ZD200 Series

Thermal Transfer Desktop Printer

User Guide

ZEBRA

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Contents

Contents

About This Guide

This document is intended for use by any person who needs to perform routine maintenance, upgrade, or troubleshoot problems with the printer.

Notational Conventions

The following notational conventions make the content of this document easy to navigate.

- **Bold** text is used to highlight the following:
    - Dialog box, window, and screen names
    - Dropdown list and list box names
    - Checkbox and radio button names
    - Icons on a screen
    - Key names on a keypad
    - Button names on a screen
- Bullets (•) indicate:
    - Action items
    - List of alternatives
    - Lists of required steps that are not necessarily sequential.
- Sequential lists (for example, those that describe step-by-step procedures) appear as numbered lists.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following graphic icons are used throughout the documentation set. These icons and their associated meanings are described below.

NOTE: The text here indicates information that is supplemental for the user to know and that is not required to complete a task.

IMPORTANT: The text here indicates information that is important for the user to know.

CAUTION—EYE INJURY: Wear protective eyewear when performing certain tasks such as cleaning the inside of a printer.

CAUTION—EYE INJURY: Wear protective eyewear when performing certain tasks such as installing or removing E-rings, C-clips, snap rings, springs, and mounting buttons. These parts are under tension and could fly off.

CAUTION—PRODUCT DAMAGE: If the precaution is not taken, the product could be damaged.

CAUTION: If the precaution is not heeded, the user could receive a minor or moderate injury.

CAUTION—HOT SURFACE: Touching this area could result in burns.

CAUTION—ESD: Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

CAUTION—ELECTRIC SHOCK: Turn off (O) the device and disconnect it from the power source before performing this task or task step to avoid the risk of electric shock.

WARNING: If danger is not avoided, the user CAN be seriously injured or killed.

DANGER: If danger is not avoided, the user WILL be seriously injured or killed.

Introduction

The Zebra 4-inch Desktop printers are compact label printers with essential features and options.

This document covers the ZD220 and ZD230 desktop thermal-transfer printer models. For information on these models, see zebra.com/zd200t-info.

4-inch Desktop Thermal Transfer Printers

The ZD200 Series thermal transfer printer supports printing speeds of up to 152 mm/s (6 ips or inches per second) at 203 dpi (dots per inch) print density.

The printer supports both ZPL and EPL Zebra printer programming languages.

Common Desktop Printer Features

OpenAccess design	To simplify media loading.
Color-coded touch points (for operator controls and media guides)	For ease of using the printer.
Single control (**FEED**) button and a single, multicolor status indicator	
Zebra's printer operating system (OS)	An open platform with software tools needed to integrate, manage, and maintain the printer.
Media roll support	• Outer Diameter (O.D.): Up to 127 mm (5 in.) • Inner Diameter (I.D.) roll cores:12.7 mm (0.5 in.), 25.4 mm (1 in.), and an optional 38.1 mm (1.5 in.) media-core adapter set

Half-width movable media sensor	Compatibility with a wide range of media types:
	• Full and partial width black mark media and notched/slotted media— the printer can be set to center to the left side of media for printing.
	• Label gap/web media—the printer features a center-position transmissivity sensor.
Font support	• On-the-fly OpenType and TrueType font scaling and import
	• Unicode
	• Selection of resident bitmap fonts
Backwards-compatibility focused technology	Eases printer replacement.
	• Drop-in replacement of legacy Zebra desktop printers.
	• Accepts both EPL and ZPL programming language instructions.
Universal Serial Bus (USB) 2.0 interface	For convenient connectivity.
Factory-installed network models	Support printer configuration using a setup utility running on mobile devices.
XML-enabled printing	Used for barcode label printing to lower license fees and print server hardware requirements (thereby lowering customization and programming costs).
Zebra global printing solution	Supports the following:
	• Microsoft Windows keyboard encoding (and ANSI), Unicode UTF-8 and UTF-16 (Unicode Transformation Formats)
	• XML
	• ASCII (7-bit and 8-bit used by legacy programs and systems), basic single- and double-byte font encoding
	• JIS and Shift-JIS (Japanese International Standards)
	• Hexadecimal encoding
	• Custom character mapping (DAT table creation, font linking, and character remapping)
	• For China only: Printers have the Simplified Chinese SimSun font pre-installed.
Minimum of 50 MB of internal (E:\) printer memory	To store forms, fonts, and graphics.

4-inch Desktop Printer Options

These features are specific to 4-inch desktop printers.

Factory-installed wired and wireless options	Wi-Fi (802.11ac – includes a/b/g/n), Bluetooth Classic 4.x (3.x compatible)

	Internal Ethernet print server (with external LAN RJ-45 connector)
	Supports 10Base-T, 100Base-TX, and fast Ethernet 10/100 auto-switching networks for wired connectivity.
Media core adapter kit	Includes adapters for media rolls with Outer Diameters (O.D.) up to 127 mm (5 in.), and 38.1 mm (1.5 in.) I.D. media cores.
Asian language support	Features printer configuration options for the large Simplified and Traditional Chinese, Japanese, or Korean character sets.

Zebra Label Printing Solution

Your printer is only one of three parts of your printing solution. To print, you will also need print media and software.

The printer can operate in standalone mode. It does not have to be connected to other devices or systems to print.

Compatible media	You can use thermal transfer ribbon rolls along with thermal transfer media, or direct thermal media, with this printer.
	Media may be labels, tags, tickets, receipt paper, fanfold stacks, tamper-proof labels, etc. depending on your printing needs.
	Use information from zebra.com/supplies or from your reseller to identify and procure media for your specific use cases.
Software • Printer drivers • Printer programming utilities • Applications (such as for label design)	Use these drivers and applications to configure and manage your printer and your print jobs from a central device such as a PC or laptop.
	For information on installing the drivers, see Installing the Windows Printer Drivers on page 63.
	You can use ZebraDesigner—a free application for Windows PC operating systems—to design simple labels and forms. It is available to download from zebra.com.

Modes of Printing

Your printer supports several modes and media configurations.

Mode	Description
Direct Thermal printing	Uses heat-sensitive media to print. (When setting this mode, use media that supports this mode of printing. See Determining Thermal Media Types on page 131.)
Thermal Transfer printing	Requires ribbon rolls to print. While printing, heat and pressure transfer ink from the ribbon to the media. (When setting this mode, use media that supports this mode of printing. See Determining Thermal Media Types on page 131.)

Mode	Description
Standard tear-off mode	Allows you to tear off each label or to batch-print a strip of labels and tear them off after the printer has printed.
Label dispense mode	If your printer has the optional label dispenser factory-installed, the dispenser can peel away the backing material from the label as it is being printed, and then print the next label.
Media cutting mode	If your printer has the optional media cutter factory-installed, the printer can cut the label liner between the labels, the receipt paper, or the tag stock.
Standalone operation	The printer can print an auto-running label format or form (programming based) without being directly connected to another device (such as a computer).
Shared network printing mode	Printers configured with factory-installed Ethernet (LAN) and WiFi interface options include an internal print server.

Unpacking and Inspecting the Printer

When you receive the printer, immediately unpack it and inspect for shipping damage. Also make sure the package includes all the parts.

See the Zebra ZD200 Series printer support resources page at zebra.com/zd200t-info for videos on how to pack and unpack your printer.

1. Save all packing materials.

2. Check all exterior surfaces for damage.

3. Open the printer and inspect the media compartment for loose or damaged components (see Opening and Closing the Printer on page 14).

4. If you discover shipping damage on inspecting the printer:

   a) Immediately notify the shipping company and file a damage report.

NOTE: Zebra Technologies Corporation is not responsible for any damage to the printer incurred during shipment, and will not cover the repair of this damage under its warranty policy.

   b) Keep all packaging material for shipping-company inspection.

   c) Notify your authorized Zebra reseller promptly.

To make sure your package includes all the standard parts, see What's in the Box? on page 14.

What's in the Box?

After unpacking and inspecting the printer, make sure you have all parts listed here. Familiarize yourself with the printer hardware so you can follow the instructions in this guide.

Printer	Power cord (varies by region or locale)	Printer documentation	USB cable
Power supply	Empty 74-meter starter ribbon core	Empty 300-meter ribbon core*	Non-Zebra 300-meter ribbon adapters*
		* Included with the ZD230 Thermal Transfer Printer	

Not included in the box are:

Print media	Transfer ribbon
Media and ribbon can be ordered from zebra.com/supplies.	

Opening and Closing the Printer

Follow these instructions to open the printer and access the media compartment.

1. Pull the release latches towards you, then lift the cover.

CAUTION—ESD: The discharge of electrostatic energy—which tends to accumulate on the surface of the human body or other surfaces—can damage or destroy the printhead and other

electronic components used in this device. You MUST observe static-safe procedures when working with the printhead and the electronic components located under the top cover.

2. To close the printer, lower the top cover, then press down in the middle of the cover (located in the front of the printer) until the cover snaps closed.
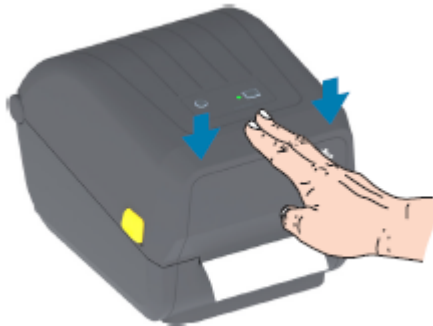
Printer Features

This section will help you identify the external and internal features of your Zebra ZD200 Series 4-inch desktop thermal transfer label printer.

To view the Zebra ZD200 Series Printer Features video and 'how-to' videos for these printers, see zebra.com/zd200t-info.

1	**FEED** button (see FEED (Advance) Button on page 24)

2	Release latch
3	**Power** button (see POWER Button on page 22)
4	Status indicator (see Status Indicator on page 23)
5	Fanfold media entry slot
6	DC power receptacle
7	Interface access
8	Release latch

Inside the Dual-Capacity Ribbon-Roll Printer

1	Ribbon carriage

2	Head-up sensor (inside)
3	Movable sensor (black mark and lower web-gap)
4	Platen (drive) roller
5	Media guide stop
6	Media guides
7	Roll holders
8	Upper web (gap) sensor (other side)
9	Printhead ⚠️ **CAUTION:** The printhead becomes hot while printing. To protect from damaging the printhead and risk of personal injury, avoid touching the printhead.

Figure 1   Dual Capacity Ribbon Chassis – Ribbon Roll Holders
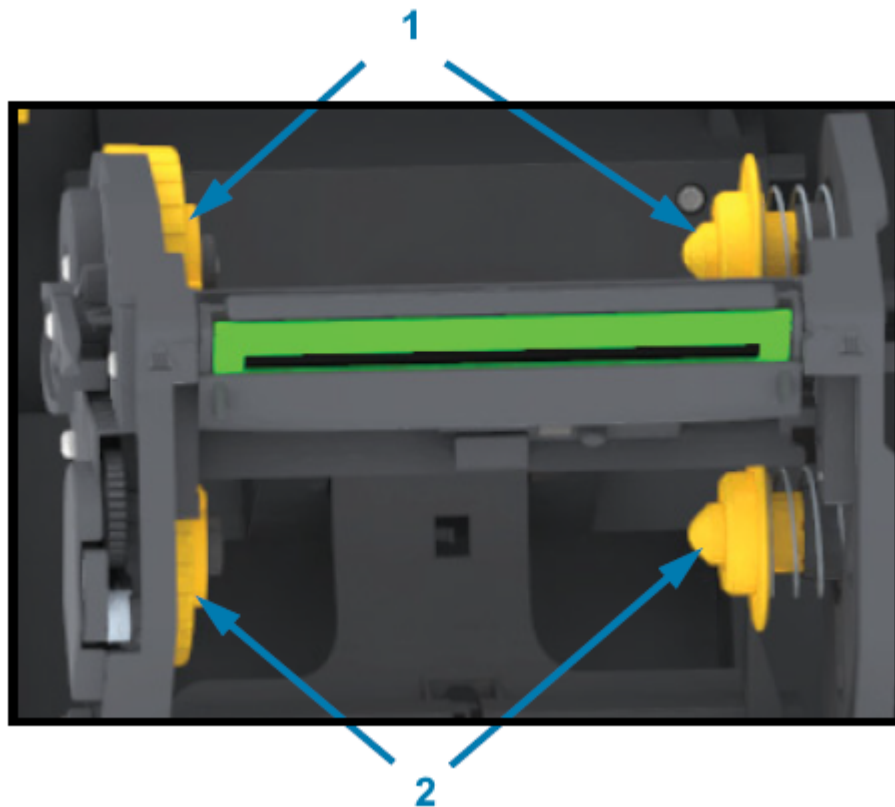
1	Take-up spindles (empty roll core for used ribbon)
2	Supply spindles (new ribbon rolls go here)

Label Dispenser Option

The Label Dispenser is a factory-installed option in your printer.

1	Label-taken sensor
2	Door latch
3	Label liner exit area
4	Dispenser door
5	Peel roll
6	Label peel bar

Cutter Option

NOTE: The Cutter is a factory-installed option in your printer.
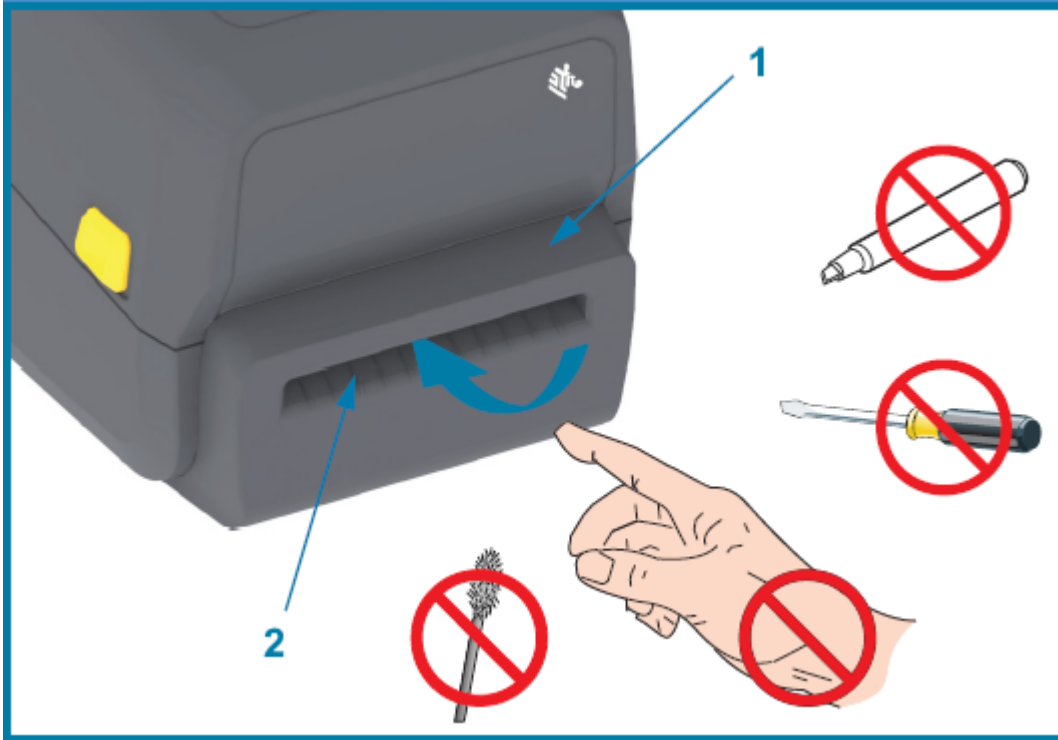
1	Cutter module
2	Media exit slot

Controls and Indicators

The user controls are located on top of the printer and towards the front. Use this interface to perform basic printer control functions and to determine printer status.

User Interface

Your desktop printer's user interface is designed to help you easily operate your printer.

	Interface control	Description
1	**Power** button (for more information, see POWER Button on page 22)	Either individually or in combination, and in tandem with the color and state of the STATUS indicator, the **Power** button and the **FEED** button are designed to help you perform a range of routine printer tasks which include: • turning printer power ON and OFF • calibrating the media (labels, paper, tags, etc.) • printing a configuration report • resetting printer settings to their defaults • entering 'Forced' firmware download mode • entering and exiting diagnostic (DUMP) mode to debug printer programming and communications **NOTE:** These buttons are modal—what happens when you press the buttons depends on what the printer is doing at the time.
3	Single multi-functional **FEED** (Advance) button (for more information, see FEED (Advance) Button on page 24)	
2	STATUS Indicator (tricolor) See Status Indicator on page 23 for information on how to interpret the Status Indicator state and color.	Indicates the printer's operating status and a range of printer conditions using state and color (such as when the printer runs out of media). The state of the indicator can be: • on (lit) • off (not lit) • blinking (off and on) and alternating between colors in a variety of patterns The color can be: • Green—ready or functioning • Amber (orange/yellow)—for busy or active process (boot-up, over-temperature cooling cycle, etc.). • Red—needs attention

POWER Button

This button turns printer power ON and OFF.

22

Power ON	Press the POWER button one time for less than two seconds.
	• The printer will power up.
	• The STATUS Indicator light turns Amber when the printer performs self-diagnostics, configuration checks, and integration of optional components. These will take several seconds to complete.
	• The STATUS Indicator will turn Solid Green—or Flashing Green— indicating the printer is ready for normal print operations.
Power OFF / Shutdown	Press and hold the POWER button for 4 to 9 seconds. The printer will turn OFF.

Status Indicator

The STATUS indicator cues you into basic printer health and operational status (including powered-up and powered-down states).

Familiarize yourself with these printer indicator conditions and what they mean:

This condition...	Indicates...
Green	The printer is READY for print and data activity.
Flashing Green	Normal Operation—Printer may be COMMUNICATING or PROCESSING data.
Double Flashing Green—two short flashes followed by one long flash	The printer is PAUSED.
Flashing Red	Media Alert—The printer is: • open • out of media (ribbon, paper, labels, tags, etc.) • unable to sense the loaded media • detecting a cut error
Flashing Amber	Over Temp—The printhead is over temperature and must cool to resume printing.

23

This condition...	Indicates...
Flashing Red-Red-Green 0 Sec　　1 Sec　　2 Sec　　3 Sec	Critical Over Temp—The printhead or motor has failed.

For information on how to interpret and troubleshoot error conditions, see Troubleshooting on page 111.

FEED (Advance) Button

The **FEED** button is a multi-function button used to feed labels, reprint the last label, pause printing, and return the printer to normal operation after a pause.

Feed one label	To advance media by one blank form or format (one label, receipt, tag, ticket, etc.), wait for the printer to stop printing. press the **FEED** button, and release it within two seconds.
Reprint last label	To activate the Enable Reprint feature, send the printer an SGD command (`ezpl.reprint_mode` OR the ZPL `^JJ` command parameters `D` and `E`), then use the **FEED** button as the 'applicator signal'. This enables a reprint of a failed media print. If the printer runs out of media (paper, labels, etc.), it can be made to reprint the last label (print form/format) from its print storage buffer as described above. **NOTE:** Do NOT turn printer power off or reset the printer if you want to reprint. These actions clear the print buffer.
Stop print activities and place the printer into a PAUSE state	Press the **FEED** button while printing. The printer will finish printing the label it is printing before it enters a PAUSE state.
Return the printer to normal operation after the first three actions above	Press the **FEED** button while in PAUSE state. If the printer is printing a multi-label (form/format) job or if another job is waiting to print in the print queue, the printer will resume printing.
Initialize **FEED** button modes	You can access these advanced-operation **FEED** button modes by pressing the button and holding it down for longer than two seconds. (See FEED Button Modes – Power ON on page 24 and FEED Button Modes – Power OFF on page 25.)

FEED Button Modes – Power ON

This is the first of two advanced function sets available by way of operating the **FEED** button. (The other is **FEED** Button Mode - Power OFF.) By noting changes in the state and color of the STATUS indicator light—

specifically the patterns of these changes—, you can access the Power ON modes used to configure and set up the printer.

To access advanced operation Power ON modes, make sure the printer is ON and ready to print (STATUS Indicator is lit up Green). Then follow these instructions:

To...	Press and hold the FEED button for two seconds, then immediately release it and follow these instructions:	Result
Print a configuration report...	 Wait for one flash of the STATUS Indicator, then release the **FEED** button.	The printer prints a Configuration Report and exits Advanced Mode.
Calibrate the installed media (labels, paper, tags, etc.) using the Smart Cal routine and set the media-sensing parameters...	 Continue holding the **FEED** button until the STATUS indicator flashes two times, then release the button.	The printer begins measuring media, sets the start of the media position, and exits Advanced mode.
Reset the printer to factory defaults...	 Continue holding the **FEED** button until the STATUS Indicator flashes three times, then release the button.	The printer resets to factory defaults (same result as after issuing the ZPL `^JUN` command) and exits Advanced mode.
Return the printer to normal operating mode...	Release the **FEED** button two or more seconds after the third flash sequence.	The printer exits Advanced mode and returns to normal operating mode.

FEED Button Modes – Power OFF

This is the second of two advanced function sets of the **FEED** button. (The other is **FEED** Button Mode – Power ON.) By noting changes in the state and color of the STATUS indicator light—specifically the patterns of these changes—, you can use the Power OFF modes to update and troubleshoot the printer.

To access the advanced operation Power OFF options, make sure the printer is turned ON and a roll of media is loaded. Then follow these instructions:

To...	Press and hold the FEED button and follow these instructions:	Result
Enter Forced Download mode...	Wait until the STATUS Indicator alternates Amber and Red, then release the **FEED** button. 0 Sec 1 Sec 2 Sec 3 Sec Waiting 0 Sec 1 Sec 2 Sec 3 Sec Data transferring 0 Sec 1 Sec 2 Sec 3 Sec Booting up 0 Sec 1 Sec 2 Sec 3 Sec Ready – Firmware updated	The printer waits for data to begin downloading the printer firmware file. **NOTE:** Your printer firmware may be configured to calibrate to the installed media and print a Configuration Report.
Boot up the printer in normal mode...	Continue holding the **FEED** button for three seconds, then release the button when the STATUS Indicator turns Amber. 0 Sec 1 Sec 2 Sec 3 Sec Booting up 0 Sec 1 Sec 2 Sec 3 Sec Ready	The printer boots up normally.
Enter Data Diagnostics Mode...	Continue holding the **FEED** button for at least three seconds before releasing it.	The printer boots up into Diagnostic (Hex Data Dump) mode and prints the following: ``` ********************** * Entering Diag Mode * ********************** ``` See Diagnosing Communication Issues on page 121.

To...	Press and hold the FEED button and follow these instructions:	Result
To return to Normal Operating mode...	Two or more seconds after leaving Data Diagnostic Mode (as discussed above), release the **FEED** button. Alternatively, after the STATUS indicator turns green, hold the **FEED** button down for five or more seconds.	The printer returns to normal operating mode.

Setup

The printer setup process is comprised of two phases: hardware setup and host system (software/driver) setup. This section covers how to set up the physical hardware setup to print your first label.

Setting Up the Printer (Process Overview)

1. Place the printer in a safe location with access to power and where you can connect interface cables or wirelessly to the system.

2. Attach the printer and power supply to a grounded AC power source.

3. Select and prepare media for your printer.

4. Load the media (see Media Types and Sensing on page 31).

5. Power ON the printer (see POWER Button on page 22).

6. Run a SmartCal Media calibration to calibrate the printer to the media (see Running a SmartCal Media Calibration on page 48).

7. Print a Configuration Report to verify basic printer operation (see Test Printing with the Configuration Report on page 49).

8. Turn printer power OFF.

9. Choose a method to set up wired device-to-printer communications. Available wired local connections are USB port and factory-installed Ethernet (LAN). You may also used a WLAN or Bluetooth connection as described in Setup for Windows OS on page 63.

10. If using a physical connection, attach the printer cable to the network or host system with the printer powered OFF.

> **NOTE:** Wait to turn printer power ON. Install the drivers first using the Zebra Setup Utilities (see Setup for Windows OS on page 63 for details). The setup utility will prompt you to turn printer power ON at the appropriate juncture in the setup process. If you connected the central device to the printer and turned printer power ON before installing the drivers, see What To Do If You Forget to Install the Printer Drivers First on page 56.

11. Begin the second phase of the printer setup, typically Setup for Windows OS on page 63.

28

Select a Location for the Printer

For optimal print operations, ensure that the printer and media location is clean with moderate temperatures.

Select a location for the printer that meets the conditions.

Condition	Description
Surface	Must be solid, level, and of sufficient size and strength to hold the printer with media.
Space	The operating location for the printer must include enough space to open the printer (for media access and cleaning), and enable access to connectivity and power cords. Leave open space on all sides of the printer to allow for proper ventilation and cooling. ⓘ **IMPORTANT:** Do not place any padding or cushioning material under or around the base of the printer because this will restrict airflow and could cause the printer to overheat.
Power	Situate the printer within easy access of a power outlet.
Data communication interfaces	Ensure that cabling and WiFi or Bluetooth radios do NOT exceed the maximum distance specified by the communication protocol standard or product data sheet for this printer. Radio signal strength can be reduced by physical barriers (objects, walls, etc.).
Data cables	Cables should not be routed with or near power cords or conduits, fluorescent lighting, transformers, microwave ovens, motors or other sources of electrical noise and interference. These interference sources may cause problems with communications, host system operation, and printer functionality.
Operating conditions	Your printer is designed to function in a wide range of environments. • Operational temperature: 5°C to 41°C (40°F to 105°F) • Operational humidity: 10% to 90% non-condensing • Non-operational temperature: -40°C to 60°C (-40°F to 140°F) • Non-operational humidity: 5% to 85% non-condensing

Attaching Power

Use this procedure to connect power to the printer.

⚠ **CAUTION:** NEVER operate the printer and power supply in an area where they can get wet. Serious personal injury could result!

ⓘ **IMPORTANT:** Use ONLY the appropriate power cord with a three-prong plug and an IEC 60320-C13 connector at all times. The power cords MUST bear the relevant certification mark of the country in which the product is being used.

📝 **NOTE:** Set up your printer so that you can handle the power cord easily if needed. Some setup or troubleshooting tasks may instruct you to switch printer power OFF. Separate the power cord from the power supply receptacle or AC electrical outlet to make certain the printer cannot carry electrical current.

1. Plug the power supply into the printer's DC power receptacle.

2. Insert the AC power cord into the power supply.

3. Plug the other end of the AC power cord into an appropriate AC electrical outlet. (The AC-outlet end of the power cord's plug type can vary by region.)

The active power light will turn on green if power is on at the AC outlet.
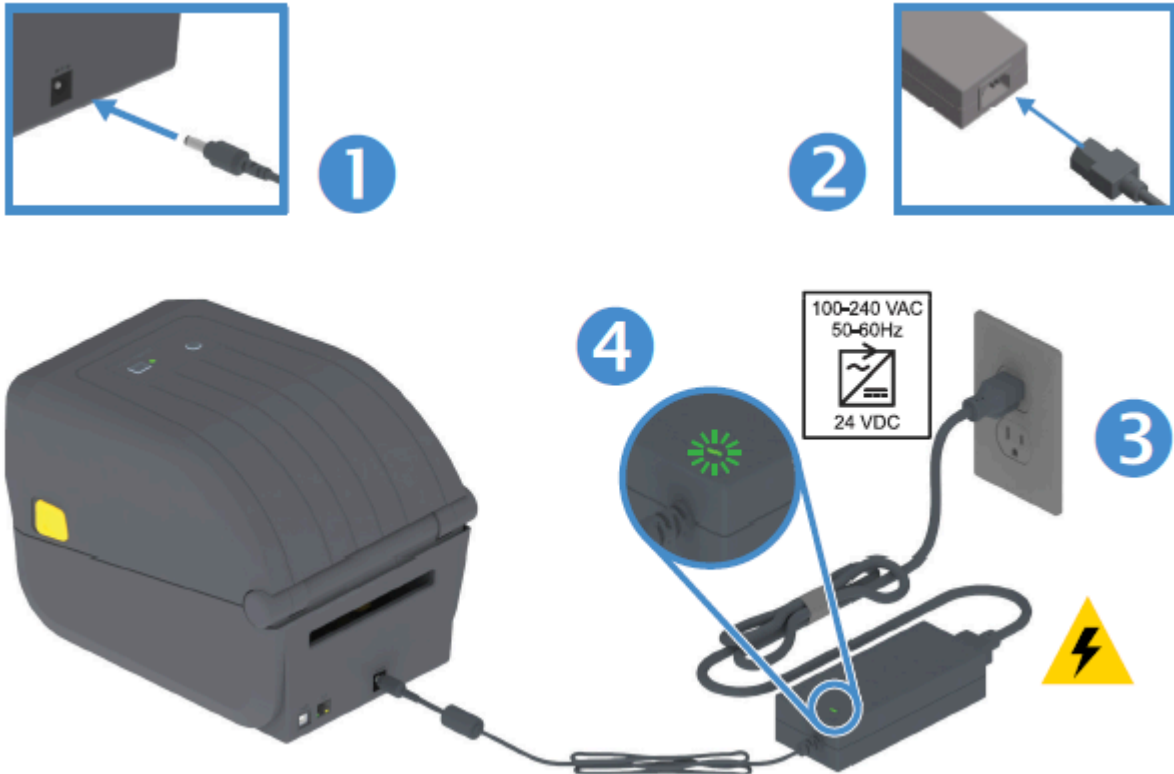
Media Preparation for Printing

Purchase media that will suit your printing needs. Media does not ship with the printer.

You can use labels, tags, tickets, receipt paper, fanfold stacks, tamper proof labels or other print media formats. Use the Zebra web site or your reseller may be able to help you select the right media for your intended printing application.

To procure media that is specifically designed for use with your Zebra printer, go to zebra.com/supplies.

During setup, use the same media that you would use for normal printer operation. This will help you identify any setup or real-life application issues so you can address them right at the start.

Preparing and Handling Media

Careful handing and storage of your media is important in order to maximize print quality. If the media becomes contaminated or dirty, it can damage the printer and cause defects in the printed image such as voids, streaks, discoloration, and compromising of the adhesive.

IMPORTANT: During manufacturing, packaging, handling and storage, the outside length of media may become dirty or contaminated. Remove the outside layer of the media roll or stack to

reduce the possibility of contaminants being transferred from the media onto the printhead while printing.
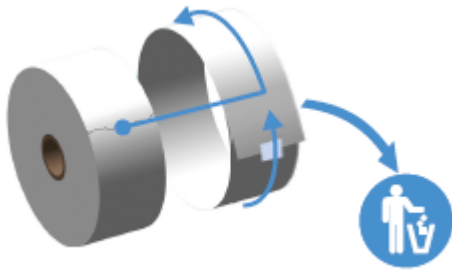
Media Storage Guidelines

Follow these media storage guidelines for optimal print output.

- Store media in a clean, dry, cool, dark area.

NOTE: Direct thermal media is chemically treated to be heat-sensitive. Direct sunlight or heat sources may expose the media.

- Do NOT store media with chemicals or cleaning products.

- Leave media in its protective packaging and remove the packaging only before use.

- Many media types and label adhesives have a shelf life or expiration date. Always use the oldest, viable (non-expired) media first.

Media Types and Sensing

Use the information in this section to understand various print media options and media sensing types.

Your printer supports three basic types of media:

Continuous media	Used for items like receipts. Has no marks to define print length.
Marked media	Has black lines, black marks, notches, or holes to define the print length for each printed item.
Label media	Uses the sensor to look through the media backing (liner) to see the beginning and end of labels on the roll.

The printer uses two sensing methods to accommodate the range of media that it supports:

Center area transmissive sensing	For continuous media and gap/web label media.
Half-width movable (reflective) sensing	To sense print format (length) using the black marks, black lines, notches, or holes present on the media.

Setting Media Sensing by Media Type

Your printer's media-sensing settings must match the type of media you use. Sensing is automatic for some media types. The sensor can be aligned for others.

For web/gap media	The printer senses the differences between the label and the liner to determine the print format length.
For continuous roll media	The printer senses only the media's characteristics. The print format's length is set through programming (using a driver or software), or based on the last stored form's length.
For black mark media	The printer senses the beginning of the mark and the distance to the start of the next black mark to measure the print format length.
For other common media and setting variations	Do one of the following depending on the media you plan to use: • Load the media (see Loading Media), then follow the steps in Using the Label Dispenser Option. • Follow the steps in Printing on Fanfold Media.

Loading Media

This procedure works for Tear-Off (standard bezel), Label Dispense and Media Cutting printer options.

1. Open the printer. Pull the release latch levers toward the front of the printer.
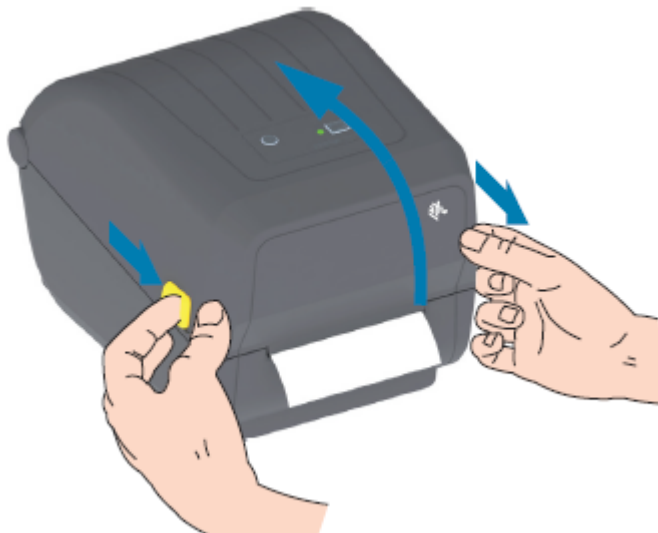
2. Open the media roll holders.

3. With one hand, orient the media roll so that its printing surface will face up as it passes over the platen (drive) roller.

4. Use your free hand to pull the media guides open.

5. Place the media roll on the roll holders and release the guides. Make sure that the roll turns freely.

NOTE: Make sure the roll is NOT resting on the bottom of the media compartment.
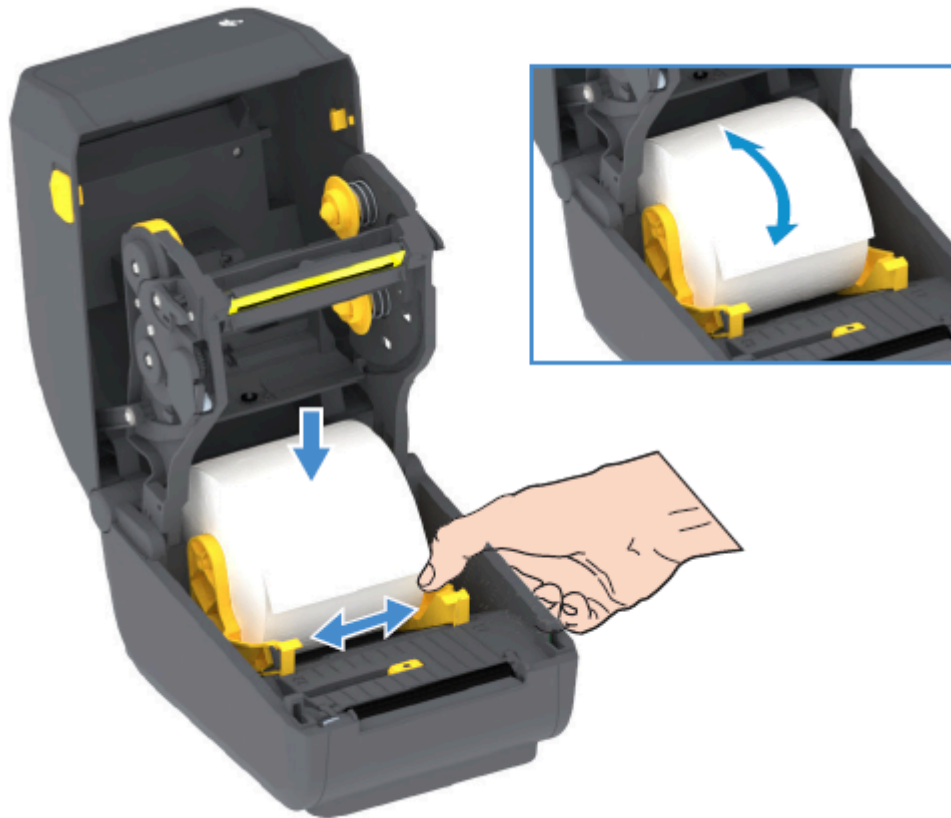
6. Pull the media so that it extends out of the front of the printer.
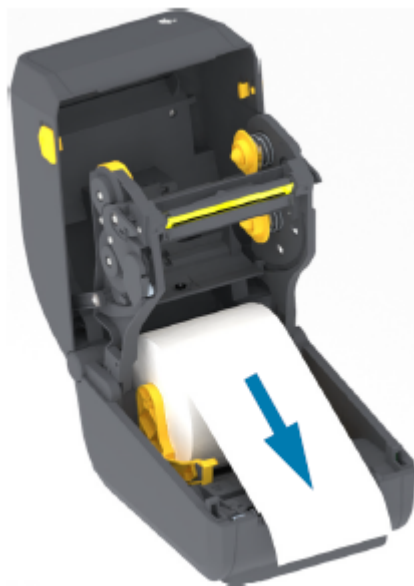
7. Push the media under both of the media guides.

