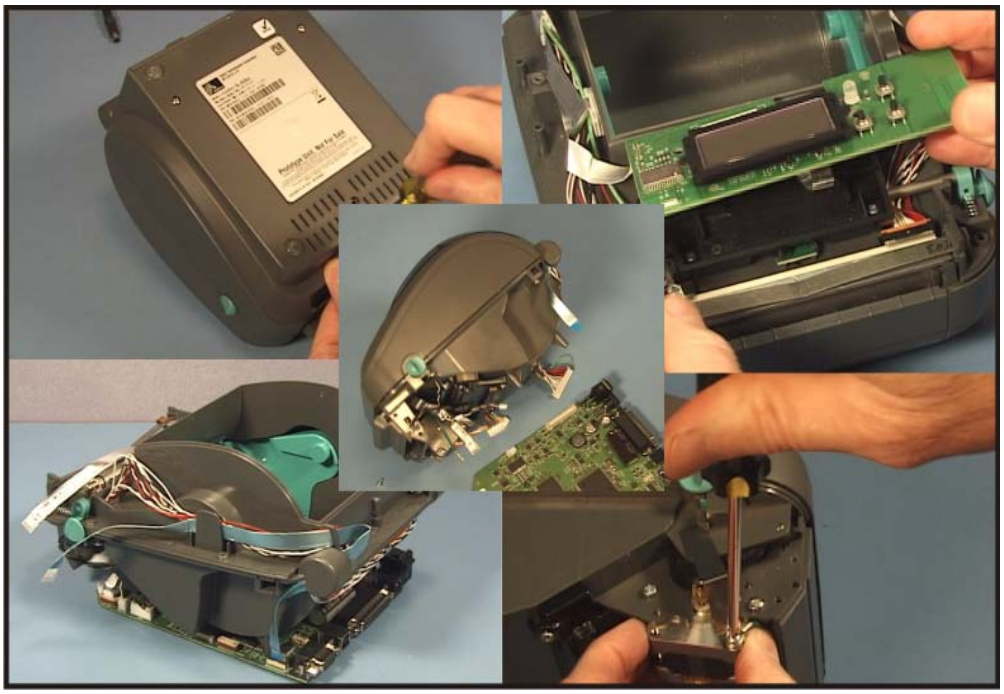


Direct Thermal G-Series™

Desktop Thermal Printer

Printer Service Manual

Proprietary Statement

This manual contains proprietary information of Zebra Technologies Corporation and its subsidiaries (“Zebra Technologies”). It is intended solely for the information and use of parties operating and maintaining the equipment described herein. Such proprietary information may not be used, reproduced, or disclosed to any other parties for any other purpose without the express written permission of Zebra Technologies.

Product Improvements

Continuous improvement of products is a policy of Zebra Technologies. All specifications and designs are subject to change without notice.

Liability Disclaimer

Zebra Technologies takes steps to ensure that its published Engineering specifications and manuals are correct; however, errors do occur. Zebra Technologies reserves the right to correct any such errors and disclaims liability resulting therefrom.

Limitation of Liability

In no event shall Zebra Technologies or anyone else involved in the creation, production, or delivery of the accompanying product (including hardware and software) be liable for any damages whatsoever (including, without limitation, consequential damages including loss of business profits, business interruption, or loss of business information) arising out of the use of, the results of use of, or inability to use such product, even if Zebra Technologies has been advised of the possibility of such damages. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Canadian DOC Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC Compliance Statement

This device complies with Part 15 rules. Operation is subject to the following two conditions:

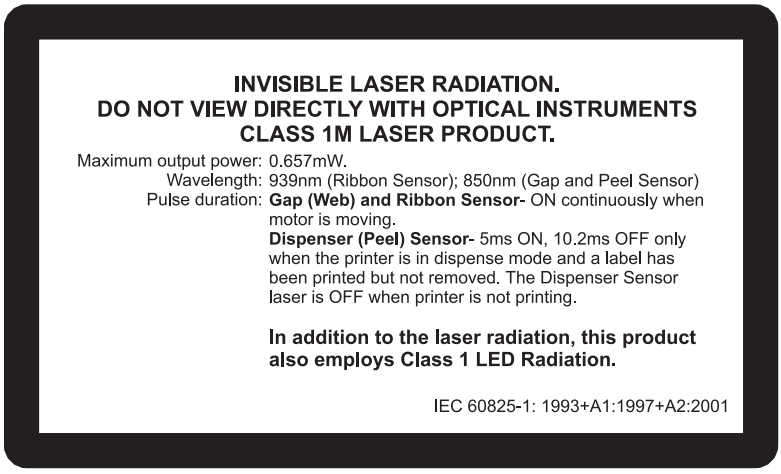
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for Class B Digital Devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the product manuals, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, the user is encouraged to do one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced RF service technician for help.

The user is cautioned that any changes or modifications not expressly approved by Zebra Technologies could void the user's authority to operate the equipment. To ensure compliance, this printer must be used with fully shielded communication cables.

G Series Printers



Caution • CLASS 1M LASER PRODUCT

- Viewing the laser output with certain optical instruments (for example, eye loops, magnifiers and microscopes) within a distance of 100mm may pose an eye hazard.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Do not tamper or attempt to repair any sensor inside this product. No serviceable sensors inside.

- Do not stare into Gap (Web) or Dispenser (Peel) sensors. Avoid possible exposure to hazardous laser radiations.

Environmental Management

Do not dispose of this product in unsorted municipal waste. This product is recyclable, and should be recycled according to your local standards.

For more information, please see our Web site at:

Web address: www.zebra.com/environment

Activating Computer Video

If you are reading this manual on-line (that is, viewing a computer file that has portable document format), you can click on the picture or graphic next to the movie icon (shown below) to play a video file that meets the standards of the Moving Picture Experts Group.

Preface

This section provides you with contact information, document structure and organization, and additional reference documents.

Contacts

You can contact Zebra Technologies Corporation at any of the following:

Visit us at: www.zebra.com

Our Mailing Addresses:

Zebra Technologies Corporation
333 Corporate Woods Parkway
Vernon Hills, Illinois 60061.3109 U.S.A
Telephone: +1 847.634.6700
Fax: +1 847.913.8766

Zebra Technologies Europe Limited
Dukes Meadow
Millboard Road
Bourne End
Buckinghamshire SL8 5XF, UK
Telephone: +44 (0)1628 556000
Fax: +44 (0)1628 556001

Support

You can contact Zebra support at:

Web Address: www.zebra.com/SS/service_support.htm

Note • The web address is case-sensitive.

US Phone Number +1 847.913.2259

UK/International Phone Number +44 (0)1628 556000

Environmental Management

Do not dispose of this product in unsorted municipal waste. This product is recyclable, and should be recycled according to your local standards.

For more information, please see our website at:

Web address: www.zebra.com/environment

Document Conventions

The following conventions are used throughout this document to convey certain information:

Alternate Color (online only) Cross-references contain links to other sections in this guide. If you are viewing this guide online, click the blue text to jump to its location.

Command Line Examples All command line examples appear in `Courier New` font. For example, type the following to get to the Post-Install scripts in the `bin` directory:

```
Ztools
```

Files and Directories All file names and directories appear in `Courier New` font. For example, the `Zebra.tar` file and the `/root` directory.

Cautions, Important, Note, and Example

Caution • Warns you of the potential for electrostatic discharge.

Caution • Warns you of a potential electric shock situation.

Caution • Warns you of a situation where excessive heat could cause a burn.

Caution • Advises you that failure to take or avoid a specific action could result in physical harm to you.

Caution • Advises you that failure to take or avoid a specific action could result in physical harm to the hardware.

Caution • Advises you need to wear protective eyeware.

Important • Advises you of information that is essential to complete a task.

Note • Indicates neutral or positive information that emphasizes or supplements important points of the main text.

Example • Provides an example, often a scenario, to better clarify a section of text.

Tools • Tells you what tools you need to complete a given task.

Related Documents

The following documents might be helpful references:

- *GX420d User Guide*
- *GK420d User Guide*
- *ZPL II® Programming Guide*
- *EPL® Programmer's Guide*

Notes •

Contents

1 Introduction

If you are a field engineer or technician, this manual helps you with routine maintenance, troubleshooting and procedures for replacing parts for repair.

Follow the parts replacement procedures as closely as possible. If you are unsure of any procedure, please contact your service representative or call the products technical support group at Zebra Technologies Corporation.

Zebra Technologies stocks all replacement parts for the printer. Be sure your facility stocks sufficient parts for the printer so that scheduled maintenance can take place in a timely manner.

Models

There are several models of the printer, each of which look similar but have different power modules and firmware.

- The GX printer models have 100 watt power supplies.
- The GK printer models have 70 watt power supplies.
- The GX printer 100 watt power supply fully supports both models, but the GK 70 watt power supply may have stalling or light print if used on the on GX printers.

Packaging

Printers are carton shipped and wrapped inside a protective bag. Keep all packing materials in case you need to reship the printer later or store the printer for any length of time.

Preparing a Static-Safe Work Area

Prepare a static-safe work area before opening the printer for repair. The area must include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for the technician. ESD protective devices are available from most electronic supply stores or by contacting 3M corporation at (800) 328-1368

Environmental and Shock Protection

Extreme temperature and humidity fluctuations or mishandling can damage the printer and power supply.

Allow 30 minutes or more before opening the printer's plastic bag. This time allows the printer to stabilize temperature especially after storage in a cool, dry location and then placed in a warmer, more humid location. Warm, humid air condenses on the cool components of the printer and this condensation may damage the components.

Move the printer carefully. Mechanical damage can certainly result from falls or rough handling.

2

Maintenance

This section provides routine cleaning and maintenance procedures.

Cleaning

When you clean the printer, use one of the following supplies that best suits your needs:

Cleaning Supplies	Order Quantity	Intended Purpose
Cleaning pens (105950-035)	Set of 12	Clean printhead
Cleaning swabs (105909-057)	Set of 25	Clean media path, guides and sensors

You can obtain cleaning supplies at www.zipzebra.com.

The cleaning process takes just a couple of minutes using the steps outlined below.

Printer Part	Method	Interval
Printhead	Let the printhead to cool for a minute, then use a new cleaning pen to swab the dark line on the printhead cleaning from the center to the outside edges of the printhead. See *Cleaning the Printhead* on page 5	After every roll of media.
Platen roller	Remove the platen roller to clean. Clean the roller thoroughly with 90% medical-grade alcohol and a cleaning swab or lint-free cloth. See *Platen Cleaning* on page 10	As needed.
Peel bar Media path	Clean it thoroughly with 90% medical-grade alcohol and a fiber-free cleaning swab. Let alcohol dissipate and the printer dry completely.	
Exterior	Water-dampened cloth.	
Interior	Gently brush out printer.	

Caution • Adhesives and media material can over time transfer onto the printer components along the media path including the platen and printhead. This build-up can accumulate dust and debris. Failure to clean the printhead, media path and platen roller could result in inadvertent loss of labels, label jams and possible damage to the printer.

Important • Using too much alcohol can result in contamination of the electronic components requiring a much longer drying time before the printer will function properly.

Cleaning the Printhead

Always use a new cleaning pen on the printhead (an old pen carries contaminants from its previous uses that may damage the printhead).

Caution • The printhead becomes hot while printing. To protect from damaging the printhead and risk of personal injury, avoid touching the printhead. Use only the cleaning pen to perform maintenance.

When you load new media, you can also clean the printhead.

1. Rub the cleaning pen across the dark area of the printhead. Clean from the middle to the outside. This will move adhesive transferred from the edges of media to the printhead outside of media path.
2. Wait one minute before closing the printer.

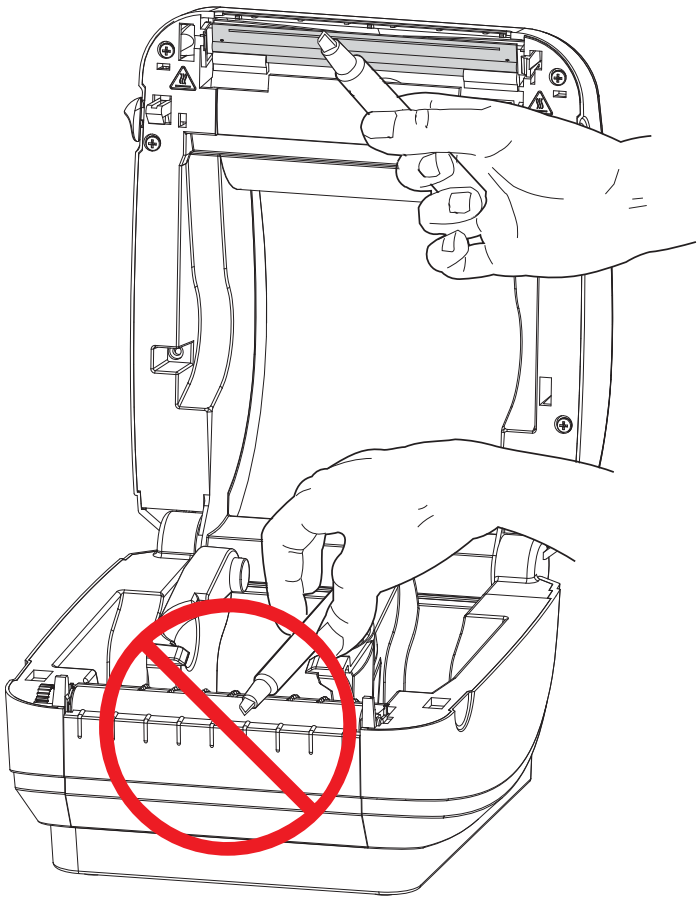


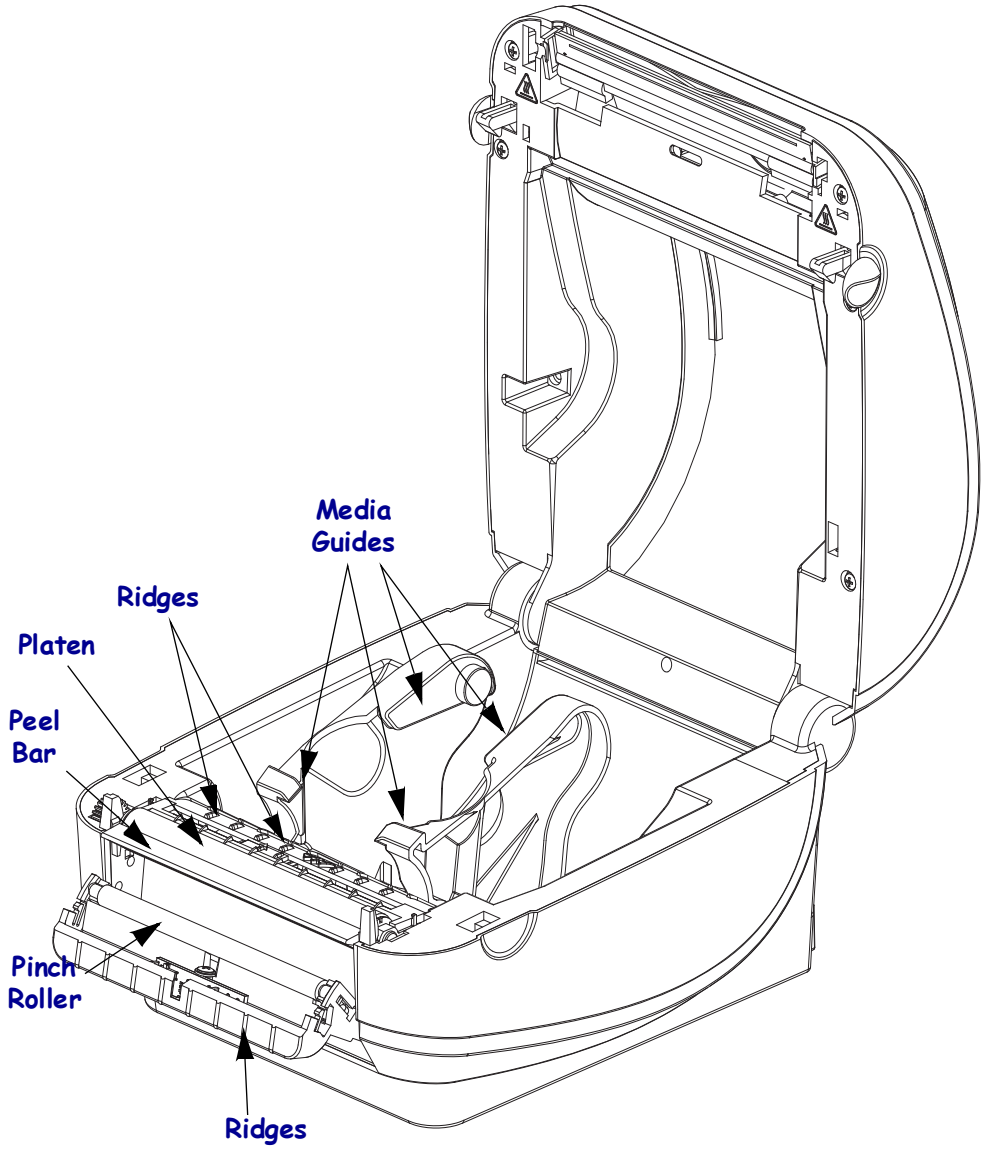
Figure 1 • Printhead Cleaning

Media Path Considerations

Use a cleaning swab to remove debris, dust or crust that has built-up on the holders, guides and media path surfaces.

