XEROX®

Phaser 8860/8860MFP Service Documentation

705P01205
September 2007

Phaser 8860/8860MFP Service Manual

Service Documentation

Phaser 8860/8860MFP Service Manual

705P01205

Initial Issue

09/2007

Xerox Corporation

XOG Worldwide Product Training & Information

26600 Parkway - Bldg. 60

P.O. Box 1000, M/S 7060-776

Wilsonville, OR 97070-1000

Introduction

About This Manual

The Phaser 8860/8860MFP Service Manual is the primary document used for diagnosing, repairing, maintaining, and troubleshooting these systems. The Service Manual is the controlling publication for a service call. Information on using this document is found in the Introduction section. To ensure understanding of this product, complete the Xerox Service Training Program for this particular system.

For manual updates, Service Bulletins, knowledge base, and technical support, visit www.xerox.com/office/support.

Service Manual Revision

Updates are issued as the system changes or as corrections are identified.

Organization

The titles of the sections and a description of the information contained in each section are contained in the following paragraphs:

Introduction and General Information

This section contains documentation organization, symbology and nomenclature, translated warnings, safety symbols, regulatory specifications, and general information about the printer.

Section 1 Service Call Procedures

This section contains procedures to be taken during a service call and in what sequence they are to be completed. This is the entry level for all service calls.

Section 2 Status Indicator RAPs

This section contains descriptions of the diagnostic aids for troubleshooting that include Power On Self Test (POST), Built-in Self Tests (BIST), and Fault Code error procedures.

Section 3 Image Quality

This section contains the diagnostic aids for troubleshooting image quality problems, as well as image quality specifications and image defect samples.

Section 4 Repairs/Adjustments

This section contains all the removal, replacement, and adjustments procedures.

Repairs

Repairs include procedures for removal and replacement of spare parts listed in the Parts List. Use the repair procedures for the correct order of removal and replacement, for warnings, cautions, and notes.

Adjustments

Adjustments include procedures for adjusting the parts that must be within specification for the correct operation of the system. Use the adjustment procedures for the correct sequence of operation for specifications, warnings, cautions and notes.

Section 5: Parts Lists

This section contains the illustrated Parts List.

Section 6: Diagnostic Information

This section contains details of the embedded Service Diagnostics test suite, as well as troubleshooting procedures for system problems not related to a specific fault code.

Section 7: Wiring Data

This section contains drawings, lists of plug/jack locations, and diagrams of the power distribution wire networks in the machine. Individual wire networks are shown in the Circuit Diagrams contained in Section 2. This section also contains the Block Schematic Diagrams.

Section 8: Theory of Operation

This section contains detailed functional information on the print engine components.

Power Safety

Power Source

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

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

Disconnecting Power

WARNING

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

Disconnect the power cord in the following cases:

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

Service Safety Summary

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.
- 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.

WARNING

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

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-installed options, there are no parts that you can maintain or service behind these covers

WARNING

The following are hazards to your safety:

- **Damaged or frayed Power Cord**
- **Liquid spilled into the system**
- **Exposure to water or excessive moisture**

If any of these conditions occur, do the following:

1. **Turn off the Power Switch**
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

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

Pay attention to these safety guidelines to ensure the continued, safe operation of the system.

- 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 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.*

General Guidelines

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

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

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

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

Warning Labels

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

Safety Interlocks

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

Servicing Electrical Components

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

WARNING

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

Figure 1 Electrical Components Warning

Servicing Mechanical Components

WARNING

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

Figure 2 Mechanical Components Warning

Servicing Printhead Components

WARNING

This system uses heat to fuse the image to media. The Printhead is VERY HOT. Turn the printer power off and wait at least 30 minutes for the Printhead to cool before you attempt to service the Printhead or adjacent components.

Moving the System

WARNING

Parts of the system are hot. To avoid personal injury or damage to the system, allow the ink to solidify. Run the shutdown procedure to park the Printhead and begin cooling the system. Wait at least 30 minutes for the system to cool before moving or packing the system.

- Allow the system to cool to avoid ink spills which can damage the system.
- Use the shutdown procedure from the Control Panel before moving the system.
- Never move the system if a Power Down Error-Head not Parked message is displayed. Damage to the system can occur if the Printhead is not locked before shipment.
- Use the power switch to turn off 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.
- For the 8860MFP, lock the scanhead shipping restraint before removing the scanner portion for shippment. Moving the scanner with the scanhead unlocked can damage the scanner.

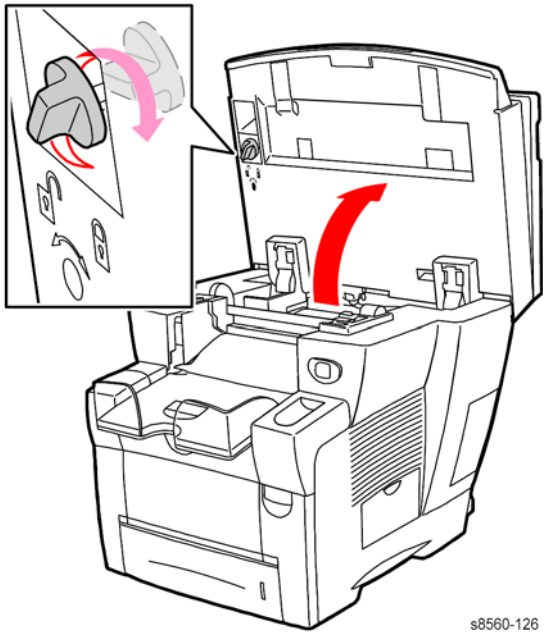


Figure 1 Locking the Scanhead

- Always remove the document feeder and Scanner before shipping the system.
- The system is heavy and must be lifted by two people.

Figure 2 System Lifting Technique

- 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. Instructions for repacking the system are included in the 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 packaging is not covered by the Xerox warranty, service agreement, or Total Satisfaction Guarantee.

Symbology and Nomenclature

The following reference symbols are used throughout the documentation.

Warnings, Cautions, and Notes

Warnings, Cautions, and Notes will be found throughout the Service Documentation. The words **WARNING** or **CAUTION** may be listed on an illustration when the specific component associated with the potential hazard is pointed out; however, the message of the **WARNING** or **CAUTION** is always located in the text. Their definitions are as follows:

WARNING

A Warning is used whenever an operating or maintenance procedure, a practice, condition, or statement, if not strictly observed, could result in personal injury.

CAUTION

A Caution is used whenever an operating or maintenance procedure, a practice, condition, or statement, if not strictly observed, could result in damage to the equipment.

***NOTE:** A Note is used whenever it is necessary to highlight an operating or maintenance procedure, practice, condition, or statement.*

Common Warnings and Safety Icons

The following common warnings are used throughout the documentation and the safety icons are displayed on the machine. Additional specific warnings are included for the listed sections.

Common Warnings

WARNING

To avoid personal injury or shock, do not perform repair or adjustment activities with the power switch on or electrical power applied to the machine.

DANGER: Afin d'éviter des blessures ou des chocs électriques, ne pas effectuer des activités de maintenance ou de réglage avec l'équipement sur Marche ou avec le cordon d'alimentation branché.

The following sections have additional specific warning information.

Table 1 Introduction and Section 4

Introduction - Symbology and Nomenclature
Section 4 - Repairs and Adjustments

WARNING

A Warning is used whenever an operating or maintenance procedure, a practice, conditioning, or statement, if not strictly observed, could result in personal injury.

DANGER: Une note DANGER est utilisée à chaque fois qu'une procédure de maintenance ou qu'une manipulation présente un risque de blessure si elle n'a pas été strictement observée.

The following sections have additional specific warning information.

Table 2 Additional Warnings

REP 2.0.2 Printhead Assembly
REP 2.0.8 Left and Right Printhead Restraints

Table 2 Additional Warnings

REP 5.0.2 Scanner Power Supply
REP 5.0.19 Drum Heater Relay Board

WARNING

HIGH VOLTAGE!

DANGER: HAUTE TENSION!

Exercise care when making the voltage check in the following steps.

DANGER: Soyez extrêmement vigilant lorsque vous effectuez les tests de tension au cours des étapes qui suivent.

WARNING

Personal injury may result from grasping hot areas of Printhead. If a hot Printhead must be removed, grasp the Printhead by black plastic frame component.

DANGER: Des blessures peuvent résulter si les zones chaudes du module de four sont touchées. Si un module de four chaud doit être enlevé, le saisir par l'élément en plastique noir du bâti.

Machine Safety Icons

The following precautionary symbols may appear on the system.

This symbol indicates DANGER high voltage.

Figure 1 High Voltage Symbol

Protective ground (earth) symbol.

Figure 2 Protective Ground (earth) Symbol

These symbols indicate hot surface on or in the printer. Use caution to avoid personal injury.

Figure 3 Hot Surface Symbol

The surface is hot while the printer is running. After turning off the power, wait 30 minutes.

Figure 4 Wait 30 Minutes Symbol

Avoid pinching fingers in the printer. Use caution to avoid personal injury.

Figure 5 Pinch Injury Symbol

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

Figure 6 Use Caution Symbol

Electrostatic Discharge (ESD) Field Service Kit

The purpose of the ESD Protection Program is to preserve the inherent reliability and quality of electronic components that are handled by the Field Service Personnel. This program is being implemented now as a direct result of advances in microcircuitry technology, as well as a new acknowledgment of the magnitude of the ESD problem in the electronics industry today.

This program will reduce Field Service costs that are charged to PWB failures. Ninety percent of all PWB failures that are ESD related do not occur immediately. Using the ESD Field Service Kit will eliminate these delayed failures and intermittent problems caused by ESD. This will improve product reliability and reduce callbacks.

The ESD Field Service Kit should be used whenever Printed Wiring Boards or ESD sensitive components are being handled. This includes activities like replacing or reseating circuit boards or connectors. The kit should also be used in order to prevent additional damage when circuit boards are returned for repair.

The instructions for using the ESD Field Service Kit can be found in ESD Field Service Kit Usage in the General Procedures section of the Service Documentation.

Voltage Measurement and Specifications

Measurements of DC voltage must be made with reference to the specified DC Common, unless some other point is referenced in a diagnostic procedure. All measurements of AC voltage should be made with respect to the adjacent return or ACN wire.

Table 3 Voltage Measurement and Specifications

Voltage	Specification
INPUT POWER 220 V	198 VAC TO 254 VAC
INPUT POWER 100 V	90 VAC TO 135 VAC
INPUT POWER 120 V	90 VAC TO 135 VAC
+5 VDC	+4.75 VDC TO +5.25 VDC
+24 VDC	+23.37 VDC TO +27.06 VDC

Logic Voltage Levels

Measurements of logic levels must be made with reference to the specified DC Common, unless some other point is referenced in a diagnostic procedure.

Table 4 Logic Levels

Voltage	H/L Specification
+5 VDC	H= +3.00 TO +5.25 VDC L= 0.0 TO 0.8 VDC
+24 VDC	H= +23.37 TO +27.06 VDC L= 0.0 TO 0.8 VDC

DC Voltage Measurements in RAPs

The RAPs have been designed so that when it is required to use the DMM to measure a DC voltage, the first test point listed is the location for the red (+) meter lead and the second test point is the location for the black meter lead. For example, the following statement may be found in a RAP:

There is +5 VDC from TP7 to TP68.

In this example, the red meter lead would be placed on TP7 and the black meter lead on TP68.

If a second test point is not given, it is assumed that the black meter lead may be attached to the copier frame.

Electrostatic Discharge Precautions

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

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

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

Regulatory Specifications

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

United States (FCC Regulations)

The Phaser 8860/8860MFP has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with these instructions, it may cause harmful interference to radio communications. Operation of Class A equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. 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.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

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

Canada (Regulations)

This Class A digital apparatus (8860/8860MFP) complies with Canadian ICES-003.

Cet appareil numérique (8860/8860MFP) de la classe A est conforme à la norme NMB-003 du Canada.

European Union

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Radio Equipment & Telecommunications Terminal Equipment Directive

The Phaser 8860MFP has been self-certified by Xerox for pan-European single terminal connection to the analogue public switched telephone network (PSTN) in accordance with Directive 1999/5/EC. The product has been designed to work with the national PSTNs and compatible PBXs of the following countries:

Table 1 Supported Countries

Austria	Germany	Luxembourg	Sweden
Belgium	Greece	Netherlands	Switzerland
Denmark	Iceland	Norway	United Kingdom
France	Ireland	Portugal	Finland
Italy	Spain		

In the event of a problem you should contact your authorized local dealer in the first instance. This product has been tested to and is compliant with TBR21, a specification for terminal equipment for use on analogue-switched telephone networks in the European Economic Area. This product provides an user-adjustable setting of the country code. Refer to the customer documentation for this procedure. Country codes should be set prior to connecting this product to the network.

NOTE: *Although the 8860MFP can use either loop disconnect (pulse) or DTMF (tone) signaling, it is recommended that it is set to use DTMF signaling. DTMF signaling provides reliable and faster call setup. Modification of this product, connection to external control software or to external control apparatus not authorized by Xerox, will invalidate its certification.*

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.

Phaser 8860/8860MFP Overview

The Phaser 8860 in either the printer (8860) or multifunction (8860MFP) configuration uses a Printhead and a new formulation of solid-ink sticks, with an image processor supporting PostScript 3 and PCL5c page description languages. The system is a high performance, Letter or A4, 30 page per minute (ppm) product, supporting resolutions up to 525 x 1200 dots-per-inch (dpi). The both products feature USB and 10/100 base T Ethernet ports. The 8860MFP includes an RJ-11 Fax port with an optional Foreign Device Interface (FDI) for specialized installations. The 8860/8860MFP provides a 100-sheet Tray 1 from which specialty media, card stock, and envelopes are fed. Tray 1 also supports manual feeding. Tray 2 provides 525 sheets of capacity. The Output Tray holds 250 sheets facedown. The 8860MFP features a Duplex Automatic Document Feeder (DADF) providing enhanced document handling functionality.

Phaser 8860/8860MFP options add memory, media capacity and functionality. RAM memory upgrades are available to raise installed memory to the 1 GB maximum. A 525-Sheet Feeder is also available. Two 525-Sheet Feeders may be installed to raise the maximum media input storage capacity to 1675 sheets. The System Cart is available for mobility and increased media storage.

After a predefined period of time since its last activity, the Phaser 8860/8860MFP enters a power saving standby mode. All communications interfaces remain active and have the ability to wake the system up.

CAUTION

Phaser 8860/8860MFP products use a new formulation of Ink having unique properties. The Ink Loader on these products is keyed to accept this Ink shape only. The use of Ink not specifically designed for this product can result in system failures.

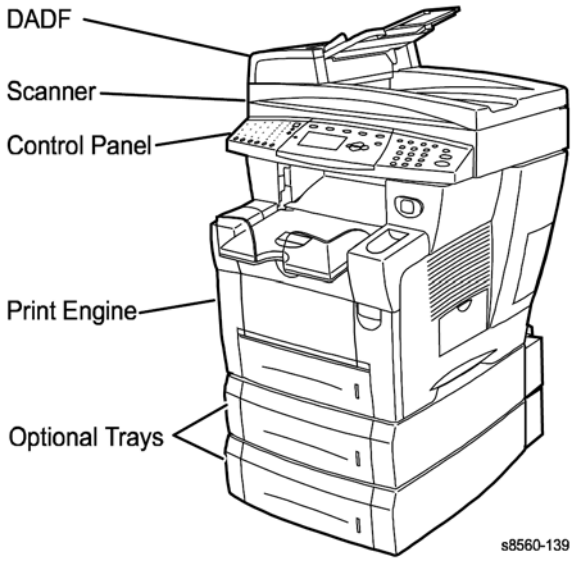


Figure 1 Phaser 8860MFP Multifunction Product with Optional Trays

System Configurations

Standard Features

The Phaser 8860/8860MFP offers these standard features:

- Maximum print speed (pages per minute) based on letter-size plain paper:

  NOTE: *Print speeds for media fed from Tray 1 may be up to 50% slower.*

Table 1 Phaser 8860/8860MFP Print Speeds

Phaser 8860 Color Printer	Phaser 8860MFP Multifunction Product
PostScript Print Quality Modes: – Fast Color: 30 ppm – Standard: 24 ppm – Enhanced: 16 ppm – High Resolution/Photo: 10 ppm	PostScript Print Quality Modes: – Fast Color: 30 ppm – Standard: 24 ppm – Enhanced: 16 ppm – High Resolution/Photo: 10 ppm
PCL Print Quality Modes: – 300 x 600 dpi: 16 ppm – 600 x 600 dpi: 8 ppm	PCL Print Quality Modes: – 300 x 600 dpi: 16 ppm – 600 x 600 dpi: 8 ppm

- First-page-out: 6 seconds for color prints, 15 seconds for color copies
- Copy, Print, Scan, Fax capabilities (options vary according to configuration and memory)
- Connections: USB, Ethernet 10/100 Base-Tx, Foreign Device Interface (available)
- RJ-11 Fax Modem (8860MFP only)

Available Configurations

Table 2 lists the standard configurations.

Table 2 Phaser 8860/8860MFP Configurations

Features	8860	8860MFP
Memory	256 MB	512 MB
Hard Drive	No*	Yes
Automatic 2-sided Printing (DADF)	No	Yes
525-Sheet Feeder	No*	No*
System Cart	No*	No*
Copy	No	Yes
Scan to PC	No	Yes
Scan to E-mail	No	Yes
Scan to Hard Drive	No	Yes
Fax	No	Yes
* This option can be purchased separately for this configuration.		

Product Options

Phaser 8860/8860MFP options include:

- Additional Trays
- Memory
- System Cart

Additional Trays

Trays 1 and 2 are standard on all configurations. The following additional tray combinations are supported:

- One 525-Sheet Feeder (Tray 3)
- Two 525-Sheet Feeders (Trays 3 and 4)

Memory

All configurations have two memory slots supporting 256 MB, 512 MB, and 1 GB SODIMM modules (up to maximum of 1 GB DDR2).

System Cart

The System Cart supports a fully-optioned system and provides space for media storage.

Metered Printing

Metered printing (PagePack), involves the combination of control software and specialized Ink Sticks to meter system activity for billing purposes. The Configuration page lists Metered Ink as Enabled when metering is enabled.

Metered Operation

When a metered printer is initialized at first power-up, the customer sets the printer to Metered operation using a unique, factory-supplied, 4-digit PIN. Once set to Metered operation, the control software performs the following:

1. The Mode and PIN-entered values in Engine Control Board NVRAM are set.
2. The Control Panel momentarily displays “Metered Ink is now enabled”, then returns to “Ready” (if no other errors).
3. The First Time Tips pages and the Configuration page are printed.

If an incorrect PIN is entered, “Incorrect numeric password” displays with a prompt “Retry” or “Do not retry.” Retry returns to the enter prompt, “Do not retry” returns to the Replace Ink Stick error message. The error persists until the correct PIN is entered.

NOTE: *The Hidden Service menu provides an Enable Metered Ink option to restore the Metered mode parameters to NVRAM should they become lost or corrupt.*

Metered Ink

To support metered printing, metered Ink Sticks are available in all four colors. The shape of the metered Ink Stick differs from the non-metered versions.

Parts of the 8860MFP

Front View

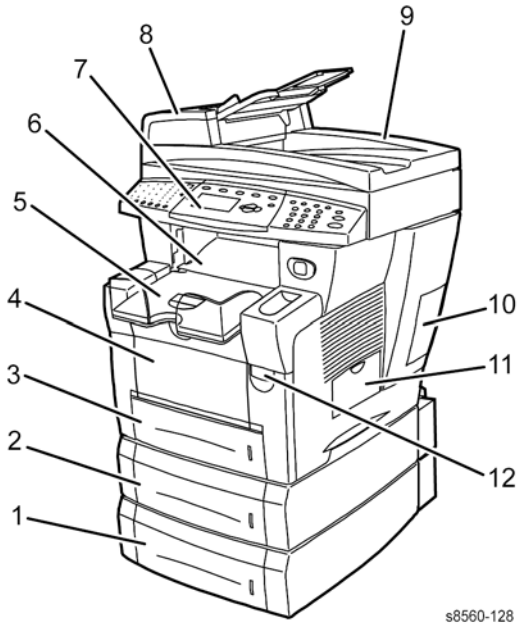


Figure 1 8570MFP Front View

1. Tray 4 (optional)
2. Tray 3 (optional)
3. Tray 2
4. Tray 1 (MPT)
5. Output Tray
6. Exit Cover
7. Control Panel
8. Duplex Automatic Document Feeder (DADF) Front Cover
9. DADF
10. Interface Cover
11. Drum Maintenance Kit and Waste Tray access
12. Front Door Latch

Open View

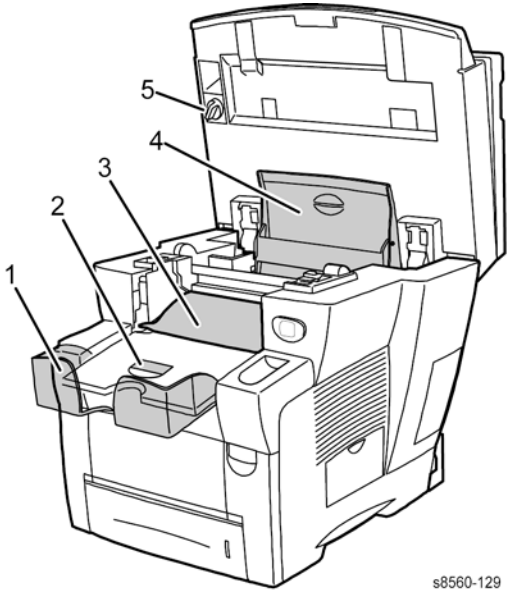


Figure 2 Open View

1. Output Tray
2. Short Paper Stop
3. Exit Cover
4. Ink Loader Cover
5. Scan Head Lock

Side View with Interface Connections

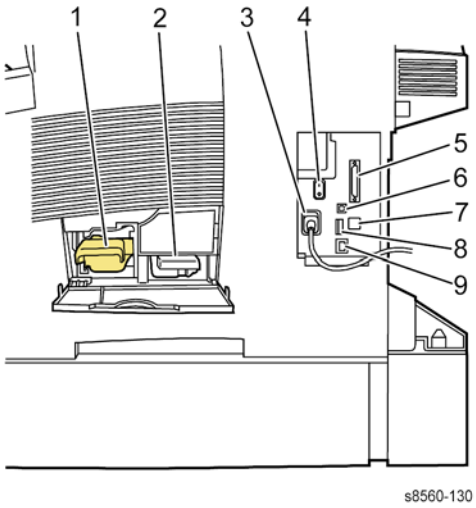


Figure 3 Side View with Interface Connections

1. Drum Maintenance Kit
2. Waste Tray
3. AC Power Cord Connection
4. Power Switch
5. Scanner Cable Connection
6. USB Connection
7. Ethernet Connection
8. Configuration Card
9. RJ-11 Fax Modem Connection

Back View - Electronics Module

The system's main electronics and power supply are enclosed in a metal case called the Electronics Module. The Electronics Module's rear panel allows access to the RAM, and NVRAM chips. The optional Hard Drive mounts on the rear panel.

NOTE: *When replacing the electronics module, transfer these components to the new module.*

- *RAM*
- *Configuration Card*
- *NVRAM Device*
- *Hard Drive or Flash Disk*

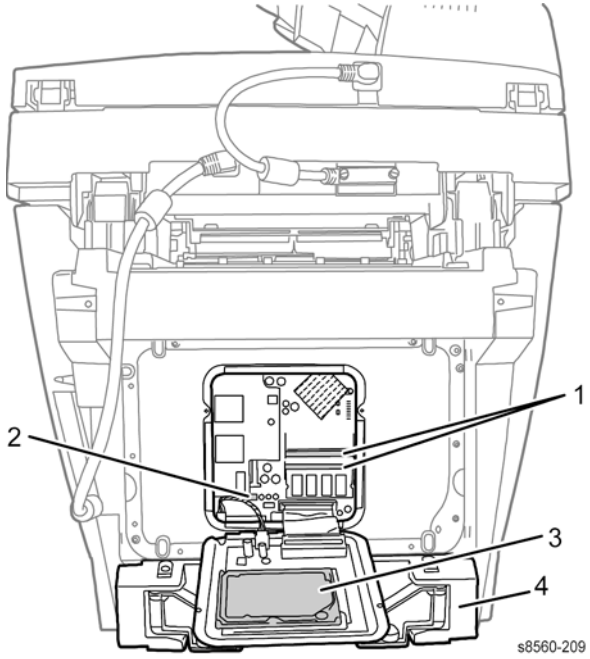


Figure 4 Back View

1. RAM Connectors
2. NVRAM Device
3. Hard Drive
4. Printer Stabilizer (8860MFP only)

Routine Maintenance Items

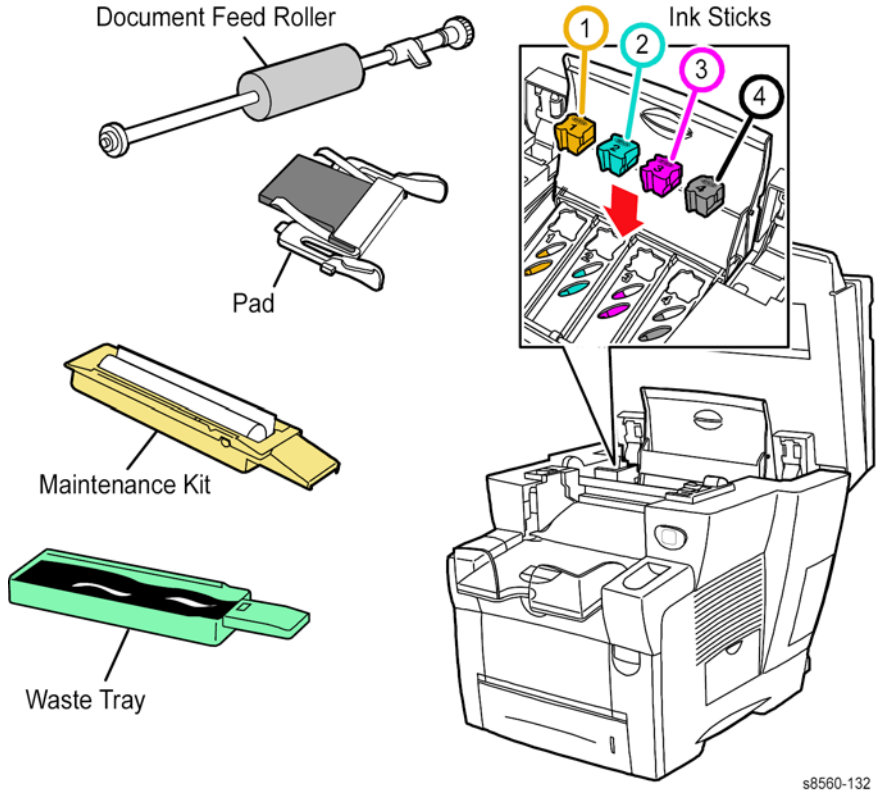


Figure 5 Routine Maintenance Items and Consumables

Table 1 Routine Maintenance Life Expectancy

Routine Maintenance Items	
Extended-Capacity Maintenance Kit	30,000 cycles (0-20% coverage) 20,000 cycles (20-100%) coverage.
Standard-Capacity Maintenance Kit	10,000 cycles
Waste Tray	Empty every 7 Purges
DADF Pick Rollers and Separator Pad	50,000 scans

Consumables

CAUTION

Phaser 8860/8860MFP products use a new formulation of Ink having unique properties. The Ink Loader on these products is keyed to accept this Ink shape only. The use of Ink not specifically designed for this product can result in system failures.

8860MFP Control Panel Layout

The Control Panel functions are segregated into three areas.

Figure 1 8860MFP Control Panel

Table 1 Control Panel Functional Areas

Left Side	Center	Right Side
Copy, Scan, and Fax functions and indicator LEDs	Display, Mode, Navigation buttons, and status LED's	Numeric keypad, Stop, Start, Clear, and Clear All buttons

Control Panel Left

The left side of the Control Panel contains the copy, scan, fax controls and LEDs. A lighted LED indicates the current selection. Figure 2 shows each function's location.

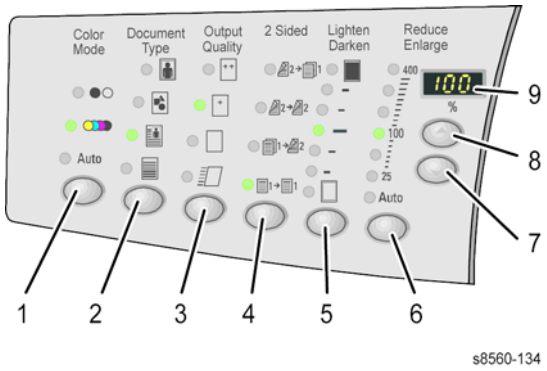


Figure 2 Left Side Control Panel

1. Color Mode selects black and white or color for copy or scan jobs.
2. Document Type selects the type of document (photo, graphic, mixed text and graphics, or text only), for copy or scan jobs.
3. Output Quality selects the output quality mode for copies: fast color, standard, enhanced, or high-resolution/photo.
4. 2-Sided selects either one or 2-sided for the original and one- or 2-sided for the output.
5. Lighten/Darken selects a setting for copy, scan, or fax jobs.
6. Reduce/Enlarge selects scale percentage for output: 25, 50, 100, 150, 200, 400.

7. The Down Arrow reduces the reduce/enlarge percentage in one percent increments.
8. The Up Arrow increases the reduce/enlarge percentage in one percent increments.
9. Reduce/Enlarge Percentage display indicates the current educe/enlarge setting.

Control Panel Center

The center of the Control Panel contains the display, mode and navigation buttons, as well as the status LED. Figure 3 shows each function's location.

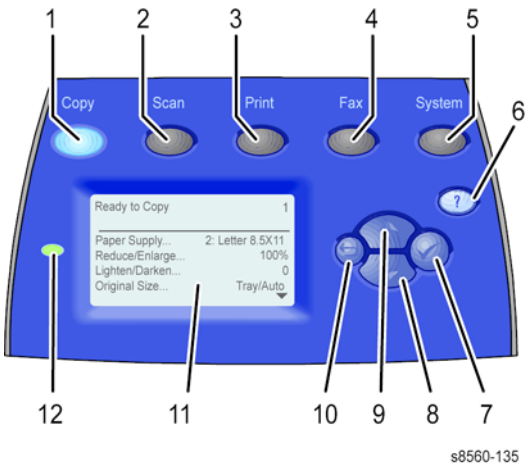


Figure 3 Center Control Panel

1. Copy displays the Copy menu.
2. Scan displays the Scan menu.
3. Print displays the Print menu.
4. Fax displays the Fax menu.
5. System displays the System Setup menu.
6. Help(?) provides additional information about the menu or message displayed.
7. OK accepts the highlighted menu selection.
8. Down Arrow scrolls downward through menu selections.
9. Up Arrow scrolls upward through menu selections.
10. Back returns the previous menu to the display.
11. Control Panel display.
12. Status LED uses color to indicate these states of the current function:
    - Green indicates the system is ready to print, copy, scan, or fax.
    - Yellow indicates a warning condition. The system continues the operation.
    - Red indicates a startup or operational error condition.
    - Blinking indicates a warm-up or busy condition.

Control Panel Right

The right side of the Control Panel contains the numeric keypad, Start, Stop, and Clear buttons, as well as Fax control functions. Figure 4 shows each function's location.

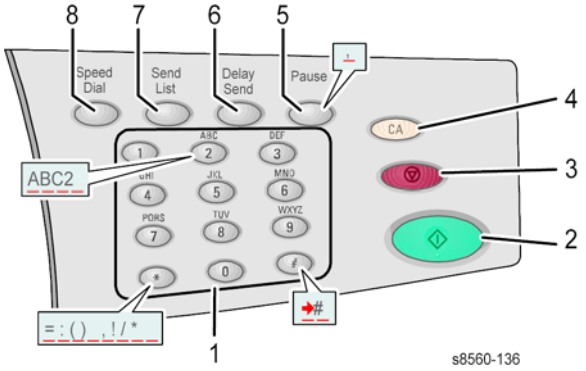


Figure 4 Right Side Control Panel

1. Numeric keypad for entering numbers for sending a fax, selecting a number of copies, or entering a numeric password.
2. Start initiates the selected function (copy, scan. or fax).
3. Stop pauses a print, copy, scan, or fax job. To cancel the job, follow the instructions indicated on the display.
4. Clear All resets all job settings and returns to the top of the default function.
5. Pause enters a pause in a fax number.
6. Delayed Send stores a time for fax transmission.
7. Send List to view or add fax numbers to a list.
8. Speed Dial accesses directories of groups or individual fax numbers.

Control Panel Shortcuts

Table 2 Short Cuts

Mode	Press this selection at Power On
Skip execution of POST diagnostics	OK
Print Service Diagnostics Map	INFO
Reset PostScript NVRAM	BACK+ON
Password Bypass	UP+DOWN

NOTE: *To enter Service Diagnostics, press the* BACK and ? buttons before the Xerox logo stops scrolling and until Beginning Service Mode appears.

Parts of the 8860

Front View

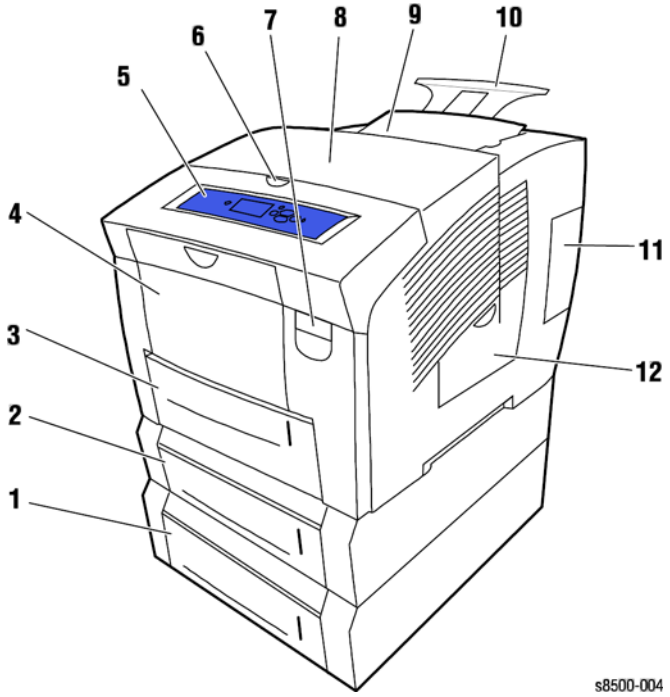


Figure 1 8570MFP Front View

1. Tray 4 (optional)
2. Tray 3 (optional)
3. Tray 2
4. Tray 1 (MPT)
5. Control Panel
6. Exit Cover Release
7. Front Door Release
8. Exit Cover
9. Ink Loader
10. Output Tray Extension
11. Interface Cover
12. Side Door

Side View with Interface Connections

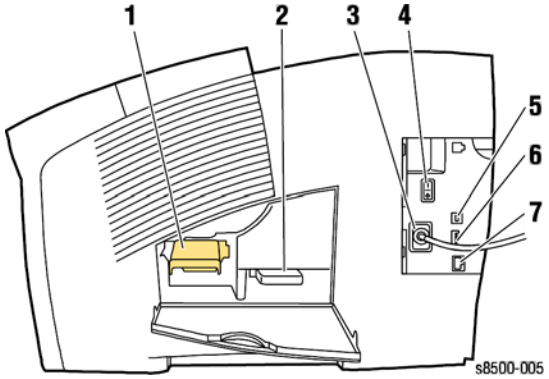


Figure 2 Side View with Interface Connections

1. Drum Maintenance Kit
2. Waste Tray
3. AC Power Cord Connection
4. Power Switch
5. USB Connection
6. Configuration Card
7. Ethernet Connection

Back View - 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, if installed, is mounted on the rear panel.

NOTE: *When replacing the electronics module, transfer these components to the new module.*

- *RAM*
- *Configuration Card*
- *NVRAM Device*
- *Hard Drive or Flash Disk*

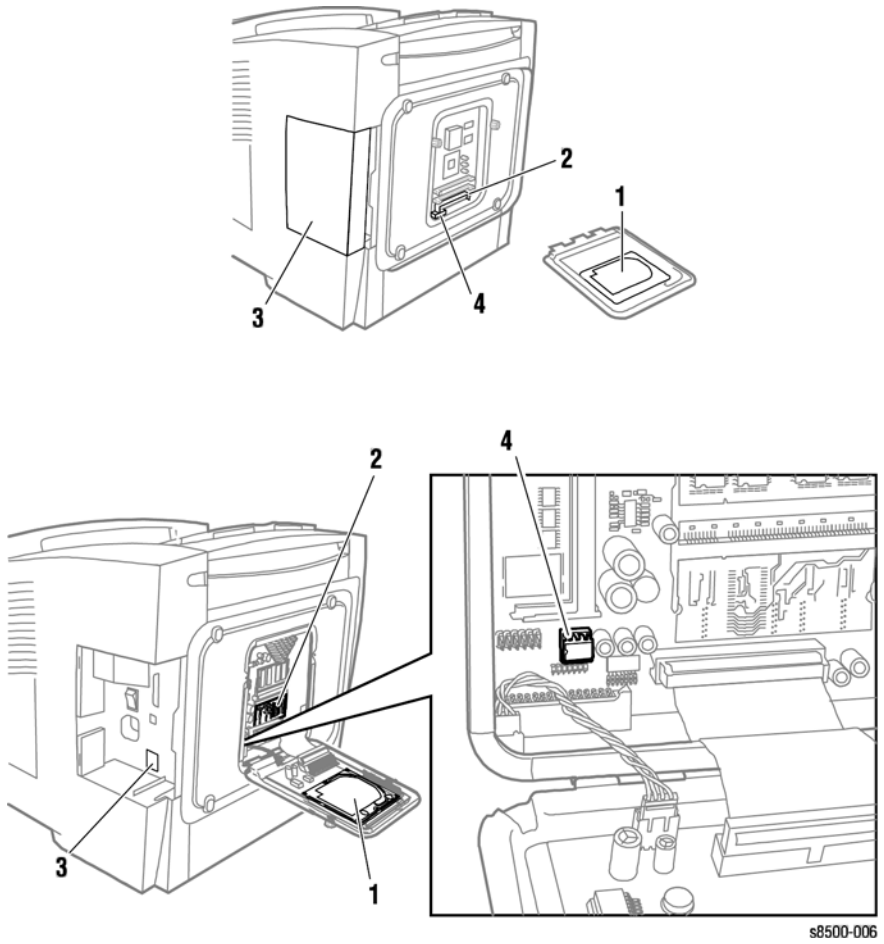


Figure 3 Back View

1. Hard Drive (optional)
2. Memory
3. Configuration Card
4. NVRAM Device

Routine Maintenance Items

Drum Maintenance Kit life expectancy depends on the kit capacity. For example, the standard-capacity kits produce 10,000 prints regardless of the colors used. Extended-capacity Drum Maintenance Kits for 8860 models produce 30,000 pages up to 20% coverage and 20,000 pages when coverage exceeds 20%. The Phase 8860/8860MFP uses a unique Drum Maintenance Kit. See Section 5 for the correct replacement part.

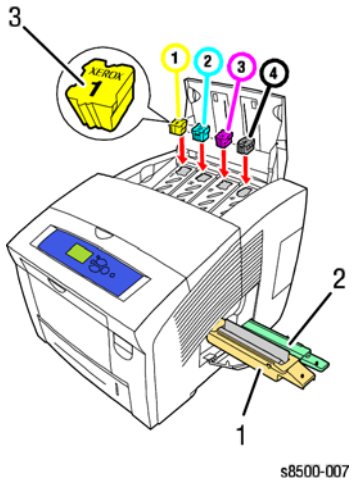


Figure 4 Routine Maintenance Items and Consumables

Table 1 Routine Maintenance Life Expectancy

Routine Maintenance Items	
Extended-Capacity Maintenance Kit	30,000 cycles (0-20% coverage) 20,000 cycles (20-100%) coverage.
Standard-Capacity Maintenance Kit	10,000 cycles
Waste Tray	Empty every 7 Purges
DADF Pick Rollers and Separator Pad	50,000 scans

Consumables

CAUTION

Phaser 8860/8860MFP products use a new formulation of Ink having unique properties. The Ink Loader on these products is keyed to accept this Ink shape only. The use of Ink not specifically designed for this product can result in system failures.

8860 Control Panel Layout

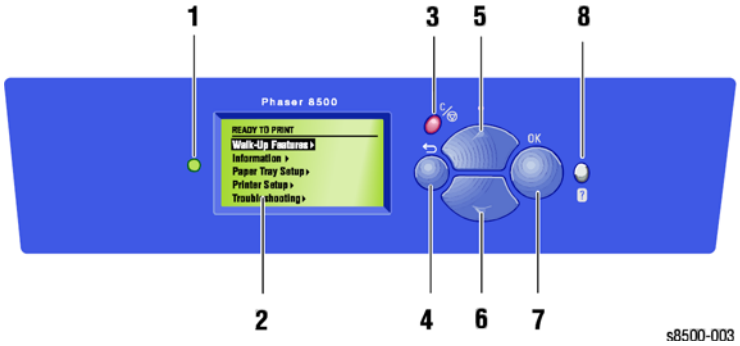


Figure 1 8860 Control Panel

1. Status LED.
   - Green is Ready to Print
   - Yellow is Warning condition, printer continues to print
   - Red is Startup sequence or error condition
   - Blinking is printer is busy or warming up
2. Display
3. Cancel button cancels the current print job
4. Back button returns to the previous menu item
5. Up Arrow button scrolls upward through the menus
6. Down Arrow button scrolls downward through the menus
7. OK button accepts the selected setting
8. Help (?) button provides additional information, such as status, error messages, and maintenance information

Control Panel Shortcuts

Table 1 Short Cuts

Mode or Menu	Press These Buttons
Service Tools Menu	From any menu, press and hold the Up Arrow, then press OK.
Hidden Service Menu	From the Service Tools menu, press and hold the Up Arrow, and then press the Down Arrow.
Service Diagnostics	When the Display turns black, press and hold Back and Help until “Beginning Service Mode” appears.
Control Panel language	Press and hold the Cancel button, then press the Help button.
Bypass protected menus	Press and hold the Cancel button, then press the Back button..

Table 1 Short Cuts

Mode or Menu	Press These Buttons
FTTR (Fast Time To Ready)	Printer goes to the ready state without waiting for temperatures to reach operating values. On power-up, when the Xerox splash screen displays, press and release the Up Arrow button, then press the Down Arrow button. If the printer detects ink on the drum, the display indicates a warming-up status.

8860 Menu Map

NOTE: *Maps vary by model.*

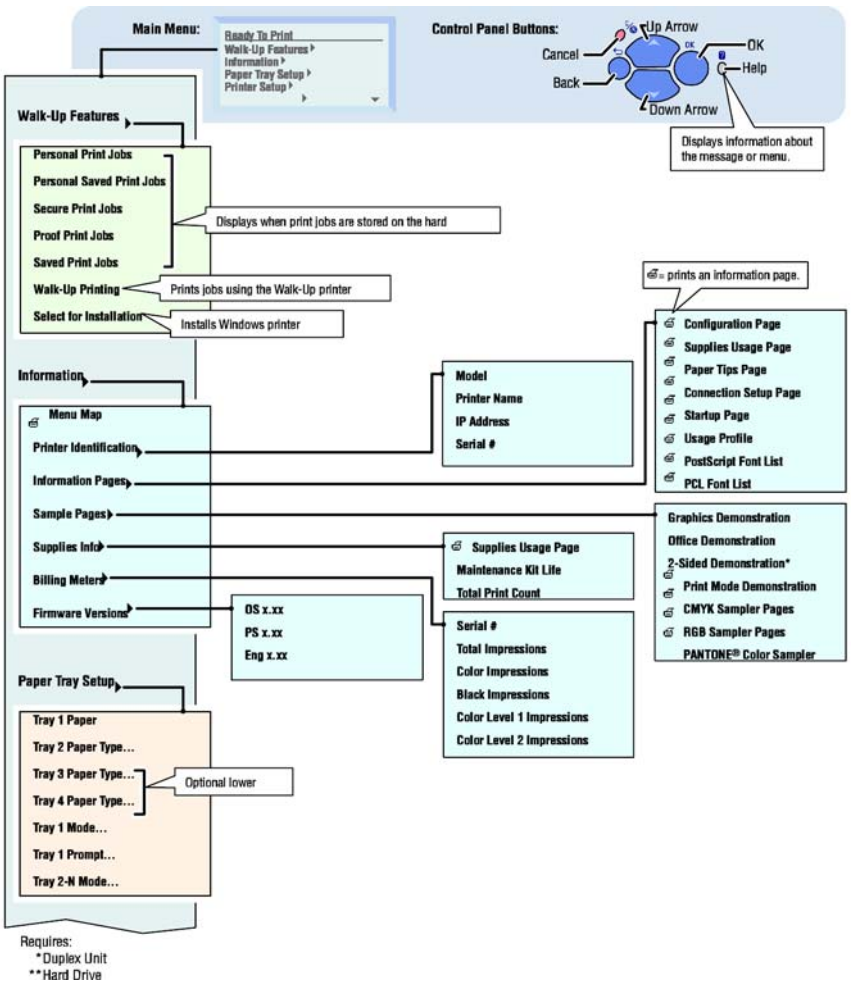


Figure 1 8860 Menu Map (1/2)

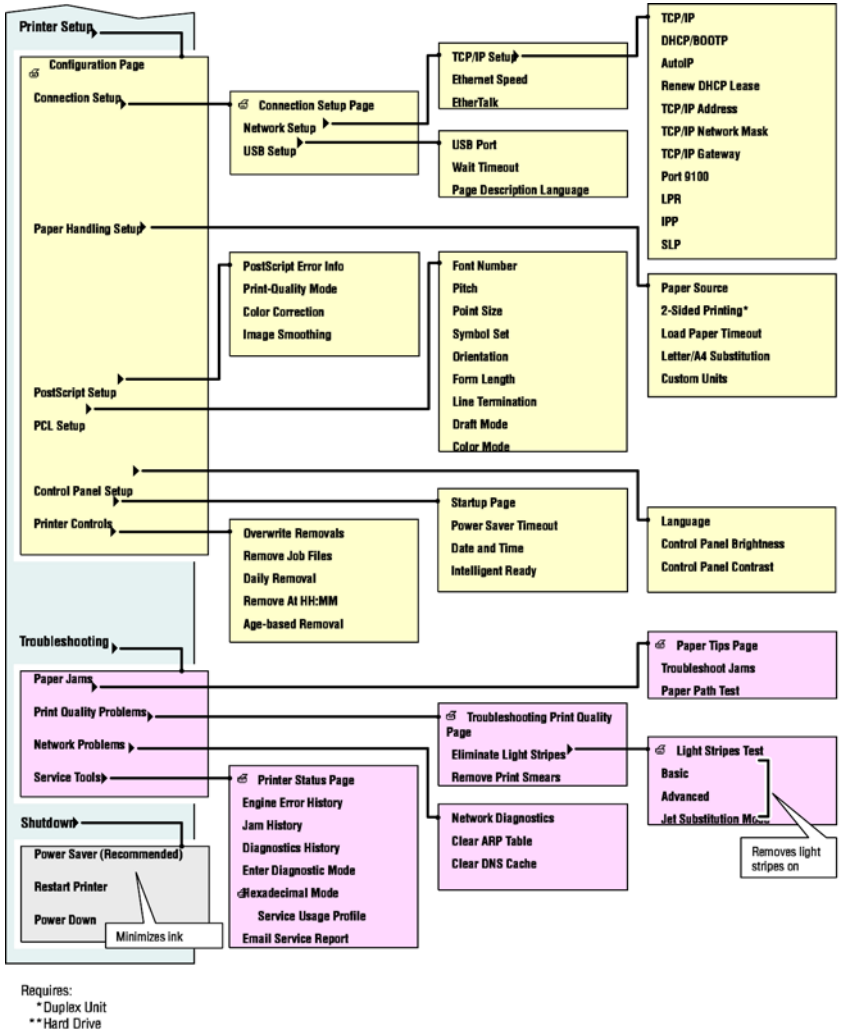


Figure 2 8860 Menu Map (2/2)

System Specifications

Functional Specifications

Table 1 Functional Specifications

Characteristic	Specifications
Printing Process	Four-color (CMYK) solid ink Printhead architecture.
Image System	Transfix transfer from oil coated Drum
Color Medium	Cyan, Magenta, Yellow, and Black Ink Sticks
Resolution	Fast Color: 225 x 400 dpi Standard: 300 x 450 dpi Enhanced: 525 x 450 dpi Photo: 525 x 2400 dpi
First Page-Out (from Ready)	Color: 8 seconds Monochrome: 8 seconds
Warm-up Time	Color and Monochrome: 12 minutes from Power On

Memory Specifications

Table 2 Memory Specifications

Characteristic	Specifications
Minimum RAM	256 MB 8860 / 512 MB 8860MFP
Maximum RAM	1 GB
Supported RAM	Supports up to 1 GB of DDR2 memory using 2 slots

Media Tray Capacity

Table 3 Tray Capacity

Media and Weight	Tray 1	Trays 2 and 3	DADF
Standard Paper	100 Sheets	525 Sheets	50 Sheets
Transparency	100 Sheets	50 Sheets	
Envelopes	50		
Weight	75-220 g/m^2	75-255* g/m^2	
The DADF accommodates sizes from 114 x 140 mm (4.5 x 5.5 in.) to 216 x 356 mm (8.5 x 14.0 in.). The weight range includes 60-120 g/m2 (16-32 lb. Bond) (22-45 lb. Cover).			

Physical Dimensions and Clearances

Table 4 8860MFP Print Engine

Dimensions	Value
Height	620 mm (24.4 in.)
Width	530 mm (20.9 in.)
Depth	660 mm (26.2 in.)
Weight	42 kg (93 lb.)

Table 5 8860 Print Engine

Dimensions	Value
Height	368 mm (14.5 in.)
Width	422 mm (16.6 in.)
Depth	514 mm (20.2 in.)
Weight	26.8 kg (59 lb.)

Table 6 525-Sheet Feeder

Dimensions	Value
Height	132 mm (5.2 in.)
Width	422 mm (16.6 in.)
Depth	514 mm (20.24 in.
Weight	5.2 kg (11.5 lb.)

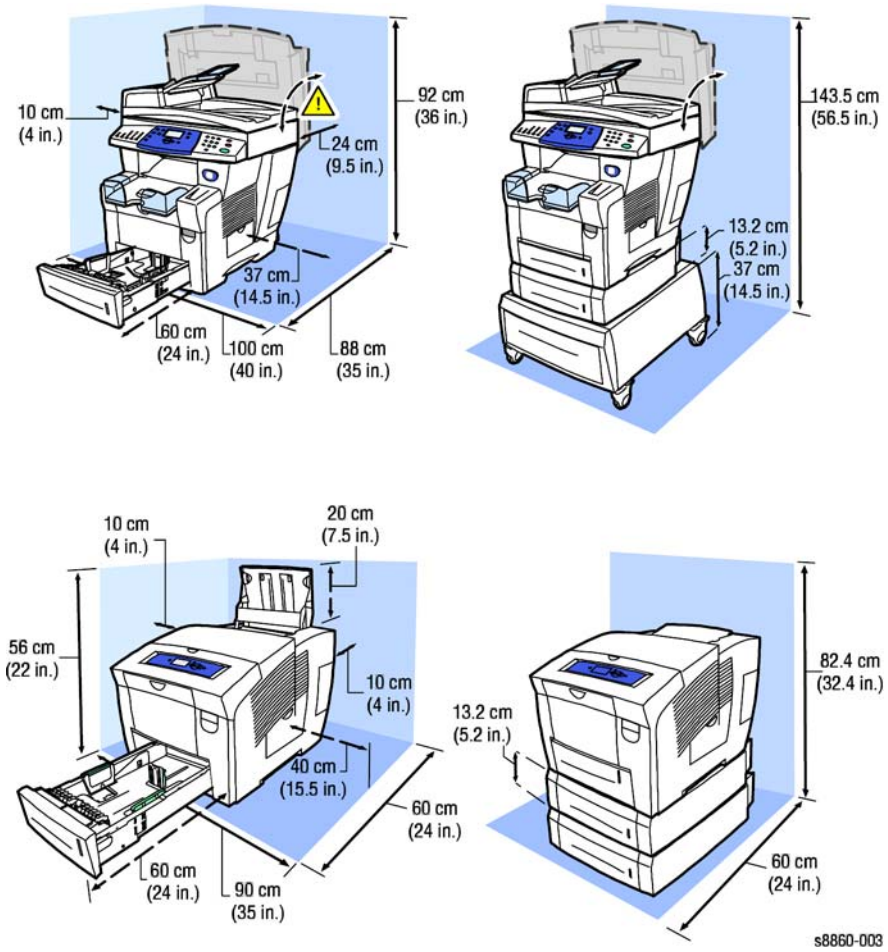


Figure 1 Minimum Clearances

Print Engine Specifications

Table 7 Print Engine 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
FPOT, Color Copy	< 15 seconds per page/1st copy subsequent copies at printer speed.
Memory	2 slots; minimum 256 MB, maximum 1 GB, PC133 DRAM
Fonts	137 PostScript 3 81 PCL5c
Warm-up time	From Off (cold start): 12 minutes From power saver: 4 minutes

8860MFP Scanner/DADF Specifications

Table 8 Scanner/DADF Functional 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 DADF paper path Charge Coupled Device scanhead RGB color pack The scan controller provides 16 bit DMA interface 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
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 20 minutes.

Table 8 Scanner/DADF Functional Specifications

Characteristic	Specification
Noise	Standby: < or equal to 45 dB Scanning: < or equal to 50 dB

Electrical Specifications

Table 9 Electrical Specifications

Characteristic	Specification
Primary Line Voltages	90-135 VAC 180-254 VAC
Primary Line Voltage Frequency Range	47 - 63 Hz
Power Consumption at Rated Voltage Input	300 W (230 W 8860) average during printing 1500 W (1250 W 8860) peak - 1000 typical 220 W (180W 8860) at idle
Energy Star	70 W (43 W 8860)
Scanner Power Supply	30 W

Image Specifications

Table 10 Print Engine Only Skew Specifications

Characteristic	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.)

NOTE: *To derive the skew specification for a particular media size, measure the width of the leading edge in millimeters. Next, divide the measured length by 1000, then multiply by the appropriate Image Area Tolerance specification in milli-radians. For example, A 5 in. by 7 in. custom page would have a leading edge width, in millimeters, of 127mm (5 in.). Dividing the 127 by 1000 (127/1000), then multiplying the result by the 11 milli-radians specification results in a maximum skew of 1.4 mm (127/1000) x 11 = 1.4 mm.*

Table 11 System Skew Specifications Scan, Copy, Print

Characteristic	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	15.5 milli-radians max across the width of the leading edge.
Image Skew, Index Card	18.0 milli-radians max across the width of the leading edge.
Image Skew, All other sizes	11.0 milli-radians max across the width of the leading edge.

Table 12 Image Specifications

Characteristic	Specification
Maximum Print Area	206 mm x 346 mm
Guaranteed Image Area	206 mm x 346 mm
Resolution/Gradation	Fast Color: 300 x 300 dpi Standard: 300 x 450 dpi Enhanced: 563 x 400 dpi Photo/Hi Res: 525 x 2400 dpi

Environmental Specifications

Table 13 Environmental Specifications

Characteristic	Specification	
	Operating	Storage
Temperature	10° - 32° C / 50° - 90° F operating	-30°C to 60°C (-22 F to 140 F)
Humidity	10% - 80% RH Non-Condensing operating	30% to 95% RH, non-condensing
Altitude	0 to 2,438 meters (8,000 ft.)	0 to 6,092 meters (20,000 ft.)
Acoustic Noise (db)	Operating Mode	Standby Mode

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

Media and Tray Specifications

The media trays accommodate most sizes and types of paper, transparencies, or other specialty media. Print the Paper Tips page for a list of supported media.

Media that May Damage the System

The system can use a variety of media for print and copy jobs. However, some media can cause poor output quality, increased jams, or damage. Unacceptable media includes:

- Rough, plastic, or porous media
- Paper that has been stapled, folded, photocopied, or wrinkled
- Envelopes with windows, metal clasps, padding, or adhesives with release strips
- CD labels
- Media that is less than 60 g/m2 or more than 220 g/m2

Media Storage Guidelines

If media handling problems are a common occurrence, review the following storage guidelines with the customer.

- 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 needed. Leave paper in the original packaging. For most commercial grades, the wrapper's inner lining protects the paper.
- Some specialty media is packaged inside sealed plastic bags. Leave the media inside the bag until needed; return unused media to the bag.

DADF Media Guidelines

The DADF accommodates 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/m2 (16–32 lb. Bond) (22–45 lb. Cover).

Follow these guidelines when loading originals into the document feeder:

- Load originals face-up, 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 such as cloth or metal
- Envelopes

Supported Media

The following sections provide information about paper sizes and weights that can be used in the system trays. For more detailed information about supported paper and other media, print the Paper Tips page:

1. On the Control Panel, press the System button.
2. Select Information, and then press the OK button.
3. Select Information Pages, and then press the OK button.
4. Select Paper Tips, and then press the OK button to print.

See also: Recommended Media List at www.xerox.com/paper

1 Service Call Procedures

Service Call Procedures

This section provides an overview of the steps a service technician should take to service the system and attached options. The system's diagnostic routines report problems using error messages and fault codes displayed on the Control Panel, logged in the Service Usage Profile, or by flashing LEDs. These error indications serve as the entry point into the troubleshooting process. System problems not directly indicated by or associated with an error message or fault code are covered in Section 6, General Procedures. Print-quality problems are covered in Section 3, Image Quality.

The steps listed here are a guide for performing any service on this system. If you choose not to use these steps, it is recommended that you start at the appropriate troubleshooting procedure and proceed from there. When servicing the system, follow the safety measures detailed in Service Safety Summary.

1. Identify the problem.
   - Verify the reported problem does exist.
   - Check for any error codes and write them down.
   - Print normal customer prints and service test prints.
   - Make note of any print-quality problems in the test prints.
   - Make note of any mechanical or electrical abnormalities present.
   - Make note of any unusual noise or smell coming from the printer.
   - Print a Service Usage Profile, if the printer is able to print.
   - View the Engine Error and Jam Histories under the Service Tools menu.
   - Verify the AC input from the wall outlet is within specifications.
2. Inspect and clean the system.
   - Follow the cleaning instructions given in Section 6.
   - Verify that the power cord is in serviceable condition.
   - Restart the system to check if the error reoccurs.
3. Find the cause of the problem.
   - Use the troubleshooting procedures to find the root cause of the problem.
   - Use Service Diagnostics to check the system and optional components.
   - Use the Wiring Diagrams and Plug/Jack Locator to locate test points.
   - Take voltage readings as instructed in the troubleshooting procedure.
4. Correct the problem.
   - Use the Parts List to locate a part number.
   - Use the Repair procedures to replace the part.
5. Final checkout
   - Test the printer to verify the problem is corrected and no new problems arose.

Accessing Engine Fault History

Listed below are three ways in which you can access fault history records.

1. Print (if possible) the Status page from the Troubleshooting menu --> Service Tools. The Engine Error History and Jam History are listed on the second page of the report.
2. View the system's fault history on the Control Panel. Go to Troubleshooting->Service Tools --> Engine Error History.

   NOTE: *Definitions of the codes that appear in the Fault and Jam History appear in Section 2.*

3. If the system is connected to a network and has a TCP/IP address, view the system's web page using a web browser.
   a. Open a web browser.
   b. Enter the system's IP address as the URL.
   c. Select the Support --> Troubleshooting --> Diagnostics Logs and the fault history displays.

Technician's Tool Kit

Table 1 lists required, recommended, and optional tools used to service this and other similar products.

Table 1 Service Tools

Description	Detail
Required Tools	
Torx Driver Bits	T5, T8, T10, T15 (T20 P/N 003086600)
Phillips Drivers	Phillips # 2 and # 1 5.0 x 75 mm, 3.0 x 75 mm, 6.0 x 100 mm
Flathead Drivers	5.0 x 75 mm, 3.0 x 75 mm
Torque Screw Driver	Required for this system P/N 003082700
Driver Extension	
Small Channel lock Pliers	
Needle Nose Pliers	
Wire Cutters	
Flashlight	
Assorted Nut Drivers	
Lint-Free Cloths	
Lubricant/Grease	Reolube P/N 070E00890
Cleaners	Multipurpose surface cleaner and Alcohol
ESD Strap	
Highly Recommended Tools	
Nut Driver	5.5mm (magnetic) P/N 600T2123
Serial Adaptor Cable	600T80374
Network Cross-over cable	Tech
Scanner Calibration page	P/N 109K01910
Toner Vac	Toner and general cleaning
Multimeter	Volts, Ohms, Current

Table 1 Service Tools

Description	Detail
Optional Tools	
Canned Air	
3 -Prong Claw Part-Retriever	
Pointer with Magnetized Head	
Tweezers	
Utility Knife	
Dental Mirror	
Screw Box	
Soldering Iron	
Heat Shrink tubing	
Electrical Tape	
Jeweler's Screwdriver Kit	
Precision/Hobby tool set	phillips, flathead, pliers, small torx drivers
Serial & Parallel Loop Back Plugs	
Bootable CDs and Floppy Disks	
IC Chip Puller	

Initial Actions

Purpose

Use the following procedure to determine the reason for the service call and to identify and organize the actions which must be performed.

Procedure

1. Gather the information about the service call and the condition of the copier/printer.
   a. Question the operator(s). Ask about the location of most recent paper jams. Ask about the image quality and the copier/printer performance in general, including any unusual sounds or other indications.
   b. After informing the customer that the machine will not be available for copying and printing, disconnect the machine from the customer's network.
   c. If a new installation, be sure all packing material is removed.
   d. Check that the power cords are in good condition, directly plugged in to the power source, and free from defects. Repair or replace the power cords as required. Check that the circuit breaker, if present, is not tripped.
   e. If the system appears is inoperative, go to Electrical Troubleshooting and repair the problem. Then continue below.
   f. Inspect any rejected copies. Inquire as to, or otherwise determine, the paper quality and weight. Print the Paper Tips page for specific media specifications. Look for any damage to the copies, oil marks, image quality defects, or other indications of an unreported problem.

      NOTE: *If a fault code is displayed while performing a diagnostics procedure, go to that fault code RAP and repair the fault. Return to Diagnostics and continue with the procedure that you were performing.*

   g. Display and review the information in the Fault History, Jam History, Service Usage Profile. Classify this information into categories:

      Information that is related to the problem that caused the service call.

      Information that is related to secondary problems.

      Information that does not require action, such as a single occurrence of a problem.
2. Perform any required routine maintenance activities. Refer to the Routine Maintenance Activities section.
3. If any DADF feed jams are reported, or fault codes are logged, replace the Feed Roll Kit.
4. Try to duplicate the problem by running the same jobs that the customer ran once repairs are complete to verify repairs are effective.
5. Go to General Procedures to further investigate the problem.

Routine Maintenance Activities

Procedure

1. Clean the Pick Rollers on every call.
2. Use the Control Panel to check maintenance item counters.
3. Compare the counter values to those listed in Table 1.
4. Advise the customer of any routine maintenance items that are approaching or over the service limit.

Table 1 Routine Maintenance Item Life Expectancy

Routine Maintenance Items	
Extended-Capacity Maintenance Kit	30,000 cycles (0-20% coverage) 20,000 cycles (20-100%) coverage.
Standard-Capacity Maintenance Kit	10,000 cycles
Waste Tray	Empty every 7 Purges
DADF Pick Rollers and Separator Pad	50,000 scans

Cleaning Procedures

Purpose

The purpose is to provide cleaning procedures to be performed at every call.

Procedure

CAUTION

Do not use any solvents unless directed to do so in this manual.

General Cleaning

Use a dry lint free cloth or a lint free cloth moistened with water for all cleaning unless directed otherwise in this manual. Wipe with a dry, lint free cloth if a moistened cloth is used.

1. **Feed Components (Rolls and Pads)**
   Follow the General Cleaning procedure above.
2. **Jam Sensors**
   Clean the sensors with a dry cotton swab.
3. **Scanner**
   a. Using the optical Cleaning Cloth, clean the Document Glass.
   b. Clean the Document Cover.
4. **DADF**
   Check the paper path for debris or damage. Clean the rolls with a clean cloth and Film Remover as required.

Final Actions

Purpose

The intent of this procedure is to be used as a guide to follow at the end of every service call.

Procedure

1. Check that the exterior of the system and the adjacent area is clean. Use a dry cloth or a cloth moistened with water to clean the exterior of the system. Do not use solvents.
2. Check the supply of consumables. Ensure that an adequate supply of consumables is available according to local operating procedures.
3. Conduct any operator training that is needed. Ensure the operator understands the periodic maintenance procedures in the User Guide.
4. Reconnect the system to the customer network. Verify function by printing one or more test prints. Present these to the customer as examples of system performance.
5. Issue copy credits as needed.
6. Discuss the service call with the customer to ensure that the customer understands what has been done and is satisfied with the results of the service call.

2 Error Messages and Codes

Power On Self Tests

This section covers the start-up, Power On Self Test (POST), Service Diagnostics, and power supply operations of the system to aid in troubleshooting problems not associated with a reported error. For problems associated with an error message or code, see Error Message Troubleshooting. Troubleshooting tips are available at: www.xerox.com/support.

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

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

Power-Up Error Messages and LED Codes

The 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.*

In addition to the numeric error codes appearing on the Control Panel display, the system uses the Control Panel, PS, and PE LEDs to communicate errors. Figure 1 shows location of the PS and PE LEDs on the Electronics Module.

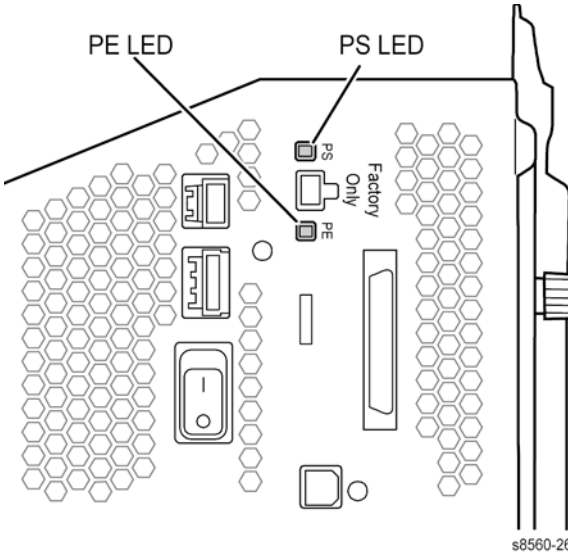


Figure 1 PS and PE LED Locations

BIST Error Reporting

BIST verifies basic Electronics Module CPU operation and reports failures using PS and PE LEDs. These LEDs are located on the Electronics Module directly above the Scanner Assembly connection. BIST 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:

Table 1 BIST Blink Pattern Error Reporting

PE LED	PS LED	Description
Off or 1 blink, then Off	Off or 1 blink, then Off	The power supply could not remain regulated when DC power was applied so it shut down. Follow the troubleshooting procedures for electrical shorts (see Electrical Troubleshooting) and check the power supply fuses.
On solid (dim)	On solid (dim)	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 failure. See Electrical Troubleshooting.
Off	PS and Control Panel blink at 1/2 sec. intervals	Boot loader memory test failure. Ensure the systems RAM is properly seated and that the correct RAM type is installed.
1	Rapid Blinking	The CPU and/or PCI bus is not communicating. Reboot the system. If the error persists, replace the Electronics Module (REP 5.0.5).
2	Rapid Blinking	ROM not responding. Reboot the system, if the error still occurs, replace the Electronics Module (REP 5.0.5).
3	Rapid Blinking	System hangs during initialization 1. Unplug all connections to the Electronics Module. 2. Plug in the Power Cable. 3. Power on the system. 4. If the problem persists, reseat the RAM Modules. 5. Replace the Electronic Module (REP 5.0.5).

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 equal the error code. If the code has more than 5 flashes, there is a brief pause between each set of 5 flashes to make them easier to count. After all flashes occur within the code, there is a long pause and then the flash pattern repeats.

“Soft” POST errors, that do not prevent the system from powering up completely, 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 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.*

Table 2 POST Blink Pattern Error Reporting

Error Code	PS, PE, and Control Panel LED s	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 then 04 blinks	Hard	ID read failure
04.02	Flutter then 04 blinks	Hard	ID mismatch
04.03	Flutter then 04 blinks	Hard	TMVL mismatch, read/write failed
04.04	Flutter then 04 blinks	Hard	TMVL mismatch, read/write failed
05.01	Flutter then 05 blinks	Hard	I/O Board serial communication error.
05.02	Flutter only	Soft	I/O Board serial mismatch error.
6.08	No indication	Soft	Hard Drive failure
07.01	Flutter only	Soft	Control Panel communications error
07.02	Flutter only	Soft	Control Panel version mismatch
08.01	Flutter only	Soft	Control Panel failed to initialize
09.01	Flutter only	Soft	Control Panel data error
10.01	Flutter then 10 blinks	Hard	Power control link failure
10.02	Flutter only	Soft	Power control link invalid, mismatch error
11.01	Flutter then 11 blinks	Hard	EEPROM read failure
11.02	Flutter then 11 blinks	Hard	EEPROM write failure
11.03	Flutter then 11 blinks	Hard	EEPROM re-read failure
11.04	Flutter then 11 blinks	Hard	EEPROM data failure
12.nn	Flutter only	Soft	Configuration Card failure
13.01	Flutter then 13 blinks	Hard	PHY reset failure (Low)
13.02	Flutter then 13 blinks	Hard	PHY ID error
14.nn	Flutter then 14 blinks	Hard	USB ASIC error
15.01	Flutter then 15 blinks	Hard	CPU interrupt error
15.02	Flutter then 15 blinks	Hard	CPU interrupt error
15.03	Flutter then 15 blinks	Hard	CPU interrupt error, IRQ
15.04	Flutter then 15 blinks	Hard	CPU interrupt error
15.05	Flutter then 15 blinks	Hard	CPU interrupt error
15.06	Flutter then 15 blinks	Hard	CPU interrupt error
15.07	Flutter then 15 blinks	Hard	CPU interrupt error
15.08	Flutter then 15 blinks	Hard	CPU interrupt error
15.09	Flutter then 15 blinks	Hard	CPU interrupt error
15.10	Flutter then 15 blinks	Hard	CPU interrupt error
15.11	Flutter then 15 blinks	Hard	CPU interrupt error
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 failure
17.01	Flutter then 17 blinks	Hard	Insufficient RAM memory
18.01	Flutter then 18 blinks	Hard	IPCB ID read failure
18.02	Flutter then 18 blinks	Hard	IPCB ID mismatch
18.03	Flutter then 18 blinks	Hard	IPCB PCI configuration failure
18.04	Flutter only	Soft	IPCB version mismatch
19.01	Flutter then 19 blinks	Hard	Hard Drive failure

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 Error Message Troubleshooting.

NVRAM Reset

Many of the troubleshooting procedures in this section include an NVRAM reset as a procedural step. Following an NVRAM reset, the system is unable to communicate on the network and has lost several parameters specific to the customer's configuration. If possible, print a Configuration page to capture networking parameters. and discuss the customer's configuration to document these settings before resetting NVRAM.

Table 1 lists the parameters reset by NVRAM Reset. Required parameters (Yes) must be configured to restore default system operation on the network.

Table 1 Parameters Reset with the Service Diagnostics NVRAM Reset Command

Menu	Parameter	Default	Required
TCP/IP Setup	TCP/IP	On	Yes
	DHCP/BOOTP	On	Yes
	AutoIP	On	Yes
	TCP/IP Address	0.0.0.0	Yes
	TCP/IP Network Mask	0.0.0.0	Yes
	TCP/IP Gateway	0.0.0.0	Yes
	Port 9100	On	Yes
	LPR	On	Yes
	IPP	On	Yes
	SLP	On	Yes
	SSDP	On	Yes
	CentreWare IS	On	Yes
Network Setup	Ethernet Speed	Auto	Yes
	EtherTalk	On	Yes
USB Setup	USB Port	On	Yes
	Wait Timeout (USB)	30	Yes
	Page Description Language (USB)	AutoSelect	Yes
Control Panel Setup	Control Panel Language	English	No
	Control Panel Brightness	5	No
	Control Panel Contrast	5	No
	Accessible Control panel	Off	No
Copy Defaults Setup	Color Mode	Color	No
	2-Sided Copying	1-1	No
	Output Quality	Enhanced	No
	Document Type	Mixed	No
	Paper Supply	Tray 2	No
	Color Balance -> Cyan Color Balance	0	No
	Color Balance -> Magenta Color Balance	0	No
	Color Balance -> Yellow Color Balance	0	No
	Color Balance -> Black Color Balance	0	No
	Laser Original	Off	No
	Prescan Glass	On	No
Copy Main	Number of Copies	1	No
	Paper Suppy	Tray 2	No
	Original Size	Supply	No
	Prescan Glass	On	No
	Preset Reduce/Enlarge	None	No
	Collate	Auto	No
	Edge Erase -> Left	0.0	No
	Edge Erase -> Right	0.0	No
	Edge Erase -> Top	0.0	No
	Edge Erase -> Bottom	0.0	No
	Margin Shift -> Long Edge	0.0	No
	Margin Shift -> Short Edge	0.0	No
	Auto Center	Off	No
	Book Copy -> Both Pages ->Gutter Erase	0.0	No
	Book Copy -> Left Page -> Gutter Erase	0.0	No
	Book Copy -> Right Page -> Gutter Erase	0.0	No
	Auto Suppression	Off	No
	Covers -> Cover Tray	Tray 1	No
	Blank Separator	Off	No
	Blank Separator Tray	Tray 2	No
	Create Booklet (8860MFP Only)	Off	No
	Repeat Image (8860MFP Only)	Off	No
	Repeat Image -> Rows	1	No
	Repeat Image -> Columns	1	No
	N-Up	Off	No
	Poster	Off	No
	Color Balance -> Cyan Color Balance	0	No
	Color Balance -> Magenta Color Balance	0	No
	Color Balance -> Yellow Color Balance	0	No
	Color Balance -> Black Color Balance	0	No
	Laser Original	Off	No
Fax Main	Fax To	None	No
	Resolution	Standard	No
	Original Size	Automatic	No
	Auto Suppression	Off	No
	Transmission Report	On	No
	Starting Rate	Super G3	No

Table 1 Parameters Reset with the Service Diagnostics NVRAM Reset Command

Menu	Parameter	Default	Required
Fax Send Setup	Transmission Report	Never	No
	Reduced Image (8860 only)	Off	Yes
	Redial Count	3	No
	Redial Time Interval	15	No
	Auto Resend Policy	Unsent Pg	Yes
	Auto Resend Count	3	Yes
	Document Type	Mixed	No
	Resolution	Standard	No
	Transmission Header (8860 only)	On	No
Fax Receive Setup	Paper Suplly	Tray 2	Yes
	Fax Receive	On	Yes
	Answer Delay	0	Yes
	Secure Receive (8860 only)	Off	Yes
	Secure Receive Password (8860 only)	None	Yes
	Junk Fax Prevention	Off	Yes
	2-Sided Fax Printing	1-1	No
Fax Configuration	Line Name	None	Yes
	Dial Type	Tone	Yes
	Line Monitor Volume	2	No
	Auto Activity Report	Off	No
	Starting Rate	Super G3	Yes
	Error Correction Mode	On	Yes
Fax Configuration	Dial Pause	3	No
	Dial Delay	0	No
	Max Compression	JBIG/MMR	No
File Security	Daily Removal	Off	Yes
	Remove At	00:00	Yes
	Age-based Removal	Off	Yes
	Remove at Age	24	Yes
Paper Handing Setup	Load Paper Timeout	3 min.	No
	Tray 1 Mode	Dynamic	No
	Tray 1 Prompt	30 sec.	No
	Tray 2 ~ [N] Mode	Dynamic	No
	Tray 2 ~ [N] Prompt	None	No
	Letter/A4 Substitution	On	No
	Custom Units	Inches/mm	No
	Cleaning Page Source	Highest	No

Table 1 Parameters Reset with the Service Diagnostics NVRAM Reset Command

Menu	Parameter	Default	Required
System Controls	Startup Page	On	No
	Auto Clear Timeout	60 sec.	No
	Power Saver Timeout	4 hours	No
	Date and Time	None	No
	Intelligent Ready	On	No
	Default Function	Copy	No
	Color Copy Password	Disabled	No
	Print Job Interrupt (8860 only)	On	No
Paper Tray Setup	Tray 1 Paper - Media Size	Guide Size	No
	Tray 1 Paper - Media Type	Plain	No
	Tray 2 Paper - Media Type	Plain	No
	Tray 3 Paper - Media Type (if installed)	Plain	No
	Tray 4 Paper - Media Type (if installed)	Plain	No
Print Defaults Setup	Paper Source	Auto	No
	2-Sided Printing	Disabled	No
PS-PCL Setup	Pitch	10.00	No
	Point Size	12.00	No
	Symbol Set	PC8	No
	Oreientation	Portrait	No
	Form Length	6	No
	Line Termination	On	No
	Draft Mode	Off	No
	Color Mode	Color	No
Scan Default Setup	Color Mode	Color	No
	Document Type	Mixed	No
	Scan Resolution	100x100	No
	Laser Original	Off	No
Scan Main	Scan To	Public	No
	Scan Resolution	100x100	No
	Original Size	Automatic	No
	Auto Suppression	Off	No
	Laser Original	Off	No

Table 2 summarizes system parameters not affected by an NVRAM Reset.

Table 2 System Parameters Not Affected by an NVRAM Reset

Parameter	Comment
Metric Defaults	
MAC Address	Set by the Configuration Card
Serial Number	
Model number	

Table 2 System Parameters Not Affected by an NVRAM Reset

Parameter	Comment
License Number	
PostScript Version	
PostScript Revision	
Activation Date	The activation date is stored in Usage Profile NVRAM.
Adobe Serial Number	
System Date and Time	
Fax Country	Fax Configuration
Fax Line ID	Fax Configuration
Overwrite Removals	File Security
Speed Dial Individual Directory	Fax Send
Speed Dial Group Directory	Fax Send
Tray Media Types and Sizes	Unconfirmed following NVRAM Reset.
Metered Supplies	Metered operation
Print Counter	System Print Count
Billing Meters	
Substituted Jets	Jet Substitution Mode
Warm-up Mode	Set in CWIS
Warm-up Settings	Set in CWIS
Stand-by Settings	Set in CWIS

Error Message Troubleshooting

This section covers troubleshooting procedures utilizing Control Panel error messages and codes. Some procedures require running Service Diagnostic test functions to verify that a component is operating correctly. Procedures that direct a test to be run are referencing tests from within the Hidden Service menu. For information on Service Diagnostics, see Service Diagnostics.

For troubleshooting problems not associate with an error code or message, such as startup or power on, media, paper path, print-quality or image problems, and electrical failures, see General Troubleshooting.

Fault Code Error Reporting

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

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

Interpreting Fault Codes

- Failing system (XX,yyy.zz)
- Failing subsystem (xx,YYY.zz)
- Checksum (xx,yyy.zZ)
- Type of problem (xx,yyy.Zx)
- Print engine page count when the error occurred (xx,yyy.zz:123)

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

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

CPU exceptions are indicated by a 7 in the tenths place of the fault code (xx,yyy.7z). The error code indicates both the Power PC 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.*

1,00X.4x 525-Sheet Feeder Faults

The following troubleshooting procedure applies to these errors:

525-Sheet Feeder Errors

1,001.46	An over current condition was detected in the upper 525-Sheet Feeder. The lift motor or clutch may be shorted.
1,002.47	An over current condition was detected in the lower 525-Sheet Feeder. The lift motor or clutch may be shorted.

Initial Actions

- Check the tray to ensure it is free of obstructions or debris.
- Check the operation of the Tray Lift Plate.
- Check the condition of the Feed and Pick Rollers.
- Reseat the optional tray connection to the system.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 1,000.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Tray Feeder, PL 3.0	Left Side Harness (1/2) - Figure 4
Pick Assy and Retard Roller Kit, PL 3.0	
Left Side Harness, PL 5.0	Left Side Wire Routing (1/2) - P/J204

Troubleshooting Procedure

Table 2 525-Sheet Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Remove the 525-Sheet Feeder and check the connections for damage. Are the connectors damaged?	Replace the damaged connections.	Go to Step 2.
2	Check the Pick Assembly for dirt, damage, or wear. Are the rollers damaged or worn?	Replace the Pick Assembly (REP 3.0.18).	
3	Test the Pick Clutch. Run the Service Diagnostics Pick Clutch test for the affected tray. Does the Pick Clutch operate correctly?	Go to Step 3.	Replace the feeder.
4	Test the Lift Motor. Run the Service Diagnostics Lift Motor test for the affected tray. Does the Lift Motor operate correctly?		

Table 2 525-Sheet Troubleshooting Procedure

Step	Questions or Actions	Yes	No
5	Check the wiring from the feeder to Electronics Module. Is the wiring defective?	Replace the harness. If the error persists, go to Step 6.	Replace the feeder.
6	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the feeder.	Reconnect the system grounds.

1,000.6x 525-Sheet Feeder Program Faults

A firmware error has occurred. The following troubleshooting procedure applies to these errors:

525-Sheet Feeder Program Errors

1,006.x The 525-Sheet Feeder has encountered a program fault.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 1,000.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 525-Sheet Feeder Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

2,00X.xx I/O Board Errors

The following troubleshooting procedure applies to these errors:

I/O Circuit Board Errors

2,001.47 The Print Engine does not detect the I/O Board

Initial Actions

- Check the I/O Board for obvious signs of damage.
- Check that all connections to the board are secure by reseating each connection.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 2,00X.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
I/O Board, PL 5.0	Right Side Harness / I/O Control - Figure 8
Right Side Harness, PL 5.0	Right Side Wire Routing (1/2) - Figure 2
I/O Board Power Control Cable, PL 5.0	Right Side Wire Routing (1/2) - Figure 2

Troubleshooting Procedure

Table 2 I/O Board Error Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the I/O Board for damage. Are the connectors damaged?	Repair the damaged connections.	Go to Step 2.
2	Reseat all I/O Board connections. Does the problem persist?	Go to Step 3.	Complete.
3	Check I/O Power Control Cable continuity between P/J840 on the I/O Board and P/J10 on the Electronics Module. Is the wiring defective?	Replace the cable. If the error persists, replace the I/O Board.	Replace the I/O Board (REP 5.0.13).

2,006.xx I/O Board Program Faults

The following troubleshooting procedure applies to these errors:

I/O Board Program Faults	
2,001.69	The Electronics Module Failed to initialize.
2,002.61	Firmware program fault
2,003.62	Firmware program fault
2,004.63	Failure to start the Print Engine in Suspend Mode.
2,005.64	ROM read error
2,006.65	ROM read error
2,007.66	idiags entry point access error

Initial Actions

- Reset NVRAM and retest.
- Check that all connections to the Electronics Module and I/O Board are secure by reseating each connection.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 2,006.xx Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
I/O Board, PL 5.0.13	
NVRAM, PL 5.0.9	

Troubleshooting Procedure

Table 2 I/O Board Error Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all I/O Board connections. Does the problem persist?	Go to Step 2.	Complete.
2	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 3.	Complete.
3	Check ground integrity. Are the system grounds connected?	Replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

2,0XX.6x Configuration Card Faults

The following troubleshooting procedure applies to these errors:

I/O Board Program Faults	
2,008.67	The Configuration Card is Missing
2,009.68	The Configuration Card is Bad
2,010.69	The Configuration Card is Blank
2,011.61	The Configuration Card is for the wrong product
2,012.62	The Configuration Card is an invalid model

Initial Actions

- Turn Off the system.
- Check that the Configuration Card is correct for the system.
- Turn the system On.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 2,006.xx Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 5.0	
Configuration Card, PL 5.0	

Troubleshooting Procedure

Table 2 Configuration Card Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Replace the Configuration Card, restart the system, and retest. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Go to Step 3.	Reconnect the system grounds.
3	Replace the Electronics Module. Does the problem persist?		Complete.

3,0XX.6x IPC Program Faults

A firmware communications error has occurred. The following troubleshooting procedure applies to these errors:

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 3,000.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 I/O Board Error Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

4,0xx.4x Process Control Errors

The following troubleshooting procedure applies to these errors:

Process Control Errors

4,017.47	The ambient temperature is too low (< 10°C).
4,018.48	The Printhead temperature is too low.
4,020.41	Fast Time To Ready (FTTR) mode with head/cap flag set in NVRAM.
4,021.42	Fast Time To Ready (FTTR) mode with a dirty Drum.

Initial Actions

- Check the ambient air temperature.
- Check that the system is located in a suitable environment.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 4,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 5.0	Right Side Wire Routing (2/2) - Figure 3
Printhead, PL 2.0	Electronics Module - Figure 6
Drum Assembly, PL 2.0	Electronics Module Power - Figure 7
Drum Heater Relay Board, PL 5.0	Right Side Wire Routing (1/2) - Figure 2
Drum Temperature Sensor, PL 6.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

Table 2 Process Control Error Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the heaters. Run the Service Diagnostics Monitor Heaters tests with all heaters On. Do the heaters function properly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 3.
2	Check the harness to the failed heater. Is the harness damaged?	Replace the harness.	Replace the failed component.

4,024.42 Wiper Alignment Fault

The following troubleshooting procedure applies to this error:

Wiper Blade Misalignment Errors	
4,024.42	Printhead Wiper Blade misaligned

Initial Actions

- Check Wiper Alignment.
- Check damage, debris, or Ink build-up near the Printhead.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 4,024.42 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Head Maintenance Clutch, PL 4.0	I/O Board (2/2) - Figure 12
Media Drive Assembly, PL 4.0	Left Side Harness (2/2) - Figure 7
Wiper Blade, PL 2.0	

Troubleshooting Procedure

Table 2 4,024.42 Wiper Alignment Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Wiper alignment. Run the Service Diagnostics Check Wiper Alignment test. Did the test Fail?	Perform (ADJ 2.5.1) and retest. If the test fails again, go to Step 2.	Go to Step 2.
2	Test the Wiper drive. Run the Service Diagnostics Wiper Drive test. Did the test fail?	Go to Step 3.	Go to Step 5.
3	Check the Wiper drive and lock systems for ink, obstructions, or damage. Is the Wiper drive function correctly?	Go to Step 4.	Clear any ink or obstructions or replace any damaged components.
4	Check the Head Maintenance Clutch. Is there any oil, contamination, or obvious damage?	Clean the interior of the system or replace the clutch if necessary.	Go to Step 5.
5	Test the Head Maintenance Clutch. Run the Service Diagnostics Head Maintenance Clutch test. Does the clutch function correctly?	Replace in order: Exit Module Media Drive Assy Wiper Blade	Replace the Head Maintenance Clutch (REP 4.0.4).

4,025.46 Drum Transfix Fault

The following troubleshooting procedure applies to this error:

Drum Transfix Fault	
4,025.46	Drum Transfix does not reach home position.

Initial Actions

- Check for dirt, debris, or obstructions around the Printhead.
- Check that the Waste Tray is correctly installed.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 4,025.46 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Process Drive, PL 5.0	Right Side Harness / I/O Control - Figure 10
X-Axis Motor, PL 2.0	Right Side Harness / I/O Control - Figure 10
Head Tilt Solenoid, PL 5.0	Left Side Harness (2/2) - Figure 7

Troubleshooting Procedure

Table 2 4,025.46 Drum Transfix Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check for ink build up in the Head Tilt drive, Waste Tray, or wires interfering with Printhead motion. Is the Printhead clear of obstructions?	Go to Step 11.	Clear any obstructions to Printhead movement. If the error persists, go to Step 2.
2	Check the Process Drive for damage. Ensure the gears are correctly aligned (see ADJ 4.7.1). Is the process gearbox damaged?	Replace the Process Drive (REP 4.0.7).	Go to Step 3.
3	Check the X-Axis Motor connection (P/J150). Run the Service Diagnostics X-Axis Motor test. Did the test fail?	Replace the X-Axis Motor (REP 4.0.5).	Go to Step 4.
4	Test the Printhead Tilt Drive. Run the Service Diagnostics Tilt Drive test. Did the test fail?	Replace the Process Drive (REP 4.0.7).	

4,0xx.6x Process Control Program Faults

A firmware communications error has occurred. The following troubleshooting procedure applies to these errors:

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 4,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 Process Control Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

5,0xx.4x Y-Axis Sub-System Faults

The following troubleshooting procedure applies to these errors:

Y-Axis Sub-System Faults

5,001.41	The Drum rotated once without a Drum Home Position Sensor activation.
5,002.42	The Y-Axis Encoder is faulty, or the Drum has stalled.
5,003.43	Problem in the Y-Axis sub-system.
5,004.44	Problem with the Y-Axis motion sub-system.

Initial Actions

- Check for obstructions or debris.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 5,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Y-Axis Belt, PL 2.0	
Y--Axis Motor, PL 4.0	Electronics Module Power - Figure 9
Drum Assembly (Encoder)	Right Side Harness / I/O Control - Figure 10

Troubleshooting Procedure

Table 2 Y-Axis Sub-System Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Y-Axis Encoder. Run the Service Diagnostics Y-Axis Encoder test from the Monitor menu. Did the test pass?	Go to Step 2.	Go to Step 3.
2	Check the Y-Axis Motor connection (P/J18). Is the wiring faulty?	Replace the wiring.	Go to Step 4.
3	Check the Y-Axis Encoder wiring. Is the wiring faulty?	Replace the wiring.	Replace the Drum Assy (REP 2.0.3).
4	Test the Y-Axis Drive. Run the Service Diagnostics Y-Axis Drive test. Did the test pass?	Go to Step 5.	Replace the Y-Axis Motor (REP 4.0.11).
5	Test Y-Axis Belt tension. Run the Service Diagnostics Y-Axis Belt Tension test. Did the test pass?	Go to Step 6.	Replace the Y-Axis Belt (REP 2.0.4).

Table 2 Y-Axis Sub-System Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
6	Test the Y-Axis Motor. Run the Service Diagnostics Y-Axis Motor test. Did the test pass?	Replace the Drum Assembly (REP 2.0.3).	Replace the Y-Axis Motor (REP 4.0.11).

5,0xx.6x Y-Axis Sub-System Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Y-Axis Sub-System Program Faults

5,001.63	Y-Axis sub-system general fault.
5,005.67	Sub-system not in homeless or idle state, software fault.
5,006.68	Software fault.
5,007.60	Software fault.
5,008.61	PostScript failed to fill the buffer.
5,009.62	Imaging errors. Possible jets On/Off outside the deadband area.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 5,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 Y-Axis Sub-System Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

6,0xx.4x X-Axis Fault

An X-Axis drive error has occurred. The following troubleshooting procedure applies to this error:

X-Axis Motor Error

6,000.41 X-Axis Motor current error.

Initial Actions

- Check for Ink build-up or other obstructions around the Printhead.
- Check the Printhead power (P/J4) connection and related wiring.
- Verify the Printhead travels smoothly from left to right.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 6,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
X-Axis Motor, PL 4.0	Right Side Harness / I/O Control - Figure 10
Electronics Module, PL 5.0	Right Side Wire Routing (2/2) - Figure 3

Troubleshooting Procedure

Table 2 Process Control Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the X-Axis Motor wiring. Is the wiring faulty?	Replace the wiring.	Go to Step 2.
2	Test the X-Axis Motor. Run the Service Diagnostics X-Axis Motor test. Did the test pass?	Replace the X-Axis Motor (REP 4.0.5).	Replace the Electronics Module (REP 5.0.5).

6,0xx.6x X-Axis Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

X-Axis Program Faults

6,001.64 The X-Axis task received an unexpected message.
6,002.65 Attempt to home X-Axis drive from wrong state.
6,008.62 Attempt to use X-Axis drive without initialization.
6,011.65 Attempt to service X-Axis drive in wrong state.
6,013.67 Unknown X-Axis program fault.
6,017.62 Attempt to drive X-Axis using wrong server.
6,018.63 Attempt to move with the X-Axis not initialized.
6,019.64 Attempt to move with the X-Axis not at home position.
6,023.68 Could not allocate memory for X-Axis parameters.
6,025.66 Attempt to home the X-Axis drive without initialization.
6,032.68 Unrecognized X-Axis motion.
6,033.60 Could not allocate memory for X-Axis move parameters.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 6,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 X-Axis Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

7,002.44 Process Drive Fault

A Process Drive error has occurred. The following troubleshooting procedure applies to this error:

Process Faults

7,002.44 The Process Drive stalled during operation.

Initial Actions

- Check that the Process Drive gear train is properly homed.
- Check for obstructions in or around the Process Drive gearbox.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 7,002.44 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10

Troubleshooting Procedure

Table 2 Process Drive Fault 7,002.44 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that the Process Drive is properly aligned (ADJ 4.7.1). Is the Process Drive misaligned?	Perform ADJ 4.7.1.	Go to Step 2.
2	Test the Tilt Axis Drive. Run the Service Diagnostics Tilt Axis Drive test. Did the test pass?	Go to Step 3.	Go to Step 4.
3	Check the Process Drive for damage, debris, or obstructions. Is there any damage?	Replace the Process Drive (REP 4.0.7).	Go to Step 4.
4	Test the Process Drive Motor. Run the Service Diagnostics Process Motor Test. Did the test fail?	Replace the Process Drive (REP 4.0.7).	Go to Step 5.
5	Test the Transfix Cams Run the Service Diagnostics Transfix Drive Slow test. Do the Transfix Cam operate correctly?	Replace the Process Drive (REP 4.0.7).	Verify the transfix cams are not damaged. If the error persists, replace the Transfix Cam Shaft (REP 2.0.10).

7,006.4x Head Tilt Solenoid Fault

A Printhead tilt error has occurred. The following troubleshooting procedure applies to this error:

Process Faults

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

Initial Actions

- Check for obstructions or ink spills around the Printhead.
- Verify the Printhead travels smoothly from left to right.
- Check the Printhead Restraint Arms.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 7,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Head Tilt Gear, PL 4.0	
Head Tilt Solenoid, PL 4.0	Left Side Harness (2/2) - Figure 7
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10

Troubleshooting Procedures

The Head Tilt Solenoid is not activating the Head Tilt Gear, or the Printhead is not tilting properly

Table 2 Head Tilt Solenoid Faults 7,006.xx Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that the Process Drive is properly aligned (ADJ 4.7.1). Is the Process Drive misaligned?	Perform ADJ 4.7.1.	Go to Step 2.
2	Reboot the system. Is the tilt-head activating the Head Tilt Gear.	Go to Step 4.	Go to Step 3.
3	Check for Ink spills on or near the Head Tilt Gear.	Remove ink spills or reinstall the head-tilt and start over with Step 1.	Go to Step 4.
4	Review instructions for 7,008.xx and 7,010.xx fault codes.	Follow recommended actions for error codes and reboot the printer.	

7,007.49 Process Drive Fault

A Process Drive or Printhead error has occurred. The following troubleshooting procedures applies to this error:

Process Drive Fault

7,007.49 The Process Drive stalled while tilting the Printhead.

Initial Actions

- Check that the Process Drive gear train is properly homed.
- Check for obstructions or ink spills around the Printhead.
- Verify the Printhead travels smoothly from left to right.
- Check the Printhead Restraint Arms.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 7,007.49 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10

Troubleshooting Procedure

Table 2 Process Drive Faults 7,007.49 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that the Process Drive is properly aligned (ADJ 4.7.1). Is the Process Drive misaligned?	Perform ADJ 4.7.1.	Go to Step 2.
2	Remove the Printhead and inspect the Head Tilt Gear, Spring, and Process Drive gears for ink spills. Clean if necessary. Does the error persist?	Go to Step 3.	Complete.
3	Realign the Process Drive (ADJ 4.7.1). Does the error persist?	Replace the Process Drive (REP 4.0.7).	Complete.

7,008.41 Printhead Tilt Fault

A Process Drive or Printhead error has occurred. The following troubleshooting procedure applies to this error:

Process Faults

7,008.41 Printhead tilt is not engaged, or the Printhead is stuck in the tilt position.

Initial Actions

- Check that the Process Drive gear train is properly homed.
- Check for obstructions or ink spills around the Printhead.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 7,008.41 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10
Head Tilt Solenoid, PL 4.0	Left Side Harness (2/2) - Figure 7
Head Tilt Gear, PL 4.0	

Troubleshooting Procedure

The Head Tilt Solenoid is not activating the Head Tilt Cam, or the head is not tilting properly

Table 2 Head Tilt Solenoid Faults 7,008.41 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reboot the system. Does the error persist?	Go to Step 2.	Complete.
2	Check for Ink spills on or near the Head Tilt Gear. Clean and reboot the system. Does the error persist?	Go to Step 3.	Complete.
3	Check that the Printhead moves properly to the left and right. Does the Printhead move correctly?	Go to Step 4.	Remove any obstructions or replace any defective parts.
4	Realign the Process Drive (ADJ 4.7.1). Does the error persist?	Go to Step 5.	Complete.
5	Check the Process Drive for damage, debris, or obstructions. Is there any damage?	Replace the Process Drive (REP 4.0.7).	Go to Step 6.
6	Test the Tilt Axis Drive. Run the Service Diagnostics Tilt Axis Drive test. Did the test pass?	Go to Step 7.	Replace the Process Drive (REP 4.0.7).

Table 2 Head Tilt Solenoid Faults 7,008.41 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
7	Test the Head Maintenance Clutch. Run the Service Diagnostics Head Maintenance Wiper Clutch test. Does the clutch operate correctly?	Go to Step 8.	Replace the clutch (REP 4.0.4).
8	Check the Printhead Wiper alignment. Is the Printhead Wiper properly aligned?	Go to Step 9.	Perform ADJ 2.5.1.
9	Test the Wiper Drive. Run the Service Diagnostics Wiper Drive test. Does the Wiper Drive operate correctly?	Replace the Exit Module (REP 3.0.7).	Repair or replace the Wiper Drive.

7,009.42 Printhead Restraint Fault

A Process Drive or Printhead error has occurred. The following troubleshooting procedure applies to this error:

Process Faults

7,009.42 Printhead is tilted back, but not properly restrained.

Initial Actions

- Check for obstructions or ink spills around the Printhead.
- Check the Printhead Restraint Arms.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 7,009.42 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10
Restraint Arms, PL 2.0	
Head Maintenance Clutch, PL 4.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

The Printhead is tilted back, but not properly restrained in the Printhead Restraints.

Table 2 Printhead Restraint Fault 7,009.42 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the restraints for damage or debris. Are the restraints damaged?	Replace damaged parts (REP 2.0.8).	Go to Step 2.
2	Check the Printhead Wiper alignment. Is the Printhead Wiper properly aligned?	Go to Step 4.	Perform ADJ 2.5.1.
3	Check Printhead wire routing and the Tilt Gear. Does the Printhead move freely?	Remove ink spills or reinstall the Printhead.	Go to Step 4.
4	Check that the Process Drive is aligned (ADJ 4.7.1). Is the Process Drive misaligned?	Perform ADJ 4.7.1.	Go to Step 5.
5	Replace the Process Drive (REP 4.0.7). Does the error persist?	Go to Step 6.	Complete.
6	Test the Head Maintenance Clutch Run the Service Diagnostics Head Maintenance Wiper Clutch test. Does the clutch operate correctly?	Go to Step 7.	Replace the clutch (REP 4.0.4).

Table 2 Printhead Restraint Fault 7,009.42 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
7	Test the Wiper Drive. Run the Service Diagnostics Wiper Drive test. Does the Wiper Drive operate correctly?	Replace the Exit Module (REP 3.0.7).	Repair the Wiper Drive.

7,01X.4x Process Faults

A Process Drive or Printhead error has occurred. The following troubleshooting procedures apply to these errors:

Process Faults

7,010.43 Printhead is stuck or is not tilting properly. See IQ35.
7,011.44 Soft fault. System continues to operate.
7,012.45 Transfix Home Sensor does not indicate home position.
7,014.47 The Printhead is not locked in the restraint spring.
7,015.48 The Head Tile Restraint Spring is out of place.

Initial Actions

- Check that the Process Drive gear train is properly homed.
- Check for obstructions or ink spills around the Printhead. Spilled ink could indicate the system was tipped while hot. Check for blockage in the Purge Tube.
- Verify the Printhead travels smoothly from left to right.
- Check the Printhead Restraint Arms.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 7,010.4x through 7,015.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10
Head Tilt Solenoid, PL 4.0	Left Side Harness (2/2) - Figure 7
Head Tilt Gear, PL 4.0	
Restraint Arms, PL 2.0	
Head Maintenance Clutch, PL 4.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

The Printhead is stuck, or incorrectly positioned.

Table 2 Printhead Restraint Fault 7,010.xx through 7,015.xx Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reboot the system. Does the error persist?	Go to Step 2.	Complete.
2	Check the Printhead Lock Arms. Do the arms rotate correctly?	Go to Step 3.	Repair or replace the Printhead Restraints (REP 2.0.8).

Table 2 Printhead Restraint Fault 7,010.xx through 7,015.xx Troubleshooting Procedure

Step	Questions or Actions	Yes	No
3	Check for ink spills around the Printhead and Printhead Tilt Gears. The Printhead should move when pushed left or right. Is the area around the Printhead clean and unobstructed?	Go to Step 4.	Remove ink spills or obstructions.
4	Check the X-Axis Motor. Does the X-Axis Motor drive the Printhead to the center position?	Go to Step 5.	Check the X-Axis Drive (6,0xx.4x).
5	Check that the Process Drive is properly aligned (ADJ 4.7.1). Check that the Process Shaft and Drive Module Shaft are at their home positions. Is the Process Drive misaligned?	Realign the Process Drive (ADJ 4.7.1).	Go to Step 6.
6	Check for ink spilled on the Head Tilt Gear or its drive train. Are the gears clean?	Go to Step 7.	Clean the gears.
7	Test the Head Maintenance Clutch Run the Service Diagnostics Head Maintenance Wiper Clutch test. Does the clutch operate correctly?	Go to Step 8.	Replace the clutch (REP 4.0.4).
8	Test the Wiper Drive. Run the Service Diagnostics Wiper Drive test. Does the Wiper Drive operate correctly?	Replace the Exit Module (REP 3.0.7).	Repair the Wiper Drive.
9	Test the maintenance drive. Run the Service Diagnostics Load Maintenance Clutch test. Does the drive operate correctly?	Go to Step 9.	Check the maintenance drive system and replace any defective parts.
10	Check that the Head Tilt Gear engages. Manually engage the Head Tilt Gear. Does the gear engage the drive?	Go to Step 11.	Set the Head Tilt Gear.
11	Test the Tilt Axis Drive. Run the Service Diagnostics Tilt Axis Drive test. Did the test pass?	Go to Step 12.	Replace the Process Drive (REP 4.0.7).
12	Test the Process Drive. Run the Service Diagnostics Process Motor test. Does the Process Drive operate correctly?	Complete.	Replace the Process Drive (REP 4.0.7).

7,0xx.6x Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Process Program Faults

7,0xx.6x The system detected a program fault during operation.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 7,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 Process Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

8,0XX.4x Wiper or Media Drive Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Wiper or Media Drive Faults

8,005.48 The media path motor 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 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 head tilt.

Initial Actions

- Check for paper in the paper path.
- Check the condition of the Pick and Retard Rollers.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 8,0XX.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Media Drive Assembly, PL 4.0	Left Side Harness (2/2) - Figure 7
Head Maintenance Clutch, PL 4.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

Table 2 Media Drive Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	For an **8,005.48** error: 1. Check the area surrounding the Take Away Roller. 2. Remove the Tray 1 Pick Solenoid (REP 4.0.12) to view the meshing of the roller gears to the Media Drive. Did this correct the problem?	Complete.	Go to Step 4.

Table 2 Media Drive Troubleshooting Procedure

Step	Questions or Actions	Yes	No
2	For an **8,007.41** error: Check for a missing KL-clip securing the Head Maintenance Clutch. Replace if missing. Check for oil on the right end of the Exit Roller shaft. Oil leaks from the brass bushing can cause the clutch to slip. Did this correct the problem?	Complete.	Go to Step 4.
3	For an **8,009.43** error: 1. Check for paper in the paper path. 2. Ensure the Media Drive Assembly is fully seated and correctly installed. 3. Remove the Tray 1 Pick Solenoid to check that the Take Away Roller shaft is properly seated to its drive gear in the Media Drive Assembly. 4. Ensure the feed rollers are properly engaged in the drive gears. Did this correct the problem?	Complete.	Replace the Media Drive Assembly (REP 4.0.14).
4	Check the Wiper drive. Run the Service Diagnostics Wiper Drive test. Does the Wiper operate correctly?	Go to Step 5.	Go to Step 6.
5	Align the Printhead Wiper (ADJ 2.5.1). Does the Wiper align?	Go to Step 7.	Go to Step 6.
6	Inspect the wiper system for improper operation, obstructions, or damage (broken gear or belt). Look for ink in the wiper belt channels. Did this correct the problem?	Complete.	Go to Step 7.
7	Check the Wiper Clutch. Run the Service Diagnostics Head Maintenance Clutch test. Does the clutch operate correctly?	Go to Step 8.	Replace the clutch (REP 4.0.4).
8	Check the right side Wiper Lock. Does the lock operate correctly?	Go to Step 9.	Replace the Exit Module (REP 3.0.7).
9	Check for obstructions or spilled ink on the Wiper Blade, Head Tilt Gear drive, and under the Printhead. Is the Wiper, Media Drive, and Printhead clear or ink or obstructions?	Replace the Exit Module (REP 3.0.7).	Clean the system and retest.

8,0xx.6x Media Drive Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Media Drive Program Faults

8,0xx.6x The system detected a program fault during operation.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 8,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 Media Drive Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

9,0XX.4x Ink Loader Faults

An Ink Loader error has occurred. The following troubleshooting procedure applies to these errors:

Ink Loader Faults

9,000.44 The Ink Loader failed during operation.
9,005.49 The Cyan Ink Melt Heater is on, but no ink is detected.
9,006.41 The Magenta Ink Melt Heater is on, but no ink is detected.
9,007.42 The Yellow Ink Melt Heater is on, but no ink is detected.
9,008.43 The Black Ink Melt Heater is on, but no ink is detected.
9,015.41 Ink Loader Door opened to clear Cyan Ink Stick Jam.
9,016.41 Ink Loader Door opened to clear Magenta Ink Stick Jam.
9,017.41 Ink Loader Door opened to clear Yellow Ink Stick Jam.
9,018.41 Ink Loader Door opened to clear Black Ink Stick Jam.
9,025.41 Ink Loader Door opened twice to clear Cyan Ink Stick Jam.
9,026.41 Ink Loader Door opened twice to clear Magenta Ink Stick Jam.
9,027.41 Ink Loader Door opened twice to clear Yellow Ink Stick Jam.
9,028.41 Ink Loader Door opened twice to clear Black Ink Stick Jam.
9,035.41 Ink count flag stuck after melting 2.5 Cyan Ink Sticks.
9,036.41 Ink count flag stuck after melting 2.5 Magenta Ink Sticks.
9,037.41 Ink count flag stuck after melting 2.5 Yellow Ink Sticks.
9,038.41 Ink count flag stuck after melting 2.5 Black Ink Sticks.

Initial Actions

- Check that the Ink Sticks are genuine Xerox.
- Check for obstructions in the Ink Wells.
- Check the Ink Loader data (P/J0150) and power (P/J5) connections.
- Verify the Ink Sticks advance in the Ink Loader.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 9,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Ink Loader Assy, PL 2.0	I/O Board (2/2) - Figure 12

NOTE: *Following Ink Loader Assembly replacement, or for Ink count flag stuck errors, clear the Ink Stick Count (ISC) fault using the Clear ISC Fault menu item located in the Service Diagnostics Function menu.*

Troubleshooting Procedure

Table 2 Process Drive Faults 9,0XX.4x Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that the ink stick is able to advance in the ink loader chute. Check for broken or wrong type ink sticks. Are the Ink Sticks loading properly?	Go to Step 2.	Remove any blockage and/or replace the ink stick. Run clear ISC Fault test to clear the error. This must be performed following an ink loader replacement.
2	Test the appropriate Ink Melt Heater. Run the Service Diagnostics Ink Melt [1,2,3,4] test. • 1 = Yellow • 2 = Cyan • 3 = Magenta • 4 = Black Did the test pass?	Replace the Printhead (REP 2.0.2).	Replace the Ink Loader (REP 2.0.1).

9,009.44 and 9,00X.6x Ink Loader Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Ink Loader Program Faults

9,009.44 Communications error in NVRAM.

9,0xx.6x The system detected a program fault during operation.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 9,009.44 and 9,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 Ink Loader Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device. (REP 5.0.9).	Reconnect the system grounds.

11,0XX.xx Electronics Module Interface Faults

A communications error has occurred. The following troubleshooting procedure applies to these errors:

Ink Loader Faults

11,001.47	The Upper 525-sheet feeder broken serial link detected.
11,002.48	The 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	Communication timeout failure detected.
11,010.47	Hardware version mismatch.
11,011.48	Software version mismatch.
11,012.49	The power control PLD does not match the expected version.
11,013.41	I/O PLD version mismatch.
11,014.42	Control Panel version mismatch.
11,015.43	Printhead PLD version mismatch.
11,016.44	Lower 525-sheet feeder PLD version mismatch.
11,017.45	Upper 525-sheet feeder PLD version mismatch.
11,018.46	Titan version mismatch.
11,043.66	Control Panel waiting error

Initial Actions

- Check that all system grounds are secured.
- Check or reseat all connections to the Electronics Module.
- Check the condition of all harnesses.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 11,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
I/O Board, PL 2.0	Right Side Harness / I/O Control - Figure 10
Right Side Harness, PL 5.0	Right Side Harness / I/O Control - Figure 10
I/O Board Power Control Cable, PL 5.0	Right Side Harness / I/O Control - Figure 10
Left Side Harness, PL 5.0	Left Side Harness (1/2) - Figure 6
Electronics Module, PL 5.0	Electronics Module - Figure 8
Optional Feeder, PL 3.0	Left Side Harness (1/2) - Figure 6

Troubleshooting Procedure

Table 2 Process Drive Faults 11,0xx.4x Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check ground integrity for the printer. Does the error persist?	Go to Step 2.	Complete.
2	Reseat all system interconnections and check that the cables are properly dressed. Does the error persist?	Go to Step 3.	Complete.
3	Reset NVRAM. Does the error persist?	Locate the error code below.	Complete.
	For errors **11, 001.47** and **11,017.45** Replace the Tray Lift Motor. Does the error persist?	Replace the Electronics Module (REP 5.0.5).	Complete.
	For errors **11,002.48** and **11, 016.44** Check the Option Tray connection. Does the error persist?	Replace the optional tray.	Complete.
	For errors **11,003.49** and **11,0014.42**	Replace the I/O Board (REP 5.0.13)	Complete.
	For errors **11,004.41** and **11,013.41** Replace the I/O Board (REP 5.0.13). Does the error persist?	Replace the Control Panel (REP 1.0.9).	Complete.
	For errors **11,006.43** and **11,015.43**	Replace the Printhead (REP 2.0.2).	Complete.
	For error **11,009.46** Replace the I/O Board (REP 5.0.13). Does the error persist?	Replace the Electronics Module (REP 5.0.5).	Complete.
	For all other **11,000.4x** errors:	Replace the Electronics Module (REP 5.0.5).	Complete.

11,100.60 Electronics Module Temperature Fault

The root problem for this error is temperature sensitivity with the power supply's opto-isolator chips. The following troubleshooting procedure applies to this error:

Program Faults	
11,100.60	The system reports an overheat condition.

Initial Actions

- Check the ambient room temperature.
- Check for obstructions in the Air Vents. If obstructions are cleared, allow time for the system to cool.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 11,100.60 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 5.0	Electronics Module Power - Figure 9
Electronics Module Fan, PL 4.0	Left Side Harness (2/2) - Figure 7

Troubleshooting Procedure

Table 2 Temperature Fault 11,100.60 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that the air ducts are free of obstructions and the fans are operating correctly. Are the fans operating correctly?	Replace the Electronics Module (REP 5.0.5).	Replace the defective fan.

11,300.6x EMC Motor Control Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Program Faults	
11,300.6x	Motor told to move too late..

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 11,300.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 5.0	Electronics Module Power - Figure 9

Troubleshooting Procedure

Table 2 12,000.60 Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Replace the Electronics Module (REP 5.0.5).	Reconnect the system grounds.

12,000.60 Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Program Faults	
12,000.60	The system detected a program fault during operation.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 12,000.60 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 12,000.60 Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

13,000.48 Printhead Thermal Fault

A thermal error is detected in the Printhead. The following troubleshooting procedure applies to this error:

Process Thermal Faults	
13,000.48	A thermal fault was detected in the Printhead.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Printhead, PL 2.0	Electronics Module - Figure 8
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 13,000.48 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check ground integrity for the printer. Does the error persist?	Go to Step 2.	Complete.
2	Reset NVRAM. Does the error persist?	Replace the NVRAM device (REP 5.0.9).	Complete.
3	Reseat all system connections to the Printhead and check that the harnesses are properly dressed. Does the error persist?	Replace the Printhead (REP 2.0.2).	Complete.

13,003.42 and 13,007.46 Thermal Faults

A thermal error has occurred. The following troubleshooting procedures apply to these errors:

Thermal Faults

13,003.42 Thermal fault

13,007.46 Thermal fault

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,003.42 and 13,007.46 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	
Electronics Module, PL 5.0	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 13,003.42 and 13,007.46 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check ground integrity for the printer. Does the error persist?	Go to Step 2.	Complete.
2	Reset NVRAM. Does the error persist?	Replace in the NVRAM device (REP 5.0.9). If the error persists, replace the Electronics Module (REP 5.0.5).	Complete.

13,008.47 and 13,010.49 Drum Thermal Faults

A Drum Assembly thermal error has occurred. The following troubleshooting procedures apply to these errors:

Drum Thermal Faults

13,008.47 The Drum Heater is too hot

13,010.49 The Drum Heater took too long to reach the setpoint temperature.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,008.47 and 13,010.49 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Drum Fan, PL 4.0	Right Side Harness / I/O Control - Figure 10
Drum Assembly	Electronics Module Power - Figure 9
Drum Temperature Sensor, PL 6.0	I/O Board (2/2) - Figure 12
Electronics Module Fan	Left Side Harness (2/2) - Figure 7

Troubleshooting Procedure

Table 2 13,008.47 and 13,010.49 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Verify that the ambient temperature is within environmental specifications. Is the room within operating parameters?	Go to Step 2.	Advise the customer of operational requirements.
2	Check ground integrity for the printer. Does the error persist?	Go to Step 2.	Complete.
3	Is the error code associated with an overheat condition?.	Go to Step 4.	Go to Step 6.
4	Check airflow at the vents. Is there adequate clearance, and are the vents clean?	Go to Step 5.	Clean the vents.
5	Test the Drum Fan Run the Service Diagnostics Drum Fan Motor test. Does the fan operate correctly?	Go to Step 6.	Replace the Drum Fan (REP 4.0.6).
6	Test the Electronics Module Fan. Does the Fan operate correctly?	Go to Step 7.	Replace the Electronics Module Fan (REP 4.0.15).

Table 2 13,008.47 and 13,010.49 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
7	Test the Drum Temperature Sensor. Run the Service Diagnostics Drum Temperature Sensor test. Does the sensor operate correctly?	Go to Step 8.	Replace the Drum Temperature Sensor. (REP 6.0.4).
8	Test the Drum Heater. Run the Service Diagnostics Drum Heater test. Does the heater operate correctly?	Replace the Drum Assembly (REP 2.0.3).	Replace the Drum Temperature Sensor. (REP 6.0.4).

13,067.43, 13,069.45, 13,071.47 Drum Temp Sensor Faults

A Drum Temperature Sensor error has occurred. The following troubleshooting procedures apply to these errors:

Drum Temperature Sensor Faults

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 faulty reading.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Drum Temperature Sensor, PL 6.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedures

Table 2 13,067.43, 13,069.45 and 13,071.47 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Drum Temperature Sensor. Run the Service Diagnostics Drum Temperature Sensor test. Does the sensor operate correctly?	Go to Step 2.	Replace the Drum Temperature Sensor. (REP 6.0.4).
2	Check the Drum Heater Sensor harness. Is the harness free from defects or damage?	Replace the Drum Temperature Sensor. (REP 6.0.4).	Repair the wiring.

13,XXX.4x Preheater Thermal Faults

A Preheater thermal error has occurred. The following troubleshooting procedures apply to these errors:

Preheater Thermal Faults

13,072.48 The Preheater is too hot.
13,074.41 The Preheater took too long to reach the setpoint temperature.
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 faulty reading.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,XXX.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Preheater, PL 2.0	I/O Board (1/2) - Figure 11
I/O Board, PL 5.0	I/O Board (1/2) - Figure 11
Right Combined Cable, PL 5.0	

Troubleshooting Procedures

Table 2 Preheater Thermal Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Verify that the ambient temperature of the room is within the system's environmental specifications. Is the room within operating parameters?	Go to Step 2.	Advise the customer of operational requirements.
2	Test the Preheater. Run the Service Diagnostics Preheater test. Does the Preheater operate correctly?	Replace the I/O Board (REP 5.0.13).	Go to Step 3.
3	Check Preheater connections and wiring. Are the connections secure and the wiring undamaged?	Replace the Preheater (REP 2.0.17).	Repair or replace the wiring.

13,1XX.4x Left Jetstack Thermal Faults

A thermal error in the Printhead jetstack has occurred. The following troubleshooting procedures apply to these errors:

Left Jetstack Thermal Faults

13,136.49 The left jetstack heater is too hot.
13,138.42 The left jetstack heater took too long to reach the setpoint temperature.
13,195.45 The left jetstack heater thermistor circuit is open.
13,197.47 The left jetstack heater thermistor circuit is shorted.
13,199.49 The left jetstack heater thermistor returned faulty reading.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,1XX.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Printhead, PL 2.0	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 Left Jetstack Thermal Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Verify that the ambient temperature of the room is within the system's specifications. Is the room within operating parameters?	Go to Step 2.	Advise the customer of operational requirements.
2	Check ground integrity for the printer. Does the error persist?	Go to Step 3.	Complete.
3	Test the Left Jetstack. Run the Service Diagnostics Left Jetstack Temperature test. Does the Preheater operate correctly?	Go to Step 4.	Replace the Printhead (REP 2.0.2).
4	Check Printhead connections and wiring. Are the connections secure and the wiring undamaged?	Replace the Printhead (REP 2.0.2).	Repair the wiring.

13,2XX.4x Right Jetstack Thermal Faults

A thermal error in the Printhead jetstack has occurred. The following troubleshooting procedures apply to these errors:

Right Jetstack Thermal Faults

13,200.41	The right jetstack heater is too hot.
13,202.43	The right jetstack heater took too long to reach the setpoint temperature.
13,259.46	The right jetstack heater thermistor circuit is open.
13,261.48	The right jetstack heater thermistor circuit is shorted.
13,263.41	The right jetstack heater thermistor returned faulty reading.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,2XX.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Printhead, PL 2.0	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 Right Jetstack Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Verify that the ambient temperature of the room is within the system's specifications. Is the room within operating parameters?	Go to Step 2.	Advise the customer of operational requirements.
2	Check ground integrity for the printer. Does the error persist?	Go to Step 3.	Complete.
3	Test the Right Jetstack. Run the Service Diagnostics Right Jetstack Temperature test. Does the Preheater operate correctly?	Go to Step 4.	Replace the Printhead (REP 2.0.2).
4	Check Printhead connections and wiring. Are the connections secure and the wiring undamaged?	Replace the Printhead (REP 2.0.2).	Repair the wiring.

