WorkCentre® C2424

XEROX

copier-printer

Service Manual

WorkCentre® C2424 Copier-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.

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Copyright

Organization of this Manual

Frontis - Introductory, Safety and Regulatory Information

This section contains important safety information regarding technical components, regulatory agency requirements, and information about this manual.

Section 1 - General Information

This section cantains a general overview of the system and basic information regarding the control panel, consumables, and the system's physical, functional, electrical, environmental, and media specifications.

Section 2 - Theory of Operation

This section contains the basic theory of operation for the entire system. It includes diagrams and detailed operating information regarding the sub-systems (internal components), print processes (media paths and imaging), and electronics (power supply and boards).

Section 3 - Error Codes and Messages

This section provides detailed troubleshooting procedures for the system, utilizing the displayed control panel error codes and messages.

Section 4 - General Troubleshooting

This section covers general start-up, POST, BIST, PEST, and power supply operations of the system to aid in troubleshooting problems not associated with a control panel message or error code. This section also covers the Service Diagnostic functions of the system.

Section 5 - Image-Quality Troubleshooting

This section provides image-quality troubleshooting procedures for the entire system. It also contains the various test prints available to aid in troubleshooting image-quality problems.

Section 6 - Adjustments and Calibrations

This section provides procedures for proper homing of the systems components, system calibrations, ensuring ground integrity of the system, and resetting NVRAM.

Section 7 - Cleaning and Maintenance

This section provides basic information on cleaning and maintaining the system for optimal operation. It also includes printer self-maintenance functions.

Section 8 - Disassembly

This section contains all the disassembly instructions for removing and replacing Xerox spared parts.

Section 9 - Parts List

This section contains exploded diagrams and detailed parts lists for the WorkCentre C2424 Copier-Printer and the most common Xerox supplies used for this system.

Section 10 - Wiring Diagrams

This section contains the main wiring diagrams, plug-jack connector maps, and wiring diagrams to aid in troubleshooting the PEST codes.

Manual Terms

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

Note

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

Caution

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

Warning

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

General Safety

The system and recommended supplies have been designed and tested to meet strict safety requirements. Attention to the following information will ensure the continued safe operation of the system.

Electrical Safety

- Use the power cord supplied with the system.
- Plug the power cord directly into a properly grounded electrical outlet.
- Do not use a ground adapter plug to connect the system to an electrical outlet that does not have a ground connection terminal.
- Do not use an extension cord or power strip.

Warning

Avoid the potential of electrical shock by ensuring that the system is properly grounded. Electrical products may be hazardous if misused.

- Do not place the system in an area where people might step on the power cord.
- Do not place objects on the power cord.
- Do not block the ventilation openings. These openings are provided to prevent overheating of the system.
- Do not drop paper clips or staples into the system.

The power cord is attached to the system as a plug-in device on the side of the system. If it is necessary to disconnect all electrical power from the system, disconnect the power cord from the electrical outlet.

Warning

Do not remove the covers or guards that are fastened with screws unless you are installing optional equipment and are specifically instructed to do so. Power should be **OFF** when performing these installations. Disconnect the power cord when removing covers and guards for installing optional equipment. Except for user-installable options, there are no parts that you can maintain or service behind these covers.

Warning

The following are hazards to your safety:

- The power cord is damaged or frayed.
- Liquid is spilled into the system.
- The system is exposed to water.

If any of these conditions occur:

1. Turn off the system immediately.
2. Disconnect the power cord from the electrical outlet.
3. Call an authorized service representative.

Maintenance Safety

- Do not attempt any maintenance procedure that is not specifically described in the documentation supplied with your system.
- Do not use aerosol cleaners. The use of supplies that are not approved may cause poor performance and could create a hazardous condition.
- Do not burn any consumables or routine maintenance items. For information on Xerox supplies recycling programs, go to www.xerox.com/gwa.

Operational Safety

Your system and supplies were designed and tested to meet strict safety requirements. These include safety agency examination, approval, and compliance with established environmental standards.

Your attention to the following safety guidelines helps to ensure the continued, safe operation of your system.

System Supplies

- Use the supplies specifically designed for your system. The use of unsuitable materials may cause poor performance and a possible safety hazard.
- Follow all warnings and instructions marked on, or supplied with, the system, options and supplies.

Caution

Use of other than Genuine Xerox WorkCentre C2424 Solid Ink may affect print and copy quality and system reliability. It is the only ink designed and manufactured under strict quality controls by Xerox for specific use with this system. The Xerox Warranty, Service Agreements, and Total Satisfaction Guarantee do not cover damage, malfunction, or degradation of performance caused by use of non-Xerox supplies or consumables, or the use of Xerox supplies not specified for this system.

Note

The Total Satisfaction Guarantee is available in the United States and Canada. Coverage may vary outside these areas; please contact your local representative for details.

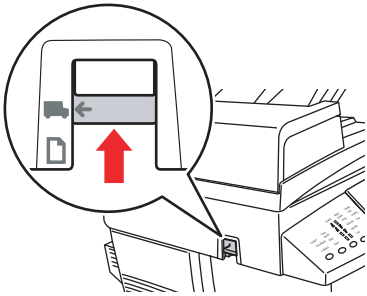
Moving the System

Caution

Parts of the system are hot. To avoid personal injury or damage to the system, allow the ink to solidify. Run the shut-down procedure to cool the system quickly. Wait at least **30 minutes** for the system to cool completely before moving or packing it.

- Always allow the system to cool before it is moved to avoid ink spills which can damage the system.
- Use the shut-down procedure at the control panel **Shut Down for Moving System** for best results.

- Never move the system if you receive a **Power Down Error-Head not Parked** message at the system's control panel. This message means the system is not ready to be moved. If the printhead is not locked, the system can be damaged during shipment.
- Always turn off the system using the power switch, located under the interface cover on the right side of the system, and unplug all cables and cords. Do not turn off the system by pulling the power cord or using a power-strip with an on/off switch.
- Always secure the scanhead shipping restraint on the left side of the scanner to lock the scanhead before removing the scanner portion of the system. Shipping the scanner with the scanhead unlocked can damage the scanner.



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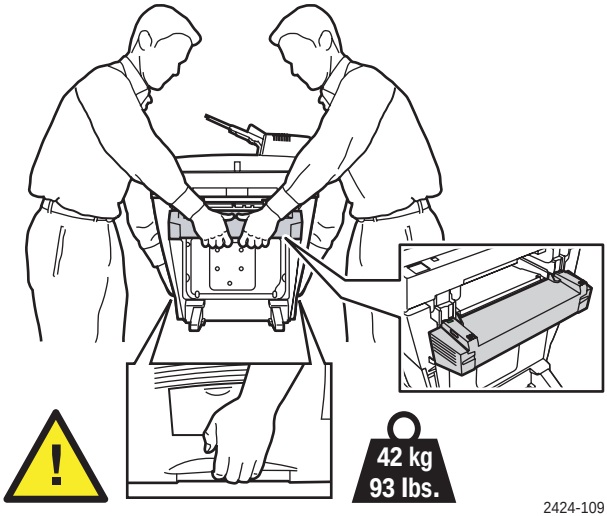
- Always remove the document feeder before shipping the system.
- Always remove the scanner before shipping the system.
- The system is heavy and **must** be lifted by **two** people. The illustration below shows the proper technique for lifting the system.



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- Always move the system separately from optional Trays 3 and 4.

When shipping the system, repack the system using the original packing material and boxes or a Xerox repackaging kit. Additional instructions for repacking the system are provided in the repackaging kit. If you do not have all the original packaging, or are unable to repackage the system, contact your local Xerox service representative.

Caution

Failure to repackage the system properly for shipment can result in damage to the system. Damage to the system caused by improper moving is not covered by the Xerox warranty, service agreement, or Total Satisfaction Guarantee.

Note

The Total Satisfaction Guarantee is available in the United States and Canada. Coverage may vary outside these areas; please contact your local representative for details.

Operating Safety Guidelines

- Keep hands, hair, neckties, etc., away from the exit and feed rollers.
- Do not remove the paper source tray that you selected in either the printer driver or control panel.
- Do not open the doors while the system is busy.
- Do not move the system while busy.

Symbols Marked on the System

	Danger, high voltage.
	Use caution (or draws attention to a particular component). See the manual(s) for information.
	Avoid pinching fingers in the system. Use caution to avoid personal injury.
	Hot surface on or in the system. Use caution to avoid personal injury.

Electrostatic Discharge (ESD) Precautions

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

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

- Immediately before handling any semiconductor components assemblies, drain the electrostatic charge from your body. This can be accomplished by touching an earth ground source or by wearing a wrist strap device connected to an earth ground source. Wearing a wrist strap will also prevent accumulation of additional bodily static charges. Be sure to remove the wrist strap before applying power to the unit under test to avoid potential shock.
- After removing a static sensitive assembly from its anti-static bag, place it on a grounded conductive surface. If the anti-static bag is conductive, you may ground the bag and use it as a conductive surface.
- Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage some devices.
- Do not remove a replacement component or electrical sub-assembly from its protective package until you are ready to install it.
- Immediately before removing the protective material from the leads of a replacement device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- Minimize body motions when handling unpackaged replacement devices. Motion such as your clothes brushing together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an electro-statically sensitive device
- Handle IC’s and EPROM’s carefully to avoid bending pins.
- Pay attention to the direction of parts when mounting or inserting them on Printed Circuit Boards (PCB’s).

Service Safety Summary

General Guidelines

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

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

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

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

Power source: This product is intended to operate from a power source that will not apply more then 264 volts RMS for a 220 volt AC outlet or 140 volts RMS for a 110 volt AC outlet 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.

Warning Labels

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

Safety Interlocks

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

Servicing Electrical Components

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

Warning

Turning the power off by using the On/Off switch does not completely de-energize the printer. You must also disconnect the printer power cord from the AC outlet. Position the power cord so that it is easily accessible during servicing.

Warning

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

Servicing Mechanical Components

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

Warning

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

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 system and the receiver.
- Connect the system into an outlet on a circuit different from that which the receiver is connected.
- Route the interface cables on the system 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 system 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 61000-3-2:1995 +A1:1998+A2:1998 (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 (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 55024:1998 (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
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.

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3 Error Messages and Codes

4 General Troubleshooting

5 Image-Quality Troubleshooting

6 Adjustments and Calibrations

7 Cleaning and Maintenance

8 Service Parts Disassembly

9 Parts Lists

10 Wiring Diagrams

A Appendix

General Information

In this chapter…

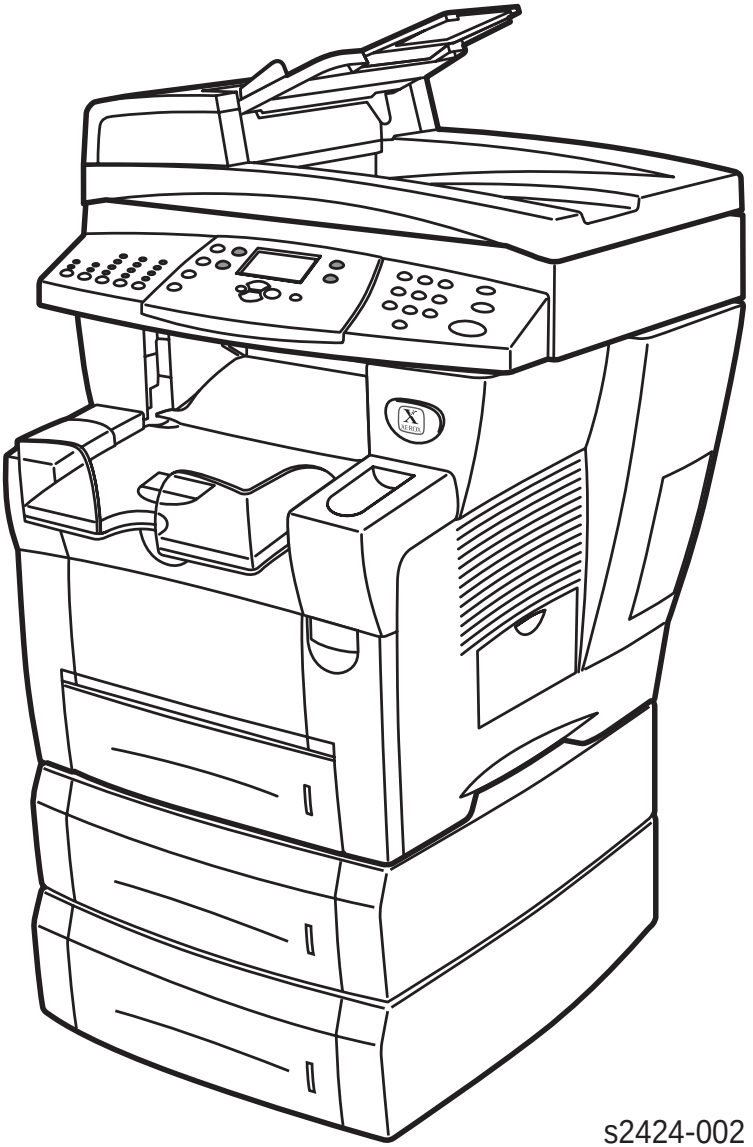
- System Introduction and Overview
- System Features and Configurations
- Routine Maintenance Items and Consumables Life Expectancy
- Control Panel Layout
- System Specifications
- Tray and Media Specifications

Section 1

System Introduction and Overview

The Xerox WorkCentre® C2424 Copier-Printer Service Manual is the primary document used for repairing, maintaining, and troubleshooting the system.

To ensure understanding of this product, complete the Xerox WorkCentre C2424 Service Training Program.



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System Features and Configurations

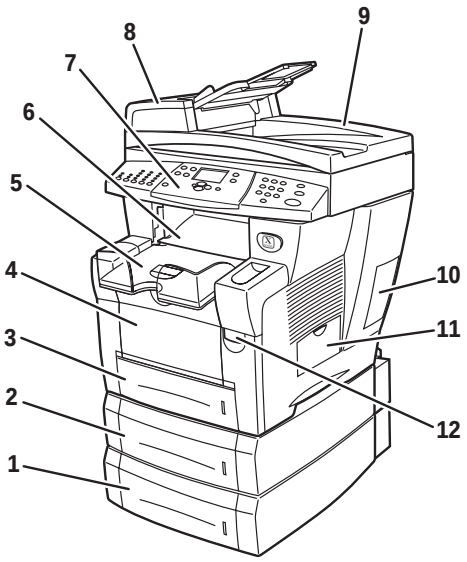
This section covers the basic system and its specifications. For more detailed information on the system's internal components, such as main assemblies, power supply, circuit boards, sensors, paper path, and functions, see Section 2, "Theory of Operation" on page 2-1.

Standard Configurations

The WorkCentre C2424 is offered in three configurations.

- DN = System with 256 MB RAM
- DP = System with 256 MB RAM, 1 525-sheet high capacity feeder, and a cart.
- DX = System with 512 MB RAM, 1 525-sheet high capacity feeder, cart, plus Scansoft applications.

Front View



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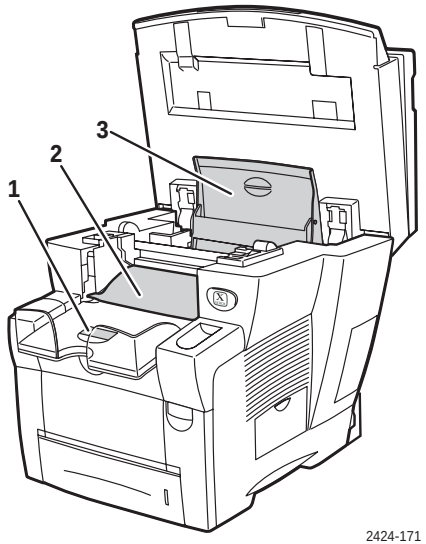
1. Tray 4 (optional 525-Sheet Feeder)
2. Tray 3 (optional 525-Sheet Feeder)
3. Tray 2 (525-sheet capacity)
4. Tray 1 (100-sheet capacity, custom size and manual feed)
5. Output tray
6. Exit cover
7. Control panel
8. DADF front cover
9. Duplex Automatic Document Feeder (DADF)
10. Interface (I/O) cover
11. Waste tray/maintenance kit side door
12. Front cover release (product serial number is behind the front cover)

Open View



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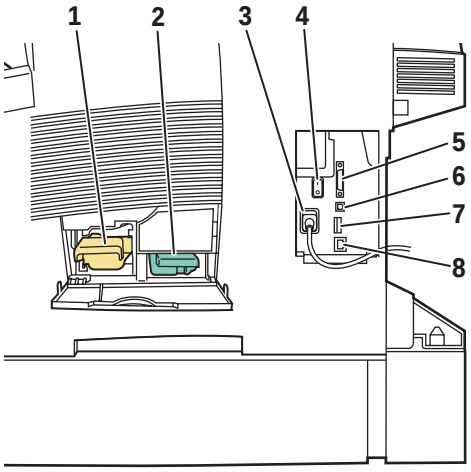
1. Short paper stop
2. Exit cover
3. Ink cover

Side View with System Interfaces



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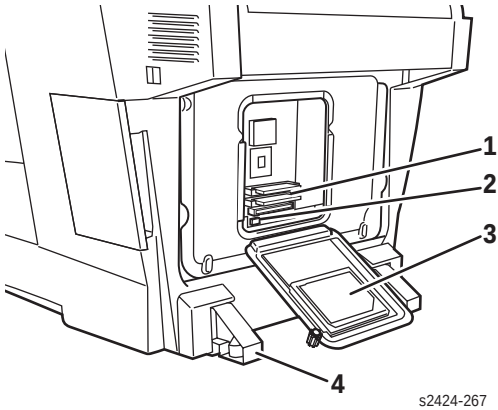
1. Maintenance kit
2. Waste tray
3. Power cord connection
4. Power switch
5. Scanner cable connection
6. USB connection
7. Configuration card
8. Ethernet 10/100 Base-T connection

Back View



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1. RAM slots
2. NVRAM chip
3. Hard drive
4. Stabilizer

Electronics Module

The system'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 system's hard drive is mounted on the rear panel.

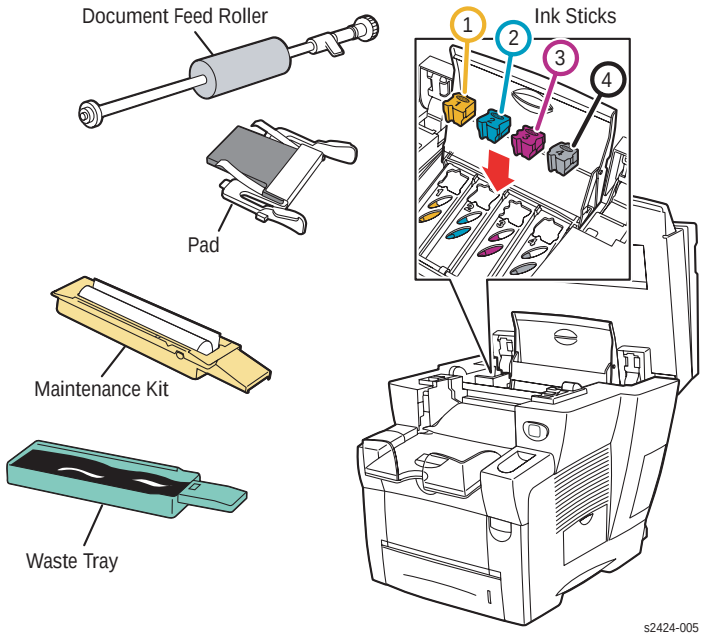
When installing a new electronics module in the system, the following components need to be transferred from the old main board.

- Hard Drive
- Configuration Card
- Memory (1 or 2 DIMMs)
- NVRAM (8-pin socketed chip)

Note

See the illustrations on page 1-5 for locating the above components.

Routine Maintenance Items and Consumables Life Expectancy



Routine Maintenance Items:		Consumable:	
Extended-Capacity Maintenance Kit	30,000 cycles (0-20% coverage) 20,000 (20-100% coverage)	Ink	1220 prints per stick*
Standard-Capacity Maintenance Kit	10,000 cycles		
Waste Tray	Empty every 5 Purges (~35 g)		
DADF Pick Rollers and Separator Pad	50,000 scans		

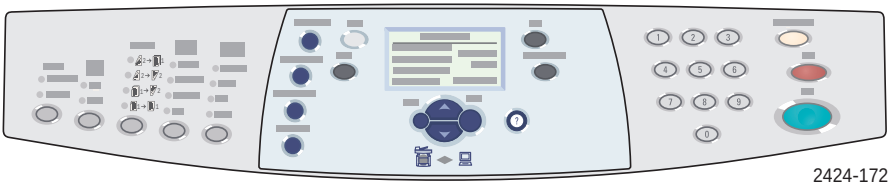
*Consumable capacity is based on 5% coverage per color on plain A4/Letter paper.

Control Panel Layout

The control panel

- Displays the system's operating status or errors and warnings.
- Prompts to load paper, replace supplies, or clear jams.
- Enables selection settings for print, copy, and scan jobs.
- Displays menus that enable changing the system's settings and accesses tools to help resolve problems.

The control panel is divided into three major areas.



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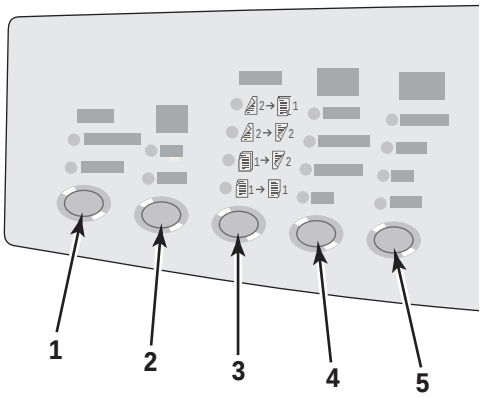
Left side:
Copying and scanning function buttons and LEDs

Middle:
Graphic display screen, mode buttons, menu navigation, shortcut buttons and status LEDs

Right side
Numeric keypad, **Clear/Clear All**, **Stop**, and **Start** buttons

Control Panel Left



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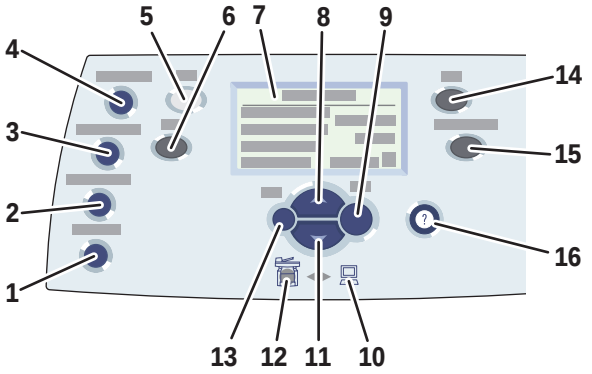
The left side of the control panel contains the following copy and scan function buttons and LEDs. A green LED shows the current selection.
More details about using these buttons are provided in the **Copying** and **Scanning** sections in the customers WorkCentre C2424 User Guide.

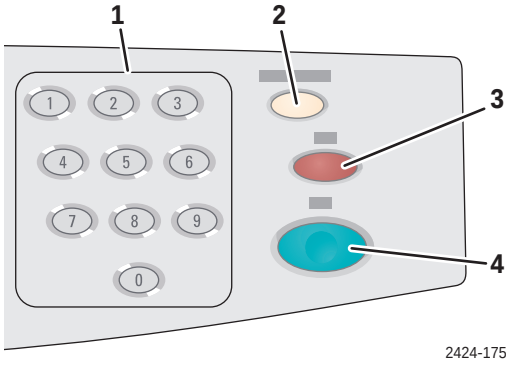
1. **Output** button and LEDs (copy only)
   Press to select **Uncollated** or **Collated** for your copies.
2. **Color Mode** button and LEDs
   Press to select **B/W** (black and white) or **Color** for your copy or scan job.
3. **2-Sided** button and LEDs
   Press to select whether the original is 2-sided and whether you want the output 2-sided.
4. **Output Quality** button and LEDs
   Press to select the output quality for the copy job.
5. **Output Type** button and LEDs
   Press to select the type of original for your copy or scan job.

Control Panel Middle



1. **Original Size** button
   Press to jump to **Original Size** option on the menu.
2. **Lighten/Darken** button
   Press to jump to the **Lighten/Darken** option on the menu.
3. **Reduce/Enlarge** button
   Press to jump to **Reduce/Enlarge** option on the menu.
4. **Paper Supply** button
   Press to jump to the **Paper Supply** option on the menu.
5. **Copy** button
   Press to display the **Copy** menu on the graphic display.
6. **Scan** button
   Press to display the **Scan** menu on the graphic display.
7. Graphic display shows status messages and menus.
8. **Up Arrow** button
   Scrolls upward.
9. **Enter** button
   The menu option selected.
10. Status Indicator LED:
    Blinking green = System is busy or in Standby or PowerSaver mode
    Steady green = Ready
11. **Down Arrow** button
    Scrolls downward.
12. Status Indicator LED:
    Blinking red = Error condition, stops job
    Steady red = Warning, continues job
13. **Back** button
    Returns to the previous menu item.
14. **Print** button
    Press to display the **Print** menu on the graphic display.
15. **System Setup** button
    Press to display the **System Setup** menu on the graphic display.
16. **Help (?)** button
    Press to display a help message explaining the menu or message shown on the graphic display.

Control Panel Right



1. Number keys
   Press to enter a number, such as for the number of copies or a numeric password.
2. **Clear/Clear All** button
   Press once to reset the current menu selection; press twice to reset the system.
3. **Stop** button
   Press to pause the printing of the current copy or print job. To then cancel the job, follow the instructions shown on the graphic display.
4. **Start** button
   Press to start a copy or scan job.

Menu Map

The Menu Map is a visual representation of the control panel menu structure. You can use it to see how to access the system settings and information pages. To print the Menu Map:

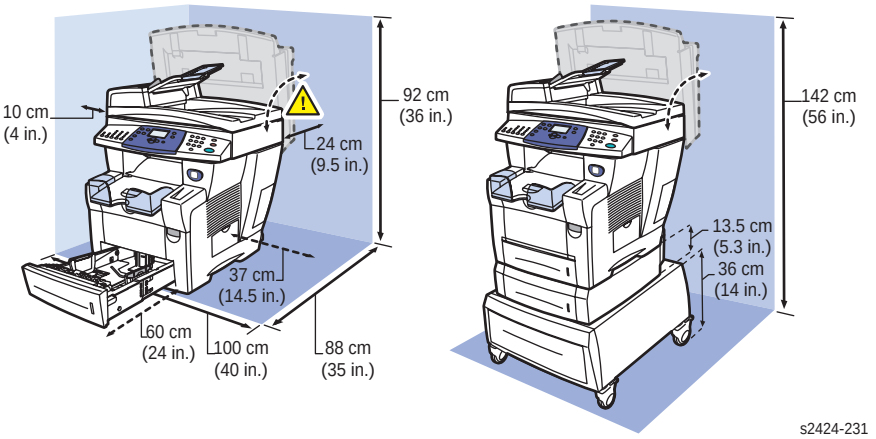
1. On the control panel, press the **System Setup** button.
2. Select **Information**, then press the **Enter** button.
3. Select **Menu Map**, then press the **Enter** button to print.

The menu map can also be found in the appendix of this manual. See, "Control Panel Menu Map" on page A-2.

System Specifications

Physical Dimensions and Clearances

Basic System with DADF and Scanner (IIT)	Value
Width:	53 cm (20.9 in.)
Depth:	66 cm (26.2 in.)
Height:	62 cm (24.4 in.)
Weight: Print Engine (IOT) only	30.0 kg (66.1 lbs.)
Scanner Unit and DADF Unit	**Value**
Scanner Weight:	6.3 kg (14 lbs.)
DADF Weight:	4.8 kg (10.6 lbs.)
Optional 525-Sheet Feeder	**Value**
Weight:	5 kg (11 lbs.)
Optional Cart	**Value**
Width:	50 cm (19.7 in.)
Depth:	67 cm (26 in.)
Height:	36 cm (14.2 in.)
Weight:	22 kg (48 lbs.)
Minimum Clearances	



Print Engine (IOT) Functional Specifications

Characteristic	Specification
Printing process	Solid-ink
Controller	500 MHz processor
Color medium	Yellow, cyan, magenta, and black ink sticks, each shape-coded. The system uses the subtractive color system to produce the colors red, green, and blue.
Color Management	Automatic, Black & White, Office: sRGB, Vivid Color, None, Press: Commercial, Euroscale, SWOP
Print Speed	Up to 24 ppm print and copy Up to 20 ppm scan Up to 18 ppm document feeder
Resolutions	2400 FinePoint print Standard 300 x 300 dpi scan resolution 600 x 600 dpi copy resolution up to 600 x 2400 for 400% zoom
FPOT	< 6 seconds from Ready.
FPOT, Color Copy	< 15 seconds per page/1st copy subsequent copies at printer speed.
Memory	2 slots; minumum 256 MB, maximum 512 MB, PC133 DRAM 256 MB RAM standard, upgradable to 1 GB
Hard Drive	Standard 40 GB
Printer Description Language	137 PostScript 3 81 PCL5c
Print Features	Intelligent Ready, Collation, Secure Printing, Proof Print, Saved Print, Job Pipeling NOTE: Does not support direct PDF printing.
Automatic 2-Sided Printing	Supported from Trays 1, 2, 3, and 4 - Duplex automatic 2-sided copy, supported from DADF tray
Paper Handling	Tray 1 = 100-sheet capacity Tray 2 = 525-sheet capacity Optional Tray 3 = 525-sheet capacity Optional Tray 4 = 525-sheet capacity - Duplex Automatic Document Feeder = 50-sheet capacity
Warm-up time	From Off (cold start): 12 minutes From power saver: 4 minutes

System 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) 175 W (idle) 230 W (average during printing)	1250 W (peak) 175 W (idle) 230 W (average during printing)
ENERGY STAR®	70 W	70 W
Scanner Power Supply	30 W	30 W

System Environmental Specifications

Nominal Operating Environment	
Temperature	10° - 32° C / 50º - 90º F operating
Humidity	10% - 80% RH Non-Condensing operating

Scanner/DADF (IIT) Specifications

Characteristic	Specification
Printing Process	Print Engine
Scan to Capabilities	Scan to Disk (mailbox) function Scan to PC
Scan/copy Process	Flatbed platen and C-shape ADF Charge Coupled Device scan head RGB color pack The scan controller provides 16 bit DMA intrerface for sending image data through the scanner board to the image processor board in the electronics module.
Copies per Minute	DADF: 20 ppm simplex, 10 ppm duplex
Memory	2 MB (1M x 16 SDRAM
Image Buffer	32 MB SDRAM for Platen 128 MB SDRAM for DADF
Bit Depth	Reading: 48 bits Output: 24 bits

Characteristic	Specification
Optical Resolution	600 x 300 to 600 x 2400 dpi (FS x SS)
Output Resolution from Scanner	Always equals optical resolution
Calibration Time	less than 2 seconds (performed prior to copier and scan operations)
Power Saver Mode	Scanner and DADF are switched OFF. Also, lamps automatically turn off after after 20 minutes.
Noise	Standby: < or equal to 45 dB Scanning: < or equal to 50 dB

Tray and Media Specifications

The system trays accommodate most sizes and types of paper, transparencies, or other specialty media.

- Do not overload the paper tray. Do not load paper above the fill line on the inside of the paper guide.
- Adjust the paper guides to fit the paper size. For Trays 2, 3, and 4, the paper guides click into place when they are adjusted correctly.
- If excessive jams occur, use paper, transparencies, or other specialty media from a new package.
- Custom size paper can be printed only from Tray 1.
- Xerox Professional Solid Ink Photo Paper, Xerox Professional Solid Ink Glossy Paper, and Xerox Professional Solid Ink Trifold Brochures, can be printed from any tray, although they exceed the recommended weight guidelines for Trays 2–4.
- Use Xerox Professional Solid Ink Transparencies; print quality may vary with other transparencies.
- When printing photos, postcards, or brochures, some attention to stacking in the output tray may be required.
- Use only paper envelopes. Do not use envelopes with windows, metal clasps, or adhesives with release strips.
- Do not print CD labels in this system.
- When using pre-punched paper, load the paper so that the holes are on the right side of the tray. Adjust print and copy margins to accommodate the pre-punched holes.

Duplex Automatic Document Feeder Guidelines

The document feeder accommodates original sizes from 114 x 140 mm (4.5 x 5.5 in.) to 216 x 356 mm (8.5 x 14.0 in.), with weights within the following range: 60–120 g/m^2 (16–32 lb. Bond) (22–45 lb. Cover).

Follow these guidelines when loading originals into the document feeder:

- Load originals faceup, so the top of the document enters first.
- Place only loose sheets of paper in the document feeder.
- Adjust the paper guides so they fit against the originals.
- Insert paper in the document feeder only when the ink on the paper is completely dry.

Use the glass rather than the document feeder to copy or scan the following types of originals:

- Paper with paper clips or staples attached
- Paper with wrinkles, curls, folds, tears, or notches
- Coated or carbonless paper, transparencies, or items other than paper such as cloth or metal
- Envelopes

Supported Papers, Transparencies, and Other Specialty Media

Paper Sizes	Paper Types	Paper Weight/Description	Any Tray	Tray 1 Only	Auto 2-Sided Printing	1-Sided Printing Only
Letter (8.5 x 11.0 in.) **A4 (210 x 297 mm)** **Legal (8.5 x 14.0 in.)** **Executive (7.25 x 10.5 in.)** **A5 (148 x 210 mm)** **Statement (5.5 x 8.5 in.)** **US Folio (8.5 x 13 in.)** **B5 ISO (176 x 250 mm)** **B5 JIS (182 x 257 mm)**	**Plain Paper, Letterhead, Card Stock**	60–120 g/m^2 (16–32 lb. Bond) (22–45 lb. Cover)	●		●	
		121–220 g/m^2 (33–40 lb. Bond) (46–80 lb. Cover)		●		●

Paper Sizes	Paper Types	Paper Weight/Description	Any Tray	Tray 1 Only	Auto 2-Sided Printing	1-Sided Printing Only
Letter (8.5 x 11.0 in.) **A4 (210 x 297 mm)**	**Special** (Pre-punched Paper, Business Cards, Photo Paper, Weatherproof Paper, Carbonless Paper, Glossy Paper)	60–120 g/m^2 (16–32 lb. Bond) (22–45 lb. Cover)	●		●	
		121–220 g/m^2 (33–40 lb. Bond) (46–80 lb. Cover)		●		●
	Special	Xerox Phaser Postcards	●		●	
		Xerox Professional Solid Ink Glossy Paper	●		●	
		Xerox Phaser Trifold Brochures	●		●	
	Transparency, Labels		●			●
A6 (105 x 148 mm) Index Cards (3 x 5 in.)	Plain Paper, Card Stock	60–220 g/m^2 (16–40 lb. Bond) (22–80 lb. Cover)		●		●
Custom		Width: 140–216 mm (5.5–8.5 in.) and Height: 210–356 mm (8.3–14.0 in.)		●	●	
		Width: 76–139 mm (3.0–5.4 in.) or Height: 127–209 mm (5.0–8.2 in.)		●		●
		Weight: 60–120 g/m^2 (16–32 lb. Bond) (22–45 lb. Cover)		●	●	
		Weight: 121–220 g/m^2 (33–40 lb. Bond) (46–80 lb. Cover)		●		●

Supported Envelopes

Note

All envelopes should be printed single-sided only. Use only paper envelopes. Do not use envelopes with windows, metal clasps, or adhesives with release strips. Some wrinkling and embossing may occur when printing envelopes.

Tray	Size/Description
Print these envelopes from any tray	■ #10 Commercial (4.12 x 9.5 in.) ■ DL (110 x 220 mm) ■ C5 (162 x 229 mm)
Print these envelopes from Tray 1 only	■ #5 ½ Baronial (4.375 x 5.75 in.) ■ #6 ¾ Commercial (3.625 x 6.5 in.) ■ Monarch (3.87 x 7.5 in.) ■ #6 ½ Booklet (6 x 9 in.) ■ Lee (5.25 x 7.25 in.)

Media Storage Guidelines

Providing a good environment, and safe handling and storage conditions for your paper and other media contributes to optimum print quality.

- Store paper in dark, cool, relatively dry locations. Most paper items are susceptible to damage from ultraviolet (UV) and visible light. UV radiation, which is emitted by the sun and fluorescent bulbs, is particularly damaging to paper items. The intensity and length of exposure to visible light on paper items should be reduced as much as possible.
- Maintain constant temperatures and relative humidity.
- Avoid light, heat, and dampness.
- Avoid attics, kitchens, garages, and basements for storing paper. Inside walls are drier than outside walls where moisture can collect.
- Store paper flat. Paper should be stored on pallets, cartons, shelves, or in cabinets.
- Avoid having food or drinks in the area where paper is stored or handled.
- Do not open sealed packages of paper until you are ready to load them into the system. Leave paper in the original packaging. For most commercial cut-size grades, the ream wrapper contains an inner lining that protects the paper from moisture loss or gain.
- Some specialty media is packaged inside resealable plastic bags. Leave the media inside the bag until you are ready to use it; reinsert unused media in the bag and reseal it for protection.

Media that May Damage the System

The system is designed to use a variety of media types for print and copy jobs. However, some media can cause poor output quality, increased paper jams, or damage to the system. Unacceptable media for Trays 1–4 include:

- Rough or porous media
- Plastic media
- Paper that has been folded or wrinkled
- Paper that has been photocopied
- Paper with staples inserted
- Envelopes with windows, metal clasps, or adhesives with release strips
- Padded envelopes
- CD labels
- Media that is less than 60 g/m^2 or more than 220 g/m^2

Media Skew Specification Print Engine (IOT)

Charecteristic	Specification
Printed Left Side Margin	5.0 mm ± 2.0 mm (0.197 in. ± .080 in.)
Leading Edge Margin	5.0 mm ± 1.3 mm (0.197 in. ± .050 in.)
Image Area Tolerance Zone	
Image Skew, Envelopes	11.5 milli-radians measured across the width of leading edge.
Image Skew, Index Card	14.0 milli-radians measured across the width of leading edge.
Image Skew, All other sizes	7.0 milli-radians measured across the width of leading edge.

Media System Skew Specification (IIT/IOT)

Charecteristic	Specification
Printed Left Side Margin	5.0 mm ± 4.0 mm (0.197 in. ± .157 in.)
Leading Edge Margin	5.0 mm ± 3.3 mm (0.197 in. ± .130 in.)
Image Area Tolerance Zone	
Image Skew, Envelopes	11.5 ± 4 milli-radians measured across the width of leading edge.
Image Skew, Index Card	14.0 ± 4 milli-radians measured across the width of leading edge.
Image Skew, All other sizes	7.0 ± 4 milli-radians measured across the width of leading edge.

Theory of Operation

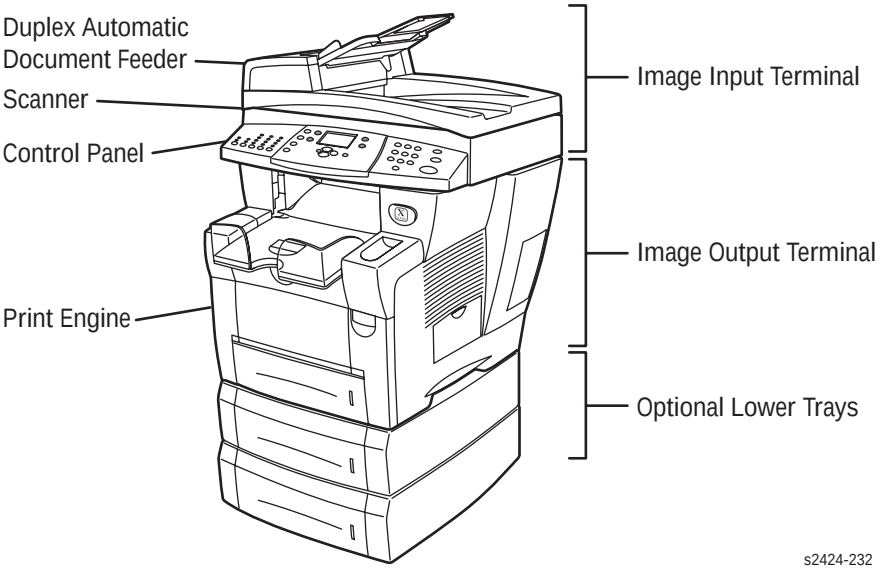
In this chapter…

- System Overview
- Image Input Terminal (IIT)
- Image Output Terminal (IOT) Sub-Assemblies
- System Electronics
- Paper Path and Paper Pick
- System Motors, Solenoids, and Drive
- The Print Process
- Configuration Card “Shadowed” Personality Parameters

Section 2

System Overview

The system is broken into two main components: the Image Input Terminal (IIT - Document Feeder/Scanner) and the Image Output Terminal (IOT - Print Engine).



System Summaries

This section covers the basic theory of operation for all major assemblies and sub-assembly interactions for this system. This section is broken down into the following:

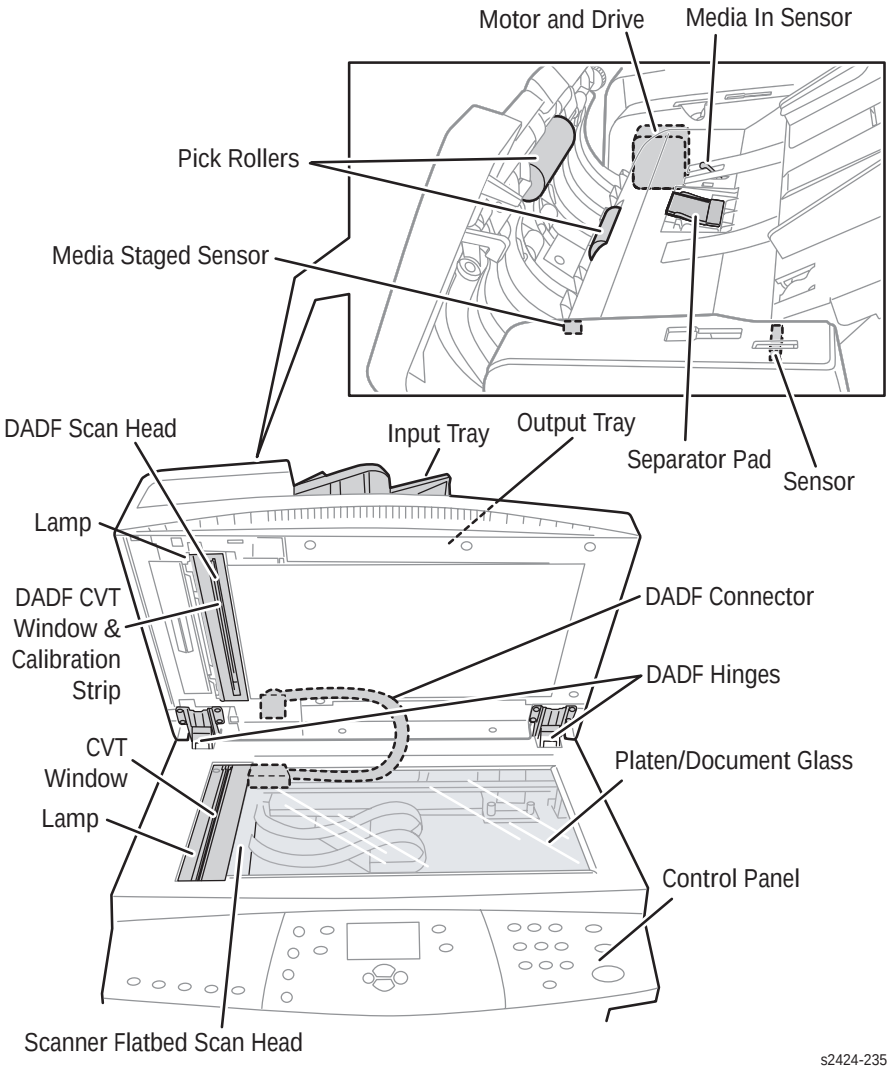
- The Image Input Terminal (IIT)
  - DADF and paper path
  - The Scanner Assembly with Control Panel
- System Electronics
  - Electronics Module
  - Scanner Power Supply
  - Exit Module (MEP) Control Board
- The Print Engine (IOT)
  - Paper Path
  - Sensing
  - Drive
  - Image Process
  - Exiting

Image Input Terminal (IIT)

The IIT generates the image data for copies and scans and is made up of two major subsystems:

- Duplex Automatic Document Feeder (DADF)
- Scanner Assembly with Control Panel

Major Components of the DADF and Scanner



Document Feeder Functions

The WorkCentre C2424 Copier-Printer includes a Duplexing Automatic Document Feeder (DADF). It is capable of automatically feeding original documents from the input tray and scanning either a single-sided document or both sides of a double-sided document.

Input Tray: The input tray feeds document originals into the DADF for simplex (single-sided) or duplex (double-sided) scanning. It has a capacity of 50 originals.

Output Tray: Original documents fed through the DADF exit to the output tray.

Media Present Sensor/Media In Sensor: The media in sensor detects the presence of original documents in the input tray. After a delay to allow for adjusting the feed guides, the media will stage to the this media staged sensor.

Media Staged Sensor: This sensor, located within the DADF scanhead, detects whether media has been fed into the DADF to a predetermined (staged) point. When the scanner detects this point, it starts collecting data from the Charge Coupled Device (CCD).

DADF Cover Open Sensor: This optical sensor detects the status of the DADF access cover. When the cover is open, DADF operation is inhibited; given sufficient time, an error message appears on the control panel display instructing the user to close the access cover.

Pick Roller and Separator Pad: The pick roller is the first of several feed rollers. It is designed to work with the separator pad to ensure that only one sheet of media is fed at a time.

Feed Rollers and Idler Rollers: Three additional feed rollers in the DADF are responsible for media transport through the media path. They include associated idler rollers to maintain proper media tension. This ensures proper imaging while providing the minimal chance for damage to the original document(s).

Drive Motor: A stepper motor is housed in the DADF to drive the pick and feed rollers, and moves the calibration shutter into position. The connection is through a toothed belt and gear drive. This connection and the vibration mounts that the motor is mounted to help reduce vibrations introduced into the system.

DADF scanhead and Lamp: The DADF utilizes a stationary scanhead containing the imaging CCD. This scanhead is only for scanning the second side of a duplex original. The lamp is a Cold Cathode Flourescent Lamp (CCFL).

Note

The CCFL is powered through a chopper board. It is supplied with a variable DC input (Up to +24 VDC) and generates +600 VDC to +900 VDC depending on the supply voltage.

DADF Connector: An electrical connector on the rear of the DADF connects to a receptacle on the rear of the flatbed portion of the IIT. The DADF connector communicates with the scanner board and that communication is passed to the IOT. The image information is also passed to the scanner board and then sent to the IOT. There is no direct communication from the DADF to the IOT

DADF Hinges: Mechanical connection between the DADF and the scanner portion of the IIT consists of a set of hinges. These hinges allow for the DADF to lift from the platen glass to facilitate book copying. The hinges are designed to lock when the IIT is opened for adding consumables or removing media jams from the IOT. In order to unlock the hinges, the IIT must be closed.

Note

It is possible to continue scan and flatbed copy functions with the document feeder disconnected. In this condition, the control panel displays the error message “Document Feeder Disconnected”.

Document Feeder Paper Path and Imaging

The pick roller feeds paper from the input tray to the document feeder. The paper then passes between the DADF scanhead and the flatbed scanhead. Mylar strips guide the original document back out the document feeder and into the output tray.

The imaging path of the DADF is referred to as a Constant Velocity Transport (CVT) design. This design compensates for differences in the operating speed of any of the drive rollers, thereby reducing the chance of damage to the original or of varying the distance between the imaging device and the target document.

Copy/Scan Imaging

When using the document feeder for a copy or a scan, the DADF scanhead scans the second side of the original at the same time the flatbed scanhead scans the first side of the original. The scanhead in the document feeder is stationary.

Data is transferred from the IIT to the IOT through the electrical connections to an image processing board in the electronics module. This processing board receives the RGB channel data and translates it into a data stream that the print engine controller can understand. This data is either transferred to the engine driver (for copy service) or to the hard drive controller (for scan service)

Scanner Assembly Functions

Document originals can be placed on the scanner document glass (platen). In this mode of operation the original is stationary and the scanhead moves.

Document Glass or Platen: The scanner platen is used for copying or scanning original documents and images. The platen functions well for media outside the operating range of the DADF (16 lb.-32 lb.), fragile or damaged originals, photographs, or large (or bound) items such as books or periodicals.

scanhead and Lamp: The Flatbed portion of the IIT contains a moveable scanhead that includes the CCD imaging board, main control board, drive motor, and lamp assembly. The lamps are Cold Cathode Flourescent Lamps (same as the lamps in the DADF).

CVT Window: This portion of the platen is a part of the DADF media path. The principal function of this window is to allow the lower scanhead to image the first side of an original being fed through the DADF.

IIT Connector: An electrical connection on the rear of the Flatbed portion of the IIT connects to a receptacle on the IOT completing the signal path for image data from the IIT, power to the IIT, and system communications between the three components.

Control Panel: The control panel is the user interface with the system.

Scanner and Document Feeder Calibration

There are two types of calibration for the scanner and document feeder: automatic calibration and manual calibration.

Automatic Calibration

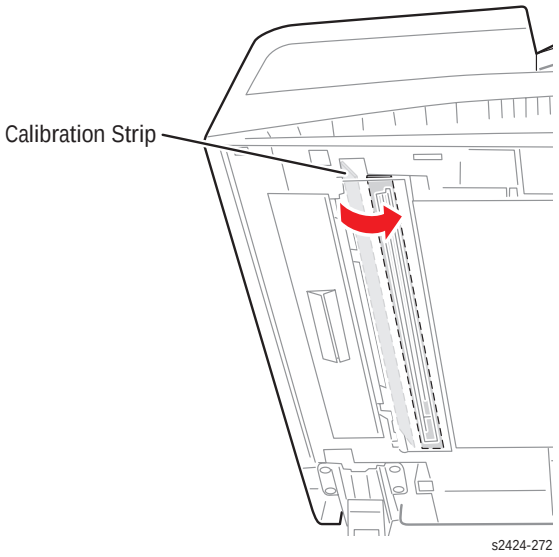
The automatic calibration performed by the sytem is a “white balance” calibration performed during startup and at pre-programmed intervals of operation. This calibration ensures that the system detects the response to a given calibration spot and determines the effects of lamp temperature and age on the image quality of the system.

Automatic calibration uses built in targets of the system. The target for the flatbed is on the back of the diverter strip; the target for the DADF is located on the back of a moveable flap, internal to the DADF. The calibration is automatic at power-up, when coming out of energy star mode, and at a predetermined schedule based on the length of time the lamps have been on continuously.

Automatic DADF Calibration

Calibration for the DADF is performed at initial power-up and “as required” with normal usage of the DADF. The steps are the same for both conditions.

1. The lamps turn on.
2. The calibration strip moves back slightly from the home position, to confirm the home position, then extends into the image path.



3. The calibration strip holds this position until the Charge Coupled Device (CCD) image reaches a specified luminescence value and is stable.

   This time varies depending on the starting conditions of the lamp.

4. Once the color stabilizes, the strip retracts back to its home position.

Automatic Scanner Calibration

1. Lamps turn on.
2. The scanhead drives toward the automatic calibration target to ensure that the head lock is released.
3. Scanhead moves back to the home position flag, out, and back in to confirm operation.
4. Scanhead moves under the calibration target until the CCD achieves a predetermined image quality and stability.
5. Scanhead moves toward platen glass to confirm motion control.
6. Scanhead moves back to the home position under the CVT window.

Manual Calibration

The manual calibration is a maintenance procedure accessed through the system's control panel. This calibration requires a calibration sheet provided with a new scanner assembly. It is designed to ensure the document feeder and flatbead scan heads are aligned to the system (motion control), the scan heads are aligned to one another (duplex scanning alignment), and that certain white, black and gray scale calibrations are performed. This calibration is performed:

- At the factory during initial system setup.
- Whenever the document feeder or scanner assembly, or both, are replaced.
- If troubleshooting determines that the calibration has drifted or that the calibration data has been erased from the system (ESD event).

Note

The manual calibration procedure is detailed in "Manual DADF to Scanner Calibration" on page 6-9.

System Electronics

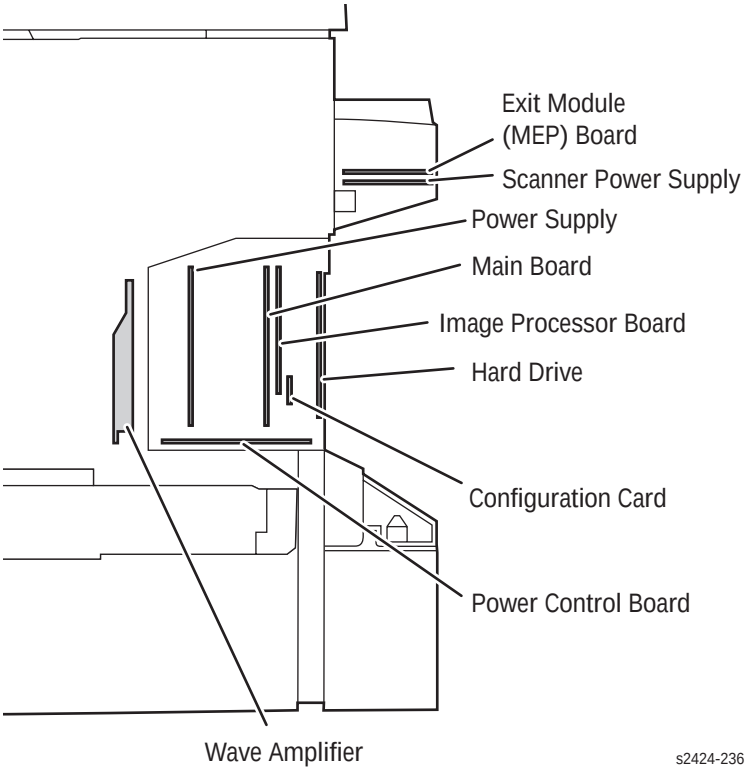
The WorkCentre C2424 electronics differ from other solid-ink products in that there are two controller boards: the main board and the exit module board. The main board, controls all image processing by way of a daughter board integrated with the main board. The main board also controls network functionality, PS and PCL interpretation, memory, job management, device management interfaces and a host of other services. The MEP board, or exit module board, provides low level motor control for the exit module components.

The system also contains a second (scanner) power supply located next to the exit module MEP board contained in the backframe. This supplies power to the scanner, document feeder, and the exit module drives.

For more information, or block diagrams showing the interaction between the system electronics, see the Wiring Diagram section of the manual starting on page 10-1.

Note

Although the control panel is part of the scanner unit, it receives power from the electronics module power supply.



Exit Module (MEP) Board

The exit module board controls motor and paper path functions for the exit module portion of the IOT. Once the print process is complete and the media is ready to exit the IOT, the primary controller relinquishes control to the exit module (MEP) board. The exit module board is also the connection point for the stack full sensor, cover open sensor, exit module elevator carriage, and exit sensors and flags.

Scanner Power Supply

The scanner power supply board supplies power to the scanner and exit module assemblies using the following voltages:

- +24 V to the scanner
- +24 V and +5 V to the exit module board

The electronics module enables or disables the scanner power supply using the power supply enable line for functions such as Intelligent Ready and standby functions. The control panel receives power from the power supply contained in the electronics module.

Electronics Module

The electronics module includes the main board, image processing board, the power control board, hard disk drive, and the power supply. The electronics module is replaced as one assembly.

Main Board: The main board controls the operation of all the mechanical and electrical systems in the IOT. Through the power control and I/O boards, signals are passed to the different gear trains, heater controls, and drive motors and signals are received from sensors for proper operation of the IOT.

The imaging process is a "three way" communication between the electronics module, printhead, and wave amplifier board. Imaging data is received from either the print or scan function and is processed through the imaging path portion of the main board. This data then is split into two paths. One of these paths is through the power control board to the wave amplifier board. This data controls the operation of the wave amp with regard to the drive algorithm to use for driving the jet stacks (discussed later in the printhead section). The second path is through a ribbon cable from the main board to the printhead control board (located on the underside of the printhead). These two signals are interpreted by the printhead to properly produce the image on the drum.

The main board provides support for Ethernet and USB 2.0 external I/O interfaces.

Note

The WorkCentre C2424 system does not support a parallel connection.

Image Processor Controller Board: The image processor board provides the interface between the main board and the scanner. The image processor board includes a complete color image path, taking raw 24-bit RGB scanner data and creating print ready CMYK or B&W binary data, 8-bit RGB data, or 8-bit grayscale data.

NVRAM: The NVRAM memory device, located on the main board, stores control panel defaults, network settings, IOT 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 PC133 compatible SO-DIMM SDRAM memory modules (64 to 512 MB). While the main board will support memory configurations as low as 64 MB, the WorkCentre C2424 requires a minimum of 256 MB of system memory to operate. The system has been tested with up to 1 GB of memory installed. This memory configuration can be ordered as an option.

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 functional. The WorkCentre C2424 requires that a hard drive be installed for proper operation.

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 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. For more information on the configuration card, see "Configuration Card Personality Parameters" on page 2-45.

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 V and 5 V from unregulated +/-15 V power.

Power Supply (Electronics Module): 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. Under the main board logic control, the triacs supply AC power to the 10 heaters in the printer.

Two fuses provide current protection to the triacs. Fuse F2 and F3 protect the power supply from, 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.

Power Supply Diagram (Electronics Module)

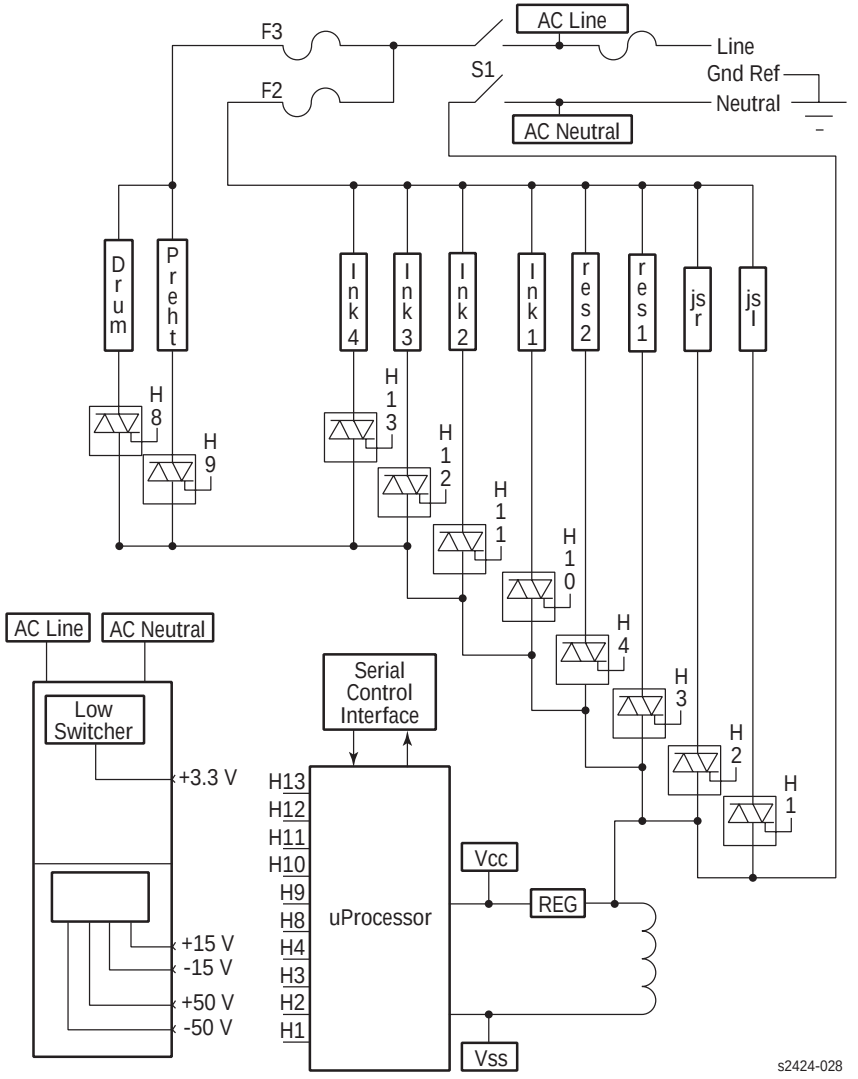


Image Output Terminal (IOT) Sub-Assemblies

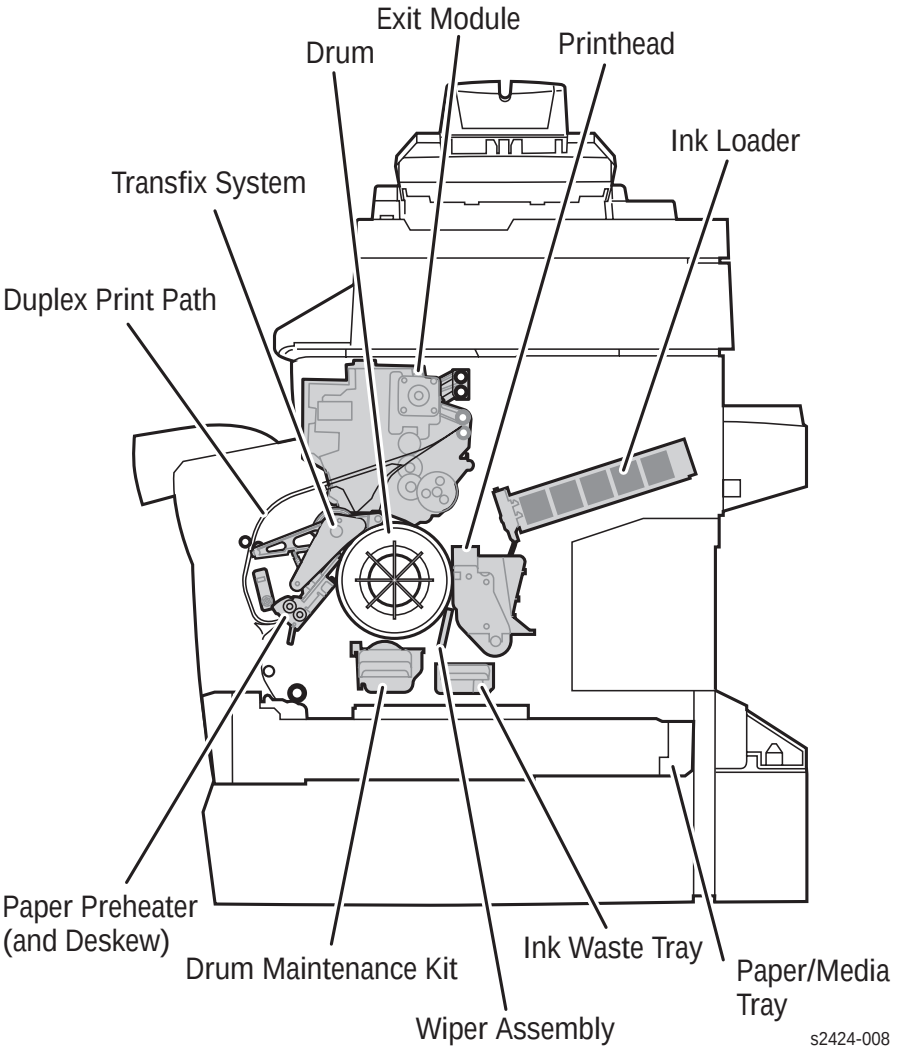
The Image Output Terminal (commonly referred to as the print engine) is made up of nine major subsystems:

- The Process Drive
- The Media Path Drive
- The Ink Loader
- The Printhead
- The Drum Maintenance System
- The Preheat and Deskew System
- The Drum Assembly and Transfix System
- The Exit Module or Media Exit Path (MEP)
- The Purge System

Note

The electronics module is also a subsystem of the IOT but was discussed previously. For more information on the electronics module, see "System Electronics" on page 2-10.

Sub-Assemblies of the IOT



The Process Drive: 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: The gearbox and motor assembly controls each roller in the paper transport system. The paper transport system consists of a drive motor, a gearbox assembly and three solenoids. The media path drive motor also controls the movement of the wiper assembly and the headlock mechanism through a gear train and solenoid on the exit module.

The Ink Loader: Melts the solid ink as ink is required by the printhead. The melted ink drops into the ink reservoirs of the printhead underneath the ink loader.

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

The Drum Maintenance 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 Preheat and Deskew System: Serves to ensure that the print media (paper, envelope, or transparency film) aligns properly to the drum and that the media is sufficiently warms to facilitate transfer of the image from the drum to the media.

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

The Exit Module or Media Exit Path (MEP): Receives control signals from the exit module (MEP) board, which contains its own firmware, for proper handling of media exiting the IOT. The exit module takes transport control of the media, lifting it from the area of the ink loader and delivering it to the output tray at the front of the IOT.

