



## *Service Manual*

**Lexmark Optra™ Color 45**

**4080-001**

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# 1. General Information

The Lexmark Optra™ Color 45 printer is a network, near laser-quality inkjet printer. The print cartridge contains single-unit customer-replaceable supply items. Dual printheads provide color and true black printing without changing printheads. The black cartridge has a total of 208 nozzles and installs on the left. The color cartridge has a total of 192 nozzles and installs on the right. The printer is capable of printing in two directions from either cartridge.

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## Power Consumption

- 13 Watts - Idle Mode (power on - not printing)
- 21 Watts - Printing (average)

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## Maintenance Approach

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

This printer can be serviced without being connected to a host computer. The user is directed, in the Printer Control program, to perform the head to head and bidirectional alignment adjustments after replacing a print cartridge.

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

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## Tools Required For Service

- Analog or digital multimeter
- Coax/serial debug cable P/N 1381964
- Parallel wrap plug P/N 1319128
- Pliers: diagonal and needle-nose
- Screwdrivers: #1 and #2 Phillips
- Twinax/serial debug cable P/N 1381963

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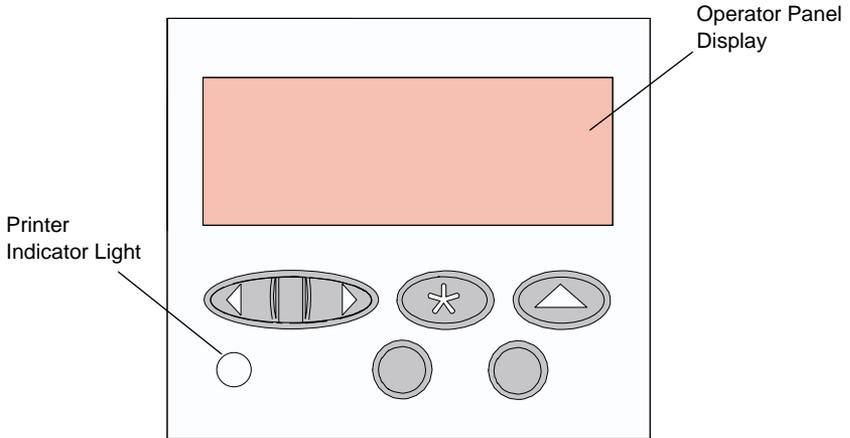
## Abbreviations

|      |                              |
|------|------------------------------|
| EOF  | End of Forms                 |
| ESD  | Electrostatic Discharge      |
| FRU  | Field Replaceable Unit       |
| LED  | Light-Emitting Diode         |
| POST | Power-On Self Test           |
| SIMM | Single In-line Memory Module |
| RAM  | Random Access Memory         |
| ROM  | Read Only Memory             |
| V ac | Volts alternating current    |
| V dc | Volts direct current         |

## Operator Panel and Menu

### Using the Operator Panel

The operator panel, on the front right side of your printer, has a 2-line by 16-character liquid crystal display (LCD), five buttons, and one indicator light.



### Printer Indicator Light

The printer indicator light gives information about the status of your printer.

| Light State | Meaning                                  |
|-------------|--|
| On solid    | Powered On and in the <b>Ready</b> state |
| Flashing    | Powered On and <b>Busy</b>               |
| Off         | Unplugged from the power source          |

## Operator Panel Buttons

Use the five operator panel buttons to open a menu, scroll through a list of values, change printer settings, and respond to printer messages. The following table describes the functions of each button.

**Note:** Buttons act upon the information that displays on the second line of the operator panel.

| Button                                    | Function   |
|---|--|
| <b>Go</b>                                 | <p>Press the <b>Go</b> button to:</p> <ul style="list-style-type: none"> <li>• Return the printer to the <b>Ready</b> state if the printer is in an offline situation (<b>Ready</b> message does not appear on the display).</li> <li>• Exit printer menus displayed on the operator panel.</li> <li>• Clear operator panel error messages.</li> </ul> <p>If you have changed printer settings from the operator panel menus, press <b>Go</b> before sending a job to print. The printer must display <b>Ready</b> for jobs to print.</p>  |
| <b>Menu&gt;</b><br>and<br><b>&lt;Menu</b> | <p>Each end of the button has a function.</p> <p>Press the <b>Menu&gt;</b> or <b>&lt;Menu</b> button:</p> <ul style="list-style-type: none"> <li>• At the <b>Ready</b> message, to take the printer <i>offline</i> (out of the <b>Ready</b> state) and enter the menus.</li> <li>• At the <b>Busy</b> message, to take the printer to the <b>JOB MENU</b>.</li> <li>• When the printer is offline: <ul style="list-style-type: none"> <li>- Press <b>Menu&gt;</b> to go to the next item in the menus, or</li> <li>- Press <b>&lt;Menu</b> to go to the previous item in the menus.</li> </ul> </li> <li>• For menu items that have numerical values, such as <b>Copies</b>, press and hold <b>Menu&gt;</b> to scroll forward, or <b>&lt;Menu</b> to scroll backward. Release the button when the number you want displays.</li> </ul> |
| <b>Select</b>                             | <p>Press the <b>Select</b> button to:</p> <ul style="list-style-type: none"> <li>• Select the menu item shown on the second line of the display. Depending on the type of menu, this action: <ul style="list-style-type: none"> <li>- Opens the menu and displays the first item in the menu.</li> <li>- Opens the menu item and displays the default setting.</li> </ul> </li> <li>• Save the displayed menu item as the new default setting. The printer displays the <b>Saved</b> message and then returns to the menu item.</li> </ul>   |

| Button        | Function   |
|---------------|--|
| <b>Return</b> | Press the <b>Return</b> button to return to the previous menu level.   |
| <b>Stop</b>   | Press the <b>Stop</b> button: <ul style="list-style-type: none"> <li>• At the <b>Ready</b>, <b>Busy</b>, or <b>Waiting</b> message to temporarily stop all activity and take the printer offline. The printer operator panel status message changes to <b>Not Ready</b>.</li> </ul> Press <b>Go</b> to return the printer to the <b>Ready</b> state. |

## Printer Messages

The operator panel displays three types of messages:

- Status messages provide information about the current state of the printer.
- Attendance messages indicate printer errors that you must resolve.
- Service messages indicate printer failures that may require servicing.

When the **Ready** status message displays, the printer is ready to receive a print job.

While a job is printing, the **Busy** status message appears on the first line of the operator panel display.

---

## Operator Panel Menus

Menus make it easy for you to change printer settings. Some menus appear only if a specific option is installed in the printer. Other menu items may only be effective for a particular printer language. You can select these values at any time, but they only affect printer function when you use the specified printer language.

An asterisk (\*) next to a value indicates the original factory default setting and may vary for different countries. When you select a new setting from the operator panel, the asterisk moves next to the selected setting to identify it as the current user default. These settings are active until new ones are stored or the factory defaults are restored. Changes made from a software application or driver override the user default settings made from the printer operator panel.

## Printing the Menu Settings Page

The menu settings page shows current settings for the menus and a list of installed options. You can use this page to verify that the printer options are properly installed and the printer settings are properly set.

**Note:** Before printing the menu settings page, make sure the Paper Type setting for the source is Plain Paper.

To print a menu settings page:

1. Make sure the printer is plugged in and the **Ready** status message appears on the display.
2. Press **Menu>** or **<Menu** to enter the menus.
3. Continue to press and release **Menu>** until you see **Tests Menu**.
4. Press **Select**.  
**Tests Menu** appears on the first line and **Print Menus** is on the second line.
5. Press **Select** to select **Print Menus**.  
The message **Printing Menu Settings** appears and remains on the operator panel display until the page prints. The printer returns to the **Ready** state after the menu settings page prints.
6. If you installed options, verify that they are listed on the menu settings page under "Installed Features." If an option you installed does not appear on the page, unplug the power cord and reinstall the option.

## Changing Printer Settings

You can use the operator panel to change printer settings and customize your printer to meet your specific needs. To select a new value as the default setting:

1. From the **Ready** state, press **Menu>** or **<Menu** to enter the menu.
2. Continue to press and release **Menu>** or **<Menu** until the menu you need appears on the second line of the display.
3. Press **Select**.  
The menu opens and the first menu item in the menu appears on the second line of the display.
4. Press **Menu>** or **<Menu** until the menu item you need appears on the display.
5. Press **Select**.  
An asterisk (\*) appears beside the current user default setting for that menu item.

**Note:** Some menu items have sub-menus. You must select another menu (such as **Tray 1 Type**) before the available values display.

6. Press **Menu>** or **<Menu** until the value you need appears on the second line of the display.
7. Press **Select**.  
An asterisk (\*) appears beside the value to indicate that it is now the user default setting. The display shows the new setting for one second and then clears. The **Saved** message displays, then the previous list of menu items appears on the operator panel display.
8. Press **Return** to go back to previous menus or menu items and set new default settings.
9. Press **Go** to return to **Ready** if this is the last printer setting you want to change.

**Note:** User default settings remain in effect until you save new settings or restore the factory defaults. Changes made from a software application override the user default settings made from the printer operator panel.

## Disabling the Operator Panel Menus

To disable the menus so that changes cannot be made to the printer default settings:

1. Unplug the printer.
2. While pressing **Go** and **Stop**, plug in the printer.
3. Release the buttons when **Performing Self Test** displays. When the printer self test completes, the **Ready** status message appears. If you press **Menu>** or **<Menu**, the **Menus Disabled** message displays.

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## 2. Diagnostic Information

Use the error indicator table, symptom tables, service checks, and diagnostic aids to determine the printer failure.

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### Start

Service error indications are displayed on the operator panel. If your printer displays an error indication, locate the error number in the **“Error Indicator Table” on page 2-2** and take the indicated action. Unplug the printer to clear the error indicator.

## Error Indicator Table

| Error             | Symptom   | Action   |
|-------------------|---|--|
| 900               | RIP software  | Refer to the <b>“Controller Board Service Check” on page 2-9.</b>  |
| 902               | Engine error:<br>065 Address error<br>127 - 223 Software<br>detection error   | Replace the engine board, refer to the <b>“Engine Board Removal” on page 4-22.</b>   |
| 910<br>930        | Carrier stall<br>Printhead error  | Refer to the <b>“Transport Service Check” on page 2-24.</b>  |
| 931<br>939        | Incomplete print<br>RIP - engine<br>communication                             | <p>Check the controller board cable connections. If the connections are good, replace the controller board, refer to the <b>“Controller Board Service Check” on page 2-9.</b></p> <p>If the problem remains, replace the engine board, refer to the <b>“Engine Board Removal” on page 4-22.</b></p> <p><b>Note:</b> The controller software can cause a 939 error.</p> |
| 941               | RIP code - CRC  | Refer to the <b>“Controller Board Service Check” on page 2-9.</b>  |
| 943               | RIP font version  | Replace Font SIMM.   |
| 944<br>945<br>946 | Processor failure<br>ASIC failure<br>SRAM failure                             | Refer to the <b>“Controller Board Removal” on page 4-20.</b>   |
| 947               | Engine board  | Replace the engine board, refer to the <b>“Engine Board Removal” on page 4-22.</b>   |
| 953<br>954<br>960 | NVRAM chip failure<br>NVRAM CRC failure<br>Controller Board DRAM<br>defective | Replace the controller board, refer to the <b>“Controller Board Removal” on page 4-20.</b>   |

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| <b>Error</b> | <b>Symptom</b>                               | <b>Action</b>  |
|--------------|--|--|
| 961          | DRAM in (J6) is bad                          | Replace the memory SIMM card in (J6).                  |
| 975          | Unrecognized network card                    | If the incorrect card is installed, replace the card.  |
| 976          | Unrecoverable software error in network card | Go to the <b>“Options Service Check” on page 2-13.</b> |
| 977          | Communication error with network card        | If the problem remains, replace the controller card.   |
| 978          | Network card checksum error                  | Replace network card.                                  |
| 979          | Flash/Network card error                     |  |

## Power-On Self Test (POST) Sequence

Plug the printer in and check for a correct POST operation by observing the following:

1. The operator panel displays one row of rectangles followed by two rows of diamonds.
2. The printer indicator (green light) comes on.
3. **Performing Self Test** is shown on the operator panel display and then turns off.
4. The carrier moves to the center of the frame and returns to the maintenance station.
5. The paper feed motor turns.
6. The printer indicator light turns off and then back on.
7. **Ready** is displayed indicating that POST is complete.

If your printer completes POST with no errors, go to the **“Symptom Tables” on page 2-6**, 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   |
|--|--|
| Blank display, carrier moves, paperfeed motor turns  | Go to the <b>“Operator Panel (LCD) Display Service Check”</b> on page 2-12.  |
| All diamonds on display  | Go to the <b>“Operator Panel (LCD) Display Service Check”</b> on page 2-12.  |
| <b>Performing Self Test</b> remains on display, no motors turn   | Go to the <b>“Power Service Check”</b> on page 2-19.   |
| Paper feed motor does not turn   | Go to the <b>“Paper Feed Service Check”</b> on page 2-15.  |
| Transport motor does not turn  | Go to the <b>“Transport Service Check”</b> on page 2-24.   |
| Carrier drives into left side frame  | Go to the <b>“Transport Service Check”</b> on page 2-24.   |
| Printer indicator light does not light, or remains on  | Go to the <b>“Operator Panel (LCD) Display Service Check”</b> on page 2-12.  |
| POST incomplete, printer indicator light on, no motors turn and <b>Performing Self Test</b> is displayed | Go to the <b>“Power Service Check”</b> on page 2-19.   |
| Printer inoperable   | Go to the <b>“Power Service Check”</b> on page 2-19.   |
| <b>Performing Self Test</b> remains on display, transport and paperfeed motors turn                      | Replace in the following order: <ul style="list-style-type: none"> <li>• Code SIMM (if installed)</li> <li>• Controller board</li> </ul> |

## Symptom Tables

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

### Carrier Transport Problems

| Symptom   | Action  |
|---|---|
| <ul style="list-style-type: none"> <li>• No carrier movement</li> <li>• Slow carrier movement</li> <li>• Carrier stops</li> </ul> | Go to the <b>“Transport Service Check” on page 2-24.</b>    |
| <ul style="list-style-type: none"> <li>• Carrier strikes left side frame</li> </ul>   | Go to the <b>“Transport Service Check II” on page 2-25.</b> |

### Communications Problems

| Symptom                                      | Action   |
|--|--|
| Printer not communicating with host computer | Go to the <b>“Parallel Wrap Test” on page 3-6.</b> |

### Maintenance Station Problems

| Symptom  | Action   |
|--|--|
| <ul style="list-style-type: none"> <li>• Fails to cap the printhead</li> <li>• Fails to clean the printhead</li> </ul> | Go to the <b>“Maintenance Station Service Check” on page 2-10.</b> |

## Operator Panel Problems

| Symptom  | Action  |
|--|---|
| Printer indicator light does not: <ul style="list-style-type: none"> <li>• Turn on</li> <li>• Flash</li> <li>• Turn off</li> <li>• All diamonds</li> </ul> | Go to the <b>“Operator Panel (LCD) Display Service Check”</b> on page 2-12. |
| One or two pels missing  | Replace the operator panel assembly.  |
| Only one button inoperative  | Replace the operator panel assembly.  |
| More than one button inoperative   | Go to the <b>“Operator Panel (Buttons) Service Check”</b> on page 2-11.     |
| All diamonds on display  | Go to the <b>“Operator Panel (LCD) Display Service Check”</b> on page 2-12. |

## Paper Feed Problems

| Symptom  | Action   |
|--|--|
| Paper fails to stop at first print line <ul style="list-style-type: none"> <li>• Fails to pick paper</li> <li>• Picks more than one sheet of paper</li> <li>• Picks paper but fails to feed</li> <li>• Paper jams</li> <li>• Paper fails to exit</li> <li>• Noisy paper feed</li> <li>• Paper skews</li> </ul> | Go to the <b>“Paper Feed Service Check”</b> on page 2-15.  |
| Paper does not feed, motor does not turn   | Go to the Paper Feed Service Check <b>“Paper does not feed - paper feed motor does not turn”</b> on page 2-16.               |
| Paper does not feed motor attempts to turn   | Go to the Paper Feed Service Check <b>“Paper does not feed - paper feed motor turns in only one direction”</b> on page 2-17. |

## Power Problems

| Symptom            | Action   |
|--------------------|--|
| Printer inoperable | Go to the <b>“Power Service Check” on page 2-19.</b> |

## Print Quality Problems

| Symptom   | Action   |
|---|--|
| <ul style="list-style-type: none"> <li>• Voids in characters</li> <li>• Light print</li> <li>• Prints off the page</li> <li>• Fuzzy print</li> <li>• Carrier moves but does not print</li> <li>• Printhead drying prematurely</li> <li>• Vertical alignment off</li> <li>• Excessive ink flow (Flooding)</li> <li>• Horizontal banding</li> </ul> | Go to the <b>“Print Quality Service Check” on page 2-21.</b> |
| <ul style="list-style-type: none"> <li>• Ink smearing</li> <li>• Vertical streaks on paper</li> <li>• Print lines crowded</li> </ul>  | Go to the <b>“Paper Feed Service Check” on page 2-15.</b>    |

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## Service Checks

### Controller Board Service Check

|   | FRU              | Action  |
|---|------------------|---|
| 1 | Code SIMM        | Some printers may contain a code SIMM located in the option card(s) (J6) on the controller board. If a SIMM is present, replace the code SIMM, go to the <b>“Code or Flash SIMM Removal” on page 4-19</b> . If the problem remains, continue to step 2. |
| 2 | Controller Board | If the printer does not contain a code SIMM in the option card(s) (J6), replace the controller board, go to the <b>“Controller Board Removal” on page 4-20</b> .  |

### Encoder Card / Strip Service Check

**Note:** Be sure the printer is unplugged from the AC outlet before performing this service check.

Disconnect the transport motor (CN5) from the engine board. Move the carrier to where it is parked over the maintenance station, turn the printer on and after Performing Self Test appears on the display, wait approximately five seconds and move the carrier to the center of the printer and back to the maintenance station. Ready should appear on the display. If not, check the connection at the encoder card (CN1) and retest. If the problem remains, replace the encoder card, refer to the **“Encoder / Thermistor Card Removal” on page 4-21**. You may have to perform this check several times.