13,XXX.xx Printhead Reservoir Thermal Faults

A Printhead Reservoir thermal error has occurred. The following troubleshooting procedures apply to these errors:

Printhead Reservoir Thermal Faults

13,264.42	The Printhead reservoir heater is too hot.
13,266.44	The Printhead reservoir heater took too long to reach setpoint temp.
13,323.47	The Printhead reservoir heater thermistor circuit is open.
13,325.49	The Printhead reservoir heater thermistor circuit is shorted.
13,327.42	The Printhead reservoir heater thermistor returned faulty reading.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 13,XXX.xx Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Printhead, PL 2.0	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 Printhead Reservoir Thermal Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Verify that the ambient temperature of the room is within the system's specifications. Is the room within operating parameters?	Go to Step 2.	Advise the customer of operational requirements.
2	Check ground integrity for the printer. Does the error persist?	Go to Step 3.	Complete.
3	Test the Printhead Reservoir temperature. Run the Service Diagnostics Reservoir Temperature test. Does the Printhead operate correctly?	Go to Step 4.	Replace the Printhead (REP 2.0.2).
4	Check Printhead connections and wiring. Are the connections secure and the wiring undamaged?	Replace the Printhead (REP 2.0.2).	Repair the wiring.

13,XXX.xx Ink Loader Thermal Faults

A thermal error has occurred. The following troubleshooting procedures apply to these errors:

Ink Loader Thermal Faults

13,328.43	The Cyan heater is too hot.
13,330.45	The Cyan heater took too long to reach the setpoint temperature.
13,387.48	The Cyan heater thermistor circuit is open.
13,389.41	The Cyan heater thermistor circuit is shorted.
13,391.43	The Cyan heater thermistor returned faulty reading.
13,392.44	The Magenta heater is too hot.
13,394.46	The Magenta heater took too long to reach the setpoint temperature.
13,451.49	The Magenta heater thermistor circuit is open.
13,453.42	The Magenta heater thermistor circuit is shorted.
13,455.44	The Magenta heater thermistor returned faulty reading.
13,456.45	The Yellow heater is too hot.
13,458.47	The Yellow heater took too long to reach setpoint temp.
13,515.41	The Yellow heater thermistor circuit is open.
13,517.43	The Yellow heater thermistor circuit is shorted.
13,519.45	The Yellow heater thermistor returned faulty reading.
13,456.45	The Black heater is too hot.
13,458.47	The Black heater took too long to reach setpoint temp.
13,515.41	The Black heater thermistor circuit is open.
13,517.43	The Black heater thermistor circuit is shorted.
13,519.45	The Black heater thermistor returned faulty reading.

Initial Actions

- Check that all system grounds are secured.
- Check the ambient room temperature.
- Check the fan operation and vents.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedures.

Table 1 Ink Loader Thermal Fault Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Ink Loader, PL 2.0	Electronics Module - Figure 8
I/O Board, PL 5.0	I/O Board (2/2) - Figure 12
Electronics Module, PL 5.0	Electronics Module - Figure 8
Right Combined Cable, PL 5.0	

Troubleshooting Procedures

Table 2 Ink Loader Ink Melt Heater 13,328.43 through 13,581.44 Procedure

Step	Questions or Actions	Yes	No
1	Verify that the ambient temperature of the room is within the system's specifications. Is the room within operating parameters?	Go to Step 2.	Advise the customer of operational requirements.
2	Check ground integrity for the printer. Does the error persist?	Go to Step 3.	Complete.
3	Test the appropriate Ink Melt heater. Run the Service Diagnostics Ink Melt test. 1. Yellow 2. Cyan 3. Magenta 4. Black Does the Ink Melt Heater operate correctly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 4.
4	Check Ink Loader connections and wiring. Are the connections secure and the wiring undamaged?	Replace the Ink Loader (REP 2.0.1).	Repair or replace the wiring. If the error persists, replace the I/O Board (REP 5.0.13).

13,00x.6x Thermal Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

X-Axis Program Faults

13,001.62	Thermals failed to read system NVRAM.
13,002.63	Value 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 expected an initialization message, but received other.
13,008.60	Thermal power manager task received an unexpected message.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 6,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 X-Axis Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

19,0XX.4x Printhead Calibration Faults

The root problem for this error is temperature sensitivity with the power supply's opto-isolator chips. The following troubleshooting procedure applies to this error:

Printhead Calibration Faults

19,001.46	The HFD server failed due to NVRAM operation. THis fault should only occur when the system is in manufacturing mode.
19,002.47	The system attempted a Printhead operation without position data in NVRAM.
19,003.48	Scale and offset voltage error too large. Something is wrong with the Electronics Module or Wave Amplifier.
19,004.40	The Printhead and Electronics Module do not match.
19,005.41	Improper ground connection

Initial Actions

- Check electrical connections to the Printhead.
- Check for obstructions or damage near the Printhead. If obstructions are cleared, retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 19,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 5.0	Electronics Module - Figure 8
Printhead, PL 2.0	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 Process Drive Faults 7,0xx.4x Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check and reseat all connections to the Printhead. Does the problem persist?	Replace the Printhead (REP 2.0.2). If the error persists, replace the Electronics Module (REP 5.0.5).	Complete.

19,0XX.6x Waveform Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

X-Axis Program Faults

19,001.68 to 19,039.61 Waveform Printhead calibration program faults.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 6,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 X-Axis Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Check that the ground straps are place between the Media Drive Motor and Y-Axis Assembly. Also check the ground clip at the Tray 2 Pick Clutch. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

21,000.69 Diagnostic Firmware Version Mismatch

A software error has occurred. The following troubleshooting procedure applies to these errors:

X-Axis Program Faults

21,000.69 The diagnostics firmware doesn't match the engine firmware.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 6,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 5.0	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 X-Axis Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Update the Diagnostic firmware. Does the problem persist?	Go to Step 2.	Complete.
2	Replace the Electronics Module (REP 5.0.5).		Complete.

22,0XX.6x Jam Fault

A jam has occurred. The system generates a four-digit, alphanumeric code associated to a particular area of the paper path, followed by the value of the system page counter when the jam occurred <jam code><page count>. Jam code syntax is defined in Table 1. A listing of common Jam Codes appears at the end of this section.

Table 1 Jam Code Key

Process Event	Basis for Jam	System State	Media Supply
A Deskew Flag B Preheater Flag C Strip Flag D Exit Flag E Tray 1 Width F Front Door G Exit Door H Tray 2 Media J Tray 3 Media K Tray 4 Media M Media Drive N Y-Axis Motor P Process Drive 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 Abnormal shutdown B Normal shutdown C Mechanical recovery D Warmup E Ready F Fault G Auto Drum Maintenance H Printhead Maintenance J Printhead purge K Oil Transfix Roller L Standby 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 Pint Drum Maintenance W Imaging X Exit Z Shutdown	1 Tray 1 2 Tray 2 3 Tray 3 4 Tray 4 5 Chase Page 6 Duplex

As an example, the Jam Code W2Q1 indicates a Tray 3 Paper Size Switch unexpectedly activated while a paper pick operation occurred from Tray 1. See Jam Codes for a listing of the most commonly seen codes.

Initial Actions

- Clear the paper path of obstructions or debris.
- Check that the media meets specifications and is loaded correctly.
- Check that the Pick Rollers are clean and in good condition.

Troubleshooting Procedure

Locate the code in the Jam Codes listing and follow the procedure, if available

23,0XX.6x NVRAM Faults

An NVRAM error has occurred. The following troubleshooting procedure applies to these errors:

NVRAM Faults

23,0xx.6x The system detected an NVRAM fault during operation.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 23,0XX.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 X-Axis Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

23,133.4x RAM Faults

An RAM DIMM error has occurred. The following troubleshooting procedure applies to these errors:

NVRAM Faults

23,133.4x The system detected an NVRAM fault during operation.

Initial Actions

- Reseat RAM devices and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 23,0XX.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
SDRAM, PL 5.0 or PL 5.1	
Electronics Module, PL 5.0 or PL 5.1 (8860)	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 X-Axis Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat the SDRAM devices in the Electronics Module. Does the problem persist?	Go to Step 2.	Complete.
2	Replace SDRAM. Does the problem persist?	Replace the Electronics Module (REP 5.0.5 or PL 5.1 (8860)).	Complete.

26,0XX.6x Printing Faults

A printing process error has occurred. The following troubleshooting procedure applies to these errors:

Printing Faults

26,0xx.6x A printing process fault occurred during operation.

26,962.64 A fall out code fault.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Troubleshooting Procedure

Check the fault history and troubleshoot the error listed immediately prior to these codes. Otherwise, reboot the system to clear these error conditions.

27,0XX.6x Profile Library

A profile library error has occurred. The following troubleshooting procedure applies to these errors:

Profile Library Faults

27,0xx.6x A printing process fault occurred during operation.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Troubleshooting Procedure

Check system ground integrity.

29,0XX.6x Jam Manager Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Jam Manager Faults

29,0XX.6x Jam Manager program faults.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 29,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 Jam Manager Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

31,001.40 Mechanical Initialization Jam

A software error has occurred. The following troubleshooting procedure applies to this error:

Mechanical Initialization Fault

31,001.40 Mechanical initialization jam fault.

Initial Actions

- Check routing of tray sensor harnesses.
- Check that the Take Away Rollers are free of obstructions.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 31,0xx.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Media Drive Assy, PL 4.0	Left Side Harness (2/2) - Figure 7

Troubleshooting Procedure

Table 2 X-Axis Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the Take Away Rollers. Do the rollers show signs of excessive wear or damage?	Replace the affected roller.	Go to Step 2.
2	Test the Media Drive. Run the Service Diagnostics Paper Path Drive test. Does the Media Drive operate correctly?	Go to Step 4.	Go to Step 3.
3	DId the Media Drive run extremely fast?	Replace the Media Drive Assembly (REP 4.0.14).	Go to Step 4.
4	Check the rollers. Remove the Media Drive Assembly and check each roller for binding or drag. Do the rollers rotate correctly?	Replace the Media Drive Assembly (REP 4.0.14).	Repair or replace rollers.

31,0XX.6x Program Faults

A software error has occurred. The following troubleshooting procedure applies to these errors:

Program Faults

31,0XX.6x Program faults.

Initial Actions

- Reset NVRAM and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 31,0xx.6x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
NVRAM, PL 5.0	

Troubleshooting Procedure

Table 2 Program Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat all Electronics Module connections. Does the problem persist?	Go to Step 2.	Complete.
2	Check ground integrity. Are the system grounds connected?	Reset NVRAM. If the error persists, replace the NVRAM device (REP 5.0.9).	Reconnect the system grounds.

33,00X.4x Tray 1 Width Sensor Faults

The Paper Width Sensor, located in the Tray 1/Front Door Assembly is reporting out of range values. The following troubleshooting procedure applies to these errors:

Tray Manager Device Faults

33,001.42	Tray 1 width value too low.
33,002.43	Tray 1 width value too high.

Initial Actions

- Check electrical connection to Tray 1 (P/J650).
- Check for obstructions or damage to the Media Guides.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 33,00x.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Tray 1/Front Door Assembly, PL 1.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

Table 2 Tray 1 Width Sensor Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the Tray 1 Harness connection to the I/O Board (P/J610). Is the connection secure and the harness undamaged?	Go to Step 2.	Repair or replace the harness.
2	Test the Width Sensors. Run the Service Diagnostics Tray 1 Width Sensor test. Does the sensor operate correctly?	Replace the I/O Board (REP 5.0.13).	Replace the Tray 1/ Front Door Assembly (REP 1.0.1).

34,00X.4x Printhead NVRAM Faults

The Printhead is unable to access system NVRAM. The following troubleshooting procedure applies to these 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 purposes of initialization. The Printhead cable may be unplugged.

Initial Actions

- Check data connection to the Printhead.
- Check for obstructions or damage to the Media Guides.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 34,00x.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Printhead, PL 2.0	Electronics Module - Figure 8
Printhead Interface Cable, PL 5.0	Electronics Module - Figure 8

Troubleshooting Procedure

Table 2 Printhead NVRAM Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the Printhead data cable connections (P/J3 and P/J180). Are the connections secure and the cable undamaged?	Go to Step 2.	Repair or replace the cable.
2	Replace the Printhead (REP 2.0.2). Does the error persist?	Replace the Electronics Module (REP 5.0.5).	Complete.

34,01X Ink Level Sense Faults

There are two known ways an Ink level sense over-range fault can occur. One fault condition results from an internal short in the sensor or Printhead. In these cases, replacement of the Printhead is required. A more common fault condition is caused by ink contamination. If different color or type of inks mix in the reservoir, the sensor's function is impaired producing the over range fault. If multiple colors have mixed or the wrong type of ink has been used, remove the source of the ink contamination, and then purge the Printhead.

NOTE: *The Ink level sensors can detect contamination before color mixing appears on prints.*

Ink Contamination Faults

34,015.48	An over range level sense error occurred in the Cyan Printhead reservoir. Check The Cyan reservoir for contamination.
34,016.40	An over range level sense error occurred in the Magenta Printhead reservoir. Check The Magenta reservoir for contamination.
34,017.41	An over range level sense error occurred in the Yellow Printhead reservoir. Check The Yellow reservoir for contamination.
34,018.42	An over range level sense error occurred in the Black Printhead reservoir. Check The Black reservoir for contamination.

WARNING

Allow adequate time for the system to cool before servicing the printer.

Initial Actions

- Check the Ink Loader for improperly installed Ink Sticks.
- Shutdown the printer and allow it to cool until the Ink solidifies (approximately 30 minutes).
- Investigate where the contamination came from and remove the contamination source.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 34,00x.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Printhead, PL 2.0	Electronics Module - Figure 8
Ink Sticks	

Troubleshooting Procedure

Table 2 Printhead NVRAM Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the Ink Loader chutes for improperly installed Ink Sticks. Has the Ink been loaded incorrectly or the wrong ink used?	Go to Step 2.	Go to Step 7.

Table 2 Printhead NVRAM Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
2	**CAUTION** *Do not attempt to remove ink from the Printhead reservoir. Purge the reservoir using solid color test prints as described.* Clear the Ink Loader of Ink. For these types of errors, clear the Ink Loader of the incorrect Ink. 1. Remove the Ink Loader. 2. Load the correct Ink into the chutes. 3. Clean the area surrounding the Printhead reservoir for the affected color(s). 4. Install the Ink Loader. Has all the improper Ink been removed from the Ink Loader and Printhead area?	Go to Step 3.	Continue cleaning until no residual ink remains in the Ink Loader or area surrounding the Printhead.
3	Disable Ink Loader level sensing. 1. Open the Ink Loader Door. 2. Switch the power On and interrupt the initialization process immediately after the Xerox logo is replaced by the words "Warming Up" by holding down the **Up Arrow** button while pressing the **OK** button. If successful, the words "Level sense disabled" momentarily appear on the display. If these words don't appear, power Off the system and attempt the procedure again. Ink level sensing remains disabled for approximately 5 minutes. Is level sense disabled?	Go to Step 4.	Continue Step 3 until level sensing is disabled.
4	Close the Ink Loader Door and allow the system to reach "Ready". Is the system Ready?	Go to Step 5.	Go to Step 7.
5	Access the Service Tools menu to purge the Printhead contamination using the Ink Flush Prints routine. Select the affected color to print 20 solid fill prints. Were 20 solid fills printed?	Go to Step 6.	Continue printing solid fills in the affected color(s).
6	Check that the contamination has been purged. 1. Shutdown the system. 2. Turn the system On. Did the system reach "Ready" without error?	Complete.	Go to Step 2 and attempt a second purge procedure. If unsuccessful, go to Step 7.

Table 2 Printhead NVRAM Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
7	Replace the Printhead (REP 2.0.2). Does the error persist?	Replace the Electronics Module (REP 5.0.5).	Complete.

36,000.40 Drum Maintenance Faults

An error occurred while attempting to position the Drum Maintenance Kit. The following troubleshooting procedure applies to these errors:

Printhead NVRAM Faults

36,000.40 An error occurred while attempting to position the Drum Maintenance Kit.

Initial Actions

- Check for ink spills or obstructions near the Drum Maintenance Kit.
- Check for obstructions or damage to the Pivot Plate and Cam Rollers.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 36,000.40 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Drum Maintenance Kit PL 1.0	
Drum Maintenance Pivot Plate PL 2.0	I/O Board (2/2) - Figure 12
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10

Troubleshooting Procedure

Table 2 Drum Maintenance Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that system grounds are in place. Are the grounds secure and undamaged?	Go to Step 2.	Repair or replace the grounds.
2	Check the Drum Maintenance Pivot Plate for cracks, and the Dram Maintenance Cam Rollers for damage or improper movement. Is there damage to the Pivot Plate or Cam Rollers?	Replace any damaged parts.	Go to Step 3.
3	Test Drum Maintenance operation. Run the Service Diagnostics Drum Maintenance/Transfix Home test. Does the system operate correctly?	Go to Step 4.	Replace the Process Drive (REP 4.0.7).
4	Test the Drum Maintenance drive. Run the Service Diagnostics Drum Maintenance Drive test. Does the drive operate correctly?	Complete.	Replace the Process Drive (REP 4.0.7)

36,001.67 Drum Maintenance Drive Faults

An error occurred while attempting to position the Drum Maintenance Kit. The following troubleshooting procedure applies to this error:

Drum Maintenance Drive Faults

36,001.67 An error occurred while attempting to position the Drum Maintenance Kit.

Initial Actions

- Check for ink spills or obstructions near the Drum Maintenance Kit.
- Check for obstructions or damage to the Pivot Plate and Cam Rollers.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 36,001.67 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Drum Maintenance Kit PL 1.0	
Drum Maintenance Pivot Plate PL 2.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

Table 2 Drum Maintenance Drive Faults 36,001.67 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that system grounds are in place. Are the grounds secure and undamaged?	Go to Step 2.	Repair or replace the grounds.
2	Test Drum Maintenance operation. Run the Service Diagnostics Drum Maintenance/Transfix Home test. Does the system operate correctly?	Go to Step 3.	Replace the Process Drive (REP 4.0.7).
3	Test the Drum Maintenance drive. Run the Service Diagnostics Drum Maintenance Drive test. Does the drive operate correctly?	Replace the Drum Maintenance Pivot Plate and Shaft (REP 2.0.16).	Replace the Process Drive (REP 4.0.7)

36,002.44 Drum Maintenance Kit Fault

An error occurred while attempting to position the Drum Maintenance Kit. The following troubleshooting procedure applies to this error:

Drum Maintenance Drive Faults

36,002.44 The system can not write to the Drum Maintenance Kit.

Initial Actions

- Check for ink spills or obstructions near the Drum Maintenance Kit.
- Check for obstructions or damage to the Pivot Plate and Cam Rollers.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 36,001.67 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Drum Maintenance Kit PL 1.0	
Drum Maintenance Pivot Plate PL 2.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

Table 2 Drum Maintenance Drive Faults 36,001.67 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check that the Drum Maintenance Kit is correctly installed. Is the installation correct?	Go to Step 2.	Correct and retest.
2	Replace the Drum Maintenance Kit Does the error persist?	Replace the Drum Maintenance Pivot Plate and Shaft (REP 2.0.16).	Complete.

37,0XX.xx PEST Heater Faults

An heating error has occurred. The following troubleshooting procedure applies to these errors:

PEST Heater Faults

37,001.46 An error occurred during PEST execution.
37,002.47 The Left Jetstack is drawing less power than expected.
37,003.48 The Right Jetstack is drawing less power than expected.
37,004.40 Ink Reservoir 0 is drawing less power than expected.
37,005.41 Ink Reservoir 1 is drawing less power than expected.
37,006.42 The Drum Heater is drawing less power than expected.
37,008.44 The Preheater is drawing less power than expected.
37,009.45 All Ink Melt Heaters are drawing less power than expected.
37,010.46 The Yellow (0) Ink Melt Heater is drawing less power than expected.
37,011.44 The Cyan (1) Ink Melt Heater is drawing less power than expected.
37,012.48 The Magenta (2) Ink Melt Heater is drawing less power than expected.
37,013.48 The Black (3) Ink Melt Heater is drawing less power than expected.

Initial Actions

- Check the Printhead, Preheater and Ink Loader power connections.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,0XX.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Ink Loader Assy, PL 2.0	Electronics Module - Figure 8
Printhead, PL 2.0	Electronics Module - Figure 8
Preheater, PL 2.0	Electronics Module Power - Figure 9

Troubleshooting Procedure

Table 2 PEST Heater Faults 37,0XX.4x Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the affected component. Run the Service Diagnostics test for the affected component. Does the affected component reach operating temperature?	Go to Step 2.	Replace the affected component.
2	Check wiring to the affected component. Is the wiring damaged?	Repair or replace the harness.	Replace the affected component.

37,01X.41 PEST Fan Faults

An fan error has occurred. The following troubleshooting procedure applies to these errors:

PEST Heater Faults

37,014.41 The Electronics Module Fan is drawing less power than expected.
37,015.41 The Drum Fan is drawing less power than expected.

Initial Actions

- Check the Electronics Module and Drum Cooling Fans.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,01X.41 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module Fan, PL 4.0	Left Side Harness (2/2) - Figure 7
Drum Fan, PL 4.0	Right Side Harness / I/O Control - Figure 10

Troubleshooting Procedure

Table 2 PEST Fan Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the affected component. Run the Service Diagnostics test for the affected fan. Does the affected fan operate correctly?	Go to Step 2.	Replace the fan.
2	Check wiring to the affected component. Is the wiring damaged?	Repair or replace the harness.	Replace the affected component.

37,016.43 PEST 50 Volt Supply Fault

An error has occurred related to the Electronics Module 50 V Power Supply. The clutches operate at 50 V. The Head Maintenance, Deskew, and Pick clutches are drawing too much power indicating a short in the supply or one of the components connected to it.

PEST 50 V Supply Fault

37,016.43 All three clutches failed.

Initial Actions

- Check the Electronics Module indicators.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,016.43 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 4.0	Left Side Harness (1/2) - Figure 6
I/O Board, PL 5.0	I/O Board (2/2) - Figure 12

Troubleshooting Procedure

CAUTION

Damage to circuits within the Electronics Module may occur if the power supply capacitors are not allowed to fully discharge.

Table 2 PEST 50 V Supply Fault 37,016.43 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check for a short in the Electronics Module. Measure the 50 V power supply output. The test point is located on the power control board below the main board RAM DIMMs. Is there 50 V across the TP and ground?	Go to Step 2.	Go to Step 2.
2	Shutdown the system and wait 30 seconds for the capacitors to discharge. Unplug all connections to the Electronics Module. Turn the system On. Do the PE and PS indicators (near the Power Switch) flash momentarily?	Go to Step 3.	Replace the Electronics Module (REP 5.0.5).

Table 2 PEST 50 V Supply Fault 37,016.43 Troubleshooting Procedure

Step	Questions or Actions	Yes	No
3	Shutdown the system and wait 30 seconds for the capacitors to discharge. Connect I/O Board connector (P/J840). Turn the system On. Do the PE and PS indicators (near the Power Switch) flash momentarily?	Go to Step 4.	Go to Step 5.
4	Check the 50 V Supply LED. If the 50V LED (Figure 2) illuminates, the short is on one of the external devices unplugged earlier. In this case, systematically turn off the printer, plug a wiring harness back in, and turn the printer on until the 50V LED fails to illuminate. Was the defective part isolated?	Replace the defective part.	Go to Step 5.
5	Shutdown the system and wait 30 seconds for the capacitors to discharge. Disconnect all connections to the I/O Board. Test the resistance of the I/O Board across pin 1 of J270 and ground. Pin 1 is on the left end of the jack. Is the resistance still less than 1K ohm?	Replace the I/O Board (REP 5.0.13).	Go to Step 6.
6	Reconnect connections on the I/O Board until you find one that creates a short at J270-1. Does a short appear at J270-1?	Replace the affected component.	Go to Step 7.
7	Reconnect the Wave Amplifier. Turn the system On. Does the error persist?	Go to Step 8.	Leave power on to ensure the problem is fixed.
8	Reconnect the Printhead. Turn the system On. Does the error persist?	Replace the Electronics Module (REP 5.0.5).	Leave power on to ensure the problem is fixed.

37,0XX.4x PEST Clutch/Solenoid Faults

An heating error has occurred. The following troubleshooting procedure applies to these errors:

PEST Heater Faults

37,017.44 The Head Maintenance Clutch is drawing less power than expected.
37,018.45 The Deskew Clutch is drawing less power than expected.
37,019.46 The Pick Clutch is drawing less power than expected.
37,020.48 The Tray 1 Pick Solenoid is drawing less power than expected.
37,021.42 The Strip Solenoid is drawing less power than expected.
37,022.4x The Preheater Lift Solenoid is drawing less power than expected.
37,023.4x The Head Tilt Solenoid is drawing less power than expected.

Initial Actions

- Check the indicated component for damage, wear, or obstructions.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,0XX.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Head Maintenance Clutch, PL 4.0	I/O Board (2/2) - Figure 12
Deskew Clutch, PL 4.0	Left Side Harness (1/2) - Figure 6
Pick Clutch, PL 4.0	Left Side Harness (1/2) - Figure 6
Tray 1 Pick Solenoid, PL 4.0	Left Side Harness (1/2) - Figure 6
Strip Solenoid, PL 3.0	I/O Board (1/2) - Figure 11
Preheater Lift Solenoid, PL 4.0	Left Side Harness (2/2) - Figure 7
Head Tilt Solenoid, PL 4.0	Left Side Harness (2/2) - Figure 7

Troubleshooting Procedure

Table 2 PEST Clutch/Solenoid Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the component indicated by the error. Run the Service Diagnostics test for the affected component. Does the component operate correctly?	Go to Step 2.	Replace the affected component.
2	Check wiring to the affected component. Is the wiring damaged?	Repair or replace the harness.	Replace the affected component.

37,024.48 PEST Tray 2 Lift Motor Fault

An error has occurred related to the Tray 2 Lift Motor. The following troubleshooting procedure applies to this error:.

Tray 2 Lift Motor Fault

37,024.48 The Tray 2 Lift Motor is drawing less power than expected.

Initial Actions

- Check the Tray 2 Lift Plate for damage or obstructions.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,024.48 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Tray 2 Lift Motor, PL 4.0	Left Side Harness (1/2) - Figure 6
Electronics Module, PL 4.0	Left Side Harness (1/2) - Figure 6

Troubleshooting Procedure

Table 2 PEST Tray 2 Lift Motor Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Tray 2 Lift Motor. Run the Service Diagnostics Tray 2 Lift Motor test. Does the motor operate correctly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 2.
2	Check the motor connection to the Left Side Harness. Is the connection secure and the harness undamaged?	Replace the motor (REP 4.0.10).	Repair of replace the Left Side Harness.

37,026.44 PEST Purge Pump Fault

An error has occurred related to the Purge Pump. The following troubleshooting procedure applies to this error:.

Tray 2 Lift Motor Fault

37,026.44 The Purge Pump purge valve is drawing less power than expected.

Initial Actions

- Check the Purge Pump for damage or obstructions.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,026.44 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Purge Pump, PL 2.0	Left Side Harness (2/2) - Figure 7
Electronics Module, PL 4.0	Left Side Harness (2/2) - Figure 7

Troubleshooting Procedure

Table 2 PEST Purge Pump Fault Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Purge Pump. Run the Service Diagnostics Purge Vent Solenoid test. Does the pump operate correctly?	Go to Step 2.	Replace the Purge Pump (REP 2.0.7).
2	Check the pump connection to the Left Side Harness. Is the connection secure and the harness undamaged?	Replace the Purge Pump (REP 2.0.7).	Repair of replace the Left Side Harness.

37,02X.4x PEST Relay Board Faults

An Relay Board error has occurred. The following troubleshooting procedure applies to these errors:

PEST Relay Board Faults

37,027.45 Both relay coils are drawing less power than expected.

37,028.46 The A coil is drawing less power than expected.

37,029.47 The B coil is drawing less power than expected.

Initial Actions

- Check the Relay Board's power connection.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,02X.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Relay Board, PL 5.0	I/O Board (1/2) - Figure 11
Electronics Module, PL 5.0	Electronics Module Power - Figure 9

Troubleshooting Procedure

Table 2 PEST Relay Board Faults 37,02X.4x Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Relay Board. Run the Service Diagnostics Drum Heater Relay test. Does the Relay Board operate correctly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 2.
2	Check wiring to the affected component. Is the wiring damaged?	Repair or replace the harness.	Replace the Relay Board (REP 5.0.19).

37,03X.4x PEST X-Axis Motor Faults

An X-Axis Motor error has occurred. The following troubleshooting procedure applies to these errors:

PEST X-Axis Motor Faults

37,030.45 The X-Axis Motor is drawing less power than expected.
37,031.46 The X-Axis Motor first phase is drawing less power than expected.
37,032.47 The X-Axis Motor first phase is drawing too much power.
37,033.48 The X-Axis Motor second phase is drawing less power than expected.
37,034.40 The X-Axis Motor second phase is drawing too much power.

Initial Actions

- Check the X-Axis Motor connection.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,03X.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
X-Axis Motor, PL 4.0	Right Side Harness / I/O Control - Figure 10
Electronics Module, PL 5.0	Right Side Wire Routing (2/2) - Figure 3

Troubleshooting Procedure

Table 2 PEST X-Axis Motor Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the X-Axis Motor. Run the Service Diagnostics X-Axis Drive test. Does the motor operate correctly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 2.
2	Check wiring to the motor. Is the wiring damaged?	Repair or replace the harness.	Replace the X-Axis Motor (REP 4.0.5).

37,035.44 and 37,036.45 PEST Y-Axis Motor Faults

A Y-Axis Motor error has occurred. The following troubleshooting procedure applies to these errors:

PEST Y-Axis Motor Faults

37,035.44 The Y-Axis Motor is drawing less power than expected.
37,036.45 The Y-Axis Motor is drawing too much power.

Initial Actions

- Check for obstructions to Drum rotation.
- Check the condition of the Y-Axis Drive Belt.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,03X.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Y-Axis Motor, PL 4.0	Electronics Module Power - Figure 9
Drum Assembly, PL 2.0	
Electronics Module, PL 5.0	Electronics Module Power - Figure 9

Troubleshooting Procedure

Table 2 PEST Y-Axis Motor Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check the Drum rotation. Does the Drum rotate smoothly?	Go to Step 2.	Replace the Drum Assembly (REP 2.0.3).
2	Check the Y-Axis Motor. Remove the Y-Axis Belt (REP 2.0.4). Does the Y-Axis Motor shaft rotate freely?	Go to Step 3.	Replace the Y-Axis Motor (REP 4.0.11).
3	Replace the Y-Axis Belt and test the Y-Axis Motor. Run the Service Diagnostics Y-Axis Drive test. Does the motor operate correctly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 4.
4	Check wiring to the motor. Is the wiring damaged?	Repair or replace the harness.	Replace the Y-Axis Motor (REP 4.0.11).

37,037.46 and 37,038.47 PEST Media Drive Faults

A Media Drive Assembly error has occurred. The following troubleshooting procedure applies to these errors:

PEST Media Drive Faults

37,037.46 The Media Drive Motor is drawing less power than expected.

37,038.47 The Media Drive Motor is drawing too much power.

Initial Actions

- Check for obstructions to Media Drive rotation.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,037.46 and 37,038.47 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Media Drive, PL 4.0	Left Side Harness (2/2) - Figure 7
Electronics Module, PL 5.0	Left Side Wire Routing (2/2) - Figure 5

Troubleshooting Procedure

Table 2 PEST Media Drive Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Media Drive Motor. Run the Service Diagnostics Media Path Motor test. Does the motor operate correctly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 2.
2	Check wiring to the motor. Is the wiring damaged?	Repair or replace the harness.	Replace the Media Drive (REP 4.0.14).

37,039.48 and 37,040.40 PEST Process Drive Faults

A Y-Axis Motor error has occurred. The following troubleshooting procedure applies to these errors:

PEST Process Drive Faults

37,039.48 The Process Drive Motor is drawing less power than expected.

37,040.40 The Process Drive Motor is drawing too much power.

Initial Actions

- Check for obstructions to Process Drive rotation.
- Check the rotation of the Drum Maintenance and Transfix Roller shafts.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,039.48 and 37,040.40 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Process Drive, PL 4.0	Right Side Harness / I/O Control - Figure 10
Electronics Module, PL 5.0	

Troubleshooting Procedure

Table 2 PEST Process Drive Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Check shaft rotation. Do the Process Drive gears, Transfix Shaft, and Drum Maintenance shaft rotate freely?	Go to Step 2.	Repair or replace affected parts.
2	Test the Process Drive Motor. Run the Service Diagnostics Process Motor test. Does the motor operate correctly?	Replace the Electronics Module (REP 5.0.5).	Go to Step 3.
3	Check wiring to the motor. Is the wiring damaged?	Repair or replace the harness.	Replace the Process Drive (REP 4.0.7).

37,0XX.4x PEST Power Supply Faults

An Power Supply error has occurred. The following troubleshooting procedure applies to these errors:

PEST Power Supply Faults

37,041.41 The Power Supply failed to reset.
37,043.43 The Power Supply 2.5 V source over limit.
37,044.44 The Power Supply 2.5 V source under limit.
37,045.45 The Power Supply 3.3 V source over limit.
37,046.46 The Power Supply 3.3 V source under limit.
37,047.47 The Power Supply 12 V source over limit.
37,048.48 The Power Supply 12 V source under limit.
37,049.40 The Power Supply -12 V source over limit.
37,050.41 The Power Supply -12 V source under limit.
37,051.42 The Power Supply current over limit.
37,052.43 The Power Supply current under limit.
37,053.44 The Power Supply 50 V source over limit.
37,054.45 The Power Supply 50 V source under limit.
37,055.46 The Power Supply -50 V source over limit.
37,056.47 The Power Supply -50 V source under limit.
37,057.48 The Power Supply 15 V source over limit.
37,058.40 The Power Supply 15 V source under limit.
37,059.41 The Power Supply -15 V source over limit.
37,060.42 The Power Supply -15 V source under limit.
37,061.43 The Power Supply 5 V source over limit.
37,062.44 The Power Supply 5 V source under limit.
37,063.45 The Power Supply high switch not activated. Electrical short or missing reset line.
37,064.46 Vss too low. The Printhead power harness may be disconnected.
37,065.47 Vpp too low. The Printhead or Wave Amp may be disconnected.
37,066.48 The Wave Amplifier s drawing too much power. Possible short.

Initial Actions

- Check the component power connections and harness condition.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 37,0XX.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Electronics Module, PL 5.0	

Troubleshooting Procedure

Table 2 PEST Power Supply Faults 37,0XX.4x Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Power Supply. Run the Service Diagnostics Voltages test. Does the Power Supply operate correctly?	Go to Step 2.	Replace the Electronics Module (REP 5.0.5).
2	Check the Printhead Power connection. Is the wiring disconnected or damaged?	Repair or replace the harness.	Replace the Electronics Module (REP 5.0.5).

39,002.40 and 39,003.41 Scanner Subsystem Test Faults

A Scanner DRAM or Optical self test error has occurred. The following troubleshooting procedure applies to these errors:

Scanner Subsystem Test Faults

39,002.40 The Scanner DRAM test failed.

39,003.41 The Scanner Optical Test failed.

Initial Actions

- Cycle system power and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 39,00X.4x Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Scanner Assembly, PL 1.0	

Troubleshooting Procedure

Table 2 Scanner Subsystem Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Cycle system power and retest. Does this correct the problem?	Complete.	Go to Step 2.
2	Replace the Scanner Assembly (REP 1.0.11).	Complete.	

39,004.42 Scanhead Locked or Shipping Restraint Faults

A Scanner self test determined the Scanhead was either locked, or the shipping restraint remained. The following troubleshooting procedure applies to these errors:

Scanhead Lock or Shipping Restraint Faults

39,004.42 The Scanhead did not reach Home position. Release Scanner Shipping Restraint or Scanhead Locked appears on the Control Panel display.

Initial Actions

- Check the Scanhead lock.
- Check for packaging.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 39,004.42 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Scanner Assembly, PL 1.0	

Troubleshooting Procedure

Table 2 Scanhead Locked Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Cycle system power and retest. Does this correct the problem?	Complete.	Go to Step 2.
2	Replace the Scanner Assembly (REP 1.0.11).	Complete.	

39,005.43 Scanner Missing Fault

A Scanner was not detected. The following troubleshooting procedure applies to these errors:

Scanner Missing Fault

39,005.43 The system did not detect the Scanner Assembly.

Initial Actions

- Reseat the Scanner connection to the Electronics Module.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 39,005.43 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Scanner Assembly, PL 1.0	
Scanner Power Supply, PL 5.0	Exit Module Control Board - Figure 13
DADF, PL 1.0	
Exit Module Control Board, PL 5.0	Exit Module Control Board - Figure 13
Exit Roller Motor, PL 4.0	Exit Module Control Board - Figure 13
Elevator Motor, PL 4.0	Exit Module Control Board - Figure 13

Troubleshooting Procedure

Table 2 Scanhead Missing Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Cycle system power and retest. Does this correct the problem?	Complete.	Go to Step 2.
2	Check the Scanner Power Supply status LED (see Figure 2). Is the Status LED blinking?	Go to Step 3.	Go to Step 5.
3	Remove the Output Tray and Side Covers. Disconnect the Elevator (P/J303) and Exit Roller (P/J309) motors. Does the Status LED stop blinking and remain On?	Replace the defective motor or the Exit Module (REP 3.0.7)	Go to Step 4.
4	With the Exit Module motors disconnected, disconnect the DADF from the Scanner. Does the Status LED stop blinking and remain On?	Replace the DADF (REP 1.0.15).	Go to Step 5.
5	Is the Status LED Off?	Replace the Scanner Power Supply (REP 5.0.2). If the error persists, replace the Electronics Module (REP 5.0.5).	Go to Step 6.
6	Disconnect the Scanner Assembly from the Electronics Module. Does the Status LED light?	Replace the Scanner Assembly (REP 1.0.11).	Replace the Exit Module Control Board (REP 5.0.1). If the error persists, replace the Scanner Power Supply (REP 5.0.2). If the Status LED remains Off, replace the Electronics Module (REP 5.0.5).

39,010.8 Document Feeder Disconnected or Missing

The system could not detect the DADF. The following troubleshooting procedure applies to this error:

Document Feeder Disconnected or Missing Faults

39,010.8 The DADF was not detected. Document Feeder Disconnected or DADH Missing appears on the Control Panel display.

Initial Actions

- Check the DADF connection to the Scanner Assembly.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 39,010.8 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
DADF, PL 1.0	

Troubleshooting Procedure

Table 2 DADF Disconnected or Missing Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Reseat the DADF connection to the Scanner Assembly. Wait at least one minute. Does the problem persist?	Go to Step 2.	Complete.
2	Cycle system power and retest. Does this correct the problem?	Complete.	Replace the DADF (REP 1.0.15).

39,011.40 and 39,012.40 DADF Subsystem Test Faults

The DADF DRAM or Optical self test error has occurred. The following troubleshooting procedure applies to these errors:

DADF Subsystem Faults

39,011.40 The DADF DRAM Test failed.

39,012.40 The DADF Optical Test failed.

Initial Actions

- Cycle system power and retest.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 39,011.40 and 39, 012.40 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
Document Feeder, PL 1.0	

Troubleshooting Procedure

Table 2 DADF Subsystem Faults Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Cycle system power and retest. Does this correct the problem?	Complete.	Go to Step 2.
2	Replace the DADF (REP 1.0.15).	Complete.	

39,013.42 Document Feeder Jam

A media Jam is detected in the DADF. The following troubleshooting procedure applies to this error:

Document Feeder Disconnected or Missing Faults

39,013.42 Media Jam in the DADF was detected. Jam at Document Feeder appears on the Control Panel display.

Initial Actions

- Check that the media is supported by the system.
- Check the pick rollers and separator pad.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 39,004.42 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
DADF Pick Roller and Pad, PL 1.0	
DADF, PL 1.0	

Troubleshooting Procedure

Table 2 Scanhead Locked Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Clean or replace the DADF Pick Rollers and Separator Pad. Does the problem persist?	Go to Step 2.	Complete.
2	Remove all media, open and close the DADF Front Cover, and retest. Does this correct the problem?	Complete.	Replace the DADF (REP 1.0.15).

39,014.43 Document Feeder Calibration Fault

A calibration faults is detected in the DADF. The following troubleshooting procedure applies to this error:

Document Feeder Calibration Fault

39,014.43 DADF calibration fault.

Initial Actions

- Check that the media is supported by the system.
- Check the pick rollers and separator pad.
- If the problem persists, follow the procedure below.

Primary Causes

The troubleshooting table lists parts and wiring referenced in the troubleshooting procedure.

Table 1 39,004.42 Troubleshooting Reference Table

Applicable Parts	Wiring and Plug/Jack References
DADF, PL 1.0	

Troubleshooting Procedure

Table 2 Scanhead Locked Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Cycle system power and retest. Does this correct the problem?	Complete.	Replace the DADF (REP 1.0.15).

Jam Codes

The system stores the most recent 20 events in Jam History. To access this information, press and hold the **Up Arrow** button, then scroll to Jam History and press **OK**. Jam codes for Process Events differ between models. Tables 1 and 2 list the code keys for each model. Table 3 provides troubleshooting information for the most common jams.

Table 1 8860 Jam Code Key

Process Event	Basis for Jam	System State	Media Supply
A Deskew Flag B Preheater Flag C Strip Flag D Exit Flag E Tray 1 Width F Front Door G Tray 2 Media H Tray 3 Media J Tray 4 Media M Media Drive N Y-Axis Motor P Process Drive T Exit Door 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 Abnormal shutdown B Normal shutdown C Mechanical recovery D Warmup E Ready F Fault G Auto Drum Maintenance H Printhead Maintenance J Printhead purge K Oil Transfix Roller L Standby 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 Drum Maintenance W Imaging X Exit Z Shutdown	1 Tray 1 2 Tray 2 3 Tray 3 4 Tray 4 5 Chase Page 6 Duplex

Table 2 8860MFP Jam Code Key

Process Event	Basis for Jam	System State	Media Supply
A Deskew Flag B Preheater Flag C Strip Flag D Exit Flag E Tray 1 Width F Front Door G Exit Door H Tray 2 Media J Tray 3 Media K Tray 4 Media M Media Drive N Y-Axis Motor P Process Drive 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 Abnormal shutdown B Normal shutdown C Mechanical recovery D Warmup E Ready F Fault G Auto Drum Maintenance H Printhead Maintenance J Printhead purge K Oil Transfix Roller L Standby 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 Drum Maintenance W Imaging X Exit Z Shutdown	1 Tray 1 2 Tray 2 3 Tray 3 4 Tray 4 5 Chase Page 6 Duplex

NOTE: *The following table defines the first 3-digits. The 4th digit represents the tray number (1~4), 5 represents a chase page, and 6 represents duplex. Numbers following the 4th digit are the system page count:*

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
A2C	Deskew sensor in unexpected state during mechanical recovery. 1. Check the Drum Maintenance Kit NVRAM contacts during oiling 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. Check system grounding. 2. Replace Tray 1 Pick Solenoid.
A2F	Deskew sensor in unexpected state. 1. Check system grounding. 2. Verify all doors and covers are fully closed and not moving during printing.
A2J	Deskew flag sensor event during head purge.
A2K	Deskew sensor in an unexpected state during a Transfix Roller oiling.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
A2M	The deskew flag tripped unexpectedly while picking paper from Tray 2.
A2N	The deskew flag tripped unexpectedly while picking paper from Tray 3.
A2P	The deskew flag tripped unexpectedly while picking paper from Tray 4.
A2S	Deskew sensor in unexpected state during media stage for transfix.
A2Q	The deskew flag tripped unexpectedly while the printer was picking paper from Tray 1. 1. Try using different, supported media 2. Ensure the paper guides are snug against the media in the tray 3. Push up on Tray {2 - 4} Nudger Roller until it is captured by actuator arm. 4. Run the following diagnostic tests, Deskew Flag, Tray {2-4} Pick Clutch and the Tray {2-4} Solenoid. 5. Check system grounding. 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 (REP 3.0.18). 9. Replace the Preheater (REP 2.0.17).
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 (REP 3.0.18).
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. 2. Check the condition of the Exit Roller and the Duplex Roller. 3. Check the Front Door for obstructions or damage, replace the Front Door if necessary. 4. Test the operation of the exit roller and the duplex roller using diagnostic Duplex Paper Lead Edge Times test. 5. Test the deskew sensor using the diagnostic Sensors test.
B2C	Preheat exit sensor unexpected state during mechanical recovery. 1. Clear jam and let printer finish mechanical recovery. 2. Check system grounds.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
B2F	Preheater exit sensor in unexpected state during fault.
B2S	Preheater exit sensor in unexpected state during stage. 1. Check system grounds. 2. Check the Drum Maintenance Kit NVRAM contacts during oiling for continuity. 3. Check the waste tray. 4. Replace the Preheater (REP 2.0.17).
B2M	The preheat flag tripped unexpectedly while picking paper from Tray 2.
B2N	The preheat flag tripped unexpectedly while picking paper from Tray 3.
B2P	The preheat flag tripped unexpectedly while picking paper from Tray 4.
B2Q	The preheat flag tripped unexpectedly while picking paper from Tray 1. 1. Test the Preheater Sensor using Service Diagnostics. 2. Check system grounds.
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 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. Test the Preheater Exit Sensor using Service Diagnostics. 5. Check the condition of the Deskew Rollers. 6. Test the Deskew Clutch using Service Diagnostics. 7. Run the Paper Path Drive test from Service Diagnostics. 8. Replace the Preheater (REP 2.0.17), 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 was picked from Tray 2.
C2N	The strip flag actuated unexpectedly when paper was picked from Tray 3.
C2P	The strip flag actuated unexpectedly when paper was picked from Tray 4.
C2Q	The strip flag actuated unexpectedly when paper was picked from Tray 1.
C2R	Strip flag unexpected event during pick from the duplex path.
C2T	Strip flag unexpected event during transfix. 1. Check system grounds. 2. Check for paper tray overfill. 3. Test the Strip Sensor using Service Diagnostics. 4. Check the Stripper Blade for damage or debris. 5. Run the Paper Lead Edge Times test using Service Diagnostics. 6. Test the Deskew Clutch using Service Diagnostics. 7. Replace the Stripper Carriage Assembly (REP 2.0.12), then retest.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
C2X	Strip flag unexpected event during exit. 1. Check that the media is not too thick and is supported by the system. 2. Use a less glossy media. 3. Check that the guides in the tray are snug against the media. 4. If the Drum Maintenance Kit is near end of life, replace it. 5. Clean and inspect the exit rollers. 6. Test the Paper Path Drive using Service Diagnostics.
C3M C3N C3P C3Q C3T	The strip flag timed out waiting for the paper picked from Tray 2. The strip flag timed out waiting for the paper picked from Tray 3. The strip flag timed out waiting for the paper picked from Tray 4. The strip flag timed out waiting for the paper picked from Tray 1. Strip flag time-out during transfix. 1. Check that the media is the correct size and type for the tray. If envelope jam, try a different style. 2. Check the Drum Maintenance Kit for proper operation, replace if necessary. 3. Check that the Process Drive is correctly homed (ADJ 4.7.1). 4. Test the Stripper Carriage using the Stripper Contact test in Service Diagnostics. 5. Test the Transfix Drive using the Transfix Drive Slow and Transfix Drive Fast tests.
C3X	Strip flag time-out during exit. 1. Open the Exit Door and ensure the springs for the idler rollers are present and installed correctly (they should be the same for all 5 rollers). 2. Verify the metal bar is installed on top of the Exit Guide.
C5X	Print pulled back into transfix nip during exit. 1. Check that the media is not too thick and is supported by the system. 2. Use a less glossy media. 3. If the Drum Maintenance Kit is near end of life, replace it. 4. Clean and inspect the exit rollers. 5. Check that the Process Drive is correctly homed (ADJ 4.7.1). 6. Test the Paper Path Drive using Service Diagnostics. 7. Replace the Lower Exit Guide.
D2D D2M D2N D2P D2Q D2R D2T	Exit flag unexpected event during warm-up. The exit flag actuated unexpectedly when paper was picked from Tray 2. The exit flag actuated unexpectedly when paper was picked from Tray 3. The exit flag actuated unexpectedly when paper was picked from Tray 4. The exit flag actuated unexpectedly when paper was picked from Tray 1. The exit flag actuated unexpectedly when duplexing The exit flag actuated unexpectedly when transfixing 1. Check system grounds. 2. Test the Exit Sensor using Service Diagnostics. 3. Run the Paper Lead Edge Times test using Service Diagnostics. 4. Replace the problem component, then retest.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
D2X	The exit flag actuated unexpectedly exit. 1. Check that the media is not too thick and is supported by the system. 2. Use a less glossy media. 3. If the Drum Maintenance Kit is near end of life, replace it. 4. Clean and inspect the exit rollers. 5. Check that the Exit Sensor Flag for proper installation or damage. Replace if necessary. 6. Test the Paper Path Drive using Service Diagnostics. 7. Replace the problem component.
D3C D3M D3N D3P D3Q D3R D3T	Exit flag time-out during mechanical recovery. Exit flag timed out following Tray 2 Pick. Exit flag timed out following Tray 3 Pick. Exit flag timed out following Tray 4 Pick. Exit flag timed out following Tray 1 Pick. Exit flag timed out during duplexing. Exit flag time-out during transfix. 1. Check that the media is not too thick and is supported by the system. 2. Check that the exit path is free of obstructions. 3. If the Drum Maintenance Kit is near end of life, replace it. 4. Clean and inspect the Stripper Blade. 5. Clean and inspect the exit rollers. Check that the rollers rotate freely. 6. Check the Exit Sensor Flag for proper installation or damage. Replace if necessary. 7. Test the Paper Path Drive using Service Diagnostics. 8. Replace the problem component.
E2D E2E E2Q	Tray 1 width sensor during warm-up. Tray 1 width sensor during operation. Tray 1 width sensor during Tray 1 pick 1. Check the Tray 1 width guides for proper operation. Verify the guides are not moving during printing. 2. Check the Front Door is closed and the wiring is properly connected and seated. 3. Test the Tray 1 Width Sensor using Service Diagnostics. 4. Check the Tray 1 wiring to the I/O board. 5. Replace the I/O Board (REP 5.0.13), then retest.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
F2D	The Front Door Interlock tripped during warming up.
F2F	The Front Door Interlock tripped during fault state.
F2M	The Front Door Interlock tripped during a pick from Tray 2.
F2N	The Front Door Interlock tripped during a pick from Tray 3.
F2P	The Front Door Interlock tripped during a pick from Tray 4.
F2Q	The Front Door Interlock tripped during a pick from Tray 1.
F2R	The Front Door Interlock tripped during duplexing.
F2S	The Front Door Interlock tripped while the paper was staged for transfix.
F2T	The Front Door Interlock tripped during transfix.
F2V	The Front Door Interlock tripped during Drum oiling.
F2W	The Front Door Interlock tripped during imaging.
F2X	The Front Door Interlock tripped during exit. 1. Check the Front Door for damaged hinges, latch, or interlock actuator. 2. Check the covers for proper alignment and fit. 3. Test the Interlock Switch (Door Sensor test) using Service Diagnostics. 4. Check the Front Door Interlock Switch installation and wiring. 5. Replace the switch, then retest.
G2M	Tray 2 removed during pick from Tray 2.
H2N	Tray 3 removed during pick from Tray 3.
J2M	Tray 4 removed during pick from Tray 4.
J2P	Tray 4 Media Present Sensor event pick from Tray 4.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
M2C	Media Drive motor had an unexpected event during mechanical recovery.
M4A	Media Drive motor stalled during an abnormal printer shutdown.
M4B	Media Drive motor stalled during a normal printer shutdown.
M4C	Media Drive motor stalled during mechanical recovery.
M4D	Media Drive motor stalled during printer warm-up.
M4E	Media Drive motor stalled during ready state.
M4F	Media Drive motor stalled during a fault state.
M4G	Media Drive motor stalled during an auto drum maintenance cycle.
M4H	Media Drive motor stalled during printhead maintenance.
M4J	Media Drive motor stalled during printhead purge.
M4K	Media Drive motor stalled during an oil Transfix Roller cycle.
M4L	Media Drive motor stalled during standby mode.
M4M	Media Drive motor stalled during pick from Tray 2.
M4N	Media Drive motor stalled during pick from Tray 3.
M4P	Media Drive motor stalled during pick from Tray 4.
M4Q	Media Drive motor stalled during pick from Tray 1.
M4R	Media Drive motor stalled during duplex.
M4S	Media Drive motor stalled during transfix stage.
M4T	Media Drive motor stalled during transfix. 1. Check that the media is supported by the system. 2. Check that the exit path is free of obstructions. 3. Check system grounds. 4. Test the Media Drive motor using the Paper Path Drive test. 5. If necessary, retest using the Media Path Motor and Shafts tests. 6. Check the condition and movement of the rollers and gears. 7. Replace the Media Drive Assembly (REP 4.0.14).
N2T	Y-Axis motor event during transfix (Tray 1 only - probably a multi-pick). 1. Check that the media is supported by the system. 2. Try a heavier media. 3. Send a snippet to turn off the multi-pick detection code. 4. Test the Y-Axis Motor using Service Diagnostics, replace if necessary (REP 4.0.11). 5. Run the Voltages test, replace the Electronics Module if necessary (REP 5.0.5).
N2W	Y-Axis motor event during imaging. Probably a software fault. Check system grounds.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
N4A	Y-Axis motor stalled on power-up following an abnormal shutdown.
N4B	Y-Axis motor stalled on power-up following a normal shutdown.
N4C	Y-Axis motor stalled during mechanical recovery
N4D	Y-Axis motor stalled during warm-up.
NFE	Y-Axis motor stalled during ready state.
N4F	Y-Axis motor stalled during a fault state.
N4G	Y-Axis motor stalled during an auto drum maintenance cycle.
N4H	Y-Axis motor stalled during printhead maintenance.
N4J	Y-Axis motor stalled during printhead purge.
N4K	Y-Axis motor stalled during an oil Transfix Roller cycle.
N4L	Y-Axis motor stalled during standby mode.
N4S	Y-Axis motor stalled during staging for transfix.
N4T	Y-Axis motor stalled during transfixing.
N4V	Y-Axis motor stalled during a print drum maintenance cycle.
N4W	Y-Axis motor stalled during drum imaging.
N4X	Y-Axis motor stalled during paper exit. 1. Check for supported media, generally label, trifold or envelopes cause this error. 2. Try running fewer sheets through the tray. 3. Check that the Process Drive is correctly homed (ADJ 4.7.1). 4. Test theY-Axis Motor using Service Diagnostics, replace if necessary (REP 4.0.11). 5. Test for Y-Axis Belt slippage using the Belt Slip test. 6. Replace the Tray 1 Separator Pad assembly. 7. Replace the Process Drive (REP 4.0.7).
N5T	Y-Axis motor out of position during transfixing.
N5W	Y-Axis motor out of position during drum imaging. 1. Check the Y-Axis drive belt. 2. Run the Check Drum Y-Axis Encoder test. 3. Run the Check Drum Y-Axis Drive test. 4. Test for Y-Axis Belt slippage using the Belt Slip test. 5. Replace the Y-Axis Motor (REP 4.0.11), or Drum Assembly (REP 2.0.3) if necessary.
N6T	Y-Axis Motor media short during transfix. The media was shorter than expected. Legal size paper from Tray 4 in standard print mode may buckle. Use slower print mode. 1. Check for supported media. 2. Check system grounds. 3. Run the Check Drum Y-Axis Encoder test. 4. Remove the Preheater (REP 2.0.17), and check the Preheater flag for ink or paper interference. 5. Replace the Preheater (REP 2.0.17).

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
N7T	Y-Axis Motor media long during transfix. The media was longer than expected. 1. Check for supported media. 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 (REP 3.0.18). 6. Run the clean ink smears and check the Preheater exit flag for debris. 7. Remove the Preheater (REP 2.0.17), and check the Preheater flag for ink or paper interference. 8. Replace the Preheater (REP 2.0.17) if the error persists.
P4A	Process Drive stalled on power-up following an abnormal shutdown.
P4B	Process Drive stalled on power-up following a normal shutdown.
P4C	Process Drive stalled during mechanical recovery
P4D	Process Drive stalled during warm-up.
PFE	Process Drive stalled during ready state.
P4F	Process Drive stalled during a fault state.
P4G	Process Drive stalled during an auto drum maintenance cycle.
P4H	Process Drive stalled during printhead maintenance.
P4J	Process Drive stalled during printhead purge.
P4K	Process Drive stalled during an oil Transfix Roller cycle.
P4L	Process Drive stalled during standby mode.
P4S	Process Drive stalled during staging for transfix.
P4T	Process Drive stalled during transfixing.
P4V	Process Drive stalled during a print drum maintenance cycle.
P4W	Process Drive stalled during drum imaging.
P4X	Process Drive stalled during paper exit. 1. Check for supported media. 2. Check that the Process Drive is correctly homed (ADJ 4.7.1). 3. Test the Process Drive using Service Diagnostics. 4. Replace the Process Drive (REP 4.0.7) if necessary. 5. Run the Transfix Fast and Slow tests. 6. Replace the Transfix Camshaft (REP 2.0.10) and load arms if necessary. 7. Run the Tilt Drive test, replace if necessary. 8. Replace the Process Drive (REP 4.0.7).

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
T2A	Exit Door Interlock tripped following an abnormal shutdown.
T2B	Exit Door Interlock tripped following a normal shutdown.
T2C	Exit Door Interlock tripped during mechanical recovery
T2D	Exit Door Interlock tripped during warm-up.
T2E	Exit Door Interlock tripped during ready state.
T2F	Exit Door Interlock tripped during a fault state.
T2G	Exit Door Interlock tripped during an auto drum maintenance cycle.
T2H	Exit Door Interlock tripped during Printhead maintenance.
T2J	Exit Door Interlock tripped during Printhead purge.
T2K	Exit Door Interlock tripped during an oil Transfix Roller cycle.
T2L	Exit Door Interlock tripped during standby mode.
T2M	Exit Door Interlock tripped during pick from Tray 2.
T2N	Exit Door Interlock tripped during pick from Tray 3.
T2P	Exit Door Interlock tripped during pick from Tray 4.
T2Q	Exit Door Interlock tripped during pick from Tray 1.
T2R	Exit Door Interlock tripped during duplexing.
T2S	Exit Door Interlock tripped during transfix staging.
T2T	Exit Door Interlock tripped during transfixing.
T2X	Exit Door Interlock tripped during paper exit.
T2Z	Exit Door Interlock tripped during shutdown. 1. Check for supported media. 2. Check system grounds. 3. Run the Monitor Sensors test using Service Diagnostics. 4. Check the Exit Door Interlock Switch. Replace if necessary (REP 6.0.2). 5. Check the Drum Maintenance Kit is functioning properly and the blade is not covered with ink debris. Replace if necessary 6. Replace the Transfix Roller (REP 2.0.12).
V2D	Tray 2 Paper Size Switch activated during warm-up.
V2E	Tray 2 Paper Size Switch activated during ready state.
V2F	Tray 2 Paper Size Switch activated during a fault state.
V2K	Tray 2 Paper Size Switch activated during an oil Transfix Roller cycle.
V2L	Tray 2 Paper Size Switch activated during standby mode.
V2M	Tray 2 Paper Size Switch activated during pick from Tray 2.
V2N	Tray 2 Paper Size Switch activated during pick from Tray 3.
V2P	Tray 2 Paper Size Switch activated during pick from Tray 4.
V2Q	Tray 2 Paper Size Switch activated during pick from Tray 1.
V2R	Tray 2 Paper Size Switch activated during duplexing.
V2S	Tray 2 Paper Size Switch activated during transfix staging.
V2T	Tray 2 Paper Size Switch activated during transfixing.
V2X	Tray 2 Paper Size Switch activated during paper exit. 1. Check system grounds. 2. Check that the Tray 2 media guides are set correctly. 3. Run the Monitor Sensors test using Service Diagnostics. 4. Check the Paper Size Switch. Replace if necessary (REP 6.0.7). 5. Replace the Pivot Arm.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
W2D	Tray 3 Paper Size Switch activated during warm-up.
W2E	Tray 3 Paper Size Switch activated during ready state.
W2F	Tray 3 Paper Size Switch activated during a fault state.
W2L	Tray 3 Paper Size Switch activated during standby mode.
W2M	Tray 3 Paper Size Switch activated during pick from Tray 2.
W2N	Tray 3 Paper Size Switch activated during pick from Tray 3.
W2P	Tray 3 Paper Size Switch activated during pick from Tray 4.
W2Q	Tray 3 Paper Size Switch activated during pick from Tray 1.
W2R	Tray 3 Paper Size Switch activated during duplexing.
W2V	Tray 3 Paper Size Switch activated during an auto drum maintenance cycle.
W2S	Tray 3 Paper Size Switch activated during transfix staging.
W2T	Tray 3 Paper Size Switch activated during transfixing.
W2X	Tray 3 Paper Size Switch activated during paper exit. 1. Check system grounds. 2. Check that the Tray 3 media guides are set correctly. 3. Run the Monitor Sensors test using Service Diagnostics. 4. Replace the 525-Sheet Feeder.
W4N	Tray 3 Paper Size Switch activated during pick from Tray 3.
W4P	Tray 3 Paper Size Switch activated during pick from Tray 4.
W2S	Tray 3 Paper Size Switch activated during pick from Tray 1. 1. Check system grounds. 2. Check that the Tray 3 media guides are set correctly. 3. Run the Monitor Sensors test using Service Diagnostics. 4. Replace the 525-Sheet Feeder.
X2A	Tray 3 pick flag actuated during an abnormal shutdown.
X2B	Tray 3 pick flag actuated during a normal shutdown.
X2C	Tray 3 pick flag actuated during mechanical recovery
X2D	Tray 3 pick flag actuated during warm-up.
X2E	Tray 3 pick flag actuated during ready state.
X2F	Tray 3 pick flag actuated during a fault state.
X2L	Tray 3 pick flag actuated during standby mode.
X2M	Tray 3 pick flag actuated during pick from Tray 2.
X2N	Tray 3 pick flag actuated during pick from Tray 3.
X2P	Tray 3 pick flag actuated during pick from Tray 4.
X2Q	Tray 3 pick flag actuated during pick from Tray 1.
X2R	Tray 3 pick flag actuated during duplexing.
X2S	Tray 3 pick flag actuated during transfix staging.
X2V	Tray 3 pick flag actuated during an auto drum maintenance cycle.
X2W	Tray 3 pick flag actuated during drum imaging.
X2X	Tray 3 pick flag actuated during paper exit. 1. Check system grounds. 2. Check that the Tray 2 media guides are set correctly 3. Run the Monitor Sensors test using Service Diagnostics. 4. Replace the 525-Sheet Feeder. 5. Replace the Pivot Arm.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
X3D	Tray 3 pick flag timed-out during warm-up.
X3E	Tray 3 pick flag timed-out during ready state.
X3F	Tray 3 pick flag timed-out during a fault state.
X3K	Tray 3 pick flag timed-out during an oil Transfix Roller cycle.
X3L	Tray 3 pick flag timed-out during standby mode.
X3M	Tray 3 pick flag timed-out during pick from Tray 2.
X3N	Tray 3 pick flag timed-out during pick from Tray 3.
X3P	Tray 3 pick flag timed-out during pick from Tray 4.
X3Q	Tray 3 pick flag timed-out during pick from Tray 1.
X3R	Tray 3 pick flag timed-out during duplexing.
X3S	Tray 3 pick flag timed-out during transfix staging.
X3T	Tray 3 pick flag timed-out during transfixing.
X3V	Tray 3 pick flag timed-out during a drum maintenance cycle.
X3W	Tray 3 pick flag timed-out during drum imaging.
X3X	Tray 3 pick flag timed-out during paper exit. 1. Check for supported media. 2. Reduce the amount of media loaded in the tray and reposition the guides to fit snugly against the media. 3. Check the rollers for damage, debris or excessive wear. Clean or replace as necessary. 4. Run the Tray 3 Pick Shaft test using Service Diagnostics. 5. Check system grounds. 6. Push up on the Nudger Roller until it is captured by the Actuator Arm. 7. Run the Pick Clutch test using Service Diagnostics. Replace if necessary. 8. Run the Media Path Drive test using Service Diagnostics. 9. Replace the Pick Roller Assembly (REP 3.0.18). 10. Replace the 525-Sheet Feeder.
Y2D	Tray 4 Paper Size Switch activated during warm-up.
Y2E	Tray 4 Paper Size Switch activated during ready state.
Y2F	Tray 4 Paper Size Switch activated during a fault state.
Y2L	Tray 4 Paper Size Switch activated during standby mode.
Y2M	Tray 4 Paper Size Switch activated during pick from Tray 2.
Y2N	Tray 4 Paper Size Switch activated during pick from Tray 3.
Y2P	Tray 4 Paper Size Switch activated during pick from Tray 4.
Y2Q	Tray 4 Paper Size Switch activated during pick from Tray 1.
Y2R	Tray 4 Paper Size Switch activated during duplexing.
Y2S	Tray 4 Paper Size Switch activated during transfix staging.
Y2T	Tray 4 Paper Size Switch activated during transfixing.
Y2V	Tray 4 Paper Size Switch activated during a drum maintenance cycle.
Y2W	Tray 4 Paper Size Switch activated during Drum imaging.
Y2X	Tray 4 Paper Size Switch activated during paper exit. 1. Check system grounds. 2. Check that the media guides are adjusted correctly. 3. Run the Monitor Sensors test to test the Tray 4 Paper Size Switch. 4. Replace the Tray 4 525-Sheet Feeder. 5. Replace the pivot arm.

Table 3 Jam Code Troubleshooting

Code	Description / Procedure
Z2A	Tray 4 pick flag actuated during an abnormal shutdown.
Z2B	Tray 4 pick flag actuated during a normal shutdown.
Z2C	Tray 4 pick flag actuated during mechanical recovery
Z2D	Tray 4 pick flag actuated during warm-up.
Z2E	Tray 4 pick flag actuated during ready state.
Z2F	Tray 4 pick flag actuated during a fault state.
Z2L	Tray 4 pick flag actuated during standby mode.
Z2M	Tray 4 pick flag actuated during pick from Tray 2.
Z2N	Tray 4 pick flag actuated during pick from Tray 3.
Z2P	Tray 4 pick flag actuated during pick from Tray 4.
Z2Q	Tray 4 pick flag actuated during pick from Tray 1.
Z2R	Tray 4 pick flag actuated during duplexing.
Z2S	Tray 4 pick flag actuated during transfix staging.
Z2T	Tray 4 pick flag actuated during transfix.
Z2V	Tray 4 pick flag actuated during an auto drum maintenance cycle.
Z2W	Tray 4 pick flag actuated during drum imaging.
Z2Z	Tray 4 pick flag actuated during paper exit. 1. Check system grounds. 2. Run the Monitor Sensors test using Service Diagnostics. 3. Replace the 525-Sheet Feeder. 4. Replace the Pivot Arm.
Z3B	Tray 4 pick sensor timed-out during a normal shutdown.
Z3D	Tray 4 pick sensor timed-out during warm-up.
Z3E	Tray 4 pick sensor timed-out during ready state.
Z3F	Tray 4 pick sensor timed-out during a fault state.
Z3L	Tray 4 pick sensor timed-out during standby mode.
Z3M	Tray 4 pick sensor timed-out during a pick from Tray 2.
Z3N	Tray 4 pick sensor timed-out during a pick from Tray 3.
Z3P	Tray 4 pick sensor timed-out during a pick from Tray 4.
Z3Q	Tray 4 pick sensor timed-out during a pick from Tray 1.
Z3R	Tray 4 pick sensor timed-out during duplexing.
Z3S	Tray 4 pick sensor timed-out during transfix staging.
Z3T	Tray 4 pick sensor timed-out during transfix.
Z3V	Tray 4 pick sensor timed-out during an auto drum maintenance cycle.
Z3W	Tray 4 pick sensor timed-out during drum imaging.
Z3Z	Tray 4 pick sensor timed out while exiting print 1. Check the paper loaded in Tray 4 is the correct size and type. 2. Check the rollers for damage, debris or excessive wear. Clean or replace as necessary. 3. Run the Tray 4 Pick Shaft test. 4. Replace the Tray 4 525-Sheet Feeder.

3 Image Quality

IQ1 IOT Image Quality Entry RAP

The purpose of this RAP is to establish the source of the imaging defect. After following the Initial Actions, select the RAP that best describes the observed defect.

Initial Actions

Computer applications, hardware malfunctions, or communication between the IIT and IOT can cause scan/copy or print-quality issues. Hardware failures that result in image quality problems can occur in the DADF, Scanner Assembly or Print Engine. Use the following steps to determine which part of the system is at fault.

1. Ensure the DADF and Scanner connectors are securely connected.
2. Cycle power to the system.
3. Print the 2-sided demo page from the Control Panel. If the image defect appears on the printed page, the problem is within 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
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 1st side, the problem is within the Scanner Assembly.
7. If the image defect appears on the 2nd side of the page, the problem is the DADF.

NOTE: *To aid in troubleshooting image quality issues, print the Paper Tips page. The paper should be from an unopened ream that has been acclimated to room temperature.*

Procedure

After determining the source of the image quality problem, examine the image and select the relevant corrective procedure from one of the following tables.

Table 1 DADF Image Quality Problems

Symptom	RAP
Dark Streaks on the Copied Image	IQ2
Voids in the Copied Image	IQ3
Skewed Copy Image	IQ4
Copied Image is Lighter or Darker than the Original	IQ5
Fuzzy Text or Image	IQ6
Copy Image Colors Do Not Match Original	IQ7

Table 2 Scanner Image Quality Problems

Symptom	RAP
Dark Streaks on the Scanned Image	IQ8
Skewed Scan Image	IQ9
Scanned Image is Lighter or Darker than the Original	IQ10
Scan Image Colors Do Not Match Original	IQ11

Table 2 Scanner Image Quality Problems

Symptom	RAP
Fuzzy Text or Image	IQ12

Table 3 Print Engine Image Quality Problems

Symptom	RAP
Random Light Stripes	IQ13
Predominate Light Stripes	IQ14
Smudges or Smears	IQ15
The printed Image is too Light or Dark	IQ16
No Image is Printed	IQ17
Color is Uneven or Wrong	IQ18
Streaks or Lines Down the Print	IQ19
Scratches or Marks Parallel to the Long Printing Axis	IQ20
Ink on the White Portion of the Page	IQ21
Fuzzy Text	IQ22
Poor Primary Color Fills	IQ23
Ghosting	IQ24
Poor Small Text Resolution	IQ25
Vertical Lines Appear Wavy	IQ26
Oil Streaks on Print	IQ27
Incomplete Image Transfer	IQ28
Ink Smears on First Printed Side of Duplex Print	IQ29
Repeating Defects	IQ30
White Stripes	IQ31
Wrinkling	IQ32
Image if Offset or Cutoff	IQ33
Poor Ink Adhesion, Poor Image Durability	IQ34

If a print quality problem is not resolved using the image quality troubleshooting procedures, see Analyzing Service Test Prints.

NOTE: *The Troubleshooting Print Quality page includes instructions for printing the Eliminate Light Stripes test print. The Eliminate Light Stripes test print indicates individual weak or missing jets or an obstruction in the imaging path that produces 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 and usually self corrects within a few printed pages.*

IQ2 Dark Streaks on Copied Image

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Check for Ink build-up or debris. Clean if necessary.
3. Copy another page. If the problem persists, perform the following corrective actions.
4. Reseat all DADF connections.

Procedure

Table 1 IQ2 Dark Streaks on Copied Image

Step	Questions and Actions	Yes	No
1	Check the DADF for ink build up. Open the DADF Front Cover. Clean the inside of the DADF Front Cover, including the ribs, rollers and separator pad. Does the problem persist?	Go to Step 2.	Complete.
2	Check the CVT Window for ink build up. Clean the CVT Window. Does the problem persist?	Go to Step 3.	Complete. Advise the customer that periodic cleaning of the CVT window may be necessary.
3	Check DADF calibration. Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Go to Step 4.	Complete.
4	Replace the DADF (REP 1.0.15). Does the problem persist?	Replace the Scanner Assembly (REP 1.0.11).	Complete.

IQ3 Voids in the Copied Image

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Reseat all DADF connections.

Procedure

Table 1 IQ3 Voids in the Copied Image

Step	Questions and Actions	Yes	No
1	Does the void run the entire length of one side of the image.	Go to Step 2.	Go to Step 3.
2	Open the DADF and check that the Calibration Strip extends fully. The Lamp should be completely covered by the strip. Block the DADF Cover Sensor, select 2-sided copy, and then feed media through the DADF. Does the strip extend and retract properly?	Go to Step 3.	Replace the DADF.
3	Remove any debris obstructing the Lamp. Does the problem persist?	Replace the DADF.	Complete.

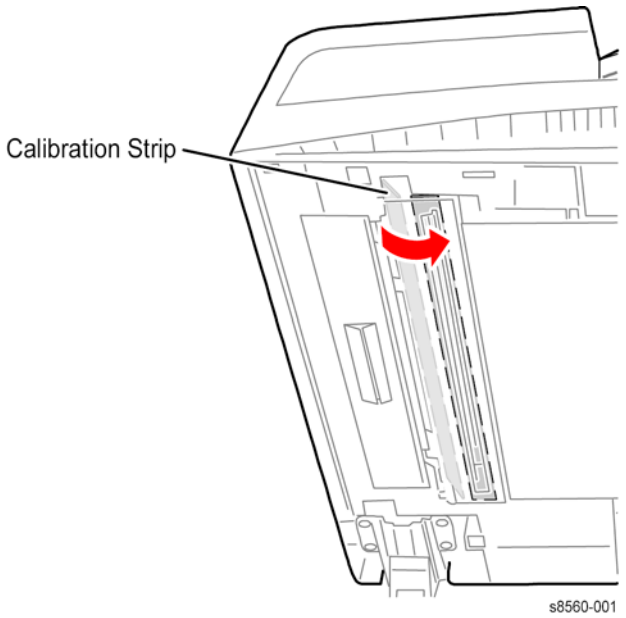


Figure 1 DADF Calibration Strip

IQ4 Skewed Copy Image

This RAP addresses image quality problems associated with the DADF. See the Skew and Margins test print discussion.

Initial Actions

1. Reset the Media Guides on the DADF Input Tray.
2. Check that supported media is being used.
3. Check that image skew exceeds specifications.
4. Reseat all DADF connections.

Procedure

Table 1 IQ4 Skewed Copy Image

Step	Questions and Actions	Yes	No
1	Check that the original is printed on supported media and is undamaged. Is the original supported?	Go to Step 2.	Use the Platen.
2	Check that the paper guides are correctly adjusted, and clean the Pick Roller and Separator Pad. Does the problem persist?	Go to Step 3.	Complete.
3	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Replace the DADF (REP 1.0.15).	Complete.

IQ6 Fuzzy Text or Image

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Reseat all DADF connections.
3. Cycle power to the system.

Procedure

Table 1 IQ6 Fuzzy Text or Image

Step	Questions and Actions	Yes	No
1	Print the Graphics Demo page for fuzzy image or the Configuration page for fuzzy text. Does the text appear fuzzy?	The problem is with the Print Engine. See IQ22.	Go to Step 2.
2	Make a copy of the page printed in Step 1. Does the image still appear fuzzy?	Go to Step 3.	Go to Step 4.
3	Check and/or adjust the Control Panel copy settings. Print the Troubleshooting Print Quality page and evaluate the Output Quality and Color Settings section. Use Text or Mixed print mode to evaluate text. Graphics lose image quality in these two modes. If the system is set to Photo or Graphics mode, text quality decreases. Does the problem persist after making the adjustments?	Go to Step 4.	Complete.
4	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Go to Step 5.	Complete.
5	Scan a copy of the page printed in Step 2. Does the problem persist?	Replace the Scanner Assembly (REP 1.0.11).	Replace the DADF (REP 1.0.15).

IQ5 Copy Image is Lighter or Darker than the Original

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Reseat all DADF connections.

Procedure

NOTE: *The Control Panel settings for Color Mode, Document Type, Output Quality, and Lighten/Darken influence the output in different ways. Finding a satisfactory combination of these settings for a particular original might require several attempts. In some cases, these controls may not completely compensate for artifacts introduced in the scanning process.*

Table 1 IQ5 Copy Image is Lighter or Darker than the Original

Step	Questions and Actions	Yes	No
1	Check and/or adjust the Control Panel copy settings. 1. Print the Troubleshooting Print Quality page and evaluate the Output Quality and Color Settings section. 2. Use the Lighten/Darken Output Quality adjustment to attempt to correct the problem. 3. Check that the print mode is not set to Draft or Standard. Does the problem persist after making the adjustments?	Go to Step 2.	Complete.
2	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Replace the DADF.	Complete.

IQ7 Copied Image Colors Do Not Match the Original

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Test output using Laser Original Mode.
3. Reseat all DADF connections.
4. Cycle power to the system.

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.). A Laser Original Mode is also available to adjust the imaging system to more accurately produce copies of laser originals. Color matching varies because the reflective characteristics of the original vary.*

The Control Panel settings for Color Mode, Document Type, Output Quality, and Lighten/Darken influence the output in different ways. Finding a satisfactory combination of these settings for a particular original might require several attempts. In some cases, these controls may not completely compensate for artifacts introduced in the scanning process.

Procedure

Table 1 IQ7 Copied Image Colors Do Not Match the Original

Step	Questions and Actions	Yes	No
1	Print the Graphics Demo page. Make a copy of the Graphics Demo page. Do the colors vary between the two?	Go to Step 2.	Complete.
2	Check and/or adjust the Control Panel copy settings. Print the Troubleshooting Print Quality page and evaluate the Output Quality and Color Settings section. Does the problem persist after making the adjustments?	Go to Step 3.	Complete.
3	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Go to Step 4.	Complete.
4	Replace the DADF. Does the problem persist?	Go to Step 5.	Complete.
5	Check the cabling between the Scanner and Print Engine. Is the cabling damaged?	Replace the Scanner Assembly (REP 1.0.11).	Replace the Electronics Module. If the problem persists, replace the Scanner Assembly (REP 1.0.11).

IQ8 Dark Streaks on Copied Image

This RAP addresses image quality problems associated with the Scanner Assembly.

Initial Actions

1. Check that supported media is being used.
2. Reseat all cable connections between the Scanner Assembly and the Electronics Module.
3. Check for Ink build-up or debris. Clean if necessary.
4. Copy another page. If the problem persists, perform the following corrective actions.

Procedure

Table 1 IQ8 Dark Streaks on Copied Image

Step	Questions and Actions	Yes	No
1	Check the CVT Window for ink build up. Clean the CVT Window. Scan another page. Does the problem persist?	Go to Step 2.	Complete.
2	Check DADF calibration. Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Replace the Scanner Assembly (REP 1.0.11).	Complete.

IQ9 Copy Image is Skewed

This RAP addresses image quality problems associated with the Scanner Assembly.

Initial Actions

1. Check that supported media is being used.
2. Adjust the guides on the DADF Input Tray.
3. Check that image skew exceeds specifications.
4. Reseat all DADF connections.

Procedure

Table 1 IQ9 Copy Image is Skewed

Step	Questions and Actions	Yes	No
1	Check that the original is printed on supported media and is undamaged. Print the Paper Tips page for a listing of supported media. Is the original supported?	Go to Step 2.	Use the Platen.
2	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Replace the Scanner Assembly (REP 1.0.11).	Complete.

IQ10 Copy Image is Lighter or Darker than the Original

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Reseat all cable connections between the Scanner Assembly and the Electronics Module.

Procedure

Table 1 IQ10 Copy Image is Lighter or Darker than the Original

Step	Questions and Actions	Yes	No
1	Check and/or adjust the Control Panel copy settings. 1. Print the Troubleshooting Print Quality page and evaluate the Output Quality and Color Settings section. 2. Use the Lighten/Darken Output Quality adjustment to attempt to correct the problem. 3. Check that the print mode is not set to Draft or Standard. Does the problem persist after making the adjustments?	Go to Step 2.	Complete.
2	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Replace the Scanner Assembly (REP 1.0.11).	Complete.

IQ11 Copied Image Colors Do Not Match the Original

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Reseat all cable connections between the Scanner Assembly and the Electronics Module.
3. Cycle power to the system.

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.). Reds may never match the original. A Laser Original Mode is also available to adjust the imaging system to more accurately produce copies of laser originals. Color matching varies because the reflective characteristics of the original vary.*

Procedure

Table 1 IQ11 Copied Image Colors Do Not Match the Original

Step	Questions and Actions	Yes	No
1	Print the Graphics Demo page. Make a copy of the Graphics Demo page. Do the colors vary between the two?	Go to Step 2.	Complete.
2	Check and/or adjust the Control Panel copy settings. Print the Troubleshooting Print Quality page and evaluate the Output Quality and Color Settings section. Does the problem persist after making the adjustments?	Go to Step 3.	Complete.
3	Adjust the Original Type and Output Quality modes and monitor how the copy changes with different combinations of settings. Does the problem persist?	Go to Step 4.	Complete.
4	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Go to Step 5.	Complete.
5	Replace the DADF (REP 1.0.15). Does the problem persist?	Go to Step 6.	Complete.
6	Check the cabling between the Scanner and Print Engine. Is the cabling damaged?	Replace the Scanner Assembly (REP 1.0.11).	Replace the Electronics Module (REP 5.0.5). If the problem persists, replace the Scanner Assembly.

IQ12 Fuzzy Text or Image

This RAP addresses image quality problems associated with the DADF.

Initial Actions

1. Check that supported media is being used.
2. Reseat all cable connections between the Scanner Assembly and the Electronics Module.
3. Cycle power to the system.

Procedure

Table 1 IQ12 Fuzzy Text or Image

Step	Questions and Actions	Yes	No
1	Print the Graphics Demo page for fuzzy image or the Configuration page for fuzzy text. Does the text appear fuzzy?	The problem is with the Print Engine. See IQ22.	Go to Step 2.
2	Make a copy of the page printed in Step 1. Does the image still appear fuzzy?	Go to Step 3.	Go to Step 4.
3	Check and/or adjust the Control Panel copy settings. Print the Troubleshooting Print Quality page and evaluate the Output Quality and Color Settings section. Use Text or Mixed print mode to evaluate text. Graphics lose image quality in these two modes. If the system is set to Photo or Graphics mode, text quality decreases. Does the problem persist after making the adjustments?	Go to Step 4.	Complete.
4	Perform the DADF to Scanner Calibration adjustment procedure (ADJ 1.15.1). Does the problem persist?	Go to Step 5.	Complete.
5	Scan a copy of the page printed in Step 2. Does the problem persist?	Replace the Scanner Assembly (REP 1.0.11).	Replace the DADF (REP 1.0.15).

IQ13 Random Light Stripes

This RAP addresses image quality problems associated with the Print Engine. Random light stripes typically result from an obstructed Printhead jet. Most jet obstructions are caused by paper fibers or air bubbles. Indications of a random light stripe condition are one or more color bars missing on the test page, or output that appears as follows:

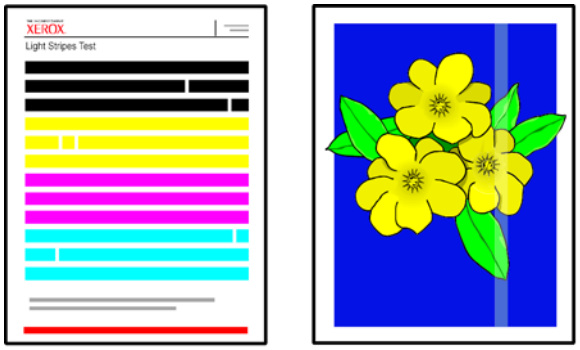


Figure 1 Random Light Stripes

NOTE: *If there are discolored jets, as shown in Figure 2, print several solid fill test prints in the affected color. In the following example, the center yellow stripe has discolored jets, therefore you would print the yellow solid fill.*

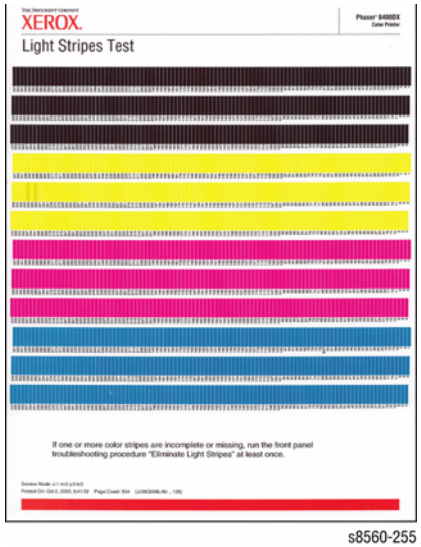


Figure 2 Discolored Jets on the Light Stripes Page

Initial Actions

1. Check that supported media is being used.
2. Run the Eliminate Light Stripes routine from the Control Panel.

Procedure

NOTE: *If the Eliminate Light Stripes page indicates that the missing jets are arranged as 3 side by side or 2 at the end of a row, jet substitution as described in Step 4 will not correct the problem.*

Table 1 IQ13 Random Light Stripes

Step	Questions and Actions	Yes	No
1	Run the Eliminate Light Stripes routine from the Control Panel. Multiple attempts are sometimes needed to clear obstructed jets. Does the problem persist?	Go to Step 2.	Complete.
2	Clean the Print Engine exit path, and wipe the Stripper Blade with a lint-free cloth. Does the problem persist?	Go to Step 3.	Complete.
3	Remove the Drum Maintenance Kit and wipe the clear plastic Wiper Blade with a lint-free cloth. Does the problem persist?	Replace the Maintenance Kit. If the problem persists, go to Step 4.	Complete.
4	Select the Jet Substitution Mode. 1. On the Control Panel, select Troubleshooting, and then press the OK button. 2. Select Print Quality Problems, and then press the OK button. 3. Select Eliminate Light Stripes, and then press the OK button. 4. Select Jet Substitution Mode, and then press the OK button. 5. Follow the Control Panel prompts to select the color and malfunctioning jet number indicated on the Light Stripes Test page. Does the problem persist?	Go to Step 5.	Complete.
5	Turn off the system for at least 4 hours. Run the Eliminate Light Stripes routine. Does the problem persist?	Follow Printhead Troubleshooting Checklist.	Complete.

NOTE: *Air bubbles obstructing jets leading to light stripes generally are absorbed after a few hours, even without purging. Air bubbles can be ingested into the Printhead as a result of a strong shock, such as a tray slam, or during ink cooling and solidification.*

IQ14 Predominate Light Stripes

This RAP addresses image quality problems associated with the Print Engine. Predominate light stripes typically result from something scraping the image off the Drum before Transfixing. Indications of a random light stripe condition are all four color bars missing on the test page, or output that appears as follows:

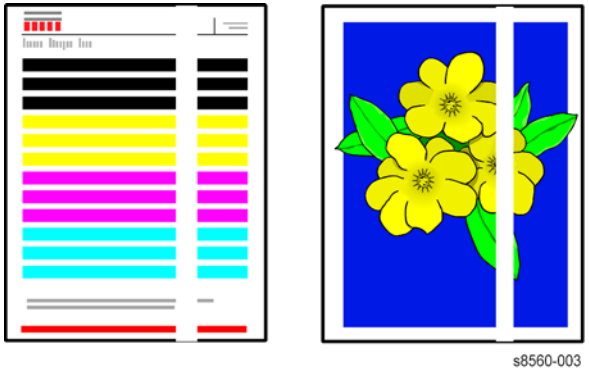


Figure 1 Example of Predominate Light Stripe Output

NOTE: *If there are a series of regularly spaced white lines approximately 6 mm (.25 in.) apart, see IQ31.*

Initial Actions

1. Check that supported media is being used.
2. Run the Eliminate Light Stripes routine from the Control Panel.

Procedure

Table 1 IQ14 Predominate Light Stripes

Step	Questions and Actions	Yes	No
1	Clean the Print Engine exit path, and wipe the Stripper Blade with a lint-free cloth. Does the problem persist?	Go to Step 2.	Complete.
2	Remove the Drum Maintenance Kit and wipe the clear plastic Wiper Blade with a lint-free cloth. Does the problem persist?	Replace the Drum Maintenance Kit. If the problem persists, use IQ13.	Complete.

IQ15 Smudges or Smears

This RAP addresses image quality problems associated with the Print Engine. Smudges or smears typically result from ink residue in the paper path. Residue can collect on the rollers, paper guide ribs, or inside the Preheater. Smudges or smears can appear as follows:

Figure 1 Example of Smudged or Smeared Output

Initial Actions

1. Check that supported media is being used.
2. Run the Remove Print Smears routine from the Control Panel.

Procedure

Table 1 IQ15 Smudges or Smears

Step	Questions and Actions	Yes	No
1	Clean the Print Engine exit path, and wipe the Stripper Blade with a lint-free cloth. Does the problem persist?	Go to Step 2.	Complete.
2	Run the Remove Print Smears routine. Does the problem persist?	Go to Step 3.	Complete.
3	Repeat Step 2 up to 3 times if necessary. Load fresh media and reprint the test page. Does the problem persist?	Go to Step 4.	Complete.
4	Remove the Drum Maintenance Kit and wipe the clear plastic blade with a lint-free cloth. Does the problem persist?	Replace the Drum Maintenance Kit. If the problem persists, go to Step 5.	Complete.
5	Clean the rollers and Stripper Blade. Does the problem persist?	Go to Step 6.	Complete.
6	Check the Drum Maintenance Pivot Plate and Cam Rollers for damage or debris. Replace any defective parts. Does the problem persist?	Replace the Preheater (REP 2.0.17).	Complete

IQ16 Printed Image is Too Light or Too Dark

This RAP addresses image quality problems associated with the Print Engine.

Initial Actions

1. Check that supported media is being used.
2. Verify the settings for media type match the media loaded in the tray.

Procedure

Table 1 IQ16 Printed Image is Too Light or Too Dark

Step	Questions and Actions	Yes	No
1	Verify that paper type matches the type selected in the driver and by the application. Does the problem persist after making the adjustments?	Go to Step 2.	Complete.
2	Check and/or adjust the Control Panel print mode settings. 1. Print the Troubleshooting Print Quality page and evaluate the Output Quality and Color Settings section. 2. Use the Lighten/Darken Output Quality adjustment to attempt to correct the problem. 3. Check that the print mode is not set to Draft or Standard. Does the problem persist?	Go to Step 3.	Complete.
3	Insert new ink and print solid fill test prints until the affected color returns to normal. This could require several ink sticks of the affected color. Does the problem persist?	Go to Step 4.	Complete.
4	Purge the ink from the affected color up to 10 times, checking output every 3 purges until the discoloration clears. Does the problem persist?	Replace the Printhead (REP 2.0.2).	Complete.

IQ17 No Image is Printed

This RAP addresses image quality problems associated with the Print Engine. The printer processes a sheet of paper, but no image appears on the output.

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

Initial Actions

1. Check that supported media is being used.
2. Check for media or debris around the Printhead and Drum.

Procedure

Table 1 IQ17 No Image is Printed

Step	Questions and Actions	Yes	No
1	Follow the instructions on the Printhead Troubleshooting Checklist. Does the problem persist?	Go to Step 2.	Complete.
2	Inspect and reseat the Wave Amp and data cables connected to the Printhead. Replace any defective cables. Does the problem persist?	Replace the Electronics Module (REP 5.0.5). If the problem persists, replace the Printhead (REP 2.0.2).	Complete.

IQ18 Color is Uneven or Color is Wrong

This RAP addresses image quality problems associated with the Print Engine. Uneven or incorrect colors typically result from incorrect colors in the Ink Loader, old ink in the Printhead, color mixing at the faceplate, or Drum thermal problems. Indications of uneven or incorrect color appears as follows:

Figure 1 Example of Uneven or Incorrect Color Output

NOTE: *Using non-Xerox ink may cause unpredictable color results.*

Initial Actions

1. Check that supported media is being used.
2. Run the Eliminate Light Stripes routine from the Control Panel.

Procedure

Table 1 IQ18 Color is Uneven or Color is Wrong

Step	Questions and Actions	Yes	No
1	Clear discolored jets in the Printhead. Print a Solid Fill test print for the affected color. Purge the Printhead up to 3 times. If some improvement is seen, the ink could be discolored due to exposure. Replace the affected ink and print another test. Does the problem persist?	Go to Step 2.	Complete.
2	Remove the Drum Maintenance Kit and wipe the clear plastic Wiper Blade with a lint-free cloth. Does the problem persist?	Replace the Maintenance Kit. If the problem persists, go to Step 3.	Complete.

Table 1 IQ18 Color is Uneven or Color is Wrong

Step	Questions and Actions	Yes	No
3	Check thermal regulation of the Drum. Run the Service Diagnostics Drum Thermal test. Are the reported values within range?	Go to Step 5.	Go to Step 4.
4	Check the Drum Fan. Does the fan operate correctly?	Go to Step 5.	Replace the Drum Fan (REP 4.0.6).
5	Check that the Drum Temperature Sensor contacts the Drum. Clean or replace the Drum Temperature Sensor (REP 6.0.4). Does the problem persist?	Replace the Drum Heater Relay Board (REP 5.0.19). If the problem persists, replace the Drum Assembly (REP 2.0.3), followed by the Electronics Module (REP 5.0.5).	Complete.

IQ19 Streaks or Lines Down the Print

This RAP addresses image quality problems associated with the Print Engine. Streaking or lines typically result from parts in contact with the Drum, dirty Wiper Blade, or debris in the paper path. Indications of streaks or lines can appear as follows:

Figure 1 Example of Streaks and Lines on Output

Initial Actions

1. Check that supported media is being used.
2. Check for any dirt, debris or jammed media in the exit path.
3. Run the Remove Print Smears routine from the Control Panel.

Procedure

Table 1 IQ19 Streaks or Lines Down the Print

Step	Questions and Actions	Yes	No
1	Remove the Drum Maintenance Kit and wipe the clear plastic Wiper Blade with a lint-free cloth. Does the problem persist?	Replace the Maintenance Kit. If the problem persists, go to Step 2.	Complete.
2	Check the exit area, exit frame, Preheater, Drum Maintenance Kit, Printhead and the Stripper Blade to see that nothing is in contact with the Drum. Clean the Stripper Blade. Does the problem persist?	Go to Step 3.	Complete.

Table 1 IQ19 Streaks or Lines Down the Print

Step	Questions and Actions	Yes	No
4	If streaking or lines occur on only one side of a 2-sided print, the Preheater may be scraping ink off the print. Look for ink shavings along the streaks on the print. Clean the Preheater using the Remove Print Smears routine. Does the problem persist?	Go to Step 5.	Complete.
5	Check for a possible weak or missing jet. Print the Weak or Missing Jet test print. Does the problem persist?	Go to Step 6.	Complete.
6	Check for a discoloration in a jet. Print the Solid Fill test page for the affected color. Does the problem persist?	Go to Step 7.	Complete.
7	Check the X-Axis Drive. If the X-Axis Drive does not move the Printhead smoothly, vertical lines appear on the output. Verify that the drive functions normally and that the cabling is properly dressed. Does the X-Axis Drive function correctly?	Go to Step 8.	Repair or replace (REP 4.0.5) the drive as necessary.
8	Check the Preheater temperature. Run the Service Diagnostics Duplex Path test. Is the operating temperature of the Preheater within normal range.	Replace the Preheater (REP 2.0.17).	Replace the Electronics Module (REP 5.0.5).

IQ20 Scratches or Marks Parallel to the Long Axis of Printing

This RAP addresses image quality problems associated with the Print Engine. Scratches or marks typically result from debris in the paper path. Indications of scratches can appear as follows:

Figure 1 Example of Scratches on Output

Initial Actions

1. Check that supported media is being used.
2. Check for a missing jet(s) using the Light Stripes page.
3. Check for any dirt, debris or jammed media in the exit path.
4. Run the Remove Print Smears routine from the Control Panel.

Procedure

Table 1 IQ20 Scratches or Marks Parallel to the Long Axis of Printing

Step	Questions and Actions	Yes	No
1	Check the exit area, exit frame, Preheater, Drum Maintenance Kit, Printhead and the Stripper Blade to see that nothing is in contact with the Drum. Clean the Stripper Blade. Does the problem persist?	Go to Step 2.	Complete.
2	Remove the Drum Maintenance Kit and wipe the clear plastic Wiper Blade with a lint-free cloth. Does the problem persist?	Replace the Drum Maintenance Kit. If the problem persists, go to Step 3.	Complete.
3	Using transparency media, print from Tray 1. Does the problem persist?	Go to Step 4.	Go to Step 5.

Table 1 IQ20 Scratches or Marks Parallel to the Long Axis of Printing

Step	Questions and Actions	Yes	No
4	The scratch occurred during the pick or transport process from Trays 2, 3, or 4. Inspect the Pick Guides, Front Door, and Maintenance Kit. Replace or clean parts as needed. Does the problem persist?	Go to Step 5.	Complete.
5	Check for debris on the Preheater. Run the Service Diagnostics Remove Print Smears routine. Does the problem persist?	Go to Step 6.	Complete.
6	Force a sheet of thick (65 to 85 lb.) paper through the Preheater. Using care not to damage the sensor actuators, gently buff the heating surface by moving the sheet back and forth through the Preheater. Does the problem persist?	Go to Step 7.	Complete.
7	Check the paper guides for nicks, cuts, or debris. Are the guides damaged?	Replace damaged parts.	Clean all parts in the paper path.

IQ21 Ink on the White Portion of the Printed Page

This RAP addresses image quality problems associated with the Print Engine. Color appearing on blank areas of the output is called latent image. Latent images typically result from insufficient oiling of the Drum. Insufficient oiling is often the result of a dirty, defective, or expended Drum Maintenance Kit. Printing on pre-punched media can also contribute to latent images. debris in the paper path. Indications of latent images can appear as follows:

Figure 1 Example of Latent Image on Output

Initial Actions

1. Check that supported media is being used.
2. Check for any dirt, debris or jammed media in the exit path.
3. Run the Remove Print Smears routine from the Control Panel.

Procedure

Table 1 IQ21 Ink on the White Portion of the Printed Page

Step	Questions and Actions	Yes	No
1	Try printing using a smoother, higher quality paper, some recycled papers are too coarse. Watermarked or punched paper could also cause latent images. Does the problem persist?	Go to Step 2.	Complete.
2	Remove the Drum Maintenance Kit and wipe the clear plastic Wiper Blade with a lint-free cloth. Does the problem persist?	Replace the Drum Maintenance Kit. If the problem persists, go to Step 3.	Complete.
3	Clean the Stripper Blade. Run the Service Diagnostics Remove Print Smears routine. Does the problem persist?	Go to Step 4.	Complete.

Table 1 IQ21 Ink on the White Portion of the Printed Page

Step	Questions and Actions	Yes	No
4	Check the thermal regulation of the Drum. Run the Service Diagnostics temperature tests. Replace the Drum Temperature Sensor (REP 6.0.4), if necessary. Does the problem persist?	Go to Step 5.	Complete.
5	Check for dust or debris on the Feed Rollers. Run the Service Diagnostics Remove Print Smears routine. Replace the rollers (REP 3.0.18), if necessary. Does the problem persist?	Follow Printhead Troubleshooting Checklist.	Complete.

IQ22 Fuzzy Text

This RAP addresses image quality problems associated with the Print Engine. Fuzzy text typically results from one of the three causes illustrated. An error in Y-Axis Drum rotation results in text appearing as shown at the upper left. Fuzzy text may also occur following a Printhead replacement. The text at the lower left is the result of Drum thermal problems. X-Axis errors cause text to appear as shown at the lower right.

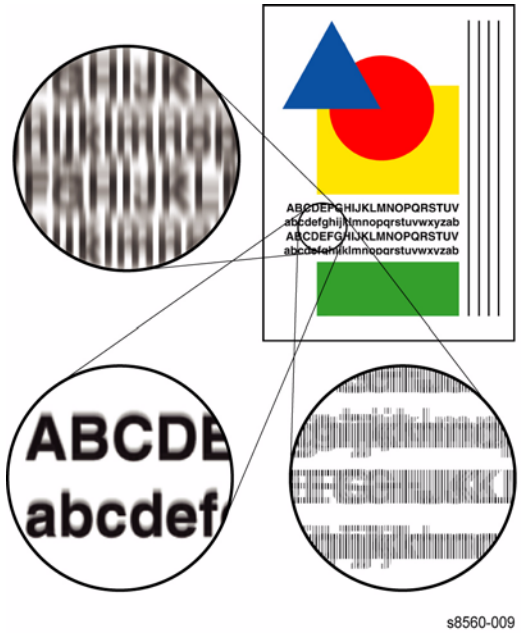


Figure 1 Examples of Fuzzy Text on Output

Initial Actions

1. Check that supported media is being used.
2. Check for any dirt, debris or jammed media in the exit path.
3. Run the Remove Print Smears routine from the Control Panel.

Procedure

Table 1 IQ22 Fuzzy Text

Step	Questions and Actions	Yes	No
1	Try printing using a smoother, higher quality paper, some recycled papers are too coarse. Watermarked or punched paper could also cause latent images. Does the problem persist?	Go to Step 2.	Complete.

Table 1 IQ22 Fuzzy Text

Step	Questions and Actions	Yes	No
2	Use a higher quality print mode. Does the problem persist?	Go to Step 3.	Complete.
3	Check that the dot on the Printhead Roll Block is aligned with the label of the left side of the frame. See Figure 7. Adjust the position of the dot if necessary. Does the problem persist?	Go to Step 4.	Complete.
4	Check the thermal regulation of the Drum. Run the Service Diagnostics temperature tests. Replace the Drum Temperature Sensor (REP 6.0.4), if necessary. Does the problem persist?	Go to Step 5.	Complete.
5	Check Y-Axis motion. Run the Service Diagnostics Y-Axis Encoder test. Does the problem persist?	Go to Step 6.	Complete.
6	Check X-Axis motion. Follow the White Stripes (Pinstripes) procedure to correct an X-Axis problem. Does the problem persist?	Go to Step 7.	Complete.
7	Check that the Printhead is tilted forward against the Drum in proper print position. Realign the Printhead if necessary. Does the problem persist?	Follow Printhead Troubleshooting Checklist.	Complete.

IQ23 Poor Primary Color Fill

This RAP addresses image quality problems associated with the Print Engine. Poor primary color fills typically result from obstructed jets. X-Axis errors may also cause banding. Indications of poor primary color fill can appear as follows:

Figure 1 Example of Poor Primary Color Fill on Output

Initial Actions

1. Check that supported media is being used.
2. Check for any dirt, debris or jammed media in the exit path.
3. Run several solid fill test prints in the affected color.

Procedure

Table 1 IQ23 Poor Primary Color Fill

Step	Questions and Actions	Yes	No
1	Banded or inconsistent primary fills may indicate a missing, weak, or discolored jet. Print the Weak/Missing Jet test print. If there are discolored jets, print the Solid Fill test print for the affected color. Does the problem persist?	Go to Step 2.	Complete.
2	Test the Y-Axis Encoder. Run the Service Diagnostics Encoder test. Does the problem persist?	Replace the Drum Assembly (REP 2.0.3). If the problem persists, go to Step 3.	Complete.

Table 1 IQ23 Poor Primary Color Fill

Step	Questions and Actions	Yes	No
3	If banding is uniform, or in a corduroy pattern, check the X-Axis motion. Run the Service Diagnostics X-Axis Motor tests. Is X-Axis motion impeded? If so, use the White Stripes (Pinstripes) procedure to troubleshoot the problem. Does the problem persist?	Replace the X-Axis Motor (REP 4.0.5). If the problem persists, replace the Electronics Module (REP 5.0.5).	Complete.
4	Try the procedure listed under the Solid Fill test prints. Does the problem persist?	Follow Printhead Troubleshooting Checklist.	Complete.

IQ24 Ghosting

This RAP addresses image quality problems associated with the Print Engine. Ghosting typically results from stacked prints, faulty or expended Drum Maintenance Kit, or Drum thermal regulation. Ghosting is indicated by images from a previous print appearing on subsequent prints as follows:

Figure 1 Example of Ghosting on Output

Initial Actions

1. Check that supported media is being used.
2. Check the Drum Maintenance Kit.

Procedure

Table 1 IQ24 Ghosting

Step	Questions and Actions	Yes	No
1	This problem can occur when prints are stacked in the Output Tray. The resulting pressure, and system heat causes “blocking” which has the appearance of ghosting. Print the Weak/Missing Jet test print. If there are discolored jets, print the Solid Fill test print for the affected color. Does the problem persist?	Go to Step 2.	Complete.
2	Run multiple, 2-sided prints. Some amount of Transfix Roller ghosting is inherent to the system. This type of ghosting is most pronounced on the first 2-sided print. Ghosting should fade on subsequent prints. Does the problem persist?	Go to Step 3.	Complete.

Table 1 IQ24 Ghosting

Step	Questions and Actions	Yes	No
3	Check and clean the Drum Maintenance Kit Wiper Blade. Replace the kit if necessary. Run the Service Diagnostics X-Axis tests. Does the problem persist?	Go to Step 4.	Complete.
4	Test the Drum Maintenance system. Run the Service Diagnostics maintenance system tests. Does the problem persist?	Go to Step 5.	Complete.
5	Check these Drum maintenance system parts for damage or defects: Drum Maintenance Pivot Plate Drum Maintenance Cam Shaft Is there any damage?	Replace any damaged parts. If the problem persists, go to Step 6.	Go to Step 6.
6	Test the Drum temperature regulation. Run the Service Diagnostics Drum temperature tests. Check the Drum Temperature Sensor. Does the problem persist?	Replace the Drum Temperature Sensor (REP 6.0.4).	Complete.

IQ25 Poor Small Text Resolution

This RAP addresses image quality problems associated with the Print Engine. Poor text resolution typically results from Drum thermal regulation, or X-Axis drive problems. Poor text resolution is indicated by characters appearing heavy or plugged up as follows:

Figure 1 Example of Poor Text Resolution on Output

Initial Actions

1. Check that supported media is being used.
2. Check the Drum Maintenance Kit.

Procedure

Table 1 IQ25 Poor Small Text Resolution

Step	Questions and Actions	Yes	No
1	Try using a higher quality print mode. Does the problem persist?	Go to Step 2.	Complete.
2	Test the Drum temperature regulation. Run the Service Diagnostics Drum temperature tests. Check the Drum Temperature Sensor. Does the problem persist?	Replace the Drum Temperature Sensor (REP 6.0.4). If the problem persists, got to Step 3.	Complete.
3	Check the X-Axis Drive installation and lubrication? Does the problem persist?	Replace the X-Axis Motor (REP 4.0.5).	Complete.

IQ26 Vertical Lines Appear Wavy

This RAP addresses image quality problems associated with the Print Engine. Wavy or ill-formed vertical lines typically result from excessive Drum oiling. An error in X-Axis or Y-Axis motion could also cause this problem. Wavy vertical lines can appear as follows:

Figure 1 Example of Wavy Vertical Lines on Output

Initial Actions

1. Check that supported media is being used.
2. Check the Drum Maintenance Kit.

Procedure

Table 1 IQ26 Vertical Lines Appear Wavy

Step	Questions and Actions	Yes	No
1	Check and clean the Drum Maintenance Kit Wiper Blade. Does the problem persist?	Replace the Drum Maintenance Kit. If the problem persists, go to Step 2.	Complete.
2	Check X-Axis motion. Verify that there is nothing interfering with X-Axis motion. Replace any defective parts found. Does the problem persist?	Go to Step 3.	Complete.
3	Check Y-Axis motion. Run the Service Diagnostics Y-Axis Encoder test. Does the problem persist?	Go to Step 4.	Complete.
4	Check the Drum maintenance Cam Roller and Pivot Plate are functioning correctly. Run the Service Diagnostics Drum Maintenance tests. Does the problem persist?	Replace any defective parts found.	Complete.

IQ27 Oil Streaks on Print

This RAP addresses image quality problems associated with the Print Engine. Oil streaking typically results from excessive Drum oiling. An problem with the Drum Maintenance Kit is the likely cause. Oil streaks can appear as follows:

Figure 1 Example of Oil Streaks on Output

Initial Actions

1. Check that supported media is being used.
2. Check the Drum Maintenance Kit.
3. Run the Remove Print Smears routine.

Procedure

Table 1 IQ27 Oil Streaks on Print

Step	Questions and Actions	Yes	No
1	Check and clean the Drum Maintenance Kit Wiper Blade. Does the problem persist?	Replace the Drum Maintenance Kit. If the problem persists, go to Step 2.	Complete.
2	Check the Drum Maintenance Kit ground connection. Verify that the ground connection is secure between the Drum Maintenance Shaft and Drum Fan. Does the problem persist?	Go to Step 3.	Complete.
3	Run the Remove Print Smears routine. Does the problem persist?	Go to Step 4.	Complete.
4	Clean the Stripper Blade and Exit Guides. Does the problem persist?	Go to Step 5.	Complete.

Table 1 IQ27 Oil Streaks on Print

Step	Questions and Actions	Yes	No
5	Check that the Drum Maintenance Cam Roller and Pivot Plate are functioning correctly. Run the Service Diagnostics Drum Maintenance tests. Does the problem persist?	Replace any defective parts found.	Complete.

IQ28 Incomplete Image Transfer

This RAP addresses image quality problems associated with the Print Engine. Incomplete image transfer typically results from coarse, underweight, or watermarked media. Incomplete image transfer limited to one side of the page may be the result of improper Drum oiling. Incomplete image transfer can appear as follows:

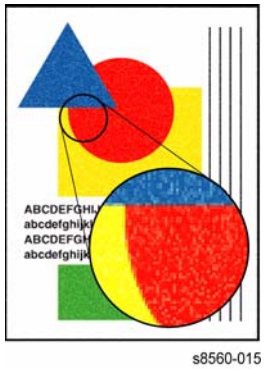


Figure 1 Example of Incomplete Image Transfer on Output

Initial Actions

1. Check that supported media is being used.
2. Check the Drum Maintenance Kit.
3. Run the Remove Print Smears routine.

Procedure

Table 1 IQ28 Incomplete Image Transfer

Step	Questions and Actions	Yes	No
1	Tray using a higher quality print mode. Does the problem persist?	Go to Step 2.	Complete.
2	Check that the Drum maintenance Cam Roller and Pivot Plate are functioning correctly. Run the Service Diagnostics Drum Maintenance tests. Does the problem persist?	Replace any defective parts found. If the problem persists, go to Step 3.	Complete.
3	Clean the Stripper Blade and Exit Guides. Does the problem persist?	Go to Step 4.	Complete.
4	Test the Drum temperature regulation. Run the Service Diagnostics Drum temperature tests. Check the Drum Temperature Sensor. Does the problem persist?	Replace the Drum Temperature Sensor (REP 6.0.4). If the problem persists, go to Step 3.	Complete.

Table 1 IQ28 Incomplete Image Transfer

Step	Questions and Actions	Yes	No
5	Is the image incomplete of only the sides of the print? This indicates incomplete Transfix Cam rotation. Check for a damaged Transfix Cam Roller or a malfunction of the Process Drive. Replace any damaged parts found. Does the problem persist?	Go to Step 6.	Complete.
6	Check the Preheater temperature. Run the Service Diagnostics Preheater tests. Does the problem persist?	Replace the Transfix Load Module (REP 2.0.15) and Transfix Load Arms.	Complete.

IQ29 Ink Smears on First Side of Duplex Print

This RAP addresses image quality problems associated with the Print Engine. Ink smearing typically results from dirt or debris in the paper path, or the Preheater operating at too high a temperature. Ink smearing can appear as follows:

Figure 1 Example of Ink Smears on Output

Initial Actions

1. Check that supported media is being used.
2. Check the Drum Maintenance Kit.
3. Run the Remove Print Smears routine.

Procedure

Table 1 IQ29 Ink Smears on First Side of Duplex Print

Step	Questions and Actions	Yes	No
1	Clean the Stripper Blade and Exit Guides. Does the problem persist?	Go to Step 2.	Complete.
2	Check the duplex paper path for damage, obstructions, or contamination. Clean or replace parts as necessary. Does the problem persist?	Go to Step 3.	Complete.
3	Run the Remove Print Smears routine. Does the problem persist?	Go to Step 4.	Complete.
4	Check the Preheater temperature. Run the Service Diagnostics Preheater tests. Does the problem persist?	Replace the Preheater (REP 2.0.17). If the problem persists, replace the Electronics Module (REP 5.0.5).	Complete.

IQ30 Repeating Print Defects

This RAP addresses image quality problems associated with the Print Engine. Repeating defects typically result from dirt, debris, or damage to an imaging component. The interval between the defect can reveal the affected component. A repeating defect can appear as follows:

Figure 1 Example of Repeating Defects on Output

Initial Actions

1. Check that supported media is being used.
2. Print several test prints as a sample.
3. Measure the interval between defects and note their position.

Procedure

Table 1 IQ30 Repeating Print Defects

Step	Questions and Actions	Yes	No
1	Repeating defects that occur every 11.6 cm (4.58 in.) are caused by the Transfix Roller. Clean or replace the Transfix Roller as needed. Does the problem persist?	Go to Step 2.	Complete.
2	A repeating defect that has a different Y position on each page, but has the same X position indicates a defect on the Drum. Clean the Drum. Does the problem persist?	Replace the Drum Assembly (REP 2.0.3).	Complete.

IQ31 White Stripes (Pinstripes)

This RAP addresses image quality problems associated with the Print Engine. White striping appears as a series of evenly-spaced pinstripes approximately 6 mm (.25 in.) apart. This indicates a malfunction in the X-Axis Drive. Pinstriping appears as follows:

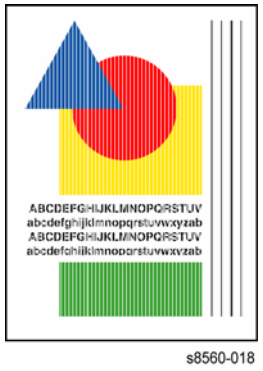


Figure 1 Example of Pinstripes on Output

Initial Actions

1. Check that supported media is being used.
2. Print several solid-fill test prints as a sample.

Procedure

Table 1 IQ31 White Stripes (Pinstripes)

Step	Questions and Actions	Yes	No
1	Print several solid-fill test prints. Does the problem persist?	Go to Step 2.	Complete.
2	Check the X-Axis motion. Are there any obstructions, such as cables, screws, or damaged parts?	Correct the interference. If the problem persists, go to Step 3.	Go to Step 3.
3	Check Printhead motion. Is there any interference with the horizontal motion of the Printhead? Does the problem persist?	Correct the interference.	Replace the X-Axis Motor (REP 4.0.5).

IQ32 Wrinkling

This RAP addresses image quality problems associated with the Print Engine. Wrinkling generally appears in areas of solid fill near the image edge. This problem is more often seen on short-grain media. Some wrinkling of envelope flaps is expected. You may see wrinkling on the second side of a 2-sided print on the secondary colors. Wrinkling could indicate a malfunction in the Transfix mechanism.

Figure 1 Example of Wrinkled Output

Initial Actions

1. Check that supported media is being used.
2. Print several solid-fill test prints as a sample.
3. Print using a higher-quality or heavier media type.

Procedure

Table 1 IQ32 Wrinkling

Step	Questions and Actions	Yes	No
1	Increase the margin size of the image. Does the problem persist?	Go to Step 2.	Complete.
2	Check the Drum Maintenance Kit. Inspect, clean, or replace the Drum Maintenance Kit. Does the problem persist?	Go to Step 3.	Complete.
3	Check the Transfix components. Does the problem persist?	Replace in this order: Transfix Roller Transfix Camshaft Transfix Load Arms Transfix Load Module	Complete.

IQ33 Image is Offset or Cut-Off

This RAP addresses image quality problems associated with the Print Engine. Image off-set generally appears as a result of a mismatch between the application and the driver.

Initial Actions

1. Check that supported media is being used.
2. Print an Information page from the Control Panel.
3. Check the application print settings.

Procedure

Table 1 IQ33 Image is Offset or Cut-Off

Step	Questions and Actions	Yes	No
1	Check the Information page. Does the problem persist?	Go to Step 2.	Complete.
2	Check the tray guide adjustment. Are the guides adjusted properly?	Go to Step 3.	Adjust the guides.
3	Check the application for correct image sizing and orientation. Does the problem persist?	Correct the application settings.	Complete.

IQ34 Poor Ink Adhesion, Poor Image Durability

This RAP addresses image quality problems associated with the Print Engine. Poor ink adhesion generally appears as a result of a overly glossy media coatings, or improper temperature regulation of the Preheater or Drum.

Initial Actions

1. Check that supported media is being used.
2. Print an Information page from the Control Panel.
3. Check the application print settings.

Procedure

Table 1 IQ34 Poor Ink Adhesion, Poor Image Durability

Step	Questions and Actions	Yes	No
1	Check the media type and finish. If the media appears glossy, replace the media and reprint. Does the problem persist?	Go to Step 2.	Complete.
2	Check the Preheater and Drum temperatures. Run the Service Diagnostics Temperature test. Are the temperatures within specified ranges (approximately 60 to 62 degrees Celsius)?	Go to Step 3.	Adjust the guides.
3	Check the position of the Drum Temperature Sensor. Is the sensor positioned properly?	Go to Step 4.	Correctly position the sensor.

IQ35 Massive Jet Loss

This RAP addresses image quality problems associated with the Print Engine. Significant jet loss can occur during high-coverage printing due to ink starvation. Restricted ink flow typically occurs in individual jets and is caused by air bubbles that form while the ink cools. These bubbles are usually cleared during the warm-up process or periodic cleaning cycles. More significant ink flow restrictions can occur when the system is mishandled while the ink is in liquid form. While ink is liquid, tipping, tilting, or using excessive force to close a tray can cause ink to infiltrate the upper portions of the Printhead blocking the flow of ink and air.

Symptoms of mishandling include:

- Ink in the Purge Hose
- Ink reservoir overflow
- Ink accumulations under the Printhead obstructing Printhead movement resulting in 7,010.43 errors.
- Massive jet loss in one or more colors. Figure 1 is an example of massive jet loss

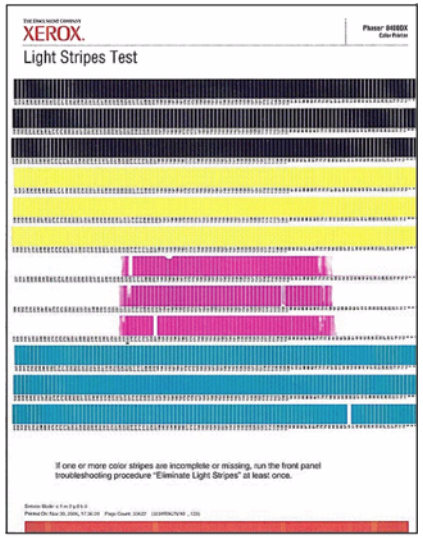


Figure 1 Massive Jet Loss Example

Initial Actions

Inspect the Printhead for Ink overflow, blockage of the Purge Hose, or accumulations of ink underneath the Printhead.

Procedure

If ink has been overflowing the Printhead reserviors, replace the Printhead.

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, open the Hidden Service Menu from the Control Panel.