1. Use the alcohol in the cleaning swab to soak the debris to break up the adhesive.
2. Wipe the ridges to remove accumulated debris.
3. Wipe the inside edges of both edge guides to remove any built-up residue.
4. Wait one minute before closing the printer.

Discard the cleaning swab after use.



Sensor Cleaning

Dust can accumulate on the media sensors.

1. Gently brush away dust; if necessary, use a dry swab to brush away dust. If adhesives or other contaminates remain, use an alcohol moistened swab to break it up.
2. Use a dry swab to remove any residue that may be left from the first cleaning.
3. Repeat steps 1 and 2 as required until all residue and streaks are removed from the sensor.

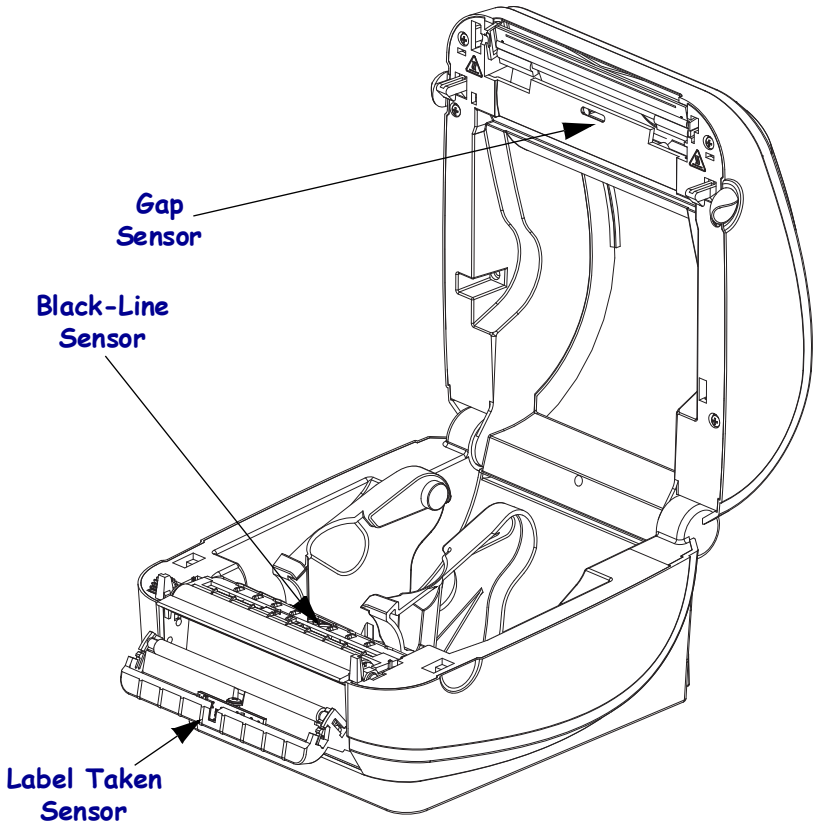


Figure 2 • Cleaning the Media Path and Sensors

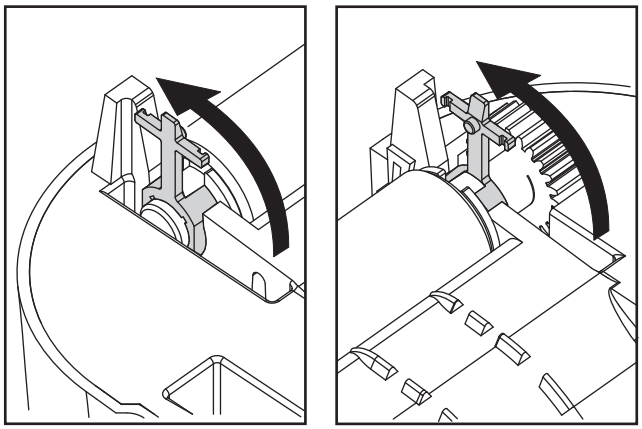
Platen Cleaning

The standard platen (drive roller) normally does not require cleaning. Paper and liner dust can accumulate without effecting print operations. Contaminates on the platen roller can damage the printhead or cause the media to slip or stick when printing. Adhesive, dirt, general dust, oils and other contaminates should be cleaned immediately off the platen.

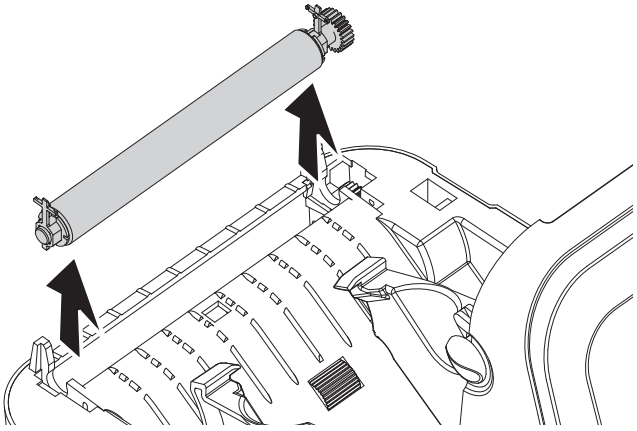
Clean the platen (and media path) whenever the printer has significantly poorer performance, print quality or media handling. The platen is the print surface and drive roller for your media. If sticking or jamming continues even after cleaning, you must replace the platen.

The platen can be cleaned with a fiber-free swab (such as a Texpad swab) or a lint free, clean, damp cloth very lightly moistened with medical grade alcohol (90% pure or better).

1. Open the cover (and dispenser door). Remove media from platen area.
2. Press the tabs on the right and left sides out. Then rotate them up.

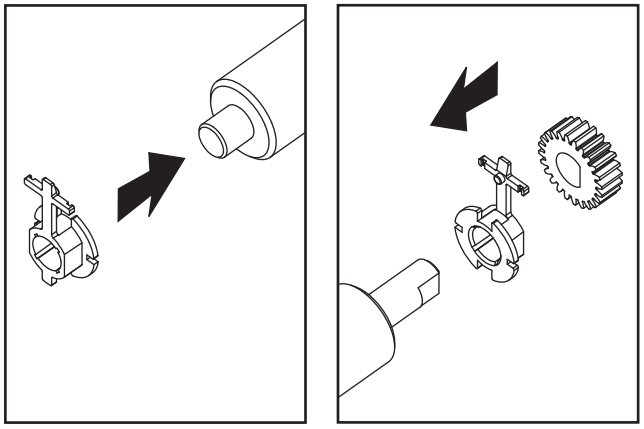


3. Lift the platen out of the printer's bottom frame.

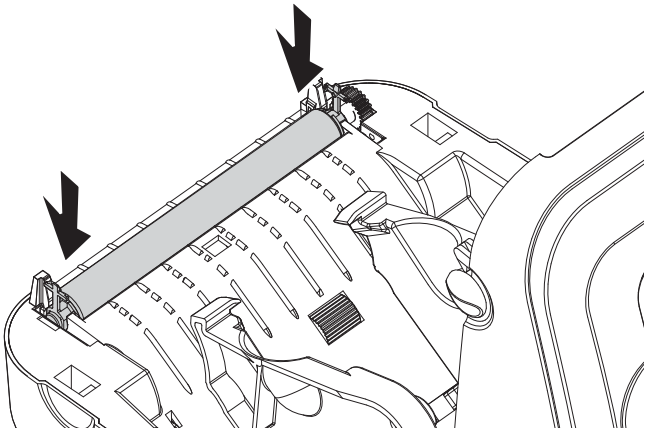


4. Clean the platen with the alcohol moistened swab. Clean from the center out. Repeat this process until the all of the roller surface has been cleaned. If there has been heavy adhesive build-up or label jam, repeat with a new swab to remove residual contaminates. Adhesives and oils, for example, may be thinned by the initial cleaning but not completely removed.

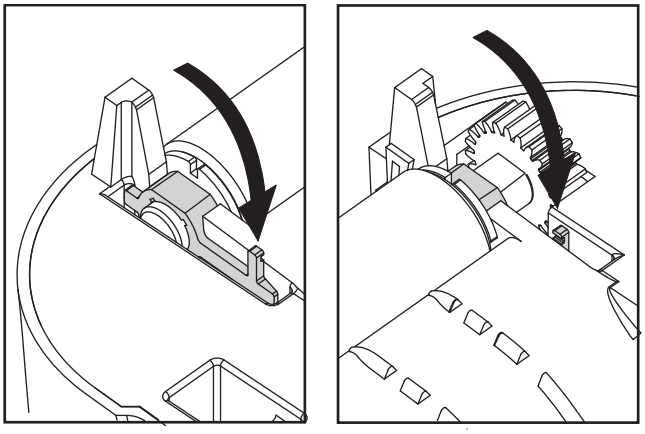
5. Install the platen in the printer. Discard the cleaning swabs after use - do not reuse.
6. Make sure the bearings are on the shaft of the platen.



7. Align the platen with the gear to the left and lower it into the printer's bottom frame.



8. Rotate the tabs back and snap them into place.



Allow the printer to dry for one minute before closing the dispenser door, media cover or loading labels.

Figure 3 • Cleaning the Platen Roller

Other Printer Maintenance

There are no user level maintenance procedures beyond those detailed in this section. See the *Troubleshooting* on page 13 for more information on diagnosing printer and print problems.

3

Troubleshooting

This section provides information about printer error reporting that you might need for printer troubleshooting. Assorted diagnostic tests are included.

Status Light Descriptions

What the Status Light is Telling You		
LED Status and Color	**Printer Status**	**For a Resolution, Refer to Number:**
Off	Off	1
Solid Green	On	2
Solid Amber	Stopped	3
Flashing Green	Normal Operation	4
Flashing Red	Stopped	5
Double Flashing Green	Paused	6
Flashing Amber	Paused	7
Alternately Flashing Green and Red	Needs Service	8
Flashing Red, Red and Green	Needs Service	9

Status Light Error Resolutions

1. The printer is not receiving power.

- Have you turned on the printer power?
- Check power connections from the wall outlet to the power supply, and from the power supply to the printer.
- Disconnect the printer from the wall outlet for 30 seconds and then reconnect the printer to the wall outlet.

2. The printer is on and in an idle state.

No action necessary.

3. The printer has failed its power on self test (POST).

- If this error occurs right after you turn on the printer, contact an authorized reseller for assistance. When the printer is operating normally, the printer status light will be amber for about 10 seconds before turning green (solid or blinking).

There is a memory error.

- If this error occurs after you have been printing, turn the printer power off and on, and then resume printing.

The printhead needs to cool down.

- If this error continues, turn the printer power off for five minutes or more, and then turn on. If the amber light persists, then the printer requires service.

4. The printer is receiving data.

- As soon as all of the data has been received, the status LED will turn green and the printer will automatically resume operation.

5. The media is out.

- Follow the instructions for Loading Media in users manual, and then press the Feed button to resume printing.

The printhead is open.

- Close the top cover and then press the Feed button to resume printing.

6. The printer is paused.

- Press the Feed button to resume printing.

7. The printhead is over temperature.

- Printing will stop until the printhead cools to an acceptable printing temperature. When it does, the printer will automatically resume operation.

8. FLASH memory is not programmed.

- Return the printer to an authorized reseller.

9. The printhead or motor has had a critical failure.

- Return the printer to an authorized reseller.

Print Quality Problems

No print on the label.

- The media may not be direct thermal media. See *Determining Thermal Media Types* on page 22.
- Is the media loaded correctly? Follow the instructions for *Loading Roll Media* in the users manual.

The printed image does not look right.

- The printhead is dirty. Clean the printhead.
- The printhead is under temperature.
- Adjust the print darkness and/or print speed.
  - Use the **^PR** (speed) and **~SD** (darkness) commands referenced in the ZPL Programming Guide.
  - Use the **D** (darkness/density) and **S** (speed) commands in the *EPL Programmer's Guide*.
  - Manually adjust print darkness with the six-flash sequence of *Feed Button Modes* on page 29.
  - The Windows printer driver or application software may change these settings and may require a change to optimize print quality.
- The media being used is incompatible with the printer. Be sure to use the recommended media for your application, and always use Zebra-approved labels and tags.
- Verify that the printer power supply in use is rated at 100 Watts of DC output for GX printer models.
- The printhead has worn out. The printhead is a consumable item and will wear out due to friction between the media and printhead. Using unapproved media may shorten life or damage your printhead. Replace the printhead.
- The platen may need cleaning or replacement. The platen (driver) roller maybe losing traction due to:
  - Foreign objects attached to its surface,
  - The rubbery smooth surface has become polished and slippery, or
  - There is damage to the normally smooth and flat print surface such as box knife cuts.

There are long tracks of missing print (blank vertical lines) on several labels.

- The printhead is dirty. Clean the printhead.
- The printhead elements are damaged. Replace the printhead.

The printing does not start at the top of the label or misprinting of one to three labels.