## End of Forms (EOF) Service Check

Before turning the printer on, remove any paper from the input tray and insert one sheet of paper into the manual paper tray slot. If paper feeds through the machine when the printer is turned on, the sensor is functioning properly. If paper fails to feed, check the end of forms sensor flag for correct operation. If the operation is bad, replace the flag. If the operation is good, replace the engine board, refer to the **“Engine Board Removal” on page 4-22.**

## 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 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 caps to rise and seal the printheads. Carrier movement to the left will uncap the printheads. The wipers clean the printhead nozzles as the carrier leaves the maintenance station. The wipers clean the printheads only when the carrier is moving to the left. There should be no wiping action of 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 wipers to lower.<br><br>Check the maintenance station for worn or broken parts. |
| 2 | Wiper                        | A worn wiper can cause degraded print quality just after a maintenance cleaning. Check for loose or worn wiper.   |
| 3 | Cap                          | A worn cap can cause the printhead nozzles to dry and clog. Check for loose or worn cap.  |

## Noisy Paper Feed Motor Service Check

|   | FRU              | Action  |
|---|------------------|---|
| 1 | Paper Feed Motor | <p>Check the following motor pins for approximately 12.5 ohms:</p> <p style="text-align: center;"><b>(CN6-1) and (CN6-2)</b><br/><b>(CN6-3) and (CN6-4)</b></p> <p>If incorrect, replace the paper feed motor, refer to the <b>“Paper Feed Motor Removal” on page 4-16.</b></p> |
| 2 | Gears            | Check the gears for proper alignment, chipped teeth, loose motor, missing gear clip or worn gears.  |

## Operator Panel (Buttons) Service Check

**Note:** Perform the **“Button Test” on page 3-4**, before continuing this service check.

|   | FRU   | Action   |
|---|---|--|
| 1 | Operator Panel Assembly                     | If any button fails the button test, replace the operator panel assembly.  |
| 2 | Controller Board<br>Operator Panel Assembly | Be sure the voltage at (JT6-2) measures +5 V dc. If the voltage is incorrect, replace the controller board. If the voltage is correct, check the continuity of the operator panel cable. Replace the operator panel cable if continuity is incorrect. If correct, replace the operator panel assembly. |

## Operator Panel (LCD) Display Service Check

**Note:** Be sure the operator cable is properly installed at the controller board (JT6) and at the operator panel. Check the continuity of the cable and replace if necessary.

### Operator panel display blank - printer indicator light OFF, paperfeed motor turns, carrier moves.

|   | FRU                     | Action  |
|---|-------------------------|---|
| 1 | Controller Board        | Verify the voltage at (JT6-2) on the controller board is approximately +5 V dc. If incorrect, replace the controller board. If correct, go to step 2.   |
| 2 | Operator Panel Assembly | Verify that the resistance between (JT6-4) and ground on the controller board is approximately 0 ohms. If incorrect, replace the controller board. If correct, replace the operator panel assembly. |

### Operator panel display blank - printer indicator light ON.

|   | FRU   | Action  |
|---|---|---|
| 1 | Controller Board<br>Operator Panel Assembly | Verify that the resistance between (JT6-4) and ground on the controller board is approximately 0 ohms. If incorrect, replace the controller board. If correct, replace the operator panel assembly. |

## Options Service Check

### Flash Memory Option(s)

Run a copy of the test page and check to see if the option you are checking is listed. The printer does not recognize the option being installed if the option is not listed. Check to make sure that the Memory SIMM is installed correctly and is not broken or damaged. If the Memory SIMM is correctly installed, and not broken or damaged, then run the **“Flash Test” on page 3-10**. If the test fails, replace the flash SIMM. If the problem continues, replace the controller board, refer to the **“Controller Board Removal” on page 4-20**.

### DRAM Memory Option(s)

This service check is the same as the flash memory option service check with the following exception:

Run the **“DRAM Memory Test” on page 3-5** from the menu if the DRAM Memory SIMM is correctly installed and not broken or damaged. If the test fails, replace the DRAM SIMM, refer to the **“Memory (SIMM) Card Cover Removal” on page 4-7**. If the problem continues, replace the controller board, refer to the **“Controller Board Removal” on page 4-20**.

### Hard Disk Option

Be sure the hard disk and the hard disk adapter board are correctly installed. Run the **“Quick Disk Test” on page 3-8** from the Device Test on the Diagnostic Menu when a problem is suspected either with the hard disk adapter board or with the hard disk.

**Note:** The Quick Disk Test is a non-destructive test and indicates Pass or Fail. If the test fails, replace the hard disk, refer to the **“Option Card(s) Removal” on page 4-25**. If a problem still exists, replace the controller board, refer to the **“Controller Board Removal” on page 4-20**.

The **“Disk Test/Clean” on page 3-9** is used to help restore the disk if the data is corrupted and unusable. This test is divided into a cleaning and a verifying section.

**Note:** The test can be very lengthy and leaves the hard disk unformatted. The servicer or user must reformat the disk using the

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Format Disk Menu operation. This is a destructive test, as the data on the disk is destroyed and should not be performed on a known good disk.

### Network Card Option

#### Error Code 976 - Network Card

A 976 error code indicates an unrecoverable software error in network card. Verify that the network card is correctly installed in the controller board socket, and is properly grounded. If you find no problem, contact your next level of support before replacing the network card.

#### Error Code 977 - Network Card

A 977 error displays when the RIP software detects that a network card is installed, but cannot establish communications with the network card. Replace the network card, refer to **“Option Card(s) Removal” on page 4-25**. If the problem remains, replace the controller board, refer to **“Controller Board Removal” on page 4-20**.

## Paper Feed Service Check

**Note:** Be sure the printer is unplugged from the AC outlet before performing this service check.

### Perform the following, if you are experiencing a paper jam:

- Check the entire paper path for obstructions.
- Be sure the input tray contains not more than 150 sheets of paper and the manual tray not more than 100.
- Be sure the correct type of paper is being used.
- Check for static in the paper.
- Ensure the correct position of the left paper adjuster guide lifter assembly.
- Check for skew by performing the **“Test Page (Quick Test)” on page 3-15.**

|   | FRU        | Action   |
|---|------------|--|
| 1 | Gears      | Check for binds in the gear train and paper feed mechanism by rotating the large feed roll by hand.<br><br>Check all gears for correct installation and signs of wear or damage. If there is a bind, isolate it by removing one of the small idler gears on the inside of the left side frame. Replace any worn or binding gears or rollers. |
| 2 | Paper Path | Perform the <b>“Paper Path Service Check” on page 2-18.</b>  |

**Paper does not feed - paper feed motor does not turn**

**Note:** A noisy or chattering motor or a motor that fails to turn can be caused by:

- A defective motor
- A bind in the paper feed mechanism
- Defective gears
- Defective engine board
- Defective power supply (+30 V dc)

|   | <b>FRU</b>             | <b>Action</b>  |
|---|------------------------|--|
| 1 | Engine Board           | With (CN6) connected and power on, check the voltage between Pins 1,2,3,4 and ground. The voltage should measure between +15 V dc and +32 V dc when paper is feeding. If the voltage is correct, replace the engine board.   |
| 2 | Paper Feed Motor       | Check the motor pins between (CN6-1) and (CN6-2) for approximately 12.5 ohms. Also check (CN6-3) and (CN6-4) for approximately 12.5 ohms. If incorrect, replace the paper feed motor assembly. If correct, check the continuity between each motor pin on the motor connector and the motor case. If continuity exists, replace the paper feed motor assembly. If the symptom remains, go to step 3.<br><br><b>Note:</b> If a short exists in the paper feed motor, damage to the system board drivers and power supply may occur. |
| 3 | Power Supply           | Disconnect the AC line cord. Disconnect (J2-6) from the controller board and verify the voltage on the cable is approximately +30 V dc. If incorrect, replace the power supply.  |
| 4 | Engine Board           | Check continuity between (J2-6) on the controller board and (C10-36) on the system board. If correct, replace the engine board. If correct, go to step 5.  |
| 5 | Controller Board Cable | Check the continuity of the controller board cable. If incorrect, replace the cable. If correct, replace the controller board.   |

**Paper does not feed - paper feed motor turns**

**Note:** A noisy or chattering motor or a motor that fails to turn can be caused by:

- A defective motor
- A bind in the paper feed mechanism
- Defective gears
- Defective engine board

|   | <b>FRU</b>        | <b>Action</b>   |
|---|-------------------|---|
| 1 | Gear Box          | Check the clutch lever for obstructions and the gear box for binds and wear. Replace worn or binding gears.   |
| 2 | Gears             | Check for binds in the gear train and paper feed mechanism by rotating the large feed roll by hand. If you notice a bind, isolate it by removing one of the small idler gears on the inside of the left side frame. Replace any worn or binding gears or rollers. |
| 3 | Large Feed Roller | Be sure that the large feed roller is clean.  |
| 4 | Paper Lifters     | Check the paper lifters, pads and paper tray for proper positioning.  |
| 5 | Paper Adjuster    | Check for correct position of the left paper adjuster guide lifter assembly.  |

**Paper does not feed - paper feed motor turns in only one direction**

- When paper is fed from the input tray, the paper feed motor rotates counterclockwise actuating the paper lifters, followed by a clockwise rotation.
- When feeding from the manual tray, the paper feed motor rotates in only one direction. If, when paper is fed from the input tray and the motor turns in one direction only, replace the engine board.

## Paper Path Service Check

Examine the printer 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 the paper is positioned properly.
- Be sure the correct type of paper is being used.
- Be sure the printer is installed on a flat surface.

|   | <b>FRU</b>                   | <b>Action</b>  |
|---|------------------------------|--|
| 1 | Large and Small Feed Rollers | Check for wear and binds.  |
| 2 | Small Feed Roller Springs    | Check for damage.  |
| 3 | Exit Roller<br>Star Rollers  | Check for wear and binds.  |
| 4 | Input / Output Tray          | Check the following for wear or damage: <ul style="list-style-type: none"> <li>• Paper lifters assemblies</li> <li>• All parts inside the left and right edge guides.</li> </ul> |
| 5 | End-of-Forms Flag & Spring   | Check for binds or damage.   |

## Power Service Check

### Dead Machine

**Note:** Remove paper from printer prior to performing the dead machine service check. Observe all necessary ESD precautions when removing and handling the controller board, engine board or any of the installed option cards or assemblies.

|   | FRU                    | Action   |
|---|------------------------|--|
| 1 | AC Outlet              | Check the AC outlet for correct line voltage. If incorrect, inform the customer.   |
| 2 | Power Line Cord        | Check the power line cord for damage. Check the continuity of the line cord and replace if necessary.  |
| 3 | Power Supply Fuse (F1) | <p>Verify the voltage between (J2-1) on the power supply connector and ground is approximately +5 V dc. If incorrect, check fuse F1. If the fuse is defective, replace the fuse and re-verify the voltage at (J2-1).<br/>If incorrect, continue to step 4.</p> <p><b>Note:</b> Disconnect the line cord prior to checking fuse F1.</p>   |
| 4 | Power Supply           | <p>If fuse (F1) continues to fail, replace the fuse and disconnect the (J2) connector from the controller board before applying power.</p> <p>Check for approximately +5 V dc between connector (J2-1) and ground. If incorrect replace the power supply. If correct, disconnect all connectors to the controller board except (J2).</p> <p>Check for approximately +5 V dc between connector (J2-1) and ground. If incorrect, replace the controller board.</p> <p>Reconnect the (J1) engine board connector and disconnect all cables connected to the engine board. Check for approximately +5 V dc between connector (J2-1) and ground. If incorrect, replace the engine board. If correct, reconnect one cable at a time checking the voltage at (J2) each time until the problem is found.</p> |

**POST incomplete, printer indicator light on, Performing Self Test is displayed and no motors turn.**

**Note:** Excessive ink may be present in the maintenance station caps.

|   | FRU                          | Action  |
|---|------------------------------|---|
| 1 | Power Supply                 | Check for approximately +30 V dc at (J2-6) on the controller board.   |
| 2 | Transport Motor Engine Board | Check for approximately +30 V dc at (CN5-1) on the engine board. If correct, disconnect the motor and check the resistance between (CN5-1) and (CN5-2), which should measure between 10.5 - 12.5 ohms. If the resistance is incorrect, replace the motor. If the resistance is correct, check for approximately +30 V dc on the transistor tab Q17 on the engine board. If the voltage is incorrect, replace the engine board. If the voltage is correct, go to step 3. |
| 3 | Controller Board Cable       | Check the continuity of the controller board cable. If incorrect, replace the cable. If correct, replace the engine board. if the problem remains, replace the controller board.  |

## Print Quality Service Check

**Note:** Before troubleshooting any print quality problem, be sure the cartridge is in good condition. Set print quality to normal and be sure the correct paper type is selected in the paper menu. Set the color menu to Vivid and select black and white if checking B/W print quality.