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.*

Weak or 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.

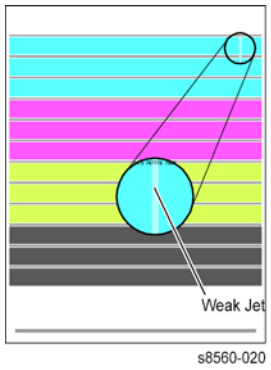


Figure 1 Test Print 1 Weak or Missing Jet

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. 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".

X-Axis Motion (Drop Mass Evaluation)

For X-Axis Motion problems, see solid fill test 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.

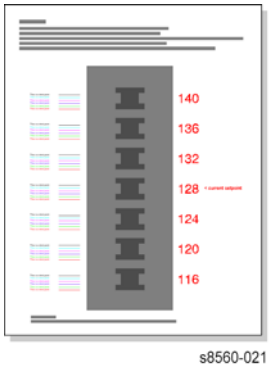


Figure 2 Test Print 2 X-Axis Motion

Color Bands, RGBK Dither

The large, secondary colored areas in this print reveal banding and weak jets.

Look for: Vertical "bars" or "bands" of much lighter color or a different hue running in-line in one or more of the solid fills.

Causes: A weak jet can cause banding; see the Weak/Missing Jets test print. 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".

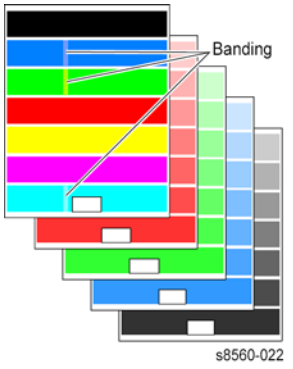


Figure 3 Test Print 3 Color Bands

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.

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

Causes: Check the thermal regulation of the printhead and of the drum. Make sure that the drum temperature sensor is correctly mounted and in proper, even contact with the drum. If necessary, remove the sensor and check it for an accumulation of debris at its contact point. Replace the drum temperature sensor. Ensure the Printhead drive voltage is set to the default 128.

Figure 4 Test Print 4 Reverse Text

Big Bands Hand Feed 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.

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.

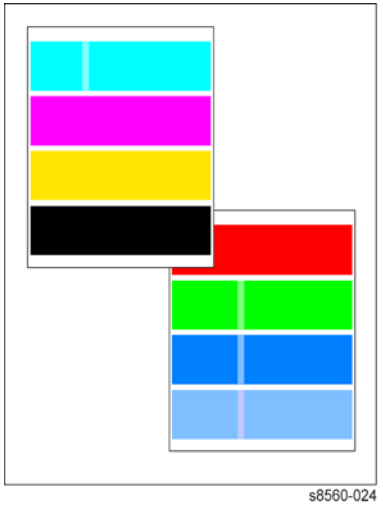


Figure 5 Test Print 5 Big Bands OHP

Grey Fill, Dot Size Uniformity

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

Look for: 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.).

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: 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 Preheater. Run the control panel cleaning procedure Clean Print Smears, which raises the temperature of the 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.

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 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.

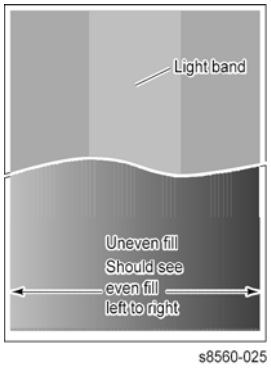


Figure 6 Grey Fill, Dot Size Uniformity Test Print

Five Duplex GSF

This print is used by Manufacturing and Engineering only.

YMCKRGB Solid Fills

This test prints a single-sided, solid-fill print in all seven colors to show uniformity of fill. If colors are uneven or wrong, see IQ18.

Look for:

- Even, uniform fill throughout each print.
- Wrinkles or deformity of the paper.
- Proper ink transfer.
- White striping or banding.

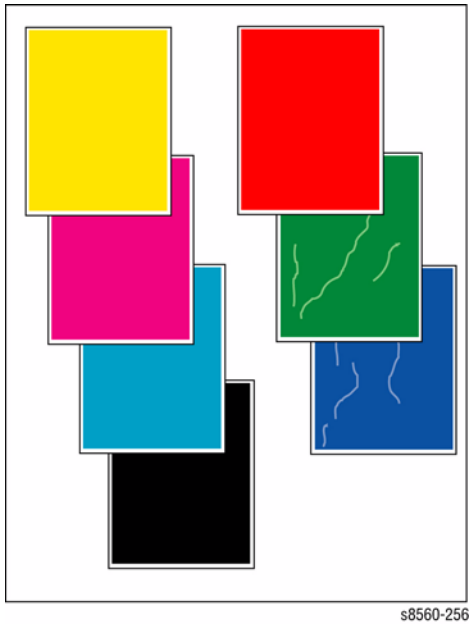


Figure 7 YMCKRGB Solid Fill Test Prints

Causes:

- Weak jets or improper Drum heating can cause uneven fills.
- To solve wrinkling, try different print media. Replace the maintenance kit to correct streaking. Check the drum temperature sensor for debris build-up on the sensor. Check to see if the sensor is in improper contact with the drum. See the Reverse Text test print. As a last resort to fix wrinkling, replace the Transfix Roller, transfix load module, and transfix load arm.
- 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.
- If there are repeating white stripes on the print, there may be a problem with the X-Axis motion, see IQ31.

Drum Seal

This print is used by manufacturing and Engineering only.

Paper Path

This print is used by Manufacturing and Engineering only.

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.

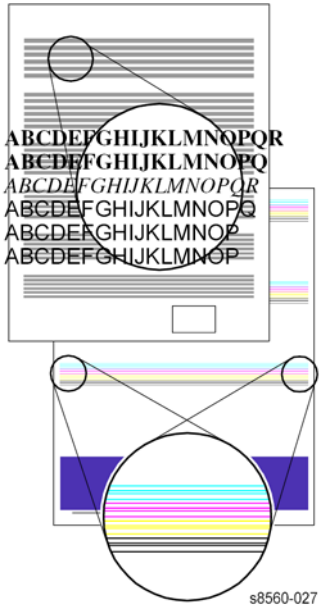


Figure 8 Head to Drum Check Test Print

Manual X-Axis (Scanner)

This print is used by Manufacturing and Engineering only.

Black, Red, Green, Blue, Cyan, Magenta, and Yellow Solid Fills

These single-sided test prints show the uniformity of fill for an individual color. They are also used to purge discoloration of a particular jet or color.

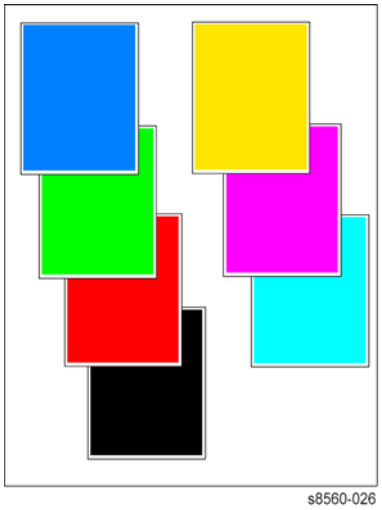


Figure 9 Single Primary Solid Fill Test Prints

Look for:

1. Even, uniform fills throughout the print.
2. There should be no wrinkling or deformity of the paper throughout the print.
3. Poor transfer on one side.
4. Repeating white stripes.

Causes:

1. Weak jets or uneven drum heating may cause uneven fills
2. To solve wrinkling, try different print media. Replace the maintenance kit to correct streaking. Check the drum-temperature sensor for debris build-up on the sensor or the sensor is not in proper contact with the drum. See the test print Reverse Text.
3. If there is poor transfer, 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.

OHP Color Bands

This print is used by Manufacturing and Engineering only.

Primary Solid Fills 10x

This item enables you to print 10, single-sided, solid-fill, prints in Cyan, Magenta, Yellow or black. 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.

Skew and Margins

This print is used to gauge skew and margin on 2-sided prints.

For 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
  - Evaluate Custom media using this formula: Skew Spec (mm) = 998.4*(width-12.5)^(-1.02), where width is in millimeters

For Margins

- 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 Specifications.

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

Check that the media is support for the tray and the guides are properly adjusted.

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.

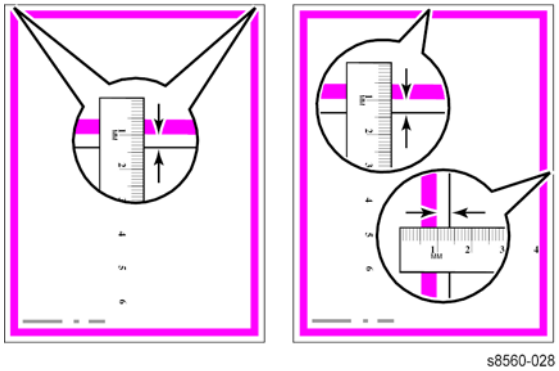


Figure 10 Skew and Margin Measurement

Banding

This print is used by Manufacturing.

Head Roll

This print is used by Manufacturing.

Head Height

This print is used by Manufacturing.

X Dot Position

This print is used by Manufacturing and Engineering.

Y Dot Position

This print is used by Manufacturing and Engineering.

Chase Pages

A blank piece of paper is used to remove contamination from the Drum, Transfix Roller, and media path.

Oil Bar Chase

This print is used by Manufacturing.

Purge Efficiency

This print is used by Manufacturing and Engineering.

Cleaning Page

This page is automatically printed following a purge. It is used to flush the jet nozzles of any possible contamination or color mixed jets. It can also be printed on its own.

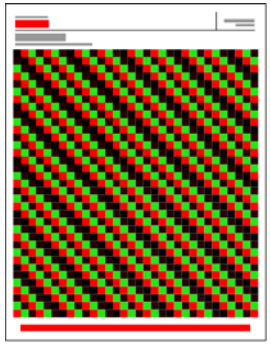


Figure 11 Cleaning Page

Jet Substitution Mode

Jet Substitution Mode provides a solution for print-quality problems when weak or missing jets are not recoverable by cleaning. This mode substitutes adjacent jets to print the area normally covered by the problem jet. Perform a cleaning procedure before disabling any jets. Substituted jets are stored and remain disabled until Jet Substitution Mode is turned Off.

Jet Substitution Mode, refer to Figure 1, is not effective in correcting situations where 3 or more consecutively numbered jets (**1**) are weak or missing. Jet substitution requires the presence of an numerically adjacent functional jet to replace the affected jet. As an example, If jet 2 is missing, jet 1 or jet 3 could substitute for 2. If 1, 2, and 3 were all missing, no jet is available to substitute for 2. Once Jet Substitution mode is enabled for a particular jet, the Light Stripes Test page displays a black line (**2**) underneath the substituted jet number. It is normal for the substituted jet to appear either blank or filled on Light Stripes Test page after substitution. Also, Saved & Stored jobs stored on the hard drive will not print correctly because they were rendered before the Jet Substitution was made.

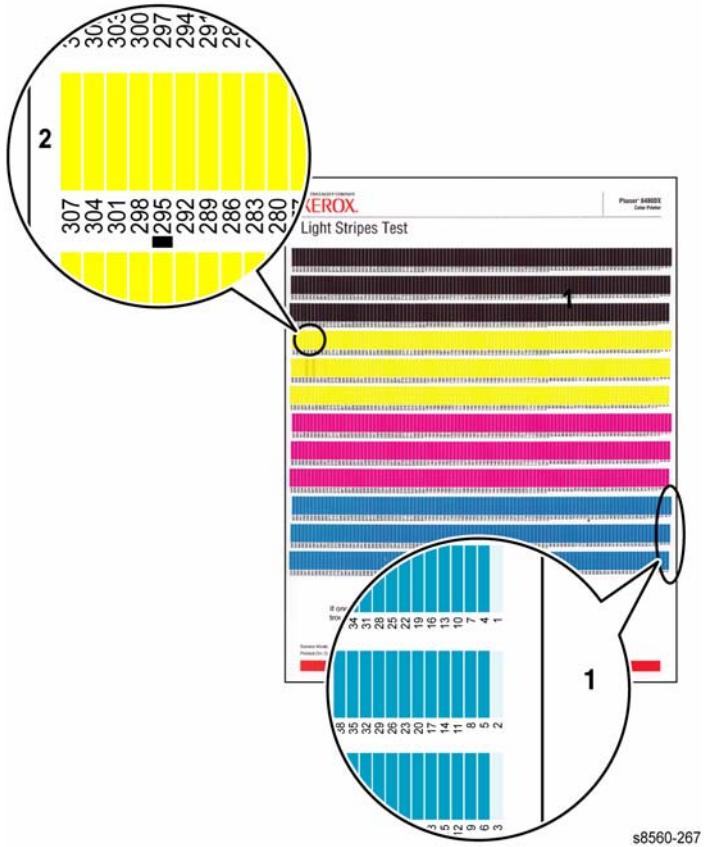


Figure 1 Jet Substitution Exceptions

Enabling Jet Substitution Mode

To correct print-quality problems, refer to the Eliminate Light Stripes test page to determine which jets are weak or missing. To access Jet Substitution Mode from the Control Panel:

1. First press System, and then enter the Information menu.
2. From the menu, scroll to Troubleshooting, and then press OK.
3. Scroll to Print Quality Problems, and then press OK.
4. Select Eliminate Light Stripes.
5. Select Jet Substitution Mode and enter the color and number of the affected jet. To substitute the jet:
   a. Scroll to the jet color and press OK.
   b. Use the Up Arrow and Down Arrow buttons to select the jet number and press OK.
   c. Select Save Change and Exit, and then press OK to complete the procedure.

After substituting a jet, print the Light Stripes Test page to verify Jet Substitution mode is enabled for the correct jet. A Service Mode key, at the bottom of the page, summarizes the number of substituted jets for each color.

Other options on the Eliminate Light Stripes menu are:

- Light Stripes Test prints the Light Stripes page. Use this to detect weak, missing, or discolored jets.
- Basic initiates a cleaning cycle followed by a Cleaning page.
- Advanced requests a jet color and number, and then attempts to purge the jet by printing five, double-sided pages using a range of jets and color that include the affected jet. After the purge pages, the system performs a cleaning cycle, prints the Cleaning page, and prints a Light Stripes page.

NOTE: *The Configuration page indicates the date when the service mode was entered. The Printer Status page provides a list of jets in Substitution Mode.*

Disabling Jet Substitution Mode

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

1. First press System, and then enter the Information menu.
2. From the menu, scroll to Troubleshooting, and then press OK.
3. Scroll to Print Quality Problems, and then press OK.
4. Select Eliminate Light Stripes, and then select Basic to begin a cleaning cycle, Advanced to select the Jet color, or Jet Substitution Mode.
5. Scroll to Turn Jet Substitution Mode Off, and then press OK.
6. Print the Eliminate Light Stripes Test page to verify that Substitution Mode is disabled for all jets.

4 Repairs and Adjustments

Disassembly Overview

This section contains the removal procedures for field-replaceable parts listed in the Parts List. In most cases, the replacement procedure is simply the reverse of the removal procedure. In some instances, additional steps are necessary and are provided for replacement of the parts.

Phaser 8860/8860MFP Differences

With the exception of the DADF, Scanner, Exit Module, covers, and some electronics, the two models are essentially the same. To indicate procedures unique to a particular model, the REP title includes the model number. Procedure titles without a model number are correct for either model and begin with a Note referencing where to start the procedure. In cases where the part number is unique to a particular model, both parts list references appear at the begining of the procedure (PL 1.0 for 8860MFP Covers or PL 1.1 for 8860 Covers). All parts, common and unique, are listed in Section 5. Use the parts diagrams when selecting replacement parts.

WARNING

Unplug the AC power cord from the wall outlet before servicing the system.

Standard Orientation of the System

When needed, system orientation is called out in the procedure as an aid to locating parts. Refer to the following figure to identify the right, left, front, and back sides of the printer.

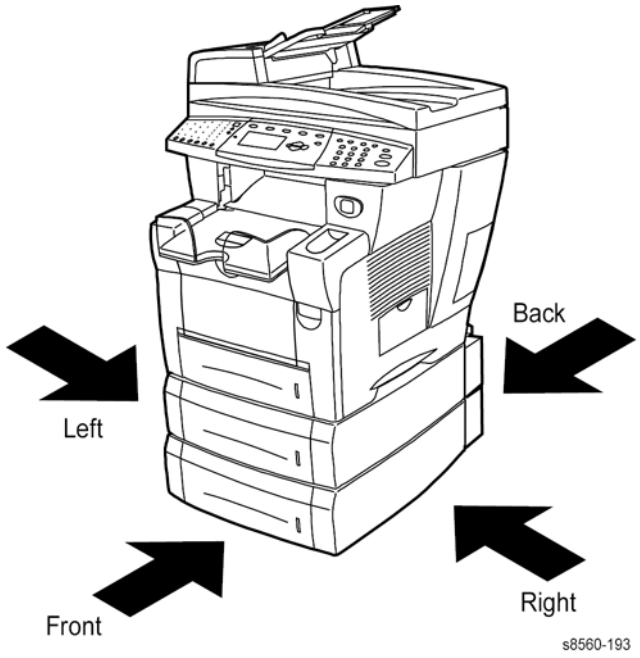


Figure 1 Procedural System Orientation

Preparation

CAUTION

Following reassembly, but before restoring power, be sure the components are all in their home positions, otherwise damage to the printer will occur. Refer to the Adjustment procedures at the end of this section, for procedures on setting components to thier home positions.

Before you begin any removal procedure:

1. Switch Off the printer power and disconnect the power cord from the wall outlet
2. Disconnect all computer interface cables from the system.
3. Wear an electrostatic discharge wrist strap to help prevent damage to the sensitive electronics of the printer circuit boards.
4. Allow adequate time for the system to cool.

NOTE: *Names of parts that appear in the removal and replacement procedures may not match the names that appear in the Parts List. For example, a part called the Registration Chute Assembly in a removal procedure may appear on the Parts List as Assembly, Chute REGI.*

Notations in the Procedures

- The notation “(REP X.X.X)” points to a prerequisite procedure in the current disassembly procedure being performed.
- The notation “PLX.X.X” indicates that this component is listed in the Parts List.
- The notation “XX in.-lbs. is the torque specification for the subject fastener.
- Bold arrows in an illustration show direction of movement when removing or replacing a component.
- The notation “(plastic T-20)” or “(metal, T-20)” refer to the type of screw being removed. Plastic refers to a metal, self-tapping screw used to secure parts onto plastic. Metal refers to metal, fine-threaded screws used to secure parts onto metal.

Fastener Types

CAUTION

Screws in plastic are torqued to 12 in. lbs., metal to 15 in lbs., unless otherwise specified. The screws for the Printhead Restraints should be torqued to 6 in. lbs. Irreversible damage can result from over tightening the screws into plastic parts. Always use the correct type and size screw. Using the wrong screw can damage tapped holes.

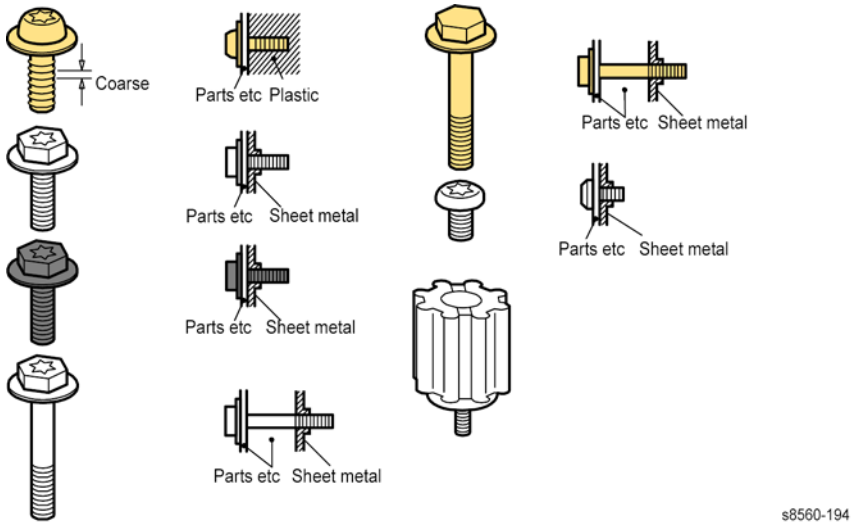


Figure 2 Fastener Types

Follow these guidlines for fasteners in this product:

- Always use the correct type and size screw; coarse thread, brass-colored screws into plastic and fine thread, silver-colored screws into metal.
- Using the wrong screw can damage tapped holes. This applies to the yellow reverse-threaded screws on the Drum.
- Do not use excessive force to remove or install either a screw or a printer part. If using a power driver to install a screw into plastic, start the screw by hand.
- If you strip out threads in the plastic chassis, a silver-blue-tinted thread repair screw (included in the hardware kit) can be used to correct the problem.
- If you remove a silver-blue-tinted thread repair screw during disassembly, replace the screw the same location or additional damage to the printer will occur.

Fasteners used in the product appear in Figure 2. Removal procedures include dimensional specifications for screws being removed.

CAUTION

Many parts are secured by plastic tabs or hooks. Do not over Flex or force these parts.

Recommended Tool Kit

Table 1 lists required and recommended tools used to service this and other similar products.

Table 1 Recommended Service Tools

Description	Detail
Torx Drivers Bits	T5, T8, T10, T15 (T20 P/N 003086600)
Phillips Drivers	Phillips # 2 and # 1 5.0 x 75 mm, 3.0 x 75 mm, 6.0 x 100 mm
Flathead Drivers	5.0 x 75 mm, 3.0 x 75 mm
Torque Screw Driver	Required for this system P/N 003082700
Hex Bit	2.5mm Hex Bit, T-20 P/N 003086600
Driver Extension	
Small Channel lock Pliers	
Needle Nose Pliers	
Wire Cutters	
Flashlight	
Assorted Nut Drivers	
Lint-Free Cloths	
Cleaners	Multipurpose surface cleaner and Alcohol
ESD Strap	
Nut Driver	5.5mm (magnetic) P/N 600T2123
Serial Adaptor Cable	600T80374
Network Cross-over cable	Tech
Scanner Calibration page	P/N 109K01910
Toner Vac	Toner and general cleaning
Multimeter	Volts, Ohms, Current
Lubricant/Grease	Reolube P/N 070E00890

REP 1.0.1 Front Door / Tray 1 Assembly

Parts List on PL 1.0

Removal

1. Open the Front Door and release the 2 Stopper Straps.

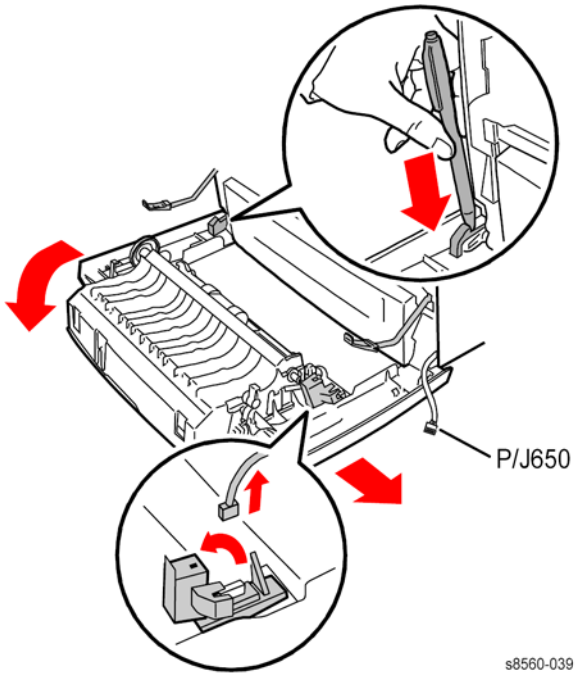


Figure 1 Releasing the Front Door Stopper Straps

2. Open the plug cover and disconnect P/J650 from the right side of the Front Door .
3. Release the wiring from cable retainers.
4. Remove the Front Door (Tray 1/MPT) by releasing the left hinge pin from the frame and sliding the door to the right.

REP 1.0.6 Output Tray (8860MFP)

Parts List on PL 1.0

Removal

1. Open the Front Cover.

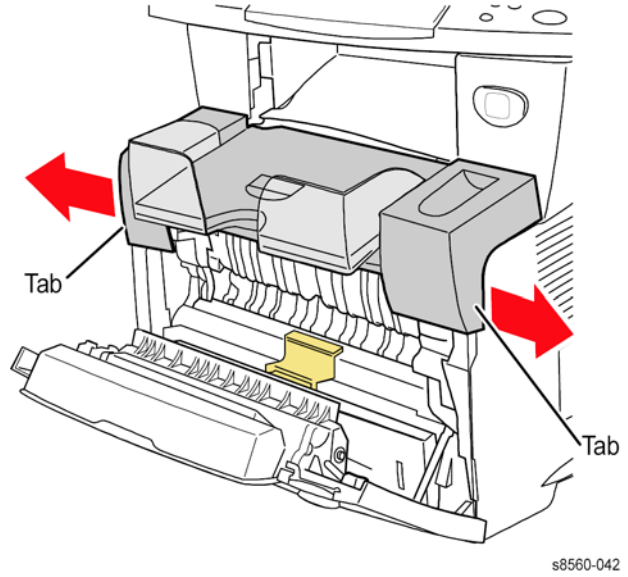


Figure 1 Output Paper Tray Retaining Tabs

2. Spread the left and right sides of the Output Tray to release the 2 tabs on the bottom.

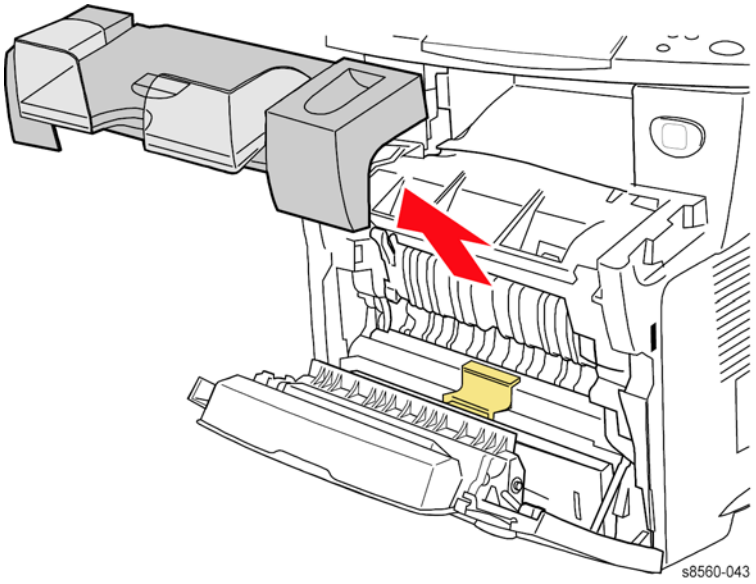


Figure 2 Removing the Output Tray

REP 1.0.7 Left Side Cover (8860MFP)

Parts List on PL 1.0

Removal

1. Open the Front Door.
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
4. Remove the (metal, T-20) screw at the back of the system that secures the cover to the frame.

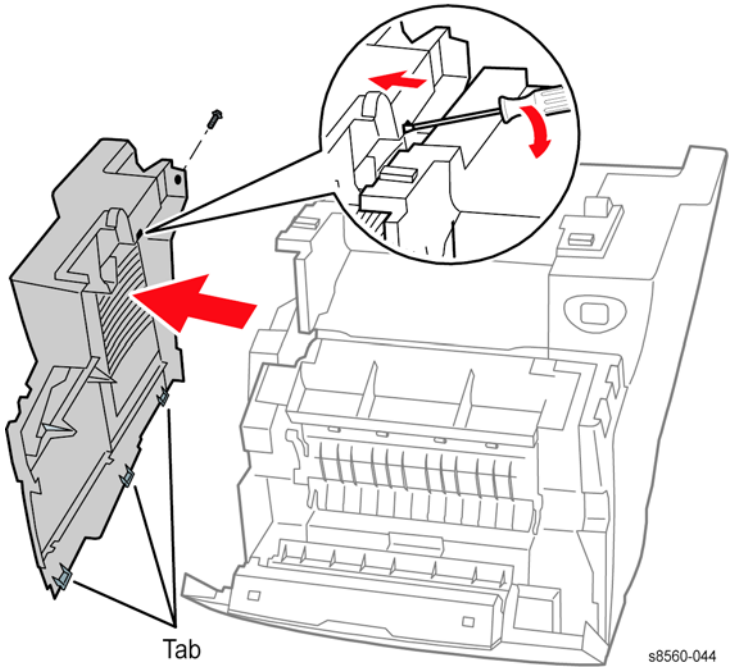


Figure 1 Removing the Left Side Cover

5. Release the tab near the top of the cover using a flat-blade screwdriver.
6. Release the tabs along the front of the cover that secure it to the Exit Module.
7. Pull outward on the front of the cover to release it from the frame.

Replacement

Insert the 3 tabs along the bottom edge of the cover into the slots in the frame before snapping the cover into place.

REP 1.0.8 Scanner Hinges (8860MFP)

Parts List on PL 1.0

Removal

CAUTION

If possible, lock the Scanhead before removing the assembly. A utility for locking the Scanhead is provided in the Service Tools Menu. Power down the printer with the DADF closed.

1. Remove the DADF (REP 1.0.15).
2. Disconnect the Scanner from the printer.
3. Place the Scanhead in the locked position for removal.

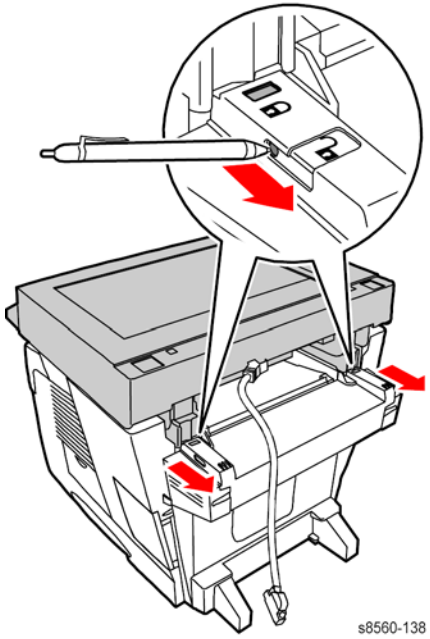


Figure 1 Unlocking the Scanner Hinges

4. Release the hinge latches using a screwdriver or pen.
5. Slide the Scanner towards the back, and then lift to remove it from the printer.
6. Remove the 4 (plastic T-20) screws that secure each hinge to the assembly.

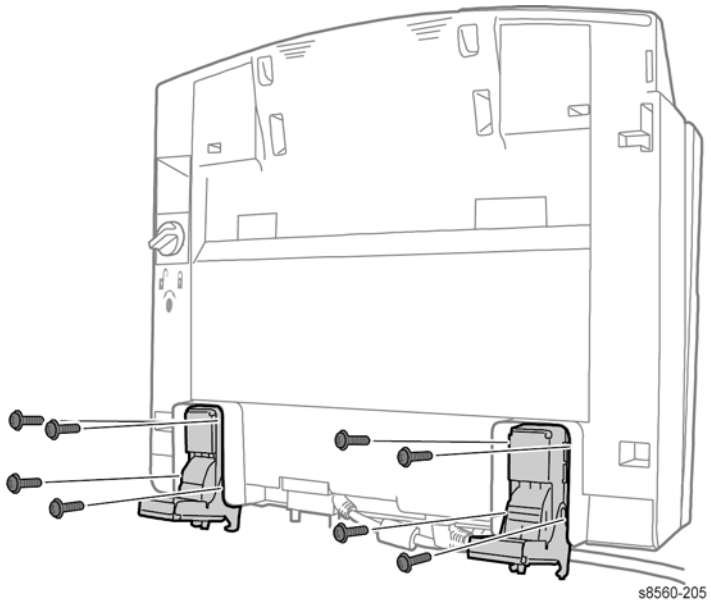


Figure 2 Removing the Scanner Hinges

REP 1.0.9 Control Panel (8860MFP)

Parts List on PL 1.0

Removal

1. Open the Scanner.
2. Remove 2 (plastic, T-20) screws that secure the Control Panel to the Scanner.

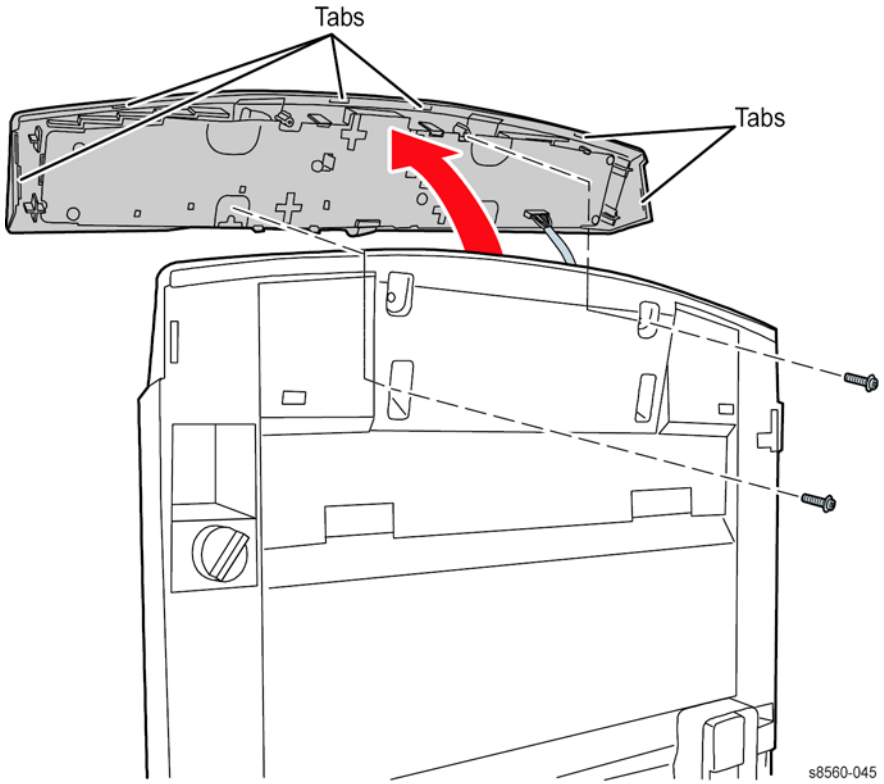


Figure 1 Removing the 8860MFP Control Panel

3. Release the tab at each end of the Control Panel, then release the remaining 4 tabs along the front edge to access the Control Panel connector.
4. Disconnect P/J19 and remove the Control Panel from the Scanner.

REP 1.0.11 Scanner Assembly (8860MFP)

Parts List on PL 1.0

Removal

CAUTION

Lock the Scanhead before removing the assembly. A utility for locking the Scanhead is provided in the Service Tools Menu. Power down the printer with the DADF closed.

1. Remove the DADF (REP 1.0.15).
2. Place the Scanhead in the locked position for removal.
3. Disconnect the Scanner from the system.

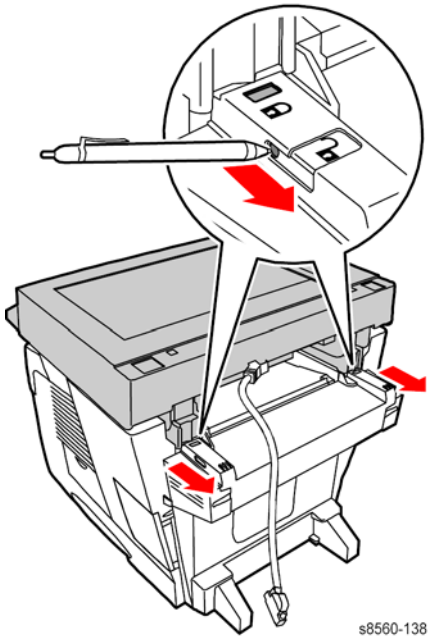


Figure 1 Unlocking the Scanner Hinges

4. Release the hinge latches using a screwdriver or pen.
5. Slide the Scanner towards the back, and then lift to remove it from the printer.

Replacement

NOTE: *Failure to adequately secure the Scanner cable connection to the Rear Panel can result in sporadic Scanner errors. Seat the Scanner connector completely using the connector's two thumbscrews.*

REP 1.0.13 DADF Front Cover (8860MFP)

Parts List on PL 1.0

Removal

1. Open the DADF Front Cover.
2. Remove 3 (plastic, T-20) screws that secure the DADF Front Cover.

Figure 1 DADF Front Cover Fasteners

3. Close and latch the DADF Input Chute.

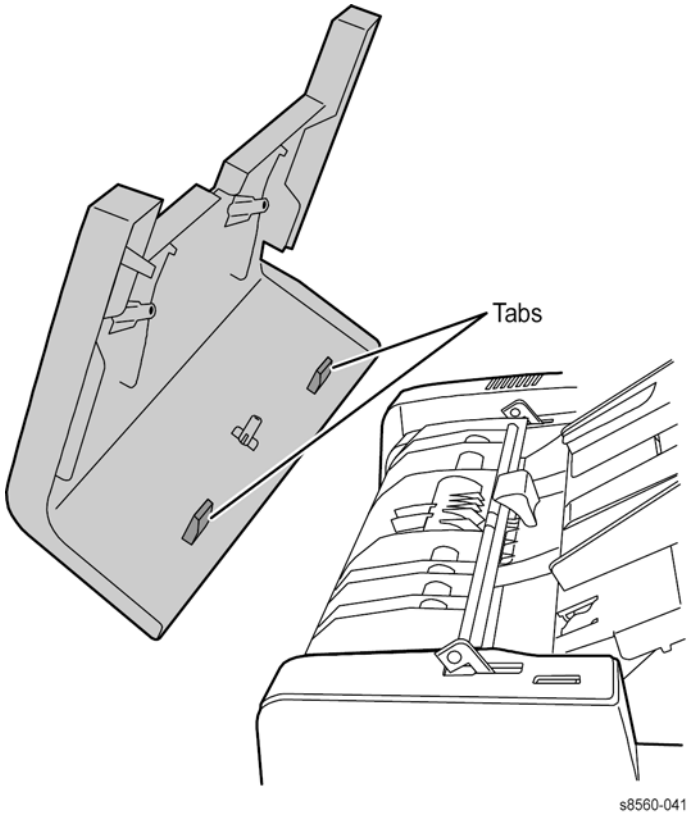


Figure 2 DADF Front Cover Removal

4. Lift the DADF Front Cover to remove.

REP 1.0.15 Duplex Automatic Document Feeder (8860MFP)

Parts List on PL 1.0

Removal

1. Disconnect the DADF Cable from the Scanner Assembly.
2. Lift the DADF to expose the locking mechanism.
3. Release the hinge locks to remove the DADF from the Scanner Assembly.

NOTE: *If a replacement DADF is being installed, recalibrate the Scanner using ADJ 1.15.1.*

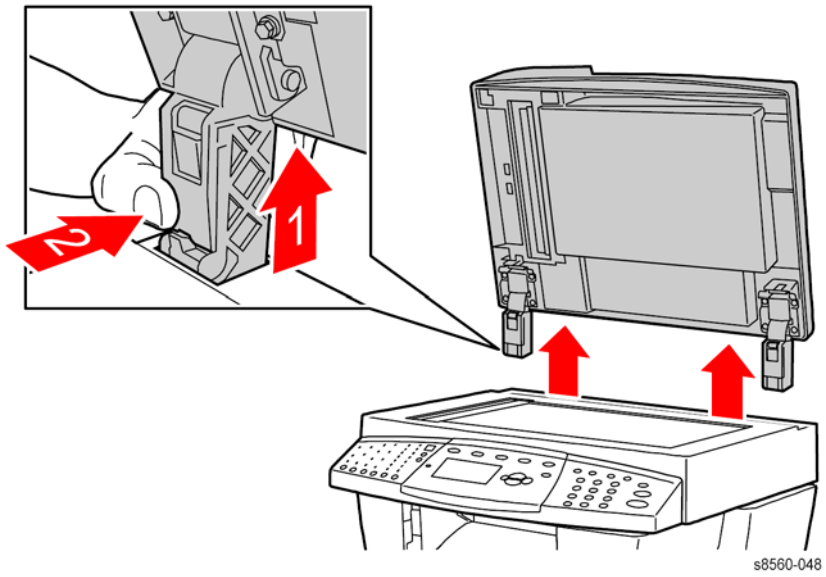


Figure 1 DADF Removal

REP 1.0.19 DADF Hinges (8860MFP)

Parts List on PL 1.0

Removal

1. Remove the DADF (REP 1.0.11).
2. Remove the 4 (plastic, T-20) screws that secure each hinge to the DADF.

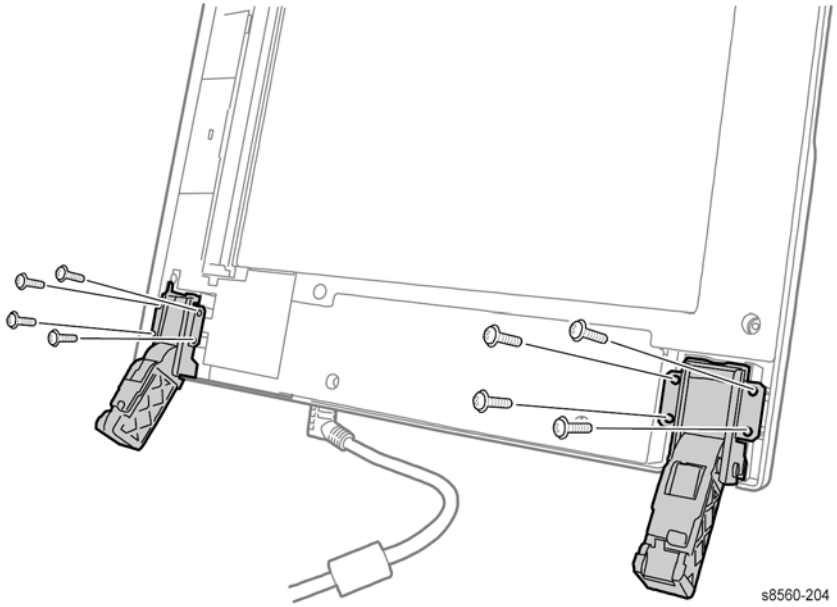


Figure 1 Removing the DADF Hinges

Replacement

NOTE: *Failure to adequately secure the DADF cable connection to the Scanner Assembly can result in sporadic DADF errors. Seat the DADF connector completely using the connector's two thumbscrews.*

REP 1.0.20 Rear Cover (8860MFP)

Parts List on PL 1.0

Removal

1. Remove the Right Side Cover (REP 1.0.21).
2. Remove the Left Side Cover (REP 1.0.7).
3. Release the Tab that secures the Rear Cover.

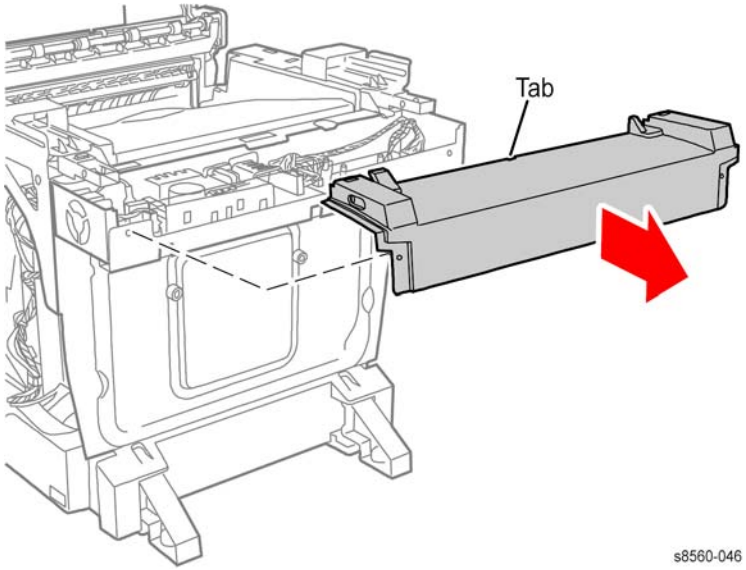


Figure 1 Removing the Rear Cover

REP 1.0.21 Right Side Cover (8860MFP)

Parts List on PL 1.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Open the Front Door.
3. Remove the Output Tray (REP 1.0.6).
4. Remove the (metal, T-20) screw at the back of the system that secures the cover.

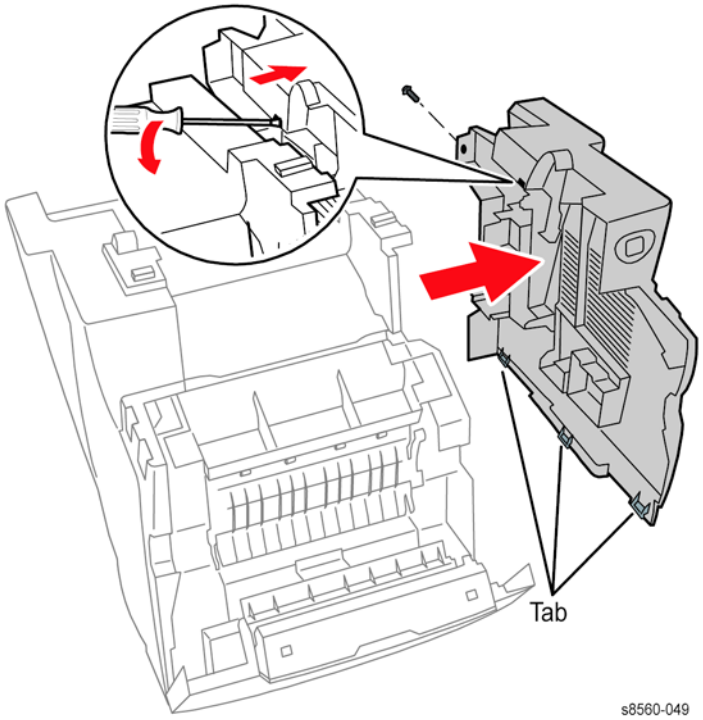


Figure 1 Removing the Right Side Cover

5. Release the tab near the top of the cover using a flat-blade screwdriver.
6. Release the tabs along the front of the cover that secure it to the Exit Module.
7. Pull outward at the front of the cover to release it from the frame.

Replacement

Insert the 3 tabs, located along the bottom edge of the cover, into the slots provided in the frame before snapping the cover into place.

REP 1.1.5 Control Panel Cover (8860)

Parts List on PL 1.1

Removal

CAUTION

The Control Panel is connected by 3 harnesses. Use care not to damage these harnesses while removing or replacing the cover.

1. Raise the Exit Cover.
2. Open the Front Door.
3. Using either your fingers or a small flathead screwdriver, loosen the Control Panel Cover on the left side, and then slide it forward while lifting up to remove it from the printer..

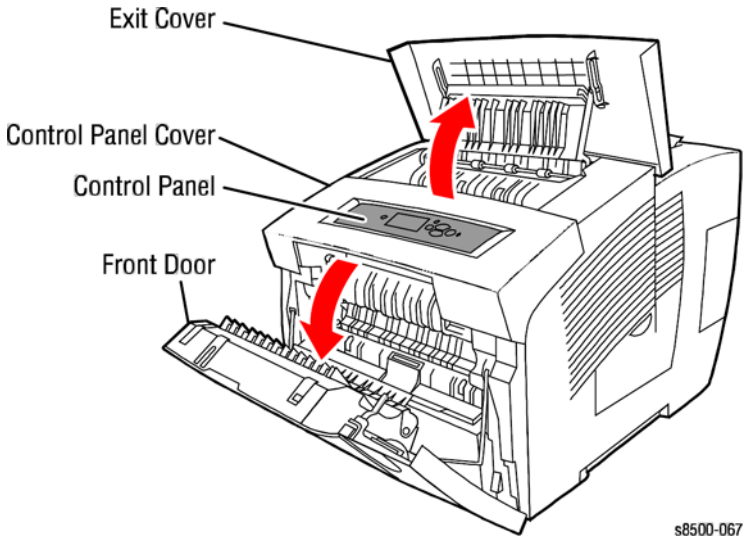


Figure 1 Removing the Control Panel Cover

REP 1.1.6 Control Panel (8860)

Parts List on PL 1.1

Removal

4. Remove the Control Panel Cover (REP 1.1.5).
5. Disconnect the P/J190, P/J110, and P/J600 from the Control Panel.

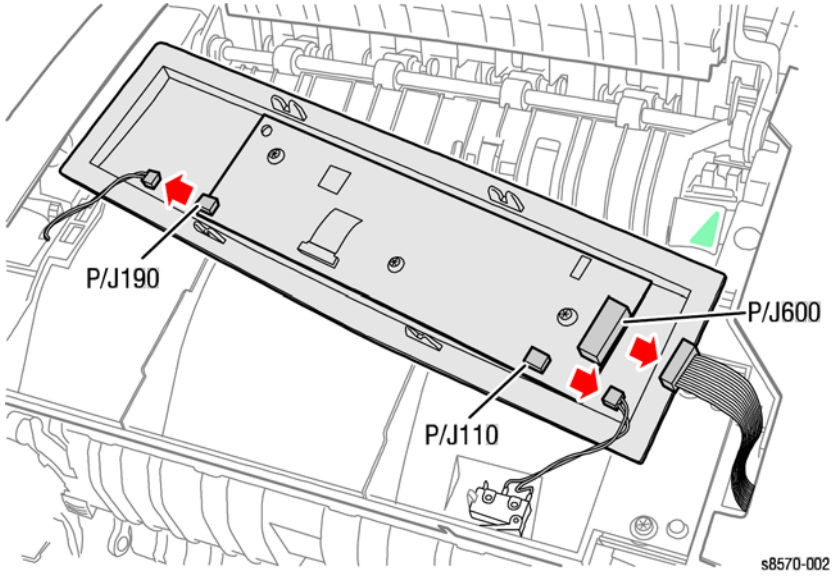


Figure 1 Removing the Control Panel

Replacement

CAUTION

Use care during reassembly to avoid damaging the connections on the underside of of the Control Panel.

REP 1.1.7 Exit Cover (8860)

Parts List on PL 1.1

Removal

1. Remove the Left Side Cover (REP 1.1.9).
2. Remove the Right Side Cover (REP 1.1.10).
3. Lift the Exit Cover from the chassis.

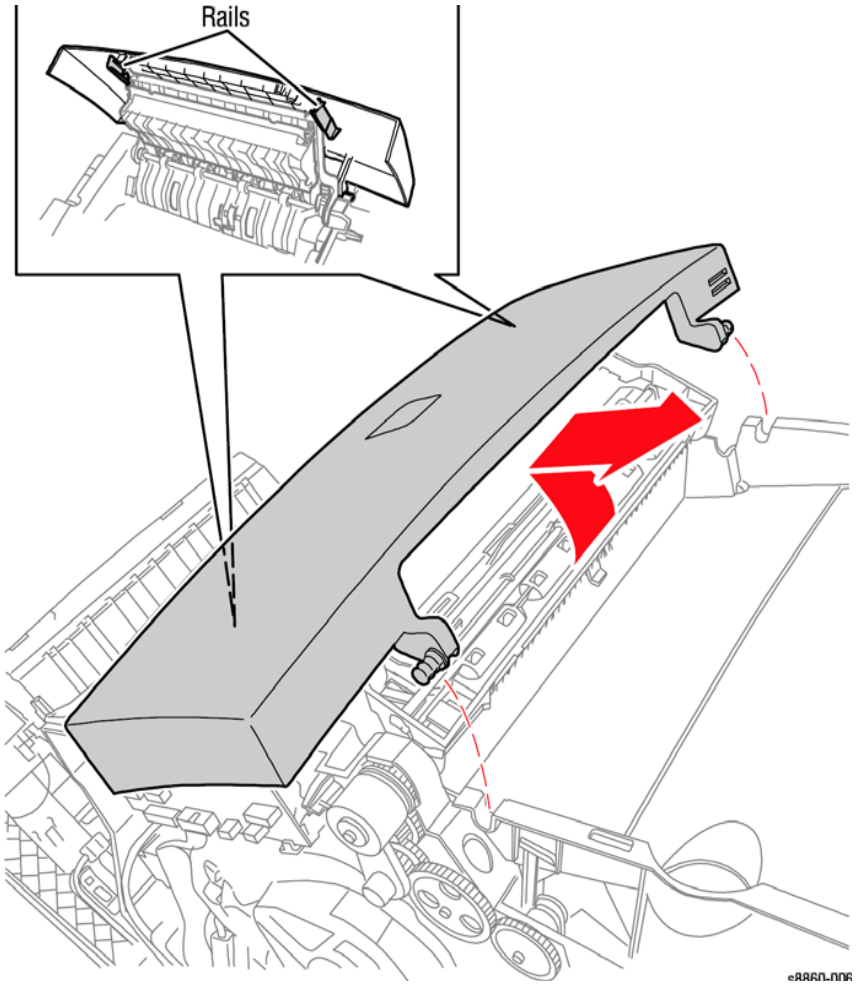


Figure 1 Removing the Exit Cover

Replacement

Lift the Upper Exit Guide slightly, and engage the pins on the Upper Exit Guide with the slots on the Exit Cover before inserting the cover hinge pins into the pivot points in the printer frame.

REP 1.1.8 Ink Loader (8860)

Parts List on PL 1.1

Removal

CAUTION

Allow adequate time for the system to cool before servicing the Ink Loader.

1. Remove the Left Side Cover (REP 1.1.9).
2. Remove the Right Side Cover (REP 1.1.10).
3. Remove the Exit Cover (REP 1.1.7).
4. Press the left and right sides of the Ink Loader inward, then lift to access the 2 connectors.
5. Disconnect the Ink Loader Power harness P/J5 from the Electronics Module.
6. Remove the Ink Loader harness from the retaining clip on the right side, and then disconnect the harness P/J0150 from the Ink Loader to remove the Ink Loader.

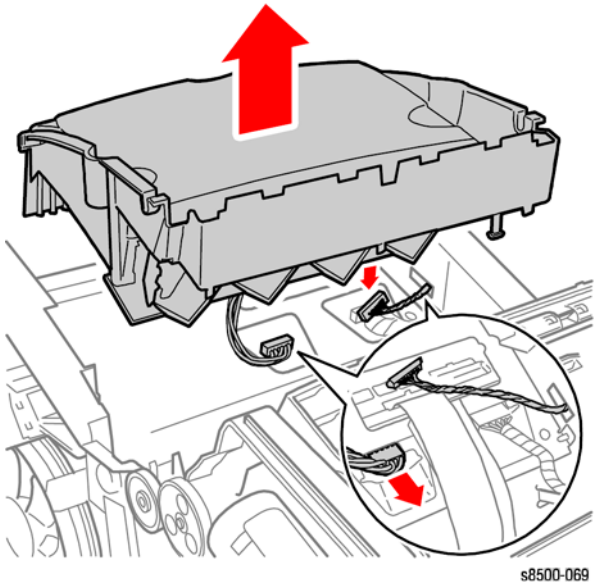


Figure 1 Removing the Ink Loader

Replacement

The Ink Loader data harness comes from the side of the chassis and plugs directly into the Ink Loader. After replacing the Ink Loader, reset the ink stick count, using the Hidden Service Menu. Perform these steps while replacing the Ink Loader.

1. Secure the Ink Loader harness in the retainer clip provided on the Ink Loader, and connect P/J0150.
2. Route the Ink Loader Power harness towards the left side and connect P/J5.
3. Transfer the Ink Sticks to the replacement Ink Loader.

REP 1.1.9 Left Side Cover (8860)

Parts List on PL 1.1

Removal

1. Remove the Control Panel Cover (REP 1.1.5).
2. Open the Exit Cover and Front Door.
3. Remove 1 (metal, T-20) screw.
4. Release the tabs and remove the cover.

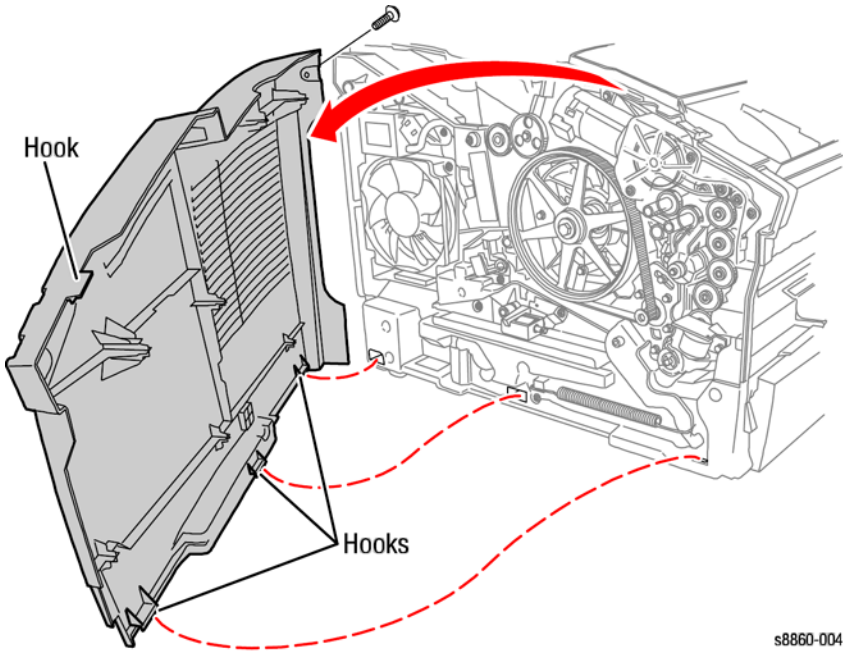


Figure 1 Removing the Left Side Cover

REP 1.1.10 Right Side Cover (8860)

Parts List on PL 1.1

Removal

1. Open the Exit Cover and Front Door.
2. Remove the Control Panel Cover (REP 1.1.5).
3. Remove 1 (metal, T-20) screw.
4. Pull forward to release the tab located near the AC connection and release the front tab while pulling outward at the top.

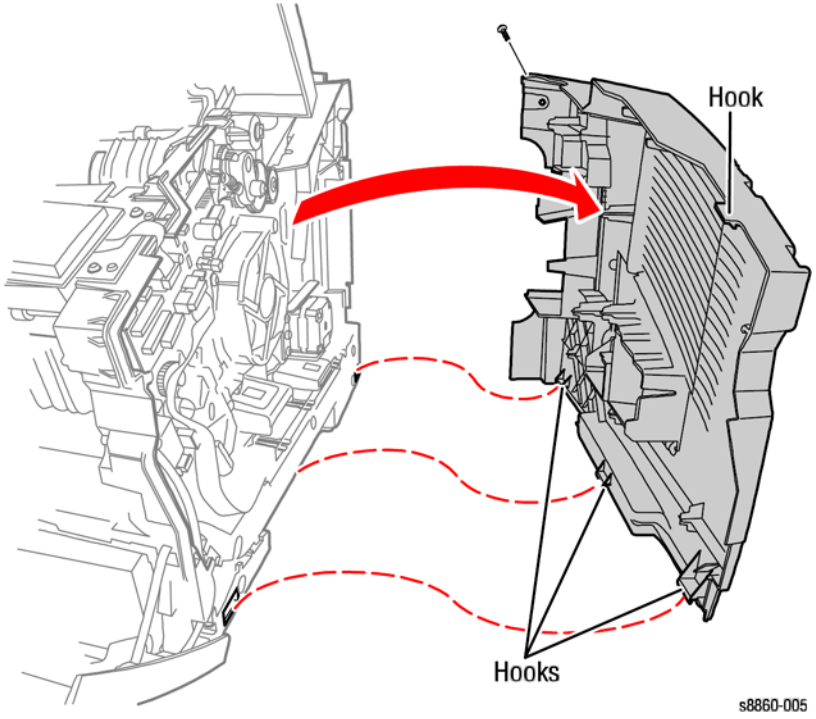


Figure 1 Removing the Right Side Cover

REP 2.0.1 Ink Loader (8860MFP)

Parts List on PL 2.0

Removal

CAUTION

Allow adequate time for the system to cool before servicing the Ink Loader.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Right Side Cover (REP 1.0.21).
3. Remove the Left Side Cover (REP 1.0.7).
4. Raise the Media Path Elevator to the up position.

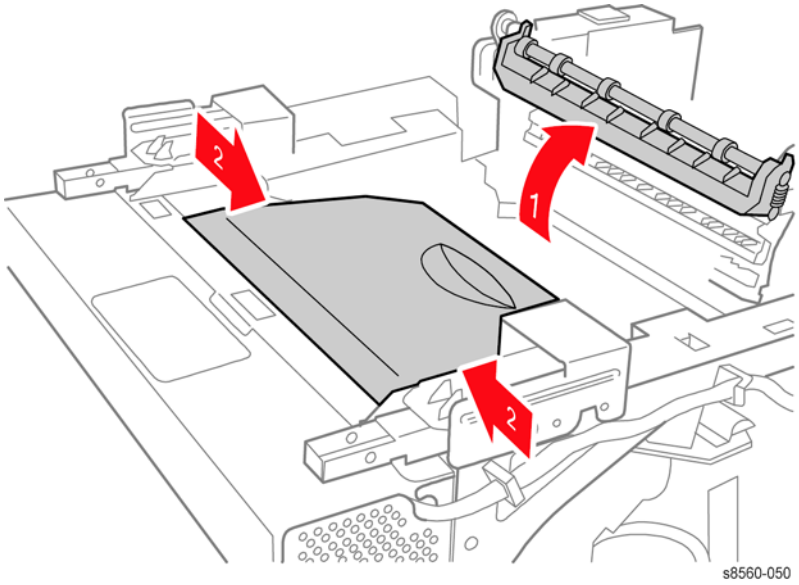


Figure 1 Raising the Media Path Elevator

5. Press the left and right sides of the assembly inward, then lift to access the 2 connectors.

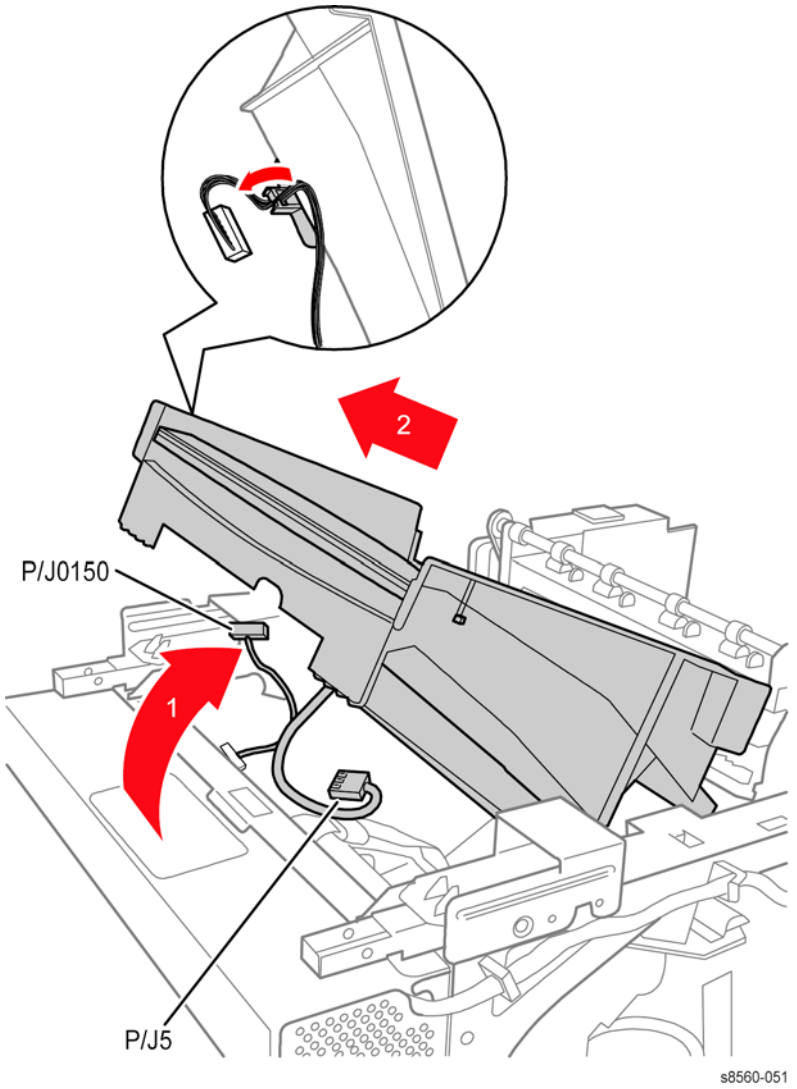


Figure 2 Removing the Ink Loader

6. Disconnect the Ink Loader Power harness P/J5 from the Electronics Module.
7. Remove the Ink Loader harness from the retaining clip on the right side, and then disconnect the harness P/J0150 from the Ink Loader to remove the Ink Loader.

Replacement

Perform these steps while replacing the Ink Loader.

1. Raise the Media Path Elevator before inserting the assembly.

2. Secure the Ink Loader harness in the retainer clip provided on the Ink Loader, and connect P/J0150.
3. Route the Ink Loader Power harness towards the left side and connect P/J5.
4. Transfer the Ink Sticks to the replacement Ink Loader.

REP 2.0.2 Printhead

Parts List on PL 2.0

Removal

NOTE: *Use the Printhead Troubleshooting Checklist to troubleshoot Printhead operation before replacement. A copy of this checklist is included with the replacement part. Return the completed checklist with the defective part if Printhead replacement is necessary.*

When parked, the Printhead is held in place by pins that are captured by left and right Printhead Restraints. If the restraints are released, tension from the Printhead Tilt Spring will force the Printhead toward the Drum. Gradually release the spring tension when unlocking the Printhead Restraints.

WARNING

Allow adequate time for the system to cool before servicing. The Roll Block that retains the Printhead Shaft remains hot longer than other nearby components.

CAUTION

To prevent the Printhead from contacting the Drum while releasing the restraints, move the Printhead away from the Drum using the process described in ADJ 2.2.1.

CAUTION

Perform the Printhead removal steps in the order given and use the Printhead finger recesses to lift the Printhead from the chassis. Do not touch the Printhead jetstack.

NOTE: *These steps describe Printhead removal for the 8860MFP. On 8860 models, access the Printhead by removing the Ink Loader (REP 1.1.8). Afterwards, return to this procedure and begin at Step 6.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11)
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21).
4. Remove the Left Side Cover (REP 1.0.7).
5. Remove the Ink Loader (REP 2.0.1).
6. Place several sheets of paper between the Printhead and Drum to protect the Drum.
7. Unlock the Printhead Wiper Assembly by raising the Lock.

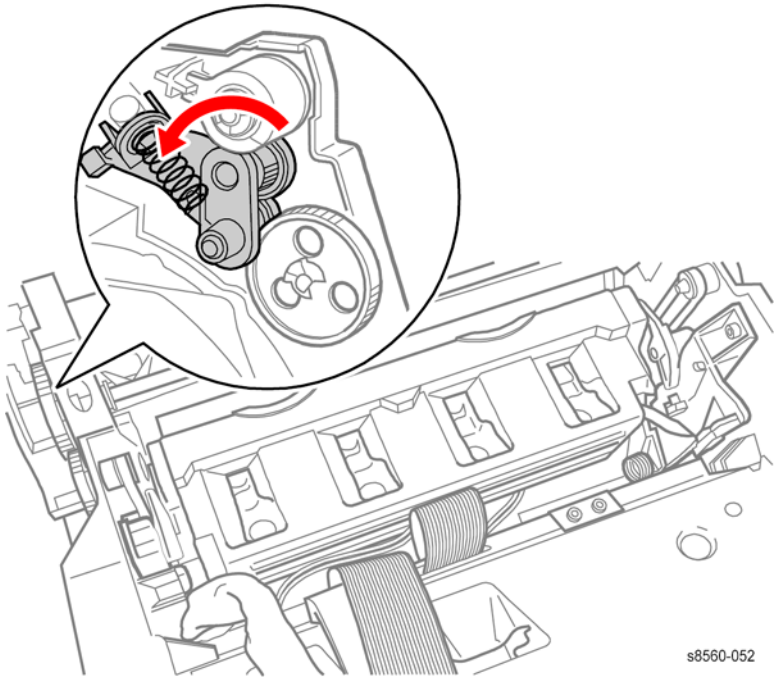


Figure 1 Releasing the Printhead Wiper Lock

8. Lower the Printhead Wiper Assembly completely by rotating the Wiper drive gears as shown in Figure 2.

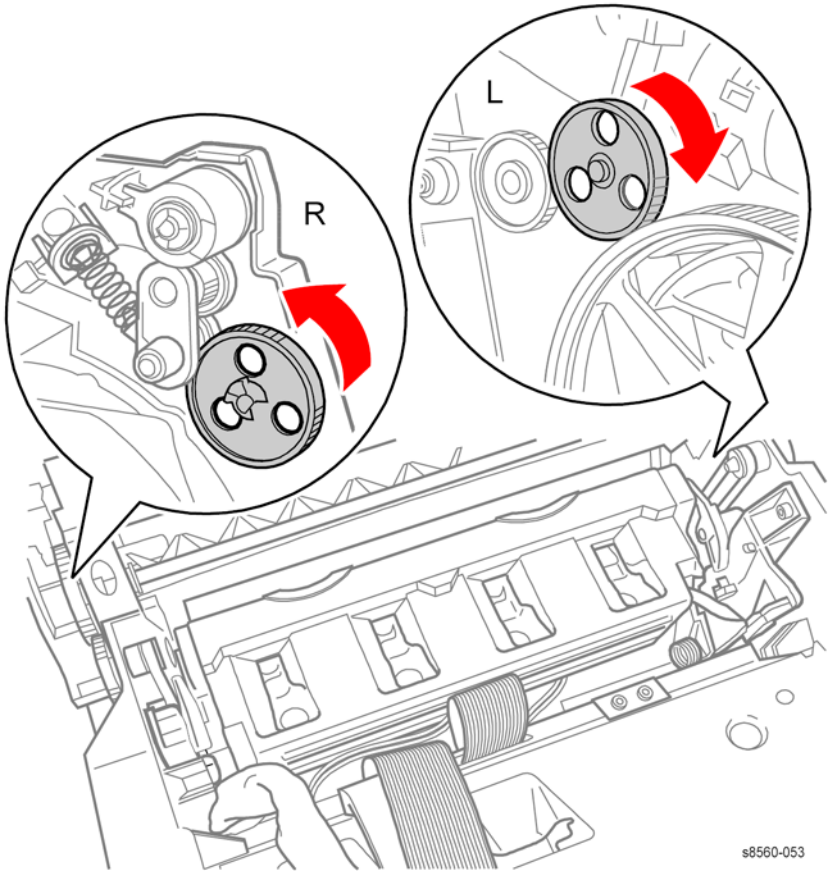


Figure 2 Lowering the Printhead Wiper Assembly

9. Move the Printhead Tilt Spring from its position on the Printhead and hook it behind itself as shown in Figure 3.

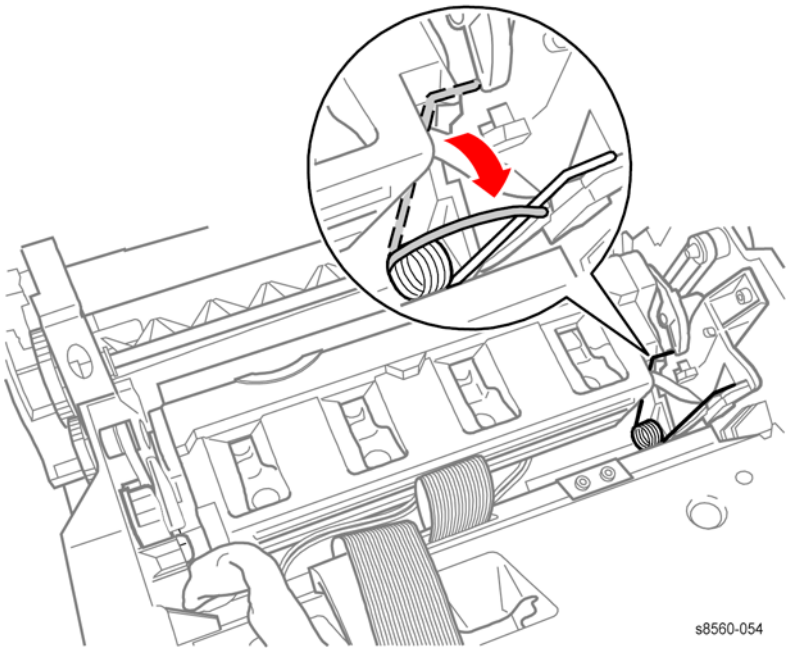


Figure 3 Releasing the Printhead Tilt Spring.

10. Pull the X-Axis Bias Spring and Hook out slightly, and then rotate downward to allow it to rest in detents provided on the frame. See Figure 4.

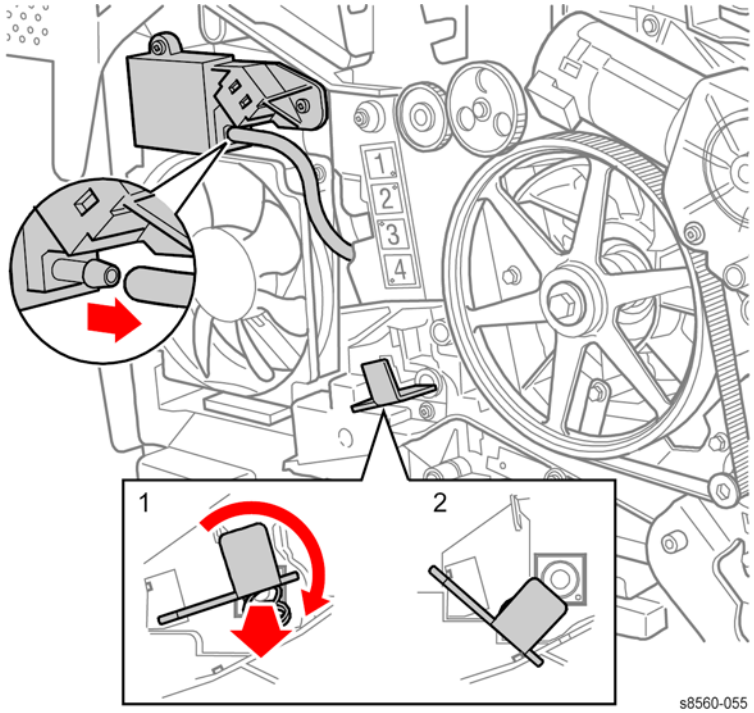


Figure 4 X-Axis Bias Spring Hook

11. Disconnect the Air Hose from the Purge Pump.
12. Remove the left and right Printhead Restraints. To remove the restraints, remove 1 (plastic, T-20) screw that secures each restraint, and then shift the restraint inwards toward the Printhead while lifting toward the rear of the printer.

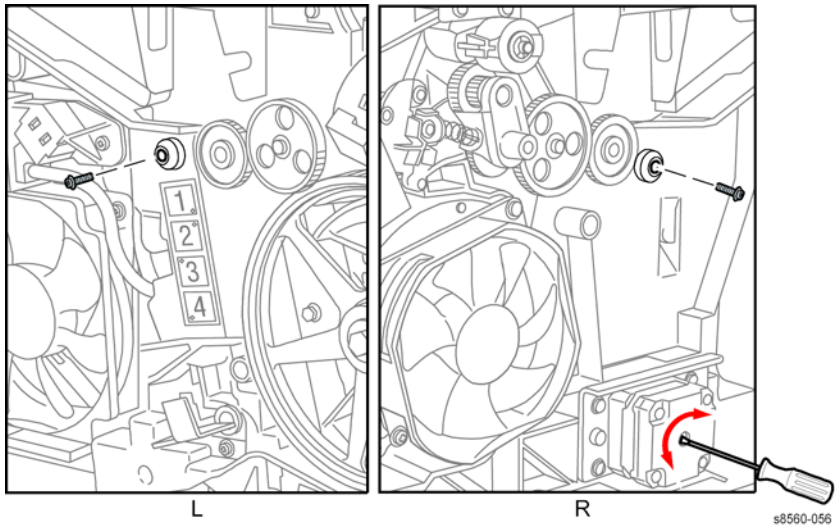


Figure 5 Removing the Printhead Restraint Screws

NOTE: *Adjust the Printhead along its X-Axis as needed using a small screwdriver inserted in the slot on the X-Axis Motor to allow removal of the Printhead Restraints.*

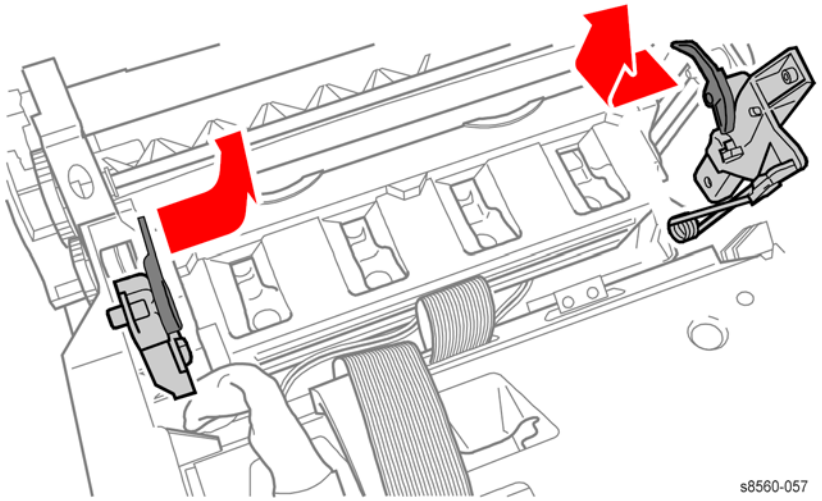


Figure 6 Removing the Printhead Restraints

13. Remove the Roll Block on the left end of the Printhead Shaft.

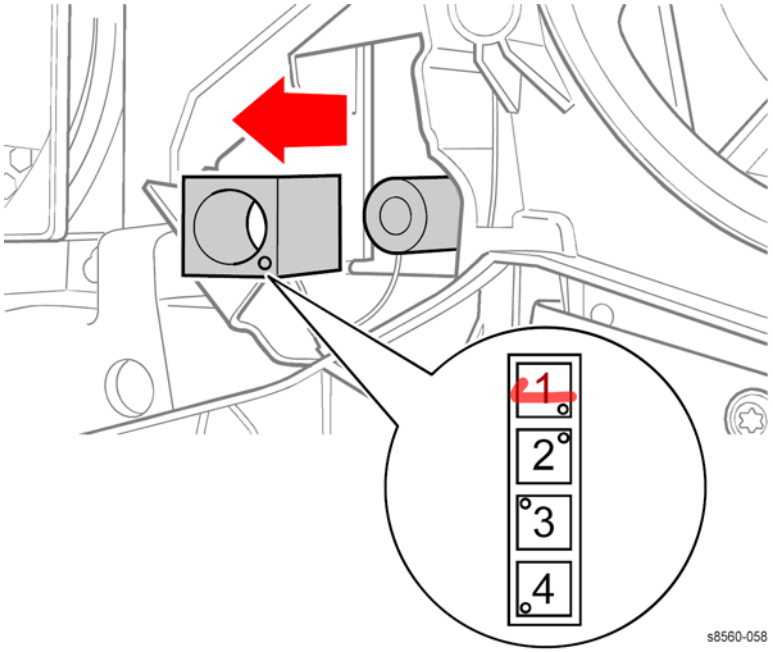


Figure 7 Removing the Roll Block

NOTE: *The check mark on the label indicates the proper orientation of the Roll Block.*

14. Disconnect the Printhead Heater Harness P/J3 and free the harness from the restraint.

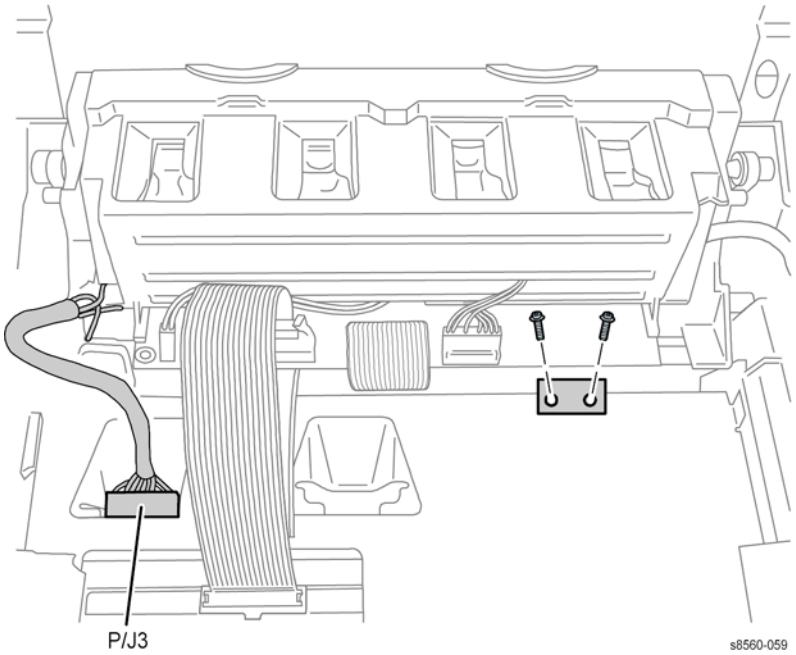


Figure 8 Printhead Electrical Connections

15. Remove the 2 (metal, T-20) screws that secure the Ground Strap.
16. Push the Air Hose into the chassis.
17. Lift the Printhead, using the finger recesses as shown in Figure 11, and place the ends of the shaft in the cradle notches provided near the top of the frame as shown in Figure 9.

Figure 9 Printhead Cradle Notch Location

NOTE: *Unlock the connectors before disconnecting the ribbon cables.*

18. Disconnect the remaining 2 ribbon cables P/J180 and P/J240 from the Printhead.

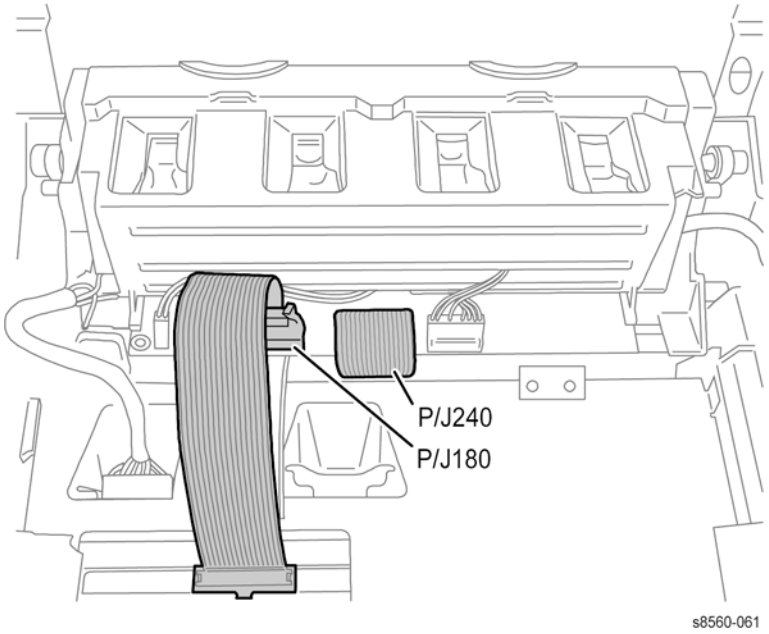


Figure 10 Printhead Cable Connections

19. Remove the Printhead as shown in Figure 11, using the Finger recesses provided.

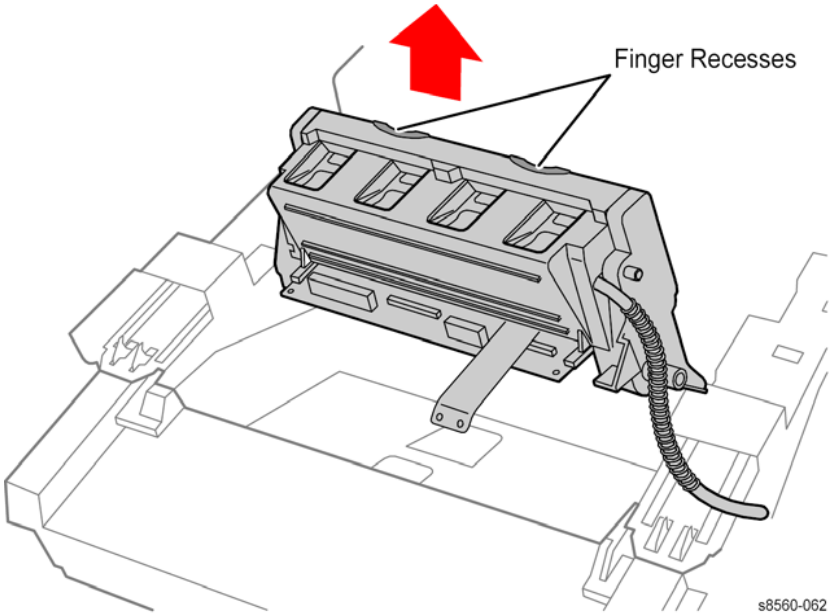


Figure 11 Lifting the Printhead

Replacement

Follow these steps to install the replacement Printhead.

1. Set the Head Tilt Gear to its home position by performing ADJ 4.13.1.
2. Lower the Wiper Assembly to the bottom of its travel.
3. Rest the Printhead in the Cradle Notches while attaching the 2 ribbon cables.
4. Seat and lock the Ribbon Cables (P/J180 and P/J240) in their respective sockets.
5. Lower the Printhead into its mounts. The Printhead should tilt forward in the print position.
6. Route the Purge Pump Hose through the frame and connect it to the Purge Pump.
7. Install the Roll Block on the left end of the Printhead Shaft. Orient the Roll Black as shown on the label attached to the frame (Figure 7). The Red check mark indicates the correct orientation.
8. Properly route and reconnect the Printhead Heater Harness (P/J4).

   NOTE: *Errors 7009 and 4025 are often the result of Printhead interference by the Printhead Heater Harness. Make certain the harness is properly restrained and does not obstruct Printhead movement.*

9. Install the 2 (metal, T-20) screws that secure the Ground Strap.
10. Install the left and right Printhead Restraints. Tighten the screws to 6 in. lb. to avoid stripping the chassis threads. Check that the restraints do not obstruct the Roll Block. Also, make sure the Tilt Spring on the left restraint is properly positioned in the notch on the back of the Printhead and does not pinch the Purge Pump Hose.
11. Set the X-Axis Bias Hook and spring on the left end of the Printhead Shaft. See Figure 4. Ensure the point of the hook is centered in the shaft and the rest of the hook floats freely.
12. Install the Ink Loader.
13. Perform ADJ 4.13.1 to home the Head Tilt Gear.
14. Reassemble the remaining components, and turn system power on.
15. Print the Light Stripes page. Check for jets in Service mode. If necessary, use the Control Panel to reset the jet substitution.
16. Package the defective Printhead and completed Printhead Checklist in the replacement part's packaging.

REP 2.0.3 Drum Assembly

Parts List on PL 2.0

Removal

NOTE: *These steps describe Drum Assembly removal for the 8860MFP. On 8860 models, access the Drum by removing the Exit Module (REP 3.1.13). Afterwards, return to this procedure and begin at Step 9.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21).
4. Remove the Left Side Cover (REP 1.0.7).
5. Remove the Ink Loader Assembly (REP 2.0.1).
6. Park the Printhead using ADJ 2.2.1.
7. Place the Printhead Wiper Blade in its home position using ADJ 2.5.1.
8. Remove the Exit Module (REP 3.0.7)
9. Remove the Drum Temperature Sensor (REP 6.0.4)
10. Remove the Transfix Load Module (REP 2.0.15).
11. Remove the Media Drive Gearbox (REP 4.0.14).
12. Remove the Y-Axis Belt (REP 2.0.4). Relieve tension on the belt by pulling the end of the Spring Arm toward the front. With the tension released, slide the belt off the pulley.
13. Disconnect the Drum Fan P/J118 from the Right Side Harness and release the fan harness from the retainer on the Process Drive.
14. Remove 3 (plastic, T-20) screws that secure the fan to the Drum. Note the location of the Ground Plate behind the fan

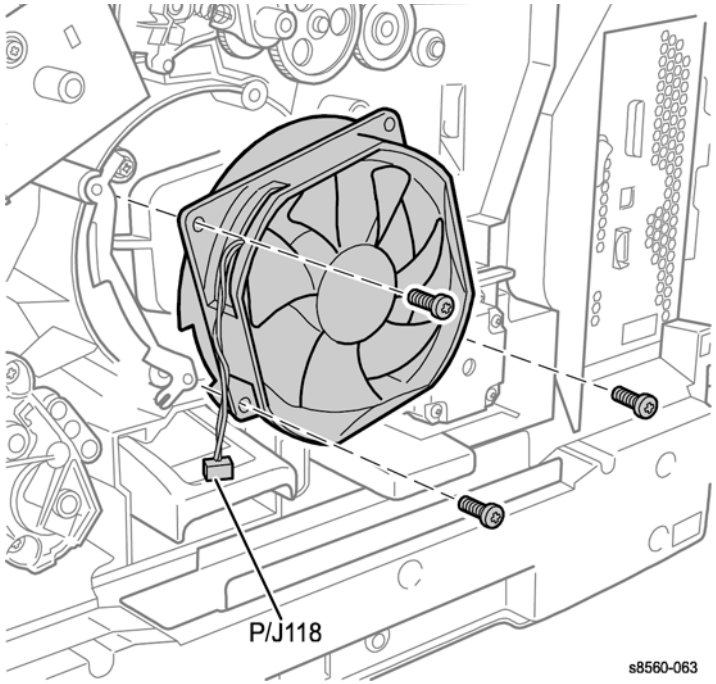


Figure 1 Drum Fan Mounting

15. Unplug the Drum Heater Harness P/J200 from the Relay Board and free the harness from the retaining hook.

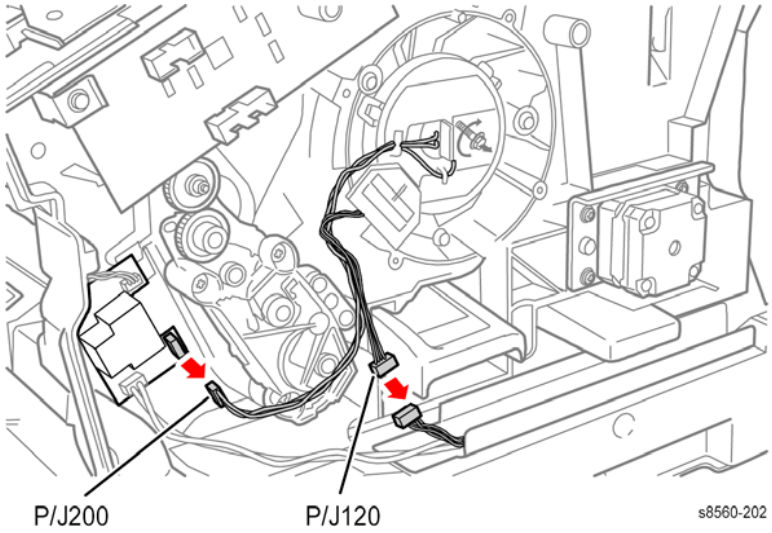


Figure 2 Disconnecting the Drum

16. Disconnect the Drum Encoder harness P/J120 from the Right Side Harness and release the cable from the restraint.
17. Remove 3 (metal, 5.5 mm hex-head) screws, 2 washers, and the Ground Plate from the right side of the Drum Assembly as shown in Figure 3. These are **reverse-threaded** screws as indicated on the label attached to the Drum.

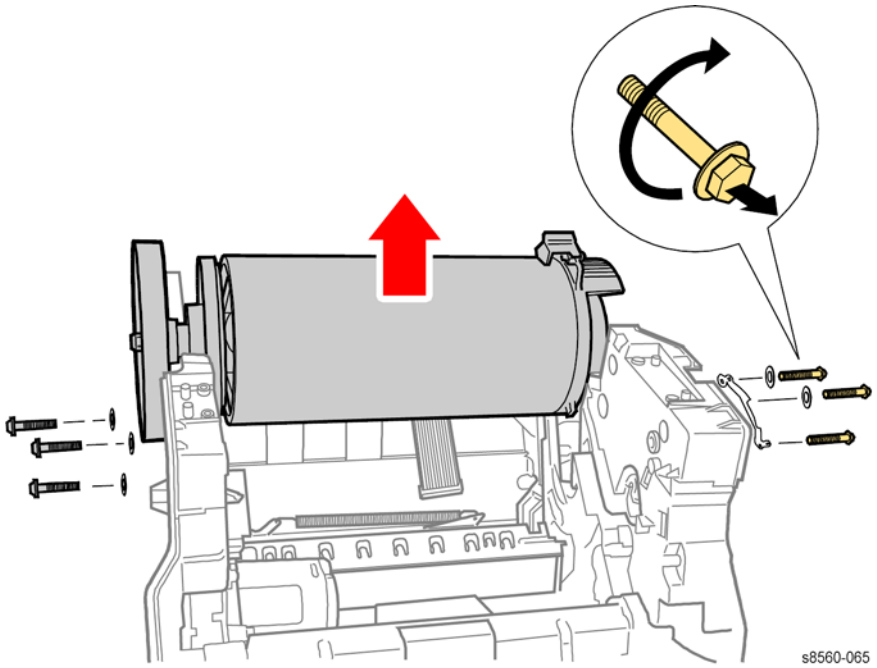


Figure 3 Removing the Drum Assembly

18. Remove 3 (metal, T-20) screws and 3 washers from the left side of the Drum Assembly.

    NOTE: *Do not rest the Drum Assembly on the pulley. Allow the pulley to overhang the surface and rest the assembly on its feet.*

19. Lift the Drum Assembly straight out of the chassis using the metal grips provided.

Replacement

CAUTION

The Drum Temperature Sensor harness is routed through the Exit Module. Use care when reinstalling to avoid damaging the sensor.

NOTE: *To help seat the Drum properly, steps 2-6 provide an explicit order of placement for installing the screws to secure the Drum Assembly to the chassis.*

1. Seat the Drum Assembly into the chassis.
2. Align the screw holes in the left and right sides of the Drum Assembly to the holes in the chassis sides.
3. Install 1 (metal, T-20) screw and washer at the rear position on the left side to hold the Drum Assembly and torque the screw to 25 in.-lbs.
4. Install the remaining (metal, T-20) screws and washers into the left side of the Drum Assembly and torque to 25 in.-lbs.

5. Install 1 (metal, hex-head) screw and washer at the rear position on the right-side to hold the Drum Assembly and torque the screw to 25 in.-lbs.
6. Install the remaining (metal, hex-head) screws into the bottom location (without a washer) and the front location (with a washer and Ground Plate) on the right side of the Drum Assembly and torque to 25 in.-lbs.
7. Pull outward on the left Drum Assembly handle and the right chassis side to spread the chassis and seat the left Drum bearing.
8. Replace the Drum Temperature Sensor.
9. Replace the Transfix Load Module, Ground Strap, and Preheater Lift Solenoid.
10. Align the clevis on the Transfix Load Arms with the holes in the mounting ears on the Drum Assembly. The Transfix Load Arms should point in the opposite direction as the Drum Thermistor. Position the Cam Followers on the Transfix Load Arms under the Transfix Cams.
11. Insert the Clevis Pins through the clevis and the mounting ears on the Drum Assembly (insert the pins from the outside). Check that the o-ring on each Clevis Pin is inside the chassis.
12. Align the Exit Module to the chassis and re-route the Drum Temperature Sensor harness through the opening provided. Seat the Exit Module in the chassis by first engaging the 2 front locating pins, and then the rear locating pins.
13. Inset and torque to 12 in-lbs. the 6 Exit Module screws. On 8860 models, the Exit Module is secured with 4 screws torqued to 12 in-lbs.

NOTE: *After installing the Exit Module, perform the Wiper Alignment (ADJ 2.5.1). The printer may report error 7,009.4x if the Wiper is misaligned.*

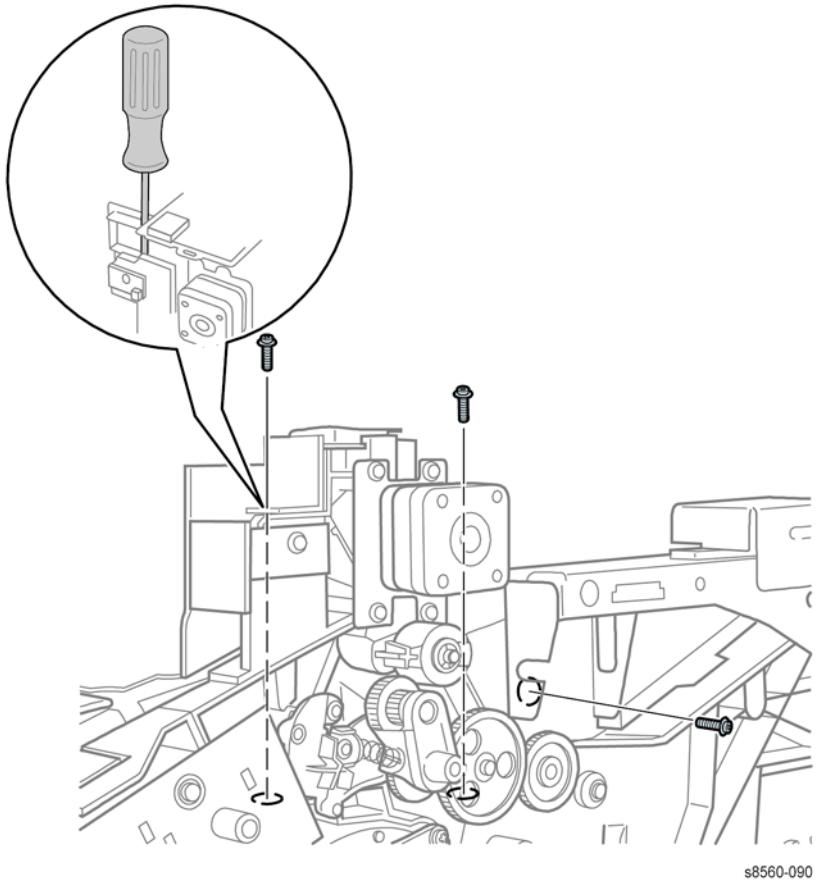


Figure 4 8860MFP Exit Module Right Side Fasteners

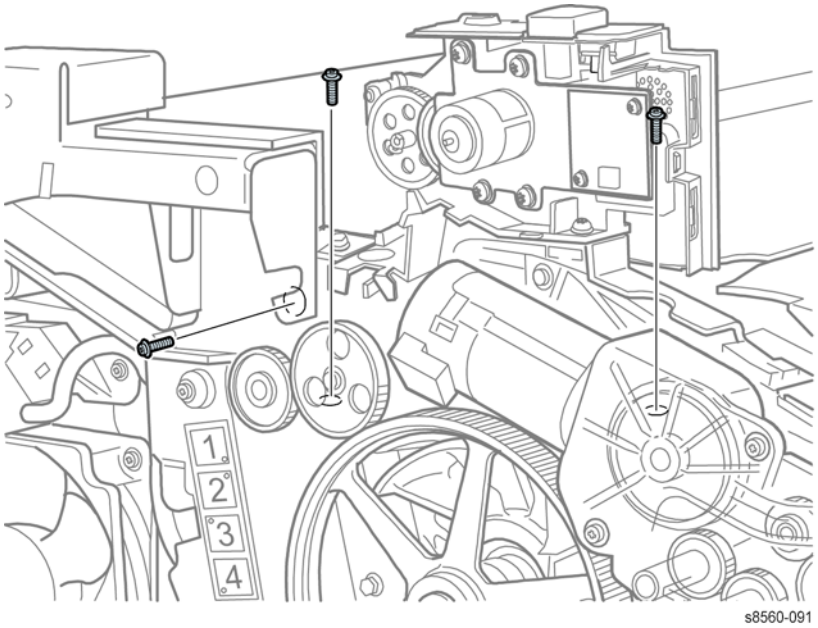


Figure 5 8860MFP Exit Module Left Side Fasteners

14. Apply a small quantity of Rheolube 768 grease (P/N 070E00890) to the groove on the Transfix Load Arms.

    NOTE: *Ensure that you lever the Spring Cam towards the center of the printer. Applying pressure in the wrong direction can damage the Transfix Load Module.*

15. Insert a T-20 Torx bit through the right side slotted hole in the Transfix Load Module. Engage the hole at the back of the module, and lever the module's spring cam towards the center of the system while connecting the spring hooks to the Transfix Load Arms. Repeat this process for the left side.

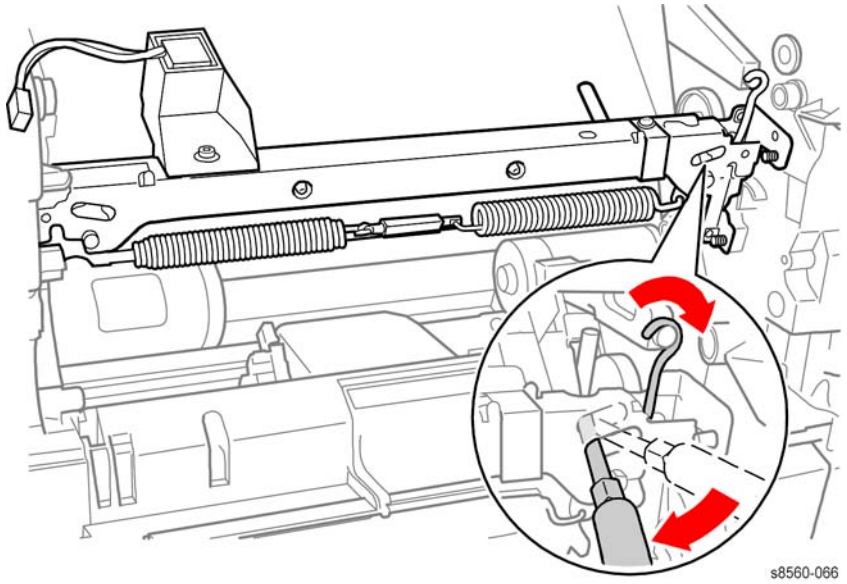


Figure 6 Attaching the Transfix Load Module Arm Cam Springs

16. Pull the lower end of the Y-Axis Spring Arm toward the front of the system and install the Y-Axis Belt first on the motor pulley, and then on the drum pulley. Align the grooves of the belt with those on the motor pulley. Check that the cross-ribs are away from the pulleys.
17. Connect the Media Drive Assembly harnesses.
18. Connect the Drum Heater harness P/J200 to the Relay Board.
19. Connect the Drum Encoder harness P/J120 to the Right Side Harness.
20. Connect the Drum Temperature Sensor to the I/O Board P/J870.
21. Dress the left side cabling into the retainers in the frame. Secure the Drum Heater and Drum Encoder harnesses under the retainer located on the Process Drive.
22. Install the Drum Fan and secure it with 3 (plastic, T-20) screws. Torque the top screw to 20 in-lbs. Torque the other 2 screws to 12 in-lbs. Use care not to pinch the Drum Heater or Drum Encoder harnesses between the chassis and fan shroud.
23. Route the Media Release Blade Solenoid harness through the right side of the chassis and install the Upper Duplex Guide and solenoid on the 4 mounting pins on the frame.
24. Connect the Drum Fan to the Right Side harness P/J118.
25. Install the Upper Duplex Roller.
26. Install the Outer Duplex Guide. Route the Exit Door Interlock Switch harness under the guide and through the notch provided. Connect the 2 interlock switches.
27. Reposition the Media Drive Assembly and seat the roller shafts. Insert the 6 (plastic, T-20) screws, and torque the screws to 12 in-lbs.
28. Install the Ink Loader.
29. Install the Lower Duplex Guide.
30. Install the Preheater.

31. Install the Inner Simplex Guide.
32. Install all covers and doors.
33. Install the Output Tray, Scanner, and DADF on the 8860MFP.
34. Perform the Wiper Alignment Adjustment (ADJ 2.5.1).
35. Perform the Printhead Parking procedure (ADJ 2.2.1).
36. Perform the Head Tilt Gear Homing procedure (ADJ 4.13.1).
37. Perform the Process Drive Homing Procedure (ADJ 4.7.1).
38. Turn system power On and print a Configuration page to test operation.

REP 2.0.4 Y-Axis Belt

Parts List on PL 2.0

Removal

1. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
2. Release tension on the Y-Axis Belt by pushing the end of the Spring Arm toward the front of the printer.

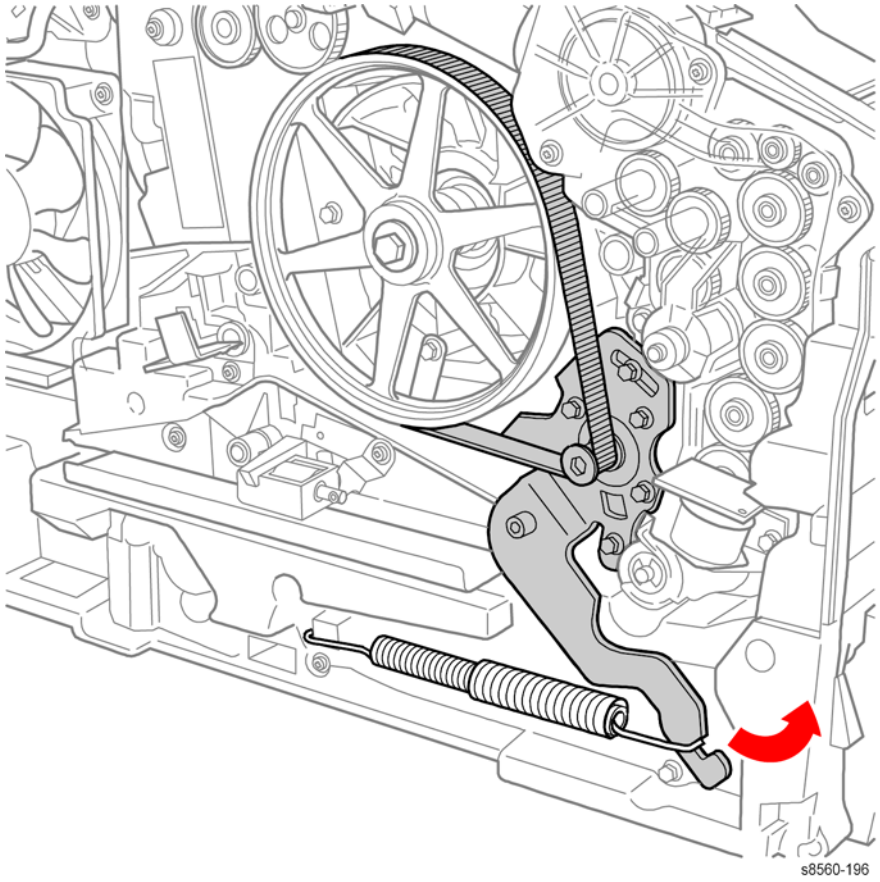


Figure 1 Removing the Y-Axis Belt

3. Hold tension with one hand while removing the Y-Axis Belt with the other.

REP 2.0.5 Printhead Wiper Blade and Wiper Belt

Parts List on PL 2.0

Removal

Place several sheets of paper between the Printhead and Drum before servicing the Printhead Wiper.

1. Remove the Printhead (REP 2.0.2)
2. Using the gears, position the Printhead Wiper Blade at the top of its travel.
3. Remove the KL-Clip and large drive gear on the left side of the printer.

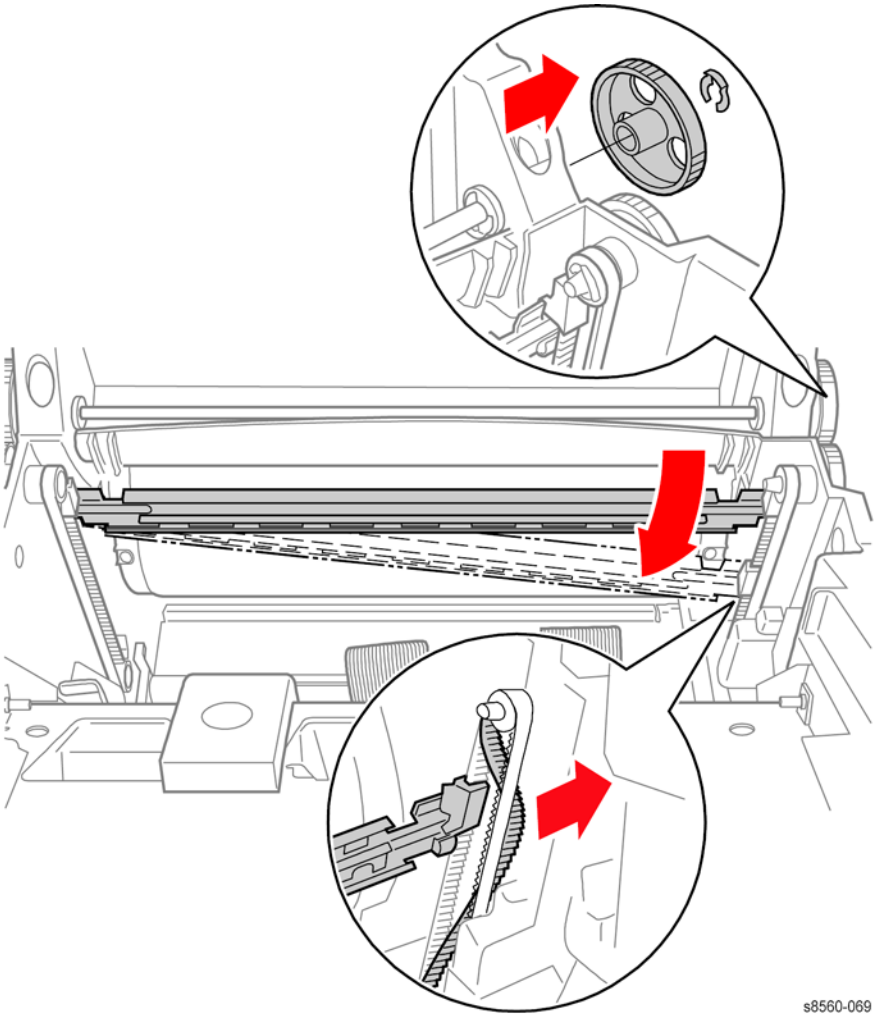


Figure 1 Removing the Printhead Wiper

4. Hold the Wiper Blade while rotating the small drive gear. This lowers the left end of the wiper producing slack in the Wiper Belt. Remove the Wiper Belt from the Wiper Clip to release the Wiper Blade.

Replacement

1. When reinstalling the belt into the wiper clip, place the belt partly on the clip, and then press the center of the clip with a small needle-nose pliers until the belt is secured in the clip.

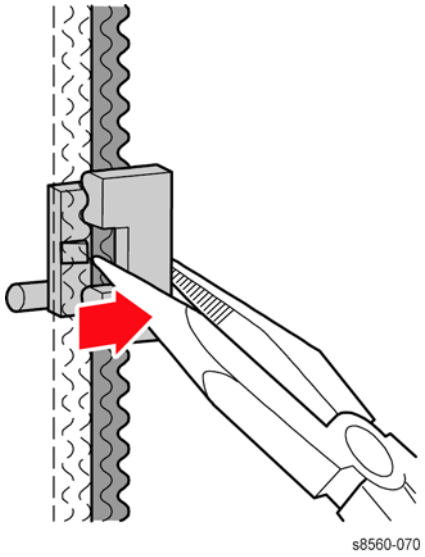


Figure 2 Connecting the Printhead Wiper Blade and Belt

2. Position the Wiper Blade so that both ends are all the way down following reassembly. See ADJ 2.5.1. Also, make sure the metal portion of the blade is nearest the Drum Assembly.
3. Install the Printhead.
4. Perform the Head Tilt Gear Homing procedure (ADJ 4.13.1).
5. Perform the Process Drive Homing Procedure (ADJ 4.7.1).
6. Turn system power On to check wiper operation.

REP 2.0.7 Purge Pressure Pump

Parts List on PL 2.0

Removal

1. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
2. Disconnect the Purge Pump Hose from the pump.
3. Disconnect the harness from the pump.
4. Remove 3 (plastic, T-20) screws that secure the pump to the chassis.

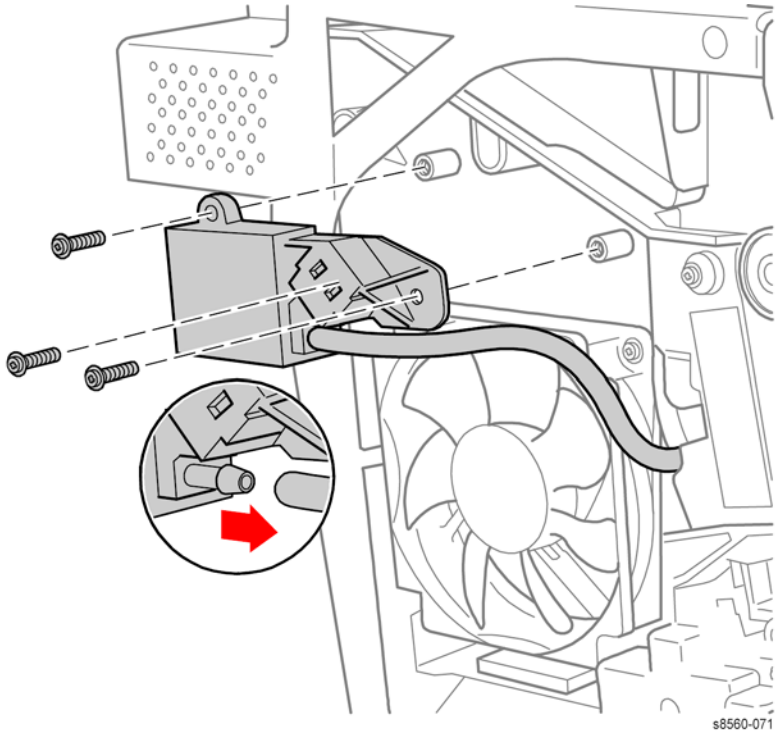


Figure 1 Removing the Purge Pressure Pump

REP 2.0.8 Left and Right Printhead Restraints

Parts List on PL 2.0

Removal

NOTE: *These steps describe Printhead Restraint removal for the 8860MFP. On 8860 models, access the Printhead Restraints by removing the Ink Loader (REP 1.1.8). Afterwards, return to this procedure and begin at Step 6.*

When parked, the Printhead is held in place by pins that are captured by left and right Printhead Restraints. If the pins are released, tension from the Printhead Tilt Spring forces the Printhead toward the Drum. Gradually release the tension when unlocking the restraints.

WARNING

Allow adequate time for the system to cool before servicing the printer.

1. Remove the Scanner Assembly with the attached DADF (REP 1.0.11)
2. Remove the Output Tray (REP 1.0.6)
3. Remove the Right Side Cover (REP 1.0.21)
4. Remove the Left Side Cover (REP 1.0.7)
5. Remove the Ink Loader Assembly (REP 2.0.1)
6. Place several sheets of paper between the Printhead and Drum to protect the Drum.
7. Unlock the Wiper Assembly by raising the Wiper Assembly Lock.

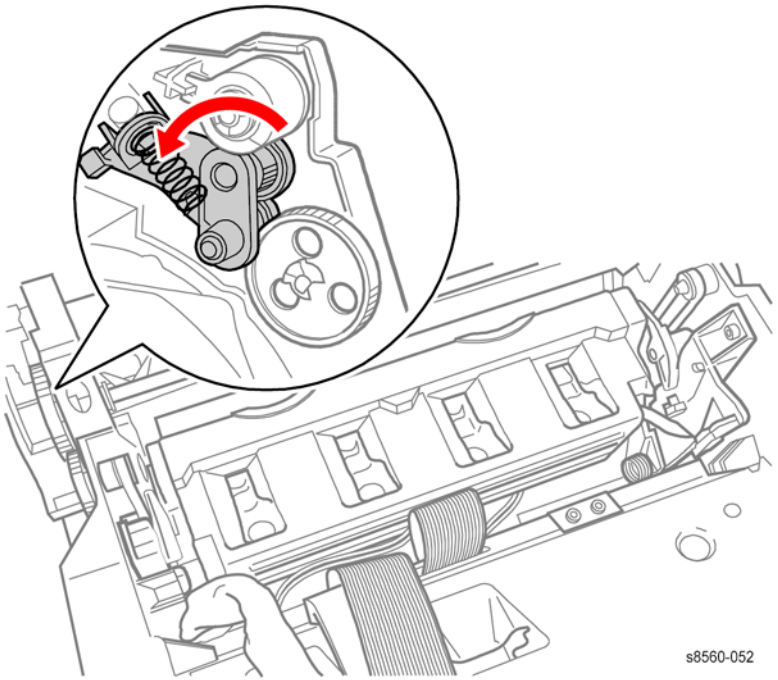


Figure 1 Releasing the Printhead Restraints

8. Lower the Wiper Assembly completely by rotating the drive gear s as shown.

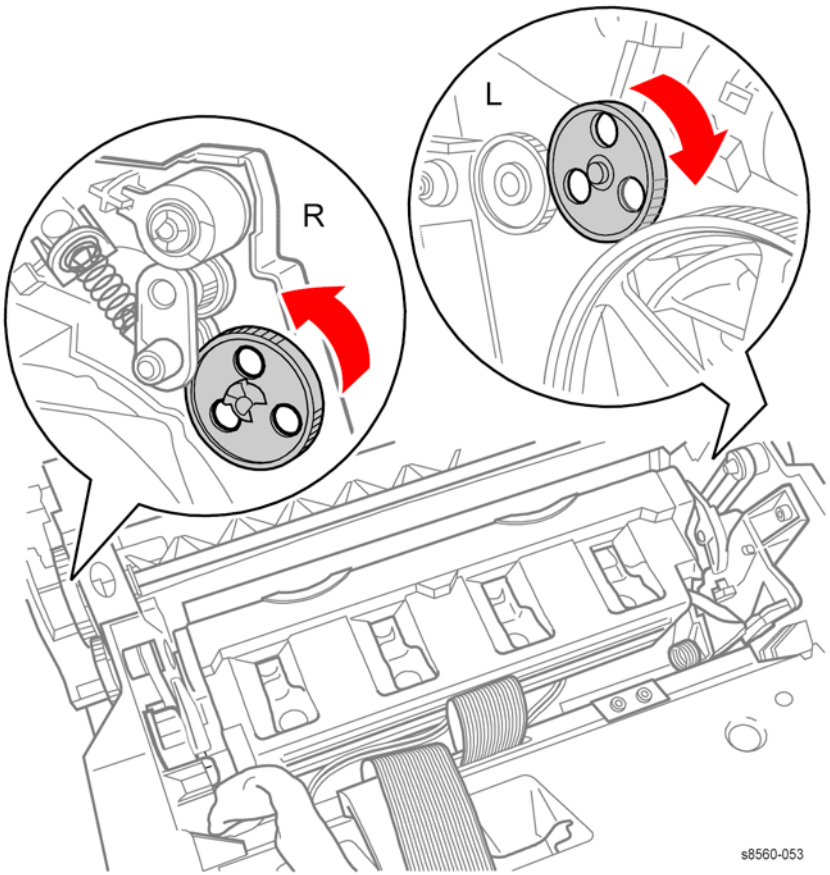


Figure 2 Lowering the Printhead Wiper Blade

9. Hold the Printhead away from the Drum and push down on the left and right Printhead Restraint Arms to release the Printhead Tilt Spring tension.