8. Flip the media up and align the movable media sensor as appropriate for your media type.

For continuous roll receipt-type media and for label media without black marks or notches...	Align the media to the default center position.

For black mark (black line, notches or holes), backed media...	Adjust the sensor position in such a way that the sensor aligns to the center of the black mark.
	Avoid the center area of the media so you only use black-mark sensing for printing on black mark media.)
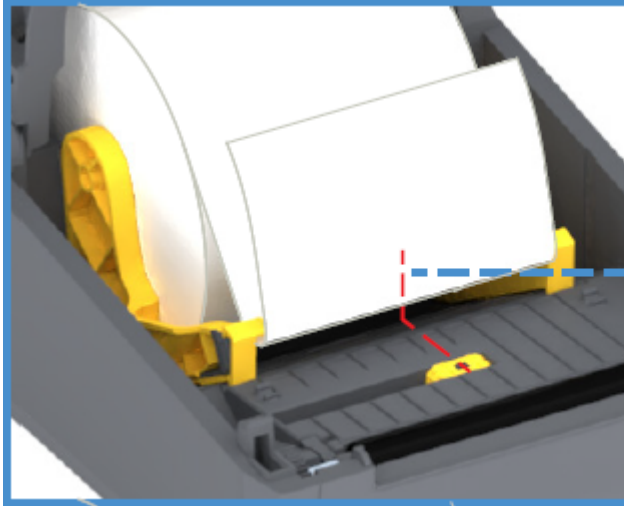
Default - Web (Gap) Sensing Standard Operating Position
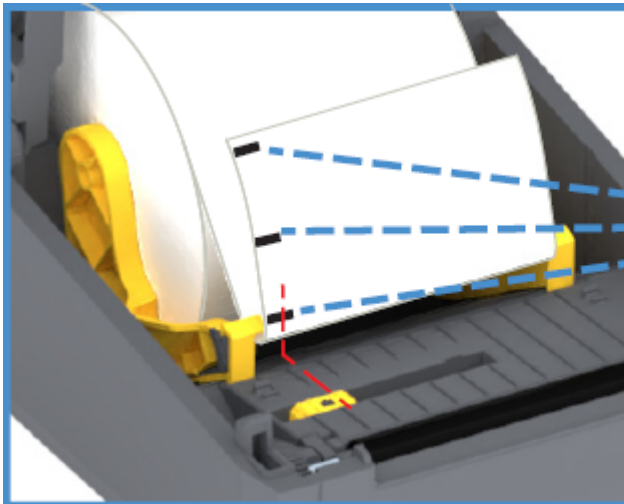
Off-Center Black Mark Sensing Only

Adjusting the Movable Sensor for Black Marks or Notches

The movable sensor is a dual-function sensor that provides transmissive (sees through media) and reflective media sensing. The printer can use only one of these two sensing methods at any given time. If printing on black mark media, the movable sensor must be adjusted to sense the marks or notches on the media.

Black-mark sensing looks for nonreflective surfaces such as black marks, black lines, notches, or holes on the back of the media which do not reflect the sensor's near-infrared light beam back to the sensor's detector. The sensor light and its black-mark detector are positioned next to each other under the sensor cover.

The sensor has single sensor position for Web/Gap media which is its Default position.

The design of the sensor allows the printer to use media with black marks or notches (holes through the media) on the back side of the media (or media liner). The sensor aligns to the middle of the black marks or notches (not to the center of the media roll). This is to avoid Web/Gap sensing array.

1. Position the movable sensor's alignment arrow to the middle of the black mark or notch in the underside of the media.

2. Verify that you have set the sensor alignment as far as possible from the edge of the media but where 100% of the sensor window is covered by the mark.
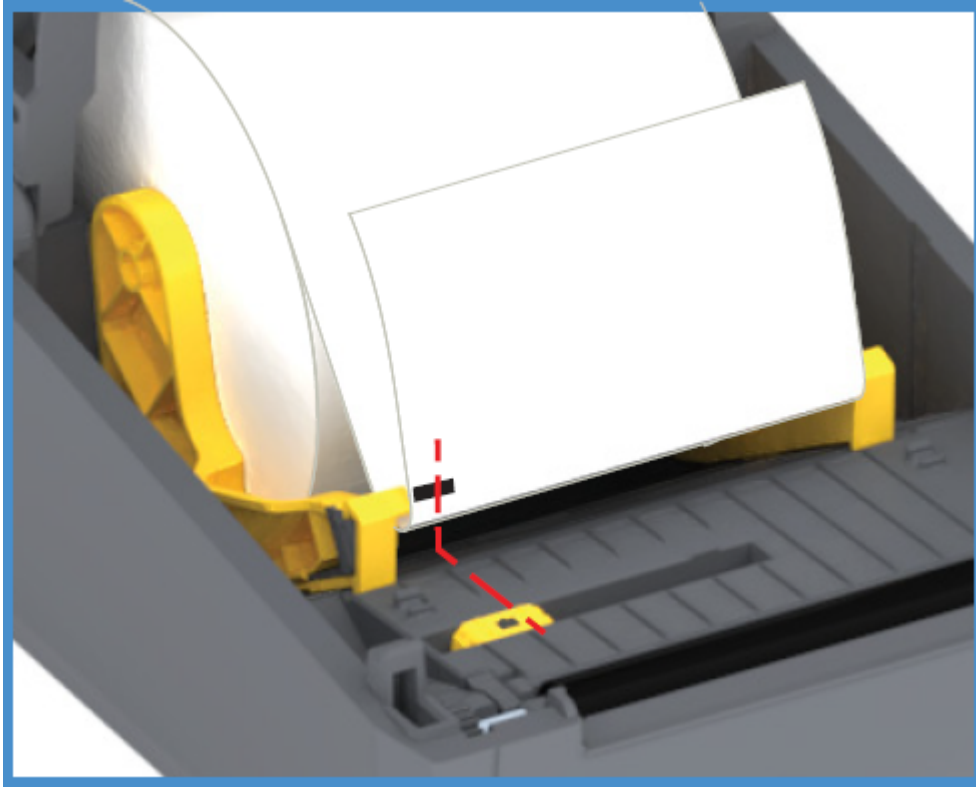
When printing, the media can move from side to side ±1 mm (due to media variations and edge damage due to handling). Notches cut into the side of the media can also become damaged.

Loading Roll Media for Cutter Models

If your printer has the optional cutter module installed, use these instructions to load roll media.

1. Thread the media through cutter's media slot and pull it out the front of the printer.
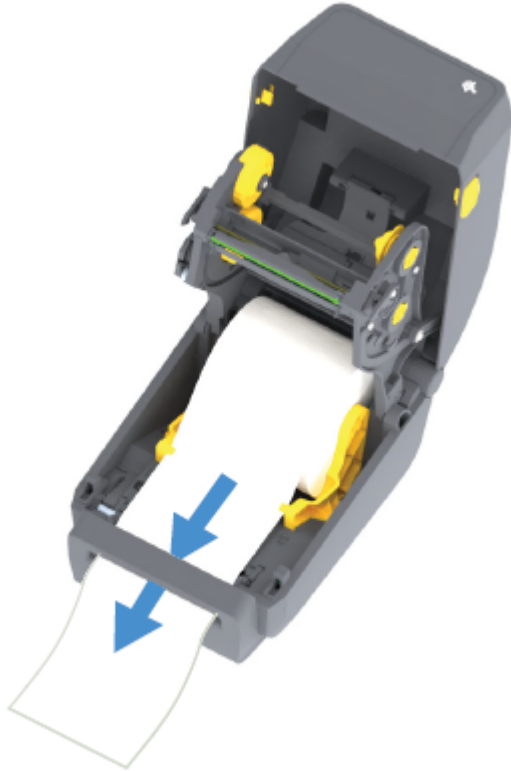
2. Close the printer. Press down until the cover snaps closed.
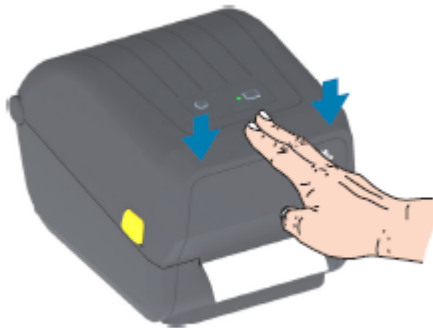
After loading the media, you may need a calibrate your printer for the media (see Running a SmartCal Media Calibration on page 48). The printer's sensors must adjust to sense the label, the liner, and the distance between labels to operate properly.

 NOTE: If you calibrated the sensor for a certain type of media earlier and reload the same media (size, vendor, and batch) without any changes in the media type in between, simply press the **FEED** (Advance) button one (1) time to prepare the new media for printing.

Thermal Transfer Roll Ribbon Loading

Thermal transfer printers have a flexible ribbon system that supports 74-meter and 300-meter ribbons manufactured by Zebra. Your printer ships with 300-meter ribbon adapters to support non-Zebra ribbon rolls.

The 74-meter ribbon used with non-Zebra printers does NOT require non-Zebra ribbon adapters to operate properly.

Transfer ribbons come in several varieties—and in some cases several colors—to match your application needs. Transfer ribbons manufactured by Zebra are specifically designed for use with your Zebra printer and Zebra brand media. For transfer ribbon rolls and other printing supplies, see zebra.com/supplies.

CAUTION—PRODUCT DAMAGE: Using non-Zebra media or ribbons that are NOT approved for use with your Zebra printer may damage your printer or printhead.
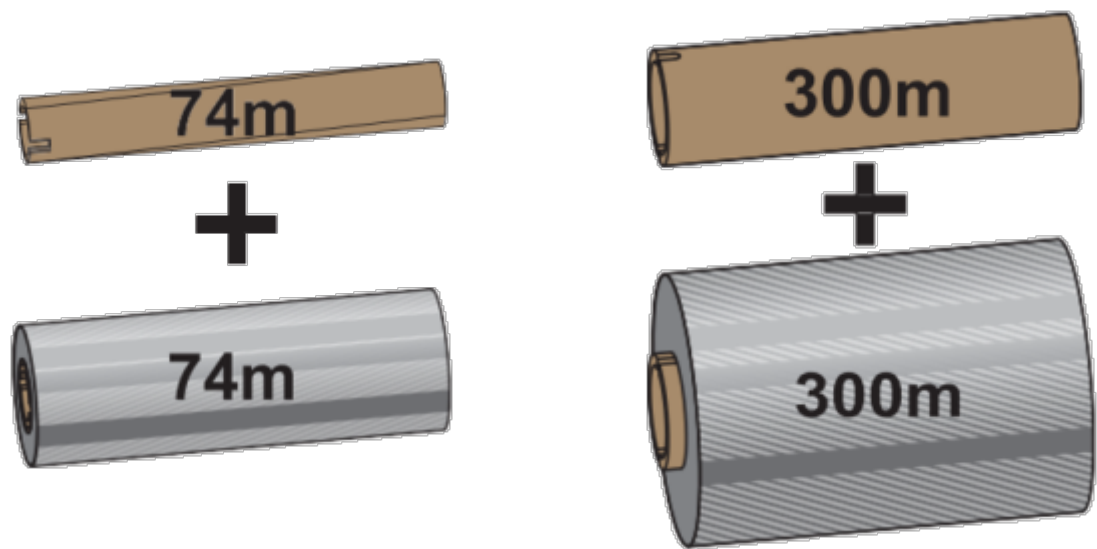
Inner Diameter (I.D.) = 12.2 mm (0.5 in.)   I.D. = 25.4 mm (1.0 in.)

- To ensure optimal print results, match the media and ribbon types.
- To protect the printhead from wear, always use ribbon that is wider than the media.
- For printing on Direct Thermal media, do NOT load ribbon in the printer. See Determining Thermal Media Types on page 131.
- To avoid ribbon wrinkling and other print problems, always use an empty ribbon core that matches your transfer ribbon roll's inner diameter (I.D.).

Your printer requires ribbons manufactured by Zebra that have a ribbon-out trailer (reflector). When the printer senses this trailer, it recognizes that the transfer ribbon roll has been used up and it stops printing. In addition, ribbons and ribbon cores manufactured by Zebra include notches to help maintain ribbon-roll engagement and drive (without slipping) while printing.

Zebra-manufactured ribbons for your printer include:

- Performance Wax
- Premium Wax/Resin

38

- Performance Resin for synthetics (6 inches per second or ips maximum speed) and coated paper (4 ips maximum speed)

- Premium Resin for synthetics (4 ips maximum speed)

IMPORTANT: If using 74-meter ribbons, DO NOT pair them with early-model desktop printer ribbon cores! These older cores are too large. You can identify the older-style ribbon cores (and some Non-Zebra ribbons) by notches seen ONLY on one side of the ribbon core.

IMPORTANT: DO NOT use ribbon cores that have damaged notches (rounded, frayed, smashed, etc.) The core notches must be square to lock the core onto the spindle. Otherwise, the core may slip and cause ribbon wrinkle, poor end-of-ribbon sensing, or other intermittent failures.

Loading Zebra Transfer Roll Ribbon

Follows these steps to load the ribbon.

Prepare the ribbon by removing its wrapping and pulling its adhesive strip free.

Verify that the ribbon and empty ribbon core have notches on the left side of the ribbon cores as shown here. (If they do not, see)
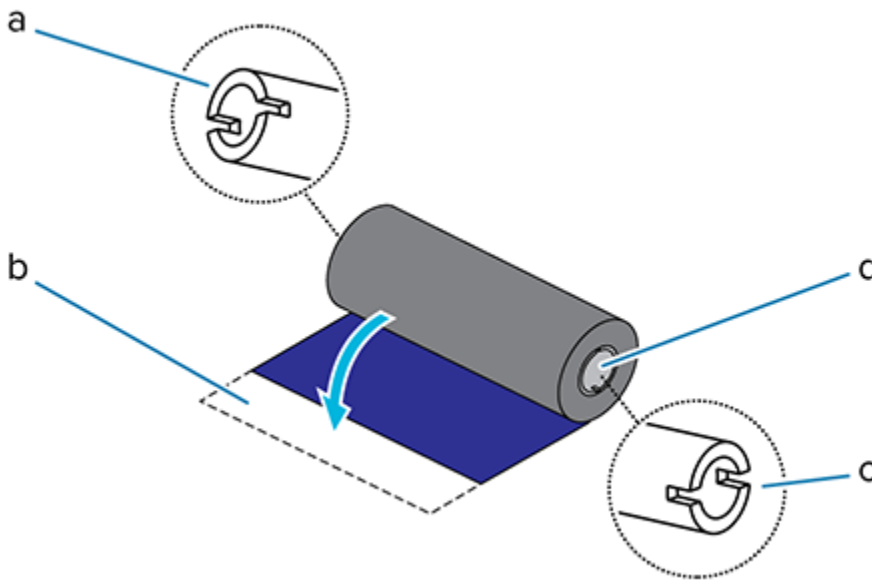
a	Notch (required on left side of ribbon)
b	Adhesive strip
c	Notches are also on the right side of the 74-meter ribbon
d	Right side (printer and roll)

1. With the printer open, place an empty ribbon core on printer's take-up spindles. Push the right side of the empty core onto the spring loaded spindle (right side). Align the core with the center of the left side spindle's hub and rotate the core until the notches align and lock.

NOTE: You can find your first ribbon take-up core in the packing box. Subsequently, use the empty supply core from the supply spindle for the next roll of ribbon.

2. Place a new ribbon roll on printer's lower ribbon supply spindle. Push it onto the right spindle and lock the left side the same as the take-up mounting the take-up core.

74m

300m
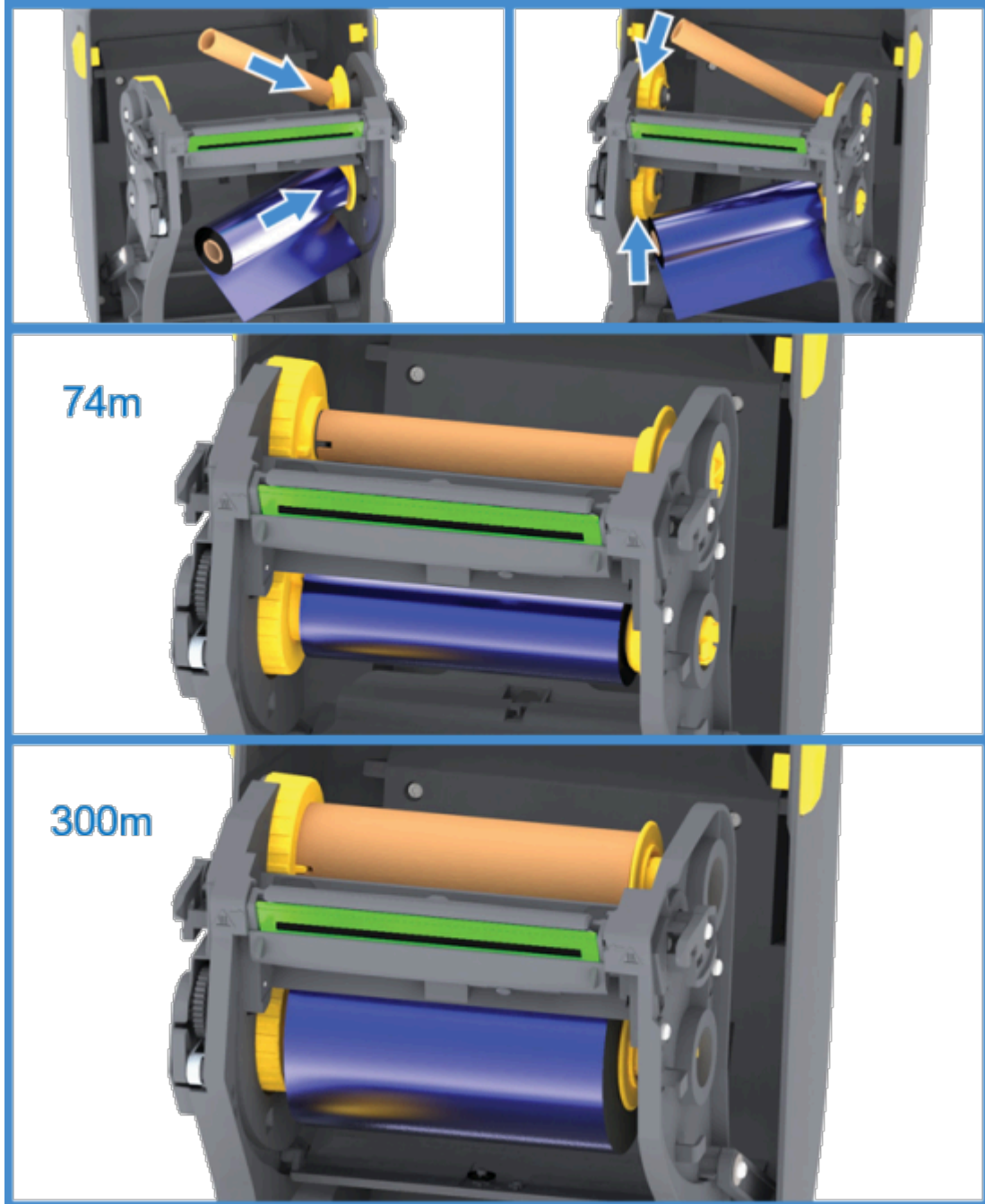
3. Attach the ribbon to the take-up core. Use the adhesive strip on new rolls; otherwise, use a thin strip of tape. Align the ribbon so that it will be taken straight onto the core.
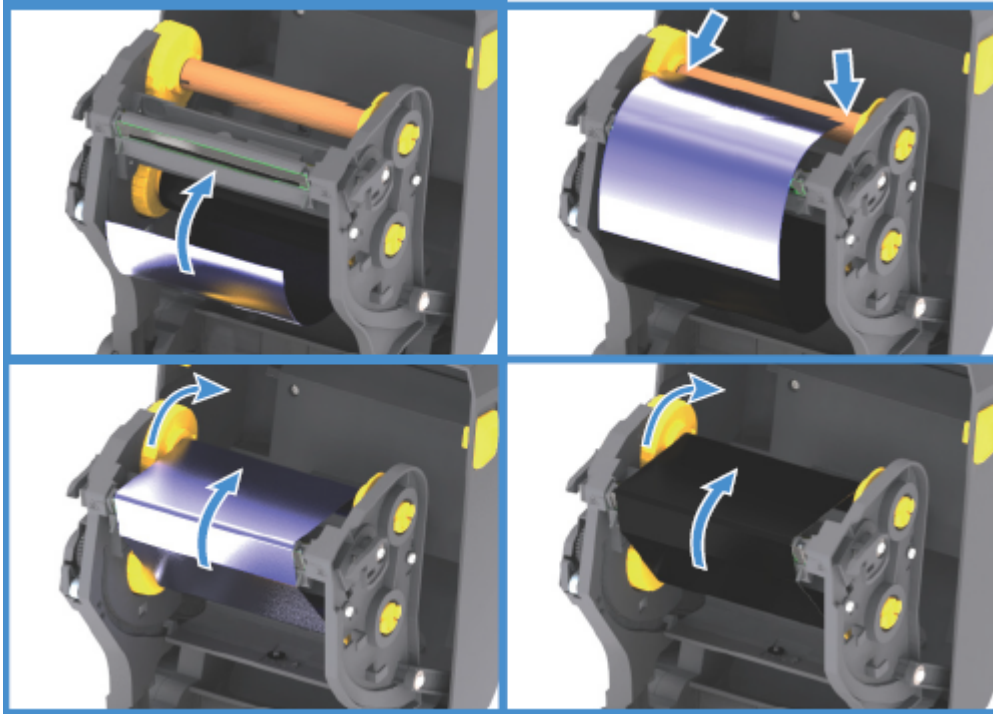
4. Turn the ribbon take-up hub with the top moving toward rear to remove slack from the ribbon. Rotating the hub helps to finish aligning the take-up ribbon position to the supply ribbon roll. The ribbon leader should be completely covered by the ribbon.

5. Verify that the media is loaded and ready to print and then close the printer cover.

6. If printer power is ON, press **FEED** to have the printer advance a minimum of 20 cm (8 in.) of media to straighten the ribbon and remove any slack and ribbon wrinkle and align the ribbon on the spindles. (Otherwise, wait to power the printer ON until you are instructed to do so during the setup process by the Installation Wizard.)

7. Use the printer driver, application software, or printer programming commands to change the print mode setting from Direct Thermal to Thermal Transfer.

| Option	Description
When controlling printer operations with ZPL programming...	Refer to the Media Type ZPL II command (`^MT` and, follow the instructions, in the ZPL Programming Guide).
When controlling printer operations with EPL Page Mode...	Refer to the Options EPL command (`O`), and follow the instructions, in the EPL Page Mode Programmer's Guide).

This sets the printer's temperature profiles for thermal transfer media.

8. To verify the mode change from Direct Thermal printing to Thermal Transfer printing, print a configuration label (see Test Printing with the Configuration Report on page 49).

   The `PRINT METHOD` on the printer configuration status report should read `THERMAL-TRANS`.

Your printer is now ready to print.

Loading Non-Zebra 300-Meter Transfer Ribbon

To load non-Zebra 300-meter transfer ribbon onto your printer, you will need Zebra ribbon core adapters.

The minimum requirements to use non-Zebra 300-meter ribbons with your printer are:

Inside core diameter (I.D.)	25.4 mm (1.0 in., with a range of 1.004 to 1.016 in.)
Inside core material	Fiberboard (hard materials such as plastic cores may NOT function correctly)
Ribbon width range	33 mm to 110 mm (1.3 to 4.3 in.)
Ribbon's maximum outer diameter (O.D.)	66 mm (2.6 in.)

CAUTION—PRODUCT DAMAGE: Using non-Zebra media or ribbons not approved for use in your Zebra printer may damage your printer or printhead. Image quality may also be affected by:

- poor or marginal ribbon performance (maximum print speed, ink formulation, etc.)
- core material that is too soft or too hard)
- loose or tight ribbon core fit or a ribbon core that exceeds the maximum outer diameter of 66 mm)

The adapters help you align the ribbon and core to the media (and printer's) center. They include a 'core lock' spring to engage the soft fiberboard inside the ribbon core and scale (measured from the printer's center-line) when mounted in the printer.
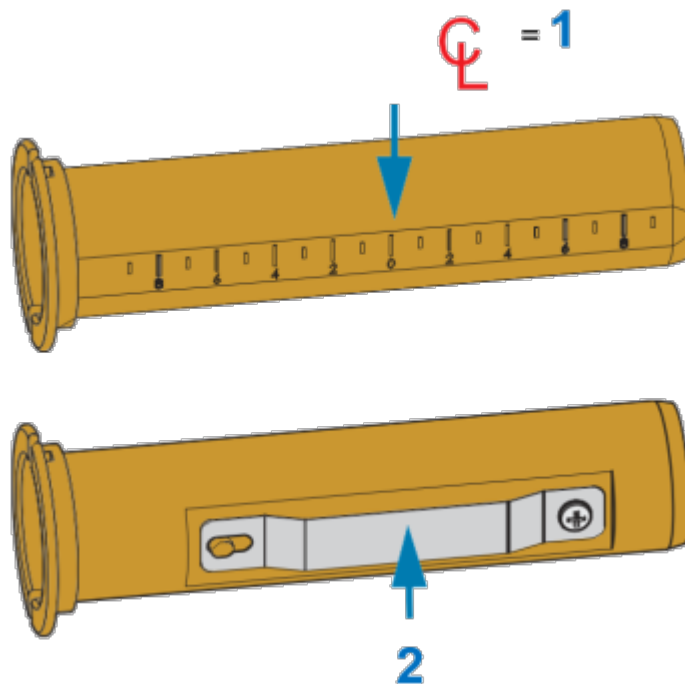
1	Center line
2	Core lock spring

1. Load an empty ribbon core onto a ribbon core adapter. The empty ribbon core should be the same width (or larger) than the ribbon roll. Roughly center the core over the adapters center line.

NOTE: An empty Zebra ribbon core may be used instead of the adapter and empty non-Zebra ribbon core. One 300-meter empty ribbon core is supplied with your printer.

2. Load the non-Zebra ribbon roll onto the ribbon-core adapter. Orient the adapter flange on the left side and verify that the ribbon unwraps on the backside of the roll as shown here. Roughly center the core over the center line (CL) of the adapter.
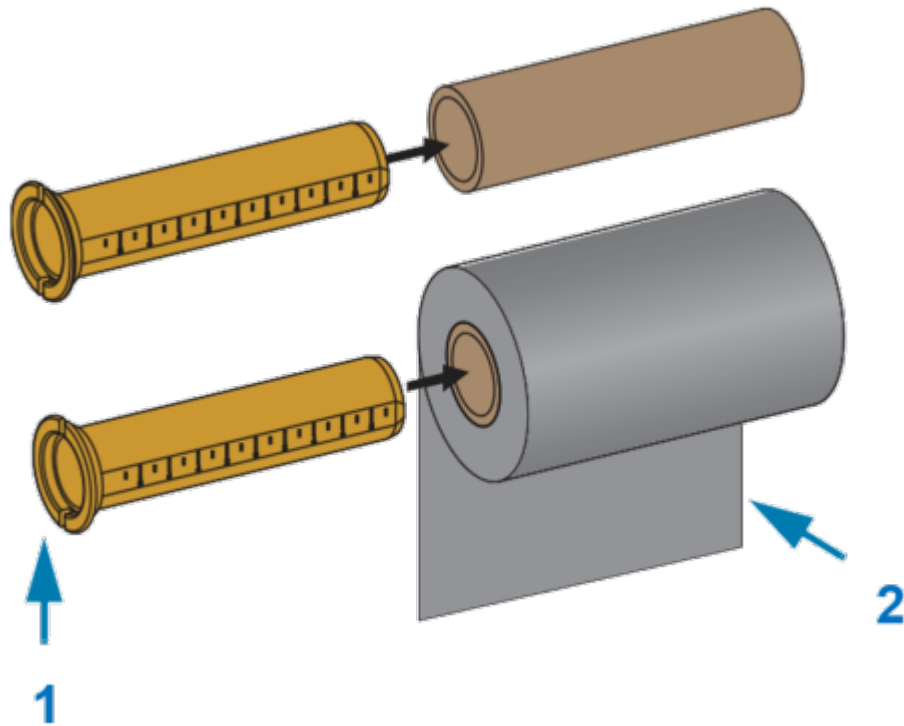
1	Flange – place on left
2	Ribbon exiting the roll in the back

NOTE:

The maximum roll width of 110 mm (4.3 in.) does NOT require centering.

For media less than maximum width down to the minimum width of 33 mm (1.3 in.), use the graduated scale on the adapter core to align the ribbon rolls to the media and printer.
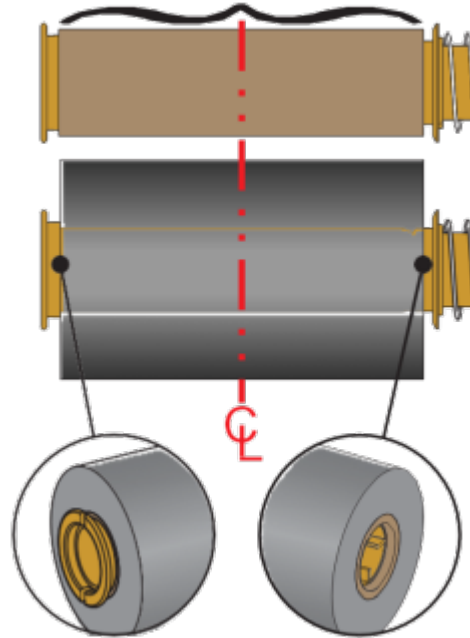
Width = 110 mm (4.3 in.)	Width = 33 mm (1.3 in.)
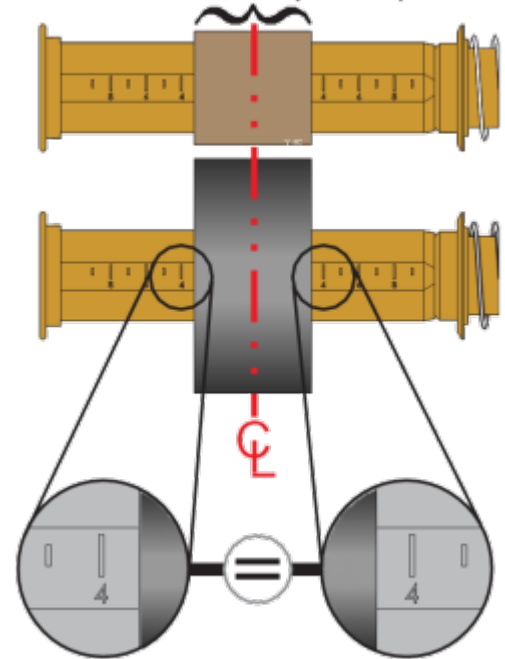
3. Place the adapter with an empty core on the take-up spindles and the adapter with the ribbon roll on the lower supply spindles. The right side of the core adapter fits on the cone-tip on each of the spring-loaded right-side spindles. Continue pushing the adapter onto right-side spindle and swing

the adapter onto the left-side spindle hubs. Rotate the adapters and hubs until the notches on the adapters flange align and lock on the left spindles' hub spokes.
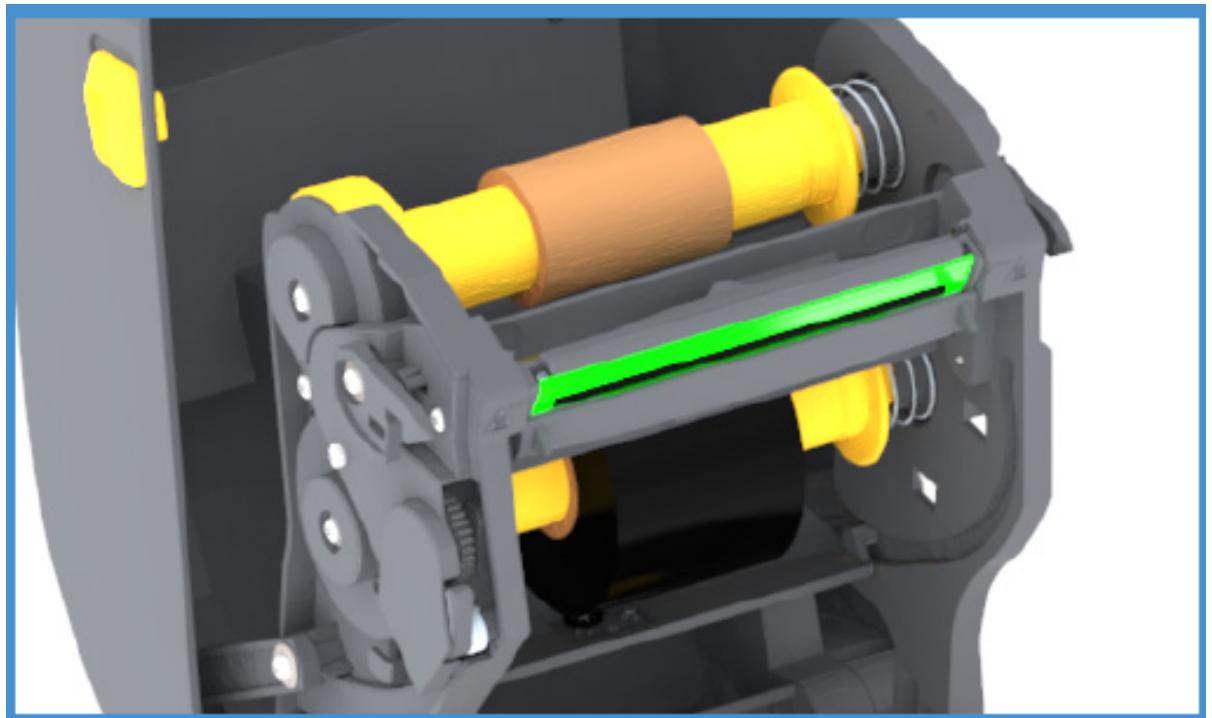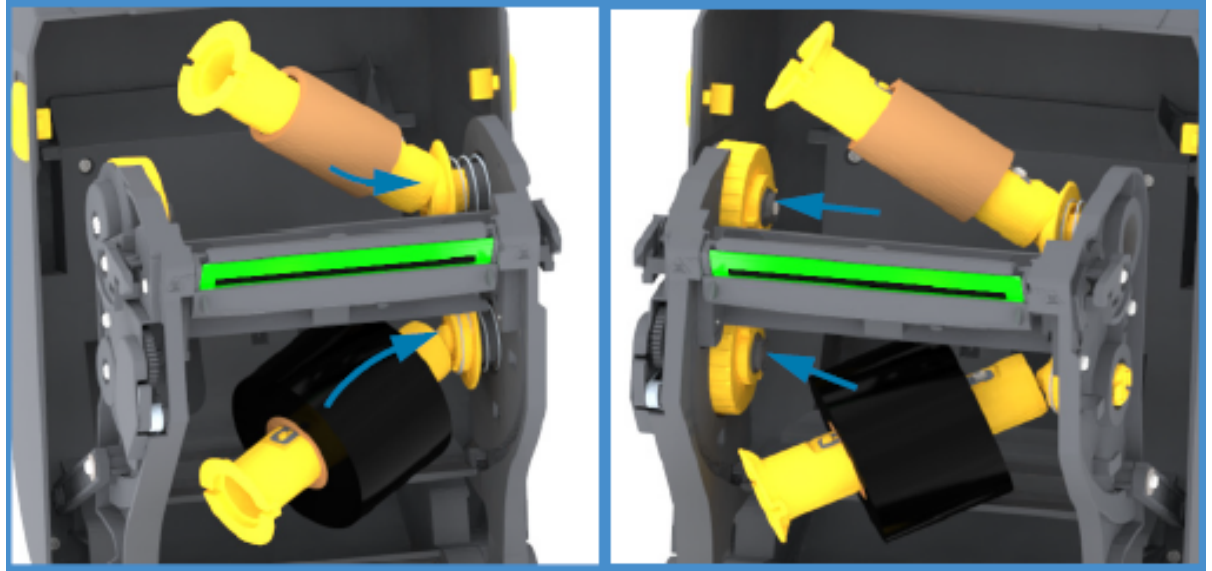
4.   As you completed the steps so far, the ribbon and empty cores may have been bumped off center. Verify that the ribbon roll and empty core are aligned to the center of the media (labels, paper, tags, etc.). You can use the center-line scales on the ribbon core adapter to place their positions.