- The media may not be threaded correctly. Follow the instructions for *Loading Roll Media* in the users manual.
- The printer needs to be calibrated. Refer to the two-flash sequence of *Feed Button Modes* on page 29 in this section.
- ZPL Label Formats - The correct media sensor may not be activated. Manual calibration selects the media sensing method for the labels being used (refer to the **^MN** command in the *ZPL Programming Guide*).
- ZPL Label Formats - Verify that the Label Top (**^LT**) command is correctly set for your application (consult the *ZPL Programming Guide*).
- EPL Label Formats - The correct media sensor may not be activated for label dispensing, blackline or notch sensing, or for Gap/Web sensing. Manual calibration selects the media sensing method for the labels being used (refer to the **O** and **Q** commands in the EPL *Programmer's Guide*).
- EPL Label Formats - Verify that the Set Label Length (**Q**) command is correctly set for your application (consult the *EPL Programmer's Guide*).

A ZPL label format was sent to, but not recognized by, the printer.

- Is the printer in pause mode? If so, press the Feed button.
- If the status LED is on or flashing, refer to *What the Status Light is Telling You* on page 14.
- Make sure the data cable is correctly installed.
- A communications problem has occurred. First, make sure that the correct communications port on the computer is selected. Refer to *Communicating with the Printer* in the users manual.
- Verify the correct Format and Control Prefix on the printer match what you are using in your ZPL programmed label format. The default Format (COMMAND CHAR) is Caret (^) character and the Control (CONTROL CHAR) is a Tilde (~) character. Verify the characters with the Configuration Status label printout. Refer to the one-flash sequence of *Feed Button Modes* on page 29 to print this label.

A EPL label format was sent to, but not recognized by, the printer.

- Is the printer in pause mode? If so, press the Feed button.
- If the printer has label dispensing enabled, the printer may be waiting for the label to be removed. The liner/web must be properly threaded through the label dispenser mechanism (peeler) to correctly operate in label dispense mode, refer to the *Label Dispenser Option* in the users manual.
- If the status LED is on or flashing, refer to *What the Status Light is Telling You* on page 14.
- Make sure the data cable is correctly installed.
- A communications problem has occurred. First, make sure that the correct communications port (USB) on the computer is selected. Refer to *Communicating with the Printer* in the users manual.

Determining Printer Configuration

The printer uses a ZPL printer configuration status label to report the printer's configuration status for both EPL and ZPL operations.The ZPL style label provides a more intuitive and functionally descriptive naming conventions than the EPL style printer status label. Operational status (darkness, speed, media type, etc.), installed printer options (network, interface settings, cutter, etc.) and printer description information (serial number, model name, firmware version, etc.) are all includes on the status label.

To get an EPL style printer configuration status label, send the printer the EPL **`U`** command. See the EPL programmer's guide for more information on the various EPL **`U`** commands and interpreting the settings displayed on these labels.

The printer configuration status label can be localized for up to 16 languages. Use the ZPL programming command **`^KD`** to modify the displayed language for most status items on this label.

See *Printing a Configuration Label* on page 26 and *Feed Button Modes* on page 29 for information on accessing the printer configuration status label.

Thermal Printing

Caution • The printhead becomes hot while printing. To protect from damaging the printhead and risk of personal injury, avoid touching the printhead. Only use the cleaning pen to perform printhead maintenance.

Caution • The discharge of electrostatic energy that accumulates on the surface of the human body or other surfaces can damage or destroy the printhead or electronic components used in this device. You must observe static-safe procedures when working with the printhead or the electronic components under the top cover.

Modes of Printing

You can operate this printer in many different modes and media configurations:

- Direct thermal printing (which uses heat sensitive media to print).
- Standard Tear-Off mode allows you to tear off each label (or batch print a strip of labels) after it is printed.
- Label Dispense Mode: If an optional dispenser is installed, the backing material can be peeled away from the label as it is printed. After this label is removed, the next one is printed.
- Media Cutting: If an optional media cutter is installed, the printer can cut the label liner between labels, receipt paper or tag stock depending upon the cutter option purchased.
- Stand-alone: The printer can run in a stand-alone mode (not connected to a computer) using the printer's auto running label form feature (programming based) or by using an data input device. This mode accommodates data input devices, such as scanners, weigh scales, Zebra KDU Plus or KDU (Keyboard Display Unit) with a KDU Adapter, etc., via the printer's serial port.
- Shared network printing: Printers configured with the Ethernet interface option include an internal print server with ZebraLink printer configuration web page and ZebraNet Bridge software for managing and monitoring status of Zebra printers on a network.

Print Media Types

Important • Zebra strongly recommends the use of Zebra-brand supplies for continuous high-quality printing. A wide range of paper, polypropylene, polyester, and vinyl stock has been specifically engineered to enhance the printing capabilities of the printer and to prevent premature printhead wear. To purchase supplies, go to http://www.zebra.com/howtobuy.

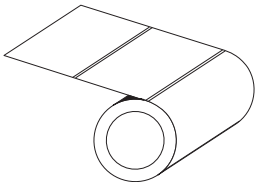
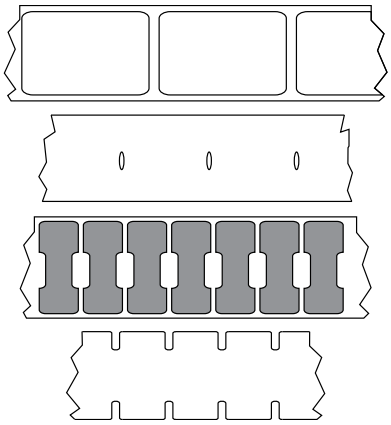
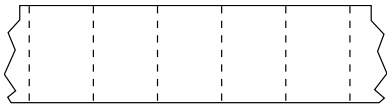
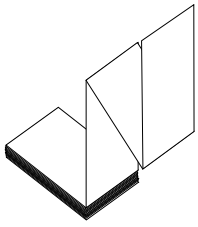
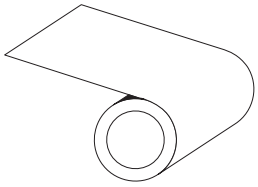
Your printer can use various types of media:

- *Standard media*—Most standard (non-continuous) media uses an adhesive backing that sticks individual labels or a continuous length of labels to a liner.
- *Continuous roll media*—Most continuous roll media is direct thermal media (similar to FAX paper) and is used for receipt or ticket style printing.
- *Linerless media*—Linerless labels have an adhesive backing, but they are wound onto a core without a liner. The media typically is perforated and may have black marks on the bottom surface of the media to indicate label separations. The top surface of linerless media labels have a special coating that keeps the labels from sticking to each other. The printer must be equipped with a special Linerless option to be able to use linerless media to keep the media from sticking to the printer.
- *Tag stock*—Tags are usually made from a heavy paper (up to 0.0075in./0.19mm thick). Tag stock does not have adhesive or a liner, and it is typically perforated between tags.

For more information on basic media types, see Table 1.

The printer typically uses roll media, but you can use fan-fold or other continuous media too. Use the correct media for the type of printing you require. You must use direct thermal media.

Table 1 • Types of Media Roll and Fanfold Media

Media Type	How It Looks	Description
Non-Continuous Roll Media		Roll media is wound on a core that can be 1 in. to 3 in. (25 to 76 mm) in diameter. Labels have adhesive backing that sticks them to a liner, and they are separated by gaps, holes, notches, or black marks. Tags are separated by perforations. Individual labels are separated by one or more of the following methods: • *Web media* separates labels by gaps, holes, or notches.  • *Black mark media* uses pre-printed black marks on the back side of the media to indicate label separations.  • *Perforated media* has perforations that allow the labels or tags to be separated from each each other easily. The media may also have black marks or other separations between labels or tags. 
Non-Continuous Fanfold Media		Fanfold media is folded in a zigzag pattern. Fanfold media can have the same label separations as non-continuous roll media. The separations would fall on or near the folds.
Continuous Roll Media		Continuous roll media does not have gaps, holes, notches, or black marks to indicate label separations. This allows the image to be printed anywhere on the label. Sometimes a cutter is used to cut apart individual labels. With continuous media, use the transmissive (gap) sensor so the printer can detect when the media runs out.

Determining Thermal Media Types

Thermal transfer media requires ribbon for printing while direct thermal media does not. To determine if ribbon must be used with a particular media, perform a media scratch test.

To perform a media scratch test, complete these steps:

1. Scratch the print surface of the media with a finger nail or pen cap. Press firmly and quickly while dragging it across the media surface. Direct thermal media is chemically treated to print (expose) when heat is applied. This test method uses friction heat to expose the media.
2. Did a black mark appear on the media?

If a black mark...	Then the media is...
Does not appear on the media	**Thermal transfer**. A ribbon is required.
Appears on the media	**Direct thermal**. No ribbon is required.

Replacing Supplies

If labels or ribbon run out while printing, leave the printer power on while reloading (data loss results if you turn off the printer). After you load a new label or ribbon roll, press the Feed button to restart.

Always use high quality, approved labels, tags and ribbons. If adhesive backed labels are used that don't lay flat on the backing liner, the exposed edges may stick to the label guides and rollers inside the printer, causing the label to peel off from the liner and jam the printer. Permanent damage to the printhead may result if a non-approved ribbon is used as it may be wound incorrectly for the printer or contain chemicals corrosive to the printhead.

Adjusting the Print Width

Print width must be set when:

- You are using the printer for the first time.
- There is a change in media width.

Print width may be set by:

- The Windows printer driver or application software such as Zebra Designer.
- The five-flash sequence in *Feed Button Modes* on page 29.
- Controlling printer operations with ZPL programming; refer to the Print Width (**^PW**) command (consult your *ZPL Programming Guide*).
- Controlling printer operations with EPL Page Mode programming, refer to the Set Label Width (**q**) command (consult your *EPL Programmer's Guide*).

Adjusting the Print Quality

Print quality is influenced by the heat or density (setting) of the printhead, the print speed, and the type of media you are using. Only by experimenting will you find the optimal mix for your application.

Note • Media manufactures may have specific recommendations for speed settings for your printer and the media. Some media types have lower maximum speeds than your printer's maximum speed.

The relative darkness (or density) setting can be controlled by:

- The six-flash sequence in *Feed Button Modes* on page 29. This will overwrite any ZPL and EPL programmed darkness/density settings.
- The Set Darkness (**~SD**) ZPL command (consult your *ZPL Programming Guide*).
- The Density (**D**) EPL command (consult your *EPL Programmer's Guide*).

If you find that the print speed needs to be adjusted, use:

- The Windows printer driver or application software such as Zebra Designer.
- The Print Rate (**^PR**) command (consult your *ZPL Programming Guide*).
- The Speed Select (**S**) command (consult your *EPL Programmer's Guide*).

Media Sensing

The G-Series printer has automatic media sensing capability. The printer is designed to continuously check and adjust media length sensing for minor variations. Once the printer is printing or feeding media, the printer continually checks and adjusts the media sensing to accommodate for minor changes in media parameters from label to label on a roll and from roll to roll of media. The printer will automatically initiate a media length calibration if the expected media length or the label to label gap distance has exceeded the acceptable variation range when starting a print job or Feeding media. The automatic media sensing in the G-Series printers works the same for printer operations that use EPL and ZPL label formats and programming.

If the printer does not detect labels or blacklines (or notches with blackline sensing) after feeding the media the default maximum label length distance of 39 inches (1 meter), then the printer will switch to continuous (receipt) media mode. The printer will keep these settings until changed by software, programming or a manual calibration with different media.

Optionally, the printer can be set to do a short media calibration after printer power up or when closing the printer with power on. The printer will then feed up to three labels while calibrating.

The printer's media settings can be verified by printing a Printer Configuration label. See the *Manual Calibration* on page 25 for more details.

The maximum distance that the automatic media type detection and sensing will check can be reduced by using the ZPL Maximum Label Length command (**^ML**). It is recommended that this distance be set to no less than two times the longest label being printed. If the largest label being printed was a 4 by 6 inch label, then the maximum label (media) length detection distance can be reduced from the default distance of 39 inches down to 12 inches.

If the printer has difficulty automatically detecting the media type and auto-calibrating, see *Manual Calibration* on page 25 to perform an extensive calibration. It includes a printed graph of sensor operation for your media. This method disables the printer's automatic media sensing capability until the printer's default parameters are reset to the factory defaults with the four flash Feed button mode. See the *Feed Button Modes* on page 29 for more details.

The automatic media calibration can be modified, turned on or turned off to meet your needs. Sometimes print job conditions require that the printer use all the media on a roll. The two automatic media conditions, power up with media loaded and closing the printer with power on, can be controlled individually with the ZPL Media Feed command, **^MF.** The feed action discussed in the ZPL programmers guide for the **^MF** command is primarily for automatic media sensing and calibration. The automatic media calibration that controls the dynamic media (label to label) calibration is the **^XS** command. If multiple media types of different lengths, material or detection methods (web/gap, blackline or continuous) are used, you should not change these settings.

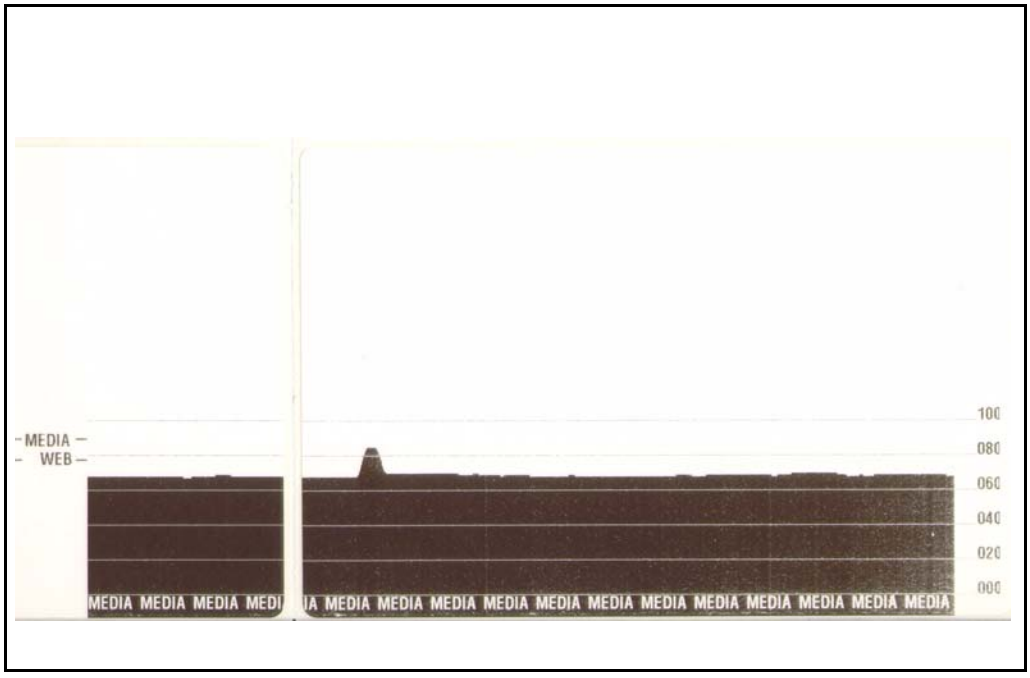
The media calibration and detection process can also be refined to match the media type loaded into the printer. Use the ZPL Media Tracking command (**^MN**) to set the media type. Sometimes the printer can detect preprinted media as the gap between labels or the liner backing with print as a blackline marks. If the **^MN** parameter for continuous media is set, then the print does not preform the automatic calibration. The **^MN** command also includes an automatic calibration parameter (**^MNA**) to return the printer to its default setting to automatically detect all media types.