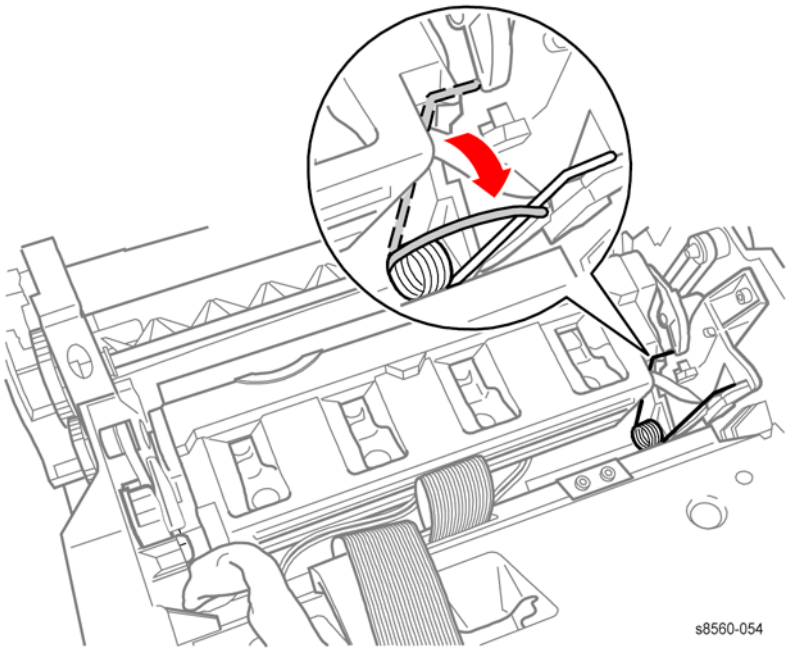


Figure 3 Releasing the Printhead Tilt Spring.

10. Pull the X-Axis Bias Spring and Hook out slightly, and then rotate downward to allow it to rest in detents provided on the frame. See Figure 4.

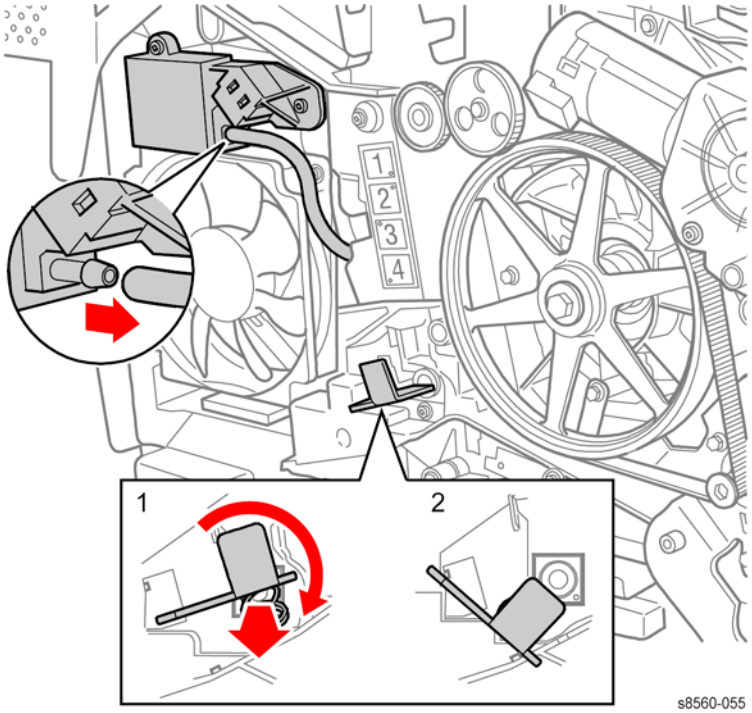


Figure 4 X-Axis Bias Spring Hook

11. Disconnect the Air Hose from the Purge Pump.
12. Remove 1 (plastic, T-20) screw that secures each Printhead Restraint, and then shift the restraint inwards toward the Printhead while lifting toward the rear of the printer.

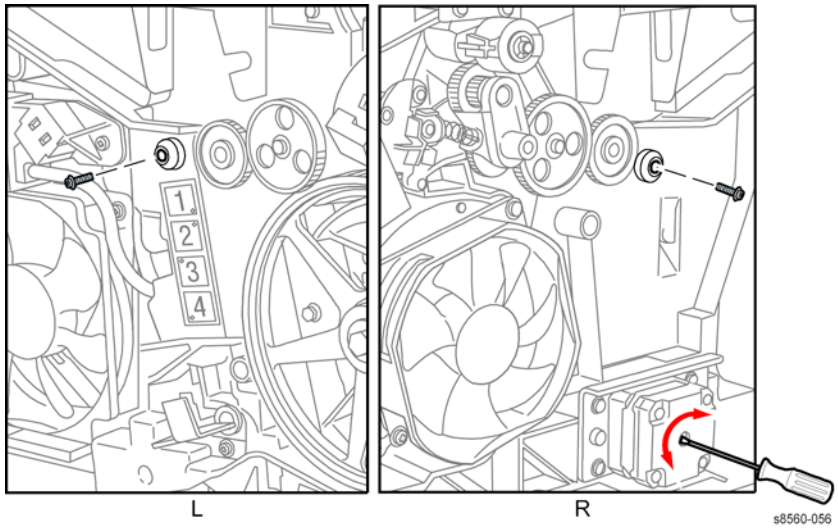


Figure 5 Removing the Printhead Restraint Screws

NOTE: *Use a flat-bladed screwdriver to rotate the X-Axis Motor to adjust the Printhead position as needed to remove the Printhead Restraints.*

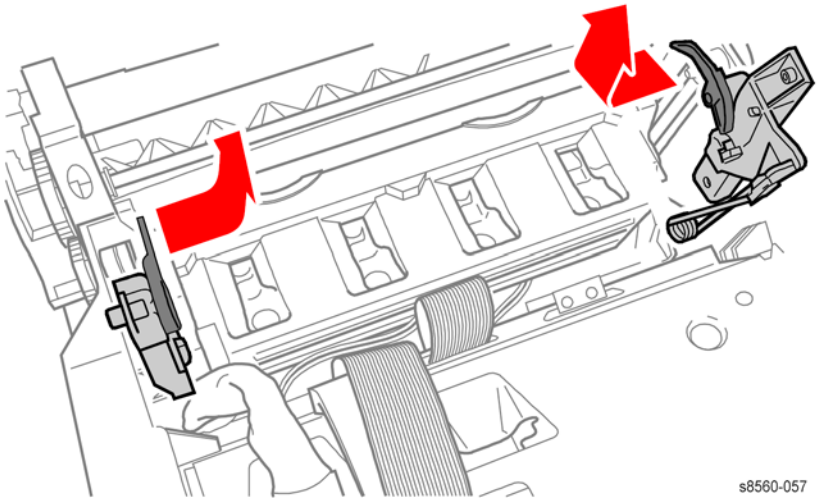


Figure 6 Removing the Printhead Restraints

Replacement

CAUTION

Torque the Printhead Restraint screws to 6 in. lbs. Irreversible damage can result from over-tightening these fasteners.

Check that the Left Printhead Restraint does not interfere with the Roll Block. Also, make sure the Tilt Spring on the Left Printhead Restraint is properly positioned in the notch on the back of the Printhead and does not pinch the Air Hose.

Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 2.0.10 Transfix Camshaft

Parts List on PL 2.0

Removal

CAUTION

Use care when releasing the Transfix Module spring hooks. Move your lever handle towards the center of the system as indicated in Figure 1.

1. Remove the Ink Loader (REP 2.0.1 or REP 1.1.8 for the 8860).
2. Remove the Media Drive Assembly (REP 4.0.14).
3. Remove the Exit Module (REP 3.0.7 or REP 3.1.13 for the 8860).
4. Remove the Duplex Roller (REP 3.0.4).
5. Remove the Upper Duplex Guide and Solenoid (REP 3.0.5).
6. Insert a T-20 Torx bit through the right side slotted hole in the Transfix Load Module. Engage the hole at the back of the module, and lever the module's spring cam towards the center of the printer while disconnecting the spring hooks from the Transfix Load Arms. Repeat this process for the left side.

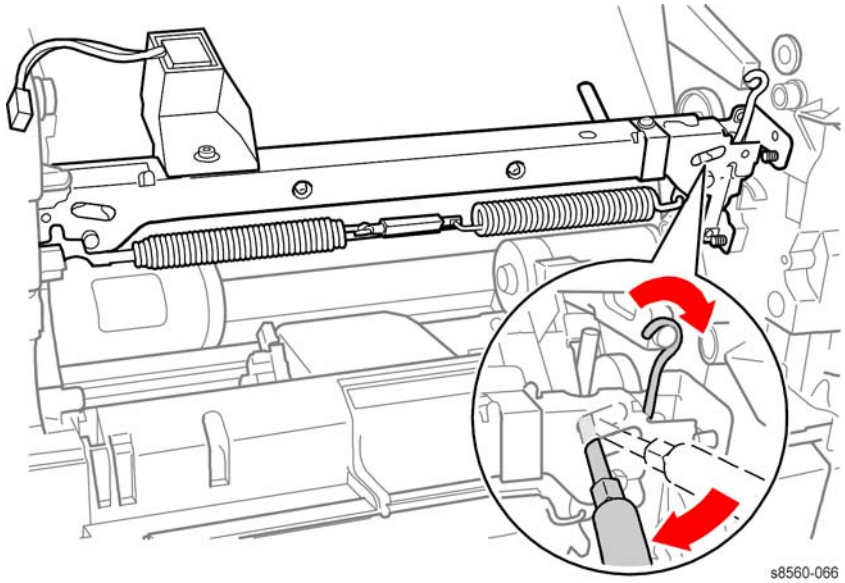


Figure 1 Detaching the Transfix Load Module Spring Hooks

7. Remove the Process Drive Gearbox (REP 4.0.7).
8. Slide the camshaft to the right, making sure the bearing slides over to the gear. Move the camshaft down and slightly to the right, and then up to the left to remove it from the chassis.

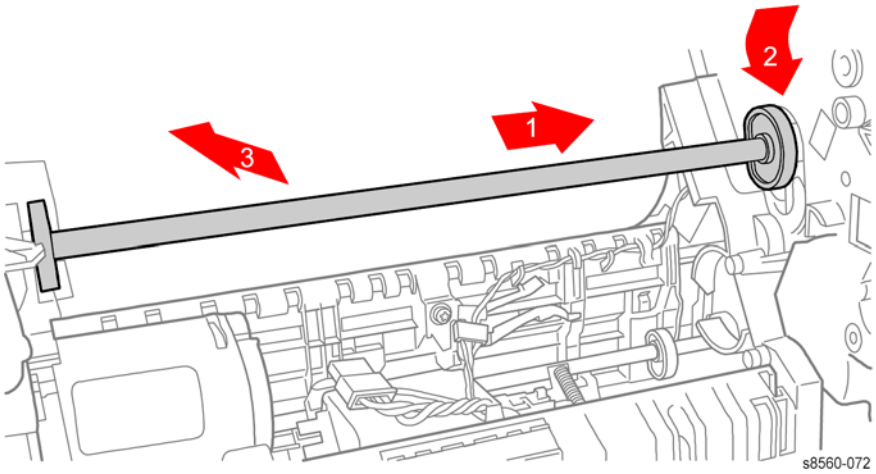


Figure 2 Removing the Transfix Camshaft

REP 2.0.11 Drum Maintenance Camshaft

Parts List on PL 2.0

Removal

1. Remove the Drum Maintenance Pivot Plate (REP 2.0.16).
2. Remove the Process Drive (REP 4.0.7).
3. Slide the camshaft to the right, release the bushing by carefully prying it from the ground plate, Move the left end of the camshaft towards the rear of the system. Next, move the camshaft to the right, then lift the camshaft through the slot while removing it to the right.

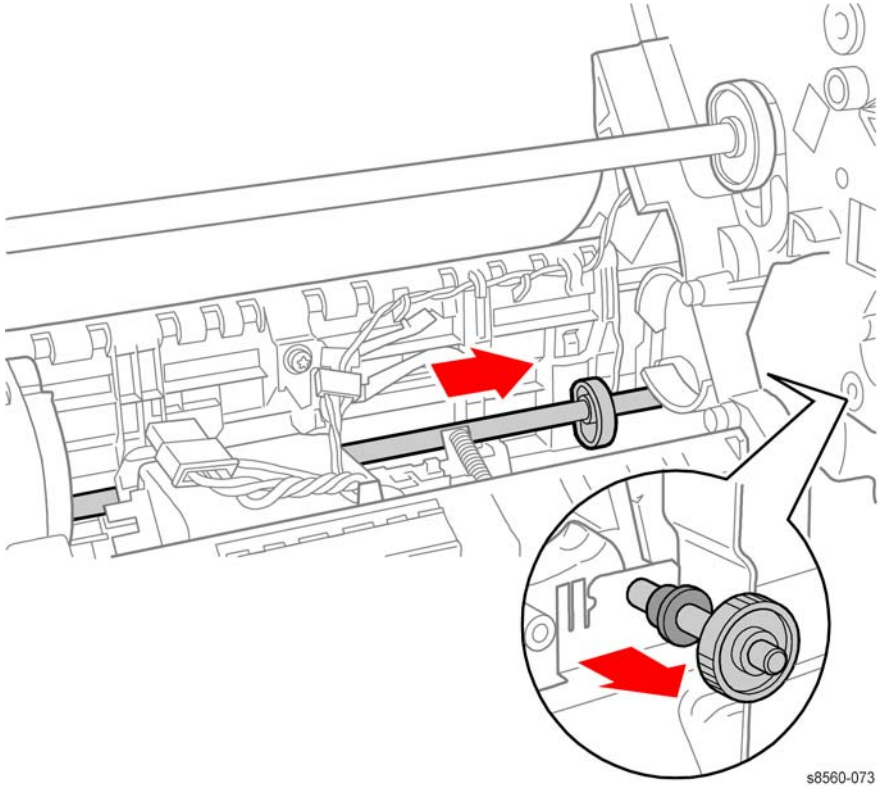


Figure 1 Removing the Drum Maintenance Camshaft

Replacement

CAUTION

When reinstalling the camshaft, line up the hole on the bushing with the metal ground plate. Do not damage or bend the ground plate to install the camshaft.

When installing the camshaft, position the flat side of the D-shaped cams towards the rear of the system as shown in Figure 1. Align the hole in the white Head Tilt Gear with the arrow on the chassis to put the Head Tilt Gear in home position.

Replace the KL-Clips on the outside grooves of the Drum Maintenance Camshaft, and perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 2.0.12 Stripper Carriage Assembly

Parts List on PL 2.0

Removal

NOTE: *These steps describe Stripper Carriage removal for the 8860MFP. On 8860 models, access the Stripper Carriage by removing the Control Panel (REP 1.1.6). Afterwards, return to this procedure and begin at Step 4.*

1. Remove the Scanner Assembly and attached DADF (REP 1.0.11).
2. Remove the Right Side Cover (REP 1.0.21).
3. Remove the Output Tray (REP 1.0.6).
4. Remove the Outer Duplex Guide (REP 3.0.6).
5. Remove the Upper Duplex Guide (REP 3.0.5).
6. Prop open the Exit Door.
7. Disconnect P/J250 from the I/O Board.
8. Remove 2 (plastic, T-20) screws that secure the I/O Board to the chassis. Slide the board towards the rear to release it from the ground strap, and then downward to position it out of the way.
9. Loosen 1 (plastic, T-20) screw that secures an I/O Board ground strap and the Transfix Roller Shaft Restraint, then remove the restraint.

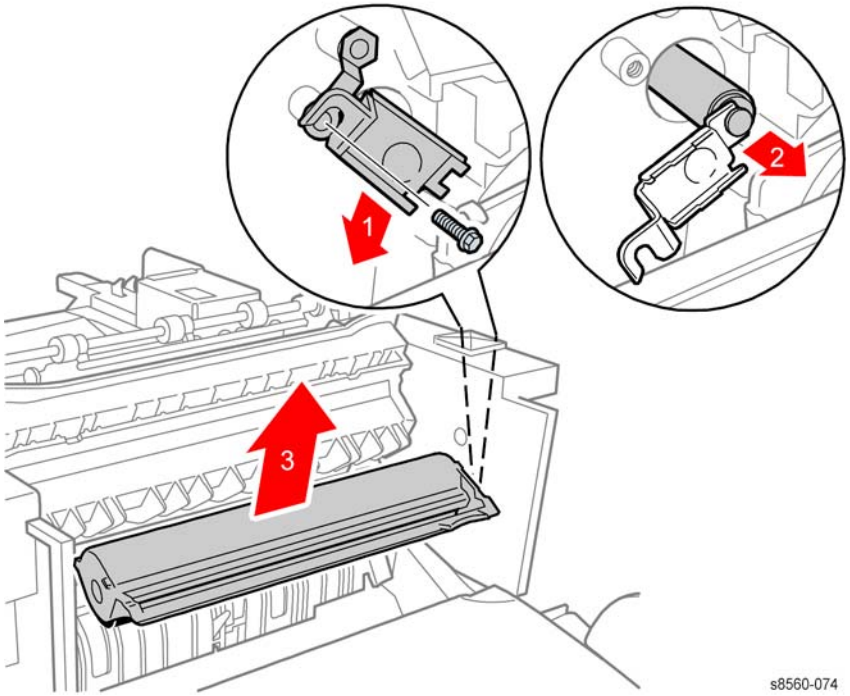


Figure 1 Removing the Transfix Roller Shaft Restraint

10. Hold the Transfix Roller and Stripper Blade with one hand, engage the end of the Transfix Roller Shaft with the Transfix Roller Shaft Restraint and pull the shaft out of the Stripper Carriage Assembly.
11. Lift the Stripper Carriage Assembly and Transfix Roller up and out of the chassis.

Replacement

NOTE: *Make sure the I/O Board Ground Straps are properly positioned and the I/O Board is behind the chassis retainers before installing the 2 I/O Board screws.*

REP 2.0.13 Transfix Roller

Parts List on PL 2.0

Removal

NOTE: *These steps describe Transfix Roller removal for the 8860MFP. On 8860 models, access the Transfix Roller by removing the Control Panel (REP 1.1.6). Afterwards, return to this procedure and begin at Step 4.*

1. Remove the Scanner Assembly and attached DADF (REP 1.0.11).
2. Remove the Right Side Cover (REP 1.0.21).
3. Remove the Output Tray (REP 1.0.6).
4. Remove the Outer Duplex Guide (REP 3.0.6).
5. Remove the Upper Duplex Guide (REP 3.0.5).
6. Prop open the Exit Door.
7. Disconnect P/J250 from the I/O Board.
8. Remove 2 (plastic, T-20) screws that secure the I/O Board to the chassis. Slide the board towards the rear to release it from the ground strap, and then downward to position it out of the way.
9. Loosen 1 (plastic, T-20) screw that secures an I/O Board ground strap and the Transfix Roller Shaft Restraint, then remove the restraint.

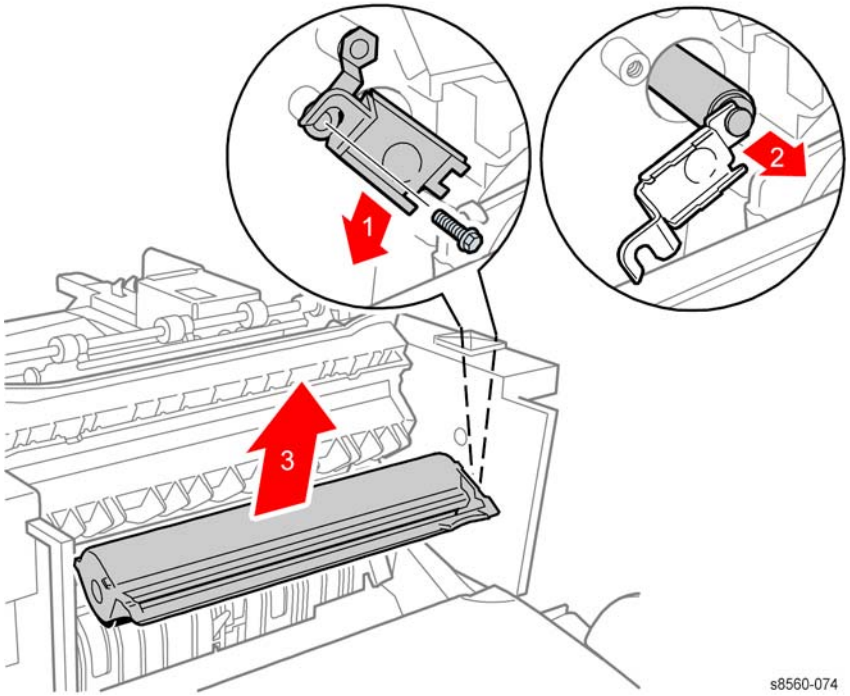


Figure 1 Removing the Transfix Roller Shaft Restraint

10. Hold the Transfix Roller and Stripper Blade with one hand, engage the end of the Transfix Roller Shaft with the Transfix Roller Shaft Restraint and pull the shaft out of the Stripper Carriage Assembly.
11. Lift the Stripper Carriage Assembly and Transfix Roller up and out of the chassis.
12. Remove the Transfix Roller from the Stripper Carriage Assembly.

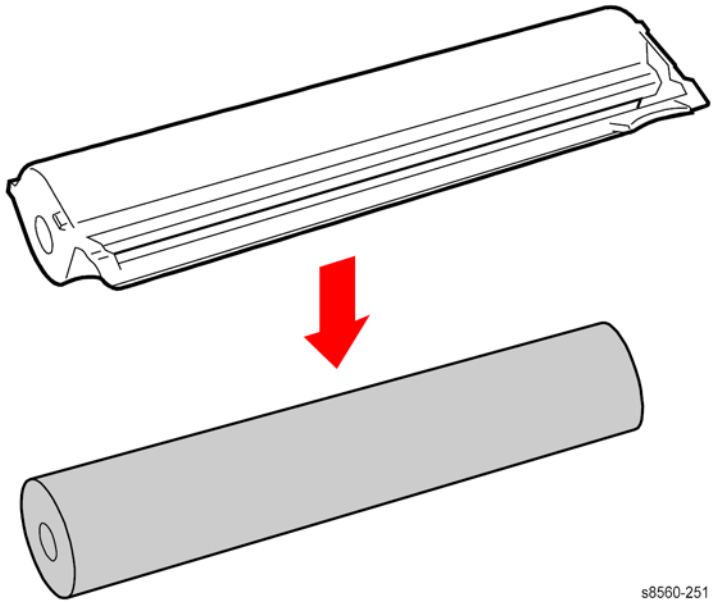


Figure 2 Removing the Transfix Roller

Replacement

NOTE: *Make sure the I/O Board Ground Straps are properly positioned and the I/O Board is behind the chassis retainers before installing the 2 I/O Board screws.*

REP 2.0.14 Y-Axis Spring

Parts List on PL 2.0

Removal

NOTE: *These steps describe Y-Axis Spring removal for the 8860MFP. On 8860 models, access the Y-Axis Spring by removing the Left Side Cover (REP 1.1.9). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly and Attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6) and Left Side Cover (REP 1.0.7).
3. Release Y-Axis Belt tension by pulling the end of the Spring Arm toward the front of the printer. Remove the belt from the Drum Pulley, then the motor.

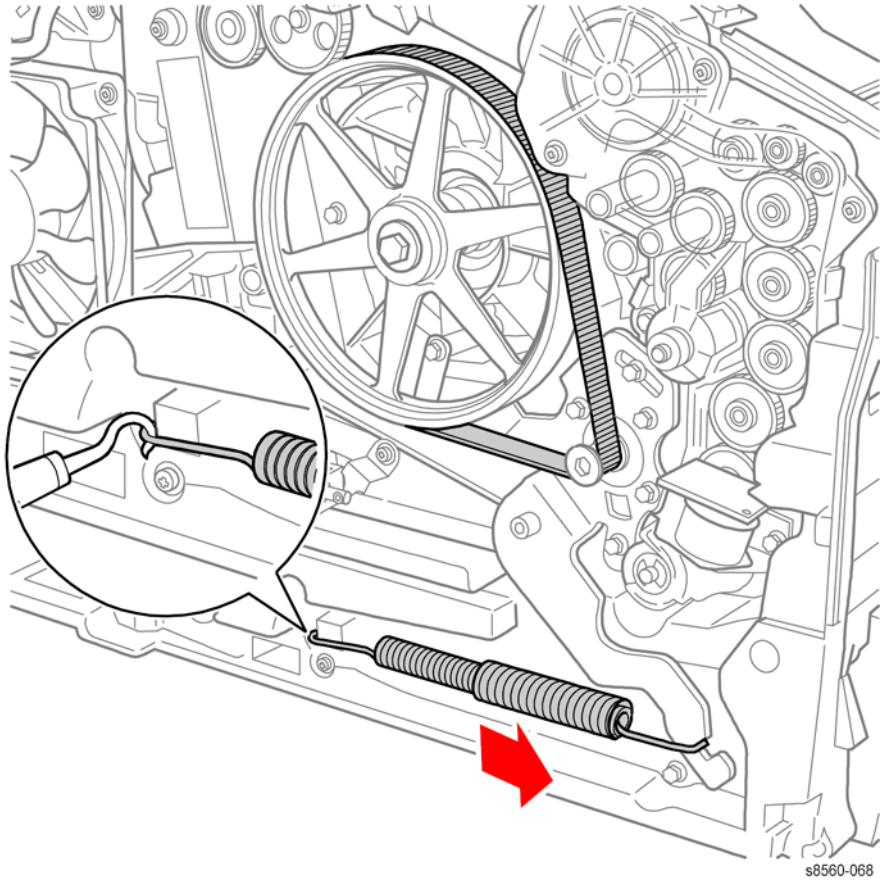


Figure 1 Removing the Y-Axis Spring

4. Remove the Y-Axis Spring using either a spring hook or pliers, Brace the printer to prevent movement while removing the spring.

REP 2.0.15 Transfix Load Module

Parts List on PL 2.0

Removal

CAUTION

Use care when releasing the Transfix Module spring hooks. Move your lever handle towards the center of the system as indicated in Figure 1.

1. Remove the Scanner Assembly and attached DADF (REP 1.0.11 8860MFP only).
2. Remove the Front Door (REP 1.0.1).
3. Remove the Ink Loader (REP 2.0.1 or REP 1.1.8 for the 8860).
4. Remove the Preheater (REP 2.0.17).
5. Remove the Outer Duplex Guide (REP 3.0.6).
6. Remove the Media Drive Assembly (REP 4.0.14).
7. Remove the Exit Module (REP 3.0.7 or REP 3.1.13 for the 8860).
8. Remove the Duplex Roller (REP 3.0.4).
9. Remove the Upper Duplex Guide and Solenoid (REP 3.0.5).
10. Insert a T-20 Torx bit through the right side slotted hole in the Transfix Load Module. Engage the hole at the back of the module, and lever the module's spring cam towards the center of the printer while disconnecting the spring hooks from the Transfix Load Arms. Repeat this process for the left side.

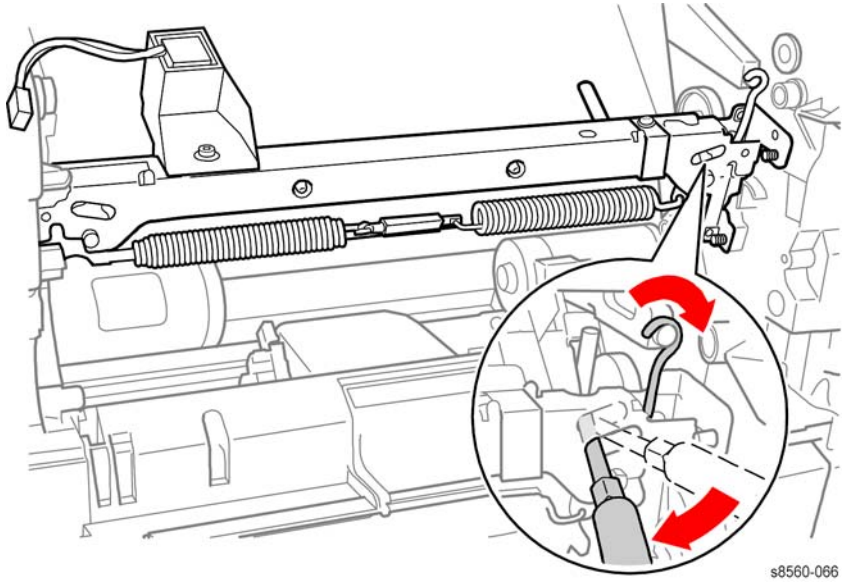


Figure 1 Detaching the Transfix Load Module Spring Hooks

NOTE: *In the following step, the Media Release Blade, Transfix Roller, Transfix Roller Shaft, and the 2 Transfix Load Arms are removed as a single assembly.*

11. Remove the Clevis Pins from the left and right Transfix Load Arms to release the Transfix Roller assembly from the chassis.

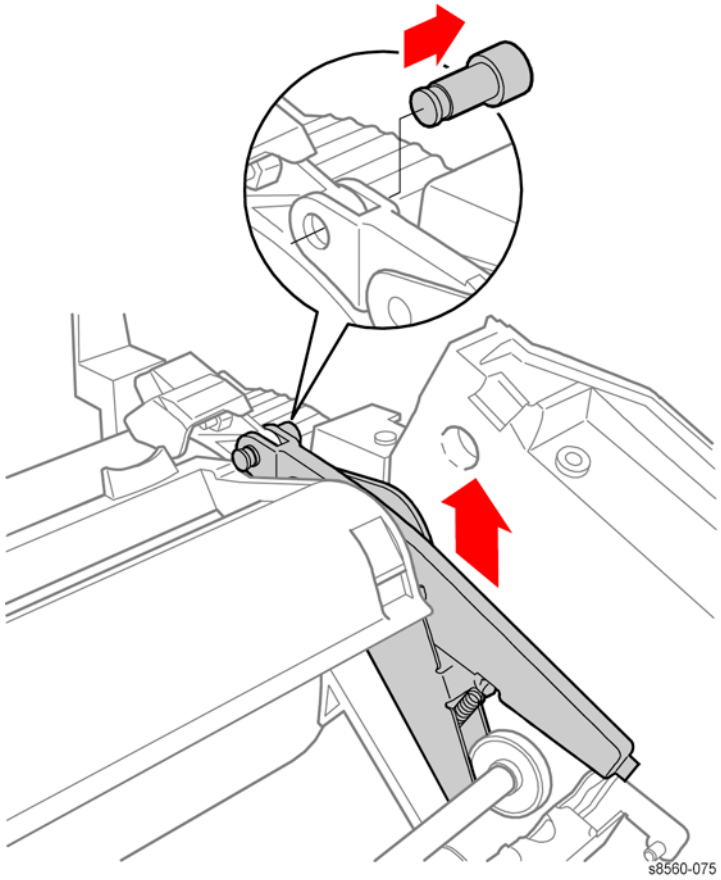


Figure 2 Removing the Transfix Load Arm Clevis Pins

12. Disconnect the Preheater Lift Solenoid P/J202 from the harness.
13. Remove the screw that secures the Preheater Lift Solenoid to the Transfix Load Module.

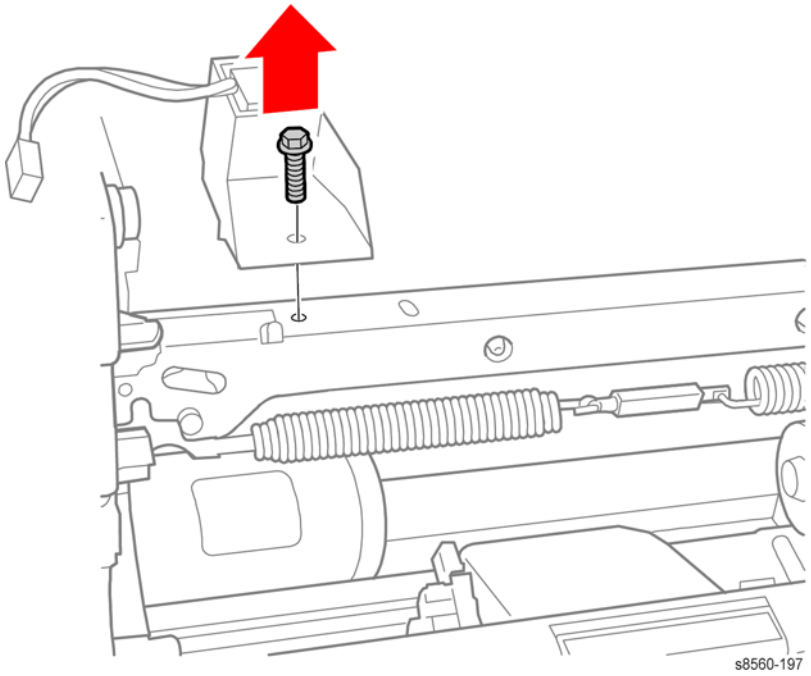


Figure 3 Removing the Preheater Lift Solenoid

14. Remove the screw that secures the Transfix Load Module Ground Strap.

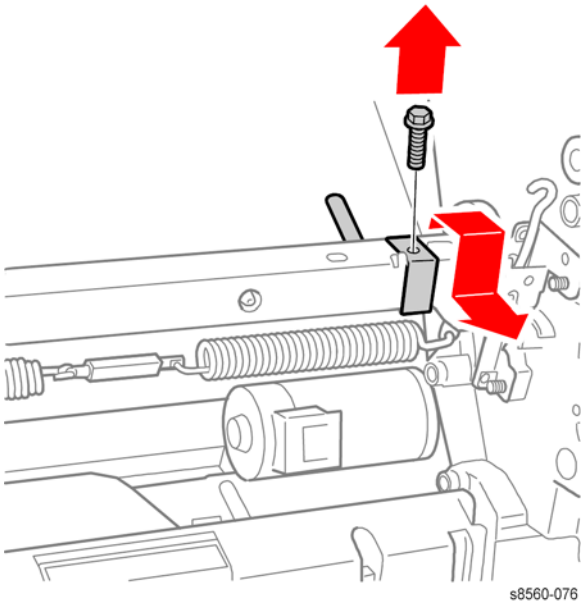


Figure 4 Transfix Load Module Ground Strap Removal

15. Remove 4 (metal, T-20) screws, 2 at each end, that secure the Transfix Load Module to the chassis.

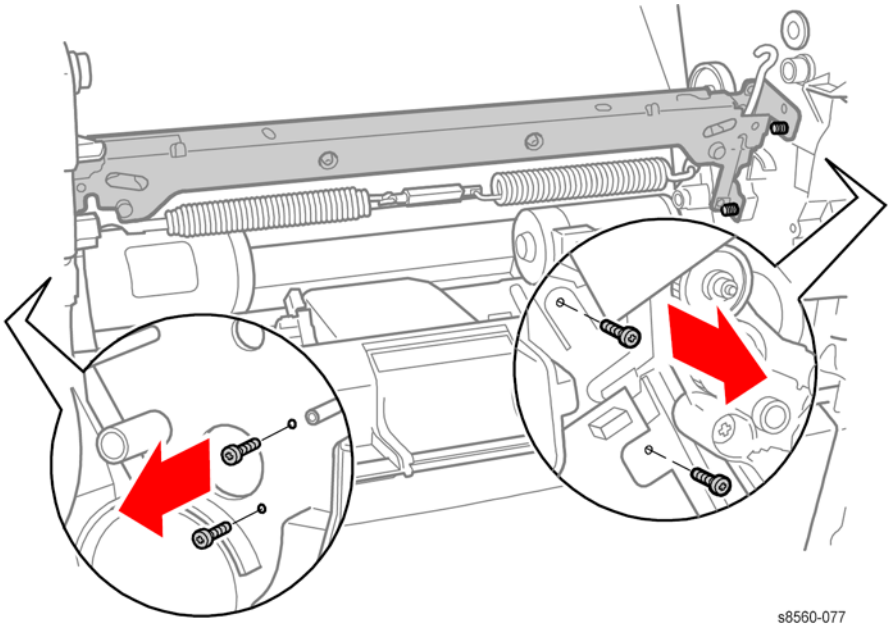


Figure 5 Transfix Load Module Fasteners

16. Rotate the top of the Transfix Load Module forward and spread the chassis slightly at the right side to remove it. The Transfix Load Module fits tightly in the chassis. Some force is needed to remove it.

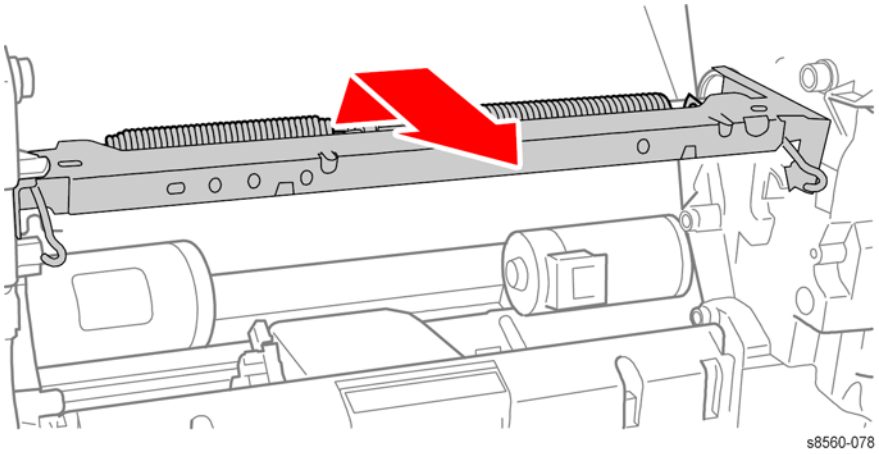


Figure 6 Removing the Transfix Load Module

Replacement

Place a small amount of Rheolube 768 grease (P/N 070E00890) in the groove at the end of each Transfix Load Arm before reattaching the Spring Hooks. Also, when replacing the Grounding Springs on the Transfix Load Module, make sure the springs rest below the Transfix Camshaft.

After replacing the Exit Module, perform ADJ 2.5.1, Wiper Alignment. Error code 7009.4x indicates misalignment of the Wiper Assembly.

REP 2.0.16 Drum Maintenance Pivot Plate

Parts List on PL 2.0

Removal

NOTE: *These steps describe Drum Maintenance Pivot Plate removal for the 8860MFP. On 8860 models, access the Drum Maintenance Pivot Plate by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

CAUTION

Use care not to damage the Drum while servicing the Pivot Plate. Feed a sheet of paper between the Transfix Roller and Drum to protect the Drum surface during this procedure.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Front Door (REP 1.0.1).
4. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
5. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
6. Remove the Drum Maintenance Kit.
7. Remove the Preheater (REP 2.0.17).
8. Remove the Drum Fan (REP 4.0.6) and grounding plate.
9. Remove the KL- Clip on the right end of the shaft and remove the shaft from the chassis by pulling it out from the right side,

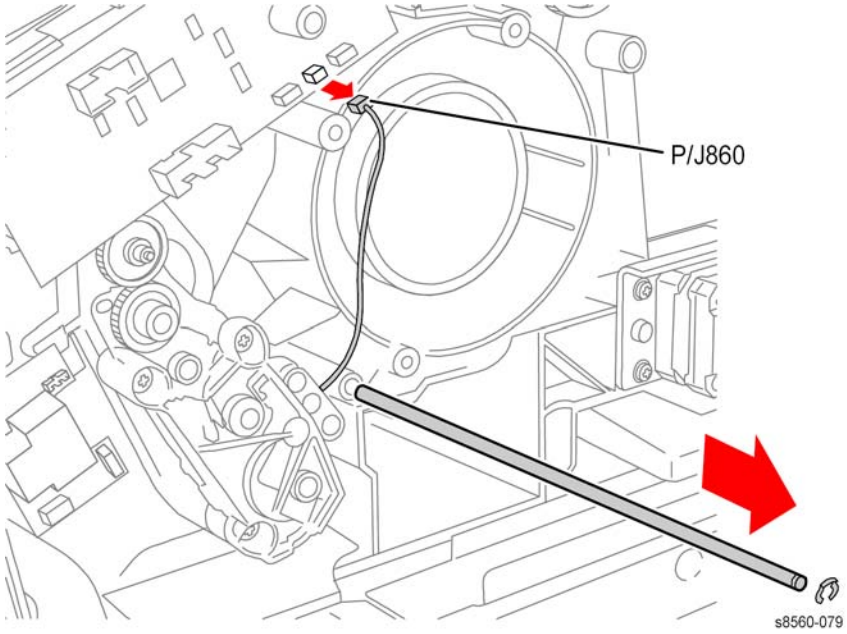


Figure 1 Removing the Pivot Plate Shaft

10. Disconnect P/J860 from the I/O Board.
11. Feed the harness through the hole in the chassis near the front of the Drum Assembly while sliding the plate out the Drum Maintenance drawer cavity.

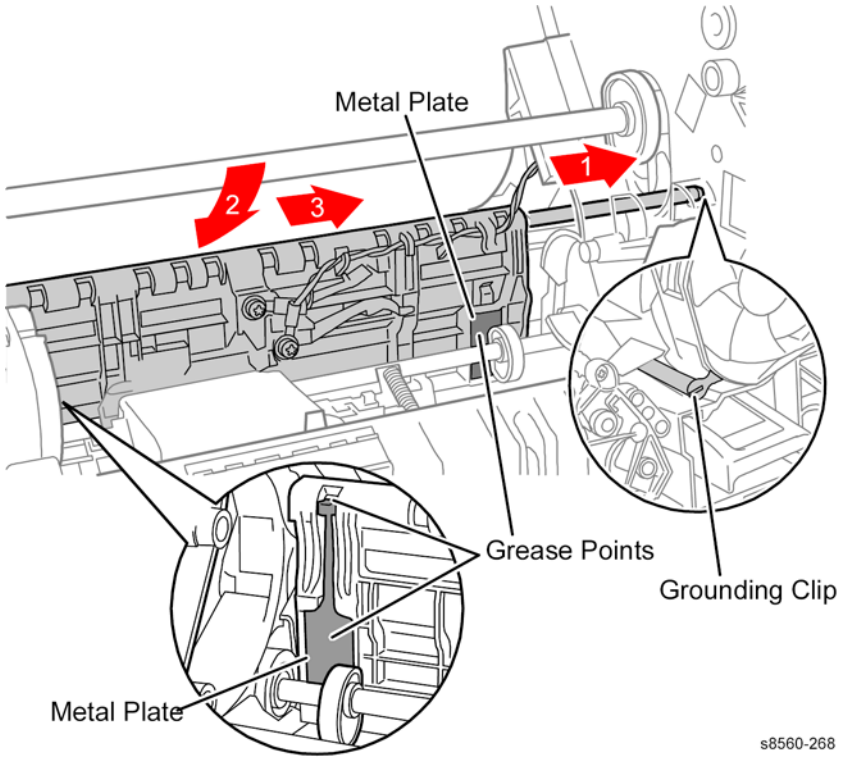


Figure 2 Removing the Drum Maintenance Pivot Plate

Replacement

Lightly grease the metal plates on the underneath side of the Pivot Plate using a small amount of Rheolube 768 grease (P/N 070E00890). Also check that the right end of the Pivot Plate Shaft is in contact with the Ground Plate following installation of the Drum Fan. Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power

REP 2.0.17 Preheater and Deskew Assembly

Parts List on PL 2.0

Removal

1. Open the Front Door
2. Remove the Lower Inner Duplex Guide (REP 3.0.2).
3. Remove the Inner Simplex Guide (REP 3.0.1).
4. Release the lock on the back of the AC connector (P/J0720) and unplug 2 connectors from the Preheater.

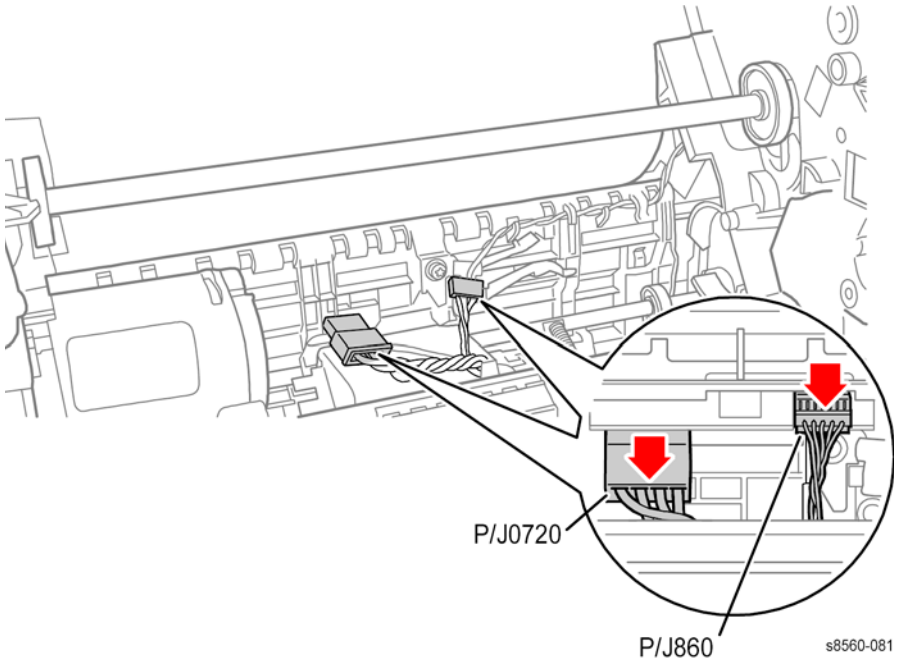


Figure 1 Preheater Electrical Connections

5. Slide the latches in and forward to release the Preheater as shown in Figure 2.

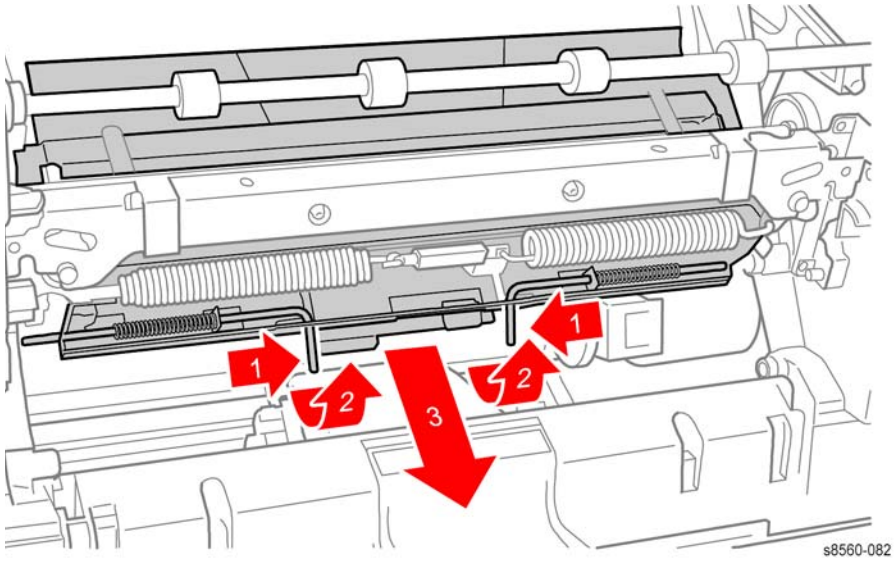


Figure 2 Removing the Preheater

6. Slide the Preheater out of the chassis.

Replacement

NOTE: *Check that the connector P/J0670 on the back of the Preheater Board is secure before installing the Preheater.*

The fingers on the Inner Simplex Guide go over the segmented roller. To install, first snap the left retainer in place, followed by the right. Make sure the sensors are properly positioned when completing the installation.

REP 2.0.21 X-Axis Bias Spring

Parts List on PL 2.0

Removal

CAUTION

The X-Axis Bias Spring is in close proximity to the Drum Assembly. Use care to not damage the Drum while servicing the spring.

1. Remove the Printhead (REP 2.0.2).
2. Remove the X-Axis Bias Spring using a spring hook or pliers.

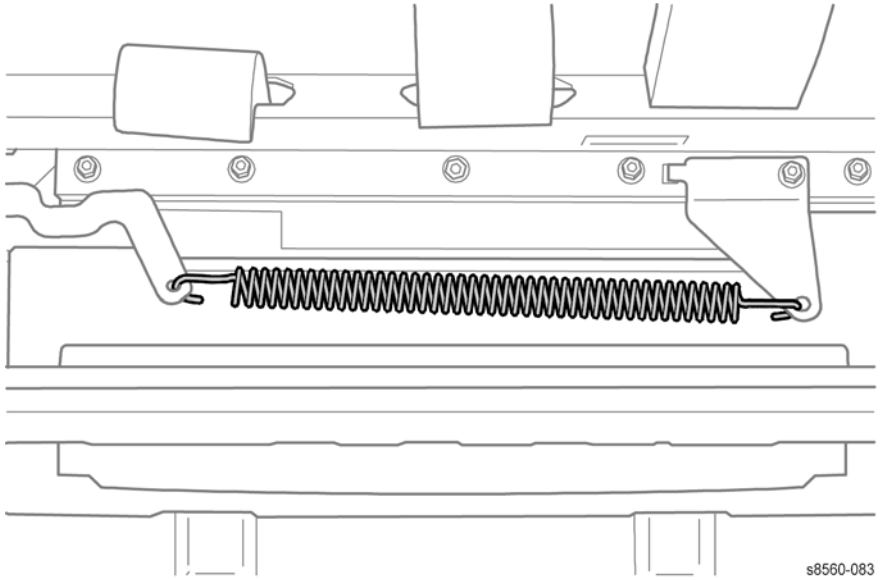


Figure 1 Removing the X-Axis Bias Spring

Replacement

Do not rotate the spring more than one-quarter turn. Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 2.0.22 Preheater Lift Solenoid

Parts List on PL 2.0

Removal

NOTE: *These steps describe Preheater lift Solenoid removal for the 8860MFP. On 8860 models, access the Preheater lift Solenoid by removing the Control Panel (REP 1.1.6). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly and attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
4. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
5. Remove the Upper Duplex Guide (REP 3.0.5).
6. Remove the Outer Duplex Guide (REP 3.0.6).
7. Disconnect the Preheater Solenoid (P/J202).
8. Remove the screw that secures the solenoid to the Transfix Load Module.

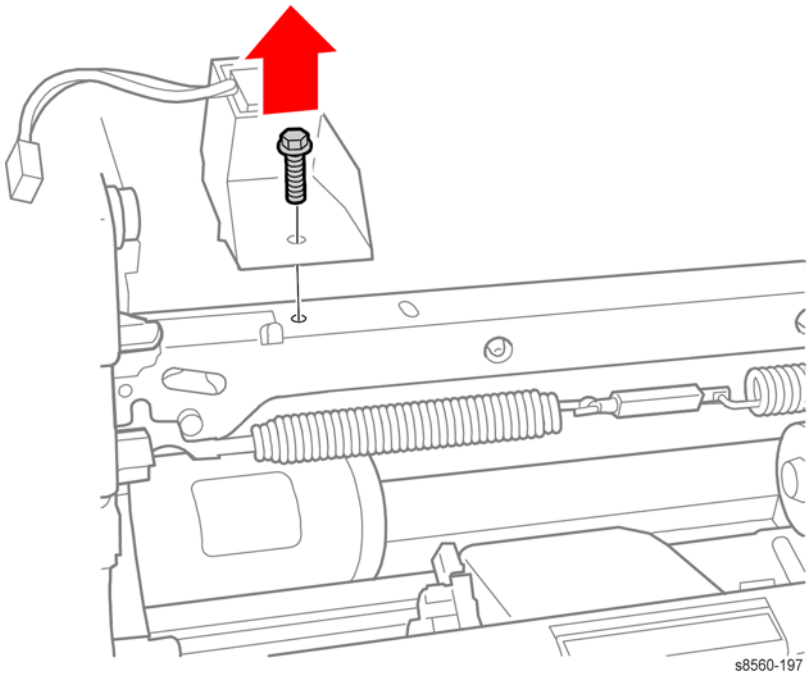


Figure 1 Removing the Preheater Solenoid

REP 3.0.1 Inner Simplex Guide

Parts List on PL 3.0

Removal

1. Open the Front Door.
2. Raise the Lower Duplex Guide.
3. Pry inward on the 2 retainers to release them from the mounting post.
4. Slide the guide down and forward to remove it from the chassis.

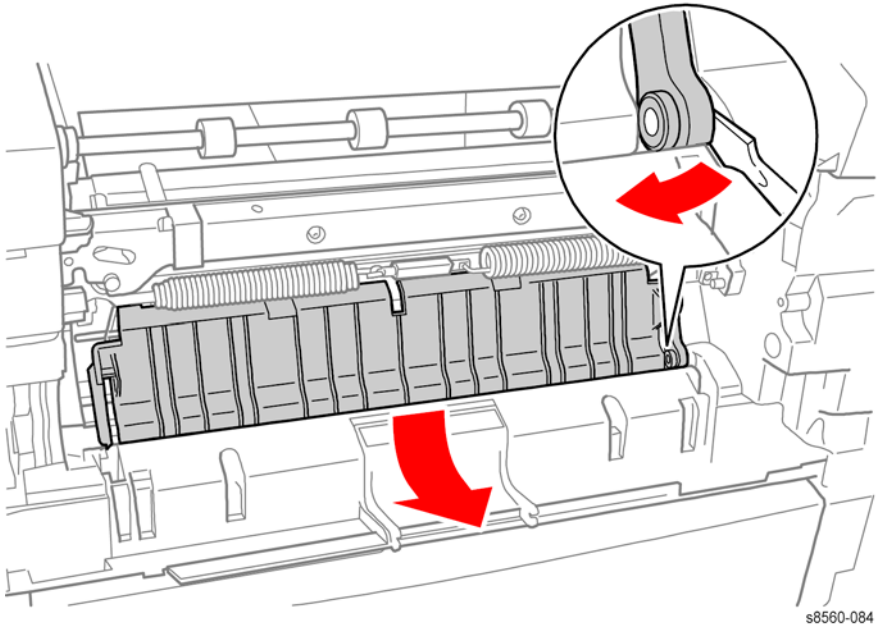


Figure 1 Removing the Inner Simplex Guide

Replacement

Position the fingers on the Inner Simplex Guide over the segmented roller. Install the guide by snapping the left side to the retaining post, then the right side.

REP 3.0.2 Lower Duplex Guide

Parts List on PL 3.0

Removal

1. Open the Front Door.
2. Pull outward on the tabs at the bottom of the guide and let the guide swing free.
3. Pry inward, towards the center of the printer, on the right, upper retainer to release it from the boss and remove the guide.

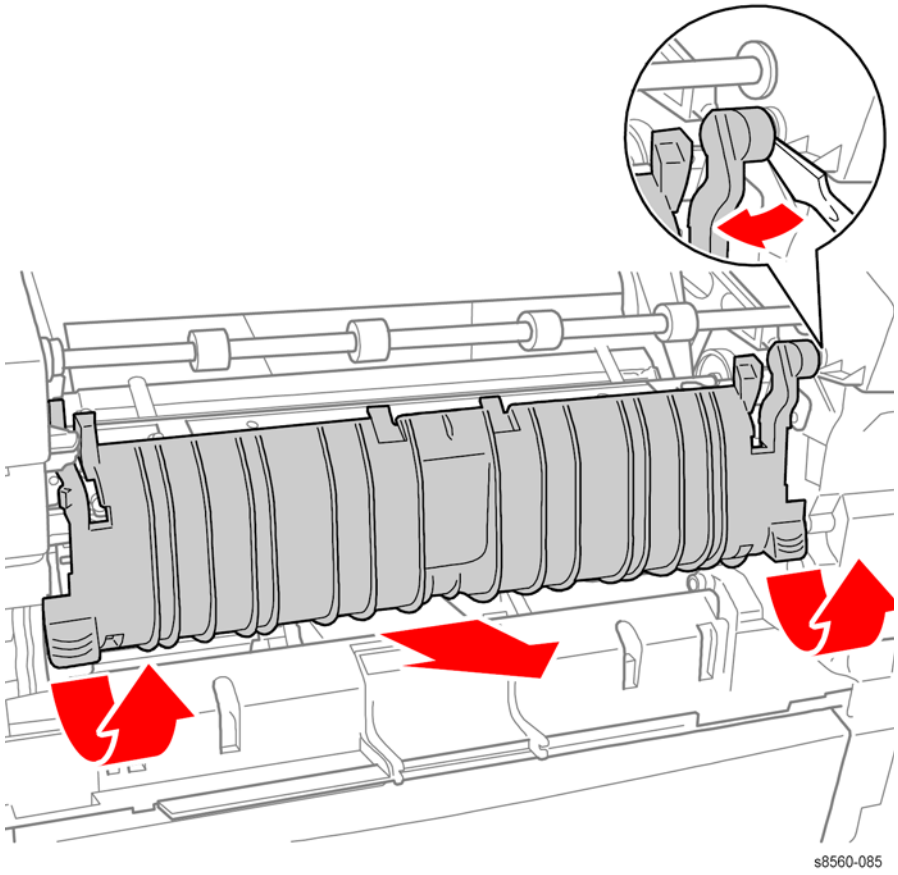


Figure 1 Removing the Lower Duplex Guide

REP 3.0.3 Take Away Roller

Parts List on PL 3.0

Removal

NOTE: *These steps describe Take Away Roller removal for the 8860MFP. On 8860 models, access the Take Away Roller by removing the Control Panel (REP 1.1.6). Afterwards, return to this procedure and begin at Step 4.*

1. Remove the Front Door (REP 1.0.1).
2. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
3. Remove the Output Tray (REP 1.0.6).
4. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
5. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
6. Remove the Media Drive Assembly (REP 4.0.14).
7. Remove the Inner Simplex Guide (REP 3.0.1).
8. Remove the KL-Clip from the right end of the Take Away Roller shaft.
9. Remove the KL-Clip and bushing from the left end of the shaft. Slide the shaft to the left to release the right end from the chassis. Rotate the shaft forward, and then remove it to the right.

NOTE: *Pressure from the Idler Rollers may make it difficult to slide the Take Away Roller shaft to the right during removal.*

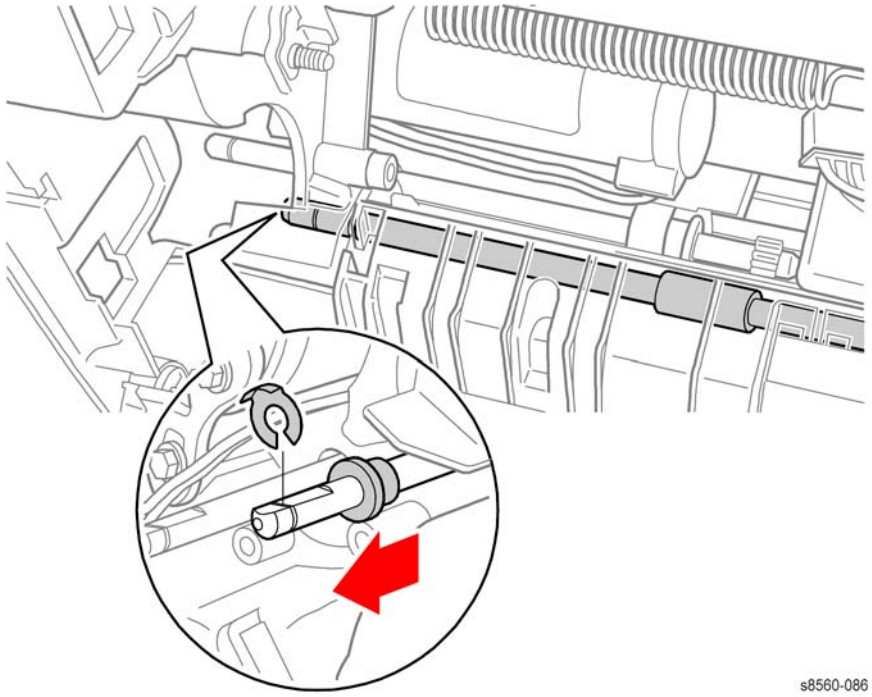


Figure 1 Removing the Take Away Roller

REP 3.0.4 Duplex Roller

Parts List on PL 3.0

Removal

1. Open the Front Door.
2. Remove the Outer Duplex Guide (REP 3.0.6).
3. Remove the Lower Inner Duplex Guide (REP 3.0.2).
4. Remove the KL-Clip on the left end of the roller shaft, move the bearing to the right, slide the shaft to the left to release the right end from the chassis, and lift the right end upward to clear the top of the frame at the right.

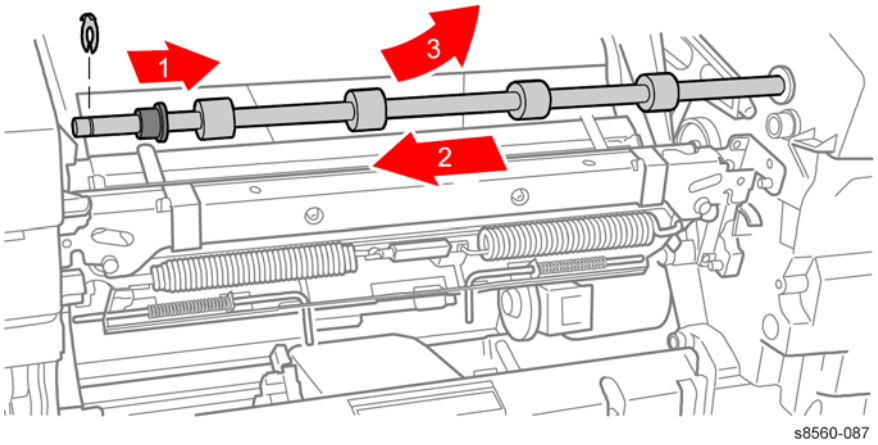


Figure 1 Removing the Duplex Roller

REP 3.0.5 Upper Duplex Guide and Solenoid

Parts List on PL 3.0

Removal

NOTE: *These steps describe Upper Duplex Guide removal for the 8860MFP. On 8860 models, access the Upper Duplex Guide by removing the Control Panel (REP 1.1.6). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
4. Remove the Outer Duplex Guide (REP 3.0.6).
5. Disconnect the solenoid (P/J250) from the I/O Board and release the harness from the right side retainers to remove the guide from the printer.

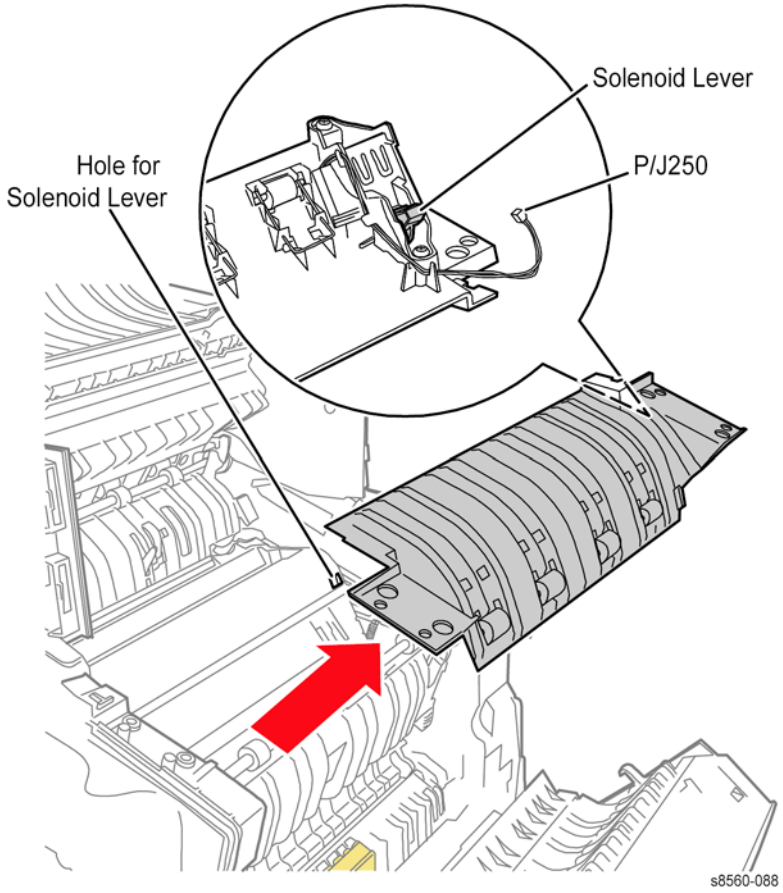


Figure 1 Removing the Upper Duplex Guide

Replacement

Route the solenoid harness through the right side of the frame. Also, route the guide under the edges of the Exit Module frame. Check that the Stripper Solenoid actuator engages the hole in the Stripper Carriage Assembly.

REP 3.0.6 Outer Duplex Guide

Parts List on PL 3.0

Removal

NOTE: *These steps describe Outer Duplex Guide removal for the 8860MFP. On 8860 models, access the Outer Duplex Guide by removing the Control Panel (REP 1.1.6). Afterwards, return to this procedure and begin at Step 2.*

1. Remove the Output Tray (REP 1.0.6).
2. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
3. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
4. Disconnect the Front Door P/J140 and Exit Door P/J411 Interlock Switches on the 8860MFP and remove the guide. For 8860 models, these connections are made on the Control Panel (Figure 12).
5. Remove the 4 (plastic, T-20) screws that secure the Outer Duplex Guide.

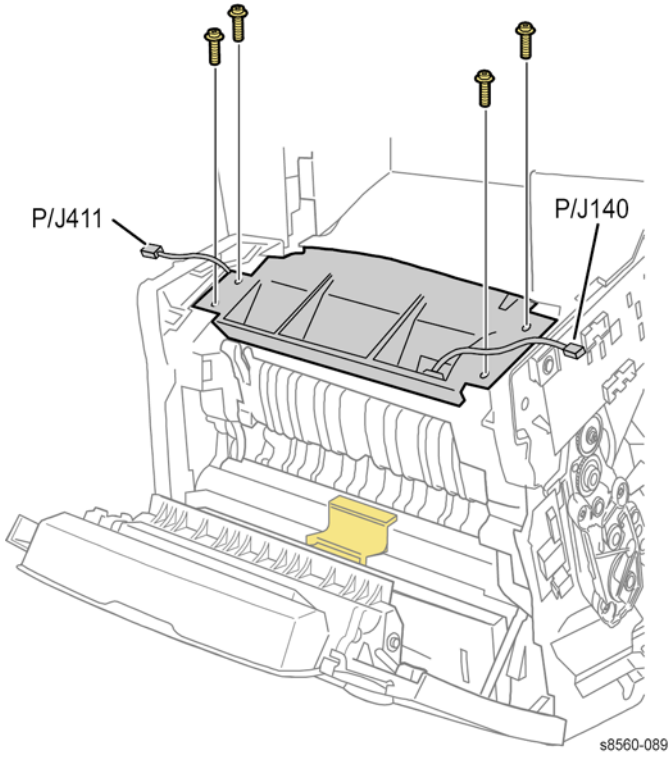


Figure 1 Removing the Outer Duplex Guide

REP 3.0.7 Exit Module (8860MFP)

Parts List on PL 3.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Remove the Right Side Cover (REP 1.0.21).
5. Remove the Ink Loader (REP 2.0.1).
6. Remove these components from the right side:
   a. Remove the right front (plastic, T-20) screw.
   b. Remove the KL-Clip, Pulley, and Belt from the Exit Elevator Roller to access and remove the right rear screw located behind the large Wiper Assembly gear.

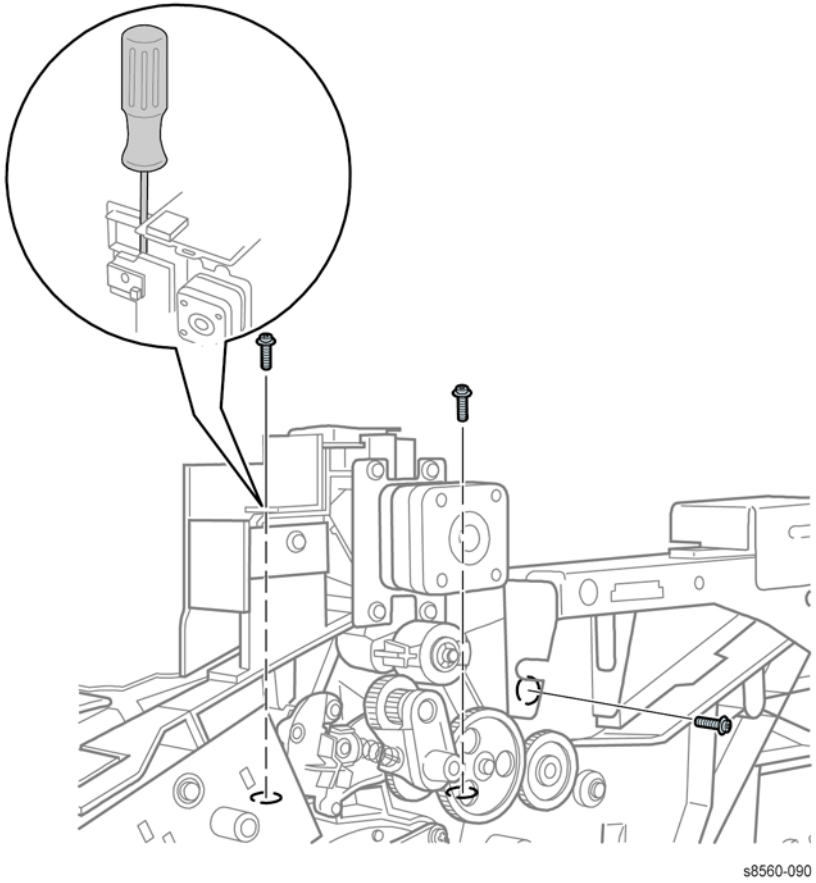


Figure 1 Exit Module Right Side Fasteners

c. Remove the (plastic, T-20) screw connecting the Exit Module and Back Frame.

7. Remove these components from the left side:

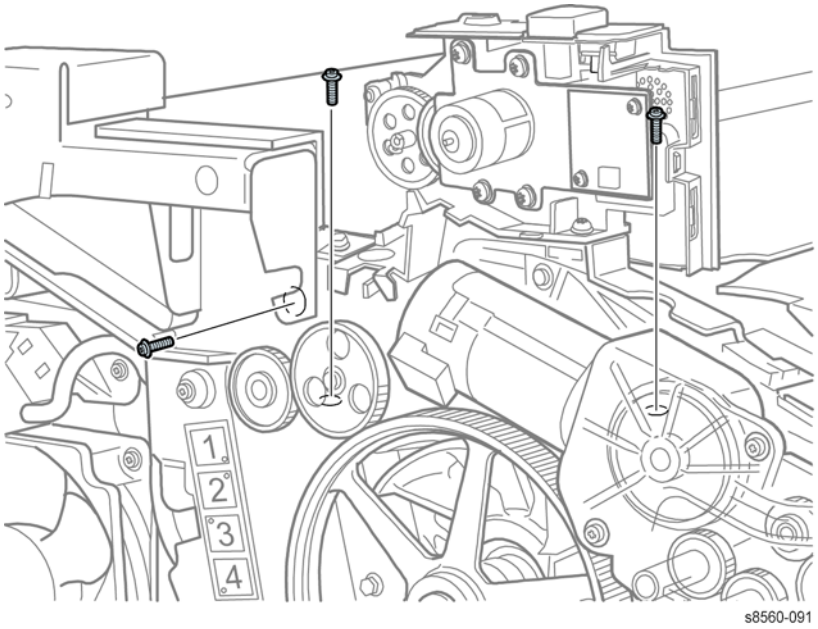


Figure 2 Exit Module Left Side Fasteners

a. Loosen the Media Drive Assembly to remove the left front screw. See REP 4.0.14.

b. Remove the left rear screw located behind the large Wiper Assembly gear.

c. Remove 1 (plastic, T-20) screw that connects the Exit Module and ground wire to the Back Frame.

8. Disconnect these connections. See Figure 3:

- Output Tray Full Sensor (CN801 and CN802)
- Front Exit Module Harness (P/J303)
- Speaker (P/J410)
- Elevator Position Sensor (P/J409)
- Scanner Detect Sensor (CN851)
- Exit Module Harness (P/J308)
- Exit Door Interlock Switch (P/J411)
- Drum Temperature Sensor (P/J870) on the I/O Board.
- Front Door Interlock (P/J140).
- Head Maintenance Clutch (P/J130).
- I/O Board connector (P/J680).

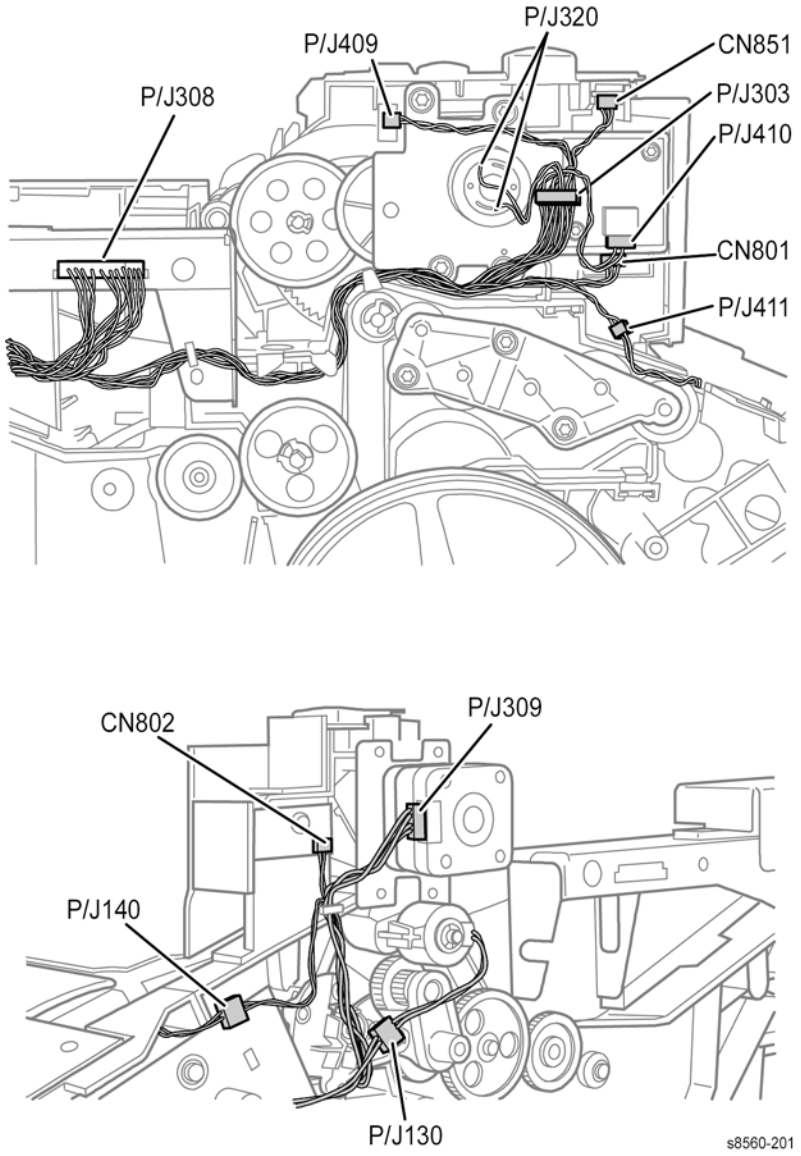


Figure 3 8860MFP Exit Module Harness Connections

9. Lift the Exit Module from the chassis.

Replacement

Transfer the Front Exit Module Harness to the replacement part, and Perform ADJ 2.5.1 after replacing the Exit Module.

REP 3.0.14 System Stabilizer

Parts List on PL 3.0

Removal

Remove the 2 screws that secure the System Stabilizer to the chassis.

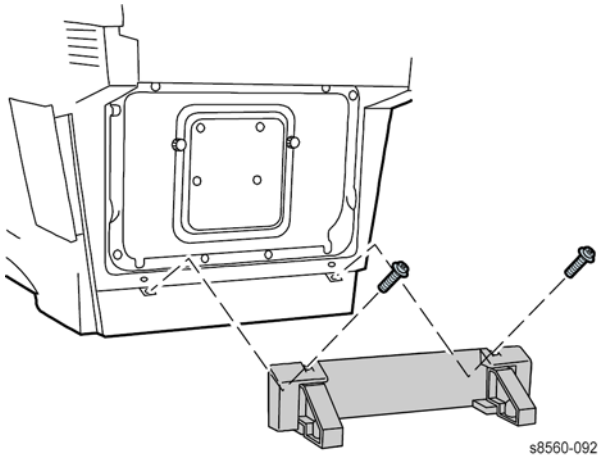


Figure 1 Removing the System Stabilizer

REP 3.0.18 Pick and Retard Rollers

Parts List on PL 3.0

Removal

The Pick Roller 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.

1. Remove Tray 2.
2. Release the Pick Roller catch and pull downward to remove the roller.

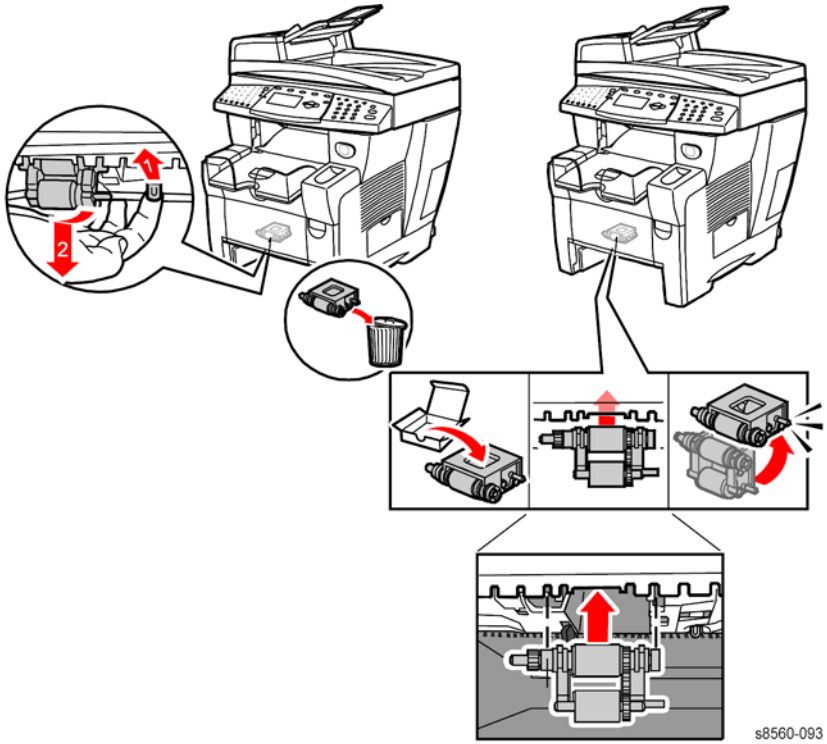


Figure 1 Replacing the Pick Roller

3. Lift the Retard Roller to vertical, then pull the roller from the shaft in the tray. See Figure 2.

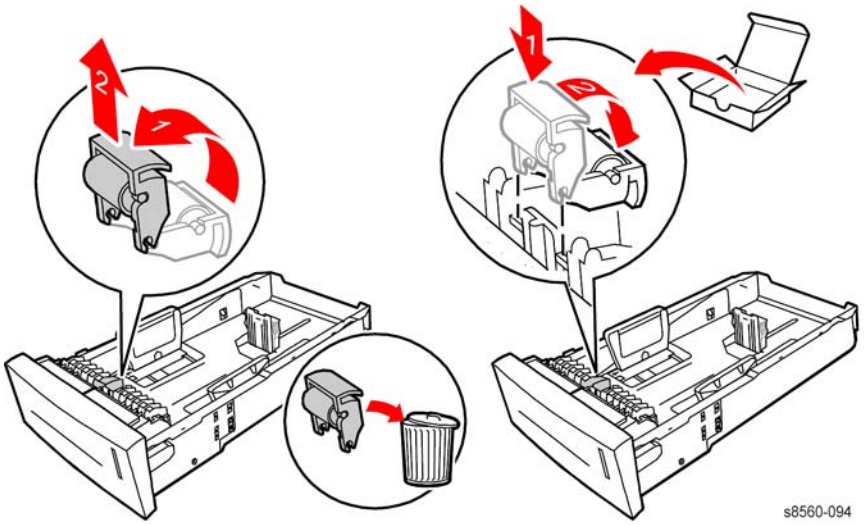


Figure 2 Replacing the Retard Roller

Replacement

For the Pick Roller, insert the replacement roller 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. Fell for a large plastic lip on the right and the mating gear on the left. Rotate the Pick Roller up and back to snap it into place.

REP 3.1.13 Exit Module (8860)

Parts List on PL 3.1

Removal

CAUTION

The Drum Temperature and Exit Module Sensor harnesses are routed through an opening in the Exit Module frame. Use care during removal to avoid damaging these harnesses.

1. Remove the Exit Cover (REP 1.1.7).
2. Disconnect 2 I/O Board connections.
   - Drum Temperature Sensor (P/J870).
   - I/O Board connector (P/J680).
3. Remove the 3 (plastic, T-20) screws that secure the Media Drive Motor. Allow the motor to hang from the harnesss.
4. Remove the 4 (metal, T-20) screws that secure the Exit Module.

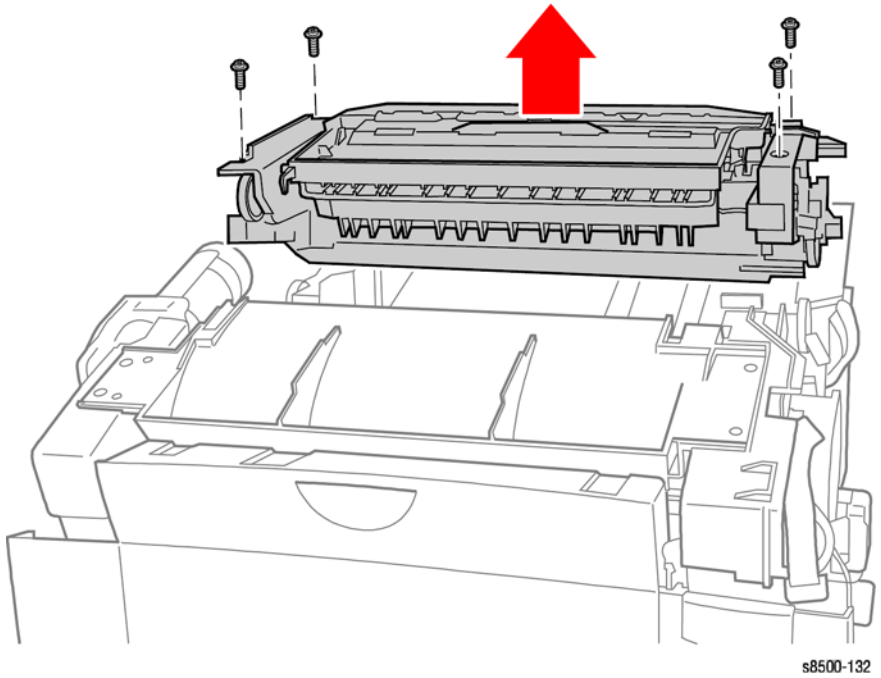


Figure 1 Removing the 8860 Exit Module

5. Lift the Exit Module from the chassis.

Replacement

Seat the Exit Module on the chassis., torque the 4 screws to 15 in. lbs, and perform ADJ 2.5.1. The system may report error 7,009.4x if the Wiper Assembly is misaligned.

REP 4.0.3 Scanner Power Supply Fan (8860MFP)

Parts List on PL 4.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Remove the Right Side Cover (REP 1.0.21).
5. Remove the Rear Cover (REP 1.0.20).
6. Disconnect the fan connector (CN5) from the Exit Module Control Board.
7. Remove 2 (plastic, T-20) screws that secure the fan to the frame.

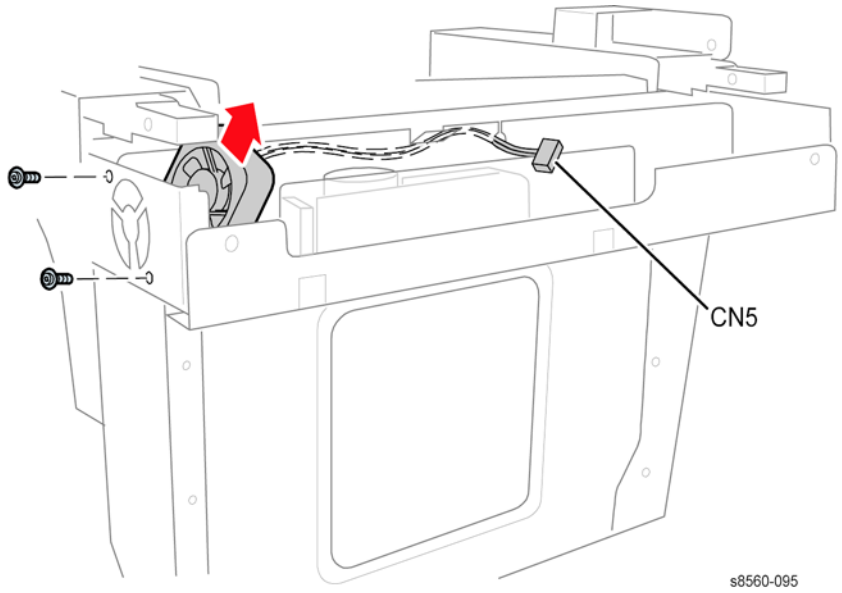


Figure 1 Removing the Scanner Power Supply Fan

Replacement

NOTE: *Route the fan harness behind the mylar insulator as shown in Figure 1.*

REP 4.0.4 Head Maintenance Clutch

Parts List on PL 4.0

Removal

NOTE: *These steps describe Head Maintenance Clutch removal for the 8860MFP. On 8860 models, access the clutch by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
4. Disconnect the Head Maintenance Clutch (P/J130) from the harness.
5. Remove the KL-Clip that secures the clutch to the shaft and remove the clutch.

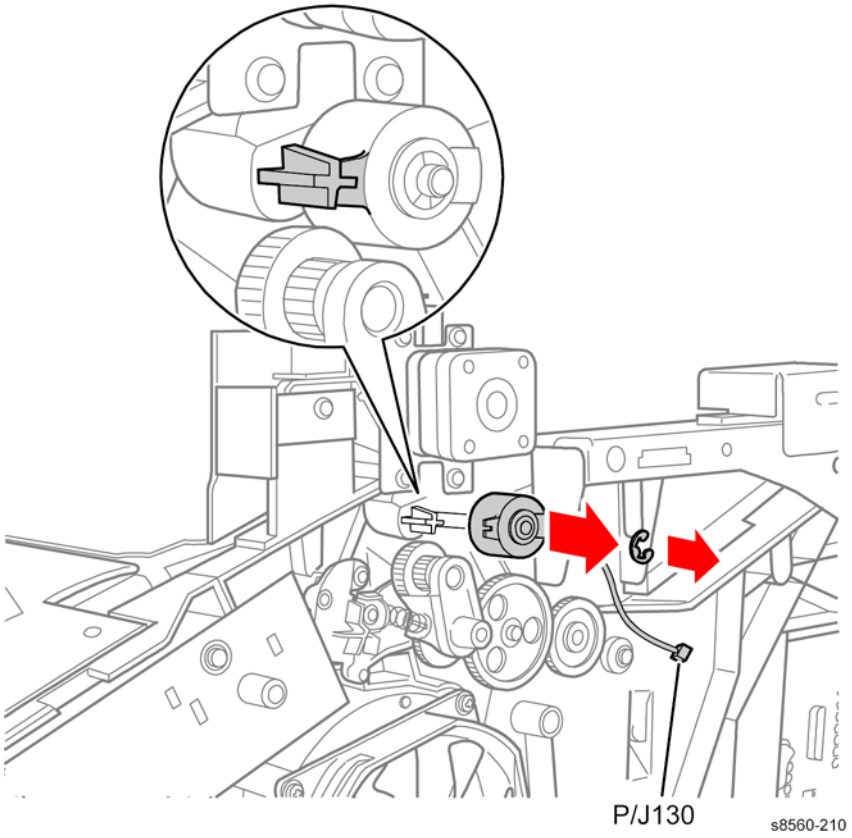


Figure 1 Removing the Head Maintenance Clutch

Replacement

Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 4.0.5 X-Axis Motor

Parts List on PL 4.0

Removal

1. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
2. Disconnect the X-Axis Motor (P/J150) from the Right Side Harness.
3. Remove 4 (plastic, T-20) screws that secure the motor to the frame.

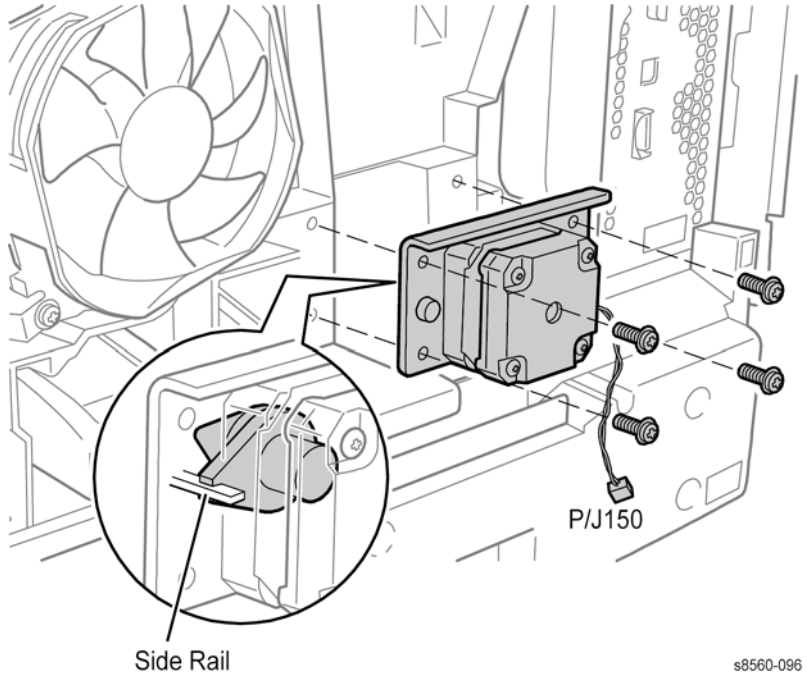


Figure 1 Removing the X-Axis Motor

Replacement

Engage the fork extending from the motor shaft to the Side Rail as shown in Figure 1. Also, slip the mounting plate behind the ground strap and replace the cable retainer on the lower right screw. Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 4.0.6 Drum Fan

Parts List on PL 4.0

Removal

NOTE: *These steps describe Drum Fan removal for the 8860MFP. On 8860 models, access the Drum Fan by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860).
4. Disconnect the Drum Fan (P/J118) from the Right Side Harness.
5. Remove 3 (plastic, T-20) screws that secure the fan to the chassis.

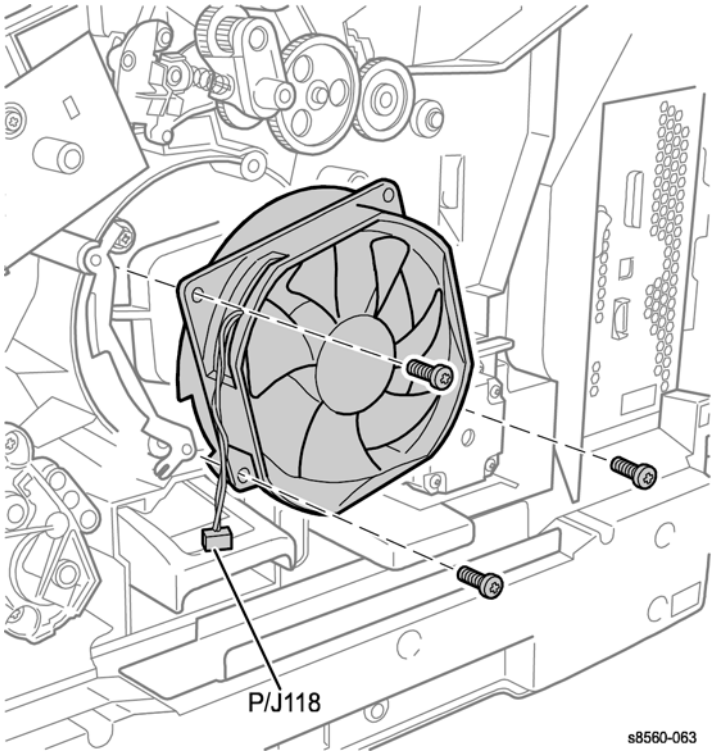


Figure 1 Removing the Drum Fan

Replacement

NOTE: *Check that the grounding strap contacts the Pivot Plate Shaft following installation.*

REP 4.0.7 Process Drive

Parts List on PL 4.0

Removal

NOTE: *These steps describe Process Drive removal for the 8860MFP. On 8860 models, access the Process Drive by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

CAUTION

If the Process Drive is being reinstalled, pin the gears using the holes provided in the Process Drive frame (Figure 1) to maintain gear alignment. Use a paper clip or similar object to pin the gears before removing the drive. Replacement drives have pins installed. Do not remove these pins until the drive has been installed. Installation of the Process Drive with misaligned gears can damage the system. See Figure 1 to verify proper gear position before replacing the screws.

CAUTION

Before installing the Process Drive, use ADJ 2.2.1 and ADJ 2.5.1 to put the Printhead and Wiper Assembly in the home position.

CAUTION

Before tightening the Process Drive mounting screws, align the holes in the Process Drive flange with the mounting bosses on the frame, seat the gears, and press the Process Drive tightly against the frame. Next, seat all three screws before torquing the screws to a final tightness of 12 in-lbs. Tightening the screws individually before seating all three can put undue strain on the mounting bosses.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 for the 8860)
4. Pin the Process Drive gears, if the drive is being reinstalled, using paper clips or similar objects.
5. Disconnect the Drum Heater (P/J200) from the Relay Board and remove it.
6. Release the Drum Encoder and Drum Fan wiring from the Process Drive wiring retainers
7. Remove 3 (plastic, T-20) screws that secure the Process Drive to the chassis.

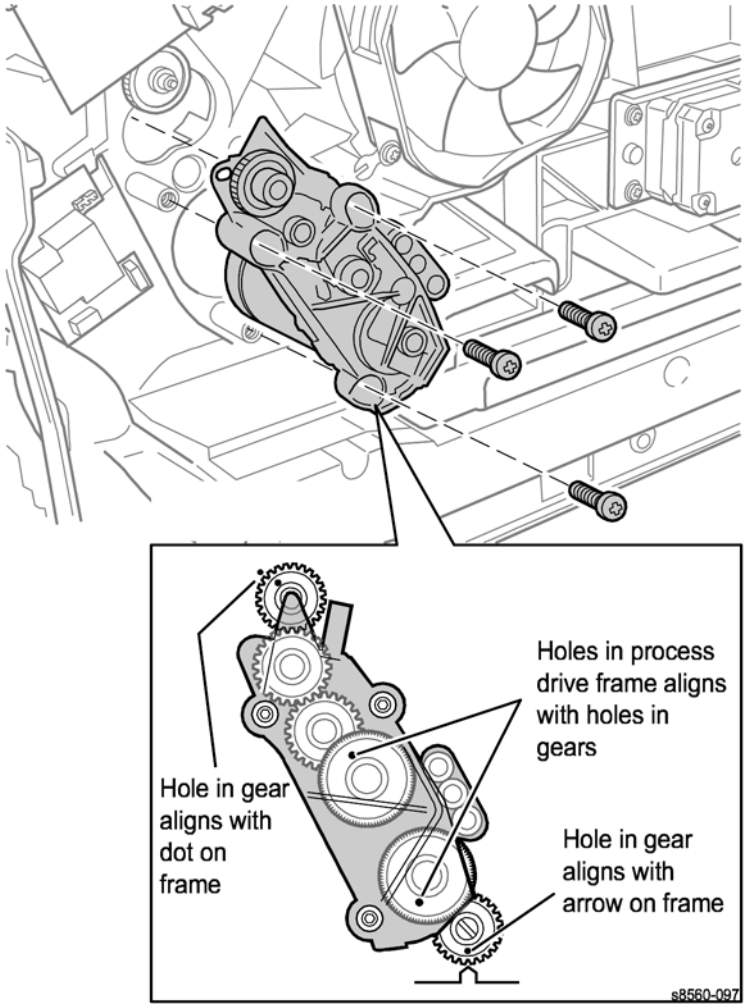


Figure 1 Removing the Process Drive and Process Drive Gear Alignment

8. Remove the Process Drive from the chassis.
9. Disconnect the Process Drive from the harness.

Replacement

CAUTION

Before tightening the Process Drive mounting screws, align the holes in the Process Drive flange with the mounting bosses on the frame, seat the gears, and press the Process Drive tightly against the frame. Next, seat all three screws before torquing the screws to a final tightness of 12 in-lbs. Tightening the screws individually before seating all three can put undue strain on the mounting bosses. Do not use the screws to pull the Process Drive into alignment.

Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 4.0.8 Exit Roller Motor (8860MFP)

Parts List on PL 4.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21).
4. Disconnect the motor (P/J309) from the harness.
5. Remove 4 (plastic, T-20) screws, one with a ground strap that secure the motor to the chassis.

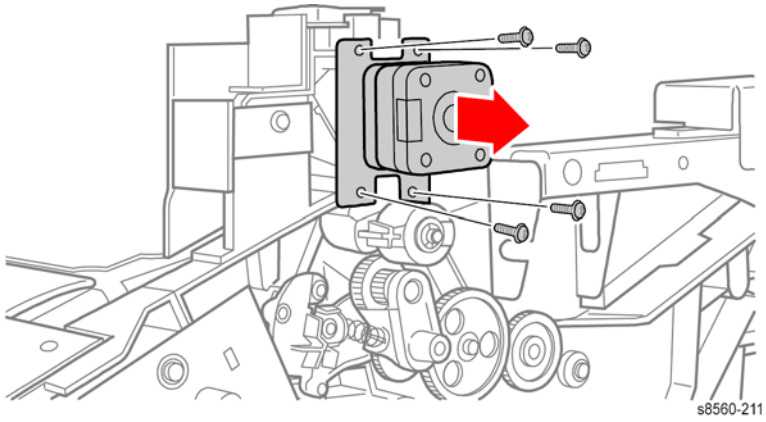


Figure 1 Removing the Exit Roller Motor

6. Remove the KL-Clip that secured the pulley on the motor shaft and transfer the pulley to the replacement motor.

Replacement

CAUTION

When replacing the Exit Roller Motor screws, torque to no more than 12 in.-lbs. Overtightening these fasteners can result in irreversible damage to the chassis.

REP 4.0.9 Exit Elevator Motor (8860MFP)

Parts List on PL 4.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Disconnect the Speaker.
5. Mark the position of the leads and disconnect the Exit Elevator Motor (P/J303) from the harness.
6. Remove 4 (plastic, T-20) screws, that secure the motor to the chassis.

NOTE: *Transfer the Speaker to the replacement motor bracket.*

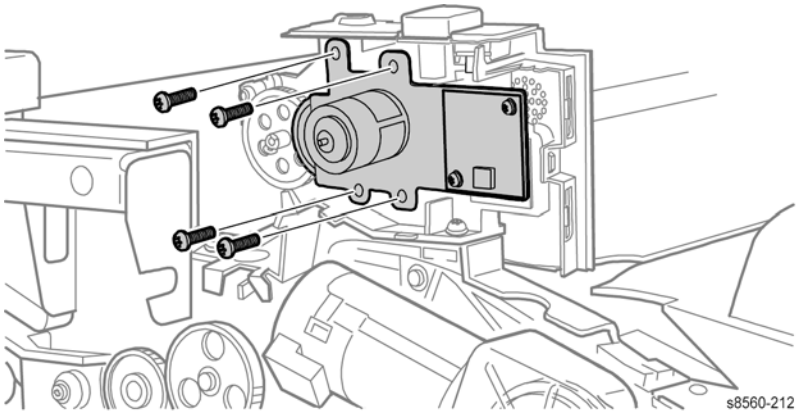


Figure 1 Removing the Exit Elevator Motor

Replacement

CAUTION

When replacing the Elevator Motor screws, torque to no more than 12 in.-lbs. Overtightening these fasteners can result in irreversible damage to the chassis.

If the Elevator Motor leads (P/J320) are reversed during replacement, on power-up, the system enters a fault state without displaying a fault code. This state is indicated by the LED on the Exit Module Control Board flashing and media jams in the Exit Module.

REP 4.0.10 Tray 2 Lift Motor Gear

Parts List on PL 4.0

Removal

1. Remove the Electronics Module (REP 5.0.5).
2. Remove Tray 2.
3. Remove the Lift Motor Gear by prying the Push Nut off the shaft. Replace the Push Nut with a new one when installing the gear.

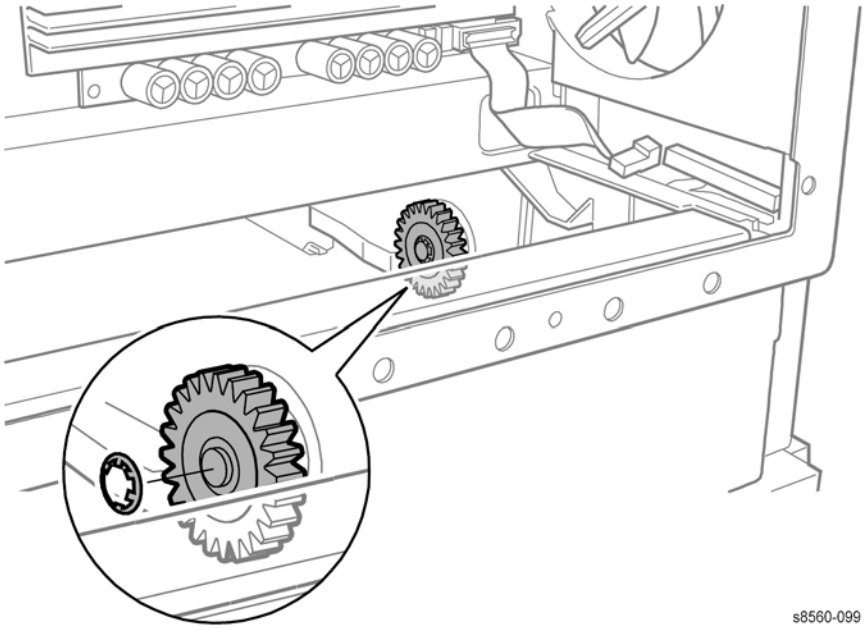


Figure 1 Removing the Lift Motor Gear

Replacement

Check that the bushing tabs are properly seated in the chassis. To seat the new Push Nut, position the Push Nut so the fingers point away from the shaft. Place a 3/8 in. nut driver over the nut and press firmly to seat the nut on the shaft.

REP 4.0.11 Y-Axis Motor Assembly

Parts List on PL 4.0

Removal

NOTE: *These steps describe Y-Axis Motor removal for the 8860MFP. On 8860 models, access the Y-Axis Motor by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
4. Release tension on the Y-Axis Belt by pulling the end of the Spring Arm toward the front of the printer.

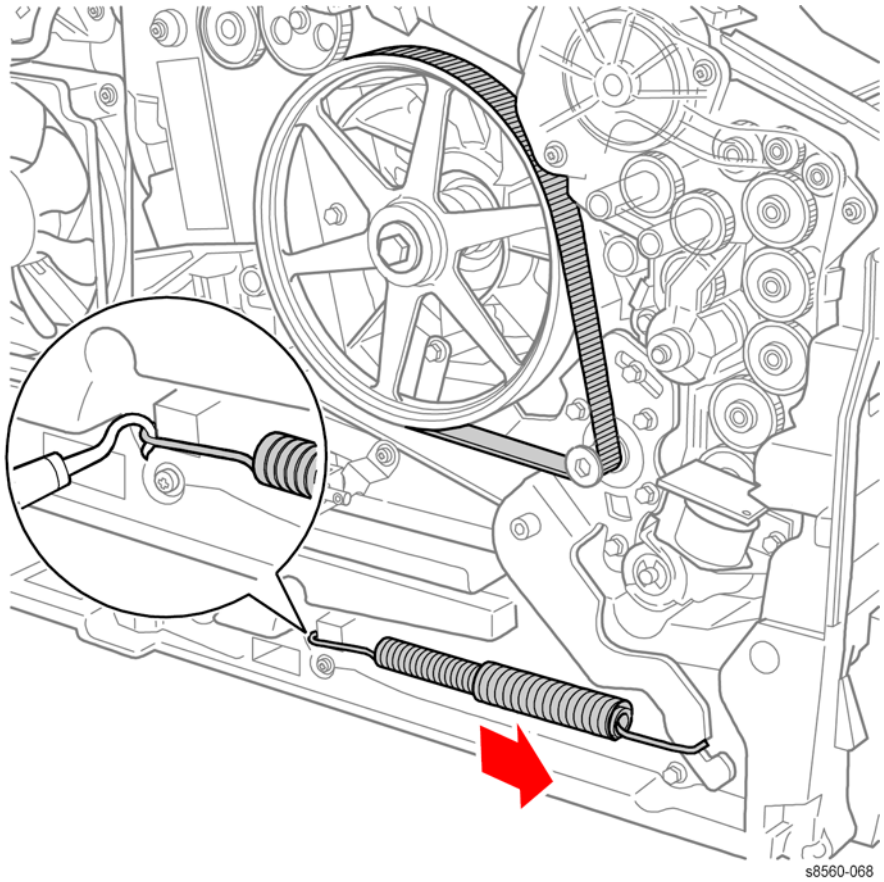


Figure 1 Removing the Y-Axis Spring

5. Hold tension with one hand while removing the Y-Axis Belt with the other.
6. Remove the Y-Axis Spring using either a spring hook or pliers, Brace the printer to prevent movement while removing the spring.
7. Disconnect the motor (P/J18) from the Electronics Module and remove the harness from the cable guide.
8. Disconnect the Tray 1 Pick Solenoid (P/J241) from the harness.
9. Disconnect the Tray 2 Pick Clutch (P/J230) from the harness.

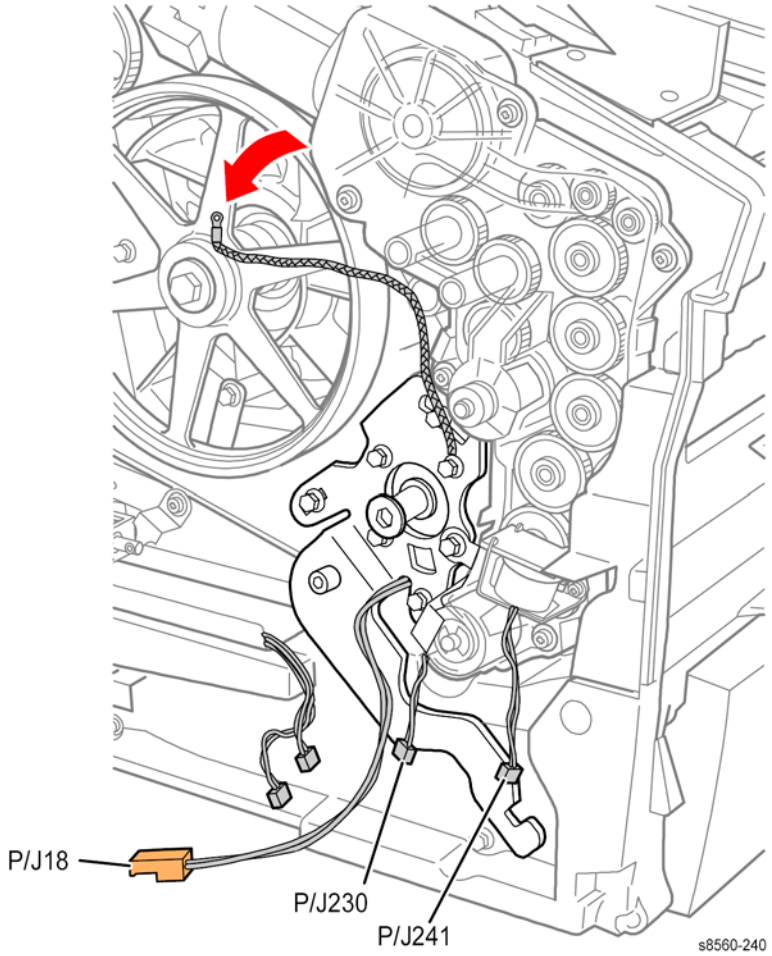


Figure 2 Y-Axis Assembly Electrical Connections

10. Release the harness from the retainers in the chassis.

NOTE: *Observe the routing of the Y-Axis Motor harness. The harness exits the motor cavity through the notch provided at the bottom of the mount.*

11. Remove 3 (plastic, T-20) screws, and 2 (metal, T-20) screws with ground connections from the Spring Arm and slide the assembly out of the chassis.

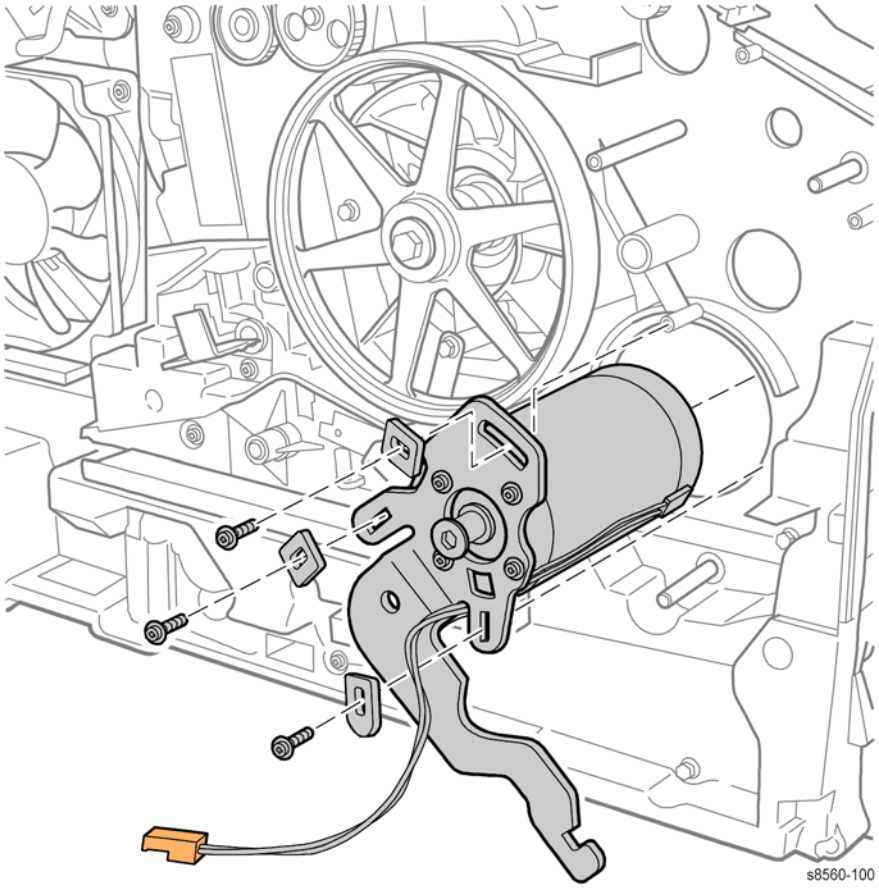


Figure 3 Removing the Y-Axis Drive Assembly

Replacement

CAUTION

When replacing the Y-Axis Drive screws, torque to no more than 12 in.-lbs. Overtightening these fasteners can result in irreversible damage to the chassis.

Check that the grounding lugs are captured by the screws, the spacers are present, and wiring is correctly routed.

REP 4.0.12 Tray 1 Pick Solenoid

Parts List on PL 4.0

Removal

NOTE: *These steps describe Tray 1 Pick Solenoid removal for the 8860MFP. On 8860 models, access the Tray 1 Pick Solenoid by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
4. Disconnect the solenoid (P/J241) from the harness.
5. Remove 1 (plastic, T-20) screw that secures the solenoid to the Media Drive Assembly.

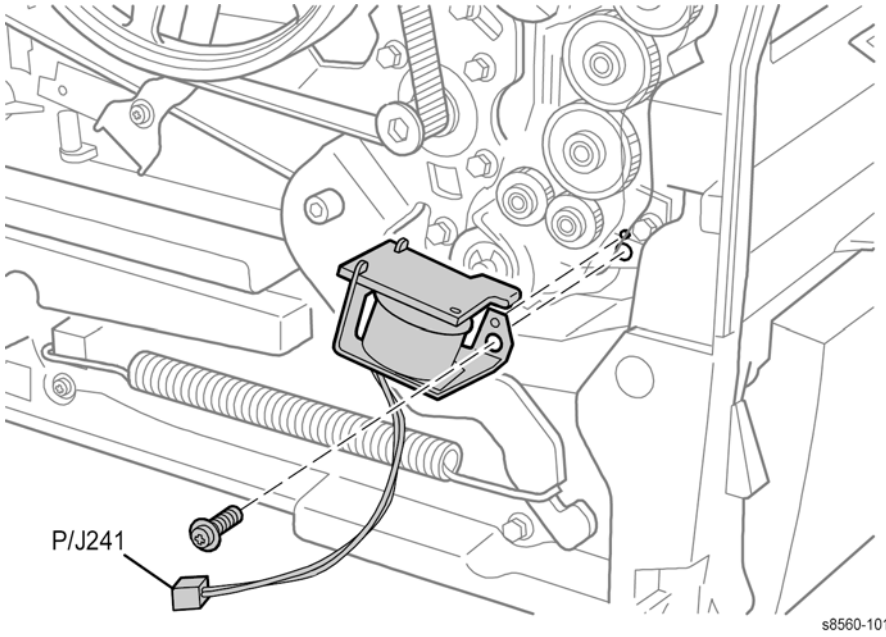


Figure 1 Removing the Tray 1 Pick Solenoid

Replacement

Align the hole in the solenoid with the boss on the Media Drive Assembly before tightening the screw.

REP 4.0.13 Tray 2 Lift Motor

Parts List on PL 4.0

Removal

1. Remove the Electronics Module (REP 5.0.5).
2. Remove Tray 2.
3. Remove the Lift Motor Gear by prying the Push Nut off the shaft. Replace the Push Nut with a new one when installing the gear.

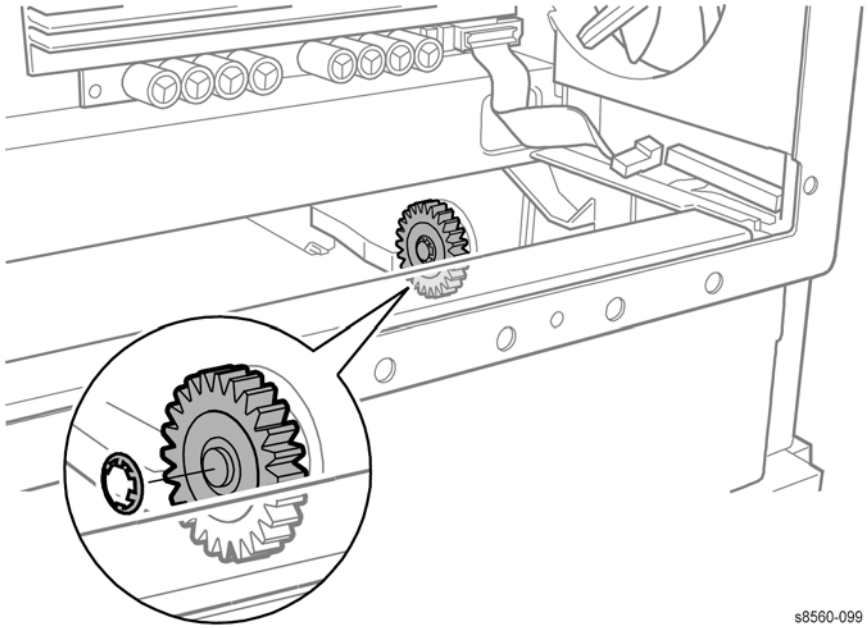


Figure 1 Removing the Lift Motor Gear

4. Disconnect the Tray 2 Lift Motor (P/J203) from the harness.
5. Remove 2 screws that secure the Tray Lift Motor to the chassis, and remove the motor.

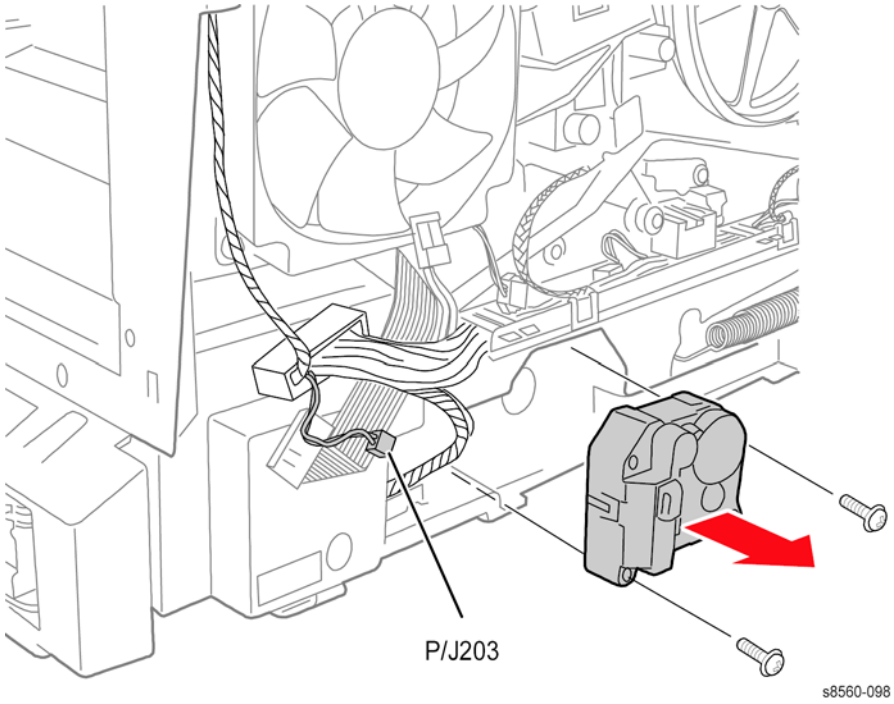


Figure 2 Removing the Tray 2 Lift Motor

Replacement

Check that the bushing tabs are properly seated in the chassis. To seat the new Push Nut, position the Push Nut so the fingers point away from the shaft. Place a 3/8 in. nut driver over the nut and press firmly to seat the nut on the shaft.

REP 4.0.14 Media Drive Assembly

Parts List on PL 4.0

Removal

NOTE: *These steps describe Media Drive Assembly removal for the 8860MFP. On 8860 models, access the Media Drive Assembly by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

NOTE: *Do Not completely remove the Tray 1 Pick Solenoid screw. A replacement solenoid is included with the new Media Drive Assembly. Loosen the screw just enough to allow removal of the Media Drive Assembly.*

1. Remove the Scanner Assembly and attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
4. Disconnect these Media Drive Assembly components from the Left Side Harness:
   - Media Drive Motor (P/J206)
   - Deskew Clutch (P/J256)
   - Tray 1 Pick Clutch (P/J230)
   - Tray 1 Pick Solenoid (P/J241),
   - Preheater Lift Solenoid (P/J202)
5. Remove 1 (plastic, T-20) screw that secures the braided ground wire to the Media Drive Motor mounting plate.
6. Remove 1 (metal, T-20) screw in the Y-Axis Motor mount that secures a ground strap to the Pick Clutch.

