Service Manual

Lexmark X125
All-In-One

4412-00X

- Table of Contents
- Start Diagnostics
- Safety and Notices
- Trademarks
- Index

LEXMARK™

4412-00X

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Table of Contents

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- 有些零件的安全功能可能不明显。因此，所替换零件的性能一定要与原有的零件一致。

Preface

This manual and contains maintenance procedures for service personnel. It is divided into the following chapters:

1. **General Information** contains a general description of the printer and the maintenance approach used to repair it. Special tools and test equipment are listed in this chapter, as well as general environmental and safety instructions.
2. **Diagnostic Information** contains an error indicator table, symptom tables, and service checks used to isolate failing field replaceable units (FRUs).
3. **Diagnostic Aids** contains tests and checks used to locate or repeat symptoms of printer problems.
4. **Repair Information** provides instructions for making printer adjustments and removing and installing FRUs.
5. **Connector Locations** uses illustrations to identify the connector locations and test points on the printer.
6. **Preventive Maintenance** contains the lubrication specifications and recommendations to prevent problems.
7. **Parts Catalog** contains illustrations and part numbers for individual FRUs.

1. General Information

The Lexmark™ X125 All-In-One (4412-00X) is a letter quality print, fax, copy, and scan machine. The printhead uses small heater plates and nozzles to control ink flow and the formation of characters on the print media. The printhead assembly and ink supply are combined into a single unit. Print cartridges are available as a customer replaceable supply item. Dual printheads provide color and true black printing without changing printheads. The number and size of inkjets or nozzles, in the printhead, determines the overall quality and capability of the printer. The black cartridge has a total of 208 nozzles and installs on the right. The color cartridge has a total of 192 nozzles and installs on the left. The printer is capable of printing in both directions from either cartridge.

Specifications

Printer Engine

Technology		Thermal Inkjet
		2-pin and printhead swapping type
Speed	Color	8 ppm at Draft Mode
	Mono	16 ppm at Draft Mode
Resolution	Color	600 X 600 dpi (1200 X 2400 dpi addressable)
	Mono	600 X 600 dpi (1200 X 2400 dpi addressable)
Printing Width		203 mm
Feeding Method	Automatic	100 sheets of 20 lb cut sheets (Max 10 mm)
	Manual Tray	No
Emulation		Host Based Printing (GDI)
Printer Driver		Windows 98/ME, Windows 2000/Windows XP
Interface		USB Interface

Printhead

	Babbage Mono Standard	**Birch Color**
Printhead	208 nozzles	192 nozzles
Ink Type	Pigment	Dye
Ink Color	Black	Color
Ink Yield	About 600 sheets	About 200 sheets

Facsimile

General	Compatibility	ITU-G3
	Scan Method	CIS
	Scan Width	Maximum 216 mm, Effective 210 mm
	Scan Resolution	600 X 1200 dpi
	Scan Speed	6 seconds
	Feeding Method	Sheet Feed
	ADF	30 sheets of 20 lb
	Guide	Document Input Guide
	Stacker	Document Output Stacker/Paper Stacker
	Paper Tray	Bin Type (without Manual Tray)
	Modem Speed	33.6 Kbps
	Coding Method	MH, MR, MMR, Error Correction Mode
	LCD	2 lines of 16 characters each
Scanning	Resolution and Type	Standard: 200 X 100 dpi Fine: 200 X 200 dpi (default) Super Fine: 300 X 300 dpi Color: 200 X 200 dpi (Standard: Low quality, Fine: High quality compression)
	Contrast	Darkest/Darken/Normal Lighten/Lightest
Memory	Capacity	1 Mbyte
	Back-up Time	15 sec (Continuous power failure, typically 1-2 minutes)
	Confidential	No
	Forced Memory TX	Yes
	Memory RX	Automatic reception when paper empty.

Telephone	Speed Dial	70 locations
	Chain Dial	No
	On-Hook Dial	Yes, 1-Key
	Last Number Redial	Yes, 1-Key
	Auto Redial	Yes
	Hold and Mute	No
	Pause	Yes, use Redial Key
	Ringer Volume	S/W Option Setting (4 steps)
	Tone/Pulse Select	S/W Option Setting
	DRPD	USA: Yes, Other Countries: Yes
Report and List	TX/RX Journal	Yes
	Image TCR	Yes, reduction of first page sent by Memory TX
	System Data	Yes
	Telephone Number List	Yes
	Self Test	Yes
Copy	Multipage Copy	Up to 99 pages
	Grayscale	256 levels
	Reduction and Enlargement	25% - 200% (Reference is the top center of document.)
Telephone I/F	Answering I/F	Yes
	Extension Phone	1-jack, extension phone transfer
Others	Sensors	Paper Jam
	Real-Time Clock	No
	RTI	Yes

Scanner

Compatibility	TWAIN
Technology	Platen CIS
Light Source for Color CIS	RGB LEDs (Line Order Control)

Power and Size

Power Source	110V-240V / 50Hz-60Hz
Dimensions	440.6 X 319.6 X 205.4 mm
Weight (Packed)	15.3 lbs (Packed Weight)

Abbreviations

ASF	Auto Sheet Feed
B/M	Bill of Material
CIS	Contact Image Sensor
EOF	End of Form
ESD	Electrostatic Discharge
FPC	Flat Printhead Cable
FRU	Field Replaceable Unit
HVPS	High Voltage Power Supply
LCD	Liquid Crystal Display
LVPS	Low Voltage Power Supply
OEM	Original Equipment Manufacturer
V ac	Volts alternating current
V dc	Volts direct current
ZIF	Zero Insertion Force

2. Diagnostic Information

Start

Power-On Self Test (POST) Sequence

1. Power Up Please Wait is displayed on the LCD.
2. Carrier moves to the left and the paper feed motor runs then stops.
3. Carrier returns to the right.
4. Ready, ANS/FAX, and the Date and Time display when POST is complete.

If your printer completes POST with no errors, go to the **“Symptom Tables” on page 2-3**. Locate the symptom and take the indicated action.

If your printer does not complete POST, locate the symptom in the following table and take the indicated action.

POST Symptom Table

Symptom	Action
LCD or operator panel buttons do not work and no motors run	Go to the **“Power Service Check” on page 2-15**. If okay, go to the **“Operator Panel Problems” on page 2-3**.
Paper feed gears do not turn	Go to the **“Paper Feed Service Check” on page 2-12**.
Carrier does not move	Go to the **“Carrier Transport Service Check” on page 2-7**.
Carrier slams side frame	Go to the **“Carrier Transport Service Check” on page 2-7**.
CIS light does not turn on	Go to the **“CIS Assembly Service Check” on page 2-9**.

Symptom Tables

Locate the symptom in the following tables and take the appropriate action.

Carrier Transport Problems

Symptom	Action
• No carrier movement • Slow carrier movement • Carrier stops • Carrier slams side frame	Go to the **"Carrier Transport Service Check" on page 2-7**.

Maintenance Station Problems

Symptom	Action
Maintenance station: • Fails to cap the printheads • Fails to clean the printheads	Go to the **"Maintenance Station Service Check" on page 2-11**.

Operator Panel Problems

Symptom	Action
• Buttons do not work • LCD does not display	Check operator panel cable connection at P9 on the system board. Run the **"Power-On Self Test (POST) Sequence" on page 2-1**. If the LCD or buttons fail, check connection P9. If the problem remains, replace the operator panel assembly. Go to the **"Operator Panel Assembly Removal" on page 4-13**. If the problem still exists, replace the system board. Go to the **"System Board Removal" on page 4-19**.

Symptom	Action
Document scan sensor does not detect document	Check operator panel cable connector P9 on the system board. If okay, go to the **“Scanner Motor with Gear Assembly Service Check” on page 2-10**. If the scanner motor is working correctly, replace the operator panel assembly. Go to the **“Operator Panel Assembly Removal” on page 4-13**.

Printer Communication Problem

Symptom	Action
Not able to print Self Test Page	Check the USB cable and system board cable connections. If okay, replace system board. Go to the **"System Board Removal" on page 4-19**.

Scanner Problems

Symptom	Action
Light does not turn on	Go to the **"CIS Assembly Service Check" on page 2-9**.
• Scanned images are faded, or colors are dull, blurry or fuzzy. Images are slanted or crooked and the straight lines in the image appear to be jagged or uneven. • Blank copies	Go to the **"Scan/Copy Quality Service Check" on page 2-18**.
• Scanner motor does not run • Document sensor does not work	Go to the **"Scanner Motor with Gear Assembly Service Check" on page 2-10**. Go to the **"Operator Panel Problems" on page 2-3**.
• CIS white roller assembly slips • Paper does not feed correctly	Go to the **"Paper Path Service Check" on page 2-14**.

Paper Feed Problems

Symptom	Action
• Fails to pick paper • Picks more than one sheet of paper • Picks paper but fails to feed • Paper jams • Paper fails to exit • Noisy paper feed	Go to the **"Paper Feed Service Check" on page 2-12**.
Envelopes fail to feed	Go to the **"Paper Feed Service Check" on page 2-12**.
Paper skews	Go to the **"Paper Path Service Check" on page 2-14**.

Power Problems

Symptom	Action
No power in machine, motors do not operate	Go to the **"Power Service Check" on page 2-15**.

Print Quality Problems

Symptom	Action
• Voids in characters • Light print • Prints off the page • Fuzzy print • Carrier moves but no print • Printhead dries prematurely • Colors print incorrectly • Vertical alignment off	Go to the **"Print Quality Service Check" on page 2-16**.
• Ink smearing • Vertical streaks on paper • Print lines crowded	Go to the **"Paper Feed Service Check" on page 2-12**.

Service Checks

Carrier Transport Service Check

	FRU	Action
1	System Board Carrier Transport Motor	Check the carrier transport motor connector P4. If connected, check for approximately 29 volts on pins 1 and 2 or at the wire connections located on the rear of the carrier transport motor. If voltage is incorrect, replace the system board. If voltage is correct, check the motor for shorts.
2	Carrier Transport Motor	Check the motor for binds, or loose motor pulley. A noisy or chattering motor, or a motor that fails to turn, can be caused by: • An open or short in the motor • An open or short in the motor driver on the system board • A bind in the carrier transport mechanism With the carrier transport motor cable (P4) disconnected from the system board, check for 0 to 16 ohms between the following pins on the motor: P4-1 and P4-2 If the readings are incorrect, replace the print engine. Go to the **“Carrier Transport Motor Removal” on page 4-23**.
3	Carrier Guide Rod	Clean the carrier rod. **Note**: Lubricate the rod and the carrier rod bearing surfaces with grease P/N 99A0394.