⚠ **IMPORTANT:** The ribbon must be wider than the media (including the label liner or backing) to protect the printhead.
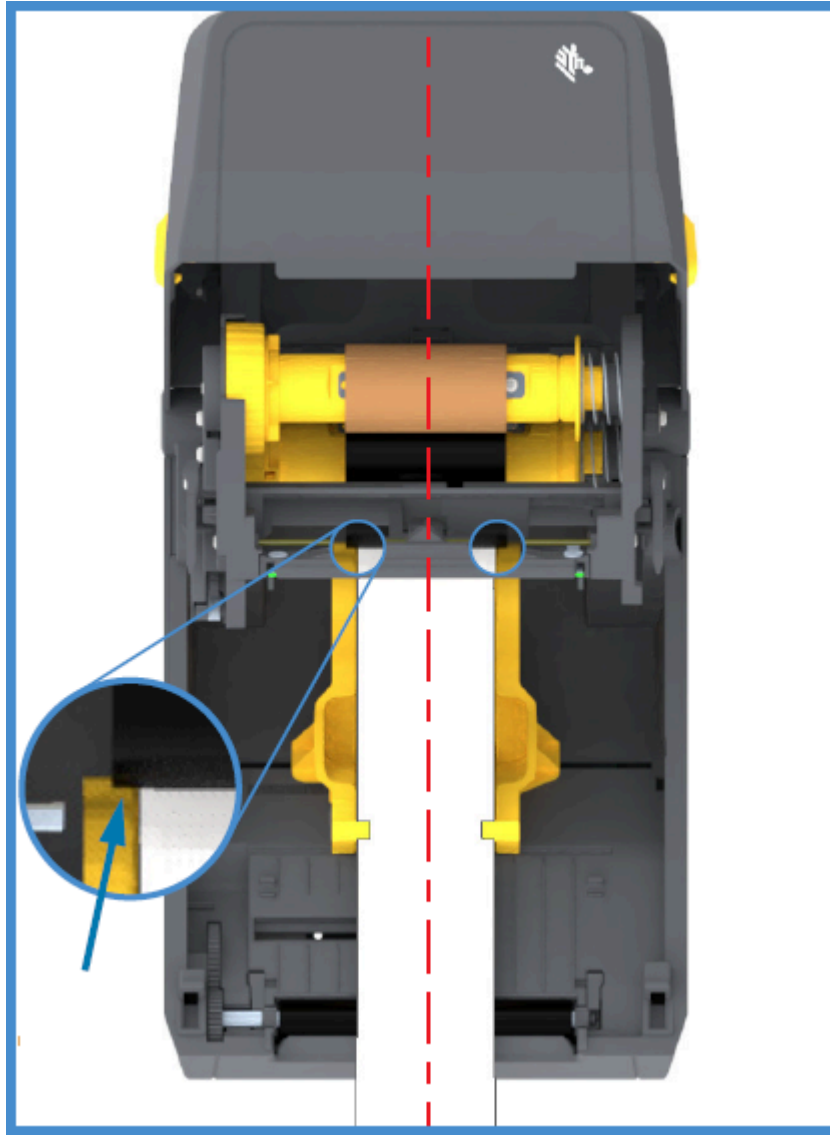
⚠ **IMPORTANT:** As shown by the arrow on this image, make sure the ribbon extends past the media on both sides for proper center alignment.

5.   Attach the ribbon to the take up core. If your media does not have an adhesive strip on the ribbon leader as Zebra-manufactured ribbon does, use a thin strip of tape to secure the ribbon to the take-up core. Align the ribbon so that it will be taken straight onto the core.
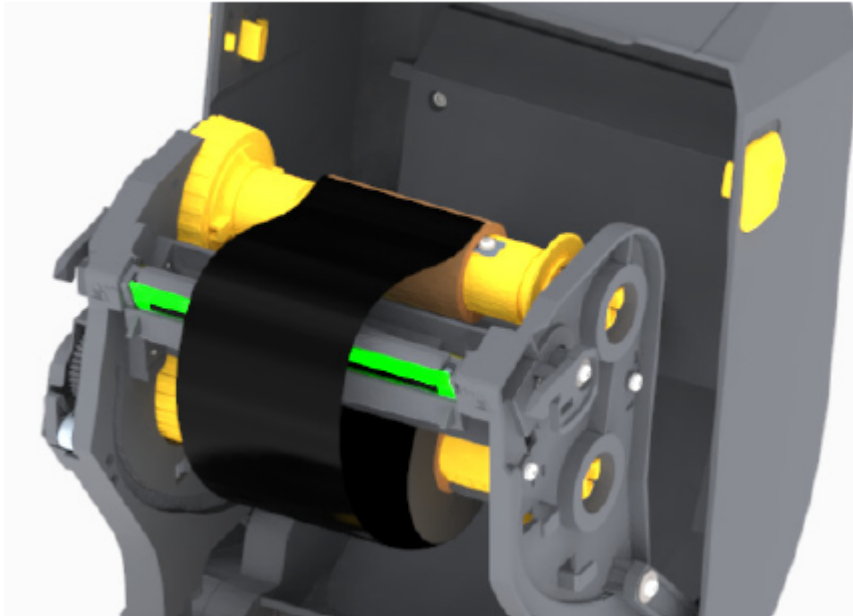
6.   Turn the ribbon take-up hub with the top moving towards the rear to remove slack from the ribbon. Rotate the hub to finish aligning the take-up ribbon position with the supply-ribbon roll. The ribbon should be wound, at a minimum, one-and-a-half times around the take-up ribbon core.
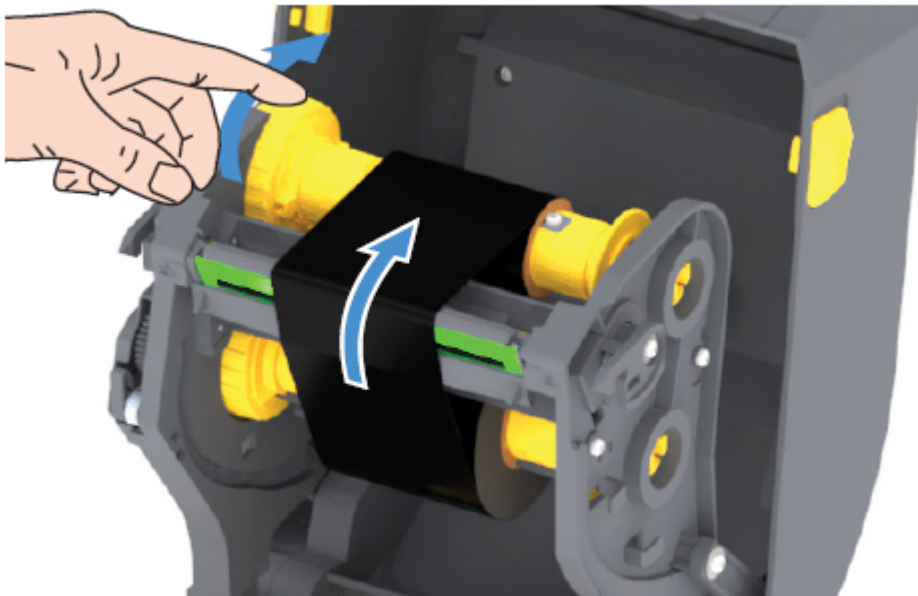
7.   Verify that the media is loaded and ready to print, then close the printer cover.

8.   If printer power is ON, press **FEED** to advance a minimum of 20 cm (8 in.) of media to remove slack and ribbon wrinkle (straighten the ribbon), and align the ribbon on the spindles. Otherwise, wait to

power the printer ON until you are instructed to do so during the setup process by the Installation Wizard.

9. Use the printer driver, application software, or printer programming commands to change the print mode setting from Direct Thermal printing to Thermal Transfer.

When controlling printer operations with ZPL programming...	Refer to the Media Type ZPL II command (`^MT`), and follow the instructions, in the ZPL Programming Guide).
When controlling printer operations with EPL Page Mode...	Refer to the Options EPL command (`O`), and follow the instructions, in the EPL Page Mode Programmer's Guide).

This sets the printer's temperature profiles for Thermal Transfer media.

10. To verify the mode change from Direct Thermal printing to Thermal Transfer printing, print a configuration label (see Test Printing with the Configuration Report on page 49).

The `PRINT METHOD` on the printer configuration status report should read `THERMAL-TRANS`.

Your printer is now ready to print.

Running a SmartCal Media Calibration

The printer must set media parameters for optimal operation prior to printing. To do this, it automatically determines the media type (web/gap, black mark/notch, or continuous) and the measure media characteristics.

> **NOTE:** After initial calibration to a specific media is complete, additional calibrations are not necessary after you load a new batch as long as the newly-loaded media is of the same type as the prior media. The printer will automatically measure the new batch and adjust for any small changes in its characteristics when printing.

After you load a roll of new media from the same batch, press the **FEED** (Advance) once or twice to synchronize the labels. This readies the printer to continue printing using the new batch of media.

1. Make sure the media and ribbon (if you are thermal transfer printing) are loaded properly in the printer and the top cover of the printer is closed.

2. Press **POWER** to turn the printer on and wait until the printer is in the Ready state (the STATUS Indicator lights up solid green).

3. Press and hold **FEED** for two seconds, until the STATUS Indicator flashes one time. Continue to hold **FEED** until it has flashed two more times, then immediately release the button.
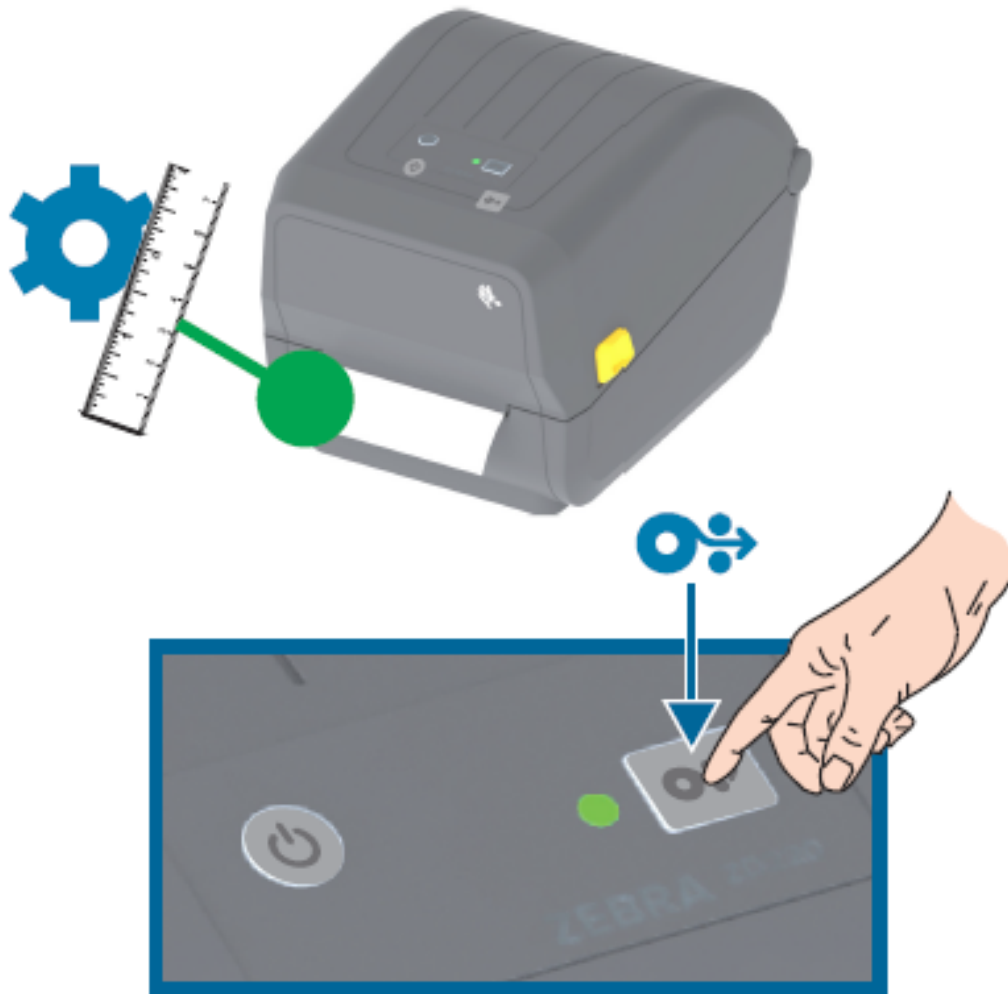
The printer will measure a few labels and adjust media sensing levels. When it has completed measuring, the STATUS indicator will turn solid green.

Test Printing with the Configuration Report

Before you connect the printer to a computer, make sure that the printer is in proper working order. You can do this by printing a configuration report.

The information in the Configuration Report may be help with printer installation and troubleshooting.

1. Make sure the media (and ribbon, if you printing on Thermal Transfer media) are loaded properly in the printer and the printer's top cover is closed.

2. Turn printer power ON.

3. After the printer is ready (STATUS indicator lights up solid green), press and hold **FEED** for approximately two seconds, until the STATUS Indicator blinks once, then release the button.

The Printer and Network Configuration Reports prints. When the printer stops, the STATUS Indicator turns solid green.
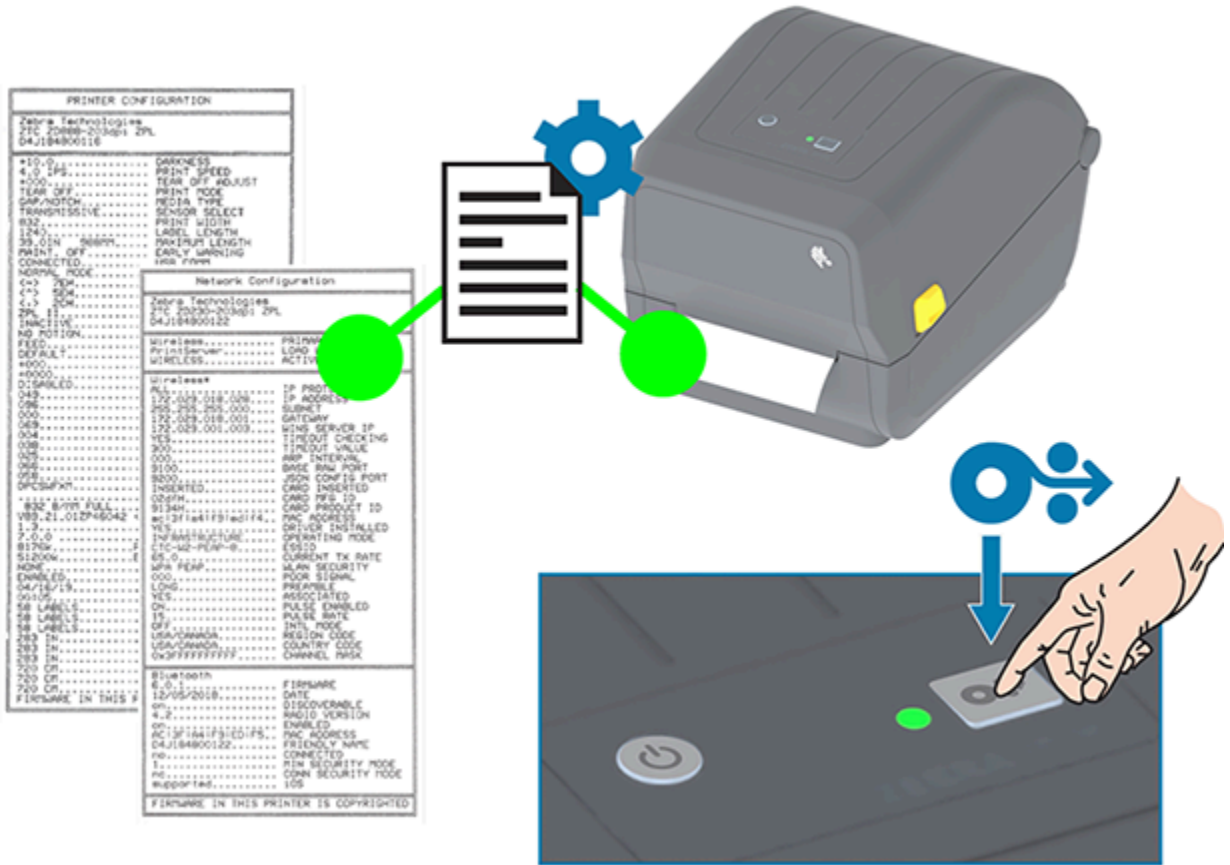
If you cannot get these reports to print, see Troubleshooting on page 111.

Detecting a Media-Out Condition

When you run out of media, your printer will report a Media Out condition with the STATUS Indicator flashing red. This is part of the normal media usage cycle.
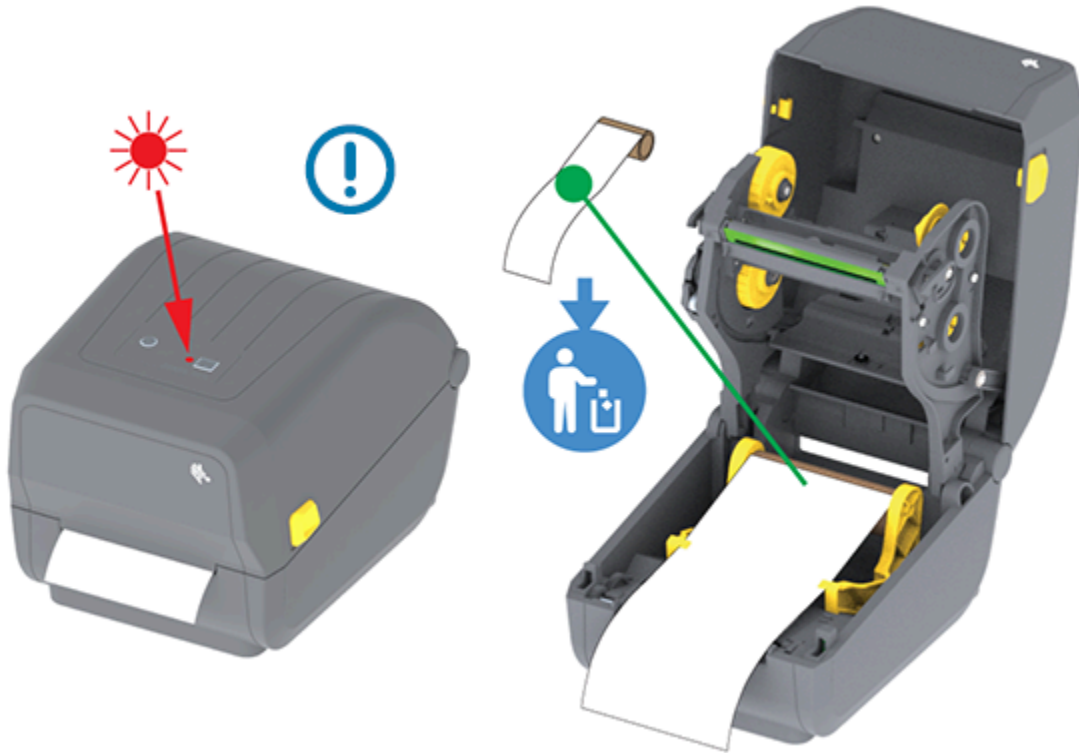
Recovering from a Media-Out Condition

1. Open the printer (see).

   ✎ **NOTE:** When you observe the media, it should be either either at the end or nearly at the end of the roll, with a label missing from the liner.

2. Remove the remaining media and roll core.

3. Insert a new roll of media. (See and if your printer has the optional factory-installed-only cutter module.)

If you are installing more of the same media…	Load the new media and press **FEED** (Advance) once to resume printing.
If you are loading different media (different size, vendor, or batch)…	Load the new media and calibrate the printer to the media to ensure optimal operation. (See Running a SmartCal Media Calibration on page 48.)

✎ **NOTE:** If you load media of a different size (length or width), you will usually have to change the programmed media dimensions or the active label format in the printer.

⊙ **IMPORTANT:** Sometimes a label may be missing somewhere in the middle of your roll of labels (instead of at the end of the media roll). In addition to reaching the end of a roll, this will also cause a 'Media Out' condition. To recover from this condition:

1. Pull the media past the missing label until the next label is over the platen roller.

2. Close the printer.

3. Press **FEED** (Advance) once.

The printer will resynchronize the label position and be ready to resume printing.

Detecting a Ribbon-Out Condition

The printer reports a Media Alert for a Ribbon Out condition when it runs out of ribbon.

The printer auto-detects the silvery reflector on the end of Zebra-brand roll of ribbon and displays a Media Alert (STATUS Indicator is Flashing Red). This is part of the normal media usage cycle.
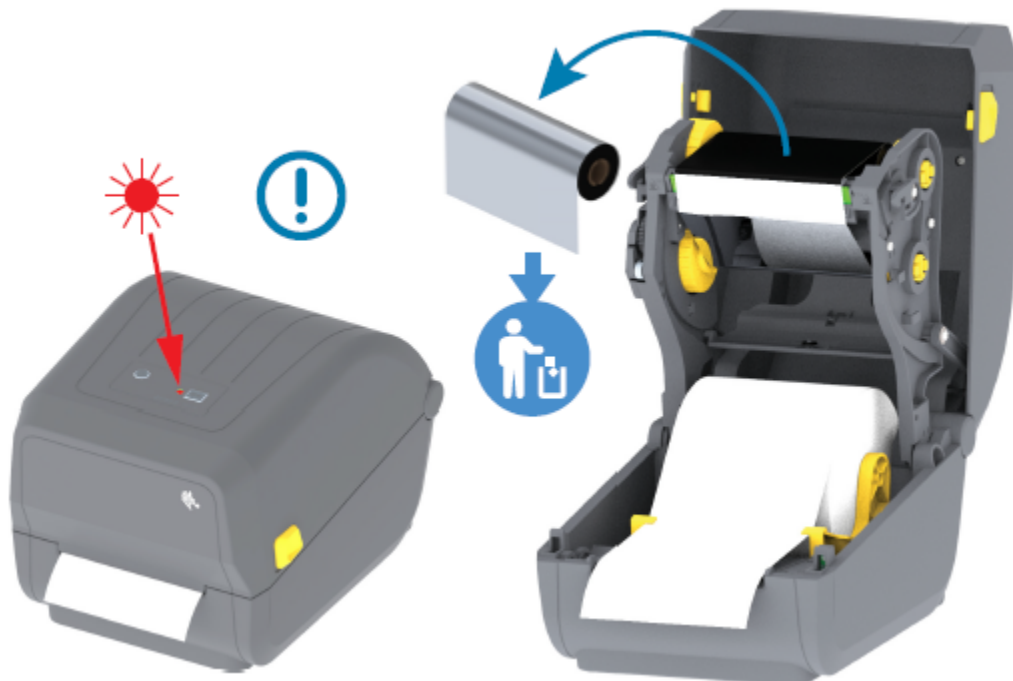
Recovering from a Ribbon-Out Condition

Follow these steps to recover from a ribbon-out condition.

1. Open the printer (see Opening and Closing the Printer on page 14).

NOTE: Observe that the reflective ribbon (used to detect end of ribbon) is exposed on the underside of the ribbon cartridge or ribbon roll. The front ribbon/top roll is also full.

2. Remove the full roll of used ribbon from the take-up spindles and dispose of it.

3. Move the now-empty supply ribbon roll core (situated towards the bottom/back of the ribbon carriage) up so you can replace the discarded take-up roll..

4. Load the new ribbon roll. See Thermal Transfer Roll Ribbon Loading on page 38.

5. Press the **FEED** (Advance) button once to resume printing.

Connecting Your Printer to a Device (Process Overview)

Zebra printers support a variety of interface options and configurations to enable network and physical cable connections.

1. Decide how you will connect to the printer.

   Your printer supports these interface options and configurations:

   - Universal Serial Bus (USB 2.0) interface—Standard (see Interface Cable Requirements on page 53 and USB Interface on page 54 for cable requirements).

   - Ethernet/LAN—factory-installed option (see Interface Cable Requirements on page 53 and Ethernet (LAN, RJ-45) on page 54 for cable requirements).

   - Internal Wi-Fi (802.11ac) and Bluetooth Classic 4.1 (3.0 Compatible)—factory-installed option

   NOTE: Zebra ZD Series printers equipped with the Wi-Fi connectivity option support Bluetooth Low Energy (low-speed connection). You can configure them using software running on an Android or iOS device.

   Be sure to review the cabling and unique parameters for each physical printer communication interface. This will help you set up the printer with the correct settings. For detailed instructions on configuring network (Ethernet/Wi-Fi) and Bluetooth communication, see the Wired and Wireless Print Server User Guide and the Bluetooth Wireless Guide available from zebra.com.

2. Switch printer power OFF (see POWER Button on page 22).

3. Connect the printer to the computer or device you will use to manage the printer using your selected connection method (USB, Ethernet/LAN, WiFi, or Bluetooth).

4. Run Zebra Setup Utilities (ZSU) from your central device (see Running the Printer Installation Wizard on page 66).

   The central device may be a Windows PC or laptop running the operating systems listed in Setup for Windows OS on page 63, an Android device, or an Apple device. Supported printer connection options are Wired/Ethernet, USB, and Wireless, Bluetooth Classic, and Bluetooth Low Energy (Bluetooth LE).

   Zebra Setup Utilities (ZSU) are designed to assist you with installing these interfaces. (For ZSU user guides, go to zebra.com/setup.)

   IMPORTANT: Wait to turn printer power ON until you are instructed to do so by the Installation Wizard. Keep the power switch in the OFF position when attaching the interface cable. The power cord must be inserted into the power supply and the power receptacle on the back of the printer before you connect or disconnect the communications cables.

   The ZSU wizard installs the Zebra Windows drivers.

5. When the ZSU installation wizard prompts you do to so, turn printer power ON, then follow the on-screen instructions to complete the printer setup.

Interface Cable Requirements

Data cables must be of fully-shielded construction and fitted with metal or metalized 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 (1.83 m [6 ft.] recommended).

- Do NOT tightly bundle the data cables with power cords.

- Do NOT tie the data cables to power wire conduits.

IMPORTANT: This printer complies with FCC Rules and Regulations, Part 15, for Class A Equipment, using fully-shielded data cables. Use of unshielded cables may increase radiated emissions above the Class A limits.

USB Interface

Universal Serial Bus (version 2.0 compliant) provides a fast interface that is compatible with your existing PC hardware. The USB plug-and-play design eases the installation process, and multiple printers can share a single USB port/hub.
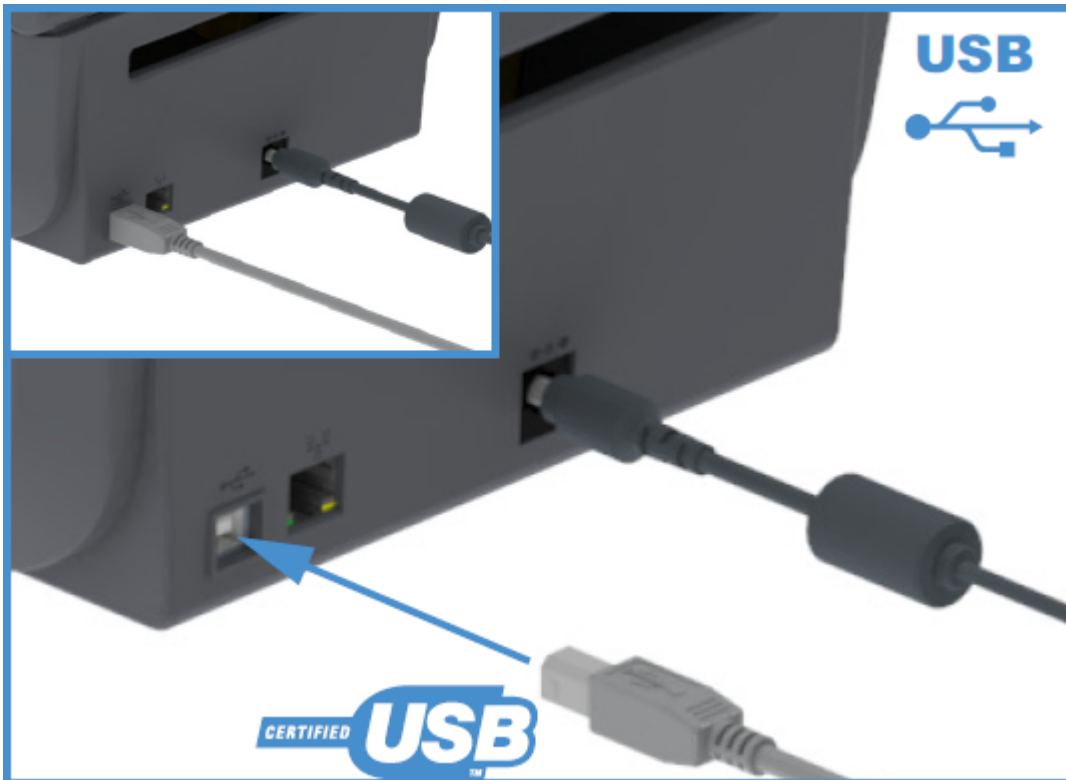
When selecting a USB cable for use with your printer, verify that the cable or cable packaging bears the Certified USB mark to guarantee USB 2.0 compliance.

Ethernet (LAN, RJ-45)

Your printer requires UTP RJ-45 Ethernet cable rated CAT-5 or better.

Your printer must be physically connected to your Ethernet/LAN network using the appropriate cable and be configured properly to make a network connection and operate on your network.
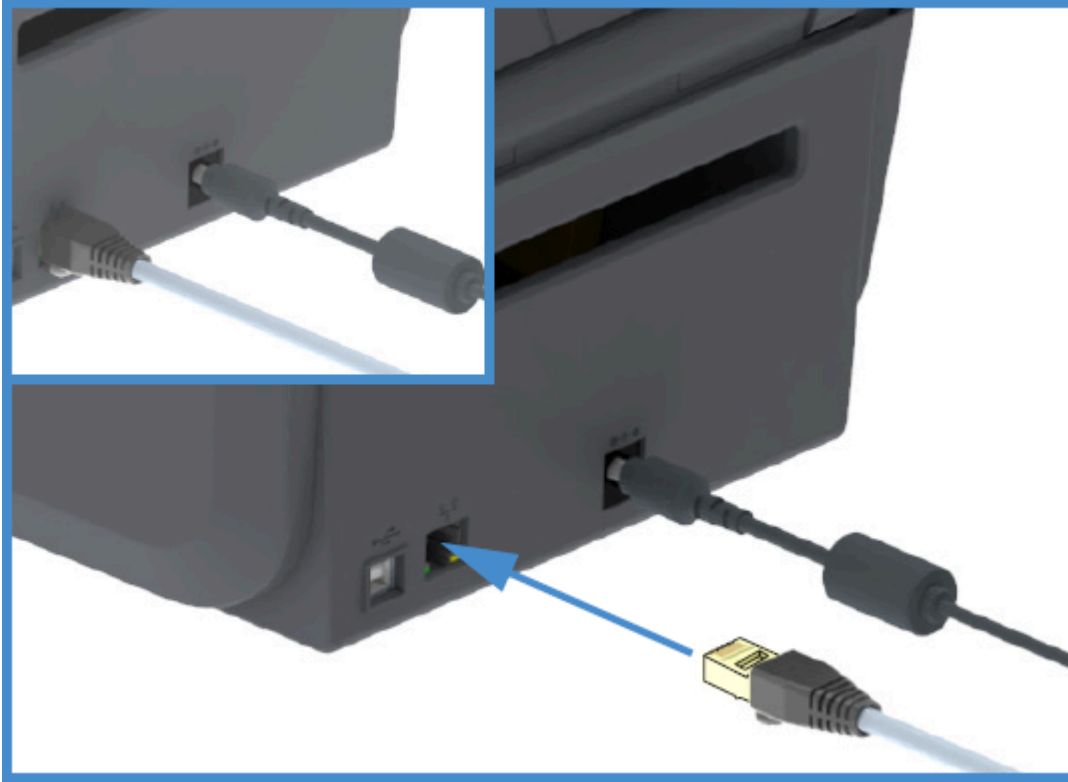
The printer includes an in-built network print server which can be accessed through the printer's print server web pages.

✎ **NOTE:** For information on how to configure your printer to run on a compatible Ethernet/LAN, see the Wired and Wireless Print Server User Guide.

Ethernet Status/Activity Indicators

The Ethernet connector on the printer has two partially visible status/activity indicators which provide interface status at the connector.

LED Status	Description
Both OFF	No Ethernet link detected.
Green	100 Mbps link detected.
Green with the Amber flashing	100 Mbps link and Ethernet activity detected.
Amber	10 Mbps link detected.
Amber with the Green flashing	10 Mbps link and Ethernet activity detected.

Assigning an IP Address for Network Access

All devices on an Ethernet network (LAN and WLAN) including your printer require a network IP (Internet Protocol) address.

You will need the printer's IP address to access the device for printer configuration and for printing.

There are five ways to assign an IP address:

- DHCP (Dynamic Host Configuration Protocol) (default setting)
- Zebra Setup Utilities (includes the ZebraDesigner Windows printer driver)
- Telnet
- Mobile Apps
- ZebraNet Bridge.

DHCP for Personal Networks

Your printer is set to operate on an Ethernet LAN or Wi-Fi network with DHCP by default.

This setting is intended primarily for personal networks. The network automatically provides a new network IP address each time printer power is turned ON.

The Windows printer driver uses a Static IP address to connect to the printer. You must change the IP address set in the printer driver to access the printer if its assigned IP address has changed after initial printer installation.

Using Your Printer on a Managed Network

Using the printer in a structured network (LAN or Wi-Fi) requires a network administrator to assign the printer a Static IP address and establish other settings that your printer needs to operate on the network.

Print Server User ID and Password Defaults

You will need the default User ID and/or default password for the printer's in-built print server to access some printer's features and its WiFi option.

Factory default User ID: `admin`

Factory default Password: `1234`

Wi-Fi and Bluetooth Classic Wireless Connectivity Option

This user guide covers only basic configuration of your Internal Wi-Fi Print Server and Bluetooth Classic 4.X wireless connectivity options as described in Setting Up the Wi-Fi Print Server Option on page 69 and Configuring the Printer Using Bluetooth on page 79.

For details on your printer's Ethernet and Bluetooth operations, see the Wired/Wireless Print Server User Guide and the Bluetooth Printer Management Guide available from zebra.com.

What To Do If You Forget to Install the Printer Drivers First

If you plug your Zebra printer into a power source and printer power is turned ON before installing the drivers, the printer displays as an Unspecified device on your host computer. Use this procedure to make sure the printer is identifiable by name on your host device.

NOTE: The images in this section depict screens for Windows 10. The screens that display for you depend on the operating system.

1. From the **Windows** menu, open the **Control Panel**.

2. Click **Devices and Printers**.

   In this example, the ZTC ZT320-203dpi ZPL is an incorrectly installed Zebra printer.

3. Right-click on the icon representing the device, then select **Properties**.

   The properties for the device display.
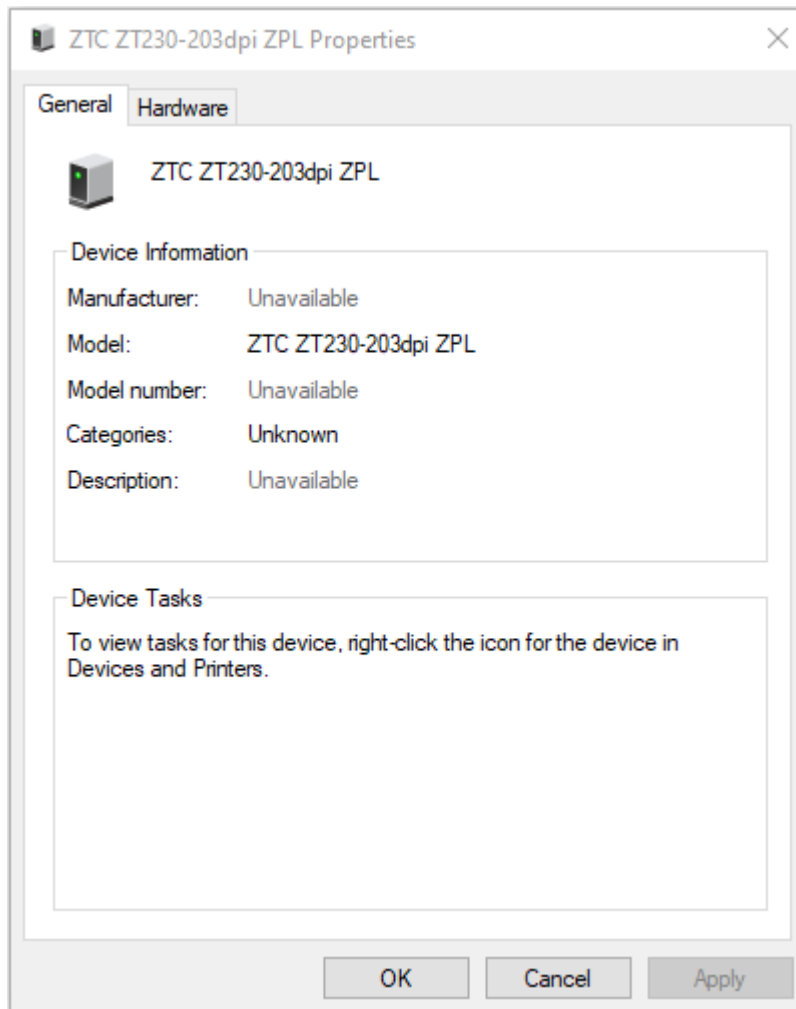
4. Click the **Hardware** tab.
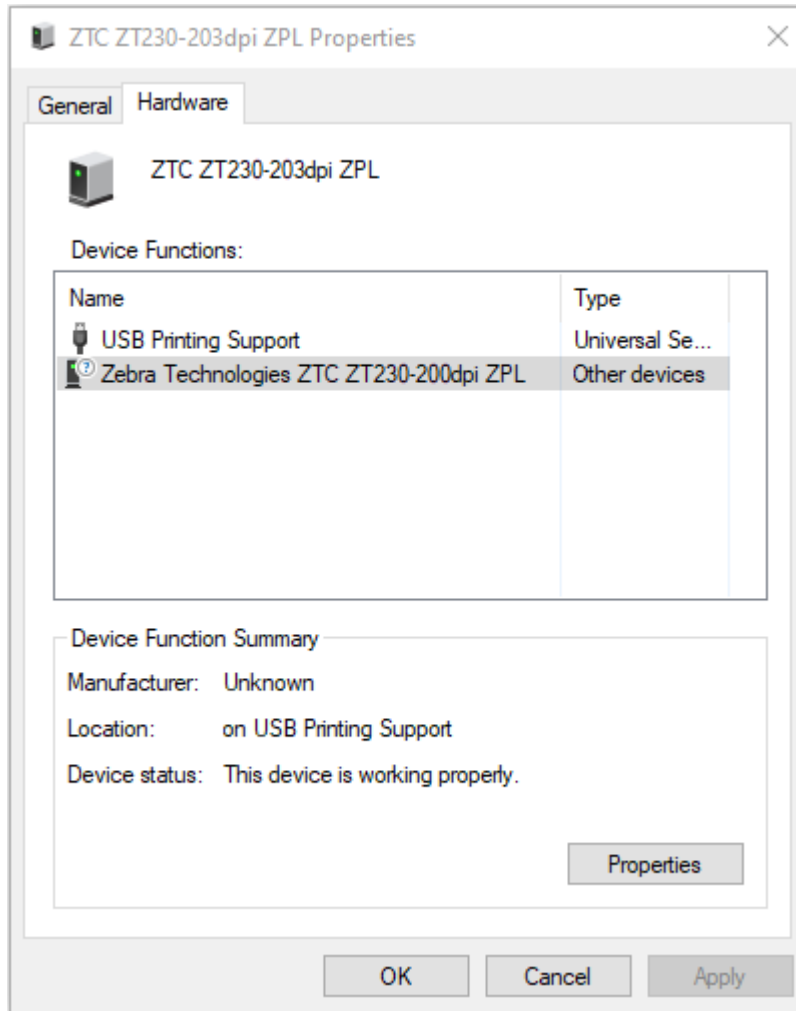
5. Select the printer in the **Device Functions** list, and then click **Properties**.