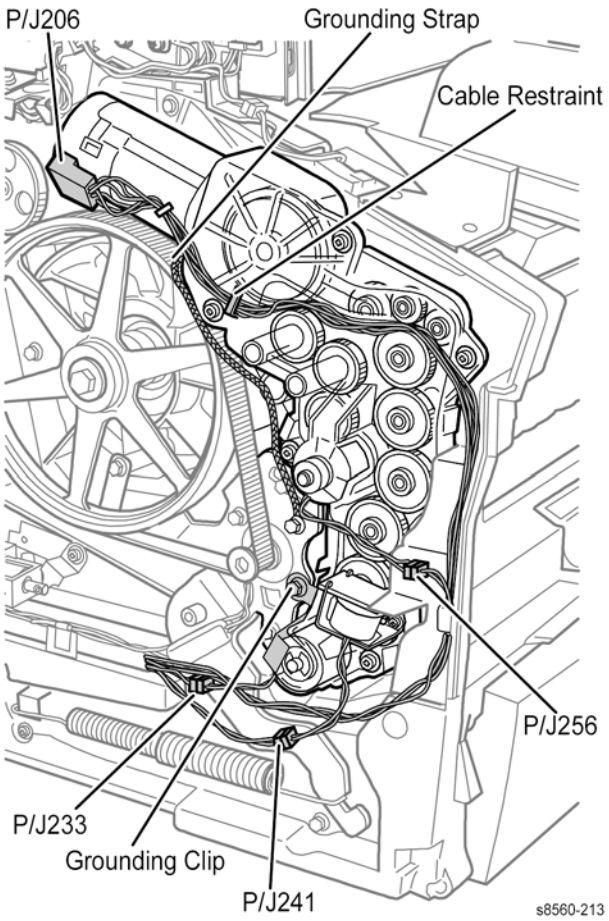


Figure 1 Media Drive Assembly Electrical Connections

7. Remove 6 (plastic, T-20) screws that secure the Media Drive Assembly to the frame.

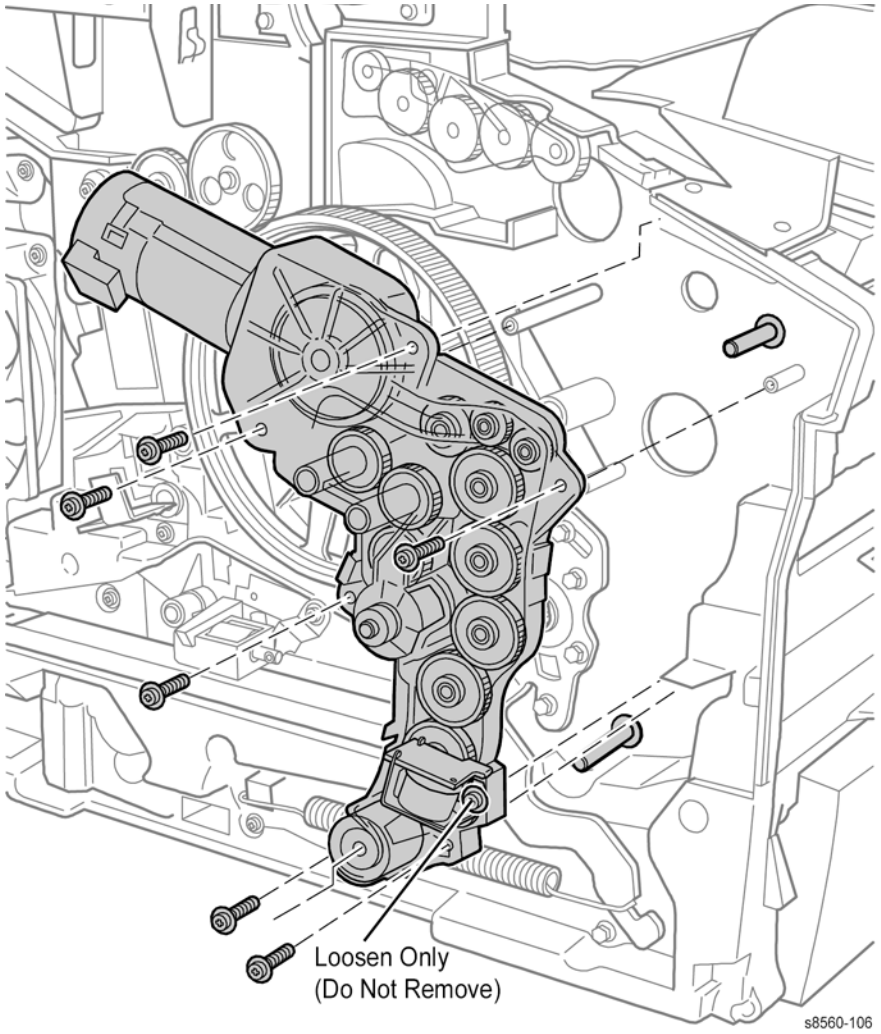


Figure 2 Removing the Media Drive Assembly

Replacement

CAUTION

When replacing the Media Drive screws, torque to no more than 12 in.-lbs. Overtightening these fasteners can result in irreversible damage to the chassis.

To replace the Media Drive Assembly, remove Tray 2. Rotate the Pick Roller Shaft until the d-shaft correctly seats into the Pick Clutch. Next, working upwards, rotate the Duplex Feed Roller until the Duplex Roller Shaft seats in it's clutch.

Check that the Media Drive Assembly is correctly positioned before tightening the screws.

REP 4.0.15 Electronics Module Cooling Fan

Parts List on PL 4.0

Removal

NOTE: *These steps describe fan removal for the 8860MFP. On 8860 models, access the Electronics Module Cooling Fan by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly and attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 for the 8860).
4. Disconnect the fan (P/J207) from the Left Side Harness.
5. Remove 2 (plastic, T-20) screws that secure the fan to the chassis.

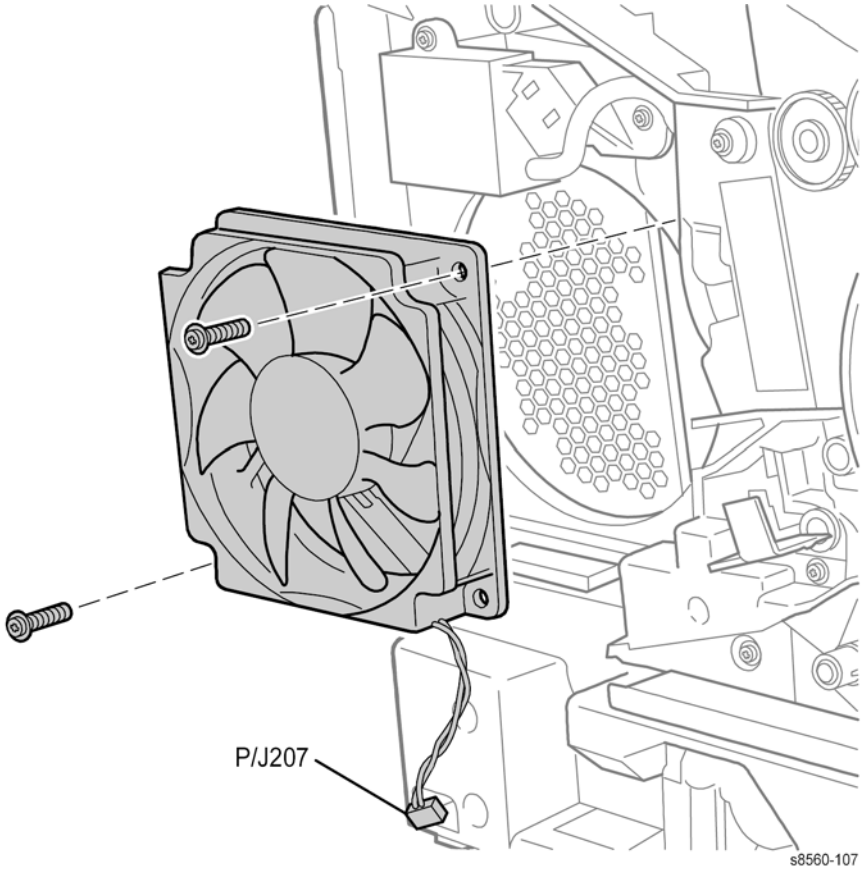


Figure 1 Removing the Electronics Module Cooling Fan

REP 4.0.16 Head Tilt Gear

Parts List on PL 4.0

Removal

1. Remove the Printhead (REP 2.0.2).
2. Remove the KL-Clip from the left side.

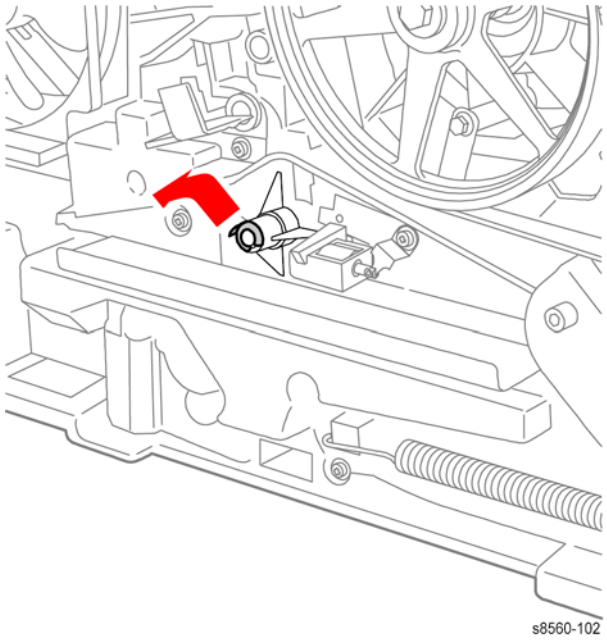


Figure 1 Head Tile Gear KL-Clip Location

3. Remove the Waste Tray.
4. Remove the X-Axis Spring (REP 2.0.21).
5. Remove 1 (metal, T-20) screw that secures the X-Axis Spring Retainer to the chassis.

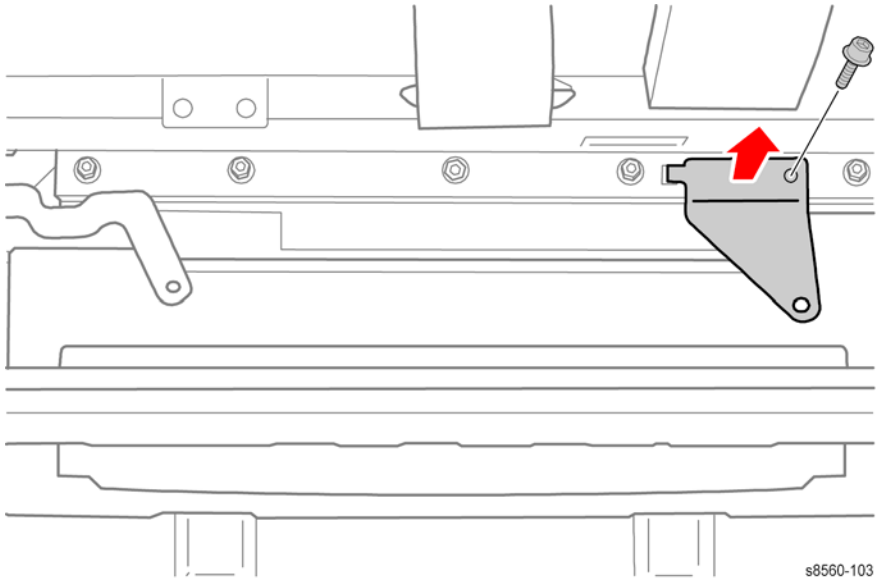


Figure 2 Removing the X-Axis Spring Retainer

6. Unlock the Wiper Blade and raise the Wiper Blade to the top of its travel.
7. Raise the Exit Elevator.
8. Remove the Waste Tray Cover without disconnecting the Waste Tray Sensor harness.
   a. Lift the center of the cover to release the right side hook.
   b. Move the cover towards the back to release the 2 tabs from the chassis.
   c. Pull the cover right to release the left hook and position the cover out of the way.

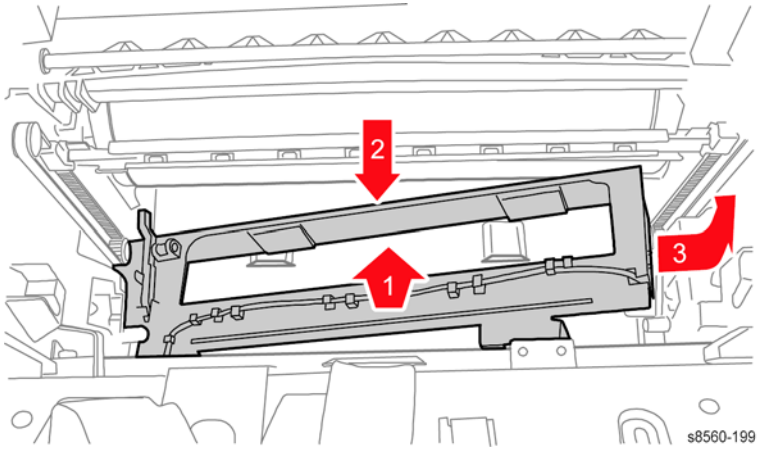


Figure 3 Removing the Waste Tray Cover

9. Reach into the Waste Tray cavity and pull the gear and shaft from the chassis.

Replacement

The leaf spring on the back side of the chassis must be behind the gear to engage. Lubricate the curved surface of the gear using a small amount of Rheolube 768 grease (P/N 070E00890).

1. Remove the Leaf Spring from the chassis.
2. Partially insert the Head Tilt Gear Shaft into the chassis.

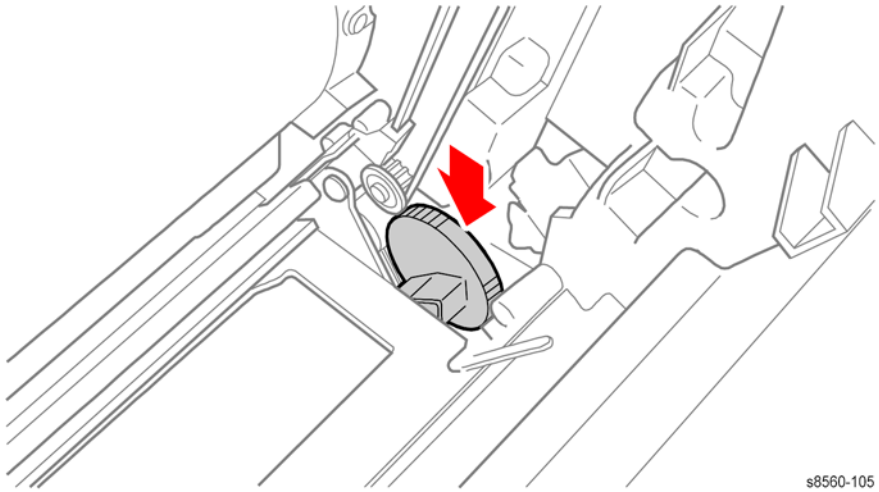


Figure 4 Replacing the Head Tilt Gear

3. Replace the spring. Turn the Head Tilt Gear while inserting the spring to guide the spring to its proper position behind the gear.

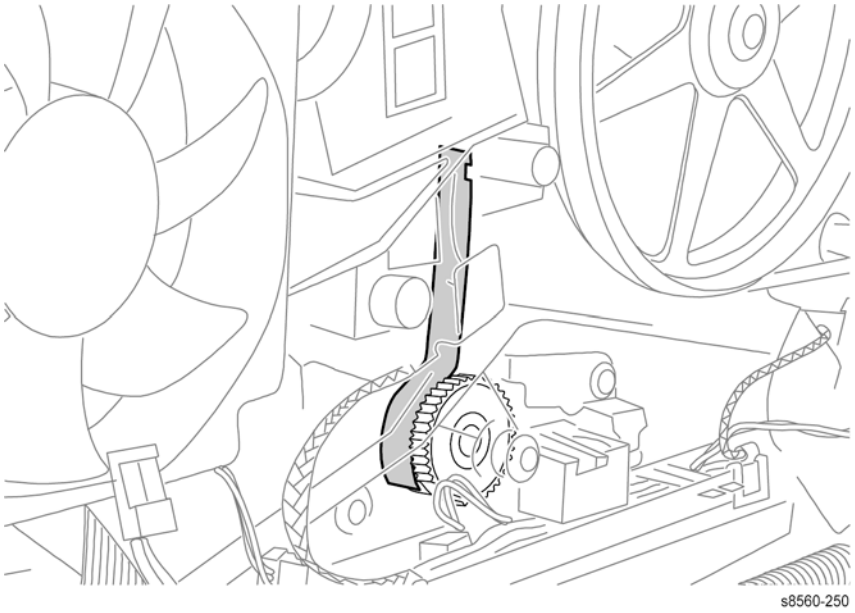


Figure 5 Head Tilt Spring Alignment

4. Seat the gear by lifting the Head Tilt Solenoid Actuator.
5. Replace the KL-Clip on the end of the Head Tilt Gear Shaft.
6. Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 4.0.18 Fax Speaker (8860MFP)

Parts List on PL 4.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Disconnect the Speaker.
5. Remove the 2 (metal) screws that secure the Speaker to the Exit Elevator Motor bracket.

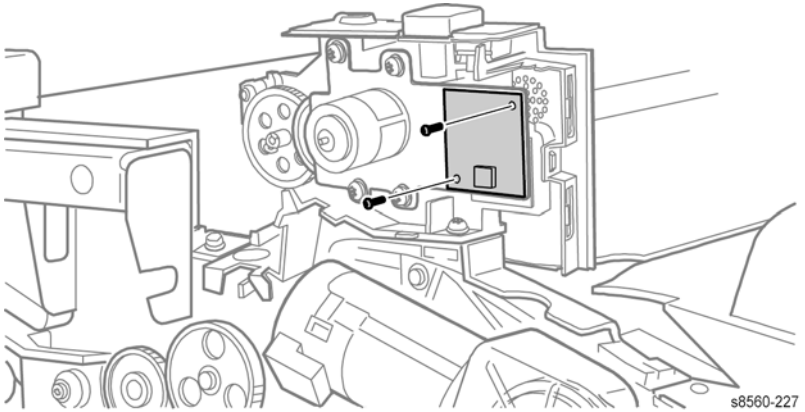


Figure 1 Removing the Speaker

REP 4.0.20 Head Tilt Solenoid

Parts List on PL 4.0

Removal

NOTE: *These steps describe Head Tilt Solenoid removal for the 8860MFP. On 8860 models, access the Head Tilt Solenoid by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly with attached DADF.
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 on the 8860).
4. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 on the 8860).
5. Lower the Wiper Blade to its lowest position.
6. Disconnect the Head Tilt Solenoid from the harness.
7. Remove 1 (plastic, T-20) screw that secures the solenoid actuator to the frame. and remove it from the frame.
8. Release the hook to release the solenoid from the frame.

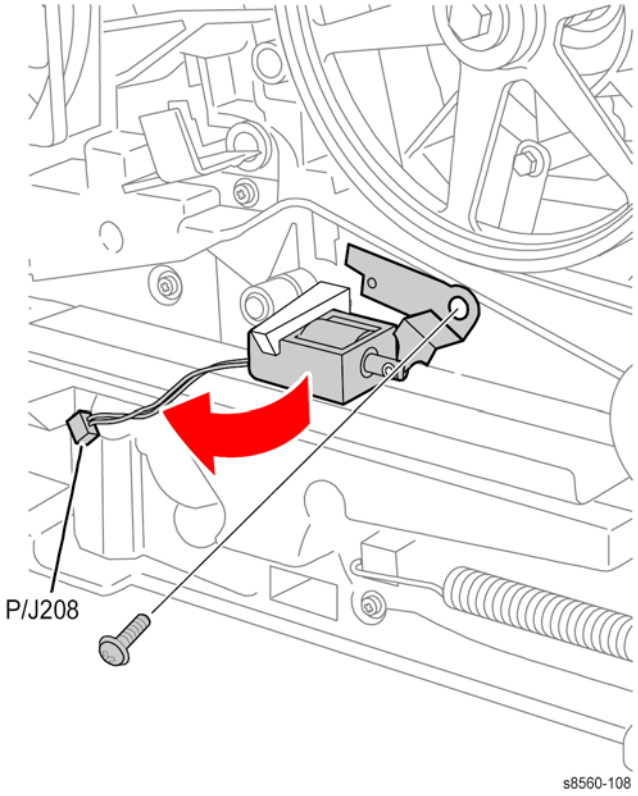


Figure 1 Removing the Head Tilt Solenoid

Replacement

CAUTION

When replacing the Head Tilit Solenoid screw, torque to no more than 12 in.-lbs. Overtightening this fastener can result in irreversible damage to the chassis.

CAUTION

To ensure proper operation of the Printhead following reassembly, perform these steps in the order given.

1. Insert the plastic end of Head Tilt Solenoid into the frame, swing to the right and replace the screw.
2. With the Printhead centered on the Drum, use a screwdriver to turn the lower screw of the Process Drive clockwise until you hear the Head Tilt Solenoid snap into place

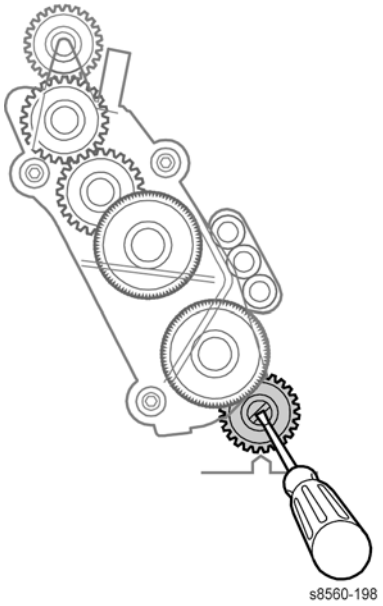


Figure 2 Engaging the Head Tilt Solenoid

REP 5.0.1 Exit Module Control Board (8860MFP)

Parts List on PL 5.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Remove the Right Side Cover (REP 1.0.21).
5. Remove the Rear Cover (REP 1.0.20).
6. Disconnect all connections to the Exit Module Board.
7. Remove 2 (metal, T-20) screws that secure the board to the Back Frame.

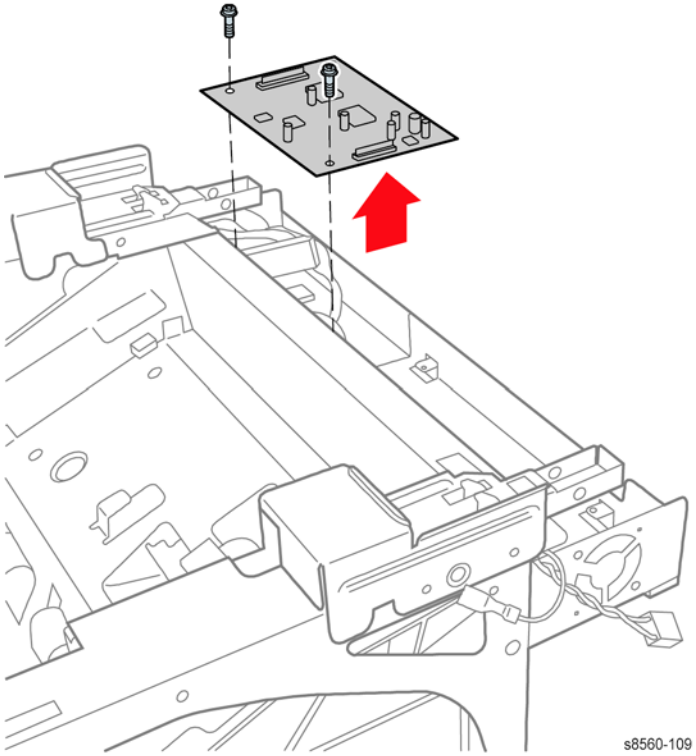


Figure 1 Removing the Exit Module Control Board

REP 5.0.2 Scanner Power Supply (8860MFP)

Parts List on PL 5.0

Removal

WARNING

Disconnect the AC Power Cord before servicing the system. The Scanner Power Supply connects directly to the AC Line.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Remove the Right Side Cover (REP 1.0.21).
5. Remove the Rear Cover (REP 1.0.20).
6. Disconnect all connections to the Scanner Power Supply.
7. Remove 4 (metal, T-20) screws that secure the Scanner Power Supply to the Back Frame.

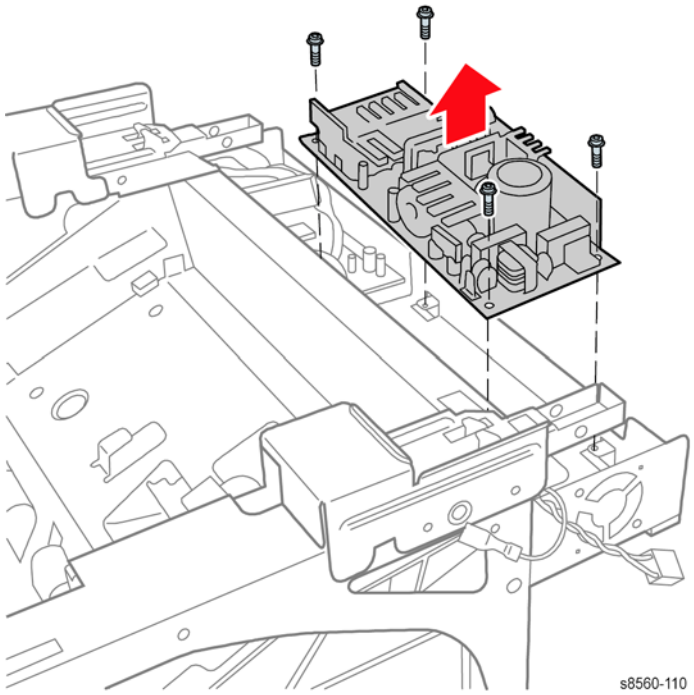


Figure 1 Removing the Scanner Power Supply

REP 5.0.4 Wave Amplifier

Parts List on PL 5.0

Removal

CAUTION

Handle the ribbon cables carefully. Check that each cable is square to the socket and fully inserted. Damage to the Wave Amplifier could result from improper cable connections.

1. Remove the Electronics Module (REP 5.0.5).
2. Remove the Printhead (REP 2.0.2).
3. Remove 4 (metal, T-20) screws that secure the Wave Amplifier to the chassis, and then remove the board through the back of the printer.

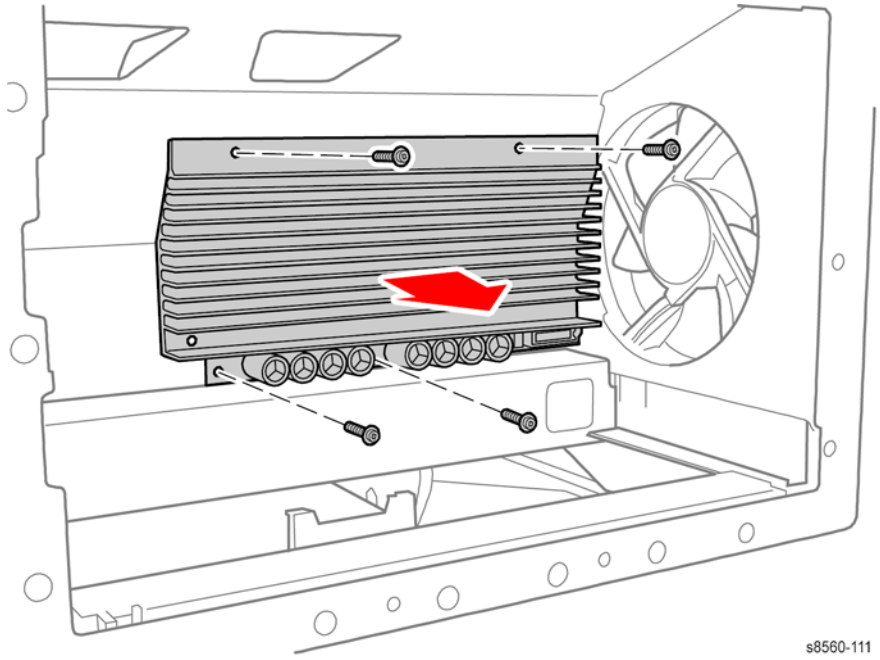


Figure 1 Removing the Wave Amp Board

Replacement

Route the cables through the slots provided. Position the T-shaped strain relief near the Wave Amplifier following installation. Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 5.0.5 Electronics Module

Parts List on PL 5.0, PL 5.1

Removal

NOTE: *These steps describe Electronics Module removal for the 8860MFP. On 8860 models, access the Electronics Module by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

CAUTION

Touch the Electronics Module to discharge any static electricity before servicing the system.

Remove the Configuration Card, NVRAM, RAM, and the Hard Drive or Flash Disk and install these components into the replacement module.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 on the 8860).
4. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 on the 8860).
5. Remove the Ink Loader (REP 2.0.1 or REP 1.1.8 on the 8860).
6. Disconnect the all connections from the Electronics Module.
7. Remove 7 (metal, T-20) screws that secure the Electronics Module to the Back Frame.

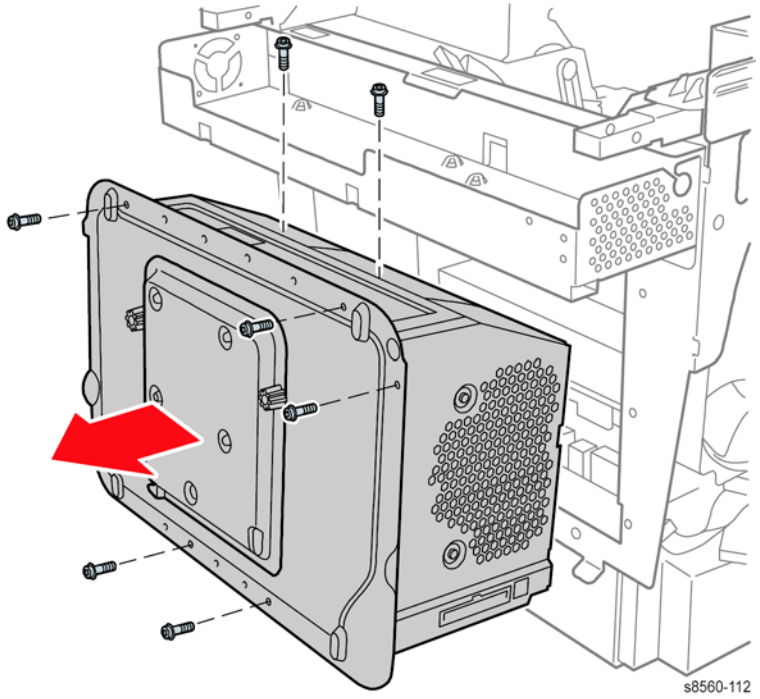


Figure 1 Removing the Electronics Module

REP 5.0.7 Hard Drive

Parts List on PL 5.0

Removal

1. Loosen the thumbscrews on the back cover of the Electronics Module.
2. Disconnect the Hard Drive from the Electronics Module.

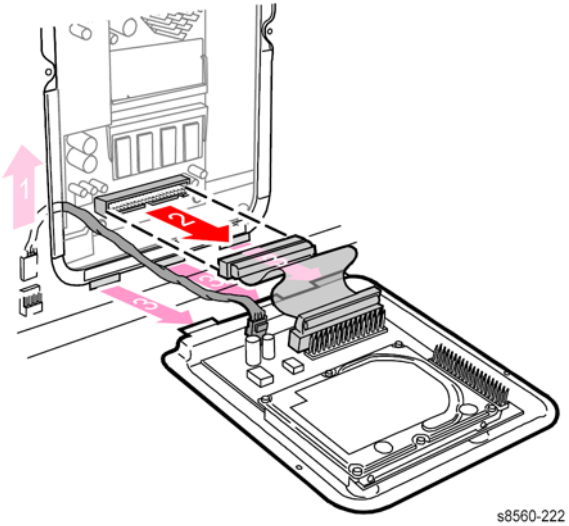


Figure 1 Removing the Hard Drive

Replacement

1. Connect the replacement drive and close the Back Cover.

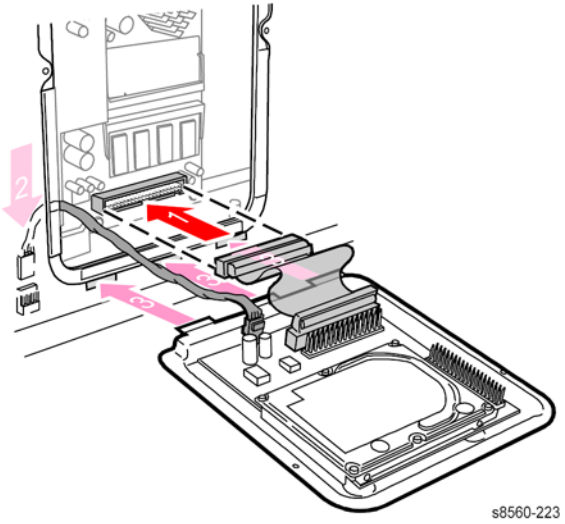


Figure 2 Replacing the Hard Drive

REP 5.0.8 RAM

Parts List on PL 5.0

Removal

CAUTION

RAM is vulnerable to ESD. Review ESD procedures presented in Section 1.

1. Loosen the thumbscrews on the back cover of the Electronics Module.

   NOTE: *Observe the orientation of the RAM device before removing it from the board.*

2. Disconnect the RAM module from the Electronics Module.

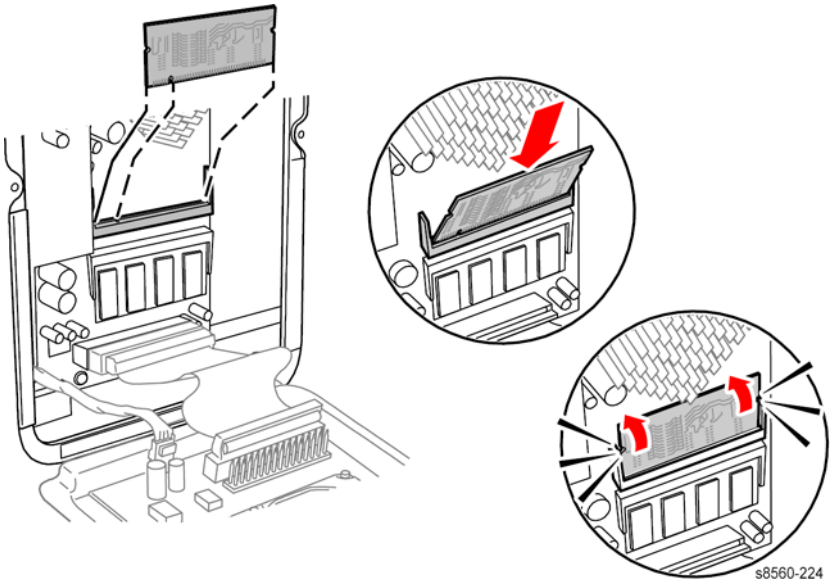


Figure 1 Removing RAM

3. Insert the replacement RAM and close the Back Cover.

REP 5.0.9 NVRAM

Parts List on PL 5.0, PL 5.1

Removal

CAUTION

NVRAM is vulnerable to ESD. Review ESD procedures presented in Section 1.

1. Loosen the thumbscrews on the back cover of the Electronics Module.

   NOTE: *Observe the orientation of the NVRAM devices before removing it from the board.*

2. Exchange the NVRAM devices.

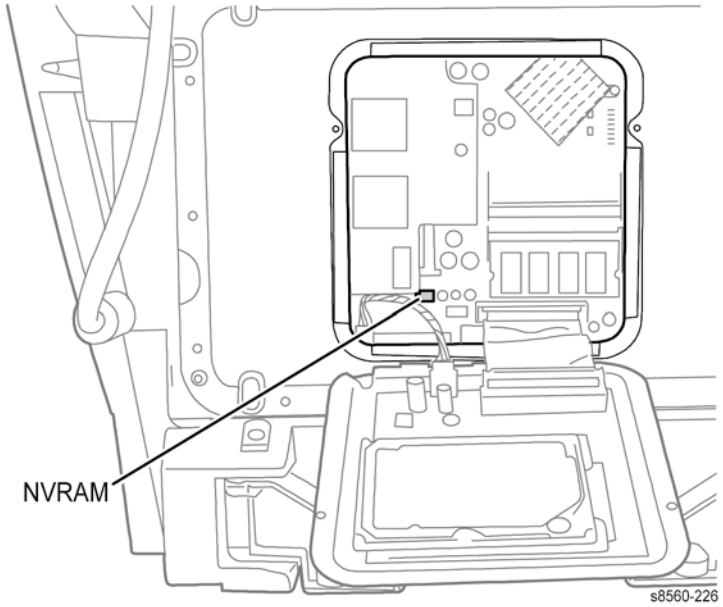


Figure 1 Removing NVRAM

REP 5.0.13 I/O Board

Parts List on PL 5.0, PL 5.1

Removal

1. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 on the 8860).
2. Disconnect the harnesses from the board.
3. Remove 2 screws that secure the board to the chassis.

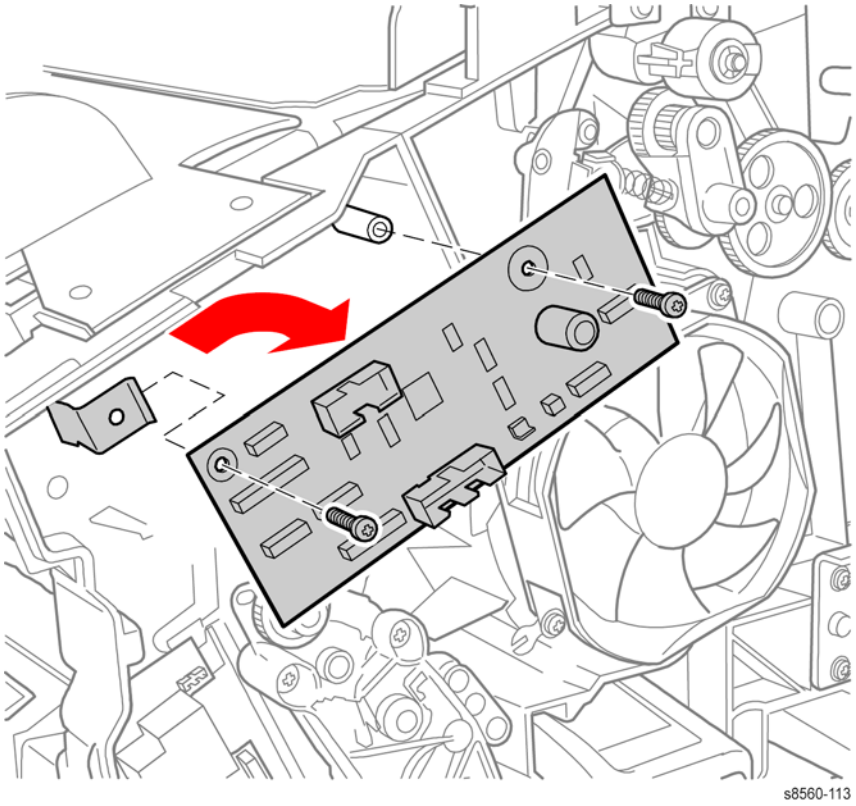


Figure 1 Removing the I/O Board

Replacement

CAUTION

When replacing the I/O Board screws, torque to no more than 12 in.-lbs. Overtightening these fasteners can result in irreversible damage to the chassis.

Position the corner of the board behind the Ground Tab before installing the screws.

REP 5.0.19 Drum Heater Relay Board

Parts List on PL 5.0

Removal

WARNING

Disconnect the AC Power Cord before servicing the system. The Drum Heater Relay Board connects directly to the AC Line.

1. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 on the 8860).
2. Disconnect the harnesses from the board.
3. Remove the 2 screws that secure the board to the chassis.

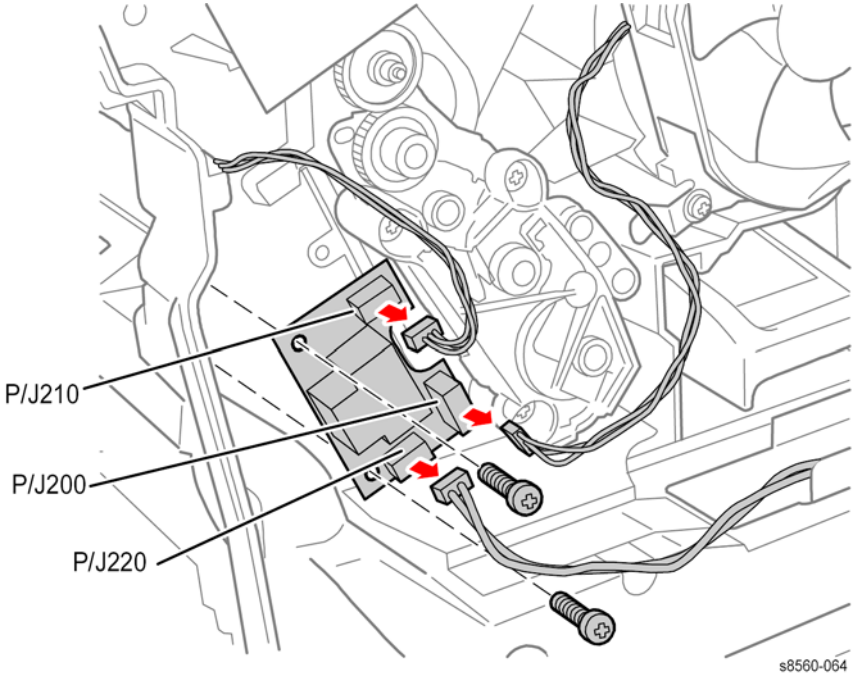


Figure 1 Removing the Drum Heater Relay Board

Replacement

WARNING

Verify that no wiring is routed behind the Drum Heater Relay Board before installing the screws.

CAUTION

When replacing the Drum Heater Relay Board screws, torque to no more than 12 in.-lbs. Over-tightening these fasteners can result in irreversible damage to the chassis.

REP 5.0.24 Back Frame (8860MFP)

Parts List on PL 5.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Remove the Right Side Cover (REP 1.0.21).
5. Remove the Rear Cover (REP 1.0.20).
6. Remove the Ink Loader (REP 2.0.1).
7. Remove the Scanner Power Supply Fan (REP 4.0.3).
8. Remove the Exit Module Board (REP 5.0.1).
9. Remove the Scanner Power Supply (REP 5.0.2) and mylar insulator.
10. Remove the Electronics Module (REP 5.0.5).
11. Remove the Printer Stabilizer (REP 3.0.14).
12. Remove 7 (metal, T-20) screws that secure the Back Frame to the chassis.

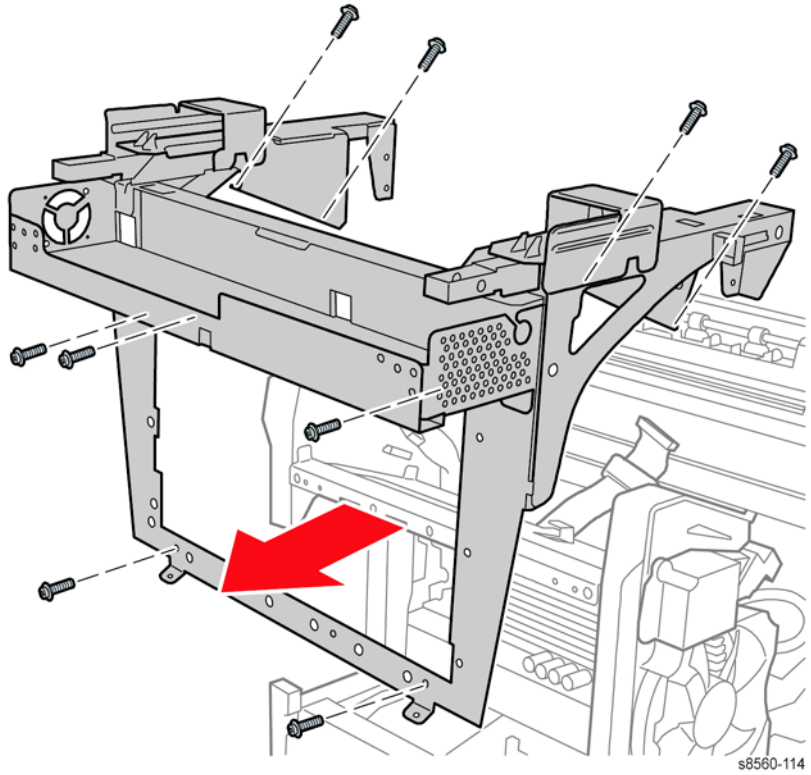


Figure 1 Removing the Back Frame

REP 5.0.26 FDI Board (8860MFP Option)

Parts List on PL 5.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21).
4. Disconnect the harnesses from the FDI board.
5. Remove the 3 (2 metal, T-20, 1 plastic T-20) screws that secure the board to the chassis.

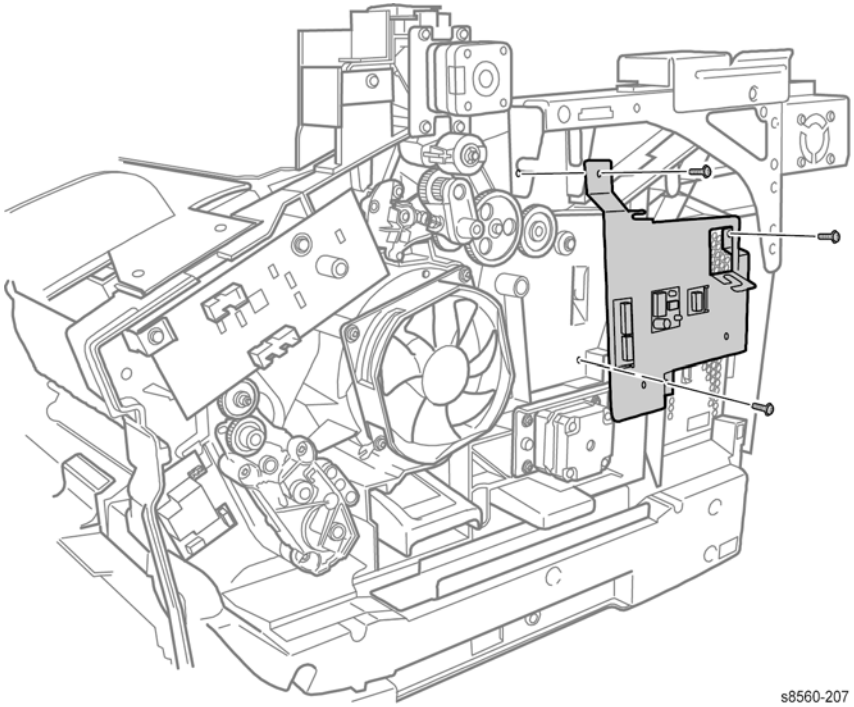


Figure 1 Removing the FDI Board

REP 6.0.1 Scanner Detect Sensor (8860MFP)

Parts List on PL 6.0

Removal

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Flex the retaining hook to the right to remove the sensor from the chassis.
5. Disconnect the sensor (CN851) from the harness.

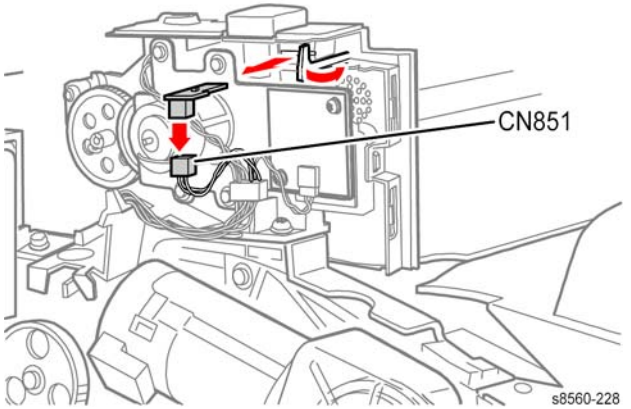


Figure 1 Removing the Scanner Detect Sensor

REP 6.0.2 Front Door and Exit Door Interlock Switches

Parts List on PL 6.0

Removal

NOTE: *These steps describe Interlock Switch removal for the 8860MFP. On 8860 models, access the switches by removing the Control Panel (REP 1.1.6). Afterwards, return to this procedure and begin at Step 3.*

The same part is used for both the Front Door and Exit Door Interlocks, Use this procedure to replace either interlock switch.

NOTE: *Replacement of the Front Door Interlock Switch does not require removal of the Outer Duplex Guide*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).

   NOTE: *Removal of the Outer Duplex Guide is not required to replace the Front Door Interlock Switch.*

3. Remove the Outer Duplex Guide (REP 3.0.6).
4. Remove the defective switch from the Outer Duplex Guide.

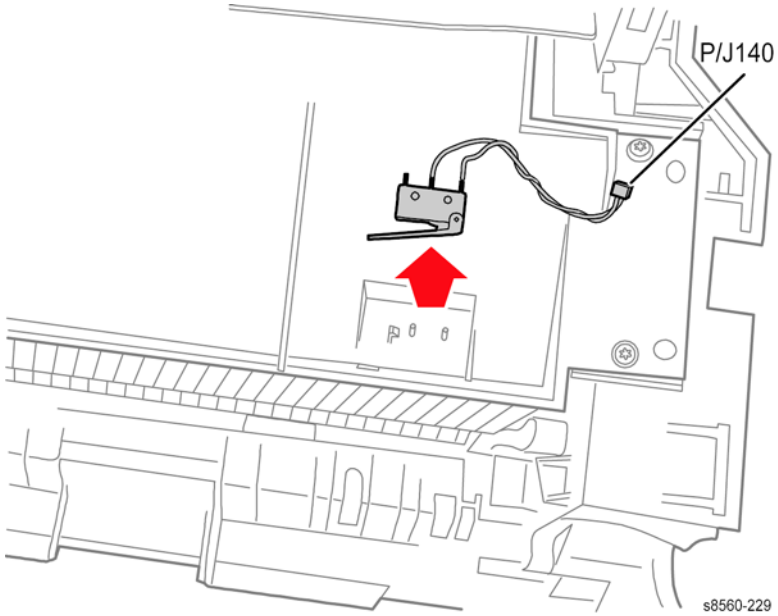


Figure 1 Removing the Front Door Interlock Switch

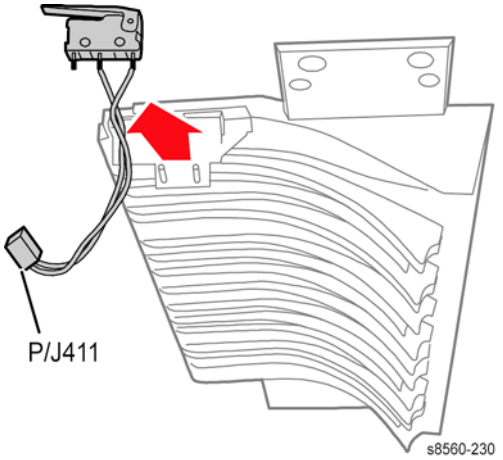


Figure 2 Removing the Exit Door Interlock Switch

REP 6.0.4 Drum Temperature Sensor

Parts List on PL 6.0

Removal

Use this procedure to remove the Drum Temperature Sensor located at the top, right side of the Drum Assembly.

NOTE: *These steps describe Drum Temperature Sensor removal for the 8860MFP. On 8860 models, access the sensor by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 2.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Exit Module (REP 3.0.7 or REP 3.1.13 for the 8860).
3. Remove the screw that secures the sensor to the Drum.

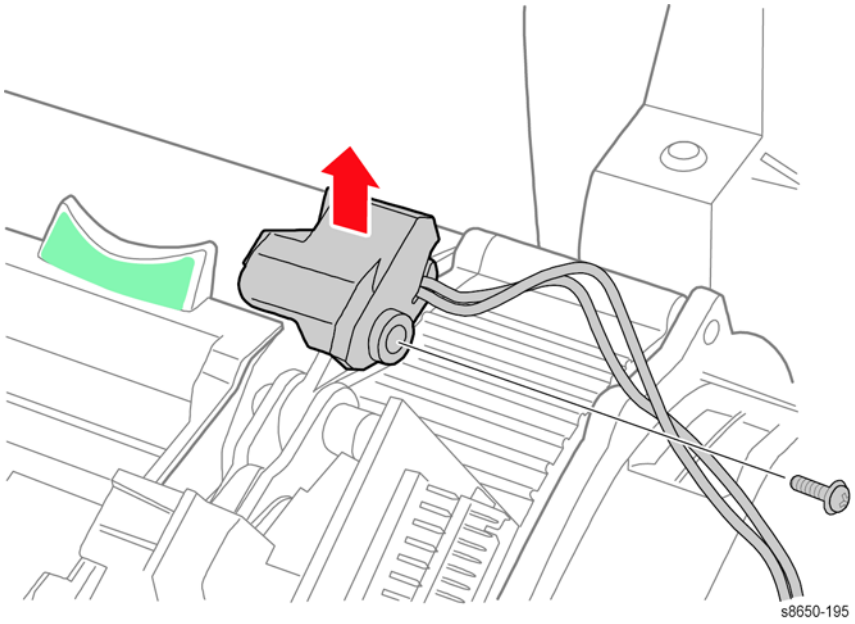


Figure 1 Removing the Drum Temperature Sensor

REP 6.0.6 Waste Tray Detect Sensor

Parts List on PL 6.0

Removal

CAUTION

Place a couple sheets of paper between the Wiper Assembly and the Drum to protect the Drum while performing this procedure.

1. Remove the Printhead (REP 2.0.2).
2. Remove the Waste Tray.
3. Remove the X-Axis Spring (REP 2.0.21).
4. Remove 1 (metal, T-20) screw that secures the X-Axis Spring Retainer to the chassis.

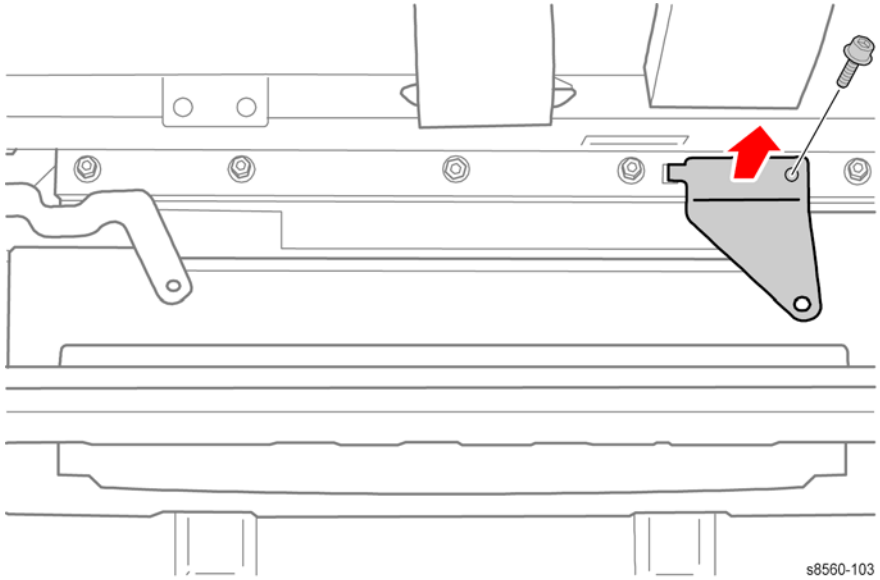


Figure 1 Removing the X-Axis Spring Retainer

5. Unlock the Wiper Blade and raise the Wiper Blade to the top of its travel.
6. Raise the Exit Elevator.
7. Remove the Waste Tray Cover without disconnecting the Waste Tray Sensor harness.
   a. Lift the center of the cover to release the right side hook.
   b. Move the cover towards the rear to release the 2 tabs from the chassis.
   c. Pull the cover to the right to release the left hook and position the cover out of the way.

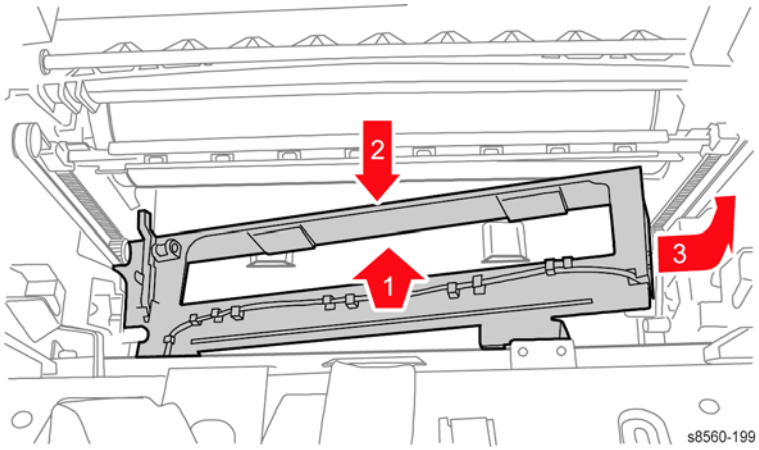


Figure 2 Removing the Waste Tray Cover

8. Disconnect the Waste Tray Detect Sensor (P/J110) from the I/O Board.
9. Unlace the sensor harness from the retainers and guides.
10. Release the hooks that secure the sensor to the cover and remove the sensor.

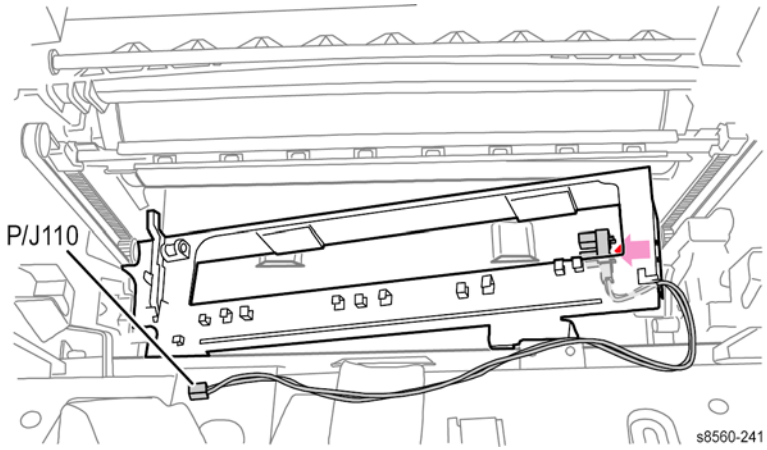


Figure 3 Removing the Waste Tray Detect Sensor.

Replacement

Perform the Head Tilt Gear (ADJ 4.13.1), and Process Drive Alignment (ADJ 4.7.1) adjustments before restoring system power.

REP 6.0.7 Paper Size Switch

Parts List on PL 6.0

Removal

NOTE: *These steps describe Paper Size Switch removal for the 8860MFP. On 8860 models, access the switch by removing the Control Panel Cover (REP 1.1.5). Afterwards, return to this procedure and begin at Step 3.*

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 on the 8860).
4. Remove Tray 2.
5. Disconnect the Paper Size Switch (P/J600) from the I/O Board.
6. Unlace the harness from the retainers.
7. Use pliers to push the latch rearward and release the front of the switch from the chassis.

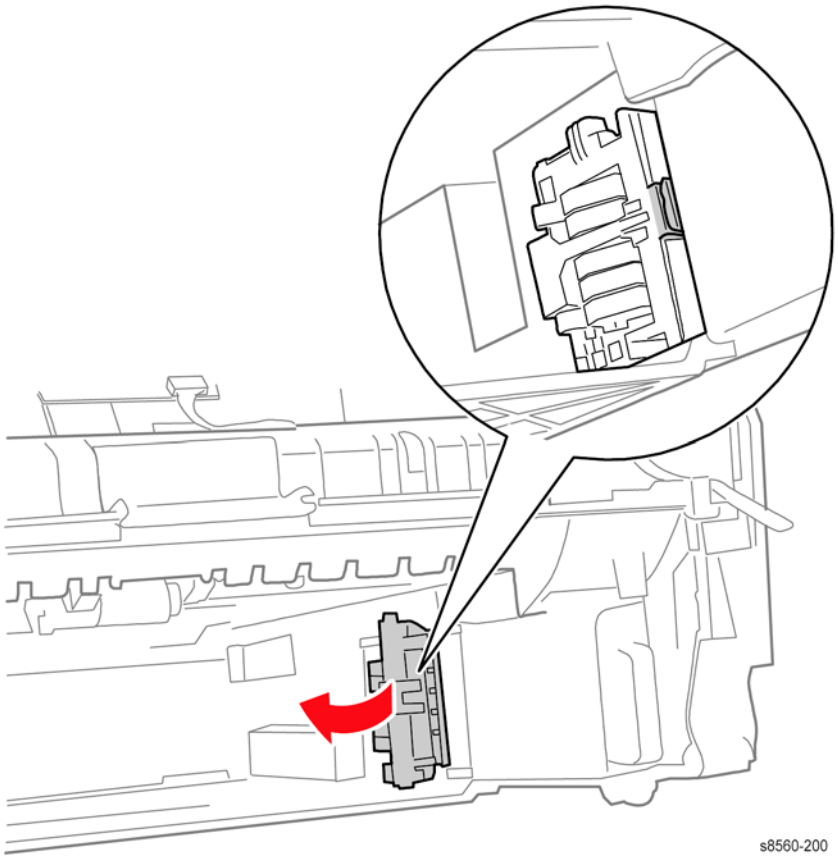


Figure 1 Removing the Paper Size Switch

8. Pull the harness through the opening in the chassis and remove the switch from the tray cavity.

REP 6.0.8 No Paper Sensor

Parts List on PL 6.0

Removal

1. Remove the Front Door (REP 1.0.1).
2. Remove Tray 2.
3. Remove the Pick Roller Assembly (REP 3.0.18).
4. Remove the Lower Duplex Guide (REP 3.0.2).
5. Remove the Inner Simplex Guide (REP 3.0.1).
6. Release the 4 hooks that secure the No Paper Sensor to the left side of the Pick Assembly recess.

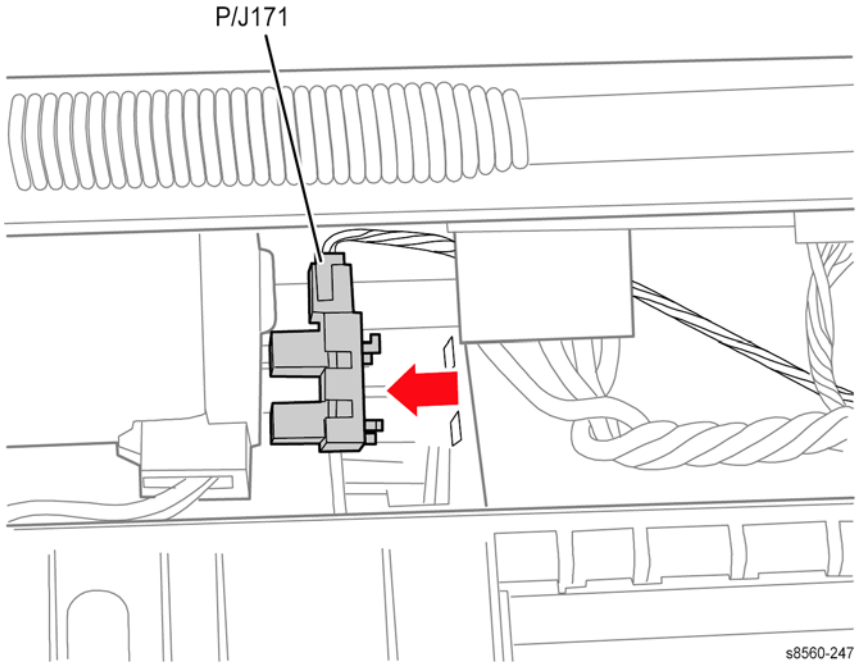


Figure 1 Removing the No Paper Sensor

7. Disconnect the sensor (P/J171) from the harness and remove the sensor.

Replacement

Disconnect the Preheater Assembly (P/J0720 and P/J860) to make additional room to replace the sensor. Release the lock on P/J0720 to remove it from the Preheater Assembly.

REP 6.0.9 Paper Height Sensor

Parts List on PL 6.0

Removal

1. Remove the Front Door (REP 1.0.1).
2. Remove Tray 2.
3. Remove the Pick Roller Assembly (REP 3.0.18).
4. Remove the Lower Duplex Guide (REP 3.0.2).
5. Remove the Inner Simplex Guide (REP 3.0.1).
6. Release the 4 hooks that secure the Paper Height Sensor to the right side of the Pick Assembly recess.

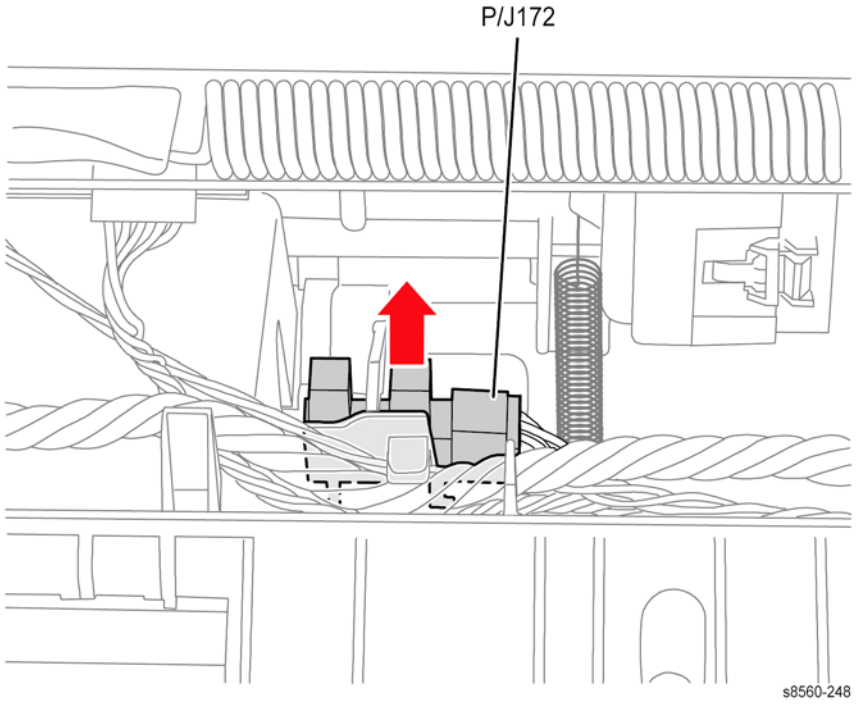


Figure 1 Removing the Paper Height Sensor

7. Disconnect the sensor (P/J172) from the harness and remove the sensor.

Replacement

Disconnect the Preheater Assembly (P/J0720 and P/J860) to make additional room to replace the sensor. Release the lock on P/J0720 to remove it from the Preheater Assembly.

REP 6.0.11 Output Tray Full Sensor (8860MFP)

Parts List on PL 6.0

Removal

The Output Tray Full Sensor consists of two circuit boards mounted on either side of the Output Tray. Replace both boards when replacing this sensor.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7).
4. Remove the Right Side Cover (REP 1.0.21).
5. Remove the Exit Elevator Motor (REP 4.0.9).
6. Disconnect the Output Tray Full Sensor connectors CN801 and CN802 (see Figure 1).
7. Remove 2 (plastic, T-20) screws that secure the left and right boards to the chassis.

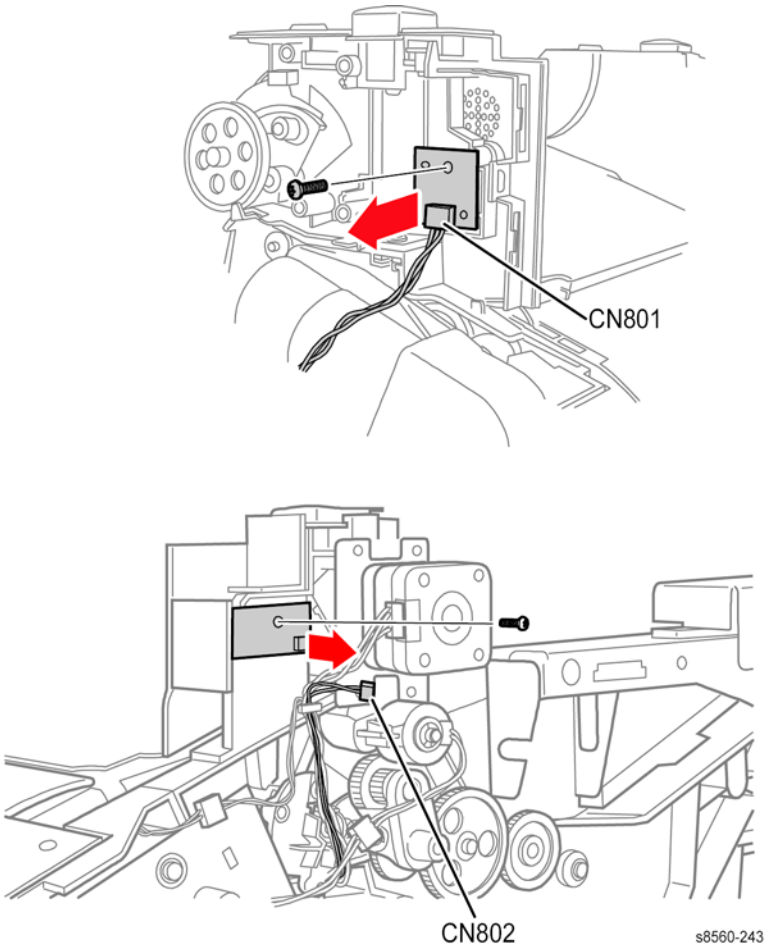


Figure 1 Removing the Output Tray Full Sensor

ADJ 1.15.1 DADF to Scanner Calibration (8860MFP)

Purpose

Use this adjustment procedure to calibrate a newly installed DADF to the Scanner Assembly. This procedure requires the Scanner Calibration Page shown in Figure 1, Use the calibration page that came with the replacement part

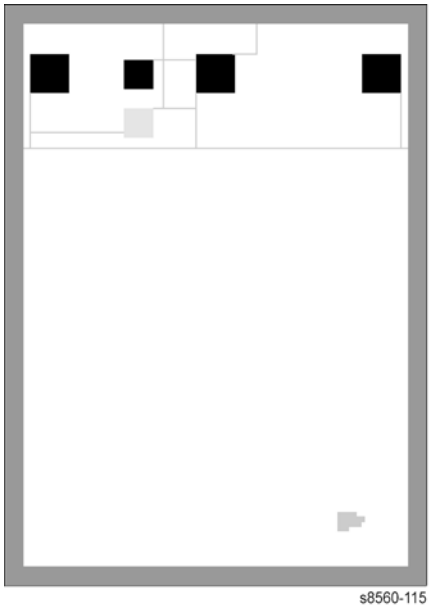


Figure 1 Scanner Calibration Page P/N 109K02110

NOTE: *Perform this calibration procedure when replacing the Scanner Assembly or DADF. Start this procedure with the scanner having just made a duplex copy, this ensures the lamps are up to temperature. If the lamps are cold, the calibration procedure fails due to a time-out.*

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.

Adjustment

1. On the control panel, press the System Setup button.
2. Select the Information menu
3. Select Troubleshooting, and then press the Enter button.
4. Select Calibrate Scanner, and then press the Enter button.
5. Place the Scanner Calibration page on the platen with the top edge to the left as shown in Figure 2.

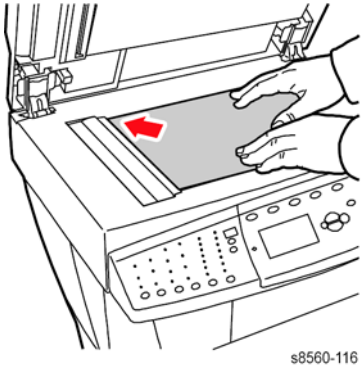


Figure 2 Scanning the Scanner Calibration Page

NOTE: *Make sure the Scanner Calibration page is aligned correctly. If the page is misaligned, the calibration procedure fails.*

6. Close the document feeder.
7. Select the Document Glass Step from the menu, and then press Enter to scan the Scanner Calibration page.
8. When the scan completes, check the Control Panel message:
   - If the Control Panel indicates Success, select Continue, press Enter, and then continue with Step 9.
   - If the Control Panel indicates Failure, select Continue, press Enter, and then repeat Steps 5-7.
9. Remove the Scanner Calibration page from the platen.
10. Place the Scanner Calibration page in the DADF face up so the top edge enters first. Adjust the paper guides so they fit against the page.

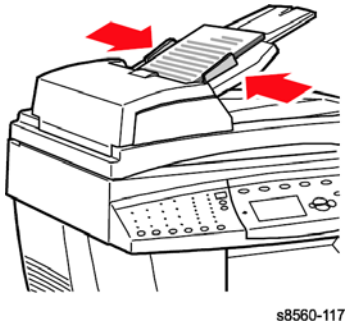


Figure 3 Loading the Scanner Calibration Page into the DADF

NOTE: *Make sure the Scanner 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.*

11. Select Document Feeder Step from the menu, and then press Enter to scan the Calibration page.
12. When the scan completes, check the control panel message:
    - If the Control Panel indicates Success, select Continue, press Enter, and calibration procedure is complete.
    - If the Control Panel indicates Failure, select Continue, press Enter, and then repeat Steps 1 and 2 until a successful result is achieved.

ADJ 2.2.1 Printhead Parking

Purpose

To place the Printhead in a parked position, away from the Drum, during service procedures or when the Control Panel parking routine is unavailable.

CAUTION

After servicing the system, place the Printhead, Head Tilt Gear, Printhead Wiper Blade, and Process Drive in their home positions before turning the system power on. Damage to the Process Drive or system errors can result during system initialization.

Adjustment

Use this procedure to move the Printhead to its parked position.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 on the 8860).
4. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 on the 8860).
5. Remove the Ink Loader (REP 2.0.1 or REP 1.1.8 on the 8860).
6. Engage the Head Tilt Gear as shown in Figure 1.

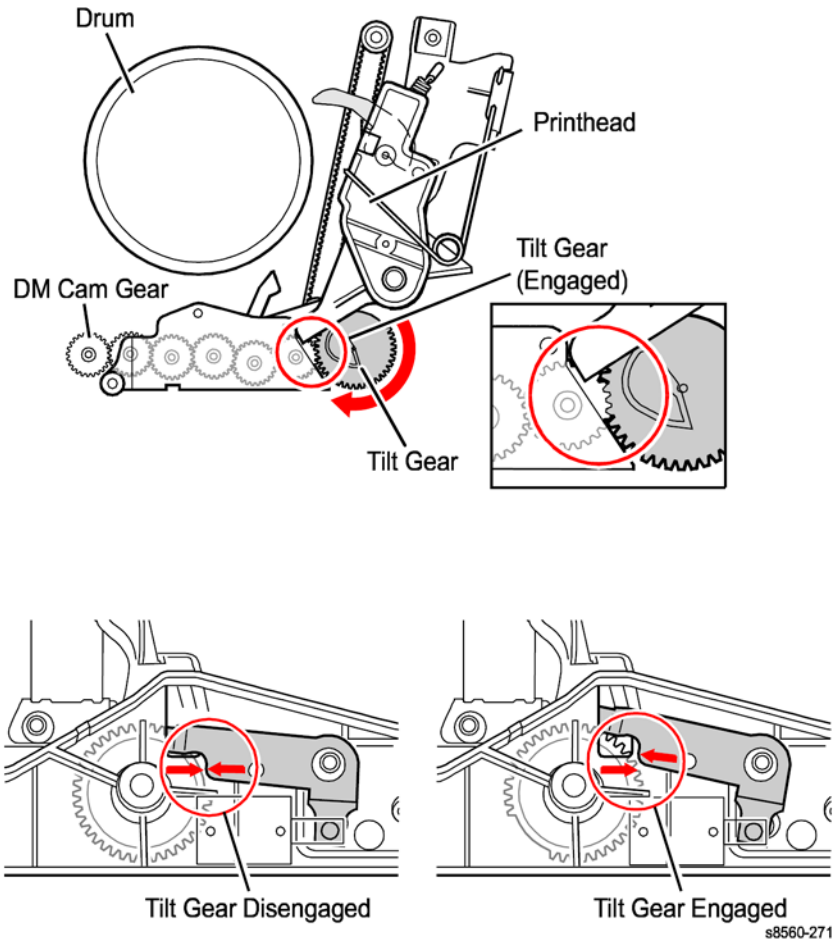


Figure 1 Printhead Wiper Blade Drive

7. Rotate the Drum Maintenance Camshaft until the Printhead has moved to the parked position, which is the furthest point from the Drum.

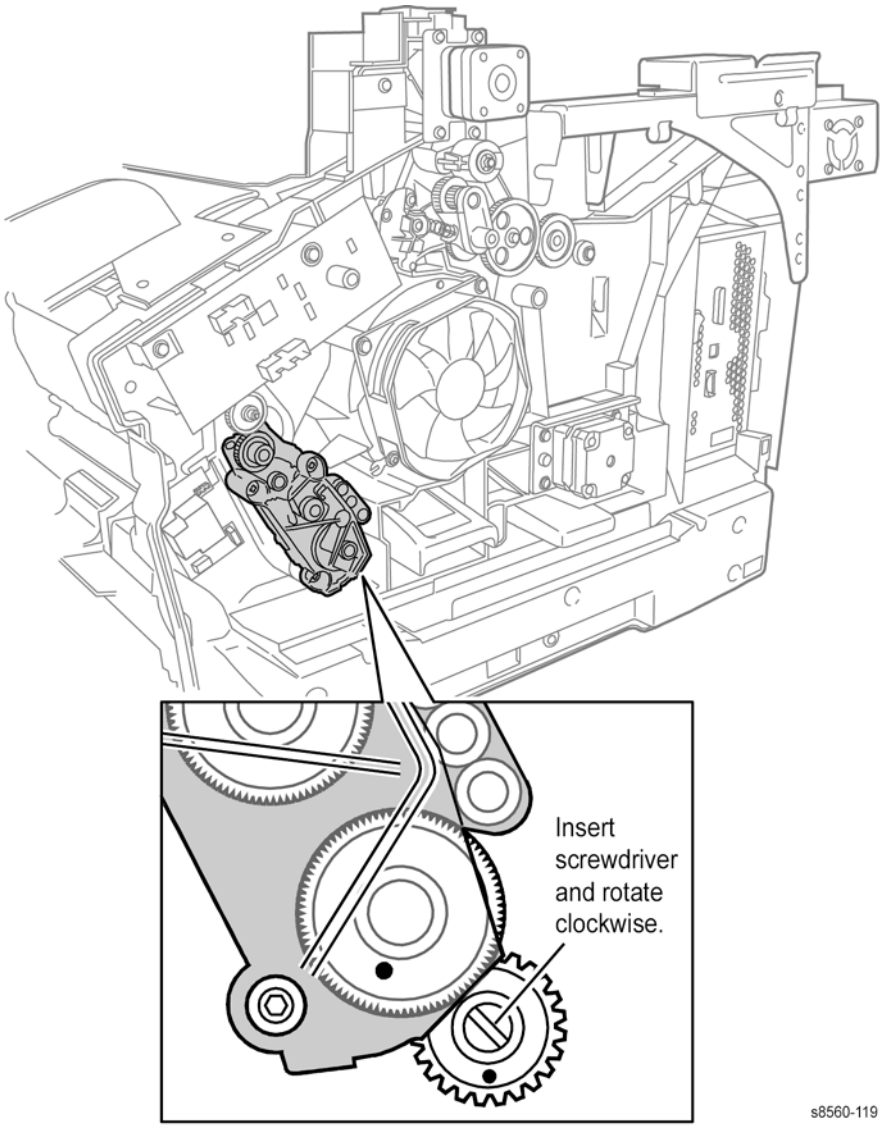


Figure 2 Rotating the Drum Maintenance Camshaft

ADJ 2.5.1 Wiper Blade Alignment

Purpose

To set the Printhead Wiper Blade alignment or place the Wiper Blade in the home position.

Adjustment

To ensure Wiper Blade alignment, and place the blade in the home position, remove the drive gear, lower the blade, and then reseat the gear.

1. Remove the Scanner Assembly with attached DADF (REP 1.0.11).
2. Remove the Output Tray (REP 1.0.6).
3. Remove the Left Side Cover (REP 1.0.7 or REP 1.1.9 on the 8860).
4. Remove the Right Side Cover (REP 1.0.21 or REP 1.1.10 on the 8860).
5. Remove the KL-Clip that secures the left side Wiper Blade Drive Gear and remove the gear.

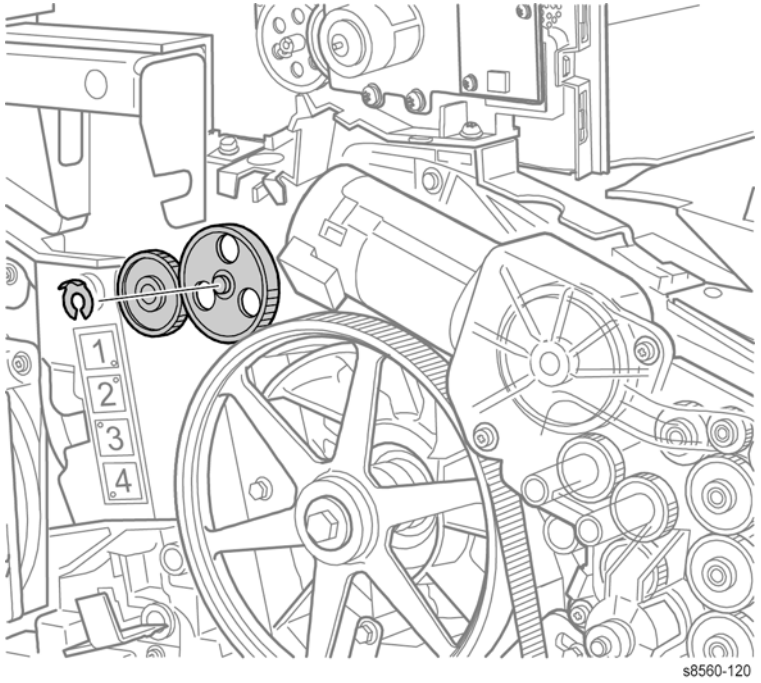


Figure 1 Printhead Wiper Blade Drive

6. Rotate the left and right Wiper Blade Idler Gears to lower the Wiper Blade to the bottom of its travel. As you lower the Wiper Blade, keep the blade parallel to the Drum.

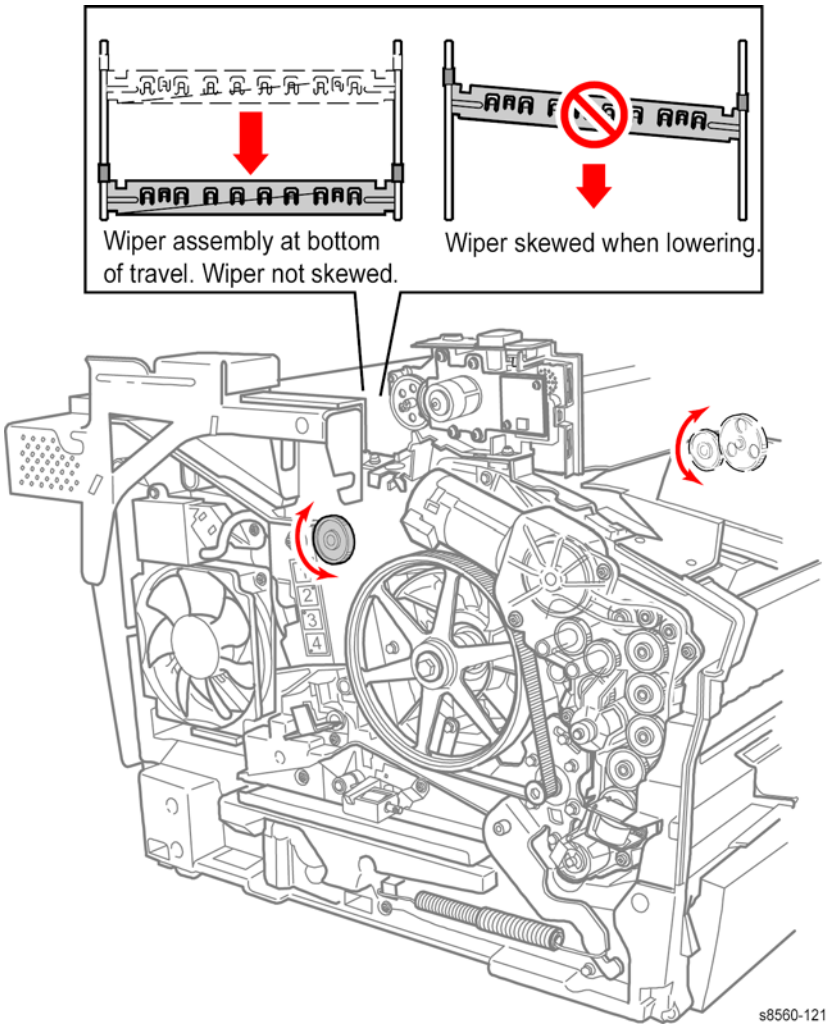


Figure 2 Lowering the Printhead Wiper Blade

7. Replace the left side Drive Gear and KL-Clip.

ADJ 4.7.1 Process Drive Alignment

Purpose

To place the Process Drive in the home position.

CAUTION

Place the Printhead, Head Tilt Gear, Printhead Wiper Blade, and Process Drive in their home positions before restoring system power. Improper alignment could result in damage or errors.

Adjustment

Examine the Process Drive alignment points to verify proper gear alignment:

- The holes in the Process Drive and gears must align as indicated in Figure 1.

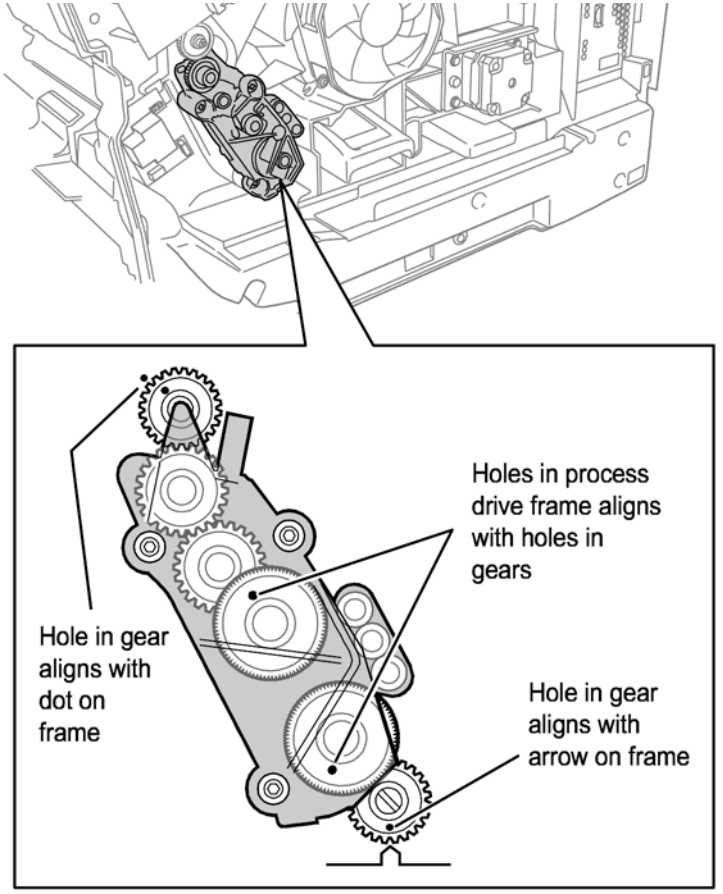


Figure 1 Process Drive Gear Alignment

- The hole in the Camshaft gear must align with the arrow on the chassis.
- The hole in the Transfix Camshaft Gear must align with the hole in the chassis.

ADJ 4.13.1 Head Tilt Gear and Printhead Homing

Purpose

To home the Head Tilt Gear and as a result, the Printhead. Two procedures are given, one for when the Printhead is installed, and one for when the Printhead is not installed.

Printhead Not Installed

Adjustment

1. Disengage the Head Tilt Gear as shown in Figure 1.

   NOTE: *When the Head Tilt Gear is disengaged, the two arrows on the left side of the printer align as shown in Figure 1.*

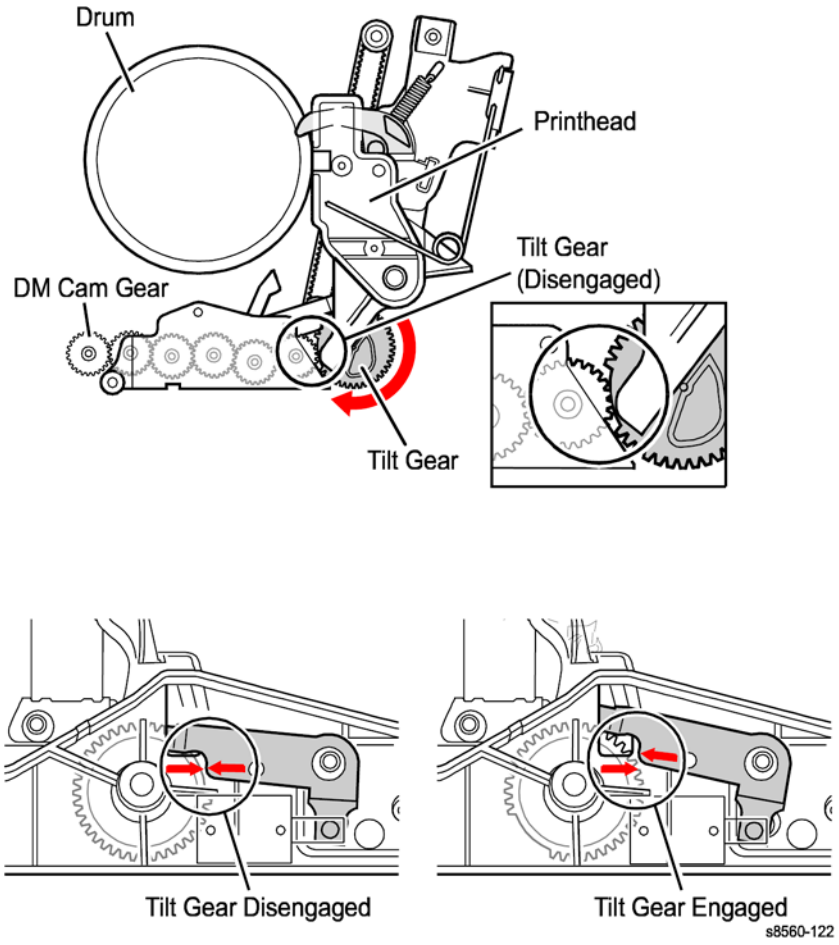


Figure 1 Head Tilt Gear Indicator

Printhead is Installed

Adjustment

1. Remove the Drum Maintenance Kit.
2. With the Printhead centered over the Drum to clear the restraints, rotate the Drum Maintenance Camshaft 360° clockwise using a flat blade screwdriver as shown in Figure 2. If the Head Tilt Gear is engaged, manually assist the movement of the Printhead. There is an audible click when the Head Tilt Gear disengages.

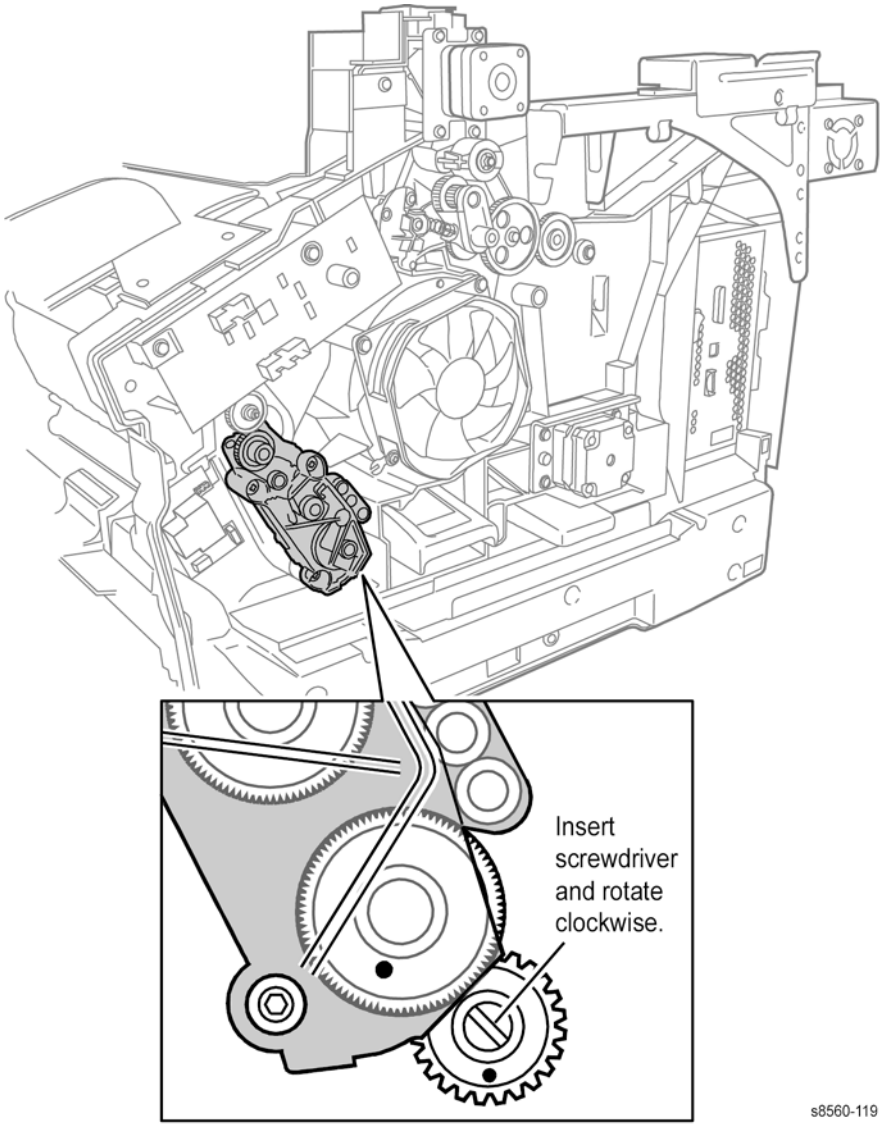


Figure 2 Rotating the Drum Maintenance Camshaft

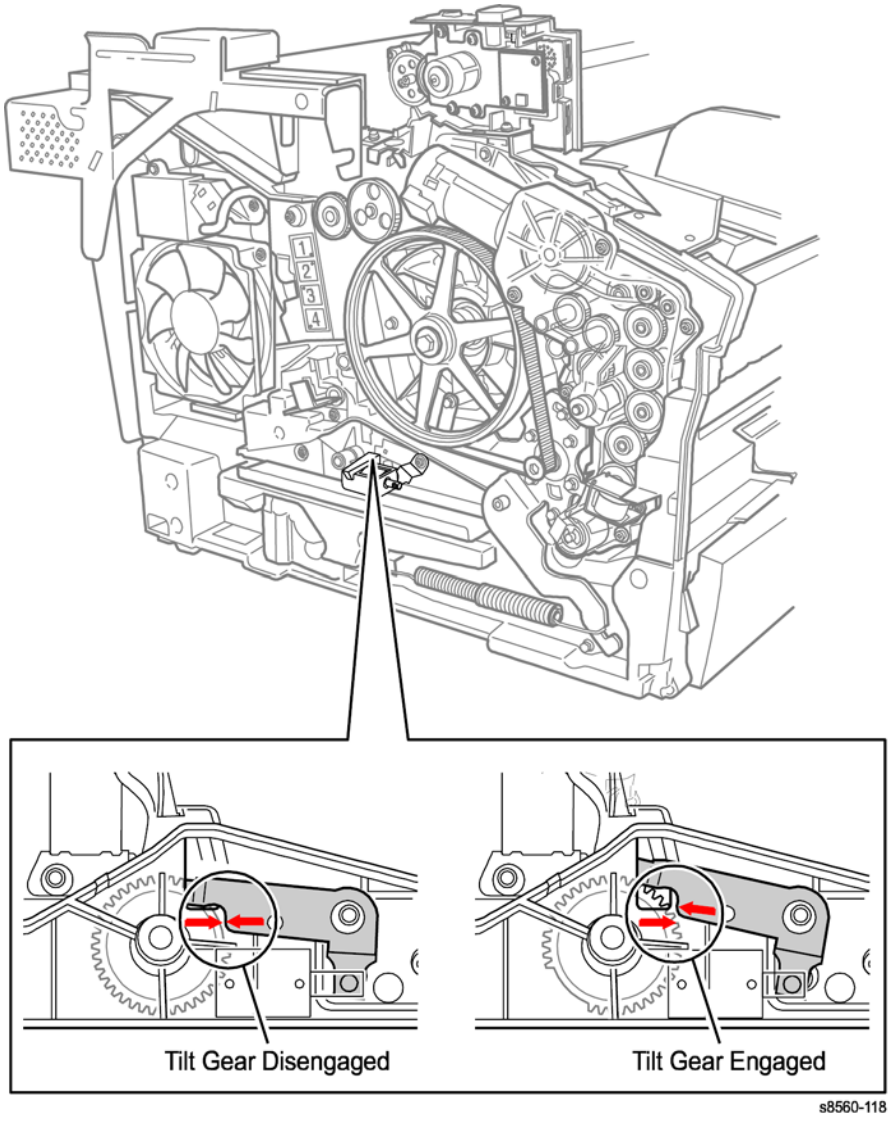


Figure 3 Head Tilt Gear Indicator

NOTE: *Rotate the Drum Maintenance Camshaft Gear until the hole in the gear reaches the 6:00 position.*

3. Disengagement of the Head Tilt Gear is indicated by the alignment of the two arrows on the left side of the chassis as shown in Figure 3.

5 Parts List

Parts List Overview

The Parts List section identifies all part numbers and the corresponding location of all spared subsystem components.

Use of the Term “Assembly”

The term “assembly” is used for items in the parts listing that may include other itemized parts. When the word “assembly” is found in the part number listing, there will be a corresponding item number on the illustrations followed by a bracket and a listing of the contents of the assembly.

Using the Parts Lists

Only those parts listed with part numbers are available for order. Parts listed without part numbers are only available as part of a parent assembly or Service Kit.

- Item.: The callout number from the exploded part diagram.
- Part Number: The material part number used to order specific parts
- Description: Name of the part and number supplied per order.
- Parts throughout this manual are referenced PL#.#.#; For example, PL 3.0.10 means the part is item 10 of Parts List 3.0.
- A black triangle preceding a number followed by a parenthetical statement indicates the item is a parent assembly, made up of the parts listed in parentheses and enclosed by a dashed line.
- The notation (P/O PL X.X Item X) folowing the part description indicates the part is included with the item identified in the referenced Parts List.
- The notation “(with X~Y)” following a part name indicates an assembly includes components X through Y. For example, “1 (with 2~4)” means part 1 consists of parts 2, 3, and 4
- 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.

Serial Number Format

Changes to Xerox products are made to accommodate improved components. As improvements are made, part numbers may change from those appearing in this section. To get the latest part, provide the following information when ordering:

- Component's part number
- Product type or configuration number
- Serial number of the printer

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 format PPPRSSSSS where:

  PPP - Is the alphanumeric Product Code

Table 1 8860/8860MFP Product Code

Product	Product Code
8860	HAV
8860MFP	HBB

  R - Is the numeric revision digit. Changes at major product updates or when the serial number is reset to a starting value.

  SSSSS - Is the five digit numeric serial number.

For example: S/N HBB453072

- **HBB** = Product code for the 8860MFP
- **4** = Revision level
- **53072** = Serial number

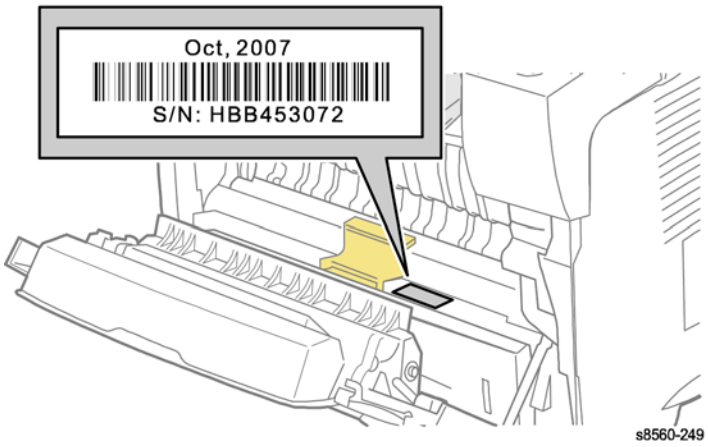
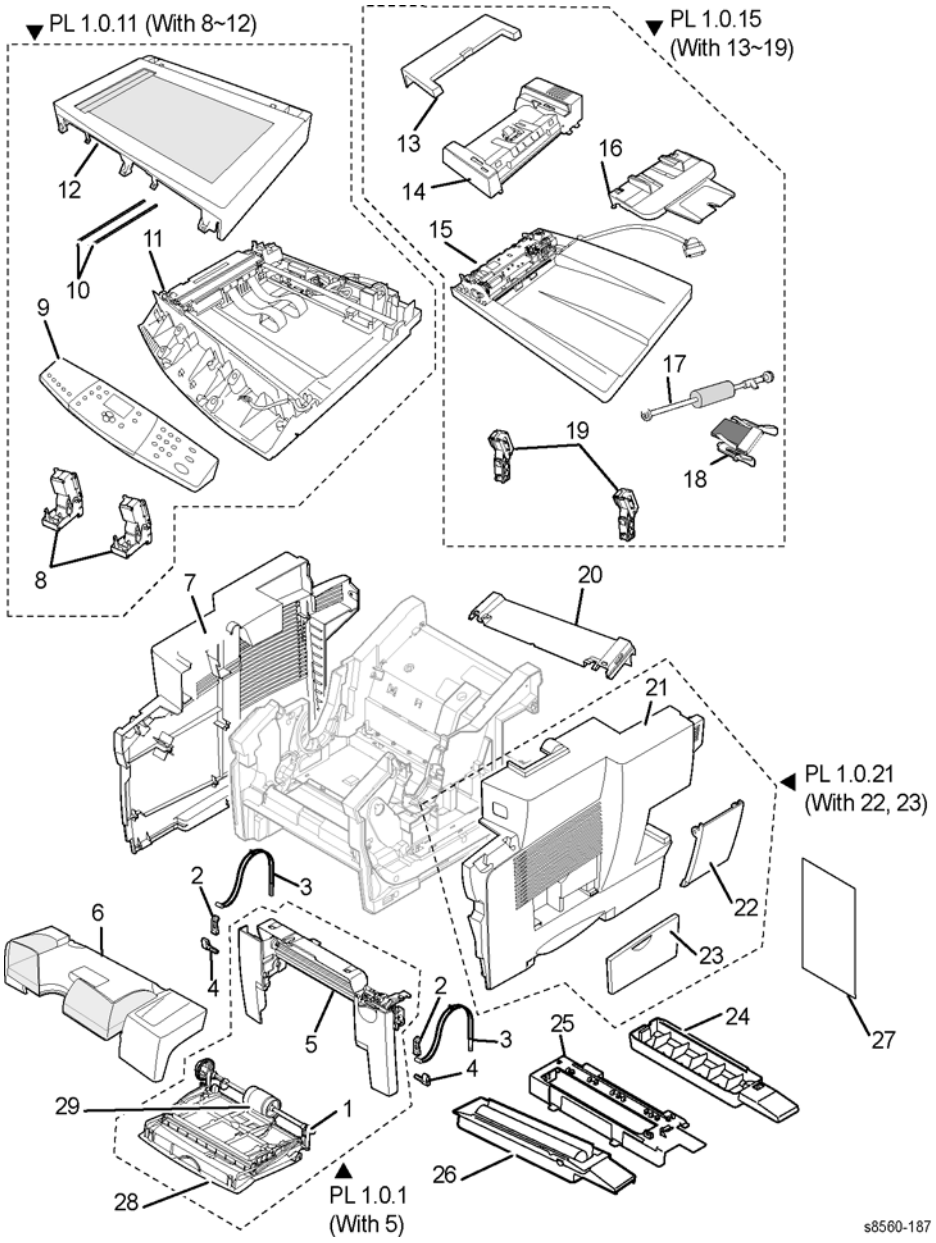


Figure 1 Serial Number Location

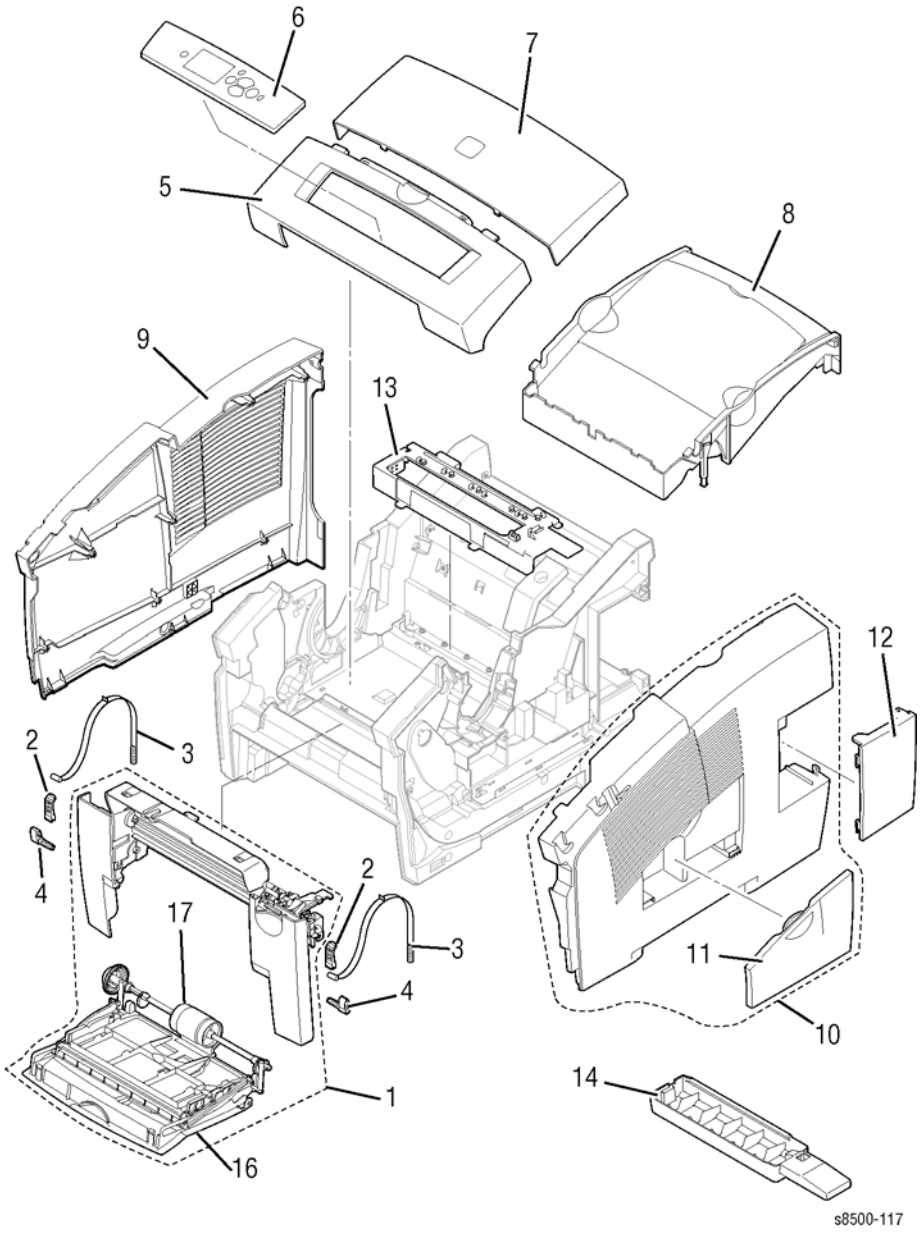
PL 1.0 8860MFP Covers

Item	Part	Description
1	848K06520	Front Door / Tray 1 Assembly
2	120E29140	Front Door Stay Retainer
3	009K02390	Front Door Stay with Spring
4	029E49330	Hinge Pins, Front Door
5	–	Front Door (P/O PL 1.0 Item 1)
6	050E23550	Output Tray
7	101E23660	Left Side Cover
8	003K20530	Scanner Hinge
9	848E11560	Control Panel (without Overlays)
10	–	Lamp Assembly
11	062K22590	Scanner Assembly (with 8-12)
12	–	Upper Housing (P/O PL 1.0 Item 11) (Includes Glass)
13	–	DADF Front Cover (P/O PL 1.0 Item 15)
14	–	DADF Upper Cover (P/O PL 1.0 Item 15)
15	059K58460	DADF Assembly (with 13-19)
16	050K67610	DADF Input Tray
17	059K58650	DADF Pick Roller and Pad Kit
18	–	Separator Pad (P/O PL 1.0 Item 17)
19	003K20520	DADF Hinge
20	848E17250	Rear Cover
21	101E23670	Right Side Cover (with doors)
22	848E11530	I/O Access Door
23	848E11540	Drum Maintenance Door
24	109R00736	Waste Tray
25	802E93880	Waste Tray Cover
26	113R00736	Maintenance Kit, Standard
–	604K53810	Maintenance Kit, Extended
27	109K02110	Scanner Calibration Page
28	050K68070	MPT Tray Arm (P/O PL 1.0 Item 1)
29	059K63590	MPT Pick Roller (P/O PL 1.0 Item 1)



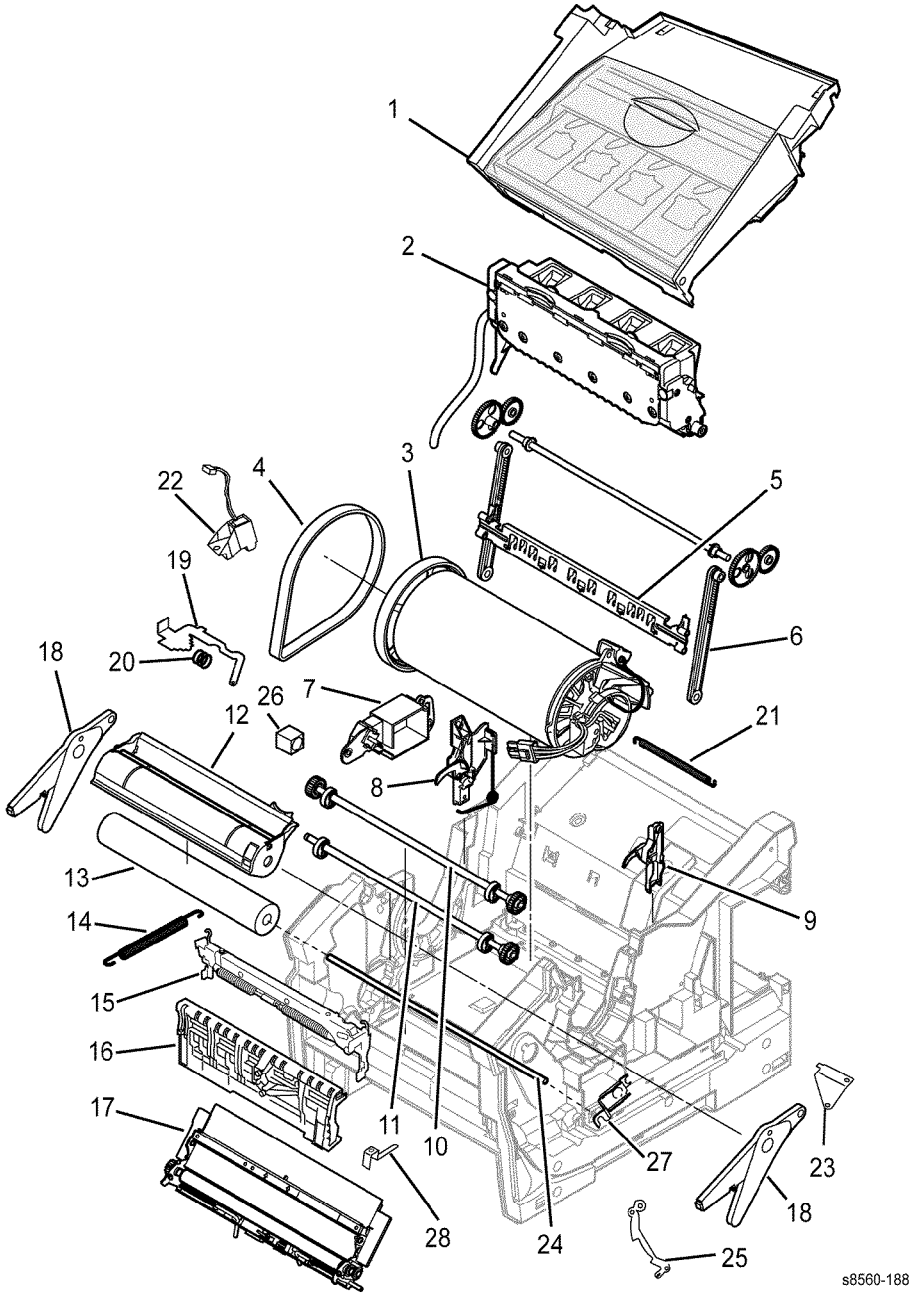
PL 1.1 8860 Covers

Item	Part	Description
1	848K06520	Front Door / Tray 1 Assembly
2	120E29140	Front Door Stay Retainer
3	009K02390	Front Door Stay with Spring
4	029E49330	Hinge Pins, Front Door
5	802E93850	Control Panel Cover
6	802K93650	Control Panel with Bezel
7	848K12760	Exit Cover with Badge
8	–	
9	802K93660	Left Side Cover
10	802K93570	Right Side Cover with Doors
11	802E93870	Drum Maintenance Door (P/O PL 1.1 Item 10)
12	802E93860	I/O Access Door
13	802E93880	Waste Tray Cover
14	109R00736	Waste Tray
15	113R00736	Maintenance Kit, Standard
–	604K53810	Maintenance Kit, Extended
16	050K68070	MPT Tray Arm (P/O PL 1.1 Item 1)
17	059K63590	MPT Pick Roller (P/O PL 1.1 Item 1)



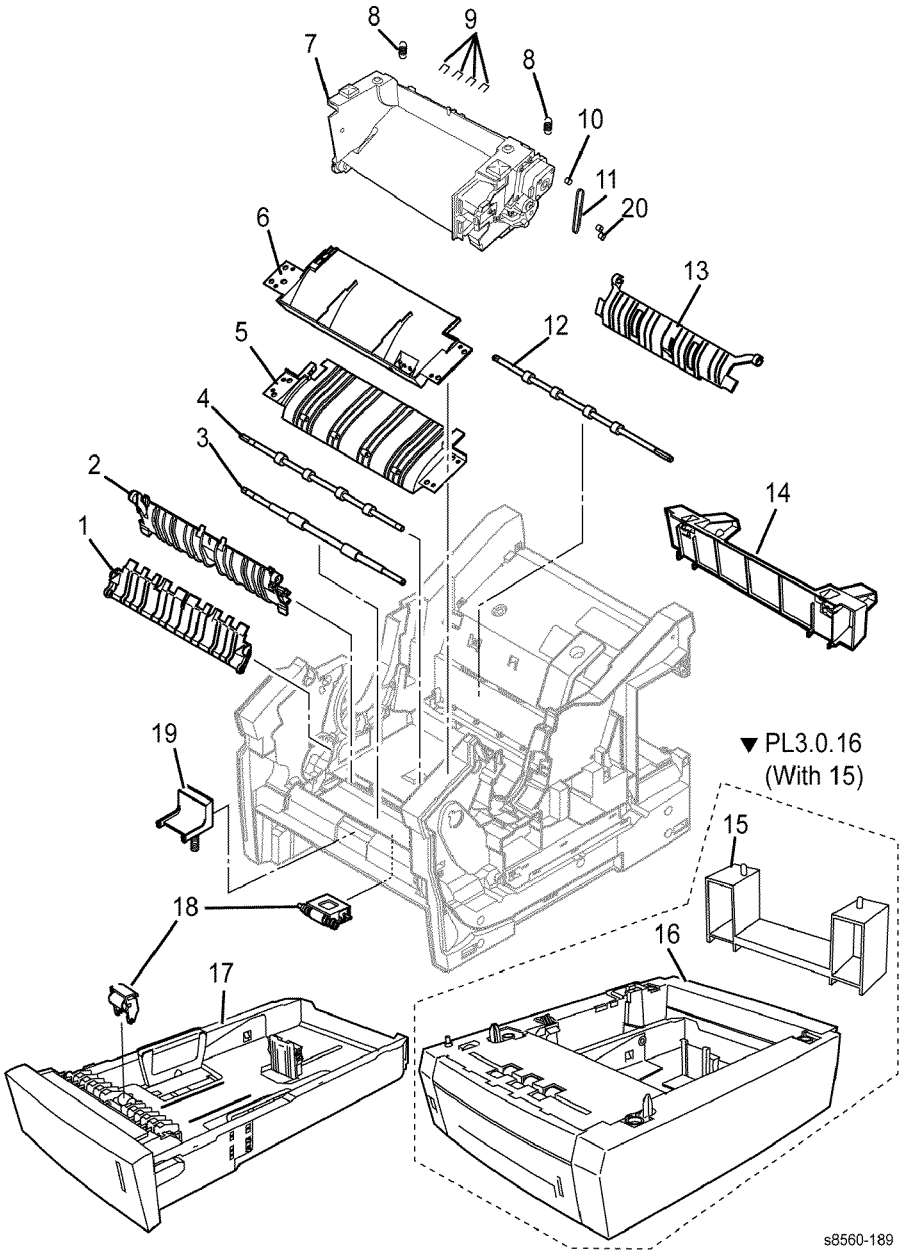
PL 2.0 Imaging

Item	Part	Description
1	848K18890	Ink Loader (8860MFP only)
–	848K24660	Ink Loader (metered 8860MFP)
–	848K18880	Ink Loader (8860 only)
–	848K24650	Ink Loader (metered 8860)
2	033K04490	Printhead
3	020K15090	Drum Assembly
4	023E30670	Y-Axis Belt
5	033E05290	Printhead Wiper Blade
6	023E31250	Wiper Drive Belt
7	094E02790	Purge Pressure Pump
8	120E29160	Left Printhead Restraint
9	120E29150	Right Printhead Restraint
10	020K14800	Drum Maintenance Camshaft
11	008K02260	Transfix Camshaft
12	041K06500	Stripper Carriage Assembly
13	022E33180	Transfix Roller
14	809E69920	Y-Axis Tension Spring
15	137E24130	Transfix Load Module
16	020K15100	Drum Maintenance Pivot Plate
17	126E02721	Preheater and Deskew Assembly
18	059K50011	Transfix Arm Kit (with pins)
19	019E75180	X-Axis Bias Spring Hook
20	809E69940	X-Axis Roll Adjuster Spring
21	809E69930	X-Axis Bias Spring
22	121K44430	Preheater Lift Solenoid
23	–	X-Axis Bias Spring Retainer (Not Spared)
24	–	Transfix Roller Shaft (Not Spared)
25	–	Drum Ground Plate (Not Spared)
26	–	Roll Block (Not Spared)
27	–	Transfix Roller Shaft Restraint (Not Spared)
28	–	Transfix Load Module Ground Strap (Not Spared)



