



Service Manual

Medley™

4012-0XX

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Preface

This manual 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 the symptom table 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. **Parts and Test Point Locations** uses illustrations to identify the major components and test points on the printer.
6. **Preventive Maintenance** contains recommendations to help prevent problems and maintain optimum performance.
7. **Parts Catalog** contains illustrations and part numbers for individual FRUs.

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- The maintenance information for this product has been prepared for use by a professional service person and is not intended to be used by others.
- There may be an increased risk of electric shock and personal injury during disassembly and servicing of this product. Professional service personnel should understand this and take necessary precautions.
- The safety features of some parts may not always be obvious. Therefore, replacement parts must have the identical or equivalent characteristics as the original parts.

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- Les normes de securite de certaines pieces n'etant pas toujours explicites, les pieces de rechange doivent etre identiques ou conformes aux caracteristiques des pieces d'origine.

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Chinese Safety Information

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- 有些零件的安全功能有时可能不明显。因此，替换零件的特性一定要与原有的零件一致。

Korean Safety Information

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General Information

This manual is used to service the Lexmark Medley 4012. Medley is a multifunction product which can connect to an IBM-compatible personal computer. It acts as an all-in-one color-capable printer, G3 fax machine, scanner, and convenience copier. It will send and receive faxes, scan documents, print from the PC, and make convenience copies. It uses 300 x 300 pels per inch inkjet technology for high quality text and graphics. Print Quality Enhancement Technology (PQET) smooths the edges of lines and characters.

Medley uses the same black or color print cartridges as the IBM ExecJet II and ExecJet IIc by Lexmark.

Medley uses a 300 x 300 dpi scanner for fast, high quality scanning, personal copying, and faxing. Scanning software for the PC is included with the Medley.

There are three models: Medley 4c (4012-005) which does not include a handset, Medley 4x (4012-006) which does include a handset, and the Medley 4sx (4012-009) which is the same as the 4x but is shipped standard with the battery backup. Other than in the Parts Catalog, there are no service differences.

All models can handle a variety of paper sizes as well as envelopes and other media using an integrated automatic sheet feed and manual feed.

The machine contains the following circuit boards:

- Fax Board—controls the scanner and most of the machine's functions
- Printer Board—runs the printer motors, sensors, and printhead
- Line Connect Unit (LCU) Board—printer parallel port and telephone connections
- Operator Panel Board

Options

The following options are available. Contact your point of purchase for options available in your country.

- 1MB Memory Expansion
- 3MB Memory Expansion
- Battery Backup (standard on Medley 4sx)

Maintenance Approach

The diagnostic information in this manual leads you to the correct field replaceable unit (FRU) or part. Use the error code charts, symptom table, service checks, and diagnostic aids to determine the symptom and repair the failure.

Medley can be serviced without being connected to a host computer.

After you complete the repair, perform tests as needed to verify the repair.

Abbreviations

CCD	Charge Coupled Device
CE	Customer Engineer
CSU	Customer Setup
DRAM	Dynamic Random Access Memory
ESD	Electrostatic Discharge
FRU	Field Replaceable Unit
G3	Group 3 (Digital Facsimile Protocol)
LCD	Liquid Crystal Display
LCU	Line Connect Unit
LED	Light-Emitting Diode
NVRAM	Nonvolatile Random Access Memory
OEM	Original Equipment Manufacturer
PCA	Printed Circuit Assemblies
PICS	Problem Isolation Charts
PIXEL	Picture Element
POST	Power-On Self Test
PQET	Print Quality Enhancement Technology
SRAM	Static Random Access Memory
UPR	Used Parts Replacement
V ac	Volts alternating current
V dc	Volts direct current
ZIF	Zero Insertion Force

Diagnostic Information

Use the symptom table and service checks in this chapter to determine the failing part in a malfunctioning machine.

Symptom Table

Symptom	Action
Printer Code 1,4	Replace the printer board EPROM; if necessary replace the printer board.
Printer Code 1,6	Go to "Transport Service Check" on page 21.
Printer Code 1,8	Replace the printer board EPROM; if necessary replace the printer board.
Printer Code 1,10	Go to "Maintenance Station Service Check" on page 9.
Printer Code 1,12	Replace the printer board EPROM; if necessary replace the printer board.
Printer Code 1,14	Go to "Maintenance Station Service Check" on page 9.
Printer Code 3,4	Go to "Transport Service Check" on page 21.
Printer Code 3,8	Go to "Transport Service Check" on page 21.
Printer Code 9,2	Replace the printer board EPROM; if necessary replace the printer board.
Printer Code 9,4	Go to "Transport Service Check" on page 21.
Power Problem No LEDs or LCD pixels light up during POR, no machine activity:	Go to "Power Service Check" on page 11.
Maintenance Station Problem Maintenance station does not move, or fails to clean or cap the printhead:	Go to "Maintenance Station Service Check" on page 9.
Carrier Transport Problem No carrier movement, slow carrier movement, carrier stops:	Go to "Transport Service Check" on page 21.
Operator Panel Problem Incorrect or no lit LEDs or LCD display, or buttons do not work properly:	Go to "Operator Panel Service Check" on page 10.

Symptom	Action
<p>Printer paper feed, misfeed, or jam problem Paper fails to stop at first print line:</p> <p>Envelopes fail to feed:</p> <p>Paper misfeeds, multifeeds, jams, picks but fails to feed, or fails to exit:</p> <p>Paper skews:</p>	<p>Go to “First Print Line Service Check” on page 8.</p> <p>Go to “Envelope Feed Service Check” on page 8.</p> <p>Go to “Printer Paper Feed Service Check” on page 12.</p> <p>Go to “Printer Paper Path Service Check” on page 15.</p>
<p>Scanner paper feed, misfeed, or jam problem</p>	<p>Go to “Scanner Document Feed Service Check” on page 19.</p>
<p>Printing Problem Test prints, faxes, or printer jobs do not print correctly (not a print quality problem).</p>	<p>Go to “Printing Problem Service Check” on page 18.</p>
<p>Print Quality Problem Test prints, faxes, and printer jobs print but output has voids or uneven density or is fuzzy, smudged, or faint.</p>	<p>Go to “Print Quality Service Check” on page 16.</p>
<p>Scanning Problem No scanned image or incorrect scanned image:</p>	<p>Go to “Scanner Service Check” on page 20.</p>
<p>Communications Problem Cannot send fax, cannot receive fax, or cannot connect with remote machine:</p>	<p>Go to “Communications Service Check” on page 7.</p>

Service Checks

Communications Service Check

	FRU	Action
1	Fax or LCU Card Cannot make telephone connection to other fax machine.	<p>No dialtone Verify correct dialing method (tone or pulse). TEL and LINE connections reversed. Verify phone number and availability of other fax machine.</p> <p>Turn Call Monitoring on and listen to the speaker during dial. You should hear the ring and a 0.5 second 1000Hz calling tone from your machine, a 1 second pause, then the 3 second 2100Hz fax response tone and a 1650Hz-1850Hz "warbling" handshaking tone from the called machine.</p> <p>Check the connections of LCU card J2 to fax card J11. If the problem still exists, replace the LCU board, and then if necessary, the fax board.</p>
2	Cannot receive faxes.	<p>Machine not set for auto-answer. TEL and LINE connections reversed. A telephone on the same line is already off-hook. Machine connected to the wrong telephone line. Damaged telephone line to machine. Check memory; faxes received during paper jams are stored and printed after jam is cleared. Make sure "Receive into memory" is set to No. If handshaking between fax machines can be established, the LCU board should be OK. If necessary, replace the fax board.</p>

Envelope Feed Service Check

	FRU	Action
1	Envelope Loading	<p>Be sure the envelope guides have been turned to the envelope load positions.</p> <p>Be sure the envelope guides are against the envelopes.</p> <p>Go to and perform the "Printer Paper Feed Service Check" on page 12.</p>

First Print Line Service Check

	FRU	Action
1	Printer End-of-Forms Flag	Check the flag for binds or damage.
2	Printer End-of-Forms Sensor	Check the sensor for dirt.
3	Printer Board	Check the End-of-Forms sensor, measure the voltage at pin 2 of U28 on the printer board. The voltage should change from 0 to 5 V dc as you block and unblock the End-of-Forms sensor S1.
4	Feed Arm Assembly	Check all parts of the feed arm assembly for binds, wear, or damage.
5	Software Setting	Use Toolkit, one of the setup programs installed on the PC, to adjust the Top of Form setting.
6	Operator Panel	Go to "Operator Panel Service Check" on page 10.

Maintenance Station Service Check

The maintenance station has two functions:

1. Cleans the printhead nozzles during the print operation.
2. Seals the printhead when it is not being used to prevent the nozzles from drying.

	FRU	Action
1	Maintenance Drive Assembly	<p>Warning: Disconnecting the maintenance motor while the machine is plugged in can damage the printer board. Voltage is present on the board even with the power switch off.</p> <p>Disconnect J4 from the printer board. Check for 18 ohms (± 4 ohms) between pins 1 and 2 at the motor. If the reading is incorrect, replace the maintenance drive assembly.</p> <p>Check for motor pins shorted to the motor housing. If you find a shorted pin, replace the maintenance drive assembly. If the symptom remains, replace the printer board.</p> <p>A bind in the drive assembly can prevent the motor from turning. Check for binds and loose or worn parts in the drive assembly. Also check the motor gear.</p>
2	Printer Board	Turn the machine off and disconnect J4 from the printer board. Turn the machine on and check for a pulse of 15 V dc between J4-1 and ground on the system board as the printer goes through POST.
3	Maintenance Rocker Asm	Check for binds or wear.
4	Wiper	A worn wiper causes degraded print quality just after a maintenance cleaning. Check for loose or worn wiper.
5	Cap	A worn cap causes the printhead nozzles to dry and clog. Check for loose or worn cap.

Note: If the failure remains, replace the printer board.

Operator Panel Service Check

	FRU	Action
1	Power Supply	<p>Disconnect J2 from the fax board and check the following voltages on the power supply cable:</p> <p>J2-1 to GND = +5 V dc J2-3 to GND = +34 V dc</p> <p>If you do not have correct voltage, replace the power supply. Be sure to unplug the machine before you reconnect the power supply to the fax board.</p>
2	Operator Panel Board Operator Panel Cable	<p>Perform the Operator Panel Test; see "Operator Panel Test" on page 24.</p> <p>If some of the buttons do not work, check the contacts on the back of the keypads and the surface of the lands on the operator panel board. Replace the keypads as necessary. Check the continuity of the operator panel cable before replacing the operator panel board.</p>
3	Fax Board	<p>Turn the printer on. Check for +5 V dc at J4-3 on the fax board.</p>

Power Service Check

The operator panel power key does not control line power. With the machine turned off the power supply is still active and there is voltage to both the fax and printer boards. To remove power you must unplug the machine.

	FRU	Action
1	Power Supply	<p>Disconnect J2 from the fax board, J11 from the printer board and check the following voltages on both power supply cables:</p> <p>Pin-1 to GND = +5 V dc Pin-3 to GND = +34 V dc</p> <p>If you do not have correct voltage, replace the power supply. Be sure to unplug the machine before you reconnect the power supply to the boards.</p>
2	Printhead Cable Parallel Cable	<p>Unplug the machine. Disconnect one of the listed components and plug in the machine. Look for a symptom change. Check the failing part for shorts and replace as necessary. Repeat this procedure for the remaining listed parts.</p>
3	Printer Board	<p>Disconnect the fax board from the printer board. Run the Print Engine Test. If the test does not run and there are no mechanical problems, replace the printer board.</p>
4	Fax Board	<p>Check for +5 V dc at the fax board J9-4, and check for +34 V dc at J9-2. If the voltages are incorrect replace the fax board.</p>

Printer Paper Feed Service Check

If your machine does not have paper jam problems, go on to the service check. If your machine does have a paper jam problem, examine it for the following before you begin the service check.

- Check the entire paper path for obstructions.
- Make sure there is not too much paper in the Automatic Sheet Feed (150 sheets or less depending on the thickness).
- Make sure the correct type of paper is in the machine.
- Check for static in the paper.
- Make sure the rear of the carrier guide is on top of the paper guide.

	FRU	Action
1	Printer Board	With J5 disconnected and power on, check for +24 V dc between J5-3 and ground, and between J5-4 and ground on the printer board. If the voltage is not present, check for motor pins shorted to the motor housing. If you find a shorted pin, replace the motor. If you still have a failure after replacing the motor, replace the printer board.