	FRU	Action
4	Encoder Strip Carrier Assembly with Belt	Check the encoder strip for proper installation. Also, check it for wear, dirt, and grease. Replace if needed. Be sure all printhead connectors are fully seated. Check the cables for damage. If the encoder strip and all connections are okay, but the carrier still slams the side frame, replace the carrier assembly with belt. Go to the **"Carrier Assembly with Belt Removal" on page 4-18**. If problem remains, replace the system board. Go to the **"System Board Removal" on page 4-19**.
5	Carrier Transport Belt Idler Pulley Assembly	Check for worn, loose or broken parts. Check for obstructions blocking carrier movement. If pulley assembly is damaged, replace. Lubricate carrier to carrier frame engagement with grease P/N 99A0394.
6	Maintenance Station	A problem with the maintenance station can cause carrier movement problems at the right margin. Go to the **"Maintenance Station Removal" on page 4-17**.
7	Access Door Sensor	If the carrier does not move toward the cartridge load position when the access door is opened, verify that power is on. If the carrier still does not move, check connector P11 pin 1 for approximately 3 volts, with the door open. If the voltage is correct, replace the sensor. Disconnect P11 from the system board before removing sensor. If the voltage is incorrect, replace the system board. Go to the **"System Board Removal" on page 4-19**.

CIS Assembly Service Check

The CIS lamp does not light when scanning is in process.

	FRU	Action
1	CIS Assembly	If light does not come on during the scanning process, check connector P2 on the system board. If the connection is okay, check for a voltage reading of approximately 4 volts from ground to P2-2 pin. If voltage is correct, replace the CIS assembly. Go to the **“CIS (Contact Image Sensor) Removal” on page 4-7**. If voltage is incorrect, replace the system board. Go to the **“System Board Removal” on page 4-19**.

Scanner Motor with Gear Assembly Service Check

Motor will not run.

	FRU	Action
1	Scanner Motor with Gear Assembly	Check scanner motor for shorts. Disconnect connector P6 from the system board and check for approximately 6 ohms between the following pins on the motor connector. P6-1 and P6-2 If the ohms reading is incorrect, replace the scanner motor assembly. If the motor does not come on during the scanning process, check connector P6 on the system board. If the connection is okay, check for voltage reading of approximately 29 volts at pins P6-1 P6-2 P6-3 P6-4 If voltage is correct, replace the scanner motor with gear assembly. Go to the **“Scanner Motor with Gear Assembly Removal” on page 4-9**. If voltage is incorrect, replace the system board. Go to the **“System Board Removal” on page 4-19**.
2	Document Scanner Sensor	To check the document scanner sensor, insert a sheet of paper or press the sensor to see if the scanner motor is working. Go to **“Operator Panel Problems” on page 2-3**.

Maintenance Station Service Check

The maintenance station has three functions:

1. Wipes the printhead nozzles to clean them of dirt.
2. Provides a place for printheads to fire all nozzles, keeping them clear prior to printing.
3. Seals the printhead when it is not being used to prevent the nozzles from drying.

	FRU	Action
1	Maintenance Station Assembly	As the carrier moves to the right over the maintenance station, a slot on the bottom of the carrier engages a tab on the sled of the maintenance station causing the cap to rise and seal the printhead. Carrier movement to the left uncaps the printhead. The wiper cleans the printhead nozzles as the carrier leaves the maintenance station. The wiper cleans the printhead only when the carrier is moving to the left. Do not wipe the printhead nozzles when the carrier is moving to the right. After the cleaning operation is complete, a tab on the maintenance station engages a tab on the carrier, causing the wiper to lower. Check the maintenance station for worn or broken parts. Replace if needed. Go to the **“Maintenance Station Removal” on page 4-17**. Worn wipers cause degraded print quality just after a maintenance cleaning. Check for loose or worn wipers. Worn caps cause the printhead nozzles to dry and clog. Check for loose or worn caps.

Paper Feed Service Check

If your machine does not have paper jam problems, continue with the service check. If your machine does have a paper jam, examine it for the following before you begin the service check:

- Check the entire paper path for obstructions.
- Be sure there is not too much paper in the sheet feeder.
- Be sure the correct type of paper is being used.
- Check for static in the paper.

	FRU	Action
1	System Board	Run the **"Power-On Self Test (POST) Sequence" on page 2-1**. Replace parts as needed. To check the paper feed motor, disconnect the paper feed connector P5 and check for approximately 4 ohms between pins 1 and 4. If the reading is incorrect, replace the paper feed motor assembly with gears. Go to the **"Paper Feed Motor Assembly with Gears Removal" on page 4-22**. If the reading is correct, replace the system board. Go to the **"System Board Removal" on page 4-19**.

	FRU	Action
2	Paper Feed Motor	A noisy or chattering motor or a motor that fails to turn, can be caused by: • An open or short in the motor • An open or short in the motor driver on the system board • A bind in the paper feed mechanism With the paper feed motor cable P5 disconnected from the system board, check for approximately 4 ohms between the following pins on the motor: Pin 1 to Pin 4 If the readings are incorrect, replace the paper feed motor assembly with gears. Go to the **"Paper Feed Motor Assembly with Gears Removal" on page 4-22**. Although the paper feeds in a forward direction only, the paper feed motor turns in two directions. If the paper feed motor turns in one direction only, replace the system board. Go to the **"System Board Removal" on page 4-19**. Binds in the paper feed motor or gear train can cause intermittent false paper jam errors. Remove the paper feed motor and check the shaft for binds. Also check for a loose or worn motor gear.
3	Auto Sheet Feeder Assembly	Check the pick roller for wear.
4	Mid Frame Assembly	Check the following for wear: • Small Feed rollers • Large Feed roller • Exit roller • Star rollers If the mid frame assembly needs to be replaced, go to the **"Mid Frame Assembly with Exit Rollers Removal" on page 4-20**.
5	End-of-Forms Flag and Spring	Check for binds or damage.

Paper Path Service Check

Examine the machine for the following before you begin this service check:

- Check the entire paper path for obstructions.
- Be sure the correct type of paper is being used.
- Be sure the printer is installed on a flat surface.

	FRU	Action
1	Large and Small Feed Rollers	Check for wear and binds.
2	Small Feed Roller Springs	Check for damage or disconnected springs.
3	Auto Sheet Feeder Assembly	Check the pick roller for wear.
4	Mid Frame Asm	Check the following for wear: • Exit roller • Star rollers
5	End-of-Forms Flag	Check for binds or damage.
6	White Roller Assembly	Check for correct installation. Check gear and bushings for damage. If damaged, replace. Go to the **“CIS White Roller Assembly Removal” on page 4-4**.

Power Service Check

	FRU	Action
1	Power Supply	Plug the machine into an outlet. Check for approximately 30 V dc at P1 pin 3. Check connector (CON1) at the power supply. If voltage is incorrect, replace the power supply.
2	Printhead Cables Paper Feed Motor Carrier Transport Motor Operator Panel	Unplug the printer. Disconnect the printhead cables and plug in the printer. Look for a symptom change. Check the failing part for shorts and replace as necessary. Repeat this procedure for the carrier transport motor, paper feed motor, and operator panel.
3	System Board	If the symptom has not changed, replace the system board. Go to the **“System Board Removal” on page 4-19**.

Print Quality Service Check

	FRU / Function	Action
1	Printhead Cartridge	Be sure the machine contains good print cartridges.
2	Color Printhead Cartridge Cross Contamination	Cross contamination of color inks results in incorrect colors printed, as when green prints for yellow, (when yellow and blue are mixed in the printhead cartridge). This problem resolves quickly as the printhead cartridge is used. If cross contamination occurs, check the following: • The maintenance station wiper for damage. • The printhead nozzle plate was resealed with tape.
3	Carrier Assembly	Reseat the printhead cables in the system board and check the following parts for wear or damage: • Printhead Cartridge Latch • Latch Spring • Carrier
4	System Board Carrier Assembly	Print the self test page. To enter the self test page, press **Setup** and then **Menu** button until “Print Report” is displayed. Press **Options** button until “Self Test” is displayed. Then press the to print the self test page. Look for a break in the diagonal line of the nozzle test pattern. A broken line indicates one or more print nozzles are not working. Run the test again to verify the failure. Check the gold-plated contacts on the end of the printhead carrier cable for dirt, wear, and damage. Use only a clean dry cloth to clean the contacts. If a problem is found with contacts on the carrier, replace the carrier. Go to the **“Carrier Assembly with Belt Removal” on page 4-18**. If the symptom remains, replace the system board. Go to the **“System Board Removal” on page 4-19**.
5	Maintenance Station	Intermittent nozzle failures can be caused by worn parts in the maintenance station. Go to the **“Maintenance Station Removal” on page 4-17**, and then return to this check.

	FRU / Function	Action
6	Paper Feed	Ink smudging and smearing can be caused by paper problems or problems in the paper feed area. Check the following: • Correct type of paper is being used. Also check the paper for curl or wrinkles. • Feed rollers for wear, dirt, or looseness. • Gears for wear or binds. • Paper path for obstructions.
7	Carrier Transport	Blurred print and voids can be caused by problems in the carrier transport area. Check the following: • Carrier transport belt for wear. • Carrier guide rod for wear or dirt. If dirty, clean and lubricate. • Carrier to carrier frame engagement should be lubricated with grease P/N 99A0394. • Idler pulley parts for wear, damage, or looseness.
8	Alignment	Uneven vertical lines can be adjusted by performing the printhead alignment adjustments in the maintenance mode. The user is directed, through the **“Setting up System in User Mode” on page 3-3**, to perform the printhead alignment adjustments, when replacing a printhead cartridge.

Scan/Copy Quality Service Check

	FRU / Function	Action
1	Scanned images are faded, or colors are dull, blurry, or fuzzy. Images are slanted or crooked and the straight lines in the image appear to be jagged or uneven.	Check the lighter/darker settings to see if it is correct. • From the operator panel • From the Scan & Copy Control Program Check to see if there is any dust or debris on the glass lens of the CIS. This may cause a poor image.
2	Blank copies	If there are blank copies found, make sure that the original document is facing down. Check the print cartridges to see if they need to be cleaned or replaced.
3	Scanning error	Ensure the USB cable is correctly installed. Ensure the USB cable is proper for USB specification, version 1.1. Start the system after twain driver is reinstalled. If error still occurs, replace the system board. Go to the **“System Board Removal” on page 4-19**.