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

Paper Path and Paper Pick

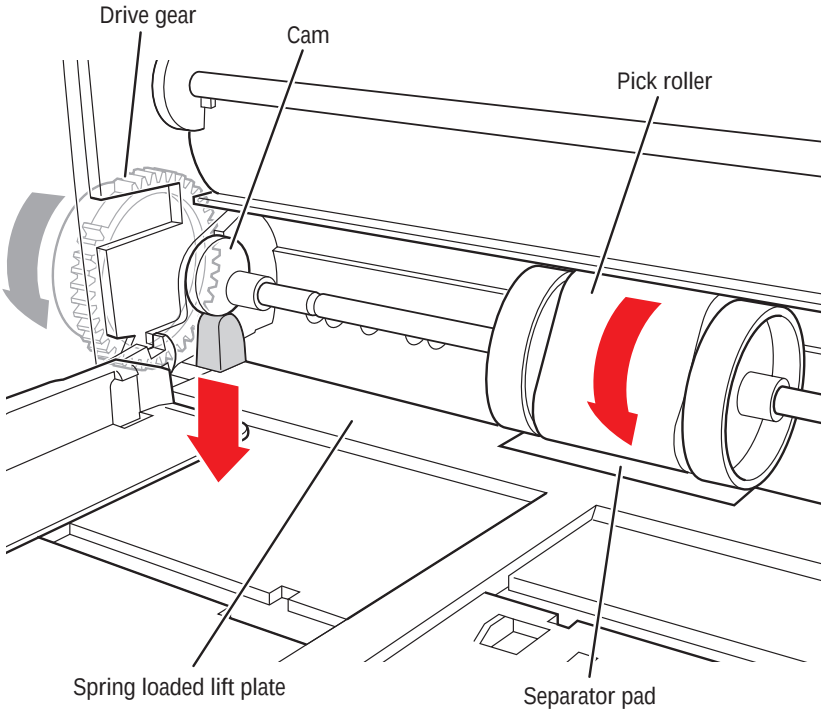
For paper picked from the document feeder, see the illustration on "Document Feeder Paper Path and Imaging" on page 2-6.

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



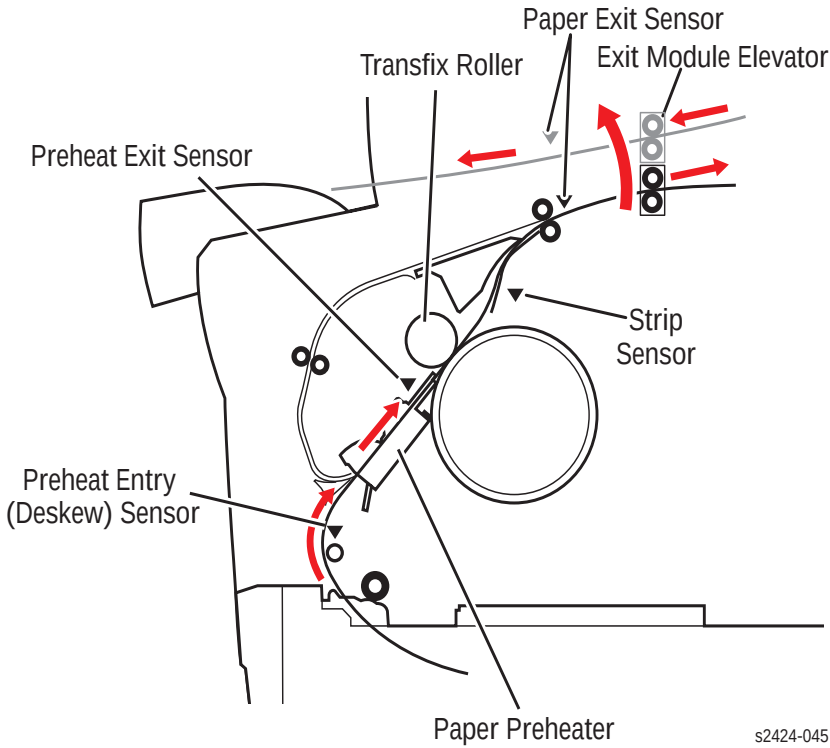
Paper Pick for Trays 2 - 4

Note

Trays 3 and 4 are optional 525-Sheet Feeders.

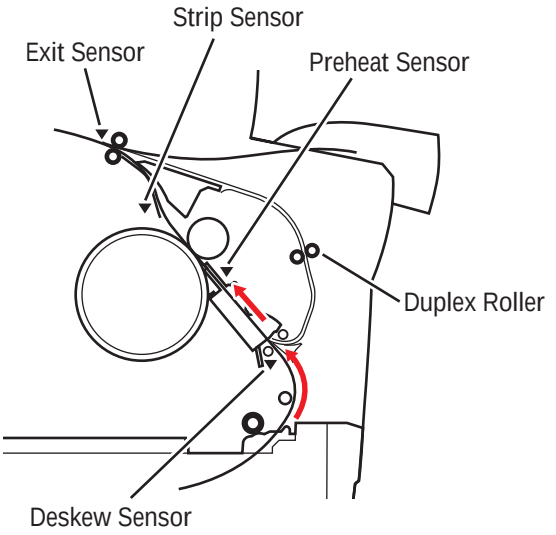
To pick a sheet of paper, the media path drive starts the process. The pick clutch engages to turn the pick roller and the nudger roller. The nudge roller advances one sheet of paper forward into the pick nip. The retard roller prevents two sheets from advancing. The sheet of paper continues past the 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.

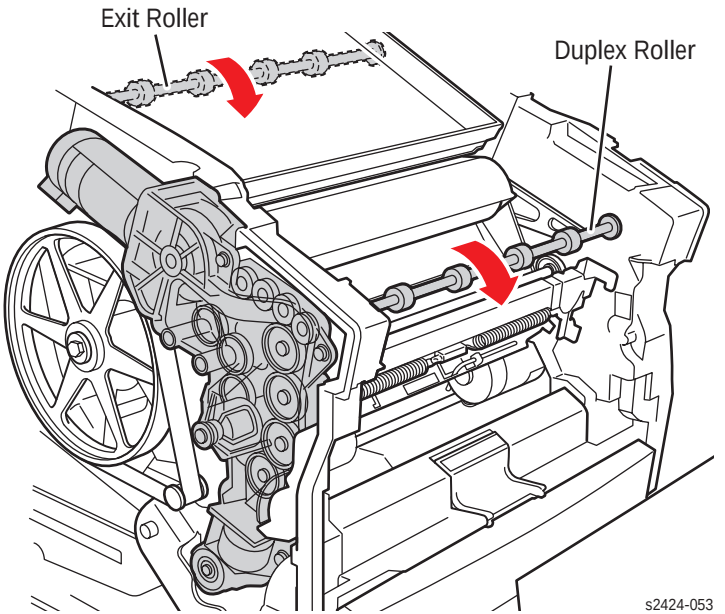
The deskew process uses a reverse/buckle deskew for all three paper paths. The paper is first driven against non-rotating rollers. The rollers reverse during simplex, causing a buckle in the paper. This ensures that the leading edge is straight to prevent skewing. The deskew rollers will not reverse during duplex printing.



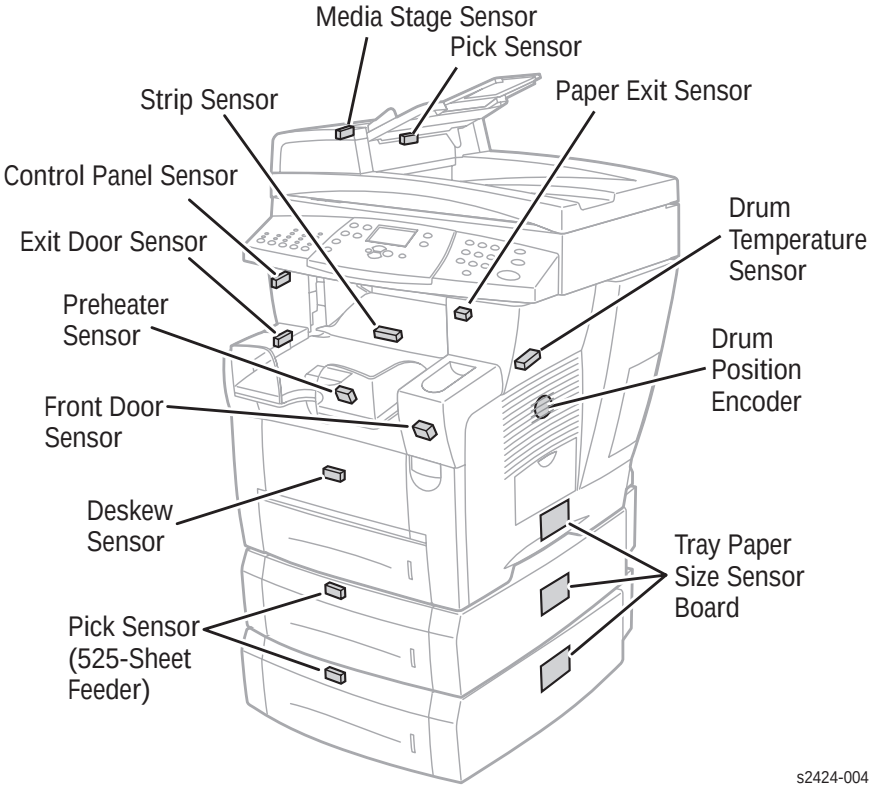
2-Sided (Duplex) Printing

When duplex printing, the exit rollers pull the paper to a predetermined location. In this position, the trailing edge of the paper is adjacent to the exit rollers. The exit rollers then pull the paper back into the duplex path. From a non-rotating deskew nip, the print continues through the paper preheater and transfix system to the exit tray in the same manner as a single-sided print.

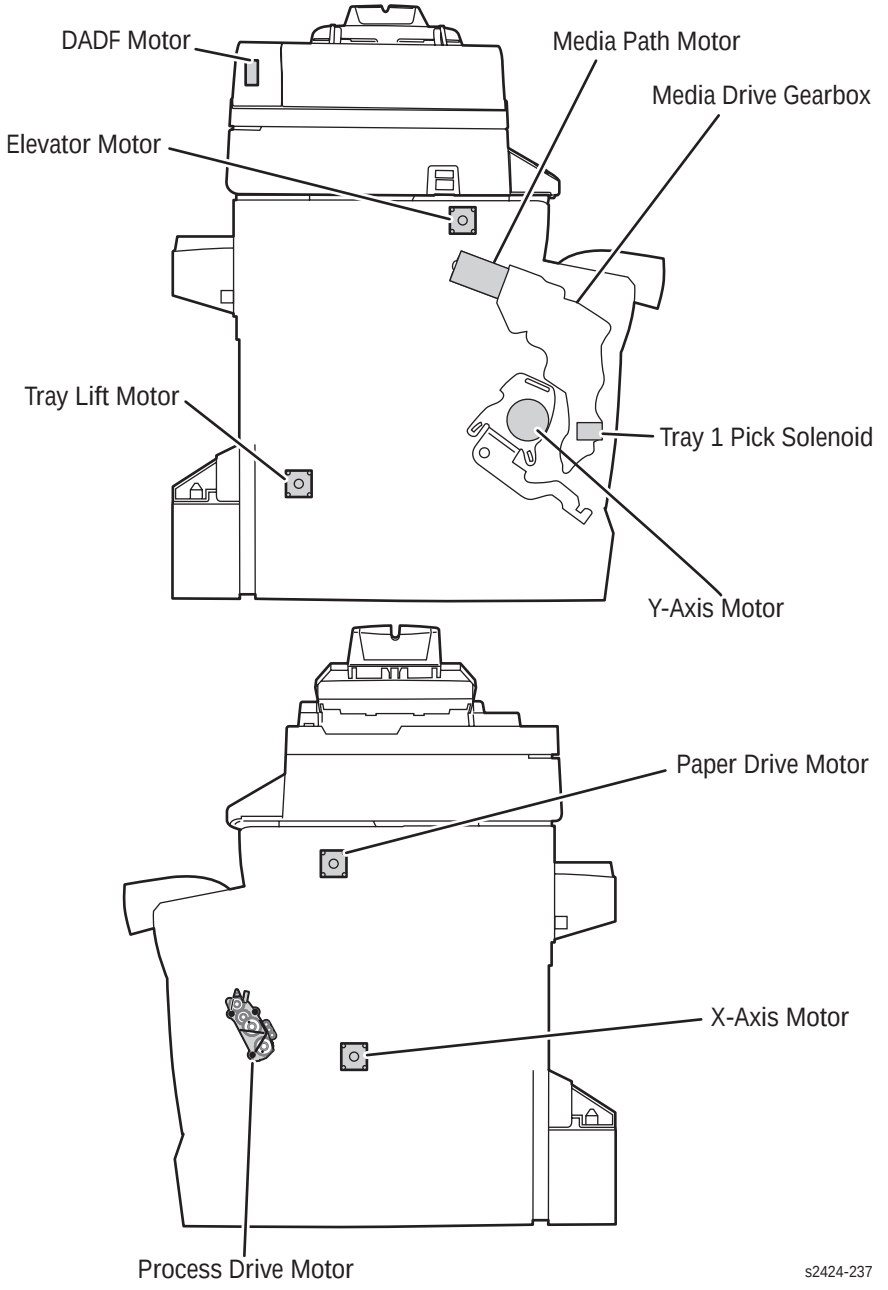




Sensor Locations



System Motors, Solenoids, and Drive

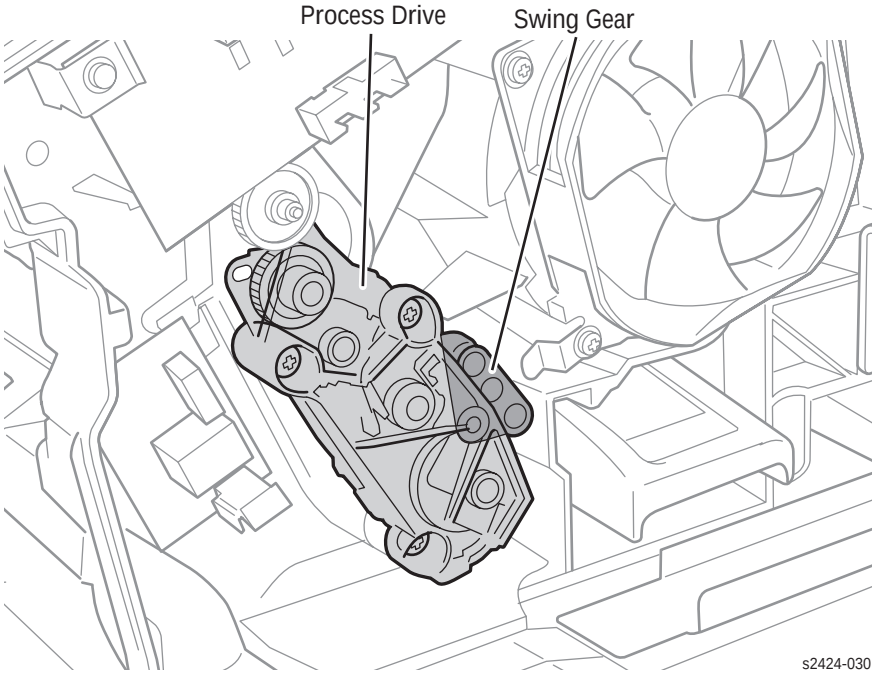


Process Drive

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 servo motor 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.

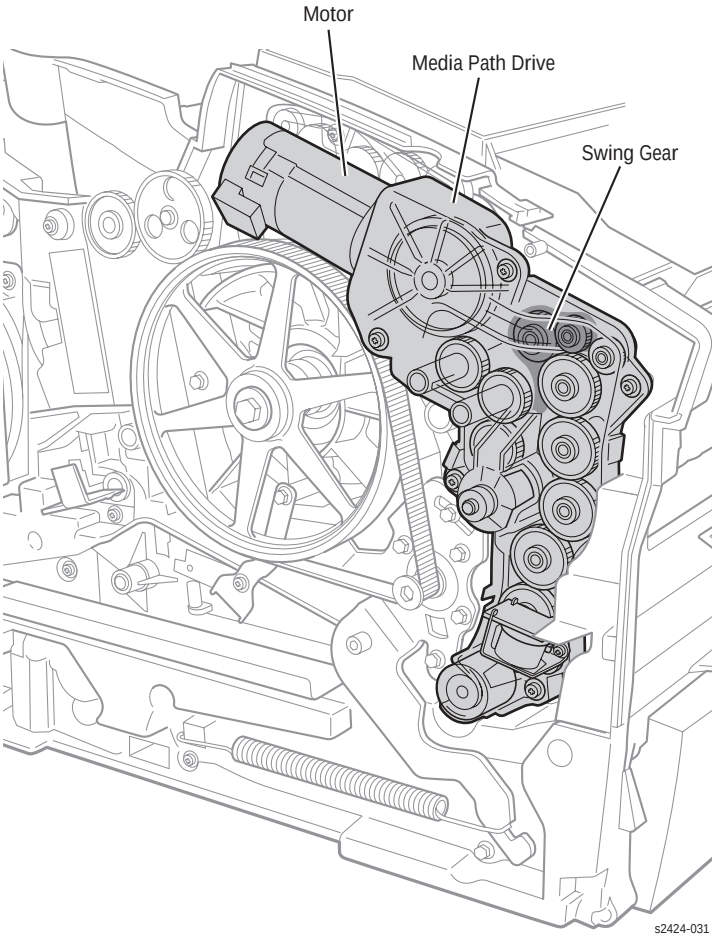
Since the system is open loop, special attention to the home position of the process drive gears and the mating camshaft gears is critical. The process drive gearbox is mechanically keyed upon installation via gear orientations. These gear orientations allow the printer subsystems to self home during 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 MEP. 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



The Print Process

Once an image has been processed and a printing bitmap created, the 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.

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

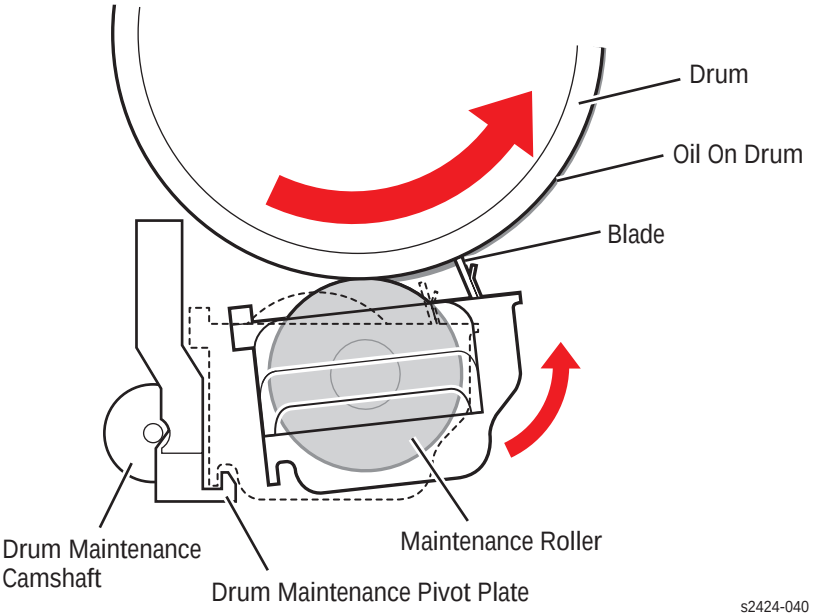
- Drum Preparation
- Printing
  - Ink Loader
  - Printhead
  - Drum Assembly
  - Transfix System
- Purge System
- Transfix and Exiting

Warning

Keep your fingers away from the Y-Axis drum rotation drive system; it uses a closed-loop servo drive system and is inherently dangerous; the motor speeds up if it senses the drive system slowing down, and 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.

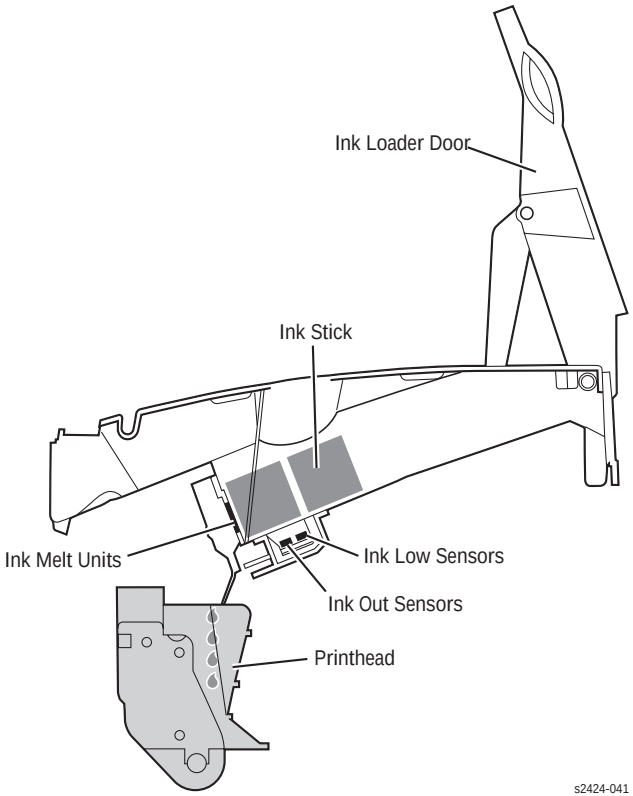
When printing, the printer performs a “six-jet interlace,” in which each jet lays down a particular number of pixel columns, depending on the print resolution. Each jet lays down one pixel column for each drum rotation, which varies from eight to 16 rotations, depending on the print resolution. Interlacing “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 substituted jets. See "Jet Substitution Mode" on page 6-12.

Ink Loader

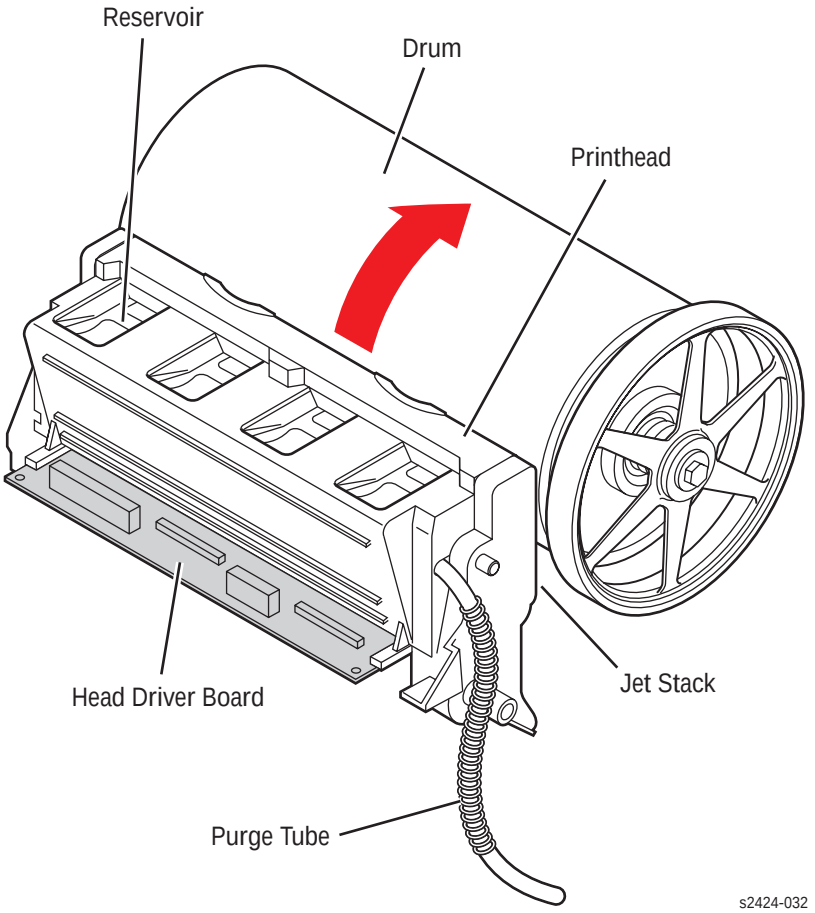
The ink loader consists of four parallel channels with an ink melting element at the end of each channel. Ink sticks, one color loaded in each channel, are pressed by coil spring pressure into the melting elements. As ink is required by the printhead, the appropriate color's melting element is activated 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.

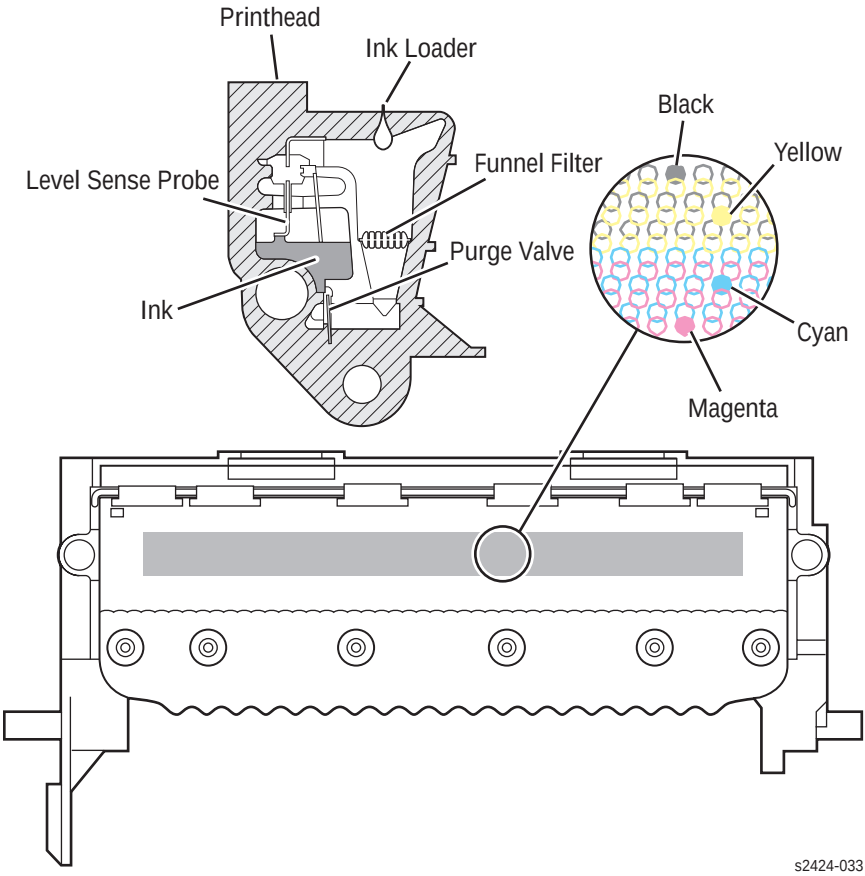
If the ink level sensors inside the printhead detect that the printhead has run out of ink, but the ink low/out sensors are not activated, the control panel reports an "Ink Jam" error.



Printhead

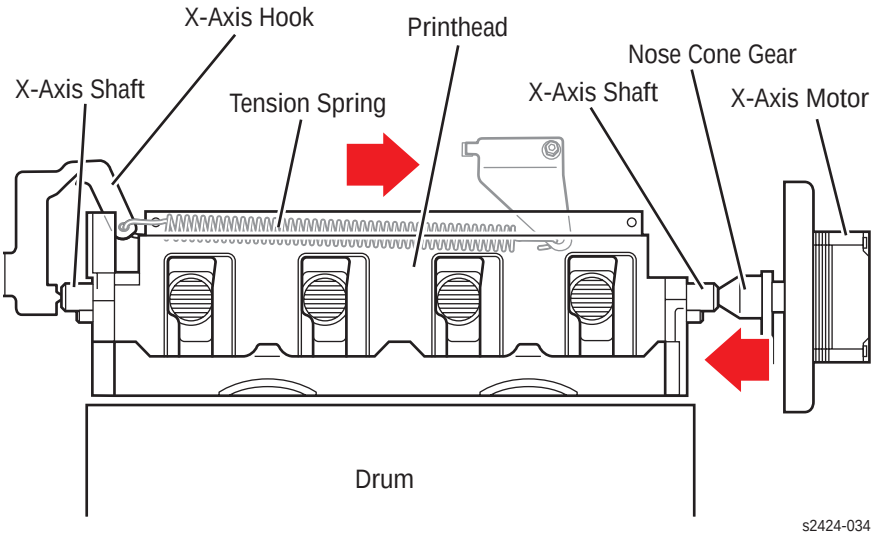
The printhead is the heart of the printer, spanning nearly the length of the drum. Using its 1236 jet nozzles (309 jets for each primary color), with a horizontal motion of slightly less than 5 mm (0.2 inches), the printhead can print the entire image on the rotating drum. The printhead provides one size ink drop that it uses 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 140^{o} 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:

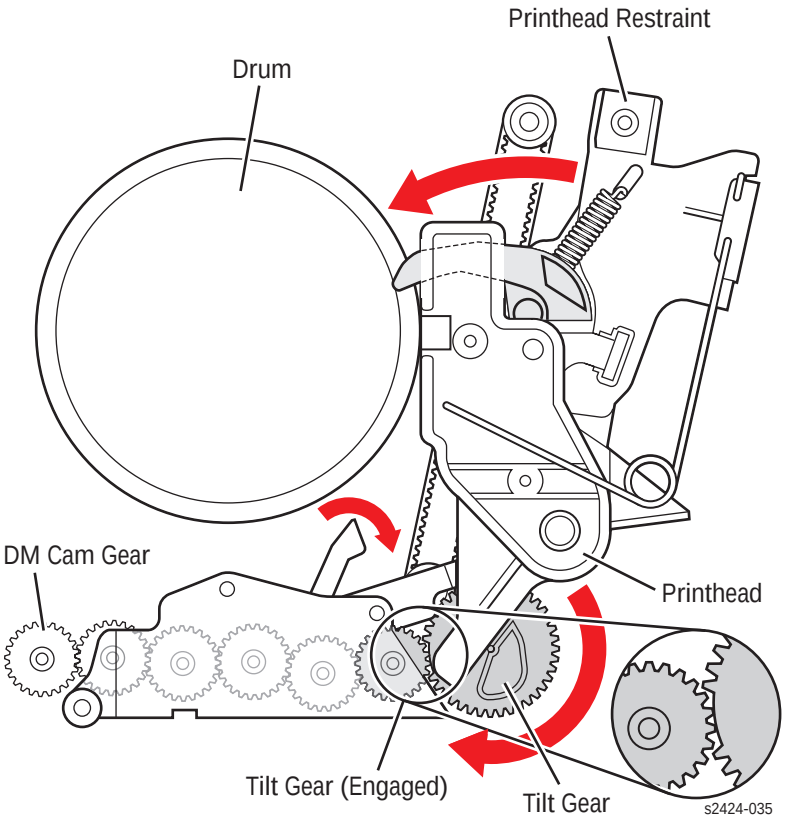
1. **Printhead lock / ship position (19.5 degrees):** the printhead restraint pins are resting against the right and left locks. In this position, the printhead tilt arm/ follower is free of the tilt cam, and the head is secured for shipping.
2. **Wipe position (12 degrees):** the printhead tilt arm/follower 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. This 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). This holds the printhead back in the standby position
4. The cam profile has a wipe dwell that 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 to alert the system 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 1.7 mm in the X-Axis (left / right side motion when the printhead is back and locked) by the right lock and the left home stop on the left side frame.

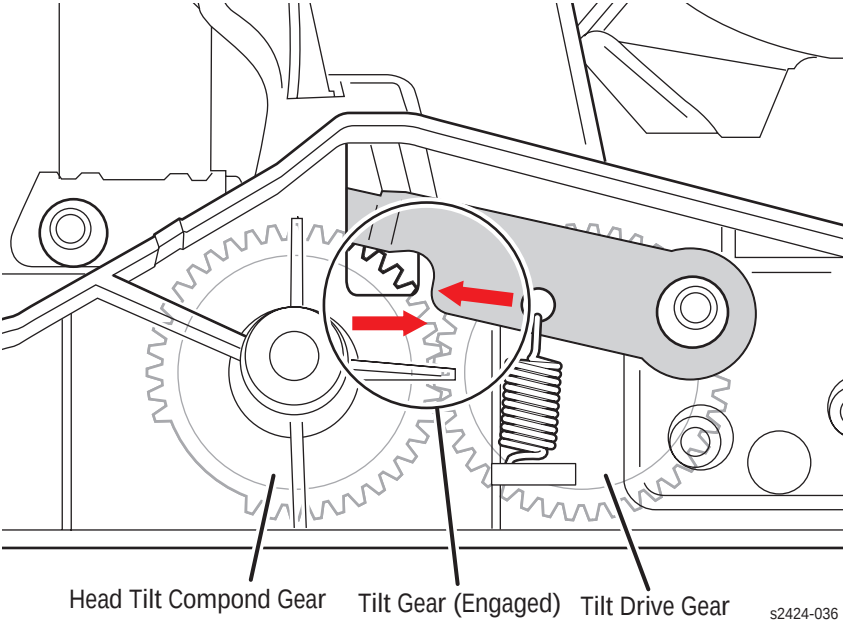


In the print position (0 degrees), the printhead is forward and resting against the right and left head-to-drum buttons. The head-to-drum buttons define the space between the jet stack and the drum. When the process drive is activated, it drives the drum maintenance camshaft to engage the tilt gear train. The tilt cam tilts the printhead into the print position. The cam is combined with a missing tooth gear that allows the cam to be inactive in the print position, freeing the process drive to perform other printer operations.

The cam has a latching mechanism to unlatch and latch the missing tooth gear to engage the printhead tilt drive train. The cam's latching mechanism also holds the tilt gear in place. A leaf spring applies constant pressure to engage the gear when the latching mechanism is released. The arm of the latching mechanism is inside the frame; the rest is visible, outside the frame. Arrows located on the latching mechanism and on the frame indicate when the printhead is in print position. When the arrows on the latching mechanism and frame align, the printhead is in the print position and the tilt gear disengages from the process drive.

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 and 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.

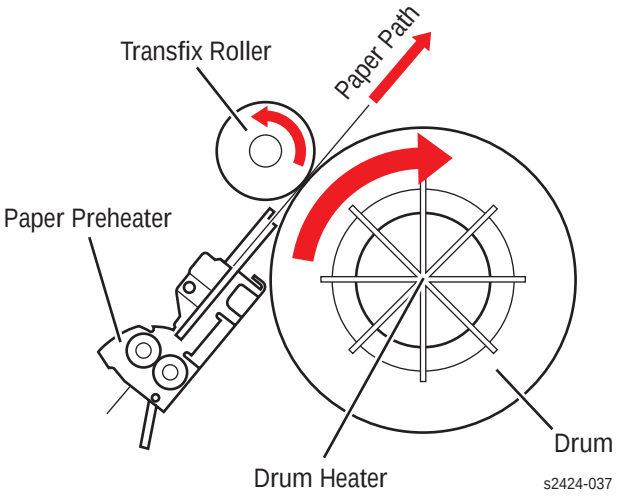


To accommodate printhead maintenance, the printhead can be tilted back away from the drum. This creates room for the wiper to be moved into position in front of the printhead faceplate. The process drive drives the gears to the tilt compound gear train. The drum maintenance camshaft drives the gear train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



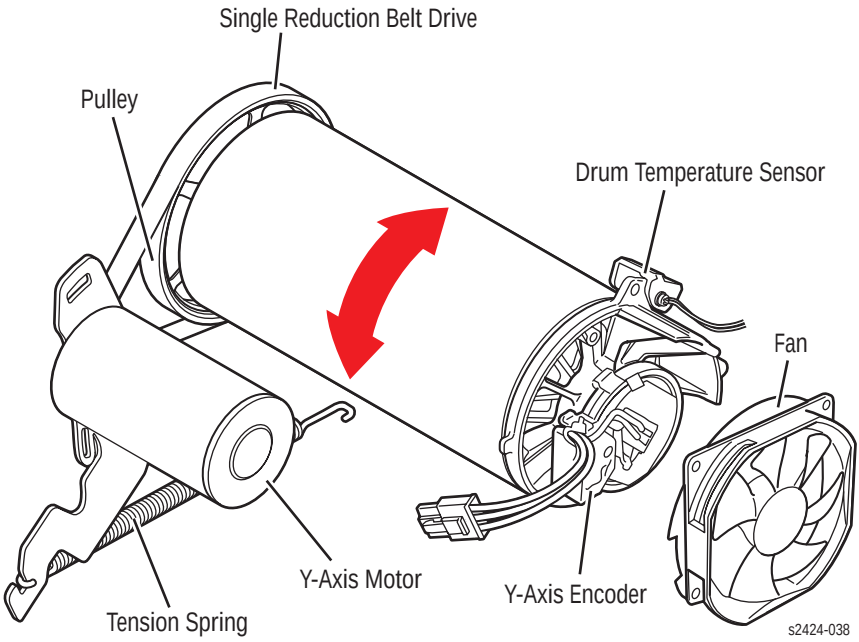
The drum heater heats the surface of the drum to about 60^{o} C (140^{o} F) for imaging. The drum heater does not rotate. The heater is inside the drum, and is controlled by the drum heater relay board. The drum heater consists of two resistive heater coils that operate in series for 220 V and in parallel 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. Through a single reduction belt drive, the servo motor rotates the drum at a high speed for imaging and a constant low speed for image transfer to paper. The Y-Axis uses an active tension system to allow the pulley to float while the spring actively adjusts the tension.

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. 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.

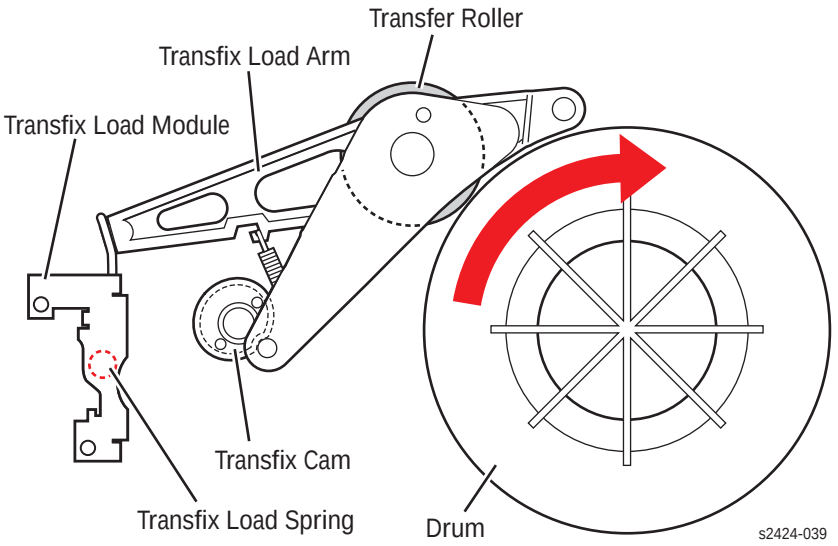
Transfix System

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.



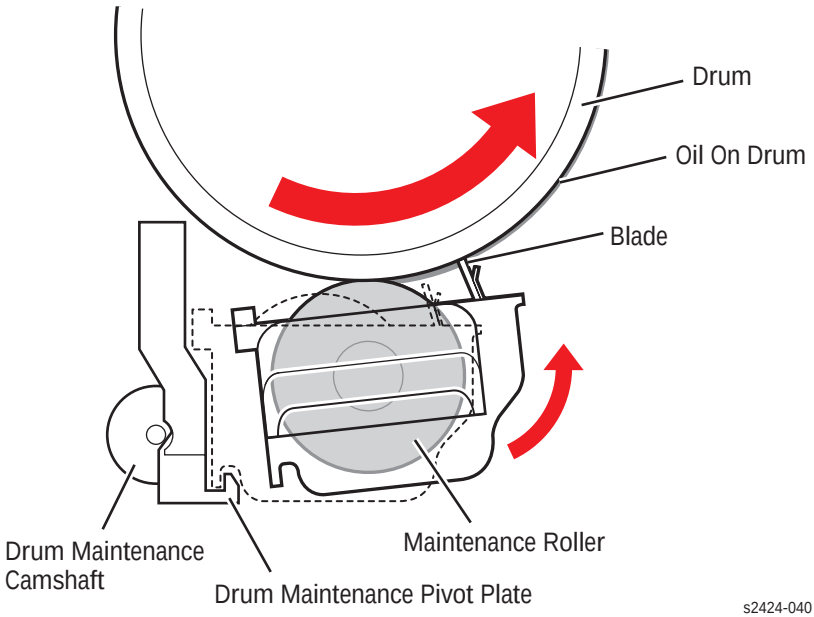
Drum Maintenance System

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, the process motor drives a cam to raise the pivot plate, which raises the oil roller against the rotating drum. The same cam raises the compliant wiper blade to assure that the oil film is smooth and even across the drum's surface. The process drive rotates in one direction. This rotates the drum maintenance camshaft and raises the drum maintenance system to the drum. The process drive then rotates in the opposite direction to lower the drum maintenance system. The blade removes oil and drains it back into the maintenance kit drawer through a felt filter. The oil roller can then reuse the oil. As the drum completes one rotation, the rotating cam lowers the oil roller and then lowers the blade.

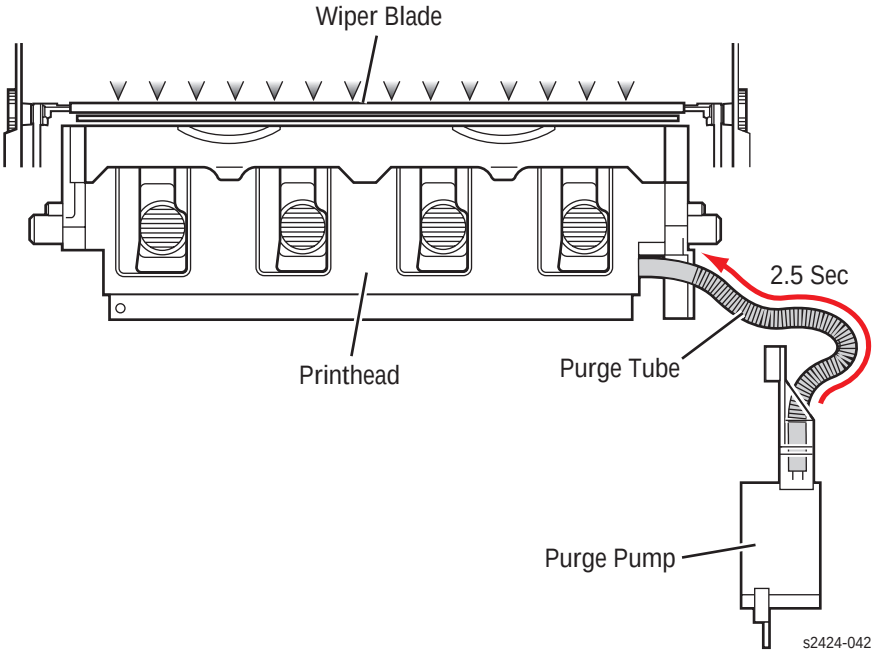
The drum has a floating deadband, the narrow section of the drum containing excess oil and other debris. The oil bar is left on the drum surface when the blade is removed from the drum. This oil bar location is controlled to keep it outside of the print area.

An EEPROM chip, built-in to the 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.



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.

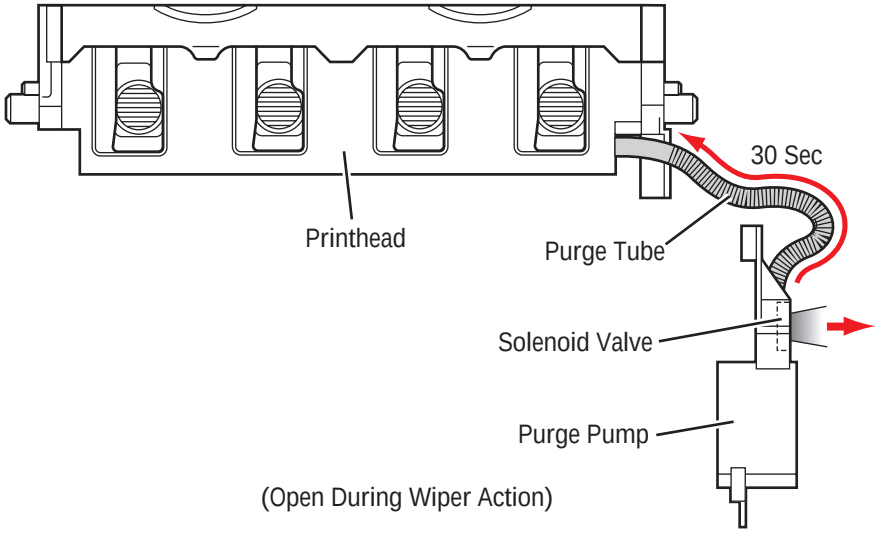


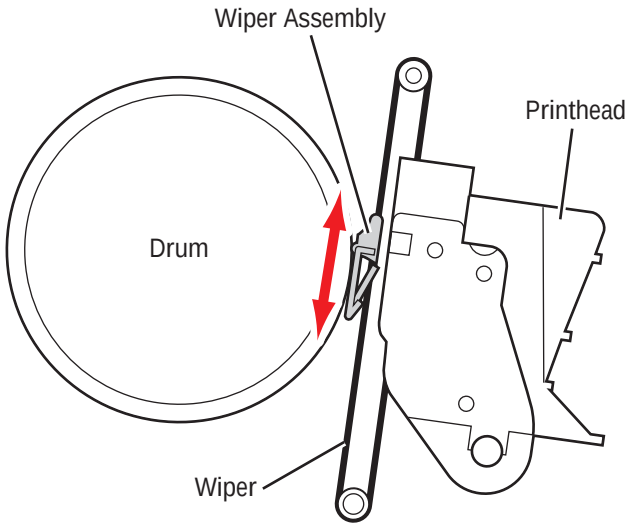
To perform a printhead maintenance cycle, the printhead is first tilted away from the drum to allow the wiper assembly to pass by. The wiper blade is then raised in front of the printhead. The media path drive governs wiper movement when it engages a clutch on the exit shaft of the printer. The purge 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 tilts 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 covers 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 can occur if the ink overfills and the reservoir cannot 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.





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Transfixing and Exiting

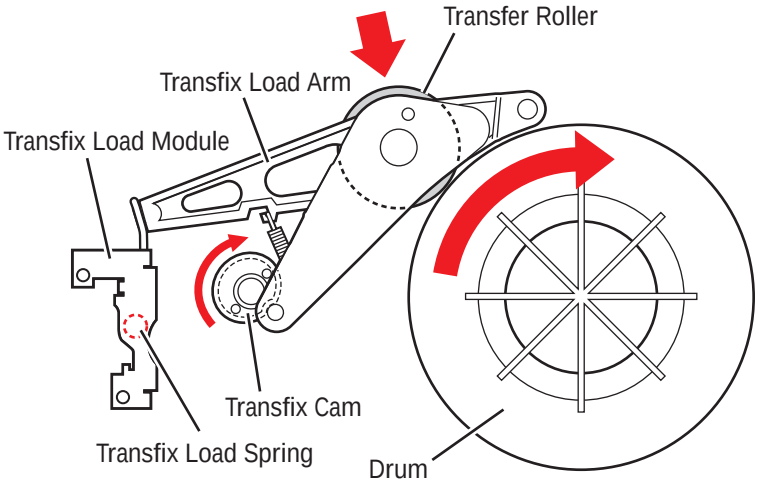
Transfixing and exiting consists of four major functions:

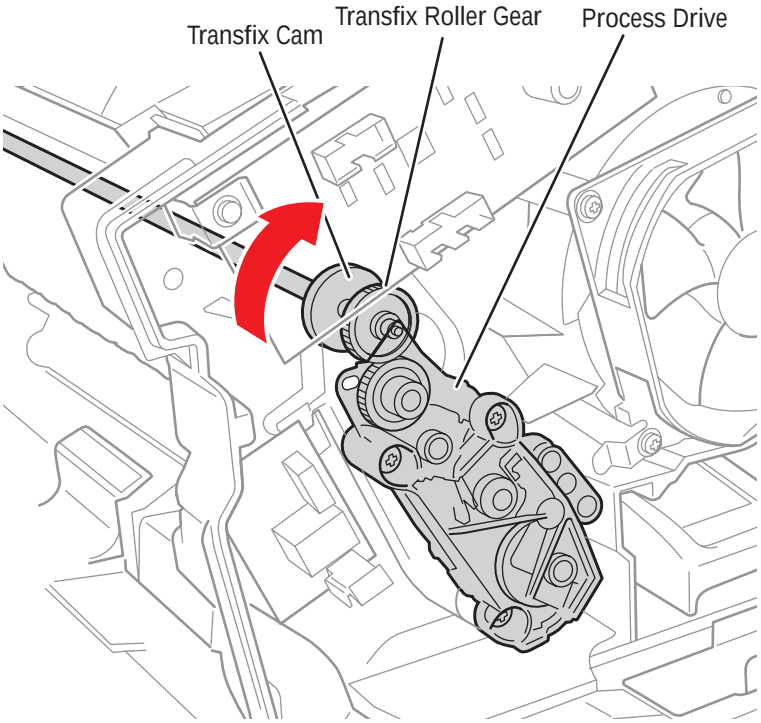
1. Stage the paper for rendezvous with the image on the drum and transfix roller nip.
2. Load the transfix roller and engage the drum stripper blade assembly.
3. Strip the paper from the drum.
4. Exit the paper from the system, or exit the paper for 2-sided printing.

Tripping the preheat exit sensor sets up a series of events that occur 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 lowers 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 process drive lifts and lowers the transfix roller.

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. The solenoid mounts on the upper inner duplex guide and activates the strip solenoid lever. The lever rotates the paper release carriage until it hits the transfix ground pins, causing the paper release blade to momentarily drop onto the deadband of the drum. This action catches the leading edge of the sheet of paper and guides 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.


Transfer Roller
Transfix Load Arm
Transfix Load Module
Transfix Cam
Transfix Load Spring
Drum

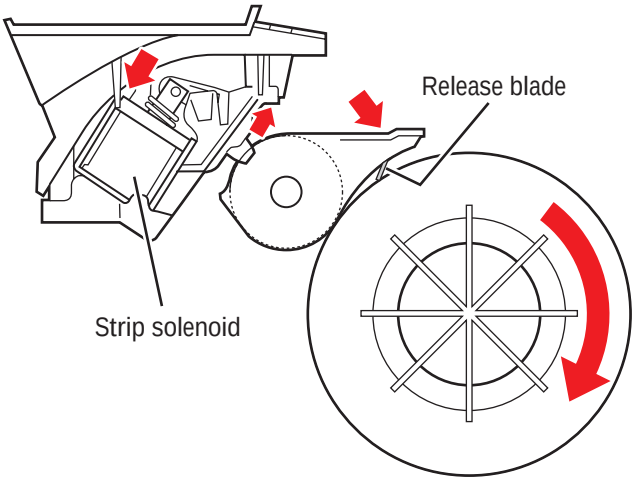

Transfix Cam
Transfix Roller Gear
Process Drive

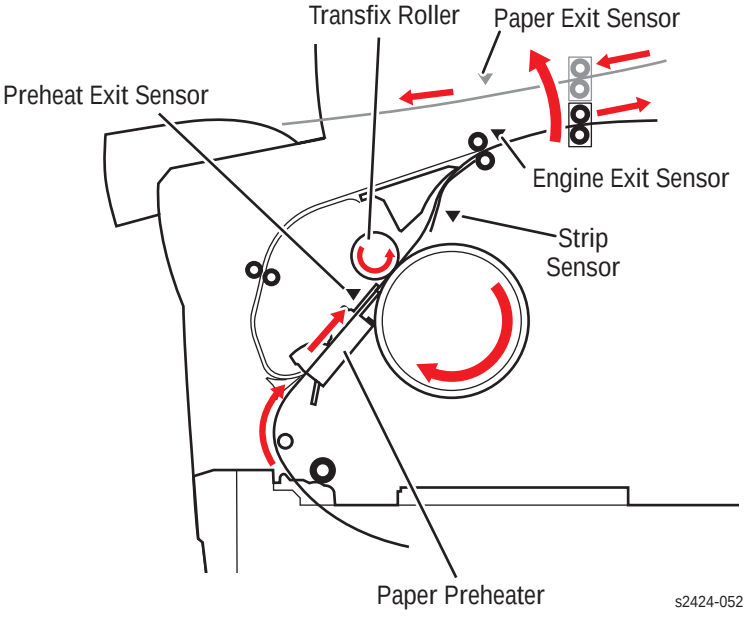
ss2424-049

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, the solenoid return spring provides force to move the solenoid plunger out of the solenoid coil which rotates 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 transport the paper into the exit module. The media is then fed out over the ink loader until the trailing edge is at the nip of the exit module roller. The elevator motor raises the carriage assembly to the top position, where it then stops and the drive motor drives the exit module rollers until the media exits the IOT ending the print cycle.


Release blade
Strip solenoid


Transfix Roller
Paper Exit Sensor
Preheat Exit Sensor
Engine Exit Sensor
Strip
Sensor
Paper Preheater
s2424-052

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 (300 x 300 dpi)	10 pages per minute (ppm)	10 sides per minute (spm)
Standard (300 x 450 dpi)	9 ppm	9 spm
Enhanced (563 x 400 dpi)	8 ppm	4 spm
High Res/Photo (525 x 2400)	6 ppm	3 spm
PCL 600 x 300 Mode PCL 600 x 600 Mode	6.5 ppm 3 ppm	
Tray 2 - 4		
Fast Color (300 x 300 dpi)	24 ppm	15 spm
Standard (300 x 450 dpi)	18 ppm	13 spm
Enhanced (563 x 400 dpi)	12 ppm	11 spm
Hi Res photo (525 x 2400 dpi)	7 ppm	7 spm
PCL 600 x 300 Mode PCL 600 x 600 Mode	13 ppm 6 ppm	

Configuration Card Personality Parameters

Information stored on the configuration card includes the ethernet address, and personality parameters. The printer model configuration is determined by a combination of printer hardware capabilities. 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 system 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 system will reboot as a "B" (non-networking, non-duplexing) model..

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

Configuration Card “Shadowed” Personality Parameters (Continued)

NCL Subject	NCL Item	Size (bytes)
IP	AutoIP	1
IP	DHCP Vendor Class ID	48
DNS RESOLVER	Primary Name Server IP Address	4
DNS RESOLVER	Secondary Name Server IP Address	4
DNS RESOLVER	MulticastDNS	1
NBNS (WINS)	Enable	1
NBNS (WINS)	WINS Note Type	1
NBNS (WINS)	Primary WINS Server	4
NBNS (WINS)	Secondary WINS Server	4
Ethernet	Speed	1
HTTP	On	1
HTTP	Information Forwarding	1
HTTP	SMTP Server Automatic	1
HTTP	Legal Settings	1
HTTP	Admin_Password	11
HTTP	Admin_Username	11
HTTP	KeyUser_Password	11
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

Configuration Card “Shadowed” Personality Parameters (Continued)

NCL Subject	NCL Item	Size (bytes)
IPP	On	1
IPP	Enabled	1
MIME	On	1
MIME	Enabled	1
EtherTalk	On	1
EtherTalk	Enabled	1
PSERVER	On	1
PSERVER	Enabled	1
PSERVER_IPX	Enabled	1

Notes:
1. “Parallel” and “USB”, “On” and “Enabled” parameters have not been identified as personality parameters. They are not tied to networking.
2. NCL = Nest Configuration Library

Error Messages and Codes

In this chapter…

- Introduction
- Power-Up Error Messages and LED Codes
- BIST Error Reporting
- POST Error Reporting
- PEST Error Reporting
- Fault Code Error Message Troubleshooting
- 3-Digit Jam Codes

Section 3

Introduction

This section covers system troubleshooting procedures utilizing control panel error messages and codes. Some procedures require running service diagnostic test functions to verify that a specific system component is operating correctly. For information on Service Diagnostics and all internal system test functions, see "Service Diagnostics Menu Functions" on page 4-4.

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

When checking for error codes from the control panel, be sure to check the Copy, Scan, and Print main menus (major mode buttons) for current status and error conditions.

- Status Page
- Usage Profile
- Fault History
- Diagnostic History

Power-Up Error Messages and LED Codes

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

- Built-In Self Tests (BIST)
- Power On Self Tests (POST)
- Print Engine Self Tests (PEST)

Note

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

BIST Error Reporting

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

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

BIST Error Reporting Blink Pattern Definition Table

PE LED	PS LED	Description
Off or 1 Blink, and then off	**Off or 1 Blink, and then off**	The power supply could not remain regulated when DC power was applied so it was shut down. Follow the troubleshooting procedures for electrical shorts (see "Electrical Troubleshooting" on page 4-58 and check the power supply fuses).
On Solid (dimly)	**On Solid (dimly)**	Initialization failure. The system is held in reset mode. This can be caused by an electronics module fault or a +3.3 V power supply regulation failure (see "Electrical Troubleshooting" on page 4-58). Also, see "Verifying Power Supply Operation - Print Engine" on page 4-71.
Off	**PS and control panel 1/2 sec. blink**	Boot loader memory test failure. Ensure the systems RAM chips are properly seated and that the correct RAM type for this system is installed. For specifications on approved RAM types for this system, see "System Specifications" on page 1-12.
1	**Rapid blinking**	CPU bridge and/or PCI bus is not communicating. Reboot the printer, if the error still occurs, replace the electronics module.
2	**Rapid blinking**	ROM not responding. Reboot the printer, if the error still occurs, replace the electronics module.

BIST Error Reporting Blink Pattern Definition Table (Continued)

PE LED	PS LED	Description
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 (system). 4. If the problem still occurs, reseat the RAM DIMMs. 5. Replace the electronics module. For disassembly, see "Electronics Module" on page 8-61. For replacement, go to the parts list on page 9-12.

POST Error Reporting

POST checks the communication paths within the electronics module and to other various system components.

POST testing initializes the control panel, and *in most cases* if an error occurs, a text message is displayed on the control panel along with an LED blink code flashing on all three LEDs (control panel LED, PS LED and PE LED). If initialization of the control panel fails, POST errors will still report using the LED blink patterns. The sum of the flashes, blinking in increments of 5, equal the error code. For example, 7 flashes equals error code 7.

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

Note

* Before replacing the electronics module for any POST errors, do the following:

1. Unplug all wiring and/or cables to the electronics module.
2. Plug in the AC power cable and power on the system electronics module.
3. If the error blink pattern is now different from the original error reported before Step 1, the problem may not be in the electronics module, see "Electrical Troubleshooting" on page 4-58.

POST Error Reporting Blink Pattern Definition Table

Control Panel Error Code	PS, PE and Control Panel LEDs	POST Error Type	Description
01.01	**Flutter then 01 blinks**	**Hard**	Bad error code.
02.01	**Flutter then 02 blinks**	**Hard**	Failed machine check.
02.02	**Flutter then 02 blinks**	**Hard**	System panic.
03.01	**Flutter only**	**Soft**	ID read failure.
03.02	**Flutter then 03 blinks**	**Hard**	Mismatch.
03.03	**Flutter only.**	**Soft**	Version mismatch.
03.04	**Flutter then 03 blinks**	**Hard**	Access failure.
04.01	**Flutter and then 04 blinks**	**Hard**	ID read failure.
04.02	**Flutter and then 04 blinks**	**Hard**	ID mismatch.
04.03	**Flutter and then 04 blinks**	**Hard**	TMVL mismatch, write/read failed.
04.04	**Flutter and then 04 blinks**	**Hard**	TMVH mismatch, write/read failed.
05.01	**Flutterand then 05 blinks**	**Hard**	Communications error. PLD I/O Board serial, link down/bad parity.
05.02	**Flutter only**	**Soft**	Communications error. PLD I/O Board serial, mismatch.
6.08	**N/A**	**Soft**	IDE drive general failure. Reseat IDE cable and power cable. If problem persists, replace the IDE drive. The system will work without the IDE drive.
07.01	**Flutter only**	**Soft**	Control panel link is invalid or bad parity.
07.02	**Flutter only**	**Soft**	Control panel version mismatch.
08.01	**Flutter only**	**Soft**	Control panel failed to initialize, POST soft error.
09.01	**Flutter only**	**Soft**	Control panel data path failure, bad data returned.
10.01	**Flutter and then 10 blinks**	**Hard**	PLD power control link down.

POST Error Reporting Blink Pattern Definition Table (Continued)

Control Panel Error Code	PS, PE and Control Panel LEDs	POST Error Type	Description
10.02	**Flutter only**	**Soft**	PLD power control link invalid, mismatch error.
11.01	**Flutter and then 11 blinks**	**Hard**	EEPROM read failure. **1.** Check EEPROM orientation. **2.** Replace EEPROM.
11.02	**Flutter and then 11 blinks**	**Hard**	EEPROM write failure. **1.** Check EEPROM orientation. **2.** Replace EEPROM.
11.03	**Flutter and then 11 blinks**	**Hard**	EEPROM re-read failure. **1.** Check EEPROM orientation. **2.** Replace EEPROM.
11.04	**Flutter and then 11 blinks**	**Hard**	EEPROM data failure, mismatch error. **1.** Check EEPROM orientation. **2.** Replace EEPROM.
12.xx	**Flutter only**	**Soft**	Configuration card test failure. **1.** Check card orientation. **2.** Reseat then replace the configuration card. NOTE: System will work as a base model (without networking) without the configuration card.
13.01	**Flutter and then 13 blinks**	**Hard**	PHY reset failure, reset stuck low.
13.02	**Flutter and then 13 blinks**	**Hard**	PHY ID error, mismatch erro.
14.xx	**Flutterand then 14 blinks**	**Hard**	USB ASIC test errors, N2280 netchip read, write, and mismatch errors, POST hard errors.
15.01	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, spurious CPU interrupts.
15.02	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, missing CPU interrupts.
15.03	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, IRQ spurious assertion.
15.04	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, timer no assertion.
15.05	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, spurious assertion.
15.06	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, no assertion.

POST Error Reporting Blink Pattern Definition Table (Continued)

Control Panel Error Code	PS, PE and Control Panel LEDs	POST Error Type	Description
15.07	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, spurious assertion.
15.08	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, no assertion.
15.09	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, spurious assertion.
15.10	**Flutterand then 15 blinks**	**Hard**	CPU interrupt error, no assertion.
15.11	**Flutter and then 15 blinks**	**Hard**	CPU interrupt error, IRQ spurious assertion.
16.01	**Flutter only**	**Soft**	Real time clock read failure.
16.02	**Flutter only**	**Soft**	Real-time clock write failure.
16.03	**Flutter only**	**Soft**	Real-time clock re-read failure.
16.04	**Flutter only**	**Soft**	Real-time clock does not tick.
17.01	**Flutter and then 17 blinks**	**Hard**	Memory test, less than 128 MB of RAM detected. This is the minimum RAM required. Add more RAM. Reseat the RAM SODIMM(s), then replace the RAM SODIMM(s).
18.01	**Flutter and then 18 blinks**	**Hard**	IPCB ID read failure.
18.02	**Flutter and then 18 blinks**	**Hard**	IPCB ID mismatch.
18.03	**Flutter and then 18 blinks**	**Hard**	IPCB PCI configuration failure.
18.04	**Flutter only**	**Soft**	IPCB version mismatch.
19.01	**Flutter and then 19 blinks**	**Hard**	Check and reseat cables. Replace hard drive, if necessary.

PEST Error Reporting

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

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

Fault Code Error Message Troubleshooting

Fault Code Error Reporting

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

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

In normal customer mode, the system will reboot each time an error occurs. If three of the same errors occur within 72 hours, or 1000 pages, the fault will be displayed on the system's control panel.

Interpreting Fault Codes

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

(xx,yyy.4x) Device faults are indicated by a 4 in the tenths place of the fault code. This indicates a hardware problem. The most common device faults troubleshooting procedures are documented in this section.

(xx,yyy.6x) Program faults are indicated by a 6 in the tenths place of the fault code. Unfortunately, there are too many program faults to enumerate them all and most program faults will not mean anything unless you are intimately familiar with the code base. Some of the more common program faults are documented in this section.

(xx,yyy.7z) CPU exceptions are indicated by a 7 in the tenths place of the fault code. The error code indicates both the PowerPC exception number and the region of firmware that was executing when the exception occurred: Engine, PostScript, Network, or Operating System.

Note

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

1,000.4x Error - 525-Sheet Feeder Faults

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

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

Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	1. Unplug all connectors to the optional 525-sheet feeder. 2. Remove the feeder and inspect the connector. 3. Replace any damaged connectors either on the 525-sheet feeder or engine. 4. Reseat and reconnect the 525-sheet feeder to the system. 5. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Inspect the pick rollers in the 525-sheet feeder tray(s). 2. Are the pick rollers damaged, dirty, or not moving freely?	Replace the pick assembly.	Go to Step 3.
3	1. Run the **Tray [3]/[4] Pick Clutch** test. 2. Does the pick clutch operate correctly?	Go to Step 4.	Replace the 525-sheet feeder.
4	1. Run the **Tray [3]/[4] Lift Motor** test. 2. Does the lift motor operate correctly?	Go to Step 5.	Replace the 525-sheet feeder.
5	1. Check the wiring from the 525-sheet feeder to the Electronics Module (J390). 2. Is the wiring defective?	Replace the wiring and go to Step 3.	Replace the 525-sheet feeder.

1,0XX.6x Errors - 525-Sheet Feeder program faults

a. Reseat the system onto the 525-sheet feeder.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

c. Reset NVRAM.

d. Replace the 525-sheet feeder.

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

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

Troubleshooting Procedure

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

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

2,001.69: The electronics module failed to initialize.

