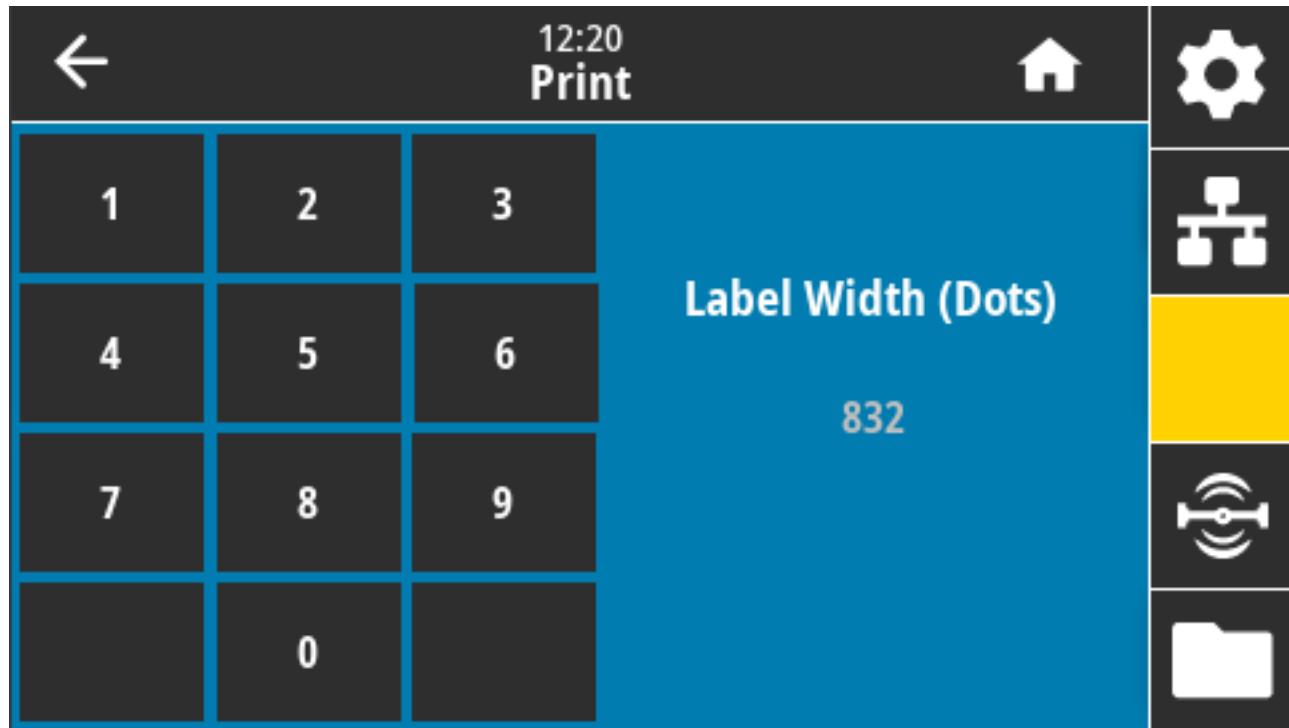


## Print > Print Quality > Label Width (Dots)

Specify the width of the labels being used, in dots. The default value is the maximum width for the printer, based on the printhead's DPI value.



Setting the width too narrow can result in portions of a label format not being printed on the media.

Setting the width too wide wastes formatting memory and can cause the printer to print outside the label edges and onto the platen roller.



**NOTE:** This setting can affect the horizontal position of the label format if the image was inverted using the `^POI` ZPL command.

Accepted values: ZD621 203 dpi = 0002 to 832 dots

ZD621 300 dpi = 0002 to 1280\* dots

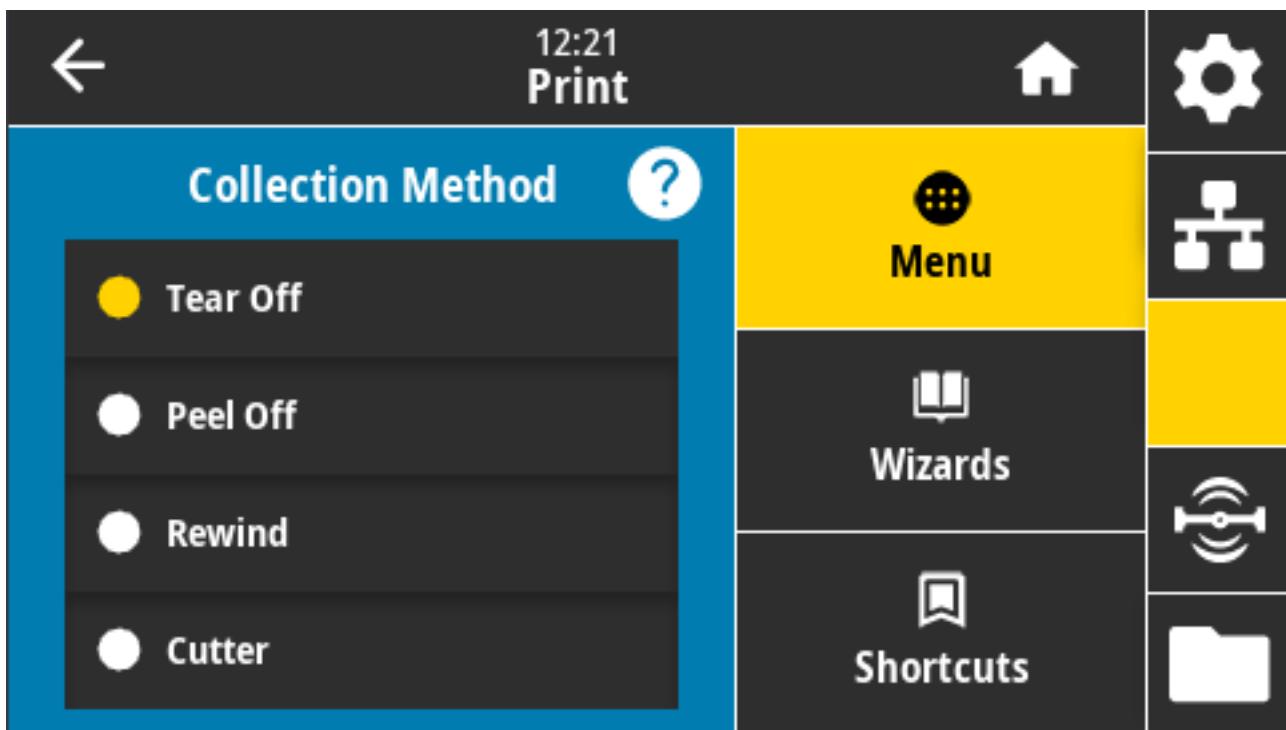
Related ZPL command(s): `^PW`

SGD command used: `ezpl.print_width`

Printer web page: [View and Modify Printer Settings > Media Setup > Print Width](#)

**Print > Label Position > Collection Method**

Select a collection method that is compatible with the options available on your printer.



Accepted values: Tear Off, Peel Off, Rewind, Cutter, Delayed Cut, Linerless Peel, Linerless Rewind, Linerless Tear, Applicator, Linerless Cut, Linerless Delayed Cut

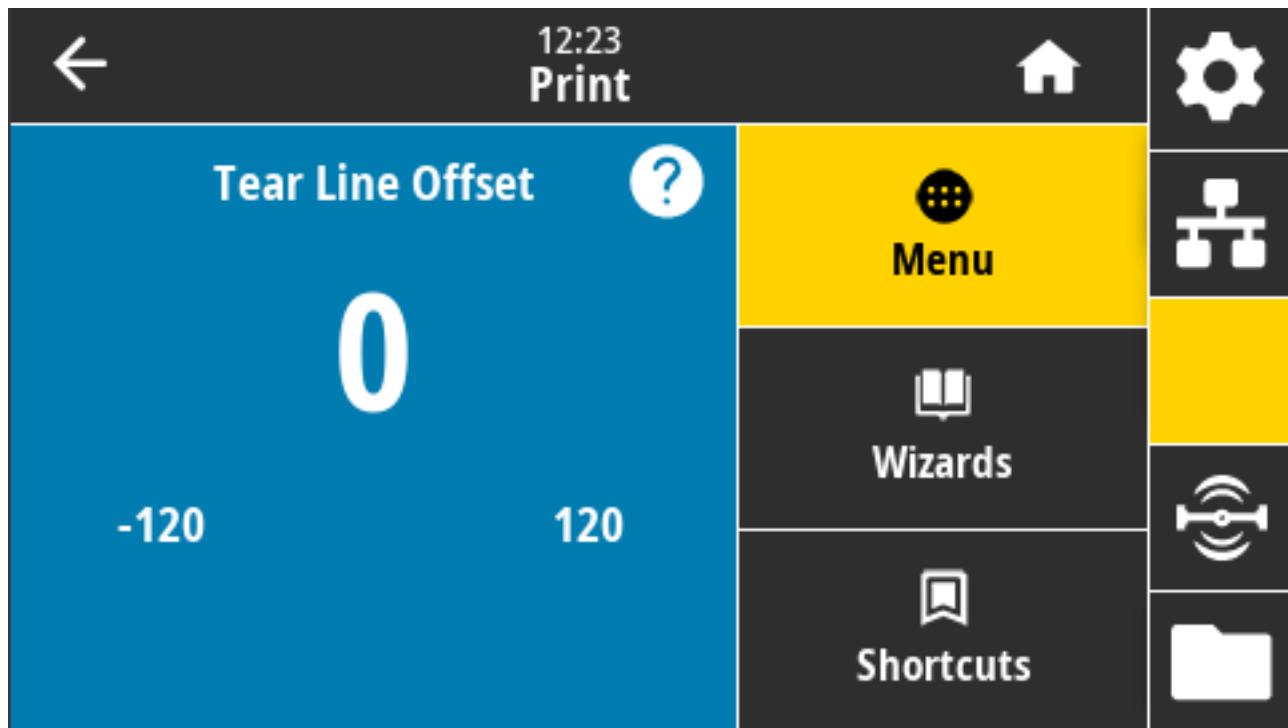
Related ZPL command(s): ^MM

SGD command used: media.printmode

Printer web page: **View and Modify Printer Settings > General Setup > Print Mode**

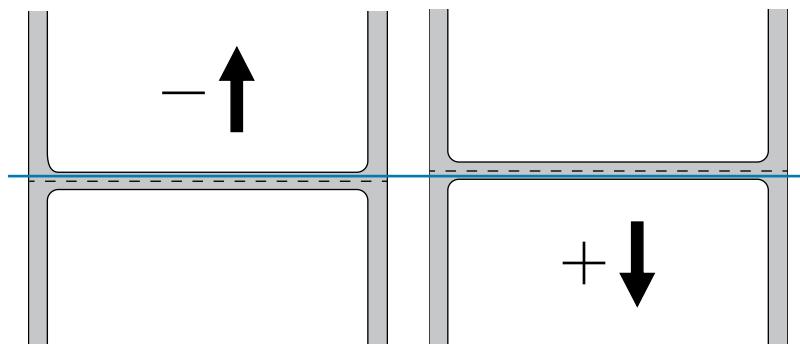
**Print > Label Position > Tear Line Offset**

Set the position where the printer stops for tear-off label removal.



If necessary, shift the position of the media over the tear-off feature after printing.

- Lower numbers move the media into the printer by the specified number of dots (the tear line moves closer to the edge of the label just printed)
- Higher numbers move the media out of the printer (the tear line moves closer to the leading edge of the next label).



