PHASER® 1235
NETWORK COLOR PRINTER

Service Quick Reference Guide

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

This printing: December 2000
071-0728-00

Tektronix
COLOR PRINTERS BY
XEROX

TE / sn

Users safety summary

Terms in manual:

CAUTION	Conditions that can result in damage to the product.
WARNING	Conditions that can result in personal injury or loss of life.

Power source: For 110 VAC printers, Do not apply more than 140 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. For 220 VAC printers, do not apply more than 260 volts RMS between the supply conductors or between either supply conductor and ground. Use only the specified power cord and connector. Refer to a qualified service technician for changes to the cord or connector.

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

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

Terms on product:

CAUTION	A personal injury hazard exists that may not be apparent. For example, a panel may cover the hazardous area. Also applies to a hazard to property including the product itself.
DANGER	A personal injury hazard exists in the area where you see the sign.

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

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

Symbols as marked on product:

DANGER high voltage:

Protective ground (earth) terminal:

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

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

Service safety summary

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

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

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

Disconnect power before removing the power supply shield, soldering, or replacing components.

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

Power source: This product is intended to operate from a power source that will not apply more than 120 or 250 volts rms (depending on printer model) between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Contents

Figures

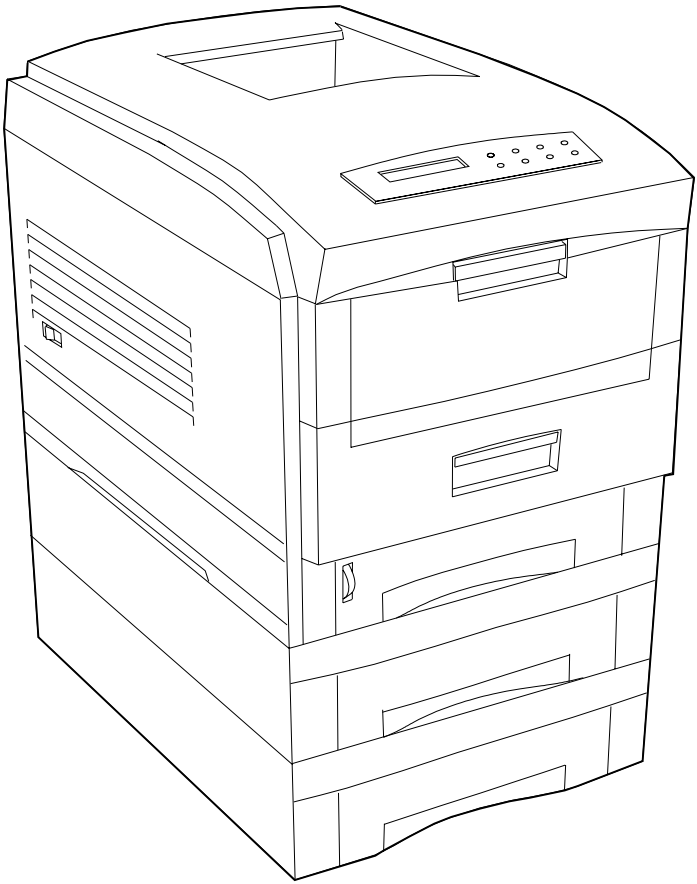
Tables

General Information

This service guide contains information useful for troubleshooting, repairing, adjusting, and maintaining the Xerox Phaser® 1235 Color Printer. This manual includes troubleshooting guides, adjustment procedures and a field replaceable units (FRU) list.

Topics such as printer theory of operation, configuration page details, and verifying printer operation are located on the companion *Color Printer Service & Support Resources CD-ROM*.

To ensure a complete understanding of the product, we recommend participation in Phaser 1235 printer service training.



The Phaser 1235 Color Printer with lower tray feeders

The Phaser 1235 Color Printer

The Phaser 1235 Color Printer combines a 4-color LED-based, tandem-design print engine with an EFI image processing controller board supporting Adobe's PostScript Level 3 page description language. The controller features a bi-directional parallel interface and an Ethernet port for host communication. The Ethernet port supports EtherTalk 10/100baseT, Novell and TCP/IP. An optional network adapter card allow the printer to communicate with Token Ring networks. All printer versions support the color PCL5C printer language.

The printer is available in three configurations:

- The **Phaser 1235N** comes standard with 64 Mbytes of RAM which can be supplemented with an additional 32-, 64- and 128-Mbyte RAM DIMM; maximum usable capacity is 512 Mbytes. The printer contains 136 standard, built-in fonts. The Phaser 1235N prints at a color resolutions of 600 x 600 dots-per-inch and 600 x 1200 dots-per-inch.

- The **Phaser 1235DT** is the same as the Phaser 1235N except it includes 128 Mbytes of memory, an auto-duplexer, an internal hard drive and a lower feeder tray assembly. With the hard drive the 1235DT supports a print collation mode, a "First Page Preview" mode and a secure printjob "password" mode.

- The **Phaser 1235DX** has all the features and capabilities of the Phaser 1235DT printers but includes 256 MBytes of RAM, two lower feeder tray assemblies and a printer station cart.

The printer supports the following resolutions:

- 600 x 600 dpi (Normal)

- 600 x 1200 dpi (High-quality)

The printer also accepts 300 x 300 dpi files from PCL legacy drivers, PCL bit map fonts, PCL bit map images, although these are imaged at 600 x 600 dpi. The resolution supported is a function of the PDL used and the feature being selected, such as Fax Friendly Black and Draft Mode. Both PostScript and PCL allow full selection of all paper sources, paper sizes, paper types and output destinations.

The auto-duplexer unit (optional on the Phaser 1235N) allows the printer to automatically create two-sided prints.

Print speeds depend on the chosen resolution and selected media. For resolutions of 600 x 600 (standard), in color, the printer prints at 12 pages-per-minute (ppm) on paper. Monochrome printing is at 20 ppm on paper. Transparency film printing is always 5 ppm. For 600 x 1200 dpi (enhanced) color printing, the printer prints color at the same speeds as standard mode.

The printers support printing on A-, A4- and Legal-sized paper and transparency film from an adjustable tray. Optional lower tray feeders, up to two can be installed, are available. The printer features a built-in multi-sheet bypass feeder from which specialty media, cardstock and envelopes can be fed. The printer also supports manual feeding using the multi-sheet bypass feeder.

If the printer is equipped with multiple trays loaded with the same-size paper, the printer will switch to an alternate tray as a paper source when a tray runs out of paper.

After being idle for the selected amount of time the printer switches into its Energy Star mode where it consumes less than 45 watts of power. It “awakens” upon receiving data at any of its ports.

Proof Jobs. A proof job is a specific case of a multiple-copy job. With a proof job, the customer assigns a password and copy account at the client workstation before printing. The first set of prints are printed immediately. The original number of requested sets are printed after the customer enters the matching password on the printer’s control panel. The customer has the option of printing the original number of requested sets or deleting the job. Since more than one job may be associated with the same password, the customer can print all the jobs, delete all the jobs or select or delete individual jobs. A proof job that has not been printed is retained on hard disk through power cycles. Proof jobs sent to a printer without the hard disk option are not printed and are discarded.

Secure Jobs. Secure printing allows the customer to defer printing of a job until a matching password is entered from the control panel. The customer assigns the password at the client workstation before printing. The job is stored, and printing is delayed until the password is entered on the printer’s control panel. Since more than one job can have the same password, all secure jobs with the same password are printed. A secure job that has not been printed or released is retained on disk through power cycles. The internal hard drive is required for this function.

TIFF Direct Printing. TIFF files consist of compressed binary images. The TIFF format itself has no capability to select printing options such as orientation, paper size, or duplexing. All TIFF files downloaded to the printer are processed using the default PostScript parameters stored in the printer. Auto sensing of TIFF files are included in the emulation sensing and switching logic when the TIFF option is enabled. TIFF direct printing requires the internal hard drive.

PDF Direct Printing. The printer supports a native PDF image processing. Processing PDF files directly requires a hard disk. PDF printing uses the printer’s currently defined imaging settings. Auto sensing of PDF files are included in the emulation sensing and switching logic when the PDF option is installed. PDF direct printing requires the internal hard drive.

Hex Mode. The printer features a hex mode in which all prints are printed as hexadecimal codes as well as the ASCII equivalent. Hex mode pages are numbered and formatted to clearly indicate the order in which data was received. Hex mode is invoked from the control panel’s Print Menu, and remains active until it is explicitly disabled at the control panel or the printer is reset. SNMP data may be processed in Hex mode, since it is not print data. EtherTalk or TokenTalk is not operational in Hex mode, since these protocols require the PostScript interpreter to be running. PostScript and PCL interpreters are not available in Hex mode. When Hex mode is active, all PDL job streams are printed in hex, rather than interpreted. This includes TIFF, PDF, and PJL.

Printer RAM and printer capabilities

The printer features three DIMM connectors which accept 64-, 128-, and 256-Mbytes RAM DIMMs. The printer can use off-the-shelf RAM meeting these specifications:

- 168-pin DIMM
- Synchronous DRAM
- 3.3 volt
- 9 nsec speed
- Valid on-board Serial Presence Detect ROM.

The Startup page and the Configuration Page list the amount of RAM installed in the printer.

Upon power-up, the image processor interrogates the 256 byte Serial Presence Detect ROM which describes the DIMM with details such as data width, clock delay, number of address columns and row, refresh rate and more. If the DIMM does not meets the required specifications it the printer reports and “Invalid Memory DIMM Configuration” message and stops the booting process.

If the power-up self-test diagnostics detect a DIMM with defective memory cells the printer declares “Diagnostics Failed - Press Enter to Continue.” After the enter key is pressed the boot process continues and the defective RAM DIMM is ignored. Note that a seriously defective RAM DIMMs (with grounded address lines, for example) can keep the system controller board from booting up at all.

With more memory the printer gains the capabilities of printing without having to use image compression (which trades less installed RAM for longer image processing time) and dual frame buffers for printing one image while processing a second image (which gives greater printing throughput).

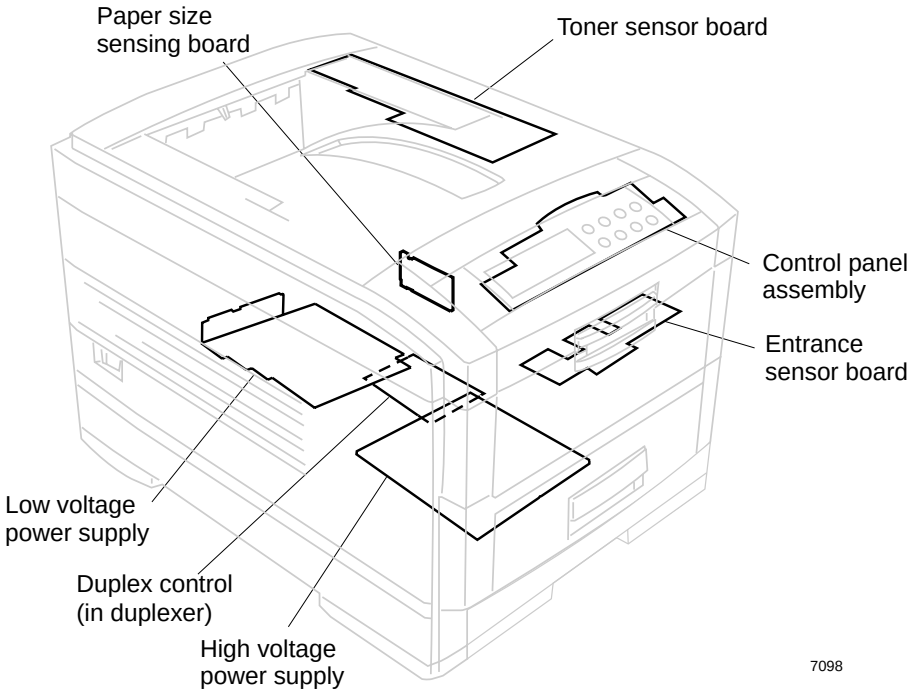
The printer features three slots each of which can contain a 64-, 128-, or 256-Mbytes SDRAM DIMM. Any slot may be used for any size DIMM. However, 256 Mbyte RAM DIMMs cannot be mixed with smaller RAM DIMMs. DRAM memory totalling beyond 512 Mbytes will be ignored. The image-processing controller board also contains 16 Kbytes of non-volatile memory (NVRAM), to store all for the necessary values that can be set on the printer.

CRU life counter behavior

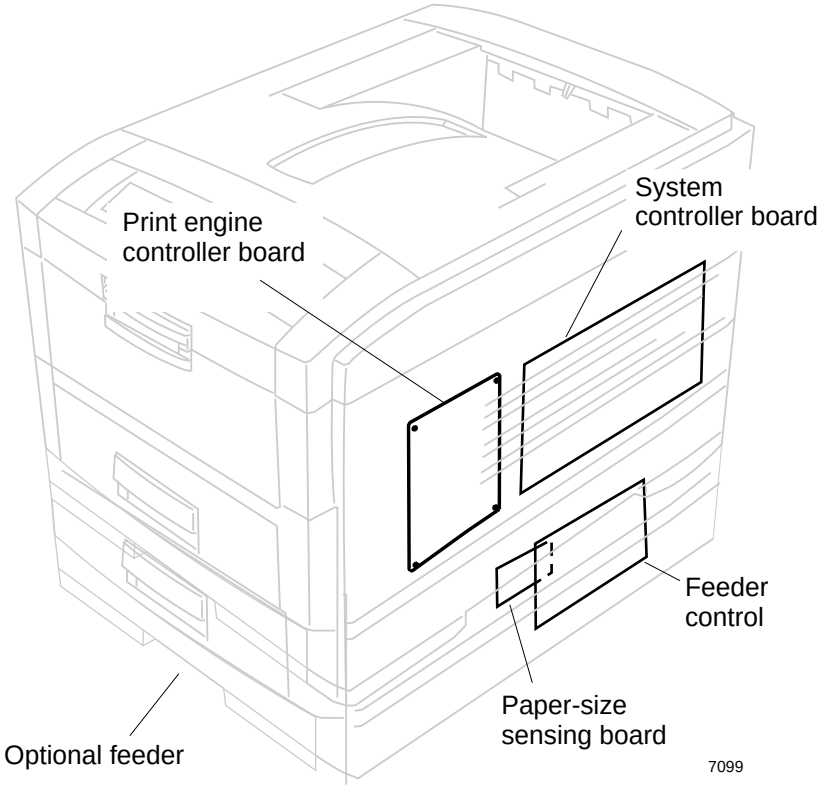
Internal counters track customer replaceable unit (CRU) life usage and store the values in NVRAM. The controller monitors these counters in order to display the near end of use and end of use messages.

The toner states displayed are OK, Low, and Empty, where the engine senses and automatically reports the Low and Empty states. When the empty state is reached for toner, the printer terminates printing at the end of current page and displays the appropriate message on the control panel. No further jobs are accepted from any input port.

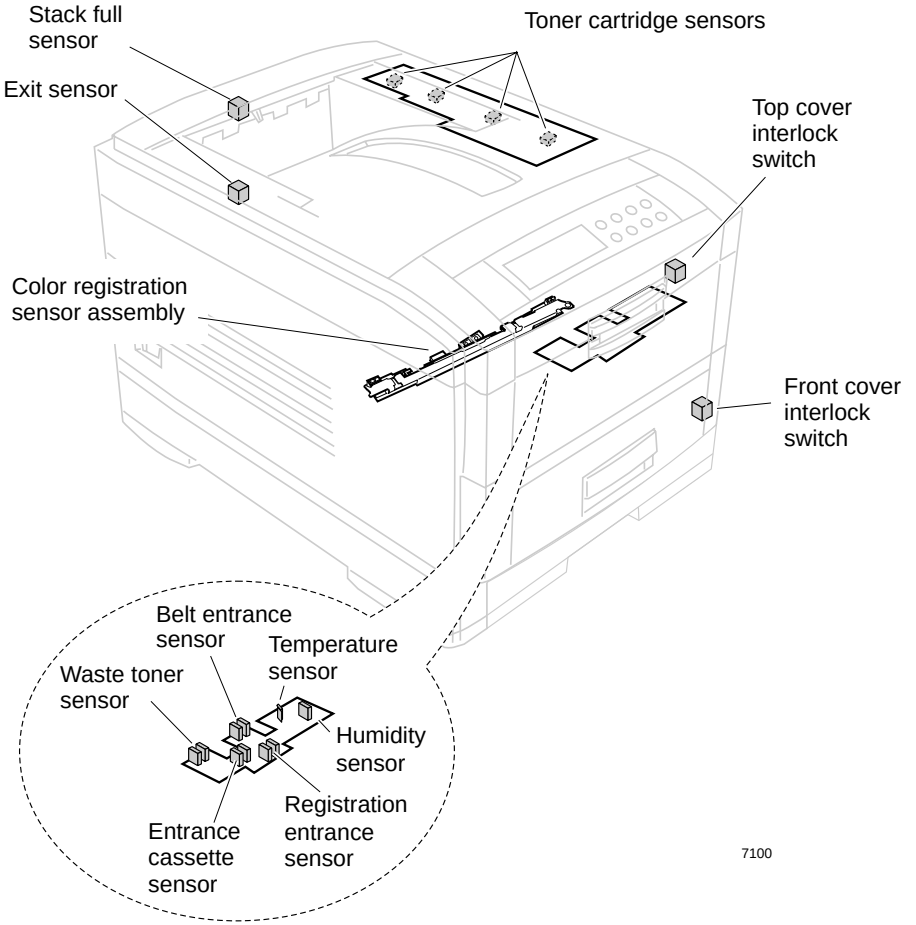
Print engine assemblies



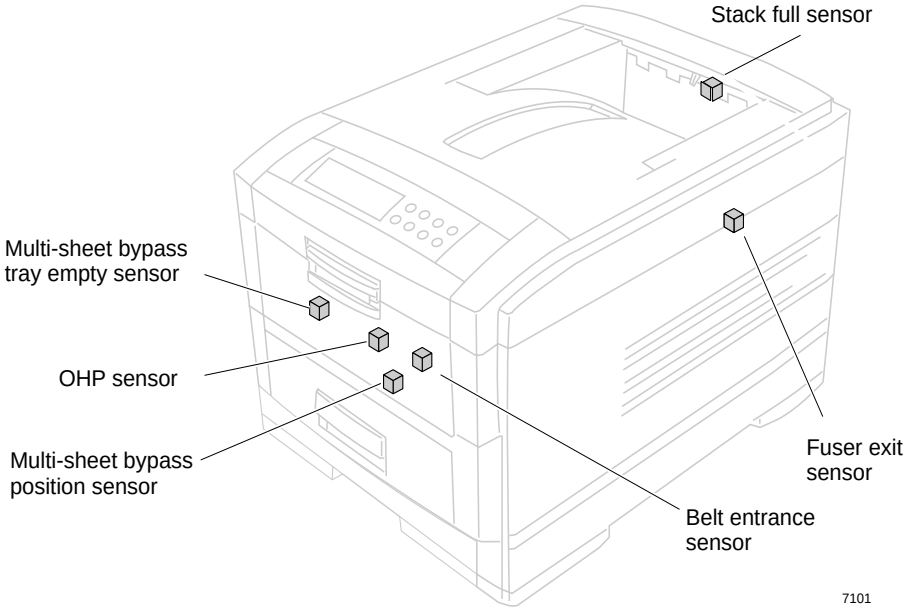
Print engine circuit boards



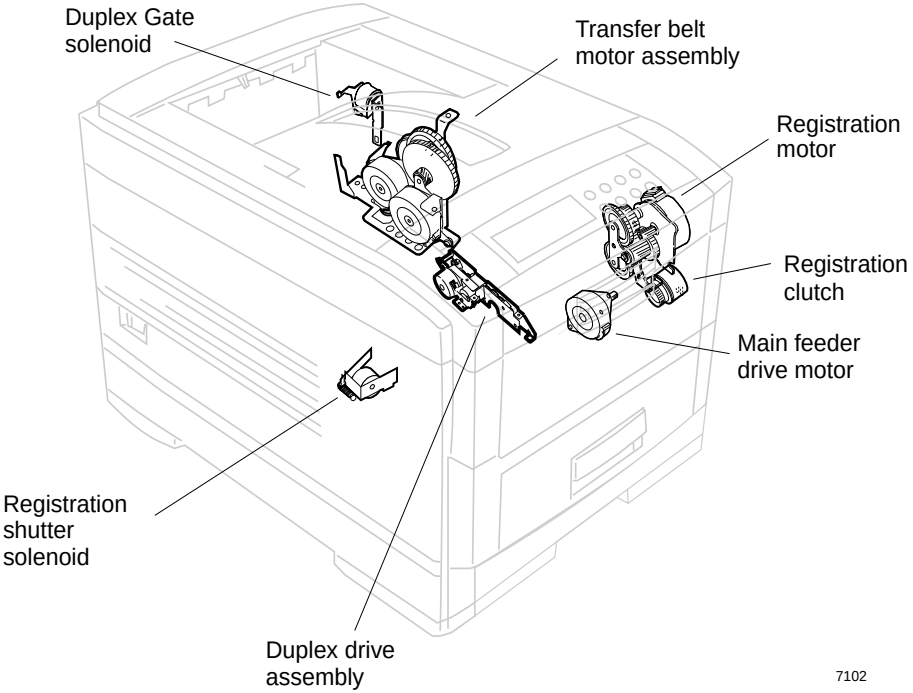
Print engine circuit boards (cont'd)



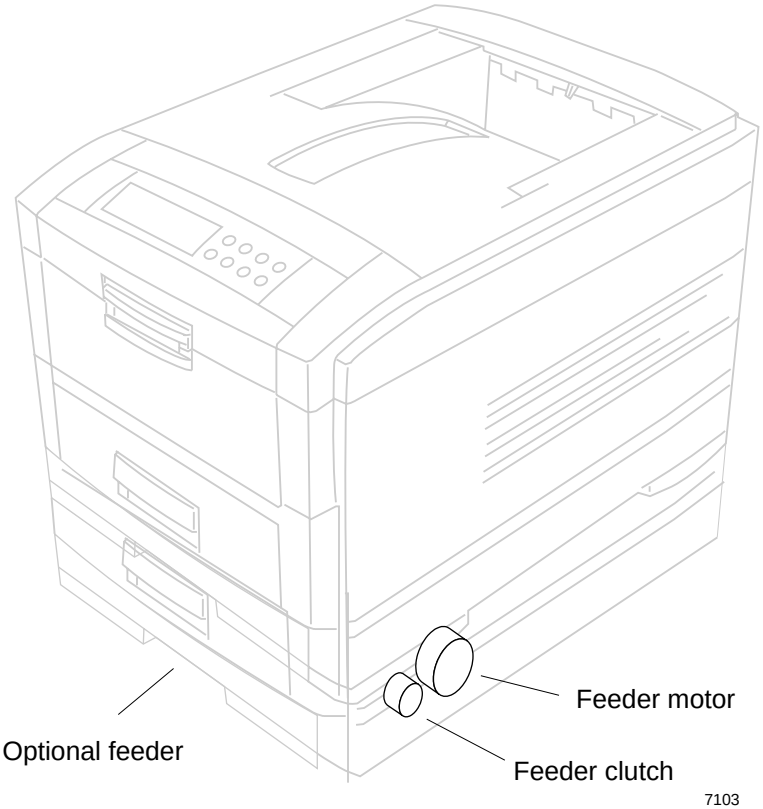
Print engine sensor and switch locations



Print engine sensor and switch locations (cont'd)

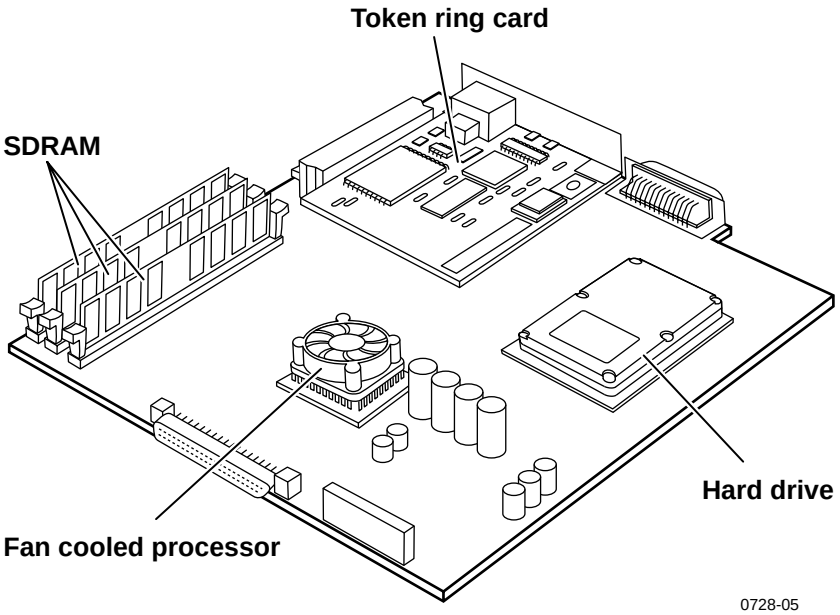


Print engine motors, clutches and solenoids



Optional feeder motor and clutch

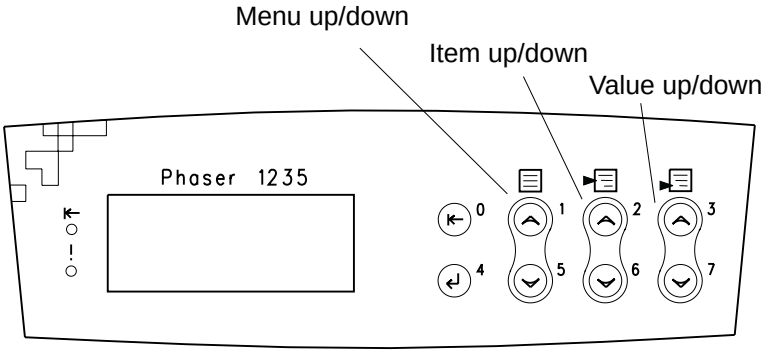
The image processor board



Features of the controller board

The control panel

The control panel consists of eight labeled keys. These keys navigate the menu system for printer operations. Two LEDs on the display indicate On Line and active faults. The LCD display is two lines by twenty-four characters wide.



The control panel

Key 0 places the printer off-line or on-line. Key 4 is an Enter key. The pairs of keys 1 and 5 are used to scroll through the main menu. Keys 2 and 6 navigate the sub menus, and Keys 3 and 7 scroll sub-menu values.

On Line LED

Green in color, this LED indicates when the printer is “On Line” and ready to process data. When transitioning from “On Line” to “Off Line”, the LED flashes at a rate of two times per second. When data is being received and processed, the LED flashes at a rate of once per second.

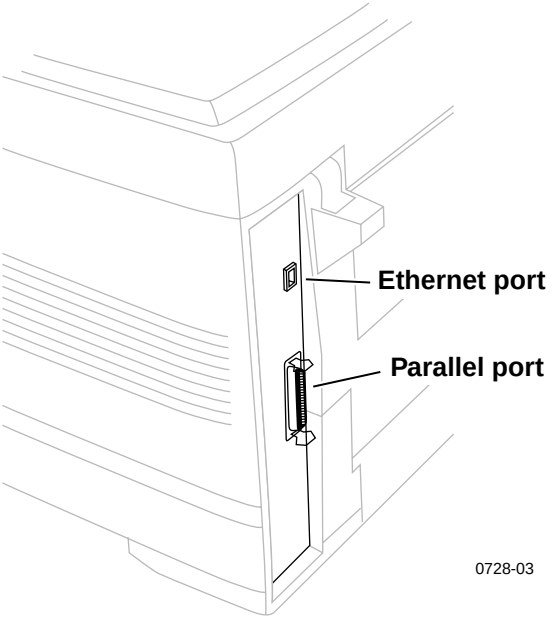
! Fault

Red in color, this LED illuminates whenever operator intervention is required, such as a paper jam in the printer.

Rear panel

The rear panel of the printer features the host interface connectors:

- Bi-directional parallel IEEE 1284-B connector.
- Twisted Pair 10/100baseT Ethernet connector. With the addition of the Token Ring card the printer can connect to Token Ring network via its Ethernet interface.



The printer rear panel

Accessing special operating modes

The printer can be placed in diagnostics or other operation modes by simultaneously holding the **Menu Up (1)** and the **Enter (4)** keys as you turn on the printer.

Entering special operating modes

Key Combination	Mode
On Line (0) and Enter (4)	This enables the **Reset Menu** to become available at the control panel. The Reset Menu is not normally available to the customer, as it contains the ability to format devices and perform a factory reset of all items. The control panel displays **Ready** when completed. To exit, switch the printer power off, then on.
Menu Up (1) and Menu Down (5)	This forces the **Software Update Mode** on the parallel port. The Control Panel will display **Entering...** on the first line **and Download Mode** on the second line. This indicates that the printer is ready to be have its firmware flash updated. To exit, switch the printer power off, then on.
Menu Up (1) and Enter (4)	Forces the printer into the **Engine Diagnostics Mode**, bypassing the controller. The control panel displays **Diag Mode 1?** in the first line. This indicates that the printer is ready to enter diagnostics. To exit, switch the printer power off, then on.
Enter (4) and Value Down (7)	This reinitiates the NVRAM to factory defaults for all values except copy counts. The control panel displays **Ready** when complete.

System controller board LEDs

A power LED (PWR), when illuminated, indicates +5V is being supplied to the system controller board.

The LED HDD, illuminates to flashes to indicate hard drive read / write activity.

LED GIO2 flashes to indicate proper CPU operation.

LED GIO3; off indicates 10baseT connection, on indicates 100baseT.

The LED LNK is *off* when the printer is not installed on an Ethernet network, *blinks* while data is transmitted to the host.

When the optional Token Ring Card is installed, the LED LNK indicates the operation of the Token Ring Card (Ethernet port operations are disabled). The LED Connection is *off* when the printer is not inserted into the Token Ring, *blinks* while the printer is attempting to insert itself into the Token Ring, *on* when the printer is properly inserted in the ring.

The LED SPD, located next to the LNK LED, is *off* when the card is set for 4 megabits-per-second (MBPS), *on* when the card is set for 16 MBPS.

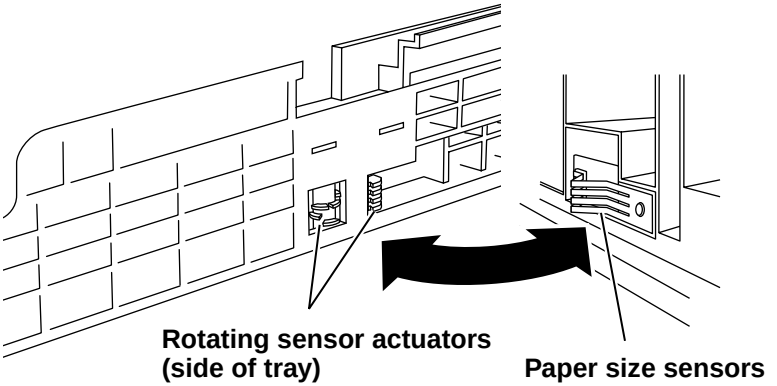
Paper tray type sensing

The positions of four tab pieces are set according to the position of the paper guide. A cam interlocks the tabs with the paper guide of the paper tray.

Upon insertion of the tray in the printer, four actuator tabs activate four switches. The combinations of the tab position indicate the size of the paper in the tray.

Paper size detection

State of Microswitch				Paper Size
SW1 (top)	SW2	SW3	SW4 (bottom)	
0	0	0	0	No tray installed
0	1	1	1	Letter
0	1	0	1	Executive
0	0	1	1	A4
1	1	1	0	Legal 14
1	0	1	1	Legal 13
1	1	0	1	B5
1	1	0	0	A5
1	0	0	1	A6



Tray switch sensors and actuators

0728-04

Tray switch sensors and actuators

Specifications

Physical dimensions

Dimensions	Specification
Height:	16.9 cm (43.0 in.)
Width:	43.0 cm (16.9 in.)
Depth:	62.0 cm (24.4 in.)
Weight:	About 51 kgs (112.2 lbs.)

Printer clearances

Clearances	Specification
Top:	91.5 cm (36 in.)
Left:	30.5 cm (12 in.)
Right:	30.5 cm (12 in.)
Front:	Unlimited for removal of consumables
Rear:	61 cm (24 in.) for connecting computer cable and power cord
Mounting surface flatness:	Maximum deviation of 50 mm from horizontal, side-to-side, with all four feet in contact with the table surface.

Functional specifications

Characteristic	Specification
Printing process	Electro-photographic, four color (CMYK) tandem transfer printing
Color medium	Four toner cartridges each contain one of four colors: cyan, magenta, yellow or black. The toner is a nonmagnetic, monocomponent contact medium.
Addressability	600 x 1200 dpi text and graphics
Printing speed (A, A4)	Time from paper-load to paper-eject for continuous A, A4 printing: Four-color: 12 ppm Monochrome: 20 ppm Four-color transparency: 5 ppm Monochrome transparencies: 12 ppm Print times do not include image processing time, which can vary depending on image complexity.
Minimum printing margins	All sides 4.2 mm (0.167 in.),
Usable paper	Tray: A-size (letter), Legal, Folio, Executive (7.25 x 10.5 in.) A4-size (metric letter), A5, B5, and A6 use only premium bond laser printer or copier paper Tray feed paper weight: 60 to 176 g/m^2 (16 to 47 lb.) Minimum paper size: 148 mm x 210 mm (5.83 x 8.27 in.) Multi-sheet bypass feeder: A-size (letter), Legal, Folio, Executive (7.25 x 10.5 in.), A4-size (Metric letter), A5, B5, and A6. Minimum paper size is 76 x 127 mm (3 x 5 in.) *Only* Xerox-brand Phaser 1235 A- and A4-size transparency film is supported. Multi-sheet Bypass Feeder - 16 lb. to 54 lb. (60g/m^2 to 203g/m^2) Two-sided printing: 75 to 105 g/m^2 (20 to 28 lb.)
Paper tray capacity	Tray 1**:** 530 sheets of paper or 175 transparencies. Tray 2 and Tray 3: 530 sheets of paper. Multi-sheet Bypass Feeder: single sheet to 100 sheets of standard paper. Varying number of envelopes and other special stock. The Multi-sheet Bypass Feeder can use media in the 20 to 60 gm^2 range.

Electrical specifications

Characteristic	Specification	
Primary line voltages	103 to 140 VAC (115 VAC nominal) 198 to 264 VAC (220 VAC nominal)	
Primary voltage frequency range	50 (48 to 52) or 60 (58 to 62) Hz	
Power consumption	250 watts during standby state, 1300 watts during warm-up 450 watts average reference value 45 watts during Energy Star state	
Primary voltage fusing	110 VAC configuration – 8 and 10 Amp 220 VAC configuration – 4 and 5 Amp	
Secondary DC voltages	Low Voltage Power Supply +3.3 VDC + 5 V +12 V + 32 V +3.8 V	High voltage Power Supply (CH) -900 to 1.4 kV (DB) -100 to 400/+300 V (SB) -200 to -700 V (TB) +1k to +7 kV (FIX) 0 to 5 kV
RF emissions	Both 110 and 220 VAC-configured instruments pass these standards: FCC Part 15 Class B VDE Class B EN60555-2 Class A VCCI (CISPR 22) Class B	

Environmental specifications

Characteristic	Specification
Temperature Operating Non-operating Storage	 10° to 32° C (50° to 90° F) 0° to 32° C (32° to 90° F) -0° to 45° C (32 to 113° F) (with supplies) Media should be acclimated 24 hours before using in the printer.
Humidity Operating Non-operating	 10 to 85% relative humidity, non-condensing 10 to 95% relative humidity, non-condensing Media should be acclimated 24 hours before using in the printer.
Altitude Operating Non-operating	 0 to 2500 m (8,000 ft.) at 25°C 0 to 15000 m (50,000 ft.)
Vibration/shock Operating Non-Operating (vibration) Non-operating (shock)	 May drop any side or corner 50 mm (2 in.) without impairment of subsequent operation. On five mutually perpendicular axes: 0.5 g, 25-minute sweep, 5 to 200 to 5 Hz, 100 to 200 sec./sweep cycle. No resonant frequencies below 50 Hz. 15 g, trapezoidal flared pulse, 20 msec each axis.
Acoustic Noise (operating)	Standby: 35 dBa, Running: 55 dBa, Impulse: 57 dBa

Regulatory specifications

The printer is a recognized component in conformance with the following regulatory standards:

- The packaged product meets ASTM D4169-93 and ASTM D4728-91 Transportation Standards.
- Listed UL 1950 Information Processing and Business Equipment.
- Certified CSA C22.2 No. 950 Safety of Information Technology Equipment, Including Electrical Business Equipment.
- GS licensed IEC 950 (1991) Second Edition; EN60950 Information Processing and Business Equipment.
- EN50022 (CISPR 22) Class B
  EN61000-3-2
  EN61000-3-3
  VCCI (CISPR 22) Class B
- FCC Class B (for 115 VAC equipment) pursuant to Sub-part J of Part 15.
  ICES 03 Class B

Error Codes and Messages

Error messages

The front panel displays error codes when it encounters certain system failures. These error codes are discussed in the next topic. When an error code first occurs, cycle power on the printer to see if the error re-occurs.

Printer fault messages

Code	Front panel message	Service message
A6	Jam A6, Remove Output Open Cover A, See Labels	A6-Bypass Feeder Jam
	1. Ensure the correct weight and type of paper is loaded in the feeder. Also ensure the paper is loaded correctly in the feeder. **2.** Clean the bypass feeder's pick roller. **3.** Test the main feed motor as described in "Motor and clutch tests" on page 69. **4.** Replace the main feed motor. **5.** Replace the engine controller board.	
A7	Jam A7, Remove Output Open Cover A, See Labels	A7-Duplex Entry Jam
	1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray. **2.** Clean the duplex unit's rollers. **3.** Test the duplex motor and clutch as described in "Motor and clutch tests" on page 69. **4.** Replace the duplex unit. **5.** Replace the engine controller board.	
A10	Jam A10, Remove Output Open Cover A, See Labels	A10-Paper Output Jam
	1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray. **2.** Clean the exit rollers. **3.** Ensure the exit rolls rotate freely when the exit roller gear train is rotated. **4.** At the rear of the printer, inspect the gate which directs the print to the face-up output bin or the face-down output bin. **5.** Test the fuser motor (which drives the exit gear train) using the test described in "Motor and clutch tests" on page 69. **6.** Replace the engine controller board.	

Printer fault messages

Code	Front panel message	Service message
A11	Jam A11, Remove Output Open Cover A, See Labels	A11-Paper Feed Jam

1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray.
2. Clean the pick and registration rollers.
3. Ensure there are no obstructions in the paper path.
4. Test the registration motor and clutch as described in “Motor and clutch tests” on page 69. Replace the motor or clutch if necessary.
5. Inspect the wiring for the registration clutch and registration motor.
6. Replace the engine controller board.

A22	Jam A22, Remove Output Open Cover A, See Labels	A22-Feed Path Jam

1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray.
2. Clean the pick and registration rollers.
3. Ensure there are no obstructions in the paper path.
4. Test the registration motor and clutch as described in “Motor and clutch tests” on page 69. Replace the motor or clutch if necessary.
5. Inspect the wiring for the registration clutch and registration motor.
6. Replace the engine controller board.

B8	Jam B8 Open Cover B, See Labels	B8-Duplex Jam

1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray.
2. Clean the duplex unit’s rollers.
3. Test the duplex motor and clutch as described in “Motor and clutch tests” on page 69.
4. Replace the duplex unit.
5. Replace the engine controller board.

B13	Jam B13 Open Area B, See Labels	B13-Duplex Inverter Jam

1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray.
2. Inspect and clean the eject rollers behind the fuser unit.
3. Ensure the paper path leading to the duplex unit and the duplex unit’s paper path are both clear of obstructions.
4. Inspect the operation of the solenoid activated separator gate the direct the print into the duplex unit. Test the exit solenoid with the “Motor and clutch tests” on page 69.
5. Replace the duplex unit.
6. Replace the engine controller board.

Printer fault messages

Code	Front panel message	Service message
B21	Jam B21 Open Cover B, See Labels	B21-Duplex Area Jam
	1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray. **2.** Clean the duplex unit's rollers. **3.** Test the duplex motor and clutch as described in "Motor and clutch tests" on page 69. **4.** Replace the duplex unit. **5.** Replace the engine controller board.	
C1	Check Tray 1 No Tray Present	C1-Check Tray 1
C2	Check Tray 2 No Tray Present	C2-Check Tray 2
C3	Check Tray 3 No Tray Present	C3-Check Tray 3
	1. Ensure the tray is installed correctly. **2.** Inspect and test the paper size sensors and the tray's corresponding sensor flags. **3.** Replace the paper tray sensor board or its metal finger-like actuators if they are damaged. **4.** Replace the engine controller board.	
E1	Tray 1 Misfeed Open Tray 1, Cover B	E1-Tray 1 Misfeed
E2	Tray 2 Misfeed Open Tray 2, Cover B	E2-Tray 2 Misfeed
E3	Tray 3 Misfeed Open Tray 3, Cover B	E3-Tray 3 Misfeed
	1. Ensure the correct weight and type of paper is loaded in the tray. Also ensure the paper is loaded correctly in the tray. **2.** Clean the pick rollers. **3.** Test the main feed motor as described in "Motor and clutch tests" on page 69. **4.** Replace the main feed motor. **5.** Replace the engine controller board.	
E9	Top Cover A Open Close Top Cover A	E9-Top Cover A Open
	1. Close the cover. **2.** Inspect the switch and ensure the switch's actuator is not broken. **3.** Test the top cover open switch using the sensor test described in "Switch scan test" on page 63. **4.** Inspect the switch's wiring harness. **5.** Replace the engine controller board.	
E12	Top Output Bin Full Remove Output	E12-Output Bin Full, Top
	1. Ensure the output bin full sensor flag operates freely. **2.** Test the output bin full sensor using the test described in "Switch scan test" on page 63. **3.** Inspect the sensor and its wiring harness. **4.** Replace the engine controller board.	

Printer fault messages

Code	Front panel message	Service message
E14	Front Cover B Open Close Front Cover B	E14-Front Cover B Open
	1. Close the cover. **2.** Inspect the switch and ensure the switch's actuator is not broken. **3.** Test the front cover open switch using the sensor test described in "Switch scan test" on page 63. **4.** Inspect the switch's wiring harness. **5.** Replace the engine controller board.	
EA	Black Drum Missing Reseat Drum, Power Off/On	EA-Black Drum Missing
EB	Cyan Drum Missing Reseat Drum, Power Off/On	EB-Cyan Drum Missing
EC	Magenta Drum Missing Reseat Drum, Power Off/On	EC-Magenta Drum Missing
ED	Yellow Drum Missing Reseat Drum, Power Off/On	ED-Yellow Drum Missing
	1. Remove and install the drum unit. **2.** Inspect the spring-loaded drum contact assembly. Ensure they are clean and move up and down freely. Remove the assembly and reseat it, if necessary. **3.** Replace the engine controller board. **4.** Replace the printer unit chassis	
EE	Transfer Belt Missing Reseat Belt, Power Off/On	EE-Transfer Belt Unit Missing
	1. Remove and re-install the transfer belt unit. **2.** Clean the transfer belt unit's contact on the front-left side of the engine chassis. Clean the corresponding contacts on the transfer belt unit. **3.** Install a new transfer belt unit. **4.** Replace the engine controller board. **5.** Replace the printer unit chassis.	
EF	Fuser Missing Reseat Fuser, Power Off/On	EF-Fuser Unit Missing
	1. Remove and reinstall the fuser. **2.** install a new fuser. **3.** Replace the low-voltage power supply. **4.** Replace the engine controller board.	

Printer fault messages

Code	Front panel message	Service message
H1	A hard disk error was detected that prevented data from being read from the disk.	H1-Disk Read Error
H2	A hard disk error was detected that prevented data from being written to the disk.	H2-Disk Write Error
H3	A hard disk full error occurred that prevented data from being written to the disk **1.** Turn the printer off and on again. **2.** Ensure the hard drive is properly installed. **3.** Reinitialize the hard drive. by scrolling to the **Reset Menu** and selecting the submenu item **Disk Init**. **4.** Replace the hard drive. **5.** Replace the system controller board.	H3-Hard Disk Full
J3	Replace Fuser **1.** Install a new fuser. **2.** If a new fuser has been installed but the print engine continues to ask for a new fuser, reset the fuser life count using the topic “Consumable count initialization” on page 73. **3.** Replace the engine controller board.	J3-Replace Fuser
J4	Replace Transfer Belt **1.** Install a new transfer belt. **2.** If a new transfer belt has been installed but the print engine continues to ask for a new transfer belt, reset the transfer belt life count using the topic “Consumable count initialization” on page 73. **3.** Replace the engine controller board.	J4-Replace Transfer Belt
J5	Replace Yellow Drum	J5-Replace Yellow Drum
J6	Replace Magenta Drum	J6-Replace Magenta Drum
J7	Replace Cyan Drum	J7-Replace Cyan Drum
J8	Replace Black Drum **1.** Install a new drum unit. **2.** If a new drum unit has been installed but the print engine continues to ask for a new drum unit, reset the drum unit life count using the topic “Consumable count initialization” on page 73. **3.** Inspect the spring-loaded drum unit contacts (in a set of three). Ensure they are clean and move up and down freely. Remove and reseat them, if necessary. **4.** Replace the engine controller board.	J8-Replace Black Drum

Printer fault messages

Code	Front panel message	Service message
J9	Yellow Toner Empty Replace Yellow Toner	J9-Yellow Toner Empty
J10	Magenta Toner Empty Replace Magenta Toner	J10-Magenta Toner Empty
J11	Cyan Toner Empty Replace Cyan Toner	J11-Cyan Toner Empty
J12	Black Toner Empty Replace Black Toner	J12-Black Toner Empty
	1. Install a new toner cartridge. **2.** If a new cartridge has been installed but the print engine continues to ask for a new cartridge, reset the toner cartridge life count using the topic "Consumable count initialization" on page 73. **3.** Replace the drum unit. **4.** Replace the engine controller board.	
L0	Load Tray # 1 Size 2 Type 3	Load Tray #, Size Type
	1. Load the requested size and type of paper in the tray. **1.** Ensure the tray is installed correctly. **2.** Inspect and test the paper size sensors and the tray's corresponding sensor flags. **3.** Replace the paper tray sensor board or its metal finger-like actuators if they are damaged. **4.** Replace the engine controller board.	
T29	Temp Sensor Error T29 Power Off/On	T29-Temp Sensor Error
T30	RH Sensor Error T30 Power Off/On	T30-RH Sensor Error
	1. Test the temperature sensor or the relative humidity sensor using the sensor test described in "Switch scan test" on page 63 **2.** Inspect the wiring harness leading to the entrance sensor board. **3.** Replace the entrance sensor board. **4.** Replace the engine controller board.	
T31	Roller Over Temp T31 Power Off/On	T31-Roller Over Error
	1. Inspect the main cooling fan. Ensure it is running correctly and is not blocked. **2.** Remove and install the fuser. **3.** Test the thermistor inside the fuser using the test described in "Switch scan test" on page 63. **4.** Replace the fuser. **5.** Replace the low-voltage power supply. **6.** Replace the engine controller board.	
T32	LED Over Temperature T32 Power Off/On	T32-LED Over Temp Error
	1. Ensure all the main cooling fan is operating and is not blocked. **2.** Ensure the printer is operating in the correct temperature environment; the printer's **Service Menu : Print Diag Summary** test page lists the ambient temperate sensed by the printer. **3.** Replace the LED heads. **4.** Replace the engine controller board.	