Manual Calibration

Manual calibration is recommended whenever you are using pre-printed media or if the printer will not correctly auto calibrate.

1. Make sure media is loaded.
2. Turn on the printer power.
3. Press and hold the Feed button until the green status light flashes once, then twice and then continuing until the flash groups reach the group of seven flashes. Release the Feed button.
4. The printer will set the media sensor for the label backing being used. After it is done making this adjustment, the roll will automatically feed until a label is positioned at the printhead. A profile of the media sensor settings (similar to the example below) will print. Upon completion, the printer will save the new settings in memory and the printer is ready for normal operation.
5. Press the Feed button. One entire blank label will feed. If this does not happen, try defaulting (refer to the four-flash sequence in "Feed Button Modes" later in this chapter) and recalibrating the printer.

Note • Performing a manual calibration disables the auto calibration function. To return to auto calibration, default the printer (refer to the four-flash sequence in *Feed Button Modes* on page 29 in this section).



Troubleshooting Tests

Printing a Configuration Label

To print out a listing of the printer's current configuration, refer to the one-flash sequence in *Feed Button Modes* on page 29 in this section

```
PRINTER CONFIGURATION

Zebra Technologies
ZTC GX420d

10.0.............. DARKNESS
6 IPS............. PRINT SPEED
+000.............. TEAR OFF
TEAR OFF.......... PRINT MODE
GAP/NOTCH......... MEDIA TYPE
WEB............... SENSOR TYPE
AUTO.............. SENSOR SELECT
816............... PRINT WIDTH
1234.............. LABEL LENGTH
39.0IN   989MM.... MAXIMUM LENGTH
CONNECTED......... USB COMM.
BIDIRECTIONAL..... PARALLEL COMM.
9600.............. BAUD
8 BITS............ DATA BITS
NONE.............. PARITY
XON/XOFF.......... HOST HANDSHAKE
NONE.............. PROTOCOL
<~>  7EH.......... CONTROL CHAR
<^>  5EH.......... COMMAND CHAR
<,>  2CH.......... DELIM. CHAR
ZPL II............ ZPL MODE
NO MOTION......... MEDIA POWER UP
NO MOTION......... HEAD CLOSE
DEFAULT........... BACKFEED
+000.............. LABEL TOP
+0000............. LEFT POSITION
NO................ HEXDUMP
03/08/00.......... RTC DATE
06:06............. RTC TIME
035............... WEB S.
096............... MEDIA S.
009............... WEB GAIN
050............... MARK S.
016............... MARK GAIN
095............... MARK MED S.
017............... MARK MEDIA GAIN
095............... CONT MEDIA S.
007............... CONT MEDIA GAIN
066............... TAKE LABEL
F................. MODES ENABLED
.................. MODES DISABLED
832 8/MM FULL..... RESOLUTION
V56.15.1P24 <-.... FIRMWARE
V06.00.0207....... HARDWARE ID
CUSTOMIZED........ CONFIGURATION
2944k.........R:  RAM
2048k.........E:  ONBOARD FLASH
NONE.............. FORMAT CONVERT
990 IN............ LAST CLEANED
990 IN............ HEAD USAGE
3,214 IN.......... TOTAL USAGE
3,214 IN.......... RESET CNTR1
3,214 IN.......... RESET CNTR2
A123456792........ SERIAL NUMBER
2007-08-06 14:28:44 TIME STAMP

FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Recalibration

Recalibrate the printer if it starts to display unusual symptoms, such as skipping labels. Refer to the two-flash sequence in *Feed Button Modes* on page 29 in this section.

Resetting the Factory Default Values

Sometimes, resetting the printer to the factory defaults may solve some problems. Refer to the four-flash sequence in *Feed Button Modes* on page 29 in this section.

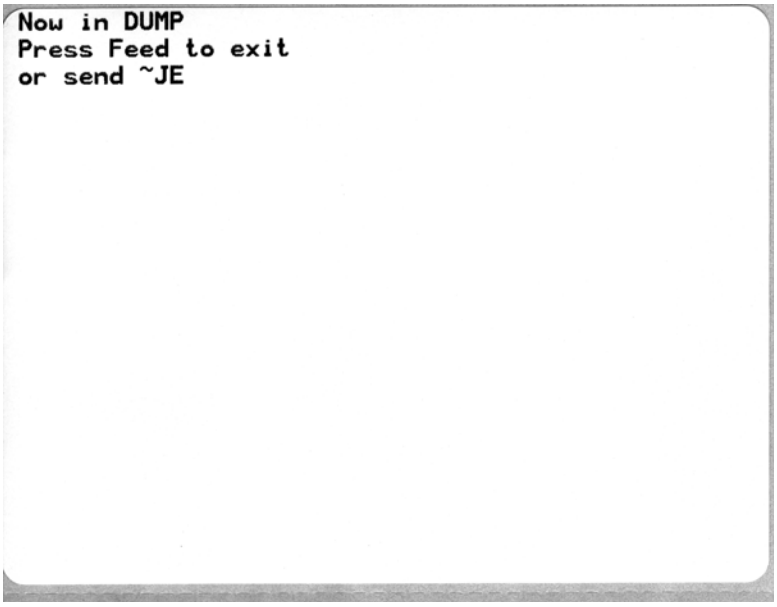
Communications Diagnostics

If there is a problem transferring data between the computer and printer, try putting the printer in the communications diagnostics mode. The printer will print the ASCII characters and their respective hexadecimal values (a sample is shown below) for any data received from the host computer. To find out how,

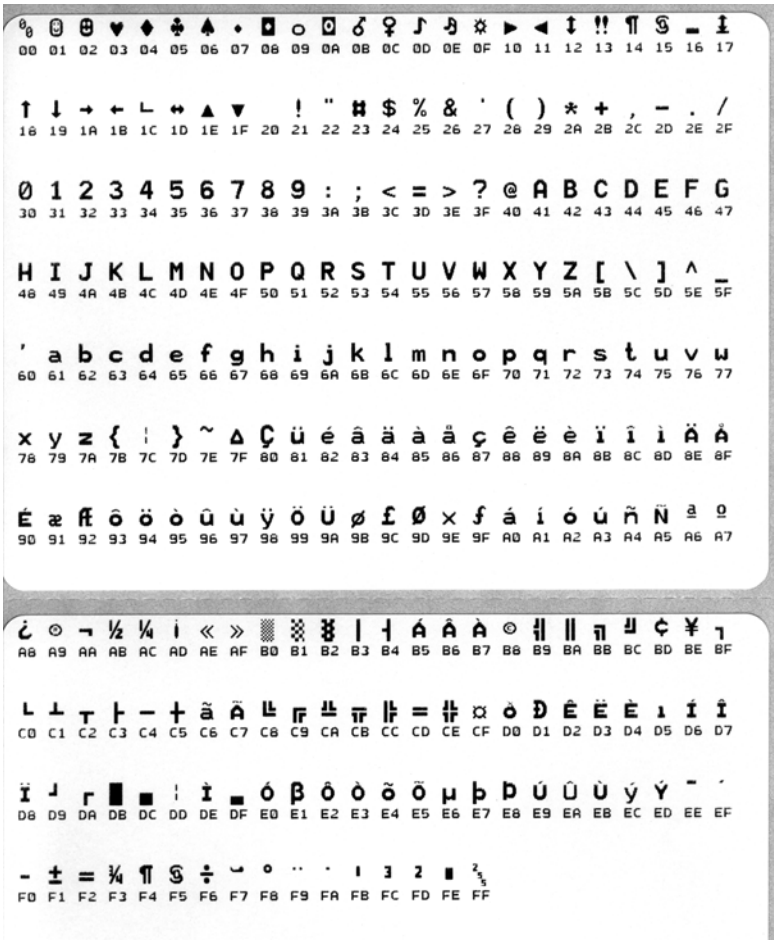
There are multiple ways to enter hex data dump mode:

- The **~JD** ZPL command
- The **dump** EPL command
- On power up with the Feed button pressed. Refer to the power off mode procedure in *Feed Button Modes* on page 29 in this section.

The printer will print 'Now in DUMP' (see below) and advance to the top of the next label.



The following example of a communications DUMP mode printed out. The printout displays hexadecimal data 00h-FFh (0-255 decimal) with a unique character for each hexadecimal value displayed above the hexadecimal data.



The blank lines between the lines of data are where serial port and Bluetooth data handling errors get logged. The errors are:

- F = Frame Error
- P = Parity Error
- N = Noise Error
- O = Data Overrun Error

To exit the diagnostic mode and resume printing, turn off and then turn on the printer. An alternate method for exiting the diagnostic mode is to press the Feed button as many times as it takes to clear the printer's command buffer and print 'Out of DUMP' on the label.

Feed Button Modes

Power Off Mode (Communications Diagnostics Mode)	
With the printer power off, press and hold the Feed button while you turn on the power.	
Flash Sequence	**Action**
Rapid Red Flashing	**Firmware Download Mode** - The printer starts rapidly flashing red to denote entry into the Firmware Download mode. Releasing the Feed button here will start initializing the printer for download. The printer is ready to start downloading firmware when the status light begins to slowly flash between red and green. See Sending Files tot the Printer in the user's manual for more information on using the Firmware (and File) Download utility available for use with this printer. Firmware updates for your printer, if available, are posted on the Zebra on our web site at: www.zebra.com
Amber	**Normal Operations Mode** - The printer continues into a normal printer initialization. Releasing the Feed button here will allow the printer to start normally without firmware download or operating in communications diagnostics mode.
