THE DOCUMENT COMPANY

XEROX®

Phaser® 8400

Color Printer

Service Manual

®

Phaser® 8400 Color Printer

Service Manual

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.

This Printing: 2004

071-0865-01

Copyright

User Safety Summary

Terms in manual

Caution

Conditions that can result in damage to the product.

Warning

Conditions that can result in personal injury or loss of life.

Power source: For 110 VAC printers, do not apply more than 130 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. For 220 VAC printers, do not apply more than 250 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. Refer to a qualified service technician for changes to the cord or connector.

Operation of product: Avoid electric shock by contacting a qualified service technician to replace fuses inside the product. Do not operate without the covers and panels properly installed. Do not operate in an atmosphere of explosive gases.

Warning

Turning the power off using the On/Off switch does not de-energize the printer. You must remove the power cord to disconnect the printer from the mains. Keep the power cord accessible for removal in case of an emergency.

Safety instructions: Read all installation instructions carefully before you plug the product into a power source.

Terms on product

Warning

A personal injury hazard exists that may not be apparent. For example, a panel may cover the hazardous area. Also applies to a hazard to property including the product itself.

Warning

Personal injury hazard exists in the area where you see the sign.

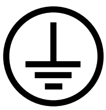
Care of product: Disconnect the power plug by pulling the plug, not the cord. Disconnect the power plug if the power cord or plug is frayed or otherwise damaged, if you spill anything into the case, if product is exposed to any excess moisture, if product is dropped or damaged, if you suspect that the product needs servicing or repair, and whenever you clean the product.

Ground the product: Plug the three-wire power cord (with grounding prong) into grounded AC outlets only. If necessary, contact a licensed electrician to install a properly grounded outlet.

Symbols as marked on product:

DANGER high voltage:

Protective ground (earth) terminal:



Use caution. Refer to the manual(s) for information:

WARNING: If the product loses the ground connection, usage of knobs and controls (and other conductive parts) can cause an electrical shock. Electrical product may be hazardous if misused.

Service safety summary

For qualified service personnel only: Refer also to the preceding Users Safety Summary.

Do not service 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 on: 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, soldering, 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.

Power source: This product is intended to operate from a power source that will not apply more than 250 volts rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Regulatory Specifications

United States

The equipment described in this manual generates and uses radio frequency energy. If it is not installed properly in strict accordance with Xerox' instructions, it may cause interference with radio and television reception or may not function properly due to interference from another device. 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 printer into an outlet on a circuit different from that which the receiver is connected.
- Route the interface cables on the printer away from the receiver.
- Consult the dealer, Xerox service, or an experienced radio/television technician for help.

Changes or modifications not expressly approved by Xerox can affect the emission and immunity compliance and could void the user's authority to operate this product. To ensure compliance, use shielded interface cables. A shielded parallel cable can be purchased directly from Xerox at www.xerox.com/office/supplies.

Xerox has tested this product to internationally accepted electromagnetic emission and immunity standards. These standards are designed to mitigate interference caused or received by this product in a normal office environment. This product is also suitable for use in a residential environment based on the levels tested.

In the United States this product complies with the requirements of an unintentional radiator in part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; (2) this device must accept any interference received, including interference that may cause undesired operation.

Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications, ICES-003.

Le présent appareil numérique n'émet pas de bruits radioélectrique dépassant les limits applicables aux appareils numériques de la classe B prescrites dans le Réglement sur le brouillage radioélectrique édicté par le ministere des Communications du Canada, NMB-003.

European Union

Xerox Corporation declares, under our sole responsibility, that the printer to which this declaration relates is in conformity with the following standards and other normative documents:

Following the provisions of the Low Voltage Directive 73/23/EEC and its amendments:

EN 60950 (IEC 60950)	"Safety of Information Technology Equipment including Electrical Business Equipment"

Following the provisions of the Electromagnetic Compatibility Directive 89/336/EEC and its amendments:

EN 55022:1998 (CISPR 22)	"Limits and Methods of measurement of radio interference characteristics of Information Technology Equipment." Class B.
EN 61000-3-2:2000 (IEC61000-3-2)	"Part 3: Limits - Section 2: Limits for harmonic current emissions (equipment input current less than or equal to 16A per phase)."
EN 61000-3-3:1995 +A1:2001 (IEC61000-3-3)	"Part 3: Limits - Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current less than or equal to 16A."
EN 55024:1997 (CISPR 24)	"Information technology equipment - Immunity characteristics - Limits and methods of measurement. "

CISPR 24 Immunity Phenomena	Basic Standard	Test Specification
Electrostatic Discharge	IEC 61000-4-2:1995	6 kV Contact, 10 kV Air
Radio-Frequency Electromagnetic Field (radiated)	IEC 61000-4-3:1995	80-1000 MHz, 3 V/m, 80% AM @ 1 KHz
Fast Burst Transients	IEC 61000-4-4:1995	5/50 Tr/Th ns, 5 kHz Rep. Freq 0.5 kV Signal Lines 1 kV AC Mains
Line Surge	IEC 61000-4-5:1995	Combination wave 2.0 kV Common mode 2.0 kV Differential mode
Radio-Frequency Electromagnetic Field (Conducted)	IEC 61000-4-6:1996	0.15 - 80 MHz, 3 V, 80% AM @ 1 kHz
Line voltage dips	IEC 61000-4-11:1994	>95% dip for ½ cycle @ 50 Hz 30% dip for 25 cycles @ 50 Hz

CISPR 24 Immunity Phenomena	Basic Standard	Test Specification
Line voltage drop-out	IEC 61000-4-11:1994	>95% dropout for 250 cycles @ 50 Hz

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

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

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 sensitivity 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).

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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

Appendix

General Information

In this chapter...

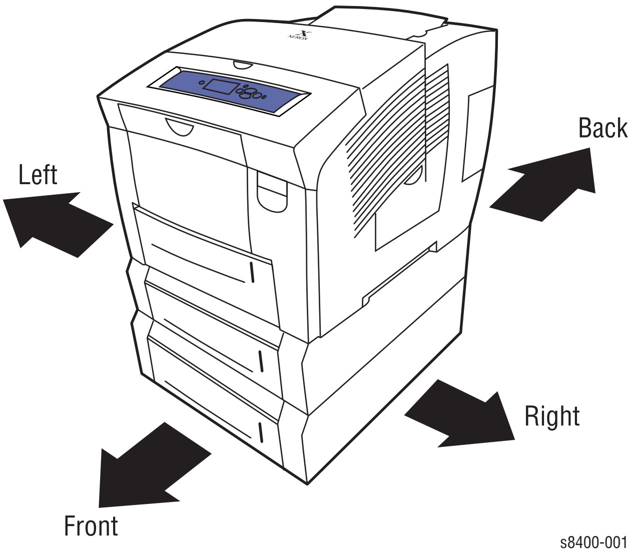
- Printer Introduction and Overview
- Printer Configurations
- Front Panel Configuration
- Parts of the Printer
- Routine Maintenance Items and Consumables
- Printer Specifications

Section 1

Printer Introduction and Overview

The Xerox Phaser 8400 Color Printer Service Manual is the primary document used for repairing, maintaining, and troubleshooting the printer.

To ensure understanding of this product, complete the Xerox Phaser 8400 Color Printer Service Training and self study guide.



Printer Configurations

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

Note

Some features are not included as options to a configuration but they are included when you upgrade the configuration.

	Printer Configuration				
Features	**8400B**	**8400BD**	**8400N**	**8400DP**	**8400DX**
Maximum Print Speed	24	24	24	24	24
Memory (Std/Max)	128/ 512MB	256/ 512MB	128/ 512MB	256/ 512MB	256/ 512MB
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(MPT)	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
10/100 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.

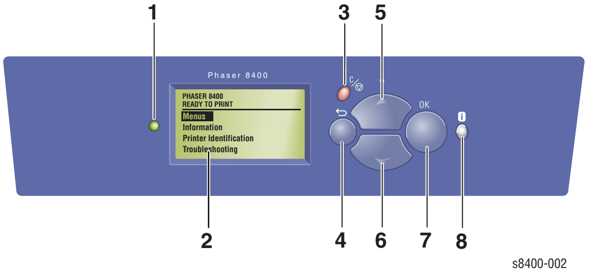
Front Panel Configuration

The Front 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

Front Panel Feature Descriptions



1	LED (Power/Status)	5	**Up Arrow** button - scrolls up the menu system
2	Graphic front panel display	6	**Down Arrow** button - scrolls down the menu system
3	**Cancel** button	7	**OK** (select) button
4	**Back** button	8	**Information** button - for additional explanation or help

Front Panel Shortcuts

- To access the Service Tools menu:
  From anywhere within the menu (not diagnostics): press and hold the **Up Arrow** button, then press the **OK** button. You can also press and hold the **Cancel** button, then press the **OK** button.

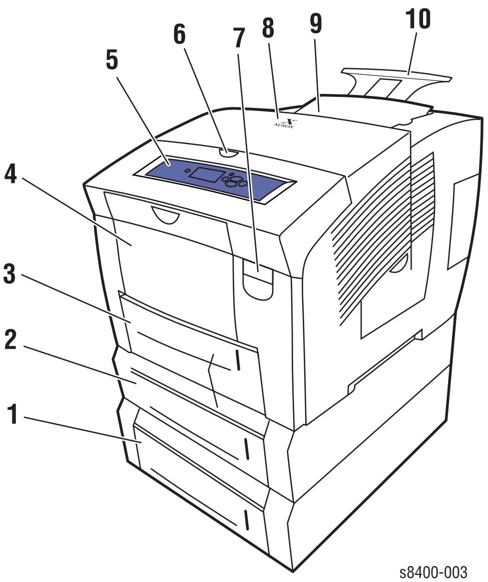
- To set the front panel language:
  Press and hold the **Cancel** button, then press the **Information** button.

- To bypass protected menus:
  Press and hold the **Cancel** button, then press the **Back** button.

- To add Jet Substitution Mode to the Print Quality Problems menu:
  From the Print Quality Problems menu: press and hold the **Up Arrow** button, then press the **Back** button.

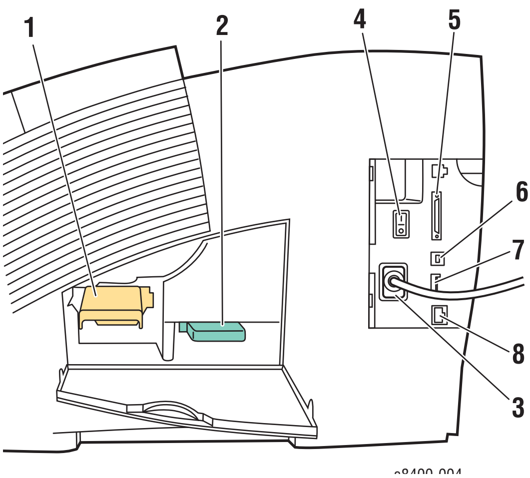
Parts of the Printer

Front View



1. Optional 525-Sheet Tray 4
2. Optional 525-Sheet Tray 3
3. Standard 525-Sheet Tray 2
4. 100-Sheet Multi-Purpose Tray 1
5. Front Panel
6. Exit Cover Release
7. Front Cover Release
8. Exit Cover
9. Ink Loader/Top Cover
10. Legal/A4 Output Tray Extension

Side View with Printer Interfaces

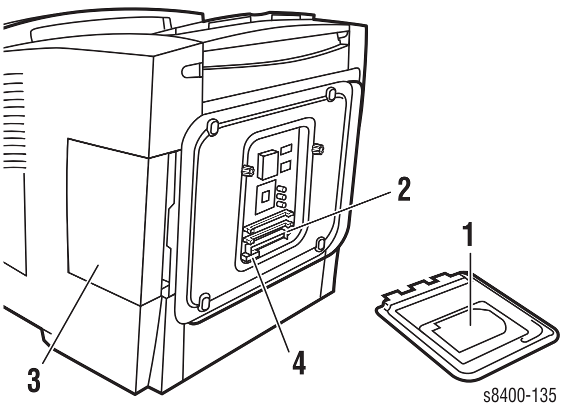


1. Maintenance Kit
2. Waste Tray
3. Power Cord
4. On/Off Switch
5. Parallel Cable Connection
6. USB Connection
7. Configuration Card
8. Ethernet Connection

Electronics Module

The printer's main electronics and power supply are enclosed in a metal case called the Electronics Module. The rear panel allows access to the Electronics module, RAM, and NVRAM chips. The printer's hard drive is mounted on the rear panel.

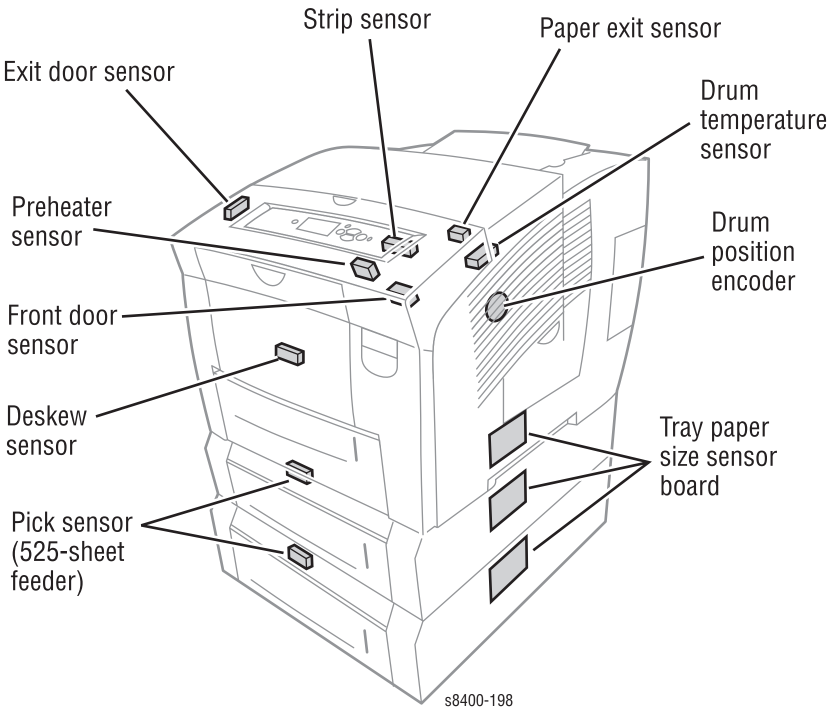
When installing a new electronic module in the printer, the following components need to be transferred from the old board.



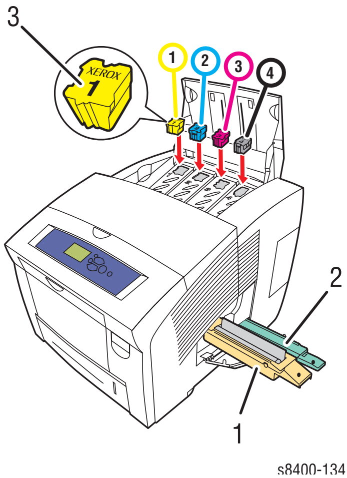
1. Hard Drive (optional)
2. Memory (RAM) DIMM 1 and DIMM 2
3. Configuration Card (Installed from the side under the interface cover.)
4. NVRAM

Sensors

The following graphic identifies the location of the printer's sensors.



Routine Maintenance Items and Consumables



Routine Maintenance Items	Consumable
1. Maintenance Kit	3. Ink
2. Waste Tray	

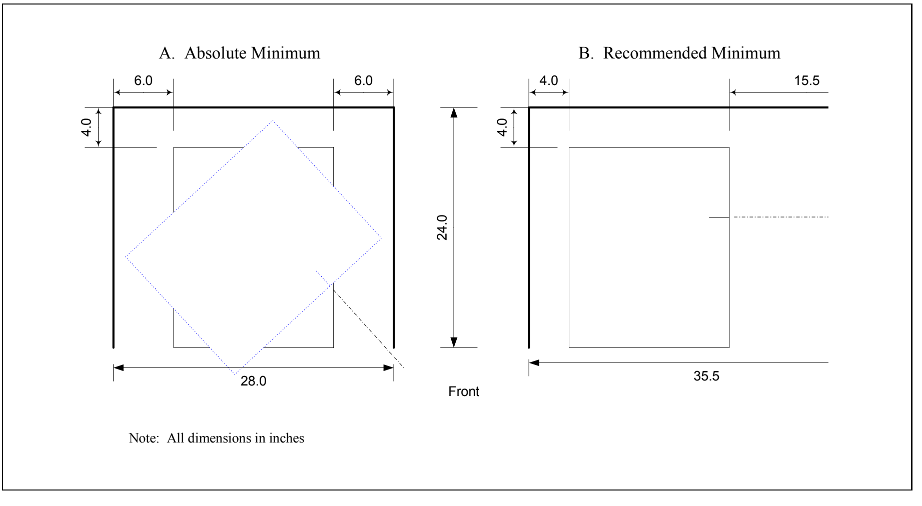
Routine Maintenance:		**Consumable:**	
Extended Maintenance Kit	30,000 cycles (0-20% coverage) 20,000 (20-100% coverage)	Ink	1140 prints per stick*
Startup Maintenance Kit	10,000 cycles		
Waste Tray	Empty every 7 Purges		

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

Printer Specifications

Physical Dimensions and Clearances

Print Engine Only	Value
Width:	422 mm (16.6 in.) find in EIS
Depth:	514 mm (20.24 in.)
Height:	368 mm (14.48 in.)
Weight:	26.8 kg (59 lbs.)
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 lbs.)
Minimum Clearances	**Supplemental Information**
Left side & 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.



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	Fast Color (300x300 dpi), Standard (300x450 dpi), Enhanced (563x400 dpi), High Resolution/Photo (525x2400)
Maximum Operating Printing Speed	24 ppm
First-Print-Out (in seconds, Letter/A4)	As low as 6 seconds
Warm-up time: from Off (cold start) from power saver	 12 minutes 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) 120 W (idle) 230 W (average during printing)	1250 W (peak) 120 W (idle) 230 W (average during printing)
Energy Star®	43 W	43 W

Environmental Specifications

Nominal Operating Environment	
Temperature	10° - 32° C / 50° - 90° F operating
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**	60–122 g/m^2 (16–32 lb. Bond)	l		l	
		123–220 g/m^2 (32–59 lb. Bond)		l		l
	Transparency	Phaser Professional Solid Ink Transparencies	l			l
	Card Stock	100–122 g/m^2 (37–44 lb. Cover)	l		l	
		123–220 g/m^2 (44–80 lb. Cover)		l		l
	Labels	Phaser Color Printing Labels	l			l
	Special	Phaser Professional Solid Ink Business Cards		l		l
		Phaser Professional Solid Ink High Resolution Photo Paper	l			l
		Phaser Premium Postcards		l	l	
		Phaser Weatherproof Paper	l		l	
		Phaser Trifold Brochures		l	l	
Legal (8.5 x 14 in.)		60–122 g/m^2 (16–32 lb. Bond)	l		l	
Executive (7.25 x 10.5 in.) or A5 (148 x 210 mm)		60–122 g/m^2 (16–32 lb. Bond)	l		l	
		123–220 g/m^2 (32–59 lb. Bond)		l		l
Statement (5.5 x 8.5 in.)			l		l	
US Folio (8.5 x 13 in.)			l		l	
A6 (105 x 148 mm)				l		l
B5 ISO (176 x 250 mm)			l		l	
B5 JIS (182 x 257 mm)			l		l	
Index Cards (3 x 5 in.)				l		l

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)		l	l	l
		Minimum: 75 mm wide x 127 mm long (3 in. wide x 5 in. long)		l		l
		Minimum: 139.7 mm wide x 210 mm long (5.5 in. wide x 8.3 in. long)		l	l	
Envelopes	**Any Tray**	#10 Commercial (4.12 x 9.5 in.) DL (110 x 220 mm) C5 (162 x 229 mm)	l l l			l l l
	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)		l l l l l l l		l l l l l l l

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).

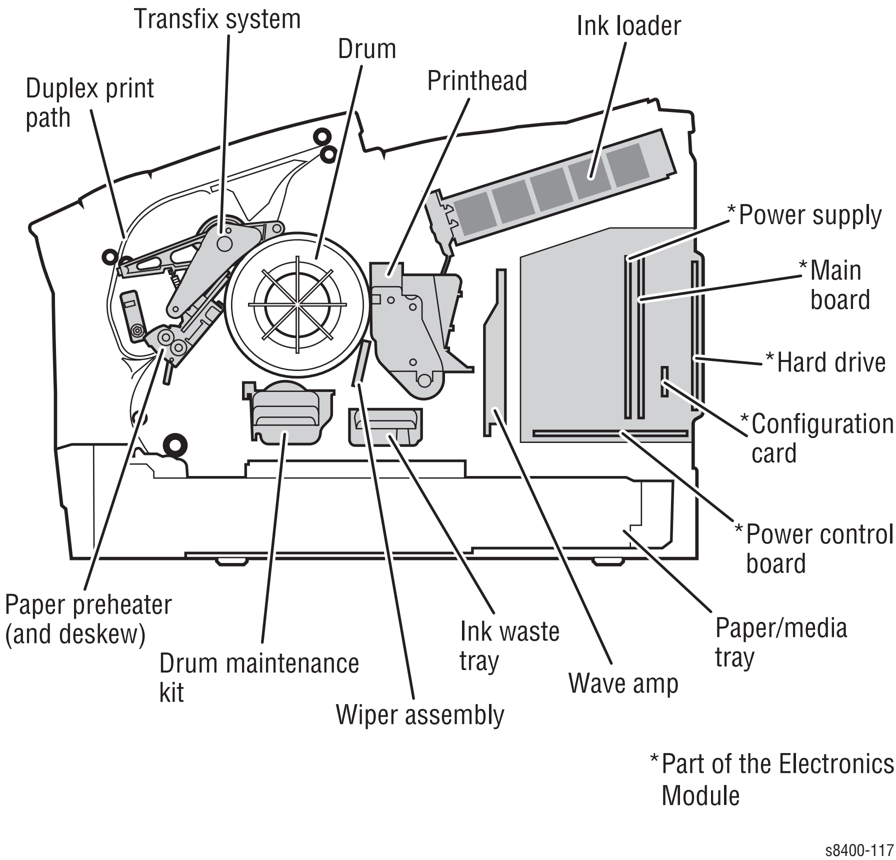
Theory of Operation

In this chapter...

- Main Printer Sub-Systems
- Print Process
- Printer Self-Maintenance

Section 2

Main Printer Subsystems



Overview

The printer is made up of nine major subsystems, which are described in this chapter:

- Electronics Module
- Process Drive
- Media Path Drive
- Printhead
- Drum Assembly
- Transfix System
- Drum Maintenance System
- Ink Loader

- Purge System

The electronics module includes the main board, the power control board, and the power supply. An important component of the electronics module is the configuration card. Printer model configuration is determined by a combination of the configuration card feature value and other printer hardware capabilities.

The process drive is an open loop system that transmits torque to two main camshaft assemblies. One camshaft assembly controls the transfix roller loading, and the other controls the drum maintenance system and printhead tilt system. The media path drive gearbox and motor assembly controls each roller in the paper transport system.

The drum maintenance system creates a thin intermediate liquid transfer surface, a 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 its transfer to the sheet of paper or transparency film. The ink loader melts the solid ink as ink is required by the printhead. The melted ink drips into the ink reservoirs of the printhead underneath the ink loader.

The printhead provides the ink used by each print job. Using its 1236 jet nozzles, the printhead can print the entire image on the rotating drum. The drum assembly and transfix system form the key portion of the printer where imaging takes place. The image to be printed on paper is first "printed" on the rotating drum. A sheet of heated paper or transparency film is then passed between the drum and the transfix roller. Under the pressure between the drum and the transfix roller, the image is transferred to the sheet of paper. The purge system uses air pressure and a wiper blade to remove any debris or air bubbles that may be obstructing the printhead nozzles.

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) assembly.

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 to the power control board, which are passed through 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 front 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: The main board supports two PC 133 compatible SO-DIMM SDRAM memory modules (128 to 256 MB).

Hard Drive Support: A hard drive IDE cable is plugged into the main board from the hard drive board. A separate power cable must be plugged into the power control board from the hard drive board to make the hard drive board functional.

Input/Output Ports: The main board provides support for Ethernet (not supported on the B and BD printer model configurations), Parallel, and USB 2.0 external I/O 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 the electronics module is replaced, the Configuration Card must be transferred to the replacement electronics module.

Information stored on the configuration card includes the feature value, ethernet address, and personality parameters. The printer model configuration is determined by a combination of the feature value and other printer hardware capabilities. Printer model configuration can be transferred from one printer to another printer by migrating the configuration card between the printers. 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 over time, as the printer is configured by the customer. The personality parameters are copied, or “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 are automatically copied to the NVRAM chip. If the configuration card is removed, the printer will reboot as a B (non-networking) model 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 are used to track mechanical and thermal functions, such as the position and temperature of the printhead. The power control board also generates regulated +/- 12 volt (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, yet interrelated sections: the AC section and the DC section. In the AC section, power is routed to 10 triacs which, under main board logic control, supply AC power to the 10 heaters in the printer.

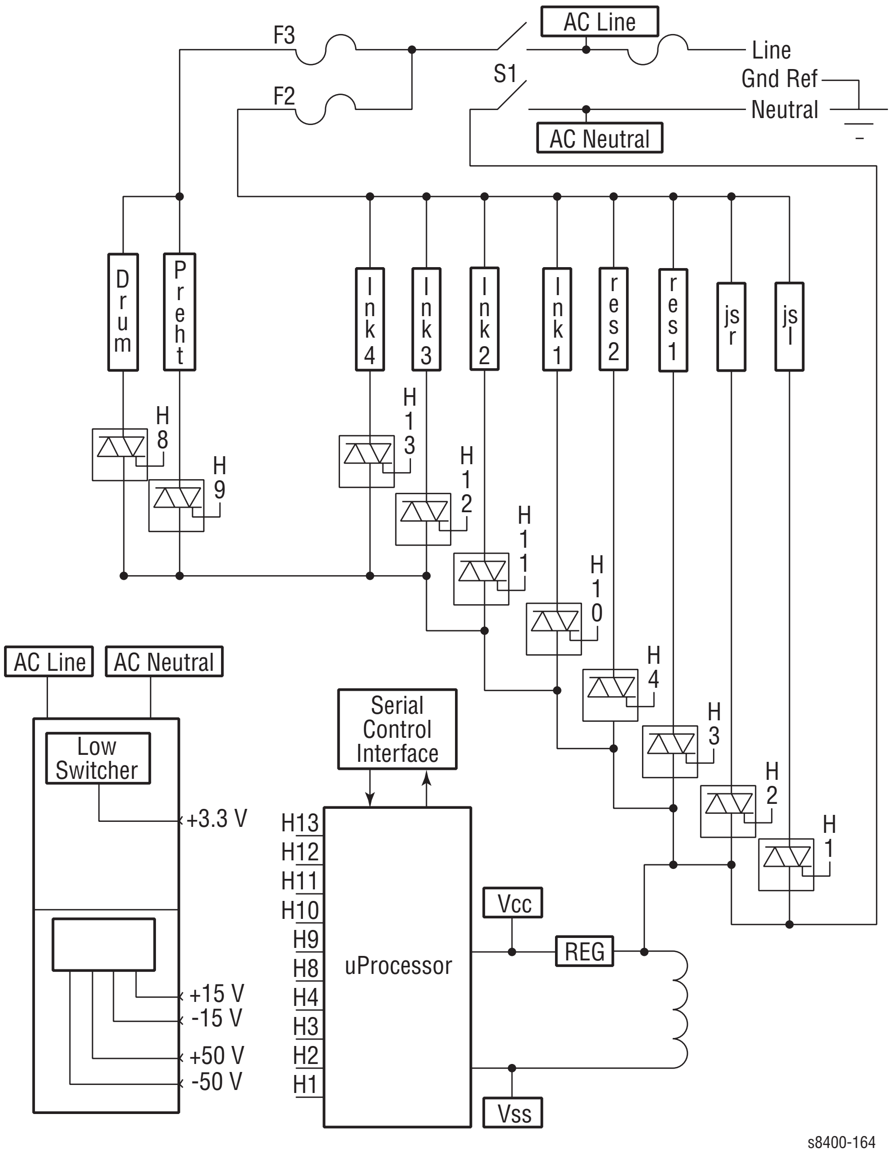
Two fuses provide current protection to the triacs. Fuse F2 and F3 protect the power supply from, most often, a shorted triac caused by a defective heater. If the F2 or F3 fuses blow, it is best to replace the electronics module (and, of course, the defective heater), rather than the fuse. Otherwise uncontrolled, with the fuse replaced but the triac shorted, AC power may be applied to the heater. 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 readdress each heater it wants to remain on. This means if the print engine firmware should fail, the heaters automatically shut off.

The printer is also protected by thermal fuses. A thermal fuse opens in the unlikely event of a “runaway” heater following a hardware failure. The drum and the paper preheater thermal fuses are located on the paper 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 are used directly or regulated to other voltage values as needed by 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.



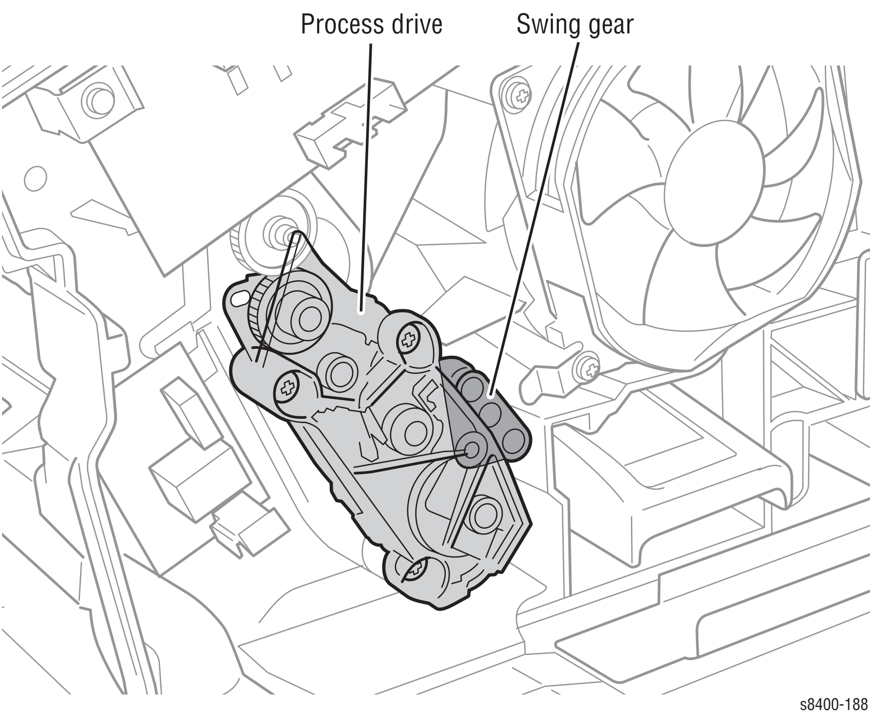
AC Line
F3
S1
Line
Gnd Ref
F2
Neutral
AC Neutral
Drum
Preht
Ink 4
Ink 3
Ink 2
Ink 1
res 2
res 1
jsr
jsl
H8
H9
H13
H12
H11
H10
H4
H3
H2
H1
AC Line
AC Neutral
Low Switcher
+3.3 V
+15 V
-15 V
+50 V
-50 V
Serial Control Interface
uProcessor
Vcc
REG
Vss
H13
H12
H11
H10
H9
H8
H4
H3
H2
H1
s8400-164

Process Drive

The process drive is an open loop system that transmits torque to two main camshaft assemblies. One camshaft assembly controls the transfix roller loading, and the other controls the drum maintenance system and printhead tilt system. 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 or concurrently through the use of the swing arm in the gear train. Operation of the transfix and drum maintenance system is controlled by the rotational direction of the motor.

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.

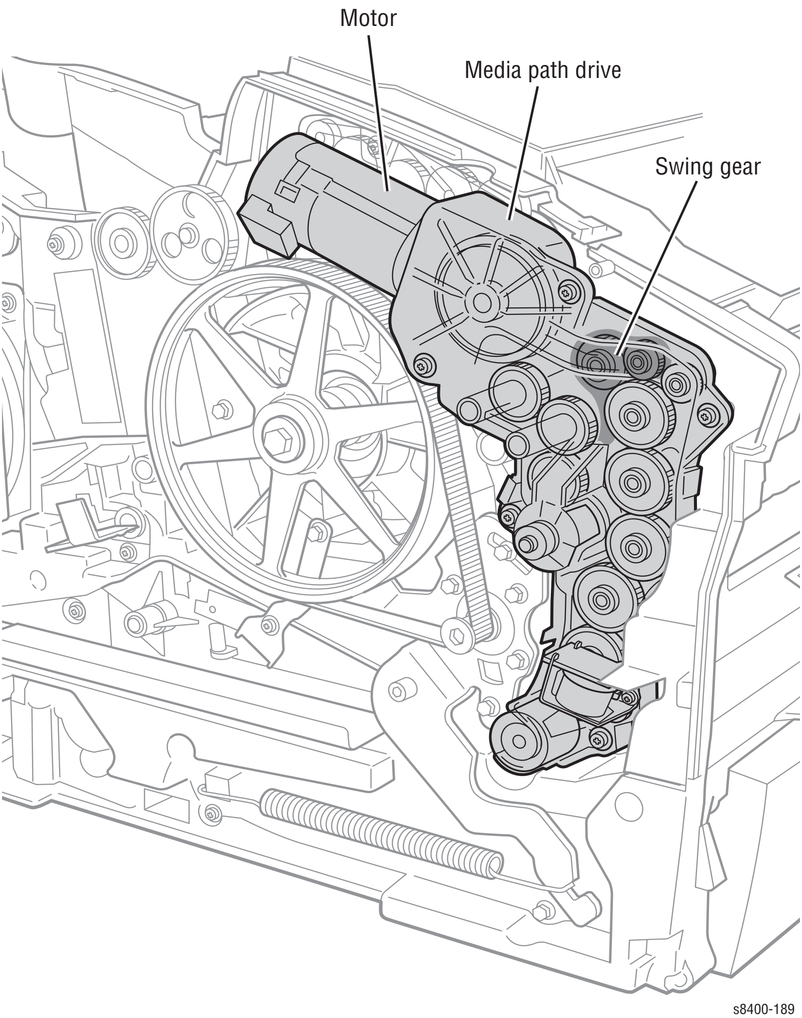
Since the system is open loop, special attention to the home position of the process drive gears and the mating camshaft gears is critical. The process drive gearbox is mechanically keyed upon installation via gear orientations. These gear orientations allow the printer subsystems to self home during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



Media Path Drive

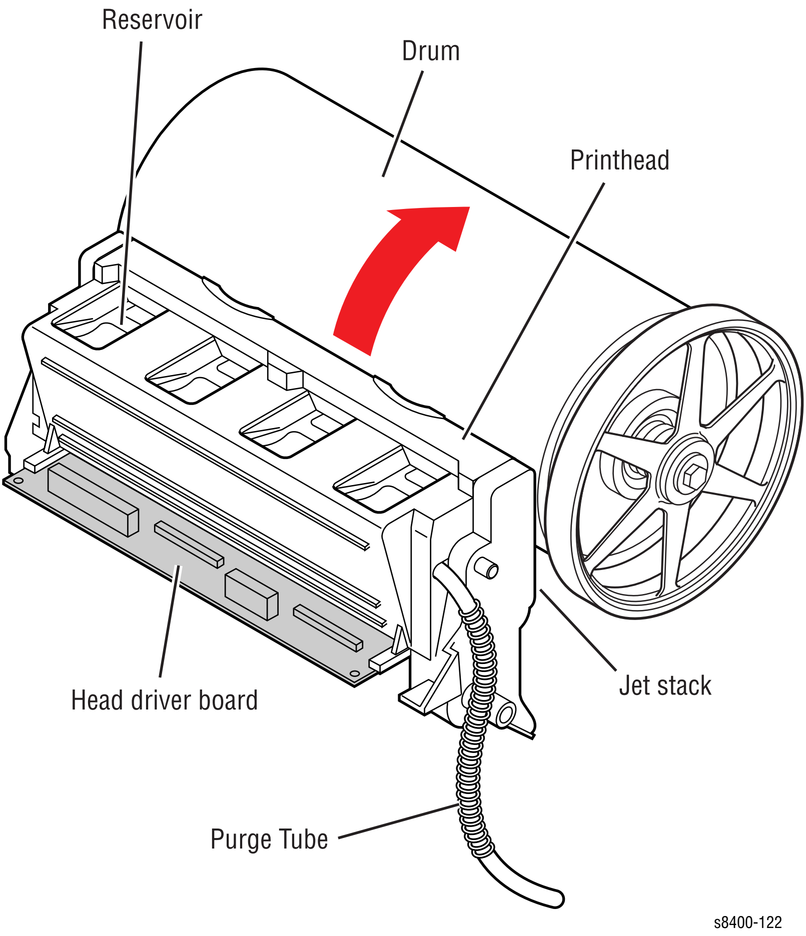
The media path drive gearbox and motor assembly controls each roller in the paper transport system. A gear train located behind the motor connects it to the exit rollers, which are built into the exit module. Gear trains located within the media path drive assembly, along with two clutches and a solenoid, allow the motor to control the pick, take-away, duplex, and deskew rollers.

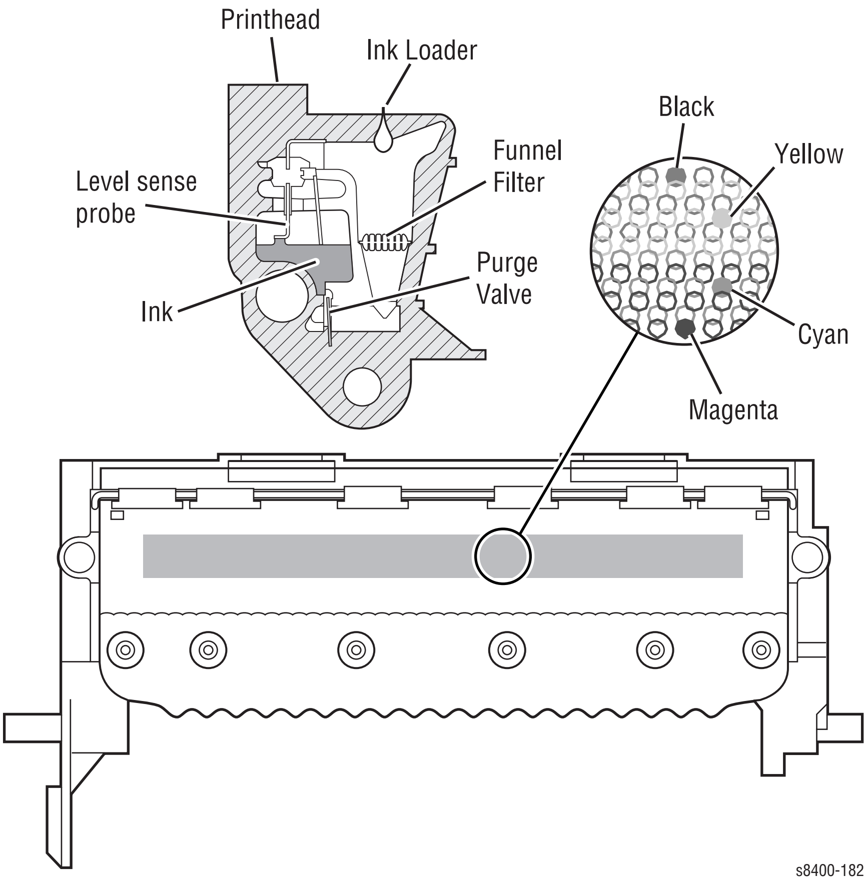
A unique swing gear allows the pick roller and takeaway roller to rotate in the same direction regardless of the direction the motor is rotating.



Printhead

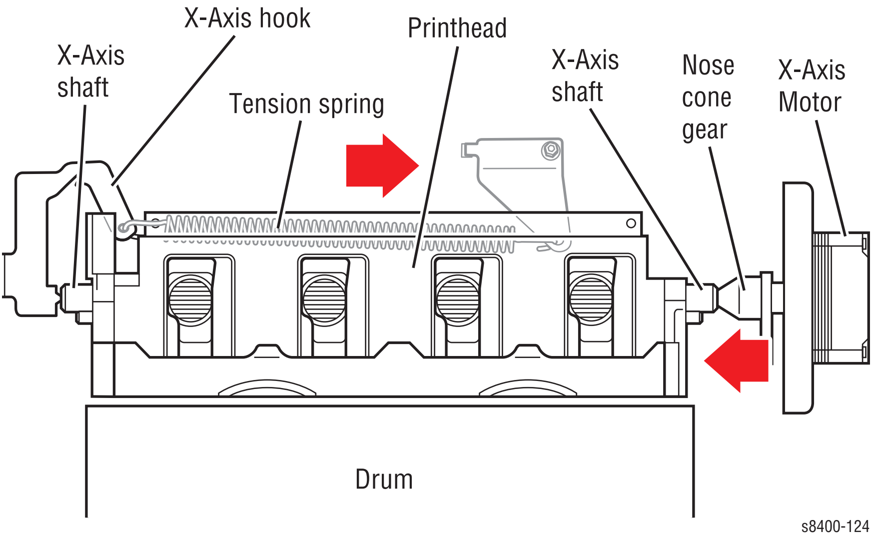
The printhead is the heart of the printer, spanning nearly the length of the drum. Using its 1236 jet nozzles (309 jets for each primary color), with a horizontal motion of slightly less than 5 mm (0.2 inches), the printhead can print the entire image on the rotating drum. The printhead provides one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





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 is bonded to a cast aluminum ink reservoir. The reservoir supplies the molten ink to the jet array. Heaters in the reservoir and the jet array maintain the ink at a temperature of about 140o C for printing.



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 so the printhead moves smoothly.

Printhead Tilt

The printhead is able to rotate into four basic positions:

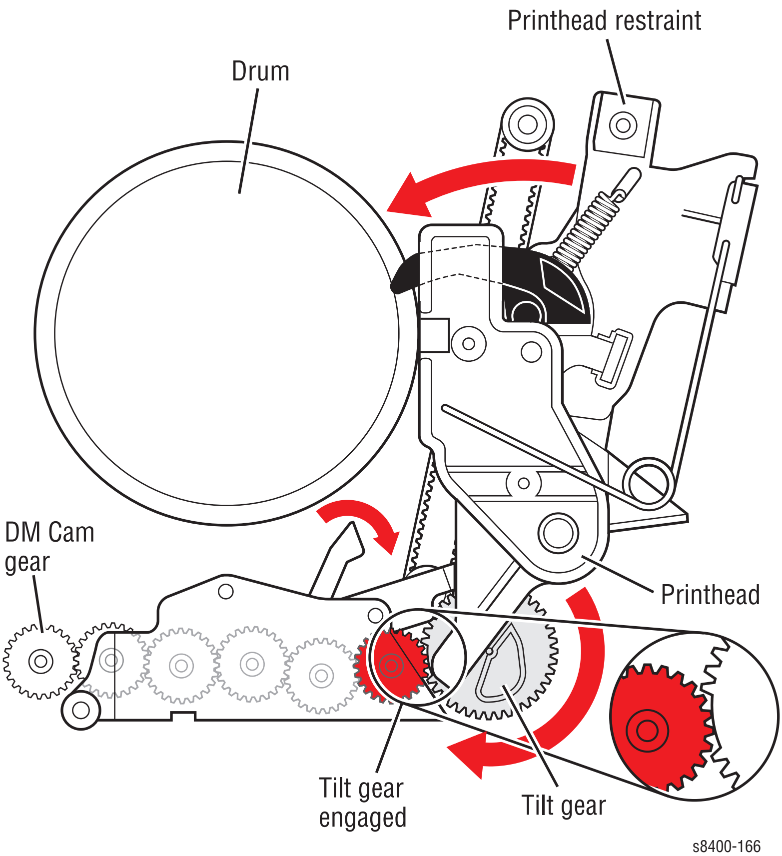
1. Printhead lock / ship position (19.5 degrees) The printhead restraint pins are resting against the right and left locks. In this position, the printhead tilt arm/ follower is free of the tilt cam, and the head is secured for shipping.
2. Wipe position (12 degrees) The printhead tilt arm/follower is 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 system 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 green head lock indicator is above the level of the 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 back and polycarbonate locks that pivot into the lock position and limit forward motion toward the drum. The locks are held in the lock position by the wiper carriage, and are spring-loaded to normally be unlocked.
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 1.7mm 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.

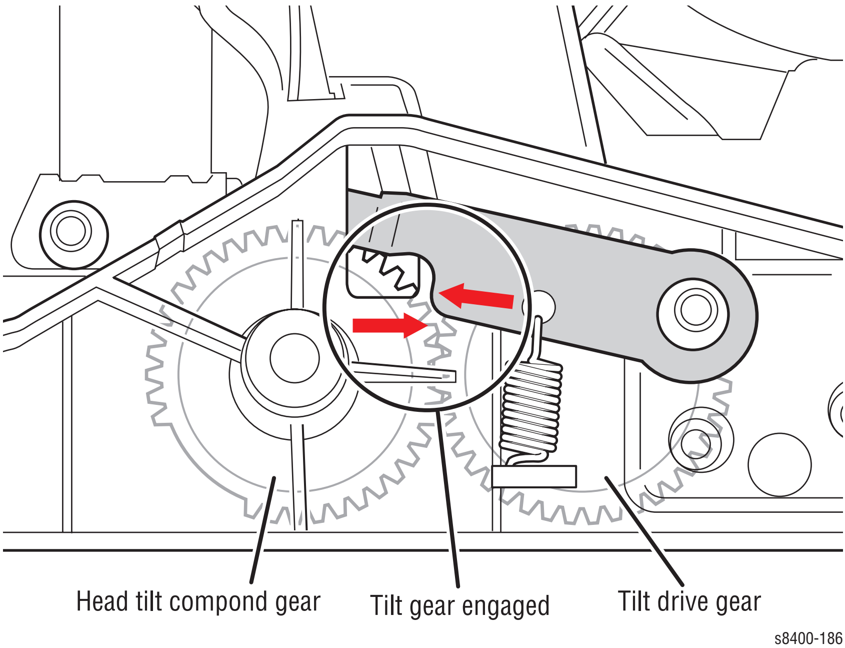


In print position (0 degrees), the printhead is forward and resting against the right and left head-to-drum buttons. The head-to-drum buttons define the space between the jet stack and the drum. The process drive is activated, which drives the drum maintenance camshaft such that the tilt gear train is engaged. 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, which frees 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 are aligned, it indicates that the printhead is in print position, and the tilt gear is disengaged from the process drive.

The latching mechanism is actuated by a small movement of the wiper. 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, which tilts the printhead. After one revolution of the tilt gear, the latching mechanism is pulled back into position by the return spring.

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

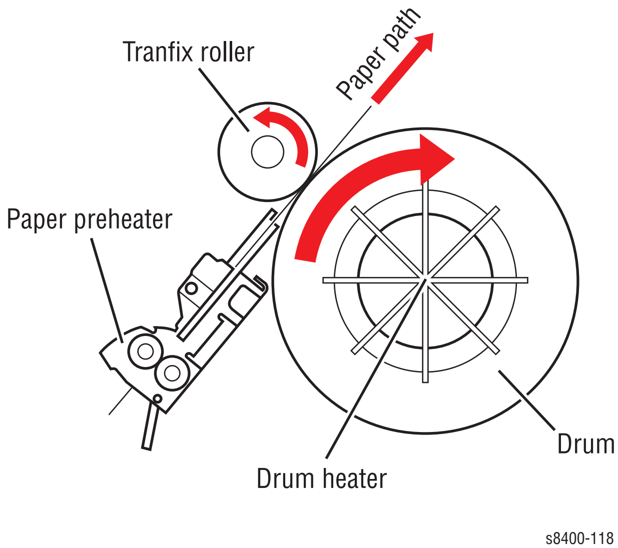


To accommodate printhead maintenance, the printhead can be tilted back away from the drum. This creates room for the wiper to be moved into position in front of the printhead faceplate. The process drive drives the gears to the tilt compound gear train. The drum maintenance camshaft drives the gear train to tilt the printhead.

Drum Assembly

The drum assembly and transfix system form the key portion of the printer where imaging takes place. The drum assembly and transfix system are separate, yet interrelated. This section discusses the drum assembly. The next section goes into more detail on the transfix system.

In operation, the image to be printed on paper is first “printed” on the rapidly rotating drum. The paper preheater heats a sheet of paper or transparency film to prepare it for the image transfer process. The heated paper is then passed between the drum (now rotating much more slowly) and the transfix roller. Under the pressure between the drum and the transfix roller, the image is transferred to the sheet of paper. An encoder disk and sensor on the left end of the drum monitors the drum’s speed and position.



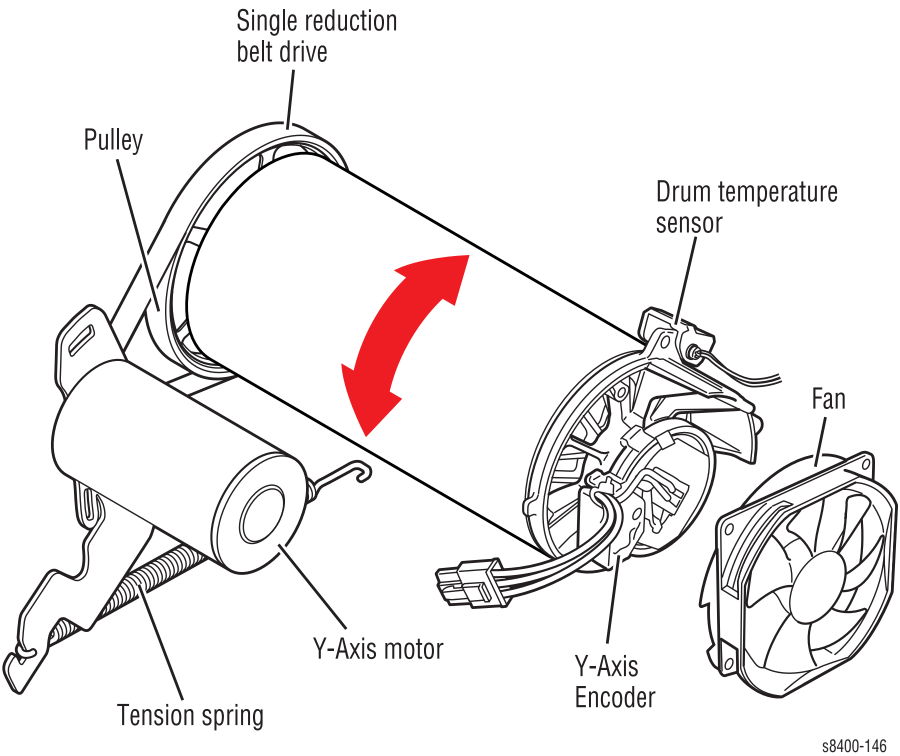
The drum heater heats the surface of the drum to about 60° C (140° F) for imaging. The drum heater does not rotate. The heater is inside the drum, and is controlled by the drum heater relay board. The drum heater consists of two resistive heater coils that operate in series for 220 V and in parallel for 110 V operation. The series/parallel operation is controlled by the drum heater relay board. A temperature sensor in contact with the drum surface 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 drum is driven by a closed-loop servo motor which, through a single reduction belt drive, rotates the drum at a high speed for imaging and a constant low speed for image transfer to paper. The Y-Axis is on an active tension system, which allows the pulley to float and the spring to actively adjust the tension during operation.

Note

The drum rotates in different directions for each process.

- Transfix CW
- Maintenance CCW
- Printing CCW



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.

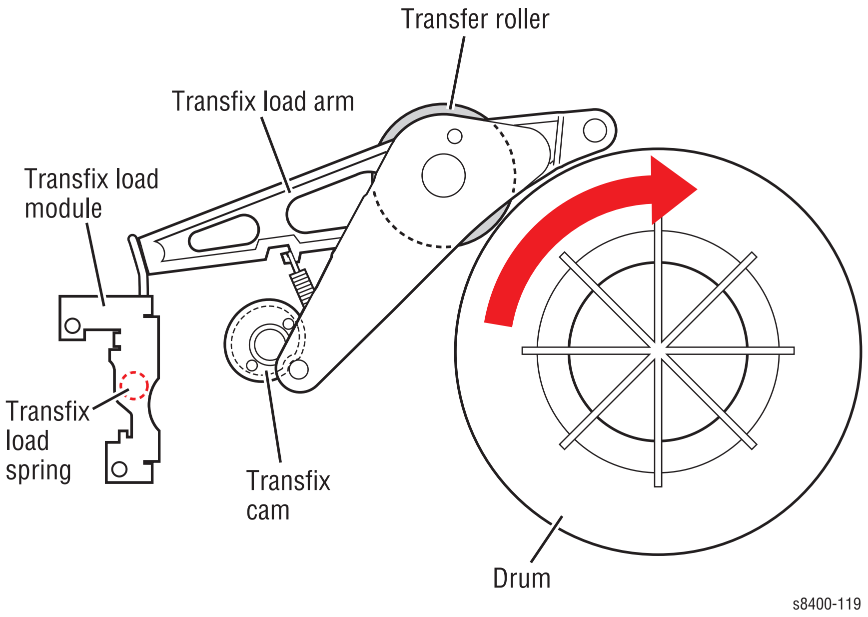
Transfix System

The transfix roller applies pressure to the back side of the paper as it moves between the transfix roller and drum. This pressure transfers the image from the drum to the paper. A set of springs determines how much pressure the transfix roller applies in the load module against the drum. The pressure must be uniform across the length of the transfix roller to avoid paper wrinkles and light spots on the prints.