Fax/Telephone Communication Service Check

	FRU / Function	Action
1	Line Interface Board or System Board Cannot make telephone connection to other fax.	No dial tone Verify correct dialing method (tone or pulse). Are TEL and LINE connections reversed? Verify phone number and availability of other fax machine. Before dialing, press **Speaker** so you can hear the dialing process. You should hear the ring and a 0.5 second 1000 Hz calling tone from your machine, a 1 second pause, then the 3 second 2100 Hz fax response tone and a 1650 Hz - 1850 Hz “warbling” handshaking tone from the called machine. Check the connectors on the line interface board P1 and P2. If okay, check connector CN15 located on the system board. If problem still exists, replace the line interface board. Go to the **“Line Interface Board Removal” on page 4-12**. If this does not correct the problem, replace the system board. Go to the **“System Board Removal” on page 4-19**.
2	Cannot receive faxes	Are TEL and LINE connections reversed? Is a telephone on the same line off the hook? Is the machine connected to the wrong telephone line? Check for a damaged line cord to the machine. Check telephone and line cord connections.

3. Diagnostic Aids

Theory of Mechanism

Scanner Mechanism

The scanner mechanism consists of components which feed, scan, and eject the documents that are to be copied or transmitted to a remote facsimile unit. These components and their functions are explained below.

Drive Feed Roller Assembly

The drive feed roller assembly, consisting of various rollers, rubber pad, and springs, automatically separates and feeds the pages of a document over the scanning area and stacks them on the document exit tray.

Documents up to 15 pages can be placed in the drive feed roller assembly for scanning. The leading edge of the document moves the document detect sensor lever when the operator slides the stack into the drive feed roller assembly. The scan motor starts to rotate when the document detect sensor detects the leading edge of the document. The roller feeds the first page of the document into the feeder.

The scan motor stops when the leading edge of the page actuates the document scan sensor. The page is now in the scan position.

The drive feed roller assembly rubber pad prevents multiple sheets from being fed. A spring provides force that the pad places on the document pages for proper separation.

The scan motor is turned on when the machine is ready to scan the document and drives the feed roller at a speed determined by the resolution selected. The scan motor stops after a set period of time when the trailing edge of the page releases the document scan sensor. If another page is detected as the trailing edge of the page releases the document scan sensor, the next page feeds to the scan position. The exit roller pushes the page out onto the document exit tray where it is stacked.

Contact Image Sensor (CIS)

The contact image sensor unit consist of LEDs, rod lens array, and a photo sensor. The LEDs illuminate the document to be scanned when the leading edge is detected by the document scan sensor. The LEDs turn off when the document exits the scanner mechanism.

The LEDs illuminate the document to obtain an image from the document through the rod lens array, where the image is translated into voltage levels.

Document Sensors

There are two document sensors in the scanner mechanism; the document detect and the document scan sensor. The document detect sensor, detects whether or not a document is loaded, and the document scan sensor detects the scan position of the document. The scanner mechanism consists of components which feed, scan, and eject the documents that are to be copied or transmitted to a remote facsimile unit.

Service Mode

In service mode (tech) mode, the technician checks the machine and performs various tests to isolate the cause of a malfunction.

To enter the service mode, press **Menu**, **#, 1, 9, 3, 4** in sequence, and the LCD briefly displays T. The machine has entered service (tech) mode. While in service mode, the machine still performs all normal operations. To return to normal user mode, press **Menu, #, 1, 9, 3, 4** in sequence again, or turn the power off and then on by unplugging and plugging the power cord.

Options changed while in service mode do not remain changed unless you clear the machine memory.

Setting up System in User Mode

Setup	Item	Default
Date Jan/01/01 Time 12:00:00P	Month - Day - Year Hour - Minute - AM/PM	Jan/01/01 12:00 PM
Print Report	Fax Confirm Transmit Log Receive Log Speed Send List Self Test	
Maintenance	Cartridge Clean Cartridge Align Scanner Init	
Paper Size	Letter/A4/Legal	Letter
Ringer Volume	Off/Low/Medium/High	Medium
Fax Print	Letter Quality/ Draft Quality	Letter Quality
Fax Forwarding	Off/Forward/ Forward and Print	Off
Fax Receive Mode	FAX/TEL/ANS/FAX/ DRPD	ANS/FAX
Setup DRPD	Learn	
Auto Journal	Yes / No	
Dial Mode	Pulse / Tone	
Default Setting	Fax Type Copy Size Copy Collate Copy Contrast Copy Type Copy Paper Type	

Setting up System in Service Mode

Setup	Item	Default
CIS Test	Red, Green, and Blue maximum and minimum peak levels	
Aging Test	Scanner Aging/ Printer Aging	
Print Report	Fax Confirm Transmit Log Receive Log Speed Send List Self Test Protocol Dump ASF Test System Data NVRAM Dump CIS Pattern	
Maintenance	Cartridge Clean Cartridge Align Scanner INIT	
Program Download		
Message Confirm	On/Off/Error	On-Error
Remote RCV Code	(0-9)	9
EMC Mode	Yes/No	Yes
Auto Reduction	On/Off Vertical Only	On
Retry Interval	(1-7)	3
Retry Count	(0-2)	2
Answer on Rings	(1-7)	1
Print RTI	Yes / No	
Modem Test	FSK/2400/4800/7200/ 9600/12000/14400 bps/ 21600 bps/26400 bps/ 28800 bps/31200 bps/ 33600 bps/1100/1650/ 1850/2100 Hz	

Setup	Item	Default
DTMF Test		
ROM Test		
Modem Speed Item (1-6)	FSK/2400/4800/7200/ 9600/112000/14400/ 33600/12000/9600/ 7200/4800/2400	33600 bps
Set TX Level	(1-15)	12
Set RX Level	(40-50)	43
Pause Time	(1-9)	3

CIS Test

The test adjusts the light of CIS. It is already set at CIS Test to get optimum quality.

Warning: Shading profile must be made after downloading a new firmware. If not, the system will not work properly.

1. Load all white document in scanner unit.
2. Press **Setup** and 'CIS Test Press Start' is displayed.
3. Press **Start** and 'Shading...' is displayed.
4. After scanning, shading waveform is printed.
5. After shading waveform has printed, press **Stop**.
6. Turn off system and turn on.

Aging Test

Scanner Aging - Scanner part aging
Printer Aging - Printer part aging.

Print Report

1. Press **Setup**.
2. Press **Menu** until 'Print Report' is displayed.
3. Press **Options** to select the log you want to print.
4. Press **Start** or **Setup** to print the report.

Maintenance

1. Press **Setup**.
2. Press **Menu** until ‘Maintenance’ displays.
3. Press **Options** to select, cartridge clean, cartridge align and scanner init.
4. Press **Start** after you select.

Program Download

1. Press **Setup**.
2. Press **Menu** four times until ‘Program Download Press Start’ is displayed.
3. Press **Start**.
4. Download your new firmware files from PC.

Note: Be sure the USB cable is connected to the PC when you are running this test. If cable is not connected, it may cause a fatal error.

Message Confirm

A message confirmation report shows whether the transmission was successful or not and how many pages were sent.

1. Press **Setup**.
2. Press **Menu** five times until ‘Message Confirm, Report, On Report, Off Report, Error’ is displayed.
3. Press **Options** to print a confirmation report automatically each time you send a fax (On). Press **Options** to turn this feature off. Press **Options** to print only when an error occurs and the transmission was not successful. Press **Start** or **Setup** to set the time you want to select.

Auto Journal

A journal shows specific information concerning transmission or reception activities, the time and dates of up to 40 of the most recent transmissions or receptions.

1. Press **Setup**.
2. Press **Menu** until ‘Auto Journal’ displays in the top line of the LCD.

3. Press **Options** to print the journal automatically after every 40 transmissions or receptions (Yes). Press **Options** to print journal manually (No).

Remote RCV Code

The remote receive code lets you initiate fax received from an extension phone plugged into the EXT jack. If you pick up the extension phone and hear fax tones, enter the remote receive code and the fax starts receiving. The password is preset to 9.

1. Press **Setup**.
2. Press **Menu** until 'Remote RCV Code' displays on the top line.
3. Enter the code you want, 0 to 9 on the number keypad.

Dial Mode

Select the type of dial system your fax machine is connected to.

1. Press **Setup**.
2. Press **Menu** until 'Dial Mode' displays in the top line of the LCD.
3. Press **Start** or **setup** when Tone Message is displayed if the fax machine is connected to a tone (Touch Tone) dial line.
4. Press **Start** or **Setup** when Pulse Message is displayed if the fax machine is connected to a pulse (Rotary) dial line.

ECM (Error Correction Mode)

This mode compensates for poor line quality and ensures accurate, error-free transmission with another ECM-equipped facsimile machine. If the line quality is poor, transmission time may be increased when ECM is enabled.

1. Press **Setup**.
2. Press **Menu** until 'ECM Mode' displays.
3. Press **Start** or **Setup** when Yes is displayed to turn on the Error Correction Mode. Press **Start** or **Setup** when No is displayed to turn off the Error Correction Mode.

Auto Reduction

When receiving a document as long or longer than the paper installed in your machine, the machine can reduce the data in the document to fit into your recording paper size.

Turn on this feature if you want to reduce an incoming page that may otherwise need to be divided into two pages with only a small portion on the second page. If the fax machine cannot reduce the data to fit one page with the feature enabled, the data is divided and printed in actual size on two or more sheets.

1. Press **Setup**.
2. Press **Menu** until ‘Auto Reduction’ displays. To turn only the vertical reduction feature On, press **Start** or **Setup** when On is displayed. The machine reduces an incoming page containing overflow data only in vertical. Press **Start** or **Setup** when Off is displayed to turn this feature on.

Discard Size

When receiving a document as long as, or longer than, the paper installed in your fax machine, you can set the fax machine to discard any excess image at the bottom of the page to fit into the recording paper size. If the receiving page is outside the margin you set, it prints on two sheets of paper at the actual size. If the data is within the margin, and the Auto Reduction feature is turned on, it reduces to fit into the appropriate size paper (Discard does not take place). If the Auto Reduction feature is turned Off or fails, the data within the margin is discarded.

1. Press **Setup**.
2. Press **Menu** until ‘Discard Size’ displays in the top line of the LCD.
3. Enter the length using the numbers on the keypad.

Retry Interval

1. Press **Setup**.
2. Press **Menu** until ‘Retry Interval’ displays.
3. Enter the number of minutes (from 1 to 7) using the numbers on the keypad.

Retry Count

1. Press **Setup**.
2. Press **Menu** until ‘Retry Count’ displays.
3. Enter the number of attempts (from 1 to 2) to redial the number. If you enter 0, the machine does not redial.

Answer On Rings

You can select the number of times your machine rings before answering an incoming call. If you are using your machine as both a telephone and a fax machine, we suggest you set the ring count to at least 4 to give you time to answer.

1. Press **Setup**.
2. Press **Menu** until ‘Answer On Rings’ displays.
3. Enter a number from 1 through 7 on the keypad.

Print RTI (Receive Terminal ID)

This feature lets the machine automatically print the receive terminal ID (if registered), page number, and the date and time of the reception at the bottom of each page on the received document.