Green	**Communications Diagnostic (Dump) Mode** - Release the Feed button immediately after the printer status light turns green. The printer will print 'Now in DUMP' at the top of the label and then advance to the next label. After printing the first label, the printer will automatically enter into diagnostic mode in which the printer prints out a literal representation of all data subsequently received. *To exit the diagnostic mode and resume printing, turn off and then turn on the printer. An alternate method for exiting the diagnostic mode is to press the Feed button as many times as it takes to clear the printer's command buffer and print 'Out of DUMP' on the label.*

Power On Modes	
With the printer power on and top cover closed, press and hold the Feed button for several seconds. The green status LED will flash a number of times in sequence. The explanation at the right (Action) shows what happens when you release the key after the start specific number of flashes and before the next flash sequence starts.	
Flash Sequence	**Action**
*	**Configuration Status** - Prints a detailed printer configuration status label. The label can be used to verify printing, assist printer to computer communication configuration, maintenance, troubleshooting, and help us with customer care communications.
* **	**Standard Media Calibration** - The printer detects and sets media type and media length, and it adjusts the media sensors for optimal performance with the installed media. The printer will feed one to four labels. *Note: Users familiar with the Zebra EPL desktop printer use this Feed mode to replace power-up AutoSensing calibration.*
* ** ***	**Serial Port Configuration** - *Applies only to printers with serial interface ports.* To reset the communication parameters. Press and release the Feed button while the LED rapidly flashes amber and green. For autobaud synchronization: Send the **^XA^XZ** command sequence to the printer while the LED rapidly flashes amber and green. When the printer and host are synchronized, the LED changes to solid green. NOTE: No labels will print during autobaud synchronization.
* ** *** ****	**Factory Defaults** - Resets the printer to the default factory settings and modes. See the configuration label for a list of the primary settings affected by this Feed Mode option. Other settings are exclusively set, viewed and controlled by programming are also reset. The printer then performs a standard media calibration. Once the printer has entered the Factory Default mode, the status light will turn amber for three (3) seconds. During that time you may do two things: Do nothing and the printer will reset the factory defaults automatically as described above OR press and hold the feed button to enter a factory default reset modes for printers for network printer options (Ethernet, Wi-Fi or Bluetooth). Releasing the button after the first flash resets the network factory options only. Releasing the button after the second flash sequence (two flashes) will reset the printer defaults only. Releasing the button after the third flash sequence (three flashes) will reset both the printer and network settings.
* ** *** **** *****	**Print Width Adjustment** - Prints a succession boxes starting at the minimum print width and ending in the printer's maximum print width in 4mm increments. Press the Feed button once when the printer has reached the desired maximum print width. Note that the printer driver and applications can override this setting.
* ** *** **** ***** ******	**Print Darkness (Density) Adjustment** - Prints a succession of bar code simulation patterns starting at the minimum darkness (print density/heat) and ending in the printer's maximum darkness in increments of four (4) using the ZPL darkness setting range values. Press the Feed button once the pattern is clear and legible. Do not continue to increase the darkness setting. Bar code line widths may become distorted reducing readability. Note that the printer driver and applications can override this setting.
* ** *** **** ***** ****** *******	**Manual Media Calibration** - The printer runs extensive tests to detect and set media type and media length, and then it adjusts the media sensors for optimal performance with the installed media. Manual calibration is recommended whenever you are using pre-printed media, print on the liner or if the printer will not correctly auto calibrate. A graphical profile of the media sensing will print.
If the Feed button remains pressed after a 8-flash sequence, the printer exits the configuration mode when the Feed button is released.	

4

Required Tools

Tools • Make use of the following tools while performing replacement procedures:

- Phillips driver #0
- Phillips driver #1
- small slot-head screwdriver
- needle-nose pliers
- WD-40 ‘No Mess’ pen for cutter maintenance
- Printhead Cleaning Pen
- Fiber free swabs
- Lint free wipes, such as Kim-Wipes

Notes •

5

Replacing Parts

In the event you must replace a spare part, review the repair path decision tree to see which procedures to perform. Read the steps in the required procedures to remove the old part and install the new part. Other required procedures may include cleaning or other maintenance after the spare is replaced.

Repair Path

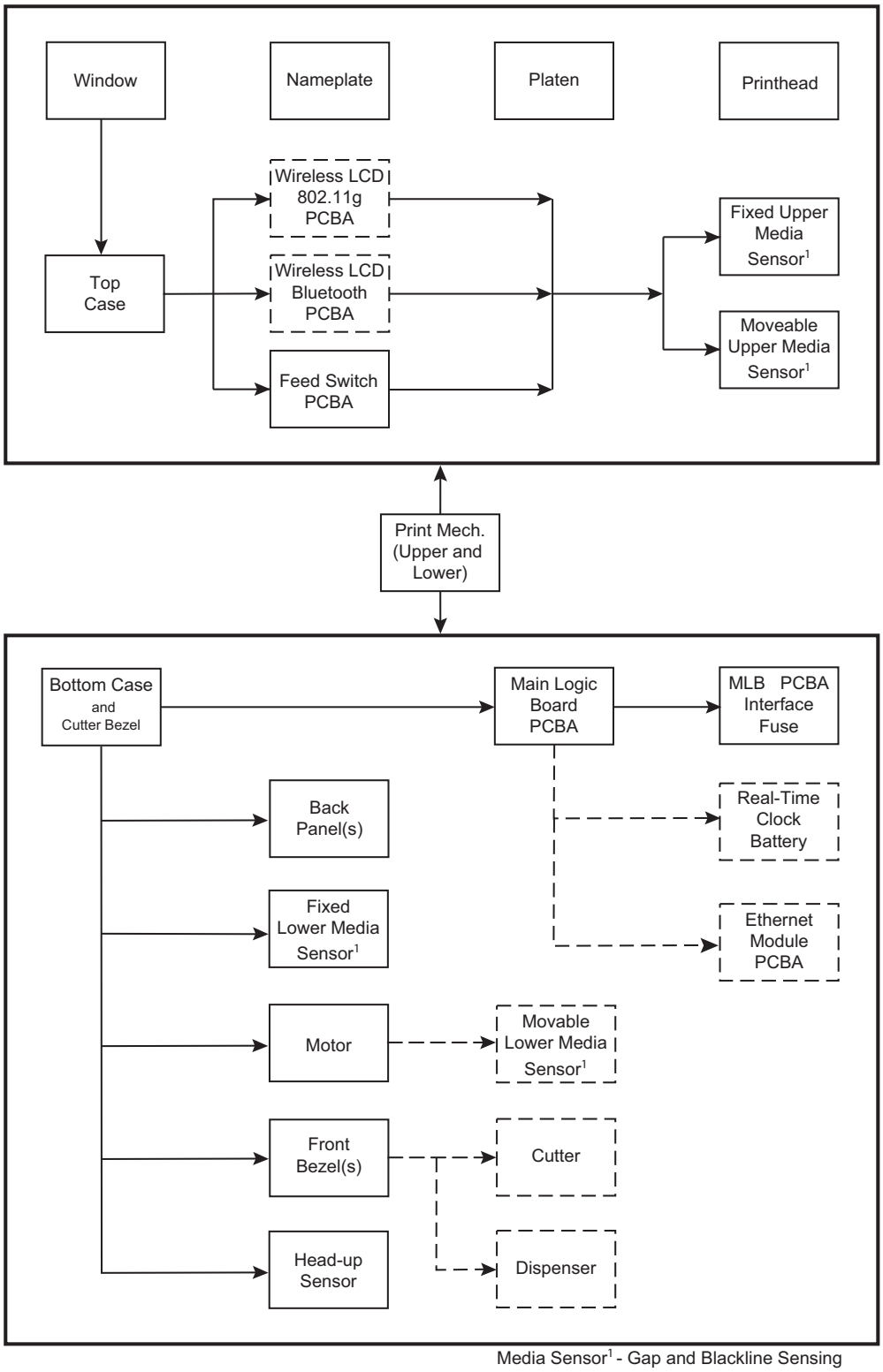


Figure 4 • Decision Tree

Replacing the Platen

Removal

Open the printer and remove any media.

1. Open the dispenser (peel) door if the dispenser option is installed.
2. Push the tabs on the right and left sides of the platen bearings out slightly to clear the lock and then rotate them up.
3. Lift the platen out of the printer's bottom frame.

Installation

1. Make sure the bearings are oriented correctly on the shaft of the platen and press the gear on the platen shaft.
2. Align the platen with the gear to the left and lower it into the printer's bottom frame.
3. Rotate the tabs back and snap them into place.

Replacing the Printhead

In the event you need to replace the printhead, read the procedure and review the removal and installation steps before actually replacing the printhead.

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

Caution • Turn the printer power off and unplug the power cord before replacing the printhead.

Caution • Let the printhead completely cool before attempting to remove the printhead.