Accepted values: -120 to +120

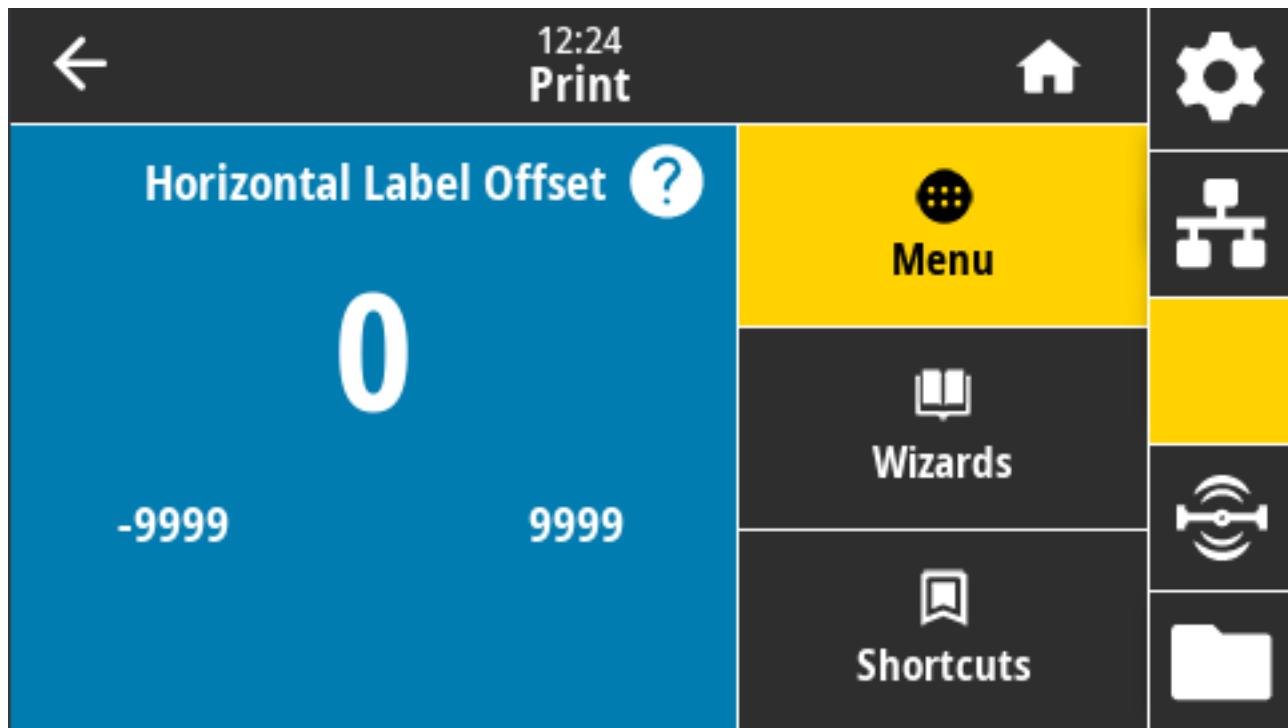
Related ZPL command(s): ~TA

SGD command used: media.printmode

Printer web page: [View and Modify Printer Settings > General Setup > Tear Off](#)

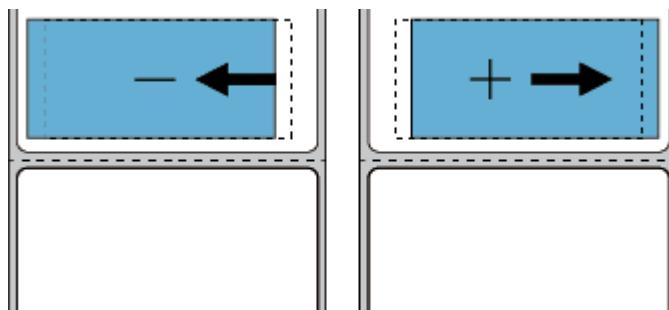
**Print > Label Position > Horizontal Label Offset**

If necessary, shift the position of the image horizontally on the label.



If necessary, shift the horizontal position of the print on the media.

- Negative numbers move the left edge of the image toward the left edge of the label by the number of dots selected.
- Positive numbers move the edge of the image toward the right edge of the label.



Accepted values: -9999 to 9999

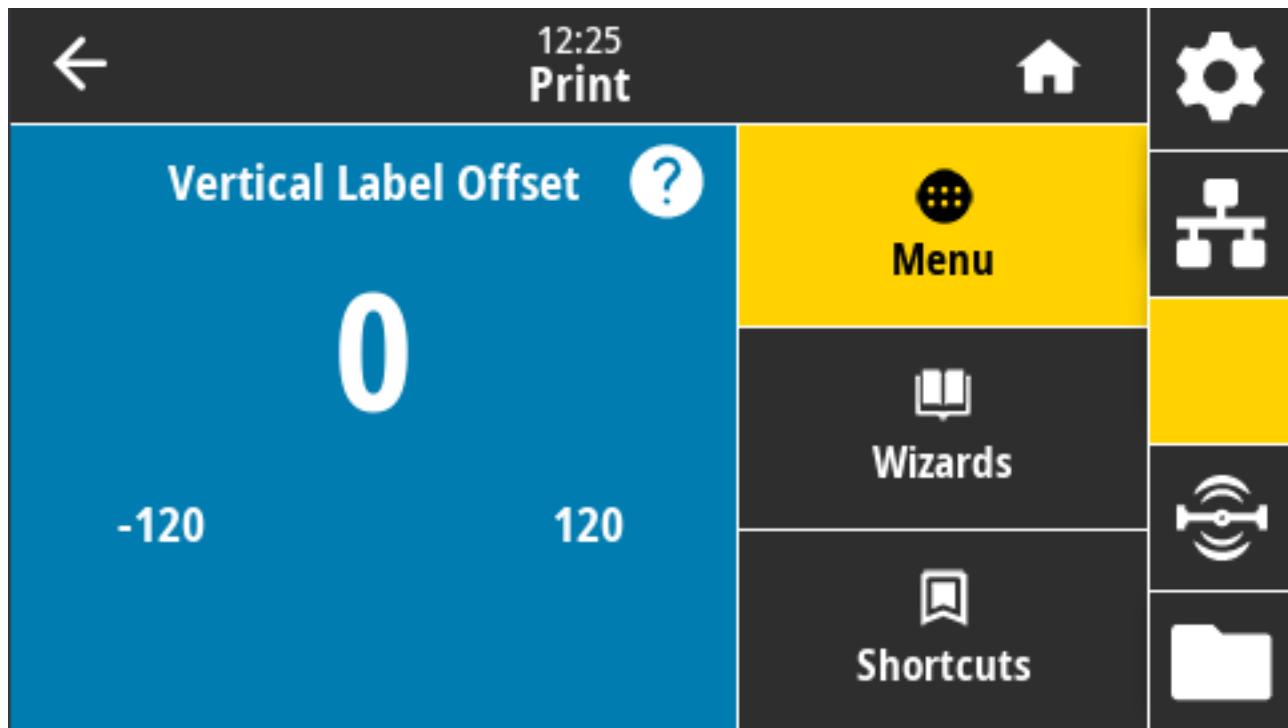
Related ZPL command(s): ^LS

SGD command used: zpl.left\_position

Printer web page: **[View and Modify Printer Settings > Advanced Setup > Left Position](#)**

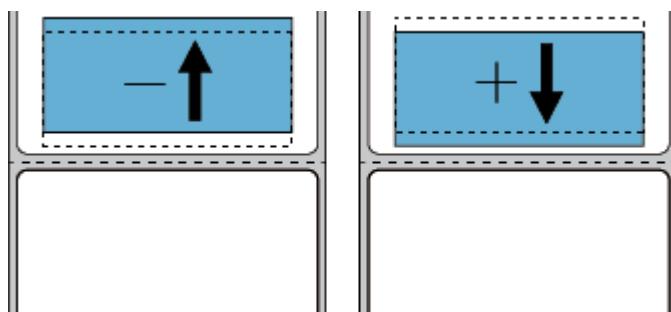
## Print > Label Position > Vertical Label Offset

If necessary, use this parameter to shift the position of the image vertically on the label.



If necessary, shift the position horizontal of the print on the media.

- Lower numbers move the image higher on the label (toward the printhead).
- Higher numbers move the image farther down on the label (away from the printhead) by the specified number of dots.



Accepted values: -120 to 120

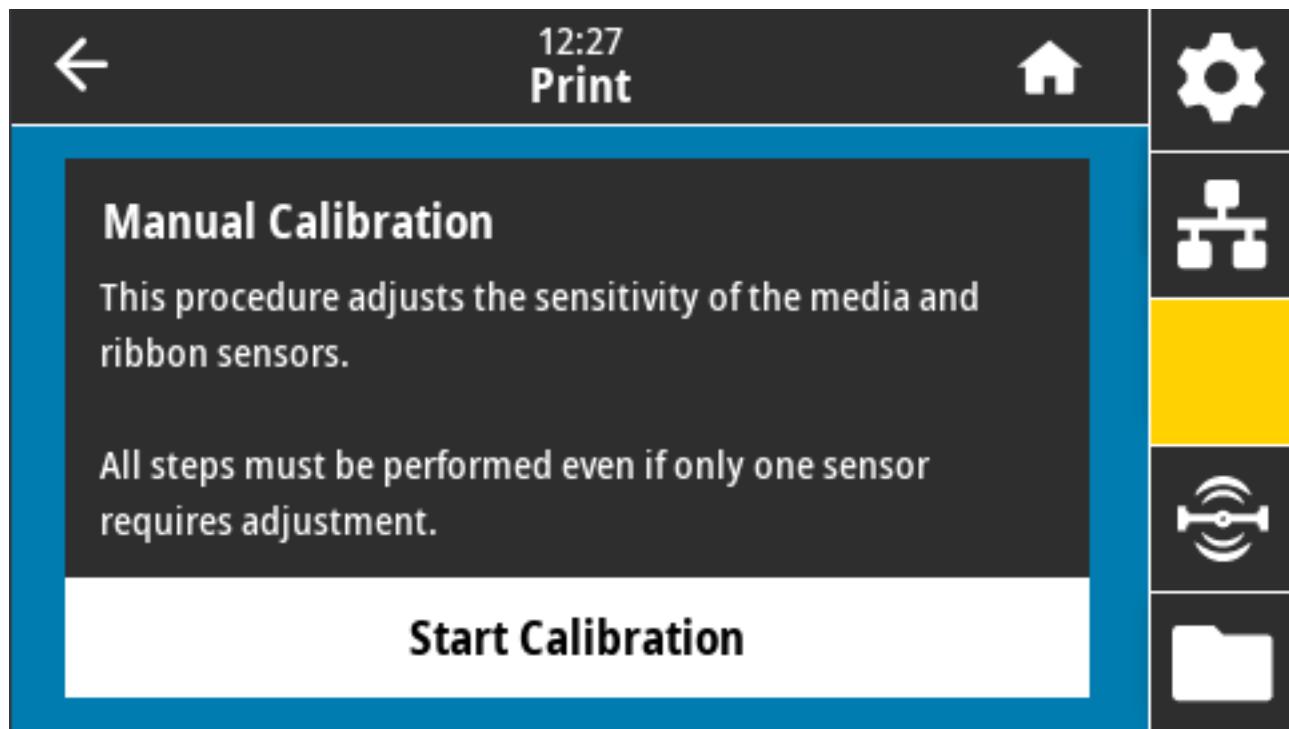
Related ZPL command(s): ^LT

SGD command used: zpl.top\_position

Printer web page: [View and Modify Printer Settings > Advanced Setup > Label Top](#)

## Print > Sensors > Manual Calibration

This wizard that interactively steps you through a manual calibration of media sensor settings. Manually calibrate the printer as needed to adjust the sensitivity of the media and ribbon sensors.



For complete instructions on how to perform a calibration procedure, see [Manually Calibrating Media](#) on page 336.

Related ZPL command(s): ~JC

SGD command used: ezpl.manual\_calibration

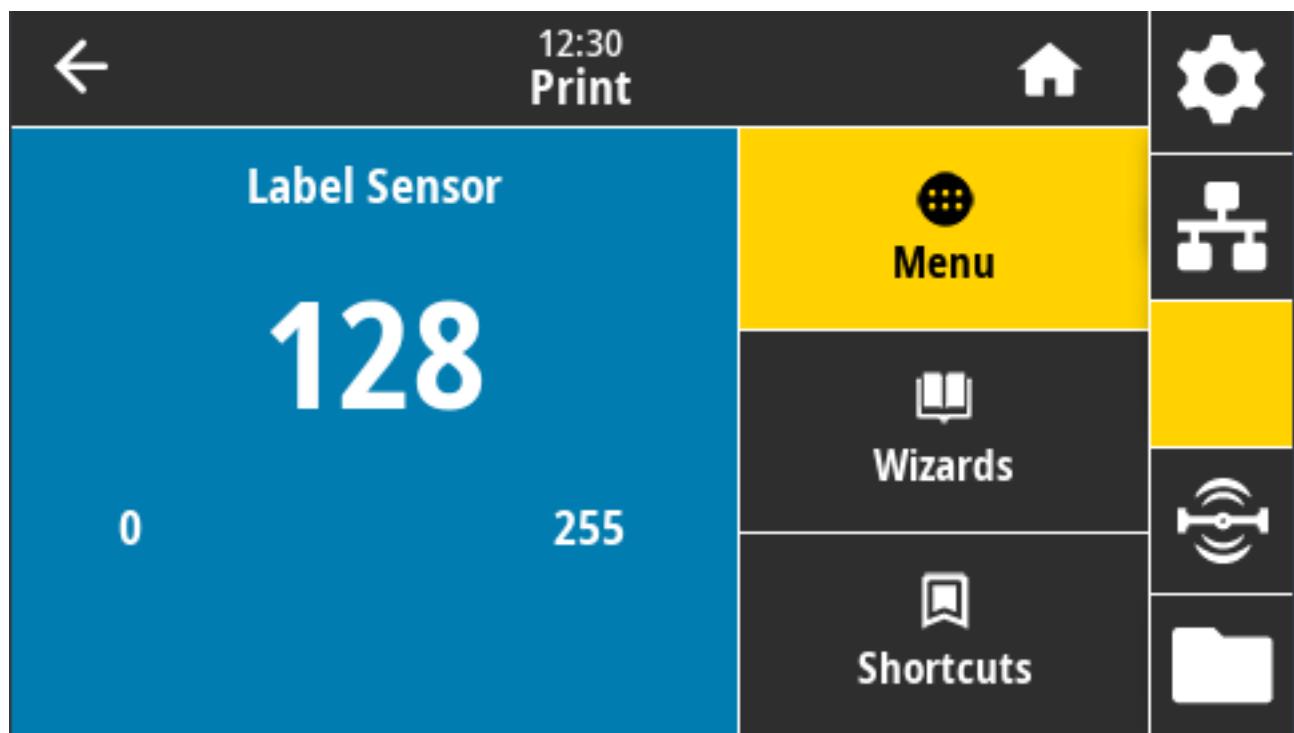
Control panel key(s): To initiate the calibration, press and hold **PAUSE + FEED + CANCEL** simultaneously for two seconds.