After the transfix roller is engaged, the drum rotates to advance the paper during the transfix process. The drum continues to advance the paper until the transfix roller is disengaged. The transfix roller is lifted and lowered by the action of the process drive. All gears 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 camshaft is engaged.

Warning

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



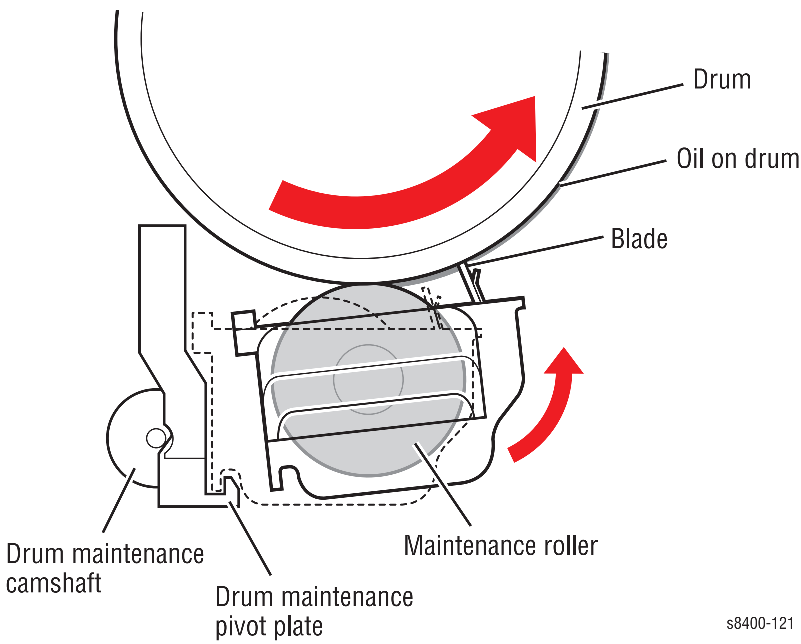
Drum Maintenance System

The drum maintenance system creates a thin intermediate liquid transfer surface, a 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 its transfer to the sheet of paper or transparency film. The oil is contained in a porous foam roller.

Prior to each print, a cam, driven by the process motor, raises the pivot plate, which raises the oil roller against the rotating drum. A compliant wiper blade, also raised by the same cam, assures that the oil film is smooth and even across the drum's surface. The process drive rotates in one direction, which rotates the drum maintenance camshaft, and raises the drum maintenance system to the drum. The process drive rotates in the opposite direction to lower the drum maintenance system. The blade removes oil that is drained back into the maintenance kit drawer, through a felt filter, to the oil roller for reuse. As the drum completes one rotation, the rotating cam lowers the oil roller and then a moment later, lowers the blade.

The drum has a floating deadband, which is 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.

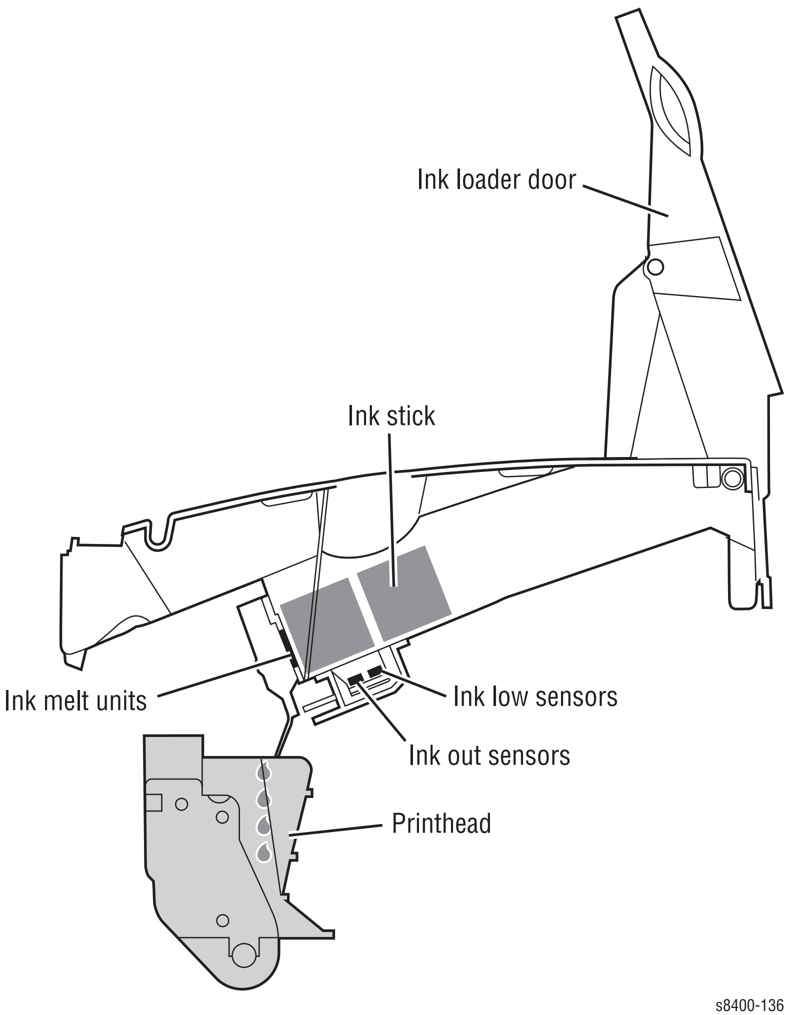
An EEPROM chip, built-in to the maintenance kit, stores the number of oiling cycles performed by the drum maintenance system. The EEPROM stores the number of prints remaining to track consumable life. At printer startup, four oiling cycles are performed to condition the drum.



Ink Loader

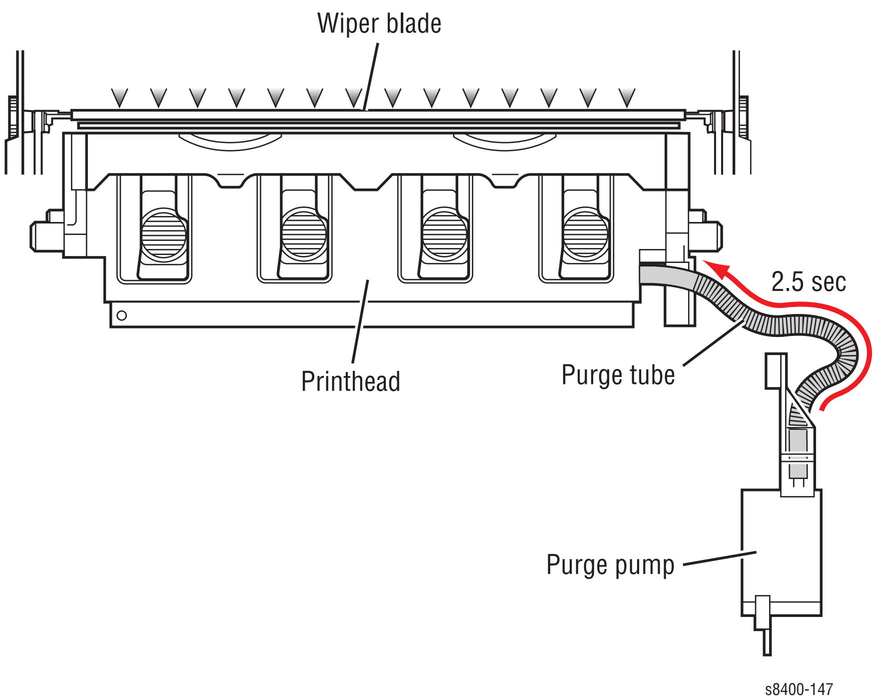
The ink loader consists of four parallel channels with an ink melting element at the end of each channel. Ink sticks, one color loaded in each channel, are pressed by coil-spring pressure into the melting elements. As ink is required by the printhead, the appropriate color's melting element is activated and the end of the ink stick is melted. The melted ink drips into the ink reservoirs of the printhead underneath. Sensors in the ink loader alert the customer to install more ink sticks before the current sticks are completely consumed.

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 front panel reports an "Ink Jam" error.



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.

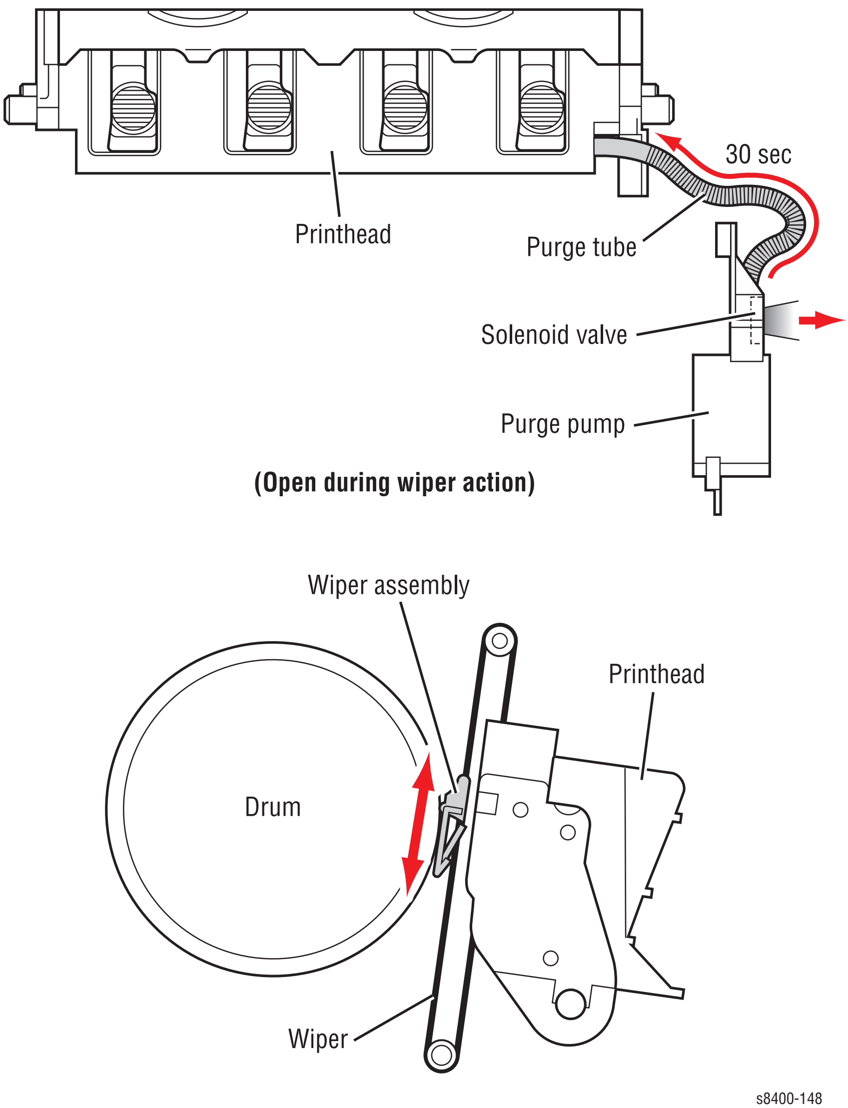


To perform a printhead maintenance cycle, the printhead is first tilted away from the drum, to allow the wiper assembly to pass by. The wiper blade is then raised in front of the printhead. Wiper movement is governed by the media path drive, by engaging a clutch on the exit shaft of the printer. The 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 pressure 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 because the reservoir is not allowed to vent properly.

Warning

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



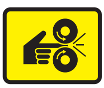
Print Process

Once an image has been processed and a printing bitmap created, a print cycle begins. The printhead and drum are brought up to their operating temperatures and the ink levels in the ink reservoirs are checked. Ink is added from the ink loader, if necessary.

At the ready state, the print process consists of the following steps, which are described in this section:

- Drum Preparation
- Printing
- Paper Pick
- Transfixing and Exiting

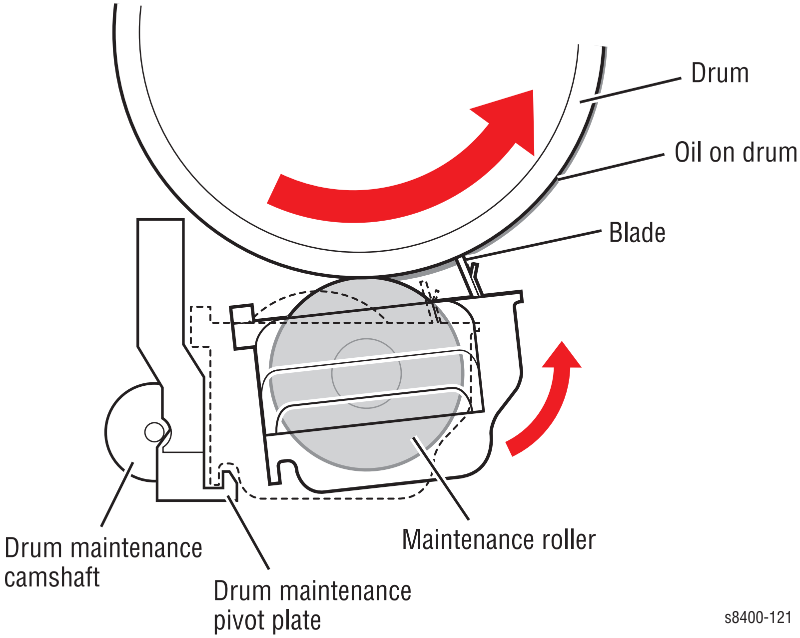
Warning



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

Drum Preparation

To prepare the drum, a thin coating of silicone oil is applied to the surface of the drum. First the drum is rotated. Next, the oil roller and blade of the drum maintenance system are raised into contact with the drum. To accomplish this, the process drive rotates the drum maintenance camshaft lifting the oil and wiper blade to the drum. 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 drum is rotated against the oil saturated roller.



Printing

To print, the drum starts rotating 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 by interlacing 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 jet substitution mode is used, the printhead makes a second, right to left movement to deposit the pixel columns of the jets being substituted. Refer to "Jet Substitution Mode" on page 6-9.

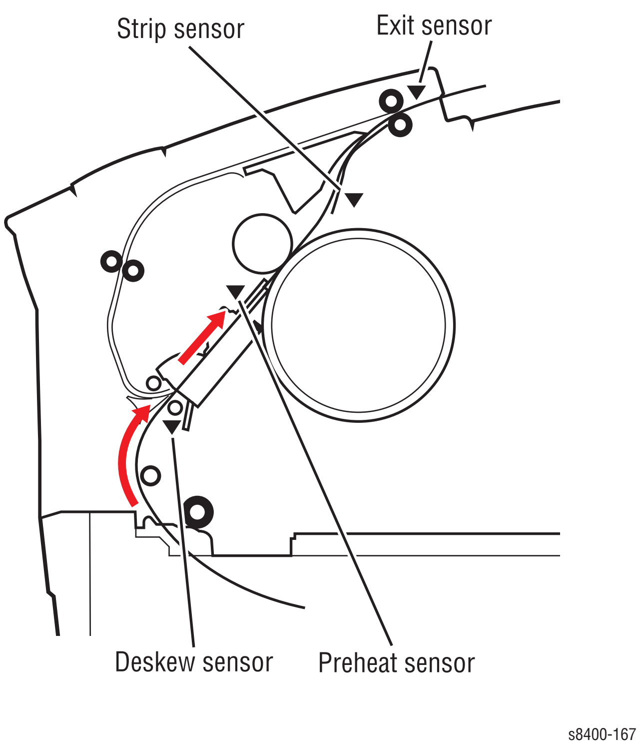
Paper Pick for Trays 2 - 4

Note

Trays 3 and 4 are 525-Sheet Feeders.

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 nudge 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 rollers 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.

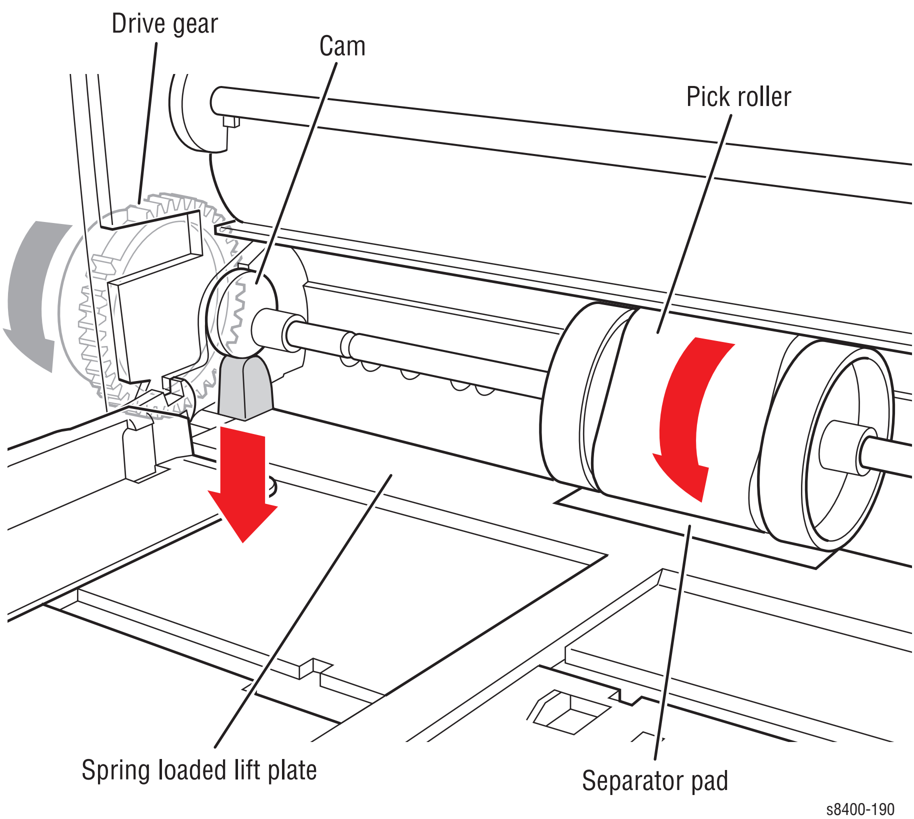


Paper Pick for Tray 1

For Tray 1, the paper pick process is different than the pick process used by the other trays. To pick a sheet of paper, the Tray 1 solenoid is fired, and the drive gear rotates slightly to engage with the drive train. A bias force provided by the lift plate force against a cam causes the roller to rotate enough so the missing tooth gear engages the drive train. The pick roller rotates to pick the paper, and the separator pad assembly prevents multiple sheets from being picked by the pick roller.

Key differences in the Tray 1 pick process include:

- Lift plate force is optimized to support heavier paper
- 100-sheet capacity
- Pick roller creates the buckle for the deskew process
- Pick roller drive disengages when the door is opened and closed
- Pivoting separator pad to prevent it from binding

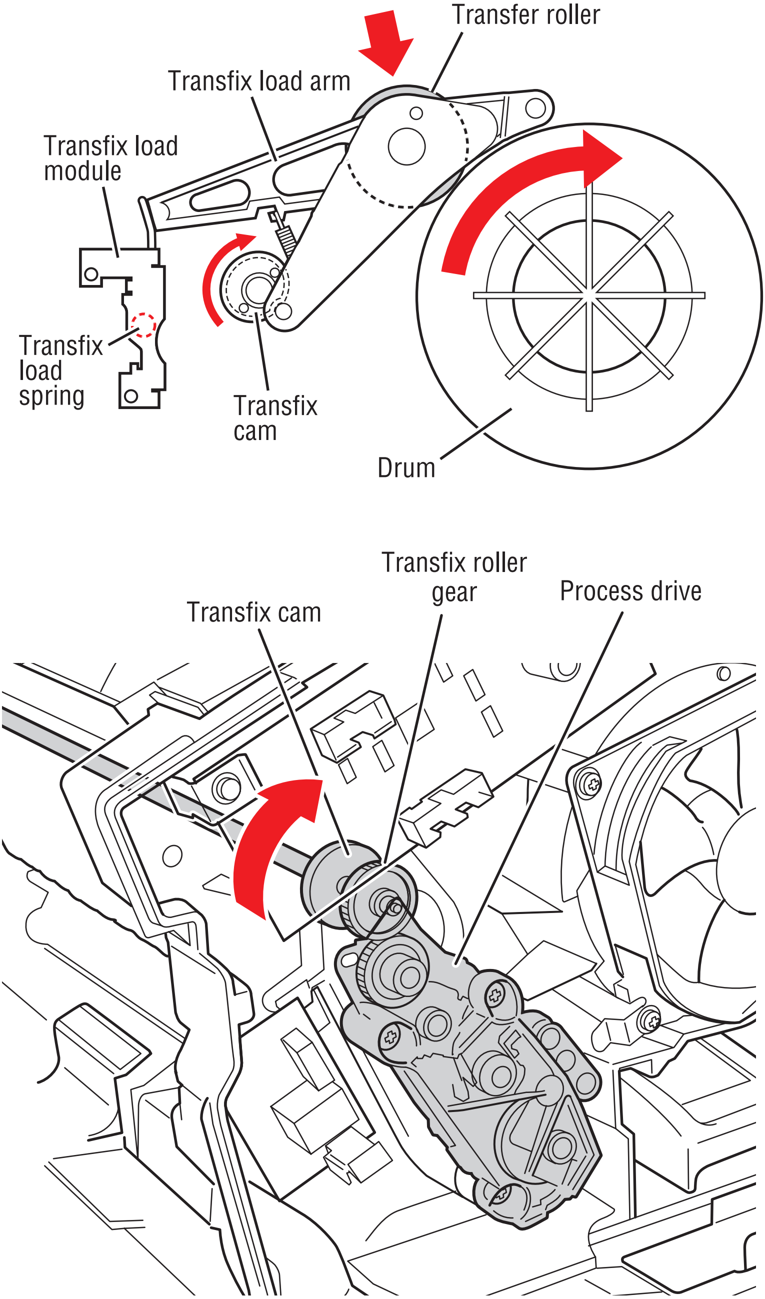


Transfixing and Exiting

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 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 paper with the image on the drum. Based on the timing information from the paper preheater exit sensor, the transfix roller is lowered onto the leading edge of the media in the nip. Timing is based on the sensor ensuring the image is perfectly aligned for transfix to the paper. The transfix roller is lifted and lowered by the process drive.

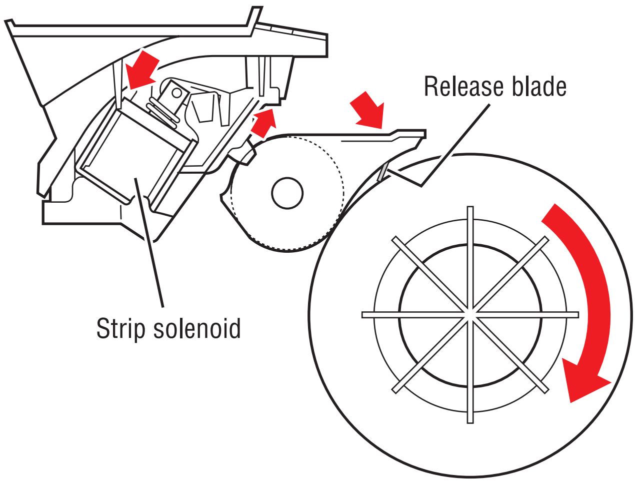

Transfer roller
Transfix load arm
Transfix load module
Transfix load spring
Transfix cam
Drum
Transfix roller gear
Process drive
Transfix cam

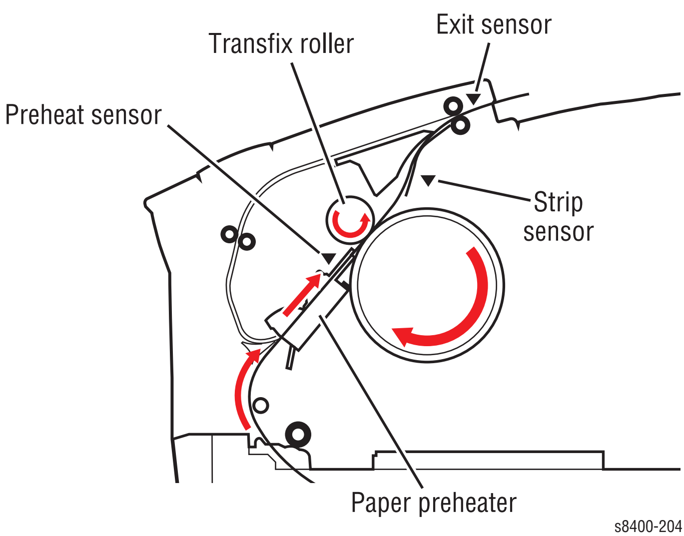
s8400-192

At the point which the transfix roller is loaded, but before the drum begins to rotate, the paper stripper solenoid is engaged. The paper stripper is actuated by energizing the paper stripper solenoid, which is mounted on the upper inner duplex guide. The solenoid activates the strip solenoid lever, which in turn rotates the paper release carriage until it hits the transfix ground pins, which causes the paper release blade to momentarily drop onto the deadband of the drum, catching the leading edge of the sheet of paper and guiding the paper to the rotating exit rollers.

After the transfix roller is engaged, the drum rotates to advance the paper and transfix the image. All gears move to rotate the drum 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 paper from the drum. Once the image is transferred, the drum stops rotating and the transfix roller is lifted by the process drive. After the leading edge of the paper is beyond the paper release guide, the paper release solenoid is de-energized. Once the solenoid is de-energized, and the solenoid return spring provides a force to move the solenoid plunger out of the solenoid coil and in turn rotate the paper release carriage back to its ready position.

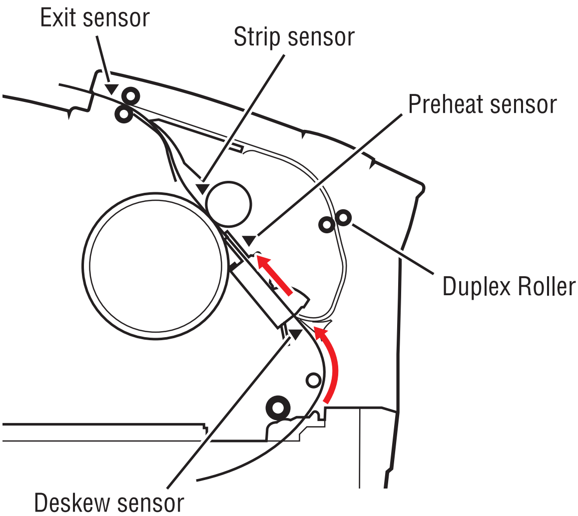
The deskew rollers are not driven during transfixing. The media path drive rotates the exit rollers in the correct direction to pull the paper out, with the deskew clutch de-energized. As the process drive lifts the transfix roller, the exit rollers deposit the paper into the output tray, ending the print cycle.

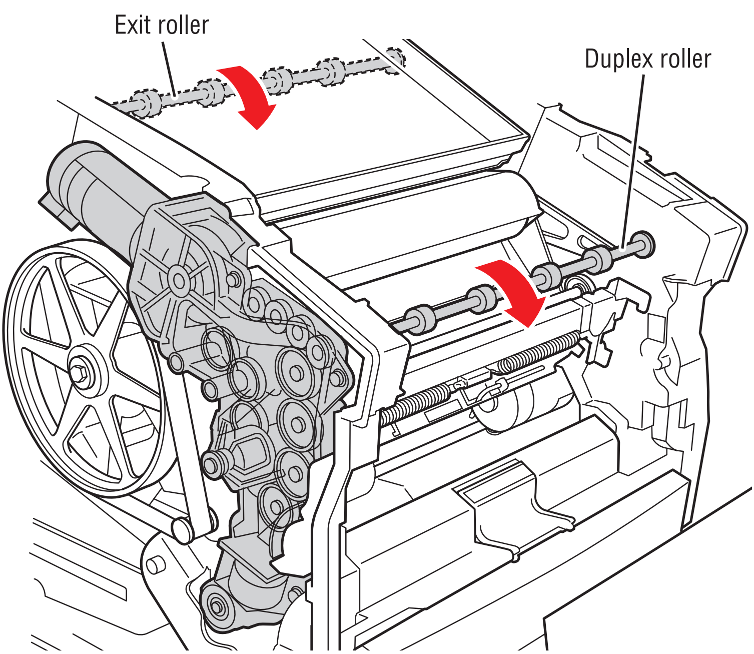

Release blade
Strip solenoid


Exit sensor
Transfix roller
Preheat sensor
Strip sensor
Paper preheater
s8400-204

Duplex Printing

When duplex printing, the exit rollers pull the paper to a predetermined location, such that the trailing edge of the paper is adjacent to the exit rollers. Then, the exit rollers pull the paper back into the duplex path. The paper deskews against a non-rotating deskew nip. From this point on, the print is processed through the paper preheater and transfix system to the exit tray in the same manner as a single-sided print.





s8400-191

Transfix and Print Speeds

Transfix Speeds

Characteristic	Setpoint, Paper Media			
	Fast Color	**Standard**	**Enhanced**	**High Res/ Photo**
Peak Transfix Speed, Simplex tray feed	20 inches per second (ips)	17 ips	13 ips	7 ips
Peak Transfix Speed, Duplex	5 ips	5 ips	5 ips	5 ips
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

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 (525x2400)	6 ppm	3 spm
PCL 600 x 300 Mode PCL 600 x 600 Mode	6.5 ppm 3 ppm	
Tray 2 - 4		
Fast Color (300x300 dpi)	24 ppm	15 spm
Standard (300x450 dpi)	18 ppm	13 spm
Enhanced (563x400 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	

Printer Self-Maintenance

To maintain peak operation, reliability, and print quality, 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)
- Paper 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 of the purge system 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 front panel's **Print Quality Problems** menu. This procedure cleans ink out of the paper 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 paper preheater.

In the paper preheater cleaning cycle, these events take place:

1. The customer selects the **Remove Print Smears** menu item.
2. The printer overheats the paper preheater to about 100^{o} C, softening ink trapped inside the paper preheater. Ordinarily the paper preheater runs at temperatures of between 60^{o} C and 65^{o} C for paper or transparency film printing.
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 paper 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 paper path and up to 20 sheets go through the duplex paper path.
4. The printer returns to the **Print Quality Problems** menu.

Because of the higher paper temperatures involved, this function can also be used to clean the drum surface of ink deposits caused by a contaminated blade on the drum maintenance system.

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. Then, the transfix roller is lowered against the drum and the drum rotates, which transfers some of the oil to the transfix roller. Finally, the transfix roller is raised 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 transfers 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

NCL Subject	NCL Item	Size (bytes)
N/A "version" not NCL 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

Configuration Card "Shadowed" Personality Parameters (Continued)

NCL Subject	NCL Item	Size (bytes)
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
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

Configuration Card "Shadowed" Personality Parameters (Continued)

NCL Subject	NCL Item	Size (bytes)
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.
2. NCL = Nest Configuration Library

Error Messages and Codes

In this chapter...

Section 3

Introduction

This section covers troubleshooting procedures for the printer using front panel error messages and codes. Some procedures require running service diagnostic test functions to verify that a specific printer part is operating correctly. For information on Service Diagnostics and all internal printer test functions, see the table "Service Diagnostics Mode Menu" on page 4-5.

To troubleshoot problems, such as startup and power on, media, paper path, print-quality or image problems, and electrical failures not associated with a front panel message or code, refer to the section "General Troubleshooting" on page 4-1.

If an error message or code is not visible on the front panel, the Service Usage Profile report and Printer Status page list errors reported by the printer.

Power-Up Error Messages and LED Codes

The printer has three sets of tests that are run when the printer is first powered on: Built-In Self Tests (BIST), Power On Self Tests (POST), and Print Engine Self Tests (PEST). BIST verifies basic Electronics Module CPU operation and reports failures with interface panel LED blink codes (The sum of the flashes equal the error code, 7 flashes equals error code 7). POST checks communication paths from the Electronics Module CPU to other parts of the Electronics Module and to some other systems of the printer. PEST runs once Postscript is operational, and checks for connection to and operation of, various system components.

POST testing initializes the front panel and if an error occurs a POST error message will be displayed on the front panel LCD. POST errors are also displayed using interface panel LED patterns in case the communication path to the front panel has failed.

Some POST errors are "soft" errors that do not prevent the printer from powering up completely. These errors are displayed on the front panel for 5 seconds and then the printer continues through the remainder of POST. Because soft errors do not stop the printer from powering up, there are no rear panel LED codes associated with them. Most soft errors will also cause the printer to print a Startup Page with the error message on it. BIST and POST errors are not stored in the fault history logs.

Jam Codes

The Jam Codes provide a basis for troubleshooting printer problems that occur as the result of misfeeds or jams within the paper path. Refer to the "3-Digit Jam Codes" on page 3-35 and to the Xerox infoSMART knowledge base at www.xerox.com/office/infoSMART for the latest information on Jam Code interpretation.

The BIST (Built-In Self Test)

These tests occur immediately at power-up, before the front panel is initialized.

BIST Rear Panel LED Codes

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 the DC power was applied so it was shut down. Follow the troubleshooting procedures for electrical shorts 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.
Off	PS and front panel 1/2 sec. blink	Boot loader memory test failure. Ensure that RAM modules are properly seated and that correct RAM type is installed.
1	Rapid blinking	CPU Bridge and/or PCI bus is not communicating.
2	Rapid blinking	ROM not responding.
3	Rapid blinking	System hangs during code initialization. 1. Unplug all cables from the Electronics Module. 2. Plug in the power cable. 3. Power on the Electronics Module 4. Check to see if the problem recurs. 5. Try reseating the RAM DIMMs. 6. If 1 through 5 do not correct the problem, replace the Electronics Module.

POST (Power On Self Test)

When these tests begin the front panel has been initialized. *In most cases*, if an error occurs, a text message is displayed on the front panel along with an LED blink code flashing on all three LEDs (front panel LED, PS LED and PE LED). The sum of the flashes, blinking in increments of 5, equal the error code. For example, 7 flashes equals error code 7.

POST (Power On Self Test) Error Messages

Front Panel Error Code	PS, PE and Front Panel LEDs	**Description** * Before replacing the electronics module do the following: 1. Unplug all cables. 2. Plug in the AC power cable and power on the electronics module. If the error blink pattern has changed, the problem may not be in the electronics module. Refer to "Electronics Troubleshooting" on page 4-51.
01.01	Flutter then 01 blinks	* Bad error code, POST hard error.
02.01	Flutter then 02 blinks	* Failed machine check, POST hard error.
02.02	Flutter then 02 blinks	* System panic, POST hard error.
03.01	Flutter only	Titan ID read failure, POST soft error.
03.02	Flutter then 03 blinks	* Titan mismatch, POST hard error.
03.03	Flutter only.	Titan version mismatch, POST soft error.
03.04	Flutter then 03 blinks	* Titan access failure, POST hard error.
04.01	Flutter then 04 blinks	* Bandit ID read failure, POST hard error.
04.02	Flutter then 04 blinks	* Bandit ID mismatch, POST hard error.
04.03	Flutter then 04 blinks	* Bandit TMVL mismatch, write/read failed, POST hard error.
04.04	Flutter then 04 blinks	* Bandit TMVH mismatch, write/read failed, POST hard error.
05.01	Flutter then 05 blinks	* Communications error. PLD I/O Board serial, link down/bad parity, POST hard error.
05.02	Flutter only	Communications error. PLD I/O Board serial, mismatch, POST soft error.

Front Panel Error Code	PS, PE and Front Panel LEDs	Description * Before replacing the electronics module do the following: 1. Unplug all cables. 2. Plug in the AC power cable and power on the electronics module. If the error blink pattern has changed, the problem may not be in the electronics module. Refer to "Electronics Troubleshooting" on page 4-51.
6.08	N/A	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.
07.01	Flutter only	Front panel link is invalid or bad parity, POST soft error.
07.02	Flutter only	Front panel version mismatch, POST soft error.
08.01	Flutter only	Front Panel failed to initialize, POST soft error.
09.01	Flutter only	Front panel data path failure, bad data returned, POST soft error.
10.01	Flutter then 10 blinks	* PLD power control link down, POST hard error.
10.02	Flutter only	PLD power control link invalid, mismatch error, POST soft error.
11.01	Flutter then 11 blinks	* EEPROM read failure, POST hard error. 1. Check EEPROM orientation. 2. Replace EEPROM.
11.02	Flutter then 11 blinks	* EEPROM write failure, POST hard error. 1. Check EEPROM orientation. 2. Replace EEPROM.
11.03	Flutter then 11 blinks	* EEPROM re-read failure, POST hard error. 1. Check EEPROM orientation. 2. Replace EEPROM.
11.04	Flutter then 11 blinks	* EEPROM data failure, mismatch error, POST hard error. 1. Check EEPROM orientation. 2. Replace EEPROM.
12.xx	Flutter only	Configuration card test failure POST soft error. 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.
13.01	Flutter then 13 blinks	* PHY reset failure, reset stuck low, POST hard error.
13.02	Flutter then 13 blinks	* PHY ID error, mismatch error, POST hard error.
14.xx	Flutter then 14 blinks	* USB ASIC test errors, N2280 netchip read, write, and mismatch errors, POST hard errors.

Front Panel Error Code	PS, PE and Front Panel LEDs	Description * Before replacing the electronics module do the following: 1. Unplug all cables. 2. Plug in the AC power cable and power on the electronics module. If the error blink pattern has changed, the problem may not be in the electronics module. Refer to "Electronics Troubleshooting" on page 4-51.
15.01	Flutter then 15 blinks	* CPU interrupt error, spurious CPU interrupts, POST hard error.
15.02	Flutter then 15 blinks	* CPU interrupt error, missing CPU interrupts, POST hard error.
15.03	Flutter then 15 blinks	* CPU interrupt error, IRQ spurious assertion, POST hard error.
15.04	Flutter then 15 blinks	* CPU interrupt error, timer no assertion, POST hard error.
15.05	Flutter then 15 blinks	* CPU interrupt error, Bandit spurious assertion, POST hard error.
15.06	Flutter then 15 blinks	* CPU interrupt error, Bandit no assertion, POST hard error.
15.07	Flutter then 15 blinks	* CPU interrupt error, N2280 spurious assertion, POST hard error.
15.08	Flutter then 15 blinks	* CPU interrupt error, N2280 no assertion, POST hard error.
15.09	Flutter then 15 blinks	* CPU interrupt error, Titan spurious assertion, POST hard error.
15.10	Flutter then 15 blinks	* CPU interrupt error, Titan no assertion, POST hard error.
15.11	Flutter then 15 blinks	* CPU interrupt error, IRQ spurious assertion, POST hard error.
16.01	Flutter only	Real time clock read failure, POST soft error.
16.02	Flutter only	Real-time clock write failure, POST soft error.
16.03	Flutter only	Real-time clock re-read failure, POST soft error.
16.04	Flutter only	Real-time clock does not tick, POST soft error.
17.01	Flutter then 17 blinks	Memory test, less than 128 MB of RAM detected. This is the minimum RAM required. Add more RAM. Reseat the RAM SODIMM(s), then replace the RAM SODIMM(s), POST hard error.

PEST (Print Engine Self Test)

These tests occur after the POST tests have been run and postscript has been initialized. Error codes for the PEST tests are displayed on the front panel and are all in the 37,xxx series. Definitions for the PEST tests are provided in the Error Code Definition Table beginning on page 3-8.

Fault Codes

Fault Code Definition Table

The following paragraphs will assist you in decoding the information contained in the fault codes:

- Failing system (**XX**,yyy.zz)
- Failing subsystem (xx,**YYY**.zz)
- Type of problem (xx,yyy.**Z**x)
- Print engine copy count (xx,yyy.zz**:123**) when the error occurred

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

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

Device faults are indicated by a 4 in the tenths place of the fault code (xx,yyy.4z). Indicates a hardware problem. Some of the more common device faults are documented in this section.

Note

In customer mode, the printer will reboot each time an error occurs. If three of the same errors occur within 72 hours, or 1000 pages, then the fault will be displayed on the printers front panel. The fault codes are saved into non-volatile memory and can be retrieved from the fault history.

Fault Code Definitions and Troubleshooting

0,000.4x: ITC_MSG_TYPE_FAULT

Fault codes of the type xx,xxx.4x are device fault codes and represent a problem with printer hardware.

0,000.6x: ITC_MSG_TYPE_PROG_ FAULT

Fault codes of the type xx,xx.6x are program fault codes representing a software problem and not a printer hardware problem.

Error Code Definition Table

Error code	Definition
1,000: HCF ((525)-Sheet Feeder) Problems	
1,000.4x: HCF_DEV_FAULT These are faults associated with the optional 525-Sheet Feeder hardware.	
1,001.4x: HCF_TOP_OVERCURRENT_ FAULT Tray 3 525-Sheet Feeder had an overcurrent condition, most likely a short to the lift motor or clutch.	
	1. Inspect the pick rollers for proper movement. If the rollers are damaged or stuck replace the 525-Sheet Feeder. 2. Run the Tray 3 Pick Clutch test to test the current draw. If out of specifications, replace the 525-Sheet Feeder. 3. Run the Tray 3 Lift Motor test. If out of specifications, replace the 525-Sheet Feeder. 4. Unknown problem? Replace the 525-Sheet Feeder.
1,002.4x: HCF_BTM_OVERCURRENT_ FAULT Tray 4 525-Sheet Feeder had an overcurrent condition, possibly a short in the motor or clutch.	
	1. Inspect the pick rollers for proper movement. If the rollers are damaged or stuck replace the 525-Sheet Feeder. 2. Run the Tray 4 Pick Clutch test to test the Tray 4 pick clutch current draw. If out of specification, replace the 525-Sheet Feeder. 3. Run the Tray 4 Lift Motor test. If out of specification, replace the 525-Sheet Feeder. 4. Unknown problem? Replace the 525-Sheet Feeder.
1,000.6x: HCF_PROG_FAULT	These faults are associated with the 525-Sheet Feeder software. 1. Ensure ground integrity of the printer, see page 4-67. 2. Reseat the printer onto the 525-Sheet Feeder. 3. Reset NVRAM.

Error code	Definition
2,000: SYSTEM FAULT I/O BOARD	
2,001.40: SY_DEV_FAULT_IO The engine cannot detect the presence of the I/O board.	1. Ensure all connections to and from the I/O board are sound.
2,001.6x: SY_ECM_INIT_FAILURE Failed to initialize Engine Control Module hardware and control structures. **2,002.6x:** SY_QUEUE_INIT_FAILURE Queue Initialization failure during execution of sy_app_init() (early initialization code), the engine firmware was unable to initialize the queues used for inter-task communication. This indicates a failure in the call to function sy_create_queues(). **2,003.6x:** SY_DIAGS_CREATE_TASK_FAILURE Can't start service diagnostic tasks, (while booting into diagnostic mode) during execution of sy_app_init() (early initialization code), the engine firmware was unable to start the service diagnostics task. **2,004.6x:** SY_SUSPENDED_BOOT_ FAILURE Failed to start the engine in suspend mode. **2,005.6x:** SY_DIAGS_OBJECT_NOT_OPENED An iDiags object, idiags.0 in ROM0, could not be opened for reading. **2,007.6x:** SY_DIAGS_OBJECT_NO _ENTRY_POINT After loading, the idiags object, idiags.o entry point diag_main, could not be found.	1. Ensure ground integrity of the printer, see page 4-67. 2. Reset NVRAM. 3. Replace the EEPROM chip. 4. Reboot the printer.
3,000 IPC Program Faults	
3,000.6x: IPC_PROG_FAULT IPC faults suggest a software problem associated with communication between engine and PostScript regions.	1. Reset NVRAM, retest. 2. Replace the EEPROM chip.
4,000: PC PROCESS CONTROL SUPERVISOR	

Error code	Definition
4,018.4x PC_DEV_FAULT_LATE_CLEAN_REQUEST This fault code indicates a problem with the process control system. Declared if the warm-up sequencer had determined a head clean operation was not needed, then the printhead temperature dropped below the head-clean-needed threshold. This would cause the printhead thermal tasks to say the head needed to be purged after all, even though thermals were stabilized during warm-up state. Something may be wrong with a heater.	
	1. Verify the temperature of the room the printer is in is not too low, refer to page 1-11 for the printer's optimal operating environment. 2. If the temperature is too low, warm up the room. 3. Run the Exercise Heaters tests with all heaters on. If a heater test fails: 1. Inspect the wiring harness to the failed heater. 2. Replace the problem component.
4,024.4x:PC_DEV_FAULT_CAP_INIT_ FAILED This fault code indicates a problem with the wiper. After homing the wiper it asks for it to go to the PARK/LOCK position. If the wiper motion fails during mech init (mechanical initialization) to go to the correct position this fault will occur.	
	1. Run the Check Wiper Alignment test. 2. Run the Wiper Drive test. 3. Inspect the wiper drive system and wiper lock system for proper operation. 4. Inspect the head maintenance clutch for the presence of oil or contaminants. 5. Run the Head Maintenance Clutch test. 6. Replace the problem component.
4,025.4x: PC_DEV_FAULT_PM_INIT_ FAILED This fault code indicates a problem with the process control system. After repeatedly trying to home the head tilt mechanism, with the X-Axis in different positions, the printer still cannot successfully home the drum maintenance transfix mechanism. Something must be stuck or disconnected limiting the ability of the mechanism to go through the required homing motion.	
4,025.4x: (continued)	1. Check for an obstruction around the printhead. 2. Ensure the wiring around the printhead is routed properly. 3. Remove the waste tray and look for ink build-up in the printer. 4. Check the process gearbox for damage. Ensure the gears are correctly aligned. Replace the process gearbox if damaged. 5. Run the X-Axis Motor test to check the X-Axis motor current. Replace the X-Axis motor if the test fails. 6. Run the Tilt Drive test.

Error code	Definition
5,000: Y-AXIS PROGRAM FAULT CODES	
5,001.4x: YA_FAULT_HOME_FAIL This fault code indicates a problem with the Y-Axis sub-system. Declared when the Y-Axis home sensor is not found. Drum home sensor failure: the drum turned one full revolution without seeing the drum home sensor activate.	1. Run the Y-Axis Encoder test. 2. Inspect the encoder wiring harness. 3. Replace the drum assembly if the test fails. 4. Replace the I/O board.
5,001.6x: YA_FAULT_MAIN_STATE_ FAULT Unknown command sent to Y-Axis task.	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset NVRAM and retest.
5,002.4x: YA_FAULT_ENCODER_FAIL Declared when the Y-Axis encoder does not appear to be working. Drum motion failure: the drum stalled, possibly because the drum position sensor electronics have failed, or because the motor drive or drive belts have failed, or because something is physically blocking the motion of the drum.	1. Inspect the Y-Axis encoder wiring harness. 2. Run the Y-Axis Encoder test. Replace the drum assembly if the test fails. 3. Run the Y-Axis Drive test. Replace the Y-Axis motor if the test fails. 4. Run the Y-Axis Belt Tension test. Replace the Y-Axis belt assembly if the test fails.
5,002.6x: YA_FAULT_DO_SERVICE_ FAULT **5,003.4x:** YA_FAULT_CAL_FAIL **5,003.6x:** YA_FAULT_CMD_POSITION_ FAULT **5,004.6x:** YA_FAULT_CMD_READY_ SLEW_FAULT Unused faults.	

Error code	Definition
5,005.6x: YA_FAULT_CMD_HOME_ FAULT If not in a proper state to move to the home position (either uninitialized or unmovable) or in the idle state, then faults out. 5,006.6x: YA_FAULT_MALLOC_FAULT Unable to allocate dynamic memory. **5,007.6x:** YA_FAULT_BAD_CMD_PARM The run parameter was greater than or equal to MAX_RUN_TYPE. Currently there are two run types; warm up speed and max speed. **5,008.6x:** YA_FAULT_RACE_FAILURE PostScript failed to fill the race buffer during imaging. **5,009.6x:** YA_FAULT_IMAGING_SETUP_ ERROR There were errors during imaging. Jets on/off outside of the deadband is one reason for this error.	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset NVRAM and retest.
6,000: X AXIS TASK PROGRAM FAULT CODES	
6,000.4x: XA_FAULT_MCURRENT This fault code indicates that the X-Axis motor had a current error occur.	1. Inspect the printhead heater wiring. Verify the printhead travels smoothly to the left and right. Ensure the printhead doesn't bind due to ink spills. 2. Run the X-Axis Drive test to test the X-Axis drive. If the test fails, inspect the X-Axis wiring harness. Replace the X-Axis motor. 3. Replace the electronics module.
6,001.6x: XA_PROGFAULT_X1 The X-Axis task received an unexpected message. **6,002.6x:** XA_PROGFAULT_X2 An attempt was made to home the X-Axis from a state where homing is not allowed. **6,008.6x:** XA_PROGFAULT_X8 An attempt was made to use the X-Axis drive without initializing it. **6,011.6x:** XA_PROGFAULT_XB Attempt to service with the X-Axis not in the proper state. 6,013.6x: XA_PROGFAULT_XD Unknown X-Axis device fault argument. Reset NVRAM and retest. **6,013.6x:** XA_PROGFAULT_XD Unknown X-Axis device fault argument. Reset NVRAM and retest.	1. Reset NVRAM and retest. 2. Ensure the ground integrity of the printer, see page 4-67.

Error code	Definition
6,017.6x: XA_PROGFAULT_X11 An attempt was made to drive the X-Axis using the wrong server (not xa). **6,018.6x:** YA_PROGFAULT_X12 An attempt was made to move with the X-Axis uninitialized. **6,019.6x:** XA_PROGFAULT_X13 An attempt was made to move to home from a state where homing is not allowed. The mechanism must be placed in a home position first. **6,023.6x:** XA_PROGFAULT_X17 Could not allocate memory for X-Axis home parameters. **6,025.6x:** XA_PROGFAULT_X19 An attempt was made to home with the X-Axis uninitialized. **6,032.6x:** XA_PROGFAULT_X20 Could not find a solution to the described motion profile. **6,033.66:** XA_PROGFAULT_X21 Could not allocate memory for the x-Axis move parameters. **6.034.6x:** XA_PROGFAULT_X22 Could not find a solution to the described move motion profile.	1. Reset NVRAM and retest. 2. Ensure the ground integrity of the printer, see page 4-67.
7,000: PROCESS GEAR MOTOR SYSTEM FAULT CODES	
7,001.43	
7,002.4x: PM_FAULT_PROCESS_ MOTOR_STALL This fault code indicates a problem with the Process Motor sub-system. The process motor stalled during operation. This has several possible causes, depending on what the process motor was connected to at the time of operation.	1. Verify the process drive system is properly homed, see page 6-8. 2. Run the Tilt Axis Drive test. If the test fails, check for obstructions in the process gear box. Ensure the process drive gears are correctly aligned. Replace the process drive gearbox assembly. 3. Run the Process Motor test. If the test fails check for an obstruction in the process gears. Replace the process drive gearbox assembly. 4. Run the Transfix Drive Slow test. If the test fails, check for an obstruction in the process gears. Verify the transfix cams are not damaged. Replace the process gearbox assembly.

Error code	Definition
7,007.4x: PM_FAULT_HEADTILT_STALL The process motor stalled while tilting the head.	
	1. Check the printhead wiring for proper routing. 2. Inspect the printhead tilt and drive gears for ink spills. 3. Run the Tilt Axis Drive test. 4. Check for obstructions or damage to the process gearbox. 5. Ensure the process gears are correctly aligned and homed, see page 6-8. 6. Replace the process drive gearbox assembly.
7,008.4x: PM_FAULT_HEADTILT_NOT_ ENGAGED The printhead tilt is not engaged, so it didn't tilt back properly or the printhead is stuck in the tilted position by the tilt lock arms. The process motor gear train getting out of sync can also cause this error.	
	1. Try rebooting the printer. 2. Check for an obstruction or damage in the process gearbox. 3. Ensure the gears are correctly aligned and homed, see page 6-8. If faulty replace the process gearbox assembly. 4. Run the Tilt Axis Drive test to test the headtilt. 5. Run the Head Maintenance Wiper Clutch test. If the test fails, replace the wiper drive clutch. 6. Run the Wiper Axis Drive test. 7. Replace the exit assembly.
7,009.4x: PM_FAULT_HEADTILT_PARK_ ERROR The printhead is tilted back but not in the park arms and restrained properly. This is due to the wiper assembly not moving up far enough for the park arms to hold it.	
	1. Check the printhead heater wiring. 2. Check for an obstruction or damage in the process gearbox. Ensure the gears are correctly aligned and homed, see page 6-8. If faulty replace the process gearbox assembly. 3. Run the Head Maintenance Clutch test, if it fails replace the clutch. 4. Run the Wiper Drive test. If the test fails, inspect the maintenance drive system. 5. Replace the exit assembly.