|   | <b>FRU</b>                 | <b>Action</b>   |
|---|----------------------------|---|
| 1 | Printhead Carrier Assembly | Re-seat the printhead cables in the engine board and check the following parts for wear or damage: <ul style="list-style-type: none"><li>• Print Cartridge Latch</li><li>• Latch Spring</li><li>• Carrier</li></ul> |

|   | FRU  | Action   |
|---|--|--|
| 2 | Engine Board<br>Printhead Cable<br>Rubber Backer | <p>Perform the <b>Clean Heads</b> from the diagnostic mode. Look for a break in the diagonal line of the test pattern. A broken line indicates one or more print nozzles are not working. 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 engine board.</p>  <p>If there is a single break or random breaks in the diagonal line check the following:</p> <ul style="list-style-type: none"> <li>• Check the gold-plated contacts, on the end of the cable that connect 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.</li> <li>• A worn rubber backer results in poor contact between the printhead cable and the print cartridge. Check the rubber backer for wear.</li> <li>• Refer to the test page. The temperature value is Celsius.</li> </ul> <p><b>Note:</b> Printing slows to prevent overheating and excessive ink flow, when the temperature is above the normal operating range, or when printing complex graphics.<br/>                     The normal operating temperature range is 60 to 90° F (16 to 32° C). If the printer is operating in a warm environment, &gt;104° F (40° C), excessive ink may flow from the cartridge. The operating temperature can be found by performing the <b>“Cleaning the Printheads” on page 3-2.</b></p> |
| 3 | Maintenance Station                              | <p>Intermittent nozzle failures can be caused by worn parts in the maintenance station. Perform the <b>“Maintenance Station Service Check” on page 2-10</b>, then return to this check.</p>  |

|   | FRU        | Action   |
|---|------------|--|
| 4 | Paper Feed | <p>Ink smudging and smearing can be caused by paper problems or problems in the paper feed area.</p> <p>Check the following:</p> <ul style="list-style-type: none"> <li>• Correct type of paper is being used.</li> <li>• Paper for curl or wrinkles.</li> <li>• Feed rollers for wear, dirt, or looseness.</li> <li>• Gears for wear or binds.</li> <li>• Paper path for obstructions.</li> </ul>   |
| 5 | 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"> <li>• Transport belt for wear and full engagement into the carrier grip.</li> <li>• Carrier guide rod for wear or dirt.</li> <li>• Carrier to carrier frame engagement should be lubricated with grease P/N 99A0394. Lubricate the carrier guide rod and carrier frame on both sides where the two surfaces ride on the frame.</li> <li>• Idler pulley parts for wear, damage, or looseness.</li> <li>• Encoder strip for wear or dirt.</li> </ul> |
| 6 | Alignment  | <p>Characters having uneven or jagged edges, or uneven vertical, horizontal, bidirectional (black or color) alignment can be checked by entering Diagnostics Mode and selecting <b>Align Cartridges</b>.</p>   |

## Transport Service Check

**Note:** If the carrier strikes the left side frame and continues to drive into the frame, refer to the **“Transport Service Check II” on page 2-25.**

|   | FRU   | Action   |
|---|---|--|
| 1 | Transport Motor                                     | <p>Check the motor for binds, or loose motor pulley.</p> <p>Disconnect the transport motor (J5) from the engine board. Check for approximately 12 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 engine board.</p> |
| 2 | Engine Board  | <p>Disconnect (CN5) from the engine board and check for approximately +30 V dc between (CN5-1) and ground. If incorrect, replace the engine board.</p>   |
| 3 | Carrier Guide Rod                                   | <p>Clean the carrier rod.</p> <p><b>Note:</b> Lubricate the rod and the carrier rod bearing surface.</p>   |
| 4 | Carrier Belt<br>Idler Pulley Parts<br>Carrier Frame | <p>Check for worn, loose or broken parts. Check for obstructions blocking carrier movement.</p>  |
| 5 | Encoder Strip<br>Encoder Card                       | <p>Check the encoder strip for wear, dirt and grease.</p> <p>Go to the <b>“Encoder Card / Strip Service Check” on page 2-9.</b></p>  |
| 6 | Printhead Cable                                     | <p>Be sure all connectors are fully seated. Check the cables for damage.</p>   |
| 7 | Maintenance Station                                 | <p>A problem with the maintenance station can cause carrier movement problems at the right margin. Go to the <b>“Maintenance Station Service Check” on page 2-10.</b></p>  |

## Transport Service Check II

### Carrier strikes left side frame and continues to drive into frame

**Note:** Be sure the printer is unplugged from the AC outlet before performing this service check.

- Check the carrier cable connection at (CN2) and encoder connection at (CN1) on the engine board.
- If the problem remains, disconnect the transport motor (CN5) connection from the engine board, turn the printer on and wait until “Performing Self Test” appears on the display. Manually move the carrier to the center location and then back to where it is parked over the maintenance station. After several seconds, “Ready” should appear on the display. If not, check the connection at the encoder card (CN1) and retest. If the problem remains, replace the encoder card.

## Tray 2 Service Check

**Note:** Be sure the tray 2 is properly installed and loaded.

### Paper does not feed.

|   | FRU               | Action  |
|---|-------------------|---|
| 1 | Drive Gear        | Check for binds and any obstructions in the paper path.   |
| 2 | Tray 2 Drive Gear | Be sure the drive gear clips are properly installed. Be sure the tray 2 drive gear and left side frame drive gear are properly meshed together.                                   |
| 3 | Tray 2 Sensor     | Disconnect (CN11) and check the continuity of the tray 2 sensor switch. If the switch is defective, replace the switch. If the switch is not defective, replace the system board. |

**Paper does not feed, but gears turn.**

|   | <b>FRU</b>      | <b>Action</b>  |
|---|-----------------|--|
| 1 | Drive Belt      | Check for binds and any obstructions in the paper path. Be sure the tray 2 and drive gear are properly installed. Be sure the drive belt is properly installed.  |
| 2 | Autocompensator | Check the autocompensator and clutch spring. Be sure the roller on the autocompensator turns when paper is fed. If the roller fails to turn, be sure the drive belt is installed properly. If the problem remains, replace the paper tray 2. |

**Paper Tray 2 is noisy when feeding paper.**

|   | <b>FRU</b>        | <b>Action</b>   |
|---|-------------------|---|
| 1 | Gears             | Be sure the tray 2, drive gear and clip are installed properly.   |
| 2 | Tray 2 Drive Gear | Be sure the drive gear clips are properly installed. Be sure the tray 2 drive gear and left side frame drive gear are properly meshed together. |

## User Error Messages

| Message  | Explanation  |
|--|--|
| 30 Cartridges Missing: <ul style="list-style-type: none"> <li>• Color</li> <li>• Black</li> <li>• Photo</li> </ul> | Press the <b>Go</b> button to clear the error. At this point the Supplies status appears on the display and the cartridge missing shows in the supplies menus. This remains until the user accesses the Tests Menu to install a cartridge and fill the empty slots. If a print job is sent while in this state, it may result in poor print quality since the job most likely requires the missing cartridge.  |
| 38 Memory Full   | Press <b>Go</b> to clear the message and continue processing the job. Some data will be lost. You must allow additional memory to complete your print job by: <ul style="list-style-type: none"> <li>• Deleting fonts, macros and other data in RAM.</li> <li>• Simplifying your print job.</li> <li>• Installing additional memory.</li> </ul> Press <b>Menu&gt;</b> or <b>Menu&lt;</b> to access the reset function in the Busy/Waiting Menu group.<br>Menu Lockout does not prevent access to the Busy/Waiting Menu group. The menu buttons are not active when Reset Control is Off. |
| 51 Defective Flash   | Press <b>Go</b> to clear the message and continue processing the job. All downloaded fonts and macros not written to flash will be deleted.<br>Press <b>Menu&gt;</b> or <b>Menu&lt;</b> to access the reset function in the Busy/Waiting Menu group.<br>Menu Lockout does not prevent access to the Busy/Waiting Menu group. The menu buttons are not active when Reset Control is Off.  |
| 53 Unformatted Flash   | Press <b>Go</b> to clear the message. The flash will be marked as bad and normal operation will continue. Flash operations will not be allowed until the flash is formatted.   |
| 54 Serial Option x Error   | This error indicates that the serial port has been improperly set.   |

| Message           | Explanation   |
|-------------------|---|
| 54 Parallel Error | <p>This error occurs when a IEEE 1284 protocol error has been detected on the parallel host interface, or due to a faulty cable.</p> <p>Once a host interface error has been displayed for the first time, reporting of further host interface errors for the associated port is suppressed until the interface parameters are changed, or the printer is powered off.</p> <p>Press <b>Go</b> to clear the message and continue processing the print job. The job may not print correctly. Verify that the correct cable is used. If a serial error has occurred, be sure the serial interface parameters (protocol, baud, parity and data bits) are set correctly on the printer and the host computer. If a parallel error has occurred, check the cable connection between the host and printer.</p> <p>Press <b>Menu&gt;</b> or <b>Menu&lt;</b> to access the reset function in the Busy/Waiting Menu group.</p> <p>Menu Lockout does not prevent access to the Busy/Waiting Menu group. The menu buttons are not active when Reset Control is Off.</p> <p>Press and hold Select and then press Return to determine the exact cause of host interface error.</p> <p>If a serial error has occurred, a 16-bit error code displays in hexadecimal on the second line of the LCD. If bit 15 is on, a framing error has occurred. If bit 14 is on, an overrun error has occurred. If bit 13 is on, a parity error has occurred.</p> |

| Message                   | Explanation   |
|---------------------------|---|
| 56 Serial x Port Disabled | <p>This error occurs when data is sent to the printer across the optional serial port x (where x=1, 2, or 3), but the port is disabled.</p> <p>Once the error displays the first time, reporting of further errors is suppressed until the menus are entered, or the printer is reset.</p> <p>Press <b>Go</b> to clear the message. The printer discards any data received on the serial port. Enable the serial port.</p> <p>Press <b>Menu&gt;</b> or <b>Menu&lt;</b> to access the reset function in the Busy/Waiting Menu group.</p> <p><b>Note:</b> The menu buttons are not active when Reset Control is Off.</p> <p><b>Note:</b> Menu Lockout does not prevent access to the Busy/Waiting Menu group.</p> |
| 56 Parallel Port Disabled | <p>Once the error has been displayed for the first time, reporting of further error is suppressed until the menus are entered, or the printer is reset.</p> <p>Press <b>Go</b> to clear the message. The printer discards any data received on the serial port. Enable the serial port.</p> <p>Press <b>Menu&gt;</b> or <b>Menu&lt;</b> to access the reset function in the Busy/Waiting Menu group.</p> <p><b>Note:</b> The menu buttons are not active when Reset Control is Off.</p> <p><b>Note:</b> Menu Lockout does not prevent access to the Busy/Waiting Menu group.</p>  |
| 61 Defective Disk         | <p>Press <b>Go</b> to clear the message. The disk will be marked as defective and normal printer operation continues. Disk operations are not allowed with a defective disk, and the Format Disk menu item is not shown.</p>  |

| Message             | Explanation  |
|---------------------|--|
| 62 Disk Full        | <p>Press <b>Go</b> to clear the message and continue processing the job. All downloaded fonts and macros not written to disk are deleted.</p> <p>Press <b>Menu&gt;</b> or <b>Menu&lt;</b> to access the reset function in the Busy/Waiting Menu group.</p> <p><b>Note:</b> The menu buttons are not active when Reset Control is Off.</p> <p><b>Note:</b> Menu Lockout does not prevent access to the Busy/Waiting Menu group.</p> |
| 63 Unformatted Disk | <p>Press <b>Go</b> to clear the message. The disk will be marked as bad and normal operation continues. Disk operations are not allowed until the disk is formatted.</p>   |
| 200 Paper Jam       | <p>This message indicates that a paper jam has occurred. If the error does not clear after cleaning the paper jam, go to the <b>“Paper Feed Service Check”</b> on page 2-15.</p>   |

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## 3. Diagnostic Aids

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### Diagnostic Mode

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To enter the Diagnostic Mode:

1. Turn the printer off.
2. Press and hold the **Go** and **Return** buttons.
3. Turn the printer on.
4. Release the buttons when **Performing Self Test** displays on the operator panel.

**Note:** Select **Exit Diagnostics** to return to normal mode.

The tests display on the operator panel in the order shown:

- Print Tests
- Hardware Tests
- Printer Setup
- Error Log
- Align Cartridges
- Base Sensor Tests
- Exit Diagnostics

---

## Aligning the Cartridges

1. Enter **Diagnostics Mode**.
2. Select **Align Cartridges**.
3. Press **<MENU>** to select the test.
4. Press **Select**
  - Horizontal Align
  - Vertical Align
  - Bi-di Black Align
  - Bi-di Color Align
5. Test (A) Alignment = XX\* - The alignment can be changed by pressing **<MENU>** to change the setting.
6. Press **SELECT** to save the setting.
7. Once any changes have been made, a test page can be printed showing the changes by selecting Print Align Page.
8. Use the test page to check each alignment, A-D.
9. If changes are necessary repeat step 5.

---

## Cleaning the Printheads

1. Enter **Diagnostics Mode**.
2. Select **Hardware Test**.
3. Press **<MENU>** to go to "Clean Heads".
4. Press **Select**. The nozzle test pattern test page prints.

---

## Paper Lifters Operation Theory

As the carrier applies pressure against the clutch lever, located in the gear box assembly, the left and right paper lifters engage, positioning the media into the printer. Media is then pulled through the printer by the combination of torque action between the paper feed motor and the large feed roller, and friction between the paper feed motor and the media.

---

## Error Log

### Viewing the Error Log

The error log is helpful to the servicer by providing a history of printer errors. The error log contains the 12 most recent errors. The most recent error displays in position 1 and the oldest error displays in position 12 (if 12 errors have occurred). If an error occurs after the log is full, the oldest error is discarded. Identical errors in consecutive positions in the log are entered. All 2xx and 9xx error messages are stored in the error log.

To view the Error Log:

1. Select **Display Log** from the Error Log menu. The Error log displays on 3 screens as only 4 entries display at a time.
2. To move to the next screen press **Menu>** to move forward or **<Menu** to move backward.
3. Press **Return/Stop** to exit the Error Log.

### Clearing the Error Log

To clear the Error Log:

1. Select **Clear Log** from the Error Log menu.
2. Select **YES** to clear the Error Log or **NO** to exit the Clear Log menu. If YES is selected, the **Empty Error Log** displays on the screen.
3. Press **Return/Stop** to exit the Clear Log menu.

---

## Hardware Tests

The following Hardware Tests can be selected from this menu:

- Clean Heads
- LCD Test
- Button Test
- DRAM Memory Test
- ROM Memory Test
- Parallel Wrap (if available)
- Serial Wrap (if available)

### LCD Test

To run the LCD Test:

1. Select **LCD Test** from the Diagnostic menu.  
(The LCD test continually executes the LCD display test).
2. Press **Return/Stop** to cancel the test.

### Button Test

To run the Button Test:

1. Select **Button Test** from the Diagnostic menu. With no buttons pressed several **OP** (Open) appear on the display.
2. Press each button one at a time and a **CL** (Closed) displays in place of an **OP**. The proper operation of each button can be checked.
3. Press **Return/Stop** to cancel the test.

## DRAM Memory Test

The purpose of this test is to check the validity of DRAM, both standard and optional. The test writes patterns of data to DRAM to verify that each bit in memory can be set and read correctly.

### To run the DRAM Memory Test:

1. Select **DRAM Memory Test** from the menu. The power indicator blinks indicating the test is in progress.
2. Press **Return/Stop** to exit the test.

P:##### represents the number of times the memory test has passed and finished successfully. Initially 000000 displays with the maximum pass count being 999,999.

F:##### represents the of time the memory test has failed and finished with errors. Initially 00000 displays with the maximum fail count being 99,999.

Once the maximum pass count or fail count is reached, the test is stopped, the power indicator is turned on solid, and the final results display. If the test fails, the message DRAM Error, displays for approximately 3 seconds and the failure count increases by 1.

## ROM Memory Test

The ROM Memory Test is used to check the validity of the RIP code and fonts.

To run the ROM Memory Test:

1. Select **ROM Memory Test** from the menu. P and F represent the same numbers for DRAM. The power indicator blinks indicating the test is in process. The test runs continuously.
2. Press **Return/Stop** to exit the test.

Each time the test finishes, the screen updates with the result. If the test passes, the Pass Count increases by 1, however if the test fails, one of the following messages displays for approximately 3 seconds:

### **ROM Checksum Error, ROM Burst Read Error**

Once the maximum pass count or fail count is reached, the test stops with the power indicator on solid. The final results display on the screen.

## Parallel Wrap Test

This test is used with a wrap plug to check operation of the parallel port hardware. Each parallel signal is tested.

To run the Parallel Wrap Test:

1. Disconnect the parallel interface cable and install the wrap plug (P/N 1319128).
2. Select the **Parallel Wrap Test** from the menu. The printer indicator light flashes indicating the test is in progress. The test runs continuously until canceled.

Each time the test finishes, the screen updates. If the test passes, the Pass Count increases by 1, however if the test fails, an error message displays for approximately 3 seconds. Once the maximum count is reached the test stops. The power indicator shows solid and the final results display.