## Print > Sensors > Label Sensor

This screen shows the sensitivity level of the label sensor which is typically set by the printer during the calibration process.



**NOTE:** Do NOT change these settings unless you are told to do so by Zebra Technical Support or by an authorized service technician.



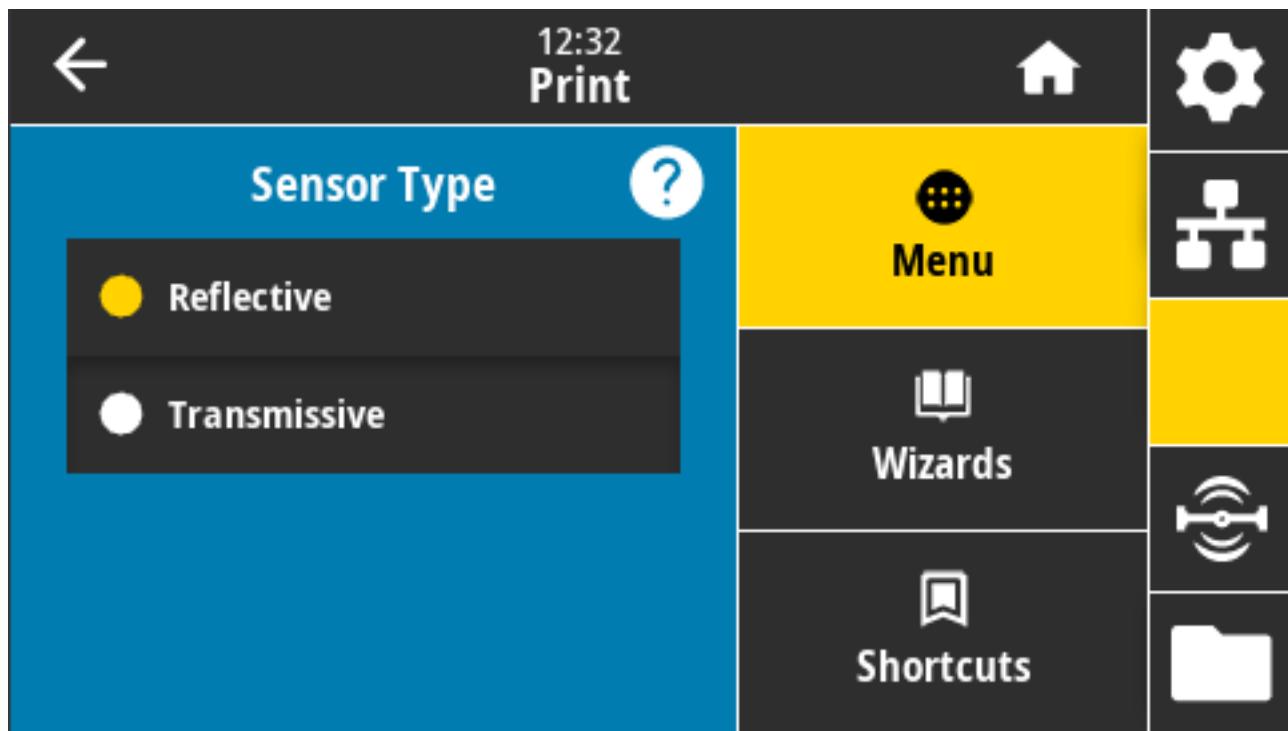
Range of values: 0 to 255

SGD command used: `ezpl.label_sensor`

Printer web page: **[View and Modify Printer Settings > Calibration](#)**

## Print > Sensors > Sensor Type

Select between transmissive and reflective media sensing based on the media type you plan to use for printing.



Accepted values: REFLECTIVE, TRANSMISSIVE

- **Reflective** — Used when the printer needs to detect black mark/line and notches/holes on the back of media. This is because black markings and holes do not reflect like label liner or paper.
- **Transmissive** (sees through media and liner) — Used when the printer needs to sense gaps/webs for regular labels and continuous media. These types of media do not have tracking marks or notches.

Related ZPL command(s): ^JS

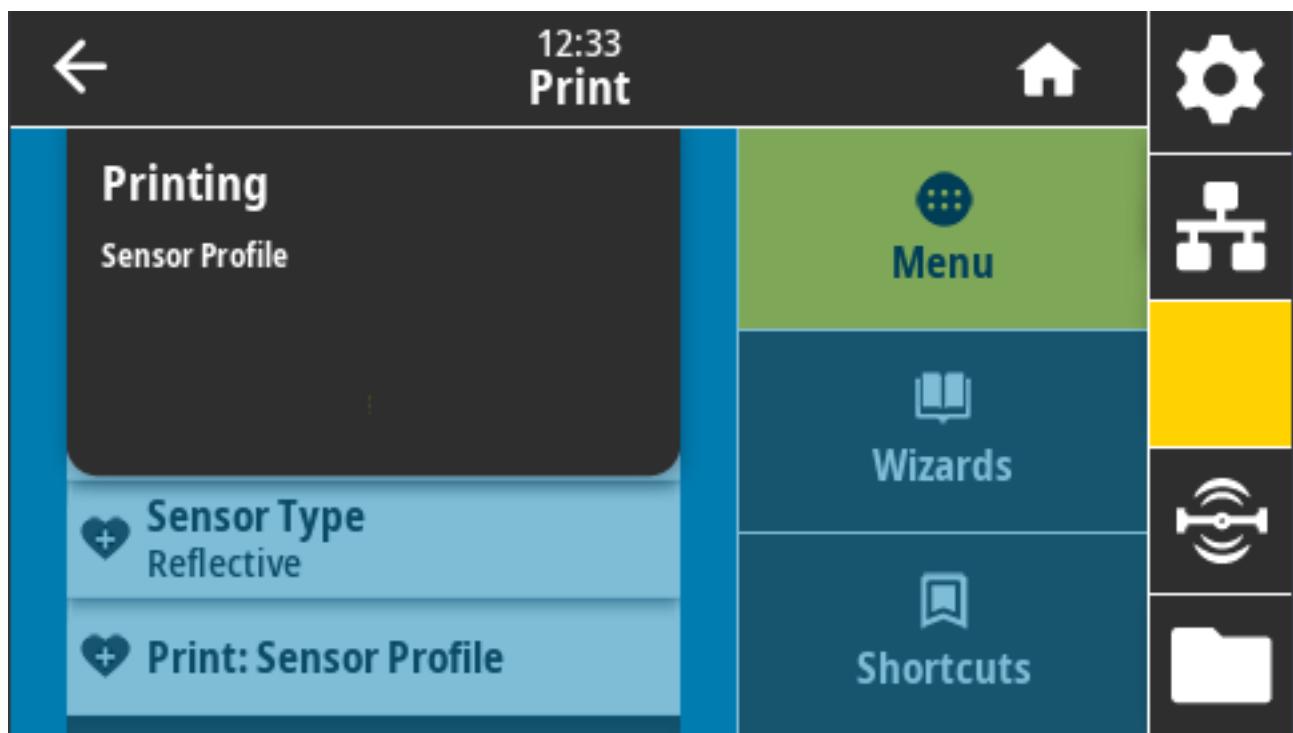
SGD command used: device.sensor\_select

Printer web page: [View and Modify Printer Settings > Media Setup](#)

## Print > Sensors > Print: Sensor Profile

Shows the sensor settings compared to actual sensor readings.

To interpret the results, see [Sensor Profile](#) on page 335.



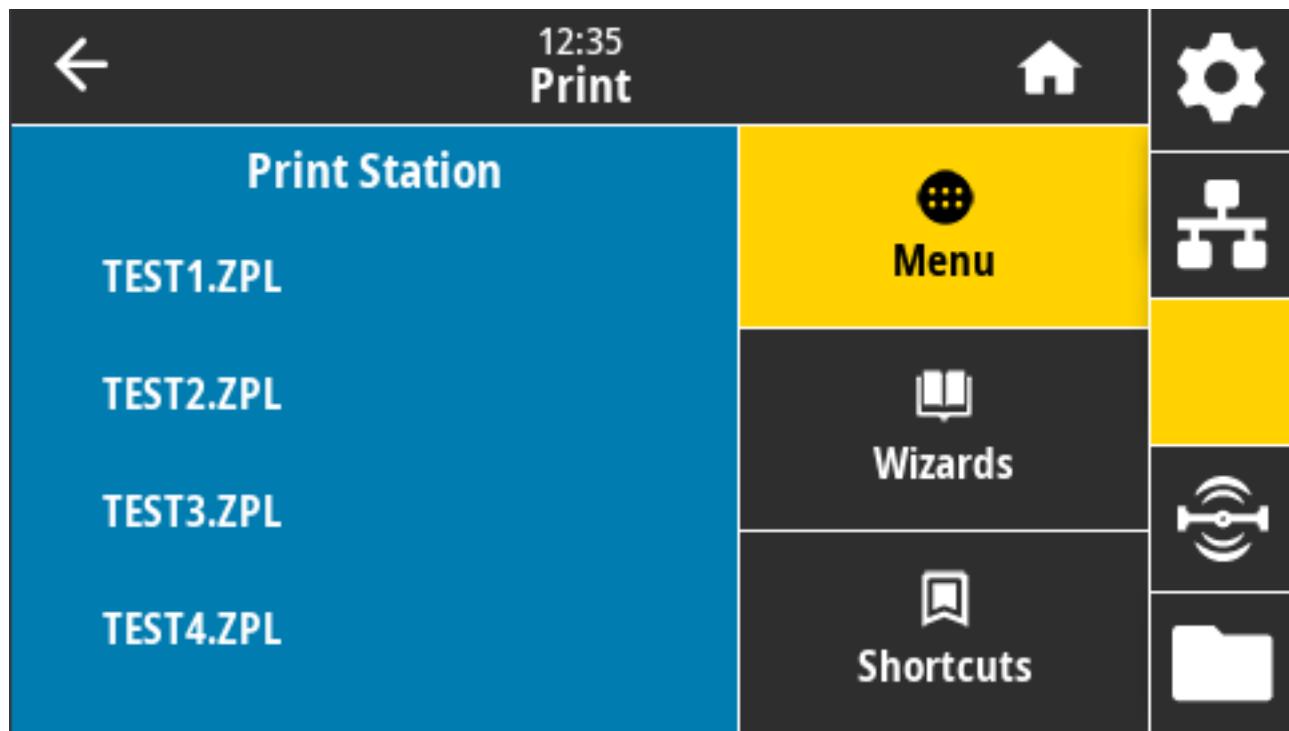
Related ZPL command(s): ~JG

Control panel key(s): During printer power-up, press and hold **FEED** + **CANCEL** simultaneously.

Printer web page: **View and Modify Printer Settings > Print Listings on Label**

## Print > Print Station

Use this menu item to fill in variable fields in a label format and print the label using a Human Input Device (HID), such as a USB keyboard, scale, or barcode scanner.



**IMPORTANT:** To use this option, a suitable label format must be stored on the printer's E: drive. See [Using the USB Host Port and Near Field Communication \(NFC\) Capabilities](#) on page 268 and [Exercise 5: Enter Data for a Stored File with a Smart Device and Print a Label](#) on page 268 to learn how to use this feature.

When you plug an HID into one of the printer's USB host ports, use this menu to select a form on the printer's E: drive. When you are prompted to fill in each variable ^FN field on the form, you can specify the desired quantity of labels to print.

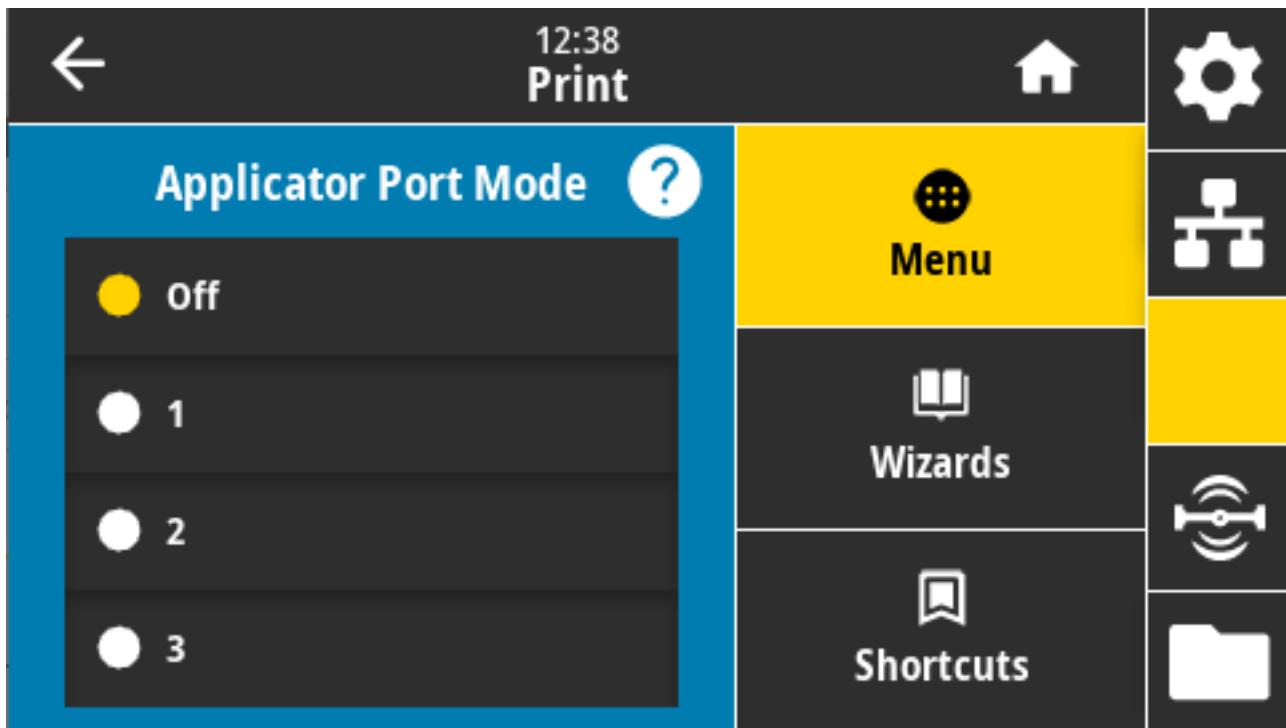
For more information about using the ^FN command or the SGD commands related to this feature, refer to the Zebra Programming Guide at [zebra.com/manuals](http://zebra.com/manuals).