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

2,003.62: This fault code indicates a problem with the system program. The engine firmware was unable to start the service diagnostics tasks.

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

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

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

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

a. Reset NVRAM and retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

c. Replace the EEPROM chip.

d. Reboot the system.

3,0XX.6x - IPC Program Faults

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

a. Reset NVRAM, and then retest.

b. Replace the EEPROM chip.

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

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

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

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

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify the temperature of the room where the system is located (see "System Environmental Specifications" on page 1-14) is operating within specification. 2. Is the room temperature too cold for proper operation of the sytem? 3. Ensure the printer is acclimated to the room temperature. 4. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Run the **Monitor Heaters tests** with all heaters **ON**. 2. Are the heaters operating correctly and within specification?	Replace the electronics module.	Go to Step 3.
3	1. Inspect the wiring harness to the failed heater. 2. Is the wiring harness damaged or not working properly?	Replace the wiring harness to the failed heater.	Replace the problem component.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the **Check Wiper Alignment** test. 2. Did the test fail?	Perform the Wiper Alignment Procdure and test again. Go to Step 2 if the test fails again.	Go to Step 2.
2	1. Run the **Wiper Drive** test. 2. Did the test fail?	Go to Step 3.	Go to Step 5.
3	1. Inspect the wiper drive system and wiper lock system. Look for ink in the belts. 2. Is the wipe system operating correctly?	Go to Step 4.	Replace the problem component.
4	1. Inspect the head maintenance clutch. 2. Is there the presence of oil or contamination?	Clean the interior of the sytem and replace clutch if necessary.	Go to Step 5.
5	1. Run the **Head Maintenance Clutch** test. 2. Is the head maintenance clutch operating correctly?	Replace in the following order: ■ Exit module ■ Media drive gearbox ■ Wiper blade	Replace the head maintenance clutch.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Check for obstructions around the printhead. Look for ink shards in gears of the tilt drive. 2. If the printhead is obstructed, remove any obstruction from the system and reboot. 3. Did this fix the problem?	Complete.	Go to Step 2.
2	1. Ensure the wiring around the printhead is routed properly. 2. Is the wiring blocking the printhead?	Re-route all wiring to the printhead.	Go to Step 3.
3	1. Remove the waste tray and printhead and look for ink build-up in the system. 2. Is there ink build-up any where in the system?	Clean any ink or debris which may be restricting movement of the drive train or printhead.	Go to Step 4.
4	1. Check the process gearbox for damage. 2. Ensure the gears are correctly aligned. See see "Homing the Process Gear Drive Train" on page 6-8. 3. Is the process gearbox damaged?	Replace the process gearbox.	Go to Step 5.
5	1. Check the X-axis motor connector for damage. 2. Run the **X-axis Motor** test to check the X-axis motor current. 3. Did the test fail?	Replace the X-axis motor.	Go to Step 6.
6	1. Run the **Tilt Drive** test. 2. Did the test fail?	Replace the process gearbox.	

4,0XX.6x Process Control Software Fault

a. Reset NVRAM and then retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

c. Replace the EEPROM chip.

d. Reboot the system.

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

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

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

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

Troubleshooting Procedure

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

5,0XX.6x Errors - Program Faults

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

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

5,006.68: Software fault. **5,007.60:** Software fault.

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

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

- **a.** Reset NVRAM and retest.
- **b.** Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).
- **c.** Replace the EEPROM chip.
- **d.** Reboot the system.

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

6,000.41: An X-axis motor current error occured.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Inspect the printhead power cable and heater wiring. 2. Verify the printhead travels smoothly from left to right. 3. Ensure the printhead does not bind due to ink spills. 4. Is anything visibly restricting printhead movement?	Go to Step 2.	Go to Step 3.
2	1. Clear the wiring or ink spill, which is restricting movement of the printhead. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Inspect the X-axis wiring harness. 2. Is the wiring damaged or faulty?	Replace the defective wiring.	Go to Step 4.
4	1. Use service diagnostics to test the **X-axis drive**. 2. Did the test fail?	Replace the X-axis motor.	Replace the electronics module.

6,0XX.6x Errors - Program Faults

6,001.64: The X-axis task recieved an unexpected message.

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

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

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

6,013.67: Unknown X-axis program fault.

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

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

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

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

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

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

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

a. Reset NVRAM, and then retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

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

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

Troubleshooting Procedure

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

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Check the printhead wiring for proper routing. 2. Remove the printhead and inspect the printhead tilt and drive gears for ink spills. 3. Re-route the wiring. 4. Clean around the gears and printhead. 5. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Ensure the gears are correctly aligned, homed, and free from damage, see "Homing the Process Gear Drive Train" on page 6-8. 2. Did this correct the problem?	Replace the process gearbox.	Complete.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	**1.** Reboot the system . **2.** Did this correct the problem?	Go to Step 2.	Complete.
2	**1.** Inspect the system for ink spills on the head tilt gear and the drive train. **2.** Clean and reboot the system. **3.** Did this correct the problem?	Complete.	Go to Step 3.
3	**1.** Check the process gearbox for obstructions or damaged. **2.** Remove any obstructions. **3.** Is the gearbox damaged?	Replace the process gearbox.	Go to Step 4.
4	**1.** Ensure that the printhead moves properly left and right.	Go to Step 5.	Remove any obstructions or replace any defective parts.
5	**1.** Ensure the gears are correctly aligned and homed, see "Homing the Process Gear Drive Train" on page 6-8. **2.** Are the gears damaged?	Replace the process gearbox.	Go to Step 6.
6	**1.** Use service diagnostics to run the Tilt Axis Drive test. **2.** Did the test fail?	Replace the process gearbox.	Go to Step 7.
7	**1.** Use service diagnostics to run the Head Maintenance Wiper Clutch test. **2.** Did the test fail?	Replace the wiper drive clutch.	Go to Step 8.
8	**1.** Perform the Wiper Alignment procedure, see "Wiper Alignment" on page 6-2. **2.** Did this correct the problem?	Complete.	Go to Step 9.
9	**1.** Use service diagnostics to run the Wiper Drive Test. **2.** Did the test fail?	Inspect the maintenance drive system and replace any defective parts.	Replace the exit module assembly.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Check the printhead wiring for proper routing. 2. Remove the printhead and clean around the printhead tilt gears. 3. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Ensure the gears are correctly aligned and homed, see see "Homing the Process Gear Drive Train" on page 6-8. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Replace the process gearbox. 2. Did this correct the problem?	Complete.	Go to Step 4
4	1. Use service diagnostics to run the **Head Maintenance Wiper Clutch** test. 2. Did the test fail?	Replace the wiper drive clutch.	Go to Step 5.
5	1. Use service diagnostics to run the **Wiper Drive** test. 2. Did the test fail?	Inspect the maintenance drive system, replace any defective parts.	Replace the exit module assembly.

7,010.43: The printhead is stuck in the tilted position, or is not tilting properly over the CAM, due to problems with the process motor gearbox.

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

7,012.45: The drum transfix home sensor is still in a not homed position, after the return home motion has been Complete.d.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Reboot the system. 2. Did this correct the problem?	Go to Step 2.	Complete.
2	1. Do the printhead lock arms rotate correctly?	Go to Step 3.	Repair or replace the lock arms.
3	1. Is there spilled ink around the printhead?	Clean the printhead area.	Go to Step 4.

Step	Questions and Actions	Yes	No
4	1. Check the process gearbox for obstructions or damaged. 2. Ensure the gears are correctly aligned and homed. 3. Verify the process shaft and drive module shaft are at their home positions. 4. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Verify the headtilt gear will engage. You can manually set the headtilt gear. 2. Is the gear engaged properly?	Go to Step 6.	Set the headtilt gear.
6	1. Use service diagnostics to run the **Tilt Axis Drive** test. 2. Did the test fail?	Replace the process gearbox.	Go to Step 7.
7	1. Use service diagnostics to run the **Process Motor** test. 2. Did the test fail?	Replace the process motor.	Go to Step 8.
8	1. Use service diagnostics to run the **Head Maintenance Wiper Clutch** test. 2. Did the test fail?	Replace the wiper drive clutch.	Go to Step 9.
9	1. Ensure the wiper is properly aligned. 2. Use service diagnostics to run the **Wiper Drive** Test. 3. Did the test fail?	Go to Step 10.	Replace the exit module assembly.
10	1. Use service diagnostics to run the **Load Maintenance Clutch** test. 2. Did the test fail?	Inspect the maintenance drive system, replace any defective parts.	

7,0XX.6x Errors - Program Faults

a. Reset NVRAM and retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

8,0XX.xx Error - Wiper/Media Path Gearbox Faults

8,005.48: The media path motor gearbox stalled while moving the wiper to the home position.

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

8,007.41: The wiper stalled finding home.

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

8,009.43: The media path motor stalled while moving without the clutch engaged.

8,015.49: The media path motor stalled while moving the cap/wipe to the park position.

8,025.41: The media path motor stalled while moving the cap/wipe from the park position.

8,035.42: The media path motor stalled while moving the cap/wipe UP.

8,045.43: The media path motor stalled while moving the cap/wipe DOWN.

8,055.44: The media path motor stalled while engaging headtilt.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	For an **8,005.48** error: 1. Check for paper in the paper path that is adding drag to the rollers. Look for paper or wiring interfering with the take away roller. 2. Did this correct the problem?	Complete.	Go to Step 4.
2	For an **8,007.41** error: 1. Check for a missing KL-clip securing the drum maintenance clutch. Replace if missing. 2. Did this correct the problem?	Complete.	Go to Step 4.
3	For an **8,009.43** error: 1. Ensure the media paper drive is fully seated and correctly installed. 2. Ensure the feed rollers are properly engaged in the drive gears. 3. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Run the **Wiper Drive** test. 2. Did the test pass?	Go to Step 5.	Go to Step 6.
5	1. Run the **Wiper Alignment** test. 2. Did the test pass?	Go to Step 7.	Go to Step 6.

Step	Questions and Actions	Yes	No
6	1. Inspect the wiper system for improper operation, obstructions, or damage (broken gear or belt). 2. Ensure the wiper system is properly aligned (see "Wiper Alignment" on page 6-2). Also, see "Homing the Printhead Wiper" on page 6-4. 3. Did this correct the problem?	Complete.	Go to Step 7.
7	1. Run the **Head Maintenance Clutch** test. 2. Did the test pass?	Go to Step 8.	Replace the maintenance clutch.
8	1. Is the head lock mechanism on the right end of the MEP assembly is functioning properly?	Go to Step 9.	Replace the exit assembly.
9	1. Are there obstructions or spilled ink on the wiper blade or in the drive path?	Clean the inside of the system and retest.	Replace the exit module assembly.

8,0XX.6x Errors - Program Faults

a. Reset NVRAM, and then retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

9,0XX.xx Errors - Ink Loader Faults

9,000.44: These fault indicate a problem with the ink loader.

9,005.49: Ink loader fault. The **cyan** ink melt heater is on, but the ink does not appear to be dripping.

9,006.41: Ink loader fault. The **magenta** ink melt heater is on, but the ink does not appear to be dripping.

9,007.42: Ink loader fault. The **yellow** ink melt heater is on, but the ink does not appear to be dripping.

9,008.43: Ink loader fault. The **black** ink melt heater is on, but the ink does not appear to be dripping.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Are the ink sticks all Xerox branded ink?	Go to Step 2.	Advise customer.
2	1. Manually verify that the ink stick is able to advance in the ink loader chute.	Go to Step 3.	Remove any blockage and/ or replace the ink stick.
3	1. Run the appropriate **Ink Melt [1, 2, 3, 4] Heater** test. 1 = Yellow 2 = Cyan 3 = Magenta 4 = Black 2. Did the test pass?	Replace the printhead.	Replace the ink loader assembly.

9,009.44 and 900X.6x

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

a. Reset NVRAM and retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

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

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

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

11,003.49: Control panel broken serial link detected.

11,004.41: Control panel or I/O board broken serial link detected.

11,005.42: Power control broken serial link detected.

11,006.43: Printhead broken serial link detected.

11,007.44: PCI error detected.

11,008.45: The DMA hardware is not responding.

11,009.46: PS communication timeout failure detected.

11,010.47: PS hardware version mismatch.

11,011.48: PS software version mismatch.

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

11,013.41: I/O PLD version mismatch.

11,014.42: Control Panel version mismatch.

11,015.43: Printhead PLD version mismatch.

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

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

11,018.46: Titan version mismatch.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Ensure ground integrity for the system. 2. Did this resolve the error?	Complete.	Go to Step 2.
2	1. Inspect and reseat all connectors. 2. Inspect the gray cable between the I/O board and the electronics module. 3. Ensure the cables are properly dressed in the wiring raceway as detailed in the wiring diagram section of this manual. 4. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Reset NVRAM and retest. 2. Did this resolve the problem?	Complete.	Go to Step 4.
	■ 11, 001.47 and 11,017.45	Replace Tray 2.	
	■ 11,002.48 and 11, 016.44	Replace Tray 3.	
	■ 11,003.49 and 11,0014.42	Replace the control panel.	
	■ 11,004.41 and 11,013.41	Replace the I/O board.	

Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
	■ 11,006.43 and 11,015.43	Replace the printhead.	
	■ For all other 11,000.4x errors:	Replace the electronics module.	

11,100.60 - Temperature Error

11.100.60: The root problem for this error is temperature sensitivity with the power supply's opto isolator chips. Ensure room temperature is not too high. Ensure also that the electronics fan runs correctly. If OK, then replace the electronics module.

12,000.60 Errors - Program Faults

a. Reset NVRAM and retest.

b. Ensure ground integrity for the system(see "Ensuring Ground Integrity" on page 4-73).

13,0XX.xx Errors - Thermal Faults

13,000.48: Thermal fault.

Troubleshooting Procedures

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

13,003.42:

13,007.46:

Troubleshooting Procedures

Step	Questions and Actions	Yes	No
1	1. Ensure ground integrity for the system. 2. Did this correct the problem?	Complete.	Go to Step 2.

Troubleshooting Procedures

Step	Questions and Actions	Yes	No
2	1. Reset NVRAM and retest. 2. Did this correct the problem?	Complete.	Replace in the following order: ■ NVRAM ■ Electronics module.

13,008.47: The drum heater is too hot.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify that the ambient temperature of the room is within the systems optimal environmental specification (see "System Environmental Specifications" on page 1-14). 2. Is the room too cold or too hot?	Advise customer of specification requirements.	Go to Step 2.
2	1. Ensure ground integrity of the system (see "Ensuring Ground Integrity" on page 4-73). 2. Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	1. Is the error code associated with an overheat condition?	Go to Step 4.	Go to Step 6.
4	1. Verify system clearance for adequate air flow. 2. Are any of the vents blocked?	Advise customer of clearance specification.	Go to Step 5.
5	1. Using service diagnostics, run the **Drum Fan Motor** test. 2. Did the test pass?	Go to Step 6.	Replace the drum fan and/or the wiring harness.
6	1. Check the electronics module fan. 2. Is the fan operating correctly?	Go to Step 7.	Replace the electronics module fan.
7	1. Using service diagnostics, run the **Drum Temperature Sensor** test. 2. Did the test pass?	Go to Step 8.	Replace the drum temperature sensor.

Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
8	1. Using service diagnostics, run the **Drum Heater** test. 2. Did the test pass?	Replace the drum assembly.	Replace the drum temperature sensor.

13,067.43: The drum thermistor circuit is open.

13,069.45: The drum thermistor circuit is shorted.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Using service diagnostics, run the **Drum Temperature Sensor** test. 2. Did the test pass?	Go to Step 2.	Replace the drum temperature sensor.
2	1. Inspect the sensor wiring harness. 2. Is the wiring free from defects?	Replace the drum temperature sensor.	Replace the sensor wiring harness.

13,072.48: The preheater got too hot.

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

13,131.44: The preheater thermistor circuit is open.

13,133.46: The preheater thermistor circuit is shorted.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify that the ambient temperature of the room is within the systems optimal environmental specification (see "System Environmental Specifications" on page 1-14). 2. Is the room too cold or too hot?	Advise customer of specification requirements.	Go to Step 2.
2	1. Run the **Preheater** test. 2. Did the test pass?	Replace the I/O board.	Go to Step 3.
3	1. Check the wiring from the preheater. 2. Is the wiring connected properly and sound?	Replace the preheater board.	Replace the wiring harness.

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

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

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

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

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify that the ambient temperature of the room is within the systems optimal environmental specification (see "System Environmental Specifications" on page 1-14). 2. Is the room too cold or too hot?	Advise customer of environmental specification requirements.	Go to Step 2.
2	1. Ensure ground integrity of the system (see "Ensuring Ground Integrity" on page 4-73). 2. Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	1. Use service diagnostics to run the **Left Jetstack Temperature** test. 2. Did the test pass?	Go to Step 4.	Replace the printhead.
4	1. Check and reseat all wiring to the printhead. 2. Did this correct the problem?	Complete.	Replace the printhead.

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

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

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

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

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify that the ambient temperature of the room is within the system's optimal environmental specification (see "System Environmental Specifications" on page 1-14). 2. Is the room too cold or too hot?	Advise customer of specification requirements.	Go to Step 2.
2	1. Ensure the ground integrity of the system (see "Ensuring Ground Integrity" on page 4-73). 2. Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	1. Run the **Right Jetstack Temperature** test. 2. Did the test pass?	Go to Step 4.	Replace the printhead.
4	1. Check and reseat all wiring to the printhead. 2. Did this correct the problem?	Complete.	Replace the printhead.

13,264.42: The reservoir heater got too hot.

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

13,323.47: The reservoir thermistor circuit is open.

13,325.49: The reservoir thermistor circuit is shorted.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify that the ambient temperature of the room is within the system's optimal environmental specification (see "System Environmental Specifications" on page 1-14). 2. Is the room too cold or too hot?	Advise customer of specification requirements.	Go to Step 2.
2	1. Ensure ground integrity of the system (see "Ensuring Ground Integrity" on page 4-73). 2. Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	1. Run the printhead **Reservoir Temperature** test. 2. Did the test pass?	Go to Step 4.	Replace the printhead.
4	1. Check and reseat all wiring to the printhead. 2. Did this correct the problem?	Complete.	Replace the printhead.

13,328.43: The CYAN heater is too hot.

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

13,387.48: The CYAN thermistor circuit is open.

13,389.41: The CYAN thermistor circuit is shorted.

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

13,392.44: The MAGENTA heater is too hot.

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

13,451.49: The MAGENTA thermistor circuit is open.

13,453.42: The MAGENTA thermistor circuit is shorted.

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

13,456.45: The YELLOW heater got too hot.

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

13,515.41: The YELLOW thermistor circuit is open.

13,517.43: The YELLOW thermistor circuit is shorted.

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

13,520.46: The BLACK heater got too hot.

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

13,579.42: The BLACK thermistor circuit is open.

13,581.44: The BLACK thermistor circuit is shorted.

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify that the ambient temperature of the room is within the systems optimal environmental specification (see "System Environmental Specifications" on page 1-14). 2. Is the room too cold or too hot?	Advise customer of specification requirements.	Go to Step 2.
2	1. Ensure ground integrity of the system, (see "Ensuring Ground Integrity" on page 4-73). 2. Are all components grounded properly?	Go to Step 3.	Resolve ground integrity.
3	1. Run the appropriate **Ink Melt** test. 1 = Yellow 2 = Cyan 3 = Magenta 4 = Black 2. Did the test pass?	Replace the electronics module.	Go to Step 4.

Step	Questions and Actions	Yes	No
4	1. Inspect and reseat the wiring to the ink loader. 2. Did this correct the problem?	Replace the ink loader.	Replace the I/O board.

13,000.6x Errors - Program Faults

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

13,002.63: Value is not in valid range.

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

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

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

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

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

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

a. Reset NVRAM and retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

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

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

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

19,003.48: Scale and offset error is too large. The voltages measured have more than a 20% error from their expected values. Something is wrong with the electronics module or the wave amplifier.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Check and reseat all wiring to the printhead. 2. Did this correct the problem?	Complete.	Replace in the following order: ■ Printhead ■ Electronics Module

19,0XX.6x - Errors

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

a. Reset NVRAM, and then retest.

b. Replace the NVRAM chip.

21,000.69 Errors - Diagnostic Code Version Mismatch

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

22,0XX.6x Errors - Jam Codes

a. For jam codes, see "3-Digit Jam Codes" on page 3-49.

23,0XX.6x Errors - NVRAM Fault

a. Reset NVRAM, and then retest.

b. Replace the NVRAM.

26,0XX.6x Errors - Printing Faults

a. Reboot the system if one of these faults occur.

27,0XX.6x Errors - Profile Library

a. Ensure the ground integrity of the system (see "Ensuring Ground Integrity" on page 4-73).

29,0XX.6x Errors - Jam Manager

a. Reset NVRAM, and then retest.

b. Replace the NVRAM.

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

31,001.40: Mechanical initialization jam fault.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Verify that all the main tray paper path sensor wires are clear of the takeaway rollers. 2. Are any wires damaged?	Replace the wiring harness.	Go to Step 2.
2	1. Are the takeaway rollers dirty, contaminated, or damaged?	Replace the take away roller.	Go to Step 3.
3	1. Run the **Paper Path Drive** test. 2. Did the test pass?	Go to Step 5.	Go to Step 4.
4	1. Remove the media driev gearbox and manually rotate each paper path roller. 2. Identify any roller which may be binding and causing drag on the system. 3. Repair or replace as necessary. 4. Did this correct the problem?	Complete.	If the media path is clear of debris and the rollers rotate normally, replace the media gearbox.

31,0XX.6x Errors - Program Faults

a. Reset NVRAM, and then retest.

b. Ensure ground integrity for the system (see "Ensuring Ground Integrity" on page 4-73).

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

33,001.42: Tray 1 width value too low.

33,002.43: Tray 1 width value too high.

Troubleshooting Procedure

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

34,0XX.xx Errors - Printhead NVRAM Faults

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

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

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

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

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Check and reseat all wiring to the printhead. 2. Did this correct the problem?	Complete.	Replace in the following order: ■ Printhead ■ Electronics Module.

36,000.40 Errors - Drum Maintenance Faults

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Ensure ground integrity (see "Ensuring Ground Integrity" on page 4-73. 2. Did this correct the problem?	Complete	Go to Step 2.
2	1. Inspect pivot plate for cracks. 2. Check the drum maintenance cam rollers for damage or improper movement. 3. If the pivot plate or cam rollers are faulty, replace. 4. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Use service diagnostics to run the **Drum Maintenance/Transfix Home** test. 2. Use service diagnostics to run the **Drum Maintenance Drive** test.	If either test fails, Replace the process drive.	

36,001.67 Errors

a. Replace the pivot plate.

b. Replace the drum maintenance unit.

37,0XX.xx Errors - PEST Faults

AC power supplied by power sources such as uninterruptible power supplies (UPS's) or DC-to-AC inverter systems, may not supply enough current to properly power up the printer. In these cases, the printer may report printhead jet-stack or reservoir heater disconnect, drum heater, or preheater errors (37,002.47 thru 37,012.48). Verify the AC power source prior to troubleshooting for a system exhibiting any of these errors.

There are wiring diagrams to aid in diagnosing PEST faults, see "Wiring Diagrams" on page 10-1.

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

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

37,003.48: PEST - Right jetstack disconnect. The right jetstack is not drawing the expected power from the supply.

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

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

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

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

37,009.45: PEST - Inkmelt 0 (Yellow) disconnect. The inkmelt heater is not drawing the expected power from the supply.

37,010.46: PEST - Inkmelt 1 (Cyan) disconnect. The inkmelt heater is not drawing the expected power from the supply.

37,011.44: PEST - Inkmelt 2 (Magenta) disconnect. The inkmelt heater is not drawing the expected power from the supply.

37,012.48: PEST - Inkmelt 3 (Black) disconnect. The inkmelt heater is not drawing the expected power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the appropriate diagnostic test: **37,002.47 = Left Jetstack Heater** **37,003.48 = Right Jetstack Heater** **37,004.40, 37,005.41 = Reservoir Heater** **37,006.42 = Drum Heater** **37,008.44 = Preheat Heater** **37,009.45 = Ink Melt 1** **37,010.46 = Ink Melt 2** **37,011.47 = Ink Melt 3** **37,012.48 = Ink Melt 4** 2. Did the test pass?	Go to Step 3.	Go to Step 2.
2	1. Check the wiring running from the problem component to the printhead. 2. Is the wiring damaged or not working properly?	Replace the problem wiring harness.	Replace in the following order: ■ Drum assembly ■ Preheater ■ Printhead ■ Ink loader

37,013.40: PEST - Electronics module cooling fan disconnect. The electronics cooling fan is not drawing the expected power from the supply.

37,014.41: PEST - Drum cooling fan disconnect. The drum cooling fan is not drawing the expected power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the appropriate diagnostic test: **37,013.40 = Electronics Cooling Fan** **37,014.41 = Drum Fan** 2. Did the test pass?	Go to Step 3.	Go to Step 2.
2	1. Check the wiring for the problem fan. 2. Is the wiring damaged or not working properly?	Replace the problem wiring harness.	Replace the problem component: ■ Electronics cooling fan ■ Drum Fan

37,016.43: PEST 50 V power supply test. The 50 V power supply is loaded with the head maintenance clutch and then tested. The expected power from the supply is not being drawn. This error may be caused by a power supply that is faulty or shorted by some other 50 V device.

50V Power Supply Fault Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	Checking for a short in electronics module. NOTE: Damage to circuits within the electronics module may occur if the power supply capacitors are not allowed to fully discharge. **1.** Turn off the printer and wait 30 seconds for the power supply capacitors to discharge. **2.** It is possible that the power supply is not shorted but instead is out of spec, which leads to an error condition. **3.** Measure the 50V power supply output. The test point is located on the power control board below the main board RAM DIMMs. **4.** Is the power supply within specification?	Go to Step 2.	Go to Step 2.
2	**1.** Unplug the following electronics module connectors. This step disconnects all other external circuits so the electronics module can be tested alone: ■ Power Control to I/O board (J800 - gray ribbon cable on right side) ■ Power Control right (J400 – 16 wire, multi-color) ■ Printhead data interface (J130 – gray ribbon cable on top side) ■ Wave amp signal (J790) short gray ribbon cable located on left side) ■ Printhead power connector ■ Power Control left (J390 – 34 wire, multi-color) ■ Y-Axis motor (J280) **2.**Turn on power to the printer. **3.** Do the PE and PS indicators flash momentarily?	Go to Step 3.	Replace the electronics module.
3	**1.** Turn off the printer and wait 30 seconds for power supply capacitors to discharge. **2.** Plug in the power control to I/O board connector (J800). **3.** Turn on power to the printer. **4.** Do the PE and PS indicators flash momentarily?	Go to Step 4.	Go to Step 5.

50V Power Supply Fault Troubleshooting Procedure (Continued)

Step	Questions and Actions	Yes	No
4	1. If the 50V Power Supply LED (viewed thru the cooling grill below the power cord receptacle) illuminates, the short is on one of the external devices you unplugged earlier. In this case, systematically turn off the printer, plug a wiring harness back in, and turn the printer on until the 50V supply fails. 2. Replace the defective part. Retest the printer.		
5	1. To isolate the problem to the I/O board or its related cabling, unplug the I/O board connectors. Umbilical Right J1 ■ Waste Tray Sense J110 ■ Stripper Solenoid J250 ■ Paper Tray Sense J610Ink load Signal J910 ■ DMU Sense J860 ■ Drum Thermistor J870 ■ Exit Module J680 ■ Heater Relay Control J950 2. Test the resistance of the I/O board. 3. Is the resistance still less than 1K ohm?	Replace the I/O board.	Go to Step 6.
6	1. Plug in the I/O board connectors one at a time and retest the resistance. 2. Replace the component that creates a short at J270.		

37,017.44: PEST - Main tray (Tray 1) deskew clutch disconnect . The main tray deskew clutch is not drawing the expected power from the supply.

37,018.45: PEST - Main tray (Tray 1) pick clutch disconnect. The main tray pick clutch is not drawing the expected power from the supply.

37,019.46: PEST - Tray 1 pick solenoid disconnect. The tray 1 pick solenoid is not drawing the expected power from the supply.

37,020.47: PEST - Strip solenoid disconnect. The strip solenoid is not drawing the expected power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the appropriate diagnostic test: **37,016.43** = **Head Maintenance Clutch** **37,017.44** = **Deskew Clutch** **37,018.45** = **Pick Clutch** **37,019.46** = **Pick Solenoid** **37,020.47** = **Strip Solenoid** 2. Did the test pass?	Go to Step 3.	Go to Step 2.
2	1. Check the wring for the problem clutch or solenoid. 2. Is the wiring damaged or not working properly?	Replace the problem wiring harness.	Replace the problem component: ■ Head maintenance clutch ■ Media path drive assembly ■ Pick solenoid ■ Strip solenoid

37,021.48: PEST - Tray 1 elevator disconnect. The main tray elevator is not drawing the expected power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the **Tray 2 Lift Motor** test. 2. Did the test pass?	Replace the electronics module.	Go to Step 2.
2	1. Check the wiring to the tray 2 lift motor. 2. Is the wiring damaged?	Replace the wiring harness	Replace the tray lift motor.

37,022.40: PEST - Pressure pump motor disconnect. The pressure pump motor is not drawing the expected power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the **Pressure Pump Motor** test. 2. Did the test pass?	Replace the electronics module.	Go to Step 2.
2	1. Check the purge pump assembly wiring. 2. Is the wiring damaged?	Replace the pressure pump motor.	

37,023.41: PEST - Purge valve disconnect. The purge valve is not drawing the expected power from the supply.

Troubleshooting Procedure

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

37,024.42: PEST - Drum heater relay board disconnect. Both drum heater relay coils are not drawing the expected power from the supply.

37,025.43: PEST - Drum heater relay A disconnect. The drum heater A coil is not drawing the expected power from the supply.

37,026.44: PEST - Drum heater relay B disconnect. The drum heater B coil is not drawing the expected power from the supply.

Troubleshooting Procedures

Step	Questions and Actions	Yes	No
1	1. Run the **Drum Heater Relay** test. 2. Did the test pass?	Replace the electronics module.	Go to Step 2.
2	1. Check the wiring for damage.	Replace the drum heater relay board.	

37,027.45: PEST - X-axis motor disconnect. The X-axis motor is not drawing the expected power from the supply (both phases).

37,028.46: PEST - X-axis motor disconnect. The X-axis motor (first phase) is not drawing the expected power from the supply.

37,029.47: PEST - X-axis motor short. The X-axis motor is drawing too much power from the supply (first phase).

37,030.48: PEST - X-axis motor disconnect. The X-axis motor (second phase) is not drawing the expected power from the supply.

37,031.40: PEST - X-axis motor short. The X-axis motor is drawing too much power from the supply (second phase).

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the **X-axis Drive** test. 2. Did the test pass?	Replace the electronics module.	Go to Step 2.
2	1. Check the X- axis motor wiring for damage.	Replace the X-axis motor.	

37,032.41: PEST - Y-axis motor disconnect. The Y-axis motor is not drawing the expected power from the supply.

37,033.42: PEST - Y-axis motor short. The Y-axis motor is drawing too much power from the supply.

Troubleshooting Procedure

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

37,034.43: PEST - Media path motor disconnect. The media path motor is not drawing the expected power from the supply.

37,035.44: PEST - Media path motor short. The media path motor is drawing too much power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the **Media Path Motor** test. 2. Did the test pass?	Replace the electronics module.	Go to Step 2.
2	1. Check the wiring for damage.	Replace the media path motor.	

37,036.45: PEST - Process motor disconnect. The process motor is not drawing the expected power from the supply.

37,037.46: PEST - Process motor short. The process motor is drawing too much power from the supply.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Do the process drive gears, transfix shaft, and drum maintenance shafts rotate freely?	Go to Step 2.	Look for drag in the rollers or replace the process drive.
2	1. Run the **Process Motor** test. 2. Did the test pass?	Replace the electronics module.	Go to Step 3.
3	1. Check the wiring for damage.	Replace the process drive assembly.	

37,038.47: PEST - The power supply did not reset properly as requested. The reset line may not be connected.

37,039.48: PEST - Power supply +5 volt over limit.

37,040.40: PEST - Power supply +5 volt under limit .

37,041.41: PEST - Power supply +1.8 volt over limit.

37,042.42: PEST - Power supply +1.8 volt under limit.

37,043.43: PEST - Power supply +2.5 volt over limit.

37,044.44: PEST - Power supply +2.5 volt under limit.

37,045.45: PEST - Power supply +3.3 volt over limit.

37,046.46: PEST - Power supply +3.3 volt under limit. (

37,047.47: PEST - Power supply +12 volt over limit.

37,048.48: PEST - Power supply +12 volt under limit.

37,049.40: PEST - Power supply -12 volt over limit.

37,050.41: PEST - Power supply -12 volt under limit.

37,051.42: PEST - Power supply current over limit.

37,052.43: PEST - Power supply current under limit.

37,053.44: PEST - Power supply +50 volt over limit.

37,054.45: PEST - Power supply +50 volt under limit.

37,055.46: PEST - Power supply -50 volt over limit.

37,056.47: PEST - Power supply -50 volt under limit.

37,057.48: PEST - Power supply +15 volt over limit.

37,058.40: PEST - Power supply +15 volt under limit.

37,059.41: PEST - Power supply -15 volt over limit.

37,060.42: PEST - Power supply -15 volt under limit.

37,061.43: PEST - Power supply high switch will not activate. 12, 15, and 50 volt missing. This may be due to a short or disconnected power supply reset line.

37,062.44: PEST - Vss measurement too low. The printhead power cable may be disconnected.

37,063.45: PEST - Vpp measurement too low. The printhead power cable may be disconnected.

Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Run the **Voltages** check test. 2. Did the test pass?	Go to Step 2.	Replace the electronics module.
2	1. Check the printhead power cable. 2. Is the wiring damaged or not connected?	Reseat the wiring.	Replace the electronics module.

39,0XX.xx Errors - Document Feeder / Scanner Unit Faults

Note

Document feeder and scanner faults are only recorded in the usage profile report.

39,002.40 (Scanner) DRAM Test Failure Troubleshooting Procedures

Step	Questions and Actions	Yes	No
1	1. Cycle power to the system to clear. 2. Did this correct the problem?	Complete.	Replace the scanner assembly.

39,003.41 Scanner Optical Test Failure Troubleshooting Procedures

Step	Questions and Actions	Yes	No
1	1. Cycle power to the system to clear. 2. Did this correct the problem?	Complete.	Replace the scanner assembly.

39,004.42 Home Position Test Error Troubleshooting Procedure Control Panel Message “Release Scanner Shipping Restraint or Scanhead Locked”

Step	Questions and Actions	Yes	No
1	1. Is the scan head locked?	Unlock and and reboot the system.	Replace the scanner assembly.

39,005.43 “Scanner Missing” Troubleshooting Procedures

Step	Questions and Actions	Yes	No
1	1. Reseat the scanner cable connection, verify the scan head lock is in the unlocked postion and reboot the sytem. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Open the rear access cover to the electronics module and look for the red LED on the image processor controller board (to locate the appropriate LED see the diagram on page 4-71. 2. Is the red LED on solid, (not blinking)?	Replace the scanner assembly.	Go to Step 3.
3	1. Is the red LED blinking?	Go to Step 4.	Go to Step 6.
4	1. Remove the side covers and disconnect both exit module (MEP) motors. 2. Does the red LED come on solid?	Replace the exit module or defective motor.	Go to Step 5.
5	1. Leave the exit module motors disconnected and disconnect the document feeder assembly. 2. Does the red LED come on solid?	Replace the document feeder.	Go to Step 7.
6	1. Is the LED off?	Replace in the following order: ■ scanner power supply ■ electronics module	Go to Step 7.
7	1. Disconnect the scanner assembly. 2. Does the red LED come on solid?	Replace the scanner assembly.	Replace in the following order: ■ MEP control board. ■ Scanner power supply ■ electronics module

39,010.8 Document Feeder Disconnected Troubleshooting Procedure
Control Panel Message: “Document Feeder Disconnected or DADH Missing”

Step	Questions and Actions	Yes	No
1	1. Reseat the document feeder cable connector. 2. Wait at least one full minute. 3. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Cycle power to the system. 2. Did this correct the problem?	Complete.	Replace the document feeder.

39,011.40 (Document Feeder) DRAM Test Failure Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Cycle power to the system to clear. 2. Did this correct the problem? NOTE: You can disconnect the document feeder and the system will still scan from the platen.	Complete.	Replace the document feeder assembly.

39,012.41 Document Feeder Optical Test Failure Troubleshooting Procedure

Step	Questions and Actions	Yes	No
1	1. Cycle power to the system to clear. 2. Did this correct the problem?	Complete.	Replace the document feeder.

39,013.42 Document Feeder Jam Troubleshooting Procedure
Control Panel Message “Jam at Document Feeder”

Step	Questions and Actions	Yes	No
2	1. See the troubleshooting procedure on page 4-77.		

39,014.43 Document Feeder Calibration Troubleshooting Procedures

Step	Questions and Actions	Yes	No
3	1. Cycle power to the system to clear. 2. Did this correct the problem?	Complete.	Replace the document feeder.

3-Digit Jam Codes

This section provides a basis for troubleshooting system problems that occur as the result of misfeeds or jams within the paper path. Refer to the Xerox infoSMART knowledge base at www.xerox.com/office/c2424infoSMART for the latest information on Jam Code interpretation.

The system stores the 20 most recent events in Jam History. To access this information press the **Up Arrow** button when the jam code is displayed, scroll to **Jam History**, and then press **Enter**. 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	syStem 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 **K** Exit Module **L** IIT Cover **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** system 1st Init - Abnormal Shutdown **B** system 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 system (see page 4-73). **2.** Replace Tray 1 solenoid.
A2F	Deskew sensor in unexpected state. **1.** Ensure ground integrity of the system (see page 4-73). **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 system was picking paper from Tray 2.
A2N	The deskew flag tripped unexpectedly while the system was picking paper from Tray 3.
A2P	The deskew flag tripped unexpectedly while the system 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 system 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 system (see page 4-73). **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 system 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 system finish mechanical recovery.
2. Ensure ground integrity of the system (see page 4-73).

B2F Preheater exit sensor in unexpected state during fault.

B2S Preheater exit sensor in unexpected state during stage.

1. Ensure ground integrity of the system (see page 4-73).
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 system was picking paper from Tray 2.

B2N The preheat flag tripped unexpectedly while the system was picking paper from Tray 3.

B2P The preheat flag tripped unexpectedly while the system was picking paper from Tray 4.

B2Q The preheat flag tripped unexpectedly while the system was picking paper from Tray 1.
1. Test the preheat flag using the diagnostic Sensors test.
2. Ensure ground integrity of the system (see page 4-73).

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 that 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 pre heater, then retest.

C2C Strip flag unexpected event during mechanical recovery.

C2D Strip flag unexpected state during warm-up.

C2E Strip flag unexpected event during system 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.

C2T Strip flag unexpected event during transfix.
1. Ensure ground integrity of the system (see page 4-73).
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 that the media is not too thick and that it is supported by the system.
2. Use a less glossy media.
3. Ensure that 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 that the 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 that the process drive assembly is correctly homed (see page 6-8).
4. Ensure that 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 that the springs for the idler rollers are present and installed correctly (they should be the same for all 5 rollers).
2. Verify that the metal bar is installed on top of the exit guide.

C5X Print pulled back into transfix nip during exit.

1. Ensure that the media is not too thick and that it is supported by the system.
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 system (see page 4-73).
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 system.
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.

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 system was warming up.
F2F	The front door open flag unexpectedly tripped while the system was in a fault state.
F2M	The front door open flag unexpectedly tripped when the system pick from Tray 2.
F2N	The front door open flag unexpectedly tripped when the system pick from Tray 3.
F2P	The front door open flag unexpectedly tripped when the system pick from Tray 4.
F2Q	The front door open flag unexpectedly tripped when the system pick from Tray 1.
F2R	The front door open flag unexpectedly tripped while the system 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 system was oiling the drum during a print job.
F2W	The front door open flag unexpectedly tripped while the system was imaging during a print job.
F2X	Front door sensor unexpectedly actuated during exit. **1.** Ensure the media is supported. **2.** Ensure ground integrity of the system, see page 4-73. **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.
K2A	Exit module (MEP) malfunction during an abnormal IIT device shutdown.
K2B	Exit module (MEP) malfunction during a normal IIT device shutdown.
K2C	Exit module (MEP) malfunction during mechanical recovery.
K2D	Exit module (MEP) malfunction during warm-up.
K2E	Exit module (MEP) malfunction while in ready state.
K2F	Exit module (MEP) malfunction while in a fault state.
K2T	Exit module (MEP) malfunction during transfix.

K2X	Exit module (MEP) malfunction during paper exit. **1.** Ensure supported media. **2.** Inspect the media path for obstructions. **3.** Verify scanner power supply and MEP control board operation, see page 4-70. **4.** Inspect the exit module for defects or damaged components. **5.** Replace the exit module MEP control board. **6.** Replace the exit module MEP.
L2A	IIT cover open during abnormal IIT shutdown.
L2B	IIT cover open during normal IIT shutdown.
L2C	IIT cover open during mechanical recovery.
L2D	IIT cover open during warm-up.
L2E	IIT cover open while in ready state.
L2F	IIT cover open while in a fault state.
L2G	IIT cover open during auto drum maintenance cycle.
L2H	IIT cover open during printhead maintenance cycle.
L2J	IIT cover open during printhead purge.
L2K	IIT cover open during transfix.
L2L	IIT cover open in standby mode.
L2M	IIT cover open during pick from Tray 2.
L2N	IIT cover open during pick from Tray 3.
L2P	IIT cover open during pick from Tray 4.
L2Q	IIT cover open during pick from Tray 1.
L2R	IIT cover open during pick from duplex.
L2S	IIT cover open during staging for transfix.
L2T	IIT cover open during transfix.
L2V	IIT cover open during print drum maintenance.
L2W	IIT cover open while imaging.

L2X IIT cover open while paper exits the IOT.

1. Test the IIT cover open sensor with a magnet or magnetic screwdriver, the exit module will home and the message should clear.
2. Check the wiring to the IIT cover open sensor, (see "Main Block Wiring Diagram" on page 10-6).
3. Test the magnet under the control panel by placing a screw on the left do not touch symbol.
4. Replace the sensor.
5. Replace scanner assembly.

M2C Media path motor had an unexpected event during mechanical recovery.

M4A Paper path motor stalled during an abnormal system shutdown.

M4B Paper path motor stalled during a normal system shutdown.

M4C Paper path motor stalled during mechanical recovery.

M4D Paper path motor stalled during system warm-up.

M4E Paper path motor stalled while the system was in its ready state.

M4F Paper path motor stalled while the system was in a fault state.

M4G Paper path motor stalled while the system performed an auto drum maintenance cycle.

M4H Paper path motor stalled while the system performed printhead maintenance.

M4J Paper path motor stalled while the system performed printhead purge.

M4K Paper path motor stalled while the system performed an oil transfix roller cycle.

M4L Paper path motor stalled while the system was in standby mode.

M4M Paper path motor stalled while the system picked from Tray 2.

M4N Paper path motor stalled while the system picked from Tray 3.

M4P Paper path motor stalled while the system picked from Tray 4.

M4Q Paper path motor stalled while the system picked from Tray 1.

M4R Paper path motor stalled while the system duplexed the print.

M4S Paper path motor stalled while the system staged the print for transfix.

M4T Paper path motor stalled during transfix.

1. Verify that the media in the tray is supported by the system.
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 that the media in the tray is supported by the system. **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 system (see page 4-73).
N4A	Y-Axis motor stalled on power-up following an abnormal system shutdown.
N4B	Y-Axis motor stalled on power-up following a normal system shutdown.
N4C	Y-Axis motor stalled during mechanical recovery.
N4D	Y-Axis motor stalled during an system warm-up.
NFE	Y-Axis motor stalled while the system was in its ready state.
N4F	Y-Axis motor stalled while the system was in a fault state.
N4G	Y-Axis motor stalled while the system performed an auto drum maintenance cycle.
N4H	Y-Axis motor stalled while the system performed printhead maintenance.
N4J	Y-Axis motor stalled while the system performed printhead purge.
N4K	Y-Axis motor stalled while the system performed an oil transfix roller cycle.
N4L	Y-Axis motor stalled while the system was in standby mode.
N4S	Y-Axis motor stalled while the system staged for transfix.
N4T	Y-Axis motor stalled while the system transfixed the print.
N4V	Y-Axis motor stalled while the system performed a print drum maintenance cycle.
N4W	Y-Axis motor stalled while the system imaged the drum.
N4X	Y-Axis motor stalled while the print exited the system. **1.** Check for supported media; generally, unsupported labels, tri-folds, or envelopes cause this error. **2.** Try running fewer sheets through the tray. **3.** Ensure that 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 system transfixed the print.

N5W Y-Axis motor out of position while the system 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 system (see page 4-73).
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 that 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 system shutdown.

P4C Process motor stalled during mechanical recovery.

P4D Process motor stalled during an system warmup.

P4E Process motor stalled while the system was in its ready state.

P4F Process motor stalled while the system was in a fault state.

P4G Process motor stalled while the system performed an auto drum maintenance cycle.

P4H Process motor stalled while the system performed printhead maintenance.

P4J Process motor stalled while the system performed printhead purge.

P4K Process motor stalled while the system performed an oil transfix roller cycle.

P4L Process motor stalled while the system was in standby mode.

P4S Process motor stalled while the system staged for transfix.

P4T Process motor stalled while the system transfixed the print.

P4V Process motor stalled while the system performed a print drum maintenance cycle.

P4W Process motor stalled while the system imaged the drum.

P4X Process motor stalled while the print exited the system.

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 system was performing an abnormal shutdown.

T2B The exit door open flag unexpectedly tripped while the system was performing a normal shutdown.

T2C The exit door open flag unexpectedly tripped while the system was performing a mechanical recovery.

T2D The exit door open flag unexpectedly tripped while the system was warming up.

T2E The exit door open flag unexpectedly tripped while the system was ready.

T2x (continued)

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

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

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

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

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

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

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

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

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

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

T2R The exit door open flag unexpectedly tripped while the system 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 system was ejecting the print.

T2Z The exit door open flag unexpectedly tripped while the system was shutting down.

1. Ensure the media is supported.
2. Ensure ground integrity of the system, see page 4-73.
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 system ready.

V2F Tray 2 media size sensor unexpectedly activated while system 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 system 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 system imaging.

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

1. Ensure ground integrity of the system (see page 4-73).
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 system ready.

W2F Tray 3 media size sensor unexpectedly activated while system in fault state.

W2L Tray 3 media size sensor unexpectedly activated while system 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 system 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 system (see page 4-73).
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 system (see page 4-73).
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 system ready.

X2F Tray 3 pick flag triggered unexpectedly while system was in a fault state.

X2L Tray 3 pick flag triggered unexpectedly while system 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 system imaging.

X2x (continued)

X2X Tray 3 pick flag triggered unexpectedly while exiting print.

1. Ensure ground integrity of the system (see page 4-73).
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 system ready.

X3F Tray 3 pick flag sensor timed out while system in fault state.

X3L Tray 3 pick flag sensor timed out while system 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 system drum maintenance cycle was being performed.

X3W Tray 3 pick flag sensor timed out while system 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 system (see page 4-73).
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 system ready.

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

Y2L Tray 4 media size sensor unexpectedly activated while system 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 system drum maintenance cycle was being performed.

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

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

1. Ensure ground integrity of the system (see page 4-73).
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 system ready.

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

Z2L Tray 4 pick flag triggered unexpectedly while system 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 system drum maintenance cycle was being performed.

Z2W Tray 4 pick flag triggered unexpectedly during system imaging.

Z2Z Tray 4 pick flag triggered unexpectedly while exiting print.

1. Ensure ground integrity of the system (see page 4-73).
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 system ready.

Z3F Tray 4 pick flag sensor timed out while system in fault state.

Z3L Tray 4 pick flag sensor timed out while system 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 system drum maintenance cycle was being performed.

Z3W Tray 4 pick flag sensor timed out while system 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
- Check Menu / Activators Definition Tables
- Electrical Troubleshooting
- Ensuring Ground Integrity
- Paper Path and Media-Based Problems
- Operating System and Application Problems

Section 4

Introduction

This section covers troubleshooting general start-up, mechanical, and electrical or power supply problems not associated with a control panel error message or code. For troubleshooting problems associated with an error code or control panel error message, see the section "Error Messages and Codes" on page 3-1.

The System Status Page also contains useful troubleshooting information. This page provides general system 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 are still unable to solve the problem, read the Theory of Operation section for the problem area. The theory section provides useful information for providing a better understanding of how specific components or sub-assemblies are 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 system malfunctions and accessing special features. Display the Hidden Service menu as follows:

1. From the System Setup menu, go to **Information** --> **Troubleshooting** --> **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 5-35 for a complete explanation of each test print available.
Startup Page	Prints a page with basic system 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.
Enter Diagnostic Mode	See "Service Diagnostics Menu Functions" on page 4-4 for a complete explanation of each diagnostic routine.

Menu Item	Description
Reset NVRAM	Provides access to reset the system 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 system must be idle before changing to Power Saver low-energy consumption mode, per ENERGY STAR\256 guidelines.
Restart System	Resets all items in the system 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 system-usage information.
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.
Center Image	Adjusts the margin to center an image.

Service Diagnostics

The system has built-in diagnostics to aid in troubleshooting problems with the system components. The Service Diagnostics menu provides a means to test sensors, motors, switches, clutches, solenoids, fans, and power supplies. Diagnostics also contain functions to report system status and some NVRAM access.

Service diagnostics are to be executed through the control panel by a certified service technician only.

Service Diagnostics Menu Functions

The system reboots while entering or exiting all diagnostic modes. The system keeps the thermals hot during diagnostics to avoid unnecessary cleaning cycles.

If a diagnostic test runs into a problem while initializing the heaters a message displays, **"Test Fault, can't warm up - press any button"**, you can still continue to run diagnostics under this condition.

Important Information While Performing Service Diagnostics

Heaters and Thermals: When entering diagnostics, if the printhead temperature is approximately 32^{o} Celcius, the system is assumed to be warm and the heaters are turned ON to maintain the warmed-up state. Otherwise, they will remain OFF. Utilize the **Exercise Heaters** function if it is necessary to turn ON/OFF the heaters. Select **All Heaters On** to warm-up.

Print Engine Tests: In general, diagnostic testing is assumed to be done with the system in a "diagnostic configuration." This means the following applies:

- Doors are closed unless instructed otherwise.
- The print engine is thermally warm (at nominal printing temperatures).
- All axis's are or have been moved to their HOME position (run MECH INIT function).
- Trays are inserted and contain A/A4 media, unless instructed otherwise.

The tests may also be performed with the system operating at less than normal printing temperatures, but may produce slightly less typical results.

Entering Service Diagnostics

From Customer Mode to Diagnostics:

This method of entering diagnostics is to allow a transistion to diagnostics while keeping the system warm.

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 **Enter** button.

From System OFF to Diagnostics:

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

Note

Selecting Enter Diagnostics from the Service Tools menu activates a restricted test selection menu intended for customer access, because these tests are duplicated in the hidden Service Diagnostics menu the customer diagnostics are not detailed in this manual.

Service Diagnostics Control Panel Button Descriptions

Button	Function
BACK	Returns to the prior higher level menu structure, if available. Cancels the display of test results on the control panel and allows the current test to complete. If help text is displayed on the control panel, pressing **BACK** restores the current menu item and removes the help text.
CANCEL	Cancels certain functions of the system.
HELP/ INFO	Provides help information abouot the current menu selection, 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'. Used to decrement data in tests requiring user input.
Enter	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 Diagnostic Menu Definition Tables

Service Diagnostics Main Menu Definition Table

Menu Item	Description
Main Menu	
Menu Help	Displays information on how to use the control panel menus.
Exit Diagnostics	Exits service diagnostics and runs through POST to Ready.
Print Engine Menu	This menu contains all of the test functions associated with the print engine. Each menu item under this print engine menu has its own table describing the individual test descriptions and results.
Exit Path Menu*	This menu contains the test functions for the exit module (MEP).
Scanner Menu*	This menu contains the test functions for the scanner unit.
Doc Handler Menu*	This menu contains the test functions for the DADF.
Control (Front) Panel Menu	This menu contains the test functions for the control panel.
* The exit module, scanner, and doc handler are separate subsystems with their own firmware. In these tests, the service diagnostic firmware commands the subsystem to perform the built-in test, and reports the results on the display. Each subsystem is tested separately, with an electronic reset performed when switching the testing focus from one subsystem to another.	
Main Menu --> Print Engine Menu	
Monitor Menu	A submenu containing a set of functions for passively viewing or monitoring system mechanical parameters. See the monitor menu table on page 4-11 for a description of the individual test functions and results.
Exercise Menu	A submenu containing a set of functions for actively causing mechanical actions which may then be observed. See the exercise menu table on page 4-12 for a description of the individual test functions and results.
Check Menu	A submenu containing a set of extensive tests that return measured mechanism parameters for comparison against stated limits. See the individual table descriptions starting on page 4-15.
Function Menu	A submenu containing a set of functions for commanding more complex actions by portions of the system. See the function menu table on page 4-14 for a description of the individual test functions and results.

Service Diagnostics Main Menu Definition Table (Continued)

Menu Item	Description	
Main Menu --> Exit Module Menu		
Test Name	**Description**	**Results**
Report FW Version	Reports the current firmware version.	
Report Status	Displays the current status as reported by the exit module firmware.	
Monitor Sensors	Monitors all sensors associated with the exit module assembly. Manually exercise the sensor flags and verify the results.	MEP Home sensor: Home or Not Home Exit sensor: No Paper or Paper Top Open IIT cover: Open or Not Open Output Tray Full sensor Full or Not Full Error
Exercise Elevator Home Sequence	Exercises the exit path elevator home position and reports final status.	Ready Error
Exercise Elevator Lift Sequence	Moves the pinch roller over its range of travel, then reports final status.	Ready Error
Exercise Roller Drive	Rotates the exit path transport rollers clockwise, then counter-clockwise, performs a seek home command, and then reports final status.	Ready Error
Reset Exit Module	This test power cycles the IIT unit (MEP, Scanner, DADF).	Ready or Not Ready

Service Diagnostics Main Menu Definition Table (Continued)

Menu Item	Description	
Main Menu --> Scanner Menu		
Test Name	**Description**	**Results**
Report FW Version	Reports the current firmware version.	
Report Status	Checks then reports the current status as reported by the scanner unit firmware.	Ready or Not Ready Lamp: ON, OFF, Warming Up, Warmup test not done, Test fail Error: OK, Internal test failure, Test fail, Data capture test fail, Seek Home test fail, Unlocked Check test fail.
Perform Selftest	This test commands the scanner subsystem to perform its built-in self test proceedure, including a DRAM test. The test will fail if the scan head is locked.	OK or Fail. (This operation may take several minutes to complete.)
Test DRAM	Tests the scanner subsystem DRAM.	OK or Fail. (This operation may take several minutes to complete.)
Test Homing	Runs the scanner axis seek home procedure. The axis moves a short distance to the left, then moves right to the home sensor.	OK or Fail.
Test Axis Unlock	The axis attempts to move a short distance to the right. The test will make strange noises if the scan head lock is still engaged.	OK = Unlocked Fail = Locked
Test Data Capture	The scan axis moves to the right, under the calibration strip with the light on, then back to the home position.	OK or Fail.
Monitor Sensors	This monitors all scanner unit sensors.	Cover open or closed. (The cover must be open approximately 60 degrees before the test preports a change.)

Service Diagnostics Main Menu Definition Table (Continued)

Menu Item	Description	
Test Name	**Description**	**Results**
Exercise Lamp	This tests commands the scanner to cycle the lamp on, then off. The lamp is then left ON.	The lamp status must be observed. OK Fail
Exercise Axis Motion	The scanner axis moves to the maximum of its travel position, then back to the home (left) position.	OK or Fail.
Reset Scanner	This test power cycles the IIT unit (MEP, Scanner, DADF).	Ready or Not Ready
Main Menu --> Doc Handler Menu		
Test Name	**Description**	**Results**
Report FW Version	Reports the current firmware version.	
Report Status	Checks then reports the current status as reported by the DADF unit firmware.	Ready or Not Ready Lamp: ON, OFF, Warming Up, Warmup test not done, Test fail Error: OK, Paper Jam, Cover Open, Internal failure, Test fail, Data Capture test fail, Cal Device test fail.
Report Paper Status	Reports the presence of paper in the DADF unit.	Paper or no paper.
Perform Selftest	This tests performs the built-in self test procedure for the DADF.	OK or Fail. (This test may take several minutes to complete.)
Test DRAM	Tests the DRAM.	OK or Fail. (This test may take several minutes to complete.)

Service Diagnostics Main Menu Definition Table (Continued)

Menu Item	Description	
Test Name	**Description**	**Results**
Test Data Capture	Performs the built-in optical test procedure to determine if the system can capture scan dats, the calibration device, the lamp, optics and electronics are functional.	OK or Fail.
Test Cal Motion	Commands the DADF subsystem to move the calibration strip into the scanning window.	OK or Fail.
Monitor Sensors		Paper or no paper.
Exercise feed motion	Exercises the transport rollers in the DADF. Monitors the paper present sensor. You can manually excercise the sensor flags and verify the results.	OK or Fail. There should *not* be media present to perform this test.
Exercise Lamp	Cycles the DADF lamp on, then off. The lamp is then left ON.	OK or Fail. The lamp state must be manually observed.
Reset Doc Handler	This test power cycles the IIT unit (MEP, Scanner, DADF).	Ready or Not Ready
Main Menu --> Control Panel Menu		
Test Name	**Description**	**Results**
Report FW Version	Reports the current firmware version.	
Monitor Buttons	Reports each button pressed. Manually press each button.	Pressed and released.
Exercise Display	Cycles the display to verify backlight pixels and operation.	All dark = No Backlight All light = Backlight ON
Exercise LEDs	Exercises each LED (Top to bottom and left to right).	ON, Blink, or OFF.

Service Diagnostic Print Engine Menu Functions

Print Engine Monitor Menu Functions

Main Menu --> Print Engine Menu --> Monitor Menu		
The monitor test functions report current values (temperatures, positions, etc.), and demonstrate the ability to read the values without changing the current state of the system. Some monitor tests, such as sensors, allow tracking of the values as a state change, either manually or otherwise.		
Test Name	**Description**	**Results**
Sensors	Monitors all mechanically activated digital sensors in the print engine subsystem.	Whenever a state change is detected it is reported on the control panel as follows: H = Open or de-actuated L = Closed/Present/Actuated
Encoders	Monitors each of the non-temperature analog sensors.	Tray 1 Media Width Y-Axis Position Media Path Motor Position Process Motor Position
Temps	Monitors each of the thermal sensors.	Shows the current thermal control setpoint (first value) and the current sensor temperature (second value). LJ = Left Jetstack RJ = Right Jetstack RE = Reservoir DR = Drum PH = Preheater
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). LJ = Left Jetstack RJ = Right Jetstack RE = Reservoir DR = Drum PH = Preheater
Line Voltage	Provides the current voltage readings for AC Power. You can run this test overnight to record supply voltage settings. This test will not record spike voltages.	Minimum: Now: Maximum:

Print Engine Exercise Menu Functions

This submenu contains a group of functions intended to stimulate a specific portion of the print engine system in such a way that the test can be observed. Listening observations may be required for certain tests and will prompt you on the control panel if covers, doors, or trays need to be removed.

<table>
<tr><th colspan="3">Main Menu --> Print Engine Menu --> Exercise Menu</th></tr>
<tr><th>Test Name</th><th>Description</th><th>Results</th></tr>
<tr><td colspan="3">Activators Menu
The activators functions pulse the specified activator to cause it to generate a sound or motion. The Exercise All function cycles each of the listed activators below 4 times, in sequence, until interrupted by a control panel button press. The other functions continue cycling repeatedly until interrupted by a control panel key press. The key should be pressed only when the state is OFF. The following is a list of the components that can be exercised under the Exercise Activators Menu:</td></tr>
<tr><td colspan="2">■ Exercise All
■ Tray 1 Pick Solenoid
■ Tray 2 Pick Clutch
■ Tray 3 Pick Clutch
■ Tray 4 Pick Clutch
■ Deskew Clutch
■ Strip Solenoid
■ Head Maintenance Clutch
■ Purge Vent Solenoid
■ 110 V and 220 V Drum Heater Relays</td><td>All test results toggle ON and then OFF on the display</td></tr>
<tr><td colspan="3">Motors/Shafts Menu
The motor and shaft functions drive the specified motor or shaft enough to generate enough motion to be easily observed (usually 1 revolution), without making a substantial change to the state of the system.The Exercise All function cycles each of the listed motors/shafts 3 times in sequence until interrupted by a control panel button press. The other functions continue to cycle the motor/shaft repeatedly until interrupted by a control panel key press.
The following is a list of the components that can be exercised under the Exercise Motors/Shafts Menu:=</td></tr>
<tr><td>■ Exercise All
■ Process Motor
■ Y-axis Motor
■ X-axis Motor
■ Purge Pump Motor
■ Drum Fan Motor
■ Electronics Fan Motor
■ Media Path Motor & Shafts</td><td colspan="2">■ Transfix Cam Shaft
■ Drum Maintenance Cam Shaft
■ Deskew Shaft
■ Wiper Shaft
■ Tray 1 Pick Shaft
■ Tray 2 Pick Shaft
■ Tray 3 Pick Shaft
■ Tray 0 lift motor
■ Tray 3 Lift Motor
■ Tray 3 Motor & Shafts
■ Tray 4 Pick Shaft
■ Tray 4 Lift Motor
■ Tray 4 Motor & Shafts</td></tr>
</table>

Print Engine Exercise Menu Functions (Continued)

This submenu contains a group of functions intended to stimulate a specific portion of the print engine system in such a way that the test can be observed. Listening observations may be required for certain tests and will prompt you on the control panel if covers, doors, or trays need to be removed.

Main Menu --> Print Engine Menu --> Exercise Menu		
Test Name	**Description**	**Results**
Heaters Menu	Allows the heaters to be forced to an ON or OFF condition or to be toggled from one condition to the other. Also provides monitoring to observe the resulting heater power or temperature. ■ **Monitor heaters** ■ **Monitor Temperatures** ■ **All Heaters On (warmup to normal operating setpoints with Ink Melt Heaters OFF).** ■ **All Heaters Off** ■ **Toggle Printhead Heaters** ■ **Toggle Preheat Heater** ■ **Toggle Drum Heater** ■ **Toggle Ink Melt Heaters (The Ink Melt heaters are on only for 4 seconds).**	

Print Engine Check Menu Functions

This submenu contains a group of tests that perform specific measurements on portions of the print engine and report measured values to the control panel. These values may then be compared with range limits documented in the service manual, or using service bulletins on the service website (if the values were unavailable at the time of printing).

Main Menu --> Print Engine Menu --> Check Menu		
Test Name	**Description**	**Results**
Check Menu See the individual table descriptions starting on page 4-15 for all Check/Activator menu items.		
■ **Check All** ■ **Activators Menu** ■ **Shafts Menu** ■ **Fans Menu** ■ **Heaters Menu** ■ **Paper Path Menu** ■ **Drive Menu** ■ **Drum Menu** ■ **Motors Menu** ■ **Misc. Menu**		

Print Engine Function Menu Functions

This submenu contains a group of functions that either perform higher-level exercise functions involving multiple print engine subsystems, or special purpose functions requiring sofware support, such as working with NVRAM.

Main Menu --> Print Engine Menu --> Function Menu	
Test Name	**Description**
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 / Activators Definition Tables

The Check Menu contains 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 system were collected using 24 lb. Bond paper.

Note

Often, just running the test will exercise a position of the sytem and provide useful motions for observation. **Also, 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 system 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.

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.

R#	Definition	Typical Value	Actions
0	Peak Power (watts)	-0.1 to 0.8	Reports the profile max power value.
1	Average Power (watts)	2 to 6.5	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)	-0.1 to 0.65	Reports the profile max power.
1	Average Power (watts)	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)	0 to 1.5	Reports the profile max power value.
1	Average Power (watts)	18 to 26.5	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)	15 to 25	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)	-.45 to 0.95	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)	-1.0 to 10	Reports the profile max power value.
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)	-0.65 to 1.2	Reports the profile max power value.
1	Average Power (watts)	0.03 to 1.29	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)	MFG Only	Reports the profile max power value.
1	220 V Coil Average Power (watts)	MFG Only	Reports the average power during the constant portion of the profile.
2	220 V Coil Min Power (watts)	MFG Only	Reports the min power following power off.
3	220 V Coil Peak Power Time (sec)	MFG Only	Reports time after solenoid power on that the peak power occurred.
4	220 V Coil Initial Average Power (watts)	MFG Only	Reports the average power following power on.
5	110 V Coil Peak Power (watts)	MFG Only	Reports the profile max power value.
6	110 V Coil Average Power (watts)	MFG Only	Reports the average power during the constant portion of the profile.
7	110 V Coil Min Power (watts)	MFG Only	Reports the min power following power off.
8	110 V Coil Peak Power Time (sec)	MFG Only	Reports time after solenoid power on that the peak power occurred.
9	110 V Coil Initial Average Power (watts)	MFG Only	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.	370 to 980	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).	0.0 to 0.25	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.	80 to 300	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).	.10 to .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).	0.01 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.	-560 to -261	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.	83.0 to 307	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).	0.01 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).	0.66 to 0.69	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.