1. Press **Setup**.
2. Press **Menu** until ‘Print RTI’ displays.
3. Press **Start** for yes to print RTI, or press **Cancel** for no.

Modem Test

The modem sends various transmit signals on the telephone line. You can check the following:

- FSK
- Tones: 1100Hz, 1650Hz, 1850Hz, 2100Hz
- G3 training: 33600, 31200, 28800, 26400, 21600, 14400, 12000, 9600, 7200, 4800, 2400 bps

1. Press **Setup**.
2. Press **Menu** until ‘Modem Test’ displays.

DTMF Test

This feature lets the user or tester verify that the phone keypad buttons are working correctly.

1. Press **Setup**.
2. Press **Menu** until “DTMF Test” displays.
3. Press **Start**.

To test each button, press each button one at a time. There is a different tone for each button. Each pressed button displays a corresponding number or symbol in the LCD. If any button fails, replace the operator panel.

ROM Test

Display ROM version and checksum.

1. Press **Setup**.
2. Press **Menu** until ‘ROM Test’ displays.
3. Press **Start** or **Setup**.

Modem Speed

Default=33600 bps

Select baud rate of 33600, 28800, 14400, 12000, 9600, 7200, 4800 or 2400 bps. The lower the baud rate, the larger the acceptable error rate. T30 protocol has a fixed speed of 300 bps in the protocol mode. When the TX speed is set to 33600 or 28800 bps, the RX speed is either V.34 V.17 or V.33. When the TX speed is set to 14400 or

12000 bps, the RX speed is either V.17 or V.33. When the TX speed is set to 9600 or 7200 bps, the RX speed is V.29 or V.27. When the TX speed is set to 4800 or 2400 bps, the RX speed is V.27.

1. Press **Setup**.
2. Press **Menu** until 'Modem Speed' displays.
3. Press **Options** to select the TX speed you want. Press **Start** or **Setup**.

Set TX Level

Default=12 dBm

FCC requires that the transmission level be less than -9 dBm. From -9 dBm to -15 dBm is acceptable. You can set the transmission level between 0 and -15 dBm in 1 dBm steps using the operator panel keypad. Accuracy is +0/-3 dBm.

1. Press **Setup**.
2. Press **Menu** until 'Set TX Level' displays.
3. Enter a number from 1 through 15 on the keypad.

Set RX Level

Default=-43 dBm

Reception level may be too low due to cable losses. If set to -43 dBm, reception sensitivity is between 0 and -43 dBm.

1. Press **Setup**.
2. Press **Menu** until 'Set RX Level' displays.
3. Enter a number from 40 through 50 on the keypad.

Pause Time

Default=3 seconds

This sets the length of the pause time from 1 through 9 seconds.

1. Press **Setup**.
2. Press **Menu** until 'Pause Time' displays.
3. Enter a number from 1 through 9 on the keypad.

4. Repair Information

This chapter explains how to make adjustments to the printer and how to remove defective parts.

Note: Read the following before handling electronic parts.

Handling ESD-Sensitive Parts

Many electronic products use parts that are known to be sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive parts, follow the instructions below in addition to all the usual precautions, such as turning off power before removing logic boards:

- Keep the ESD-sensitive part in its original shipping container (a special “ESD bag”) until you are ready to install the part into the machine.
- Make the least-possible movements with your body to prevent an increase of static electricity from clothing fibers, carpets, and furniture.
- Put the ESD wrist strap on your wrist. Connect the wrist band to the system ground point. This discharges any static electricity in your body to the machine.
- Hold the ESD-sensitive part by its edge; do not touch its pins. If you are removing a pluggable module, use the correct tool.
- Do not place the ESD-sensitive part on the machine cover or on a metal table; if you need to put down the ESD-sensitive part for any reason, first put it into its special bag.
- Machine covers and metal tables are electrical grounds. They increase the risk of damage because they make a discharge path from your body through the ESD-sensitive part. (Large metal objects can be discharge paths without being grounded.)
- Prevent ESD-sensitive parts from being accidentally touched by other personnel. Install machine covers when you are not working on the machine, and do not put unprotected ESD-sensitive parts on a table.
- If possible, keep all ESD-sensitive parts in a grounded metal cabinet (case).
- Be extra careful in working with ESD-sensitive parts when cold weather heating is used because low humidity increases static electricity.

Adjustments

The user is directed, in the Printer Control program, to perform the bidirectional alignment adjustments after replacing a print cartridge.

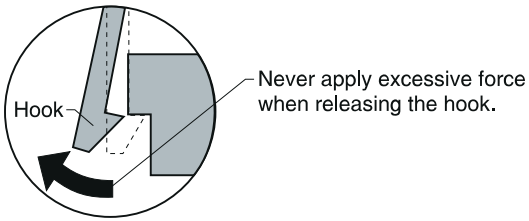
Removal Procedures

The following procedures are arranged according to the name of the printer part discussed.

CAUTION: Unplug the power cord before removing any parts.

Releasing Plastic Latches

Many of the parts are held in place with plastic latches. The latches break easily; release them carefully. To remove such parts, press the hook end of the latch away from the part to which it is latched.



Removals

General Precautions on Removals

When you disassemble and reassemble components, use extreme caution. The close proximity of cables to moving parts makes proper routing a must. If components are removed or replaced, any cables disturbed must be replaced as close as possible to their original positions. Before removing any component from the machine, note the cable routing.

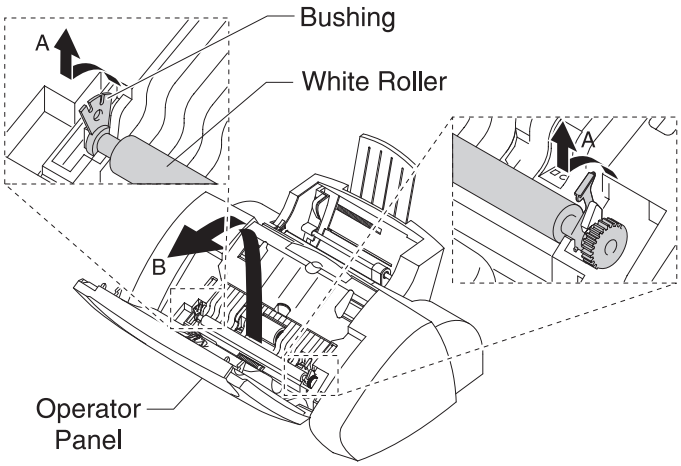
When servicing the machine:

- Check to verify that documents are not stored in memory.
- Move the printer cartridge to far right to cap the nozzle.
- Unplug the power cord.
- Use a flat and clean surface.
- Replace only with authorized components.
- Do not force plastic-material components.
- Make sure all components are in their proper position.

CIS White Roller Assembly Removal

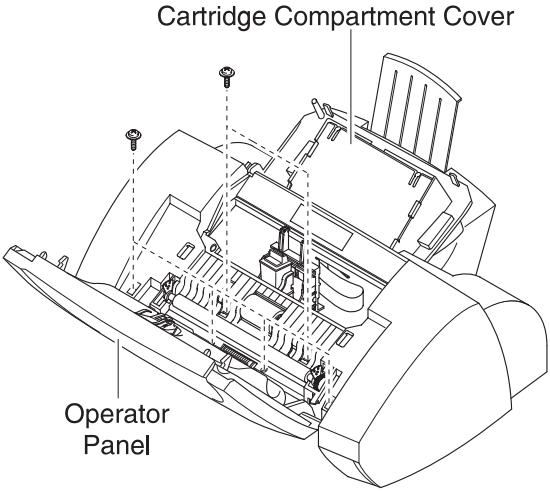
1. Open the operator panel.
2. Push the bushing on both ends of the roller slightly inward, and then rotate it until it reaches the slot as shown. Lift the roller out.

   Note: If the roller is dirty. If dirty, wipe it with a soft cloth dampened with water. If the roller is heavily worn, replace it with a new one.

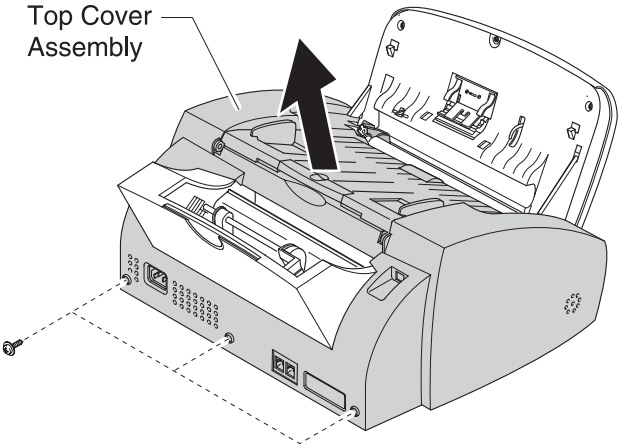


Top Cover Assembly Removal

1. Open the operator panel and open the print cartridge compartment cover. Remove the white roller assembly. Remove the six screws as shown.

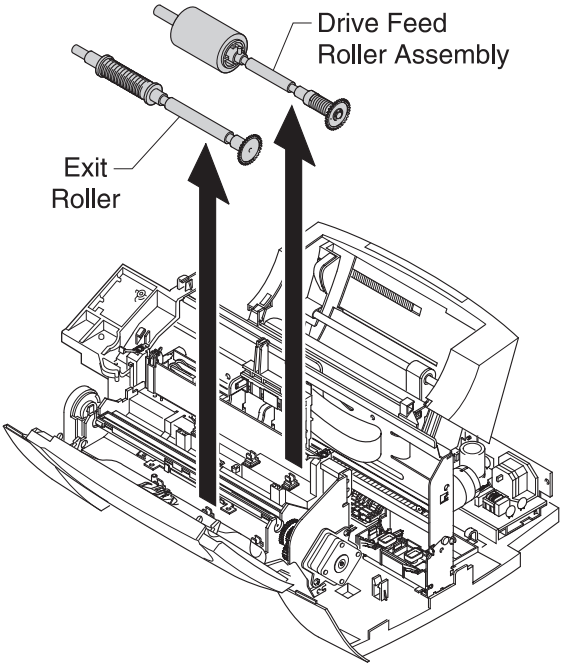


2. Remove the three screws as shown and remove the top cover assembly.



Rollers (Drive Feed Roller Assembly, Exit Shaft) Removal

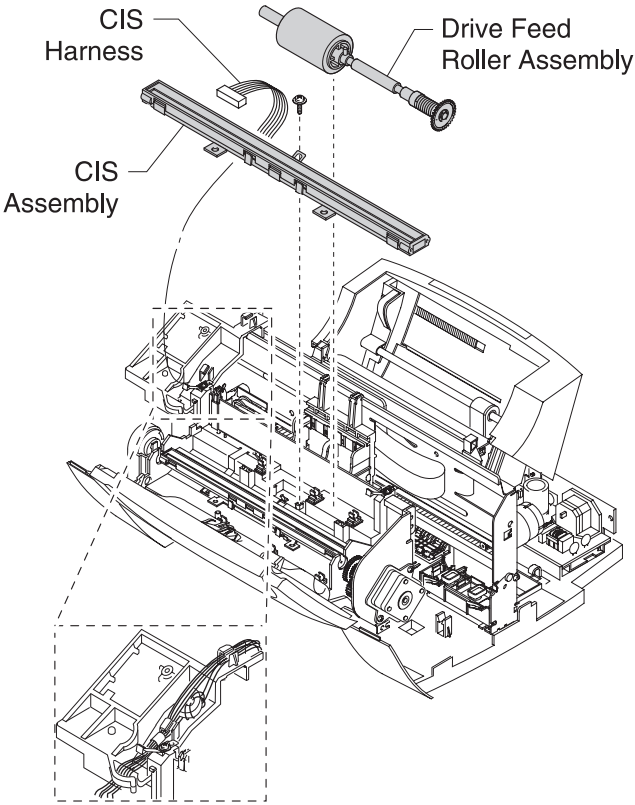
1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Take out the rollers from the base assembly.