Error code	Definition
7,010.4x: PM_FAULT_HEADTILT_HOME_ERROR The printhead is stuck in the tilt position by the tilt arms. The process motor gearbox being out of sync can also cause this error.	1. Reboot the printer. 2. Verify the lock arms rotate correctly. 3. Check for spilled ink around the printhead. 4. Check the process motor gears for damage. Ensure the process gears are correctly aligned and homed. 5. Verify the process gear box, process shaft, and drive module shaft are at home position. 6. Verify the headtilt gear will engage, see the home positioning procedure on page. You can manually engage the headtilt gear. 7. Run the Tilt Axis Drive test. 8. Run the Process Motor test. 9. Run the Head Maintenance Clutch test, if the test fails replace the clutch. 10.Run Wiper Drive test. If this fails inspect the wiper drive system.
7,014.4x: PM_FAULT_HEADTILT_LOCK_ERROR The head is not locked in the head tilt restraint spring.	1. Verify the lock arms rotate correctly. 2. Check for spilled ink around the printhead. 3. Run the Tilt Axis Drive test to test the headtilt. 4. Run the Head Maintenance Wiper Clutch test. If the test fails replace the wiper drive clutch. 5. Check for an obstruction or damage in the process gearbox. Ensure the gears are correctly aligned. If faulty replace the process drive gearbox assembly. 6. Run the Load Maintenance Clutch test, if it fails replace the clutch. 7. Run the Wiper Axis Drive test, if the test fails, inspect the maintenance drive system. 8. Replace the exit assembly.

Error code	Definition
7,035.63: PM_PROG_FAULT_ FUNCS(3) Negative delay in pm_sleep_for(). A negative delay argument was passed to pm_sleep_for(). **7,036.64:** PM_PROG_FAULT_FUNCS(4) Unexpected message in pm_sleep_for(). An unexpected ITC message was received by pm_get_message() during processing of pm_sleep_for(). **7,052.62:** PM_PROG_FAULT_FUNCS(20) Bad message ID in pm_update_dmc_status(). The ITC message received and passed to pm_update_dmc status() did not match any DMC status message that the Process Motor task was expecting. **7,2059.4x:** PM_FAULT_DMFIX_POS_ERROR The position error of the dmfix device is greater than allowed. This is a soft fault, and will not halt the printer. Set dbsa_dmfix = 512 to see actual position error data.	
	1. Reset NVRAM and retest. 2. Ensure the ground integrity of the printer, see page 4-67.
7,3084.4x: PM_FAULT_DMFIX_NOT_HOME Unused fault.	
8,000: CAP TASK PROGRAM FAULT CODES	
8,000.4x: CAP_DEVICE_FAULT Indicates a problem with the wiper hardware. **8,005.4x:** AP_FAULT_HOMING_STALL The media path motor has stalled while moving the wiper to home. There may be interference or a problem with the clutch. **8,006.4x:** CAP_FAULT_VERIFY_HOME The wiper has a problem verifying the home position. **8,007.4x:** CAP_FAULT_NO_STALL_HOME The wiper didn't stall to find home. **8,008.4x:** CAP_FAULT_AWAY_FROM_HOME The wiper stalled while trying to move up away from the home position. **8,009.4x**:CAP_FAULT_MP_NO_ CLUTCH_STALL The media path motor has stalled while moving without the clutch engaged. **8,015.4x:** CAP_FAULT_PARKING_STALL The media path motor has stalled while moving the wiper to a park position. **8,025.4x:** CAP_FAULT_UNPARKING_STALL The media path motor has stalled while moving the wiper from the park position. **8,035.4x:** CAP_FAULT_MOVEUP_STALL The media path drive module has stalled while moving the wiper down. **8,045.4x:** CAP_FAULT_MOVEDOWN_STALL The media path drive module has stalled while moving the wiper down. Follow the procedures listed on the following page.	

Error code	Definition
8,0##.4x: (continued)	1. Look for obstructions and/or spilled ink in the media path. 2. Check for a broken wiper drive belt or gear. 3. Check the wiper alignment, physically and run the Wiper Alignment test. 4. Run the Head Maintenance Clutch test, replace the wiper drive clutch if the test fails. 5. Run the Wiper Drive test. Replace the exit assembly if the test fails.
8,055.4x: CAP_FAULT_ENGAGING_STALL The media path drive module has stalled while engaging the headtilt.	
	1. Check for an obstruction in the wiper assy drive. 2. Check for a broken wiper drive belt or gear. 3. Verify the head lock mechanism on the right end of the exit module assembly is functioning properly. 4. Run the Head Maintenance Clutch test, replace the wiper drive clutch if the test fails. 5. Run the Wiper Drive test. Replace the exit assembly if the test fails.
8,000.6x: CAP_PROG_FAULT This indicates a code firmware fault within the head maintenance system.	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset NVRAM, and retest.
9,000: INK LOADER: INK MELTERS AND printhead INK-LEVEL SENSORS.	
9,000.4x: IL_FAULT_NONE This indicates a fault code related to the ink loader sub-system. **9,005.4x:** IL_FAULT_C_JAM This fault code indicates a problem with the Ink Load sub-system. The cyan ink melt heater is on, but ink does not seem to be dripping. **9,006.4x:** IL_FAULT_M_JAM This fault code indicates a problem with the Ink Load sub-system. The magenta ink melt heater is on, but ink does not seem to be dripping. **9,007.4x:** IL_FAULT_Y_JAM This fault code indicates a problem with the Ink Load sub-system. The yellow ink melt heater is on, but ink does not seem to be dripping. **9,008.4x:** IL_FAULT_K_JAM This fault code indicates a problem with the Ink Load sub-system. The black ink melt heater is on, but ink does not seem to be dripping. Follow the procedures listed on the following page.	

Error code	Definition
9,008.4x: (continued)	1. Ensure the ink is Xerox branded ink. 2. Check that the ink stick is able to advance in the chute. 3. Run the appropriate Ink Melt # Heaters test. If the test fails, replace the ink loader assembly and door. 4. If the test passes replace the printhead.
9,009.4x: IL_FAULT_HID_HW This fault code indicates a device failure attempting to access the Head Ink Data in NVRAM.	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset NVRAM and retest.
11,000: ELECTRONIC CONTROL MODULE	
11,000.4x: ECM_SWD_DEV_TIMEOUT The Electronic Control Module (ECM) Single Wire Device (SWD) interface failed to respond to a command. No ISR detected in the allotted time period. The ECM should send an interrupt even if no 1-wire device is detected. **11,003.4x:** ECM_UHCF_SER_LINK_BROKEN Tray 3 feeder broken serial link detected. This indicates that 7 consecutive frames occurred with errors. **11,004.4x:** ECM_LHCF_SER_LINK_BROKEN Tray 4 feeder broken serial link detected. This indicates that 7 consecutive frames occurred with errors. **11,005.4x:** ECM_FP_SER_LINK_BROKEN Front panel broken serial link detected. This indicates that 7 consecutive frames occurred with errors. **11,006.4x:** ECM_IO_SER_LINK_BROKEN I/O board serial link detected. This indicates that 7 consecutive frames occurred with errors. **11,007.4x:** ECM_PCTL_SER_LINK_BROKEN Power Control broken serial link detected. This indicates that 7 consecutive frames occurred with errors. **11,008.4x:** ECM_HEAD_SER_LINK_BROKEN Head broken serial link detected. This indicates that 7 consecutive frames occurred with errors.	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Inspect and reseat all data wiring harness. 3. Reset NVRAM and retest.
12,000.6x - ITC_PROG_FAULT	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset NVRAM and retest.
13,000: THERMAL FAULTS	

Error code	Definition
13,001.6x: TH_NVRAM_READ_FAILURE Thermals failed to read from system NVRAM. Reboot the printer.	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset the NVRAM and retest. 3. Check and reseat the data cable to the printhead. 4. Replace the printhead and then retest.
13,002.6x:TH_SUBSCRIPT_FAILURE Subscript fault: Value is not in valid range.	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset the NVRAM and retest. 3. Check and reseat the data cable to the printhead. 4. Replace the printhead and then retest.
13,003.6x: TH_CTRL_UNEXPECTED_MSG_FAILURE Thermal control task received a unexpected message. **13,004.6x:** TH_CTRL_NOT_INIT_MSG_FAILURE Thermal control task was expecting an initialization message, but received another message. **13,005.6x:** TH_NONEXISTANT_SEGMENT_FAILURE_1 Thermal code tried to command a segment ID that did not exist. **13,006.6x:** TH_NONEXISTANT_SEGMENT_FAILURE_2 Thermal code tried to command a segment ID that did not exist. **13,007.6x:** TH_PWR_MGR_NOT_INIT_MSG_FAILURE Thermal power manager task was expecting an initialization message, but received another message.	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset the NVRAM.
13,008.4x: TH_DEV_FAULT_DRUM_TOO_HOT The Drum heater became too hot. **13,010.4x:** TH_DEV_FAULT_DRUM_TOO_SLOW The Drum heater took too long to reach its setpoint.	

Error code	Definition
13,0##.4x: (continued)	1. Ensure the ground integrity of the printer, see page 4-67. 2. Verify the ambient temperature of the room is within the printers environmental specifications. Adjust as necessary. If the fault is an overheat condition: 1. Verify printer clearances for adequate air flow to the fans if the fault is a too hot condition. 2. Check the Electronics Module Fan. An overheating electronics module can create this error condition. For too cool or too hot: 1. Run the Drum Fan Motor test, if it fails: ■ Inspect the drum fan wiring. ■ Replace the drum fan. 2. Run the Drum Heater test, if it fails replace: ■ Drum Temperature sensor ■ Drum
13,067.4x: TH_DEV_FAULT_DRUM_THERMISTOR_OPEN The Drum thermistor circuit is open. **13,069.4x:** TH_DEV_FAULT_DRUM_THERMISTOR_SHORTED The Drum thermistor circuit is shorted. **13,071.4x:** TH_DEV_FAULT_DRUM_THERMISTOR_BAD The Drum thermistor is bad.	
	1. Run the Temp Sensor test. 2. Inspect the sensor wiring harness. 3. If the test fails replace the drum temperature sensor.
13,072.4x: TH_DEV_FAULT_PREHEAT_TOO_HOT The preheat heater became too hot. **13,074.4x:** TH_DEV_FAULT_PREHEAT_TOO_SLOW The preheat heater took too long to reach its setpoint. **13,131.4x:** TH_DEV_FAULT_PREHEAT_THERMISTOR_OPEN The preheat thermistor circuit is open. **13,133.4x:** TH_DEV_FAULT_PREHEAT_THERMISTOR_SHORTED The preheat thermistor circuit is shorted. **13,135.4x:** TH_DEV_FAULT_PREHEAT_THERMISTOR_BAD The preheat thermistor is bad.	
	1. Check the ambient temperature of the room. 2. Run the Preheater test. 3. Check the wiring from the preheater. 4. Replace the preheater board. 5. Replace the I/O Board.

Error code	Definition
13,136.4x: TH_DEV_FAULT_JET_L_TOO_HOT The left jetstack heater became too hot. **13,138.4x:** TH_DEV_FAULT_JET_L_TOO_SLOW The left jetstack heater took too long to reach its setpoint.	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Verify the ambient temperature of the room is within the printers environmental specifications. Adjust as necessary. 3. Run the printhead Left/Right Jetstack Temperature test if the room temperature is within the correct operating range. If the test fails, replace the printhead and/or wiring after performing steps 4 and 5. 4. Check and reseat all wiring to the printhead. 5. Reverse the printhead data cable, if the error reappears the cable is bad and needs to be replaced.
13,195.4x: TH_DEV_FAULT_JET_L_THERMISTOR_OPEN The left jetstack thermistor circuit is open. **13,197.4x:** TH_DEV_FAULT_JET_L_THERMISTOR_SHORTED The left jetstack thermistor circuit is shorted. 13,199.4x: TH_DEV_FAULT_JET_L_THERMISTOR_BAD The left jetstack thermistor is bad.	
	1. Run the printhead Left /Right Jetstack Temperature Sensor test. 2. Inspect the printhead wiring. 3. Reverse the printhead data cable, if the error reappears the cable is bad and needs to be replaced. 4. If the test fails, replace the printhead and/or wiring.
13,200.4x: TH_DEV_FAULT_JET_R_TOO_HOT The right jetstack heater became too hot. **13,202.4x:** TH_DEV_FAULT_JET_R_TOO_SLOW The right jetstack heater took too long to reach its setpoint.	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Verify the ambient temperature of the room is within the printers environmental specifications. Adjust as necessary. 3. Run the printhead Left/Right Jetstack Temperature test if the room temperature is within the correct operating range. If the test fails, replace the printhead and/or wiring after performing steps 4 and 5. 4. Check and reseat all wiring to the printhead. 5. Reverse the printhead data cable, if the error reappears the cable is bad and needs to be replaced.

Error code	Definition
13,259.4x - TH_DEV_FAULT_JET_R_THERMISTOR_OPEN The right jetstack thermistor circuit is open. **13,261.4x -** TH_DEV_FAULT_JET_R_THERMISTOR_SHORTED The right jetstack thermistor circuit is shorted. **13,263.4x -** TH_DEV_FAULT_JET_R_THERMISTOR_BAD The right jetstack thermistor is bad.	
	1. Run the printhead Left /Right Jetstack Temperature Sensor test. 2. Inspect the printhead wiring. 3. Reverse the printhead data cable, if the error reappears the cable is bad and needs to be replaced. 4. If the test fails, replace the printhead and/or wiring.
13,264.4x - TH_DEV_FAULT_RESERVOIR_TOO_HOT The reservoir heater became too hot. **13,266.4x -** TH_DEV_FAULT_RESERVOIR_TOO_SLOW The reservoir heater took too long to reach its setpoint.	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Verify the ambient temperature of the room is within the printers environmental specifications. Adjust as necessary. 3. Run the printhead Reservoir Temperature test if the room temperature is within the correct operating range. 4. Check and reseat all wiring to the printhead. 5. Reverse the printhead data cable, if the error reappears the cable is bad and needs to be replaced. 6. If the test fails, replace the printhead and/or wiring.
13,323.4x - TH_DEV_FAULT_RESERVOIR_THERMISTOR_OPEN The reservoir thermistor circuit is open. **13,325.4x -** TH_DEV_FAULT_RESERVOIR_THERMISTOR_SHORTED The reservoir thermistor circuit is shorted. **13,327.4x -** TH_DEV_FAULT_RESERVOIR_THERMISTOR_BAD The reservoir thermistor is bad.	
	1. Run the printhead Reservoir Temperature test if the room temperature is within the correct operating range. 2. Check and reseat all wiring to the printhead. 3. Reverse the printhead data cable, if the error reappears the cable is bad and needs to be replaced. 4. If the test fails, replace the printhead and/or wiring.

Error code	Definition
13,328.4x - TH_DEV_FAULT_CYAN_TOO_HOT The cyan ink load heater became too hot. **13,330.4x -** TH_DEV_FAULT_CYAN_TOO_SLOW The cyan ink load heater took too long to reach its setpoint **13,387.4x** - TH_DEV_FAULT_CYAN_THERMISTOR_OPEN The cyan ink load thermistor circuit is open. **13,389.4x -** TH_DEV_FAULT_CYAN_THERMISTOR_SHORTED The cyan ink load thermistor circuit is shorted. **13,391.4x -** TH_DEV_FAULT_CYAN_THERMISTOR_BAD The cyan ink load thermistor is bad.	1. Verify the ambient temperature of the room. If the temperature of the environment is out of spec, advise the customer of the printers environmental specifications. 2. Run the Ink Melt 2 test. 3. Check and reseat wiring to the ink loader. 4. Replace the ink loader. 5. Replace the I/O board.
13,392.4x - TH_DEV_FAULT_MAGENTA_TOO_HOT The magenta ink load heater became too hot. **13,394.4x -** TH_DEV_FAULT_MAGENTA_TOO_SLOW The magenta ink load heater took too long to reach its setpoint. **13,451.4x -** TH_DEV_FAULT_MAGENTA_THERMISTOR_OPEN The magenta ink load thermistor circuit is open. **13,453.4x -** TH_DEV_FAULT_MAGENTA_THERMISTOR_SHORTED The magenta ink load thermistor circuit is shorted. **13,455.4x -** TH_DEV_FAULT_MAGENTA_THERMISTOR_BAD The magenta ink load thermistor is bad.	1. Verify the ambient temperature of the room. If the temperature of the environment is out of spec, advise the customer of the printers environmental specifications. 2. Run the Ink Melt 3 test. 3. Check and reseat wiring to the ink loader. 4. Replace the ink loader. 5. Replace the I/O board.

Error code	Definition
13,456.4x - TH_DEV_FAULT_YELLOW_TOO_HOT The yellow ink load heater became too hot. **13,458.4x -** TH_DEV_FAULT_YELLOW_TOO_SLOW The yellow ink load heater took too long to reach its setpoint. **13,515.4x -** TH_DEV_FAULT_YELLOW_THERMISTOR_OPEN The yellow ink load thermistor circuit is open. **13,517.4x -** TH_DEV_FAULT_YELLOW_THERMISTOR_SHORTED The yellow ink load thermistor circuit is shorted. **13,519.4x -** TH_DEV_FAULT_YELLOW_THERMISTOR_BAD The yellow ink load thermistor is bad.	1. Verify the ambient temperature of the room. If the temperature of the environment is out of spec, advise the customer of the printers environmental specifications. 2. Run the Ink Melt 1 test. 3. Check and reseat wiring to the ink loader. 4. Replace the ink loader. 5. Replace the I/O board.
13,520.4x - TH_DEV_FAULT_BLACK_TOO_HOT The black ink load heater became too hot. **13,522.4x -** TH_DEV_FAULT_BLACK_TOO_SLOW The black ink load heater took too long to reach its setpoint. **13,579.4x -** TH_DEV_FAULT_BLACK_THERMISTOR_OPEN The black ink load thermistor circuit is open. **13,581.4x -** TH_DEV_FAULT_BLACK_THERMISTOR_SHORTED The black ink load thermistor circuit is shorted. **13,583.4x -** TH_DEV_FAULT_BLACK_THERMISTOR_BAD The black ink load thermistor is bad.	1. Verify the ambient temperature of the room. If the temperature of the environment is out of spec, advise the customer of the printers environmental specifications. 2. Run the Ink Melt 1 test. 3. Check and reseat wiring to the ink loader. 4. Replace the ink loader. 5. Replace the I/O board.

Error code	Definition
19,000: HEAD CALIBRATION	
19,001.4x - HC_DEV_FAULT_1	HFD server failed because of a failed NVRAM operation. This fault only occurs when the printer is set in Manufacturing mode.
19,002.4x - HC_DEV_FAULT_2	Attempted to perform a head operation without the head NVRAM data being loaded from hardware.
19,003.4x - HC_DEV_FAULT_3	Scale and offset error is too large. This process attempts to measure a waveform of known voltage. It then compares the known voltage with the actual measured voltage to derive a scale and an offset value for the Vpp and Vss power supplies. If the actual voltages are measured to have more that 25% error from their expected values, something must be wrong with either the electronics that creates the waveform or the electronics that is measuring the waveform.
19,001.6x - HC_PROG_FAULT_1	The requested waveform operation cannot be performed on the specified waveform index.
19,002.6x - HC_PROG_FAULT_2	Because of its waveform type, the requested operation cannot be executed. It is not valid for the indexed waveform.
19,003.6x - HC_PROG_FAULT_3	Attempted to utilize an undefined waveform that has not been loaded from head NVRAM.
19,004.6x - HC_PROG_FAULT_4	Unused fault
19,005.6x - HC_PROG_FAULT_5	Unused fault
19,006.6x - HC_PROG_FAULT_6	A Head Field Data message packet failed to get process by the HFD server task. This fault will only occur in a non-customer mode printer configuration.
19,007.6x - HC_PROG_FAULT_7	Memory allocation error
19,008.6x - HC_PROG_FAULT_8	Unused fault
19,009.6x - HC_PROG_FAULT_9	Unused fault
19,010.6x - HC_PROG_FAULT_10	A request was made to fire more jets than the power supply is designed to handle.

Error code	Definition
19,032.6x - HC_PROG_FAULT_32 Waveform Encoding Fault: Invalid wave RAM instruction. Attempted to load an illegal wave generator instruction into the wave RAM.	
19,033.6x - HC_PROG_FAULT_33 Waveform Encoding Fault: Insert results in shifting past end of wave RAM. Waveform programming requires more wave RAM memory then is available.	
19,034.6x - HC_PROG_FAULT_34 Waveform Encoding Fault: Wave RAM Delay record too small. Trying to remove more clocks from a delay record than it has to give up.	
19,035.6x - HC_PROG_FAULT_35 Waveform Encoding Fault: Error in waveform generation. Generic error occurred while creating wave RAM records during waveform generation.	
19,036.6x - HC_PROG_FAULT_36 Waveform Encoding Fault: Insufficient time for waveform instruction generation. The delay associated with the current waveform segment is not long enough to generate the adequate wave RAM instructions.	
19,037.6x - HC_PROG_FAULT_37 Waveform Encoding Fault: Exceeded wave RAM boundary.	
19,038.6x - HC_PROG_FAULT_38 Waveform Encoding Fault: Control flag not found. An error occurred while setting up the control lines in wave RAM for waveform generation.	
19,039.6x - HC_PROG_FAULT_39 Waveform Encoding Fault: Delay parameter out of bounds. The requested wave RAM delay instruction has either an invalid clock divide parameter or an invalid number of delay clocks.	
21,000.6x Diags Code Mismatch The diagnostics code does not match the engine code version. A code upgrade is required.	
23,000.6x SY_NVRAM_PROG_FAULT For all faults in this category:	1. Reset NVRAM and retest. 2. Replace NVRAM.
26,000.6x - PRN_PROG_FAULT: FAULTS WHILE PRINTING Reboot the printer if one of these faults should appear.	
27,000.6x - PF_FAULT_BASE Profile library has experience a program fault.	1. Ensure the ground integrity of the printer, see page 4-67.

Error code	Definition
29,000.6x - JM_PROG_FAULT Jam manager has experienced a program fault.	
	1. Reseat NVRAM.
31,000.4x - MP_FAULT_MECH_INIT_JAM There is too much drag in the media path drive system.	
	1. Ensure all main tray paper path sensor wires are clear of the take away rollers. 2. Ensure the take-away rollers are free from debris and contamination. 3. Run the Process Motor Drive check test. 4. Run the Paper Path Drive check test.
31,000.6x - MP_PROG_FAULT **33,002.4x -** TM_DEV_FAULT_MPT_WIDTH_VALUE_TOO_HIGH Tray 1 Status	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset NVRAM.
33,000.4x - Tray manager device fault	
33,001.4x - TM_DEV_FAULT_MPT_WIDTH_VALUE_TOO_LOW Tray 1 status.	
	1. Check the wiring and connectors from the front door to the I/O board. 2. Run the Test Tray 1 Width Sensors. 3. If the test fails replace the front door. 4. Replace the I/O board.
33,000.6x - TM_PROG_FAULT	
	1. Ensure the ground integrity of the printer, see page 4-67. 2. Reset NVRAM.
34,000.: PRINTHEAD_NVRAM	
34,001.4x - HD_DEV_FAULT_HCD_NVRAM Error occurred while attempting read/write access to the Head Cal Data partition of head NVRAM.	
34,002.4x - HD_DEV_FAULT_HID NVRAM Error occurred while attempting read/write access to the Head Ink Data partition of head NVRAM	

Error code	Definition
34,003.4x - HD_DEV_FAULT_HFD_ NVRAM Error occurred while attempting read/write access to the head ink data partition of head NVRAM	
34,004.4x - HD_DEV_FAULT_NVRAM_INIT Error occurred while attempting read/write access to the head ink data partition of head NVRAM	
34,001.6x - HD_PROG_FAULT_INKNV_UNINITED Software attempted to invoke an HID command before HID was initialized.	
34,002.6x - HD_PROG_FAULT_UNKNOWN_INK_CMD Software attempted to invoke an unknown HID command.	
35,000.6x - PPT_PROG_FAULT - Unused Fault	
36,000.4x - DML_FAULT **36,000.6x -DML_PROG_FAULT** The drum maintenance life (dml) task has experienced a program fault.	1. Ensure the ground integrity of the printer, see page 4-67. 2. Replace the pivot plate. 3. Replace the drum maintenance unit, exit assembly.
37,000.: PRINT ENGINE SELF TEST (PEST)	
37,001.4x - PEST_FAULT_GENERIC PEST - Generic Error. Something bad happened inside of PEST	
37,002.4x - PEST_FAULT_JSL_HEATER_DISCONNECT PEST - Left jetstack disconnect.The left jetstack is not drawing the expected power from the supply.	1. Run the printhead Left Jetstack Heater test. 2. Verify printhead wiring.
37,003.4x - PEST_FAULT_JSR_HEATER_DISCONNECT PEST - Right jetstack disconnect, the right jetstack is not drawing the expected power from the supply.	1. Run the printhead Right Jetstack Heater test. 2. Verify printhead wiring.
37,004.4x - PEST_FAULT_RESERVOIR0_HEATER_DISCONNECT PEST - Reservoir0 Disconnect Reservoir0 is not drawing the expected power from the supply.	1. Run the printhead Reservoir Heater test. 2. Verify printhead wiring.

Error code	Definition
37,005.4x - PEST_FAULT_RESERVOIR1_HEATER_DISCONNECT PEST - Reservoir1 Disconnect Reservoir1 is not drawing the expected power from the supply.	
	1. Run the printhead Reservoir Heater test. 2. Verify printhead wiring.
37,006.4x - PEST_FAULT_DRUM_HEATER_DISCONNECT PEST - Drum Disconnect Drum is not drawing the expected power from the supply	
	1. Run the Drum heater test. 2. Verify that Drum heater is connected.
37,008.4x - PEST_FAULT_PREHEAT_HEATER_DISCONNECT PEST - Preheat Heater Disconnect The Preheat heater is not drawing the expected power from the supply.	
	1. Run the Preheat Heater test. 2. Check the preheater wiring. 3. If the test fails, replace the preheater.
37,009.4x - PEST_FAULT_INK0_HEATER_DISCONNECT PEST - Ink melt 0 Disconnect Ink melt 0 is not drawing the expected power from the supply. **37,010.4x -** PEST_FAULT_INK1_HEATER_DISCONNECT PEST - Ink melt 1 Disconnect Ink melt 1 is not drawing the expected power from the supply. **37,011.4x -** PEST_FAULT_INK2_HEATER_DISCONNECT PEST - Ink melt 2 Disconnect Ink melt 2 is not drawing the expected power from the supply. **37,012.4x -** PEST_FAULT_INK3_HEATER_DISCONNECT PEST - Ink melt 3 Disconnect Ink melt 3 is not drawing the expected power from the supply.	
	1. Run appropriate Ink Melt # Heater test. 2. Check the Ink Loader wiring. 3. If the test fails, replace the ink loader assembly.
37,013.4x - PEST_FAULT_ELEC_FAN_DISCONNECT PEST - Electronics Cooling Fan Disconnect The Electronics Cooling Fan is not drawing the expected power from the supply.	
	1. Run the Electronics Fan test. 2. Check the Electronics Cooling Fan wiring. 3. Replace the Electronics Cooling Fan.

Error code	Definition
37,014.4x - PEST_FAULT_DRUM_FAN_DISCONNECT PEST - Drum cooling fan disconnect the drum cooling fan is not drawing the expected power from the supply.	1. Run the Drum Fan test. 2. Check the drum cooling fan wiring. 3. Replace the drum cooling fan.
37,015.4x - PEST_FAULT_MP_FAN_DISCONNECT PEST - Media path cooling fan disconnect the media path cooling fan is not drawing the expected power from the supply.	1. Run the MP Motor Fan test. 2. Check the media path cooling fan wiring. 3. Replace the Media Path Cooling Fan.
37,016.4x - PEST_FAULT_HM_CLUTCH_DISCONNECT PEST - Head maintenance clutch disconnect. The head maintenance clutch is not drawing the expected power from the supply.	1. Run the Head Maintenance Clutch test. 2. Check the Head Maintenance Clutch wiring. 3. Disconnect the Wave Amp signal cable from the left side of the Electronics Module. If the error code changes, replace the Wave Amp. 4. Replace the head maintenance clutch.
37,017.4x - PEST_FAULT_MT_DESKEW_CLUTCH_DISCONNECT PEST - Main Tray deskew clutch disconnect. The main tray deskew clutch is not drawing the expected power from the supply.	1. Run the Deskew Clutch test. 2. Check the Main Tray Deskew Clutch wiring. 3. Replace the Media Path Drive Assembly.
37,018.4x - PEST_FAULT_MT_PICK_CLUTCH_DISCONNECT PEST - Main Tray pick clutch disconnect. The main tray pick clutch is not drawing the expected power from the supply.	1. Run the Tray 1 Pick Clutch test 2. Check the Pick Clutch wiring. 3. Replace the Media Path Drive Assembly.
37,019.4x - PEST_FAULT_MPT_PICK_SOL_DISCONNECT PEST - Tray 1 Pick Solenoid disconnect. The Tray 1 pick solenoid is not drawing the expected power from the supply.	1. Run the Tray 1 Pick Solenoid test. 2. Check the Tray 1 Pick Solenoid wiring. 3. Replace the solenoid if the test fails.

Error code	Definition
37,020.4x - PEST_FAULT_STRIP_SOL_DISCONNECT PEST - Strip solenoid disconnect. The strip solenoid is not drawing the expected power from the supply.	
	1. Run the Strip Solenoid test. 2. Check the strip solenoid wiring. 3. Replace the strip solenoid if the test fails.
37,021.4x-PEST_FAULT_MT_ELEVATOR_DISCONNECT PEST - Main Tray elevator disconnect. the Main tray elevator is not drawing the expected power from the supply.	
	1. Run the Tray 2 Lift Motor test. 2. Check the Tray 2 lift motor wiring. 3. Replace the lift motor if the test fails.
37,022.4x - PEST_FAULT_PURGE_MOTOR_DISCONNECT PEST - Pressure pump motor disconnect. The pressure pump motor is not drawing the expected power from the supply.	
	1. Run the Pressure Pump Motor test. 2. Check the pressure pump motor wiring. 3. Replace the pressure pump motor if the test fails.
37,023.4x - PEST_FAULT_PURGE_VALVE_DISCONNECT PEST - Purge valve disconnect. The purge valve is not drawing the expected power from the supply.	
	1. Run the Purge Vent Solenoid test. 2. Check the purge pump assembly wiring. 3. Replace the purge pump assembly if the test fails.
37,024.4x - PEST_FAULT_DRUM_HEATER_RELAY_DISCONNECT PEST - Drum heater relay disconnect. Both drum heater relay coils are not drawing the expected power from the supply. **37,025.4x -** PEST_FAULT_DRUM_HEATER_RELAY_A_DISCONNECT PEST - Drum heater relay A disconnect. The drum heater relay coil is not drawing the expected power from the supply. **37,026.4x -** PEST_FAULT_DRUM_HEATER_RELAY_B_DISCONNECT PEST - Drum heater relay B disconnect. The drum heater relay coil is not drawing the expected power from the supply.	
	1. Run the Drum Heater Relay test. 2. Check the drum heater wiring. 3. Replace the drum heater relay board if the test fails.

Error code	Definition
37,027.4x - PEST_FAULT_X_MOTOR_DISCONNECT PEST - X-Axis motor disconnect. Both phases of the X-Axis Motor are not drawing the expected power from the supply. **37,028.4x -** PEST_FAULT_X_MOTOR_PHASE_A_DISCONNECT PEST - X-Axis motor phase A disconnect. The X-Axis motor phase A is not drawing the expected power from the supply. **37,029.4x -** PEST_FAULT_X_MOTOR_PHASE_A_SHORT **37,030.4x -** PEST_FAULT_X_MOTOR_PHASE_B_DISCONNECT PEST - X-Axis motor phase B disconnect. The X-Axis motor phase B is not drawing the expected power from the supply. **37,031.4x -** PEST_FAULT_X_MOTOR_PHASE_B_SHORT PEST - X-Axis motor phase B short. The X-Axis motor phase B is drawing to much power from the supply.	1. Run the X-Axis Drive test. 2. Check the x-Axis Motor wiring. 3. Replace the x-Axis motor if the test fails.
37,032.4x - PEST_FAULT_Y_MOTOR_DISCONNECT PEST - Y-Axis motor disconnect. The Y-Axis motor is not drawing the expected power from the supply. **37,033.4x -** PEST_FAULT_Y_MOTOR_SHORT PEST - Y-Axis motor short. The Y-Axis motor is drawing to much power from the supply.	1. Run the Y-Axis Motor test. 2. Check the Y-Axis motor wiring. 3. Replace the Y-Axis motor if the test fails.
37,034.4x - PEST_FAULT_MP_MOTOR_DISCONNECT PEST - Media path motor disconnect. The Media Path Motor is not drawing the expected power from the supply. **37,035.4x -** PEST_FAULT_MP_MOTOR_SHORT PEST - Media path motor short. The media path motor is drawing to much power from the supply.	1. Run the Media Path Motor test. 2. Check the media path motor wiring. 3. Replace the media path motor if the test fails.
37,036.4x - PEST_FAULT_PROC_MOTOR_DISCONNECT PEST - Process motor disconnect. The process motor is not drawing the expected power from the supply. **37,037.4x -** PEST_FAULT_PROC_MOTOR_SHORT PEST - Process motor short. The process motor is drawing to much power from the supply.	1. Run the Process Motor test. 2. Check the process motor wiring. 3. Replace the process drive assembly if the test fails.

Error code	Definition
37,038.4x - PEST_FAULT_PWR_RESET_DISCONNECT PEST - The power supply did not reset properly as requested. The reset line may not be connected. **37,039.4x** - PEST_FAULT_PWR_P5_0_OVER PEST - Power Supply +5.0 OVER LIMIT **37,040.4x -** PEST_FAULT_PWR_P5_0_UNDER PEST - Power Supply +5.0 UNDER LIMIT **37,41.4x -** PEST_FAULT_PWR_P1_8_OVER PEST - Power Supply +1.8 OVER LIMIT **37,042.4x** - PEST_FAULT_PWR_P1_8_UNDER PEST - Power Supply +1.8 UNDER LIMIT **37,043.4x -** PEST_FAULT_PWR_P2_5_OVER PEST - Power Supply +2.5 OVER LIMIT **37,044.4x -** PEST_FAULT_PWR_P2_5_UNDER PEST - Power Supply +2.5 UNDER LIMIT **37,045.4x -** PEST_FAULT_PWR_P3_3_OVER PEST - Power Supply +3.3 OVER LIMIT **37,046.4x -** PEST_FAULT_PWR_P3_3_UNDER PEST - Power Supply +3.3 UNDER LIMIT **37,047.4x -** PEST_FAULT_PWR_P12_OVER PEST - Power Supply +12 OVER LIMIT **37,048.4x -** PEST_FAULT_PWR_P12_UNDER PEST - Power Supply +12 UNDER LIMIT **37,049.4x -** PEST_FAULT_PWR_N12_OVER PEST - Power Supply -12 OVER LIMIT **37,050.4x -** PEST_FAULT_PWR_N12_UNDER PEST - Power Supply -12 UNDER LIMIT **37,051.4x -** PEST_FAULT_PWR_CURRENT_OVER PEST - Power Supply Current Detect OVER LIMIT **37,052.4x -** PEST_FAULT_PWR_CURRENT_UNDER PEST - Power Supply Current Detect UNDER LIMIT **37,053.4x -** PEST_FAULT_PWR_P50_OVER PEST - Power Supply +50 OVER LIMIT **37,054.4x -** PEST_FAULT_PWR_P50_UNDER PEST - Power Supply +50 UNDER LIMIT **37,055.4x -** PEST_FAULT_PWR_N50_OVER PEST - Power Supply -50 OVER LIMIT **37,056.4x -** PEST_FAULT_PWR_N50_UNDER PEST - Power Supply -50 UNDER LIMIT **37,057.4x -** PEST_FAULT_PWR_P15_OVER PEST - Power Supply +15 OVER LIMIT **37,058.4x -** PEST_FAULT_PWR_P15_UNDER PEST - Power Supply +15 UNDER LIMIT **37,059.4x -** PEST_FAULT_PWR_N15_OVER PEST - Power Supply -15 OVER LIMIT **37,060.4x -** PEST_FAULT_PWR_N15_UNDER PEST - Power Supply -15 UNDER LIMIT	
	1. Run the Voltages check test. 2. Replace the electronics module.

Error code	Definition
37,061.4x - PEST_FAULT_POWER_HIGH_SWITCHER_OFF PEST - Power supply high switcher will not activate. 12 V, 15 V, and 50 V missing. This may be due to a short, disconnected power supply reset line, or other failure.	
37,062.4x - PEST_FAULT_HEAD_VSS_DISCONNECT PEST - Vss measurement too low, head power cable may be disconnected. **37,063.4x -** PEST_FAULT_HEAD_VPP_DISCONNECT PEST - Vpp measurement too low, head power cable may be disconnected.	1. Verify the printhead power cable is connected.

3-Digit Jam Codes

The printer stores the most recent 20 events in Jam History. To access this information press the **Up** arrow button when the jam code is displayed, scroll to **Jam History**, and press **OK**. The information is presented with most recent jam at the top of the list.

Jam Code Key Table

Print Process Event	Basis for Declaring a Jam	Printer State
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 Present Sensor **H** Tray 3 Media Present Sensor **J** Tray 4 Media Present Sensor **M** Paper Path Motor **N** Y-Axis Motor **P** Process Motor **T** Exit Door Event **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** Printead 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

Jam Code Definition Table

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

Jam Code Troubleshooting Procedures

A2C	Deskew sensor in unexpected state during mechanical recovery. 1. Check the drum maintenance unit 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.
A2E	Deskew sensor in unexpected state at ready. 1. Ensure ground integrity of the printer, see page 4-67. 2. Replace Tray 1 solenoid.
A2F	Deskew sensor in unexpected state. 1. Ensure ground integrity of the printer, see page 4-67. 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 an transfix roller oiling.
A2M	The deskew flag tripped unexpectedly while the printer was picking paper from Tray 2.
A2N	The deskew flag tripped unexpectedly while the printer was picking paper from Tray 3.
A2P	The deskew flag tripped unexpectedly while the printer was picking paper from Tray 4.
A2S	Deskew sensor in unexpected state during media stage for transfix.
A2Q	The deskew flag tripped unexpectedly while the printer was 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 it is captured by 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 4-67. 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

Deskew Sensor time-out event during an auto drum maintenance cycle.

A3M

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

A3N

The deskew flag timed out waiting for the paper picked from Tray 3

A3P

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

A3Q

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 Assembly.
9. Replace the Pick Assembly.

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 rollers and the duplex roller.
3. Check the Front Door for obstructions or damage, replace the Front Door if necessary.
4. Test the operation of the exit roller and the duplex roller using diagnostic Duplex Paper Lead Edge Times test.
5. Test the deskew sensor using the diagnostic Sensors test.

B2C Preheat 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 4-67.

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 4-67.
2. Check the drum maintenance unit NVRAM contacts during the oiling process for continuity.
3. Check the waste tray.
4. Replace the preheater assembly.

B2M	The preheat flag tripped unexpectedly while the printer was picking paper from Tray 2.
B2N	The preheat flag tripped unexpectedly while the printer was picking paper from Tray 3.
B2P	The preheat flag tripped unexpectedly while the printer was picking paper from Tray 4.
B2Q	The preheat flag tripped unexpectedly while the printer was picking paper from Tray 1.
	1. Test the preheat flag using the diagnostic Sensors test. 2. Ensure ground integrity of the printer, see page 4-67.
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.
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.

C2x (continued)	
C2T	Strip flag unexpected event during transfix. 1. Ensure ground integrity of the printer, see page 4-67. 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	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 unit for proper operation, replace if necessary. 3. Ensure the process drive assembly 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.

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. Run the Paper Path Drive test. 6. Replace the lower exit guide assembly.
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 4-67. 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 unit 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 the flag 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.

D3x (continued)	
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
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 properly 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 the printer was warming up.
F2F	The front door open flag unexpectedly tripped while the printer was in a fault state.
F2M	The front door open flag unexpectedly tripped when the printer pick from Tray 2.
F2N	The front door open flag unexpectedly tripped when the printer pick from Tray 3.
F2P	The front door open flag unexpectedly tripped when the printer pick from Tray 4.
F2Q	The front door open flag unexpectedly tripped when the printer pick from Tray 1.
F2R	The front door open flag unexpectedly tripped while the printer was duplexing.
F2S	Front door sensor unexpectedly actuated while the paper was staged for transfix.
F2T	The front door open flag unexpectedly tripped while the print was being transfixed.
F2V	The front door open flag unexpectedly tripped while the printer was oiling the drum during a print job.
F2W	The front door open flag unexpectedly tripped while the printer was imaging during a print job.
F2x (continued)	

Jam Code Troubleshooting Procedures (Continued)

F2X	Front door sensor unexpectedly actuated during exit. 1. Ensure the media is supported. 2. Ensure ground integrity of the printer, see page 4-67. 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 path motor had an unexpected event during mechanical recovery.
M4A	Paper path motor stalled during an abnormal printer shutdown.
M4B	Paper path motor stalled during a normal printer shutdown.
M4C	Paper path motor stalled during mechanical recovery.
M4D	Paper path motor stalled during printer warm-up.
M4E	Paper path motor stalled while the printer was in its ready state.
M4F	Paper path motor stalled while the printer was in a fault state.
M4G	Paper path motor stalled while the printer performed an auto drum maintenance cycle.
M4H	Paper path motor stalled while the printer performed printhead maintenance.
M4J	Paper path motor stalled while the printer performed printhead purge.
M4K	Paper path motor stalled while the printer performed an oil transfix roller cycle.
M4L	Paper path motor stalled while the printer was in standby mode.
M4M	Paper path motor stalled while the printer picked from Tray 2.
M4N	Paper path motor stalled while the printer picked from Tray 3.
M4P	Paper path motor stalled while the printer picked from Tray 4.
M4Q	Paper path motor stalled while the printer picked from Tray 1.
M4R	Paper path motor stalled while the printer duplexed the print.
M4S	Paper path motor stalled while the printer staged the print for transfix.
M4x (continued)	

M4T	Paper path motor 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 a 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. 1. Ensure ground integrity of the printer, see page 4-67.
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 while the printer performed 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 while the printer performed a print drum maintenance cycle.
N4W	Y-Axis motor stalled while the printer imaged the drum.

N4x (continued)

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

1. Check for supported media, generally label, tri-fold or envelopes cause this error.
2. Try running fewer sheets through the tray.
3. Ensure the Process Drive Gearbox is correctly aligned.
4. Run the Check Y-Axis Motor test, replace if necessary.
5. Run the Belt Slip test.
6. Replace the Tray 1 separator pad assembly.
7. Replace the process drive assembly.

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. Ensure the media is supported.
2. Ensure ground integrity of the printer, see page 4-67.
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.

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

1. Ensure the media is supported.
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. Replace the Tray 1 Separator Pad Assembly.

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 warmup.
P4E	Process motor stalled while the printer was in its ready state.
P4F	Process motor stalled while the printer was in a fault state.
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 gearbox assembly.

T2A	The exit door open flag unexpectedly tripped while the printer was performing an abnormal shutdown.
T2B	The exit door open flag unexpectedly tripped while the printer was performing a normal shutdown.
T2C	The exit door open flag unexpectedly tripped while the printer was performing a mechanical recovery.
T2D	The exit door open flag unexpectedly tripped while the printer was warming up.
T2E	The exit door open flag unexpectedly tripped while the printer was ready.

T2x (continued)

T2F	The exit door open flag unexpectedly tripped while the printer was in a fault state.

T2G The exit door open flag unexpectedly tripped while the printer was performing an automatic drum maintenance cycle.

T2H The exit door open flag unexpectedly tripped while the printer was performing a printhead maintenance cycle.

T2J The exit door open flag unexpectedly tripped while the printer was performing a printhead purge cycle.

T2K The exit door open flag unexpectedly tripped while the printer was performing a transfix oiling cycle.

T2L The exit door open flag unexpectedly tripped while the printer was in Standby mode.

T2M The exit door open flag unexpectedly tripped when the printer picked from Tray 2.

T2N The exit door open flag unexpectedly tripped when the printer picked from Tray 3.

T2P The exit door open flag unexpectedly tripped when the printer picked from Tray 4.

T2Q The exit door open flag unexpectedly tripped when the printer picked from Tray 1.

T2R The exit door open flag unexpectedly tripped while the printer was duplexing.

T2S The exit door open flag unexpectedly tripped while the paper was staging for the transfix cycle.

T2T The exit door open flag unexpectedly tripped while the print was being transfixed.

T2X The exit door open flag unexpectedly tripped while the printer was ejecting the print.

T2Z The exit door 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 4-67.
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.
V2X	Tray 2 media size sensor unexpectedly activated while exiting print.

1. Ensure ground integrity of the printer, see page 4-67.
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.

W2x (continued)

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 4-67. 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 4-67. 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.
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 (continued)	

X2X	Tray 3 pick flag triggered unexpectedly while exiting print. 1. Ensure ground integrity of the printer, see page 4-67. 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.
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 snugly 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 4-67. 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 4-67. 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.
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.

Z2x (continued)

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 4-67. 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

In this chapter...

- Service Diagnostics
- Service Diagnostics Mode Menu
- Check Menu Definition Tables
- Electronics Troubleshooting
- Ensuring Ground Integrity
- Paper Path and Media-Based Problems
- Operating System and Application Problems

Section 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 front panel error message or error code. For troubleshooting problems associated with an error code or front 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. Press **OK** and **Cancel** buttons at the same time to display the Service Tools Menu.
2. With the cursor at the top of the Service Tools Menu, press both the **Up Arrow** and **Down Arrow** buttons to display the Hidden Service Menu.

Menu Item	Description
Test Prints	See "Analyzing Service Test Prints" on page 5-24 for a complete explanation of each test print available.
Startup Page	Prints a page with basic printer 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.

Menu Item	Description
Enter Diagnostic Mode	See "Service Diagnostics Mode Menu" on page 4-5 for a complete explanation of each diagnostic routine.
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.
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	Centers the image by adjusting the margin
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 problems with the printer. The Service Diagnostics Menu provides a means to test sensors, motors, switches, clutches, fans and solenoids. Diagnostics also contain functions to report printer status and some NVRAM access.

Service diagnostics are to be executed through the front panel by a certified service technician only. Service Diagnostics can be entered one of two ways:

Entering Service Diagnostics without Rebooting the Printer:

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 Rebooting the Printer:

1. Turn the printer power OFF.
2. Press and hold the **Back** and **Info** buttons.
3. Turn the printer power ON while continuing to hold the **Back** and **Info** buttons for approximately 30 seconds until the front panel indicates **Diagnostic Menu**.

Service Diagnostic Front Panel Button Descriptions

Button	Function
BACK	Returns to the prior higher level menu structure, if available. Cancels the display of test results on the front panel. If help text is displayed on the front panel, pressing BACK will restore the current menu item and remove the help text.
CANCEL	Cancels certain functions of the printer.
INFO	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

Menu Map

Menu	Description	
Main Menu	Displays general help text describing the general operation of the front 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** **Motors Menu** **Misc. Menu**	See the individual table descriptions starting on page 4-11 for all Check/ Activator menu items.
Monitor Menu A submenu containing a set of functions for passively viewing or monitoring printer mechanical measurements.		

Menu		Description
	Sensors	Monitors all mechanically activated digital sensors except for the front panel buttons. Whenever a state change is detected it is reported on the front panel.
	Encoders	Monitors each of the non-temperature analog sensors (Tray 1 width, 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.
	Front Panel Buttons	Monitors front panel buttons and reports button presses.
Exercise Menu A submenu containing a set of functions for actively causing mechanical actions which may then be observed.		
	Activators Menu	Pulses the specified activator to cause it to generate some sound or motion.
	Exercise All	Cycles each of the listed activators 4 times in sequence until interrupted by a front panel button press.
	Tray 1 Pick Solenoid	Cycles the activator repeatedly until interrupted by a front panel button press.
	Tray 2 Pick Clutch	Cycles the activator repeatedly until interrupted by a front panel button press.
	Tray 3 Pick Clutch	Cycles the activator repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.

Menu			Description
		Tray 4 Pick Clutch	Cycles the activator repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.
		Deskew Clutch	Cycles the activator repeatedly until interrupted by a front panel button press.
		Strip Solenoid	Cycles the activator repeatedly until interrupted by a front panel button press.
		Head Maintenance Clutch	Cycles the activator repeatedly until interrupted by a front panel button press.
		Purge Vent Solenoid	Cycles the activator repeatedly until interrupted by a front panel button press.
		Drum Heater Relay	Cycles the activator repeatedly until interrupted by a front panel button press.
	Exercise Motors/ Shafts Menu		These functions drive the specified motor or shaft sufficiently to generate easily observed motion without making substantial change to the state of the system.
		Exercise All	Cycles each of the listed motors/shafts 3 times in sequence until interrupted by a front panel button press.
		Process Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
		Y-axis Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
		X-axis Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
		Purge Pump Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.

Menu		Description
	Drum Fan Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Electronics Fan Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Media Path Motor Fan Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Media Path Motor & Shafts	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Transfix Cam Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Drum Maintenance Cam Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Deskew Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Wiper Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Tray 1 Pick Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Tray 2 Pick Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Tray 3 Pick Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press.
	Tray 4 Pick Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.
	Tray 3 Lift Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.

Menu		Description
	Tray 3 Motor & Shafts	Cycles the motor/shaft repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.
	Tray 4 Pick Shaft	Cycles the motor/shaft repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.
	Tray 4 Lift Motor	Cycles the motor/shaft repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.
	Tray 4 Motor & Shafts	Cycles the motor/shaft repeatedly until interrupted by a front panel button press. If not installed generates an “Option not detected” message.
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 preheat heater to opposite state.
	Toggle Drum Heater	Toggles drum heater to opposite state.
	Toggle Ink Melt Heaters	Toggles ink melt heaters to opposite state.
Front Panel Display		Exercises the front panel LCD/LED outputs.
	Cycle LED	Cycles the LED through a red/Yellow/ Green sequence.
	Set display dark	Sets the LCD display dark.

Menu			Description
		Test backlight	Changes the display backlight from off to max.
		Set display light	Sets the LCD display light.
	Function Menu		A submenu containing a set of functions for commanding more complex actions by portions of the printer mechanism.
		Initialize Mechanism	Performs a simplified version of the 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	A function that displays the current contents of the Fault History NVRAM store.
		Access PE NVRAM Parameters	A restricted function that provides read/write access to selected PE NVRAM parameters.
		Clear Fault History	A restricted function that clears the Fault History NVRAM store.
		Clear PS NVRAM	A restricted function that clears the PS NVRAM to be rebuilt with defaults at the next power up.
		Clear PE NVRAM	A restricted function that clears the PE NVRAM to be rebuilt with defaults at the next power up.
		Set PE NVRAM to Defaults	A restricted function that 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 results have been left blank. All results from tests that move paper through the printer were collected using 24 lb. bond paper.

Note

> **Collecting 2 or 3 samples of the test data is recommended 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**.

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

Head Maintenance Clutch

Gathers data on the performance of the head maintenance clutch coil.

R#	Definition	Typical Value	Actions
0	Peak Power (watts)	3.0 to 5.9	Reports the profile max power value.
1	Average Power (watts)	2.8 to 6.0	Reports the average power during the constant portion of the profile.

Deskew Clutch

Gathers data on the performance of the deskew clutch coil.

R#	Definition	Typical Value	Actions
0	Peak Power (watts)	2.5 to 5.3	Reports the profile max power.

Deskew Clutch (Continued)
Gathers data on the performance of the deskew clutch coil.

R#	Definition	Typical Value	Actions
1	Average Power (watts)	2.2 to 5.3	Reports the average power during the constant portion of the profile.

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

R#	Definition	Typical Value	Actions
0	Peak Power (watts)	20.0 to 30	Reports the profile max power value.
1	Average Power (watts)	20.0 to 30	Reports the average power during the constant portion of the profile.
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 power on that the peak power occurred.
4	Initial Average Power (watts)	17 to 26	Reports the average power following power on.

Tray 2, Tray 3, Tray 4, Pick Clutch
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.

R#	Definition	Typical Value	Actions
0	Peak Power (watts)	2.5 to 5.5	Reports the profile max power value.
1	Average Power (watts)	2.5 to 5.5	Reports the average power during the constant portion of the profile.

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

R#	Definition	Typical Value	Actions
0	Peak Power (watts)	8.0 to 15	Reports the profile max power value.

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

R#	Definition	Typical Value	Actions
1	Average Power (watts)	8.0 to 15	Reports the average power during the constant portion of the profile.

Purge Vent Solenoid
Gathers data on the performance of the purge vent solenoid coil.

R#	Definition	Typical Value	Actions
0	Peak Power (watts)	0.5 to 1.2	Reports the profile max power value.
1	Average Power (watts)	0.4 to 1.2	Reports the average power during the constant portion of the profile.

Drum Heater Relay
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.

R#	Definition	Typical Value	Actions
0	220 V Coil Peak Power (watts)		Reports the profile max power value.
1	220 V Coil Average Power (watts)		Reports the average power during the constant portion of the profile.
2	220 V Coil Min Power (watts)		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)		Reports the average power following power on.
5	110 V Coil Peak Power (watts)		Reports the profile max power value.
6	110 V Coil Average Power (watts)		Reports the average power during the constant portion of the profile.

Drum Heater Relay
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.

R#	Definition	Typical Value	Actions
7	110 V Coil Min Power (watts)		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

Deskew Shaft
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.