Before following the steps in this procedure, open the printer by pulling the release latches forward then lifting the top cover.

Removal

1. Push the printhead's right side catch to the right.
2. Pull the printhead forward and pull it free of the top case if necessary
3. Unplug both bundles of printhead wires from their connectors.

Installation

1. Align the printhead to plug the left and right connectors into the wire bundles.
2. Slide the printhead into the left side and jog it into the right side catch.
3. Clean the printhead.

Reload media. Plug in the power cord, turn on the printer and print a status report to ensure proper function.

Replacing the Window

Removal

Open the printer and remove any media.

1. Use a #0 Phillips screwdriver to loosen the screw holding the back of the window to the printer's lid. The screw often remains trapped in place.
2. From the back, carefully lift the window and then pull it to the rear so that the front tabs will slip out of the lid.

Installation

1. Align the front tab to the front of the lid and slip it into place.
2. Lower the rear of the window into place. Check the alignment and placement of the window on the lid.
3. Place the screw back into place and use a #0 Phillips screwdriver to tighten it.

Replacing the Bottom Case and Back Panel

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

Removal

The printer's window must be removed before continuing.

1. Turn the printer over. Use a #1 Phillips screwdriver to loosen the three screws holding the bottom case to the inner mechanism. Note: For printers with the installed cutter option, the cutter bezel must be removed first.
2. Lift the front of the bottom case away from the printer.
3. Place the bottom case upright on its feet. From the inside, gently press the top of the back panel until it snaps free of the bottom case.

Installation

1. Lower the bottom case onto the bottom of the printer. Start from the rear by inserting the interface connectors into the back of the bottom case and then align it to the chassis. Note - do not install the back panel onto the bottom case yet.
2. Attach the bottom case to the printer with the three (3) screws using a #1 Phillips screwdriver.
3. Place the printer upright on its feet. From the rear, align the back panel's 'hooks' (and the interface connectors) to the bottom case. Push back panel straight into the printer and snap it into place.
4. Checking the alignment around the power switch and receptacle, press the top of the back panel until it snaps into place.

Replacing the Main Printed Circuit Board Assembly

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window and bottom case before performing this procedure.

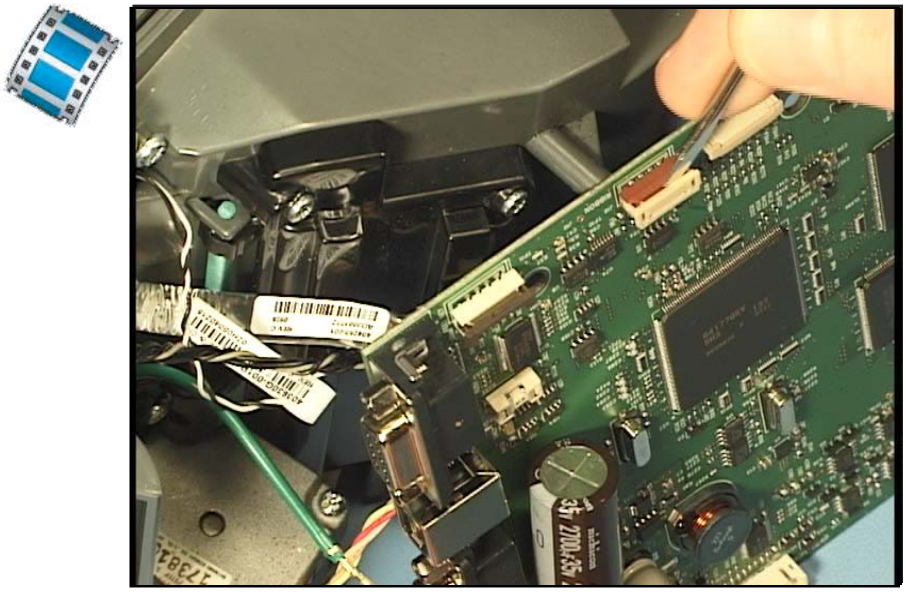
Removal

1. From beneath, use a #1 Phillips screwdriver to loosen the screw holding the main PCBA to the inner mechanism.
2. Carefully lift the main PCBA away from the printer to disconnect the wires, bundles and ribbon cables from one side of the printer and then the other. For the flex circuit cable connectors, pull the tab up to unlock the connectors.

Installation

1. From beneath, check the wires, bundles and ribbon cables and align the main PCBA over the mounting pins on the inner mechanism.
2. Connect the printer's motor, sensors, printhead and ground cables to the main PCBA. With the locking tab pulled up (open), slide the flex circuit cables into the connector. The circuit side faces the open side of the locking tab. Push the tab down to lock the cable. Check that all are securely attached.
3. Lower the main PCBA onto the mounting pins.
4. Place the screw back into place and use a #1 Phillips screwdriver to tighten it.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.



Replacing the Battery

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

Caution • Risk of explosion if battery is replaced with an incorrect type.
Caution • Risk of explosion: DO NOT dispose of in fire.

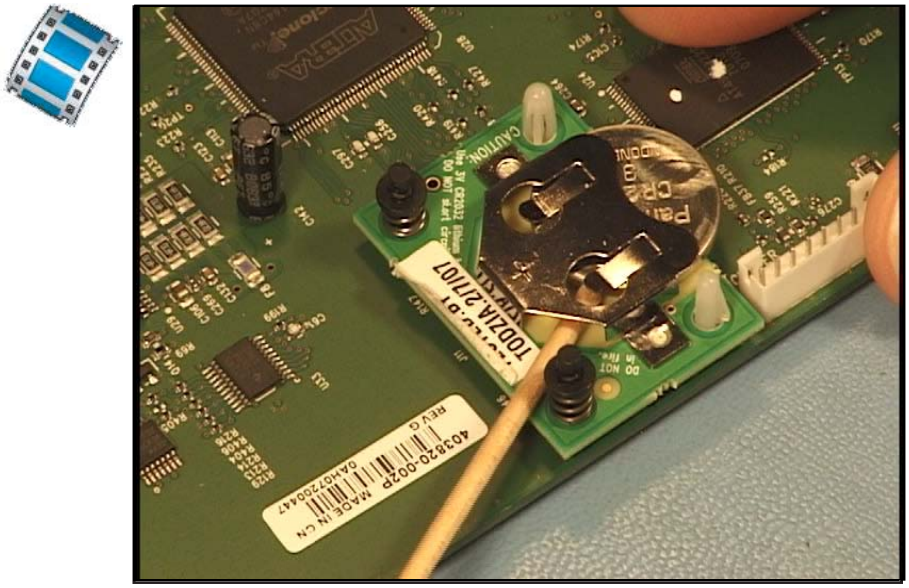
Note • This battery must be disposed of in accordance with local regulations.

The real-time clock option has a replaceable battery. Be familiar with the safety and hazardous waste disposal requirements of your local community.

You must remove the bottom case and Main Logic circuit board before performing this procedure.

Removal

1. Locate the real-time clock option on the Main Logic circuit board (near the front).
2. Use a tipped non-conductive blunt tool (such as the shaft of a cotton swab) to press the battery out of its cradle.



Installation

Check the alignment of the battery! Positive is up! Note the plus symbol (+).

1. Insert the battery into its cradle on the real-time clock board.

Replace the Main Logic circuit board and bottom case. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

Replacing the Fuse

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the bottom case and Main Logic circuit board before performing this procedure.

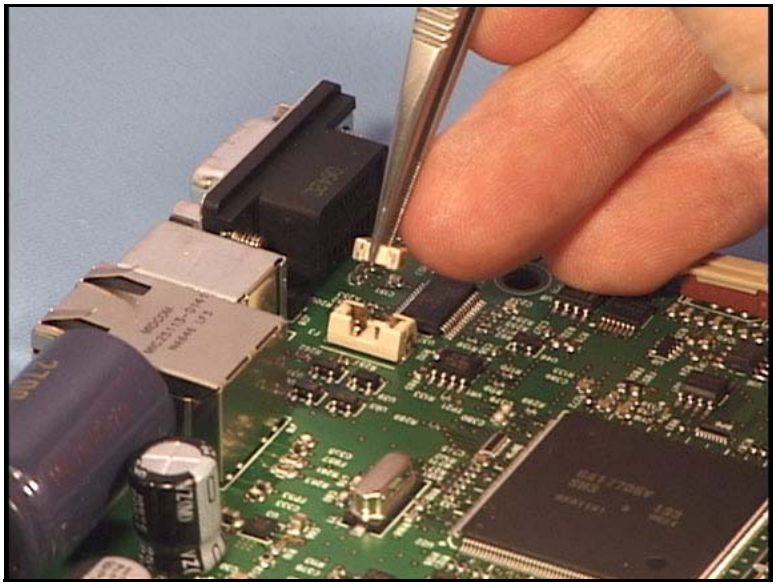
Removal

1. Locate the fuse on the top of the Main Logic circuit board near the interface connectors.
2. Use tweezers to grasp the fuse and pull it from its socket.

Installation

There is no concern about polarity.

1. Lower the fuse into its socket.
2. Make sure it is seated completely.



Replace the Main Logic circuit board and bottom case. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

Replacing the Head Up Sensor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window, bottom case and main PCBA before performing this procedure.

Removal

The head up sensor is located on the right side of the printer towards the front of the media compartment.

1. From beneath, use a #1 Phillips screwdriver to loosen the screw holding the head up sensor to the inner mechanism.
2. Carefully lift the sensor and its wire bundle away from the printer.

Installation

1. From beneath, align the sensor into place with the notch on the outside tab and the button facing toward the front of the printer.
2. Place the screw back into place and use a #1 Phillips screwdriver to tighten it.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

Replacing the Dispenser and Label Taken Sensor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window, bottom case and main PCBA before performing this procedure. To replace the dispenser's peel bar, remove the platen.