	FRU	Action
2	Paper Feed Motor	<p>A noisy or chattering motor or a motor that fails to turn, can be caused by:</p> <ul style="list-style-type: none"> • An open or short in the motor • An open or short in the motor driver on the printer board • A bind in the paper feed mechanism <p>Warning: Disconnecting the paper feed motor while the machine is plugged in can damage the printer board. Voltage is present on the board even with the power switch off.</p> <p>Check for 100 ohms (± 20 ohms) between the following pins on the motor:</p> <p>Pin 1 to Pin 4 Pin 2 to Pin 4 Pin 3 to Pin 5 Pin 3 to Pin 6.</p> <p>If the readings are incorrect, replace the motor. Check for motor pins shorted to the motor housing. If you find a shorted pin, replace the motor. If the failure remains, replace the printer board.</p> <p>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 printer board.</p> <p>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 loose or worn motor gears.</p>
3	Gears	<p>Check for binds in the gear train and paper feed mechanism. To do this, rotate the largest gear by hand. If you notice a bind, isolate it by removing the small idler gear on the outside of the right side plate and rotate the gears again. Replace any worn or binding gears, rollers, or bearings.</p>

	FRU	Action
4	Feed Arm Assembly	At the beginning of the paper feed operation, the paper feed motor reverses momentarily to allow the feed arm pawl to drop off the home position notch in the ASF side plate. If the pawl fails to drop off the notch, check the feed arm assembly for binds, and worn or broken parts.
5	Auto Sheet Feed (ASF)	Check the following for wear or damage: <ul style="list-style-type: none"> • Pick Rollers • Envelope Bucklers • All parts inside the left and right edge guides.
6	End-of-Forms Flag	Check for binds or damage.
7	Star Rollers	Check for worn or binding rollers. Check for broken star roller springs.
8	Ejectors	After the paper exits from the exit rollers, the paper feed motor reverses causing the feed arm pawl to restore to the home position in the ASF side plate. At the same time, the paper ejectors move the last sheet of paper into the exit tray. If the ejectors do not move or restore, check them for worn, loose, or broken parts; also check for interference with the front cover.


Printer 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 paper guides are not worn or broken and are positioned against the paper without binding or buckling the paper.
- Be sure the correct type of paper is in the machine.
- Be sure the rear of the carrier guide is on top of the paper guide.

	FRU	Action
1	Large and Small Feed Rollers	Check for wear and binds.
2	Large Feed Roller Springs	Check for damage.
3	Auto Sheet Feed (ASF)	<p>Check for equal pressure between the left and right pick rolls and their pads; this can be caused by the paper load shaft gears being misaligned by one tooth in the ASF frame.</p> <p>Check the following for wear or damage:</p> <ul style="list-style-type: none"> • Envelope Bucklers • All parts inside the left and right edge guides.
4	End-of-Forms Flag	Check for binds or damage.
5	Exit Roller	Check for wear or binds.
6	Star Rollers	Check for wear or binds. Check for broken star roller springs.
7	Ejectors	<p>Check the front cover; if it is installed incorrectly it can interfere with the ejectors. Make sure the front bottom cover is installed correctly. If the front bottom cover is not installed correctly, the ejectors can hang on the cover possibly causing severe paper jams.</p> <p>After the paper exits from the exit rollers, the paper feed motor reverses causing the feed arm pawl to restore to the home position in the ASF side plate. At the same time, the paper ejectors move the last sheet of paper into the exit tray. If the ejectors do not restore, check them for worn, loose, or broken parts.</p>

Print Quality Service Check

	FRU	Action
1	Print Cartridge	Be sure the machine has a known good print cartridge.
2	Printhead Carrier Assembly	Reseat the printhead cables in the printer board and check the following parts for wear or damage: <ul style="list-style-type: none"> • Print Cartridge Latch • Latch Spring • Carrier
3	Printer Board Printhead Cable Rubber Backer	<p>Perform the "Purge Test" on page 25. Look for a break in the diagonal line at the bottom of the test pattern. A broken line indicates one or more print nozzles are clogged. Run the test again to verify the failure. If there are even breaks in the diagonal line similar to the pattern shown below, replace the printer board.</p>  <p>If there is a single break or random breaks in the diagonal line check the following:</p> <p>Check the gold-plated contacts on the end of the cable that connects to the carrier for dirt and wear. Use only a clean dry cloth to clean the contacts. Also check the cable for damage. You may need to remove the cable from the carrier to inspect it.</p> <p>A worn rubber backer will result in poor contact between the printhead cable and the print cartridge. Check the rubber backer for wear.</p>
4	Maintenance Station	Intermittent nozzle failures can be caused by worn parts in the maintenance station. Go to and perform the "Maintenance Station Service Check" on page 9, then return to this check.

	FRU	Action
5	Paper Feed	<p>Ink smudging and smearing can be caused by paper problems or problems in the paper feed area. Check the following:</p> <ul style="list-style-type: none"> • Correct type of paper is in the machine. Also check the paper for curl and wrinkles. • Feed roller for wear, dirt, or looseness. • Gears for wear or binds. • Paper path for obstructions. • Star rollers for binds or dirt. The exit roller and star rollers keep tension on the paper by moving slightly faster than the feed rollers. A binding star roller can put vertical marks on the paper. • Subframe is properly snapped into position.
6	Transport	<p>Blurred print and voids can be caused by problems in the transport area. Check the following:</p> <ul style="list-style-type: none"> • Transport belt for wear. • Carrier guide and carrier guide rod for wear or dirt. • Idler pulley parts for wear, damage, or looseness. • Encoder strip for wear or dirt. • Subframe is properly snapped into position.
7	Bidirectional Alignment	<p>Uneven vertical lines can be adjusted by performing the “Bidirectional Alignment Adjustment” on page 29.</p>

Printing Problem Service Check

If test prints, faxes, or printer jobs do not print correctly (not a print quality problem), run the Print Engine Test.

	FRU	Action
1	Machine does not start the test:	Make sure all the pins of connector J7 are shorted together and try to run the test again. If the test still does not start, go to "Power Service Check" on page 11 .
2	The machine responds but does not complete the test:	Refer to the appropriate service check for the symptom.
3	The tests prints correctly:	There is a problem with the print job, the parallel cable, the LCU board, the fax board, the fax/LCU cables, or the printer/fax cable. Check the cables and their continuity. If no problem is found, replace the fax board and then the LCU board.

Scanner Document Feed Service Check

Before beginning service, examine the following:

- Are the pages damaged or dog-eared, are pages stuck together?
- Is the paper being fed too thin (less than 16 lb paper), or too thick (greater than 24 lb paper)?
- Are the pages too small to feed properly?
- Too many pages being fed (greater than 20)?
- Are the scanner entry guides set properly?
- Are both sides of the scanner front frame latched?

The scanner document feeder can be checked using the [“Scanner Feed Test”](#) on page 25.

	FRU	Action
1	Feed Rollers & Restraint Pad	Check for dirty, worn, or damaged rollers. Make sure the restraint pad and its spring are in good condition. Make sure the pick springs and all roller springs are undamaged. Refer to “Scanner Cleaning Procedure” on page 55.
2	Paper Sensors	The operator panel message should change when a document is fed into the scanner. Check for fax board J6-3 to change from 0 V dc to +5 V dc as the entry sensor flag is toggled. Check for fax board J6-6 to change from 0 V dc to +5 V dc as the second sensor flag is toggled.
3	Motor	Fax board J3-5 and J3-6 should have +15 V dc. Warning: Disconnecting scanner motor while the machine is plugged in can damage the fax board. Voltage is present on the board even with the power switch off. Unplug the machine before proceeding. Disconnect the motor from the fax board. Motor pins 1 through 4 should not have continuity to each other or to ground.
4	Gear Train	Inspect the gear teeth for damage. Rotate the gear train to check for binds.
5	Fax Board or Connections	Check scanner motor (J3) and paper sensor (J6) cable connections to fax board.

Scanner Service Check

	FRU	Action
1	LED Array	A failed LED array results in either black or very dark output. If a single LED fails, the output will have a black or dark vertical fuzzy stripe. The voltage at fax board J7-3 should be +12 V dc during a scan. Replace the array if the voltage is correct.
2	Scanner and Fax Board	<p>If there is no image (all white image), check the connection of the scanner data cable to both the scanner (J1) and the fax board (J8). A scanner CCD unit failure results in either a white image, a black image, or an image with one or more thin vertical black lines. Replace the scanner CCD unit.</p> <p>It is not possible to be certain whether an all-black or all-white scan failure is due to the CCD unit or the fax board. In general, if the machine performs non-scanning functions involving the fax board (for example, receiving a fax, exchanging stored data with the PC, or accepting data entered from the operator panel) the fax board is probably OK. If replacing the CCD unit does not correct the problem, reinstall the old CCD unit and replace the fax board.</p>
3	PC Scanner Software	If the machine sends faxes properly but does not create a scanned image file on the PC, there is a problem with the PC scanner software installation or configuration.

Transport Service Check

	FRU	Action
1	Transport Motor	<p>Check the motor for binds, or loose motor pulley.</p> <p>Warning: Disconnecting the transport motor while the machine is plugged in can damage the printer board. Voltage is present on the board even with the power switch off. Unplug the machine before proceeding.</p> <p>Disconnect the transport motor (J6) from the printer board. Check for 8 to 18 ohms between pins 1 and 2 on the motor cable. If the reading is incorrect, replace the motor.</p> <p>Check for motor pins shorted to the motor housing. If you find a pin shorted to the housing, replace the motor. If the failure remains, replace the printer board.</p>
2	Printer Board	<p>Unplug the machine and disconnect J6 from the printer board. Plug the machine in and check for a pulse of 3 to 5 V dc between J6-1 and ground and between J6-2 and ground on the printer board as the machine goes through POST.</p>
3	Transport Belt Carrier Guide or Guide Rod Idler Pulley Parts Cable Clip	<p>Check for worn, loose or broken parts. Clean the carrier guide rod. Do not lubricate the rod or the carrier rod bearings. Check for obstructions blocking carrier movement.</p>
4	Encoder Strip	<p>Check for wear and dirt.</p>
5	Printhead Cables	<p>Be sure the printer board connectors J1 and J2 are fully seated. Check the cables for damage.</p>
6	Maintenance Station	<p>A problem with the maintenance station can cause carrier movement problems at the right margin: Go to the "Maintenance Station Service Check" on page 9.</p>

Diagnostic Aids

Call Monitoring

Call Monitoring plays tones during the call connection. This is helpful in diagnosing communication problems.

To invoke this aid, press Setup, then select SPK. Press an arrow key to turn the speaker on or off, press OK to save the setting and then press Stop.

Error Report

When a fax transmission cannot be completed, the machine prints an Error Report. This is useful in determining whether service is required to correct the communication problem.

Frame Service Position

For ease of access to the electronic boards, the frame can be pivoted out of the way without being removed. Remove the covers. Disconnect the cables from the frame on the right side of the printer and fax boards. Unsnap the right front and right rear frame supports from the machine base. Pivot the printer frame up 90° on the left feet.

Hex Print Mode

Perform this test with a black print cartridge installed. Use hex mode to help evaluate data stream problems. All data (including both control and character data) print in hexadecimal digits instead of ASCII.

To activate, press Setup, then select PRT. Use the right arrow to move the cursor to Diag and press OK. Select HEX. Then send the PC job to be printed in hexadecimal.

Press Stop to return to ASCII mode, and press Stop again to exit from the service menus.

Machine Checkout

Use the standard functions of the machine to verify the correct operation of its subsystems. Copying a document confirms that the scanner and the printer engine is working. Sending a fax verifies that the scanner and the telephone connection are OK. Printing a job from the PC verifies that the parallel port and the print engine are OK. Receiving a fax to memory confirms that the telephone connection and the memory on the fax board are good.

Memory Test

Use the Memory Test for testing both system memory and document memory.

1. Press Setup.
2. Press 2104 to enter the Service Functions menu.
3. Press the right arrow key to select Testing, then press OK.
4. Select MEM.
5. Press Stop several times to exit the test.

Operator Panel Service Position

To operate the machine with the covers removed, the operator panel can be positioned on a table at the left of the machine and the cable connected to the fax board.

Operator Panel Test

This test activates each LED in sequence and cycles all pels of the LCD display. It also allows the servicer to test each button.

1. Press Setup.
2. Press 2104 to activate the Service Functions menu.
3. Press the right arrow to move the pointer to Testing, then press OK.
4. Select PNL.
5. Press any button (except Stop) to start the button test. Follow the instructions on the display to press and test each button.
6. Press Stop at any time to end the test. Press Stop several times to exit the menus.

