounces following the passage of the paper trailing edge.

Test picks paper from selected tray (test currently supports picking from Tray 2 only) and moves it through either the simplex or duplex paper path to determine paper path power requirements.

Duplex Paper Drive Power

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Tray			Reports the tray from which the test paper was picked.
1	Paper Size			Reports the size of the picked paper.
2	Unused			
3	Unused			
4	Tray 2 Pick Average Power (watts)			Reports average of the power over the pick interval (begin pick to Deskew sensor).

Paper is picked and moved through either simplex or duplex paper path to determine leading edge arrival time at each paper path sensor. R values have alternate definitions or are unused depending on the pick tray and if simplex or duplex path was selected.

Duplex Paper Lead Edge Times

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
8	Duplex Turnaround Interval (us)			Reports the interval from the time the engine software is commanded to start the duplex exit process until the Strip sensor deactivates.
9	Duplex Pick Interval (us)			Reports the interval from the time the engine software is commanded to start the duplex pick process until the Deskew sensor activates
10	Duplex Stage Interval (us)			Reports the interval from the time the engine software is commanded to start the stage process until the Preheat sensor activates (part way through the stage paper motion).
11	Duplex Transfix Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Strip sensor activates (part way through the paper transfix motion).
12	Duplex Exit Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Exit sensor activates (part way through the paper transfix motion).
13	Duplex Exited Interval (us)			Reports the interval from the time the engine software is commanded to start the exit process until the Exit sensor deactivates.

Paper is picked and moved through either the simplex or duplex paper path to determine the paper trailing edge arrival time at each paper path sensor. R values have alternate definitions or are unused depending on the pick tray and if simplex or duplex path was selected.

Duplex Paper Trail Edge Times

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
7	Exit Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the duple pick process until the Exit sensor deactivates.
8	Duplex Deskew Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Deskew sensor deactivates (part way through the paper transfix motion).
9	Duplex Preheat Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the transfix process until the Preheat sensor deactivates. (part way through the paper transfix motion).
10	Duplex Strip Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the exit process until the Strip sensor deactivates (part way through the paper exit motion).
11	Duplex Exit Trailing Edge Interval (us)			Reports the interval from the time the engine software is commanded to start the duplex pick process until the Exit sensor deactivates.

Paper is picked and moved through either the duplex paper path to determine the paper trailing edge bounce interval at each paper path sensor. R values have alternate definitions or are unused depending on the pick tray and if simplex or duplex path was selected.

Duplex Paper Sensor Bounce Times

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
7	Exit Bounce Interval (us)			Reports the interval during which the Exit sensor bounces following the passage of the paper trailing edge during duplex turnaround.
8	Duplex Deskew Bounce Interval (us)			Reports the interval during which the Deskew sensor bounces following the passage of the paper trailing edge.
9	Duplex Preheat Bounce Interval (us)			Reports the interval during which the Preheat sensor bounces following the passage of the paper trailing edge.
10	Duplex Strip Bounce Interval (us)			Reports the interval during which the Strip sensor bounces following the passage of the paper trailing
11	Duplex Exit Bounce Interval (us)			Reports the interval during which the Exit sensor bounces following the passage of the paper trailing edge.

Check Drive Menu

This test moves the wiper drive mechanism through the complete range of its motion in each direction and does an "on the fly" reversal to verify operability.

Wiper Drive

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Up Motion Drive Error (uin)	120 to 275	-.06 to -.4	Reports the average following error while moving the wiper up from the low limit to the lock encounter point.
1	Up Motion Drive Error Ripple (uin)	35 to 150	.06 to .2	Reports the difference between the max and min following error over the same interval.
2	Up Distance (uin)	3200 to 4600	4000 to 4350	Reports the difference between the max and min limits of travel when moving up.
3	Lock Encounter Distance (uin)	1300 to 2500	3500 to 4450	Reports the distance up from the lower limit of travel at which the head lock latch is encountered.
4	Lock Engage Distance (uin)	350 to 700	2500 to 4500	Reports the distance up from the lower limit of travel at which the head lock latch engages.
5	Lock Engage Peak (uin)	-250 to -125	.25 to 1.0	Reports the peak following error at the point the latch engages.
6	Down Motion Drive Error (uin)	-250 to -125	.25 to 1.0	Reports the average following error while move the wiper up from the low limit to the lock encounter point.
7	Down Motion Drive Error Ripple (uin)	40 to 150	.05 to .8	Reports the difference between the max and min following error over the same interval.
8	Down Distance (uin)	3200 to 4600	4000 to 4350	Reports the difference between the max and min limits of travel when moving up.
9	Lock Disengage Distance (uin)	-2000 to -50	-95 to -60	Reports the distance up from the upper stall point at which the head lock latch releases.
10	Lock Disengage Peak (uin)	-800 to -150	.30 to 1.2	Reports the peak following error at the point the latch releases

Wiper Drive (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
11	Bottom Encounter Distance (uin)	-2500 to -1800	-4250 to -3900	Reports the distance up from the upper limit of travel at which the wiper first encounters the lower travel limit.
12	Turnaround Recovery time (sec)	0.001 to 0.250	-0.05 to .35	Reports the time following the start of the turnaround motion that the motion drive error return to normal in the opposite direction.

This test moves the gear train in one direction while capturing data, does a reversal to capture reversal transient data, then operates in the other direction.

Paper Path Drive

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Forward Drive Power Level (watts)		1.0 to 4.0	Reports the average drive power level in the foreword direction.
1	Up Motion Drive Error Ripple (watts)		0 to 1.5	Reports the average drive ripple level in the forward direction.
2	Reverse Drive Power Level (watts)		-4.0 to -1.0	Reports the average power in the reverse direction.
3	Down Motion Drive Error Ripple (watts)		0 to 1.5	Reports the average drive ripple in the forward direction.
4	Swing Arm Transition Time (sec)		.03 to .06	Reports the time that the lower portion of the paper path drive is disconnected while the swing arm transitions to the other drive position.

This test drives the X-Axis Motor in each direction until the Printhead stalls into the stops. Next, the test moves the Printhead into the clear and performs an on the fly reversal.

X-Axis Drive

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Right Stall Power Level (watts)	5 to 10	.5 to 3.3	Reports the motor/drive electronics stall power. An abnormal level may indicate a motor/motor drive problem.
1	Left Right Distance (in)	0.32 to 0.48	-.15 to .5	Reports the distance between the left and right stall points. An abnormal value may indicate an problem that restricts the range of motion (pinched cable, etc.).
2	Right Left Traverse Average Power Level (watts)	3.5 to 8.5	.5 to 1.55	Reports the average power required to move the printhead from the right hard stop to the left hard stop. An abnormal value may indicate a problem with the lead screw or printhead bearings (lubrication, etc.).
3	Right Left Traverse Power Ripple (watts)	.20 to 1.8	-0.5 to 1.0	Reports ripple in the power level needed to move the printhead from the right hard stop to the left hard stop. An abnormal value may indicate a problem with roughness in the drive mechanism or an interference with the printhead motion.
4	Left Right Traverse Power Average Level (watts)	4.0 to 8.5	.5 to 1.75	Same as R2 except for the other direction of motion.
5	Left Right Traverse Power Ripple (watts)	1.2 to 1.5	-.01 to .05	Same as R3 except for the other direction of. motion.
6	Turnaround Power Blip Width (watts)		.02 to .11	Reports the width of the momentary drop in the required drive power when the printhead motion is being reversed. An abnormal value may indicate an unusual amount of play in the drive mechanism.

With the drum turning at a constant velocity, the transfix roller is loaded against the drum, held for one revolution, then raised. The velocity with which the transfix roller is moved differs for the two tests.

Transfix Drive Slow and Transfix Drive Fast

R#	Definition	Typical Fast	Value Slow	Actions
0	Time to first contact (sec)	0.22 to 0.29	0.22 to 0.50	Reports the time from the load command to the engine until the drum indicates contact with the pressure roller.
1	Loaded average Y-Axis following error (mpts)	2600 to 4200	2600 to 3400	Reports the average Y-Axis following error during the Roll With Transfix Roller Down interval.
2	Loaded Y-Axis following error ripple (mpts)	75 to 1200	150 to 1100	Reports the difference between the max and min Y-Axis following errors during the Roll With Transfix Roller Down interval
3	Time to last contact (sec)	.300 to 0.450	0.30 to 0.80	Reports the time from the unload command to the engine until the drum indicates no further contact.

With the Y-Axis rotating, the drum maintenance unit is loaded against the drum for a short time in each configuration (roller and blade/blade only).

Drum Maintenance Drive

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Time to blade first contact (sec)	.01 to .35	.15 to .4	Reports the time from the load command to the engine until the drum indicates blade contact.
1	Time to roller first contact (sec)	.03 to 045	.2 to .50	Reports the time from the load command to the engine until the drum indicates roller contact.
2	Roller/Blade loaded average Y-Axis following error (mpts)	-700 to -250	-650 to -150	Reports the average Y-Axis following error during the Roll With Both Loaded interval.
3	Roller/Blade loaded Y-Axis following error ripple (mpts)	-50 to 300	0 to 600	Reports the difference between the max and the min Y-Axis following error during the Roll With Both Loaded interval.

Drum Maintenance Drive (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
4	Roller Average Period (sec)	50 to 1600	-.05 to .05	Reports the average period of the Y-Axis following error ripple during the Roll With Both Loaded interval. This variation would be due to the dmu roller rolling along the drum surface.
5	Roller Revs	3 to 40		Reports the number of Y-Axis following error ripple peaks during the Roll With Both Loaded interval.
6	Roller Disengaged Time (sec)	-0.001 to 0.05	-.05 to 0.5	Reports the time from the unload roller command to the engine until the drum indicates no further roller contact.
7	Blade loaded average Y-Axis following error (mpts)	-160 to -50	-800 to -100	Reports the average Y-Axis following error during the Roll With Blade Loaded interval.
8	Blade loaded Y-Axis following error ripple (mpts)	-0.001 to 0.50	115 to 900	Reports the difference between the max and the min Y-Axis following error during the Roll With Blade Loaded interval.
9	Blade Disengaged Time (sec)		-0.05 to 0.05	Reports the time from the unload blade command to the engine until the drum indicates no further blade contact.

This test drives the Printhead tilt mechanism through one cycle to determine if it is controllable and operating as expected.

Tilt Drive

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Tilt Engage Cap Position (min)	10 to 600	50 to 550	Reports the distance from the cap Home position to the tilt cam engage point.
1	Pre Standby Peak Location ()	325 to 3100	-125 to 10	Reports the distance around the tilt cam from the tilt engage position to the pre standby peak.

Tilt Drive (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
2	Pre Standby peak Magnitude (pm ticks)	-5100 to -500	-150 to -20	Reports the pm motor following error at the pre standby peak location.
3	Post Wipe Peak Location ()	1400 to 4150	-450 to 150	Reports the distance around the tilt cam from the tilt engage position to the post wipe peak.
4	Post Wipe peak Magnitude (pm ticks)	-4000 to -75	-130 to 25	Reports the pm motor following error at the post wipe peak location.

This test raises the lift plate to verify motion and sensor operation. If the test is requested for a tray not installed, an "Option Not Detected" message appears.

Tray 2, Tray 3, Tray 4, Lift Plate Drive

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Tray Configuration			Reports the tray status (present, plate not lifted, etc.). See Paper Path Status test for a description of the configuration encoding.
1	Start Peak Power (watts)			Reports the highest peak during the first quarter of the lifting interval.
2	Slack Take-up Time (sec)			Reports the interval between the initial power min (when the plate is not yet engaged), and the point where the lifting power becomes a constant.
3	Average Lift Power (watts)			Reports the average power over the center ¾ of the lifting interval.
4	Lift Contact Time (sec)			Reports the interval from the motor start time until the required lift power starts to increase due to the initial contact with the Nudger Roller.
5	Lift Time (sec)			Reports the interval from the motor start time until plate lifted is indicated.
6	Stall Power (watts)			Reports the average stall power during the overlifting interval.

Check Drum Menu

Uses the sine and cosine sum data to determine the characteristics of the encoder disk and encoder sensors.

Y-Axis Encoder

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Sin Sum Data Offset (sin sum units)	150000 to 800000	-68000 to 160000	Reports average of the max and min Sin Sum average amplitude values.
1	Sin Sum Data Amplitude (sin sum units)	-11000 to 350000	-68000 to 160000	Reports difference between the max and min Sin Sum average amplitude values.
2	Amplitude Ripple (Sun Sum units)	25 to 75	2.0 to 12	Reports the ripple in the Sin Sum amplitude values. Excludes the neighborhood of the Home notch (a distance of +/- 50 samples from the Home notch min location.
3	Max Position Ripple (mpts)	-140000 to 275000	24000 to 52000	Reports the max variation in the reported delta position between samples over the revolution.
4	Sin max delta position	-.3 to 5	-.3 to 5	Reports the max value of the diference between the rotation position of any adjacent sin sum peaks
5	Home Notch Depth Ratio (none)	0 to 13	68 to 80	Reports the ratio between the notch bottom amplitude and the max amplitude value as reflected in the Sin Sum data.
6	Home Notch Width (sec)	50 to 90	720 to 960	Reports the width of the Home notch at 99% full depth as reflected in the Sin Sum data.
7	Home Notch Symmetry (none)	250 to 550	35 to 65	Reports the ratio of the Home notch width sections as bisected by a vertical from the notch min as reflected in the Sin Sum data.
8	Cosine Sum Data Offset (cosine sum units)	90000 to 450000	-125000 to 200000	Reports average of the max and min Cosine Sum average amplitude values.
9	Cosine Sum Data Amplitude (cosine sum units)	300000 to 500000	300000 to 500000	Reports difference between the max and min Cosine Sum average amplitude values.

Rotates the drum at a constant velocity and samples the Y-Axis position. Uses the data to determine Y-Axis motor and drum vibration and the most significant other vibrational frequencies.

Y-Axis Geometry

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Drum Normalized FFT Power (none)		-3900 to 6000	Reports the normalized FFT power amplitude of the drum frequency. The normalized value is generated by dividing the drum FFT power by 1.0xE13.
1	Drum Frequency (hz)		1.25 to 7.5	Reports the current drum frequency.
2	Motor FFT Power Ratio (none)		-200 to 250	Reports the ration of the FFT power amplitude of the motor frequency to the FFT power amplitude of the drum frequency.
3	Motor Frequency (hz)		44 to 48	Reports the current motor frequency.
4	FFT Power Ratio 1 (none)		-20000 to 25000	Reports the ratio of the FFT power amplitude of the most powerful FFT frequency (not including the drum or motor), to the FFT power amplitude of the drum frequency.
5	Frequency 1 Frequency (hz)		45 to 110	Reports the frequency of the most powerful FFT frequency (not including the drum or motor).
6	FFT Power Ratio 2 (none)		-14000 to 17000	Reports the ratio of the FFT power amplitude of the second most powerful FFT frequency (not including the drum or motor), to the FFT power amplitude of the drum frequency.
7	Frequency 2 Frequency (hz)		-70 to 140	Reports the frequency of the second most powerful FFT frequency (not including the drum or motor).

This procedure performs a "4 corner" test using the minimum and maximum velocity and acceleration used during printing and minimum and maximum load for a total of eight test cycles. Measures servo response parameters under various conditions.

Y-Axis Drive

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	HAHVN CCW Average Fe (mpts)	4000 to 5700	4000 to 5800	Reports average following error during the last half of the first period.
1	HAHVN CCW Fe Ripple (mpts)	100 to 380	0 to 500	Reports following error ripple during the last half of the first period.
2	HAHVN CW Average Fe (mpts)	-5200 to 3800	-5500 to -4000	Reports average following error during the last half of the second period.
3	HAHVN CW Fe Ripple (mpts)	80 to 380	75 to 350	Reports following error ripple during the last half of the second period.
4	HAHVN Start Fe Settle time (sec)	0.08 to 1.0	.05 to 0.2	Reports the time following the start of motion for the Fe value to enter the CCW ripple band.
5	HAHVN Reverse Fe Settle time (sec)	0.17 to 1.1	.12 to .3	Reports the time following the start of motion reversing that it takes the following error value to enter the CW ripple band.
6	HAHVN Stop Fe Settle time (sec)	-.001 to 0.15	-.001 to .30	Reports the time following the start of motion stopping that it takes the following error value to enter the idle ripple band.
7	HAHVN Delta Print Velocity Settle Time (sec)	0.02 to 0.10	0 to .11	Reports the time following the start of motion that it takes Y-Axis delta velocity to enter the CCW delta velocity ripple band.

This test does a chase using a special sheet of preprinted media and records the y-axis following error.

Y-Axis Belt Slip

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Initial Peak Y-Axis FE (mpts)	0 to 12000	1200 to 8000	Reports the amplitude of the first Y-Axis following error peak.
1	Max Following Peak Y-Axis FE (mpts)	0 to 11000	1100 to 7500	Reports the amplitude of the maximum Y-Axis FE peak after the first.
2	Average Y-Axis FE (mpts)	0 to 4000	2200 to 3500	Reports the average of the Y-Axis following error during the roller down portion of the transfix operation.

This test modifies the Y-Axis servo loop so that it is unstable and oscillates. The oscillation frequency is recorded while the drum is advanced for two revolutions. Checks for correct belt tension and variations in tension during operation.

Y-Axis Belt Tension

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Min Resonant Frequency (hz)	10 to 150	4.5 to 175	Reports the min resonant frequency over the data set.
1	Max Resonant Frequency (hz)	175 to 3000	-4400 to 10000	Reports the max resonant frequency over the data set.
2	Min Resonant Frequency Revs (revs)			Reports the number of full Y-Axis revs required to locate the min frequency configuration.
3	Min Resonant Frequency Angle (deg)	-0.001 to -0.2	-33 to -20	Reports the amount of additional Y-Axis rotation required to locate the min frequency configuration.

This test holds the drum stationary while the stripper solenoid is activated and released. The drum servo error signal illustrates activation/deactivation timing and how strongly the drum was contacted by the blade.

Stripper Contact

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Engage Displacement (mpts)	-10 to 2	-15 to 8.0	Reports the static difference between the average ya_fe before and after the blade contacts the drum, indicating how strongly the blade is interacting with the drum while pushing onto the drum. May be an indication as to the condition of the blade (stiffness, dirty, bent, delaminated, etc.). Another potential factor could be the solenoid range of travel or engagement force (solenoid/ solenoid drive strength or return spring strength).
1	Engage Time (sec)	.0030 to .0035	0 to .05	Reports time between engagement of the stripper solenoid and initial contact between the blade and the drum. May indicate the geometry of the mechanism, such as parts out of tolerance, mis-assembled, or bent, causing an incorrect blade to drum gap.
2	Engaging Period (sec)	0 to 0.11	0 to .3	Reports time between stripper solenoid engagement and the point when the reaction of the drum to the contact of the blade fades back into the ripple (noise). Another indication of blade to drum interaction. The profile shape (R2/R2) could be a dynamic indication of the blade/drum interaction as is the static value reported by R0.
3	Engaging Amplitude (mpts)	3 to 18	5.0 to 35	Reports the magnitude of the reaction of the drum to the contact of the blade. (See R2)

Stripper Contact (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
4	Release Displacement (mpts)	-0.75 to 2.2	-4.5 to 4.5	Reports the static difference between the average ya_fe before and after the blade disengages from the drum, indicating the strength of the blade/drum interaction while pulling off the drum (see R0).
5	Release Time (sec)	0 to 0.09	.002 to .1	Reports the time between the disengagement of the stripper sol and the point when the blade begins to withdraw from the drum (see R2).
6	Releasing Period (sec)	0 to .001	-0.5 to .75	Reports the time between the disengagement of the stripper sol and the point when the reaction of the drum to the withdrawal of the blade fades back into the ripple (see R2).
7	Releasing Amplitude (mpts)	-45 to 0	-10 to 1	Reports the magnitude of the reaction of the drum to the blade withdrawal (see R3).

This test uses the drum servo error signal to indicate when the drum is contacted by the roller blade.

Drum Maintenance Contact

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Initial Contact Position (pm motor counts)			Reports the distance the pm motor was moved (raising the dm unit), before a Y-Axis reaction was detected. Shows that the dm is raising, provides blade/drum gap information.

Check Motors Menu

This test turns on the Y-Axis motor and runs it very slowly for one revolution.

Y-Axis Motor

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Motor fe ripple (ticks)	0.08 to 0.60	.07 to .7	Reports variation of the motor following error.
1	Motor fe average (ticks)	0.5 to 0.7	.5 to .8	Reports the motor following error average value.
2	Motor drive voltage ripple (volts)	0.34 to 1.3	.3 to 1.5	Reports amount of variation of the motor drive voltage.
3	Motor drive voltage (volts)	-1.4 to -0.8	-1.6 to -.8	Reports average value of motor drive voltage.
4	Motor drive power ripple (watts).	0.25 to 1.8	.06 to .13	Reports variation of motor drive power.
5	Motor drive power average (watts)	1.25 to 2.6	1.3 to 2.5	Reports average value of motor drive power.

This test turns on the X-Axis motor and runs it very slowly for one revolution.

X-Axis Motor

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Motor Voltage A Ripple (volts).	84 to 86	59 to 62	Reports amount of variation of the motor phase A drive voltage.
1	Motor Voltage A Average (volts)	-0.120 to 0.13	.10 to .05	Reports the motor phase A drive voltage average value.
2	Motor Voltage B Ripple (volts)	84 to 86	59 to 62	Reports amount of variation of the motor phase B drive voltage.
3	Motor Voltage B Average (volts)	-.012 to 0.1	.04 to .11	Reports the motor phase B drive voltage average value.
4	Motor Drive Power Ripple (watts)	0.5 to 2.0	.1 to .5	Reports amount of variation of the motor drive power.
5	Motor Drive Power Average (watts)	9 to 13	5.5 to 7.5	Reports the motor drive power average value.

This test turns on the process motor and runs it very slowly for one revolution.

Process Motor

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Motor fe ripple (ticks)	2.8 to 6.0	0 to .02	Reports amount of variation of the motor following error.
1	Motor fe average (ticks)	-4 to 3.0	.015 to .01	Reports the motor following error average value.
2	Motor drive voltage ripple (volts)	5 to 11	8 to 11	Reports amount of variation of the motor drive voltage.
3	Motor drive voltage (volts)	1.3 to 2.3	.9 to 1.5	Reports the motor drive voltage average value.
4	Motor drive power ripple (watts)	1.03 to 3.6	.7 to 2.0	Reports amount of variation of the motor drive power.
5	Motor drive power average (watts)	1.5 to 3.5	1.2 to 2.75	Reports the motor drive power average value.

This test turns on the media path motor and runs it very slowly for one revolution.

Media Path Motor

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	Motor fe ripple (ticks)	.40 to 1.3	.001 to .0035	Reports amount of variation of the motor following error.
1	Motor fe average (ticks)	0.8 to 2.0	.0033 to .007	Reports the motor following error average value.
2	Motor drive voltage ripple (volts)	4 to 10	4 to 8	Reports amount of variation of the motor drive voltage.
3	Motor drive voltage (volts)	-5.5 to -2.0	-5 to -2.0	Reports the motor drive voltage average value.
4	Motor drive power ripple (watts)	0.8 to 6	.8 to 3.9	Reports amount of variation of the motor drive power.
5	Motor drive power average (watts)	1.9 to 7	2 to 8	Reports the motor drive power average value.

This test turns on the specified motor and runs it at constant velocity for approximately 20 revolutions while recording drive data. The test is the same for each motor. Requesting a test for tray not installed generates an "Option Not Detected" message.

Tray 2, Tray 3, Tray 4, Lift Motor

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Motor Peak Power (watts)	1 to 2.5		Reports max amount of power.
1	Motor Average Power (watts)	.25 to .55		Reports the average motor drive power over the last half of the run interval.
2	Brake Average Power (watts)	.10 to .20		Reports the average motor brake power over the stop with brake interval.

This test turns on the specified motor and runs it at constant velocity for approximately 25 revolutions while recording drive data. The test is the same for each motor. Requesting a test for a tray not installed generates an "Option Not Detected" message.

Tray 3 and Tray 4 Pick/Feed Motor

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Motor fe ripple (ticks)			Reports amount of variation of the motor following error.
1	Motor fe average (ticks)			Reports the motor following error average value.
2	Motor drive voltage ripple (volts)			Reports amount of variation of the motor drive voltage.
3	Motor drive voltage (volts)			Reports the motor drive voltage average value.
4	Motor drive power ripple (watts)			Reports amount of variation of the motor drive power.
5	Motor drive power average (watts)			Reports motor drive power average value.

Check Misc Menu

This test looks at the paper path sensors to identify if anything would prevent a page from printing. The Control Panel will display messages indicating if anything unexpected is found for: R0 = upper paper path; R1 = tray 1; R2 = tray 2; R3 = tray 3; and R4 = tray 4. The display is a string of 0's and 1's (one digit for each sensor state) and is listed below from most significant bit to least significant bit.

1 = an item that needs to be corrected.

0 = normal

Paper Path Status

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Upper Paper Path			6 -31 Not used, always 0
0				5 - Front door open
0				4 - Top door open
0				3 - Paper at deskew sensor
0				2 - Paper at preheat exit sensor
0				1 - Paper at strip sensor
0				0 - Paper at exit sensor
1	Tray 1			14 - 31 unused, always 0
1				13 - No media present
1				0 - 12 width value
2, 3, 4	Tray 2, 3 and 4			9 - 31 unused
2, 3, 4				8 - No tray
2, 3, 4				7 - No paper
2, 3, 4				6 - plate not lifted
2, 3, 4				5 - Paper at tray pick sensor
2, 3, 4				4 - media length top
2, 3, 4				3 - media length bottom
2, 3, 4				2 - Media width top
2, 3, 4				1 - media width middle
2, 3, 4				0 - Media width bottom

This test scans the thermocouples and reports data on the current temperature with the goal of providing a picture of the current temperature state of the printer. All degrees are reported in Celsius.

Temperature Status

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Reservoir Temp	~127.7°	~135.0°	Reports the current temperature
1	Left Jetstack	~134°	~138°	Reports the current temperature
2	Right Jetstack	~134°	~138°	Reports the current temperature
3	Preheater Temp	~62°	~70	Reports the current temperature
4	Drum Temp	~60°	~60°	Reports the current temperature
5	Ink Melt 1 Temp	~50°	~50°	Yellow (usually off)
6	Ink Melt 2 Temp	~50°	~50°	Cyan (usually off)
7	Ink Melt 3 Temp	~50°	~50°	Magenta (usually off)
8	Ink Melt 4 Temp	~50°	~50°	Black (usually off)

This test determines if the purge pump system (pump/hose/purge valve/printhead) is operating normally.

Purge Pump

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	Jetstack Temperature (deg)	~134°	~138°	Reports current jetstack temperature. If the temperature is above current threshold (120 deg), the test will abort and following results will report as 0. This avoids having ink extrude out of the faceplate and onto the drum, requiring both a wipe and a chase to clean up.
1	Start Power (watts)			Reports initial peak pumping power after pump power on. This reflects the inrush current to the pump motor. An unusual value could indicate a defective motor (windings/brushes/etc.).

Purge Pump (Continued)

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
2	Initial Pumping Power (watts)			Reports minimum pumping power after start up peak (R1). This is the first value to reflect the system pressure. If the volume is normal (hose/ printhead), then the drop is large and the pressure rises slowly. If the volume is small (hose pinched plugged near the pump), then the drop is minimal and the pressure rises quickly
3	Max Pressure Pumping Power			Reports average pumping power just before maximum pressure is reached. May indicate the efficiency of the pump, leaks, and/or the setting of the pressure relief valve.
4	Pumping Time To Max (sec)			Reports the time from pump on until the pressure relief valve opens. May indicate the conditions discussed in R3, as well as the system volume.
5	No Pressure Pumping Power (watts)			Reports the average pumping power after the pressure has fully decayed. May indicate pump motor condition/ efficiency.
6	Pressure Decay Time (sec)			Reports the time between purge valve opening and the point when the pumping power (relative to the current pressure), fades back into the ripple of the no pressure pumping power (see the R5 discussion above). This time could indicate the operation of the purge valve and the condition of the bleed orifice (plugged, etc.).

This test determines averaged readings for key system voltages.

Voltages

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
Main Board Voltages				
0	5 Volts (volts)	~5V	~5V	
1	1.8 Volts (volts)	~1.8V	~1.8V	
2	2.5 Volts (volts)	~2.5V	~2.5V	
3	3.3 Volts (volts)	+/-2.5%	+/-2.5%	
4	unregulated12 Volts (volts)	+/- 20%	+/- 20%	
5	2.5 Volts (volts)	~ 2.5	~ 2.5	
6	unregulated Negative 12 Volts (volts)	+/- 20%	+/- 20%	
Control Board Voltages				
7	DC Power (watts)			
8	50 Volts	47 to 52	47 to 52	
9	Negative 50 Volts	-47 to 52	-47 to 52	
10	Unregulated Negative 15 Volts	-11 to -16.5	-11 to -16.5	
11	Unregulated 15 Volts	11 to 17	11 to 17	
12	AC Volts 120 Volts	90 to 140	90 to 140	
	AC Volts 240 Volts	180 to 275	180 to 275	

This test drives the Process Drive to move the Wiper Blade a short distance in each direction to verify the home position.

Wiper Alignment

R#	Definition	Typical Value (8400)	Typical Value (8500/ 8550/8560)	Actions
0	The engage wiper position (min)		50 to 400	Reports the distance from wipe home to the tilt engage position.
1	Upper hard stop wiper position (min)		2000 to 5000	Reports the distance from wipe to home to the upper hard stop.

This test drives the process motor a short distance in each direction to verify that the dmfix drive unit was in its home position.

Drum Maint/Transfix Home

R#	Definition	Typical Value (8400)	Typical Value (8500/8550/8560)	Actions
0	DM Initial FE Peak (pm motor counts)			Reports the height of the initial peak when starting rotation of the dm drive gear.
1	DM Initial FE Peak Time (sec)			Reports the time since the start of CCW motion until the peak was detected.
2	TF Initial FE Peak (pm motor counts)			Reports the height of the initial peak when starting rotation of the tf drive gear.
3	TF Initial FE Peak Time (sec)			Reports the time since the start of CW motion until the peak was detected.

Electronics Troubleshooting

Printer Power-Up Sequence

The following lists the chain of events that occur when you turn on a printer. You can follow this list as one means of determining if the printer is operating correctly. The exact chain of events depends upon the last power down condition and where the printer has last determined the printhead is positioned, this is stored in non-volatile RAM. The Electronics Troubleshooting Checklist is the primary reference for troubleshooting power-up problems.

1. Power cord is plugged in and the power switch is turned on:

2. Power supply senses AC line voltage conditions (110 VAC or 220 VAC) and enables DC voltages. If an overload occurs, the printer turns off the high voltage DC supplies, causing a "blink" effect on the Control Panel LEDs.

3. BIST test flashes the PE LED very briefly at a fast rate until the end of the next test.

4. The Boot loader performs CPU initialization and RAM test. It then sends the boot loader version to the serial port.

5. Power-On Self Test (POST) initializes the Control Panel. The Control Panel LED turns red, green, orange, and then off. The Control Panel LCD then goes black and then clear. The POST version displays on the LCD and waits two seconds. During this time the operator can press the **Back** button to bypass the remaining POST test.

6. Low level Power-On Self Test (POST) diagnostics are performed. The Control Panel displays status messages as each sub-test is performed. This test takes about 8 seconds. All LEDs are off during the test.

   If POST diagnostics pass, the Control Panel displays the Xerox logo and turns on the green LED.

   If the test detects an error, the error message displays on the LCD and the printer flashes the LEDs with a repeating error code pattern.

7. The VxWorks operating system is initialized and engine code is started. This takes about 15 seconds. The Xerox logo is displayed.

8. Print Engine Self Test (PEST) diagnostics are then performed. These test the heaters, clutches, motors and solenoids. As each clutch is tested, you hear clicking with four high tones as each motor is tested. This test takes about 30 seconds.

9. The printer now runs the mechanical initialization. The exact sequence depends on the initial position of the printhead and wiper assembly.

Mechanical Initialization 8400 (1/2)

```
                           ┌──────────────────┐
                          ( Start Mechanical  )        ( Mechanical Recovery )
                          (    Recovery       )        (    POWER ON         )
                           └──────────────────┘
                                    │
                    ┌───────────────────────────────┐
                    │ Set FIRMWARE states:          │
┌──────────────────┐│   CapState = UNKNOWN          │    ┌─────────────────────────────────┐
│ Start the Thermals│◄──  Head Tilt State = UNKNOWN │    │ Values in the NVRAM are used to  │
│    13,xxx        ││   DmfixState = UNKNOWN        │    │ determine if printhead and wiper │
└──────────────────┘│   YaState = HOMELESS          │    │ have contact or if the head was  │
         │          │   Xa State = HOMELESS         │    │ parked on last power down.       │
         ▼          └───────────────────────────────┘    │
```

Set FIRMWARE states:
  CapState = UNKNOWN
  Head Tilt State = UNKNOWN
  DmfixState = UNKNOWN
  YaState = HOMELESS
  Xa State = HOMELESS

Start the Thermals
13,xxx

Unbind Media Path Motor and Home the MPT
31,000

Home the Y-Axis
5001, 5004

Wait for the Head to read OK_TO_WIPE Temperatures
13.xxx

Is the head tilt Cam engaged (head tilted?)

YES

NO

Home XA
6000

Move XA to HEAD TILT POSITION
6000

Home the CAP/wiper without disengaging the Head Tilt Cam
8005, 8007, 8008, 8009

Values in the NVRAM are used to determine if printhead and wiper have contact or if the head was parked on last power down. If printhead and wiper are in contact, the printhead warms first before moving. If the printhead was parked, the printhead is warm before moving to the print position.

The dashed line traces what happens if the printhead was parked on last power down.

The RED numbers indicate errors that may be displayed at that point in the mech init process.

s8500-029

Mechanical Initialization 8400 (2/2)

RECOVERY ROUTINE

_head Parked On? / **Last Power Down?**

NO → **Home Dmfix** **7002**

Did the Process Motor Devise Fault?

YES

YES → Try to recover from Process Motor Stall

YES

Home XA **6000**

Move XA to Left Side Hard Stop **6000**

Move XA to Tilt Position **6000**

Jog the X Axis in order to release the Head Tilt Arms.

home Dmfix again **4025**

YES (Move Cap/Wiper branch)

Move Cap/Wiper to the Park ARMS-and restrain head again. **8035,7009**

NO → **Move Head to the Standby position.** **7007, 7008, 8005, 8055, 8007, 7006, 8008, 8009**

Move XA to Left Side Hard Stop **6000**

Move XA to Tilt Position **6000**

Move Head to the Home/ Print position **7010, 7006**

NO

Jog the X Axis in order to release the Head Tilt Arms.

Start YA Slew **5003**

Rehome XA **6000**

Move Head to the PARK position, **7007, 7008, 8005, 8055, 8007, 7006, 8008, 8009, 7014**

If not in non-thermals Oil Drum 4 times

DONE

Warmup will be responsible for moving the head to the print position after the wipe and purge are performed.

s8500-030

Device Fault Codes

80xx - Wiper
7002 - PM stalled
70xx - Headtilt
7014 - Head Not Restrained
31001 - Media Path
5001 - YA Home Timer
5002 - YA Encoder (Stall)
6000 - XA Error
4025 - PM Init Failed (home Dmfix)
4024 - Wiper Alignment Failed
8021 - Pump Uninitialized

Others..... - Thermal Faults, ECM Faults, HC, PM Faults oiling drum

Mechanical Initialization (8500/8550/8560)

MECHANICAL RECOVERY

Start Mechanical
Recovery

Mechanical Recovery
POWER ON

Start the
thermals.
13,xxx

Set FIRMWARE states:
CapState = UNKNOWN
HeadTiltState = UNKNOWN
DmfixState = UNKNOWN
YaState = HOMELESS

Values in NVRAM are used to determine if
printhead and wiper have contact or if the
printhead was parked on last power down. If
printhead and wiper are in contact, the printhead
warms first before moving the wiper.
The BLUE line traces what happens if printhead
was parked on last power down.
NOTE: Headtilt CAM will be engaged when the
printhead is in the PARKED (restrained) position.
The RED numbers indicate errors that may be
displayed at that point in the process.

Close preheater

Unbind Media
Path Motor and
HOME the MPT
31,001

Home the Y-Axis
5001, 5004

Wait for head to read
OK_TO_WIPE
temperatures
13,xxx

Is the
head tilt CAM
engaged
(head tilted?)

Yes

Home XA and move XA to the
HEADTILT position
6000

No

Engage the Headtilt
Solenoid

Use the Headtilt
Solenoid and tilt the
head to Standby
7007, 7006, 7008, 8005,
8055, 8007, 8008, 8009

Home the CAP/wiper
without disengaging the
Head Tilt CAM
8005,
8007, 8008, 8009

Move the wiper and the head to determine if
the head is fully restrained or not. This will
allow the head to tilt to the standby position so
the wiper can be homed.
7007, 7006

s8500-137

Move Cap/Wiper to the PARK
ARMS - and restrain head
again.
8035, 7009

Yes

_headParkedOn
LastPowerDown?

No

Yes

RECOVERY ROUTINE
Try to recover from
Process Motor Stall

homeDmfix
7002

Did
the Process Motor
Device Fault?

Yes

Home XA
6000

Device Fault Codes

80xx - Wiper
8021 - Pump Not Inited
7009 - Wiper Alignment
7002 - PM stalled
70xx - Headtilt
7006 - Headtilt Solenoid
7014 - Head Not Restrained
31001 - Media Path
5001 - Ya Home Timer
5004 YA - General Motion Error
6000 - XA Error
4025 - PM Init Failed (homeDmfix)
4024 - Wiper Alignment Failed
Others... - Thermal faults, ECM
Faults, HC, PM faults oiling drum

No

Move Head to the
Standby position,
7007, 7006, 7008, 8005,
8055, 8007, 8008, 8009

Move XA to Left Side
Hard Stop
6000

Jog the X
Axis in
order to
release the
HeadTilt
Arms.

Move XA to Tilt position
6000

Move Head to the
Home/Print position
7006, 7010

Start YA SLEW
5004

No

Move XA to Left
Side Hard Stop
6000

Move XA to Tilt
Position
6000

homeDmfix
again
4025

Jog the X
Axis in order
to release the
HeadTilt
Arms.

Move Head to the
PARK position,
7007, 7008, 8005, 8055,
8007, 8008, 8009, 7014

Rehome XA
6000

Warmup will be responsible for moving
the head to the print position after the
wipe and purge are performed.

After the printer is warm,
the head will tilt to the
print position and
Oil Drum 4 times

DONE

s8500-138

Unplanned Shutdown

If the printer was not shutdown by the power switch the last time it was turned off or it was shutdown with ink on the drum:

As soon as the printer has warmed up, the media path motor moves the wiper to the bottom of its travel and the process motor moves the printhead to the print position a chase page is sent through the paper path to clean ink from the drum.

Temperature Below Purge Threshold

If the Printhead, ink reservoirs, or jetstack temperature are below purge threshold, the printer performs a Printhead cleaniong cycle.

1. The printer waits for the printhead to reach its purge temperature.

2. The printer moves the wiper to the bottom of its travel and tilts the printhead forward to its print position to check the ink levels. If the ink level is low, ink is melted into the appropriated reservoirs.

3. The printhead tilts to the standby position and moves the wiper assembly to the purge position in front of the printhead faceplate.

4. The purge pump begins the pressure purge after about 2 seconds the purge pump solenoid opens.

5. The printhead tilts forward against the wiper assembly (wipe position) and the purge and wipe cycle begins.

6. The Control Panel indicates the printer is performing the cleaning process.

7. The printhead is moved left to the tilt zone, where the printhead can tilt back without interference, and the media path motor moves the wiper to the bottom of its travel to engage the printhead tilt cam. The process motor rotates the printhead tilt gears, which tilt in order to move the printhead to the forward print position.

8. After the print engine is in a known, valid state the Control Panel display shows the warm-up progress (the Ready LED flashes). When warm-up completes, the Ready LED displays solid.

9. The temperature of the printhead, drum and paper preheater are allowed to stabilize at their operating temperatures and ink is melted if needed.

10. The printhead is homed to the print position for printing.

11. A cleaning page is printed at this time, if a purge was performed.

12. A start page is printed (if enabled).

13. The Control Panel displays a message that the printer is initializing and then ready.

14. The print engine is initialized and is ready to print.

Miscellaneous Electrical Troubleshooting

The Electronics Module contains the power supply, image processor board and the power control board. If a component of the Electronics Module fails, and service is necessary, the entire Electronics Module is replaced as a unit. No individual board troubleshooting is required. The printer contains many self test routines to aid in diagnosing problems.

Note

If the printer encounters certain fault conditions, the printer may reboot up to three times before displaying an error code. This is an attempt to correct the problem and reduce the number of unnecessary service calls.

Following the suggested debug procedures, the specified sequence generally provides better test coverage than performing tests in a different order.

Error Message Displayed on Control Panel LCD

Printer has detected a fault condition. See "Fault Code Error Message Troubleshooting" on page 3-7 for definitions and solutions.

Blank Display and the PS and PE LEDs Are Flashing an Error Code

Printer has detected a fault condition but can't display a message on the LCD. Some portion of the chain of devices used to drive the LCD may be defective since an error message is not displayed. See "Fault Code Error Message Troubleshooting" on page 3-7 for definitions and solutions.

Printer Fails Power-Up: PS, PE and 3.3 V LEDs Do Not Illuminate

Printer is not receiving proper AC.

Caution

Use caution with hazardous voltages when diagnosing AC problems. The 3.3 V LED is located inside the Electronics Module and must be observed through the vent holes close to the AC power switch, see the illustration on page 4-64.

1. Inspect the power cord.
   a. Verify AC outlet voltage and current capacities are within specifications.
   b. If necessary, move the printer to a different outlet and retest.
2. Transient on AC line tripped protective circuitry in printer power supply.

   Cycle power to printer to reset protective circuits in power supply.

3. Short circuit on 3.3 V supply within the Electronics Module. ESD damage to the printer may occur if static electricity is discharged to printer electronics
   a. With power cord connected, touch the metal Electronics Module to discharge any static electricity.
   b. Turn off printer and wait 30 seconds for power supply capacitors to discharge. Damage to circuits within the Electronics Module may occur if the power supply capacitors are not allowed to fully discharge.

    c. Unplug power cord and remove printer's covers.

Caution

Use caution around motors, pulleys and live AC connections when working with the printer covers off.

    a. Unplug the following Electronics Module connections. This step removes all other circuits so the Electronics Module can be tested alone.

    ■ Power Control to I/O board (J800)

    ■ Power Control right (J400)

    ■ Preheater solenoid (interconnect cable)

    ■ Printhead tilt gear solenoid (interconnect cable)

    ■ Printhead data (J130)

    ■ Waveamp signal (J790)

    ■ Power Control left (J390)

    ■ Y-Axis motor (J280)

    b. Plug in power cord and turn on power to the printer

    c. If the PE and PS indicators do not flash momentarily, the short is inside the Electronics Module. Replace the Electronics Module and retest the printer. If PE and PS indicators flash, continue with debug.

    d. Plug in all cables removed during service.

    e. Trace through all service steps performed to reattach any cables that were unplugged during debugging.

    f. Attach printer covers.

    g. Perform full test of printer.

4. Short circuit on 3.3 V power supply within the I/O board.

    a. **REQURIED**: Follow all procedures from Step 3 before proceeding with these steps. The I/O board needs to be isolated from other systems in the printer to be effectively tested.

    b. Turn off printer and wait 30 seconds for power supply capacitors to discharge. Damage to circuits within the Electronics Module may occur if the power supply capacitors are not allowed to fully.

    c. Unplug the Control Panel connector (J220) on the I/O board. This removes the Control Panel from the I/O board.

    d. Plug in the Power Control to I/O board connector (J800). This step adds the I/O board back to the working Electronics Module - nothing else is connected.

    e. Turn on power to the printer

5. If the PE and PS indicators do not flash momentarily, the short is on the I/O board or related cabling. Skip the rest of this section if the PE and PS indicators flash because the problem is elsewhere in the printer.

    a. Verify short is on the I/O board by using an ohmmeter to check the resistance on J270, pin 1 to ground. Resistance of less than 1K ohm indicates a problem.

    b. To isolate problem to I/O board or related cabling, unplug I/O board connectors:

    ■ Umbilical Right J1

    ■ Waste Tray Sense J110

    ■ Stripper Solenoid J250

    ■ Paper Tray Sense J610

    ■ Front Door Sense J600

- Inkload Signal J910

- DMU Sense J860

- Drum Thermistor J870

- Exit Module J680

- Heater Relay Control J950

   c. Retest the resistance of the I/O board. If the resistance is still less than 1K ohm, replace the I/O board, reinstall all cables and retest printer.

   d. If the I/O board resistance is OK, plug in the I/O board connectors one at a time and retest the resistance.

   e. Plug in all cables removed during service.

   f. Trace through all service steps performed to reattach any cables that were unplugged during debugging.

   g. Attach printer covers.

   h. Perform full test of printer.

6. Short circuit on 3.3 V power supply within the Control Panel.

   a. **Required**: Follow all procedures from Step 3 and Step 4 before proceeding.

   b. With power cord connected, touch the metal Electronics Module to discharge any static electricity.

   c. Turn off printer and wait 30 seconds for power supply capacitors to discharge. Damage to circuits within the Electronics Module may occur if the power supply capacitors are not allowed to fully discharge.

   d. Plug in the Control Panel connector J220 on the I/O board. This step adds the Control Panel back to a working Electronics Module and I/O board in order to see if the short circuit is also removed.

   e. Turn on power to the printer.

   f. If the PE and PS indicators do not flash momentarily, the short is on the Control Panel. Replace the Control Panel and retest the printer. Skip the rest of this section if the PE and PS indicators flash because the problem is elsewhere in the printer.

   g. Plug in all cables removed during service.

   h. Trace through all service steps performed to re-attach any cables that were unplugged during debugging.

   i. Attach printer covers.

   j. Perform full test of printer.

7. Short circuit on 3.3 V power supply within the printhead.

   a. **Required**: Follow all procedures from 'Short circuit on 3.3 V power supply within the Electronics Module' before proceeding. The following procedure relies on a working Electronics Module to determine if the printhead is causing a short circuit.

   b. With power cord connected, touch the metal Electronics Module to discharge any static electricity. ESD damage to the printer may occur if static electricity is discharged to printer electronics.

   c. Turn off printer and wait 30 seconds for power supply capacitors to discharge. Damage to circuits within the Electronics Module may occur if the power supply capacitors are not allowed to fully discharge.

   d. Plug in the printhead interface connector (J130) to the Electronics Module. This step adds the Control Panel back to a working Electronics Module and I /O board in order to see if the short circuit is also removed.

   e. Turn on power to the printer.

   f. If the PE and PS indicators do not flash momentarily, the short is on the printhead. Replace the printhead and retest the printer. Skip the rest of this section if the PE and PS indicators flash because the problem is elsewhere in the printer.

   g. Carefully test the printer to ensure damage to the Electronics Module did not occur due to the shorted printhead.

   h. Plug in all cables removed during service.

   i. Trace through all service steps performed to reattach any cables that were unplugged during debugging.

   j. Attach printer covers.

   k. Perform full test of printer.

Printer Prints and the Display is Frozen With No Errors

   Note

   Opening and closing the Front Door resets the Control Panel.

1. Electrostatic Discharge.

   a. If the printer is currently powered on and frozen, open then close the front door of the printer and see if the LCD responds.

   b. If printer appears functional after operating the door, advise client that failure may have been due to an ESD event. Thoroughly test printer for any other problems.

   c. Skip the rest of this section if printer now appears functional, otherwise continue debugging.

   d. With power cord connected, touch the metal Electronics Module to discharge any static electricity. ESD damage to the printer may occur if static electricity is discharged to printer electronics.

   e. Turn off printer and wait 30 seconds for power supply capacitors to discharge. Damage to circuits within the Electronics Module may occur if the power supply capacitors are not allowed to fully discharge.

   f. Unplug power cord and remove printer's covers. Use caution around motors, pulleys and live AC connections when working with the printer covers off.

   g. Examine printer for loose grounding connections, especially the ground strap on the Y-Axis motor. Eliminate the possibility of internally generated ESD from affecting printer.

   h. Plug in all cables removed during service. Trace through all service steps performed to reattach any cables that were unplugged during debugging.

   i. Attach printer covers.

   j. Perform full test of printer.

2. Control Panel failure

   a. Unplug the original Control Panel at connector ('C' / J220) and plug in a known working Control Panel. This step checks for a keypad or LCD failure in the Control Panel.

   b. Plug in all cables removed during service. Trace through all service steps performed to reattach any cables that were unplugged during debugging.

   c. Attach printer covers.

   d. Perform full test of printer.

Display Functions, but Sent Jobs Do Not Print

1. Computer driver incorrect or improperly installed

   a. Verify printer hardware is functional by sending a test print via the printer Control Panel.

   b. If a test print is properly produced, continue to next steps, focusing on problems outside the printer (network, Ethernet, or computer driver configuration issues).

   c. If a test print is not properly produced, the focus of problems within the printer suggests that the internal settings are corrupt.

   d. Use a known functional computer to test printer using the printer's parallel port or USB port. If test computer successfully prints pages, review the version of driver, the installation and the settings of the customer's computer.

   e. If test computer is unsuccessful, continue with debug.

2. Customer network or printer's Ethernet port not properly configured.

   a. Please see "Testing Communications Ports" on page 4-71 for procedures related to communication problems.

3. Disconnect the printer from its network and see if the behavior continues.

4. Printer internal settings corrupted.

   a. On the Control Panel, use the Hidden Service Menu to reset NVRAM.

   b. Perform full test of printer.

Printer Resets Unexpectedly

1. Transient on AC line tripped reset circuitry in printer.

   a. Cycle power to ensure printer initializes during stable AC power.

2. Check if non-Xerox, third-party RAM DIMM is installed. Non-compliant RAM can cause erratic printer behavior.

3. Internal fault

   a. Record any error codes and report to Xerox Office Group. If the printer detects an error, the printer will attempt to reboot and re initialize (up to three times) to correct the problem. After the third cycle of rebooting, an error code displays on the LCD and flashes on the PS and PE indicators.