SGD command(s) used:

- `usb.host.keyboard_input` (must be set to ON)
- `usb.host.template_list`
- `usb.host.fn_field_list`
- `usb.host.fn_field_data`
- `usb.host.fn_last_field`
- `usb.host.template_print_amount`

## Print > Applicator > Applicator Port Mode

Controls the way in which the applicator port's "End Print" signal functions.



Accepted values:

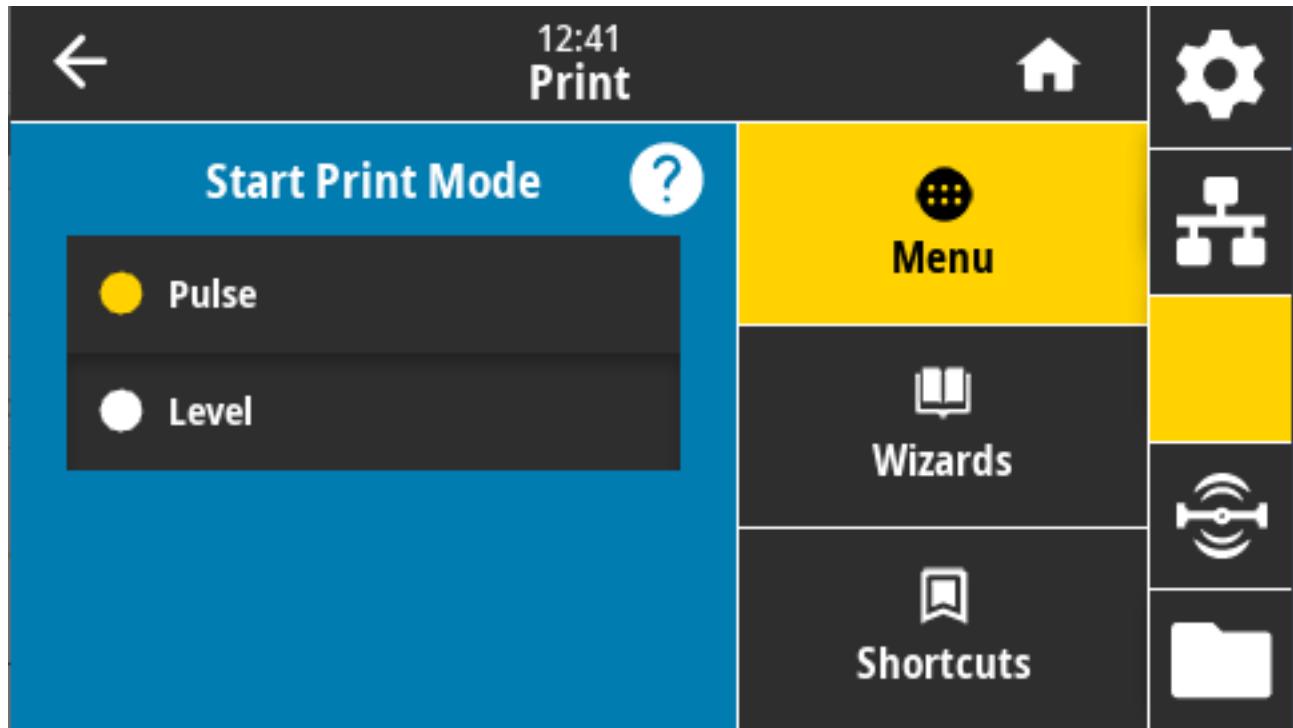
- Off 1 = End Print signal normally high, and low only when the printer is moving the label forward.
- 2 = End Print signal normally low, and high only when the printer is moving the label forward.
- 3 = End Print signal normally high, and low for 20 ms when a label has been printed and positioned.
- 4 = End Print signal normally low, and high for 20 ms when a label has been printed and positioned.

Related ZPL command(s): ^JJ

SGD command used: device.applicator.end\_print

## Print > Applicator > Start Print Mode

Determines if the applicator port's "Start Print" signal is in level mode or pulse mode.



Accepted values:

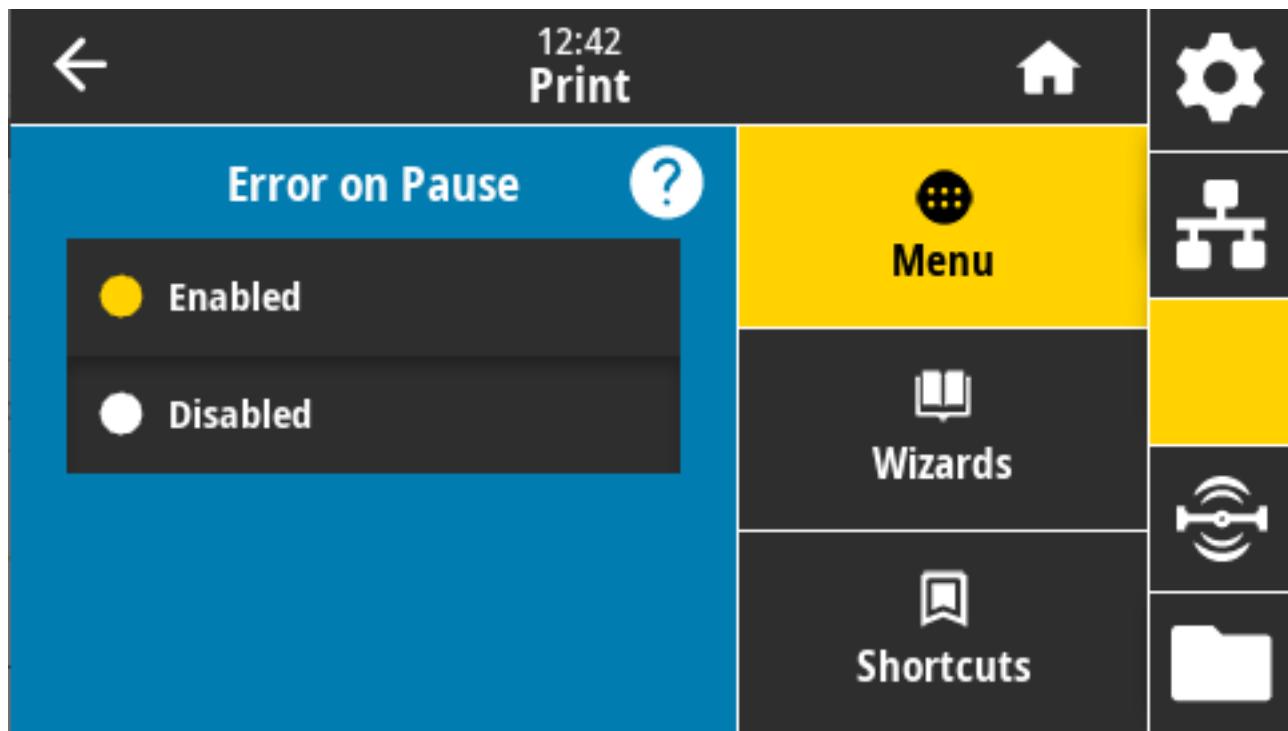
- Pulse — Start Print signal must be disabled before it can be asserted for the next label.
- Level — Start Print signal does not need to be disabled to print the next label. A label prints as long as the Start Print signal is low and a label is formatted correctly.

Related ZPL command(s): ^JJ

SGD command used: device.applicator.start\_print

## Print > Applicator > Error on Pause

Determines how applicator port errors are treated by the printer. Enabling this feature also causes the "Service Required" pin to be asserted.



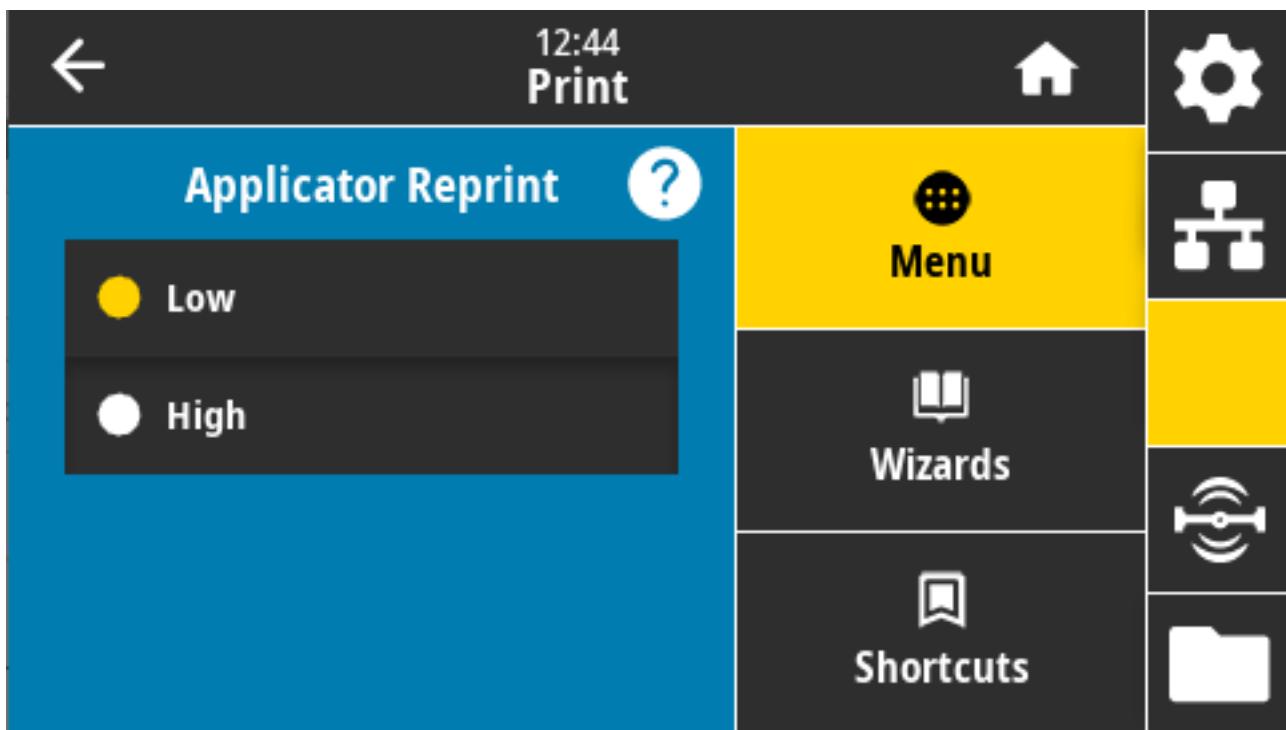
Accepted values: ENABLED, DISABLED

SGD command used: device.applicator.error\_on\_pause

Printer web page: [View and Modify Printer Settings > Advanced Setup > Error on Pause](#)

## Print > Applicator > Applicator Reprint

This setting specifies if a high or low value is required for an applicator to reprint a label.