Reset Button

This recessed button on the operator panel is covered with a shield and must be pressed with a small tool or straightened paper clip.

The Reset button does a hardware reset of the fax board and operator panel. Pressing Reset does not erase stored faxes or the contents of the phone book. The Reset button does not reset the printer board; unplugging the machine resets the printer board.

Print Engine Test

Use the Print Engine test for testing the printer board and inkjet printer engine independent of the other machine subsystems. This test can be run with the fax, LCU, or operator panel boards disconnected or defective.

1. Unplug the machine.
2. Remove the right cover and locate printer board header J7.
3. Short all four pins together with a screwdriver and plug the machine in.

The test print will run continuously until the machine is unplugged. The pins do not need to stay shorted after the test starts.

Purge Test

This test prints out a nozzle test pattern followed by several gray lines and another nozzle test pattern. Use this test to check the function of all the nozzles in the print cartridge. This test also checks the electronic connection to the print cartridge. During the test, the print-head cartridge goes through a maintenance cleaning at the maintenance station. Run this test with either the black or the color cartridge installed.

1. Press Setup.
2. Select PRT.
3. Select PUR.
4. Press Stop several times to exit the menus.

Scanner Feed Test

This test exercises the scanner Automatic Document Feed to allow you to verify the paper pick and scanner motor function. This test feeds paper but does not test scanning.

1. Press Setup.
2. Press 2104 to activate the Service Functions menu.
3. Use the right arrow to select Testing and press OK.
4. Select ADF.
5. Insert one or more sheets into the scanner ADF and follow the panel instructions.
6. Press Stop several times to exit the service menus.

Setting the Machine Serial Number

When the fax board is replaced, the machine serial number needs to be saved into memory.

1. Press Setup.
2. Press 2104 to activate the Service Functions menu.
3. Press OK to enter the Service Setup menu.
4. Select SRN.
5. Enter the machine serial number (4012 followed by 10 characters) found on the rear label.
6. Press OK to save the number. Press Stop several times to exit the service menus.

Test Print

From the operator panel, print the Setup Conditions report (press Setup, then press the button for LST) to determine that the operator panel, the fax board, the printer board, the ASF, and the print engine are performing correctly.

There are two other test prints available. Press Setup, then the button for PRT. Press the right arrow to select Diag and then press OK. On this menu, FON prints the fonts available in the printer. TST prints a test print which can show a non-functioning printhead nozzle. Press Stop several times to exit the service menus.

Repair Information

This chapter explains how to make adjustments to the printer and how to remove defective parts. Read [page 28](#) before handling electronic parts.

Warning: Medley has a soft power key which does not remove machine power; it shuts down visible machine activity. When the machine is plugged in power is always present on the fax board and printer board. Before connecting or disconnecting any machine components always unplug the machine from the wall outlet.

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 connector shroud (cover); 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

Bidirectional Alignment Adjustment

Perform this adjustment with the black print cartridge installed.

Note: For machines at software version 5.15.5.2 or lower (press Setup LST to print the report listing the version number), this adjustment affects only Letter quality mode and Step 5 and its note do not apply. If bidirectional alignment in Draft mode is a problem on a machine at this level, enter Setup PRT Setup and either set Printing Quality to Letter or set Printing Direction to Unidir.

1. Press Setup.
2. Select PRT, select Diag (diagnostics), and then select Bidi.
3. Open the top cover to see the alignment test print. A page loads and the bidirectional alignment pattern prints. The pattern consists of three lines of vertical bars. The bars are aligned when the adjustment is correct. The following sample requires the center vertical bars to be moved to the right.



4. The center bars can be aligned in increments of 1/1200 (0.02 mm). If the lines are not straight, press the left arrow key (←) to move the center of the lines to the left, or press the right arrow key (→) to move them to the right. Each time you press an arrow key the three lines print.
5. When the alignment is correct, press the top right key under the display to switch to Draft mode. Follow the same procedures as above to align the bars in Draft mode.

Note: Single left and right arrows are printed while in Letter mode, and triple left and right arrows are printed while in Draft mode.
6. When the adjustment is complete press Stop to save the setting then press Stop again to exit the Setup menu.

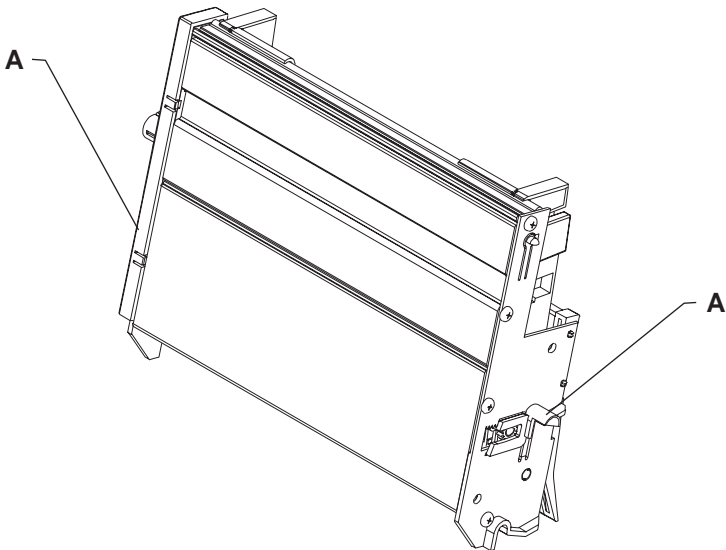
Removal Procedures

The following procedures are arranged according to the name of the part discussed. When there is artwork to support a procedure, it follows the text.

Note: Unplug the machine before beginning any electrical service. The power key does not remove power from the electronics.

Auto Sheet Feed (ASF) Assembly Removal

1. Remove the paper load lever.
2. Remove the left and right side covers.
3. Remove the clip from the right side subframe, if installed.
4. Remove the top cover.
5. Release the latches holding the subframe to the ASF.
6. Push in the two latches [A] that secure the ASF to the side frame, then lift up the sheet feed to remove it from the machine.



When you reinstall the ASF, be sure the feed arm assembly is vertical, with the feed pawl at the top.

ASF Envelope Buckler and Pick Roller Hub Removal

1. Remove the ASF assembly.
2. Remove the inside C-clip from the pick roller shaft and pull the shaft to the right far enough to remove the envelope bucklers and pick rollers.
3. Remove the pick roller hubs from the bucklers.

ASF Right and Left Edge Guide Assemblies Removal

1. Remove the ASF assembly.
2. Remove the manual insert tray by prying one of the side frames away from it.
3. Remove the inside C-clip from the pick roller shaft and pull the shaft out to the right.
4. Remove the pick roller and buckler assemblies.
5. Remove the paper load lever and shaft by pulling them out from the right side of the ASF assembly. Be careful not to lose the small gear on the left end of the shaft. When you reinstall this shaft, it must be parallel with the ASF housing.
6. Pivot the guide assembly up and pry it off the back plate.

Battery Option

1. Unplug the machine.
2. Open the access door on the left side cover. The battery option is attached to the door.
3. Disconnect the battery option cable from the fax board.
4. Remove the battery board mounting screw.

Note: If the battery option is being replaced, install the jumper on the new battery option board. If the battery option is being removed, install the jumper at J9 (2 center pins) of the fax board. Failure to install the jumper will cause a dead machine condition.

Carrier Guide Rod Removal

1. Open the top cover.
2. Remove the print cartridge.
3. With the carrier centered, carefully release the two carrier guide rod latches and lift the shaft slightly.
4. Unlatch the two carrier guide rod latches by pushing the latches to the rear.
5. Gently push the carrier to the extreme right and remove the carrier guide rod.

Carrier Removal

1. Open the top cover.
2. Remove the right side cover
3. Remove the print cartridge.
4. Disconnect the printhead cables from the printer board.
5. Cut the cable tie and remove the toroid.
6. Move the carrier in line with the opening in the carrier transport motor frame.
7. Reach through the opening and pull the belt from the carrier.
8. To unlock the carrier guide rod latches, rotate the rod top-to-rear. Gently push the carrier guide rod latches, at each end of the rod, to the rear and lift up the rod until the sensor on the carrier clears the encoder strip. Move the rod to the left until the right end can be lifted above the frame. Remove the carrier guide rod to the right, above the carrier motor. Be careful not to damage the encoder strip.
9. Pull the ends of the printhead cables into the machine, then remove the cables from the four retainers in the paper guide starting from the right.

Carrier Transport Belt Removal

1. Open the top cover and then remove the left and right side covers.
2. Move the carrier in line with the opening in the carrier transport motor frame.
3. Reach through the opening and pull the belt from the carrier.
4. Remove the belt from the carrier transport motor pulley.
5. Remove the belt from the idler pulley and pull it through the opening in the left side frame.

Note: When you reinstall the belt be sure to insert the bottom of the belt into both the lower and upper belt grips on the carrier. DO NOT INSERT THE TOP OF THE BELT INTO THE UPPER GRIP.

Carrier Transport Motor Removal

1. Open the top cover and then remove the left and right side covers, then the lower front cover.
2. Disconnect the carrier transport motor (J6) from the printer board.
3. Remove the two motor mounting screws and remove the motor.

Carrier Transport Motor Frame Removal

1. Remove the top cover and then the left and right side covers.
2. Remove the rear and front covers.
3. Disconnect J6 from the printer board.
4. Disconnect the four scanner connectors and the speaker connector from the fax board.
5. Remove the scanner and subframe.
6. Move the carrier in line with the opening in the carrier transport motor frame.
7. Reach through the opening and pull the belt from the carrier.
8. To unlock the carrier guide rod latches, rotate the rod top-to-rear. Gently push the carrier guide rod latches, at each end of the rod, to the rear and lift up the rod until the sensor on the carrier clears the encoder strip. Remove the carrier guide rod through the opening in the left side frame. Be careful not to damage the encoder strip.
9. A latch on the top front end of each side frame holds the transport motor frame in place. Push up the latches on the front of the side frames and pivot the carrier transport motor frame down and out of the side frames.

Covers Removal

Front Cover

1. Remove the left and right side covers.
2. Flex the front cover to release the latches on each end.
3. Lift the cover to free the lower latch and remove the cover.

Note: When reinstalling the front cover, make sure the lower latch and side latches are installed properly to prevent the cover from interfering with the paper ejectors.

Rear Cover

1. Remove the left and right side covers.
2. Flex the tabs on the subframe to release both latches.
3. Lift the cover to free the lower latch and remove the cover.

Top Cover

1. Bend the subframe slightly to free the top cover pivot pin.
2. Remove the top cover.

Right Side Cover

1. Remove the paper load lever.
2. Open the operator panel cover and the top cover.
3. Remove the screw from inside the subframe just above scanner.
4. Lift on the top inner edge of the cover to free the top latches.
5. Rotate the cover to the right to free the lower latches.

Left Side Cover

1. Open the operator panel cover and the top cover.
2. Remove the screw from inside the subframe just above scanner.
3. Lift the top inner edge of cover to free the top latches.
4. Rotate the cover to the left to free the lower latches.
5. If the battery option is installed, disconnect its cable from the fax board (J9).

Operator Panel and Cover

1. Remove the left and right side covers.
2. Flex the subframe to free one of the pivot pins.
3. Remove the two screws and the ESD shield.
4. Disconnect the operator panel cable from the back of the operator panel.
5. Unsnap the operator panel from the cover.

Encoder Strip Removal

The encoder strip can be easily damaged; use care when removing or installing.

1. Open the top cover.
2. Move the carrier in line with the opening on the carrier transport motor frame.
3. Reach through the opening and pull the belt from the carrier.
4. To unlock the carrier guide rod latches, rotate the rod top to rear. Gently push the carrier guide rod latches at each end of the rod to the rear and lift up the rod until the sensor on the carrier clears the encoder strip. Place the carrier on top of the paper guide.
5. Remove the encoder strip from the left mounting peg. To do this, push the right latch slightly to the left.
6. Remove the encoder strip from the right latch.

When you install the encoder strip, be sure it is fully seated on the left mounting peg.

End-of-Forms Flag Removal

1. Remove the covers.
2. Disconnect the printer board connectors: J1, J2, J4, J5, and J6.
3. Disconnect the fax board connectors: J3 and J8.
4. Raise the machine frame into the service position.
5. Pivot the weighted end of the end-of-forms flag through the opening in the middle frame.
6. Unsnap the flag by moving it to the rear.