4. Disconnect the printer from its network, for a few hours if necessary, to see if the behavior continures.

Printer Fails to Enter Energy Star Mode

1. Model not certified as an Energy Star model.

   a. Use the Control Panel to enable Energy Star mode (Printer Setup -> **Printer Control** -> Select **Power Saver Timeout**). Some printers are not shipped as Energy Star compliant and don't have the power saving mode enabled by default.

2. Electronics Module failure.

   a. **Required**: Follow Step 1 before proceeding.

   b. With power cord connected, touch the metal Electronics Module to discharge any static electricity.

   c. Turn off printer and wait 30 seconds for power supply capacitors to discharge.

   d. Unplug power cord and remove printer's covers.

   e. Replace the Electronics Module.

    f. Plug in all cables removed during service.

    g. Trace through all service steps performed to reattach any cables that were unplugged during debugging.

    h. Attach printer covers.

    i. Perform full test of printer.

Printer Reports Missing Drum Maintenance Kit

1. Drum Maintenance Kit missing or not fully seated.

    a. Fully install Drum Maintenance Kit.

2. Connector not fully seated.

    a. Check I/O Board connector J860 for proper mating.

3. Check that the Drum Maintenance Kit stop on left end of the Drum Maintenance Pivot Plate is not broken.

4. Chack that the Waste Tray Sensor is correctly installed at the end of the Waste Tray Cover.

Printer Reports Missing Waste Tray

1. Waste Tray missing or not fully seated.

    a. Fully install waste tray.

2. Connector not fully seated.

    a. Check I/O Board connector J110 for proper mating.

Optional Features Not Available

1. Printer configuration incorrect.

    a. Verify proper configuration of printer using Control Panel.

2. Computer print driver configured incorrectly.

    a. Examine print driver setup to ensure printer driver setup doesn't override desired features set via Control Panel.

3. Configuration card failure.

    a. Verify configuration card is properly oriented and fully inserted.

    b. Verify printer model purchased corresponds to features expected.

    c. Clean configuration card contacts with isopropyl alcohol, reinstall, and retest.

    d. Swap configuration card with a known working card. If printer works, replace card with one containing identical features as originally purchase.

    e. The configuration card enables certain optional features in the printer. Care must be taken to duplicate the features of the original printer when replacing the card.

525-Sheet Feeder Does Not Function

1. Thermal safety fuse blown.

    a. Power cycle printer.

    b. The safety fuse is a self resetting device. Power cycling ensures the fuse cools enough to reset itself.

2. 525-Sheet Feeder faulty.

    a. Turn off printer and wait 30 seconds for power supply capacitors to discharge.

    b. Replace 525-Sheet Feeder.

    c. Perform full test of printer.

Printer Does Not Print, LEDs are On and the Display is Frozen With No Errors

1. Nonspecific electronics failure.

    a. Double check PS and PE indicators for any error code information. The printer self test is usually able to detect a failure that would cause this symptom. Looking up the error code may save debugging time.

    b. If the PS and PE indicators are steady and dimly-on, replace the Electronics Module, reassembly and retest printer.

    c. If the PS and PE indicators are blinking, brightly-on, or totally off, continue debugging. A dim but steady on condition indicates some firmware was not properly loaded into a logic circuit.

    d. With Power Cord connected, touch the metal Electronics Module to discharge any static electricity.

    e. Turn Off printer and wait 30 seconds for power supply capacitors to discharge.

    f. Unplug Power Cord and remove printer's covers.

    g. Unplug the following Electronics Module connectors:

- Power Control to I/O Board (J800)
- Power Control right (J400)
- Printhead data (J130)
- Wave Amp signal (J790)
- Power Control left (J390)
- Y-Axis motor (J280)

This step removes all other circuits so the Electronics Module can be tested alone.

    h. Plug in Power Cord and turn on power to the printer.

    i. The PE and PS indicators should flash an error code reporting that the Control Panel is missing. If the proper error message is not flashed, replace the Electronics Module and retest the printer. If PE and PS indicators flash, continue with debug.

    j. Turn Off printer and wait 30 seconds for power supply capacitors to discharge

    k. Unplug the following Electronics Module connectors:

- Power Control to I/O Board (J800)
- Power Control right (J400)
- Printhead data (J130)
- Wave Amp signal (J790)
- Power Control left (J390)
- Y-Axis motor (J280)

This step prevents any faults from the motors, clutches and sensors from preventing the I/O Board and Control Panel from functioning.

    l. Plug in the I/O Board connector (P/J800) in the Electronics Module. This step adds the I/O Board and Control Panel to the Electronics Module.

    m. Turn On power to the printer.

n. If the Electronics Module, I/O Board and Control Panel are working, the error code 34,001.43 should appear on the display to indicate the Printhead is disconnected. If the correct error code is displayed, continue with the next steps of the procedure.

If the correct error code is not displayed, replace the Control Panel and I/O Board and verify the correct error code appears. Retest Electronics Module, I/O board, Control Panel combination.

If no error code displays, return the original Control Panel and I/O Board to the printer. Replace the Electronics Module and then continue with the next steps of the procedure.

o. If a different error code is displayed, see the "Fault Code Error Message Troubleshooting" on page 3-7 for a definition of the problem and the procedures needed to solve the problem.

2. Repeat these procedures to check all circuits connected to the I/O Board:

a. Turn off printer and wait 30 seconds for power supply capacitors to discharge.

b. Plug in the I/O Board connectors, one at a time, and perform steps C and D for each connector.

c. Turn on printer and wait for the error code 34,001.43. Check that the three voltage indication LEDs inside the Electronics Module (visible through the vent holes of the Electronics Module near the AC power switch) are lit.

d. If the proper error code and LED doesn't appear after each I/O connector is reconnected, repair or replace the faulty circuit.

e. If the proper code appears, repeat the procedures until all I/O board connectors are plugged back in.

f. If repairs are made during this step, plug in all connectors to printer and retest. If printer is fixed, reattach covers to printer and perform a full test. If no defects are found in this step, continue with next step.

3. The proper error code is displayed, repeat the following procedures to check all circuits connected to the Electronics Module:

a. Turn off printer and wait 30 seconds for power supply capacitors to discharge.

b. Plug in the connectors, one at a time, and perform steps C and D for each connector.

c. Turn on printer and wait for the error code 34,001.43. Check that the three voltage indication LEDs inside the Electronics Module (visible through the vent holes of the Electronics Module near the AC power switch) are lit.

d. If the proper error code and LED doesn't appear after each I/O connector is reconnected, repair or replace the faulty circuit.

e. If the proper code appears, repeat the procedures until all I/O board connectors are plugged back in.

f. If repairs are made during this step, plug in all connectors to printer and retest. If printer is fixed, reattach covers to printer and perform a full test. If no defects are found in this step, replace Electronics Module, test printer, reattach covers to printer and perform a full test.

Verifying Print Engine Operation by Printing Stored Pages

1. Turn On the printer. If the printer does not begin initializing, go to the topic, "Measuring AC Power Supply Voltages" on page 4-64.

2. Once the **Power** light is on (not blinking) and the Control Panel displays **Ready to Print** it is now possible to print a stored page.

3. If a page prints, the print engine is working correctly. If not, a problem exists with the print engine.

Verifying Power Supply Operation

The power supply is divided into two sections: the AC section used for heaters and the DC section for control logic, Printhead drivers, and motors. Verifying the power supply involves three steps:

1. Checking for proper AC voltage.

2. Inspecting the power supply fuses.

3. Testing for a shorted motor or solenoid, which shuts down the power supply.

+50 V Supply
Active LED
(Take 20 Seconds
to Drain Off)

+3.3 V
Supply Active
LED

+15 High Side
+12 Power
+5 Supply
Active LED
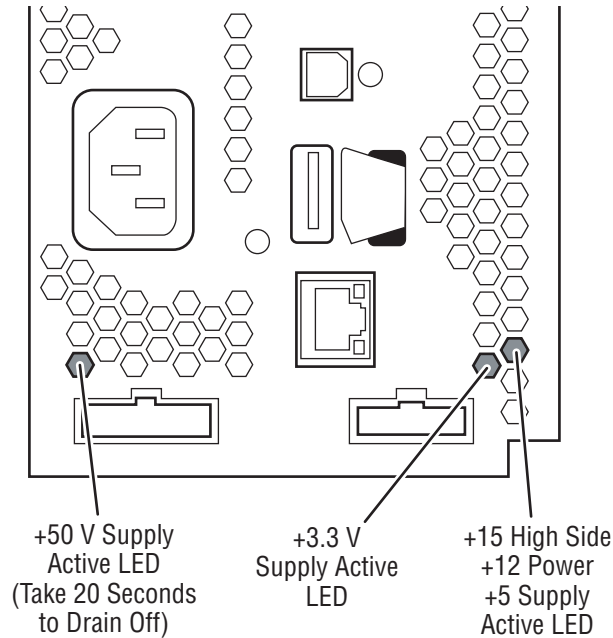
s8500-031

Measuring AC Power Supply Voltages

1. AC line voltages are present on the power supply and possibly in the printer, via the heaters, while the printer is plugged into an AC outlet. The power switch is detected by software; a proper shut down follows a power off signal to the power supply. The printer may operate for a considerable time after this procedure.

2. Turn off the printer, wait for shutdown, and unplug it from the power outlet.

3. **AC Input:** With a DMM set to measure AC voltages, measure the power being supplied to the printer; it should measure between 90 to 140 VAC (115 VAC nominal) or 180 to 264 VAC (220 VAC nominal).

4. Proceed to the step, "Testing Motor and Solenoid Resistances" below.

5. If a heater shorts, F2 or F3 opens. The power supply does NOT shut down; however, a **Service Required** error code is displayed on the Control Panel.

Detecting condition of Fuse F2 and F3

1. The Drum and Preheater connect to F3.

2. The Printhead and Ink Loader connect to F2.

3. Turn the power switch Off and wait for the printer to shut down.

4. Unplug the Power Cord.

5. Remove the Ink Loader (page 8-7).

6. From the back of the printer you will see one heater cable connector on the left near the power switch and two under the ink loader.

7. Place the power switch in the On position and make the following measurements:

   a. Using an ohmmeter, measure the resistance between the lowest pin on the left side, just above the power switch, and the lowest pin on the AC input connector. If the meter measures 0 ohms, F3 is intact.

   b. Measure between the right most pin under the ink loader and (again) the lowest pin on the AC input connector. If the meter measures 0 ohms, F2 is intact.

8. The heater triacs are not accessible for measurement and are disconnected from loads if the switch is off or the printer is powered down.

9. Reinstall the Ink Loader following the test.

Measuring DC Power Supply Voltages

1. Check the power supply status LEDs, they should be bright.

2. If the printer is operational, use the diagnostic test Monitor Voltages.

Note

DC voltage test points can be found on the power control board. When you remove the rear access cover, you will see the test points below the RAM DIMM's on the power control board.

Ensuring Ground Integrity

Intermittent or missing ground connections can result in minor interferences in the printer. As examples:

■ Control Panel display can be affected (blank)

■ I/O board errors

■ False jam reporting

■ Erroneous thermistor readings

■ Major interruptions

■ Damage to the electrical boards

Key Ground Connections

The following illustration shows the grounding points in the printer.

Transfix Roller
Ground Springs

I/O Board
Ground

DM Ground
Clip

X-Axis Motor

X-Axis Return
Spring Ground

Y-Axis Motor
Ground

Media Path Drive
Ground
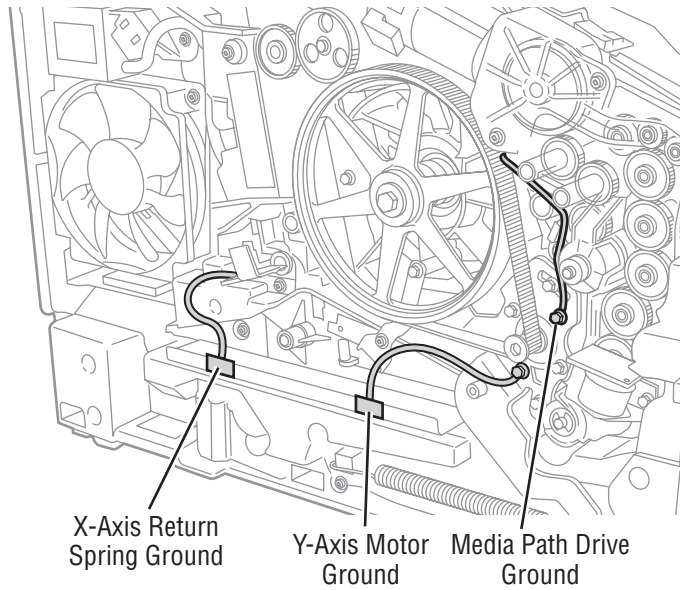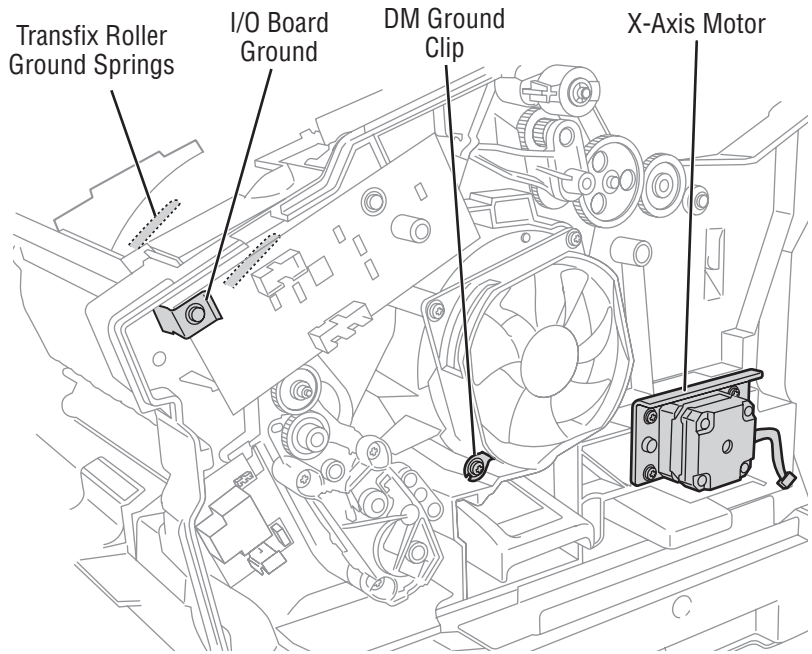
s8500-032

Testing Motor and Solenoid Resistances

1. Turn off the printer and disconnect the power cord.

2. With a DMM set for measuring resistance, test each motor's windings for correct resistance (disconnected from the printer). Rotate the motor's drive shaft slightly while taking the measurement.

Motor and Solenoid Resistances

Motor or Solenoid	Resistance (Approximate)
Process Drive motor	4.3 ohms +/-15% (Difficult to measure due to variability at the brush/commutator interface.)
Y-Axis Motor	1.4 ohms +/- 15% (Difficult to measure due to variability at the brush/commutator interface.)
X-Axis Motor	12.5 ohms/phase (red-to-yellow and blue-to-orange)
Media Path Drive motor	1.5 +/- 20% ohms
Wiper drive clutch	186 ohms +/- 15%
Paper-pick clutch Deskew clutch	186 ohms +/- 15%
MPT Pick solenoid	124 ohms +/- 5%

Paper Path and Media-Based Problems

For paper path and media-based problems, first check the displayed error codes using the Error Code Definition Table beginning on page 3-7 to help determine where the error is occurring. Run paper path diagnostics to help eliminate problems with printer components.

Media-Based Problems

1. Check that the correct type of media is being used, for information on the correct media type and sizes refer to the Paper Tips page, which is printable from the Control Panel.
2. Ensure the printer is operating under the right environmental conditions, see Section One for more information.
3. Ensure the correct weight of paper is being used.
4. Ensure that envelopes are of an acceptable size and oriented with the flap up for Tray 1 and the flap down for Trays 2, 3, and 4.
5. Ensure that the correct media is in the correct media tray. The paper guides indicate to the printer the size of media being used. Ensure that the media guides in the tray are set correctly.
6. Inspect the paper for bent, torn or folded corners.
7. Check to ensure no small pieces of paper are in the paper path.
8. Run the paper path status test in service diagnostics to ensure all sensors are operating correctly.
9. Try printing from a fresh, unopened ream of paper.

Pick Errors - Trays 2, 3, and 4

Pick errors occur when the media in the media tray mispicks or the printer double-picks two or more sheets of paper.

1. Inspect the paper path for obstructions.
2. Ensure that the side guides are set correctly by sliding the guide gently against the media.
3. Try printing from a fresh, unopened ream of paper.
4. Flip over the media in the tray.
5. Ensure the Pick Rollers for Trays 2, 3, and 4 are installed correctly.
6. Clean the Pick Roller using the cleaning procedures. Paper dust can coat the pick roller and affect its ability to grip the paper and pull it out of the tray. Also clean the transport rollers if they are visibly dirty. Refer to page 7-4 for proper cleaning procedures.
7. Check that the Pick Roller is being rotated.
8. Run the Paper Path test.
9. Replace the Pick Roller if damaged.
10. Inspect the rollers, bushings and gears of the paper path.

Paper-Pick Errors - Tray 1

1. Verify the media being used is the correct size and weight.
2. Clean the Tray 1 pick roller and separator pad, refer to the cleaning procedure.
3. Ensure the printer is operating under the right environmental conditions, see Chapter One for more information.
4. Run the Tray 1 Pick Solenoid test, replace if necessary.
5. When Tray 1 is opened or closed with media present the pick roller will home and pick paper. Remove all media, open and close Tray 1 and then try printing again.

Preheater and Transfix Jams

1. Remove the preheater and check for and remove any small paper scraps that may be present.
2. Check for excessive media skews.
3. Check for ink shards on top of the preheater next to the flag (see page 8-20).
4. Using diagnostics, run the media drive path test. If the test fails, replace the preheater assembly.
5. Check the paper-eject path for obstructions. Ensure no small pieces of paper are trapped around the paper release blade.
6. Ensure that the transfix roller is rotating freely, replace if necessary.
7. Test the sensors in the paper path. Look for damaged or non-operating sensor flags.
8. Check the stripper solenoid is functioning properly by running the stripper solenoid test and the stripper contact test, replace if necessary.
9. Check the stripper blade for damage, replace the stripper carriage if necessary.
10. Check for ink shards on top of the preheater next to the flag (see page 8-20).

Checking the Process and Media Path Drive

1. Determine if the process motor runs. If it does not rotate, go to Step 2. If it does rotate, go to Step 4.
2. Measure to determine if +50 VDC is being supplied to the motor. If power is applied, go to Step 3. If it is not, inspect the process motor's wiring harness. If the harness is functional, then troubleshoot the Electronics Module. Refer back to the topic, "Measuring AC Power Supply Voltages" on page 4-64.
3. Disconnect the motor's wiring harness. Measure the resistance of the motor's windings. If the windings are opened, shorted or far out of tolerance, replace the motor.
4. Ensure the process drive gearbox is in it's proper home position, refer to page page 6-8.
5. Run the paper path drive test.
6. Run the drum maintenance drive test.
7. Run the transfix fast and transfix slow.
8. Run the process motor and media drive motor tests.

9. Inspect the gears and mating cam gears for stripped or damaged gear teeth.

10. Replace the Process Drive Gearbox.

11. Replace the media path drive gearbox.

Media Skews Passing Through the Paper Path

1. Ensure the media is supported.

2. Ensure that the side guides are properly adjusted.

3. Do not overfill the tray, especially with envelopes.

4. Check to see if the media is excessively curled. Curled media can get mistracked in the paper path.

5. Examine the paper path; ensure it is clear of obstructions.

6. Ensure that the pick roller is not visibly dirty so that it picks up a sheet of media smoothly and evenly.

7. Check and clean or replace, as required, the preheater and/or take away rollers. Also make sure that the front door is properly closed.

8. The printer should be installed on a flat, level surface.

9. Ensure the paper preheater assembly is clean and properly seated into the printer frame.

Operating System and Application Problems

Print an internal test print from the printer's Control Panel to ensure the problem is not printer related. There is additional help available at www.xerox.com/office/support. You can access PhaserSMART Technical Support, Technical Support via email, driver downloads, and much more.

PhaserSMART Technical Support is an automated, Internet-based support system. Use your default web browser to send diagnostic information from your printer to our web site for analysis. PhaserSMART Technical Support examines the information, diagnoses the problem, and proposes a solution.

To access PhaserSMART Technical Support:

1. Go to www.phaserSMART.com.
2. Enter your printer's IP address in the browser address window.

Testing Communications Ports

Testing the communication ports can isolate communication problems to the computer, network, or software. Test the communications ports after the printer is installed or when the Electronics Module has been replaced. Test the communications ports as follows:

Ethernet Port Verification

Note

The Ethernet port can be tested without connecting to the network by using a crossover cable and the "PING" command.

1. Connect a crossover cable between the Ethernet ports on the printer and computer.
2. Verify that the printer is **Ready To Print**.
3. At the computer, click the **Start** button, and select **Run**.
4. Type in the word "command" and click **OK** to launch the MS-DOS command prompt.
5. At the prompt, type in the command "ipconfig" and press **Enter** to display the computer's IP address, subnet mask, and gateway.
6. On the Control Panel, print the Configuration Page and use this page to verify that TCP/IP is enabled and to determine the current TCP/IP values.

Note

To enable communication between the computer and printer, both must be configured for the same TCP/IP network.

7. Using the printer Control Panel, disable DHCP/BOOTP and AutoIP so that the printer can be configured manually.
8. Select an IP address for the printer that matches the computer, except for the last field, which must be unique.
9. Edit the printer's gateway and subnet mask to match the computer.
10. At the MS-DOS command prompt, type "ping" followed by a space and the printer's IP address. Then press **Enter**. If the number of packets sent and received match, the PING was successful and the Ethernet port is functional. If the request times out and fails to reply, either the cable or the port is defective.

Ethernet Port Verification for Default Assigned IP Address 169.254.xxx.xxx

An alternate method is required to test the Ethernet port when the PC's IP address falls within the range 169.254.xxx.xxx. PCs that have not been configured for a specific network default to a "LOCAL LINK" value within the 169.254.xxx.xxx range.

Note

To comply with industry standards, Phaser 8400 printers cannot be manually configured for IP addresses within the LOCAL LINK range.

Note

Always print the Configuration Page to obtain a record of the printer settings before changing the IP address. After testing the printer, be sure to restore the printer's original network settings.

1. Connect a crossover cable between the PC and printer.
2. Verify the printer is Ready To Print.
3. Use the printer's Control Panel to enable AutoIP:
   a. Select the **Printer Setup** menu.
   b. Select the **Connection Setup** menu.
   c. Select the **Network Setup** menu.
   d. Select the **TCP/IP Setup** menu.
   e. Set **AutoIP** to **On**.
   f. Exit the menu so the printer is **Ready To Print**.
4. Reset the printer to cause AutoIP to assign a new IP address (cycle power or select Restart Printer from the Shutdown menu).
5. After the printer's IP address is set, test communication by sending the "PING" command.
6. If the test fails, install a different cable and retest.

USB Port Verification

1. Verify that the printer is **Ready To Print**.
2. Insert the Printer Installer and Utilities CD-ROM (8400) and Software and Documentation CD-ROM (8500/8550/8560) into the computer.
3. If the installer autoruns, exit the installer window.
4. Connect a USB cable between the printer and computer USB ports. The computer automatically detects the new hardware and creates a driver.

Note

If the files from the driver are not installed on the computer, locate the driver files on the CD-ROM. Once the files have been located, the computer installs the driver and automatically configures it to match the printer's feature set.

5. To test the connection, click the START button.
6. Select SETTINGS and then PRINTERS.
7. Locate the Phaser 8400/8500/8550/8560 Color Printer icon and display its properties.
8. From the General tab, click the Print Test Page button to generate the test print. If the test page prints, the USB port is functioning normally.

Network Problems

The printer maintains 6 logs in memory detailing network functions. The logs contain TCP/IP, NetWare and AppleTalk initialization events. The logs can also be accessed remotely via CentreWare.

The logs list events chronologically. The log is limited in length; when the log is full the printer stops recording data to the log. The logs are stored on the Hard Drive so only new data is stored each time the printer's power is cycled.

There is a Connection Setup page, Configuration page, and a network reset available for troubleshooting network problems.

Print an Event Log or Runtime Log:

1. Enter normal 'Customer Mode'.
2. From the main menu, select **Troubleshooting** and press **OK**.
3. Scroll and select **Network Log Pages** and press **OK**.
4. Highlight the appropriate menu item from the list and select **OK**.

Note

Phaser 8500/8550/8560 printers include diagnostic tools for network connections. Use the menu path **Troubleshooting**>**Network Problems**>**Network** >**Diagnostics**. To troubleshoot network problems, select the standard Network Log Pages or Network Diagnostics. Network Diagnostics take about 60 seconds to test the network connection for basic communication problems such as collisions, wrong ethernet speeds, possible missing hubs when not using crossover cable, and inappropriate IP settings for the network type detected or server.

5. The page should now print.

Note

To print the **Connection Setup Page** or **Configuration Page**, select the Printer Setup Menu.

Obtaining Serial Back Channel Trace

In rare cases the printer may exit unusual behavior that is difficult to troubleshoot. In such cases, if feasible, it can be useful to obtain a Back Channel Trace from the printer's on-board serial port. The Back Channel Trace, lists step-by-step what the printer is doing up to the point that an error occurs. The trace may offer clues to help troubleshoot the problem. You will need the following:

■ Computer with a serial port

■ Null modem serial cable

■ Serial cable adapter, part number 600T80374 (Same adapter used to run PC- based diagnostic on other Phaser printers.)

To obtain a trace:

1. Connect the serial cable to your PC. Serial port settings are 19.2 kbaud, 8 bits, no parity, 1 stop bit, and software control.

2. Turn off the printer.

3. Remove the rear panel to access the main board.

4. **(8400 only)** Connect the serial cable with adapter to the 5-pin connector (labeled SER0) located above the RAM DIMM connectors. Pin 1 is the top pin. The label THIS SIDE UP of the serial port adapter should face towards the main board's round back-up battery.

   (8500/8550/8560 only) Connect the serial cable with adapter to the *service only* port located above the USB cable port. The label THIS SIDE UP on the serial adapter should face the rear of the printer.

5. Start up a terminal program, such as in window's HyperTerminal (usually located in **Start** ->**Programs** -> **Accessories** -> **Communications** -> **Hyper Terminal**). Ensure the serial port settings, usually COM1: is correct.

6. Turn on the printer.

The trace should appear in the terminal dialog window. Examine the trace to troubleshoot the problem. If necessary, save the trace file to capture the text.

Obtaining a Back Channel Trace with USB to Serial Adapter

Many Laptops or PC's do not include serial ports. An alternate method of communicating with the printer is available by using a USB-to-Serial Port Adapter. Use these steps to capture a back channel trace using a USB to Serial adapter cable.

Note

These instructions were developed using a Belkin USB-to-Serial Adapter, P/N F5U109 and Windows XP. Other USB-to-Serial adapters are available. However, software installation procedures may vary by brand. Xerox is not responsible for any changes made to your Laptop or PC setup to make the adapter software function properly.

1. Load the software from the CD and reboot the PC. Follow the instructions included with your adapter to install the necessary software.

2. Connect the USB-to-Serial adapter to an available USB port on your PC. Attach the port adapter to the 9 pin Serial cable (012-1535-00) and the diagnostic pig tail (012-1543-00), and plug it into the printer's service port.

3. Configure the USB port for diagnostics. For Windows XP, go to **My Computer** -> **Control Panel** -> **System**, select the **Hardware** tab, and then select **Device Manager**. Click on the "**+**" next to **Ports (COM & LPT)**, then right click on the USB-to-Serial Port device and select **Properties**. Make a note of the port number (usually COM3 or COM4)

   Note

   Check the USB-to-Serial adapter instructions for acceptable ports. Some adapters may require that the adapter use COM3 or COM4.

4. Click on the **Port Settings** tab. Set "Bits per second" to 19200, and set "Flow control" to Hardware, then click **OK**.

5. Set up a Hyper Terminal port on the PC. Click **Start** ->**Programs** -> **Accessories** -> **Communications** -> **Hyper Terminal**.

6. Name the new connection with the model number of the printer. Configure the new connection using the COM port configured in step 3, then click **OK**. Set "Bits per second" to 19200, and set "Flow control" to Hardware, then click [OK].

7. From the Hyper Terminal tool bar, click on **Transfer** and select **Capture Text**. Click on **Browse**, and in the browse window, navigate to the location where you wish to save your diagnostic results. Enter a file name for your trace and click **Save**.

8. Turn on the printer and monitor the backchannel trace.

9. The back channel trace should appear in the Hyper Terminal window. When you have captured the necessary trace data, click **Transfer** -> **Capture Text** -> **Stop** to end data capture. This data is saved as a text file to the location specified in step #7. Fax or email this data to EHS for help with troubleshooting problems on power up or other out of the ordinary problems where normal diagnostics may not run.

Print-Quality Troubleshooting

In this chapter…

- Print-Quality Problems Overview
- Analyzing Service Test Prints

Chapter 5

Print-Quality Problems Overview

Print-quality defects can be attributed to printer components, consumables, media, internal software, external software applications, and environmental conditions. To successfully troubleshoot print-quality problems, as many variables as possible must be eliminated. The first step is to generate prints using printable pages embedded in the printer on paper from the approved media list. The paper should be from an unopened ream that has been acclimated to room temperature.

See the approved media list from, "Xerox Supplies" on page 9-16 for media that has been tested and approved for use in this printer. If the print-quality defect is still present when printing on approved media from an unopened ream of paper, then media, software applications, and environmental conditions need to be researched.

When analyzing a print-quality defect, first determine if the defect occurs:

■ in all colors

■ in only one color

■ if it is repeating or random

The visible surfaces of all rollers should be inspected for obvious defects.

Diagnosing Print-Quality Problems

The Troubleshooting Print-Quality page provides a good overview of the most common print quality problems. To print the Troubleshooting Print-Quality page, follow these steps:

1. From the Control Panel, scroll to **Troubleshooting**, then press **OK**.

2. Scroll to **Print Quality Problems,** then press **OK**.

3. Scroll to **Troubleshooting Print Quality Page**, then press **OK**.

The Troubleshooting Print Quality page includes instructions for printing the Eliminate Light Stripes test print. These instructions are also provided on the next page of this manual. The Eliminate Light Stripes test print indicates individual weak or missing jets or an obstruction in the imaging path that affects a vertical band down the entire page. Also, you may see color variation from jet to jet on the Eliminate Light Stripes test print. Some variation is normal, occasionally occurs, and usually self-corrects within a few printed pages. If a print-quality problem is not resolved with the information provided in the Diagnosing Print-Quality Problems section, see the specific problem in "Analyzing Service Test Prints" on page 5-34.
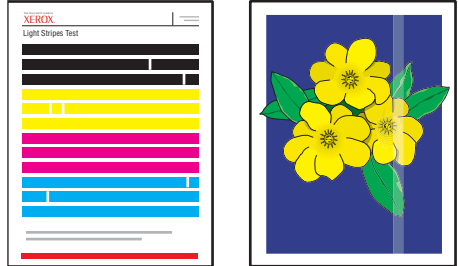
Random Light Stripes

One or more color bars are missing on the test page. This is likely caused by a weak or clogged Printhead jet.

Initial Actions

■ Run the Eliminate Light Stripes routine from the Control Panel.

■ Check the exit path for debris or contamination.

Troubleshooting Reference

Applicable Parts	Example Print
■ Printhead ■ Drum Maintenenace Kit ■ Stripper Carriage	

Random Light Stripes Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	On the Control Panel, select the **Eliminate Light Stripes** function and follow the procedure on the printed pages. For 8400 printers, this step does not include Jet Substitution. Did this correct the problem?	Complete.	Go to Step 2.
2	It may be necessary to repeat Step 1 up to 3 times if the stripes still appear. **NOTE** If there are discolored jets, print the solid fill test print in the color with the discolored jets. In the following example, the yellow stripe has discolored jets, therefore you would print the yellow solid fill. For instructions on printing solid fill test prints, see "Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. Discolored jets usually clear after two or three prints, using the problem jets.		
3	Clean the exit path and Stripper Blade with a lint-free cloth. Did this correct the problem?	Complete.	Go to Step 4.

Random Light Stripes Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
4	Remove the Drum Maintenance Kit and clean the wiper blade with a lint-free cloth or replace the maintenance kit. Did this correct the problem?	Complete.	Go to Step 5.
5	**For the 8400:** Download the latest Jet Fix snippet from the Customer Support Site and follow the readme instructions. **For the 8500/8550/8560:** Select "Advanced". You are prompted to choose the color and number of the problem jet based on the Light Stripes Test page. After selections are made, the printer temporarily increases the drive voltage to the selected jet, prints several pages, and then performs a cleaning cycle. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Turn off the printer for at least 4 hours. 2. Turn on the printer and if necessary, repeat Step 1. Did this correct the problem?	Complete.	Follow the instructions on the "Printhead Troubleshooting Checklist".
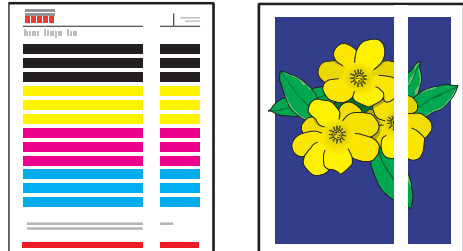
Predominate Light Stripes

All four color bars are missing on the test page. A thin stripe with no colon is likely due to foreign debris scratching ink off the Drum or the print. If there are a series of regularly spaced white lines approximately 6 mm (.25 in.) apart see "White Stripes (Pinstripes)" on page 30

Initial Actions

■ Run the Eliminate Light Stripes routine from the Control Panel.

■ Check the exit path for debris or contamination.

Troubleshooting Reference

Applicable Parts	Example Print
▪ Printhead ▪ Drum Maintenenace Kit ▪ Stripper Carriage	

Predominate Light Stripes Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Clean the exit path and Stripper Blade with a lint-free cloth. Did this correct the problem?	Complete.	Go to Step 2.
2	Remove the Drum Maintenance Kit and wipe the clear plastic wiper blade with a lint-free cloth. Did this correct the problem?	Complete.	If the problem persists, follow the steps for "Random Light Stripes" on page 5-3.

Smudges or Smears

Smudges or smears appear on the page. The likely cause is ink residue in the media path. Check for residue on the rollers, Stripper Blade, guide ribs, or inside the Preheater.

High coverage images with small margins may leave ink debris on the Stripper Blade which is then re-deposited on other pages. This condition usually self corrects (the debris is "cleaned" off the blade by lower coverage images).

Note

To avoid future problems, remind the customer to select "2nd Side" as the paper type if manually printing duplex with preprinted solid ink images on the reverse. This reduces Preheater temperatures to prevent partial melting of the preprinted image.

Initial Actions

■ Check that the media used is supported.

■ Run the Remove Print Smears routine from the Control Panel.

■ Check the exit path for debris or contamination.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Maintenenace Kit ■ Drum Maintenance Pivot Plate ■ Drum Maintenenace Camshaft ■ Preheater ■ Stripper Carriage	

Smudges or Smears Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Clean the exit path, including the Stripper Blade with a lint-free cloth. Did this correct the problem?	Complete.	Go to Step 2.
2	1. On the Control Panel, select **Information --> Troubleshooting --> Print Quality Problems**. 2. Select **Remove Print Smears**, and then press the **Enter** button. This cleans ink from the Preheater and Exit Rollers. 3. Reprint test pages. Did this correct the problem?	Go to Step 3.	Complete.
3	1. Repeat Step 2 up to 3 times if the smears persist. 2. Open a fresh ream of supported paper and reprint the test page. Did this correct the problem?	Complete.	Go to Step 4.
4	Remove the Drum Maintenance Kit and wipe the clear plastic wiper blade with a lint-free cloth. Did this correct the problem?	Complete.	Go to Step 5.
5	Manually clean visibly dirty feed rollers and the Stripper Blade. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Check the Drum Maintenance Pivot Plate for damage. 2. Check the Drum Maintenance Camshaft rollers are working properly. 3. Replace any damaged or defective parts. Did this correct the problem?	Complete.	Replace the Preheater.
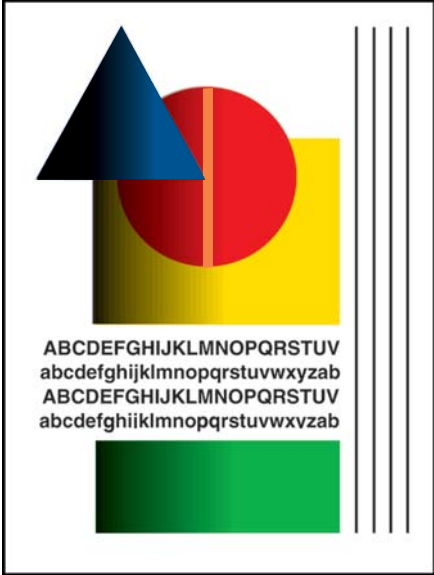
Print Too Light or Too Dark

The overall image density is too light or dark.

Initial Actions

■ Check the media used is supported by this printer.

■ Check the media settings are correct at the Control Panel.

Troubleshooting Reference

Applicable Parts	Example Print
■ Ink Sticks ■ Media	 s8500-034

Print Too Light or Too Dark Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Check that the paper type settings match the driver and application settings being used, especially if printing on transparency. Did this correct the problem?	Complete.	Go to Step 2.
2	Adjust the print mode or Color settings. Did this correct the problem?	Complete.	Go to Step 3.
3	Insert new ink and print a solid fill test print. Run the test print until the affected color returns to normal. The ink may be discolored due to age or lack of use over an extended period of time. Did this correct the problem?	Complete.	Go to Step 4.
4	If the problem is occurring for only one color, purge the ink up to 10 times to clear the ink or until discoloration is cleared. Did this correct the problem?	Complete.	

Blank Prints

The printer processes a sheet of paper, but no image is printed on it.
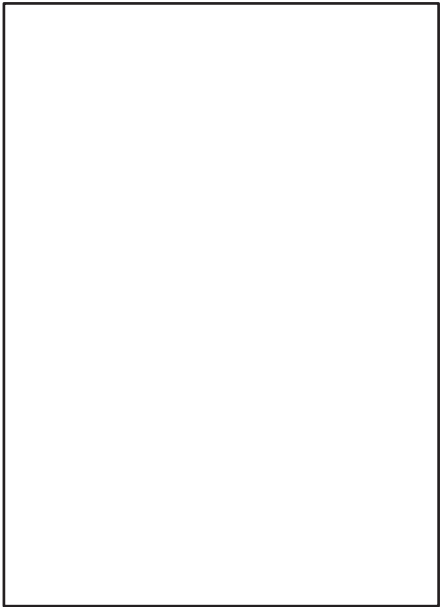
Note

Blank sheets accompanying multi-picks or chase pages following a jam are a part of normal operation.

Initial Actions

■ Check the media used is supported by this printer.

■ Check the media settings are correct at the Control Panel.

Troubleshooting Reference

Applicable Parts	Example Print
■ Electronics Module ■ Printhead ■ Wave Amp	s8560-269

Blank Prints Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Check the area around the Printhead and Drum for debris. Clean if necessary. Did this correct the problem?	Complete.	Go to Step 2
2	Complete the Printhead Troubleshooting Checklist. Did this correct the problem?	Complete.	Go to Step 3.
3	Check all connections to the Printhead. Replace or repair any defective cables. Did this correct the problem?	Complete.	Replace in this order: ■ Electronics Module ■ Printhead

Color is Uneven or Wrong

This may be due to incorrect colors in the ink loader, old ink in the Printhead, color mixing at the faceplate, or Drum thermal problems. Using non-Xerox ink may cause unpredictable color results.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the Ink is Genuine Xerox.

Troubleshooting Reference

Applicable Parts	Example Print
■ Ink Sticks ■ Drum Fan ■ Drum Heater Relay Board ■ Drum Temperature Sensor ■ Electronics Module ■ Drum Assembly	 s8500-034

Color is Uneven or Wrong Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	To remove discolored jets in the Printhead, run the solid fill test print for the color displaying the discolored jets. **NOTE** For instructions on printing solid fill test prints, see "Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. Purge the Printhead up to 3 times. If improvement is seen, the ink could be discolored. Did this correct the problem?	Complete.	Go to Step 2
2	Clean the Drum Maintenance Kit wiper blade or replace the kit. Did this correct the problem?	Complete.	Go to Step 3.

Color is Uneven or Wrong Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
3	Check thermal regulation of the Drum. Run the Service Diagnostics **Drum Thermal Check** test, see "Temperature Status" on page 4-47. Are the Drum thermal values out of the appropriate range?	Go to Step 4.	Go to Step 5.
4	Check the Drum Fan for correct installation and operation.	Go to Step 5.	Replace the Drum Fan.
5	Check that the Drum Temperature Sensor is in contact with the Drum. Clean or replace the Drum Temperature Sensor. Did this correct the problem?	Complete.	Replace in the following order: ■ Drum Heater Relay Board ■ Drum Assembly ■ Electronics Module
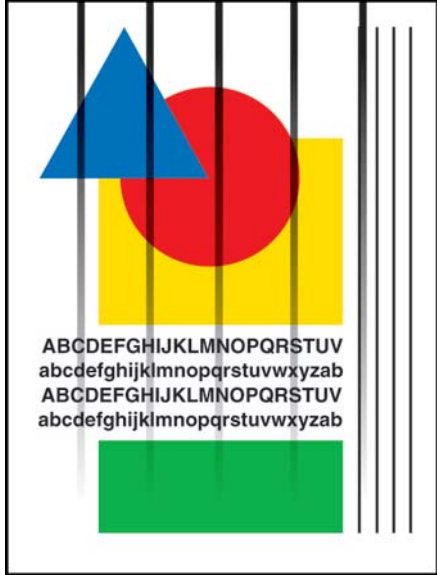
Streaks or Lines Down the Print

There are several possible causes of streaks running the length of a print.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the exit path is clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Stripper Blade ■ Drum Maintenance Kit ■ Preheater ■ Electronics Module ■ Drum Assembly	 s8500-035

Streaks or Lines Down the Print Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Check for and remove any media, jammed paper, or debris found in the exit path. Did this correct the problem?	Complete.	Go to Step 2.
2	Clean the Drum Maintenance Kit wiper blade or replace the kit. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Check the exit area, exit frame, Preheater, Drum Maintenance Kit, Printhead, and Stripper Blade for anything touching the Drum. 2. Reseat any component interfering or touching the Drum. 3. Clean the Stripper Blade. Did this correct the problem?	Complete.	Go to Step 4.

Streaks or Lines Down the Print Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
4	If there are streaks on the front side only of a 2-sided print, the Preheater may be scraping ink off the print. 1. Look for ink shavings along the streaks on the printed paper. 2. Clean the Preheater using the **Remove Print Smears** routine. Did this correct the problem?	Complete.	Go to Step 5.
5	Check for weak or missing jets. Print the weak/missing jet test print, see "Weak/ Missing Jet" on page 5-34. Did this correct the problem?	Complete.	Go to Step 6.
6	Check for discolored jets. Print the solid fill test print, see "Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. Did this correct the problem?	Complete.	Go to Step 7.
7	Check X-Axis drive motion. If the X-Axis drive does not move the Printhead smoothly and evenly during printing, vertical lines appear on the print. See "White Stripes (Pinstripes)" on page 5-30. Did this correct the problem?	Complete.	Go to Step 8.
8	Check the Preheater's temperature. Smears on a duplex print can be caused by the preheater operating at a temperature that is too high or debris is in the Duplex Roller or duplex guides. Run the Service Diagnostics **Duplex Path** test. Is the operating temperature within the correct value range?	Replace the Preheater.	Replace the Electronics Module.

Scratches or Marks Parallel to the Long Axis of Printing, Particularly with Film

Scratches or marks are usually caused by debris in the paper path. The scratch or mark may extend into non-printed areas or be more pronounced on the lower portion of the image.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Stripper Blade ■ Drum Maintenance Kit ■ Preheater ■ Media Guides	 s8500-036

Scratches or Marks Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Check the exit area, exit frame, Preheater, Drum Maintenance Kit, Printhead, and Stripper Blade for anything touching the Drum. 2. Reseat any component interfering or touching the Drum. 3. Clean the Stripper Blade. Did this correct the problem?	Complete.	Go to Step 2.

Scratches or Marks Troubleshooting Procedure

Step	Questions and Actions	Yes	No
2	1. Check the Drum Maintenance Kit. If the defect is a thin line that is glossier than the surrounding area, it may be due to a defect on the maintenance kit wiper blade. 2. Clean the wiper blade or replace the Drum Maintenance Kit. Did this correct the problem?	Complete.	Go to Step 3.
3	Using transparency media, print from Tray 1 to see if the scratch appears. Is there a visible scratch? **NOTE** To determine where the scratch is originating, place a small drop of water on the scratch on the transparency. If the scratch disappears, the scratch is on that side. If the scratch does not disappear, test the other side. This can help to determine where the problem is originating.	Go to Step 5.	Go to Step 4.
4	1. If there is no scratching on the transparency, the defect occurred during pick or early transport from Tray 2, 3, or 4. 2. Change the paper pick guide, Front Door, or Drum Maintenance Kit. Did this correct the problem?	Complete.	Go to Step 5.
5	A scratch or smear can be caused by debris build-up on the Preheater's surface. Run **Remove Print Smears**. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Force a sheet of thick 65- to 80-lb. paper through the Preheater to "buff" the Preheater heating surfaces. 2. With the leading and trailing ends of the sheet of paper extending from the entry and exit of the Preheater, gently pull the sheet of paper back and forth several times and then remove the paper. Be careful of the sensor flags. Did this correct the problem?	Complete.	Go to Step 7.
7	Inspect all paper guides for nicks, cuts, or debris.	Clean or replace any defective paper guide(s).	
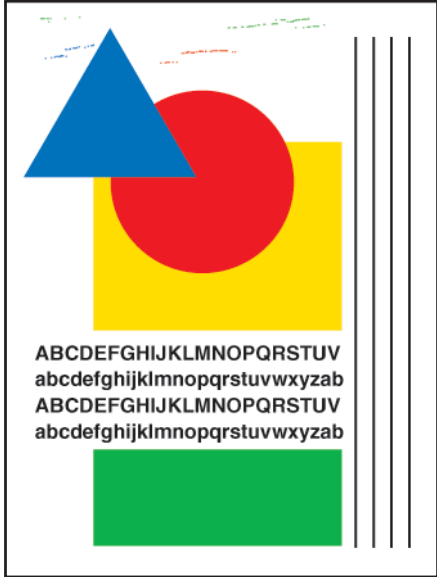
Ink on White Portion of Print

Color on the print where no color should be printed is often called a latent image. A latent image remains on the Drum when it should have been transferred to its sheet of paper. An insufficient amount of oil on the Drum, provided by a dirty, defective, or old Drum Maintenenace Kit may be the problem. Printing on recycled or 3-hole punch paper commonly causes this problem.

Initial Actions

■   Check the media used is supported by this printer.

■   Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Stripper Blade ■ Drum Maintenance Kit ■ Preheater ■ Transfix Roller	 s8500-037

Ink on White Portion of Print Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Try printing using a smoother, higher quality paper. Some recycled brands are too rough. Watermarked or 3-hole punched paper may also cause this problem. Did this correct the problem?	Complete.	Go to Step 2.
2	Clean the Drum Maintenance Kit wiper blade. If necessary replace the kit. Did this correct the problem?	Complete.	Go to Step 3.

Ink on White Portion of Print Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
3	1. Clean the Stripper Blade, it may be contaminated with ink. 2. Run **Remove Print Smears**. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Check for ink on the Transfix Roller. 2. Run **Remove Print Smears**. Did this correct the problem?	Complete	Go to Step 5.
5	1. Test system thermal characteristics using Service Diagnostics. Verify temperatures are within the normal operating range. 2. Inspect the Drum Temperature Sensor. Clean or replace the sensor if necessary. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Check the feed rollers. An accumulation of paper dust and oil can produce dark rectangular marks on transparency film. 2. Run **Remove Print Smears**. 3. Replace the rollers if necessary. Did this correct the problem?	Complete.	

Fuzzy Text
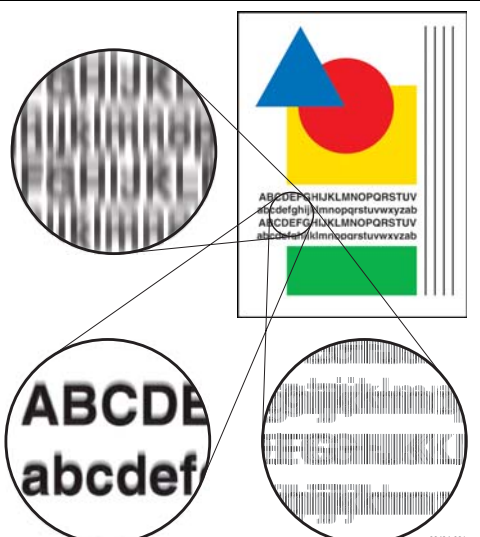
Text appears indistinct and difficult to read. There are three typical reasons for fuzzy text, as called out in this illustration.

1. Top left image displays a Y-axis Drum rotation problem.

2. Lower left image displays the wrong Drum temperature problem.

3. Lower right image displays an X-axis movement problem.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Temperature Sensor ■ Y-Axis Encoder ■ X-Axis Motor ■ Printhead	

Fuzzy Text Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Try printing using a smoother, higher quality paper. Some recycled brands are too rough. Watermarked or 3-hole punched paper may also cause this problem. Did this correct the problem?	Complete.	Go to Step 2.
2	Try using a higher quality print mode. Did this correct the problem?	Complete.	Go to Step 3.
3	This problem can occur after Printhead replacement. Check the Roll Block alignment. Is the Roll Block positioned to match the label on the left frame. Correct if necessary. Did this correct the problem?	Complete.	Go to Step 4.

