Zebra® ZP 450™

User Guide

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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:

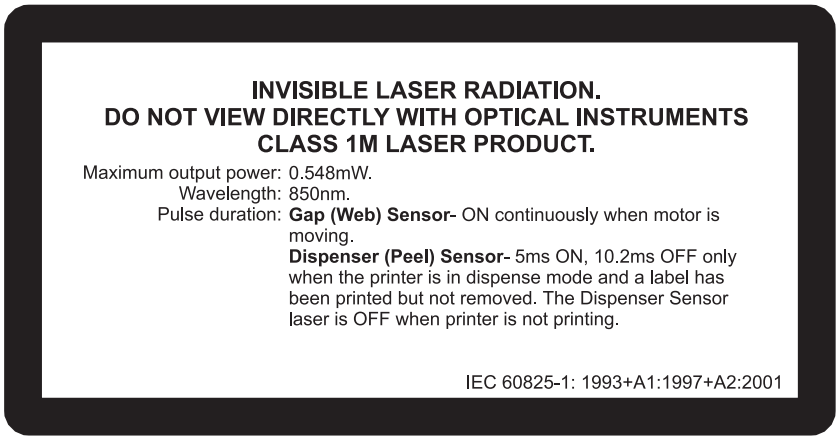
1. **This device may not cause harmful interference, and**
2. **This device must accept any interference received, including interference that may cause undesired operation.**

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 radio/TV 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.

ZP Family 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.

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Preface

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

Contacts

You can contact Zebra Technologies 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
Zebra House
The Valley Centre, Gordon Road
High Wycombe
Buckinghamshire HP13 6EQ, UK
Telephone: +44 (0)1494 472872
Fax: +44 (0)1494 450103

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) 1494 768289

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<version number>.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:

- *ZPL II® Programming Guide Volume I, Volume II, and ZP 450 Addendum*

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1 Introduction

This section describes what you get in your shipping box and provides an overview of printer parts. This section also has procedures that describe how to open and close the printer and report any problems.

Hello!

Thank you for choosing a Zebra® desktop printer, a high-quality on-demand printer manufactured by the industry leader in quality, service, and value—Zebra Technologies Corporation. For over 25 years, Zebra Technologies Corporation has provided customers with the highest caliber of products and support.

Your printer is a high-quality on-demand printer. The printer provides direct-thermal printing.

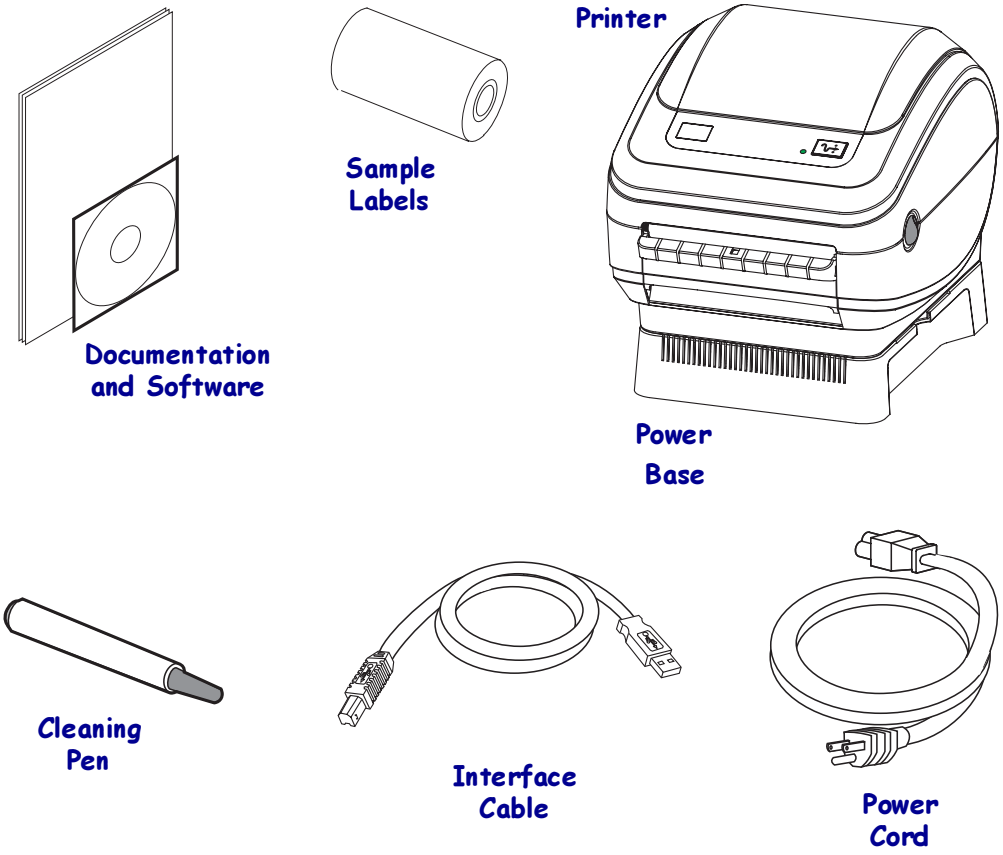
This manual provides all of the information you will need to operate your printer on a daily basis. To create label formats, refer to your programming guide. This guide is available by contacting your distributor or dealer.

Your printer, when connected to a host computer, functions as a complete system for printing labels and tags.

Note • Many printer settings may also be controlled by your printer's driver or label preparation software. Refer to the driver or software documentation for more information.

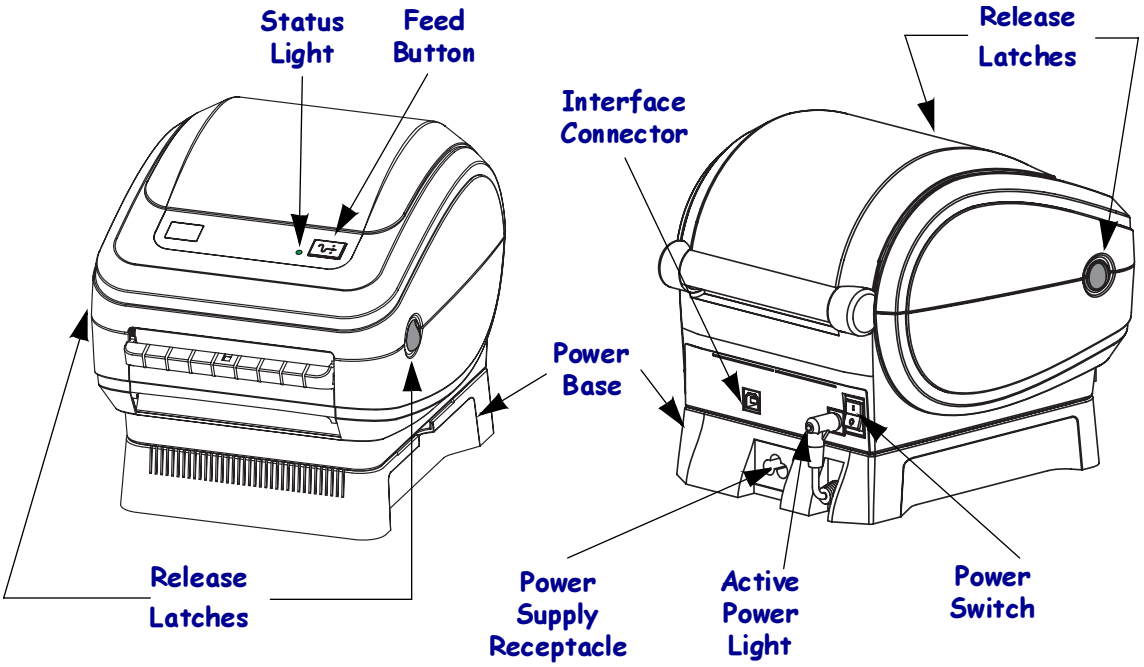
What's in the Box?

Save the carton and all packing materials in case you need to ship or store the printer later. After unpacking, make sure you have all parts. Follow the procedures for inspecting the printer to familiarize yourself with printer parts so you can follow the instructions in this book.



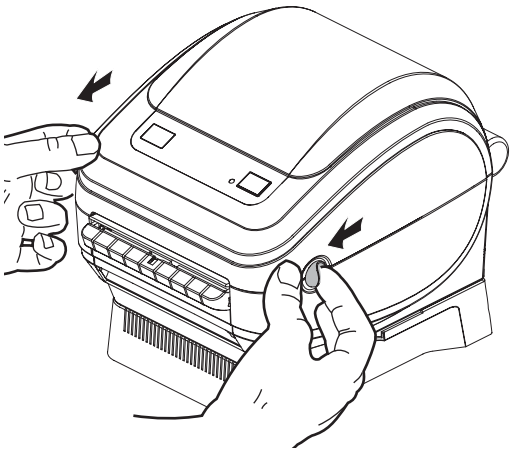
Inspecting the Printer

Look at the outside of the printer and make sure that all parts are present.

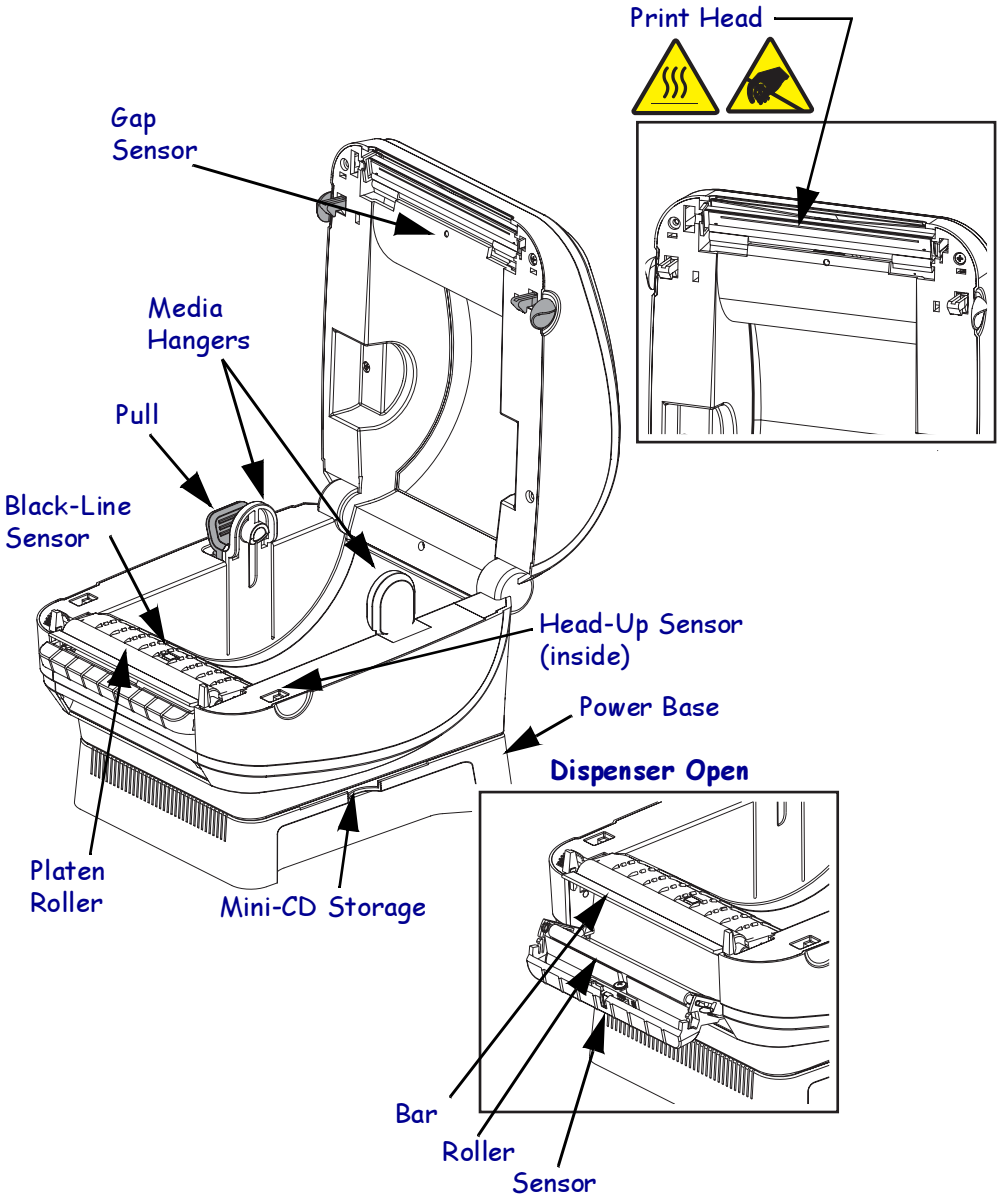


Opening the printer

To access the media compartment, you must open the printer. Pull the release latches towards you and lift the cover.