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
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).	0.01to 0.20	Reports the time it takes the MP motor servo system to “settle down” after the sudden release of the wiper shaft load. A larger value may show a dragging or slow to release clutch.
6	Time to CW On peak fe (sec).	0.005 to 0.20	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.
8	CW On fe settling time (sec).	0.01 to 0.20	Reports the time it takes the MP motor servo system to "settle down" following the sudden addition of the wiper shaft load. A longer time could indicate a looseness in the wiper shaft assembly or a slipping clutch.

Wiper Shaft (Continued)

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
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.	0 to 70	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 0.01	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).	MFG Only	Reports the average MP fe during the run in interval before the pick shaft is engaged.
1	On response time. (sec).	MFG Only	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.).

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
2	Initial average MP fe. (mpts).	MFG Only	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. If the missing tooth gear did not kick forward and engage, this value would be unchanged from R0.
3	Transition MP fe min. (mpts).	MFG Only	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.	MFG Only	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.	MFG Only	Reports the peak MP fe during the interval when the pick cams are depressing the lift plate. A higher value here could indicate issues with the cam surfaces or the spring compression force.
6	Final average MP fe. (mpts).	MFG Only	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).	MFG Only	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.	MFG Only	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).	MFG Only	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.	MFG Only	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, or extra friction in the pick truck assembly.
4	On fe ripple.	MFG Only	Reports the variation of effort required to rotate the Tray 2 pick shaft in the pick direction at a constant velocity. A larger value could indicate particles in the gears or non-uniform contamination of a roller (causing a lump).
5	Off fe settling time (sec).	MFG Only	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).	MFG Only	Reports the time between the activation of the Tray 2 lift motor and the detection of the raised lift plate. Out of range values may indicate a problem with the lifting mechanism (which could effect the following friction measurement), or media left in the tray.

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

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
7	Plate lifted average fe.	MFG Only	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 and Electronics 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	Actions
0	Max Power (watts)	2 to 12	2.25 to 6.6	Reports initial power drawn by the fan at On. May indicate the condition of the windings.
1	Constant Velocity Power (watts)	0 to 8.25	0 to 10	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 to 5	0 to 5	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 to 7	0 to 5	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, and then the data for the specified heater is reported.

R#	Definition	Typical Value	Actions
0	Initial Temperature (deg c)	MFG Only	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^{o} C.
1	Average AC Current (amps)	MFG Only	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)	MFG Only	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 system is pulling down the external AC supply, indicating a more robust supply may be required.
3	Response Time (ms)	MFG Only	Reports the time after power is applied to the specified heater that the temperature begins to rise. For printhead temperatures < 32^{o} C, this time becomes the time at which the temperature reaches 32^{o} C. 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)	MFG Only	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, and then the data for the specified heater is reported.

R#	Definition	Typical Value	Actions
5	Peak Temperature (deg c)	MFG Only	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)	MFG Only	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)	MFG Only	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	MFG Only	Reports the tray from which the test paper was picked.
1	Paper Size	MFG Only	Reports the size of the picked paper.
2	Unused	MFG Only	
3	Unused	MFG Only	
4	Tray 2 Pick Average Power (watts)	MFG Only	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	MFG Only	Reports the tray from which the test paper was picked.
1	Paper Size	MFG Only	Reports the size of the picked paper.
Tray 4 Pick			
2	Tray 4 Pick Interval (us)	MFG Only	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)	MFG Only	Reports the interval from the Tray 4 Pick sensor activation until the Tray 3 Pick sensor activates.
4	Tray 3 Transport Interval (us)	MFG Only	Reports the interval from the Tray 3 Pick sensor activation until the Deskew sensor activates.

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
Tray 3 Pick			
2	Unused	MFG Only	
3	Tray 3 Pick Interval (us)	MFG Only	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)	MFG Only	Reports the interval from the Tray 3 Pick sensor activation until the Deskew sensor activates.
Tray 2 Pick			
2	Unused	MFG Only	
3	Unused	MFG Only	
4	Tray 2 Pick Interval (us)	MFG Only	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	MFG Only	
3	Unused	MFG Only	
4	Tray 1 Interval (us)	MFG Only	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)	MFG Only	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)	MFG Only	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).

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
7	Exit Interval (us)	MFG Only	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)	MFG Only	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	MFG Only	Reports the tray from which the test paper was picked.
1	Paper Size	MFG Only	Reports the size of the picked paper.
Tray 4 Pick			
2	Tray 4 Pick Trailing Edge Interval (us)	MFG Only	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)	MFG Only	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	MFG Only	

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
3	Unused	MFG Only	
Tray 1 Pick			
2	Unused	MFG Only	
3	Unused	MFG Only	
Common			
4	Deskew Trailing Edge Interval (us)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	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	MFG Only	Reports the tray from which the paper was picked.

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
1	Paper Size	MFG Only	Reports size of the picked paper.
Tray 4 Pick			
2	Tray 4 Pick Bounce Interval (us)	MFG Only	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)	MFG Only	Reports the interval during which the Tray 3 pick sensor bounces following the passage of the paper trailing edge.
Tray 2 Pick			
2	unused	MFG Only	
3	unused	MFG Only	
Tray 1 Pick			
2	unused	MFG Only	
3	unused	MFG Only	
Common			
4	Deskew Bounce Interval (us)	MFG Only	Reports the interval during which the Deskew sensor bounces following the passage of the paper trailing edge.
5	Preheat Bounce Interval (us)	MFG Only	Reports the interval during which the Preheat sensor bounces following the passage of the paper trailing edge.
6	Strip Bounce Interval (us)	MFG Only	Reports the interval during which the Strip sensor bounces following the passage of the paper trailing edge.
7	Exit Bounce Interval (us)	MFG Only	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	MFG Only	Reports the tray from which the test paper was picked.
1	Paper Size	MFG Only	Reports the size of the picked paper.
2	Unused	MFG Only	
3	Unused	MFG Only	
4	Tray 2 Pick Average Power (watts)	MFG Only	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)	MFG Only	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)	MFG Only	Reports the interval from the time the engine software is commanded to start the duplex pick process until the deskew sensor activates.
10	Duplex Stage Interval (us)	MFG Only	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)	MFG Only	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).

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
12	Duplex Exit Interval (us)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	Reports the interval from the time the engine software is commanded to start the exit process until the strip sensor deactivates. (part way through the paper exit motion).
11	Duplex Exit Trailing Edge Interval (us)	MFG Only	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)	MFG Only	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)	MFG Only	Reports the interval during which the deskew sensor bounces following the passage of the paper trailing edge.
9	Duplex Preheat Bounce Interval (us)	MFG Only	Reports the interval during which the preheat sensor bounces following the passage of the paper trailing edge.
10	Duplex Strip Bounce Interval (us)	MFG Only	Reports the interval during which the strip sensor bounces following the passage of the paper trailing.
11	Duplex Exit Bounce Interval (us)	MFG Only	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)	3054 to 5115	Reports the distance up from the lower limit of travel at which the head lock latch is encountered.
4	Lock Engage Distance (uin)	3080 to 5153	Reports the distance up from the lower limit of travel at which the head lock latch engages.
5	Lock Engage Peak (uin)	-1570 to 2083	Reports the peak following error at the point the latch engages.
6	Down Motion Drive Error (uin)	MFG Only	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)	MFG Only	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 0	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)	-5000 to 1000	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 0.25	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, and then operates in the other direction.

R#	Definition	Typical Value	Actions
0	CW Average Power (watts)	0 to 15	Reports the average drive power level in the foreword direction.
1	CCW Average Power (watts)	3 to 12	Reports the average drive power level in the backward direction.
2	Swing Arm Transition Time (sec)	0.01 to .05	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)	4.3 to 10.85	Reports the motor/drive electronics stall power. An abnormal level may indicate a motor/motor drive problem.
1	Left Right Distance (in)	0 to 0.5	Reports the distance between the left and right stall points. An abnormal value may indicate an problem that restricts the range of motion (pinched cable, etc.).
2	Right Left Traverse Average Power Level (watts)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	Same as R3 except for the other direction of. motion.
6	Turnaround Power Blip Width (watts)	4.3 to 10.85	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	MFG Only	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 3800	MFG Only	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	MFG Only	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 0.8	MFG Only	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)	-2 to 0.5	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)	-1000 to -140	Reports the average Y-axis following error during the Roll With Both Loaded interval.
3	Roller/Blade loaded Y-axis following error ripple (mpts)	0 to 1000	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	0 to 55	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)	-150 to -35	Reports the average Y-axis following error during the Roll With Blade Loaded interval.
8	Blade loaded Y-axis following error ripple (mpts)	MFG Only	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)	MFG Only	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)	MFG Only	Reports the distance from the cap Home position to the tilt cam engage point.
1	Pre Standby Peak Location ()	50 to 3500	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)	-5500 to 0	Reports the pm motor following error at the pre standby peak location.
3	Post Wipe Peak Location ()	1000 to 5000	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)	MFG Only	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	MFG Only	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)	MFG Only	Reports the highest peak during the first quarter of the lifting interval.
2	Slack Take-up Time (sec)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	Reports the interval from the motor start time until plate lifted is indicated.
6	Stall Power (watts)	MFG Only	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)	MFG Only	Reports difference between the max and min Sin Sum average amplitude values.
1	Cosine Sum Data Amplitude (cosine sum units)	MFG Only	Reports difference between the max and min Cosine Sum average amplitude values.
2	Sin Sum Data Offset (sin sum units)	MFG Only	Reports average of the max and min Sin Sum average amplitude values.
3	Cosine Sum Data Offset (cosine sum units)	MFG Only	Reports average of the max and min Cosine Sum average amplitude values.
4	Home Notch Depth Ratio (none)	MFG Only	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)	MFG Only	Reports the width of the Home notch at 99% full depth as reflected in the Sin Sum data.
6	Home Notch Symmetry (none)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	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)	MFG Only	Reports the current drum frequency.
2	Motor FFT Power Ratio (none)	MFG Only	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)	MFG Only	Reports the current motor frequency.
4	FFT Power Ratio 1 (none)	MFG Only	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)	MFG Only	Reports the frequency of the most powerful FFT frequency (not including the drum or motor).
6	FFT Power Ratio 2 (none)	MFG Only	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 (Continued)

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)	MFG Only	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)	3333 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)	-6000 to -3500	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)	3500 to 6900	Reports the amplitude of the first Y-axis following error peak.
1	Max Following Peak Y-axis FE (mpts)	3659.3 to 6500	Reports the amplitude of the maximum Y-axis FE peak after the first.
2	Average Y-axis FE (mpts)	1500 to 3000	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)	MFG Only	Reports the min resonant frequency over the data set.
1	Max Resonant Frequency (hz)	MFG Only	Reports the max resonant frequency over the data set.
2	Min Resonant Frequency Revs (revs)	MFG Only	Reports the number of full Y-axis revs required to locate the min frequency configuration.
3	Min Resonant Frequency Angle (deg)	MFG Only	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)	-35 to 35	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)	0 to 0.054	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)	0 to 25	Reports the magnitude of the reaction of the drum to the contact of the blade. (See R2)
4	Release Displacement (mpts)	-5 to 5	Reports the static difference between the average ya_fe before and after the blade disengages from the drum, indicating the strength of the blade/drum interaction while pulling off the drum. (See R0).
5	Release Time (sec)	0 to 0.09	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)	-1 to 1	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)	-12.3 to 5.85	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)	MFG Only	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 0.6	Reports amount of variation of the motor following error over the recording interval.
1	Motor fe average (ticks)	0.3 to 0.8	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)	-.75 to -1.5	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)	0.5 to 3.0	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).	MFG Only	Reports amount of variation of the motor phase A drive voltage over the recording interval.
1	Motor Voltage A Average (volts)	-0.12 to 0.13	Reports the motor phase A drive voltage average value over the recording interval.
2	Motor Voltage B Ripple (volts)	MFG Only	Reports amount of variation of the motor phase B drive voltage over the recording interval.
3	Motor Voltage B Average (volts)	-0.2 to 0.2	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)	-5 to -2.5	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)	0 to 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)	.4 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 to 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

This test turns on the specified motor and runs it at constant velocity for approximately 20 revolutions while recording drive data. The test is the same for each motor. Requesting a test for 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)	MFG Only	Reports max amount of motor power over the run interval.
1	Motor Average Power (watts)	MFG Only	Reports the average motor drive power over the last half of the run interval.
2	Brake Average Power (watts)	MFG Only	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)	MFG Only	Reports amount of variation of the motor following error over the recording interval.
1	Motor fe average (ticks)	MFG Only	Reports the motor following error average value of the recording interval.
2	Motor drive voltage ripple (volts)	MFG Only	Reports amount of variation of the motor drive voltage over the recording interval.
3	Motor drive voltage (volts)	MFG Only	Reports the motor drive voltage average value of the recording interval.
4	Motor drive power ripple (watts)	MFG Only	Reports amount of variation of the motor drive power over the recording interval.
5	Motor drive power average (watts)	MFG Only	Reports motor drive power average value over the recording interval.

Check Misc Menu

Paper Path Status

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

1 = an item that needs to be corrected.

0 = normal

R#	Definition	Typical Value	Actions
0	Upper Paper Path	MFG Only	6 -31 Not used, always 0
0		MFG Only	5 - Front door open
0		MFG Only	4 - Top door open

Paper Path Status (Continued)

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

1 = an item that needs to be corrected.

0 = normal

R#	Definition	Typical Value	Actions
0		MFG Only	3 - Paper at deskew sensor
0		MFG Only	2 - Paper at preheat exit sensor
0		MFG Only	1 - Paper at strip sensor
0		MFG Only	0 - Paper at exit sensor
1	Tray 1	MFG Only	14 - 31 unused, always 0
1		MFG Only	13 - No media present
1		MFG Only	0 - 12 width value
2, 3, 4	Tray 2, Tray 3 and Tray 4	MFG Only	9 - 31 unused
2, 3, 4		MFG Only	8 - No tray
2, 3, 4		MFG Only	7 - No paper
2, 3, 4		MFG Only	6 - plate not lifted
2, 3, 4		MFG Only	5 - Paper at tray pick sensor
2, 3, 4		MFG Only	4 - media length top
2, 3, 4		MFG Only	3 - media length bottom
2, 3, 4		MFG Only	2 - Media width top

Paper Path Status (Continued)

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

1 = an item that needs to be corrected.

0 = normal

R#	Definition	Typical Value	Actions
2, 3, 4		MFG Only	1 - media width middle
2, 3, 4		MFG Only	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 system. All degrees are reported in Celsius.

R#	Definition	Typical Value	Actions
0	Reservoir Temp	~127.7°	Reports the current temperature
1	Left Jetstack	~134°	Reports the current temperature
2	Right Jetstack	~134°	Reports the current temperature
3	Preheater Temp	~62°	Reports the current temperature
4	Drum Temp	~60°	Reports the current temperature
5	Ink Melt 1 Temp	~50°	Yellow (usually off)
6	Ink Melt 2 Temp	~50°	Cyan (usually off)
7	Ink Melt 3 Temp	~50°	Magenta (usually off)
8	Ink Melt 4 Temp	~50°	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)	MFG Only	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)	MFG Only	Reports initial peak pumping power after pump power on. This reflects the in rush current to the pump motor. An unusual value could indicate a defective motor (windings/brushes/ etc.).
2	Initial Pumping Power (watts)	MFG Only	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	MFG Only	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)	MFG Only	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)	MFG Only	Reports the average pumping power after the pressure has fully decayed. May indicate pump motor condition/efficiency.
6	Pressure Decay Time (sec)	MFG Only	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)	~4.79 to 5.0	
1	1.8 Volts (volts)	~1.68 to 1.76	
2	2.5 Volts (volts)	~2.38 to 2.46	
3	3.3 Volts (volts)	~3.17 to 3.24	
4	unregulated12 Volts (volts)	~11.25 to 11.85	
5	2.5 Volts (volts)	~ 2.38 to 2.47	
6	unregulated Negative 12 Volts (volts)	-13.1 to -12.26	
Control Board Voltages			
7	DC Power (watts)	20 to 27.4	
8	50 Volts	47 to 52	
9	Negative 50 Volts	-47 to -52	
10	Unregulated Negative 15 Volts	-16.5 to -13.5	
11	Unregulated 15 Volts	MFG Only	
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)	MFG Only	Reports the distance from wipe home to the tilt engage position.
1	Upper hard stop wiper position (min)	MFG Only	Reports the distance from wipe to home to the upper hard stop.

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)	MFG Only	Reports the height of the initial peak when starting rotation of the dm drive gear.
1	DM Initial FE Peak Time (sec)	MFG Only	Reports the time since the start of CCW motion until the peak was detected.
2	TF Initial FE Peak (pm motor counts)	MFG Only	Reports the height of the initial peak when starting rotation of the tf drive gear.
3	TF Initial FE Peak Time (sec)	MFG Only	Reports the time since the start of CW motion until the peak was detected.

System Power-Up Sequence

Use the power-up sequence timing chart to troubleshoot failures that occur during the power-on sequence. The chart provides typical timing of mechanical events that occur relative to power-on, assuming the printer is cold and was shutdown properly. The actual timing will vary if the printhead is not parked or if the printer is located in extremely hot or cold environments.

Note

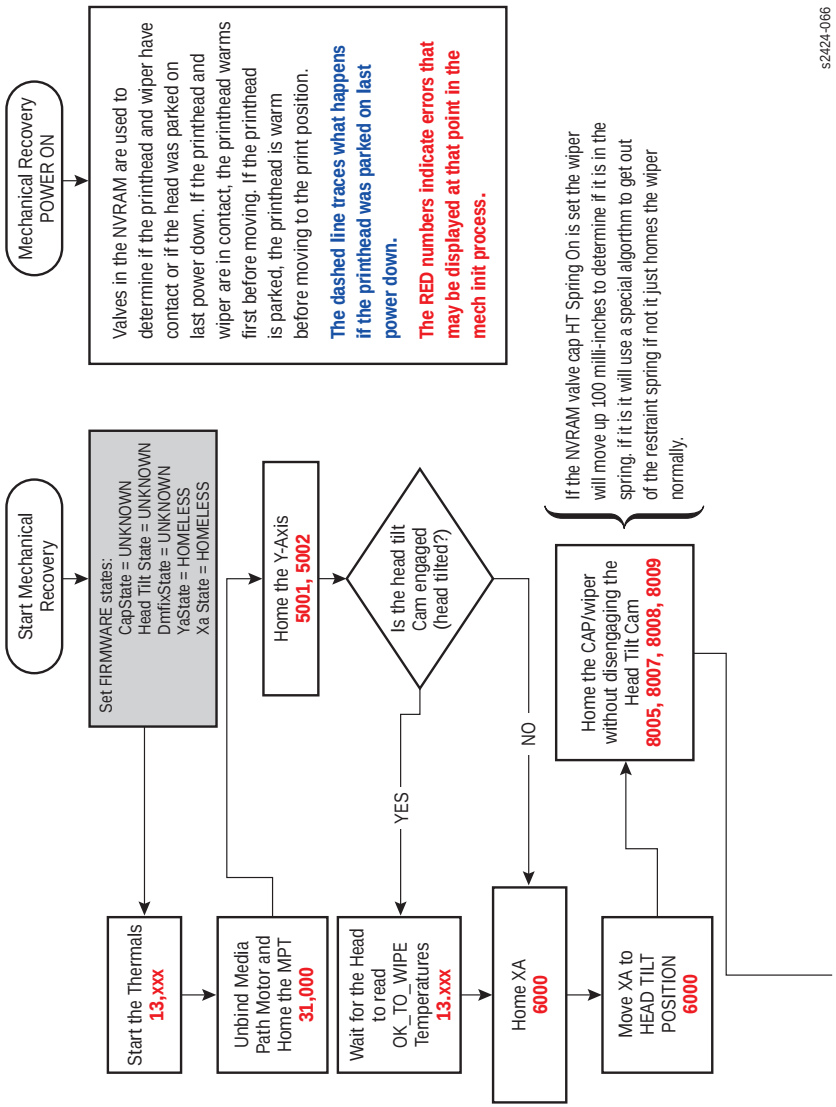
Warm printers reach “Ready To Print” in about 2 minutes while cold printers require up to 12 minutes. Only cold systems require Steps 18-21 below for cleaning the printhead. A cold system is defined by the printhead temperature being below 95 - 100^{o} C.

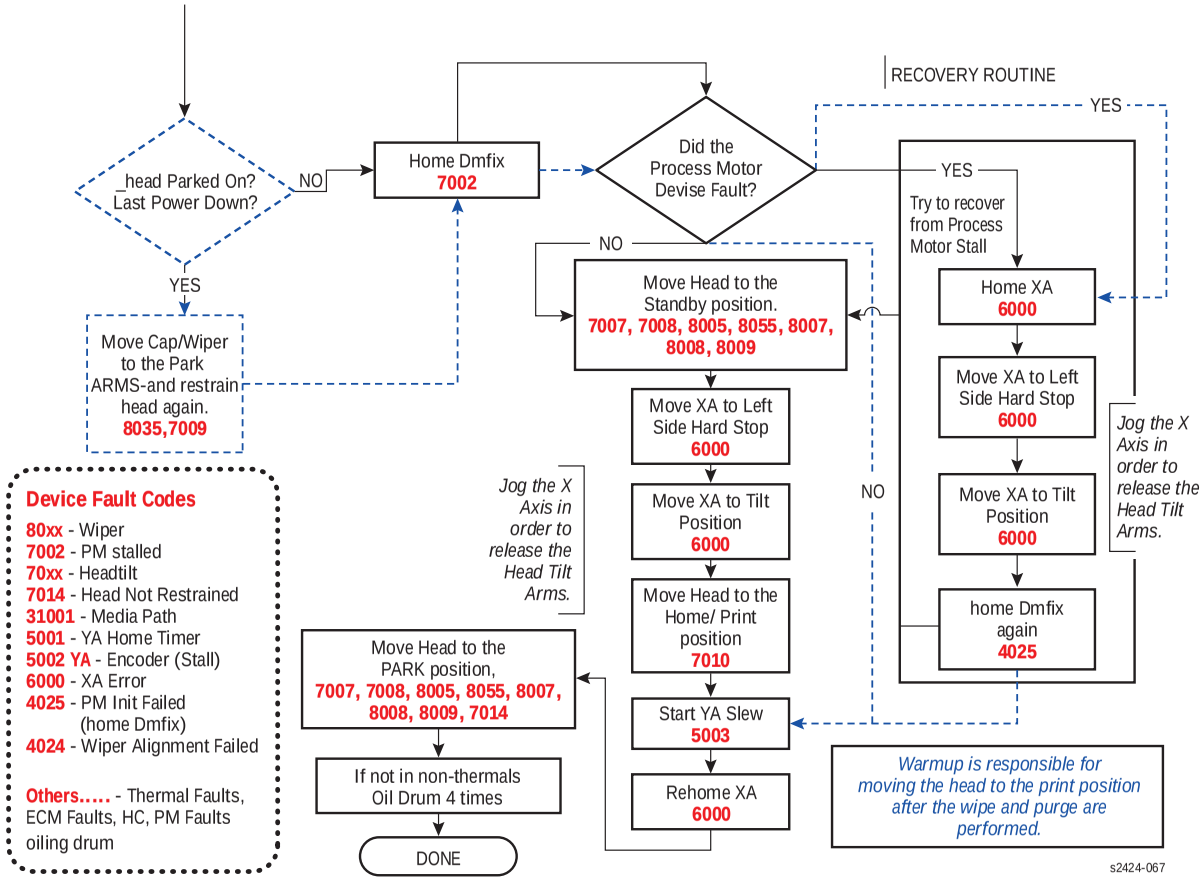
Mechanical Event Timing Table

Mechanical Event Timing	Power-On (mm:ss)
1. Set power switch to ON.	00:00
2. BIST test flashes PS LED 1 time and the PE LED quickly 4 times.	00:00
3. Control panel LED flashes red-green-yellow-orange-off.	00:03
4. Scrolling “Xerox” logo.	
5. Control panel displays “WorkCentre C2424 Power on Self Test”.	00:04
6. Control panel displays “Test Complete-Initializing....”	00:11
7. Power supply fan starts turning.	00:20
8. Control panel displays “Initializing Complete”.	00:23
9. Control panel displays XEROX logo & LED turns green .	00:24
10. Print Engine Self Tests (PEST) begin with solenoids and clutches.	00:26
11. Print Engine Self Test complete.	00:48
12. Scanner initializes.	00:30
13. Four high tones from motor testing.	00:49
14. Mechanical initialization begins.	01:08
15. Back light on control panel display turns on.	01:15
16. Control panel displays “Warming Up”.	01:24
17. Control panel displays “Warming Up 5%”.	01:51
18. Mechanical initialization ends.	02:04
19. Control panel displays “Warming Up xx%” (increasing toward 100%).	02:16
20. When the control panel displays “Warming Up 60%”, cleaning starts --- Cold printers only.	07:34
21. Cleaning ends --- Cold printers only.	10:16
22. Control panel displays “Printing page 1 of 4” --- Cold printers only.	11:12
23. Cleaning page exits --- Cold printers only.	11:48
24. Startup page exits (if enabled).	11:58
25. Control panel displays “Ready To Print”.	11:59

Mechanical Initialization of the Print Engine

The following chart does not include initialization of the exit module.




_head Parked On?
Last Power Down?
NO
YES
Home Dmfix
7002
Move Cap/Wiper to the Park ARMS-and restrain head again.
8035,7009
Did the Process Motor Devise Fault?
RECOVERY ROUTINE
YES
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
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 is 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
s2424-067

Head Cleaning Cycle Performance

If the printhead, ink reservoirs, or jetstack temperature are below purge threshold, the system performs a head clean cycle.

1. The system waits for the printhead to reach its purge temperature.
2. The system moves the wiper to the bottom of its travel and tilts the printhead forward to its print position to check the ink levels. If the ink level is low, ink is melted into the appropriated reservoirs.
3. The printhead tilts to the standby position and moves the wiper assembly to the purge position in front of the printhead faceplate.
4. The purge pump begins the pressure purge after about 2 seconds the purge pump solenoid opens.
5. The printhead tilts forward against the wiper assembly (wipe position) and the purge and wipe cycle begins.
6. The control panel indicates the system is performing the cleaning process.
7. The printhead is moved left to the tilt zone, where the printhead can tilt back without interference, and the media path motor moves the wiper to the bottom of its travel to engage the printhead tilt cam. The process motor rotates the printhead tilt gears, which tilt in order to move the printhead to the forward print position.
8. After the print engine is in a known valid state, the control panel display shows the warm-up progress. The Ready LED first 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 control panel displays a message that the system is initializing and then Ready.
14. The print engine is initialized and is ready to print.

Electrical Troubleshooting

Electronics Module

The **Electronics Module** contains the power supply, main board containing the image processor controller 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, with the exception of the NVRAM, memory, configuration card, and hard drive; no individual board troubleshooting is needed. The system contains many self test routines to aid in diagnosing problems.

The system backframe contains the scanner and exit module power supply and the scanner control board.

Note

If the system encounters certain fault conditions, the system 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 troubleshooting procedures in the specified sequence generally provides better test coverage than performing tests in a different order.

If either the scanner turns on or the exit module initializes, the scanner power supply is operational. If the scanner turns on, but the exit module doesn't initialize properly, then the power supply may be operational, but the exit module board may be malfunctioning.

Note

The image processor controller board enables the scanner power supply and communicates with the exit module, scanner, document feeder, and control panel. A faulty image processor controller board can make it appear as if other subsystems are not working properly.

Document Feeder Lamp Does Not Turn ON

1. Is there power at the document feeder? Place media into the document feeder input tray. If the paper feeds the document feeder has power, the lamp circuit is faulty, replace the document feeder.
2. Is there power at the scanner? Lift the document feeder and observe the scanner lamp and scanhead motion. If the lamp is on and the scanhead moves, the scanner power supply is operating correctly, replace the document feeder.
3. Is there power to the exit module? The exit module elevator should cycle up and down when the control panel is raised and lowered. The exit module control board receives power from the scanner power supply, so if the elevator cycles the scanner power supply is operating correctly, replace the scanner assembly.
4. Verify the scanner power supply, see "Verifying Scanner Power Supply Operation" on page 4-70.

Document Feeder Does Not Feed Media

1. Is there power at the document feeder? Lift the document feeder and verify the document feeder lamp is on and the calibration strip moves into position. If so, the scanner power supply is operating correctly.
2. If there is not power at the document feeder, perform Steps 2 through 4 from "Document Feeder Lamp Does Not Turn ON" on page 4-59.
3. Using service diagnostics run the “Paper Present” and “Feed Motor” tests. If either test fails, replace the defective component.
4. Verify the media being used is supported, see "Tray and Media Specifications" on page 1-16, for a list of supported media.
5. Clean or replace the pick rollers and separator pad.
6. Check the document feeder front cover and upper cover for obstructions or damage.
7. Print a Usage Profile and look for repeating document feeder or scanner errors that may be causing the problem.

   Note

   If the system encounters scanner or document feeder errors, the system can lose communication with scanner and document feeder. If the system cannot re-establish communication with the document feeder the document feeder will be unable to feed paper.

8. Replace the document feeder.

Scanner Scanhead Does Not Move

1. Verify the scanhead shipping lock is in the “unlocked” position. Reboot the system.
2. Is there power to the scanner assembly? Lift the document feeder and verify the document feeder lamp is on. If so, the scanner power supply is operating correctly.
3. Verify the scanner power supply, see "Verifying Scanner Power Supply Operation" on page 4-70.
4. Replace the scanner assembly.

Scanhead Motion is Not Smooth and Continuous

1. Verify the scanhead shipping lock is in the “unlocked” position. Reboot the system.
2. Run the service diagnostics test “Exercise Axis Motion” and observe the motion of the scanhead, paying special attention to anything that could be obstructing the scanhead motion.
3. If there is no scanhead motion, replace the scanner assembly.

Scanner Lamp Does Not Turn On

1. Is there power to the scanner assembly? Lift the document feeder and verify the scanhead moves. If so, the scanner power supply is operating correctly.
2. Is there power being to the scanner power supply? See, "Verifying Scanner Power Supply Operation" on page 4-70
3. Replace the scanner assembly.

Control Panel is Malfunctioning

Note

Make sure to connect the scanner cable properly to the electronics module.

1. Control panel appears to be frozen or the buttons are not working.
   a. If the system is currently powered on and frozen, open then close the front door of the system and see if the control panel responds.
   b. If system appears functional after operating the door, advise client that failure may have been due to an ESD event. Thoroughly test system for any other problems.
   c. Skip the rest of this section if the system now appears functional, otherwise continue troubleshooting.

d. With power cord connected, touch the metal electronics module to discharge any static electricity. ESD damage to the system may occur if static electricity is discharged to system electronics.

e. Turn off system 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 system's covers. Use caution around motors, pulleys and live AC connections when working with the system covers off.

g. Examine system for loose grounding connections, especially the ground strap on the Y-axis motor. Eliminate the possibility of internally generated ESD from affecting system.

h. Plug in all cables removed during service. Trace through all service steps performed to reattach any cables that were unplugged during troubleshooting.

i. Attach system covers.

j. Perform full test of system.

System Continuously Resets or Resets Unexpectedly

a. Check the main AC voltage. For troubleshooting AC voltages, see page 4-72.

b. Disconnect the network cable, if this corrects the problem go to "Network Problems" on page 4-81.

c. Try entering Service Diagnostics, see page 4-4.

d. If you are able to enter service diagnostics, view the fault history for any error codes that may be causing the system to reboot. Troubleshoot any error codes reported.

e. Turn the system off and unplug the document feeder. If the system powers on normally, replace the document feeder.

f. Turn the system off and unplug the scanner. If the system powers on normally, replace the scanner.

g. Replace the electronics module.

Control Panel Is Blank and the PS and PE Indicators are Flashing an Error Code

The system 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 "Power-Up Error Messages and LED Codes" on page 3-3 for definitions and solutions.

Exit Module (MEP) is Malfunctioning

1. The exit module elevator does not raise and lower correctly.
   a. Is there scanner power supply working properly? Lift the document feeder and observe the scanner lamps. If the lamps are on and the scanhead moves, the scanner power supply is supplying +24 volts.
   b. Check the exit module board LED's, see "Scanner/Exit Module Power Supply and MEP (Exit Module) Board" on page 10-8. Replace the exit module board if the LED's do not light up.
   c. Lift the control panel and check for proper movement of the exit module elevator. Inspect the exit module for defective components. Replace any defective components or the exit module assembly.

System Fails to Power-Up

PS, PE, and the 3.3 V indicator LEDs are not illuminated

1. System is not receiving proper AC.

   Caution

   Use caution with hazardous voltages when diagnosing AC problems. The 3.3 V LED is located INSIDE the electronics module and must be observed through the vent holes close to the AC power switch, see the illustration on page 4-71.

   a. Inspect the power cord.
   b. Verify AC outlet voltage and current capacities are within specifications.
   c. If necessary, move the system to a different outlet and retest.
2. Disconnect the scanner assembly.
3. Transient on AC line tripped protective circuitry in system power supply.
   a. Cycle power to system to reset protective circuits in power supply.
4. Short circuit on 3.3 V power supply within the electronics module. ESD damage to the system may occur if static electricity is discharged to system electronics
   a. With power cord connected, touch the metal electronics module to discharge any static electricity.
   b. Turn off the system 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 system covers, see "Covers" on page 8-8.

   Caution

   Use caution around motors, pulleys, and live AC connections when working with the system covers off. Disconnect the scanner cable from the electronics module and power on the system.

d. Unplug the following electronics module connectors: This step removes all other circuits so the electronics module can be tested alone (see also "Plug/ Jack Locator Table" on page 10-2).

- Power Control to I/O board (J800)
- Power Control right (J400)
- Printhead data cable (J130)
- Waveamp signal (J790)
- Power Control left (J390)
- Y-Axis motor (J280)
- Scanner power supply
- Exit module data cable
- Door sensor(s) Exit cover and Front door

e. Plug in power cord and power on the system

f. If the PE and PS indicators do not flash, replace the electronics module and retest the system.

g. If PE and PS indicators do flash, continue with troubleshooting procedures.

5. Short circuit on 3.3 V power supply within the I/O board.

a. **REQUIRED**: Follow all procedures from Step 4 before proceeding with these steps. The I/O board needs to be isolated from other systems in the system to be effectively tested.

b. Turn off system 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. 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.

d. Power on the system.

6. If the PE and PS indicators do not flash, the short is on the I/O board or related cabling.

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 the problem to the I/O board or related cabling, unplug the following I/O board connectors :

- Umbilical Right J400
- 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 (no cable)

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 system.

d. If the I/O board resistance is OK, plug in the I/O board connectors one at a time and retest the resistance. If the resistance drops below 1K ohm, intentify which connector you just reattached. The problem will be with the component that was just reconnected or the wire harness is defective. Replace the suspected component and test.

7. Short circuit on 3.3 V power supply within the printhead.

a. REQUIRED: Follow all procedures from 'Short circuit on 3.3 V power supply within the electronics module' before 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 system may occur if static electricity is discharged to system electronics.

c. Turn off system 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.

e. Power on the system.

f. If the PE and PS indicators do not flash, the short is on the printhead. Replace the printhead and retest the system. Skip the rest of Step 8 if the PE and PS indicators flash because the problem is elsewhere in the system.

g. Carefully test the system to ensure damage to the electronics module did not occur due to the shorted printhead.

System Energy Star Mode Troubleshooting

1. Model not configured as an ENERGY STAR model.

a. Use the control panel to enable Energy Star mode. Many systems are not shipped as Energy Star compliant and don't have the power saving mode enabled by default.

2. Electronics module failure.

a. **REQUIRED:** Ensure you have performed Step 1.

b. With power cord connected, touch the metal electronics module to discharge any static electricity.

c. Turn off system and wait 30 seconds for power supply capacitors to discharge.

d. Unplug power cord and remove system'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 troubleshooting.

h. Attach the system covers.

i. Perform full test of system.

3. Power supply problems in the Energy Star Mode.

   a. In the energy star mode, the 2nd power supply is turned off via a signal from the image processor board.

   b. If the power supply fails to shut off, the system may appear to be in energy star mode but its power consumption will be about 70 Watts higher than it should be.

System Reports Missing Maintenance Kit

1. Maintenance kit missing or not fully seated.

   a. Fully install maintenance kit.

2. Connector is not fully seated.

   a. Check I/O board connector J860 for proper mating (see "Plug/Jack Locator Table" on page 10-2).

System 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 (see "Plug/Jack Locator Table" on page 10-2).

   b. Verify the waste tray sensor is operating correctly.

System Features Not Available

Note

Before performing the following steps, check and reinstall scanner cables, if necessary. Make a copy using the platen. If the copy is good, then make a 2-sided copy from the DADF. If these checks are good, then the scanner and DADF are operational.

1. Insuficient RAM.

   a. 400 x 400 dpi and 600 x 600 dpi scan resolutions are not enabled with less than 512 MB RAM.

2. Computer print driver configured incorrectly.

   a. Examine print driver setup to ensure system driver setup doesn't override desired features set via the control panel.

3. Configuration card failure.

a. Verify configuration card is properly oriented and fully inserted.
b. Clean configuration card contacts with isopropyl alcohol, reinstall, and then retest.
c. Swap configuration card with a known working card to test operation.
d. The configuration card enables miscellaneous features in the system.

525-Sheet Feeder Does Not Function

1. Thermal safety fuse blown.
   a. Power cycle system.
   b. The safety fuse is a self resetting device, power cycling ensures the fuse cools enough to reset itself.
2. 525-Sheet Feeder is faulty.
   a. Turn off system and wait 30 seconds for power supply capacitors to discharge.
   b. Replace the 525-Sheet Feeder.
   c. Perform full test of system.

Non-Specific Electronics Failure

1. Disconnect the Scanner cable from the electronics module and power on.
   a. Double check PS and PE indicators for any error code information. The system self test is usually able to detect a failure that would cause this symptom. Looking up the error code may save troubleshooting time.
   b. If the PS & PE indicators are steady and dimly-on, replace the electronics module, reassembly and retest system.
   c. If the PS & PE indicators are blinking, brightly-on, or totally off, continue troubleshooting. 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 system and wait 30 seconds for power supply capacitors to discharge.
   f. Unplug power cord and remove system's covers.
   g. Unplug the following electronics module connectors (see "Plug/Jack Locator Table" on page 10-2):
      - 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 system.
   j. The PE and PS indicators should flash an error code reporting that the control panel is missing. If the proper error message is not flashed, replace the electronics module and retest the system. If PE and PS indicators flash, continue with troubleshooting.
   k. Turn off system and wait 30 seconds for power supply capacitors to discharge
   l. Unplug the following electronics module connectors (see "Plug/Jack Locator Table" on page 10-2):
      - 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 control 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 control panel to the electronics module.

n. Turn on power to the system.

o. If the electronics module, I/O board and control 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 control panel and I/O board and verify the correct error code appears on the LCD. Retest electronics module, I/O board, control 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 control panel and I/O board to the system, 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 Error Message Troubleshooting" on page 3-8 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 system 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 system 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 system and retest. If system is fixed, reattach covers to system 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 system 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 system 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.

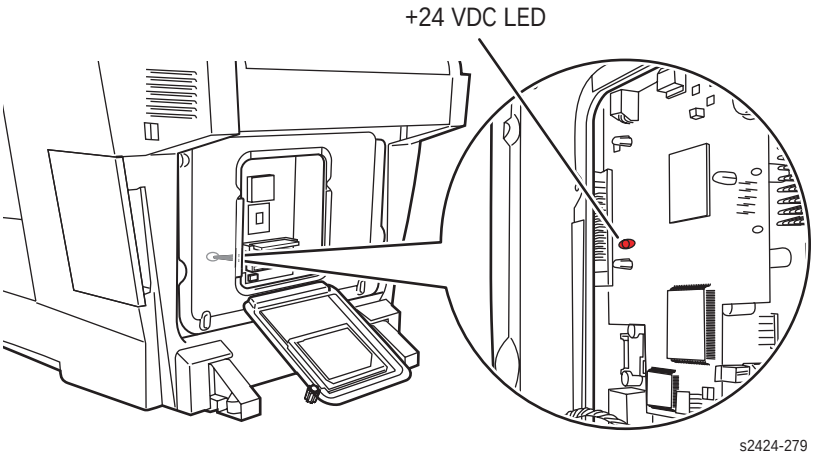
d. If the proper error code and LED doesn't appear after each I/O connector is reconnected, repair or replace the faulty circuit.

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 system and retest. If system is fixed, reattach covers to system and perform a full test. If no defects are found in this step, replace electronics module, test system, reattach covers to system and perform a full test.

Verifying Scanner Power Supply Operation

1. Open the electronics module and observe the +24 VDC LED. If the LED is ON, the scanner power supply is operational.
2. If the LED is blinking, there is a problem with the document feeder, scanner power supply or exit module board.
3. Isolate the problem board:
   a. Turn the system off and disconnect the document feeder. Turn the system back on. If the LED is still blinking the problem is not with the document feeder.
   b. Disconnect the scanner assembly. Turn the system back on, if the LED is still blinking the problem is not with the scanner assembly.
   c. Check the exit module (MEP) board LEDs, see "Scanner/Exit Module Power Supply and MEP (Exit Module) Board" on page 10-8. If the +24 V and +5 V LEDs are on, the exit module (MEP) board is operating correctly.
   d. If the +24 VDC LED is still blinking, replace the scanner power supply.
4. If the +24 V LED in the electronics module is off, there could be a problem with the scanner power supply or with the in-line fuse in the electronics module.
5. If the problem still persists, see "Verifying Power Supply Operation - Print Engine" on page 4-71



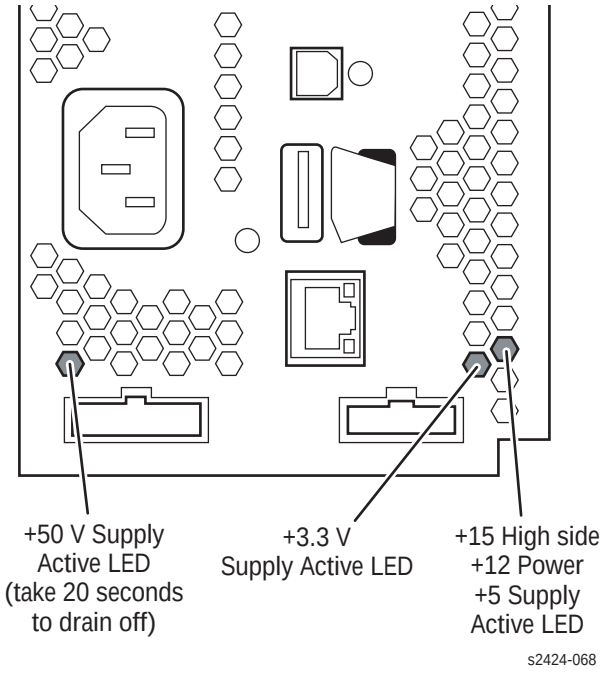
Verifying Power Supply Operation - Print Engine

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 thepower 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

AC line voltages are present on the power supply and possibly in the system, via the heaters, while the system 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 system may be operating for a considerable time after the switch is turned off.

1. Power off the system and try a different outlet.
2. Turn off the system, 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 system; it should measure between 90 to 140 VAC (115 VAC nominal) or 180 to 264 VAC (220 VAC nominal).
4. Proceed to the step, “Testing Motor and Solenoid Resistances” below.
5. If a heater shorts, F2 or F3 opens. The power supply does NOT shut down; however, a Service Required error code is displayed on the control panel.

Detecting condition of Fuse F2 and F3

1. The drum and preheater connect to F2.
2. The printhead and ink loader connect to F3.
3. Turn the power switch off and wait for the system to shut down.
4. Unplug the power cord.
5. Remove the Ink loader Assembly and Door as specified on page 8-13.
6. From the back of the system 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 system 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 system is operational, use the diagnostic test Monitor Voltages.

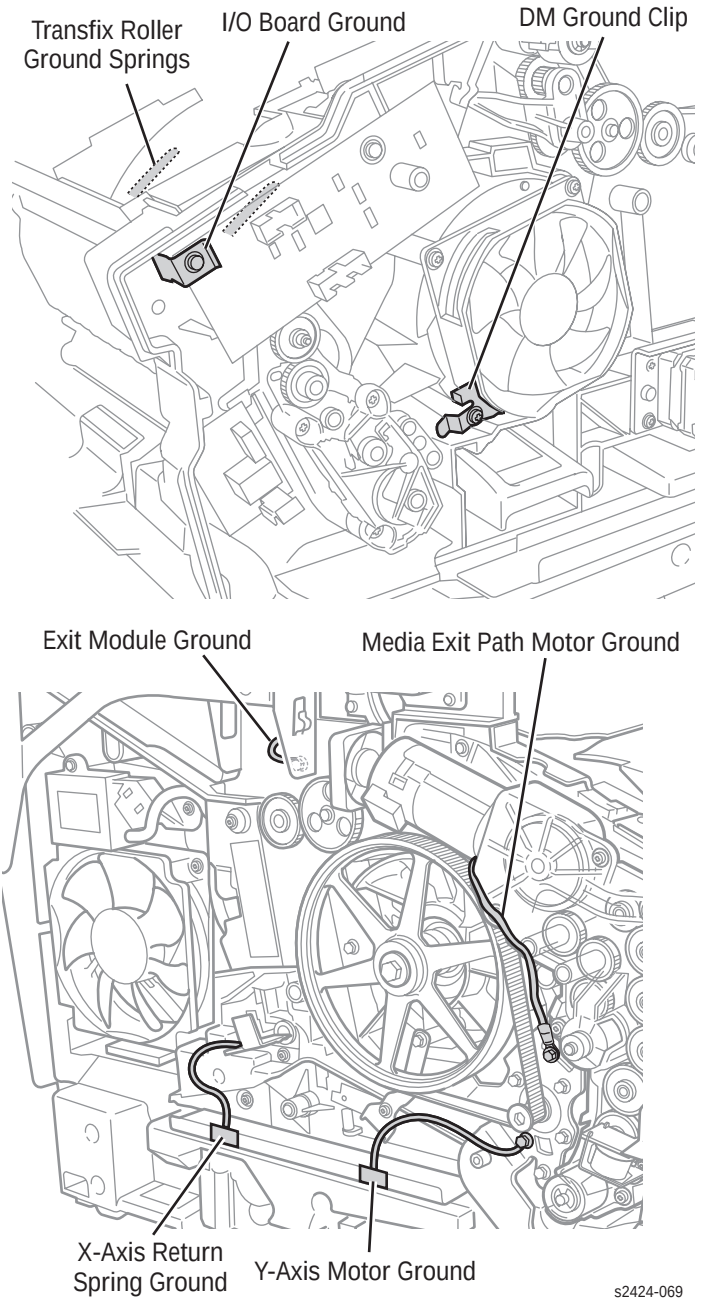
Ensuring Ground Integrity

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

- control panel display can be affected (blank)
- I/O board errors
- False jam reporting
- Erroneous thermistor readings
- Major interruptions
- Damage to the electrical boards

Key Ground Connections

The following illustration shows the grounding points in the IOT that need to be checked. There is also one grounding point in the backframe



Testing Motor and Solenoid Resistances

1. Turn off the system and disconnect the power cord.
2. With a DMM set for measuring resistance, test each motor's windings for correct resistance (disconnected from the system). 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 system 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 systems control panel Menu.
2. Ensure the system 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 system 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 system 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 or replace the document feeder pick roller and separator pad. Refer to the cleaning procedure.
3. Ensure the system is operating under the right environmental conditions. See Chapter One for more information.
4. Remove all media, open and close the document feeder jam access cover then try copying again.

Document Feeder Pick Problems

1. Verify supported media for the system.
2. Clean or replace the document feeder pick rollers and separator pad, see "Pick Roller Cleaning Methods" on page 7-7.
3. Ensure the system is operating under the within environmental specifications, see "System Environmental Specifications" on page 1-14.
4. Remove all media, open and close the document feeder jam access cover, then try copying 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 8-27).
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. Enter 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 8-27).

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 4-72.
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 system should be installed on a flat, level surface.
9. Ensure the paper preheater assembly is clean and properly seated into the system frame.

Operating System and Application Problems

Print an internal test print from the system's control panel to ensure the problem is not system 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 system 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 system'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 system 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 system and computer.
2. Verify that the system is **Ready To Print**.
3. At the computer, click the **Start** button, and select **Run**.
4. Type in the word "command" and click **Enter** 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 system control panel, print the Configuration Page and use this page to verify that TCP/IP is enabled and to determine the current TCP/IP values.

Note

To enable communication between the computer and system, both must be configured for the same TCP/IP network.

7. Using the system control panel, disable DHCP/BOOTP and AutoIP so that the system can be configured manually.
8. Select an IP address for the system that matches the computer, except for the last field, which must be unique.
9. Edit the system's gateway and subnet mask to match the computer.
10. At the MS-DOS command prompt, type "ping" followed by a space and the system'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, WorkCentre C2424 systems cannot be manually configured for IP addresses within the LOCAL LINK range.

Note

Always print the **Configuration Page** to obtain a record of the system settings before changing the IP address. After testing the system, be sure to restore the system's original network settings.

1. Connect a crossover cable between the PC and system.
2. Verify the system is "Ready To Print".
3. Use the system's control panel to enable AutoIP:
   a. Select the **system 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 system is "Ready To Print".
4. Reset the system to cause AutoIP to assign a new IP address (cycle power or select **Restart system** from the Shutdown menu).
5. After the system'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 system is **Ready To Print**.
2. Insert the system Installer and Utilities CD-ROM into the computer.
3. If the installer autoruns, exit the installer window.
4. Connect a USB cable between the system 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 system's feature set.

5. To test the connection, click the START button.
6. Select SETTINGS and then systemS.
7. Locate the WorkCentre C2424 Service Manual 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 WorkCentre C2424 system 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 system stops recording data to the log. The logs are stored on the Hard Drive so only new data is stored each time the system'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 **Enter**.
3. Scroll and highlight **Network Log Pages** and press **Enter**.
4. Highlight the appropriate menu item from the list and select **Enter**.

5. The page should now print.

Note

To print the **Connection Setup Page** or **Configuration Page**, select the system Setup Menu.

Obtaining Serial Back Channel Trace

In rare cases the system 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 system's on-board serial port. The Back Channel Trace, lists step-by-step what the system 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 systems.)

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 system.
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 system.

The trace should appear in the terminal dialog window. Examine the trace to troubleshoot the problem. Save the trace as a file, if necessary.

Image-Quality Troubleshooting

In this chapter…

- Image-Quality Problems Overview
- Isolating a Copy/Scan Malfunction to the Scanner/DADF
- Diagnosing IOT (Print Engine) Print-Quality Problems
- Analyzing Service Test Prints

Section 5

Image-Quality Problems Overview

Image-quality defects can be attributed to the following:

- system hardware components or communication
- consumables
- media
- internal or external software applications
- environmental conditions

To successfully troubleshoot print/copy-quality problems, as many variables as possible must be eliminated.

Note

To aid in troubleshooting image-quality issues, generate prints using the information pages embedded in the system software on paper from the approved media list. (See the media specifications in the section "Tray and Media Specifications" on page 1-16 for media that has been tested and approved for use in this system.) The paper should be from an unopened ream that has been acclimated to room temperature.

If the print-quality defect is still present when printing on approved media from an unopened ream of paper other conditions need to be researched.

The following steps should be performed for diagnosing print-quality problems:

1. Verify the media being used and the environment for the system are within specification.
2. Isolate the print-quality defect to either a malfunction of the DADF/scanner (IIT) or a malfunction of the print engine (IOT), and once identified:
   - Troubleshoot the DADF/Scanner
   - Troubleshoot the print engine

   When analyzing a print-quality defect from a print engine malfunction, determine if the defect occurs:
   - in all colors
   - in only one color
   - as a repeating or random defect

Service Technician RIP Procedure

1. Clean all pick rollers ***only*** when ink or debris is visible.
2. Clean feed rollers, exit rollers, and guides ***only*** when ink or debris is visible.
3. Inspect the wiper blade. If the wiper blade is damaged, replace the wiper assembly. Ensure the wiper assembly is properly aligned, see "Wiper Alignment" on page 6-2.
4. Check for incorrectly installed or discolored inks, if necessary flush out ink.
5. Inspect and clean the drum maintenance blade and the paper release guide. Check print quality; if necessary perform a cleaning cycle.
6. Check the interior and exterior of the system for cleanliness, including the fans; if necessary, clean (dust or vacuum) these areas.
7. Record the use of Non-Xerox Ink in OpenUp Time.
8. Review proper operation of the system using a customer file, if possible.
9. Review with the customer all work performed. Also, discuss the need for 90% IPA, a cleaning kit, and how to properly care for their system.

Isolating a Copy/Scan Malfunction to the Scanner/DADF

Scanner software, computer applications, hardware malfunctions or communication between the IIT and IOT can cause scan/copy print-quality issues that reside within the document feeder or scanner unit and not from the print engine.

Before troubleshooting image-quality problems:

1. Ensure all document feeder and scanner cables and fasteners are securely connected.
2. Cycle power to the system.
3. Print the 2-sided demo page from the system control panel. If the image defect appears on the printed page, the problem is within the print engine.
4. Copy a page directly from the platen.
5. Copy a page from the DADF, selecting 2-sided copy to see if the defect is on the 1st, 2nd or both sides of the page.
6. If the image defect appears on the 2nd side of the page, the problem is the DADF.
7. If the image defect appears on the 1st side, the problem is within the Scanner Assembly.

DADF Image-Quality Problems

Dark Streaks on the Copied Image

Step	Questions and Actions	Yes	No
1	1. Reseat all connections to the DADF and scanner assembly. 2. Copy another page. 3. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Open the DADF front cover and visually inspect the ribs for ink build-up. 2. Clean the inside of the DADF front cover, including the ribs, rollers and separator pad. 3. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Check for ink build-up on the CVT window. 2. Clean the CVT window, see page 7-6. 3. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Replace the document feeder. 2. Did this correct the problem?	Complete.	Replace the scanner assembly.

Voids in the Copied Image

Step	Questions and Actions	Yes	No
1	1. Does the void run along the entire length of one side of the image?	Go to Step 2.	Go to Step 3.
2	1. Open the document feeder and ensure the automatic calibration strip fully extends, the lamp should be completely covered by the strip. 2. Place a piece of paper over the top, right side of the platen, covering the small photo recepter to simulate the document feeder is closed. 3. Select 2-sided copy on the control panel and feed paper through the document feeder. 4. Does the strip extend and retract properly?	Go to Step 3.	Replace the document feeder.
3	1. Check and remove any paper debris obstructing the DADF lamp. 2. Did this correct the problem?	Complete.	Replace the document feeder.

Skewed Copy Image

Step	Questions and Actions	Yes	No
1	1. Ensure the original copy being used is supported by this system and undamaged.	Go to Step 2.	Use the platen.
2	1. Ensure the paper guides are adjusted securely against the original. 2. Clean the pick roller and separator pad. 3. Make another copy. 4. Did this correct the problem?	Complete.	Go to Step 3.
3	1. See the "Media System Skew Specification (IIT/IOT)" on page 1-20. 2. Is the skew within specification?	Complete.	Go to Step 4.
4	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Replace the document feeder.

Copy Image is Lighter/Darker than the Original

Step	Questions and Actions	Yes	No
1	1. Ensure supported media is being used. 2. Check and/or adjust the control panel copy settings. Print the Troubleshooting Print Quality information page from the control panel and review Output Quality and Color Settings section to aid in adjusting copy settings. 3. Does adjusting the copy settings correct the problem?	Complete.	Go to Step 2.
2	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Replace the document feeder.

Fuzzy Text/Image

Step	Questions and Actions	Yes	No
1	1. Cycle power to the system, this will cause an automatic calibration cycle. 2. Does the text or image still appear fuzzy?	Go to Step 2.	Complete.
2	1. Print the Graphics Demo for a fuzzy image or the Configuration Page for fuzzy text. 2. Does the text or image still appear fuzzy?	The problem is with the print engine, see "Fuzzy Text" on page 5-22.	Go to Step 3.
3	1. Make a copy of the embedded page printed in Step 2, using the document feeder. 2. Does the text or image still appear fuzzy?	Go to Step 4.	Go to Step 5.
4	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Does the text or image still appear fuzzy?	Go to Step 5.	Complete.
5	1. Check and/or adjust the control panel copy settings. Print the Troubleshooting Print Quality information page from the control panel and review Output Quality and Color Settings section to aid in adjusting copy settings. 2. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Use the flatbed to make a copy of the embedded page printed in Step 2. 2. Did this correct the problem?	Replace the scanner assembly.	Replace the DADF.

Copied Image Colors Do Not Match the Original

Note

There can be slight color variations from an original copy to a solid ink print resulting from the physical properties of the original, (i.e., ink jet copy, laser toner copy, etc.)

Step	Questions and Actions	Yes	No
1	1. Print the Graphics Demo page from the system control panel. 2. Make a copy of the Graphics Demo page. 3. Compare the copy to the original. 4. Do the colors vary from the original?	Go to Step 2.	Complete.
2	1. Ensure supported media is being used. 2. Check and/or adjust the control panel copy settings. NOTE: Print the Troubleshooting Print Quality information page from the control panel and review Output Quality and Color Settings section to aid in adjusting copy settings. 1. Does adjusting the copy settings correct the problem?	Complete.	Go to Step 3.
3	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Replace the document feeder. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Inspect the cable connection between the scanner assembly and the print engine. 2. Is there any visible damage or defects in the cabling, (i.e. bent or broken pins, etc.)?	Replace the scanner assembly.	Replace in the following order: ■ Electronics module. ■ Scanner assembly.

Scanner Image Quality Problems

Dark Streaks on the Copied Image

Step	Questions and Actions	Yes	No
1	1. Reseat the cable connection from the scanner assembly to the electronics module. 2. Clean the CVT window and platen glass. 3. Scan another page. 4. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Perform the calibration procedure found on page 6-9. 2. Did this correct the problem?	Complete.	Replace the scanner assembly.

Copied Image is Skewed

Step	Questions and Actions	Yes	No
1	1. See the "Media System Skew Specification (IIT/IOT)" on page 1-20. 2. Is the skew within specification?	Complete.	Go to Step 2.
2	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Replace the scanner assembly.

Copied Image is Lighter/Darker than the Original

Step	Questions and Actions	Yes	No
1	1. Ensure supported media is being used. 2. Check and/or adjust the control panel copy settings. NOTE: Print the Troubleshooting Print Quality information page from the control panel and review Output Quality and Color Settings section to aid in adjusting copy settings. 1. Does adjusting the copy settings correct the problem?	Complete.	Go to Step 2.
2	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Replace the scanner assembly.

Copy Image Colors Do Not Match the Original

Note

There can be slight color variations from an original copy to a solid ink print resulting from the physical properties of the original, (i.e., ink jet copy, laser toner copy, etc.

Step	Questions and Actions	Yes	No
1	1. Print the Graphics Demo page from the system control panel. 2. Make a copy of the Graphics Demo page. 3. Compare the copy to the original. 4. Do the colors vary from the original?	Go to Step 2.	Complete
2	1. Ensure supported media is being used. 2. Check and/or adjust the control panel copy settings. NOTE: Print the Troubleshooting Print Quality information page from the control panel and review Output Quality and Color Settings section to aid in adjusting copy settings. 1. Does adjusting the copy settings correct the problem?	Complete.	Go to Step 3.
3	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Replace the document feeder. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Inspect the cable connection between the scanner assembly and the print engine. 2. Is there any visible damage or defects in the cabling, (i.e. bent or broken pins, etc.)?	Replace the scanner assembly.	Replace in the following order: ■ Electronics module. ■ Scanner assembly.

Fuzzy Text/Image

Step	Questions and Actions	Yes	No
1	1. Cycle power to the system, this will cause an automatic calibration cycle. 2. Does the text or image still appear fuzzy?	Go to Step 2.	Complete.
2	1. Print the Graphics Demo for a fuzzy image or the Configuration Page for fuzzy text. 2. Does the text or image still appear fuzzy?	The problem is with the print engine, see "Fuzzy Text" on page 5-22.	Go to Step 3.
3	1. Make a copy, using the DADF, of the embedded page printed in Step 2. 2. Does the text or image still appear fuzzy?	Go to Step 4.	Go to Step 5.
4	1. Perform the "Manual DADF to Scanner Calibration" on page 6-9. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Check and/or adjust the control panel copy settings. Print the Troubleshooting Print Quality information page from the control panel and review Output Quality and Color Settings section to aid in adjusting copy settings. 2. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Use the flatbed to make a copy of the embedded page printed in Step 2. 2. Did this correct the problem?	Replace the scanner assembly.	Replace the DADF.

Diagnosing IOT (Print Engine) Print-Quality Problems

When analyzing a print-quality defect from a print engine malfunction, determine if the defect occurs:

- in all colors
- in only one color
- as a repeating or random defect

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 system control panel's **System Setup** menu, scroll to **Information,** and then press **Enter**.
2. Scroll to **Troubleshooting**, and then press **Enter**.
3. Scroll to **Print Quality Problems**, then press **Enter**.
4. Scroll to **Troubleshooting Print Quality Page**, and then press **Enter**.

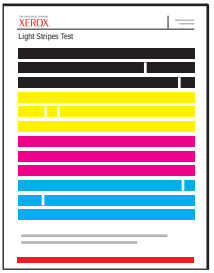
Note

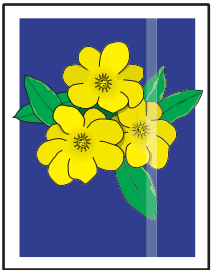
The Troubleshooting Print Quality Page includes instructions for printing the Eliminate Light Stripes test print. These instructions are also provided on the next page of this manual.

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. You may also see color variations 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 5-35.

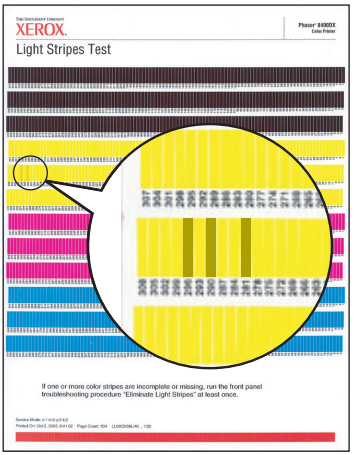
Random Light Stripes





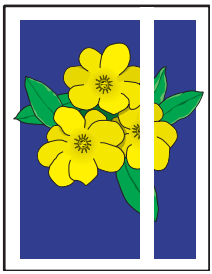
One or more color bars are missing on the test page.

This is probably caused by a weak or clogged printhead jet.

Step	Questions and Actions	Yes	No
1	1. At the system's control panel, select the **Eliminate Light Stripes** function and follow the procedure on the printed pages. 2. Did this correct the problem?	Complete.	Go to Step 3.
2	1. It may be necessary to repeat Step 1 up to 3 times if the stripes still appear.. NOTE: If there are discolored jets, print the solid fill test print in the color with the discolored jets. In the following example, the yellow stripe has discolored jets, therefore you would print the yellow solid fill. For instructions on printing solid fill test prints, see"13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. Discolored jets usually clear after two or three prints, using the problem jets. 		
3	1. Clean the print engine exit path and wipe the paper release blade with a lint-free cloth. 2. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Remove the drum maintenance kit and wipe the clear plastic wiper blade with a lint-free cloth or replace the maintenance kit. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Download the latest Jet Fix snippet from the customer support site and follow the readme text instructions. 2. Did this correct the problem?	Complete.	Go to Step 6.

Step	Questions and Actions	Yes	No
6	1. Turn off the system for at least 4 hours. 2. Turn on the system and if necessary, repeat Step 1. 3. Did this correct the problem?	Complete.	Follow the instructions on the “Printhead Troubleshooting Checklist”.

Predominate Light Stripes



All four color bars are missing on the test page.

The probable cause for light stripes is something scraping the image off the drum before transfixing.

NOTE:

If there are a series of regularly spaced white lines approximately 6 mm (.25 in.) apart, see "White Stripes (Pinstripes)" on page 5-32.

Step	Questions and Actions	Yes	No
1	1. Clean the system’s exit path, including wiping the paper release blade with a lint-free cloth. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Remove the drum maintenance kit and wipe the clear plastic wiper blade with a lint-free cloth. 2. Did this correct the problem?	Complete.	If the problem persists, follow the steps for "Random Light Stripes" on page 5-12

Smudges or Smears

Smudges or smears appear on the page.

The probable cause is ink residue in the paper path. The residue can be found on the roller, on the paper guide ribs, or inside the paper preheater.