Fuzzy Text Troubleshooting Procedure

Step	Questions and Actions	Yes	No
4	1. Test the Drum Temperature Sensor with Service Diagnostics. 2. Check that the Drum Termperature Sensor is clean and properly positioned. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Test the Y-Axis Encoder. 2. Run the Service Diagnostics **Y-axis Encoder** test. Is the Y-axis encoder working properly?	Go to Step 6.	Clean the encoder or replace the Drum Assembly.
6	Check X-Axis motion. See "White Stripes (Pinstripes)" on page 5-30 for troubleshooting this problem. Did this correct the problem?	Complete.	Go to Step 7.
7	Verify the Printhead is tilted forward against the Drum in the proper print position. Did this correct the problem?	Complete.	
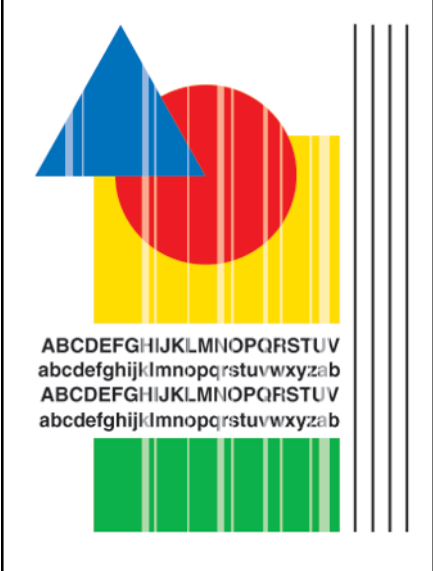
Poor Primary Color Fills

Primary fills appear banded and inconsistent.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Temperature Sensor ■ Y-Axis Encoder ■ X-Axis Motor ■ Printhead	s8500-039

Poor Primary Fills Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Banded and inconsistent primary fills may indicate a missing, weak, or discolored jet. 1. Print the Weak/Missing Jet test print. 2. If there are discolored jets, print the Solid Fill test print in the affected color. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Test the Y-Axis Encoder. 2. Run the Service Diagnostics **Y-axis Encoder** test. Is the Y-axis encoder working properly?	Go to Step 3.	Clean the Drum encoder or replace the Drum Assembly.
3	If the bands are uniform, or in a corduroy pattern, check X-Axis motion. See "White Stripes (Pinstripes)" on page 5-30. Did this correct the problem?	Go to Step 4.	Replace the X-Axis Motor or Electronics Module.
4	Try the procedure listed on "Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. Did this correct the problem?	Complete.	
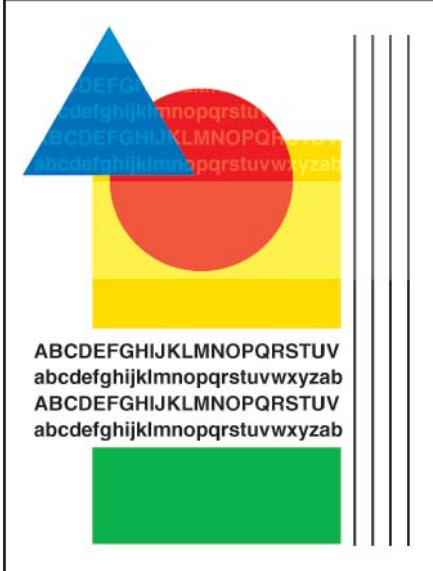
Ghosting

The image from a previous print is on the current print. This problem can occur from prints being stacked in the output tray, causing the pressure of the stack and the heat of the printer to cause "blocking" which has the appearance of ghosting.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Maintenenace Kit ■ Drum Maintenance Pivot Plate ■ Drum Maintenenace Camshaft ■ Drum Temperature Sensor	 s8500-040

Ghosting Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Try printing the images again, without letting them stack in the output tray. 2. Try different paper. Ink may have a problem adhering to smooth, impervious surfaces of some paper. Did this correct the problem?	Complete.	Go to Step 2.
2	Run multiple prints; the first 2-sided print will have the worst ghosting. Some Transfix Roller ghosting is inherent to the printer but will improve with multiple prints. Does this correct the problem?	Complete.	Go to Step 3.

Ghosting Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
3	Inspect and clean the Drum Maintenance Kit wiper blade. If necessary, replace the kit. Did this correct the problem?	Complete.	Go to Step 4.
4	Test Drum maintenance operation. 1. Run service diagnostics to verify the Drum maintenance system is operating correctly. 2. Check, and if necesary, replace these parts; check for cracking: ■ Drum Maintenance Pivot Plate ■ Drum Maintenance Camshaft Did this correct the problem?	Complete.	Go to Step 5.
5	1. Test the Drum Temperature Sensor with Service Diagnostics. 2. Check that the Drum Termperature Sensor is clean and properly positioned. Did this correct the problem?	Complete.	Replace the Drum Temperature Sensor.

Poor Small Text Resolution

Small characters appear heavy and "plug up."

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Temperature Sensor ■ X-Axis Motor	 s8500-038

Poor Small Text Resolution Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Try using a higher quality print mode. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Test the Drum Temperature Sensor with Service Diagnostics. 2. Check that the Drum Termperature Sensor is clean and properly positioned. Did this correct the problem?	Complete.	Go to Step 3.
3	Check that the X-Axis drive system is correctly assembled and lubricated, see "X-Axis Motor (PL4.0.12)" on page 8-44 for more information. Did this correct the problem?	Complete.	Replace the X-Axis Motor.
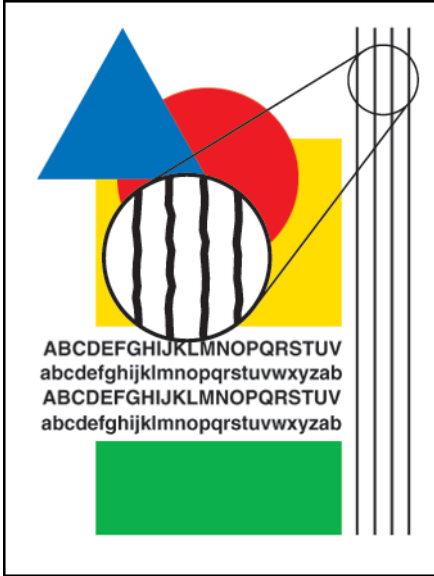
Vertical Lines Appear Wavy

Straight vertical lines appear to be wavy and ill-formed. This problem is likely caused by too much oil on the Drum.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Temperature Sensor ■ X-Axis Motor ■ Y-Axis Encoder ■ Drum Maintenance Pivot Plate ■ Drum Maintenance Camshaft	 s8500-041

Wavy Vertical Lines Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Check and clean the Drum Maintenance Kit wiper blade. Replace the kit if necessary. Did this correct the problem?	Complete.	Go to Step 2.
2	Check X-Axis motion and verify there is nothing interfering such as a poorly dressed cable or screw. Replace any defective parts. Did this correct the problem?	Complete.	Go to Step 3.
3	Test the Y-Axis Encoder. 1. Run the Service Diagnostics **Y-Axis Encoder** test. Is the Y-axis encoder working properly?	Go to Step 4.	Clean the Drum encoder or replace the Drum Assembly.

Wavy Vertical Lines Troubleshooting Procedure

Step	Questions and Actions	Yes	No
4	Test Drum maintenance operation. 1. Run service diagnostics to verify the Drum maintenance system is operating correctly. 2. Check, and if necesary, replace these parts; check for cracking: ■ Drum Maintenance Pivot Plate ■ Drum Maintenance Camshaft Did this correct the problem?	Complete.	Replace the pivot plate or Drum maintenance cam roller if damaged.

Oil Streaks on Print

Oil stains the edge of the print. This problem is likely caused by too much oil on the Drum or poor Drum Maintenance Kit grounding.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Maintenance Kit ■ Drum Maintenance Pivot Plate ■ Drum Maintenance Camshaft	 s8500-042

Oil Streaks on Print Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Check and clean the Drum Maintenance Kit wiper blade. Replace the kit if necessary. Did this correct the problem?	Complete.	Go to Step 2.

Oil Streaks on Print Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
2	Check the Drum Maintenance Kit ground. Inspect the back of the Drum Maintenance Kit to Drum Maintenance Camshaft to Drum Fan ground clip. Did this correct the problem?	Complete.	Go to Step 3.
3	Run **Remove Print Smears**. Did this correct the problem?	Complete.	Go to Step 4.
4	Clean the Stripper Blade and exit guides. Did this correct the problem?	Complete.	Go to Step 5.
5	Test Drum maintenance operation. 1. Run service diagnostics to verify the Drum maintenance system is operating correctly. 2. Check, and if necesary, replace these parts; check for cracking: ■ Drum Maintenance Pivot Plate ■ Drum Maintenance Camshaft Did this correct the problem?	Complete.	Replace the pivot plate or Drum maintenance cam roller if damaged.
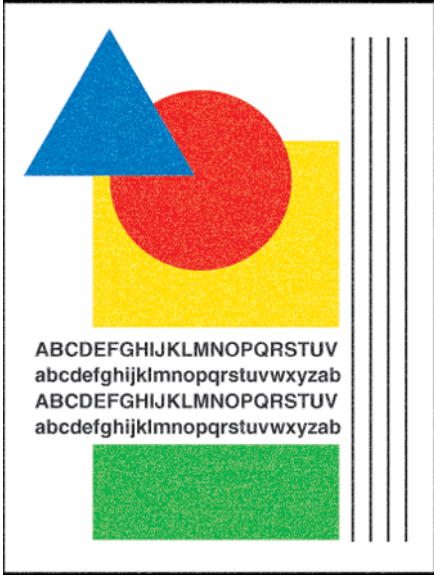
Incomplete Image Transfer to Paper

All of the image does not transfer to the paper. Media that is not smooth enough or too light can cause this problem. This problem can also occur on watermarked paper or when poor Drum oiling causes an incomplete image on one side of the page.

Initial Actions

- Check the media used is supported by this printer.
- Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Drum Temperature Sensor ■ Drum Maintenance Kit ■ Drum Maintenance Pivot Plate ■ Drum Maintenance Camshaft	 s8500-043

Incomplete Image Transfer Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Try a higher quality or heavier media type. Did this correct the problem?	Complete.	Go to Step 2.
2	Try using a higher quality print mode. Did this correct the problem?	Complete.	Go to Step 3.
3	Test Drum maintenance operation. 1. Run service diagnostics to verify the Drum maintenance system is operating correctly. 2. Check, and if necesary, replace these parts; check for cracking: ■ Drum Maintenance Pivot Plate ■ Drum Maintenance Camshaft Did this correct the problem?	Complete.	Go to Step 4.

Incomplete Image Transfer Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
4	Check and clean the Drum Maintenance Kit wiper blade. Replace the kit if necessary. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Test the Drum Temperature Sensor with Service Diagnostics. 2. Check that the Drum Termperature Sensor is clean and properly positioned. Did this correct the problem?	Complete.	Go to Step 6.
6	Is the incomplete image on the left and right sides, but fine through the center? This indicates incomplete transfix cam rotation. Check for a damaged Transfix Camshaft or a malfunction of the Process Drive, replace any defective parts. Did this correct the problem?	Complete.	Go to Step 7.
7	Test the Preheater temperature. Does the Preheater operate within the normal operating range? Replace the Preheater if necessary. Did this correct the problem?	Complete.	Replace the Transfix Load Assembly and TransfixLoad Arms.

Ink Smears on First Printed Side of Auto-Duplex Print

Preheater temperature is too high.
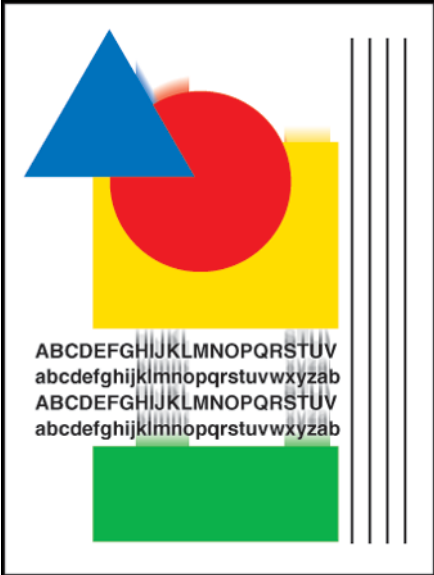
Initial Actions

Note

For 8500/8550/8560 models only. If the customer is manually duplexing, check that the customer is selecting the second side in the print driver.

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Stripper Blade ■ Preheater	 s8500-044

Ink Smears on First Printed Side of Duplex Print Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Clean or replace the Stripper Blade. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Check the duplex paper path for obstructions, contamination, or damage. 2. Clean or replace defective parts. Did this correct the problem?	Complete.	Go to Step 3.
3	Run **Remove Print Smears**. Did this correct the problem?	Complete.	Go to Step 4.

Ink Smears on First Printed Side of Duplex Print Troubleshooting Procedure

Step	Questions and Actions	Yes	No
4	Test the Preheater temperature. Does the Preheater operate within the normal operating range? Replace the Preheater if necessary. Did this correct the problem?		Replace in the following order: ■ Preheater ■ Electronics Module
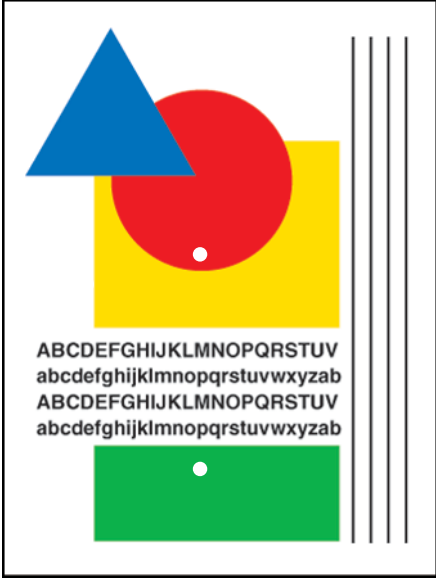
Repeating Defects on Print

The distance between each artifact of a repeating image defect reveals which imaging component is causing the defect. Transfix Roller defects show up as light spots in solid fill areas.

Initial Actions

- Check the media used is supported by this printer.
- Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Transfix Roller ■ Drum Assembly	 s8500-045

Repeating Defects Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Repeating defects that occur every 11.6 cm (4.58 in.) and do not move across the X-Axis are caused by the Transfix Roller. Clean or replace the Transfix Roller. Did this correct the problem?	Complete.	Go to Step 2.

Step	Questions and Actions	Yes	No
2	A single repeating defect that has a different Y position on each page, but the same X position on each page is probably due to a defect on the Drum. Clean the Drum. Did this correct the problem?	Complete.	Replace the Drum Assembly.
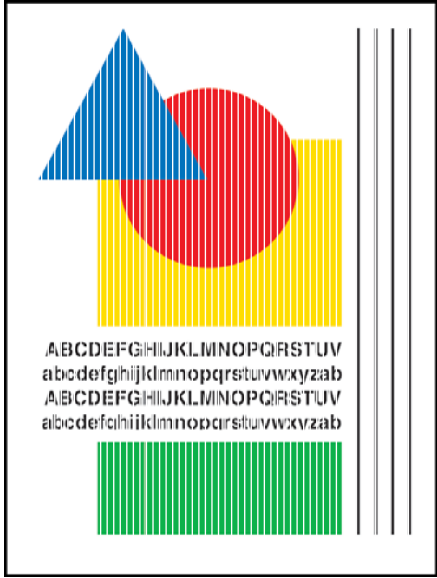
White Stripes (Pinstripes)

This print-quality problem has a series of regularly spaced white stripes approximately 6 mm (.25 in.) apart. If the X-Axis Motor does not move the Printhead smoothly and evenly during printing, vertical lines appear on the print.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the Printhead is free to move in the horizontal direction.

Troubleshooting Reference

Applicable Parts	Example Print
■ X-Axis Motor	s8500-046

White Stripes Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Print the Solid Fills test print to reveal an X-axis problem. See "Primary Solid Fills 10x" on page 5-40 for more information. Are the pinstripes apparent on the prints?	Go to Step 2.	Complete. The problem is not with the print engine.
2	Check X-Axis motion and verify there is nothing interfering such as a poorly dressed cable or screw. Replace any defective parts. Did this correct the problem?	Complete.	Go to Step 3.
3	Check that there are no harnesses interfering with the Printhead. Repair or replace any defective part or interference with the Printhead. Did this correct the problem?	Complete.	Replace the X-Axis Motor.

Wrinkling

Damage is usually in a corner with solid fills. This problem is more often seen on short-grain media. Some wrinkling on envelope flaps is normal. Wrinkling may occur on the second side of a 2-sided print on the secondary colors. This indicates the Preheater is too open on the duplex side of the print.

Note

On the paper's packaging, an underline under the 11 (in 8.5 in. x 11 in.) indicates the paper is long-grain.

Initial Actions

■ Check the media used is supported by this printer.

■ Check that the paper path is clean and clear of debris.

Troubleshooting Reference

Applicable Parts	Example Print
■ Preheater ■ Drum Maintenance Kit ■ Transfix Components	 s8500-047

Wrinkling Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Try a higher quality or heavier media type from an unopened fresh ream of paper. Did this correct the problem?	Complete.	Go to Step 2.
2	Increase the margin size of the image. Wrinkling generally occurs in solid fills near the print's edge. Did this correct the problem?	Complete.	Go to Step 3.
3	Did the "wrinkle" occur printing the duplex side only?	Replace the Preheater	Go to step 4.
4	Inspect, clean, or if necessary, replace the Drum Maintenance Kit. Did this correct the problem?	Complete.	Go to Step 5.
5	Inspect the transfix components.	Replace in the following order: ■ Transfix Roller ■ Transfix Camshaft ■ Transfix Load Arms ■ Transfix Load Module.	

Image Is Offset or Cut-Off

1. Print an information page (internal page embedded in the printer).
2. Verify that the tray guides are adjusted correctly.
3. Ensure that the paper size settings for the driver and printer match the paper loaded in the tray.
4. Check the application for the correct image sizing and orientation.

Poor Ink Adhesion, Poor Image Durability

Follow these steps if the ink is flaking off the print after the print is complete.

1. If a specialty coated paper is being used (for example, glossy media), try a different paper. Xerox transparency film provides the best ink adhesion versus off-the-shelf transparency film.
2. Verify the Preheater temperature using diagnostics.
3. The Drum is too cold or too hot. Verify the Drum temperature using diagnostics. Ensure that the Drum Temperature Sensor is properly positioned and has no contamination between it and the Drum surface.

Image durability is almost always an issue with the paper being used. It is never an issue with the printer's Printhead.

Analyzing Service Test Prints

This section shows how to select and analyze all test prints stored in the printer. A variety of test prints are available in the Hidden Service Menu to aid in determining the quality of output from the printer and to assist in troubleshooting problems. To enter the Hidden Service Menu: from the Service Tools menu, press and hold the **Up Arrow** and **Down Arrow** buttons.

Note

Defects revealed by the prints may not occur in the course of ordinary printing. In servicing the printer, you should minimize the defects shown by the prints but not necessarily eliminate them.

Weak/Missing Jet

This print shows which jets are not outputting enough, if any, ink compared to its neighboring jets. Note that the yellow jets' bands have a small amount of cyan ink added to them, which tints them green, to make them more visible.
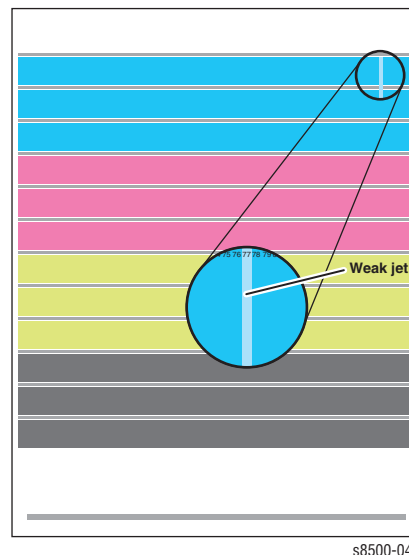
s8500-048

Look for: No interlacing is used in this print; expect light/dark variation between jets. Look for much lighter colored vertical bands in the horizontal bars. Weak jets in the yellow band are distinguished by a cyan tint.

Causes: A jet may be partially clogged; perform Printhead clean/purge cycles on the Printhead to remove contaminants from the poorly-performing jet. If jet substitution mode is required, see "Jet Substitution Mode" on page 6-9. Test the purge system and the wiper blade performance. Turn the printer off for 4 to 6 hours (or overnight, if practical). Then perform a clean/purge cycle again. There may be a problem in the Purge Pump or the Wiper Assembly. Verify that Xerox ink is being used. Follow the instructions on the "Printhead Troubleshooting Checklist".

Note

Include two prints of this test print with any returned Printhead.

X-Axis Motion (8400 Only)

Note

> For X-Axis Motion problems, see "Analyzing Service Test Prints" on page 5-34 (solid fill prints).

This print is used by Engineering and Manufacturing. The print must be printed on Xerox Photo Paper. Using a lower grade paper will result in inaccurate measurements.
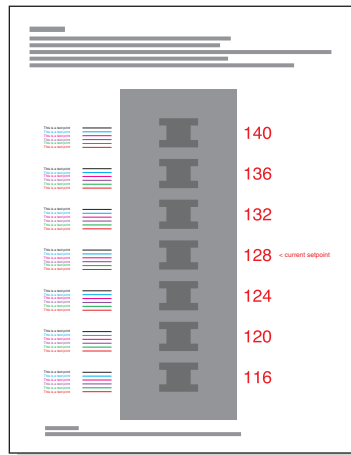
s8500-049

Color Bands, RGBK Dither

The large, secondary colored areas in this print reveal banding and weak jets.

Look for: Vertical "bars" or bands of *much* lighter color or a different hue running in-line in one or more of the solid fills.

Causes: A weak jet can cause banding; see the Weak/Missing Jets test print on page 5-34. Banding can also be caused by color-to-color misregistration. Use the diagnostics to ensure that the Printhead and Drum thermals are correct. Follow the instructions on the "On-site Printhead Troubleshooting Checklist (8400)" on page A-8

s8500-050
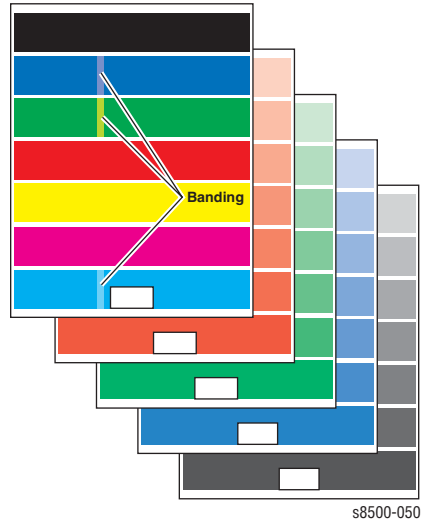
Reverse Text

The print indicates if the Printhead is producing properly-sized drops of ink and that the Drum temperature is not too high.

Note

This print should be made with the printer covers closed and in place. The heat loss without the covers can hide the "too-hot" thermal problem. Also, print the test print in Enhanced print mode.

s8500-051
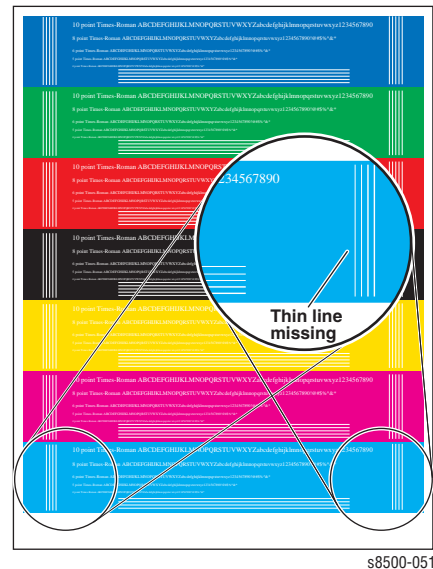
Look for: Legibility in the lines of 6-point text; particularly in the primary colors. If the letters are closed or badly "plugged" with ink, the Printhead is laying down too much ink. A good-quality print shows five vertical parallel lines of different thicknesses on the left and right side of the print. If the thinnest line is missing, the Printhead is outputting too much ink or the Drum temperature is too high.

Note

Check that the printer is not in High Resolution/Photo or Standard print mode, and the Printhead drive voltage is set to the default 128.

Causes: Check the thermal regulation of the Printhead and of the Drum. Make sure that the Drum Temperature Sensor is correctly mounted and in proper, even contact with the Drum. If necessary, remove the sensor and check it for an accumulation of debris at its contact point. Replace the Drum Temperature Sensor.

Big Bands OHP

This print allows you to evaluate transparency printing. It prints two transparencies from Tray 1, one with primary color fills and one with secondary color fills and a band of 50% blue, as this is a popular background color for overhead transparencies.
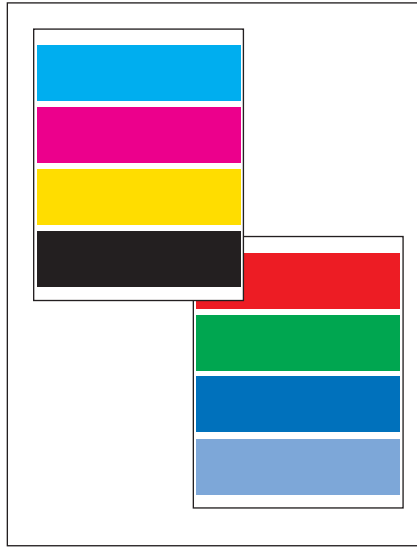
s8500-052

Look for: Scratching on the print. Uniformity of fill with no scratching.

Evaluate the print on an overhead projector. Some print artifacts visible on the print do not show when projected. Likewise, some defects do not show until projected.

Causes: Confirm that you are using the transparency that is supported for this printer.

Clean or replace the paper release blade. For more information about scratches, see "Scratches or Marks Parallel to the Long Axis of Printing, Particularly with Film" on page 5-13

Gray Fill, Dot Size Uniformity

This print consists of a 66% black fill. It reveals thermal variations, transfix roller pressure variations, or Drum oiling variations.

Light band

Uneven fill

Should see
even fill
left to right

s8500-053
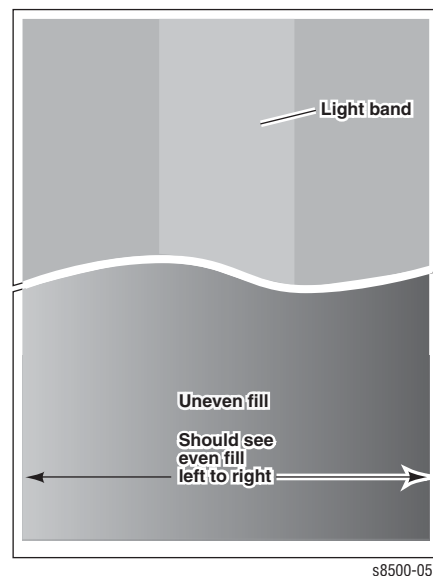
Look for: Large area of differences in the density across the width of the page. (A slight variation is normal.) Look for a lighter vertical band, about 1/3 the width of the page, running the length of the page. Also, look for small, light spots, or irregular white lines, vertically aligned every 125 mm (5.0 in.).

Also, look for ink on the top and bottom margin of the page, or ink on the back of the page. This pattern is sensitive to the density variations in the paper it is printed on. Use high-quality paper; otherwise, the print appears mottled.

Causes: Use the diagnostics to check the Printhead and Drum for correct thermal regulation. Ensure the Drum Fan is running properly. A vertical band, 1/3 of a page wide, running the length of the page, is caused by a stuck heating plate in the paper preheater. Run the **Clean Print Smears** procedure, which raises the temperature of the paper preheater and may free the stuck heating plate. Additionally, you may manually force a thick sheet of paper (65 to 80 lb.) through the paper preheater to jar the plate free. Light spots that repeat every 11.63 cm (4.58 in.) down the length of the page are caused by a defective transfix roller. The roller has a soft spot that is not pushing the ink into the paper as well as the rest of the roller. If you observe variations in the glossiness of the print, replace the maintenance kit.

If there is ink on the top and bottom margin of the page or ink on the back of the page, it may be caused by the roller remaining down during the print. You may hear an unusual noise if the Transfix Roller stays down and rubs against the Drum. Inspect the Drive Train and ensure that it self-homes between prints. The drive train is in its home position when the two 1.5 mm holes found on the clear plastic cover align axially with corresponding holes in the gear. Another way to verify that the drive train is in its home position is to verify that the two small leaf springs from the clear plastic cover are seated correctly in their corresponding gear detent slots. Inspect the perimeter of the cam lobes for surface defects and check to see that the angular orientations of the cams match. Inspect the transfix load arm return springs. Verify that the maintenance kit returns home between prints. Inspect the cam shaft surfaces for damage. If all of these items are working correctly, replace the process drive module.

YMCKRGB Solid Fills

These seven prints show uniformity of fill. If colors are uneven or wrong, see "Color is Uneven or Wrong" on page 5-9.
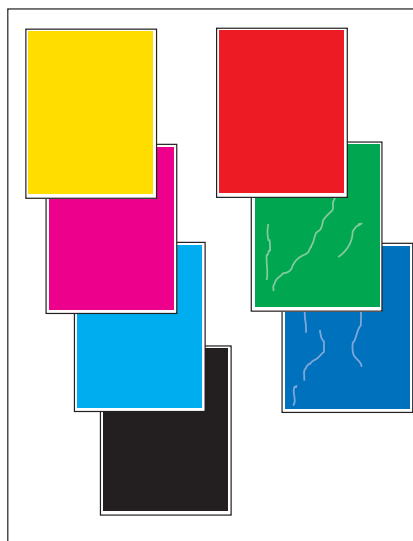
s8500-054

Look for: Even, uniform fills throughout each print.

Wrinkles or deformity of the paper itself caused by the print process show up in duplexed solid fill prints at Standard or Enhanced resolutions. To test for wrinkling, print the YMCKRGB prints in duplex mode at the Enhanced or High Resolution/Photo mode. Typically wrinkling appears in the secondary colors. See the blue and green solid fills in the illustration to the right.

Causes: Weak jets or uneven Drum heating may cause uneven fills.

To solve wrinkling, try different print media. Replace the maintenance kit to correct streaking. Check the Drum Temperature Sensor for debris build-up on the sensor. Check to see if the sensor is in improper contact with the Drum. See the Reverse Text test print. As a last resort to fix wrinkling, replace the transfix roller, transfix load module, and transfix load arm.

Primary Solid Fills 10x

This item enables you to print 10, CMYK solid fill prints. These prints are used to determine if the Drum or transfix roller have a defect.

Drum defects do not move in the X-position print-to-print; but it does move into the Y'-position print-to-print. Drum defects do not repeat down the page.

Transfix Roller defects do not move in the X-direction; but, these defects repeat every 4.58 in. (11.63 cm) down the length of the page. Many Transfix Roller defects will be most visible on duplex solid fills

Head-to-Drum Gap (8400 Only)

These prints indicate if the gap between the Printhead and the Drum is correct.
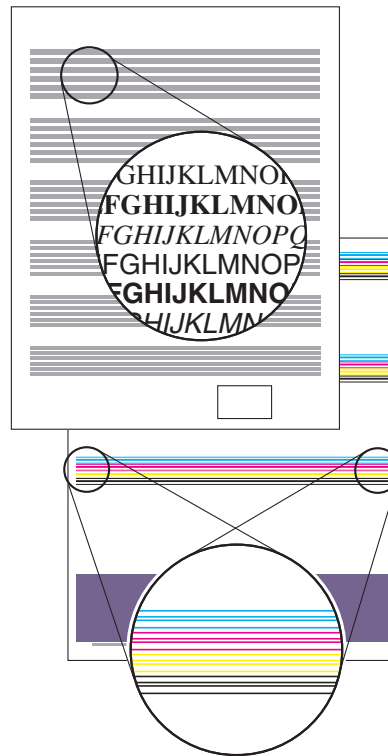
s8500-055

Lines: The horizontal lines of the print are made up of long and short dashes. Inspect the first and last 1/2 in. (12 mm) of the black lines for the vertical distance between the short dashes and long dashes.

A difference indicates the Printhead gaps at each end of the Printhead are not equal.

Text: Examine each end of the band of text. Look for fuzziness or differences between the quality of the characters on the left and right ends of the print.

A difference indicates the Printhead gaps at each end of the Printhead are not equal.

The ends of this printer's Printhead rests on two spacers on the ends of the Drum that hold the head-to-drum gap under much tighter control than in previous solid ink printers. There is no head-to-drum adjustment possible in this printer. If the gap is suspect, check that the Printhead is correctly and completely installed.

Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills

These prints show uniformity of fill. Check for the following:

1. Even, uniform fills throughout the print.
2. There should be no wrinkling or deformity of the paper throughout the print.
3. Poor transfer on one side.
4. Repeating white stripes.

.
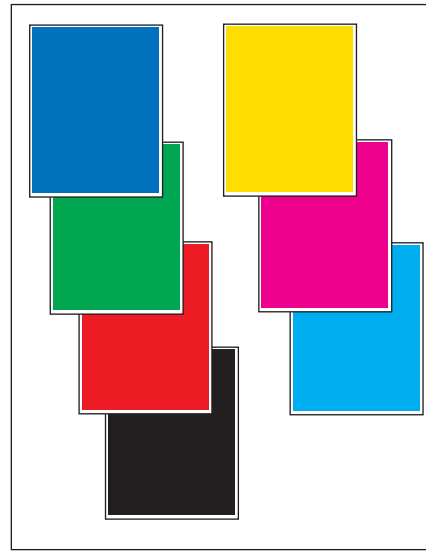
s8500-056

Primary causes:

1. Weak jets or uneven Drum heating may cause uneven fills.
2. To solve wrinkling, try different print media. Replace the Drum Maintenance Kit to correct streaking. Check the Drum Temperature Sensor for debris build-up on the sensor or the sensor is not in proper contact with the Drum. See the Reverse Text test print on page 5-37.
3. If there is poor transfer on one side, check to see if the transfix load arm assemblies are moving easily. Clean any contamination that may be interfering with the Transfix Arm movement. If either of the Transfix Arm assemblies are worn, replace the arm.

If there are repeating white stripes on the print, there may be a problem with the X-Axis motion, see "White Stripes (Pinstripes)" on page 30.

Manuf. Skew Margins

This print consists of an image used by manufacturing to gauge skew and margin on 2 sided prints.
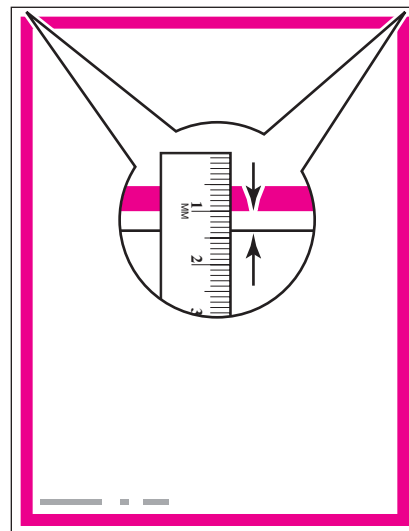
s8400-145
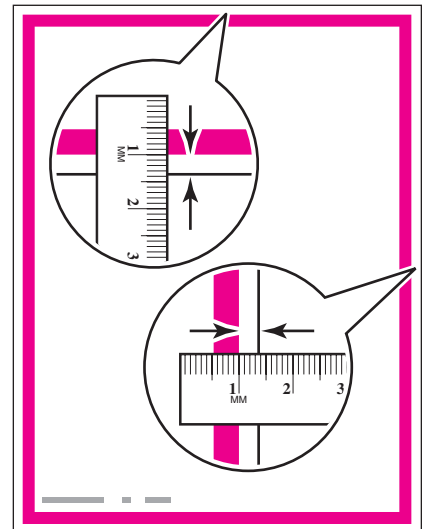
s8400-201

To measure skew, measure between the edge of the paper and the magenta frame should be within tolerance along the entire length of the top of the paper. For example, the measurement on the top left side of the sheet should be the same as the measurement on the top right side of the sheet (within tolerance).

To calculate skew, measure the margin at the leading edge of each corner, then take the difference between them. For example, if the margin at the right leading edge corner is 5.1 mm, and the margin at the left leading edge corner is 4.9 mm, then the skew is (5.1 - 4.9) = 0.2 mm. Skew tolerances are:

- All sizes except envelopes and custom sizes: 0.0 +/- 0.89 mm

- Envelopes: 0.0 +/- 1.04 mm

- Custom media: evaluate with the following formula: Skew Spec (mm) = $998.4*(width-12.5)^{(-1.02)}$, where width is in millimeters.

To measure margin, measure from the magenta frame to the edge of the paper at the midpoint on the top and left-edge margin (right side of paper, left side of printer). Margin tolerance is the margin +/- 2. See the Media Margin Specification in the Appendix.

Note

Measurements for skew and margin for Sides 1 and 2 may not match

Check: The media must be supported for the tray. The side and rear guides must be adjusted to the size of the paper to ensure correct deskewing.

If you have skew on simplex prints in Trays 2, 3, or 4, check for a worn take away roller or pick roller; in Tray 1, check for a worn pick roller. This test print uses the tray selected in Paper Source on the Paper Handling Menu.

If you have skew on duplex prints, check for a worn duplex roller an verify that the front door is completely closed and latched on both the left and right sides.If the lead-edge margins are outside of tolerance, check the preheater flag.

Cleaning Page

This page is automatically printed following a purge. It is used to flush the jet nozzles of any possible contamination or color mixed jets. It can also be printed on its own. An ocassional stripe or series of short stripes on this page is normal.
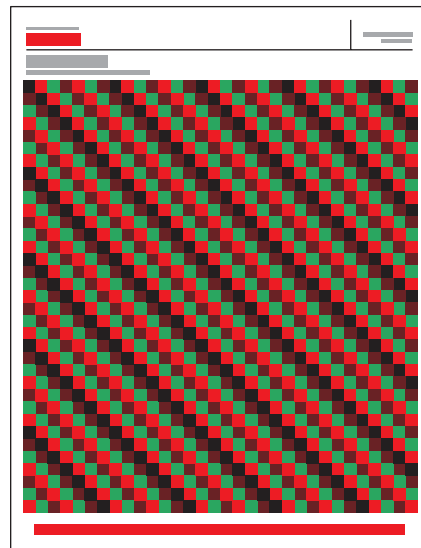
s8500-058

Other Test and Specialty Prints

The following prints are used by Manufacturing and Engineering for development and test.

- Manuf. Five Duplex GSF
- Drum Seal (8400 only) is not supported for this printer.
- Manuf. Paper Path
- Manuf X-Axis (Scanner) (8400 only)
- OHP Color Bands (8400 only)
- Manuf. Banding (8400 only)
- Head Roll (8400 only)
- Head Height(8400 only)
- X Dot Position (8400 only)
- Y Dot Position (8400 only)
- Chase Pages
- Oil Bar Chase
- Purge Efficiency

Adjustments and Calibrations

In this chapter…

Chapter 6

Adjustments

Wiper Alignment Procedure

1. Remove the printer covers using the procedures that begin on page 8-4.

2. Remove the left head maintenance drive gear by removing the e-clip from the drive shaft.

Left Idler Gear

Left Drive Gear

s8500-059
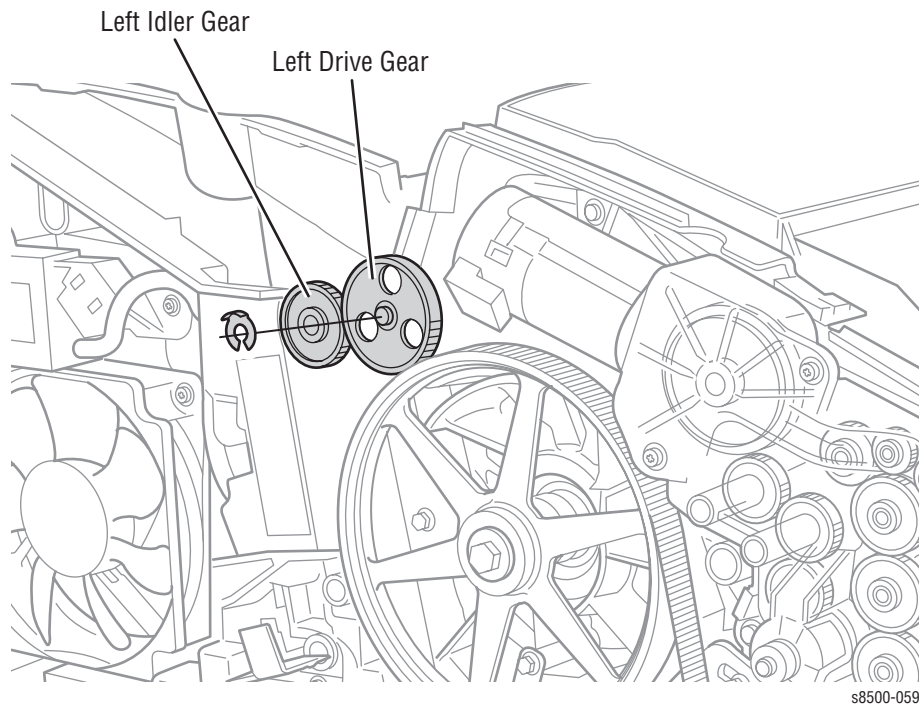
3. Rotate the left and right idler gears until the Wiper is all the way to the bottom and the gears cannot be rotated further. Rotating the left and right gears together ensures that the wiper stays parallel and does not pop out of the belts.

Wiper assembly at bottom of travel. Wiper not skewed.

Wiper skewed when lowering.
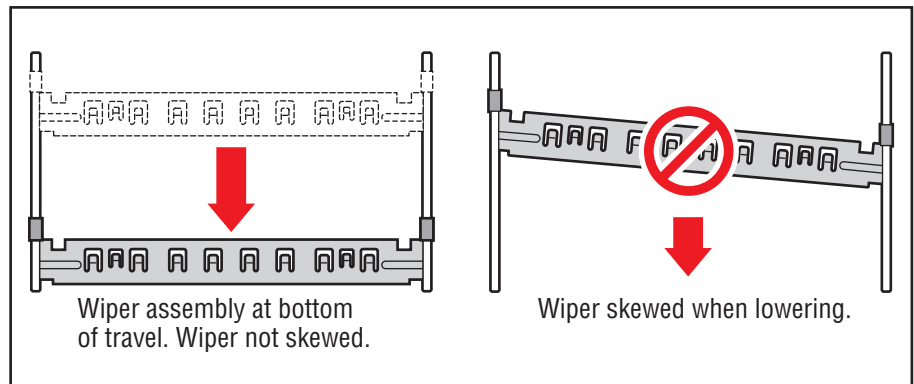
Rotate left and right idler gears to lower wiper.
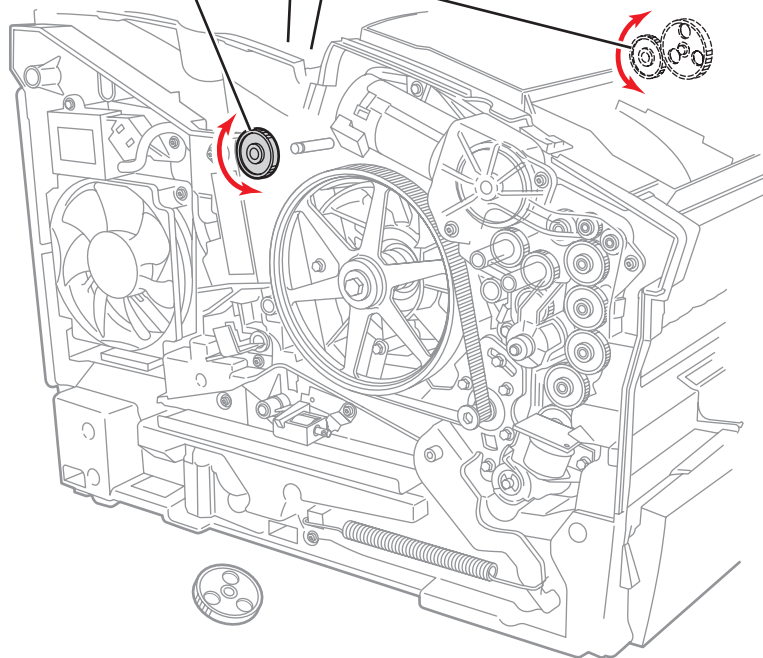
s8500-060

4. Replace the left drive gear and the e-clip.

Printer Component Homing Positions and Indicators

After servicing the printer, manually set the following assemblies to their home position before powering on the printer. If the assemblies are not home, gears in the Process Drive can grind or the printer can generate errors.

■ Printhead (tilted forward and disengaged from tilt gear)

■ Head Tilt Gear (disengaged from Process Drive train; arrows on left frame point to each other)

■ Wiper Blade (bottom of travel)

■ Process Drive (holes on Transfix Camshaft and Drum Maintenance Camshaft line up with marks on frame, large gears within assembly line up with holes in assembly housing)

Wiper Assembly Positions

When the Wiper Assembly is homed, the Wiper Blade should be moved all the way to the bottom of the printer. When the Wiper Blade is at the bottom, you can easily remove the Waste Tray. See the "Wiper Alignment Procedure" on page 6-2.

Homing the Head Tilt Gear

The Printhead Is Not in the Printer

If the Printhead is removed, manually rotate the Head Tilt Gear, located on the inside of the left frame, to its disengaged position.
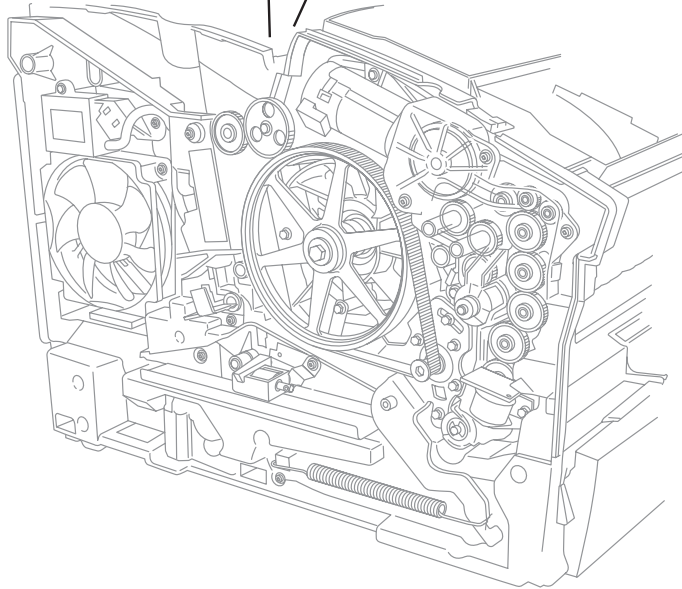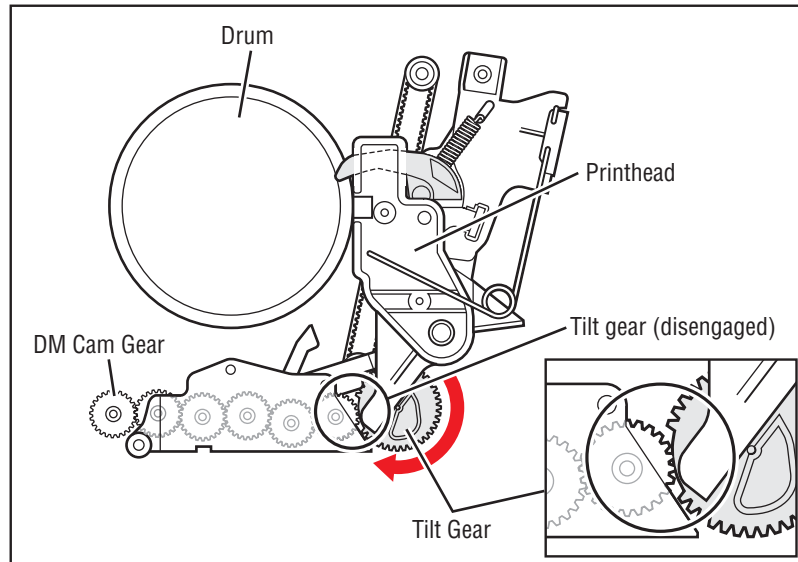
s8500-061

The Printhead Is in the Printer

1. Remove the Drum Maintenance Kit.

Caution

Center the Printhead on its X Axis before continuing with Step 2. Check that the Printhead is clear of the frame to prevent the Printhead from binding against the frame.

2. Insert a flat blade screwdriver into the end of Drum Maintenance Camshaft and rotate clockwise one revolution. If the Printhead is engaged, manually assist the movement of the Printhead.

Note

The hole on the Drum Maintenance Camshaf drive gear should be at the 6:00 position after the rotation.

Insert screwdriver and rotate clockwise.

Drum maintenance camshaft gear
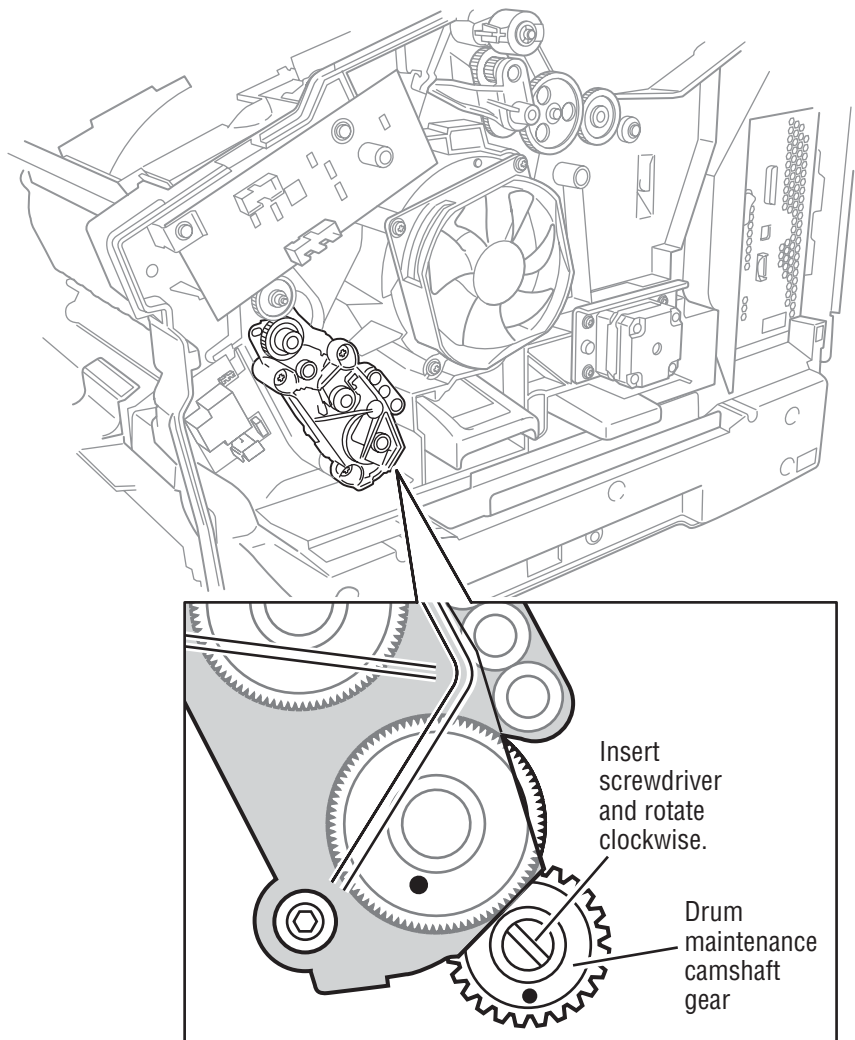
s8500-062

Note

When the tilt gear is disengaged, the two arrows on the left side of the printer are pointing at each other.