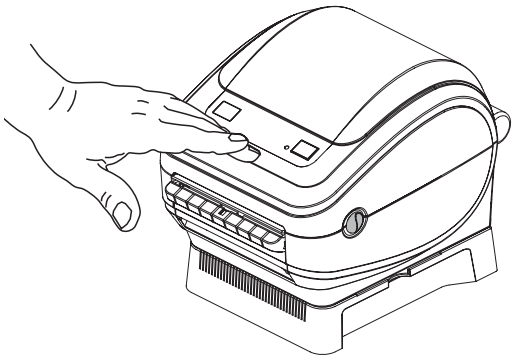


After opening the printer, check the media compartment.

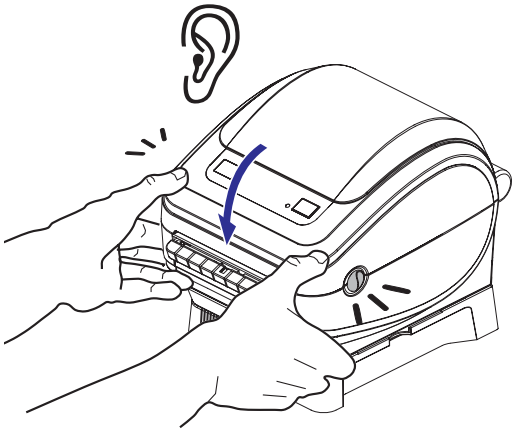


Closing the printer

1. Lower the top cover.



2. Press down until the cover snaps closed.



Reporting Damage

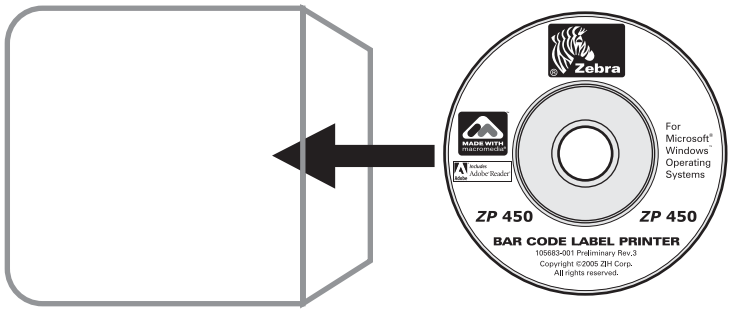
If you discover damage or missing parts:

- Immediately notify and file a shipping damage report.
- Keep the carton and all packing material for inspection.

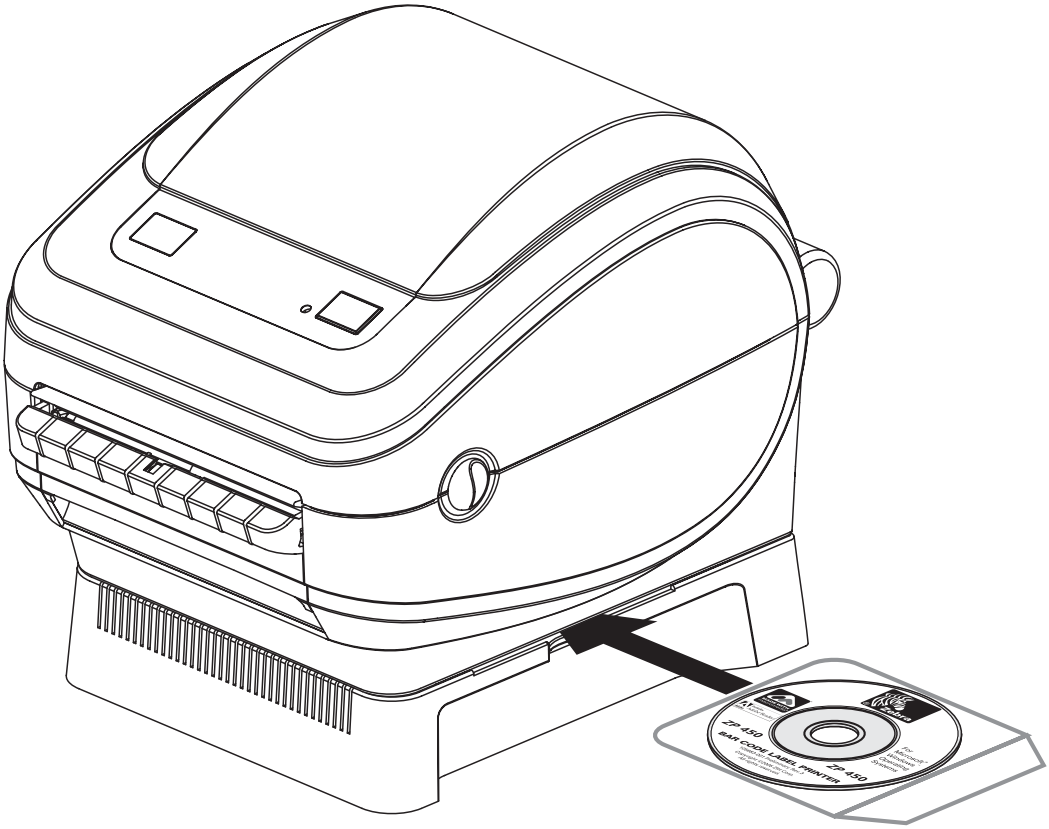
Mini-CD on Printer Storage

The printer has a mini-CD storage slot molded between the printer and its power base. Please keep the mini-CD there for quick access to maintenance, troubleshooting, printer usage animations, media, contact information and more.

1. Always place the mini-CD in its plastic sleeve to protect the mini-CD from damage.



2. Slide the plastic sleeve with the mini-CD inside, into the printer.



2

Getting Started

This section describes how to set up your printer for the first time and use the most common operating procedures for loading media in tear-off mode.

Modes of Printing

You can operate this printer in different modes:

- Standard tear-off mode allows you to tear off each label (or a strip of labels) after it is printed.
- Dispense mode will peel the backing material away from the label as it is printed. After this label is removed, the next one is printed.The printer typically uses roll media, but you can use fan-fold or other continuous media as well.

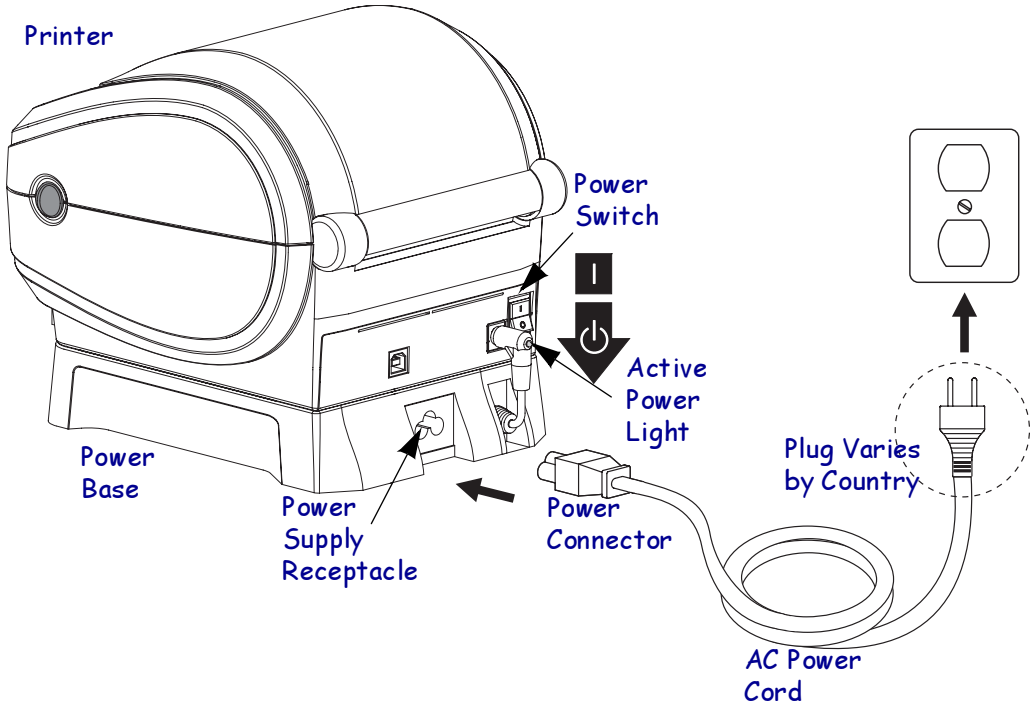
For procedures to use optional equipment and features, refer to *Operations & Options* on page 17.

Attaching Power

Important • Set up your printer so that you can handle the power cord easily if needed. To make certain the printer cannot carry electrical current, you must separate the power cord from the power supply receptacle or AC electrical outlet.

Caution • Never operate the printer and power supply in an area where they can get wet. Serious personal injury could result!

1. Make sure the power switch is in the off position (down).
2. Insert the AC power cord into the power supply.
3. Plug the other end of the cord into an appropriate AC electrical outlet.



Loading Roll Media

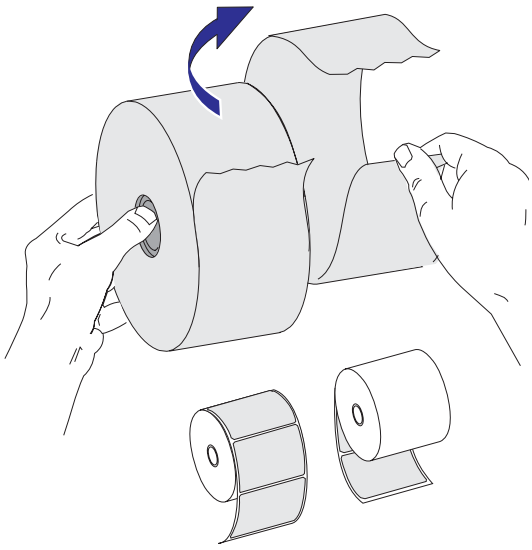
When you load media, you must place the roll on the media hangers.