3. Press **Return/Stop** to exit the test.

## Serial Wrap Test

This test is used to check the operation of the Serial Port Hardware using a wrap plug. Each signal is tested.

### To run the Serial Wrap Test:

1. Disconnect the serial interface cable and install the wrap plug.
2. Select the **Serial Wrap Test** from the menu. The power indicator blinks indicating the test is running.
3. This test runs continuously unless canceled by pressing **Return/Stop**.

Each time the test finishes, the screen updates with the result. If the test passes, the Pass Count increases by 1, however if the test fails, a message displays for approximately 3 seconds and the Fail Count increases by 1. Once the maximum count is reached the test stops. The power indicator shows solid and the final results display.

4. Press **Return/Stop** to exit the test.

---

## Device Tests

### Hex Trace

Hex Trace can be used to help diagnose print job problems.

To invoke the Hex Trace:

1. Select Hex Trace from the Tests Menu.
2. Send a print job to the printer. (The document should print in both hexadecimal and character formats.)
3. Select Reset Printer from the Tests Menu or unplug the printer, to exit Hex Trace.

### Quick Disk Test

This test performs a non-destructive read/write on one block per track on the disk. The test reads one block on each track, saves the data, and proceeds to write and read four test patterns to the bytes in the block. If the block is good, the saved data is written back to the disk.

To run the Quick Disk Test:

1. Select the **Quick Disk Test** from the Device Tests menu.
  - The power indicator blinks while the test is in progress.
  - **Quick Disk Test/Test Passed** message displays if the test passes and the power indicator turns on solid.
  - **Quick Disk Test/Test Failed** message displays if the test failed and the power indicator turns on solid.
2. Press **Go**, **Return**, or **Stop** to return to the Device Tests menu.

## Disk Test/Clean

**WARNING:** This test destroys all data on the disk and should not be attempted on a good disk. Also note that this test may run approximately 1 1/2 hours depending on the disk size.

To run the Disk Test/Clean Test:

1. Select **Disk Test/Clean** from the Device Tests menu.
  - **Files will be lost/Go or Stop?** message displays to warn the user that all contents on the disk will be lost.
2. To exit the test immediately and return to the Device Tests menu, press **Return/Stop**. To continue with the test, press **Go**.
  - If go is selected, **Disk Test/Clean/BAD:000000 00%** message displays. The screen updates periodically indicating the percentage of test completed and the number of bad blocks found.
3. The power indicator blinks during the test. The test can be canceled anytime during the test by pressing **Return/Stop**.
  - Once the test is complete, the power indicator shows solid and a message displays.
  - **XXXX Bad Blocks/YYYYYY Usable** message displays if fewer than 2000 bad blocks are detected. XXXX indicates the number of bad blocks and YYYYYY indicates the number of usable blocks.
  - **XXXX Bad Blocks/Replace Disk** message displays if more than 2000 bad blocks are detected. The disk cannot be recovered because too many bad blocks exist on the disk.
4. Press **Go** or **Return/Stop** to return to the Device Tests menu.

## Flash Test

This test causes the file system to write and read data on the flash to test the flash.

**WARNING:** This test destroys all data on the flash because the flash is reformatted at the end of the test.

### To run the Flash Test:

1. Select **Flash Test** from the Device Tests menu.
  - The power indicator blinks while the test is running.
  - **Flash Test/Test Passed** message displays if the test passes and the power indicator shows solid.
  - **Flash Test/Test Failed** message displays if the test fails and the power indicator shows solid.
2. Press **Go** or **Return/Stop** to return to the Device Tests menu.

---

## Printer Setup

### Setting the Page Count

This lets the servicer change the page count from the diagnostic menu. This is used whenever the engine board is replaced because this board contains the printer's NVRAM Memory where the page count is stored.

To set the Page Count:

1. Select **Printer Setup** from the Diagnostic menu.
2. Select **Page Count** from the Diagnostic menu.
  - a. The current page count displays.
  - b. The leftmost digit blinks, indicating it is the first digit to be changed.
3. Press either **Menu>** or **<Menu** until the value you want displays.
4. Press **Select** to move to the next digit, press **Menu>** or **<Menu** until the value you want displays. Continue with each digit until you set the page count. You can skip any digit by pressing **Select**.
5. Press **Select** to save the new page count in NVRAM.
6. Press **Return/Stop** to exit.

### Viewing the Permanent Page Count

The Permanent Page Count can only be viewed and cannot be changed.

To view the Permanent Page Count:

1. Select **Permanent Page Count** from the menu.
2. Press **Return/Stop** to exit.

## Restore Factory Defaults

To restore each of the printer settings contained in the Setup menu to their factory default value select **Restore** from the menu. To exit the menu without restoring the settings to the factory default values, select **Do Not Restore**. Sometimes this is used to help correct print quality problems.

---

## Print Tests

The purpose of the diagnostic Print Tests is to verify that the printer can print on media from each of the installed input options. Each of the installed options is listed in the following order in the menu:

- Tray 1 (input tray)
- Optional Paper Tray 2 (if installed)
- Manual Tray

For each input source selected you have the following choice:

- Single (prints the Quick Test Page once)
- Continuous (continue printing the Quick Test Page until Return or Stop is pressed).

The contents of the Quick Test Page varies depending on the media installed in the selected input source.

### To run the Print Test Page:

1. Select **Print Tests** from the Diagnostic menu.
2. Select Tray 1.
3. Select Single or Continuous.
  - If single is selected no buttons are active during printing.
  - If continuous is selected, **Return or Stop** can be selected to cancel the test.

Check each Test Page from each source to assist in Print Quality and Paper Feed problems.

## Print Quality Test Page

The purpose of this diagnostic function is to allow printing of the print quality test page. This page must always be printed on letter, legal or A4 paper.

### To run the Print Quality Test Page:

1. Turn the printer off.
2. Press and hold **Select** and **Return**.
3. Turn on the printer.
4. Release the buttons once **Performing the Self Test** displays.
5. The printer performs its normal POR cycle then prints one copy of the Print Quality Test page. If you want more than one copy, perform these steps again.

The following is printed on page 1:

- Contents of the Diagnostic Error Log.
- Printer configuration information:
  - printer serial number, controller code level, engine code level, operator panel code level, installed memory, font versions, and so on.
- Values for the Quality Menu settings used to print the pages.

## Printing Menu Settings Page

This test page must be printed on letter, legal or A4 paper.

To print the Menu Settings Page:

1. Select the **TESTS MENU**.
2. Select **Print Menus** from the **TESTS MENU**.

The page contains the following information:

- A list of all the printer settings contained in the control panel menus and their values.
- A list of the installed options and features such as RAM memory SIMMs, optional input paper trays, flash or disk.
- Printer information such as serial number, page count, installed RAM, engine code level, RIP code level, control panel code levels, font ROM version, SRAM availability, supplies status and color settings.

---

## Test Page (Quick Test)

**Note:** Paper can be fed from Tray 1 or the optional Tray 2.

To run a quick test page of black, be sure the print cartridges are in good condition. Install a black print cartridge in the left side of the printhead cradle and a color print cartridge in the right side. To check the color, run Hardware Tests, clean heads.

### To run the test:

1. Select Print Tests from the Diagnostic menu.
2. Select Tray 1 or optional Tray 2.
3. Select Single or Continuous.
  - If single is selected, no buttons are active during printing.
  - If continuous is selected, Return or Stop can be selected to cancel the test
4. Check the test page from each source to assist in print quality and paper feed problems.

The test page contains the following:

- Page count
- Installed memory
- Serial number
- Engine
- Base
- Panel
- Font

**4080-001**

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## 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. When working on the printer, always unplug the printer from the electrical outlet. High voltage is present in the power supply as long as it is plugged into the electrical 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 printer.
- 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 printer.
- 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 printer 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.
- Printer 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 printer covers when you are not working on the printer, 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 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 head to head and bidirectional alignment adjustments after replacing a print cartridge.

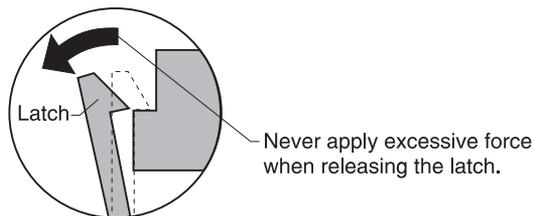
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## Removal Procedures

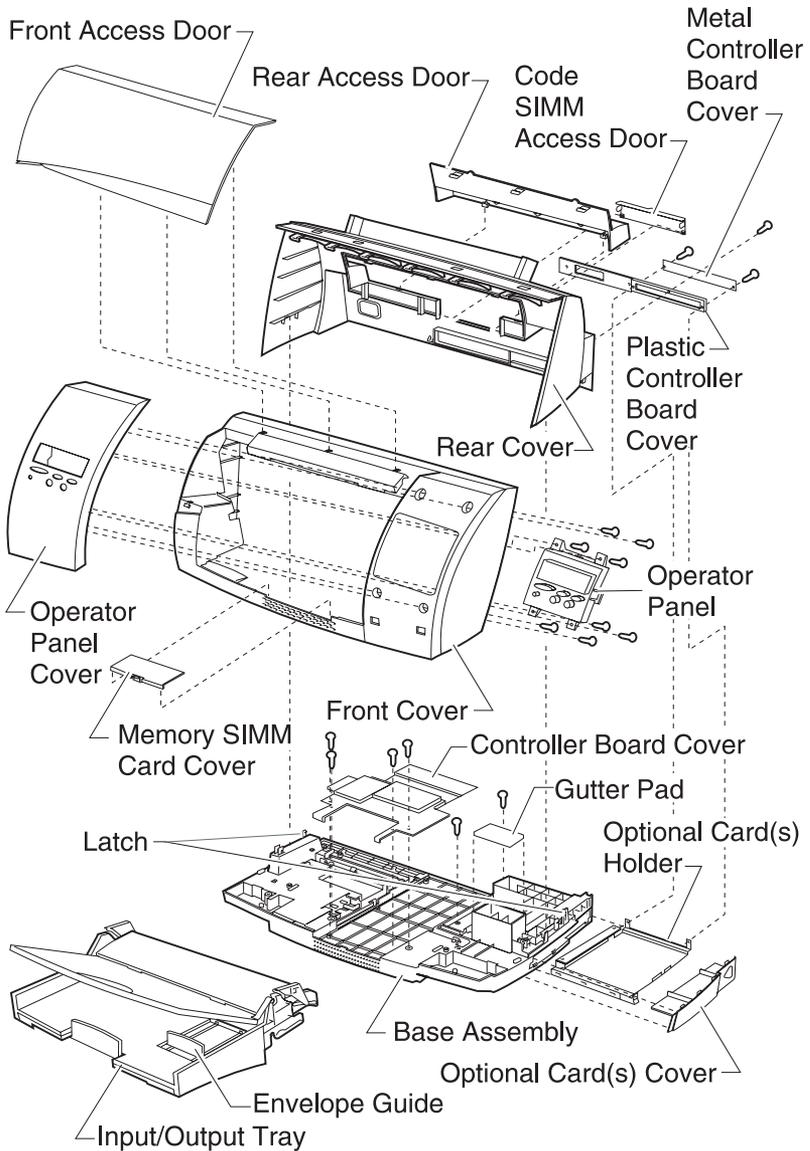
The following procedures are arranged according to the name of the printer part discussed. Unplug the power cord before removing any parts.

### 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.



## Covers and Doors



## Base Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to the **“Covers and Doors” on page 4-3.**
3. Disconnect the controller board cable from the engine board.
4. Remove the eight screws from the left and right side of the carrier frame assembly and remove the frame. Do not overtighten the screws, as this may strip the plastic.
5. Remove the controller board access cover, refer to **“Controller Board Access Cover Removal” on page 4-5.**
6. Disconnect the operator panel connector and the engine board connector from the controller board.
7. Remove the four screws from the controller board and remove the board.
8. Remove the operator panel cable and the engine board cable. Note the routing of the cables.
9. Remove the power supply, refer to the **“Power Supply Removal” on page 4-26.**
10. Remove the gutter pad.

## Code SIMM Access Door Removal

1. Remove the rear access door, refer to **“Rear Access Cover Removal” on page 4-9.**
2. Unsnap the hinge on either side of the Code SIMM access door, and remove the door.

## Controller Board Access Cover Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable and note the routing.
4. Remove the eight screws from the carrier frame assembly and note the ground strap cable.
5. Disengage the latches located on each side of the carrier frame assembly, refer to the **“Covers and Doors” on page 4-3.**
6. Slide the carrier frame assembly toward the rear, lift up and remove it from the base.
7. Remove the two screws from the controller board access cover and remove.

## Controller Board Access Door Removal

1. Remove the input / output tray assembly.
2. Open the front access door, refer to **“Covers and Doors” on page 4-3.**
3. Remove the paper tray, refer to the **“Paper Tray Assembly Removal” on page 4-17.**
4. Depress the clip on the controller board access door, and remove.

## Envelope Guide Removal

1. Remove the input / output tray assembly.
2. Open the input / output tray and lift the envelope guide unclipping it from the lower input tray. Refer to **“Covers and Doors” on page 4-3.**

## Front Access Door Removal

1. Remove the input / output tray assembly.
2. Open the front access door, refer to **“Covers and Doors” on page 4-3.**
3. Depress the plastic hinges releasing the pressure and remove the front access door.

## Front Cover Removal

1. Remove the input / output tray assembly.
2. Remove the two screws from the front cover, located on the bottom of the printer. Refer to **“Covers and Doors” on page 4-3.**
3. Release the latch beside each screw from the front cover and pull forward off the base.
4. Disconnect the operator panel cable and note the routing.

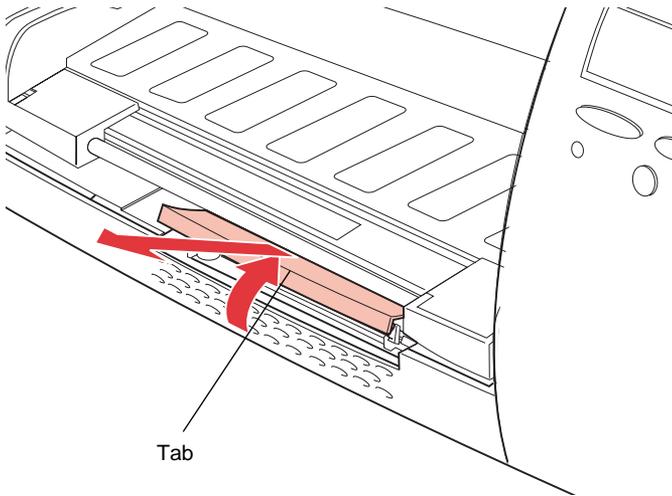
**Note:** Do not turn the printer on its back, as this may cause the ink to spill.

## Gutter Pad Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to the **“Covers and Doors” on page 4-3.**
3. Remove the gutter pad.

## Memory (SIMM) Card Cover Removal

1. Remove the input / output tray assembly.
2. Open the front access door, by pulling up on the tab, as shown.
3. Remove the memory (SIMM) card cover.



## Metal / Plastic Controller Board Cover Removal

1. Remove the optional card(s) cover, refer to **“Covers and Doors” on page 4-3**.
2. Facing the rear of the printer, remove the two screws securing the metal controller plate to the plastic controller board and remove the plate.
3. Remove the three screws holding the plastic controller board and remove the board.

**Note:** When reinstalling the metal plate, be sure the arrow points upward.

## Operator Panel Cover Removal

1. Remove the input / output tray assembly.
2. Remove the front cover, refer to the **“Front Cover Removal” on page 4-6.**
3. Disconnect the operator panel cable and note the routing.
4. Remove the four screws securing the operator panel to the front cover, refer to **“Covers and Doors” on page 4-3.**
5. Be sure the front access door is open.
6. Unhook the two plastic guides and lift the operator panel up and out of the printer.