Tilt Gear Disengaged   Tilt Gear Engaged
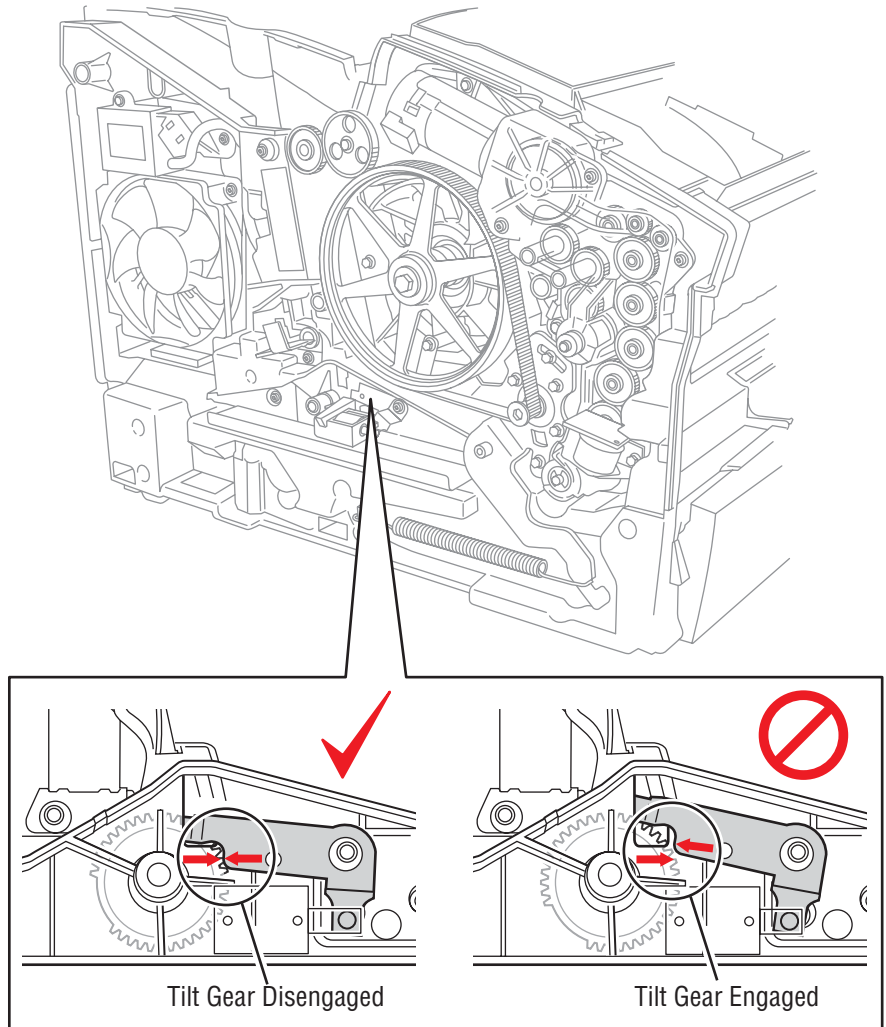
s8500-063

Homing the Process Drive Train

Examine the Process Drive gears for the following:

■ The holes is the Process Drive frame must align with the holes in the gear.

■ The hole in the Drum Maintenance Camshaft gear must align with the arrow on the frame.

■ The hole in the Transfix Camshaft gear align with the hole on the frame.

When installing or homing the Process Drive, engage the Drum Maintenance Pivot Plate to the Drum Maintenance Camshaft by pushing the Drum Maintenance Kit to the left (toward front of printer) while seating the drive.

Holes in process drive frame aligns with holes in gears

Hole in gear aligns with arrow on frame

Hole in gear aligns with arrow on frame
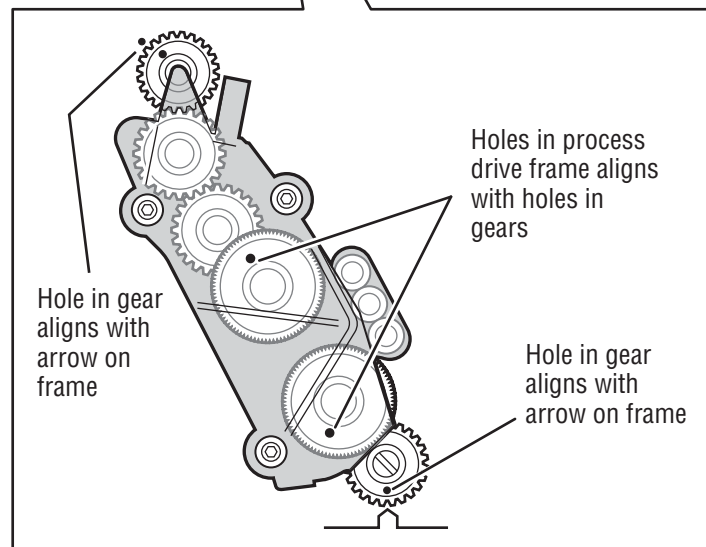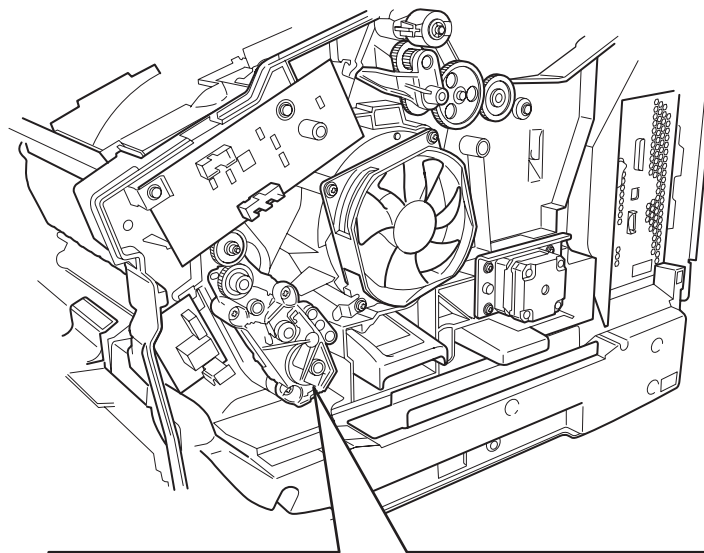
s8500-064

When correctly homed, slightly rotating the Drum Maintenance Camshaft in either direction should result in a proportional movement of the Drum Maintenance Kit - with no delays or lags.

Timing the Drum Maintenance Camshaft

Caution

Use either the pins that come with replacement Process Drives, or a paper clip, bent into a U shape to hold the gears in their proper position during removal and replacement. If the Process Drive is incorrectly installed, the printer could be damaged. See "Homing the Process Drive Train" on page 6-8.

The Process Drive screws are torqued to 12 in. lbs. Irreversible damage to the chassis mounting bosses or the threads can result if screws are over tightened.

After replacing the Process Drive, Drum Maintenance Pivot Plate or the Drum Maintenance Camshaft (or any component requiring removal of the Process Drive), the printer may experience Front Cover jams from Tray 2. The jam occurs with paper in the Preheater and C3T jam errors (strip flag timeout during transfix) recorded in Jam History. In many cases, Tray 1 (MPT) prints with no jams.

These symptoms indicate that the Transfix Load Module is incorrectly timed resulting in a late arrival of the leading edge at the strip flag. The likely cause is the position of the Drum Maintenance Camshaft gear in relation to the Process Drive gear. To correct the timing problem requires removal of the Process Drive and realignment of the Drum Maintenance Camshaft.

To correct the problem, follow these steps:

1. Using a flat-blade screwdriver, rotate the Drum Maintenance Camshaft clockwise to tilt the Printhead forward to its home position. This disengages the Printhead and Head Tilt Gear from the Drum Maintenance Camshaft.
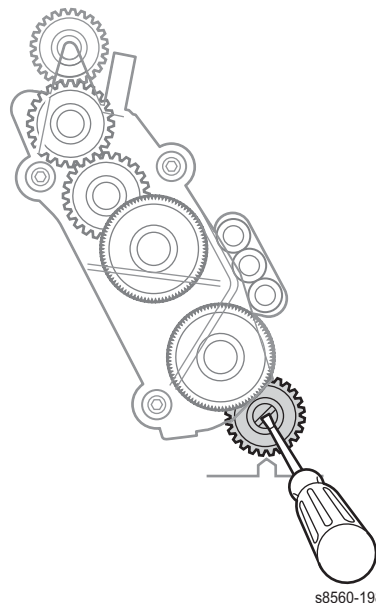
s8560-198

2. Pin the Process Drive gears using a paper clip or similar object to keep the gear set in its disengaged orientation during removal and replacement.

3. Remove the Process Drive (page 8-43).

4. Apply pressure in the direction indicated by the arrow to the Drum Maintenance Kit and Drum Maintenance Pivot Plate to force these components against the Drum Maintenance Camshaft. This forces the cam to home position. Home position is indicated by the hole in the camshaft end gear aligning with the arrow embossed on the frame.

s8500-140
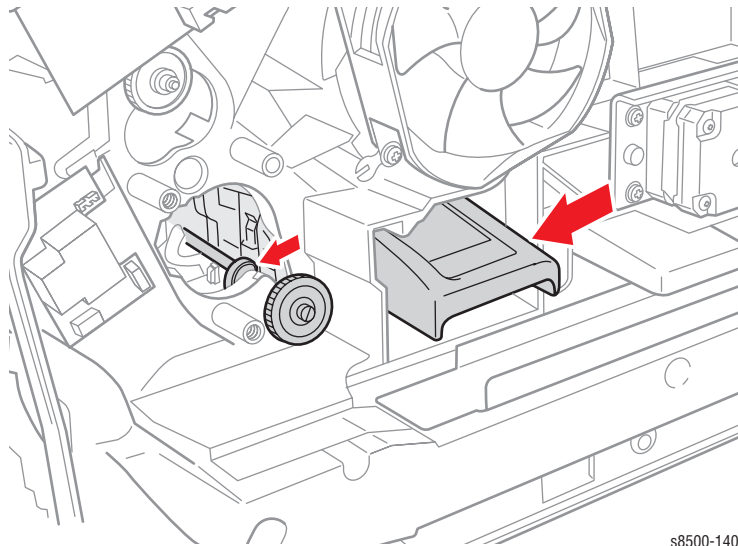
Note

When properly aligned, the hole in the camshaft gear points to the 6:00 or 5:30 position. If the hole does not point at the arrow, while the Drum Maintenance Kit is being pressed against the cams, a cam may be broken on the Drum Maintenance camshaft.

5. Clear the harnesses from the mounting location and insert the Process Drive to the frame.

6. Insert and seat all 3 screws before torquing the screws to final tightness of 12 in. lbs. Torquing the screws individually before seating all components, or applying too much torque can break or put undue strain on the mounting bosses.

7. Check that the hole in camshaft gear is aligned with the arrow embossed on the ground plane. The hole in the upper mating gear should align with the adjacent hole in the frame.

Holes in process drive frame aligns with holes in gears

Hole in gear aligns with arrow on frame

Hole in gear aligns with arrow on frame

s8560-097
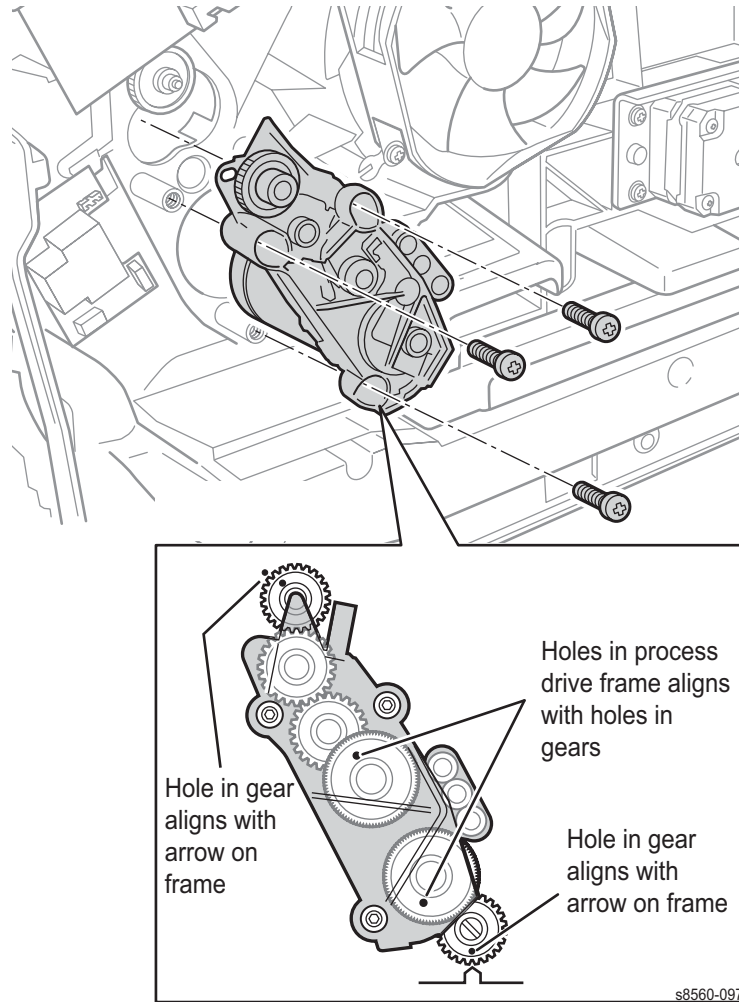
8. Remove the pins holding the Process Drive gears in their disengaged positions.

9. Route the Drum heater, Y-Axis encoder, and Drum Fan harnesses through the guides provided on the Process Drive gearbox.

10. Replace the covers and test the installation.

Replacement Note

Tighten the Process Drive screws to 12 in. lbs. Over tightening can result in irreversable damage to the printer.

Jet Substitution Mode

On 8400 models, the Jet Substitution Mode provides a temporary solution for print-quality problems when weak or missing jets cannot be recovered. When Jet Substitution Mode is active, adjacent jets are used to print over the area covered by the problem jet to restore the print-quality. Jet Substitution Mode reduces the maximum imaging speed by 50% or more and has other limitations that affect printer performance.

Jet Substitution Mode on 8500/8550/8560 models is in the Eliminate Light Stripes menu. Although it does not slow down the imaging speed as it does on 8400 models, it still provides an end solution to eliminating light stripes.

Phaser 8500/8550/8560 printers feature a Jet Substitution mode that is similar to Phaser 8400 printers, but with two important differences:

■ Jet Substitution mode on 8500/8550/8560 models can provide an end solution instead of serving as a temporary fix (as for Phaser 8400 printers). Because Jet Substitution mode can provide an end solution, it is located in the "Eliminate Light Stripes" menu instead of requiring a hidden push button sequence, as is the case with Phaser 8400 printers.

■ Most 8500/8550/8560 users will not notice changes to print-quality or speed when using the Jet Substitution mode. It typically increases the imaging time by no more than one or two seconds per page compared to a 50% increase on 8400 modles.

The knowledge base provides new procedures for determining when to use Jet Substitution mode. Factors such as the use of the Billing Meters feature and multiple, adjacent problem jets can affect the recommended solution.

Enabling Jet Substitution Mode (8400)

To add Jet Substitution Mode to the Control Panel menu:

1. Scroll to **Troubleshooting,** and then press the **OK** button.
2. Scroll to **Print Quality Problems**, and then press the **OK** button.
3. Press and hold the **Up Arrow** button, then press the **Back** button.

   The Jet Substitution Mode is now displayed on the Control Panel.

To correct print-quality problems, refer to the Eliminate Light Stripes test page to determine which jets are weak or missing.

1. Select **Jet Substitution Mode**, and then press the **OK** button.

2. Select **Jet Select**, and then press the **OK** button.

3. Scroll to the color for the weak or missing jet, and then press **OK** to select the color.

4. Use the **Up Arrow** and **Down Arrow** buttons to select the number of the weak or missing jet, and then press **OK** to confirm the selection.

5. Select **Save Change and Exit**, and then press **OK** to complete the procedure.

6. After substituting a jet, print the Light Stripes Test page to verify the problem has been solved.

   At the bottom of the page, a Service Mode key summarizes the number of substituted jets for each color.

Note

The Configuration and Printer Status pages also list jets in Service Mode (substituted).

Enabling Jet Substitution Mode (8500/8550/8560)

To select Jet Substitution Mode for 8500/8550/8560 models:

1. Select **Troubleshooting**, and then press the **OK** button.

2. Select **Print Quality Problems**, and then press the **OK** button.

3. Select Eliminate Light Stripes, and then press the **OK** button.

4. Select Jet Substitution Mode, and then press the **OK** button.

5. Follow the prompts to select the color and malfunctioning jet number indicated on the **Light Stripes Test** page.

Disabling Jet Substitution Mode (8400)

Note

Turn Jet Substitution Mode Off will only become available if Jet Substitution Mode has been turned on. If the option to turn off is not available then Jet Substitution Mode is not turned on.

After the Printhead is replaced, disable Jet Substitution Mode to restore normal operation. Using the hidden Jet Substitution Mode Menu, select Jet Select.

1. Select **Troubleshooting,** and then press the **OK** button.

2. Select **Print Quality Problems**, and then press the **OK** button.

3. Press and hold the **Up Arrow** button, and then press the **Back** button.

4. Select **Jet Substitution Mode**, and then press the **OK** button.

5. Select **Jet Select**, and then press the **OK** button.

6. Select **Turn Jet Substitution Mode Off**, and then press the **OK** button.

7. Select **Print the Eliminate Light Stripes** to print the test page and verify that Service Mode is disabled for all jets.

Disabling Jet Substitution Mode (8500/8550/8560)

After the Printhead is replaced, disable Jet Substitution Mode to restore normal operation. To deselect Jet Substitution Mode:

1. On the Control Panel, scroll to **Troubleshooting,** then press the **OK** button.
2. Select **Print Quality Problems**, and then press the **OK** button.
3. Select **Eliminate Light Stripes**, and then press the **OK** button.
4. Select **Turn Jet Substitution Mode Off**, and then press the **OK** button.
5. Print the Eliminate Light Stripes test page to verify that Service Mode is disabled for all jets.

Resetting NVRAM

Resetting NVRAM returns all the image processor board NVRAM-stored parameters to their factory default values. The print counts and the Adobe firmware serial number are not affected by this reset. You can reset the PostScript NVRAM using the **Service Tools** menu or the **Service Diagnostics** menu.

Cleaning and Maintenance

In this chapter…

- Maintenance
- Inspection
- Cleaning

Chapter 7

Service Cleaning Maintenance Procedure

Cleaning is indicated if the printer is having print-quality or paper-feeding problems. Some cleaning procedures, such as purging the jet nozzles are done automatically when necessary. Other procedures, such as scrubbing the paper-feed rollers with an alcohol-moistened, lint free wipe, must be done by customers, but only if the rollers are visibly dirty.

Cleaning is indicated by any of the following:

■ Light stripes or missing colors appear in prints.

■ Ink smears or random streaks appear on the front or back of prints.

■ Oily spots appear along the tops of prints.

■ Mispicks or multiple picks occur at the media tray.

■ Persistent paper jams inside the printer or at the media tray if the rollers are visibly dirty.

■ Wiggly vertical stripes caused by too much oil created by a dirty Drum Maintenance Kit blade.

■ Most print-quality problems can be corrected by running the cleaning procedures on the printer's Control Panel menu.

Cleaning

Supplies Required

■ 90% pure isopropyl alcohol	■ Alcohol-moistened, lint-free wipes
■ Foam swabs	■ Clear packaging tape

Caution

Do not use Rubbing Alcohol as it can contain water and oils that leave undesirable residue on the printer parts. Never use Water to clean the printer's internal components.

Clean dust build-up on the exterior of the printer. Inspect the vents on the exterior of the printer for dust. Clean if necessary

Appropriate cleaning procedures, as listed in the following tables, should be performed when specific print-quality or paper transport problems occur. All cleaning procedures are detailed in the printer's *Phaser 8400 Reference Guide* or the *Phaser 8500/8550 User's Guide*.

Light Stripes or Missing Colors

Problem type	Solution
Missing or light-colored stripes on prints.	Select the automated procedure **Eliminate Light Stripes** from the Control Panel.

Ink Smears, Oil Spots, or Random Ink Streaks

Problem type	Solution
Ink smears on the front, back, or edges of a page.	Select the automated procedure **Remove Print Smears** from the Control Panel. Check the maintenance kit for ink and paper-dust build-up on the wiper blade.
Oil (Drum fluid) on top edge of print.	Select the automated procedure **Remove Print Smears** from the Control Panel.

Media Jams:

Note

Refer to the jam codes in "Jam Codes" on page 3-48.

Problem type	Solution
Tray 1 (MPT) jams.	Clean the Pick Roller. Follow the "Pick Roller Cleaning Method" on page 7-3.
Front Door jams.	Clean the transport rollers.
Exit jams.	Clean the Exit Rollers and Stripper Blade.
Tray 2 ~ 4 jams.	Clean the appropriate tray feed roller.
Duplex path jam	Clean the Preheater, Duplex, and Exit Rollers.
Double picks	Clean the Pick Rollers and Separator Pad with alcohol. Clean pick pad with clear packaging tape using the procedure "Pick Roller Cleaning Method" on page 7-3.

Pick Roller Cleaning Method

Tray 1

Tray 1 pick roller can be cleaned with an alcohol moistened swab.

1. Open the Front Door.
2. Rotate the roller and clean it with an alcohol-moistened swab.
3. Rotate the roller so that the flat side is facing down.
4. Close the Front Door.

Trays 2~4

Use off-the-shelf clear packaging tape and follow the procedures listed below to clean the pick roller and pick pad for Trays 2~4. This cleaning method has been found to be extremely effective for removing debris. Isopropyl alcohol, while effective, tends to smear the debris, rather than remove it.

1. Remove the affected tray.
2. Peel off a strip of tape. Stretch the tape across the table with the sticky side up. Fasten it to the table at both ends.
3. Remove the roller.
4. Roll the roller across the tape to remove the debris from the roller.
5. Locate a clean section of the tape, rub it onto the surface of the pick pad for the paper tray, then remove it.
6. Replace the roller.
7. Reinsert the tray.

Drum Temperature Sensor

With a dry swab, clean any buildup around the Drum Temperature Sensor. You can access the sensor through the opened Exit Cover. Also, make sure the sensor rides evenly on the Drum surface. You can remove the sensor, if necessary, to clean under it.

Maintenance

Drum Maintenance Kit

The printer uses the Drum Maintenance Kit as part of its self-maintenance routine to coat the print Drum with oil before each print.

Drum Maintenance Kit Life

Standard/Startup Maintenance Kit Life	P/N 108R00602 (8400) P/N 108R00675 (8500/8550/8560)
Any Coverage*	10,000 cycles for black and white, 5500 cycles for color (8500/8550). 10,000 cycles regardless of colors used (8400/8560).
Extended Maintenance Kit Life	P/N 108R00603 (8400) P/N 108R00676 (8550/8560)
0 - 20% Coverage*	30,000
20 - 100% Coverage*	20,000-30,000

*The image coverage is determined by counting the number of pixels imaged.

A Control Panel message indicates when the maintenance kit is low. Printing is still possible when the Drum Maintenance Kit is low. When the message indicates the Drum Maintenance Kit is "empty," replace the kit to continue printing.

Note

The Drum Maintenance Kit fluid, an oil, poses no known adverse health effects. See the Material Safety Data Sheet at www.xerox.com/office/msds.

Waste Tray

The Waste Tray collects ink that has been purged from the ink jets. A Control Panel message indicates when the Waste Tray is full. Empty the waste tray to continue printing.

Caution

Never reuse waste ink in the printer; it will damage the Printhead.

Lubrication

The printer is lubricated during assembly at the factory and requires no periodic lubrication. Some parts require lubrication following replacement. These parts are identified in the replacement procedures. When lubricating during replacement, use the grease approved for all Phaser printers. The grease part number is 070E00890.

Caution

Plastic parts will deteriorate when unspecified grease and chemicals are used. To avoid damage, use only Rheolube 768 grease (P/N 070E00890).

Inspection

Replace the rollers when you see any of the following defects:

- Flat spots
- Out of roundness
- Cracked rubber
- Loss of traction (tackiness) causing pick or feed failures

Replace gears that show any signs of wear or damage. Look for these problems:

- Thinned gear teeth
- Bent or missing gear teeth; check especially where a metal gear drives a plastic gear.
- Fractured or cracked gears (Oil or incorrect grease on a plastic gear can cause the gear to crack.)

Belts: There are 3 rubber belts in the printer. Inspect the belts for wear. Look for these problems:

■ Loose rubber particles below the belts indicate a worn belt.

■ Missing teeth in the belts

■ Cracking or moderate fraying; a small amount of fraying is inevitable, so look for other signs of wear before replacing the belt.

Service Parts Disassembly

In this chapter…

Chapter 8

Overview

This section contains the removal procedures for selected printer parts listed in the Field Replaceable Units (Service Parts) Parts List. In general, replacement procedures are not given because re-installing a part is usually simply a reversal of the disassembly. Replacement procedures are included where this is not the case and special steps are required. Replacement notes are included when they can help ease or shorten the reassembly process.

Standard Orientation of the Printer

When needed the orientation of the printer is called out in the procedure for locating printer parts. Refer to the printer orientation graphic for locating the right, left, front and back sides of the printer.

s8500-002
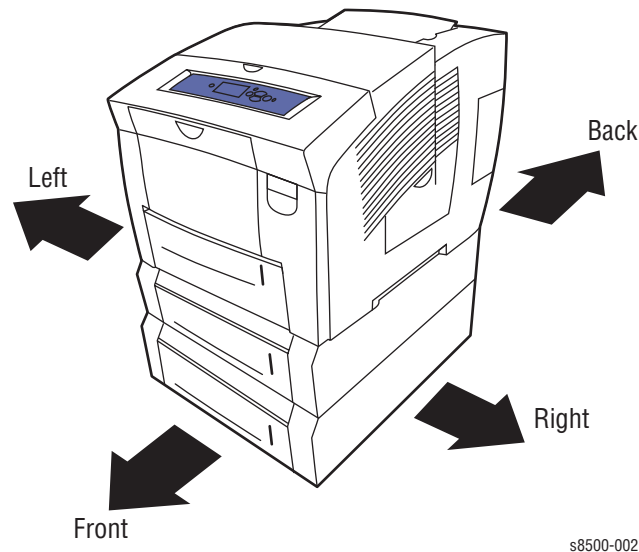
General Notes on Disassembly

Caution

Follow the steps of all disassembly procedures in the order given to avoid damaging printer components.

1. Before servicing the printer, switch Off the printer power, wait until the printer completely shuts down, and disconnect the power cord from the wall outlet.

2. Wear an electrostatic discharge wrist strap to help prevent damage to the sensitive electronics of the printer circuit boards.

3. Upon reassembly of printer components, be sure the components are all in their home positions, otherwise damage to the printer will occur. See Chapter 6 Adjustments, Home Position page 6-2 for information on the home positions.

Special Notes Regarding Screws Used in This Equipment.

Caution

Screws in plastic are torqued to 12 in. lbs., metal to 15 in lbs., unless otherwise specified. The screws for the Printhead Restraints should be torqued to 6 in. lbs. Irreversible damage can result from over tightening the screws into plastic parts.

■ Always use the correct type and size screw; coarse thread, brass-colored screws into plastic and fine thread, silver-colored screws into metal.

■ Using the wrong screw can damage tapped holes. This applies to the yellow reverse-threaded screws on the Drum.

■ Do not use excessive force to remove or install either a screw or a printer part. If using a power driver to install a screw into plastic, start the screw by hand.

■ If you strip out threads in the plastic chassis, a silver-blue-tinted thread repair screw (included in the hardware kit) can be used to correct the problem.

■ If you remove a silver-blue-tinted thread repair screw during disassembly, replace the screw the same location or additional damage to the printer will occur.

Warning

Unplug the AC power cord from the wall outlet before removing any printer part.

Notations in the Disassembly Text

■ The notation "(item X)" points to a numbered callout in the illustration corresponding to a part or step being performed.

■ The notation "PL*X.X.X*" indicates that this component is listed in the Service Parts List.

■ Bold arrows in an illustration show direction of movement when removing or replacing a component.

Covers

Front Door/Tray 1 Assembly (PL1.0.1)

1. Open the Front Door by pulling out on the handle to the right side of the door.
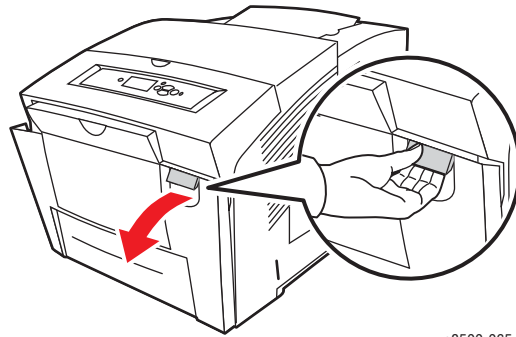
s8500-065

2. Remove the right and left stay retainers from the Front Door.

3. Open the plug cover and disconnect the plug from the right side of Front Door.

4. Release the harness from cable retainer on the right side of Front Door.

5. Carefully remove the Front Door, by releasing the left hinge pin from the frame and sliding the assembly to the right.

Stay Retainer
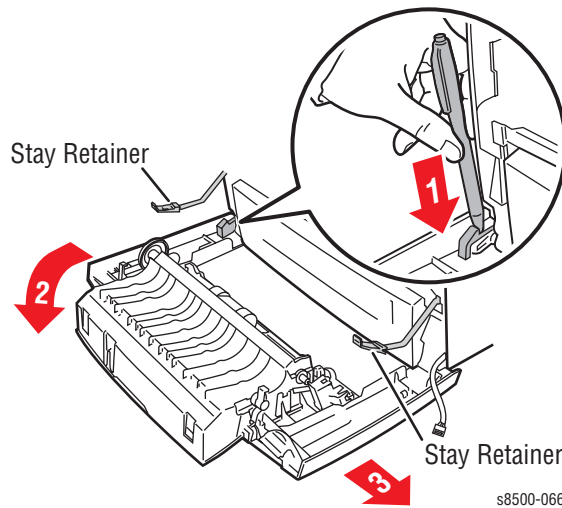
Stay Retainer

s8500-066

Note

Do not lose the hinge pins or stay retainers for the Front Door.

Control Panel Cover (PL1.0.5)

1. Open the Exit Cover.

Exit Cover

Control Panel Cover

Control Panel

Front Door

s8500-067
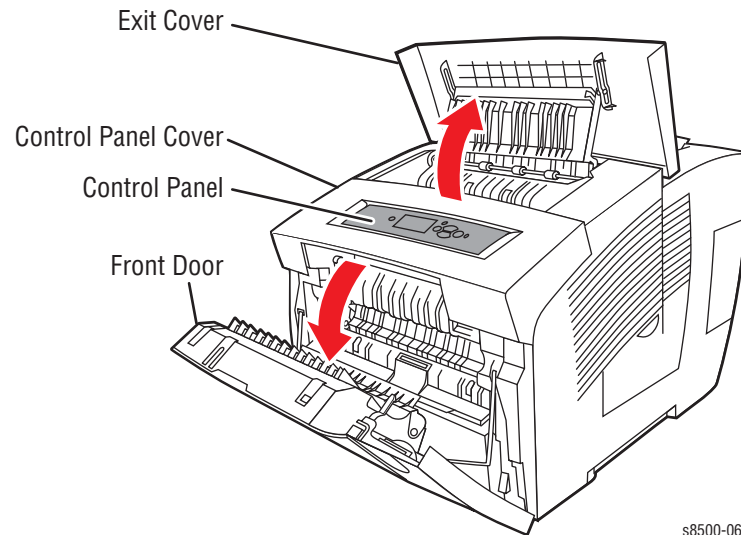
2. Using either your fingers or a small flathead screwdriver, loosen the Control Panel Cover on the left side, and then slide it forward while lifting up to remove it from the printer.

Control Panel (PL1.0.6)

1. Remove the Control Panel Cover (page 8-5).

2. Disconnect the two wiring harness connectors and one ribbon cable connector from the back of the Control Panel.

3. Remove the Control Panel.

Right Side Cover (PL1.0.10)

1. Open the Exit Cover.

2. Remove the Control Panel Cover (page 8-5).

3. Open the Front Door.

4. Remove the rear screw.

5. Pull forward on the latching tab located by the power plug to release it.

6. Release the front latching tab and pull out on the top to remove the Right Side Cover.

Left Side Cover (PL1.0.9)

1. Remove the Control Panel Cover (page 8-5).

2. Open the Exit Cover and Front Door.

3. Remove the rear screw.

4. Release the latching tabs and remove the Left Side Cover.

Exit Cover (PL1.0.7)

1. Remove the Right Side Cover (page 8-5).

2. Remove the Left Side Cover (page 8-6).

3. The Exit Cover will now just lift off the printer.

Replacement Note

Lift the upper exit guide slightly, and engage the pins on the upper exit guide with the slots on the Exit Cover before inserting the cover hinge pins into the pivot points in the printer frame.

Ink Loader (PL1.0.8)

1. Remove the Right Side Cover (page 8-5).

2. Remove the Left Side Cover (page 8-6).

3. Remove the Exit Cover (page 8-6).

4. Lift the Ink Loader clear of the chassis and hold it in position against the rear of the chassis to allow access to the connectors. For 8400, the Ink Loader disconnects from the printer frame. For 8500/8550/8560, the harness that plugs into the right side frame disconnects directly from the Ink Loader.

Note

Hooks on the bottom of the Ink Loader allow it to hang on the rear of the printer chassis while the connectors are removed.

5. Disconnect the 2 connectors from the printer and remove the Ink Loader.

8400

8500/8550/8560

s8500-069
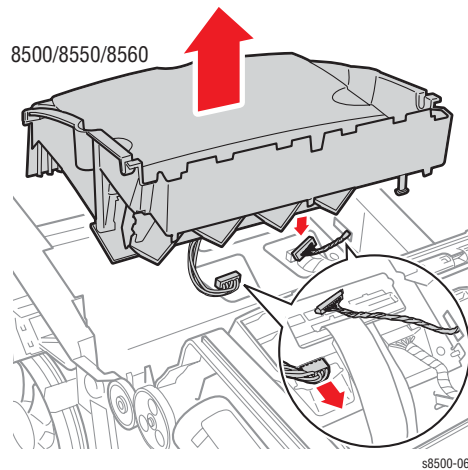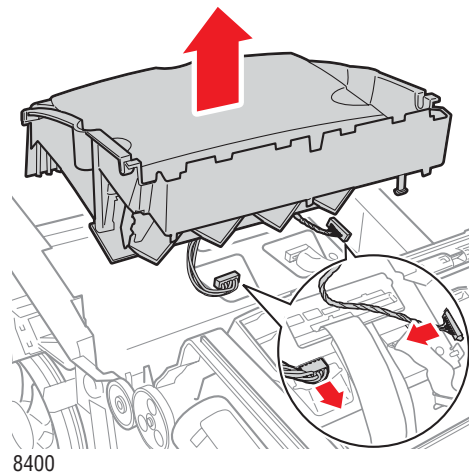
Replacement Note

For the 8400, route the gray harness from the chassis between the Ink Loader and printer side. The harness from the Ink Loader must be routed towards the left side (see inset). For the 8500/8550/8560, the harness comes from the side of the chassis and plugs directly into the Ink Loader. After replacing the 8500/8550/8560 Ink Loader, reset the ink stick count, using the Hidden Service Menu.

Imaging

Y-Axis Belt, Y-Axis Tension Spring, and Y-Axis Motor

(PL 2.0.4) (PL 2.0.14) (PL 4.0.4)

Warning

The use of safety glasses is recommended for this procedure.

1. Remove the Left Side Cover (page 8-6).

2. Relieve tension on the belt by pulling the end of the spring arm toward the front of the printer using your fingers.

3. Slide the belt off the pulley.

s8500-070
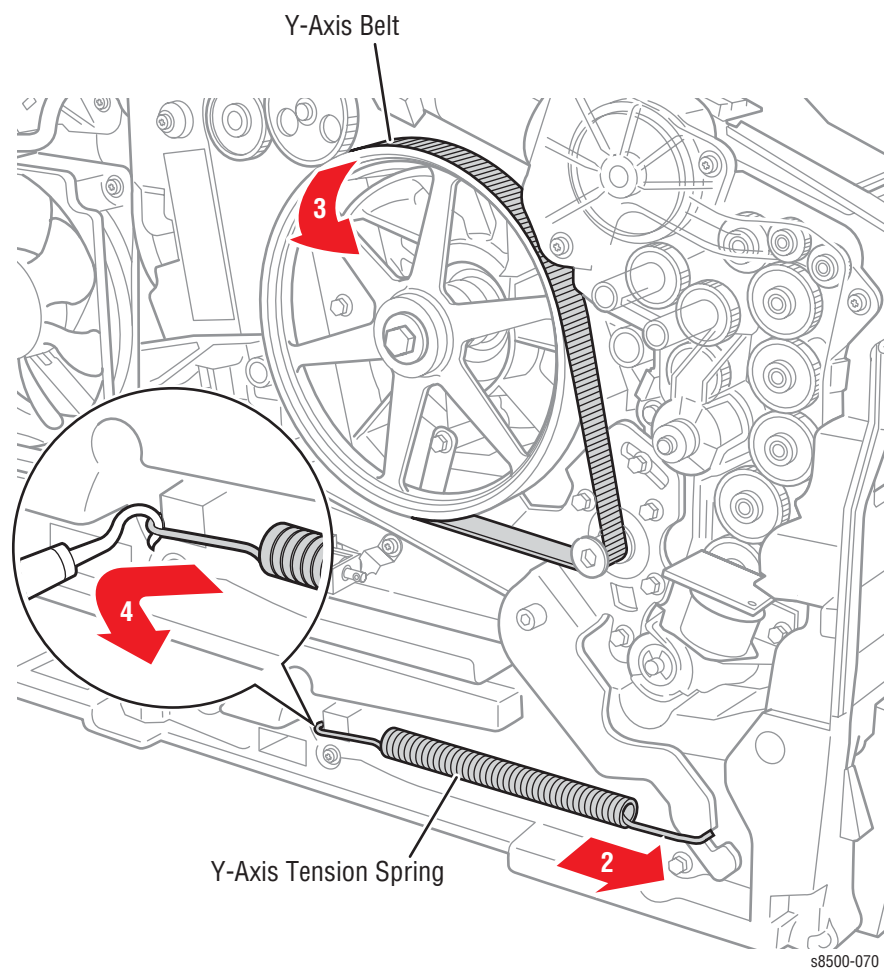
4. Using a spring hook or pliers, remove the Y-Axis Tension Spring from the chassis retainer and spring arm. Brace the printer to keep it from moving during removal of the spring.

Caution

This is a strong spring that can cause damage if it slips during removal; use care when removing.

5. Move the wires out of the way.

6. Disconnect the motor harness.

7. Remove 3 screws (3 coarse thread and 1 fine thread) from the spring arm. The 3 screws securing the arm to the motor remain in place.

20 in-lbs.

Y-Axis Motor Assembly

s8500-071
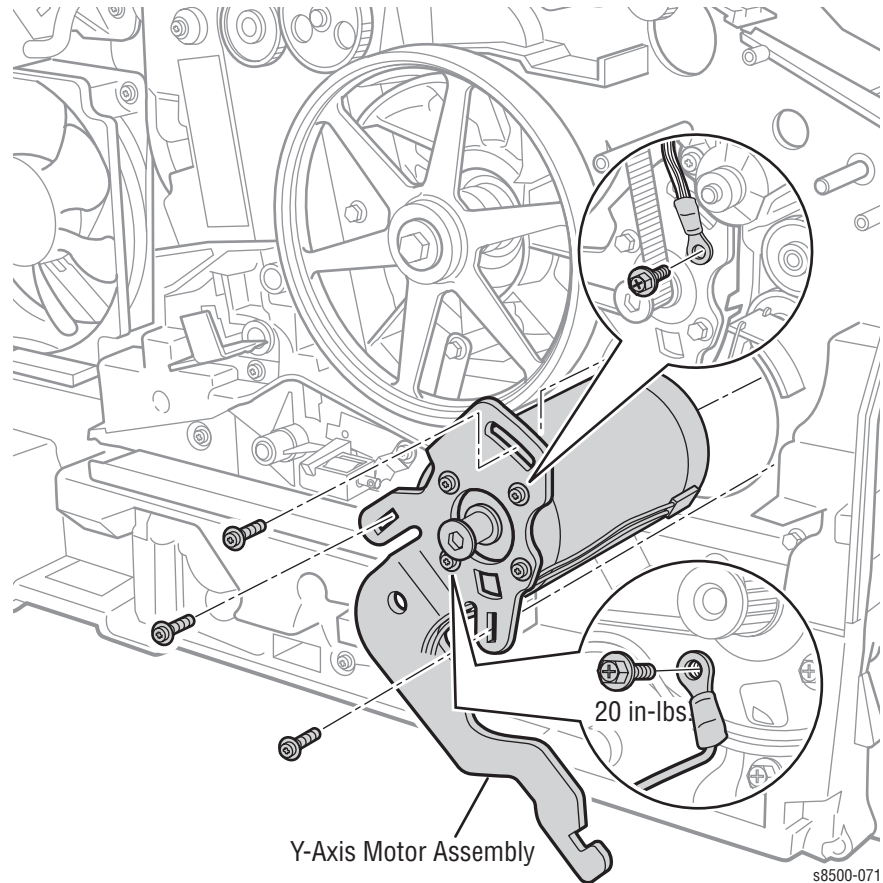
8. If replacing the motor, remove 3 motor screws to separate the motor from the arm and remove the spring arm.

Replacement Note

Check that the spring arm screws are in the right locations, the grounding connection is attached, and that the arm floats freely. Screws in plastic are torqued to 12 in. lbs., metal to 15 in lbs., unless otherwise specified. Also, if the spring arm has been removed from the motor, torque the motor screws securing the spring arm to 20 in.-lbs. Irreversible damage can result from over tightening screws into plastic parts.

Printhead, Right and Left Printhead Restraints

(PL 2.0.4) (PL 2.0.5 and 2.0.6)

Warning

Allow components adaquate time to cool before servicing the printer.

Caution

Perform the steps in the order given to prevent damage to the printer.

1. Remove the Ink Loader (page 8-7).

Caution

Place several sheets of paper between the faceplate of the Printhead and the Drum to protect the Drum from damage.

2. On the right side, lift up on the wiper lock to unlock the Wiper Assembly gear train.
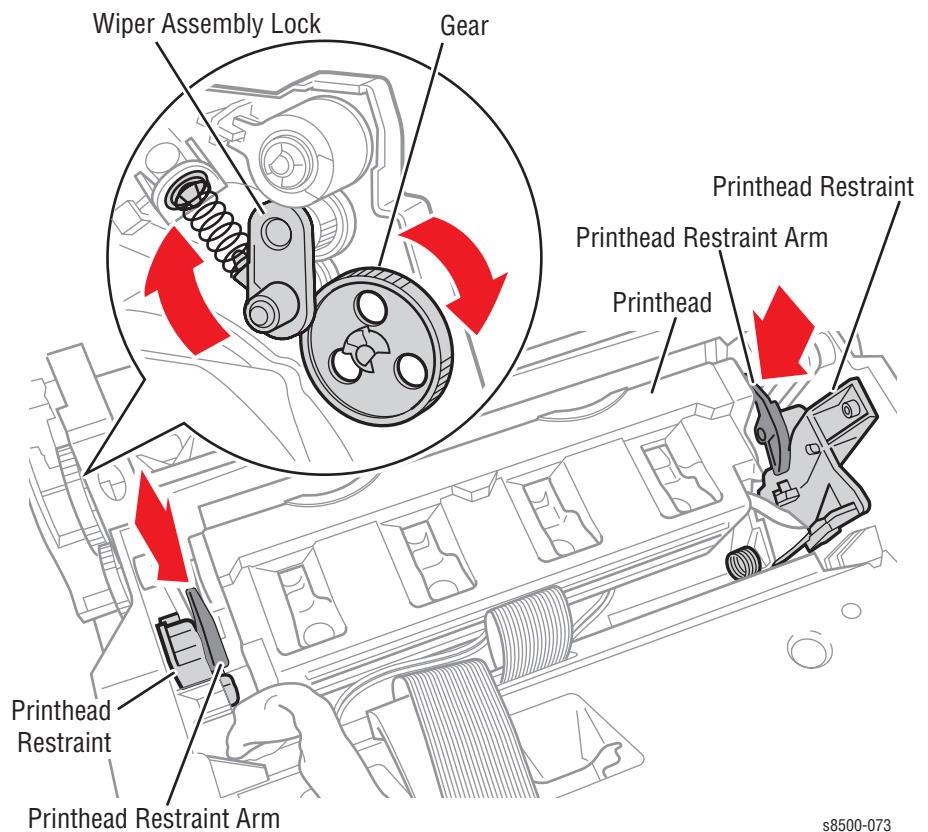
s8500-073

3. Rotate the gears to lower the Wiper all the way down.

Caution

To prevent damage to the ink jets, do not to place your fingers on the faceplate of the Printhead.

4. While pulling back slightly on the Printhead to keep it away from the Drum, unlock (push down) the Right and Left Printhead Restraint arms, then slowly allow the spring-loaded Printhead to tilt forward.

5. On the left side, pull the X-Axis Bias Spring Hook out slightly and shift to the side (rotate down). Allow the hook to rest against the detents in the frame.

Purge Pump   Bias Spring Hook

1.

2.
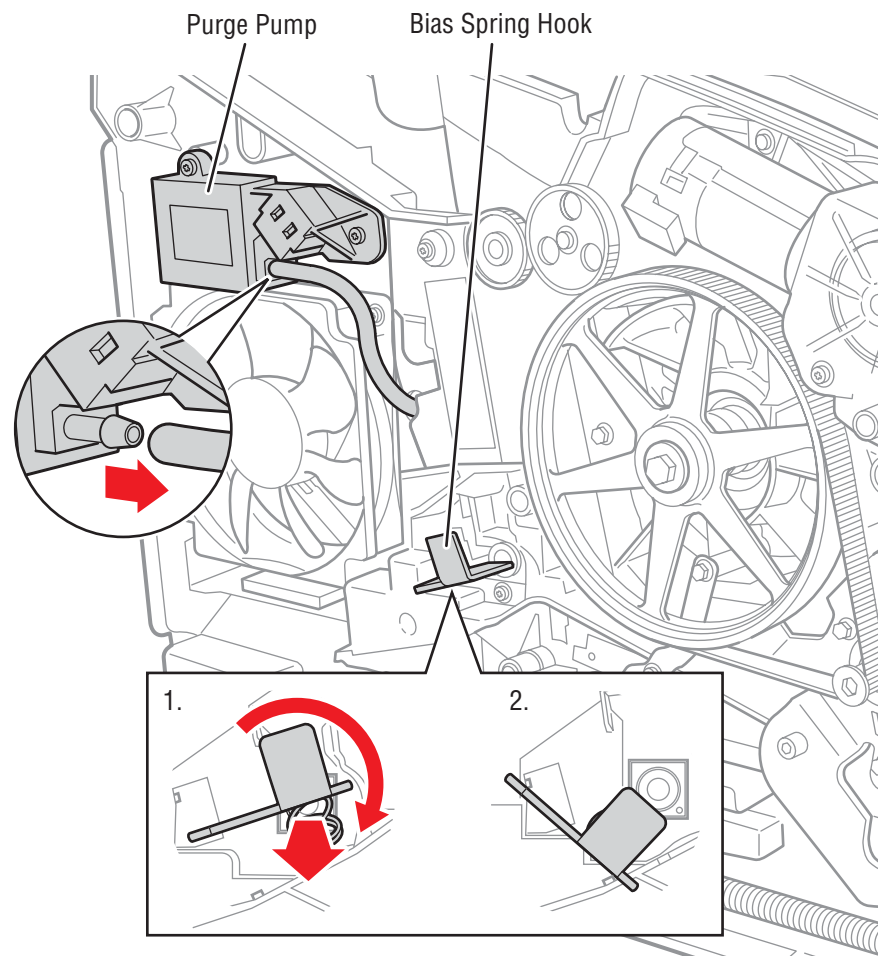
s8500-074

6. Disconnect the air hose from the Purge Pump.

7. Remove Left and Right Printhead Restraints. First remove the screw, then pull inward towards the Printhead, then lift up and slightly toward the rear to remove.