Note: Clean the surface of the rollers with ethyl alcohol. After wiping them, you must dry them completely.

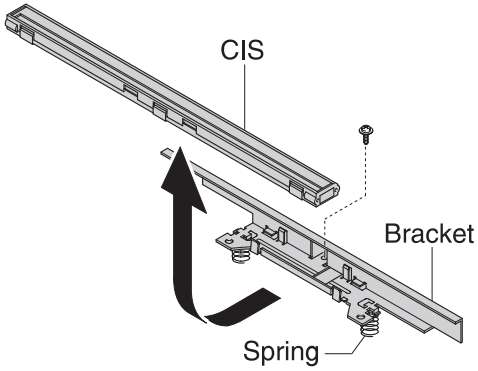
CIS (Contact Image Sensor) Removal

1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Remove the drive feed roller. See **“Rollers (Drive Feed Roller Assembly, Exit Shaft) Removal” on page 4-6**.
3. Remove one screw securing the CIS assembly and unplug the CIS harness. Remove the CIS assembly.



4. Turn the CIS assembly over. Remove one screw to release the CIS from the bracket.

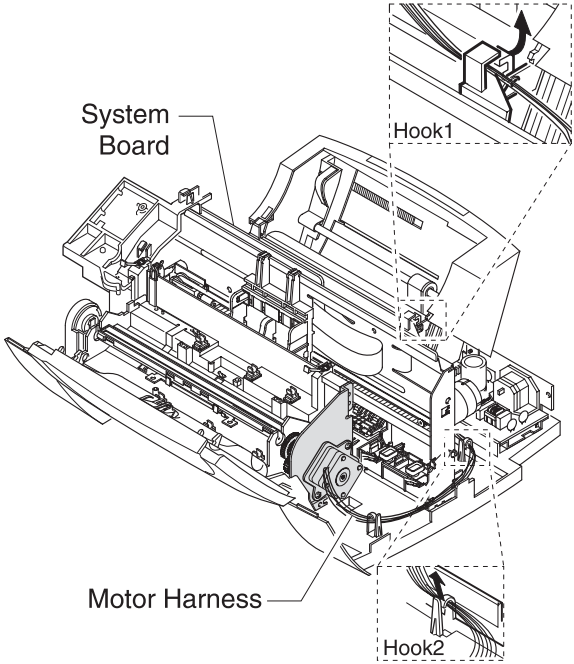
Note: Be careful not to lose the springs.



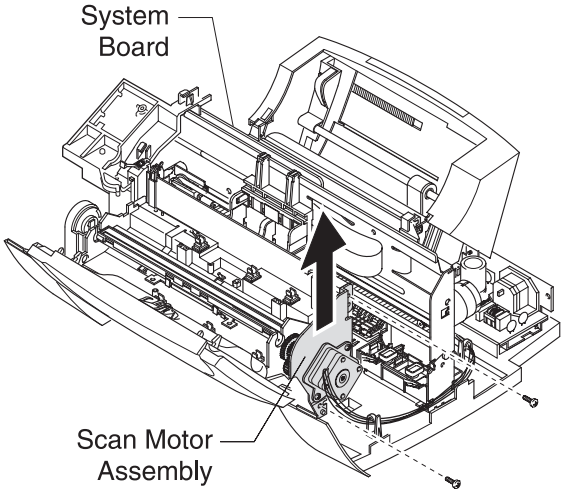
Note: Check the glassy surface of the CIS for any stain or scratch. If stained, wipe off with ethyl alcohol. If it is heavily stained or scratched, replace it.

Scanner Motor with Gear Assembly Removal

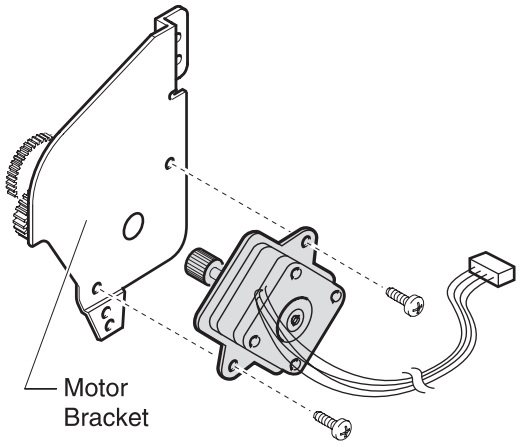
1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Unplug the motor connector from the system board. Make sure the harness is released from hooks securing the harness as shown.



3. Remove two screws as shown and remove the scan motor assembly.

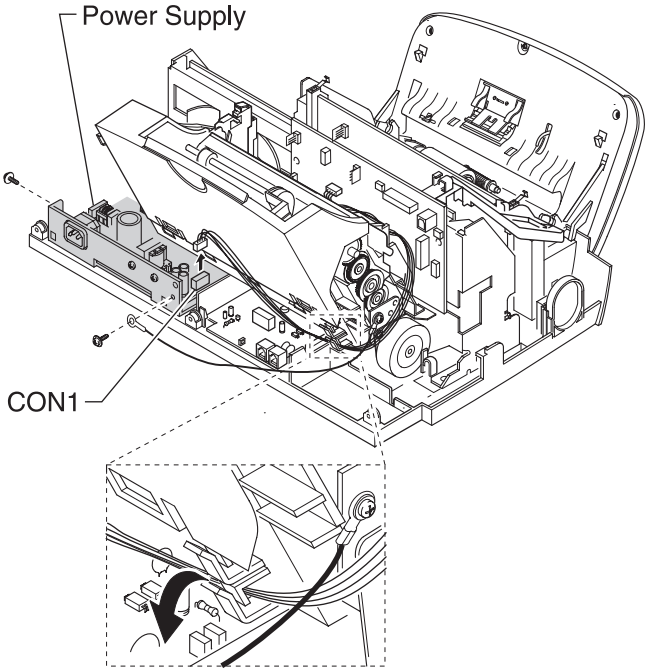


4. Remove the two screws securing the motor to the motor bracket.



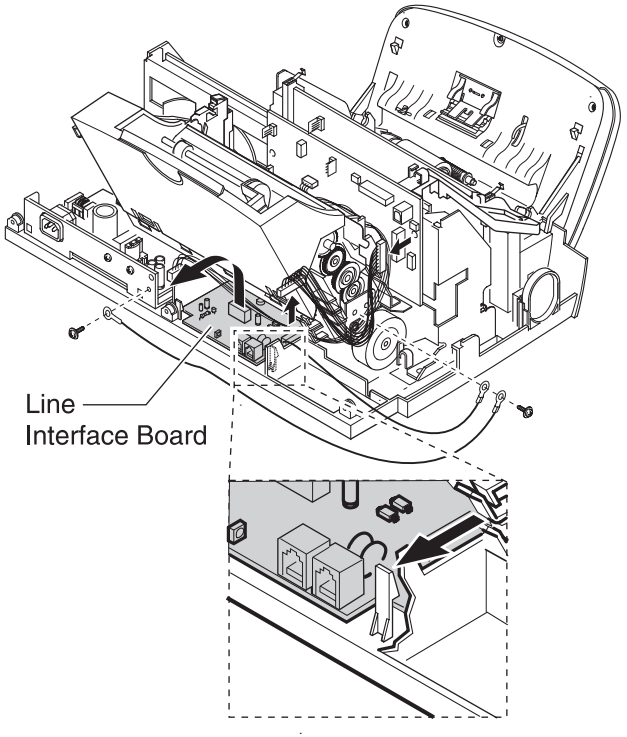
Power Supply Removal

1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Remove screw from left side and the ground wire on the right.
3. Disconnect connector CON1 from power supply.
4. Lift up and remove.



Line Interface Board Removal

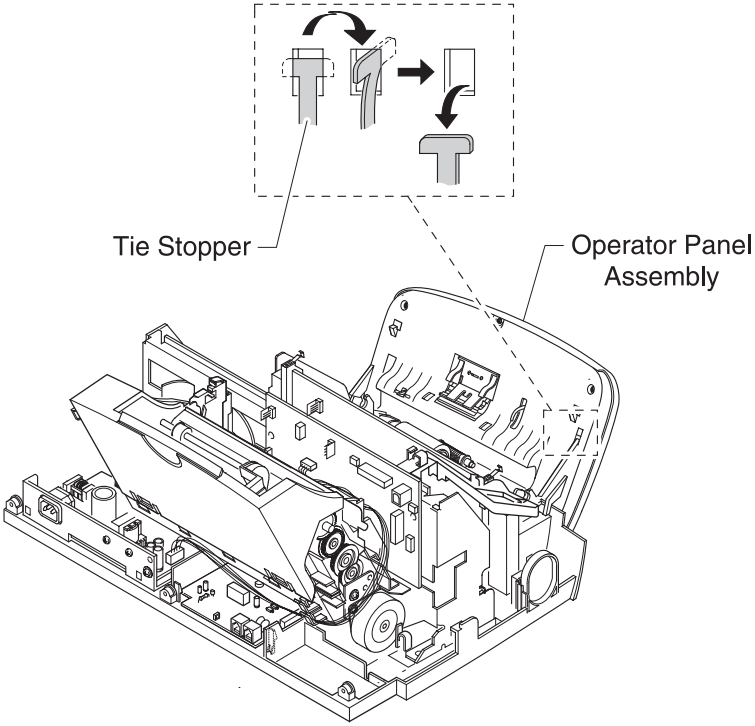
1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Remove the one screw securing the ground wires to the bracket.