Printer fault messages

Code	Front panel message	Service message
T1	Fuser Upper Error T1 Power Off/On	T1-Fuser Upper Error
T2	Fuser Lower Error T2 Power Off/On	T2-Fuser Lower error
	1. Remove and install the fuser. **2.** Test the thermistors inside the fuser using the test described in "Switch scan test" on page 63. **3.** Replace the fuser. **4.** Replace the low-voltage power supply. **5.** Replace the engine controller board.	
U0	Engine ROM Error U0 Power Off/On	U0-Engine ROM Error
U1	Engine RAM Error U1 Power Off/On	U1-Engine RAM Error
U2	Engine EPROM Error U2 Power Off/On	U2-Engine EPROM Error
U3	Engine EPROM Missing U3 Power Off/On	U3-Engine EPROM Missing
U4	Engine SRAM Error U4 Power Off/On	U4-Engine SRAM Error
U5	Engine Control Error U5 Power Off/On	U5-Engine Control Error
	1. Turn the printer off and then on **2.** Reset the printer NVRAM using the procedure "Resetting NVRAM" on page 85. **3.** Replace the engine controller board.	
U6	Power Supply Error U6 Power Off/On	U6-Power Supply Error
	1. Inspect the main cooling fan. Ensure it is running correctly and is not blocked. **2.** Turn the printer off and then on. **3.** Replace the low-voltage power supply. **4.** Replace the engine controller board.	
U7	Feeder Home Error U7 Power Off/On	U7-Feeder Home Error
	1. Test the manual bypass feeder home sensor using the test described in "Switch scan test" on page 63. **2.** Inspect the sensor and its wiring harness. **3.** Replace the engine controller board.	
U8	Controller Fan Error U8 Power Off/On	U8-Controller Fan Error
	1. Inspect the electrical chassis fan to see if it is running and not blocked. **2.** Inspect the fan's wiring harness. **3.** Replace the fan. **4.** Replace the engine controller board.	
U9	Supply Fan Error U9 Power Off/On	U9-Supply Fan Error
	1. Inspect the main cooling fan to see if it is running and not blocked. **2.** Inspect the fan's wiring harness. **3.** Replace the fan. **4.** Replace the engine controller board.	

Printer fault messages

Code	Front panel message	Service message
U10	Roller Position Error U10 Power Off/On	U10-Roller Position Error
	1. Ensure the correct weight and type of paper is loaded in the currently used tray. Also ensure the paper is loaded correctly in the tray. **2.** Clean the pick and registration rollers. **3.** Ensure there are no obstructions in the paper path. **4.** Test the registration motor and clutch as described in "Motor and clutch tests" on page 69. Replace the motor or clutch if necessary. **5.** Inspect the wiring for the registration clutch and registration motor. **6.** Replace the engine controller board.	
U12	Duplex I/F Error U12 Power Off/On	U12-Duplex I/F Error
	1. Turn the printer off and on. **2.** Pull out the duplexer and inspect its connector at the right front corner (the connector faces rearward). Inspect the printer's corresponding connector on the printer chassis (covered by a flexible metal plate). **3.** Inspect the wiring harness leading from the engine control board to the duplex unit connector. **4.** Replace the duplex unit. **5.** Replace the engine controller board.	
U13	Tray 3 I/F Error U13 Power Off/On	U13-Tray 3 I/F Error
U14	Tray 2 I/F Error U14 Power Off/On	U14-Tray 2 I/F Error
	1. Turn the printer off and then on. **2.** Inspect the interface connector connecting the tray unit to the print engine. Inspect the printer's corresponding connector on the underside of the printer. Inspect the wiring harness leading from the connector to the engine control board. **3.** Replace the engine controller board.	
U15	Control Panel Error U15 Power Off/On	U15-Control Panel Error
	1. Turn the printer off and then on. **2.** Reset the printer NVRAM using the procedure "Resetting NVRAM" on page 85. **3.** Replace the engine controller board.	
U18	Yellow LED Error U18 Power Off/On	U18-Yellow LED Bar Missing
U19	Magenta LED Error U19 Power Off/On	U19-Magenta LED Bar Missing
U20	Cyan LED Error U20 Power Off/On	U20-Cyan LED Bar Missing
U21	Black LED Error U21 Power Off/On	U21-Black LED Bar Missing
	1. Ensure the LED assembly is correctly installed. **2.** Inspect the wiring harnesses leading to the LED assembly. **3.** Replace the engine controller board.	

Printer fault messages

Code	Front panel message	Service message
U22	Yellow Toner Missing Reseat Toner	U22-Yellow Toner Missing
U23	Magenta Toner Missing Reseat Toner	U23-Magenta Toner Missing
U24	Cyan Toner Missing Reseat Toner	U24-Cyan Toner Missing
U25	Black Toner Missing Reseat Toner	U25-Black Toner Missing
	1. Inspect the toner cartridge sensor flag. Ensure to moves properly and is not broken. **2.** Test the sensor using the test described in “Switch scan test” on page 63. **3.** Inspect he toner sensor boards wiring harness. **4.** Replace the toner sensor board. **5.** Replace the engine control board.	
U26	Yellow Drum Error U26 Power Off/On	U26-Yellow Drum Error
U27	Magenta Drum Error U27 Power Off/On	U27-Magenta Drum Error
U28	Cyan Drum Error U28 Power Off/On	U28-Cyan Drum Error
U29	Black Drum Error U29 Power Off/On	U29-Black Drum Error
	1. Remove and install the drum unit. **2.** Inspect the spring-loaded drum unit contacts (in a set of three). Ensure they are clean and move up and down freely. Remove the assembly and reseat it, if necessary. **3.** Install a new drum unit. **4.** Replace the engine controller board. **5.** Replace the print unit chassis.	

Controller board diagnostic error codes

Code	Test	Possible Cause
1	Memory	Bad memory DIMMs
2	Memory Speed	Bad DIMMs or controller board
3	CPU Tick	Bad controller board
4	System Timer	Bad controller board
5	BX Host Bridge	Bad controller board
6	PIIX4 PCI-ISA Bridge	Bad controller board
7	21152 PCI-ISA Bridge	Bad controller board
8	PCI-PCI Bridge	Bad controller board
9	IX	Bad controller board
10	Parameter Flash R/W	*not implemented*
11	Strata Flash R/W	*not implemented*
12	Strata Flash Boot Block Integrity	Bad controller board
13	Strata Flash File System Integrity	Bad controller board
14	STE100	Bad controller board
15	VX2b-0	Bad controller board
16	VX2b-1	Bad controller board
17	VX2b-2	Bad controller board
18	VX2b-3	Bad controller board
19	Disk Identify	Bad hard disk drive
20	Disk Read/Write	Bad hard disk drive
21	Disk Read Capability	Bad hard disk drive
22	Disk Write Capability	Bad hard disk drive
23	Disk Data Format Check	Bad hard disk drive

Troubleshooting

This topic discusses troubleshooting the printer. Troubleshooting is discussed with two approaches:

- A step-by-step verification procedure that systematically confirms that particular components of the printer are properly functioning until a problem is found.
- A symptom/cause scheme that lists particular printer failures or error codes and their possible causes.

Power on self-diagnostic test

Initial test. The following checks are automatically performed when the printer is powered on:

1. ROM check (loader). Checks ROM by comparing the sum of bits in the received data unit by the number of bits in the transferred data unit.
2. Flash ROM check. Checks Flash ROM by writing a present data pattern in Flash ROM, reading the contents of Flash ROM, and comparing the data read from Flash ROM by the data written in Flash ROM.
3. RAM check. Checks RAM by writing a preset data pattern in RAM, reading the contents of RAM, and comparing the data read from RAM by the data written in RAM.
4. EEPROM check. Checks ID numbers stored in the fixed addresses of EEPROM. Checks the content of the menu area by control firmware and the engine area by engine firmware.
5. Mechanical check.
   - All the engine fans are turned on and also checked to ensure they run properly.
   - The fuser heaters are activated to heat up the heated rollers.
   - The print engine checks to see that the imaging drum units are installed.
   - The engine motors are rotated to ensure that their rotation sensors are detected.
   - A sensor check is made to determine if any paper is jammed in the printer.
   - The print engine checks the presence of each toner cartridge.
   - Option unit check. Checks whether the optional units (such as the paper tray 2, paper tray 3, duplex unit) have been installed before entering the operation mode.
   - The print engine performs a color misalignment detection check by laying down patches of toner on the transfer belt and reading their relative positions to each other with the color registration sensor assembly.
   - After the fuser reaches its idle temperature the printer is placed on line in its READY state.

The print engine is initialized. If the startup page feature has not been disabled and no error occurred with the printer, the printer prints a startup page.

Print engine troubleshooting

This topic is a step-by-step procedure for systematically verifying particular aspects of the printer's operation. Following this procedure should lead to the cause of a printer's failure.

Testing the print engine

1. If the printer does not power up, or does not initialize, or the printer initializes but the motors do not run properly, go to the later topic, “Verifying power supply operation” on page 34.
2. Observe that the Ready message is displayed on the front panel. If it is not, go to the later topic “Verifying power supply operation” on page 34.
3. To ensure the print engine operates correctly, print one of its internal test pages as explained in the topic “Test printing” on page 71.

If the printer prints a test print, then the printer's print engine is working correctly. Proceed with the next topic, “Verifying printer operation by using its self-test print” on page 34.

If the printer does not make the test print, then a problem exists with the print engine. Proceed with the topic, “Verifying power supply operation” on page 34.

Verifying printer operation by using its self-test print

1. If not already on, turn on the printer. If the printer does not power up, or does not initialize, or the printer initializes but the motors do not run properly, go to the next topic "Verifying power supply operation."
2. Verify that the system controller board's health LED is flashing. The health LED is viewable through the rear panel. If the health LED is not flashing, then the system controller board is not working.
3. When the Ready message is displayed, press the **Menu (1, 5)** buttons to enter the menu.
4. Press the **Menu (1, 5)** buttons to navigate to the Print Menu item. Press the **Item (2, 6**) keys to scroll through the list of available test prints. Select any test print.
5. Press **Enter** to print a test prints. The printer should print a test page from the system controller board.

If the printer prints a test pattern, then the print engine controller board and system controller board are working correctly and the printer's problem resides with the network or host interface.

Verifying power supply operation

Required tools

- #1 Phillips screwdriver
- Digital multimeter (DMM)

Verifying the power supply involves four steps:

- Measuring the input and output voltages.
- Checking the power supply fuse.
- Checking its safety interlocks.
- Testing for a shorted motor which would shut down the power supply or damage the engine controller board.

Measuring power supply voltages

1. Turn off the printer and unplug it from its power outlet.
2. **AC Input:** With the DMM set to measure AC voltages, measure for power being supplied to the printer. It should measure between 87 to 128 VAC (115 VAC nominal) or 174 to 250 VAC (220 VAC nominal).
3. **Power supply fan**: With the power switch on, is the main fan running? (Access the fan by removing the left side cover.) If not, check the fan's wiring harness (CN5) to the low-voltage power supply board; it should measure 32 to 38VDC (the voltage drops to zero when the fan is disconnected). If the voltage is not correct, replace the low-voltage power supply. Otherwise, replace the power supply fan.

DC Output: With the DMM set to measure DC voltages, measure the voltages at the POWER connector on the bottom of the print engine controller board for +3.3VDC, +5 VDC, +12 VDC and +32 VDC. (You must remove the right side cover and right shield plate to access the engine controller board.)

If the voltages are not correct, inspect the wiring harness connecting the POWER connector of the engine controller board to the CN1 connector of the low-voltage power supply. If the harness is undamaged, replace the power supply.

POWER Connector pinout

Pin	Voltage/Signal Level	Pin	Voltage/Signal Level
1	+12 VDC	16	+3.3 VDC
2	No connection	17	+3.3 VDC
3	Ground	18	+3.3 VDC
4	Ground	19	32 V
5	Ground	20	Ground
6	Ground	21	No connection
7	+32 VDC	22	No connection
8	+32 VDC	23	Ground
9	+32 VDC	24	Ground
10	+32 VDC	25	Ground
11	+5 VDC	26	Ground
12	+5 VDC	27	Ground
13	+5 VDC	28	Ground
14	+5 VDC	29	No connection
15	+3.3 VDC	30	24 VDC

If DC voltages are not being output by the power supply, proceed to the next step, “Inspecting the low-voltage power supply fuse” on page 36.

If the +5 and +32 VDC voltages measure correctly, but the printer does not operate correctly, then proceed to the topic, “Safety interlocks” on page 36.

Inspecting the low-voltage power supply fuse

The 115 VAC power supply features a 20 A fuse. The 220 VAC power supply fuse uses a 10 A fuse.

1. Turn off the printer.
2. Disconnect the power cord from the printer.
3. Remove the left-side cover as described in “Left-side cover” on page 88.
4. Remove the main cooling fan as described in “Main cooling fan” on page 99. The fuse is now accessible.

If the fuse is good, but the printer's power supply does not output DC voltages, replace the low-voltage power supply.

Safety interlocks

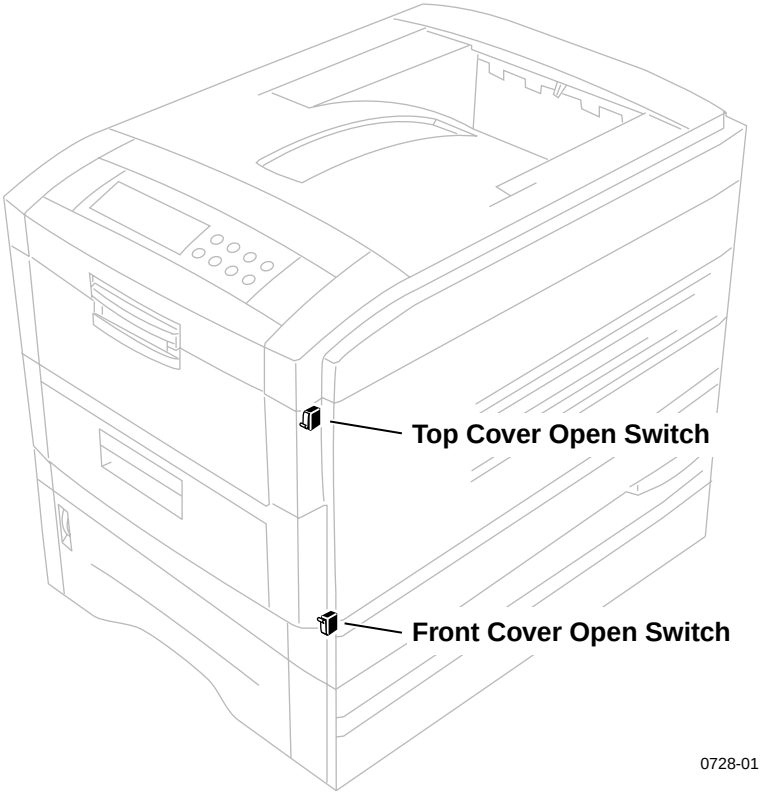
The printer features two safety interlock switches:

- Top door-opened switch.
- Front door-opened switch.

When the top cover switch is opened, the +32 VDC supply to the motors is shut down, as well as the high-voltage power supply. When the front cover door is opened, the +32 VDC supply to the duplex unit and high-voltage power supply is disabled.

5. Turn off the printer.
6. With a DMM set to measure resistance, test each switch when it is opened and closed.
7. Inspect each switch’s wiring harness for pinches, nicks or open connections.

If you find a switch that is defective, replace it. If no motors appear to be at fault, replace the engine controller board.



Door safety interlock switches

Testing for a shorted motor

1. Remove the top and rear covers.
2. Disconnect the motor harnesses and verify motor resistances (see the following topic).
3. Refer to the topic “Wiring Diagram” on page 215 for a diagram that locates each connector.
4. Turn on the printer again to see if it overloads now that the motors are disconnected from the engine driver board.

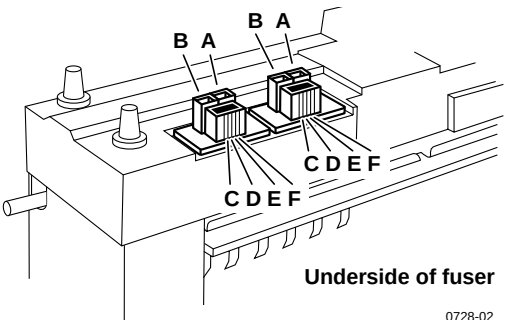
If the power supply still does not function, replace it.

Motor and fuser roller resistances

1. Turn off the printer and disconnect the power cord.
2. With a DMM set for measuring resistance, test each motor's windings for correct resistance (disconnected from the printer).

Motor and fuser roller resistances

Motor	Measure between ...	Resistance
Yellow drum unit motor Magenta drum unit motor Cyan drum unit motor Black drum unit motor	Between motor Pins 1 and 2 Between motor Pins 3 and 4 All the drum motors connect to connector ID at the top of the engine controller board Black Pins 1 thru 4 Yellow Pins 5 thru 8 magenta Pins 9 thru 12 Cyan Pins 13 thru 16	4 Ω 4 Ω
Transfer belt motor Registration motor Fuser motor Main feed drive motor	Between motor Pins 1 and 2 Between motor Pins 3 and 4 The transfer belt motor connects to connector BELTHET pins 5 thru 8 The feed motor connects to connector HOPFF pins 1 thru 4 The main motor connects to connector HOPFF pins 5 thru 8	10.8 Ω 10.8 Ω
Fuser unit New fuser: The resistance between pins C and D of the lower roller will be O Ω, a fuse. Used fuser: The between pins C and D of the lower roller will be open. The fuse indicates a new fuser and is blown within seconds of being installed to indicate a fuser now in use.	Upper Roller Between Pins A and B Between Pins C and D Between Pins E and F Lower Roller Between Pins A and B Between Pins C and D Between Pins E and F	 2 Ω Open 363 at 25°C 3 Ω 0 Ω or open (fuse) 363 at 25°C



Media jams and the paper path

Required tools

- #1 Phillips screwdriver
- DMM

Jams fall into the following four categories:

- Media-based problems
- Paper-picking errors
- Printing jams
- Paper-ejecting errors

Media-based problems

Media problems

1. Check that the correct type of media is being used. The customer should be using a quality laser printer paper. The printer may have trouble picking slick-finish paper.
2. Inspect the paper for bent, torn or folded corners.
3. Ensure that the correct media is loaded in the paper tray.
4. Only Xerox-brand 35-Series transparency film for this printer should only be used.
5. Refer to the media specifications in the table “Functional specifications,” on page 17.

Multiple-sheet pick

1. Is the paper in good condition and appropriate for a laser printer? Quality office laser printer paper works best.
2. Is the printer printing within its environmental specifications? Print the Diagnostic Summary Page to determine the printer’s condition.
3. Ensure the paper is correctly loaded in the tray.
4. Clean the pick rollers with an a dry, lint-free cloth if debris is visible.
5. Replace the paper pick rollers.
6. Check the tray’s retard pad for damage.
7. Replace the paper tray.

The media skews passing through the paper path

1. Make sure that the media is properly installed in the tray.
2. Does the pick-up roller pick up evenly? Is it clean?
3. Is the paper tray damaged or obstructed?
4. Are the tray's side paper guides snugly adjusted against the stack of media? The guides should be neither too loose nor too tight.
5. The problem occur when printing from a different tray?
6. Is there an obstacle blocking the paper path?
7. Is the media excessively curled?
8. Is the customer using an appropriate type of media – a type the printer can handle?
9. Ensure the corners or the paper are under the tabs in the corners of the tray.
10. Replace the paper pick rollers.

Paper tray indicates it is empty when it is not

The procedure for troubleshooting this problem applies to the lower tray assembly as well.

1. Does the paper empty flag properly interrupt the paper empty sensor? Remove the paper tray and actuate the paper-empty flag located to the left of the pick rollers.
2. Test the sensor using the service tests described in “Switch scan test” on page 63.
3. Replace the engine controller board.

Jams

Wrong media

1. Ensure the correct media type and size is loaded in the correct tray. For the multi-sheet bypass feeder, ensure the loaded media matches the control panel settings.
2. Inspect the paper tray for damage to the tray's paper size sensor actuators.
3. Test the printer's paper size sensors using the service test "Switch scan test" on page 63. If the sensors test ok, then the engine controller board is probably bad.
4. Replace the paper size sensor board's wiring harness.

Paper jams at the paper tray

1. Is the paper in good condition and appropriate for a laser printer?
2. Is the printer printing within its environmental specifications? Print the Diagnostic Summary Page to determine the printer's environmental conditions.
3. Are the pick rollers dirty? If so, clean them with an a dry, lint-free cloth if debris is visible and try printing again.
4. Remove the paper tray and inspect the paper tray lift levers on the inner-sides of the paper tray cavity. Inspect the tray's paper lift mechanism.
5. Does the paper feed motor run? Check the motor's wiring harness and connection (HOPFF) to the engine controller board.
6. Replace the paper feed motor.
7. Check the gear train for broken teeth and proper installation.
8. Replace the pick rollers.
9. Does the pick clutch work properly? If not, replace it.
10. Replace the engine controller board.

Manual bypass feeder feed jams

1. Is the paper in good condition and appropriate for a laser printer?
2. Is the printer printing within its environmental specifications? Print the Diagnostic Summary Page to determine the printer's environmental conditions.
3. Do not overload the manual bypass tray; otherwise jams will occur.
4. Clean with an a dry, lint-free cloth if debris is visible or replace the manual bypass feed pick roller.
5. Test the manual bypass feeder sensors using the service test "Switch scan test" on page 63.
6. Inspect the wiring harness from the manual bypass feeder to the engine controller board.
7. Replace the manual bypass feeder.
8. Replace the engine controller board.

Paper jams at the registration rollers

1. Ensure that the pick-up rollers are clean. Clean them with an a dry, lint-free cloth if debris is visible.
2. Check the paper path for burrs or foreign obstructions that could block the movement of a sheet of paper.
3. Clean the registration rollers with an a dry, lint-free cloth if debris is visible.
4. Test, and if necessary, replace the registration motor. Test the motor using the service test "Motor and clutch tests" on page 69.
5. Does the registration roller electric clutch operate correctly? Operate it with the service test "Motor and clutch tests" on page 69.
6. **Transparency film.** Use only Xerox-brand transparency film meant for this printer.

Paper jams at the transfer belt

1. Check for a paper scrap in the paper path.
2. Is the transfer belt assembly correctly installed?
3. Test the transfer belt motor using the service test "Motor and clutch tests" on page 69.

Fuser jams

1. Is the paper in good condition and appropriate for a laser printer?
2. Is the printer printing within its environmental specifications? Print the Diagnostic Summary Page to determine the printer's environmental conditions.
3. Test the fuser motor using the service test "Motor and clutch tests" on page 69.
4. Does the exit sensor flag properly actuate its sensor? Use the service test "Switch scan test" on page 63 to test the senor.
5. Replace the fuser.
6. Replace the engine controller board.

Eject jams

1. Is the paper in good condition and appropriate for a laser printer? Is the paper curling?
2. Is the printer printing within its environmental specifications? Print the Diagnostic Summary Page to determine the printer's environmental conditions.
3. Is the jam caused by a heavy, stiff paper being printed to the face-down tray? In such cases, a lighter grade of paper should be used or face-up mode to the rear output tray should be used.
4. Is the paper excessively curved after passing through the fuser? Try flipping the paper over in the paper tray.
5. Clean all the eject rollers with an a dry, lint-free cloth if debris is visible.
6. Does the exit sensor flag properly actuate its sensor? Test the sensor using the service test "Switch scan test" on page 63.
7. Replace the engine controller board.

Jams in the duplex unit

1. Is the duplex unit correctly installed?
2. Clean the rollers inside the duplex unit with an a dry, lint-free cloth if debris is visible.
3. Inspect the duplex unit for foreign objects such as a scrap of paper.
4. Inspect the duplex unit's electrical connector for damage.
5. Does the duplex unit's sensors operate correctly? Test the sensors using the service test "Switch scan test" on page 63.
6. Test the duplex motor using the service test "Motor and clutch tests" on page 69.
7. Replace the duplex unit.
8. Replace the engine controller board.

No drum imaging unit installed

1. Ensure that the drum imaging units are properly installed.
2. Check the high-voltage terminal connectors for the imaging unit to ensure that they are not damaged.
3. Replace the drum imaging unit.

Imaging drum unit up/down error

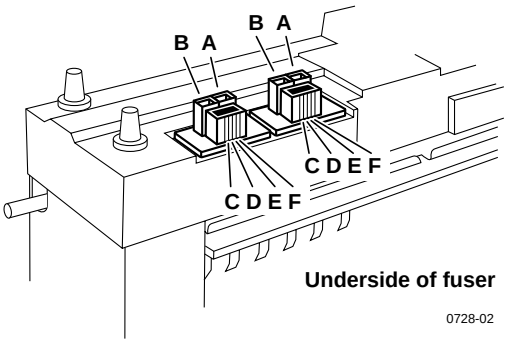
1. Cycle the printer power to see if the problem clears.
2. Ensure that each imaging drum unit is correctly installed and that each unit's drum contact assembly (a set of three spring-loaded pins) is not damaged. Ensure that each contact moves up and down freely and is not contaminated with toner. Remove an assembly from the printer to inspect, if necessary.
3. Open the top cover, defeat the top cover open switch, and observe if the color imaging drum unit are lifted up and down.
4. Test the drum contact assemblies using service test "Switch scan test" on page 63. If a drum contact assembly is damaged, replace it.
5. Does each imaging drum motor rotate. Test them using the service test "Motor and clutch tests" on page 69. Replace the main motor assembly, if indicated.
6. Inspect the gear drive for each imaging drum unit for damage.
7. Replace the engine controller board.

Fan error

1. Is power supplied to pin 1 of the fan? If yes, replace the fan.
2. Inspect the fan's wiring harness for damage.
3. Replace the low-voltage power supply
4. Replace the engine controller board.

Fuser unit error

1. Does the error occur immediately after the printer is turned on? Replace the fuser.
2. Check that AC voltage supplied to the printer is correct.
3. Does the fuser get hot? If not, replace the fuser.
4. If the fuser does warm up, verify that it is reaching the correct temperature by running the service test “Switch scan test” on page 63.
5. Does AC voltage appear between Pins 1 and 2 of CN 4-1 and CN 4-2 of the fuser connector. These pins connect to Pins A and B of the fuser (illustrated below) when the fuser is installed. Remove the fuser to check. If not, replace the power supply.



Bear in mind that the correct AC voltage may be present at Pins 1 and 2 of CN 4-1 and CN 4-2 even though the drivers feeding these pins are damaged and cannot deliver the current required by the fuser heaters.

6. Replace the engine controller board.
7. Replace the low-voltage power supply.

Other problems

These problems may be indicated as errors on the front panel.

The printer continuously displays “Booting” or “Initializing.”

The most likely cause is that the system controller board has not successfully loaded its EEPROM contents (instructions) into RAM. The health indicator LED (heart beat) usually indicates such an error state by being on or off but not flashing. All print engine operation halts, and will only become ready when the system controller board successfully boots.

1. Re-powering the printer, or perform a NVRAM reset can may fix this problem.
2. To verify if the system controller board has failed:
   a. Power down the printer, and remove the system controller board board.
   b. Power-up the printer. Wait at least 5 minutes while the print engine initializes. If there was a problem with the system controller board, it will now not affect the print engine controller board.
   c. If the print engine powers up correctly, a traveling “*” moves around the control panel display. If not, then your problem is most likely associated with the print engine controller board, and you will need to replace it. If, however, you see the traveling “*”, then the most likely cause is the system controller board.

False “No toner cartridge installed” message

1. Ensure that the toner cartridge is correctly installed.
2. Replace the toner cartridge.
3. Test the toner cartridge sensor board using the service test “Switch scan test” on page 63.
4. Replace the engine controller board.

False “No fuser unit installed” message

1. Ensure that the fuser unit is correctly installed.
2. Check the condition of fuser units’s connector and their corresponding receptacles on the print engine (under the fuser unit).
3. Replace the fuser unit.
4. Replace the engine controller board.
5. Replace the low-voltage power supply.

Front door indicated being open when it is closed

1. Inspect that the front door's interlock for damage.
2. Replace the interlock switch.
3. Check its wiring harness.
4. Replace the engine controller board.
5. Replace the power supply.

High temperature error

1. Check the fans for proper operation.
2. Replace the low-voltage power supply unit.
3. Replace the engine controller board.

Low temperature error

If the fuser is cold,

4. Ensure the fuser unit is properly installed.
5. Check the fuser unit's connection and wiring.
6. Replace the fuser unit.
7. Replace the low-voltage power supply.
8. Replace the engine controller board.

If the fuser is hot,

1. Replace the fuser
2. Replace the engine controller board

Invalid memory DIMM

1. Upon power-up, the system controller board checks each DIMM for information such as data width, clock delay, number of address columns and row, refresh rate and more. If the DIMM does not meets the required specifications the printer displays an "Invalid memory DIMM" error message and then continues the bootup process.

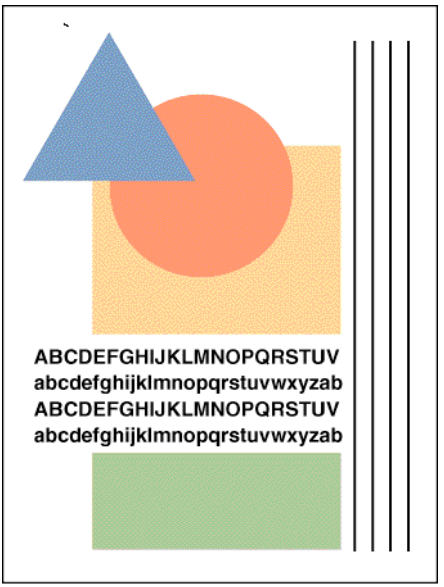
Printing and print quality problems

Required tools

- #1 Phillips screwdriver
- Volt-ohm-meter (VOM)
- Conductive grease
- Ruler

Light or blurred images

1. Is the correct paper being used in the printer?
2. Are the toner cartridges low?
3. Are any of the imaging drum reaching their end-of-life? Replace them if they are.
4. Do the imaging drum units make good connection to their power terminals?
5. Are the LED heads dirty? Clean each head with an alcohol-soaked, lint-free cloth.
6. Are the LED heads wiring harnesses undamaged and properly seated?
7. Is +3.8V (red wire) supplied to Pin 3 of each LED head assembly? If yes, replace the LED head assembly.



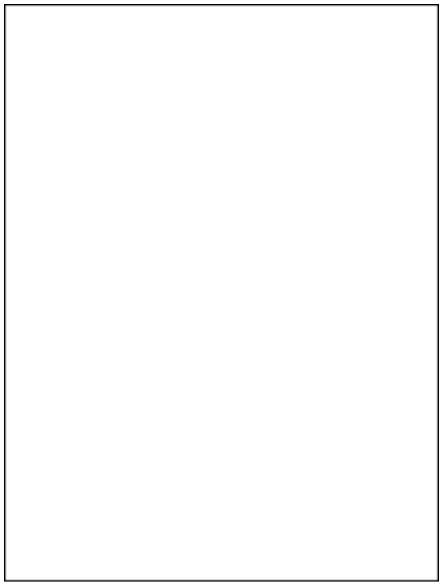
8. Is +3.8 V supplied to the POWER connector pins 1, 2, 3, 4, 5, 6, 7 and 8 on the junction board or at the 16-pin interconnect near the top cover hinge (under the top shield plate). Inspect the junction board's wiring connectors. If the voltage is not OK, replace the low-voltage power supply.
9. If +32 volts supplied to the POWER connector pins 7, 8, 9 and 10 on the engine controller board? Inspect the wiring harnesses or replace the low-voltage power supply.
10. Is +32V supplied to the HVOLT connector Pin 5 of the engine board. If not replace the engine board. (Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.)
11. Inspect the high-voltage wiring harnesses.
12. Replace the high-voltage power supply.

Dark, stained background

1. Determine if any of the imaging drums were exposed to light for an extended amount of time. If so, replace an unit which was.
2. Examine the fuser rollers for contamination. Replace the fuser if they are.
3. Ensure the media type is correctly set.
4. Are the power supply fans both running? A heat build-up under the imaging units can cause toner to stain the print's background.
5. Do the imaging drum units make good connection to their power terminals?
6. Are the LED heads wiring harnesses undamaged and properly seated?
7. Is +3.8V (red wire) supplied to Pin 3 of each LED head assembly? If yes, replace the LED head assembly.
8. Is +3.8 V supplied to the POWER connector pins 1, 2, 3, 4, 5, 6, 7 and 8 on the junction board or at the 16-pin interconnect near the top cover hinge (under the top shield plate). Inspect the junction board's wiring connectors. If the voltage is not OK, replace the low-voltage power supply.
9. If +32 volts supplied to the POWER connector pins 7, 8, 9 and 10 on the engine controller board? Inspect the wiring harnesses or replace the low-voltage power supply.
10. Is +32V supplied to the HVOLT connector Pin 5 of the engine board. If not replace the engine board. (Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.)
11. Inspect the high-voltage wiring harnesses.
12. Replace the high voltage power supply.

Blank print

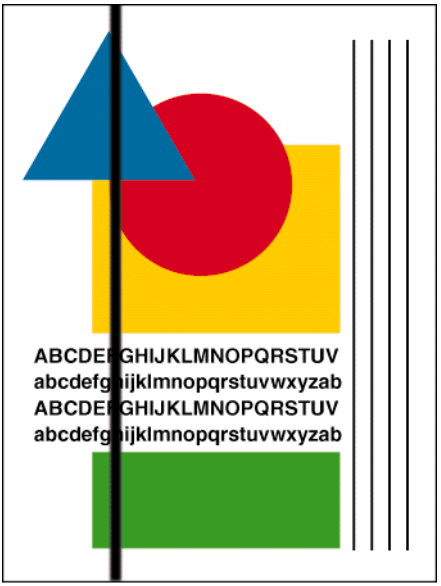
1. Do the imaging drum units make good connection to their power terminals?
2. Are the LED heads wiring harnesses undamaged and properly seated?
3. Is +3.8V (red wire) supplied to Pin 3 of each LED head assembly? If yes, replace the LED head assembly.
4. Is +3.8 V supplied to the POWER connector pins 1, 2, 3, 4, 5, 6, 7 and 8 on the junction board or at the 16-pin interconnect near the top cover hinge (under the top shield plate). Inspect the junction board's wiring connectors. If the voltage is not OK, replace the low-voltage power supply.



0728-08

5. If +32 volts supplied to the POWER connector pins 7, 8, 9 and 10 on the engine controller board? Inspect the wiring harnesses or replace the low-voltage power supply.
6. Is +32V supplied to the HVOLT connector Pin 5 of the engine board. If not replace the engine board. (Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.)
7. Inspect the high-voltage wiring harnesses.
8. Replace the high voltage power supply.

Black stripe in direction of paper travel



1. Do the imaging drum units make good connection to their power terminals?
2. Are the LED heads wiring harnesses undamaged and properly seated?
3. Is +3.8V (red wire) supplied to Pin 3 of each LED head assembly? If yes, replace the LED head assembly.
4. Is +3.8 V supplied to the POWER connector pins 1, 2, 3, 4, 5, 6, 7 and 8 on the junction board or at the 16-pin interconnect near the top cover hinge (under the top shield plate). Inspect the junction board's wiring connectors. If the voltage is not OK, replace the low-voltage power supply.
5. If +32 volts supplied to the POWER connector pins 7, 8, 9 and 10 on the engine controller board? Inspect the wiring harnesses or replace the low-voltage power supply.
6. Is +32V supplied to the HVOLT connector Pin 5 of the engine board. If not replace the engine board. (Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.)
7. Inspect the high-voltage wiring harnesses.
8. Replace the high voltage power supply.

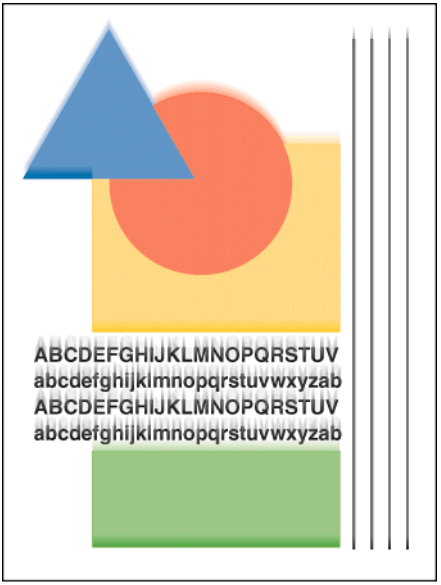
White stripe in direction of paper travel

1. Look for dirt or contamination on the LED heads. Clean them with an alcohol wipe.
2. Do the imaging drum units make good connection to their power terminals?
3. Are the LED heads wiring harnesses undamaged and properly seated?
4. Is +3.8V (red wire) supplied to Pin 3 of each LED head assembly? If yes, replace the LED head assembly.
5. Is +3.8 V supplied to the POWER connector pins 1, 2, 3, 4, 5, 6, 7 and 8 on the junction board or at the 16-pin interconnect near the top cover hinge (under the top shield plate). Inspect the junction board's wiring connectors. If the voltage is not OK, replace the low-voltage power supply.

6. If +32 volts supplied to the POWER connector pins 7, 8, 9 and 10 on the engine controller board? Inspect the wiring harnesses or replace the low-voltage power supply.
7. Is +32V supplied to the HVOLT connector Pin 5 of the engine board. If not replace the engine controller board. Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.
8. Inspect the high-voltage wiring harnesses.
9. Replace the high voltage power supply.

Poor fusing, toner offsetting

1. Is a supported paper type being used? Try printing on a different brand of paper.
2. Is the fuser unit properly installed and making good electrical contact with the print engine? Inspect its connector.
3. Inspect the fuser. Are its rollers contaminated or damaged?
4. Ensure the media type is correctly set.
5. Does AC voltage appear between Pins 1 and 2 of CN 4-1 and CN 4-2 of the fuser connector. These pins connect to Pins A and B on the fuser's underside when the fuser is installed; remove the fuser to check. If not, replace the power supply.



0728-11

6. Is the resistance of the fuser's upper roller thermistor (at room temperature) between 190 to 980 ohms? If not replace the fuser.
7. Is the resistance of the fuser's lower roller thermistor (at room temperature) between 190 to 980 ohms? If not replace the fuser.
8. Is the fuser temperature correct during printing? Run the maintenance mode fuser test "Test printing" on page 71 and check the temperature displayed on the controller panel.
9. Replace the engine controller board. Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.

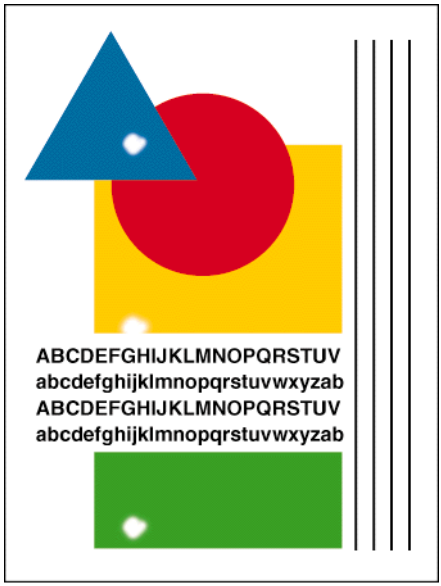
Offsetting and fuser temperature. Offsetting occurs on specialty paper if the fuser's temperature does not match the paper loaded in the multi-sheet bypass feeder. For cold-offsetting, characterized by toner flaking off the completed print, you want to raise the fuser's temperature. For hot-offsetting, characterized by toner pulled off print as it is fused, you want to lower the fuser's temperature. The chart below lists the specialty paper types and relative fuser temperatures used. To correct offsetting, select the next paper type above or below the current paper type you are using. Removing and reloading paper in the multi-sheet bypass feeder, prompts you for the paper type at the control panel.

Hottest fuser temperature used
Cardstock
Label/Envelope
Glossy
Letterhead/Light Cardstock
Plain Paper/Transparency film
Coolest fuser temperature used

Repeating defect or voids on print

This can usually be traced to a dent-like defect in the developer roller of the imaging drum unit in question. Measure the spacing between the spots. The distance between the repeating spots indicates the source of the problem.

In some instances, the spots may be dark instead of white. They may also be shaped something other than round.



0728-12

- If the spots are about 115 mm (4 in.) apart, then the problem is a defect on a fuser roller. Replace the fuser.
- If the spots are 57.8 mm (2.27 in.) the problem is with the transfer roller of the transfer belt unit. Replace the transfer belt unit.
- 94.2 mm (3.7 in.): Imaging drum. Replace the imaging drum unit.
- 49 mm (1.9 in.): Developing roller. Replace the imaging drum unit of the affected color.
- 57.8 mm (2.27 in.): Toner supply roller. Replace the imaging drum unit of the affected color.
- 44 mm (1.7 in.): Charging roller. Replace the imaging drum unit of the affected color.

Missing characters or voids in print

1. Look for dirt or contamination on the LED heads. Clean them with an alcohol wipe.
2. Inspect and clean the imaging drum unit's power terminals Ensure the spring-loaded pins travel smoothly up and down.
3. Is a low-toner condition occurring?
4. Replace any imaging drum units you suspect are defective.
5. Are the LED heads' ribbon cables undamaged and properly seated?
6. Is +3.8V (red wire) supplied to Pin 3 of each LED head assembly? If yes, replace the LED head assembly.

0728-13

7. Is +3.8 V supplied to the POWER connector pins 1, 2, 3, 4, 5, 6, 7 and 8 on the junction board or at the 16-pin interconnect near the top cover hinge (under the top shield plate). Inspect the junction board's wiring connectors. If the voltage is not OK, replace the low-voltage power supply.
8. If +32 volts supplied to the POWER connector pins 7, 8, 9 and 10 on the engine controller board? Inspect the wiring harnesses or replace the low-voltage power supply.
9. Is +32V supplied to the HVOLT connector Pin 5 of the engine board. If not replace the engine controller board. Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.
10. Inspect the high-voltage wiring harnesses.
11. Replace the high voltage power supply.

Color misalignments

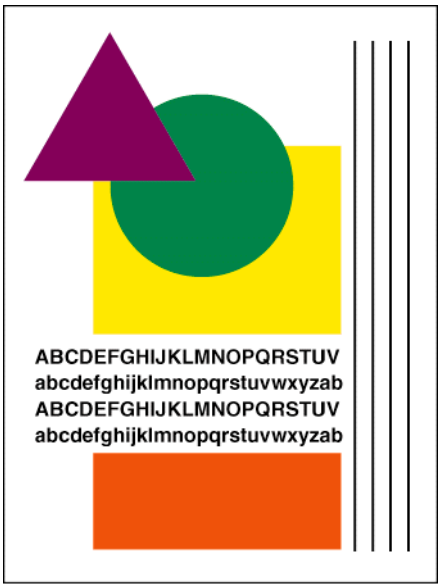
1. Test the registration sensor as described in the topic “Switch scan test” on page 63.
2. Look for any broken gears in the printer. specifically, inspect the imaging drum gear assembly, the paper feeder assembly and the transfer belt assembly.
3. Inspect and clean the imaging drum unit’s power terminals Ensure the spring-loaded pins travel smoothly up and down.
4. Replace any imaging drum units you suspect are defective.
5. Are the LED heads’ ribbon cables undamaged and properly seated? Replace any suspect LED head assembly, if necessary
6. Inspect the wiring harnesses of the junction board for damage or improper seating.

0728-14

7. Inspect the wiring harnesses of the engine controller board for damage or improper seating.
8. Replace the engine controller board. Transfer the old engine controller board’s EEPROM (lower-right corner of board) to the new engine controller board.

Unexpected colors

The colors produced by the printer are dramatically different from the color you expected.



1. Look for dirt or contamination on the LED heads. Clean them with an alcohol wipe.
2. Inspect and clean the imaging drum unit's power terminals Ensure the spring-loaded pins travel smoothly up and down.
3. Replace any imaging drum units you suspect are defective.
4. Are the LED heads wiring harnesses undamaged and properly seated?
5. Is +3.8V (red wire) supplied to Pin 3 of each LED head assembly? If yes, replace the LED head assembly.
6. Is +3.8 V supplied to the POWER connector pins 1, 2, 3, 4, 5, 6, 7 and 8 on the junction board or at the 16-pin interconnect near the top cover hinge (under the top shield plate). Inspect the junction board's wiring connectors. If the voltage is not OK, replace the low-voltage power supply.
7. If +32 volts supplied to the POWER connector pins 7, 8, 9 and 10 on the engine controller board? Inspect the wiring harnesses or replace the low-voltage power supply.
8. Is +32V supplied to the HVOLT connector Pin 5 of the engine board. If not replace the engine controller board. Transfer the old engine controller board's EEPROM (lower-right corner of board) to the new engine controller board.
9. Inspect the high-voltage wiring harnesses.
10. Replace the high voltage power supply.

Image is skewed on the paper

1. Is the paper in good condition and the recommended type and weight for a laser printer? Does the paper in the multi-sheet bypass feeder match the front panel settings?
2. Is the printer printing within its environmental specifications? Print the Diagnostic Summary Page to determine the printer's conditions.
3. Ensure the tray is properly loaded with the tray's paper guides correctly snugged against the stack of paper.
4. Swap the tray from which the skewed print originates.
5. Ensure that paper feed rollers are clean and undamaged. Inspect its paper pick roller. Clean them with an a dry, lint-free cloth if debris is visible.
6. Replace the paper pick rollers.
7. Look for obstructions in the paper path.
8. Clean the intermediate and aligning rollers with an a dry, lint-free cloth if debris is visible.
9. Replace the paper feeder.

Image is not centered on the print

1. Is the paper in good condition and appropriate for a laser printer?
2. Is the printer printing within its environmental specifications? Print the Diagnostic Summary Page to determine the printer's conditions.
3. Ensure that paper feed rollers are clean and undamaged. Inspect its paper pick roller. Look for obstructions in the paper path.
4. Clean the feed rollers and the registration rollers with an a dry, lint-free cloth if debris is visible.
5. Replace the engine controller board.

The print is wrinkled

1. Check for an obstruction in the paper path, particularly with the feed rollers and the fuser.
2. Is the paper in good condition and appropriate size, weight, grain and grade for a laser printer? Print the Diagnostic Summary Page to determine the printer's conditions.
3. Is the printer printing within its environmental specifications?
4. If possible, you should feed long-grain paper into the printer. Long-grained paper's grain is parallel to the paper path (the direction the paper travels while it is fed through the printer).

Macintosh printing problems

Image never prints

The printer indicates it is receiving data, but no print comes out of printer or the printer goes back to `Ready to Print` mode without printing an image.

1. Make sure that the correct printer icon was selected in the **Chooser**. Try printing the job again. Try printing a different file or from a different application.
2. In the **Chooser**, switch background printing *off*. Try printing the job again. With newer LaserWriter printer drivers, select Foreground Printing in the Print dialog box.
3. Download the *Echo showpage* snippet which produces a blank sheet of paper, to determine if the printer is receiving and processing files.
4. Make sure you are printing with the correct PPD file.
5. Activate *Error Handler* using the front panel `Advanced Printer Settings` menu. Alternately, download the *Error Handler* utility and try printing the job again. If an error page is printed after printing the job again, call the Customer Support Hotline for further assistance. Please have the error page in hand.
6. If available, try printing to a black-and-white PostScript Level 2 printer (such as an Apple LaserWriter). If the file does not print on the black-and-white PostScript printer, this may mean that the problem is application- or network-related.