R#	Definition	Typical Value	Actions
0	Time to CCW On peak fe (sec).	0.01 to 0.04	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	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	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.
3	CCW On average fe.	250 to 600	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	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	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	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.

Deskew Shaft (Continued)
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.

R#	Definition	Typical Value	Actions
7	CW On peak fe.	-950 to -450	Reports the peak effort required to accelerate the deskew shaft load. A smaller value could indicate a slipping clutch.
8	CW On fe settling time (sec).	0.010 to 0.20	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	Reports the average effort required to rotate the deskew shaft in the CW direction at a constant velocity. A 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	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	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.

Wiper Shaft
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.

R#	Definition	Typical Value	Actions
0	Time to CCW On peak fe (sec).	0.009 to 0.16	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	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	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	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).
4	CCW On fe ripple.	25 to 100	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	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	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	Reports the peak effort required to accelerate the wiper shaft load. A smaller value could indicate a slipping clutch.

Wiper Shaft (Continued)
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.

R#	Definition	Typical Value	Actions
8	CW On fe settling time (sec).	-10 to 1	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.
9	CW On average fe.	-50 to 15	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	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	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.

Tray 1 Pick Shaft

Runs the media path drive train and engages the tray 1 pick solenoid on the fly. The pick shaft goes through 2 full revolutions while drive requirements are determined.

R#	Definition	Typical Value	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.
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.
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.

Tray 1 Pick Shaft (Continued)

Runs the media path drive train and engages the tray 1 pick solenoid on the fly. The pick shaft goes through 2 full revolutions while drive requirements are determined.

R#	Definition	Typical Value	Actions
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.

Tray 2, Tray 3, and Tray 4 Pick Shaft

Test is the same for each pick shaft although for tray 2 the media path 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.

R#	Definition	Typical Value	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.
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).

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

Test is the same for each pick shaft although for tray 2 the media path 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.

R#	Definition	Typical Value	Actions
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.
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.

Check Fans Menu

Drum Fan, Electronics Fan, and MP Motor Fan
Test is the same for each fan. The fan is turned on fro a short time while the power is measured. Test determines if the fan is operating and turning at the expected speed.

R#	Definition	Drum Value	Elect. Value	MP Value	Actions
0	Max Power (watts)	5 to 11	7 to 13	1.5 to 3.5	Reports initial power drawn by the fan at On. May indicate the condition of the windings.
1	Constant Velocity Power (watts)	-0.01 to 0.30	3 to 8.0	1.0 to 3.0	Reports the power drawn by the fan while running a constant velocity. Should be proportional to the final fan RPM due to the back EMF.
2	Constant Velocity Power Ripple (watts)	0.06 to 0.35	0.60 to 0.40	0.01 to 0.1	Reports the power ripple while the fan is running at constant velocity. Could indicate a bad winding/ commutator segment.
3	Constant Velocity Time (sec)	0.25 to 6.0	1.5 to 5.0	-0.01 to 7	Reports the time from On until the fan reaches constant velocity. Could indicate a weak fan/fan drive or extra drag (bearings, brushes, blade).

Check Heaters Menu

Reservoir Heater, Jetstack Left Heater, Jetstack Right Heater, Paper Preheater, Drum Heater, Ink Melt 1 (yellow) Heater, Ink Melt 2 (cyan) Heater, Ink Melt 3 (magenta) Heater, Ink Melt 4 (Black) Heater

This test sequentially applies power to each of the heaters to verify the relationship between power applied and heating/cooling and to check the current drawn by each heater. Test results are derived for each heater. When information about a specific heater is requested, all of the heaters are tested as a group, then the data for the specified heater is reported.

R#	Definition	Typical Value	Actions
0	Initial Temperature (deg c)		Reports the temperature prior to application of heater power. This value may indicate how to interpret the following values as the temperature "bump" may be a different shape depending on initial temperature. In particular the printhead only reports a constant (room temperature), value if the temp is < 32 degree.
1	Average AC Current (amps)		Reports the difference from baseline AC current during the specified heating interval.For heaters with multiple elements in parallel, a significantly different value can indicate a partial failure. The nominal values could change with operating hours.
2	Average Voltage Change (volts)		Reports the difference from baseline AC volts during the specified heating period. Normally the changes should be small. Negative changes for high current heaters indicate the load provided by the printer is pulling down the external AC supply, indicating a more robust supply may be required.
3	Response Time (ms)		Reports the time after power is applied to the specified heater that the temperature begins to rise. For printhead temperatures < 32 deg, this time becomes the time at which the temperature reaches 32 deg. This is the propagation time of the heat pulse through the mechanism from the heating element to the corresponding thermistor.
4	End Heating Temperature (deg c)		Reports the temperature at the end of the specified heating interval. This may not be the actual temperature for printhead temperatures < 32 deg (normally the temp would be > 32 deg). For the linear portion of the heating curve (i.e. quite a ways from the setpoint), the end temp minus the initial temp is the parameter of interest.

Reservoir Heater, Jetstack Left Heater, Jetstack Right Heater, Paper Preheater, Drum Heater, Ink Melt 1 (yellow) Heater, Ink Melt 2 (cyan) Heater, Ink Melt 3 (magenta) Heater, Ink Melt 4 (Black) Heater (Continued)

This test sequentially applies power to each of the heaters to verify the relationship between power applied and heating/cooling and to check the current drawn by each heater. Test results are derived for each heater. When information about a specific heater is requested, all of the heaters are tested as a group, then the data for the specified heater is reported.

R#	Definition	Typical Value	Actions
5	Peak Temperature (deg c)		Reports the peak temperature after the heating interval ends. Normally the beginning temp would be subtracted. Indicates how much heat was produced during the heating interval and propagated to the thermistor.
6	Peak Temperature Time (ms)		Reports the time following the application of power to the specified heater until the peak temperature is reached. Shows the rate at which the thermal pulse propagated through the intervening structure.
7	Final Temperature (deg c)		Reports the final temperature at the end of the test. Note, for each heater this is a different time from heater power application. This value could be more effected than others by cross talk from other heaters (and the chassis generally warming). Shows the heat dissipation at the thermistor during cooling. Might indicate problems with airflow.

Check Paper Path Menu

Paper Drive Power

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.

R#	Definition	Typical Value	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 Lead Edge Times

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.

R#	Definition	Typical Value	Actions
Common			
0	Tray		Reports the tray from which the test paper was picked
1	Paper Size		Reports the size of the picked paper.
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		

Paper Lead Edge Times (Continued)

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.

R#	Definition	Typical Value	Actions
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.
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 Trail Edge Times

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.

R#	Definition	Typical Value	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 Trail Edge Times (Continued)

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.

R#	Definition	Typical Value	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).
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 Sensor Bounce Times

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.

R#	Definition	Typical Value	Actions
Common			
0	Tray		Reports the tray from which the paper was picked
1	Paper Size		Reports size of the picked paper
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.
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.

Paper Sensor Bounce Times (Continued)
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.

R#	Definition	Typical Value	Actions
7	Exit Bounce Interval (us)		Reports the interval during which the exit sensor bounces following the passage of the paper trailing edge.

Duplex Paper Drive Power

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.

R#	Definition	Typical Value	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).

Duplex Paper Lead Edge Times

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.

R#	Definition	Typical Value	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

Duplex Paper Lead Edge Times (Continued)

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.

R#	Definition	Typical Value	Actions
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.

Duplex Paper Trail Edge Times

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.

R#	Definition	Typical Value	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).

Duplex Paper Trail Edge Times (Continued)

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.

R#	Definition	Typical Value	Actions
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.

Duplex Paper Sensor Bounce Times

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.

R#	Definition	Typical Value	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

Wiper Drive
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.

R#	Definition	Typical Value	Actions
0	Up Motion Drive Error (uin)	120 to 275	Reports the average following error while move the wiper up from the low limit to the lock encounter point.
1	Up Motion Drive Error Ripple (uin)	35 to 150	Reports the difference between the max and min following error over the same interval.
2	Up Distance (uin)	3200 to 4600	Reports the difference between the max and min limits of travel when moving up.
3	Lock Encounter Distance (uin)	1300 to 2500	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	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	Reports the peak following error at the point the latch engages.
6	Down Motion Drive Error (uin)	-250 to -125	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	Reports the difference between the max and min following error over the same interval.
8	Down Distance (uin)	3200 to 4600	Reports the difference between the max and min limits of travel when moving up.
9	Lock Disengage Distance (uin)	-2000 to -50	Reports the distance up from the upper stall point at which the head lock latch releases.
10	Lock Disengage Peak (uin)	-800 to -150	Reports the peak following error at the point the latch releases
11	Bottom Encounter Distance (uin)	-2500 to -1800	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	Reports the time following the start of the turnaround motion that the motion drive error return to normal in the opposite direction.

Paper Path Drive

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.

R#	Definition	Typical Value	Actions
0	Forward Drive Power Level (watts)		Reports the average drive power level in the foreword direction.
1	Up Motion Drive Error Ripple (watts)		Reports the average drive power level in the backward direction.
2	Swing Arm Transition Time (sec)		Reports the time that the lower portion of the paper path drive is disconnected while the swing arm transitions to the other drive position.

X-Axis Drive

This test drives the X-Axis motor in each directions until the printhead stalls into the stops and then moves the printhead into the clear and performs an on the fly reversal. The power profile is used to confirm operational goals.

R#	Definition	Typical Value	Actions
0	Right Stall Power Level (watts)	5 to 10	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	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	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	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	Same as R2 except for the other direction of motion.

X-Axis Drive (Continued)
This test drives the X-Axis motor in each directions until the printhead stalls into the stops and then moves the printhead into the clear and performs an on the fly reversal. The power profile is used to confirm operational goals.

R#	Definition	Typical Value	Actions
5	Left Right Traverse Power Ripple (watts)	1.2 to 1.5	Same as R3 except for the other direction of. motion.
6	Turnaround Power Blip Width (watts)		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.

Transfix Drive Slow and Transfix Drive Fast
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.

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 3400	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)	150 to 1100	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)	-0.001 to 0.800	0.30 to 0.80	Reports the time from the unload command to the engine until the drum indicates no further contact.

Drum Maintenance Drive
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)

R#	Definition	Typical Value	Actions
0	Time to blade first contact (sec)	.01 to .35	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	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	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	Reports the difference between the max and the min Y-axis following error during the Roll With Both Loaded interval.
4	Roller Average Period (sec)	50 to 1600	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	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	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	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)		Reports the time from the unload blade command to the engine until the drum indicates no further blade contact.

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

R#	Definition	Typical Value	Actions
0	Tilt Engage Cap Position (min)	10 to 600	Reports the distance from the cap Home position to the tilt cam engage point.
1	Pre Standby Peak Location ()	325 to 3100	Reports the distance around the tilt cam from the tilt engage position to the pre standby peak. Should be in degrees, but currently units/ scaling are unverified.
2	Pre Standby peak Magnitude (pm ticks)	-5100 to -500	Reports the pm motor following error at the pre standby peak location.
3	Post Wipe Peak Location ()	1400 to 4150	Reports the distance around the tilt cam from the tilt engage position to the post wipe peak. Should be in degrees, but currently units/ scaling are unverified.
4	Post Wipe peak Magnitude (pm ticks)	-4000 to -75	Reports the pm motor following error at the post wipe peak location.

Tray 2, Tray 3, Tray 4, Lift Plate Drive
This test raises the lift plate to verify motion and sensor operation. If the test is requested for a 525-sheet feeder that is not installed, an “Option Not Detected” message is generated.

R#	Definition	Typical Value	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.

Tray 2, Tray 3, Tray 4, Lift Plate Drive (Continued)
This test raises the lift plate to verify motion and sensor operation. If the test is requested for a 525-sheet feeder that is not installed, an “Option Not Detected” message is generated.

R#	Definition	Typical Value	Actions
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 assembly.
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

Y-axis Encoder
Uses the sine and cosine sum data to determine the characteristics of the encoder disk and encoder sensors.

R#	Definition	Typical Value	Actions
0	Sin Sum Data Amplitude (sin sum units)	-11000 to 350000	Reports difference between the max and min Sin Sum average amplitude values.
1	Cosine Sum Data Amplitude (cosine sum units)	300000 to 500000	Reports difference between the max and min Cosine Sum average amplitude values.
2	Sin Sum Data Offset (sin sum units)	150000 to 800000	Reports average of the max and min Sin Sum average amplitude values.
3	Cosine Sum Data Offset (cosine sum units)	90000 to 450000	Reports average of the max and min Cosine Sum average amplitude values.
4	Home Notch Depth Ratio (none)	0 to 13	Reports the ratio between the notch bottom amplitude and the max amplitude value as reflected in the Sin Sum data.
5	Home Notch Width (sec)	50 to 90	Reports the width of the Home notch at 99% full depth as reflected in the Sin Sum data.
6	Home Notch Symmetry (none)	250 to 550	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.

Y-axis Encoder (Continued)
Uses the sine and cosine sum data to determine the characteristics of the encoder disk and encoder sensors.

R#	Definition	Typical Value	Actions
7	Amplitude Ripple (Sun Sum units)	25 to 75	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.
8	Max Position Ripple (mpts)	-140000 to 275000	Reports the max variation in the reported delta position between samples over the revolution.

Y-axis Geometry
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.

R#	Definition	Typical Value	Actions
0	Drum Normalized FFT Power (none)		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)		Reports the current drum frequency.
2	Motor FFT Power Ratio (none)		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)		Reports the current motor frequency.
4	FFT Power Ratio 1 (none)		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)		Reports the frequency of the most powerful FFT frequency (not including the drum or motor).
6	FFT Power Ratio 2 (none)		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.

Y-axis Geometry
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.

R#	Definition	Typical Value	Actions
7	Frequency 2 Frequency (hz)		Reports the frequency of the second most powerful FFT frequency (not including the drum or motor).

Y-axis Drive
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.

R#	Definition	Typical Value	Actions
0	HAHVN CCW Average Fe (mpts)	4000 to 5700	Reports average following error during the last half of the first period.
1	HAHVN CCW Fe Ripple (mpts)	100 to 380	Reports following error ripple during the last half of the first period.
2	HAHVN CW Average Fe (mpts)	-5200 to 3800	Reports average following error during the last half of the second period.
3	HAHVN CW Fe Ripple (mpts)	80 to 380	Reports following error ripple during the last half of the second period.
4	HAHVN Start Fe Settle time (sec)	0.08 to 1.0	Reports the time following the start of motion that it takes the following error value to enter the CCW ripple band.
5	HAHVN Reverse Fe Settle time (sec)	0.17 to 1.1	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	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	Reports the time following the start of motion that it takes the Y-axis delta velocity to enter the CCW delta velocity ripple band.

Y-axis Belt Slip

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

R#	Definition	Typical Value	Actions
0	Initial Peak Y-axis FE (mpts)	0 to 12000	Reports the amplitude of the first Y-axis following error peak.
1	Max Following Peak Y-axis FE (mpts)	0 to 11000	Reports the amplitude of the maximum Y-axis FE peak after the first.
2	Average Y-axis FE (mpts)	0 to 4000	Reports the average of the Y-axis following error during the roller down portion of the transfix operation.

Y-axis Belt Tension

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 for variations in tension during operation.

R#	Definition	Typical Value	Actions
0	Min Resonant Frequency (hz)	10 to 150	Reports the min resonant frequency over the data set.
1	Max Resonant Frequency (hz)	175 to 3000	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	Reports the amount of additional Y-axis rotation required to locate the min frequency configuration.

Stripper Contact
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.

R#	Definition	Typical Value	Actions
0	Engage Displacement (mpts)	-10 to 2	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	Reports time between engagement of the stripper solenoid and initial contact between the blade and the drum. May indicate the geometry of the mechanism (i.e. parts out of tolerance, mis-assembled, bent, etc.), causing an incorrect blade to drum gap.
2	Engaging Period (sec)	0 to 0.11	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	Reports the magnitude of the reaction of the drum to the contact of the blade. (See R2)
4	Release Displacement (mpts)	-0.75 to 2.2	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	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	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).

Stripper Contact (Continued)
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.

R#	Definition	Typical Value	Actions
7	Releasing Amplitude (mpts)	-45 to 0	Reports the magnitude of the reaction of the drum to the blade withdrawal (see R3).

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

R#	Definition	Typical Value	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

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

R#	Definition	Typical Value	Actions
0	Motor fe ripple (ticks)	0.08 to 0.60	Reports amount of variation of the motor following error over the recording interval.
1	Motor fe average (ticks)	0.5 to 0.7	Reports the motor following error average value of the recording interval.
2	Motor drive voltage ripple (volts)	0.34 to 1.3	Reports amount of variation of the motor drive voltage over the recording interval.
3	Motor drive voltage (volts)	-1.4 to -0.8	Reports average value of motor drive voltage over the recording interval.
4	Motor drive power ripple (watts).	0.25 to 1.8	Reports variation of motor drive power over the recording interval.
5	Motor drive power average (watts)	1.25 to 2.6	Reports average value of motor drive power over the recording interval.

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

R#	Definition	Typical Value	Actions
0	Motor Voltage A Ripple (volts).	84 to 86	Reports amount of variation of the motor phase A drive voltage over the recording interval.
1	Motor Voltage A Average (volts)	-0.120 to 0.13	Reports the motor phase A drive voltage average value over the recording interval.
2	Motor Voltage B Ripple (volts)	84 to 86	Reports amount of variation of the motor phase B drive voltage over the recording interval.
3	Motor Voltage B Average (volts)	-.012 to 0.1	Reports the motor phase B drive voltage average value over the recording interval.
4	Motor Drive Power Ripple (watts)	0.5 to 2.0	Reports amount of variation of the motor drive power over the recording interval.
5	Motor Drive Power Average (watts)	9 to 13	Reports the motor drive power average value of the recording interval.

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

R#	Definition	Typical Value	Actions
0	Motor fe ripple (ticks)	2.8 to 6.0	Reports amount of variation of the motor following error over the recording interval.
1	Motor fe average (ticks)	-4 to 3.0	Reports the motor following error average value of the recording interval.
2	Motor drive voltage ripple (volts)	5 to 11	Reports amount of variation of the motor drive voltage over the recording interval.
3	Motor drive voltage (volts)	1.3 to 2.3	Reports the motor drive voltage average value of the recording interval.
4	Motor drive power ripple (watts)	1.03 to 3.6	Reports amount of variation of the motor drive power over the recording interval.
5	Motor drive power average (watts)	1.5 to 3.5	Reports the motor drive power average value of the recording interval.

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

R#	Definition	Typical Value	Actions
0	Motor fe ripple (ticks)	.40 to 1.3	Reports amount of variation of the motor following error over the recording interval.
1	Motor fe average (ticks)	0.8 to 2.0	Reports the motor following error average value of the recording interval.
2	Motor drive voltage ripple (volts)	4 to 10	Reports amount of variation of the motor drive voltage over the recording interval.
3	Motor drive voltage (volts)	-5.5 to -2.0	Reports the motor drive voltage average value of the recording interval.
4	Motor drive power ripple (watts)	0.8 to 6	Reports amount of variation of the motor drive power over the recording interval.
5	Motor drive power average (watts)	1.9 to 7	Reports the motor drive power average value of the recording interval.

Tray 2, Tray 3, Tray 4, Lift Motor
his 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 a 525-sheet feeder that is not installed will generate an “Option Not Detected” message.

R#	Definition	Typical Value	Actions
0	Motor Peak Power (watts)	1 to 2.5	Reports max amount of motor power over the run interval.
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.

Tray 3 and Tray 4 Pick/Feed Motor
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 525-sheet feeder that is not installed will generate an “Option Not Detected” message.

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

Check Misc Menu

Paper Path Status

This test looks at the paper path sensors to identify if anything would prevent a page from printing. The front 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

R#	Definition	Typical Value	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

Paper Path Status (Continued)

This test looks at the paper path sensors to identify if anything would prevent a page from printing. The front 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

R#	Definition	Typical Value	Actions
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, Tray 3 and Tray 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

Temperature Status

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.

R#	Definition	Typical Value	Actions
0	Reservoir Temp	~127.7^{o}	Reports the current temperature
1	Left Jetstack	~134^{o}	Reports the current temperature
2	Right Jetstack	~134^{o}	Reports the current temperature
3	Preheater Temp	~62^{o}	Reports the current temperature
4	Drum Temp	~60^{o}	Reports the current temperature
5	Ink Melt 1 Temp	~50^{o}	Yellow (usually off)
6	Ink Melt 2 Temp	~50^{o}	Cyan (usually off)
7	Ink Melt 3 Temp	~50^{o}	Magenta (usually off)
8	Ink Melt 4 Temp	~50^{o}	Black (usually off)

Purge Pump

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

R#	Definition	Typical Value	Actions
0	Jetstack Temperature (deg)	~134^{o}	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)

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

R#	Definition	Typical Value	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.).

Voltages

This test determines averaged readings for key system voltages.

R#	Definition	Typical Value	Actions
Main Board Voltages			
0	5 Volts (volts)	~5V	
1	1.8 Volts (volts)	~1.8V	
2	2.5 Volts (volts)	~2.5V	

Voltages (Continued)

This test determines averaged readings for key system voltages.

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

Wiper Alignment

R#	Definition	Typical Value	Actions
0	The engage wiper position (min)		Reports the distance from wipe home to the tilt engage position.
1	Upper hard stop wiper position (min)		Reports the distance from wipe to home to the upper hard stop.
2			

Drum Maint/Transfix Home

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

R#	Definition	Typical Value	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

System Power-Up Sequence

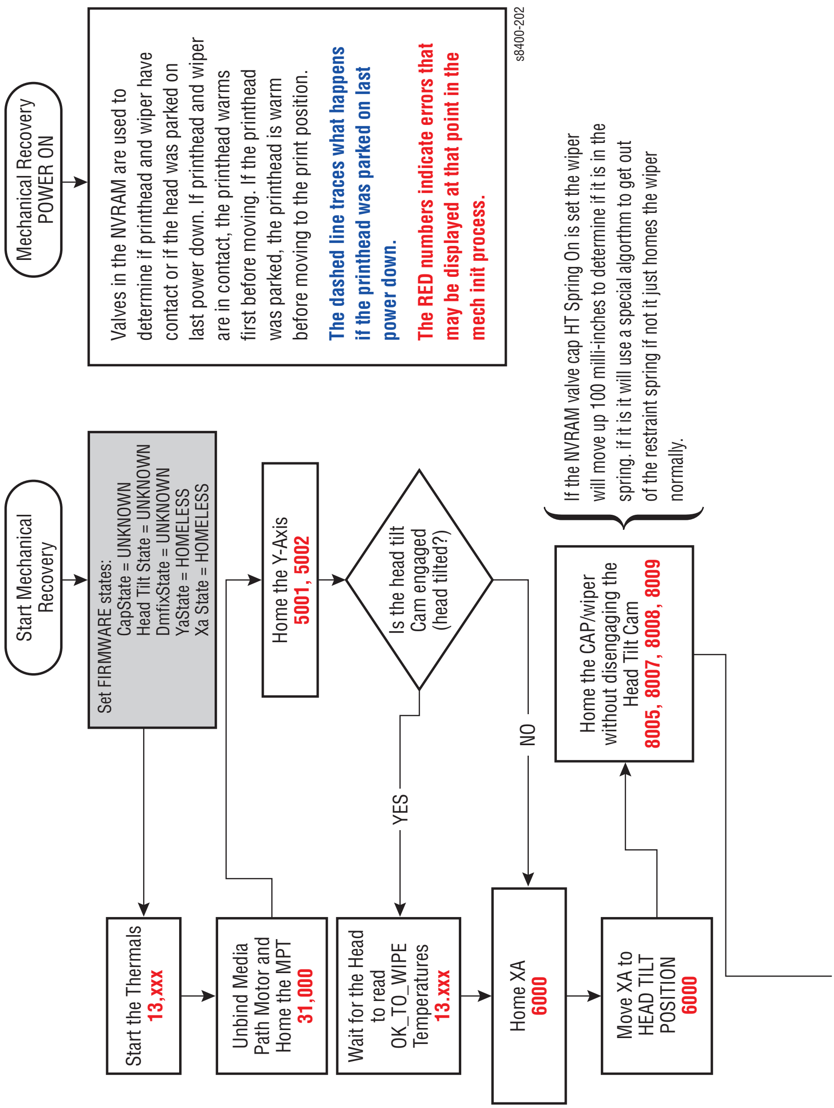
The following lists the chain of events that occur when you turn on a printer. You can follow this list as one means of determining if the printer is operating correctly. The exact chain of events depends upon the last power down condition and where the printer has last determined the printhead is positioned,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

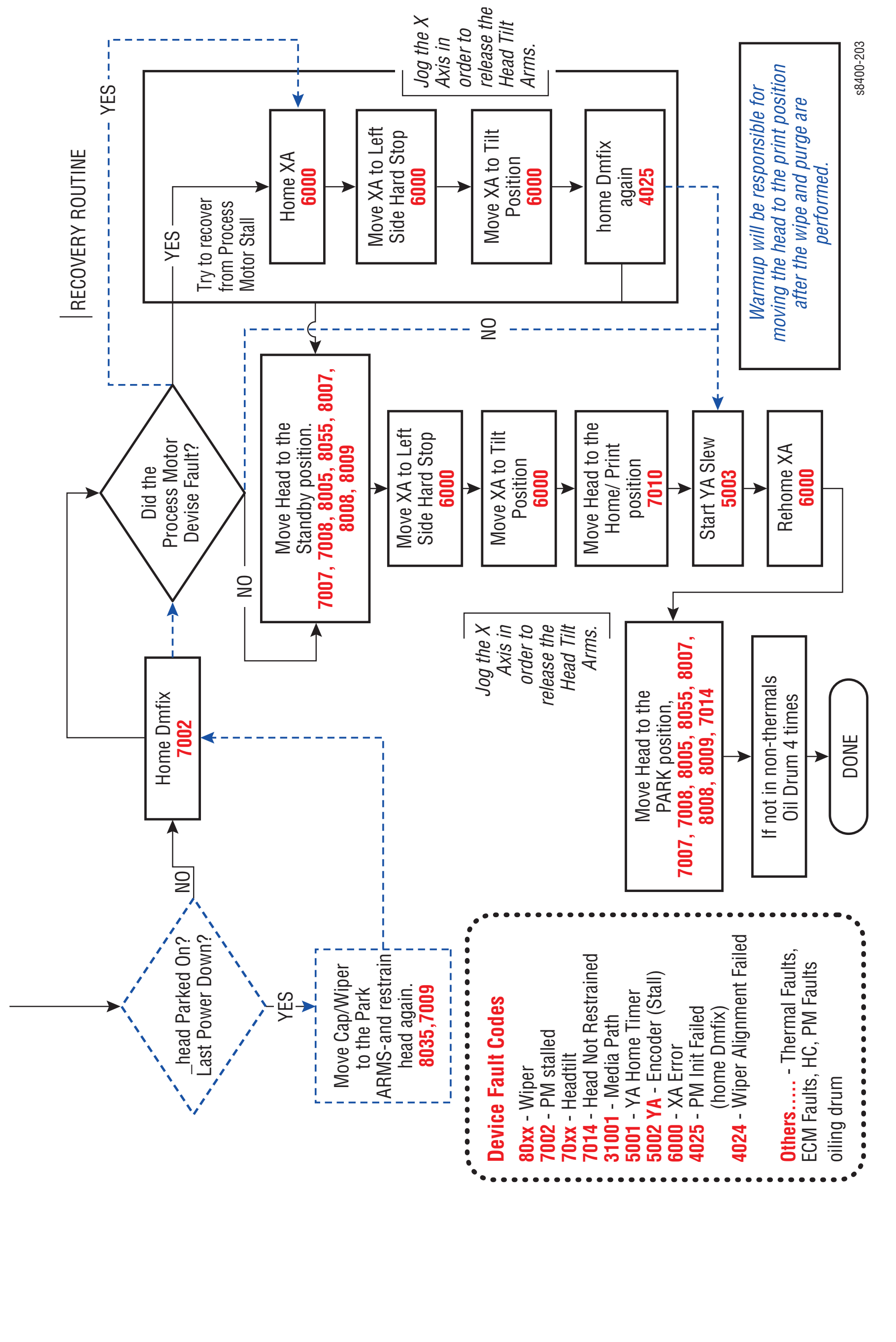
1. Power cord is plugged in and the power switch is turned on:
2. Power supply senses AC line voltage conditions (110 VAC or 220 VAC) and enables DC voltages. If an overload occurs, the printer turns off the high voltage DC supplies causing a “blink” effect on the front panel LEDs.
3. BIST test flashes 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 front panel; front panel LED turns red, green, orange, and then off, the front panel LCD goes black and then clear. The POST version is displayed 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 front 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 front panel displays the Xerox logo and turns on the green LED.

   If an error is detected, the error message is displayed 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 will hear clicking and there will be 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





RECOVERY ROUTINE
_head Parked On?
Last Power Down?
YES
NO
Move Cap/Wiper to the Park ARMS-and restrain head again.
8035,7009
Home Dmfix
7002
Did the Process Motor Devise Fault?
YES
Try to recover from Process Motor Stall
Home XA
6000
Move XA to Left Side Hard Stop
6000
Move XA to Tilt Position
6000
home Dmfix again
4025
Jog the X Axis in order to release the Head Tilt Arms.
NO
Move Head to the Standby position.
7007, 7008, 8005, 8055, 8007, 8008, 8009
Move XA to Left Side Hard Stop
6000
Move XA to Tilt Position
6000
Move Head to the Home/ Print position
7010
Start YA Slew
5003
Rehome XA
6000
Jog the X Axis in order to release the Head Tilt Arms.
Move Head to the PARK position,
7007, 7008, 8005, 8055, 8007, 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.
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
Others..... - Thermal Faults, ECM Faults, HC, PM Faults oiling drum
s8400-203

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:

1. 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.

If printhead, ink reservoirs, or jetstack temperature are below purge threshold, the printer performs a head clean 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 front 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 front panel display shows the warm-up progress. The Ready LED flashes; when warm-up completes, the Ready LED lights 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 front 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 needed. 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 in the specified sequence generally provides better test coverage than performing tests in a different order.

Error Message Displayed on Front Panel LCD

Printer has detected a fault condition.

1. See "Fault Code Definitions and Troubleshooting" on page 3-8 for definitions and solutions.

LCD Is Blank and the PS and PE Indicators 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.

1. See "Fault Code Definitions and Troubleshooting" on page 3-8 for definitions and solutions.

Printer Fails to Power-Up: PS, PE and the 3.3 V Indicator LEDs Are Not Illuminated

1. Printer is not receiving proper AC.

   Note

   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 4-65.

   a. Inspect the power cord.
   b. Verify AC outlet voltage and current capacities are within specifications.
   c. If necessary, move the printer to a different outlet and retest.

2. Transient on AC line tripped protective circuitry in printer power supply.
    a. Cycle power to printer to reset protective circuits in power supply.
3. Short circuit on 3.3 V power 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.

    d. Unplug the following electronics module connectors: 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)
- Printhead data (J130)
- Waveamp signal (J790)
- Power Control left (J390)
- Y-Axis motor (J280)

    e. Plug in power cord and turn on power to the printer
    f. If the PE and PS indicators do not flash, the short is inside the electronics module. Replace the electronics module and retest the printer. If PE and PS indicators flash, continue with debug.
    g. Plug in all cables removed during service.
    h. 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.
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 front panel connector (J220) on the I/O board. This removes the front 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, 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 front 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 front panel connector J220 on the I/O board. This step adds the front 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, the short is on the front panel. Replace the front 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 reattach 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. REQURIED: Follow all procedures from 'Short circuit on 3.3 V power supply within the electronics module' before proceding.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 front 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, 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 Is on and Can Print Pages, but the Front Panel Appears Frozen and No Error Messages Are Displayed

Note

Opening and closing the front door of the printer causes a reset of the entire front 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. Front Panel failure
   a. Unplug the original front panel at connector ('C' / J220) and plug in a known working front panel. This step checks for a keypad or LCD failure in the front 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.

Printer Front Panel Is Functional, but Printer Won't Print Jobs Sent from Computer

1. Computer driver incorrect or improperly installed
   a. Verify printer hardware is functional by sending a test print via the printer front 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, focus of problems within the printer (internal settings corrupted.
   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.

   Note

   Using the parallel or USB port eliminates any network complexities associated with an Ethernet port.

   e. If test computer is unsuccessful, continue with debug.
2. Customer network or printer's Ethernet port not properly configured
   a. Please see chapter 4 of service manual for procedures related to communication problems.
3. Printer internal settings corrupted.
   a. Use the front panel 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. Internal fault
   a. Record any error codes and report to Xerox Office Group. If the printer detects an error, the printer will attempt to correct the problem by rebooting and reinitializing (for up to three times). After the third cycle of rebooting, an error code will be displayed on the LCD and flashed on the PS and PE indicators.

Printer Fails to Enter ENERGY STAR Mode

1. Model not certified as an ENERGY STAR model.
   a. Use the front panel to enable Energy Star mode (Printer Setup -> Printer Control -> Select Power Saver Timeout). Many 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 all procedures from 'Model not certified as an Energy Star model' 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 Maintenance Kit

1. Maintenance kit missing or not fully seated.
   a. Fully install maintenance kit.
2. Connector not fully seated.
   a. Check I/O board connector J860 for proper mating.

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.

Printer Optional Features Not Available

1. Printer configuration incorrect.
   a. Verify proper configuration of printer using front panel.
2. Computer print driver configured incorrectly.
   a. Examine print driver setup to ensure printer driver setup doesn't override desired features set via front 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, 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 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. HCF faulty.
   a. Turn off printer and wait 30 seconds for power supply capacitors to discharge.
   b. Replace HCF.
   c. Perform full test of printer.

Printer Is On (Electronics Module LEDs are Illuminated) but the Printer Cannot Print Pages and the Front Panel Appears Frozen and No Error Messages Are Displayed

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 & PE indicators are steady and dimly-on, replace the electronics module, reassembly and retest printer.
   c. If the PS & 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)
- Waveamp signal (J790)
- Power Control left (J390)
- Y-Axis motor (J280)

h. This step removes all other circuits so the electronics module can be tested alone.

i. Plug in power cord and turn on power to the printer.

j. The PE and PS indicators should flash an error code reporting that the front 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.

k. Turn off printer and wait 30 seconds for power supply capacitors to discharge

l. Unplug the following electronics module connectors:

- Power Control to I/O board (J800)
- Power Control right (J400)
- Printhead data (J130)
- Waveamp 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 front panel from functioning.

m. Plug in the I/O board connector ('P' / J800) in the electronics module. This step adds the I/O board and front panel to the electronics module.

n. Turn on power to the printer.

o. If the electronics module, I/O board and front panel are working, the error code 34,001.43 should be displayed on the LCD to indicate the printhead is disconnected.

p. If the correct error code is not displayed, replace the front panel and I/O board and verify the correct error code appears on the LCD. Retest electronics module, I/O board, front panel combination.

q. If the correct error code is displayed, continue with the next steps of the procedure.

r. If no error code is displayed, return the original front panel and I/O board to the printer, replace the electronics module and then continue with the next steps of the procedure.

s. If a different error code is displayed, see the "Fault Code Definition Table" on page 3-7 for a definition of the problem and the procedures needed to solve the problem.

2. Repeat the following 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 following 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 following 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 a Built in Page.

1. If not already on, turn on the printer. If the printer does not begin initializing, go to the topic, "Measuring AC Power Supply Voltages" on page 4-65.

2. Once the **Power** light is on (not blinking) and the front panel displays `Ready to Print` it is now possible to print any built-in pages.

3. If the printer prints the Page, the print engine is working correctly. If the printer does not print the Page, then a problem exists with the print engine.

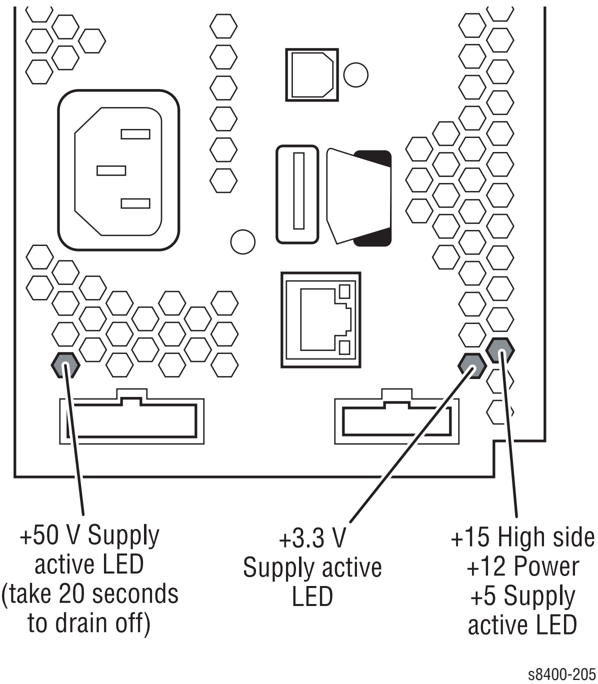
Verifying Power Supply Operation

Required tools

- TORX T-20 screwdriver
- Digital Multi-Meter (DMM)

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 driver, which shuts down the power supply.



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 and proper shut down is followed by a power off signal to the power supply. The printer may be operating for a considerable time after the switch is turned off.

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 front panel.

Detecting condition of Fuse F2 and F3

1. The drum and preheater connect to F2.
2. The printhead and ink loader connect to F3.
3. Turn the power switch off and wait for the printer to shut down.
4. Unplug the power cord.
5. Remove the Ink loader Assembly and Door as specified on page 8-8.
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 has not been damaged.
    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 has not been damaged.
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. Replace the Inkloader Assembly and Door 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.

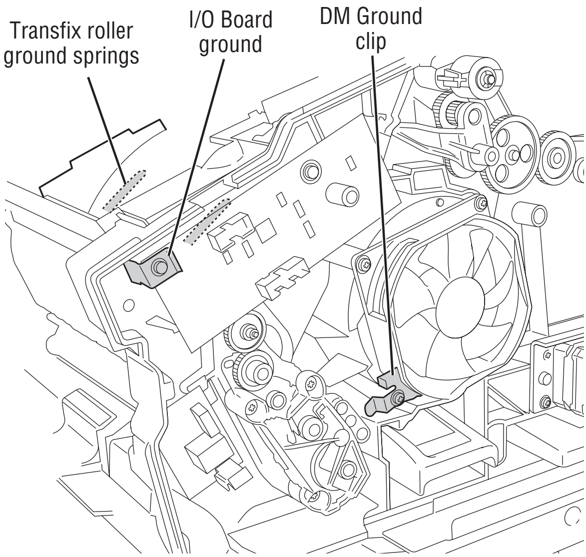
Ensuring Ground Integrity

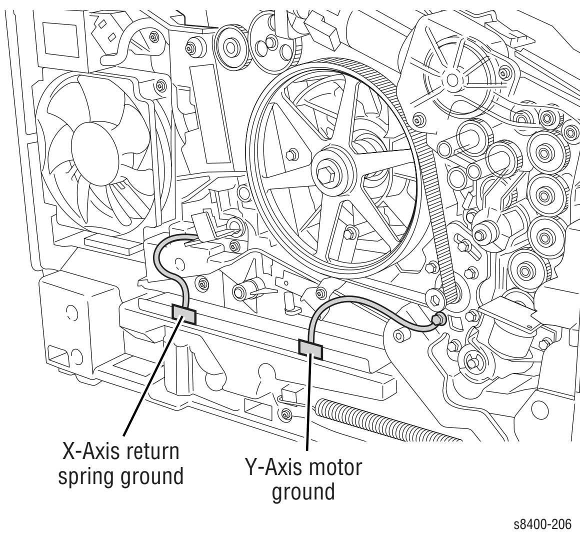
Intermittent or missing ground connections can result in minor interferences in the printer. As examples:

- Front 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 that need to be checked.


Transfix roller ground springs
I/O Board ground
DM Ground clip


X-Axis return spring ground
Y-Axis motor ground
s8400-206

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 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 motor	1.5 +/- 20% ohms/phase
Wiper drive clutch	132 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 3-8 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 printers front panel Menu.
2. Ensure the printer is operating under the right environmental conditions, see Chapter 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.

Paper-Pick Errors - Trays 2, 3, and 4

Paper-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 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 8-24).
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 8-24).

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 4-65.
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 front panel to ensure the problem is not printer related. There is additional help available at www.xerox.com/office/support. You can access the infoSMART Knowledge Base, 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. At the printer front 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 front 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 front 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 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 currently installed on the computer, you must 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 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 Phaser 84400 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.

To print an Event Log or Runtime Log:

1. Enter normal 'Customer Mode'.
2. From the main menu, highlight **Troubleshooting** and press **OK**.
3. Scroll and highlight **Network Log Pages** and press **OK**.
4. Highlight the appropriate menu item from the list and select **OK**.

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. Alternately, you can email the trace to your RSS for his interpretation. You will need the following:

- Computer with a serial port
- Null modem serial cable
- Serial cable adapter, part number 174-3493-00 (Same adapter used to run PC-based diagnostic on Phaser 340 -360 and Phaser 840 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 hardware control.
2. Turn off the printer.
3. Remove the rear panel to access the main board.
4. 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.
5. Start up a terminal program such as in window's HyperTerminal (usually located in Programs:Accessories:Communications:HyperTerminal). 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. Save the trace as a file, if necessary.

Print-Quality Troubleshooting

In this chapter...

- Print-Quality Problems Overview
- Analyzing Service Test Prints

Section 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.

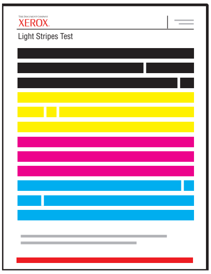
Diagnosing Print-Quality Problems

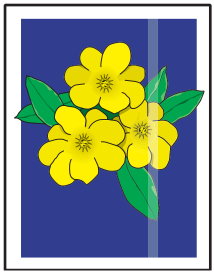
The **Troubleshooting Print-Quality Page** provides a good overview of the most common print quality problems. To print the **Troubleshooting Print-Quality Page**, follow these steps:

1. From the front 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 5-24.

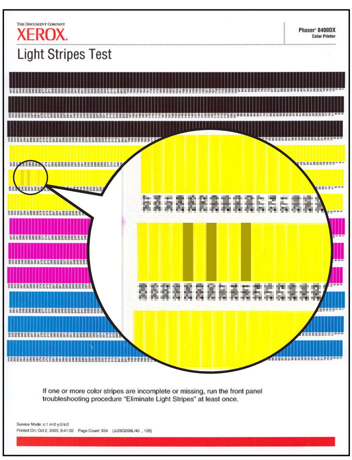
Random Light Stripes





One or more color bars are missing on the test page.

Step	Question and Actions
1	At the printer's front panel, select **Troubleshooting**, select **Print Quality Problems**, select **Eliminate Light Stripes**, then press the **OK** button.
2	Under the exit cover, lift the green guide, wipe the plastic paper release blade with a lint-free cloth, then close the exit cover.
3	Open the side door on the right panel, remove the orange maintenance kit, wipe the clear plastic wiper blade with a lint-free cloth, replace the maintenance kit, then close the side door.
4	Repeat Step 1 up to 3 times if the stripes still appear.

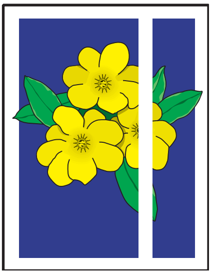


s8400-173

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"13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-31.

5	If the problem continues, turn off the printer for at least 4 hours.
6	Turn on the printer and if necessary, repeat Step 1.
7	If the problem continues, follow the instructions on the "Printhead Troubleshooting Checklist".

Predominate Light Stripes



All four color bars are missing on the test page.

Note

If there are a series of regularly spaced white lines approximately 6 mm (.25 in.) apart see “White Stripes (Pinstripes)” on page 21.

Step	Question and Actions
1	Open the exit cover, inspect the paper-exit area for debris.
2	Under the exit cover, lift the green guide, carefully wipe the plastic paper release blade with a lint-free cloth, then close the exit cover.
3	Open the side door on the right panel, remove the orange maintenance kit, wipe the clear plastic wiper blade with a lint-free cloth, reinsert the maintenance kit, then close the side door.
4	If the problem continues, follow the steps for “Random Light Stripes” on page 3.

Smudges or Smears

Smudges or smears appear on the page.

Step	Question and Actions
1	Under the exit cover, lift the green guide, carefully wipe the plastic paper release blade with a lint-free cloth, then close the exit cover.
2	At the printer's front panel, select **Troubleshooting**, select **Print Quality Problems**, select **Remove Print Smears**, then press the **OK** button. The printer will clean the ink from the preheater and exit rollers by running several sheets of paper through the printer.
3	Repeat Step 2 up to 3 times if the smears still appear.
4	If the problem continues, verify that a supported paper type is being used. At the printer's front panel, select **Information**, select **Information Pages**, select **Paper Tips Page**, then press the **OK** button.
5	If the problem continues, open the side door on the right panel, remove the orange maintenance kit, wipe the clear plastic wiper blade with a lint-free cloth, reinstall the maintenance kit, then close the side door.

Printing Too Light or Too Dark

Step	Question and Actions
1	Verify that the paper type selected on the front panel matches the paper in the printer. If you are printing on a transparency, verify that the paper type is set to transparency in the computer software application or the printer driver.
2	Confirm that you are using media from the approved media list. For information about the approved media list, see "Xerox Supplies" on page 9-16.
3	Try a different print mode.
4	If some improvement is seen, the ink may be discolored due to a long time without use. Print the solid fill test print for the color with the problem, see “21: Primary Solid Fills 10x” on page 32. If the problem still occurs in one color, purge up to 10 additional times to clear the ink.

Not Printing

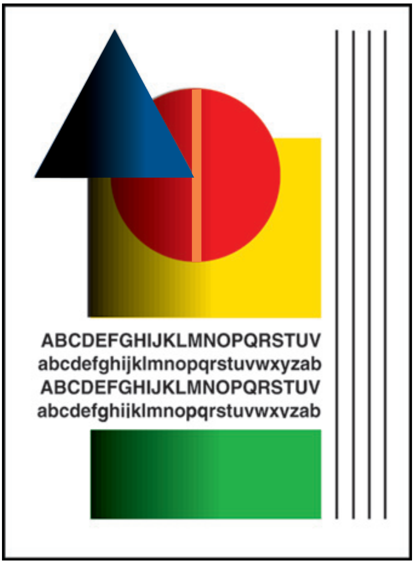
The printer processes a sheet of paper, but no image is printed on it.

Note

Blank sheets accompanying multi-picks or chase pages following a jam are a part of normal operation.

Step	Question and Actions
1	Ensure that no paper is jammed between the printhead and the drum.
2	Inspect the wave amp cables and the data cables going to the printhead, replace if necessary.
3	Follow the instructions on the “Printhead Troubleshooting Checklist”.
4	Replace the Electronics Module.
5	Replace the signal cable.

Color is Uneven or Color is Wrong



0388-45

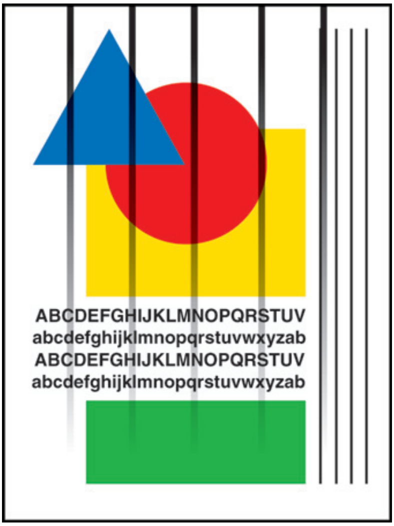
This may be due to incorrect colors in the ink loader, old ink in the printhead, color mixing at the faceplate, or drum thermal problems.

Note

Using non-Xerox ink may cause unpredictable color results.

Step	Question and Actions
1	Remove discolored jets in the printhead jets by printing the solid fill test print in the color with the discolored jets. For instructions on printing solid fill test prints, see "13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-31.
2	Clean the maintenance kit wiper blade.
3	Purge the printhead up to three times. If some improvement is seen, the ink could be discolored due to a long period of time without use. Print the solid fill test print for the problem color until the problem resolves. See"13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-31.
4	Check the thermal regulation of the Drum using diagnostics check test. For information about diagnostics, see “Service Diagnostics Mode Menu” on page 5.

Streaks or Lines Down the Print



0388-41

There are several possible causes of streaks running down the length of a print.

Step	Question and Actions
1	Check for media in the exit path.
2	Clean the maintenance kit wiper blade. Inspect the operation of the maintenance kit. If necessary, replace the maintenance kit.
3	Inspect the printer for anything touching the drum. For example, check the exit area, under the exit frame, the preheater, the maintenance kit and the printhead, including the paper release blade. If necessary, clean the paper release blade.
4	If streaks are on the front side of a 2-sided print, the paper preheater may be scraping ink off the print. Look for ink shaving alongside the streak. Clean the preheater using the front panel initiated cleaning process **Remove Print Smears**.
5	Possible missing, weak, or discolored jet. Print the Service Test Print 1: **Weak/Missing Jet** to determine if a jet is missing or weak. If there are discolored jets, print the solid fill test print in the color with the discolored jets. For instructions on printing solid fill test prints, see"13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-31.
6	The X-Axis Drive is not functioning correctly. If the X-Axis Drive does not move the printhead smoothly and evenly during printing, vertical lines appear in the print. For more information about X-Axis Drive problems, see "White Stripes (Pinstripes)" on page 21.
7	Smears on a duplex print can also be caused by the paper preheater operating at a too high temperature. Use the diagnostics to check the paper preheater's temperature. Replace, if necessary.

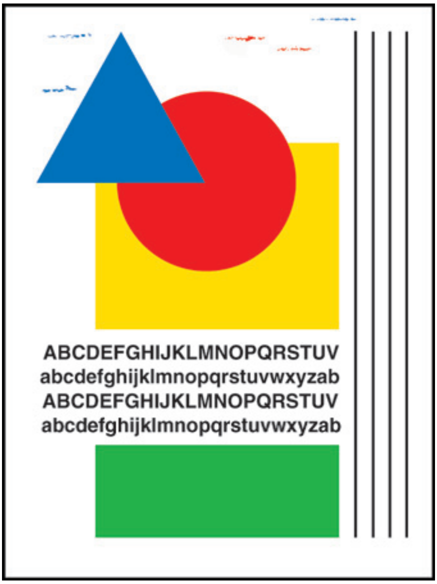
Scratches or Marks Parallel to the Long Axis of Printing, Particularly with Film

0388-68

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.

Step	Question and Actions
1	Inspect the exit area for anything that may be touching the drum.
2	Clean the paper release guide.
3	Inspect the maintenance kit. If print defect is a thin line that is glossier than surrounding area, it may be due to a defect on the wiper blade.
4	Print on a transparency in Tray 1 (MPT) to see if the scratch appears on the print. If it does not, the scratch occurred in the paper pick and early transport from Tray 2, 3, or 4. Try changing the Paper Pick Guide, front door, or maintenance kit. If the scratch appears on the non-printed side. NOTE: To determine where the scratch is originating, project the transparency and put a small drop of water on the scratch. If the scratch disappears, the scratch is on that side. If the scratch does not disappear, follow these steps on the other side. This can help to determine where the problem is originating.
5	A scratch or smear can be caused by debris build-up on the paper preheater heating surfaces. Run the front panel cleaning procedure **Remove Print Smears**. Force a sheet of thick 65- to 80-lb. paper through the paper preheater to “buff” the paper preheater heating surfaces. With the leading and trailing ends of the sheet of paper extending from the entry and exit of the paper preheater, gently pull the sheet of paper back and forth several times and then remove the sheet of paper. Be careful of the paper-sensor flags.
6	Inspect all paper guides (for example the exit guide) for nicks and cuts. Replace if necessary.

White Portion of Print is Colored

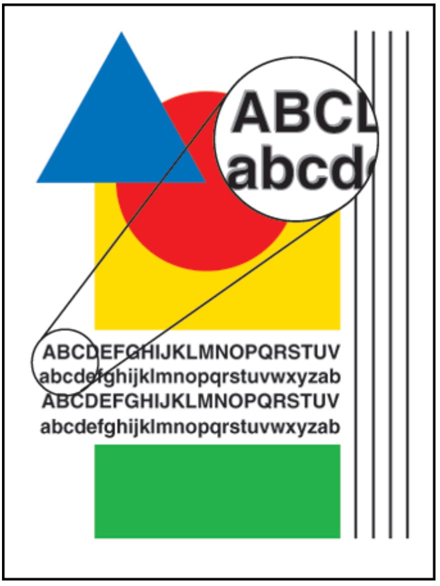


0388-69

Color on a 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 maintenance kit may be the problem.

Step	Question and Actions
1	Print using a smoother, quality paper. Some recycled paper brands may be too rough. Watermarked paper may also have this problem.
2	Clean the maintenance kit wiper blade. If necessary, replace the maintenance kit.
3	Clean the paper release blade.
4	Print a Chase Page, see “28: Chase Pages” on page 34.
5	The paper preheater may be contaminated with ink. Clean for ink smears using the front panel troubleshooting function **Remove Print Smears**.
6	Run diagnostics to ensure that printer temperatures are in tolerance. Inspect the drum thermistor. Clean or replace the drum thermistor if necessary.
7	Dark rectangular marks on transparency film can be caused by an accumulation of paper dust and oil on the feed rollers. Run 2 or 3 sheets of blank paper through the printer to clean the rollers or manually clean the rollers.
8	Follow the instructions on the “Printhead Troubleshooting Checklist”.