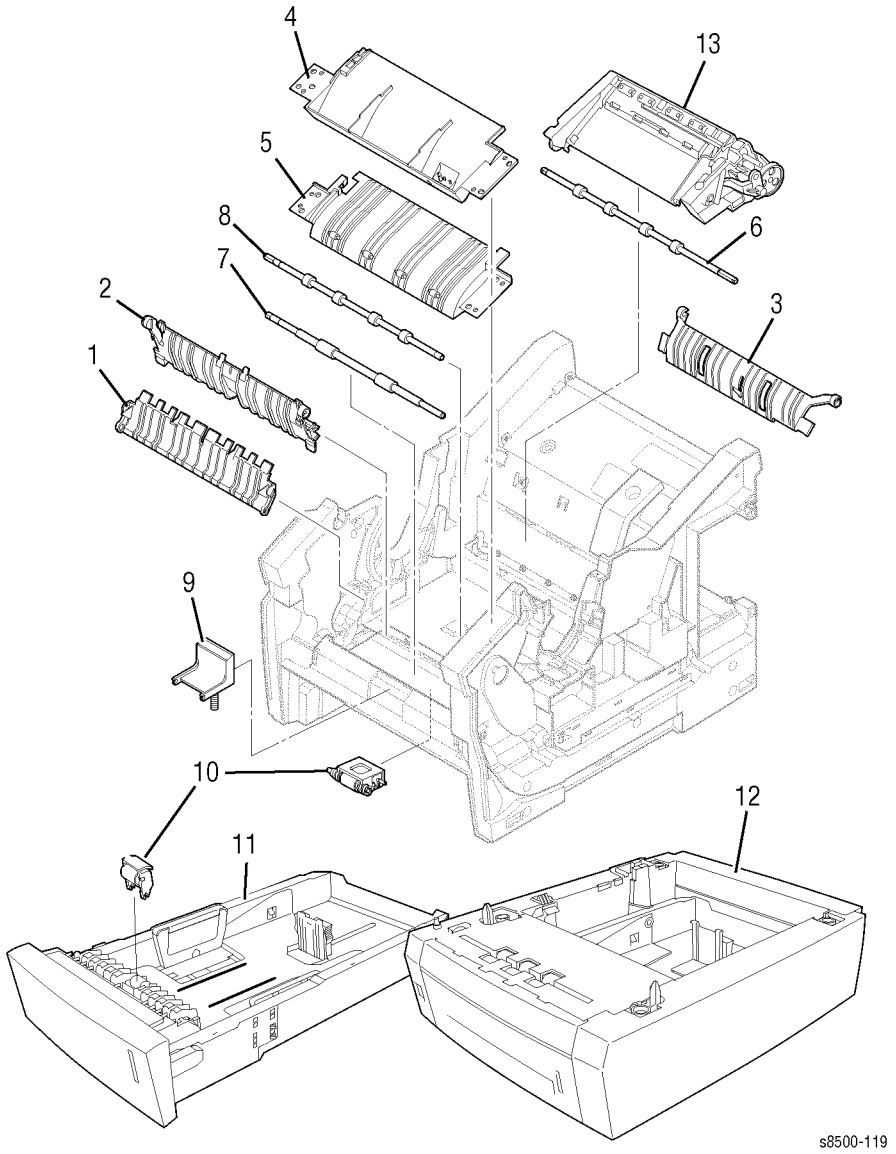
PL 3.0 8860MFP Paper Path

Item	Part	Description
1	032E29480	Inner Simplex Guide
2	038K16870	Lower Inner Duplex Guide
3	022E32420	Take Away Roller
4	022E32410	Duplex Roller
5	032K04630	Upper Duplex Guide with Solenoid
6	032K04640	Outer Duplex Guide with Switches
7	133K27680	Exit Module Assembly (with 10, 11, 20)
8	809E78710	Spring Carriage
9	809E78700	Spring, Carriage Roller
10	–	Pulley, Exit Module (P/O PL 3.0 Item 7)
11	–	Belt, Exit Module (P/O PL 3.0 Item 7)
12	059E05610	Exit Roller
13	038K17800	Lower Exit Guide Assembly
14	674E02820	Stabilizer, Printer
15	674E00760	525-Sheet Feeder Stabilizer
16	059K58610	525-Sheet Feeder, Tray, Stabilizer (P/O PL 3.0 Item 15)
17	050E23570	525-Sheet Tray, Adjustable to Legal
18	604K42200	Pick Assembly and Retard Roller
19	604K31140	Separator Pad Kit
20	–	Belt Tensioner (P/O PL 3.0 Item 7)



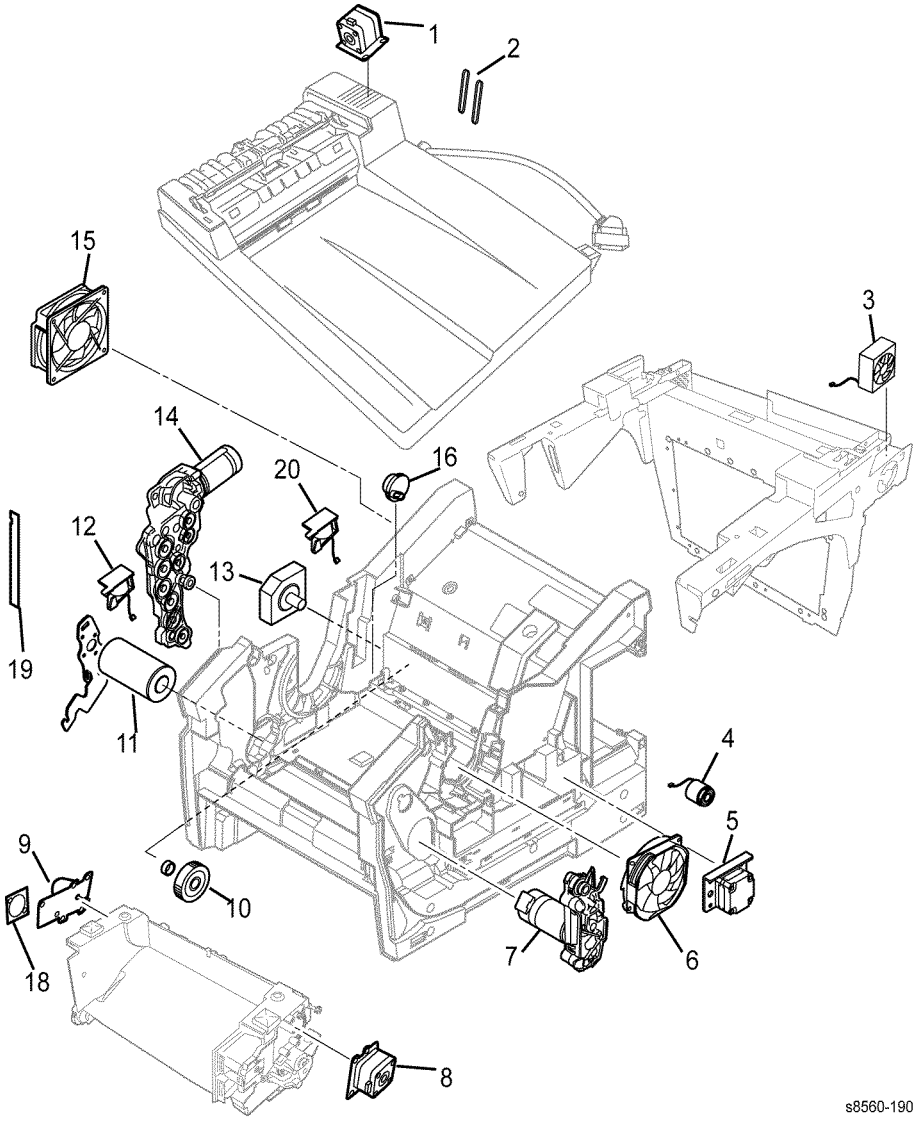
PL 3.1 8860 Paper Path

Item	Part	Description
1	032E29480	Inner Simplex Guide
2	038K16870	Lower Inner Duplex Guide
3	038K17800	Lower Exit Guide Assembly
4	032K04640	Outer Duplex Guide with Switches
5	032K04630	Upper Duplex Guide with Solenoid
6	059E05610	Exit Roller
7	022E32420	Take Away Roller
8	022E32410	Duplex Roller
9	604K31140	Separator Pad Kit
10	604K42200	Pick Assembly and Retard Roller
11	050E23080	Tray
12	059K58610	525-Sheet Feeder and Tray
13	133K27700	Exit Module



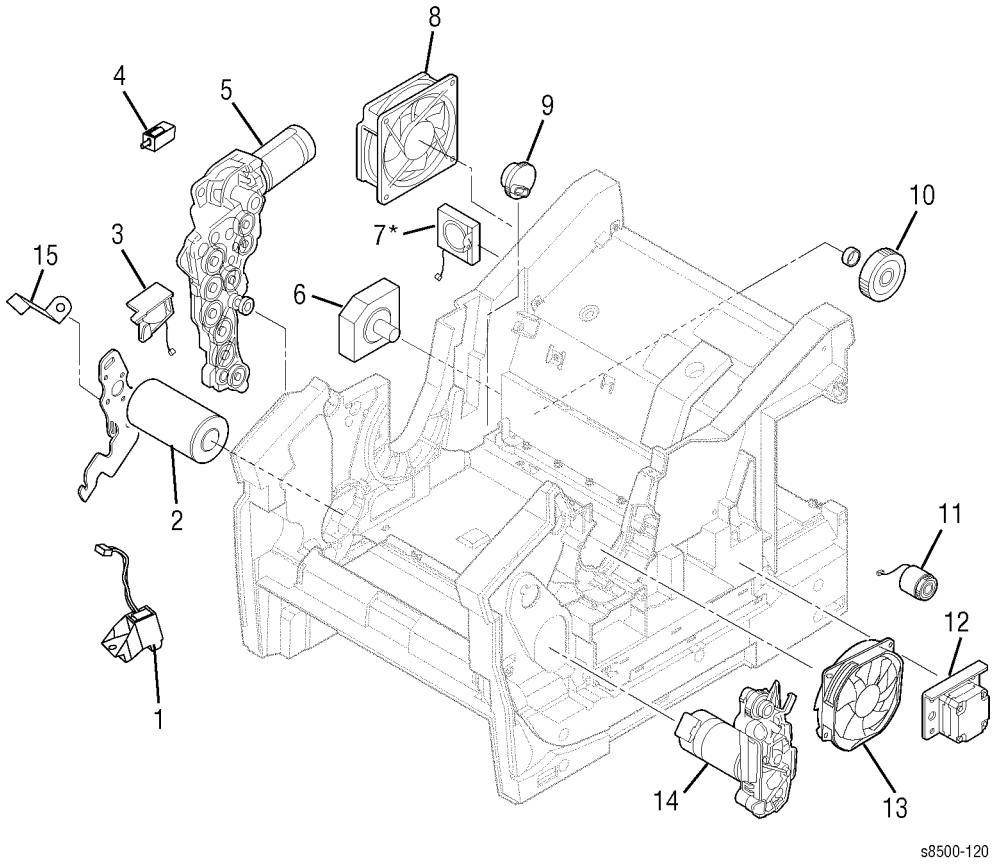
PL 4.0 8860MFP Drive

Item	Part	Description
1	–	ASM, Motor (Not Spared) (DADF)
2	–	DADF Belt Kit (Not Spared)
3	127E15910	Scanner Power Supply Fan
4	033E05190	Head Maintenance Clutch
5	127K53580	X-Axis Motor
6	127E16010	Drum Fan
7	005K12780	Process Drive
8	127K56300	Exit Motor
9	059K58470	Elevator Motor Assembly
10	–	Lift Motor Gear (Not Spared)
11	127K56520	Y-Axis Motor Assembly
12	121E20120	Tray 1 Pick Solenoid
13	604K31810	Tray Lift Motor
14	807E23090	Media Drive with 2 Clutches
15	133K25010	Electronics Module Fan
16	007K14590	Head Tilt Gear
18	130E12580	FAX Speaker
19	–	Head Tilt Gear Spring (Not Spared)
20	121K44480	Head Tilt Solenoid



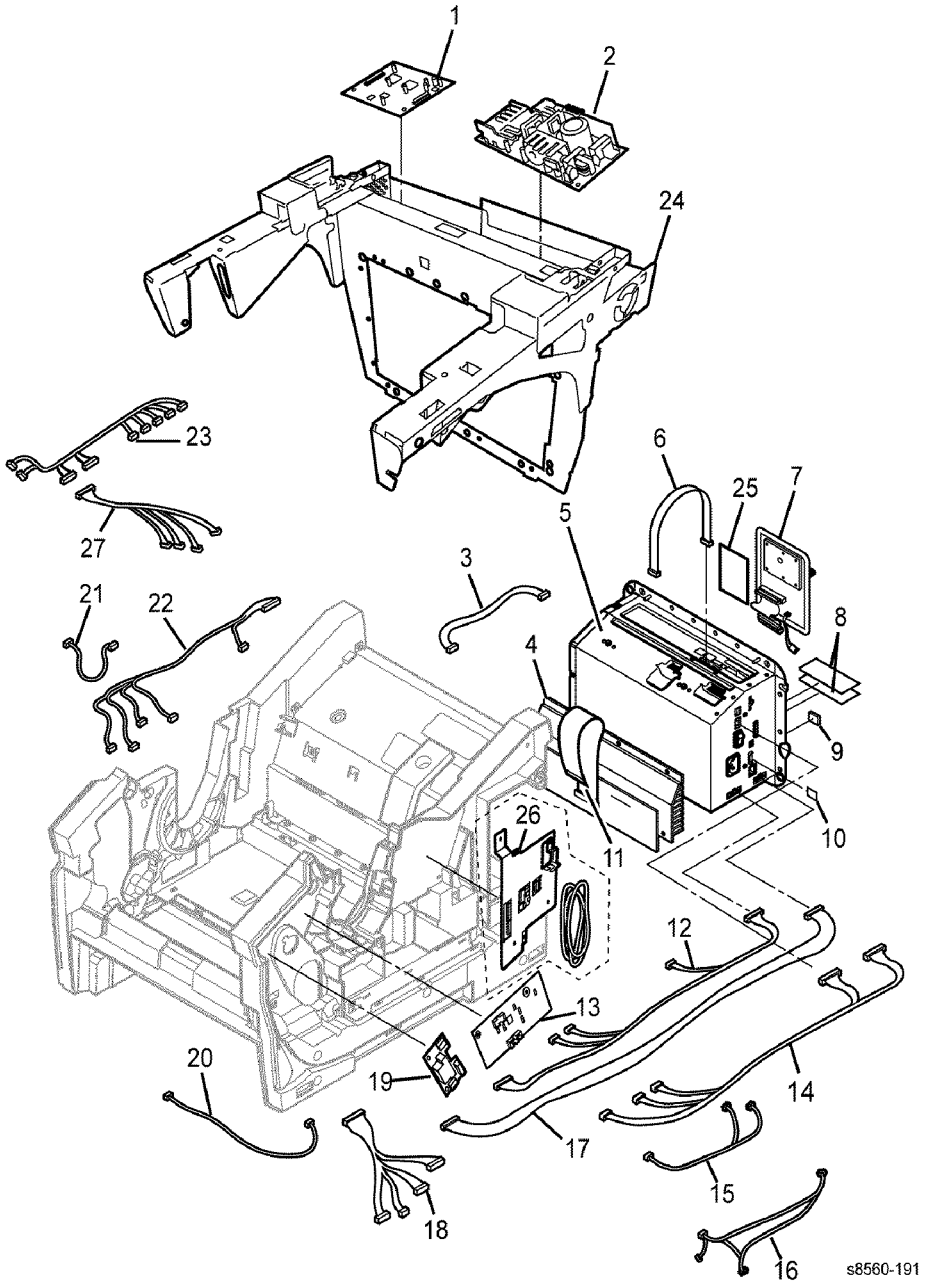
PL 4.1 8860 Drive

Item	Part	Description
1	121K44430	Preheater Lift Solenoid
2	127K56520	Y-Axis Motor Assembly
3	121E20120	Tray 1 Pick Solenoid
4	121K44480	Head Tilt Solenoid
5	807E23090	Media Drive with 2 Clutches
6	604K31810	Tray Lift Motor
7	–	
8	133K25010	Electronics Module Fan
9	807E16060	Head Tilt Gear
10	–	Lift Motor Gear (P/O PL 4.1 Item 6)
11	033E05190	Head Maintenance Clutch
12	127K53580	X-Axis Motor
13	127E16010	Drum Fan
14	005K12780	Process Drive
15	650442700	Ground Clip



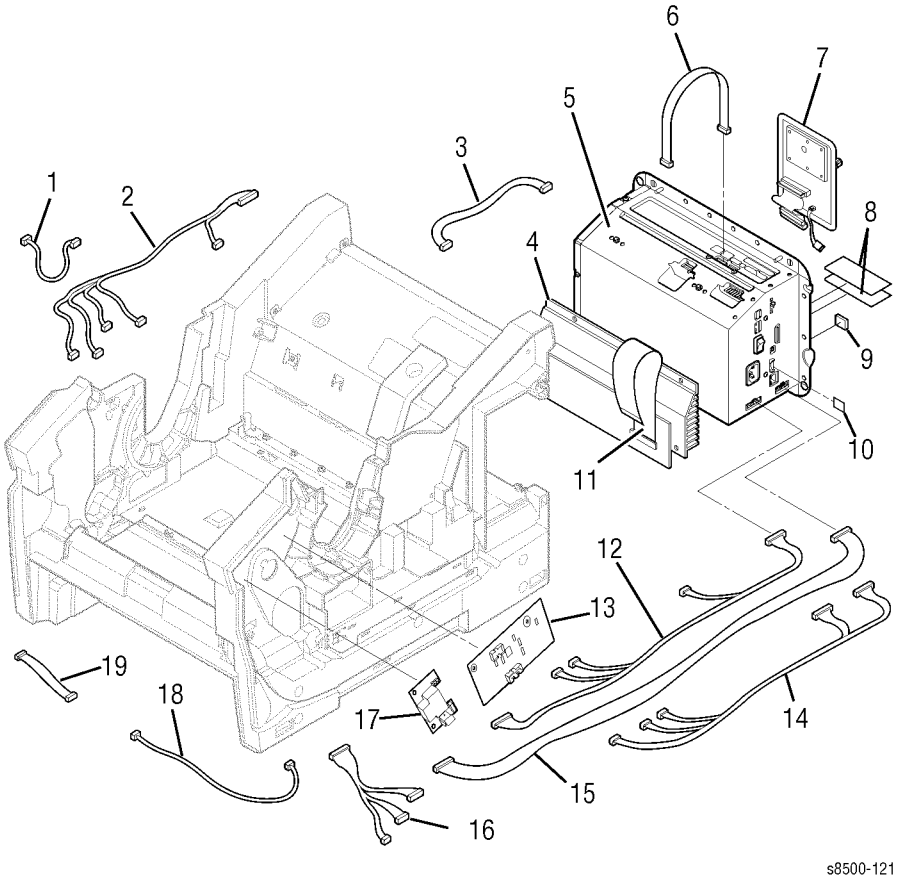
PL 5.0 8860MFP Electrical

Item	Part	Description
1	960K34960	Exit Module Control Board
2	105E23670	Scanner Power Supply
3	117E34870	Cable, Wave Amp Signal
4	960K46480	Wave Amplifier
5	084K36560	Electronics Module 8860MFP only (w/o RAM, Configuration Card, NVRAM)
6	117E29840	Cable, Printhead Interface
7	121K50440	Hard Drive Assembly
8	237E23640	256 MB SDRAM
–	237E23650	512 MB SDRAM
–	237E23890	128 MB SDRAM
9	237E23660	8-pin NVRAM
10	069E00570	Configuration Card
11	117E29790	Cable, ZIF, Wave Amp Drive
12	117E29820	Harness, Right Side
13	960K22331	I/O Board
14	117E29810	Cable, Right Combined
15	117E29650	Cable, Scanner PS to System PS
16	117E29660	Cable, Scanner PS it IP, Exit Module and Fan
17	117E29830	Cable, I/O Board Power Control
18	117E28790	Cable, Right Umbilical
19	960K35170	Drum Heater Relay Board
20	117E28780	Cable, Front Door
21	117E34880	Cable., Y-Axis Motor Ground
22	117E29800	Harness, Left Side
23	117E29670	Cable, Exit Module Rear
24	801K33480	Back Frame
25	–	Flash Disk
26	050K67600	Foreign Device Interface
27	117E29680	Cable, Exit Module Front



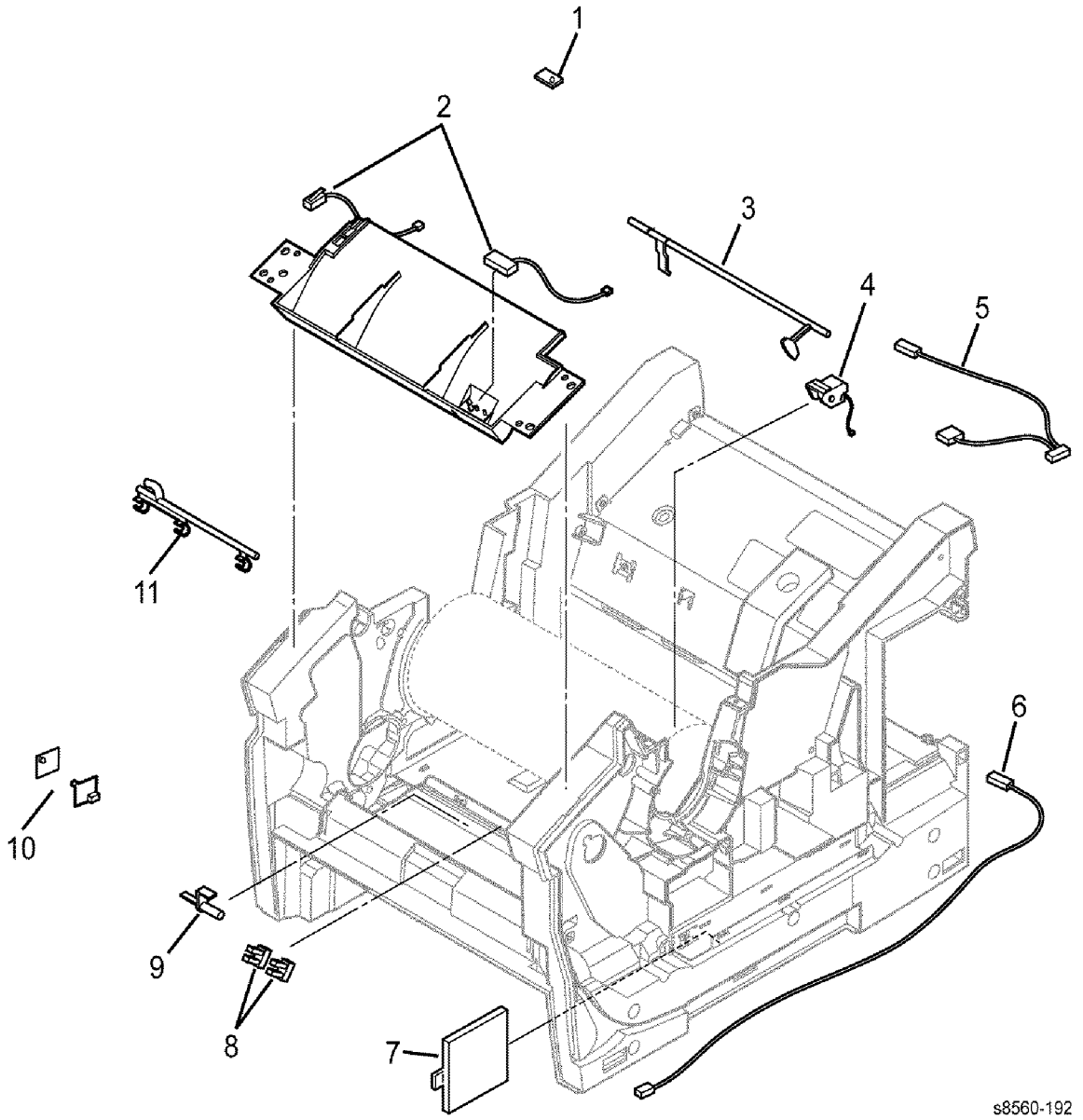
PL 5.1 8860 Electrical

Item	Part	Description
1	117E34880	Cable., Y-Axis Motor Ground
2	117E29800	Harness, Left Side
3	117E34870	Cable, Wave Amp Signal
4	960K21181	Wave Amplifier
5	084K36550	Electronics Module 8860 only (w/o RAM, Configuration Card, NVRAM)
6	117E29840	Cable, Printhead Interface
7	121K45340	Hard Drive
8	237E23640	256 MB SDRAM
–	237E23650	512 MB SDRAM
–	237E23890	128 MB SDRAM
9	237E23660	8-pin NVRAM
10	069E00570	Configuration Card
11	117E29790	Cable, Wave Amp Drive
12	117E29820	Harness, Right Side
13	960K22331	I/O Board
14	117E29810	Cable, Right Combined
15	117E29830	Cable, I/O Board Power Control
16	117E28790	Cable, Right Umbilical
17	960K35170	Drum Heater Relay Board
18	117E28780	Cable, Front Door
19	117E35230	Cable,Control Panel (8860 only)



PL 6.0 Sensors and Actuators

Item	Part	Description
1	130E12570	IIT Cover Sensor (Scanner Detect 8860MFP only)
2	110E20390	Front Door Interlock Switch
3	137E24280	Engine Exit Flag
4	130K75210	Drum Temperature Sensor
5	130K75220	Exit Module Sensor Assembly
6	130E12620	Waste Tray Sensor
7	130K75230	Paper Size Switch
8	119640580	No Paper or Paper Height Sensor
9	130E11550	Paper Present Flag
10	130E12600	Output Tray Full Sensor (8860MFP only)
11	137E24290	Exit Module Flag (8860MFP only)



Xerox Supplies

Table 1 Kits, Supplies, and Options

Description	Part Number
Mechanical Kit Print Engine: • Backframe Cable Clamps (2 ea.) • Exit Module KL-Clips 5 mm (5 ea.) • Exit Module Plastic Washers (2 ea.) • Scanner Power Supply and Exit Module Control Board screws M4x6 (5 ea.) • DADF/Scanner Hinge Screws M4x12 (5 ea.)	604K42210
Mechanical Kit IIT	604K42670
Maintenance Kit Standard Capacity	113R00736
Maintenance Kit Extended Capacity	604K53810
Cleaning Kit	016184500
Repackaging Kit: 8860 8860MFP	 695K22810 695K23120
Stabilizer	674E00750
525-Sheet Feeder Stabilizer	674E00760
Cart	137E11900
Stopper, Retainer	003E77400
Clip, Retainer	019E68680
Scanner Calibration Page	109K02110
Control Panel Overlay Kit, Hungarian (8860MFP only)	650K26620
Control Panel Overlay Kit, Polish (8860MFP only)	650K26630
Control Panel Overlay Kit, Turkish (8860MFP only)	650K26640
Control Panel Overlay Kit, Italian (8860MFP only)	650K26650
Control Panel Overlay Kit, German (8860MFP only)	650K26660
Control Panel Overlay Kit, Spanish (8860MFP only)	650K26670
Control Panel Overlay Kit, Dutch (8860MFP only)	650K26680
Control Panel Overlay Kit, Swedish (8860MFP only)	650K26690
Control Panel Overlay Kit, B. Port (8860MFP only)	650K26700
Control Panel Overlay Kit, Russian (8860MFP only)	650K26710
Control Panel Overlay Kit, Czech (8860MFP only)	650K26720
Control Panel Overlay Kit, Danish (8860MFP only)	650K26730
Control Panel Overlay Kit, Greek (8860MFP only)	650K27210
Control Panel Overlay Kit, Norwegian (8860MFP only)	650K27200
Control Panel Overlay Kit, Finnish (8860MFP only)	650K27190
Control Panel Overlay Kit, French (8860MFP only)	650K26740
Wireless Network Adapter with NA power converter 110V	097S03740
Wireless Network Adapter with Euro power converter 220V	097S03741
Wireless Network Adapter with UK power converter 220V	097S03742

Table 2 Power Cords

Description	Part Number
Cord, Power, Standard, 115V	117E29520
Cord, Power, EURO, 220V	117E29500
Cord, Power, UK, 240V	117E29510
Cord, Power, AUST, 240V	117E29490
Cord, Power, SWISS, 220V	117E35050
Cord, Power, DANISH	117E29460
Cord, Power, CHINESE	117E35030
Cord, Power, ARGENTINA, 240V	117E35040

6 Diagnostics

System Power On Process

Use Table 1 and the Mechanical Engine Initialization diagram, Figure 1 and Figure 2, to troubleshoot failures that occur during the power-on sequence. Table 1 provides typical timing of mechanical events that occur in the 8860MFP relative to power-on, assuming the system is cold and was shutdown properly. For the 8860, these figures are slightly different, but the sequence, exclusive of the Scanner initialization, remains the same. Timing may also vary dependent on the Printhead position and environmental conditions.

NOTE: *Warm systems reach "Ready To Print" in about 2 minutes while cold systems 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° C*

Table 1 System Power On Sequence

	Power On Event	Elapsed Time (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 "Phaser 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 systems only.	07:34
21.	Cleaning ends --- Cold systems only.	10:16
22.	Control Panel displays "Printing page 1 of 4" --- Cold systems only.	11:12
23.	Cleaning page exits --- Cold systems only.	11:48
24.	Startup page exits (if enabled)	11:58
25.	Control Panel displays "Ready To Print".	11:59

System Power On Sequence

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

1. Power supply senses AC line voltage conditions (110 VAC or 220 VAC) and enables DC voltages. If an overload occurs, the system turns off the high voltage DC supplies, causing a "blink" effect on the Control Panel LEDs.
2. BIST test flashes the PE LED very briefly at a fast rate until the end of the next test.
3. The Boot loader performs CPU initialization and RAM test. It then sends the boot loader version to the serial port.
4. Power-On Self Test (POST) initializes the Control Panel. The Control Panel LED turns red, green, orange, and then off. The Control Panel LCD then goes black and then clear. The POST version displays on the LCD and waits two seconds. During this time the operator can press the Back button to bypass the remaining POST test.
5. Low level Power-On Self Test (POST) diagnostics are performed. The Control Panel displays status messages as each sub-test is performed. This test takes about 8 seconds. All LEDs are off during the test.

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

   If the test detects an error, the error message displays on the LCD and the system flashes the LEDs with a repeating error code pattern.
6. The VxWorks operating system is initialized and engine code is started. This takes about 15 seconds. The Xerox logo is displayed.
7. Print Engine Self Test (PEST) diagnostics are then performed. These test the heaters, clutches, motors and solenoids. As each clutch is tested, you hear clicking with four high tones as each motor is tested. This test takes about 30 seconds.
8. The system now runs the mechanical initialization. The exact sequence depends on the initial position of the Printhead and wiper assembly.

Mechanical Engine Initialization Diagram

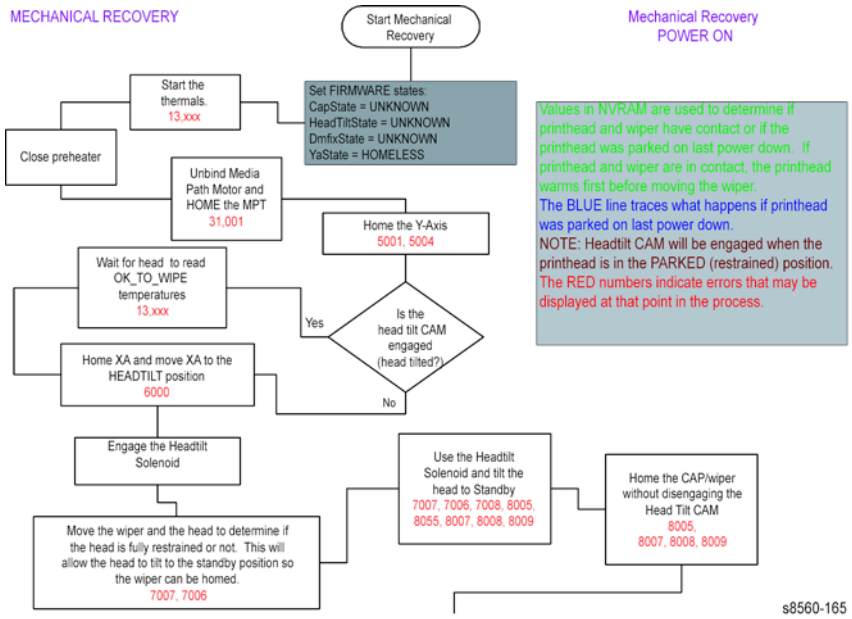


Figure 1 Mechanical Engine Initialization (1/2)

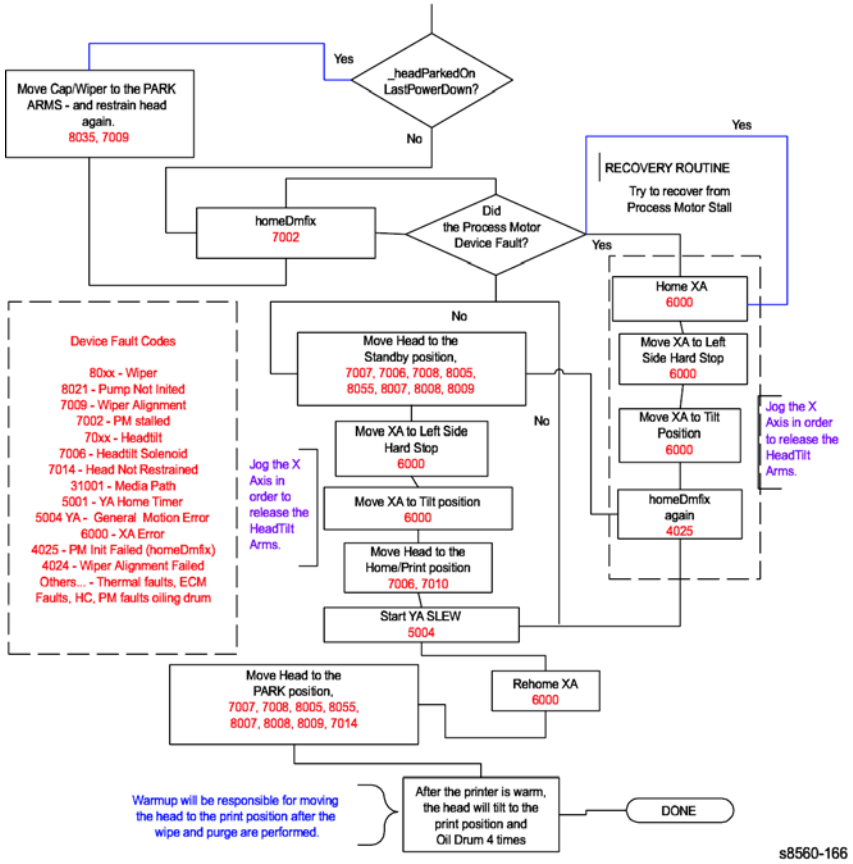


Figure 2 Mechanical Engine Initialization (2/2)

Hidden Service Menu

The Hidden Service menu provides access to information pages and tests for diagnosing and correcting system malfunctions and accessing special features. Access 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.

NOTE: *The Hidden Service menu varies by model.*

Table 1 Hidden Service Menu Selections

Menu Item	Description
Fax Enable	Turns FAX On or Off. The system resets following a change.
Test Prints	See Section 3 for descriptions of each test print available.
Startup Page	Prints 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.
Diagnostics History	Displays Fault History results.
Enter Diagnostic Mode	See Service Diagnostics Menu Definitions for test descriptions.
Reset NVRAM	Resets the system back to default settings and clears all network settings. If possible, print the Configuration page before resetting NVRAM.
Power Saver Time-out	Selects the Power Saver Time-out, the amount of time the system must be idle before changing to Power Saver mode.
Restart System	Resets all items in the System Controls menu to 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.
FDI Enable	Activate the optional FDI interface. This reduces engine speed to accurately track the credit available from the input to the FDI.
Enable Metered Supplies	Prompts for the PagePack PIN on metered systems.

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 by a certified service technician only.

The Control Panel, Exit Module, Scanner, DADF, and Fax are discreet subsystems with their own diagnostic specialized diagnostic firmware. Typically, the system's Service Diagnostics firmware simply commands the subsystem to perform the built in test, and reports the results.

Test results appear on the Control Panel display in this format: RX: YYYYYY. Where X is the result identifier (starting with 0), and YYYYYY is the result. Labels (meaning), and units are not presented. If the results exceed the display, the last line is replaced by Display full - press key to page. Pressing any Control Panel key, except the Back (small round) key, scrolls the display to additional results. When the Down(v), Up(^), or Enter (large round) keys are pressed after the last results group have been presented, the first group will be presented again (i.e. with wraparound). If the Cancel or Back button is pressed after the last result group has been displayed, the results are erased and the menu is refreshed.

Service Diagnostics Test 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.

Functional Organization of Service Diagnostic Tests

Monitor functions	These functions provide passive continuous reporting of parameters or state information without changing the current state (i.e. temperatures, mechanism positions, etc.). Most monitor functions run until cancelled.
Exercise functions	These functions provide the ability to change the system's state in defined ways (turn on heaters, activate a solenoid, or rotate a shaft. The change of state is usually as small as possible to show a visible change. If possible, the function attempts to put the state back to where it was initially. Most exercise functions run until cancelled. The technician is expected to directly observe the resulting state changes to verify results.
Report functions	These functions report the current state of the specified parameter.
Test functions	These functions instruct the subsystem tests to run and return the results. These functions do not measure anything, but infer from the status returned that the operation was successful. The resulting actions may also be verified by the user. Most of these functions may be exercised remotely.
Check functions	These functions exercise subsystems and system components individually outside of normal Customer mode operation. Used primarily by Manufacturing to test system operation, these tests collect data, process the data to extract specific parameters, and report the parameters to the Control Panel. These parametric values are compared with defined limits.

Entering Service Diagnostics

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.

NOTE: *While the heaters are On, the Y-Axis is turning (to keep the Drum heating even), and the Drum Fan may be active. The Exercise Menu -> Heaters -> All Off function disables thermal regulation if access to these areas is necessary. The background thermal regulation is reactivated by the Exercise Menu -> Heaters -> All On function if the system is still warm enough. Turning off a single heater does NOT disable this function and the heater may be turned back on following the next check test or reboot. The Electronics Module Fan is always active.*

Test Selection Diagnostics Mode:

The Test Selection mode provides limited access to diagnostic tests, and is typically used during remote customer support activity where the customer is being directed to run the test and report results by a support representative.

NOTE: *Before running any diagnostic test, prepare the system according to test requirements.*

To enter Test Selection mode from Customer mode and display the Test Selection screen:

1. Select Information -> Troubleshooting -> Service Tools from the Control Panel.
2. Scroll down to Enter Diagnostics and press the OK button.

When the system transitions from Customer mode into Test Selection mode, the initial Control Panel display is the Test Selection screen as follows:

Diagnostics Menu 19.212.0
Test: 000 None Selected

The Diagnostics Menu revision number identifies the system and diagnostics firmware versions. The first two identify the system firmware version. The last digit identifies the Diagnostics Firmware version. The Test number (000) is entered using the Up or Down buttons. The currently selected Test appears next to the number. Run the test by pressing the OK button. At that point, the display changes to the name of the test, followed by a series of status messages providing a general idea of the current test activity. When the test completes, the display changes to display the results.

In some menus the subsystems are identified as follows:

- FP - Control Panel Module subsystem
- EM - Exit Module subsystem
- SM - Scanner Module subsystem
- DH - Doc Handler Module (DADF) subsystem
- FM - FAX Module subsystem

Test 000 is inoperative and causes no response if the OK button is pressed. To return to Customer mode, run test 001. Table 1lists the available tests.

Table 1 Test Selection Numbers

No.	Test Name	No.	Test Name	No.	Test Name
0	No test selected	44	Transfix Drive	88	Report EM Status
1	Exit Diagnostics	45	Drum Maintenance Drive	89	Monitor EM Sensors
2	Paper Path Status	46	Tilt Drive	90	Exercise EM Home Seq
3	Temperature Status	47	Tray 2 Lift Plate Drive	91	Exercise EM Lift Seq
4	Head Maintenance Clutch	48	Tray 3 Lift Plate Drive	92	Exercise EM Roller Drive
5	Deskew Clutch	49	Tray 4 Lift Plate Drive	93	Test EM Subsystem
6	Strip Solenoid	50	Y-axis Encoder	94	Reset EM Subsystem
7	Tray 1 Pick Solenoid	51	Y-axis Geometry	95	Report SM FW Version
8	Tray 2 Pick Clutch	52	Y-axis Drive	96	Report SM Status
9	Tray 3 Pick Clutch	53	Y-axis Belt Slip	97	Report SM Lamp Status
10	Tray 4 Pick Clutch	54	Y-axis Belt Tension	98	Monitor SM Sensors
11	Tilt Solenoid	55	Stripper Contact	99	Exercise SM DRAM
12	Purge Vent Solenoid	56	Drum Maintenance Contact	100	Exercise SM Axis Motion
13	Drum Heater Relay	57	Y-axis Motor	101	Exercise SM Axis Unlock
14	Deskew Shaft	58	X-axis Motor	102	Exercise SM Data Capture
15	Wiper Shaft	59	Process Motor	103	Exercise SM Lamp
16	Tray 1 Pick Shaft	60	Media Path Motor	104	Test SM Subsystem
17	Tray 2 Pick Shaft	61	Tray 2 Lift Motor	105	Reset SM Subsystem
18	Tray 3 Pick Shaft	62	Tray 3 Lift Motor	106	Report DH FW Version
19	Tray 4 Pick Shaft	63	Tray 4 Lift Motor	107	Report DH Status
20	Drum Fan	64	Tray 3 Pick/Feed Motor	108	Report DH Lamp Status
21	Electronics Fan	65	Tray 4 Pick/Feed Motor	109	Report DH Paper Status
22	Reservoir Heater	66	Purge Pump	110	Monitor DH Sensors
23	Jetstack Left Heater	67	Voltages	111	Exercise DH DRAM
24	Jetstack Right Heater	68	Line Voltage	112	Exercise DH Data Capture
25	Preheat Heater	69	Wiper Alignment	113	Exercise DH Cal Sheet Motion
26	Drum Heater	70	Drum Maint/Transfix Home	114	Exercise DH Feed Motion
27	Ink Melt 1 Heater	71	Printhead Clearance	115	Exercise DH Lamp
28	Ink Melt 2 Heater	72	Transfix Gap	116	Test DH Subsystem
29	Ink Melt 3 Heater	73	Access PE NVRAM Para	117	Reset DH Subsystem
30	Ink Melt 4 Heater	74	Clear Fault History	118	Report FW Version
31	Clear Heater Data	75	Clear ISC Fault	119	Report Status
32	Paper Drive Power	76	Clear PS NVRAM	120	Report Line Status

Table 1 Test Selection Numbers

No.	Test Name	No.	Test Name	No.	Test Name
33	Paper Lead Edge Times	77	Clear PE NVRAM	121	Test FAX Modem Subsystem
34	Paper Trail Edge Times	78	Set PE NVRAM To Defaults	122	Reset FAX Subsystem
35	Paper Sensor Bounce Times	79	Print DMU Blot	123	Report FP FW Version
36	Duplex Paper Drive Power	80	Display Fault History	124	Monitor FP Buttons
37	Duplex Paper Lead Edge Times	81	Monitor Sensors	125	Exercise FP Display
38	Duplex Paper Trail Edge Times	82	Monitor Encoders	126	Exercise FP LEDs
39	Duplex Paper Sensor Bounce Times	83	Monitor Temperatures	127	Initialize Mechanism
40	Clear Paper Path Data	84	Monitor Heaters		
41	Wiper Drive	85	Monitor Line Voltage		
42	Paper Path Drive	86	Report MFP Configuration		
43	X-axis Drive	87	Report EM FW Version		

From System Off Directly to Diagnostic Mode:

When the system powers up in Diagnostic mode, the current Printhead temperature is measured. If Printhead reservoir temperature is greater than 110 degrees, thermal regulation is restarted to keep the system warm while diagnostic tests are being run. This thermal regulation is in addition to any test-specific initialization requirements. If possible, each test attempts to leave the system warm. If a failure is encountered, the heaters may be turned off. If the initial temperature is cold, thermal regulation is not started.

1. Turn the system power On and wait for the Xerox logo to begin moving across the display
2. Before the logo is centered on the display (stops moving), press and hold the Back and ? buttons on the Control Panel.
3. 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.

Service Diagnostics Menu

When the system is powered up (or reset) directly into Diagnostic mode, or Enter Diagnostics is selected from the Hidden Service menu, the initial Control Panel displays the Service Diagnostics menu. The display reverts back to this menu whenever a test terminates. On return, the highlighted menu item is the previously selected test. Use the Control Panel buttons as described in Table 2 to navigate the menu, select tests and respond to prompts.

Table 2 Control Panel Button Functions in Service Diagnostics

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
?	Provides help information about 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.*	

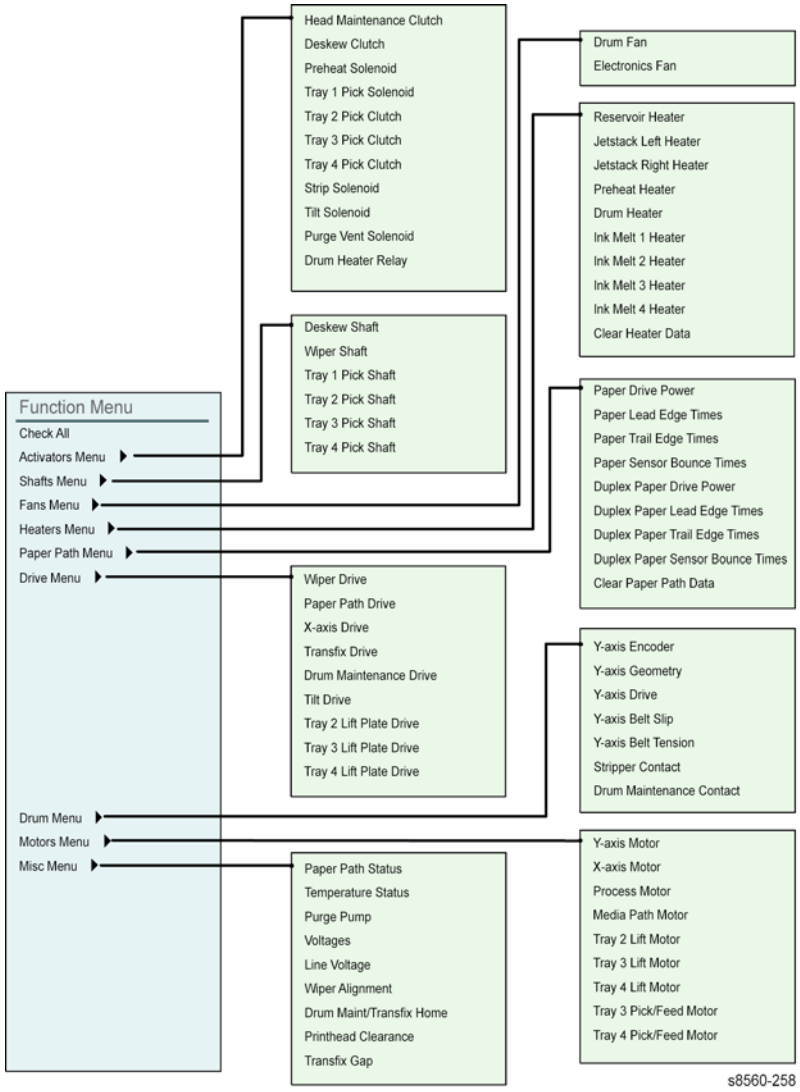


Figure 1 8860MFP Service Diagnostics Menu (1/3)

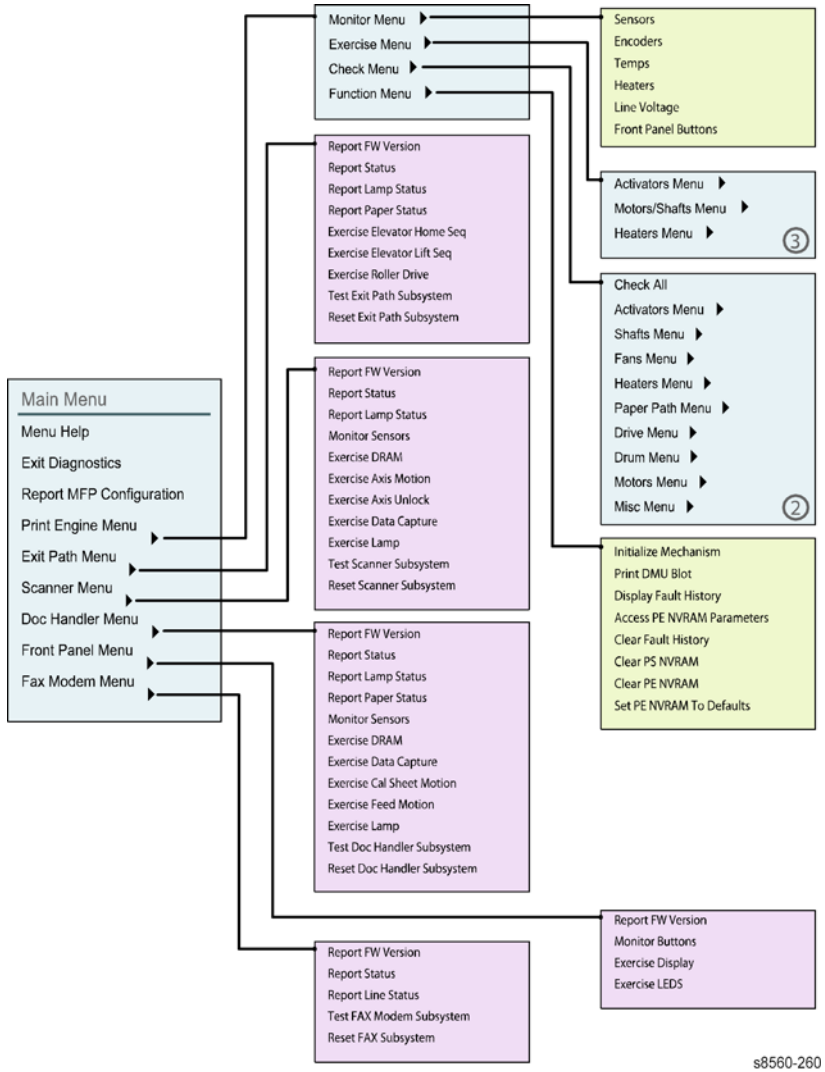


Figure 2 8860MFP Service Diagnostics Menu (2/3)

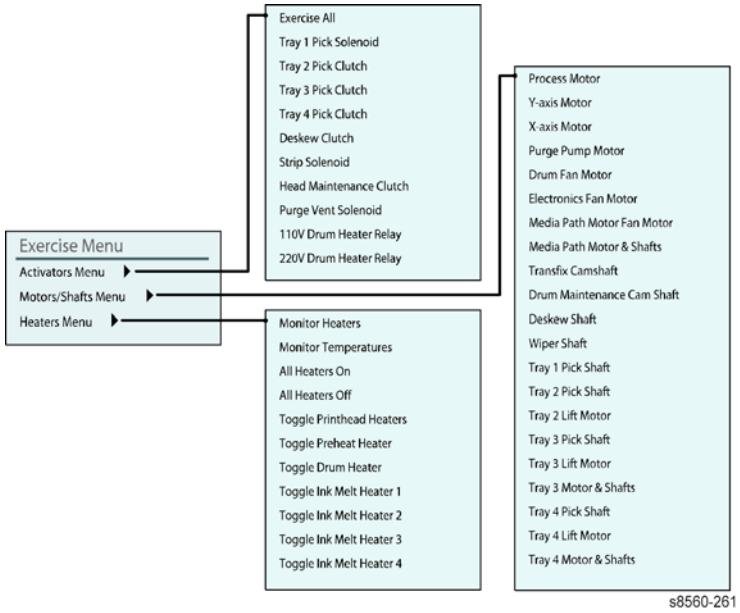


Figure 3 8860MFP Service Diagnostics Menu (3/3)

Service Diagnostics Menu Definitions

Table 3 provides a description, behavior, and preconditions for Service Diagnostic tests.

Table 3 Service Diagnostics Menu Definitions

Menu Item	Description
Main Menu	
Menu Help	Displays information on how to use the menus.
Exit Diagnostics	Exits Service Diagnostics and runs through POST to Ready.
Report MFP Config	Lists the system configuration.
Print Engine	Lists the print engine tests. Each menu item under this print engine menu has its own table describing the individual test descriptions and results
Exit Path*	Lists the Exit Module tests.
Scanner *	Lists the Scanner Assembly tests.
Doc Handler *	Lists the DADF tests.
FAX Modem*	Lists the Fax tests.
Control Panel*	Lists the Control Panel tests.
* The Control Panel, Exit Module, Scanner, DADF, and Fax are separate subsystems with their own diagnostic firmware. In these tests, Service Diagnostics commands the subsystem to perform its 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.	

Table 3 Service Diagnostics Menu Definitions

Menu Item	Description
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 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 for a description of the individual test functions and results.
Check Menu	A submenu containing a set of extensive manufacturing tests that return measured parameters for comparison against known limits.
Function Menu	A submenu containing a set of functions for commanding more complex actions by portions of the system. See the function menu table for a description of the individual test functions and results.
Exit Module Menu	
Report FW Version	Reports current firmware version.
Report Status	Displays the current status Reports the current mechanism status as understood by the Exit Module Control Board. The status is reported as one or more of the following messages: • Ready • Rollers Open • Roller Closed • Elevator Up • Driving • Rollers Down
Monitor Sensors	Monitors all sensors associated with the Exit Module assembly. Manually exercise the sensor flags and verify the results. • Exit Home Position Sensor - Home or Not Home • Exit Sensor - Paper or No Paper • Output Tray Full Sensor - Full or Not Full
Exercise Elevator Home Sequence	Exercises the exit path elevator home position and reports final status as Ready or Error.
Exercise Elevator Lift Sequence	Causes the exit path elevator to move to the lifted position, pause, then move back to the Home position.
Exercise Roller Drive	Rotates the exit path transport rollers clockwise, then counter-clockwise, performs a seek home command, and then reports final status as Ready or Error.
Test Exit Path Subsystem	The test sends a series of commands to verify the operation elevator and exit drive rollers.
Reset Path Subsystem	This resets the Exit Module, Scanner, and DADF, and then reports status as Ready or Not Ready

Table 3 Service Diagnostics Menu Definitions

Menu Item	Description
Scanner Menu	
Report FW Version	Reports current firmware version.
Report Status	Reports the current Scanner Assembly status: • OK- (no errors detected) • Internal Target Failure • Optical Test Error • Home Position Test Error • Check Lock Test Error
Report Lamp Status	The Scanner reports the current lamp status as On, Off, or Warming Up. The Warming Up status includes the dim state, which won't change to On until instructed to do so.
Monitor Sensors	This monitors the state of the Scanner Cover (DADF or Document Cover) Sensor. Toggle the sensor state by opening the cover.
Exercise DRAM	The Scanner performs a DRAM test. Errors are reported as a Internal Target Failure and the lamp flashes twice.
Exercise Axis Motion	The Scanner moves the scan axis to the Home position, then to the right limit of travel, and then back to the Home position. This test exercises the axis motion mechanism and the Home sensor.
Exercise Axis Unlocked	The Scanner performs a Locked test. Errors are reported as Check Lock Test Error. The test determines if the scanner motion axis is currently unlocked and available for use.
Exercise Data Capture	The Scanner performs a Data Capture test which exercises the lamp, optics, CCD, DRAM, and supporting electronics. Errors are reported as an Optical Device Error. For this test the lamp is on and the scan head is moved under the calibration strip.
Exercise Lamp	The Scanner turns the lamp On, Off, then On. Each state is held for a short time to allow observation of the lamp state. Errors with a light state transition are reported as a Light Check Error. The lamp may be On prior to the test, and the lamp is left On after the test. Each lamp On transition triggers a calibration function which takes approximately 50 seconds to complete. The test exercises the lamp and the lamp control.
Test Scanner Subsystem	The Scanner runs a series of tests to verify the operation of these Scanner functions as previously described: • DRAM • Unlock • Motion • Capture • Lamp
Reset Scanner Subsystem	This test forces a hardware reset of the Exit Module, Scanner, DADF and FAX modules.

Table 3 Service Diagnostics Menu Definitions

Menu Item	Description
Doc Handler Menu	
Report FW Version	Reports the current DADF firmware version.
Report Status	Reports the current DADF module status: • OK - (no errors detected) • Paper Jam • Cover Open • Internal Target Failure • Test Fail • Optical Test Error • Calibration Device Error
Report Lamp Status	The DADF reports the current lamp status as On, Off, or Warming Up. The Warming Up status includes the dim state, which won't change to On until instructed to do so.
Report Paper Status	The DADF reports the current status as Paper or No Paper.
Monitor Sensors	Tests the DADF No Paper and Cover Sensors. Toggle the actuator to change sensor state. Results are reported as Paper Present or Not Present, and Cover Open or Closed.
Exercise DRAM	The DADF performs a DRAM test. Errors are reported as a Internal Target Failure and the lamp flashes twice.
Exercise Data Capture	The DADF performs a Data Capture test which exercises the lamp, optics, CCD, DRAM, and supporting electronics. Errors are reported as an Optical Device Error. For this test the lamp is on and the scan head is moved under the calibration strip.
Test Cal Sheet Motion	The DADF performs a Calibration Motion test which moves the cal sheet out under the lamp. Errors are reported as a Calibration Device Error. The test determines if the cal sheet motion is as expected.
Exercise Feed Motion	The DADH performs a Transmission test. This test rotates the transport rollers for a short time (sufficient to transport a 14 inch sheet of paper). The test requires observation of the correct action, and a final status of Complete is always reported. Remove all media from the DADF before running this test.
Exercise Lamp	The DADF turns the lamp On, Off, then On. Each state is held for a short time to allow observation of the lamp state. Errors with a light state transition are reported as a Light Check Error. The lamp may be On prior to the test, and the lamp is left On after the test. Each lamp On transition triggers a calibration function which takes approximately 50 seconds to complete. The test exercises the lamp and the lamp control.

Table 3 Service Diagnostics Menu Definitions

Menu Item	Description
Test Doc Handler Subsystem	The DADF runs a series of tests to verify the operation of these DADF functions as previously described: • DRAM • Feed • Cal Sheet • Capture • Lamp
Reset DADF Subsystem	This forces a hardware reset of the Exit Module, Scanner, DADF and FAX modules.
FAX Modem Menu	
Report FW Version	Reports the current firmware version.
Report Line Status	Reports whether the FAX modem is able to detect a Dial Tone on a connected phone line.
Test FAX Modem Subsystem	The FAX modem runs an analog loopback test. When the test is stopped, the error rate (mismatched characters received / characters sent) is reported.
Reset FAX Modem Subsystem	This forces a hardware reset of the Exit Module, Scanner, DADF and FAX modules.
Control Panel Menu	
Report FW Version	Reports the current firmware version.
Monitor Buttons	Reports Control Panel button activity. Results are identified by the button name and the transition (Pressed/Released). The test ends when there have been no button presses for 10 seconds.
Exercise Display	Cycles the Backlight Off then On to verify pixels and operation. After the test ends, the display settings are backlight maximum, contrast is minimum, and the pixel background is clear.
Exercise LEDs	Exercises each Control Panel LED by turning On, flashing, then turning Off. The LEDs are activated beginning with the upper right most LED and moves from top to bottom and left to right until all LEDs have been activated. The pattern repeats. As each LED is activated, the LED name is displayed. After termination all LEDs are off.

Print Engine Monitor Menu

The Print Engine Monitor tests 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. Press any Control Panel key to stop the test.

Table 4 Print Engine Monitor Menu Definitions

Test	Description	Results
Sensors	Monitors all mechanically activated sensors in the print engine, except the front panel buttons. When a state change is detected it is reported on the display. The state change reports scroll up as new ones are added. If the sensor transitions several times very fast (too fast to do by hand), the transition is reported as a bounce.	State changes are reported as: • H = Open or de-actuated • L = Closed/Present/Actuated
Encoders	Monitors these analog sensors: • Tray 1 width sensor • Y-Axis Motor encoder • Media Drive Motor encoder • Process Drive Motor encoders	These sensors are monitored: • 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).	Abbreviations used: • LJ = Left Jetstack • RJ = Right Jetstack • RE = Reservoir • DR = Drum • PH = Preheater • IM = Ink Melter 1, 2, 3, or 4
Heaters	Monitors each of the heaters and shows if the heater is currently enabled (first value) and what percentage of maximum power is currently allocated (second value).	Abbreviations used: • LJ = Left Jetstack • RJ = Right Jetstack • RE = Reservoir • DR = Drum • PH = Preheater • IM = Ink Melter 1, 2, 3, or 4
Line Voltage	Monitors the line voltage seen by the power supply. Reports the minimum and maximum values seen during the monitoring period. Fast line voltage spikes are not reported. Helps to evaluate the AC supply, such as line voltage sags do to the start up of adjacent equipment. You can run this test overnight to record supply voltage settings.	Tests results are reported as: • Minimum • Now • Maximum

Print Engine Exercise Menu

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 5 Print Engine Exercise Menu Definitions

Test	Description
Activators Menu • 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 • Drum Heater Relay	The tests pulse the specified target causing it to generate a sound or motion. The Exercise All function cycles each of the listed components below 4 times, in sequence, until interrupted by pressing the Cancel button. The other functions continue cycling repeatedly until interrupted by a control panel key press. The Cancel button should be pressed only when the state is Off

Table 5 Print Engine Exercise Menu Definitions

Test	Description
Motor/Shafts Menu • Exercise All • Process Motor • Y-axis Motor • X-axis Motor • Purge Pump Motor • Drum Fan Motor • Electronics Fan Motor • Media Path Motor & Shafts • 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	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.
Heaters Menu • Monitor Heaters • Monitor Temperatures • All Heaters On (warm-up to normal operating temperature 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 remain On for 4 seconds.).	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.

Print Engine Function Menu

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

Table 6 Print Engine Function Menu

Function	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 down the page).
Display Fault History	Displays the 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.

Print Engine Check Menu

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 tests are typically used to verify system operation during manufacture. Details of the function and output of these tests is provided in the Print Engine Check Menu Tests discussion.

Table 7 Print Engine Check Menu

Test Menu	Description
• Check All • Activators Menu • Shafts Menu • Fans Menu • Heaters Menu • Paper Path Menu • Drive Menu • Drum Menu • Motors Menu • Misc. Menu	Each of the tests listed under the submenus contained in the Check Menu are described in detail in Print Engine Check Menu Tests.

Print Engine Check Menu Tests

This submenu within Service Diagnostics contains a group of tests that perform measurements on print engine components and report measured values to the Control Panel. These tests are typically used to verify system operation during manufacture. However, in some instances, the values returned by these tests can help to locate system malfunctions or indicate excessive wear in selected components. To access the Check Menu tests, enter Service Diagnostics, go to the Print Engine Menu, and select Check Menu.

When referred to one of these tests from a troubleshooting procedure, locate the table associated with the test for typical values. In many of these tests, baseline data was not available at the time of publication. Therefore, these tests are included for reference and typical values are shown as not available (N/A). As data becomes available, periodic updates to this manual will incorporate the new data. All measurements from tests that move paper through the printer were collected using 24 lb. bond paper.

NOTE: *Collecting 2 or 3 samples of the test data is recommended before deciding on a course of action. Many of the tests rely on mechanical positions and slight changes can effect the results. Ensure that media is loaded, and adequate ink and maintenance kit life remain. 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 subsystem containing the problem component.*

Each test included within the submenus listed below is described in detail in the following sections.

- Check All, manufacturing use only.
- Activators Menu
- Shafts Menu
- Fans Menu
- Heaters Menu
- Paper Path Menu
- Drive Menu
- Drum Menu
- Motors Menu
- Misc. Menu

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

Activators Menu

Check Menu Activator tests measure DC (i.e. steady state), parameters and do not provide information on transient phenomenon, such as rise/fall times, inductive overshoot, change in inductance due to core/clapper pull in, etc.). The parameters measured do not verify mechanical function. An audible noise generated by most activator tests is one indication of mechanical activity. Observable motion is another. Tests the selected component and reports the value of the characteristic defined in the following tables.

Head Maintenance Clutch Test

This test briefly energizes the Head Maintenance Clutch coil and measures parameters. Peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. Deviations from typical average values could indicate voltage supply problems, and/or unexpected resistance.

Table 1 Head Maintenance Clutch Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak Power (Watts)	N/A	Reports the profile maximum power.
1	Average Power (Watts)	N/A	Report the average power during the constant portion of the part's profile.

Deskew Clutch Test

This test briefly energizes the Deskew Clutch coil and measures parameters. Peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. Deviations from typical average values could indicate voltage supply problems, and/or unexpected resistance.

Table 2 Deskew Clutch Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak Power (Watts)	N/A	Reports the profile maximum power.
1	Average Power (Watts)	N/A	Report the average power during the constant portion of the part's profile.

Preheater Solenoid Test

This test separately energizes both Preheater Solenoid coils briefly, and then measures parameters. The peak power level is expected to be constant during the On High intervals. Therefore, peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. The Low power level is generated via a software controlled voltage signal. The presence of any intermediate value indicates that the drive circuitry is operating correctly. The Preheater plates should not relax when the power level drops to low.

Table 3 Preheater Solenoid Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak High Push Power (Watts)	N/A	Reports the profile maximum power.
1	Average High Push Power (Watts)	N/A	Reports the average power during the constant portion of the part's profile.
2	Average Low Push Power (Watts)	N/A	Reports the low average power.

Table 3 Preheater Solenoid Nominal Values

R#	Characteristic	Typical Value	Result
3	Peak High Pull Power (Watts)	N/A	Reports the power On peak solenoid power.
4	Average High Pull Power (Watts)	N/A	Reports the average high power following power On.
5	Average Low Pull Power (Watts)	N/A	Reports the average low power following power On.

Stripper Solenoid Test

This test briefly energizes the Stripper Solenoid and measures parameters. Peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. Deviations from typical average values could indicate voltage supply problems, and/or unexpected resistance.

Table 4 Stripper Solenoid Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak Power (Watts)	N/A	Reports the profile maximum power.
1	Average Power (Watts)	N/A	Report the average power during the constant portion of the part's profile.

Tray 1 Pick Solenoid Test

This test briefly energizes the Tray 1 Pick Solenoid and measures parameters. Peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. Deviations from typical average values could indicate voltage supply problems, and/or unexpected resistance.

Table 5 Tray 1 Pick Solenoid Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak Power (Watts)	N/A	Reports the profile maximum power.
1	Average Power (Watts)	N/A	Report the average power during the constant portion of the part's profile.

Tray 2~4 Pick Clutch Tests

These tests briefly energize the Tray 2, 3, or 4 Pick Clutch and measures parameters. Peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. Deviations from typical average values could indicate voltage supply problems, and/or unexpected resistance.

Table 6 Tray 2 ~ 4 Pick Clutch Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak Power (Watts)	N/A	Reports the profile maximum power.
1	Average Power (Watts)	N/A	Report the average power during the constant portion of the part's profile.

Head Tilt Solenoid Test

This test briefly energizes the Head Tilt Solenoid and measures parameters. The solenoid is activated for a short time at both the high and low power levels while the power is measured. The peak power level is expected to be constant during the On High intervals. Therefore, peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. The Low power level is generated via a software controlled voltage signal. The presence of any intermediate value indicates that the drive circuitry is operating correctly. The Preheater plates should not relax when the power level drops to low.

Table 7 Head Tilt Solenoid Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak High Push Power (Watts)	N/A	Reports the power ON high peak power.
1	Average High Push Power (Watts)	N/A	Report the power On high average power.
2	Average Low Push Power (Watts)	N/A	Reports the power On low average power.

Purge Vent Solenoid Test

This test briefly energizes the Purge Vent Solenoid and measures parameters. Peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. Deviations from typical average values could indicate voltage supply problems, and/or unexpected resistance.

Table 8 Purge Vent Solenoid Nominal Values

R#	Characteristic	Typical Value	Result
0	Peak Power (Watts)	N/A	Reports the profile maximum power.
1	Average Power (Watts)	N/A	Report the average power during the constant portion of the part's profile.

Drum Heater Relay Test

This test briefly energizes both relay coils of the Drum Heater Relay Board and measures parameters. Peak power is expected to be very close to the average power level. An appreciable deviation could indicate a variation in the supply voltage or coil resistance, possibly due to heating during the test. A change in heating behavior could indicate a problem with cooling or the thermal conductivity through the mounting. Deviations from typical average values could indicate voltage supply problems, and/or unexpected resistance

Table 9 Drum Heater Relay Nominal Values

R#	Characteristic	Typical Value	Result
0	220V Coil Peak Power (Watts)	N/A	The profile maximum power.
1	220V Coil Average Power (Watts)	N/A	The average power during the constant portion of the part's profile.
2	110V Coil Peak Power (Watts)	N/A	The profile maximum power.
3	110V Coil Average Power (Watts)	N/A	The average power during the constant portion of the part's profile.

Shafts Menu

Runs the selected shaft in both directions to determine shaft characteristics, steady state drive requirements, bearing status, etc. The objective of these tests is to perform dynamic testing of the engaging clutch.

Deskew Shaft Test

This test attempts to determine if the deskew shaft is controllable and is operating normally. The deskew shaft is first driven for a short time to loosen up the gears/bearings and run any flat spots out of the rollers. Then the Media Drive Assembly is started and run for a short time without the deskew shaft. Next, the deskew clutch is engaged "on the fly". After a short time, the clutch is released and the Media Drive Assembly is stopped. This process repeats for the opposite direction of deskew shaft rotation. The response of the system to the clutch engagement/disengagement should show the clutch characteristics. The steady state drive requirements indicate bearing status and the condition of the rollers, flat/dirty, bent shafts, etc. The data used is the Media Drive Assembly servo system following error (fe), which is a measure of how hard the system is working at any point in time.

Table 10 Deskew Shaft Nominal Values

R#	Characteristic	Typical Value	Result
0	Time to CCW On peak fe (sec)	N/A	Reports how long it takes the Media Drive Assy 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	N/A	Reports peak effort needed to accelerate the deskew shaft load. A smaller value could indicate a slipping clutch.

Table 10 Deskew Shaft Nominal Values

R#	Characteristic	Typical Value	Result
2	CCW On fe settling time (sec)	N/A	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 loose deskew shaft or a slipping clutch.
3	CCW On average fe	N/A	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	N/A	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)	N/A	Reports the time it takes the Media Drive 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)	N/A	Reports a time that indicates how long it takes the MP motor servo system to react to the sudden addition of the deskew shaft load. Larger values may indicate a slipping or slow to engage clutch.
7	CW On peak fe	N/A	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)	N/A	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.

Table 10 Deskew Shaft Nominal Values

R#	Characteristic	Typical Value	Result
9	CW On average fe	N/A	Reports the average effort required to rotate the deskew shaft in the CW direction at a constant velocity. An unusual value could indicate a difference in the composition and/or number of 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	N/A	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)	N/A	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 Test

This test exercises the Head Maintenance Clutch and Wiper Assembly. The test raises the wiper to just under the tilt engage point, and then moves the wiper to home position to initialize the drive mechanism. Next, the Printhead is tilted back out of the way and the Media Drive Assembly is driven for a short time. While the Media Drive Assembly is being driven, the Head Maintenance Clutch is engaged. Finally, the clutch is released and the Media Drive Assembly is stopped. This process repeats for the opposite direction.

If the Printhead does not tilt to the Standby position, the Wiper Blade will interfere with the Printhead causing error in the recorded values. The system response to the Head Maintenance Clutch activity demonstrates the clutch characteristics. Steady state drive values indicate bearing status and the condition of the pulleys, belts, and shafts. The CW and CCW measurements are slightly different due to the vertical motion of the Wiper Assembly. The data used is the Media Drive Assembly servo system following error (fe), which is a measure of how hard the system is working at any point in time.

Table 11 Wiper Shaft Nominal Values

R#	Characteristic	Typical Value	Result
0	Time to CCW On peak fe (sec)	N/A	Reports how long it takes the Media Drive Assembly servo system to react to the sudden addition of the wiper shaft load. Larger values may show a slipping/ slow to engage clutch.
1	CCW On peak fe	N/A	Reports peak effort needed to accelerate the wiper shaft load. A smaller value could indicate a slipping clutch.

Table 11 Wiper Shaft Nominal Values

R#	Characteristic	Typical Value	Result
2	CCW On fe settling time (sec)	N/A	Reports the time it takes the Media Drive Assembly servo system to settle down after the sudden addition of the wiper shaft load. A longer time could indicate a slipping clutch.
3	CCW On average fe	N/A	Reports the average effort required to rotate the wiper shaft in the CCW direction at a constant velocity.
4	CCW On fe ripple	N/A	Reports the variation of effort required to rotate the wiper shaft in the CCW direction at a constant velocity.
5	CCW Off fe settling time (sec)	N/A	Reports the time it takes the Media Drive Assembly servo system to settle down after the sudden release of the wiper shaft load. A larger value can indicate a slow to release or dragging clutch.
6	Time to CW On peak fe (sec)	N/A	Reports a time that indicates how long it takes the Media Drive Assembly 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	N/A	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)	N/A	Reports the time it takes the Media Drive Assembly servo system to settle down after the sudden addition of the wiper shaft load. A longer time could indicate a loose wiper shaft or a slipping clutch.
9	CW On average fe	N/A	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 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).

Table 11 Wiper Shaft Nominal Values

R#	Characteristic	Typical Value	Result
10	CW On fe ripple	N/A	Reports the variation of effort required to rotate the wiper shaft in the CW direction at a constant velocity. Most of this variation is caused by the normal gear mesh impulses in the assembly. An irregular ripple could be caused by the wiper binding in the track (too long, misaligned, or loose clips). A long term ripple could be caused by a worn or out of spec drive belt. Other unexpected variation could come from non-circular gears, broken/ malformed teeth, foreign materials in the teeth, dirty rollers, bent shafts, etc.
11	CW Off fe settling time (sec)	N/A	Reports the time it takes the Media Drive Assembly 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 Test

This test exercises the Tray 1 pick mechanism to determine if the shaft can be engaged/disengaged and to measure the friction between the Pick Roller and the Separator Pad. The Media Drive Assembly is started and run for a short time without the Tray 1 pick shaft to loosen up the gears/bearings. Next, the Tray 1 Pick Solenoid is engaged and through one revolution of the pick shaft and released right after the next trip point so that two full revolutions are obtained. During the two revolutions, the drive requirements are recorded to test the interaction between the Tray 1 pick shaft, Pick Roller, lift plate, and Separator Pad.

The data used in the analysis is the Media Drive Assembly servo system following error (fe), which is a measure of how hard the drive system is working at any point in tim. Open Tray 1, remove any media, and fold out the media extension before running this test.

Table 12 Tray 1 Pick Shaft Nominal Values

R#	Characteristic	Typical Value	Result
0	Off average Media Drive fe. (mpts)	N/A	Reports the average MP fe during the run in interval before the pick shaft is engaged.

Table 12 Tray 1 Pick Shaft Nominal Values

R#	Characteristic	Typical Value	Result
1	On response time. (sec)	N/A	Reports the time between Pick Solenoid activation and a detectable response from the Media Drive Assembly indicating pick shaft engagement. A higher value of R1 could indicate that the pick shaft 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 followers, drag on the pick shaft, or problems with the drive gears (missing teeth, etc.).
2	Average Media Drive fe	N/A	Reports the average Media Drive fe immediately following pick shaft engagement. A higher value of R2 could indicate extra friction between the cams and the lift plate followers (wear, contamination, etc.), as well as high lift plate spring tension or higher shaft bearing drag. Also, if the pick shaft gear did not engage, this value is unchanged from R0.
3	Transition Media Drive fe min. (mpts)	N/A	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	N/A	Reports the average Media Drive fe while the Pick Roller is contacting the Separator Pad. This value reflects friction between the Separator Pad and the Pick Roller. This value may be effected by contamination or glazing.
5	Pushdown MP fe max	N/A	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)	N/A	Reports the average Media Drive fe following the latching of the pick shaft gear. This value should be the same as R0 if the pick shaft gear successfully latched.

Tray 2, 3, or 4 Pick Shaft Test

This test determines if the specified tray pick shaft is operating normally. The test is the same for each pick shaft, although for Tray 2, the Media Drive Assembly is used instead of the optional Tray Motor. Requesting a test for a missing tray generates an "option not detected" message and the test does not run. This test checks Pick Clutch, Nudger Roller, and Separator Pad performance, although information is obtained about bearing, gear and shaft condition.

At the start of the test, a prompt requests removal of any media, if present, in the tray (if initially empty, cycle the tray to leave the lift plate in the down position). Acknowledge the prompt by pressing a Control Panel key. After acknowledgement, the pick shaft is driven for a short time to loosen up the gears and bearings. Next, the Tray Motor is run for a short time with the pick shaft disengaged. The pick clutch is momentarily engaged and the Tray Motor stopped. The test continues by running the pick shaft at a slow pick speed. At the same time, the corresponding lift plate is raised. The raising operation terminates when the Paper Height Sensor goes High. The pick shaft continues to run for a short time to determine the amount of friction between the Nudger Roller and the Separator Pad. The system response to the Pick Clutch activity demonstrates the clutch characteristics. The steady state drive requirements should show bearing status and the characteristics of the roller materials, flat/dirty rollers, bent shafts, etc. Nudger Roller and Separator Pad friction indicates condition of these parts (glazed, dirty).

Table 13 Tray 2, 3, or 4 Pick Shaft Nominal Values

R#	Characteristic	Typical Value	Result
0	Time to On peak fe (sec)	N/A	Reports a time that indicates how long it takes the Media Drive Assembly servo system to react to the sudden addition of the pick shaft load. Larger values may indicate a slipping or slow to engage clutch.
1	On peak fe	N/A	Reports the peak effort required to accelerate the pick shaft load. A smaller value could indicate a slipping clutch.
2	On fe settling time (sec)	N/A	Reports the time it takes the MP motor servo system to settle down after the sudden addition of the pick shaft load. A longer time could indicate looseness in the pick shaft or a slipping clutch.
3	On average fe	N/A	Reports the average effort needed to rotate the 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 excessive friction.
4	On fe ripple	N/A	Reports the variation of effort required to rotate the 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).

Table 13 Tray 2, 3, or 4 Pick Shaft Nominal Values

R#	Characteristic	Typical Value	Result
5	Off fe settling time (sec)	N/A	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)	N/A	Reports the time between the activation of the Tray 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 in the tray.
7	Plate lifted average fe	N/A	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 Roller pressure spring, or a glazed pad.

Fans Menu

These tests determine if the specified fan is operating properly. The selected fan is turned on for a short interval while the power is measured.

Drum Fan Test

The Drum Fan is turned On and allowed to rotate to its constant velocity. Next, the Drum Fan is turned Off and the values are calculated. Typical values are influenced by part variability and power supply tolerances.

Table 14 Drum Fan Nominal Values

R#	Characteristic	Typical Value	Result
0	Max Power (Watts)	N/A	Reports the initial fan power draw.
1	Constant Velocity Power (Watts)	N/A	Reports the power drawn by the fan while running a constant velocity.
2	Constant Velocity Power Ripple (Watts)	N/A	Reports the power ripple while the fan is running at constant velocity.
3	Constant Velocity Time (sec)	N/A	Reports the time from On until the fan reaches constant velocity. Values above typical could indicate a weak fan, extra drag (bearings, blades), or obstructed airflow.

Electronics Fan Test

The Electronics Module Fan is turned On and allowed to rotate to its constant velocity. Next, the Drum Fan is turned Off and the values are calculated. Typical values are influenced by part variability and power supply tolerances.

Table 15 Electronics Fan Nominal Values

R#	Characteristic	Typical Value	Result
0	Max Power (Watts)	N/A	Reports the initial fan power draw.
1	Constant Velocity Power (Watts)	N/A	Reports the power drawn by the fan while running a constant velocity.
2	Constant Velocity Power Ripple (Watts)	N/A	Reports the power ripple while the fan is running at constant velocity.
3	Constant Velocity Time (sec)	N/A	Reports the time from On until the fan reaches constant velocity. Values above typical could indicate a weak fan, extra drag (bearings, blades), or obstructed airflow.

Heaters Menu

These tests determine if the selected heater is operating as expected. When test data on a specific heater is requested, all of the heaters are tested as a group and the data for the selected heater is displayed. Subsequent requests for heater test data is derived from this captured information (without further testing). Heater test data remains in memory until a non-heater test is selected, a reset, or restart occurs.

The test tilts the Printhead back to isolate the Drum from the jetstack heaters. The Drum is rotated at idle velocity to keep the Drum temperature uniform. The test then sequentially applies power to each heater (while monitoring all of the temperatures), to produce a temperature response. The test determines the relationship between heating power applied, the resulting temperature response profile, and the current drawn by each heater.

Reservoir Heater Test

The Printhead reservoir heater test characteristics and descriptions are listed in the following table.

Table 16 Reservoir Heater Nominal Values

R#	Characteristic	Typical Value	Result
0	AC Line Voltage (volts)	N/A	Reports the baseline AC voltage prior to the start of the test.
1	Initial Temperature (deg C)	N/A	Reports the thermistor temperature prior to the application of heater power.
2	Average AC Current Delta (amps)	N/A	Reports the average difference from baseline AC current during the specified heating interval.
3	Average AC Voltage Delta (volts)	N/A	Reports the average difference from baseline AC volts during the specified heating interval.

Table 16 Reservoir Heater Nominal Values

R#	Characteristic	Typical Value	Result
4	Response Time (ms)	N/A	Reports the time following the application of power to the specified heater that the corresponding temperature begins to increase.
5	End Heating Temperature (deg c)	N/A	Reports the temperature at the end of the heating interval.
6	Peak Temperature (deg c)	N/A	Reports the peak temperature following the end of the heating interval.
7	Peak Temperature Time (ms)	N/A	Reports the time following the application of power to the specified heater until the peak temperature is reached.
8	Final Temperature (deg c)	N/A	Reports the final temperature at a fixed time following the peak temperature time.

Left Jetstack Heater Test

The Left Jetstack heater test characteristics and descriptions are listed in the following table.

Table 17 Left Jetstack Heater Nominal Values

R#	Characteristic	Typical Value	Result
0	AC Line Voltage (volts)	N/A	Reports the baseline AC voltage prior to the start of the test.
1	Initial Temperature (deg C)	N/A	Reports the thermistor temperature prior to the application of heater power.
2	Average AC Current Delta (amps)	N/A	Reports the average difference from baseline AC current during the specified heating interval.
3	Average AC Voltage Delta (volts)	N/A	Reports the average difference from baseline AC volts during the specified heating interval.
4	Response Time (ms)	N/A	Reports the time following the application of power to the specified heater that the corresponding temperature begins to increase.
5	End Heating Temperature (deg c)	N/A	Reports the temperature at the end of the heating interval.
6	Peak Temperature (deg c)	N/A	Reports the peak temperature following the end of the heating interval.
7	Peak Temperature Time (ms)	N/A	Reports the time following the application of power to the specified heater until the peak temperature is reached.
8	Final Temperature (deg c)	N/A	Reports the final temperature at a fixed time following the peak temperature time.

Right Jetstack Heater Test

The Right Jetstack heater test characteristics and descriptions are listed in the following table.

Table 18 Right Jetstack Heater Nominal Values

R#	Characteristic	Typical Value	Result
0	AC Line Voltage (volts)	N/A	Reports the baseline AC voltage prior to the start of the test.
1	Initial Temperature (deg C)	N/A	Reports the thermistor temperature prior to the application of heater power.
2	Average AC Current Delta (amps)	N/A	Reports the average difference from baseline AC current during the specified heating interval.
3	Average AC Voltage Delta (volts)	N/A	Reports the average difference from baseline AC volts during the specified heating interval.
4	Response Time (ms)	N/A	Reports the time following the application of power to the specified heater that the corresponding temperature begins to increase.
5	End Heating Temperature (deg c)	N/A	Reports the temperature at the end of the heating interval.
6	Peak Temperature (deg c)	N/A	Reports the peak temperature following the end of the heating interval.
7	Peak Temperature Time (ms)	N/A	Reports the time following the application of power to the specified heater until the peak temperature is reached.
8	Final Temperature (deg c)	N/A	Reports the final temperature at a fixed time following the peak temperature time.

Preheater Test

The Preheater test characteristics and descriptions are listed in the following table.

Table 19 Preheater Nominal Values

R#	Characteristic	Typical Value	Result
0	AC Line Voltage (volts)	N/A	Reports the baseline AC voltage prior to the start of the test.
1	Initial Temperature (deg C)	N/A	Reports the thermistor temperature prior to the application of heater power.
2	Average AC Current Delta (amps)	N/A	Reports the average difference from baseline AC current during the specified heating interval.
3	Average AC Voltage Delta (volts)	N/A	Reports the average difference from baseline AC volts during the specified heating interval.

Table 19 Preheater Nominal Values

R#	Characteristic	Typical Value	Result
4	Response Time (ms)	N/A	Reports the time following the application of power to the specified heater that the corresponding temperature begins to increase.
5	End Heating Temperature (deg c)	N/A	Reports the temperature at the end of the heating interval.
6	Peak Temperature (deg c)	N/A	Reports the peak temperature following the end of the heating interval.
7	Peak Temperature Time (ms)	N/A	Reports the time following the application of power to the specified heater until the peak temperature is reached.
8	Final Temperature (deg c)	N/A	Reports the final temperature at a fixed time following the peak temperature time.

Drum Heater Test

The Drum heater test characteristics and descriptions are listed in the following table.

Table 20 Drum Heater Nominal Values

R#	Characteristic	Typical Value	Result
0	AC Line Voltage (volts)	N/A	Reports the baseline AC voltage prior to the start of the test.
1	Initial Temperature (deg C)	N/A	Reports the thermistor temperature prior to the application of heater power.
2	Average AC Current Delta (amps)	N/A	Reports the average difference from baseline AC current during the specified heating interval.
3	Average AC Voltage Delta (volts)	N/A	Reports the average difference from baseline AC volts during the specified heating interval.
4	Response Time (ms)	N/A	Reports the time following the application of power to the specified heater that the corresponding temperature begins to increase.
5	End Heating Temperature (deg c)	N/A	Reports the temperature at the end of the heating interval.
6	Peak Temperature (deg c)	N/A	Reports the peak temperature following the end of the heating interval.
7	Peak Temperature Time (ms)	N/A	Reports the time following the application of power to the specified heater until the peak temperature is reached.
8	Final Temperature (deg c)	N/A	Reports the final temperature at a fixed time following the peak temperature time.

Ink Melt Heater Tests

The four Ink Melt Heater (YCMK) test characteristics and descriptions are listed in the following table. Select the color of Ink Melt Heater to view the test results.

Table 21 Ink Melt Heater Nominal Values

R#	Characteristic	Typical Value	Result
0	AC Line Voltage (volts)	N/A	Reports the baseline AC voltage prior to the start of the test.
1	Initial Temperature (deg C)	N/A	Reports the thermistor temperature prior to the application of heater power.
2	Average AC Current Delta (amps)	N/A	Reports the average difference from baseline AC current during the specified heating interval.
3	Average AC Voltage Delta (volts)	N/A	Reports the average difference from baseline AC volts during the specified heating interval.
4	Response Time (ms)	N/A	Reports the time following the application of power to the specified heater that the corresponding temperature begins to increase.
5	End Heating Temperature (deg c)	N/A	Reports the temperature at the end of the heating interval.
6	Peak Temperature (deg c)	N/A	Reports the peak temperature following the end of the heating interval.
7	Peak Temperature Time (ms)	N/A	Reports the time following the application of power to the specified heater until the peak temperature is reached.
8	Final Temperature (deg c)	N/A	Reports the final temperature at a fixed time following the peak temperature time.

Paper Path Menu

These tests exercise specific sections of the media transport path. These tests assume the paper path drive to be basically functional, and move paper through the system in a standard test profile, which is similar to, but not an exact duplicate of the various transport motion profiles used during normal operation. Therefore the timing information does not correspond to normal transport timing. When a test is run, a sheet of media is fed from the lowest numbered tray containing media through the simplex or duplex paper path and the data is displayed. Subsequent requests for path test data is derived from captured data without further testing. Path data remains in memory until a non paper path test is selected, the Clear Paper Path Data is selected, a system reset, or restart is performed. The tests measure the transit of A or A4 media. The media size and source Tray is captured and reported with the other data. The data output format accommodates the maximum number of parameters involved in moving media from any tray through either the simplex or duplex paper path. Any parameters not pertaining to a particular paper movement are listed as undefined. These tests may be performed with any weight media, but typical values assume a nominal 20 lb. weight media

Paper Drive Power / Duplex Drive Power

This test measures required drive power (in Watts).

Table 22 Paper Drive Power / Duplex Drive Power Nominal Values

R#	Characteristic	Typical Value	Result
0	Tray	1/2/3/4	Reports the source tray.
1	Paper Size	0 or 1	Reports the paper size (0/1 -> A/A4).
Tray 4 Source Tray			
2	Tray 4 Pick Average Power	N/A	Reports average power over the Tray 4 pick interval.
3	Tray 4 Transport Average Power	N/A	Reports average of the power over the Tray 4 to Tray 3 transport interval.
4	Tray 4 - 3 Transport Average Power	N/A	Reports average power over the Tray 4 to deskew transport interval.
Tray 3 Source Tray			
2	not used	undefined	No Tray 3 value.
3	Tray 3 Pick Average Power	N/A	Reports average power over the Tray 3 pick interval.
4	Tray 3 Transport Average Power	N/A	Reports average power over the Tray 3 to deskew transport interval.
Tray 2 Source Tray			
2	not used	undefined	No Tray 2 value.
3	not used	undefined	No Tray 2 value.
4	Tray 2 Transport Average Power	N/A	Reports average power over the Tray 2 to deskew transport interval.
Tray 1 Source Tray			
2	not used	undefined	No Tray 1 value.
3	not used	undefined	No Tray 1 value.
4	Tray 1 Transport Average Power	N/A	Reports average power over the Tray 1 to deskew transport interval.
5	Stage Average Power	N/A	Reports average of the power over the stage interval.
6	Transfix Average Power	N/A	Reports average of the power over the transfix interval.
7	Exit Average Power	N/A	Reports average of the power over the exit interval for all trays for Simplex operations only.
Duplex Operations Only			
7	Duplex Turnaround Average Power	N/A	Reports average of the power over the duplex turnaround interval for all trays.
8	Duplex Pick Average Power	N/A	Reports average of the power over the duplex pick interval.
9	Duplex Stage Average Power	N/A	Reports average of the power over the duplex stage interval.
10	Duplex Transfix Average Power	N/A	Reports average of the power over the duplex transfix interval.
11	Duplex Exit Average Power	N/A	Reports average of the power over the duplex exit interval.

Paper Leading Edge Times / Duplex Paper Leading Edge Times

The test measures the paper leading edge arrival time (in microseconds) at each paper path sensor. An out of range value could indicate slipping rollers or excessive drag. Rollers can slip due to contamination or loss of pressure. A slipping clutch or drag in previous path segment could also result in increased transport times.

Table 23 Simplex / Duplex Paper Leading Edge Times Nominal Values

R#	Characteristic	Typical Value	Result
0	Tray	1/2/3/4	Reports the source tray.
1	Paper Size	0 or 1	Reports the paper size (0/1 -> A/A4).
Tray 4 Source Tray			
2	Tray 4 Pick Interval Time	N/A	Reports the Tray 4 pick interval timing.
3	Tray 4-3 Transport Interval Time	N/A	Reports the Tray 4 to Tray 3 transport interval timing.
4	Tray 3 Transport Interval Time	N/A	Reports the Tray 4 transport interval timing.
Tray 3 Source Tray			
2	not used	undefined	No Tray 3 value.
3	Tray 3 Pick Interval Time	N/A	Reports the Tray 3 pick interval timing.
4	Tray 3 Transport Interval Time	N/A	Reports Tray 3 transport interval timing.
Tray 2 Source Tray			
2	not used	undefined	No Tray 2 value.
3	not used	undefined	No Tray 2 value.
4	Tray 2 Pick Interval Time	N/A	Reports the Tray 2 pick interval timing.
Tray 1 Source Tray			
2	not used	undefined	No Tray 1 value.
3	not used	undefined	No Tray 1 value.
4	Tray 1 Pick Interval Time	N/A	Reports the Tray 1 pick interval timing.
5	Stage Interval Time	N/A	Reports stage interval timing.
6	Strip Interval Time	N/A	Reports the strip interval timing.
7	Exit Interval Time	N/A	Reports the exit interval timing.
Sinplex Operations Only			
8	Exited Interval Time	N/A	Reports the exit clear timing.
Duplex Operations Only			
8	Duplex Turnaround Interval Time	N/A	Reports turnaround interval timing.
9	Duplex Pick Interval Time	N/A	Reports duplex pick interval timing.

Table 23 Simplex / Duplex Paper Leading Edge Times Nominal Values

R#	Characteristic	Typical Value	Result
10	Duplex Stage Interval Time	N/A	Reports duplex stage interval timing.
11	Duplex Strip Interval Time	N/A	Reports duplex strip interval timing.
12	Duplex Exit Interval Time	N/A	Reports duplex exit interval timing.
13	Duplex Exited Interval Time	N/A	Reports duplex exit interval.

Paper Trailing Edge Times / Duplex Paper Trailing Edge Times

This test measures the paper trailing edge arrival time (in microseconds) at each paper path sensor. An out of range value could indicate slipping rollers or excessive drag. Rollers can slip due to contamination or loss of pressure. A slipping clutch or drag in previous path segment could result in increased transport times. A sticking sensor, vibration of the trailing edge, media too thin to support the sensor actuator, and buckling or tearing media could produce an apparent media length change effecting the result.

Table 24 Simplex / Duplex Paper Trailing Edge Times Nominal Values

R#	Characteristic	Typical Value	Result
0	Tray	1/2/3/4	Reports the source tray.
1	Paper Size	0 or 1	Reports the paper size (0/1 -> A/A4).
Tray 4 Source Tray			
2	Tray 4 Pick Trailing Edge Interval Time	N/A	Reports the Tray 4 pick interval timing.
3	Tray 4-3 Pick Trailing Edge Interval Time	N/A	Reports the Tray 4 to Tray 3 transport interval timing.
Tray 3 Source Tray			
2	not used	undefined	No Tray 3 value.
3	Tray 3 Pick Trailing Edge Interval Time	N/A	Reports the Tray 3 pick trailing edge interval timing.
Tray 2 Source Tray			
2	not used	undefined	No Tray 2 value.
3	not used	undefined	No Tray 2 value.
Tray 1 Source Tray			
2	not used	undefined	No Tray 1 value.
3	not used	undefined	No Tray 1 value.
4	Deskew Trailing Edge Interval Time	N/A	Reports deskew trailing edge interval timing.
5	Preheat Trailing Edge Interval Time	N/A	Reports Preheater trailing edge interval timing.
6	Strip Trailing Edge Interval Time	N/A	Reports strip trailing edge interval timing.
Simplex Operations Only			
7	Exit Trailing Edge Interval Time	N/A	Reports exit trailing edge interval timing.
Duplex Operations Only			

Table 24 Simplex / Duplex Paper Trailing Edge Times Nominal Values

R#	Characteristic	Typical Value	Result
7	Duplex Turnaround Interval Time	N/A	Reports duplex turnaround trailing edge interval timing.
8	Duplex Deskew Trailing Edge Interval Time	N/A	Reports the duplex deskew trailing edge interval timing.
9	Duplex Preheat Trailing Edge Interval Time	N/A	Reports the duplex Preheater trailing edge interval timing.
10	Duplex Strip Trailing Edge Interval Time	N/A	Reports the duplex strip trailing edge interval timing.
11	Duplex Exit Trailing Edge Interval Time	N/A	Reports the duplex exit trailing edge interval.

Paper Trailing Edge Bounce Times / Duplex Paper Trailing Edge Bounce Times

This test measures the paper trailing edge bounce interval of each paper path sensor (in microseconds). An out of range value can indicate a sticking actuator due to missing, damaged, or displaced springs. Vibration of the trailing edge caused by media type or condition may also cause excessive bounce. Stuck or still bouncing flags (an odd number of transitions following the initial deassertion), causes the test to exit.

Table 25 Simplex / Duplex Paper Trailing Edge Bounce Times Nominal Values

R#	Characteristic	Typical Value	Result
0	Tray	1/2/3/4	Reports the source tray.
1	Paper Size	0 or 1	Reports the paper size (0/1 -> A/A4).
Tray 4 Source Tray			
2	Tray 4 Pick Trailing Edge Bounce Interval Time	N/A	Reports the Tray 4 pick interval bounce timing.
3	Tray 4-3 Pick Bounce Interval Time	N/A	Reports the Tray 4 to Tray 3 pick bounce interval timing.
Tray 3 Source Tray			
2	not used	undefined	No Tray 3 value.
3	Tray 3 Pick Bounce Interval Time	N/A	Reports the Tray 3 pick bounce interval timing.
Tray 2 Source Tray			
2	not used	undefined	No Tray 2 value.
3	not used	undefined	No Tray 2 value.
Tray 1 Source Tray			
2	not used	undefined	No Tray 1 value.
3	not used	undefined	No Tray 1 value.
4	Deskew Bounce Interval Time	N/A	Reports deskew bounce interval timing.
5	Preheat Bounce Interval Time	N/A	Reports Preheater bounce interval timing.
6	Strip Bounce Interval Time	N/A	Reports strip bounce interval timing.
Simplex Operations Only			

Table 25 Simplex / Duplex Paper Trailing Edge Bounce Times Nominal Values

R#	Characteristic	Typical Value	Result
7	Exit Bounce Interval Time	N/A	Reports exit bounce interval timing.
Duplex Operations Only			
7	Duplex Turnaround Bounce Interval Time	N/A	Reports duplex turnaround bounce interval timing.
8	Duplex Deskew Bounce Interval Time	N/A	Reports the duplex deskew bounce interval timing.
9	Duplex Preheat Bounce Interval Time	N/A	Reports the duplex Preheater trailing edge interval timing.
10	Duplex Strip Bounce Interval Time	N/A	Reports the duplex strip bounce interval timing.
11	Duplex Exit Bounce Interval Time	N/A	Reports the duplex exit bounce interval.

Drive Menu

These tests exercise each subsystems driven by a motor and measure the power required (in Watts). The exception being the Y-Axis tests which are included under the Drum menu.

X-Axis Test

This test determines if the X-Axis is operating correctly. The X-Axis Motor is driven CW (viewed from behind the motor) until the Printhead stalls at the right stop (viewed from the front of the system). Next, the X-Axis Motor is driven CCW until the Printhead stalls at the left stop. Finally, the Printhead is moved into the clear and a in motion velocity reversal is performed. This test assumes that the X-Axis Motor test produced satisfactory results.

Table 26 X-Axis Nominal Values

R#	Characteristic	Typical Value	Result
0	Left Stall Power Level	N/A	Reports the stall power when the Printhead stalls at the left stop.
1	Left Right Distance (in)	N/A	Reports the distance between the left and right stall points in inches. a short distance could indicate something blocking the normal Printhead range of motion (either inside of outside the right side frame), or some significant binding (loose cables, foreign object, Printhead not in the Ready position, etc.). A long distance could mean a problem with the drive cone or motor not turning.

Table 26 X-Axis Nominal Values

R#	Characteristic	Typical Value	Result
2	Left Right Traverse Average Power Level	N/A	Reports the average power required to move the Printhead from the left stall point to the right stall point. A high value could indicate a problem with the lead screw or the Printhead bearings (lubrication, etc.), or out of spec restraint spring. A too low value could indicate that the restraint spring is missing or damaged.
3	Left Right Traverse Power Ripple	N/A	Reports the ripple in the power level required to move the Printhead from the left stall point to the right stall point. A high value could indicate a bad motor, lead screw, or something interfering with the Printhead's motion.
4	Right Left Traverse Power Average Level	N/A	Reports the average power required to move the Printhead from the right stall point to the left stall point. This value should be lower than R2 due to the effect of the restraint spring.
5	Right Left Traverse Power Ripple	N/A	Reports the ripple in the power level required to move the Printhead from the right stall point to the left stall point. This value should be similar to R3.
6	Turnaround Power Blip Width	N/A	Reports the width of the momentary drop in the required drive power when the Printhead motion is being reversed. A high value could indicate an unusual amount of backlash in the drive mechanism (lead screw/drive cone threads), or an issue with the restraint spring where the Printhead is not being pressed tightly to the drive cone. If the mechanism is tight this value could be 0.

Transfix Drive Test

CAUTION

This test does not clean the Drum before lowering the Transfix Roller. To prevent contamination of the Transfix Roller, check that the Drum is clean before running this test.

This test exercises the Transfix Roller and reports the results. The Transfix Drive test measures the dynamic response of the transfix mechanism at normal operating velocity.

Table 27 Transfix Drive Nominal Values

R#	Characteristic	Typical Value	Result
0	Time to first contact (sec)	N/A	Reports the time from the load command to the engine until the drum indicates pressure roller contact.

Table 27 Transfix Drive Nominal Values

R#	Characteristic	Typical Value	Result
1	Loaded Average Y-axis following error (mpts)	N/A	Reports the average Y-axis following error during the Roll With Transfix Roller Down interval.
2	Loaded Y-axis following error ripple (mpts)	N/A	Reports the difference between the max and the min Y-axis following error during the Roll With Transfix Roller Down interval.
3	Time to last contact (sec)	N/A	Reports the time from the unload command to the engine until the drum indicates no further contact.

Drum Maintenance Drive Test

This test determines if the drum maintenance mechanism is operating by placing the Drum Maintenance Kit against the Drum for a short time. First with the roller and blade in contact with the Drum, then just the blade. This test requires that the Drum is clean and not dry to provide a predictable interface surface.

NOTE: *If this test indicates the Drum Maintenance Kit is not functioning, the Tilt Axis Drive test may also produce out of range results due to the effect of the Drum Maintenance Kit on that test.*

Table 28 Drum Maintenance Drive Nominal Values

R#	Characteristic	Typical Value	Result
0	Time to blade first contact (sec)	N/A	Reports the time to blade contact with the Drum.
1	Time to roller first contact (sec)	N/A	Reports the time to roller contact with the Drum.
2	Roller/Blade loaded average Y-axis following error (mpts)	N/A	Reports the average Y-axis following error during the Roll With Both Loaded interval.
3	Roller/Blade loaded Y-axis following error ripple (mpts)	N/A	Reports the difference between the max and the min Y-axis following error during the Roll With Both Loaded interval.
4	Roller Disengaged Time (sec)	N/A	Reports the time till the drum indicates no further roller contact.
5	Blade loaded average Y-axis following error (mpts)	N/A	Reports the average Y-axis following error during the Roll With Blade Loaded interval.
6	Blade loaded Y-axis following error ripple (mpts)	N/A	Reports the difference between the max and the min Y-axis following error during the Roll With Blade Loaded interval.
7	Blade Disengaged Time (sec)	N/A	Reports the time till the drum indicates no further blade contact.

Tilt Axis Drive Test

This test exercises the head tilt mechanism. This includes the Drum Maintenance Kit, Process Drive, Media Drive Assembly, Wiper Assembly, and Head Tilt Solenoid and Gear.

Table 29 Tilt Axis Drive Nominal Values

R#	Characteristic	Typical Value	Result
0	Tilt Engage Wiper Position (min)	N/A	Reports the distance from the wiper Home position to the tilt cam engage point.
1	Pre Standby peak Location (deg)	N/A	Reports the distance around the tilt cam from the tilt engage position to the pre standby peak.
2	Pre Standby peak Av (counts)	N/A	Reports the Process Drive following error at the pre standby peak location.
3	Post Wipe Peak Location (degrees)	N/A	Reports the distance around the tilt cam from the tilt engage position to the post wipe peak.
4	Post Wipe peak Av (counts)	N/A	Reports the pm motor following error at the post wipe peak location

·If the Tilt mechanism does not engage, the test will abort with one of the following messages:

- Printhead unlatch time-out - The Drum Maintenance following error did not exceed 105% of the Drum Maintenance only max with in the Process Motor tilt drive interval.
- The wiper stalled during the scan before unlatching the Head Tilt Gear. The most likely cause is the Wiper Blade is not level causing the high end to contact the drip bib and stalling the wiper axis before unlatching the gear. Other causes could be that the Head Tilt Gear is jammed (full of ink), or not properly biased (Head Tilt Spring missing or defective). Also the trip lever could require extra effort to lift (flat spring stronger than usual, rough or warped engage surface with gear, binding/drag from Head Tilt Solenoid), causing the wiper axis to stall before contacting the drip bib. Extra drag in the wiper mechanism could also cause a stall.
- Process Drive stalled before the Head Tilt Gear was unlatched.

Drive problems on either axis could cause the respective motor to stall and the test to abort. The Wiper Drive and Drum Maintenance Drive tests would test the basic drive mechanisms. If the Head Tilt Gear fails to engage the tilt mechanism, the test aborts, and all R values are undefined. If peak values are high, there could be an issue with a weak Process Drive, friction in the tilt cam drive train, the cam surfaces (lubrication), the Head Tilt Spring, or something impeding the Printhead from tilting (warped insulation on the side, X-Axis misalignment, or the Printhead being compressed against the Electronics Module. If the peak values are low, check the Head Tilt Spring.

Wiper Drive Test

This test exercises the Wiper Assembly, Printhead latching mechanism, Head Maintenance Clutch, and related parts. This test assumes that the tilt drive and the Wiper Assembly mechanisms are functioning correctly. Run the Tilt Drive test first to verify correct operation of that mechanism. This test activates the tilt mechanism to move the Printhead out of the way. Next, the Media Drive Assembly drives the Wiper Blade over it's range of motion.

If the Printhead does not reach the standby position, the Wiper Blade can contact or interfere with the Printhead. Problems with the Wiper or Media Drive assemblies (including the clutch) can cause excessive ripple and or drive power levels. Review the results of the Paper Path Drive and the Wiper Shaft tests to verify the wiper mechanism drive is operating properly before investigating problems indicated by this test. Variation in the Up and Down Drive characteristics are often caused by CW/CCW drive differences in the Media Drive Assembly. A slipping Head Maintenance Clutch could produce several out of bounds results. Check the clutch using with the Wiper Shaft test. Incorrect Wiper Belt tension can introduce variation in several ripple or position values, especially the turnaround recovery time.

Table 30 Wiper Drive Nominal Values

R#	Characteristic	Typical Value	Result
0	Up Motion Drive Error (min)	N/A	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 (min)	N/A	Reports the difference between the max and min following error over the same interval.
2	Up Distance (min)	N/A	Reports the difference between the max and min limits of travel when moving up.
3	Lock Encounter Distance (min)	N/A	Reports the distance up from the lower limit of travel at which the head lock latch is encountered.
4	Lock Engage Distance (min)	N/A	Reports the distance up from the lower limit of travel at which the head lock latch engages.
5	Lock Engage Peak (min)	N/A	Reports the peak following error at the point the latch engages.
6	Down Motion Drive Error (min)	N/A	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 (min)	N/A	Reports the difference between the max and min following error over the same interval.
8	Down Distance (min)	N/A	Reports the difference between the max and min limits of travel when moving up.
9	Lock Disengage Distance (min)	N/A	Reports the distance up from the upper stall point at which the head lock latch releases.
10	Lock Disengage Peak (min)	N/A	Reports the peak following error at the point the latch releases.
11	Bottom Encounter Distance (min)	N/A	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)	N/A	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 Test

This test exercises the Media Drive gear train and shafts. This test runs the Media Drive gear train for a short time to loosen up the gears and bearings. Next, the gear train is abruptly reversed to capture the reversal transient (which includes the swing gear motion), and operation in the other direction. No media is needed for this test to run. However, check that the Tray 1 pick gear, Tray 2 Pick Clutch, and Head Maintenance Clutch are disengaged before running this test. Verify proper Media Drive motor operation with the Media Path Motor test.

Excessive following error (fe) during the drive intervals might indicate:

- Weak Media Drive motor
- Shafts with high drive requirements due to dry or misaligned bushings, bent shafts, roller tension springs too strong, shaft gear diameter too large, rollers that are hard or dirty.
- Media Drive Assembly with high drive requirements due to warpage, no lubrication, gear diameter too large, or out of spec face gear

Excessive ripple may indicate heavy load, malformed gear teeth, eccentric gears, bent shafts, dirt on rollers, or warped face gear. An out of spec transition time might indicate and issue with the meshing gears or a bound up Media Drive Assembly swing gear. The power peaks indicate when swing gears loose contact on one side (reducing the required power), and make contact on the other side, accelerating the upper shafts in the opposite direction.

Table 31 Paper Path Drive Nominal Values

R#	Characteristic	Typical Value	Result
0	CW MP fe Av (counts)	N/A	Reports the average drive following error level in the foreword direction.
1	CW MP fe Ripple (counts)	N/A	Reports the average drive following error ripple in the foreword direction.
2	CCW MP fe Av (counts)	N/A	Reports the average drive following error level in the backward direction.
3	CCW MP fe Ripple (counts)	N/A	Reports the average following error ripple in the backward direction.
4	Swing Arm Transition Time (sec)	N/A	Reports the time that the lower portion of the paper path drive is disconnected while the swing arm transitions to the other rotation direction drive position.

Tray 2, 3, and 4 Lift Plate Drive Test

This test exercises the selected Lift Motor and Lift Plate mechanism. This test. raises the Lift Plate until it stalls against the upper stop. If the tray is empty (the normal situation), the No Paper Sensor is not activated, but the Paper Height Sensor is. If the tray contains 1 sheet of media (additional media would distort the power and lift distance readings), both sensors would are activated.

NOTE: *The test requires that the tray be cycled (pulled out and pushed in) and emptied. However there are no sensors to detect if the required actions were taken. The test runs with the tray in any state, but the results are less useful if the tray is not in the required configuration.*

The power peaks indicate when swing gears loose contact on one side (cutting the required power), and then making contact on the other side and accelerating the upper shafts in the other direction.

Table 32 Tray 2, 3, and 4 Lift Plate Drive Nominal Values

R#	Characteristic	Typical Value	Result
0	Tray Configuration	N/A	Reports the tray status (present, plate not lifted, etc.).
1	Start Peak Power (watts)	N/A	Reports the highest peak during the first quarter of the lifting interval. Peak power is a characteristic of the motor, and shows the power required to begin moving.
2	Slack Take-up Time (sec)	N/A	Reports the time interval between motor power on and when lifting actually starts.
3	Average Lift Power (watts)	N/A	Reports the average power during the lifting interval. This is power required to lift the plate. This value is affected if the tray is missing, not empty, or problems with the lift arm (missing sleeve bearings, etc.).
4	Lift Contact Time (sec)	N/A	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. This value indicates the point of contact with the Nudger Roller. which indicates if the roller is installed and is hanging down correctly
5	Lift Time (sec)	N/A	Reports the interval from the motor start time until the Paper Height Sensor is activated. This value indicates that the sensor is working and is encountered at the correct spot in the lift profile. This value is also be affected if the tray contains media.
6	Stall Power (watts)	N/A	Reports the average motor stall power during the over lifting interval. ·Stall power is a characteristic of the motor.

Drum Menu

The Drum menu contains tests for different aspects of Drum operation and the Y-Axis subsystem.

Y-Axis Encoder Test

This test gathers data on the performance of the Y-axis Encoder and Home position reporting. The Y-Axis encoder subsystem (consisting of the data gathering hardware and the firmware), is very tolerant and operates correctly with a wide range of data. Most data issues are related to encoder disk misalignment, damage, or contamination.

Table 33 Y-Axis Encoder Nominal Values

R#	Characteristic	Typical Value	Result
0	Sin DC offset (sin sum units)	N/A	Reports one half of the difference between the average of the Sin Sum positive peak values and the average of the Sin Sum negative peak values.
1	Sin peak-to-peak average amplitude (sin sum units)	N/A	Reports sum of the absolute values of the average of the Sin Sum positive peak values and the average of the Sin Sum negative peak values.
2	Sin amplitude ripple Ratio (none)	N/A	Reports difference between the Sin amplitude ripple (the difference between the max and min Sin Sum positive peak values over a revolution ignoring a short distance each side of the notch), and half the peak to peak Sin Sum average amplitude (R1 / 2).
3	Sin max delta amplitude (sin sum units)	N/A	Reports max value of the difference between the amplitudes of any adjacent Sin Sum positive peaks.
4	Sin max delta position (Y-Axis encoder ticks)	N/A	Reports max value of the difference between the rotational position of any adjacent Sin Sum positive peaks.
5	Home Notch Depth Ratio (none)	N/A	Reports the ratio between the notch bottom amplitude measured with respect to the Sin DC offset (R1), and one half the peak to peak average amplitude value (R1 / 2), as determined from the Sin Sum data.
6	Home Notch Width (Y-Axis encoder ticks)	N/A	Reports the width of the Home notch at 99% full depth as determined from the Sin Sum data.
7	Home Notch Symmetry (none)	N/A	Reports the ratio of the portions of the Home notch width distance as bisected by a vertical from the notch min as determined from the Sin Sum data.
8	Cosine DC offset (cosine sum units)	N/A	Reports difference between the average of the Cosine Sum positive peak values and the average of the Cosine Sum negative peak values.

Table 33 Y-Axis Encoder Nominal Values

R#	Characteristic	Typical Value	Result
9	Cosine peak-to-peak average amplitude (cosine sum units)	N/A	Reports sum of the absolute values of the average of the Cosine Sum positive peak values and the average of the Cosine Sum negative peak values.

Y-Axis Geometry Test

This test measures the dynamic stability of the Y-axis drive system. The test rotates the Drum at a constant velocity and measures Drum and Y-Axis Motor vibration. A very high motor or drum peak indicates that the component is unbalanced.

Table 34 Y-Axis Geometry Nominal Values

R#	Characteristic	Typical Value	Result
0	Drum FFT Power (none)	N/A	Reports the rescaled FFT power amplitude of the drum frequency.
1	Drum Frequency (hz)	N/A	Reports the current drum frequency.
2	Motor FFT Power Ratio (none)	N/A	Reports the ratio of the FFT power amplitude of the motor frequency to the FFT power amplitude of the drum frequency.
3	Motor Frequency (hz)	N/A	Reports the current motor frequency.
4	FFT Power Ratio 1 (none)	N/A	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)	N/A	Reports the frequency of the most powerful FFT frequency (not including the drum or motor.
6	FFT Power Ratio 2 (none)	N/A	Reports the ratio of the FFT power amplitude of the second most powerful FFT frequency (not including the drum or motor), to the FFT power amplitude of the drum frequency.
7	Frequency 2 Frequency (hz)	N/A	Reports the frequency of the second most powerful FFT frequency (not including the drum or motor).

Y-Axis Drive Test

This test checks the dynamic performance of the Y-Axis servo control loop. The test is performed with and without the Transfix Roller loaded on the Drum (i.e. min and max loads). Servo response parameters under various conditions covering anticipated usage ranges are measured. Excessive velocity ripple could result in image quality problems due to variations in Y-Axis pixel placement. Excessive settling times can reduce throughput or result in leading edge print artifacts.

Table 35 Y-Axis Drive Nominal Values

R#	Characteristic	Typical Value	Result
0	HAHVN CCW Average fe (mpts)	N/A	Reports average following error (fe) during the last half of the first steady state period.
1	HAHVN CCW fe Ripple (mpts)	N/A	Reports following error ripple during the last half of the first steady state period.
2	HAHVN CW Average fe (mpts)	N/A	Reports average following error during the last half of the second steady state period.
3	HAHVN CW fe Ripple (mpts)	N/A	Reports following error ripple during the last half of the second steady state period.
4	HAHVN Start fe Settle time (sec)	N/A	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)	N/A	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)	N/A	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)	N/A	Reports the time following the start of motion that it takes the Y-axis delta velocity to enter the CCW delta velocity ripple band.
8	HAHVN Speed/Voltage Ratio (in/sec/volt)	N/A	Reports an approximation of the motor Ke parameter during high speed operation.
9	HALVN Speed/Voltage Ratio (in/sec/volt)	N/A	Reports an approximation of the motor Ke parameter during low speed operation.

Y-Axis Drive Belt Slippage Test

This test does a chase (pick/transfix), of a special sheet of preprinted media and records the Y-axis following error (fe).

Table 36 Y-Axis Drive Belt Slippage Nominal Values

R#	Characteristic	Typical Value	Result
0	Initial Peak Y-axis fe (mpts)	N/A	Reports the amplitude of the first Y-axis following error peak.
1	Maximum Peak Y-axis fe (mpts)	N/A	Reports the amplitude of the maximum Y-axis fe peak after the first.
2	Average Y-axis fe (mpts)	N/A	Reports the average of the Y-axis following error during the roller down portion of the transfix operation.

Y-Axis Drive Belt Tension Test

This test checks for proper belt tension by modifying the Y-Axis servo loop so it is unstable and oscillates. After a run in period to loosen the belt, the drum is advanced for two revolutions and the oscillation frequency is recorded. Drive component runouts and tolerances can cause the belt tension to change as the Drum turns. Higher frequency variations are typically the motor pulley. While lower frequency variations are the drum pulley. Dirt, debris, or defects may also cause tension variations.

Table 37 Y-Axis Drive Belt Tension Nominal Values

R#	Characteristic	Typical Value	Result
0	Min Resonant Frequency (hz)	N/A	Reports the min resonant frequency over the data set.
1	Max Resonant Frequency (hz)	N/A	Reports the max resonant frequency over the data set.
2	Min Resonant Frequency Revs (revs)	N/A	Reports the number of full Y-Axis rotations required to locate the min frequency configuration.
3	Min Resonant Frequency Angle (deg)	N/A	Reports the amount of additional Y-Axis rotations required to locate the min frequency configuration.

Stripper Contact Test

This test exercises the stripper blade. The Drum is held stationary and the Stripper Solenoid is activated and released. The reaction of the Drum servo error signal indicates activation timing and how strongly the Drum was contacted by the stripper blade. The contract pressure on the drum may relate to stripper blade geometry and condition. The test requires the doors be closed and the upper paper path to be clear.

Zero or too small readings for all of the engage/release values indicate that the stripper blade did not contact the Drum. A minimal bump could occur if the solenoid plunger activated, but there was no stripper mechanism motion, possibly due to the stripper blade being in the latched up position. The test does not prepare the Drum with a drum maintenance cycle. The condition of the Drum (too much oil, not enough oil, ink residue, or dirt), may affect results.

Table 38 Stripper Contact Nominal Values

R#	Characteristic	Typical Value	Result
0	Engage Displacement (mpts)	N/A	Reports the static difference between the average Y-Axis following error before and after the blade has engaged the Drum, indicating how strongly the blade is interacting with the drum while pushing onto the drum. Unusual values may indicate blade condition (stiffness, dirty, bent, delaminated, etc.). Another potential contributor is the solenoid's range of travel or engagement force (solenoid/solenoid drive strength or return spring strength, including a missing or double spring).
1	Engage Time (sec)	N/A	Reports the time between the engagement of the Stripper Solenoid and the blade begins to contact the Drum. Unusual values may indicate the geometry of the mechanism (i.e. parts out of tolerance, bent, missing, etc.), causing an incorrect blade to Drum gap.
2	Engaging Period (sec)	N/A	Reports the time between the engagement of the Stripper Solenoid and the reaction of the Drum servo error signal fades back into the ripple (noise).
3	Engaging Amplitude (mpts)	N/A	Reports the magnitude of the reaction of the drum to the contact of the blade.
4	Release Displacement (mpts)	N/A	Reports the static difference between the average Y-Axis following error before and after the blade has disengaged from the drum.
5	Release Time (sec)	N/A	Reports the time between the disengagement of the Stripper Solenoid and the blade begins to withdraw from the Drum. See R2.
6	Releasing Time (sec)	N/A	Reports the time between the disengagement of the Stripper Solenoid and the reaction of the drum to the withdrawal of the blade fades back into the ripple. See R2.