Image is rotated 90 degrees

1. In the application's **Page Setup**, make sure that the image is selected to print in Portrait or Landscape orientation, as you expect.

Image prints in black-and-white

1. In the **Chooser**, ensure a color printer icon is displayed next to the Phaser 1235 in the list of available printers. This indicates the printer's PPD has been selected and properly configured.
2. In the Print dialog box, make sure that the **Color/Grayscale** option has been selected.
3. Make sure that the Phaser 1235 printer icon was selected in the **Chooser**. Try printing the job again.
4. Check the version of your LaserWriter driver to ensure that it is version 8.0.x or higher. Earlier versions of the driver do not support color PostScript.
5. The application may require special instructions to print, such as those contained in a *PPD* file; check in the *Phaser 1235 Printer CD-ROM*.

Printer isn't in the Chooser

1. Ensure that the printer is turned on and the printer is in its READY mode.
2. Check the **Network** or **AppleTalk** control panel to ensure the proper network or zone is selected.
3. Power-cycle the printer.
4. Check to see if the printer has not been renamed or placed in another zone. You can print a Configuration Page, which lists this EtherTalk information as well as other information about the printer.
5. Verify the EtherTalk settings on the printer's Configuration Page.
6. Verify that the printer is correctly cabled to the network and that the Ethernet cable functions properly.
7. Locate and remove and Windows NT shared printers that have captured the AppleTalk queue for the printer.
8. Verify the driver version for the built-in Ethernet port on a Macintosh G3.
9. Reset the printer's NVRAM settings.
10. Disable QuickDraw GX

Windows printing problems

Image never prints

The printer's front panel `Receiving data` message is displayed as if receiving data, but nothing comes out of printer or the printer goes back to `Ready to Print` mode without printing an image.

1. From the printer driver, under the printer's set up options, set **TRANSMISSION RETRY = 850**.

Service Tests and Adjustments

Diagnostics mode

To start the engine maintenance mode:

1. Turn off the printer.
2. Press and hold the **Menu (1)** and **Enter (4)** keys.
3. Turn on the printer.
4. When, DIAGNOSTIC MODE xx.xx.xx is displayed on the control panel (*xx.xx.xx* is the ROM version), release the control panel keys.
5. Press the **Menu (1)** key to enter the maintenance mode menu.
6. Press the **Item (2) or (6)** keys to scroll through the menu.
7. Press the **Enter (4)** key to activate the displayed menu item.
   Press the **Enter (4)** key again to discontinue a test in progress.

Use engine maintenance mode to test the printer sensors, test the media transport system, test the imaging LED banks, and to reset NVRAM.

To exit engine maintenance mode, while DIAGNOSTIC MODE xx.xx is displayed, press **Online (0)**. Alternately, you can turn the power off, wait a few seconds, and then turn power back on.

These are the items of the engine maintenance mode menu.

- Switch Scan Test
- Motor & Clutch Tests
- Test Print
- Consumables count reset
- Consumable Status
- Printer Status

This table details the menu items, their sub-menus, and settings.

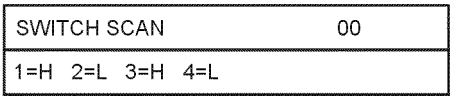
Engine maintenance mode menu

Menu - scroll using Menu(1) or Menu(5)	**Items -** scroll using Item(2) or Item(6)	**Settings -** scroll using Value(3] or Value(7)	**Description**
SWITCH SCAN	SCAN00 thru SCAN19	Test start/stop	Select and test printer switches and sensors
MOTOR & CLUTCH TEST	Lists each motor and clutch	Test start/stop Alternation of setting or Test start/stop	Test the printer motors and clutches. A selected motor or clutch is operated for 10 seconds
TEST PRINT	Items set for test print	Select parameters of print such as paper source and print mode. Test start/stop	Test the print engine's ability to print
NV-RAM INITIAL (consumables count reset)	TABLE 1 TABLE 2 TABLE 3	Test start/stop	The selected table determines which items will be initialized. The counter values are initialized after exchanging the drum belt unit, fuser unit or toner cartridge. The adjusted values for mechanical controls are all cleared to their initial values.
CONSUMABLE STATUS	Displays each consumable item	*no settings*	The consumption status of each consumables is displayed in turn. Values show are of prints made and percentage of toner consumed.
PRINTER STATUS	Lists print count and impressions made by each imaging unit	*no settings*	The life status of the selected consumable is displayed.

Switch scan test

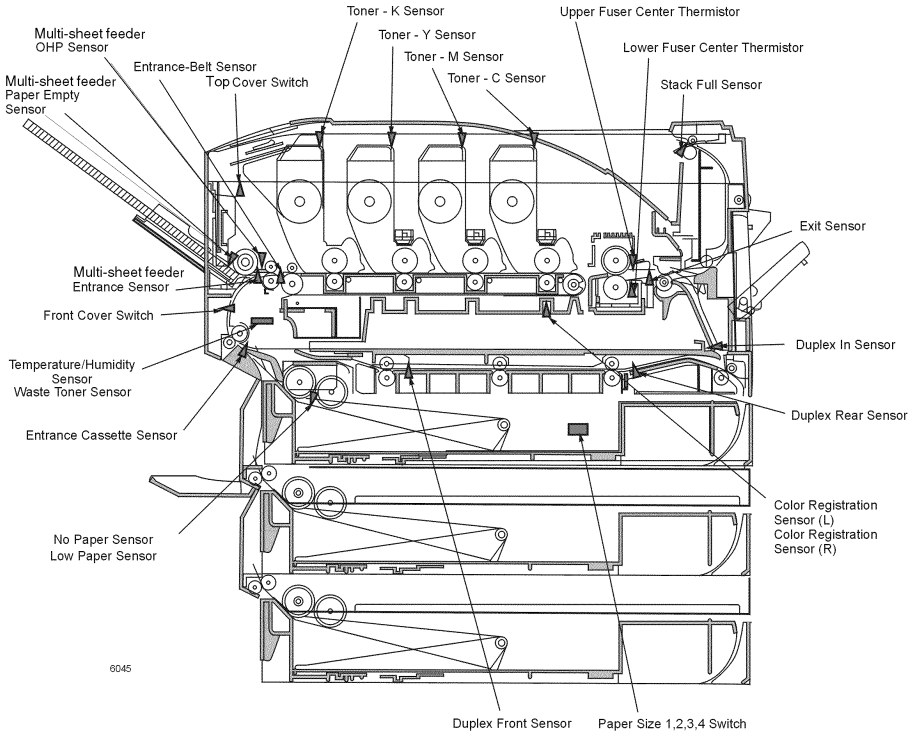
Use this test to check the operation of the printer's switches and sensors.

1. Enter the diagnosis mode by pressing and holding the **Menu (1)** and **Enter (4)** keys as you turn on the printer.
2. Press the **Menu (1, 5)** keys to scroll through the list of test until SWITCH SCAN appears on the upper display.
3. Press the **Item (2,6)** keys to scroll through the list of sensor tests, called SWITCH SCAN tests. The table below list the SCAN test items and which sensors and switches and test by that menu item.
4. Pressing the **Value (3)** key activates the currently displayed switch scan test. The SWITCH SCAN number begins to blink, and the corresponding logic state (High or Low) of the particular switches or sensors scanned by the test (listed as 1=, 2=, 3=, and 4=) are displayed.



6051

5. With a test active, you can manually actuate the sensors being scanned and look for a change at the control panel.
6. Press **Value (7)** to stop the current test.
7. Repeat steps 2 through 5 as required.
8. To exit the switch scan test mode, press **Enter (4)**.


Toner - K Sensor
Upper Fuser Center Thermistor
Multi-sheet feeder
OHP Sensor
Toner - Y Sensor
Lower Fuser Center Thermistor
Toner - M Sensor
Entrance-Belt Sensor
Top Cover Switch
Toner - C Sensor
Multi-sheet feeder
Paper Empty
Sensor
Stack Full Sensor
Exit Sensor
Multi-sheet feeder
Entrance Sensor
Front Cover Switch
Duplex In Sensor
Temperature/Humidity
Sensor
Waste Toner Sensor
Duplex Rear Sensor
Entrance Cassette Sensor
Color Registration
Sensor (L)
Color Registration
Sensor (R)
No Paper Sensor
Low Paper Sensor
6045
Duplex Front Sensor
Paper Size 1,2,3,4 Switch

Switch scans and the sensor and switches test

Switch or sensor	Switch scan test	Test result	Details
Tray 1 No Paper Sensor	Switch Scan 00 1=	L - Paper present H - No paper	Pull main tray out to test sensor
Tray 1 Low Paper Sensor	Switch Scan 00 2=	L - Paper level OK H - Low paper	Pull main tray out to test sensor
Cassette Entrance	Switch Scan 00 3=	L - No paper H - Paper present	Open front door and toggle sensor flag behind feed rollers
Manual Bypass Feeder Entrance/ Registration sensor	Switch Scan 00 4=	L - No paper H - Paper present	Open front door and push sheet of paper into paper path leading to the transfer unit
Belt Entrance	Switch Scan 01 1=	L - Paper present H - No paper	Open front door and push sheet of paper into paper path leading to the transfer unit. Manually rotate the registration roller (use the thumbwheel on the left end of the roller) to feed the paper to the transfer belt.
Exit Sensor	Switch Scan 01 2=	L - No paper H - Paper present	Toggle sensor flag behind the fuser. Remove the fuser if necessary
Stack Full Sensor	Switch Scan 01 3=	L - No paper H - Stack full	Toggle the sensor flag at the exit bin
not used	Switch Scan 01 4=		*not used*
Black Toner Cartridge Present	Switch Scan 02 1=	L - Deactuated H - Unit installed	Open top cover and actuate sensor flag next to LED head.
Cyan Toner Cartridge Present	Switch Scan 02 2=	L - Deactuated H - Unit installed	Open top cover and actuate sensor flag next to LED head.
Magenta Toner Cartridge Present	Switch Scan 02 3=	L - Deactuated H - Unit installed	Open top cover and actuate sensor flag next to LED head.
Yellow Toner Cartridge Present	Switch Scan 02 4=	L - Deactuated H - Unit installed	Open top cover and actuate sensor flag next to LED head.
Top Cover Switch	Switch Scan 03 1=	L - Top closed H - Top opened	Open top cover
Front Cover Switch	Switch Scan 03 2=	L - Cover closed H - Cover opened	Open front cover
Waste Toner Sensor	Switch Scan 03 3=	L - Not full H - Full	Remove the drum unit caddy and the transfer belt. Locate the sensor below the registration rollers. Interrupt the sensor with a scrap of paper
not used	Switch Scan 03 4=		not used
not used	Switch Scan 04		*not used*
not used	Switch Scan 05		*not used*
Manual Bypass Feeder Home Sensor	Switch Scan 06 1=	L - Roller at home H - Roller not home	Open the top cover and remove the drum unit caddy. Manually rotate the manual bypass feed roller by turning the white gear on the right end of the roller.
Manual Bypass Feeder Paper Empty Switch	Switch Scan 06 2=	L - Paper loaded H - No Paper	Toggle the switch located at the inner-base of the Manual Bypass Feeder tray

Switch scans and the sensor and switches test

Switch or sensor	Switch scan test	Test result	Details
not used	Switch Scan 06 3=		not used
Manual Bypass Feeder OHP Sensor	Switch Scan 06 4=	L - Transparency H - Paper	Manual feed a sheet of paper film thru the feeder. Transparency film causes no change
Tray 1, Size 1 Switch - (Top)	Switch Scan 07 1=	L - Actuated H - Deactuated	Remove the tray and actuate the sensor flags on right side of tray cavity
Tray 1, Size 2 Switch	Switch Scan 07 2=	L - Actuated H - Deactuated	
Tray 1, Size 3 Switch	Switch Scan 07 3=	L - Actuated H - Deactuated	
Tray 1, Size 4 Switch - (Bottom)	Switch Scan 07 4=	L - Actuated H - Deactuated	
Color Registration (Left) - 006	Switch Scan 08 1=	Density Value ***H	Color value in hexidecimal format. The default is 094
Color Registration (Right) - 00A	Switch Scan 08 2=	Density Value ***H	Color value in hexidecimal format. The default is 073
not used	Switch Scan 08 3=		*not used*
not used	Switch Scan 08 4=		*not used*
Upper Fuser Thermistor - 00D	Switch Scan 09 1=	Encoded fuser roller temperature	Temperature is encoded as a hexidecimal value. The default is between 16 and A1.
not used	Switch Scan 09 2=		*not used*
Lower Fuser Thermistor - 00F	Switch Scan 09 3=	Encoded fuser roller temperature	Temperature is encoded as a hexidecimal value. The default is between 16 and A1.
not used	Switch Scan 09 4=		*not used*
Humidity Sensor	Switch Scan 10 1=	Encoded environmental humidity	Default - 036
Temperature Sensor	Switch Scan 10 2=	Encoded environmental temperature	Default - 21E
not used	Switch Scan 10 3=		*not used*
not used	Switch Scan 10 4=		*not used*
Duplex In Sensor	Switch Scan 11 1=	L - Deactuated H - Actuated	Pull out the duplex unit. Lift its cover. Place a sheet of paper inside on the sensor flag. Close the cover. Reinsert the duplex unit in the printer.
Duplex Rear Sensor	Switch Scan 11 2=	L - Deactuated H - Actuated	Pull out the duplex unit. Lift its cover. Place a sheet of paper inside on the sensor flag. Close the cover. Reinsert the duplex unit in the printer.

Switch scans and the sensor and switches test

Switch or sensor	Switch scan test	Test result	Details
not used	Switch Scan 11 3=	*not used*	
Duplex Front Sensor	Switch Scan 11 4=	L - Deactuated H - Actuated	Pull out the duplex unit. Lift its cover. Place a sheet of paper inside on the sensor flag. Close the cover. Reinsert the duplex unit in the printer.
Tray 2, Size 1 Switch - (Top)	Switch Scan 12 1=	L - Actuated H - Deactuated	Remove the tray and actuate the sensor flags on right side of tray cavity
Tray 2, Size 2 Switch	Switch Scan 12 2=	L - Actuated H - Deactuated	
Tray 2, Size 3 Switch	Switch Scan 12 3=	L - Actuated H - Deactuated	
Tray 2, Size 4 Switch - (Bottom)	Switch Scan 12 4=	L - Actuated H - Deactuated	
Tray 2 No Paper Sensor	Switch Scan 13 1=	L - Actuated H - Deactuated	Pull Tray 2 out to test sensor
Tray 2 Low Paper Sensor	Switch Scan 13 2=	L - Actuated H - Deactuated	Pull Tray 2 out to test sensor
not used	Switch Scan 13 3=	*not used*	
not used	Switch Scan 13 4=	*not used*	
not used	Switch Scan 14 1=	*not used*	
not used	Switch Scan 14 2=	*not used*	
Tray 2 Feed Sensor	Switch Scan 14 3=	L - Actuated H - Deactuated	Open front door and toggle sensor flag behind feed rollers
not used	Switch Scan 14 4=	*not used*	
Tray 3, Size 1 Switch - (Top)	Switch Scan 15 1=	L - Actuated H - Deactuated	Remove the tray and actuate the sensor flags on right side of tray cavity
Tray 3, Size 2 Switch	Switch Scan 15 2=	L - Actuated H - Deactuated	
Tray 3, Size 3 Switch	Switch Scan 15 3=	L - Actuated H - Deactuated	
Tray 3, Size 4 Switch - (Bottom)	Switch Scan 15 4=	L - Actuated H - Deactuated	
Tray 3 No Paper Sensor	Switch Scan 16 1=	L - Actuated H - Deactuated	Pull Tray 3 out to test sensor
Tray 3 Low Paper Sensor	Switch Scan 16 2=	L - Actuated H - Deactuated	Pull Tray 3 out to test sensor
not used	Switch Scan 16 3=	*not used*	
not used	Switch Scan 16 4=	*not used*	
not used	Switch Scan 17 1=	*not used*	
not used	Switch Scan 17 2=	*not used*	
Tray 3 Feed Sensor	Switch Scan 17 3=	L - Actuated H - Deactuated	Remove tray 3 and toggle sensor flag behind feed rollers

Switch scans and the sensor and switches test

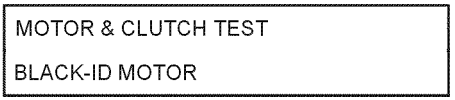
Switch or sensor	Switch scan test	Test result	Details
not used	Switch Scan 17 4=	*not used*	
not used	Switch Scan 18		*not used*
not used	Switch Scan 19		*not used*
not used	Switch Scan 20		*not used*
not used	Switch Scan 21		*not used*

Motor and clutch tests

1. Enter the diagnosis mode by pressing and holding the **Menu (1)** and **Enter (4)** keys as you turn on the printer.
2. Press the **Menu (1, 5)** keys to scroll through the list of test until MOTOR & CLUTCH TEST appears on the upper display.

Caution *Before running some motor and clutch tests you must remove certain printer consumable items; refer to table below. The front panel also reminds you to remove the necessary item before starting the test.*

3. Press the **Item (2, 6)** keys to scroll through the list of motors and clutches until the desired item is displayed.



6052

4. If indicated, remove the consumable items constraining the test.
5. Press the **Value (3)** key to start the displayed test. The displayed test item blinks, and the selected motor or clutch is driven for 10 seconds.
6. Press the **Value (7)** key to stop the unit.
7. Repeat the Steps 2 to 7 for other motor or clutch tests.
8. Press Enter (4) ends the tests.

Motor and clutch test constraints

Motor or clutch displayed on control panel	Constraints displayed on control panel	Details
BLACK-ID MOTOR	REMOVE ID	Run test with the drum unit caddy removed.
YELLOW-ID MOTOR	REMOVE ID	Run test with the drum unit caddy removed.
MAGENTA-ID MOTOR	REMOVE ID	Run test with the drum unit caddy removed.
CYAN-ID MOTOR	REMOVE ID	Run test with the drum unit caddy removed.
TRANSFER BELT MOTOR	REMOVE ID	Run test with the drum unit caddy removed.
FUSER MOTOR	*none*	Remove the fuser and observe the fuser drive gears turn.
REGISTRATION MOTOR	*none*	Remove the drum unit caddy and observe the registration roller B turn

Motor and clutch test constraints

Motor or clutch displayed on control panel	Constraints displayed on control panel	Details
MAIN FEEDER MOTOR	EXIT TRAY1 CASSETTE	Run the test with Tray 1 removed
REGISTRATION CLUTCH	*none*	Open the front cover and observe registration roller A turning
REGISTRATION SHUTTER	*none*	Remove the imaging drums and the transfer belt to watch the shutter open and close.
EXIT SOLENOID	*none*	Open the top cover and observe the exit gate move up and down
DUPLEX MOTOR (OPTION)	*none*	Listen for the motor turning for about 5 seconds
DUPLEX CLUTCH	*none*	*none*
TRAY2 MOTOR (OPTION)	EXIT TRAY2 CASSETTE	Run the test with Tray 2 removed
TRAY2 FEED ROLLER CLUTCH (OPTION)	*none*	*none*
TRAY3 FEEDER MOTOR (OPTION)	EXIT TRAY3 CASSETTE	Run the test with Tray 3 removed
TRAY3 FEED ROLLER CLUTCH (OPTION)	*none*	*none*
MBF MOTOR	Remove media form the multi-sheet bypass feeder	Open the multi-sheet bypass feeder and observe the paper position plate cycle up and down

Test printing

1. Enter the diagnosis mode by pressing and holding the **Menu (1)** and **Enter (4)** keys as you turn on the printer.
2. Press the **Menu (1, 5)** keys to scroll through the list of test until TEST PRINT appears on the upper display.
3. Press the **Item (2, 6)** keys to scroll through the list of test print items until the desired print option is displayed.
4. With a test print menu item displayed, press the **Value (3, 7)** keys to scroll through the printing options of that item, such as which tray to print from and to print in blank-and-white or color.

6053

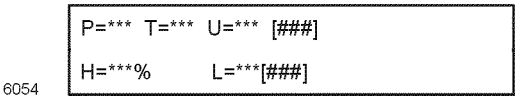
Test Print menu

Display	Set Value	Function
PRINT EXECUTE	-	Press **Value (3)** to start printing. Press **Value (7)** to stop printing.
TEST PATTERN	1	Selection of Printing Patterns 1: LED Head Drive Pattern 2: Color Registration Adjust Pattern 3: *Reserved* 4: Gray pattern 5: Thin lines 6: Colored stripes 7 thru 14: Blank
	2	
	3	
	4	
	5	
	6	
	7 - 14	
CASSETTE	TRAY1	Lets you select the source of paper for the test print.
	TRAY2	
	TRAY3	
	FF	
	NONE	
COLOR	ON*	Lets you select between color or monochrome printing
	OFF	
FUSER	ON*	Lets you select between the fuser heater being on or off.
	OFF	
DUPLEX	ON*	Lets you select between single-sided or double-sided printing.
	OFF	

5. Press the **Item (2, 6)** keys to scroll to the menu item PRINT EXECUTE. Press **Value (3)** to starts printing.

6. Press **Value (7)** to stop printing.

The following messages are showing at warm-up and during printing.



6054

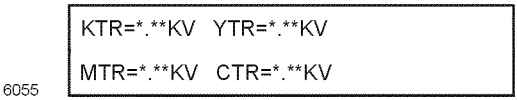
P: Number of sheets printed for test (in units of sheets)

U: Upper fuser heater temperature measurement (in degrees Celsius)

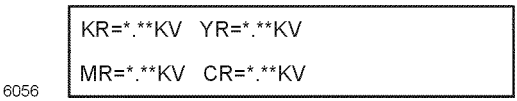
L: Lower fuser heater temperature measurement (in degrees Celsius)

T: Environmental temperature measurement (in degrees Celsius)

H: Environmental humidity measurement (in units of%). The key **Value (3)** changes the display.



6055



6056

7. Press **Enter (4)** to end the test.

Consumable count initialization

This test menu item allows you to initialize the print engine's consumable counts and registration set points.

1. Enter the diagnosis mode by pressing and holding the **Menu (1)** and **Enter (4)** keys as you turn on the printer.
2. Press the **Menu (1, 5)** keys to scroll through the list of test until NV-RAM INITIAL appears on the upper display.
3. Press the **Item (2, 6)** keys to select either Table 1 or Table 2. The tables determine which NVRAM items will be initialized. Refer to the tables printed below.

6057

4. Press and hold Value (3) for 10 seconds to initialize the items of the selected table. The front panel display NV-RAM INITIAL blinks eight times.
5. Press Enter (4) to exit the test mode.

Table 1: Initialization items - consumables

Initialization Item	Detail
Drum Counter Black Yellow Magenta Cyan	Initializes the drum counter's count after the replacement of a drum.
Belt Unit Counter	Initializes the print count after the replacement of a transfer belt unit.
Fuser Unit Counter	Initializes the fuser's print count after the replacement of a fuser unit.
Toner Counter Black Yellow Magenta Cyan	Initializes the toner use count after a toner cartridge is replaced

Table 2: Initialization items - calibration points

Initialization Item		Detail	Initialization Value	Unit
Registration Set Point x-axis	Yellow LED Magenta LED Cyan LED	Initialization of X-axis Corrections for yellow, magenta, and cyan LED heads	0	1/1200 inch
Registration Set Point y-axis (Left)	Yellow LED Magenta LED Cyan LED	Initialization of Y-axis Left-Corrections for yellow, magenta, and cyan LED heads	0	1/1200 inch
Registration Set Point y-axis (Right)	Yellow LED Magenta LED Cyan LED	Initialization of X-axis Right. Corrections for yellow, magenta, and cyan LED heads	0	1/1200 inch

Consumable counter display

This test indicate the status of each consumable supply.

1. Enter the diagnosis mode by pressing and holding the **Menu (1)** and **Enter (4)** keys as you turn on the printer.
2. Press the **Menu (1, 5)** keys to scroll through the list of test until CONSUMABLE STATUS appears on the upper display.
3. Press the **Item (2, 6)** keys to scroll through the list of consumable supply items. The consumption value is displayed with the item. The table below lists the menu items.
4. Press **Enter (4)** to end the test.

Consumable counter menu items

Upper Display	Lower Display	Detail
FUSER UNIT	********IMAGES	Shows the number of sheets fed since installation of a new fuser unit.
TR BELT UNIT	********IMAGES	Shows the number of sheets fed since installation of a new transfer belt unit.
BLACK ID UNIT	********IMAGES	Indicates the number of images processed by each imaging drum unit since it was installed.
YELLOW ID UNIT	********IMAGES	
MAGENTA ID UNIT	********IMAGES	
CYAN ID UNIT	********IMAGES	
BLACK TONER	***%	Shows the amount of toner remaining in each toner cartridge.
YELLOW TONER	***%	
MAGENTA TONER	***%	
CYAN TONER	***%	

Consumable continuation counter display

The self-diagnosis is carried out to indicate the consumption status of each consumable supply.

1. Enter the diagnosis mode by pressing and holding the **Menu (1)** and **Enter (4)** keys as you turn on the printer.
2. Press the **Menu (1, 5)** keys to scroll through the list of test until PRINTER STATUS appears on the upper display.
3. Press the **Item (2, 6)** keys to scroll through the list of supply items. The life-cycle consumption value is displayed with the item. The table below lists the menu items.
1. Press **Enter (4)** to end the test.

Consumable life-cycle counts

Upper Display	Lower Display	Unit	Detail
TOTAL SHEETS FED	******** PRINTS	Prints	Indicates the total number of sheets fed including blank paper
BLACK IMPRESSIONS	******** IMAGES	Image	Displays the number of images printed by each imaging drum
YELLOW IMPRESSIONS	******** IMAGES	Image	
MAGENTA IMPRESSIONS	******** IMAGES	Image	
CYAN IMPRESSIONS	******** IMAGES	Image	

Adjusting color density and balance

Over the life of the printer, colors may change. For example, reds may begin to take on a purple cast, or blues may take on a green cast. This happens during the normal use of a color printer and can be easily remedied by using the color adjustment procedure described in this section

This front panel procedure involves printing a test page and adjusting the densities and colors based on the appearance of the test page. You may need to repeat this procedure and test your adjustments until you achieve the desired effect.

Note *At any time, you can reset the printer to the factory defaults by selecting* Color Defaults *from the Color Adjust Menu.*

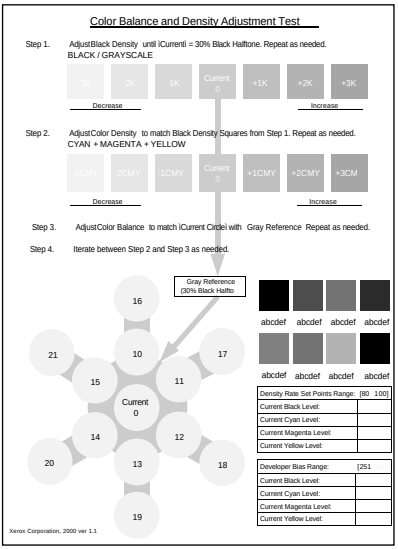
Printing a Test Page

1. Press the **Menu (1, 5)** keys until you see Color Adjust**.**
2. Press **Item (2, 6)** keys and the printer prints the Color Balance test print.

Interpreting the Color Balance test print

The Color Balance test print contains numbered images that indicate possible adjustments that can be made. You can choose to make an adjustment to the Color Density, the Black Density, or the Color Balance.

- The Black Density Images, numbered -3K...0,...+3K, show a lightness / darkness range of 30% halftones using black only.
- The Color Density Images, numbered -3CMY...0,...+3CMY, show a lightness / darkness range of 30% gray halftones using three colors (cyan, magenta, yellow).
- The Color Balance Images, numbered 0,10,11,...21, show variations of three-color gray. Each of these circles contains gray with tints of other colors.



What to look for

There are three things to look for in examining the test print.

- The Color Density and the Black Density are a matter of taste. The 30% halftones can be used to judge the current level and decide on a preference.
- The Color Density and Black Density should be at approximately the same level. This is important in order to make the Color Balance adjustment.
- The correct Color Balance is determined by comparing the circle in the center of the Color Balance object marked “CURRENT” with the gray background. The background is produced using black only and the circles are produced using a combination of cyan, magenta, and yellow. The adjustment objective is for the “CURRENT” circle to be the closest gray of any of the circles when compared to the gray background.

Making adjustments

Use the following procedures to make adjustments to the color density and balance:

Black density adjustment

1. Press **Item (2, 6)** keys until you see Color Adjust Menu: Black Density.
2. Press **Value (3, 7)** keys until you see Black Density = *New Value*.

   Values are: -3K, -2K, -1K, 0, +1K, +2K, +3K.
3. Press **Enter**. The Color Adjust Page prints and the front panel displays Color Adjust Menu: Black Density.

   Repeat Steps 2 and 3 above until you are satisfied with the results.

Color density adjustment

1. Press **Item (2, 6)** keys until you see Color Adjust Menu: Color Density.
2. Press **Value (3, 7)** keys until you see Color Density = *New Value*.

   Values are: -3CMY, -2CMY, -1CMY, 0, +1CMY, +2CMY, +3CMY.
3. Press **Enter**. The Color Adjust Page prints and the front panel displays Color Adjust Menu: Color Density.

   Repeat Steps 2 and 3 above until you are satisfied with the results.

Color balance adjustment

1. Press **Menu (1, 5)** keys until you see Color Adjust Menu.
2. Press **Item (2, 6)** keys until you see Color Adjust Menu: Color Balance.
3. Press **Value (3, 7)** keys until you see Color Density = *New Value*.

   Values are: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.
4. Press **Enter**. The Color Adjust Page prints and the front panel displays Color Adjust Menu: Color Balance.

   Repeat Steps 2 and 3 above until you are satisfied with the results.

Adjustment recovery

While in the color adjustment routine you can choose to return the values to the factory default values by using the Color Adjust menu's Color Defaults item.

The printer will be restored to the default values.

Cleaning and Maintenance

Service preventive maintenance procedure

Whenever you check, service, or repair a printer, you should perform the following procedures. Cleaning the printer, as outlined in the following steps, assures proper operation of the printer and reduces the probability of having to service the printer in the future.

The frequency of use and the type of paper a customer prints on determines how critical cleaning the machine is. Users of ordinary laser Bond paper (copier paper) should have very few problems since this paper is smooth and relatively dust-free. You should thoroughly inspect and clean these printers.

Recommended tools

- Toner vacuum cleaner
- Suction bulb (air blower)
- Cleaning water
- Lint-free wipes
- Cotton swabs
- Imaging unit cover
- Isopropyl alcohol (greater than 90% pure)

Periodically replaced parts

Periodically replaced parts

Part name	Display or Warning Condition	Recommended condition for replacement	Adjustment after replacement
Standard Toner Cartridge	When the message is displayed	When 5,000 pages are printed out (5% print density).	No adjustment required after replacing toner cartridge
Hi-Capacity Toner Cartridge	When the message is displayed	When 10,000 pages are printed out (5% print density).	No adjustment required after replacing toner cartridge
Drum Units	When the message is displayed	When 22,000 pages are printed out. (For 5 pages-per-job, Letter-size paper)	The printer's imaging drum unit counters are automatically reset due to a fuse being blown in the unit a few seconds after a unit is installed
Fuser Unit	When the message is displayed	When 60,000 pages are printed out.	The printer's fuser unit counter is automatically reset due to a fuse being blown in the unit a few seconds after it is installed
Transfer Belt Unit	When the message is displayed	When 66,000 pages are printed out. (For 5 pages-per-job, Letter-size paper)	The printer's transfer belt unit counter is automatically reset due to a fuse being blown in the unit a few seconds after it is installed

The following usage patterns may significatly reduce the lives of toner cartridges, imaging drums and transfer belts: Printing less than 5 pages per job, opening and closing the top cover, turning the printer off and on, printing on transparencies or specialty papers and automatic two-sided printing.

Cleaning

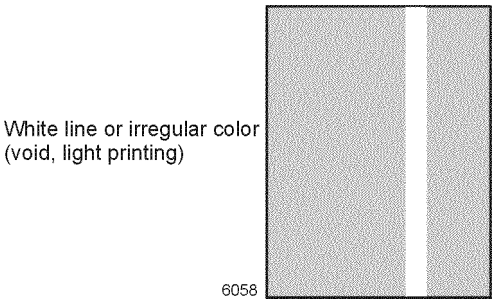
Periodically clean the inside and outside of the printer with a soft cloth and small vacuum cleaner when necessary.

Caution *Do not touch the terminals of the image drums, the LED bar, and the LED head connector block. Clean with alcohol wipe, if necessary.*

Cleaning the LED bar

The LED lens array must be cleaned when the printed paper has white lines or irregular colors (such as a void or light printing) running vertically down of the paper. Clean the lens with an alcohol wipe to clean the LED bar. (An alcohol wipe always comes with the toner cartridge.)

Print the 100% Color Stripe Pattern. If a light or white stripe appears in any primary color or a secondary color has an irregular color streak, clean the LED lens of the affected color.



Print problem caused by dirty LED lens

Cleaning the pickup roller

When mispicks occur, clean the pickup roller.

Note *The roller should be cleaned with an a dry, lint-free cloth if debris is visible so the surface is not scratched.*

Resetting NVRAM

Resetting NVRAM returns all the image processor's NVRAM-stored parameters, including the network card, to their factory defaults except the print counts and the Adobe firmware serial number. This procedure reset all values, including language and color balance, to the factory default values. Event logs cannot cleared.

1. Turn off the printer.
2. Press and hold-down the **On Line (0)** key and the **Enter (4)** keys.
3. Turn on the printer. When the message **Ready** will be displayed use the the **Menu (1, 4)** keys to scroll through the list of menu items to the menu item **Reset Menu**. Press **Enter (4)**.
4. Use the **Menu (1, 4)** keys to scroll through the list of reset options:

   - **Factory Defaults**. (print engine settings)
     Use the **Item (2, 6)** keys to activate the **Confirm Action Yes/No** menu. Press **Enter** to confirm your selection.
   - **Network Defaults**. (network settings)
     Use the **Item (2, 6)** keys to activate the **Confirm Action Yes/No** menu. Press **Enter** to confirm your selection.
   - **Demo Mode**.
     Use the **Item (2, 6)** keys to activate the **Confirm Action Yes/No** menu. Press **Enter** to confirm your selection.
   - **CRU Reset**. (consumable print counts)
     Use the **Item (2, 6)** keys to scroll through the list of consumable items. Use the **Value (2, 6)** keys to activate the **Confirm Action Yes/No** menu for the consumable item displayed. Press **Enter** to confirm your selection.
   - Delete Jobs. Deletes all Secure Print and Proof Print jobs from the hard disk.
   - Disk Init. Initializes the hard drive.
   - Disk format - Formats the hard drive.

Alternately, pressing and holding-down the **Enter (4)** key and the **Value Down (7)** keys upon power up will reset all the NVRAM-stored parameters except the consumable counts.

Refer to the service test procedure “Consumable count initialization” on page 73 to reset the print engine’s NVRAM-stored consumable counts or the registration set points parameters.

FRU Disassembly

This topic illustrates how to remove and replace printer Field Replaceable Units (FRUs). Refer to the later topic “FRU List” on page 187 for a list of the printer’s FRUs.

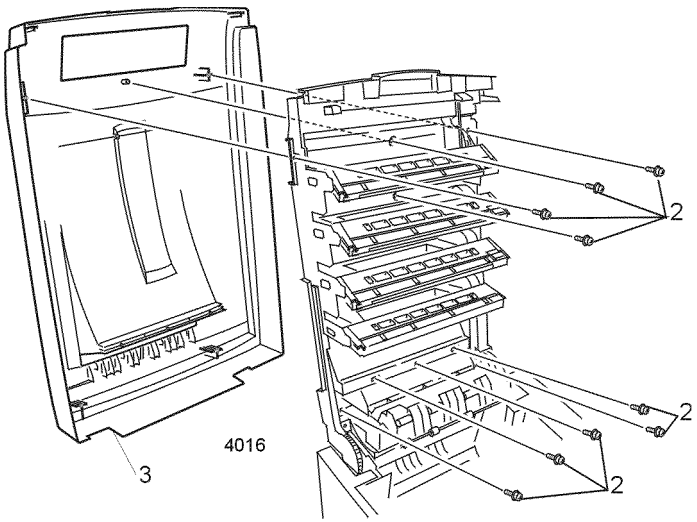
The printer does not contain any mechanical field adjustable components. Default settings and soft switch settings are covered in “Service Tests and Adjustments” on page 61.

Cabinet panels

Top cover

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket and store in a lightproof bag to protect the drum units from light.
2. Remove the nine screws securing the top cover to the top cover inner unit.
3. Remove the top cover.



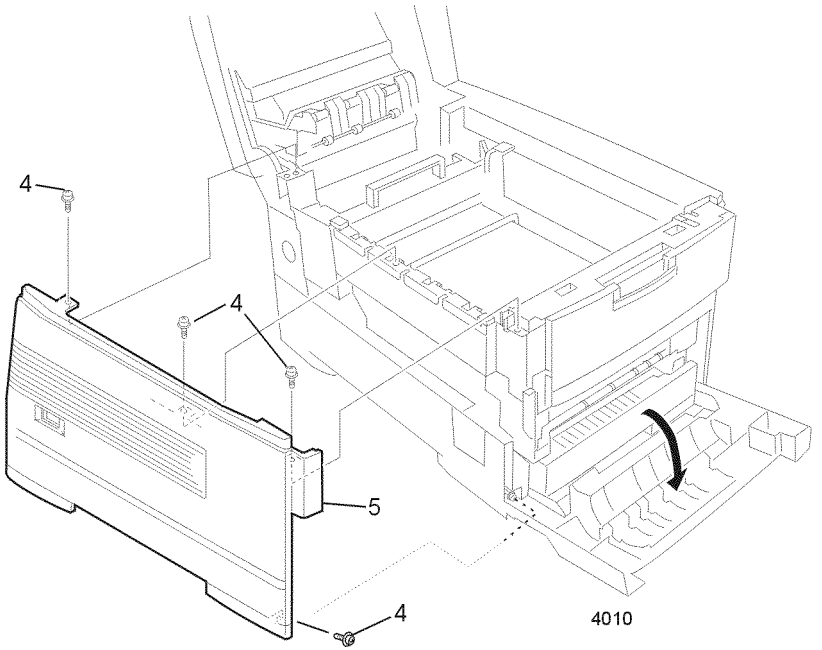
Removing the top cover

To reinstall the top cover, reverse the removal order.

Left-side cover

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover.
2. Open the front cover.
3. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag to protect the drum units from light and store in a safe place.
4. Remove the four screws securing the left side cover.
5. Pull the top of the cover out then up to remove.



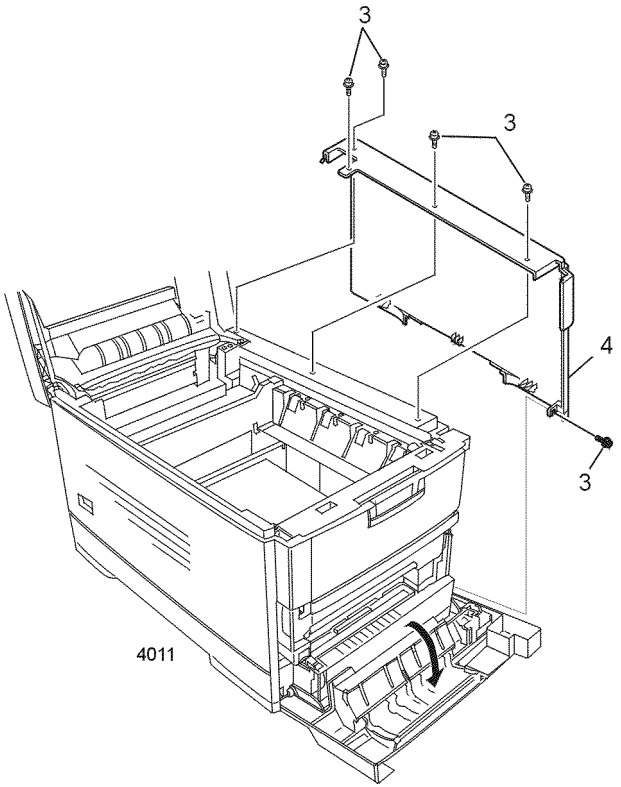
Removing the left-side cover

To reinstall the left-side cover, reverse the removal order.

Right-side cover

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag to protect the drum units from light and store in a safe place.
2. Open the front cover.
3. Remove the five screws securing the right-side cover.
4. Pull the right-side cover up and out to remove.



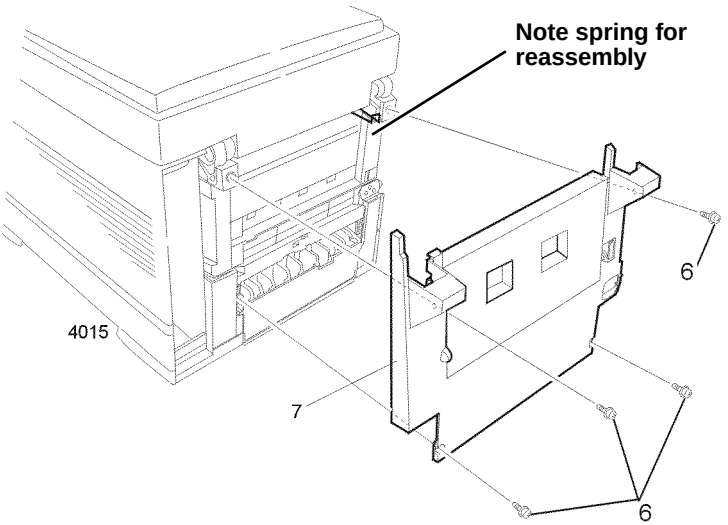
Removing the right-side cover

Reverse these steps to install the right-side cover.

Rear cover

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag to protect the drum units from light and store in a safe place.
2. Open the front cover.
3. Remove the left side cover as detailed in the topic “Left-side cover” on page 88.
4. Remove the right side cover as detailed in the topic “Right-side cover” on page 89.
5. Close the top cover.
6. Remove the four screws securing the rear cover to the printer.
7. Remove the rear cover.



Removing the rear cover

To install the rear cover, open the face up tray.

Note *Ensure that the face up tray gate spring extends out the face up tray opening.*

Reverse the removal steps to install the rear cover. Install the rear cover with the face-up tray in the open position to ensure the gate spring is properly located. The end of the spring should protrude out when the tray is opened, allowing the gate to open (which deflects the print into the face-up tray).

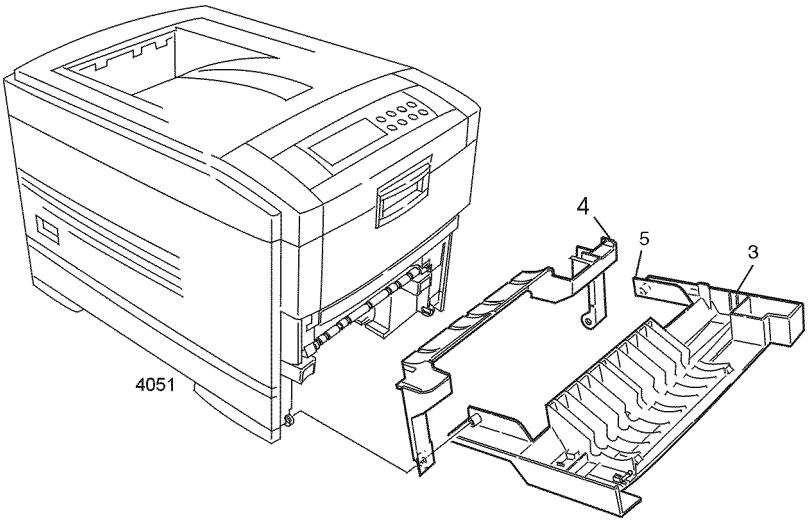
Front cover

Warning *Switch off the power and disconnect the power cord.*

1. Remove Tray 1.
2. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag to protect the drum units from light and store in a safe place.
3. Open the front cover.
4. Open the front cover inner baffle.
5. Carefully press the right side of the front cover to the left until the hinge pin disconnects from the printer.

Note *If the printer is sitting on an optional lower tray assembly, prop the front of the printer up about 12 mm (1/2 in.) to remove the front cover and inner baffle.*

6. Slide the front cover and inner baffle to the right and remove.

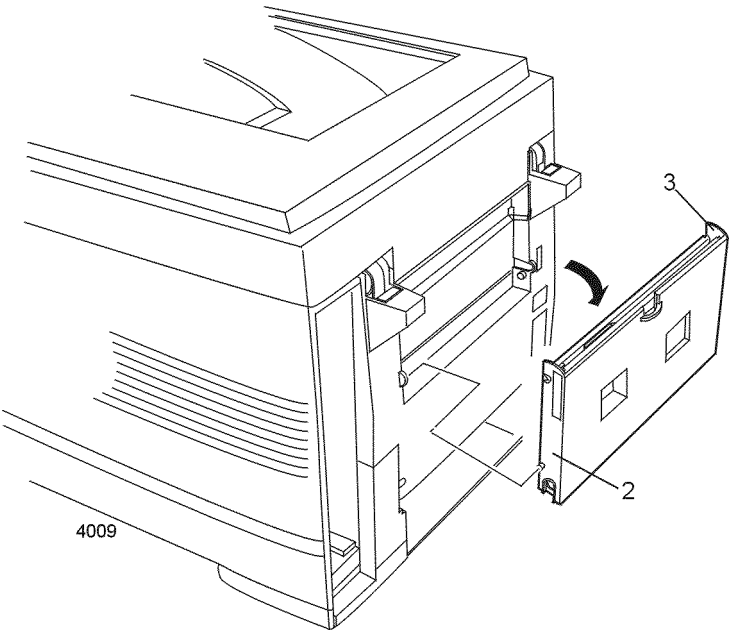


Removing the front cover

Reverse these steps to install the front cover.

Face-up tray

1. Open the face-up tray.
2. Carefully pry the left stopper pin free of the rear cover.
3. Remove the face up tray.



Removing the face-up tray

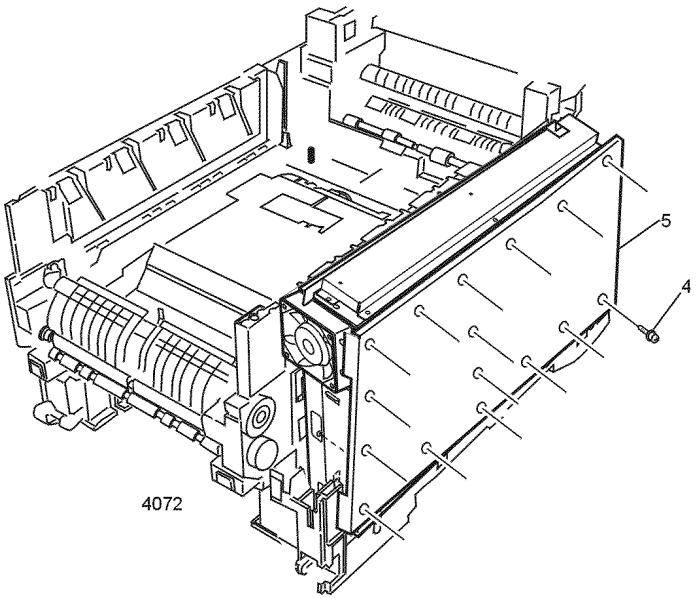
Reverse these steps to install the face-up tray.