The properties display.
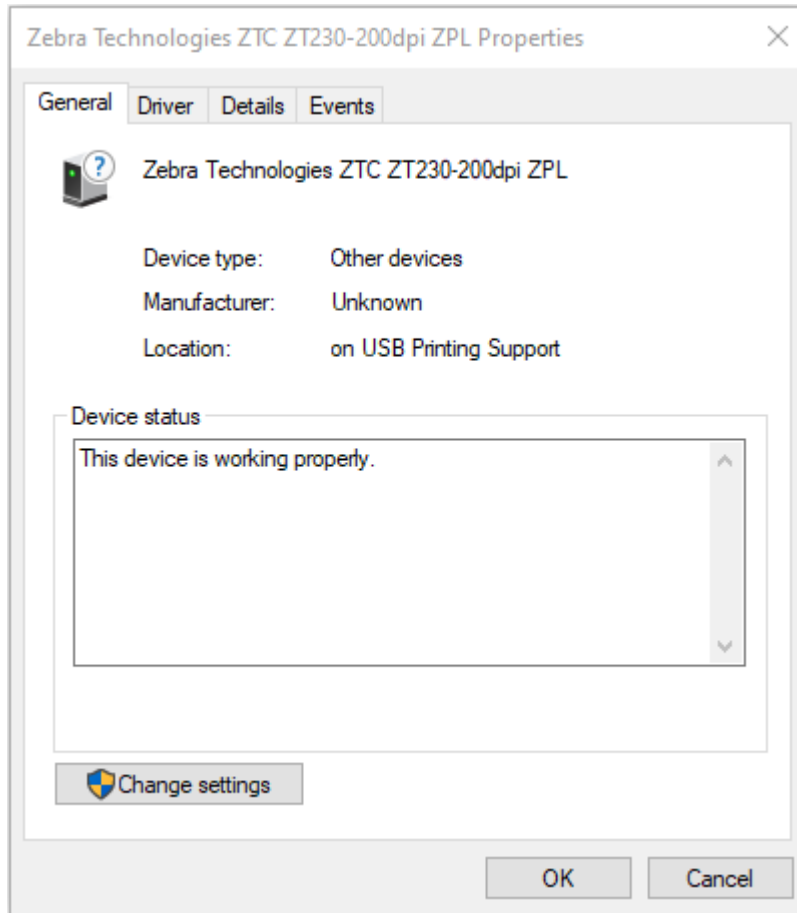
6. Click **Change settings** and then click the **Driver** tab.
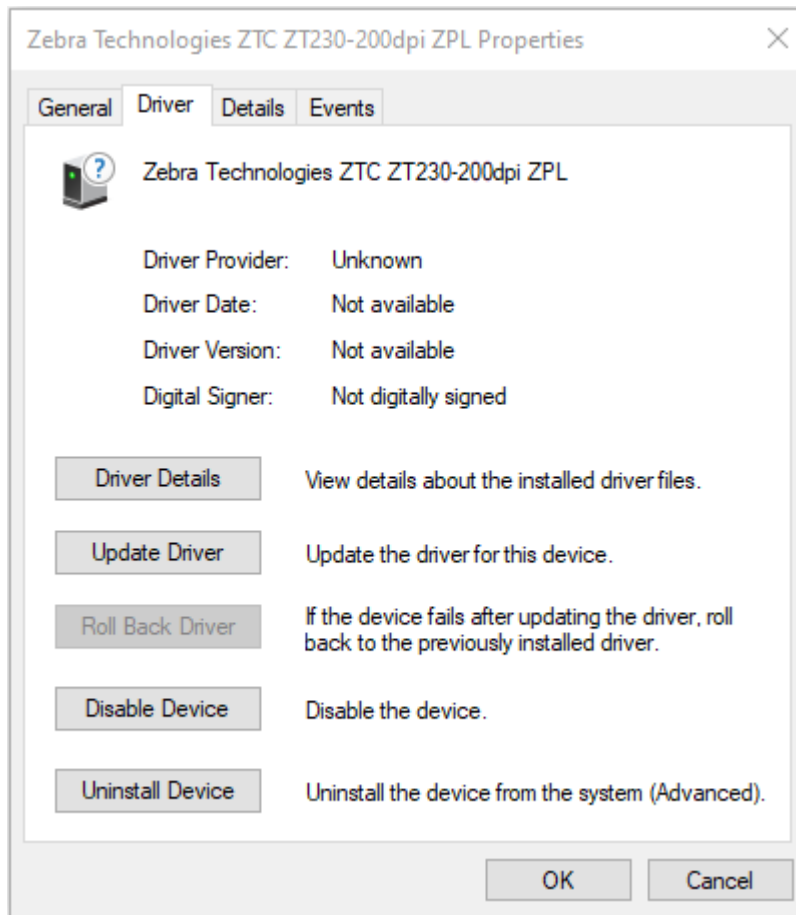
7. Click **Update Driver**.

8. Click **Browse my computer for driver software**.

9. Click **Browse**… and navigate to the **Downloads** folder.

10. Click **OK** to select the folder.

11. Click **Next**.

The device is updated with the correct drivers.

Setup for Windows OS

The section helps you set up communications between your printer and the Windows operating system environment.

Windows to Printer Communication Setup (Process Overview)

Use this overview to understand how to set up your printer using the most common (supported) Windows operating systems and a local (wired) connection.
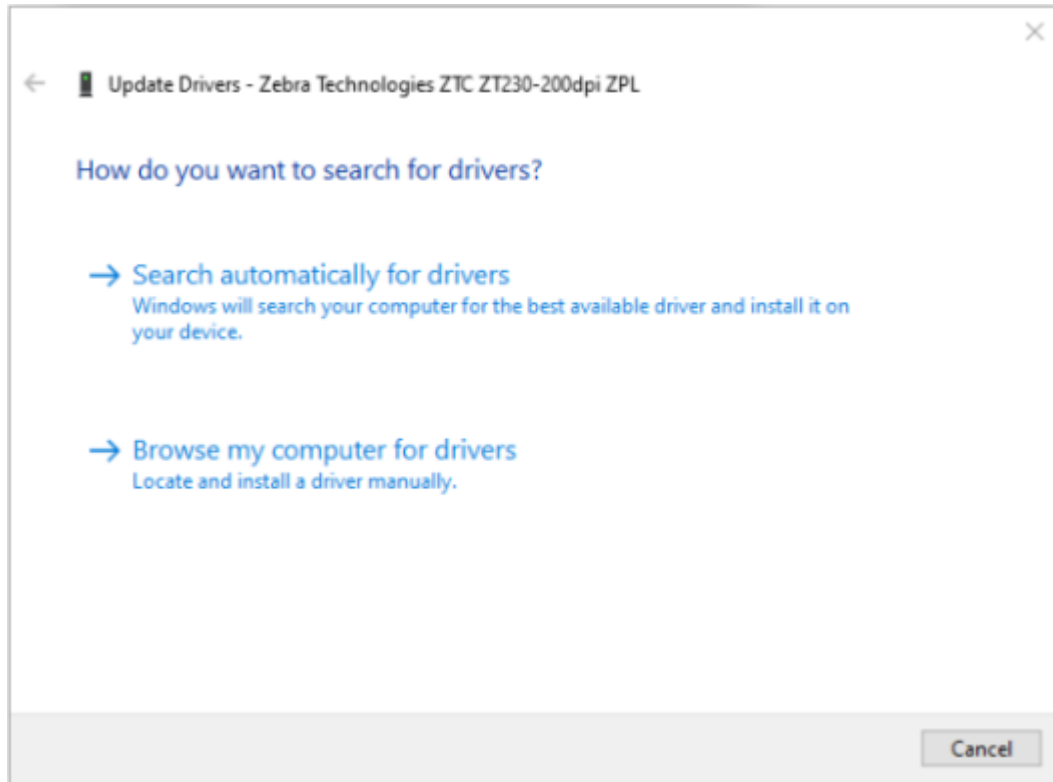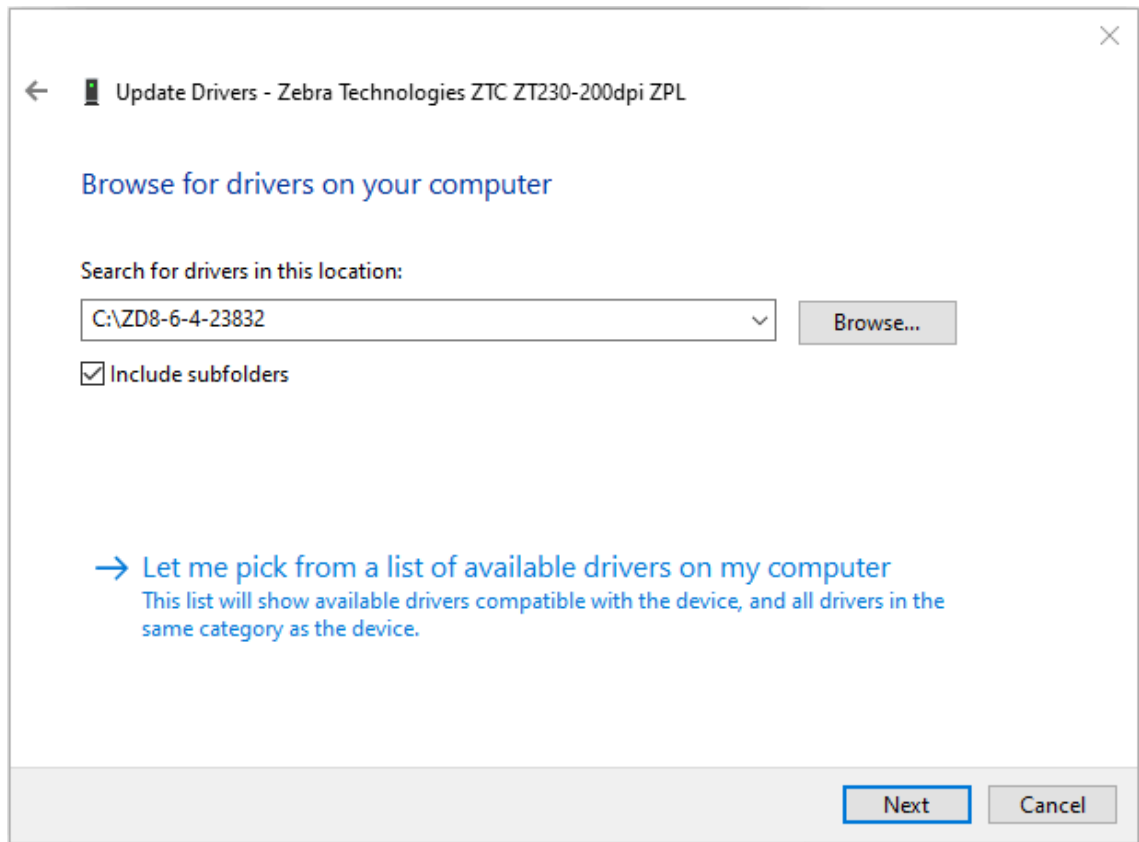
You may also set up your printer using factory-installed Wi-Fi or Bluetooth as described in Setting Up the Wi-Fi Print Server Option on page 69 and Configuring the Printer Using Bluetooth on page 79.

1. Download the Zebra Setup Utilities (ZSU) from the ZD200 Series Thermal Transfer Printer page on the Zebra web site at zebra.com/zd200t-info. (See Installing the Windows Printer Drivers on page 63.)

2. Make sure printer power is OFF.

3. Run Zebra Setup Utilities (ZSU) from your Download directory.

4. Click **Install New Printer** and run the installation wizard.

5. Click **Install Printer**, then select your printer's model number from the list of Zebra printers.

6. Select the appropriate USB port and connect to the PC.

   You can use the USB interface for a wizard-guided installation of networked devices or Bluetooth Classic (4.0) devices.

7. Turn printer power ON when the wizard instructs you to do so.

8. Use the Wizard to configure printer communications for the selected interface type.

9. Perform a print test to verify that your printer has been setup properly.

🛈 **IMPORTANT:** If you did not install the printer drivers before connecting to the printer when it was powered ON, see What To Do If You Forget to Install the Printer Drivers First on page 56.

Installing the Windows Printer Drivers

To use your printer with a Microsoft Windows-based computer, you must install the correct drivers first. Use the Zebra Setup Utilities to install the printer drivers on your central device and run the Utilities with

power to the printer is switched OFF. These drivers enable you to set up and manage your printer from the convenience of your central device.

📝 **NOTE:** You may connect your printer to your computer using any of the supported connections that are available to you to use. However, do NOT connect any cables from your computer to the printer UNTIL you are instructed to do so by the installation wizards. If you connect the cables at the wrong time, your printer will not install the correct printer drivers. To recover from incorrect driver installation, see What To Do If You Forget to Install the Printer Drivers First on page 56.

📝 **NOTE:** If using a PC, it must run a Zebra-driver-supported Windows OS. (See the Zebra Setup Utilities release notes for a list of supported Windows operating systems.)

If you are using a physical cable to connect your computer to the printer, be sure to review the cabling specifications and the parameters specific to the physical communication interface you plan to use. This information will help you make the appropriate configuration setup choices both prior to and immediately after you apply power to the printer.

- For basic interface cabling requirements, see Interface Cable Requirements on page 53.

- For USB cable requirements and information on basic USB connectivity, see USB Interface on page 54.

- For Ethernet cable specifications and information on basic Ethernet connectivity, see Ethernet (LAN, RJ-45) on page 54.

- For detailed information on installing Ethernet/LAN and Bluetooth interfaces, see the Wired/ Wireless Print Server User Guide and the Bluetooth Printer Management Guide available from zebra.com.

1. Navigate to zebra.com/drivers.

2. Click **Printers**.

3. Select your printer model.

4. On the product page for your printer, click **Drivers**.

5. Download the appropriate driver for Windows.

   The driver executable file (such as `zd86423827-certified.exe`) is added to your Download folder.

6. Ensure printer power is OFF.

⊙ **IMPORTANT:** Do NOT turn printer power on until you are instructed to do so by the Setup Wizard.

7. From your PC, run the Zebra Setup Utilities (ZSU) executable and follow the prompts.

The setup wizard installs the printer drivers and prompts you to turn printer power ON.

NOTE: When setup is complete, you may select to add the drivers to your system (Configure System) or elect to add specific printers in a later step.
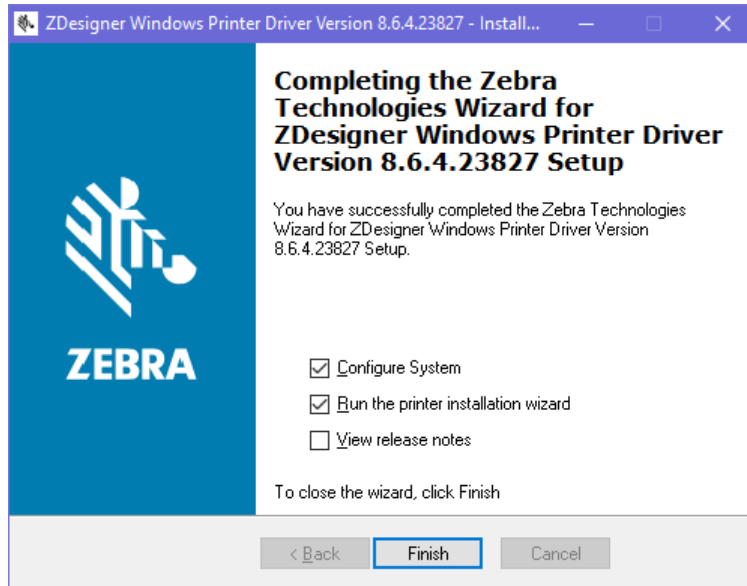
8. Select **Configure System**, then click **Finish**.

The Printer Installation Wizard installs the drivers.

65
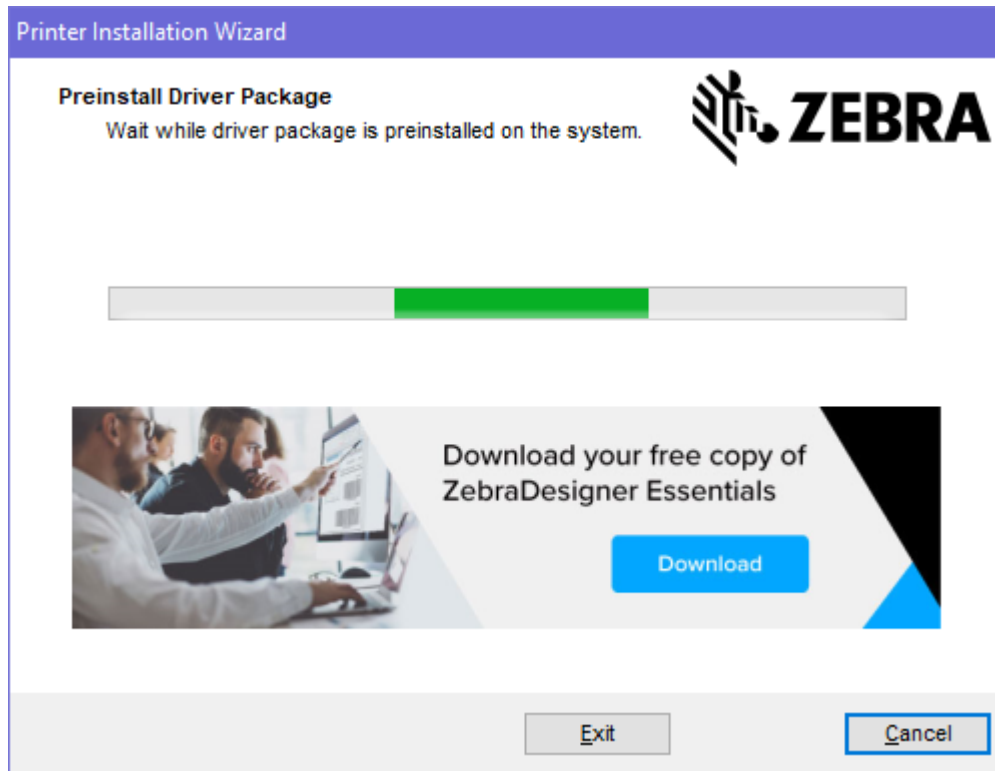
Running the Printer Installation Wizard

1. On the last screen of the driver installer, leave **Run the Printer Installation Wizard** checked, then click **Finish**.

   The Printer Driver Wizard displays.

2. Click **Next**.

3. Click **Install Printer Driver**.

The license agreement displays.

4. Read and accept the terms of the license agreement, and then click **Next**.

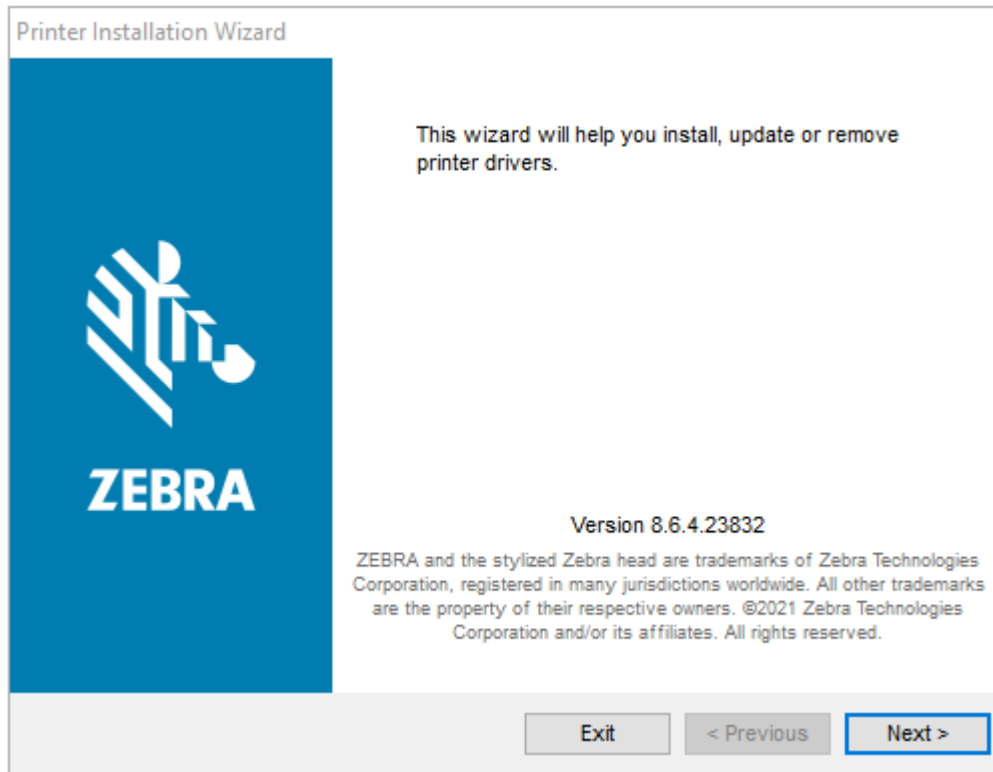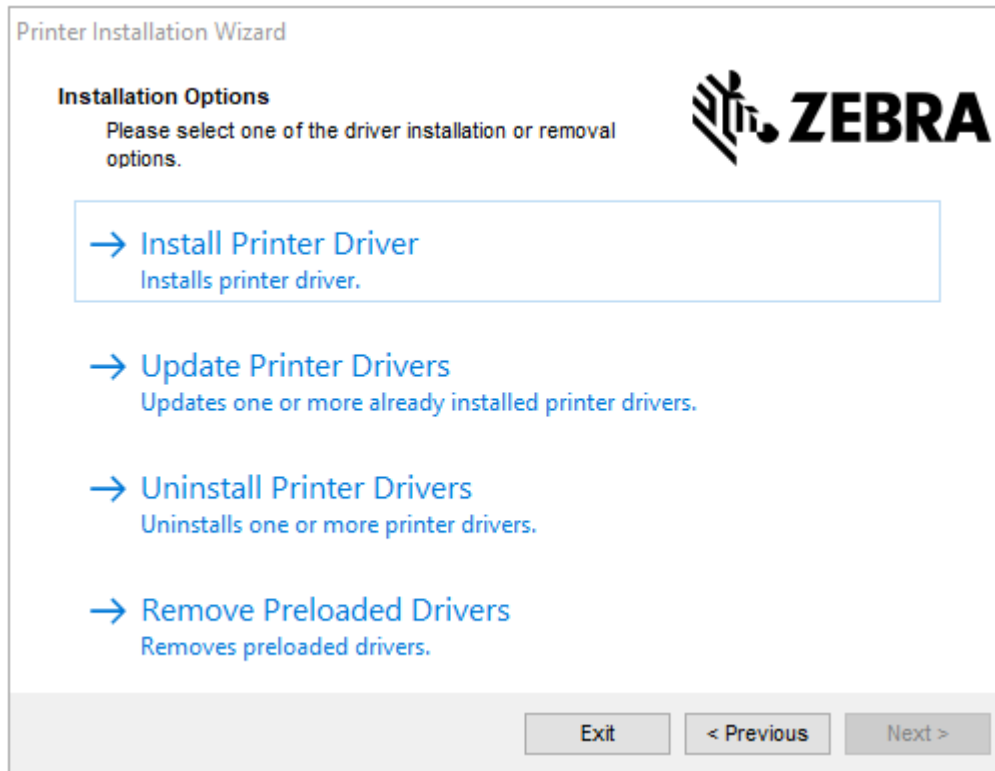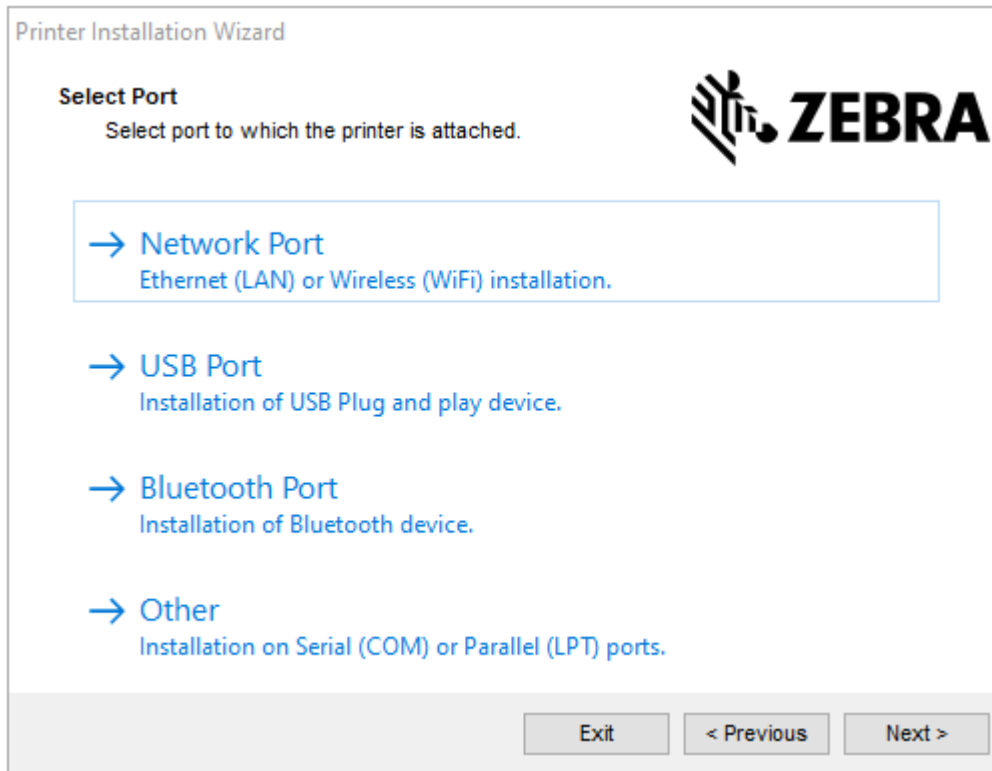**5.** Select the communication option that you want to configure for your printer:

- Network Port: For installing printers with an Ethernet (LAN) or wireless (Wi-Fi) network connection. Wait for the driver to scan your local network for devices and follow the prompts.

- USB Port: For installing printers connected with the USB cable. Connect the printer to the computer. If the printer is already connected and powered on, you may need to remove the USB cable and install it again. The driver will automatically search for the model of the connected printer.

- Bluetooth Port: For installing printers with a Bluetooth connection.

- Other: For installation on another type of cable, such as Parallel (LPT) and Serial (COM). No additional configuration is necessary.

6. If prompted, select your printer model and resolution.

The model and resolution are listed on the printer configuration label. See Test Printing with the Configuration Report on page 49 for instructions on printing a label.)

Setting Up the Wi-Fi Print Server Option

The wireless radio option (which includes Wi-Fi, Bluetooth Classic and Bluetooth Low Energy) is available ONLY as a factory-installed configuration. These instructions guide you through basic configuration of your internal Wi-Fi Print Server option using the Connectivity Wizard.

NOTE: For detailed information on installing Ethernet/LAN and Bluetooth interfaces, see the Wired/Wireless Print Server User Guide and the Bluetooth Printer Management Guide available from zebra.com.

You may configure your printer for wireless operation using one of these methods:

69

Using the Connectivity Wizard (covered in this guide)	When run, the wizard writes a ZPL script to enable your PC to communicate with your printer over Wi-Fi.
	Towards the end of the process, the wizard will prompt you to either send the command directly to your printer, or save the ZPL script to a file. If you elect to save this ZPL file:
	• You can send the file to one or more printers that will use the same network settings, using any available connection (serial, parallel, USB, or wired print server).
	• You can resend the file to the printer at a future time if the printer's network settings were restored to their factory defaults.
Using a ZPL script that you write yourself*	Use the `^WX` command to set the basic parameters for Security Type.
Using Set/Get/Do (SGD) commands that you send to the printer	Begin with `wlan.security` to set the Wireless Security type. Then add other SGD commands (which will be necessary based on the security type you select) to specify the other required parameters.

NOTE: * Refer to the ZPL Programming Guide for more information on these options. You can send these commands through any available connection (serial, parallel, USB, or wired print server).

Configuring the Printer Using ZebraNet Bridge's Connectivity Wizard

While you have several options to connect to and configure your printer for cloud, WLAN and LAN operations, the recommended tool to use is Link-OS Profile Manager. Link-OS Profile Manager is provided with the ZebraNet Bridge Enterprise (for local and LAN configurations), a configuration utility that is available for download from zebra.com/software.

The Connectivity Wizard (which is part of this software) allows you to easily configure your printer for wireless operation by authoring the appropriate ZPL script for your printer. Use this utility to configure your printer's wireless print server either for the first time or after you reset the printer's network options to their factory defaults.

1. If it is not already downloaded and installed, download ZebraNet Bridge Enterprise version 1.2.5 or later from zebra.com/software and install it on your computer.

NOTE: You will need ZebraNet Bridge Enterprise version 1.2.5 or later to configure the printer.

2. Launch the ZebraNet Bridge Enterprise utility. If you are prompted for a serial number, you can choose to click **Cancel** and continue using the Connectivity Wizard.

3. From the Windows **Menu** bar, select **Tools** > **Connectivity Wizard**.

The Connectivity Wizard opens.

4. From the **Choose Port** list, select the port to which your printer is connected.

If you want to save the file without sending it to a printer...	Select any available port.
If you decide to select **File**...	Browse to the location of the file.
If you select a serial port...	Serial port configuration information appears below the **Choose Port** list. If necessary, change the serial communication settings to match your printer's settings. **NOTE:** If a port is in use by another device, it will NOT appear in the drop-down list.

5. Click **Next**.

The wizard prompts you to select the print server device to configure.
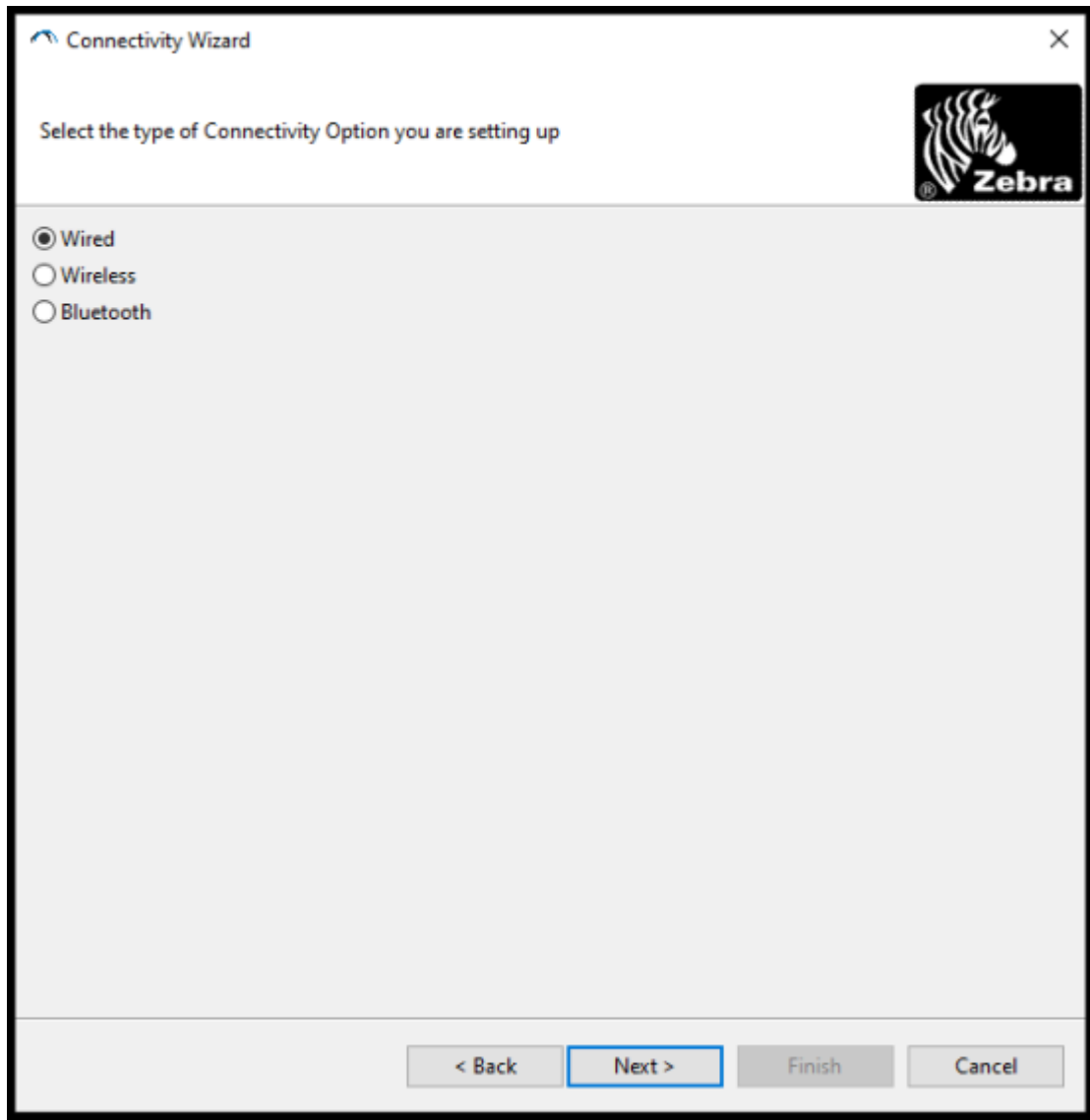
6. Select **Wireless**, then click **Next**.