Printhead Restraint

Printhead Restraint

When reassembling, torque to 6 in/lbs (1 N-m)

s8500-075
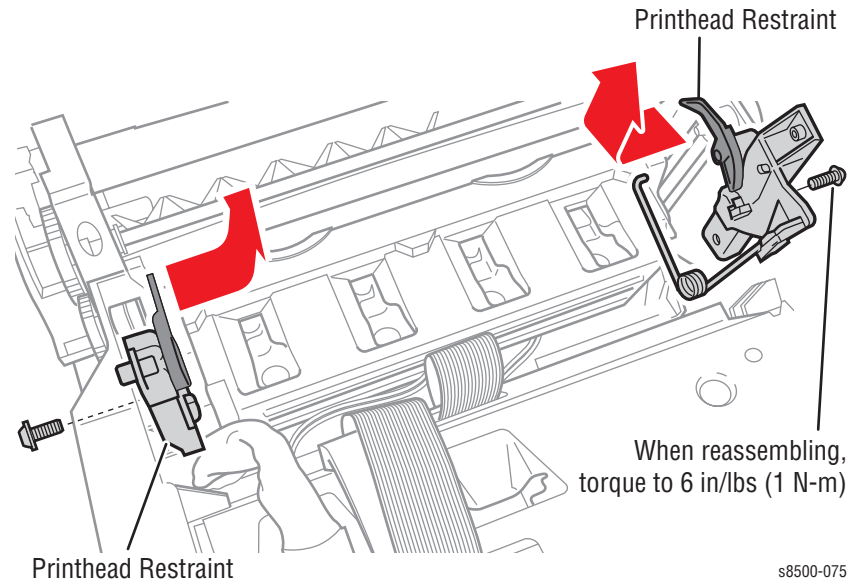
Note

Adjust Printhead position as required to remove the right restraint.

8. Remove the Roll Block on the left end of the Printhead shaft.

Caution

The Roll Block may be hot if the printer was just shut down.

Printhead Shaft

Roll Block
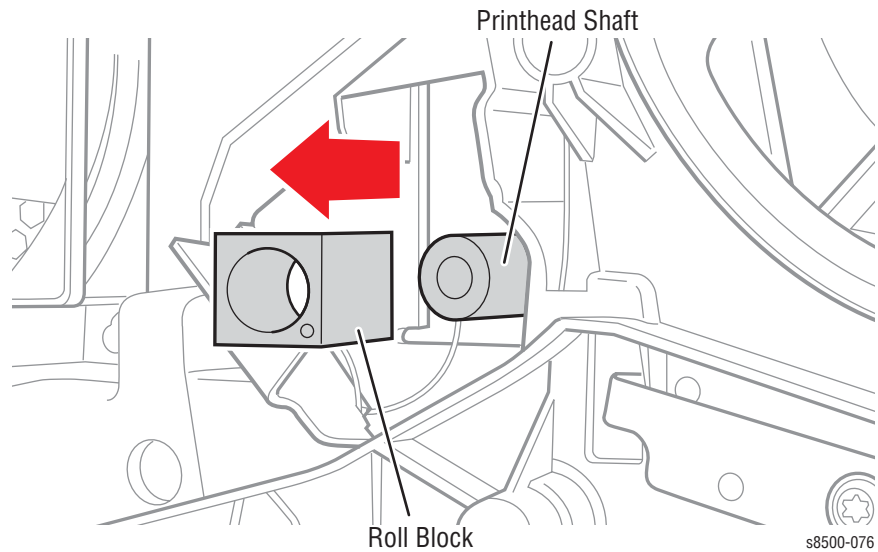
s8500-076

9. Disconnect the heater harness and free the harness from its restraint.

Finger Holes

Cable Restraint

Cradle Notch

Flex Cable

Flex Cable (8400 Only)

Data Cable

Heater Cable

Heater Harness Plug

EMI Tape
(8500/8550/8560)

Ground Strap (8500/8550/8560 Only)
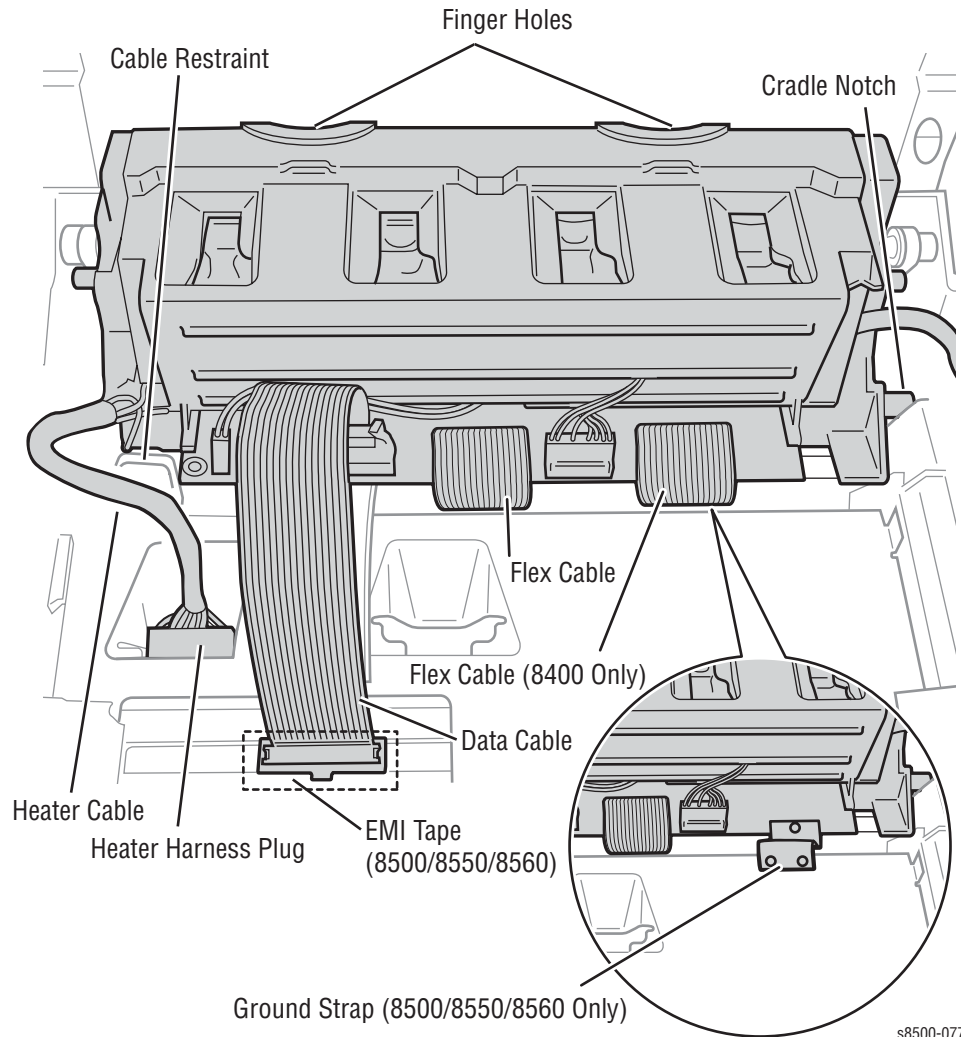
s8500-077

10. Lift the Printhead out of its mounting position and place the shaft ends in the cradle notches near the top of the chassis frame.

Cradle Notches
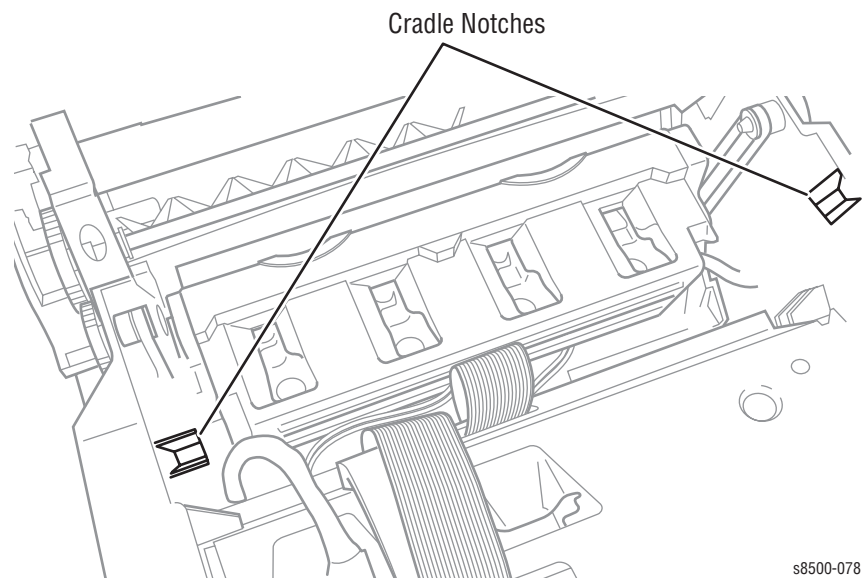
s8500-078

11. Disconnect the data cable from the Printhead.

12. Disconnect the flex cable from the Printhead (Phaser 8400 printers have two cables).

Caution

Do not pinch or tear the air hose while removing the Printhead as this will damage the printer.

13. Lift the Printhead free of the printer chassis.

Replacement

The following replacement steps are basically the reverse of the disassembly steps and provide important precautions. Perform these steps in the order given.

1. Ensure that the Head Tilt Gear is in the home position (page 6-5).

2. Rest the Printhead on the cradle notches provided while reconnecting the cable and flex connector.

Caution

Three types of Printhead Flex Cables have been used. One type provides a locking ZIP connector. Ensure that the flex cable is inserted into the flex connector on the Printhead fully and squarely. If the cable has the ZIF connector, lock the connection. If the cable is not inserted incorrectly, it can short out the Wave Amp.

3. Insert the ribbon cable fully and squarely into the flex connector.

4. Connect the data cable connector and heater harness connector.

Note

The Printhead heater cable not only needs to be routed through the cable restraint, but also needs to be clear of the Printhead to prevent interference which would result in errors 7009 and 4025 fault codes.

Caution

Before reinstalling the Printhead, move the wiper all the way down.

5. Lower the Printhead into its mounts. The Printhead should be tilted forward in the print position.

Note

Remove any paper placed between the faceplate of the Printhead and the Drum during disassembly.

6. Route the air hose through the frame and connect it to the purge pump. Check that the hose is routed clear of the Left Printhead Restraint.

7. Install the Roll Block on the left end of the Printhead shaft. Position the Roll Block as shown on the label on the left side of the frame.

8. Install the Left and Right Printhead Restraints. Tighten the screws to 6 in. lb. to avoid stripping the chassis threads.

Caution

Ensure that the tilt spring on the left restraint is properly positioned in the notch on the back of the Printhead and does not pinch the air hose.

9. Set the X-Axis Hook and spring on the end of the left Printhead shaft. Ensure that the point of the hook is centered in the shaft and the rest of the hook floats freely.

10. After completing the installation, print the Light Stripes Page and check for jets in service mode. If necessary, use the Control Panel to reset the jet substitution mode.

Head Tilt Solenoid (PL4.0.12)

Note

Be careful not to lose the restraining spring from the unit.

1. Remove the Printhead (page 8-10).

2. Lower the Wiper Blade to its lowest position.

3. From the left side, disconnect the Head Tilt Solenoid (P/J208).

4. Remove 1 screw from the Head Tilt Solenoid, then swing the unit out to the left until the solenoid is free from the chassis.

P/J208

s8560-108
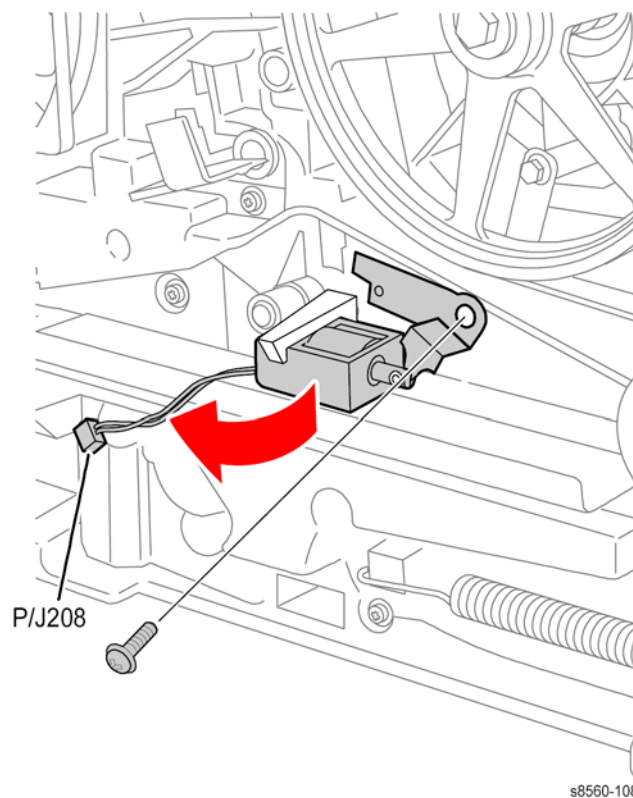
Replacement Note

To ensure proper operation of the Printhead, observe the following order when reinstalling the Head Tilt Solenoid.

Insert the plastic end of Head Tilt Solenoid into the chassis, swing to the right and replace the screw in the chassis. Torque to 12 in-lbs. Next, from the right side of the chassis, use a screwdriver from the right side of the chassis, to turn the lower screw of the Process Drive clockwise until you hear the Head Tilt Solenoid snap into place.

X-Axis Bias Spring (PL2.0.19)

Caution

The spring is in close proximity to the Drum. Use care not to damage the Drum with the removal tools or the spring.

1. Remove the Printhead (page 8-10).
2. Using your hands, a spring hook, or pliers, remove the X-Axis Bias Spring from inside the printer cavity.

X-Axis Bias Spring

s8500-080
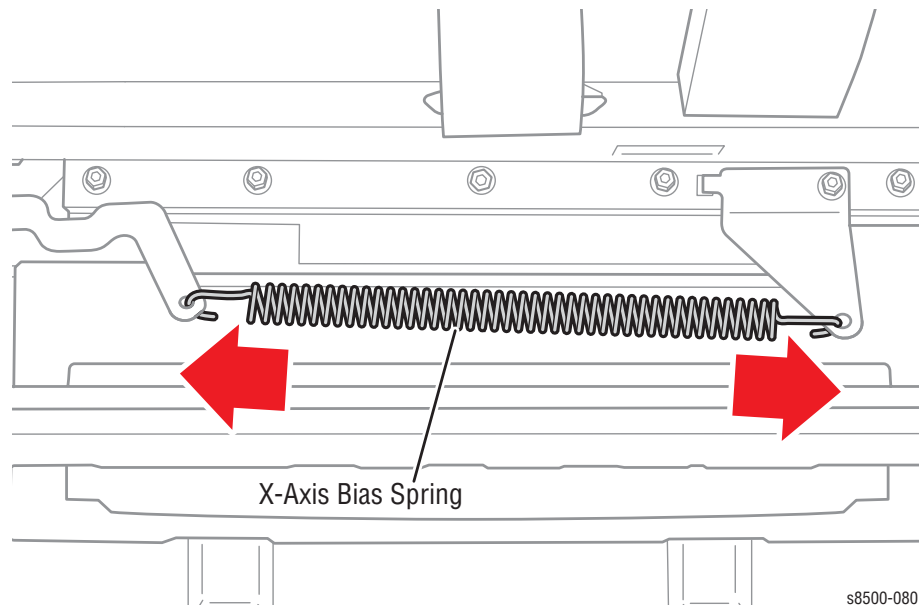
Replacement Note

Do not rotate the spring more than 1/4 turn during installation.

Wiper Assembly (PL2.0.17)

Caution

Place several sheets of paper between the Printhead and the Drum to protect the Drum from damage.

1. Remove the Printhead (page 8-10).
2. Using the gears, position the Wiper Blade all the way up.
3. On the left side, remove the KL clip and gear as shown below.
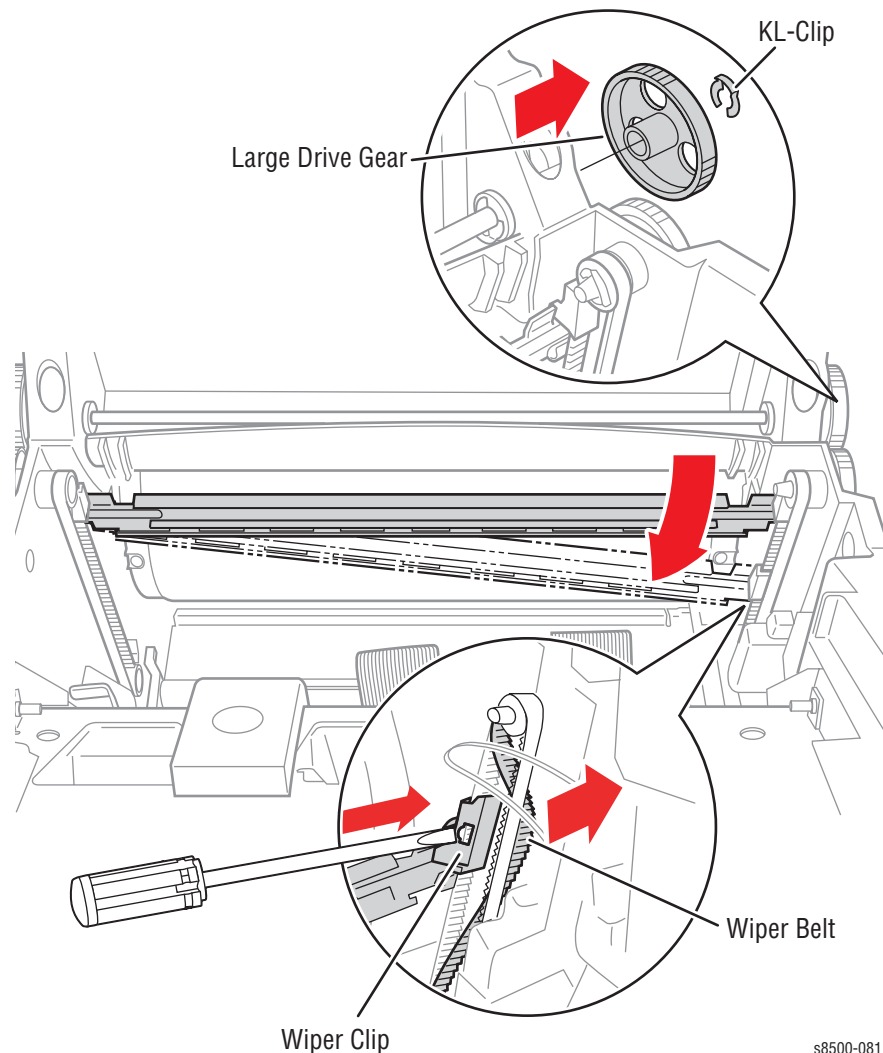
s8500-081

4. Remove the left plastic clip from the Wiper Belt and slide the Wiper off of the belt.

Note

For early model 8500/8550 printers, insert a small flatblade screwdriver between the backside of the left wiper clip and the flat side of the belt. Apply a small amount of pressure against the plastic wiper clip with the screwdriver, and gently slide the Wiper off the belts.

Replacement

1. Position the Wiper so both ends are all the way down following reassembly (see "Wiper Alignment Procedure" on page 6-2).

2. When reinstalling the belt into the wiper clip in 8500/8550/8560 models, place the belt partly on the clip, and then press the center of the clip with a small needle-nose plier until the belt is secured in the clip.

Wiper Belt

Wiper Clip

s8500-082
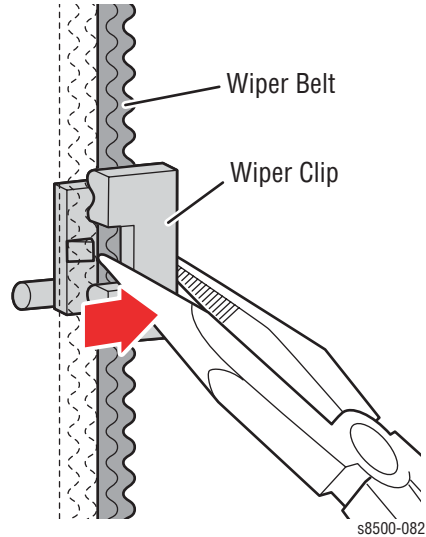
Note

Later versions of 8500/8550 models serial numbered WYN1xxxxx or WYP1xxxxx use the wider style Wiper Belt and 8400 model Wiper Blade.

Stripper Carriage (PL2.0.12) and Transfix Roller (PL2.0.13)

Caution

Hold the Transfix Roller and Stripper Carriage with one hand during removal of the Transfix Roller shaft to prevent the Transfix Roller from falling and damaging the printer. Also, do not use the Transfix Roller Shaft Restraint as a lever to pry the shaft. Doing so can bend the restraint.

1. Remove the Right Side Cover (page 8-5).

2. Disconnect P/J250 from the I/O Board.

3. Remove the Control Panel Cover (page 8-5).

4. Remove 2 screws securing the I/O Board to the chassis, slide the board towards the rear, and move the board out of the way.

5. Loosen 1 screw securing the Transfix Roller Shaft Restraint and remove the restraint.

6. Use the end of the Transfix Roller shaft restraint to remove the shaft.

7. Remove the Stripper Carriage and Transfix Roller.
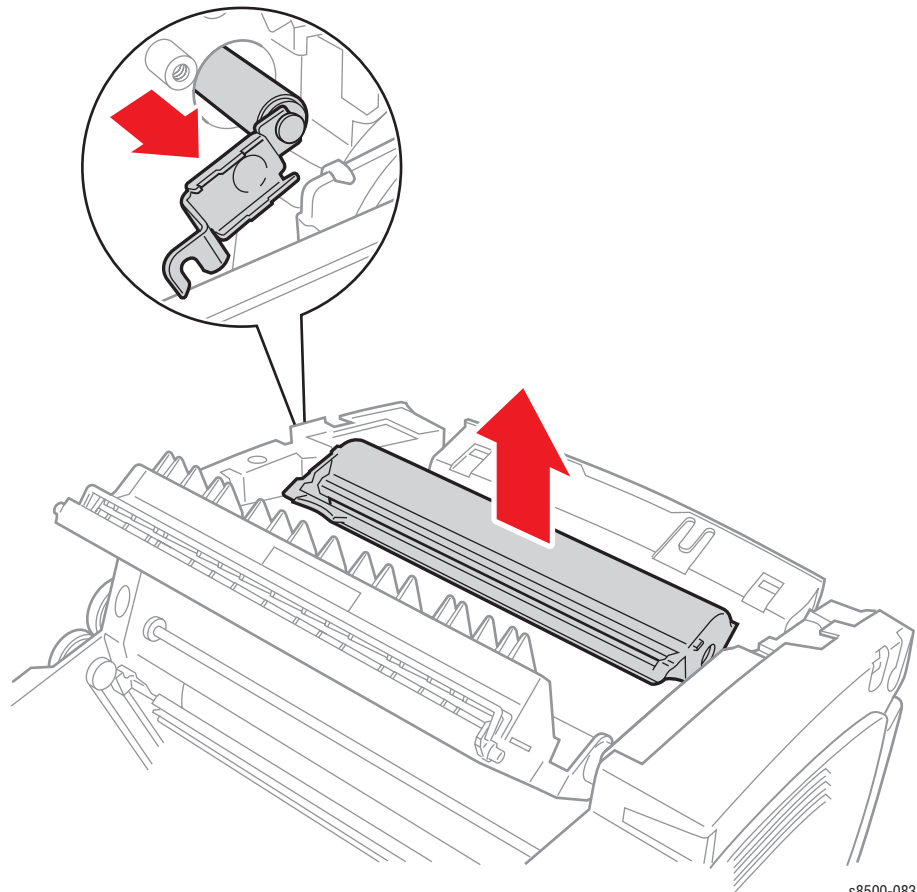
s8500-083

Preheater (PL2.0.17)

1. Open the Front Door.
2. Remove the Lower Inner Duplex Guide (page 8-33).
3. Remove the Inner Simplex Guide (page 8-33).
4. Unplug the AC and sensor flag connectors from the bottom of the Preheater.

Note

Release the lock on the back of the AC connector.

AC Connector

Sensor Flag Connector

s8500-084
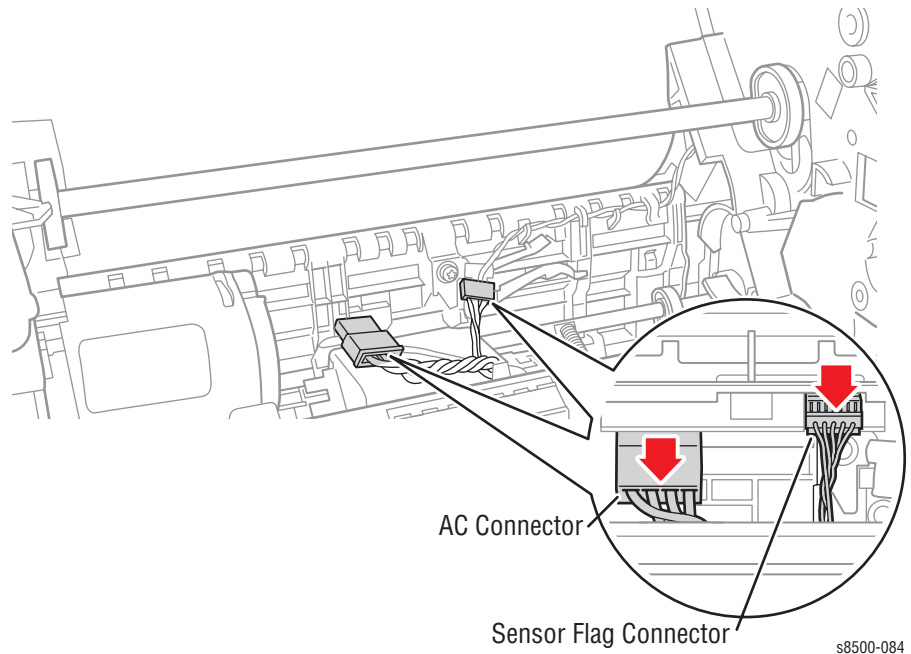
5. Slide the latches in and forward to latch in their slots.

Note

Preheaters in 8500/8550/8560 models are more difficult to slide out than the 8400 versions because of reduced clearance with the Preheater Lift Solenoid.

Latches

s8500-085
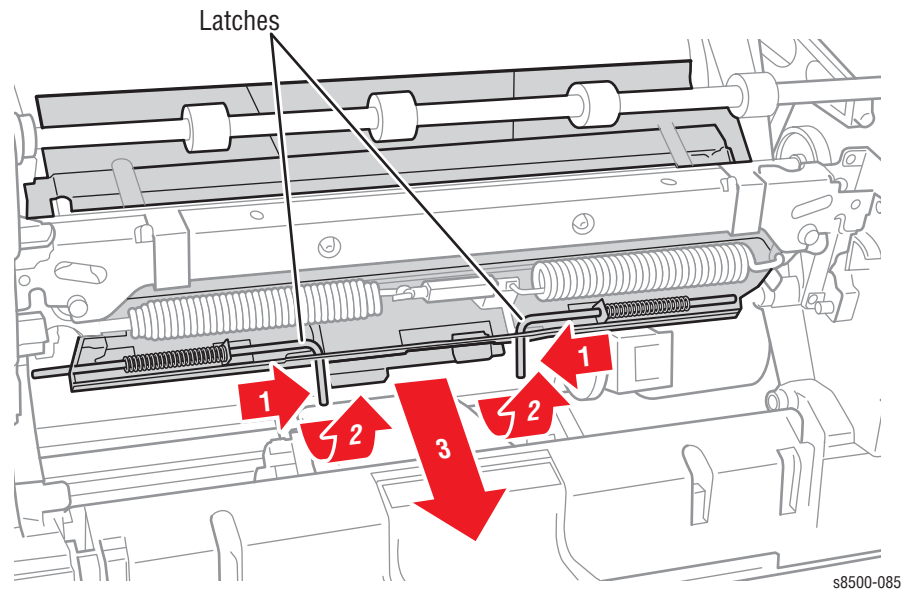
6. Slide the Preheater off the shelves and out of the printer.

Replacement Note

The fingers on the Inner Simplex Guide, go over the segmented roller. First snap the left retainer into place, then the right.

Duplex Roller (PL3.0.8)

1. Open the Front Door.

2. Remove the Outer Duplex Guide (page 8-34).

3. Remove the Upper Duplex Guide (page 8-34).

4. Remove the Lower Inner Duplex Guide (page 8-33).

5. Remove the Duplex Roller by removing the left KL-clip on the shaft and sliding the left side bearing down the shaft toward the right. Then slide the shaft toward the left to free the right end of the shaft. Finally, pull the shaft out towards the right side of the printer.

KL-Clip

Bearing

s8500-086
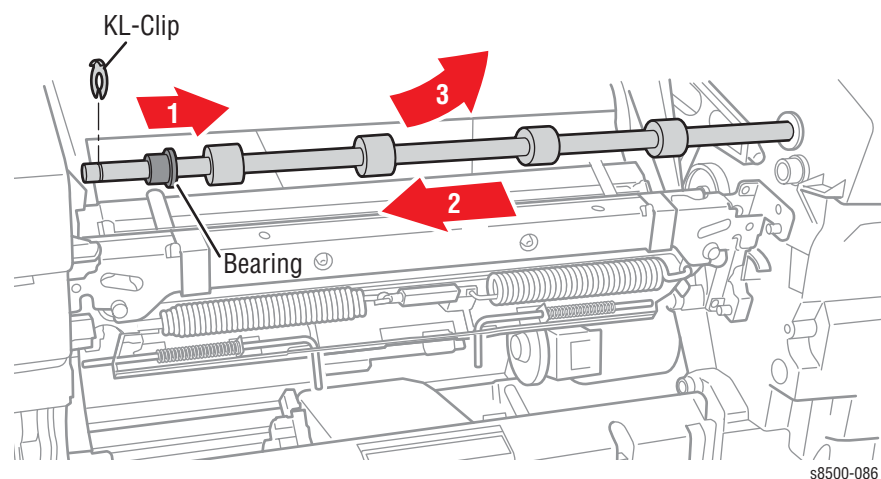
Transfix Load Module (PL2.0.15)

1. Remove the Front Door (page 8-4).

2. Remove the Ink Loader (page 8-7).

3. Remove the Preheater (page 8-20).

4. Remove the Media Drive (page 8-40).

5. Remove 4 screws, disconnect 2 connectors, and remove the Exit Module (page 8-32).

6. Remove the Upper and Lower Duplex Guides (page 8-33).

7. Remove the Duplex Roller by removing the left KL-clip on the shaft and sliding the left side bearing down the shaft toward the right. Then slide the shaft toward the left to free the right end of the shaft. Finally, pull the shaft out towards the right side.

8. Insert a T-20 Torxbit through the slotted hole in the Transfix Load Module, engage the hole on the back of the module, and gently lever the module's spring cam toward the center of the printer to release/unhook the spring hooks from the Transfix Load Arms. Slowly relax the lever to return the spring cam to the relaxed position.

Caution

Ensure that you lever the spring cam towards the center. Applying the pressure in the wrong direction can damage the Transfix Load Module. Also, placing too much force in the leverage action could destroy the cam.

Transfix Load Module

s8500-087
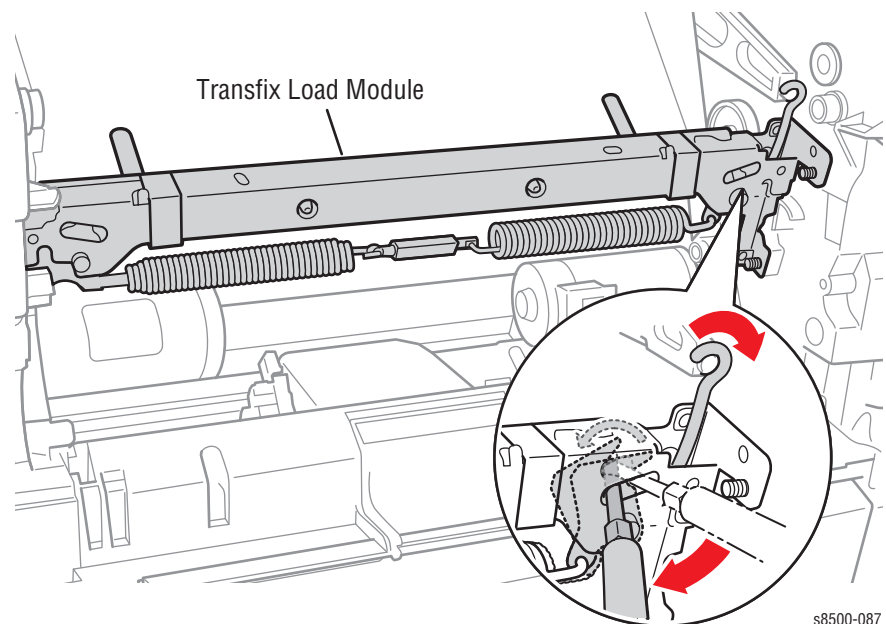
9. Remove the clevis pins securing the Transfix Load Arms to the chassis, and remove the Transfix Load Arms and Transfix Roller.

Clevis Pin

Transfix Load Arm

Add Grease
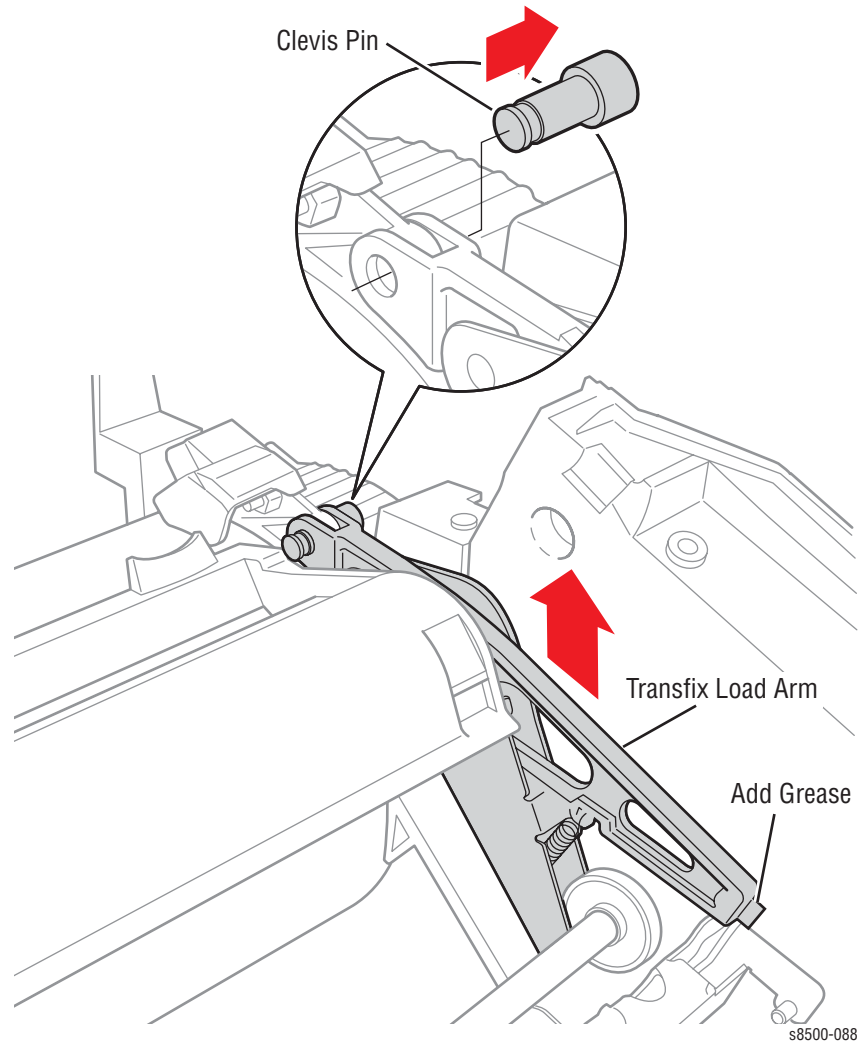
s8500-088

10. Remove the Transfix Camshaft (page 8-25)

11. Remove the grounding springs from the Transfix Load Module.

Grounding Springs
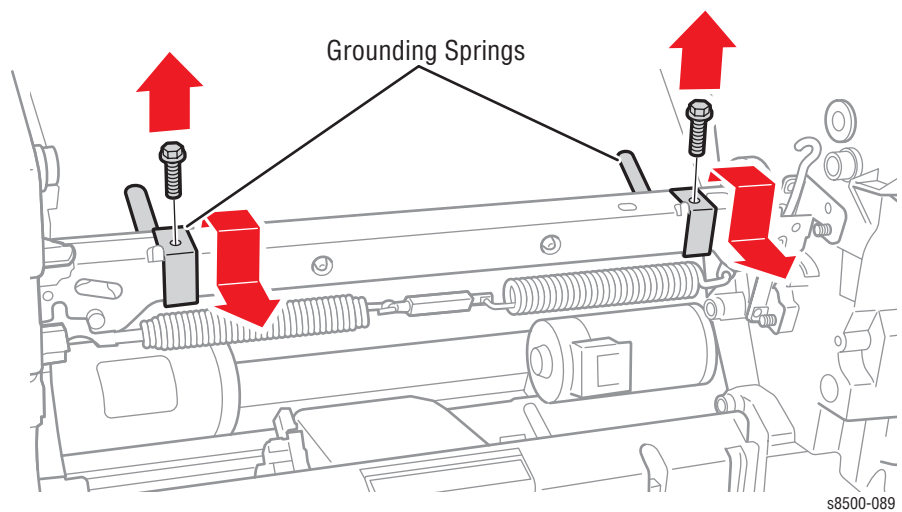
s8500-089

12. Remove two screws securing each end of the Transfix Load Module to the chassis.

Transfix Load Module
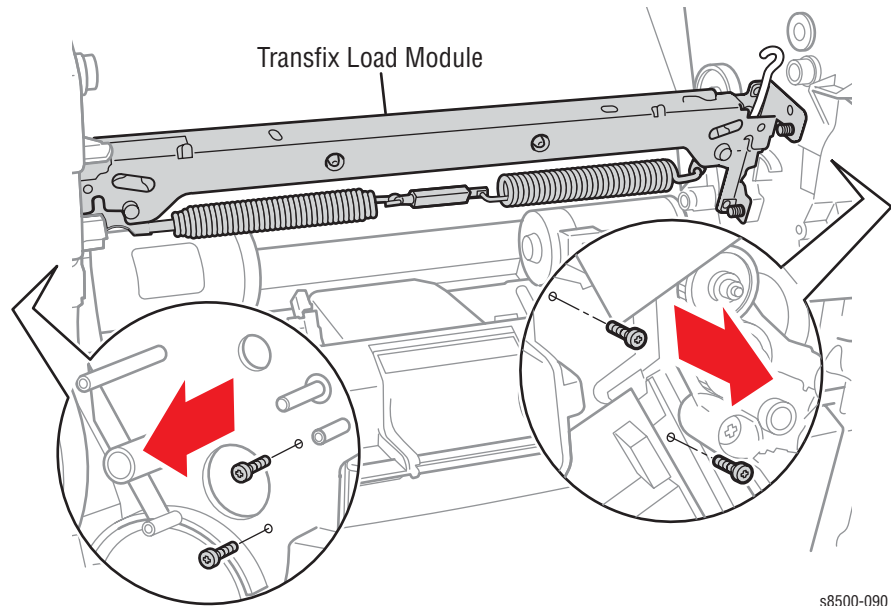
s8500-090

13. Remove the Transfix Load Module by rotating the bottom in and pulling it forward.

Note

The Transfix Load Module is a very tight fit, remove carefully.

Transfix Load Module
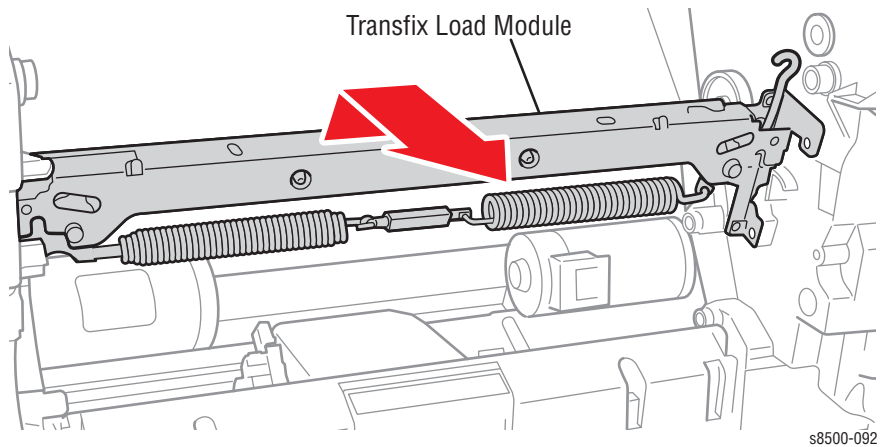
s8500-092

Replacement Note

Place a small amount of Rheolube 768 grease (P/N 070E00890) in the groove on the end of each Transfix Load Arm before reattaching the spring hooks.

After installing the Exit Module, perform the Wiper Alignment procedure on page 6-2. The printer may report error 7,009.4x if the Wiper Assembly is misaligned.

Transfix Camshaft (PL2.0.10)

1. Perform Steps 1 through 7 (remove Transfix Load Arms) of the Transfix Load Module removal procedure (page 8-22).

2. Remove the Process Drive (page 8-43).

3. Slide the shaft to the right and make sure the bearing slides over to the gear. Move the shaft down and slightly to the right, and then up and to the left to remove it.

Transfix Camshaft

s8500-093
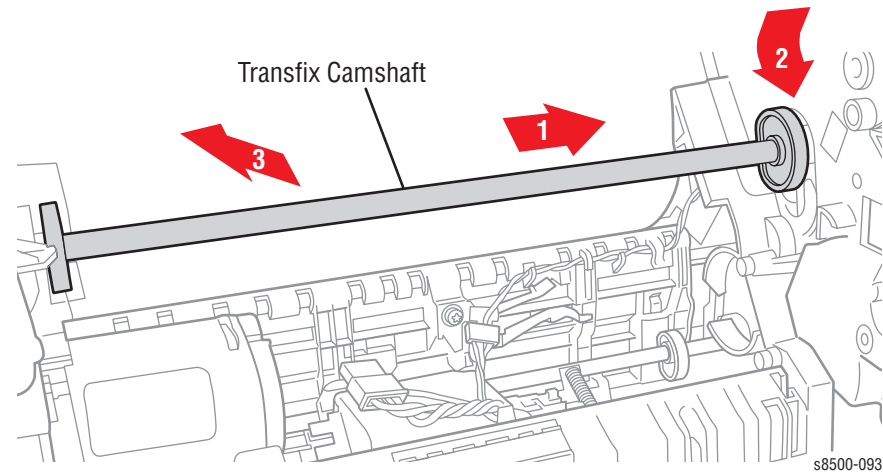
Drum Maintenance Camshaft (PL2.0.11)

Caution

Do not attempt to remove the Drum Maintenance Camshaft until the bushing is completely disengaged from the right ground plane.

1. Remove the Drum Maintenance Pivot Plate (page 8-26).

2. Remove the Process Drive (page 8-43).

3. Slide the shaft to the right, free the bushing, and remove the shaft to the right.

4. Carefully pry the bushing out of the right ground plane.

5. Rotate the left end of the shaft slightly toward the rear of the printer, lift the shaft through the slot, and pull it out to the right through the large hole.

Drum Maintenance Camshaft

Bushing

s8500-094
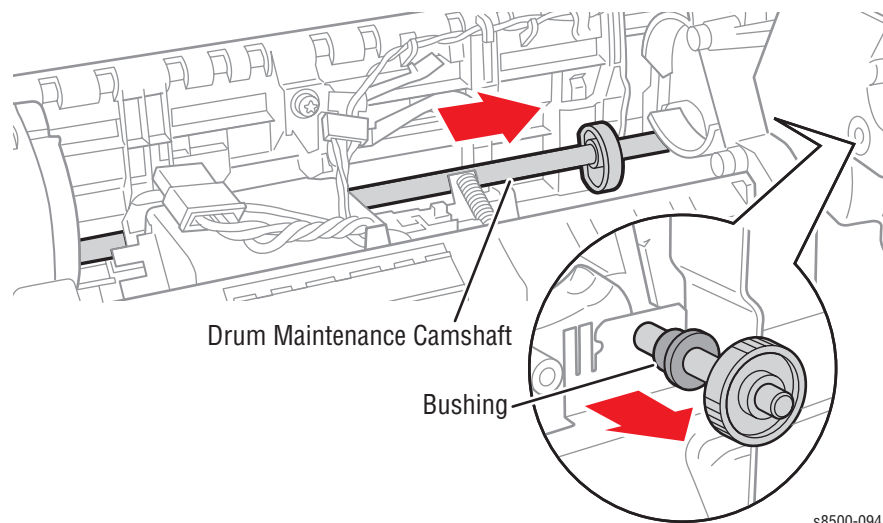
Drum Maintenance Pivot Plate (PL2.0.16)

1. Remove the Drum Maintenance Kit.
2. Remove the Right Side Cover (page 8-5).
3. Remove the Left Side Cover (page 8-5).
4. Remove the grounding clip on the right end of the Pivot Plate Shaft.
5. Remove the KL-clip on the right end of the Pivot Plate Shaft.
6. Remove the Pivot Plate Shaft.
7. Disconnect the connector from the I/O Board (black/white).
8. Feed the cable into the printer while sliding the Drum Maintenance Pivot Plate out the Drum Maintenance Kit cavity.

Metal Plate

KL Clip

Grease Points

Grounding Clip

Metal Plate

s8500-095
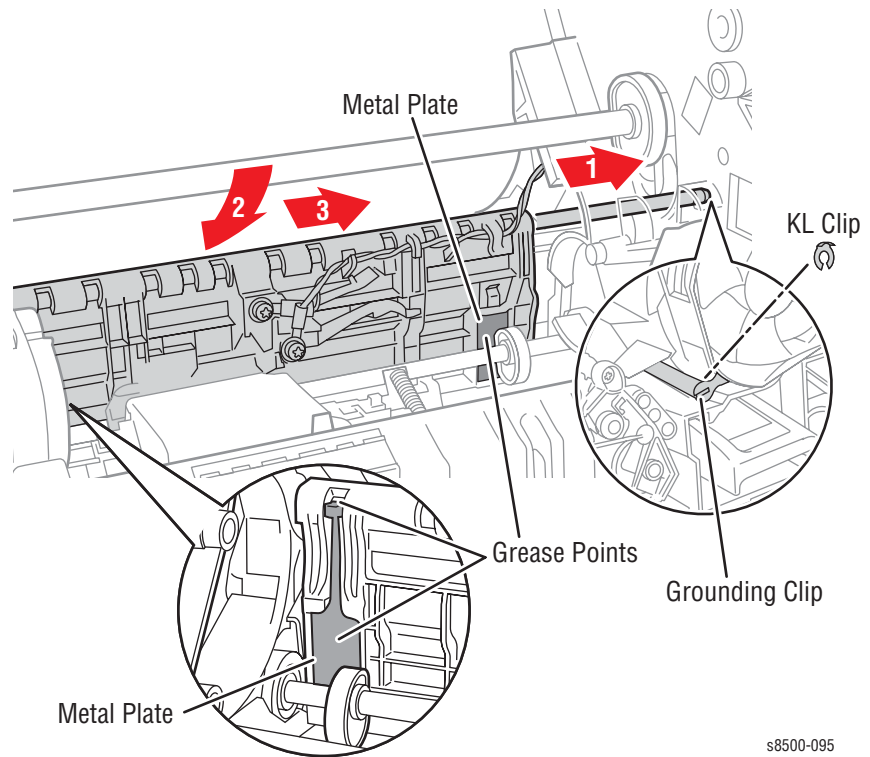
Replacement Note

Lightly grease the metal plates on which the cams ride, using a small quantity of Rheolube 768 grease (P/N 070E00890). Also fill the pocket under the shaft ground with grease.

Drum Assembly (PL2.0.3)

1. Remove the Front Door (page 8-4).

2. Remove the Right Side Cover (page 8-5).

3. Remove the Left Side Cover (page 8-5).

4. Remove the Exit Cover (page 8-6).

5. Remove the Ink Loader (page 8-7).

6. Remove the Lower Inner Duplex Guide (page 8-33).

7. Place the Printhead in the park position (tilted back) and the Wiper Assembly in the home position (all the way down).

8. Insert a T-20 Torxbit through the right slotted hole in the Transfix Load Module, engage the hole on the back of the module, and lever the module's spring cam toward the center of the printer to release/unhook the spring hooks from the Transfix Load Arms. Slowly relax the lever to return the spring cam to the relaxed position. (See the figure on page 8-22.) Repeat for the other side.

Note

Ensure that you lever the spring cam towards the center. Applying the pressure in the wrong direction can damage the Transfix Load Module.

9. From the right side, remove 3 screws from the Drum Fan and allow the fan to hang free.

10. Relieve tension on the Y-Axis Belt by pulling the end of the spring arm toward the front of the printer using your fingers. See page 8-8.

11. Slide the belt off the pulley.

12. Unplug the Drum heater cable from the Drum Heater Relay Board and free the cable from the retaining hook.

13. Unplug the Drum encoder cable connector from the Power Control Left Cable and free the cable from the retaining hook.

14. Unplug the Drum Temperature Sensor connector from the I/O Board.

15. Remove the Exit Module (page 8-32).
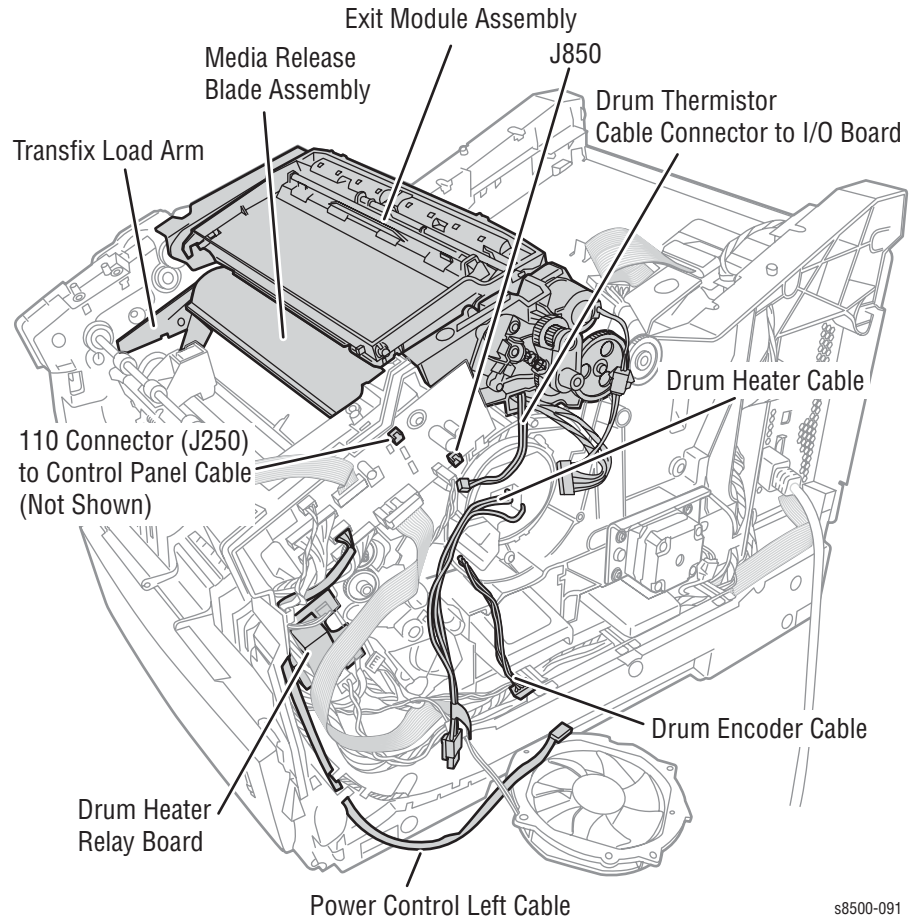
Exit Module Assembly

Media Release
Blade Assembly

J850

Drum Thermistor
Cable Connector to I/O Board

Transfix Load Arm

Drum Heater Cable

110 Connector (J250)
to Control Panel Cable
(Not Shown)

Drum Encoder Cable

Drum Heater
Relay Board

Power Control Left Cable

s8500-091

Caution

> The Drum Temperature Sensor harness is routed through the Exit
> Module. Use care during removal to avoid damaging the sensor.