Frames components

Right shield plate

Warning *Switch off the power and disconnect the power cord.*

1. Open the front cover.
2. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag to protect the drum units from light and store in a safe place.
3. Remove the right-side cover as explained in “Right-side cover” on page 89.
4. Remove the screws securing the right shield plate.
5. Remove the right shield plate.



Removing the right shield plate

Reverse these steps to install the right shield plate.

Electrical chassis (card cage)

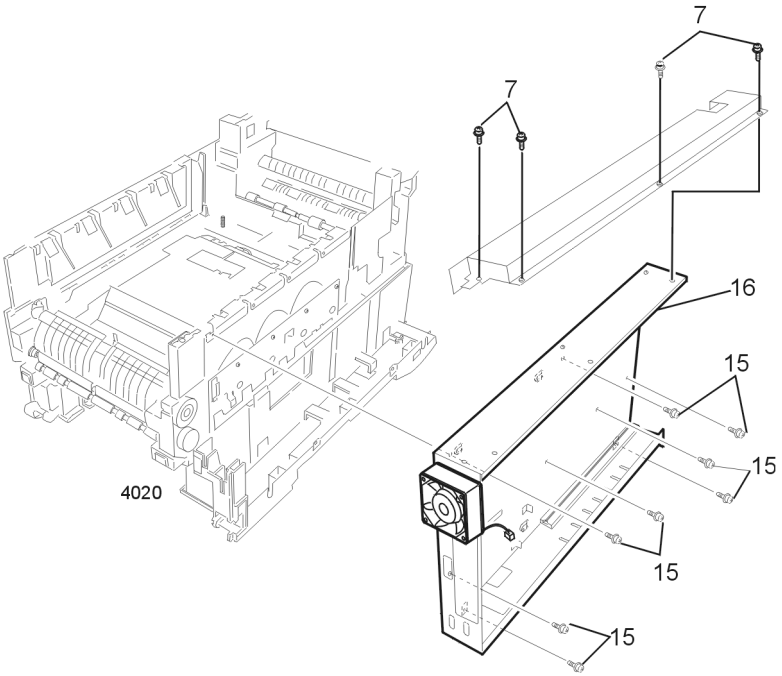
Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag to protect the drum units from light and store in a safe place.
2. Open the front cover.
3. Remove the left-side cover as detailed in “Left-side cover” on page 88.
4. Remove the right-side cover as explained in “Right-side cover” on page 89.
5. Remove the system controller board as shown on page 109.
6. Remove the right shield plate as explained on page 93.
7. Remove the multi-sheet bypass feeder as detailed on page 127.
8. Remove the four screws securing the top shield plate to the electrical chassis.

Note *To aid in reconnecting the harnesses, label the harnesses as you disconnect them.*

9. Disconnect all the connectors from the print engine controller board.
10. Pull out the disconnected harnesses routed through the top of the chassis.
11. Disconnect connectors SHUTTER, PARTTEMP, DCL, and RSNS from the print engine controller.
12. Remove the disconnected harnesses from the chassis.
13. Remove the print engine controller board as shown on page 110.
14. Remove harnesses from the front of the electrical chassis.
15. Remove the 16 screws securing the electrical chassis to the printer frame.

16. Guide the bottom harnesses as you carefully remove the electrical chassis.



Removing the electrical chassis

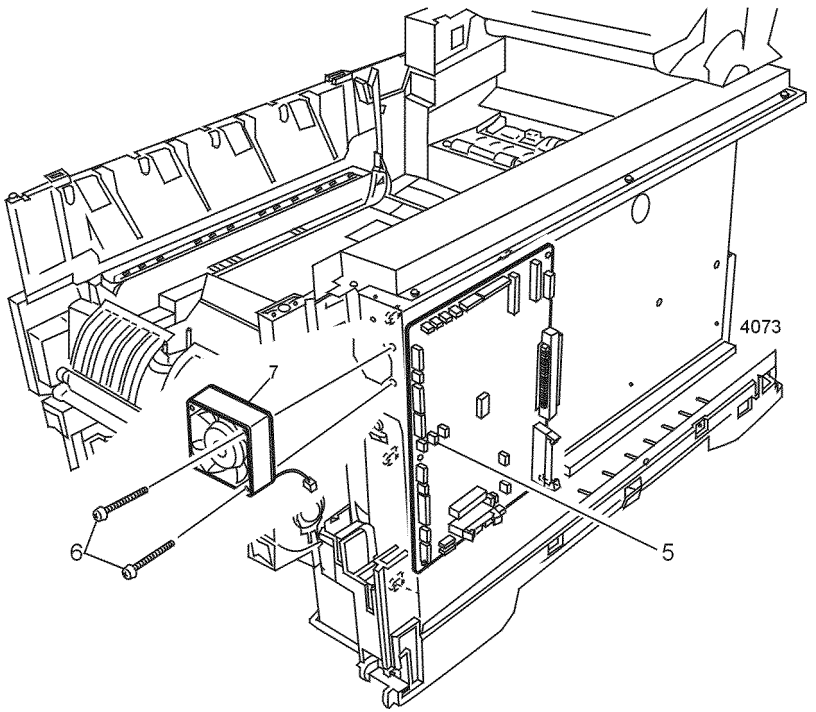
Reverse these steps to install the electrical chassis.

Note *Attached to the back of the electrical chassis is a grounding tab. As you reinstall the chassis, ensure that the tab is not deformed and is positioned on the end of the paper feed shaft.*

Electrical chassis cooling fan

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag to protect the drum units from light and store in a safe place.
2. Open the front cover.
3. Remove the right-side cover as shown on page 89.
4. Remove the right shield plate as shown on page 93.
5. Disconnect connector FAN 1 from the print engine controller board.
6. Remove the two screws and spacers securing the fan to the electrical chassis.
7. Remove the electrical chassis cooling fan.



Removing the electrical chassis cooling fan

Reverse these steps to install the electrical chassis cooling fan.

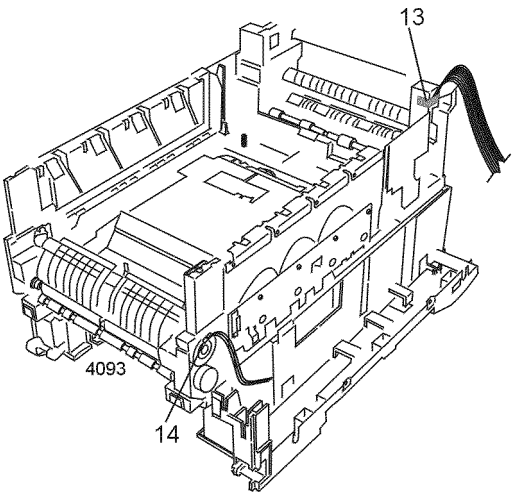
Printer unit chassis (and low-voltage power supply fan)

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover.
2. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
3. Open the front cover and inner baffle.
4. Remove the fuser assembly as detailed on page 139.
5. Remove the transfer belt assembly as detailed on page 132.
6. Remove the left-side cover as described in the topic “Left-side cover” on page 88. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
7. Remove the right shield plate as described in the topic “Right shield plate” on page 93.
8. Remove the rear shield plate; it is secured by four screws.
9. Remove the left shield plate; it is secured by ten screws.
10. Remove the rear cover as described in “Rear cover” on page 90. Remove the top cover as described in the topic “Top cover” on page 87.
11. Remove the top cover inner frame as described in the topic page 100.

Note *Make note of the harness routing before removing harnesses.*

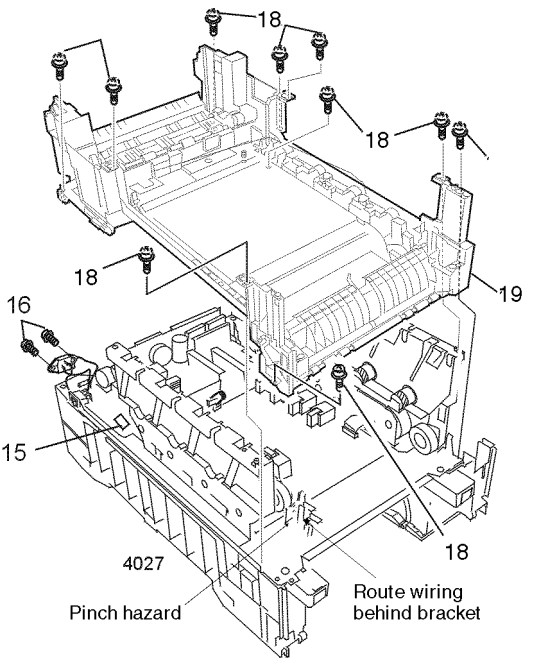
12. Remove the multi-sheet bypass feeder as described on page 127.
13. Free harnesses from the right rear of the chassis.



Disconnecting the registration motor in-line connector (HOPFF)

14. Disconnect the harness from the registration motor.
15. Disconnect the main cooling fan wiring harness from the low voltage power supply. Disconnect and remove the chassis cooling fan, it is held in place by two screws.
16. Remove the two screws securing the AC inlet. Remove the screw securing the ground wire near the power switch.
17. Disconnect connectors SHUTTER, PARTTEMP, DCL, FSENS and SHUTTER1 from the print engine controller board.
18. Remove the ten screws securing the printer unit chassis to the frame.
19. Lift the chassis about 7.5 cm (3 in.) while guiding the AC receptacle wiring through the rear chassis frame. Also guide the printer unit chassis past the wiring at the front of the electrical chassis.
20. Lift the printer unit chassis from the main chassis Rest the chassis upside-down on a table.

Note *The low-voltage power supply fan attaches to the underside of the printer unit chassis.*



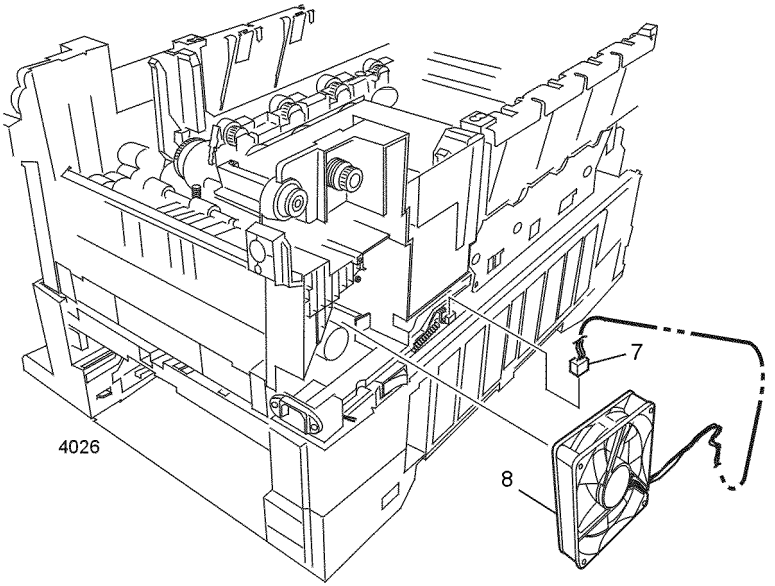
Removing the printer unit chassis

Reverse these steps to install the printer unit chassis. Ensure all wiring harnesses are not pinched during reassembly.

Main cooling fan

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the left-side cover as detailed in the topic “Left-side cover” on page 88. Also remove the left-side shield plate.
4. Remove the rear shield plate; it is secured by four screws.
5. Remove the left shield plate; it is secured by ten screws.
6. Remove the rear cover as described in “Rear cover” on page 90.
7. Disconnect the main cooling fan’s wiring harness from the low voltage power supply board.
8. Slide the main cooling fan out of the printer frame.



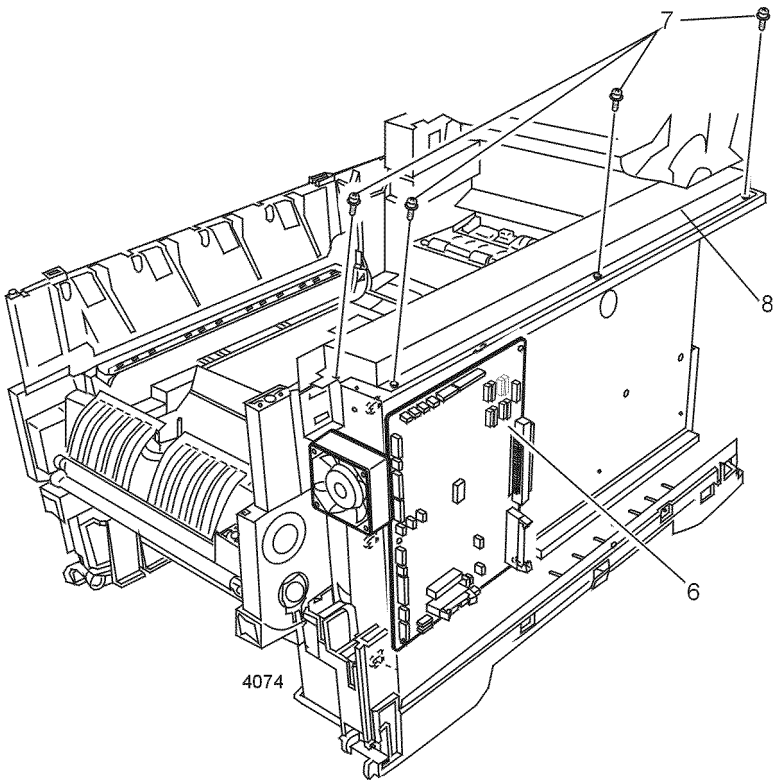
Removing the main cooling fan

Reverse these steps to install the main cooling fan.

Top cover inner frame

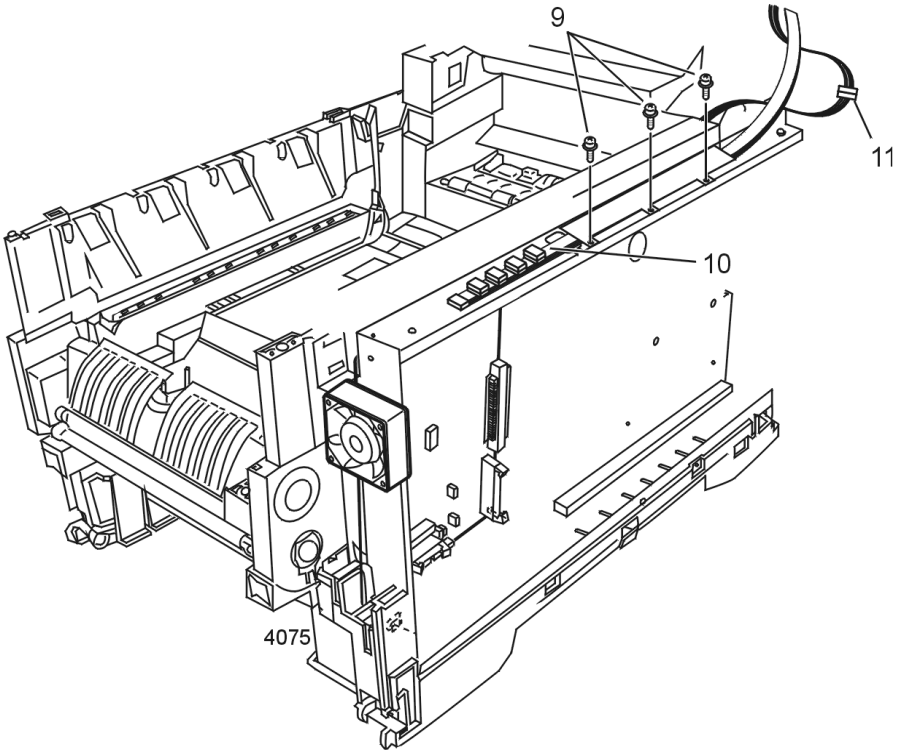
Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the left-side cover as detailed on page 88.
4. Remove the right-side cover as detailed on page 89.
5. Remove the right shield plate as shown on page 93.
6. Disconnect the nine LED connectors from the print engine controller board.
7. Remove the four screws securing the top shield plate to the electrical chassis.
8. Remove the shield plate.



Removing the top shield plate

9. Remove the three screws securing the cable shield to the top chassis.
10. Remove the harnesses from the electrical chassis.
11. Disconnect the POWER inline connector from the top cover inner frame.



Removing the harnesses from the electrical chassis

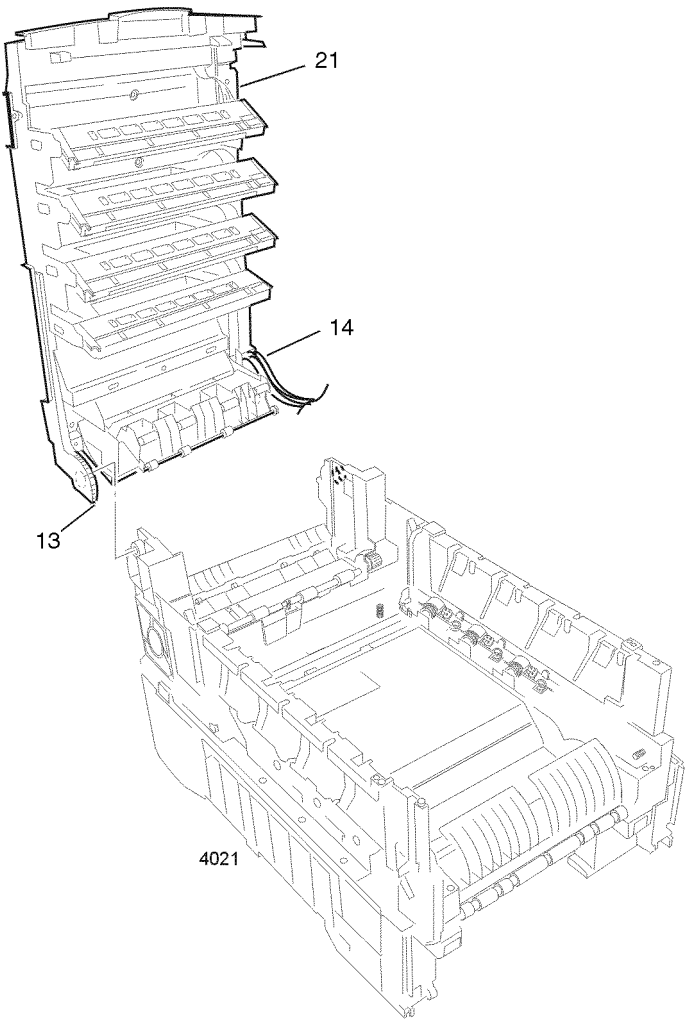
12. Remove the rear cover as detailed in “Rear cover” on page 90.
13. Remove the screws from the metal strap attached to the left pivot arm. Remove the strap and the metal washer from the center of the pivot arm.
14. Remove the screw from the center of the right pivot arm.
15. Remove the system controller board.
16. From the top of the chassis, remove the two screws holding the system controller board’s upper guide rail.
17. Through the access hole in the top of the electrical chassis, loosen (but do not remove) the screw holding the strap to the right pivot arm.
18. Swing the metal strap up to clear it from the right pivot arm. Hold it out of the way until the pivot arm is free.

19. With the top cover inner frame open to the vertical position, carefully pull the left pivot arm out until the left side of the assembly is free of the printer.

20. Carefully pull the right pivot arm out until the right side is free.

Caution *Do not set the top cover inner frame face down as the LED assemblies or the LED mounting brackets can be damaged.*

21. Remove the top cover inner frame.



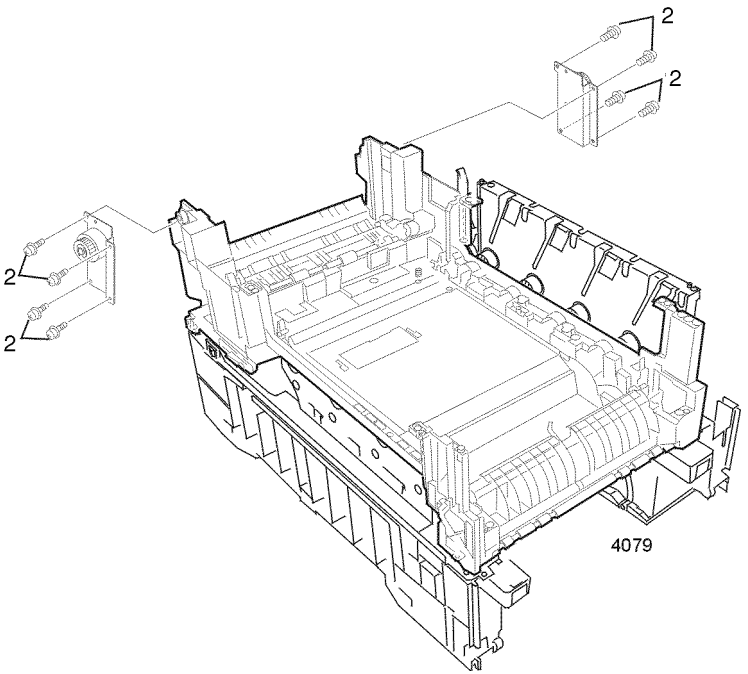
Removing the top cover inner frame

Reverse these steps to install the top cover inner frame.

Left/right top cover spring assembly

Warning *Switch off the power and disconnect the power cord.*

1. Remove the top cover inner frame as described in the topic “Top cover inner frame” on page 100.
2. Remove the four screws securing the top cover spring assembly.



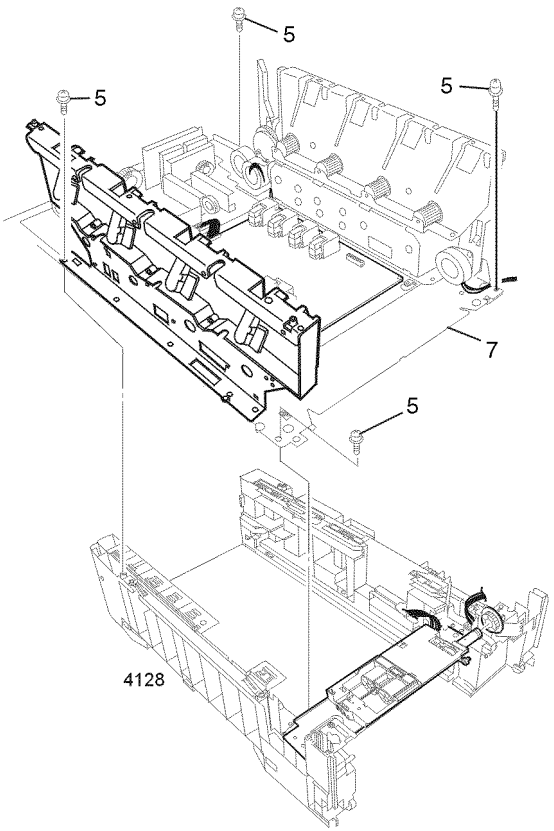
Removing the left/right top cover spring assembly

Reverse these steps to install the left / right top cover spring assembly.

Left paper tray guide assembly

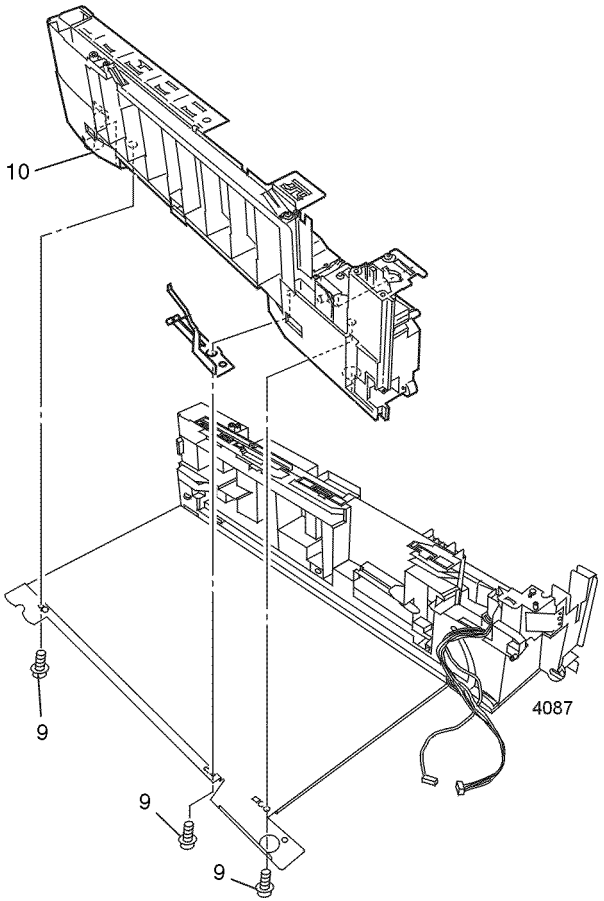
Note *Switch off the power and disconnect the power cord.*

1. Remove the paper tray 1 from the printer.
2. Remove the duplexer unit if installed.
3. Remove the electrical chassis as described on “Electrical chassis (card cage)” on page 94
4. Remove the printer unit chassis as shown on page 97.
5. Remove the four screws securing the lower plate to the paper tray guide assemblies
6. Disconnect CN1 from the low voltage power supply.
7. Lift the lower plate and power supplies from the tray guides.



Removing the lower plate assembly

8. Remove the main feeder assembly as detailed on page 123.
9. Remove the three screws securing the left paper tray guide assembly to the bottom plate.
10. Lift and remove the assembly.



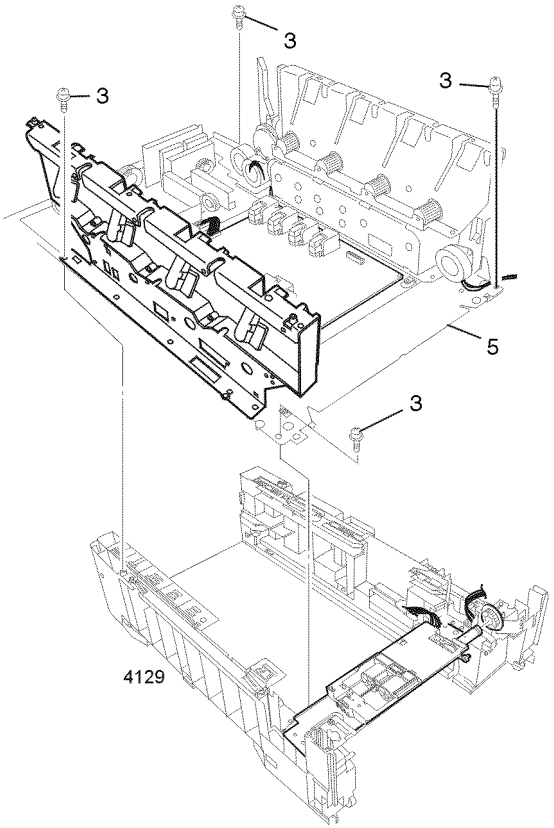
Removing the left paper tray guide assembly

Reverse these steps to install the left paper tray guide assembly.

Right paper tray guide assembly

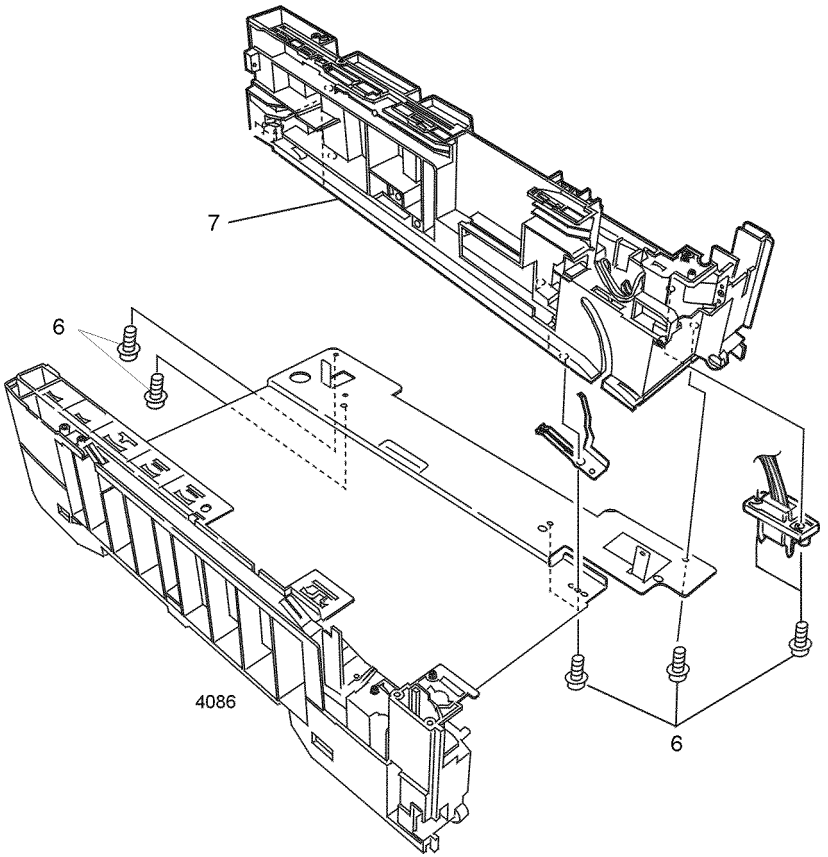
Warning *Switch off the power and disconnect the power cord.*

1. Remove the electrical chassis as described in "Electrical chassis (card cage)" on page 94.
2. Remove the printer unit chassis as shown on page 97.
3. Remove the four screws securing the lower plate to the paper tray guide assemblies.
4. Lift the lower metal shield plate from the right side of the metal plate and paper guide assembly.
5. Disconnect CN1 from the low voltage power supply.
6. Lift the lower plate and power supplies from the tray guides.



Removing the paper tray guide assemblies

7. Remove the main feeder assembly as detailed on page 123.
8. Remove the five screws securing the right paper tray guide assembly to the bottom plate.
9. Lift and remove the guide assembly.



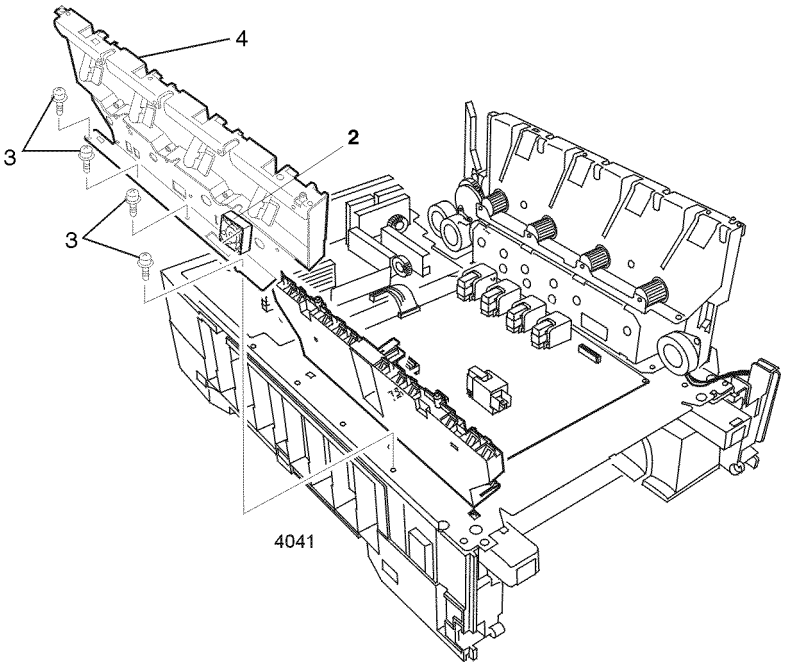
Removing the right paper tray guide assembly

Reverse these steps to install the right paper tray guide assembly.

Left plate assembly

Warning *Switch off the power and disconnect the power cord.*

1. Remove printer unit chassis as shown on page 97.
2. Remove the two screws from the high-voltage power supply fan. Let the fan rest on the front of the lower plate.
3. Remove the four screws securing the left plate assembly to the lower plate.
4. Remove the assembly.



Removing the left plate assembly

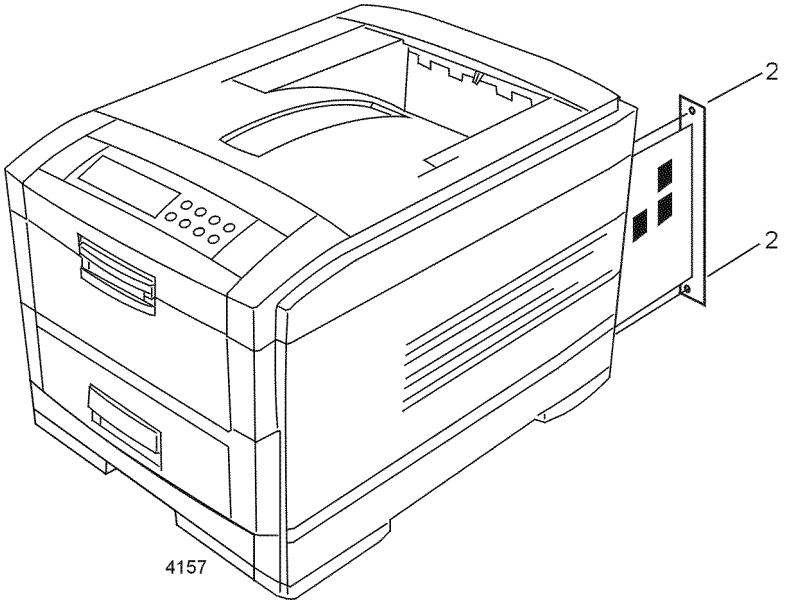
Reverse these steps to install the left plate assembly.

Electronic boards

System controller board

Warning *Switch off the power and disconnect the power cord.*

1. Disconnect all cables connected to the rear of the system controller.
2. Remove the two thumb screws securing the system controller to the printer.
3. Slide the system controller out to the rear of the printer.



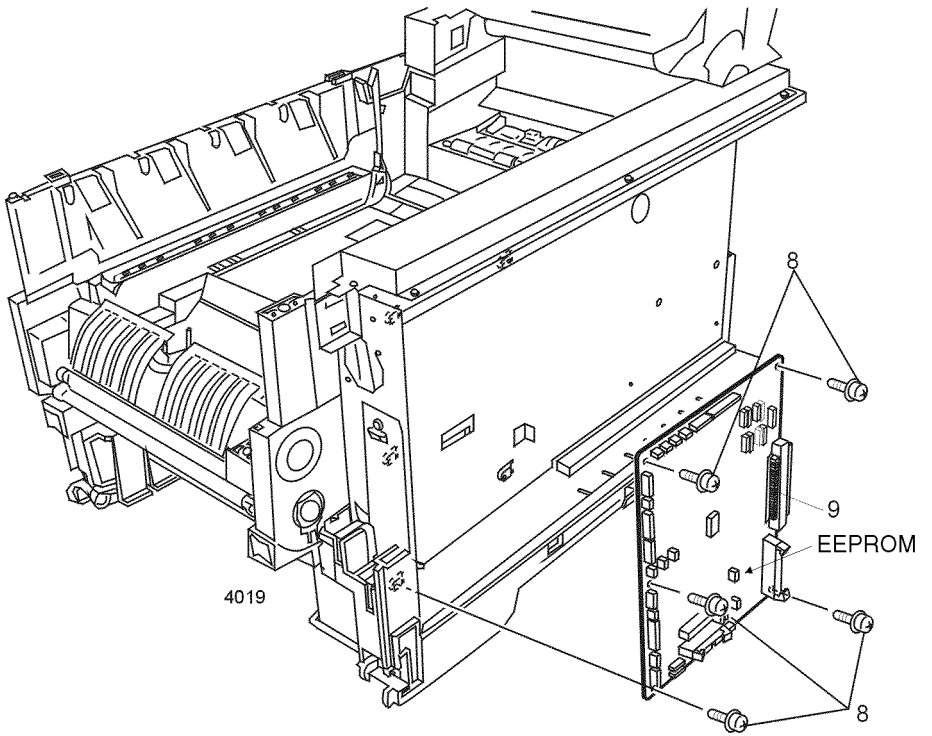
Removing the system controller board

Reverse these steps to install the system controller board.

Print engine controller board

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the right-side cover as shown on page 89.
4. Remove the right shield plate as shown on page 93.
5. Remove the system controller board as shown on page 109.
6. Disconnect all connectors connected to the print engine controller board. Remove the EMI suppressor coils and cable ties as necessary.
7. Remove the five screws securing the print engine controller board.
8. Remove the engine controller board.



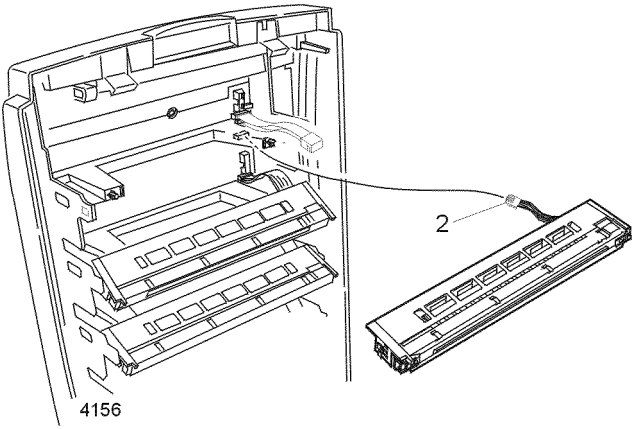
Removing the print engine controller

Reverse these steps to install the print engine controller. **When replacing the engine board, transfer the EEPROM from the old board to the new board**.

Toner sensor board

Warning *Switch off the power and disconnect the power cord.*

1. Remove the top cover as detailed on “Top cover” on page 87.
2. Disconnect the four LED power harnesses from the toner sensor board.



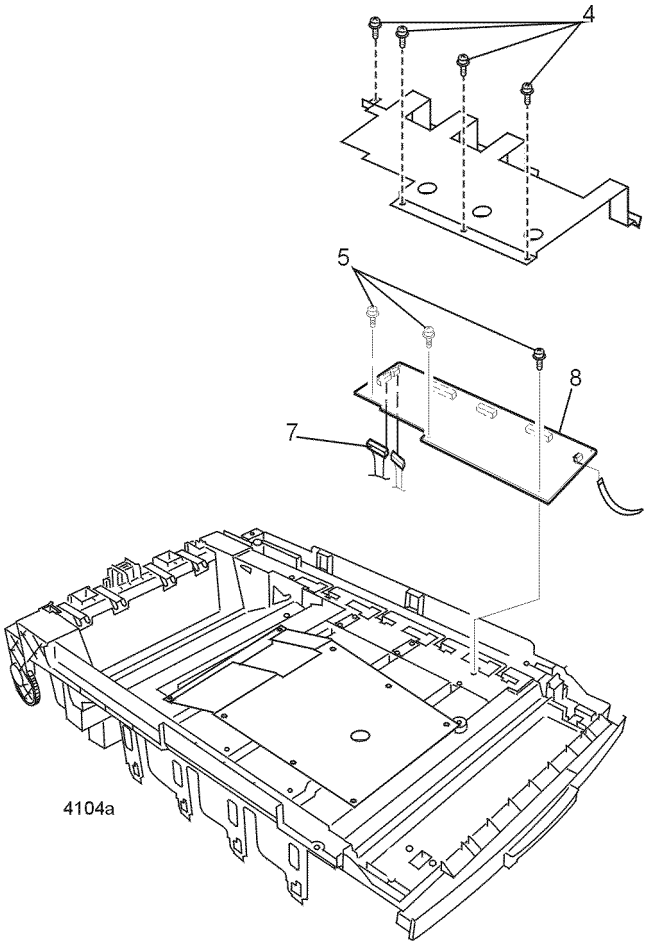
Disconnecting the LED power harnesses

3. Close the top cover inner unit.
4. Remove the four screws securing the metal shield over the toner sensor board.
5. Remove the three screws securing the toner sensor board.
6. Rotate the board up to expose the component side of the board.

Note *Note for reassembly how the ribbon cables are routed under the sensor board in the next step.*

7. Disconnect the PANEL, OPTN, STUCK, and POWER harnesses from the toner sensor board.

8. Remove the board.



Removing the toner sensor board

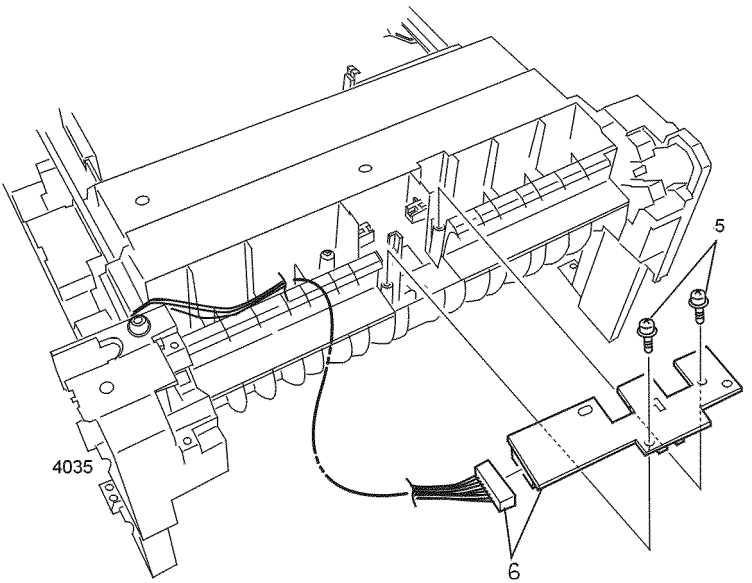
Reverse these steps to install the toner sensor board. Ensure that all harnesses are in the cable channel.

Caution *Ensure the ribbon cables are properly routed and dressed. Do not crunch or fold the ribbon cables while installing the toner sensor board.*

Entrance sensor board

Warning *Switch off the power and disconnect the power cord.*

1. Remove the multi-sheet bypass feeder as described in the topic on page 127.
2. Remove the printer unit chassis as detailed on page 97.
3. Remove registration roller assembly B as explained on page 137.
4. Remove the spring-loaded tray 1 entrance sensor actuator as explained on page 130.
5. Remove the two screws securing the entrance sensor board.
6. Remove the board and disconnect harness from FSNS.



Removing the entrance sensor board

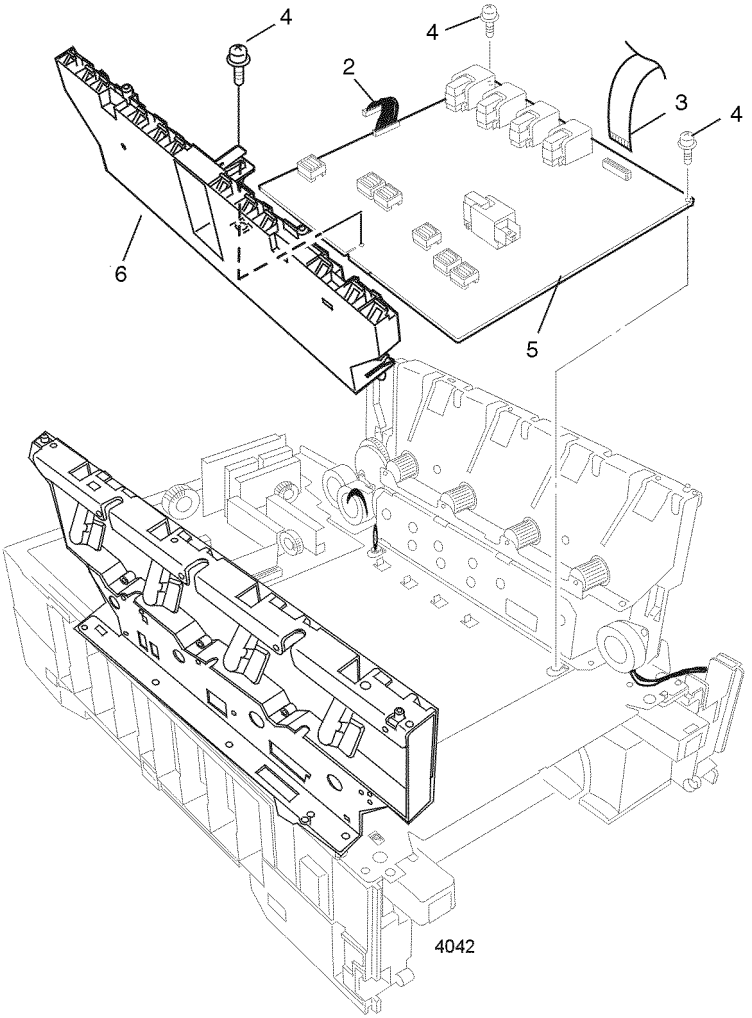
Reverse these steps to install the entrance sensor board.

High voltage power supply

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer unit chassis as detailed in the topic “Printer unit chassis (and low-voltage power supply fan)” on page 97.
2. Disconnect CN3 from the low voltage power supply.
3. Disconnect CN1 from the high voltage power supply.
4. Remove the three screws securing the high voltage power supply to the chassis.
5. Lift the high voltage power supply and the contact assembly and remove.

6. Remove the contact assembly from the high voltage power supply.



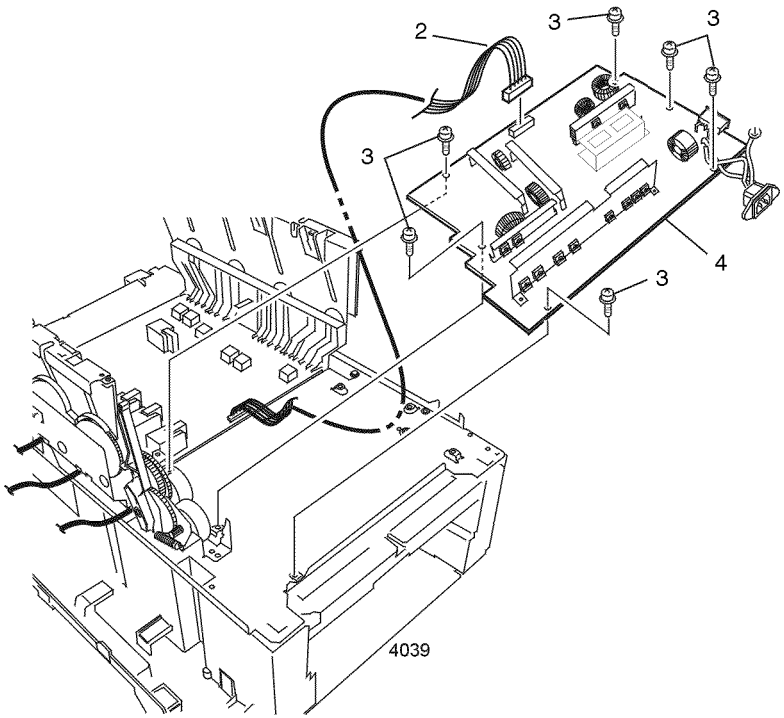
Removing the high voltage power supply

Reverse these steps to install the high voltage power supply.

Low voltage power supply

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer unit chassis as shown on page 97.
2. Disconnect CN3, CN1, & CN2 from the low voltage power supply.
3. Remove the six screws securing the low voltage power supply to the printer. Disconnect the AC ground wire from the printer frame.
4. Lift the power switch (SW1) and the low voltage power supply to remove.