Exit Roller Assembly Removal

1. Remove the covers.
2. Remove the carrier transport frame.
3. Pivot the paper ejector pusher toward the front then pull it to remove the paper ejector from the shaft.
4. Remove the bushing from the left end of the exit shaft. To do this, pull the tab and rotate the bushing.
5. Slide the exit roller to the left and lift it out of the machine.

EPROM Removal

1. Unplug the machine before beginning any electrical service. The power key does not remove power from the electronics.
2. Remove the top cover.
3. Disconnect the printhead cables from the printer board.
4. Disconnect connectors J4, J5, and J6 from the printer board.
5. Disconnect the scanner motor connector J3 from the fax board.
6. Release the latches at the right-front and right-rear legs of the frame, then lift and pivot the frame 90° to the left into the service position.
7. Gently pry the EPROM from the board.
8. To install the EPROM:
 - a. Ensure the orientation notch is to the right for the fax board or to the front for the printer board. Refer to: ["Parts and Test Point Locations" on page 49](#).
 - b. Ensure that each module pin aligns with each socket, so there are no bent pins.
 - c. Apply even pressure on the top of the module until it is seated against the socket.

Fax Board, Printer Board, and LCU Board Removal

1. Unplug the machine before beginning any electrical service. The power key does not remove power from the electronics.
2. Remove the left and right side covers, the front cover and the rear cover, and disconnect J1, J2, J4, J5 and J6 from the printer board.
3. Disconnect the scanner motor cable from J3 and scanner data cable J8 from the fax board.
4. Unsnap the two print engine feet at the right side of the machine.
5. Pivot the print engine up around the left pivots, being sure no cables are being strained, until the left side of the print engine is resting on the table.
6. Disconnect the remainder of the cables required to remove the board.
7. Cut the cable tie around the support posts.
8. Remove the EPROM (see [“EPROM Removal” on page 36](#)) for installation on the new board. Remove the ground screw and remove the board.

Note: If the printer board is replaced, check the bidirectional alignment. If the fax board is replaced, inspect the LCU board for physical damage. Replace the LCU board if damage is present. The machine serial number needs to be saved into memory, if the fax board is replaced. Refer to [“Setting the Machine Serial Number” on page 26](#).

Feed Arm Assembly Removal

1. Remove the covers.
2. Remove the ASF.
3. Remove the C-clip from the center of the large gear and remove the feed arm assembly.

Inside Idler Gears Removal

1. Remove the covers.
2. Remove the ASF.
3. Disconnect the printhead cables from the printer board.
4. Remove the paper guide.
5. Remove the C-clip from the feed arm assembly and remove the feed arm assembly.
6. Pull the idler gears off the mounting studs.

Large Feed Roller Assembly Removal

1. Remove the top cover.
2. Disconnect the printhead cables from the system board.
3. Disconnect connectors J4, J5, and J6 from the system board.
4. Disconnect scanner motor connector J3 from the fax board.
5. Release the latches at the right front and right rear legs of the frame, then lift and pivot the frame 90° to the left into the service position.
6. Disconnect the 3 springs from the bottom of the middle frame assembly.
7. Remove the large feed roller assembly.

Left Side Frame Removal

1. Remove the covers.
2. Remove the print cartridge.
3. Remove the subframe.
4. Remove the ASF.
5. Disconnect the printhead cables from the printer board.
6. Disconnect connectors J4, J5, and J6 from the printer board.
7. Remove the machine from the base. To do this, release the latches at the right-front and right-rear legs of the frame, then lift and pivot the frame 90° to the left. Lift the frame to disengage the left legs from the base.
8. Move the carrier in line with the opening in the carrier transport motor frame.
9. Reach through the opening and pull the belt from the carrier.
10. To unlock the carrier guide rod latches, rotate the rod top-to-rear. Gently push the carrier guide rod latches, at each end of the rod, to the rear and lift up the rod until the sensor on the carrier clears the encoder strip. Remove the carrier guide rod through the opening in the left side frame. Be careful not to damage the encoder strip.
11. Pull the ends of the printhead cables into the machine, then remove the cables from the four retainers in the paper guide starting from the right.
12. Disengage the left paper guide latch by carefully moving the rear of the left side frame to the left.
13. Disengage the right side of the paper guide from the latch and lift it from the machine.

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14. A latch on the top front end of each side frame holds the transport motor frame in place. Push up the latches on the front of the side frames, then pivot the carrier transport motor frame down and out of the side frames.
15. Place the machine on its back and push the left side frame latch to the rear and remove the frame from the machine.
16. Unsnap the feet from the left side frame.

When you reinstall the paper guide, be sure the front edge goes under the rear of the carrier guide. If the paper guide is on top of the carrier guide, push down the front, bottom edge. The paper guide will snap under the carrier guide.

To install the left side frame onto the middle frame, align the right side frame latch with the latching surface on the middle frame before you align the roller shafts and carrier guide. It may be easier to do this with the machine on its right side.

Maintenance Drive and Rocker Assemblies Removal

1. Remove the covers.
2. Remove the ASF.
3. Remove the right side frame.
4. Gently unlatch the maintenance assembly latches.
5. Slide out the maintenance drive assembly and then the rocker assembly.

When you reassemble the drive assembly, be sure the forks engage the pins on the rocker assembly.

Memory Option

1. Unplug the machine.
2. Open the access door in the left side cover.
3. Lift up the memory board to remove it.
Note: The 1MB option consists of two modules and the 3MB option has six modules.
4. From the operator panel, print the Setup Conditions report (press Setup, then select LST) to verify the installed memory is recognized by the machine.

Middle Frame Removal

1. Remove the covers.
2. Remove the print cartridge.
3. Remove the subframe.
4. Remove the ASF.
5. Disconnect the printhead cables from the printer board.
6. Disconnect J4, J5, and J6 from the printer board.
7. Remove the machine from the base. To do this, release the latches at the right front and right rear legs of the frame, then lift and pivot the frame 90° to the left. Lift the frame to disengage the left legs from the base.
8. Remove the paper ejectors from the middle frame.
9. Remove the left side frame.
10. Remove the exit shaft.
11. Remove the small feed roller shaft.
12. Remove the large feed roller shaft and springs.
13. Remove the end-of-forms flag.
14. Remove the right side frame.
15. Remove the maintenance station.

Outside Idler Gears Removal

1. Remove the right cover.
2. Disconnect the printhead cables from the printer board.
3. Each gear is latched in place. Push up the latch and remove the gear from the side frame stud by pulling the gear from the bottom.

Paper Ejectors Removal

1. Remove the covers.
2. Pivot the paper ejector pusher toward the front then pull it to remove the paper ejector from the shaft.
3. Unsnap the paper ejectors from the middle frame.

Paper Feed Motor Removal

1. Remove the right cover.
2. Disconnect the paper feed motor connector from printer board J5.
3. Remove the two mounting screws.

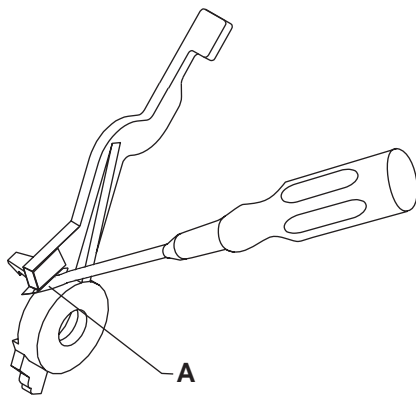
Paper Guide Removal

1. Remove the covers.
2. Remove the ASF.
3. Remove the subframe.
4. Disconnect the printhead cables from the printer board.
5. Pull the ends of the printhead cables into the machine, then remove the cables from the four retainers in the paper guide starting from the right.
6. Disengage the left paper guide latch by carefully moving the rear of the left side frame to the left.
7. Disengage the right side of the paper guide from the latch and lift it from the machine.

When you reinstall the paper guide, be sure the front edge goes under the rear of the carrier guide. If the paper guide is on top of the carrier guide, push down the front, bottom edge. It will snap under the carrier guide.

Paper Release Lever Removal

1. Remove the left cover.
2. Pull the paper release lever forward.
3. Place a screwdriver into the slot [A] of the paper release lever. Push the screwdriver down to release the latch, then remove the lever.



Power Supply Removal

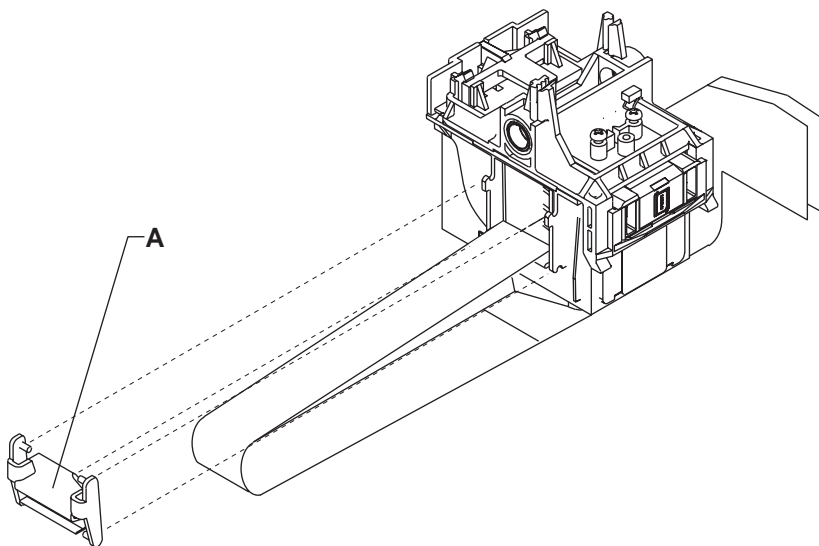
1. Unplug the machine before beginning any electrical service. The power key does not remove power from the electronics.
2. Remove the left and right side covers.
3. Remove the front and rear covers.
4. Disconnect the scanner motor cable from J3 on the right side of the fax board.
5. Disconnect the five cables connecting the printer board to the print engine (J1, J2, J4, J5, J6).
6. Unsnap the two print engine feet at the right side of the machine.
7. Pivot the print engine up around the left pivots, being sure no cables are being strained, until the left side of the print engine is resting on the table.
8. Disconnect the power leads from the fax board (J2) and the printer board (J11).
9. Remove the ground screw holding the power supply to the bottom shield.
Note: Make sure the ground screw is secure when reinstalling the power supply.
10. Unsnap the front latch and lift the power supply from the machine. Make sure the power supply insulator remains in place when reinstalling the power supply.

Print Engine Removal

1. Unplug the machine before beginning any electrical service. The power key does not remove power from the electronics.
2. Remove the left and right side covers.
3. Remove the front and rear covers.
4. Disconnect the six cables connecting the fax board to the print engine (J3, J4, J5, J6, J7, J8); cut the cable tie on the scanner cable.
5. Disconnect the five cables connecting the printer board to the print engine (J1, J2, J4, J5, J6).
6. Unsnap the two print engine feet at the right side of the machine.
7. Pivot the print engine up around the left pivots, being sure no cables are being strained, until the left side of the print engine is resting on the table.
8. Lift the print engine to free the left pivot feet from the bottom cover.

Printhead Cable Removal

1. Unplug the machine before beginning any electrical service. The power key does not remove power from the electronics.
2. Open the top cover.
3. Remove the print cartridge.
4. Remove the carrier.
5. Remove the cable clip [A] from the left side of the carrier.
6. Remove the pointer from the front of the carrier.

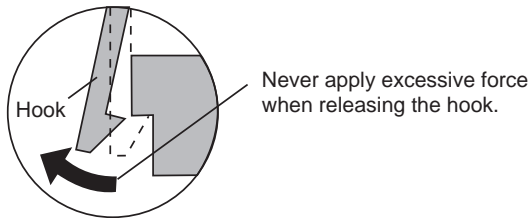


7. Remove the two sensor mounting screws.
8. Push down the two latches that secure the cradle to the carrier and pull the cradle up from the carrier.
9. Remove the printhead cable from the alignment pins.

The new cable comes without the folds in it. Place the new cable next to the old cable and fold the new cable in the appropriate places.