    The wizard prompts you for the type of printer you are using.
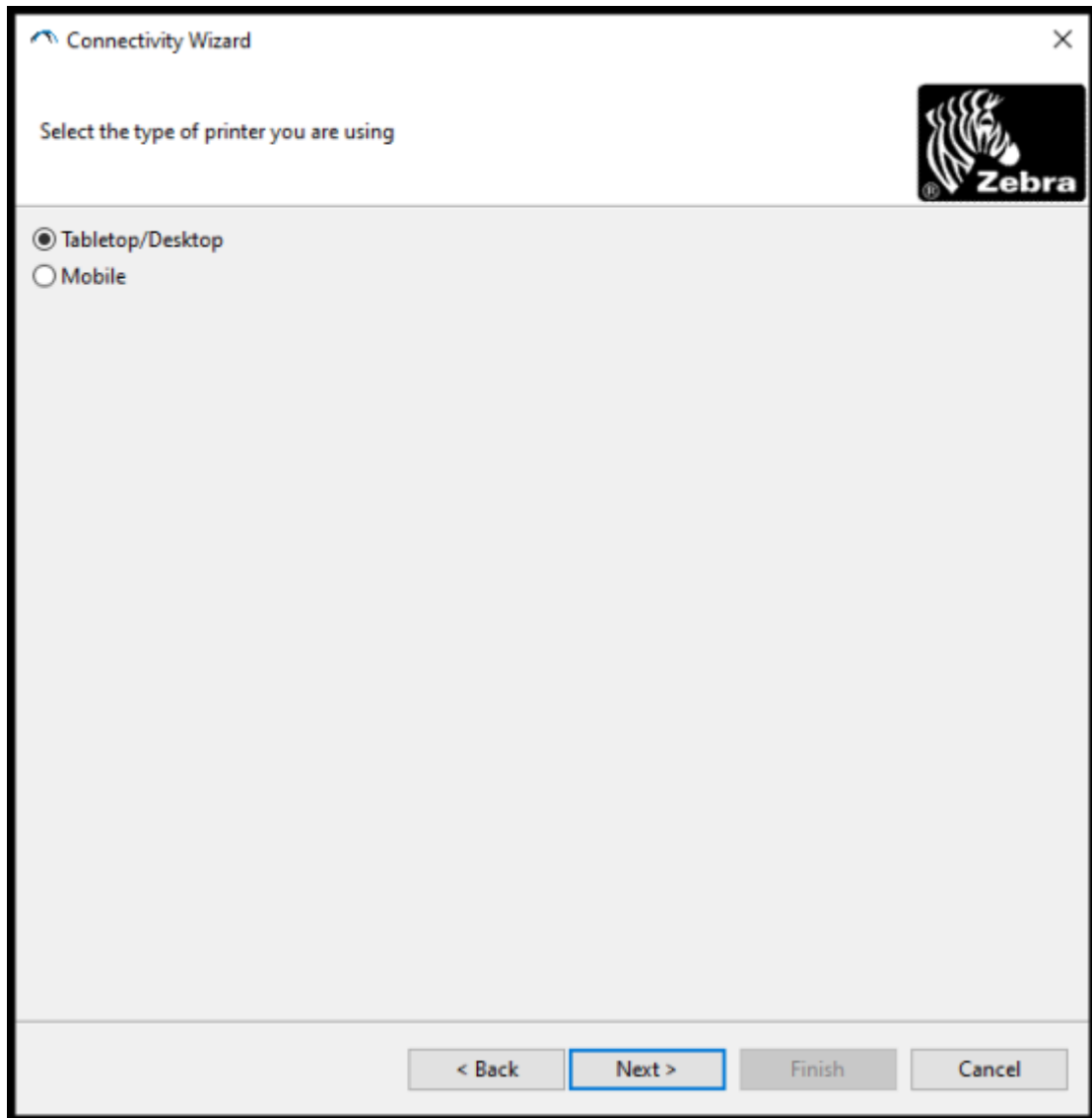
7. Select the type of printer you are using, then click **Next**.

The wizard prompts asks you to enter the wireless IP details.

8. Enable the **DHCP** (dynamic) option or the **Static** IP option.

If you chose **DHCP**...	Click **Next** and proceed to the next step in this procedure.

If you chose **Static**...	Enter the **IP Address**, Default Gateway, and Subnet Mask for the wireless print server and click **Next**. Contact your network administrator for the correct values to use.

The Wireless Settings window opens.

9.   Enter the **ESSID**.

NOTE: You must set the **ESSID** (and passphrase, if you use one) at your access point before completing these steps.

10.   From the **Security Mode** dropdown, select the appropriate mode.

If you select...	Perform these additional steps for the option you selected, then proceed to the next step.
None (no security protocol)	Skip this step. .

75

If you select...	Perform these additional steps for the option you selected, then proceed to the next step.
EAP-TLS, EAP-TTLS, EAP-FAST, or WPA-EAP-TLS	In the EAP section, if necessary, enter an **Optional Private Key**.
PEAP, LEAP, WPA-EAP-TTLS, WPA-PEAP, or WPA-LEAP	In the General Security section, enter the **Security Username** and **Password**.
WPA-PSK	In the WPA section, select the **PSK Type**, and enter the **PSK Name**.
WPA-EAP-FAST	In the General Security section, enter the **Security Username** and **Password**. In the EAP section, if needed, enter an **Optional Private Key**.
KERBEROS	Under Kerberos Settings, enter values for **Kerberos User**, **Kerberos Password**, **Kerberos Realm**, and **Kerberos KDC**. **NOTE:** KERBEROS is NOT supported on Internal Wireless Plus print servers or radio cards.

11. Click **Next**.

12. In the Wireless Settings window, click **Advanced Options**.

The Advanced Wireless Settings window opens.

13. Review and change the settings in the Advanced Wireless Settings window as needed.

14. Click **OK** to return to the Wireless Settings window.

15. Click **Next**.

Based on the selections you made in the preceding steps, the wizard creates a script file with the appropriate ZPL commands and displays them for your review.

If you selected **Tabletop/Desktop**, a dialog box similar to this one displays:

16. Decide if you will send the script immediately, or save it for use at a later time.

Sending a ZPL Configuration Script to the Printer

Complete printer Wi-Fi server setup by sending the ZPL script to the printer through the port you selected in Configuring the Printer Using ZebraNet Bridge's Connectivity Wizard on page 70. You may want to save the ZPL script and use it to restore the printer network configuration if the printer is reset to its factory defaults in the future. Saving the script will also allow you to quickly configure multiple printers if they need the same settings.

1. Verify that the printer is connected to the computer through the wired cable connection to the USB port.

2. If the printer is switched off, turn printer power ON.

3. In the Connectivity Wizard: Review and Send ZPL for Wireless window, click **Finish**.

   The computer sends the ZPL script to the printer through the interface port. The Wireless Setup Wizard screen closes.

4. Turn printer power OFF and then back ON.

5. Observe the wireless status on the printer's indicator lights to confirm that you have set up your printer for wireless connectivity.

6. At this point, you can save the ZPL script for later use with this printer and to configure other printers that may need the same network settings. To save the script:

   a) In the Review and Send ZPL for Wireless window, highlight the script, right-click it, and select **Copy**.

   b) Open a text editor such as Notepad and paste the script into the application.

   c) Save the script.

   d) Back in the Connectivity Wizard, you may click **Cancel** to exit the Wizard without sending the script to the printer at this time.

   To configure either the same printer again (in case it was reset to its factory defaults) or to configure other printers with the same settings, send the saved ZPL script file to the printer through the connection of your choice as detailed in the prior steps in this procedure.

Configuring the Printer Using Bluetooth

The Zebra Setup Utilities provides a quick and easy way to configure a Bluetooth wireless connection with your printer.

1. Double-click the **Zebra Setup Utilities** (ZSU) icon on your desktop.

2. Connect your computer and the printer with a USB cable.

3. On the first ZSU screen, highlight the printer displayed in the window and click **Configure Printer Connectivity**.

4. On the Connectivity type screen, select **Bluetooth**, then click **Next**.
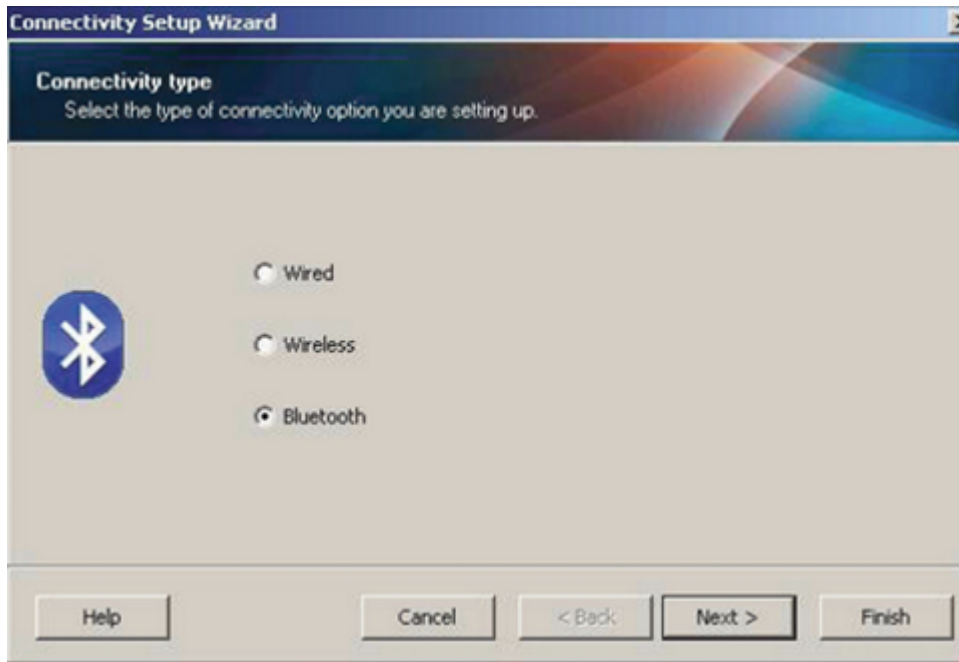
5. On the Bluetooth Settings screen, check **Enabled** to enable Bluetooth functionality.

6. In the **Friendly Name** field, set the Bluetooth name of the device that you will use to discover the device on the network.

   This is the name that the central device will apply to the printer.

7. If you want the device to appear when central devices are looking for new devices to pair with, set the **Discoverable** field to **On** . If not, set it to **Off**.

8. Set **Authentication** to **On**.

NOTE: This setting does not exist in Link-OS Profile Manager, but you must set it to **On** if you want to enter a PIN in the Zebra Setup Utilities. The actual authentication setting on the printer is set by accessing **Advanced Settings** > **Security Mode**.

9. The values required to set the **Authentication PIN** will vary based on the Bluetooth version used by the central device which you use to manage your printer. If the central device uses BT v2.0 or older, enter a numeric value in this field. You will be prompted to enter this same value on the central

device to verify Bluetooth pairing. For PIN pairing, also select **Security Mode 2** or **Security Mode 3** in **Advanced Settings** .
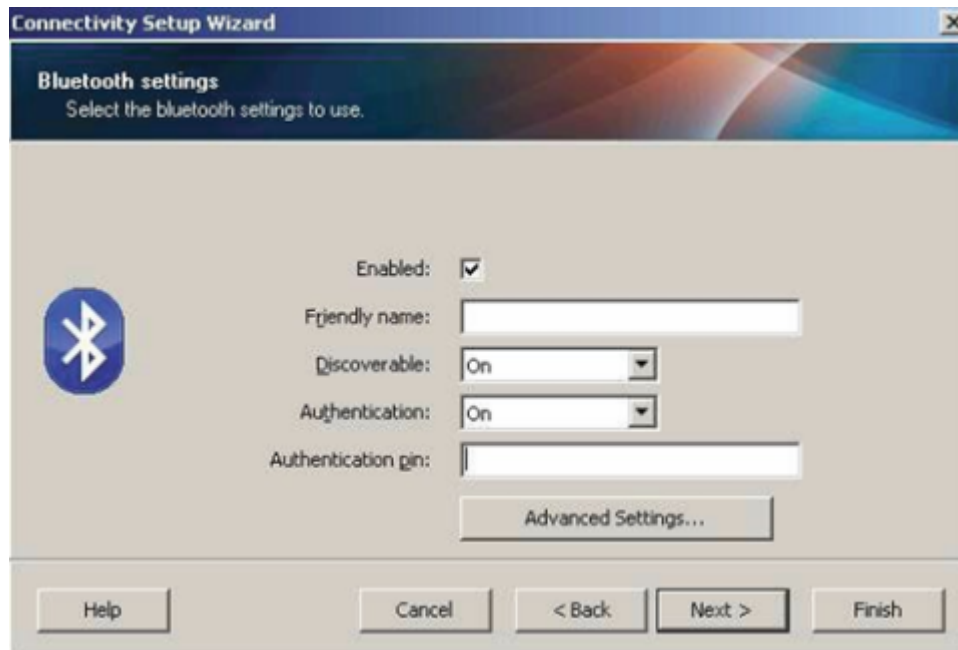
> **NOTE:** If the central device uses BT v2.1 or newer, this setting has no effect. BT v2.1 and newer versions use Secure Simple Paring (SSP) which does not require the use of a PIN.

10. To view Advanced Bluetooth settings, click **Advanced Settings...**.

> **NOTE:** For more information on Advanced Settings, refer to the Wired and Wireless Print Server Guide. This guide is available to download from zebra.com/manuals.

11. Click **Next** to continue configuring your printer.

    The specific SGD commands you need to configure your printer from your central device are displayed.

12. On the Send Data screen, click the name of the printer that you want to send the commands to. You can also click **File** to save the commands to a file for later use.

13. Send the commands to the printer you chose by clicking **Finish**.

    The printer updates and reboots with the programming settings you specified.

14. At this point, you may disconnect the USB interface from your printer.

15. To complete the Bluetooth pairing process, enable Bluetooth device discovery on your central device and follow the instructions provided by the central device to complete the pairing.

Connecting the Printer to a Windows 10 OS

Before adding (also called pairing) a Bluetooth-enabled device to your central device, make sure the device to be paired is turned on and discoverable.

> **NOTE:** Your Windows device may need a Bluetooth adapter to connect to a Bluetooth device. Check with your Windows device user guide for details.

Some non-Microsoft Bluetooth dongles and built-in Bluetooth devices in the host PCs have ONLY marginal driver support for Secure Simple Paring (SSP) printing and may not complete the **Add printer** wizard normally.

You may need to access **Bluetooth Devices** under Windows **Settings** and activate SPP for the 'device' (the Bluetooth-capable printer you are setting up).

Install the printer to a local printer (USB, for your printer), and then change the **Port** after the completing the installation to SPP (virtual serial port) COM port.

1.
Click the **Windows Start** (▢) button, then select **Settings**.
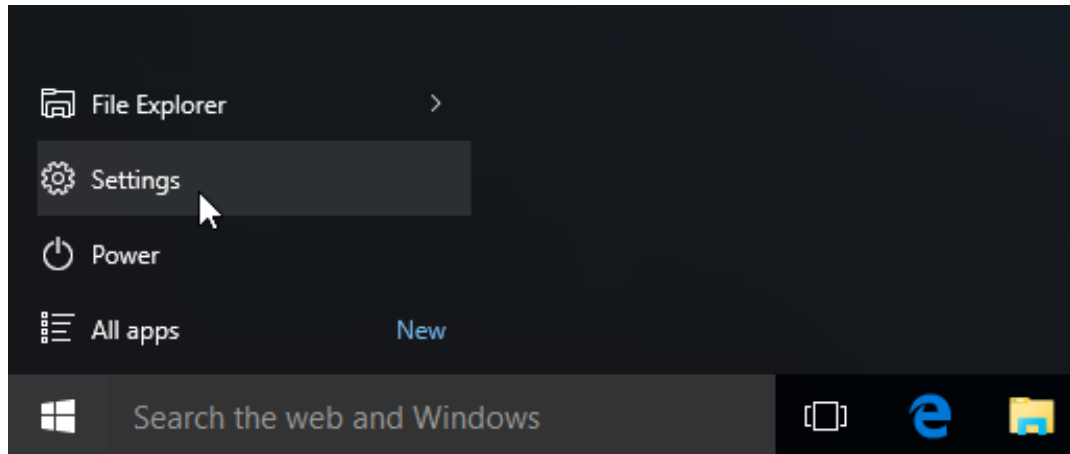
2. Click **Devices**.
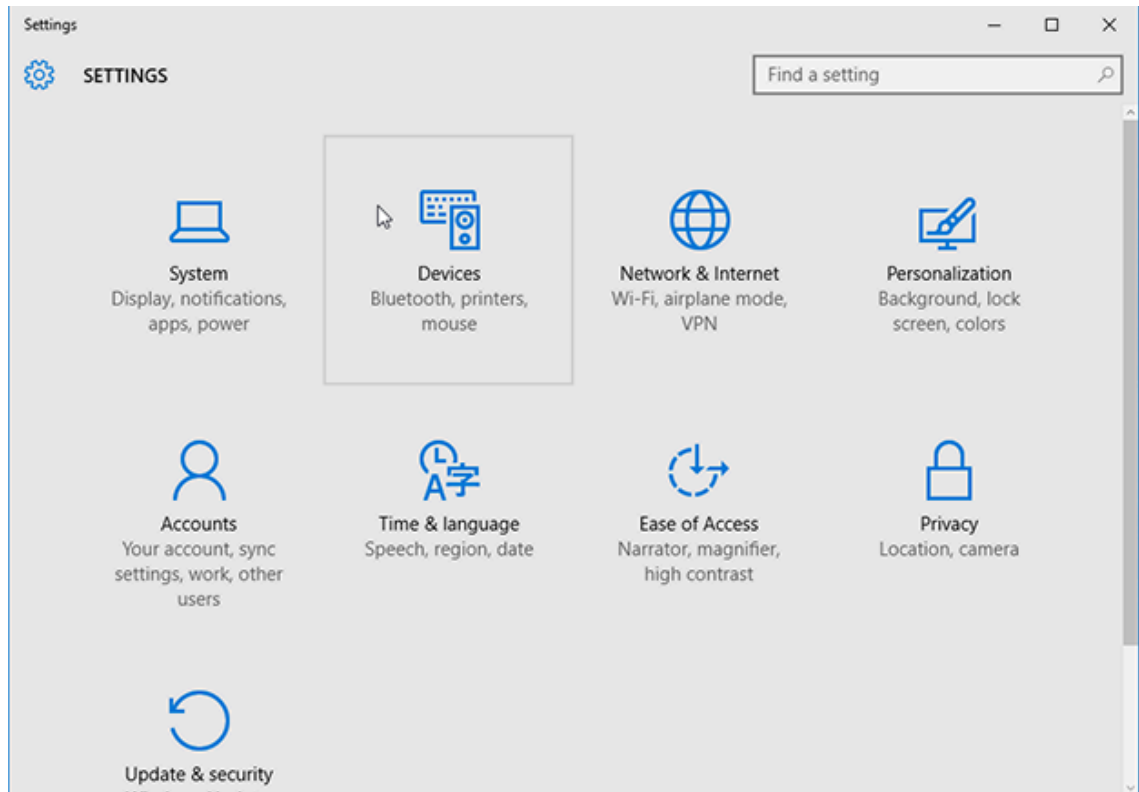
3. Click **Bluetooth**.

NOTE: If your PC does not have Bluetooth installed, the Bluetooth category is NOT displayed in the list of device categories.

The printer is identified by its serial number as shown here.
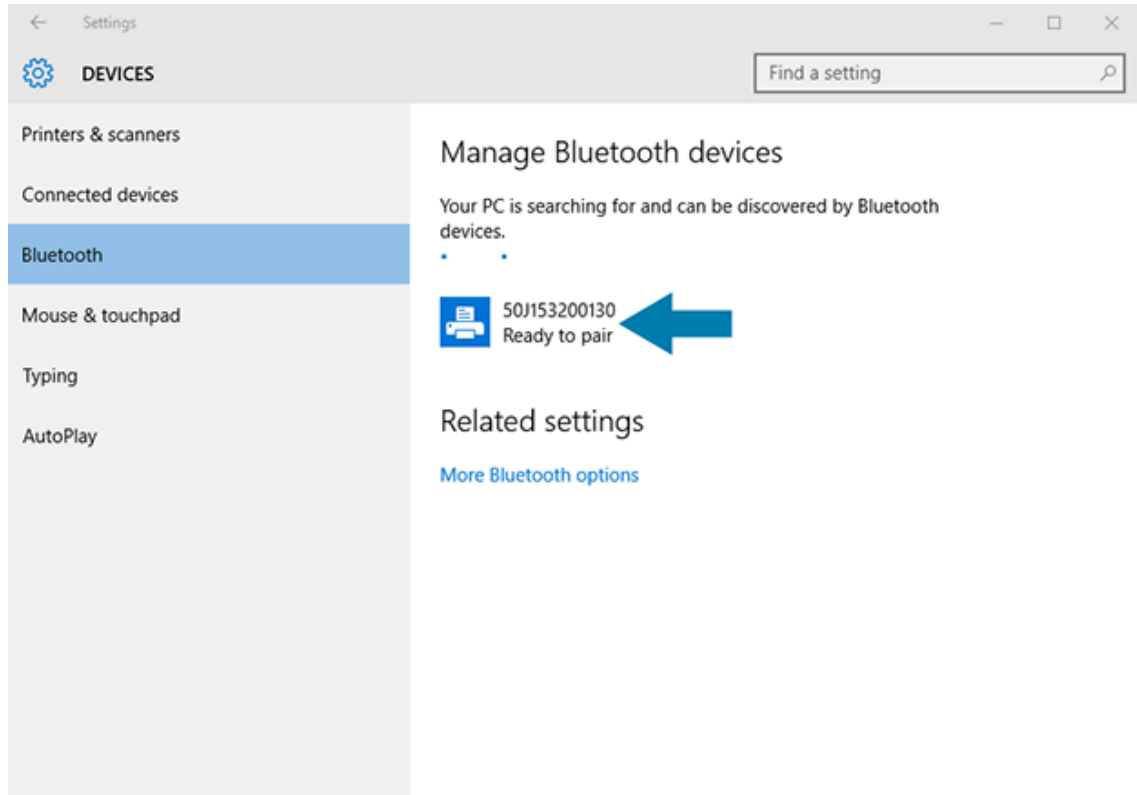
4. Click the printer icon, then click **Pair**.
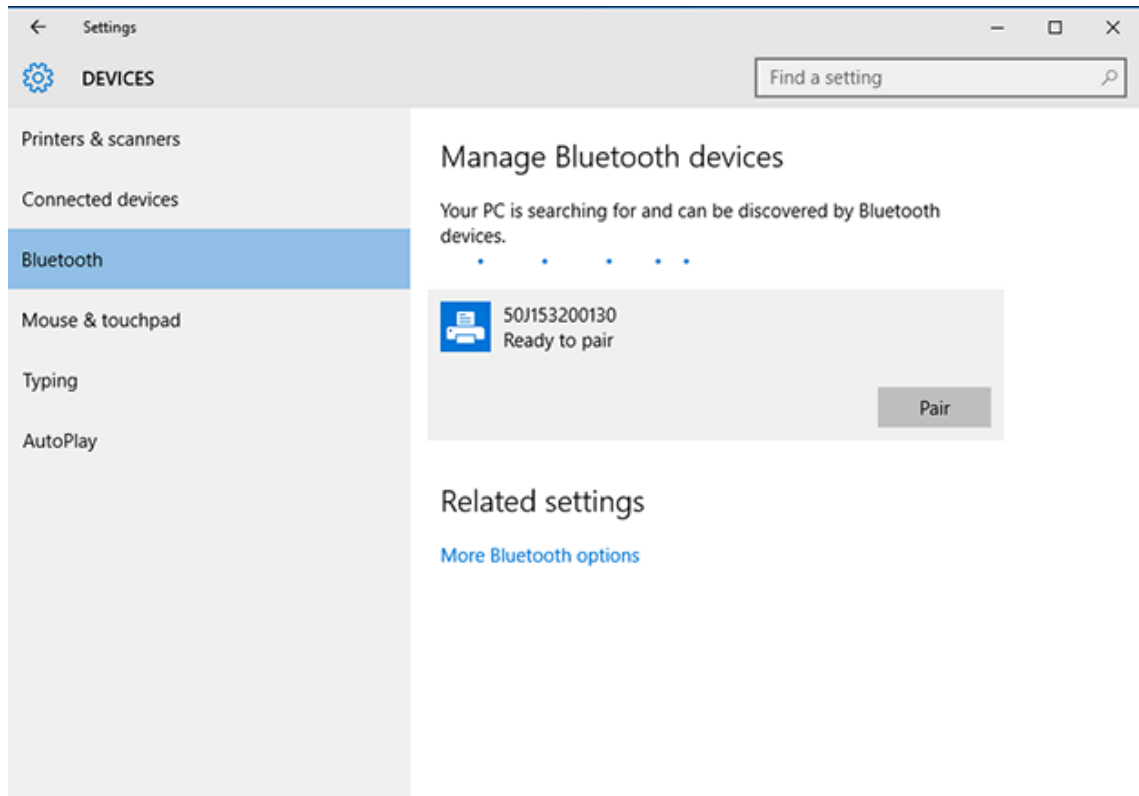
The printer prints a passcode.

5. Compare the passcode with the one on the screen. If they match, click **Yes**.
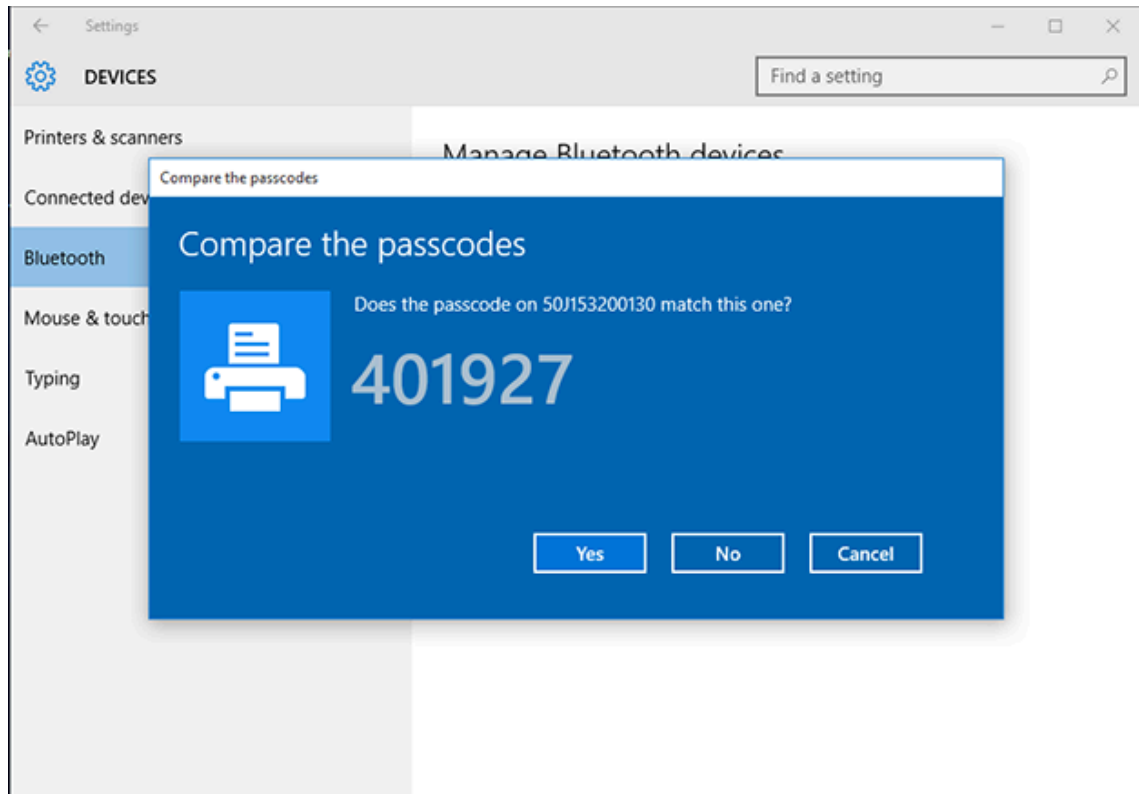
The printer status changes to Connected when pairing is complete.
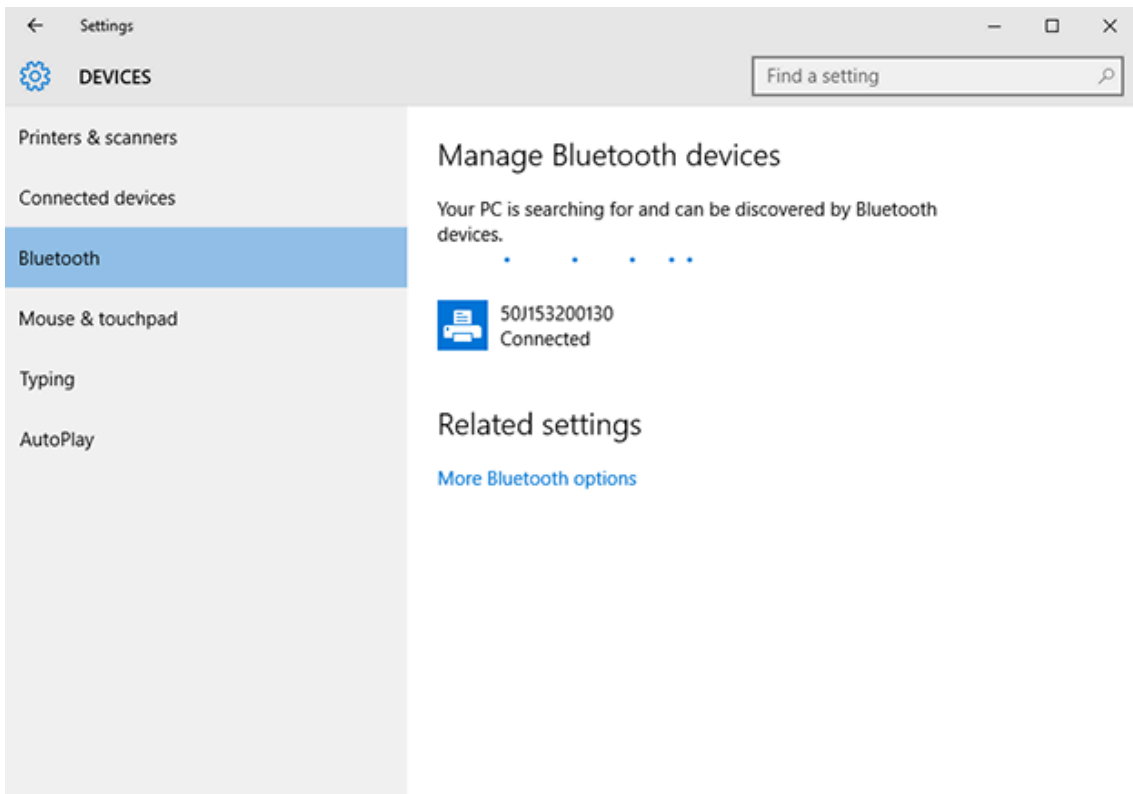
After Your Printer is Connected

When you have established basic communication to your printer, you may want to test printer communications and then install other printer related applications, drivers, or utilities.

Verifying printer operation is a relatively simple process:

- For Windows operating systems, you can use the Zebra Setup Utility or the Windows **Printers and Faxes** feature in the **Control Panel** to access and print a test label.

- For non-Windows operating systems, you can send an ASCII text file to the printer with a single command (~WC) instructing it to print a printer configuration report.

Test Printing with Zebra Setup Utilities

Print a configuration report to test the printer.

1. Open the Zebra Setup Utilities.

2. Click on the newly-installed printer's icon to select the printer.

3. Click **Open Printer Tools**.

4. Access the Print tab, click on **Print configuration label**, and click **Send**.

The printer should print a configuration report. If it doesn't, make sure the printer is set up according to the instructions in this guide and use the information in the Troubleshooting section to resolve any issues.

Test-Printing with the Windows Printer and Faxes Menu

Print a test page to test the printer.

1. Click the Windows **Start** menu button or the **Control Panel** to access the Printers and Faxes menu, then open the menu.

2. Select the newly-installed printer's icon to select the printer, and right-click to access the printer **Properties** menu.

3. From the printer's General tab window, click **Print Test Page**.

The printer prints a Windows test print page.

Test-Printing with an Ethernet Printer Connected to a Network

You can test-print on an printer connected to Ethernet (LAN or WLAN) in one of two ways: use an MS-DOS command from the command prompt, or select **Run** from the Windows **Start** menu.

1. Create a text file with this ASCII string: ~WC

2. Save the file an arbitrary filename such as TEST.ZPL.

3. Find the IP address on the printer Configuration Report – Network Status printout.

4. From a central device that is connected to the same LAN or WAN as the printer, type the following in a web browser window address bar and press **Enter**: ftp x.x.x.x (where the x.x.x.x is the IP address of your printer).

    For an IP address that reads 123.45.67.01, you would enter ftp 123.45.67.01

5. Type the word `put` followed by the filename and press **Enter**.

    For a test print using the file `TEST.ZPL`, the command to use is `put TEST.ZPL`.

    The printer prints a printer configuration report.

Test-Printing with a Copied ZPL Command File for Non-Windows Operating Systems

1. Create a text file with this ASCII string: `~WC`

2. Save the file using an arbitrary filename such as `TEST.ZPL`.

3. Copy the file to the printer. For DOS, sending this file to a printer connected to the system's serial port would be as simple as issuing this command to the printer from the central device: `COPY TEST.ZPL COM1`

NOTE: Other interface connection types and operating systems will require different command strings. See your OS documentation for detailed instructions on how to copy to the appropriate printer interface for this test.

Print Operations

This section provides general information on media and print handling, font and language support, and the setup of less common printer configurations.

Thermal Printing

Zebra ZD Series printers use heat to expose direct thermal media or use heat and pressure to melt and transfer 'ink' to the media. Extra care should be taken to avoid touching the printhead which gets hot and is sensitive to electrostatic discharge.

CAUTION—HOT SURFACE: The printhead may be hot and could cause severe burns. Allow the printhead to cool.

CAUTION: To protect from damaging the printhead and risk of personal injury, AVOID touching the printhead. Use ONLY the cleaning pen to perform printhead maintenance.

CAUTION—ESD: The discharge of electrostatic energy that accumulates on the surface of the human body or other surfaces can damage or destroy the printhead and other 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.

Replacing Supplies while Using the Printer

If the media supply (ribbon, labels, receipts, tags, tickets, etc.) runs out while printing, leave the printer power ON while reloading. (Data loss occurs if you turn off the printer). After you load a new roll of media or ribbon, simply press **FEED** to resume printing.

Sending Files to the Printer

Graphics, fonts and programming files can be sent to the printer from supported Microsoft Windows operating systems using Link-OS Profile Manager, Zebra Setup Utilities (and driver), ZebraNet Bridge or Zebra ZDownloader available from the Zebra website at zebra.com/software.

Determining Your Printer's Configuration Settings

The ZD Series printer is capable of printing a configuration report listing printer settings and hardware details.

Included in this report are:

- operational status (darkness, speed, media type, etc.)

- installed printer options (network, interface settings, cutter, etc.)

- printer details (serial number, model name, firmware version, etc.)

For instructions on printing this label...	See Test Printing with the Configuration Report on page 49.
For information on interpreting the configuration report and the associated programming command and command states identified in the report.	See Managing the ZPL Printer Configuration on page 134 to learn how to interpret the configuration report and the associated programming command and command states listed in the report.

Selecting a Print Mode

Use a print mode that matches the media being used and the printer options available. The media path is the same for roll and fanfold media.

To set the printer to use a specific print mode, see instructions on using the `^MM` command in the ZPL Programming Guide. To download this manual, go to one of the printer information links listed in zebra.com/support.

These print modes are available with your printer:

Tear Off (default; available with any printer option and with most media types)	The printer prints the labels as it receives them. The labels can be torn off after they print.
Peel (available with the Label Dispenser option)	The printer peels the label from the liner while printing. It pauses to print the next label until the current one is removed.
Cutter (available with the factory-installed-only Cutter option)	The printer cuts each label after it is printed.

Adjusting Print Quality

Print quality is affected by a combination of the heat (or density) setting of the printhead, print speed, and the media loaded. Experiment with these settings to find the optimal mix for your application.

Print quality can be configured using the Zebra Setup Utility's **Configure Print Quality** routine.

NOTE: Media manufacturers may recommend specific speed settings when using your printer with their media. The recommended speed may be lower than your printer's maximum speed setting!

You can control the print darkness (or density) setting using one of the following:

- The Set Darkness (`~SD`) ZPL command (see the ZPL Programming Guide for details)

- Windows printer driver

- Application software such as ZebraDesigner. You can download this software from zebra.com/zebradesigner.

- For the ZD230 only, the Print Rate (`^PR`) command which can lower the print speed to 102 mm/sec (4 ips, the default). (See the ZPL Programming Guide for details. To download this guide, go to one of the printer information links listed in About this Guide.)

After adjusting these settings, you can verify them by printing a Printer Configuration label (see Test Printing with the Configuration Report on page 49).

Adjusting Print Width

You must set the print width before you use the printer for the first time. You must also set it when you load media into the printer that is of a different width than the one you loaded for the prior batch of printing.

To set the print width, you can use one of the following:

- your Windows printer driver.

- application software such as ZebraDesigner.

- the ZPL Print Width (`^PW`) programming command. (See your ZPL Programming Guide for details.)

Printing on Fanfold Media

You will need to adjust the media guides' stop position when printing on fanfold media.