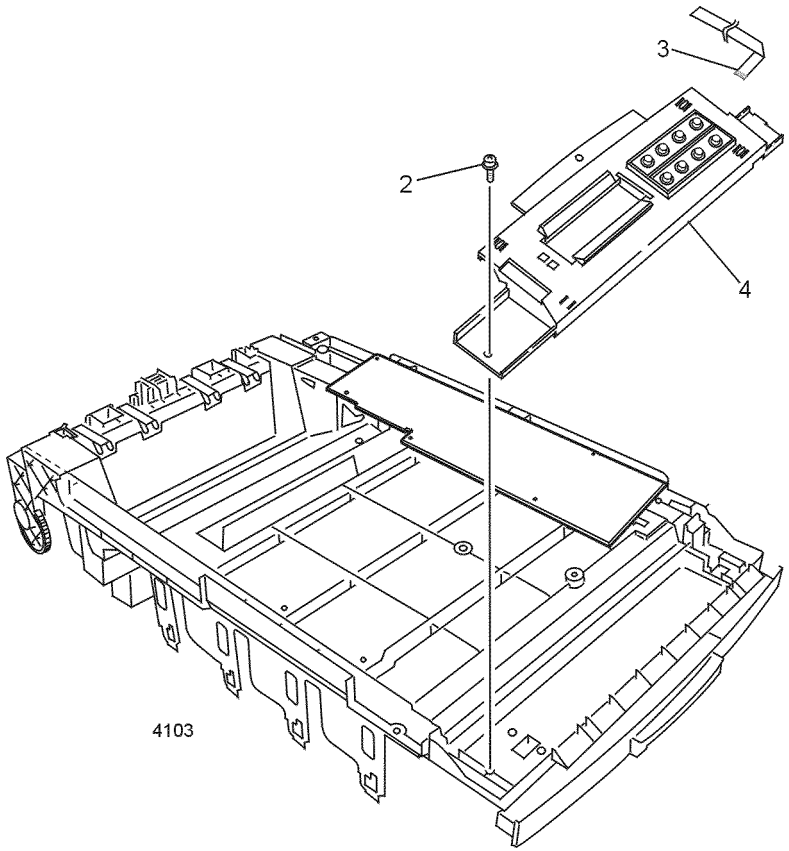
Removing the low voltage power supply

Reverse these steps to install the low voltage power supply.

Control panel

Warning *Switch off the power and disconnect the power cord.*

1. Remove the top cover as detailed in “Top cover” on page 87.
2. Remove the screw securing the left side of the control panel.
3. Lift the control panel and disconnect CN1 from the back of the panel.
4. Remove the control panel.



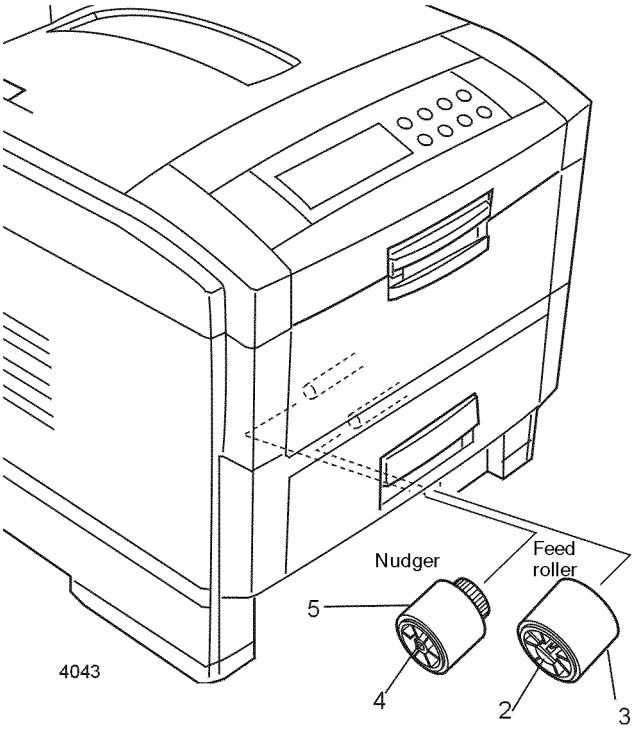
Removing the control panel

Reverse these steps to install the control panel.

Paper feed components

Tray 1 feed roller and nudger roller

1. Remove tray 1.
2. Release the locking tab on the left end of the feed roller.
3. Slide the feed roller to the left and remove.
4. Release the locking tab on the left end of the nudger roller.
5. Slide the nudger roller to the left and remove.

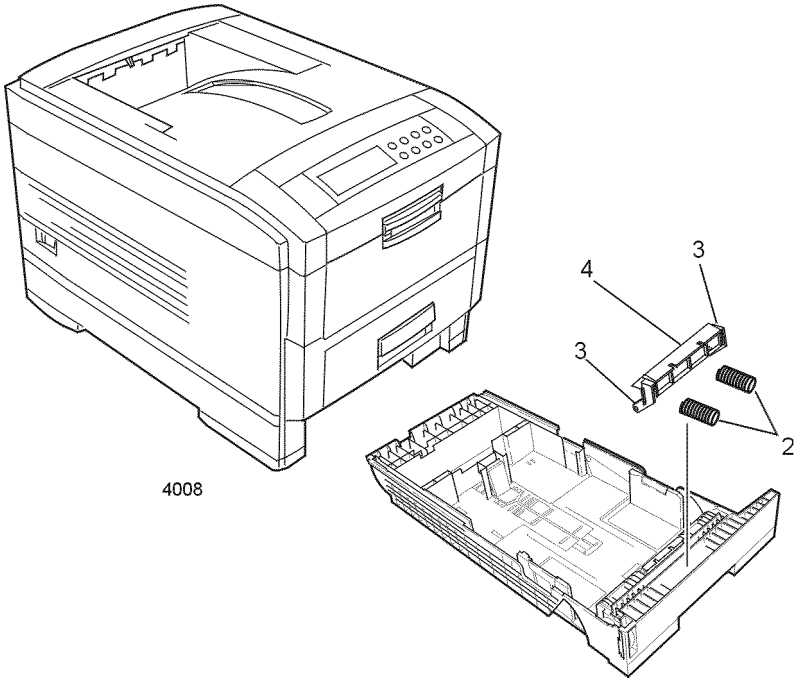


Removing the feed roller and nudger roller

Reverse these steps to install the feed roller and nudger roller.

Retard pad

1. Remove the paper tray from the printer.
2. Remove the two springs.
3. Use a small screwdriver to carefully pry both arms free of the mounting pins.
4. Remove the retard pad.



Removing the retard pad

Reverse these steps to install the retard pad.

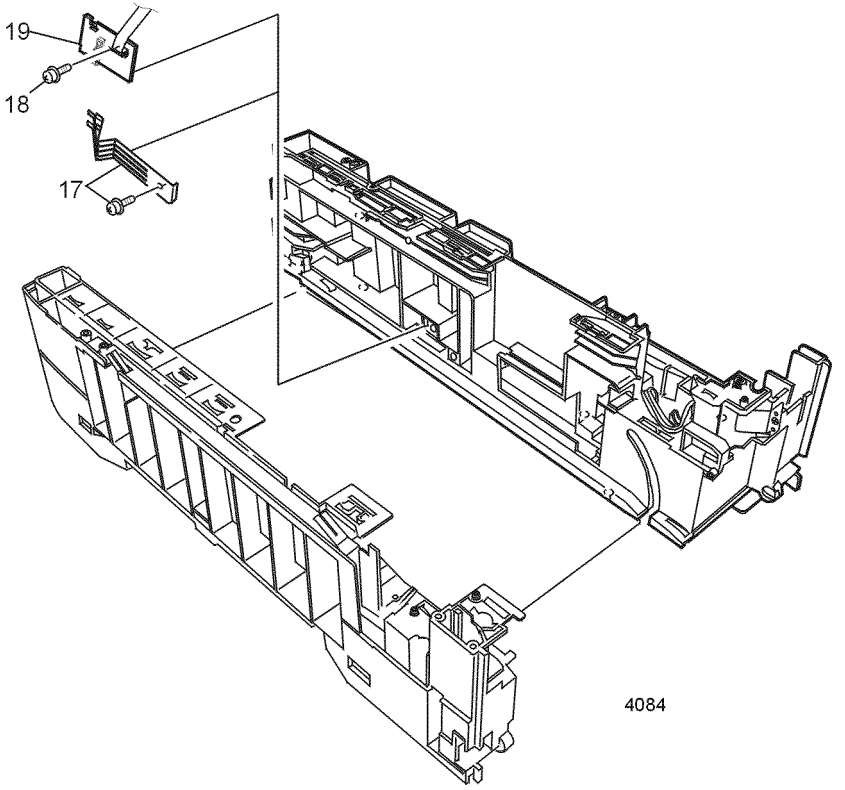
Paper-size sensing board

Warning *Switch off the power and disconnect the power cord.*

1. Remove the system controller board as described in the topic “System controller board” on page 109.
2. Remove the print engine controller board as described in the topic “Print engine controller board” on page 110.
3. Remove the multi-sheet bypass feeder as described in the topic “Multi-sheet bypass feeder” on page 127.
4. Remove the electrical chassis as described in the topic “Electrical chassis (card cage)” on page 94.
5. Remove paper tray 1.
6. Reaching in through the cavity left by paper tray 1, remove the screws securing the paper-size sensing actuator. Remove the actuator.
7. Again reaching in through the cavity left by paper tray 1, remove the screw securing the paper-size sensing board.

Note *Make note of the harness routing before removing harnesses.*

8. Guide the harness through the frame as you remove the board.



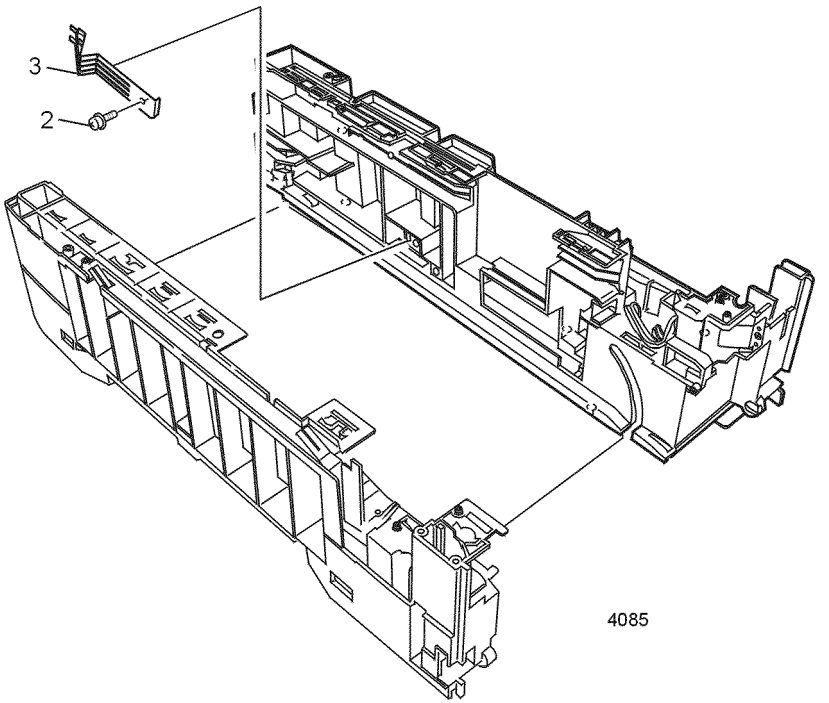
Removing the paper size sensing board

Reverse these steps to install the paper-size sensing board.

Paper-size sensing actuator

Warning *Switch off the power and disconnect the power cord.*

1. Remove paper tray 1.
2. Remove the screw securing the paper-size sensing actuator.
3. Remove the actuator.



Removing the paper size sensing actuator

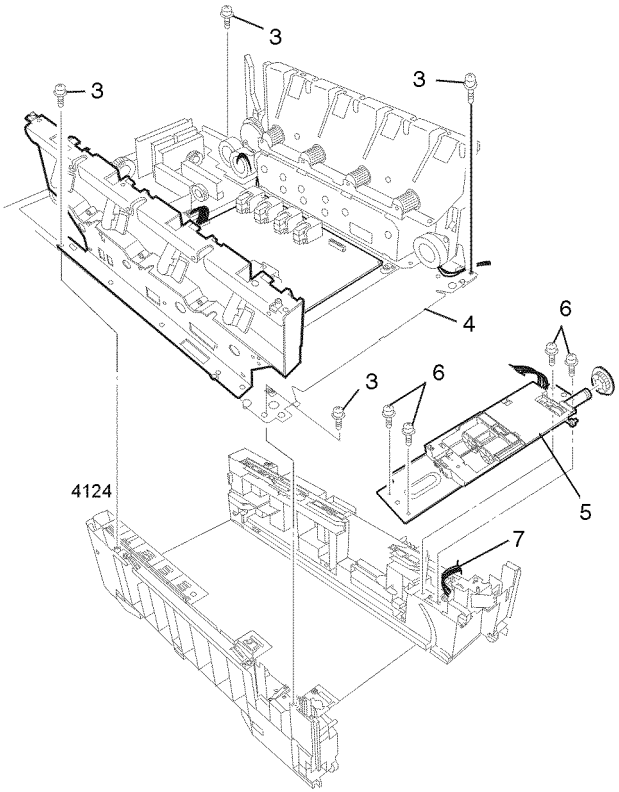
Reverse these steps to install the paper-size sensing actuator.

Main feeder assembly

Note *Switch off the power and disconnect the power cord.*

1. Remove the electrical chassis as detailed in “Electrical chassis (card cage)” on page 94.
2. Remove the printer chassis as described in the topic “Printer unit chassis (and low-voltage power supply fan)” on page 97.
3. Remove the four screws securing the lower plate to the paper tray guide assemblies.
4. Disconnect CN1 from the low voltage power supply.
5. Lift the lower plate and power supplies from the tray guides.
6. Remove the four screws securing the main feeder assembly to the tray guides.
7. Disconnect harnesses from the optional feeder connector.
8. Pull harness and connectors through the printer frame.

9. Lift and remove the main feeder assembly.



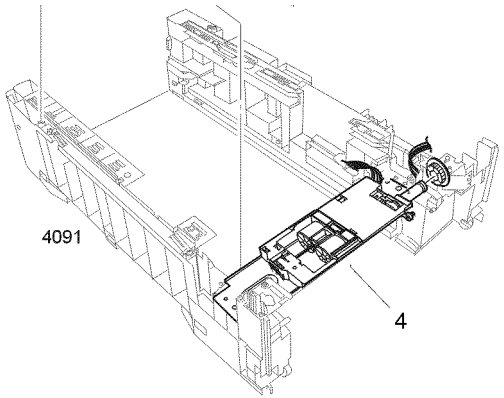
Removing the main feeder assembly

Reverse these steps to install the main feeder assembly.

Tray 1 no-paper/low-paper sensors

Warning *Switch off the power and disconnect the power cord.*

1. Remove the electrical chassis as detailed in “Electrical chassis (card cage)” on page 94.
2. Remove the printer chassis as described in the topic “Printer unit chassis (and low-voltage power supply fan)” on page 97.
3. Remove the main feeder assembly as described in the previous procedure “Main feeder assembly” on page 123.
4. The no-paper and low-paper sensors are not spared separately. If either sensor is defective, replace the main feeder assembly.



Removing the lower plate assembly

Reverse these steps to install the main feeder assembly.

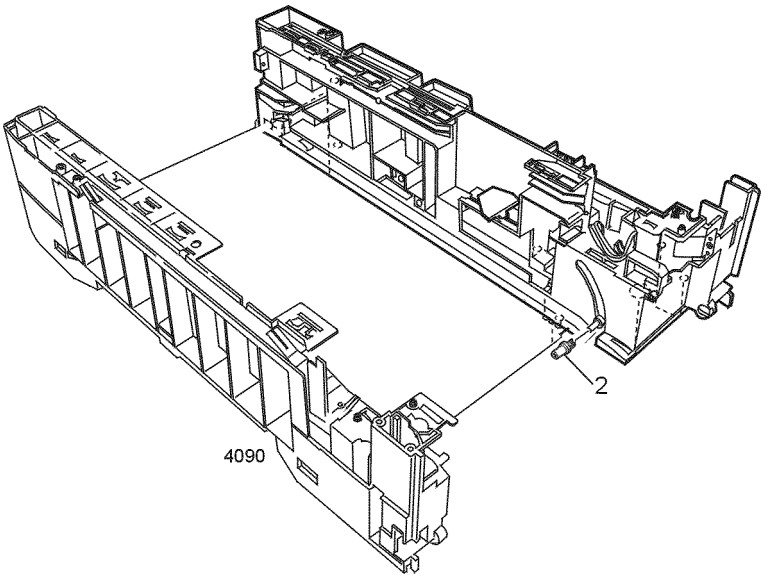
Paper tray lift arm roller

Warning *Switch off the power and disconnect the power cord.*

1. Remove paper tray 1.

Caution *Take care not to break the locking tabs in the next step.*

2. Release the two locking tabs and remove the roller.



Removing the paper tray lift arm roller

Reverse these steps to install the paper tray lift arm roller.

Multi-sheet bypass feeder components

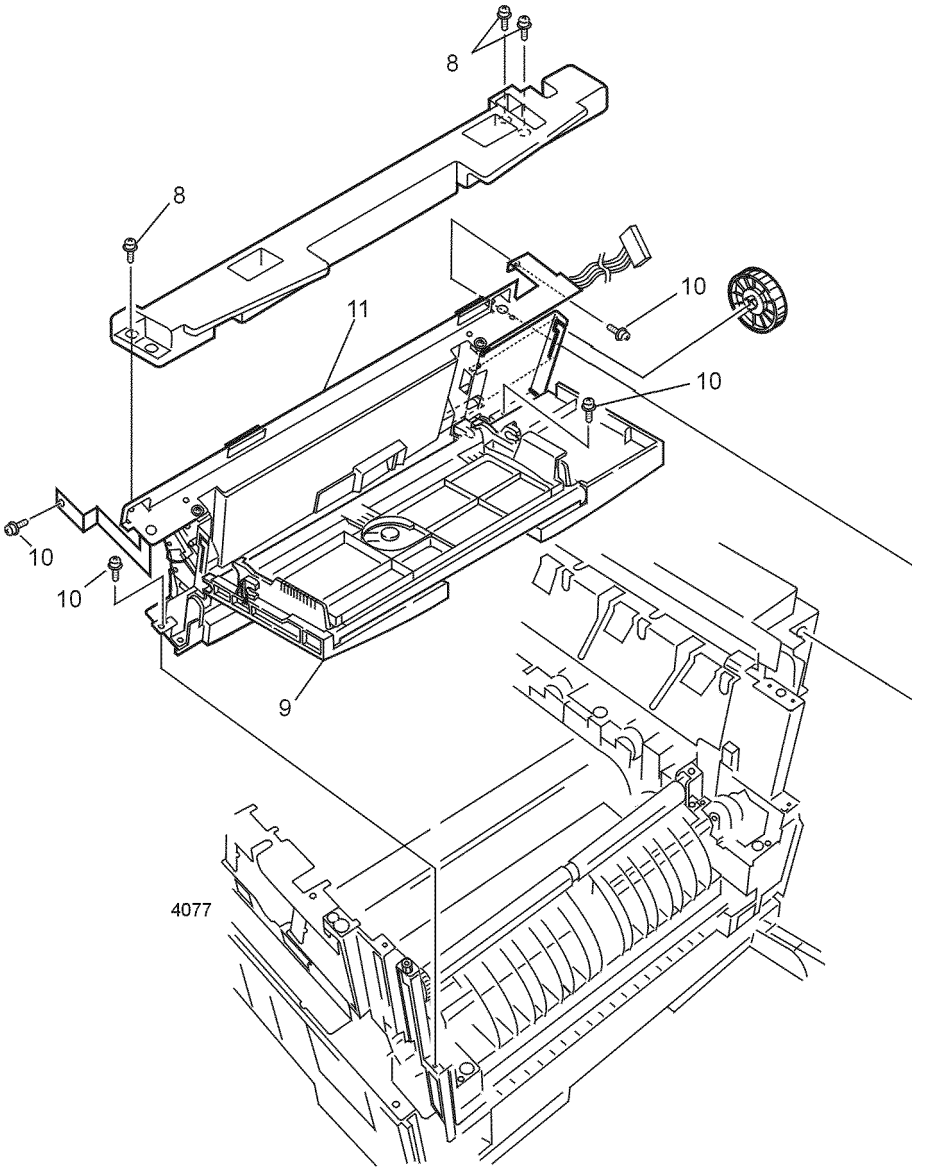
Multi-sheet bypass feeder

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the left-side cover as described in the topic “Left-side cover” on page 88.
4. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
5. Remove the right shield plate“Right shield plate” on page 93.
6. Remove the upper and lower EMI suppressors on the print engine controller harnesses. (Use a small screwdriver to release the latch on each suppressor). Cut cable ties as necessary.
7. Disconnect the wiring harnesses REG, HUMTMP, and COVOPN from the print engine controller board.
8. Remove the three screws securing the multi-sheet bypass feeder top cover. Remove the cover.
9. Open the multi-sheet bypass feeder tray.
10. Remove the three screws (two are black) securing the multi-sheet bypass feeder to the printer.
11. Lift and remove the multi-sheet bypass feeder.

Note *If replacing the multi-sheet bypass feeder drive gear, continue with Step 12.*

12. If replacing the drive gear, release the two locking tabs on the inside of the drive gear and remove the gear from the shaft.



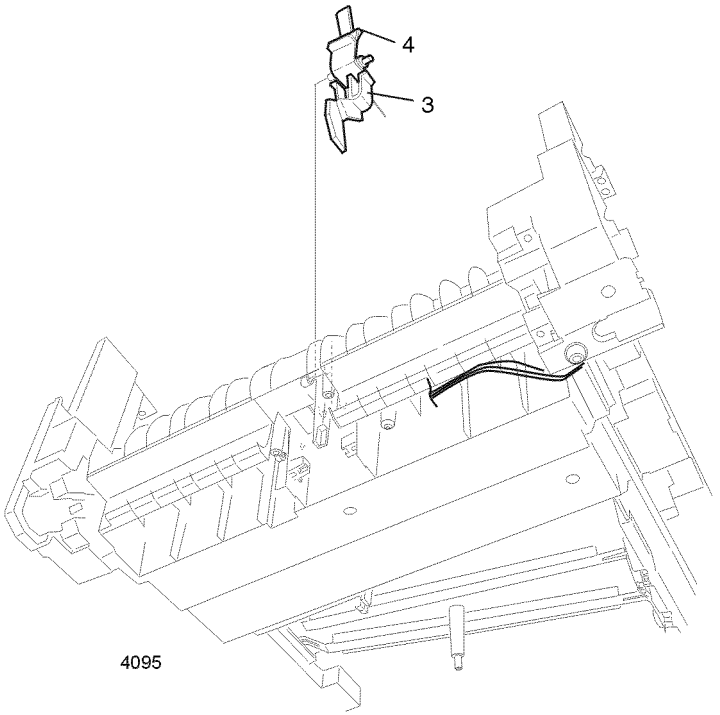
Removing the multi-sheet bypass feeder

Reverse these steps to install the multi-sheet bypass feeder.

Multi-sheet bypass feeder entrance sensor actuator

Warning *Switch off the power and disconnect the power cord.*

1. Remove the multi-sheet bypass feeder as described in the topic on page 127.
2. Remove the printer unit chassis as described in the topic on page 97.
3. Remove the Tray 1 entrance sensor actuator as detailed in the topic on page 130.
4. Remove the entrance sensor board as shown on page 113.
5. From the bottom, squeeze the two locking tabs securing the multi-sheet bypass feeder entrance sensor actuator.
6. Remove the actuator from the top.



Removing the multi-sheet bypass feeder entrance sensor actuator

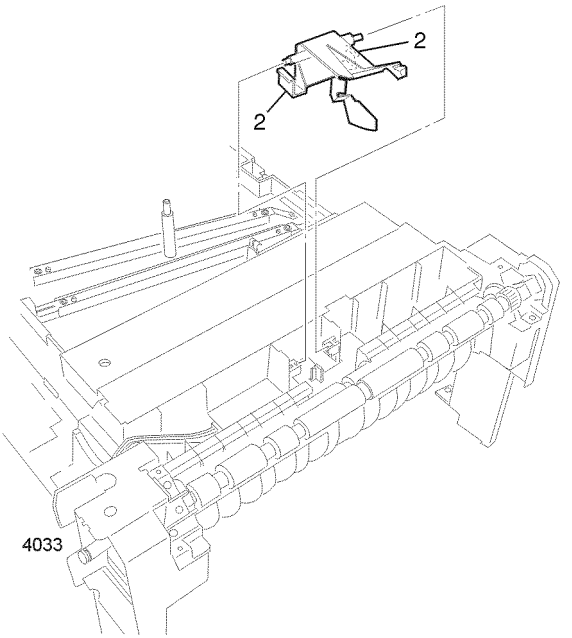
Reverse these steps to install the multi-sheet bypass feeder entrance sensor actuator. Ensure that the spring arm is in the notch in the frame.

Paper transport components

Tray 1 entrance sensor actuator

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer unit chassis as detailed in the topic on page 97.
2. From the bottom of the printer unit chassis, carefully squeeze the two locking tabs and remove the sensor.



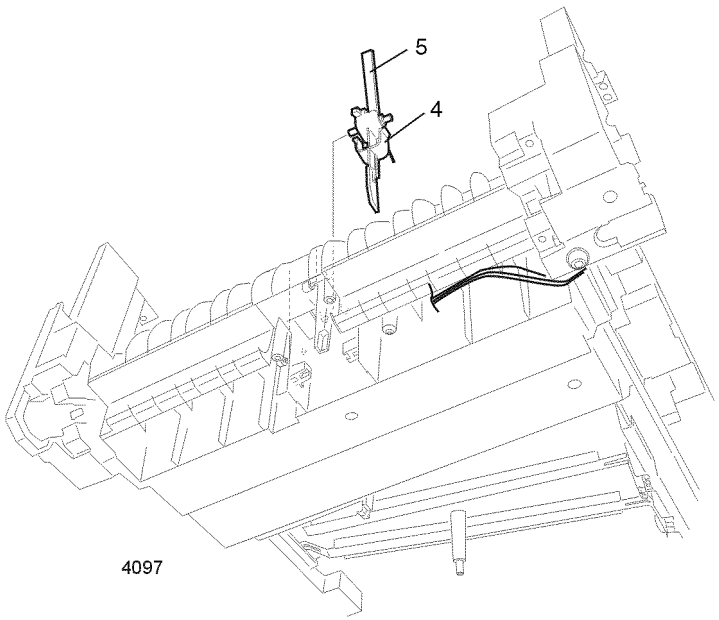
Removing the tray 1 entrance sensor actuator

For reassembly, reinstall the entrance sensor actuator. Ensure the spring arm is on the plastic post. Reverse these steps to install the tray 1 entrance sensor actuator.

Belt entrance sensor actuator

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer unit chassis described in the topic “Printer unit chassis (and low-voltage power supply fan)” on page 97.
2. Remove the Tray 1 entrance sensor actuator as described in the topic “Tray 1 entrance sensor actuator” on page 130.
3. Remove the entrance sensor board as described in the topic “Entrance sensor board” on page 113.
4. From the bottom, squeeze the two locking tabs securing the belt entrance sensor actuator.
5. Remove the actuator from the top.



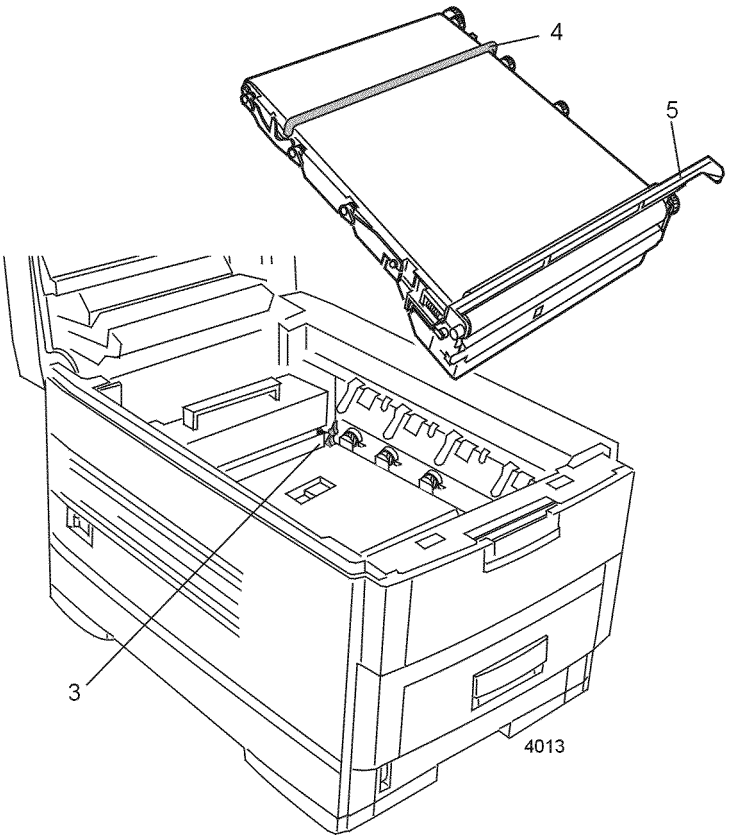
Removing the belt entrance sensor actuator

Reverse these steps to install the belt entrance actuator. For reassembly, install the entrance sensor actuator and ensure the spring arm is properly located in the notch in the printer unit chassis.

Transfer belt unit

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover.
2. Remove the drum / toner cartridge basket and store in a lightproof bag to protect the drum units from light.
3. Push the transfer belt unit locking tabs toward the rear of the printer to release the unit.
4. Using the transfer belt unit handle, lift the unit about 1 / 2 inch (12 mm).
5. Using the handle and the front frame of the transfer belt unit, remove the unit.



Removing the transfer belt unit

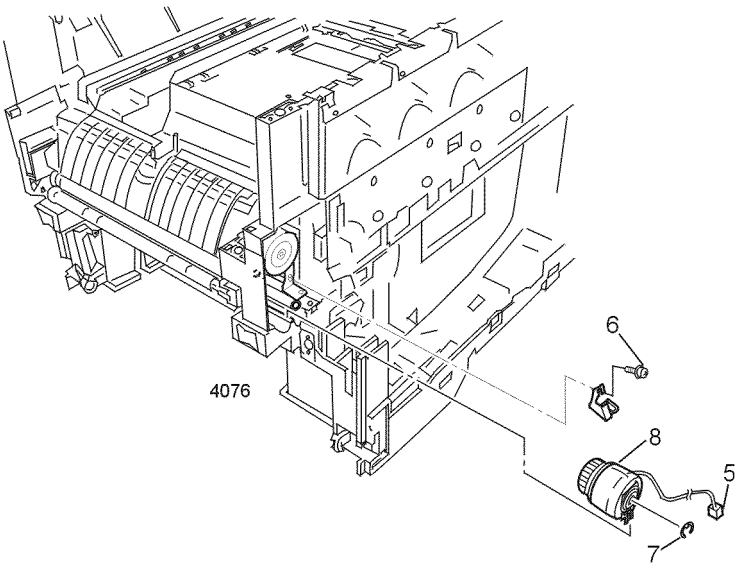
Reverse these steps to install the transfer belt unit. Ensure the transfer belt unit's locking tabs fully engage.

Registration components

Registration clutch

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
4. Remove the right shield plate as described in the topic “Right shield plate” on page 93.
5. Disconnect the RCL connector from the printer engine controller board.
6. Remove the screw securing the ground strap to the motor bracket.
7. Remove the E-Ring securing the clutch to registration shaft B.
8. Remove the registration clutch.



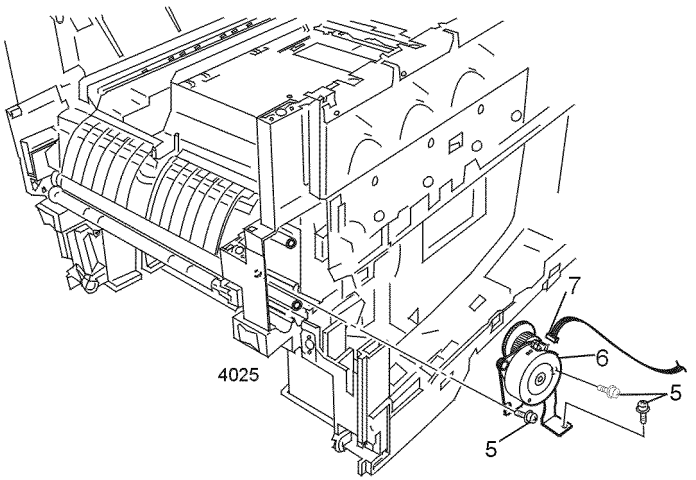
Removing the registration clutch

Reverse these steps to install the registration clutch.

Registration motor assembly

Warning *Switch off the power and disconnect the power cord.*

1. Open top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
4. Remove the registration clutch as detailed in “Registration clutch” on page 133.
5. Remove the screws securing the motor bracket to the printer.
6. Remove the registration motor assembly.
7. Disconnect the harness from the registration motor.
8. If replacing the motor, remove the two screws securing the motor to the motor bracket.



Removing the registration motor assembly

Reverse these steps to install the registration motor assembly.

Registration roller assembly A and drive gear

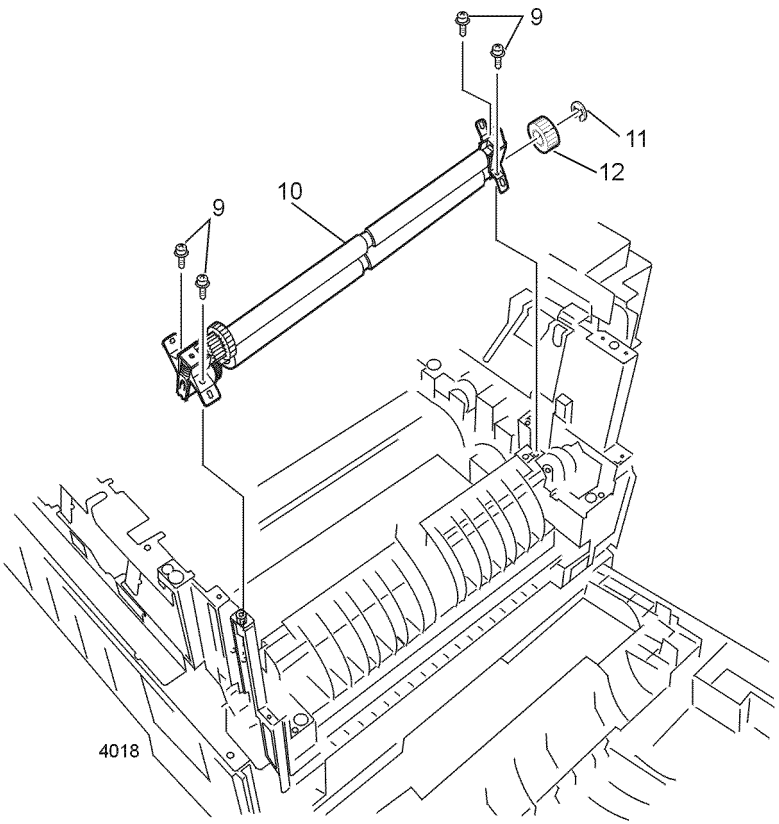
Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Remove the four imaging cartridges and basket. Cover the cartridges and store in a safe place.
3. Remove the transfer belt unit.
4. Open the front cover.
5. Remove the left-side cover as described in the topic “Left-side cover” on page 88.
6. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
7. Remove the right shield plate as described in the topic “Right shield plate” on page 93.
8. Remove the multi-sheet bypass feeder as described in the topic “Multi-sheet bypass feeder” on page 127.
9. Remove the four screws securing the registration roller assembly A.
10. Lift the roller assembly and remove.

Note *If replacing the drive gear, continue with Steps 11 and 12.*

11. Remove the E-Ring securing the drive gear to the right end of the registration roller shaft.

12. Remove the drive gears.



Removing the registration roller assembly A and drive gear

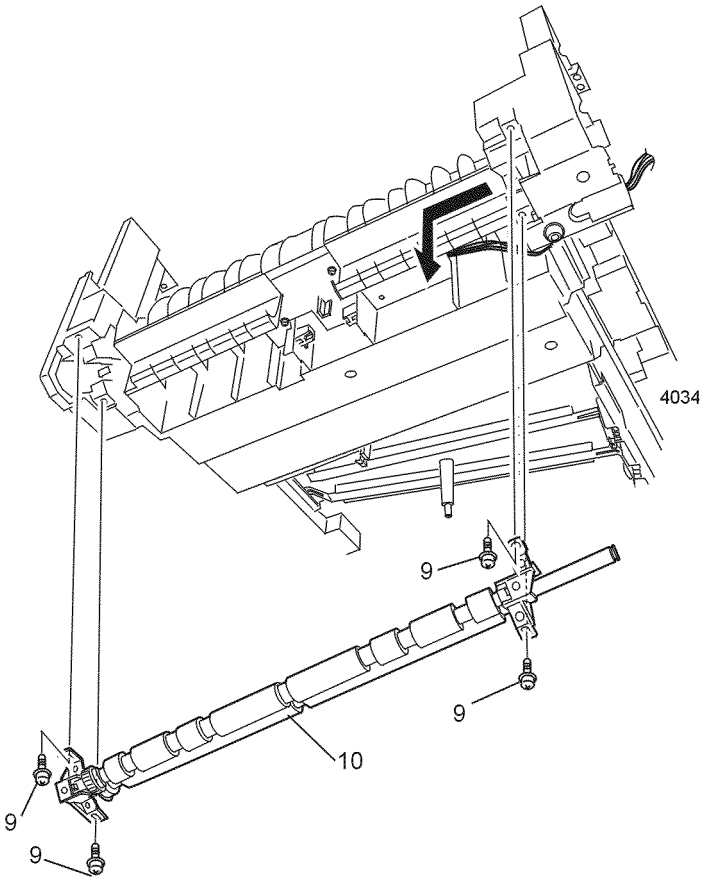
Reverse these steps to install the registration roller assembly A and drive gear. Install the drive gear so that it drives the roller in the direction of paper travel. The blue plastic face should face the outside, next to the E-ring.

Registration roller assembly B

Warning *Switch off the power and disconnect the power cord.*

1. Remove tray 1.
2. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
3. Open front cover.
4. Open front cover inner baffle.
5. Remove duplex unit if installed.
6. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
7. Remove the right shield plate as described in the topic “Right shield plate” on page 93.
8. Remove registration clutch as detailed in the topic “Registration clutch” on page 133.
9. Remove the four screws securing registration roller assembly B to the printer.

10. Lower the assembly and slide to the left to remove.



Removing the registration roller assembly B

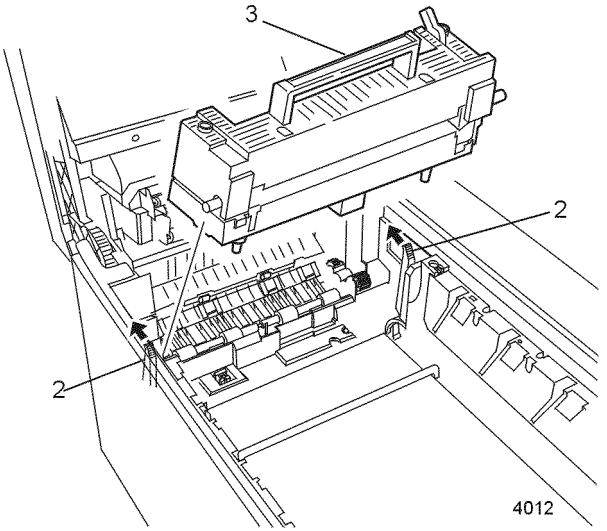
Reverse these steps to install the registration roller assembly B.

Exit assembly and fuser components

Fuser unit

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Press the two latches to release the fuser unit.
3. Use the handle to lift and remove the fuser unit.



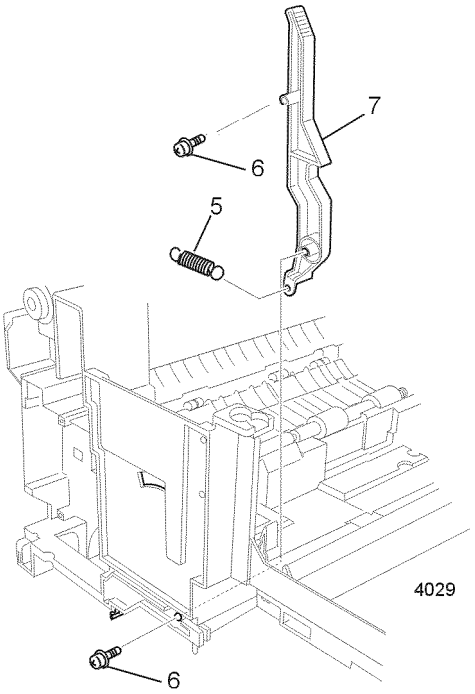
Removing the fuser unit

Reverse these steps to install the fuser unit.

Fuser latching handle (left)

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover.
2. Open the front cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
3. Remove the left-side cover as described in the topic “Left-side cover” on page 88. Remove the left-side metal shield.
4. Remove the fuser assembly as detailed on page 139.
5. Release the fuser latching handle spring.
6. Remove the screws securing the fuser latching handle to the printer frame.
7. Remove the left fuser latching handle.



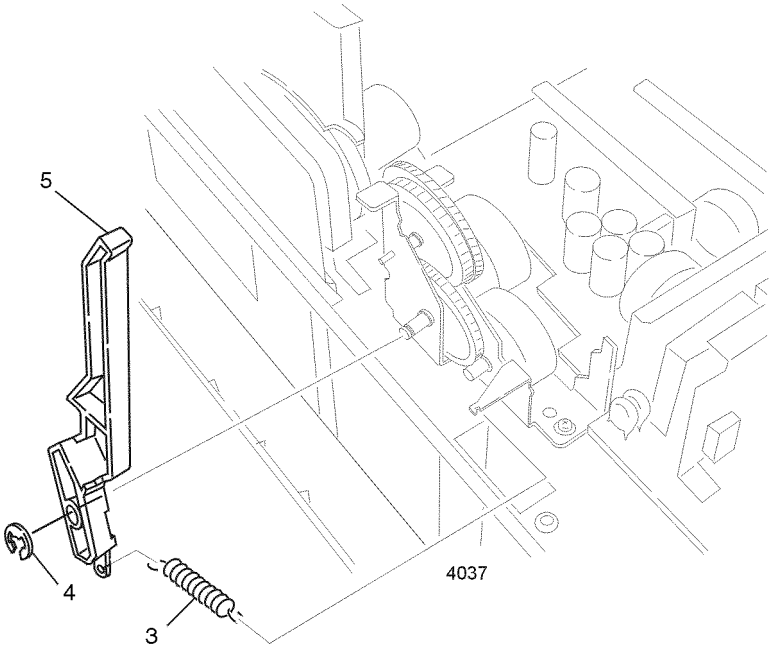
Fuser latching handle (left)

Reverse these steps to install the fuser latching handle (left).

Fuser latching handle (right)

Warning *Switch off the power and disconnect the power cord.*

1. Remove the electrical chassis as detailed in “Electrical chassis (card cage)” on page 94.
2. Remove the printer unit chassis as detailed on page 97.
3. Release the fuser latching handle spring.
4. Remove the E-ring securing the fuser latching handle.
5. Remove the fuser latching handle (right).



Removing the fuser latching handle (right)

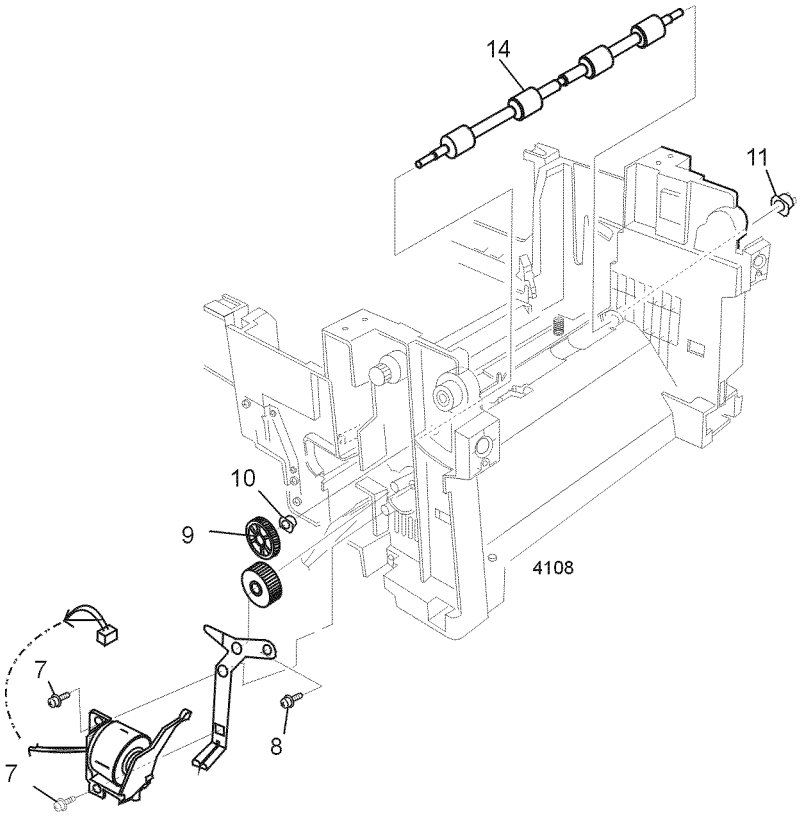
Reverse these steps to install the fuser latching handle (right).

Fuser exit roller

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the left-side cover as detailed in the topic “Left-side cover” on page 88.
4. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
5. Remove the right shield plate as shown in “Right shield plate” on page 93.
6. Remove the card cage as detailed in the topic “Electrical chassis (card cage)” on page 94.
7. Remove the two screws securing the duplex gate solenoid.
8. Remove the screw securing the fuser exit roller ground contact.
9. Release the locking tab and remove the fuser drive gear.
10. Remove the bearing located behind the fuser drive gear.
11. Release the two locking tabs and remove the bearing from the left end of the fuser exit roller shaft.
12. Lift the duplex exit gate.
13. Slide the fuser exit roller to the right until the left end of the staff is free.

14. Lift the left end of the shaft and remove.



Removing the fuser exit roller

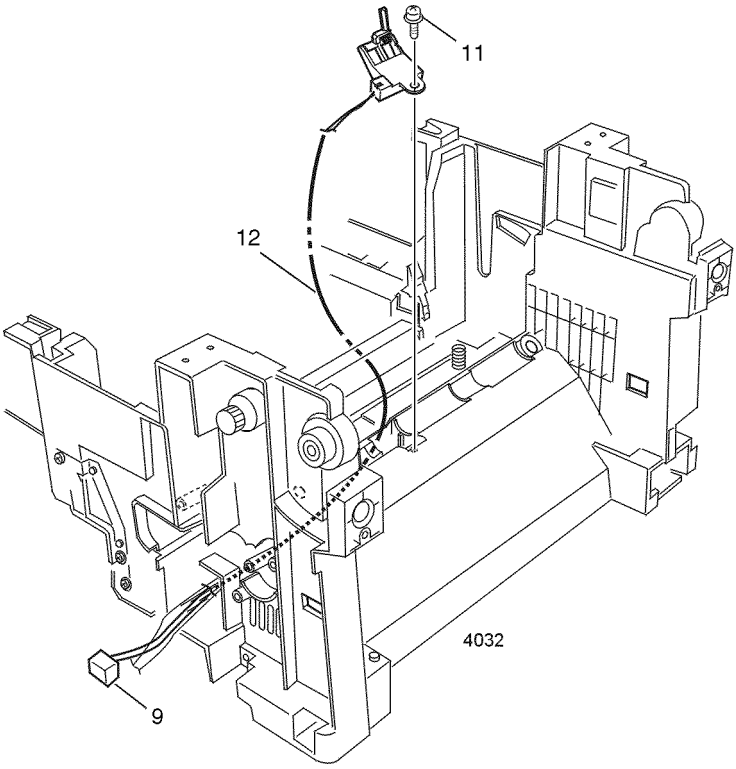
Reverse these steps to install the fuser exit roller.