Step	Questions and Actions	Yes	No
1	1. Clean the system's exit path, including wiping the paper release blade with a lint-free cloth. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. From the system control panel ,select **Information** --> **Troubleshooting** --> **Print Quality Problems**. 2. Select **Remove Print Smears**, and then press the **Enter** button. The system cleans the ink from the preheater and exit rollers. 3. Reprint test pages. Do you still see smudges?	Go to Step 3.	Complete.
3	1. Repeat Step 2 up to 3 times if the smears still appear. 2. Verify supported media is being used. 3. Open a fresh ream of supported paper and reprint the test page. 4. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Remove the drum maintenance kit and wipe the clear plastic wiper blade with a lint-free cloth. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Manually clean visibly dirty feed rollers. 2. Clean the paper release blade. 3. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Verify the maintenance pivot plate is free from damage. 2. Verify the cam rollers for the drum maintenance are working properly. 3. Replace any defective parts. 4. Did this correct the problem?	Complete.	Replace the preheater.

The Printed Image Is Too Light or Too Dark

Step	Questions and Actions	Yes	No
1	1. Verify the paper type at the control panel matches the paper type in the driver and in the software application being used, especially if printing on transparency. 2. Verify the paper type is a supported media type for this system. 3. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Change/adjust the print mode settings. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. The ink may be discolored due to age or lack of use over an extended period of time. 2. Insert new ink and print a solid fill test print. Run the test print until the affected color returns to normal. 3. Did this correct the problem?	Complete.	Go to Step 4.
4	1. If the problem is occuring for only one color, purge the ink up to 10 times to clear the ink or until discoloration is cleared. 2. Did this correct the problem?	Complete.	Replace the printhead.

No Image is Being Printed

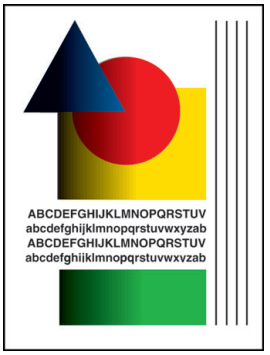
The system processes a sheet of paper, but no image is printed on it.

Note

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

Step	Questions and Actions	Yes	No
1	1. Inspect the area around the printhead and drum and remove any media or bits of paper jammed between the printhead and drum. 2. Did this correct the problem?	Complete.	Go to Step 2
2	1. Follow the instructions on the “Printhead Troubleshooting Checklist”. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Inspect and reseat the wave amp and data cables connecting to the printhead. 2. Replace or repair any defective cables. 3. Did this correct the problem?	Complete.	Replace in the following order: ■ electronics module ■ printhead

Color is Uneven or Color is Wrong



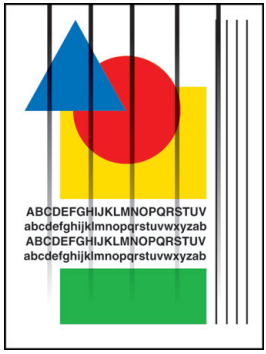
This may be due to incorrect colors in the ink loader, old ink in the printhead, color mixing at the faceplate, or drum thermal problems.

NOTE:

Using non-Xerox ink may cause unpredictable color results.

Step	Questions and Actions	Yes	No
1	1. To remove discolored jets in the printhead, run the solid fill test print for the color displaying the discolored jets. NOTE: For instructions on printing solid fill test prints, see "13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. 1. 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. 2. Did this correct the problem?	Complete.	Go to Step 2
2	1. Clean the maintenance kit wiper blade or replace the maintenance kit. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Check the thermal regulation of the drum. 2. Run the service diagnostics drum thermal check test, see "Check Heaters Menu" on page 4-25. 3. Are the drum thermal values out of the appropriate range?	Go to Step 4.	Go to Step 5.
4	1. Ensure the drum fan is correctly installed and operates correctly.	Go to Step 5.	Replace the drum fan.
5	1. Verify the drum temperature sensor is in contact with the drum. 2. Clean or replace the drum termperature sensor. 3. Did this correct the problem?	Complete.	Replace in the following order: ■ Drum heater relay board ■ Drum assembly ■ Electronics module

Streaks or Lines Down the Print



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

Step	Questions and Actions	Yes	No
1	1. Check for and remove any media, jammed paper, or debris found in the systems exit path. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Clean the maintenance kit wiper blade or replace the maintenance kit. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Check the exit area, exit frame, the preheater, maintenance kit, and the printhead (including the paper release blade) to see if there is anything touching the drum assembly. 2. Reseat any system component interfering or touching the drum assembly. 3. Clean the paper release blade. 4. Did this correct the problem?	Complete.	Go to Step 4.
4	1. If there are streaks on the front side only of a 2-sided print, the preheater may be scraping ink off the print. 2. Look for ink shavings along the streaks on the printed paper. 3. Clean the preheater using the control panel **Remove Print Smears** function. 4. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Possible weak or missing jet. Print the weak/missing jet test print from the control panel, see "1: Weak/Missing Jet" on page 5-35. 2. Did this correct the problem?	Complete.	Go to Step 6.

Step	Questions and Actions	Yes	No
6	1. Possible discolored jet. Print the solid fill test print, see "13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. 2. Did this correct the problem?	Complete.	Go to Step 7.
7	1. 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 on the print. For information about X-Axis Drive problems, see "White Stripes (Pinstripes)" on page 5-32. 2. Did this correct the problem?	Complete.	Go to Step 8.
8	1. Smears on a duplex print can be caused by the paper preheater operating at a temperature that is too high or debris is in the duplex roller or duplex paper path guides. 2. Run the service diagnostics **Duplex Path** test to check the paper preheater's temperature. 3. Is the operating temperature within the correct value range?	Replace the preheater.	Replace the electronics module.

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

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	Questions and Actions	Yes	No
1	**1.** Check the exit area, the preheater, maintenance kit, and the printhead (including the paper release blade) to see if there is anything touching the drum assembly. **2.** Reseat any system component interfering or touching the drum assembly. **3.** Clean the paper release blade. **4.** Did this correct the problem?	Complete.	Go to Step 2.
2	**1.** Inspect the drum maintenance kit. If the defect is a thin line that is glossier than the surrounding area, it may be due to a defect on the maintenance kit wiper blade. **2.** Clean the wiper blade or replace the maintenance kit. **3.** Did this correct the problem?	Complete.	Go to Step 3.
3	**1.** Using transparency media, print from Tray 1 to see if the scratch appears. **2.** Is there a visible scratch? NOTE: To determine where the scratch is originating, place a small drop of water on the scratch on the transparency. If the scratch disappears, the scratch is on that side. If the scratch does not disappear, follow these steps on the other side. This can help to determine where the problem is originating.	Go to Step 5.	Go to Step 4.

Step	Questions and Actions	Yes	No
4	1. If there is no visible scratch on the transparency the defect occurred during paper pick or early transport from Trays 2, 3, or 4. 2. Change the paper pick guide, front door, or maintenance kit. 3. Did this correct the problem?	Complete.	Go to Step 5.
5	A scratch or smear can be caused by debris build-up on the paper preheater's heating surface. Try the following: 1. Run the cleaning procedure **Remove Print Smears** from the system's control panel. 2. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Force a sheet of thick 65- to 80-lb. paper through the paper preheater to "buff" the paper preheater heating surfaces. 2. 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 paper. Be careful of the paper-sensor flags. 3. Did this correct the problem?	Complete.	Go to Step 7.
7	1. Inspect all paper guides inside the system for nicks, cuts, or debris.	Clean or replace any defective paper guide(s).	

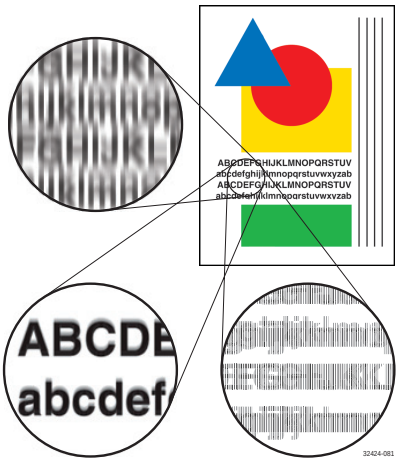
There is ink on the White Portion of the Printed Page

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 an old maintenance kit may be the problem.

Printing on 3-hole punch paper commonly causes this problem.

Step	Questions and Actions	Yes	No
1	1. Try printing using a smoother, higher quality paper, some recycled paper brands may be too rough. Watermarked or 3-hole punched paper may also have this problem. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Inspect and clean the maintenance kit wiper blade. 2. If necessary replace the maintenance kit. 3. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Clean the paper release blade, it may be contaminated with ink. 2. Run the **Remove Print Smears** from the system's control panel. 3. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Run service diagnostics to verify the system termperatures are within normal operating range. 2. Inspect the drum thermistor, clean or replace if necessary. 3. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Inspect the feed rollers. An accumulation of paper dust and oil can produce dark rectangular marks on transparency film. 2. Run the **Remove Print Smears** from the system's control panel. 3. Replace the rollers if necessary. 4. Did this correct the problem?	Complete.	Follow the "On-Site Printhead Troubleshooting Checklist" on page A-7.

Fuzzy Text



Text appears indistinct and difficult to read.

There are three typical reasons for fuzzy text, as called out in this illustration.

Top left image displays a Y-axis drum rotation problem.

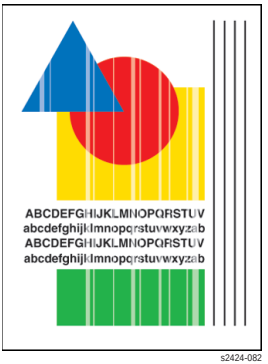
Lower left image displays the wrong drum temperature problem.

Lower right image displays an X-axis movement problem.

Step	Questions and Actions	Yes	No
1	1. Try printing using a smoother, higher quality paper, some recycled paper brands may be too rough. Watermarked paper may also have this problem. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Try using a higher quality print mode. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. This problem can occur after a printhead has been replaced. Verify the dot on the printhead roll block is positioned to match the label on the left frame. Adjust if necessary. 2. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Run service diagnostics to check the temperature of the drum. 2. Verify the drum termperature sensor is clean and properly positioned. 3. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Use service diagnostics to run the **Y-axis encoder** test. 2. Is the Y-axis encoder working properly?	Go to Step 6.	Replace the drum assembly.
6	1. Ensure the x-axis movement is not impeded. 2. See "White Stripes (Pinstripes)" on page 5-32 for troubleshooting this problem. 3. Did this correct the problem?	Complete.	Go to Step 7.

Step	Questions and Actions	Yes	No
7	**1.** Verify the printhead is tilted forward against the drum in the proper print position. **2.** Did this correct the problem?	Complete.	Follow the instructions on the "On-Site Printhead Troubleshooting Checklist" on page A-7.

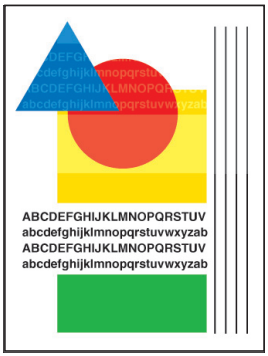
Poor Primary Color Fills



Primary fills appear banded and inconsistent.

Step	Questions and Actions	Yes	No
1	1. Banded and inconsistent primary fills may indicate a missing, weak, or discolored jet. 2. Print the Service Test Print 1: **Weak/Missing Jet**. 3. If there are discolored jets, print the solid fill test print in the color with the discolored jets. 4. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Use service diagnostics to verify the Y-axis encoder is operating normally. 2. Is the Y-axis encoder working properly?	Go to Step 3.	Replace the drum assembly.
3	1. If the bands are uniform, or in a corduroy pattern, use diagnostics to check the X-axis motion. 2. Ensure the x-axis movement is not impeded. 3. See "White Stripes (Pinstripes)" on page 5-32 for troubleshooting this problem. 4. Did this correct the problem?	Go to Step 4.	Replace the X-axis motor or electronics module.
4	1. Try the procedure listed on "13-19: Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills" on page 5-42. 2. Did this correct the problem?	Complete.	Follow the instructions on the "On-Site Printhead Troubleshooting Checklist" on page A-7

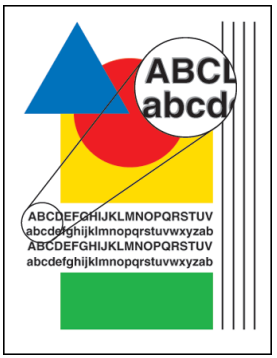
Ghosting



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

Step	Questions and Actions	Yes	No
1	1. This problem can occur from prints being stacked in the output tray, causing the pressure of the stack and the heat of the system to cause “blocking” which has the appearance of ghosting. 2. Try printing the images again, without letting them stack in the output tray. 3. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Run multiple prints; the first 2-sided print will have the worst ghosting. Some transfix roller ghosting is inherent to the system but will improve with multiple prints. 2. Does this correct the problem?	Complete.	Go to Step 3.
3	1. Inspect and clean the maintenance kit wiper blade. 2. If necessary, replace the maintenance kit. 3. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Run service diagnostics to verify the drum maintenance system is operating correctly. 2. Inspect or replace the following parts: ■ Drum maintenance pivot plate ■ Drum maintenance cam shaft 3. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Run service diagnostics to check the temperature of the drum. 2. Verify the drum termperature sensor is clean and properly installed. 3. Did this correct the problem?	Complete.	Replace the drum temperature sensor.

Poor Small Text Resolution

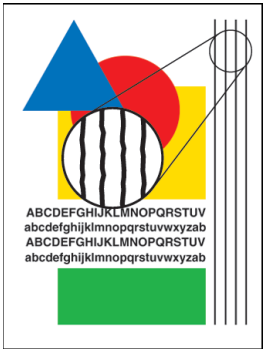


0388-70

Small characters appear heavy and “plug up.”

Step	Questions and Actions	Yes	No
1	1. Try using a higher quality print mode. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Run service diagnostics to check the temperature of the drum. 2. Verify the drum termperature sensor is clean and properly positioned. 3. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Verify the X-axis drive system is correctly assembled and lubricated, see "X-Axis Motor Assembly" on page 8-57 for more information. 2. Did this correct the problem?	Complete.	Replace the x-axis motor assembly.

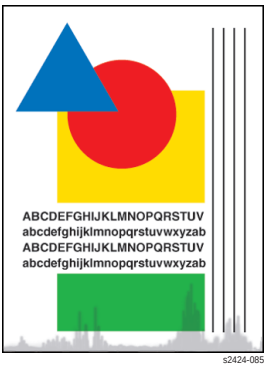
Vertical Lines Appear Wavy



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

Step	Questions and Actions	Yes	No
1	**1.** There may be too much oil on the drum. **2.** Inspect and clean the maintenance kit wiper blade. **3.** If necessary, replace the maintenance kit. **4.** Did this correct the problem?	Complete.	Go to Step 2.
2	**1.** Check the motion of the X-axis and verify there is nothing interfering such as a poorly dressed cable or screw. **2.** Replace any defective parts. **3.** Did this correct the problem?	Complete.	Go to Step 3.
3	**1.** Use service diagnostics to run the **Y-axis encoder** test. **2.** Is the Y-axis encoder functioning properly?	Go to Step 4.	Replace the drum assembly.
4	**1.** Use service diagnostics to verify the drum maintenance cam roller and pivot plate are operating correctly. **2.** Did this correct the problem?	Complete.	Replace the pivot plate or drum maintenance cam roller if damaged.

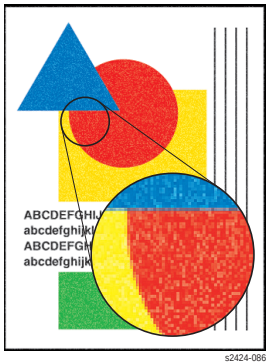
Oil Streaks on Print



Oil stains the edge of the print.

Step	Questions and Actions	Yes	No
1	1. There may be too much oil on the drum. 2. Inspect and clean the maintenance kit wiper blade. 3. If necessary, replace the maintenance kit. 4. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Ensure ground integrity for the drum maintenance unit is intact. 2. Check the back of the drum maintenance unit to drum maintenance shaft to drum fan ground clip. 3. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Run pages through the printer to clean the drum by using the **Remove Print Smears** routine from the system's control panel. 2. Did this correct the problem?	Complete.	Go to Step 4.
4	1. Clean the paper release blade and the exit guides. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Use service diagnostics to verify the drum maintenance cam roller and pivot plate are operating correctly. 2. Did this correct the problem?	Complete.	Replace the pivot plate or drum maintenance cam roller if damaged.

Incomplete Image Transfer to Paper



All of the image does not transfer to the paper.

Media that is not smooth enough or too light can cause this problem. This problem can also occur on watermarked paper.

Step	Questions and Actions	Yes	No
1	1. Verify the media is supported for this system and/or try a higher quality or heavier media type. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Try using a higher quality print mode. 2. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Poor drum oiling can cause the image transfer to be incomplete on one side of the page.		
4	1. Use service diagnostics to verify the drum maintenance cam roller and pivot plate are operating correctly. Replace any defective parts. 2. Did this correct the problem?	Complete.	Go to Step 5.
5	1. Inspect and clean the maintenance kit wiper blade. 2. If necessary, replace the maintenance kit. 3. Did this correct the problem?	Complete.	Go to Step 6.
6	1. Inspect the drum temperature sensor and check for contamination and improper positioning between the sensor and the drum surface. 2. Clean and position the sensor as necessary 3. Did this correct the problem?	Complete.	Go to Step 7.

Step	Questions and Actions	Yes	No
7	1. Is the incomplete image transfer on the left and right sides of the print, but fine through the center? 2. This indicates incomplete transfix cam rotation. Check for a damaged transfix cam roller or a malfunction of the process drive, replace any defective parts. 3. Did this correct the problem?	Complete.	Go to Step 8.
8	1. Using service diagnostics, verify the paper preheater temperature is within normal operating range. 2. Replace the paper preheater if necessary.	Complete.	Replace the transfix load assembly and transfix load arm.

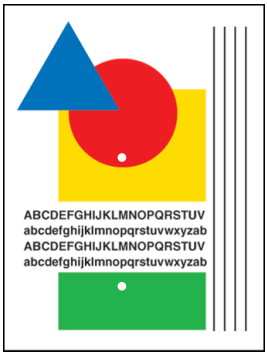
Ink Smears on First Printed Side of Duplex Print

Preheater temperature is too high.

Step	Questions and Actions	Yes	No
1	1. Clean or replace the paper release blade. 2. Did this correct the problem?	Complete.	Go to Step 2.
2	1. Inspect the duplex paper path for obstructions, contamination, debris, or damage. 2. Clean or replace defective parts. 3. Did this correct the problem?	Complete.	Go to Step 3.
3	1. Run the **Remove Print Smears** routine from the system control panel. 2. Did this correct the problem?	Complete.	Go to Step 4.

Step	Questions and Actions	Yes	No
4	1. Use service diagnostics to check the paper preheater temperature. 2. Is the preheater operating within normal range?	Replace in the following order: ■ preheater ■ electronics module	

Repeating Print Defects on Print

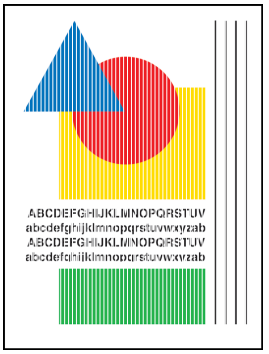


s2424-077

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	Questions and Actions	Yes	No
1	1. Repeating defects that occur every 11.6 cm (4.58 in.) are caused by the transfix roller. 2. Clean the transfix roller. The defect does not move in the X-position. 3. Replace if necessary. 4. Did this correct the problem?	Complete.	Go to Step 2.
2	1. A single repeating defect that has a different Y position on each page, but the same X position on each page is probably due to a defect on the drum. 2. Clean the drum assembly. 3. Did this correct the problem?	Complete.	Replace the drum assembly.

White Stripes (Pinstripes)



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

Step	Questions and Actions	Yes	No
1	**1.** Print the service test print 13-19 Solid Fills,to reveal an X-axis problem. See "21: Primary Solid Fills 10x" on page 5-43 for more information. **2.** Are the pinstripes apparent on the test prints?	Go to Step 2.	Complete. The problem is not with the print engine.
2	**1.** Verify the X-axis motion is operating correctly and that poorly dressed cables, loose screws, or mechanical failures are not interfering. **2.** Remove any obstructions or redress cables. **3.** Did this correct the problem?	Complete.	Go to Step 3.
3	**1.** Verify there are no wiring harnesses interfering with the horizontal movement of the printhead. **2.** Redress any faulty wiring. **3.** Repair or replace any defective part or interference with the printhead. **4.** Did this correct the problem?	Complete.	Replace the X-axis drive.

Wrinkling

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 system. 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	Questions and Actions	Yes	No
1	**1.** Verify the media is supported for this system. **2.** Print from an unopened fresh ream of paper. **3.** Try a higher quality or heavier media type. **4.** Did this correct the problem?	Complete.	Go to Step 2.
2	**1.** Increase the margin size of the image. Wrinkling generally occurs in solid fills near the print's edge. **2.** Did this correct the problem?	Complete.	Go to Step 3.
3	**1.** Inspect, clean or replace the maintenance kit. **2.** Did this correct the problem?	Complete.	Go to Step 4.
4	**1.** Inspect the transfix components.	Replace in the following order: ■ transfix roller ■ transfix cam ■ transfix load arm ■ transfix load module.	

Image is Offset or Cut-Off

1. Print an information page from the system's control panel. This is to verify the driver settings or image file is not the cause of the problem. If the defect is not visible on the information page, the problem is not hardware related.
2. Verify that the tray guides are adjusted correctly.
3. Ensure that the paper size in the driver and system 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 system and to assist in troubleshooting problems. This section shows how to select and analyze all test prints available to the system. To access the Test Print menu, see the "Hidden Service Menu" on page 4-2.

Note

Defects revealed by the prints may not occur in the course of ordinary printing. In servicing the system, you should minimize the defects shown by the prints but not necessarily eliminate them.

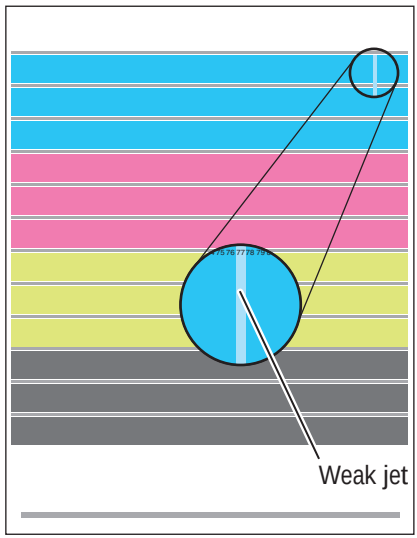
Test Print Examples

1: Weak/Missing Jet

This print shows the jets not outputting enough ink, if any, compared to its neighboring jets. Note that the yellow jets' bands have a small amount of cyan ink added to them. This tints them green to make them more visible.

Look for: No interlacing is used in this print: expect light/dark variation between jets. Use 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. Run a jet fix cycle by downloading the snippet from the customer support site.
If jet substitution mode is required, see "Jet Substitution Mode" on page 6-12. Test the purge system and the wiper blade performance. Turn the system 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 the printer is using Xerox ink. Follow the instructions on the "Printhead Troubleshooting Checklist".

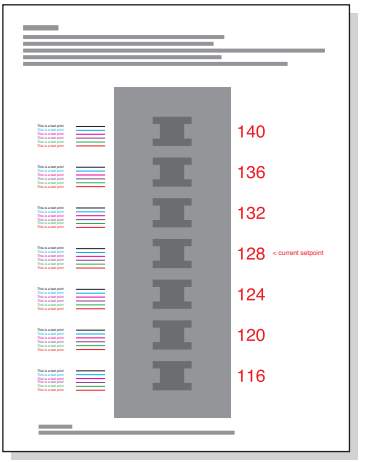


s2424-092

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 results in inaccurate measurements.

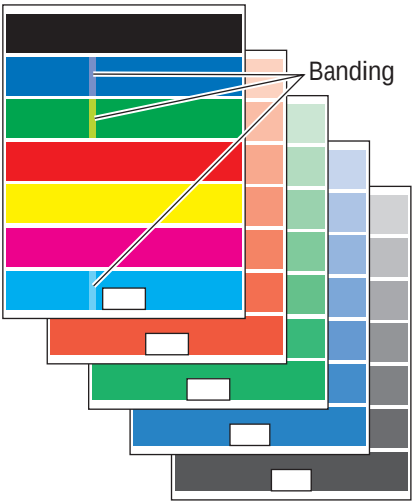


s2424-093

3: Color Bands, RGBK Dither

The large, secondary colored areas in this print reveal banding and weak jets.
Look for: These are 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 5-35). Banding can also be caused by color-to-color misregistration.
Use service diagnostics to ensure that the printhead and drum thermals are correct. Follow the instructions on the “Printhead Troubleshooting Checklist”.



s2424-094

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 system 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 system 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.

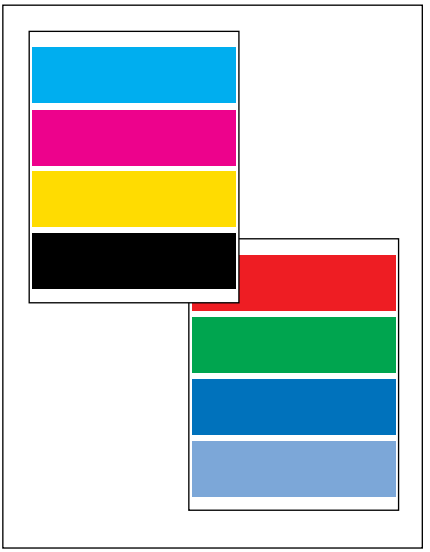
Ensure the printhead drive voltage is set to the default 128.

s2424-095

Test Print Examples (Continued)

5: Big Bands OHP

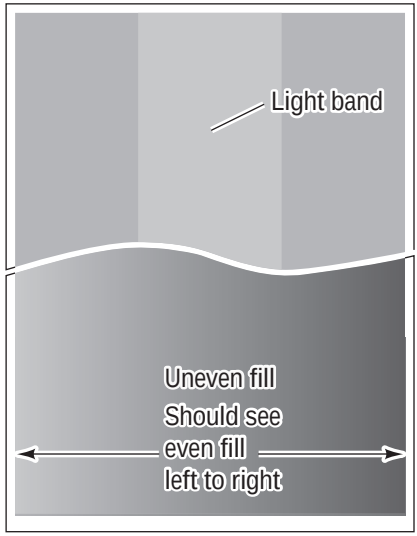
This print allows you to evaluate transparency printing. It prints two transparencies from Tray 1: one with primary color fills and one with secondary color fills and a band of 50% blue. This is a popular background color for overhead transparencies.
Look for: Scratching on the print. Uniformity of fill 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 system. 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 Transparencies" on page 5-19.



9923-117

Test Print Examples (Continued)

6: Gray Fill, Dot Size Uniformity



s2424-096

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. There is a 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. Look for small, light spots, or irregular white lines, vertically aligned with each other, in the print every 125 mm (5.0 in.).
2. 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 system 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 control 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 only.

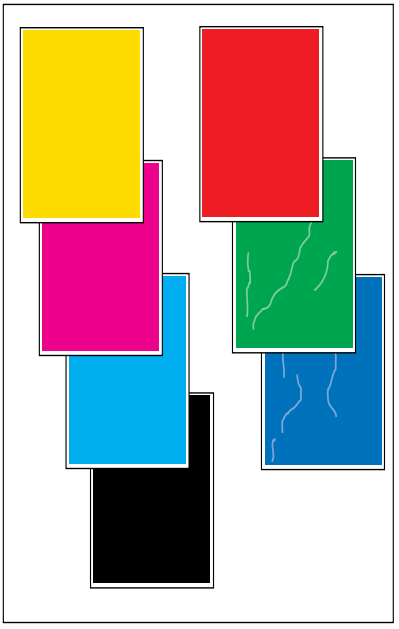
Test Print Examples (Continued)

8: YMCKRGB Solid Fills

These seven prints show uniformity of fill. If colors are uneven or wrong, see "Color is Uneven or Color is Wrong" on page 5-16.

Look for:

1. There are 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.



9923-119

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 system.

10: Manuf. Paper Path

These prints are used by manufacturing and engineering only.

Test Print Examples (Continued)

11: Head-to-Drum Check

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.

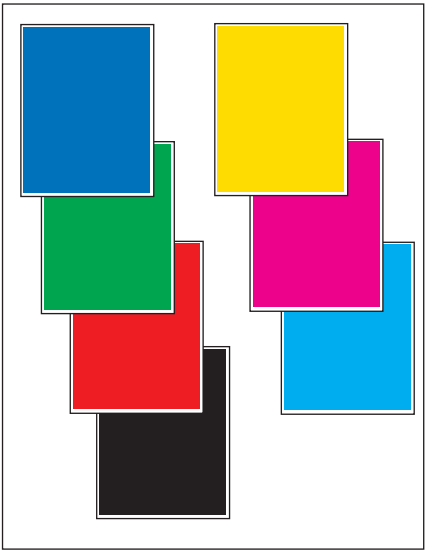
The ends of this system's printhead rests on two spacers on the ends of the drum that hold the head-to-drum gap under much tighter control than in previous solid ink systems. There is no head-to-drum adjustment possible in this system. If the gap is suspect, check that the printhead is correctly and 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



s2424-098

This prints show uniformity of fill.

Look for:

1. There are even, uniform fills throughout the print.
2. There should be no wrinkling or deformity of the paper throughout the print.
3. You may see poor transfer on one side.
4. You may also see 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 32.

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 are the 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, and 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 system) of the paper.

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

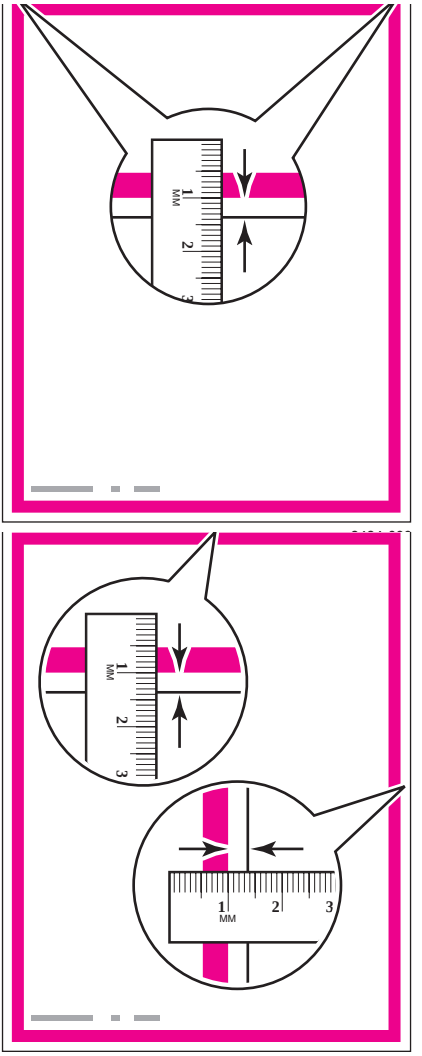
NOTE: The measurement for skew and margin for Side 1 and Side 2 may not match

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.



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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.

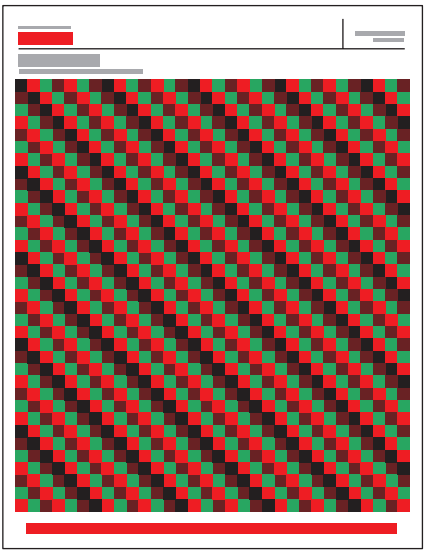
30: Purge Efficiency

This print is used by Manufacturing and Engineering.

Test Print Examples (Continued)

31: Cleaning (Chase) 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.



s2424-100

Adjustments and Calibrations

In this chapter…

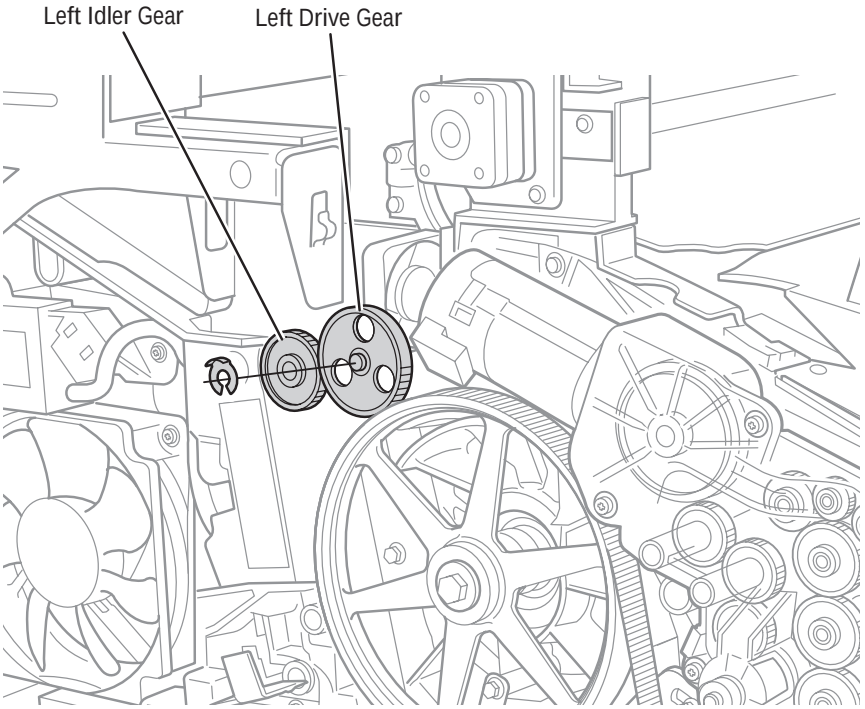
- System Alignments and Adjustments
- Print Engine Component Home Positions and Indicators
- Manual DADF to Scanner Calibration
- Jet Substitution Mode
- Resetting NVRAM

Section 6

System Alignments and Adjustments

Wiper Alignment

1. Remove the system covers using the procedures that begin on page 8-8.
2. With the swing arm in the unlocked position, remove the K-clip from the drive shaft and remove the left drive gear. If the printhead is installed, it must be tilted back first.



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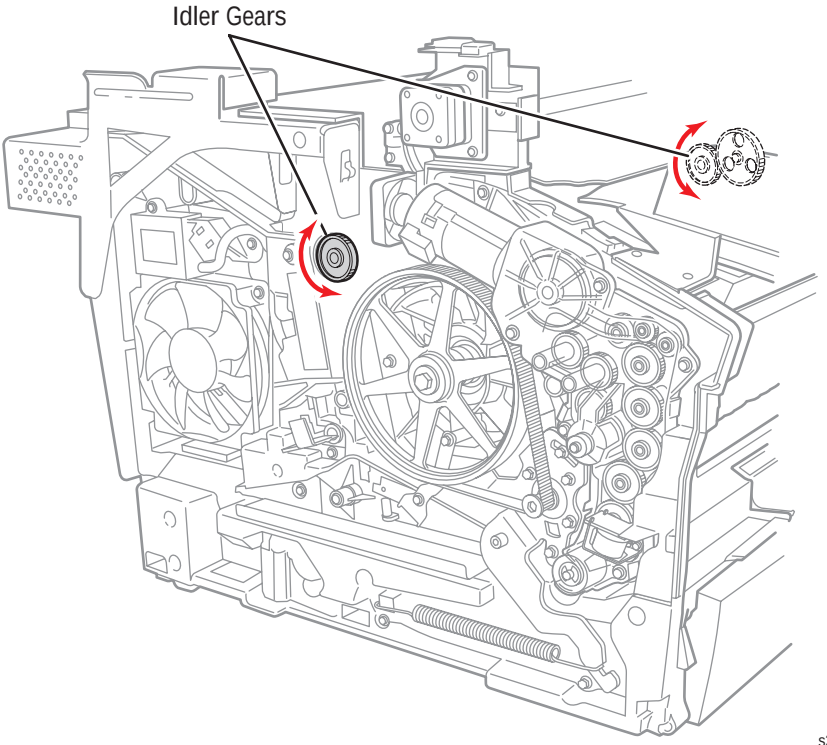
3. Rotate the left and right idler gears until the wiper is all the way to the bottom of its travel and the gears cannot be rotated any further.

Note

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 KL-clip.

Print Engine Component Home Positions and Indicators

After servicing the system, manually set the following assemblies to their home position before powering on the system. If the assemblies are not home, gears in the process drive assembly can grind or the system will generate errors.

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

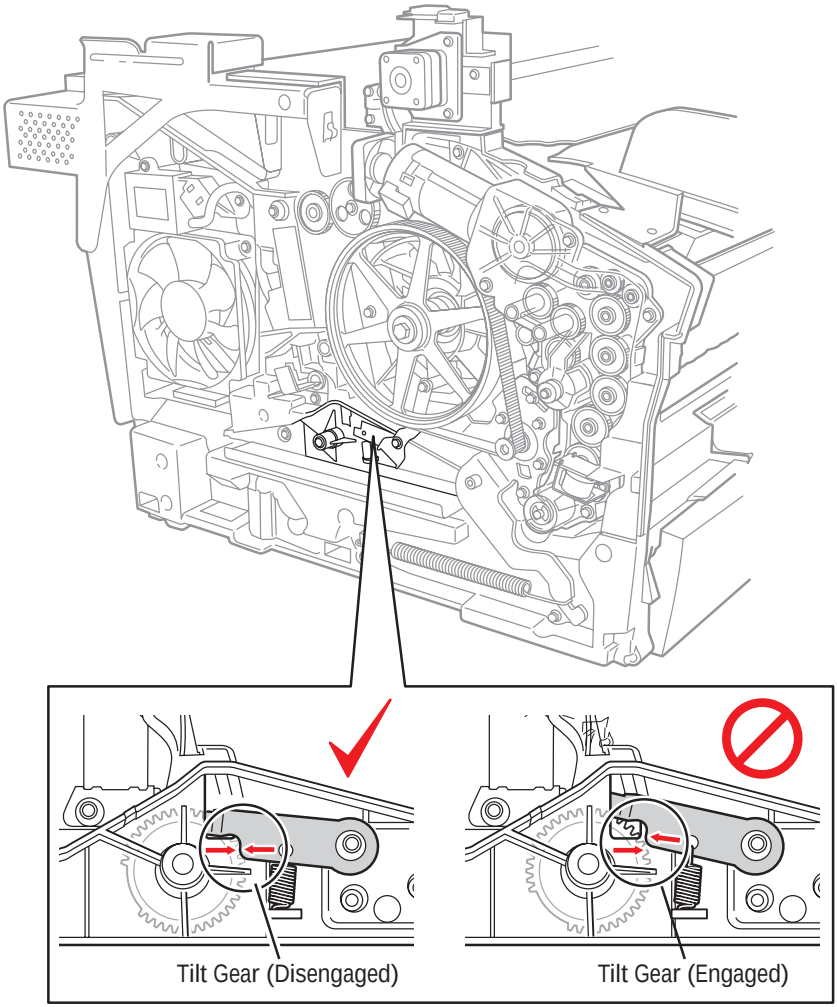
Homing the Printhead Wiper

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" on page 6-2.

Homing the Head Tilt Gear

When the Printhead Is NOT Installed

1. Manually move the tilt gear, located on the inside of the left frame, to its disengaged position. When disengaged, the arrows on the left frame point to each other.

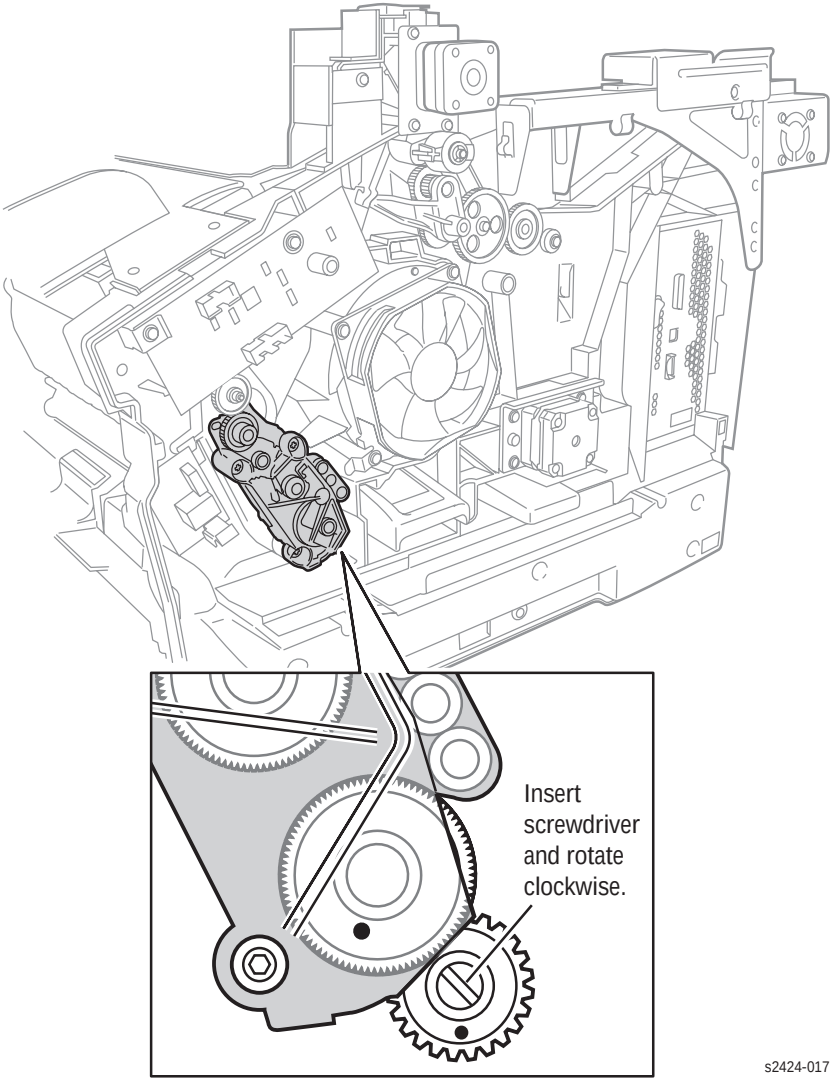


When the Printhead is in the Printer

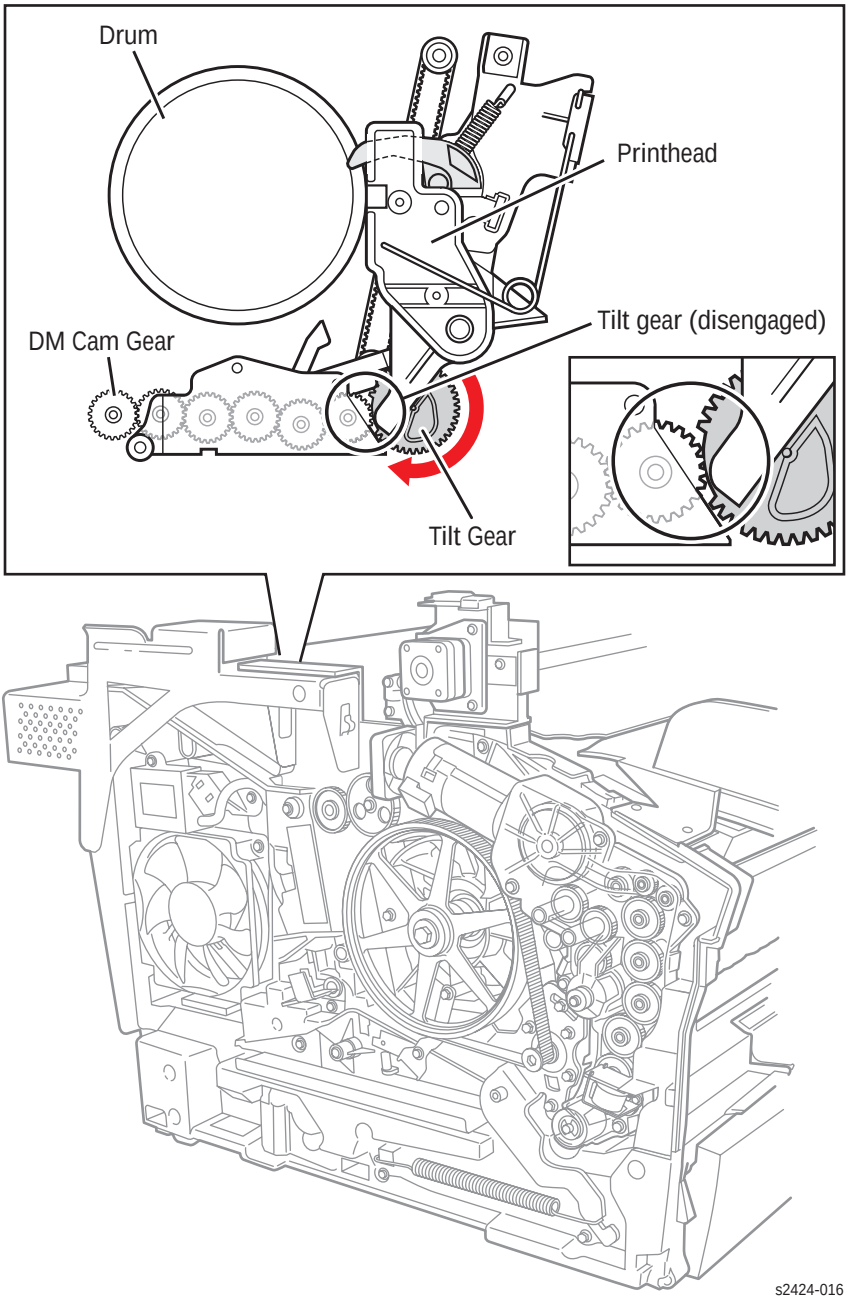
1. Remove the maintenance kit.
2. Insert a flat blade screwdriver into the end of drum maintenance cam shaft and rotate clockwise one revolution. If the printhead is engaged, manually assist the movement of the printhead. There is an audible click when the gear disengages.

Note

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



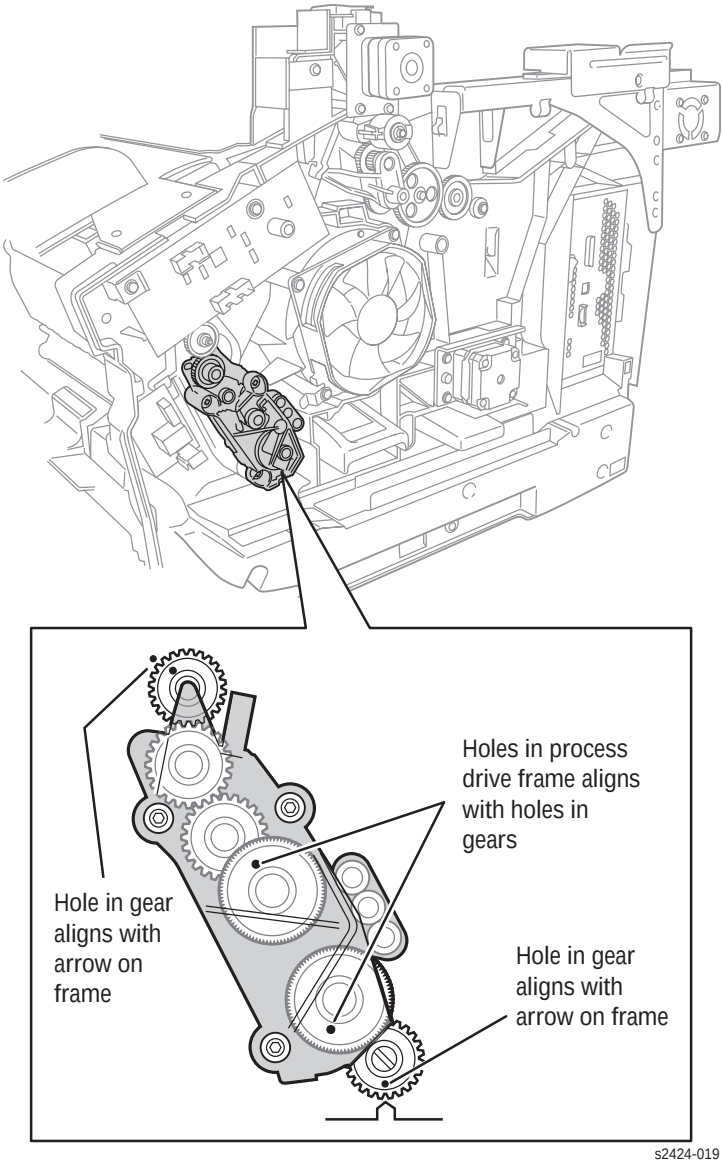
When the tilt gear is disengaged, the two arrows on the left side of the printer are pointing at each other, see also the illustration on page 6-5.



Homing the Process Gear Drive Train

Examine the process gear drive train for the following:

- The holes in 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 aligns with the hole on the frame.



Manual DADF to Scanner Calibration

Note

Perform this calibration procedure when replacing the scanner unit or DADF assembly. It is best to start this procedure with the scanner having just made a duplex copy, this ensures the lamps are on and ready. If the lamps need to warm-up, the claibration procedure will fail due to a timeout.

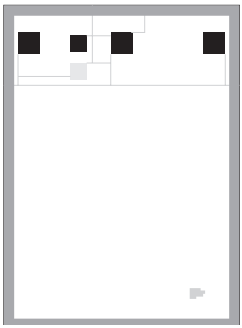
Manual calibration of the platen to DADF scanheads adjust grey level and margins. It matches the front of the page to the back of the page on a duplex scan/copy.

You need the Scanner Calibration Page for this procedure, see "Xerox Supplies" on page 9-16 for the part number, or use the page that came with the replacement part.

Calibrate the scanner using the Scanner Calibration page that came with your replacement scanner or document feeder.

Calibrating the scanner is a two-step process:

- The first step scans the calibration page from the document glass.
- The second step scans the calibration page through the document feeder.

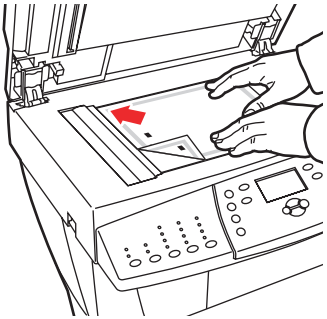


Starting the Calibration Procedure

1. On the control panel, press the **System Setup** button.
2. Select the **Information menu**.
3. In the menu, select **Troubleshooting**, and then press the **Enter** button.
4. Select **Service Tools**, and then press the **Enter** button.
5. Select **Calibrate Scanner**, and then press the **Enter** button.
6. Continue with the Scanner Platen Steps on page 6-10.

Scanner Platen Steps

1. Place the Scanner Calibration page on the platen with the top edge to the left as shown.



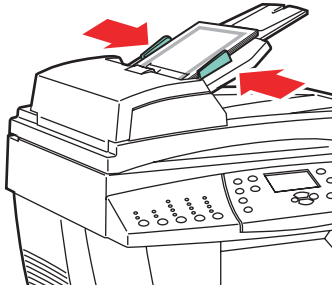
Note

Make sure the calibration page is aligned correctly. If the page is misaligned, the calibration procedure fails.

2. Close the document feeder.
3. In the menu, select **Document Glass Step**, and then press the **Enter** button to scan the calibration page.
4. When the scan completes, check the control panel message:
   - If the control panel indicates **Success**, select **Continue**, press the **Enter** button, and then continue with Step 5.
   - If the control panel indicates **Failure**, select **Continue**, press the **Enter** button, and then repeat Steps 1–4.
5. Remove the Scanner Calibration page from the platen.
6. Continue with the Document Feeder Steps on page 6-11.

Document Feeder Steps

1. Place the Scanner Calibration page in the document feeder so that the top edge enters first (as shown). Adjust the paper guides so they fit against the page.



2424-114

Note

Make sure the calibration page is aligned correctly and the paper guides are adjusted to fit against the paper. If the page is misaligned, the calibration procedure fails.

2. In the menu, select **Document Feeder Step**, and then press the **Enter** button to scan the calibration page.
3. When the scan completes, check the control panel message:
   - If the control panel indicates **Success**, select **Continue**, and then press the **Enter** button. The calibration procedure is complete.
   - If the control panel indicates **Failure**, select **Continue**, press the **Enter** button, and then repeat Steps 1–3.

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 image-quality.

Enabling Jet Substitution Mode

The Jet Substitution Mode is available through a hidden sequence. You must first perform the sequence to add Jet Substitution to the Print Quality Problems menu. To add Jet Substitution Mode to the control panel menu:

1. First press **System Setup**, and then enter the **Information Menu**.
2. From the menu, scroll to **Troubleshooting,** and then press the **OK** button.
3. Scroll to **Print Quality Problems**, and then press the **OK** button.
4. Press and hold the **Up Arrow** button, and then press the **Back** button.

   The Jet Substitution Mode is now displayed on the control panel.

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

1. Scroll to **Jet Substitution Mode**, and then press the **OK** button.
2. Scroll to **Jet Select**, and 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, and then press **OK** to confirm the selection.
5. Select **Save Change and Exit**, and then press **OK** to complete the procedure.
6. After substituting a jet, print the Light Stripes Test page to verify the problem has been solved.

   At the bottom of the page, a Service Mode key summarizes the number of substituted jets for each color.

   Note

   The Configuration Page indicates the date when the service mode was entered. The Printer Status Page provides 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. First press **System Setup**, and then enter the **Information Menu**.
2. From the menu, scroll to **Troubleshooting,** and then press the **OK** button.
3. Scroll to **Print Quality Problems**, and then press the **OK** button.
4. Press and hold the **Up Arrow** button, and then press the **Back** button.
5. Scroll to **Turn Jet Substitution Mode Off**, and then press the **OK** button.
6. 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…

- Inspection
- System Self-Maintenance
- Service Cleaning and Maintenance Procedures
- Cleaning for Print-Quality Problems
- Maintenance Kit
- Lubrication

Section 7

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 five rubber belts in the system:

- Y-axis belt that rotates the drum
- Two small belts for the exit module, exit rollers (rotation and lift)
- Two belts on the printhead wiper

Inspect the belts for wear and look for these problems:

- Loose rubber particles below the belts indicate a worn belt.
- Missing teeth in the belts
- Cracking or moderate fraying is inevitable, so look for other signs of wear before replacing the belt.

Scanner (IIT): Clean or replace the part if damaged or if these problems occur:

- Dirt, debris or scratches on the platen
- Document feeder pick rollers or separator pad is damaged or dirty.
- Clear any foriegn objects or clean dirt or debris from the CVT window on the scanner.

System Self-Maintenance

To maintain peak operation, reliability, and print quality, the system has several automatic or semi-automatic maintenance functions. These functions may be started automatically after a certain number of prints or during system power on, or they may be started by the user if a print-quality defect is noted.

For DADF/Scanner automatic-calibration, see "Scanner and Document Feeder Calibration" on page 2-8.

- 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 printhead jets to malfunction. A maintenance cycle is performed:

- At system power on
- If the ink reservoir has cooled to the point a cleaning cycle is triggered
- When the user selects the **Eliminate Light Stripes** function from the control panel

A cleaning cycle is not performed when the system is coming out of standby mode.

Three basic actions take place during a cleaning cycle:

- Purging
- Wiping
- Printing the Cleaning Page

For more detailed information on the functions of the printhead maintenance cycle, see the section, "Theory of Operation" on page 2-1.

Paper Preheater Cleaning (Remove Print Smears)

The paper preheater cleaning procedure is a function selected on the control panel by the user. 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.

To perform the paper preheater cleaning cycle:

1. On the control panel, select the **Print Quality Problems** menu and the **Remove Print Smears** menu.
2. The system 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 system picks and passes approximately 12-24 sheets of paper through the paper path. The first few sheets absorb and remove ink from the paper preheater. The system 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 system 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 system performs a transfix roller oiling cycle. During this cycle, oil is applied to the drum as it would be during a print cycle. The transfix roller is lowered against the drum and the drum rotates, which transfers some of the oil to the transfix roller. The transfix roller is then raised to its standby position.

Drum Cleaning - Chase Page

The system 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 system 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). A chase page is also run during startup/recovery if the system believes that there is ink on the drum.

Service Cleaning and Maintenance Procedures

Supplies Required

Caution

Do not use **rubbing alcohol** because it can contain water and oils that leave undesirable residue on the system parts. Never use **water** to clean the system's internal components.

■ 90% pure isopropyl alcohol	■ Alcohol-moistened, lint-free wipes
■ Foam swabs	■ Clear packaging tape

- Clean dust build-up on the exterior of the system.
- Inspect the vents on the exterior of the system for excessive dust and build up. Clean if necessary.
- Clean the pick rollers as described in this section.
- Clean the scanner platen with 90% pure isopropyl alcohol.
- Check the internal components of the system for dust and debris. Clean as necessary.

Cleaning the system is necessary if the system 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 cleaning the paper-feed and pick rollers should be done by customers, but only if the rollers are visibly dirty.

Cleaning can 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 system, DADF, 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 system's control panel menu.
- Copy or scan images are displaying print quality problems.

To aid in identifing print quality issues that go beyond cleaning, or for a list of test prints used in troubleshooting print quality issues, see "Image-Quality Troubleshooting" on page 5-1.

Cleaning for Print-Quality Problems

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 system's *User Guide*.

Scan or Copy Print-Quality Problem

Problem type	Solution
Poor overall print quality from a copy or scan.	Print an embedded page to determine if the issue is with the IOT or IIT. Also, clean the glass platen, the CVT window, and the pick/feed rollers.

Light Stripes or Missing Colors

Problem type	Solution
Missing or light-colored stripes on prints.	Select the automated procedure **Eliminate Light Stripes** from the control panel.

Ink Smears, Oil Spots, or Random Ink Streaks

Problem type	Solution
Ink smears on the front, back, or edges of a page.	Select the automated procedure **Remove Print Smears** from the control panel. Check the maintenance kit for ink and paper-dust buildup on the wiper blade.
Oil (drum fluid) on top edge of print.	Select the automated procedure **Remove Print Smears** from the control panel.

Media Jams and Paper Pick Cleaning Procedures

Note

See the jam codes in "3-Digit Jam Codes" on page 3-49.

Problem Type	Solution
Paper-pick or jamming problems tray 1.	Clean the pick roller. Follow the "Pick Roller Cleaning Methods" on page 7-7.
Paper jamming problems at the front door.	Clean the transport rollers.
Paper jamming problems within the exit path.	Clean the elevator 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 Methods" on page 7-7.
Paper jamming problems at the DADF.	Clean the DADF pick roller, feed roller, and pick pad.

Pick Roller Cleaning Methods

Tray 1 Pick Rollers

Tray 1 pick rollers 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 Through 4 Pick Rollers

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 (Tray 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.

Cleaning the 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 Kit

(PL 1.24)

The system uses a maintenance kit as part of its self-maintenance routine to coat the print drum with oil before each print. For a detailed explanation on the functions of the maintenance kit, see "Drum Maintenance System" on page 2-37.

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.

Maintenance Kit Low A control panel message indicates when the maintenance kit is low. Printing is still possible when the maintenance kit is low.

Maintenance Kit Empty When the control panel message indicates that the maintenance kit is “empty,” the maintenance kit must be replaced before continued printing is possible. See the installation instructions included with the maintenance kit.

Note

The maintenance kit oil poses no known adverse health effects. See the Material Safety Data Sheet at www.xerox.com/office/msds.

Waste Tray

(PL 1.23)

The waste tray collects ink that has been purged from the printhead’s ink jets. A control panel message indicates when the waste tray is full, usually after seven purges. You should then empty the waste tray.

Caution

Never reuse the waste ink; it can damage the printhead.

Lubrication

The system is lubricated during assembly at the factory and requires no periodic lubrication. Certain system components require lubrication following replacement. These parts are identified in the replacement procedures. When lubricating during replacement, use the grease approved for the WorkCentre C2424 system. 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.

Service Parts Disassembly

In this chapter…

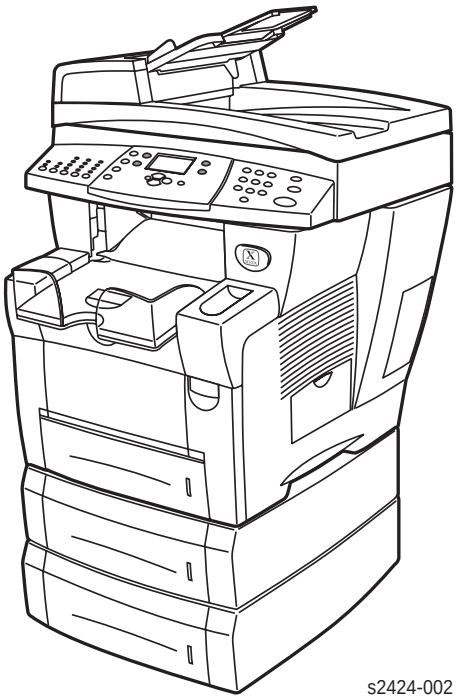
Section 8

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 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 System

When needed, the orientation of the system is called out in the procedure for locating printer parts. Refer to the system orientation graphic for locating the right, left, front and back sides of the printer.



s2424-002

General Notes on Disassembly

Caution

Follow the steps of all disassembly procedures in the order given to avoid damaging printer components.

1. Before servicing the printer, switch OFF the printer power, wait until the printer completely shuts down, and disconnect the power cord from the wall outlet.
2. Wear an electrostatic discharge wrist strap to help prevent damage to the sensitive electronics of the printer circuit boards.
3. Upon reassembly of printer components, be sure the components are all in their home positions, otherwise damage to the printer will occur. See Chapter 6 Adjustments, Home Position (page 6-2) for information on the home positions.

Special Notes Regarding Screws Used in This Equipment.

- 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 can 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.

Image Input Terminal (DADF and Scanner)

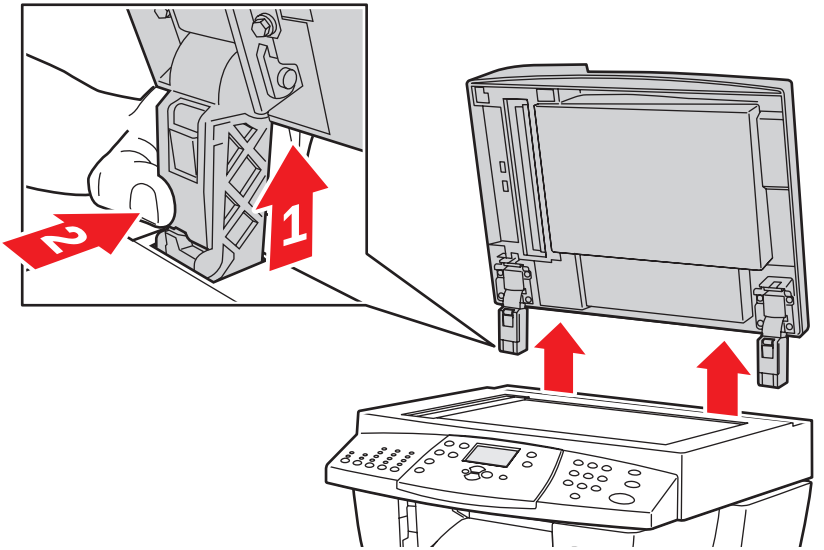
Duplex Automatic Document Feeder

(PL 1.15)

1. Disconnect the document feeder cable from the scanner assembly.
2. You must depress the locking mechanism (2) on the back hinges to release the document feeder from the scanner assembly.
3. Lift straight up on the document feeder to remove.

Note

You must perform the scanner calibration procedure after replacing the document feeder. "Manual DADF to Scanner Calibration" on page 6-9.



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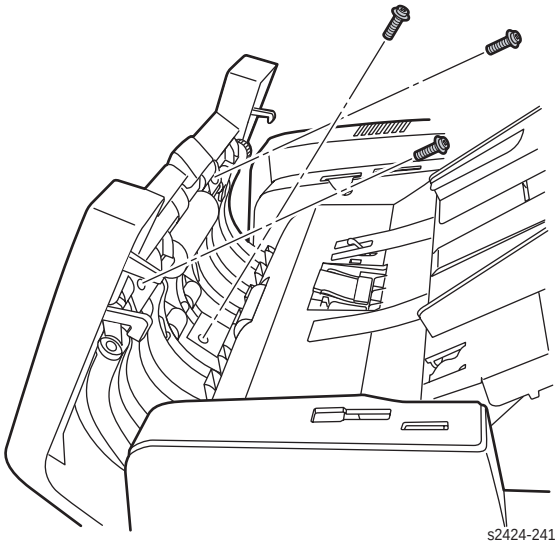
DADF Front Cover

(PL 1.13)

1. Remove 3 screws securing the cover.



2. Lift and remove.

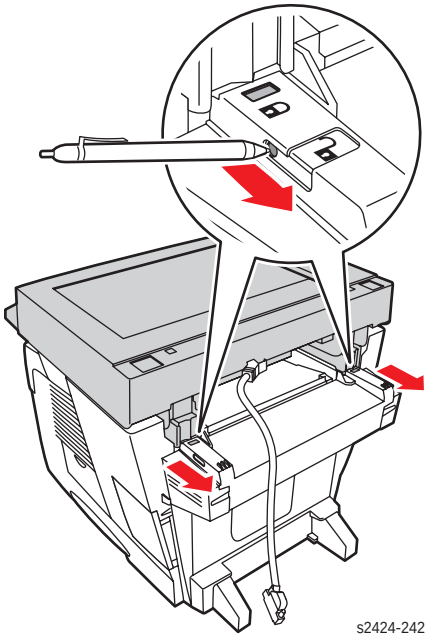
Scanner Assembly

(PL 1.11)

Caution

You must lock the scanhead prior to shipment. Make sure to power down the system when the DADF is closed. When the DADF is open, the platen scanhead is not in the home position and cannot be locked.