1. Open the top cover.
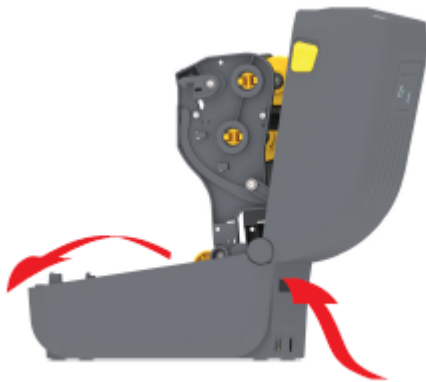
This image shows the fanfold media path.

2. Adjust the media guide stop position with the Slide Lock (gray).

    a) Use a piece of the fanfold media to help set the stop position.

    b) Push the gray locking slide on the left-hand roll holder towards the back of the printer to lock the roll holder position.

    c) Pull it forward to release the lock.
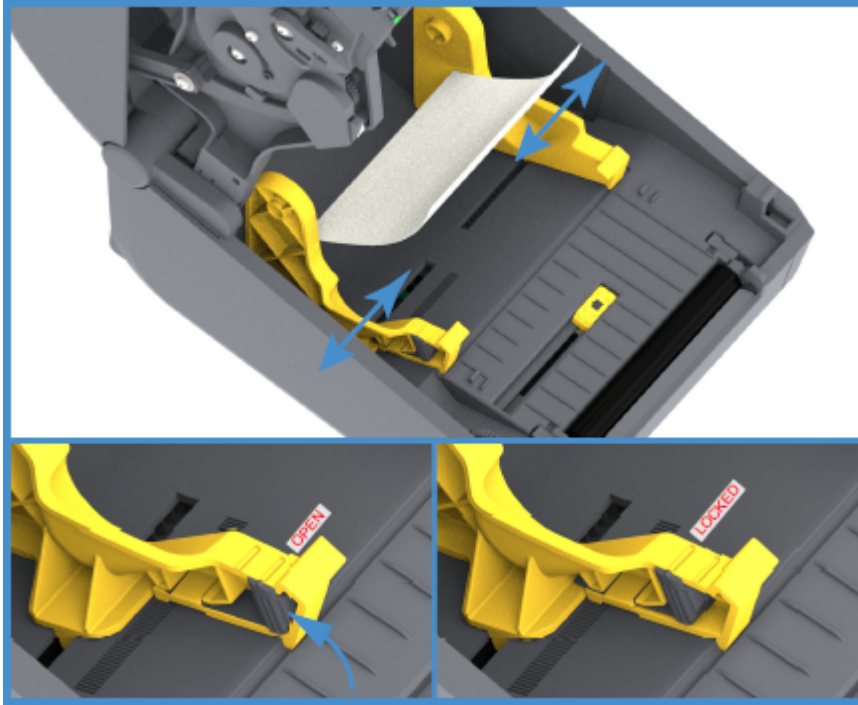
3. Insert the media through the slot at the rear of the printer, and place the media between the media guide and roll holders.
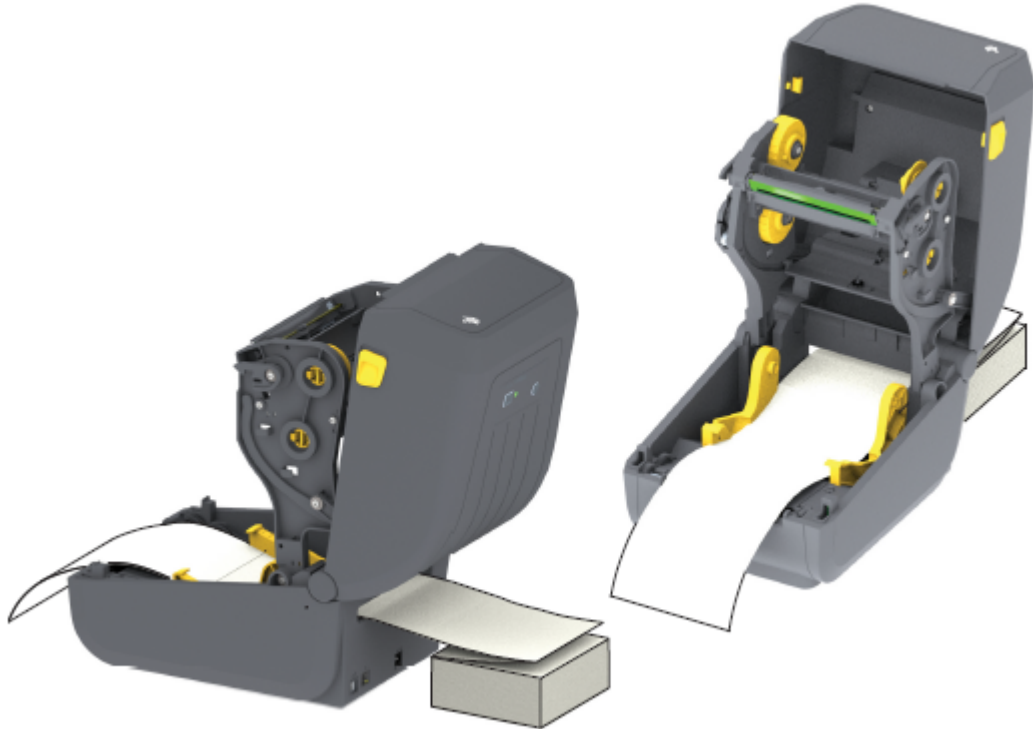
4. Close the top cover.

NOTE: The media guide stop position may need further adjustment if, after printing or after using the **FEED** button to advance several labels:

- the media does not track down the center (moves from side to side), or

- the sides of the media (liner, tag, paper, etc.) are frayed or damaged when exiting the printer

If additional adjustment does not correct the problem, route the media over the two (2) roll-holding pins on the media guide.

You can also provide additional support for thin media by placing an empty roll core—of the same width as the fanfold media stack—between the roll holders.

Printing with Externally-Mounted Roll Media

Your printer accommodates externally-mounted roll media (as it does for fanfold media). It requires a media-roll-and-stand combination to ensure low (initial) inertia when pulling the media off the roll.

Make note of these considerations when using externally-mounted roll media:

- The media should ideally enter the printer from directly behind the printer and pass through the fanfold media slot in the rear of the printer. (For media loading instructions, see Printing on Fanfold Media on page 90.)

- For ZD230 models, use the default print speed of 102 mm/sec (4 ips). (See your ZPL Programming Guide for instructions on setting the print speed using the Print Rate or ^PR command.)

- The media should move smoothly and freely. It should not slip, skip, jerk, bind and then move, etc. when mounted on your media stand.

- The movement of the media roll should not be impeded by contact with any printer or other surfaces.

- The printer should be placed such that it may not slip or lift up away from its operating surface while printing.

Using the Label Dispenser Option

If you printer has the label dispenser option, it will automatically remove the label backing material (liner/web) when printing. When the printer is printing multiple labels, it will print the next label in queue after you remove an already dispensed or peeled label.

To set the printer to use Label Dispense mode, you (or an administrator) must do one of the following:

- Use the printer driver to set **Media Handling** to **Peel-Off**.

- Use the Configure Printer Settings wizard available with the Zebra Setup Utility.

- Send a ZPL programming command to the printer. The command sequences to use are:

  - `^XA ^MMP ^XZ`

  - `^XA ^JUS ^XZ`

1. Open the printer and load the label media.

2. Close the printer and press **FEED** (Advance) until a minimum of 100 mm (4 in.) of exposed labels exit the printer.

   You can leave the exited labels on the liner.

3. Lift the liner over the top of the printer, then pull the gold latch in the center of dispenser door away from the printer.

The dispenser door opens.
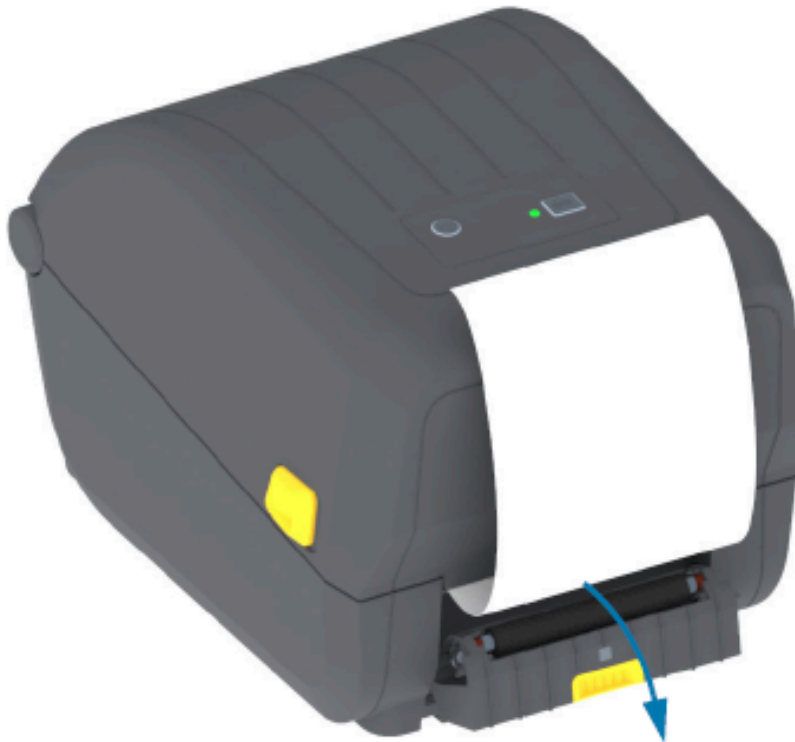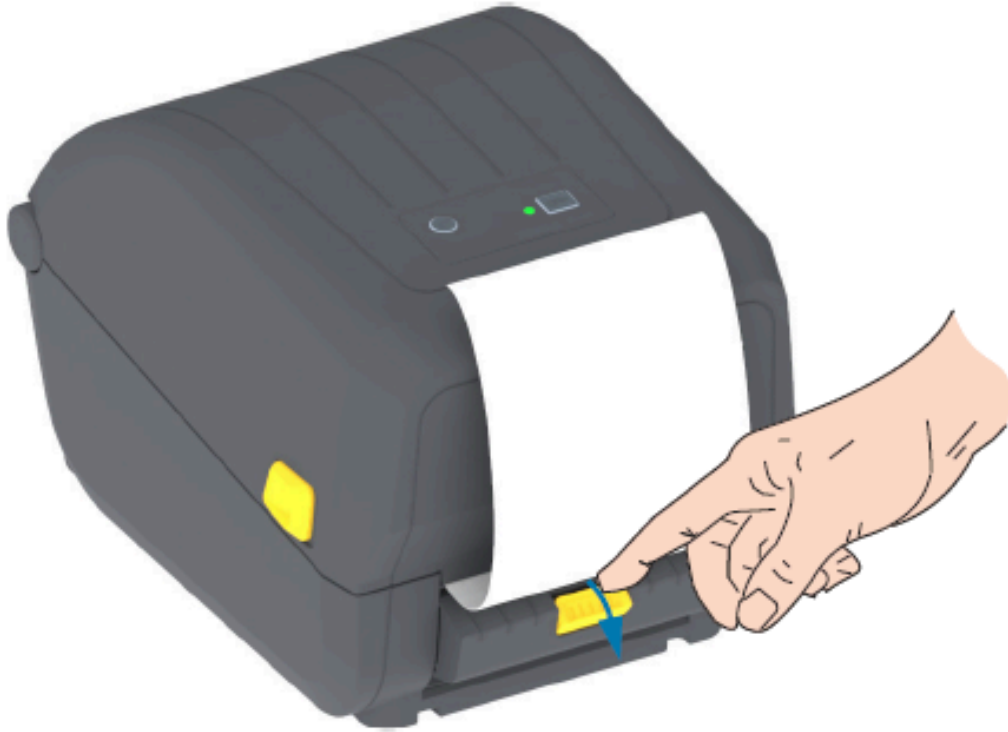
4. Insert the label liner between the dispenser door and the printer body.

5. Close the dispenser door while pulling the end of the label liner tight.

6. Press and release the **FEED** (Advance) one or more times until a label gets presented for removal.

When you print the next time, 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 did not activate the label-taken sensor to detect the removal of the dispensed (peeled) label using software commands prior to printing, the printed labels will stack and may bind the mechanism.

Printer Fonts

The ZD Series printer supports multiple languages and fonts.

You can avail of advanced font mapping and scaling technology available with your printer using the ZPL programming language. ZPL commands support the following:

- Outline fonts (TrueType and OpenType)
- Unicode character mapping
- Basic bitmapped fonts
- Character code pages

The font capabilities of your printer are programming-language dependent.

- For descriptions and documentation of the fonts, code pages, character access, listing fonts, and limitations for their respective printer programming languages, see the ZPL and the legacy EPL programming guides downloadable from zebra.com/manuals.

- For information on text, fonts and character support, see the printer programming guides.

Zebra has variety of utilities and application software to enable font downloads to the printer for the ZPL and EPL printer programming languages.

🛈 **IMPORTANT:** Some ZPL fonts that are factory-installed in your printer are license-restricted. They CANNOT be copied, cloned, or restored to your printer by reloading or updating the firmware. If these license-restricted ZPL fonts are removed using an explicit ZPL object delete command, you will need to repurchase and reinstall them using a font activation and installation utility.

EPL fonts do not have this restriction.

Identifying Fonts in Your Printer

Fonts can be loaded into various storage locations in the printer. Fonts and memory are shared by the programming languages in the printer.

The ZPL programming language can recognize EPL and ZPL fonts. However, EPL programming can only recognize EPL fonts. See the respective programming guides for more information on fonts and printer memory.

Specific to ZPL fonts:

To manage and download fonts for ZPL print operation	Use the Zebra Setup Utility or ZebraNet Bridge Utilities.
To display all fonts loaded onto your printer	Send the printer the `^WD` ZPL command to the printer. See the ZPL Programming Guide for details. In ZPL: • The bitmap fonts in the various printer memory areas are identifiable by the `.FNT` file extension. • The scalable fonts are identified with the `.TTF`, `.TTE` or `.OTF` file extensions. (EPL does not support these fonts.)

Localizing the Printer with Code Pages

For each printer programming language, ZPL and EPL, your printer supports two sets of language, region and character sets for the permanent fonts loaded onto the printer.

Your printer supports localization with common international character map code pages.

For ZPL code page support, including Unicode, see the `^CI` command in the ZPL Programming Guide.

Asian Fonts and Other Large Font Sets

Both of the printer's programming languages, ZPL and EPL, support the large pictographic double-byte character Asian font sets. The ZPL programming language supports Unicode.

Asian language ideographic and pictographic fonts have large character sets with thousands of characters that support single language code page. To support for these large character sets, printer manufacturers adopted a double-byte (67840 maximum) character system (instead of the single-byte, 256-maximum character system used by Latin-based language characters to address this issue).

With the invention of Unicode came the ability to support multiple languages using a single font set. A Unicode font supports one or more code points (relate these to code page character maps) accessed in a standard method that resolves character mapping conflicts.

The number of fonts that can be downloaded to your printer is dependent upon the amount of available Flash memory not already in use and the size of the font to be downloaded.

NOTE: Some Unicode fonts are large-sized. These include MS (Microsoft) Arial Unicode font (23 MB) available from Microsoft and the Andale font (22 MB) offered by Zebra. These large font sets typically support a large number of languages.

Procuring and Installing Asian Fonts

Asian bitmap font sets are typically downloaded into the printer either by the printer user or an integrator.

ZPL fonts are purchased separately from the printer.

The following EPL Asian Fonts are available as free downloads from zebra.com:

- Simplified and Traditional Chinese (The SimSun scalable Simplified Chinese font is pre-loaded onto printers which ship with a power cord that can be used in China.)
- Japanese—JIS and Shift-JIS mappings
- Korean including Johab
- Thai

Media Roll Adapters

The media roll adapters kit include a pair of 38.1 mm (1.5 in.) inner diameter (I.D.) media roll adapters and two mounting screws.

While the media roll adapters are intended to be permanently installed in the printer, they may be changed out as necessary to support various media roll sizes.

IMPORTANT: The adapters may wear out if they are changed too frequently.

Removing the media adapters to print on standard roll cores may leave plastic pieces in the media roll holders side areas that rub against the roll. These attached pieces can be pushed back into the side of the media roll holder.

Installing a Media Roll Adapter

The media roll adapters may wear out if they are changed too frequently. If possible, try to minimize the number of times you change them.

1. Place one screw in the top adapter mounting hole on the roll holder.

2. Start turning the screws clockwise using the Torx wrench until the tip of the screw just protrudes through the inside of the roll holder.

    The screws are self-tapping.
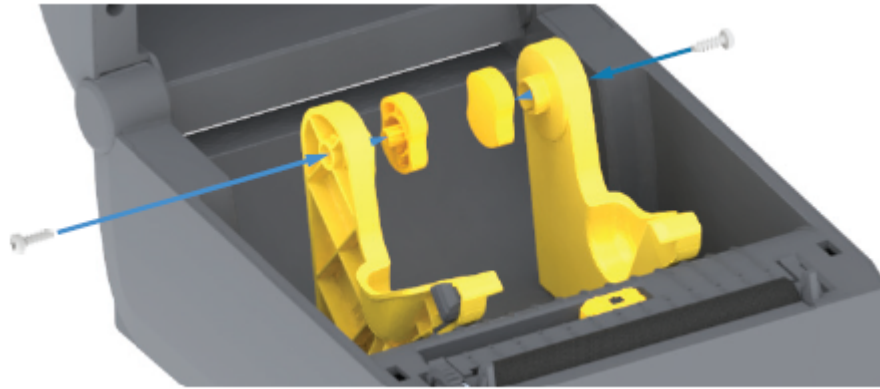
3. Place the adapter on the inside of the roll holder.

    The large side of the adapter is on top. The smooth side (no ribs) faces the middle of the printer.

4. Align the adapter's top screw hole to the protruding screw tip and pinch it tightly to the roll holder body.

5. Tighten the screw until there is no gap between the adapter and roll holder.

NOTE: Do NOT tighten beyond this point. Over-tightening will strip the thread.

6. Insert a screw in the bottom adapter mounting hole. Pinch the adapter tightly to the roll holder while tightening the screw. Tighten the screw until there is no gap between the adapter and roll holder.

NOTE: Do NOT tighten beyond this point. Over-tightening will strip the thread.

7. Repeat the above steps for the other adapter and roll holder.

When you remove the media adapter to print on standard roll cores, plastic pieces may be left behind in the media roll holder's side areas and rub against the roll. Push those attached pieces back into the side of the media roll holder.

Maintenance

Perform the routine cleaning and maintenance procedures in this section for optimal printer operation.

Cleaning

Your Zebra printer may require periodic maintenance to keep it functional and printing high quality labels, receipts, and tags.

IMPORTANT: The cutter mechanism does NOT require maintenance cleaning. DO NOT clean the blade or mechanism. The blade has a special coating to resist adhesives and wear.

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

CAUTION—PRODUCT DAMAGE: DO NOT use an air compressor in place of the can of compressed air. Air compressors have micro-contaminants and particles that can get into the air system and damage your printer.

CAUTION—EYE INJURY: When using compressed air to clean the sensors, use eye protection to protect your eyes from flying particles and objects.

Cleaning Supplies

The following printer cleaning supplies are recommended for use with your printer:

These and other printer supplies and cleaning accessories are available from zebra.com/supplies.

Printhead cleaning pens	For routine printhead cleaning.
99.7% min. pure isopropyl alcohol	Use a labeled alcohol dispenser. **NOTE:** Never re-moisten cleaning materials used to clean the printer. Always use clean supplies.
Fiber-free cleaning swabs	To clean the media path, guides, and sensors.
Cleaning wipes	To clean the media path and interior (for example, Kimberly-Clark Kimwipes)

Can of compressed air	**CAUTION—PRODUCT DAMAGE:** DO NOT use an air compressor in place of the can of compressed air. Air compressors have micro-contaminants and particles that can get into the air system and damage your printer.

IMPORTANT: To avoid product damage and risk of personal injury, follow the precautions included in each cleaning procedure when cleaning the printer.

Recommended Cleaning Schedule

Printer part	Cleaning Interval	Cleaning Procedure
Printhead	After every five rolls printed.	See Cleaning the Printhead on page 102.
Platen (drive) roller	As needed to improve print quality. (Platen rollers can slip causing print image distortion, and in worst-case scenarios not move the loaded print media.)	See Cleaning and Replacing the Platen (Driver Roller) on page 106.
Media path	As needed.	Clean it thoroughly with fiber-free cleaning swabs and cloths moistened with 90% isopropyl alcohol. Let the alcohol evaporate completely. See Cleaning the Media Path on page 103.
Interior	As needed.	Use a soft cloth, brush or compressed air to wipe or blow dust and particles out of the printer. Use 90% isopropyl alcohol and a fiber-free cleaning cloth to dissolve contaminants like oils and grime.
Exterior	As needed.	Use a soft cloth, brush or compressed air to wipe or blow dust and particles out of the printer. The exterior of the printer can be cleaned using plain soap and water solutions to moisten the cloth. Only use the minimum amount of cleaning solution to avoid getting solution in the printer or other areas. Do not clean connectors or interior of the printer with this method.
Label dispenser option	As needed to improve label dispensing operations.	See Cleaning the Label Dispenser on page 104.
Cutter option	Call a service technician. The cutter is NOT an operator-serviceable component. There are no user-serviceable parts in the cutter unit. You may however use the Exterior cleaning procedure to clean the cutter bezel (housing). **CAUTION: CUT WARNING!** Never remove the cutter cover (bezel). Never attempt to insert objects or fingers in to the cutter mechanism. **CAUTION—PRODUCT DAMAGE:** Do NOT clean inside the cutter opening or blade mechanism. The blade has a special coating to resist adhesives and wear. Cleaning it may ruin the blade. **CAUTION—PRODUCT DAMAGE:** Using unapproved tools, cotton swabs, solvents (including alcohol), etc. to clean the cutter may damage or shorten the cutter's usable life or cause the cutter to bind.	

Cleaning the Printhead

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

When you load new media, you should also clean the printhead for optimal print operations.

CAUTION: The printhead becomes hot while printing. To protect from damaging the printhead and risking personal injury, AVOID touching the printhead. Use ONLY the cleaning pen to perform printhead maintenance.

CAUTION—ESD: The discharge of electrostatic energy that accumulates on the surface of the human body or other surfaces can damage or destroy the printhead and other 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.

1. If transfer ribbon is installed, remove it before proceeding.

2. 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 outside of media path.
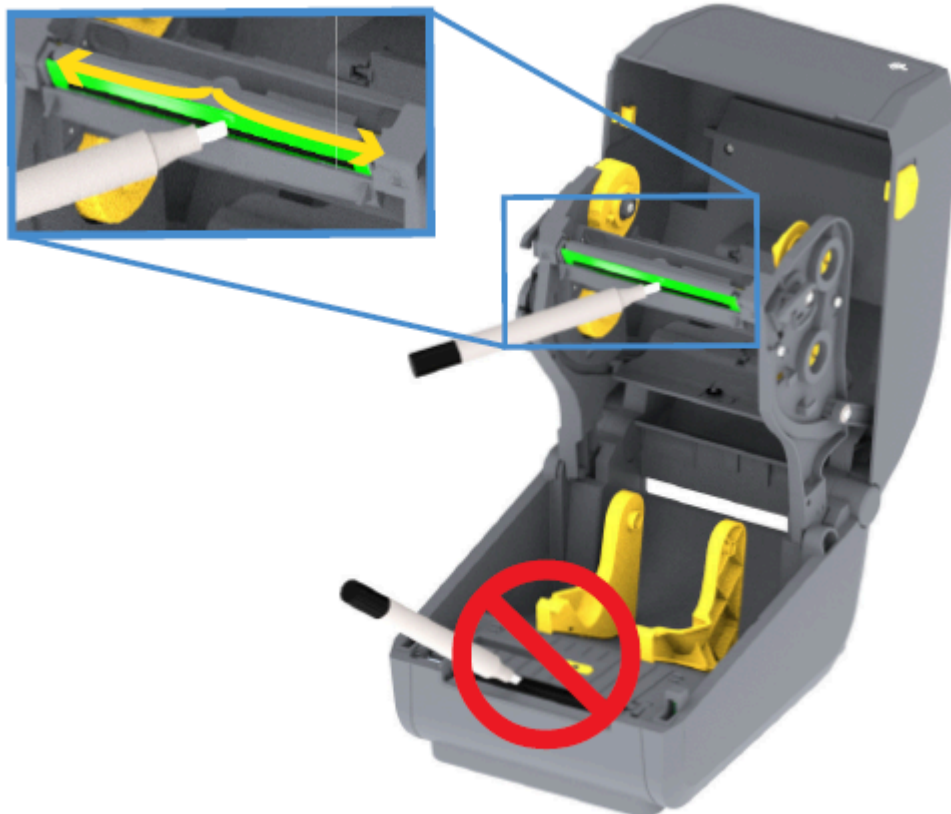
3. Wait one minute before closing the printer or loading ribbon to allow all components to dry.

Cleaning the Media Path

Use this procedure to keep the media path clean and free of debris and adhesives.

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

2. Lightly moisten the cleaning swab or cloth with 90% solution isopropyl alcohol.

NOTE: For hard-to-clean areas, use extra alcohol on a cleaning swab to soak the debris and break up any adhesive that may have accumulated on surfaces in the media compartment.

3. Do NOT clean the printhead, sensors, or platen as part of this process.
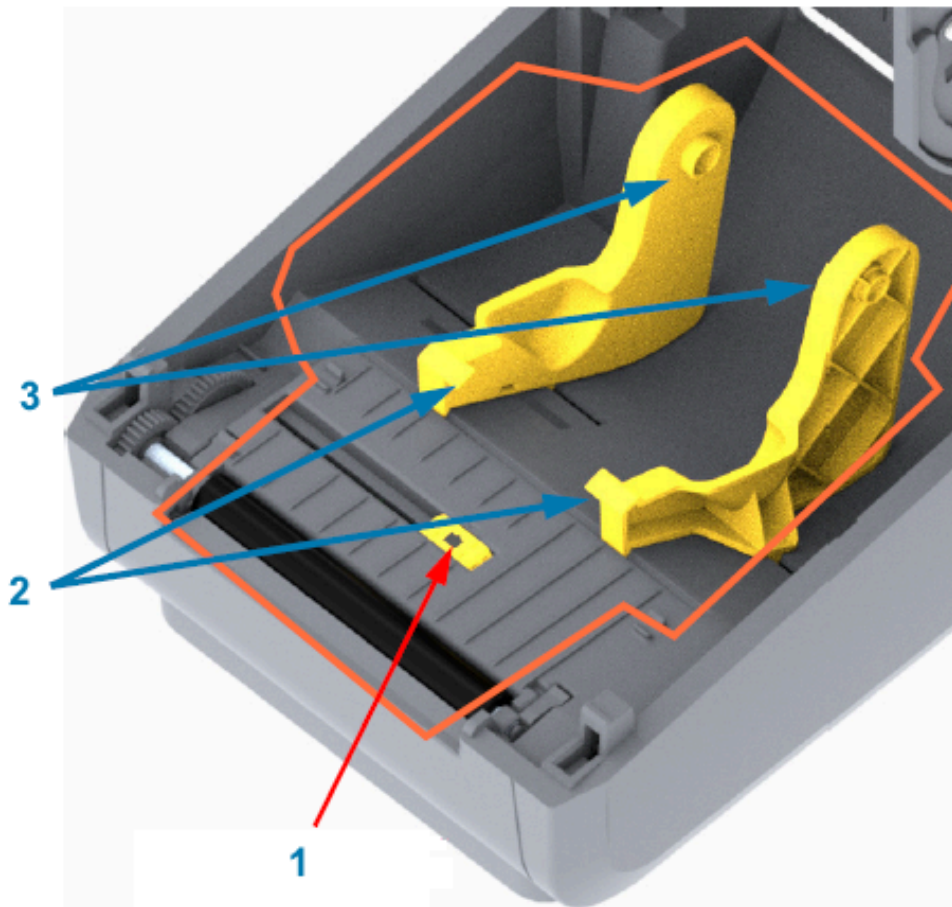
IMPORTANT: DO NOT clean the sensor window (1). Clean only the sensor channel, the groove along which which it moves.

1	Sensor window
2	Media guides
3	Media roll holders

4. To clean the lower half of the printer:

    a) Wipe the inside surfaces of the roll holders and the underside of the media guides with a cleaning swabs and wipes.

    b) Wipe only the movable-sensor's slide channel (not the sensor window itself). Move the sensor to get to all areas.

    c) Wait one minute for the cleaning solution to dry before closing the printer.

    d) Discard the used cleaning supplies.

Cleaning the Cutter

This procedure is a continuation of cleaning the media path for printers that have the cutter option installed. The plastic media path surfaces can be cleaned but NOT the internal cutter blades or mechanism.

IMPORTANT: The cutter blade mechanism does not require maintenance cleaning. Do NOT clean the blade. This blade has a special coating to resist adhesives and wear.

IMPORTANT: CUT WARNING! There are no operator serviceable parts in the cutter unit. NEVER remove the cutter cover (bezel). NEVER attempt to insert objects or fingers in to the cutter mechanism.

CAUTION—PRODUCT DAMAGE: Using unapproved tools, cotton swabs, solvents (including alcohol), etc. may damage or shorten the cutter's usable life or cause the cutter to jam.

1. Wipe the ridges and the plastic surfaces of the media entry (inside) and exit slot (outside) of the cutter. Clean inside the areas outlined in this image.

2. Repeat as necessary to remove any adhesive or contaminate residue after the surfaces have dried.
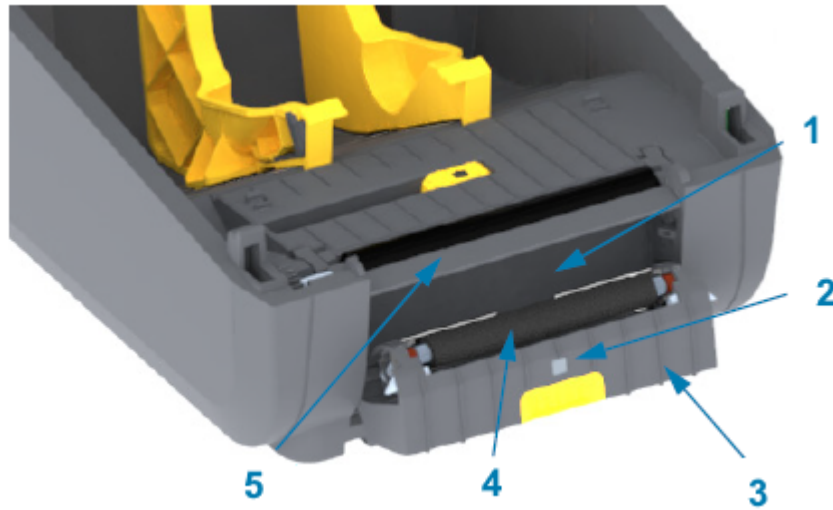
Cleaning the Label Dispenser

NOTE: The label dispenser is a factory-installed option.

1. Open the door and clean the peel bar, the inner surfaces, and the ridges on the door.

2. Wipe the roller while rotating it. Discard the swab or cloth. Clean again to remove diluted residue.

3. Clean the sensor window.

   The window should be clear of streaks and residue.

1	Inside wall
2	Label-taken sensor
3	Ridges
4	Pinch roller
5	Peel bar

Cleaning the Sensor

Dust can accumulate on the media sensors. Use only a can of compressed air to clean the sensors.

This image shows the location of the Movable Sensor for black mark and lower web/gap media.
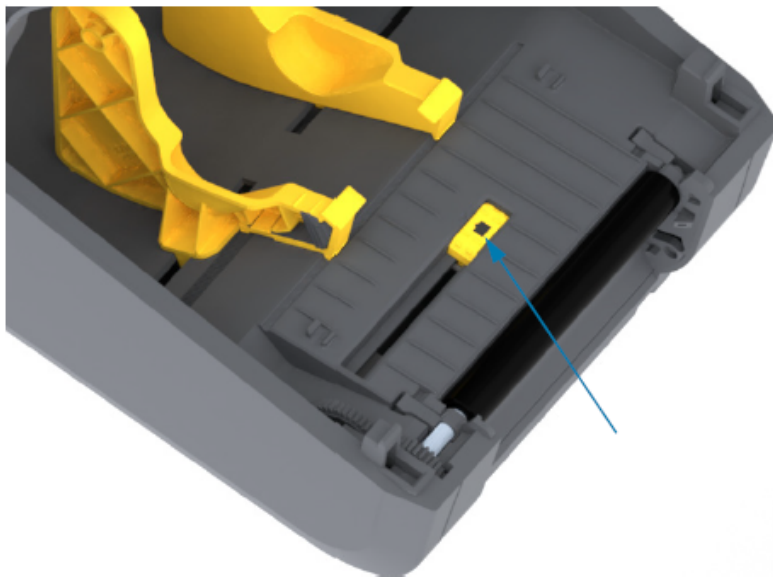
1. Clean the Movable Sensor's (1) window. Gently brush away dust or use a can of compressed air; if necessary, use a dry swab to brush away dust. If adhesives or other contaminants remain, use an alcohol-moistened swab to break it up.

IMPORTANT: Do NOT use an air compressor to remove dust from the sensor or the inside of the printer. Compressors tend to add moisture, fine grit, and lubricant which can contaminate your printer components and interior.

2. Use a dry swab to remove any residue that may be left from the first cleaning.

3. Repeat the above steps as required until all residue and streaks are removed from the sensor.

Cleaning and Replacing the Platen (Driver Roller)

The platen is the print surface and drive roller for your media. It normally does not require cleaning. Print operations tolerate some accumulation of paper and liner dust on the platen roller.

CAUTION—PRODUCT DAMAGE: Contaminants 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 contaminants should be cleaned off the platen immediately.

Clean the platen (and the media path) whenever the printer has significantly poorer performance, print quality or media handling. 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 and clean, damp cloth very lightly moistened with medical grade alcohol (90% pure or better) as described in this procedure.

1. To remove the platen roller:

   a) Open the cover (and dispenser door, if the dispenser is installed).

   b) Remove media from platen area.

   c) Pull the platen-bearing latch-release tabs (1) on the right and left sides towards the front of the printer and rotate them up. (The images with the arrows below show the latches in their closed and open positions respectively.)
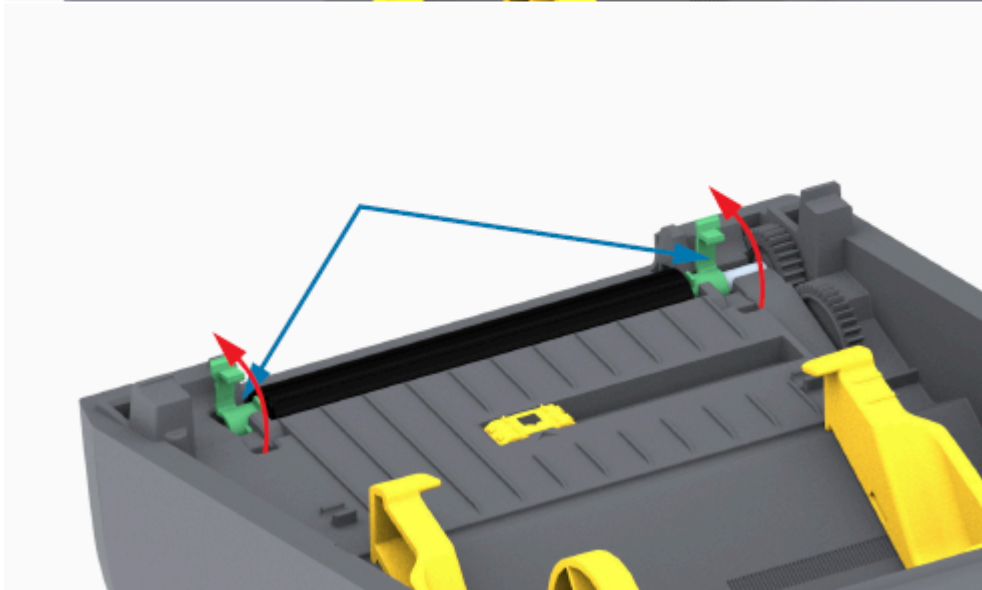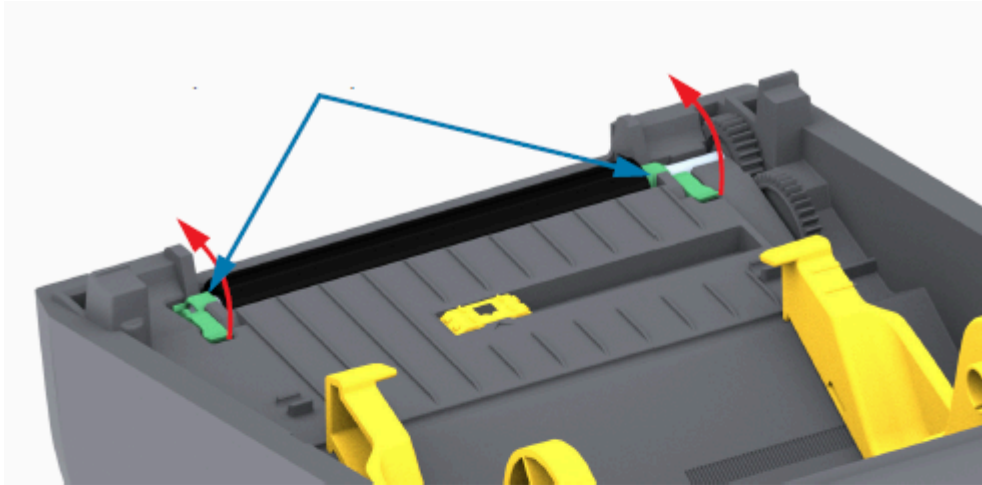
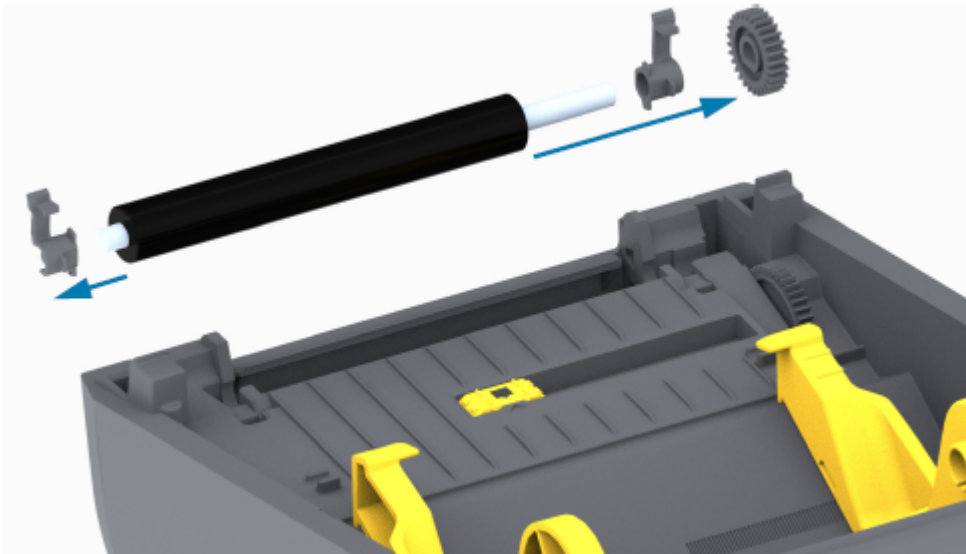**2.** Lift the platen out of the printer's bottom frame. (The arrows in this image point to the platen bearings.)
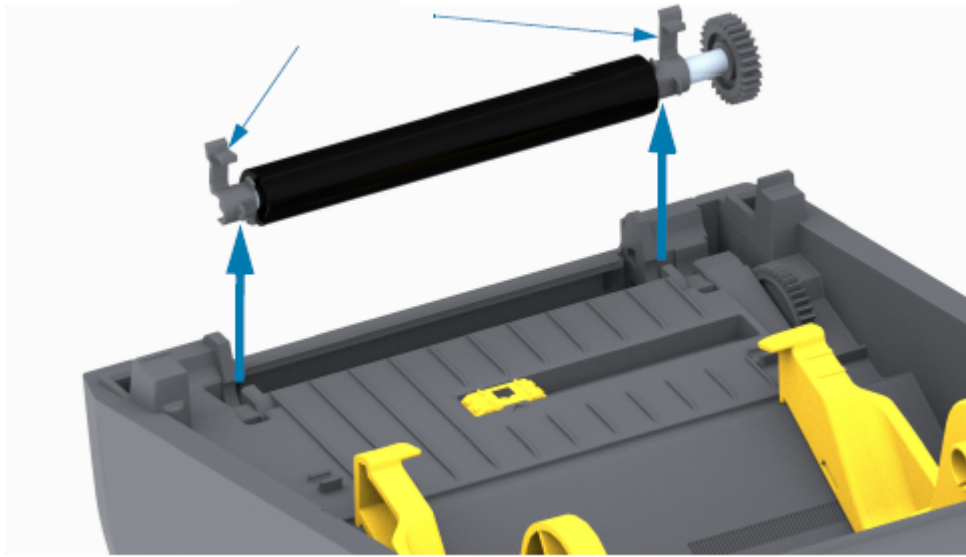
3. Slide the gear and the two bearings off the shaft of the platen roller.