16. Remove the clevis pins securing the Transfix Load Arms to the chassis
and remove the Transfix Load Arms and the Stripper Carriage Assembly.
(See the figure on page 8-23.)

17. Remove 3 left-handed screws (8500/8550/8560) and washers from the
right side of the Drum Assembly. Note that one of the screws has no
washer. The 8400 uses 3 right-handed screws.

18. Remove 3 screws and washers from the left side of the Drum Assembly.

19. Remove the Drum Assembly from the chassis by lifting it straight up as shown in the following figure.

Note

You will need to temporarily remove 3 screws of the Media Drive motor (PL 4.8) and pull the motor out of the way before you can lift the Drum and pulley from the chassis.

Yellow Left-Hand Threaded Screws

No Washer

s8500-096
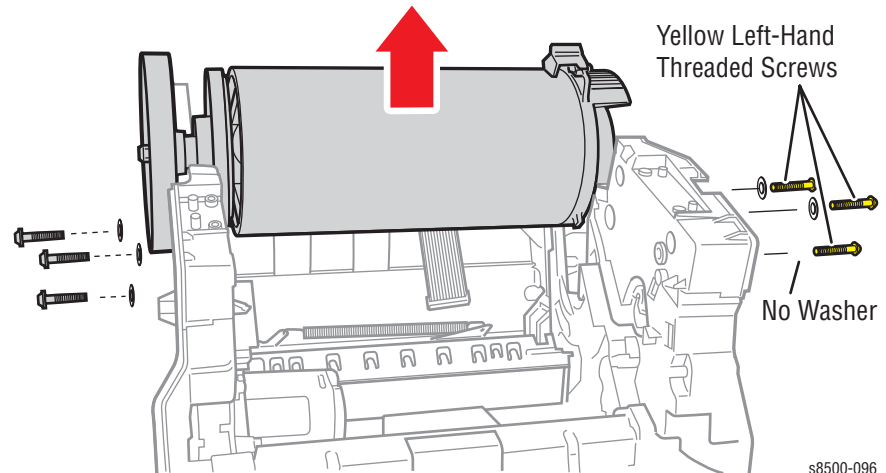
Caution

Never rest the Drum on its pulley. Let the pulley hang over the edge of a surface and place the Drum on its feet.
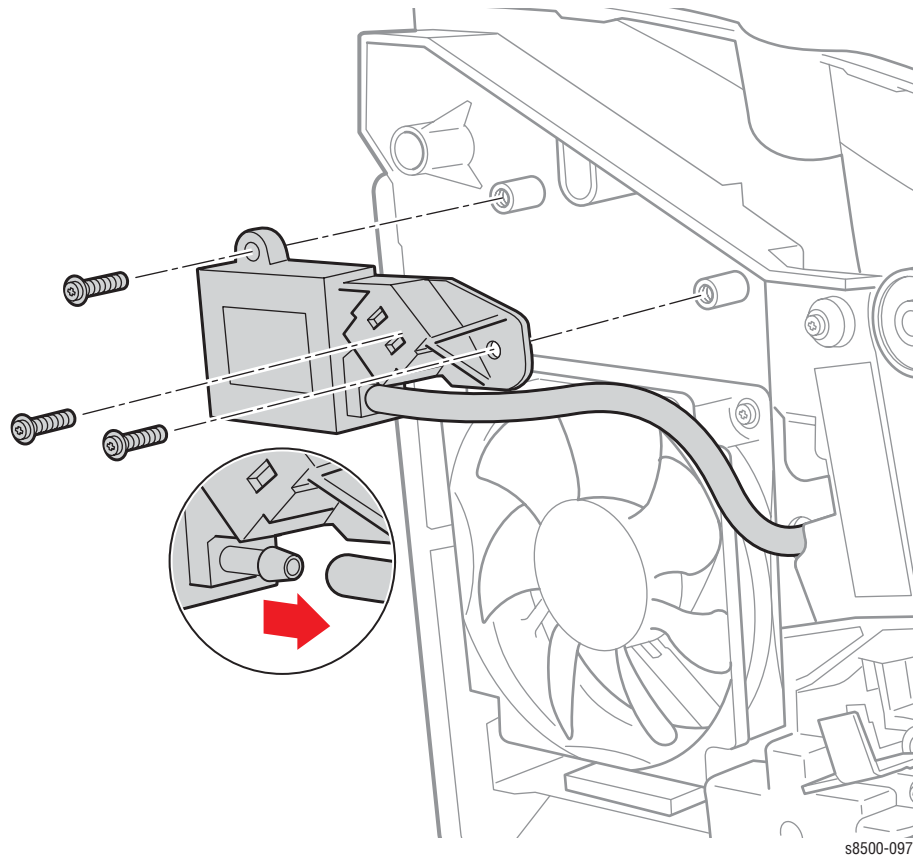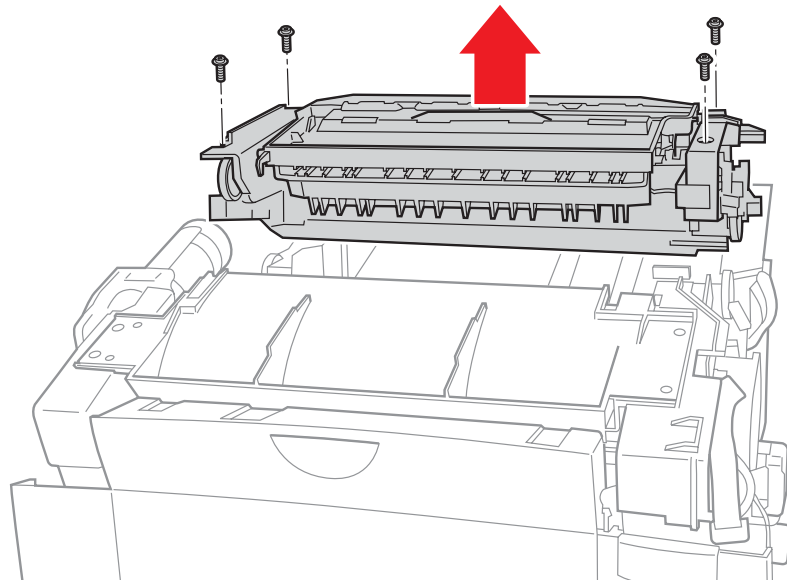
Replacement

Caution

The Drum Temperature Sensor harness is routed through the Exit Module. Use care during removal to avoid damaging the sensor.

Note

To help seat the Drum properly, follow steps 2-6 in order, when installing the screws to secure the Drum Assembly to the chassis.

1. Gently seat the Drum Assembly into the chassis.

2. Align the screw holes in the left and right sides of the Drum Assembly to the holes in the chassis sides.

3. Install one silver screw at the rear position of the left-side of the chassis to hold the left side of the Drum Assembly and torque the screw to 25 in. lbs.

4. Install the remaining two silver screws into the bottom and front chassis locations to the left side of the Drum Assembly.

5. Install one yellow reverse-threaded screw at the rear position of the right-side chassis to hold the right side of the Drum Assembly and torque to 25 in. lbs.

6. Install the remaining two yellow reverse-threaded screws into the bottom location (without a washer) and the front location (with a washer) on the right side of the Drum Assembly.

7. Spread apart the chassis handles near the left and right labyrinth seals to ensure the bearing is properly sealed.

8. Align the clevis on the Transfix Load Arms with the holes in the mounting ears on the Drum. The Transfix Load Arms point in the opposite direction from the Drum Thermistor. Ensure that the cam followers on the Transfix Load Arms are under the Transfix Cams.

9. Insert the clevis pins through the clevis and the mounting ears on the Drum (pins are inserted from the outside). Ensure that the o-rings are mounted on the inside end of each clevis pin.

10. Align the Exit Module to the chassis and route the Drum Temperature Sensor harness through the opening in the Exit Module that the other cables pass through. Seat the Exit Module on the two front locating pins and then on the rear locating pins.

11. Insert and torque the four screws securing the Exit Module to 15 in.-lbs.

12. Apply a small quantity of Rheolube 768 grease (P/N 070E00890) to the spring hook's groove of the Transfix Load Arms.

Note

> Ensure that you lever the spring cam towards the center. Applying the pressure in the wrong direction can damage the Transfix Load Module (see the figure on page 8-22).

13. Insert a T-20 Torxbit through the right side slotted hole in the Transfix Load Module, engage the hole on the back of the module, and lever the module's spring cam toward the center of the printer while connecting the spring hooks to the Transfix Load Arms. Repeat for the other side.

14. Pull the lower end of the Y-Axis spring arm toward the front of the printer and install the Y-Axis Belt first on the motor pulley and then on the Drum pulley. (It is not necessary to align the belt on the Drum pulley.) Ensure that the grooves of the belt align in the grooves of the motor pulley and that the cross-ribs are away from the pulleys.

15. Reposition the Media Drive Assembly, insert the 3 screws, and torque the screws to 12 in. lbs.

16. Connect the Media Drive Fan and Media Drive motor harnesses. Bend the cable retainer as required to hold the fan cable.

17. Connect the Drum heater harness to the Drum Heater Relay Board.

18. Connect the Drum encoder harness to the Power Control Left Cable.

19. Connect the Drum Temperature Sensor harness to the I/O Board.

Caution

> The Drum Temperature Sensor harness is routed through the Exit Module. Use care during removal to avoid damaging the sensor.

20. Connect the Exit Module Cable to the I/O Board.

21. Ensure that the Drum heater and encoder harnesses are dressed correctly and secured by the retainer hook at the Process Drive.

22. Reinstall the Drum Fan and secure it with 3 screws. Torque the top screw into the Labyrinth Seal to 20 in. lbs. and the other two screws into the chassis to 12 in. lbs.

23. Pass the Stripper Blade Solenoid harness through the right side of the chassis and seat the Lower Inner Duplex Guide on the four mounting pins on the chassis.

24. Install the Ink Loader (page 8-7).

25. Reinstall all covers and doors.

Purge Pump (PL2.0.7)

1. Remove the Left Side Cover (page 8-6).

2. Disconnect the air hose from the Purge Pump.

3. Disconnect the harness from the Purge Pump.

4. Remove 3 screws to remove the Purge Pump.

s8500-097

Replacement Note

Screws in plastic are torqued to 12 in. lbs., metal to 15 in lbs., unless otherwise specified. Irreversible damage can result from over tightening screws into plastic parts.

Paper Path

Exit Module (PL3.0.13)

Caution

> The Drum Temperature Sensor harness is routed through the Exit Module. Use care during removal to avoid damaging the sensor.

1. Remove the Exit Cover (page 8-6).
2. Remove 3 screws securing the Media Drive, and let the motor hang.
3. Disconnect 3 connectors: two on the right (I/O Board J680 and J870) and one on the left.
4. Remove the 4 screws holding the Exit Module to the printer chassis and remove the Exit Module.

Note

> You may need to remove the Media Drive to access the screw.

s8500-132

Replacement Note

> Seat the Exit Module on the chassis. Torque the 4 screws to 15 in. lbs. After installing the Exit Module, perform the Wiper Alignment (page 6-2). The printer may report error 7,009.4x if the Wiper Assembly is misaligned.

Inner Simplex Guide (PL3.0.1)

1. Open the Front Door to access the guide.

2. Using a small flatblade screwdriver, pry inward on one retainer to remove it from the mounting post then remove the other retainer.

3. Slide the guide down and forward to remove.

Replacement Note

The fingers on the Inner Simplex Guide, go over the segmented roller. First snap the left retainer into place, then the right.

Lower Inner Duplex Guide (PL3.0.2)

1. Open the Front Door.

2. Pull out on the tabs at the bottom of the guide and let the guide swing free.

3. Pry inward (toward the center of the printer) on the right upper retainer until it is free of the mounting boss and remove the guide.

Lower Exit-Guide Assembly with Strip Flag (PL3.0.3)

1. Open the Exit Cover.

2. Lift upward on the center of the guide, then flex the left retainer inward to remove it.

3. Remove the right retainer and remove the guide.

Outer Duplex Guide With Safety Interlocks (PL3.0.4)

1. Remove the Control Panel (page 8-5).

2. Remove 4 screws and remove the guide.

Outer Duplex Guide

Lower Inner Duplex Guide

Inner Simplex Guide

Lower Exit Guide Assembly

s8500-098
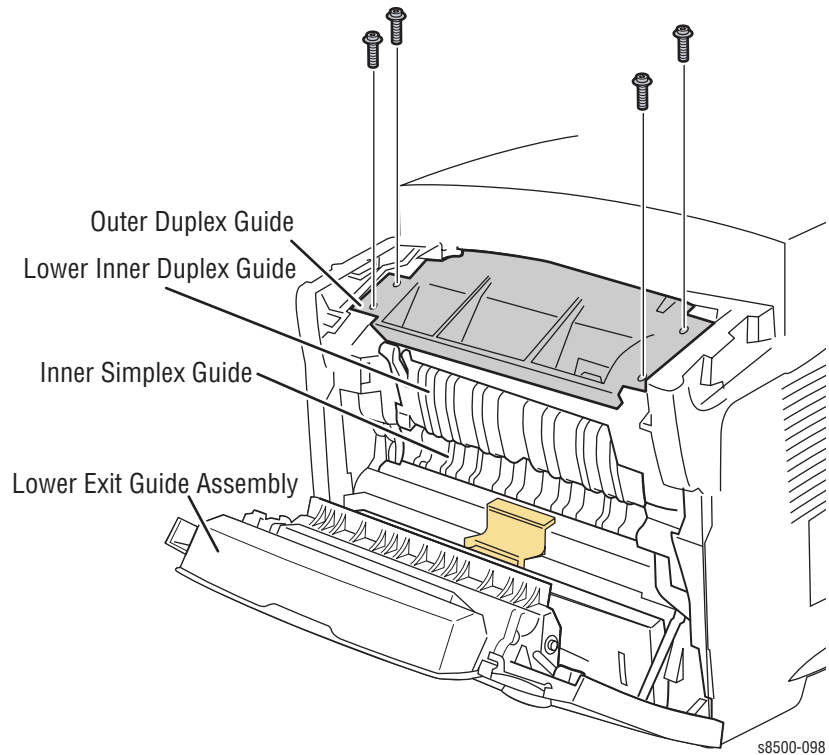
Replacement Note

Seat the guide on the chassis. Torque the 4 screws to 12 in. lbs.

Upper Duplex Guide with Solenoid (PL3.0.5)

1. Remove the Right Side Cover (page 8-5).

2. Remove the Outer Duplex Guide.

3. Disconnect the solenoid connector from the I/O Board and release the harness from the right side frame.

4. Remove the Upper Duplex Guide from the printer.

Solenoid Lever

Upper Duplex Guide

Hole for
Solenoid Lever
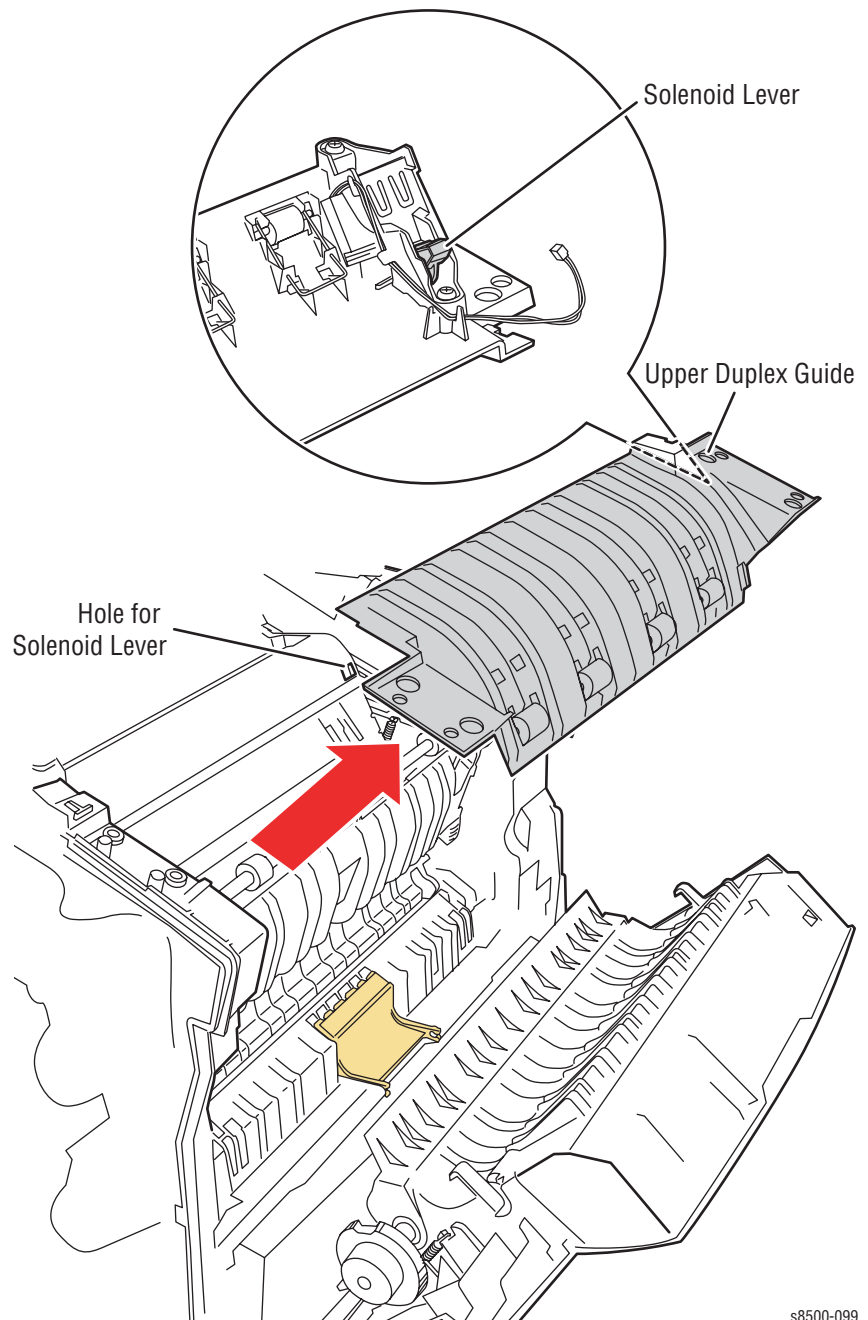
s8500-099

Replacement Note

Route the Stripper Solenoid harness through the right side frame
when replacing the Upper Duplex Guide. Also, verify that the solenoid
lever engages the hole in the Stripper Carriage.

Take Away Roller (PL3.0.7)

1. Remove the Right Side Cover (page 8-5).

2. Remove the Left Side Cover (page 8-5).

3. Remove the Media Drive (page 8-40).

4. Remove the Lower Simplex Guide (page 8-33).

5. Remove the KL-clip from the right end of the shaft.

6. Remove the KL-clip and bushing from the left end of the shaft.

7. Move the Take Away Roller shaft to the left side to release it from the right side frame, rotate the shaft forward, and remove it to the right.

Note

Pressure from the idler rollers makes it difficult to move the Take Away Roller shaft to the right during removal.


s8500-100
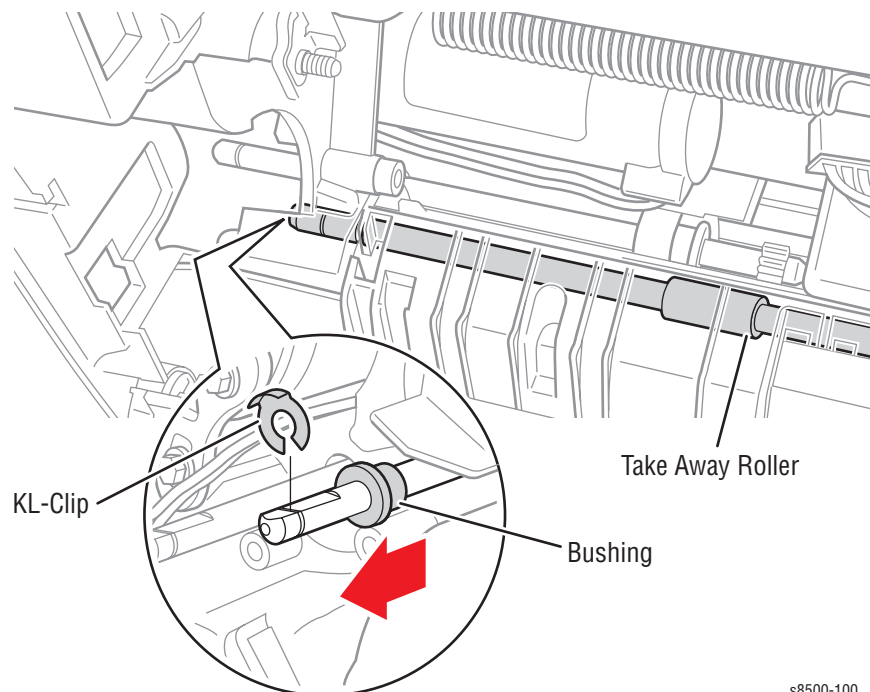
Replacement Note

First remove the tray. Next, rotate the Pick Roller Shaft until the clutch seats. Working upwards, rotate the Take Away Roller and Duplex Roller until all shafts seat properly. Check that the Media Drive is correctly positioned on the side frame. Install and torque the 6 screws to 12 in. lbs. Finally, check that all rollers rotate freely.

Pick Assembly (PL3.0.10)

Note

Replace the Retard Roller at the same time you replace the Pick Assembly.

1. Remove Tray 2 from the printer.

2. Reach into the tray cavity and release the orange colored catch holding the Pick Roller in place. The catch is located on the ceiling of the tray cavity about 1/4 of the way across the unit from the right side and about 12.5 cm (5 inches) back. When you pull forward on the catch, the roller will swing down.
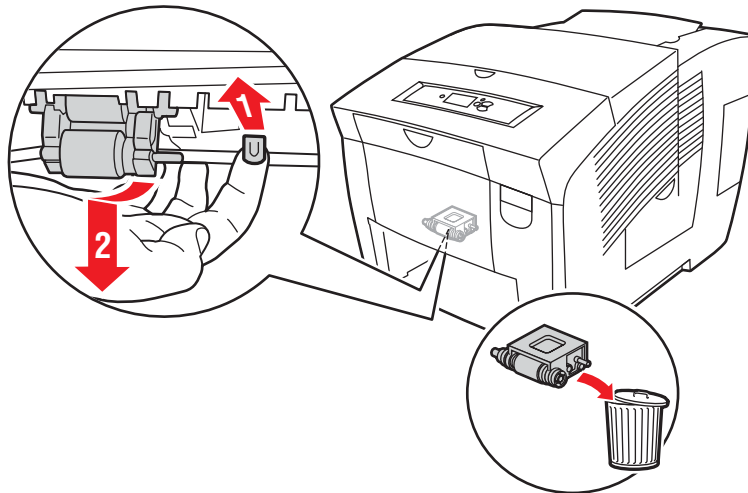
s8500-101

3. Pull down to remove the roller.

Replacement Note

Insert the replacement with the metal shaft at the top and toward the left, the grey rollers should face you. Position the roller back about 5 cm (2 inches) in the tray cavity. Push the Pick Assembly up into the chassis and snap it into place. Then, rotate the Pick Assembly up and back to latch.
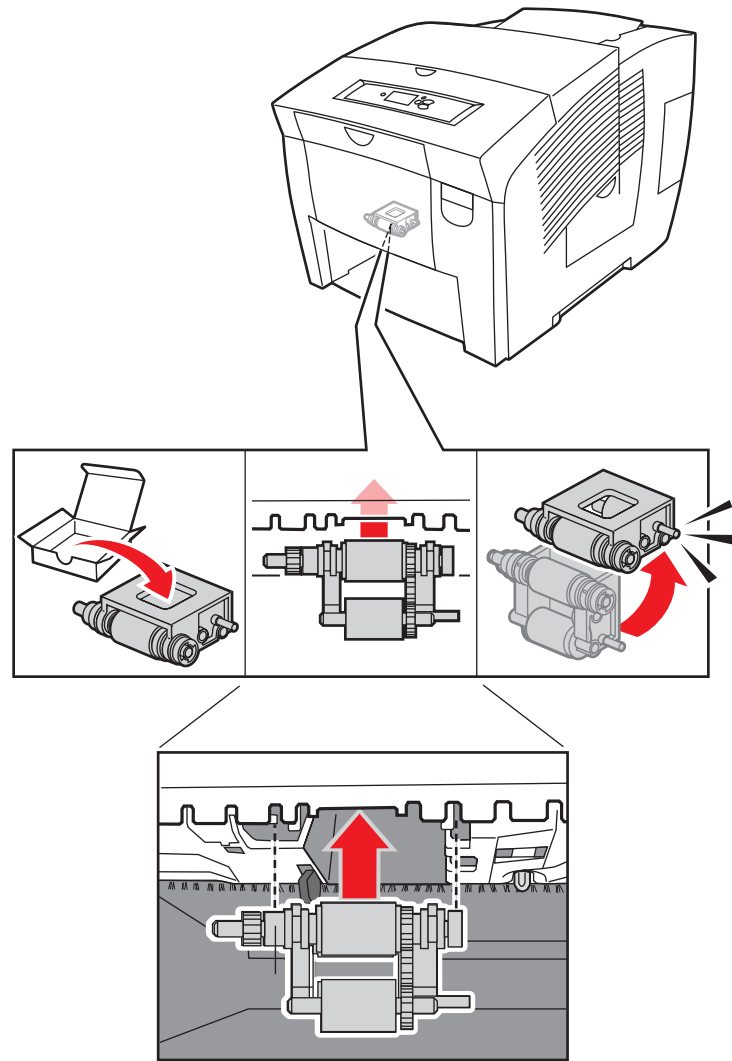
s8500-102

Retard Roller Repalcement
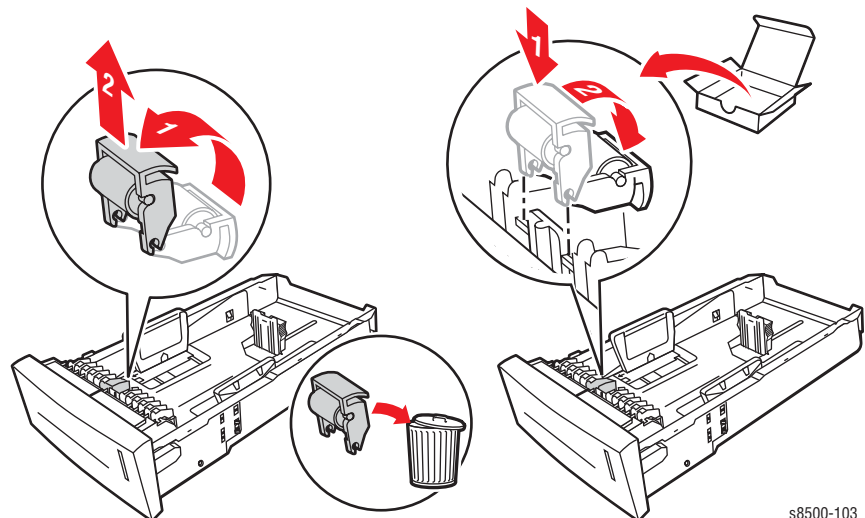
s8500-103

Tray Lift Motor and Gear (PL4.0.6)

1. Remove the Electronics Module (page 8-46).
2. Remove Tray 2.
3. Disconnect the harness from the Tray Lift Motor.
4. From the rear of the printer, inside the cavity, remove the push nut (this is a press fit).
5. Remove the gear from the shaft.
6. Remove 2 screws holding the Tray Lift Motor to the printer frame.
7. Remove the Tray Lift Motor from the outside of the printer.

Lift Motor Gear
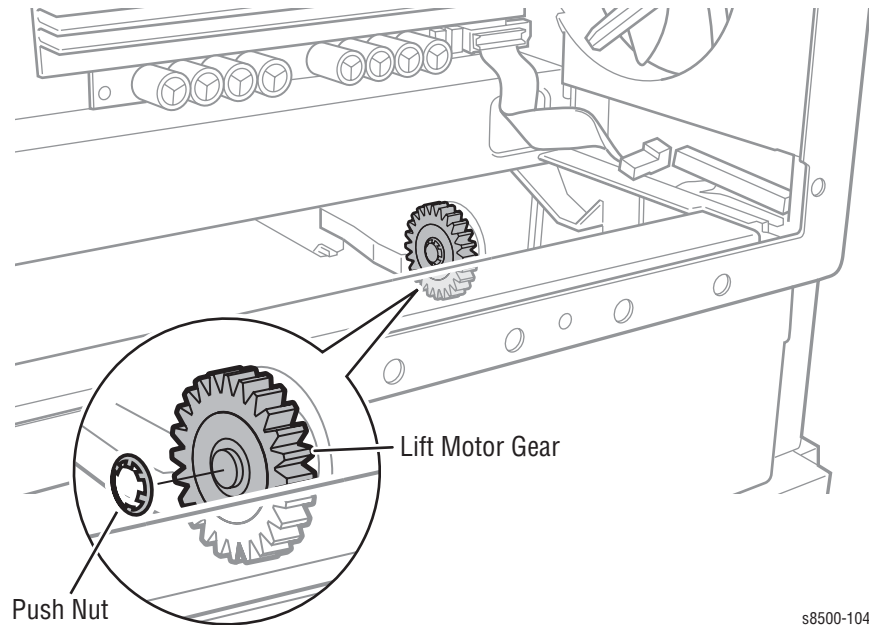
Push Nut

s8500-104

Replacement Note

Check that the two tabs of the bushing are seated in the chassis. Install and torque the 2 Tray Lift Motor screws to 12 in. lbs. Position the push nut so the fingers on the inside of the nut are pointed up toward the end of the motor shaft. Place a box wrench or socket wrench of the same size as the outer ring of the push nut over the nut and press firmly to seat the nut on the shaft.

Motors, Gears, Solenoids, Clutches, and Fans

Media Drive with Two Clutches and Solenoid (PL4.0.5)

1. Remove the Left Side Cover (page 8-6).

2. Remove the Exit Cover (page 8-6).

3. Disconnect the fan, Media Drive motor, deskew clutch, pick clutch, and Tray 1 Pick Solenoid harnesses.

4. Remove the 6 screws securing the Media Drive..

Media Drive Gearbox

Duplex Roller Shaft

Pick Clutch

Loosen Only (Do Not Remove)
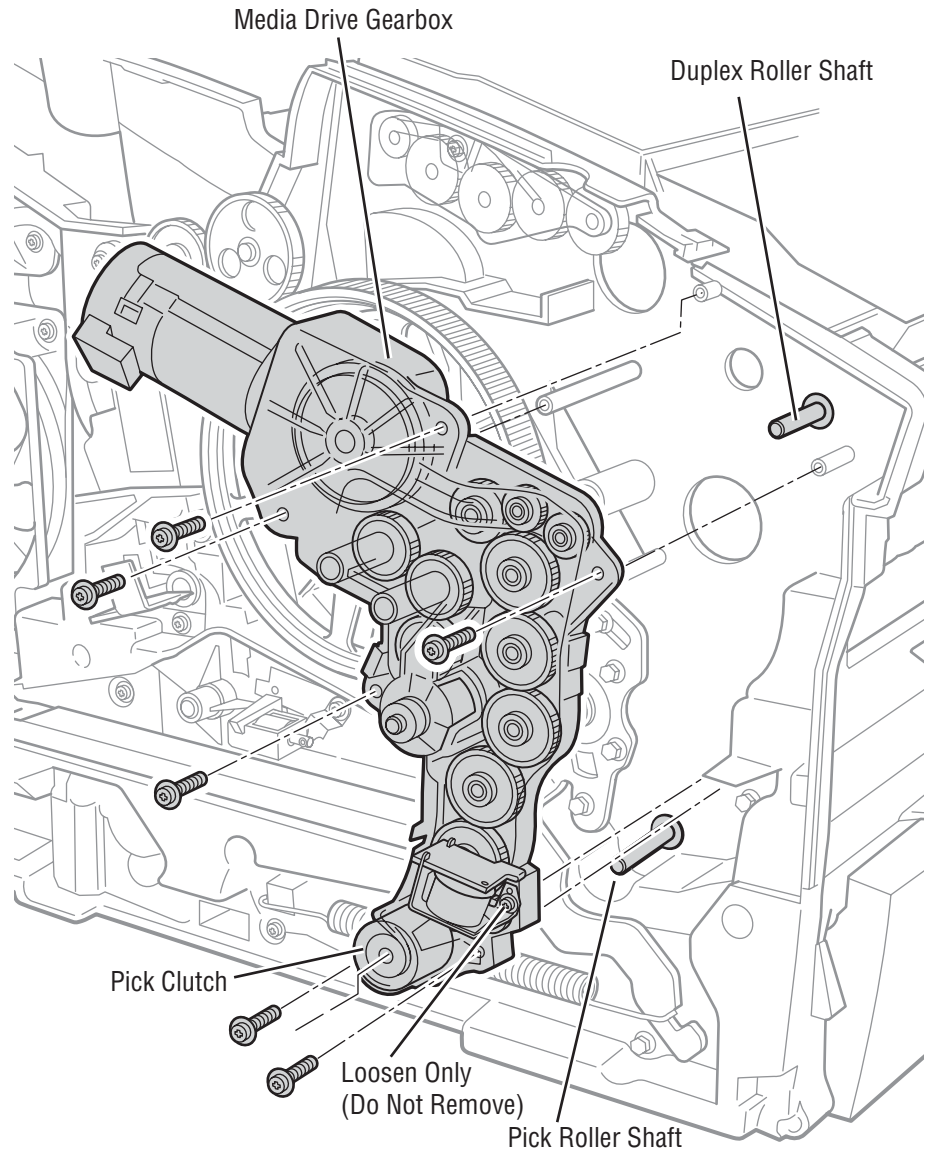
Pick Roller Shaft

s8500-105

Replacement Note

Remove the tray, then rotate the Pick Roller Shaft until the clutch seats. Working upwards, rotate the Take Away Roller and Duplex Roller until all shafts seat properly. Check that the Media Drive is correctly positioned on the side frame. Install and torque the 6 screws to 12 in. lbs. Finally, check that all rollers rotate freely.

Tray 1 Pick Solenoid (PL4.0.3)

1. Remove the Left Side Cover (page 8-6).

2. Disconnect the solenoid harness.

3. Remove 1 screw from the solenoid, and remove the solenoid.

Tray 1 Pick Solenoid

s8500-106
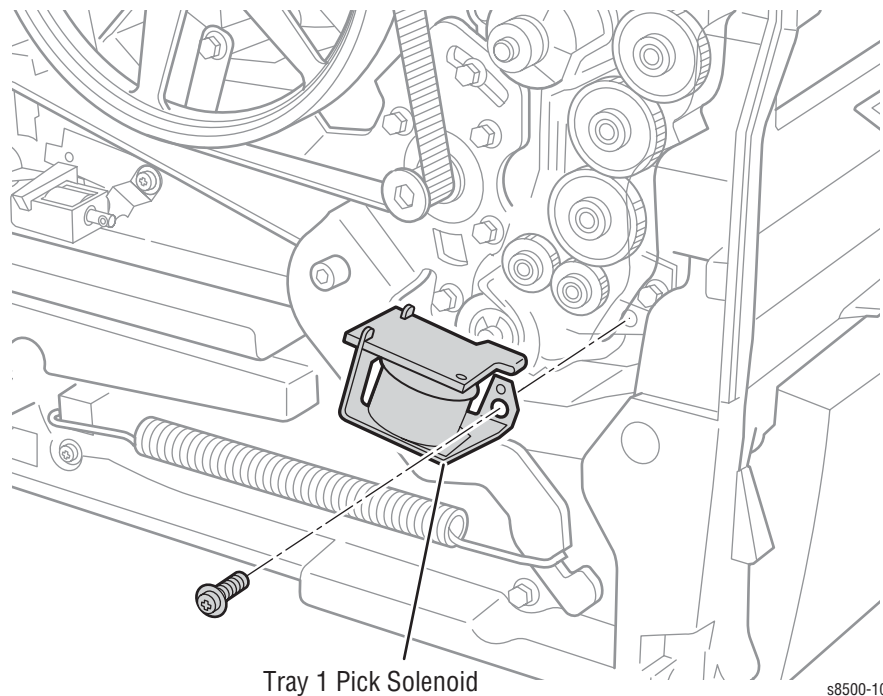
Replacement Note

Align the hole on the solenoid with the boss on the Media Drive.
Install and torque the screw to 12 in. lbs. Reconnect the harness.

Preheater Lift Solenoid (PL4.0.1)

1. Open the Front Door.

2. Remove the Control Panel and cover (page 8-5).

3. Remove 4 screws, disconnect 2 connectors, and remove the Exit Module (page 8-32).

4. Remove the Outer and Upper Duplex Guides (page 8-34). The Preheater Lift Solenoid is now visible on the top of the Transfix Load Module.

5. Disconnect the solenoid harness.

6. Remove 1 screw holding the solenoid to the Transfix Load Module.
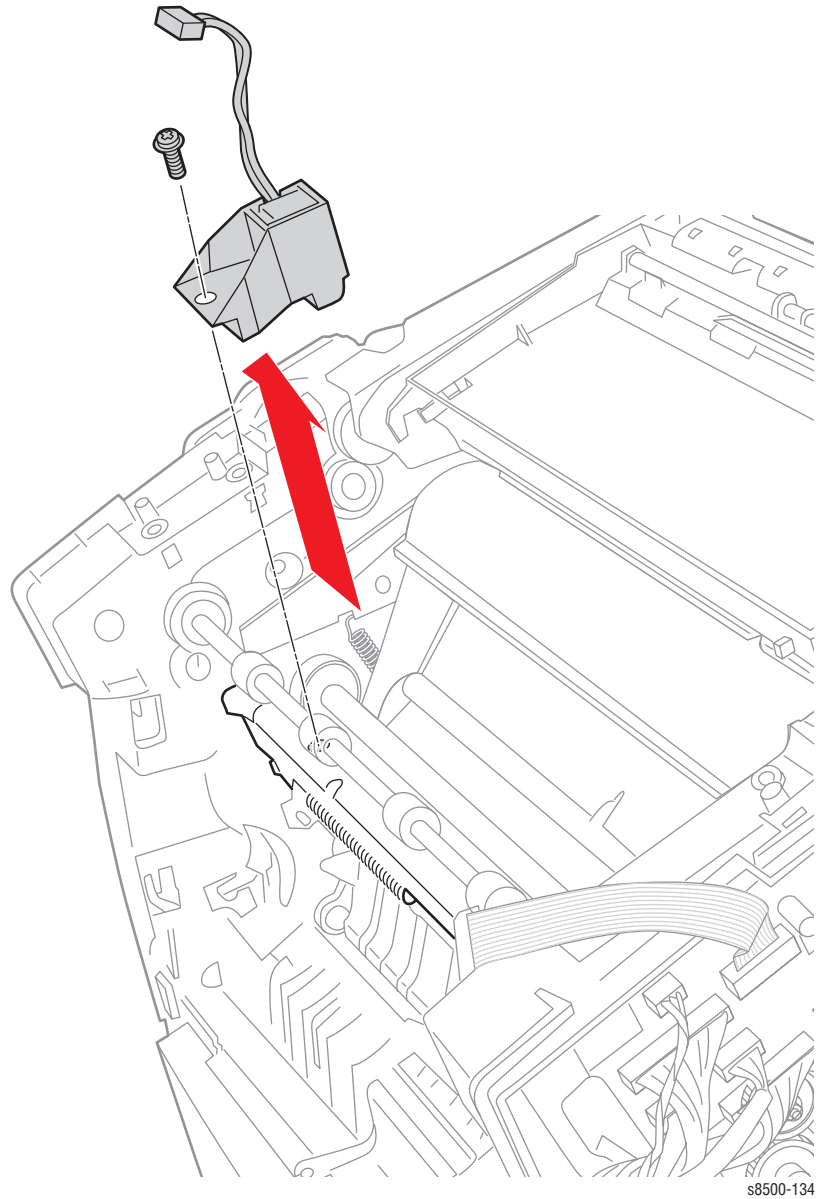
s8500-134

Replacement Note

Align the hole on Transfix Load Module. Install and torque the screw to 15 in. lbs. Reconnect the harness.

Process Drive (PL4.0.14)

Caution

Replacement drives come with two pins to hold the gears in position. Use either the pins that come with replacement drives, or a paper clip, bent into a U shape to hold the gears in their proper position during removal and replacement. If the Process Drive is incorrectly installed, the printer could be damaged. See "Homing the Process Drive Train" on page 6-8.

Torque the Process Drive screws to 12 in. lbs. Irreversible damage can result if these screws are over tightened.

1. Remove the Right Side Cover (page 8-5).
2. Disconnect the drum heater harness from the Drum Heater Relay Board and free other wiring harnesses from the gearbox cable restraint.
3. Pin the gears in position to maintain correct alignment on replacement.

Process Drive Motor
and Gearbox

Holes in process drive frame aligns with holes in gears

Hole in gear aligns with arrow on frame

Hole in gear aligns with arrow on frame
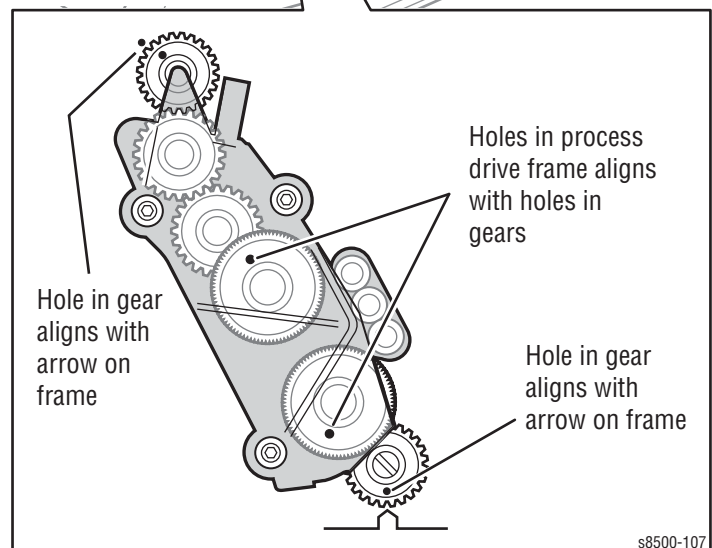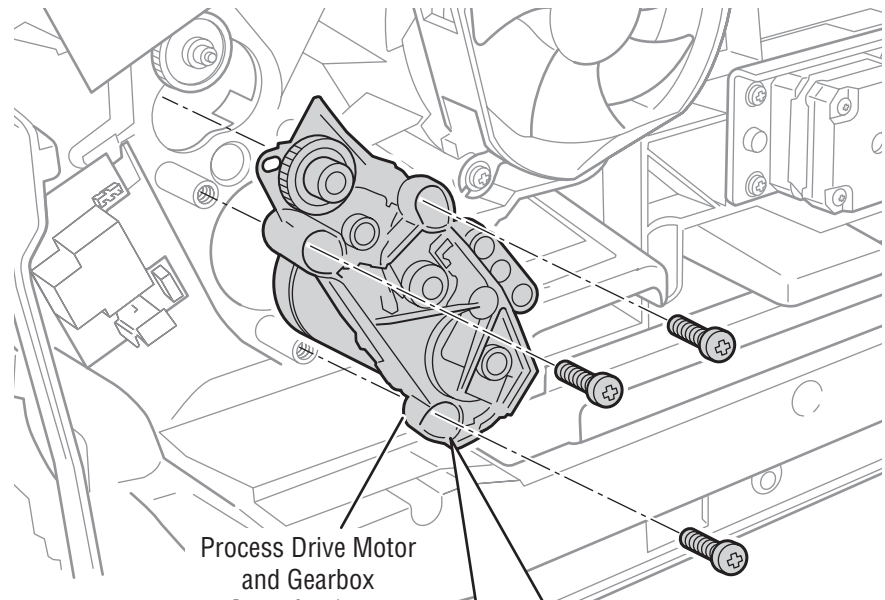
s8500-107

4. Remove 3 screws and remove the Process Drive.
5. Disconnect the harness from the Process Drive motor.

Replacement Note

After replacing the Process Drive, Drum Maintenance Pivot Plate or the Drum Maintenance Camshaft (or any component requiring removal of the Process Drive), the printer may experience Front Cover jams from Tray 2. The jam occurs with paper in the Preheater and C3T jam errors (strip flag timeout during transfix) recorded in Jam History. In many cases, Tray 1 (MPT) prints with no jams.

These symptoms indicate that the Transfix Load Module is incorrectly timed resulting in a late arrival of the leading edge at the strip flag. The likely cause is the position of the Drum Maintenance Camshaft gear in relation to the Process Drive gear. To correct this problem, see "Timing the Drum Maintenance Camshaft" on page 6-9.

X-Axis Motor (PL4.0.12)

1. Remove the Right Side Cover (page 8-5).
2. Disconnect the harness.
3. Remove 4 screws securing the motor to the chassis and remove the motor.

X-Axis Motor

Side Rail

s8500-108
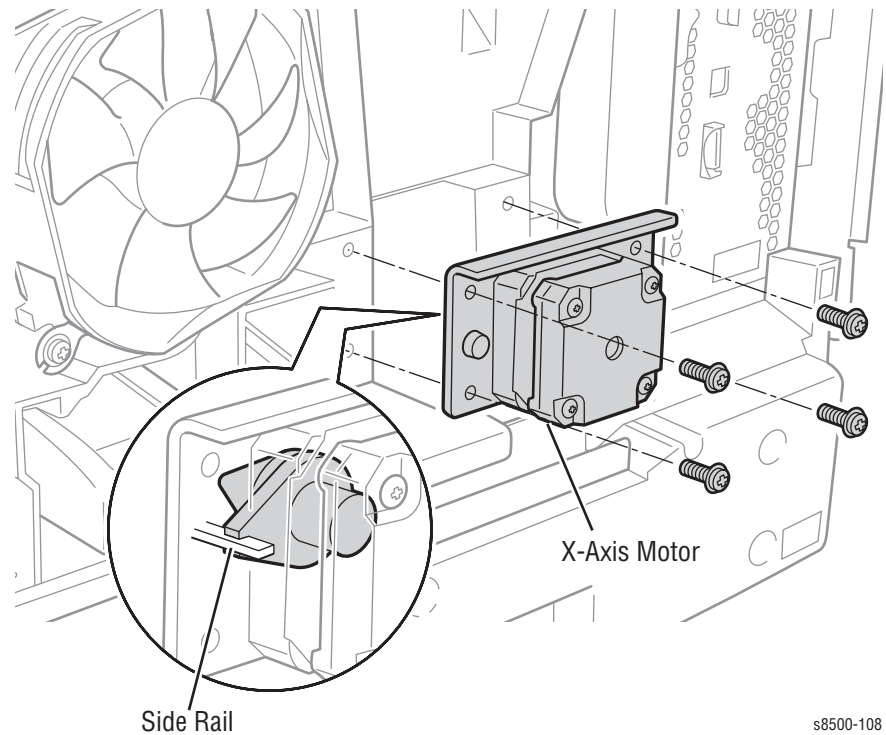
Replacement Note

When reinstalling the X-Axis Motor, ensure that the fork, extending out from the side of the cone nut on the motor shaft, is engaged with the side rail. Install and torque the 4 screws to 12 in. lbs. Reconnect the harness. Before restoring power, center the Printhead in its range of motion using a flatblade screwdriver to turn the X-Axis Motor shaft.

Head Tilt Gear (PL4.0.9)

1. Remove the Printhead (page 8-10).

2. At the left side, remove the KL-clip.

3. Remove the Waste Tray Cover, without disconnecting the Waste Tray Detect Sensor harness.

4. Reach in to the Waste Tray cavity and remove the Head Tilt Gear.

Remove KL-Clip

Head Tilt Compound Gear

s8500-109
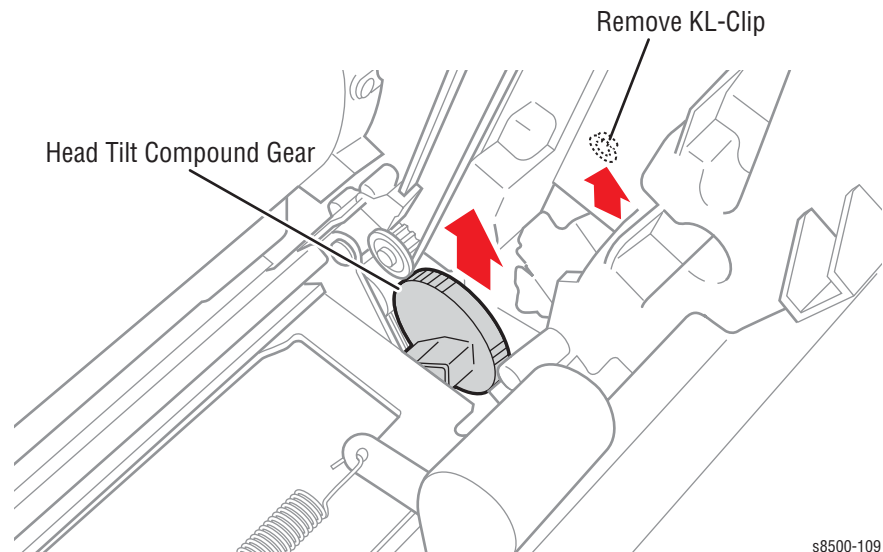
Replacement Note

> On reassembly, the leaf spring on the back side of the chassis must be behind the gear to engage. Also, lubricate the curved (cam) surfaces of the gear using a small quantity of Rheolube 768 grease (P/N 070E00890).