You must use the correct media for the type of printing you require. You must use direct thermal media.

Preparing Media

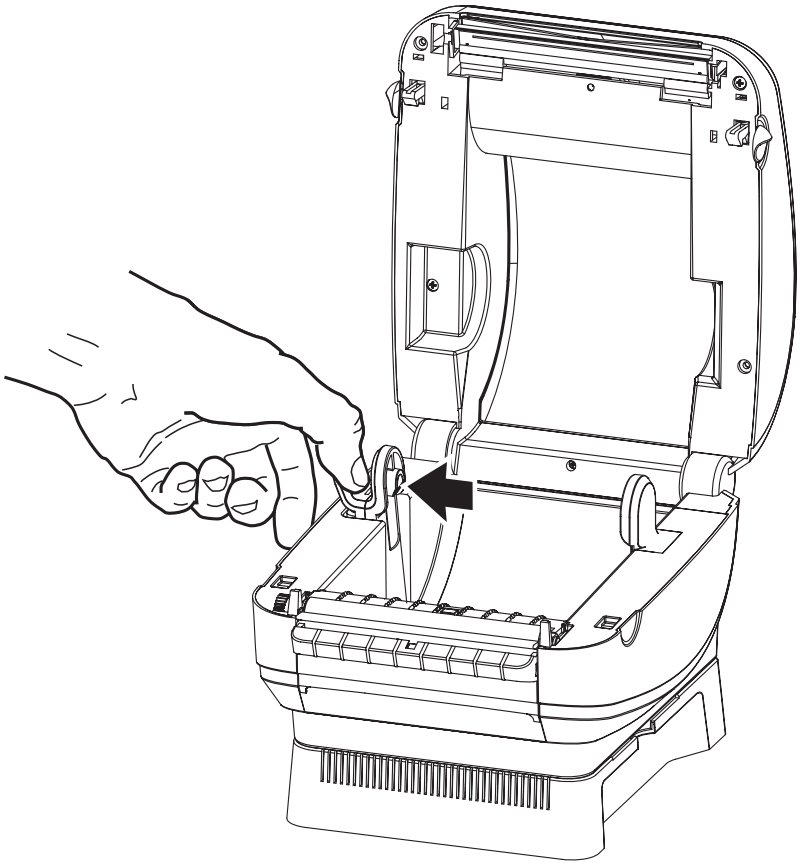
Whether your roll media is inside or outside wound you load it into the printer the same way.

- Remove the outside length of media. During shipment, the roll may become dirty when handled or dusty when stored. Removing the outside length avoids dragging adhesive or dirty media between the print head and platen.



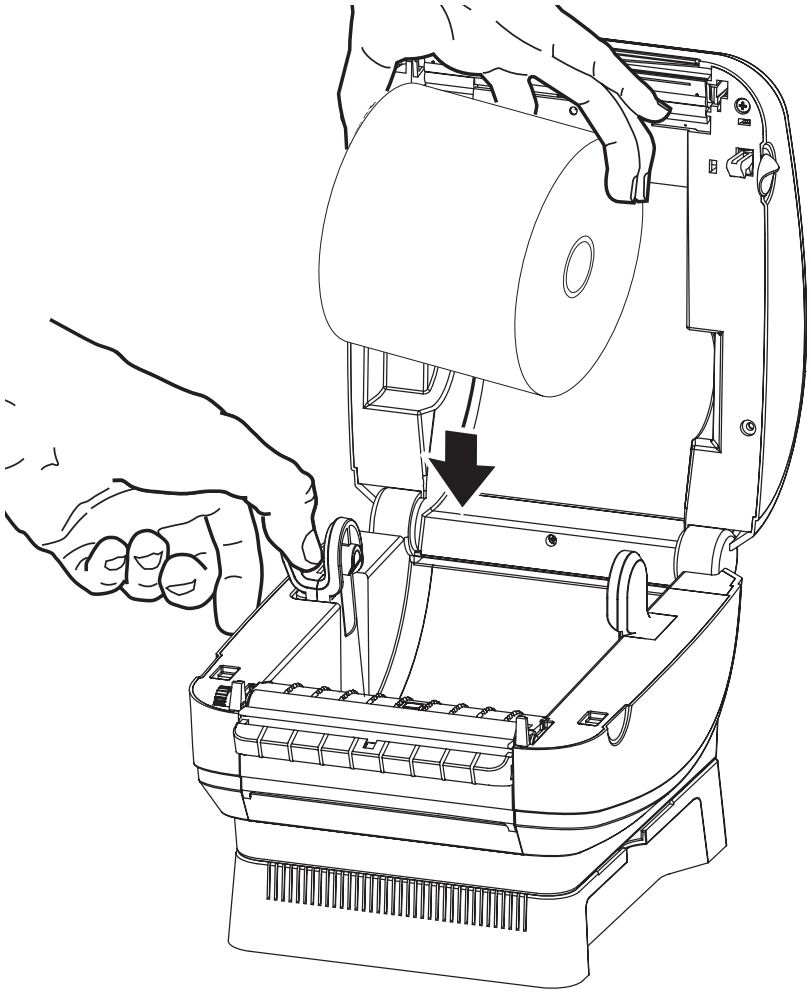
Placing the Roll in the Media Compartment

1. Open the printer. Remember that you need to pull the release levers toward the front of the printer.
2. Pull the left media hanger to the side.

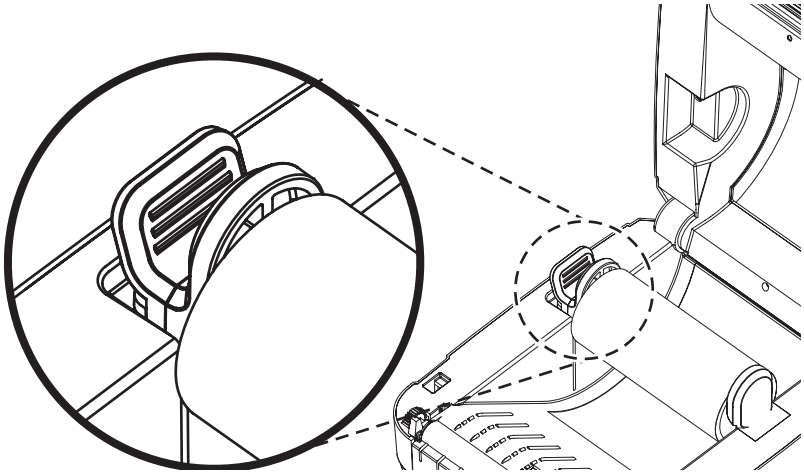


3. Orient the media roll so that its printing surface will be up as it passes over the platen.

4. Lower the roll between the hangers and release the left hanger onto the core.



5. Verify the core rests on the hangers and the roll turns freely. The roll must not sit in the bottom of the media compartment.



Operator Controls

Power Switch

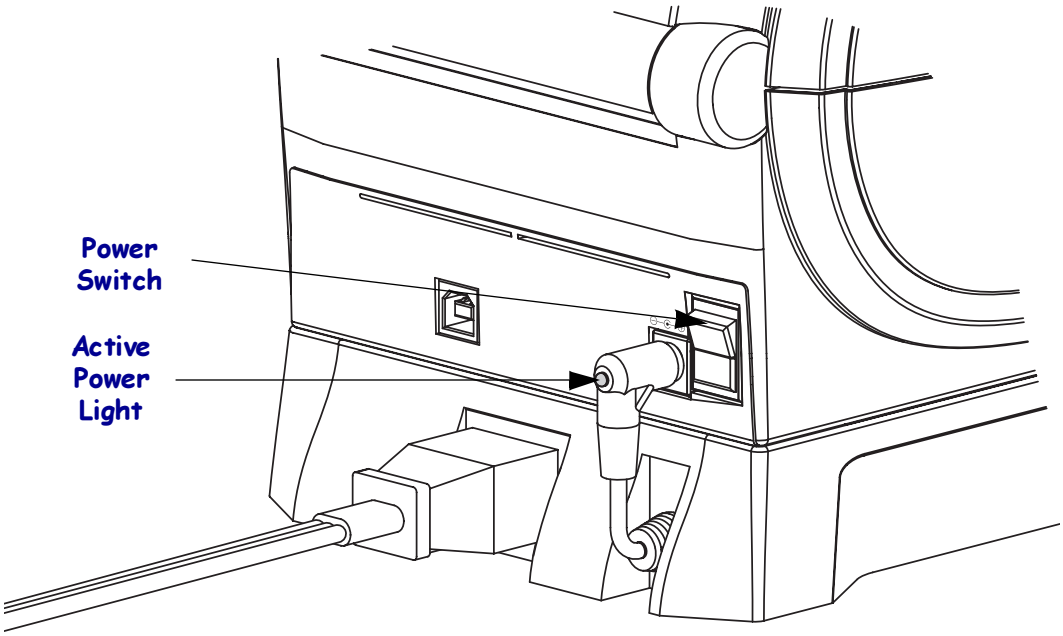
Press *up* to turn **ON** or *down* to turn **OFF** the printer.

Important • To make certain the printer cannot carry electrical current, you must separate the power cord from the power supply receptacle or AC electrical outlet. Set up your printer so that you can handle the power cord easily if needed.

Caution • The power should be turned off before connecting or disconnecting the communications and power cables.

Active Power Light

Located at the rear of the printer, the active power light indicates that electrical power is energizing the printer.

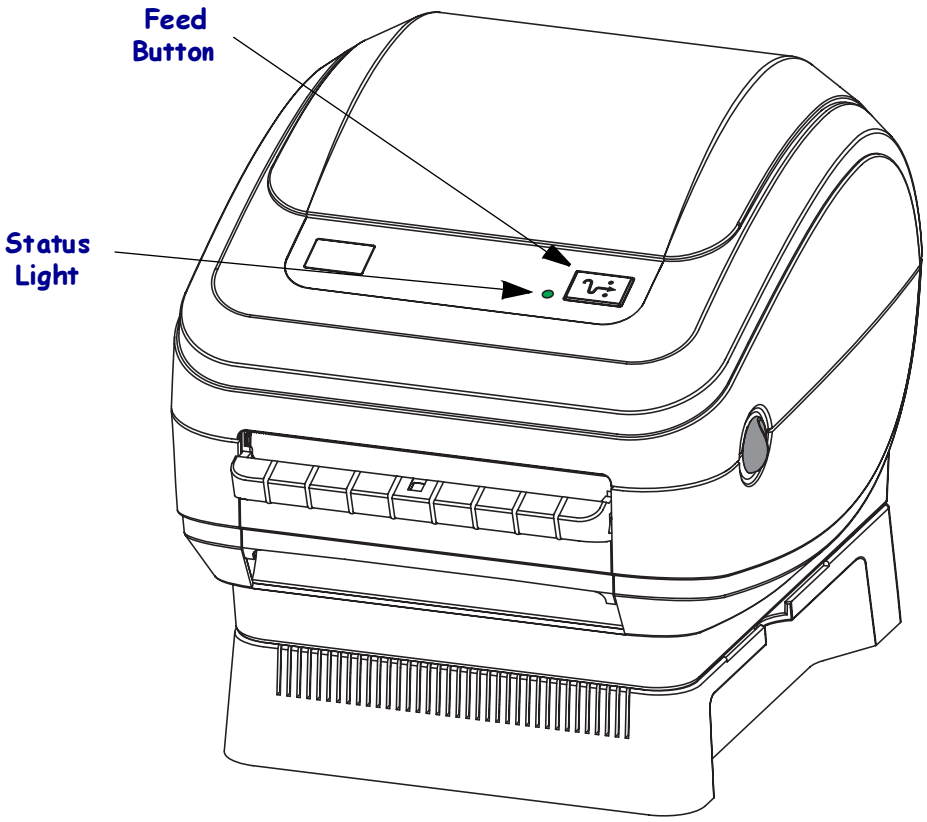


Feed Button

- Tap the Feed button once to force the printer to feed one blank label.
- Press the Feed button to take the printer out of a “pause” condition. The printer is put into “pause” by either a programming command or an error condition. See *What the Status Light is Telling You* on page 35 in the Troubleshooting chapter.
- Use the Feed button for printer setup and status (see *Feed Button Modes* on page 42 in the Troubleshooting chapter).