Fuzzy Text

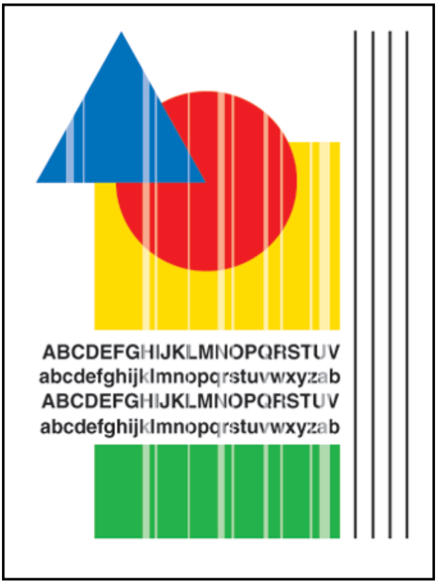


0388-70

Text appears indistinct and difficult to read.

Step	Question and Actions
1	Print using a smoother, quality paper. Some recycled paper brands may be too rough.
2	Try a higher quality print mode, such as Enhanced or High Resolution/Photo mode.
3	Verify the drum temperature using diagnostics. Ensure the drum temperature sensor is clean and properly positioned.
4	Verify the operation of the Y-Axis encoder using diagnostics. Replace the drum assembly if needed.
5	Verify the head is tilted forward against the drum in the print position.
6	Follow the instructions on the “Printhead Troubleshooting Checklist”.

Poor Primary Color Fills

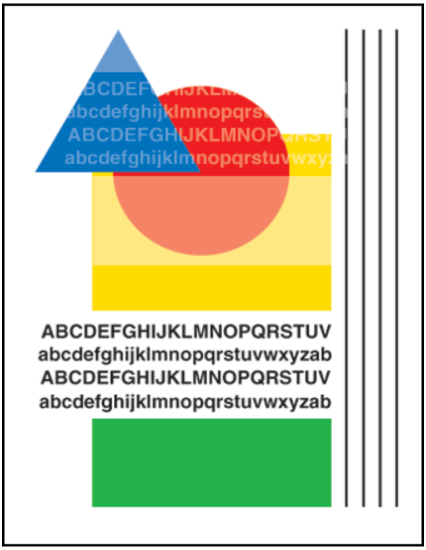


0388-47

Primary fills appear banded and inconsistent.

Step	Question and Actions
1	Possible missing, weak, or discolored jet. Print the Service Test Print 1: **Weak/Missing Jet** to determine if a jet is not missing or weak. If there are discolored jets, print the solid fill test print in the color with the discolored jets. For instructions on printing solid fill test prints, see"13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-31.
2	Verify the operation of the Y-Axis encoder using diagnostics. Replace the drum.
3	If the bands are uniform in a corduroy pattern, check the X-Axis motion. For additional information, see "13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-31.
4	Follow the instructions on the “Printhead Troubleshooting Checklist”.

Ghosting



0388-71

The image from a previous print is on the current print.

Step	Question and Actions
1	Occasionally, if the prints have been sitting atop one another, the pressure of the stack and the heat of the printer can cause blocking. This has the appearance of ghosting. Try printing the image(s) again without the prints stacking on each other in the output tray.
2	Run multiple prints; the first 2-sided print will have the worst ghosting. Some transfix roller ghosting is inherent to the printer; however, the prints should get better with multiple prints.
3	Inspect the maintenance kit. Replace the maintenance kit if necessary.
4	Run diagnostics to verify the drum maintenance system is operating correctly. Replace the defective parts.
5	Ensure that the drum temperature sensor is clean and properly positioned. Clean, realign, or replace the sensor.

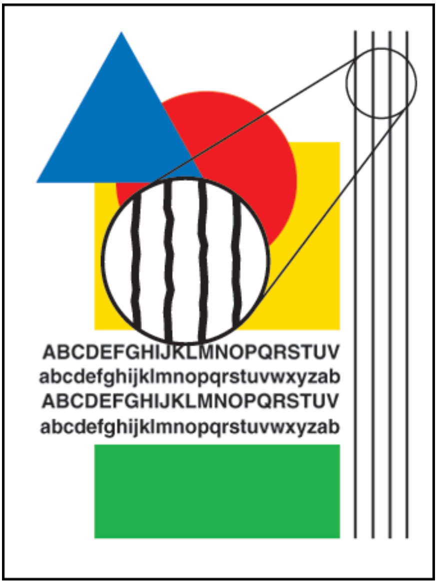
Poor Small Text Resolution

0388-70

Small characters appear heavy and "plug up."

Step	Question and Actions
1	Use a higher resolution print mode, such as Enhanced or High Resolution/Photo mode.
2	Inspect and clean the drum temperature sensor.
3	Verify the drum temperature using diagnostics. Ensure that the drum temperature sensor is properly positioned.
4	Ensure that the X-Axis Drive system is correctly assembled and lubricated. Use only the lubrication approved for this printer (006-7997-00). Other lubricants can damage plastic parts in the printer. For disassembly information, see "X-Axis Motor Assembly" on page 8-53.

Vertical Lines Appear Wavy

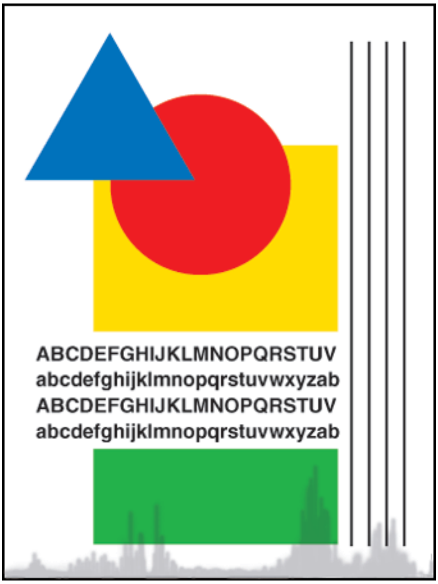


0388-50

Straight vertical lines appear to be wavy and ill-formed.

Step	Question and Actions
1	Too much oil on the drum. Inspect the maintenance kit. If necessary, replace the maintenance kit.
2	Confirm that nothing is interfering with the X-Axis motion, such as a poorly dressed cable or a loose screw.
3	Very that the drum maintenance cam roller and pivot plate are operating correctly. Test them using diagnostics.

Oil Streaks on Print

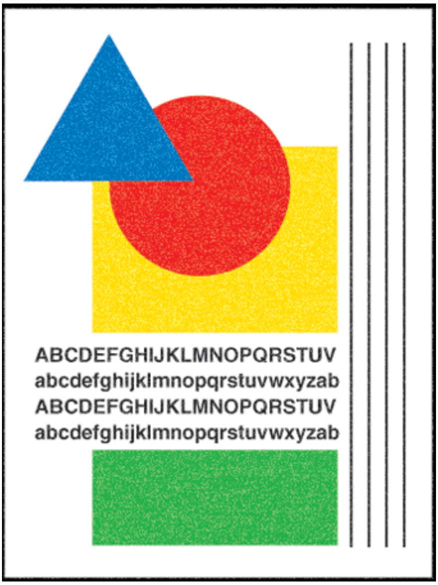


0388-51

Oil stains the edge of the print.

Step	Question and Actions
1	Run chase pages through the printer to clean the drum. Use the front panel menu item **Remove Print Smears**.
2	Clean the paper release blade and the exit guide.
3	Verify that the drum maintenance cam roller and pivot plate are operating correctly. Test them using diagnostics.
4	Inspect the maintenance kit. If necessary, replace the maintenance kit.

Incomplete Image Transfer to Paper



0388-72

All of the image does not transfer to the paper.

Step	Question and Actions
1	Use media from the approved media list. Media that is not smooth or too light can cause this problem, use higher quality or heavier media. NOTE: This problem may occur within the watermark of watermarked paper.
2	Flip over the media, or try a higher quality print mode.
3	Inspect the maintenance kit. If necessary, replace the maintenance kit.
4	Verify that the maintenance cam and pivot plate are operating correctly. Test them using diagnostics. Inspect the pivot plate for damage.
5	Ensure the drum temperature sensor is properly positioned and has no contamination between it and the drum surface.
6	Verify the paper preheater temperature using diagnostics.
7	Transfix load system may be worn, resulting in low transfix pressure. Replace the Transfix load assembly and transfix load arm.

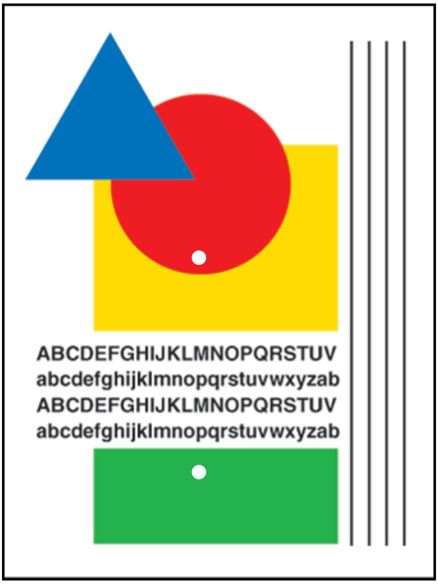
Ink Smears on First Printed Side of Duplex Print

0388-73

Preheater temperature is too high.

Step	Question and Actions
1	Clean the paper release blade.
2	Inspect the duplex paper path for obstruction, contamination, debris, or damage.
3	Run **Clean Print Smears**.
4	Verify the paper preheater temperature using diagnostics.
5	If necessary, replace the paper preheater.

Repeating Print Defects on Print

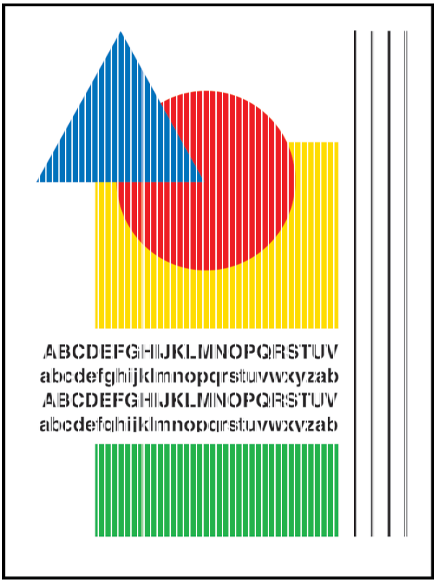


s8400-165

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.

Step	Question and Actions
1	Repeating defect 11.6 cm (4.58 in.) are caused by the transfix roller. Clean the transfix roller. Defect does not move in X-position. NOTE: To clean the transfix roller: use a rag saturated with a small amount of isopropyl alcohol to lightly scrub the transfix roller.
2	If the problem persists, replace the transfix roller.
3	A single repeating defect on the page with the defect on each page having a different Y-Axis position and is always in the same X-position is probably due to a defect on the drum. home position of the drum changes every print. Clean or replace the drum assembly.

White Stripes (Pinstripes)

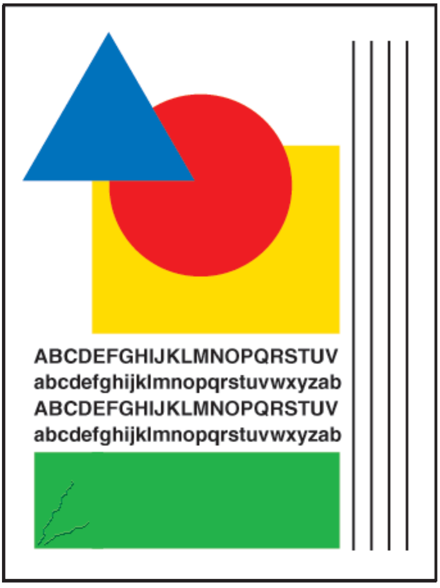


s8400-200

This print-quality problem has a series of regularly spaced white stripes approximately 6 mm (.25 in.) apart. If the X-Axis Drive does not move the printhead smoothly and evenly during printing, vertical lines appear in the print.

Step	Question and Actions
1	Print Service Test Print 13-19: Solid Fills to reveal an X-Axis problem. See “21: Primary Solid Fills 10x” on page 32.
2	Confirm that nothing is interfering with the X-Axis motion, such as a poorly dressed cable or a loose screw.
3	Ensure that no wiring harnesses are interfering with the horizontal movement of the printhead.
4	If indicated, replace the X-Axis Drive.

Wrinkling



0388-74

The print is usually damaged in a corner with solid fills. This problem is more often seen on short-grain media. Some wrinkling on envelopes flaps is an acceptable limitation of this printer. You may see wrinkling on the second side of a 2-sided print on the secondary colors.

An underline under the dimension indicates the direction of the grain.

Step	Question and Actions
1	Use media from the approved media list.
2	Try flipping the media over or using a heavier weight.
3	Try different media from a sealed package. In high-humidity environments, paper left exposed (unpacked) absorbs moisture and begins to warp.
4	Increase the margin size of the image, if feasible. Wrinkling generally occurs in solid fills near the print's edge.
5	Inspect the maintenance kit wiper blade. If necessary, replace the maintenance kit.
6	Replace the transfix roller, transfix cam, transfix load arm, and 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 in 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 paper 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.

Analyzing Service Test Prints

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. This section shows how to select and analyze all test prints available to the Phaser 8400 printer. To access the Service Tools menu: From anywhere within the menu (not diagnostics), press and hold the **Up Arrow** button, then press the **OK** button. You can also press and hold the **Cancel** button, then press the **OK** button. 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.

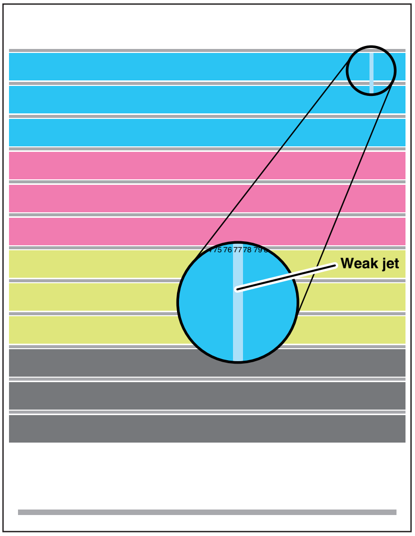
Test Print Examples

1: 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.

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 assembly or the wiper assembly may not be compliant. Verify that Xerox ink is being used. Follow the instructions on the "Printhead Troubleshooting Checklist".

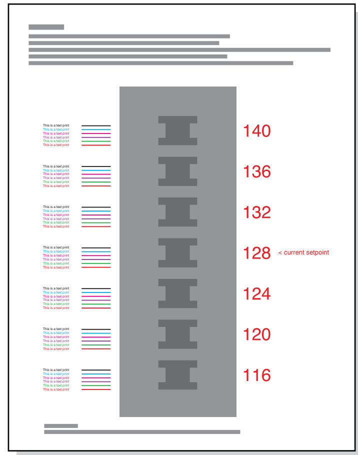


s8400-138

Test Print Examples (Continued)

2: X-Axis Motion (Drop Mass Evaluation)

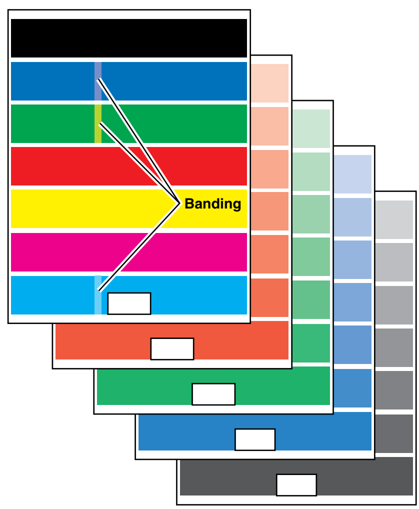
For X-Axis Motion problems, see Service Test Prints 13-19 (solid fill prints).
This print is used by Engineering and Manufacturing. The print must be printed on Xerox Photo Paper. Using a lower grade paper will result in inaccurate measurements.



s8400-199

3: 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 5-24). 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 "Printhead Troubleshooting Checklist".



s8400-139

Test Print Examples (Continued)

4: 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.

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.

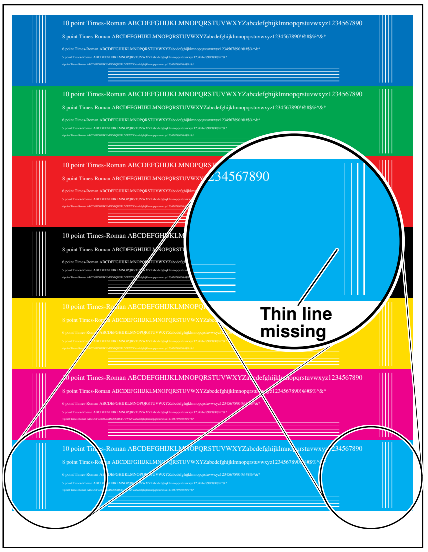
Causes:

NOTE: Ensure that the printer is not in High Resolution/Photo or Standard print mode.

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.

Ensure the printhead drive voltage is set to the default 128.



9923-116

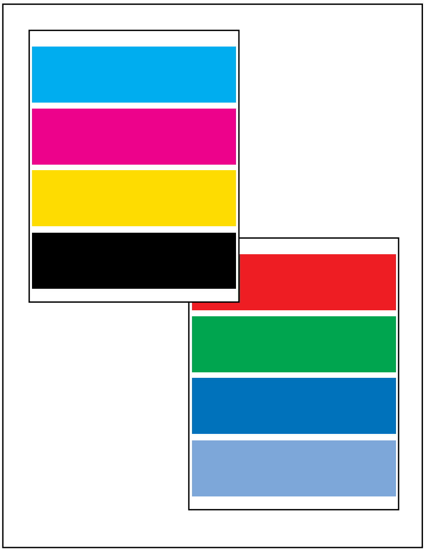
5: Big Bands OHP

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.

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 5-10.



9923-117

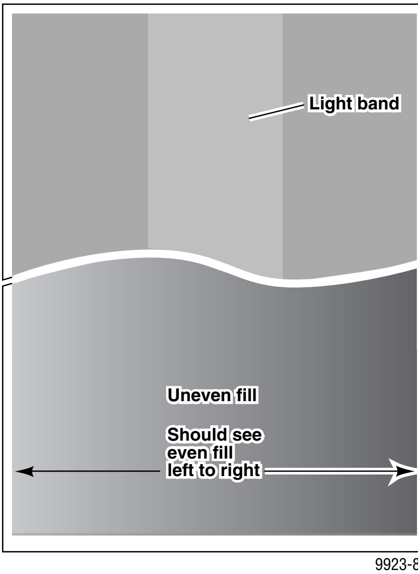
Test Print Examples (Continued)

6: Gray Fill, Dot Size Uniformity

This print is made up of a 66% black fill. It reveals variations in the ink-drop-spread caused by thermal variations, transfix roller pressure variations, or drum oiling variations.

Look for:

1. 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 with each other, in the print every 125 mm (5.0 in.).
2. 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 a high-quality grade of printer paper; otherwise, the print appears mottled.



Causes:

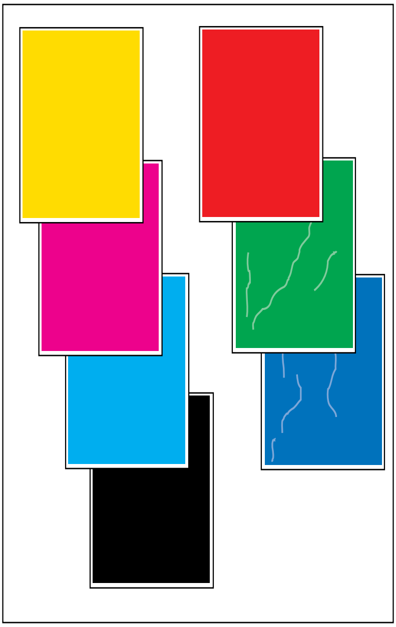
1. Use the diagnostics to check the printhead and drum for correct thermal regulation. Ensure the drum fan is running properly. A vertical band, 1/3 of a page wide, running the length of the page, is caused by a stuck heating plate in the paper preheater. Run the front panel cleaning procedure **Clean Print Smears,** 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 lbs.) 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.
2. 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.

7: Manuf. Five Duplex GSF

This print is used by Manufacturing and Engineering.

Test Print Examples (Continued)

8: YMCKRGB Solid Fills



9923-119

These seven prints show uniformity of fill. If colors are uneven or wrong, see "Color is Uneven or Color is Wrong" on page 5-8.

Look for:

1. Even, uniform fills throughout each print.
2. 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:

1. Weak jets or uneven drum heating may cause uneven fills.
2. 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.

9: Drum Seal

This print is not supported for this printer.

10: Manuf. Paper Path

These prints are used by Manufacturing and Engineering.

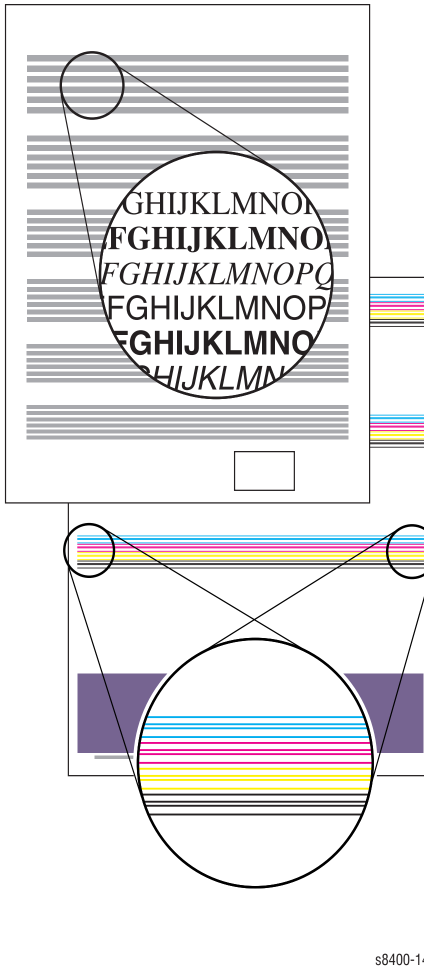
11: Head-to-Drum Gap

These prints indicate if the gap between the printhead and the drum is correct.

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.



12: Manuf X-Axis (Scanner)

This print is used by Manufacturing and Engineering.

Test Print Examples (Continued)

13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills

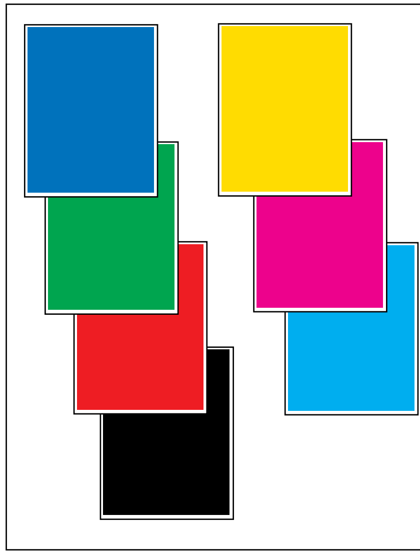
This prints show uniformity of fill.

Look for:

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.

Causes:

1. Weak jets or uneven drum heating may cause uneven fills.
2. 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 or the sensor is not in proper contact with the drum. See the test print **Reverse Text**.
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 assembly movement. If either of the transfix load arm assemblies are worn, replace the worn load arm assembly.
4. 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 21.



s8400-161

20: OHP Color Bands

This print is used by Manufacturing and Engineering.

Test Print Examples (Continued)

21: Primary Solid Fills 10x

This item enables you to print 10 cyan solid fill prints, 10 magenta solid fill prints, 10 yellow solid fill prints, or 10 black solid fill prints. These prints can be 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.

Test Print Examples (Continued)

22: Manuf. Skew Margins

This print consists of an image used by manufacturing to gauge skew and margin on 2-sided prints.

Skew

To measure skew: the measurement 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 would be (5.1 - 4.9) = 0.2 mm. The skew tolerance for the following media types 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) of the paper.

The tolerance for margin is the margin +/- 2. See the Media Margin Specification in the Appendix.

NOTE: The measurement for skew and margin for Side 1 and Side 2 may not match

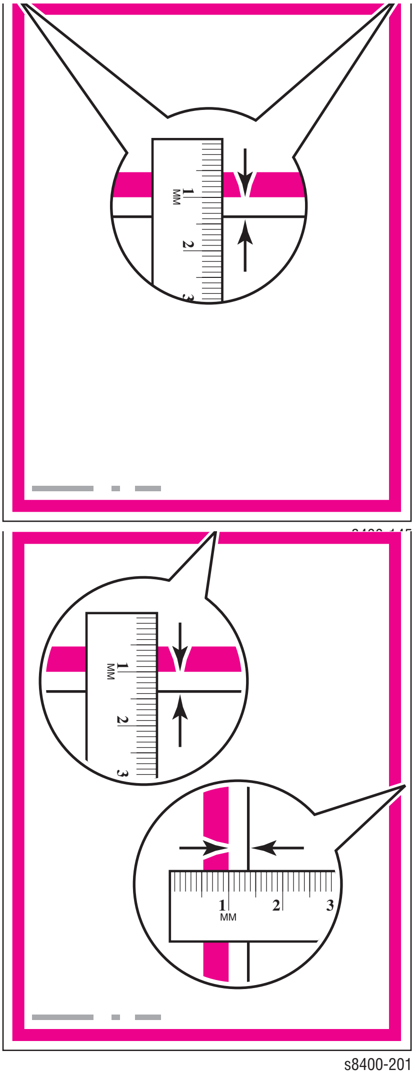
Check: The media must be supported for the tray. The side and rear guides must be adjusted to the size of the paper to ensure correct deskewing.

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.



s8400-201

Test Print Examples (Continued)

23: Manuf. Banding

This print is used by Manufacturing.

24: Head Roll

This print is used by Manufacturing.

25: Head Height

This print is used by Manufacturing and Engineering.

26: X Dot Position

This print is used by Manufacturing and Engineering.

27: Y Dot Position

This print is used by Manufacturing and Engineering.

28: Chase Pages

A blank piece of paper is used to remove contamination from the drum, transfix roller, and paper path.

29: Oil Bar Chase

This print is used by Manufacturing.

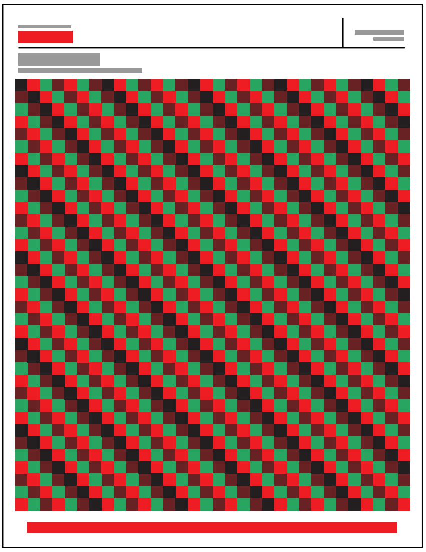
30: Purge Efficiency

This print is used by Manufacturing and Engineering.

Test Print Examples (Continued)

31: 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.



s8400-162

Adjustments and Calibrations

In this chapter...

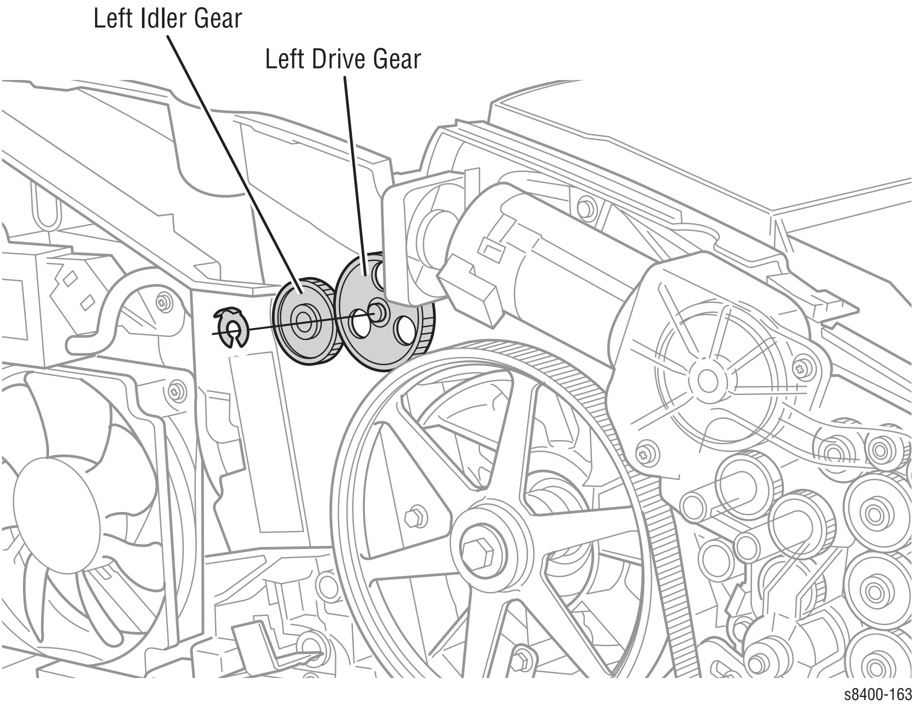
- Printer Component Homing Positions and Indicators
- Printer Calibrations
- Jet Substitution Mode
- Resetting NVRAM

Section 6

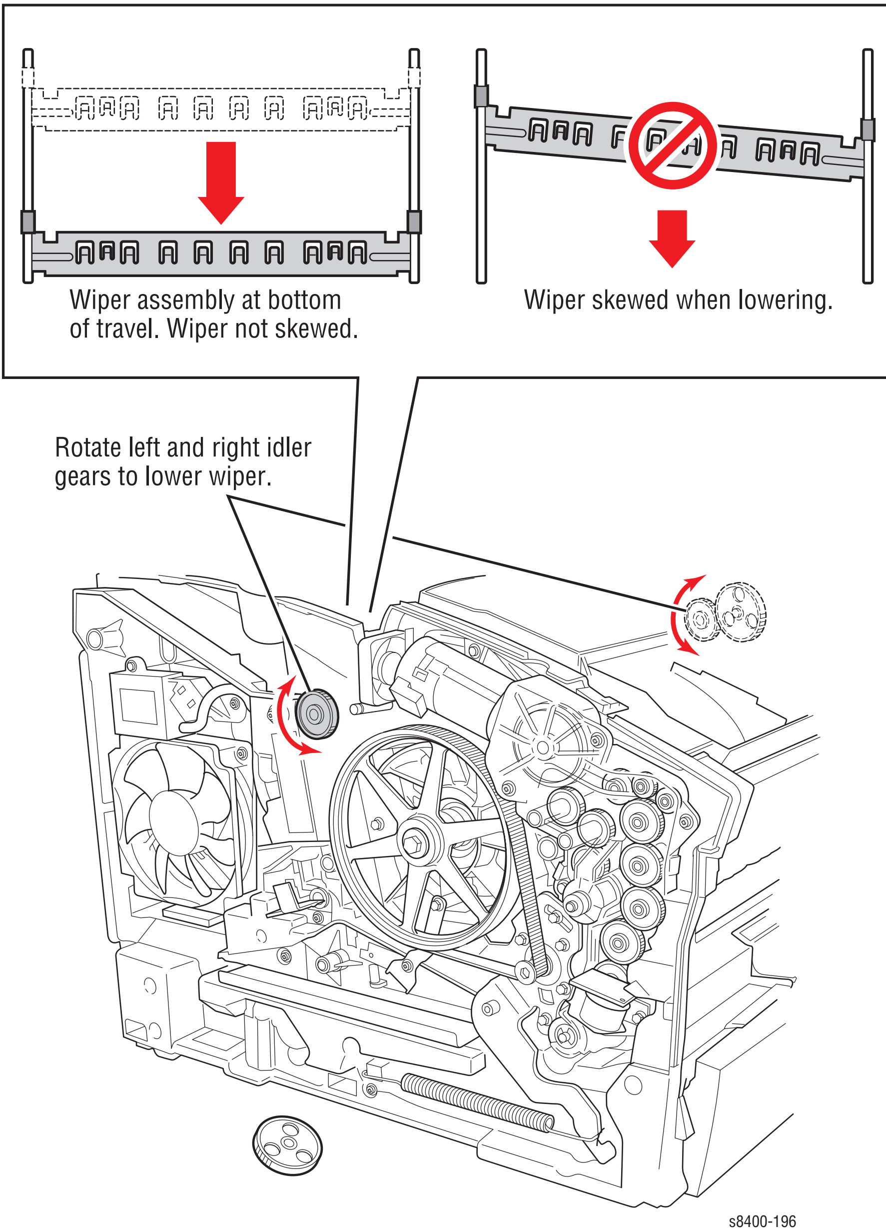
Adjustments

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 (see the following figure) by removing the e-clip from the drive shaft.



3. At the same time, 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.



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 assembly can grind or the printer can generate errors.

- Printhead (tilted forward and disengaged from tilt gear)
- Tilt gear (disengaged from process drive train; arrows on left frame point to each other)
- Printhead wiper (bottom of travel)
- Process drive assembly (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)

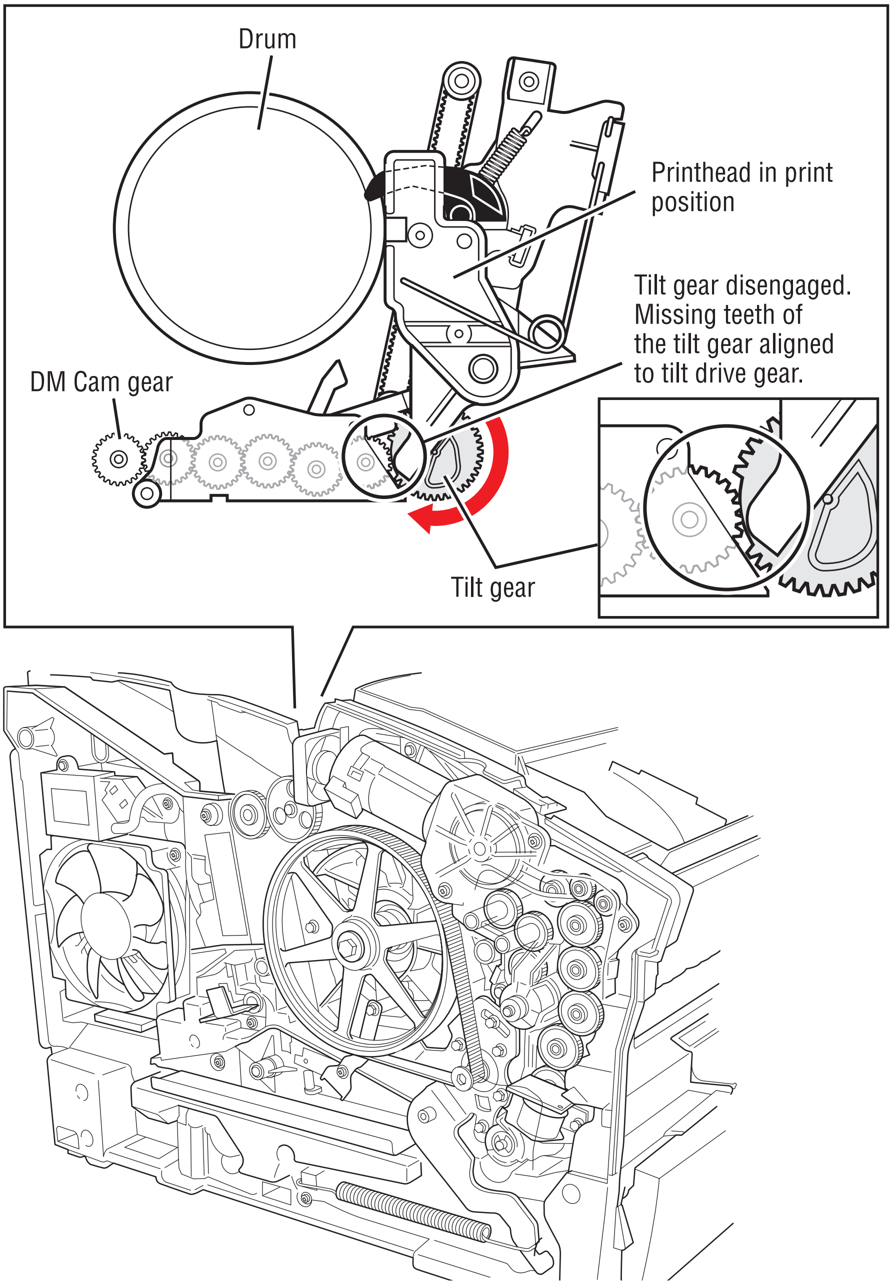
Wiper Assembly Positions

When the wiper is homed, the wiper should be moved all the way to the bottom of the printer. When the wiper 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 not in the printer, move the tilt gear, located on the inside of the left frame, manually to its disengaged position.

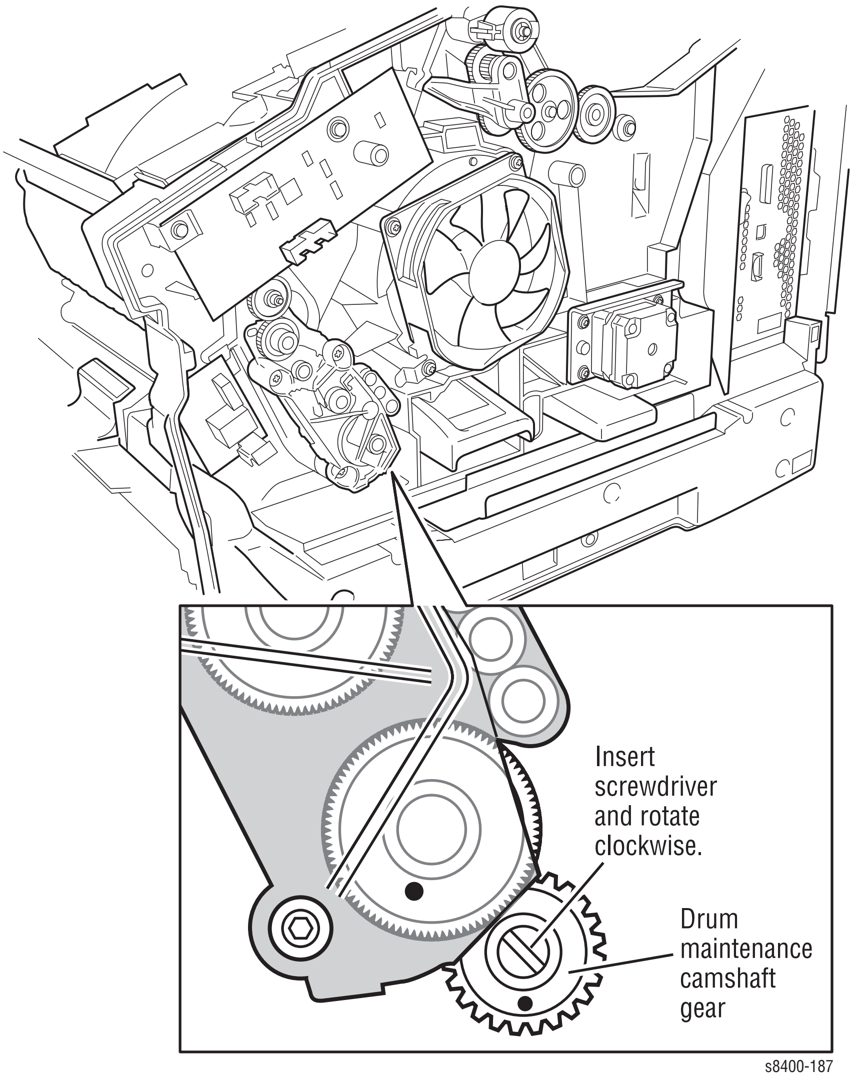


The Printhead Is in the Printer

1. Remove the maintenance kit.
2. Insert a flat blade screwdriver into the end of drum maintenance cam shaft and rotate clockwise one revolution. If the printhead is engaged, manually assist the movement of the printhead.

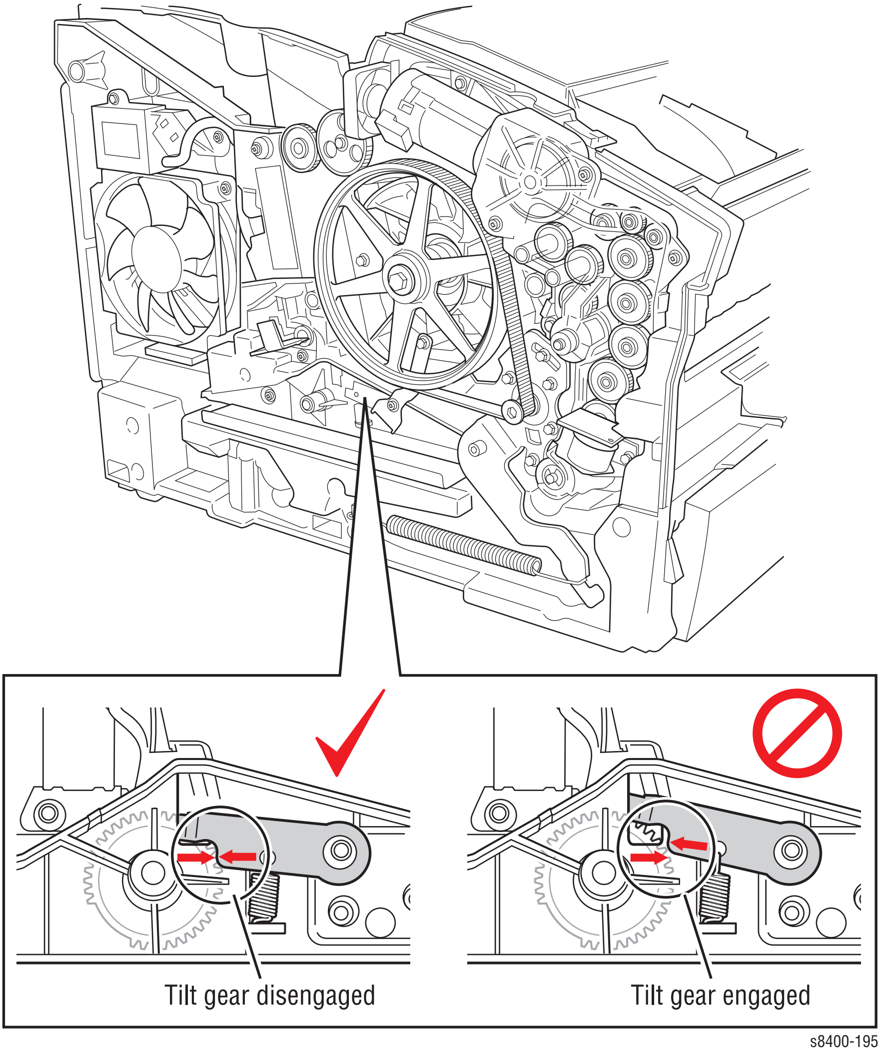
Note

The hole on the drum maintenance camshaft drive gear should be at the 6:00 position after the rotation.



Note

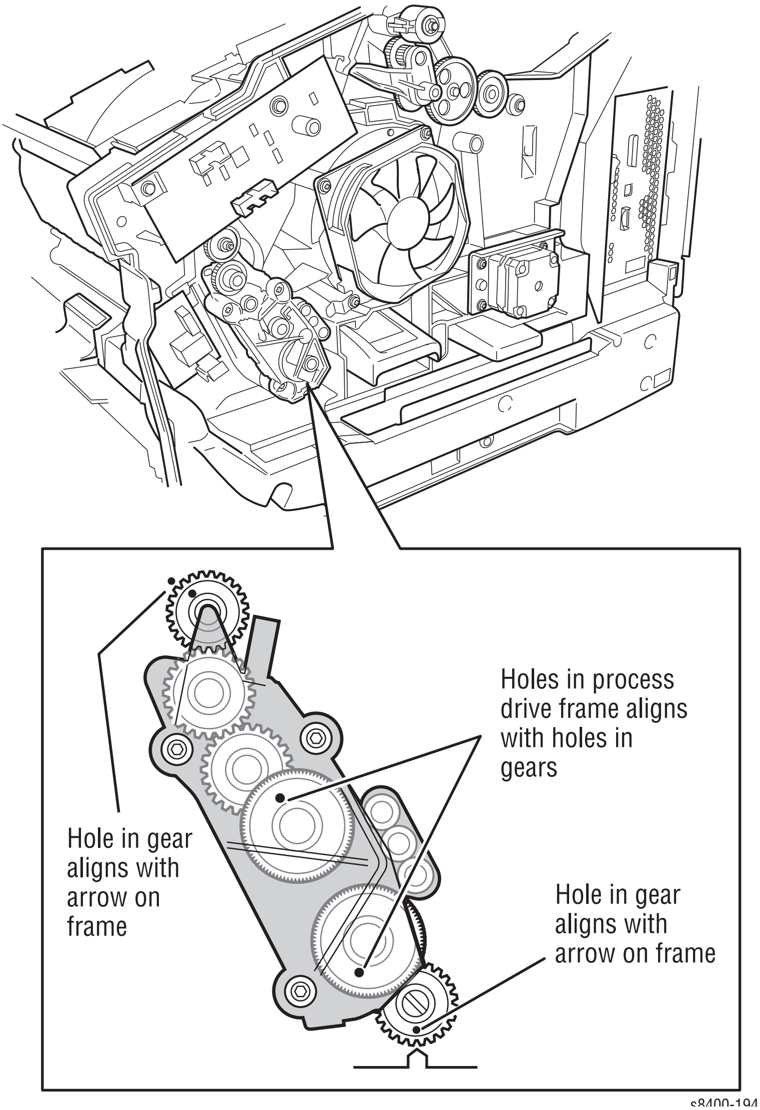
When the tilt gear is disengaged, the two arrows on the left side of the printer are pointing at each other.



Homing the Process Gear Drive Train

Examine the process gear drive train 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.



Printer Calibrations

Wiper Alignment

See the Wiper Alignment Procedure on page 6-2.

Jet Substitution Mode

The Jet Substitution Mode provides a temporary solution for print-quality problems when weak or missing jets cannot be recovered. Jet Substitution Mode reduces the maximum imaging speed by 50% or more and has other limitations that affect printer performance.

Note

Always refer to the infoSMART Knowledge Base to access the latest guidelines for using Jet Substitution Mode.

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.

Enabling Jet Substitution Mode

To add Jet Substitution Mode to the front panel menu:

1. On the Front Panel, scroll to **Troubleshooting,** then press the **OK** button.
2. Scroll to **Print Quality Problems**, 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 front panel.

To correct print-quality problems, refer to the Eliminate Light Stripes test page to determine which jets are weak or missing.

1. Scroll to **Jet Substitution Mode**, then press the **OK** button.
2. Scroll to **Jet Select**, then press the **OK** button.
3. Scroll to the color for the weak or missing jet, 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, then press **OK** to confirm the selection.
5. Select **Save Change and Exit**, 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 Page** and **Printer Status Pages** also provide a list of jets in Service Mode.

Disabling Jet Substitution Mode

After the printhead is replaced, disable Jet Substitution Mode to restore normal operation.

Using the hidden Jet Substitution Mode Menu, select Jet Select.

1. On the Front Panel, scroll to **Troubleshooting,** then press the **OK** button.
2. Scroll to **Print Quality Problems**, then press the **OK** button.
3. Press and hold the **Up Arrow** button, then press the **Back** button.
4. Scroll to **Turn Jet Substitution Mode Off**, 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

Section 7

Service Cleaning Maintenance Procedure

Cleaning your printer may be necessary 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 may be 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 maintenance kit blade.
- Most print-quality problems can be corrected by running the cleaning procedures on the printer's front 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** because 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 grills 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 *Reference 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 front 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 front 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 front panel.

Media Jams:

Note

Refer to the jam codes in "3-Digit Jam Codes" on page 3-35.

Problem type	Solution
Paper-pick or jamming problems at the tray.	Clean the pick roller. Follow the "Pick Roller Cleaning Method" on page 7-4.
Paper jamming problems at the front door.	Clean the transport rollers.
Paper jamming problems at the exit.	Clean the exit rollers and paper release blade.
Paper-pick or jamming problems at the Optional 525-Sheet Feeder, Tray 3, or Tray 4.	Clean the appropriate tray assembly feed roller.
Duplex path jam	Clean the preheat, 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 7-4.

Pick Roller Cleaning Method

Tray 1

Tray 1 pick roller can be cleaned with an alcohol moistened swab.

1. Open the front cover.
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 cover.

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 tray with the paper-picking or paper jamming problem (Trays 2, 3, or 4).

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

Maintenance Kit

The printer uses the Maintenance Kit as part of its self-maintenance routine to coat the print drum with oil before each print.

Maintenance Kit Life

Standard/Startup Maintenance Kit Life	
Any Coverage*	10,000

Extended Maintenance Kit Life	
0 - 20% Coverage*	30,000
20 - 100% Coverage*	20,000

*The image coverage is determined by counting the number of pixels imaged.

A front panel message indicates when the maintenance kit is low. Printing is still possible when the maintenance kit is low. When a front panel message indicates that the maintenance kit is “empty,” the maintenance kit must be replaced before continued printing is possible. Refer to the installation instructions included with the maintenance kit.

Note

The 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 printer’s ink jets. A front panel message indicates when the waste tray is full. Refer to the printer’s *Reference Guide* for instructions on removing and emptying the waste tray. A front panel message displays when the waste tray needs to be emptied (usually after seven purges). 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 the Phaser 8400 printer. The grease part number is 006-7997-00.

Caution

Plastic parts will deteriorate when unspecified grease and chemicals are used, such as WD-40® and Locktite® Threadlocker. To avoid damage, use only the grease specified in the Lubrication section of the Service Manual.

Inspection

Rollers: 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

Gears: Replace gears that show any signs of wear or breakage. 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...

- Overview
- General Notes on Disassembly
- Covers
- Imaging
- Paper Path
- Motors, Gears, Solenoids, Clutches, and Fans
- Electronics

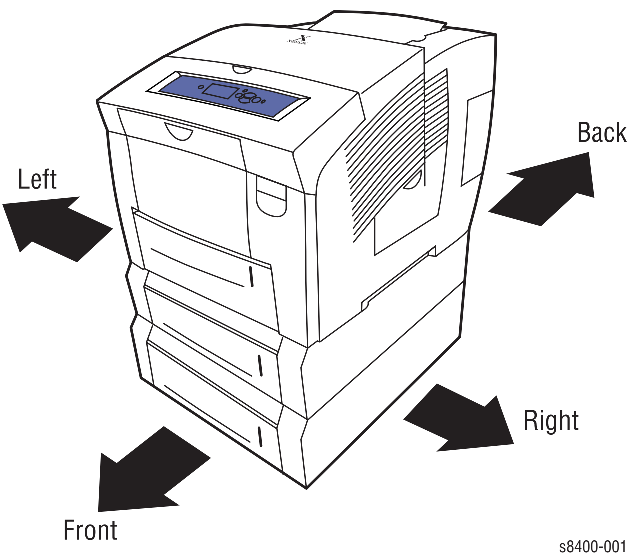
Section 8

Overview

This section contains the removal and replacement procedures for selected parts of the printer according to 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.



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.

- Screws in plastic are torqued to 12 in lbs., metal to 15 in lbs., unless otherwise specified.
- Do not over torque the screws threaded 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.
- 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

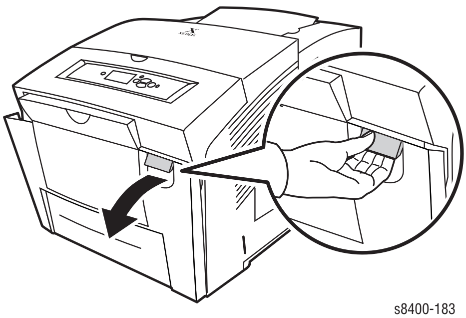
- The notation “(item X)” points to a numbered callout in the illustration corresponding to a part or step being performed.
- The notation “PL*X.X.X*” indicates that this component is listed in the Service Parts List.
- Bold arrows in an illustration show direction of movement when removing or replacing a component.