4. Perform this step for cleaning only:

    a) Clean the platen with the alcohol-moistened swab. Clean from the center out.

    b) Repeat the above step until all roller surface has been cleaned thoroughly. While adhesives and oils, for example, may be thinned by the initial cleaning, they may not have been completely removed.

    c) If there has been heavy adhesive build-up or a label jam, repeat with a new swab to remove any residual contaminants.

5. Discard the cleaning swabs after use. Do not reuse them.

6. Make sure the bearings and drive gear are on the shaft of the platen roller.
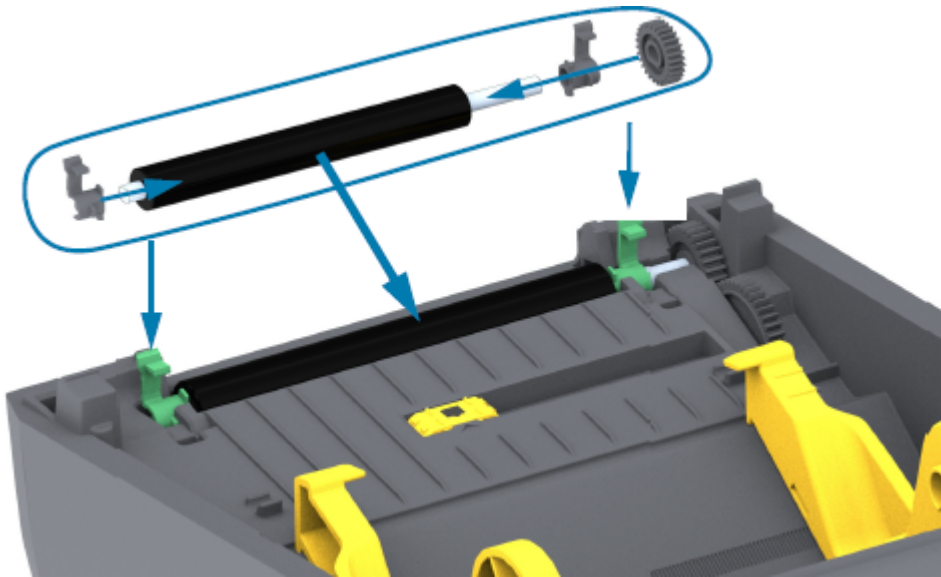
7. Align the platen with the gear to the left and lower it into the printer's bottom frame.

8. Rotate the platen-bearing latch-release tabs down on the right and left sides towards the rear of the printer and snap them into place.

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

Updating Printer Firmware

Updating the printer's firmware periodically enables you to avail of new features, improvements and printer upgrades relating to media handling and printer communications. Use Zebra Setup Utilities (ZSU) to load new firmware.

1. Open Zebra Setup Utilities.

2. Select your installed printer.

3. Click **Open Printer Tools**.

   The Tools window opens.

4. Click the **Action** tab.

5. Load media in the printer (see Media Types and Sensing on page 31).

6. Click **Send file**.

   The lower half of the window shows a filename and path with a **Browse...** button to select the latest firmware file you downloaded from the Zebra website.

7. Wait and observe the user interface.

If the firmware version shown is different than the version installed on the printer:

- The firmware download to the printer begins.

- The printer's STATUS Indicator flashes Green while the firmware is downloading.

- The printer restarts and installs the firmware.

- After a successful firmware update, the printer's STATUS Indicator displays solid Green, indicating that the firmware was validated and installed.

- The printer prints a configuration report.

The firmware update is complete.

Other Printer Maintenance

There are no user level maintenance procedures beyond those detailed in this section.

Fuses

There are no replaceable fuses in the ZD Series printers or power supplies.

Troubleshooting

Use the information in this section to troubleshoot printer issues.

Resolving Alerts and Errors

Alert	Possible Cause	Recommended Solution
Media Path		
Printhead Open		
A print command has been issued, or **FEED** was pressed, and the printer detected that the printhead (cover) is not closed.	The cover is open or has not been closed properly.	Close the cover/printhead. Push down on the front top corners of the printer's cover. You should hear and feel the cover latches snap in place to lock the cover closed for printing. (See Opening and Closing the Printer on page 14.) If that does not resolve the issue, contact your Zebra partner or Zebra Tech Support for assistance.
Media Out		
A print command has been issued, **FEED** was pressed, or the printer is printing and cannot detect media in the print path.	No media (roll) in the printer	Load your chosen media in the printer and close the printer. (See Loading Media on page 32.) You may need to press **FEED** one time or **PAUSE** to get the printer to resume printing.

Alert	Possible Cause	Recommended Solution
	The printer has detected an end-of-media-roll condition either because it is at the end of a roll or there is a label missing between two labels in the middle of the roll. (See Detecting a Media-Out Condition on page 51.)	Open the printer. If the media is at the end of the roll, load new media and continue printing. (See Media Types and Sensing on page 31.) **NOTE:** Do NOT turn printer power OFF if it detects a media-out condition in the middle of a roll. The print job will be lost. (See Replacing Supplies while Using the Printer on page 88.) If a label is missing in the middle of the roll: • Close the printer. • Press **FEED** to advance the roll to the next label. • Then press **FEED** again once or twice to resync the label calibration.
	Misaligned movable media sensor	Check the position of the movable media sensor. (See Setting Media Sensing by Media Type on page 32 and Adjusting the Movable Sensor for Black Marks or Notches on page 35.) The printer may need to be recalibrated for the media after adjusting the sensor. (See Running a SmartCal Media Calibration on page 48.)
	The printer is set for non-continuous (labels or black mark) media, but continuous media is loaded.	Make sure that the media sensor is positioned in its default center location. (It may previously have been positioned for black-mark media using Adjusting the Movable Sensor for Black Marks or Notches on page 35. See Setting Media Sensing by Media Type on page 32.) The printer may need to be recalibrated for the media after adjusting the sensor. (See Running a SmartCal Media Calibration on page 48.)

Alert	Possible Cause	Recommended Solution
	Dirty media sensor	1. Clean the upper web (gap) Sensor Array and the lower Movable Media sensors. (See Cleaning the Sensor on page 105.) 2. Reload media in the printer. 3. Adjust the Movable Media sensor's position for your media. 4. Close the cover. (See Opening and Closing the Printer on page 14). 5. Recalibrate the printer for the media. (See Running a SmartCal Media Calibration on page 48.)
	The printer is unable to sense the media due either to potential data corruption of memory or to faulty components.	Reload the printer's firmware. (See Updating Printer Firmware on page 109.) If that does not resolve the issue, contact your Zebra partner or Zebra Tech Support for assistance.
Ribbon Out		
The printer is printing and stops while printing OR A print job has been sent to the printer and the printer immediately reports this alert.	The printer has detected the end of the ribbon. The end of the ribbon has a reflective trailer on the end of Zebra-branded transfer ribbon; the printer senses it as an end-of-ribbon state. (See Detecting a Ribbon-Out Condition on page 52.)	1. Remove the ribbon and replace the ribbon rolls or the ribbon cartridge in the printer WITHOUT turning the printer off. 2. Close the printer. You may need to press **FEED** one time to get the printer to resume the current print operation.

Alert	Possible Cause	Recommended Solution
Cut Error		
The cutter blade is bound and is not moving properly	The media, adhesive buildup, or an external object has stopped the cutter blade from operating.	• Turn printer power OFF by holding **POWER** down for five seconds. • Wait for the printer to shut down completely. • Turn printer power ON. If that does not resolve the issue, contact your Zebra partner or Zebra Tech Support for assistance. ⚠️ **CAUTION: CUT WARNING!** There are no operator-serviceable parts in the cutter unit. NEVER remove the cutter cover (bezel). NEVER attempt to insert objects or fingers in to the cutter mechanism. **CAUTION—PRODUCT DAMAGE:** The use of unapproved tools, cotton swabs, solvents (including alcohol), etc. may damage or shorten the cutter's usable life or cause the cutter to jam.
Printhead Over Temp		
The printhead is over temperature and paused to allow the printhead to cool.	The printer is printing a large batch job, typically with large amounts of print.	The print operation will resume after the printhead has cooled.
	The ambient temperature at the printers location exceeds the specified operating range. The printer's ambient temperatures can at times be higher if it is in direct sunlight.	Move the printer location or cool the ambient temperature in the printer's current location.
Printhead Shutdown		
The printhead is below operating temperature for proper printing.	The printhead has had a critical temperature or power failure.	1. Turn printer power OFF by holding **POWER** down for five seconds. 2. Wait for the printer to shutdown completely. Turn printer power ON. If that does not resolve the issue, contact your Zebra partner or Zebra Tech Support for assistance.
Printhead Under Temp		

Alert	Possible Cause	Recommended Solution
The printhead is below operating temperature for proper printing.	The ambient temperature where the printer is located is below the specified operating range.	1. Turn printer power OFF. 2. Move the printer to a different location and wait for it to warm naturally. ✎ **NOTE:** Moisture may condense in (and on) the printer if the temperature changes too quickly. For optimal printer operating and storage temperature ranges, see Select a Location for the Printer on page 29.
	The printhead thermistor has failed.	• Turn printer power OFF by holding **POWER** down for five seconds. • Wait for the printer to shutdown completely. • Turn printer power ON. If that does not resolve the issue, contact your Zebra partner or Zebra Tech Support for assistance.

Resolving Print Issues

This section helps you identify issues with printing or print quality, the possible causes, and the recommended solutions.

Alert	Possible Cause	Recommended Solution
General Print Quality Issues		
The printed image does not look right.	The printer is set at an incorrect darkness level and/or print speed.	Adjust the printers Darkness setting. (See Adjusting Print Quality on page 89.)
	The printhead is dirty.	Clean the printhead. (See Cleaning the Printhead on page 102.)
	The platen roller is dirty or damaged.	Clean or replace the platen. Platens can wear out or get damaged. (See Cleaning and Replacing the Platen (Driver Roller) on page 106.)
	Thermal Transfer printing— Printing looks fuzzy, has smudge marks, or has voids or holes in print with no particular pattern.	The print material (wax, wax resin, or resin) may not match the material (paper, media coating, or synthetics) in use. ✎ **NOTE:** Avoid setting the print speed higher than the maximum-rated speed for your media (ribbon or label material combination).

Alert	Possible Cause	Recommended Solution
	You may be using the wrong power supply.	Verify you are using the power supply that came with your printer.
	The printhead has worn out.	Contact your Zebra partner or Zebra Tech Support for assistance.
No Print on the Label		
The printed image does not look right.	The media may not be direct thermal media and is made for the Thermal Transfer mode of printing.	See Determining Thermal Media Types on page 131 to ensure you are using the right type of media and the right printer settings for the media you are using.
	Media has been loaded incorrectly.	The media printable surface must face up towards the printhead. (See Media Preparation for Printing on page 30 and Media Types and Sensing on page 31.)
Labels Are Distorted in Size or Print Area Start Position Varies		
The printed image or a part of it skips between labels (mis-registration).	Media is loaded incorrectly. OR The movable media sensor is not set properly.	Verify that the sensor is positioned correctly for your media type and its sensing location. See the following: • Media Types and Sensing on page 31 • Setting Media Sensing by Media Type on page 32 • Adjusting the Movable Sensor for Black Marks or Notches on page 35
	The media sensors are not calibrated for your media length, the media's physical properties, or sensing type (gap/notch, continuous, or mark).	See Running a SmartCal Media Calibration on page 48.
	The platen (drive) roller is slipping or damaged.	Clean or replace the platen. Platens can wear out or get damaged. (See Cleaning and Replacing the Platen (Driver Roller) on page 106.
	The printer has communication issues with cables or communication settings.	See Resolving Communication Issues on page 116.

Resolving Communication Issues

This section identifies problems with communications, the possible causes, and the recommended solutions.

Alert	Possible Cause	Recommended Solution
Label Job Sent, Data Transfers, But Labels Don't Print		

Alert	Possible Cause	Recommended Solution
A label format was sent to the printer but was not recognized.	The prefix and delimiter characters set in the printer do not match the characters in the label format.	Verify the ZPL programming prefix (COMMAND CHAR) and delimiter (DELIM./CHAR) characters. (See Configuration Setting to Command Cross-Reference on page 136.)
Data was transferred to the printer but the printer does not print.	Incorrect data is being sent to the printer.	Check the label format. (See the ZPL Programming Guide for details on printer programming.)

Resolving Miscellaneous Issues

This section identifies miscellaneous issues with the printer, possible causes and solutions.

Alert	Possible Cause	Recommended Solution
Settings are Lost or Ignored		
Some parameters are set incorrectly.	Printer settings were changed without saving them. (The ZPL ^JU command was not used to save the printer configuration before printer power was turned OFF.)	Cycle printer power OFF and then back ON to verify the settings were saved.
	The label format/form commands or commands sent directly to the printer have syntax errors or have been used incorrectly. • A firmware command turned off the ability to change the parameter. • A firmware command changed the parameter back to its default setting.	See the ZPL Programming Guide to verify command usage and syntax. (This guide and other online printer support resources are available from zebra.com/support.)
	The prefix and delimiter characters set in the printer do not match the ones in the label format.	Verify the ZPL programming settings of the Control, Command and Delimiter communication character settings are correct for your system software environment. (See ZPL Configuration on page 134.) Print a Configuration Report (see Test Printing with the Configuration Report on page 49) to ensure these are correct. Compare them to the commands in the label format/form you are trying to print.

Alert	Possible Cause	Recommended Solution

	The Main Logic board may not be working properly. Firmware is corrupted or the Main Logic board failed.	1. Do one of the following
		
		  a. Reset the printer to its factory defaults (see FEED Button Modes – Power ON on page 24).
		
		  b. Use the Zebra Setup Utility and open **Printer Tools** > **Action** > **Load printer defaults** .
		
		2. Reload printer firmware. (See Updating Printer Firmware on page 109.)
		
		If the printer does not recover from this error, contact your Zebra partner or Zebra Tech Support for assistance.

Non-continuous Labels Act as Continuous labels		
A non-continuous label format with matching media (loaded in the printer) was sent to the printer, but prints like it is continuous media.	The printer was not calibrated for the media being used.	• Set the printer for the correct media type (gap/notch, continuous, or mark). • Run a SmartCal Media Calibration. (See Running a SmartCal Media Calibration on page 48.)
	The printer is configured for continuous media.	
Printer Locks Up		
All indicator lights are on and the printer locks up or the printer locks up while restarting.	The printer memory has been corrupted by an unknown event.	Use one of these options to reset the printer to its factory defaults: • Follow the instructions in FEED Button Modes – Power ON on page 24. • Open the Zebra Setup Utility in your central device, then go to **Printer Tools** > **Action** > **Load printer defaults**. • Reload printer firmware. (See Updating Printer Firmware on page 109.) If the printer does not recover from this error, contact your Zebra partner or Zebra Tech Support for assistance.

General Printer Diagnostics

You can diagnose printer issues and get insights into the operating condition of your printer using diagnostic reports, calibration procedures, and other tests.

(!) **IMPORTANT:** Use full-width media when performing self-tests. If your media is not wide enough, the test labels may print on the platen (drive) roller.

Keep these tips in mind when testing:

• During these self tests, do NOT send data to the printer from the host device. (If your media is shorter than the label to be printed, the test label proceeds to the next label.)

- When canceling a self-test prior to completion, always reset the printer by turning printer power OFF and back ON.

- If the printer is in dispense mode and the liner is being taken up by the applicator, the labels must be removed manually as they become available.

Diagnostic self-tests are enabled by pressing a specific user interface button or combination of buttons while turning printer power ON. Keep the button(s) pressed until the first indicator light turns off. The selected self test automatically starts at the end of the printer's power-on self-test.

Printer Network (and Bluetooth) Configuration Report

ZD Series printers with (factory-installed) Wired or Wireless connectivity options will print an additional printer configuration report. You will need this information to establish and troubleshoot printing on Ethernet (LAN/WLAN) and Bluetooth 4.1 networks.

This printout is printed with the ZPL ~WL command.

NOTE: Printers with factory-installed wireless connectivity options indicate support for iOS in the lower part of this report.

Manually Calibrating the Printer

It is recommended that you calibrate the printer manually when using pre-printed media or if the printer will not correctly auto-calibrate when you run a SmartCal procedure.

Make sure media is loaded. A good common label size is 4 by 6 inches.

1. Turn printer power ON.

2. Send this command to the printer:`! U1 do "ezpl.manual_calibration" ""`

   (See Sending Files to the Printer.)

The printer will set the media sensor for the label backing in use. When this adjustment is complete, the printer will auto-feed the media roll until a label is positioned at the printhead. It will then print a profile of the media sensor settings (similar to the one shown here). When done, the printer will save the new settings in memory. It is now ready for normal operation.

This image shows the start of several labels (at the right).
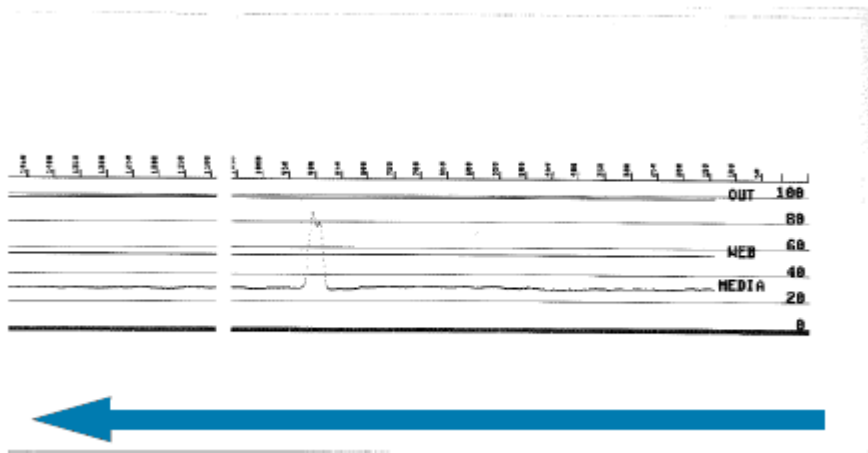
This image shows the end of several labels (at the left).
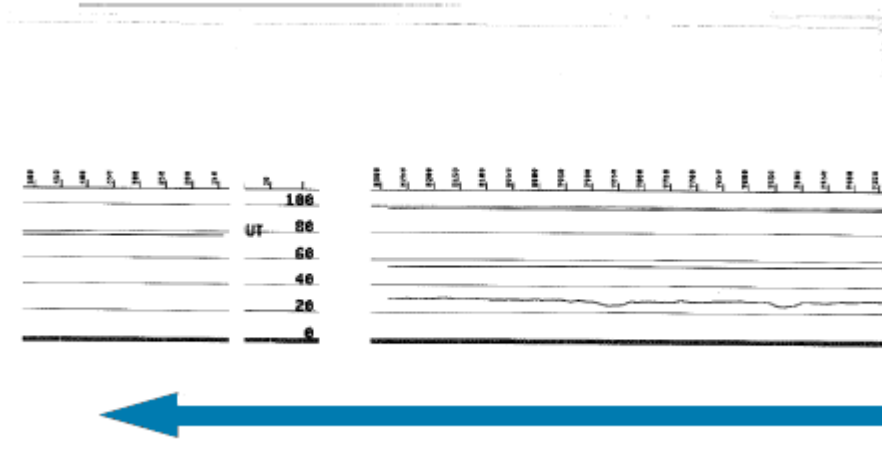
Diagnosing Communication Issues

If there is a problem transferring data between the computer and the printer, try placing the printer in Communications Diagnostics mode. The printer will print the ASCII characters and their respective hexadecimal values for any data received from the host computer:

1. To enter diagnostic mode, do one of the following:

   - Send the ZPL ~JD command- to the printer. (See the ZPL Programming Guide.)

   - Send the EPL dump command to the printer. (See the EPL Programming Guide.)

   - Use the **FEED** button after turning printer power ON. (For details, see FEED Button Modes – Power ON on page 24.)

   The printer prints the following:
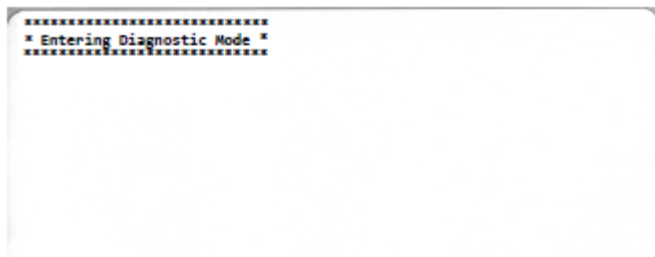
2. Retrieve the printout and and use the information below to understand the report.

The Communications Diagnostic printout displays hexadecimal data (00h–FFh which is 0-255 decimal) with a specific character for each hexadecimal value displayed above the hexadecimal data.
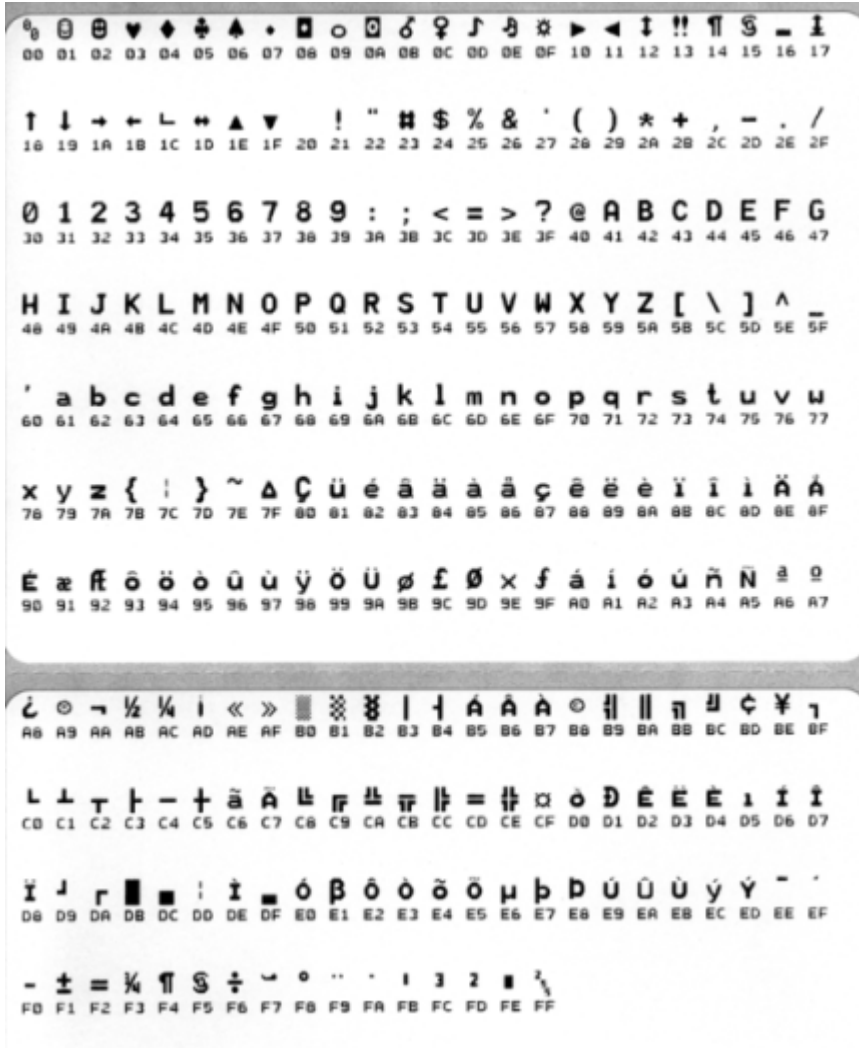
Serial port and Bluetooth data handling errors (listed here) get logged in the blank lines between the lines of data:

- `F` = Frame error
- `P` = Parity error
- `N` = Noise error
- `O` = Data overrun error

To exit diagnostic mode and resume printing, turn printer power OFF and then back ON. Alternately, press the **FEED** button as many times as it takes to clear the printer's command buffer and print `Out of Diagnostic mode` on the label.
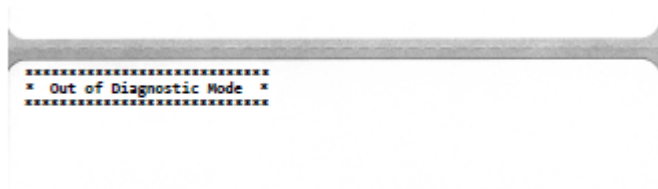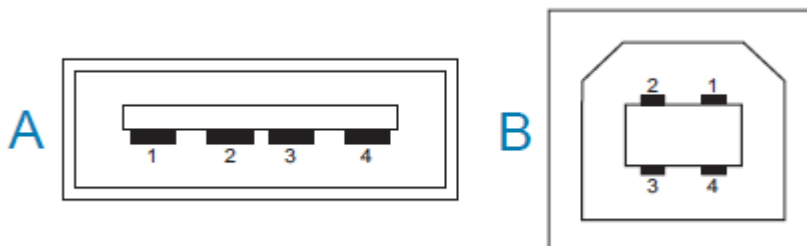
Interface Connector Wiring

This section details the connector wiring for the printer connector interface.

Universal Serial Bus (USB) Interface

This figure shows the cable wiring required to use the printer's USB two interfaces.

> **IMPORTANT:** When used with third-party cables, your printer requires USB cables—or USB cable packaging—that bears the Certified USB mark to guarantee USB 2.0 compliance. Visit usb.org for details.

Type A and Type B connectors require different pinouts.

USB A style connector pinouts (A in the image shown)	Pin 1 — Vbus (+5 VDC). (Pin 2 — D- (Data Signal, Negative Side)
	Pin 3 — D+ (Data Signal, Positive Side)
	Pin 4 — Shell (Shield/Drain Wire)
USB B style connector pinouts (B in the image shown)	Pin 1 — Vbus (Not Connected)
	Pin 2 — D- (Data Signal, Negative Side)
	Pin 3 — D+ (Data Signal, Positive Side)
	Pin 4 — Shell (Shield/Drain Wire)

> **IMPORTANT:** USB Host +5 VDC power source is shared with serial-port phantom power. It is limited to 0.5mA per USB Specification and with on-board current limiting. The maximum current available through the serial port and USB port should not exceed a total of 0.75 Amps.
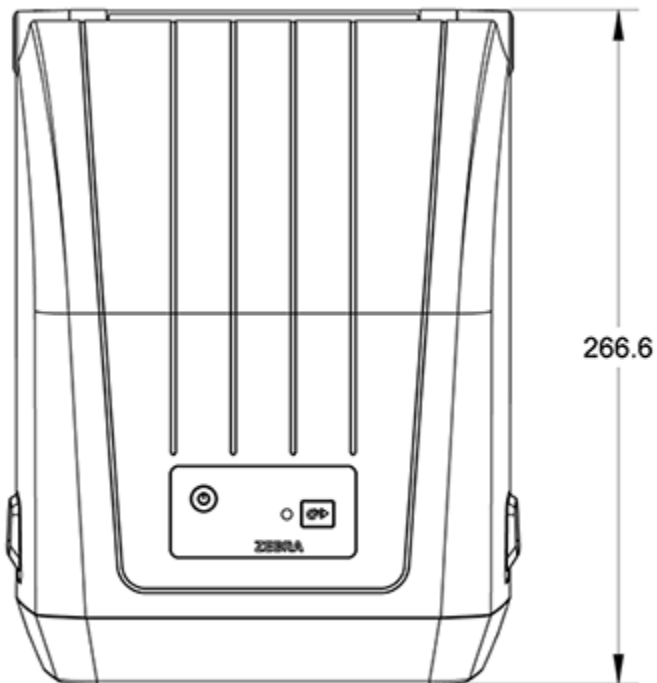
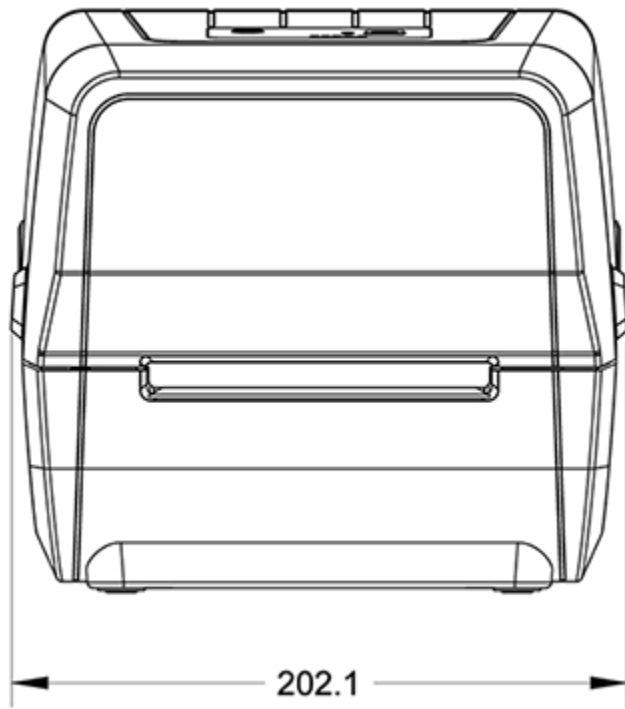# Dimensions

This section lists external printer dimensions.
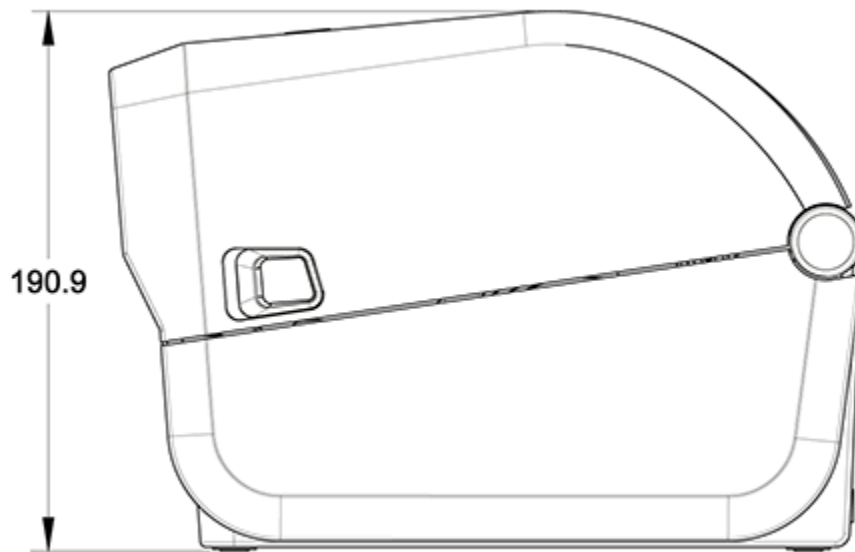
Dimensions – Standard Printer

Standard Printer Dimensions
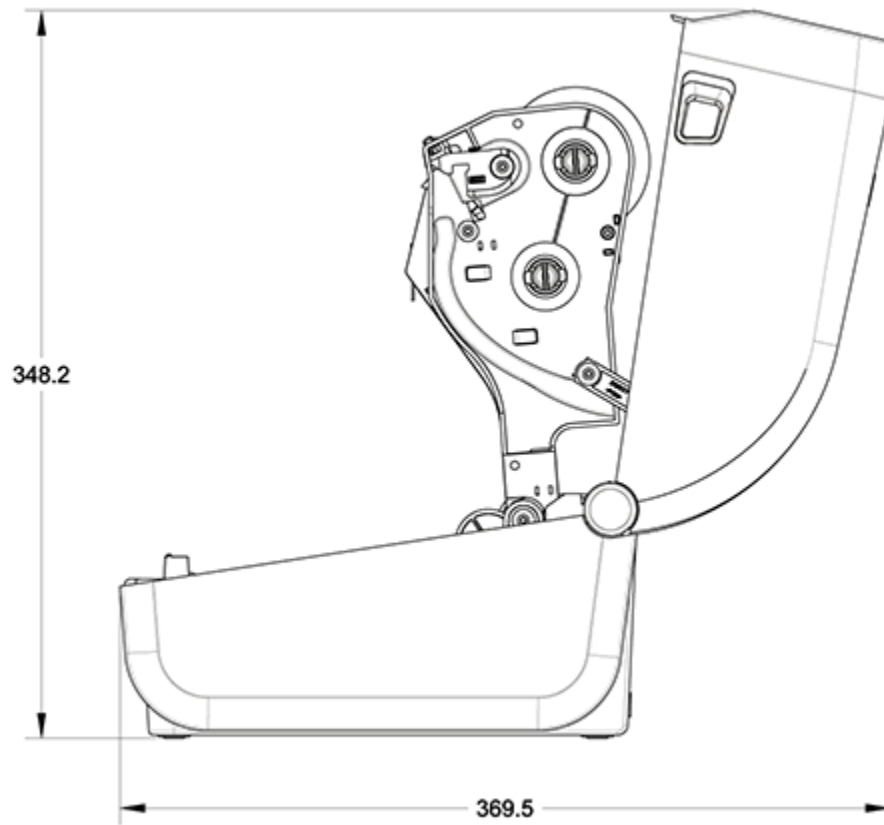
All dimensions are in millimeters.

All dimensions are in millimeters.
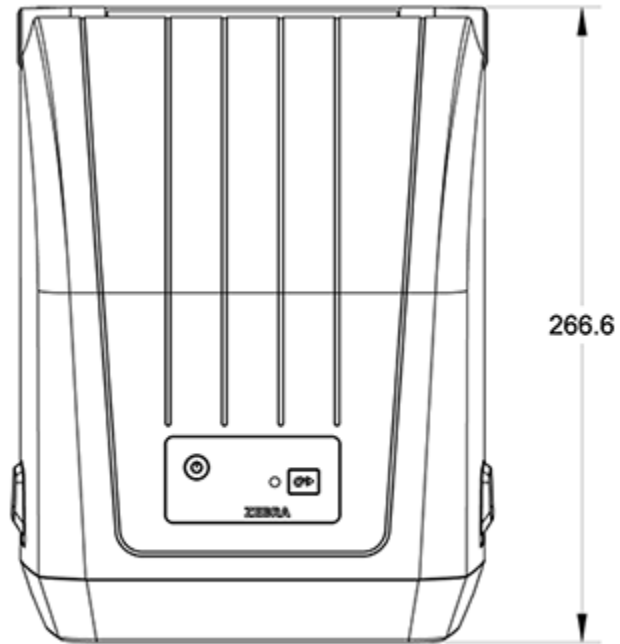
348.2

369.5

All dimensions are in millimeters.