Releasing Plastic Latches

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



Right Side Frame Removal

1. Remove the covers.
2. Remove the print cartridge.
3. Remove the subframe.
4. Remove the ASF.
5. Disconnect the printhead cables from the printer board.
6. Disconnect connectors J4, J5, and J6 from the system board.
7. Remove the machine from the base. To do this, release the latches at the right front and right rear legs of the frame, then lift and pivot the frame 90° to the left. Lift the frame to disengage the left legs from the base.
8. Move the carrier in line with the opening in the carrier transport motor frame.
9. Reach through the opening and pull the belt from the carrier.
10. To unlock the carrier guide rod latches, rotate the rod top-to-rear. Gently push the carrier rod guide latches, at each end of the rod, to the rear and lift up the rod until the sensor on the carrier clears the encoder strip. Remove the carrier rod guide through the opening in the left side frame. Be careful not to damage the encoder strip.
11. Pull the ends of the printhead cables into the machine, then remove the cables from the four retainers in the paper guide starting from the right.
12. Disengage the left paper guide latch by carefully moving the rear of the left side frame to the left.
13. Disengage the right side of the paper guide from the latch and lift the guide from the machine.

14. A latch on the top front end of each side frame holds the transport motor frame in place. Push up the latches on the front of the side frames, then pivot the carrier transport motor frame down and out of the side frames.
15. Place the machine on its back, then unlatch the right frame latch from the middle frame and remove the side frame.

Note: For reassembly you may want to remove the carrier guide and reinstall it after you install the paper guide.

When you reinstall the paper guide, be sure the front edge goes under the rear of the carrier guide. If the paper guide is on top of the carrier guide, push down the front bottom edge. It will snap under the carrier guide.

To install the right side frame onto the middle frame, align the right side frame latch with the latching surface on the mid frame before you align the roller shafts and carrier guide. It may be easier to do this with the machine on its left side.

Rubber Backer Removal

1. Open the top cover.
2. Remove the print cartridge.
3. Remove the printhead cable.
4. Remove the rubber backer from the carrier.

Small Feed Roller Assembly Removal

1. Remove the covers.
2. Remove the ASF.
3. Remove the paper guide.
4. Carefully remove the paper release lever.
5. Remove the bushing from the left end of the small feed roller shaft. To do this, pull the tab and rotate the bushing.
6. Slide the small feed roller assembly to the left and lift it out of the machine.

Star Roller Removal

1. Remove the covers.
2. Remove the subframe.
3. Move the carrier in line with the opening on the carrier transport motor frame.
4. Reach through the opening and pull the belt from the carrier.
5. To unlock the carrier guide rod latches, rotate the rod top-to-rear. Gently push the carrier guide rod latches at each end of the rod to the rear and lift up the rod until the sensor on the carrier clears the encoder strip. Place the carrier on top of the paper guide.
6. A latch on the top front end of each side frame holds the transport motor frame in place. Push up the latches on the front of the side frames and pivot the carrier transport motor frame down and out of the side frames. Place the carrier transport motor frame face down in front of the machine.
7. Remove the star roller by pushing it forward off the mounting peg in the carrier transport motor frame.

Scanner and Speaker Removal

1. Unplug the machine before beginning any electrical service. The power key does not remove power from the electronics.
2. Remove the left and right side covers.
3. Remove the front cover.
4. Disconnect the scanner motor cable from J3 on the right side of the fax board.
5. Disconnect the scanner paper sensor and LED/microswitch cables from J6 and J7 on the left side of the fax board.
6. Cut the tie wrap and disconnect the scanner data cable J8 from the left side of the fax board.
7. Unsnap the large tab holding the left end of the scanner to the subframe.
8. Lift the scanner from the machine.
9. Disconnect the speaker from the fax board J5.
10. Slide the speaker toward the front to remove it.

Subframe Removal

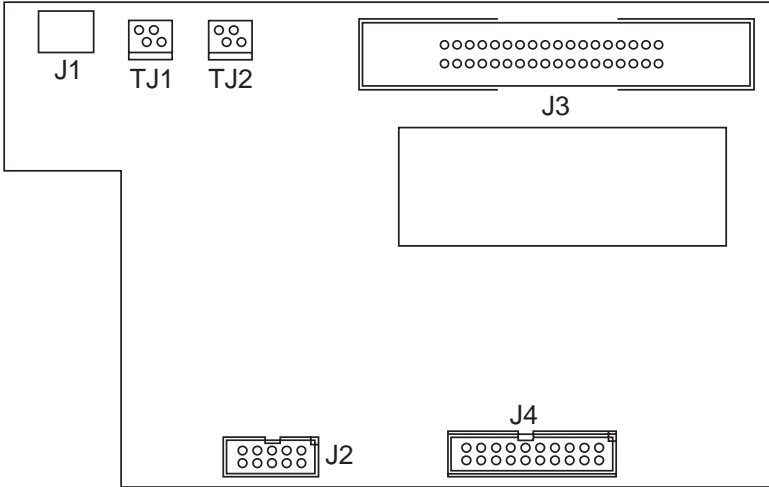
1. Remove the left and right side covers.
2. Remove the rear cover.
3. Remove the top cover, the operator panel cover, and the front cover.
4. Disconnect the four scanner cables (J3, J6, J7, J8) and the speaker cable (J5) from the fax board.
5. Cut the cable tie.
6. Remove the clip from the right side.
7. Spread the tabs at the sides of the sheet feed to free the pins.

Warning: To avoid damage to the encoder strip, make sure the carrier transport motor frame does not come unsnapped during the next step.

8. Lift the tabs, rotating the subframe toward you to release the subframe where it is snapped to the printer frame.

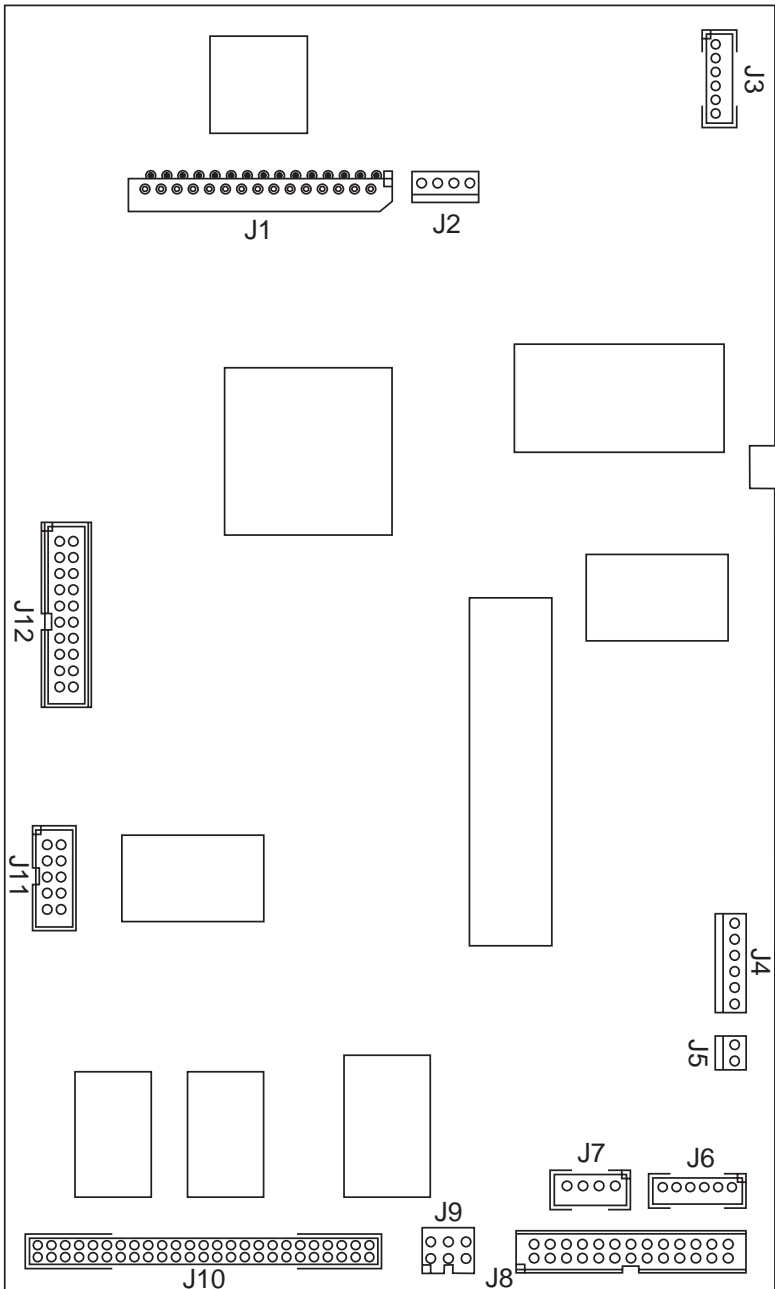
Parts and Test Point Locations

LCU Board



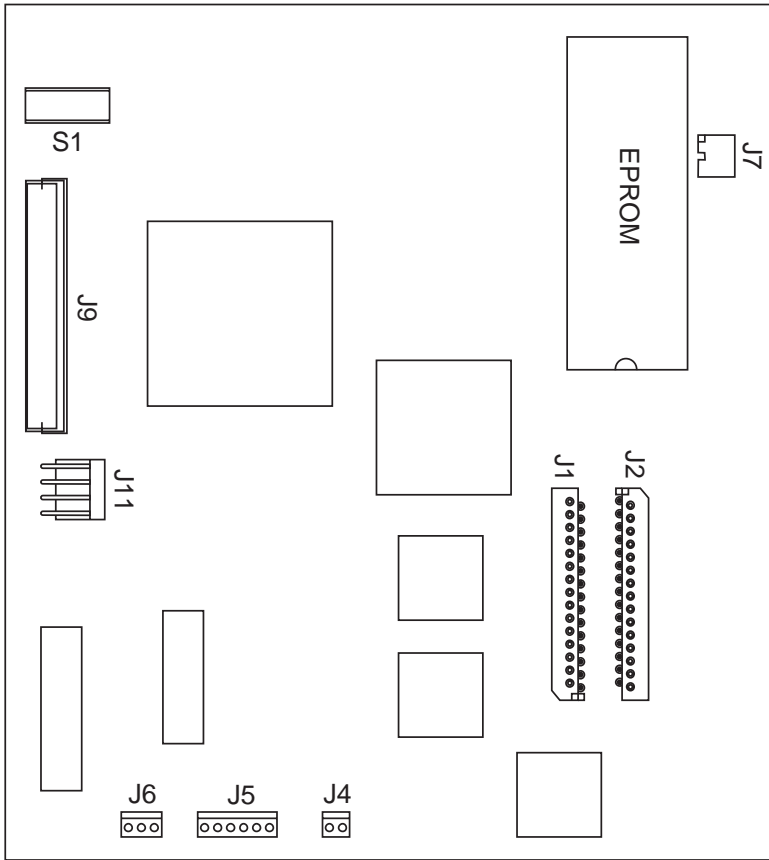
LCU Board	
Connector	Name
J1	Handset
J2	Phone Data to Fax Board
J3	Parallel Port
J4	Parallel Data to Fax Board
TJ1	Phone Line In
TJ2	External Phone

Fax Board



Fax Board	
Connector	Name
J1	Printer Board
J2	Power Supply
J3	Scanner Motor
J4	Operator Panel
J5	Speaker
J6	Scanner Paper Sensors
J7	LED Array & Scanner Closed Switch
J8	Scanner Data
J9	Battery Backup Option
J10	Memory Option
J11	Phone Data from LCU Board
J12	Parallel Data from LCU Board

Printer Board



Printer Board	
Connector	Name
J1	Printhead
J2	Printhead
J3	Not Used
J4	Maintenance Motor
J5	Paper Feed Motor

Printer Board	
Connector	Name
J6	Carrier Motor
J7	POR Test Jumper
J8	Not Used
J9/J9A	Fax Board
J10	Not Used
J11	Power Supply

Preventive Maintenance

Following these recommendations can help prevent problems and maintain optimum performance.

Lubrication Specifications

Lubricate only when parts are replaced or as needed, not on a scheduled basis.

Warning: Petroleum-based greases can attack polycarbonate parts causing premature failure. Use only mineral oil-based grease.

Use a mineral oil-based grease to lubricate the following:

- All gear mounting studs
- Right end of the exit roller at the right side frame
- Right end of the small feed roller at the right side frame
- Left end of the large feed roller at the left side frame
- Both ends of the ASF pick roll shaft at the ASF side frames
- Transport belt idler pulley hole
- Inside surface of the transport idler pulley tension wedge where it touches the left side frame.

Do not lubricate the carrier guide rod or carrier guide rod bearings.

Scanner Cleaning Procedure

The scanner restraint pad and paper feed rollers should be cleaned when necessary to avoid feed problems.

1. Clean the pad with isopropyl alcohol, wiping downward in the paper movement direction.
2. Clean the three paper feed rollers using isopropyl alcohol.
Turn the gear train with your thumb to clean the entire surface of the rollers.
3. Wipe paper dust, ink, or foreign material off the scanner white reference strip inside the front frame with a clean cloth. If necessary, use isopropyl alcohol.