Covers

Front Door (Tray 1/MPT) Assembly

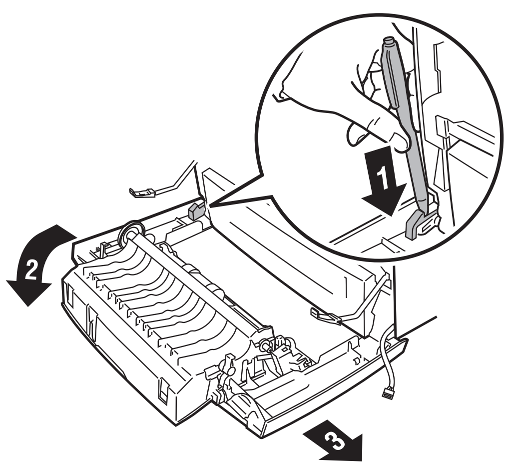
(PL 1.1)

1. Open the Front Door assembly (Tray 1/MPT) by pulling out on the handle to the right side of the door.



s8400-183

2. Remove the right and left stay retainers from the Front Door (MPT).
3. Open the plug cover and disconnect the plug from the right side of Front Door (Tray1/MPT).
4. Free the plug wiring from cable retainer on the right side of Front Door (MPT).
5. Carefully remove the Front Door (Tray 1/MPT) assembly (PL1.3), by releasing the left hinge pin (PL1.4) from the printer frame and sliding the assembly to the right to remove it.



s8400-184

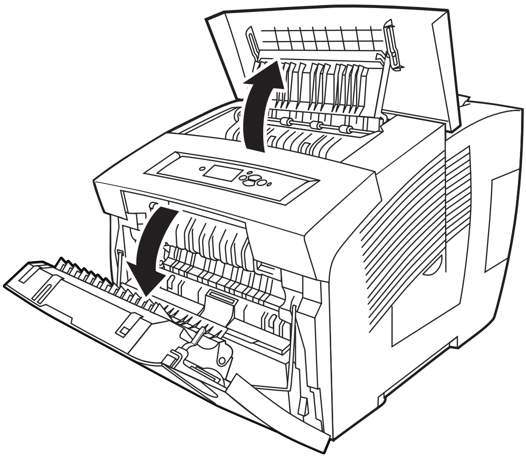
Note

Do not lose the hinge pins or stay retainers for the front door.

Control Panel Cover

(PL 1.6)

1. Open the Exit Cover.



S8400-185

2. Using either your fingers or a small flathead screwdriver, loosen the Front Panel Cover on the left side and then slide it forward and lift up to remove it from the printer.

Front (Control) Panel

(PL 1.7)

1. Remove the Front Panel Cover (as directed above).
2. Disconnect the two wiring harness connectors and one ribbon cable connector from the back of the Front Panel.
3. Remove the Front Panel (see Covers figure on page 8-7).

Right Side Cover

(PL 1.15)

1. Remove the Front Panel Cover (as directed above).
2. Open the Front Door.
3. Remove the rear screw.
4. Pull forward on the latching tab located by the power plug (see Covers figure on page 8-7) to release it.
5. Release the front latching tab and pull out on the top to remove the Right Side Cover.

Left Side Cover

(PL 1.9)

1. Remove the Front Panel Cover.
2. Open the Exit Cover and Front Door.
3. Remove the rear screw.
4. Release the latching tabs (see Covers figure on page 8-7) and remove the Left Side Cover.

Exit Cover

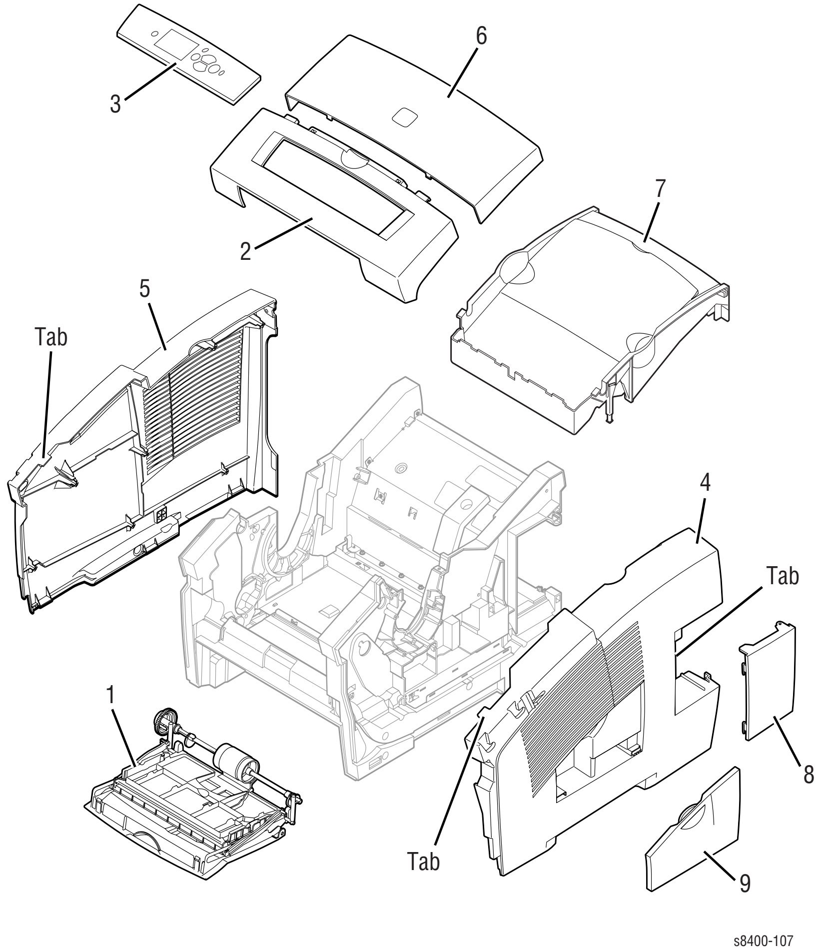
(PL 1.8)

1. Remove the Right and Left Side Covers.
2. The exit cover (see Covers figure on page 8-7) will now just lift off the printer.

Replacement Note:

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.



1. Front Door, Tray 1 (MPT)
2. Control Panel Cover
3. Control Panel
4. Right Side Cover
5. Left Side Cover
6. Exit Cover
7. Ink Loader Assembly and Door
8. Interface Cover
9. Side Door

Ink Loader Assembly and Door

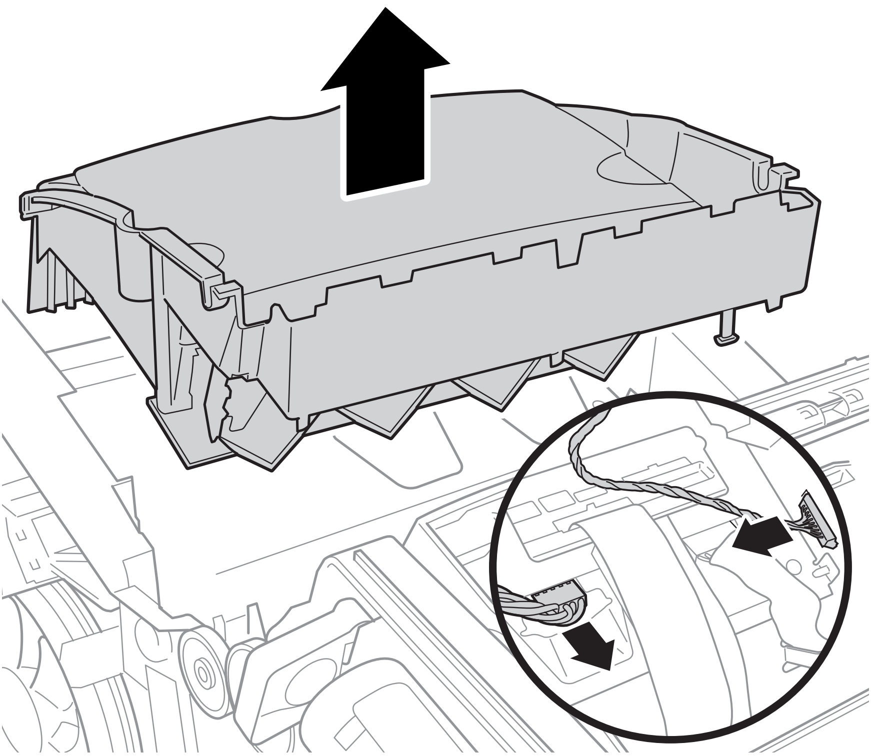
(PL 1.14)

1. Remove the Right and Left Side Covers (page 8-5) and the Exit Cover (page 8-6).
2. Lift the Ink Loader Assembly clear of the chassis and hold it in position against the rear of the chassis to allow access to the connectors.

   Note

   Hooks on the bottom of the Ink Loader Assembly allow it to hang on the rear of the printer chassis while the connectors are removed.

3. Disconnect the two Ink Loader harness connectors from the printer chassis and remove the Ink Loader, Assembly and Door as one unit



Replacement Note:

Note

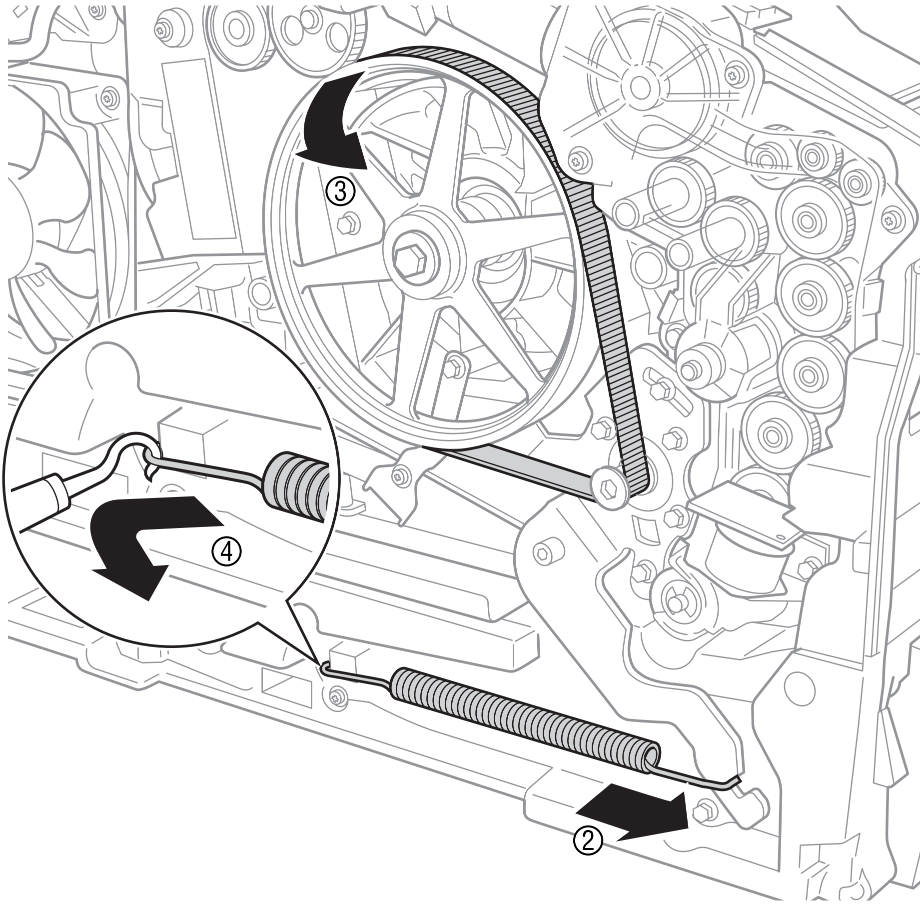
The grey cable must be routed between the Ink Loader and the printer side. The white cable must be routed towards the left side. The Exit Flag must be raised before reinstalling the Ink loader.

Imaging

Y-Axis Belt, Y-Axis Tension Spring, and Y-Axis Motor Assembly

(PL 2.1) (PL 2.2) (PL 4.4)

1. Remove the left side cover (see 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.



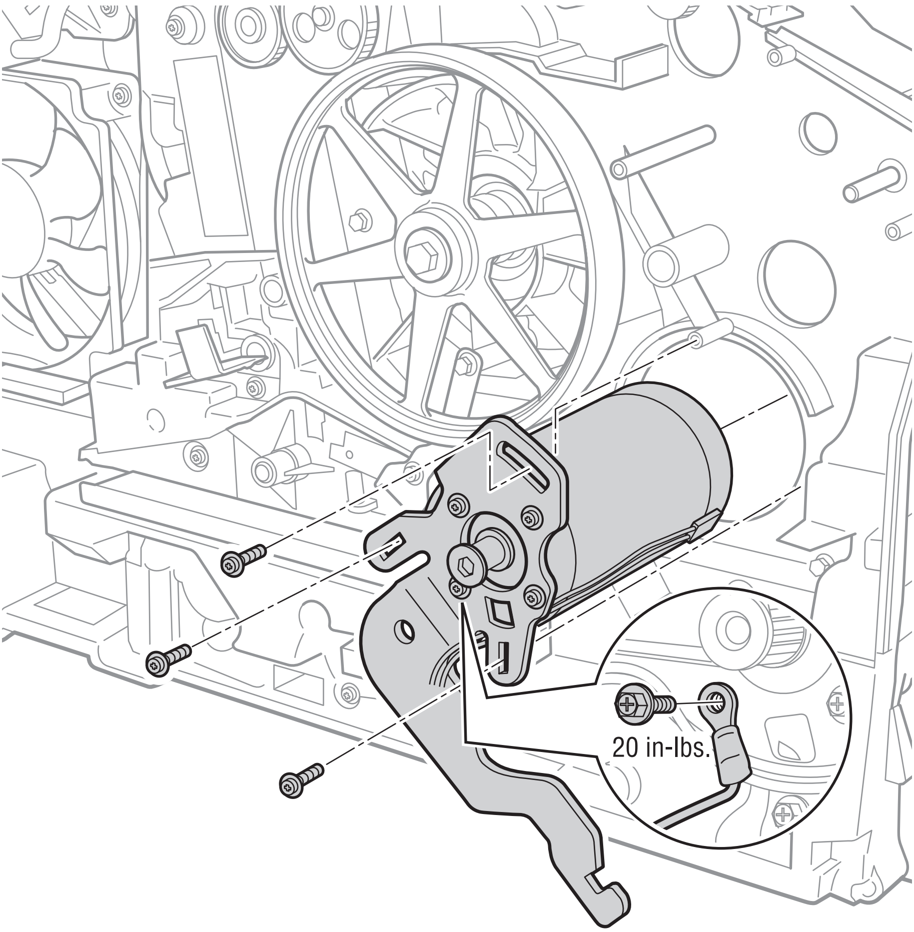
s8400-066

4. Using a spring hook or pliers, remove the Y-Axis tension spring from the chassis retainer and the 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 extreme caution when removing.

5. Move the wires out of the way.
6. Disconnect the motor wiring harness connector from the printer.
7. Remove four screws (three coarse thread and one fine thread) from the spring arm. The three screws securing the arm to the motor remain in place.



s8400-068

8. If replacing the motor, remove 3 motor screws to separate the motor from the arm and remove the spring arm.

Replacement Notes:

Note

Ensure the spring arm screws are in the right locations and that the arm floats freely.

Note

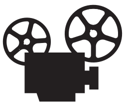
Torque the screws connecting the spring arm to the motor to 20 in.-lbs.

Caution

Ensure that the ground lug is replaced on the mounting screw (see figure above) during replacement.

Printhead Assembly, Right and Left Printhead Restraints

(PL 2.4) (PL 2.5 and 2.6)



Videos are available with instructions for replacing the printhead assembly. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

Warning

The printhead is hot when the printer is operating. Turn off power to the printer and allow the printhead to cool for 30 minutes before starting removal procedure.

Caution

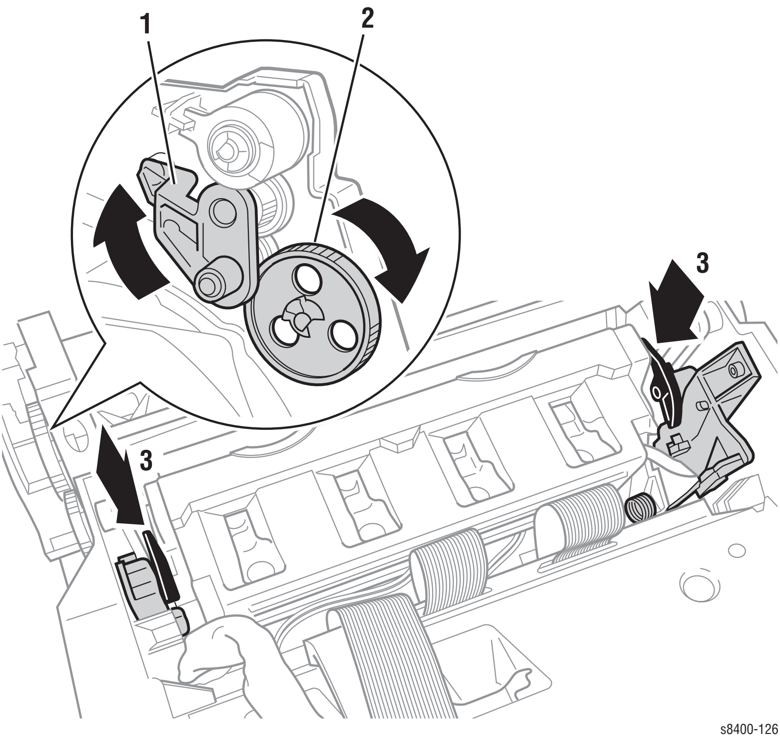
Perform the steps in this procedure in the order given to prevent damage to the printer

1. Remove the ink loader assembly and door (see page 8-8).

Caution

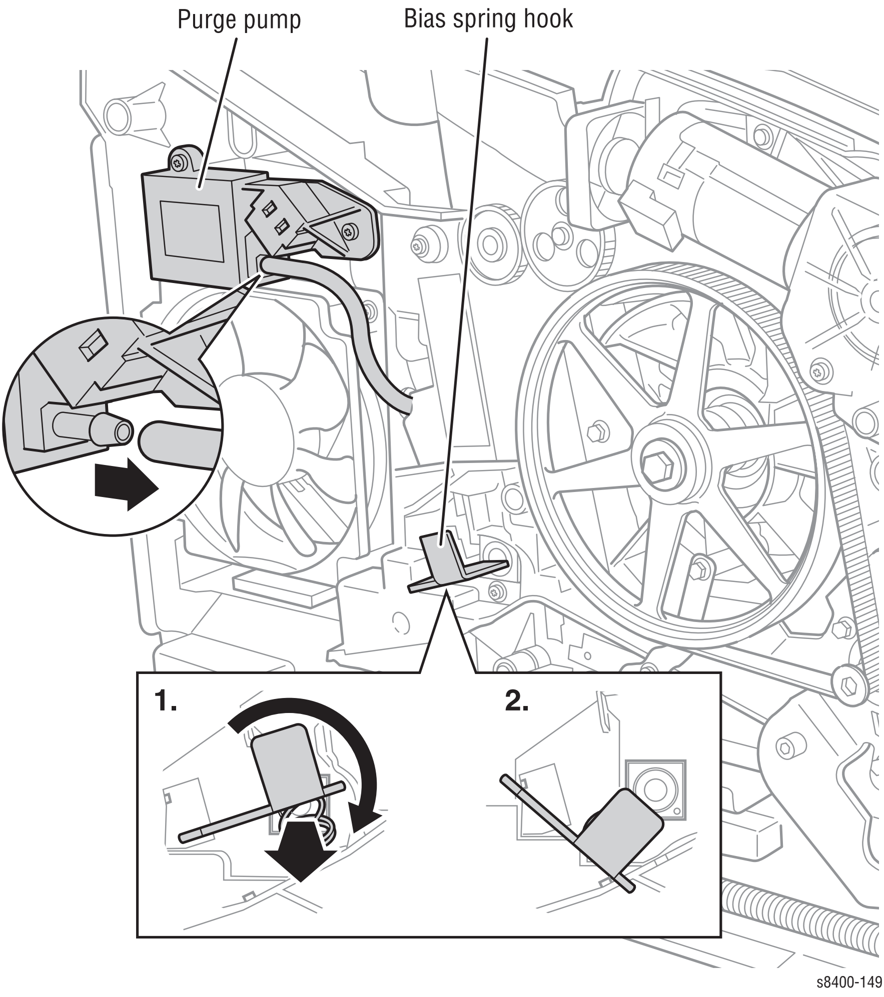
Place several sheets of paper between the printhead and the drum to protect the drum from damage.

2. On the right side of the printer, lift up on the Wiper Assembly Lock (#1 on the figure below) to unlock the Wiper Assembly gear train.



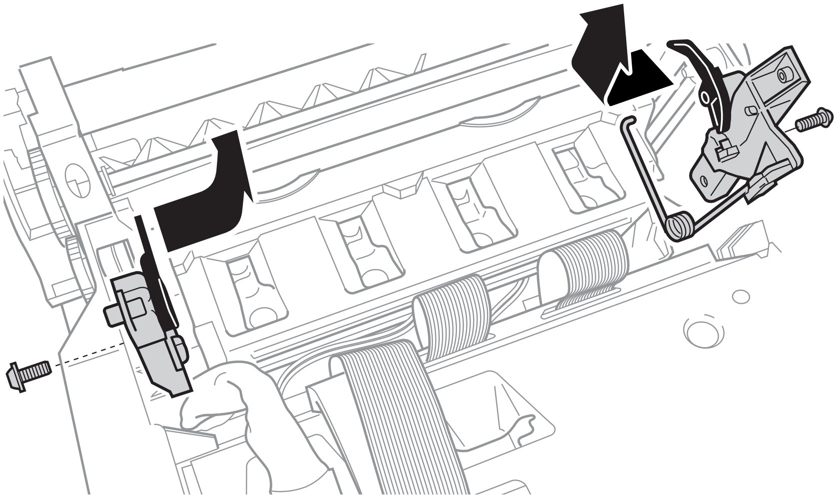
3. Rotate the gears as shown by #2 above to lower the wiper all the way down.
4. While pulling back slightly on the printhead to keep it away from the drum surface, unlock (push down) the right and left printhead restraint arms, #3 above, then slowly allow the spring-loaded printhead to tilt forward.

5. On the left side of the printer, pull the X-Axis bias spring and hook out slightly and shift to the side (rotate down), see #1 and #2 of the following figure. Allow the spring hook to rest against the detentes in the printer frame.



6. Disconnect the air hose from the purge pump (see figure above).

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 of the printer to remove (see figure below).



s8400-133

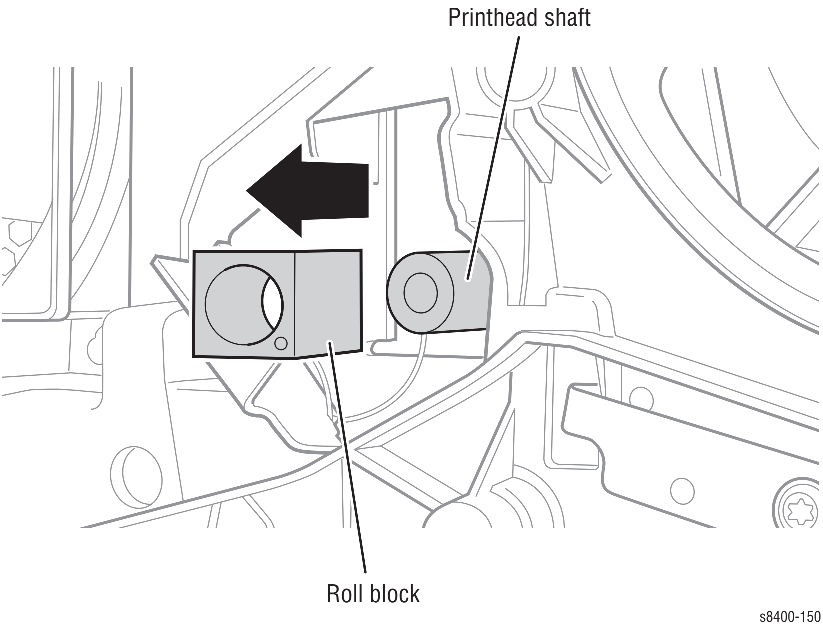
Note

Adjust printhead position as required to remove the right restraint.

8. Remove the Roll Block on the left end of the printhead shaft.

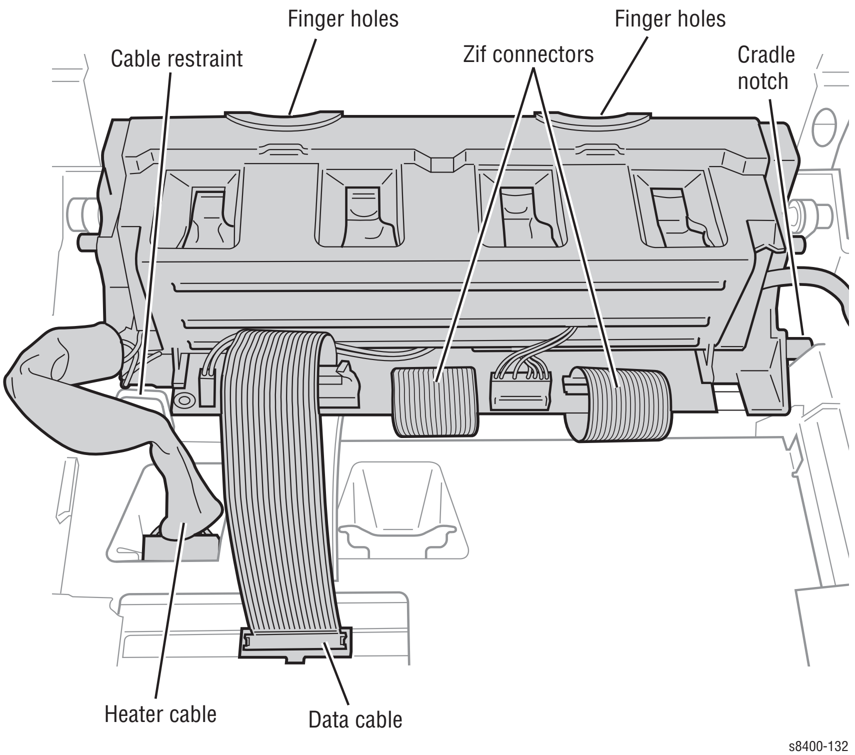
Caution

The roll block may be hot if the printer was just shut down.



9. Disconnect the heater harness plug and free the harness (see the following figure) from its restraint.

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 (see the following figure).



11. Disconnect the data cable from the print head (see the figure above).
12. Disconnect the two flex cables from the printhead.

Warning

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 Notes:

Caution

To avoid damage observe the following order when reinstalling the printhead:

1. Ensure that the tilt gear is in the home position (see page 6-5).
2. Rest the printhead on the cradle notches provided (see the previous illustration) while reconnecting the cable and ZIF connectors.

3. Insert the ribbon cables fully and squarely into the ZIF connectors.

Caution

Ensure that the flex cables are inserted into the ZIF connectors on the printhead fully and squarely. If the cables are inserted incorrectly, they can short out the Wave Amp.

4. Connect the data cable connector and heater harness connector.

Warning

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.
6. Route the air hose through the frame and connect it to the purge pump.
7. Install the Roll Block on the left end of the printhead Shaft. The Roll Block must be oriented as shown on the paper label on the left side of the printer frame.
8. Install the left and right printhead restraints.

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 bias 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 front panel to reset the jet substitution mode.

X-Axis Bias Spring

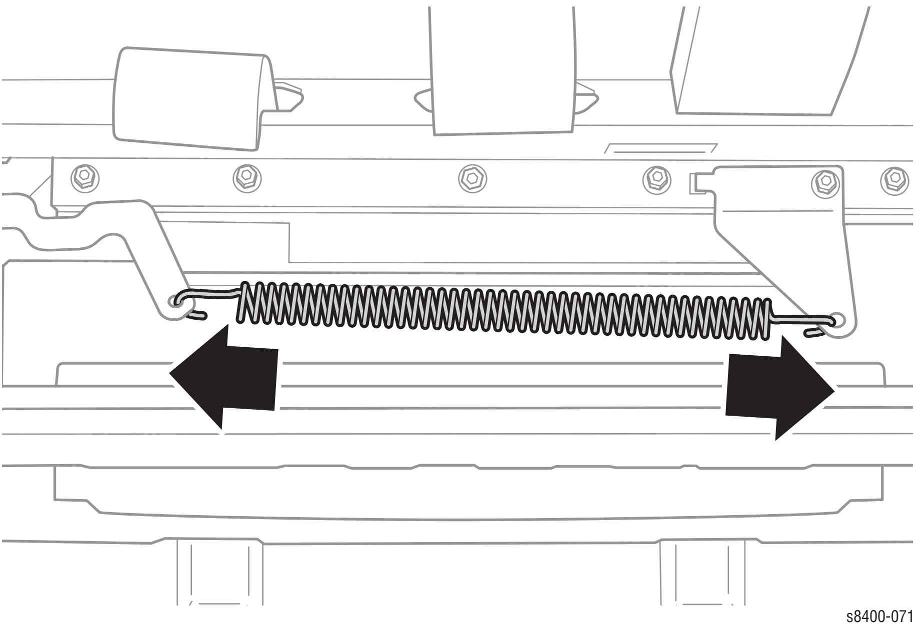
(PL2.3)

1. Remove the printhead (see page 8-13).

Caution

The spring is in close proximity to the drum. Be careful with the removal tools and the spring to ensure that you do not damage the drum.

2. Using your hands, a spring hook, or pliers, remove the X-Axis bias spring from inside the printer cavity.



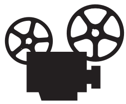
Replacement Note:

Note

Do not rotate the spring more than 1/4 turn.

Printhead Wiper

(PL 2.7)



Videos are available with instructions for replacing the printhead wiper. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

1. Remove the printhead (see page 8-13).

Caution

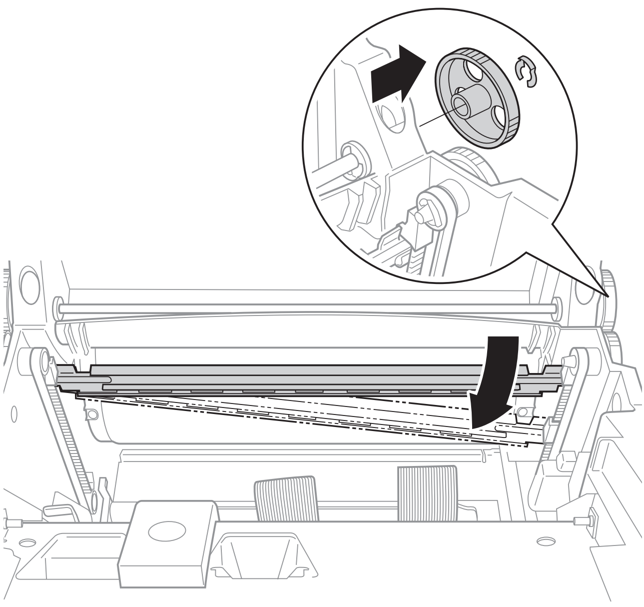
Place several sheets of paper between the printhead and the drum to protect the drum from damage.

2. Using the gears, position the wiper blade all the way up.

Note

Shown without drum and exit module for illustration only.

3. On the left side of the printer remove the clip and gear as shown below.
4. Holding the wiper, lower the left side of the wiper and it will slide off the belts easily.

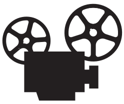


Replacement Note:

Position the wiper so both ends are all the way down following reassembly (see "Wiper Alignment Procedure" on page 6-2).

Media Release Blade Carriage Assembly and Transfix Roller

(PL 2.13)



Videos are available with instructions for replacing the Transfix Roller. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

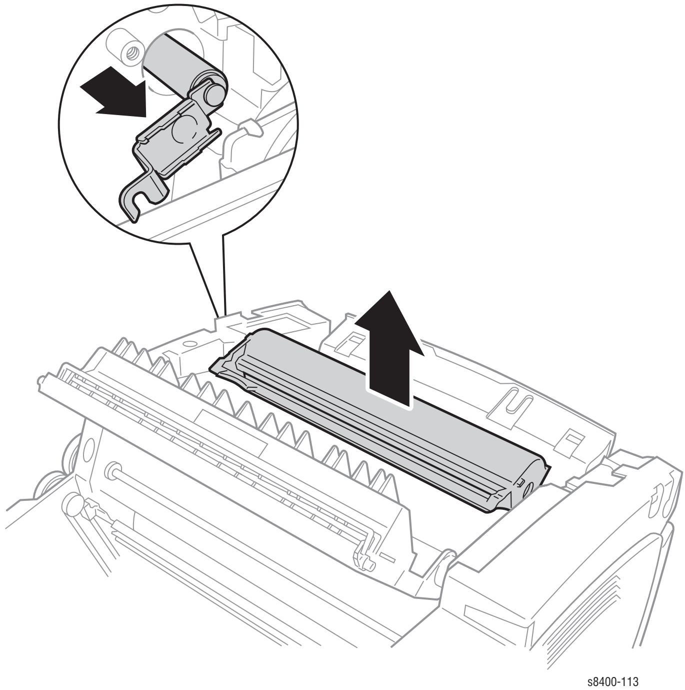
1. Remove the Right Side Cover (see page 8-5).
2. Disconnect J250 from the I/O Board.
3. Remove two screws securing the I/O Board to the chassis, slide the board towards the rear, and move the board out of the way.
4. Loosen the screw securing the Transfix Roller Shaft Restraint and remove the restraint.

   Caution

   Hold the Transfix Roller and the Media Release Blade with one hand during removal to prevent the Transfix Roller from falling and damaging the printer.

5. Use the end of the Transfix Roller Shaft Restraint (pickle fork) to pry the shaft out and remove the shaft from the printer (see figure on the next page).

6. Remove the Media Release Blade and Transfix Roller.



Paper Preheater and Deskew Assembly

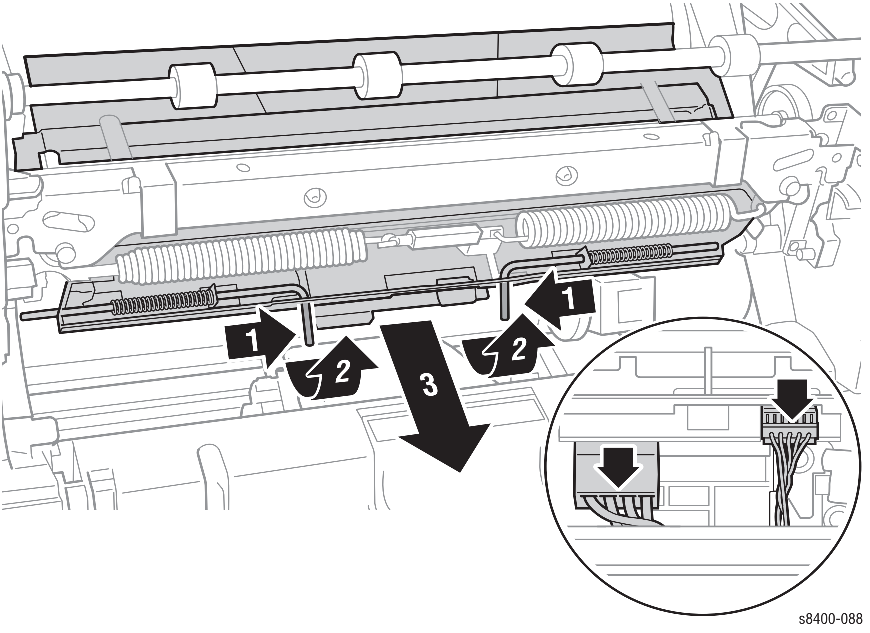
(PL 3.11)

1. Open the Front Door.
2. Remove the Lower Duplex Guide (green) (see page 8-40).
3. Remove the Inner Simplex Guide (white) (see page 8-40).
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.

5. Slide the latches in and forward to latch in their slots as shown by (1) and (2) in the following figure.
6. Slide the Preheater off the shelves and out of the printer as shown by (3).



Replacement Note:

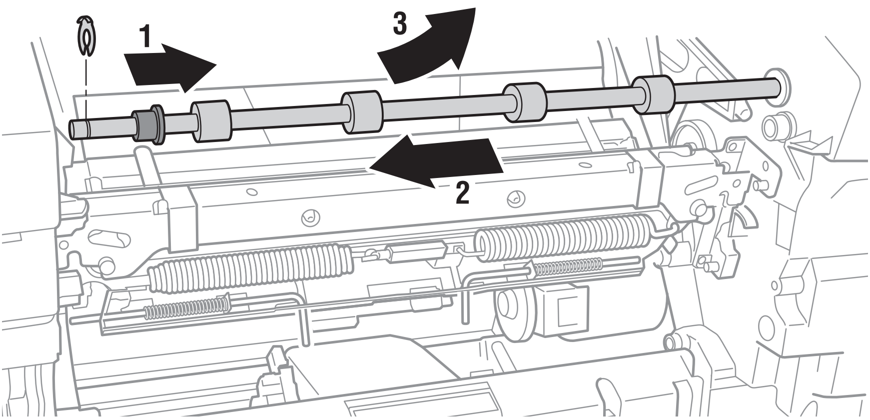
Note

The fingers on the Inner Simplex Guide, go over the segmented roller. First snap the left retainer into place, then the right.

Duplex Roller

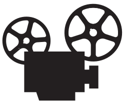
(PL 3.10)

1. Open the Front Door.
2. Remove the upper and lower duplex guides (see page 8-40).
3. 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 (1). Then slide the shaft toward the left (2) to free the right end of the shaft. Finally, pull the shaft out towards the right side of the printer (3).



Transfix Load Module

(PL 3.9)



Videos are available with instructions for replacing the Transfix Load Module. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

1. Remove the Front Door (MPT) assembly (see page 8-4).
2. Remove the Ink Loader Assembly and Door (see page 8-8).
3. Remove the Paper Preheater (see page 8-24).

   Note

   You don't need to remove the preheater if the transfix ground springs are put on after the load module is installed.

4. Remove the Media Drive Gearbox (see page 8-48).

   Note

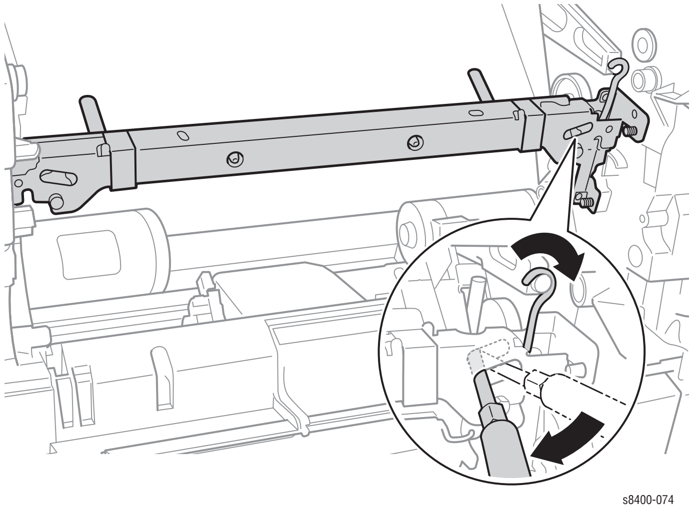
   Step 4 is not required if you are only removing the Duplex Roller.

5. Remove four screws, disconnect two connectors, and remove the Exit Module (see page 8-39).
6. Remove the upper and lower duplex guides (see page 8-40).
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 (1) (see preceding figure). Then slide the shaft toward the left (2) to free the right end of the shaft. Finally, pull the shaft out towards the right side of the printer (3).

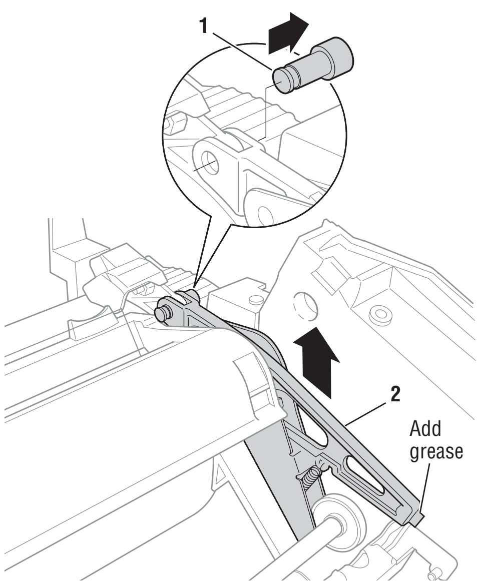
8. Insert a T-20 Torxbit through the slotted hole in the Transfix Load Module, engage the hole on the back of the module, and lever the module's spring cam toward the center of the printer to release/unhook the spring hooks from the Transfix Load Arms. Slowly relax the lever to return the spring cam 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.

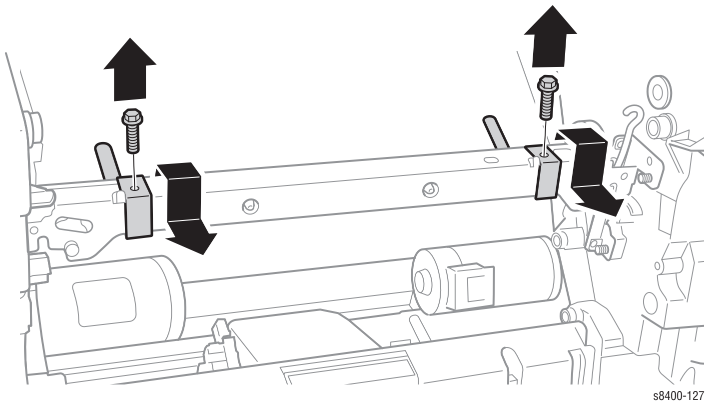


9. Remove the clevis pins (1) securing the Transfix Load Arms (2) to the chassis, and remove the Transfix Load Arms and Transfix Roller.

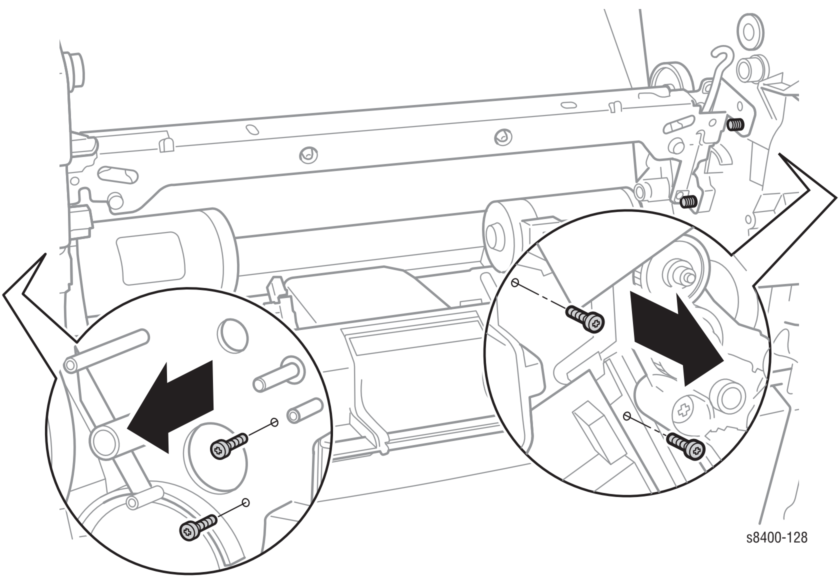


10. Remove the Transfix Camshaft (see page 8-29)

11. Remove the grounding springs from the Transfix Load Module.



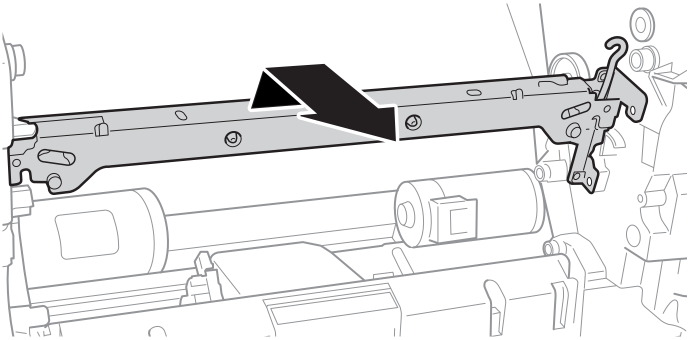
12. Remove two screws securing each end of the Transfix Load Module to the chassis.



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.



Replacement Notes:

Note

Place a small amount of Rheolube 768 grease (P/N 00679900) in the groove on the end of each Transfix Load Arm (see figure at Step 9) before reattaching the spring hooks.

Note

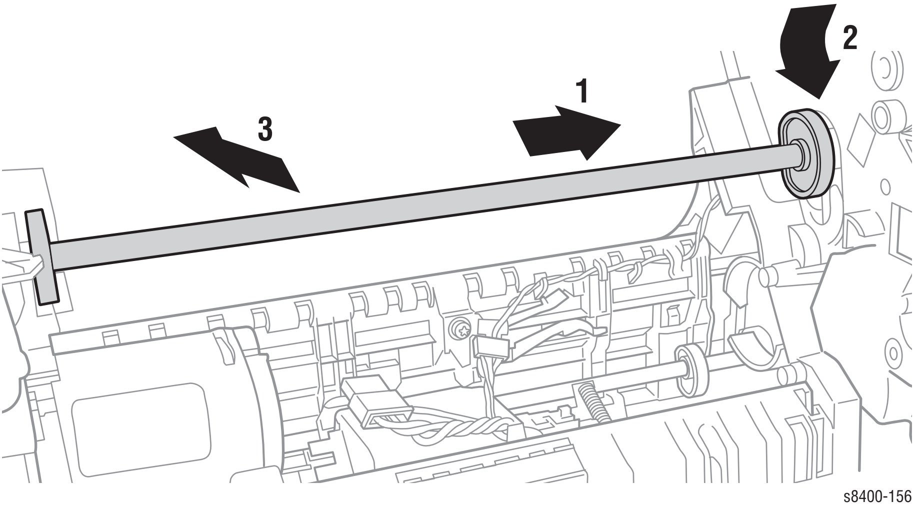
After installing the Exit Module, perform the Wiper Alignment (see page 6-2). The printer may report error code 7,009.4x if the wiper assembly is misaligned.

Transfix Camshaft Assembly

(PL 3.8)

1. Perform Steps 1 through 7 (remove Transfix Load Arms) of the Transfix Load Module removal procedure (see page 8-26).
2. Remove the Process Drive Gearbox assembly (see page 8-50).

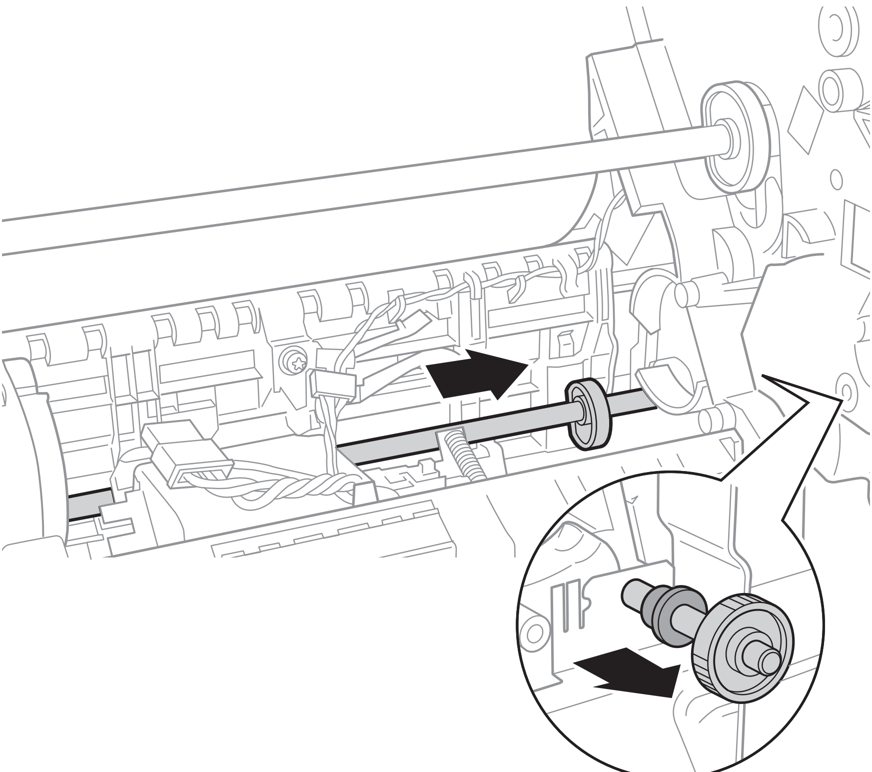
3. Slide the shaft to the right (1) and make sure the bearing slides over to the gear, move the shaft down and slightly to the right (2) and then up and to the left (3) to remove it from the printer chassis cavity.



Drum Maintenance Camshaft Assembly

(PL 2.11)

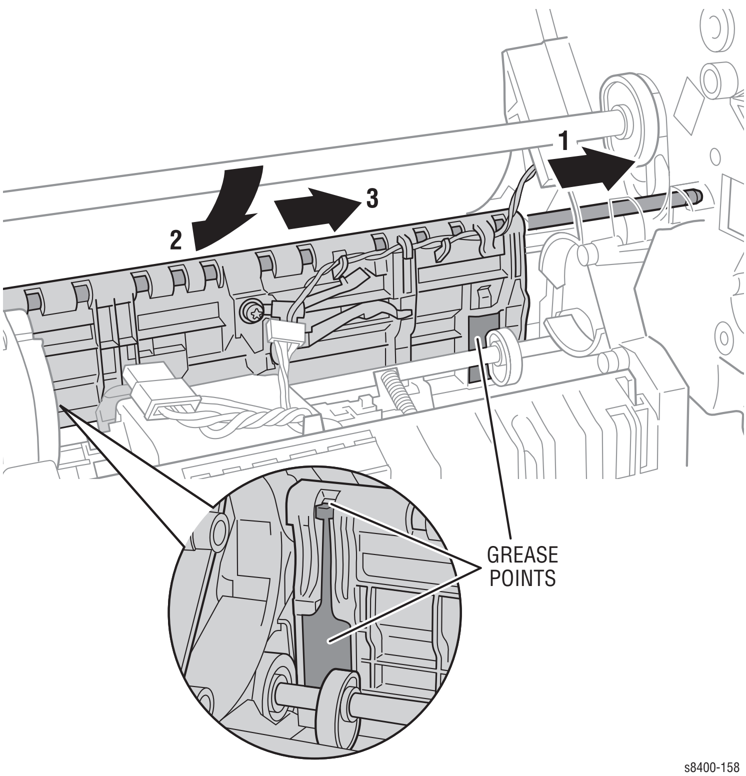
1. Remove both the Drum Maintenance Pivot Plate Assembly (see page 8-32).
2. Remove the Process Drive Gearbox assembly (see page 8-50).
3. Slide the shaft to the right, free the bushing, and remove the shaft to the right.
4. Carefully pry the bushing out of the right ground plane.
5. Rotate the left 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 Pivot Plate Assembly

(PL 2.10)

1. Remove the Drum Maintenance Kit Assembly.
2. Remove both the Right and Left Side Covers (see page 8-5).
3. Remove the KL-clip on the left end of the Pivot Plate Shaft.
4. Remove the grounding clip on the right end of the Pivot Plate Shaft.
5. Remove the Pivot Plate Shaft.
6. Disconnect the connector from the I/O Board (black/white).
7. Feed the cable into the printer while sliding the Drum Maintenance Pivot Plate out the drum maintenance drawer cavity.



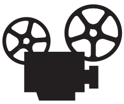
Replacement Note:

Note

Lightly grease the metal plates on which the cams ride, using a small quantity of Rheolube 768 grease (P/N 00679900). Also fill the pocket under the shaft ground with grease.

Drum Assembly

(PL 2.8)



Videos are available with instructions for replacing the Drum Assembly. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

1. Remove the Front Door Assembly (see page 8-4).
2. Remove Ink Loader Assembly (see page 8-8).
3. Ensure that the printhead is in park position (tilted back) and the Wiper Assembly is in the home position (all the way down).
4. 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 8-27.) 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.

5. Remove 3 screws from the Drum Fan Assembly and allow the fan to hang free.
6. Relieve tension on the belt by pulling the end of the spring arm toward the front of the printer using your fingers. (See the figure on page 8-10.)
7. Slide the belt off the pulley.
8. Unplug the Drum Heater Cable from the Relay Board and free the cable from the retaining hook.
9. Unplug the Drum Encoder Cable connector from the Power Control Left Cable and free the cable from the retaining hook.
10. Unplug the Drum Thermistor Cable connector from the I/O Board.
11. Remove the Exit Module assembly (see page 8-39).

    Note

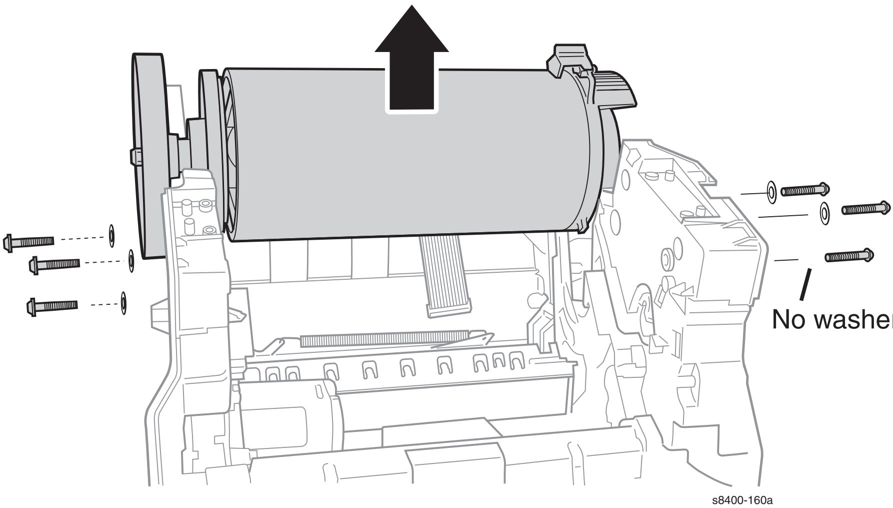
    Note the wire routing for the sensor on the drum for use during installation.