1. Remove the document feeder (page 8-4).
2. Disconnect the scanner assembly cable from the print engine.
3. Place the scanhead in the shipping restraint locked position.

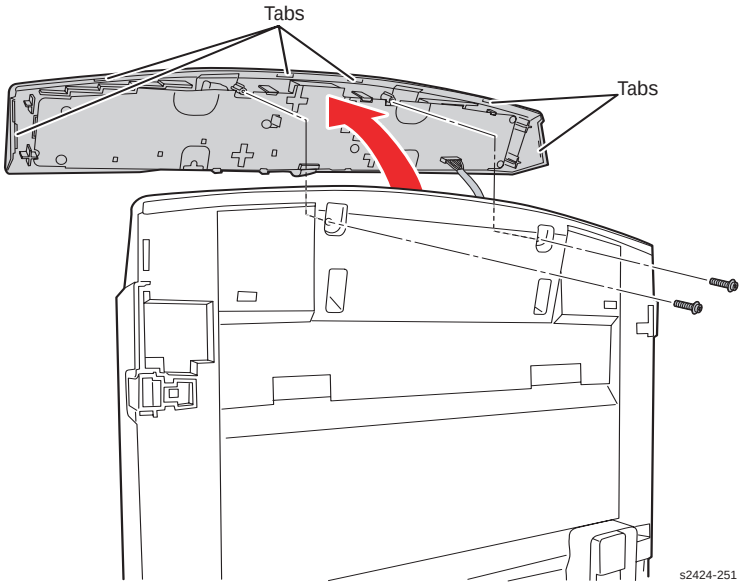


4. Using a pen or screwdriver, release the hinge latches.
5. Slide the scanner assembly towards the rear of the system, and then lift up to remove.

Control Panel

(PL 1.9)

1. Remove 4 screws securing the control panel to the scanner assembly.



2. Release the 6 tabs securing the control panel and carefully lift to access the connector.
3. Disconnect the control panel connector from the scanner assembly.
4. Remove the control panel.

Image Output Terminal (Print Engine)

Note

Accessing and removing exterior covers can be done while the document feeder and scanner assemblies are still in place; however, removing the assemblies improves access to other printer components. For all IOT disassembly, the document feeder and scanner assembly are shown removed from the system.

Covers

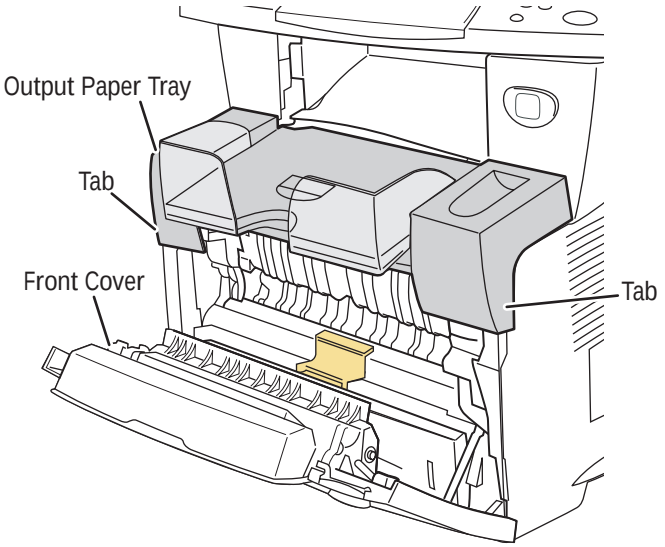
A video entitled “Replacing Covers & Ink Loader” is available with instructions for removing the document feeder, scanner assembly, covers, and ink loader. Videos are located on the WorkCentre C2424 Product Training CD-ROM.

1. Disconnect all interface cables, including the power cord.
2. Remove the DADF and scanner assembly.

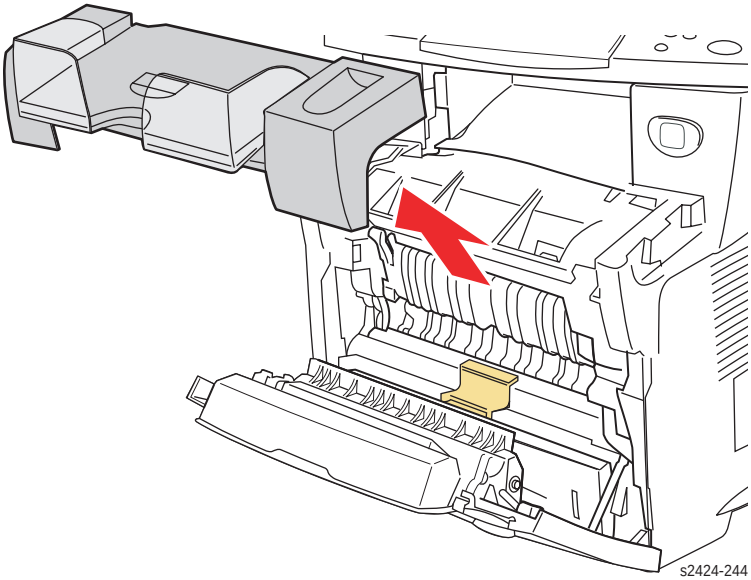
Output Paper Tray Assembly

(PL 1.6)

1. Open the front cover.



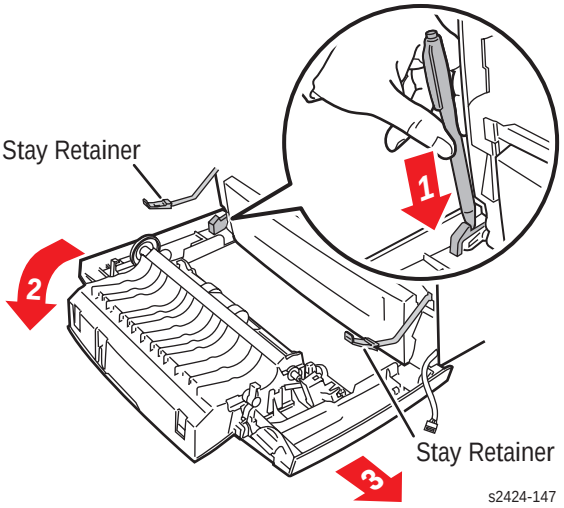
2. Pry up on the left and right side of the output tray and the two tabs on the bottom to remove the tray from the system.



Front Door / Tray 1 Assembly

(PL 1.1)

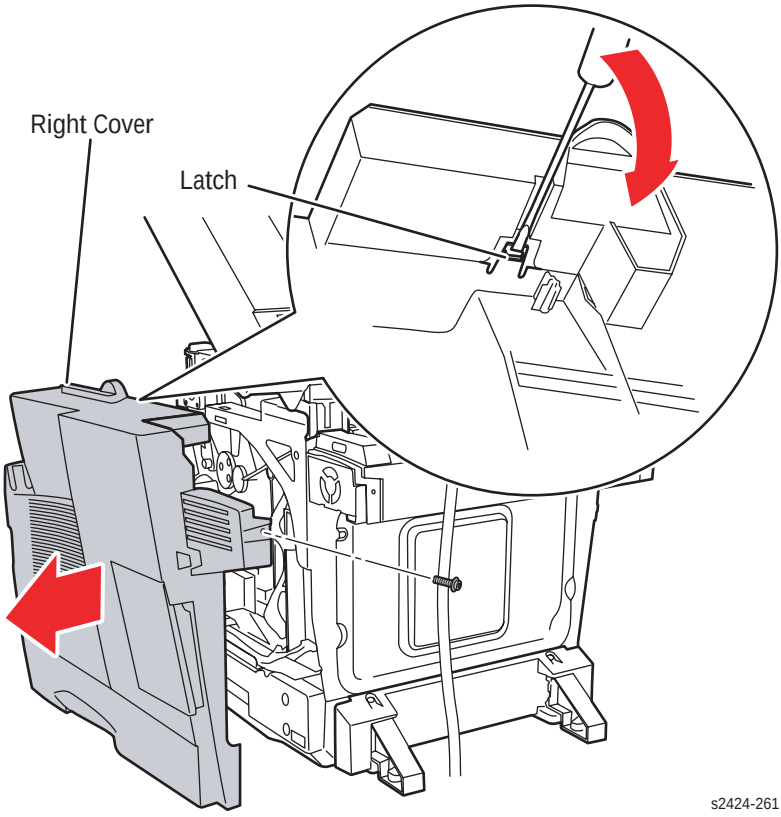
1. Open the front door assembly and unsnap the right and left stay retainers from Tray 1.
2. Disconnect and free the wiring from Tray 1.
3. Carefully remove the front door/tray 1 assembly, by releasing the left hinge pin from the printer frame and sliding the assembly to the right to remove it.



Right and Left Side Covers

(Right PL 1.21, Left PL 1.7)

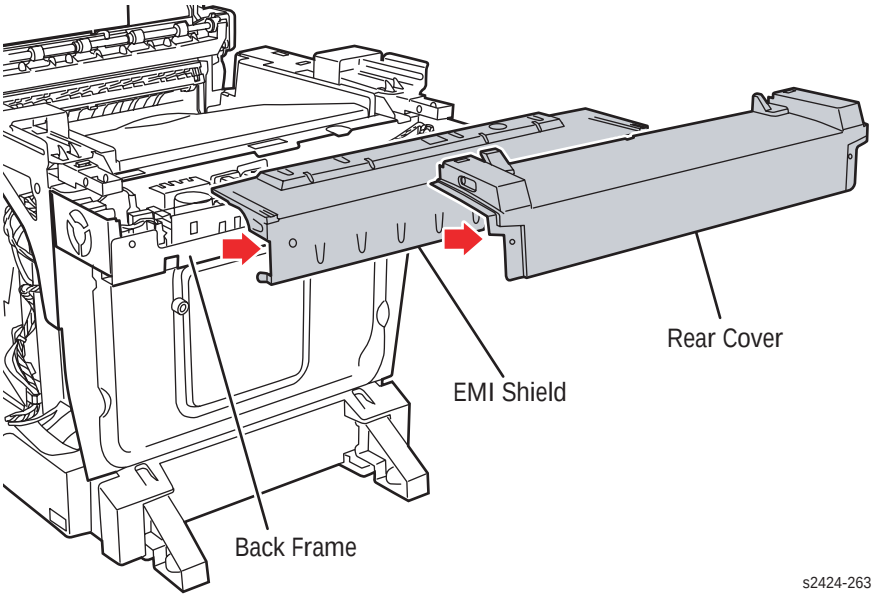
1. Remove the output paper tray.
2. Open the front door to allow removal of the right side cover.
3. Remove one screw, on the back of the system, securing the right side cover.
4. Using a flatblade screwdriver, insert the screwdriver into the channel and lift up to release the tab securing the right side cover.
5. There are tabs on the inner front side of each side cover that latch to the exit module assembly, release these tabs and remove the cover.



Rear Cover and EMI Shield

(PL 1.20)

1. Remove the left and right side covers (page 8-11).
2. Using a flatblade screwdriver, release the tab securing the back cover.
3. Remove 2 screws securing the EMI shield.
4. Using a flatblade screwdriver, release the tab securing the EMI shield.
5. Slide the EMI shield straight back to remove from the system.

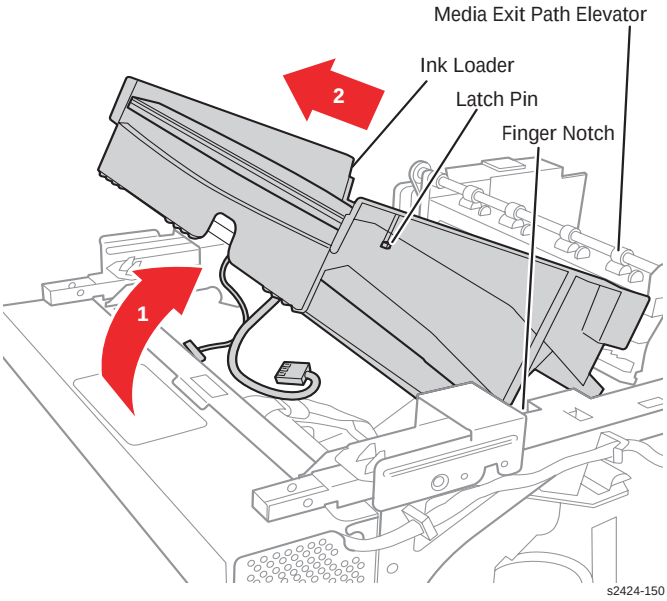


Ink Loader Assembly

(PL 2.1)

A video entitled “Replacing Covers & Ink Loader” is available with instructions for removing the ink loader. Videos are located on the WorkCentre C2424 Product Training CD-ROM.

1. Remove the right and left side covers (page 8-10).
2. Ensure the media exit path elevator is in the up position.
3. Lift up on the right and left sides of the ink loader to release from the system, then lift the ink loader assembly clear of the chassis and hold it in position against the rear of the system to allow access to the connectors
4. Disconnect the 2 connectors from the system and remove the ink loader.



Replacement Notes:

Note

The gray 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 Elevator must be raised before reinstalling the Ink loader.

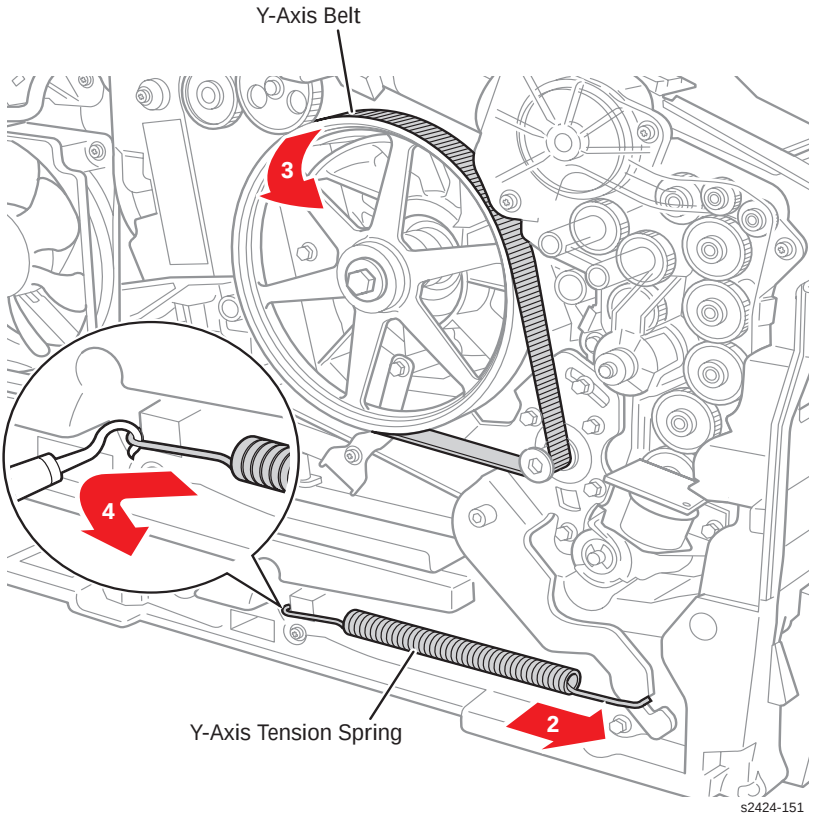
Y-Axis Drum Belt, Y-Axis Tension Spring, and Y-Axis Motor Assembly

(Belt PL 2.4) (Tension Spring PL 2.14) (Motor PL 4.11)

1. Remove the left side cover (page 8-11).
2. Relieve tension on the belt by pulling the end of the spring arm toward the front of the printer using your fingers.
3. While keeping the tension with one hand on the spring, use your other hand to slide the loosened belt off the pulley.

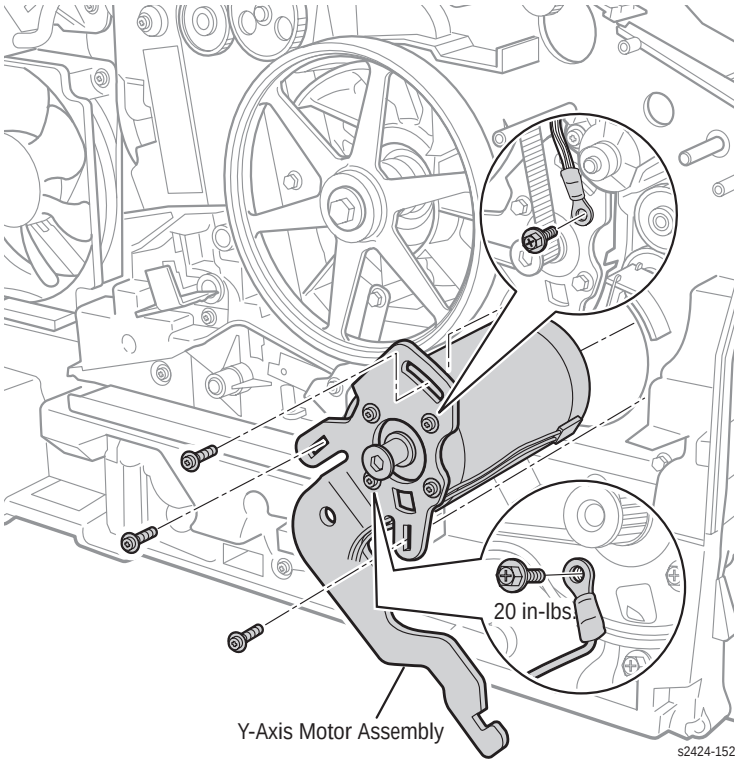
Caution

This is a strong spring that can cause damage if it slips during removal; use extreme caution when removing.



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.
5. Move the wires out of the way.

6. Disconnect the motor wiring harness connector from the printer.
7. Remove 4 screws (three coarse thread and one fine thread) from the spring arm. The three screws securing the arm to the motor remain in place.



Replacement Notes:

Note

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

Note

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

(Printhead PL 2.2) (Restraints PL 2.8, 2.9)

Videos are available with instructions for replacing the printhead assembly. Videos are located on the WorkCenter C2424 Product 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 the removal procedure.

Caution

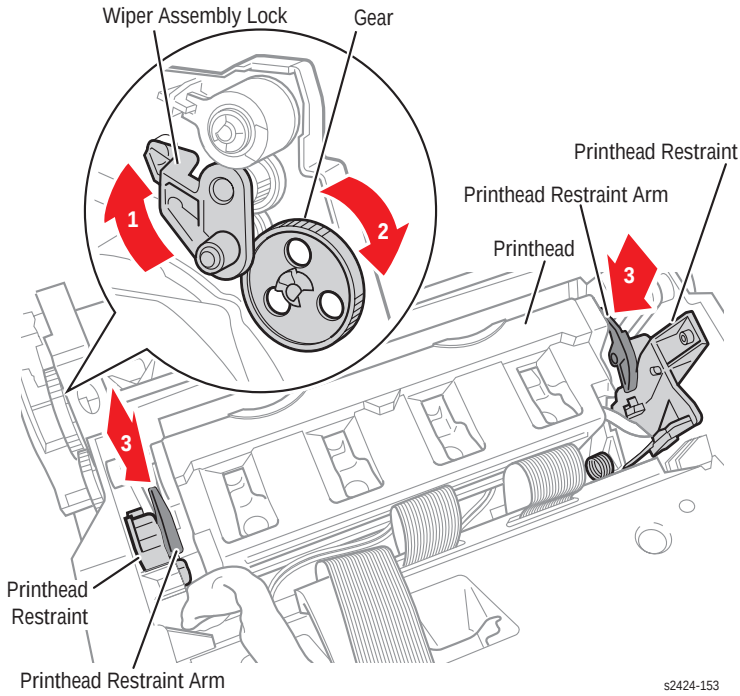
Perform the steps in this procedure in the order given to prevent damage to the system.

1. Remove the document feeder, scanner assembly, output paper tray assembly, right and left side covers, and the ink loader assembly (see page 4 thru page 13).

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, snap up the wiper assembly lock (#1 in the following illustration) to unlock the wiper assembly gear train.



3. Rotate the gears as shown by #2 above to lower the wiper all the way down.

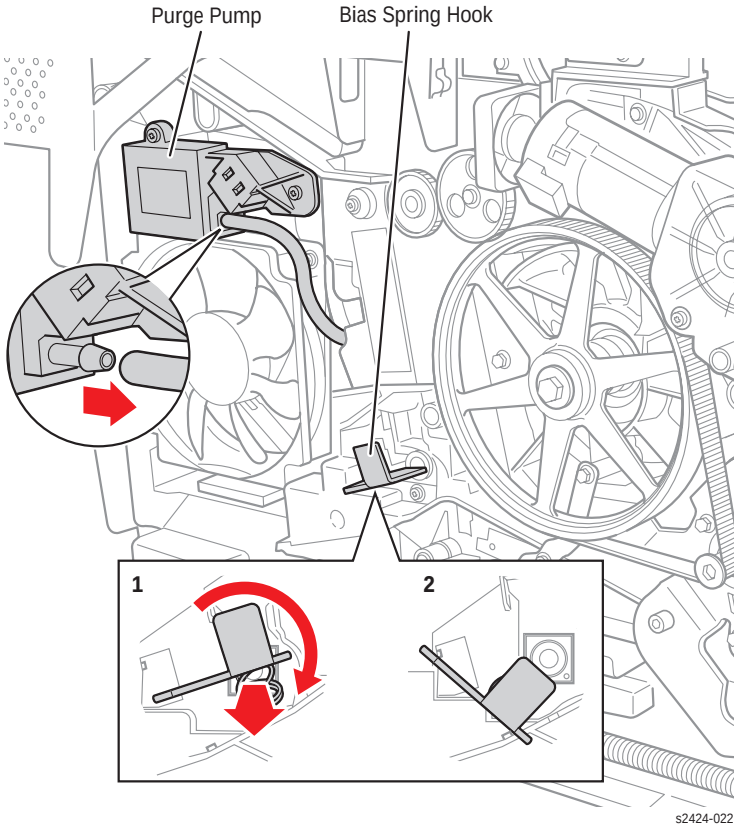
Caution

When the printhead is parked, it is held in place by pins that are captured by left and right printhead restraints. If the restraints are released, the printhead tilt spring will push the printhead toward the drum possibly causing damage.

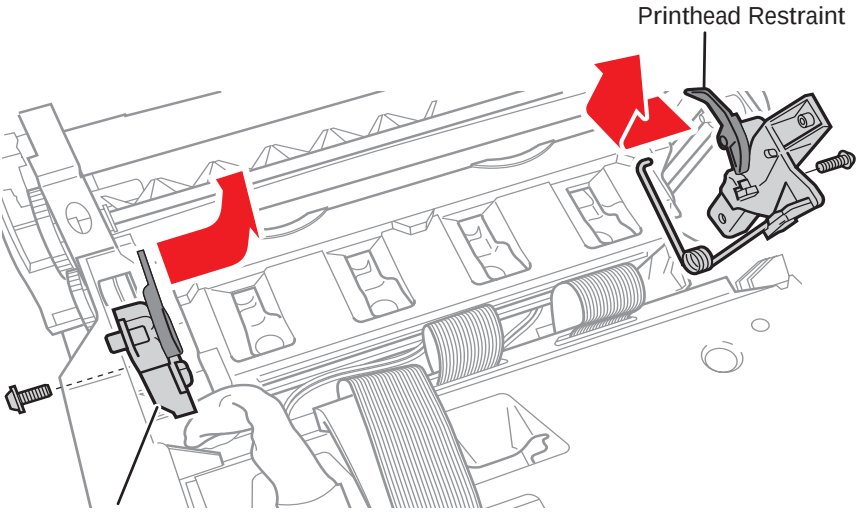
4. While pulling back slightly on the printhead to keep it away from the drum surface, unlock (push down) the right and left printhead restraint arms, #3 above, then slowly allow the spring-loaded printhead to tilt forward.

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 in the following illustration. Allow the spring hook to rest against the detentes in the printer frame.

6. Disconnect the air hose from the purge pump.

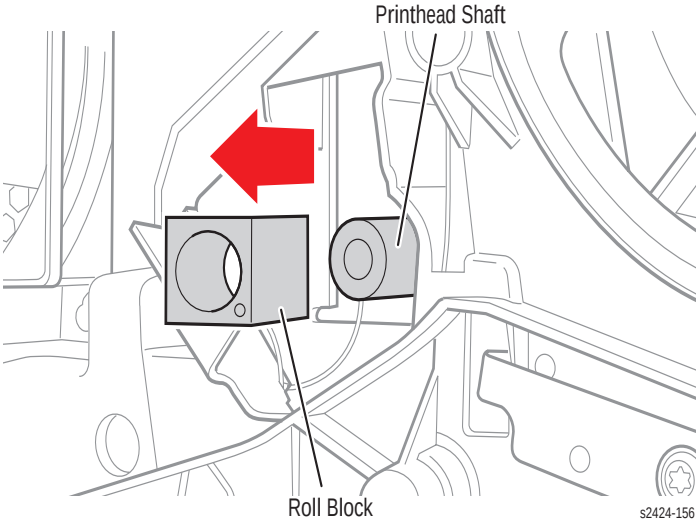


7. Remove left and right printhead restraints. Remove 1 screw, pull inward towards the printhead, and then lift up slightly toward the rear of the printer to remove.



Note

Adjust printhead position as required to remove the right restraint.

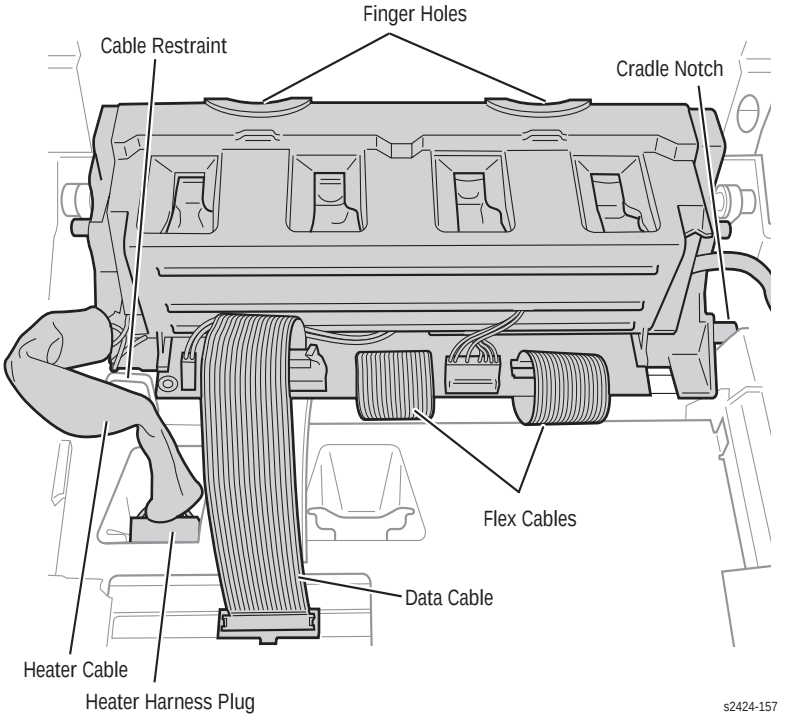


Caution

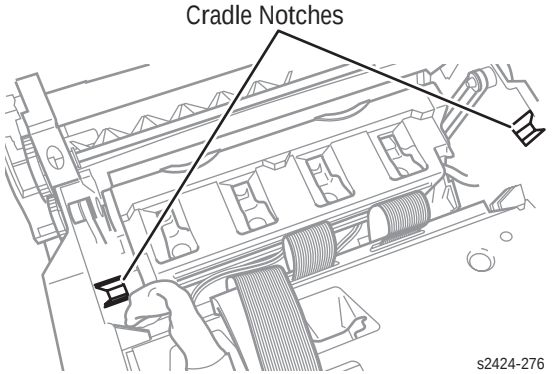
The roll block stays hot 10 to 15 minutes after the printer is shut down.

8. Remove the roll block on the left end of the printhead shaft.

9. Disconnect the heater cable and free the cable harness 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.



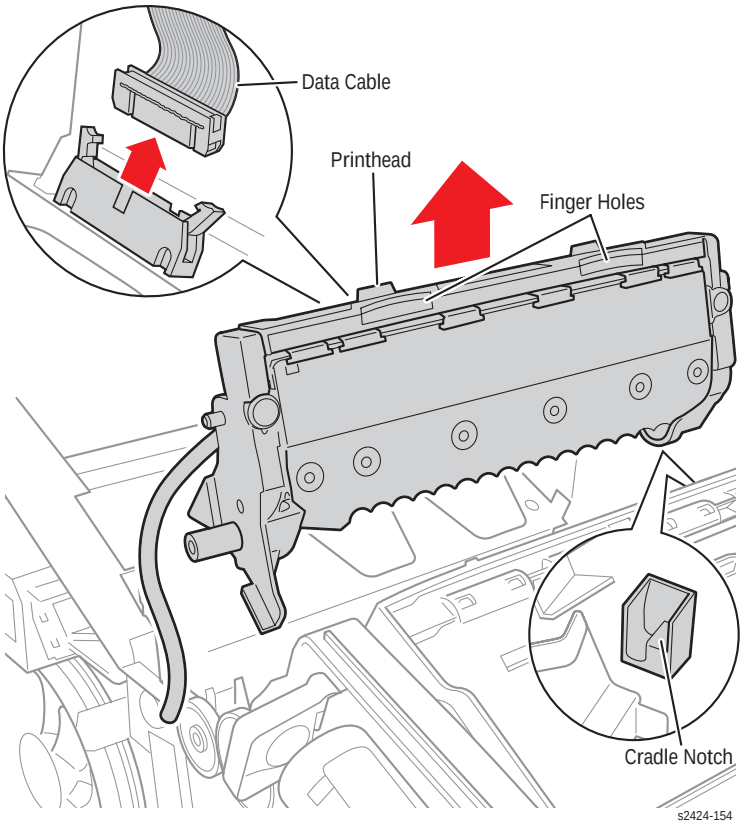
11. Disconnect the data cable from the print head.

12. Disconnect the 2 flex cables from the printhead.

Warning

Do not pinch or tear the air hose while removing the printhead as this can 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 (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.

Caution

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.

Caution

Ensure that the printhead restraint does not obstruct the Roll Block.

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 control panel to reset the jet substitution mode.

X-Axis Bias Spring

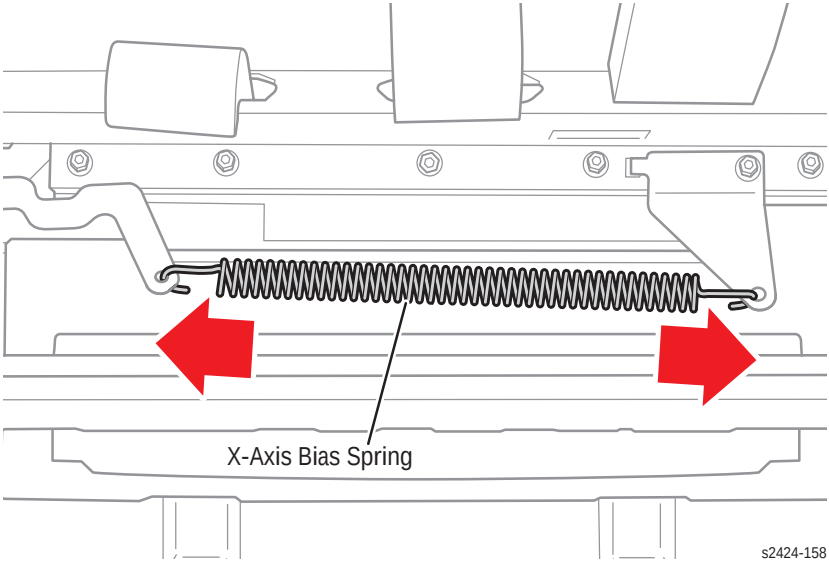
(PL2.21)

1. Remove the printhead (page 8-16).

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 2.5)

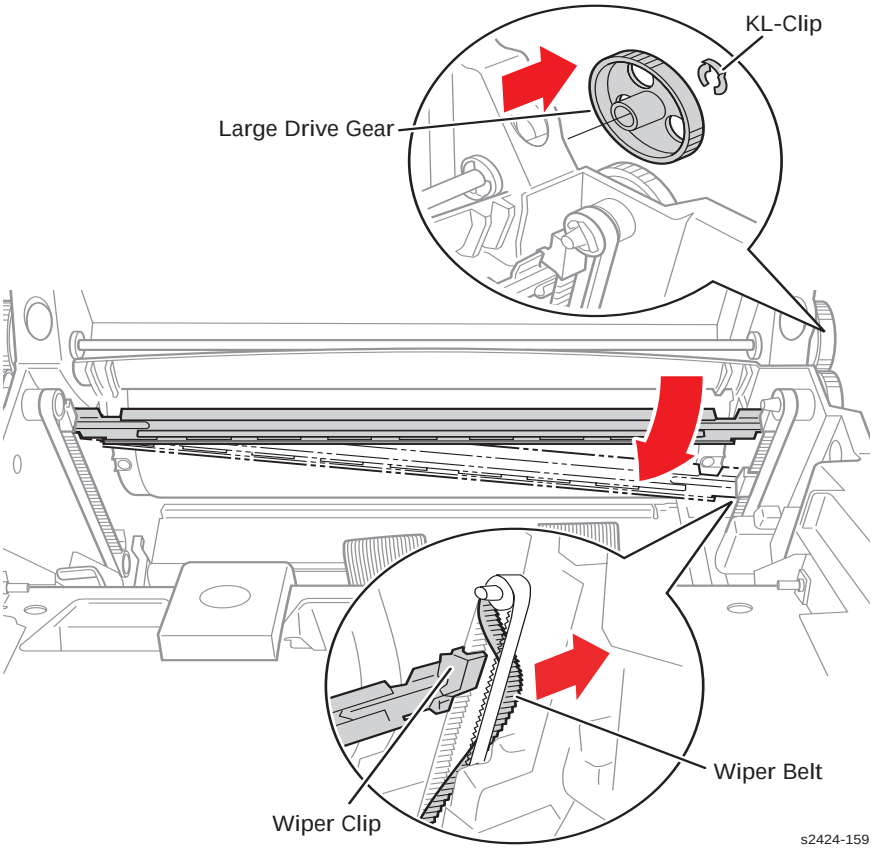
Videos are available with instructions for replacing the printhead wiper. Videos are located on the WorkCentre C2424 Product Training CD-ROM.

1. Remove the printhead (page 8-16).

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 to the top of its travel.
3. On the left side of the printer remove the KL-clip and large drive gear.
4. While holding the wiper, rotate the small drive gear to lower the left end of the wiper. One end of the wiper will travel down the guide, allowing you to slide the wiper belt off of the wiper clip.



Replacement Note:

Note

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

Note

Make sure the metal portion of the blade is nearest the drum and that the plastic clip is attached to the pulley side nearest the drum.

Media Release Blade (Stripper) Carriage Assembly and Transfix Roller

(Carriage PL 2.12) (Roller PL 2.13)

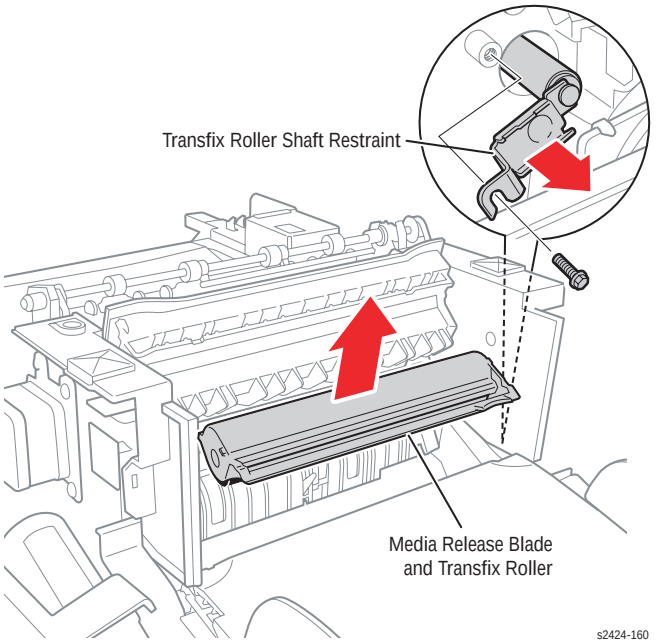
Videos are available with instructions for replacing the Transfix Roller. Videos are located on the WorkCentre C2424 Product Training CD-ROM.

1. Remove the right side cover (page 8-10).
2. Disconnect J250 from the I/O Board.
3. Remove 2 screws securing the I/O Board to the chassis (see "Electronics Module, Circuit Boards and Cables" on page 9-12), slide the board towards the rear, and move the board out of the way.
4. Loosen 1 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 roller from damaging the printer (or the roller itself).

5. Use the end of the transfix roller shaft restraint to pull the shaft out and remove the shaft from the printer.

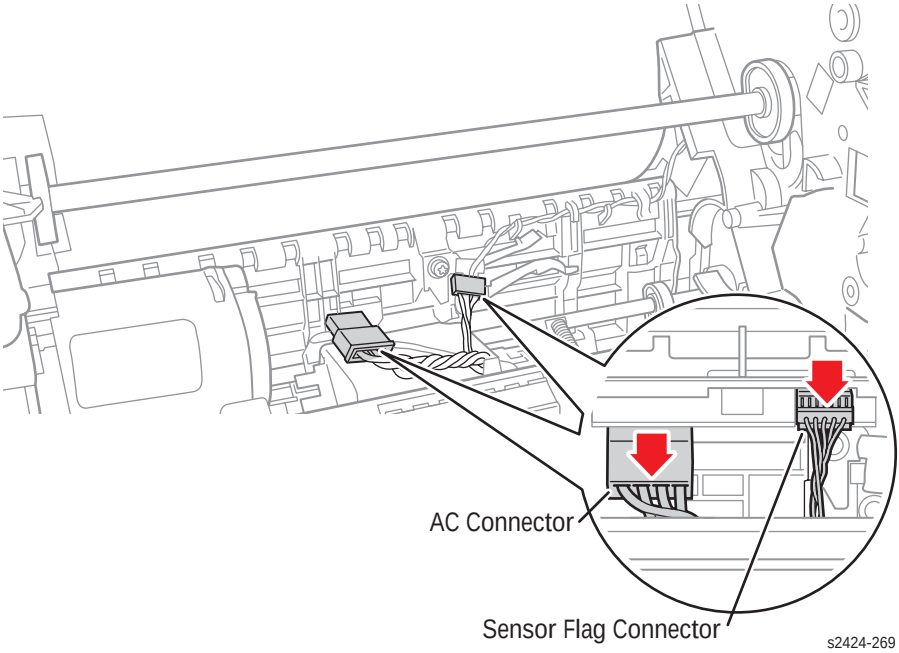


6. Remove the media release blade and transfix roller.

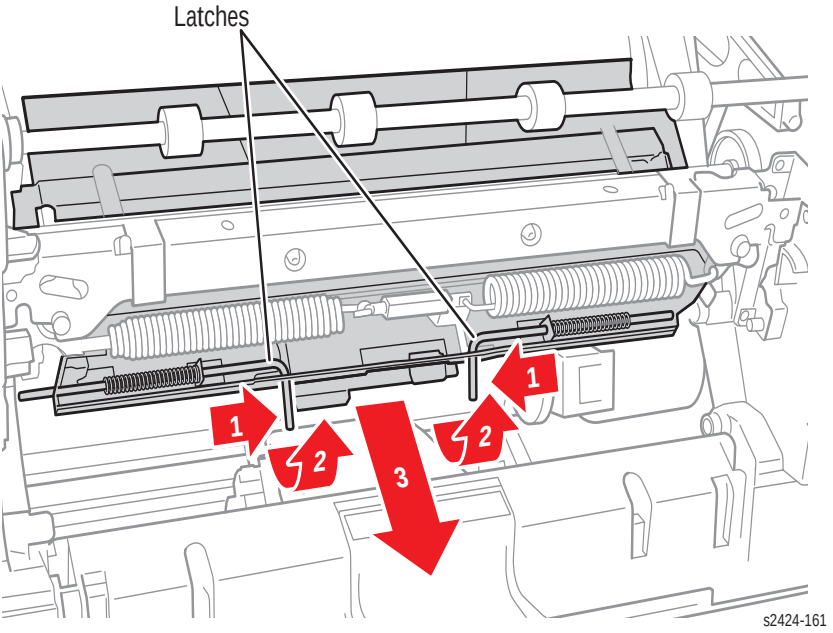
Paper Preheater and Deskew Assembly

(PL 2.17)

1. Open the front door.
2. Remove the lower duplex guide and the white inner simplex guide (page 8-44).
3. Release the lock on the back of the AC connector and unplug the AC and sensor flag connectors from the bottom of the preheater. The connectors are located on the backside of the assembly.



4. Slide the latches in and forward to latch in their slots as shown by (1) and (2) in the following illustration.



5. 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.

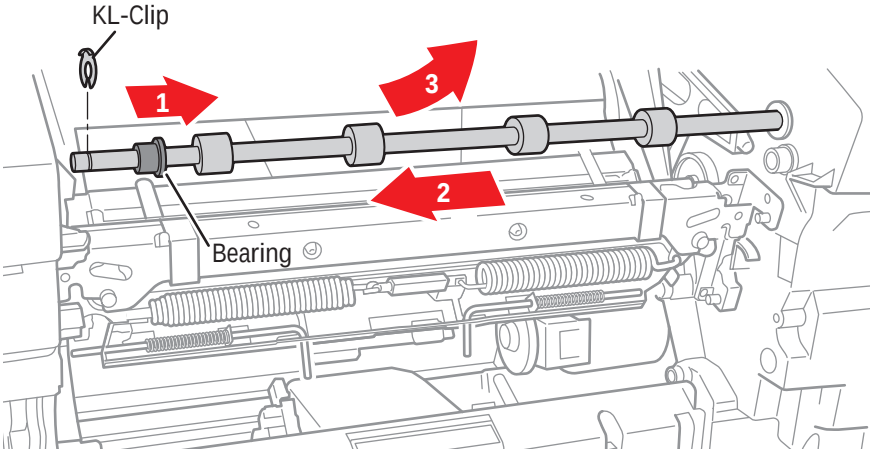
Note

Be sure you do not dislodge the optical sensors while replacing or reconnecting the pre-heater.

Duplex Roller

(PL 3.4)

1. Open the front door.
2. Remove the outer duplex paper guide (with sensors) and the lower inner duplex guide (page 8-44).
3. To allow removal of the duplex roller, remove the left KL-clip on the shaft.
4. Slide the shaft toward the left (2) to free the right end of the shaft.
5. Finally, pull the shaft out from the top. Once the shaft is free from the right frame you lift the right end of the shaft up so it can clear the top of the right frame during removal. (3).



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Transfix Load Module

(PL 2.15)

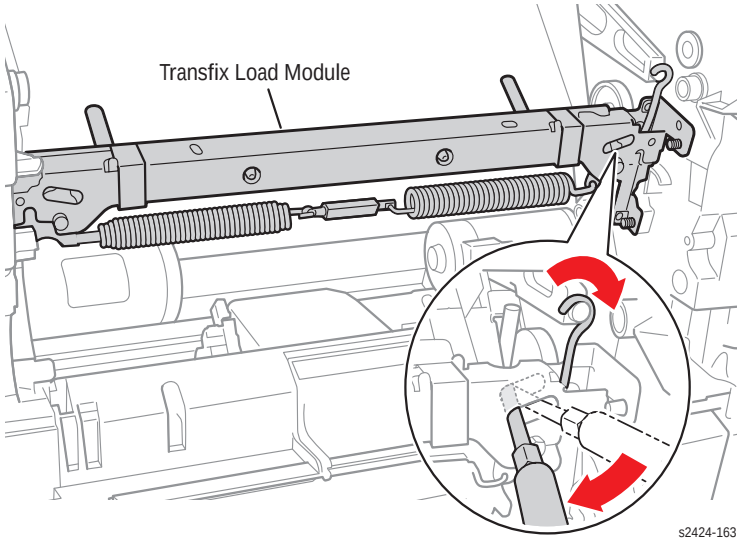
Videos are available with instructions for replacing the Transfix Load Module. Videos are located on the WorkCentre C2424 Product Training CD-ROM.

1. Remove the inkloader (page 8-13).
2. Remove the media drive gearbox (page 8-52).
3. Remove the exit module assembly (page 8-42).
4. Remove the duplex roller (page 8-29).
5. Remove the upper duplex guide with solenoid (page 8-44).
6. Insert a T-20 Torxbit through the slotted hole in the transfix load module on the outside of the plastic arm, through the backside of the housing.
7. Rotate the screwdriver toward the center of the system to release the spring hook.

Caution

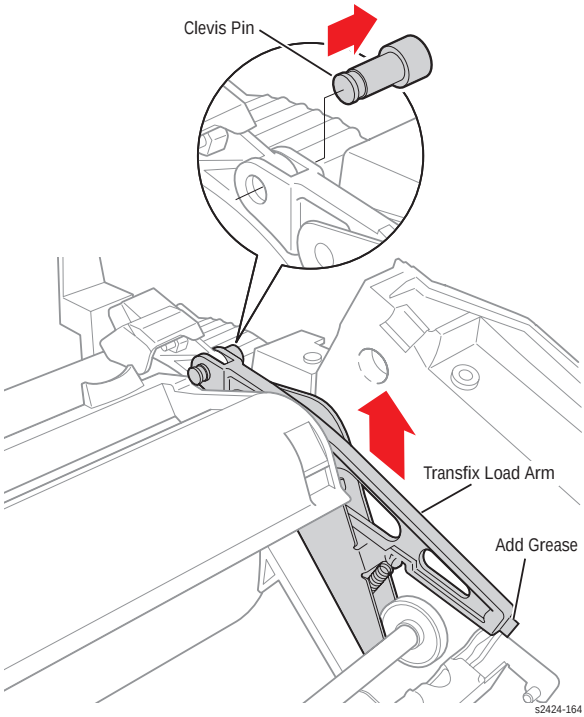
Ensure that you lever the spring cam towards the center. Applying the pressure in the wrong direction can damage the transfix load module.

8. Lift the spring hook off of the transfix load arm, then slowly relax the lever to return the spring cam to the relaxed position. Repeat steps 7 and 8 on the other side.

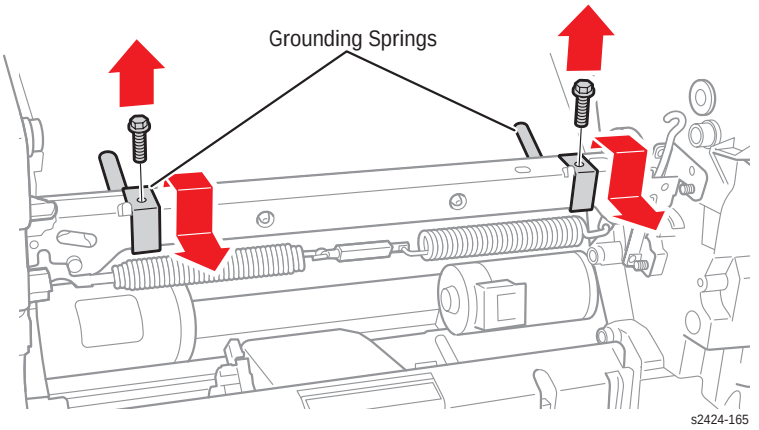


In the next step, the 2 transfix load arms and stripper carriage assembly will be removed as a single part.

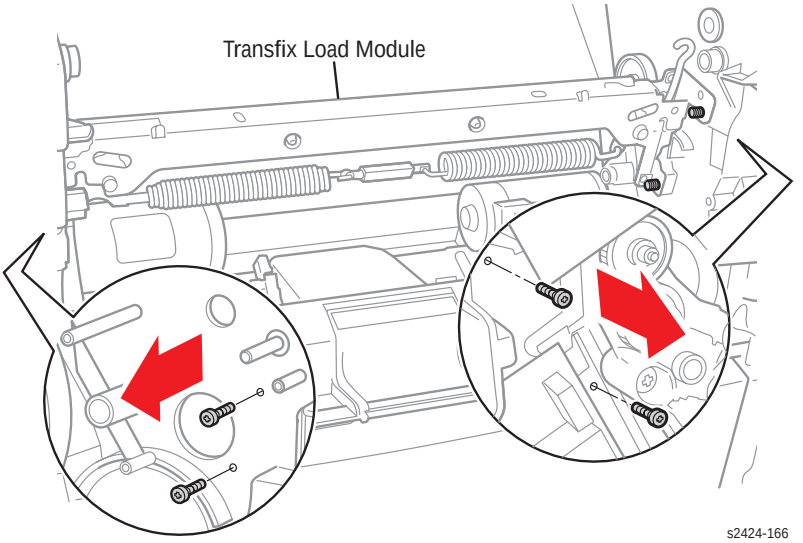
9. Remove the clevis pins from the left and right sides, securing the transfix load arms to the chassis.
10. Carefully lift each transfix load arm from the system.



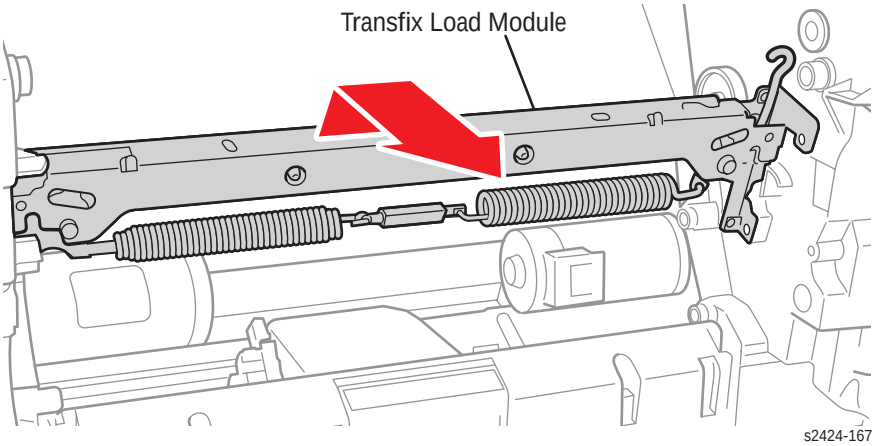
11. Remove the grounding springs from the transfix load module to avoid bending them.



12. Remove 2 screws securing each end of the transfix load module to the chassis.



13. The transfix load module fits tightly in the chassis. Rotate the bottom inwards and pull it forward to remove it from the frame.



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 before reattaching the spring hooks.

Note

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

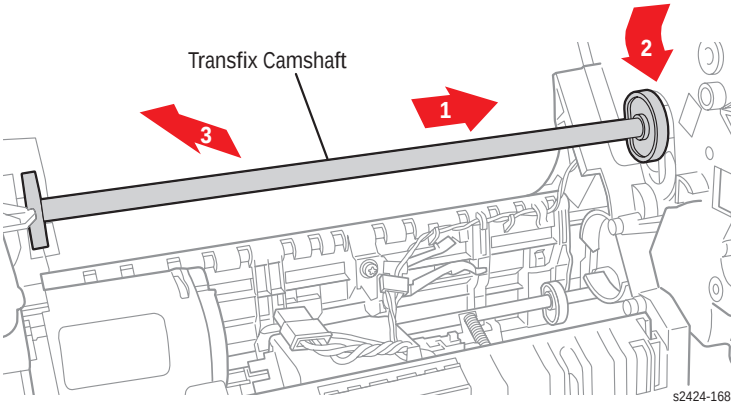
Note

When replacing grounding springs on the transfix load module, make sure the springs rest below the camshaft assembly.

Transfix Camshaft Assembly

(PL 2.10)

1. Perform Steps 1 through 6 of the transfix load module removal procedure (page 8-30).
2. Remove the process drive gearbox assembly (page 8-55).
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.



Drum Maintenance Camshaft Assembly

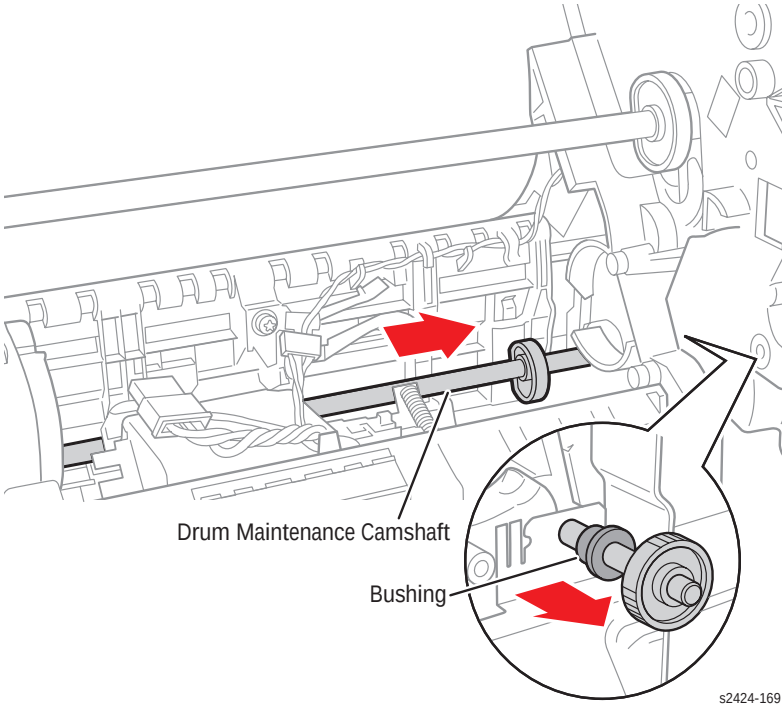
(PL 2.11)

1. Remove the drum maintenance pivot plate assembly (page 8-36).
2. Remove the process drive gearbox assembly (page 8-55).
3. Slide the shaft to the right, free the bushing, and pull out the shaft to the right.

Caution

The ground plate firmly holds the bushing in place. Be careful when pulling out.

1. Carefully pry the bushing out of the right ground plane.
2. 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.



Replacement Notes:

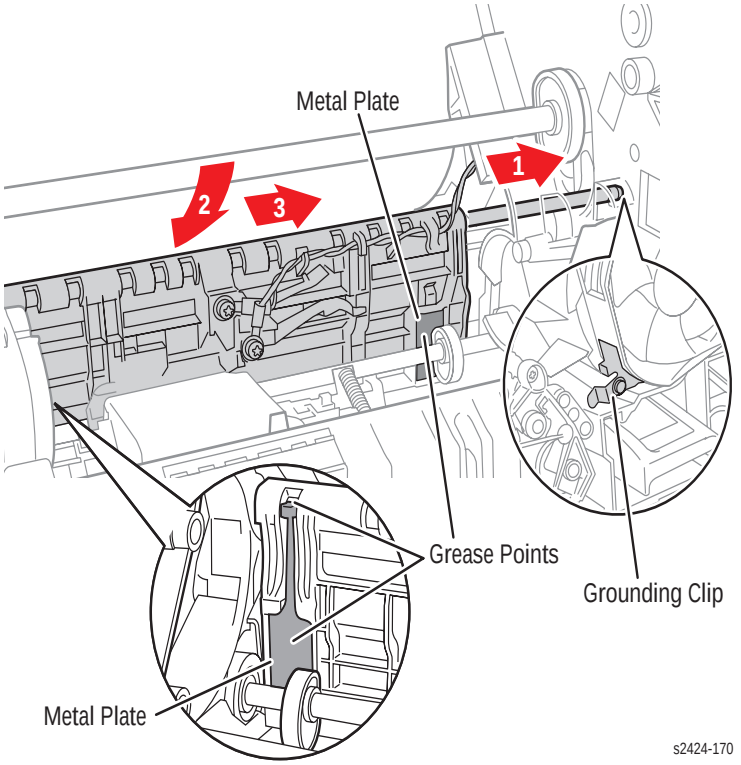
Note

Be sure to replace the KL-clips on the outside groves of the camshaft.

Drum Maintenance Pivot Plate Assembly

(PL 2.16)

1. Remove the drum maintenance kit (page 9-5).
2. Remove both the right and left side covers (page 8-10).
3. Remove the paper preheater (page 8-27).
4. Remove the KL-clip on the left end of the pivot plate shaft.
5. Remove the grounding clip on the right end of the pivot plate shaft.
6. Remove the pivot plate shaft.
7. Disconnect the connector from the I/O Board (connector J860).
8. Feed the cable into the printer while sliding the drum maintenance pivot plate out the drum maintenance drawer cavity.



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 2.3)

Videos are available with instructions for replacing the Drum Assembly. Videos are located on the WorkCentre C2424 Product training CD-ROM.

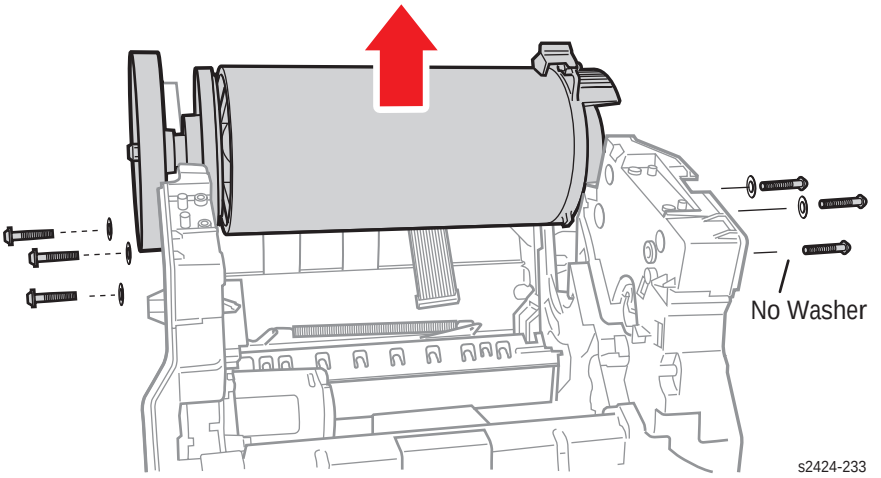
1. Remove the DADF, scanner assembly, output tray assembly, left and right side covers and the ink loader (see page 4 thru page 13).
2. Ensure that the printhead is in park position (tilted back) and the wiper assembly is in the home position (all the way down).
3. Remove the transfix load module (page 8-30).
4. Remove the media gearbox from the left side of the printer (page 8-52).
5. Remove the Y-axis belt. 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 14.), then slide the belt off the pulley.
6. Remove 3 screws from the drum fan, note the location of the ground clip, and allow the fan to hang free.
7. Unplug the drum heater cable from the relay board and free the cable from the retaining hook.
8. Unplug the drum encoder cable connector from the power control left cable and free the cable from the retaining hook.
9. Unplug the drum thermistor cable connector from the I/O Board (J870).
10. Remove the EMA assembly (page 8-42).

Note

Note the wire routing for the sensor on the drum.

Caution

The drum thermal sensor cable is routed through the MEP. Use care during removal to avoid damaging the sensor.



11. Remove 3 screws and 2 washers from the right side of the drum assembly.
12. Remove 3 screws and 3 washers from the left side of the drum assembly.
13. Using the metal grips, lift the drum assembly straight up to remove it from the system.

Caution

To prevent dents or scratches, 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 EMA, perform the Wiper Alignment (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 EMA to the chassis and route the Drum Thermistor cable through the opening in the EMA that the other cables pass through. Seat the EMA on the two front locating pins and then on the rear locating pins.
9. Insert and torque the 6 screws securing the MEP 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.

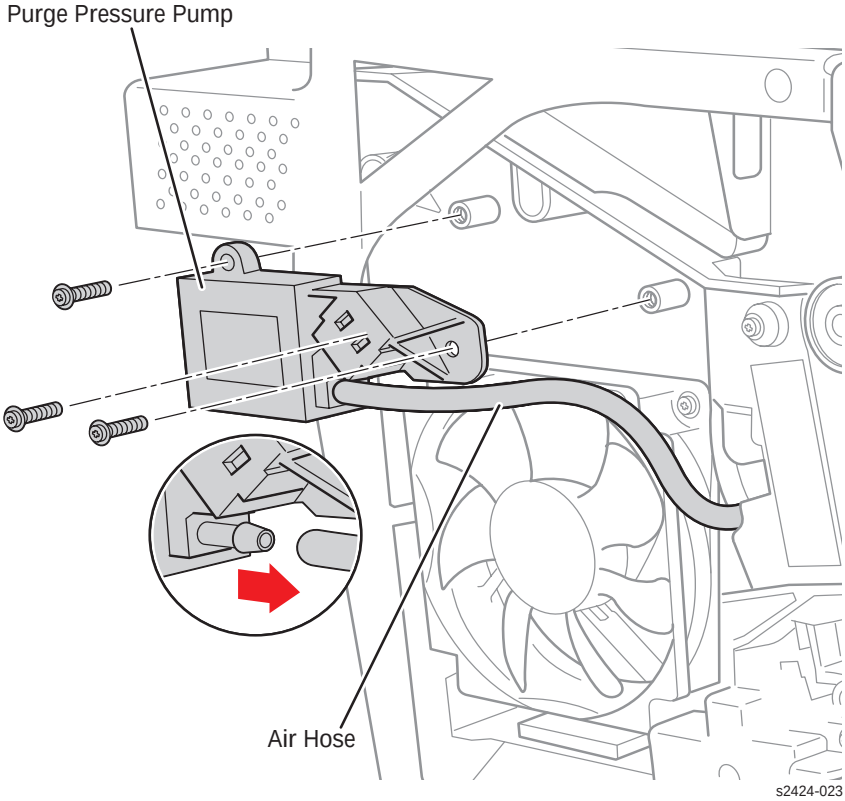
11. Insert a T-20 Torxbit through the right side slotted hole in the transfix load module, engage the hole on the back of the module, and lever the module's spring cam toward the center of the printer while connecting the spring hooks to the transfix load arms. Repeat for the other side.
12. Install 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. Route the 5 cables of the EMA on the left side of the exit module through retainers in the frame.

21. Ensure that the drum heater cable and drum encoder cable are dressed correctly and secured by the retainer hook at the process gearbox.
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 4 mounting pins on the chassis.
24. Install the ink loader assembly (page 8-13).
25. Reinstall all covers and doors.
26. Reinstall the DADF and Scanner assemblies.

Purge Pressure Pump

(PL 2.7)

1. Remove the left cover (page 8-11).
2. Disconnect the air hose from the purge pressure pump.
3. Disconnect the wiring harness from the purge pressure pump.
4. Remove 3 screws and remove the purge pressure pump.