Table 38 Stripper Contact Nominal Values

R#	Characteristic	Typical Value	Result
7	Releasing Amplitude (mpts)	N/A	Reports the magnitude of the reaction of the Drum to the withdrawal of the blade. See R3.

Drum Maintenance Contact Test

This test exercises the Drum Maintenance Kit. The Drum is driven by a low amplitude vibration and the Drum Maintenance Kit is advanced through its cycle. The reaction of the Drum servo error signal indicates when the drum was contacted by the roller and blade.

Table 39 Drum Maintenance Contact Nominal Values

R#	Characteristic	Typical Value	Result
0	Initial Contact Position (Process Motor counts)	N/A	Reports the distance the Process Motor was moved (raising the Drum Maintenance Kit, before a Y-Axis reaction was detected. Shows that the Drum Maintenance Kit is raising and provides information on the blade/drum gap.

Motors Menu

This menu contains a test for each of the system motors.

Y-Axis Motor Test

The Y-Axis motor is moved to the Home position, then turned On and run slowly for one revolution. The slow motion removes the effect of inertia from the test, and the one revolution avoids a large system status change via any permanently connected loads. With the slow operating speed used by the test, the motor may stall at a bad commutator segment. Unusual average values might indicate a weak motor. The motor following error, drive voltage, and power ripple values indicate how smoothly the motor is able to turn through one revolution. Depending on the mechanical state of the drive when this test is run, both the ripple and average values may vary significantly from run to run due to the variation in the external load.

Table 40 Y-Axis Motor Nominal Values

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

Table 40 Y-Axis Motor Nominal Values

R#	Characteristic	Typical Value	Result
6	Motor performance	N/A	Reports the ability of the motor to respond to servo commands.

X-Axis Motor Test

The X-Axis motor is turned On and run slowly for one revolution. The slow motion removes the effect of inertia from the test, and the one revolution avoids a large system status change via any permanently connected loads. With the slow operating speed used by the test, the motor may stall at a bad commutator segment. The connected drive cone could modify the drive power values if the threads were defective, dry, or if the guide notch was disengaged. The A and B voltage measurements should remain constant if the drive is operating properly.

Table 41 X-Axis Motor Nominal Values

R#	Characteristic	Typical Value	Result
0	Motor Voltage A Ripple (volts)	N/A	Reports amount of variation of the motor phase A drive voltage over the recording interval.
1	Motor Voltage A Average (volts)	N/A	Reports the motor phase A drive voltage average value over the recording interval.
2	Motor Voltage B Ripple (volts)	N/A	Reports amount of variation of the motor phase B drive voltage over the recording interval.
3	Motor Voltage B Average (volts)	N/A	Reports the motor phase B drive voltage average value over the recording interval.
4	Motor Drive Power Ripple (watts)	N/A	Reports amount of variation of the motor drive power over the recording interval.
5	Motor drive power average (watts)	N/A	Reports the motor drive power average value of the recording interval.

Process Motor Test

The Process Drive motor is moved to the Home position, then the motor is jogged CW until it begins to engage the Drum Maintenance Kit. Next, the motor is run slowly CCW for one revolution. The slow motion removes the effect of inertia from the test, and the one revolution avoids a large system status change via any permanently connected loads. With the slow operating speed used by the test, the motor may stall at a bad commutator segment. Unusual average values might indicate a weak motor. The motor following error, drive voltage, and power ripple values indicate how smoothly the motor is able to turn through one revolution.

Table 42 Process Motor Nominal Values

R#	Characteristic	Typical Value	Result
0	Motor following error ripple (ticks)	N/A	Reports variation of the motor following error over the recording interval.
1	Motor following error average (ticks)	N/A	Reports the motor following error average value of the recording interval.

Table 42 Process Motor Nominal Values

R#	Characteristic	Typical Value	Result
2	Motor drive voltage ripple (volts)	N/A	Reports amount of variation of the motor drive voltage over the recording interval.
3	Motor drive voltage (volts)	N/A	Reports the motor drive voltage average value of the recording interval.
4	Motor drive power ripple (watts)	N/A	Reports variation of the motor drive power over the recording interval.
5	Motor drive power average (watts)	N/A	Reports the motor drive power average value of the recording interval.
6	Motor performance	N/A	Reports the ability of the motor to respond to servo commands.

Media Path Motor Test

The Media Drive motor is run slowly CCW for one revolution. The slow motion removes the effect of inertia from the test, and the one revolution avoids a large system status change via any permanently connected loads. With the slow operating speed used by the test, the motor may stall at a bad commutator segment. The connected gear train effects the drive average and ripple values due to the load variation with gear train position. Unusual average values might indicate a weak motor. The motor following error, drive voltage, and power ripple values indicate how smoothly the motor is able to turn through one revolution. This test will not run if media is detected in the paper path.

Table 43 Media Path Motor Nominal Values

R#	Characteristic	Typical Value	Result
0	Motor following error ripple (ticks)	N/A	Reports variation of the motor following error over the recording interval.
1	Motor following error average (ticks)	N/A	Reports the motor following error average value of the recording interval.
2	Motor drive voltage ripple (volts)	N/A	Reports amount of variation of the motor drive voltage over the recording interval.
3	Motor drive voltage (volts)	N/A	Reports the motor drive voltage average value of the recording interval.
4	Motor drive power ripple (watts)	N/A	Reports variation of the motor drive power over the recording interval.
5	Motor drive power average (watts)	N/A	Reports the motor drive power average value of the recording interval.
6	Motor performance	N/A	Reports the ability of the motor to respond to servo commands.

Tray 2, 3, and 4 Lift Motor Test

The specified Lift Motor is turned on and run for a period of time sufficient to advance the lift plate drive gear one tooth (about 20 revolutions). Next, the motor is turned off and the brake momentarily applied. Selecting a test for an undetected optional feeder generates an Option Not Detected message and the test aborts. Also, the test aborts if the selected tray is installed.

Table 44 Tray 2, 3, and 4 Lift Motor Nominal Values

R#	Characteristic	Typical Value	Result
0	Motor Peak Power (watts)	N/A	Reports the motor starting power.
1	Motor Average Power (watts)	N/A	Reports the motor average constant velocity power.
2	Brake Average Power (watts)	N/A	Reports the average motor brake power.

Tray 3 and 4 Pick/Feed Motor Test

The selected motor is turned On and allowed to reach a constant velocity. Motor drive data is then recorded for a fixed interval (approximately 25 motor revolutions). The connected gear train effects the drive average and ripple values due to the load variation with gear train position. The motor following error, drive voltage, and power ripple values indicate how smoothly the motor is able to turn through one revolution. Selecting a test for an undetected optional feeder generates an Option Not Detected message and the test aborts. This test will not run if media is detected in the paper path.

Table 45 Tray 3 and 4 Pick/Feed Motor Nominal Values

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

Miscellaneous Menu

This menu contains tests, which various reasons don't clearly belong to another group.

Voltages Test

This test provides averaged readings for key voltages produced in the Electronics Module. For the AC line voltage, the value measured is read as either 110 Volts or 220 Volts depending on whether the measured value is less than or greater than 165 volts. The other AC Line voltage value is set to 0. A certain amount of variation in the regulated values is typical. These variations should not exceed 10 percent. The voltage sources for (R12/R13) are unregulated and may vary by as much as 20 percent. During the test, all possible system loads are turned Off except the X-Axis Motor. The motor is turned on to draw enough current to maintain power supply regulation. Any problems with the X-Axis Motor could cause unreliable voltage readings. The 0 Volt measurements are local ground references and should always be 0 V. Out of range power supply values can cause unusual power values in many other Print Engine Check tests.

Table 46 System Voltages Nominal Values

R#	Characteristic	Typical Value	Result
Main Board Voltages			
0	0 Volts (volts)	N/A	Reports a system ground reference.
1	1.5 Volts (volts)	N/A	Reports the voltage at the 1.5 V source.
2	2.5 Volts (volts)	N/A	Reports the voltage at the 2.5 V source.
3	3.3 Volts (volts)	N/A	Reports the voltage at the 3.3 V source.
4	12 Volts (volts)	N/A	Reports the voltage at the 12 V source.
5	1.2 Volts (volts)	N/A	Reports the voltage at the 1.2 V source.
6	Negative 12 Volts (volts)	N/A	Reports the voltage at the -12 V source.
7	0 Volts (volts)	N/A	Reports a system ground reference.
Power Control Board Voltages			
8	Current DC Power (watts)	N/A	Reports system power consumption.
9	50 Volts (volts)	N/A	Reports the voltage at the 50 V source.
10	Negative 50 Volts (volts)	N/A	Reports the voltage at the - 50 V source.
11	0 Volts (volts)	N/A	Reports a system ground reference.
12	Negative 12 Volts (volts)	N/A	Reports the voltage at the -12 V source.
13	12 Volts (volts)	N/A	Reports the voltage at the 12 V source.
14	5 Volts (volts)	N/A	Reports the voltage at the 5 V source.
15	110 AC Volts (volts)	N/A	Reports the AC line voltage.
16	220 AC Volts (volts)	N/A	Reports the AC line voltage.

Line Voltage Test

This test provides an evaluation the system's external power source by checking if the AC source, and any supplemental wiring or devices, can supply the system adequate power. The test selectively turns On subsystems to measure the AC line voltage at both min and max load. Bypass the cool down interval if the system is already cool. An external AC supply of sufficient capacity should show only a small change in supply voltage. Run this test to verify the AC source before investigating problems caused by voltage supply problems.

Table 47 Line Voltage Nominal Values

R#	Characteristic	Typical Value	Result
0	Min Load Line AC Voltage (volts)	N/A	Reports the minimum voltage level over the recording interval.
1	Max Load Line AC Voltage (volts)	N/A	Reports the maximum voltage level over the recording interval
2	Delta Line AC Voltage (volts)	N/A	Reports amount of variation of the voltage level over the recording interval. The voltage change with load indicates the impedance of the source. The smaller the change, the better.
3	Max Load Line Current (volts)	N/A	Reports the maximum current draw for the recording interval.

Wiper Alignment Test

This test checks Wiper Blade alignment. This test exercises the Process Drive, Media Drive, Head Tilt mechanism, and Wiper Assembly to determine Wiper Blade position.

Table 48 Wiper Alignment Nominal Values

R#	Characteristic	Typical Value	Result
0	Tilt Engage Wiper Position	N/A	Reports wiper position at the tilt trip point.
1	Upper Hard Stop Wiper Position	N/A	Reports the location of the upper limit of travel.
2	Position Difference	N/A	Reports the difference between the upper hard stop and the tilt trip point.

If the Tilt mechanism does not engage, the test will abort with one of the following messages:

- Printhead unlatch time-out - The Drum Maintenance following error did not exceed 105% of the Drum Maintenance only max with in the Process Motor tilt drive interval.
- The wiper stalled during the scan before unlatching the Head Tilt Gear. The most likely cause is the Wiper Blade is not level causing the high end to contact the drip bib and stalling the wiper axis before unlatching the gear. Other causes could be that the Head Tilt Gear is jammed (full of ink), or not properly biased (Head Tilt Spring missing or defective). Also the trip lever could require extra effort to lift (flat spring stronger than usual, rough or warped engage surface with gear, binding/drag from Head Tilt Solenoid), causing the wiper axis to stall before contacting the drip bib. Extra drag in the wiper mechanism could also cause a stall.
- Process Drive stalled before the Head Tilt Gear was unlatched.

Drive problems on either axis could cause the respective motor to stall and the test to abort. The Wiper Drive and Drum Maintenance Drive tests would test the basic drive mechanisms. If the Head Tilt Gear fails to engage the tilt mechanism, the test aborts, and all R values are undefined. If peak values are high, there could be an issue with a weak Process Drive, friction in the tilt cam drive train, the cam surfaces (lubrication), the Head Tilt Spring, or something impeding the Printhead from tilting (warped insulation on the side, X-Axis misalignment, or the Printhead being compressed against the Electronics Module. If the peak values are low, check the Head Tilt Spring.

Purge Pump Test

This test exercises the Purge Pump system that includes the pump, hose, and valve. The purge functions of the Printhead are not tested. If the ink in the Printhead is solid at the time of the test, the Purge pump is energized for a fixed interval with the bleed valve closed to allow the pressure to reach a maximum. Next, the purge valve is opened (with the pump still pumping), allowing the pressure to decay. The pressure profile during this sequence indicates the condition of the system. If the ink is liquid at the time of the test, jetstack temperatures above 120 degrees, the bleed valve remains open for the entire sequence to avoid ink spills.

Table 49 Purge Pump Nominal Values

R#	Characteristic	Typical Value	Result
0	Jetstack Temperature (deg)	N/A	Reports the maximum of the current jetstack temperatures.
1	Pump PWM (percent)	N/A	Reports the current PWM value being used to drive the pump.
2	Start Power (watts)	N/A	Reports the initial peak pumping power following power on to the pump.
3	Initial Pumping Power (watts)	N/A	Reports the minimum pumping power value following the start up peak (R2). If the pump is pumping the normal volume, then the drop is significant and the pressure rises slower. If the volume is small, hose pinched or plugged near the pump, then the drop is minimal and the pressure rises quickly.
4	Max Pressure Pumping Power	N/A	Reports the max pumping power during the pumping interval.
5	Max Pressure Average Pumping Power	N/A	Reports the average pumping power in the area of highest pressure. If this value is much different than R4, it might indicate pressure fluctuations when pumping at max pressure.
6	Pumping Time To Average Power (sec)	N/A	Reports the time from pump on until the average pressure is reached.
7	No Pressure Pumping Power (watts)	N/A	Reports the average pumping power after the pressure has fully decayed (purge valve open).

Table 49 Purge Pump Nominal Values

R#	Characteristic	Typical Value	Result
8	Pressure Decay Time (sec)	N/A	Reports the time between the 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 R7.

Drum Maintenance / Transfix Home Test

This test determines if the Process Drive was successfully repositioned to home position by a previous test or operation. The test drives the Process Drive motor a short distance in both directions to check if the drive is at home position. When the Process Drive motor is returned to the start position after each excursion, the motor is driven enough to compensate for the current following error (fe), which should put the mechanism back in the initial position. There should be very little backlash in each drive as there is a restoring force opposing each motion. The amplitude values may vary more than the time values as amplitude is affected by the attached mechanisms.

Table 50 Drum Maintenance / Transfix Home Nominal Values

R#	Characteristic	Typical Value	Result
0	DM Initial fe Peak (pm motor counts)	N/A	Reports the height of the initial peak when starting rotation of the drum maintenance drive gear.
1	DM Initial fe Peak Time (sec)	N/A	Reports the time since the start of CCW motion until the peak was detected.
2	TF Initial FE Peak (pm motor counts)	N/A	Reports the height of the initial peak when starting rotation of the transfix drive gear.
3	Transfix Initial fe Peak Time (sec)	N/A	Reports the time since the start of CW motion until the peak was detected.

Printhead Clearance Test

This test measures the clearance between the Printhead insulation and the left and right sides of the chassis when the Printhead is tilted to the Standby position (i.e. back). This measurement could help to determine if the Printhead insulation is loose or warped. The test moves the X-Axis to the home position, the Printhead is first moved to the Tilt position, then to the Standby position. Next, the X-axis is moved to the right until the insulation makes contact with the right side frame and the drive cone unloads from the Printhead. The X axis is then moved left for a fixed time. Finally, the Printhead is jogged back to the right and then moved to the left for a fixed time until the insulation starts to make contact with the left side frame. An abnormal value for either characteristic could indicate a clearance problem.

Table 51 Printhead Clearance Nominal Values

R#	Characteristic	Typical Value	Result
0	Tilt To Left Contact Distance (min)	N/A	Reports the approximate clearance between the left side of the Printhead and the chassis.

Table 51 Printhead Clearance Nominal Values

R#	Characteristic	Typical Value	Result
1	Tilt To Right Contact Distance (min)	N/A	Reports the approximate clearance between the right side of the Printhead and the chassis.

Transfix Gap Test

CAUTION

This test does not clean the Drum before lowering the Transfix Roller. To prevent contamination of the Transfix Roller, check that the Drum is clean before running this test.

This tests exercises the Transfix Roller and reports the results. The Transfix Gap test lowers the Transfix Roller at a lower velocity than the Transfix Drive test to more accurately determine of the gap between the Transfix Roller and Drum.

Table 52 Transfix Gap Nominal Values

R#	Characteristic	Typical Value	Result
0	Time to first contact (sec)	N/A	Reports the time from the load command to the engine until the drum indicates pressure roller contact.
1	Loaded average Y-axis following error (mpts)	N/A	Reports the average Y-axis following error during the Roll With Transfix Roller Down interval.
2	Loaded Y-axis following error ripple (mpts)	N/A	Reports the difference between the max and the min Y-axis following error during the Roll With Transfix Roller Down interval.
3	Time to last contact (sec)	N/A	Reports the time from the unload command to the engine until the drum indicates no further contact.

General Troubleshooting

This section provides troubleshooting procedures for system problems not associated with a error message or code. For troubleshooting problems associated with an error code or message, and information on how to use the troubleshooting procedure tables, see Section 2.

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

Service Diagnostics provides several tools useful for troubleshooting non-specific problems. Three of these are especially useful:

- Sub-system Status Reports
- Component Checks
- Diagnostic Fault History

The following overview describes the function and proper application of the each tool.

Sub-system Status

Located in the Exit Path, Scanner, and Doc Handler menus, Report Status reports on the condition of each sub-system. Report Status lists the current sub-system status as reported by. that sub-system's firmware. Status listings are not stored. If the system reaches Ready, the list is cleared.

Some applications of status are:

- Provides an initial condition from boot to begin troubleshooting.
- Captures static or dynamic events.
- Confirms diagnostic test results and subsequent repairs.

Component Checks

Located under the Print Engine -> Exercise menu of Service Diagnostics is an extensive suite of component-level tests that exercise individual electromechanical, thermal, and optical components. Use these tests as the primary tool for testing system components.

Occasionally, a troubleshooting procedure refers to a test located in the Print Engine -> Check menu. The Check Menu contains tests that perform measurements on system components and report measured values to the Control Panel. These tests are typically used to verify system operation during manufacture. However, in some instances, the values returned by these tests can help to locate system malfunctions or indicate excessive wear in selected components. Use these tests when directed to do so from a troubleshooting procedure.

Diagnostic Fault History

The Diagnostic Fault History utility records a list of engine-generated error events, warnings are not captured, that occur during diagnostic testing. Use this utility to record error events that occur while executing tests in Diagnostic Mode. The Diagnostic Fault History utility captures asynchronous (transient) events only. For static (continuous), or pre-existing events, rely on the Status utility.

When executed from the Print Engine Function menu, the Diagnostic Fault History displays on the Control Panel and updates as each error event is detected. Fault History events are recorded only when no pre-existing errors are present. The second and subsequent occurrences of the same event are not recorded. The maximum number of events recorded is 25. Once the list is full, additional new events are lost until the log is cleared by either a system reboot or by selecting Fault History Master Clear from the Fault History menu. New events occurring after the list is cleared are recorded.

For display, the list combines a line number, a code, and potentially a test precondition indicated by the letter P (for events requiring a power cycle), a U for unknown event sequence, an M for more entries, or a string of asterisks ***** to indicate the last error recorded.

As an example:

```
Fault History Display
1 [150]
2 [42]P
3 [198]P
4 [T2]M
Press CANCEL to exit
```

The example shows a single screen displaying four events. Lines 2 and 3 include the precondition indicator **P** directing a reboot before component testing continues. Line 4 includes an abbreviated Misfeed at Tray 2 code, and the continuation notation **M** indicating more events appear on subsequent pages. Pressing OK calls up the next page. Pressing Cancel exits the utility and displays the Fault History menu.

Events typically appear in the order detected. However, occasionally the event's sequence is indeterminate. As is the case with simultaneous events. In these cases, a U is appended to the event to indicate an unknown sequence. While event sequence can be important in determining cause, the event itself provides a starting point for investigation.

For those events listed with a **P**, testing of a specific component may not require the indicated power cycle. For example, if the log lists a motor failure, it's reasonable to go directly to the appropriate motor test to confirm the failure without first power cycling the system. For events involving components, such as the Drum, Transfix Roller, or Ink Sticks, power cycling is recommended before additional testing is performed.

Using Diagnostic Fault History

The general approach to using the Diagnostic Fault History utility is as follows:

1. Determine the diagnostic test necessary to reproduce a suspected transient event.
2. Determine if the current logged events are important to understanding the problem. If so, examine or record the events currently in the log, perform whatever analysis is appropriate, and then clear the log.
3. Perform the selected test.
4. Re-examine the event list.
5. Identify an abnormal or suspicious event based on the test performed. For example, a door open event while printing a test print when the door remained closed.

As an example, assume the Interlock Switch is suspect. The process to gain access to the switch will produce a number of events unrelated to switch function.

Therefore, you would:

1. Override the interlock function to provide power.
2. Access the Interlock Switch actuator
3. Clear the list with Clear Fault History.
4. Display Fault History and manipulate the component or connecting wires as required to reveal the switch's condition

Electrical Troubleshooting

The Electronics Module contains the power supply, main board containing the image processor, power control board, and in the case of the 8860MFP, the FAX circuitry. Also on the 8860MFP, the Backframe contains the Scanner Power Supply and the Exit Module Control Board. The 8860 and 8860MFP use different Electronics Modules. If a component of the Electronics Module fails, and service is necessary, replace the entire Electronics Module, with the exception of the NVRAM, RAM memory, the Configuration Card, and either the Flash or Hard drive; no individual board troubleshooting procedures or tests are necessary.

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 Control Board may be malfunctioning.

NOTE: *On the 8860MFP, the image processor board enables the Scanner Power Supply and communicates with the Exit Module, Scanner, DADF, and Control Panel. A faulty image processor board can make it appear as if other subsystems are at fault.*

FDI Equipped Systems

The Foreign Device Interface works by interrupting the Tray Present sensor when no credit is reported by the installed coin or card input. As Tray 2 has the highest priority, the message "Tray 2 Missing" appears on the Control Panel of the 8560MFP whenever there is no credit present.

System Ground Integrity

Intermittent or missing ground connections can result in system interference. As examples:

- Blank or intermittent Control Panel display
- I/O Board errors
- False jam reporting
- Erroneous thermistor readings
- Damage to the electrical boards

Key Ground Connections

The following illustration shows the grounding points in the Print Engine. There is also a ground point on the Backframe. Check that these grounding points are in contact with the frame.

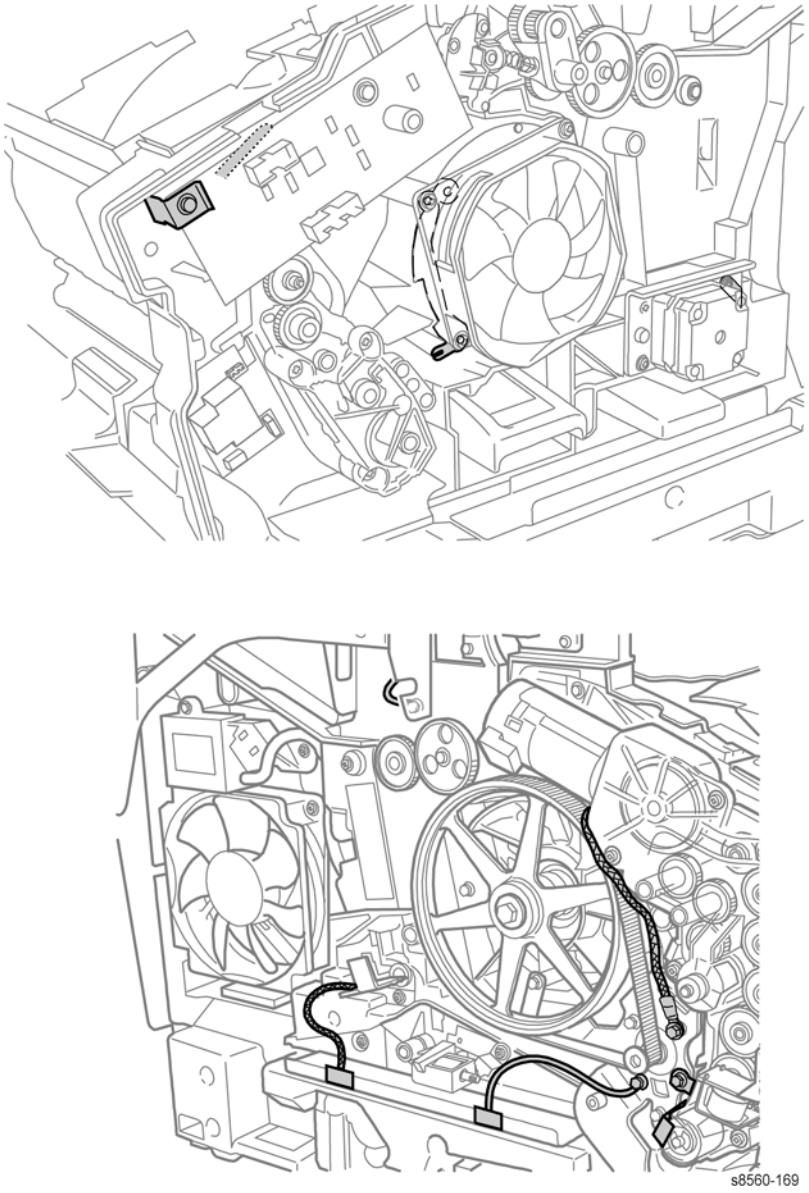


Figure 1 System Grounds

System Fails to Power Up

The system fails to power up and the PS, PE and the 3.3 V Indicator LEDs are not illuminated.

NOTE: *The 3.3 V LED is located inside the Electronics Module. View the LED through the vent holes close to the Power Switch.*

CAUTION

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

1. System is not receiving proper AC.
   a. Inspect the power cord.
   b. Verify AC outlet voltage and current capacities are within specifications. The use of power strips and extension cords is not recommended.
   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. 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 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's covers.
   d. Unplug the following Electronics Module connectors: This step removes all other circuits so the Electronics Module can be tested alone.
      - Power Control to I/O board (J10)
      - Right Side Harness (J9)
      - Preheater Lift Solenoid (P/J202)
      - Head Tilt Solenoid (P/J208)
      - Printhead data (J3)
      - Wave Amp signal (J16)
      - Left Side Harness (J17)
      - Y-Axis Motor (J18)
   e. Plug in the power cord and turn the system on.
   f. If the PE and PS indicators do not flash momentarily, the short is inside the Electronics Module. Replace the Electronics Module and retest the system. If PE and PS indicators flash, continue with debug.
   g. Connect all harnesses removed.
   h. Reassemble the system and retest.
5. Short circuit on 3.3 V power supply within the I/O board.
   a. Follow all procedures from Step 3 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.
   c. Connect the Power Control cable to the I/O Board connector (J800). This connects the I/O Board to the working Electronics Module - nothing else is connected.
   d. Turn on power to the system.
6. If the PE and PS LEDs do not flash momentarily, the short is on the I/O board or related cabling. Skip the rest of this section if the PE and PS LEDs flash, because the problem is elsewhere in the system.
   a. Verify the short is on the I/O Board using an ohmmeter to check the resistance on J270, pin 1 to ground. Resistance of less than 1K ohm indicates a problem.
   b. To isolate problem to I/O board or related cabling, unplug all I/O board connectors.
      - I/O Power Control (J840)
      - Waste Tray Sensor (J110)
      - Stripper Solenoid (J250)
      - Paper Tray Sense (J610)
      - Front Door Interlock (J600)
      - Ink loader Signal (J910)
      - Drum Maintenance Kit Detect (J860)
      - Drum Thermistor (J870)
      - Exit Module (J680)
      - Heater Relay Control (J950)
   c. Retest the resistance of the I/O board. If the resistance is still less than 1K ohm, replace the I/O board, reinstall all cables and retest the system.
   d. If the I/O board resistance is OK, above 1K, reconnect the I/O Board connectors one at a time testing the resistance after each connection. At the point resistance falls below 1K, replace the component just connected.
   e. Reassemble the system and retest.
7. Short circuit on 3.3 V power supply within the Printhead.
   a. REQURIED: Follow all procedures from 'Short circuit on 3.3 V power supply within the Electronics Module' before proceeding. The following procedure relies on a working Electronics Module to determine if the Printhead is causing a short circuit
   b. With Power cord Connected, touch the metal Electronics Module to discharge any static electricity. ESD damage to the system may occur if static electricity is discharged to system electronics.
   c. 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.
   d. Connect the Printhead Power connector to the Electronics Module (J4).
   e. Turn on the system On.
   f. If the PE and PS LEDs do not flash momentarily, the short is on the Printhead. Replace the Printhead and retest the system. Skip the rest of this section if the PE and PS LEDs 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.
   h. Reassemble and retest the system.

System Resets Unexpectedly

1. Check the main AC voltage. Connect the system directly to the wall outlet.
2. Disconnect the network cable, if this corrects the problem go to Network Troubleshooting.
3. 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.
4. Turn the system Off and disconnect the document feeder. If the system powers On normally, replace the DADF (REP 1.0.15).
5. Turn the system Off and disconnect the Scanner. If the system powers On normally, replace the Scanner Assembly (REP 1.0.11).
6. Replace the Electronics Module (REP 5.0.5).

System Reports Missing Maintenance Kit

1. Check that Drum Maintenance Kit is properly installed.
2. Reseat I/O Board connector (P/J860).
3. Replace the Drum Maintenance Pivot Plate (REP 2.0.16).

System Report Missing Waste Tray

1. Check that Waste Tray is properly installed.
2. Reseat I/O Board connector (P/J110).
3. Test the Waste Tray Detect Sensor. Replace if necessary (REP 6.0.6).

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. Check that sufficient RAM is installed. 400 x 400 dpi and 600 x 600 dpi scan resolutions are not enabled with less than 512 MB RAM.
2. Examine print driver setup to ensure system driver setup doesn't override desired features set via the Control Panel.
3. Verify Configuration Card is properly oriented and fully inserted.
4. Clean Configuration Card contacts with isopropyl alcohol, reinstall, and then retest.
5. Exchange the Configuration Card for a known working card to test operation.

System Power Supply

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.

Testing the power supply involves three steps:

1. Checking for proper AC voltage.
2. Inspecting the power supply fuses.
3. Testing for a shorted motor or solenoid driver, which shuts down the power supply.

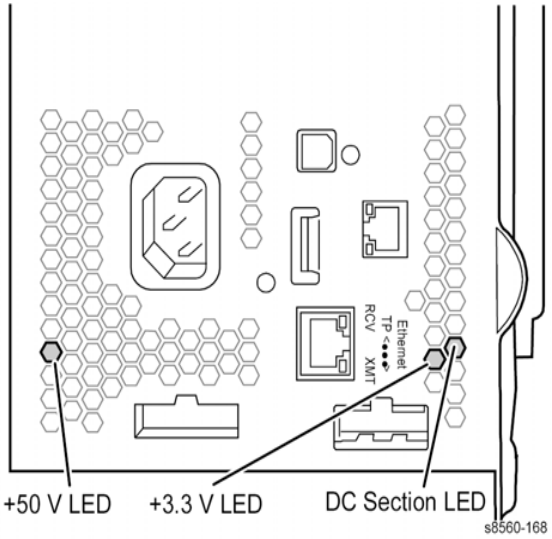


Figure 2 Power Supply Status LEDs

Measuring AC 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 134 VAC (115 VAC nominal) or 180 to 254 VAC (220 VAC nominal).
4. If a heater shorts, F2 or F3 opens. The power supply does NOT shut down; however, an error code is displayed on the Control Panel.

Testing F2 and F3

The Drum and Preheater connect to F2. The Printhead and Ink Loader connect to F3.

1. Turn the power switch off and wait for the system to shut down.
2. Disconnect the power cord from the Electronics Module.
3. Remove the Ink loader Assembly (REP 2.0.1).
4. From the back of the system you will see one heater cable connector (J7) on the left above the power switch and two (J4 and J5) under the ink loader.
5. Place the Power Switch in the On position.
6. Measure the resistance between the lowest pin on J7, and the lowest pin on the AC input connector (J8). If the meter measures 0 ohms, F3 has not been damaged.

7. Measure between the right most pin under the Ink Loader and (again) the lowest pin on the AC input connector (J8). 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.

Measuring DC Voltages

1. Check the Power Supply Status LEDs (Figure 2), they should be bright.
2. If the system is operational, use the Service Diagnostics Monitor Voltages test to check DC voltage levels.

DADF Malfunction

DADF Lamp Does Not Turn On

1. Is there power at the DADF? Place media in the DADF input tray. If the paper feeds, the DADF has power, and the lamp circuit is faulty. Replace the DADF (REP 1.0.15).
2. Is there power at the scanner? Lift the DADF 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 DADF (REP 1.0.15).
3. Is there power to the Exit Module? The Exit Module elevator should cycle up and down after the Scanner Assembly 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 (REP 1.0.11).
4. Check the Scanner Power Supply.

DADF Does Not Feed Media

1. Is there power at the DADF? Lift the DADF and verify the DADF lamp is on and the calibration strip moves into position. If so, the Scanner Power Supply is operating correctly.
2. If there is no power at the DADF, perform Steps 1 and 2 from Scanner Lamp Does Not Turn On.
3. Run the Service Diagnostics Exercise Feed Motion test. If the test fails, replace the DADF (REP 1.0.15).
4. Clean or replace the Pick Rollers and Separator Pad.
5. Check the DADF Front and Upper Cover for obstructions or damage.
6. Print a Usage Profile and look for repeating DADF or Scanner errors that could cause 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.*

7. Replace the DADF (REP 1.0.15).

Scanner Malfunction

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 DADF and verify the lamp is on. If so, the Scanner Power Supply is operating correctly.
3. Verify the Scanner Power Supply operation. See Scanner Power Supply.
4. Replace the Scanner Assembly (REP 1.0.11).

Scanhead Motion Erratic

1. Verify the scanhead shipping lock is in the “unlocked” position. Reboot the system.
2. Run the Service Diagnostics Exercise Axis Motion test and observe Scanhead motion, paying special attention to anything that could obstruct scanhead motion.
3. Replace the Scanner Assembly (REP 1.0.11).

Scanner Lamp Does Not Turn On

1. Is there power to the Scanner Assembly? Lift the DADF and verify the scanhead moves. If so, the Scanner Power Supply is operating correctly.
2. Check the Scanner Power Supply. See Scanner Power Supply.
3. Replace the Scanner Assembly (REP 1.0.11).

Scanner Power Supply

1. Check the +24 VDC Status LED. If the LED is On, the Scanner Power Supply is operational. If the LED is blinking, there is a problem with the DADF, Scanner Power Supply or Exit Module Control Board.

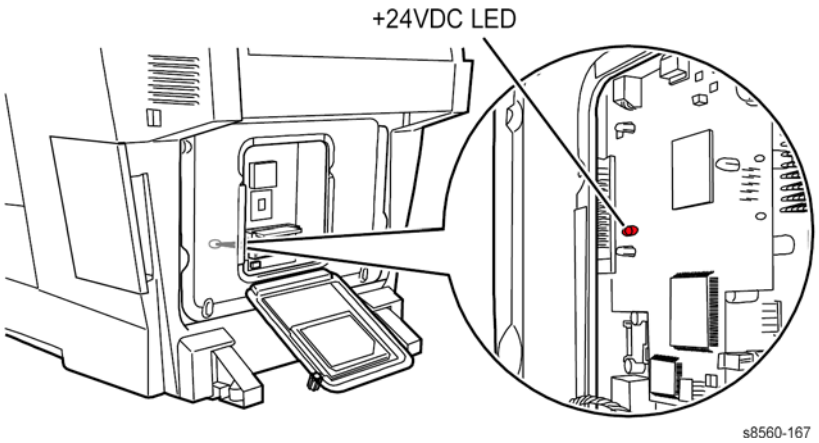


Figure 1 Scanner Power Supply 24 Volt Status LED

2. If the LED is blinking, turn the system Off and disconnect the DADF. Restart the system. If the LED is blinking, the DADF is not the problem.
3. Disconnect the Scanner Assembly. Turn the system On, if the LED is still blinking, the problem is not the Scanner Assembly. Replace the Scanner Power Supply (REP 5.0.2).
4. If the +24 V Status LED is off, there could be a problem with the Scanner Power Supply or the Electronics Module.

Control Panel Malfunction

Control Panel Not Responding

NOTE: *Make sure to connect the scanner cable properly to the Electronics Module.*

1. If the system is powered On and frozen, open then close the Front Door to see if the Control Panel responds.
2. 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.
3. Skip the rest of this section if the system is functional, otherwise continue troubleshooting
4. Reseat the Scanner Assembly connection to the Electronics Module.
5. With Power Cord connected, touch the Electronics Module to discharge any static. ESD damage may occur if static electricity is discharged to system electronics.
6. 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.
7. Unplug power cord and remove system's covers. Use caution around motors, pulleys and live AC connections when working with the system covers off.
8. 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
9. Plug in all cables removed during service. Trace through all service steps performed to reattach any cables that were unplugged during troubleshooting.
10. Reassemble and retest the system.

Control Panel is Blank

A blank Control Panel indicates some portion of the chain of devices used to drive the LCD may be defective. If the PS and PE LEDs are flashing a code, see Power On Self Tests. If no error indication is available, use the following procedure to check the Control Panel.

1. If the system is powered On, open then close the Front Door to see if the control panel responds.
2. If the system is functional after operating the door, advise client that failure may have been due to an ESD event. Thoroughly test system for any other problems.
3. Skip the rest of this section if the system now appears functional, otherwise continue troubleshooting
4. Reseat the Scanner Assembly connection to the Electronics Module.
5. With power cord connected, touch the metal Electronics Module to discharge any static electricity to prevent ESD damage to the system may occur if static electricity is discharged to system electronics.
6. 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.
7. Unplug the Power Cord and remove the Control Panel (REP 1.0.9). Check the Control Panel connection (P/J19) to the Scanner Assembly.
8. 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
9. Reassemble and retest the system.
10. Replace the Control Panel.

Exit Module Malfunction

Exit Module Elevator Inoperative

1. Is there Scanner Power Supply working properly? Lift the DADF and observe the scanner lamps. If the lamps are on and the scanhead moves, the Scanner Power Supply is supplying +24 volts. See Scanner Power Supply.
2. Check the Exit Module Control Board connections. Replace the Exit Module Control Board (REP 5.0.1) if necessary.
3. Lift the Control Panel and check for proper movement of the Exit Module elevator. The Exit Module elevator should cycle up and down after the Scanner Assembly is raised and lowered. Inspect the Exit Module for defective components. Replace any defective components or the Exit Module (REP 3.0.7).

Media Path and Transport Problems

For paper path and media-based problems, first check for displayed error codes. If a code is displayed, see Error Message Troubleshooting for the appropriate troubleshooting procedure. If no code is displayed, use the following procedures to isolate the problem.

Initial Actions

- 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.
- Ensure the system is operating under the right environmental conditions.
- Ensure the correct weight of paper is being used.
- 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
- 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 the media guides are set correctly.
- Inspect the paper for bent, torn or folded corners.
- Check to ensure no small pieces of paper are in the paper path.
- Run the Service Diagnostics Paper Path Status test to test all path sensors.
- Try printing from a fresh, unopened ream of paper.

Pick Errors Tray 1

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 Roller and Separator Pad are installed correctly.
6. Clean the Pick Roller using the cleaning procedures. Paper dust can coat the roller and affect its ability to grip the paper. Also clean the transport rollers if they are visibly dirty.
7. Check that the Pick Roller rotates. Replace if necessary (REP 3.0.18).
8. Run the Paper Path test
9. Inspect the rollers, bushings and gears of the paper path

Pick Errors Trays 2, 3, and 4

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.
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

Preheater and Transfix Jams

1. Remove the Preheater (REP 2.0.17) and check for damage, debris or obstructions.
2. Replace the Preheater and check for excessive media skews.
3. Check for ink shards on top of the Preheater next to the flag.
4. Run the Service Diagnostics Media Drive Path test. If the test fails, replace the Preheater (REP 2.0.17).
5. Check the exit path for obstructions. Look for debris around the stripper blade.
6. Ensure that the Transfix Roller is rotating freely, replace if necessary (REP 2.0.12).
7. Test the sensors in the paper path. Look for damaged or non-operating sensor flags.
8. Check the Stripper Solenoid by running the Service Diagnostics Stripper Solenoid and Stripper Contact tests. replace the Stripper Solenoid (REP 3.0.5) if necessary.
9. Check for stripper blade damage, replace the Stripper Carriage (REP 2.0.12) if necessary.
10. Inspect the rollers, bushings and gears of the paper path.

Process and Media Drive Jams

1. Determine if the Process Motor runs. If it does not, go to Step 2. If it does, go to Step 4.
2. Measure to determine if +50 VDC is being supplied to the motor. If 50V is applied, go to Step 3. If not, inspect the wiring harness. If the harness is functional, troubleshoot the Electronics Module.
3. Disconnect the Process 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 Process Drive (REP 4.0.7).
4. Ensure the Process Drive gearbox is in it's proper home position (ADJ 4.7.1).
5. Run the Service Diagnostics Paper Path Drive test.
6. Run the Service Diagnostics Drum Maintenance Drive test.
7. Run the Service Diagnostics Transfix Fast and Transfix Slow tests.
8. Run the Service Diagnostics 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 (REP 4.0.7).
11. Replace the Media Drive (REP 4.0.14).

Media Skews Passing Through the Paper Path

1. Ensure the media is supported.
2. Ensure that the side guides are set correctly by sliding the guide gently against the media.
3. Do not overfill the tray, especially with envelopes.
4. Check to see if the media is excessively curled. Curled media can track incorrectly 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 Preheater 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 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.

Macintosh Printing Problems

NOTE: *The following steps are for diagnosing a networked system running Mac OS X, version10.2.6 or later, and assume that CentreWare access is enabled. If you are using Mac OS X, but an earlier version than 10.2.6, upgrade first*

1. Cycle power to the system Off and On, and then try printing again.
2. Determine the system's IP address from the Control Panel or Startup page. Return the Control Panel to the initial menu, and then check to make sure it indicates Ready to Print. If it does not indicate Ready to Print, correct that first.
3. Make sure you can connect to the system via network from the host: Open a Safari or Internet Explorer window to the system's IP address. Once you have established basic network connectivity, proceed to Step 4.
   a. If you can not see the CentreWare IS page from the system CentreWare IS web server, the system may be Off, on a different network, or the host is not networked correctly. Try Steps b through f to correct the problem. If you make any changes to the network, try printing the job again.
   b. Open System Preferences, select Network, and select the TCP/IP tab. Make sure you have a valid IP address. Correct the settings and retry if needed.
   c. If you are on a network with a proxy server, ensure the local connections are excluded from the proxy. Check System Preferences, Proxies tab – in the Bypass proxy settings for these Hosts and Domains, to ensure the local network devices are excluded from proxy redirection.

      For example: If you open Safari to the system IP and get an error message similar to Error – the request item could not be loaded by the proxy, you are probably accessing the proxy server for a local address. This is incorrect.
   d. Open the Terminal tool located at Applications --> Utilities at the root of the Mac OS X boot disk, and select New Window. Once you have a prompt, try network connectivity using the Ping command.

      For example: ping 13.62.70.112 checks for echo replies from the system with that IP address.
   e. In the Terminal tool, try using Traceroute to determine if you are on the same subnet as your system.

      For example: traceroute 13.62.70.112 should produce exactly one hop before completing the trace. Correct as needed, and retry your print job.

f. If you still cannot connect to the system via network, try another computer.

4. In Mac OS X, open Printer Setup Utility, located at Applications --> Utilities at the root of the Mac OS X boot disk. Check to make sure the system status does not indicate Stopped. If it does, check your network and insure the host system is on the same subnet as the system. Correct if needed. Delete all jobs in the queue for the system by double-clicking the system name, selecting each job, and clicking Delete. Restart the print queue by clicking Start Jobs. Try your print job again.
5. In the Printer Setup Utility, select your system. In the Printers menu, select Show Info. From the pull-down menu in Printer Info, make sure the configuration shown for the printer is correct. If the configuration is wrong, click the configuration in the pull-down menu, and re-install. Check the Installable Options and make sure they match the system's configuration. If any changes are made, retry your print job.
6. If there is still no output, try printing from a simple application. Open TextEdit located at the Applications folder, select New File, and create a small test document. Select Print from the File menu.
7. If an error message displays or there is no output, try turning on the PostScript error status from CentreWare IS or the system's Control Panel. PostScript will now output an error page if an error occurred during the print job, assuming the system received it.
8. Try printing again using the TextEdit tool located at the Applications folder. Once you have opened a document or created a new document, select Print from the File menu. Click on the Printer pull-down menu, and then select Edit Printer List. Click the add button, or pick Add Printer from the Printers menu (The add button is configurable, so it may not be there). Select IP Printing from the pull-down menu. Put the IP address your system in the Printer's Address text area. Click on the Printer Configuration pull-down menu, and then select XEROX. A scrolling list should display. Pick the correct Xerox Phaser 8860/8860MFP configuration. You can check the exact configuration on the system's Startup page in the upper right corner. The newly added system displays in bold on the printer list, indicating it is the default system. When you are done adding the new system, close the Printer List dialog. Now select your system from the Printer pull-down menu, and then click Print in the dialog box.
9. If you can print from the TextEdit tool, but cannot print from your application, the problem is likely in your application. Check for upgrade availability or contact the application vendor for further diagnosis.

Windows Printing Problems

1. Try printing a test page from the system driver's Properties dialog box.
2. Try printing from another application.
3. Try printing to another network/PostScript printer
4. Try printing from another computer.
5. If the error returns, turn On the PostScript error handler through the Control Panel PostScript Error Info in the Support menu, or CentreWare IS and print the document again. Take note of the information on the error page that just printed.

Network Problems

Selecting Network Diagnostics runs a test on the TCP/IP connection (Ethernet Port) and displays the results. If no errors are detected, the message Network diagnostics completed, No problem detected displays, along with options for Help or printing either the Connection Setup or Configuration page. The Connection Setup and Configuration pages list current network parameters stored in the system's NVRAM. If Network Diagnostics detects an error, the error message displays with menu options to assist in correcting the error. Pressing Help (?) provides help text listing steps to help diagnose and clear the error.

In situations where Network Diagnostics completes without an error, but printing continues to fail, test the system's Ethernet Port directly using a cross-over cable and a second, known good, Ethernet Port. A successful test using this procedure eliminates the system's networking hardware as the root cause.

NOTE: *The Ethernet Port verification procedures were developed for Windows XP or Mac OS X. If a different operating system is in use, adapt the steps as necessary.*

Windows Ethernet Port Verification

1. Connect a crossover cable between the system and computer's Ethernet Ports.
2. Verify that the system is Ready.
3. Click Start, and then Run at the computer to access the Run dialog.
4. Type in cmd and click OK on the Run dialog to launch the MS-DOS command window.
5. Type in ipconfig at the MS_DOS command prompt and press Enter to display the computer's IP address, subnet mask, and gateway.
6. Print the Configuration page to verify that TCP/IP is enabled and obtain the current TCP/IP values stored in the system's NVRAM.

   NOTE: *Configure the system's TCP/IP network parameters to enable direct communication with the computer.*

7. Disable DHCP/BOOTP and AutoIP on the system.
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. Type ping followed by a space and the system's IP address at the MS_DOS command prompt, and then press Enter. If the number of packets sent and received match, 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 LOCAL LINK Default IP Addresses

An alternate method is required to test the Ethernet port when the PC's IP address falls within the range 169.254.xxx.xxx. PCs that have not been configured for a specific network default to a "LOCAL LINK" value within the 169.254.xxx.xxx range.

NOTE: *To comply with industry standards, Phaser products 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.
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.
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.

Mac OS X Ethernet Port Verification

1. Turn the system on and wait until it is Ready.
2. To check the computer's TCP/IP settings, use the Apple menu to select System Preferences.
3. Select Network.
4. Select Show Built-in Ethernet.
5. Click the TCP/IP tab and record the computer's IP address, subnet mask, and gateway.
6. Print the Configuration page and verify that TCP/IP is enabled on the system.
7. Select an IP address for the system that matches the computer, except for the last field, which must be unique.
8. Edit the system's gateway and subnet mask to exactly match the computer's.
9. Connect a crossover cable between the Ethernet Ports on the system and the Mac
10. Test the application using Network Utility by double-clicking the hard drive icon
11. Select Applications --> Utilities --> Network Utility.
12. Click the PING tab.
13. Enter the system's IP address.
14. Configure the utility to PING the system four times. The test will end after four attempts.
15. Click the PING button to complete the test.
16. If the number of packets sent and received match, the test was successful and the Ethernet port is functioning. If the request times out and fails, the cable or the port are malfunctioning.

Network Logging

The 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. Place the system in 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 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.

You will need the following:

- Computer with a serial port or a USB to Serial DB9 adaptor
- Null modem serial cable P/N 012153500
- Diagnostic Serial Adapter cable P/N 012154300

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. Connect the serial cable with adapter to the 5-pin connector (J14). The label THIS SIDE UP of the serial port adapter should face towards the back of the system.
4. 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.
5. 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.

USB Port Testing

In situations where USB communications fail, test the system's USB Port directly using a USB cable and a second, known good, USB Port. A successful test using this procedure eliminates the system's USB Port as the root cause.

Initial Actions

- Check that the driver software is properly installed on the host.
- Make sure the USB cable is connected at both ends and is serviceable.
- Print a Configuration page and verify that USB 2.0 is enabled in the system's NVRAM.

NOTE: *The testing procedure was developed for Windows XP. If a different operating system is in use, adapt the steps as necessary.*

USB Port Verification

1. Verify that the system is Ready
2. Insert the Phaser Software CD-ROM into the computer.
3. If the installer autoruns, exit the installer window.
4. Connect a USB cable between the system and computer's USB Ports. The computer automatically detects the new hardware and creates a driver.

   NOTE: *If the driver is not installed on the computer, locate the driver files on the CD-ROM. Once the files are located, the computer installs the driver and automatically configures it to match the system's feature set.*

5. Open the Printers and Faxes window on the computer by clicking Start, Settings, and then Printers and Faxes.
6. Locate the correct entry for the system being tested and display its properties from the File menu pull-down.
7. Open the General tab and click the Print Test Page button to generate the test print. If the test page prints, the USB port is functioning normally.

Fax Troubleshooting

The Control Panel displays one of these errors related to Fax operation:

- **Fax Memory Low** indicates insufficient room, less than 10 MB, for Fax images in either the Flash or Hard Drive. If the drive is full, new Faxes are rejected. If the drive becomes full while a fax is being received, the phone line is hung up and received pages are deleted without printing.
- **No Dial Tone** indicates that the system did not detect a dial tone when attempting to send a Fax. Fax operations are not completely blocked by this error. Outgoing faxes can queue, Fax subsystem parameters are adjustable, and jobs received before the dial tone was lost are accessible (secure receive jobs). The system attempts to send pending faxes until the retry count is reached.
- **Fax Modem is not Available** indicates a communications error between the main board and Fax modem.

In addition to the Control Panel messages, the system provides several built-in tools for troubleshooting Fax problems.

Initial Fax Checks

Check these items first. Use a desk telephone and a second, known-good phone line to test Fax line function.

- Check that Fax is enabled and configured properly for the local phone line.
- Check the target Fax number. If the number is in memory, is it saved correctly?
- Call the target Fax number from a desk phone and confirm a Fax tone response.
- Use a desk phone to confirm a dial tone on the FAX line supporting the system.
- Check Fax cord condition and connections between the system and Fax line.
- Enable Transmission Reports if reports aren't being printed.

If the Fax line, Fax number, and cabling are all functional, use the following tools to isolate the problem.

Fax Troubleshooting Tools

The primary tools for troubleshooting Fax problems are Service Diagnostic tests, The Fax Transmission Report, and the Fax Protocol Report. Diagnostic test results, result codes provided on the Transmission Report, and communication logs from the Protocol Report provide valuable clues to the root cause of Fax errors. A Fax subsystem reset is also available on the Control Panel menu to quickly restore factory default settings.

Service Diagnostic Fax Tests

Service Diagnostics includes tests of the system's Fax subsystem. Use these tests to verify operation of the system's Fax modem and to determine the subsystem's firmware version.

Fax Reset

Reset Fax resets all Fax parameters to factory-default values and cancels or deletes all incoming and outgoing faxes. All customer programmed data, such as the Individual and Group Speed Dial directories, are lost when a Reset Fax command is issued. CenterWare can back-up the Individual Speed Dial directory to a file for restoration following the repair.

Fax Protocol Report

The Protocol Report provides transmission results, timing, and communications activity information about each Fax transmission. Accessed from the System -> Information -> Troubleshooting -> FAX Problems menu, the Protocol Report provides Job Details similar to the Transmission Report, and a detailed log of the communications activity between devices. Use this report to diagnose possible communications errors between machines.

Table 1 lists the most common commands exchanged between Fax machines during a typical transfer of data. When reviewing the Protocol Report, trace the exchange of commands to identify irregularities. Commands in parentheses (_) may or may not appear in the log.

Table 1 Common Fax Communication Commands

Command	Definition	Appropriate Responses
(NSF) (CSI) DIS	Negotiating capabilities from a manual receiver or an auto answer terminal	(NSC) (CIG) DTC (TSI) DCS (NSF) (CSI) DIS (CRP) (TSI) (NSS) (PWD) (SEP) (CIG) DTC (PWD) (SUB) (TSI) DCS
(NSC) (CIG) DTC (PWD) (SEP) (CIG) DTC	Mode setting from calling terminal This is a poll operation	(TSI) DCS (NSF) (CSI) DIS (CRP) (TSI) (NSS)
(TSI) DCS (TSI) (NSS) (PWD) (SUB) (TSI) DCS	Mode setting from manual transmitter or automatic receiver.	CFR FTT (NSC) (CIG) DTC (NSF) (CSI) DIS (CRP)
CTC	Mode setting from the transmitter to the receiver.	(CTR) (CRP)
(EOR-NULL)	Indicates the next block transmission from the transmitter to the receiver.	(ERR) (RNR) (CRP)
(EOR-MPS) or (EOR-EOP) or (EOR-EOM) or (EOR-PRI-MPS) or (EOR-PRI-EOP) or (EOR-PRI-EOM)	Indicate the next message transmission from the transmitter to the receiver	(ERR) (RNR) PIN (CRP)
MPS or EOP or EOM or (PRI-MPS) or (PRI-EOP) or (PRI-EOM)	Post-message commands	MCF RTP RTN PIP PIN (CRP)
(PPS-NULL)	Post-message command for a partial page: from the transmitter to the receiver	(PPR) MCF (RNR) (CRP)

Table 1 Common Fax Communication Commands

Command	Definition	Appropriate Responses
(PPS-MPS) or (PPS-EOP) or(PPS-EOM) or (PPS-PRI-MPS) or (PPS-PRI-EOP) or (PPS-PRI-EOM)	Post-message commands for a complete page: from the transmitter to the receiver	(PPR) MCF (RNR) PIP PIN (CRP)
(RR)	Ask for the status of the receiver: from the transmitter to the receiver	(RNR) (ERR) MCF PIP PIN (CRP)
DCN	Phase E command	None

Fax Transmission Report

The Transmission Report provides transmission status and activity information about each Fax transmission. Generation of this report is optional and is in an Error Only state by default. Use the menus: System -> Job Defaults Setup -> Fax Defaults Setup -> Fax Send Setup to change the Error Only default. Also by default, for the 8860MFP, the Transmission Report includes a reduced image of the document scanned for faxing. Result codes appear in the Results box of the Job Details section at the bottom of the page. The results format is <code><speed>. Where code is one of the codes listed in Table 2. Speed is the transmission baud rate (i.e. 9600). Typically, the results are CP<speed> for a completed Fax. Fax failures (FA) may omit the speed if the system was unable to start the connection. The job termination results (FA, TU, TS) count as errors for the purpose of printing a Transmission Report.

Table 2 Fax Result Codes

Code	Definition	Description
FA	Fax Failed	The system was unable to connect to the Remote Station.
TU	Terminated by user	The transmission was canceled by the user.
TS	Terminated by system	The system ran out of resources. Typically, memory.
CP	Completed	The system was able to deliver the Fax.

In addition to the Results codes, the Job Details section includes Mode and Job Type codes. Definitions of all these codes appears on each report.

Fax Troubleshooting Procedures

The following provides procedures and suggestions for correcting some common problems.

1. Disable Junk Fax Prevention. This may prevent a Fax being received because the machine does not recognize the sending phone number as an acceptable source. Junk Fax Prevention compares the incoming caller Fax Machine ID with ones listed in the Dial Directory. When not finding a match, the Fax refuses the transmission.
2. Check the phone line. Especially if problems occur during receive and transmit. Does the provider support Fax protocol? Is there noise on the phone line? Is the phone line connected correctly? Is call forwarding on? Is 'Secure Send or Receive' on? All these effect Fax transmission.

   In the case of DSL, most DSL configurations share the same phone line with analog signals used by standard phones and dial-up (analog) modems. Typically a filter is installed between the DSL equipment and the analog equipment attached to that line. DSL Performance varies based on the quality and configuration of the specific site and equipment.
3. Reduce transmission speed. The 8860/8860MFP uses 33.6 kbps by default. Some phone lines and older Fax machines do not support these speeds.

Remote Fax Does Not Ring

This procedure describes troubleshooting techniques for situations in which the remote Fax machine will not ring.

Initial Actions

- Check that Fax is enabled and configured properly for the local phone line.
- Check the target Fax number. If the number is in memory, is it saved correctly?
- Call the target Fax number from a desk phone and confirm a Fax tone response.
- Check Fax cord condition and connections between the system and Fax line.

Primary Causes

The Fax configuration for the line type is set to Tone dialing when the line is a Pulse type, or the number is being dialed faster than the exchange can process it.

NOTE: Dial Delay is intended for use when the line is too noisy to reliably detect a dial tone. When in use, Dial Delay ignores any line noise, such as a busy signal, and dials the number after the specified delay interval.

Troubleshooting Procedure

Table 1 Remote Fax Does Not Ring Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Test the Fax line dialing type using a phone connected to the same line. Is the Fax configured correctly for the line type?	Go to Step 2.	Change the configuration to the correct line type.
2	Test the remote Fax connection. Does the remote Fax machine ring when called with the phone on the same line?	Go to Step 3.	Check the remote Fax number.
3	Check dialing activity using the system speaker. Does the system Fax dial?	Go to Step 4.	Replace the Electronics Module (REP 5.0.5).
4	Test the Fax on a local machine. Send a test Fax to a local machine. Does the local machine ring?	Go to Step 5.	Replace the Electronics Module (REP 5.0.5).
5	Insert a dialing pause following the external access number that precedes the Fax number on many office phone systems. Use the Pause button to insert a pause (represented by a comma) in the fax number. Does the remote machine ring?	Complete.	Select a different access point and retest the connection.

Remote Fax Answers Then Fails

The remote machine answers the call, but the Fax transmission sometimes fails to complete.

Initial Actions

- Check that Fax is enabled and configured properly for the local phone line.
- Check the target Fax number. If the number is in memory, is it saved correctly?
- Call the target Fax number from a desk phone and confirm a Fax tone response.
- Check Fax cord condition and connections between the system and Fax line.

Primary Causes

The Fax line quality is poor for Super G3 transmission speeds (default).

Troubleshooting Procedure

Table 1 Remote Fax Answers then Fails Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Print a Protocol Report. Is there a communication failure indicated (V.34-PH2 or PH3)?	Go to Step 2.	Change the configuration to the correct line type.
2	Reduce the Starting Speed to G3 (14.4 kbps) and retest.The system uses Super G3 (33.6 kbps) by default. Some phone lines and older Fax machines do not support this speed. Does the transmission complete?	Complete.	Reduce the transmission speed until the connection is reliable.

Fax Does Not Answer

The system does not answer incoming calls.

Initial Actions

- Check that Fax is enabled and configured properly for the local phone line.
- Check that the phone line supports Fax protocols.
- Check Fax cord condition and connections between the system and Fax line.

Primary Causes

This is usually a ring detection problem, or an unusual or low-quality ring signal. A high Answer Delay setting, Junk Fax Prevention, or Fax Receive settings might impede inbound calls.

Troubleshooting Procedure

Table 1 Fax Does Not Answer Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Print an Activity Report. Do incoming calls appear on the report?	Go to Step 2.	Change configuration settings that could impede inbound calls.
2	Test the incoming line using a phone. Does the phone ring?	Go to Step 3.	Connect the system to a different access point.
3	Test the Fax from a local machine. Send a test Fax from a local machine. Does the system answer?	Check the line quality.	Replace the Electronics Module (REP 5.0.5).

Fax Answers Then Fails

The system answer the incoming call, but the transmission fails.

Initial Actions

- Check that Fax is enabled and configured properly for the local phone line.
- Check that the phone line supports Fax protocols.
- Check Fax cord condition and connections between the system and Fax line.
- Disable Secure Receive and Junk Fax Prevention during testing.

Primary Causes

This is usually a line quality problem. An improperly filtered DSL line could also cause transmission errors.

Troubleshooting Procedure

Table 1 Fax Does Not Answer Troubleshooting Procedure

Step	Questions or Actions	Yes	No
1	Print a Protocol Report. Is there a communication failure indicated after a CSI/DIS, DCS/TCF, or after (V.34-PH2 or PH3)?	Go to Step 2.	Change the configuration to the correct line type.
2	Reduce the Starting Speed to G3 (14.4 kbps) and retest.The system uses Super G3 (33.6 kbps) by default. Some phone lines and older Fax machines do not support this speed. Does the transmission complete?	Complete.	Reduce the transmission speed until the connection is reliable.
3	Test the Fax from a local machine. Send a test Fax from a local machine. Does the system answer?	Check the line.	Replace the Electronics Module (REP 5.0.5).

Printhead Troubleshooting Checklist

This checklist provides the procedure for troubleshooting Printhead problems. Complete this checklist as part of the Printhead replacement process.

Phaser 8860/8860MFP Printhead Troubleshooting Checklist

THE DOCUMENT COMPANY
XEROX

PRINTHEAD TROUBLESHOOTING CHECKLIST

Phaser 8500/8550 Version 1.0

IMPORTANT! This checklist outlines proper printhead troubleshooting procedures. All Xerox service employees and any other service personnel on any job involving a printhead replacement should perform it.

Service person name	
Service Company	
Phone Number	
Date of printhead replacement	
Printer serial number	
Printhead serial number	
OUT Request ID number	

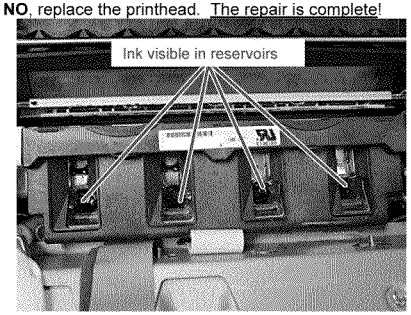
Troubleshooting Summary – Follow the checklist below and fill in spaces as they apply as you complete the troubleshooting procedures.

	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.

Xerox Phaser 8500/8550 Printhead Checklist 0750984-00 Page 1

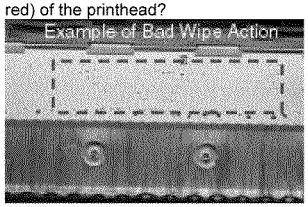
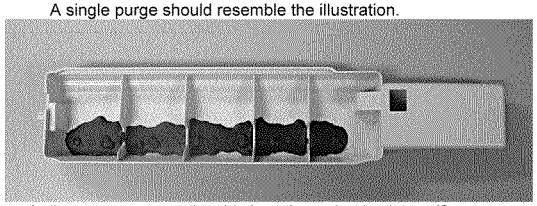
s8560-262

Figure 1 Printhead Checklist Page 1

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: **Printhead ID:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____ If **Line 636 IDU** lists any values, record the numbers here: **IDU:** 00-09: _____ 10-29: _____ 30-99 _____ 100+: _____ Xerox U.S. personnel please record these dates in the FIST system as well as in this document
Step 3	Does the printer display an error code indicating a problem with the printhead?	YES NO *Circle one*	If **YES** please write down the error code. _____ **3a.** If error code 13,264.4x is present in the Fault History replace the electronics module (continue to 3b). **3b.** If a printhead thermistor open or shorted error code 13,195.45, 13,197.47, 13,259.46, 13, 261.48, 13,323.47, 13.325.49 is displayed or a PEST error code 37,002.47, 37,003.48, 37,004.40, or 37,005.41, perform the following steps: **3c.** Inspect and reseat the printhead interface cable (gray ribbon cable) and retest. **3d.** Replace the printhead. The repair is complete!
	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.

s8560-263

Figure 2 Printhead Checklist Page 2

Step 6	Is the Cap/Wipe/ Purge assembly correctly aligned?	YES NO *Circle one*	Is the wiper assembly out of alignment (not parallel with the printhead faceplate)? If **YES,** perform the wiper alignment procedure as described in the *Phaser 8400/8500/8550 Color Printer Service Guide.*
Step 7	Print Service Test Print 2: Weak and Missing Jets. Is *severe* color mixing apparent?	YES NO *Circle one*	Is there color mixing from one row to the next row for the same jet? Note: Some color mixing is normal following a purge. It usually clears after one or two prints. If **YES,** replace the wiper assembly. Repeat **Step 6.**
Step 8	Visually check the printhead faceplate. Is the faceplate contaminated?	YES NO *Circle one*	Are there streaks, smudges, or a scum of wax in the jet area (outlined in red) of the printhead?  If **YES**, replace the wiper assembly. Repeat the checklist stating at **Step 6.**
Step 9a	Visually check the Wiper Assembly blade. Is it OK?		Is there any damage or separation on the wiper blade? If **YES**, replace the wiper assembly.
Step 9b	Check the purge performance of the purge system.	YES NO *Circle one*	Check the purge pump performance. **9a.** Empty the waste tray. **9b.** Select **Eliminate Light Stripes - Basic** from the printer front panel and run one cleaning cycle. **9c.** Remove the waste tray and examine how much ink was purged. A single purge should resemble the illustration.  Is the purge mass noticeably less than what is pictured? If **YES**, inspect the purge hoses for pinches, splits, or tears.

s8560-264

Figure 3 Printhead Checklist Page 3

Step 11	Print Service Test 2: Weak and Missing Jets.
	Are there weak or missing jet(s)?
		YES
		NO
		
		Circle one
			• If **NO** go to **Step 12**.
			• If **YES**, do the following:
			  • Check the exit area of the paper path for debris that could be scraping ink off the drum and may mimic a weak or missing jet.
			  • Select **Eliminate Light Stripes - Basic** from the printer front panel up to 3 times as needed to recover a weak or missing jet.
			  • Select **Eliminate Light Stripes - Advanced** from the printer front panel up to 2 times as needed to recover a weak or missing jet.
			  • Select **Jet Substitution** to substitute a working jet for the missing jet. However, if any of the following criteria is met, you should replace the printhead instead.
			  • If the customer uses the billing meters features.
			  • If three missing jets of the same color are adjacent (for example cyan jets 79, 80, and 81).
			  • By the customer runs mainly in Fast Color or Standard mode (as revealed on the Usage Profile page).
			The repair is complete!

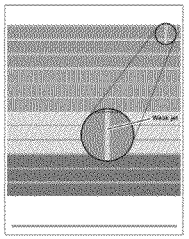
Step 12	Is the customer experiencing vertical bands (not light stripes) in solid color areas?	YES NO *Circle one*	• If **YES,** print 10 solid fill pages of cyan. If the bands vary in intensity and/or location over the 10 prints, the customer is experiencing stagnant ink discoloration. Continue to print solid fills of the offending color until the output is uniform. It may take as many as 60 solid fill pages to refresh all of the ink in the printhead reservoir. 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

Xerox Phaser 8500/8550 Printhead Checklist 0750984-00 Page 4

s8560-265

Figure 4 Printhead Checklist Page 4

NOTE: *An Adobe PDF version of this checklist is included on the EDOC CD. Print and complete this checklist as part of the Printhead replacement process.*

Printhead Cleaning Cycle

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 Blade 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 Blade 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 Blade 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 Drive motor moves the Wiper Blade to the bottom of its travel to engage the PrintHead Tilt Cam. The Process Drive motor rotates the Printhead tilt gears, which 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 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.

7 Wiring Data

How to use the Plug/Jack Location List

The P/J Locator diagrams show the location of primary connections within the system. Use these illustrations to locate connections called out in the procedures presented in Sections 2, 4, and 6. Connectors designated “CN” are listed at the end of the P/J connectors.

To find the location of a Plug or Jack:

1. Locate the P/J connector designator in the first column of the table.
2. With this information, go to the map (Figure Number) listed in the second column.
3. Use the coordinates to quickly locate the connection indicated on the map with its P/J designation number. If coordinates are not given, go to the referenced Wire Routing Diagram.

Table 1 Plug / Jack Location List

P/J	Map	Coordinates	Remarks
0150	Figure 3		Connects the I/O Board to the Ink Loader Assembly.
0670	Figure 3	C-107	Connects the Preheater sensor to the Preheater Board
0720	Figure 11	C-104	Connects the Preheater Board to the Right Side Harness.
1	Figure 6	H-105	Connects the Electronics Module to Door Interlocks and Motors.
2	Figure 6	G-105	Connects the Electronics Module to the Scanner Power Supply and Exit Module Control Board.
3	Figure 6	G-105	Connects the Electronics Module to the Printhead.
4	Figure 6	I-106	Connects the System Power Supply to the Printhead Heaters.
5	Figure 6	E-106	Connects the System Power Supply to the Ink Melt Heaters.
6	Figure 4	D-104	Connects the System Power Supply to the Scanner Power Supply.
7	Figure 4	D-105	Connects the System Power Supply to the Preheater and Drum Heater Relay Boards.
8	Figure 4	C-108	Connects AC Line to the System Power Supply
9	Figure 4	C-109	Connects the Right Side Harness to the Electronics Module.
10	Figure 4	F-109	Connects the Electronic Module to the I/O Board.
11	Figure 4	E-109	The system Ethernet LAN Port.
12	Figure 4	F-107	Connects the system to the FAX line.
13	Figure 4	E-107	The system USB Port.
14	Figure 4	E-105	The system Serial Debug Port
15	Figure 4	E-104	Connects the Electronics Module to the DADF.
16	Figure 5	C-109	Connects the Electronics Module to the Wave Amplifier.
17	Figure 5	E-109	Connects the Left Side Harness to the Electronics Module.
18	Figure 5	G-109	Connects the Electronics Module to the Y-Axis Motor.
19	Figure 3	D-104	Connects the Control Panel to the Scanner Assembly.
22	Figure 8	C-105	Connects the Electronics Module and Exit Module Control Board to the Scanner Power Supply.
110	Figure 12	F-107	Connects the Control Panel to the Front Door Interlock
110	Figure 9	B-107	Connects the Waste Tray Detect Sensor to the I/O Board.

Table 1 Plug / Jack Location List

P/J	Map	Coordinates	Remarks
118	Figure 2	C-107	Connects the Drum Fan to the Right Side Harness.
120	Figure 2	C-107	Connects the Drum Encoder to the Right Side Harness.
125	Figure 6		Connects the Process Motor to the Right Side Harness.
130	Figure 2	F-104	Connects the Printhead Wiper Clutch to the I/O Board.
140	Figure 2	D-104	Connects the Front Door Interlock to the Exit Module Harness.
150	Figure 2	H-106	Connects the X-Axis Motor to the Right Side Harness.
171	Figure 3	C-108	Connects the No Paper Sensor to the I/O Board.
172	Figure 3	D-108	Connects the Paper Height Sensor to the I/O Board.
180	Figure 7		Connects the Electronics Module to the Printhead.
190	Figure 12	B-105	Connects the Control Panel to the Exit Cover Interlock
200	Figure 10	E-108	Connects the Drum Heater to the Relay Board.
202	Figure 1	H-107	Connects the Preheater Lift Solenoid to the Left Side Harness.
203	Figure 1	C-108	Connects the Tray 2 Lift Motor to the Left Side Harness.
204	Figure 4		Connects the Optional Feeder to the Left Side Harness.
206	Figure 1	E-104	Connects the Media Drive Motor to the Left Side Harness.
207	Figure 1	B-107	Connects the Electronics Module Fan to the Left Side Harness.
208	Figure 1	C-107	Connects the Head Tilt Solenoid to the Left Side Harness.
210	Figure 10	E-104	Connects the Relay Board to the Electronics Module.
212	Figure 1	A-104	Connects the Purge Pump to the Left Side Harness.
220	Figure 10	E-108	Connects the Relay Board to the Electronics Module.
230	Figure 1	F-108	Connects the Tray 2 Pick Clutch to the Left Side Harness.
240	Figure 7		Connects the Wave Amplifier to the Printhead.
241	Figure 1	G-108	Connects the Tray 1 Pick Solenoid to the Left Side Harness
250	Figure 9	E-105	Connects the Strip Solenoid to the I/O Board.
256	Figure 1	H-106	Connects the Deskew Clutch to the Left Side Harness.
270	Figure 9	G-104	No Connection on the I/O Board.
303	Figure 1	F-103	Connects the Elevator Position Sensor, Scanner Detect Sensor, Speaker, and Elevator Motor to the Exit Module Harness.
304			Connects the Elevator Position Sensor to the Elevator Motor Harness
308	Figure 1	C-103	Interconnects two branches of the Exit Module harness.
309	Figure 2	F-102	Connects the Exit Roller Motor to the Exit Module Harness.
320	Figure 1		Connects the Exit Elevator Motor to the Exit Module Harness.
400	Figure 9	B-108	Connects the I/O Board to the Preheater, Tray 2 Sensors, and Relay Board.
409	Figure 1	E-102	Connects the Elevator Position Sensor to the Front Exit Module Harness.

Table 1 Plug / Jack Location List

P/J	Map	Coordinates	Remarks
410	Figure 1	F-103	Connects the Speaker to the Exit Module Harness.
411	Figure 1	G-104	Connects the Exit Door Interlock to the Exit Module Harness.
600	Figure 12	G-107	Connects the Control Panel to the I/O Board
600	Figure 9	B-108	Connects the Paper Size Switch to the I/O Board.
610	Figure 9	C-108	Connects the I/O Board to the Front Door/Tray 1 Assy.
650	Figure 3	E-109	Connects Front Door/Tray 1 to the I/O Board.
680	Figure 9	H-105	Connects the I/O Board to the Exit Module.
840	Figure 9	E-107	Connects the I/O Board to the Electronics Module.
860	Figure 9	G-106	Connects the Drum Maintenance Pivot Plate to the I/O Board.
860	Figure 11	G-103	Connects the Preheater Board to the I/O Board
870	Figure 9	G-106	Connects the Drum Temp Sensor to the I/O Board.
910	Figure 9	C-109	Connects the Ink Loader Sensors to the I/O Board.
CN1	Figure 7	G-107	Connects the Exit Module Control Board to the Scanner Power Supply.
CN2	Figure 7	A-106	Connects the Exit Module Control Board to the Exit Module sensors.
CN4	Figure 7	D-108	Connects the Exit Module Control Board to the Exit Module motors.
CN5	Figure 7	A-107	Connects the Scanner Power Supply Fan to the Exit Module Control Board.
CN801	Figure 2	E-102	Connects the right Output Tray Full Sensor to the Exit Module harness.
CN802	Figure 1	G-103	Connects the left Output Tray Full Sensor to the Exit Module harness.
CN851	Figure 1	F-102	Connects the Scanner Detect Sensor to the Exit Module Harness.

Plug/Jack Locations

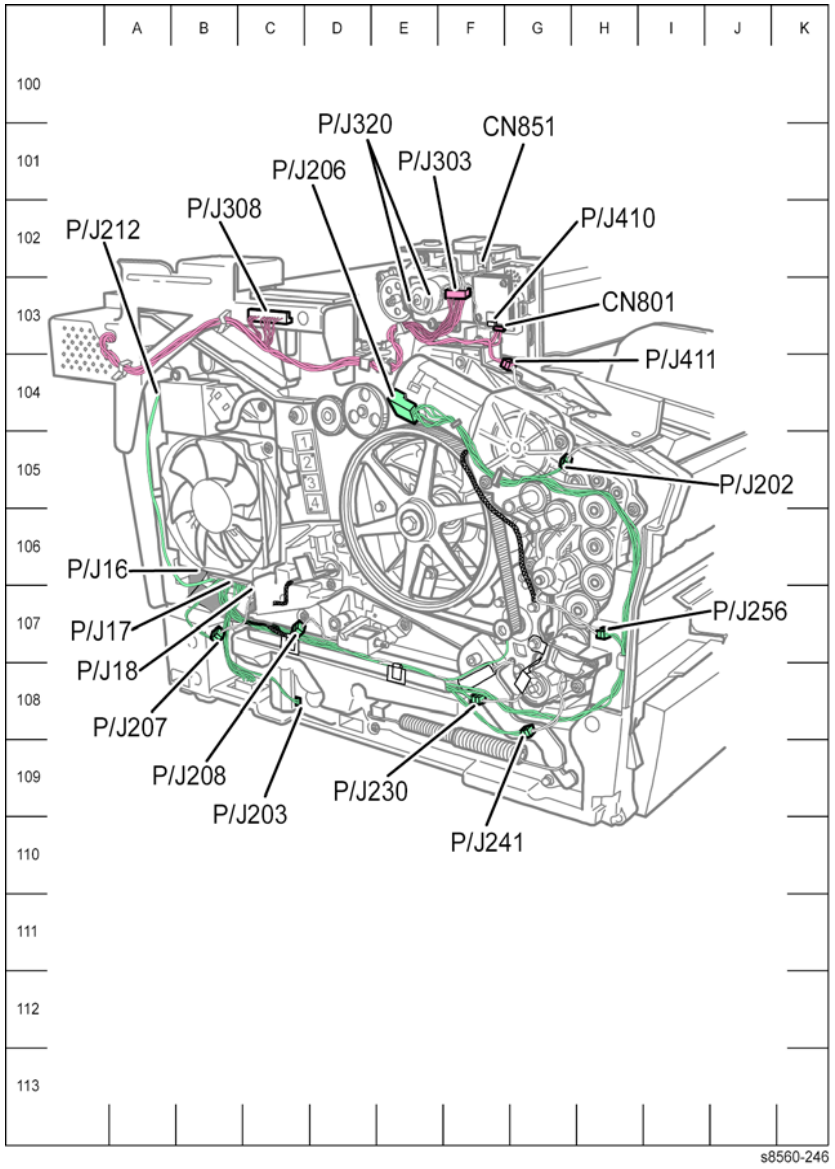


Figure 1 8860MFP Left Side P/J Locations

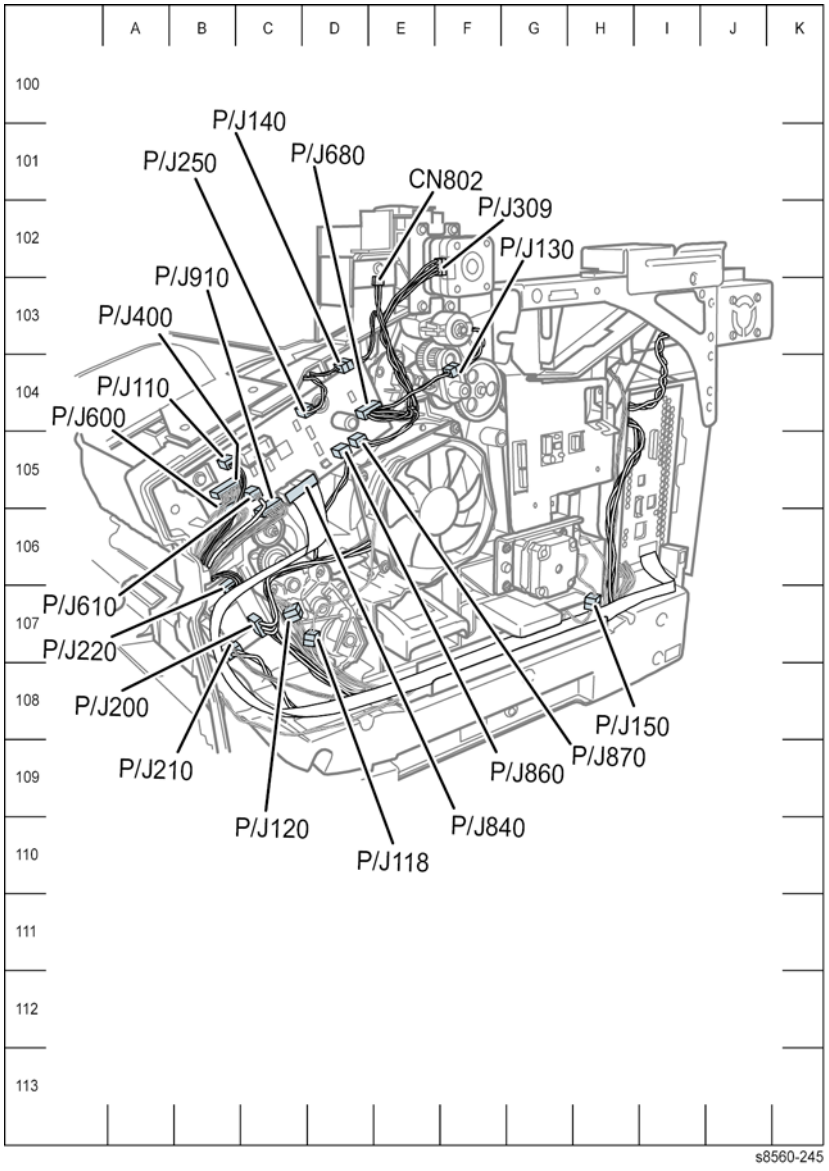


Figure 2 8860MFP Right Side P/J Locations

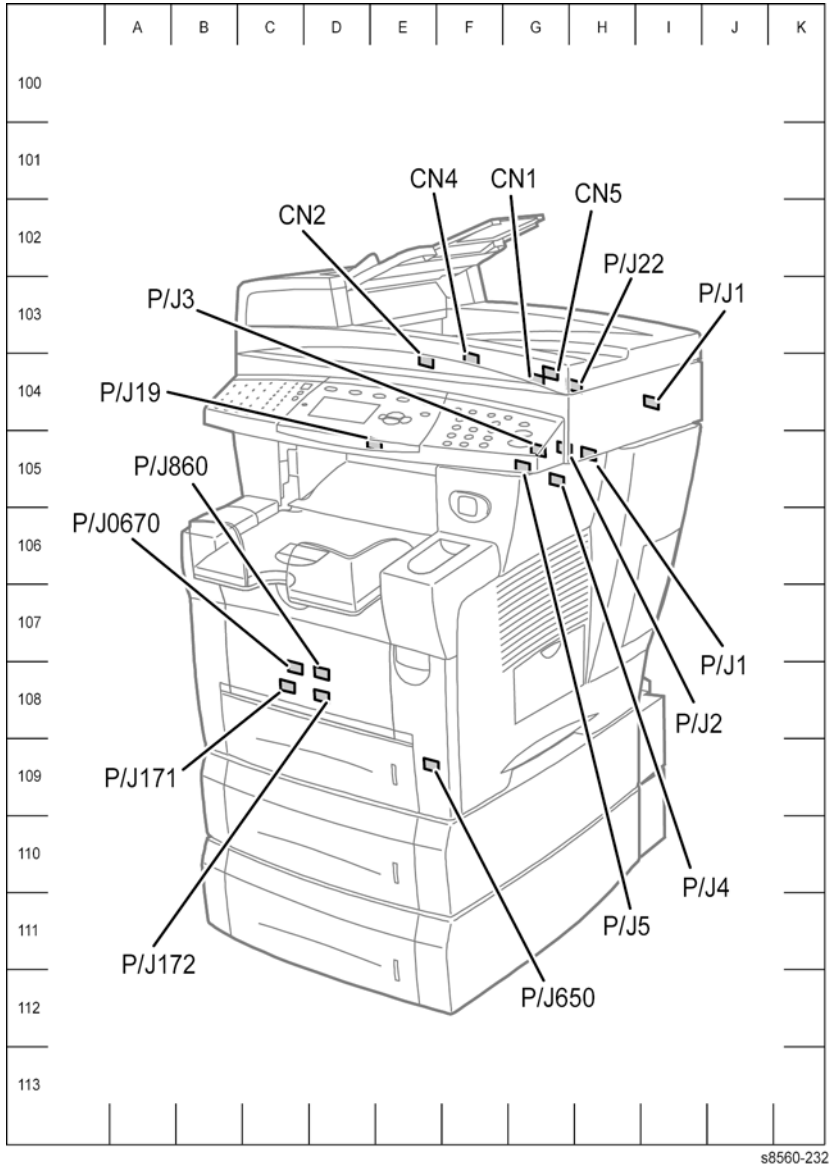


Figure 3 8860MFP Front Side P/J Locations

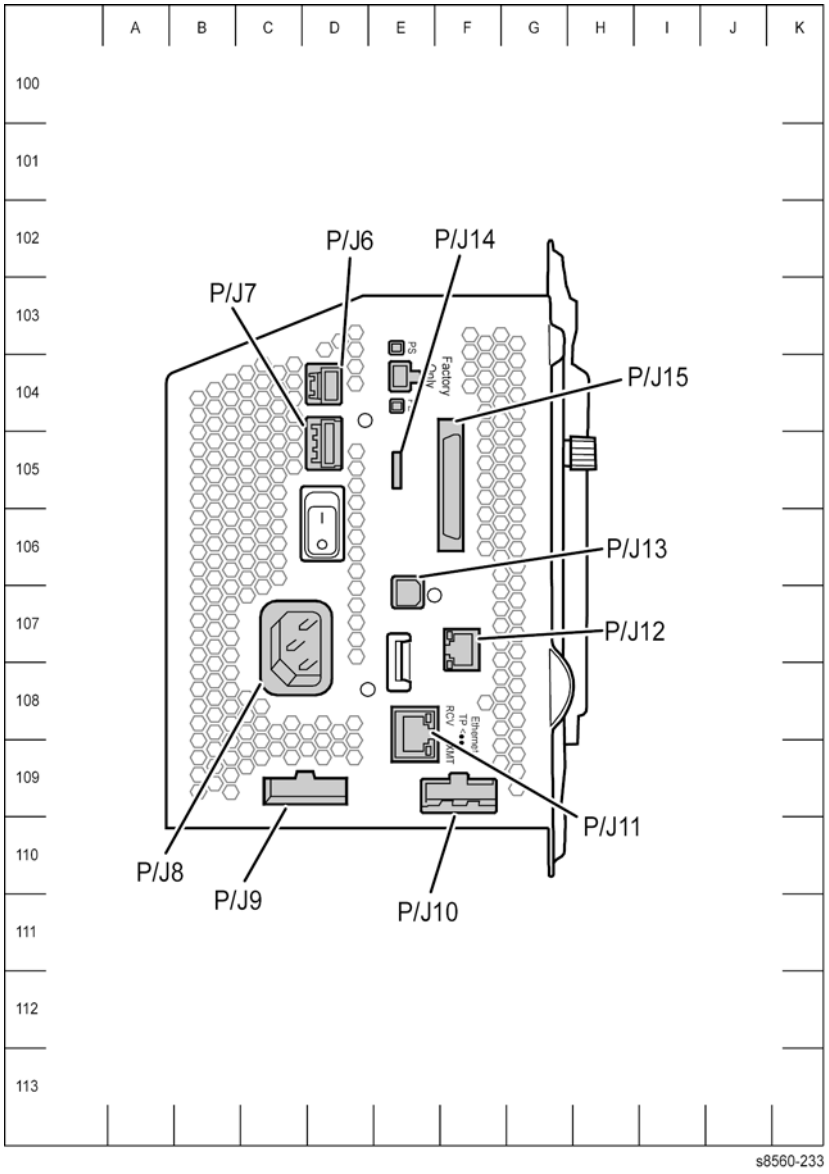


Figure 4 Right Side Electronics Module P/J Locations

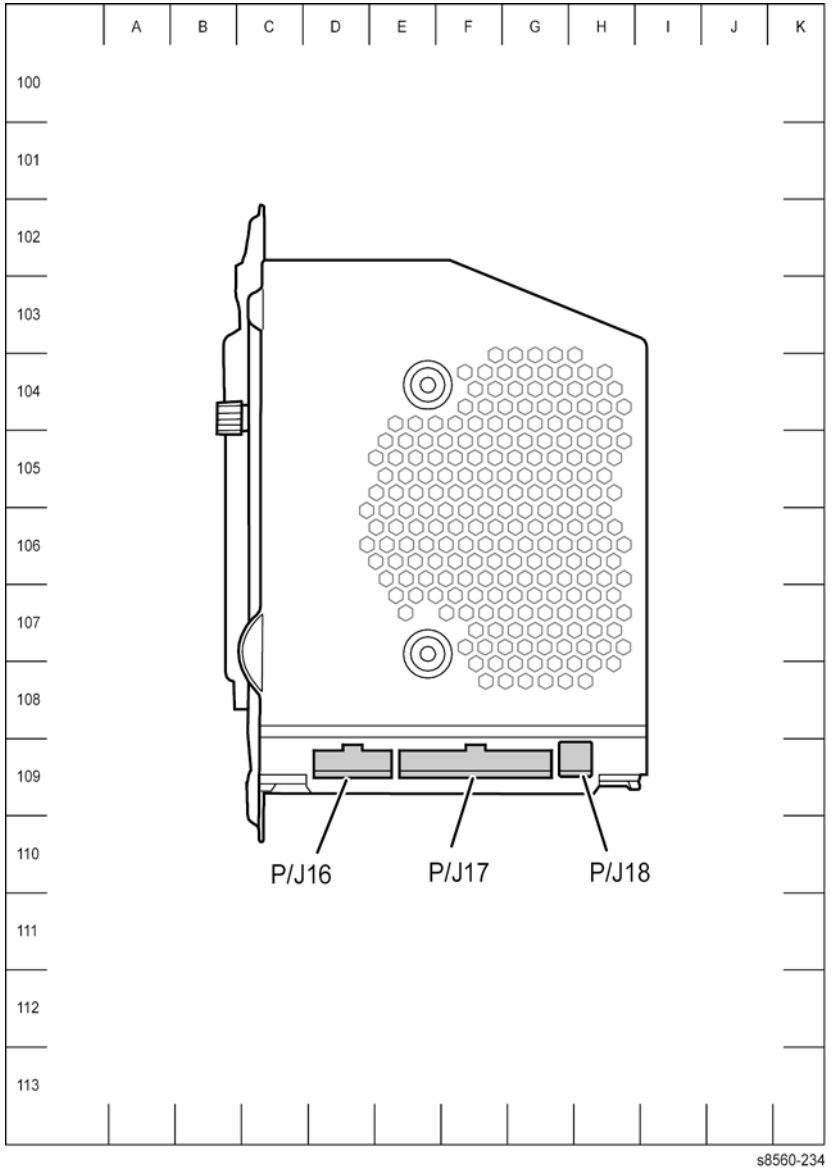


Figure 5 Left Side Electronics Module P/J Locations

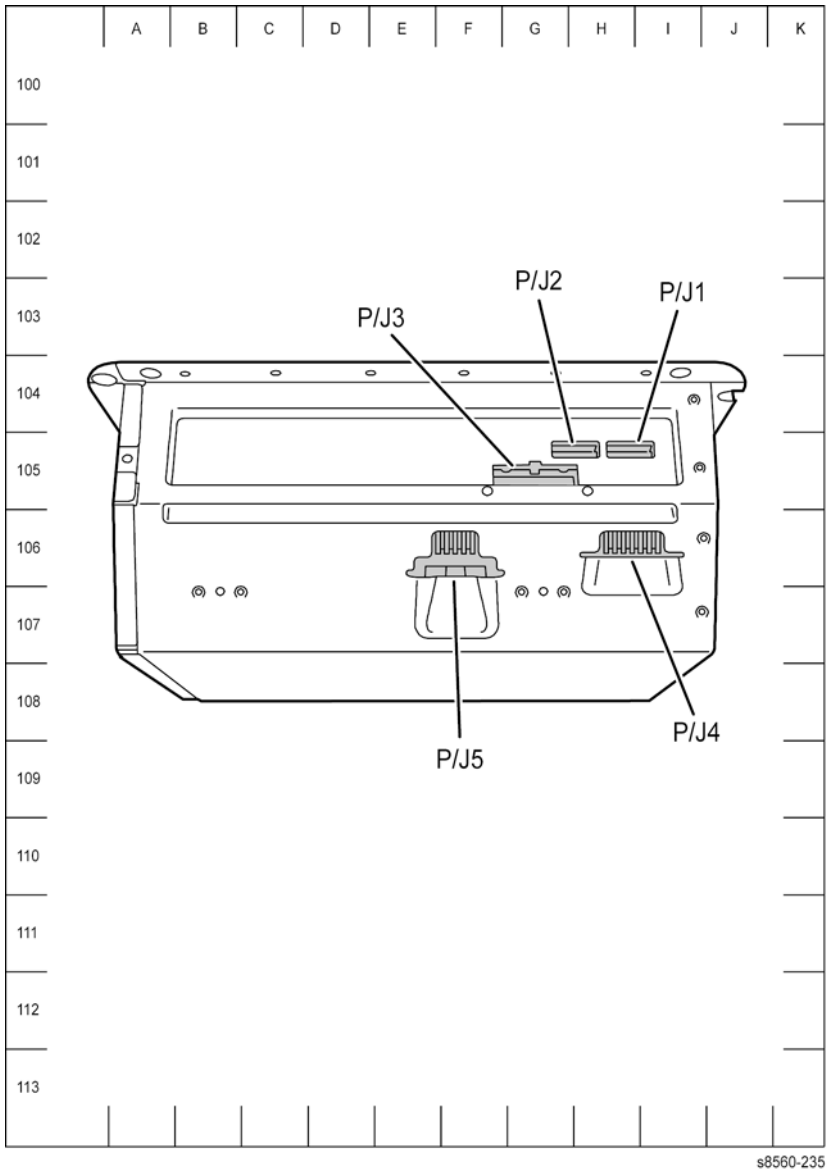


Figure 6 Top Electronics Module P/J Locations

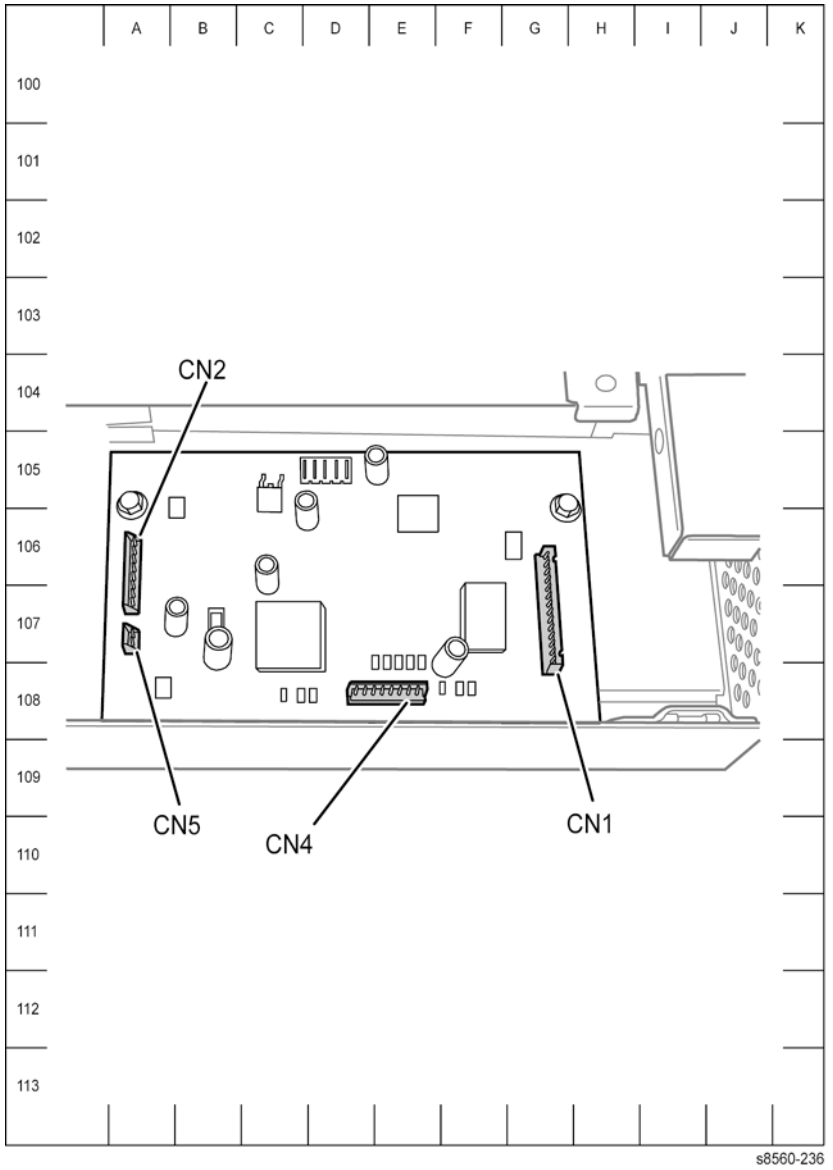


Figure 7 8860MFP Exit Module Control Board P/J Locations

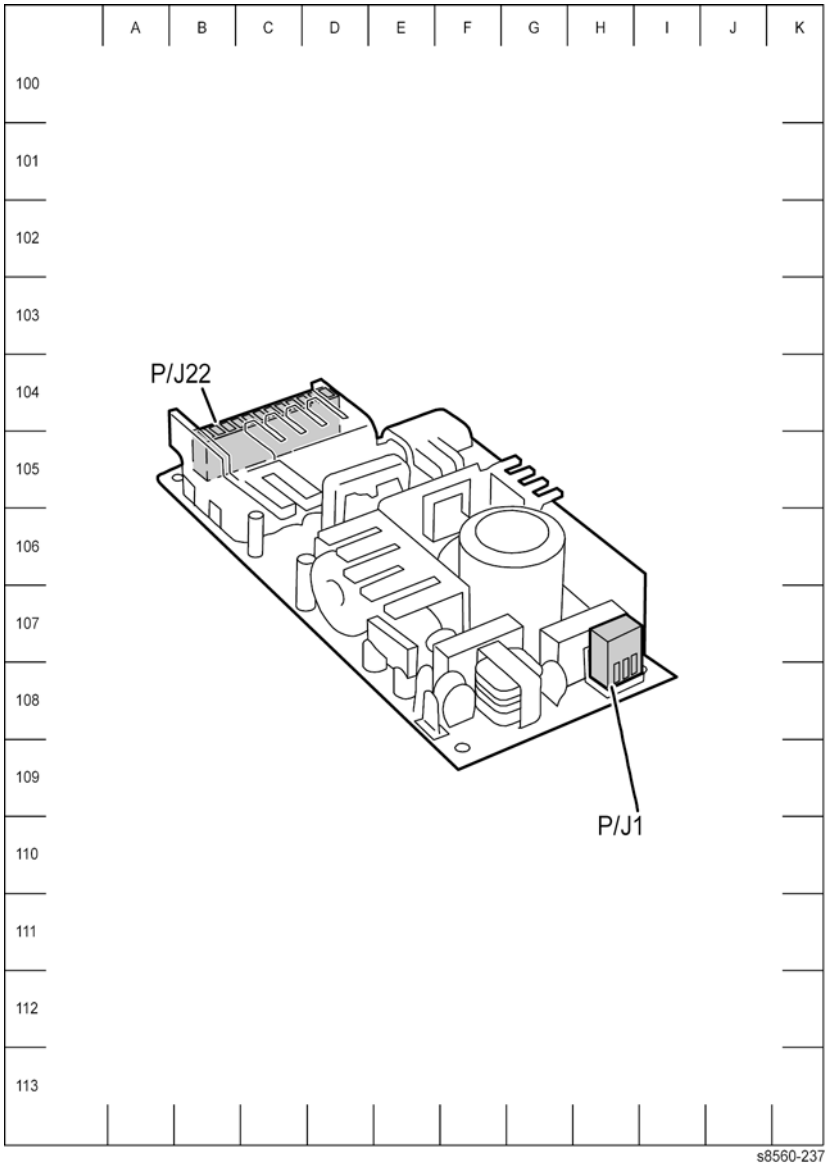


Figure 8 8860MFP Scanner Power Supply P/J Locations

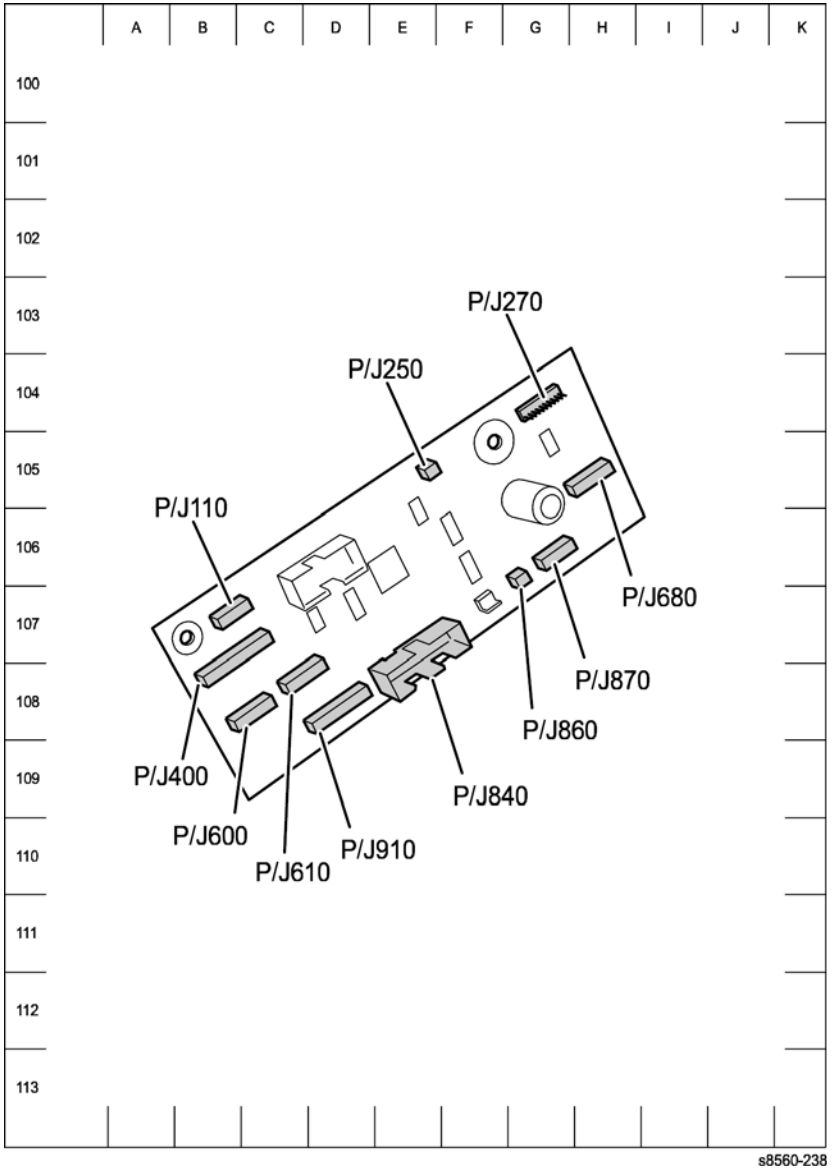


Figure 9 I/O Board P/J Locations

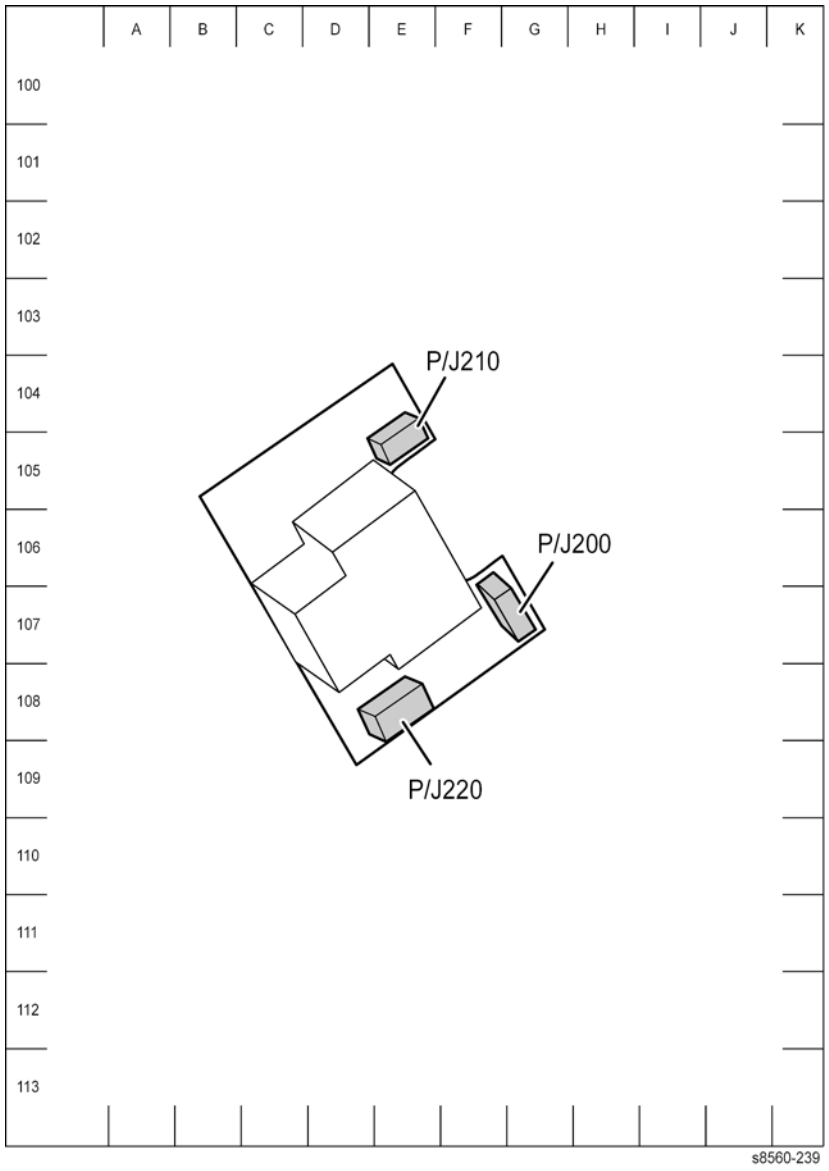


Figure 10 Drum Heater Relay Board P/J Locations

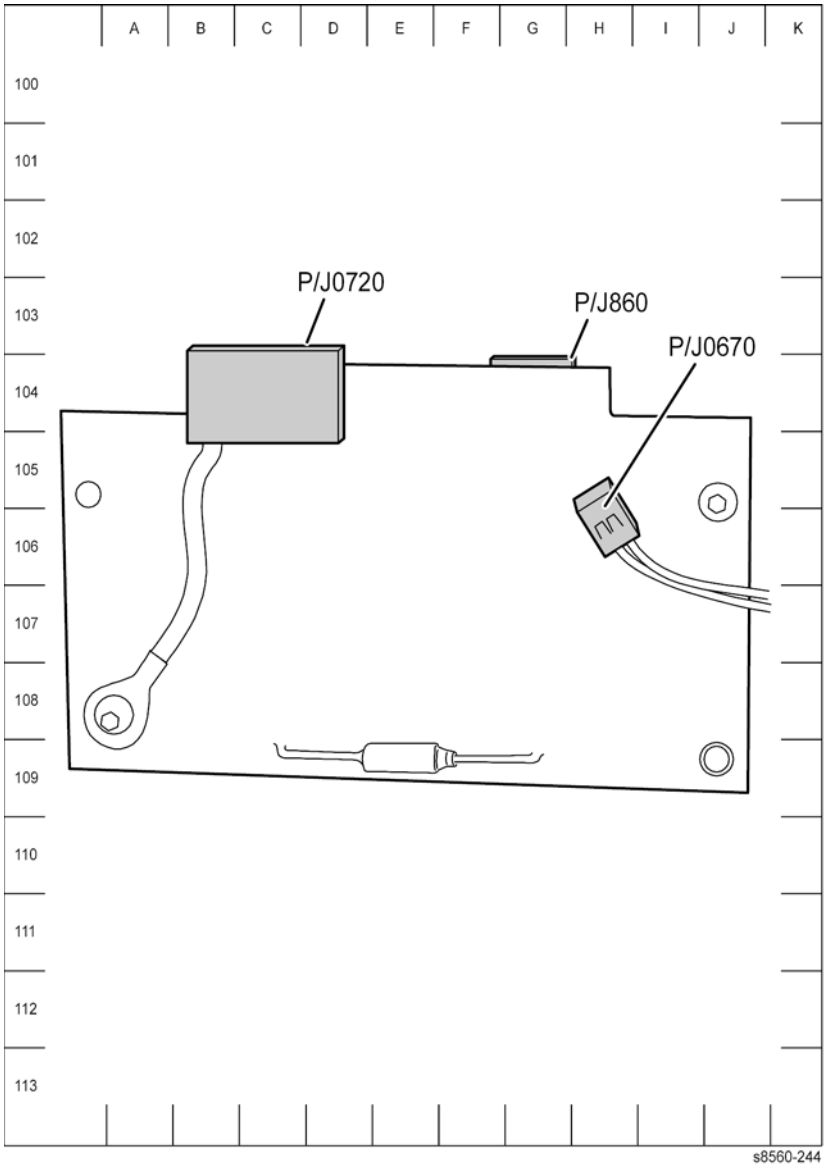


Figure 11 Underside of the Preheater Board P/J Locations

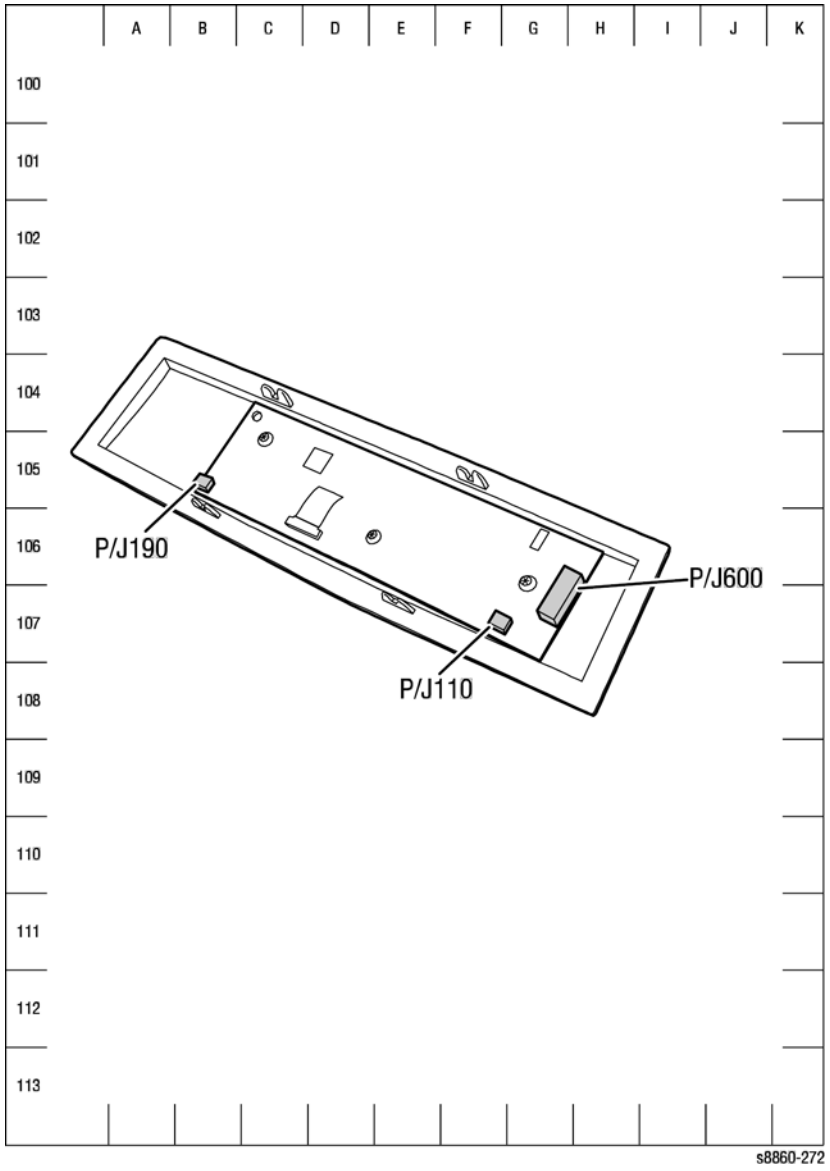


Figure 12 Control Panel P/J Locations

Wire Routing

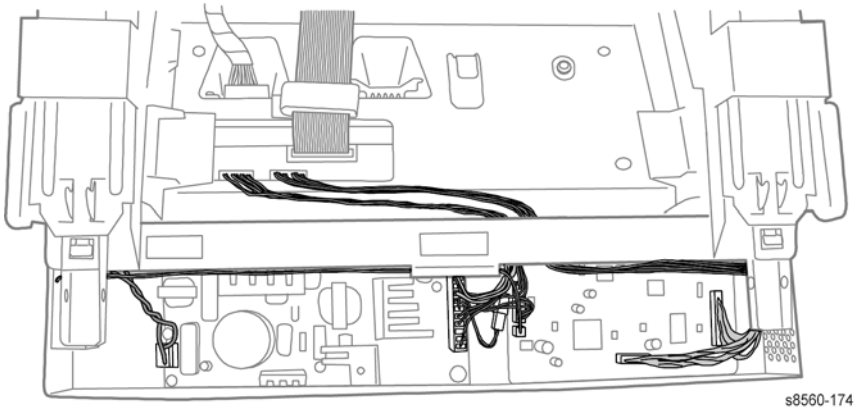


Figure 1 8860MFP Back Frame Wire Routing

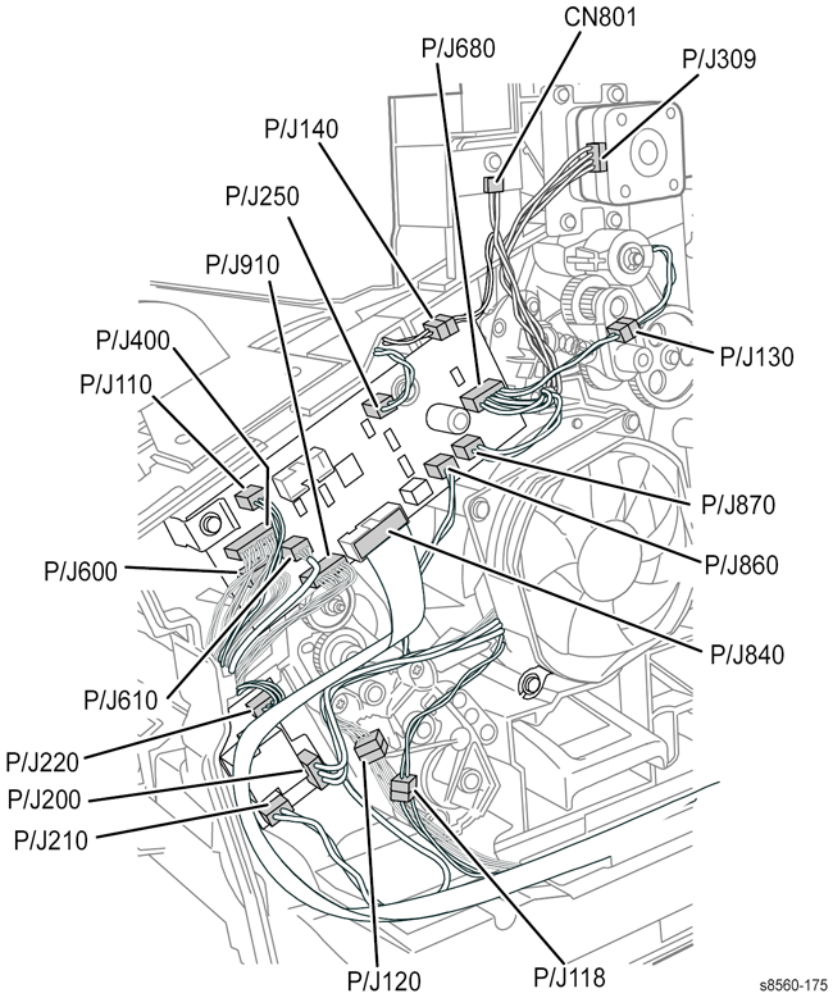


Figure 2 Right Side Wire Routing (1/2)

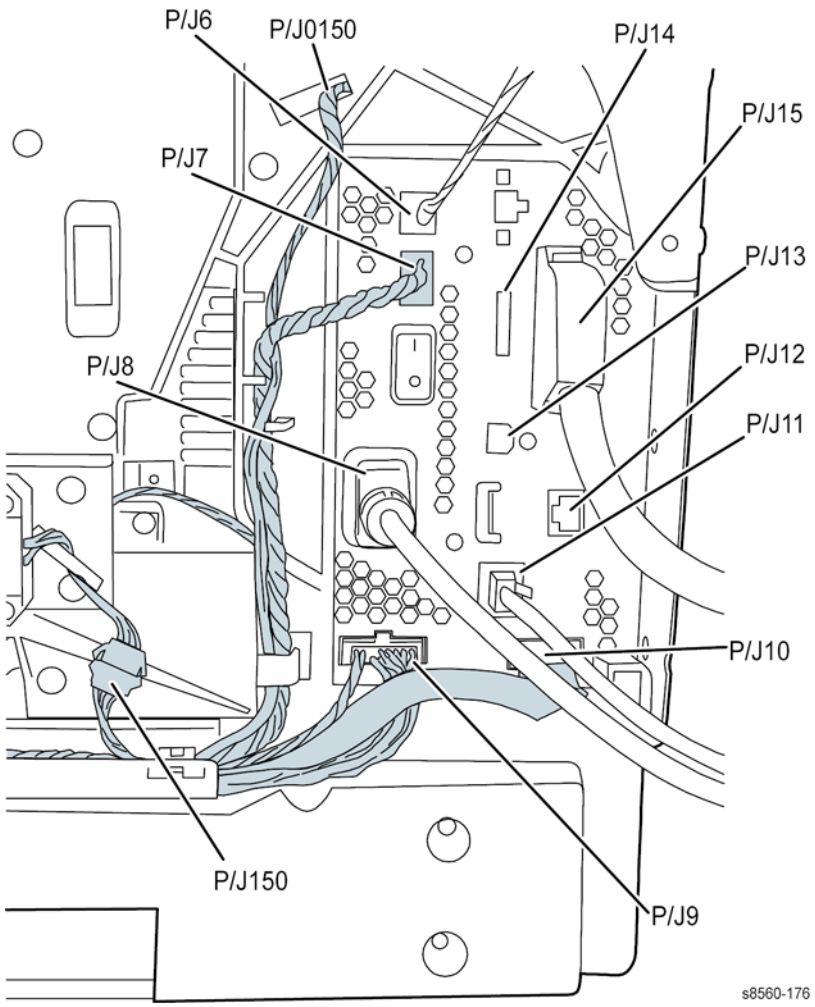


Figure 3 Right Side Wire Routing (2/2)