    Caution

    The Drum Thermal Sensor Cable is routed through the Exit Module. Use care during removal to avoid damaging the sensor.

12. Remove the clevis pins securing the Transfix Load Arms to the chassis and remove the Transfix Load Arms and the Media Release Blade Carriage Assembly. (See the figure on page 8-27.)
13. Remove 3 screws and washers from the right side of the Drum Assembly.

14. Remove 3 screws and washers from the left side of the Drum Assembly.
15. Remove the Drum Assembly from the chassis by lifting it straight up as shown in the following figure.



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 Notes:

Note

The Transfix Load Arms and the Media Release Blade Carriage Assembly can be installed on the Drum Assembly either before the Drum is installed in the printer or after. This procedure installs these components after the Drum is installed.

Note

After installing the Exit Module, perform the Wiper Alignment (see page 6-2). The printer may report error code 7,009.4x if the wiper assembly is misaligned.

1. Gently seat the Drum Assembly into the chassis.
2. Align the screw holes in the left and right Labyrinth Seals to holes in the chassis sides.
3. Install 1 screw at the rear position to hold the left Labyrinth Seal and torque the screw to 25 in.-lbs.

4. Install 1 screw at the rear position to hold the right Labyrinth Seal and torque the screw to 25 in.-lbs.
5. Pull outward on the left Labyrinth Seal handle and the right chassis side to spread the chassis and seat the left drum bearing.
6. 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.
7. 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.
8. Align the Exit Module to the chassis and route the Drum Thermistor cable 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.
9. Insert and torque the four screws securing the Exit Module Assembly to 15 in.-lbs.
10. Apply a small quantity of Rheolube 768 grease (P/N 00679900) to the 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.

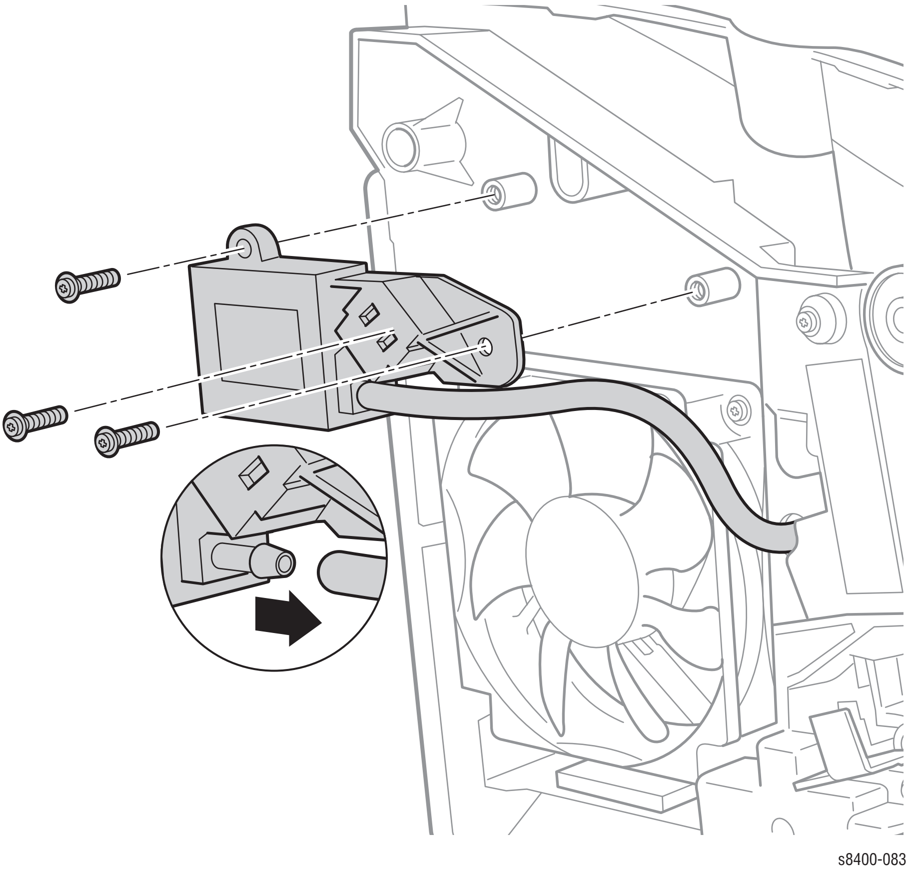
11. Insert a T-20 Torxbit through the right side slotted hole in the Transfix Load Module, engage the hole on the back of the module, and lever the module’s spring cam toward the center of the printer while connecting the spring hooks to the Transfix Load Arms. Repeat for the other side.
12. Install the front lower screw (no washer) and then the front upper screw into the Right Labyrinth Seal and torque the screws to 25 in.-lbs.
13. Install the front lower screw and then the front upper screw into the Left Labyrinth Seal and torque the screws to 25 in.-lbs.
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 Motor, insert the 3 screws, and torque the screws to 12 in.-lbs.
16. Connect the Media Drive Motor Fan and Media Drive Motor cables. Bend the cable retainer as required to hold the fan cable.
17. Connect the Drum Heater Cable to the Relay Board.
18. Connect the Drum Encoder Cable to the Power Control Left Cable.
19. Connect the Drum Thermistor Cable to the I/O Board.
20. Connect the Exit Module Cable to the I/O Board.

21. Ensure that the Drum Heater Cable and Drum Encoder Cable are dressed correctly and secured by the retainer hook at the Process Gear Assembly.
22. Reinstall the Drum Fan Assembly 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 Media Release Blade Solenoid cable 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 Assembly (see page 8-8).
25. Reinstall all covers and doors.

Purge Pressure Pump

(PL 2.14)

1. Remove the left cover.
2. Disconnect the air hose from the Purge Pressure Pump.
3. Disconnect the wiring harness from the Purge Pressure Pump.
4. Remove three screws and remove the Purge Pressure Pump.



Paper Path

Exit Module Assembly

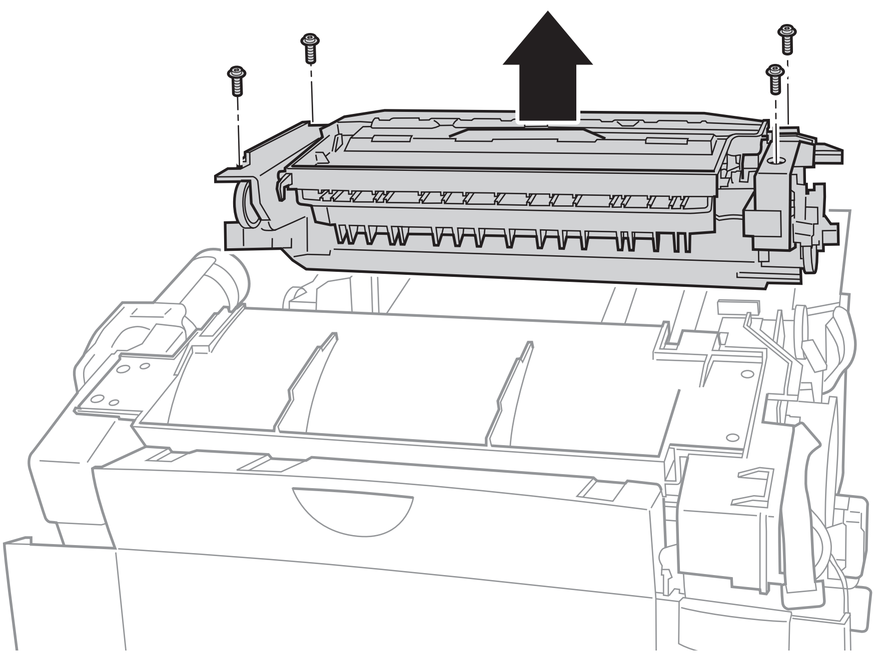
(PL 3.15)

1. Remove the Exit Cover and both side covers (see page 8-6).
2. Remove the three screws securing the media drive motor, and let the motor hang.
3. Disconnect three connectors: two on the right (I/O Board J680 and J870) and one on the left.

Caution

The Drum thermal and sensor cable (J870) passes through the Exit Module. Do not damage this cable during removal. The cable must be re-routed through the Exit Module during installation.

4. Remove the four screws holding the Exit Module Assembly to the printer chassis and remove the Exit Module Assembly.



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Replacement Note:

After installing the Exit Module, perform the Wiper Alignment (see page 6-2). The printer may report error code 7,009.4x if the wiper assembly is misaligned.

Paper Guides

Inner Simplex

(PL 3.1)

1. Open the printer 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:

Note

The fingers on the Inner Simplex Guide, go over the segmented roller. First snap the left retainer into place, then the right.

Lower Exit-Guide Assembly with Strip Flag (Green)

(PL 3.2)

1. Open Exit Door.
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.

Lower Inner Duplex (Green)

(PL 3.3)

1. Open the Front Door of the printer.
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.

Outer Duplex Paper Guide With Sensors (Safety Interlocks)

(PL 3.4)

1. Remove the Control Panel (see page 8-5).
2. Remove 4 screws and remove the guide.

Upper Duplex Guide with Solenoid

(PL 3.5)

1. Remove the Right Side Cover (see page 8-5).
2. Remove the Outer Duplex Paper Guide as specified in the preceding paragraph.
3. Disconnect the solenoid connector from the I/O board and extract the harness from the right side frame.
4. Remove the Upper Duplex Guide from the printer.

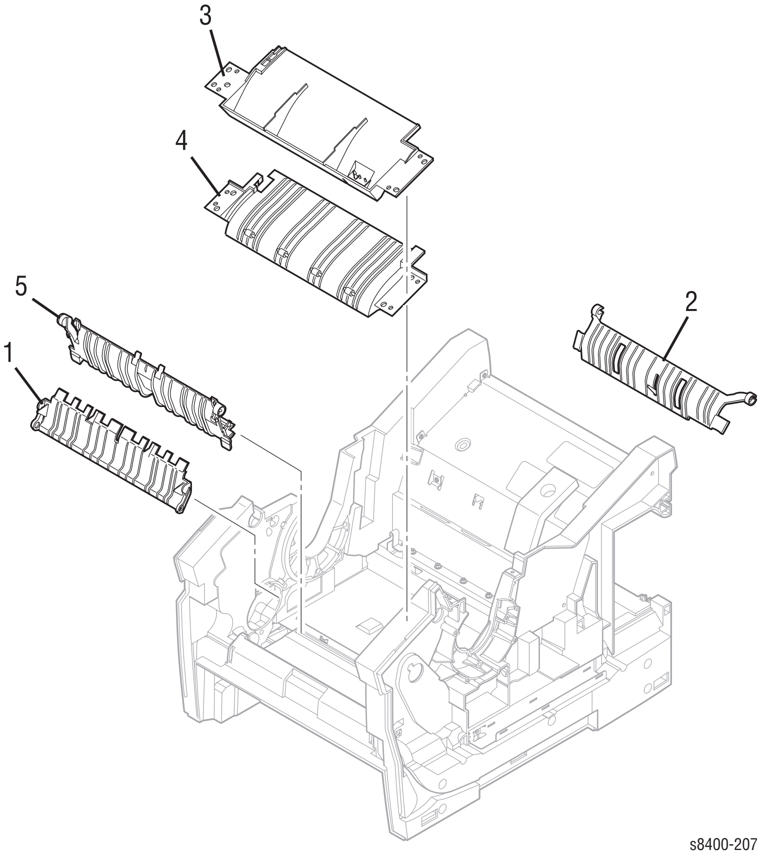
Replacement Notes:

Note

Route the solenoid harness through the right side frame when replacing the Upper Duplex Guide.

Note

Verify that the solenoid lever engages the hole in the Paper Release Guide.



1. Inner Simplex Guide
2. Lower Exit-Guide Assembly with Strip Flag (Green)
3. Outer Duplex Paper Guide With Sensors (Safety Interlocks)
4. Upper Duplex Guide with Solenoid
5. Lower Inner Duplex (Green)

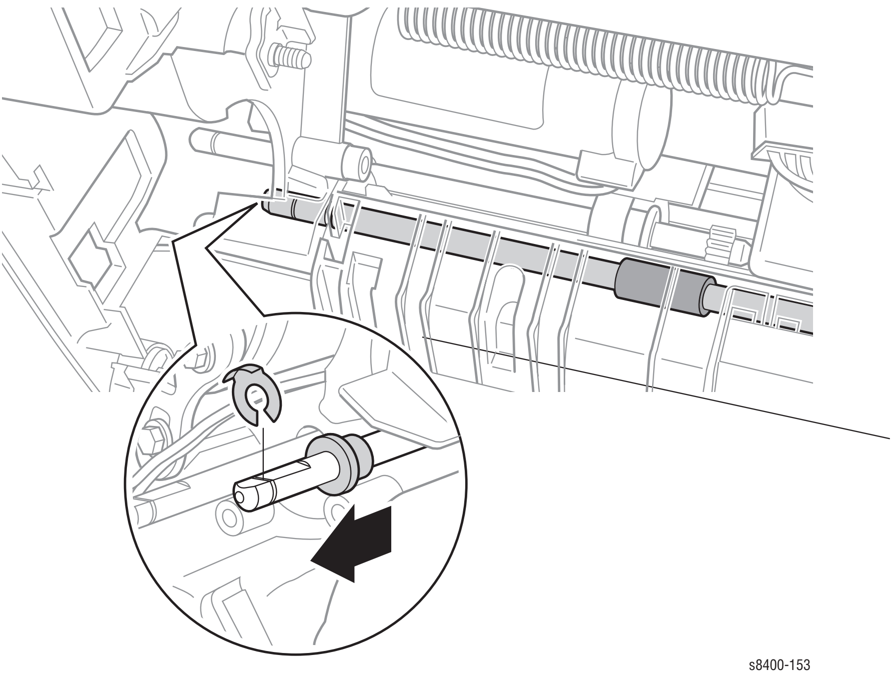
Take Away Roller

(PL 3.7)

1. Remove the left and right side covers from the printer (see page 8-6).
2. Remove the Media Drive Gearbox (see page 8-48).
3. Remove the Lower Simplex Guide, see page 8-40.
4. Remove the KL-clip from the right end of the shaft.
5. Remove the KL-clip and bushing from the left end of the shaft.
6. Move the Take Away Roller shaft to the left side of the printer to release it from the right side frame, rotate the shaft forward, and remove it to the right.

Note

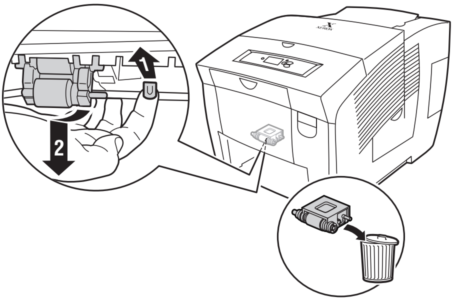
Pressure from the idler rollers makes it difficult to move the Take Away Roller shaft to the right during removal.



Pick Assembly

(PL 3.12)

1. Remove Tray 2 from the printer.
2. Reach into the tray cavity and release the green 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 5 inches (12.5 cm.) back. When you pull forward on the catch, the roller will swing down.



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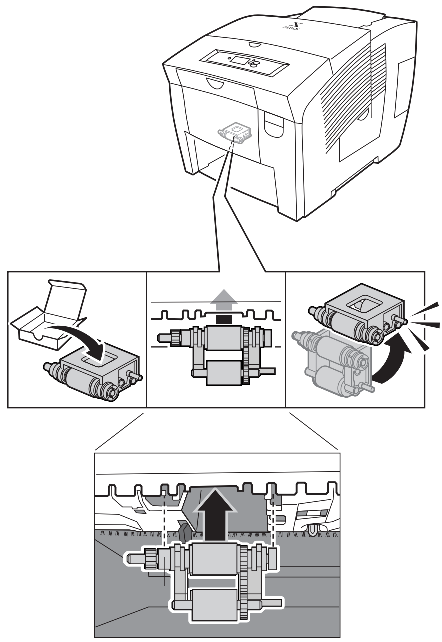


s8400-172

3. Pull down to remove the roller.

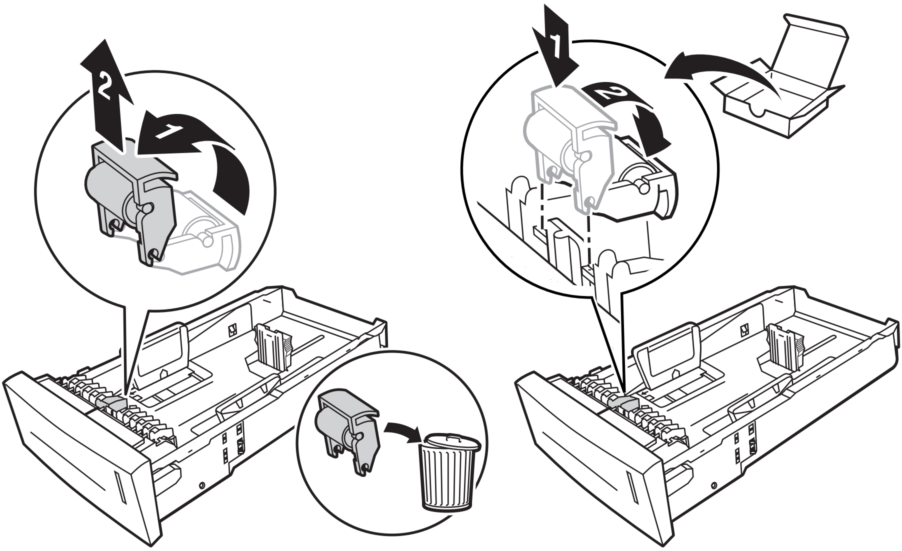
Note

Replace the Retard Roller (see following figure) at the same time you replace the Pick Assembly.

Replacement Note:

Note

Insert the replacement with the metal shaft at the top and toward the left, the grey rollers should be facing you. Position the roller back about 2 inches (5 cm.) in the tray cavity, feel for a large plastic clip on the right and the mating gear for the Pick Assembly on the left. Rotate the Pick Assembly up and back to latch it in place.

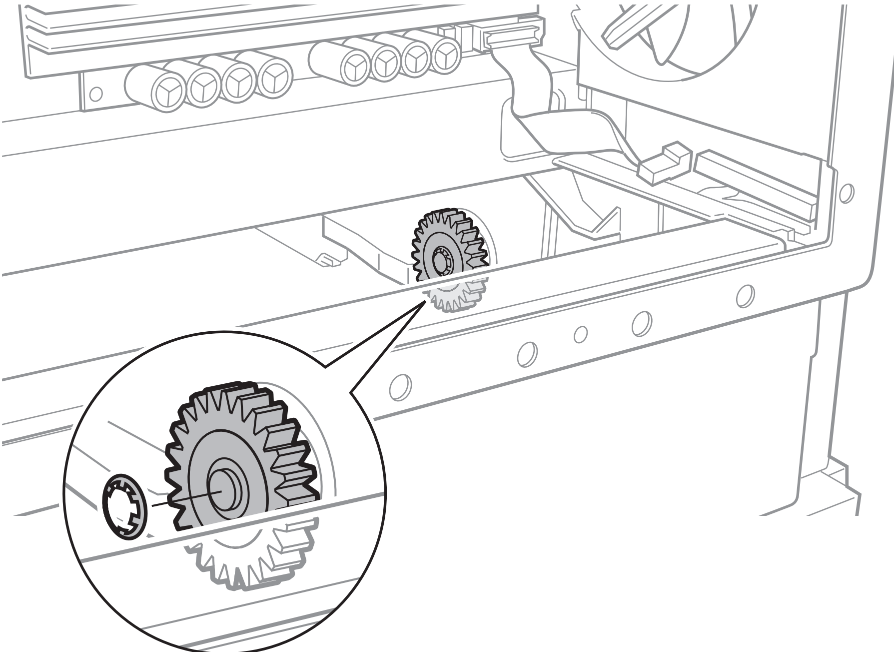


Media Tray Lift Motor

(PL 4.6)

1. Remove the Electronics Module (see page 8-55).
2. Remove Tray 2.
3. Disconnect the wiring harness from the Media 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 the two screws holding the Media Tray Lift Motor to the printer frame.

7. Remove the Media Tray Lift Motor from the outside of the printer.



s8400-159

Replacement Note:

Note

Ensure that the two tabs of the bushing are seated in the chassis. Position the push nut so the fingers on the inside of the nut are pointed up toward the end of the 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.

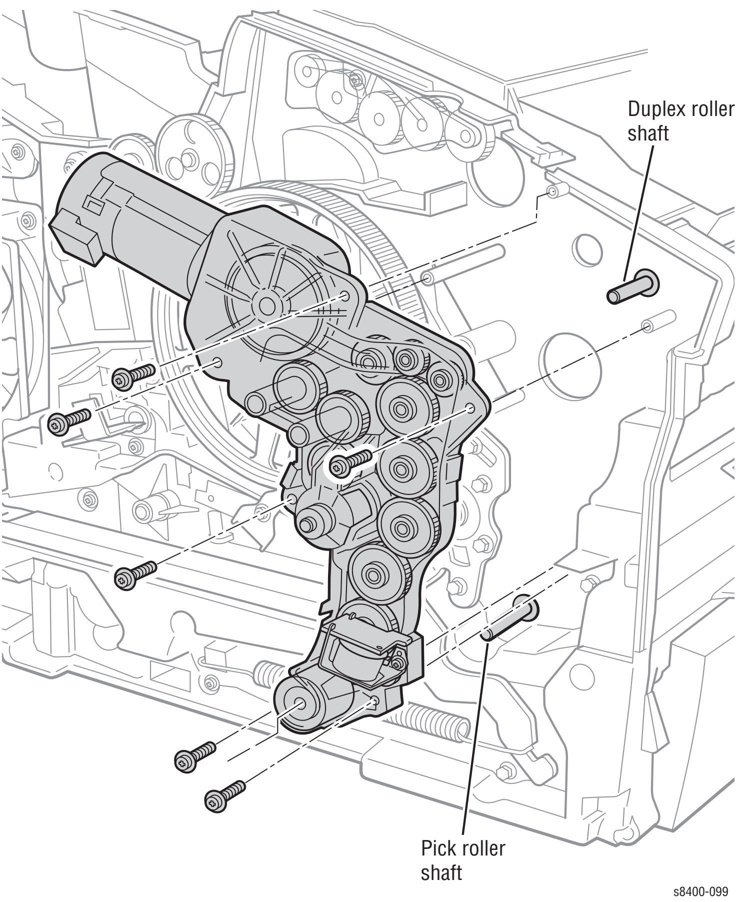
Motors, Gears, Solenoids, Clutches, and Fans

Media Drive Gearbox with Two Clutches and Solenoid

(PL 4.8)

Videos are available with instructions for replacing the Media Drive Gearbox. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

1. Remove the Left side (page 8-6) and Exit cover (page 8-6).
2. Disconnect the fan, media path motor, deskew clutch, pick clutch, and Tray 1 pick solenoid wiring harnesses.
3. Remove the six screws securing the Media Drive Gearbox.
4. Remove the Media Drive Gearbox.



Replacement Note:

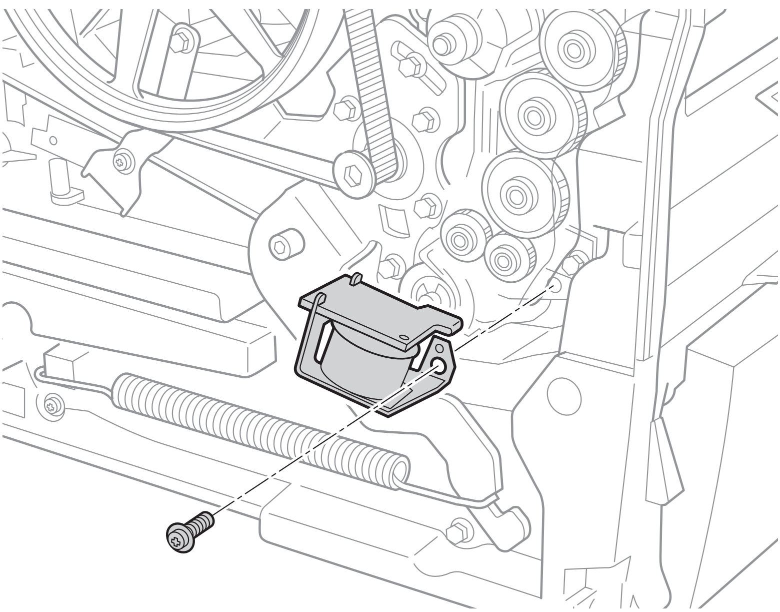
Note

To replace the Media Drive Gearbox, first remove the paper tray. Rotate the Pick Roller Shaft until the clutch seats. Then work upwards, rotating the duplex feed rollers until the other shafts seat. Ensure that the Media Drive Gearbox is correctly positioned on the side frame.

Tray 1 (MPT) Pick Solenoid

(PL 4.10)

1. Remove the left side cover from the printer (see page 8-6).
2. Disconnect the solenoid cable.
3. Remove one screw from the solenoid, and remove the solenoid from the Media Drive Gearbox.



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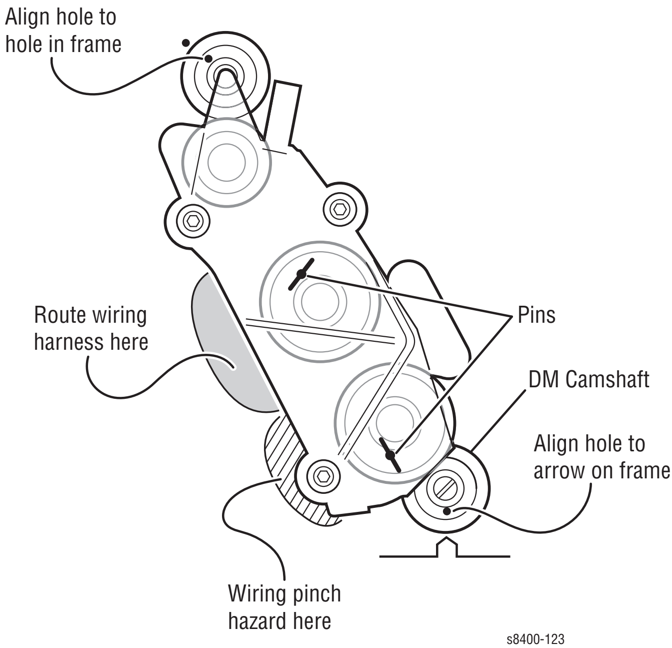
Process Drive Motor and Gearbox

(PL 4.9)

Videos are available with instructions for replacing the Process Drive Motor and Gearbox. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

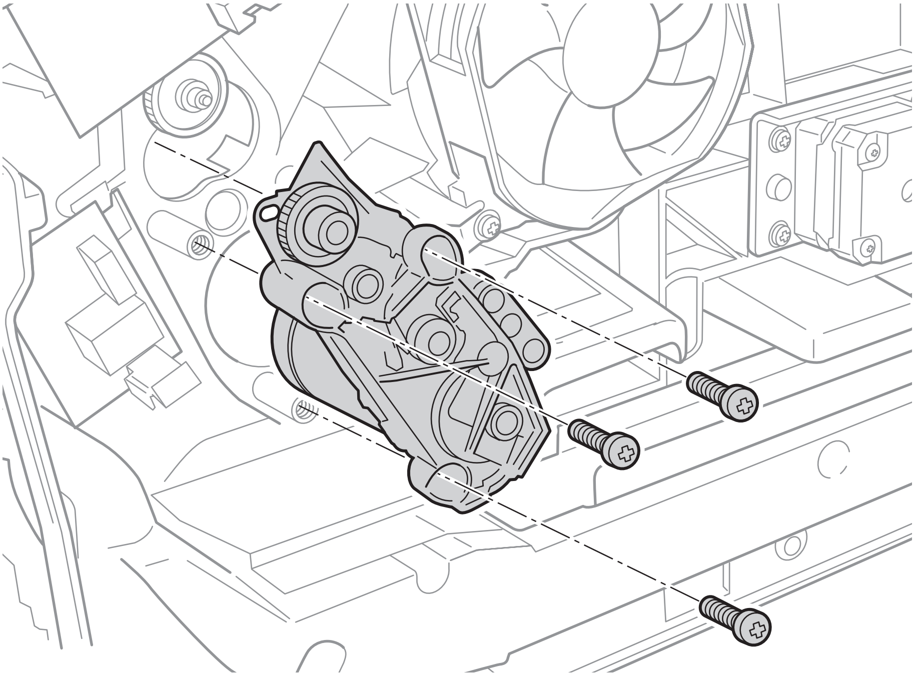
1. Remove the right side cover (see page 8-5).
2. Disconnect the drum heater wiring harness from the Relay Board to get it out of the way and free other wiring harnesses from the gearbox cable restraint.
3. If you will be re-installing this gearbox, pin the gears in position to ensure correct alignment on replacement (see the following figure).



Caution

Replacement gear boxes come with two pins to hold the gears in position. Use either the pins that come with replacement gear boxes, or a paper clip, bent into a U shape to hold the gears in their proper position during removal and replacement.

4. Remove three screws and remove the Process Drive Motor and Gearbox.



5. Disconnect the wiring harness from the Process Drive Motor.

Replacement Notes:

Caution

If the Process Gearbox is not re-installed with the gears in the correctly aligned and “pinned” positions, the printer will not function correctly and could be damaged.

Caution

Be careful of the wiring harness to the Process Drive Motor and other nearby wiring. If the wires are pinched during reinstallation damage to the electronics module will occur. Ensure that the harness is routed via the cutout in the gearbox frame (see figure on page 8-50).

Caution

Before installing the Process Gearbox, use a slotted screwdriver to rotate the DM Camshaft 360º clockwise to ensure that the head tilt system is in the home position.

Caution

Seat the Process Drive Motor and Gearbox and seat all three screws before torquing the screws to final tightness. Torquing the screws individually before seating all components, can put undue strain on the mounting bosses.

Note

When reinstalling the gearbox, the hole in the bottom mating gear should be aligned with the arrow embossed on the ground plane. The hole in the upper mating gear should be aligned with the adjacent hole in the frame (see figure on preceding page). Remove pins from the new gearbox after installation.

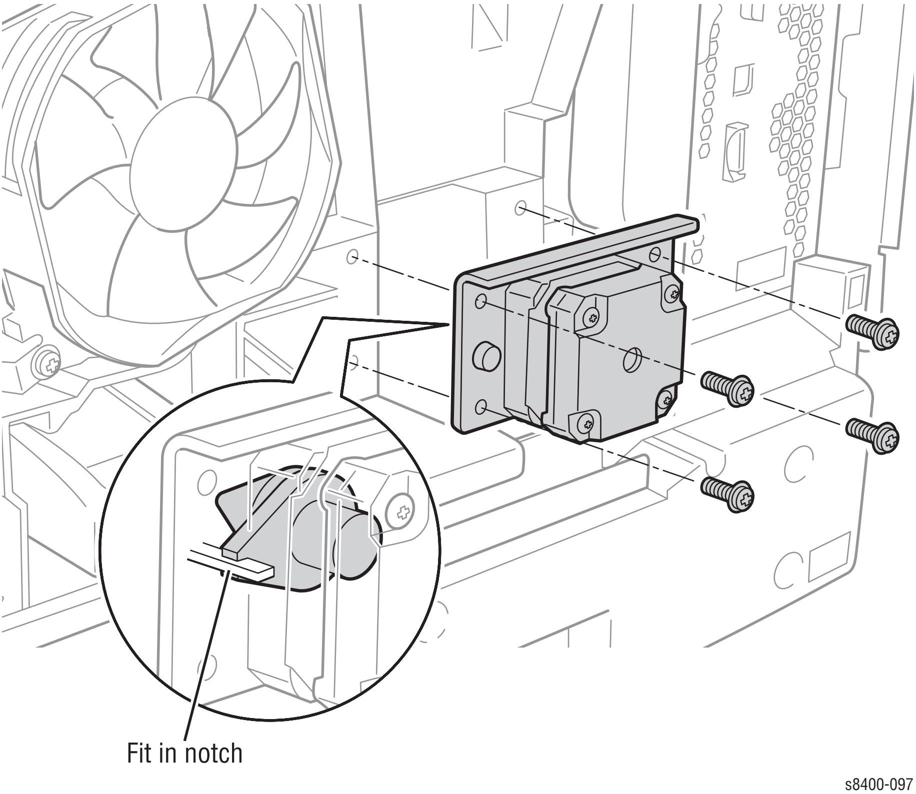
Note

Ensure that the drum heater harness, Y-Axis encoder harness, and the drum fan harness are replaced in the cable restraint on the gearbox.

X-Axis Motor Assembly

(PL 4.5)

1. Remove the Right Side Cover from the printer (see page 8-5).
2. Disconnect the wiring harness.
3. Remove four screws securing the motor to the chassis and remove the motor.



Replacement Note:

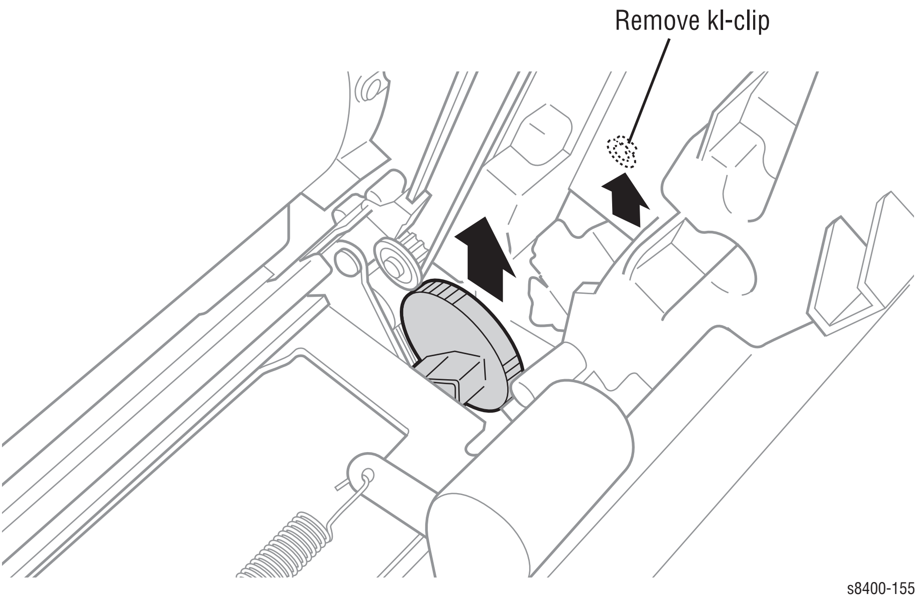
Note

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.

Head Tilt Compound Gear

(PL 4.7)

1. Remove the printhead Assembly (see page 8-13).
2. At the left side of the Printer, remove the KL-clip as shown in the figure below.
3. Remove the waste tray frame, without disconnecting the sensor wiring harness.
4. Reach in to the waste tray cavity and remove the Head Tilt Compound Gear.



Replacement Notes:

Note

On reassembly, the leaf spring on the back side of the chassis must be behind the gear to engage.

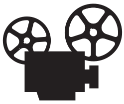
Note

On reassembly, lubricate the curved (cam) surfaces of the gear using a small quantity of Rheolube 768 grease (P/N 00679900).

Electronics

Electronics Module

(PL 5.1)

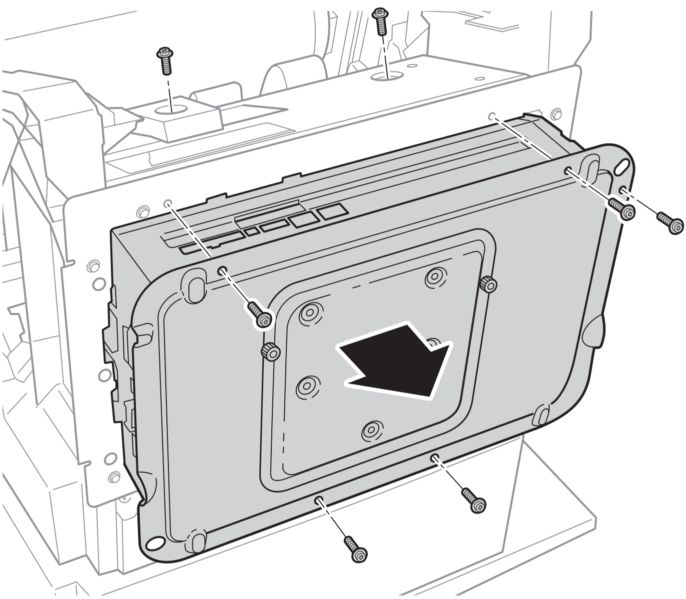


Videos are available with instructions for replacing the Electronics Module. Videos are located on the Phaser 8400 Customer Support training CD-ROM.

Caution

Touch the back of the Electronics Module before starting this procedure to discharge any electrostatic charge present on the case.

1. Disconnect the power cord and all cables to the Electronics Module.
2. Remove the Ink Loader Assembly and Door (see page 8-8).
3. Remove five screws from the back of the Electronics Module.
4. Remove two screws from inside the printer chassis.
5. Remove the Electronics Module.



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Replacement Note:

Note

When replacing the electronics module, transfer the Configuration Card, NVRAM, SODIMM RAM, and hard drive (if installed) to the new module.

Wave Amp Board

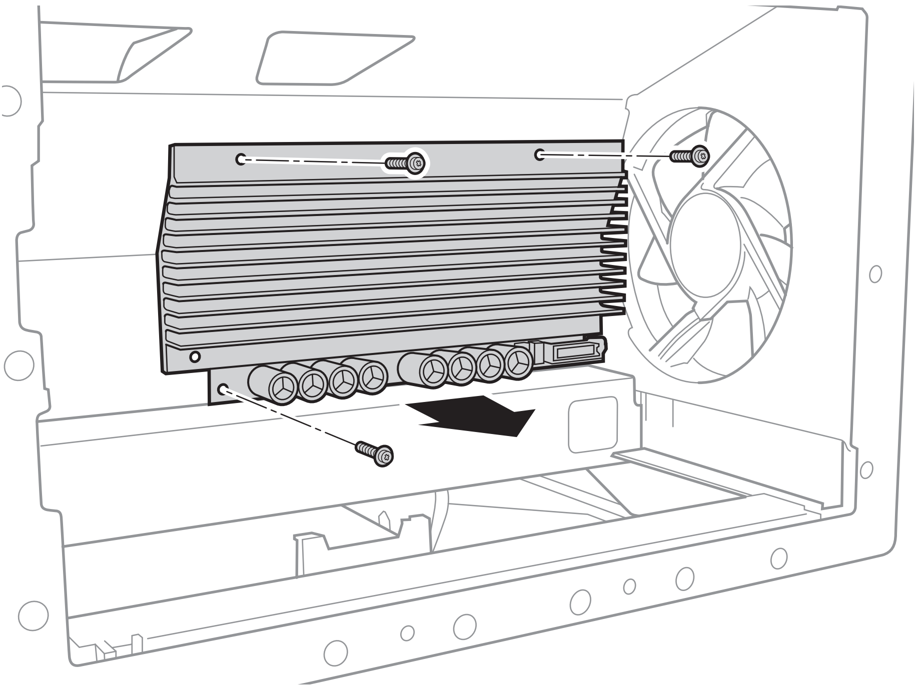
(PL 5.3)

1. Remove Electronics module (see page 8-55).
2. Remove printhead (see page 8-13).
3. Remove three screws (see illustration below).

Caution

Route the ribbon cables carefully through the slots.

4. Remove the Wave Amp Board through the back of the printer.



s8400-105

Replacement Note:

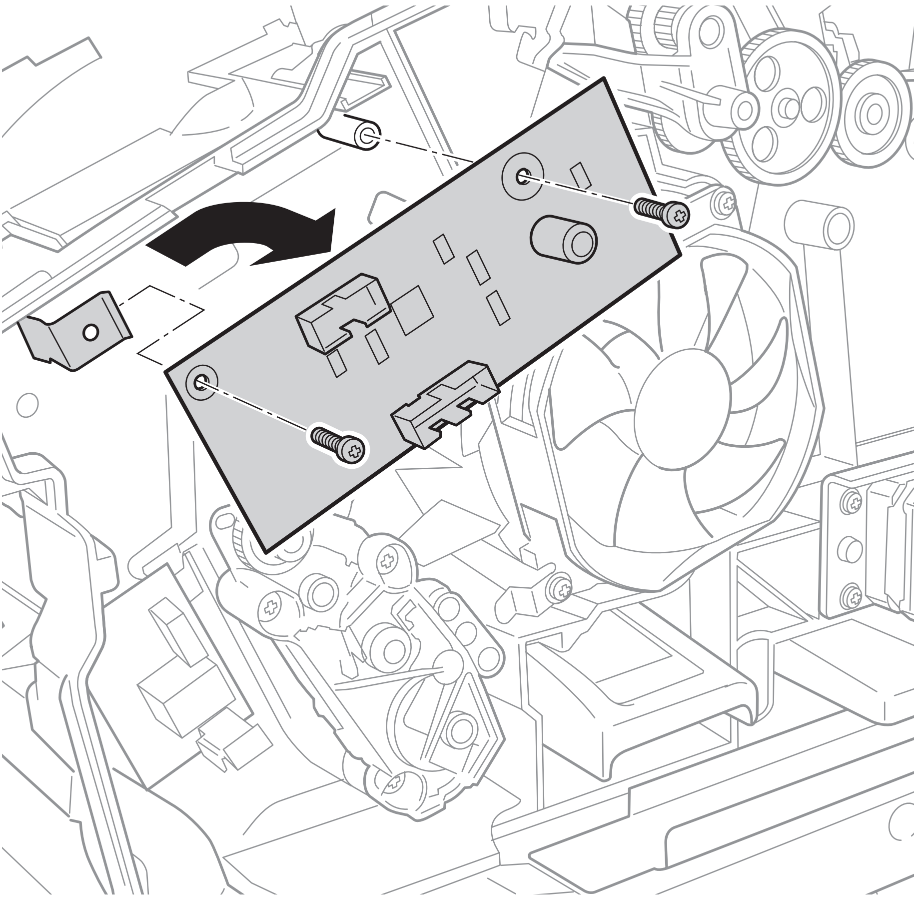
Caution

Ensure that the ribbon cables are fully and squarely inserted into the ZIF connectors on the Wave Amp and printhead. If the cables are inserted incorrectly, they can damage the Wave Amp Board. 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

(PL 5.4)

1. Remove the right side cover (see page 8-5).
2. Disconnect the wires to the I/O Board.
3. Remove the two screws attaching the I/O Board to the printer.
4. Remove the I/O Board.



Replacement Note:

Note

Ensure the corner of the board is behind the ground tab on reassembly.

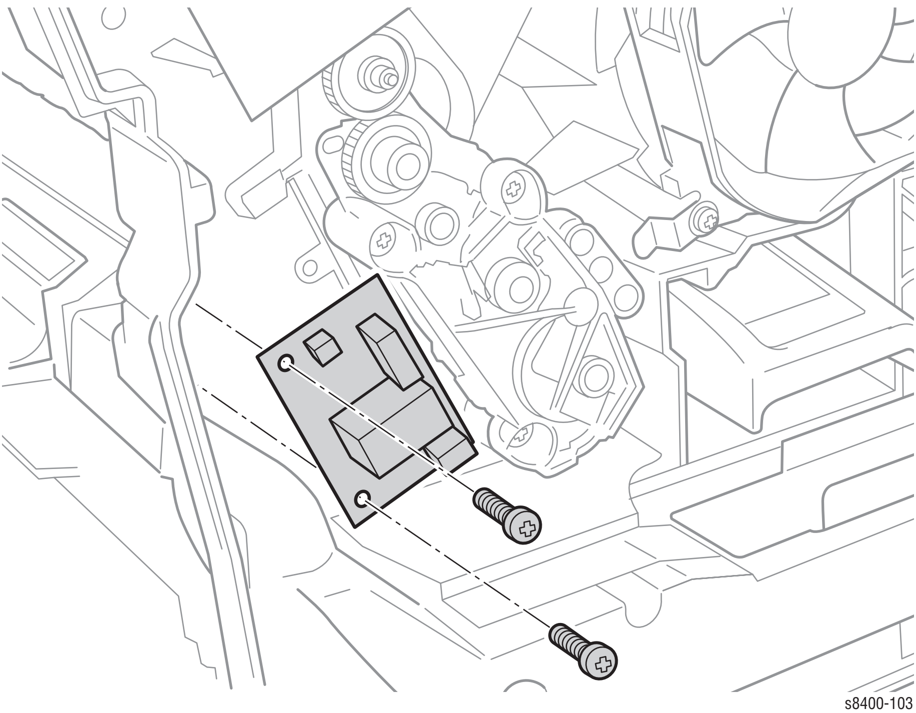
Drum Heater Relay Board

(PL 5.5)

Warning

This is an AC board, shut off power to the printer and disconnect the power cord before starting this procedure.

1. Remove the right side cover (see page 8-5).
2. Disconnect the three wires to the Drum Heater Relay Board.
3. Remove the screw securing the Drum Heater Relay Board to the printer.
4. Remove the Drum Heater Relay Board.



Replacement Note:

Warning

Ensure that no wires are routed behind the Drum Heater Relay Board during reinstallation. Some of these wires carry AC line voltage and a short could result in AC being shorted to accessible locations.

NVRAM Replacement

(PL 5.8)

1. Remove the back cover from the Electronics Module.

   Caution

   Some semiconductor components, such as the NVRAM chap, are vulnerable to damage by Electrostatic Discharge (ESD). Review the "Electrostatic Discharge (ESD) Precautions" on page 1-vi before continuing with this procedure.

   Note

   Observe the orientation of the NVRAM chip before removing it and use this as a guide for proper replacement.

2. Remove the old NVRAM chip from it's socket in the Electronics Module (see the figure on page 1-7).
3. Insert the new NVRAM chip into the socket. Ensure that the notch on the chip is on the left side.
4. Either download the snippet titled "setsn.ps" from infoSmart or get it from the Service Doc CD.
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.

Parts Lists

In this chapter...

- Serial Number Format
- Using the Parts List
- Xerox Supplies

Section 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

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.