Status Light

Located on the top case next to the feed button, the status light functions as a printer operational indicator (see See *What the Status Light is Telling You* on page 35 in the Troubleshooting chapter).



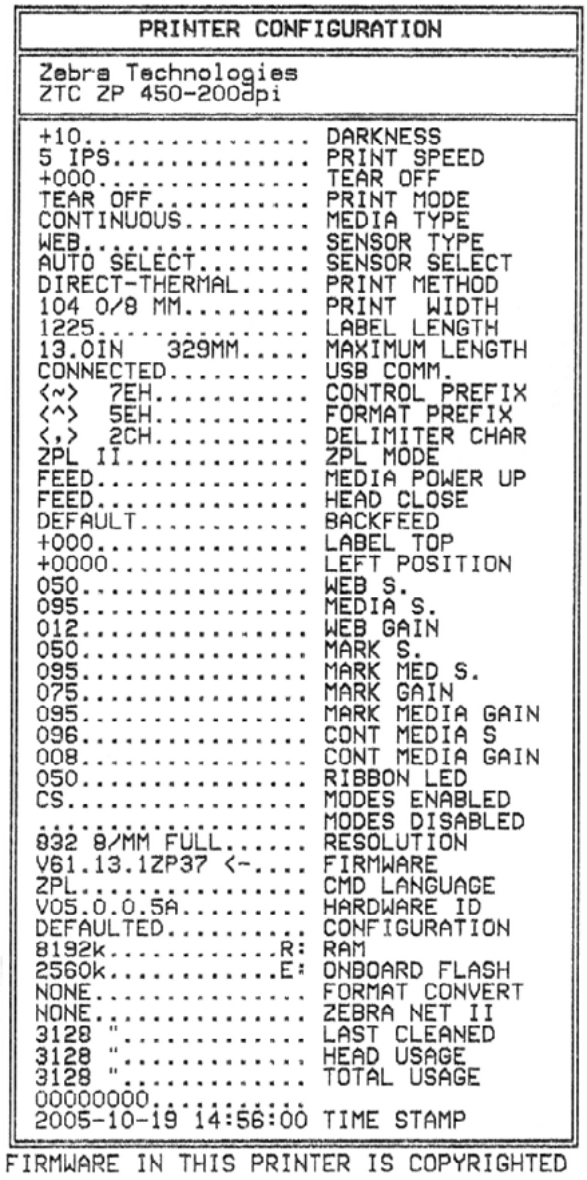
Printing a Test Label

Before you connect the printer to your computer, make sure that the printer is in proper working order.

You can do this by printing a configuration label.

1. Make sure the media is properly loaded and the top cover of the printer is closed. Then, turn the printer power on if you have not already done so.
2. When the status light is solid green, press and hold the feed button until the status light flashes once.
3. Release the feed button. A configuration label will print.

   If you cannot get this label to print, refer to *Getting Started* on page 7.



Hooking Up the Printer and Computer

Your printer will have a Universal Serial Bus (USB) interface.

Caution • Keep the power switch in the OFF position when attaching the interface cable. The power cord must be inserted into the power base on the back of the printer before connecting or disconnecting the communications cables.

Important • This printer complies with FCC "Rules and Regulations," Part 15, for Class B Equipment, using fully shielded data cables. Use of unshielded cables may increase radiated emissions above the Class B limits.

Interface Cable Requirements

Data cables must be of fully shielded construction and fitted with metal or metallized connector shells. Shielded cables and connectors are required to prevent radiation and reception of electrical noise.

To minimize electrical noise pickup in the cable:

Keep data cables as short as possible (6' [1.83 m] recommended).

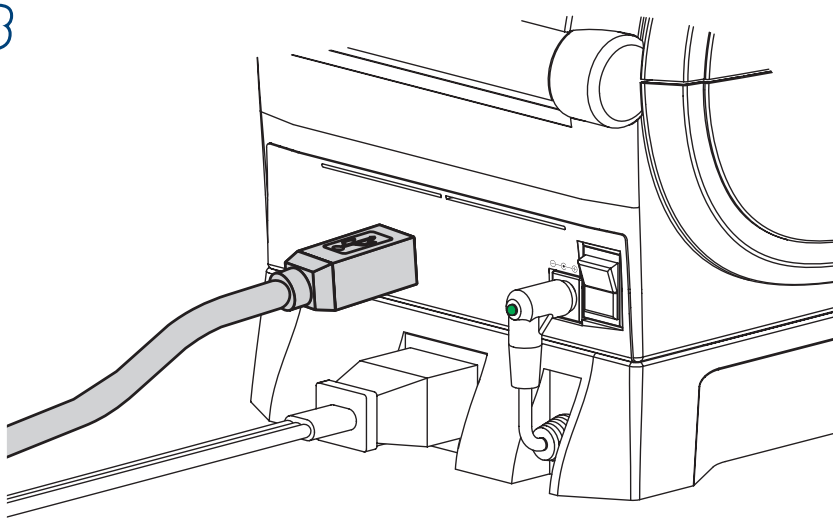
Do not tightly bundle the data cables with power cords.

Do not tie the data cables to power wire conduits.

USB Interface Requirements

Universal Serial Bus (version 2.0 compliant) provides a fast interface that is compatible with your existing PC hardware. USB's "plug and play" design makes installation easy. Multiple printers can share a single USB port/hub.

When using USB cable not supplied with your printer, verify that the cable or cable packaging bears the "Certified USB™" mark (see below) to guarantee USB 2.0 compliance.



Communicating with the Printer

Universal Serial Bus (USB) Communications

The printer is a terminal device when using a universal serial bus interface. You can refer to the Universal Serial Bus Specification for details regarding this interface.

USB Printer Detection and Windows® operating systems.

Windows 98 Second Edition, Windows 2000 and Windows XP operating systems support the USB communications with printers. The Zebra Universal Driver supports your printer in these operating systems.

These operating systems automatically detect the printer when connected via the USB interface. The operating system automatically starts a "Add new hardware' wizard when connecting the printer for the first time to the PC. Close the wizard. Install the Zebra Universal Driver found on the user's CD or for the latest driver go to www.zebra.com. Select the USB port and media size (closest match). Click on the 'Print test page' button to verify a successful installation.

The Windows operating system will detect and relink a previously installed printer if it is reconnected to the USB interface or power is turned on after the PC has finished it's restart of the operating system. Ignore the new device detected warnings and close the Task bar prompts. Wait several seconds for the operating system to match the printer to the driver software. The warnings will quit and the printer now should be ready to begin printing.

Adjusting the Print Width

Print width must be calibrated when you are using the printer for the first time.

Print width may be set by way of the five-flash sequence in *Feed Button Modes* on page 42 or refer to the Print Width (^PW) command (consult your *ZPL II Programming Guide*).

Adjusting the Print Quality

Print quality is influenced by the heat of the print head, the speed of the media and the type of media you are using. Only by experimenting will you find the optimal mix for your application.

The relative darkness setting can be controlled by the Windows Driver, the six-flash sequence in *Feed Button Modes* on page 42 or the Set Darkness (~SD) ZPL II command (follow the instructions in the *ZPL II Programming Guide*).

If you find that the print speed needs to be adjusted, refer to the Print Rate (^PR) command in the *ZPL II Programming Guide*.

3

Operations & Options

This section helps you get the most from your printer.

You must use programming to control many of the printer's functions.

Example • The `~JL` command controls label length.

The `^XA^JUS^XZ` command saves the new settings to flash memory.

For detailed information about creating labels using ZPL II, refer to the *ZPL II Programming Guide* or visit our web site at www.zebra.com.

To improve print quality, changing both print speed and density may be required to achieve the desired results. Your application's printer driver provides control of the speed and heat (density).

Thermal Printing

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

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

You must use the correct media for the type of printing you require. You must use direct thermal media.

Replacing Supplies

If labels run out while printing, leave the printer power on while reloading (data loss results if you turn off the printer).

Always use high quality, approved labels and tags. 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. Approved supplies can be ordered from your dealer.

Printing in Dispenser Mode

The dispenser option allows you to print a label with backing (liner/web) removed from the label, ready for application. When printing multiple labels, removing the dispensed (peeled) label notifies the printer to print and dispense the next label.

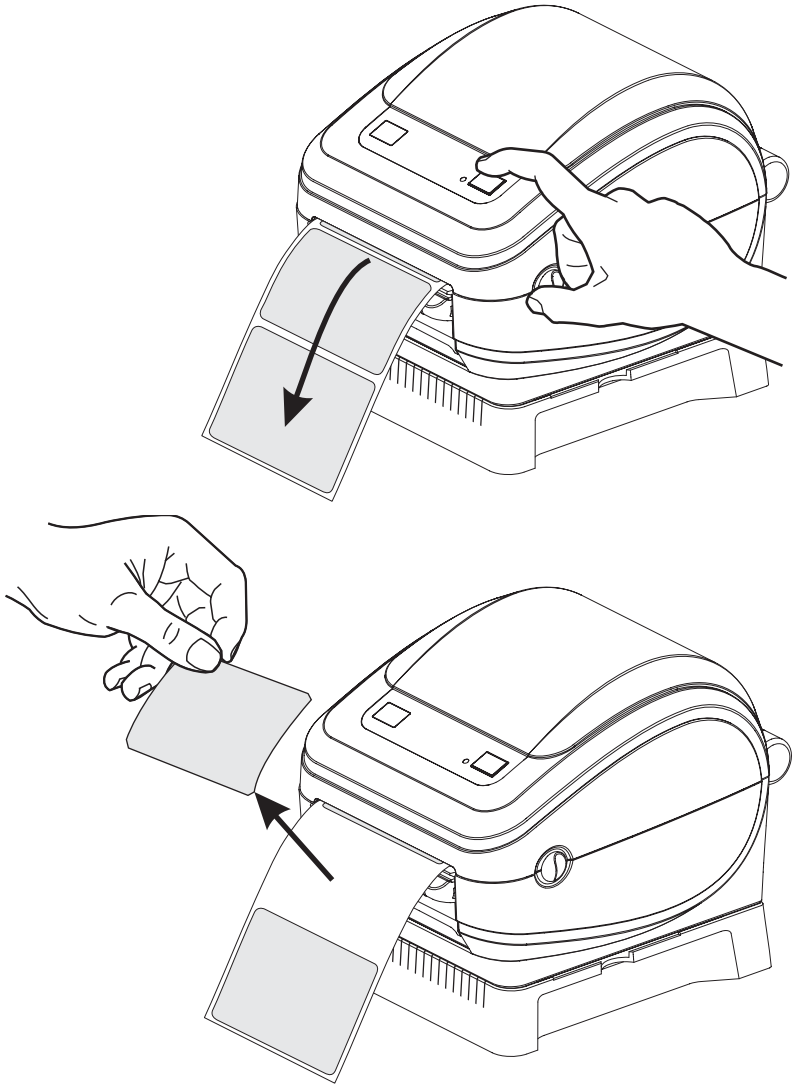
For the dispenser mode to operate correctly, label (taken) sensing must be enabled in your application software, the Windows® printer driver or with ZPL programming.