Removal - Dispenser

The dispenser and its sensor are located on the front of the printer at the media exit.

1. Open the dispenser.
2. Carefully pry the left side of the dispenser away from the printer.
3. Slide the right side away from the printer and pull the wire bundle with it. Carefully fold the wire bundle against the connector and slip the connector through the printer wall.

Installation - Dispenser

1. Carefully fold the wire bundle against the connector and slip the connector through the wall of the inner mechanism.
2. Pull the wire bundle and bring the right side of the dispenser to its mounting hole.
3. Gently flex the left side of the inner mechanism to snap the left side of the dispenser into place.
4. Test the motion of the dispenser to ensure proper function. Verify that it snaps and locks closed by opening and closing the dispenser door a few times.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

Removal - Peel Bar

The dispenser door and platen roller must be removed first.

1. Using your hands only, bend the peel bar down in the middle while pushing the left end up using controlled firm pressure.

Installation - Peel Bar

1. Insert the right side of the peel bar into the printer chassis.
2. Slide the left side of the peel bar down into the chassis.

Replacing the Cutter

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window, bottom case and main PCBA before performing this procedure.

Removal

The cutter is located on the front of the printer and is the media exit.

1. **From the bottom case replacement procedure:** Remove the two screws from the bottom of the cutter bezel. Swing the bezel out and off the top of the cutter body. Remove the bottom case. Remove the main PCBA.
2. Remove the four screws (two on each side) securing the cutter to the chassis.
3. Slide the cutter away from the printer. Disconnect the green cutter ground wire from the ground coupler connector (which is also attached to the main PCBA and motor).
4. Carefully fold the wire bundle against the connector and slip the connector and ground wire through the printer wall.

Installation

1. Carefully fold the wire bundle against the connector and slip the connector and ground wire through the wall of the inner mechanism.
2. Reconnect the cutter's green ground to the ground coupler connector.
3. Pull the wire bundle taut while sliding the cutter into the front of the printer. Align the four screw holes on the cutter bracket to the chassis. Reattach the cutter with the four screws.
4. Connect the cutter wire bundle to the main PCBA. Reconnect the rest of the wire connectors to the main PCBA. Reattach the main PCBA with the screw.
5. Reattach the bottom case.
6. Reattach the cutter bezel.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

Replacing the Motor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window, bottom case and main PCBA before performing this procedure.

Removal

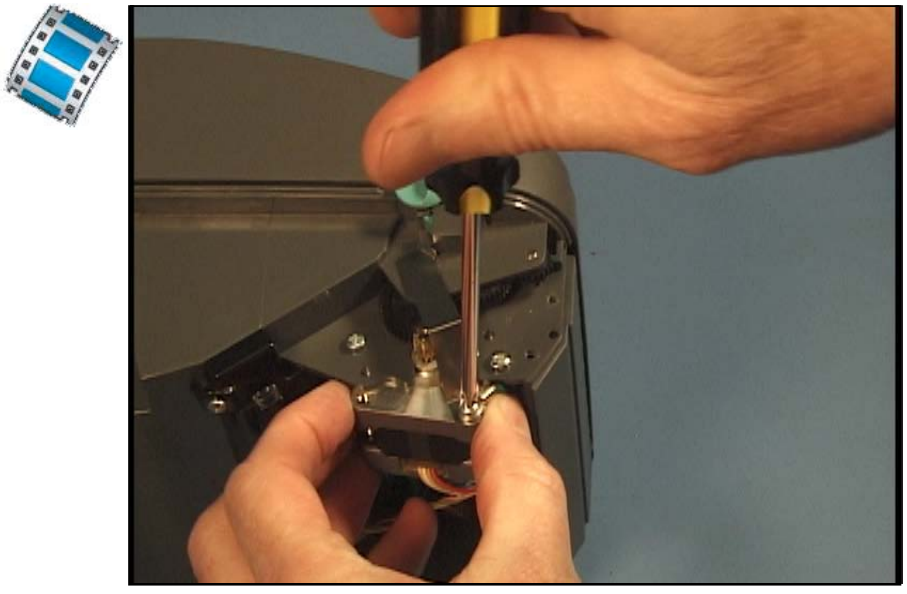
The motor is located on the right side of the printer under the media compartment.

1. Use a #1 Phillips screwdriver to remove ground clip from the motor.
2. While holding the motor, remove the two screws securing the motor to the printer chassis. Slide the motor out of the chassis.

Installation

1. Align the motor into place making sure its gears mesh with the transfer gears and then align the motor mounting holes with the motor
2. Place the screws back into place and use a #1 Phillips screwdriver to tighten them.
3. Attach the ground clip and ground (green) wire to the motor. Rotate the clip until it stops against the latch housing on the print chassis.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.



Replacing the Lower Media Sensor (Fixed)

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window, bottom case and main PCBA before performing this procedure.

Removal

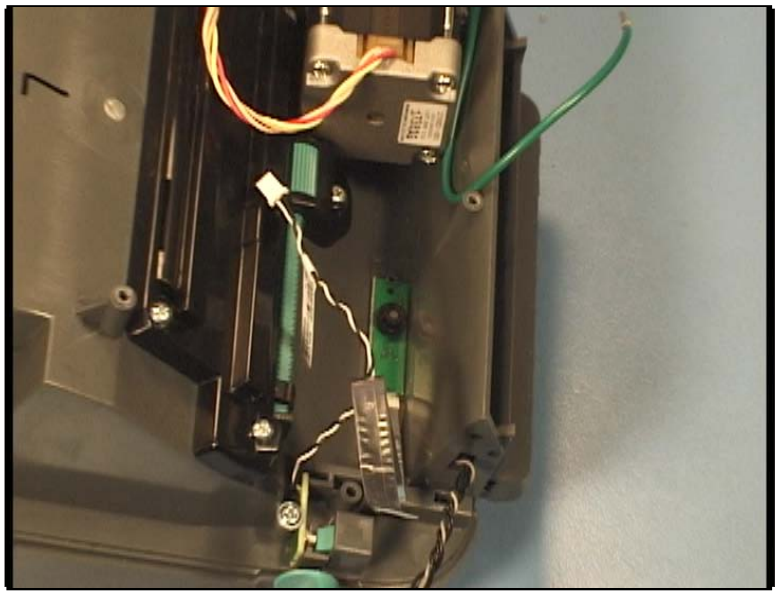
The lower media sensor (for sensing gap and black line media) is located at the center of the printer towards the front of the media compartment.

1. From beneath, use pliers or a flat blade screwdriver to lift the press-fit retainer holding the sensor to the inner mechanism. The retainer must be lifted straight up the small plastic peg or the peg may be damaged.
2. Lift the sensor and its ribbon cable off its peg and away from the printer.

Installation

1. From beneath, align the sensor into place with its ribbon cable to the right.
2. Place the retainer back into place and press it onto the peg to tighten it. A small hex nut driver is a good tool choice to press the retainer tightly on the peg.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.



Replacing the Lower Media Sensor (Moveable)

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window, bottom case, main PCBA and motor before performing this procedure.

Removal

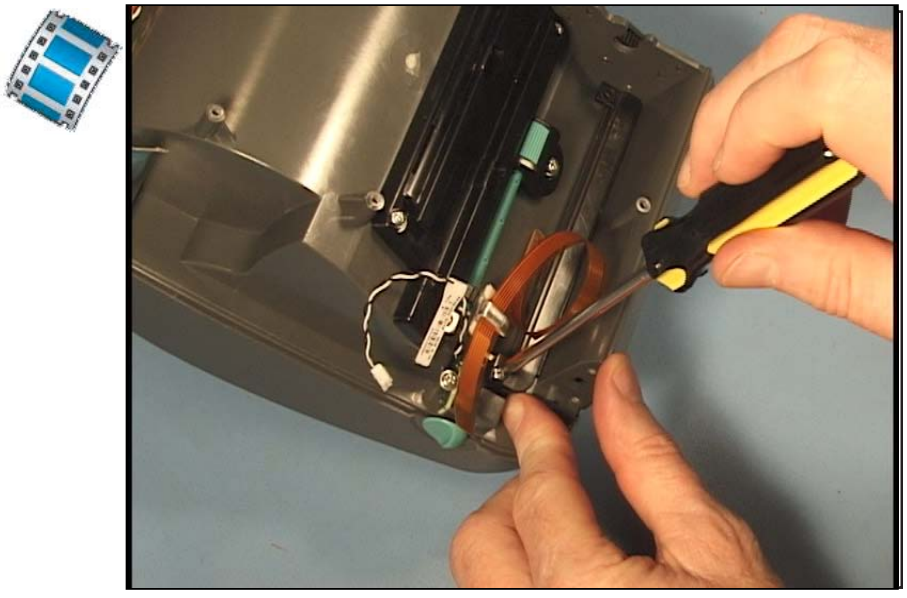
The lower media sensor (for sensing gap and black line media) is located at the center of the printer towards the front of the media compartment.

1. From beneath, remove the two screws securing the sensor slide bracket and
2. Lift the sensor and its flex ribbon cable out. Gentle pull the cable out of the clip.

Installation

1. Place the sensor into to the slide bracket.
2. From beneath, align up the bracket and sensor to the printer chassis.
3. Reattach the bracket to the chassis with the two screws. Verify that the sensor slides through the whole adjustment range without binding.
4. Put a loop in the flex cable and slip the cable into the clip. The clip can be unbent slightly and temporarily to allow easier assembly. Adjust the loop to allow the sensor to slide easily through the full adjustment range.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.



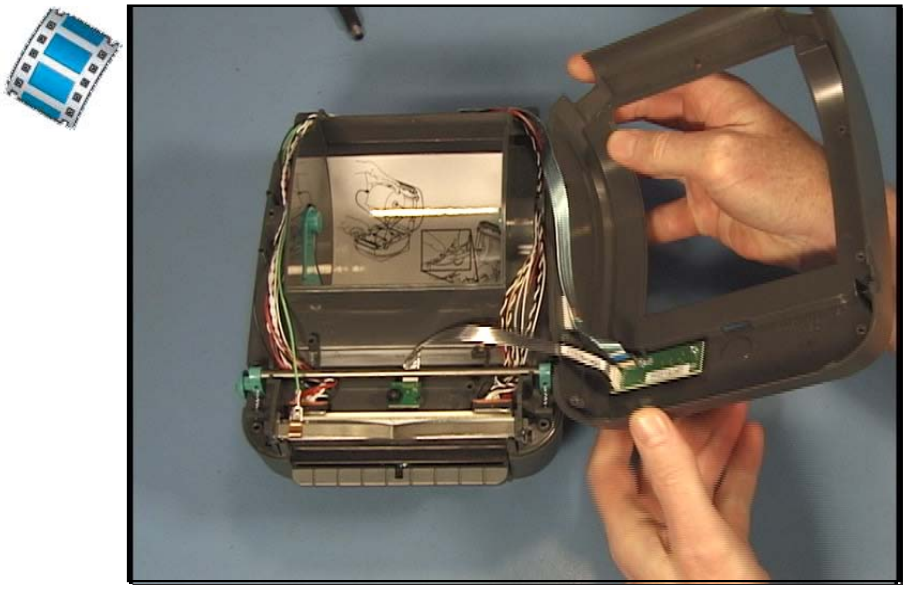
Replacing the Top Case and Feed Switch PCBA

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window before performing this procedure.

Removal

1. Open the printer.
2. From inside of the top half of the printer, use a #1 Phillips screwdriver to remove the six screws holding the top case to the inner mechanism's top frame.
3. Carefully lower the disassembled lid to close the printer.