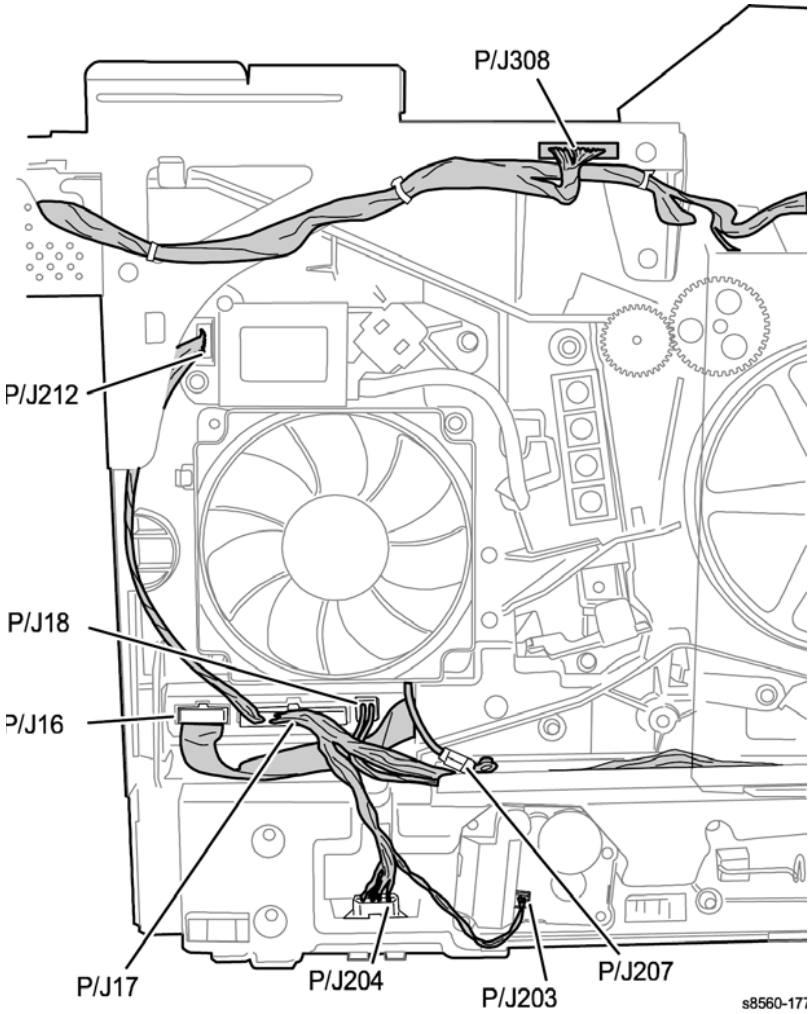


Figure 4 Left Side Wire Routing (1/2)

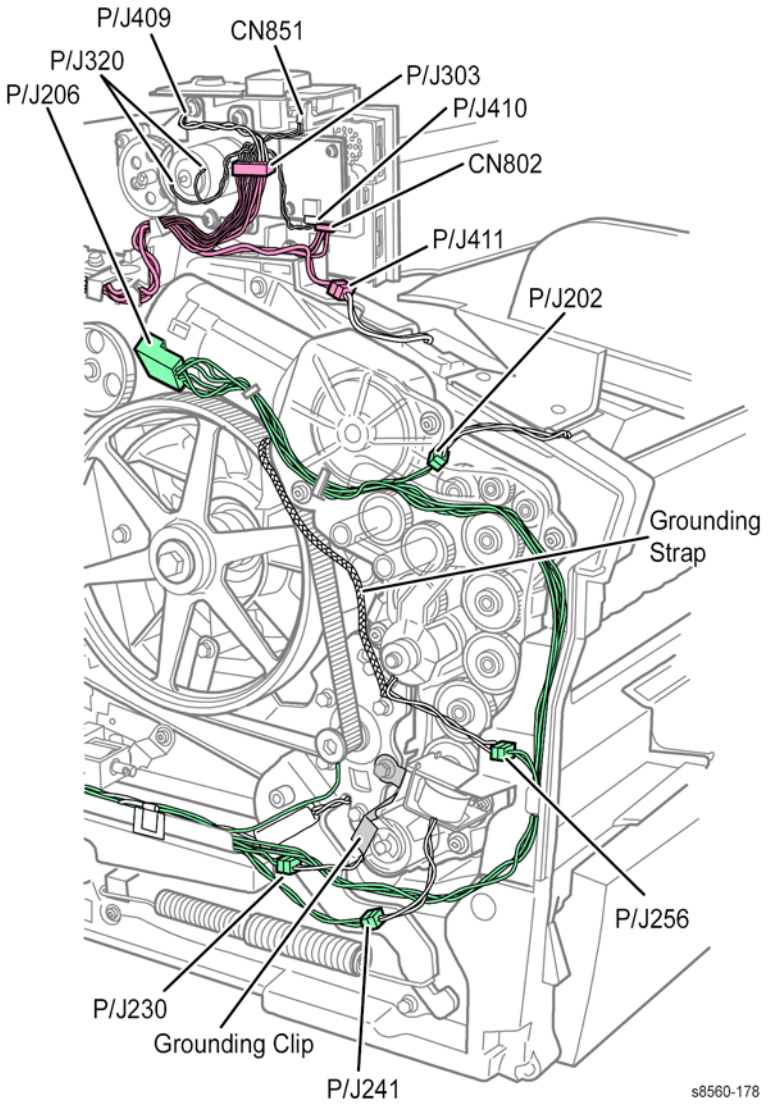


Figure 5 Left Side Wire Routing (2/2)

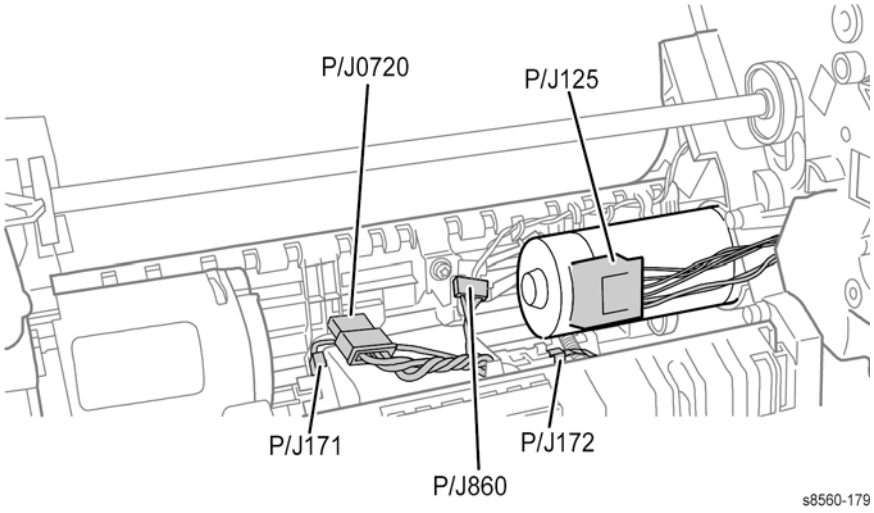


Figure 6 Front Wire Routing

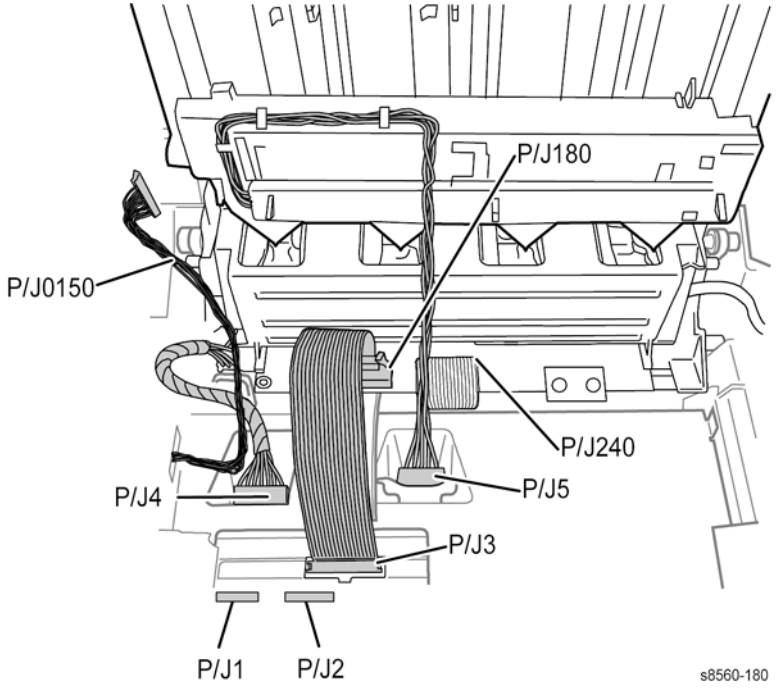


Figure 7 Top Wire Routing (1/2)

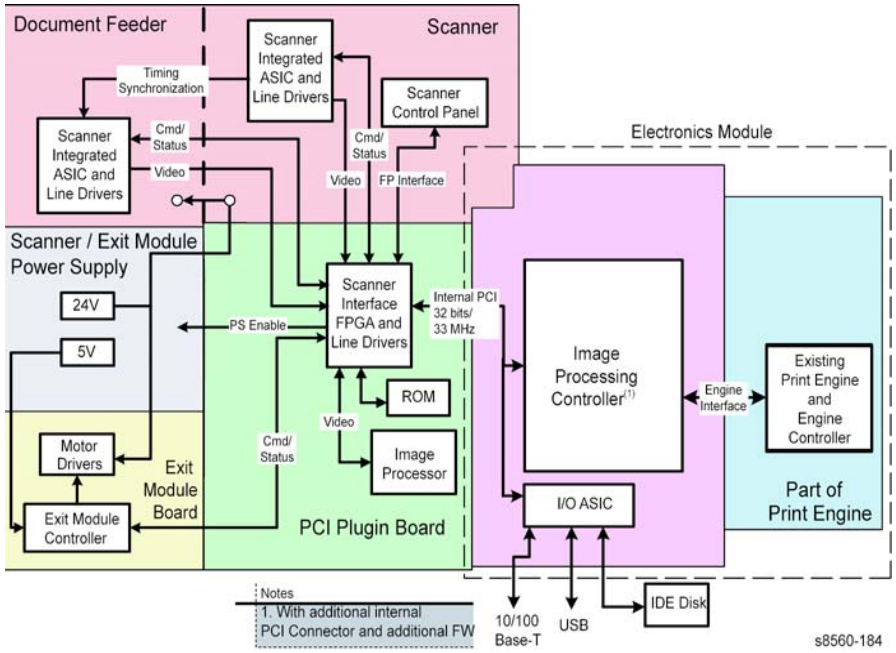


Figure 1 8860MFP Scanner/DADF Block Diagram

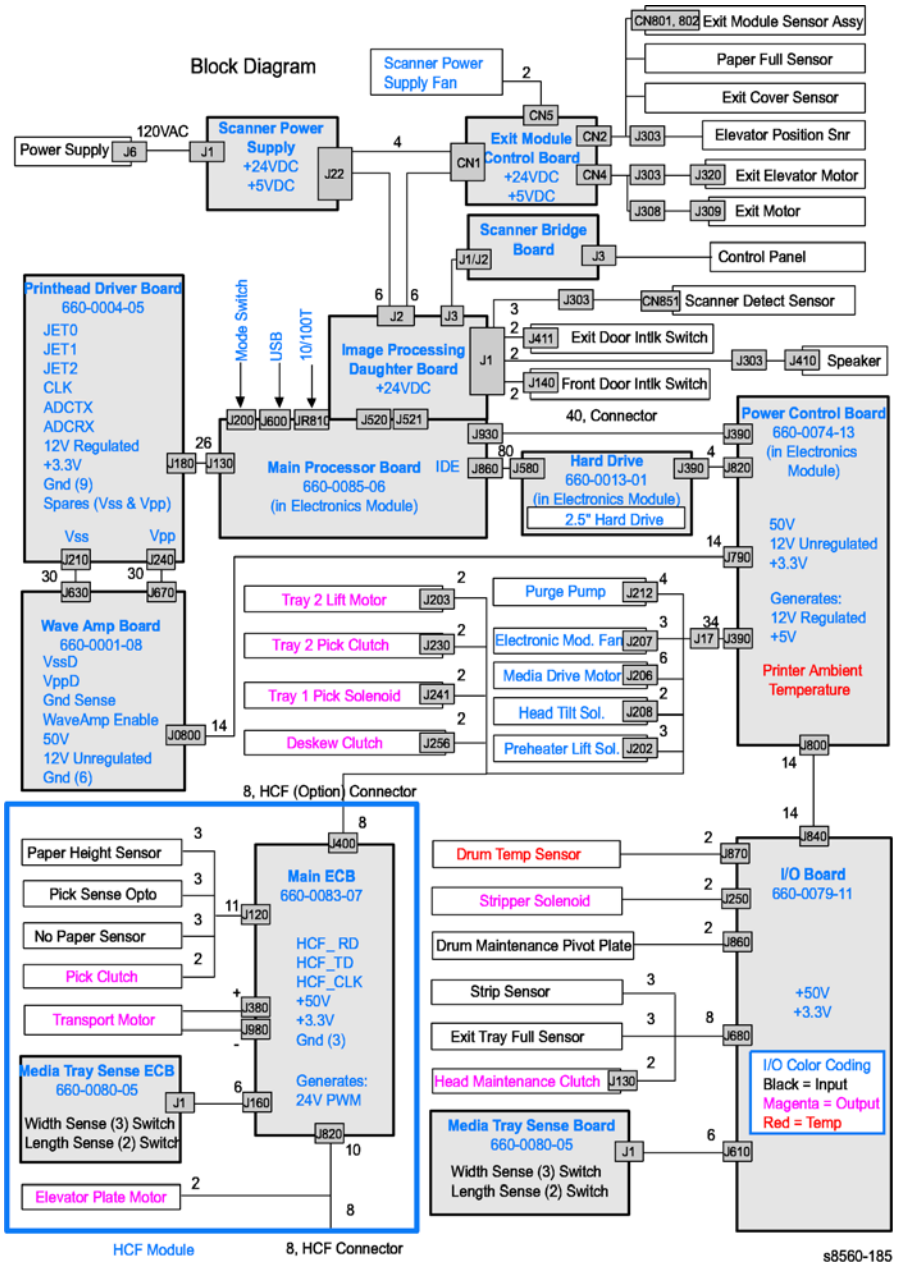


Figure 2 8860MFP System Block Diagram (1/2)

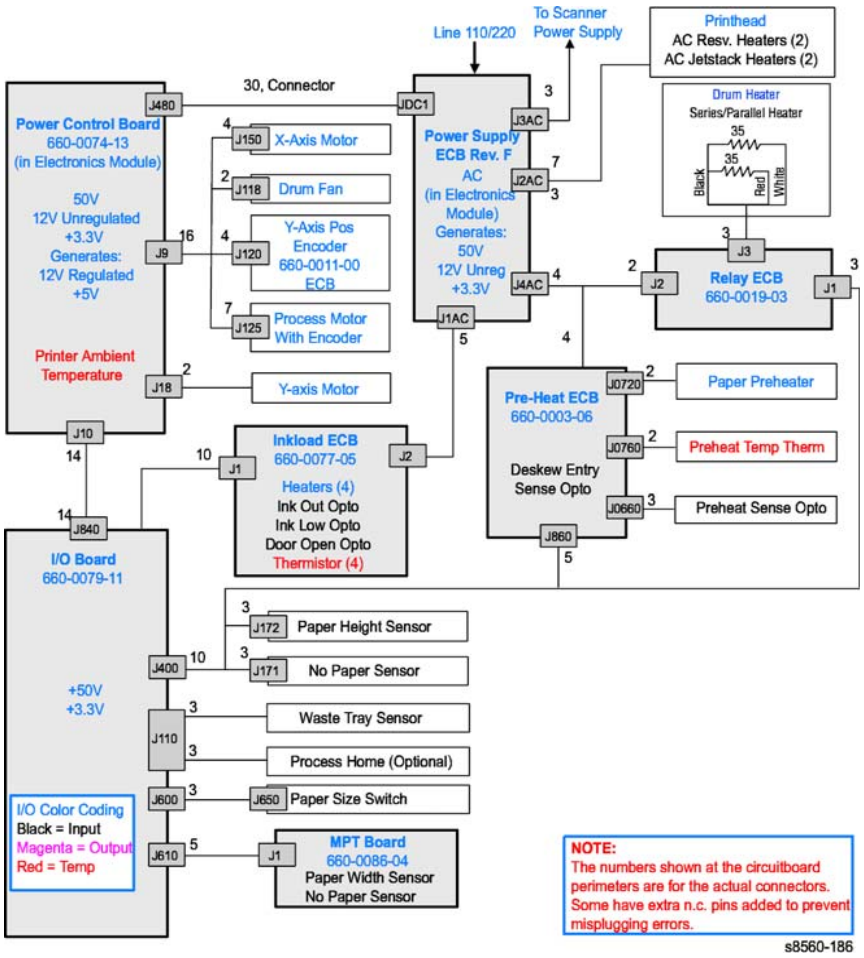


Figure 3 8860MFP System Block Diagram (2/2)

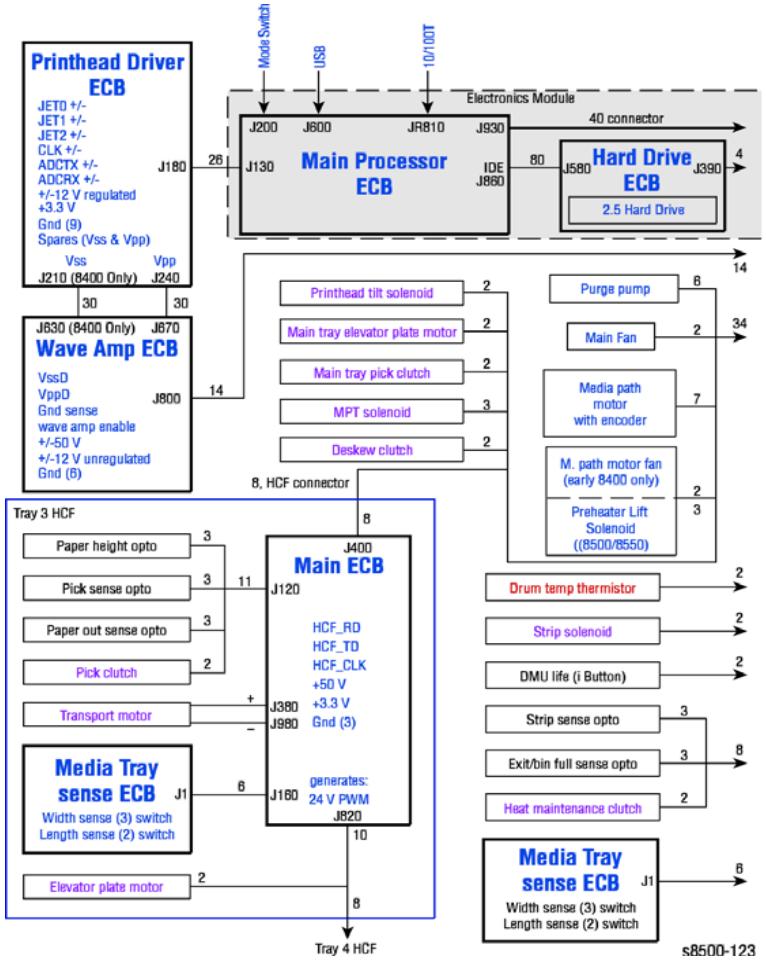


Figure 4 8860 System Block Diagram (1/2)

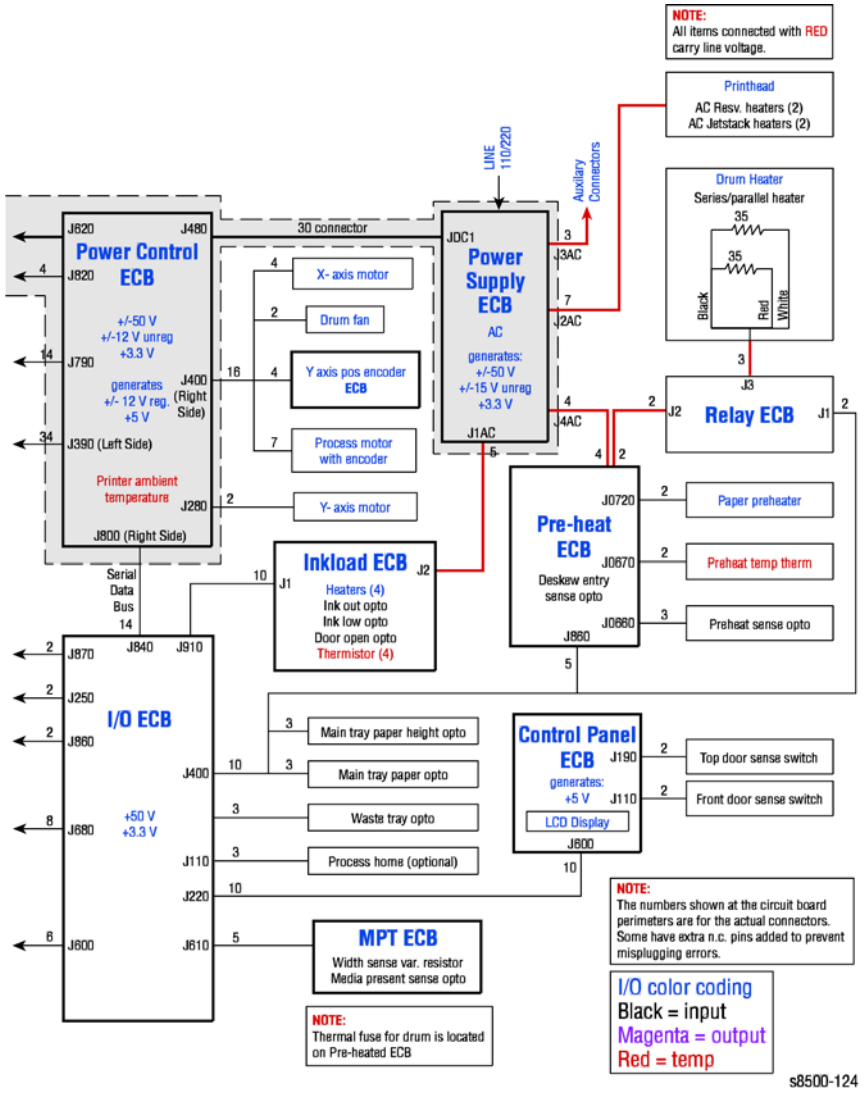


Figure 5 8860 System Block Diagram (2/2)

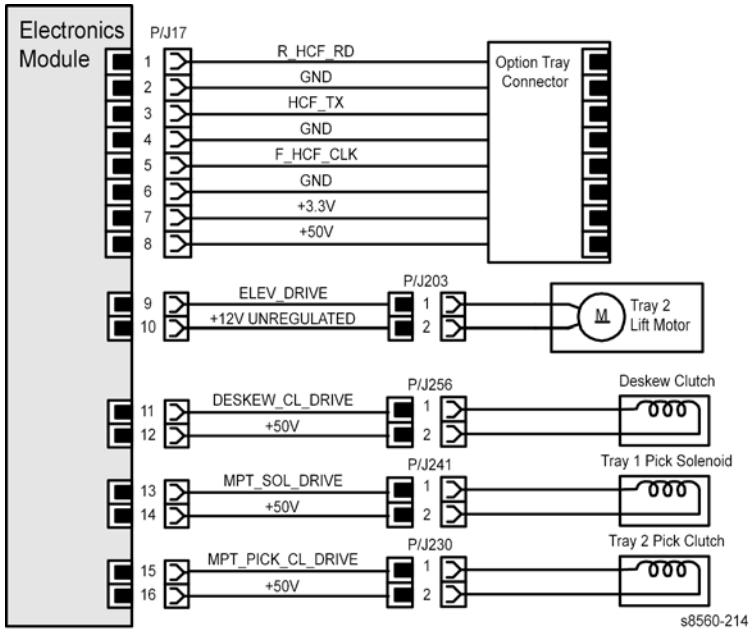


Figure 6 Left Side Harness (1/2)

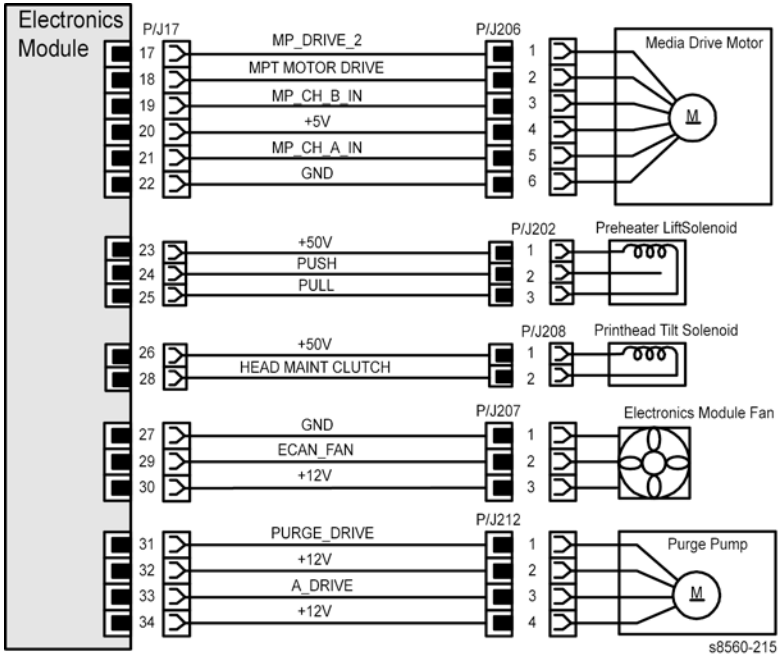


Figure 7 Left Side Harness (2/2)

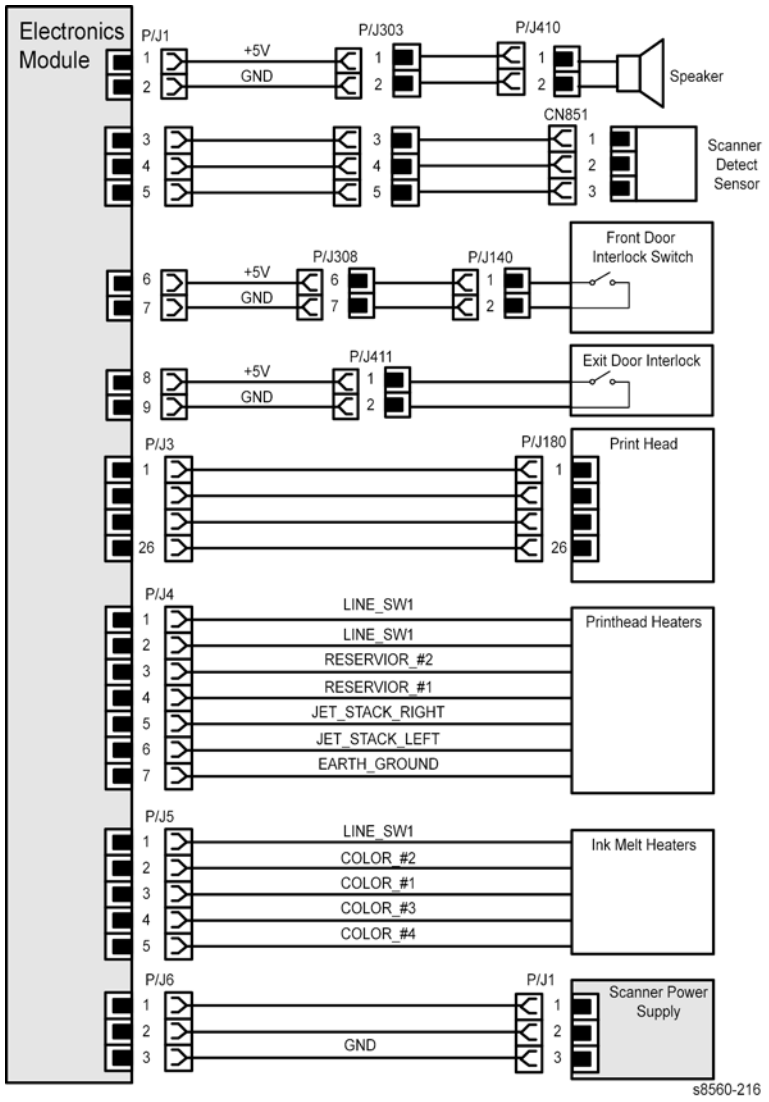


Figure 8 Electronics Module

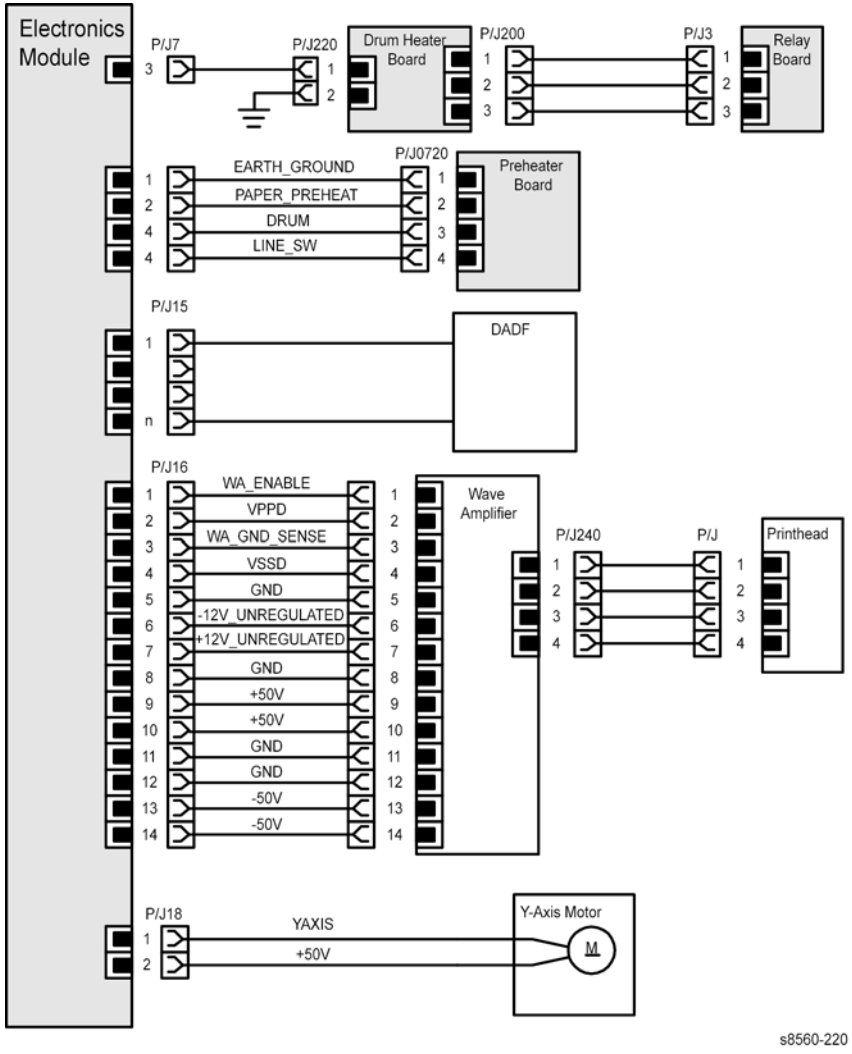


Figure 9 Electronics Module Power

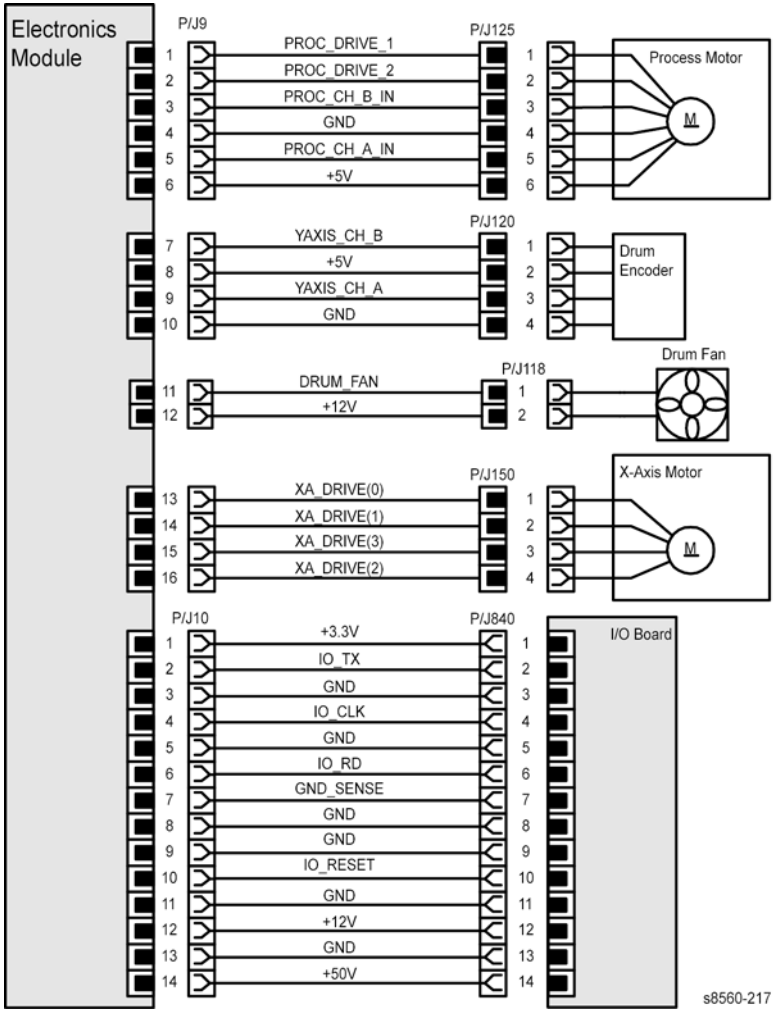


Figure 10 Right Side Harness / I/O Control

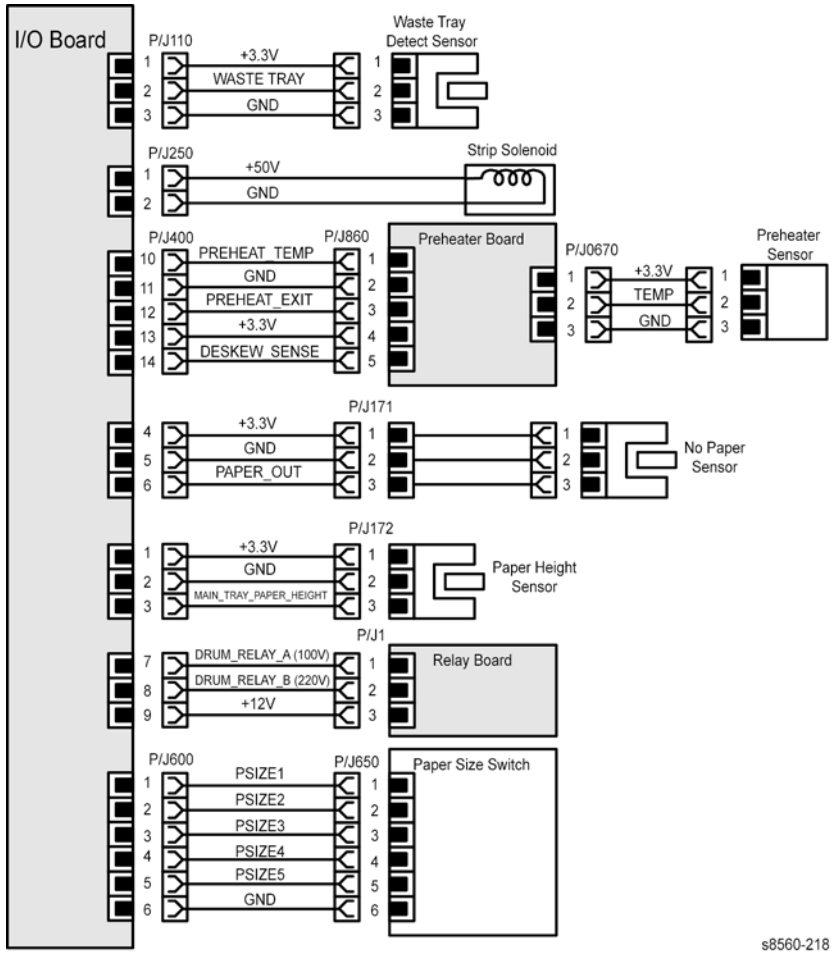


Figure 11 I/O Board (1/2)

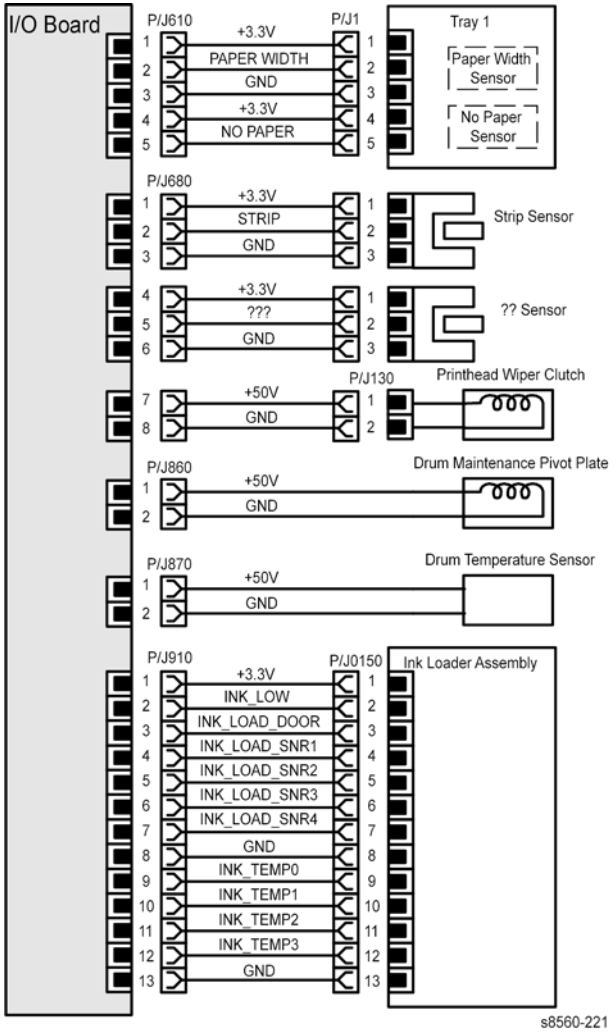


Figure 12 I/O Board (2/2)

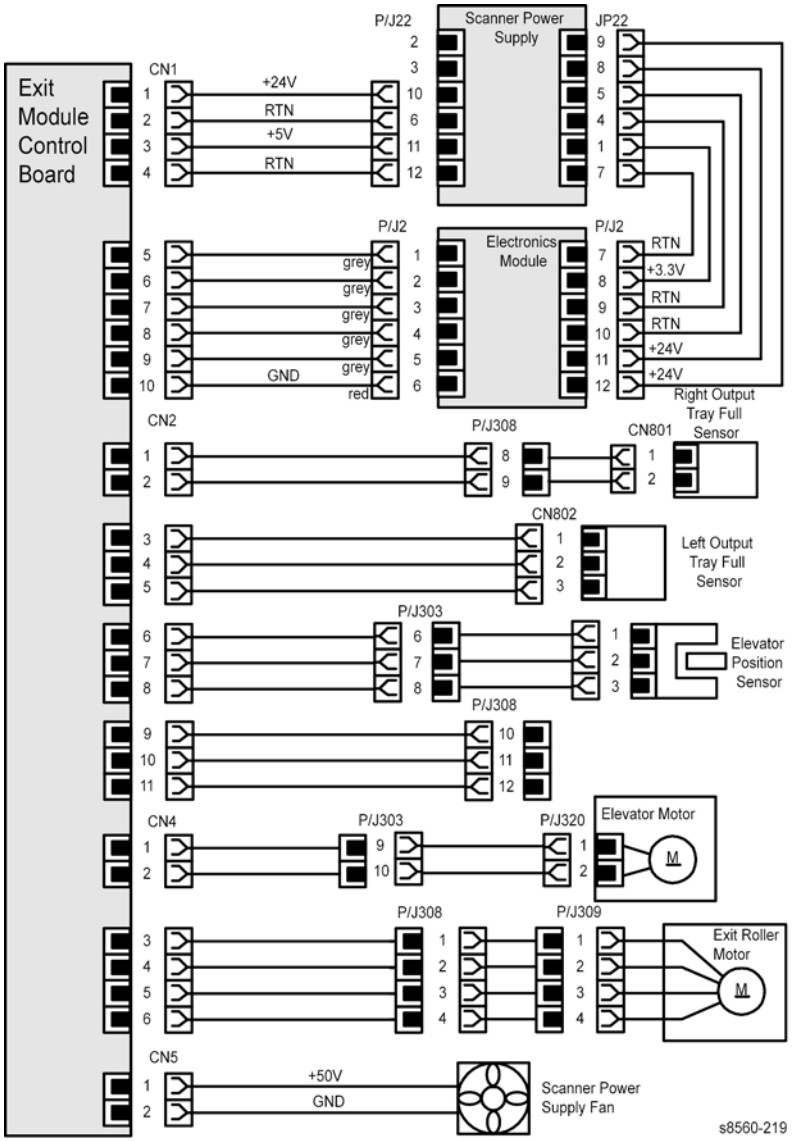


Figure 13 8860MFP Exit Module Control Board

8 Theory of Operation

System Overview

The Phaser 8860 in either the printer (8860) or multifunction (8860MFP) version uses a Printhead and new ink formulation to produce color or black and white output. With the exception of the DADF, Scanner, Exit Module, Ink Loader, covers, and some electronics, the two models are essentialy the same. For this overview, the 8860MFP is divided into two main components: Image Input Terminal (IIT - Document Feeder/Scanner) and Image Output Terminal (IOT - Print Engine). IOT descriptions also apply to the 8860.

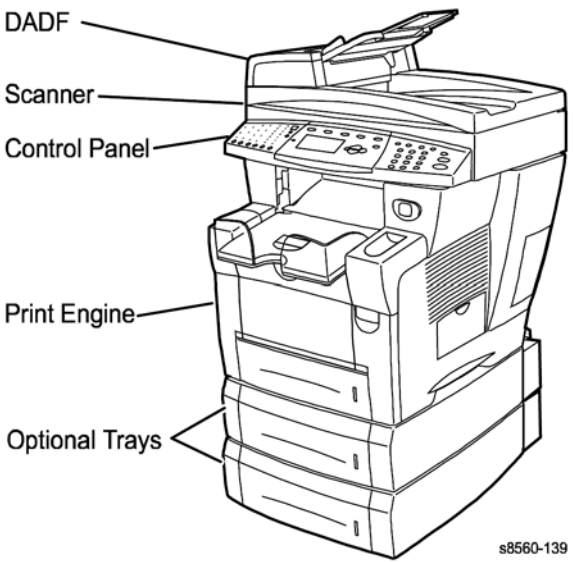


Figure 1 Phaser 8860MFP Model

This section describes these major assemblies and subassemblies:

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

Image Input Terminal

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

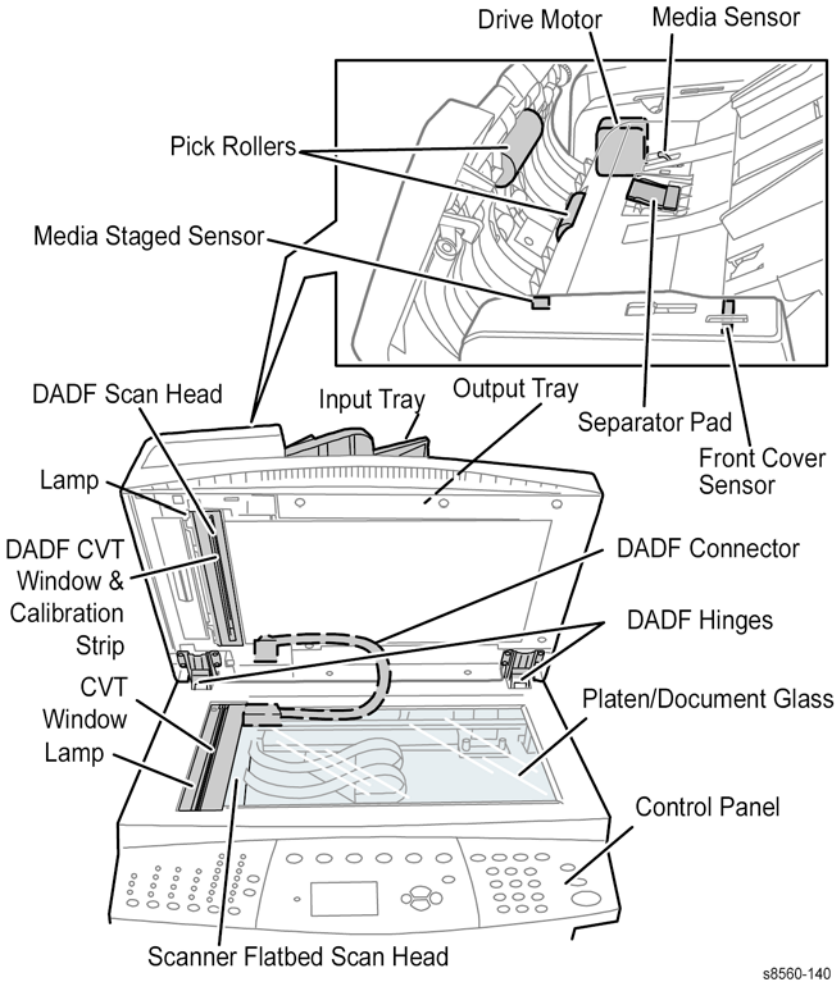


Figure 1 Major Components of the DADF and Scanner

Document Feeder Functions

The Duplex Automatic Document Feeder (DADF) is capable of automatically feeding original documents from the input tray and scanning either side document or both sides of a double-sided document.

DADF Components

Input Tray	The tray feeds document originals into the DADF for simplex (single-sided) or duplex (double-sided) scanning. Tray capacity is 50 originals.
Output Tray	Original documents fed through the DADF exit to the Output Tray.
Media In Sensor	The Media In Sensor detects the presence of documents in the input tray. After a delay to allow for adjusting the feed guides, the media is drawn to the 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 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.
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 Fluorescent Lamp (CCFL). 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 the rear of the flatbed portion of the IIT. The DADF communicates with the Scanner and the IOT. The image information is also passed to the Scanner and then sent to the IOT. There is no direct communication between the DADF and IOT.
DADF Hinges	Mechanical connection between the DADF and the Scanner consists of a set of hinges. These hinges allow for the DADF to lift from the platen glass to facilitate copying. The hinges are designed to lock when the IIT is opened for adding consumables or removing media jams. In order to unlock the hinges, the IIT must be closed.

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

Scanner Assembly Components

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 Fluorescent 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

Automatic Calibration

The automatic calibration performed by the system 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. 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.

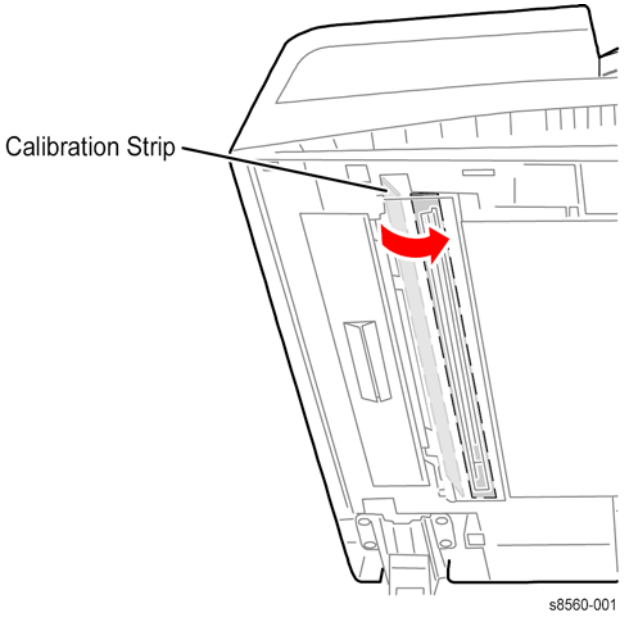


Figure 2 DADF Calibration Strip

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

Manual calibration is a maintenance procedure accessed through the Control Panel. Scanner calibration requires the calibration sheet provided with a replacement Scanner Assembly. It is designed to ensure the DADF and 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 ADJ 1.15.1.*

System Electronics

The Phaser 8860MFP has two controller boards: the main board, contained in the Electronics Module, and the Exit Module Control Board. For both models, the main board controls all image processing by way of an integrated daughter 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 Exit Module Control Board, exclusive to the 8860MFP, provides low level motor control for the Exit Module components. The 8860MFP also contains a Scanner Power Supply located next to the Exit Module Control Board on the Backframe (see Figure 1). This supplies power to the Scanner, DADF, and the Exit Module motors.

For more information, or block diagrams showing the interaction between the system electronics, see the Wiring section of the manual.

NOTE: *Although the Control Panel is part of the Scanner Assemby on the 886MFP, it receives power from the Electronics Module power supply.*

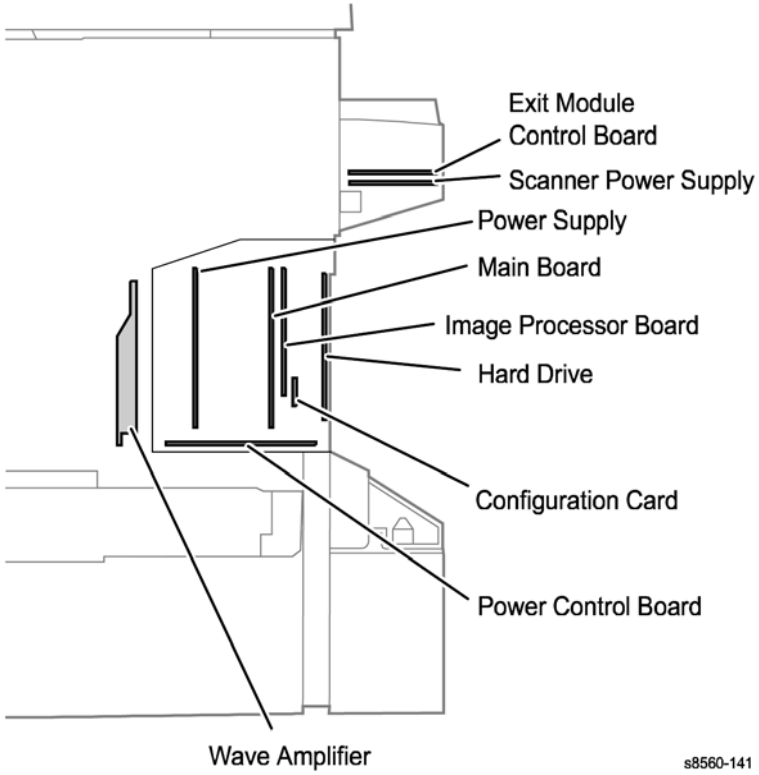


Figure 1 Electronics Locations

Exit Module Control Board

The 8860MFP Exit Module Control Board controls motor and paper path functions for the 8860MFP Exit Module. Once the print process is complete and the media is ready to exit the IOT, the primary controller relinquishes control to the Exit Module Control Board. The Exit Module Control Board is also the connection point for the Output Tray Full Sensor, Cover Interlock, Exit Module elevator carriage, and exit sensors and flags.

Scanner Power Supply

The 8860MFP Scanner Power Supply 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 Control 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, power control board, and the power supply. The Electronics Module is replaced as one assembly and is unique for each model.

The imaging process is a "three way" communication between the Electronics Module, Printhead, and Wave Amplifier. 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. This data controls the operation of the Wave Amplifier 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 produce the image on the drum.

Electronics Module Components

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 main board provides support for Ethernet and USB 2.0 external I/O interfaces.
Image Processor 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	NVRAM, located on the main board, stores Control Panel defaults, network settings, IOT calibration data, copy counts, usage profile data, and the system serial number, which is also referred to as the engine tracking number (ETN). When the Electronics Module is replaced, transfer the NVRAM to the replacement Electronics Module.
Memory	Two PC3200 compatible DDR SDRAM memory connectors are available supporting a minimum of 256 MB and maximum of 1 GB.

Electronics Module Components

Hard Drive 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.

Flash Drive The Flash Drive is a solid state equivalent of the Hard Drive, but with much smaller capacity (256 MB).

Configuration Card The Configuration Card is a thumbnail-sized device that plugs into the side of the Electronics Module. This device stores system information and interacts with NVRAM. When replacing the Electronics Module, transfer the Configuration Card to the replacement Electronics Module.

Power Control Board The power control board distributes drive voltages to operate the system's various motors, solenoids and clutches. The power control board also provides the interface that returns information from the system'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 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 system.

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 mainboard 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 system 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 Preheater thermal fuses are located on the Preheater. Additional thermal fuses are located on the Printhead and on the ink melting elements.

The DC power supply generates + 3.3 V, +/- 15 V, and +/- 50 V. These voltages are used directly or regulated to other voltage values as needed by various circuits in the system. 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 power saver mode. Fuse F1 provides protection for the switching power supply in the DC section.

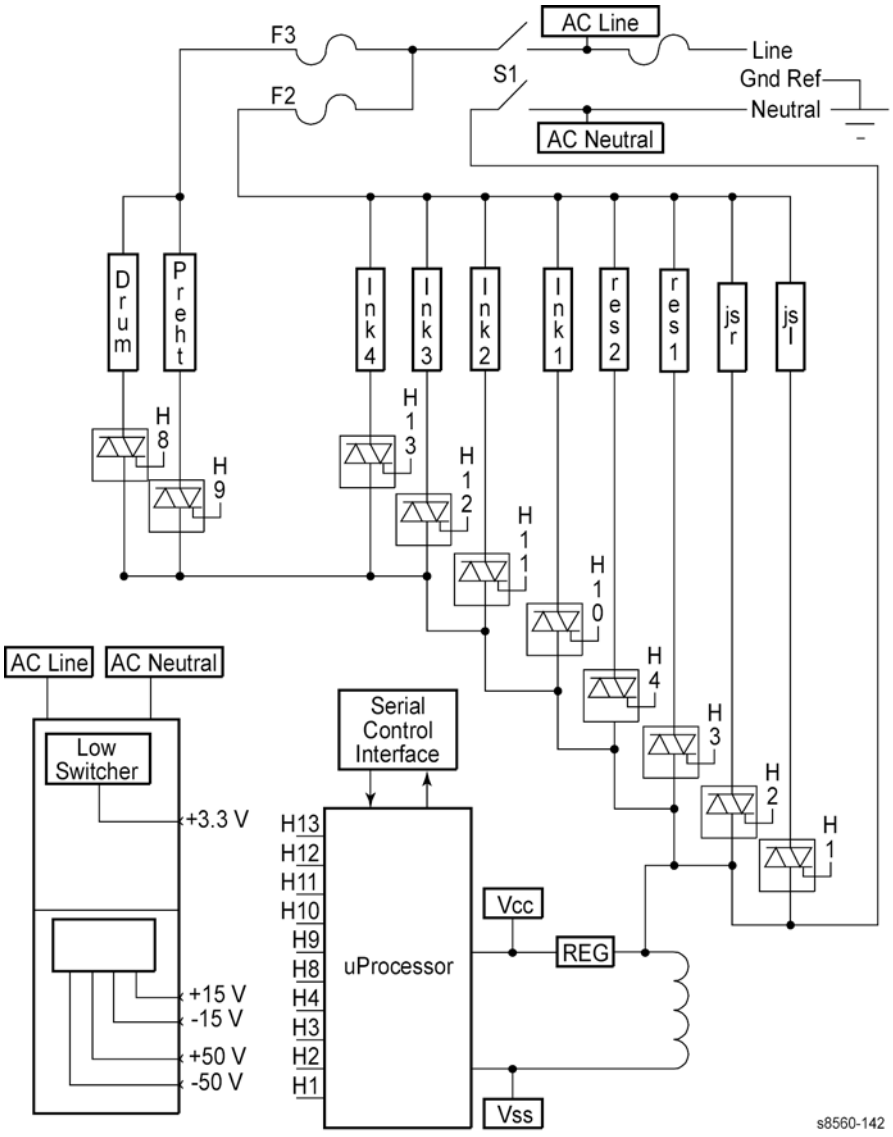


Figure 2 Power Supply Wiring Diagram

Image Output Terminal

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
- The Purge System

Except for the Exit, Electronic, and Ink Loader modules, the 8860 and 8860MFP use the same print engine. Subsystem descriptions apply to both models.

NOTE: *The Electronics Module is also a subsystem of the IOT but was discussed previously. For more information on the Electronics Module, see Electronics Module.*

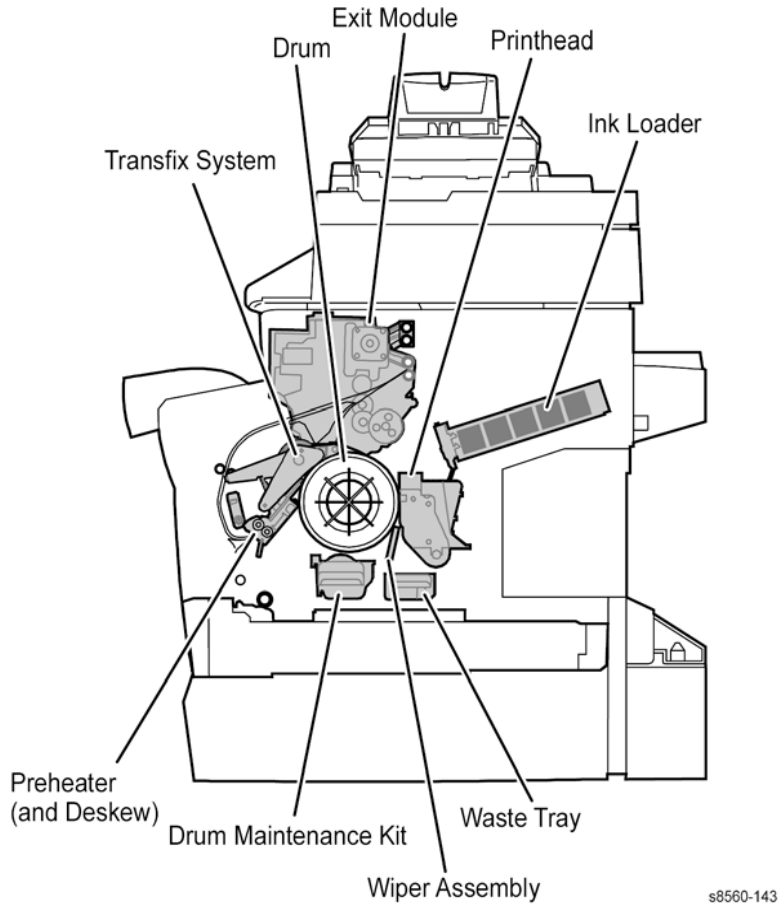


Figure 1 IOT Subassemblies

IOT Subassembly Functions

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.
Media Drive	The Media Drive assembly controls each roller in the media transport system. The Media Drive assembly includes a drive motor, gearbox, solenoid, and three clutches. The Media Drive motor also drives the Wiper assembly and the headlock mechanism through a gear train and solenoid on the Exit Module.

IOT Subassembly Functions

Ink Loader	Melts the ink as required by the Printhead. The melted ink drops into the ink reservoirs of the Printhead underneath the ink loader.
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.
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.
Preheat and Deskew	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.
Drum and Transfix System	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.
Exit Module	For the 8860MFP, the Exit Module receives control signals from the Exit Module Control Board, which contains its own firmware. The 8860MFP Exit Module incorporates an elevator mechanism that lifts and redirects the media forward. For the 8860, the Exit Module is controlled by the Electronics Module. Media is directly to the Output Tray on the Ink Loader.
Purge System	Uses an air hose and Purge Pump to pressurize the Printhead to purge debris or air bubbles that may be obstructing the Printhead jets.

Paper Path and Paper Pick

Paper Pick from Tray 1

For Tray 1, the pick process is different than the pick process used by the other trays. To pick a sheet of paper, the Tray 1 Pick 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

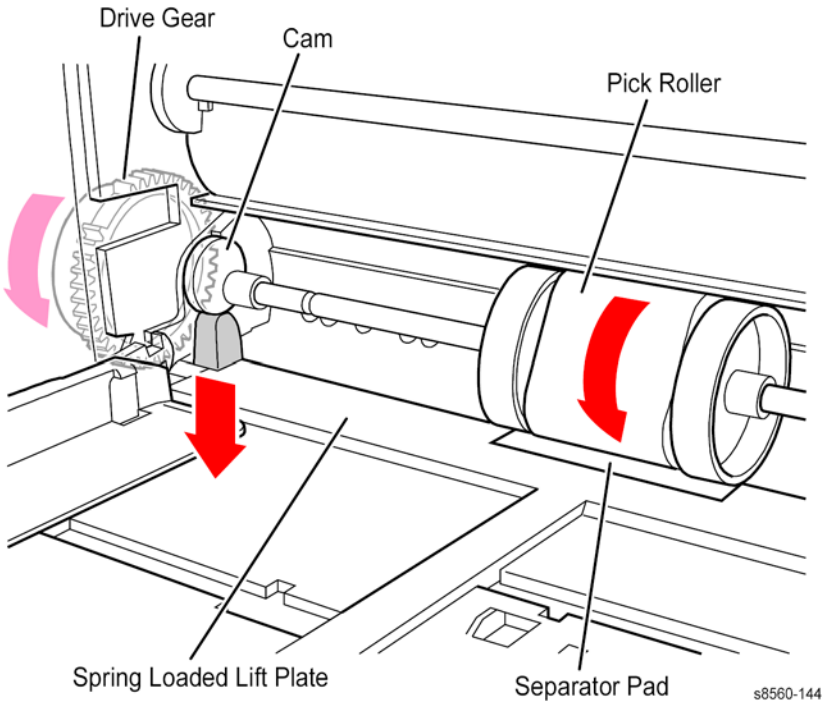


Figure 2 Tray 1 Pick Mechanism

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 system 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.

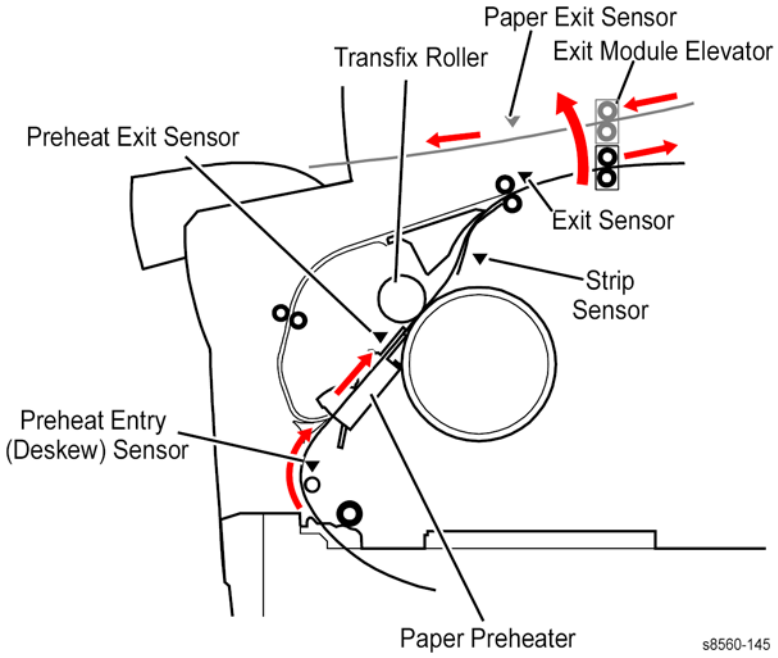


Figure 3 Paper Path Sensors

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.

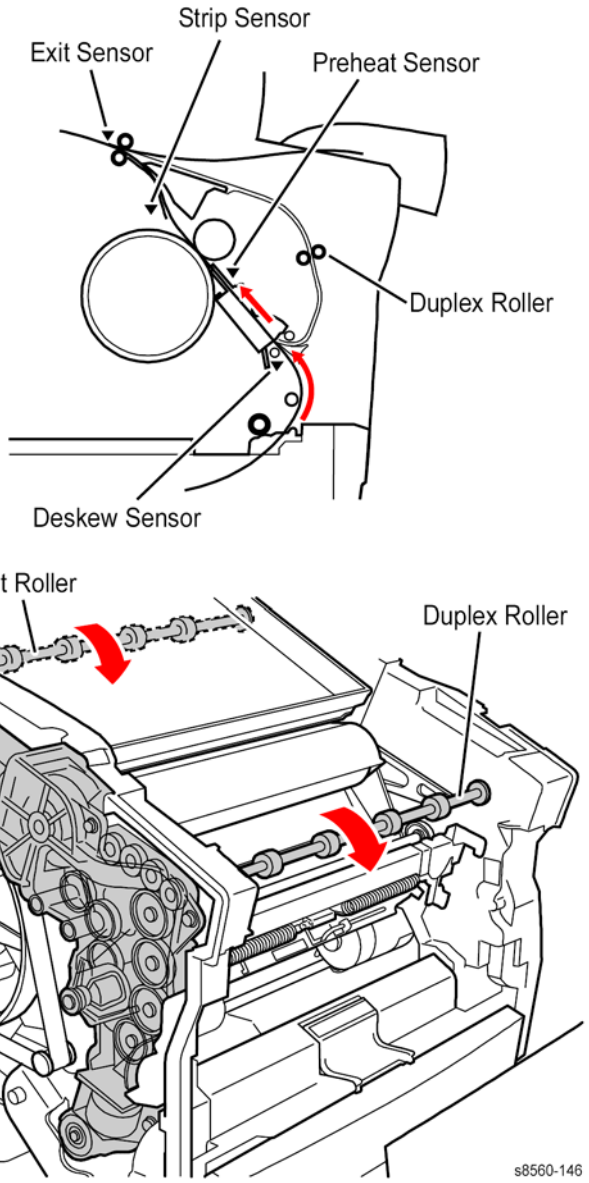


Figure 4 Duplex Drive Components

Sensors

The system contains sensors of various types that perform a variety of functions. One group of sensors track the progress of the paper along the paper path, and detects if a paper jam occurs. Other sensors detect the presence of the Ink Sticks, stop system activity if a door is open (interlock), detect the presence and size of media, and monitor system temperatures.

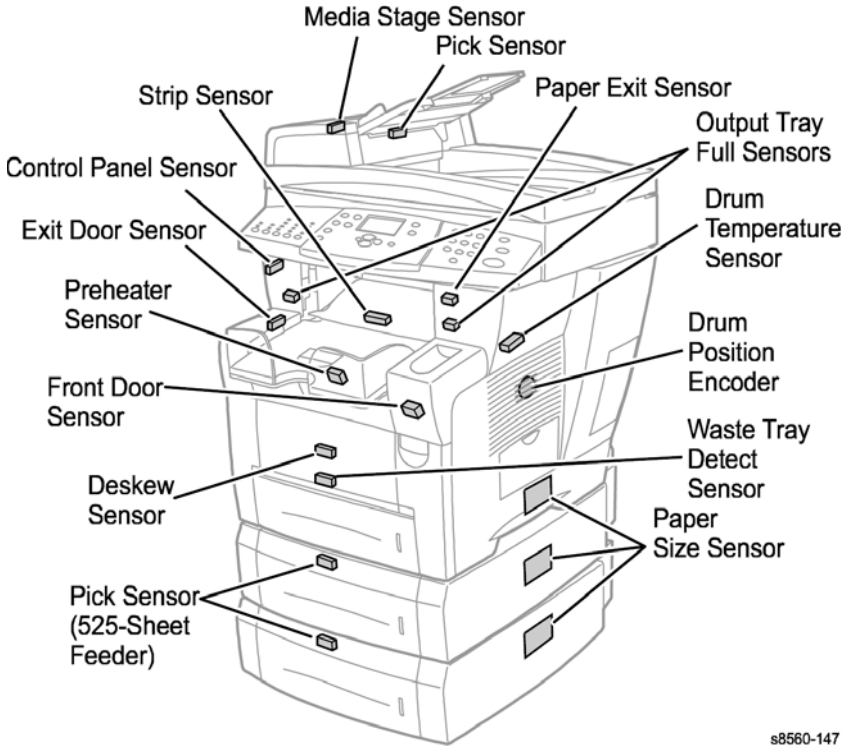


Figure 5 Sensor Locations

Sensor Types

The types of sensors used vary with function. In general, there are three types in use:

- Photo Sensors
- Microswitches
- Temperature Sensors

Two types of photo sensors are used, photo-reflective and photo-receptive. Photo-reflective sensors use light reflected back from an object to detect its presence. Photo-receptive sensors use an actuator or the object itself to block the light path to detect an object or condition. Photo-reflective sensors have the light emitter and light receiver aligned on a single surface. Output of the photo-receptor is High when light is being reflected back and Low when it isn't. Photo-receptive sensors consist of a LED in one arm of a U-shaped holder, and a photo-transistor in the other arm. When the sensing area is vacant, nothing is between the arms of the sensor, light falls on the photo-receptor sending the signal High. If the light is interrupted, the photo-transistor goes Low.

Microswitches are used primarily as paper size sensors and cover interlocks. They are in a normally open state, and close when actuated. A bank of microswitches is used to detect paper size in the universal trays. Microswitches also employ hooks or catches for retention in the bracket or frame.

Temperature Sensors (Thermistors) have a known value of resistance whose value varies with temperature. Used primarily in the Drum and Printhead for temperature sensing.

System Drive

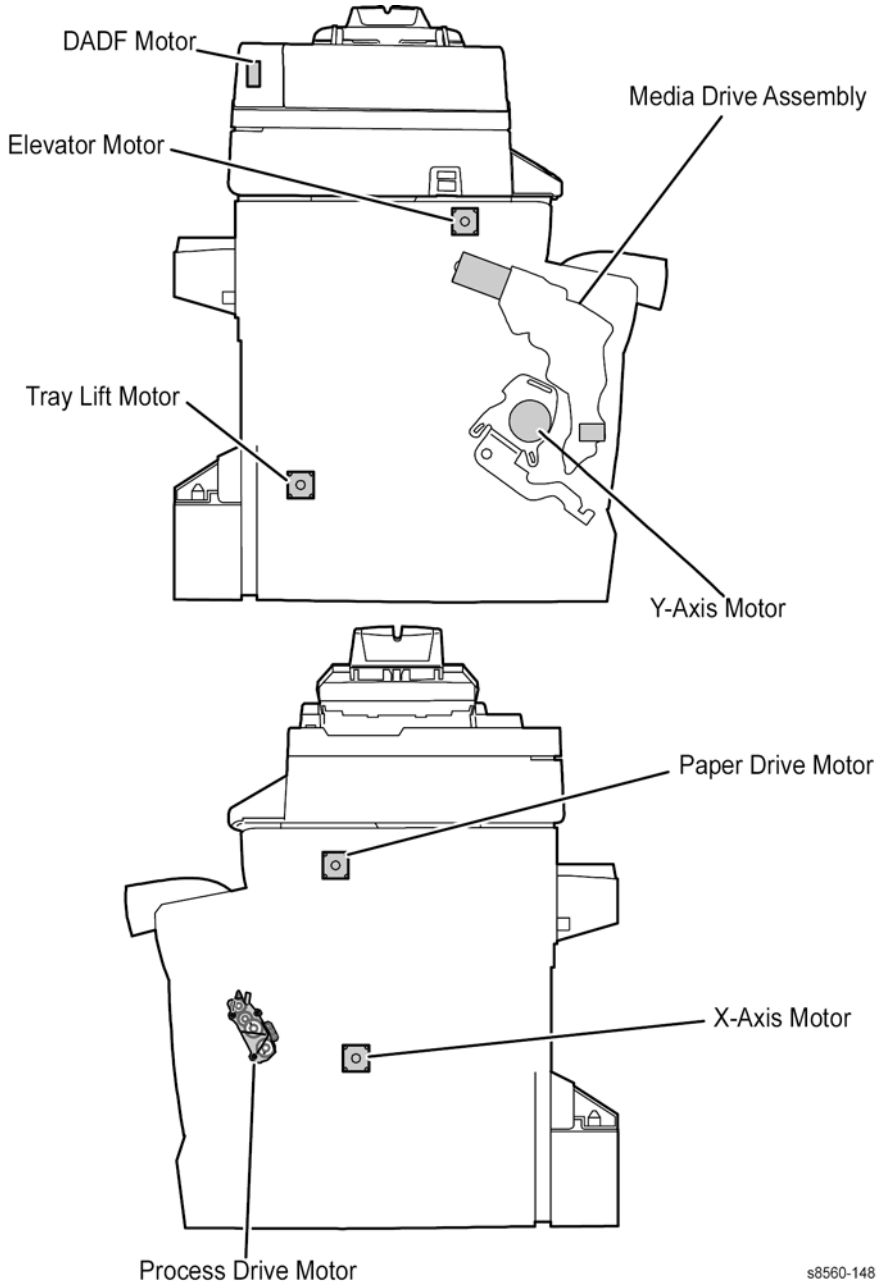


Figure 6 System Drive Component Locations

Process Drive

The Process Drive is an open loop system that transmits torque to two camshaft assemblies. One camshaft assembly, Transfix Camshaft, controls Transfix Roller loading. The second camshaft, Drum Maintenance Camshaft, controls the Drum Maintenance and Printhead tilt systems. A DC servo motor powers the Process Drive 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 gear 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 subsystems to self home during operation. If either the gearbox or cam gears is out of home during installation, the system does not function properly.

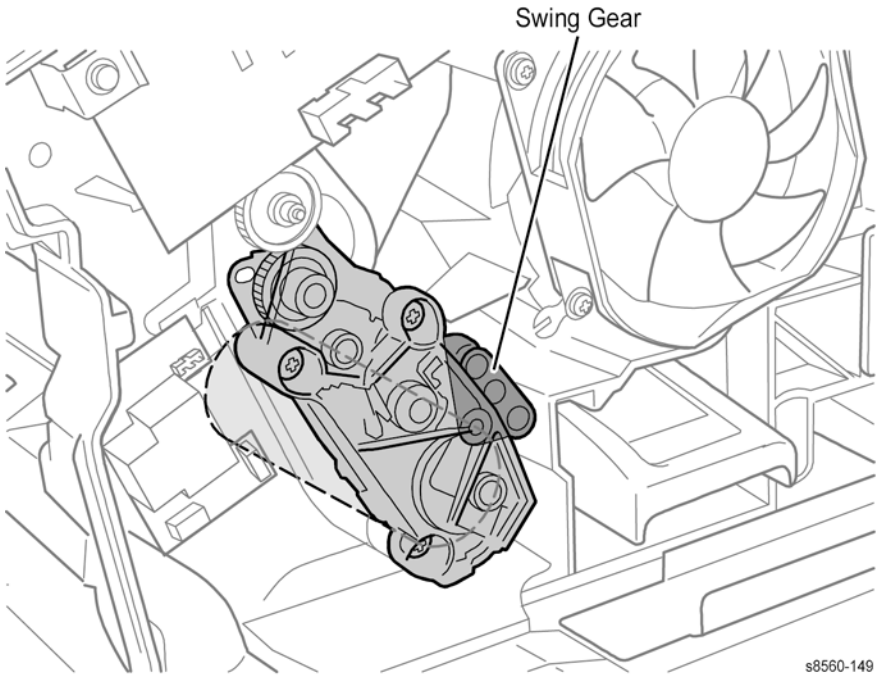


Figure 7 Process Drive Assembly

Media Drive Assembly

The Media Drive assembly controls each roller in the paper transport system. A gear train located behind the motor connects it to the exit rollers, which are built into the Exit Module. Gear trains located within the Media 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 and Take Away roller to rotate in the same direction regardless of the direction the motor is rotating.

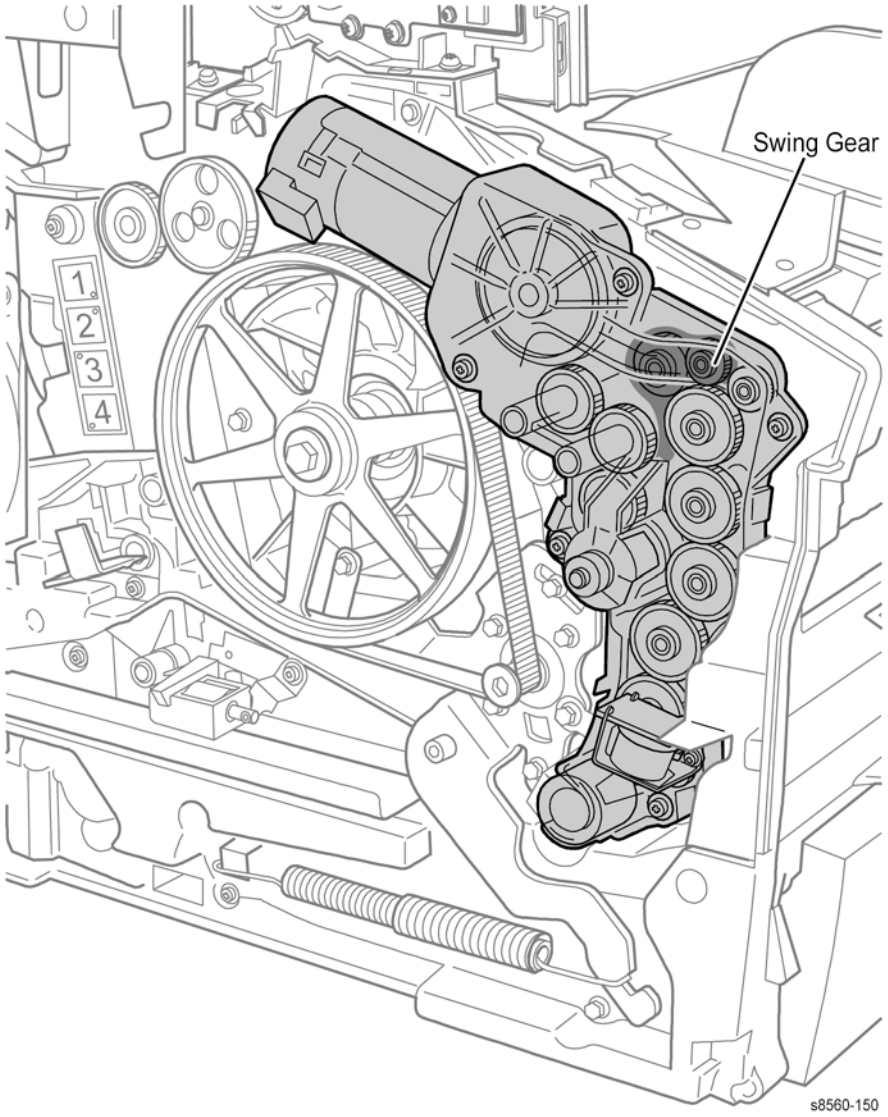


Figure 8 Media Drive Assembly

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:

- 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 Kit 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 Pivot Plate, forcing the oil roller and blade against the Drum. The Drum is rotated against the oil saturated roller.

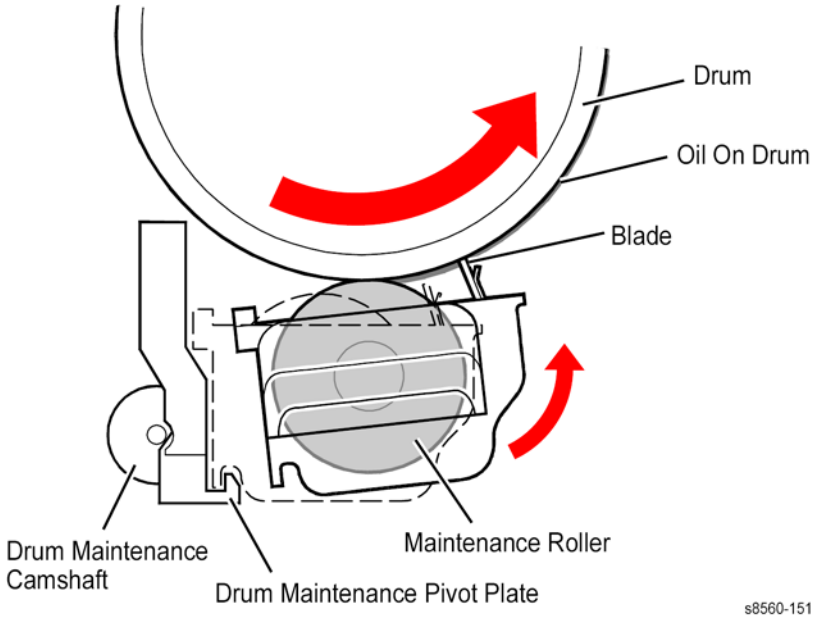


Figure 9 Drum Oiling

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 system 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 is used, the Printhead makes a second right-to-left movement to deposit the pixel columns of the substituted jets. See Jet Substitution Mode.

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.

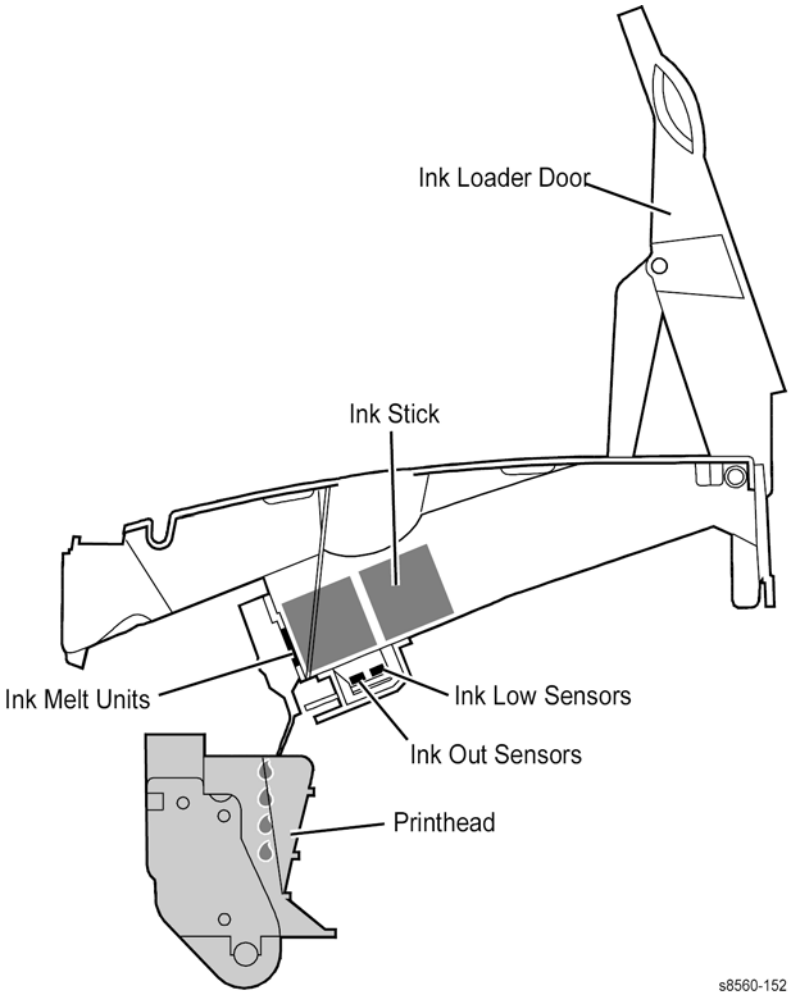


Figure 10 Ink Loading

Printhead

The Printhead is the heart of the system, 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.

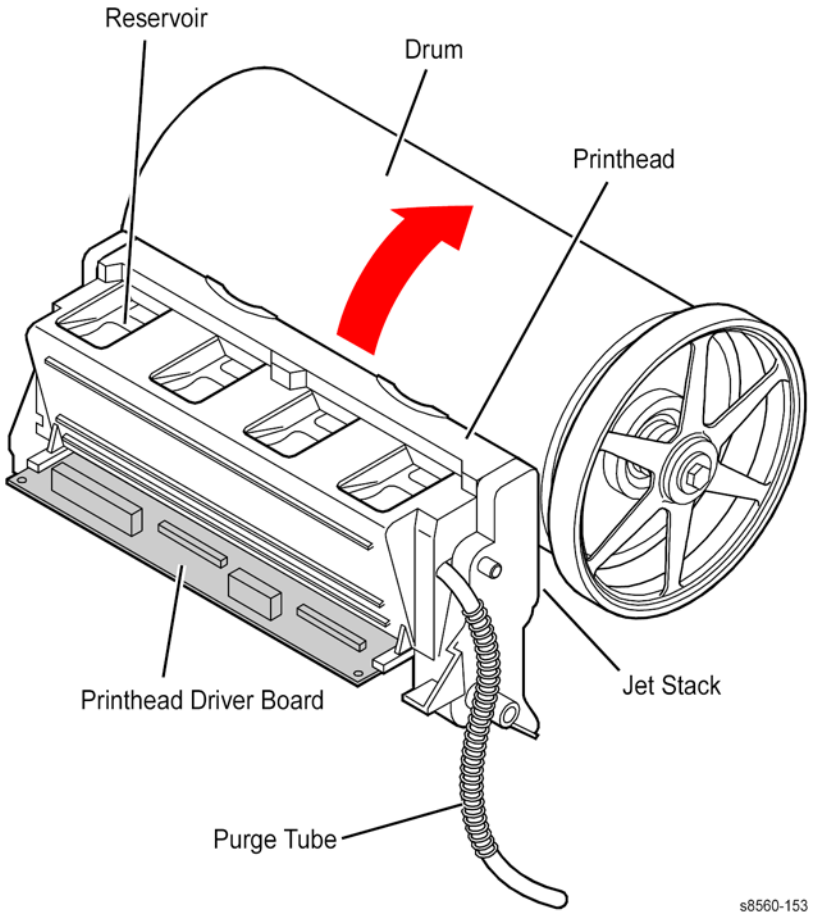


Figure 11 Printhead Components

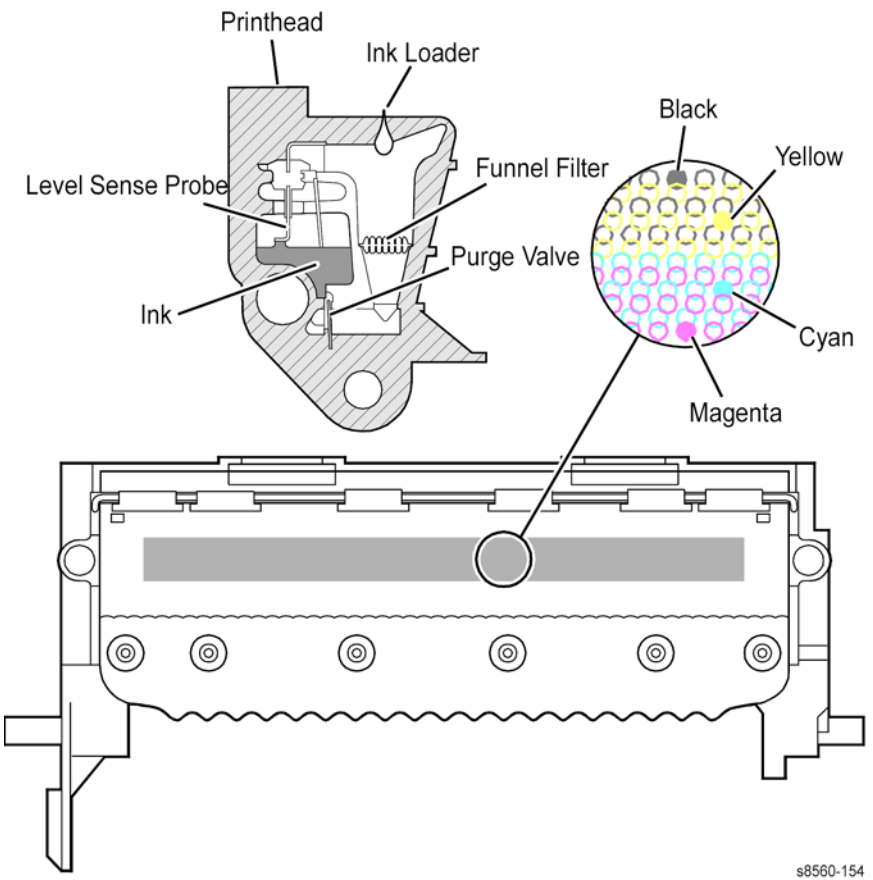


Figure 12 Printhead Detail

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 keep the ink in a liquid state.

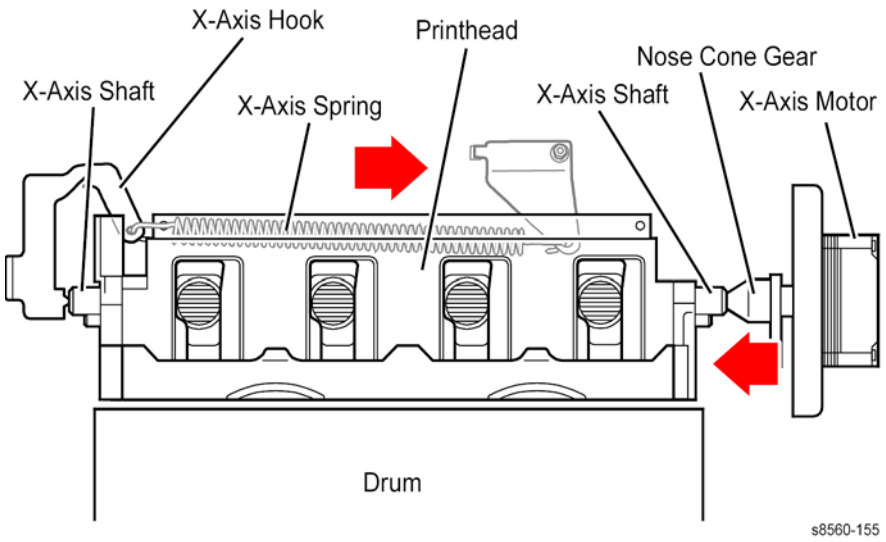


Figure 13 Printhead X-Axis Drive

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 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 head 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 (Head Tilt Gear) that allows the cam to be inactive in the print position. This frees the Process Drive to perform other system 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. 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 Printhead 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.

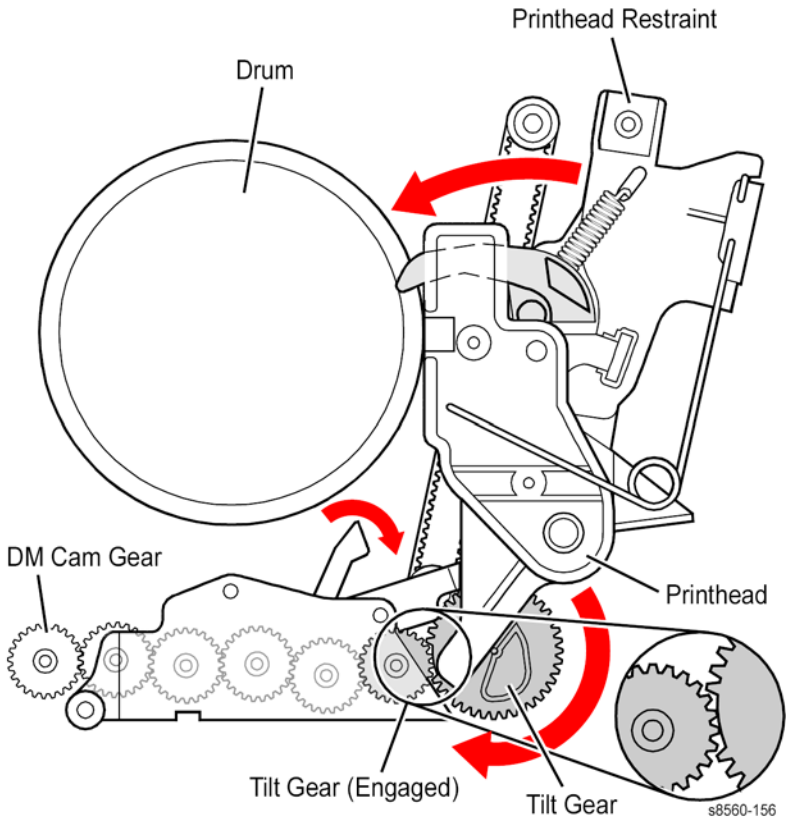


Figure 14 Printhead Tilt Drive

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 system operations.

The cam has a latching mechanism to unlatch and latch the Head Tilt Gear to engage the Printhead tilt drive train. The cam's latching mechanism also holds the 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 Head Tilt Solenoid is actuated and deactuated when the Head Tilt Gear rotates to the respective engaged and disengaged positions.

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

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

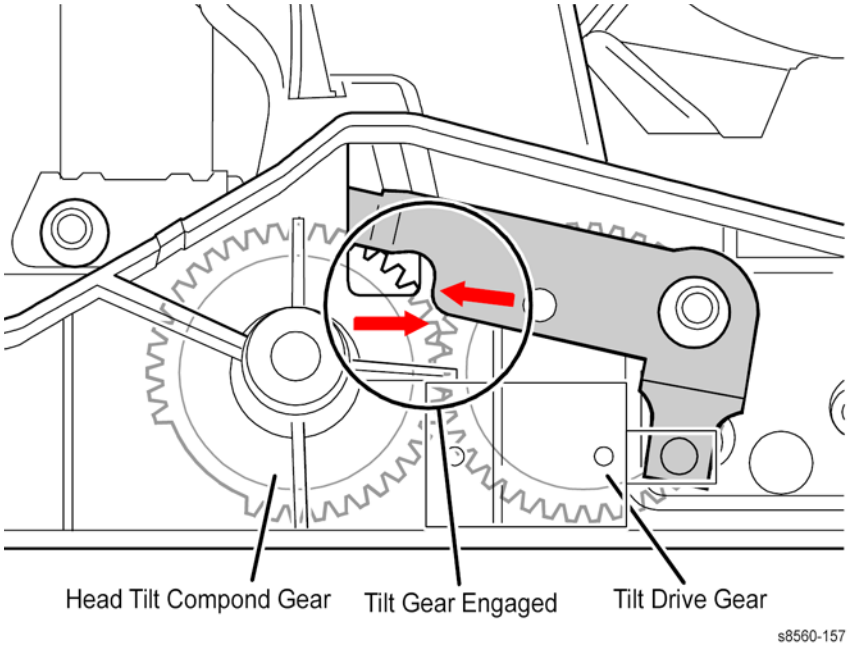


Figure 15 Printhead Tilt Detail

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 system 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 is formmed on the rotating drum. The Preheater heats the media to prepare it for image transfer. The heated media 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. An encoder disk and sensor on the left end of the Drum monitors the Drum's speed and position.

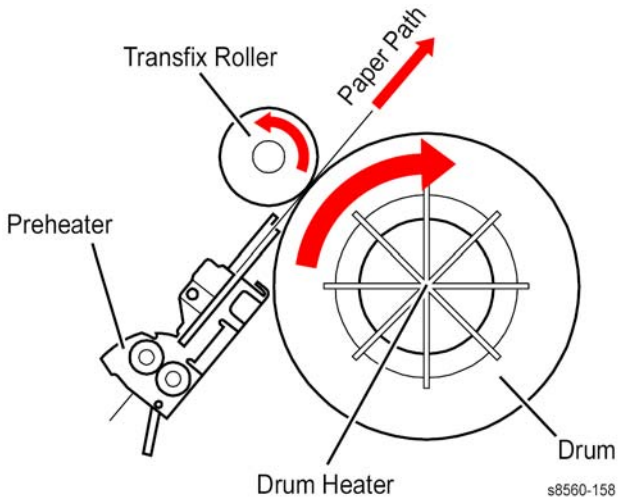


Figure 16 Drum Assembly

The drum heater heats the surface of the Drum 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 the Y-Axis Motor through a single reduction belt drive, the motor rotates the Drum at a high speed for imaging and a constant low speed for image transfer. The Y-Axis assembly uses an active tension system to allow the pulley to float while the spring adjusts the tension.

NOTE: *The Drum rotates CW for Transfix, CCW for Maintenance and Printing.*

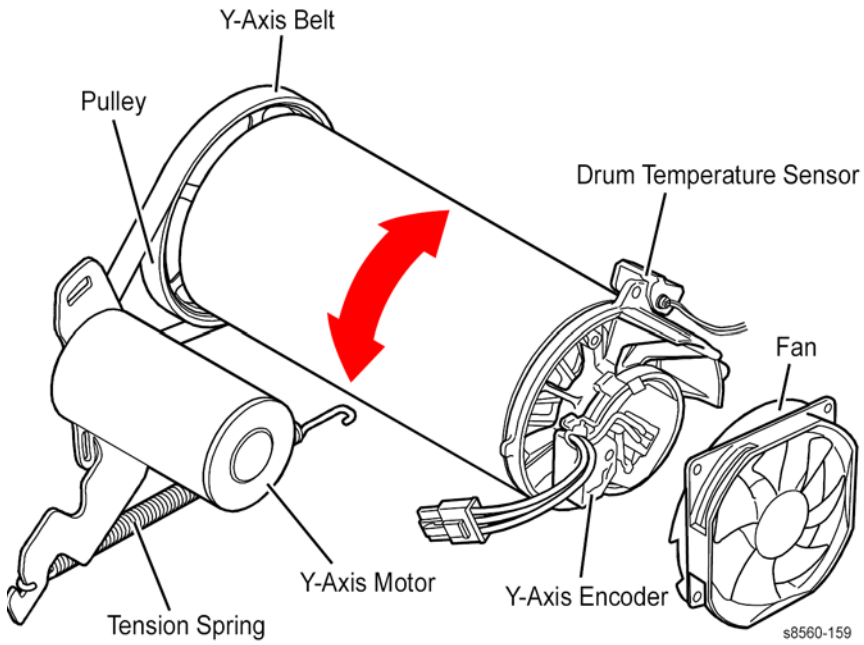


Figure 17 Drum Assembly Components

WARNING

Keep your fingers away from the Drum drive; it uses a closed-loop servo drive system. Since the motor speeds up if it senses the Drum slowing down, fingers caught in the belts and gears can be severely injured.

Transfix System

The Transfix Roller, Figure 18, applies pressure to the back side of the media as it moves between the Transfix Roller and Drum. This pressure transfers the image from the Drum to the media. A set of springs in the Transfix Load Module, acting through the Transfix Load Arms, evenly apply pressure across the Transfix Roller as it rests 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 media during the transfix process. The Drum continues to advance the media 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.

CAUTION

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

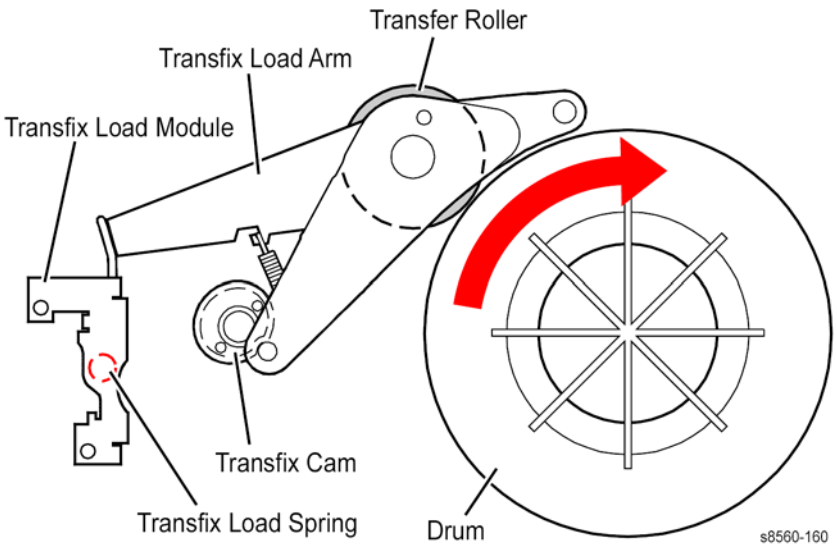


Figure 18 Transfix System

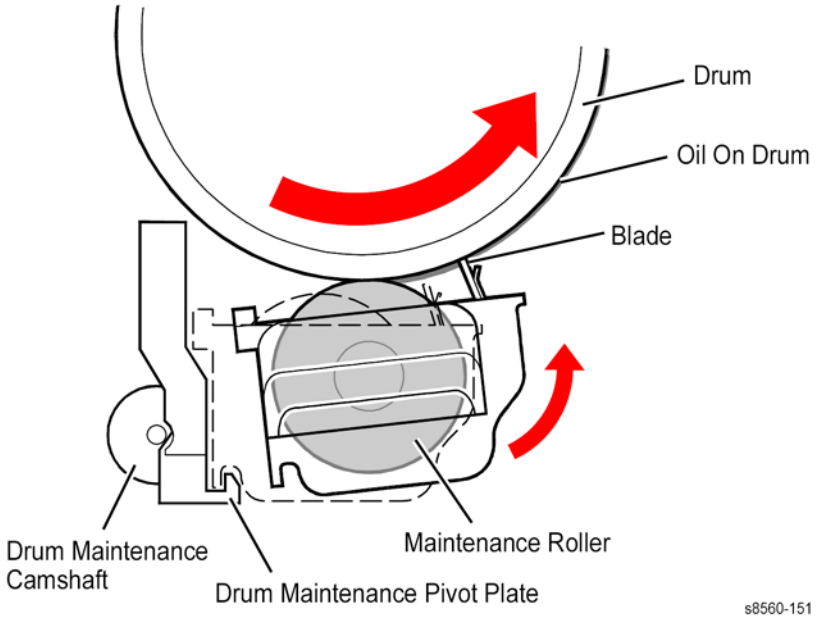


Figure 19 Drum Maintenance

Drum Maintenance System

The drum maintenance system creates a thin layer of silicone oil on the surface of the Drum prior to printing. The oil keeps the ink from sticking to the Drum's surface and facilitates image transfer to the media. The oil is contained in a porous foam roller in the Drum Maintenance Kit.

Prior to each print, the Process Drive rotaes the Drum Maintenance Camshaft to move the Drum Maintenance Pivot Plate forcing the oil roller and wiper blade against the Drum. The wiper blade produces a smooth and even oil film across the Drum's surface. The excess oil drains back into the Drum Maintenance Kit through a felt filter for reuse. As the Drum completes one rotation, the Process Drive rotates the cam lowering the oil roller and wiper blade away from the Drum.

The Drum has a floating deadband area. The deadband is a narrow section of the Drum's surface containing excess oil and other debris cleared by the drum maintenance wiper blade. An oil bar is left on the Drum surface in this deadband area as the blade is lowered from the drum. The deadband area's location is controlled to keep it outside of the Drum's image area.

An EEPROM, built-in to the Drum Maintenance Kit, stores the number of oiling cycles performed by the drum maintenance system to track consumable life. At startup, four oiling cycles are performed to condition the Drum.

Purge System

Proper Printhead operation is dependant on the purge system shown in Figure 20. The purge system uses air pressure to purge any debris or air bubbles that may be obstructing the Printhead jets. Waste ink expelled during a purge cycle is removed from the Printhead by the Wiper Blade and collected in the Waste Tray. Following the purge, a cleaning page is printed.

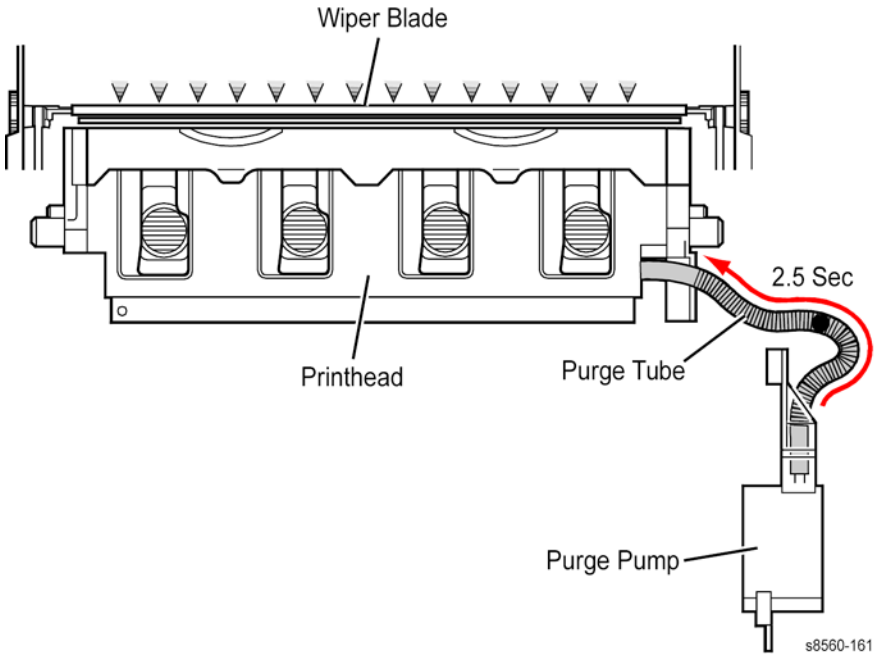


Figure 20 Purge System

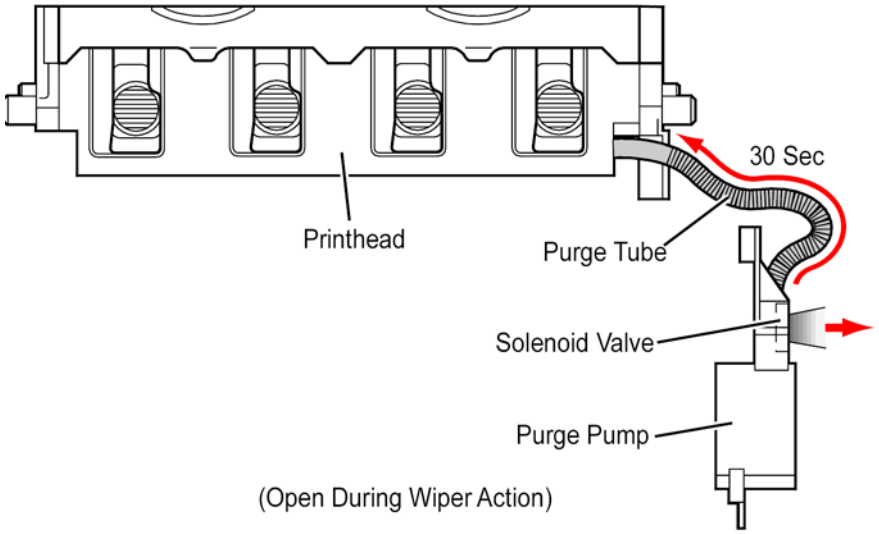
Printhead Maintenenace

To perform a Printhead maintenance cycle, the Printhead is first tilted away from the Drum to allow the Wiper Blade to pass by. The Wiper Blade is then raised in front of the Printhead. The media path drive governs wiper movement when it engages the Head Maintenance Clutch on the exit shaft of the system. 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 Blade 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 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 constant. If the purge tubing is pinched, the Printhead may not purge properly. In addition, because the purge tubing also acts as a vent to atmosphere when not purging, a more serious failure can occur if the ink overfills and the reservoir cannot vent properly.

WARNING

When servicing the system 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.



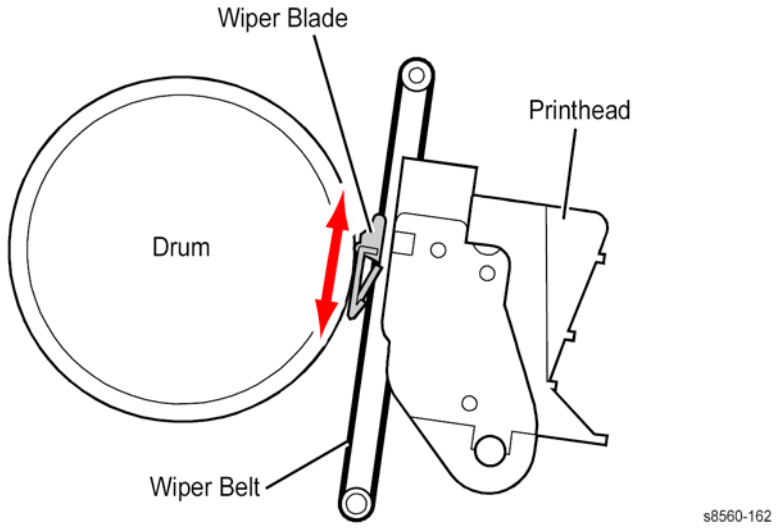


Figure 21 Printhead Wiper Blade

Transfix 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 Stripper Blade.
3. Strip the paper from the drum.
4. Exit the paper from the system, or exit the paper for 2-sided printing.

Tripping the Preheater Exit Sensor sets up a series of events that occur on a predetermined schedule. Media is transported through the Preheater to thermally prepare it for transfixing. The preheat sensor detects the media's presence and registers the leading edge with the image on the Drum. Based on the timing information from the Preheater Exit Sensor, the Transfix Roller lowers onto the leading edge 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 Stripper Solenoid is engaged. The stripper blade is actuated by energizing the Stripper Solenoid. The solenoid mounts on the Upper Inner Duplex Guide and activates the strip solenoid lever. The lever rotates the Stripper Carriage until it hits the transfix ground pins, causing the paper stripper blade to momentarily drop onto the deadband of the drum. This action catches the leading edge and guides the media to the rotating Exit Rollers.

After the Transfix Roller is engaged, the Drum rotates to advance the media and transfix the image. All gears move to rotate the Transfix Camshaft to bring the Transfix Roller into contact with the drum. The Transfix Roller nip applies the load necessary to transfer the image. Once the image is transferred, the Drum stops rotating and the Transfix Roller is lifted by the Process Drive.

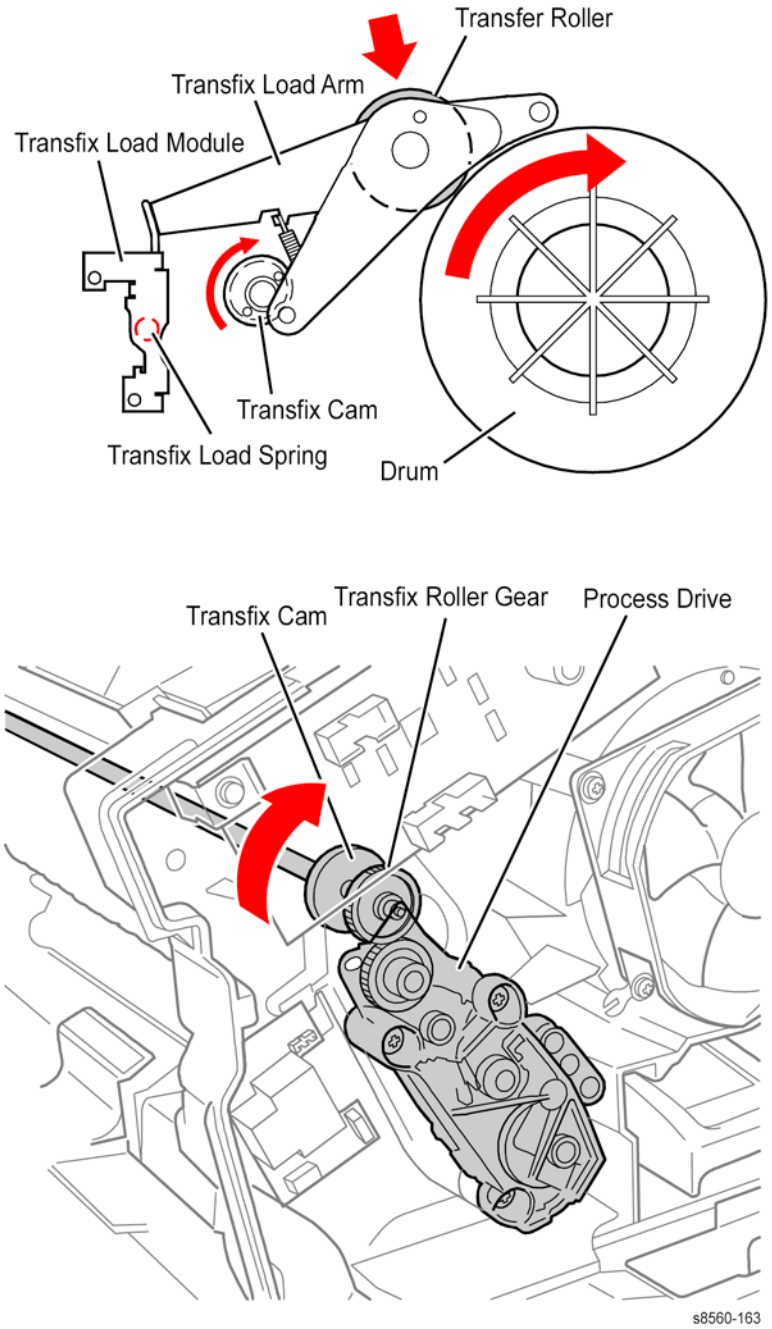


Figure 22 Transfix Components

After the leading edge of the media is beyond the stripper blade, the Stripper 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 Stripper Carriage back to its ready position.

The deskew rollers are not driven during transfixing. The Media Drive rotates the Exit Rollers in the correct direction to pull the paper out with the deskew clutch deenergized.

As the Process Drive lifts the Transfix Roller, the Exit Rollers transport the media 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. In the 8860MFP, the Elevator Motor raises the carriage assembly to the top position, where it then stops and the Elevator motor drives the Exit Module rollers until the media exits ending the print cycle.

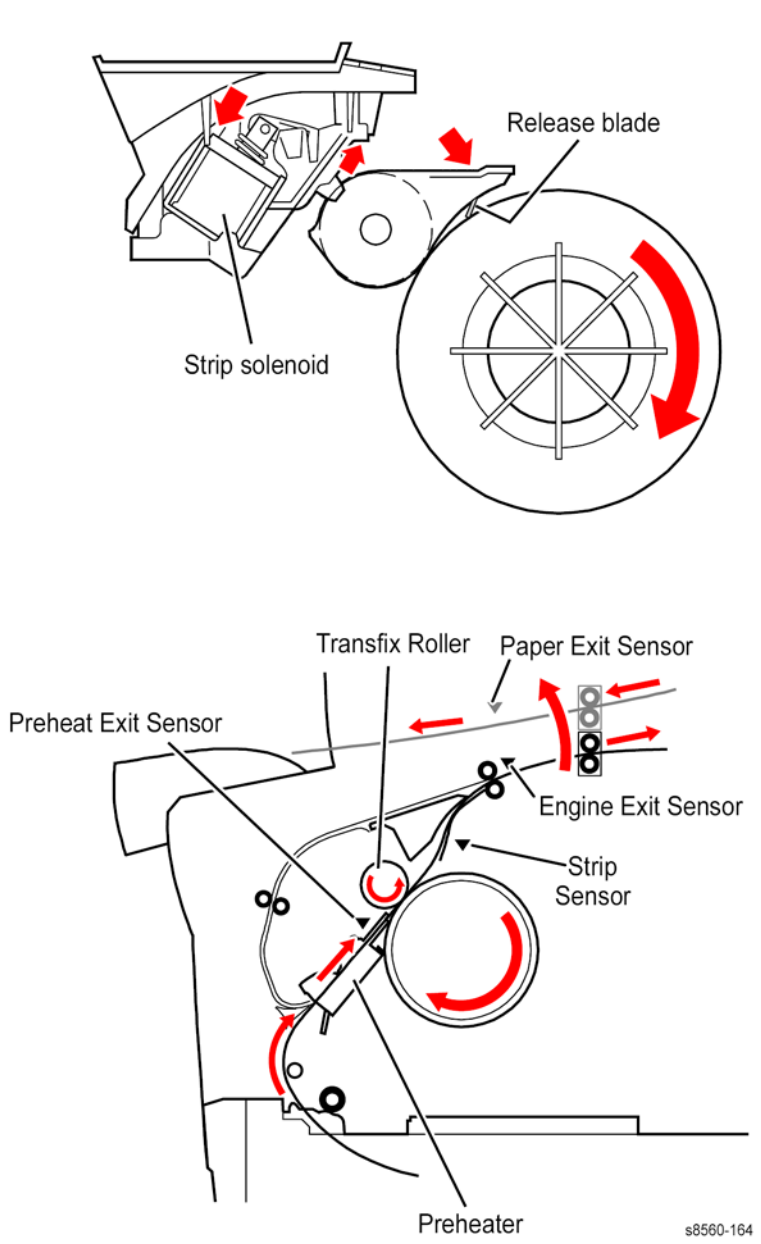


Figure 23 Exit Path

Transfix and Print Speeds

Table 1 Transfix and Print Speeds

Characteristic	Set Point, Paper Media (inches per second)			
	Fast Color	Standard	Enhanced	Hi-Res/Photo
Peak transfix speed (Simplex)	20 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
	Set Point, OHP Media			
Peak Transfix Speed		5 ips		

Table 2 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
High Res/Photo (525 x 2400)	7 ppm	7 spm
PCL 600 x 300 Mode / PCL 600 x 600 Mode	13 ppm / 6 ppm	

Configuration Card Parameters

Information stored on the configuration card includes the ethernet address, and personality parameters. The system model configuration is determined by a combination of system 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 system. When the configuration card is inserted into a new system, the personality parameters on the configuration card are written into the NVRAM chip of the new system. When a system is powered on, if it contains the configuration card of another system, the personality parameters are automatically copied to the NVRAM chip. If the configuration card is removed, the system reboots as a non-networking, non-duplexing model.

Table 3 Parameters Stored in the Configuration Card

NCL Subject	NCL Item	Size (bytes)
N/A “version” not NCL parameter	version (of the layout of personality parameters)	4
NEST	Base Printer Name	48
NEST	SysAdmin Contact	128 (truncated from 256)
NEST	Printer Location	128 (truncated from 256)
NEST	Asset Identifier	128 (truncated from 256)
IP	Host Name	64
IP	Domain Name	256
IP	Network Mask	4
IP	IP Address	4
IP	Default Gateway	4
IP	BOOTP/DHCP	1
IP	DDNS	1
IP	SMTP Server	256
IP	IP Source	1
IP	TCP/IP	1
IP	AutoIP	1
IP	DHCP Vendor Class ID	48
DNS Resolver	Primary Name Server IP Address	4
DNS Resolver	Secondary Name Server IP Address	4
DNS Resolver	Multicast DNS	1
NBNS (WINS)	Enable	1
NBNS (WINS)	WINS Note Type	1
NBNS (WINS)	Primary WINS Server	4
NBNS (WINS)	Seconday 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

Table 3 Parameters Stored in the Configuration Card

NCL Subject	NCL Item	Size (bytes)
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 Username	11
IPP	IPP Password	11
FTP	Login Password	33
Security	Print Hosts	256
AppSocket	On	1
AppSocket	Enabled	1
LPR	On	1
LPR	Enabled	1
FTP	On	1
FTP	Enabled	1
IPP	On	1
IPP	Enabled	1
MIME	On	1
MIME	Enabled	1
EtherTalk	On	1
EtherTalk	Enabled	1
PSERVER	On	1
PSERVER	Enabled	1
PSERVER_IPX	Enabled	1

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