The label (taken) sensor must be enabled along with the normal label settings which include but are not limited to length, non-continuous (gap), and web (liner). Otherwise, you must send the ZPL programming commands to the printer.

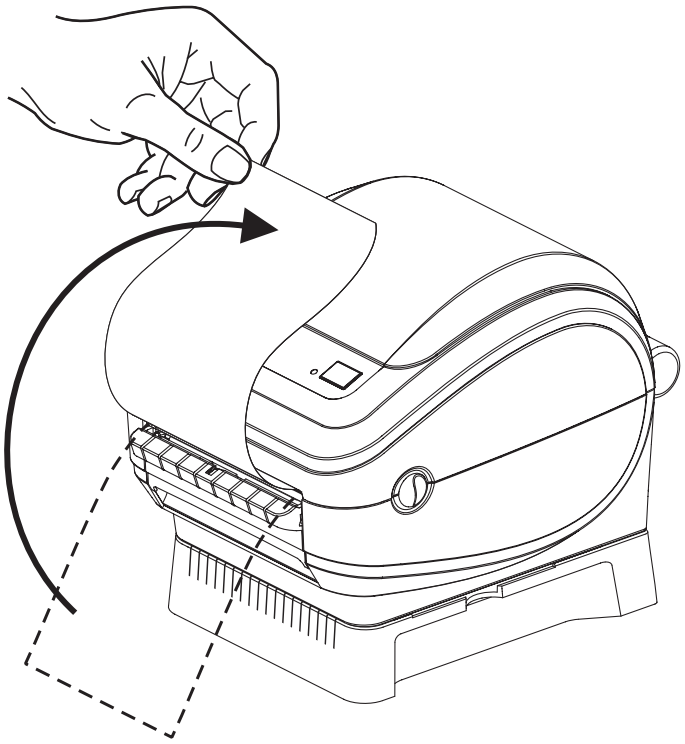
```
^XA ^MMP ^XZ
^XA ^JUS ^XZ
```

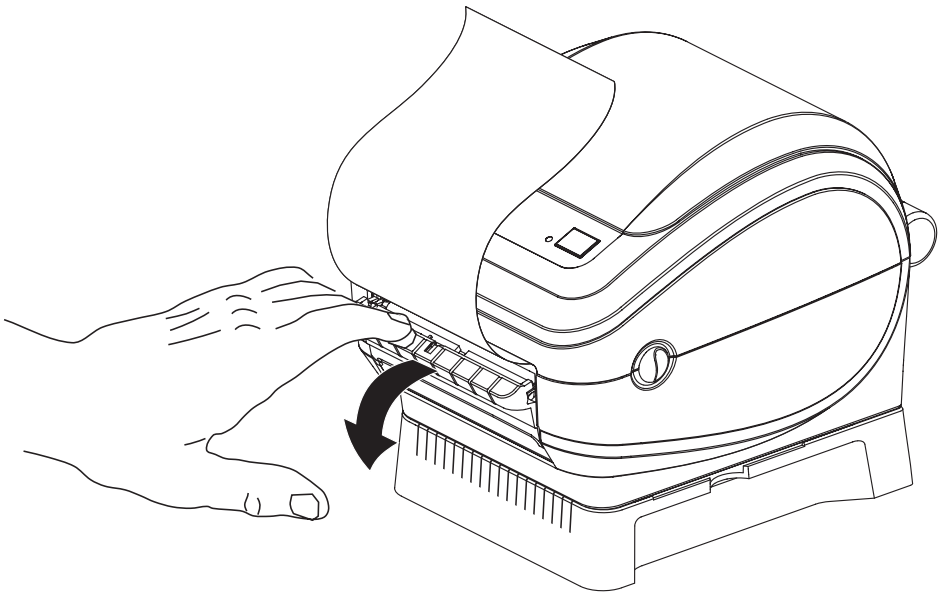
Refer to your ZPL II Programmer's Manual.

1. Load your labels into the printer. Close the printer and press the feed button until a minimum of 4 inches or 100 millimeters of exposed labels exit the printer. Remove the exposed labels from the liner.

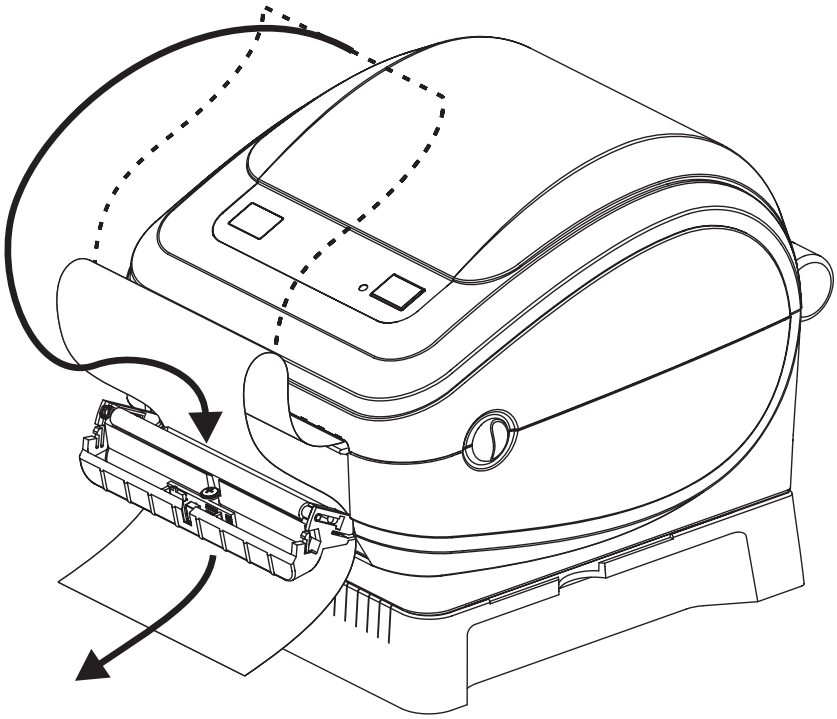


2. Lift the liner over the top of the printer and open the dispenser door.

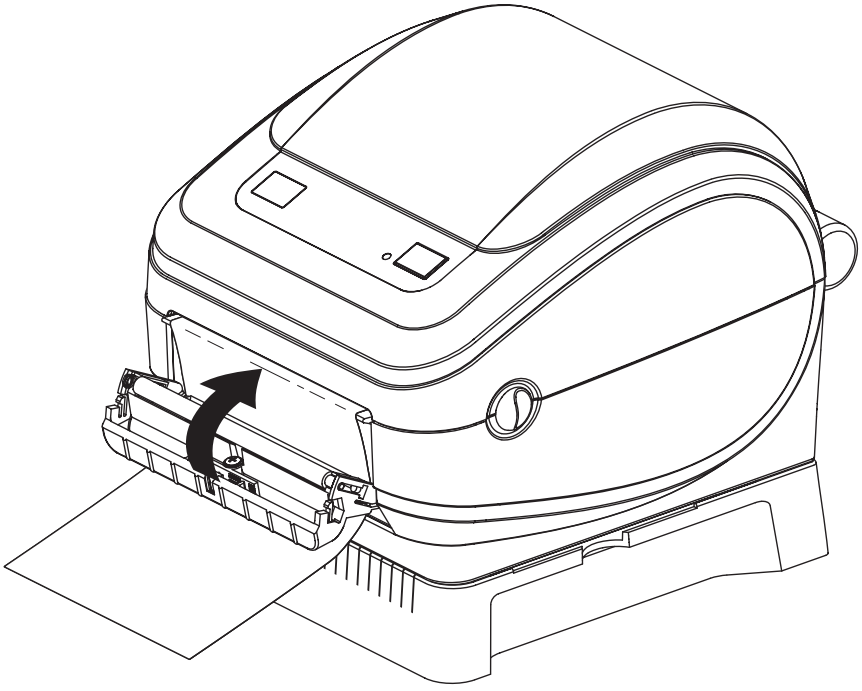




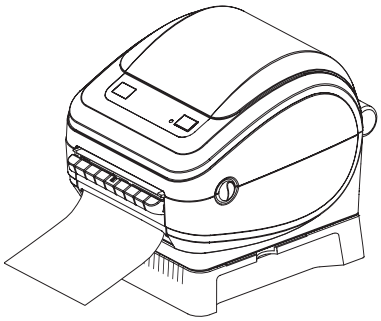
3. Insert the label liner between the dispenser door and the printer body.

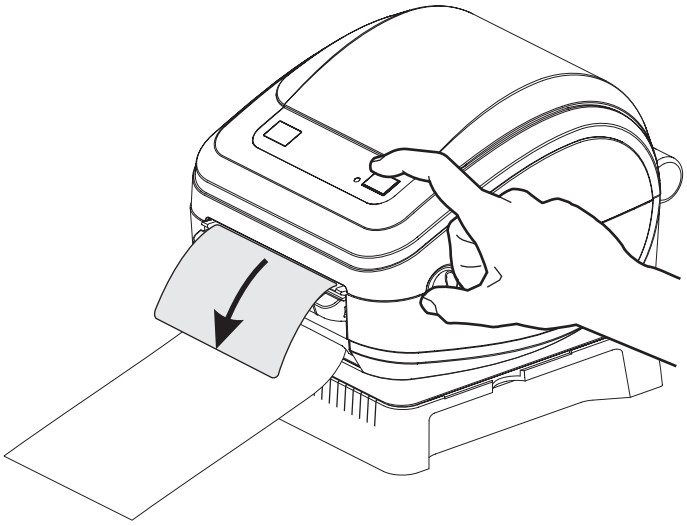


4. Close the dispenser door.



5. Press the Feed button to advance the media.



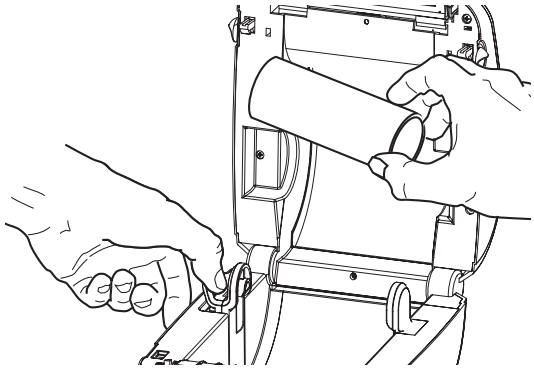


6. Set the label (taken) sensor to detect removed labels. This is set by the Windows printer driver (a configuration setting), your application software or via ZPL programming.
7. During the print job, the printer will peel off the backing and present a single label. Take the label from the printer to allow the printer to print the next label. Note: If you skipped step six, the printer will stack and eject peeled labels.