The scanner lenses and mirrors do not normally require cleaning; the microcode compensates for dust on the optical surfaces. If, however, these surfaces become unusually dirty or the scanned image becomes fuzzy, remove the scanner and clean the mirrors and lenses with isopropyl alcohol.

Caution: Do not hold the scanner by the mirrors or supports. If the supports are bent it can change alignment in the scanner. Hold the scanner by the plastic.

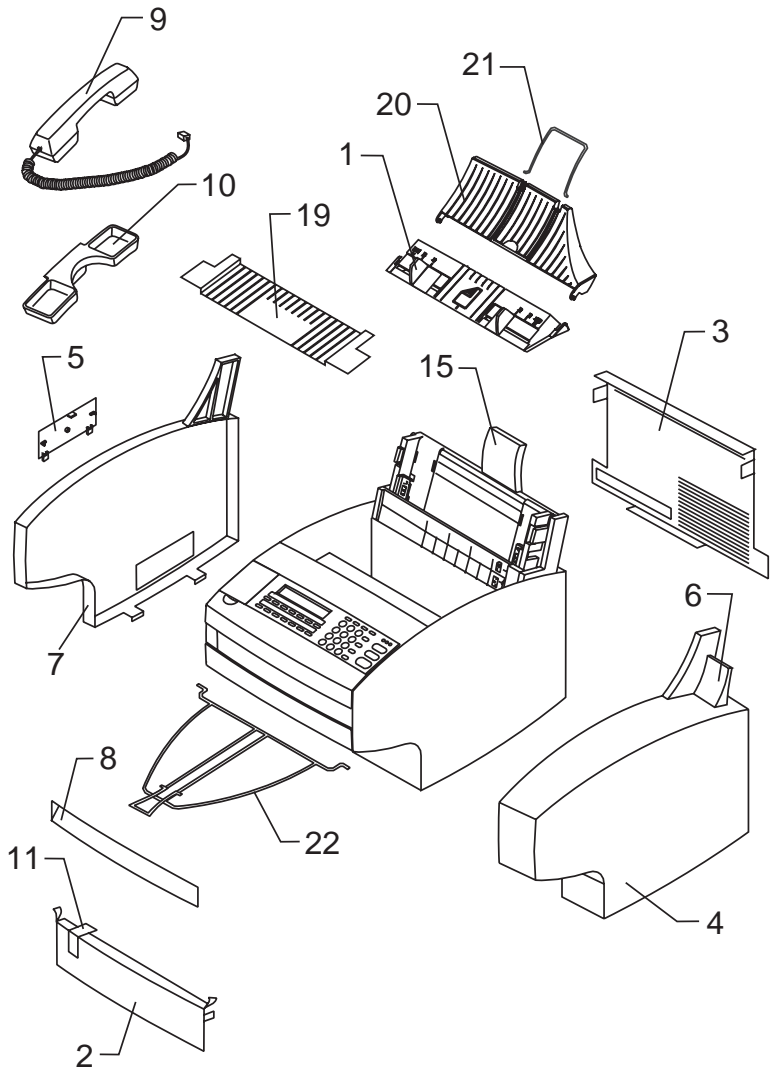
Note: Do not disassemble any optical components of the scanner.

Parts Catalog

How To Use This Parts Catalog

- **SIMILAR ASSEMBLIES:** If two assemblies contain a majority of identical parts, they are broken down 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.
- **AR: (As Required)** in the Units column indicates that the quantity is not the same for all machines.
- **NS: (Not Shown)** in the Asm-Index column indicates that the part is procurable but is not pictured in the illustration.
- **PP: Parts Packet**

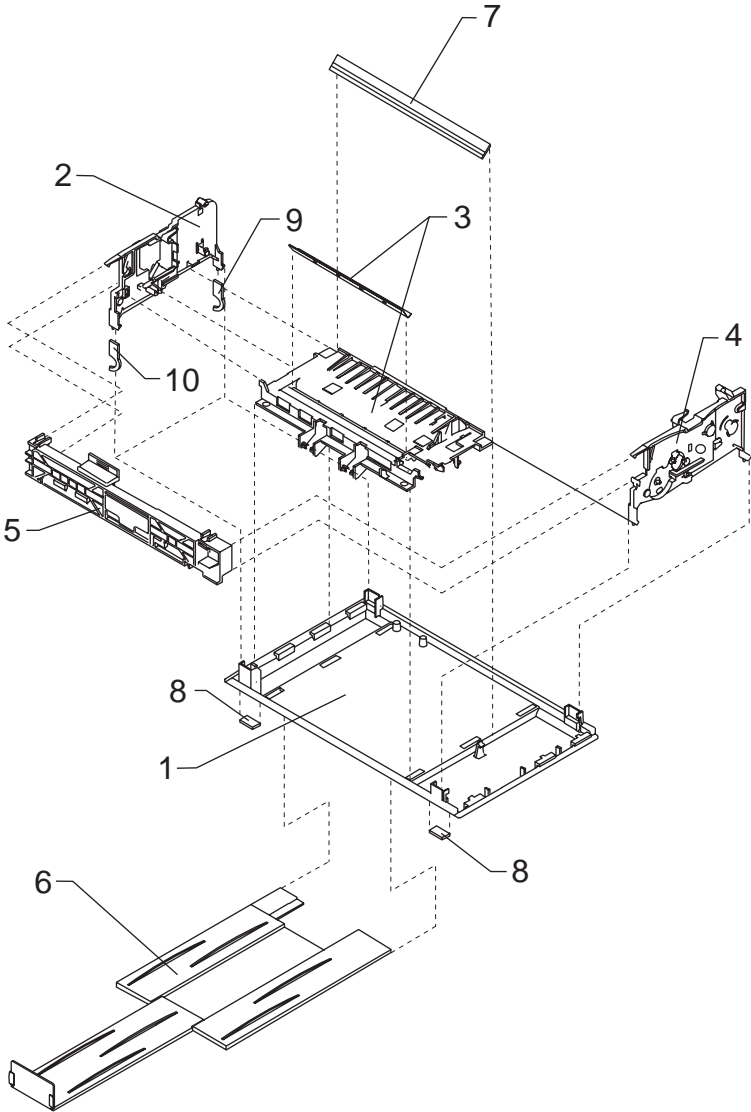
Assembly 1: Covers



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Top Cover Asm w/guides	69G6828	69G6828
2	Front Cover	69G6875	69G6875
3	Rear Cover	69G6874	69G6874
4	Right Side Cover	69G6869	69G6869
NS	Screw, Right Side Cover PP 69G6846		
5	Memory/Battery Access Door	69G6899	69G6899
6	Paper Load Lever	69G6888	69G6888
7	Left Side Cover	69G6870	69G6893
NS	Screw, Left Side Cover PP 69G6846		
8	Bezel, front	69G6861	69G6861
9	Handset w/Cable	N/A	69G6822
10	Cradle, Handset	N/A	69G6894
NS	Screw, Cradle Mounting PP 69G6846		
11	Left output Guide	1367493	1367493
15	Extender, Input Tray, Printer	69G6890	69G6890
19	Panel, Scan Input Tray	69G6889	69G6889
20	Tray, Scan Input	69G6891	69G6891
21	Extender, Scan Input Tray	69G6871	69G6871
22	Tray, Scanner Output	69G6830	69G6830

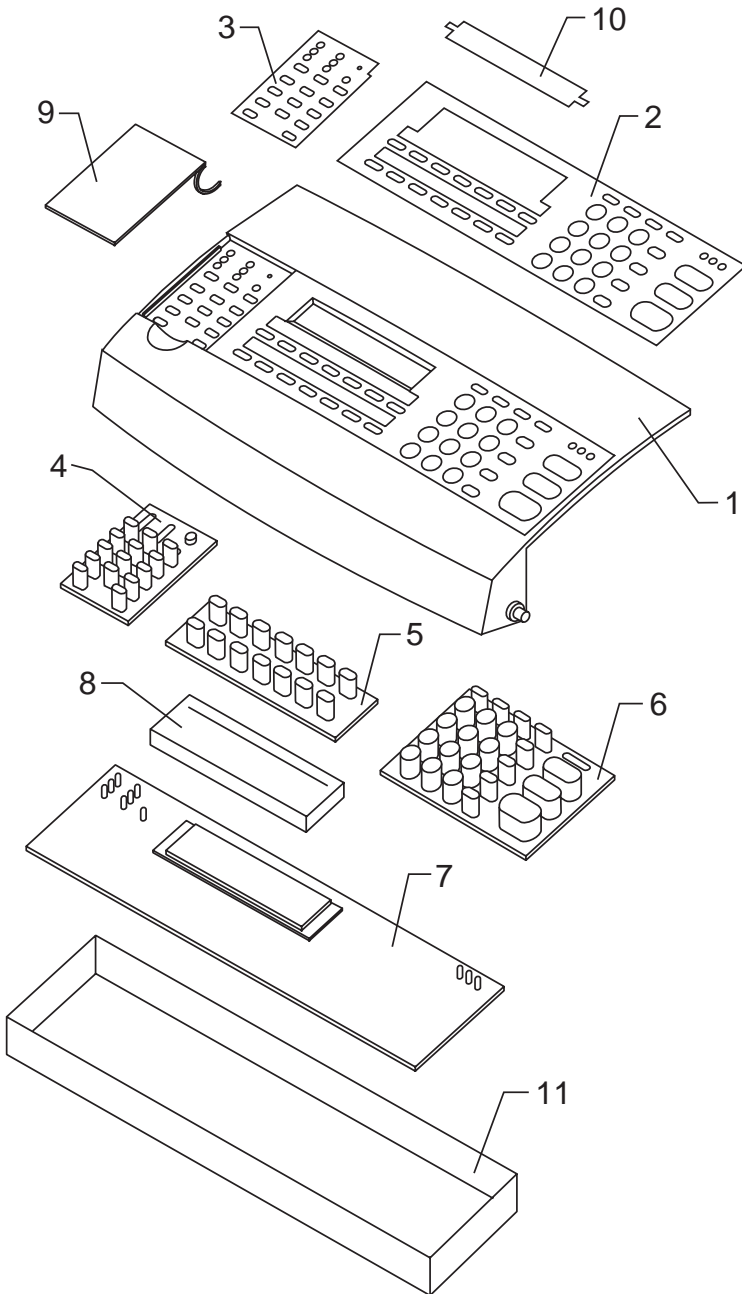
Assembly 2: Frame



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Base Asm	69G6900	69G6900
2	Left Side Frame	1367209	1367209
3	Middle Frame Asm	1367219	1367219
4	Right Side Frame	1367229	1367229
5	Carrier Transport Motor Frame	1367309	1367309
6	Exit Tray Asm	69G6824	69G6824
7	Carrier Guide	1367079	1367079
8	Foot	69G6860	69G6860
9	Leg, left Rear	69G6882	69G6882
10	Leg, left Front	69G6883	69G6883