Exit sensor assembly

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the left-side cover as detailed in the topic “Left-side cover” on page 88.
4. Remove the right-side cover as described on page 89.
5. Remove the right shield plate as shown on page 93.
6. Remove the card cage as detailed in the topic “Electrical chassis (card cage)” on page 94.
7. Remove the multi-sheet bypass feeder as shown on page 127.
8. Remove the fuser exit roller as detailed on page 142.
9. Disconnect the in-line connector to the exit sensor assembly (PARTTEMP).
10. Lift the duplex exit gate.
11. Remove the screw securing the exit sensor assembly.

12. Guide the harness through the chassis as you remove the assembly.



Removing the exit sensor assembly

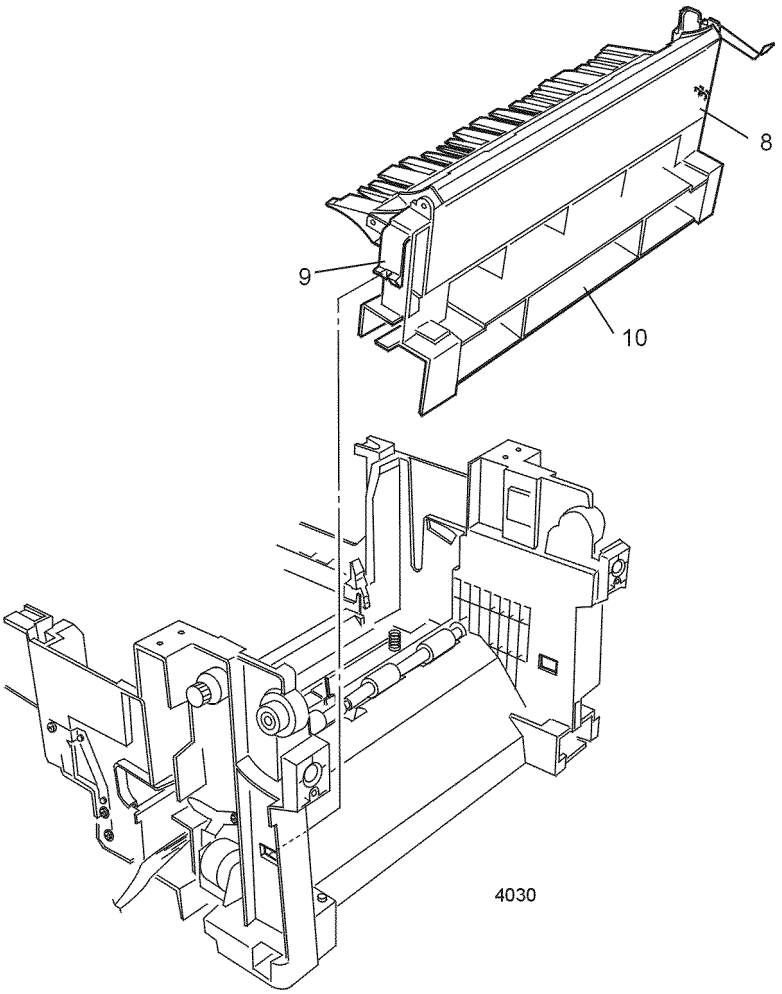
Reverse these steps to install the exit sensor assembly. Ensure that the tab on the clutch is positioned on the pin on the paper handler.

Duplex guide assembly

Warning *Switch off the power and disconnect the power cord.*

1. Remove the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Open the front cover.
3. Remove the left-side cover as described in the topic “Left-side cover” on page 88.
4. Remove the right-side cover as described in the topic “Right-side cover” on page 89.
5. Remove the right shield plate as described in the topic “Right shield plate” on page 93.
6. Remove the rear cover, “Rear cover” on page 90.
7. Remove the top cover inner frame as described in the topic “Top cover inner frame” on page 100.
8. Carefully pry the left side of the duplex guide assembly to free the duplex guide assembly from the printer frame.
9. Carefully pry the right locking tabs to free the right side of the guide.

10. Lift the duplex guide assembly and remove.



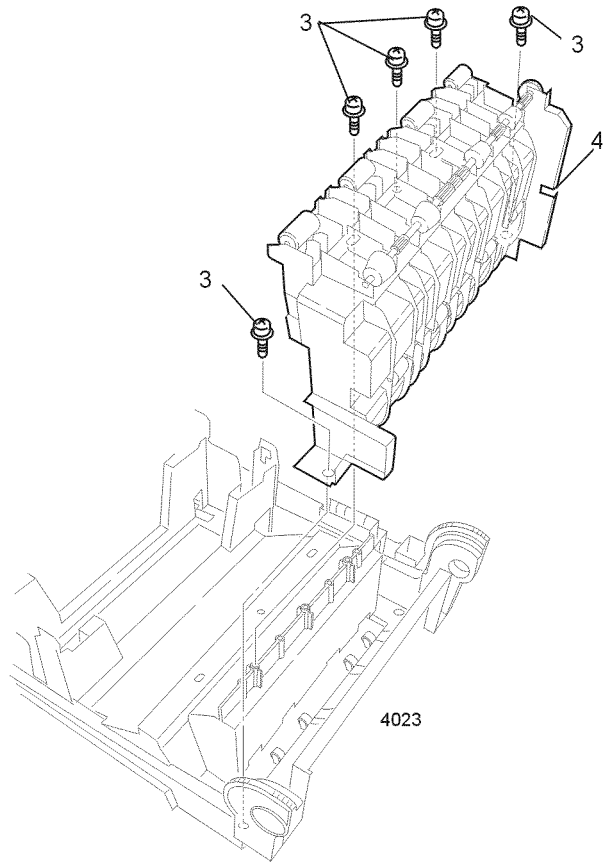
Removing the duplex guide assembly

Reverse these steps to install the duplex guide assembly.

Eject guide assembly

Warning *Switch off the power and disconnect the power cord.*

1. Remove the rear cover.
2. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
3. Remove the five screws securing the eject guide assembly to the top cover.
4. Remove the eject guide assembly.



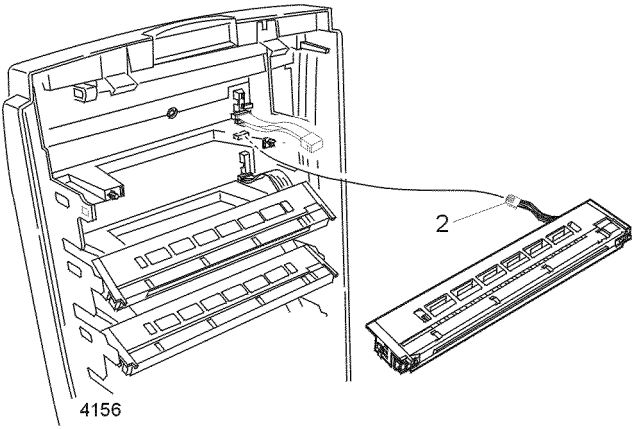
Removing the eject guide assembly

Reverse these steps to install the eject guide assembly.

Stack full sensor

Warning *Switch off the power and disconnect the power cord.*

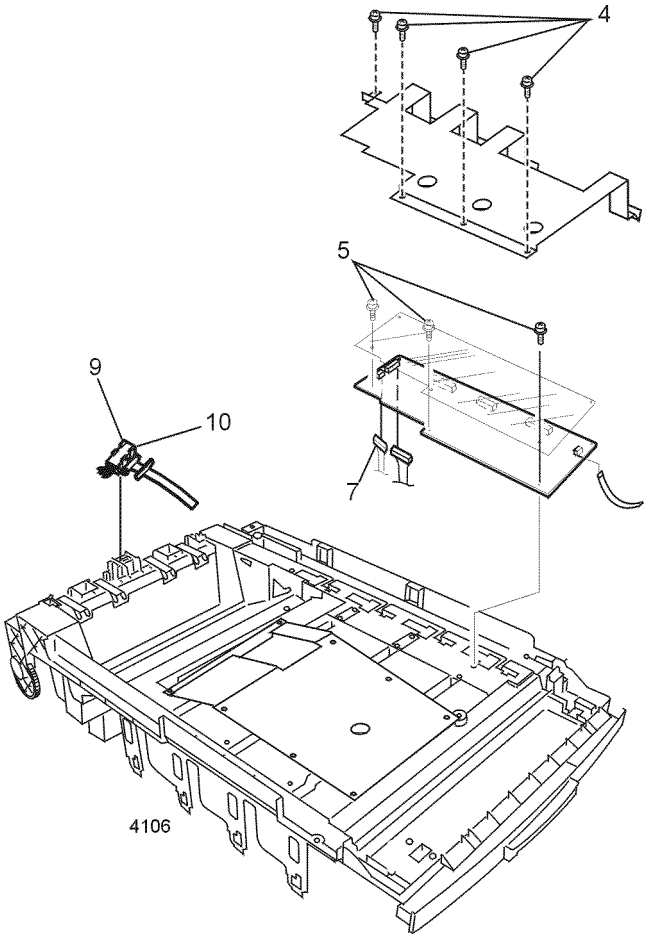
1. Remove the top cover.
2. Disconnect the four LED assembly power harnesses from the bottom of the toner sensor board.



Removing the LED Assembly power connector

3. Close the top cover inner unit.
4. Remove the four screws securing the metal shield over the toner cartridge sensor board.
5. Remove the three screws securing the toner sensor board.
6. Rotate the board up to expose the component side of the board.
7. Disconnect the STUCK connector from the toner sensor board.
8. Free the disconnected cable from all cable retainers.
9. Release the four locking tabs securing the stack full sensor.

10. Remove the stack full sensor.



Removing the stack full sensor

Reverse these steps to install the stack full sensor.

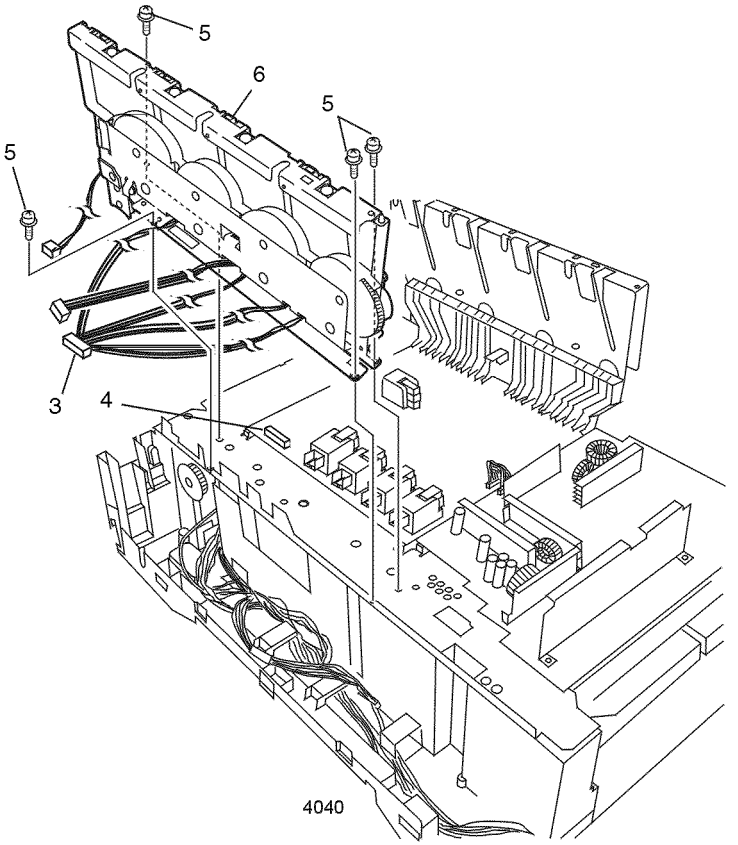
Drive assembly components

Main motor assembly

Note *Switch off the power and disconnect the power cord.*

1. Remove the electrical chassis as detailed in “Electrical chassis (card cage)” on page 94.
2. Remove the printer unit chassis as detailed on page 97.
3. Free the harnesses from the channel along the right side of the main motor assembly.
4. Disconnect the ribbon cable from the high voltage power supply.
5. Remove the four screws securing the main motor assembly to the frame.
6. Lift the front of the main motor assembly about 2 cm (3/4 in.)
7. Carefully thread the high-voltage power supply fan harness through the harness guide and main motor assembly before lifting.

8. Carefully guide the ribbon cable through the assembly as you lift the main motor assembly and remove.



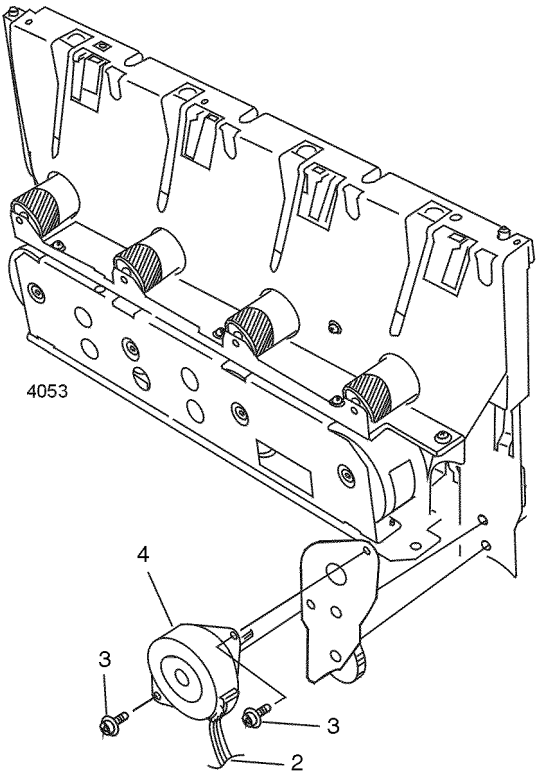
Removing the main motor assembly

Reverse these steps to install the main motor assembly.

Main feeder drive motor

Warning *Switch off the power and disconnect the power cord.*

1. Remove the print unit chassis as detailed in “Printer unit chassis (and low-voltage power supply fan)” on page 97.
2. Disconnect the inline connector from the HOPFF connector.
3. Remove the two screws securing the main feeder drive motor to the mounting bracket.
4. Remove the motor.



Removing the main feeder drive motor

Reverse these steps to install the main feeder drive motor.

Transfer belt motor assembly

Warning *Turn the power off and disconnect the power cord.*

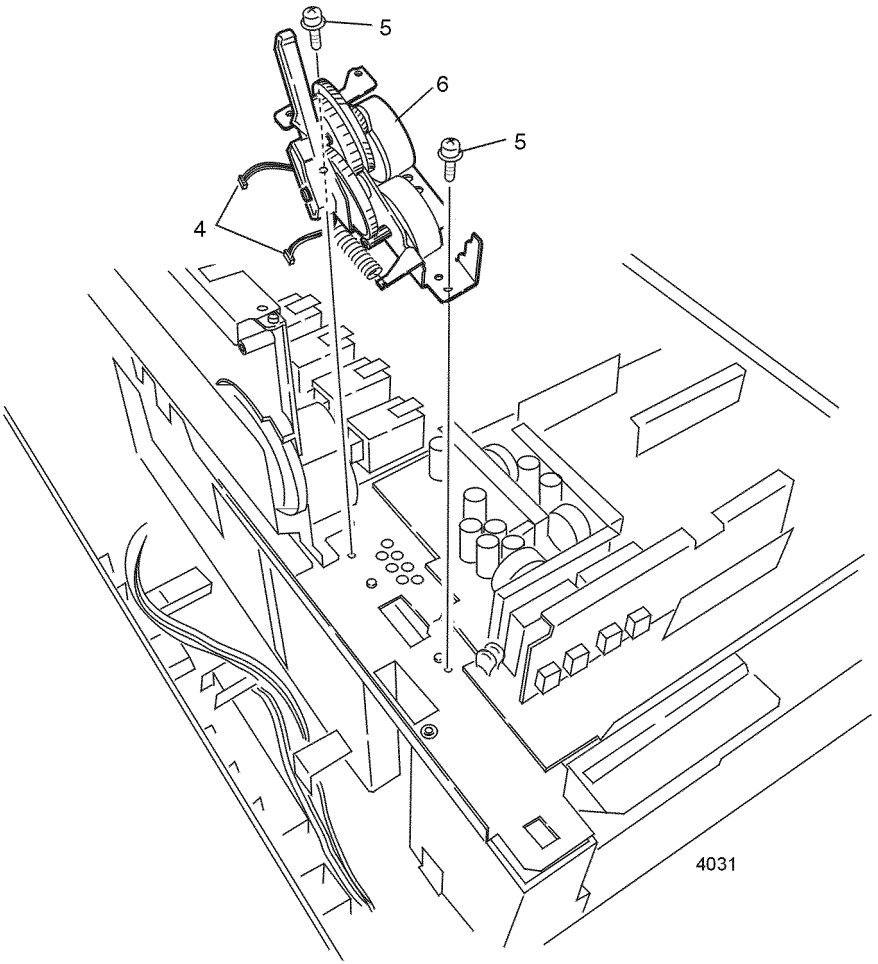
1. Remove the printer unit chassis as detailed on page 97.
2. Remove the two screws securing the transfer belt motor assembly.
3. Tilt the transfer belt motor assembly over and lift about 2.5 cm (1 in.).

Note *If the cable harness does not have enough slack to allow disconnecting and reconnecting the two incline connectors, remove the electrical chassis and free the harness from the run along the right side of the main motor assembly.*

Mark the two inline connectors attached to the motor assembly to ensure proper reinstallation.

4. Disconnect the two inline connectors.

5. Remove the transfer belt motor assembly.



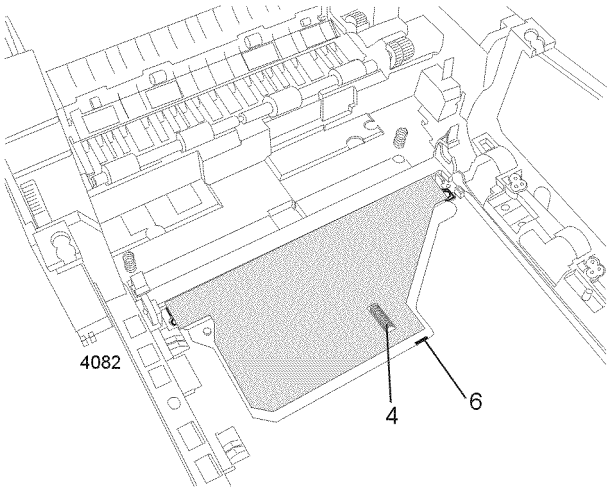
Removing the transfer belt motor assembly

Reverse these steps to install the transfer belt motor assembly.

Shutter plate

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover.
2. Remove the drum / toner cartridge basket. Place them in a lightproof bag and store in a safe place.
3. Remove the transfer belt unit as explained on page 132.
4. Through the opening in the shutter plate, carefully remove the Shutter Spring.
5. Open the shutter plate to the full open position.
6. Carefully lift the tabs on the front edge of the shutter plate over the stopper and continue to move it toward the front.
7. Remove the shutter plate.



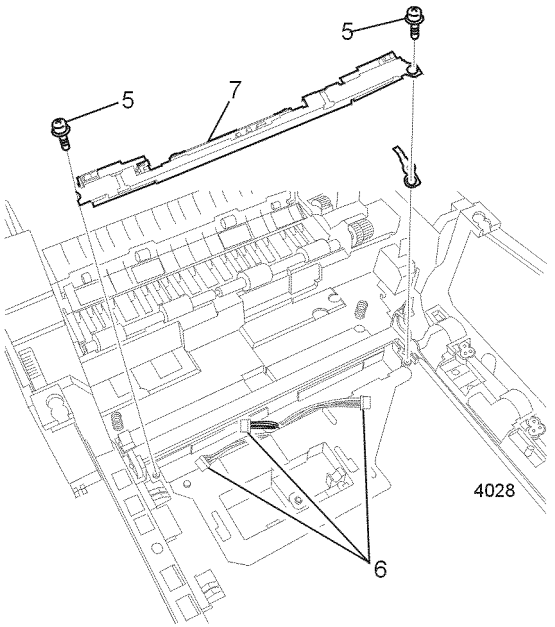
Removing the shutter plate

Reverse these steps to install the shutter plate; ensure all guide pins on the shutter plate are properly aligned when reinstalling. Move the shutter plate to the full closed position to insert the shutter spring.

Color registration sensor assembly

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover.
2. Remove the four imaging cartridges and basket. Cover the cartridges and store in a safe place.
3. Remove the transfer belt unit as detailed on page 132.
4. Remove the shutter plate as described in the previous procedure “Shutter plate” on page 156.
5. Remove the three screws securing the color registration sensor assembly.
6. As you lift the assembly, carefully disconnect the two harnesses (RSNS, LSNS, & GGU) connected to the assembly.
7. Remove the color registration sensor assembly.



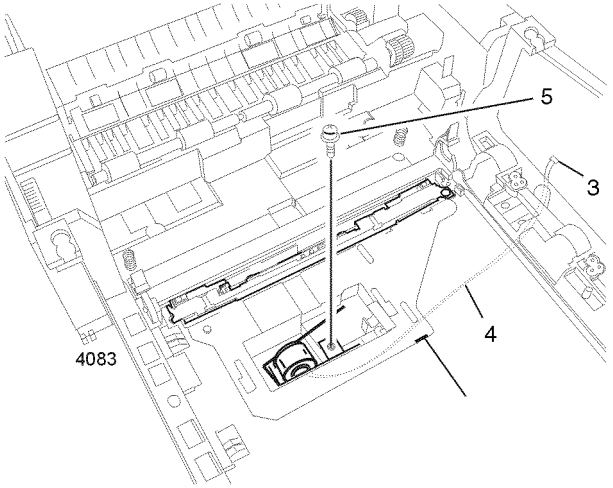
Removing the color registration sensor assembly

Reverse these steps to install the color registration sensor assembly.

Color registration solenoid

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer unit chassis as shown on page 97.
2. Remove the shutter plate as explained on page 156.
3. Disconnect the shutter solenoid in-line connector.
4. Release the shutter solenoid harness from all cable clamps.
5. Remove the screw securing the shutter solenoid to the printer unit chassis.



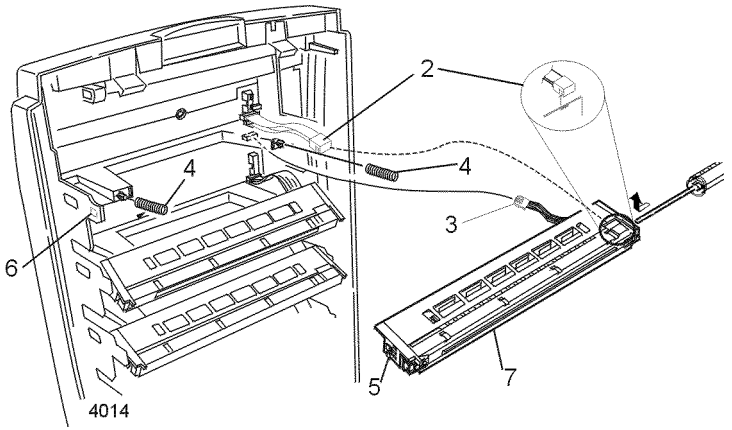
Removing the color registration solenoid

Reverse these steps to install the color registration solenoid.

LED assembly

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Carefully disconnect the flat harness connector from the LED assembly by inserting a small, flat-blade screwdriver through the hole in the end of the LED assembly and lifting up on the connector. Free the harness from the LED assembly.
3. Disconnect the power harness from the toner sensor board.
4. Note the two springs on the back of the LED assembly. Ensure they remain with the top cover inner frame.
5. Rotate the LED assembly down until the locking tabs align with the slots in the frame.
6. Carefully spread the mounting frame out to free the LED assembly.
7. Remove the LED assembly.



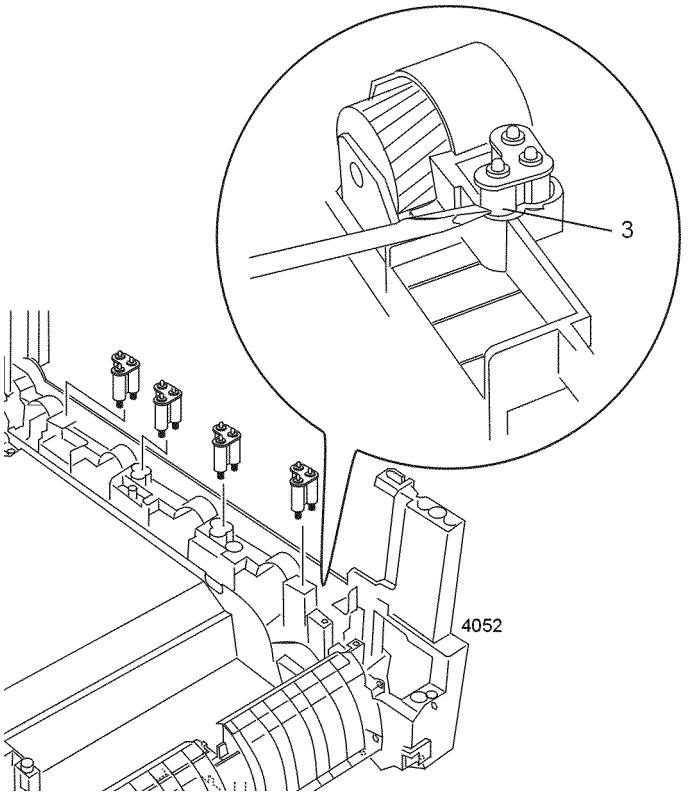
Removing an LED assembly

Reverse these steps to install the LED assembly.

Drum contact assembly

Warning *Switch off the power and disconnect the power cord.*

1. Open the top cover.
2. Remove the four imaging cartridges and basket. Cover the cartridges and store in a safe place.
3. Use a small screwdriver to carefully pry the drum contact assembly from the printer chassis.



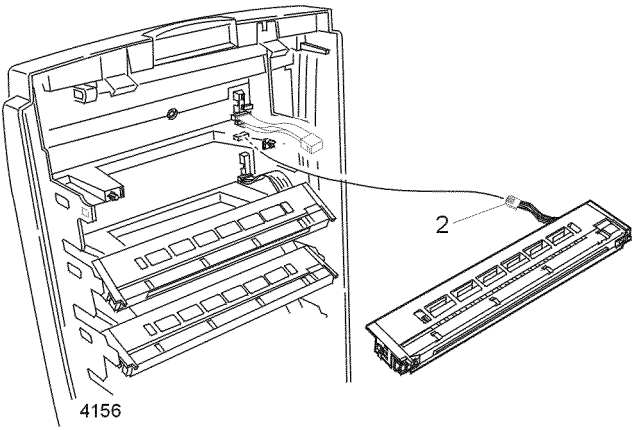
Removing the drum contact assembly

Reverse these steps to install the drum contact assembly.

Toner sensor actuators

Warning *Switch off the power and disconnect the power cord.*

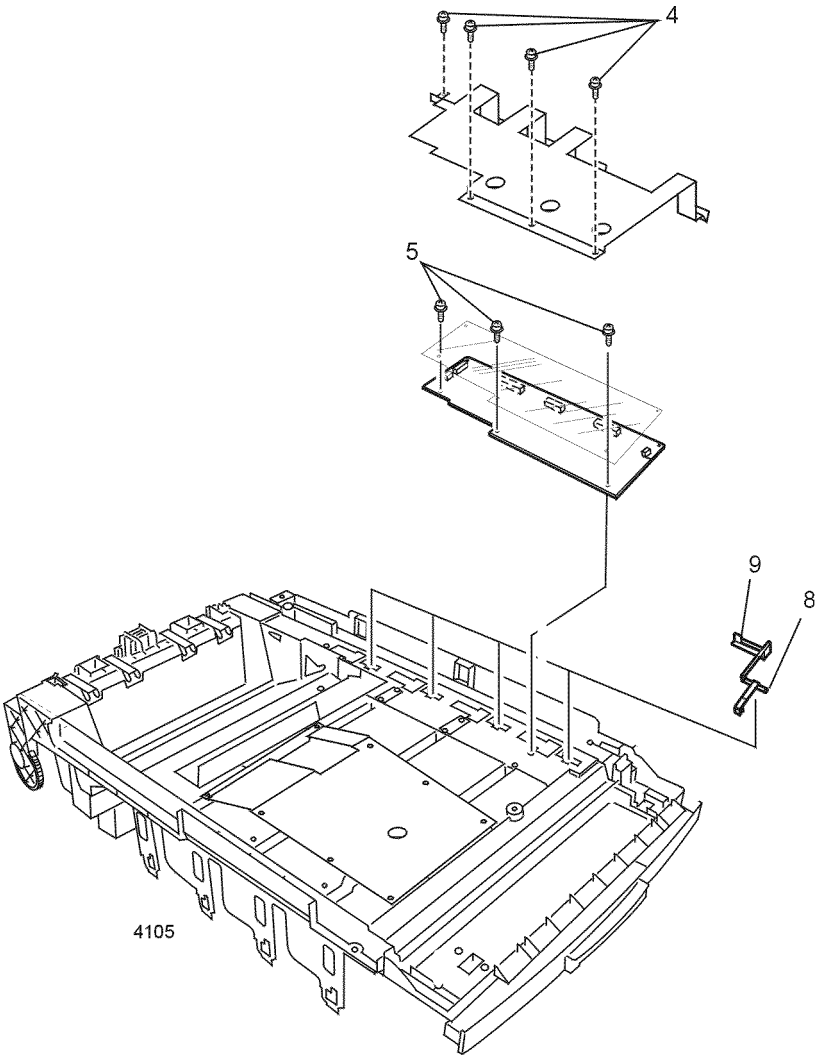
1. Remove the top cover. Remove the drum / toner cartridge basket. Cover the basket in a lightproof black bag and store in a safe place.
2. Disconnect the four LED power harnesses from the bottom of the toner sensor board.



Disconnecting the LED assembly power harness

3. Close the top cover inner unit.
4. Remove the four screws securing the metal shield over the toner sensor board.
5. Remove the three screws securing the toner sensor board and the insulator.
6. Rotate the board up to expose the component side of the board.
7. Open the top cover inner unit.
8. From the underside of the top cover inner unit, use a small screwdriver to carefully push up the arms of the sensor actuator until they are free.

9. Remove the sensor actuator.



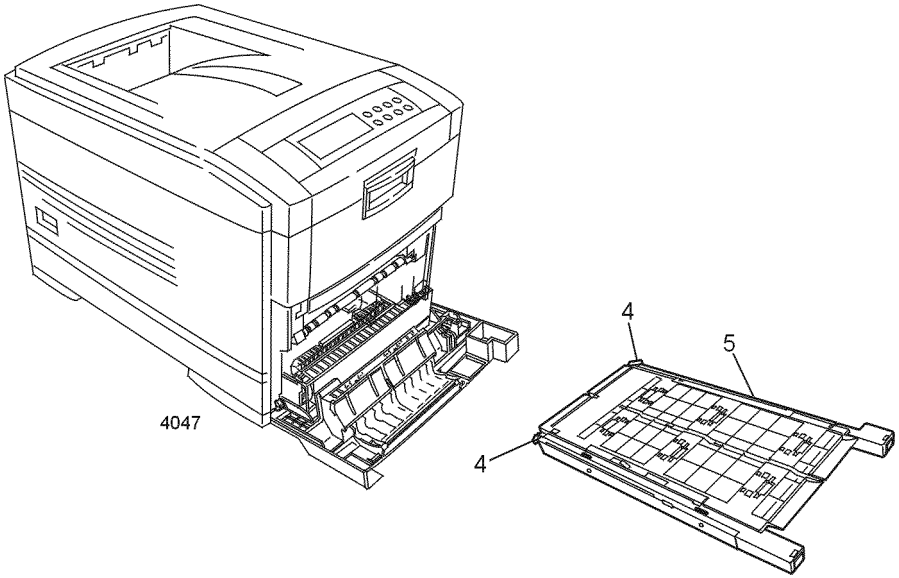
Removing the toner sensor actuators

Reverse these steps to install the toner sensor actuators. When replacing the toner sensor board, insure all harnesses are in the cable channels.

Duplex unit

Warning *Switch off the power and disconnect the power cord.*

1. Remove tray 1.
2. Open the front cover and the front cover inner baffle.
3. Pull the duplex unit out until it stops.
4. Release the latches on the left and right rails. Accessing the rails may be easiest at the rear of the printer by reaching through the cavity left by the removed paper tray.
5. Remove the duplex unit.



Removing the duplex unit

Alternately, to remove the duplex unit:

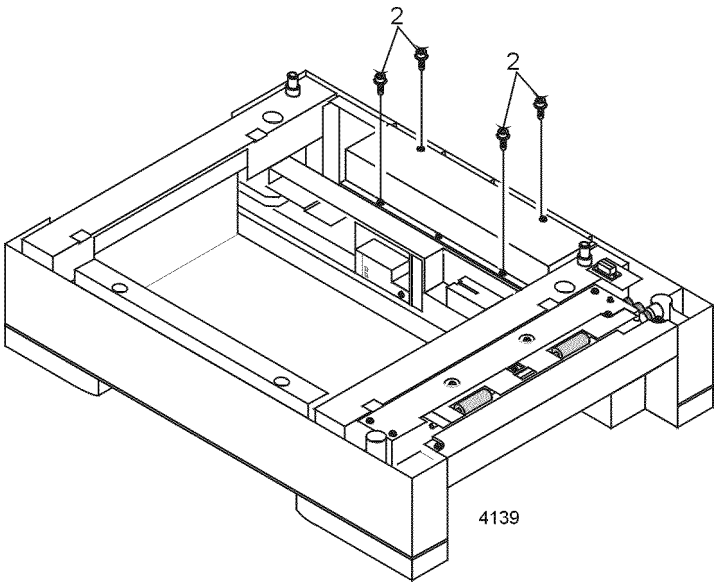
1. Pull the duplex unit out until it stops.
2. While holding the right rail. pull out the left rail (with a moderate amount of force), to free it.
3. Free the right rail by moving the unit to the left and out.

Optional paper feeder components

Idler roller assembly

Warning *Switch off the power and disconnect the power cord.*

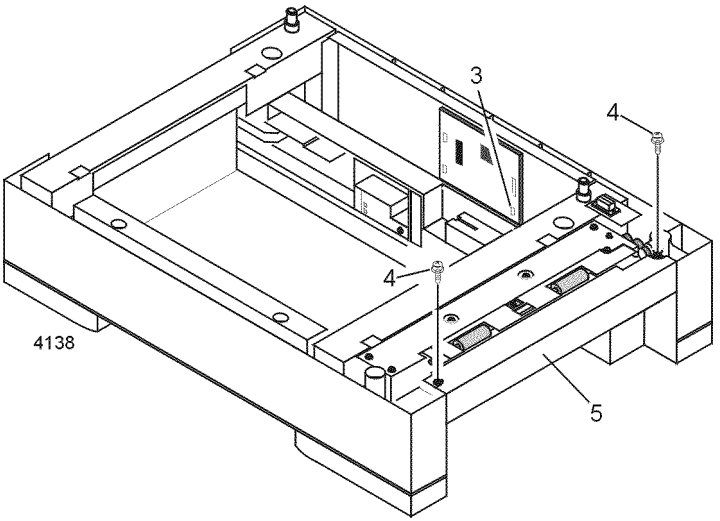
1. Remove the printer from the optional paper feeder.
2. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover

3. Carefully disconnect harness SNS0 from the feeder control board (connector SNS0 is a six pin connector with only two wires - it may be necessary to remove the feeder control board to disconnect the harness).
4. Remove the two screws securing the idler roller assembly to the feeder frame.

5. Guide the sensor wires through the frame as you remove the idler roller assembly.



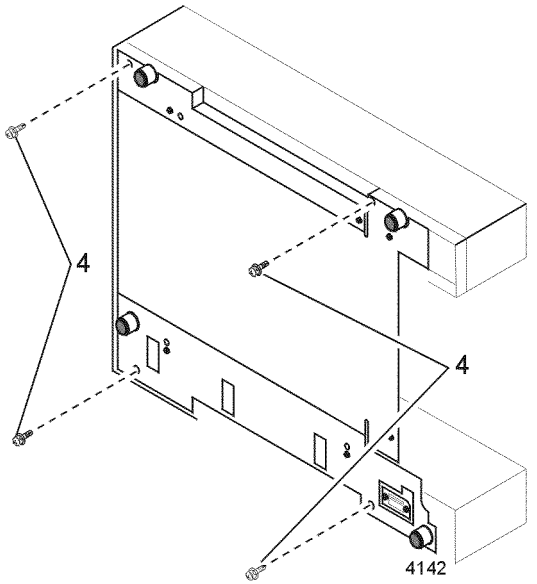
Removing the idler roller assembly

Reverse these steps to install the idler roller assembly.

Inner frame

Warning *Switch off the power and disconnect the power cord.*

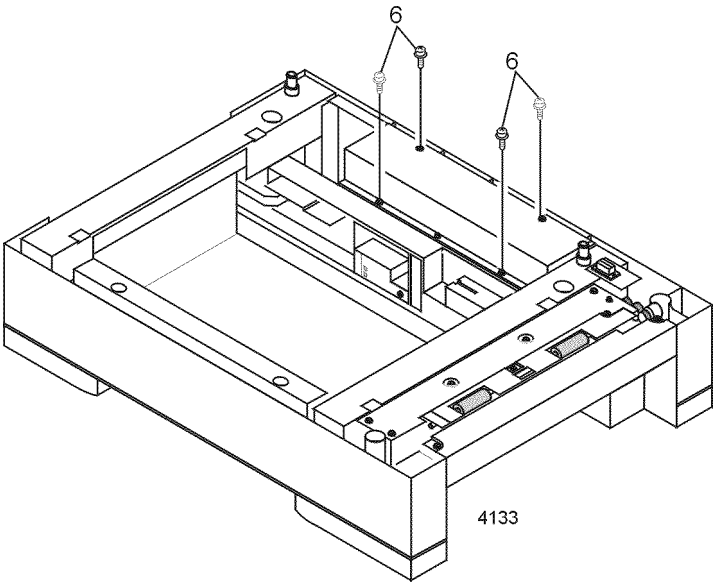
1. Remove the printer from the optional paper feeder.
2. Remove the paper tray from the optional paper feeder.
3. Turn the optional paper feeder on to its left or right side.
4. Remove the four brass colored screws from the bottom of the paper feeder.



Removing the optional feeder inner frame bottom screws

5. Turn the feeder to its right side up position.

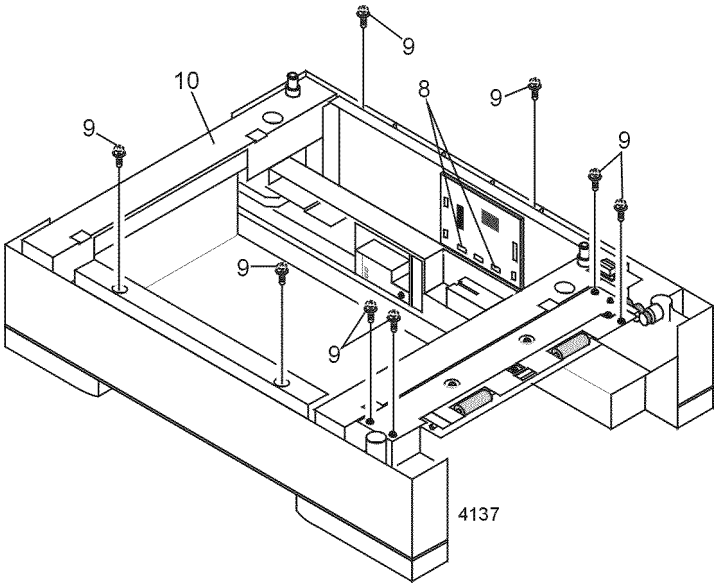
6. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover

7. Remove the idler roller assembly as explained on page 164.
8. Disconnect the PSZ and MAIN2 harnesses from the feeder control board.
9. Remove the eight screws securing the inner frame to the base frame.

10. Guide the disconnected MAIN2 harness through the frame as you remove the inner frame.



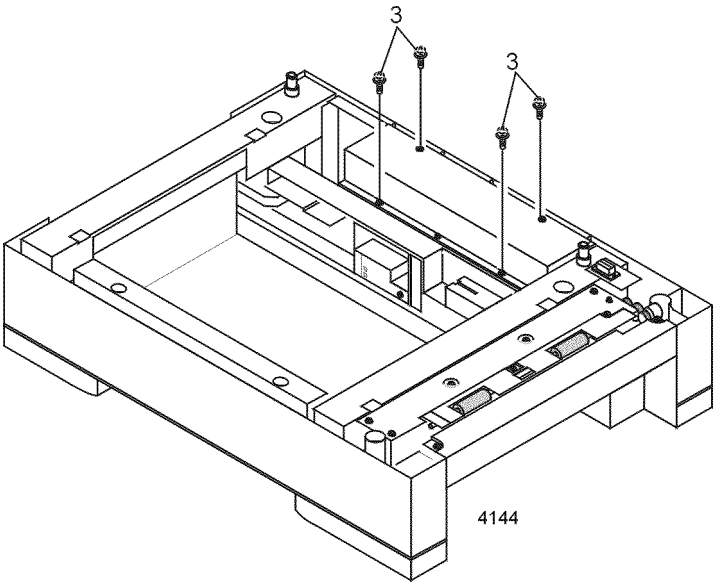
Removing the optional feeder inner plate

Reverse these steps to install the optional feeder inner frame.

Feeder clutch

Warning *Switch off the power and disconnect the power cord.*

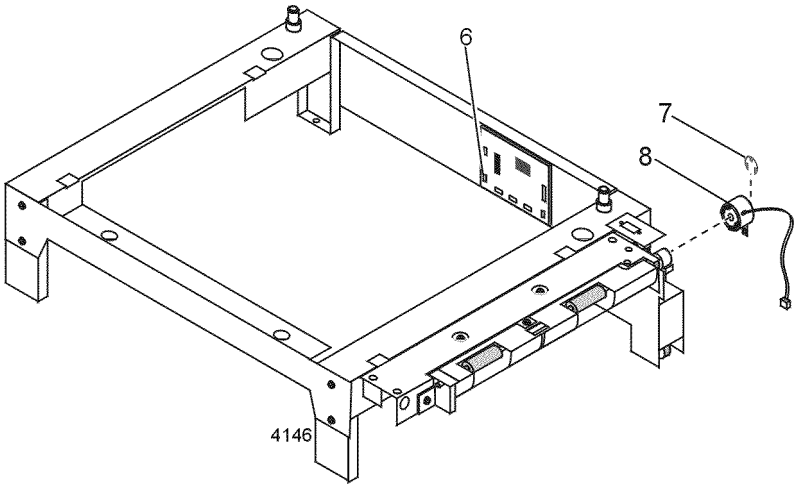
1. Remove the printer from the optional paper feeder.
2. Remove the paper tray from the feeder.
3. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover

4. Remove the idler roller assembly as explained on page 164.
5. Remove the inner frame as detailed on page 166
6. Disconnect the CL1 harness from the feeder control board.
7. Remove the E-ring securing the feeder clutch to the shaft.

8. Remove the clutch.



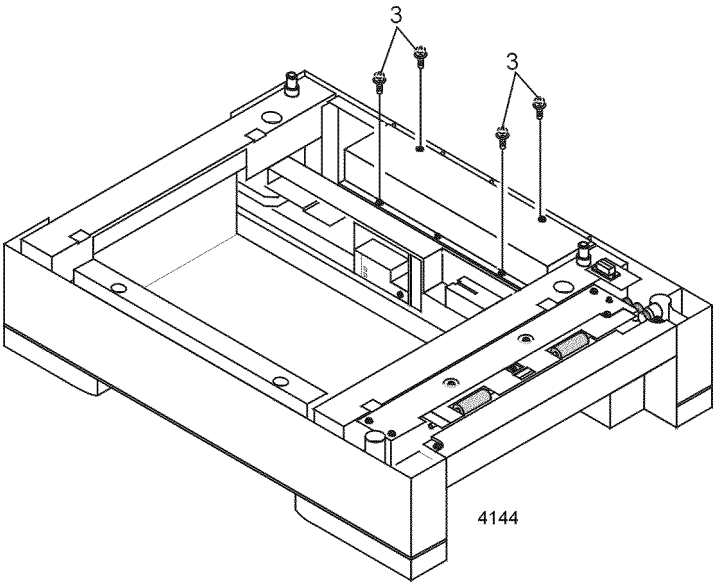
Removing the feeder clutch

Reverse these steps to install the optional feeder clutch.

Feeder motor

Warning *Switch off the power and disconnect the power cord.*

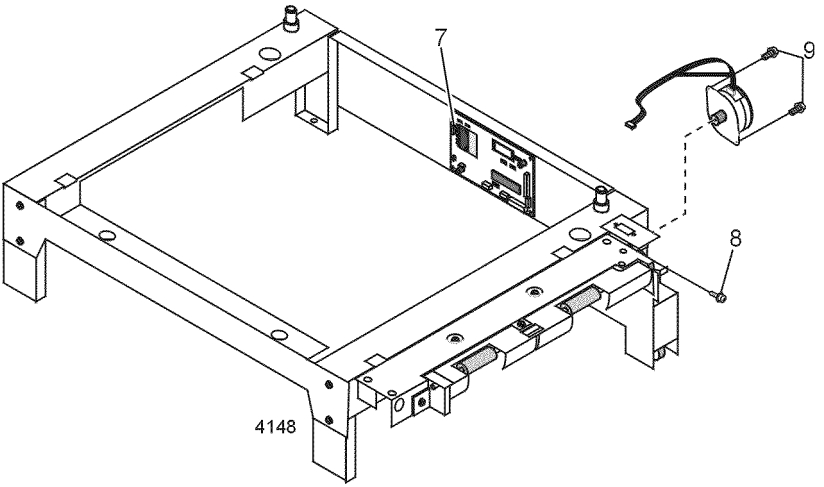
1. Remove the printer from the optional paper feeder.
2. Remove the paper tray from the feeder.
3. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover

4. Remove the idler roller assembly as explained on page 164.
5. Remove the inner frame as detailed on page 166
6. Remove the feeder clutch as shown on page 169.
7. Disconnect the MOTOR harness from the feeder control board.
8. Remove the screw securing the feed motor bracket to the inner frame.
9. Remove the two screws securing the feed motor to the feed motor bracket.

10. Remove the feed motor.



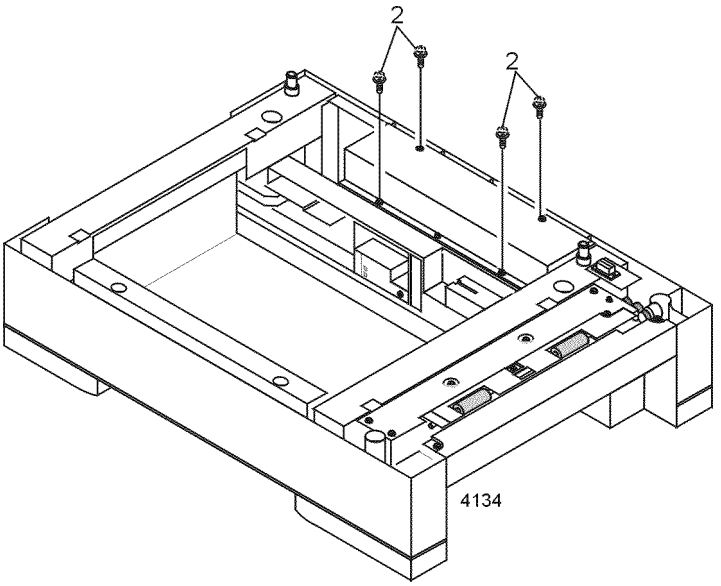
Removing the feeder motor

Reverse these steps to install the optional feeder motor.