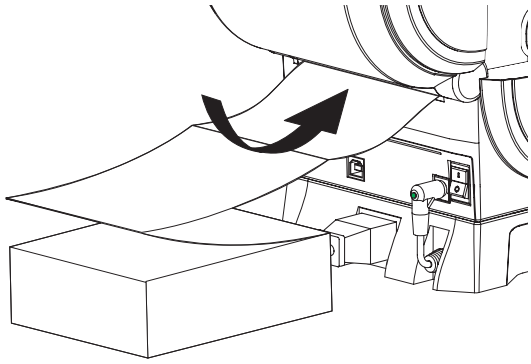
Printing on Fan-Fold Media

Printing on fan-fold media requires you to prepare the media hangers.

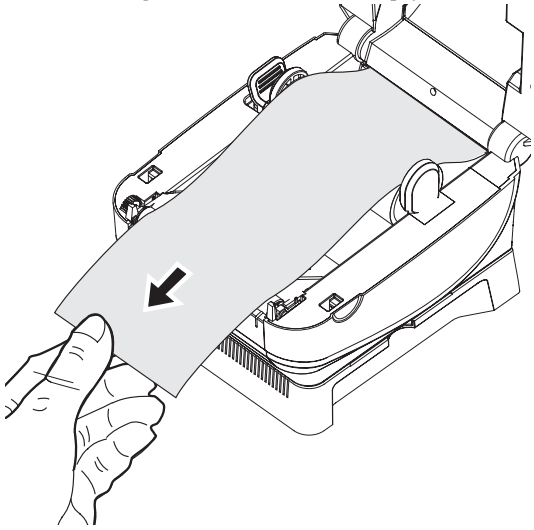
1. Open the top cover.
2. Place an empty core between the media hangers.



3. Insert the media through the slot at the rear of the printer.



4. Run the media between the hangers and above the empty core.



5. Close the top cover.

Notes • _____

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4 Maintenance

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	Set of 12	Clean print head
Cleaning swabs	Set of 25	Clean media path, guides and sensors

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

Printer Part	Method	Interval
Print head	Let the print head to cool for a minute, then use a new cleaning pen to swab the dark line on the print head from end to end.	When using direct thermal: after every roll of media.
Platen roller	See "Platen Considerations" in the Maintenance chapter. Manually rotate the platen roller. Clean it thoroughly with 95% medical-grade alcohol and a cleaning swab or lint-free cloth.	As needed.
Peel bar	Clean it thoroughly with 95% medical-grade alcohol and a cotton swab. Let alcohol dissipate and the printer dry completely.	
Media path		
Exterior	Water-dampened cloth.	
Interior	Gently brush out printer.	

Caution • Adhesives and coatings of media can over time transfer onto the printer components along the media path including the platen and print head. This build-up can accumulate dust and debris. Failure to clean the print head, 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.

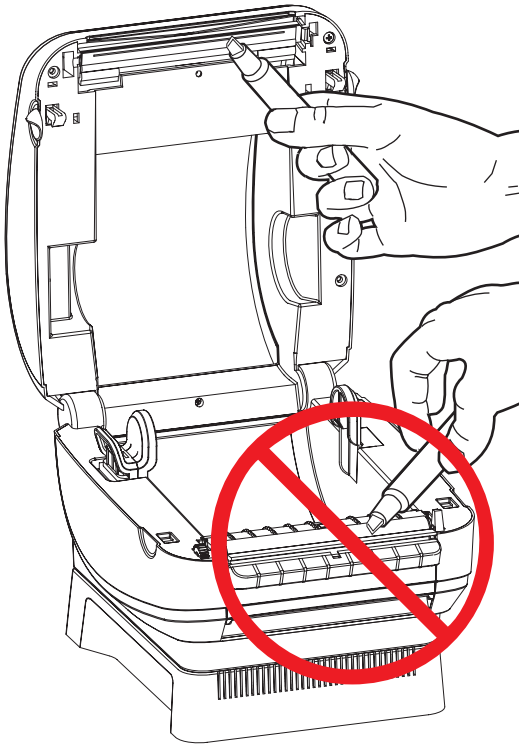
Print Head Considerations

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

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

When you load new media, you can also clean the print head.

1. Rub the cleaning pen across the dark area of the print head.
2. Wait one minute before closing the printer.

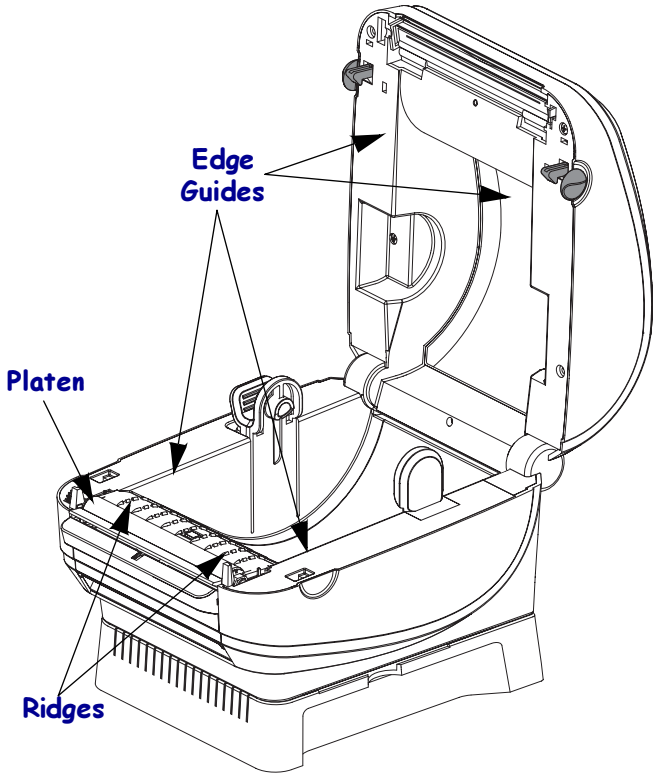


Media Path Considerations

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 so that it breaks up.
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.

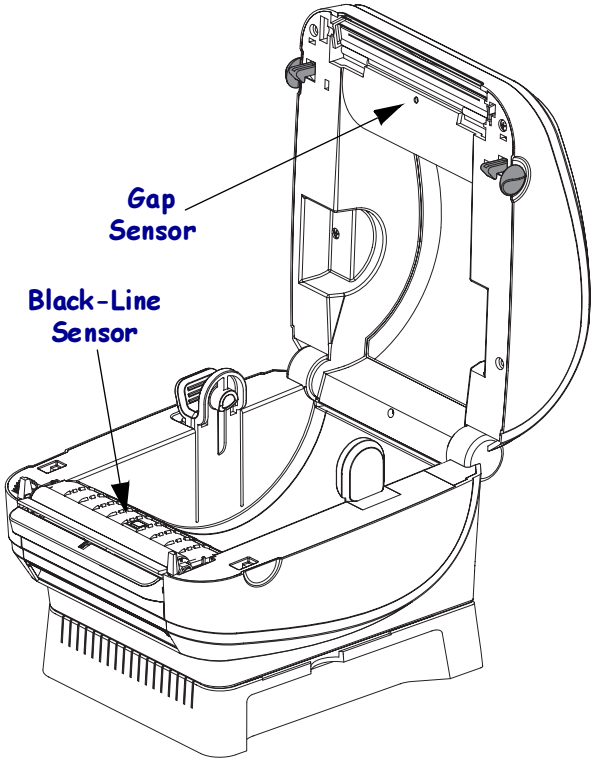
Discard the cleaning swab after use.



Sensors

Dust can accumulate on the media sensors.

1. Gently blow 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 up.
2. Use a dry swab several times to remove any residue that may be left from the first cleaning



Platen Considerations

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 print head or cause the media to slip 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 (95% pure or better).

1. Open the media door and remove the media.
2. Remove the platen from the printer (see *Replacing the Platen* on page 30).
3. Clean the platen surface with the alcohol moistened swab. Rotate the platen while swabbing. Repeat this process two to three times with a new swab to remove residual contaminates. Adhesives and oils, for example, may be thinned by the initial cleaning but not completely removed.
4. Install the platen in the printer (see *Replacing the Platen* on page 30).
5. Discard the cleaning swab after use.

Allow the printer to dry for one minute before loading labels.

Lubrication

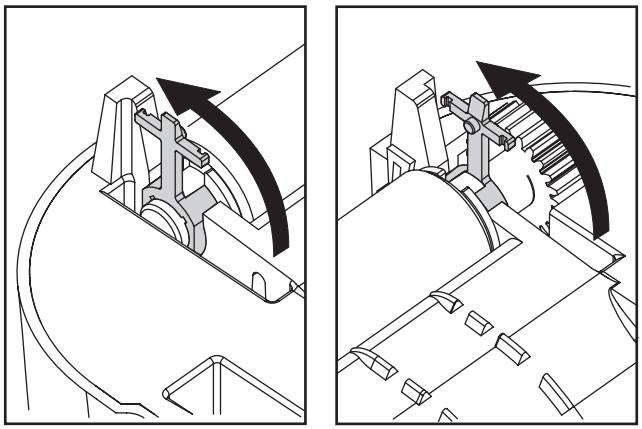
Caution • No lubricating agents of any kind should be used on this printer. Some commercially available lubricants, if used, will damage the finish and the mechanical parts inside the printer.

Replacing the Platen

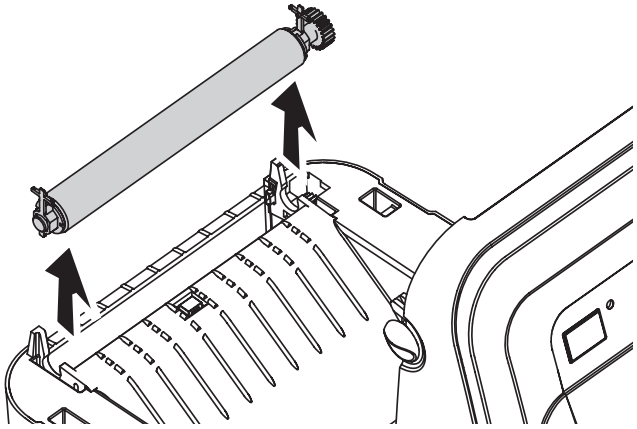
Removal

Open the printer and remove any media.