3. Unplug the line interface connector from the line interface board.
4. Remove the screw from the ground wire on the power supply.
5. Pull the snaps as shown to unlock the line interface board from the system board. Push up on the line interface board.
6. Unplug all the connectors from the line interface board and remove it.

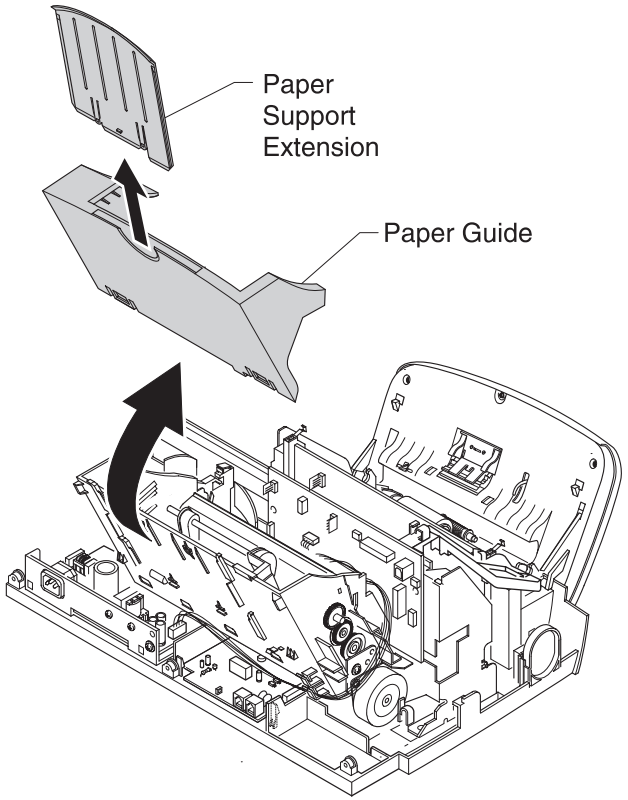
Operator Panel Assembly Removal

1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Disconnect the operator panel cable from the system board.
3. Release harness from harness hook.
4. Remove the two ground strap screws.
5. Turn the tie stopper 90 degrees as shown and remove from operator panel assembly.
6. Release ground strap cable hooks.
7. Release opposite operator panel hinge.



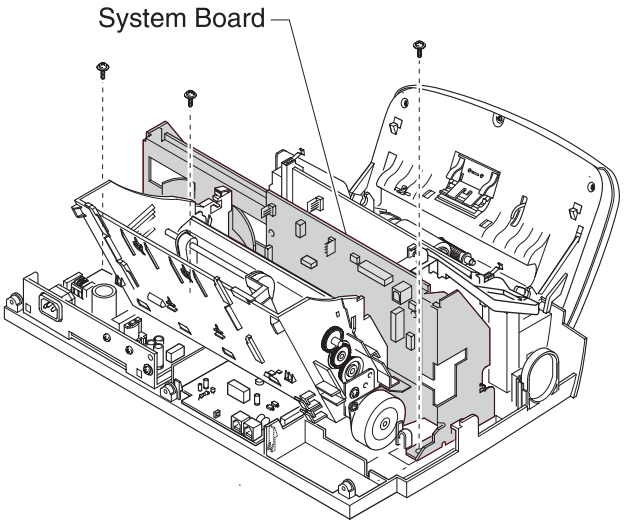
Printer Unit Removal

1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Remove the paper support extension.
3. Release lower paper guide tabs.
4. Release upper paper guide tab.
5. Remove the paper guide.
6. Remove the paper deflector.



7. Remove three screws securing the printer unit, and unplug the eight connectors from the system board. Remove the printer unit.

8. Remove ground strap screw.

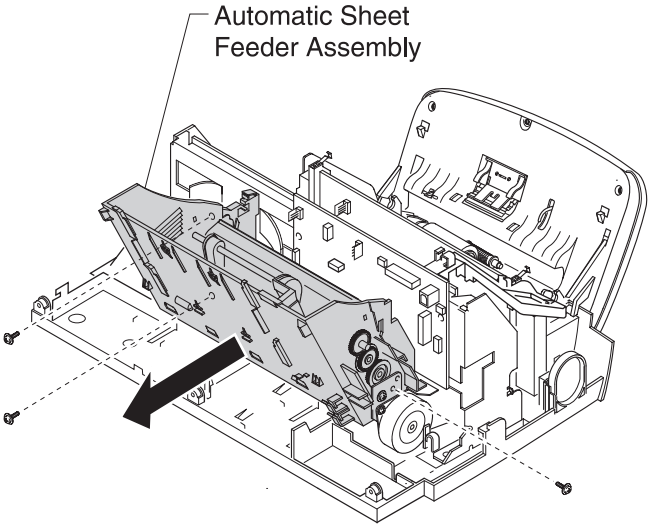


Note: When you reassemble the unit, do not pinch or short the wire harness.

ASF Assembly Removal

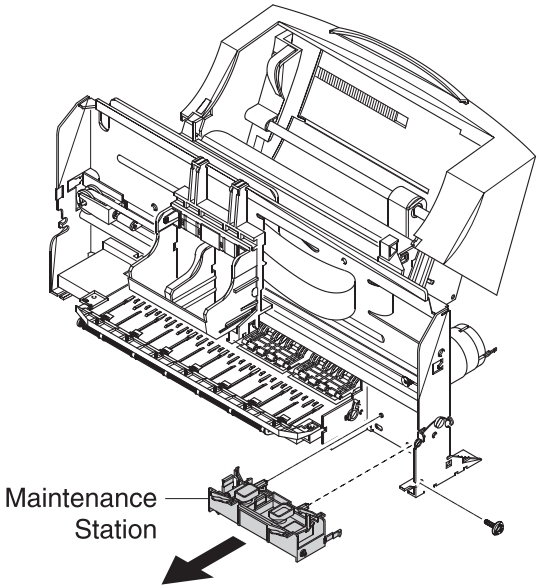
1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Remove paper support extension.
3. Release lower paper guide tabs.
4. Release upper paper guide tab.
5. Remove paper guide.
6. Remove paper deflector.
7. Release cables from guides located on ASF assembly.
8. Remove two screws.
9. Remove power supply. See**“Power Supply Removal” on page 4-11**.
10. Remove the three screws from the ASF assembly.

11. Remove ASF assembly.



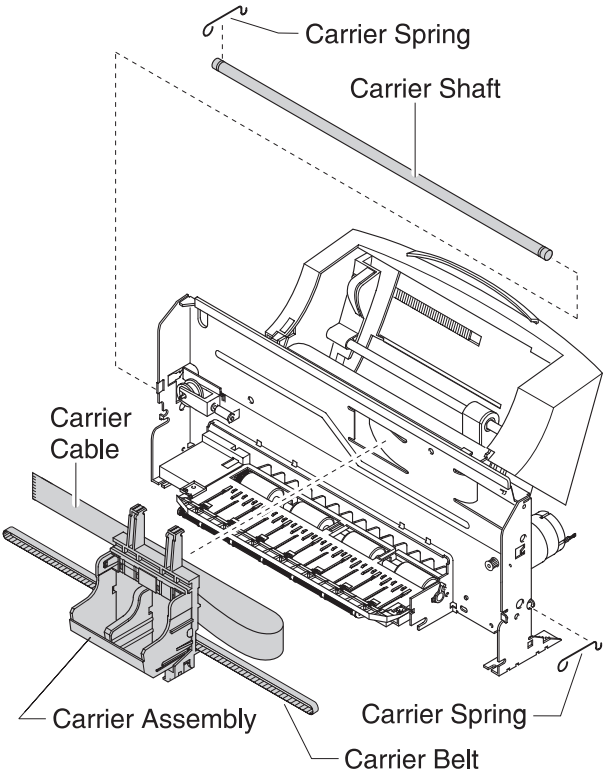
Maintenance Station Removal

1. Remove the printer unit.
2. Remove one screw.
3. Release two tabs from the rear of the maintenance station and remove the maintenance station.



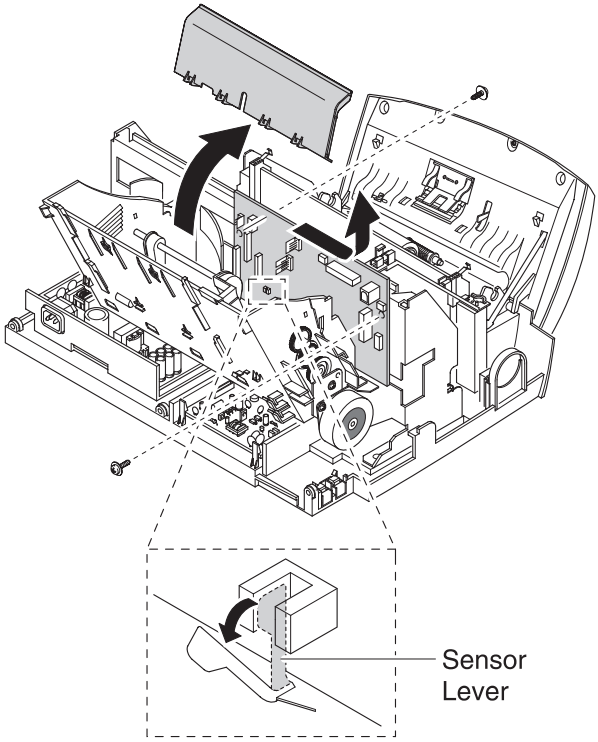
Carrier Assembly with Belt Removal

1. Remove the printer unit. See **“Printer Unit Removal” on page 4-14**.
2. Disconnect the carrier cables from the system board.
3. Release tab on carrier cable guide.
4. Release carrier cable guide from frame.
5. Remove pulley stopper.
6. Depress the belt tensioner and remove the belt from the carrier motor.
7. Remove two carrier springs that secure the shaft.
8. Remove the carrier shaft.
9. Remove the carrier assembly.



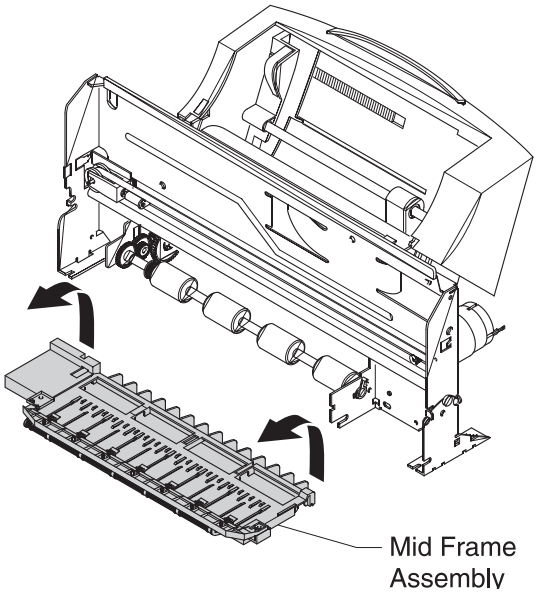
System Board Removal

1. Remove the top cover assembly. See **“Top Cover Assembly Removal” on page 4-5**.
2. Remove two screws securing the system board.
3. Unplug all connectors.
4. Pull the sensor lever toward you and remove the system board.