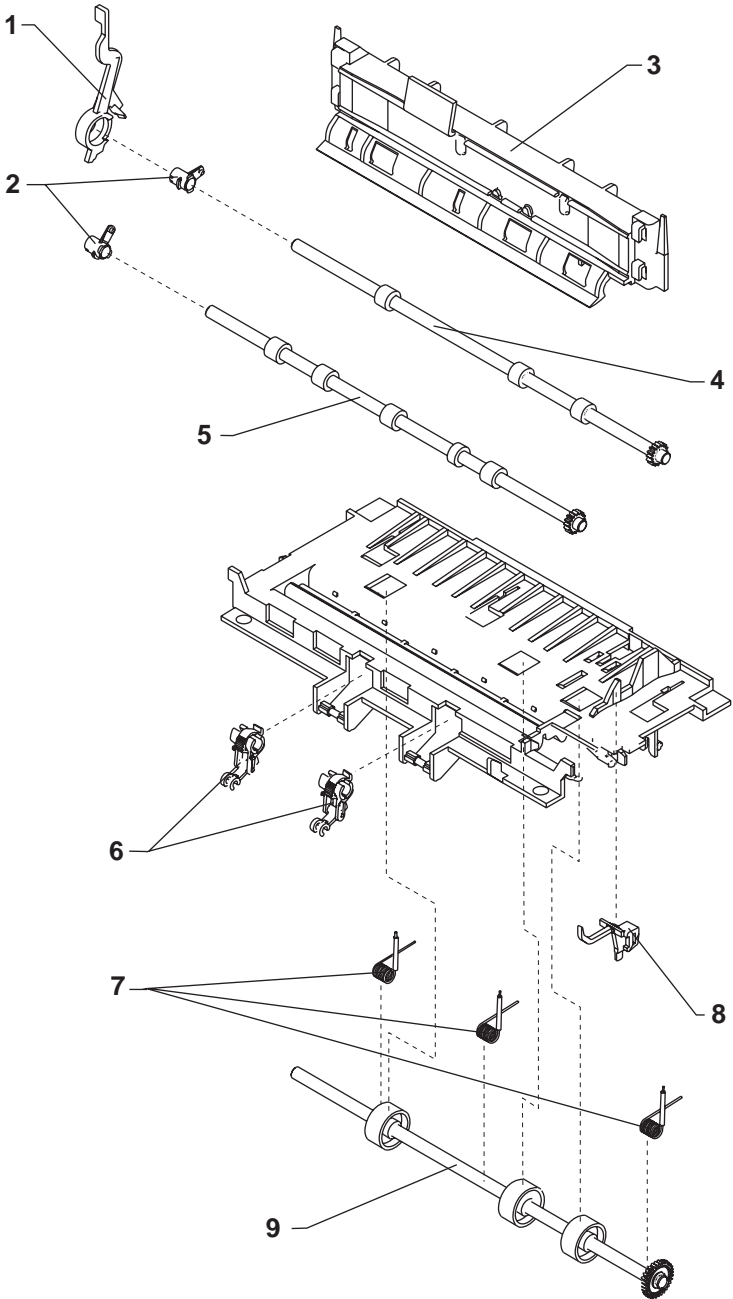
Assembly 3: Operator Panel



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Operator Panel Cover	69G6901	69G6902
1	Operator Panel Cover 4012-009		69G6905
2	Overlay, Operator Panel	69G6885	69G6886
3	Overlay, Sm Operator Panel	69G6897	69G6898
NS	Shield, Reset Button PP 69G6846		
4	Keypad, Left	69G6896	69G6896
5	Keypad, Center	69G6895	69G6895
6	Keypad, Right	69G6884	69G6884
7	Operator Panel Board	69G6806	69G6806
8	Lens, Display	69G6831	69G6831
9	Door, Button	69G6887	69G6887
10	Shield, Directory PP 69G6846		
NS	Cable, Operator Panel Cable to Fax Board	69G6878	69G6878
11	Shield, EMC	69G6903	69G6903

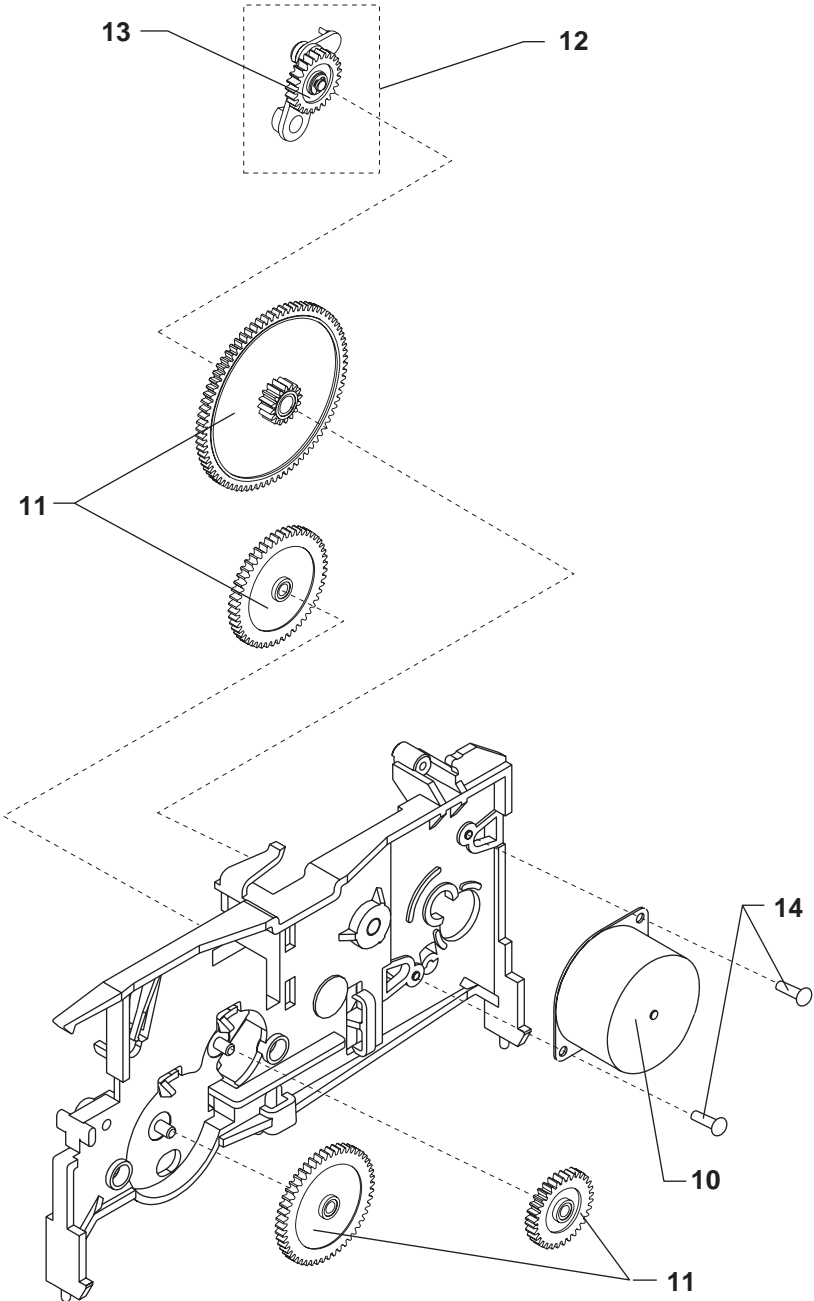
Assembly 4: Printer Paper Feed Assembly



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Paper Release Lever	1367179	1367179
2	Bushing, PP 1367169		
3	Paper Guide	1367339	1367339
4	Small Feed Roller Asm	1367279	1367279
5	Exit Roller Asm	1367289	1367289
6	Ejector B/M	1367266	1367266
7	Spring, PP 1367169		
8	End-of-Form Flag	1367049	1367049
9	Large Feed Roller Asm	1367269	1367269

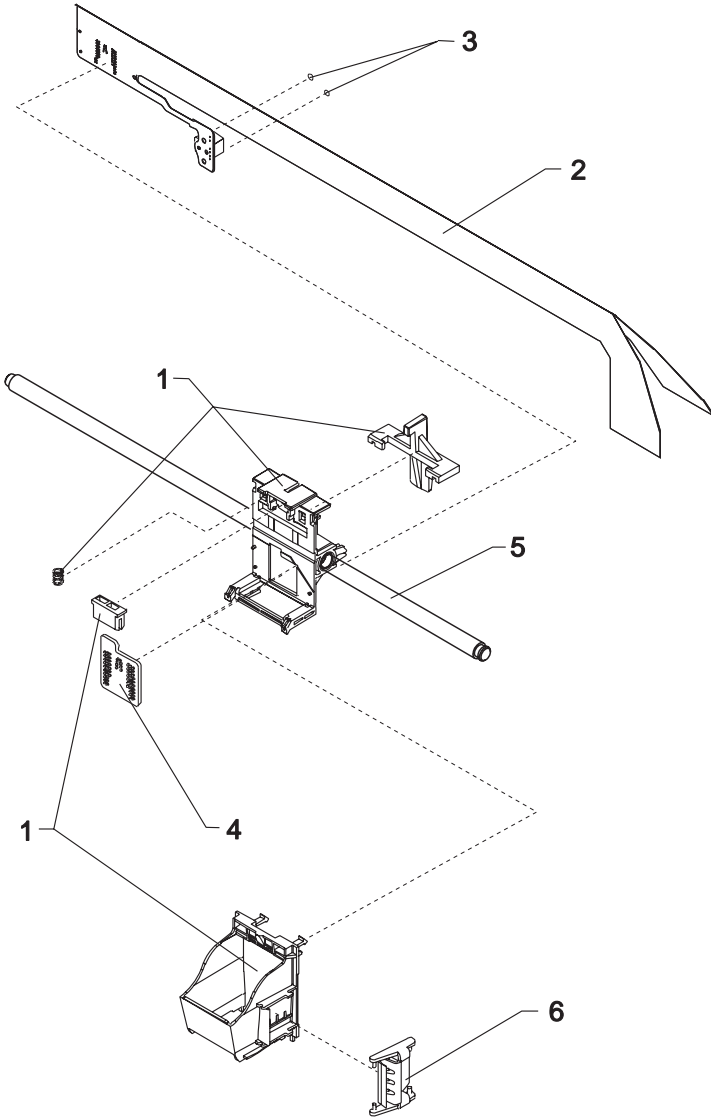
Assembly 4: Printer Paper Feed Assembly (cont.)



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
10	Paper Feed Motor	1367239	1367239
NS	Toroid, Paper Feed Motor	1374338	1374338
11	Gears B/M	1367249	1367249
12	Feed Arm Asm	1367259	1367259
13	C-Clip, PP 1367169		
14	Screw, PP 1367169		

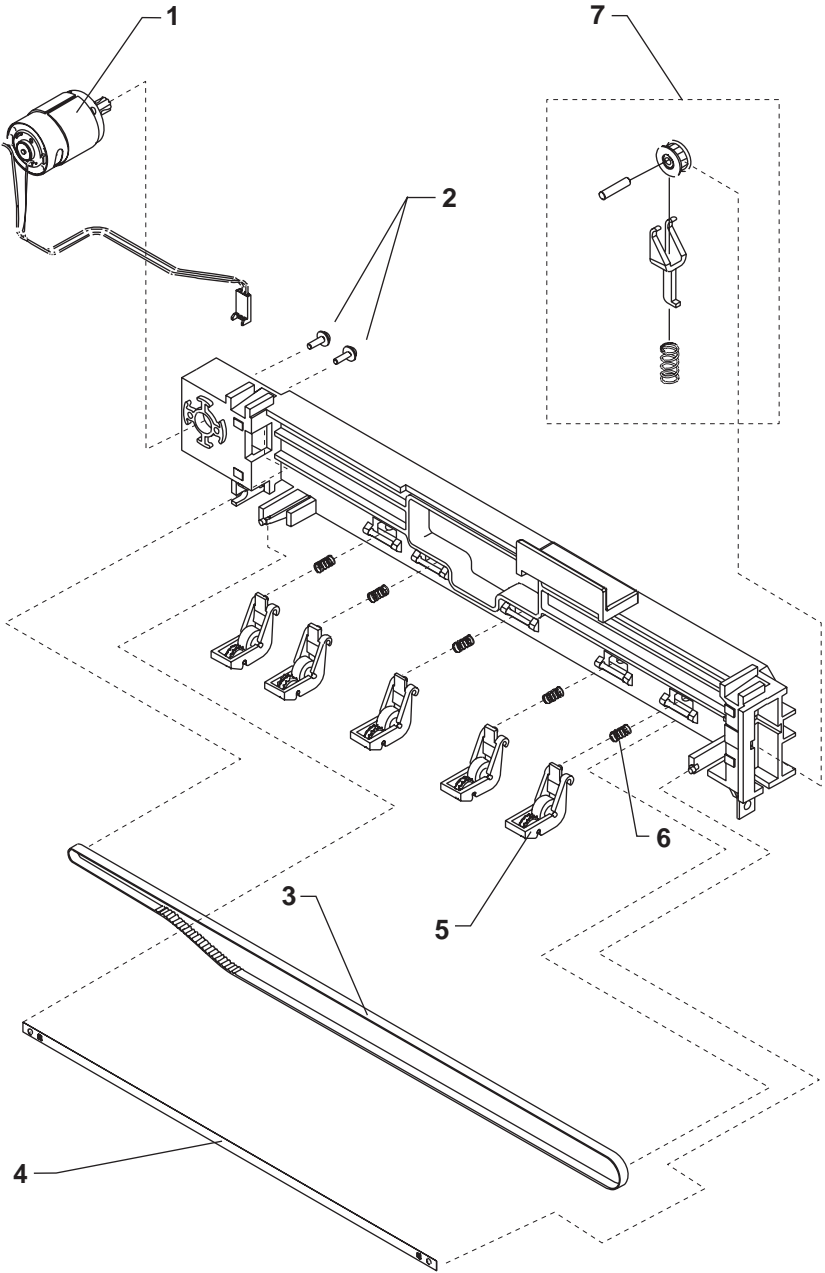
Assembly 5: Carrier



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Carrier Asm	1367299	1367299
2	Printhead Cable	1367149	1367149
NS	Toroid, Printhead Cable	1374338	1374338
3	Screw, PP 1367169		
4	Rubber Backer	1367109	1367109
5	Carrier Guide Rod	1367089	1367089
6	Clip, PP 1367169		