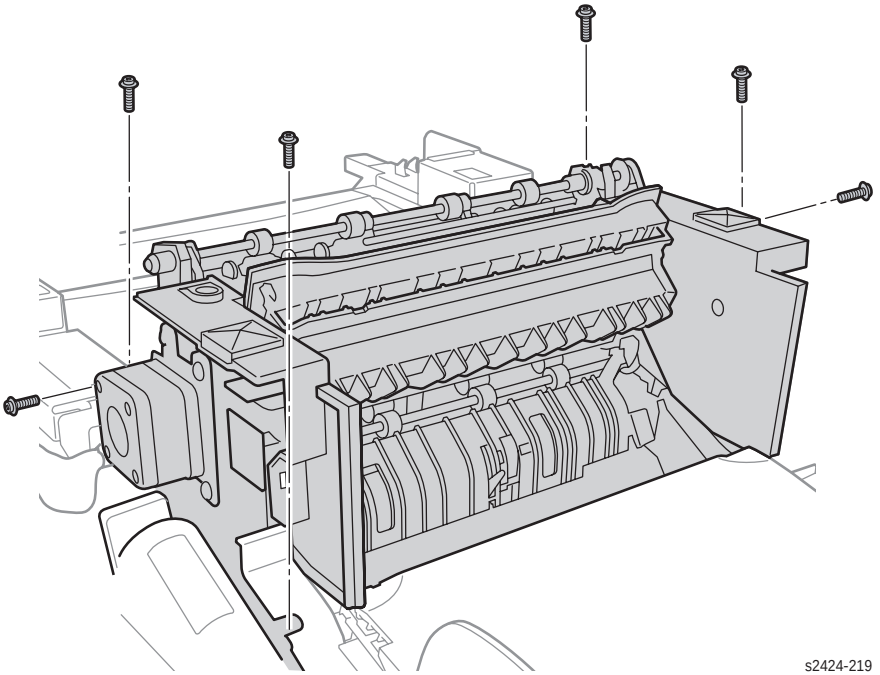


Paper Path

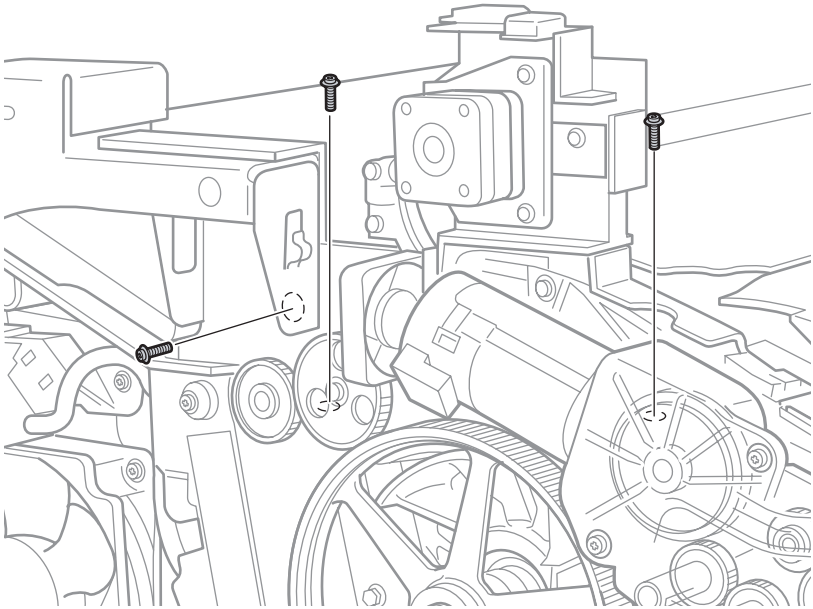
Exit Module Assembly (MEP)

(PL 3.7)

1. Remove the DADF, scanner assembly, side covers, and inkloader, pages 4 thru page 13.

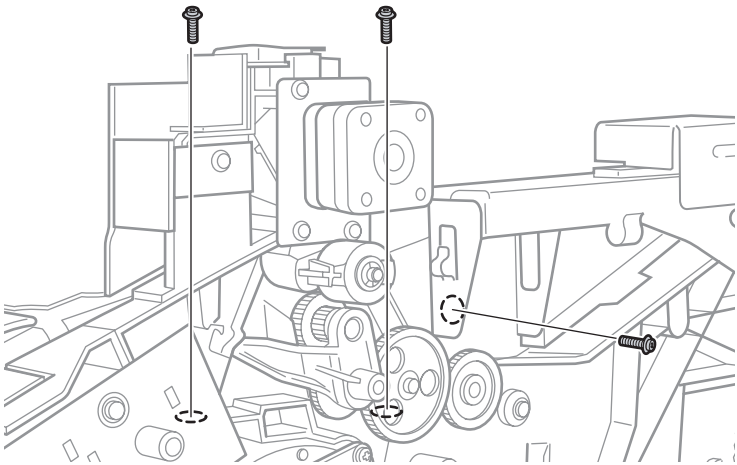


2. Right side instructions
   - Remove right front screw.
   - Remove the pulley and belt from the elevator roller to access and remove the right rear screw.
   - Remove the screw on the right side (connecting backframe to exit module and grounding wire).
   - Disconnect 3 connectors, 2 on I/O board, and 1 to the front cover open sensor.



3. Left side instructions

- Loosen the media path gearbox to access and remove the left front screw (see illustration above).
- Remove the left rear and side screws.
- Disconnect the following connectors: back frame, paper full sensor, IIT (scanner) closed sensor, lift motor, and the connector to the MEP elevator.



Replacement Note:

After installing the MEP, perform the Wiper Alignment (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 Inner Duplex

(PL 3.2)

1. Open the front door.
2. Pull out on the tabs at the bottom of the guide and let the guide swing free.
3. Pry inward (toward the center of the printer) on the right upper retainer until it is free of the mounting boss and remove the guide.

Lower Exit-Guide Assembly with Strip Flag

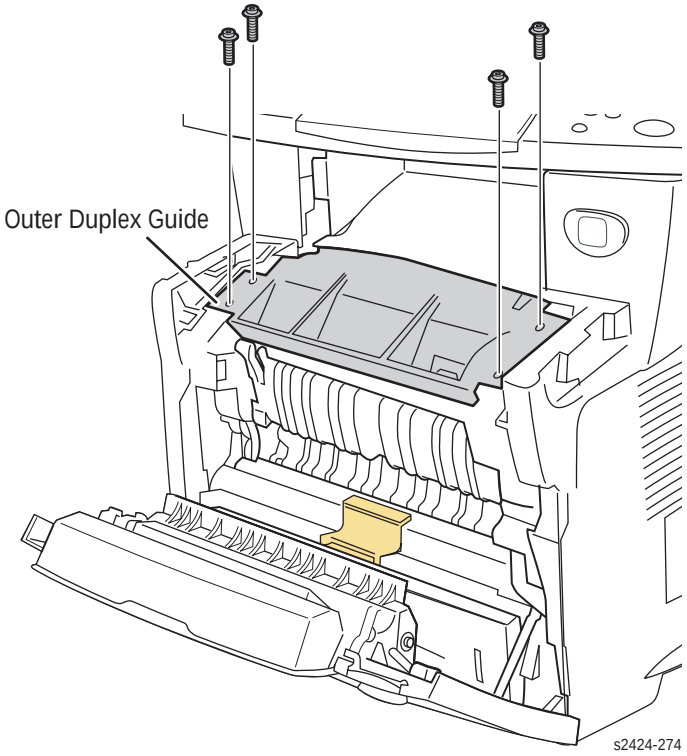
(PL 3.13)

1. Open the exit cover.
2. Lift upward on the center of the guide, then flex the left retainer inward to remove it.
3. Remove the right retainer and remove the guide.

Outer Duplex Paper Guide With Sensors (Safety Interlocks)

(PL 3.6)

1. Remove the output tray assembly and disconnect the two wiring harnesses.
2. Remove the output tray.
3. Remove the side covers.
4. Open the exit cover and remove the outer duplex guide.

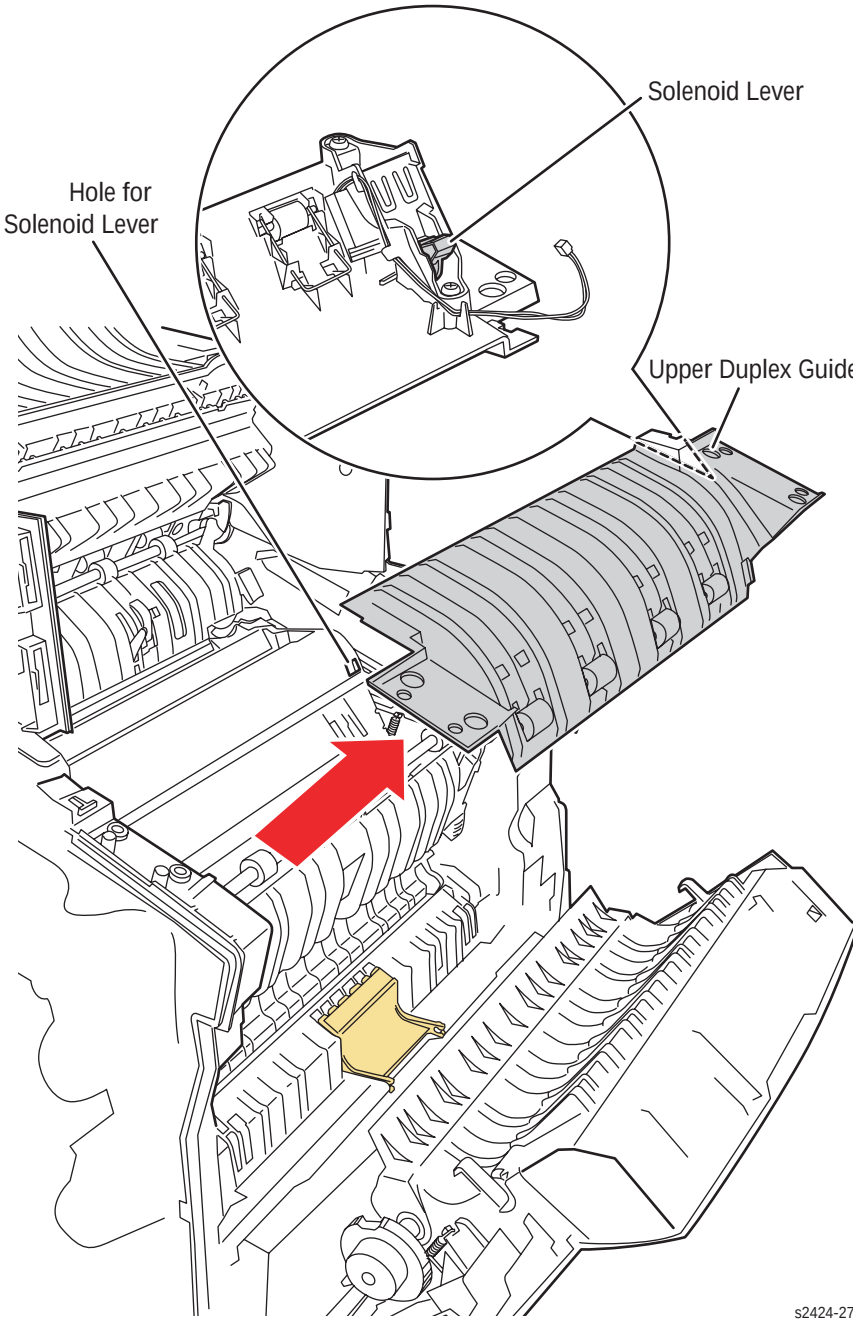


Upper Duplex Guide with Solenoid

(PL 3.5)

1. Remove the right side cover (page 8-11).
2. Remove the outer duplex paper guide (see instructions above).
3. Disconnect the solenoid connector from the I/O board and remove 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. Also, you must route the guide under the edges of the exit module assembly (EMA) frame.

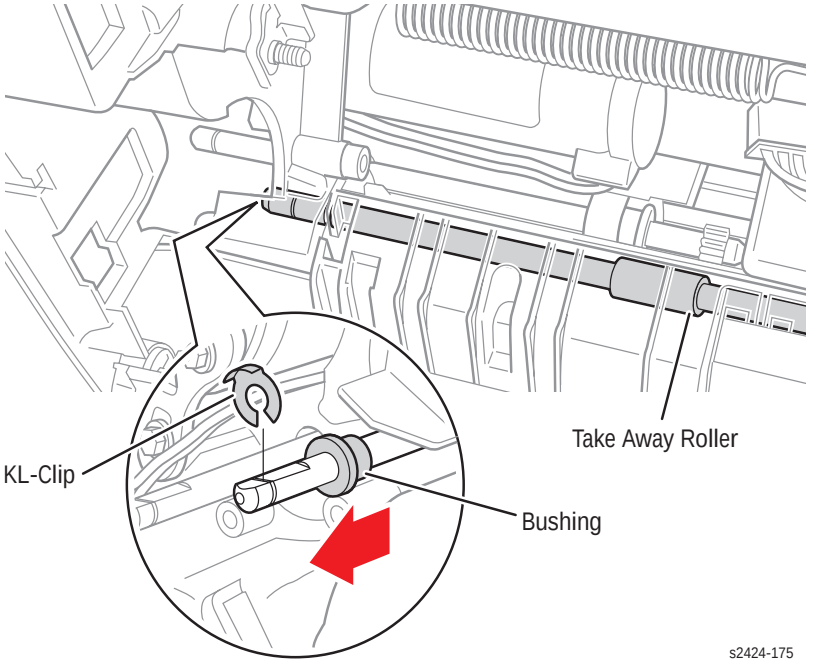
Note

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

Take Away Roller

(PL 3.3)

1. Remove the left and right side covers from the printer (page 8-11).
2. Remove the media drive gearbox (page 8-52).
3. Remove the lower simplex guide (page 8-44).
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. 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.Pressure from the idler rollers makes it difficult to move the take away roller shaft to the right during removal.



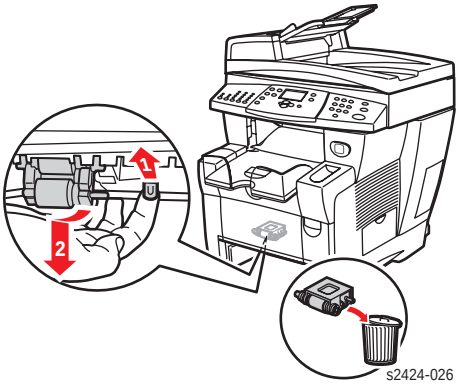
Pick Assembly

(PL 3.18)

1. Remove Tray 2 from the system.
2. Reach into the tray cavity and release the light-colored catch holding the pick roller in place.

Note

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 in. (12.5 cm.) back. When you pull forward on the catch, the roller swings down.



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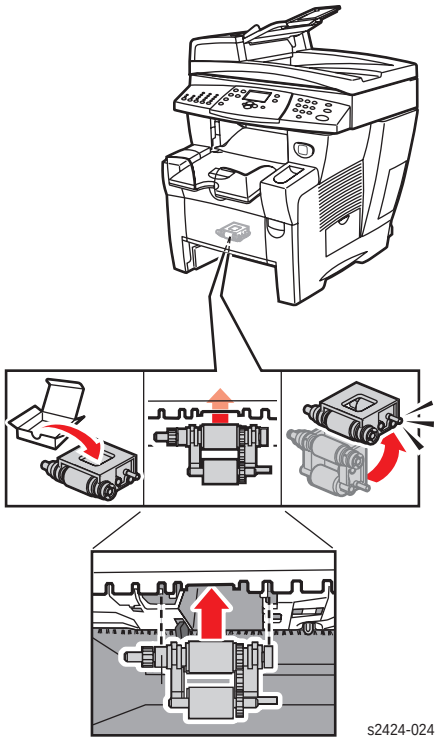
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3. Pull down to remove the roller.

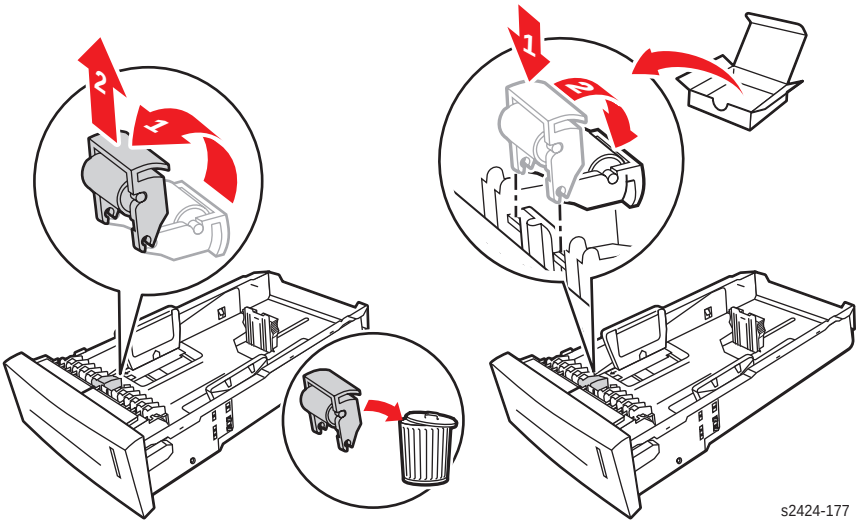
Note

Replace the retard roller at the same time you replace the pick assembly. This roller is located in the Tray 2 media tray.

Replacement Note:

Note

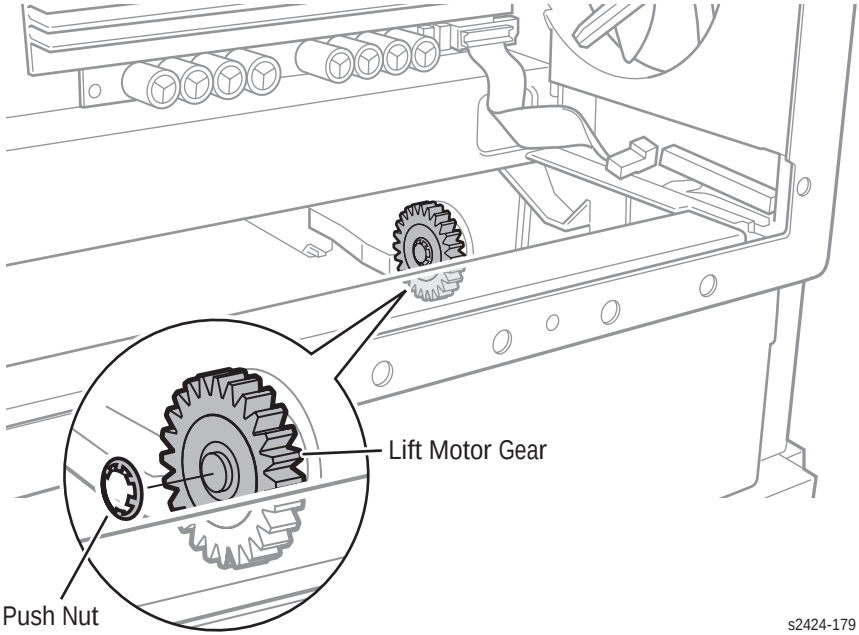
Insert the replacement with the metal shaft at the top and toward the left, the grey rollers should be facing you. Position the roller back about 2 inches (5 cm.) in the tray cavity, feel for a large plastic clip on the right and the mating gear for the pick assembly on the left. Rotate the pick assembly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



Tray Lift Motor

(PL 4.10)

1. Remove the electronics module (page 8-61).
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 and you will need to pry it off and discard). When you replace this nut, use a new one (see replacement note).
5. Remove the gear from the shaft.
6. Remove the 2 screws holding the media tray lift motor to the printer frame.
7. Remove the media tray lift motor from the outside of the printer.



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 nut are pointed away from the end of the shaft. Place a 3/8 in. nut driver (approx.) 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

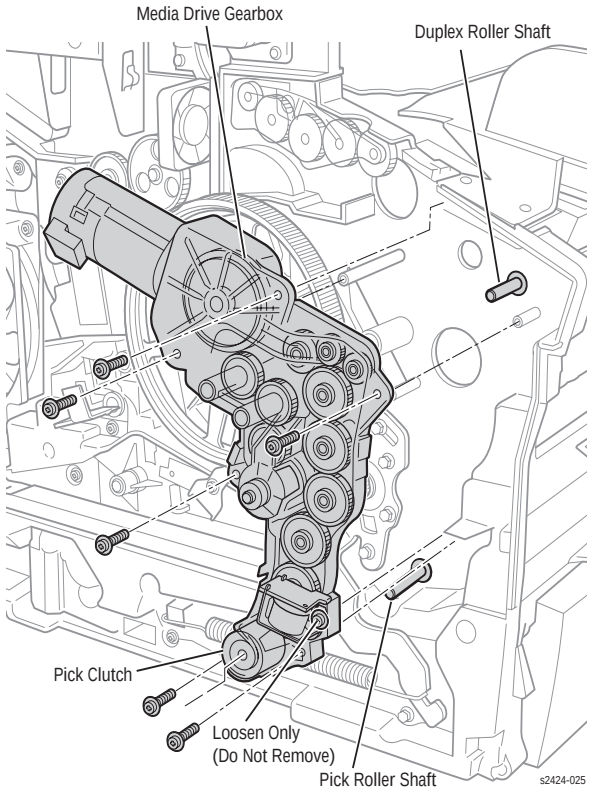
(PL 4.14)

Videos are available with instructions for replacing the media drive gearbox. Videos are located on the WorkCentre C2424 Product training CD-ROM.

1. Remove the output paper tray and left side cover (page 8-11).
2. Disconnect the media path motor, deskew clutch, pick clutch, and Tray 1 pick solenoid wiring harnesses.
3. Remove 6 screws securing the media drive gearbox and remove the entire assembly

Caution

Do NOT remove the screw for the Tray 1 pick solenoid.



Replacement Note:

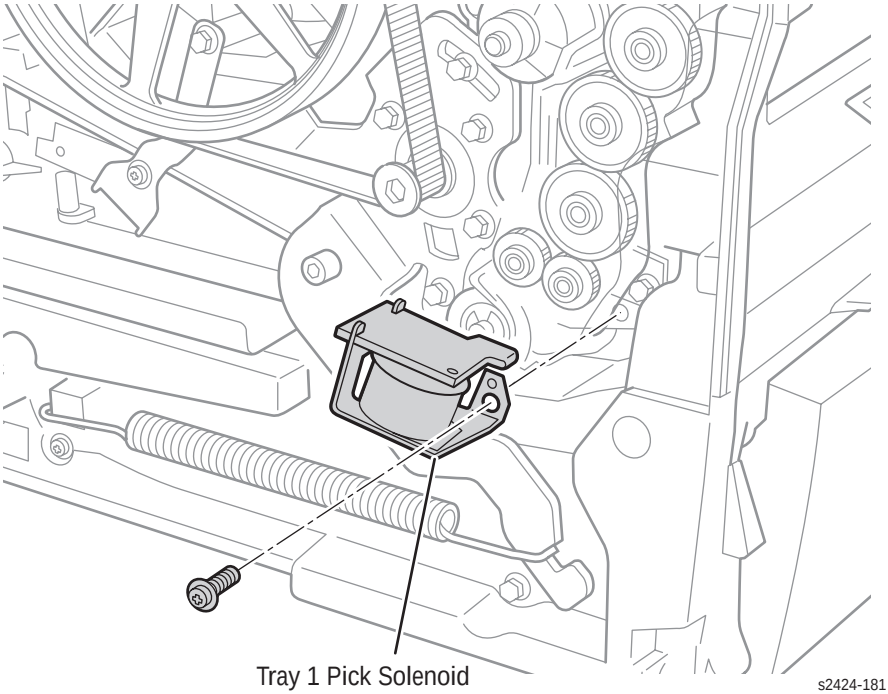
Note

To replace the media drive gearbox, first remove the paper tray. Rotate the pick roller shaft until the pick clutch seats, and 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 4.12)

1. Remove the left side cover (page 8-11).
2. Disconnect the solenoid cable.
3. Remove 1 screw from the solenoid, and remove the solenoid from the media drive gearbox.

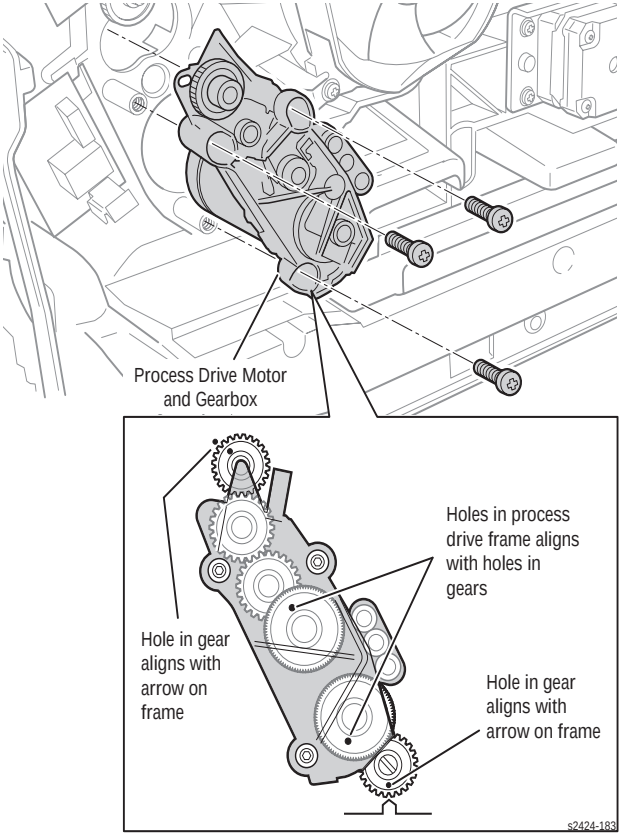


Process Drive Motor and Gearbox

(PL 4.7)

Videos are available with instructions for replacing the process drive motor and gearbox. Videos are located on the WorkCentre C2424 Product Training CD-ROM.

1. Remove the right side cover (page 8-10).
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.



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 3 screws and remove the process drive motor and gearbox.
5. Disconnect the wiring harness from the process drive motor.

Replacement Notes:

Caution

If replacing the process gear drive, see "Homing the Process Gear Drive Train" on page 6-8).

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.

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 (page 9-11).

Be sure you seat the process drive motor with 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.

Caution

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.

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.

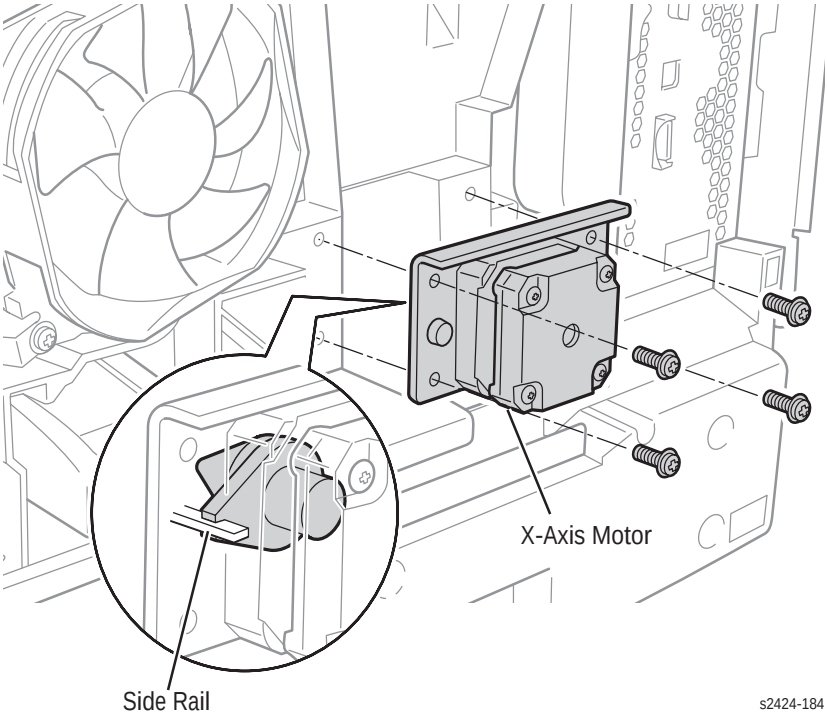
Note

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 (page 8-11).
2. Disconnect the wiring harness.
3. Remove 4 screws securing the motor to the chassis and remove the motor.



Replacement Note:

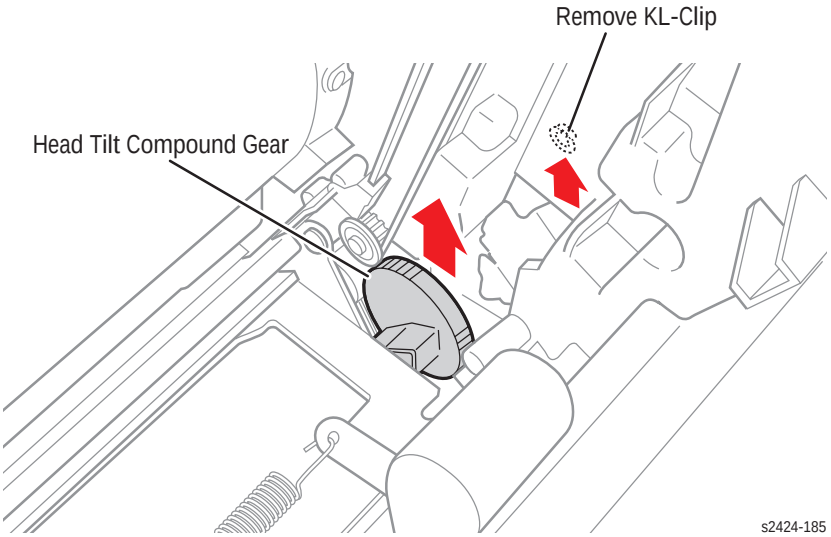
Note

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 4.13)

1. Remove the printhead assembly (page 8-16).
2. On the left side of the system, remove the KL-clip as shown.
3. Remove the waste tray frame, without disconnecting the sensor wiring harness (page 9-15).
4. Reach into 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

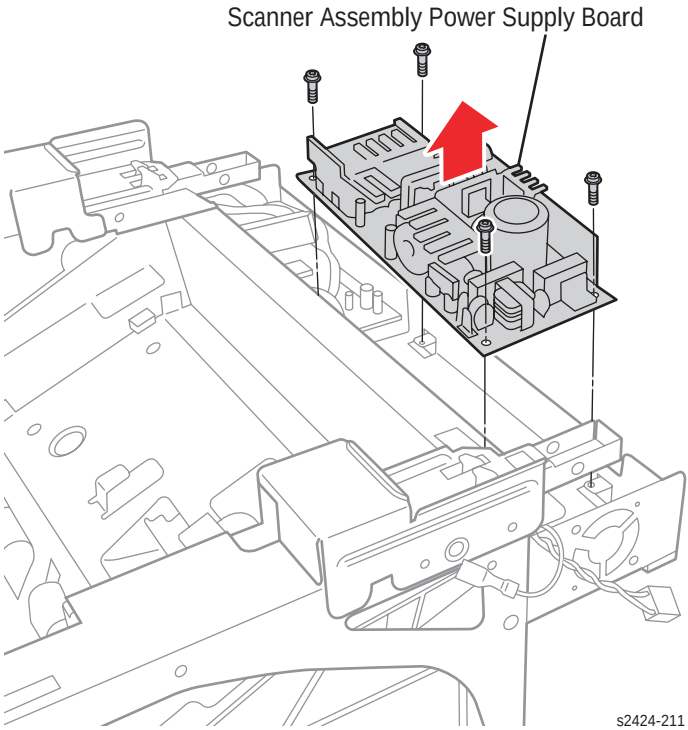
Scanner Power Supply

(PL 5.2)

Warning

Unplug the power cord. The scanner power supply connects directly to the AC line.

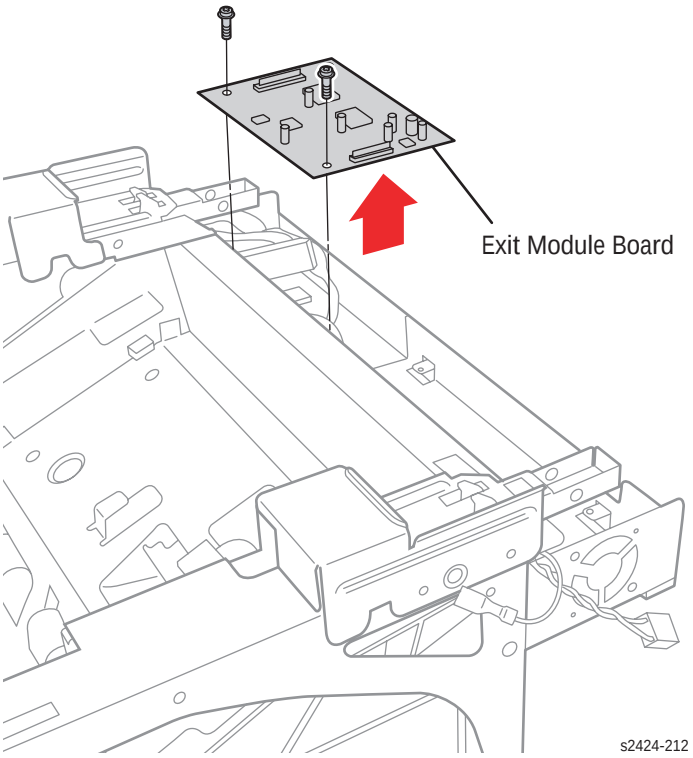
1. Remove the DADF and scanner assemblies (page 8-4).
2. Remove the output tray (page 8-8).
3. Remove the left and right side covers (page 8-11).
4. Remove the rear cover and EMI shield (page 8-12).
5. Disconnect all wiring cables to the power supply board.
6. Remove 4 short screws connecting the scanner supply board to the back frame.
7. List and remove the scanner power supply.



Exit Module (MEP) Board

(PL 5.1)

1. Remove the DADF and scanner assemblies (page 8-4).
2. Remove the output tray (page 8-8).
3. Remove the left and right side covers (page 8-11).
4. Remove the rear cover and EMI shield (page 8-12).
5. Disconnect all wiring to the exit module board.
6. Remove 2 screws securing the board to the back frame.



Electronics Module

(PL 5.5)

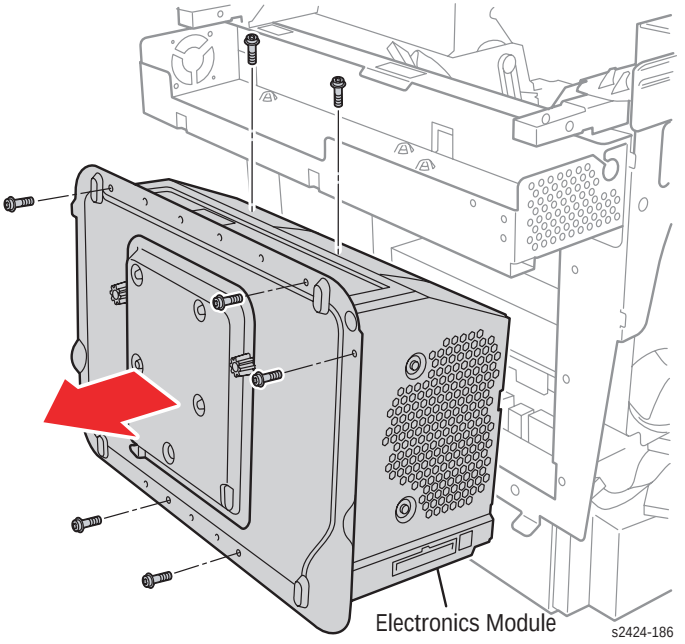
Videos are available with instructions for replacing the electronics module. Videos are located on the WorkCentre C2424 Product Training CD-ROM.

Caution

Touch the back of the electronics module before starting this procedure to discharge any electrostatic charge present.

1. Remove the DADF and scanner assemblies (page 8-4).
2. Remove the output tray (page 8-8).
3. Remove the left and right side covers (page 8-11).
4. Remove the ink loader assembly (page 8-13).
5. Disconnect the 3 wiring harnesses from the top of the electronics module.
6. Disconnect the 2 printhead cables.
7. Remove 5 screws from the back of the electronics module.
8. Remove 2 screws from inside the printer chassis.
9. Disconnect 3 wiring harnesses on the right side of the module.
10. Disconnect 4 wiring harnesses on the left side of the module.

11. Remove the electronics module.



Replacement Note:

Note

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

Back Frame and Printer Stabilizer

(Stabilizer PL 3.14) (Backframe PL 5.24)

Caution

If replacing a back frame, perform the following procedure on a flat surface.

1. Remove the DADF and scanner assemblies (page 8-4).
2. Remove the output tray (page 8-8).
3. Remove the left and right side covers (page 8-11).
4. Remove the scanner power supply and MEP control board (page 8-42).
5. Remove the Electronics Module(page 8-61).
6. Remove 2 screws securing the stabilizers to the system and remove the stabilizer.

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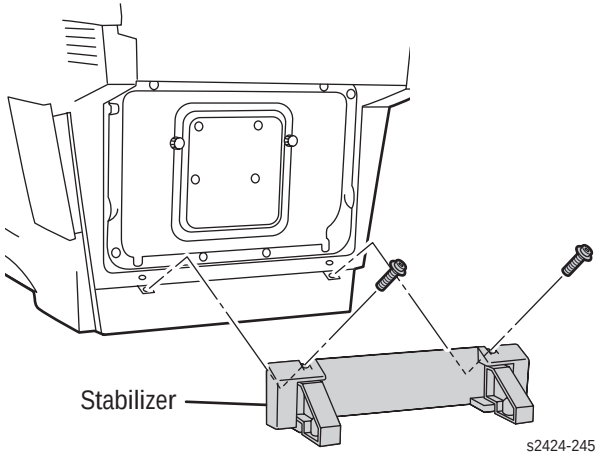
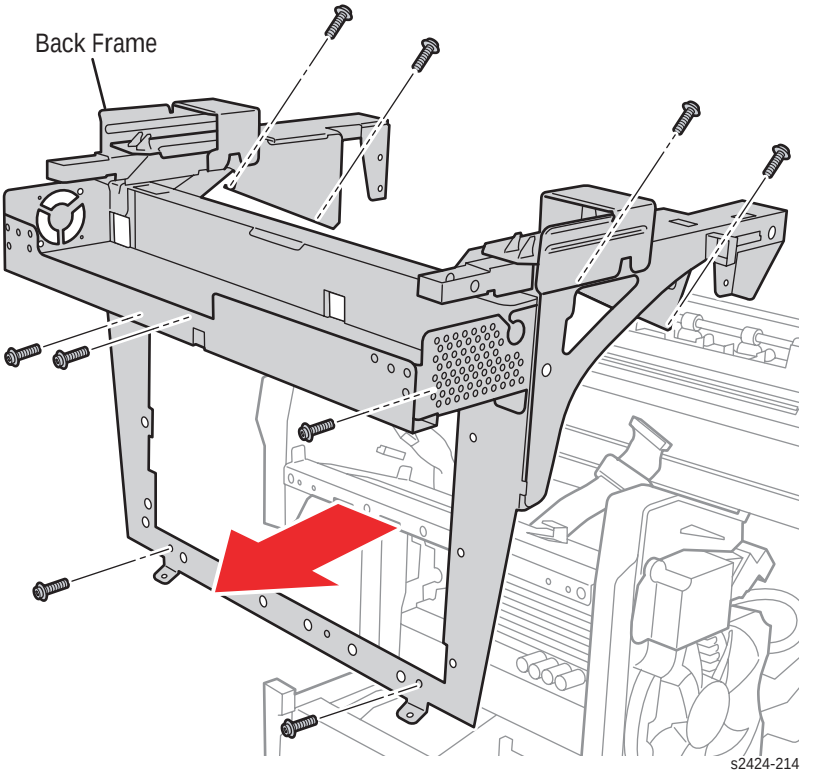


7. Remove Ink loader (page 8-13).
8. Remove 4 screws from the top.
9. Remove 7 screws from the rear of the back frame.


Back Frame
s2424-214

Wave Amp Board

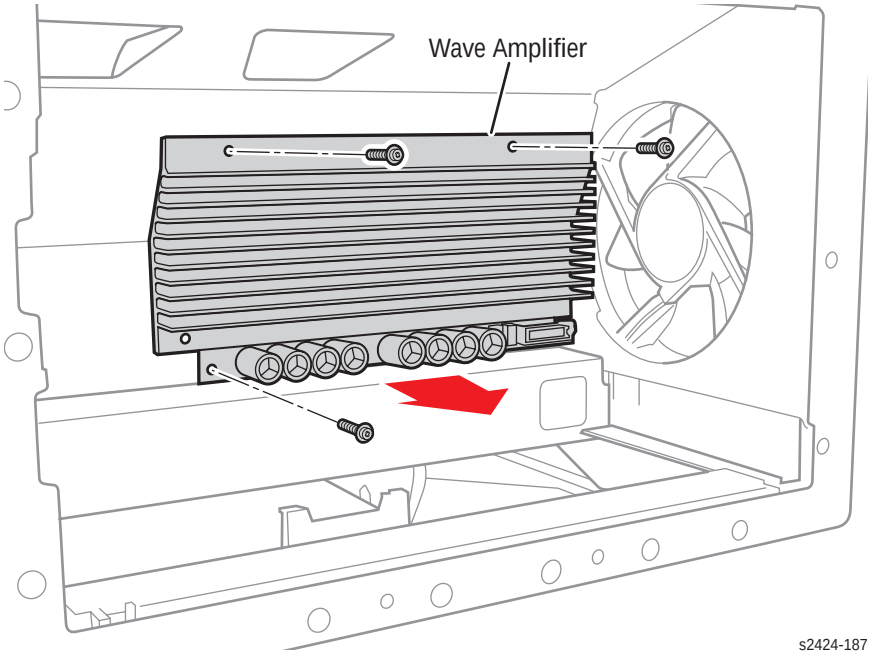
(PL 5.4)

1. Remove electronics module (page 8-61).
2. Remove the printhead (page 8-16).
3. Remove 3 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.



Replacement Note:

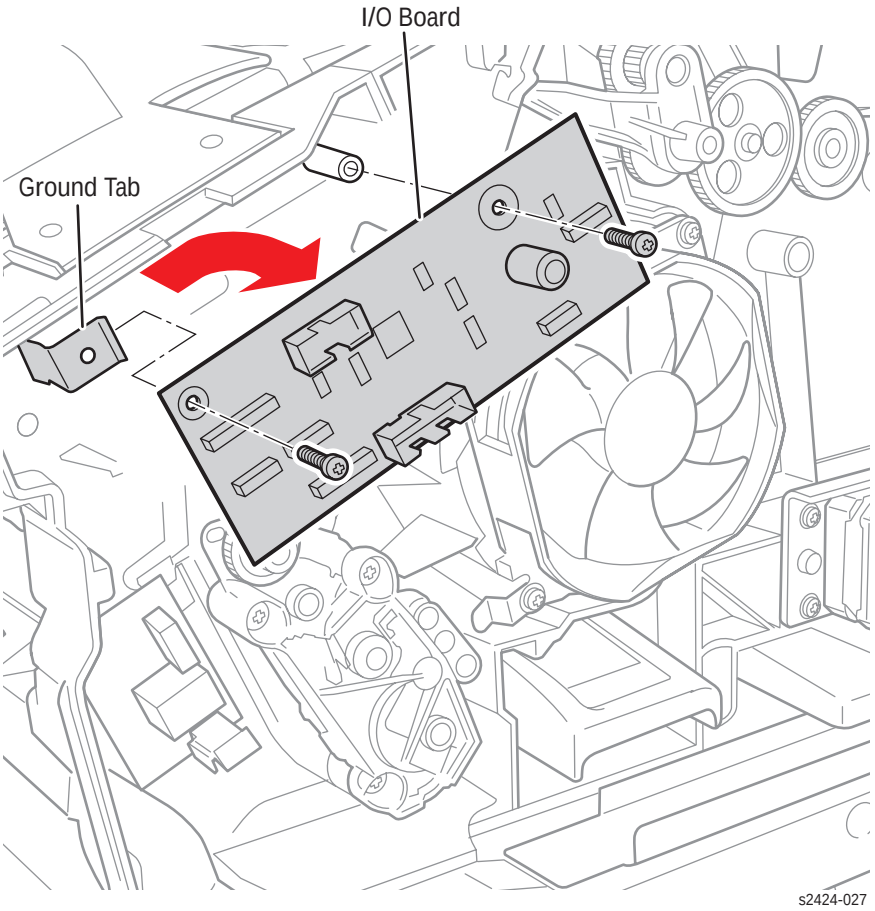
Caution

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 5.13)

1. Remove the right side cover (page 8-10).
2. Disconnect the wires to the I/O Board.
3. Remove 2 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.

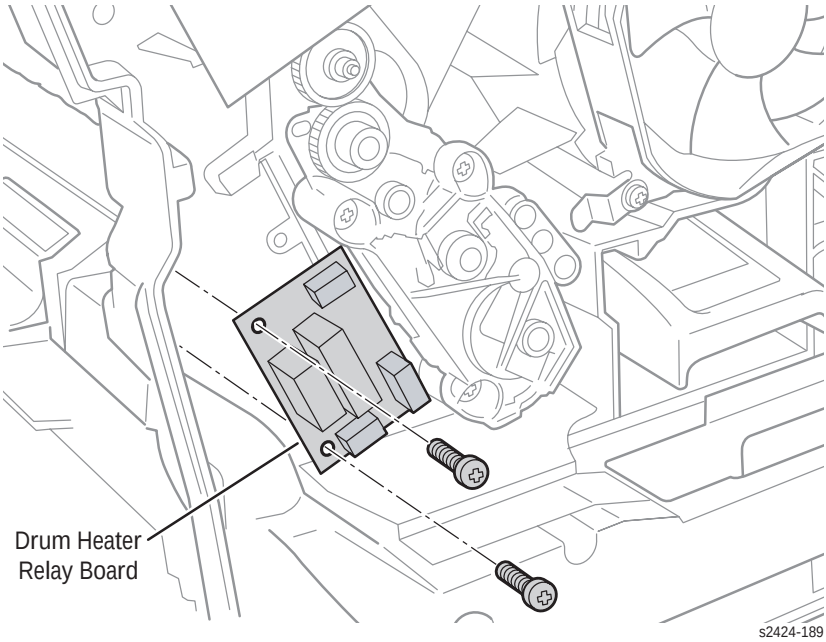
Drum Heater Relay Board

(PL 5.19)

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 (page 8-10).
2. Disconnect 3 wires to the drum heater relay board.
3. Remove the 2 screws securing the drum heater relay board to the system.
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 5.9)

1. Remove the back cover from the Electronics Module.

Caution

Some semiconductor components, such as the NVRAM chip, are vulnerable to damage by Electrostatic Discharge (ESD). Review the “Electrostatic Discharge (ESD) Precautions” on page vii 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 from its socket in the Electronics Module (page 1-4).
3. Insert the new NVRAM chip into the socket. Ensure that the notch on the chip is on the left side.
4. After powering ON the system, either download the snippet titled “setsn.ps” from infoSMART or get it from the Product Training CD-ROM.
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.
- 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, PL3.10 means the part is item 10 of Parts List 3.0
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.

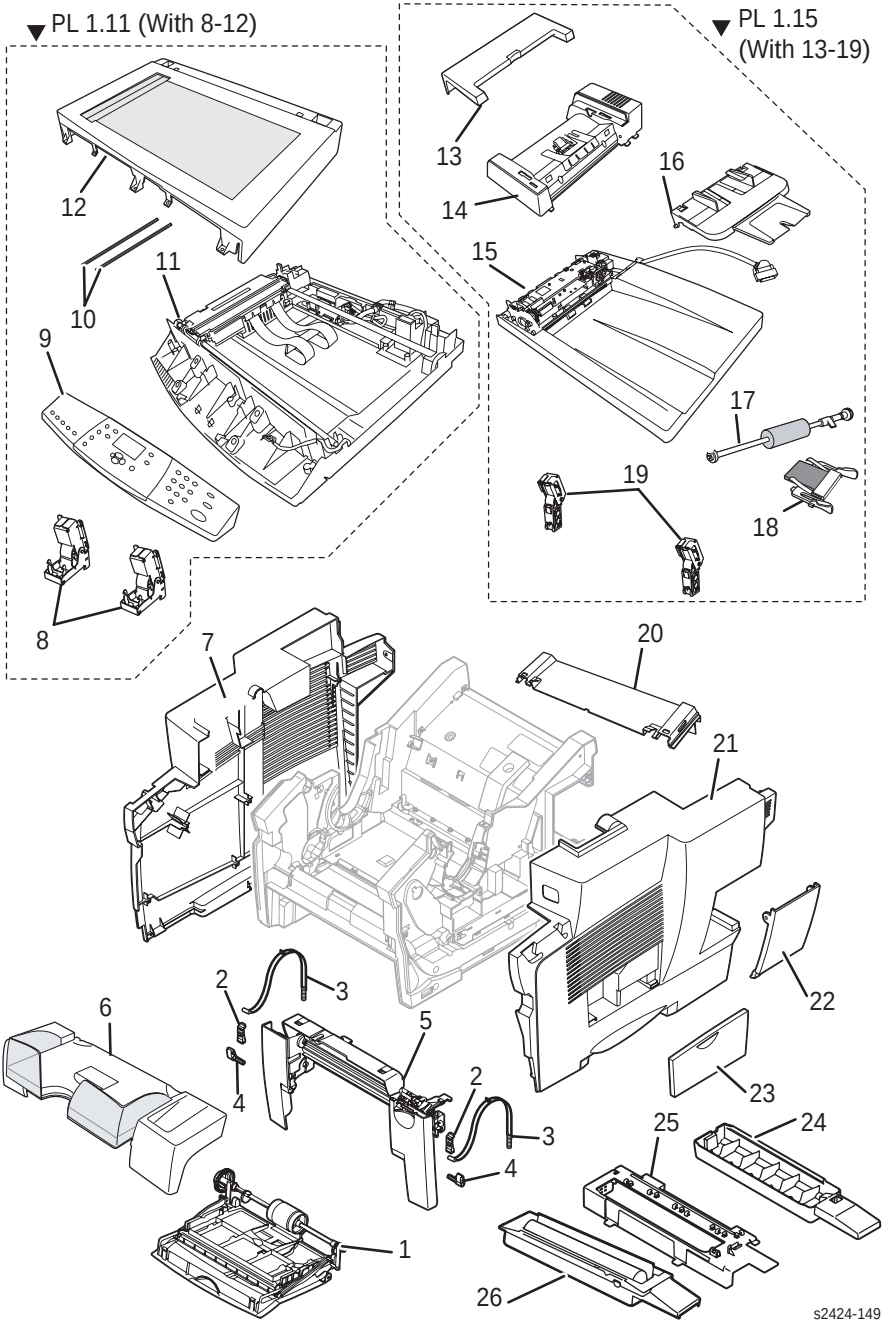
Note

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


PL 1.11 (With 8-12)
PL 1.15
(With 13-19)
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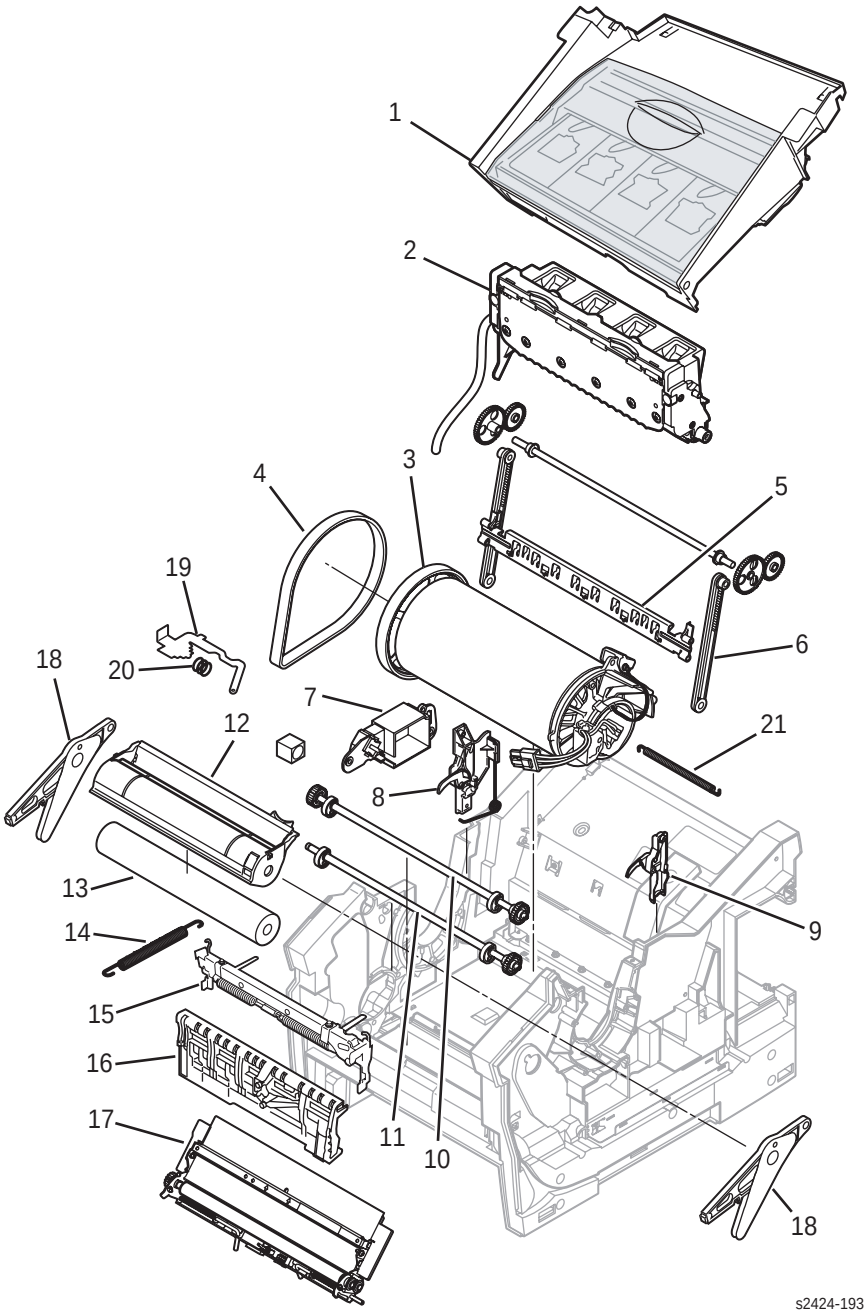
Parts List 1.0 Covers

No.	Name/Description	Qty	Part Number
1	Front Door MPT ASM	1	200467880
2	Front Door Stay Retainer (w/Clip)	2	131714380
3	Clip (part of PL 1.2)	2	
4	Hinge Pins, Front Door	2	131713880
5	Front Door Stay with Spring	2	386740780
6	Lower Paper Tray (Output Paper Tray)	1	050K59710
7	Left Side Cover ASM	1	802E82540
8	Scanner Hinge	1	003K19510
9	Control Panel (Control Panel Overlays not included)	1	802K82540
10	ASM, Lamp	1	122K02530
11	Scanner Assembly (includes PL 1.8, 1.9, 1.10, 1.11, 1.12) Control Panel Overlays not included	1	109K01870
12	Upper Housing (including platen glass)	1	802K87650
13	DADF Front Cover	1	802K87660
14	DADF Upper Cover	1	802K87820
15	Duplex Automatic Document Feeder Assembly (includes PL 1.13, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19)	1	004K07270
16	DADF Input Tray	1	050K59960
17	DADF Pick Roller and Pad Kit	1	604K30540
18	Separator Pad (part of PL 1.17)	1	
19	DADF Hinge	1	003K19520
20	Rear Cover	1	802E82550
21	Right Side Cover ASM	1	802K82080
22	I/O Access Cover (Interface Cover)	1	802E82520
23	DM Access Cover (Maintenance Kit / Side Door)	1	802E82530
24	Waste Tray	1	109R00736
25	Waste Tray Cover	1	200466780
26	Maintenance Kit (Drum) Standard Capacity Maintenance Kit (Drum) Extended Capacity	1	108R00656 108R00657
27	Scanner Calibration Page	1	109K01910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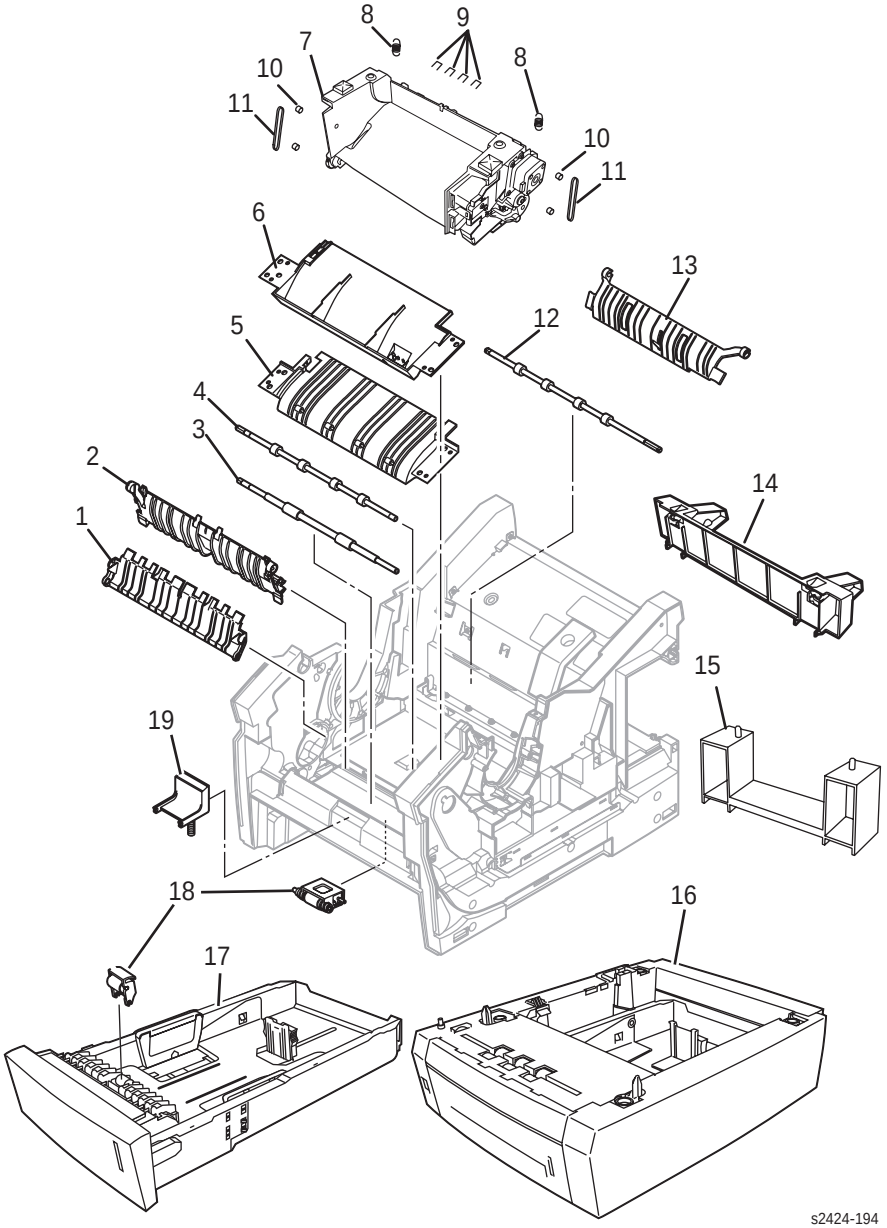
s2424-193

Parts List 2.0 Imaging

No.	Name/Description	Qty	Part Number
1	Ink Loader Assembly and Door	1	200471180
2	Printhead Assembly	1	650435400
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	386735281
13	Transfix Roller	1	022E32290
14	Y-Axis Tension Spring	1	214499680
15	Transfix Load Module	1	386739380
16	Drum Maintenance Pivot Plate Assembly	1	367053181
17	Preheater and Deskew Assembly	1	119641980
18	Transfix Arm Assembly	1	401101280
19	X-Axis Bias Spring Hook	1	214503280
20	X-Axis Roll Adjuster Spring	1	214503180
21	X-Axis Bias Spring, (Printhead)	1	214503080

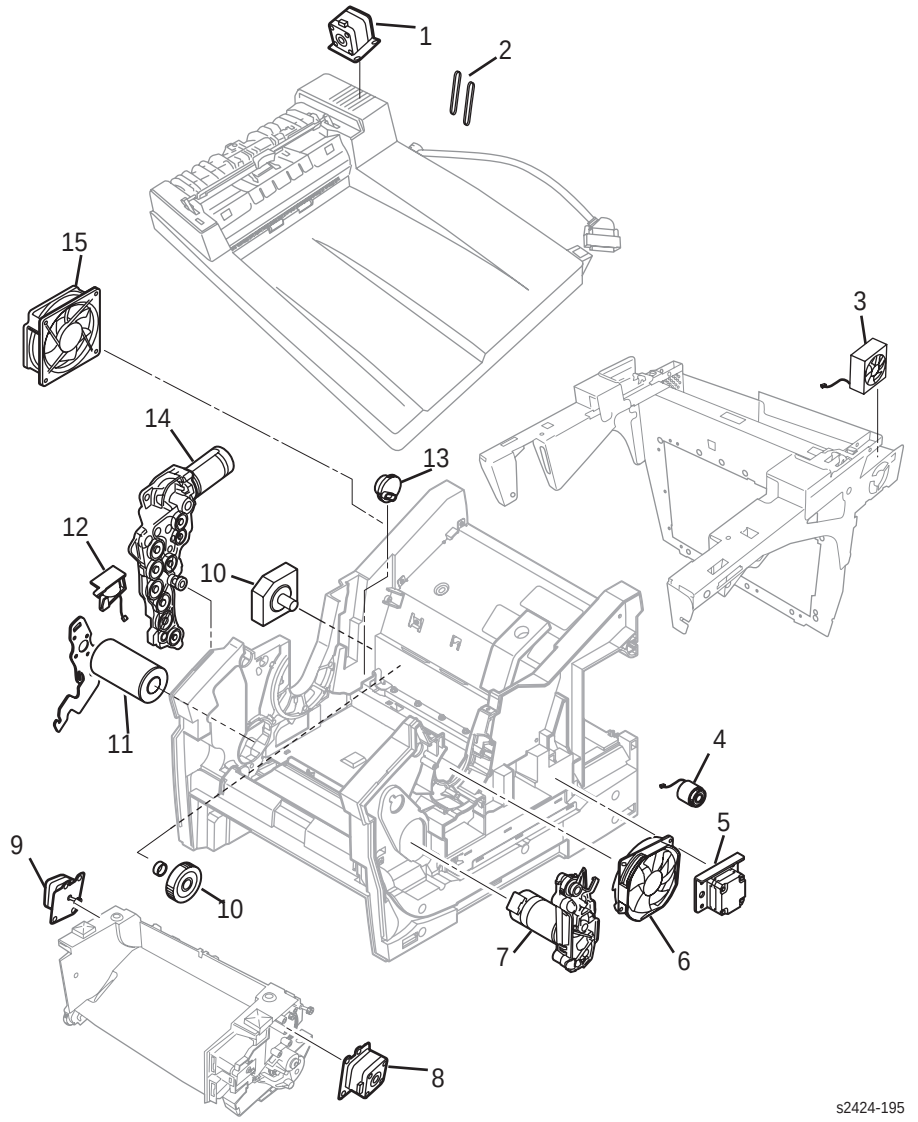
Paper Path



Parts List 3.0 Paper Path

No.	Name/Description	Qty	Part Number
1	Inner Simplex Guide	1	351111480
2	Lower Inner Duplex Guide	1	351112081
3	Take Away Roller	1	401094780
4	Duplex Roller	1	401091880
5	Upper Duplex Paper Guide with Solenoid	1	351113280
6	Outer Duplex Paper Guide with Sensors (Safety Interlocks)	1	351113680
7	Exit Module Assembly (MEP)	1	441224480
8	Spring, Carriage	2	809E68760
9	Spring, Carriage Roller	4	809E68750
10	Pulley, MEP (Exit Module)	4	020E47770
11	Belt, MEP (Exit Module)	2	023E30530
12	Roller, Idler, Exit	1	022E32230
13	Lower Exit Guide Assembly	1	038K16410
14	Printer Stabilizer	1	674E00750
15	525-Sheet Feeder (HCF) Stabilizer	1	674E00760
16	525-Sheet Feeder (HCF) with Tray	1	650433100
17	525-Sheet Tray, Adjustable to Legal	1	650433200
18	Pick Assembly and Retard Roller Kit	1	650429200
19	Separator Pad Kit	1	650429300

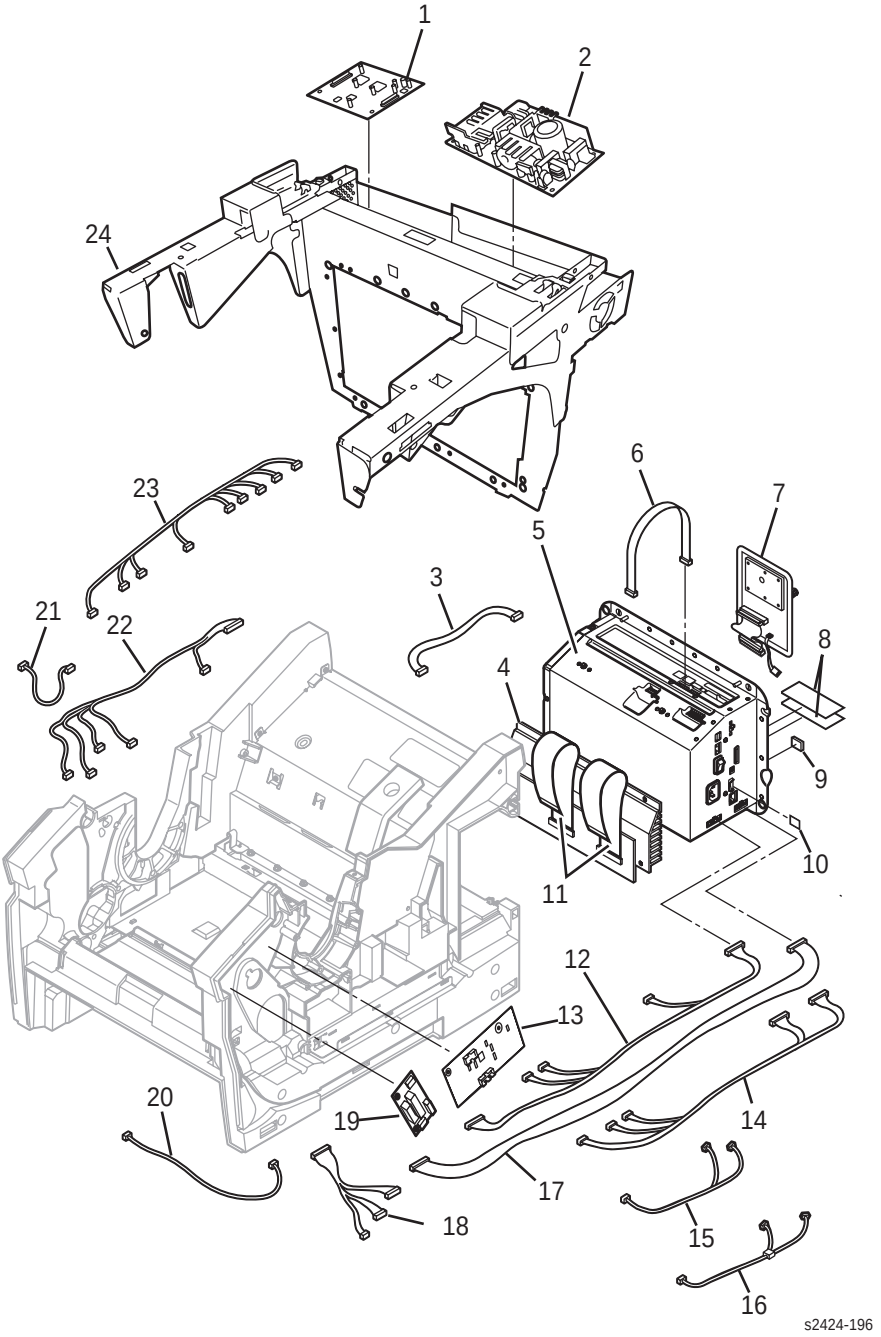
Motors, Gears, Solenoids, Clutches, Sensors, Fans and Backframe