## Option Card(s) Cover Removal

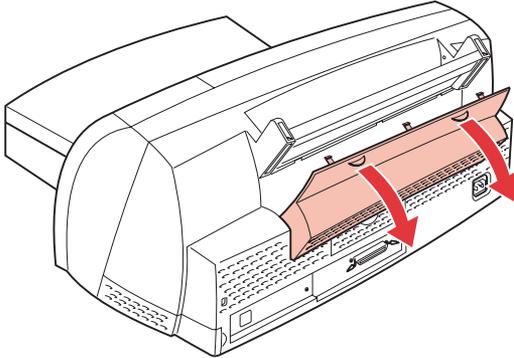
Depress the option card(s) cover and slide it to the rear of the printer to remove. Refer to the **“Covers and Doors” on page 4-3.**

## Rear Cover Removal

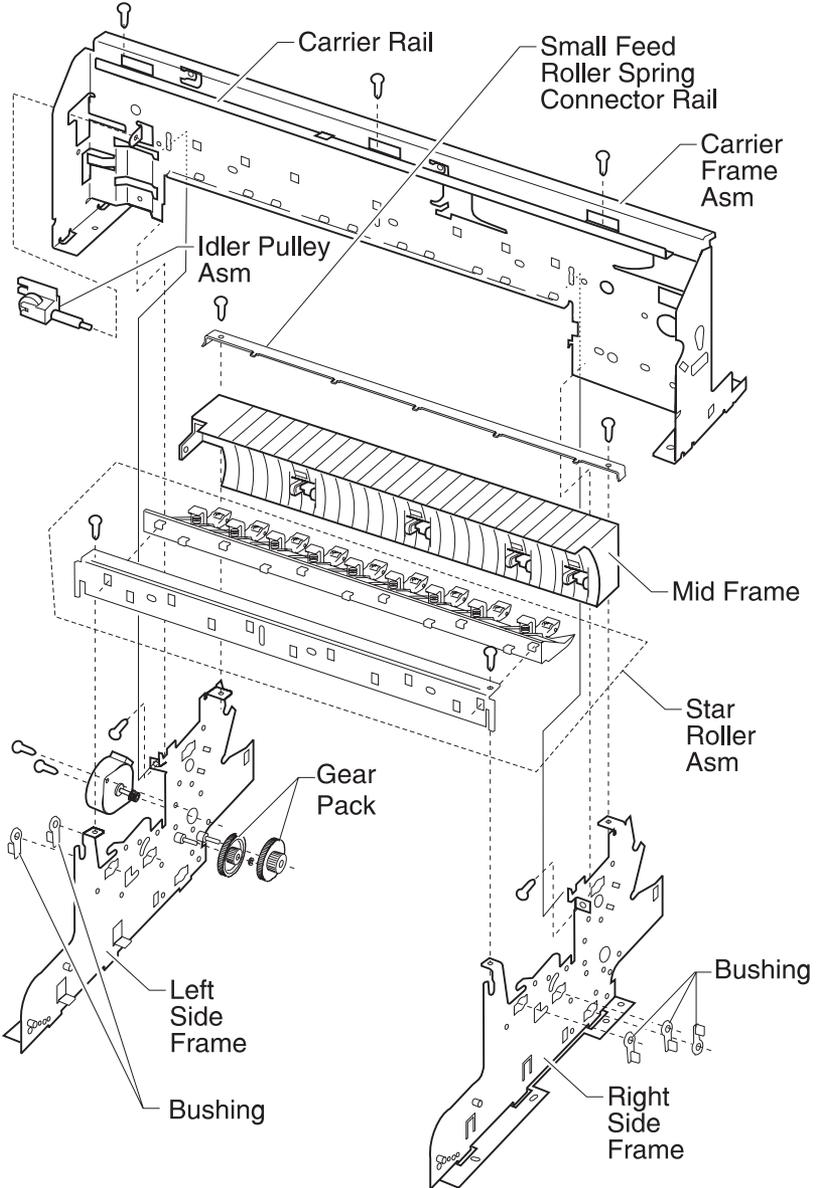
1. Remove the input / output tray assembly.
2. Remove the front cover, refer to the **“Front Cover Removal” on page 4-6.**
3. Disconnect the operator panel cable and note the routing.
4. Remove the metal and plastic controller board covers, refer to the **“Metal / Plastic Controller Board Cover Removal” on page 4-7.**
5. Unlatch the three plastic rear cover latches located on the top edge of the carrier frame, refer to **“Covers and Doors” on page 4-3.**
6. Unlatch the plastic latches from each side of the base assembly.
7. Lift and remove the rear cover.

## Rear Access Cover Removal

1. Turn the printer around so the back is facing you.
2. Depress the tabs located at the top of the rear access door cover and remove.



# Frames



## Carrier Frame Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable and note the routing.
4. Remove the four screws from the carrier frame assembly and note the ground strap cable.
5. Disconnect the controller board cable connector (CN10), the transport motor cable (CN5), and the paper feed motor cable (CN6), from the engine board.
6. Disengage the clips located on each side of the carrier frame assembly.
7. Slide the carrier frame assembly toward the rear, lift up and remove it from the base.
8. Remove the maintenance station, refer to the **“Maintenance Station Assembly Removal” on page 4-32.**
9. Disconnect the five small feed roller springs from the small feed roller spring connector rail.
10. Remove the two screws securing the carrier frame to the left and right side frames.
11. Tilt the top of the carrier frame assembly toward the front of the machine and remove.

## Carrier Rail Removal

1. Remove the input / output tray assembly.
2. Remove the front cover, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable and note the routing.
4. Remove the three screws from the top of the carrier rail, refer to the **“Frames” on page 4-10.**
5. Slide the carrier rail to the left, lift and remove.

## Idler Pulley Assembly Removal

1. Remove the input / output tray assembly.
2. Remove the front cover, refer to **“Covers and Doors” on page 4-3.**
3. Move the printhead carrier assembly to the center of the printer.
4. Release the tension on the idler pulley by pressing the idler pulley toward the transport carrier motor.
5. Remove the carrier belt from the carrier transport motor.
6. Remove the carrier belt from the idler pulley and slide the idler pulley out of the printer.

## Left Side Frame Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier frame assembly, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
4. Remove the two screws securing the small feed roller spring connector rail and remove the rail, refer to **“Frames” on page 4-10.**
5. Remove the two screws securing the star roller assembly and remove.
6. Remove the gear box assembly, refer to the **“Gear Box Assembly Removal” on page 4-15.**
7. Remove the three screws from the left side frame.
8. Remove the spring from the large feed roll shaft and remove the left side frame.

**Note:** Notice the placement of the spring.

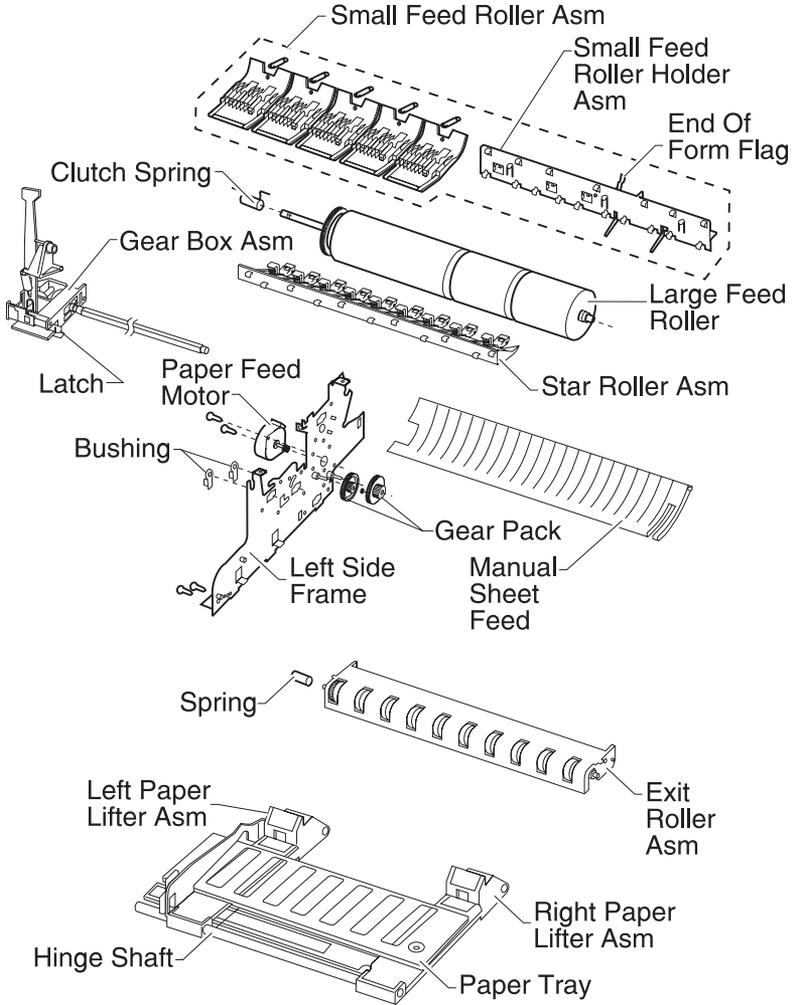
## Mid Frame Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier frame assembly, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
4. Remove the right side frame, refer to the **“Right Side Frame Assembly Removal” on page 4-13.**

## Right Side Frame Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier frame assembly, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
4. Remove the two screws securing the small feed roller spring connector rail and remove the rail. Refer to **“Frames” on page 4-10.**
5. Remove the two screws securing the star roller assembly, refer to the **“Star Roller Assembly Removal” on page 4-17.**
6. Remove the three screws from the right side frame and remove the frame.

# Paper Feed



## Exit Roller Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier frame assembly, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
4. Remove the three screws from the right side frame and remove the frame.
5. Remove the exit roller.

## Gear Box Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier frame, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
4. Depress the plastic clip on the clutch lever at the end of the large feed roller shaft and remove the clutch lever. Be sure the groove on the clutch lever aligns with the clutch spring.
5. Remove the two screws securing the gear box assembly to the frame.
6. Depress the gear box clip on the bottom of the left side frame and remove the gear box assembly and shaft.

## Large Feed Roller Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the exit roller assembly, refer to the **“Exit Roller Assembly Removal” on page 4-15.**
4. Unlatch the spring at the left end of the large feed roller shaft, by lifting up on the latch release lever.
5. Remove the tension spring from the end of the large feed roller shaft and remove the large feed roller.

## Manual Sheet Feeder Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable and note the routing.
4. Depress the manual guide clip on the right side frame and remove the guide from the rear of the printer.

## Paper Feed Motor Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the paper feed motor cable from the controller board at (CN6).
4. Remove the two screws from the left frame and remove the paper feed motor, refer to **“Frames” on page 4-10.**

## Paper Lifters Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable and note the routing.
4. Remove the gear box assembly, refer to the **“Gear Box Assembly Removal” on page 4-15.**
5. Remove the screw securing the paper tray to the paper lift assembly.
6. Remove the screws from each end of the hinge shaft.
7. Remove the screws from each end of the plastic side lifter rail.
8. Remove the hinge shaft and the left and right paper lifters.

## Paper Tray Assembly Removal

1. Open the front access door and remove. Refer to **“Covers and Doors” on page 4-3.**
2. Move the manual paper guide to the left.
3. Remove the screw from the right side of the paper tray and remove the tray.

## Small Feed Roller Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier frame assembly, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
4. Press down on the small feed rollers to remove, refer to the **“Paper Feed” on page 4-14.**

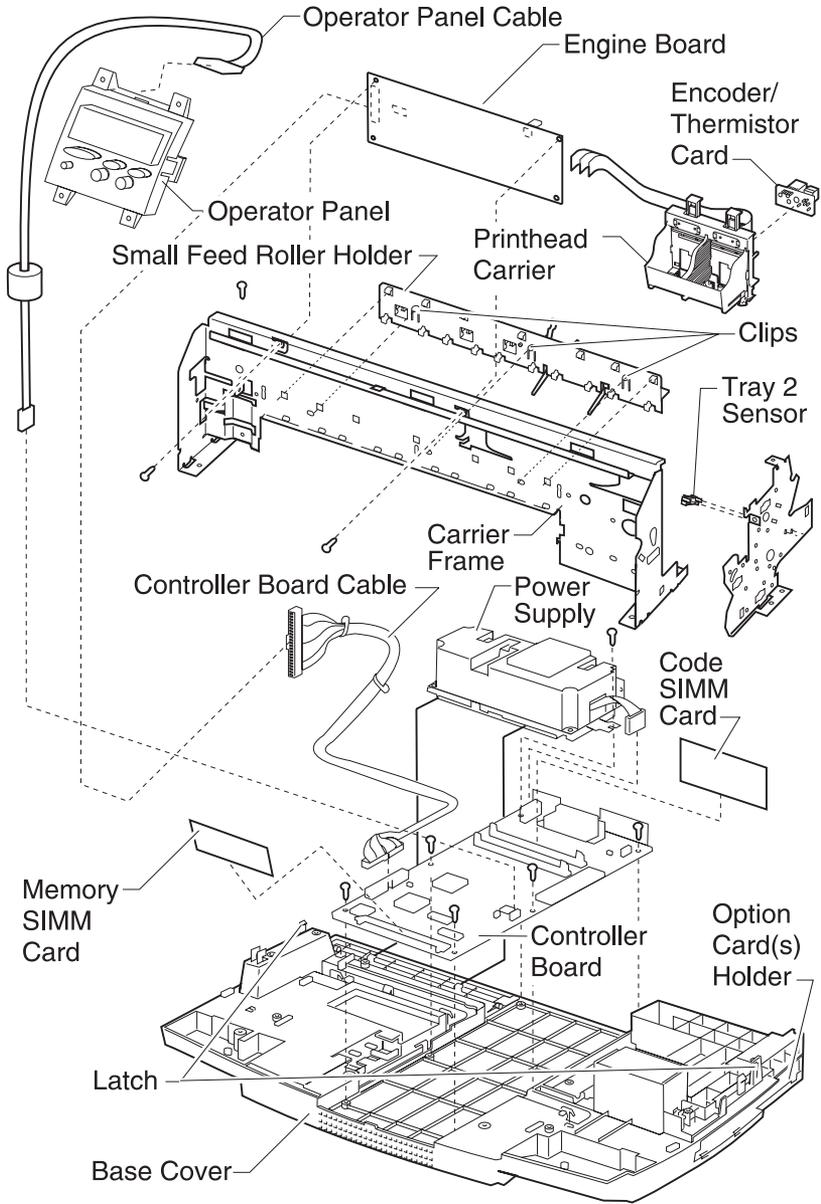
## Small Feed Roller Holder Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier frame assembly, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
4. Press down on the small feed rollers to remove, refer to the **“Paper Feed” on page 4-14.**
5. Depress the three clips securing the small feed roller holder assembly and remove.

## Star Roller Assembly Removal

1. Remove the input / output tray assembly.
2. Open the access door, refer to the **“Covers and Doors” on page 4-3.**
3. Remove the two screws from the star roller assembly and remove.

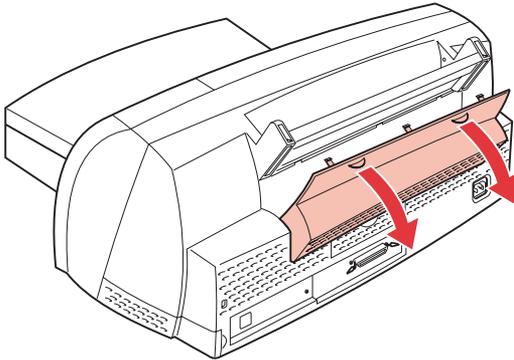
# Electronics



## Code or Flash SIMM Removal

**Note:** The code SIMM is installed on some printers. The code SIMM installs in the first option card slot (J6) only. Be sure to properly identify the code SIMM and the flash memory card, if the printer contains both.

1. Remove the input / output tray assembly.
2. Turn the printer around so the back is facing you.
3. Disconnect the printer power cord and disconnect all cables from the back of the printer.
4. Press down on the two tabs located at the top of the rear access door and remove.



5. Pull the tab on the code SIMM access door until it rotates toward you.
6. Remove the Code SIMM, refer to the **“Memory (SIMM) Card Removal”** on page 4-22.