1. Press the tabs on the right and left sides out. Then rotate them up.

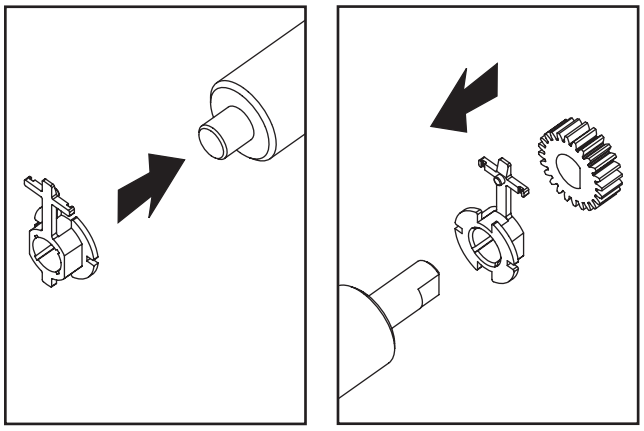


2. Lift the platen out of the printer's bottom frame.

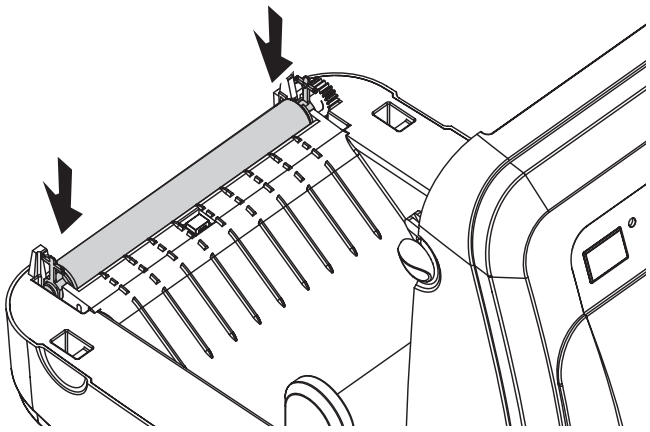


Installation

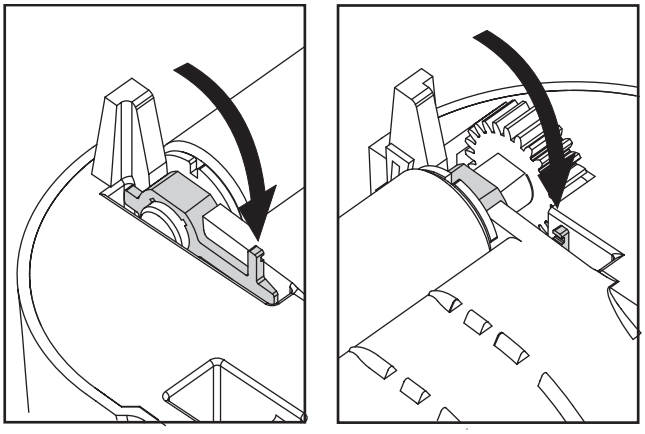
1. Make sure the bearings are on the shaft of the platen.



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 Print Head

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

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.

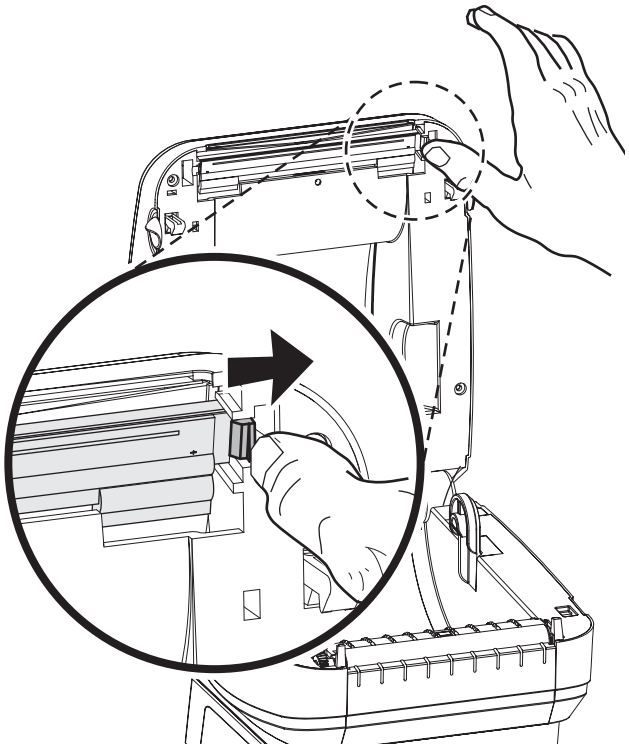
Caution • Turn the printer power off and unplug the power cord before replacing the print head.

Direct-Thermal Model

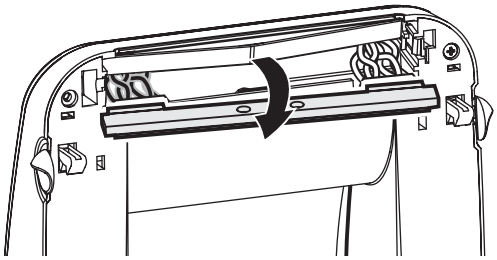
Before following the steps in this procedure, open the printer by pulling the release latches forward then lifting the top cover.

Removal

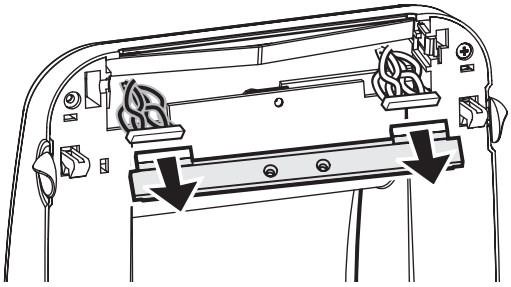
1. Press the print head to the left; then, release the right side catch.



2. Let the print head fall forward; pull it free of the top case if necessary.

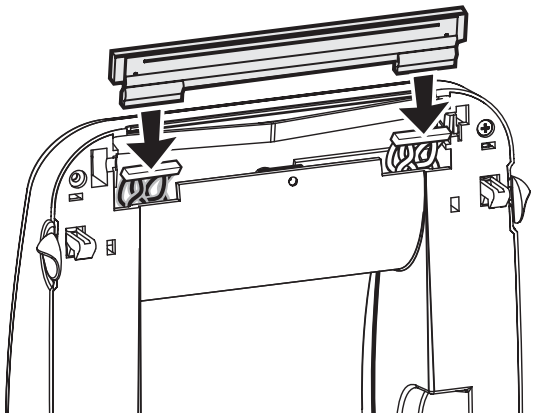


3. Unplug both bundles of print head wires from their connectors.

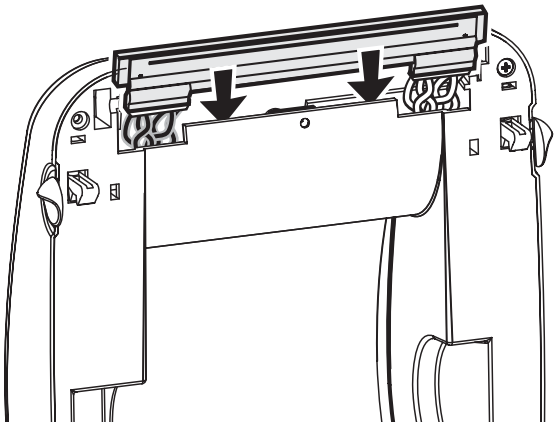


Installation

1. Align the print head to plug the left and right connectors into the wire bundles.



2. Slide the print head into the left side and jog it into the right side catch.



Clean the print head as described under *Print Head Considerations* on page 26.

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

5 Troubleshooting

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
Flashing Amber	Stopped	3
Flashing Green	Normal Operation	4
Flashing Red	Stopped	5
Double Flashing Green	Paused	6
Solid Amber	Various	7
Alternately Flashing Green and Red	Needs Service	8

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.

There is a shortage of memory.

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

The printer needs to cool or requires service.

- If this error continues, turn the printer power off for five minutes or more. 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; then, the printer will automatically resume operation.

5. The media is out.

- Follow the instructions for *Loading Roll Media* on page 9 in the Getting Started section. Then, press the feed button to resume printing.

The print head is open.

- Close the top cover. Then, press the feed button to resume printing.

6. The printer is paused.

- Press the feed button to resume printing.

7. The print head is under temperature.

- Continue printing while the print head reaches the correct operating temperature.

The print head is over temperature.

- Printing will stop until the print head 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.

Print Quality Problems

No print on the label.

- You must use direct thermal media for printing. Direct thermal media is chemically treated to print (expose) when heat is applied. A finger nail or pen cap may be used to test for direct thermal media by pressing firmly and quickly dragging it accross the media surface. This test method uses friction heat to expose the media.
- Is the media loaded correctly? The media's print surface must face up to make contact with the printhead. Follow the instructions for *Loading Roll Media* on page 9 in the Getting Started section.

The printed image does not look right.

- The print head is dirty. Clean the print head.
- The print head is under temperature.
- Adjust the print darkness and/or print speed. Refer to the six-flash sequence of *Feed Button Modes* on page 42, or the `^PR` and `~SD` commands in the ZPL II Programming Guide. 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.
- 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. Follow the instructions for *Replacing the Print Head* on page 32 in the Maintenance section).
- The platen roller may have foreign objects attached or damage to the normally smooth and flat print surface. The platen may need cleaning or replacement. Follow the instructions for *Platen Considerations* on page 29 for cleaning or *Replacing the Platen* on page 30.

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

- The print head is dirty. Clean the print head.
- The print head elements are damaged. Follow the instructions for *Replacing the Print Head* on page 32 in the Maintenance section).

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

- The printer needs to be calibrated for the media. Refer to the two-flash sequence of *Feed Button Modes* on page 42 in this section.
- 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 II Programming Guide*).
- Verify that the Label Top (^LT) command is correctly set for your application (consult the *ZPL II Programming Guide*).

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

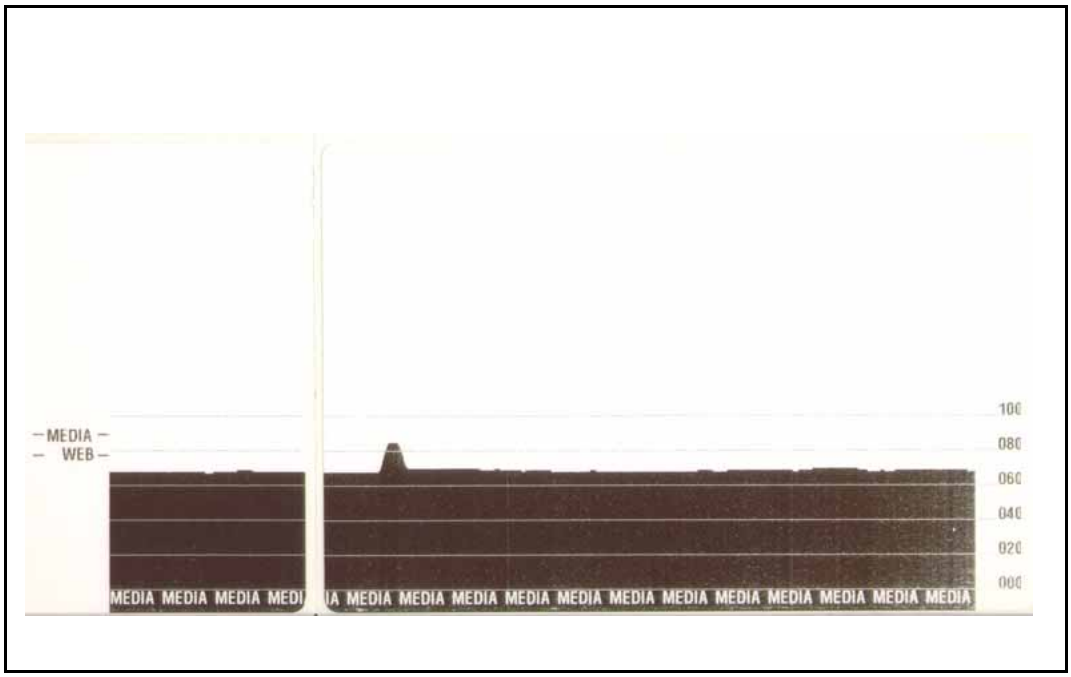
- Is the printer in pause mode? If so, press the feed button.
- If the status LED is on or flashing, refer to *What the Status Light is Telling You* on page 35 in this chapter.
- Make sure the data cable is correctly installed.
- A communications problem has occurred. First, make sure that the correct communications port on the computer is selected. Refer to Communicating with the Printer16 in the Getting Started section.