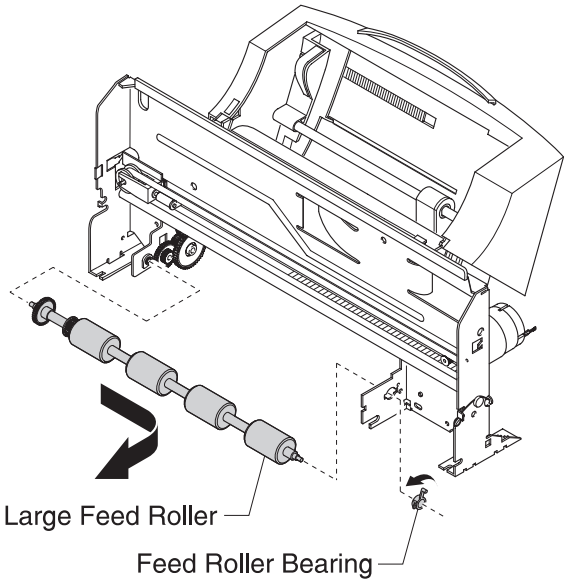
Mid Frame Assembly with Exit Rollers Removal

1. Remove the top cover. See **“Top Cover Assembly Removal” on page 4-5**.
2. Remove the carrier assembly.
3. Remove the maintenance station.
4. Remove the encoder strip.
5. Remove two screws from friction roller assembly.
6. Remove exit roller assembly.
7. Release four springs on small feed roller assembly.
8. Press down and remove each lower portion section of the small feed roller assembly.
9. Release tabs in upper portion of small feed roller assembly.
10. Remove upper portion of small feed roller assembly.
11. Push up on mid frame assembly to release from large feed roller.
12. Remove mid frame assembly.



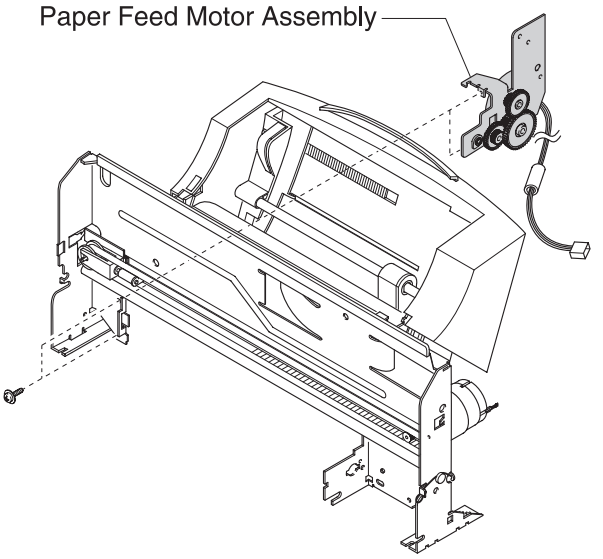
Large Feed Roller Assembly with Gear Removal

1. Remove the printer unit. See **“Printer Unit Removal” on page 4-14**.
2. Remove the mid frame assembly. See **“Mid Frame Assembly with Exit Rollers Removal” on page 4-20**.
3. Remove the maintenance station.
4. Remove the feed roller bearing from the main frame. Pull the feed roller as shown and remove.



Paper Feed Motor Assembly with Gears Removal

1. Remove the printer unit. See **“Printer Unit Removal” on page 4-14**.
2. Remove the large feed roller assembly. See **“Large Feed Roller Assembly with Gear Removal” on page 4-21**.
3. Remove the two screws and remove the paper feed motor assembly.



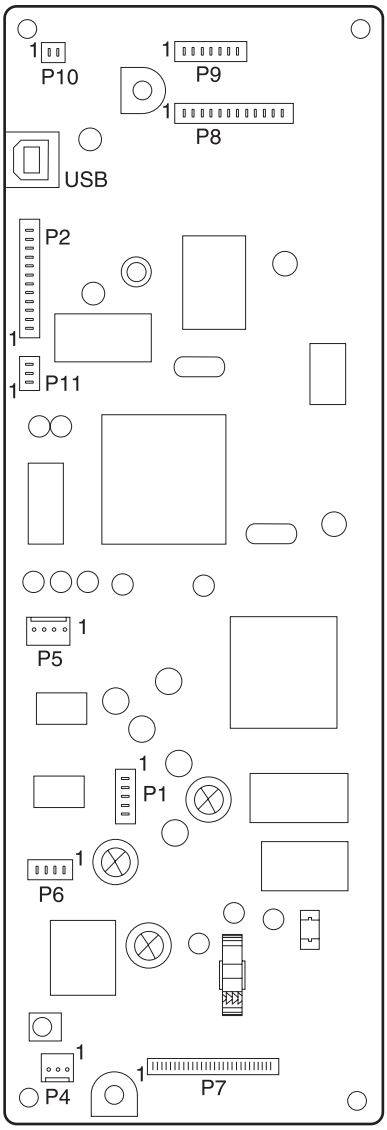
Carrier Transport Motor Removal

1. Remove the top cover assembly. Go to the **“Top Cover Assembly Removal” on page 4-5**.
2. Manually move the carrier to the center of the machine.
3. Remove the idler pulley assembly spring cover retainer.
4. Press the idler pulley and remove the belt from the carrier transport pulley.
5. Disconnect connector (P4) from the system board.
6. Remove the two screws from the carrier transport motor and remove.

5. Connector Locations

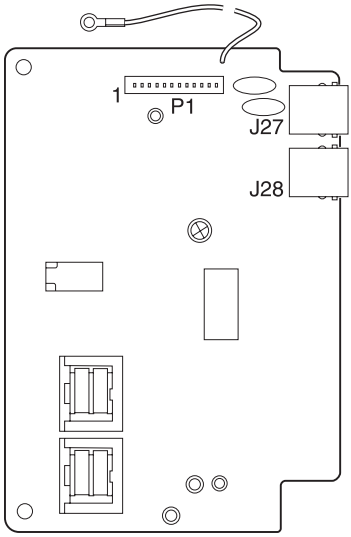
System Board

Units	Description
P1	Power Supply
P2	CIS
P4	Carrier Motor
P5	Paper Feed Motor
P6	Scanner Motor
P7	Carrier Cable
P8	Line Interface Board
P9	Operator Panel
P10	Speaker
P11	Door Switch



Line Interface Board

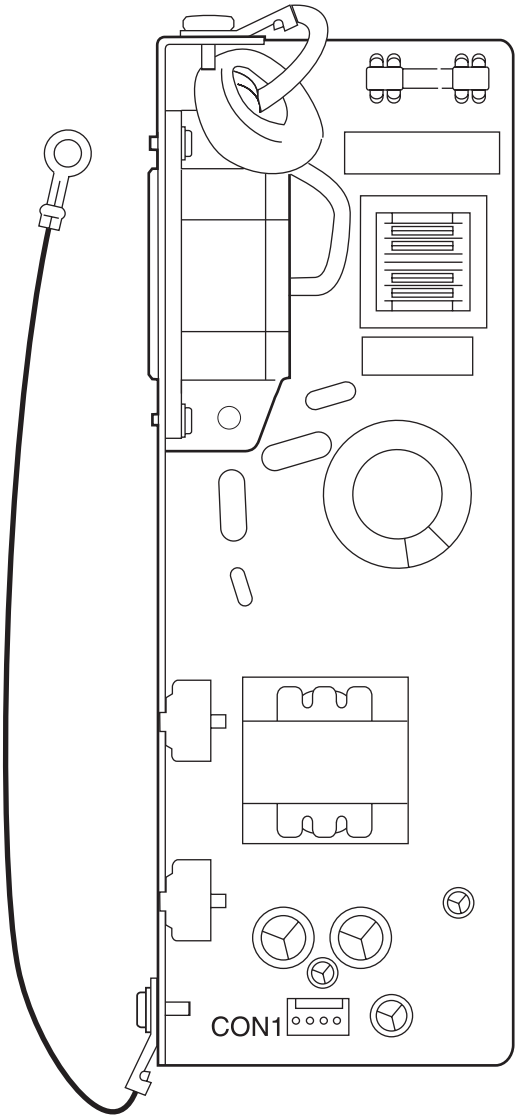
Units	Description
P1	System Board



Logic Board

Power Supply

Units	Description
CON1	System Board



6. Preventive Maintenance

This chapter contains the lubrication specifications. Follow these recommendations to prevent problems and maintain optimum performance.

Lubrication Specifications

Lubricate only when parts are replaced or as needed, not on a scheduled basis. Use grease P/N 99A0394 to lubricate the following:

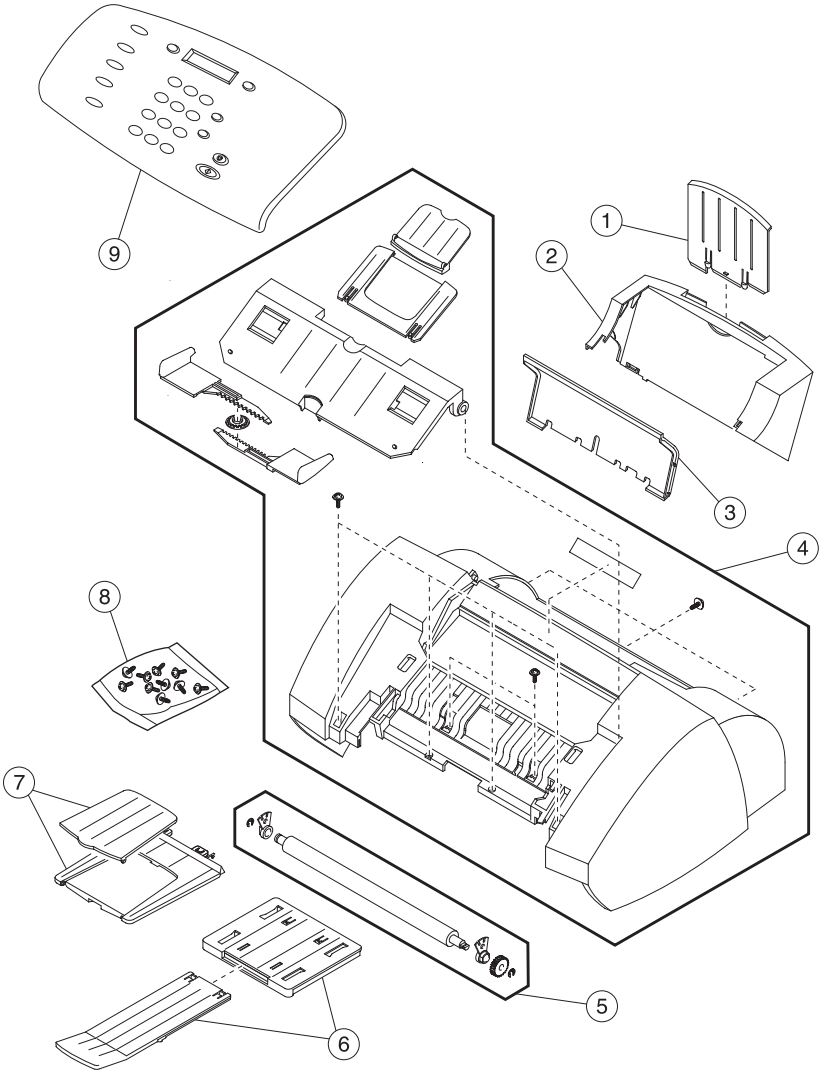
- All gear mounting studs.
- The left and right ends of the large feed roller at the side frames.
- The carrier to carrier frame engagement.
- The carrier guide rod and carrier guide rod bearings.