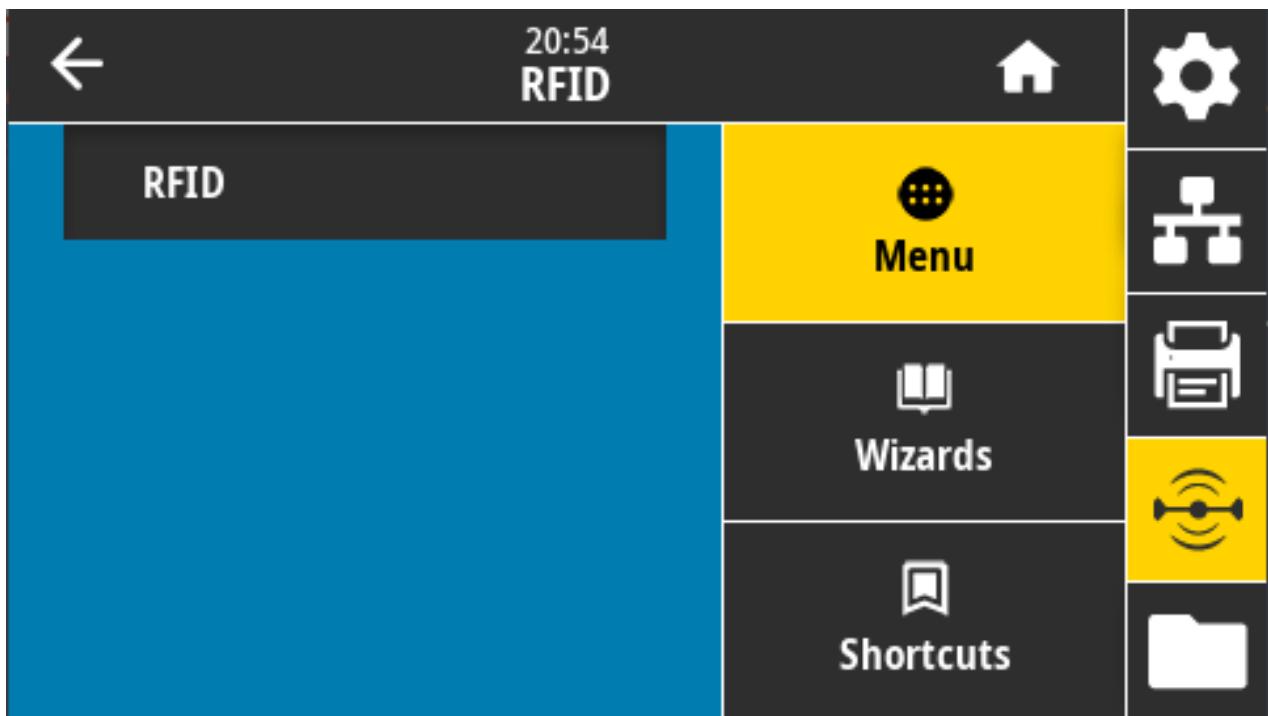
It enables or disables the ~PR command which, when enabled, reprints the last printed label. It also enables the **Reprint** on the Home screen.

Related ZPL command(s): ^JJ, ~PR

SGD command used: device.applicator.reprint

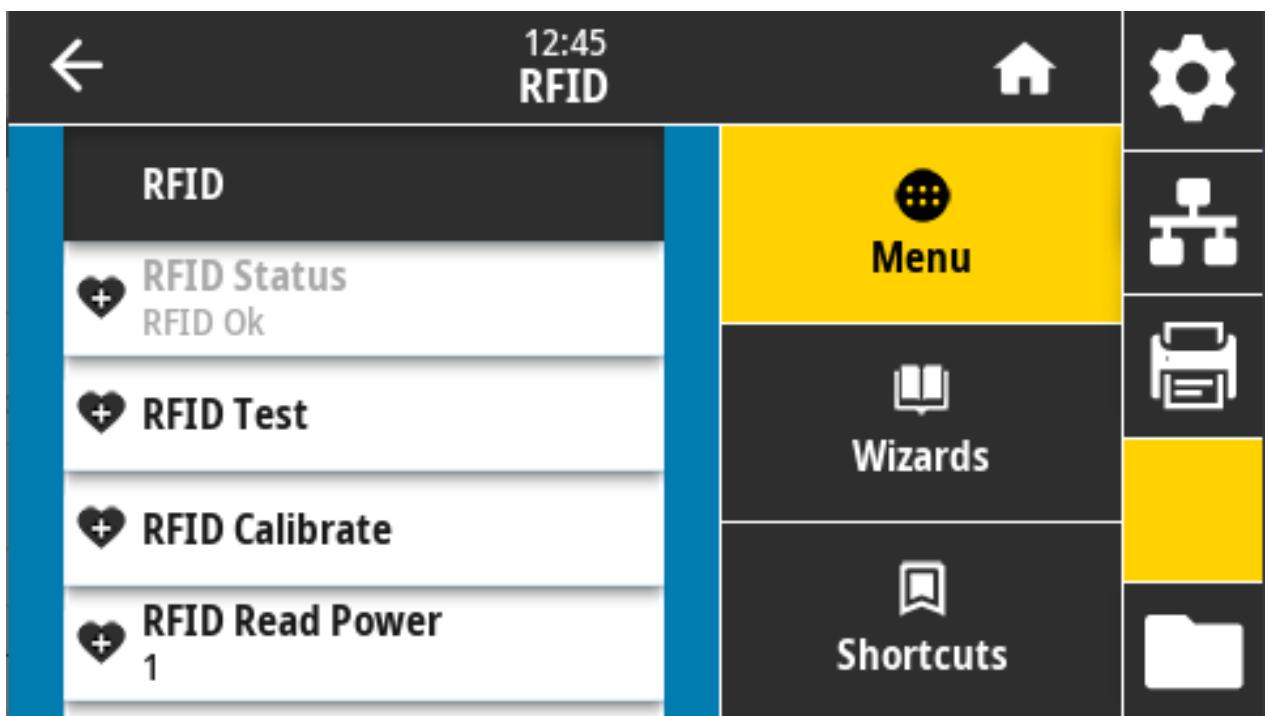
## RFID Menu

Use this menu to configure, monitor, and test the RFID subsystem operation.



### RFID > RFID Status

Display the status of the RFID subsystem of the printer.

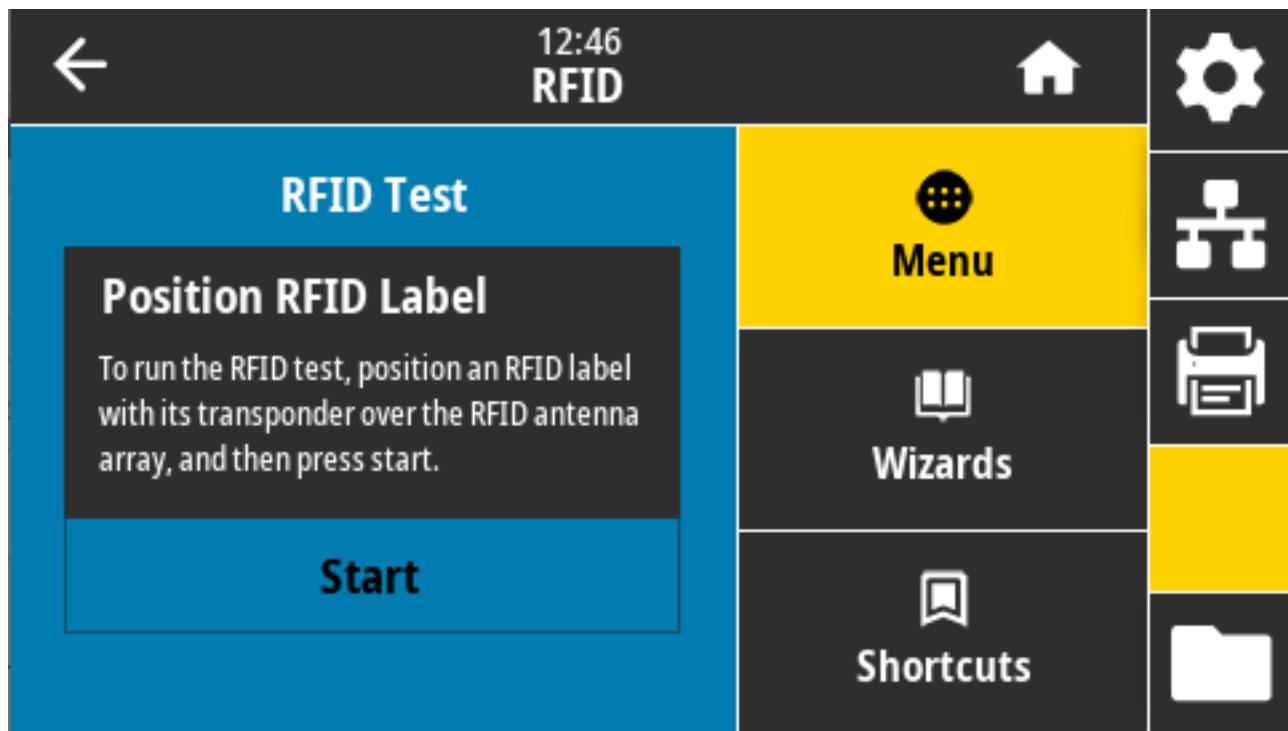


Related ZPL command(s): ^HL, ~HL

SGD command used: rfid.error.response

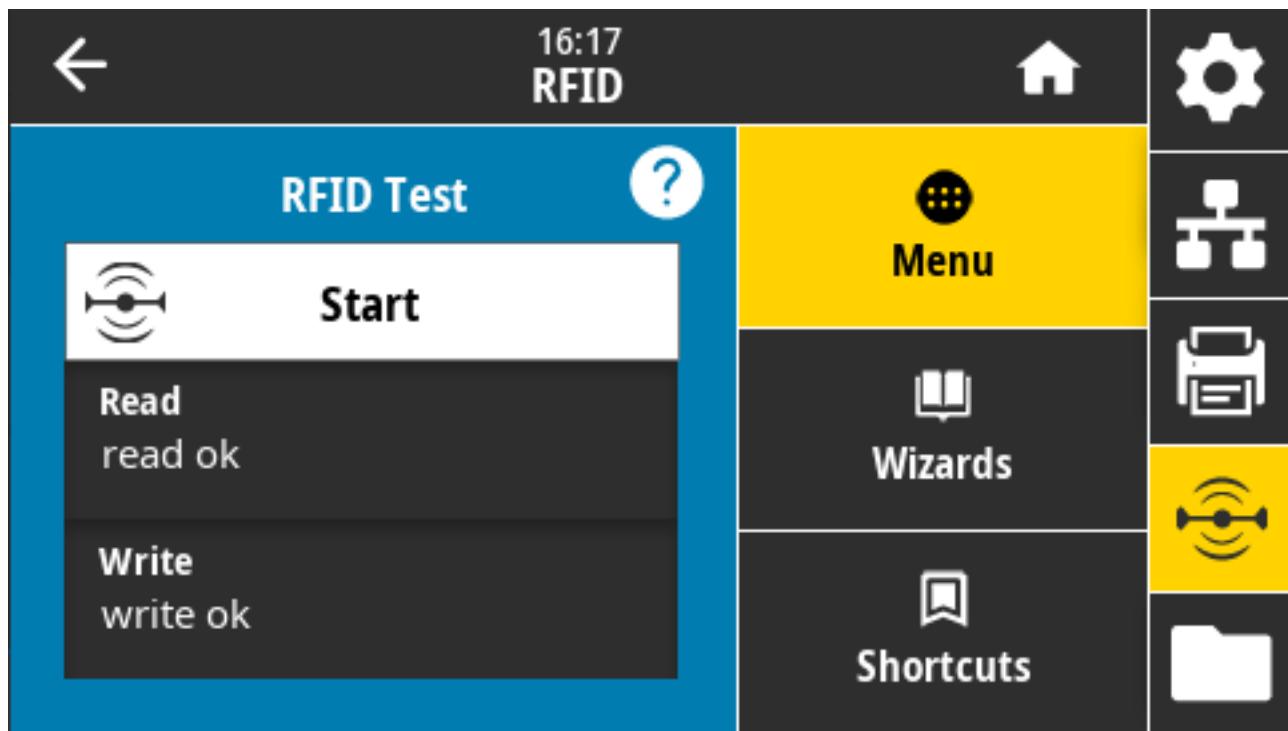
## RFID > RFID Test

During the RFID test, the printer attempts to read and write to a transponder. The printer's components do not move during this test.



To test an RFID label, position an RFID label with its transponder above the RFID antenna array. Then touch **Start**.

The results of this test appear on the display when the test is complete.



SGD commands used:

- rfid.tag.test.content
- fid.tag.test.execute

## RFID > RFID Calibrate

Initiate tag calibration for RFID media. (This is NOT the same as media and ribbon calibration.)