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 LED flashes once, then twice. 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 print head.
5. 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.
6. 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.

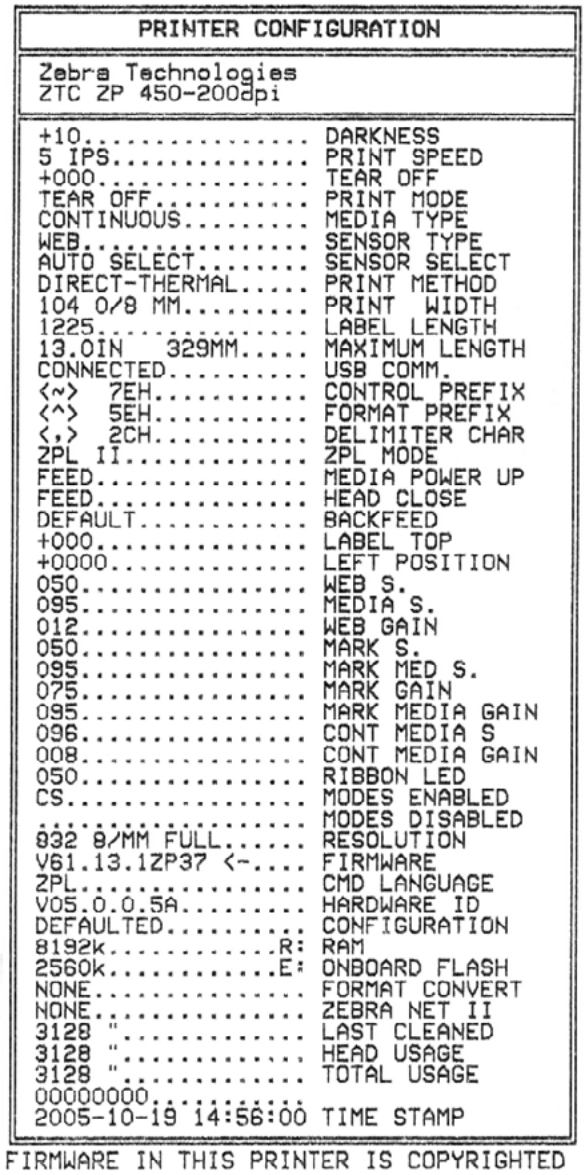
Note • Performing a manual calibration disables the auto calibration function. To return to auto calibration, default the printer (refer to the four-flash sequence in *Feed Button Modes* on page 42 in this section).



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 42 in this section



Recalibration

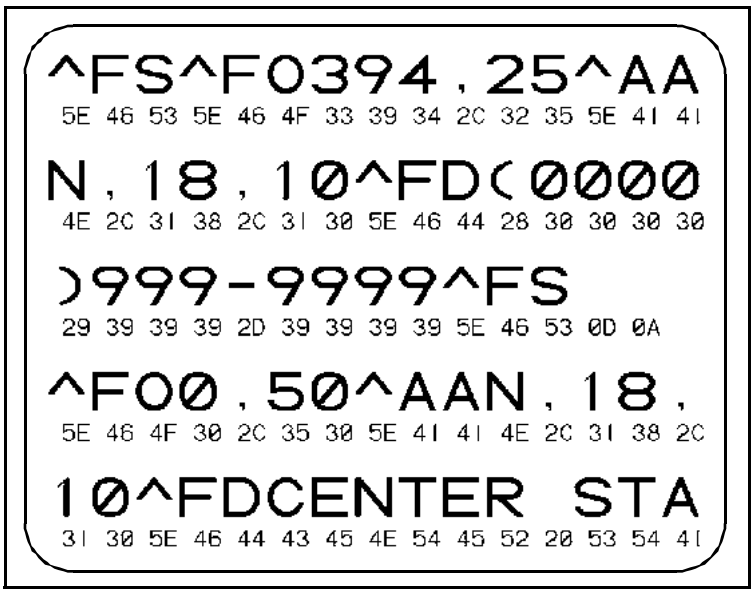
Recalibrate the printer if it starts to display unusual symptoms, such as skipping labels. Refer to the two-flash sequence in *Feed Button Modes* on page 42 in this section.

Resetting the Factory Default Values

Sometimes, resetting the printer to the factory defaults solves some of the problems. Refer to the four-flash sequence in *Feed Button Modes* on page 42 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, refer to the power off mode procedure in *Feed Button Modes* on page 42 in this section.



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. Continue holding the feed button down until the printer begins flashing green (pause mode). The printer will flash several different color and flashing combinations prior to flashing only green. Release the feed button. The printer prints out a listing of its current configuration. After printing the label, the printer will automatically enter a 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. See *Communications Diagnostics* on page 41.

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 specific number of flashes

Flash Sequence	Action
*	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.
* **	The printer performs a full media calibration routine. The printer detects and sets media type, media length and adjusts the media sensors for optimal performance with the installed media
* ** ***	Applies only to printers with serial interface ports.
* ** *** ****	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 (see the ~JC command in the ZPL II programmer's reference for more details)
* ** *** **** *****	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.
* ** *** **** ***** ******	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 4. 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.

If the feed button remains pressed after a 7-flash sequence, the printer exits the configuration mode when the feed button is released.

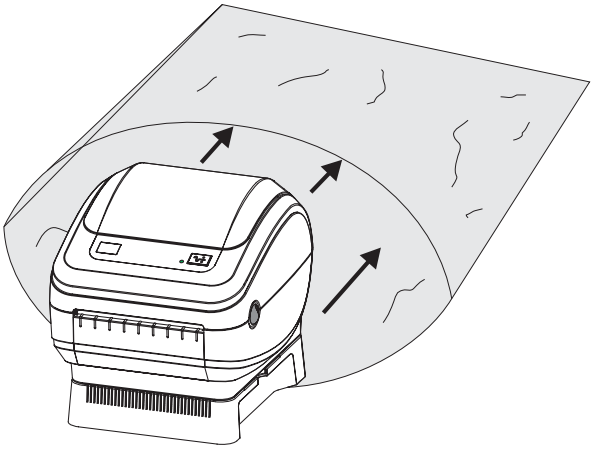
Repackaging the Printer for Return

Before repackaging your printer for return, please call customer service to get a Return Material Authorization (RMA) tracking number.

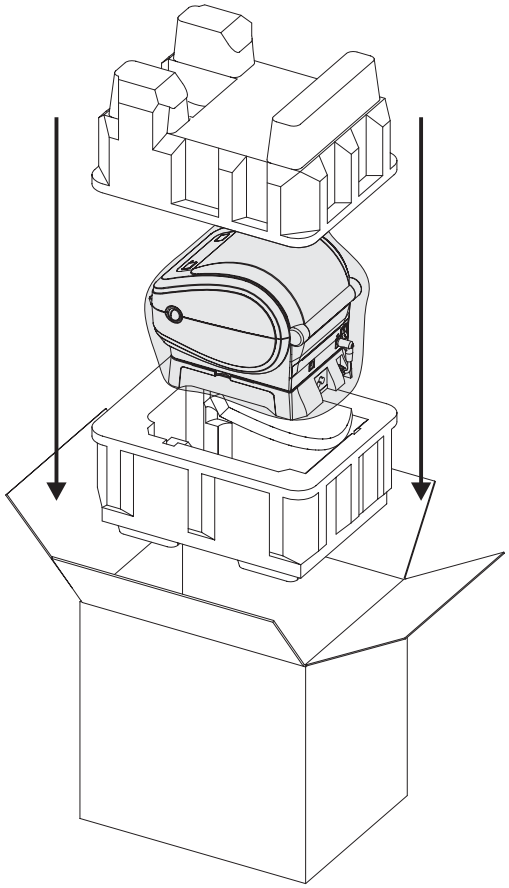
To repackage your printer, use the saved packaging materials or ask your customer service representative to send a new printer packaging kit.

Items to return: Printer, power cord and USB cable.

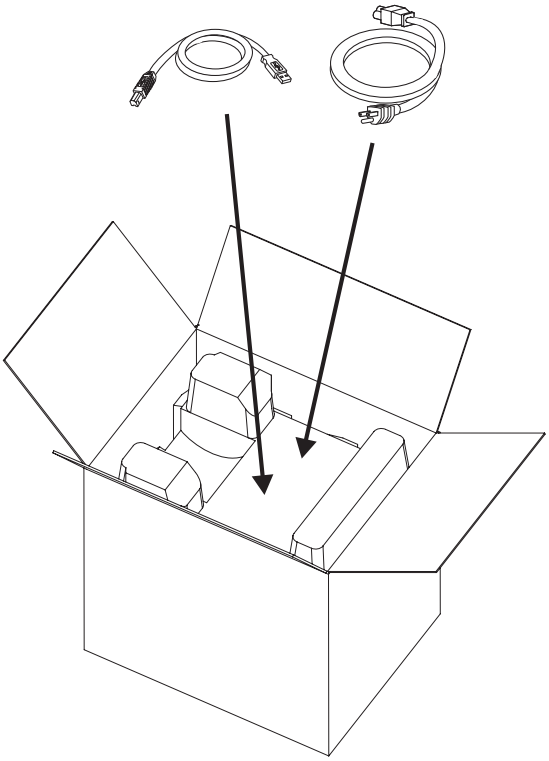
1. Place the printer in the plastic bag.



2. Place the bagged printer between the two ridged foam shells and place them into the carton.



3. Place the power cord and USB cable on the top of the foam shell in the carton.

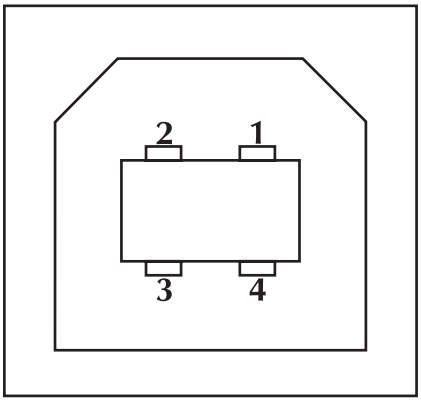


4. Seal the carton.

6 Interfaces

Universal Serial Bus (USB) Connector

The figure below displays the cable wiring required to use the printer's USB interface.



Pin No.	Description
1	Vbus
2	D–
3	D+
4	Ground
Shell	Shield/Drain Wire

For printer supported operating systems and drivers, see the software and documentation CD or visit the Zebra printer web site at:

www.zebra.com

For information on the USB interface, go to the USB web site at:

www.usb.org

Notes • _____

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