4. Carefully lift the top case's left edge away from the printer and flip it open pivoting on the right side. The right side is attached by wire bundles to the printer's chassis.
   You now have access to the Feed Switch or LCD PCBA's and Upper Media Sensors.
5. Remove the two screws securing the Feed Switch PCBA to the top case.
6. Release the locks on the ribbon cables and pull the cables out.
7. **Top Cover Only** - Pull the cable out of the clamp attaching it to the top case. Lift the top case away from the printer.



Installation

1. Connect the Feed Switch PCBA to the top case with two (2) screws.
2. Hold the top case's right edge close to the inner mechanism's top frame. Insert the sensor's ribbon cable into the Feed Switch PCBA. The ribbon cable's exposed circuit fingers face the inside of the top cover.
3. **Top Cover Only** - Attach the aluminum foam backed adhesive clamp approximately 2 inches (5 cm) from the end of the long feed Switch ribbon cable. With the ribbon cable aligned parallel to the side of the printer (no twists in the cable), place the clamp with the arm pointed down and the arm's foam facing out. Fold the arm on the ribbon cable. Fold the foam backed clamp base into the folded arm.
4. **Top Cover Only** - Open the Feed Switch cable connector's cable lock. Turn the ribbon cable one half turn clockwise and insert the ribbon cable into the connector with the exposed circuit fingers facing the open side of the connector lock (the back of the printer). Lock the connector.
5. **Top Cover Only** - Remove the backing off the foam clamp and apply the clamp to the inside of the top case. Place the clamp about a half inch from the post and bottom edge (when the printer is closed) of the top case. The area has a textured surface. Verify that the ribbon cable is straight in the connector and has not been pulled out.
6. Verify both ribbon cables are still inserted straight into the connectors and have not been pulled out.
7. Flip the case over onto the top of the chassis and snug the top case onto the printer. Take care not to pinch the cables or pull the connectors out of the Feed Switch PCBA.
8. Carefully open the printer while holding the top case against the top frame.
9. Place the six (6) screws back into place and use a #1 Phillips screwdriver to tighten them.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

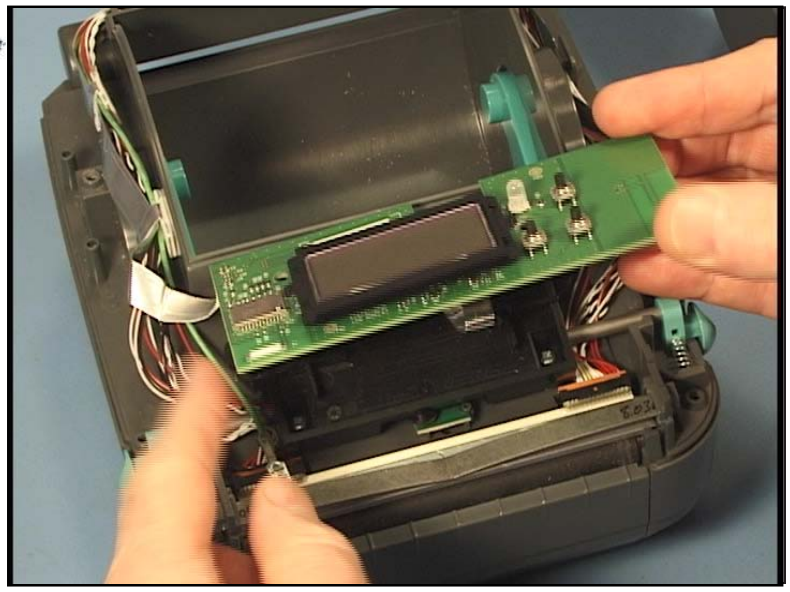
Replacing the Wireless LCD PCBA

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window and top cover before performing this procedure.

Removal

1. Remove the two screws securing the LCD PCBA to the top case.
2. Release the locks on the three ribbon cables and pull the cables out to free the PCBA.
3. **For Wi-Fi 802.11 b/g printer models:** Disconnect the antenna from the LCB PCBA.



Installation

1. Open the three cable connector's cable locks. Insert the flex cables into the connectors with the cables contacts (fingers) facing the LCD PCBA. Lock the connectors.
2. **For Wi-Fi 802.11 b/g printer models:** Connect the antenna from the LCB PCBA.
3. Verify all ribbon cables are still inserted straight in the connectors and have not been pulled out.
4. Flip the circuit board over and mount to the printer chassis. Secure it with the two screws.

Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.

Replacing the Upper Media Sensor

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

You must remove the window and top case before performing this procedure.

Removal

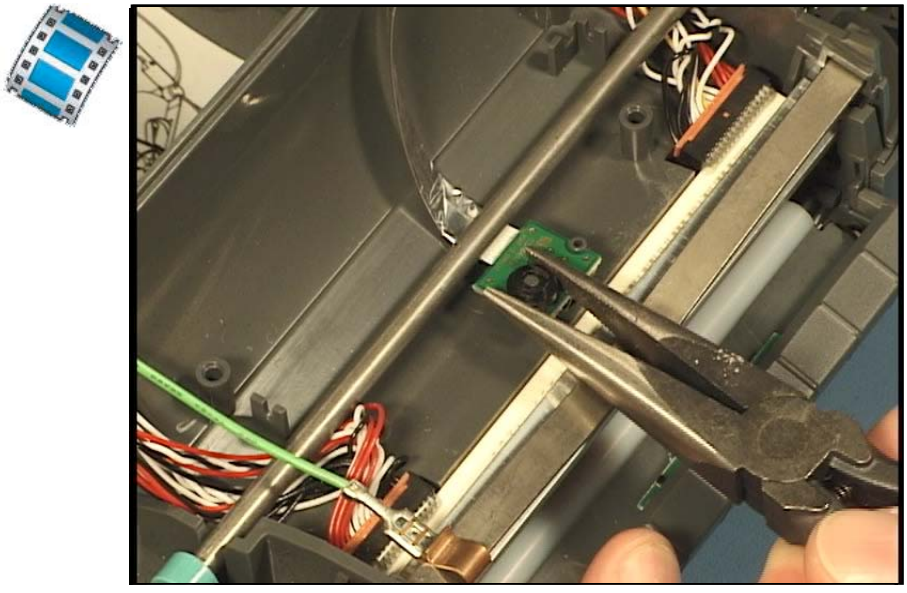
The upper transmissive (gap) sensor is located at the center of the printer on the inner mechanism's top frame.

1. Use pliers or a flat blade screwdriver to lift the press-fit retainer holding the sensor to the inner mechanism. The retainer must be lifted straight up the small plastic peg or the peg may be damaged.
2. Disconnect the sensor's ribbon cable from the Feed Switch PCBA that is mounted on the top case.

Installation

1. Align the sensor into place with its ribbon cable to the rear and facing down into the printer.
2. Place a new retainer back into place and press it onto the peg to tighten it. A small hex nut driver is a good tool choice to press the retainer tightly on the peg.
3. Connect the ribbon cable to the Feed Switch PCBA. The ribbon's circuits face in to the center of the chassis.

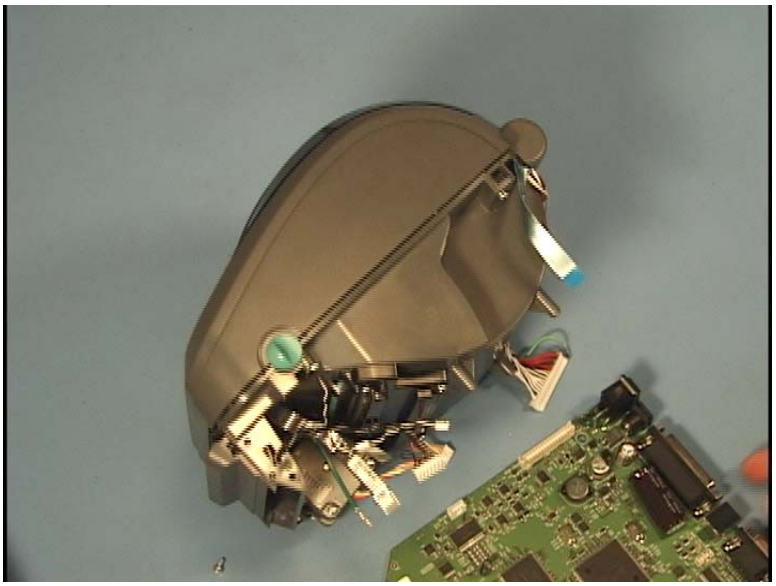
Reassemble the printer. Reload media. Plug in power, turn on the printer and print a status report to ensure proper function.



Replacing the Inner Mechanism

Caution • Prepare your work area by protecting against static discharge. Your work area must be static-safe and include a properly grounded conductive cushioned mat to hold the printer and a conductive wrist strap for yourself.

The inner mechanism includes the top and bottom inner frames, motor, and sensors. You must remove the bottom case, main PCBA, printhead, window and top case (including the feed switch). Refer to those procedures.



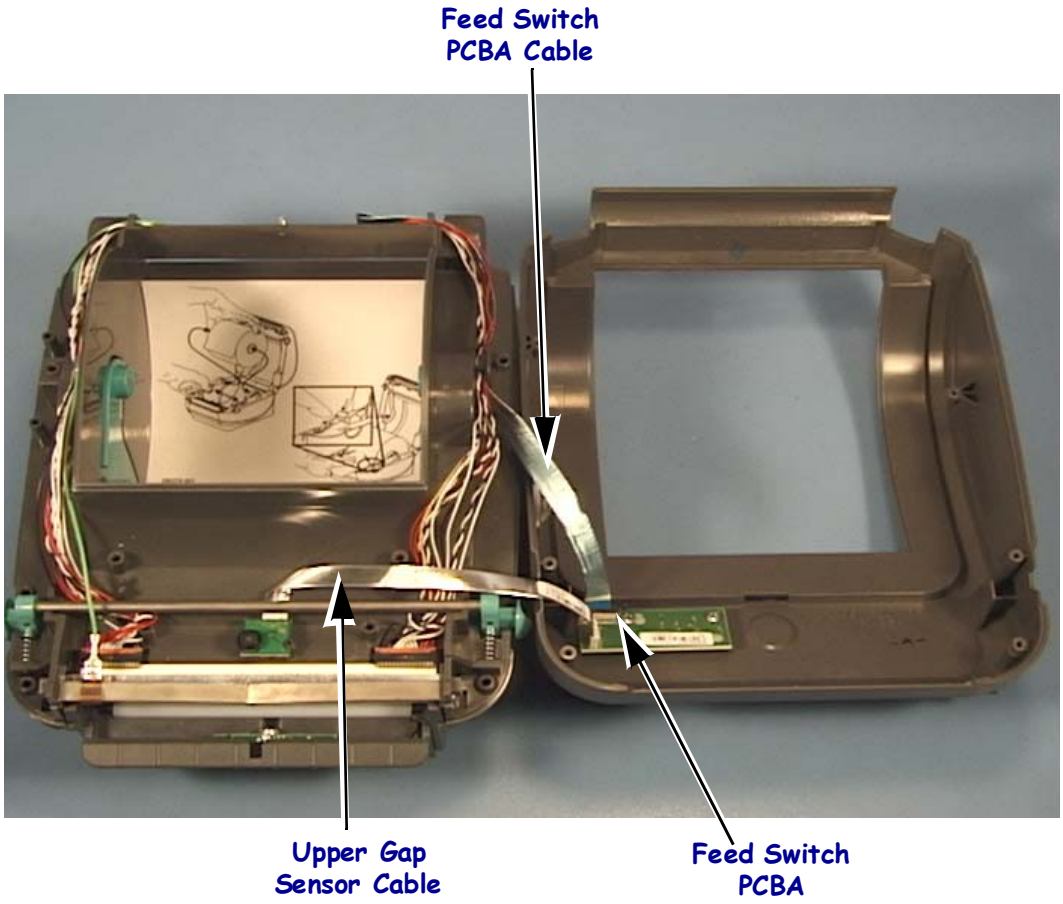
Notes •

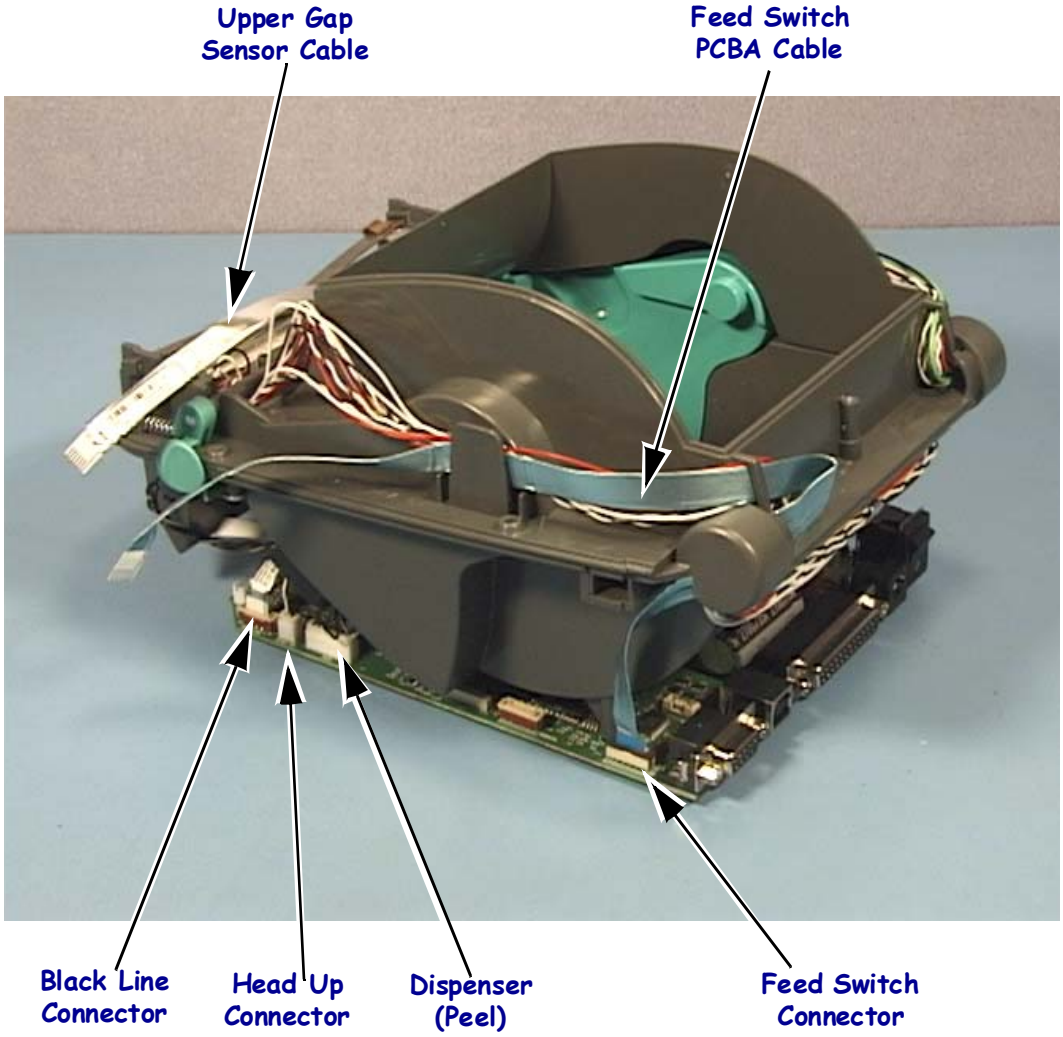
6

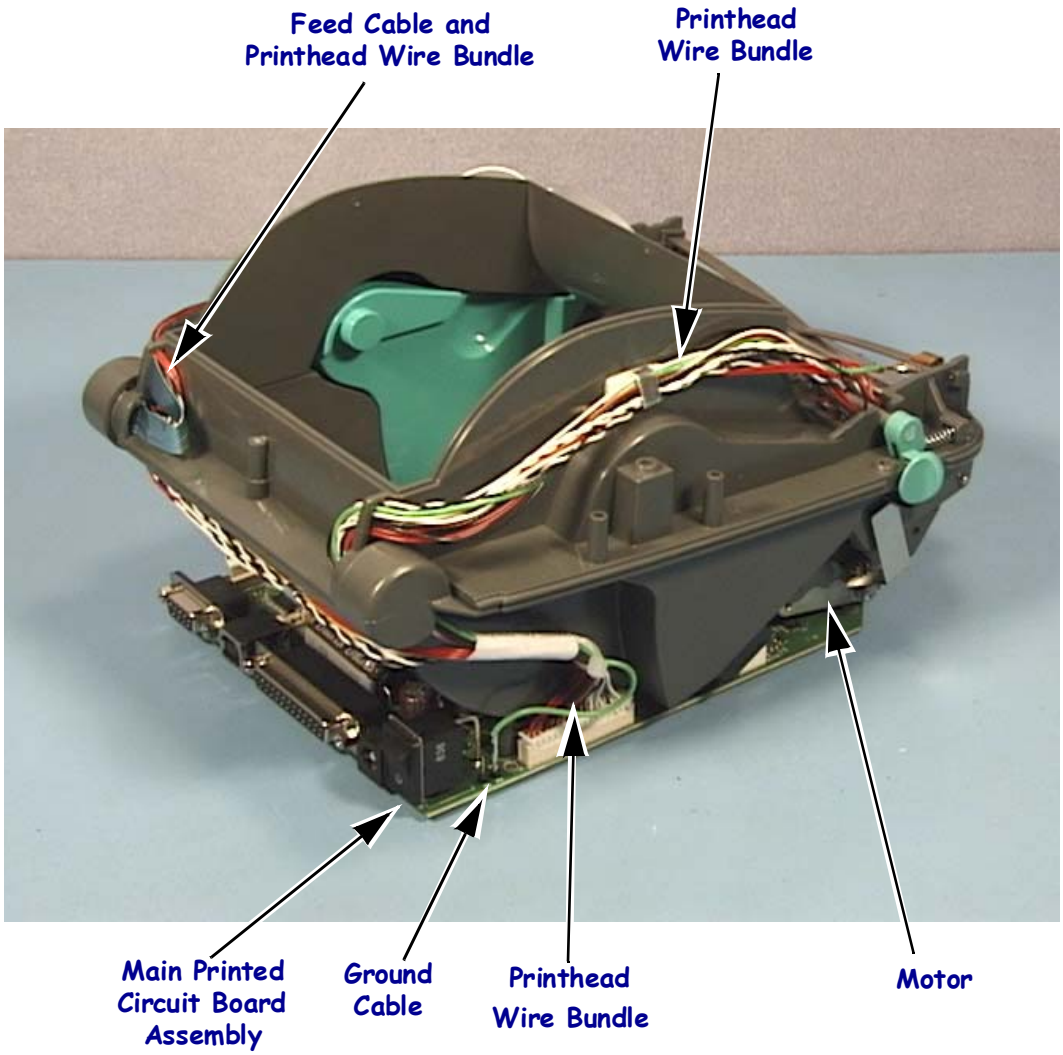
Cable Routing

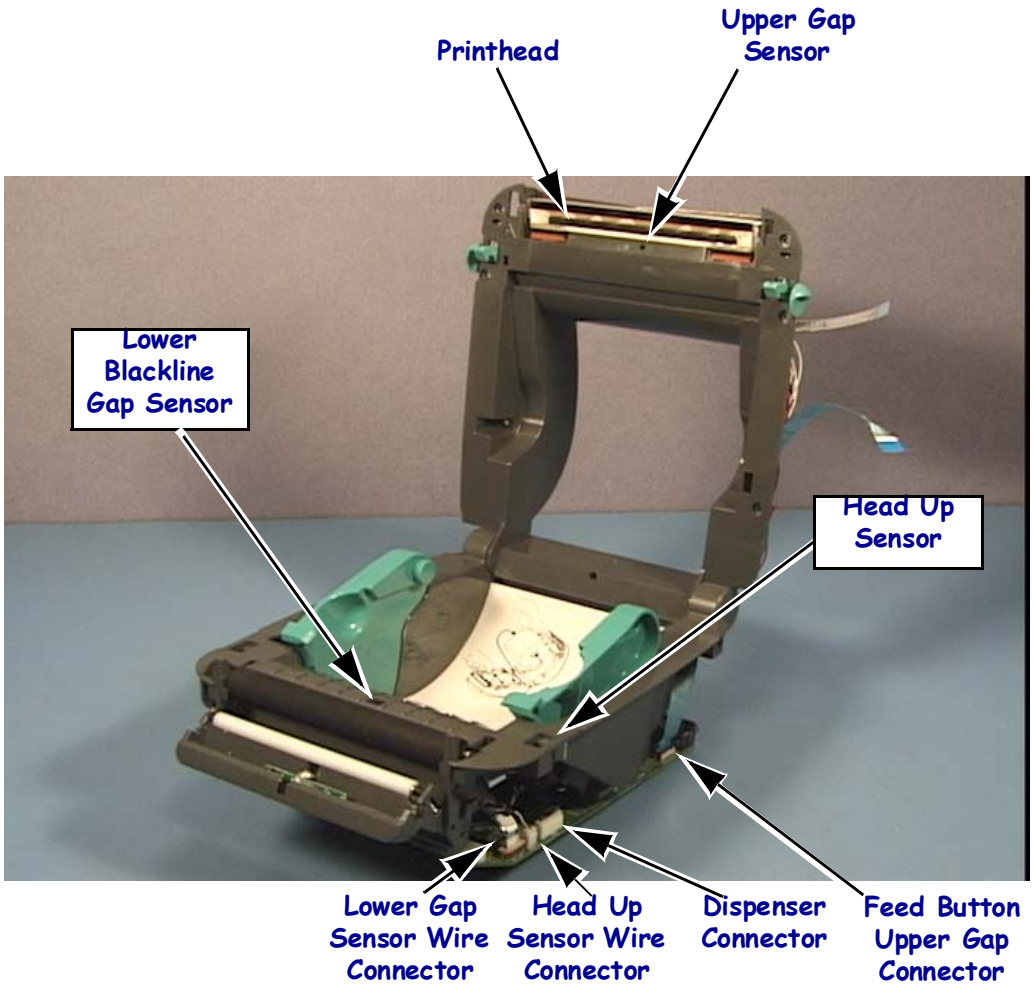
Print Mechanism

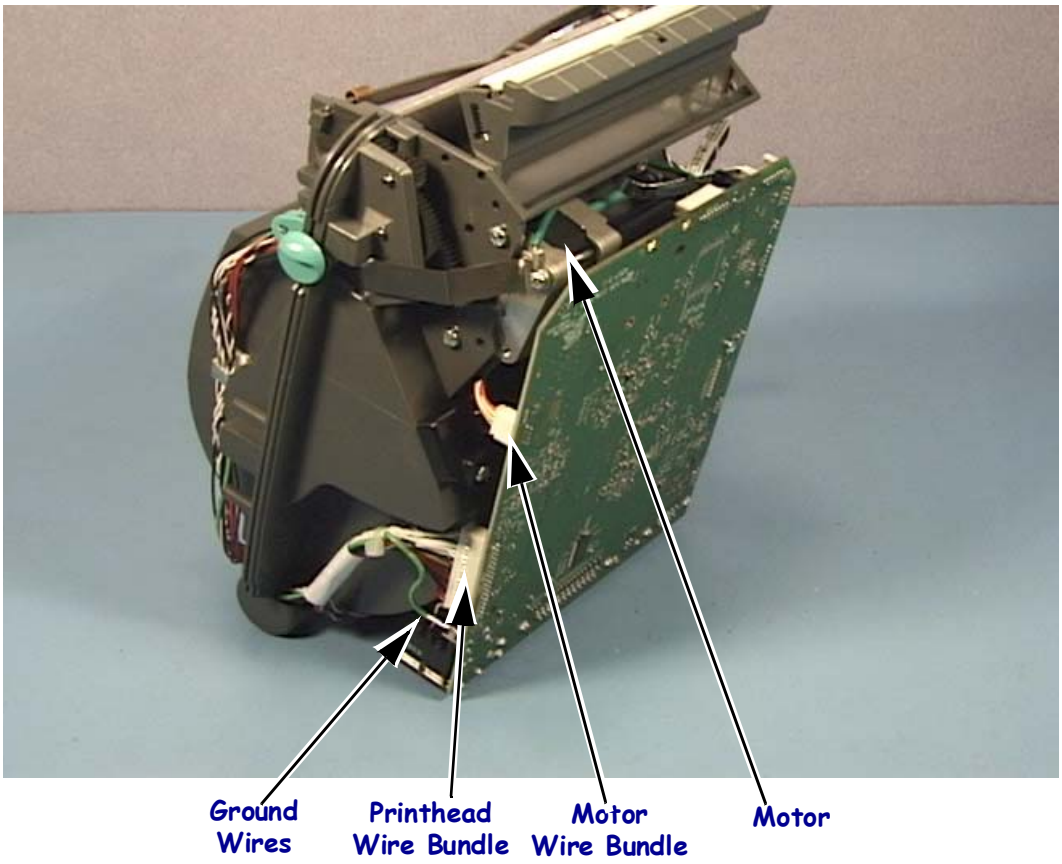
The following pictures show routing for the printer's electronic components on the printer's inner mechanism.

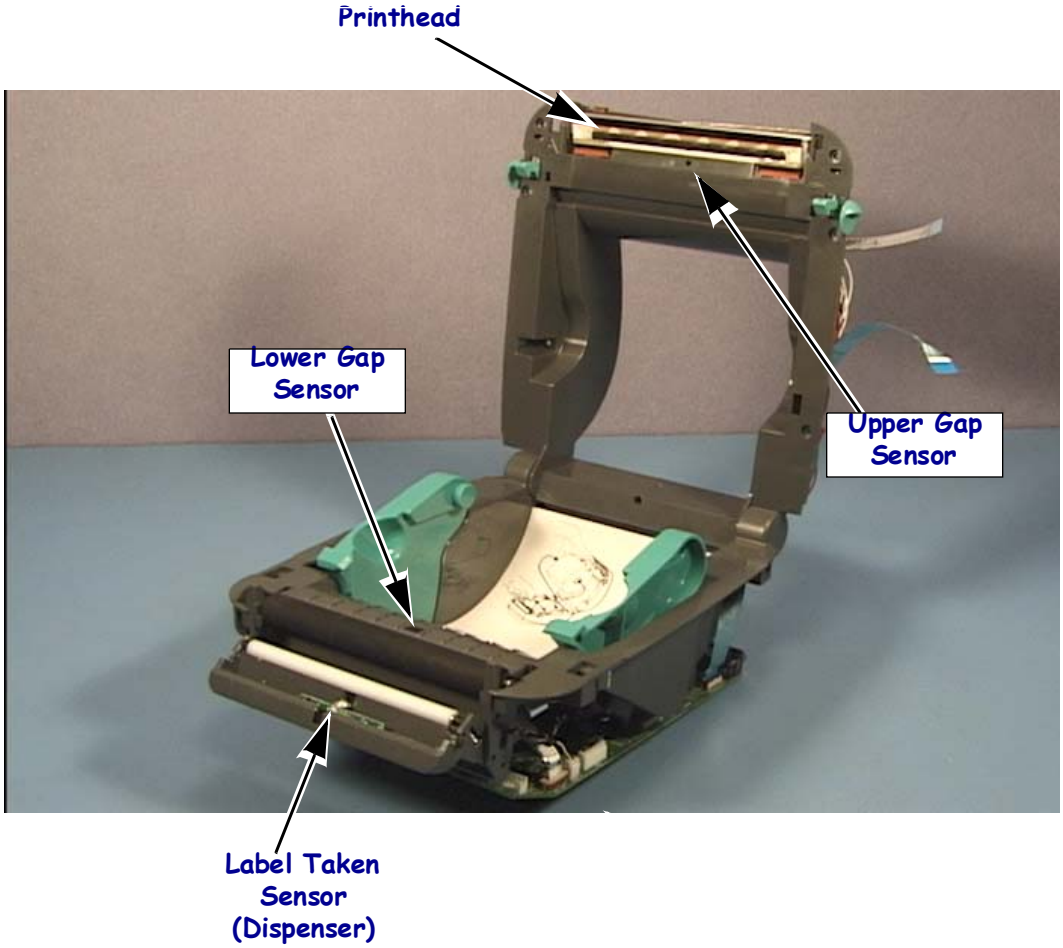


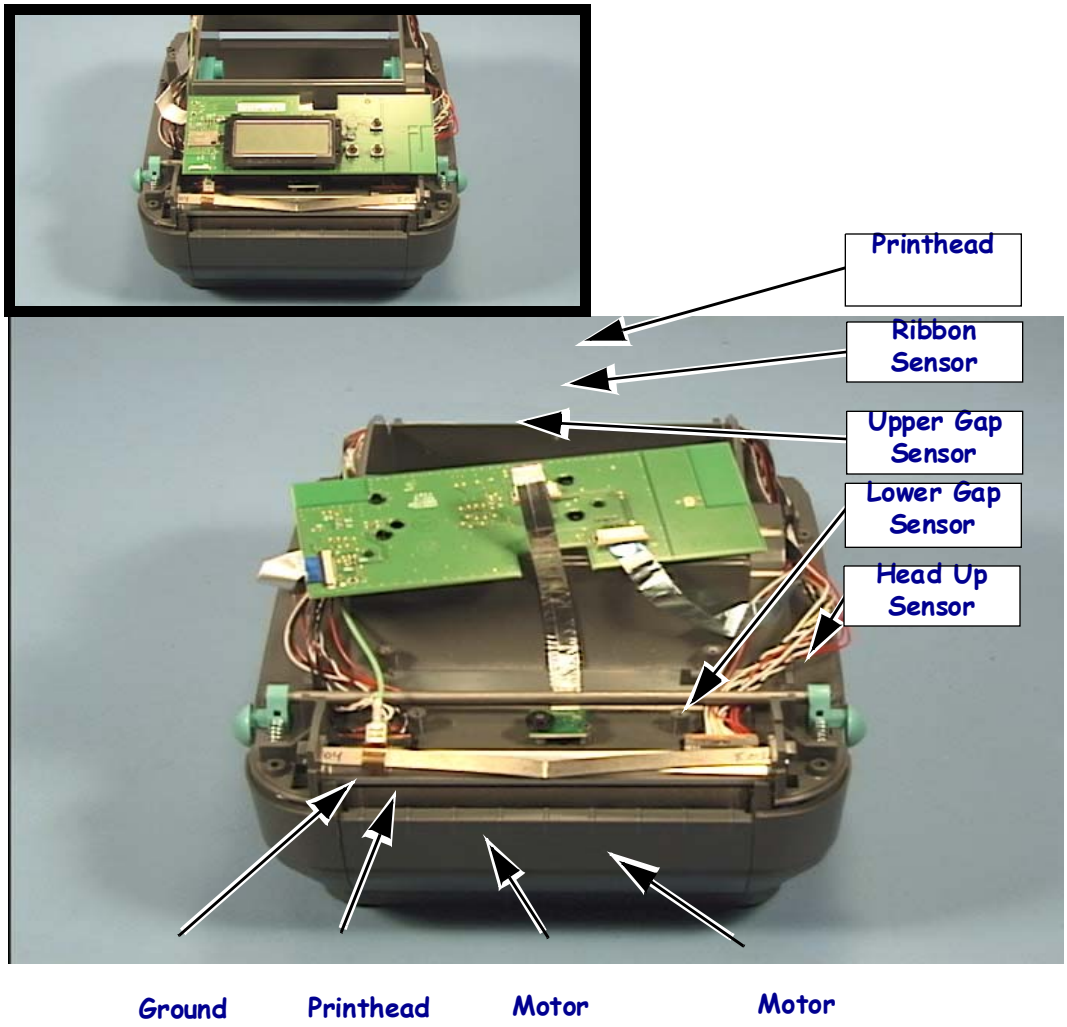

Upper Gap Sensor Cable
Feed Switch PCBA Cable
Black Line Connector
Head Up Connector
Dispenser (Peel)
Feed Switch Connector


Feed Cable and
Printhead Wire Bundle
Printhead
Wire Bundle
Main Printed
Circuit Board
Assembly
Ground
Cable
Printhead
Wire Bundle
Motor


Printhead
Upper Gap Sensor
Lower Blackline Gap Sensor
Head Up Sensor
Lower Gap Sensor Wire Connector
Head Up Sensor Wire Connector
Dispenser Connector
Feed Button Upper Gap Connector


Ground Wires
Printhead Wire Bundle
Motor Wire Bundle
Motor


Printhead
Lower Gap Sensor
Upper Gap Sensor
Label Taken Sensor (Dispenser)


Printhead
Ribbon Sensor
Upper Gap Sensor
Lower Gap Sensor
Head Up Sensor
Ground
Printhead
Motor
Motor

Main Printed Circuit Board Assembly

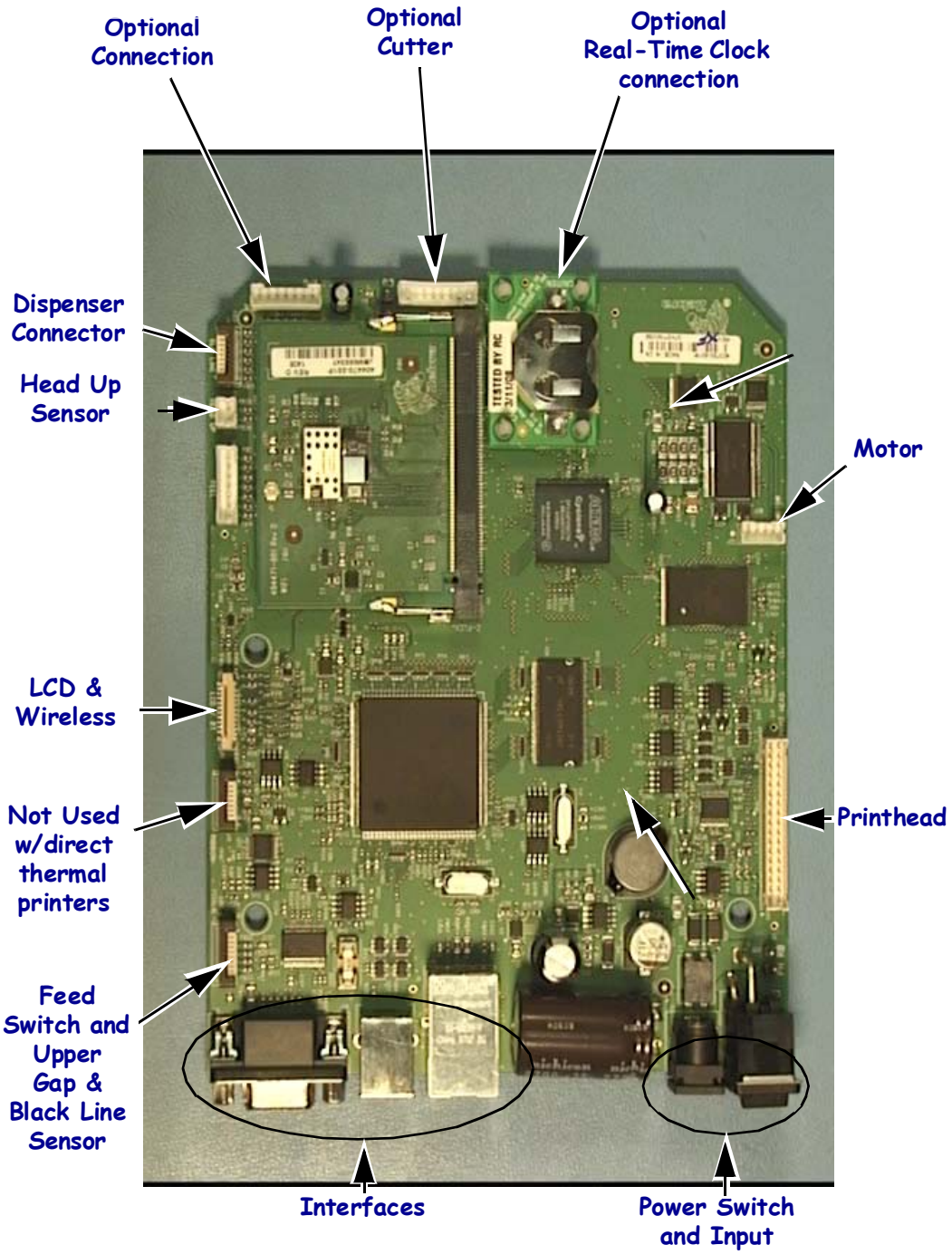


Figure 5 • Connectors on the Main Logic Board PCBA