During the process, the printer moves the media, calibrates the RFID tag position, and determines the optimal settings for the RFID media being used. These settings include:

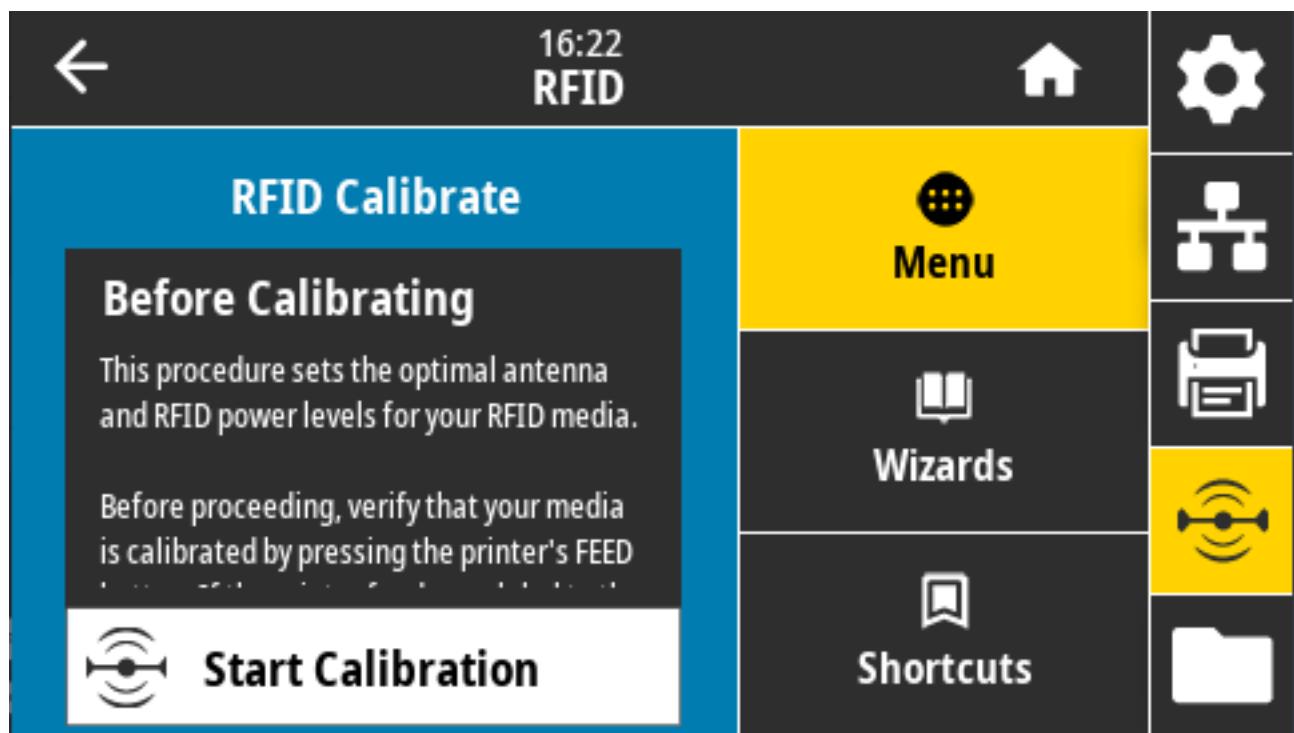
- the programming position
- the antenna element to use
- the read/write power level to use

For more information, refer to RFID Programming Guide 3 available from [zebra.com/manuals](http://zebra.com/manuals).



**NOTE:** Before you run this command, load the printer with RFID media, calibrate your printer (see [Print > Sensors > Manual Calibration](#) on page 147, close the printhead, and press **FEED** to advance at least one label to make sure that tag calibration will begin from the correct position.

Leave all transponders before and after the tag that is being calibrated. This allows the printer to determine RFID settings which do not encode the adjacent tag. Allow a portion of media to extend out the front of the printer to make room for back-feed during the tag calibration procedure.

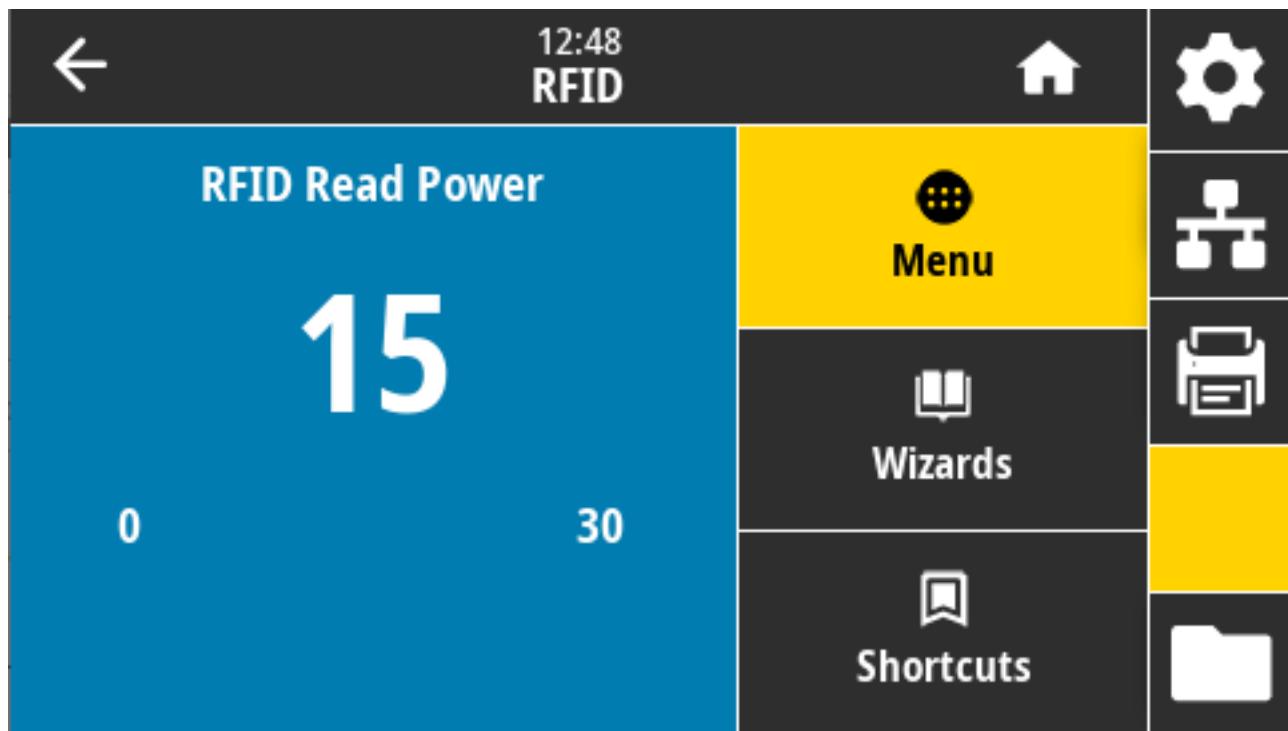


Related ZPL command(s): ^HR

SGD command used: rfid.tag.calibrate

## RFID > Read Power

Specify an appropriate value here if RFID tag calibration does not determine the desired read power for the tags you plan to use.



Accepted values: 0 to 30

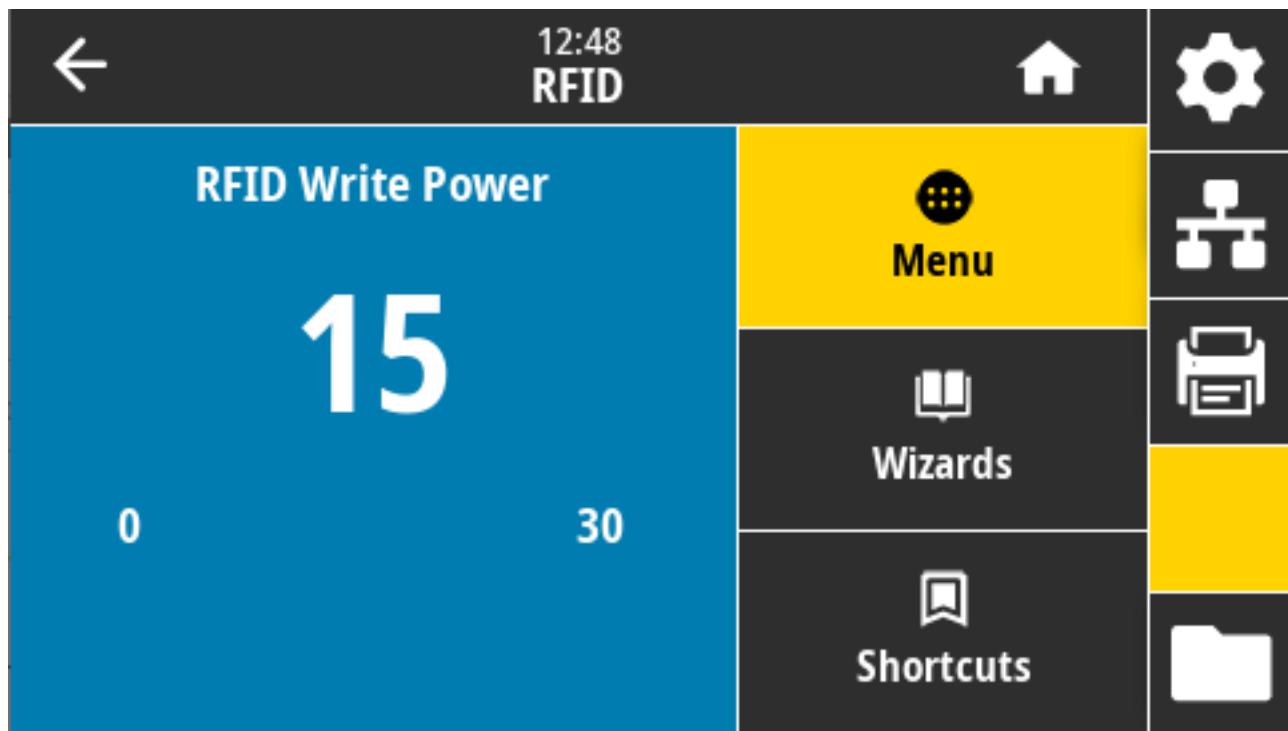
Related ZPL command(s): ^RW

SGD command used: rfid.reader\_1.power.read

Printer web page: **View and Modify Printer Settings > RFID Setup > RFID READ PWR**

## RFID > Write Power

Specify the appropriate value on this screen if RFID tag calibration does not determine the desired write power for the tags you plan to use.



Accepted values: 0 to 30

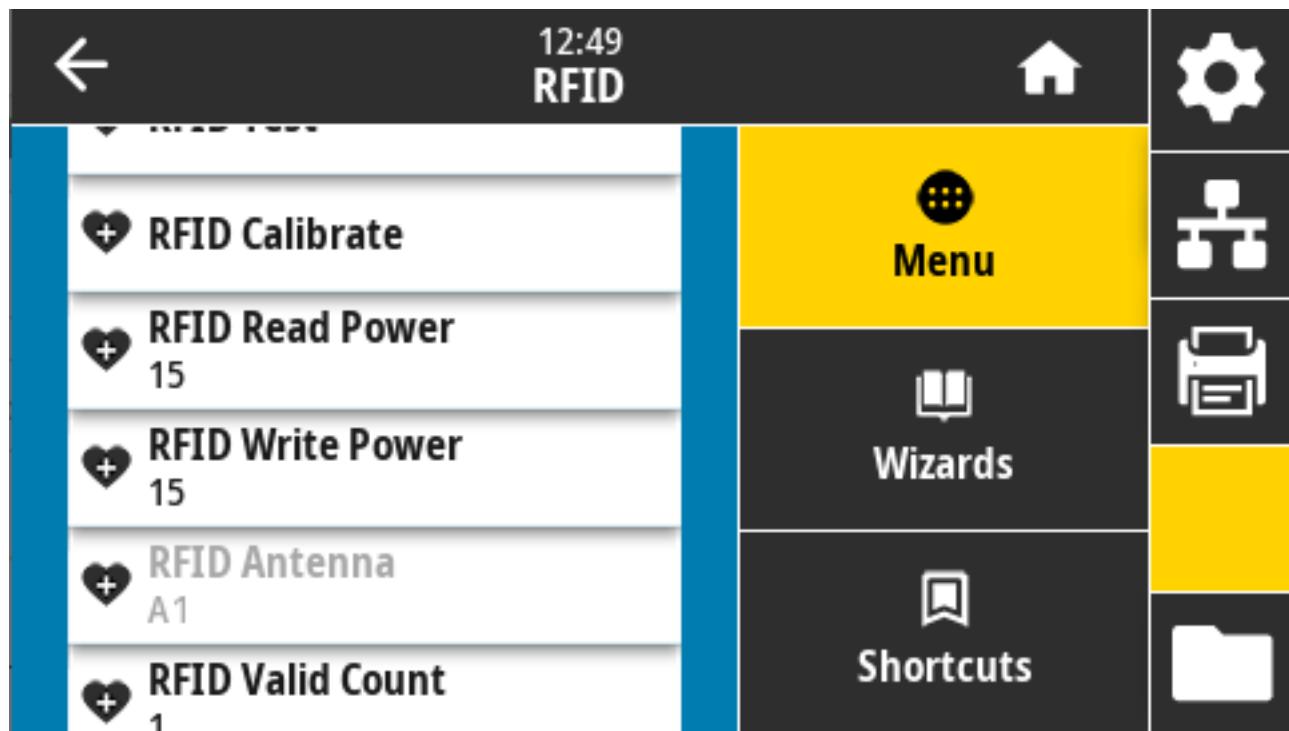
Related ZPL command(s): ^RW

SGD command used: rfid.reader\_1.power.write

Printer web page: **View and Modify Printer Settings > RFID Setup > RFID WRITE PWR**

## RFID > RFID Antenna

Specify the appropriate value here if RFID tag calibration does not determine the desired antenna selection.