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

No.	Name/Description	Qty	Part Number
1	ASM, Motor (DADF)	1	127K53220
2	DADF Belt Kit	1	604K31090
3	Fan, (Scanner) Power Supply, Cooling	1	105E18240
4	Electric Clutch, Wiper	1	401096180
5	X-Axis Motor Assembly	1	650429400
6	Drum Cooling Fan	1	119641780
7	Gearbox and Motor, Process Drive	1	401100080
8	MEP (Drive) Motor	1	127K53270
9	MEP (Elevator) Motor		127E14830
10	Tray Lift Motor Kit	1	650429500
11	Motor Assembly, Y-Axis (Drive)	1	147101780
12	Pick Solenoid, Tray 1	1	119640880
13	Compound Gear, Head Tilt	1	401097880
14	Gearbox, Media Drive with 2 Clutches	1	401098480
15	(Electronics Module) E-Can Cooling Fan	1	127E15010

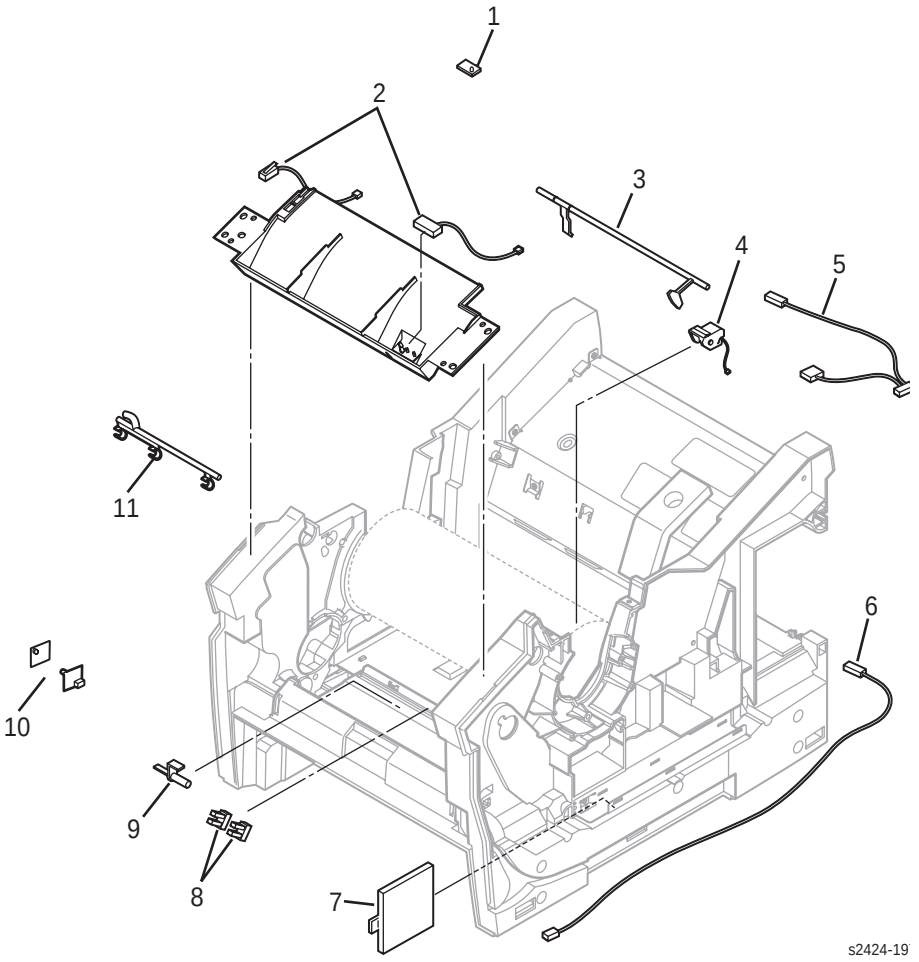
Electronics Module, Circuit Boards and Cables



Parts List 5.0 Circuit Boards

No.	Name/Description	Qty	Part Number
1	PCBA, Malibu MEP (Exit Module Board)	1	960K19990
2	Power Supply, Scanner	1	105E18250
3	Cable, Wave Amp Signal	1	174446580
4	Wave Amp Board	1	671522380
5	Electronics Module Stripped (no RAM, NVRAM, or Configuration Card)	1	133K25000
6	Cable, Printhead Interface	1	174448580
7	Hard Drive Assembly	1	121K39240
8	256 MB SDRAM 512 MB SDRAM	1	156466300 156485700
9	8-pin NVRAM	1	156476800
10	Configuration Card Programmed	1	537E65920
11	Cable, ZIF, Wave Amp Drive	1	174448680
12	Cable, Right Side Power Control	1	174446680
13	I/O Board	1	671529180
14	Cable, Combined Right	1	174451180
15	Cable, Scanner PSU to Printer PSU	1	117E28380
16	Cable, Scanner PSU TI IP, MEP and FAN	1	117E28390
17	Cable, I/O Board Data	1	174447480
18	Cable, Right Umbilical	1	174448180
19	Drum Heater Relay Board	1	650431700
20	Cable, Front Door	1	174447880
21	Cable, Y-Axis Motor Ground	1	174451680
22	Wiring Harness, Left Side Power Control	1	174449480
23	Cable, Back Frame Assembly - MEP	1	117E28400
24	Back Frame Assembly (Mechanical)	1	001E79170

Sensors and Flags (Actuators)



Parts List 6.0 Sensors and Flags (Actuators)

No.	Name/Description	Qty	Part Number
1	PCBA, IIT Sensor	1	960K20680
2	Safety Interlock Switch (Mech)	1	119645580
3	Engine Exit Flag	1	137E11880
4	Drum Temperature Sensor Assembly	1	119643080
5	Exit Module (MEP) Sensor Assembly	1	119648180
6	Waste Tray Sensor (optical)	1	119648780
7	Sensor Assembly, Paper Tray	1	441223780
8	Optical Sensor (Generic Snap-In)	1	119640580
9	Paper Present Flag	1	386731280
10	Paper Full Sensor Kit		604K30550
11	Flag, MEP (Exit Module)	1	137E11890

Xerox Supplies

Miscellaneous Kits, Supplies, and Options

Description	Part Number
Mechanical Kit -C2424 (Hardware) DADF/Scanner Hinge screws - M4x12 - 5 each Scanner PS & MEP Board screws - M4x6 - 5 each Backframe Cable Clamps - 2 each MEP KL clips - 5mm - 5 each MEP Plastic washers - 2 each	604K30530
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
Cleaning Kit	016184500
Repackaging Kit	695K17720
Printer Stabilizer	674E00750
HCF (525-Sheet Feeder) Stabilizer	674E00760
Cart	137E11900
Stopper, Retainer	003E77400
Clip, Retainer	019E68680
Scanner Calibration Page	109K01910

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

Power Cords

Description	Part Number
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

Recommended Tools

Description	Part Number
Torque Screwdriver, Adjust	003082700
Bit, Screwdriver; 0.25 Hexdrive, T20	003086600
Grease	006799700
Scanner Calibration Page	109K01910

Routine Maintenance Items and Consumables

Description	Part Number
Standard-Capacity Maintenance Kit, WorkCentre C2424	108R00656
Extended-Capacity Maintenance Kit, WorkCentre C2424	108R00657
Genuine Xerox Solid Ink 8400 Black (3 sticks)	108R00663
Genuine Xerox Solid Ink 8400 Cyan (3 sticks)	108R00660
Genuine Xerox Solid Ink 8400 Magenta (3 sticks)	108R00661
Genuine Xerox Solid Ink 8400 Yellow (3 sticks)	108R00662
Genuine Xerox Solid Ink 8400 Black (6 sticks)	108R00664
Rainbow Pack (1 Cyan,1 Magenta,1 Yellow, 1 Black	108R00600

Software and Documentation

Description	Part Number
Setup Guide (poster)	001161400
Quick Reference Guide	001162300
World Kit	650K23450

Software and Documentation

Description	Part Number
Overlay Kit, French	650K24020
Overlay Kit, Italian	650K24030
Overlay Kit, German	650K24040
Overlay Kit, Spanish	650K24050
Overlay Kit, Dutch	650K24060
Overlay Kit, Swedish	650K24070
Overlay Kit, Brazilian-Portuguese	650K24080
Overlay Kit, Russian	650K24300
Service Manual	604E13990
Software CD-ROM	063346900
User Documentation CD-ROM	063346800

Wiring Diagrams

In this chapter…

Section 10

Plug/Jack Locator Table

Plug/Jack Locator Table

P/J No.	Connected to...		P/J No.
J0660 (2)	Pre-heat ECB	Pre-heat sense opto	
J0670 (3)	Pre-heat ECB	Pre-heat temp therm	
J0800 (14)	Wave Amp ECB	Power Control ECB	J790 (14)
J1 (6	Media Tray Sense ECB	Main ECB	J160 (6)
J1 (10)	Inkload ECB	I/O ECB	J910 (10)
J1 (2)	Relay ECB	I/O ECB	J400 (10)
J1 (2)	Image Processor Controller Board	Front door sense switch Top door sense switch	
J1	Scanner Power Supply	Main Power Control	J3AC
J2	Scanner Power Supply	Cooling Fan	
J2	Scanner Power Supply	Image Processor Controller Board	J2
J2	Scanner Power Supply	MEP Board	CN1
J1/J2	Scanner Bridge Board	Image Processor Controller Board	J3
J3	Scanner Bridge Board	Control Panel	
CN1	MEP Board	Image Processor Controller Board	J4
CN2	MEP Board	Exit Module Sensor Paper Full Sensor Exit Cover Sensor IIT Sensor	
CN4	MEP Board	MEP Drive Motor MEP Elevator Motor	
J110 (3)	I/O ECB	Waste tray sensor (3)	
J120 (11)	Main ECB	Paper height opto (3) Pick sense opto (3) Paper out opto (3) Pick Clutch (2)	
J130 (26)	Main Processor ECB	Printhead driver ECB	J180 (26)
J160 (6)	Main ECB	Media Tray Sense ECB	J1

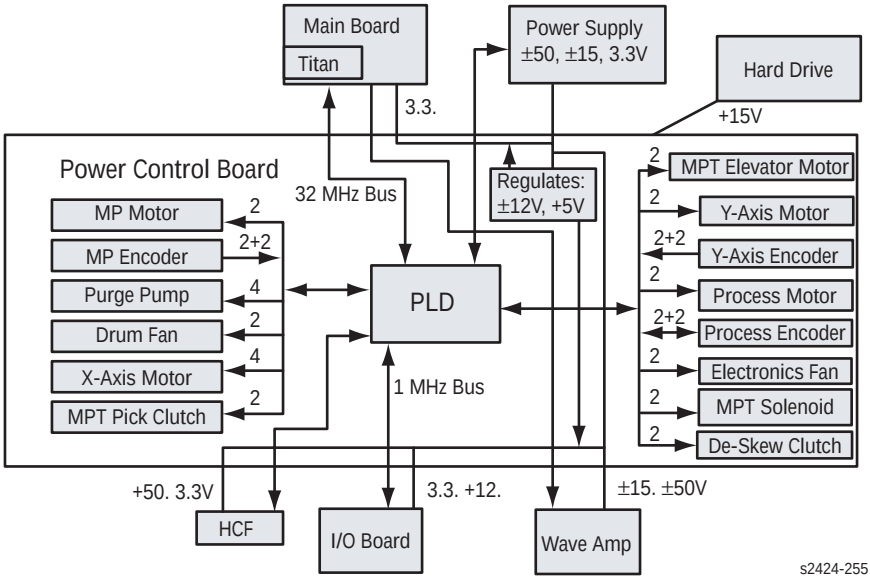
Plug/Jack Locator Table (Continued)

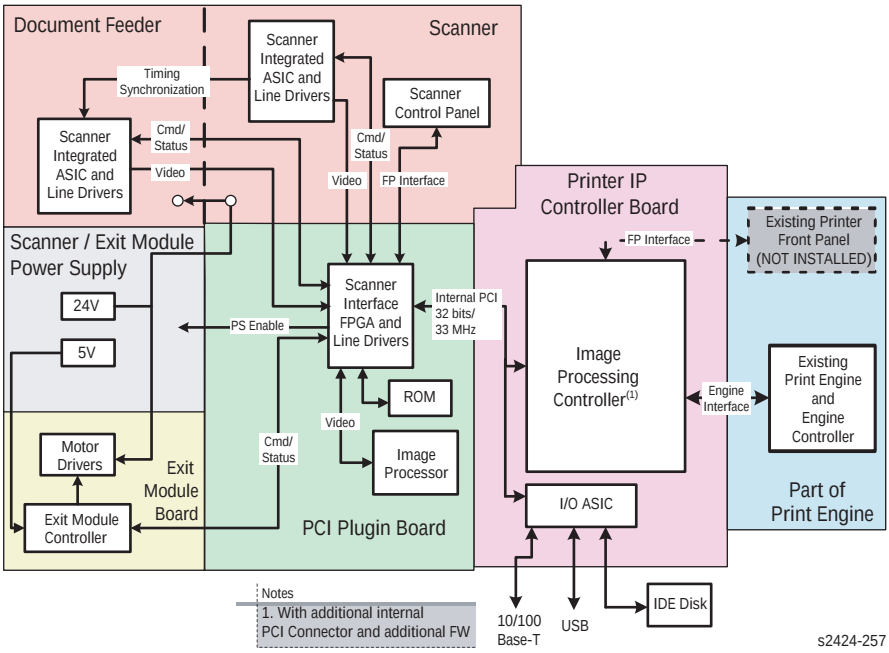
P/J No.	Connected to...		P/J No.
J180 (26)	Printhead driver ECB	Main Processor ECB	J130 (26)
J1AC	Power Supply ECB	Inkload ECB	J2 (5)
J2 (2)	Relay ECB	Power Supply ECB	J4AC (4)
J2 (5)	Inkload ECB	Power Supply ECB	J1AC
J210 (30)	Printhead driver ECB	Wave Amp ECB	J630 (30)
J240 (30)	Printhead driver ECB	Wave Amp ECB	J670 (30)
J250 (2)	I/O ECB	Strip solenoid (2)	
J280 (2)	Power Control ECB	Y-axis motor (2)	
J2AC (7)	Power Supply ECB	Printhead Res/Jetstack heaters	
J380 (1)	Main ECB	Transport motor (positive)	
J390 (4)	Hard Drive ECB	Power Control ECB	J820 (4)
J390 (1)	Main ECB	Transport motor (negative)	
J390 (34)	Power Control ECB	Main ECB (8) Main tray elevator plate (2) Main tray pick clutch (2) MPT Solenoid (3) Deskew Clutch (2) Purge pump (6) Main fan (2) Media motor and encoder (7) Media path motor fan (2)	J400 (8)
J3AC (3)	Power Supply ECB		Auxiliary
J400 (14)	I/O ECB	Main tray paper opto (3) Main paper height opto (3) Pre-heater ECB 6) Relay ECB (2)	 J860 J1
J400 (16)	Power Control ECB (16)	X-axis motor (4) Drun Fan (2) Y-axis pos encoder (4) Process motor w/encoder (6)	
J480 (30)	Power Control ECB	Power Supply ECB	JDC1
J4AC (4)	Power Supply ECB	Relay ECB	J2 (2)
J580 (80)	Hard Drive ECB	Main Processor ECB	J860 (80)
J600 (6)	I/O ECB	Add paper tray (6)	

Plug/Jack Locator Table (Continued)

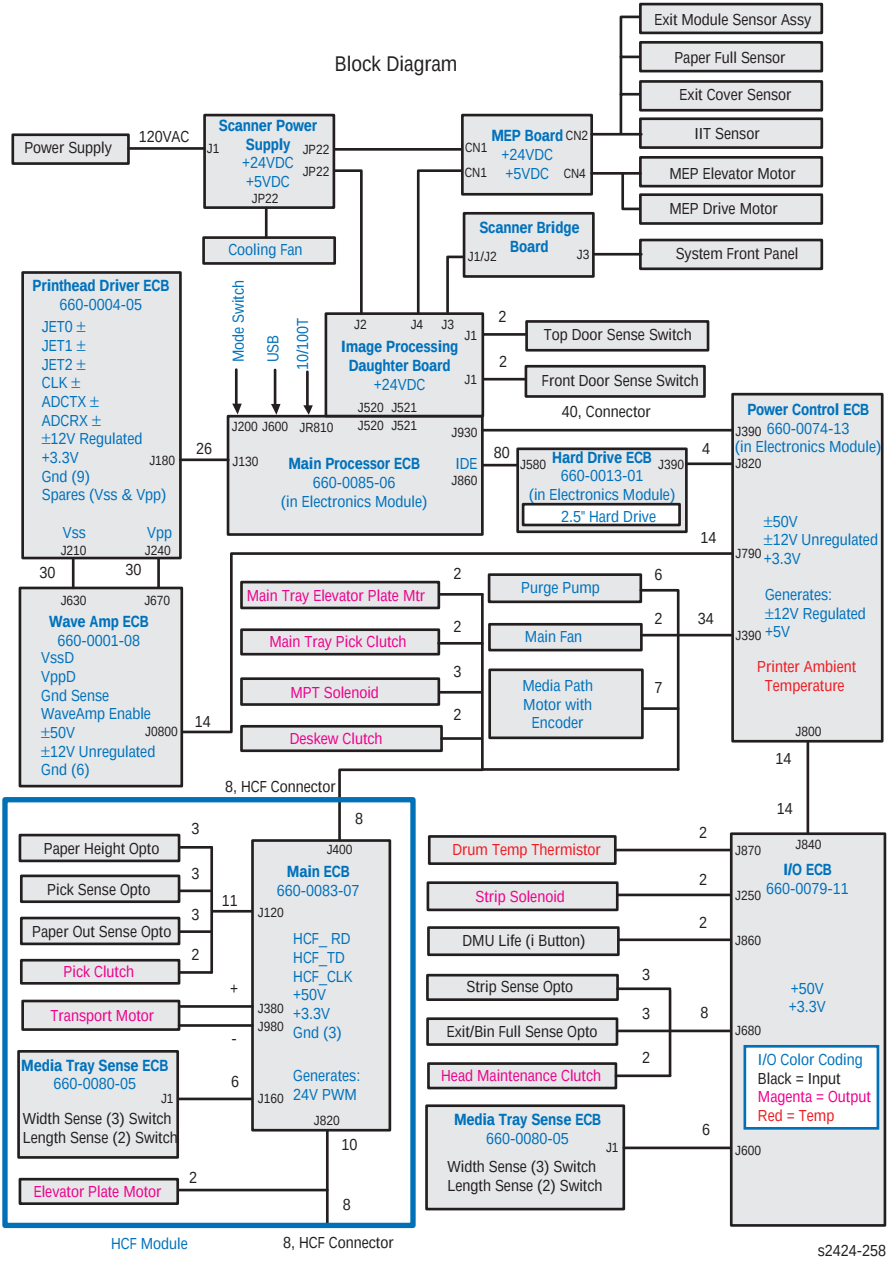
P/J No.	Connected to...		P/J No.
J610 (5)	I/O ECB	Media Present (MPT) sensors (5)	
J630 (30)	Wave Amp ECB	Printhead driver ECB	J210 (30)
J670 (30)	Wave Amp ECB	Printhead driver ECB	J240 (30)
J680 (8)	I/O ECB	Strip/Exit Bib opto (6) Power HM clutch (2	
J790 (14)	Power Control ECB	Wave Amp ECB	J0800 (14)
J800	Ethernet RCV/XMT ribbon cable	I/O ECB	J840
J720 (2)	Pre-Heat ECB	Paper pre-heater	
J820 (4)	Power Control ECB	Hard Drive ECB	J390
J840	I/O ECB	Ethernet RCV/XMT ribbon cable	J800
J860	Pre-heat ECB	I/O ECB	J400
J860 (2)	I/O ECB	Maintenance kit missing sensor (2)	
J860 (80)	Main Processor ECB	Hard Drive ECB	J580 (80)
J870 (2)	I/O ECB	Drum print thermister(2)	
J910 (10)	I/O ECB	Inkload ECB	J1 (10)
JDC1	Power Supply ECB	Power Control ECB	J480 (30)

Scanner/DADF Functional Diagrams

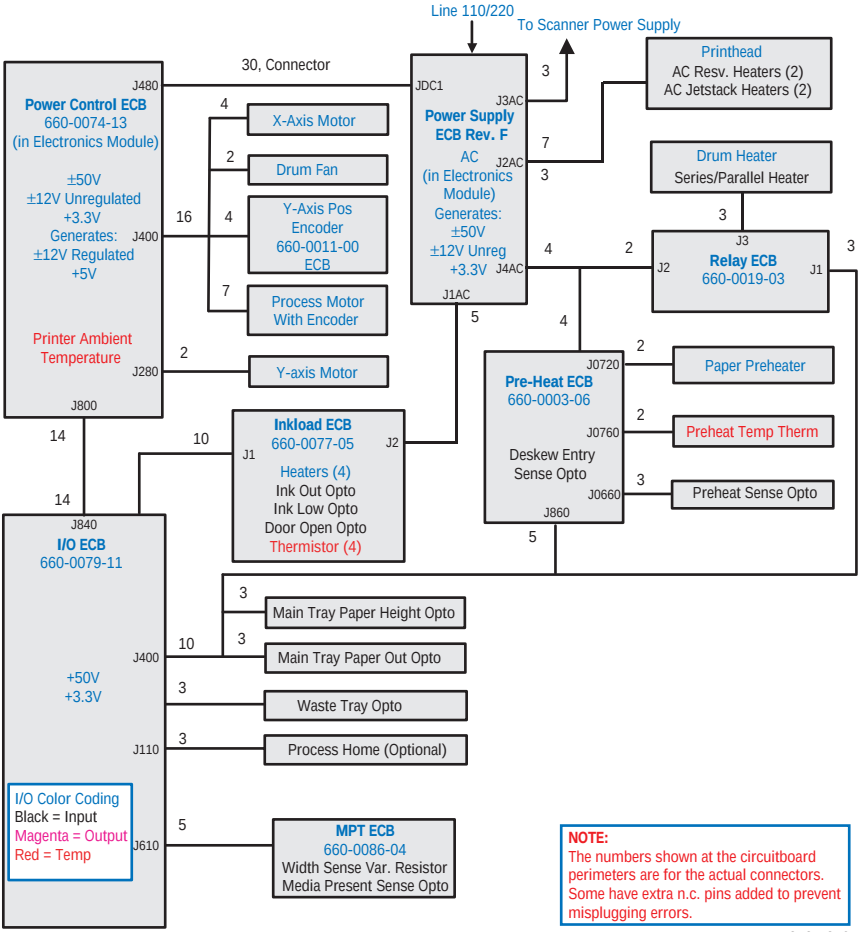




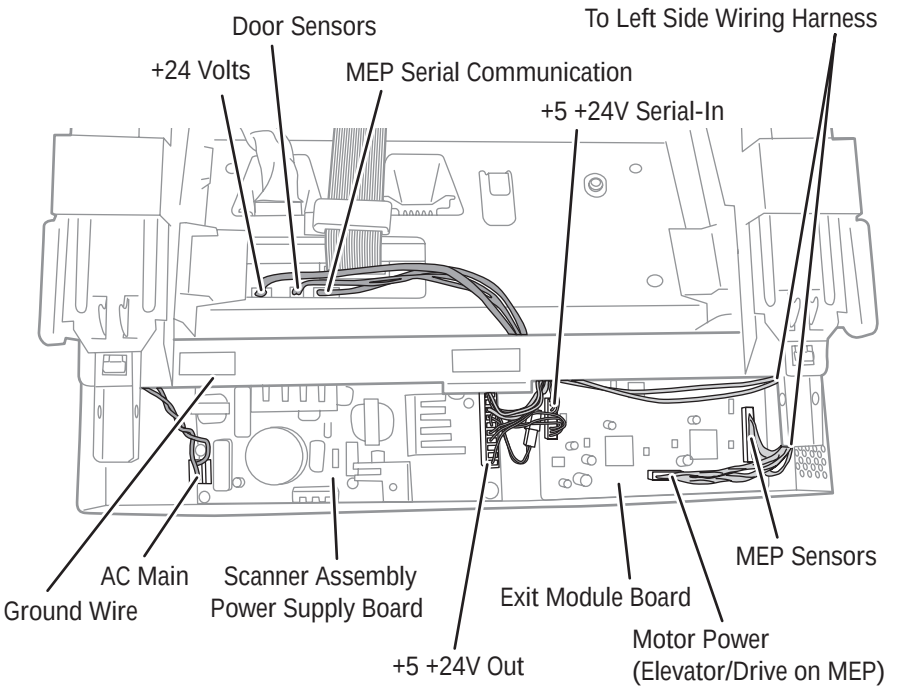
Main Block Wiring Diagram

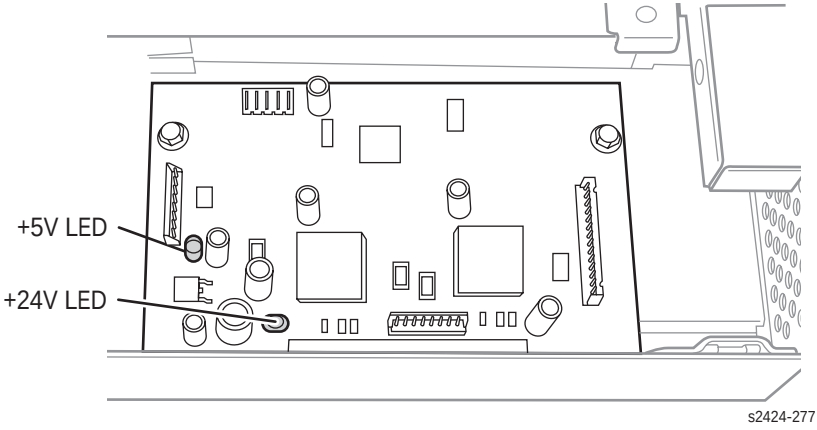


Main Block Wiring Diagram (Continued)



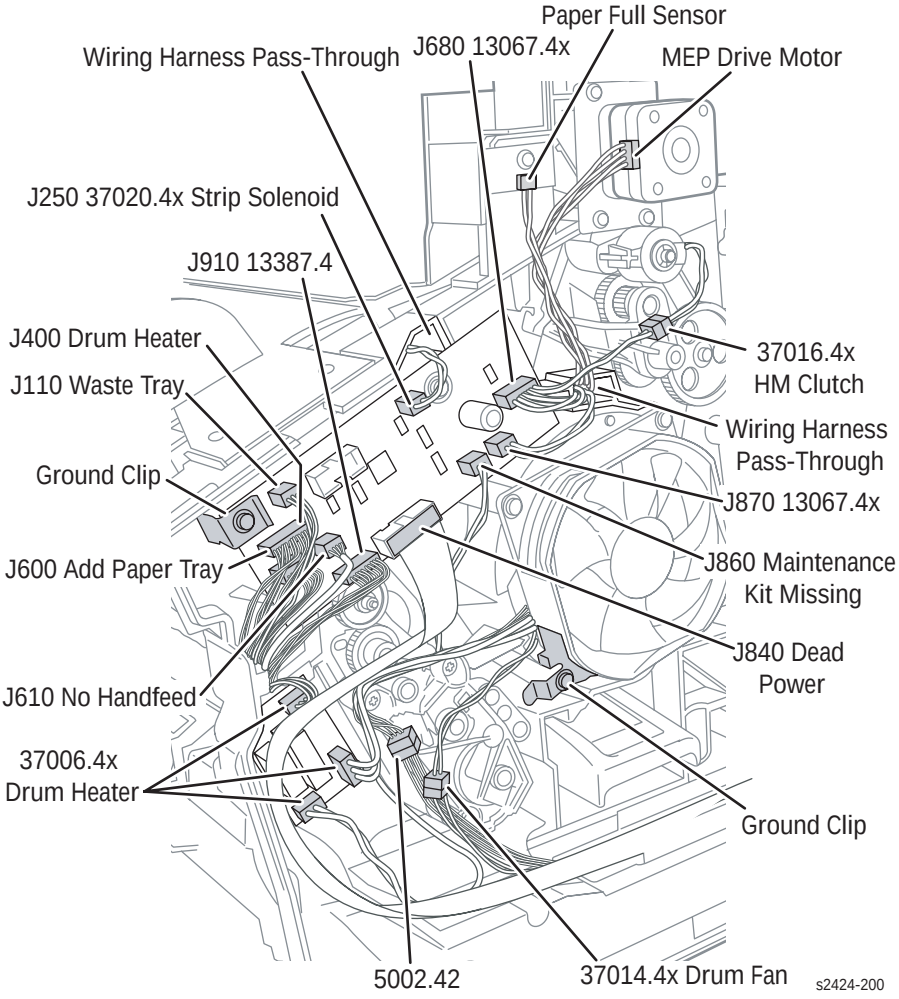
Scanner/Exit Module Power Supply and MEP (Exit Module) Board





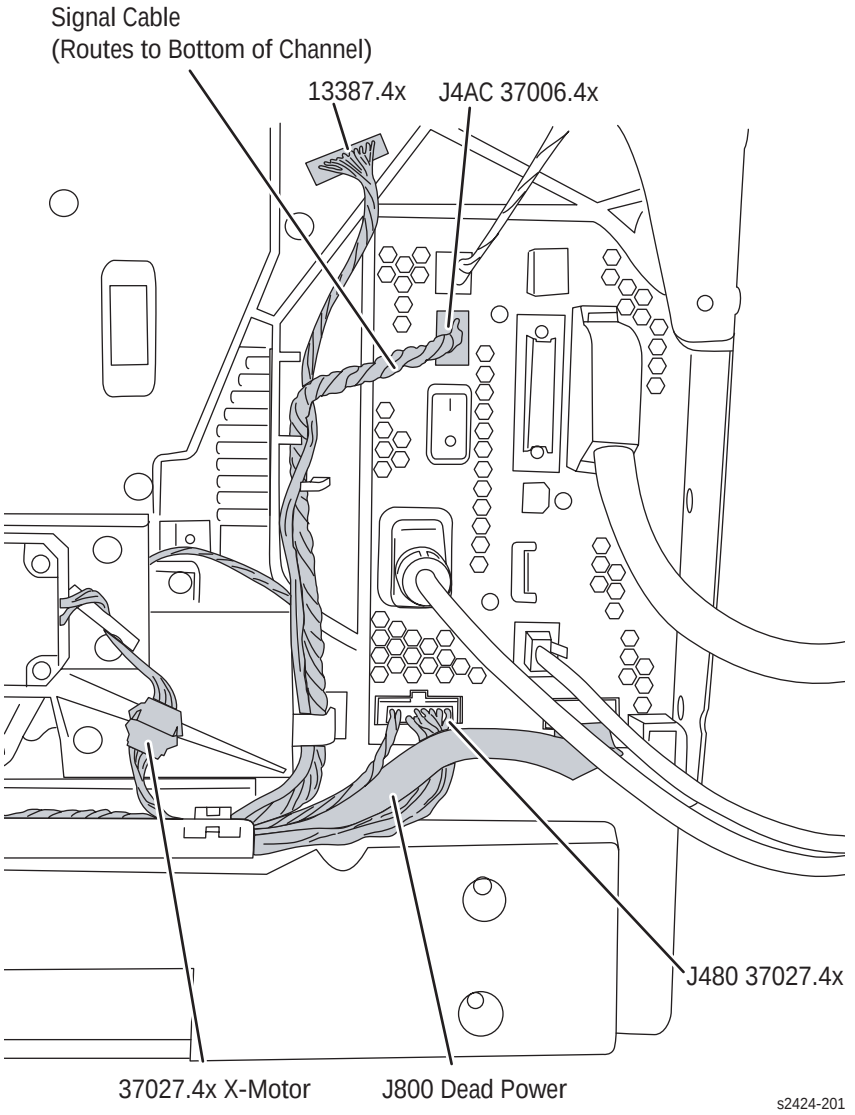
Right-Side Wiring Diagram

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



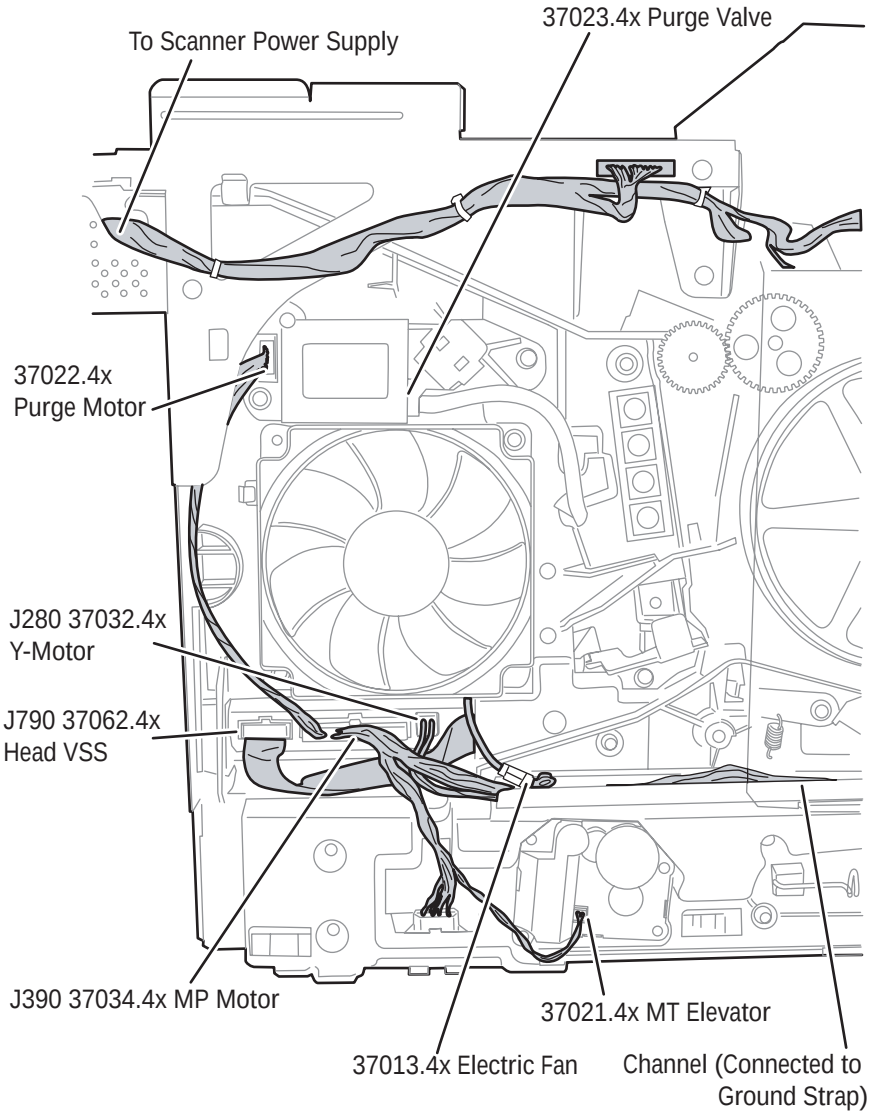
Right-Side Wiring Diagram (Continued)

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



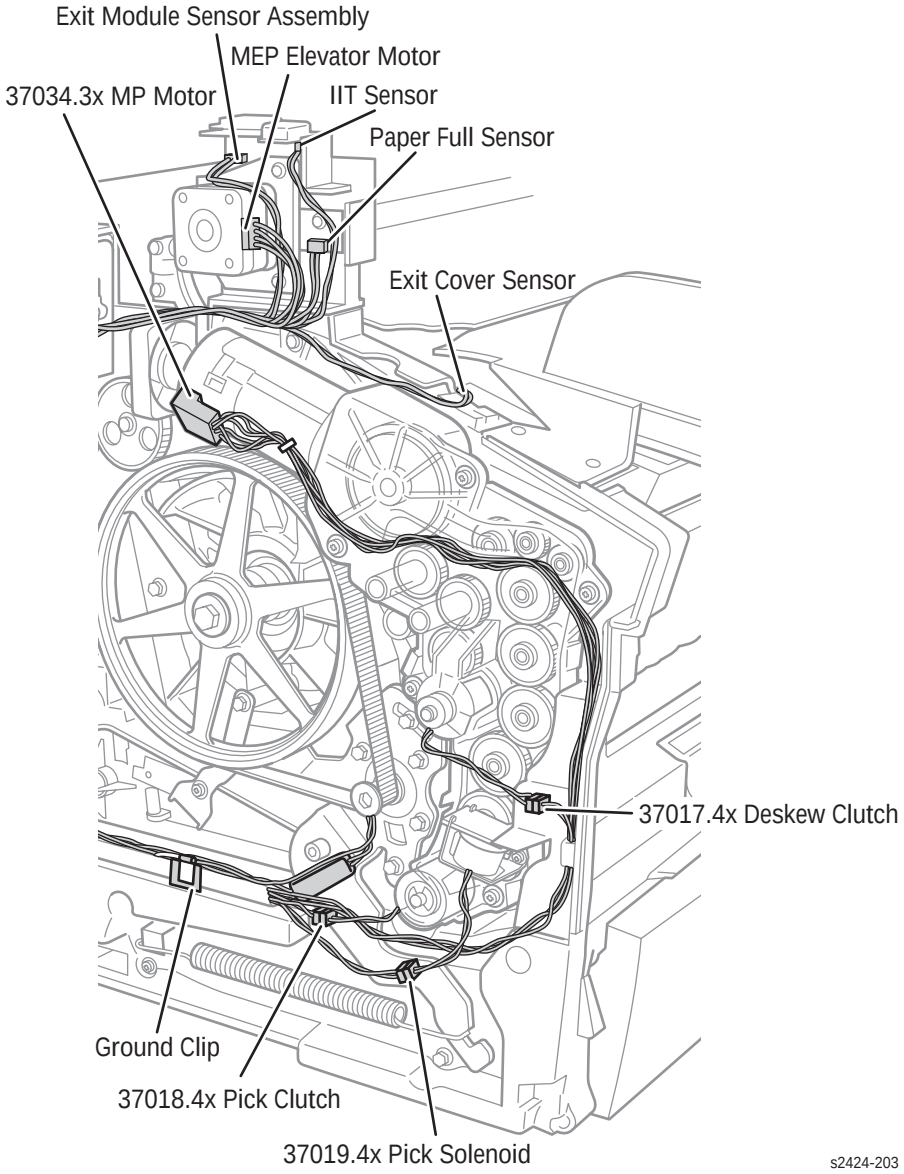
Left-Side Wiring Diagram

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



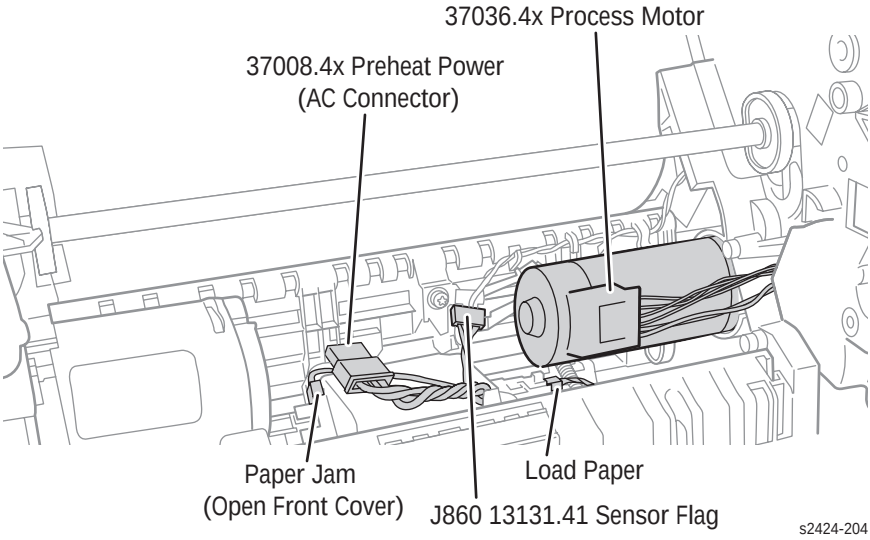
Left-Side Wiring Diagram (Continued)

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



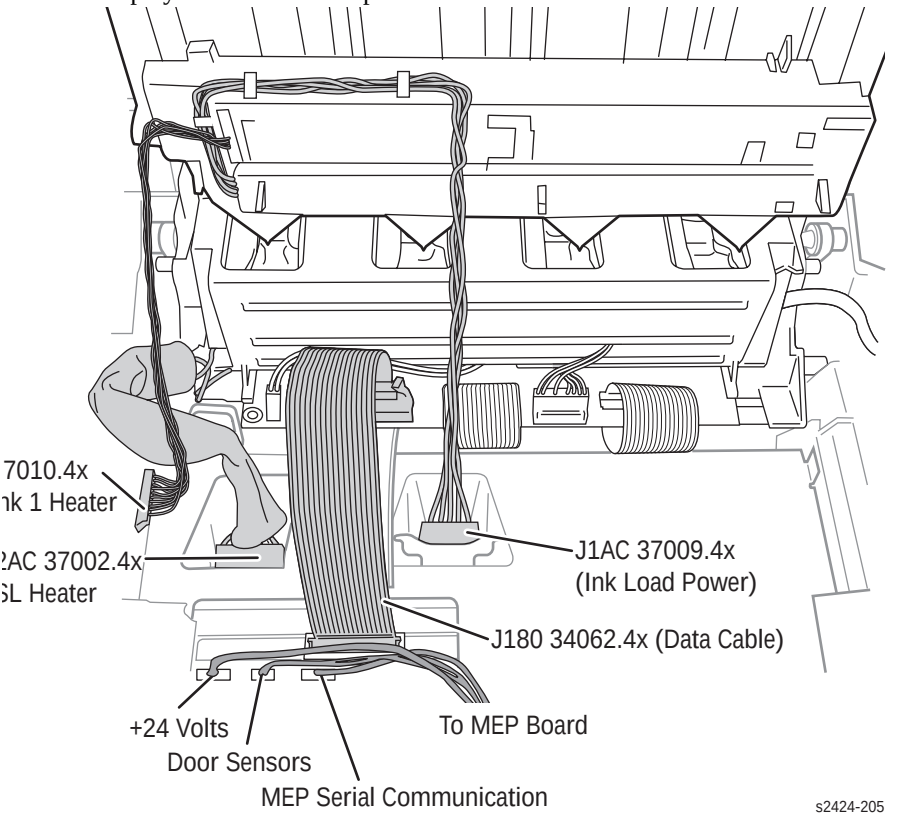
Inside Front Wiring Diagram

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



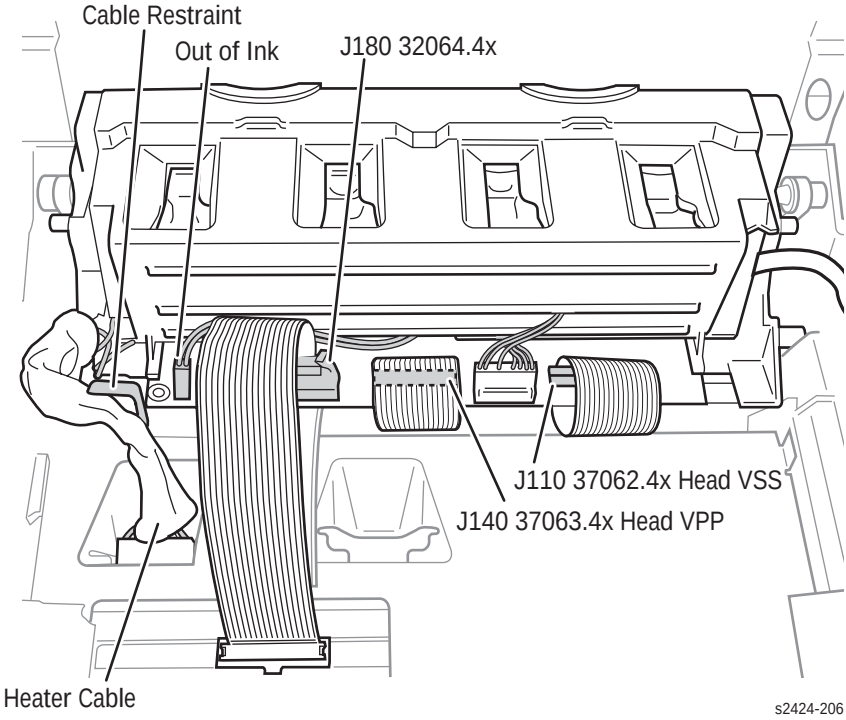
Inside Top Wiring Diagram

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

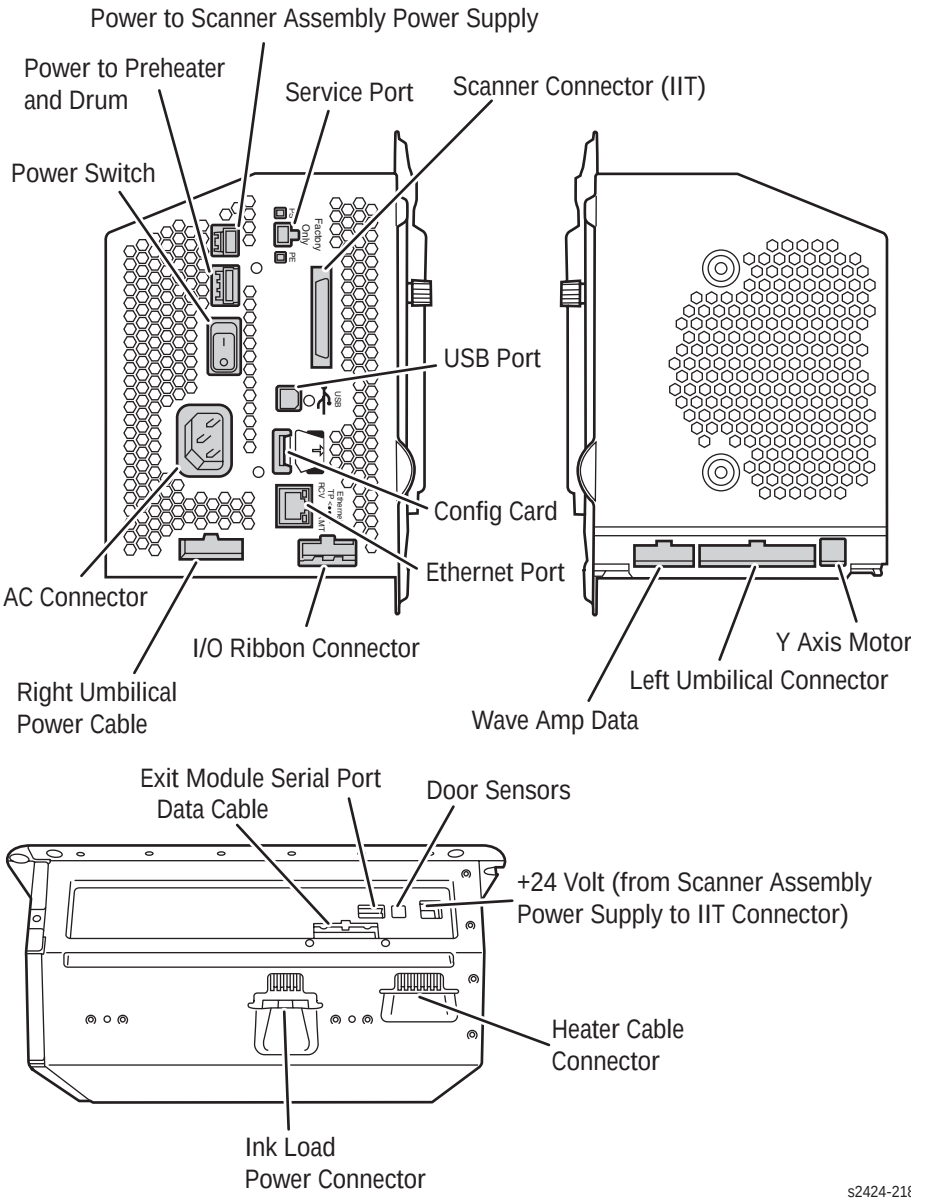


Inside Top Wiring Diagram (continued)

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



Electronics Module

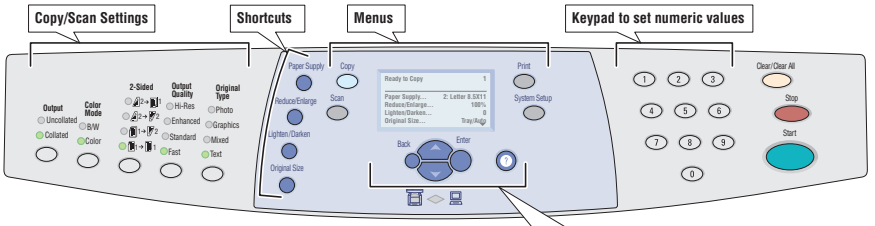


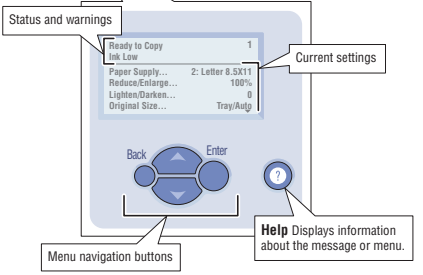
Appendix

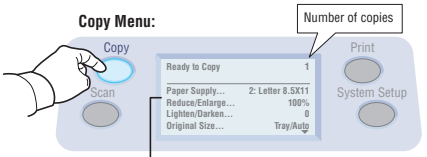
Contents…

Appendix A

Control Panel Menu Map

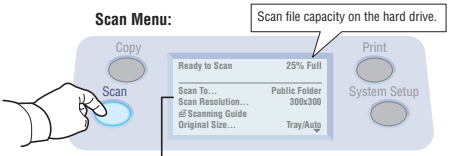






Ready to Copy

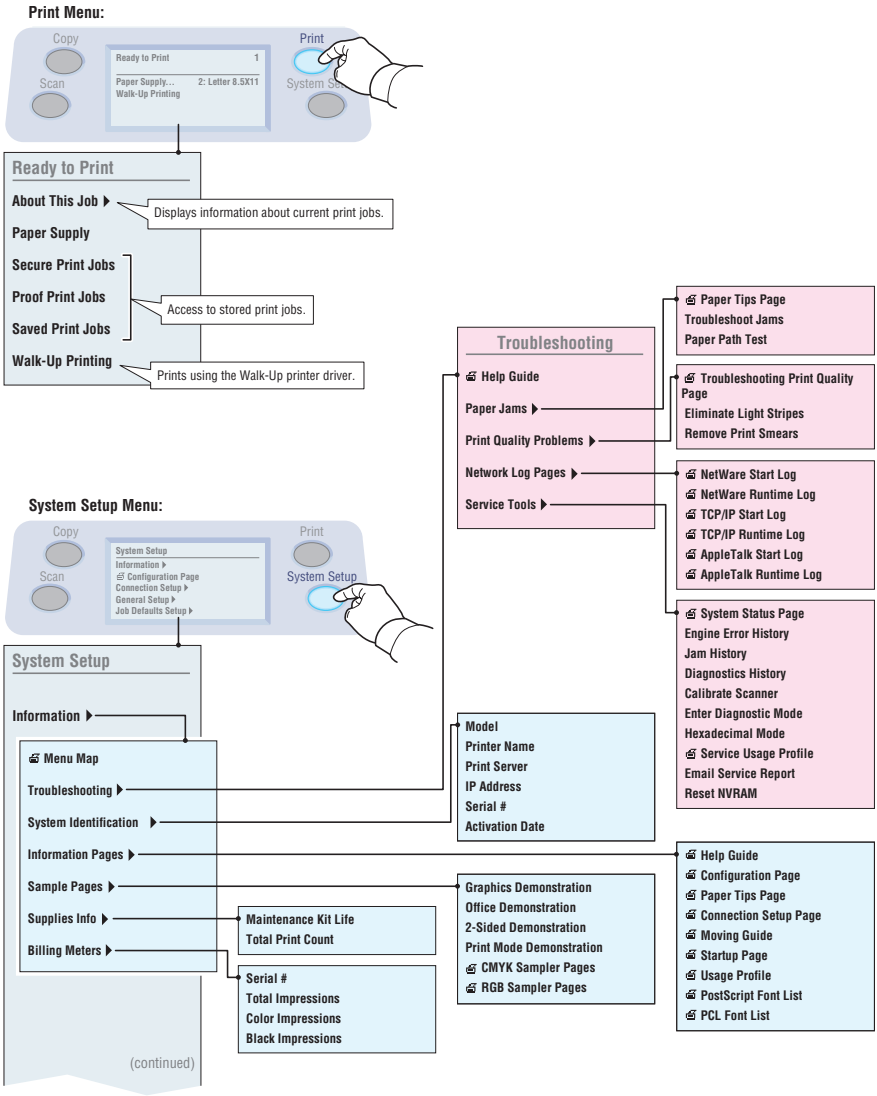
- **Paper Supply**
- **Reduce/Enlarge**
- **Lighten/Darken**
- **Original Size**
- **Edge Erase**
- **Margin Shift**
- **Auto Center**
- **Book Copy**
- **Auto Suppression**
- **Covers**
- **Blank Separators**
- **Create Booklet**
- **Repeat Image**
- **N-Up**
- **Contrast**
- **Color Balance**



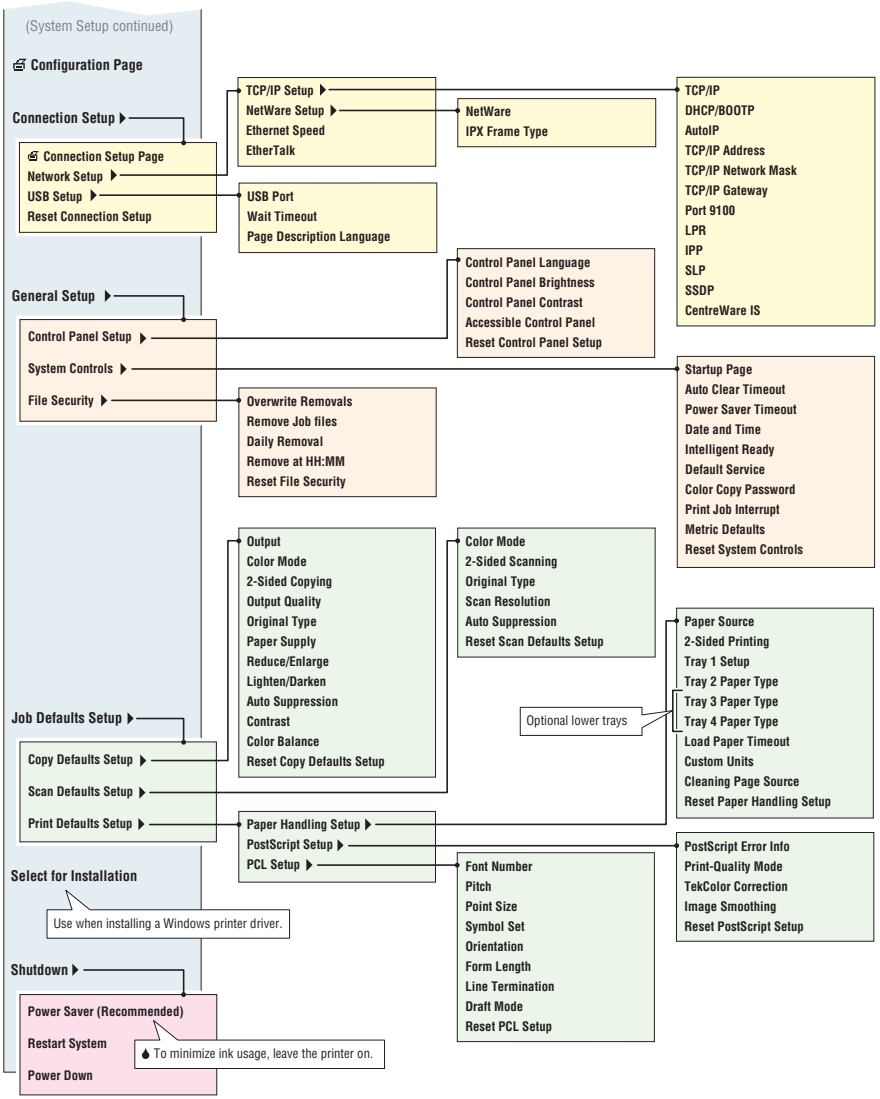
Ready to Scan

- **Scan To** — Destinations on C2424 or PC.
- **Scan Resolution**
- **Scanning Guide** — = Prints an information page.
- **Original Size**
- **Auto Suppression**
- **Clear Folder**

Control Panel Menu Map -continued-



Control Panel Menu Map -continued-



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	184.15	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
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
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
#6.75 Envelope	92.075	165.1	5	15	82.075	135.1
A6	105	148	5	5	95	138
#5.5 Baronial	111.125	146	5	15	101.125	112.9
3 x 5 Index Card	76.2	127	5	5	66.2	117
6.5 Booklet 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 (lb.)	US Text Book Weight (lb.)	US Cover Weight (lb.)	US Bristol Weight (lb.)	US Index Weight (lb.)	US Tag Weight (lb.)	Metric Weight (g/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

THE DOCUMENT COMPANY
XEROX

PRINTHEAD TROUBLESHOOTING CHECKLIST

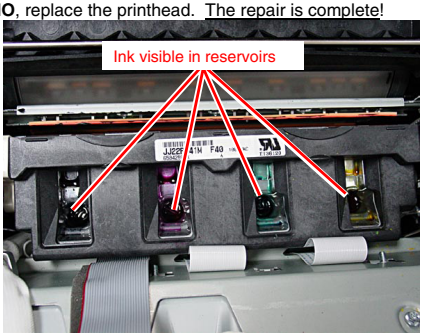
Phaser 8400/WorkCentre C2424 Version 1.1

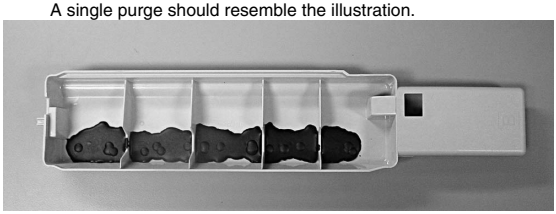
IMPORTANT! This checklist outlines proper printhead troubleshooting procedures. All Xerox service employees and any other service personnel on any job involving a printhead replacement should perform it.

Service person name	
Service Company	
Phone Number	
Date of printhead replacement	
Printer serial number	
Printhead serial number	
OUT Request ID number	

Troubleshooting Summary – Follow the checklist below and fill in spaces as they apply as you complete the troubleshooting procedures.

	Check List Items to Complete	**Value or Result**	**What to look for**
Step 1	Do you suspect or have evidence of use of generic ink?	YES NO *Circle one*	**1a**. Did the customer state that they have used generic ink in this printhead? **YES NO** **1b**. Did you observe generic sticks or related packaging at the site? **YES NO** **1c**. Are there generic ink sticks in the ink loader? **YES NO** **1d**. Does the service history indicate possible use of generic ink? **YES NO** Indicate brands and lot codes of generic ink if used: _____ If you answered **YES** to *any* of the above, be sure to document the use of non-Xerox ink in the **Comments** section of this document. Xerox U.S. personnel and Service Delivery Partners please record non-Xerox ink use in the FIST system as well as in this document.

Step 2	Print the **Service Usage Profile.** It is located in the front panel menu Troubleshooting – Service Tools.		If **Line 631 Printhead ID** lists a date, record the date (month day year) here: If **Line 636 IDU** lists any values, record the numbers here: **Printhead ID:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____ **IDU:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____ Xerox U.S. personnel please record these dates in the FIST system as well as in this document
Step 3	Does the printer display an error code indicating a problem with the printhead?	YES NO *Circle one*	If **YES** please write down the error code. _____ **3a.** If error code 13,264.4x is present in the Fault History replace the electronics module (continue to 3b). **3b.** If a printhead thermostat open or shorted error code 13,195.45, 13,197.47, 13,259.46, 13, 261.48, 13,323.47, 13.325.49 is displayed or a PEST error code 37,002.47, 37,003.48, 37,004.40, or 37,005.41, perform the following steps: **3c.** Inspect and reseat the printhead interface cable (gray ribbon cable) and retest. **3d.** Replace the electronics module and retest. **3e.** Replace the printhead. **3f.** Perform **Wiper/Purge Checklist** with new printhead.
	Visually inspect the ink reservoirs. Do they all contain ink? No ink in a reservoir indicates that an ink-level sensor has failed.	YES NO *Circle one*	If **NO**, replace the printhead. The repair is complete! 
Step 5	Has the printer had a printhead replaced before for a (non-NXI related) weak or missing jet problem?	YES NO *Circle one*	If **YES**, replace the wiper assembly. Proceed to **Step 9**. The new wiper assembly may take 6 purges to before achieving optimal performance. Ensure the wiper assembly is correctly aligned with the printhead. If the missing jet(s) recovers, the repair is complete.
Step	Is the		Is the wiper assembly out of alignment (not parallel with the printhead

6	Cap/Wipe/ Purge assembly correctly aligned?	YES NO *Circle one*	faceplate)? If **YES,** perform the wiper alignment procedure as described in the Phaser 8400 Color Printer Service Guide.
Step 7	Print Service Test Print 2: Weak and Missing Jets. Is *severe* color mixing apparent?	YES NO *Circle one*	Is there color mixing from one row to the next row for the same jet? Note: Some color mixing is normal following a purge. It usually clears after one or two prints. If **YES,** replace the wiper assembly. Repeat **Step 6.**
Step 8	Visually check the printhead faceplate. Is the faceplate contaminated?	YES NO *Circle one*	Are there streaks, smudges, or a scum of wax in the jet area (outlined in red) of the printhead? If **YES**, replace the wiper assembly. Repeat the checklist stating at **Step 6.**
Step 9a	Visually check the Wiper Assembly blade. Is it OK?		Is there any damage or separation on the wiper blade? If **YES**, replace the wiper assembly.
Step 9b	Check the purge performance of the purge system.	YES NO *Circle one*	Check the purge pump performance. **9a.** Empty the waste tray. **9b.** Select **Eliminate Light Stripes** from the printer front panel and run one cleaning cycle. **9c.** Remove the waste tray and examine how much ink was purged. A single purge should resemble the illustration.  Is the purge mass noticeably less than what is pictured? If **YES**, inspect the purge hoses for splits or tears.

Step 11	Print Service Test 2: Weak and Missing Jets.
	Are there weak or missing jet(s)?
		YES
		NO
		
		Circle one
			• If **NO** go to **Step 12**.
			• If **YES**, do the following:
			  • Check the exit area of the paper path for debris that could be scraping ink off the drum and may mimic a weak or missing jet.
			  • Select **Eliminate Light Stripes** from the printer front panel up to 3 times as needed to recover a weak or missing jet.
			  • Perform the **JetFix** technique by downloading the appropriate snippet (*such as 8400_jetfix_c.ps* for a missing cyan jet) to the printer. The snippets are available on the Customer Support Resources website in the Phaser 8400 web pages. Refer to Service Bulletin 640.
			  • If the jet is still missing, replace the printhead. The repair is complete!

Step	Is the customer		• If **YES,** print 10 solid fill pages of cyan. If the bands vary in intensity

12	experiencing vertical bands (not light stripes) in solid color areas?	YES NO *Circle one*	and/or location over the 10 prints, the customer is experiencing stagnant ink discoloration. Continue to print solid fills of the offending color until the output is uniform. It may take as many as 60 solid fill pages to refresh all of the ink in the printhead reservoir. The repair is now complete! • If **No**, the repair is complete!

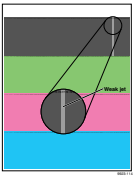
Comments: **(Xerox U.S. personnel please add all comments into FIST)**

_____
_____
_____

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

Please return the following items with the defective printhead:

- **Service Print 1** (not necessary for error code-based failures (not applicable for printheads replace because of an error code)
- This **Printhead Troubleshooting Checklist** (filled out)
- Inventory control **"Green Tag"** (filled out)
- **Sample prints** that clearly show the observed print quality defect (not applicable for printheads replace because of an error code)



Service Print 1

Numerics

A

B

C

D

E

F

G

H

I

J

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z