Feeder control board

Warning *Switch off the power and disconnect the power cord.*

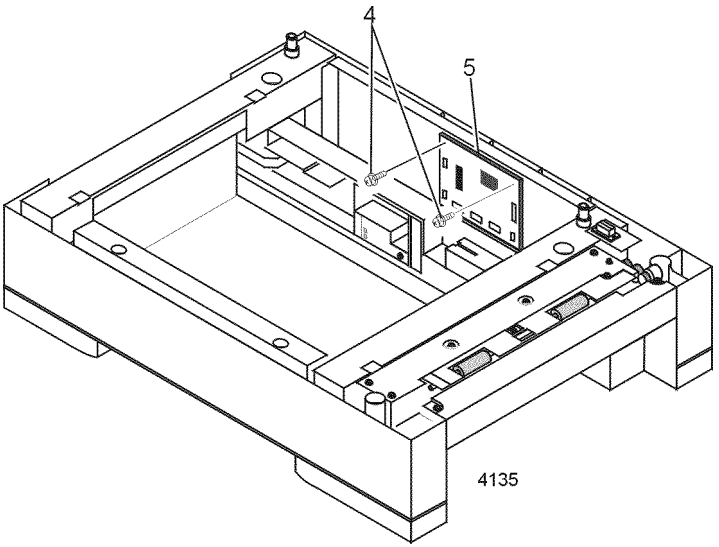
1. Remove the printer from the optional paper feeder.
2. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover

3. Disconnect the seven harnesses connected to the feeder control board.
4. Remove the two screws securing the feeder control board to the inner frame.

5. Remove the feeder control board.



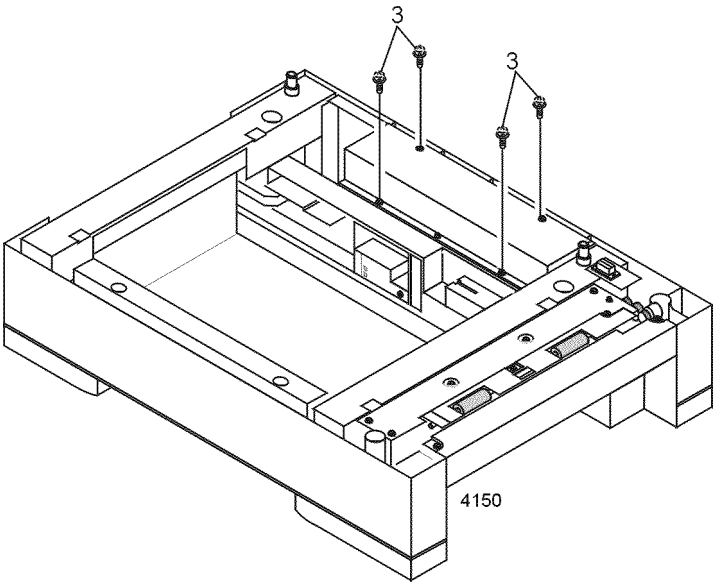
Removing the feeder control board

Reverse these steps to install the optional feeder control board.

Paper transport roll guide

Warning *Switch off the power and disconnect the power cord.*

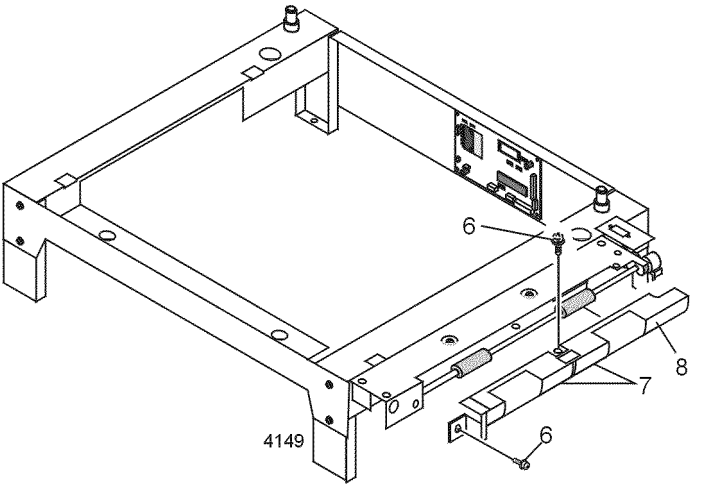
1. Remove the printer from the optional paper feeder.
2. Remove the paper tray from the feeder.
3. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover plate

4. Remove the idler roller assembly as shown on page 164.
5. Remove the inner frame as shown on page 166.
6. Remove the two screws securing the paper transport roll guide to the inner frame.
7. Carefully pull down and out on the center of the guide to release the two locking tabs.

8. Remove the guide.



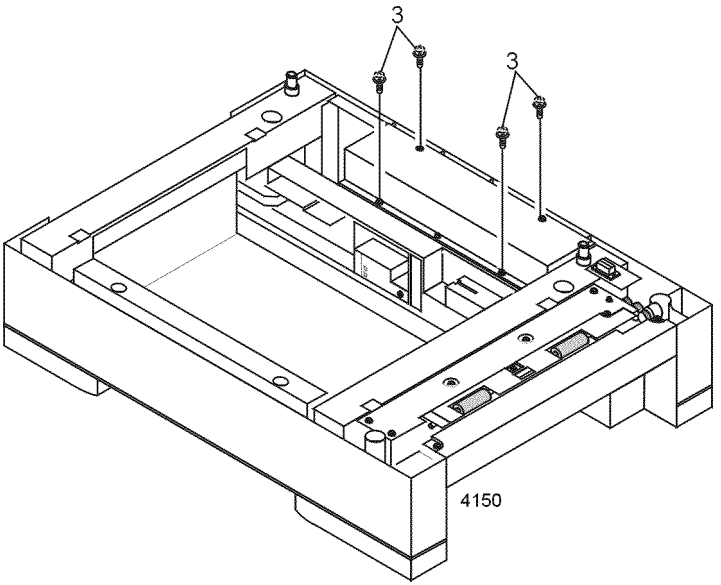
Removing the paper transport roll guide

Reverse these steps to install the paper transport roll guide.

Feeder drive assembly

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer from the optional paper feeder.
2. Remove the paper tray from the feeder.
3. Remove the four screws securing the feeder control board cover plate. Remove the plate.

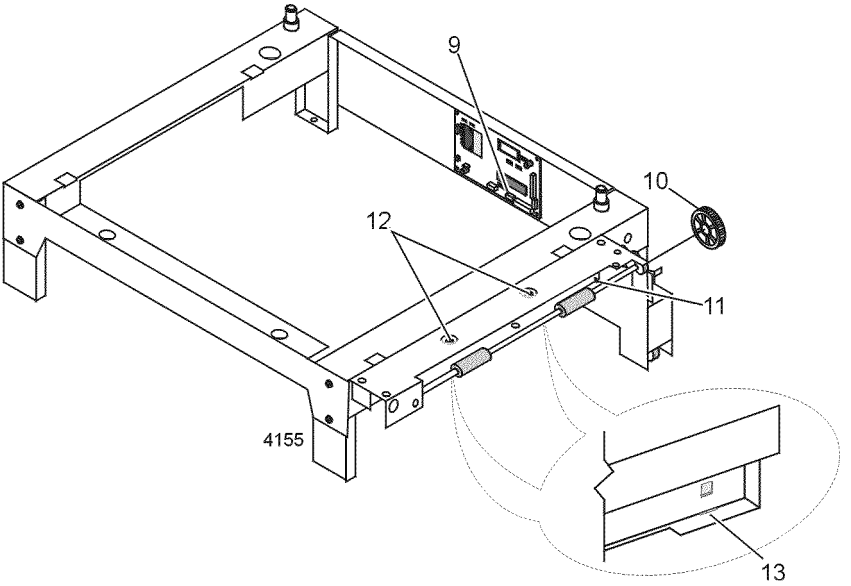


Removing the feeder control board cover plate

4. Remove the idler roller assembly as explained on page 164.
5. Remove the inner frame as detailed on page 166
6. Remove the feeder clutch as shown on page 169.
7. Remove the feeder motor as shown on page 171.
8. Remove the paper transport roll guide as shown on page 175.
9. Disconnect harness SNS2 from the feeder control board.
10. Release the two locking tabs securing the feed roll drive gear to the feed shaft and move the shaft to the left. Remove the gear.
11. Release the nudger roll spring attached to the right end of the feeder drive assembly.

12. Remove the two screws securing the feeder drive assembly to the metal frame.

13. Turn the inner frame up side down. To the left and right of the nudger roll, there is a 1/2 in. (12mm) cutout in the edge of the feeder drive assembly. At the cutouts, insert a small screwdriver between the metal frame and the drive assembly and release the two locking tabs. Remove the feeder drive assembly



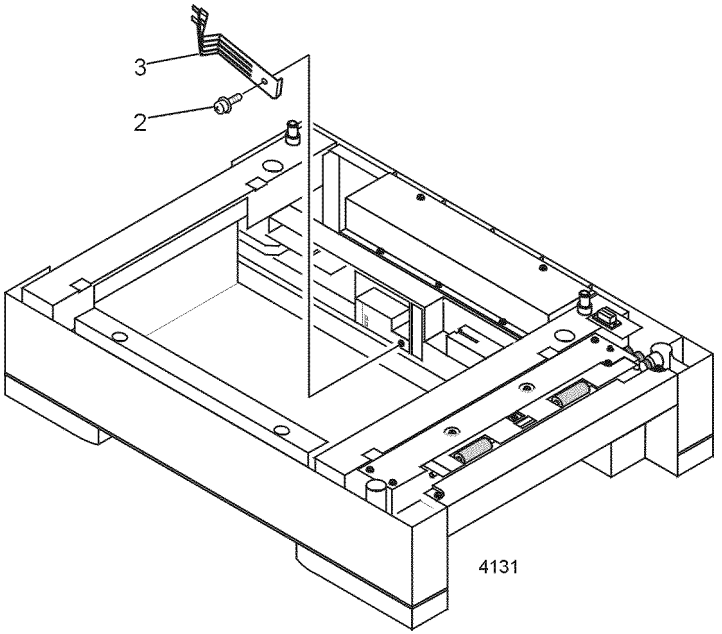
Removing the feeder drive assembly

Reverse these steps to install the feeder drive assembly.

Paper size sensing actuator

Warning *Switch off the power and disconnect the power cord.*

1. Remove paper tray 2/3.
2. Remove the screw securing the paper size sensing actuator.
3. Remove the actuator.



Removing the paper size sensing actuator

Reverse these steps to install the paper size sensing actuator.

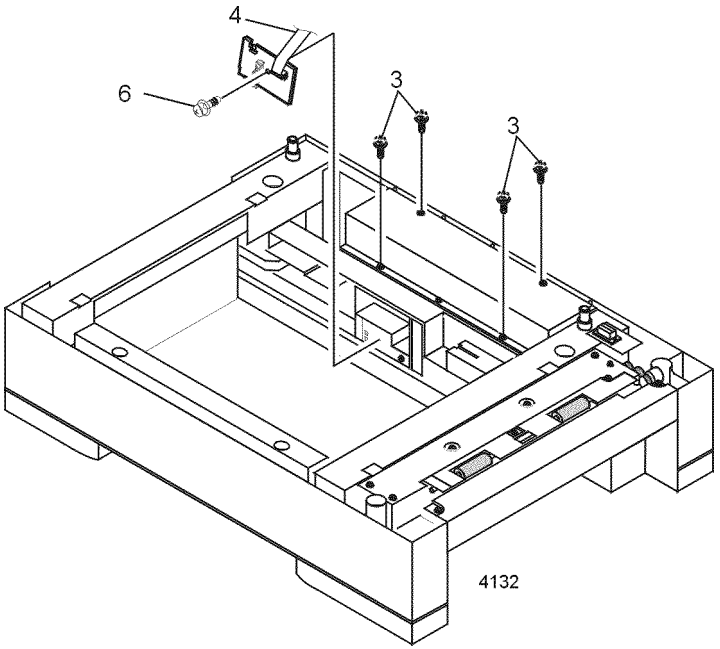
Paper size sensing board

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer from the optional paper feeder.

Note *If removing the size sensing board from feeder 3, remove feeder 2 from feeder 3.*

2. Remove the paper tray from the feeder.
3. Remove the four screws securing the feeder control board cover plate. Remove the plate.
4. Disconnect flat harness PSZ from the feeder control board.
5. Remove the paper size actuator as detailed in the topic “Paper size sensing actuator” on page 179.
6. Remove the screw securing the paper size sensing board to the feeder frame. Remove the board.



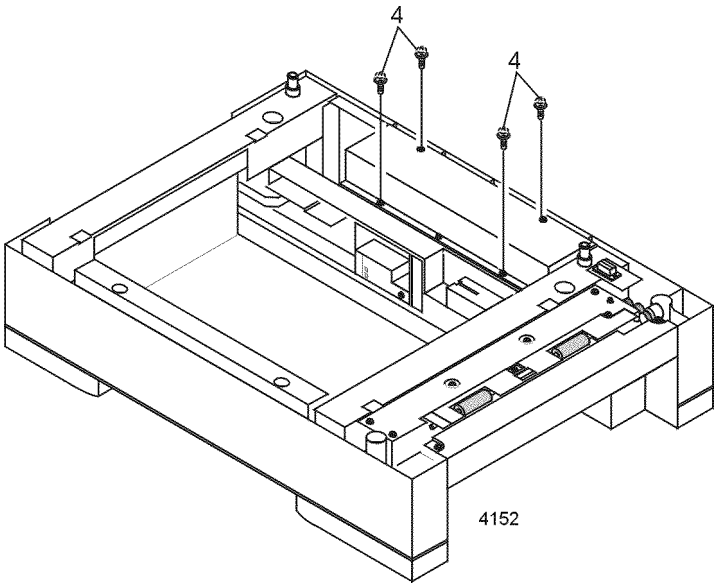
Removing the paper size sensing board

Reverse these steps to install the paper size sensing board.

Lower connector

Warning *Switch off the power and disconnect the power cord.*

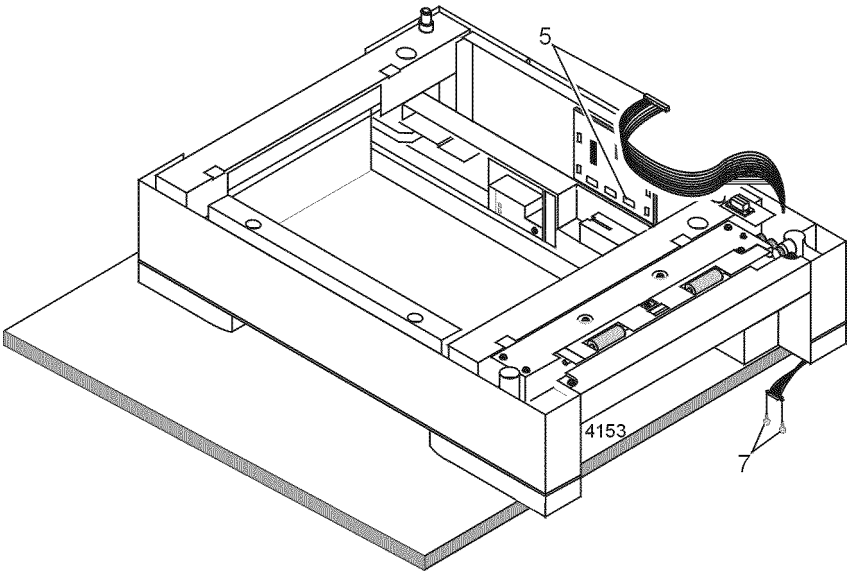
1. Remove the printer from the optional paper feeder.
2. Remove the paper tray 2 from the feeder.
3. Separate feeder 2 from feeder 3
4. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover plate

5. Disconnect harness MAIN2 from the feeder control board.
6. Set the feeder so that the front extends over the edge of the work surface by 6 in. (152mm).
7. Remove the two screws securing the lower connector to the bottom of the feeder.

8. Guide the harness through the feeder as you remove the lower connector.



Removing the lower connector

Reverse these steps to install the lower connector.

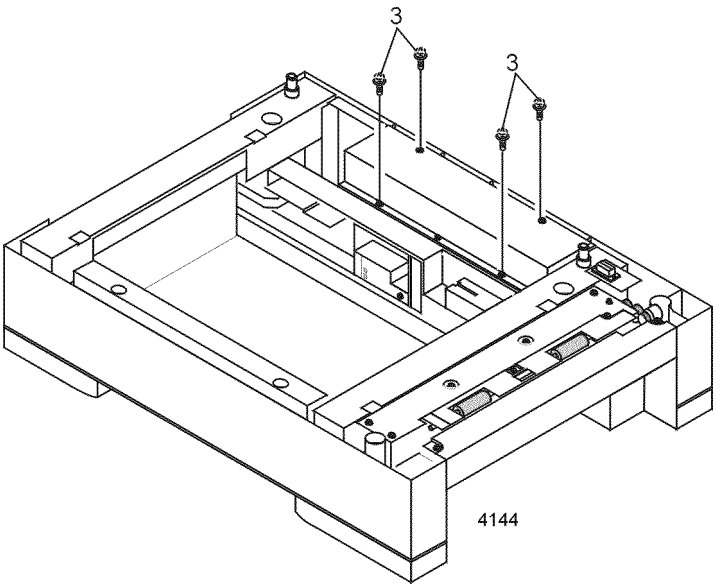
Upper connector

Warning *Switch off the power and disconnect the power cord.*

1. Remove the printer from the optional paper feeder.

Note *If removing the upper connector from feeder 3, remove feeder 2 from feeder 3.*

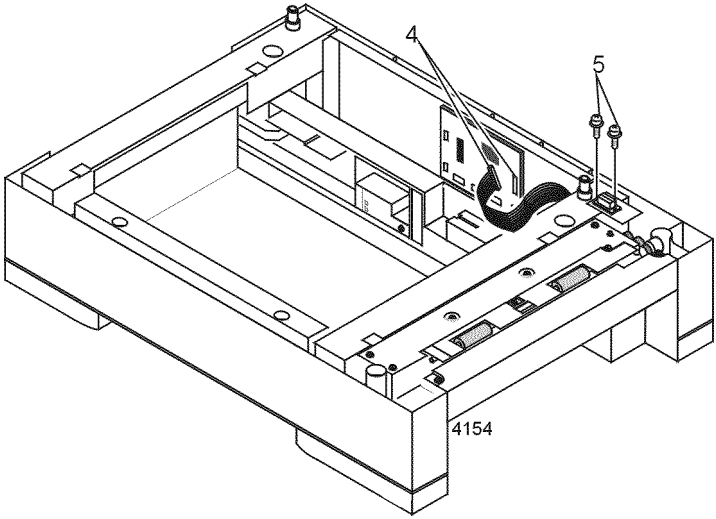
2. Remove the paper tray from the feeder.
3. Remove the four screws securing the feeder control board cover plate. Remove the plate.



Removing the feeder control board cover plate

4. Disconnect harness MAIN1 from the feeder control board.
5. Remove the two screws securing the upper connector to the feeder frame.

6. Guide the harness through the feeder as you remove the upper connector.



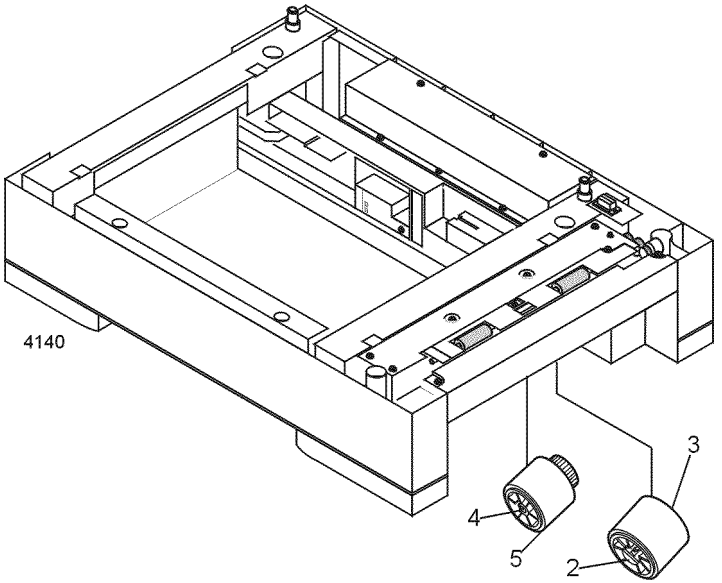
Removing the upper connector

Reverse these steps to install the upper connector.

Tray 2/3 feed roller and nudger roller

Warning *Switch off the power and disconnect the power cord.*

1. Remove paper tray 2/3.
2. Release the locking tab on the left end of the feed roller.
3. Slide the feed roller to the left and remove.
4. Release the locking tab on the left end of the nudger roller.
5. Slide the nudger roller to the left and remove.



Removing the tray 2/3 feed roller and nudger roller

Reverse these steps to install the tray 2/3 feed roller and nudger roller.

FRU List

This topic provides a list of field replaceable units for the printer.

Changes to Xerox instruments are made to accommodate improved components as they become available. It is important when ordering parts to include the following information:

- Component's part number.
- Instrument type or number.
- Instrument serial number.
- Modification number, if any.

Using the parts list

- The numbers shown in each illustration correspond to the parts list number for that illustration.
- The capital letters “C”, “E”, and “S” shown in an illustration stand for C-ring, E-ring, and Screw, respectively.
- A shaded triangle t in an illustration indicates the item is part of an assembly.
- The notation “with X~Y” following an part name indicates an assembly that is made up of components X through Y. For example, “1 (with 2~4)” means part 1 consists of part 2, part 3, and part 4.
- An asterisk * following a part name indicates the page contains a note about this part.
- 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 jack 2 is attached to the other end that is plugged into plug 2.
- A notation “(part of item 1.1)” indicates that the part is included with item 1.2.1 (PL1.2, line item 1).

Table 1 FRU parts list of the printer cabinet

Fig 1 parts	Part number	Name and description
1	802E33490	Top Cover
2	802K24020	Right Side Cover
3	802E34550	Multi-sheet Bypass Feeder Assembly Top Cover
4	802K24030	Multi-sheet Bypass Feeder Assembly
5	055K30000	Front Cover Inner Baffle
6	802K24010	Front Cover Assembly
7	802E33510	Left Side Cover
8	802E33500	Rear Cover
9	055K50620	Face Up Tray
10	- - - - -	Label (part of Rear Cover)
S	- - - - -	Screw (part of item Hardware Kit p.n. 600K89010)

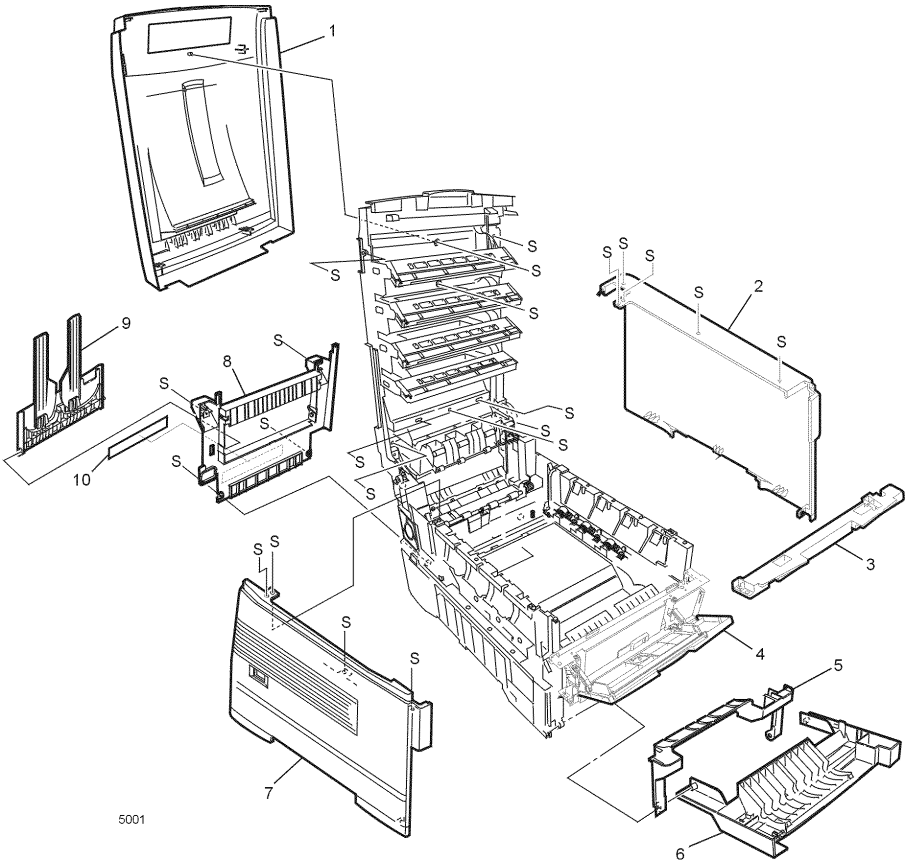


Figure 1 Cabinet FRUs

Table 2 FRU part list of the top cover assembly

Fig 2 parts	Part number	Name and description
1	802E33490	Top Cover
2	140E45610	Toner Sensor Board
3	- - - - -	Toner Sensor Actuator (part of Flag Kit, p.n. 600K88990))
4	056E04120	Control Panel Bezel (English)
	056E04660	Control Panel Bezel (Icon)
5	- - - - -	Control Panel Tape Harness (part of Harness Kit, p.n. 600K88980)
6	101K42810	Control Panel Assembly
7	- - - - -	Top Cover Latch Springs (part of item 10)
8	- - - - -	Top Cover Latch (part of item 10)
9	- - - - -	Top Cover Handle (part of item 10)
10	600K88450	Top Cover Inner Frame Kit (includes items 7-9, 20, 21)
11	022E24900	Eject Roller
12	130K65650	Stack Full Sensor w/actuator
13	038K13450	Eject Guide Assembly
14	- - - - -	LED Harness C (part of Harness Kit, p.n. 600K88980)
15	- - - - -	LED Harness M ((part of Harness Kit, p.n. 600K88980)
16	- - - - -	LED Harness Y (part of Harness Kit, p.n. 600K88980)
17	- - - - -	LED Harness K (part of Harness Kit, p.n. 600K88980)
18	- - - - -	LED Assembly Spring (part of Hardware Kit, p.n. 600K89010)
19	107K01920	LED Assembly
20	- - - - -	Lower Eject Roller Bracket (part of item 10)
21	- - - - -	Upper Eject Roller Bracket (part of item 10)
22	- - - - -	26 Pin LED Connector (part of Harness Kit, p.n. 600K88980)

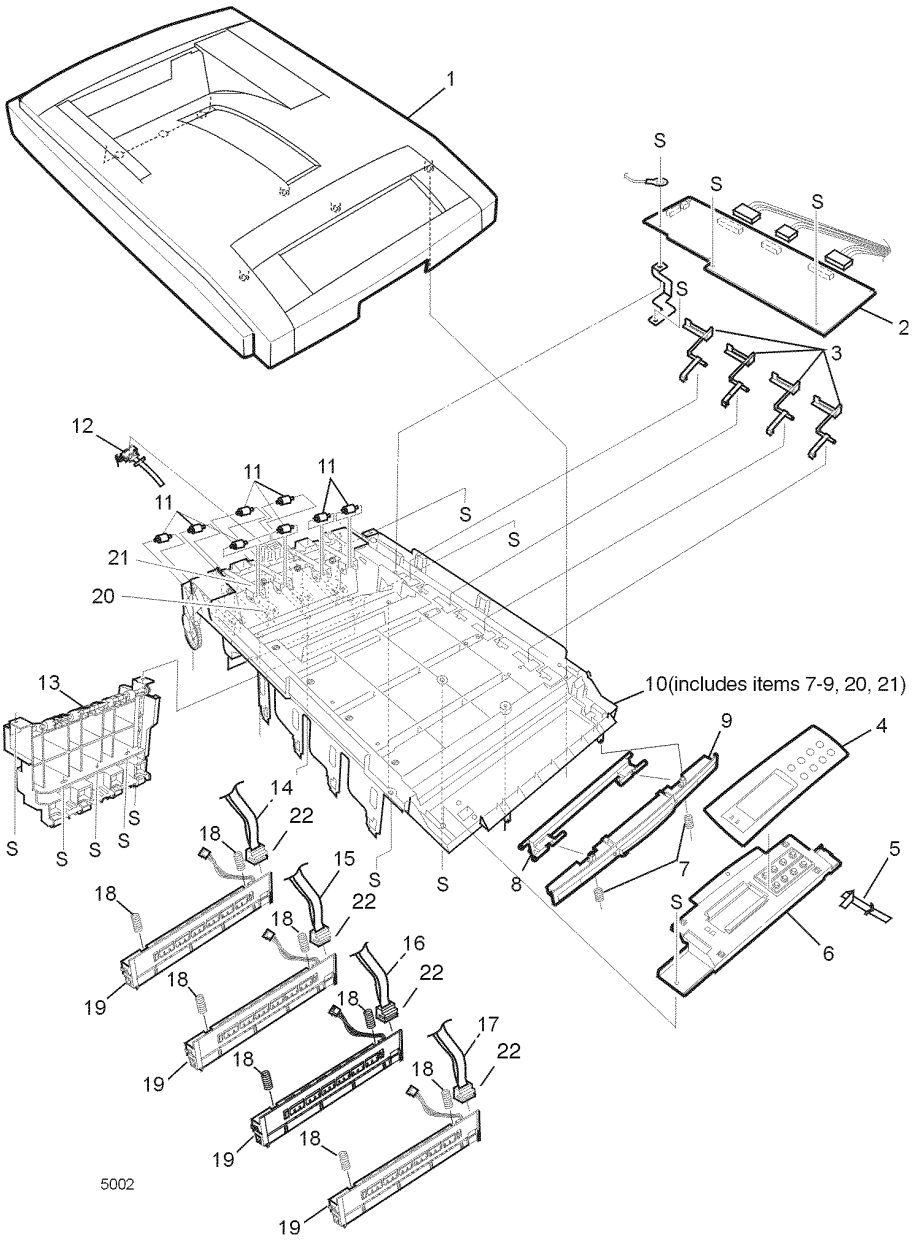


Figure 2 Top cover FRUs

Table 3 FRU part list of the printer chassis (1 of 2)

Fig 3 parts	Part number	Name and description
1	038K13460	Duplex Guide Assembly
2	022E24940	Fuser Exit Roller
3	009K01960	Right Top Cover Spring Assembly
4	- - - - -	Fuser Drive Gear A (part of Gear Kit, p.n. 600K89000)
5	- - - - -	Fuser Drive Gear B (part of Gear Kit, p.n. 600K89000)
6	- - - - -	Fuser Drive Gear C (part of Gear Kit, p.n. 600K89000)
7	- - - - -	Fuser Exit Roller Bushing (Right) (part of Hardware Kit, p.n. 600K89010)
8	115K01970	Drum Contact Assembly
9	115E01970	Fuser Exit Roller Contact
10	121K25800	Duplex Gate Solenoid Assembly
11	022K78610	Registration Roller Assembly A
12	007K11730	Registration Drive Gear A
13	- - - - -	Registration Motor Ground Contact
14	127K35200	Registration Motor Assembly
15	121K25810	Registration Clutch
16	- - - - -	A Registration Exit Sensor Actuator (part of Flag Kit, p.n. 600K88990)
17	- - - - -	A Registration Entrance Sensor Actuator (part of Flag Kit, p.n. 600K88990)
18	600K88480	Entrance Sensor Board w/harness
19	022K78620	Registration Roller Assembly B
20	- - - - -	B Registration Entrance Sensor Actuator (part of Flag Kit, p.n. 600K88990)
21	- - - - -	Waste Toner Sensor Actuator (part of Flag Kit, p.n. 600K88990)
22	101K42820	Printer Unit Chassis
23	130K65680	Color Registration Sensor Assembly
24	127K35230	Main Cooling Fan
25	- - - - -	Fuser Exit Roller Bushing (Left) (part of Hardware Kit, p.n. 600K89010)
26	009K01950	Left Top Cover Spring Assembly
27	- - - - -	Fuser Latching Handle Spring (part of Hardware Kit, p.n. 600K89010)
28	003E55690	Fuser Latching Handle (Left)
29	130K65670	Exit Sensor Assembly
30	815E06790	Registration Shutter Plate
31	121K26000	Registration Shutter Solenoid
32	- - - - -	Shutter Spring (part of Hardware Kit, p.n. 600K89010)
33	116-0992-00	Low-Voltage Power Supply Fan
S	- - - - -	Screw (part of Hardware Kit, p.n. 600K89010)

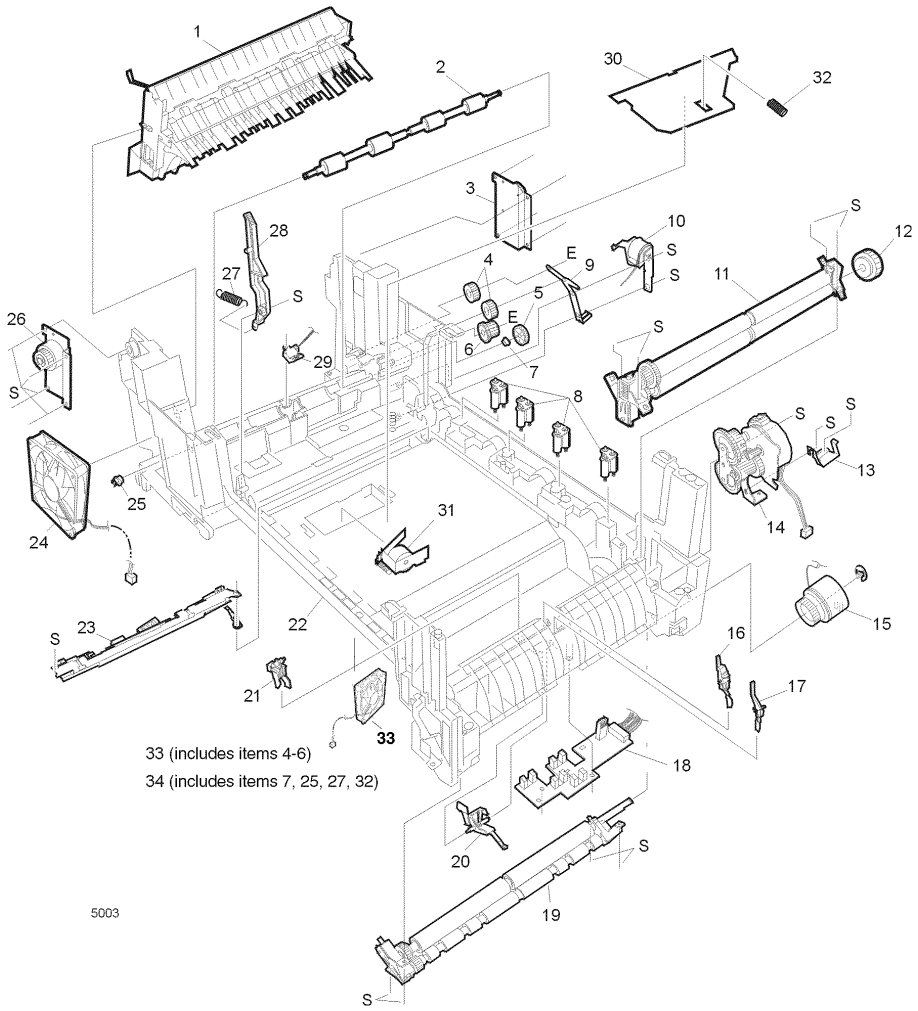


Figure 3 Printer chassis FRUs (1 of 2)

Table 4 FRU of the printer chassis (2 of 2)

Fig 4 parts	Part number	Name and description
1	127K35180	Main Motor Assembly
2	115K02020	Transfer Contact Assembly
3	118E16970	Power Supply Insulation
4	015K55950	Left Plate Assembly
5	127K35190	Transfer Belt Motor Assembly
6	- - - - -	Fuser Latching Handle Spring (part of Hardware Kit, p.n. 600K89010)
7	003E55700	Fuser Latching Handle (Right)
8	127K35170	Main Feeder Drive Motor
9	- - - - -	Gear H1(part of Gear Kit, p.n. 600K89000)
10	- - - - -	Gear H2 (part of Gear Kit, p.n. 600K89000)
11	- - - - -	Lower Plate
12	116-1058-00	High-Voltage Power Supply Fan
S	- - - - -	Screw (part of Hardware Kit, p.n. 600K89010)

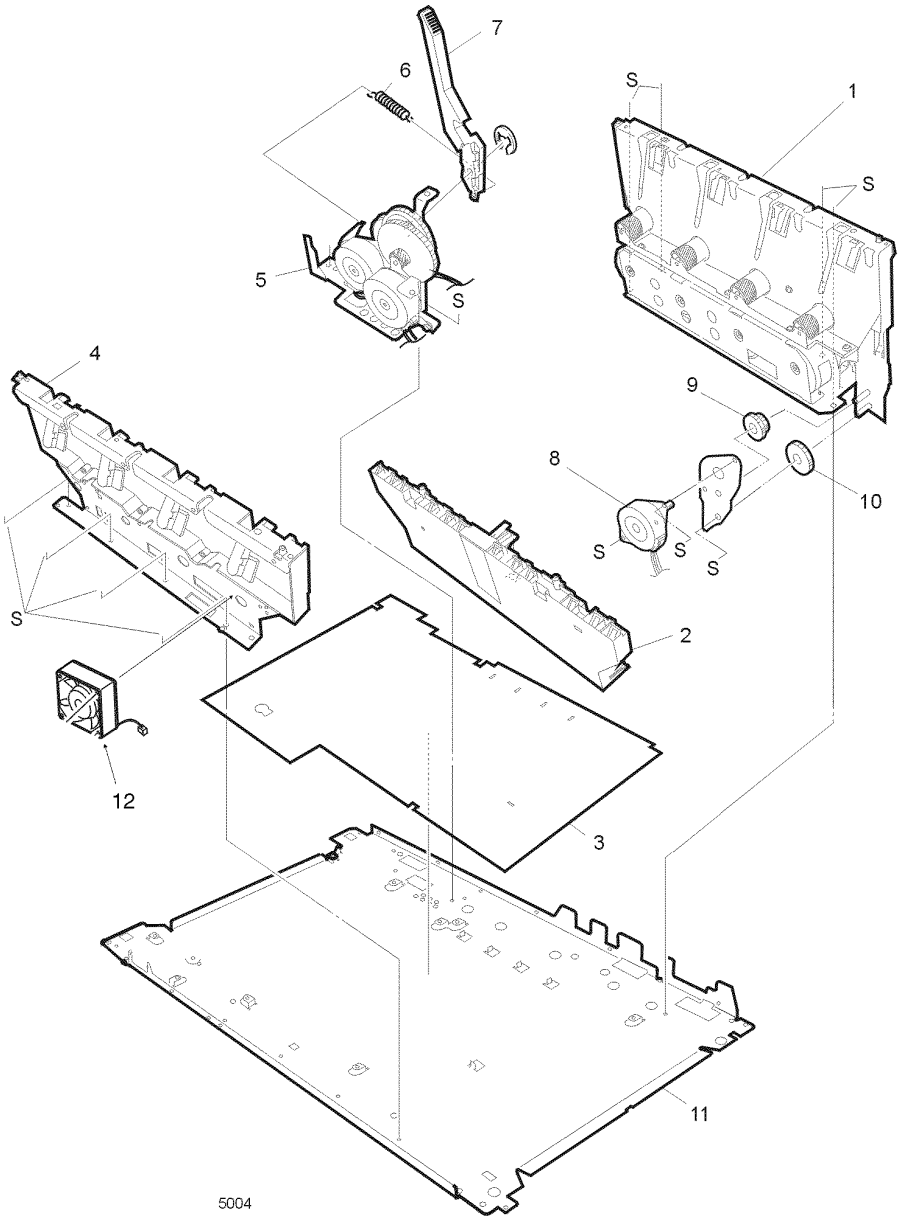


Figure 4 Printer chassis FRUs (2 of 2)

Table 5 FRU of the paper tray

Fig 5 parts	Part number	Name and description
1	050K50630	Paper Tray Cassette
2	600K89020	Retard Pad and Springs Kit

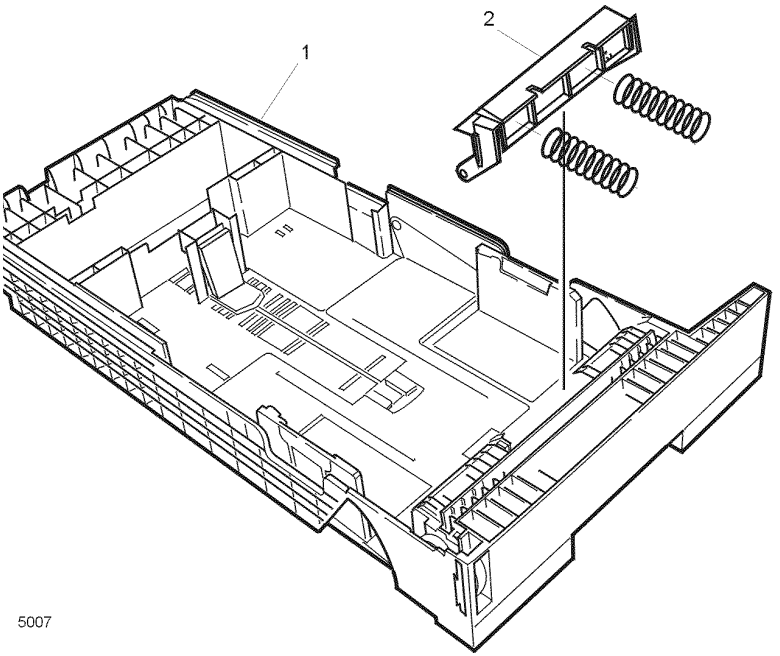


Figure 5 Paper tray FRUs

Table 6 FRU of the paper tray guide

Fig 6 parts	Part number	Name and description
1	032K03330	Paper Tray 1 Right Guide Assembly (includes items 2-10, 15, 20)
2	017E09930	Foot
3	- - - - -	Paper Tray Lift Arm (Right) (part of item 1 and 18)
4	- - - - -	Plastic Roller (part of Hardware Kit, p.n. 600K89010)
5	- - - - -	Paper Tray Lift Spring (part of item 1 & part of item 18)
6	120E20420	Paper Size Actuator
7	140E45620	Paper SIze Sensing Board w/Harness
8	- - - - -	Paper Tray Lock (part of item 1 & part of item 18)
9	- - - - -	Paper Tray Lock Spring (part of item 1 & part of item 18)
10	- - - - -	Plastic Slide (part of item 1 and 18)
11	022K78600	Main Feeder Assembly
12	- - - - -	Feed Roller (part of Paper Feed Kit, p.n. 600K89320)
13	- - - - -	Nudger Roller (part of Paper Feed Kit, p.n. 600K89320)
14	- - - - -	Main Feeder Drive Gear (part of Gear Kit, p.n. 600K89000)
15	- - - - -	Right Duplex Ground Contact (part of item 1)
16	- - - - -	Bottom Plate
17	- - - - -	Left Duplex Ground Contact (part of item 18)
18	032K03320	Paper Tray 1 Left Guide Assembly (includes items 2, 4, 5, 8-10, 17, 19)
19	- - - - -	Paper Tray Lift Arm (Left) (part of item 18)
20	- - - - -	Duplex Connector (part of item 1)
S	- - - - -	Screw (part of Hardware Kit, p.n. 600K89010)

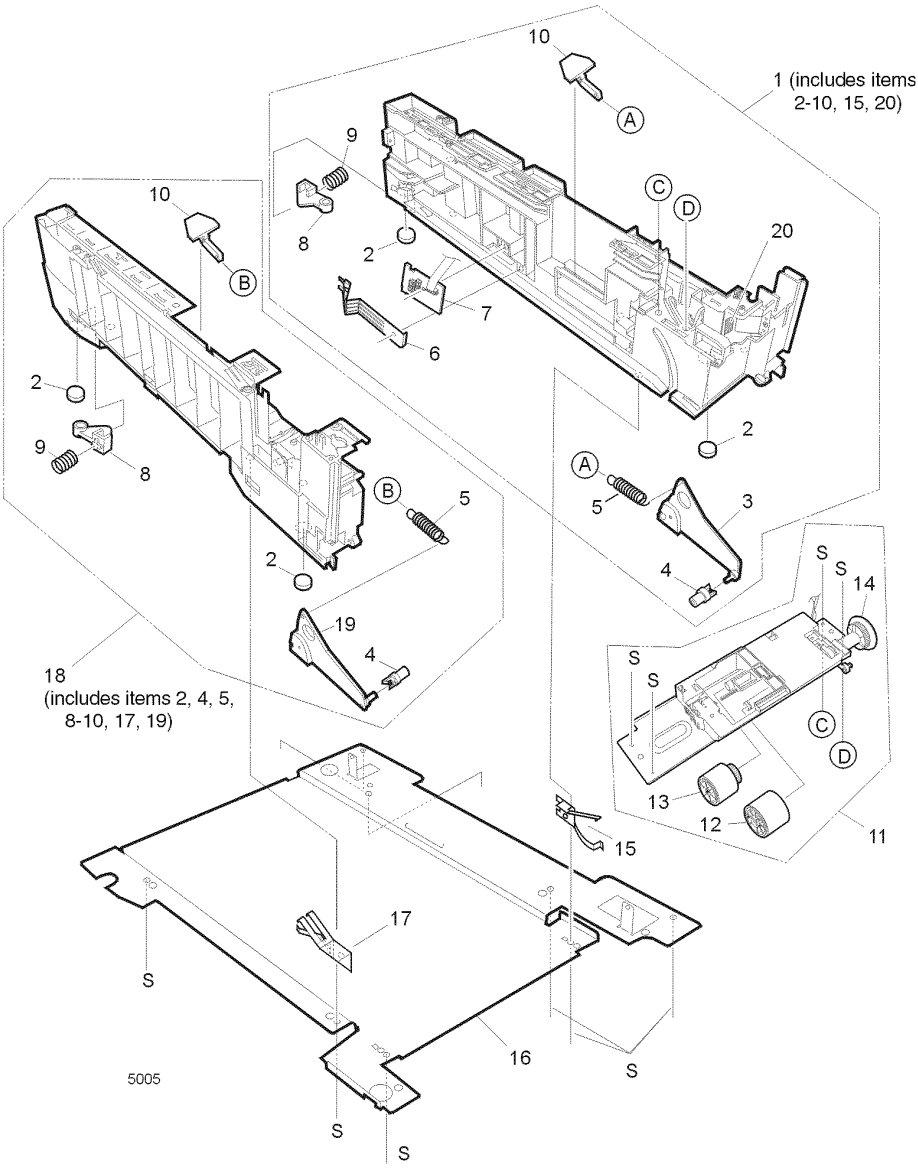


Figure 6 Paper tray guide FRUs

Table 7 FRUS of the multi-sheet bypass feeder

Fig 7 parts	Part number	Name and description
1	022K78630	Multi-sheet Bypass Feeder Assembly
2	012E12690	Link
3	007K11740	Multi-sheet Bypass Feeder Drive Gear
4	802K24030	Multi-sheet Bypass Feeder Cover Assembly
5	- - - - -	Multi-sheet Bypass OHP Sensor (part of item 1)
6	- - - - -	Multi-sheet Bypass Tray Empty Sensor (part of item 1)
S	- - - - -	Screw (part of Hardware Kit, p.n. 600K89010))