Accepted values: A1 default (only valid setting for center aligned antennas used in this Zebra printer)

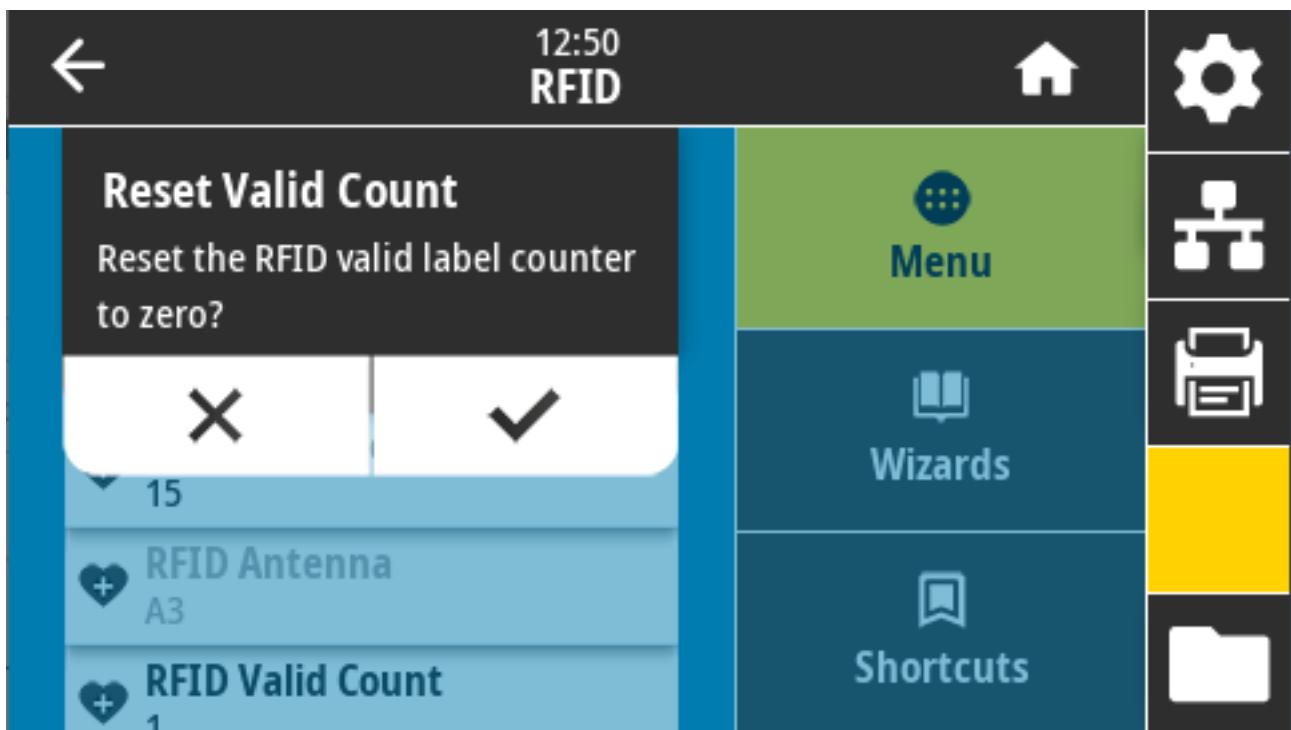
Related ZPL command(s): ^RW

SGD command used: rfid.reader\_1.antenna\_port

Printer web page: [View and Modify Printer Settings > RFID Setup > RFID ANTENNA](#)

## RFID > RFID Valid Count

Used to reset the RFID valid label counter to zero.

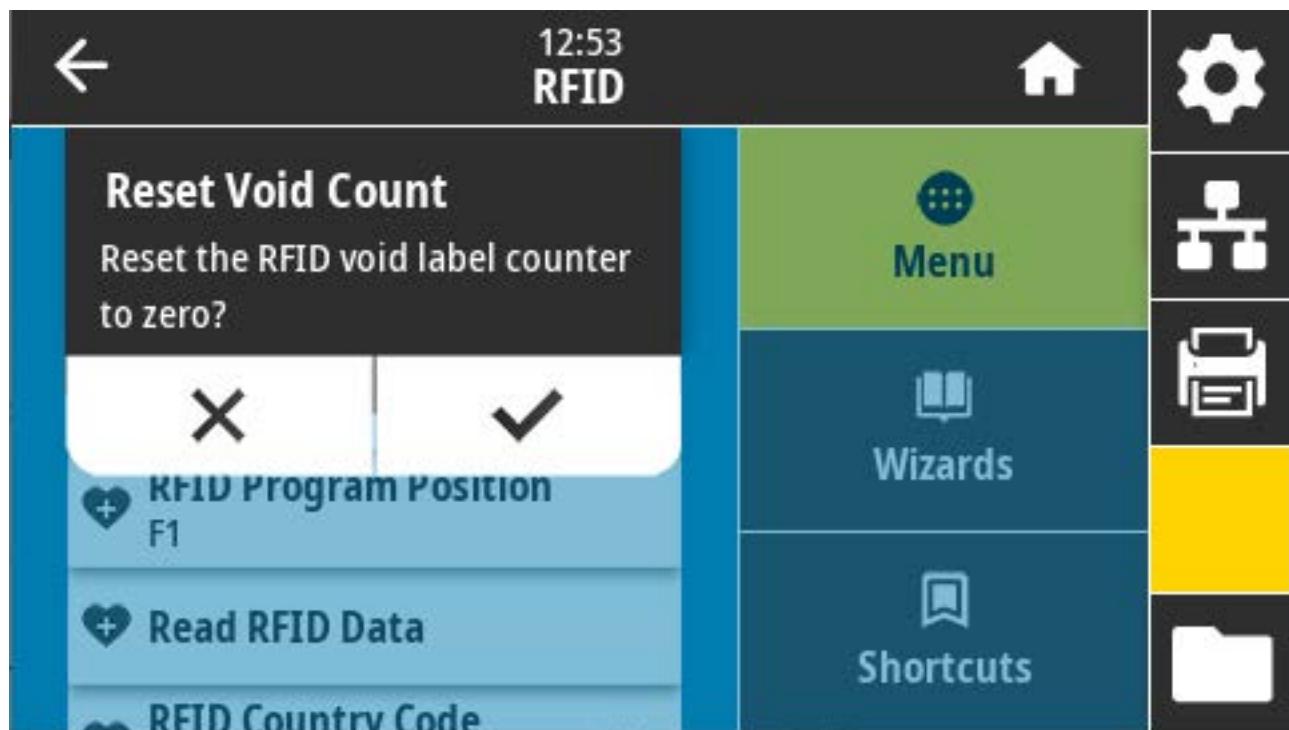


Related ZPL command(s): ~RO

SGD command used: odometer.rfid.valid\_resettable

## RFID > RFID Void Count

Used to reset the RFID void label counter to zero.

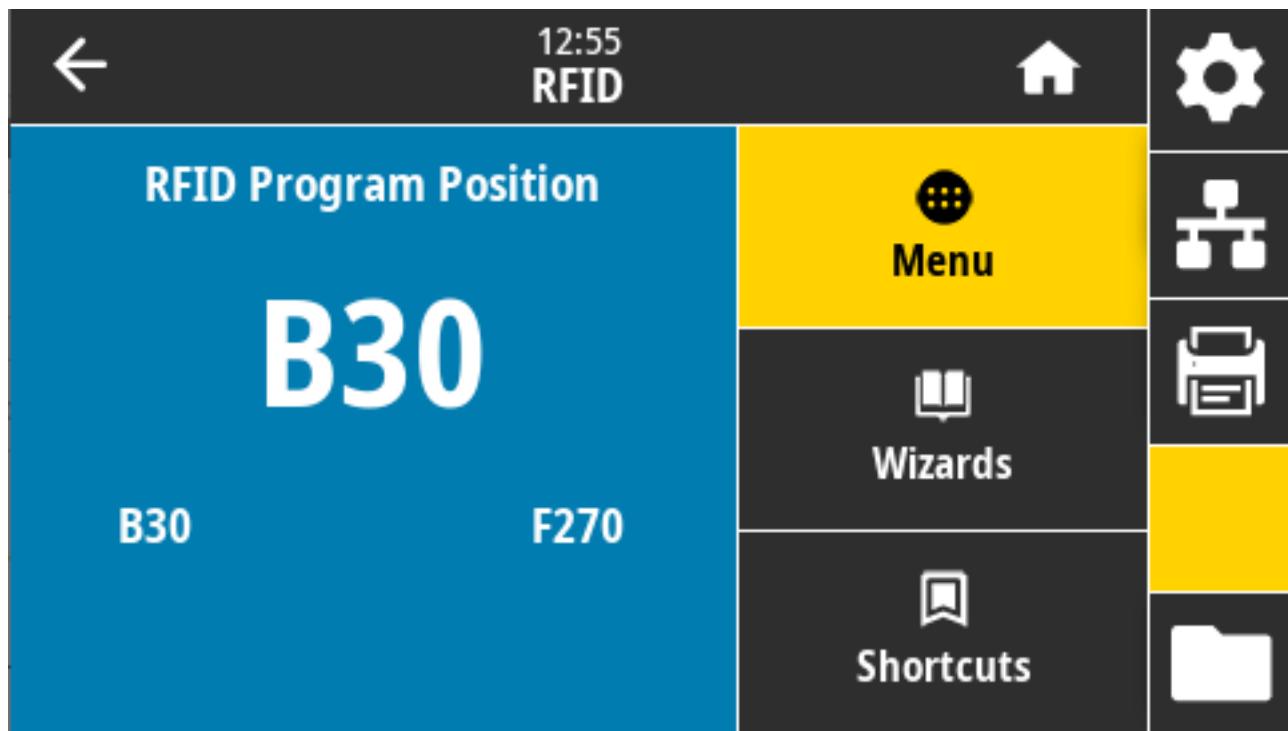


Related ZPL command(s): ~RO

SGD command used: odometer.rfid.void\_resettable

## RFID > RFID Program Position

Specify the appropriate value if the desired programming position (read/write position) is not achieved through RFID tag calibration.



Accepted values:

- F0 to Fxxx (where xxx is the label length in millimeters or 999, whichever is less) — The printer feeds the label forward for the specified distance and then begins programming.
- B0 to B30 — The printer back-feeds the label for the specified distance and then begins programming. To account for the back-feed, allow the empty media liner to extend out of the front of the printer when using a backward programming position.

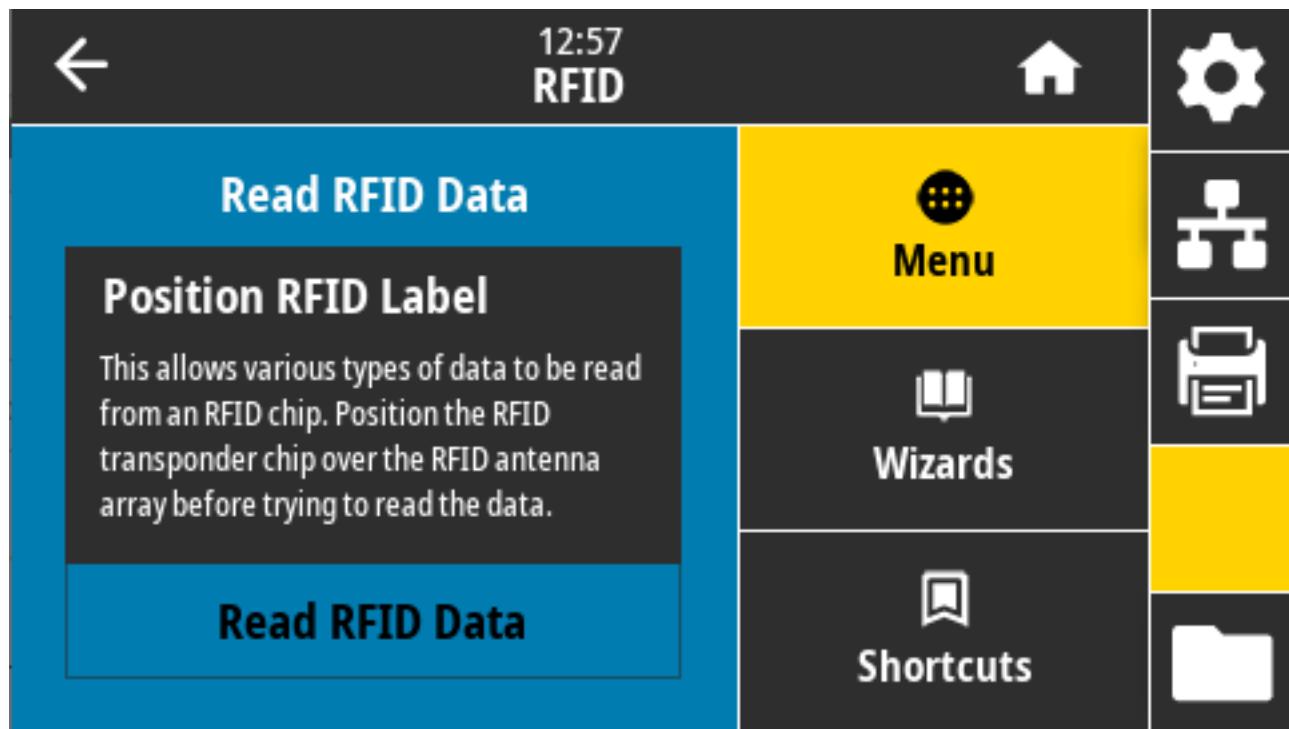
Related ZPL command(s): ^RS

SGD command used: rfid.position.program

Printer web page: [View and Modify Printer Settings > RFID Setup > PROGRAM POSITION](#)