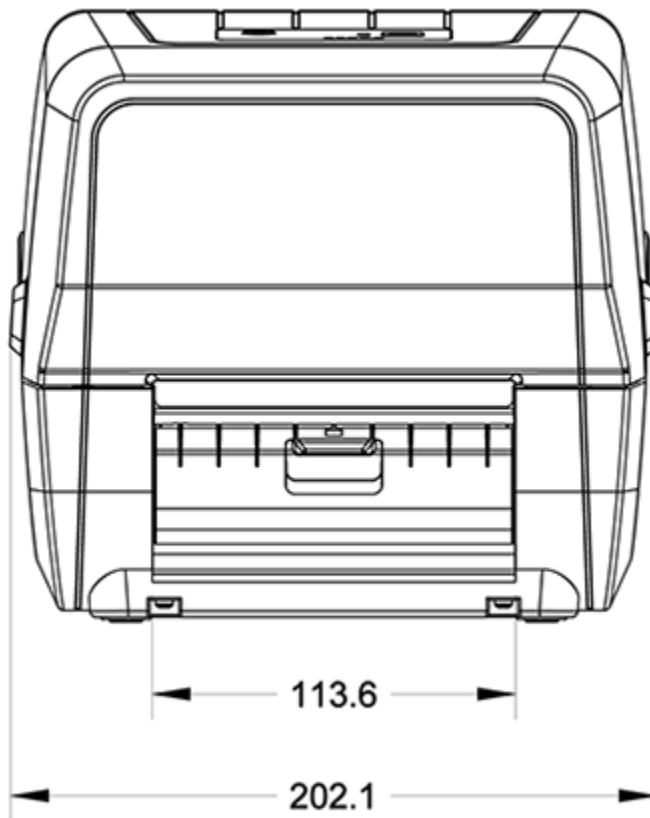## Printer with Label Dispenser – Dimensions

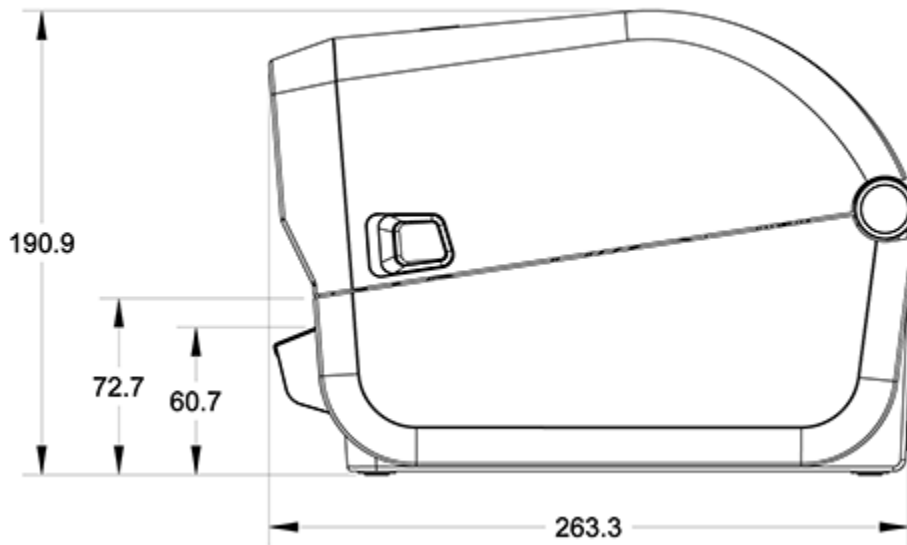**NOTE:** The label dispenser is a factory-installed option.
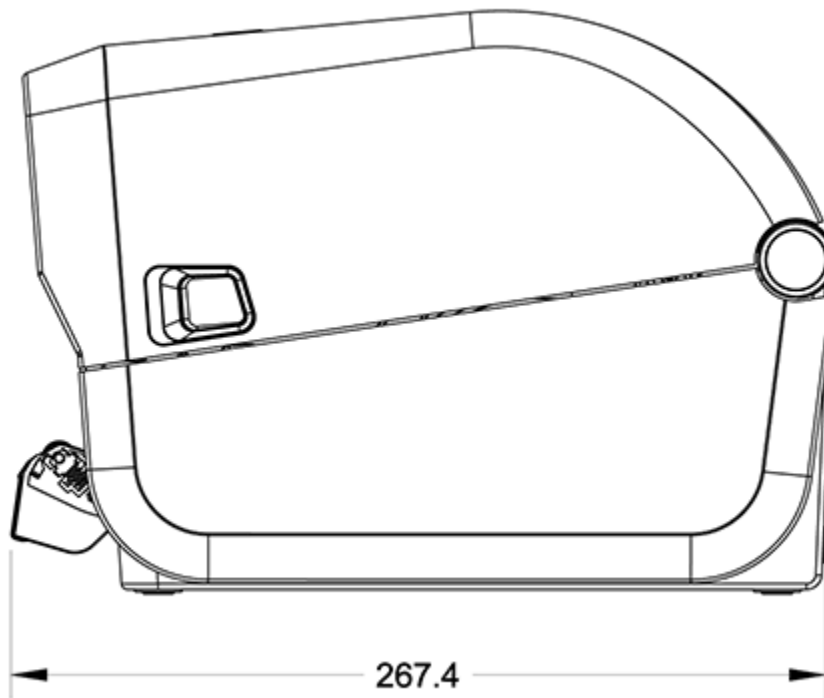
All dimensions are in millimeters.

266.6

All dimensions are in millimeters.

113.6

202.1

All dimensions are in millimeters.

Dimensions – Printer with Cutter Option

 NOTE: The cutter is a factory-installed option.

All dimensions are in millimeters.

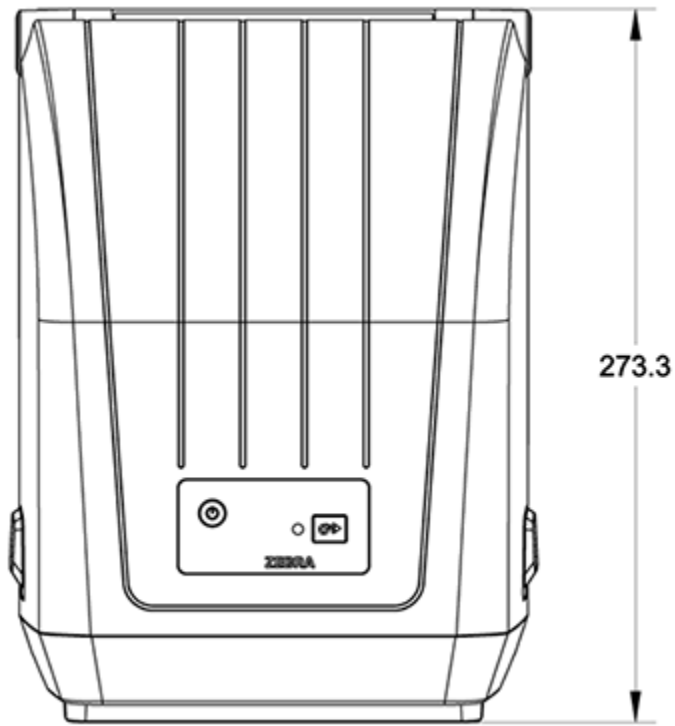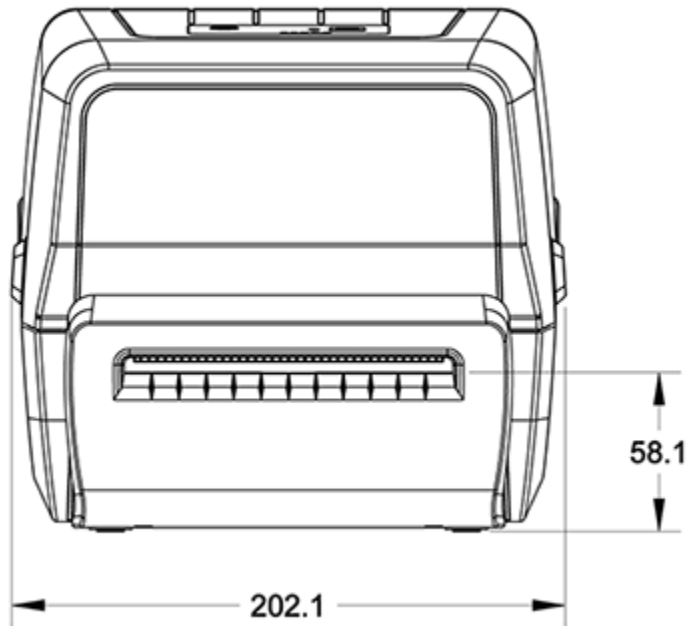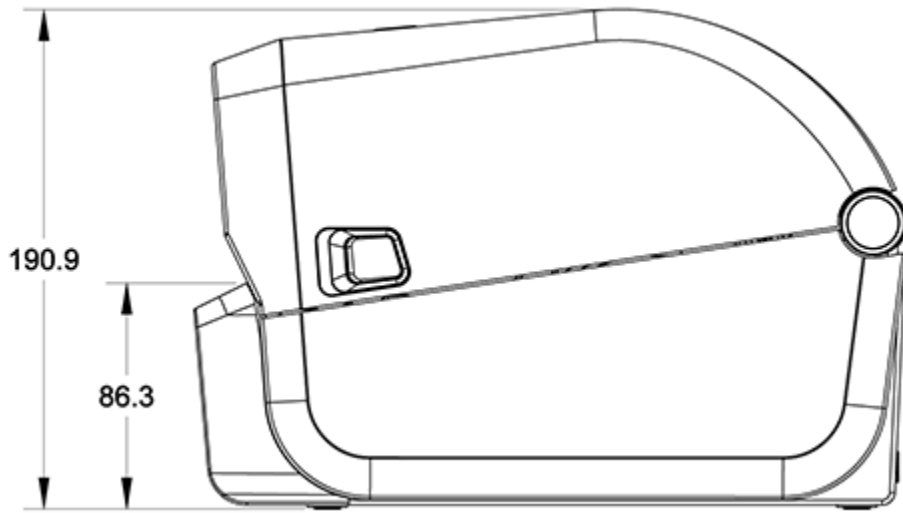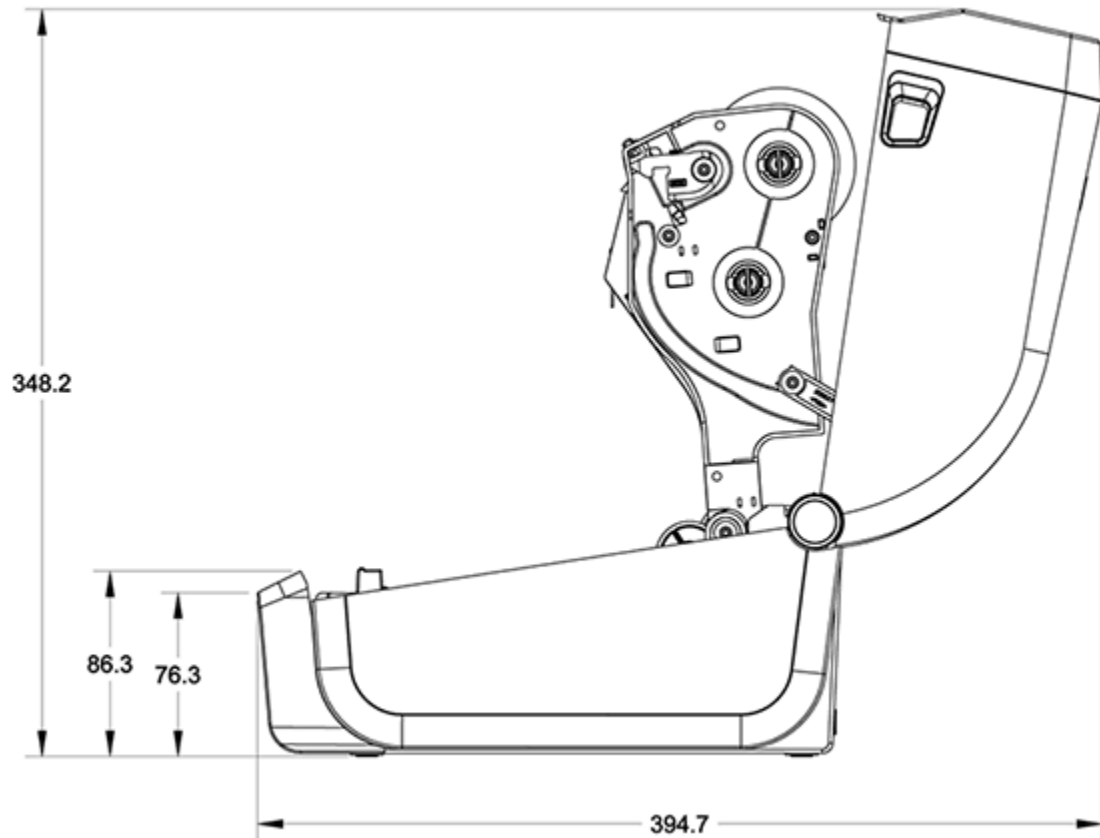All dimensions are in millimeters.

All dimensions are in millimeters.

Media

This section provides a simple media overview for your printer.

Thermal Media Types and Procurement

Zebra strongly recommends the use of Zebra-brand supplies in order to ensure consistent high-quality printing.

(!) **IMPORTANT:** A wide range of Zebra paper, polypropylene, polyester, and vinyl stock has been specifically engineered for Zebra-brand printers to enhance the printing capabilities of your device and prevent premature printhead wear.

To purchase supplies, go to zebra.com/supplies.

Your printer can use the following types of media:

Standard (noncontinuous) media	Most standard (noncontinuous) media uses an adhesive backing that has individual labels or a continuous length of labels affixed onto 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.
Tag stock	Tags are usually made from a heavy paper (up to 0.19 mm or 0.0075 in. thick). Tag stock does not have adhesive or a liner, and it is typically perforated between tags.

Types of media rolls and fanfold media include standard or noncontinuous roll media, noncontinuous fanfold media, and continuous roll media.

Your printer typically uses roll media, but also supports fanfold or other continuous media.

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, scratch the print surface of the media with a fingernail or pen cap. Press firmly and quickly while dragging it across the media surface.

📝 **NOTE:** Direct thermal media is chemically treated to print (expose) when heat is applied. This method of testing the media uses friction heat to help identify the media.

Did a black mark appear on the media?

If a black mark...	The media print mode is...
appears...	Direct Thermal. Your printer supports this media. You do NOT have to load ribbon.
does not appear...	Thermal Transfer. A ribbon is required. You will need to load ribbon.

Media and Print Specifications

Media widths	• Direct Thermal mode maximum: 108 mm (4.25 in.) • Thermal Transfer mode maximum: 112 mm (4.41 in.) • Minimum for all printers: 25.4mm (1 in.)
Media length	• Maximum: 990 mm (39 in.) • Minimum (for Tear-Off, Peel, or Cutter): 25.4 mm (1.0 in.)
Media thickness	• Maximum: 0.1905 mm (0.0075 in.) • Minimum: 0.06 mm (0.0024 in.)
Media Roll Outer Diameter (O.D.)	127 mm (5.0 in.)

Media Roll Core Inner Diameter (I.D.)	• Standard roll configuration:
	  • 12.7 mm (0.5 in.) I.D.
	  • 25.4 mm (1 in.) I.D.
	• With optional media roll adapter: 38.1 mm (1.5 in.) I.D.

Ribbon rolls (74-meter)	• Ribbon length: 74 m (243 ft.) • Ribbon width maximum: 110 mm (4.33 in.) • Ribbon width minimum: 33 mm (1.3 in.) ① **IMPORTANT:** Transfer ribbon should always cover the entire width of the media and liner to prevent damaging the printhead. • Ribbon core I.D: 12.7 mm (0.5 in.) • Wax, wax/resin, and resin transfer materials
Ribbon rolls (300-meter)	• Ribbon length: 300 m (984 ft.) • Ribbon width maximum: 110 mm (4.33 in.) • Ribbon width minimum: 33 mm (1.3 in.) ① **IMPORTANT:** Transfer ribbon should always cover the entire width of the media and liner to prevent damaging the printhead. • Wax, wax/resin, and resin transfer materials
Dot pitch	203 dpi: 0.125 mm (0.0049 in.)

Barcode modulus x-dim	203 dpi: 0.005-0.050 in.

Label Dispenser (Peeler) Specifications

These specifications apply to the field-installed label-dispenser option and the label-taken sensor used to process labels in batches.

Paper thickness	• Maximum: 0.1905 mm (0.0075 in.) • Minimum: 0.06 mm (0.0024 in.)
Media width	• Direct Thermal printers maximum: 108 mm (4.25 in.) • Thermal Transfer printers maximum: 112 mm (4.41 in.) • Minimum: 25.4 mm (1 in.)
Label length	• All printers maximum (theoretical): 990 mm (39 in.) • Direct Thermal printers maximum: 330 mm (13 in.) • Thermal Transfer printers maximum (tested): 279.4 mm (11 in.) • All printers minimum: 12.7 mm (0.5 in.)

Cutter Option Specifications

These specifications apply to printers with the media-cutter option which enables full-width cutting of label liner, tag, or receipt media.

Cutter	A medium-duty cutter for cutting label liner and light tag media (LINER/TAG). **IMPORTANT:** Do NOT cut through labels, adhesive or embedded circuitry.
Paper thickness	• Maximum: 0.1905 mm (0.0075 in.) • Minimum: 0.06 mm (0.0024 in.)
Cut width	• Direct thermal printers maximum: 108 mm (4.25 in.) • Thermal transfer printers maximum: 112 mm (4.41 in.) • Minimum: 25.4 mm (1 in.)
Distance between labels (label length)	Minimum: 25.4 mm (1 in.) **NOTE:** The cutter may jam or error if shorter media lengths are used between cuts.

NOTE: By design, the cutter is self-cleaning. The internal cutter mechanism does NOT require preventive maintenance.

ZPL Configuration

This section provides an overview of managing printer configuration, the Configuration Status report, and printer and memory printouts.

Managing the ZPL Printer Configuration

Printers that support ZPL allow you to change printer settings dynamically for fast first-label-out printing. Printer parameters that are persistent will be retained for future formats to use.

These settings will remain in effect until:

- they are changed by subsequent commands,
- the printer is reset,
- printer power is cycled (turned on and off), or
- you restore a parameter that has a factory default by resetting the printer to its defaults.

You can save and restore printer configurations using the ZPL Configuration Update command (^JUS). This command initializes (or re-initializes) the printer with pre-configured settings.

- To retain the current settings after the printer is reset or the power is cycled, send the ^JUS ZPL command to the printer to save all current persistent settings.
- To restore the last-saved values to the printer, use the ^JUR command.

ZPL stores all parameters when you issue the ^JUS command. The legacy EPL programming language (supported by your ZD Series printer) changes and saves individual commands immediately.

Most printer settings are shared between ZPL and EPL. For example, changing the speed setting with EPL will also change the speed set for ZPL operations. The changed EPL setting will persist even after a power cycle or reset issued using either printer language.

To help manage your printer, you can instruct the printer to print a Configuration Report. The report lists operating parameters, sensor settings, and printer status among other details (see Test Printing with the Configuration Report on page 49). You can also print this and other reports using the Zebra Setup Utility and the ZebraDesigner Windows driver.

ZPL Printer Configuration Format

You can manage more than one printer easily by creating a printer configuration programming file to send to all of them. Alternatively, you can use ZebraNet Bridge to clone a printer's setup.

The basic structure of a ZPL programming configuration file is as follows:

`^XA`	Start Format Command
	Format commands are case sensitive.
	(a) General print and command settings
	(b) Media handling and behaviors
	Media print size
	`^JUS` command to save
`^XZ`	End Format Command

See the ZPL Programming Guide and the Configuration Setting to Command Cross-reference to create a programming file using the appropriate commands you need for the task at hand.

Zebra Setup Utilities (ZSU) can be used to send programming files to the printer. Windows Notepad (text editor) can be used to create programing files.

Configuration Setting to Command Cross-Reference

The Printer Configuration Report lists a majority of the configurations settings that can be set by sending ZPL commands to the printer. For information on these commands, see the ZPL Programming Guide available from zebra.com.

The sensor settings shown in this image, for example, are used for service purposes.

Table 1 ZPL Commands and Configuration Report Callout Cross-Reference

Command	Listing Name	Default (or description)
`^SD`	DARKNESS	10.0
`^PR`	PRINT SPEED	• 102 mm/s / 4 ips • ZD230 only (maximum): 152 mm/s / 6 ips
`^TA`	TEAR OFF	+000
`^MN`	MEDIA TYPE	GAP/NOTCH
	SENSOR SELECT	AUTO (`^MNA` - Auto-Detect)
`^MT`	PRINT METHOD	THERMAL-TRANS or DIRECT-THERMAL
`^PW`	PRINT WIDTH	832 (dots for 203 dpi)
`^LL`	LABEL LENGTH	1230 (dots) (dynamically updated while printing)
`^ML`	MAXIMUM LENGTH	989 mm (39.0 in.)
—	USB COMM.	(Connection Status: Connected / Not Connected)
`— SGD —**`	COMMUNICATIONS	NORMAL MODE
`^CT / ~CT`	CONTROL CHAR	<~> 7EH
`^CC / ~CC`	COMMAND CHAR	<^> 5EH
`^CD / ~CD`	DELIM./CHAR	<,> 2CH
`^SZ`	ZPL MODE	ZPL II
`— SGD —`	COMMAND OVERRIDE **NOTE:** Not supported with a ZPL command. Uses the Set-Get-Do command listed in the ZPL manual. (See device.command_override.xxxxx in the ZPL Programming Guide.)	INACTIVE
`^MFa`	MEDIA POWER UP	NO MOTION
`^MF,b`	HEAD CLOSE	FEED
`~JS`	BACKFEED	DEFAULT
`^LT`	LABEL TOP	+000
`^^LS`	LEFT POSITION	+0000
	REPRINT MODE	DISABLED

From this point in the Configuration Receipt listing, the printout lists sensor settings and values which can be used to troubleshoot sensor and media operations. These are typically used by Zebra Tech Support to diagnose printer problems.

The configuration settings listed here resume after the TAKE LABEL sensor value. This listing includes commands that are:

- used to generate status information, or

- relate to printer features whose settings are seldom changed from their defaults.

Table 2   ZPL Commands and Configuration Receipt Callout Cross-Reference

Command	Listing Name	Description
`^MP`	MODES ENABLED	Default: DPCSWFXM (See `^MP` Command)
	MODES DISABLED	(No default set)
`^JM`	RESOLUTION	Default: 832 8/mm (203 dpi)
—	FIRMWARE	Lists ZPL Firmware Version
—	XML SCHEMA	1.3
—	HARDWARE ID	Lists Firmware Boot-block Version
—	CONFIGURATION	CUSTOMIZED (after first use)
—	RAM	8176k........ R:
—	ONBOARD FLASH	51200k.........E:
`^MU`	FORMAT CONVERT	NONE
	RTC DATE	Date Displayed
	RTC TIME	Time Displayed
	NONRESET CNTR0 (1, 2)	X,XXX IN
	RESET CNTR1	X,XXX IN
	RESET CNTR2	X,XXX IN

The printer can set a command or a group of commands at one (1) time for all receipts or labels that follow. Those settings remain in effect until:

- they are changed by subsequent commands

- the printer is reset, or

- you restore the printer to its factory defaults.

Printer Memory Management and Related Status Reports

To help you manage printer resources, your printer supports a variety of format commands.

Use these commands to:

- manage memory.

- transfer objects (between memory areas, import and export).

- name objects.

- output various printer operating status reports.

These commands are very similar to the old DOS commands such as `DIR` (directory listing) and `DEL` (delete file). The most common reports are also part of the Zebra Setup Utility and ZebraDesigner Windows driver.

It is recommended you issue a single command within this type of format (form) for ease of reuse as a maintenance and development tool.

`^XA`	Start Format command
	A single format command for ease of reuse.
`^XZ`	End Format command

Many of the commands that transfer objects, and manage/report on memory are control commands (~). They need not be within a format (form). They will be processed immediately after they are received by the printer, whether in a format (form) or not.

ZPL Programming for Memory Management

The ZPL programming language has various printer memory locations that are used to run the printer, assemble the print image, and store formats (forms), graphics, fonts, and configuration settings.

- ZPL treats formats (forms), fonts, and graphics similar to the way it treats files. It treats memory locations like disk drives in the DOS operating system environment.

  - Memory Object Naming supports up to 16 alphanumeric characters followed by a three alphanumeric-character file extension (for example: `123456789ABCDEF.TTF`).

NOTE: Legacy ZPL printers with V60.13 firmware and earlier can use only an 8.3 filename format instead of today's 16.3 filename format.

- Allows moving objects between memory locations and deleting objects.

- Supports DOS directory style file-list reports as printouts or status to the central device or host computer.

- Allows use of wildcards (*) for file access.

Glossary

alphanumeric

Indicating letters, numerals, and characters such as punctuation marks.

backfeed

When the printer pulls the media and ribbon (if used) backward into the printer so that the beginning of the label to be printed is properly positioned behind the printhead. Backfeed occurs when operating the printer in Tear-Off and Applicator modes.

barcode

A code by which alphanumeric characters can be represented by a series of adjacent stripes of different widths. Many different code schemes exist, such as the universal product code (UPC) or Code 39.

black mark media
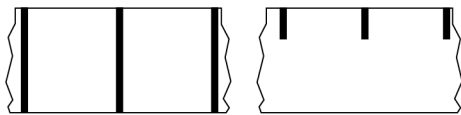
Media with registration marks found on the underside of the print media that act as start-of-label indications for the printer. The reflective media sensor is the generally-selected option for use with black mark media.

Contrast this with continuous media on page 141 or gap/notch media on page 143.

calibration (of a printer)

A process in which the printer determines some basic information needed to print accurately with a particular media and ribbon combination. To do this, the printer feeds some media and ribbon (if used) and senses whether to use the direct thermal or thermal transfer print method, along with (if using non-continuous media) the length of individual labels or tags.

collection method

Select a media collection method that is compatible with your printer options. Selections include tear-off, peel-off, cutter, and rewind. The basic media and ribbon loading instructions are the same for all collection methods with some additional steps necessary for using any media collection options.

configuration

The printer configuration is a group of operating parameters specific to the printer application. Some parameters are user selectable, while others are dependent on the installed options and mode of operation. Parameters may be switch selectable, control panel programmable, or downloaded as ZPL II commands. A configuration label listing all the current printer parameters may be printed for reference.

continuous media

Label or tag-stock media that does not have gaps, holes, notches, or black marks to indicate label separations. The media is one long piece of material wound into a roll. This allows the image to be printed anywhere on the label. Sometimes a cutter is used to cut apart individual labels or receipts.
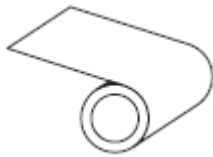
A transmissive (gap) sensor is typically used for the printer to detect when the media runs out.

Contrast this with black mark media on page 140 or gap/notch media on page 143.

core diameter

The inside diameter of the cardboard core at the center of a roll of media or ribbon.

diagnostics

Information about which printer functions are not working that is used for troubleshooting printer problems.

die-cut media

A type of label stock that has individual labels stuck to a media liner. The labels may be lined up against each other or separated by a small distance. Typically the material surrounding the labels has been removed. (See non-continuous media on page 145.)

direct thermal

A printing method in which the printhead presses directly against the media. Heating the printhead elements causes a discoloration of the heat-sensitive coating on the media. By selectively heating the printhead elements as the media moves past, an image is printed onto the media. No ribbon is used with this printing method.

Contrast this with thermal transfer on page 148.

direct thermal media

Media that is coated with a substance that reacts to the application of direct heat from the printhead to produce an image.

fanfold media
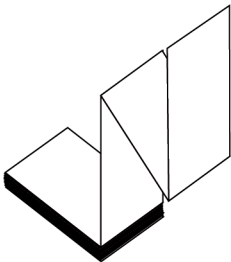
Non-continuous media that comes folded in a rectangular stack and folded in a zigzag pattern. Fanfold media is either gap-notch media or black mark media, meaning it uses black marks or notches to track media format positioning.

Fanfold media can have the same label separations as non-continuous roll media. The separations fall either on or near the folds.

Contrast this with roll media on page 147.

firmware

This is the term used to specify the printer's operating program. This program is downloaded to the printer from a host computer and stored in flash memory. Each time the printer power is turned on, this operating program starts. This program controls when to feed the media forward or backward and when to print a dot on the label stock.

FLASH memory

Non-volatile memory that maintains the stored information intact when power is off. This memory area is used to store the printer's operating program. Can also be used to store optional printer fonts, graphic formats, and complete label formats.

font

A complete set of alphanumeric characters in one style of type. Examples include CG Times™, CG Triumvirate Bold Condensed™.

gap/notch media

Media that contains a separation, notch, or hole, indicating where one label/printed format ends and the next begins.
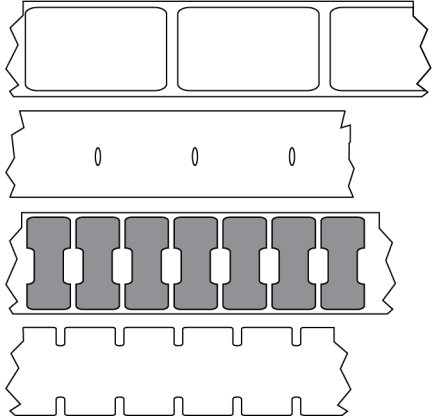
Contrast this with black mark media on page 140 or continuous media on page 141.

ips (inches-per-second)

The speed at which the label or tag is printed. Many Zebra printers can print from 1 ips to 14 ips.

label

An adhesive-backed piece of paper, plastic, or other material on which information is printed. A non-continuous label has a defined length, as opposed to a continuous label or a receipt which can have a varying length.
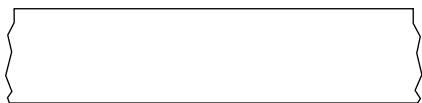
label backing (liner)

The material on which labels are affixed during manufacture and which is discarded or recycled.
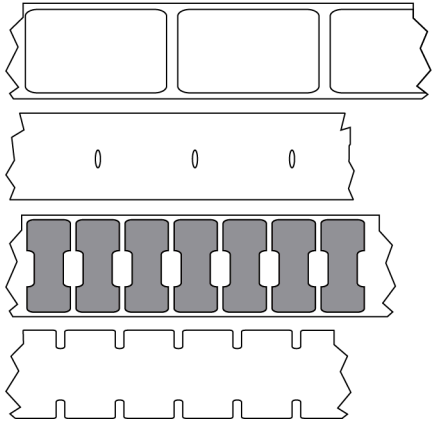
label type

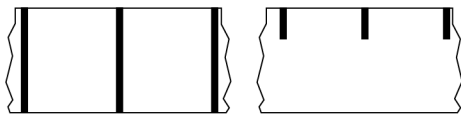The printer recognizes the following label types.

Continuous

Gap/Notch

Mark

void

A space on which printing should have occurred, but did not due to an error condition such as wrinkled ribbon or faulty print elements. A void can cause a printed barcode symbol to be read incorrectly or not at all.

LCD (liquid crystal display)

A backlit display that provides the user with either operating status during normal operation or option menus when configuring the printer to a specific application.

LED (light emitting diode)

Indicators of specific printer status conditions. Each LED is either off, on, or blinking depending on the feature being monitored.

linerless media

Linerless media does not use backing to keep the layers of labels on a roll from sticking to one another. It is wound like a roll of tape, with the sticky side of one layer in contact with the non-sticky surface of the one below it. Individual labels may be separated by perforations, or they can be cut apart. Because there is no liner, more labels can potentially fit on a roll, cutting down the need to change media as often. Linerless media is considered an environmentally-friendly option because no backing is wasted, and the cost per label can be considerably less than that of standard labels.

mark media

See black mark media on page 140.

media

Material onto which data is printed by the printer. Types of media include: tag stock, die-cut labels, continuous labels (with and without media liner), non-continuous media, fanfold media, and roll media.

media sensor

This sensor is located behind the printhead to detect the presence of media and, for non-continuous media, the position of the web, hole, or notch used to indicate the start of each label.

media supply hangar

The stationary arm that supports the media roll.

non-continuous media

Media that contains an indication of where one label/printed format ends and the next one begins. Types of non-continuous media include gap-notch media and black mark media. (Contrast this with continuous media.)

Non-continuous roll media usually comes in the form of labels with an adhesive backing on a liner. Tags (or tickets) are separated by perforations.

Individual labels or tags are tracked and position-controlled using one of these methods:

• Web media separates labels by gaps, holes, or notches.
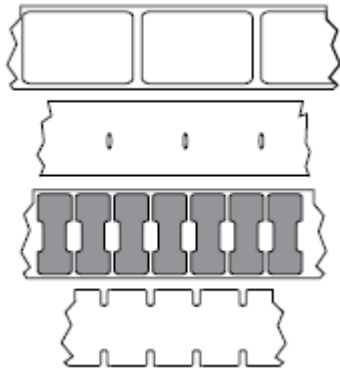
• Black mark media uses pre-printed black marks on the back side of the media to indicate label separations.

- Perforated media has holes—to allow the labels or tags to be separated from each other easily—along with position-control marks, notches, or label gaps.

non-volatile memory

Electronic memory that retains data even when the power to the printer is turned off.

notched media

A type of tag stock containing a cutout area that can be sensed as a start-of-label indicator by the printer. This is typically a heavier, cardboard-like material that is either cut or torn away from the next tag. See gap/notch media on page 143.

peel-off mode

A mode of operation in which the printer peels a printed label away from the backing and allows the user to remove it before another label is printed. Printing pauses until the label is removed.

perforated media
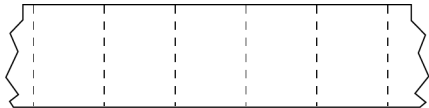
Media with perforations that allow the labels or tags to be separated from each other easily. The media may also have black marks or other separations between labels or tags.

print speed

The speed at which printing occurs. For thermal transfer printers, this speed is expressed in terms of inches per second (ips).

print type

The print type specifies whether the type of media being used requires ribbon to print. Thermal transfer media requires ribbon while direct thermal media does not.

printhead wear

The degradation of the surface of the printhead and/or the print elements over time. Heat and abrasion can cause printhead wear. Therefore, to maximize the life of the printhead, use the lowest print darkness setting (sometimes called burn temperature or head temperature) and the lowest printhead pressure

necessary to produce good print quality. In the thermal transfer printing method, use ribbon that is as wide or wider than the media to protect the printhead from the rough media surface.

Radio frequency identification (RFID) "smart" media
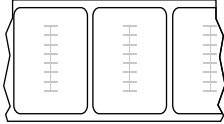
Each RFID label has an RFID transponder (sometimes called an "inlay"), made of a chip and an antenna, embedded between the label and the liner. The shape of the transponder varies by manufacturer and is visible through the label. All "smart" labels have memory that can be read, and many have memory that can be encoded.

RFID media can be used in a printer that is equipped with an RFID reader/encoder. RFID labels are made from the same materials and adhesives as non-RFID labels.

receipt

A receipt is a variable length printout. One example of a receipt is in retail stores, where each purchased item occupies a separate line on the printout. Therefore, the more items purchased, the longer the receipt.

registration

Alignment of printing with respect to the top (vertical) or sides (horizontal) of a label or tag.

ribbon

Ribbon is a thin film that is coated on one side with wax, resin, or wax resin (usually called ink), which is transferred to the media during the thermal transfer process. Ink is transferred onto the media when heated by the small elements within the printhead.

Ribbon is only used with the thermal transfer print method. Direct thermal media does not use ribbon. When ribbon is used, it must be as wide as or wider than the media being used. If the ribbon is narrower than the media, areas of the printhead are unprotected and subject to premature wear. Zebra ribbons have a coating on the back that protects the printhead from wear.

ribbon wrinkle

A wrinkling of the ribbon caused by improper alignment or improper printhead pressure. This wrinkle can cause voids in the print and/or the used ribbon to rewind unevenly. This condition should be corrected by performing adjustment procedures.

roll media

Media that comes supplied rolled onto a core (usually cardboard). It can be continuous (no separations between labels)
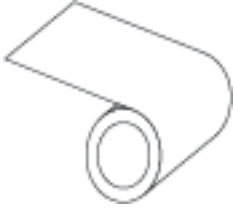
or non-continuous (some type of separation between labels).
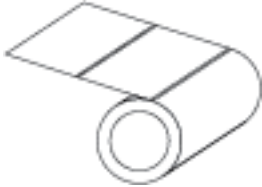
Contrast this with fanfold media on page 142.

supplies

A general term for media and ribbon.

symbology

The term generally used when referring to a barcode.

tag stock

A type of media having no adhesive backing but featuring a hole or notch by which the tag can be hung on something. Tags are usually made of cardboard or other durable material and are typically perforated between tags. Tag stock can come on rolls or in a fanfold stack. (See gap/notch media on page 143.)

tear-off mode

A mode of operation in which the user tears the label or tag stock away from the remaining media by hand.

thermal transfer

A printing method in which the printhead presses an ink or resin coated ribbon against the media. Heating the printhead elements causes the ink or resin to transfer onto the media. By selectively heating the printhead elements as the media and ribbon move past, an image is printed onto the media.

Contrast this with direct thermal on page 142.