7. Parts Catalog

How to Use This Parts Catalog

- SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are shown on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.
- NS: (Not Shown) in the Asm-Index column indicates that the part is procurable but is not pictured in the illustration.
- PP: in the parts description column indicates the part is available in the listed parts packet.
- NA: Not available as a FRU.

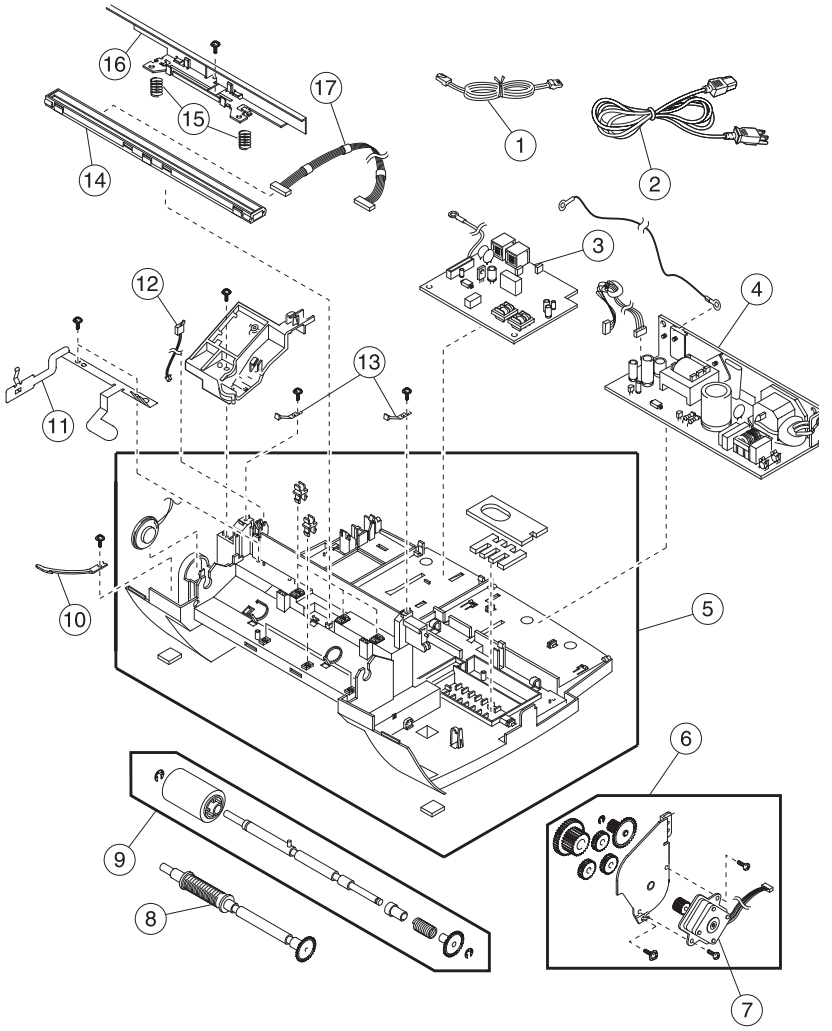
Assembly 1: Main Assembly



Assembly 1: Main Assembly

Asm-Index	Part Number	Units	Description
1-1	NA	1	Support, Paper Extension
2	56P1151	1	Guide, Paper
3	NA	1	Deflector, Paper
4	56P1154	1	Cover, Top Assembly
5	NA	1	CIS White Roller Assembly
6	56P1155	1	Tray, Paper Exit Assembly
7	56P1156	1	Tray, Scan Exit Assembly
8	NA	1	Screw/Rings Parts Packet
9	56P1160	1	Panel, Operator Assembly

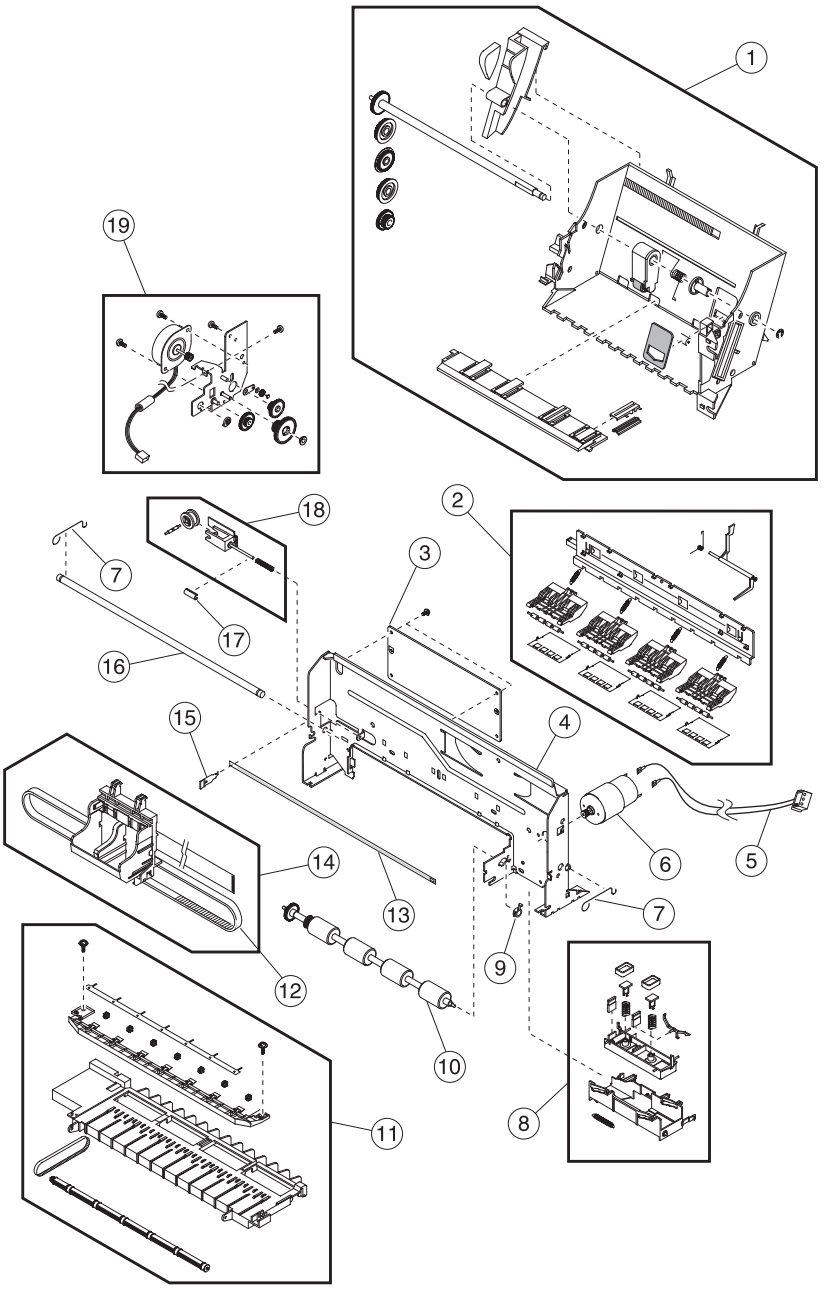
Assembly 2: Base Unit



Assembly 2: Base Unit

Asm-Index	Part Number	Units	Description
2-1	NA	1	Phone Line Cord
2	NA	1	Power Line Cord
3	56P1157	1	Board, Line Interface
3	56P1180	1	Board, Line Interface (EMEA)
3	56P1181	1	Board, Line Interface (Taiwan)
3	56P1182	1	Board, Line Interface (PRC)
4	56P1158	1	Power Supply
5	56P1161	1	Base Assembly
6	56P1164	1	Motor, Scanner with Gear Assembly
7	56P1165	1	Motor, Carrier Assembly
8	NA	1	Shaft, Exit
9	12G6941	1	Drive Feed Roller Assembly
10	NA	1	Strap, Operator Panel Door
11	NA	1	Spring, Ground
12	NA	1	Sensor, Access Door
13	NA	1	Latch, Operator Panel Door
14	56P1162	1	Contact, Image Sensor (CIS)
15	NA	1	Spring, CIS
16	NA	1	IPR-Bracket CIS
17	56P1179	1	Cable CIS

Assembly 3: Engine



Assembly 3: Engine

Asm-Index	Part Number	Units	Description
3-1	56P1167	1	ASF Assembly
2	12G6961	1	Small Feed Roller Assembly with EOF and Springs
3	56P1159	1	System Board
4	NA	1	Main Frame Assembly with Encoder Clip
5	56P1169	1	Cable, Transport Carrier Motor
6	56P1168	1	Motor, Carrier Transport
7	NA	1	Spring, Carrier Shaft Retainer
8	12G6956	1	Maintenance Station Assembly
9	NA	1	Bearing, Feed Roller
10	12G6962	1	Feed Roller, Large with Gear
11	NA	1	Frame, Mid Assembly with Exit Rollers
12	NA	1	Carrier Belt
13	12G6968	1	Strip, Encoder
14	56P1170	1	Carrier Assembly with Belt
15	56P1173	1	Clip, Encoder
16	NA	1	Shaft, Carrier
17	NA	1	Stopper Pulley
18	12G6958	1	Pulley, Idle Assembly
19	12G6963	1	Motor, Paper Feed Assembly with Gears

Index

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Part Numbers