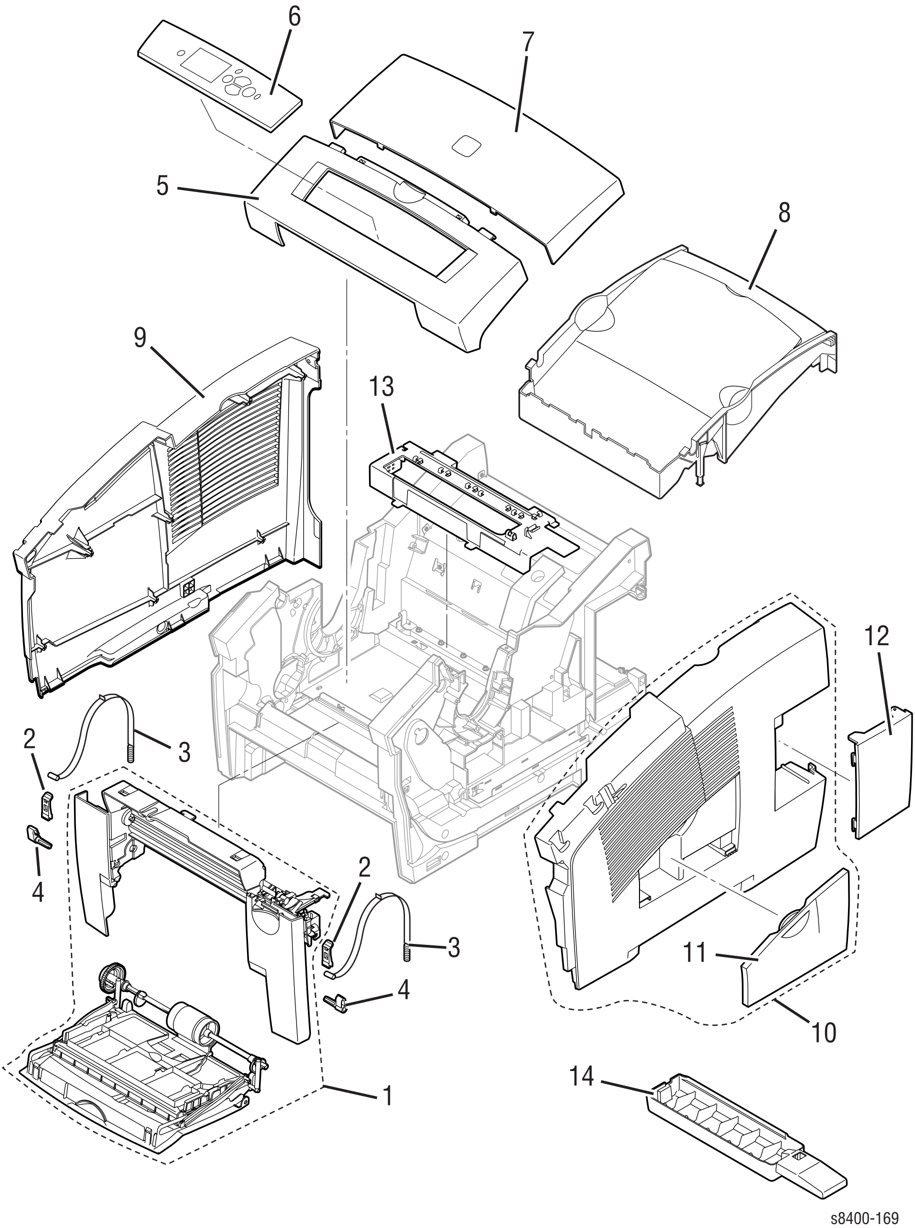
Note

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

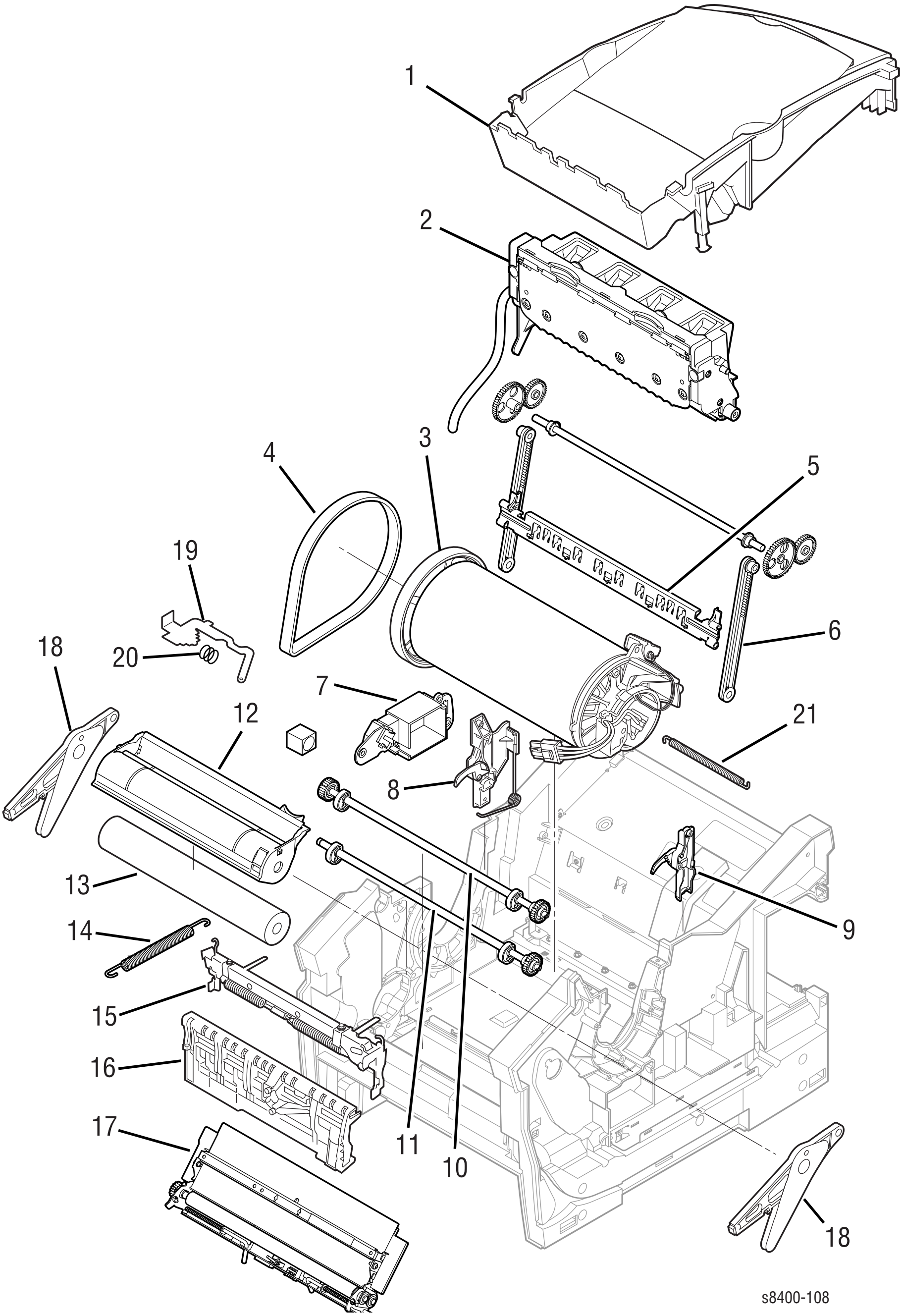
Covers



Parts List 1.0 Covers

No.	Name/Description	Qty	Part Number
1	Front Door (MPT) Assembly	1	200467880
2	Front Door Stay Retainer Clip	2	131714380
3	Front Door Stay with Spring	2	386740780
4	Hinge Pins, Front Door	2	131713880
5	Control Panel Cover	1	200467380
6	Control Panel with Bezel	1	657012880
7	Exit Cover Assembly	1	200469380
8	Ink Loader Door (part of PL 2.12)	1	200469880
9	Left Side Cover	1	200467680
10	Right Side Cover Assembly with Doors	1	200467580
11	Drum Maintenance Door (Side)	1	200469480
12	I/O Access Door	1	200468480
13	Waste Tray Cover	1	200466780
14	Waste Tray	1	109R00736

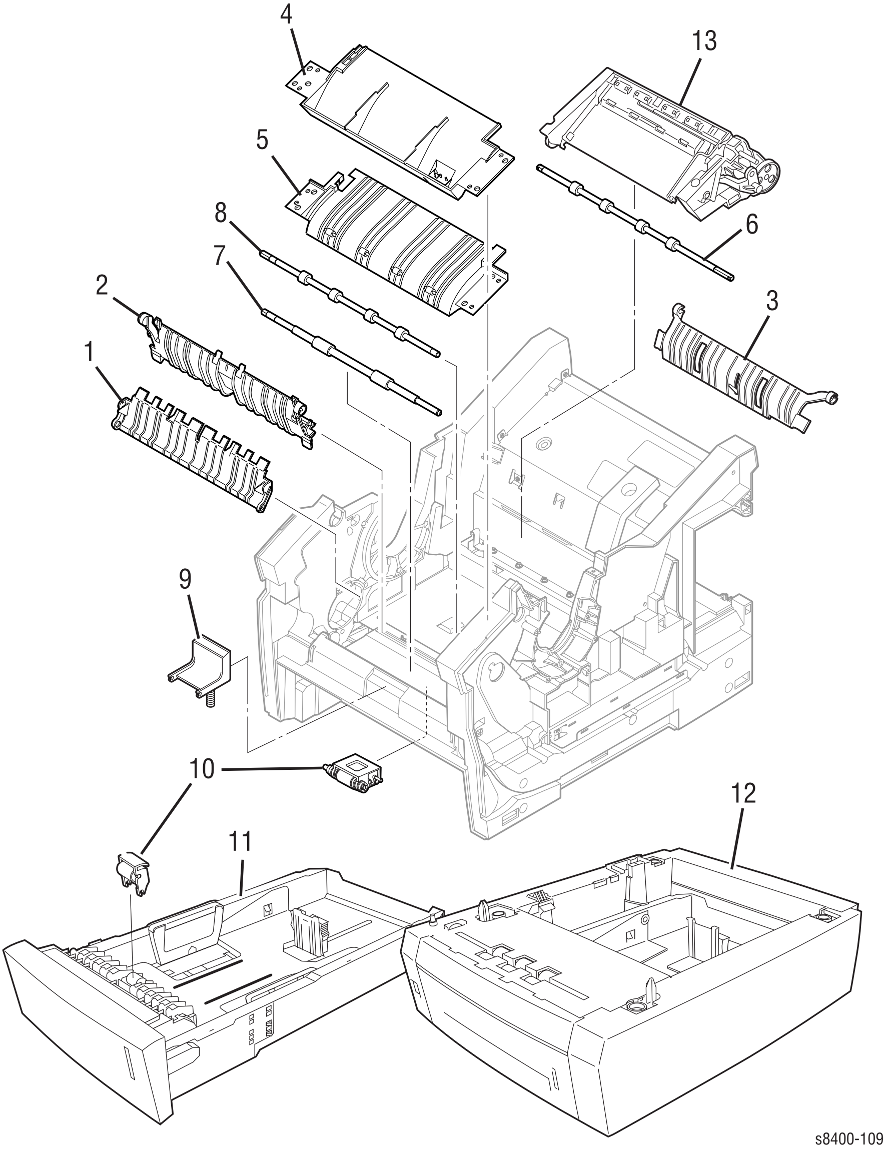
Imaging



Parts List 2.0 Imaging

No.	Name/Description	Qty	Part Number
1	Ink Loader Assembly and Door	1	200469880
2	Printhead Assembly	1	650430300
3	Drum Assembly	1	105115080
4	Belt, Y-Axis Drum	1	214498780
5	Printhead Wiper	1	367053480
6	Belt, Wiper Drive	1	214501280
7	Purge Pressure Pump	1	119641180
8	Left Printhead Restraint	1	343167280
9	Right Printhead Restraint	1	343167180
10	Transfix Camshaft Assembly	1	384187480
11	Drum Maintenance Camshaft Assembly	1	401100380
12	Stripper Carriage Assembly	1	386735280
13	Transfix Roller	1	401102780
14	Y-Axis Tension Spring	1	214499680
15	Transfix Load Module Assembly	1	386739380
16	Drum Maintenance Pivot Plate Assembly	1	367053180
17	Preheater and Deskew Assembly	1	119641980
18	Transfix Load Arm Assembly	1	401101280
19	X-Axis Bias Spring Hook	1	214503280
20	X-Axis Roll Adjuster Spring	1	214503180
21	Printhead X-Axis Bias Spring	1	214503080

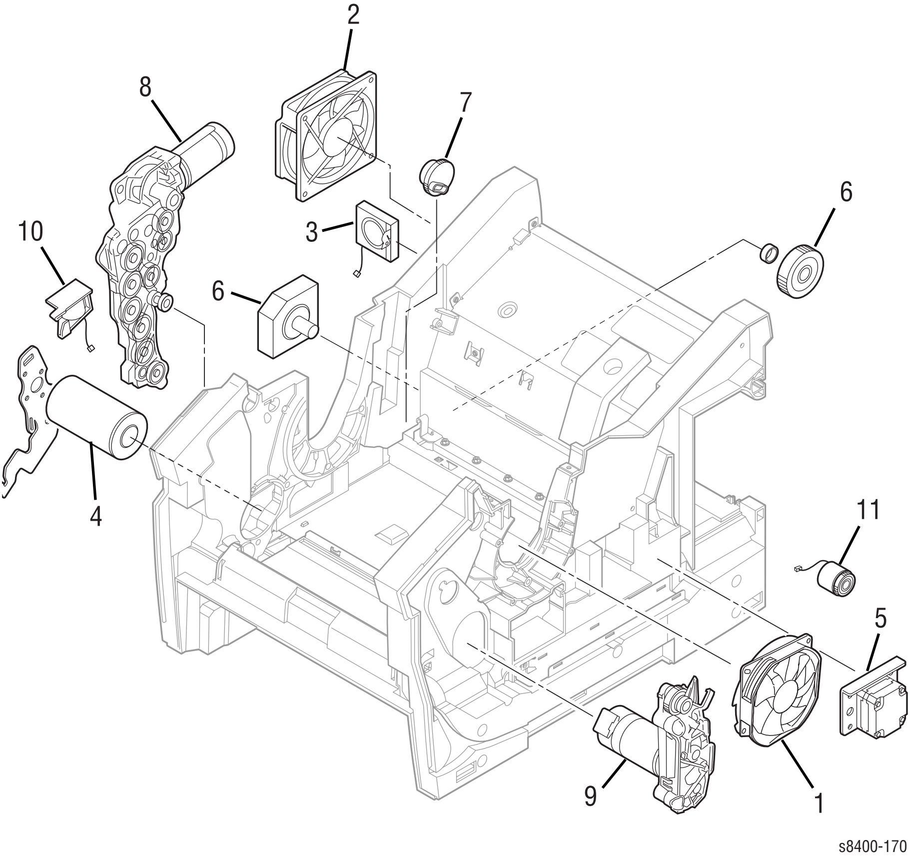
Paper Path



Parts List 3.0 Paper Path

No.	Name/Description	Qty	Part Number
1	Inner Simplex Guide (White)	1	351111480
2	Lower Inner Duplex Guide (Green)	1	351112080
3	Lower Exit Guide Assembly with Strip Flag (Green)	1	351112780
4	Outer Duplex Paper Guide with Sensors (Safety Interlocks)	1	351113680
5	Upper Duplex Paper Guide with Solenoid	1	351113280
6	Exit Roller	1	401091980
7	Take Away Roller	1	401094780
8	Duplex Roller	1	401091880
9	Separator Pad Kit	1	650429300
10	Pick Assembly and Retard Roller Kit	1	650429200
11	Main Tray (Tray 2)	1	650433200
12	525-Sheet Feeder (HCF) and Tray	1	650433100
13	Exit Module Assembly	1	441223980

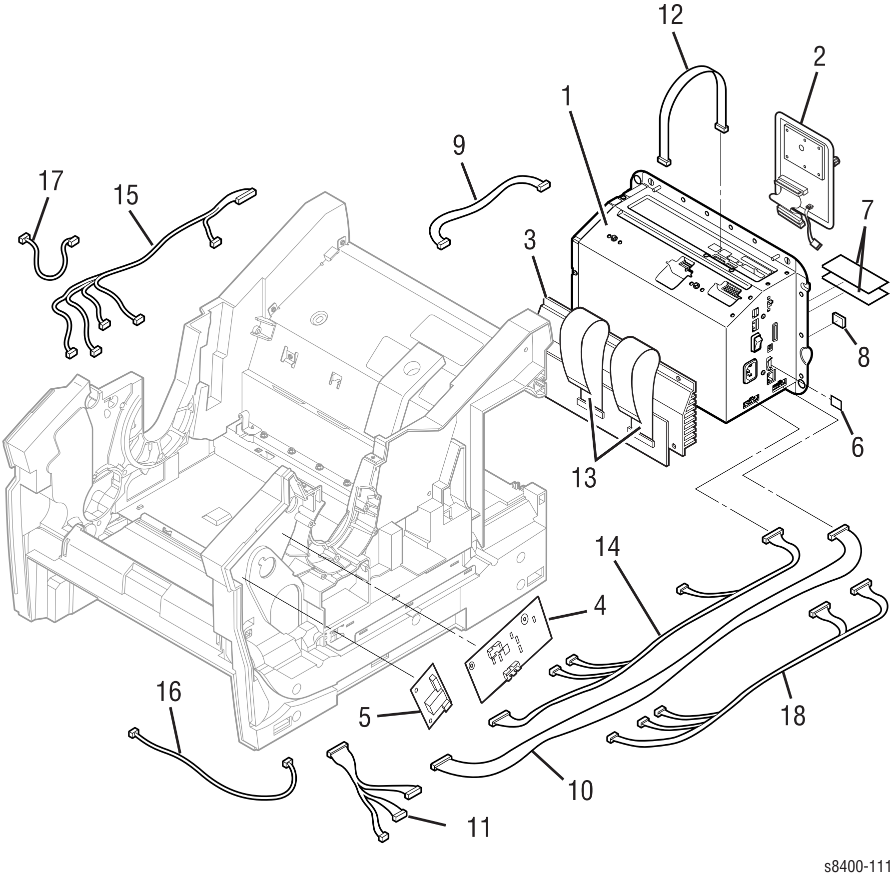
Motors, Gears, Solenoids, Clutches, and Fans



Parts List 4.0 Motors, Gears, Solenoids, Clutches, and Fans

No.	Name/Description	Qty	Part Number
1	Drum Cooling Fan	1	119641780
2	Electronics Module System Fan	1	119642680
3	Paper Path Motor Cooling Fan	1	119650580
4	Motor, Y-Axis Drive	1	147101780
5	X-Axis Motor Assembly	1	650429400
6	Tray Lift Motor Kit and Gear	1	650429500
7	Compound Gear, Head Tilt	1	401097880
8	Gearbox, Media Drive with 2 Clutches, Solenoid	1	401098480
9	Gearbox and Motor, Process Drive	1	401100080
10	Pick Solenoid, Tray 1	1	119640880
11	Electric Clutch, Wiper	1	401096180

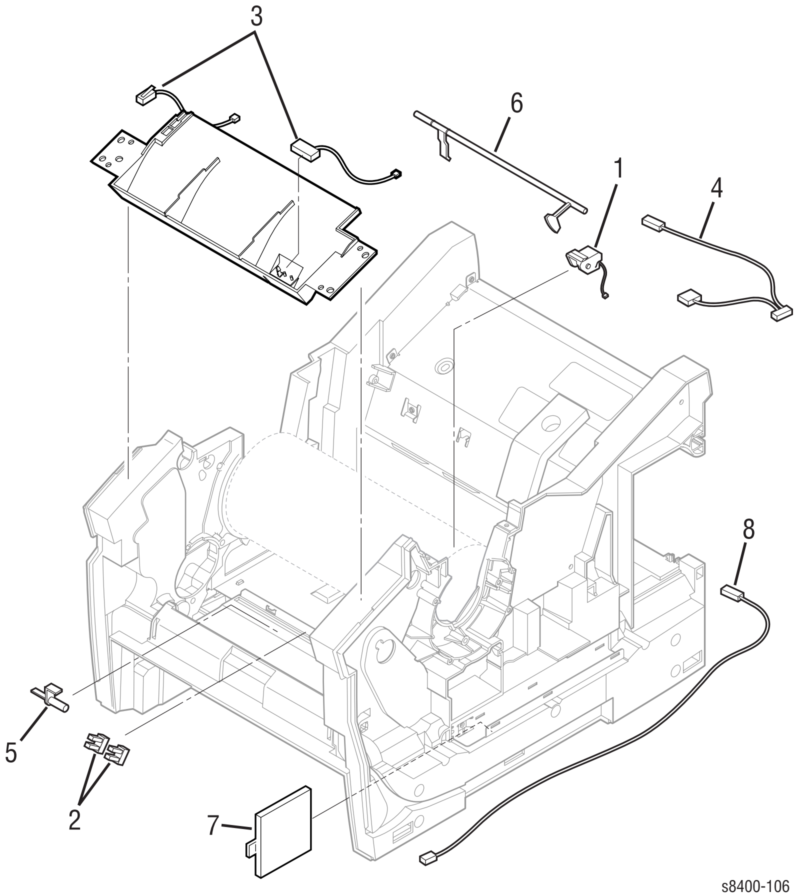
Circuit Boards



Parts List 5.0 Circuit Boards

No.	Name/Description	Qty	Part Number
1	Electronics Module (no RAM, NVRAM, or Configuration Card)	1	119649580
2	Hard Drive Assembly Hard Drive with Japanese Fonts	1	650432900 650433000
3	Wave Amp Assembly	1	671522380
4	I/O Board	1	671529180
5	Drum Heater Relay Board	1	650431700
6	Configuration Card-B, Programmed Configuration Card-BD, Programmed Configuration Card-N, Programmed Configuration Card-DP, Programmed Configuration Card-DX, Programmed	1	650431200 650431300 650431400 650431500 650431600
7	128 MB SDRAM 256 MB SDRAM	1	156483700 156466300
8	8-pin NVRAM	1	156476800
9	Cable, Wave Amp Signal	1	174446580
10	Cable, I/O Board Data	1	174447480
11	Cable, Right Umbilical	1	174448180
12	Cable, Printhead Interface	1	174448580
13	Cable, ZIF, Wave Amp Drive	1	174448680
14	Cable, Right Side Power Control	1	174446680
15	Wiring Harness, Left Side Power Control	1	174449480
16	Cable, Front Door	1	174447880
17	Cable, Y-Axis Motor Ground	1	174451680
18	Cable, Combined Right	1	174451100

Sensors and Flags (Actuators)



Parts List 6.0 Sensors and Flags (Actuators)

No.	Name/Description	Qty	Part Number
1	Drum Temperature Sensor Assembly	1	119643080
2	Optical Sensor (Generic Snap-In)	1	119640580
3	Safety Interlock Switch (Mech)	1	119645580
4	Exit Module Sensor Assembly	1	119648180
5	Paper Present Flag	1	386731280
6	Exit Flag	1	386732680
7	Sensor Assembly, Paper Tray	1	441223780
8	Waste Tray Sensor	1	119648780

Xerox Supplies

Kits

Description	Part Number
Mechanical Kit (Hardware) Nut Plate - 2 each 6 mm press nut - 2 each #8 SAE washer - 5 each Thumbscrews - 2 each M4 x 12 delta pt - 5 each M4 x 32, partial thread flanged hex - 5 each M4 x 12, taptite flanged - 5 each ASMO clip, lift motor - 2 each E-ring, bent M6 5 mm - 5 each Bushing 6 mm - 2 each Cable Restraint - 2 each Frame Replace Screw (silver blue tint - 5 each	650429700
Repackaging Kit	065062800
Cleaning Kit	016184500

Power Cords

Description	Part Number
Cable Assembly, 3,18 AWG, 115 V, 98, 0 L	161006600
Cable Power EURO 220 V, 99 L	161006609
Cable Power U.K. 240 V, 96 L	161006610
Cable Power AUST 240 V, 96 L	161006611
Cable Assembly SWISS 220/240 V, 50 Hz	161015400
Cable Assembly PWR. DANISH, 250 V	161024000
Cable Assy PWR, PRC	161030400
Cable Power, 240 V, ARGENTINA	161030700

Upgrade Kits and Options

Description	Part Number
Hard Drive Upgrade Kit	097S03172
Hard Drive Upgrade with Japanese Fonts	097S03173
Memory 128 MB, 16M x 64, PC133; Memory DIMM 256 MB, 32M x 64, PC133; Memory DIMM	 ZM0128 ZM0256
525-Sheet Feeder with Tray	097S03174

Recommended Tools

Description	Part Number
Torque Screwdriver	003082700
T20 Screwdriver Tip	003086600
Mechanical Parts Kit	650429700
Flashlight	
Grease	006799700

Consumables and Routine Maintenance Items

Description	Part Number
Standard-Capacity Maintenance Kit, Phaser 8400	108R00602
Extended-Capacity Maintenance Kit, Phaser 8400	108R00603
Genuine Xerox Solid Ink 8400 Black (3 sticks)	108R00604
Genuine Xerox Solid Ink 8400 Cyan (3 sticks)	108R00605
Genuine Xerox Solid Ink 8400 Magenta (3 sticks)	108R00606

Consumables and Routine Maintenance Items

Description	Part Number
Genuine Xerox Solid Ink 8400 Yellow (3 sticks)	108R00607
Genuine Xerox Solid Ink 8400 Black (6 sticks)	108R00608
Rainbow Pack (1 Cyan,1 Magenta,1 Yellow, 1 Black	108R00612

Software and Documentation

Description	Part Number
Setup Guide (poster)	001153600
Quick Reference Guide	71086500
World Kit	061449300
Service Manual	071086500
Printer Installer and Utilities CD-ROM	063344900
User Documentation CD-ROM	063345000

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 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

Description	Part Number
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

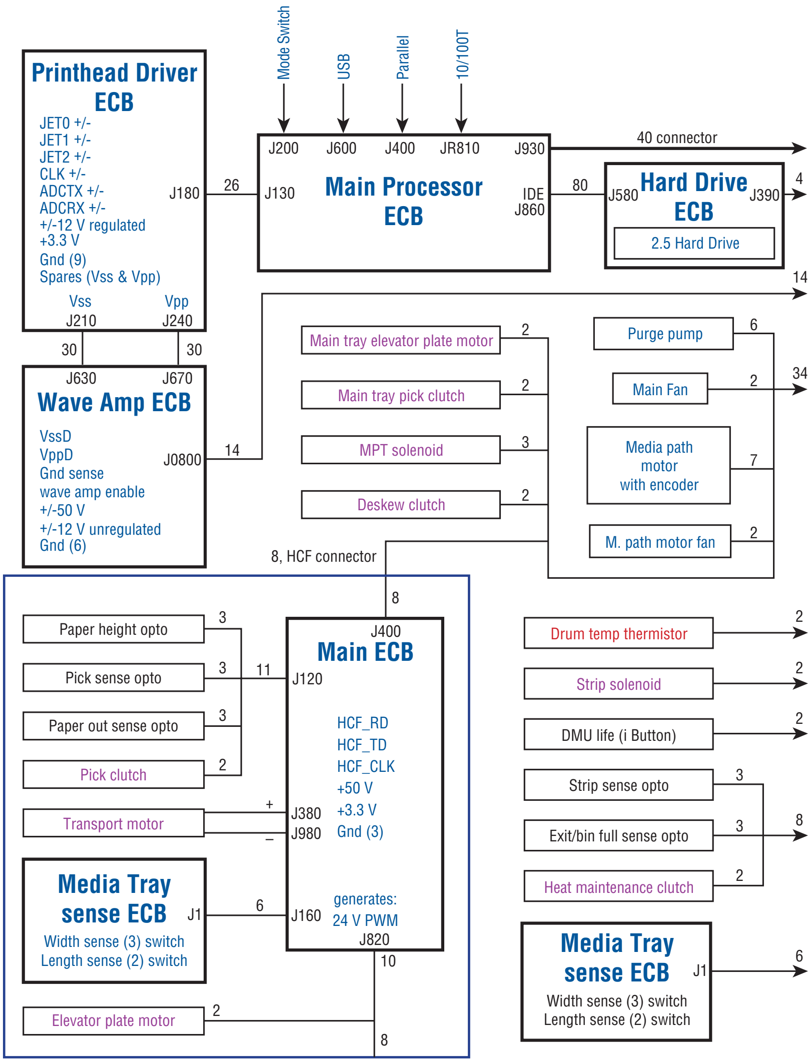
Wiring Diagrams

In this chapter...

- Main Wiring Diagram
- Right-Side Wiring Diagram
- Left-Side Wiring Diagram
- Inside Front Wiring Diagram
- Inside Top Wiring Diagram
- Inside Top - printhead Wiring Diagram

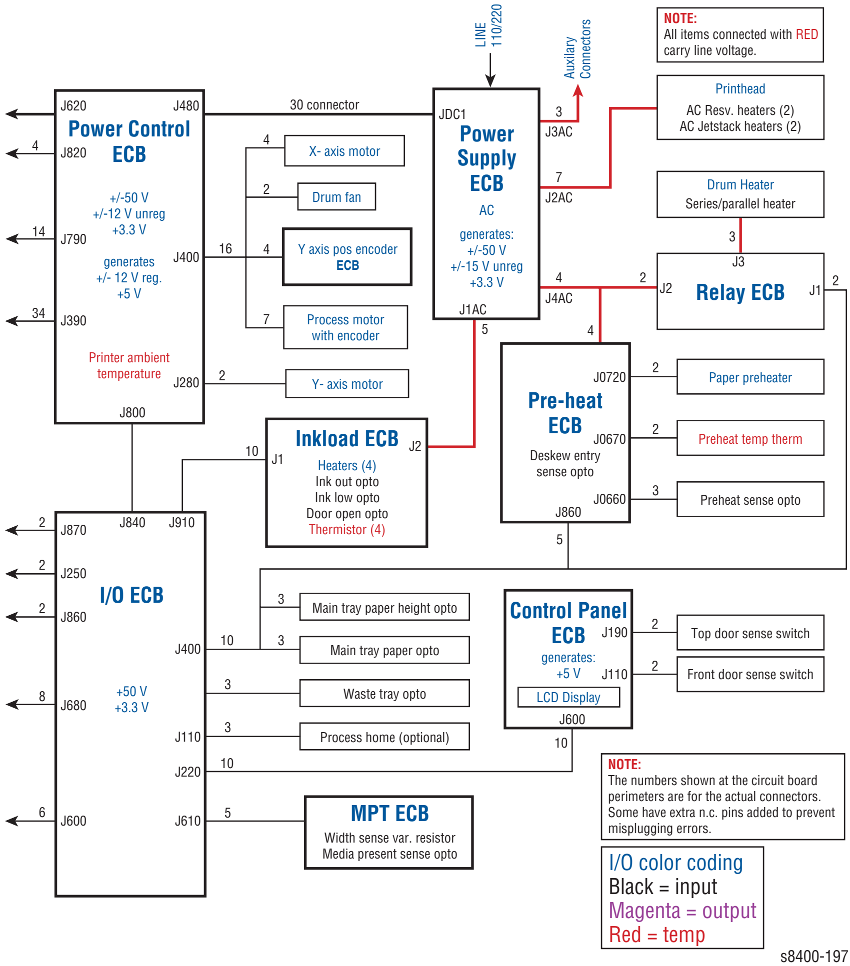
Section 10

Main Wiring Diagram



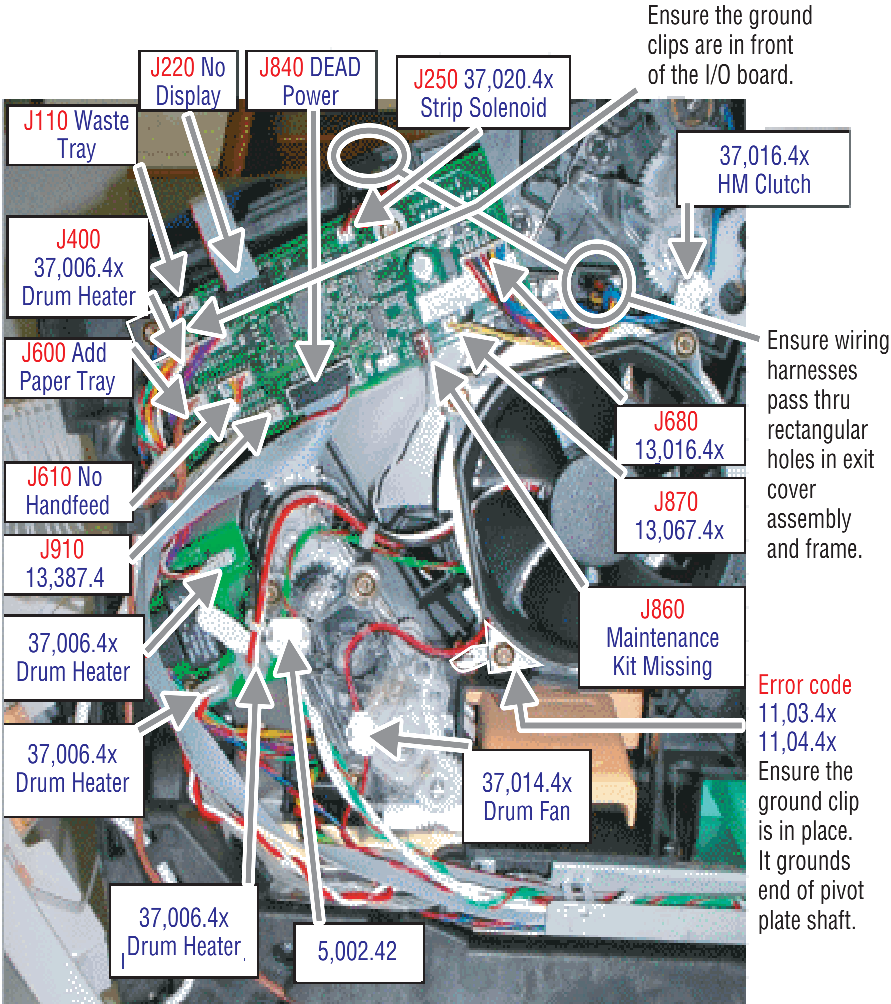
s8400-181

Main Wiring Diagram (Continued)



Right-Side Wiring Diagram

The arrows indicate which connectors you should look at for the Pest codes. The Pest codes are displayed on the front panel.

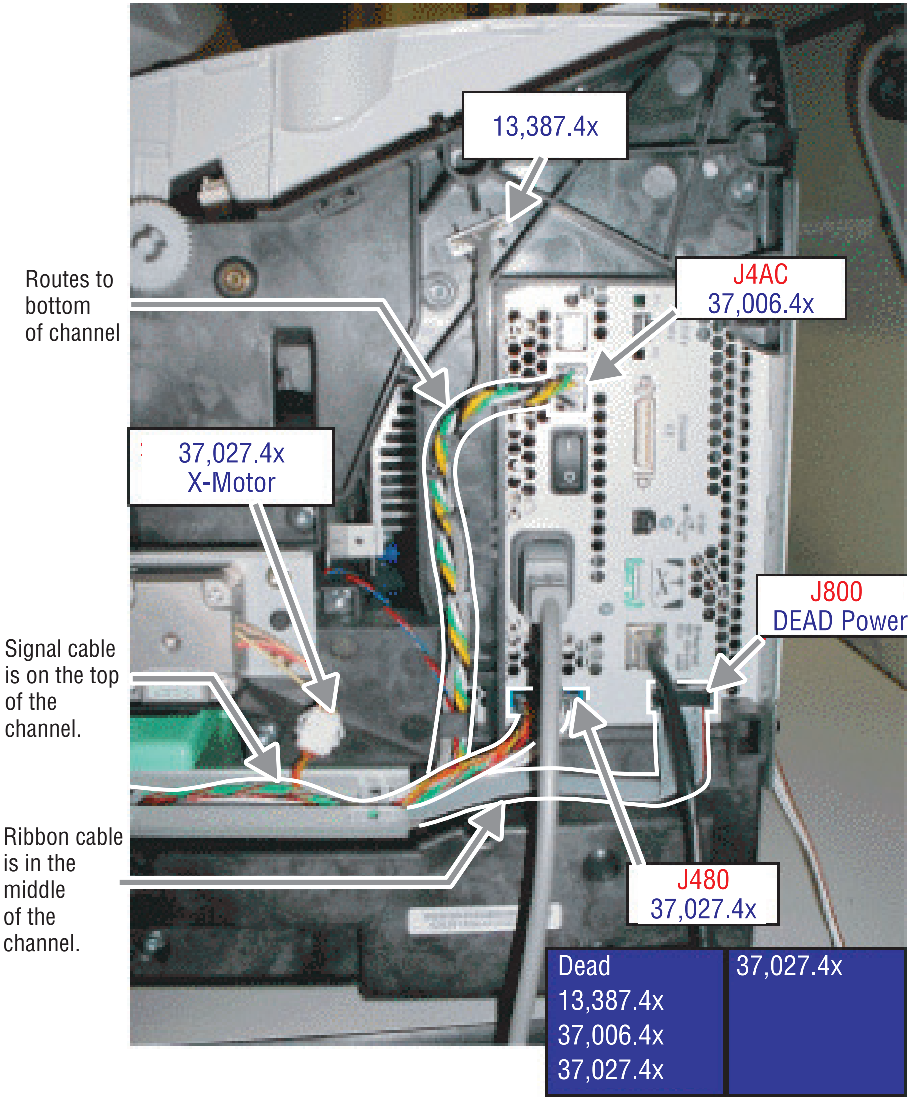


Add Paper	Waste Tray	13,387.4	37,006.4x
Dead	Maint. Kit	37,006.4x	37,014.4x
No Display	13,016.14x	37,006.4x	37,016.4x
No Handfeed	13,067.14x	37,006.4x	37,020.4x

s8400-179

Right-Side Wiring Diagram (Continued)

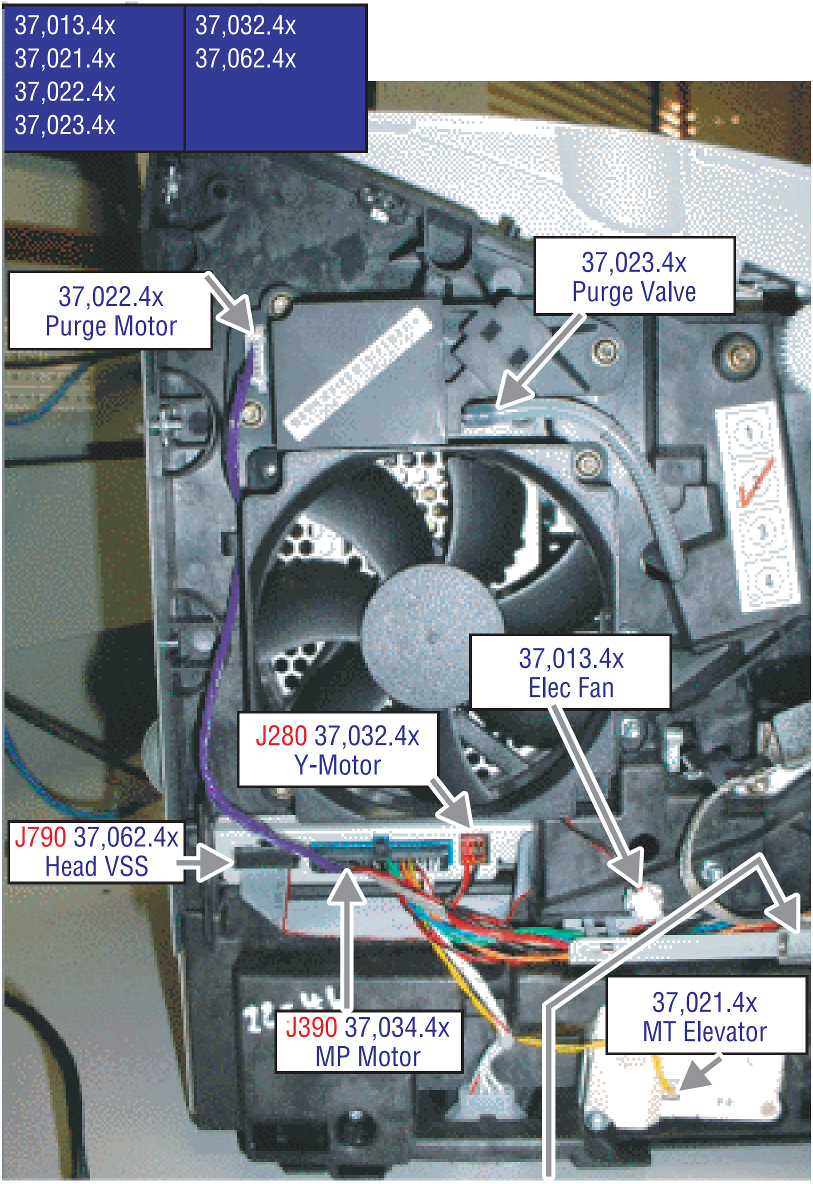
The arrows indicate which connectors you should look at for the Pest codes. The Pest codes are displayed on the front panel.



s8400-180

Left-Side Wiring Diagram

The arrows indicate which connectors you should look at for the Pest codes. The Pest codes are displayed on the front panel.

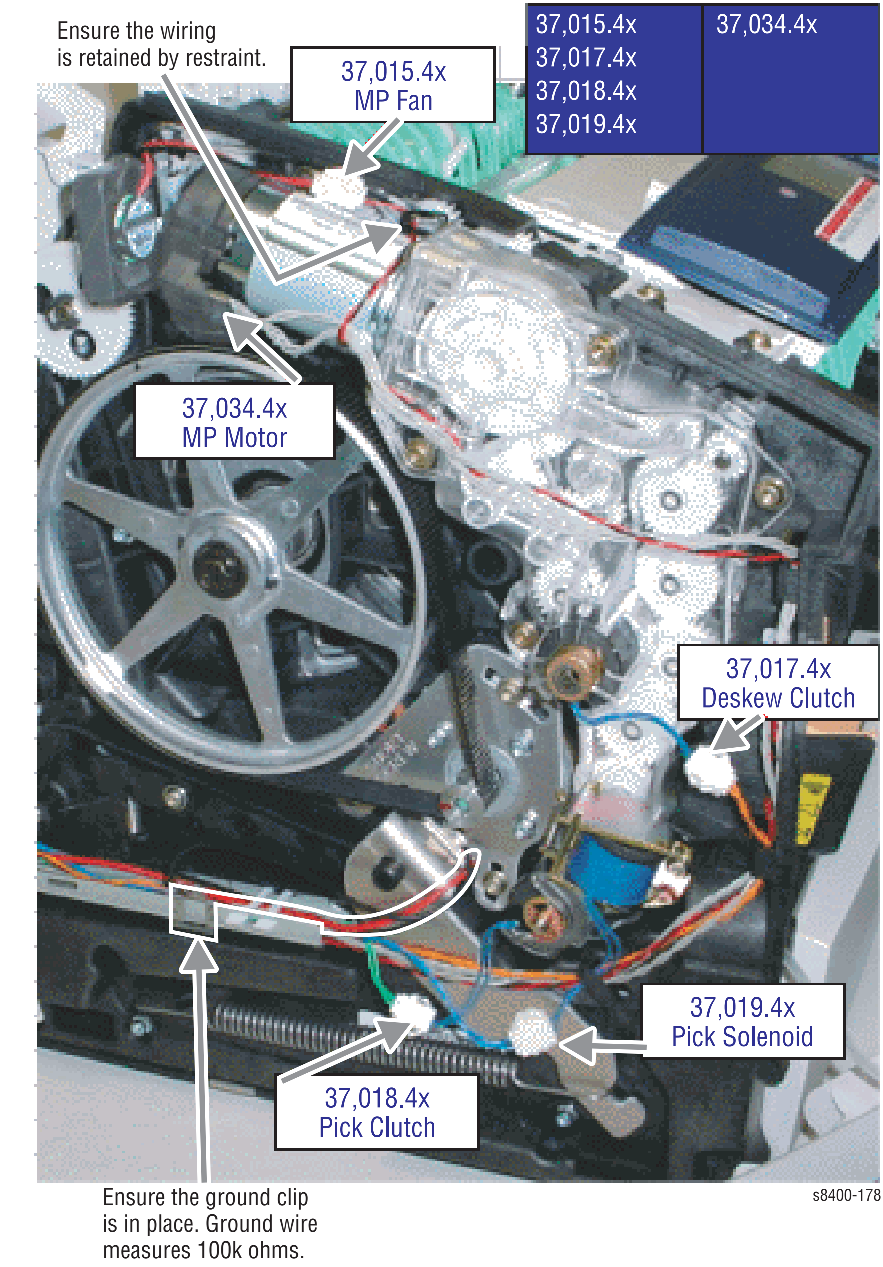


Ensure ground strap is clipped to the channel.

s8400-177

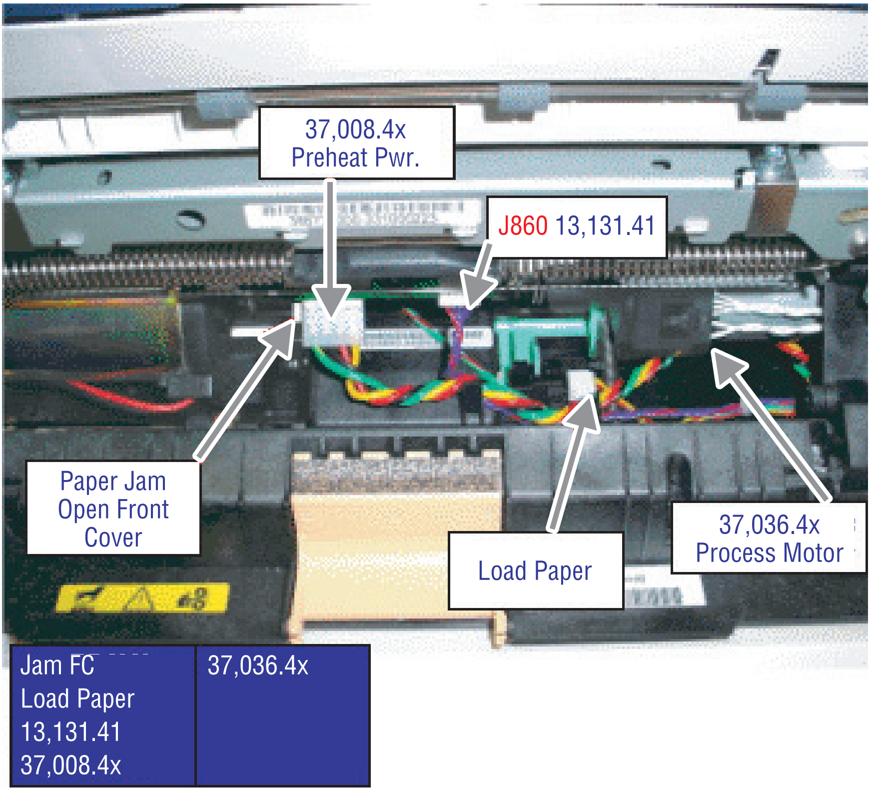
Left-Side Wiring Diagram (Continued)

The arrows indicate which connectors you should look at for the Pest codes. The Pest codes are displayed on the front panel.



Inside Front Wiring Diagram

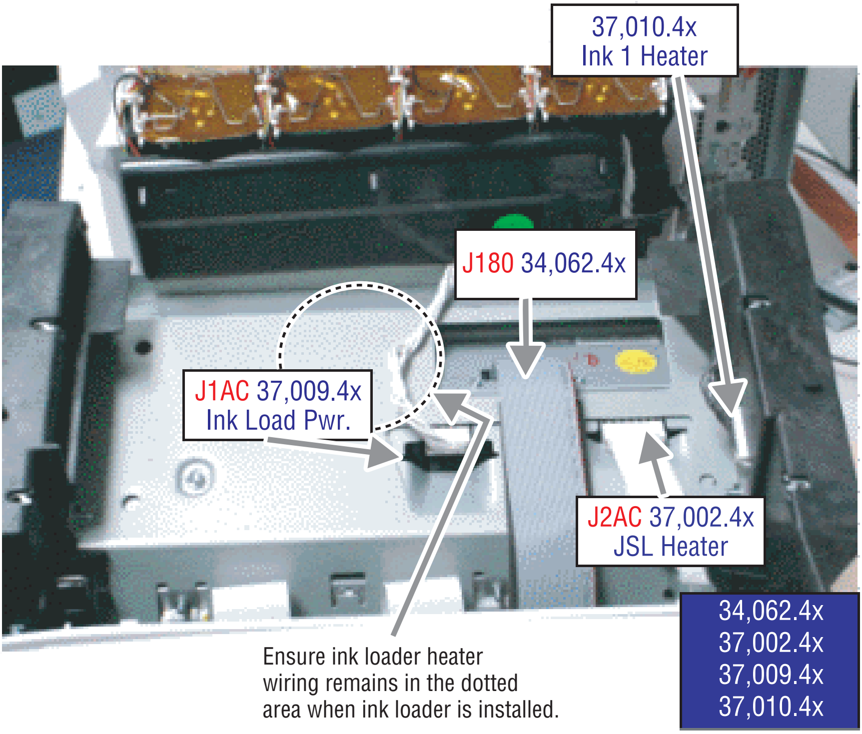
The arrows indicate which connectors you should look at for the Pest codes. The Pest codes are displayed on the front panel.



s8400-175

Inside Top Wiring Diagram

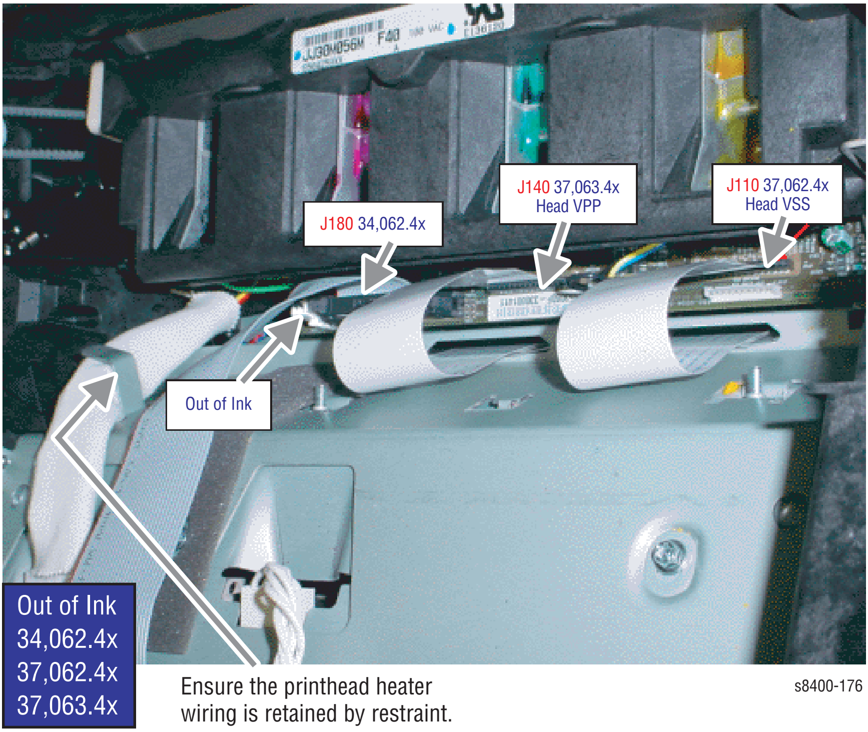
The arrows indicate which connectors you should look at for the Pest codes. The Pest codes are displayed on the front panel.



s8400-174

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 front panel.



Appendix

Contents...

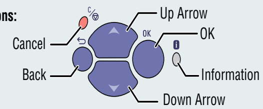
Appendix A

Menu Map

Main Menu:

READY TO PRINT.
- Information
- Walk-Up™ Features
- Printer Setup
- Troubleshooting
- Shut Down

Front Panel Buttons:



🖨 = prints an information page.

- **Information**
  - 🖨 Menu Map
  - Printer Identification
    - Model
    - Printer Name
    - Print Server*
    - IP Address*
    - Serial #
    - Activation Date
  - Information Pages
    - 🖨 Help Guide
    - 🖨 Configuration Page
    - 🖨 Paper Tips Page
    - 🖨 Connection Setup Page
    - 🖨 Moving Guide
    - 🖨 Startup Page
    - 🖨 Usage Profile
    - 🖨 PostScript Font List
    - 🖨 PCL Font List
  - 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
- **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*
      - TCP/IP Setup
        - TCP/IP
        - DHCP/BOOTP
        - AutoIP
        - TCP/IP Address
        - TCP/IP Network Mask
        - TCP/IP Gateway
        - Port 9100
        - LPR
        - IPP
        - SLP
        - SSDP
        - CentreWare IS
      - NetWare Setup
        - NetWare
        - IPX Frame Type
      - Ethernet Speed
      - EtherTalk
    - Parallel Setup
      - Parallel Port
      - Wait Timeout
      - Page Description Language
      - Job Pipelining*
    - USB Setup
      - USB Port
      - Wait Timeout
      - Page Description Language
      - Job Pipelining*
    - Reset Connection Setup

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

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	12.5	51.2 - 190.9	102 - 330.6

Paper Weight Equivalence Table

US Postcard Thickness (mm)	US Bond Weight (lbs.)	US Text Book Weight (lb.)	US Cover Weight (lb.)	US Bristol Weight (lb.)	US Index Weight (lb.)	US Tag Weight (lb.)	Metric Weight (g/m^2)
	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

Phaser 8400 Version 1.0

NAME:_____________________________**OUT REQUEST ID:**_________________________**DATE**______________

SERVICE COMPANY (if no OUT REQUEST ID):_____________________________________**PHONE:**____________

IMPORTANT! This checklist outlines proper printhead troubleshooting procedures and should be performed by all Xerox employees and any other service personnel *on any service job* involving a printhead replacement.

A completed checklist and sample prints must be returned with each returned printhead. Xerox reserves the right to refuse reimbursement to service personnel who do not enclose a completed checklist and a sample print with each returned printhead.

Please return the following items with the defective printhead:

- **Service Print 2** (not applicable for system errors).
- **Service Usage Profile Pages** – located in the front panel menu Troubleshooting – Service Tools
- **On-site Printhead Troubleshooting Checklist** (filled out).
- Inventory control "**Green Tag**" (filled out)
- **Sample prints** that clearly show the observed printhead defect (not applicable for system errors)

The On-site Printhead Troubleshooting checklist is organized into two sections: The Initial checklist and the Wiper/Purge checklist.

Initial Checklist

1. Check for use of generic ink (non-Xerox ink, NXI), circle all that apply:

1a. Did the customer state that they have used generic ink in this printhead? **YES** **NO**

1b. Did you observe generic in sticks or related packaging at the site? **YES** **NO**

1c. Are there generic ink sticks in the ink loader? **YES** **NO**

Indicate brands and lot codes of generic ink if used: ______________________________________

____

(For Xerox personnel only: Record ink information in Non-Xerox Ink section of the STS app.)

Note: 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 please record non-Xerox ink use in the FIST system as well as in this document.

2. Print the **Service Usage Profile.** It is located in the front panel menu Troubleshooting – Service Tools.

If **Line 631**	**Printhead ID:**	If **Line 636**	**IDU:**
Printhead ID	00-09: _______________	**IDU** lists any values,	00-09: _____________
lists a date**,**	10-29: _______________	record the numbers	10-29: _____________
record the date	30-99 _______________	here:	30-99 _____________
(month day year) here:	100+: _______________		100+: _____________

Xerox U.S. personnel please record these dates in the FIST system as well as in this document.

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INITIAL CHECKLIST (continued)

3. Enter the printhead serial number. ________________________________

4. Does the printer display an error code indicating a problem with the printhead? **YES** **NO** Go to Wiper/Purge Checklist

If **YES** please write down the error code. _______________

3a. Is error code 13,264.4x present in the Fault History? **YES** **NO** Go to 3b

If **YES**, replace the electronics module (continue to 3b).

3b. Is a printhead thermostat open or shorted error code displayed? **YES** **NO** Go to 3c
13,195.4x, 13,197.4x, 13,259.4x, 13, 261.4x, 13,323.4x, 13.325.4x
or PEST error code 37,002.4x, 37,003.4x, 37,004.4x, or 37,005.4x

If **YES**,
3a. Inspect and reseat the printhead interface cable (gray ribbon cable) and retest.
3b. Replace the electronics module and retest.
3c. Replace the printhead.
3d. Perform **Wiper/Purge Checklist** with new printhead.

4. Print Service Test 2: Weak and Missing Jets:

Are there weak or missing jets? **YES** **NO** Go to Wiper/Purge Checklist

If **YES**, do the following:
3a. Clean the printhead wiper blade with a lint-free cloth to prevent contamination of the printhead.
3b. 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.
3c. Select **Eliminate Light Stripes** from the printer front panel up to 3 times as needed to recover a weak or missing jet. If the problem persists, continue to the **Wiper/Purge Checklist**.

WIPER/PURGE CHECKLIST

1. Perform the wiper assembly alignment procedure as explained in the service manual.

2. Print Service Test Print 2: Weak and Missing Jets.

Is there severe color mixing from one row to the next row for the same jet? **YES** **NO**
Go to #3

If **YES,** replace the wiper assembly. Repeat **Step 2.**

3. Visually check the printhead faceplate.

Are there streaks or smudges of ink in the jet area of the printhead? **YES** **NO**
Go to # 4

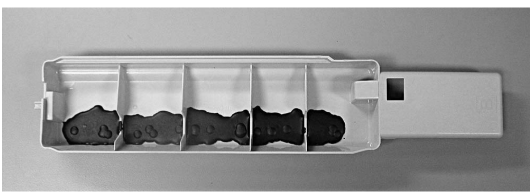
If **YES**, replace the wiper assembly. Go to **Step 2.**

4. Visually check the wiper blade.

Is there any separation or pitting on the wiper blade? **YES** **NO**
Go to # 5

If **YES**, replace the wiper assembly. Go to **Step 2.**

5. Check the purge pump performance.
5a. Empty the waste tray.
5b. Select **Eliminate Light Stripes** from the printer front panel and run one cleaning cycle.
5c. Remove the waste tray and examine how much ink was purged. A single purge should resemble the illustration.



Is purge mass noticeable less than what is pictured? **YES** **NO**
Go to # 6

If **YES**, inspect the purge hoses for splits or tears.

Continued on next page…

(continued)

If **YES**, run the service diagnostic test **Check Activators - Purge Vent Solenoid**.
R0 - test results _________. (Passing value is typically between 0.5 and 1.2).
R1 - test results _________. (Passing value is typically between 0.4 and 1.2).

If the R-values differ *significantly* from the values shown, replace the purge pump and retest.

If **YES**, run the internal diagnostic test **Check Drive - Tilt Axis Drive**.
R0 - test results _________. (Passing value is typically between 10 and 600).
R1 - test results _________. (Passing value is typically between 300 and 3100).
R2 - test results _________. (Passing value is typically between -5100 and -500).
R3 - test results _________. (Passing value is typically between 1400 and 4150).
R4 - test results _________. (Passing value is typically between -4000 and -75).

If the R-values differ significantly from the values shown, troubleshoot the head tilt system. Ensure the printhead heater wiring is secured in its restraint and not interfering with the printhead tilt action.

6. Print Service Test 2: Weak and Missing Jets.

Are there weak or missing jet(s)? **YES** **NO**

- If **NO** weak or missing jets and **generic ink** is used, document the brand of non-Xerox ink and lot codes in the **Comments** section below.
- If **NO** weak or missing jets and **Xerox ink** is used, go to **Step 7**.
- If **YES** and **non-Xerox ink is** used, document the brand and lot codes of non-Xerox ink in the **Comments** section below then go to **Step 8**.
- If **YES** and **Xerox ink** is used, go to S**tep 8**.

7. Is the customer experiencing vertical bands (not light stripes) in solid color areas? **YES** **NO** **Repair is complete!**

If **YES,** print 10 solid fill pages of the problem color. 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 over 60 solid fill pages to refresh all of the ink in the printhead reservoir. **The repair is now complete! Do not go on to Step 8 and 9**.

8. Install a new printhead and the Xerox ink included with the printhead.

9. Test the performance of the new printhead.

Comments: **(Xerox U.S. personnel please add all comments into FIST)**

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