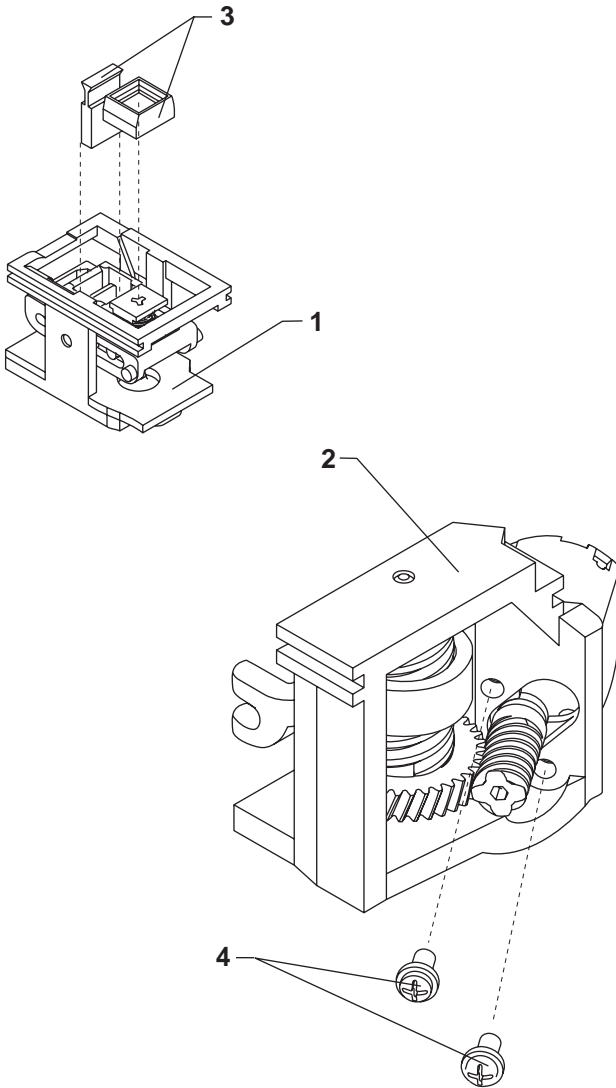
Assembly 6: Carrier Transport



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Carrier Motor	1367319	1367319
2	Screw, PP 1367169		
3	Carrier Belt	1367359	1367359
4	Encoder Strip	1367379	1367379
5	Star Roller Asm	1425705	1425705
6	Spring PP 1367169		
7	Idler Pulley B/M	1367329	1367329

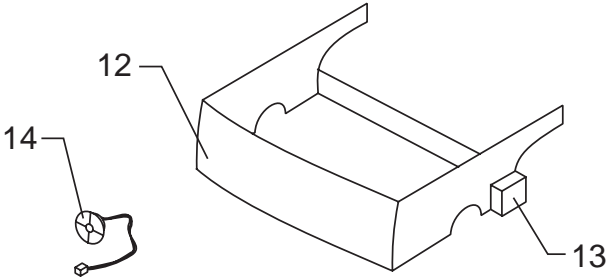
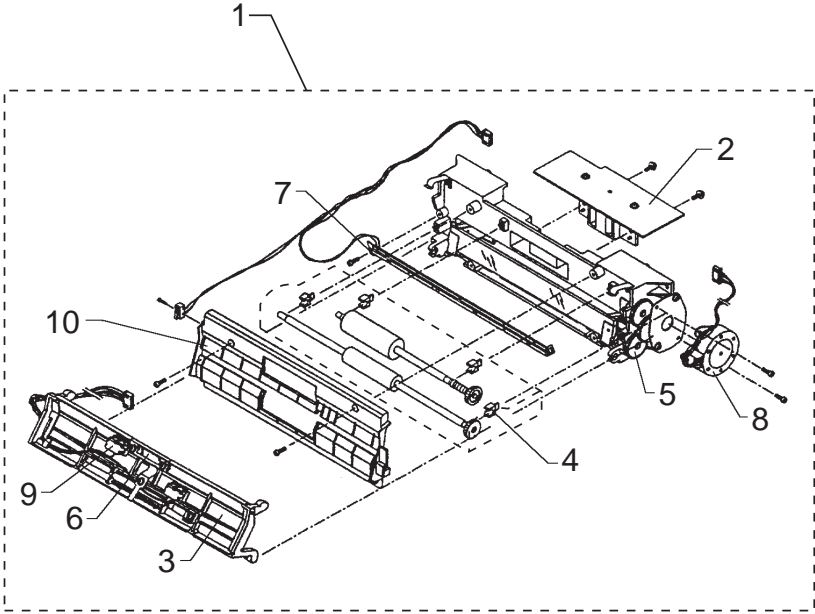
Assembly 7: Maintenance Station



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Maintenance Station Rocker Asm	1425669	1425669
2	Maintenance Station Drive Asm	1367399	1367399
3	Wiper & Cap B/M	1367389	1367389
4	Screw PP 1367169		

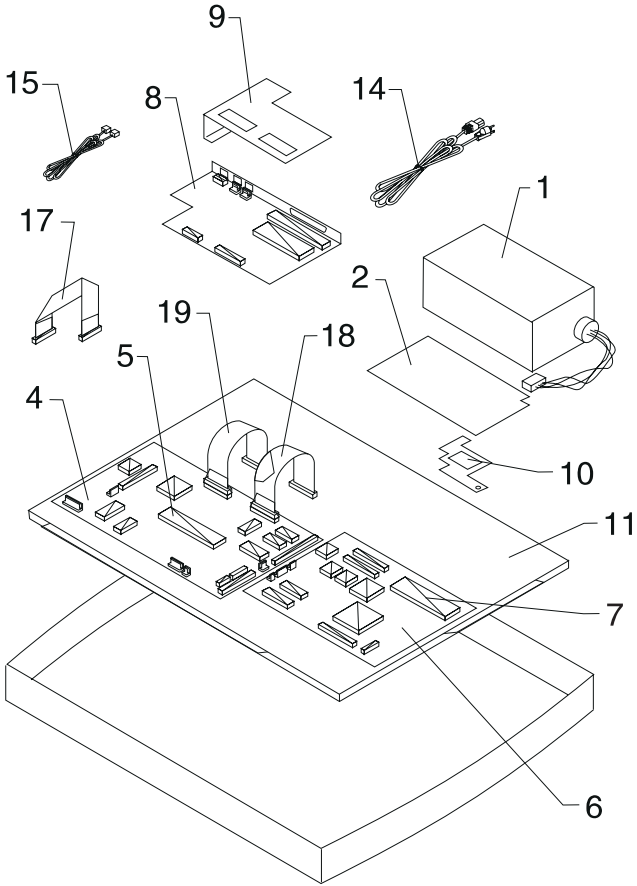
Assembly 8: Scanner



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Scanner, Complete	69G6836	69G6836
2	CCD Asm.	69G6857	69G6857
3	Front Frame Asm	69G6843	69G6843
4	Feed Roller Kit	69G6840	69G6840
5	Gear Kit (3 Gears)	69G6844	69G6844
6	Pad Unit	69G6845	69G6845
7	LED/Frame Switch Asm.	69G6841	69G6841
8	Motor Assembly	69G6842	69G6842
9	L/P Sensor	69G6839	69G6839
NS	Screws, PP 69G6846		
10	Paper Path Cover	69G6855	69G6855
12	Subframe, Scanner	69G6833	69G6833
13	Cap & Bracket Asm	69G6835	69G6835
14	Speaker	69G6838	69G6838
NS	Jumper, Front Frame ESD Gnd.	69G6862	69G6862
NS	Shield, Scanner	69G6863	69G6863

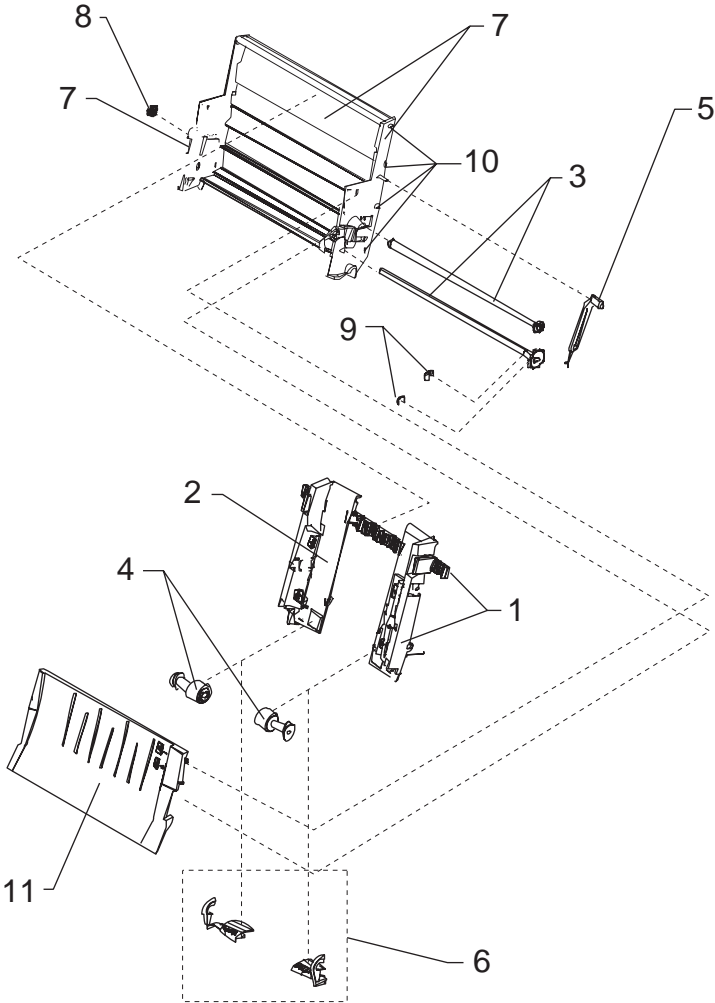
Assembly 9: Electronics



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Power Supply	69G6805	69G6805
2	PS Insulator	69G6879	69G6879
NS	Screw, PS Mounting	1624852	1624852
4	Fax Card, W/O EPROM	69G6800	69G6800
5	EPROM, Fax Card	69G6810	69G6810
6	Printer Card, W/O EPROM	69G6802	69G6802
7	EPROM, Printer Card	1375418	1375418
8	LCU Card w/Bezel	69G6808	69G6801
9	Shield, LCU Card	69G6880	69G6880
10	Shield, Printer	69G6881	69G6881
11	Shield Asm, Bottom	69G6837	69G6837
14	Line Cord, U.S.	69G6868	69G6868
15	Cable, Telephone	69G6892	69G6892
NS	Toroid, Printer/Fax Cable	69G6906	69G6906
16	Cable, Printer to Fax	69G6872	69G6872
17	Cable, Scanner to Fax	69G6873	69G6873
18	Cable, Fax to LCU Digital	69G6876	69G6876
19	Cable, Fax to LCU Analog	69G6877	69G6877
NS	Jumper, Fax Card J9 PP 69G6846		

Assembly 10: Automatic Sheet Feed (ASF)



4012-0XX

	Description	4012-005 P/N	4012-006 4012-009P/N
1	R. Edge Guide & Strip	1425574	1425574
2	L. Edge Guide Asm	1425578	1425578
3	Pick Roll & Paper Load B/M	1367469	1367469
4	Pick Roll Hub Asm	1367463	1367463
5	Paper Load Arm	1425580	1425580
6	Envelope Buckler B/M	1367019	1367019
7	Side & Back Plate B/M	1425582	1425582
8	Gears, B/M	1367249	1367249
9	E-Ring, PP 1367169		
10	Screw, PP 1367169		
11	Manual Insert Tray, Printer	1425585	1425585

4012-0XX

Assembly 11: Options

	Description	4012-005 P/N	4012-006 4012-009 P/N
1	Memory Option, 1MB (2 modules)	69G6803	69G6803
2	Memory Option, 3MB (6 modules)	69G6804	69G6804
3	Battery Option	69G6807	69G6807
NS	Screw, Battery Mounting PP 69G6846		
4	Demo code ROM, 4012-011,4012-012	69G6811	69G6811

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