**Note:** Reverse the removal to reinstall either the flash SIMM or the code SIMM.

## Controller Board Removal

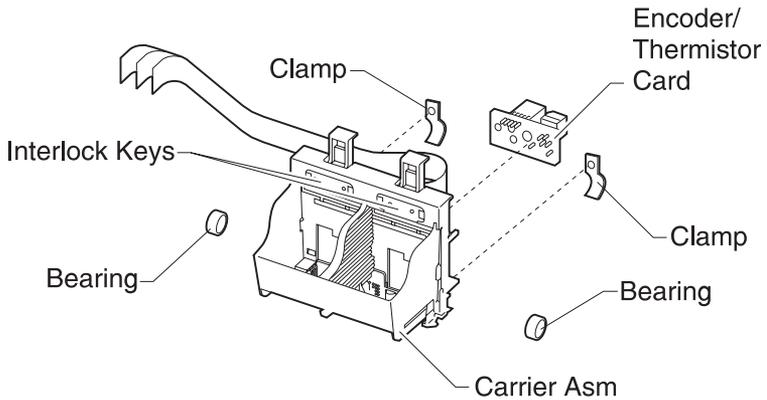
**Note:** Verify that your printer has a code SIMM in slot (J6).

1. Remove the input / output tray assembly.
2. Open the front access door, refer to **“Covers and Doors” on page 4-3.**
3. Remove the paper tray, refer to the **“Paper Tray Assembly Removal” on page 4-17.**
4. Remove the controller board access door, refer to the **“Controller Board Access Door Removal” on page 4-5.**
5. Disconnect the engine board cable and the operator panel cable from the controller board.
6. Remove the memory (SIMM) card, refer to the **“Memory (SIMM) Card Removal” on page 4-22.**
7. Remove the screw which secures the RIP bracket to the INA bracket located under the printer.
8. Remove the two screws securing the controller board access cover and remove the cover.
9. Remove the metal / plastic controller board covers, refer to the **“Metal / Plastic Controller Board Cover Removal” on page 4-7.**
10. Remove the rear access door, refer to the **“Covers and Doors” on page 4-3.**
11. Open the code SIMM access door and remove the code SIMM, refer to the **“Code or Flash SIMM Removal” on page 4-19.**
12. Disconnect the power supply cable from the controller board.
13. Remove the two screws from the controller board.
14. Lift up on the front and rear of the controller board and remove.

**Note:** Be sure to unplug the option card from the right rear side of the printer, if one is present.

## Encoder / Thermistor Card Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Move the carrier assembly to the right side of the printer.
4. Disconnect the three printhead cables from the engine board.
5. Remove the carrier shaft retainer clip from the right side of the carrier shaft.
6. Remove the screw from the left side of the carrier shaft.
7. Remove the carrier shaft by sliding it to the right.
8. Gently lift up on the carrier taking care not to damage the encoder strip and disconnect the carrier belt.
9. Disconnect the printhead cable from the encoder / thermistor card.
10. Remove the screw from the encoder / thermistor card and remove the card.



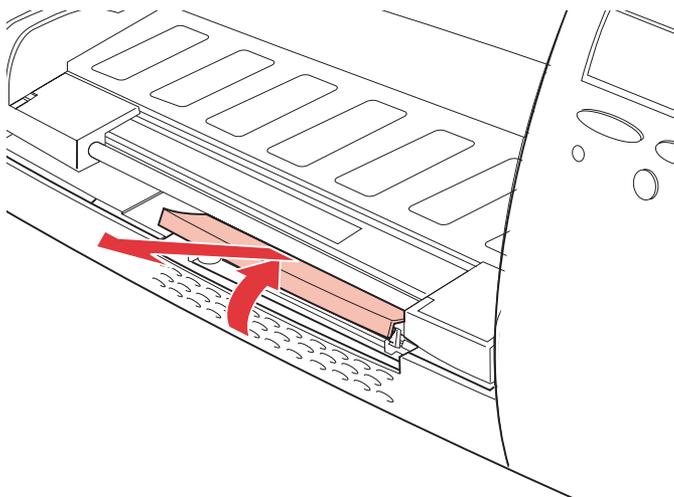
## Engine Board Removal

1. Remove the input / output tray assembly.
2. Remove all covers (except the base), refer to **“Covers and Doors” on page 4-3**.
3. Disconnect the three printhead cable connectors from the engine board.
4. Disconnect the controller board cable from the engine card (CN10).
5. Disconnect the transport carrier motor cable from the engine board at location (CN5) and the paper feed motor cable at location (CN6) and the tray 2 connector (CN11).
6. Remove the two screws from the engine board and remove the engine board.

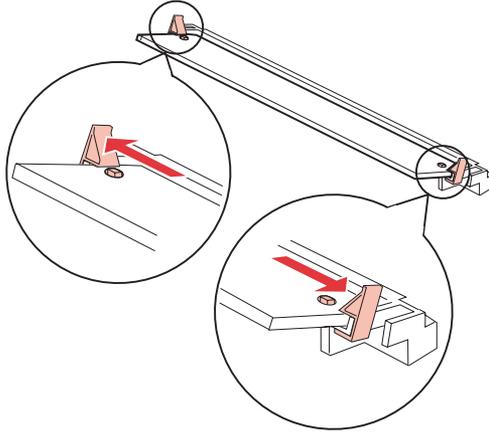
**Note:** Take care with the routing of the paper feed motor cable. Pull the EOF flag out of the sensor while removing the engine board.

## Memory (SIMM) Card Removal

1. Remove the input / output tray assembly.
2. Open the front access door, by pulling up on the tab, as shown.

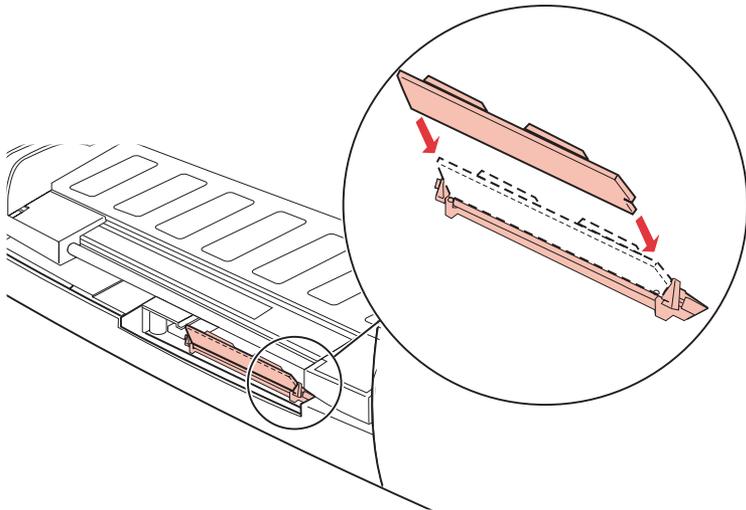


3. Remove the memory (SIMM) card cover, refer to **“Memory (SIMM) Card Cover Removal”** on page 4-7.
4. Remove the memory (SIMM) card by pushing the metal clips at both ends of the connector outward and lifting the memory (SIMM) card up and out of the printer.



### To Reinstall:

1. Hold the memory (SIMM) card with the connection points toward the connector and position the notch as shown.



2. Insert the memory (SIMM) card all the way into the connector at a 45° angle, and rotate it down until it snaps into place.
3. Be sure both metal clips on the connector are fastened, and the two pins on each end are pushed through the holes on the memory (SIMM) card.

## Operator Panel Removal

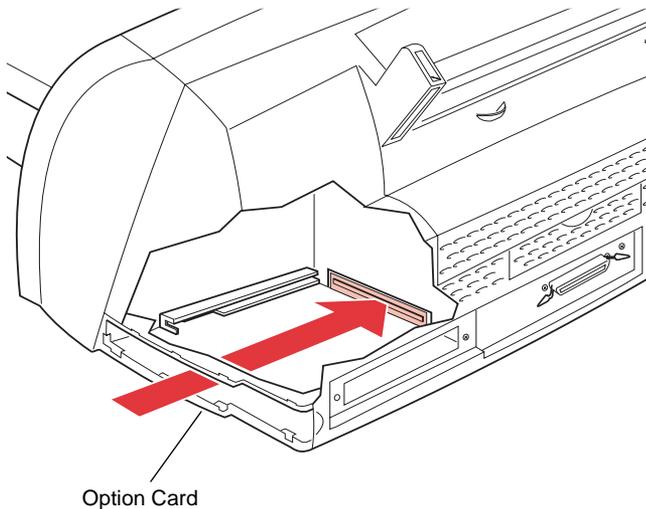
1. Remove the input / output tray assembly.
2. Remove the front cover, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable and note the routing.
4. Remove the four screws securing the operator panel to the front cover and remove the operator panel.

## Operator Panel Cable Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable from the operator panel and note the routing.
4. Remove the carrier frame, refer to the **“Carrier Frame Assembly Removal” on page 4-11.**
5. Remove the controller board cover, refer to the **“Controller Board Removal” on page 4-20.**
6. Disconnect the operator panel cable from the controller board.

## Option Card(s) Removal

1. Remove the option card cover, refer to **“Covers and Doors” on page 4-3.**
2. Remove the two screws securing the optional card.
3. Gently pull the option card out of the connector and remove.



## Power Supply Removal

**Note:** Always unplug the printer from the electrical outlet. High voltage is present in the power supply as long as it is plugged into the electrical outlet.

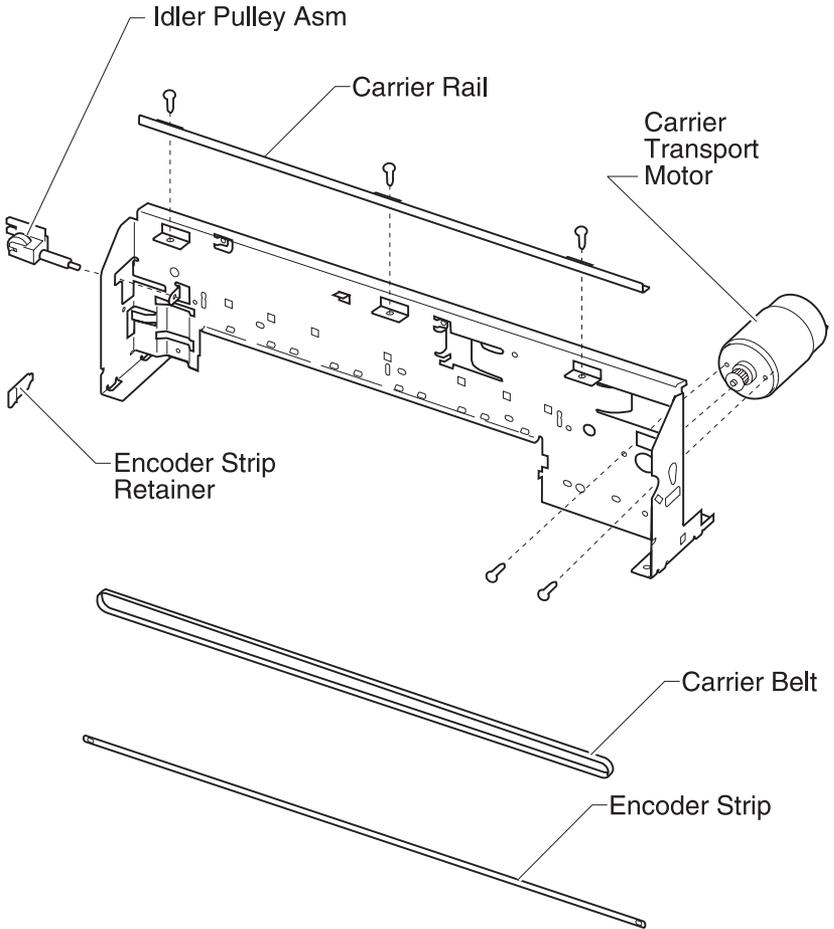
1. Remove the input / output tray assembly.
2. Remove all covers (except the base), refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the power supply cable from the controller board at (J2).
4. Disconnect the ground strap from the right side of the power supply.
5. Remove the ground screw from behind the (J2) connector on the controller card.
6. Depress the clips on both sides of the power supply and slide the power supply out of the machine.

**Note:** When replacing the power supply, be sure the metal tab on the left side of the power supply is inserted under the controller board.

## Tray 2 Sensor Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the tray 2 sensor from the engine board (CN11) and note the routing of the cable.
4. Depress the clips on the outside of the right side frame and remove the sensor.

# Carrier



## Carrier Belt Removal

1. Remove the input / output tray assembly.
2. Remove the front cover, refer to **“Covers and Doors” on page 4-3.**
3. Disconnect the operator panel cable and note the routing.
4. Move the carrier assembly to the right side of the printer.
5. Remove the carrier shaft retainer clip from the right side of the carrier shaft.
6. Remove the screw from the left side of the carrier shaft.
7. Remove the carrier shaft by sliding it to the right.
8. Gently lift up on the carrier taking care not to damage the encoder strip and remove the carrier.
9. Push the idler pulley to the right to release the tension on the belt and remove the belt.

**Note:** When reinstalling the carrier belt, take care not to damage the encoder strip.

## Carrier Rail Removal

Refer to the **“Carrier Rail Removal” on page 4-11.**

## Carrier Transport Motor Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers (except the left and base covers), refer to **“Covers and Doors” on page 4-3.**
3. Remove the carrier belt, refer to the **“Carrier Belt Removal” on page 4-28.**
4. Disconnect the carrier transport motor connector (CN5) from the engine board.
5. Remove the belt from the carrier transport motor pulley.
6. Remove the two screws securing the carrier transport motor to the carrier frame and remove the motor. Note the routing of the motor cable.

## Encoder Strip / Retainer Removal

1. Remove the input / output tray assembly.
2. Remove the front cover, refer to **“Covers and Doors” on page 4-3.**
3. Gently release the tension on the encoder strip by flexing the encoder strip tensioner and remove the encoder strip.
4. Remove the encoder strip retainer if necessary.

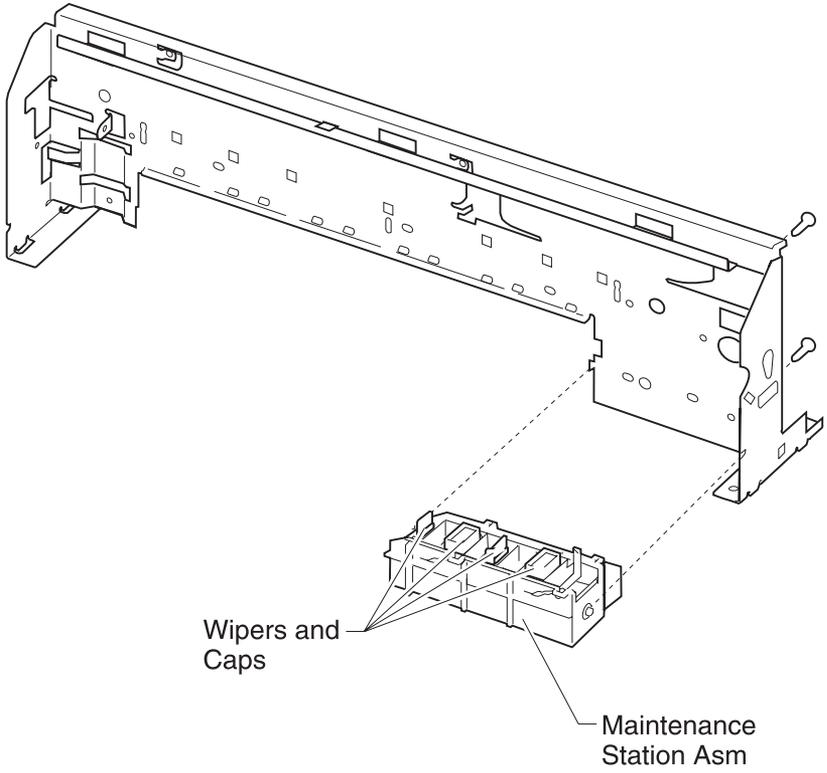
**Note:** When reinstalling the encoder strip, be sure the ends of the strip are centered in their mounting notches and the strip does not bind in the encoder card on the carrier.

## Printhead Carrier Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to “**Covers and Doors**” on page 4-3.
3. Disconnect the three printhead cables from the engine board.
4. Move the carrier assembly to the right side of the printer.
5. Remove the carrier shaft retainer clip from the right side of the carrier shaft.
6. Remove the screw from the left side of the carrier shaft.
7. Remove the carrier shaft by sliding it to the right.
8. Gently lift up on the printhead carrier, disconnect the carrier belt and remove the carrier.