Electronics

Electronics Module (PL5.0.5)

Caution

Touch the back of the Electronics Module before starting this procedure to discharge any electrostatic charge present on the case. Also, do not completely remove EMI tape, if added to a connector.

Note

Do not fully remove EMI tape, if included with any connector.

1. Disconnect the Power Cord and all connections to the Electronics Module.

2. Remove the Ink Loader (page 8-7).

3. Remove 5 screws from the back of the Electronics Module and two screws from inside the chassis.

4. Remove the Electronics Module.

EMI Tape (8500/8550/8560)

s8500-110
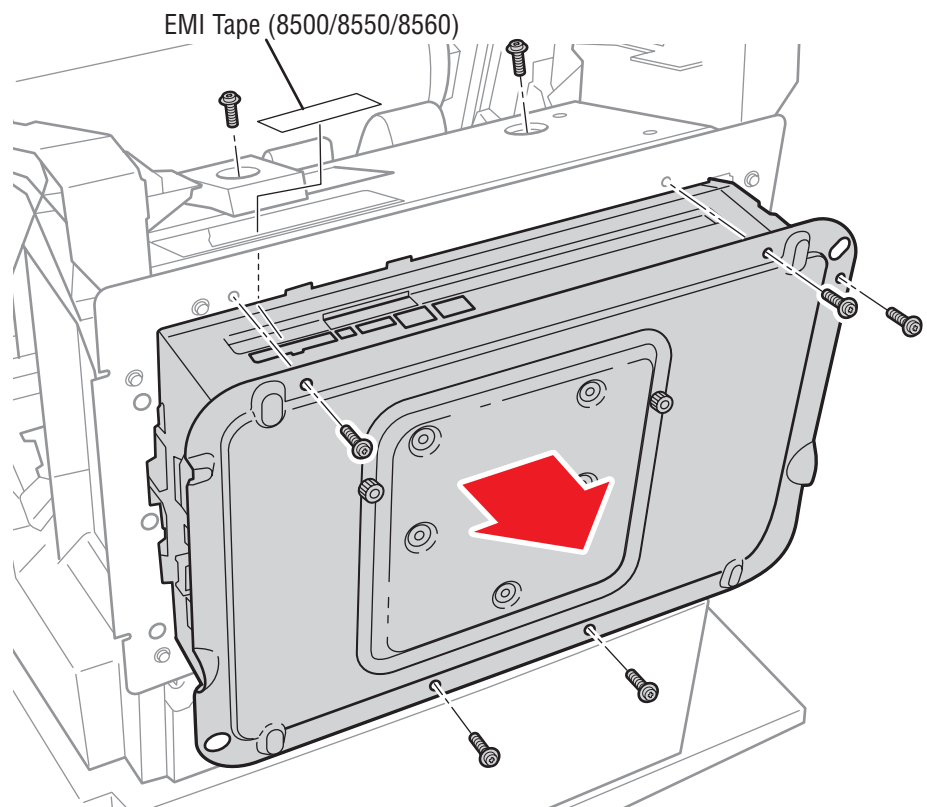
Replacement Note

When replacing the Electronics Module, transfer the Configuration Card, NVRAM (page 8-50), SODIMM RAM (page 8-51), and Hard Drive (page 8-52, if installed) to the new module.

Wave Amplifier (PL5.0.4)

Note

Do not fully remove EMI tape, if included with any connector.

1. Remove the Electronics Module (page 8-46).
2. Remove the Printhead (page 8-10).
3. Remove 3 screws.

Caution

Route the ribbon cables carefully through the slots.

4. Remove the Wave Amp through the back of the printer
.
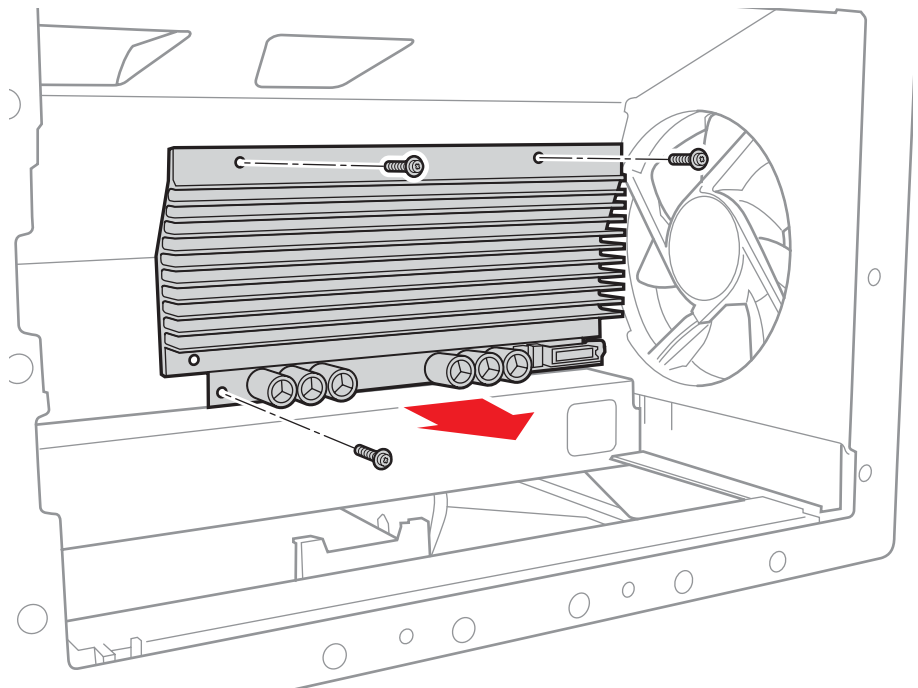
s8500-111

Replacement Note

Insert the ribbon cables fully and squarely into the flex connectors on the Wave Amp and Printhead. If the cables are inserted incorrectly, they can damage the Wave Amp. Route the ribbon cables carefully through the slots. Ensure that the T-shaped strain relief on the cable is nearest the Wave Amp on installation.

I/O Board (PL5.0.13)

1. Remove the Right Side Cover (page 8-5).

2. Disconnect all connections to the I/O Board.

3. Remove 2 screws to remove the board.

I/O Board
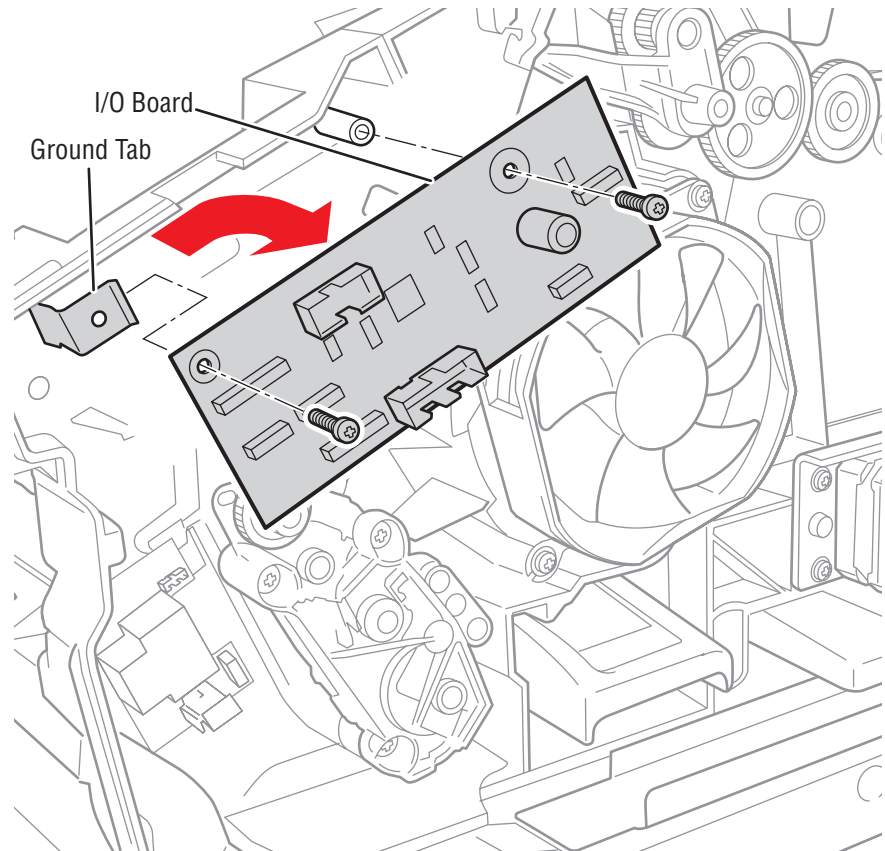
Ground Tab

s8500-112

Replacement Note

Locate the corner of the board behind the ground tab on reassembly. Install and torque the 2 screws to 12 in. lbs. Reconnect all connections.

Drum Heater Relay Board (PL5.0.17)

Warning

This board is supplied with 120 VAC, shut off printer power and disconnect the power cord before starting this procedure.

1. Remove the Right Side Cover (page 8-5).

2. Disconnect all connections to the board.

3. Remove 2 screws securing the board to the chassis.

4. Remove the Drum Heater Relay Board.

Drum Heater
Relay Board

s8500-113
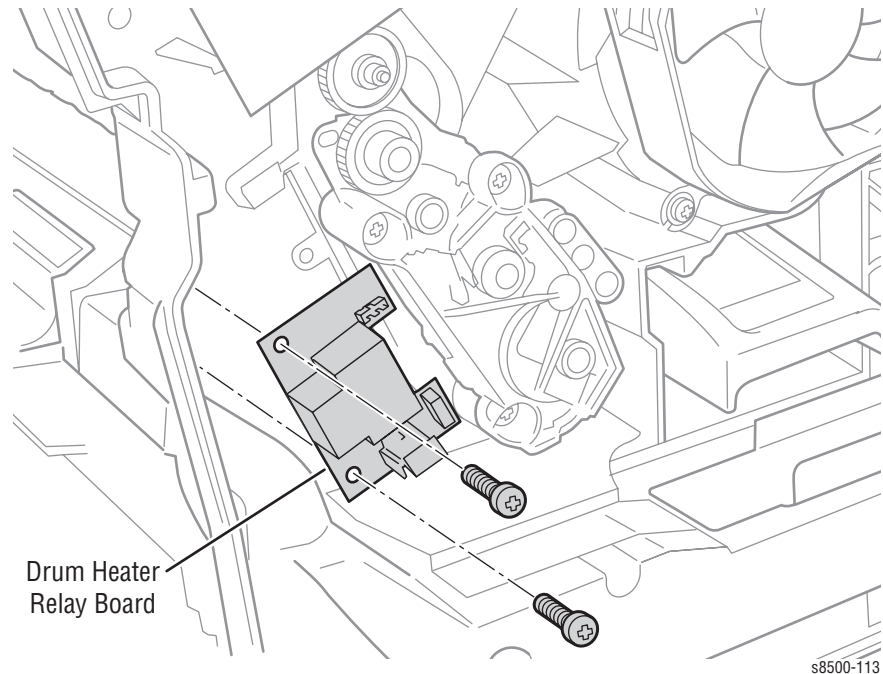
Replacement Note

Ensure that no wires are routed behind the Drum Heater Relay Board during reinstallation. Install and torque the 2 screws to 12 in. lbs. Reconnect all connections.

NVRAM (PL5.0.9)

Caution

Some semiconductor components, such as the NVRAM chip, are vulnerable to damage by Electrostatic Discharge (ESD).

Note

Observe the orientation of the NVRAM chip before removing it.

1. Remove the Back Cover from the Electronics Module.

Note

On 8400 models, the NVRAM chip is located at U850. On 8500/8550/8560 models, NVRAM is located at U840

2. Remove the old NVRAM chip from itís socket in the Electronics Module..
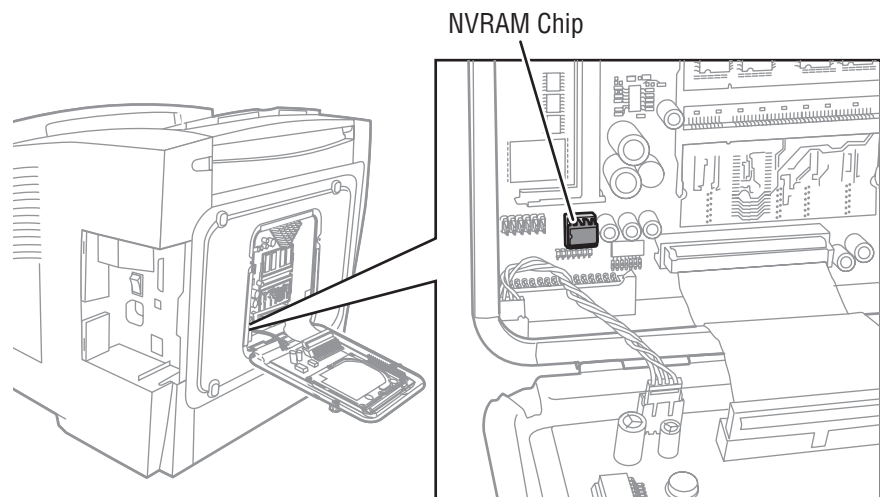
NVRAM Chip

s8500-114

3. Insert the new NVRAM chip into the socket. Ensure that the notch on the chip is on the left side.

4. Download the snippet titled "setsn.ps" from the Support web site.

5. Edit the snippet to include the printer serial number, using a text editor.

6. Download the edited file to the printer using an FTP program.

DIMM Memory (PL5.0.8)

Caution

Some semiconductor components, such as memory, are vulnerable to damage by Electrostatic Discharge (ESD). Review the "Electrostatic Discharge (ESD) Precautions" on page 1-v before continuing with this procedure.

Note

Observe the orientation of the memory devices before removing them. Notice that the DIMM boards are inverted to each other.

1. Remove the Back Cover from the Electronics Module.

2. Pull the connector release tabs away from the DIMM's to release. The 8400 models include a clip that secures the DIMM's in place. For 8500/8550/8560 DIMM's, the top DIMM swings down and the bottom DIMM swings up in the removal position, while they clip in place in the flat position.

3. Remove the old DIMM chips from their sockets in the Electronics Module.

8400

8500/85008560
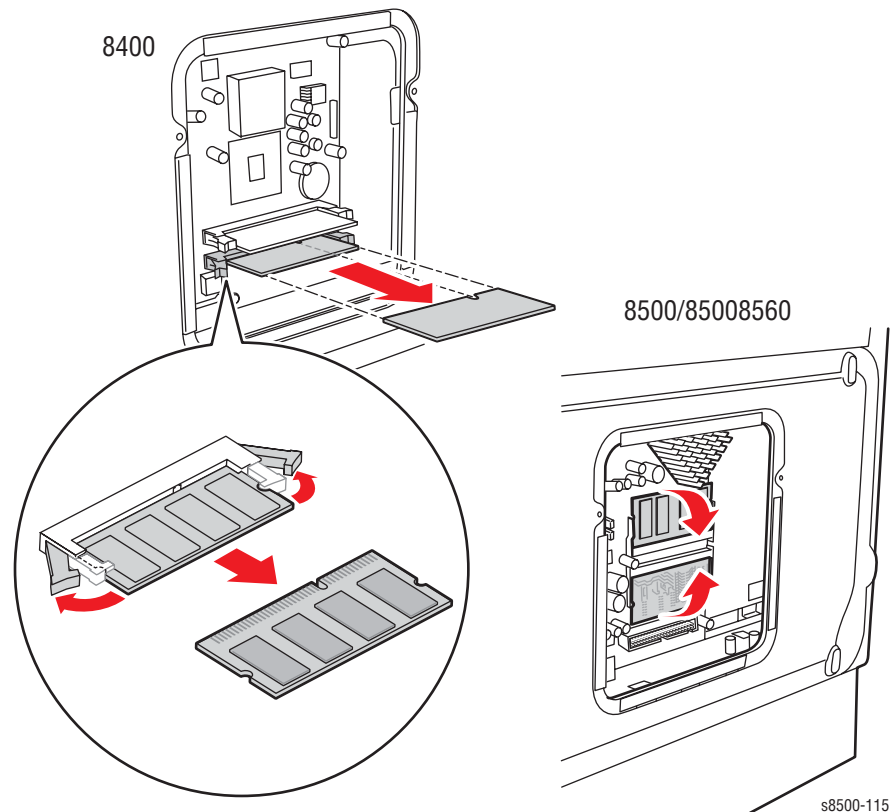
s8500-115

4. Insert the new DIMM chips into the sockets.

5. Swing the DIMM chips to their secure position against the electronics module and snap them into their respective connectors.
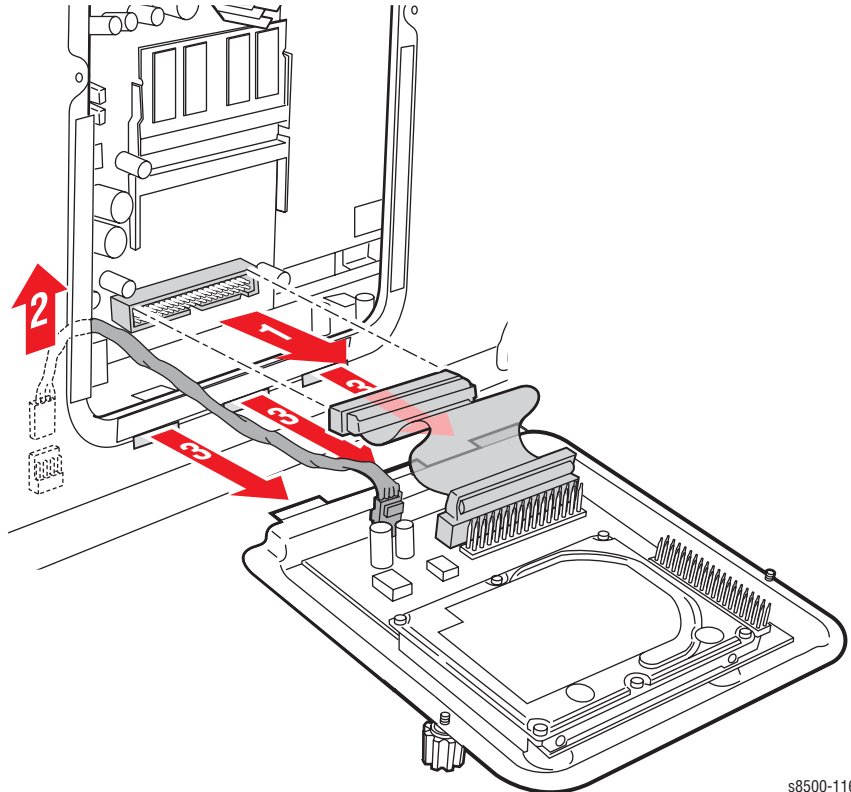
Hard Drive (PL5.0.7)

Caution

Some semiconductor components, such as the NVRAM chip, are vulnerable to damage by Electrostatic Discharge (ESD).

1. Remove the Back Cover from the Electronics Module.
2. Disconnect the 2 connectors from inside the Electronics Module.
3. Pull out and replace the entire unit, including chassis holder, hard drive, and board.

s8500-116

4. Reattach the 2 connectors to the replacement Hard Drive.
5. Replace the Back Cover.

Parts Lists

In this chapter…

- Serial Number Format
- Using the Parts List
- Xerox Supplies

Chapter 9

Serial Number Format

Changes to Xerox products are made to accommodate improved components as they become available. It is important when ordering parts to include the following information:

■ Component's part number

■ Product type or model number

■ Serial number of the printer

Serial numbering. Particular fields in the serial number indicate the modification level of the printer, the date of its manufacture and the sequence number of the printer produced on that day.

The serial number is coded as follows:

■ The text "S/N" followed by the serial number in the barcode.

■ The barcode does not include a field identifier.

■ The nine digit serial number is based on the following format: PPPRSSSSS.

PPP = Three digit alphanumeric product code

Product	Model	Product Code
8400	B, BD, N, DP, DX	RPC
8400	DPF	TMV
8500	N, DN	WYN
8550	DP, CT, DX	WYP
8550	DPF	L91
8560	N, DP, DT, DX	FBT

R - Single digit numeric revision digit. To be rolled when a major product change occurs. Initiated with a change request.

SSSSS - Five digit numeric serial number.

Serial Number Example:

RPC453072:

4 = Revision level

53072 = Serial number

Using the Parts List

1. No.: The callout number from the exploded part diagram.

2. Part Number: The material part number used to order specific parts.

3. Qty: This number represents the parts per printer, not the number of parts supplied in the actual part order.

4. Name/Description: Details the name of the part to be ordered and the number of parts supplied per order.

5. Parts identified throughout this manual are referenced PL#.#.#. For example, PL3.1.10 means the part is item 10 of Parts List 3.1.

6. A black triangle preceding a number followed by a parenthetical statement in an illustrated parts list means the item is a parent assembly, made up of the individual parts called out in parentheses.

7. The notation "with X~Y" following a part name indicates an assembly that is made up of components X through Y. For example, "1 (with 2~4)" means part 1 consists of part 2, part 3, and part 4.

8. An asterisk (*) following a part name indicates the page contains a note about this part.

9. The notation (NS) next to a part indicates that particular part is not spared, but contained in a kit or major assembly.

10. The notation "J1<>J2 and P2" is attached to a wire harness. It indicates that connector Jack 1 is attached to one end of the wire harness and connector J2 is attached to the other end that is plugged into P2.
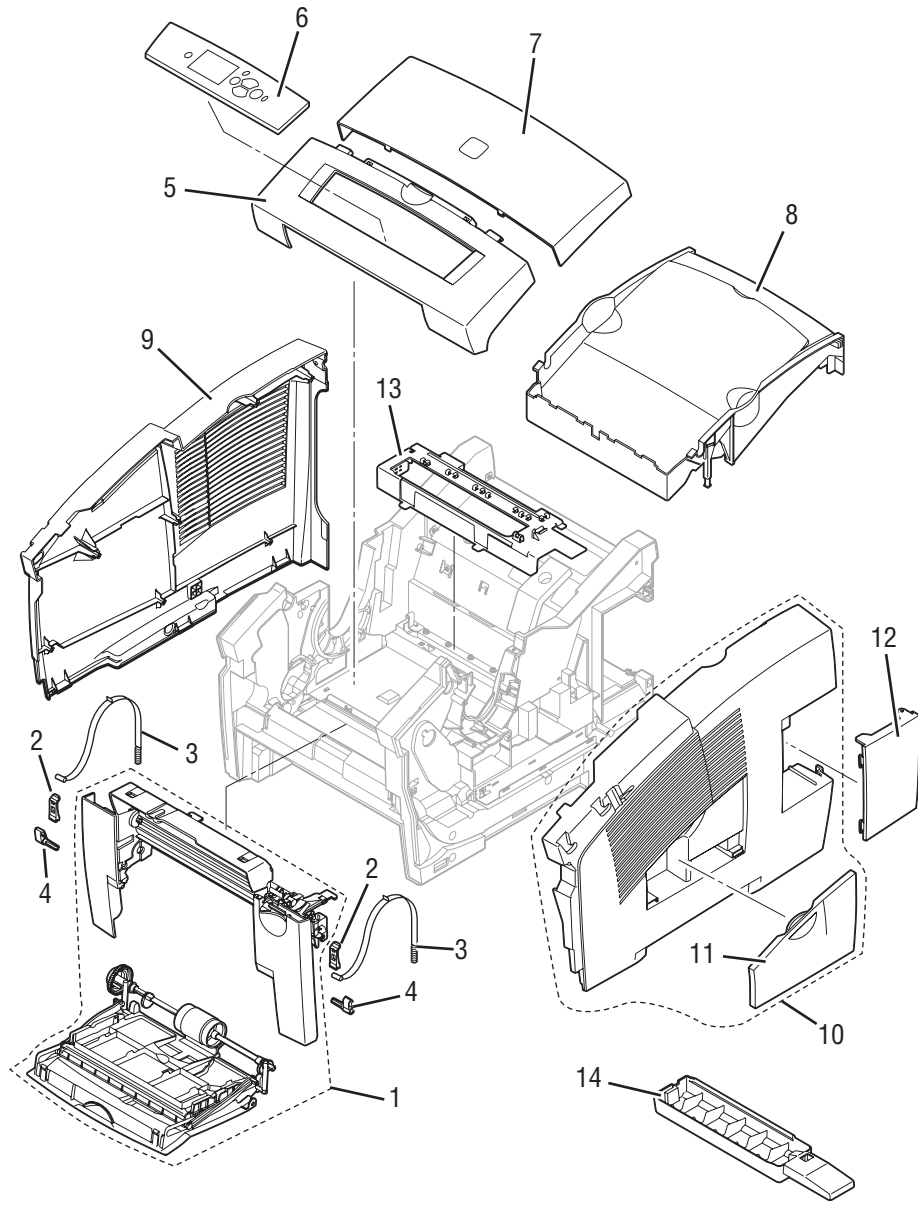
Note

Only parts showing part numbers are available for support.   Parts not showing part numbers are available on the parent assembly.

Legend:

Identifier	Meaning
C	C-ring
E	E-ring
KL	KL-clip
S	Screw

PL 1.0 Covers

s8500-117

Parts List 1.0 Covers

No.	Name/Description	Qty	Part Number
1	Front Door (MPT) Assembly	1	200467880 (8400) 848K06520 (8500/8550/8560)
2	Front Door Stay Retainer Clip	2	120E29140
3	Front Door Stay with Spring	2	009K02390
4	Hinge Pins, Front Door	2	029E49330
5	Control Panel Cover	1	200467380 (8400) 802E93850 (8500/8550/8560)
6	Control Panel with Bezel	1	657012880 (8400) 802K93650 (8500/8550/8560)
7	Exit Cover Assembly Exit Cover with Badge	1	200469380 (8400) 802K93590 (8500) 802K88420 (8550) 848K12760 (8560)
8	Ink Loader Door (part of PL 2.1)	1	See PL2.0.1
9	Left Side Cover	1	200467680 (8400) 802K93660 (8500/8550/8560)
10	Right Side Cover Assembly with Doors	1	200467580 (8400) 802K93570 (8500/8550/8560)
11	Drum Maintenance Door (Side)	1	200469480 (8400) 802E93870 (8500/8550/8560)
12	I/O Access Door	1	200468480 (8400) 802E93860 (8500/8550/8560)
13	Waste Tray Cover	1	802E93880
14	Waste Tray	1	109R00736

PL 2.0 Imaging
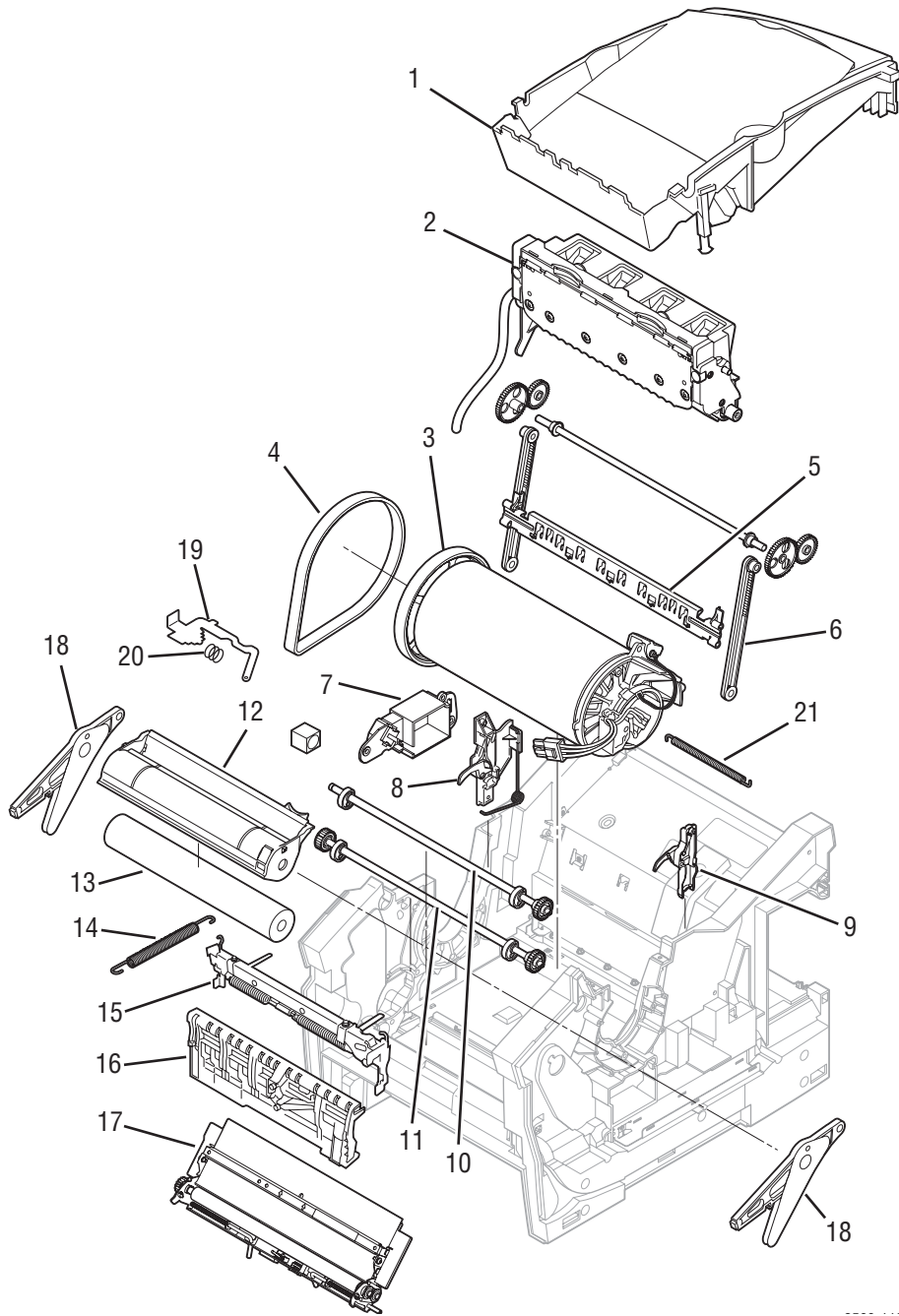
Parts List 2.0 Imaging

No.	Name/Description	Qty	Part Number
1	Ink Loader Assembly and Door	1	200469880 (8400) 133K27710 (8500/8550) 133K27770 (8560) 103K01600 (Metered 8550/8560)
2	Printhead	1	650430300 (8400) 046K00530 (8500/8550) 017K04540 (8560)
3	Drum Assembly, includes Encoder	1	105115080 (8400) 020K15090 (8500/8550/8560)
4	Belt, Y-Axis Drum	1	214498780 (8400) 023E30670 (8500/8550/8560)
5	Printhead Wiper	1	367053480 (8400/8500/8550) 033E05290 (8560)
6	Belt, Wiper Drive	1	214501280 (8400/8500/8550) 023E31250 (8560)
7	Purge Pressure Pump	1	094E02790
8	Left Printhead Restraint	1	120E29160
9	Right Printhead Restraint	1	120E29150
10	Transfix Camshaft Assembly	1	384187480 (8400) 008K02160 (8500/8550/8560)
11	Drum Maintenance Camshaft Assembly	1	401100380 (8400) 020K14800 (8500/8550/8560)
12	Stripper Carriage Assembly	1	386735280 (8400) 041K06500 (8500/8550/8560)
13	Transfix Roller	1	022E32290
14	Y-Axis Tension Spring	1	809E69920
15	Transfix Load Module	1	386739380 (8400) 137E24130 (8500/8550/8560)
16	Drum Maintenance Pivot Plate Assembly	1	020K15100
17	Preheater and Deskew Assembly	1	119641980 (8400) 126E02721 (8500/8550/8560)
18	Transfix Arm Assembly	1	401101280 (8400) 059K50011 (8500/8550/8560)
19	X-Axis Bias Spring Hook	1	019E75180
20	X-Axis Roll Adjuster Spring	1	809E69940
21	X-Axis Bias Spring	1	809E69930

PL 3.0 Paper Path
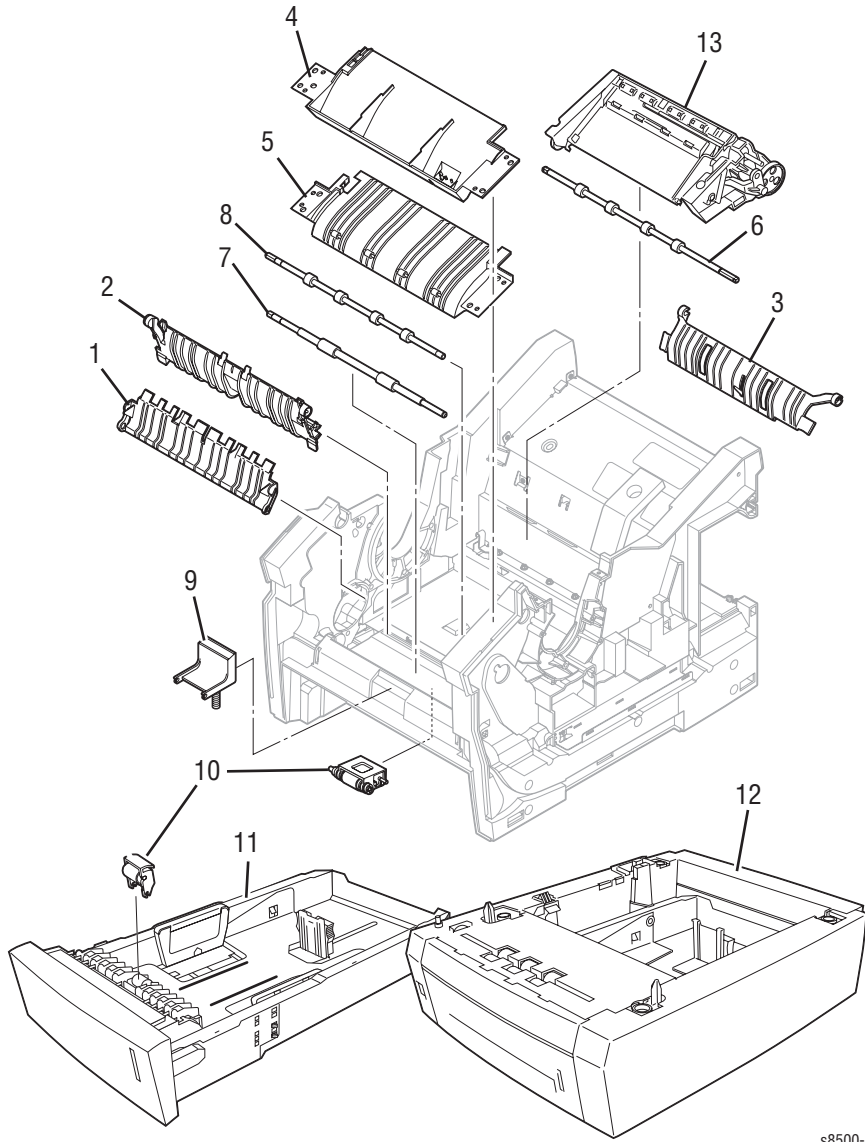
s8500-119

Parts List 3.0 Paper Path

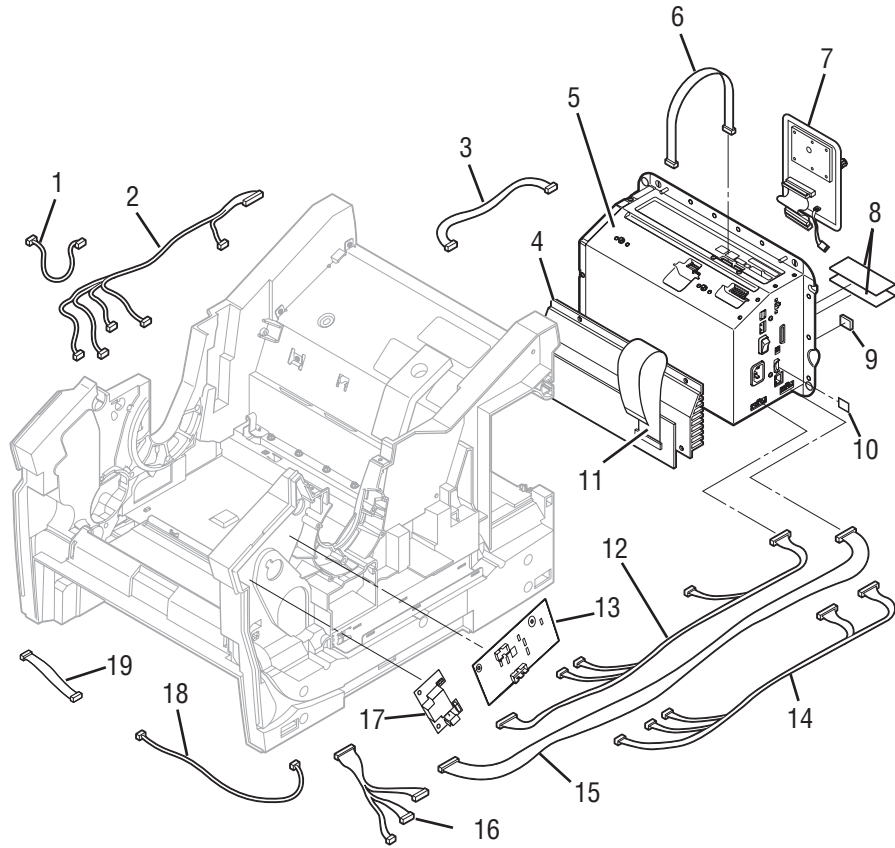| No.	Name/Description	Qty	Part Number
1	Inner Simplex Guide	1	351111480 (8400) 032E29480 (8500/8550/8560)
2	Lower Inner Duplex Guide	1	038K16870
3	Lower Exit Guide Assembly with Strip Flag	1	038K17800
4	Outer Duplex Paper Guide with Sensors (Safety Interlocks)	1	032K04640
5	Upper Duplex Guide with Solenoid	1	351113280 (8400) 032K04630 (8500/8550/8560)
6	Exit Roller	1	059E05610
7	Take Away Roller	1	022E32420
8	Duplex Roller	1	022E32410
9	Separator Pad Kit	1	650429300 (8400) 604K31140 (8500/8550/8560)
10	Pick Assembly and Retard Roller Kit	1	650429200 (8400) 604K42200 (8500/8550/8560)
11	Main Tray (Tray 2)	1	650433200 (8400) 050E23080 (8500/8550/8560)
12	525-Sheet Feeder and Tray 525-Sheet Feeder and Tray	1	059K58610 (8400) 050E23570 (8500/8550/8560)
13	Exit Module Assembly	1	441223980 (8400) 133K27700 (8500/8550/8560)

PL 4.0 Motors, Gears, Solenoids, Clutches, and Fans
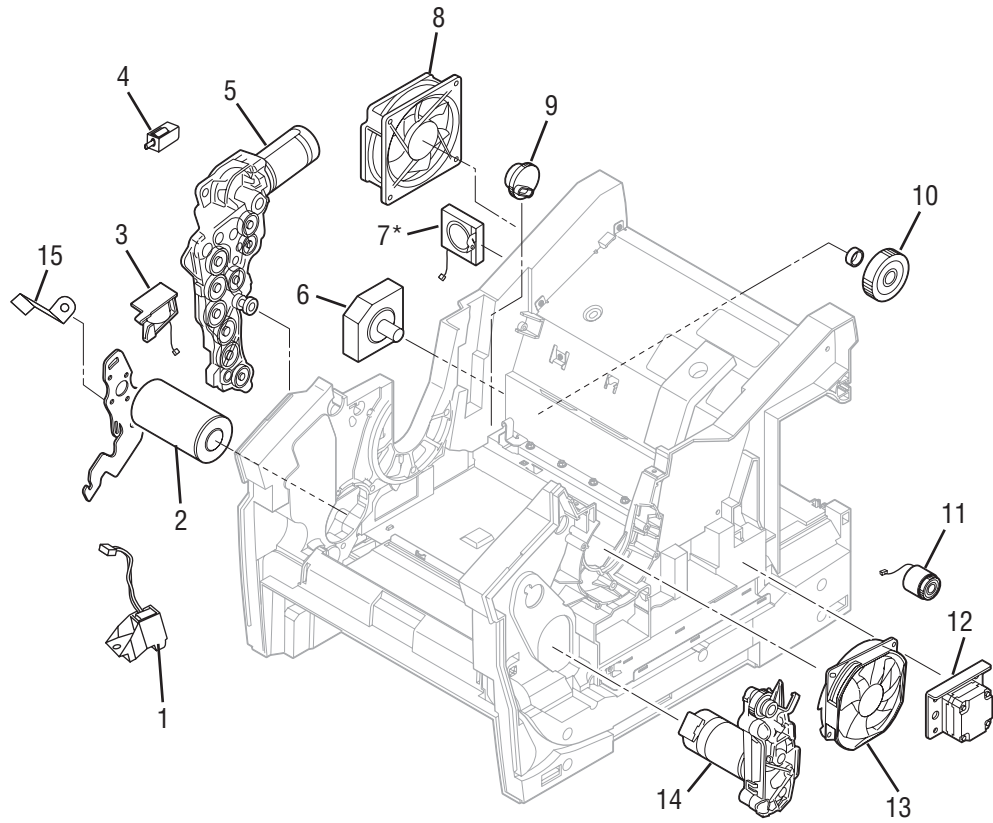
s8500-120

Parts List 4.0 Motors, Gears, Solenoids, Clutches, and Fans

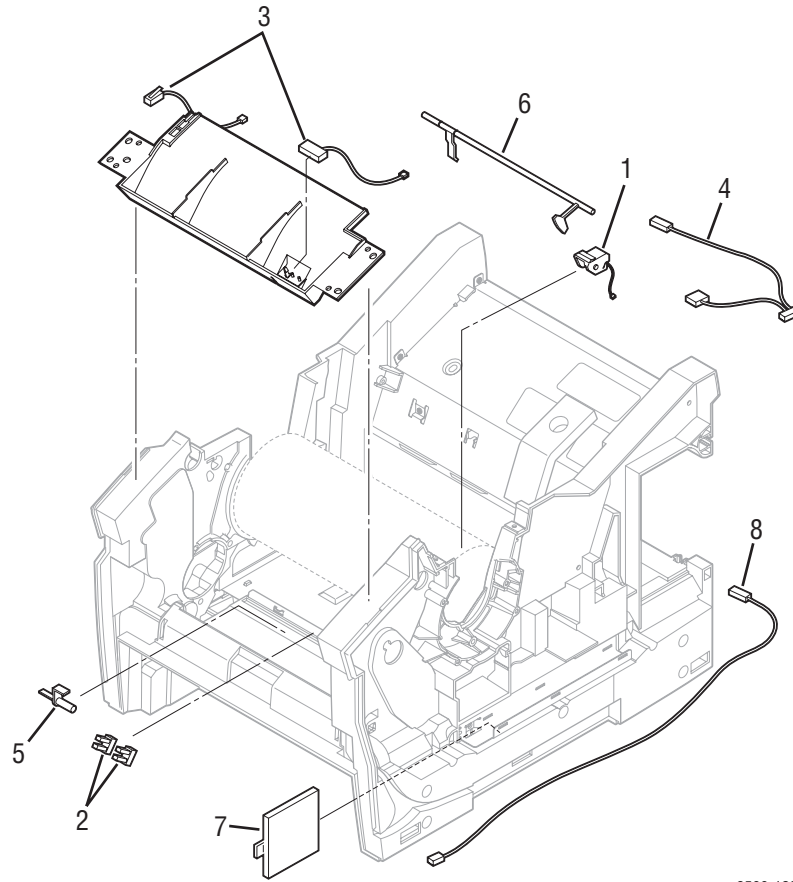| No.	Name/Description	Qty	Part Number
1	Preheater Lift Solenoid	1	121K44430 (8500/8550/8560)
2	Motor, Y-Axis Drive	1	127K56520
3	Pick Solenoid, Tray 1	1	121E20120
4	Head Tilt Solenoid	1	121K44480 (8500/8550/8560)
5	Gearbox, Media Drive with 2 Clutches, Solenoid	1	401098480 (8400) 807E23090 (8500/8550/8560)
6	Tray Lift Motor Kit and Gear (plus item 10)	1	604K31810
7	Paper Path Cooling fan	1	119650580 (8400) No longer orderable (refer to service bulletin 655).
8	Electronics Module System Fan	1	119642680 (8400) 133K25010 (8500/8550/8560)
9	Compound Gear, Head Tilt	1	807E16060
10	Tray Lift Motor Kit and Gear (plus item 6)	1	604K31810
11	Electric Clutch, Wiper (Head Maintenance Clutch)	1	033E05190
12	X-Axis Motor Assembly	1	127K53580
13	Drum Cooling Fan	1	119641780 (8400) 127E16010 (8500/8550/8560)
14	Gearbox and Motor, Process Drive	1	401100080 (8400) 005K12670 (8500/8550/8560)
15	Ground Clip, Pick Clutch	1	650442700 (8500/8550/8560)

PL 5.0 Circuit Boards

s8500-121

Parts List 5.0 Circuit Boards and Cables

No.	Name/Description	Qty	Part Number
1	Cable, Y-Axis Motor Ground	1	117E34880
2	Wiring Harness, Left Side Power Control	1	174449480 (8400) 117E29800 (8500/8550/8560)
3	Cable, Wave Amp Signal	1	174446580 (8400) 117E34870 (8500/8550/8560)
4	Wave Amp	1	671522380 (8400) 960K21181 (8500/8550/8560)
5	Electronics Module (no RAM, NVRAM, or Configuration Card)	1	119649580 (8400) 137E14020 (8500/8550) 137E24440 (8560)
6	Cable, Printhead Interface	1	117E29840
7	Hard Drive Hard Drive with Japanese Fonts	1	097S03172 (8400) 121K44411 (8500/8550) 121K45340 (8560) 097S03173 (8400) 121K44420 (8500/8550)
8	128 MB SDRAM 256 MB SDRAM 128 MB SDRAM 256 MB SDRAM 512 MB SDRAM	1	156483700 (8400) 156466300 (8400) 237E23890 (8500/8550/8560) 237E23640 (8500/8550/8560) 237E23650 (8550/8560)
9	8-pin NVRAM	1	856476800
10	Configuration Card-B Configuration Card-BD Configuration Card-N Configuration Card-DP Configuration Card-DX Configuration Card-DN Configuration Card-DP, DT and DX Configuration Card-DN, DT and DX	1	650431200 (8400) 650431300 (8400) 650431400 (8400) 069E00360 (8500) 069E00550 (8560) 650431500 (8400) 650431600 (8400) 069E00370 (8500) 069E00380 (8550) 069E00560 (8560)
11	Cable, Flex, Wave Amp Drive	1	174448680 (8400) 117E29790 (8500/8550/8560)
12	Cable, Right Side Power Control	1	117E29820
13	I/O Board	1	671529100 (8400) 960K22331 (8550/8550)
14	Cable, Combined Right (Ink Loader Data, Preheater AC)	1	174451180 (8400) 117E29810 (8500/8550/8560)
15	Cable, I/O Board Data	1	117E29830
16	Cable, Right Umbilical	1	117E28790
17	Drum Heater Relay Board	1	960K35170
18	Cable, Front Door	1	117E28780
19	Cable, Control Panel	1	117E35230 (8500/8550/8560)

PL 6.0 Sensors and Flags (Actuators)

s8500-122

Parts List 6.0 Sensors and Flags (Actuators)

No.	Name/Description	Qty	Part Number
1	Drum Temperature Sensor	1	130K75210
2	Optical Sensor (Generic Snap-In)	1	130E11530
3	Safety Interlock Switch (Mech)	1	110E20390
4	Exit Module Sensor Assembly	1	130K75220
5	Paper Present Flag	1	130E11550
6	Exit Flag	1	386732680
7	Sensor Assembly, Paper Tray	1	130K75230
8	Waste Tray Detect Sensor	1	130E12620

Xerox Supplies

Kits

Description	Part Number
Mechanical Kit (Hardware) ■ Nut Plate - 2 ea. ■ 6 mm press nut - 2 ea. ■ #8 SAE washer - 5 ea. ■ Thumbscrews - 2 ea. ■ M4 x 12 delta pt/ hexhead - 5 ea. ■ M4 x 32, partial thread flanged hex - 5 ea. ■ M4 x 32, partial thread flanged hex, left-hand thread, yellow - 5 ea. ■ M4 x 12, taptite flanged - 5 ea. ■ ASMO clip, lift motor - 2 ea. ■ E-ring, bent M6 5 mm - 5 ea. ■ Bushing 6 mm - 2 ea. ■ Cable Restraint - 2 ea. ■ Left-hand Drum screw (yellow - 2 ea.) ■ Frame Replace Screw (red tint - 5 ea.)	604K42210
Repackaging Kit	065062800 (8400) 659K22810 (8500/8550/8560)
Cleaning Kit	016184500

Power Cords

Description	Part Number
Cable Assembly, 3,18 AWG, 115 V, 98, 0 L	117E29520
Cable Power EURO 220 V, 99 L	117E29500
Cable Power U.K. 240 V, 96 L	117E29510
Cable Power AUST 240 V, 96 L	117E29490
Cable Assembly SWISS 220/240 V, 50 Hz	117E35050
Cable Assembly PWR. DANISH, 250 V	117E29460
Cable Assy PWR, CHINESE	117E35030
Cable Power, 240 V, ARGENTINA	117E35040

Upgrade Kits and Options

Description	Part Number
Hard Drive Upgrade Kit	097S03172 (8400) 121K44410 (8500/8550/8560)
Hard Drive Upgrade with Japanese Fonts	097S03173 (8400) 121K44420 (8500/8550/8560)

Upgrade Kits and Options

Description	Part Number
Memory (8400)	
128 MB, 16M x 64, PC133; Memory DIMM	ZMD128
256 MB, 32M x 64, PC133; Memory DIMM	ZMD256
Memory (8500)	
128 MB, SDRAM	097S03380
256 MB, SDRAM	097S03381
Memory (8550/8560)	
256 MB, SDRAM	097S03381
512 MB, SDRAM	097S03382
525-Sheet Feeder with Tray	097S03174
Wireless Network Adapter with N/A Power Converter 110V	097S03740
Wireless Network Adapter with Euro Power Converter 220V	097S03741
Wireless Network Adapter with UK Power Converter 220V	097S03742

Recommended Tools

Description	Part Number
Torque Screwdriver	003082700
T20 Screwdriver Tip	003086600
Mechanical Parts Kit	650429700
Flashlight	
Grease	070E00890
Serial Cable Adapter	600T80374

Consumables and Routine Maintenance Items

Description	Part Number
Standard-Capacity Maintenance Kit	108R00602 (8400) 108R00675 (8500/8550/8560)
Extended-Capacity Maintenance Kit	108R00603 (8400) 108R00676 (8500/8550/8560)
Genuine Xerox Solid Ink Black (3 sticks)	108R00604 (8400) 108R00668 (8500/8550) 108R00726 (8560)
Genuine Xerox Solid Ink Cyan (3 sticks)	108R00605 (8400) 108R00669 (8500/8550) 108R00723 (8560)

Consumables and Routine Maintenance Items

Description	Part Number
Genuine Xerox Solid Ink Magenta (3 sticks)	108R00606 (8400) 108R00670 (8500/8550) 108R00724 (8560)
Genuine Xerox Solid Ink Yellow (3 sticks)	108R00607 (8400) 108R00671 (8500/8550) 108R00725 (8560)
Genuine Xerox Solid Ink Black (6 sticks)	108R00608 (8400) 108R00672 (8500/8550) 108R00727 (8560)
Rainbow Pack	108R00612 (8400) 058K00220 (8560)
Genuine Xerox Metered Solid Ink Cyan (6 sticks)	108R00707 (8550) 108R00687 (8560)
Genuine Xerox Metered Solid Ink Magenta (6 sticks)	108R00708 (8550) 108R00688 (8560)
Genuine Xerox Metered Solid Ink Yellow (6 sticks)	108R00709 (8550) 108R00689 (8560)
Genuine Xerox Metered Solid Ink Black (6 sticks)	108R00706 (8550) 108R00690 (8560)
Genuine Xerox Solid Ink Cyan (1 stick)	108R00687 (8500/8550)
Genuine Xerox Solid Ink Magenta (1 stick)	108R00688 (8500/8550)
Genuine Xerox Solid Ink Yellow (1 stick)	108R00689 (8500/8550)
Genuine Xerox Solid Ink Black (1 stick)	108R00690 (8500/8550)

Software and Documentation

Description	8400	8500/8550	8560
Setup Guide (poster)	001153600	001167300	
Quick Reference Guide	71086500	721P58550	
World Kit	061449300	650K24290	650K27770
Printer Installer and Utilities CD-ROM	063344900	N/A	N/A
User Documentation CD-ROM	063345000	N/A	N/A
Software and Documentation CD-ROM	N/A	063347500	

Phaser Color Printing Media

Description	Part Number
Phaser Premium Color Printing Paper, 24 lb. Letter, 500 Sheets	016136800
Phaser Premium Color Printing Paper, 24 lb. A4, 500 Sheets	016136900

Phaser Color Printing Media (Continued)

Description	Part Number
Phaser Premium Cover Paper, Letter, 100 Sheets	016182300
Phaser Premium Cover Paper, A4, 100 Sheets	016182400
Phaser Professional Solid Ink Transparency, Letter, 50 Sheets	103R01039
Phaser Professional Solid Ink Transparency, A4, 50 Sheets	103R01040
Phaser Professional Solid Ink Business Cards, Letter,10/ sheet, 25 sheets	103R01041
Phaser Professional Solid Ink Business Cards, A4,10/sheet, 25 Sheets	103R01042
Phaser Color Printing Labels, Letter, 30/Sheet, 100 Sheets	016181200
Phaser Color Printing Labels, Letter, 6/Sheet, 100 Sheets	016181300
Phaser Color Printing Labels, A4, 14/Sheet, 100 Sheets	016181400
Phaser Color Printing Labels, A4, 8/Sheet, 100 Sheets	016181500
Phaser Premium Postcards, Letter, 4/Sheet, 100 Sheets	103R01016
Phaser Premium Postcards, A4, 4/Sheet, 100 Sheets	103R01017
Phaser Trifold Brochures, Letter, 150 Sheets	103R01018
Phaser Trifold Brochures, A4, 150 Sheets	103R01019
Phaser Weatherproof Paper, Letter, 150 Sheets	103R01020
Phaser Weatherproof Paper, A4,150 Sheets	103R01021
Supplies Startup Kit, Standard Size Media	097S03180
Supplies Startup Kit, Metric Size Media	097S03181

Wiring Diagrams

In this chapter…

Chapter 10

Main Wiring Diagram

Printhead Driver ECB

JET0 +/-
JET1 +/-
JET2 +/-
CLK +/-
ADCTX +/-
ADCRX +/-
+/-12 V regulated
+3.3 V
Gnd (9)
Spares (Vss & Vpp)

J180 — 26

Vss — J210 (8400 Only)
Vpp — J240

30 — 30

Wave Amp ECB
J630 (8400 Only) — J670

VssD
VppD
Gnd sense
wave amp enable
+/-50 V
+/-12 V unregulated
Gnd (6)

J800 — 14

Mode Switch · USB · Parallel · 10/100T

Electronics Module

J200 · J600 · J400 · JR810 · J930 — 40 connector

J130 — **Main Processor ECB** — IDE J860 · J580 — **Hard Drive ECB** — J390 — 4
80

2.5 Hard Drive

14

Printhead tilt solenoid — 2
Main tray elevator plate motor — 2
Main tray pick clutch — 2
MPT solenoid — 3
Deskew clutch — 2

Purge pump — 6
Main Fan — 2 — 34
Media path motor with encoder — 7
M. path motor fan (early 8400 only) — 2
Preheater Lift Solenoid ((8500/8550)) — 3

8, HCF connector

8

Tray 3 HCF

Paper height opto — 3
Pick sense opto — 3 — 11
Paper out sense opto — 3
Pick clutch — 2

Transport motor — + J380 / − J980

Media Tray sense ECB — J1 — 6
Width sense (3) switch
Length sense (2) switch

Elevator plate motor — 2

J400

Main ECB
J120

HCF_RD
HCF_TD
HCF_CLK
+50 V
+3.3 V
Gnd (3)

J160

generates:
24 V PWM
J820 — 10

8

Tray 4 HCF

Drum temp thermistor — 2
Strip solenoid — 2
DMU life (i Button) — 2
Strip sense opto — 3
Exit/bin full sense opto — 3 — 8
Heat maintenance clutch — 2

Media Tray sense ECB — J1 — 6
Width sense (3) switch
Length sense (2) switch

s8500-123

NOTE:
All items connected with RED carry line voltage.