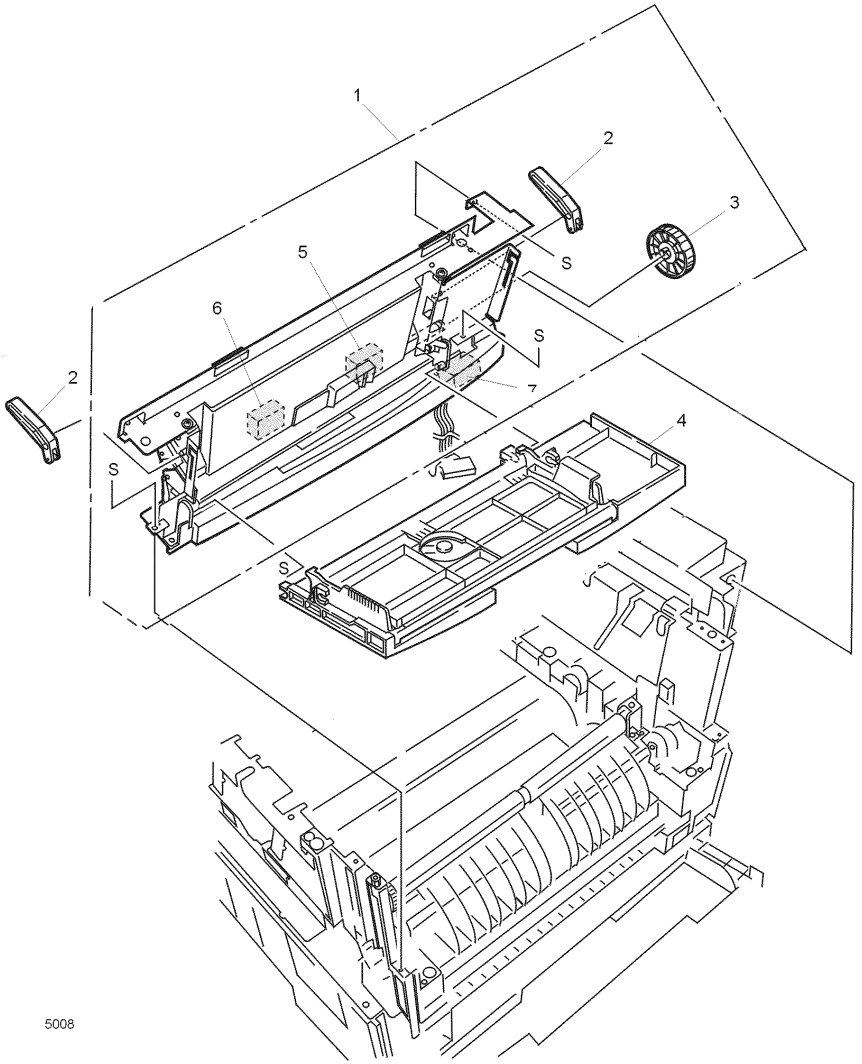


Figure 7 Multi-sheet bypass feeder FRUs

Table 8 Electrical components FRUs

Fig 8 parts	Part number	Name and description
1	105K25110	Low Voltage Power Supply (115V)
	105K25130	Low Voltage Power Supply (230V)
2	105K25120	High Voltage Power Supply
3	- - - - -	High Voltage Tape Harness (part Harness Kit, p.n. 600K88980))
4	127K35220	Electrical Chassis Cooling Fan
5	140E45640	Print Engine Controller Board
6	672-1595-00	System Controller Board (Image Processor Board)
7	121K25530	Internal Hard Drive
8	- - - - -	Shield Plate
9	- - - - -	Right Shield Plate
10	110K13470	Front Cover B Interlock Switch
11		
12	110K13450	Top Cover A Interlock Switch
13	162K68220	Paper Tray 2 Connector with Harness
14	098S04423	Token Ring Card
15	537E61970	Print Engine Controller EEPROM
16	156-4811-00 156-4780-10 156-4839-00	64-Mbyte RAM DIMM 128-Mbyte RAM DIMM 256-Mbyte RAM DIMM
S	- - - - -	Screw (part of Hardware Kit, p.n. 600K89010)

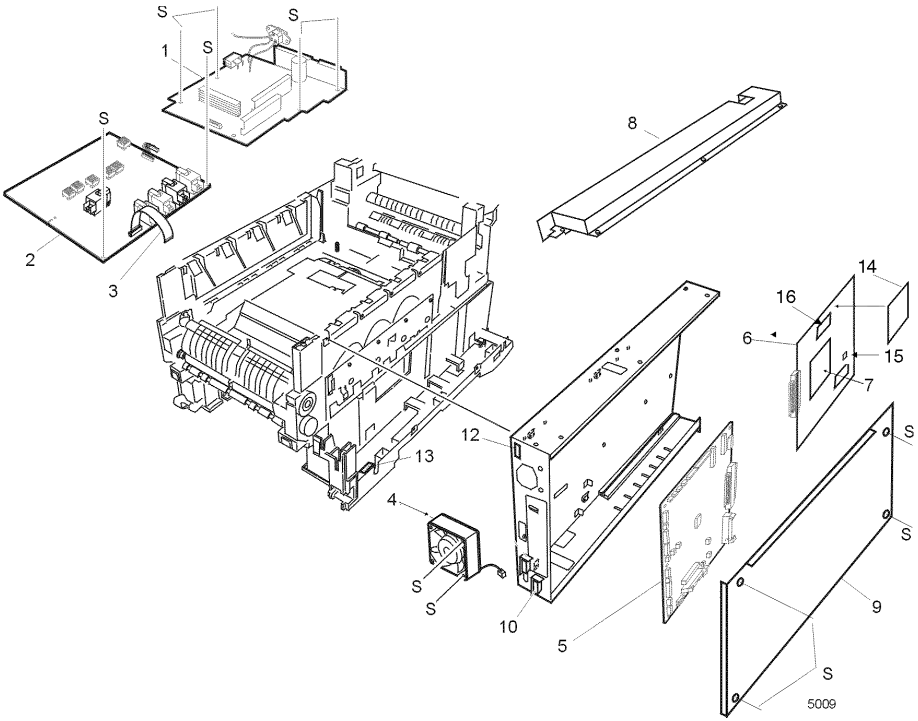


Figure 8 Electrical components FRUs

Table 9 FRUs of the duplexer unit

Fig 9 parts	Part number	Name and description
1	022K78640	Duplexer Transport Assembly

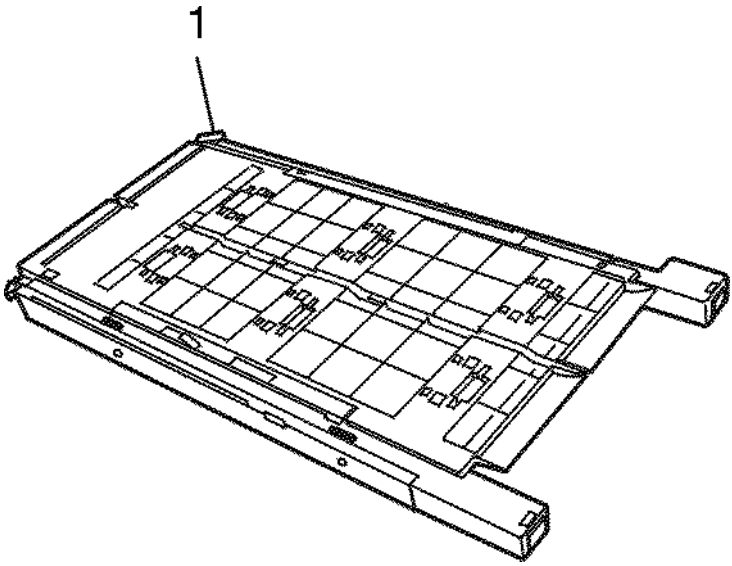


Figure 9 Duplexer unit

Table 10 FRUs of the Lower Tray Assembly

Fig 10 parts	Part number	Name and description
1	140E46240	Feeder Control Board
2	962K00700	Upper Connector w/harness
3	962K00690	Lower Connector w/harness
4	022K79500	Idler Roller Assembly
5	127K40870	Feeder Motor
6	121K26030	Feeder Clutch
7	022K79510	Feeder Drive Assembly
8	017E09930	Foot (4)
9	120E20420	Paper Size Actuator
10	140E45620	Paper Size Sensing Board w/Harness
	050K50630	Paper Tray Cassette
	022K79600	Lower Tray Assembly (with tray)

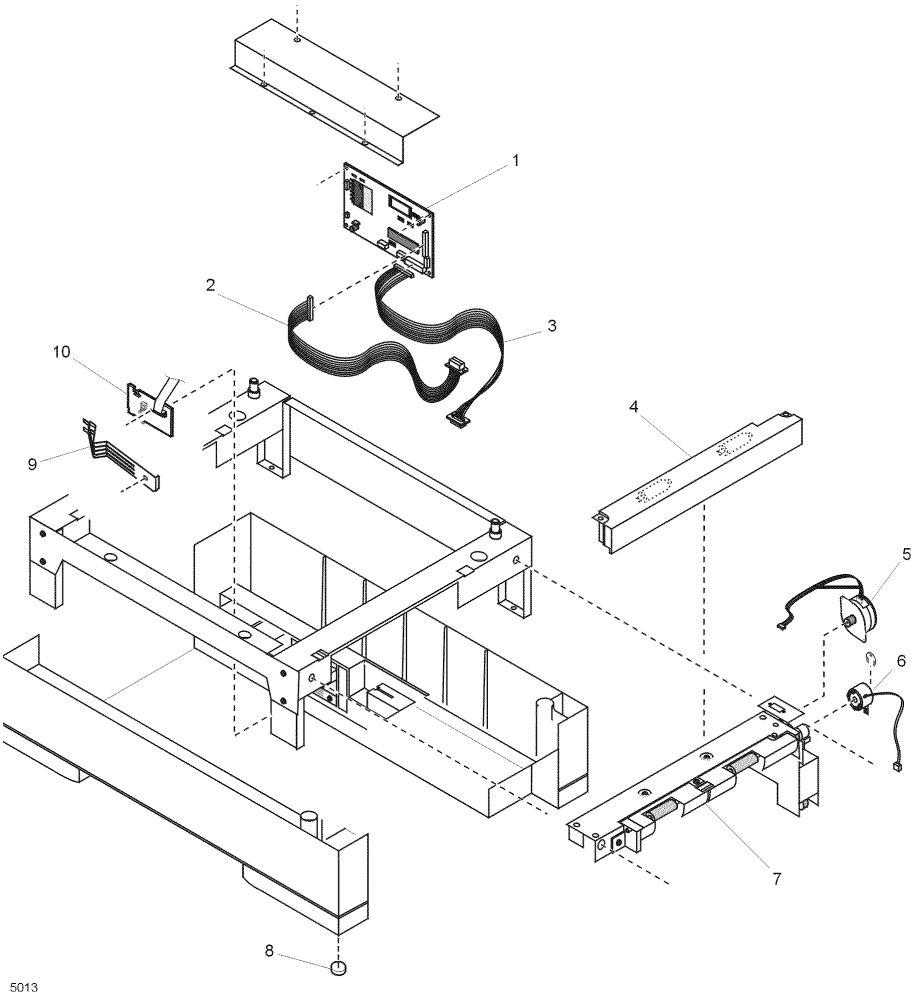


Figure 10 Lower Tray Assembly FRUs

Table 11 Hardware kit

	Part number	Name and description
	600K89010	Hardware Kit
	- - - - -	LED Assembly Spring Kit (2)
	- - - - -	Plastic Roller (2)
	- - - - -	Fuser Exit Roller Bushing (L) (1)
	- - - - -	Fuser Exit Roller Bushing (R) (1)
	- - - - -	Shutter Spring (1)
	- - - - -	Fuser Latch Handle Springs (2)
	- - - - -	Screw T3x8 (10)
	- - - - -	Screw T3x10 (10)
	- - - - -	Screw T4x10 (10)
	- - - - -	Screw M2x8 (10)
	- - - - -	Screw M3x6 (10)
	- - - - -	Screw M3x8 (10)
	- - - - -	Screw M4x8 (10)
	- - - - -	Screw SP3x10 (10)

Table 12 Gear kit

	Part number	Name and description
	600K89000	Gear Kit
	- - - - -	Main Feeder Drive Gear
	- - - - -	Gear H1
	- - - - -	Gear H2
	- - - - -	Fuser Drive Gear (A)
	- - - - -	Fuser Drive Gear (B)
	- - - - -	Fuser Drive Gear (C)

Table 13 Sensor flag kit

	Part number	Name and description
	600K88990	Flag Kit
	- - - - -	B Reg Entrance Sensor Actuator
	- - - - -	A Reg Entrance Sensor Actuator
	- - - - -	A Reg Exit Sensor Actuator
	- - - - -	Toner Sensor Actuator

Table 14 Harness kit

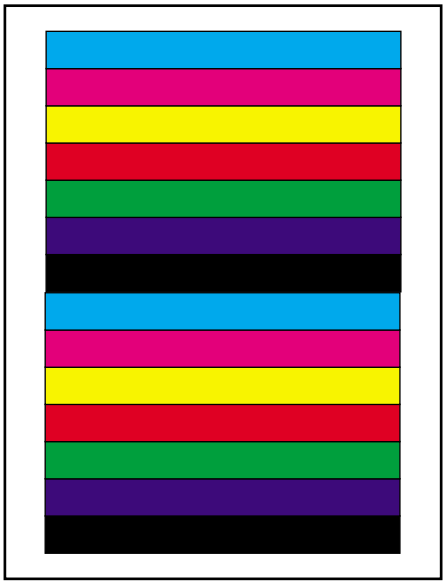
	Part number	Name and description
	600K88980	Harness Kit
	- - - - -	LED Harness M
	- - - - -	LED Harness C
	- - - - -	LED Harness Y
	- - - - -	LED Harness K
	- - - - -	Control Panel Tape Harness
	- - - - -	HV Tape Harness
	- - - - -	26 pin LED connector
	- - - - -	Numerous other harnesses (cables) to be added soon.

Table 15 Customer replaceable consumables

	Part number	Name and description
	008R12685	Fuser (1235) (110 V)
	008R12686	Fuser (1235) (220 V)
	006R90293	Standard Toner Cartridge (Black) (1235)
	006R90294	Standard Toner Cartridge (Cyan) (1235)
	006R90295	Standard Toner Cartridge (Magenta) (1235)
	006R90296	Standard Toner Cartridge (Yellow) (1235)
	006R90303	Hi Capacity Toner Cartridge (Black) (1235)
	006R90304	Hi Capacity Toner Cartridge (Cyan) (1235)
	006R90305	Hi Capacity Toner Cartridge (Magenta) (1235)
	006R90306	Hi Capacity Toner Cartridge (Yellow) (1235)
	013R90132	Imaging Drum (Black) (1235)
	013R90133	Imaging Drum (Cyan) (1235)
	013R90134	Imaging Drum (Magenta) (1235)
	013R90135	Imaging Drum (Yellow) (1235)
	016-1934-00	Cyan/Magenta/Yellow Imaging Drum Rainbow Pack (1235)
	001R00559	Transfer Belt Unit (1235)
	801K01300	Drum/Toner Cartridge Basket

Test Prints

This topic illustrates the test prints produced by the printer. The topic “Printing and print quality problems” on page 48 discusses solutions to problems revealed in the test prints.



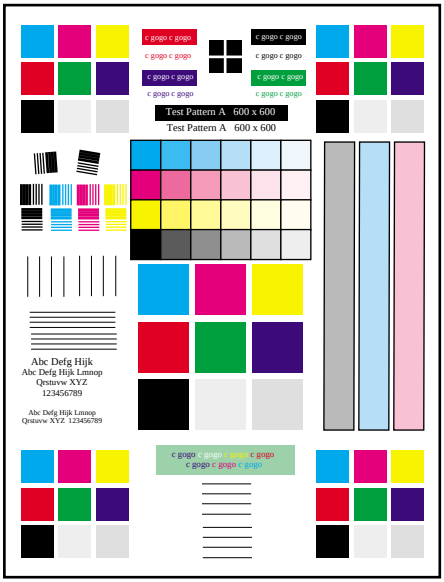
0728-16

Interpreting the 100% Color Stripe Pattern

The 100% Color Stripe Pattern consist of two set of bars. Each set of bars is made of of a seven bars, each bar is a 100% solid fill of the primary colors (cyan, magenta, yellow and black) and the secondary colors (red, green and blue).

Look for:

1. Consistent fills in each primary color. Each color should be consistent across the width of the page with no voids.
2. No separation or misconvergence where each bar meets its neighbor. Each bar is separated by a thin black line.



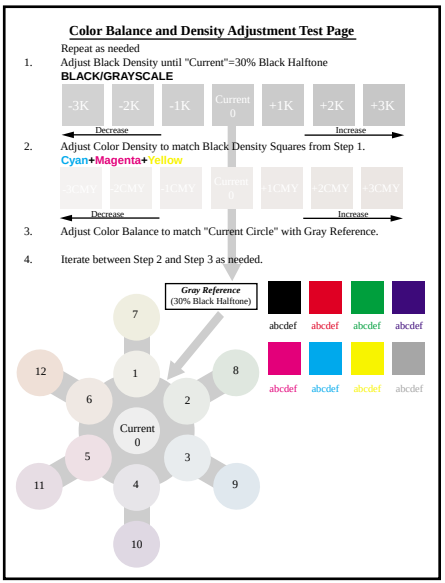
0728-17

Interpreting Test Pattern A

This pattern consists of color blocks and bars. Use this pattern to identify defects such as deletions, banding, color misregistration, side-to-side density problems, and text problems.

Look for:

1. Solid fills in the color blocks.
2. Ensure the small text is legible and not broken.



0728-18

Interpreting the Color Balance and Density Adjustment Page.

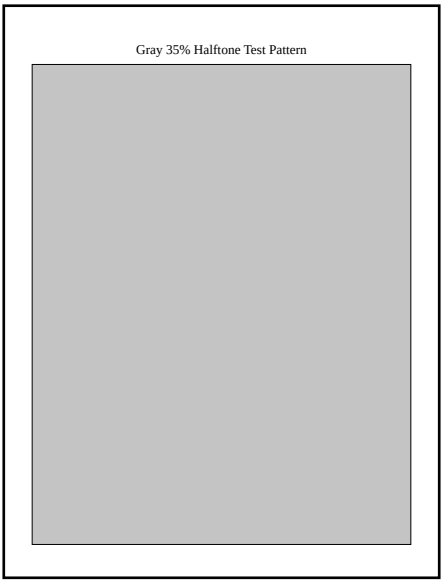
You use this print to assess and adjust color balance, color density and black density. Use the 30% halftones to judge the current level and decide on a preference.

Look for:

The Color Density and Black Density should be at approximately the same level. This is important in order to make the Color Balance adjustment.

To determine the correct Color Balance compare the circle in the center of the Color Balance object marked “CURRENT” with the gray background. The background is produced using black only and the circles are produced using a combination of cyan, magenta, and yellow. The adjustment objective is for the “CURRENT” circle to be the closest gray of any of the circles when compared to the gray background.

Refer to the adjustment “Adjusting color density and balance” on page 77.

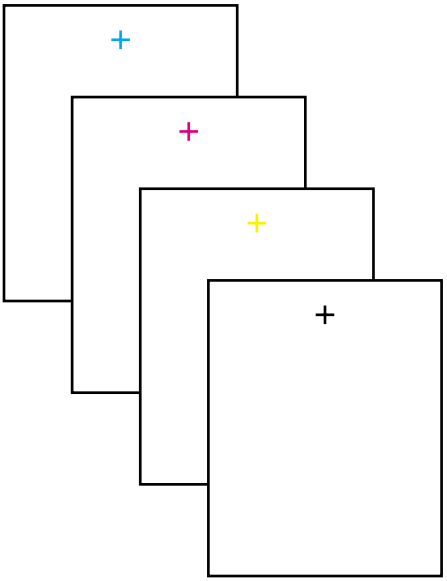


0728-19

Interpreting the Gray 35% Halftone Test Pattern

The Gray 35% Halftone Test Pattern is a full-page, fill made up of a 35% gray tint. It is useful for isolating black imaging and LED head problems.

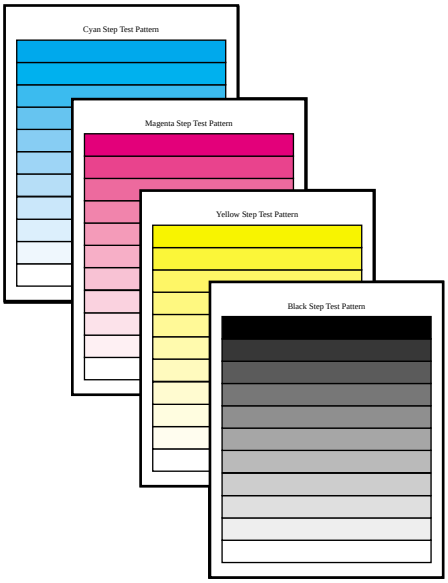
Look for uniform fill with no banding or lines.



0728-20

Interpreting the Blank Print (with crosshatch)

Each print consists of a blank page with a single primary-colored crosshatch printed near the top of the page. Use these pages to identify color on non-printed areas of a print as well as residual offsetting.



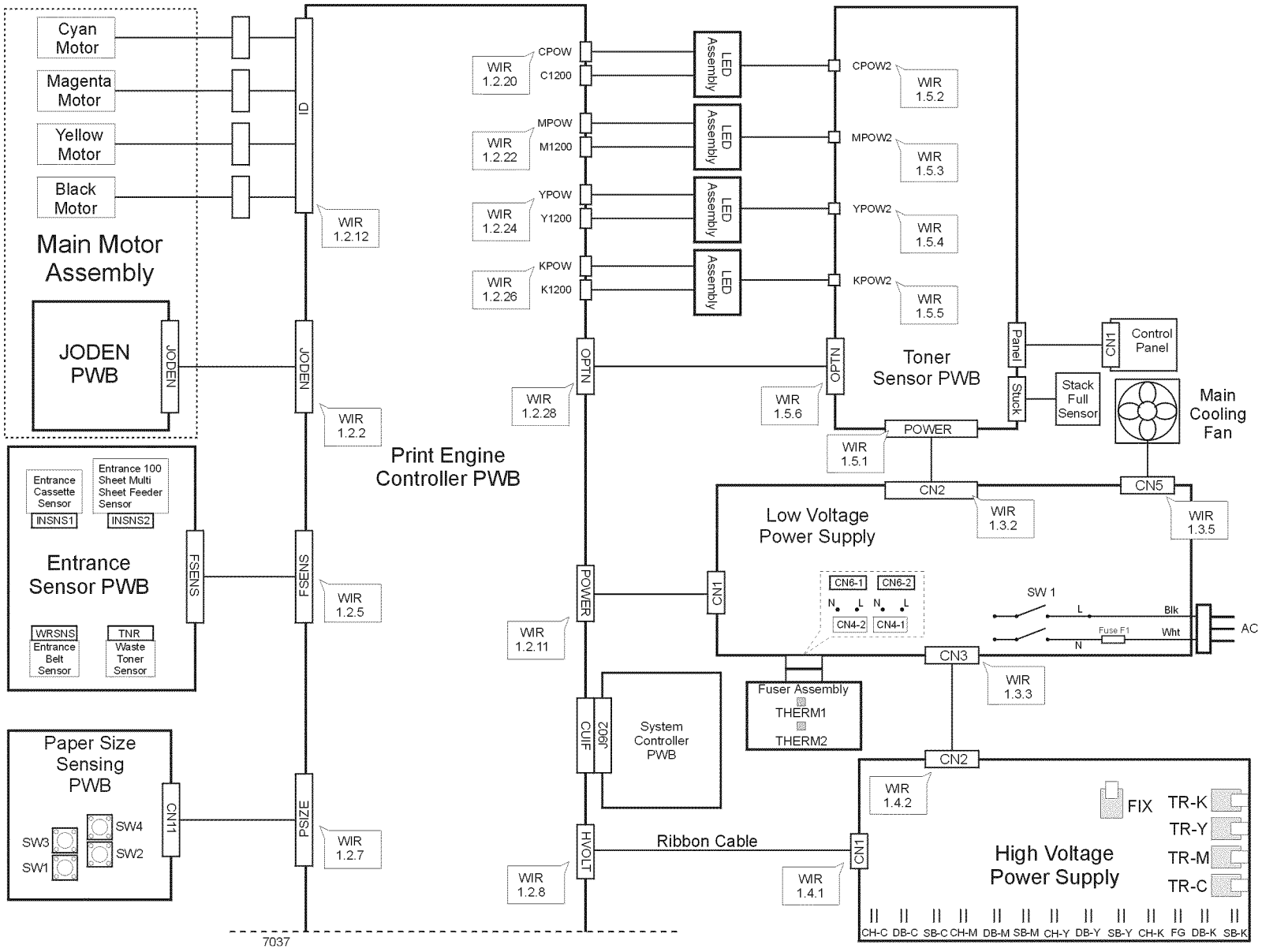
0728-21

Interpreting the Step Test Patterns

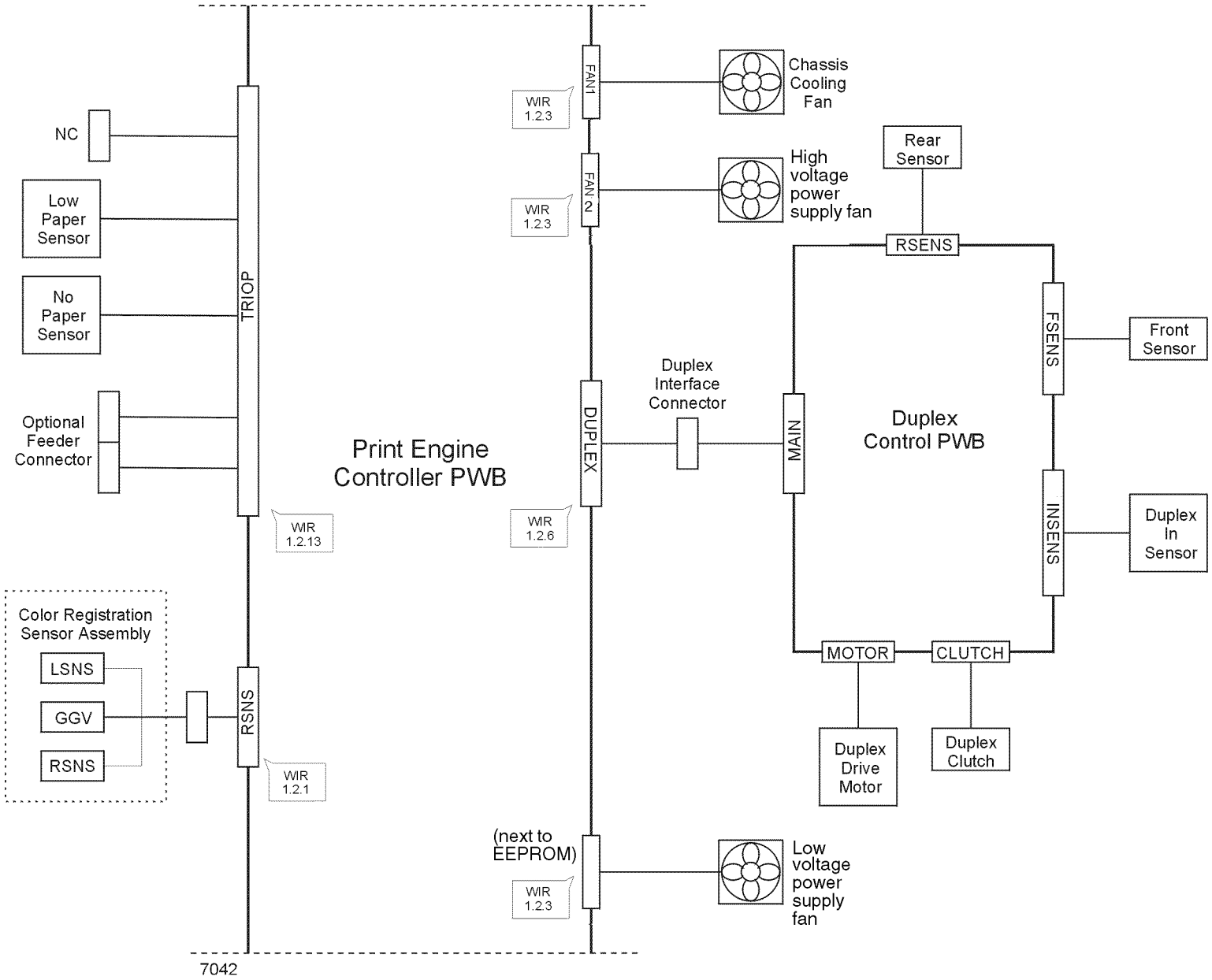
The Step Test Patterns consist of 11 color bars, starting with a100% fill of a primary color bar and progressing in 10% steps to a 0% (white) fill bar. Use these pages to isolate primary color imaging or LED head problems.

Look for uniform transitions from dark to light.

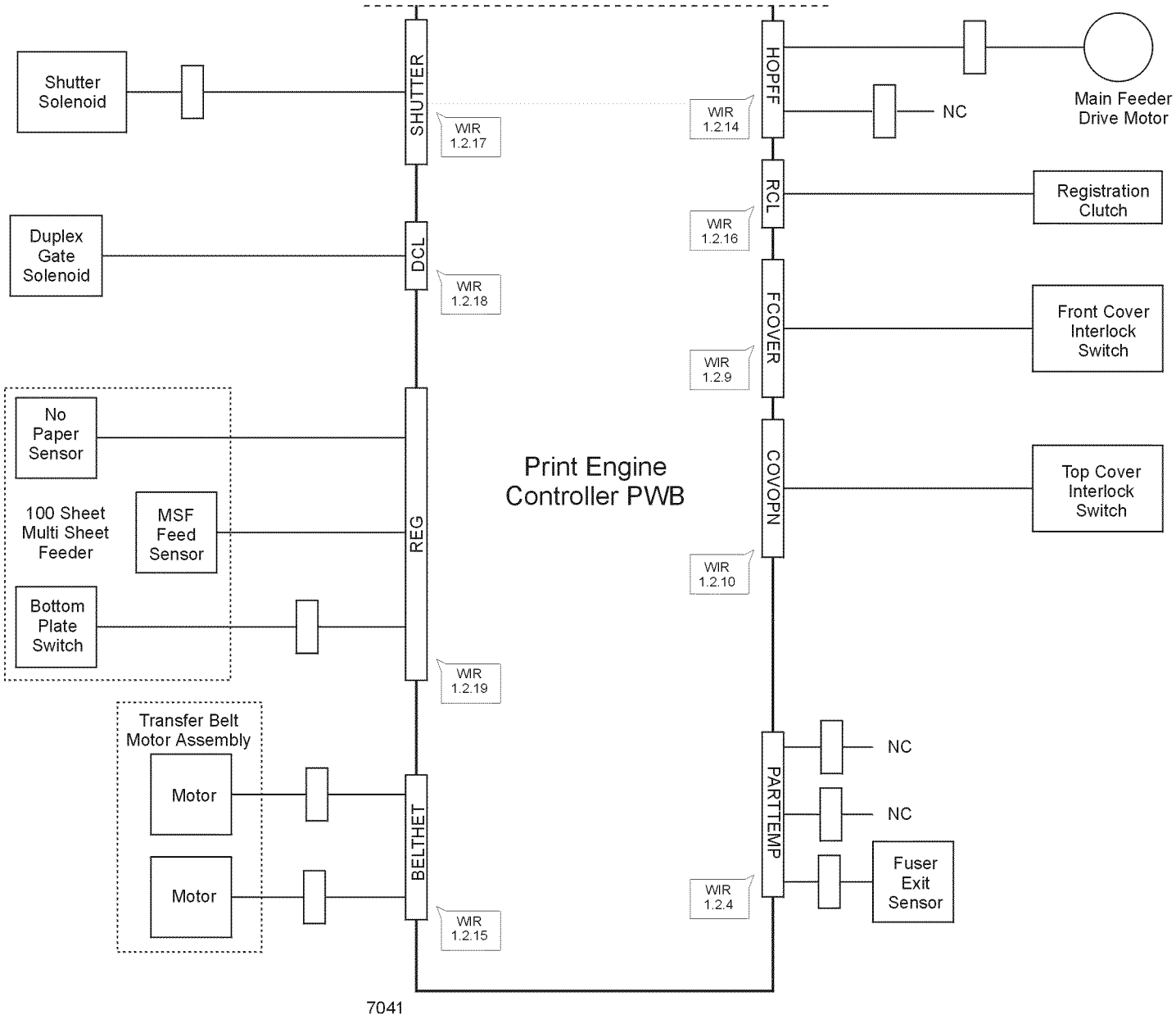
Wiring Diagram



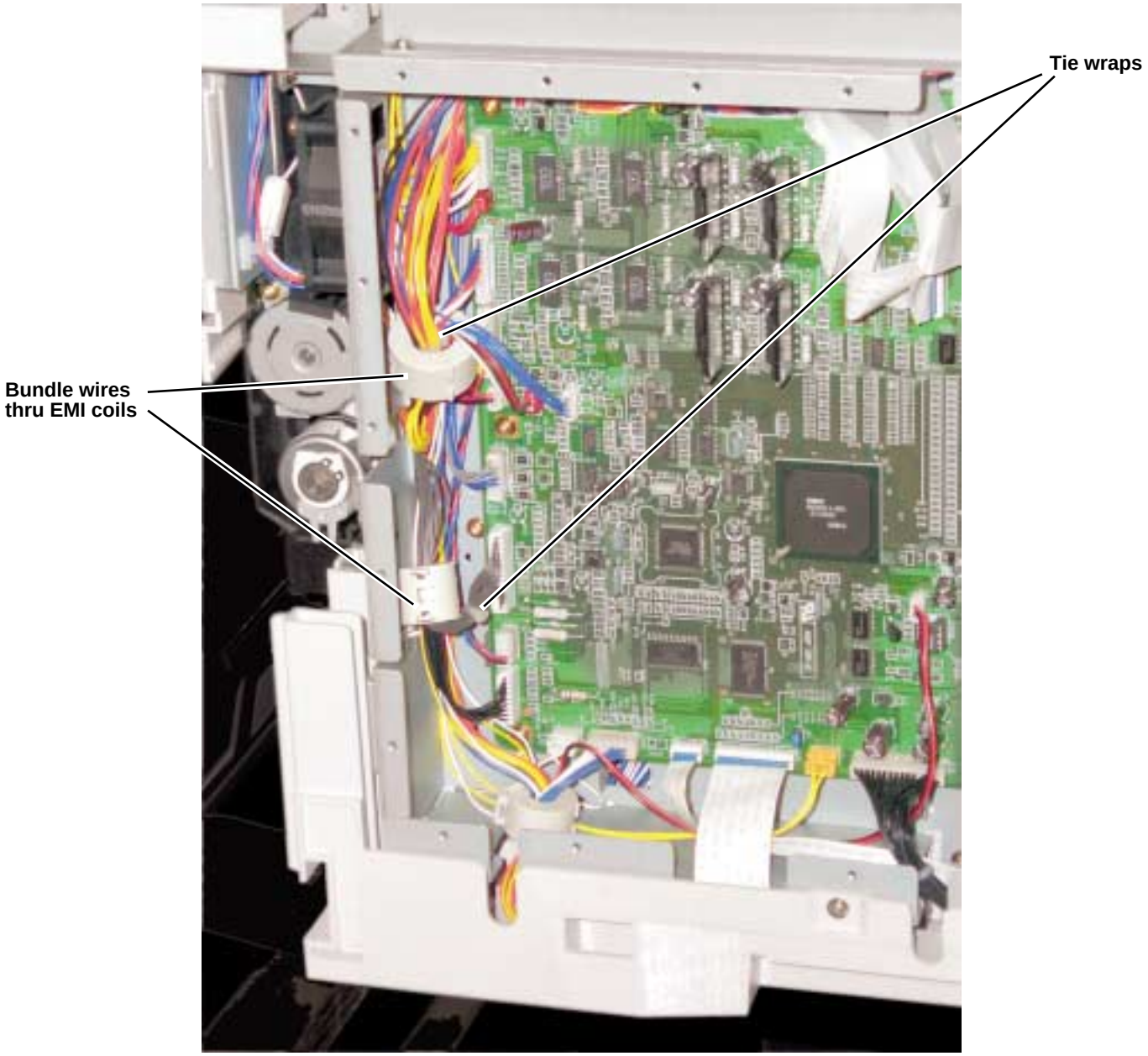
Wiring diagram (part 1 of 3)



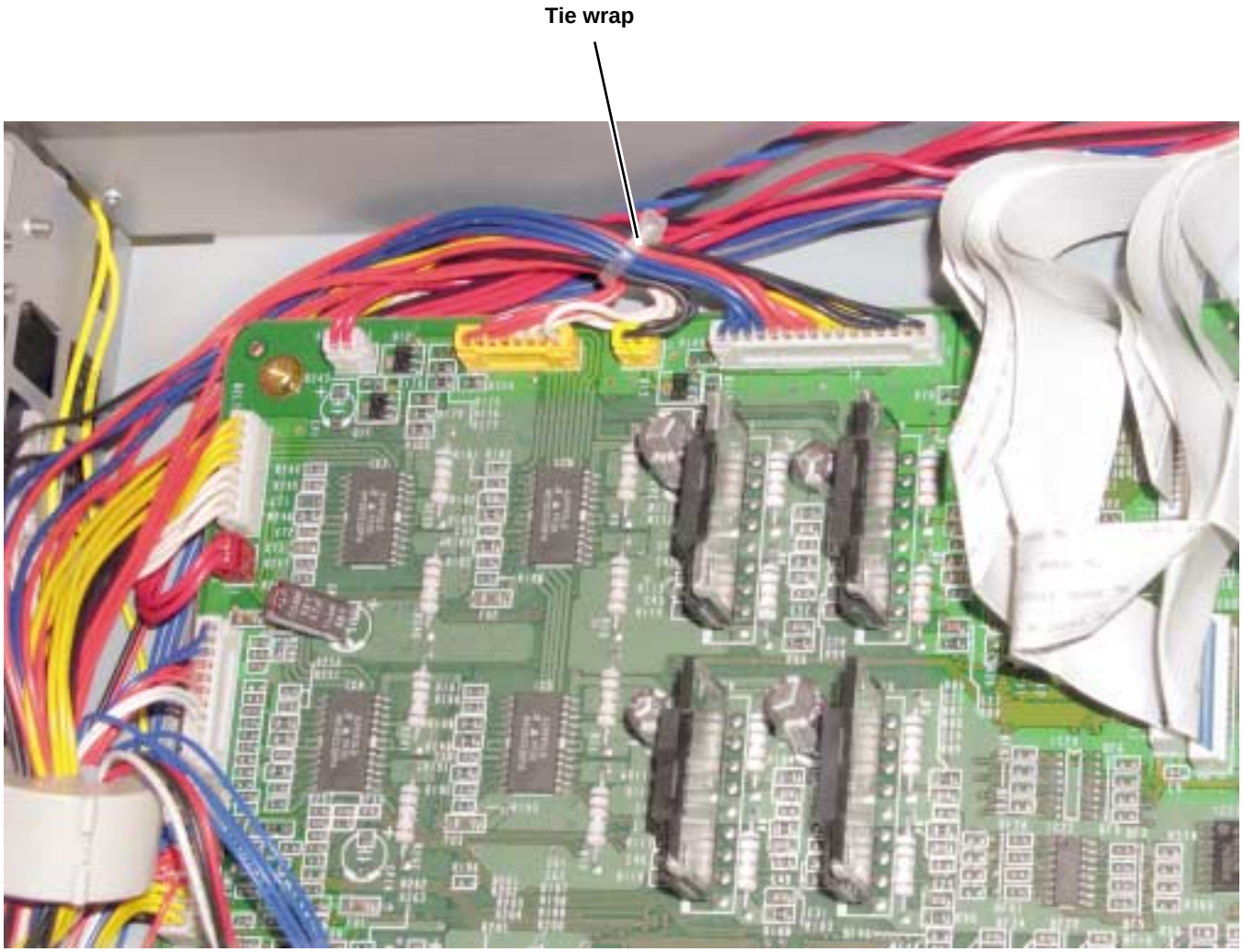
Wiring diagram (part 2 of 3)



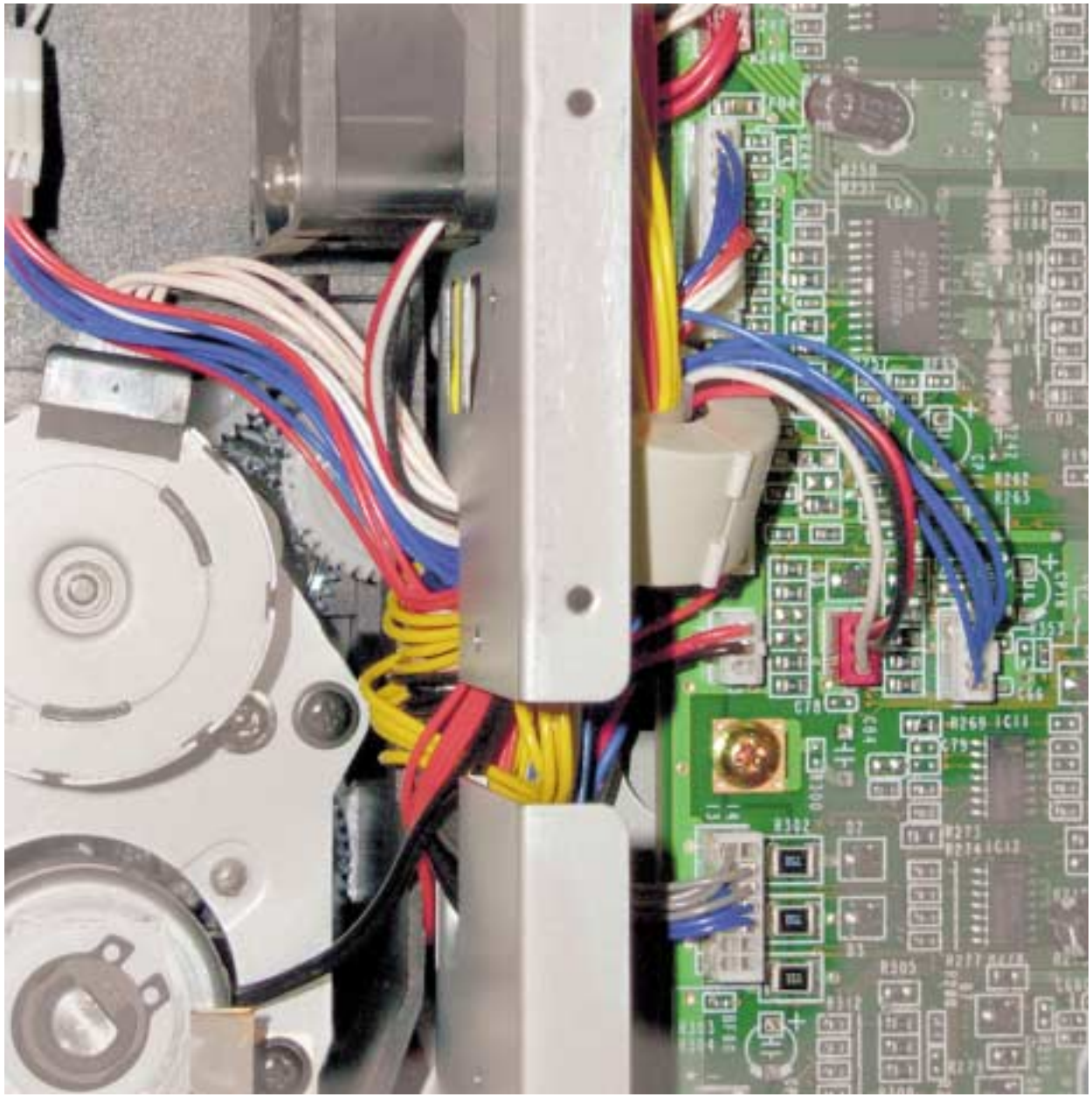
Wiring diagram (part 3 of 3)



Wire routing at the engine controller board

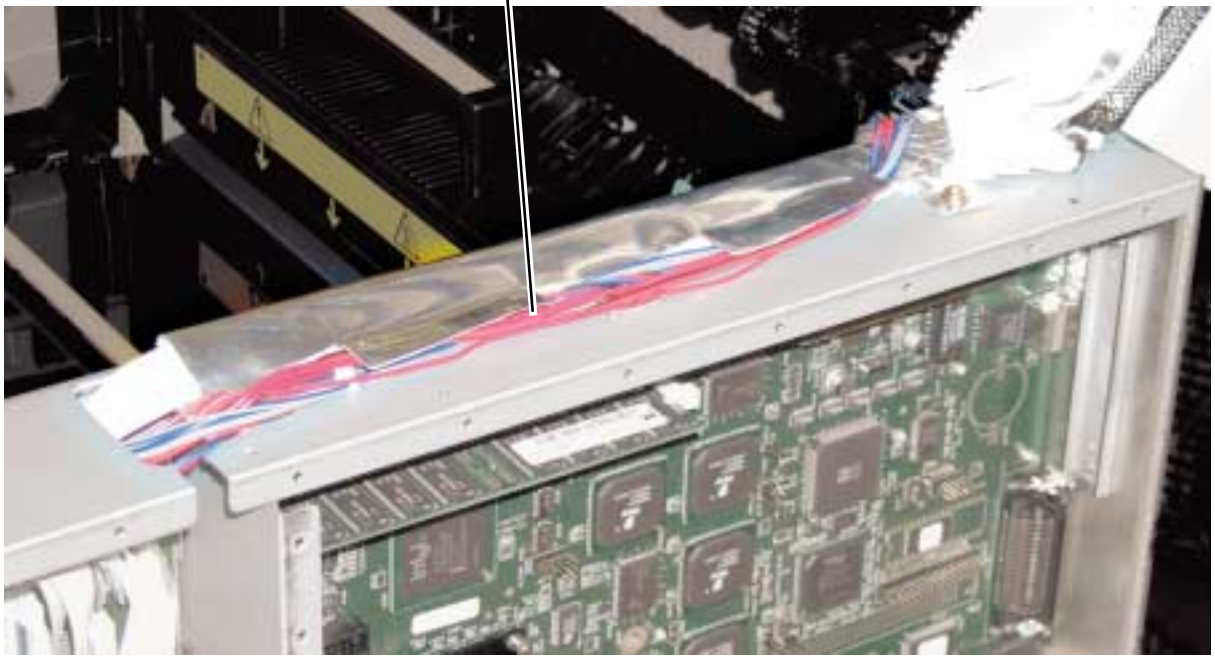


Wire routing at the top of the engine controller board



Detail of wiring passthru

Ensure wiring harness is routed inside the wiring shield



Make sure wiring is not pinched by top shield plate when it is installed

Wiring under the top shield plate

NOTES

NOTES