**Note:** When reinstalling the carrier belt, take care not to damage the encoder strip.

# Maintenance Station



## Maintenance Station Assembly Removal

1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the two screws at the rear of the maintenance station and remove the maintenance station.

## Wipers and Caps Removal

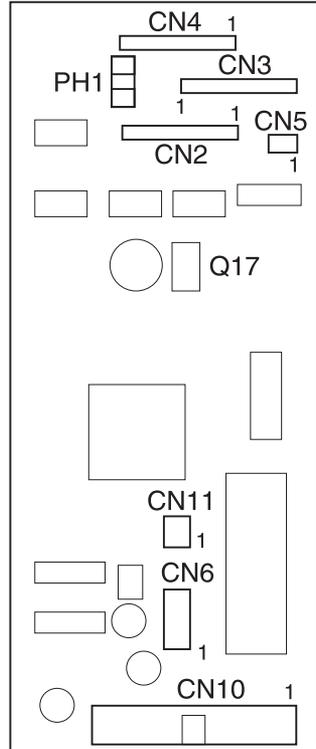
1. Remove the input / output tray assembly.
2. Remove all covers, refer to **“Covers and Doors” on page 4-3.**
3. Remove the maintenance station assembly, refer to the **“Maintenance Station Assembly Removal” on page 4-32.**
4. Remove the wipers and caps.

**Note:** Be sure the wipers are completely seated.

## 5. Connector Locations

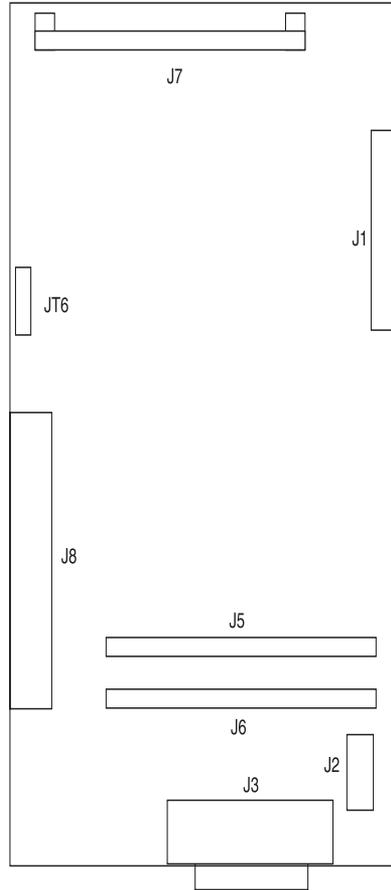
### Engine Board

|      |                        |
|------|------------------------|
| CN2  | Printhead Cable 1      |
| CN3  | Printhead Cable 2      |
| CN4  | Printhead Cable 3      |
| CN5  | Transport Motor        |
| CN6  | Paper Feed Motor       |
| CN10 | Controller Board Cable |
| PH1  | EOF Sensor             |
| CN11 | Optional Tray 2 Sensor |
| Q17  | Transistor Tab         |



# Controller Board

|     |                |
|-----|----------------|
| J1  | Engine Board   |
| J2  | Power Supply   |
| J3  | Parallel Port  |
| J5  | Flash SIMM     |
| J6  | Code SIMM      |
| J7  | Memory SIMM    |
| J8  | INA Option     |
| JT6 | Operator Panel |



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## 6. Preventive Maintenance

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

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### 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 ends of the large feed roller at the side frames.
- The carrier rail and shaft.
- Both ends of the exit roller shaft.

**4080-001**

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## 7. Parts Catalog

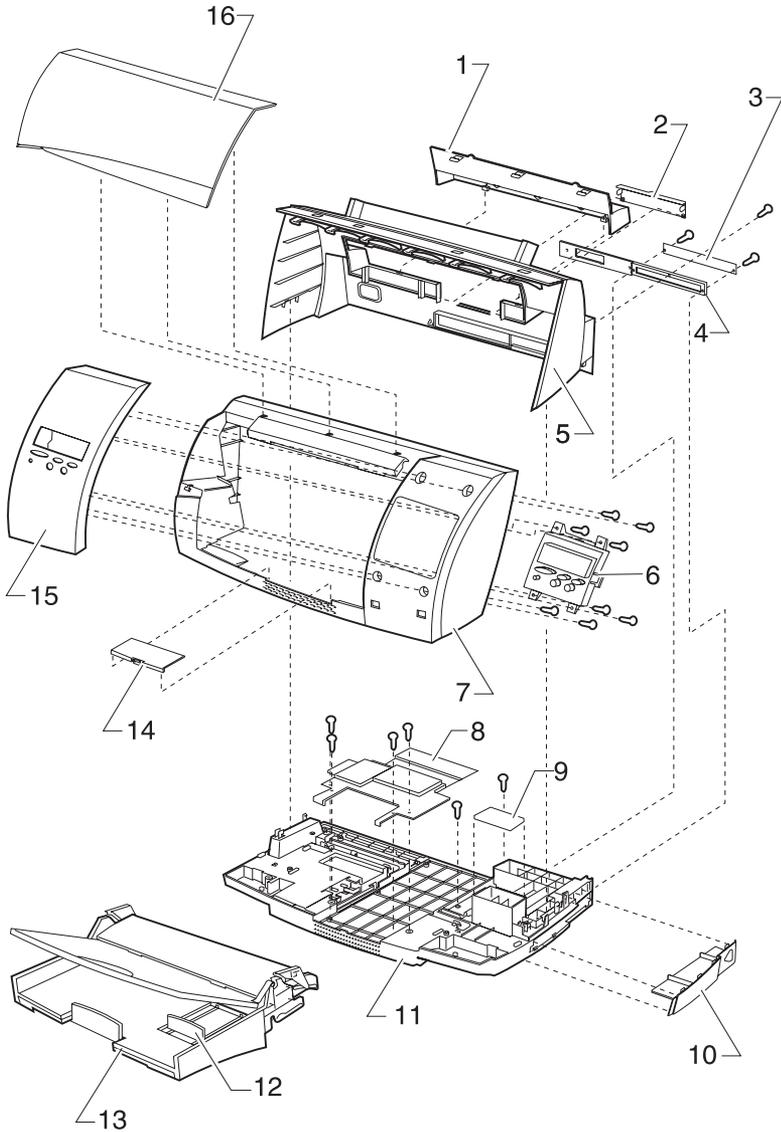
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### How To Use The Parts Catalog

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- NS: (Not Shown) in the Asm-Index column indicates that the part is procurable but is not shown in the illustration.
- PP: in the Description column indicates the part is available in the listed parts packet.

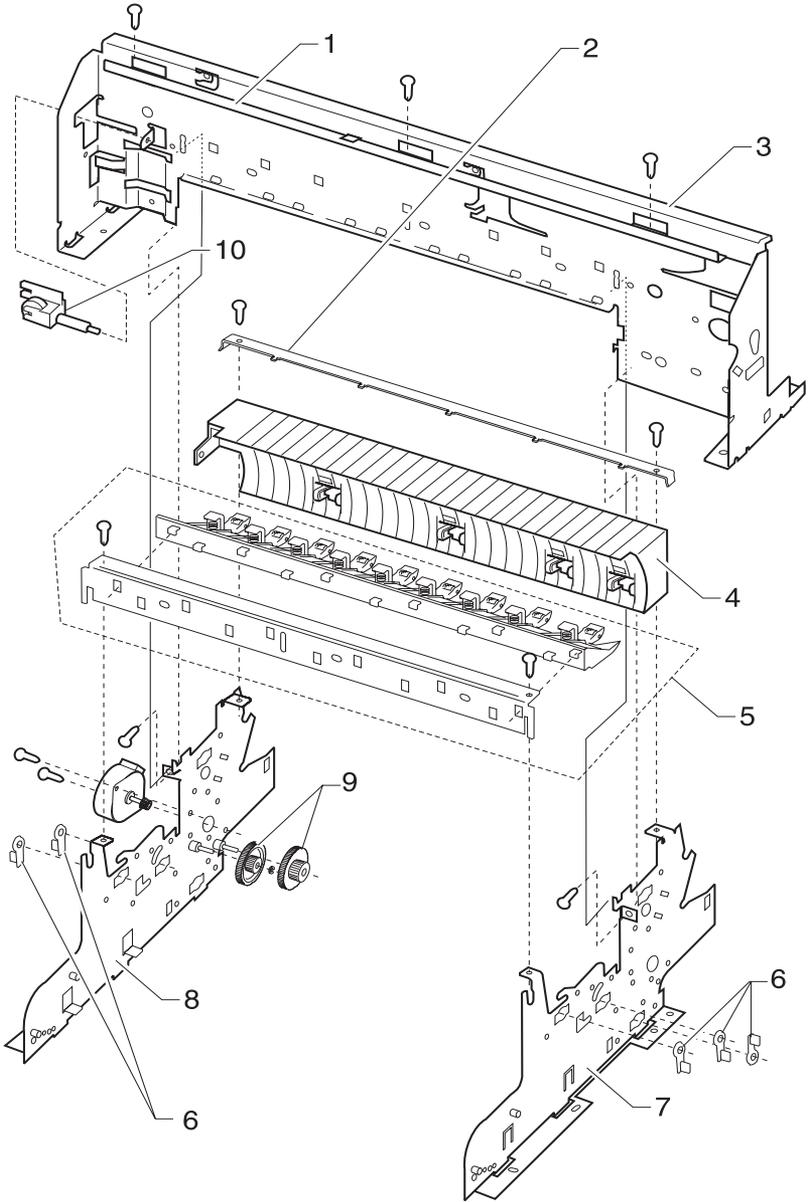
# Assembly 1: Covers



**Assembly 1: Covers**

| <b>Asm-Index</b> | <b>Part Number</b> | <b>Units</b> | <b>Description</b>              |
|------------------|--------------------|--------------|---------------------------------|
| 1 - 1            | 99A0637            | 1            | Cover, Rear Access              |
| 2                | 99A0636            | 1            | Door, Code SIMM Access          |
| 3                | 99A0626            | 1            | Cover, Metal Controller Board   |
| 4                | 99A0635            | 1            | Cover, Plastic Controller Board |
| 5                | 99A0623            | 1            | Cover, Rear                     |
| 6                | 99A0639            | 1            | Operator Panel                  |
| 7                | 99A0620            | 1            | Cover, Front                    |
| 8                | 99A0625            | 1            | Cover, Controller Board Access  |
| 9                | 99A0763            | 1            | Pad, Gutter                     |
| 10               | 99A0638            | 1            | Cover, Option Card(s)           |
| 11               | 99A0618            | 1            | Base Asm                        |
| 12               | 99A0641            | 1            | Envelope Guide                  |
| 13               | 99A0619            | 1            | Tray, Input / Output            |
| 14               | 99A0760            | 1            | Cover, Memory (SIMM) Card       |
| 15               | 99A0621            | 1            | Cover, Operator Panel           |
| 16               | 99A0622            | 1            | Door, Front Access              |
| NS               | 99A0640            | 1            | Operator Panel Overlay Kit      |
| NS               | 99A0758            | 1            | Springs, PP                     |
| NS               | 99A0642            | 1            | Feet, Rubber                    |
| NS               | 7350112            | 1            | Plain Package B/M               |
|                  | 99A0757            | 3            | Screws, PP                      |

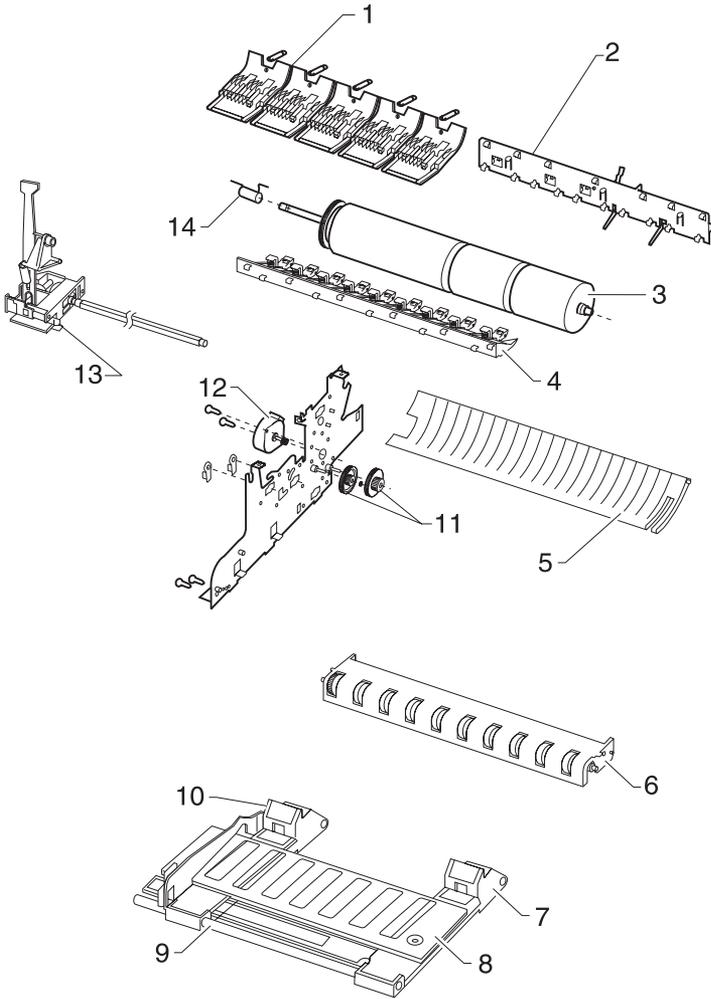
# Assembly 2: Frames



**Assembly 2: Frames**

| <b>Asm-Index</b> | <b>Part Number</b> | <b>Units</b> | <b>Description</b>                          |
|------------------|--------------------|--------------|---|
| 2 -1             | 99A0644            | 1            | Rail, Carrier                               |
| 2                | 99A0737            | 1            | Rail,<br>Small Feed Roller Spring Connector |
| 3                | 99A0643            | 1            | Frame, Carrier Asm                          |
| 4                | 99A0732            | 1            | Frame, Mid                                  |
| 5                | 99A0738            | 1            | Roller, Star Asm                            |
| 6                | 99A0761            | 1            | Bearings, PP                                |
| 7                | 99A0648            | 1            | Frame, Right Side Asm                       |
| 8                | 99A0694            | 1            | Frame, Left Side Asm                        |
| 9                | 99A0759            | 1            | Gears (PP)                                  |
| 10               | 99A0743            | 1            | Pulley, Idler Tension Asm                   |