Printhead
AC Resv. heaters (2)
AC Jetstack heaters (2)

Drum Heater
Series/parallel heater
35
35
Black   Red   White
3
J3

LINE 110/220

Auxiliary Connectors

Power Control ECB
J620   J480   30 connector   JDC1
J820   4
+/-50 V
+/-12 V unreg
+3.3 V

J790   14

generates +/- 12 V reg.
+5 V

J390 (Left Side)   34

Printer ambient temperature

J800 (Right Side)

Serial Data Bus   14

J840   J910

Power Supply ECB
AC
generates:
+/-50 V
+/-15 V unreg
+3.3 V
J1AC

J3AC   3
J2AC   7
J4AC   4

Relay ECB
J2   2   J1   2

X- axis motor   4
Drum fan   2
Y axis pos encoder ECB   4   J400 (Right Side)   16
Process motor with encoder   7
Y- axis motor   2   J280

Inkload ECB
J1   10   J2
Heaters (4)
Ink out opto
Ink low opto
Door open opto
Thermistor (4)

Pre-heat ECB
Deskew entry sense opto
J0720   2   Paper preheater   2
J0670   2   Preheat temp therm
J0660   3   Preheat sense opto   3
J860   5

I/O ECB
J870   2
J250   2
J860   2
+50 V
+3.3 V
J680   8
J600   6   J610   5

J400   10
Main tray paper height opto   3
Main tray paper opto   3
Waste tray opto   3
J110   Process home (optional)   3
J220   10

Control Panel ECB
generates:
+5 V
LCD Display
J600

J190   2   Top door sense switch   2
J110   2   Front door sense switch   2

10

MPT ECB
Width sense var. resistor
Media present sense opto

NOTE:
Thermal fuse for drum is located on Pre-heated ECB

NOTE:
The numbers shown at the circuit board perimeters are for the actual connectors. Some have extra n.c. pins added to prevent misplugging errors.

I/O color coding
Black = input
Magenta = output
Red = temp

s8500-124

Right-Side Wiring Diagram

The arrows indicate which connectors you should look at for the PEST codes. The PEST codes are displayed on the Control Panel.

Wiring Harness Pass-Through   J680 13067.4x

J250 37020.4x Strip Solenoid

J910 13387.4

J400 Drum Heater

J110 Waste Tray

37016.4x
50V PS

Ground Clip

Wiring Harness
Pass-Through
J870 13067.4x

J600 Add Paper Tray

J860 Maintenance
Kit Missing

J840 Dead
Power

J610 No Handfeed

37006.4x
Drum Heater
(Pre-heater)
Drum AC is
routed thru
pre-heater prior to
relay board and drum

Ground Clip

5002.42   37014.4x Drum Fan   s8500-125

Right-Side Wiring Diagram (Continued)

The arrows indicate which connectors you should look at for the PEST codes. The PEST codes are displayed on the Control Panel.

Routes to Top of Channel

13387.4x   J4AC 37006.4x

J800 Dead Power

J400 37027.4x

37027.4x X-Motor   Ribbon Cable (Routed in Middle of Channel)   Signal Cable (Routed on Bottom of Channel)

s8500-126

Left-Side Wiring Diagram

The arrows indicate which connectors you should look at for the PEST codes. The PEST codes are displayed on the Control Panel.

37023.4x Purge Valve

37022.4x
Purge Motor

J280 37032.4x
Y-Motor

J790 37062.4x
Head VSS

J390 37034.4x MP Motor

37013.4x Electric Fan

37021.4x MT Elevator

Channel (Connected to
Ground Strap)

s8500-127

Left-Side Wiring Diagram (Continued)

The arrows indicate which connectors you should look at for the PEST codes. The PEST codes are displayed on the Control Panel.

37034.3x MP Motor

37015.4x MP Fan (8400 Only)

370xx.4x Preheater Lift Solenoid (8500/8550 Only)

37017.4x Deskew Clutch (8400 Only)

Ground Clip

37018.4x Pick Clutch

37019.4x Pick Solenoid
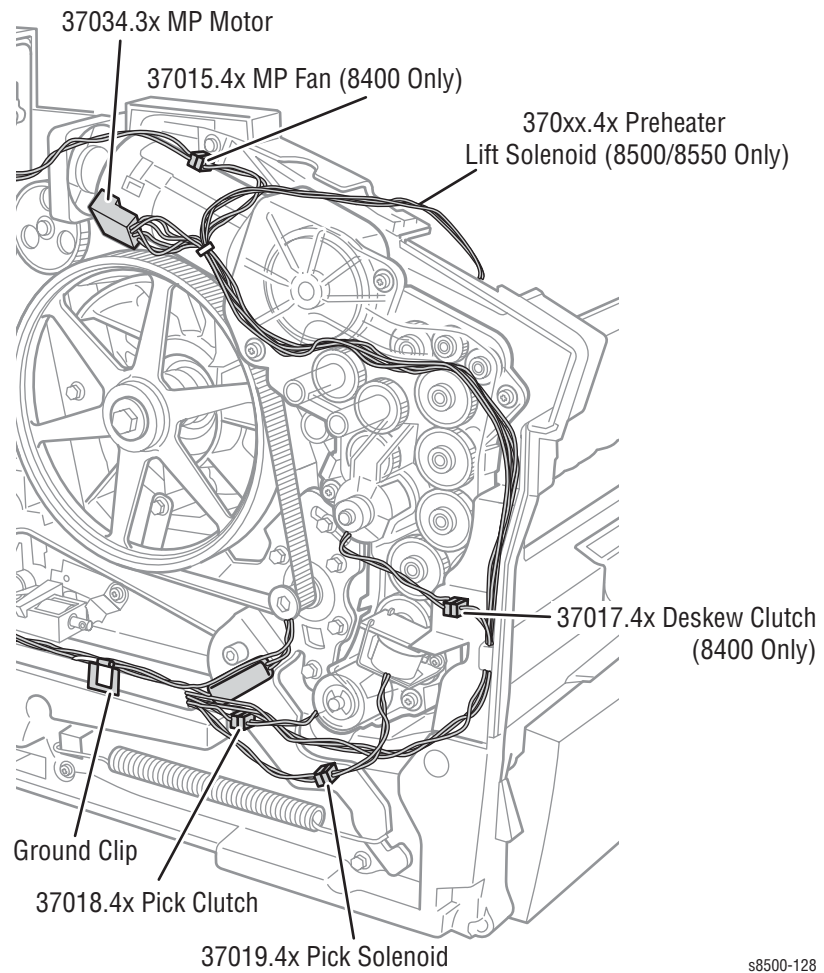
s8500-128

Inside Front Wiring Diagram

The arrows indicate which connectors you should look at for the PEST codes. The PEST codes are displayed on the Control Panel.

37036.4x Process Motor

37008.4x Preheat Power
(AC Connector)

Paper Jam
(Open Front Cover)

Load Paper

J860 13131.41 Sensor Flag

s8500-129
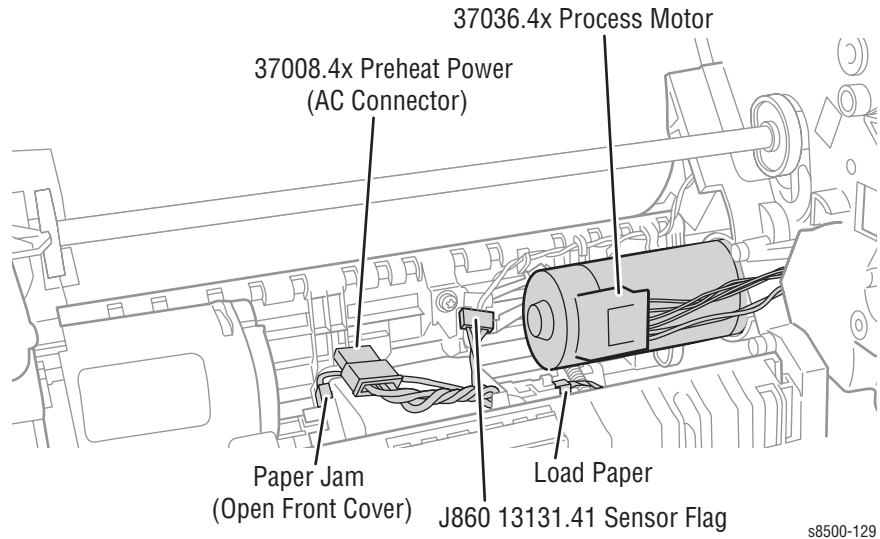
Inside Top Wiring Diagram

The arrows indicate which connectors you should look at for the PEST codes. The PEST codes are displayed on the Control Panel.

8400

37010.4x
Ink 1 Heater

J2AC 37002.4x
JSL Heater

J1AC 37009.4x
(Ink Load Power)

J130 34062.4x (Data Cable)

8500/8550

37010.4x
Ink 1 Heater

J2AC 37002.4x
JSL Heater

J1AC 37009.4x
(Ink Load Power)

J130 34062.4x (Data Cable) s8500-130
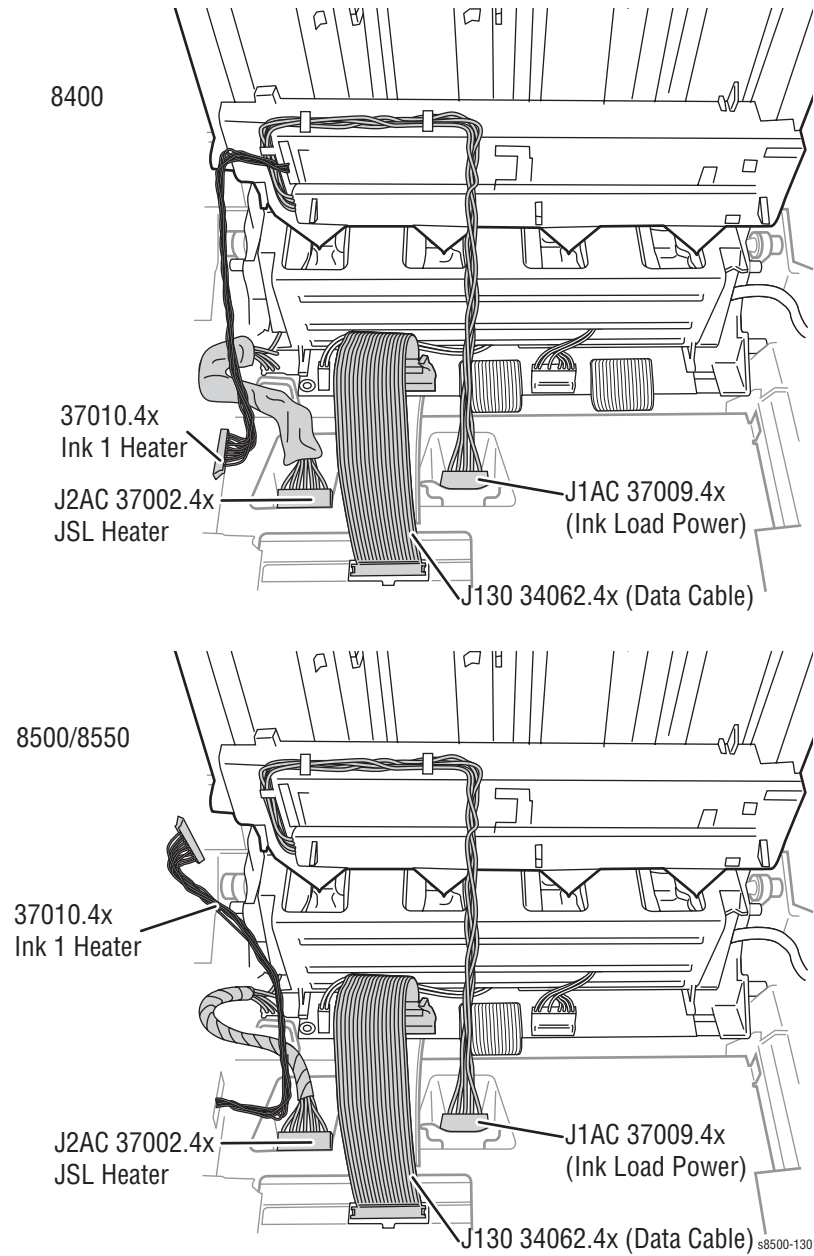
Inside Top - Printhead Wiring Diagram

The arrows indicate which connectors you should look at for the PEST codes. The PEST codes are displayed on the Control Panel.

Cable Restraint

Out of Ink

J180 32064.4x

(8400 Only)

J140 37063.4x Head VPP

Heater Cable
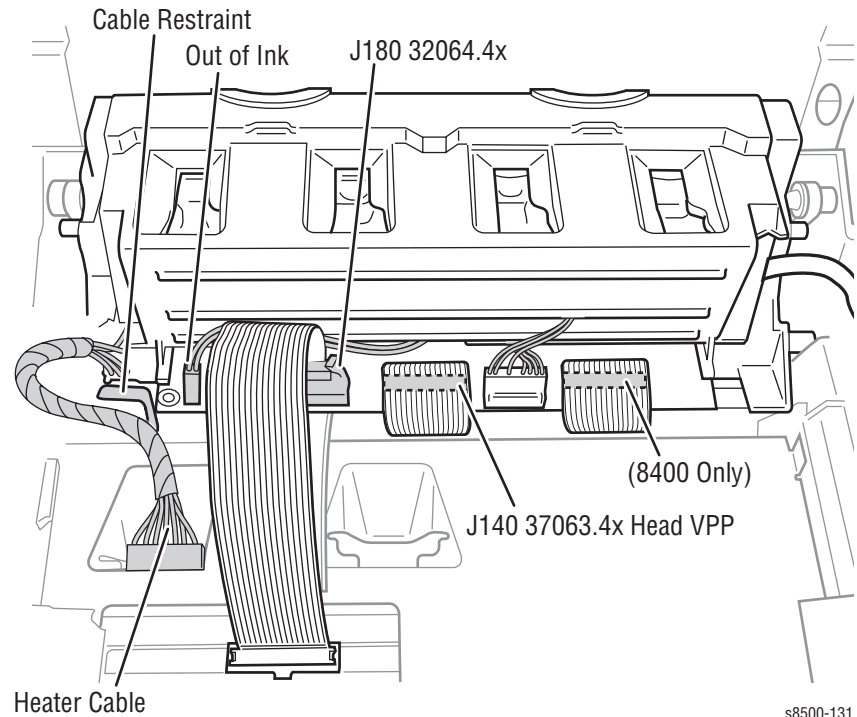
s8500-131

Reference

Contents…

- Menu Map (8400)
- Menu Map (8500/8550/8560)
- Paper Weight Equivalence Table
- On-site Printhead Troubleshooting Checklist (8400)
- On-site Printhead Troubleshooting Checklist (8500/8550/8560)

Appendix A

Menu Map (8400)

Main Menu:

READY TO PRINT.
Information ▶
Walk-Up™ Features ▶
Printer Setup ▶
Troubleshooting ▶
Shut Down ▶

Front Panel Buttons:

Cancel
Back
Up Arrow
OK
Information
Down Arrow

🖨 = prints an information page.

Information ▶

🖨 Menu Map

Printer Identification ▶

Information Pages ▶

Sample Pages ▶

Supplies Info ▶

Model
Printer Name
Print Server*
IP Address*
Serial #
Activation Date

🖨 Help Guide
🖨 Configuration Page
🖨 Paper Tips Page
🖨 Connection Setup Page
🖨 Moving Guide
🖨 Startup Page
🖨 Usage Profile
🖨 PostScript Font List
🖨 PCL Font List

Maintenance Kit Life
Total Print Count

Graphics Demonstration
Office Demonstration
2-Sided Demonstration**
Print Mode Demonstration
🖨 CMYK Sampler Pages
🖨 RGB Sampler Pages

Walk-Up™ Features* ▶

Secure Print Jobs*****

Proof Print Jobs*****

Saved Print Jobs*****

Walk-Up Printing™

Select for Installation

Printer Setup ▶

🖨 Configuration Page

Connection Setup ▶

🖨 Connection Setup Page
Network Setup* ▶
Parallel Setup ▶
USB Setup ▶
Reset Connection Setup

TCP/IP Setup ▶
NetWare Setup ▶
Ethernet Speed
EtherTalk

Parallel Port
Wait Timeout
Page Description Language
Job Pipelining*

USB Port
Wait Timeout
Page Description Language
Job Pipelining*

TCP/IP
DHCP/BOOTP
AutoIP
TCP/IP Address
TCP/IP Network Mask
TCP/IP Gateway
Port 9100
LPR
IPP
SLP
SSDP
CentreWare IS

NetWare
IPX Frame Type

Requires:
  *Network Configuration
  **Duplex Configuration
  ***Optional Lower Tray(s)
  ****Hard Drive
  *****8400DX only with stored jobs present

Page 1 of 2

Printer Setup ▶
(continued)

Paper Handling Setup ▶
- Paper Source
- 2-Sided Printing**
- Tray 1 Setup
- Tray 2 Paper Type
- Tray 3 Paper Type***
- Tray 4 Paper Type***
- Load Paper Timeout
- Cleaning Page Source
- Reset Paper Handling Setup

PostScript Setup ▶
- PostScript Error Info
- Print-Quality Mode
- TekColor Correction
- Image Smoothing
- Reset PostScript Setup

PCL Setup ▶
- Font Number
- Pitch
- Point Size
- Symbol Set
- Orientation
- Form Length
- Line Termination
- Draft Mode
- Reset PCL Setup

Front Panel Setup ▶
- Front Panel Language
- Front Panel Brightness
- Front Panel Contrast
- Accessible Front Panel
- Reset Front Panel Setup

Printer Controls ▶
- Startup Page
- Power Saver Timeout
- Date and Time
- Intelligent Ready
- Metric Defaults
- Reset Printer Controls

Troubleshooting ▶

🖺 Help Guide

Paper Jams ▶
- 🖺 Paper Tips Page
- Online Jam Prevention Guide
- Paper Path Test

Print Quality Problems ▶
- 🖺 Troubleshooting Print Quality Page
- Eliminate Light Stripes
- Remove Print Smears

Network Log Pages* ▶
- 🖺 NetWare Start Log
- 🖺 NetWare Runtime Log
- 🖺 TCP/IP Start Log
- 🖺 TCP/IP Runtime Log
- 🖺 AppleTalk Start Log
- 🖺 AppleTalk Runtime Log

Service Tools ▶
- 🖺 Printer Status Page
- Engine Error History
- Jam History
- Diagnostics History
- Enter Diagnostic Mode
- 🖺 Service Usage Profile
- Email Service Report*
- Reset NVRAM

Shutdown ▶
- Power Saver (Recommended)
- Restart Printer
- Power Down

🖤 To minimize ink usage, leave the printer on.

Requires:
  * Network Configuration
  ** Duplex Configuration
  *** Optional Lower Tray(s)
  **** 8400DX only with stored jobs present

Page 2 of 2

Menu Map (8500/8550/8560)

Main Menu:

Ready To Print
Walk-Up Features ▶
Information ▶
Paper Tray Setup ▶
Printer Setup ▶
Troubleshooting ▶
▼

Control Panel Buttons:

Up Arrow
Cancel
OK
Back
Help
Down Arrow

Displays information about the message or menu.

Walk-Up Features* ▶

Personal Print Jobs

Secure Print Jobs

Proof Print Jobs

Saved Print Jobs

Displays when print jobs are stored on the hard drive.***

Walk-Up Printing

Prints jobs using the Walk-Up printer driver.

Select for Installation

Installs Windows printer drivers.

▤= prints an information page.

▤ Configuration Page
▤ Paper Tips Page
▤ Connection Setup Page
▤ Startup Page
▤ Usage Profile
▤ PostScript Font List
▤ PCL Font List

Information ▶

▤ Menu Map

Printer Identification ▶

Model
Printer Name
IP Address*
Serial #
Activation Date

Information Pages ▶

Sample Pages ▶

Graphics Demonstration
Office Demonstration
2-Sided Demonstration**
▤ Print Mode Demonstration
▤ CMYK Sampler Pages
▤ RGB Sampler Pages

Supplies Info ▶

Maintenance Kit Life
Total Print Count

Billing Meters ▶

Serial #
Total Impressions
Color Impressions
Black Impressions

Paper Tray Setup ▶

Tray 1 Setup ▶

Tray 2 Paper Type ▶

Tray 3 Paper Type ▶

Optional lower trays

Tray 4 Paper Type ▶

Paper Handling Setup ▶

Paper Source
2-Sided Printing**
Load Paper Timeout
Tray 1 Prompt
Letter/A4 Substitution
Custom Units
Cleaning Page Source
Reset Paper Handling Setup

Requires:
   *Networked printer
  **Duplex Unit
 ***Hard Drive

Printer Setup ▶

⊟ Configuration Page

Connection Setup ▶ ——— ⊟ Connection Setup Page
Network Setup* ▶
USB Setup ▶
Reset Connection Setup

TCP/IP Setup ▶
Ethernet Speed
EtherTalk

TCP/IP
DHCP/BOOTP
AutoIP
TCP/IP Address
TCP/IP Network Mask
TCP/IP Gateway
Port 9100
LPR
IPP
SLP
SSDP
CentreWare IS

USB Port
Wait Timeout
Page Description Language

PostScript Error Info
Print-Quality Mode
TekColor Correction
Image Smoothing
User Defined Screens
Reset PostScript Setup

Font Number
Pitch
Point Size
Symbol Set
Orientation
Form Length
Line Termination
Draft Mode
Reset PCL Setup

PostScript Setup ▶
PCL Setup ▶

Control Panel Setup ▶

Printer Controls ▶

File Security*** ▶

Language
Control Panel Brightness
Control Panel Contrast
Accessible Control Panel
Reset Control Panel Setup

Startup Page
Power Saver Timeout
Date and Time
Intelligent Ready
Metric Defaults
Reset Printer Controls

Overwrite Removals
Remove Job Files
Daily Removal
Remove At HH:MM
Age-based Removal
Remove At Age
Reset File Security

Troubleshooting ▶

Paper Jams ▶

Print Quality Problems ▶

Network Problems* ▶

Service Tools ▶

⊟ Paper Tips Page
Troubleshoot Jams
Paper Path Test

⊟ Troubleshooting Print Quality Page
Eliminate Light Stripes ▶
Remove Print Smears

Basic
Advanced
Jet Substitution Mode

Removes light stripes on prints.

Network Diagnostics
Network Log Pages

⊟ Printer Status Page
Engine Error History
Jam History
Diagnostics History
Enter Diagnostics Mode
Hexadecimal Mode
⊟ Service Usage Profile
Email Service Report*
Reset NVRAM

Shutdown ▶

Power Saver (Recommended)

Restart Printer

Power Down

Minimizes ink usage.

Requires:
  *Networked printer
 **Duplex Unit
***Hard Drive

Media Margin Specification Table

Media Size	Width (mm)	Length (mm)	Side Margins (mm)	Top/Bottom Margin (mm)	Image Width (mm)	Image Length (mm)
Legal	215.9	355.6	5	5	205.9	345.6
Folio	215.9	330.2	5	5	205.9	320.2
A4	210	297	5	5	200	287
A	215.9	279.4	5	5	205.9	256.7
Executive	187.15	266.7	5	5	174.15	256.7
B5 JIS	182	257	5	5	172	247
B5 ISO	176	250	5	5	166	240
#10 Envelope	104.775	241.3	5	15	94.775	211.3
Choukei 3 Gou	120	235	5	15	105	205
C5 Envelope	162	229	5	20	157	189
DL Envelope	110	220	5	20	100	180
Statement	139.7	215.9	5	5	129.7	205.9
A5	148	210	5	5	138	200
Choukei 4 Gou	90	205	5	15	80	175
Monarch Envelope	98.425	190.5	5	15	88.425	160.5
A7 Lee Envelope	133.35	184.2	5	15	123.35	154.2
#6 3/4 Envelope	92.075	165.1	5	15	82.075	135.1
A6	105	148	5	5	95	138
#5-1/2 Baronial	111.125	146	5	15	101.125	112.9
3 x 5 Card	76.2	127	5	5	66.2	117
6 x 9 Envelope	152.4	228.6	5	20	142.4	188.6
Custom	76.2 - 215.9	127 - 355.6	12.5 (8400) 5 mm (8500)	12.5	51.2 - 190.9	102 - 330.6

Paper Weight Equivalence Table

US Postcard Thickness (mm)	US Bond Weight (lb.)	US Text Book Weight (lb.)	US Cover Weight (lb.)	US Bristol Weight (lb.)	US Index Weight (lb.)	US Tag Weight (lb.)	Metric Weight (g/m²)
	16	41	22	27	33	37	60
	17	43	24	29	35	39	64
	20	50b	28	34	42	46	75
	21	54	30	36	44	49	80
	24	60b	33	41	50	55	90
	27	68	37	45	55	61	100
	28	70b	39	49	58	65	105
	29	74	41	50	61	68	110
	32	80b	44	55	67	74	120
	36	90	50	62	75	83	135
0.18	39	100	55	67	82	91	148
	40	101	55	68	83	92	150
0.20	43	110	60	74	90	100	163
	45	115	63	77	94	104	170
0.23	47	119	65	80	97	108	176
	51	128	70	86	105	117	190
	53	134	74	90	110	122	199
	54	137	75	93	113	125	203
	58	146	80	98	120	133	216
	65	165	90	111	135	150	244

On-site Printhead Troubleshooting Checklist (8400)

For the latest policy information on Non-Xerox Supplies, visit the Xerox Service Partners Web Site:
https://www.office.xerox.com/smart/sso index.cfm?fuseaction=sso.partnerLogin

THE DOCUMENT COMPANY
XEROX®
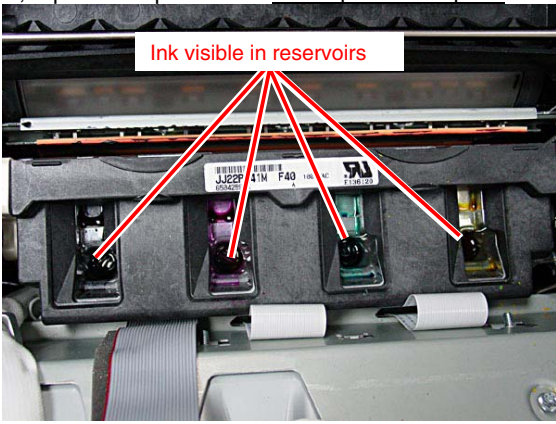
PRINTHEAD TROUBLESHOOTING CHECKLIST
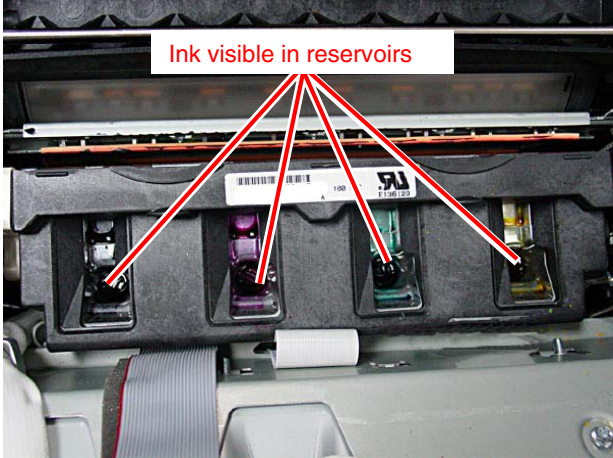**Phaser 8400/WorkCentre C2424   Version 2**

IMPORTANT!   This checklist outlines proper printhead troubleshooting procedures. All Xerox service employees and any other service personnel on any job involving a printhead replacement should perform it.

Service person name	
Service Company	
Phone Number	
Date of printhead replacement	
Printer serial number	
Printhead serial number	
OUT Request ID number	

Troubleshooting Summary – Follow the checklist below and fill in spaces as they apply as you complete the troubleshooting procedures.

	Check List Items to Complete	**Value or Result**	**What to look for**

Step 1	Do you suspect or have evidence of use of generic ink?	YES NO
		
		Circle one
			1a. Did the customer state that they have used generic ink in this printhead? **YES** **NO**
			1b. Did you observe generic sticks or related packaging at the site?
			                    YES **NO**
			1c. Are there generic ink sticks in the ink loader?
			                    YES **NO**
			1d. Does the service history indicate possible use of generic ink?
			                    YES **NO**
			Indicate brands and lot codes of generic ink if used:
			                  _____
			
			If you answered **YES** to *any* of the above, be sure to document the use of non-Xerox ink in the **Comments** section of this document. *Xerox U.S. personnel and Service Delivery Partners please record non-Xerox ink use in the FIST system as well as in this document.*

Step 2	Print the **Service Usage Profile.** It is located in the front panel menu Troubleshooting – Service Tools.		If **Line 631 Printhead ID** lists a date, record the date (month day year) here: If **Line 636 IDU** lists any values, record the numbers here: Xerox U.S. personnel please record these dates in the FIST system as well as in this document	**Printhead ID:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____ **IDU:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____
Step 3	Does the printer display an error code indicating a problem with the printhead?	YES NO *Circle one*	If **YES** please write down the error code. _____ **3a.** If error code 13,264.4x is present in the Fault History replace the electronics module (continue to 3b). **3b.** If a printhead thermistor open or shorted error code 13,195.45, 13,197.47, 13,259.46, 13, 261.48, 13,323.47, 13.325.49 is displayed or a PEST error code 37,002.47, 37,003.48, 37,004.40, or 37,005.41, perform the following steps: **3c.** Inspect and reseat the printhead interface cable (gray ribbon cable) and retest. **3d.** Replace the electronics module and retest. **3e.** Replace the printhead.	
Step 4	Visually inspect the ink reservoirs. Do they all contain ink? No ink in a reservoir, ***accompanied by many missing jets before and after a purge cycle,*** indicates that an ink-level sensor has failed.	YES NO *Circle one*	If **NO**, replace the printhead. The repair is complete! Ink visible in reservoirs	
Step 5	Has the printer had a printhead replaced before for a (non-NXI related) weak or missing jet problem?	YES NO *Circle one*	If **YES**, replace the wiper assembly. Proceed to **Step 9**. The new wiper assembly may take 6 purges to before achieving optimal performance. Ensure the wiper assembly is correctly aligned with the printhead. If the missing jet(s) recovers, the repair is complete.	

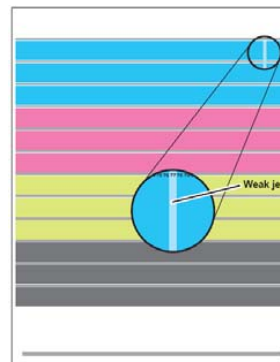| Step 6	Is the Wiper Assembly correctly aligned?	YES NO *Circle one*	Is the wiper assembly out of alignment (not parallel with the printhead faceplate)? If **YES,** perform the wiper alignment procedure as described in the *Phaser 8400 Color Printer Service Guide.*
Step 7	Print Service Test Print 1: Weak and Missing Jets. Is *severe* color mixing apparent?	YES NO *Circle one*	Is there color mixing from one row to the next row for the same jet? Note: Some color mixing is normal following a purge. It usually clears after one or two prints. If **YES,** replace the wiper assembly. Repeat **Step 6.**
Step 8	Visually check the printhead faceplate. Is the faceplate contaminated?	YES NO *Circle one*	Are there streaks, smudges, or a scum of wax in the jet area (outlined in red) of the printhead? If **YES**, replace the wiper assembly. Repeat the checklist starting at **Step 6.**
Step 9	Visually check the Wiper Assembly blade. Is it OK?		Is there any damage or separation on the wiper blade? If **YES**, replace the wiper assembly.

Step 10	Check the purge performance of the purge system.	YES NO
		
		Circle one
			Check the purge pump performance.
			  10a. Empty the waste tray.
			  10b. Select **Eliminate Light Stripes** from the printer front panel and run one cleaning cycle.
			  10c. Remove the waste tray and examine how much ink was purged. A single purge should resemble the illustration.
			
			  Is the purge mass noticeably less than what is pictured?
			  If **YES**, inspect the purge hoses for kinks, splits or tears.

Step 11	Print Service Test 1: Weak and Missing Jets. Are there weak or missing jet(s)?	YES NO *Circle one*	• If **NO** go to **Step 12**. • If **YES**, do the following: • Check the exit area of the paper path for debris that could be scraping ink off the drum and may mimic a weak or missing jet. • Select **Eliminate Light Stripes** from the printer front panel up to 3 times as needed to recover a weak or missing jet. • Perform the **JetFix** technique by downloading the appropriate snippet (s*uch as 8400_jetfix_c.ps* for a missing cyan jet) to the printer. The snippets are available on the Customer Support Resources website in the Phaser 8400 web pages. Refer to Service Bulletin 640. • If the jet is still missing, replace the printhead. <u>The repair is complete!</u>
Step 12	Is the customer experiencing vertical bands (not light stripes) in solid color areas?	YES NO *Circle one*	• If **YES,** print 10 solid fill pages of cyan. If the bands vary in intensity and/or location over the 10 prints, the customer is experiencing stagnant ink discoloration. Continue to print solid fills of the offending color until the output is uniform. It may take as many as 60 solid fill pages to refresh all of the ink in the printhead reservoir. <u>The repair is now complete!</u> • If **No**, <u>the repair is complete!</u>

Comments: (**Xerox U.S. personnel please add all comments into FIST**)

_____
_____
_____

A completed checklist <u>and</u> sample prints must be returned with each printhead.
<u>*Xerox reserves the right to refuse reimbursement*</u> to service personnel who do not enclose a completed troubleshooting checklist and a sample print with each returned printhead.

Please return the following items with the defective printhead:

- *Two* prints of **Service Print 1**
- This **Printhead Troubleshooting Checklist** (filled out)
- Inventory control **"Green Tag"** (filled out)
- **Sample prints** that clearly show the observed print quality defect (not applicable for printheads replace because of an error code)
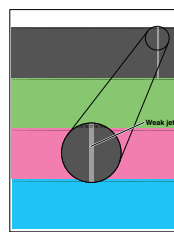
Service Print 1

Ink Failure Checklist

For the latest policy information on Non-Xerox Supplies, visit the Xerox Service Partners Web Site: https://www.office.xerox.com/smart/sso index.cfm?fuseaction=sso.partnerLogin

GENERIC INK FAILURE CHECKLIST
PERFORM THIS CHECKLIST ONLY IF YOU SUSPECT NON-XEROX INK IS BEING USED.

Step 1	Print Test Print 1 (Weak/Missing Jets). CAREFULLY examine it. Does Test Print 1 show **at least one color** with 8 or more weak/missing jets?	If YES Go to **Step 3**	If NO Go to **Step 2**
Step 2	Run 10 solid fills in the suspected color from the front panel. Does the number of weak and missing jets noticeable increase with solid fills.	If YES Go to **Step 3**	If NO Go to **B**
Step 3	Does the printhead reservoir of the affected color have a large visible pool of ink obscuring the surface of the filter element? Ink not visible. Filter viewable. Ink passing easily thru filter. Visible pool of ink obscuring filter. Ink not readily passing thru filter.	If YES Go to **B**	If NO Go to **A**

A **Generic Ink Failure.**

- **Inform the customer that service will only be provided with a credit card or purchase order. The Xerox warranty/Service Agreement** <u>DOES NOT</u> **cover repair cost of the printhead when it has been damaged by non-Xerox ink and the repair cost is the responsibility of the customer.**
- Provide the customer with the "Diagnosis Form" and "Onsite Failure notification" letters.
- Once payment has been authorized or assured, replace the printhead and included ink per normal procedures.
- Check the "Non-Xerox/Tektronix" Ink box on the Green tag.
- Enclose all sample prints (**including two prints of Service Print 1**), ink samples, waste ink, and this checklist with the printhead.

Xerox Personnel – Please provide full documentation in FIST.

B **Does not fully meet field criteria. Suspected generic ink failure.**

- **Inform the customer that although the Field Generic Ink Failure Test Criteria was not satisfied, engineering will further evaluate the printhead upon its return to the factory. It will be subjected to complete analysis at that time and, if found to be damaged by generic ink, the customer will be billed.**
- Provide the customer with the "Customer Alert #8 March 2005" letter.
- If there are weak or missing jets replace the printhead and included ink per normal procedures.
- Check "Non-Xerox/Tektronix" Ink box on the Green tag.
- Enclose all sample prints (**including two prints of Service Print 1**), ink samples, waste ink, and this checklist with the printhead.

Xerox Personnel – Please provide full documentation in FIST.

IN EITHER CASE PLEASE NOTE ADDITIONAL GENERIC INK INFORMATION
- Was generic ink or related packaging observed?   **YES   NO**
- Was generic ink present in the ink loader?   **YES   NO**

<u>IMPORTANT</u> – Note the brand and lot code of the generic ink, if available

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On-site Printhead Troubleshooting Checklist (8500/8550/8560)

PRINTHEAD TROUBLESHOOTING CHECKLIST
Phaser 8500/8550/8560/8560MFP   Version 2.0

IMPORTANT! This checklist outlines proper printhead troubleshooting procedures. All Xerox service employees and any other service personnel on any job involving a printhead replacement should perform it.

Service person name	
Service Company	
Phone Number	
Date of printhead replacement	
Printer serial number	
Defective Printhead serial number	
OUT Request ID number	

Troubleshooting Summary – Follow the checklist below and fill in spaces as they apply as you complete the troubleshooting procedures.

Incorrect Colors -- Incorrect colors, such as reds printing orange, IS NOT A VALID REASON for replacing the printhead. Color issues are correctable by either purging old ink out the printhead or using alternate Color Corrections at the print driver.

	Check List Items to Complete	Value or Result	What to look for
Step 1	Do you suspect or have evidence of use of generic ink (non-Xerox ink)?	YES NO *Circle one*	**1a**. Did the customer state that they have used generic ink in this printhead? **YES NO** **1b**. Did you observe generic sticks or related packaging at the site? **YES NO** **1c**. Are there generic ink sticks in the ink loader? **YES NO** **1d**. Does the service history indicate possible use of generic ink? **YES NO** Indicate brands and lot codes of generic ink if used: _____ If you answered **YES** to *any* of the above, be sure to document the use of non-Xerox ink in the **Comments** section of this document. Xerox U.S. personnel and Service Delivery Partners please record **non-Xerox ink** use in the FIST system as well as in this document.

Step 2	Print the **Service Usage Profile.** It is located in the front panel menu Troubleshooting – Service Tools.		If **Line 631 Printhead ID** lists a date**,** record the date (month day year) here: If **Line 636 IDU** lists any values**,** record the numbers here:	**Printhead ID:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____ **IDU:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____
			Xerox U.S. personnel please record these dates in the FIST system as well as in this document	
Step 3	Does the printer display an error code indicating a problem with the printhead?	YES NO *Circle one*	If **YES** please write down the error code. _____ **3a.** If error code 13,264.4x is present in the Fault History replace the electronics module (continue to 3b). **3b.** If a printhead thermistor open or shorted error code 13,195.45, 13,197.47, 13,259.46, 13, 261.48, 13,323.47, 13.325.49 is displayed or a PEST error code 37,002.47, 37,003.48, 37,004.40, or 37,005.41, perform the following steps: **3c.** Inspect and reseat the printhead interface cable (gray ribbon cable) and retest. **3d.** Replace the printhead. <u>The repair is complete!</u>	
	Visually inspect the ink reservoirs. Do they all contain ink? No ink in a reservoir indicates that an ink-level sensor has failed.	YES NO *Circle one*	If **NO**, replace the printhead. The repair is complete! Ink visible in reservoirs 	
Step 5	Has the printer had a printhead replaced before for a (non-NXI related) weak or missing jet problem?	YES NO *Circle one*	If **YES**, replace the wiper assembly. Proceed to **Step 9**. The new wiper assembly may take 6 purges to before achieving optimal performance. Ensure the wiper assembly is correctly aligned with the printhead. <u>If the missing jet(s) recovers, the repair is complete.</u>	

Step 6	Is the Cap/Wipe/ Purge assembly correctly aligned?	YES NO *Circle one*	Is the wiper assembly out of alignment (not parallel with the printhead faceplate)? If **YES,** perform the wiper alignment procedure as described in the *Phaser 8400/8500/8550 Color Printer Service Guide*.
Step 7	Print Service Test Print 2: Weak and Missing Jets. Is *severe* color mixing apparent?	YES NO *Circle one*	Is there color mixing from one row to the next row for the same jet? Note: Some color mixing is normal following a purge. It usually clears after one or two prints. If **YES,** replace the wiper assembly. Repeat **Step 6.**
Step 8	Visually check the printhead faceplate. Is the faceplate contaminated?	YES NO *Circle one*	Are there streaks, smudges, or a scum of wax in the jet area (outlined in red) of the printhead? Example of Bad Wipe Action If **YES**, replace the wiper assembly. Repeat the checklist stating at **Step 6.**
Step 9a	Visually check the Wiper Assembly blade. Is it OK?		Is there any damage or separation on the wiper blade? If **YES**, replace the wiper assembly.
Step 9b	Check the purge performance of the purge system.	YES NO *Circle one*	Check the purge pump performance. **9a.** Empty the waste tray. **9b.** Select **Eliminate Light Stripes - Basic** from the printer front panel and run one cleaning cycle. **9c.** Remove the waste tray and examine how much ink was purged. A single purge should resemble the illustration. Is the purge mass noticeably less than what is pictured? If **YES**, inspect the purge hoses for pinches, splits, or tears.

Step 11	Print Service Test 2: Weak and Missing Jets.
	Are there weak or missing jet(s)?
		YES
		NO
		
		Circle one
			• If **NO** go to **Step 12**.
			• If **YES**, do the following:
			  • Check the exit area of the paper path for debris that could be scraping ink off the drum and may mimic a weak or missing jet.
			  • Select **Eliminate Light Stripes - Basic** from the printer front panel up to 3 times as needed to recover a weak or missing jet.
			  • Select **Eliminate Light Stripes - Advanced** from the printer front panel up to 2 times as needed to recover a weak or missing jet.
			  • Select **Jet Substitution** to substitute a working jet for the missing jet. However, if any of the following criteria is met, you should replace the printhead instead.
			    • If the customer uses the billing meters features.
			    • If three missing jets of the same color are adjacent (for example cyan jets 79, 80, and 81).
			    • By the customer runs mainly in Fast Color or Standard mode (as revealed on the Usage Profile page).
			    The repair is complete!

Step 12	Is the customer experiencing vertical bands (not light stripes) in solid color areas?	YES NO *Circle one*	• If **YES,** print 10 solid fill pages of cyan. If the bands vary in intensity and/or location over the 10 prints, the customer is experiencing stagnant ink discoloration. Continue to print solid fills of the offending color until the output is uniform. It may take as many as 60 solid fill pages to refresh all of the ink in the printhead reservoir. <u>The repair is now complete!</u> • If **No**, <u>the repair is complete!</u>

Comments: (Xerox U.S. personnel please add all comments into FIST)

_____

_____

_____

A completed checklist *and* sample prints must be returned with each printhead.
***Xerox reserves the right to refuse reimbursement* to service personnel who do not enclose a completed troubleshooting checklist and a sample print with each returned printhead.**

Please return the following items with the defective printhead:

- **Service Print 1** (not necessary for error code-based failures (not applicable for printheads replace because of an error code)
- This **Printhead Troubleshooting Checklist** (filled out)
- Inventory control **"Green Tag"** (filled out)
- **Sample prints** that clearly show the observed print quality defect (not applicable for printheads replace because of an error code)

Service Print 1

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D

E

Notes

Reference	Description

701P27910

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