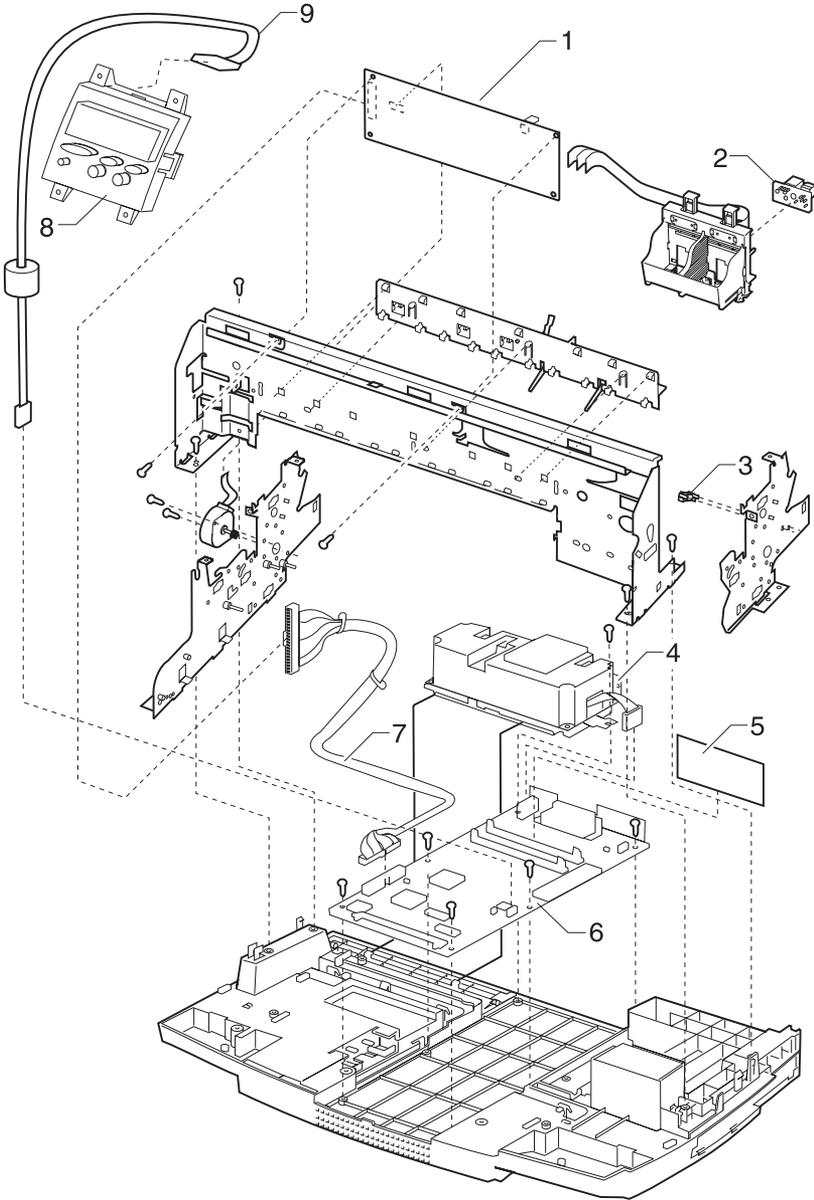
# Assembly 3: Paper Feed



**Assembly 3: Paper Feed**

| <b>Asm-Index</b> | <b>Part Number</b> | <b>Units</b> | <b>Description</b>               |
|------------------|--------------------|--------------|----------------------------------|
| 3 -1             | 99A0736            | 1            | Roller, Small Feed Asm           |
| 2                | 99A0733            | 1            | Holder, Small Feed Roller Asm    |
| 3                | 99A0735            | 1            | Roller, Large Feed Asm with Gear |
| 4                | 99A0738            | 1            | Roller, Star Asm                 |
| 5                | 99A0729            | 1            | Sheet Feeder, Manual             |
| 6                | 99A0728            | 1            | Roller, Exit Asm                 |
| 7                | 99A0649            | 1            | Paper Lifter, Right              |
| 8                | 99A0730            | 1            | Tray, Paper                      |
| 9                | 99A0731            | 1            | Shaft, Hinge                     |
| 10               | 99A0727            | 1            | Paper Lifter, Left               |
| 11               | 99A0759            | 1            | Gears (PP)                       |
| 12               | 99A0739            | 1            | Motor, Paper Feed Asm with Gear  |
| 13               | 99A0741            | 1            | Box, Gear Asm                    |
| 14               | 99A0758            | 1            | Spring, Clutch (PP)              |

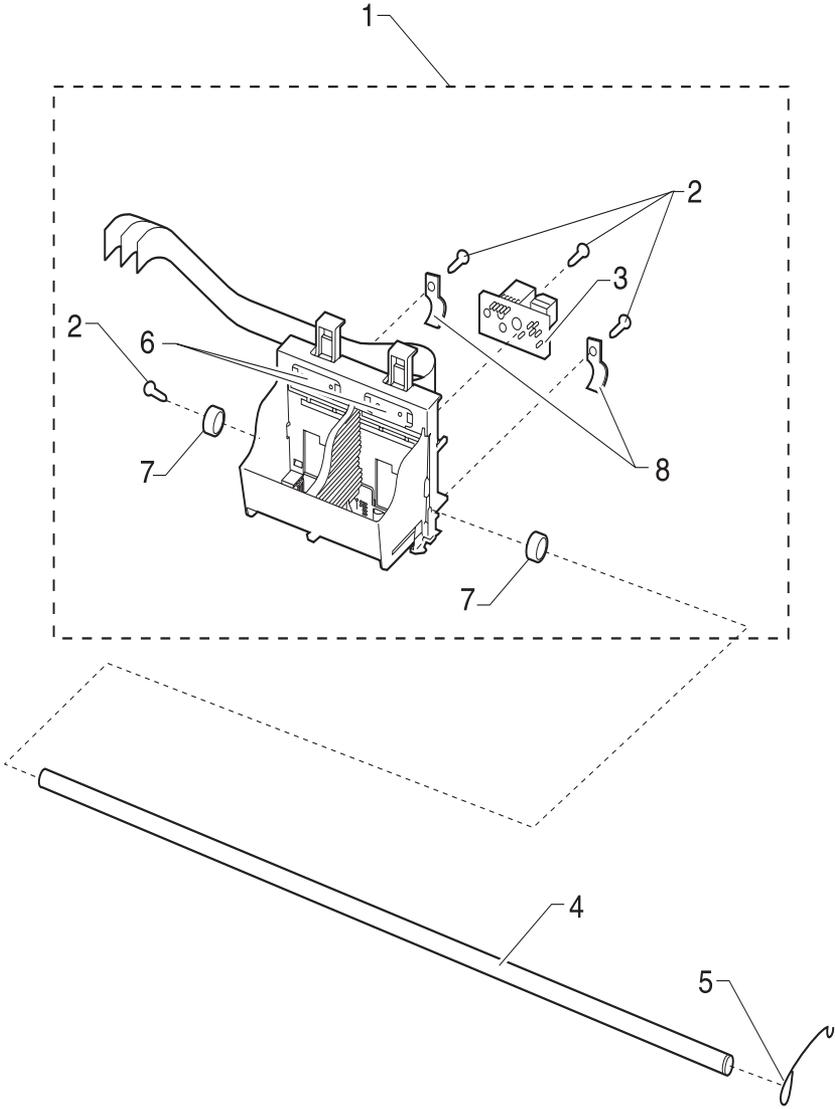
# Assembly 4: Electronics



**Assembly 4: Electronics**

| <b>Asm-Index</b> | <b>Part Number</b> | <b>Units</b> | <b>Description</b>                  |
|------------------|--------------------|--------------|-------------------------------------|
| 4-1              | 99A0765            | 1            | Board, Engine w/o EPROM             |
| 1                | 99A0748            | 1            | Board, Engine                       |
| 2                | 99A0751            | 1            | Card, Encoder w/ Thermistor         |
| 3                | 99A0762            | 1            | Sensor, Tray 2                      |
| 4                | 99A0754            | 1            | Power Supply, 100-240 V (Universal) |
| 5                | 99A0749            | 1            | Code SIMM                           |
| 6                | 99A1114            | 1            | Board, Controller                   |
| 7                | 99A0753            | 1            | Cable, Controller Board             |
| 8                | 99A0639            | 1            | Panel, Operator                     |
| 9                | 99A0752            | 1            | Cable, Operator Panel               |
| NS               | 1339518            | 1            | Cord, Power (Australia)             |
| NS               | 1339518            | 1            | Cord, Power (New Zealand)           |
| NS               | 1339525            | 1            | Cord, Power (Denmark)               |
| NS               | 1339520            | 1            | Cord, Power (Europe)                |
| NS               | 1339521            | 1            | Cord, Power (Israel)                |
| NS               | 1339524            | 1            | Cord, Power (Italy)                 |
| NS               | 1339523            | 1            | Cord, Power (South Africa)          |
| NS               | 1339522            | 1            | Cord, Power (Switzerland)           |
| NS               | 1339519            | 1            | Cord, Power (United Kingdom)        |
| NS               | 1339517            | 1            | Cord, Power (U.S.)                  |
| NS               | 12G0173            | 1            | Code Module (EPROM), Engine Board   |

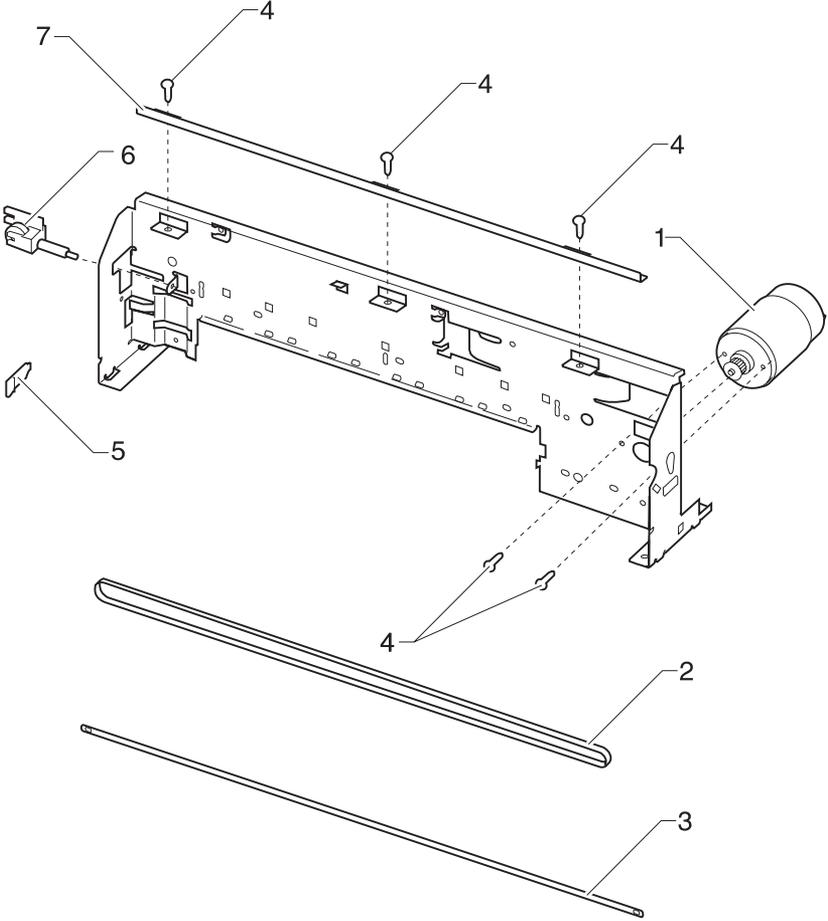
# Assembly 5: Carrier



**Assembly 5: Carrier**

| <b>Asm-Index</b> | <b>Part Number</b> | <b>Units</b> | <b>Description</b>                 |
|------------------|--------------------|--------------|------------------------------------|
| 5 -1             | 99A0740            | 1            | Carrier, Printhead Asm             |
| 2                | 99A0757            | 4            | Screws, (PP)                       |
| 3                | 99A0751            | 1            | Encoder Card w/ Thermistor         |
| 4                | 99A0734            | 1            | Shaft, Carrier                     |
| 5                | 99A0758            | 1            | Spring, Carrier Shaft (PP)         |
| 6                | 99A0745            | 1            | Printhead Interlock Key B/M        |
| 7                | 99A0761            | 1            | Bearings (PP)                      |
| 8                | 99A0761            | 1            | Clamp, Bearings (PP)               |
| NS               | 13A3860            | 1            | Garage Asm with Sticker            |
| NS               | 99A0647            | 1            | Holder, FPC (Flat Printhead Cable) |

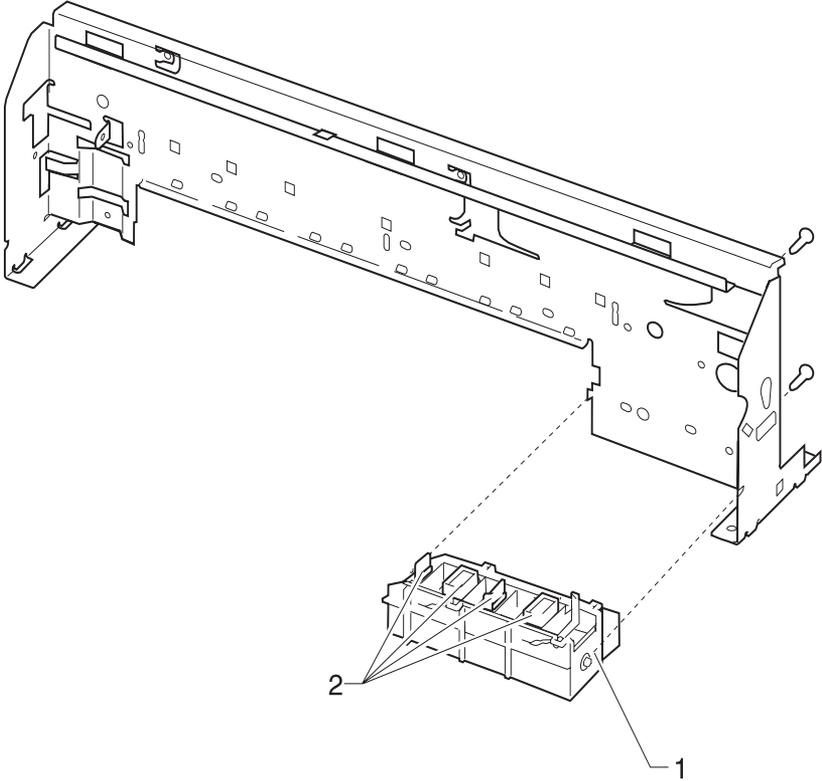
# Assembly 6: Carrier Transport



**Assembly 6: Carrier Transport**

| <b>Asm-Index</b> | <b>Part Number</b> | <b>Units</b> | <b>Description</b>                  |
|------------------|--------------------|--------------|-------------------------------------|
| 6 -1             | 99A0742            | 1            | Motor, Carrier Transport            |
| 2                | 99A0744            | 1            | Belt, Carrier                       |
| 3                | 99A0646            | 1            | Strip, Encoder                      |
| 4                | 99A0757            | 5            | Screw, Carrier Transport Motor (PP) |
| 5                | 99A0645            | 1            | Retainer, Encoder Strip             |
| 6                | 99A0743            | 1            | Pulley, Idler Tension Asm           |
| 7                | 99A0644            | 1            | Rail, Carrier                       |

# Assembly 7: Maintenance Station



4080-001

## Assembly 7: Maintenance Station

| <b>Asm-Index</b> | <b>Part number</b> | <b>Units</b> | <b>Description</b>      |
|------------------|--------------------|--------------|-------------------------|
| 7 -1             | 99A0755            | 1            | Maintenance Station Asm |
| 2                | 99A0756            | 1            | Wiper and Cap B/M (PP)  |

## Assembly 8: Options

| Asm-Index | Part number | Units | Description                            |
|-----------|-------------|-------|--|
| NS        | 99A0517     | 1     | Card, Memory SIMM 4MB                  |
| NS        | 99A0518     | 1     | Card, Memory SIMM 8MB                  |
| NS        | 99A0519     | 1     | Card, Memory SIMM 16MB                 |
| NS        | 99A0520     | 1     | Card, Memory SIMM 32MB                 |
| NS        | 99A0724     | 1     | Card, Memory SIMM 64MB                 |
| NS        | 99A0726     | 1     | Card, Memory SIMM - Japan DBCS Simm-1  |
| NS        | 99A0521     | 1     | Card, Flash Memory 1MB                 |
| NS        | 99A0522     | 1     | Card, Flash Memory 2MB                 |
| NS        | 99A0523     | 1     | Card, Flash Memory 4MB                 |
| NS        | 99A0515     | 1     | Disk, Hard w/o Adapter Card            |
| NS        | 99A0516     | 1     | Card, Hard Disk Adapter with Hard Disk |
| NS        | 99A0420     | 1     | Card, Token-Ring                       |
| NS        | 99A0421     | 1     | Card, 10/100 Ethernet                  |
| NS        | 99A0422     | 1     | Card, 10Base2/10BaseT                  |
| NS        | 99A0560     | 1     | Card, INA Omnibus                      |
| NS        | 99A0467     | 1     | Card, Parallel Port 1284C              |
| NS        | 99A0424     | 1     | Adapter, Infrared                      |
| NS        | 99A0545     | 1     | Adapter, Serial                        |
| NS        | 1364881     | 1     | Cable, Serial (50 ft.)                 |
| NS        | 99A0750     | 1     | Paper Tray 2                           |

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