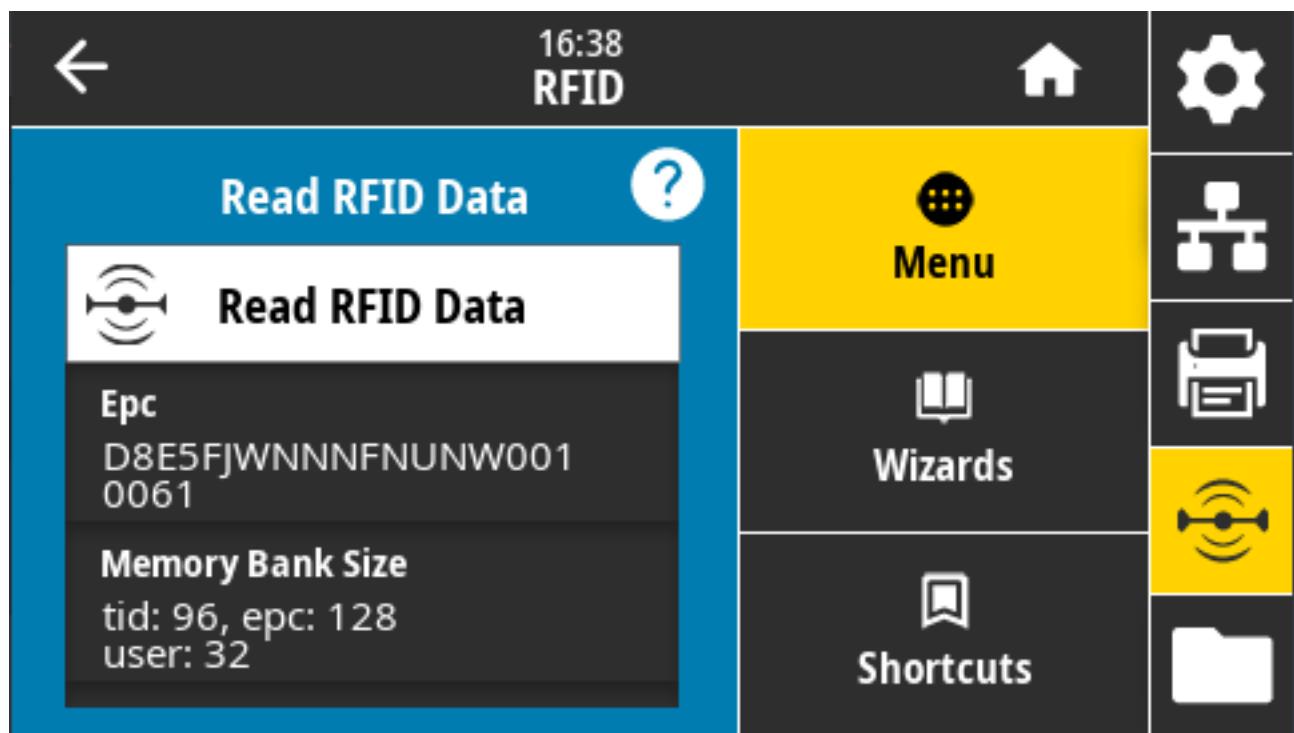
## RFID > Read RFID Data

Read and return the specified tag data from the RFID tag located over the RFID antenna. No printer movement occurs while tag data is being read. The printhead can be open or closed.



To read and display the information stored on an RFID tag, position the RFID label with its transponder over the RFID antenna, then touch **Read RFID Data**.

The results of the test are shown on the display.



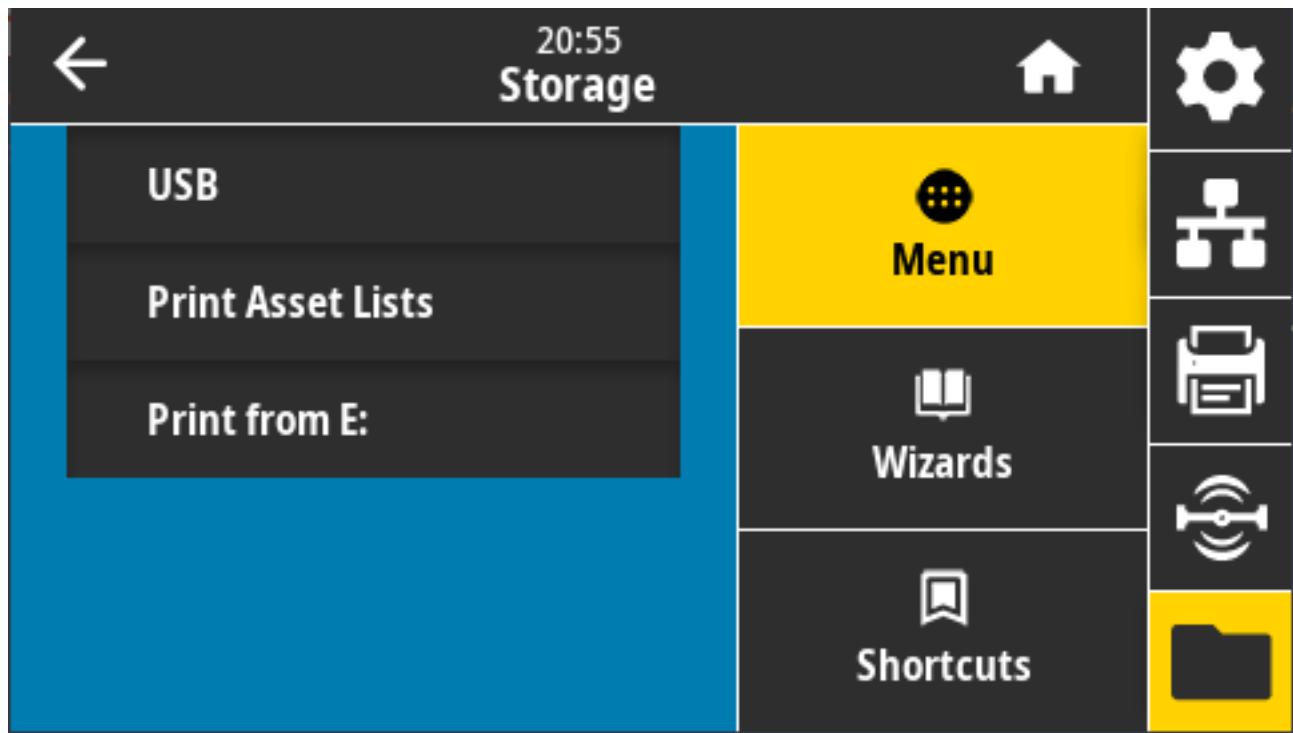
Related ZPL command(s): ^RF

SGD command used:

- rfid.tag.read.content
- rfid.tag.read.execute

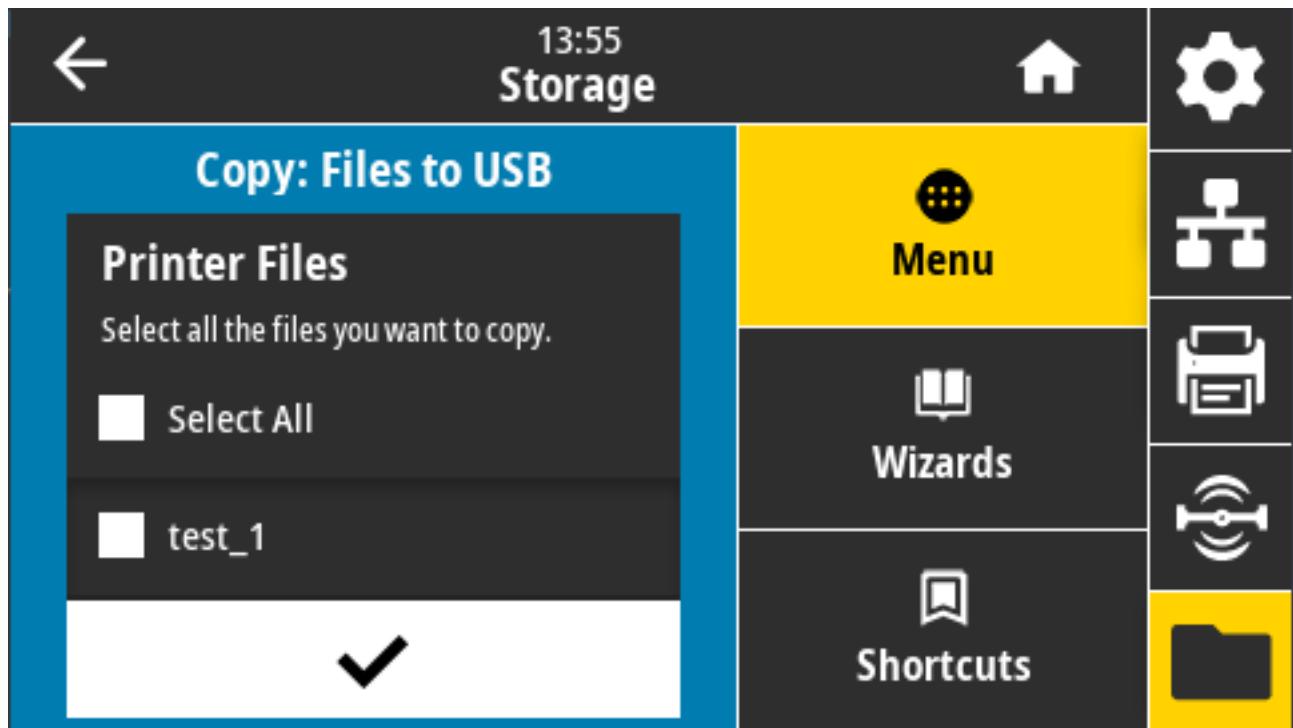
## Storage Menu

Use this menu to manage file operations within the printer, accessing external files via the USB Host, and print label formats.



**Storage > USB > Copy: Files to USB**

Select files from the printer to store on a USB Flash drive.



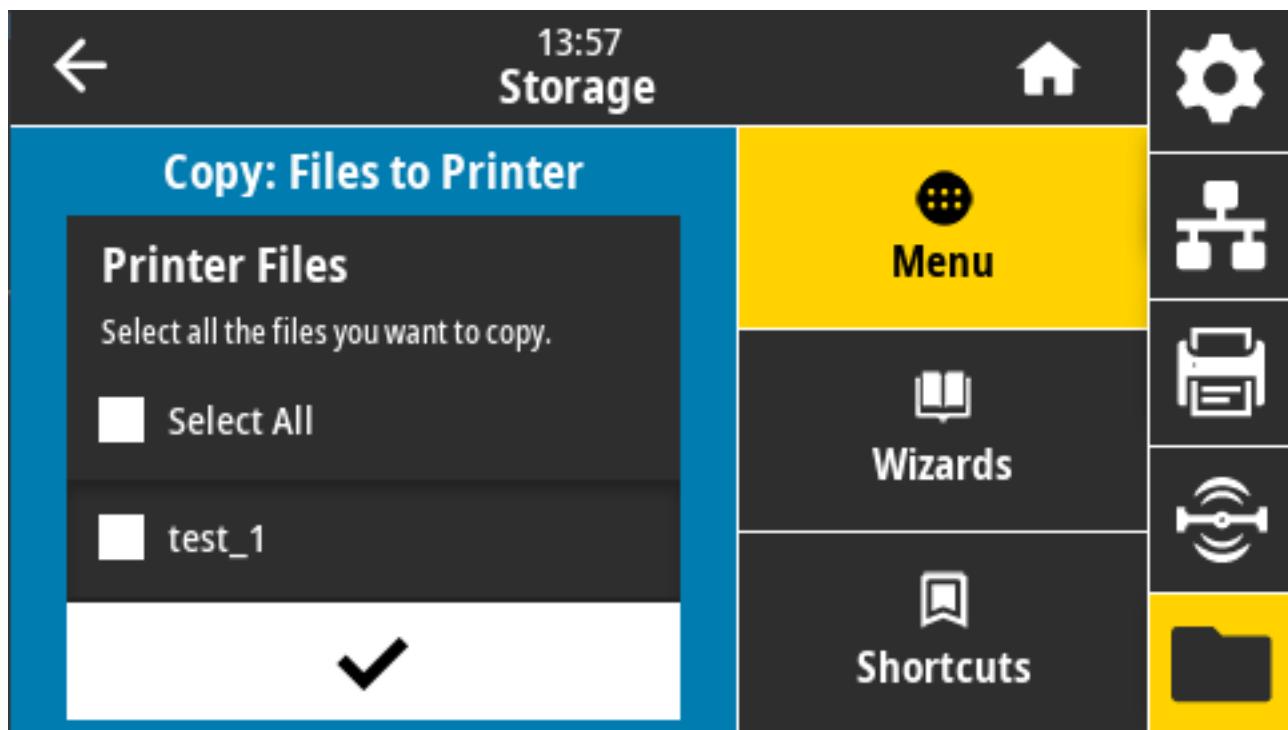
To copy files from the printer to a USB Flash drive:

1. Insert a USB flash drive into the printer's USB host port. The printer lists available files
2. Touch the box next to the desired files. You can also **Select All**.
3. Touch the checkmark to copy the selected files.

SGD command used: `usb.host.write_list`

**Storage > USB > Copy: Files to Printer**

Select files to copy to the printer from a USB Flash drive.



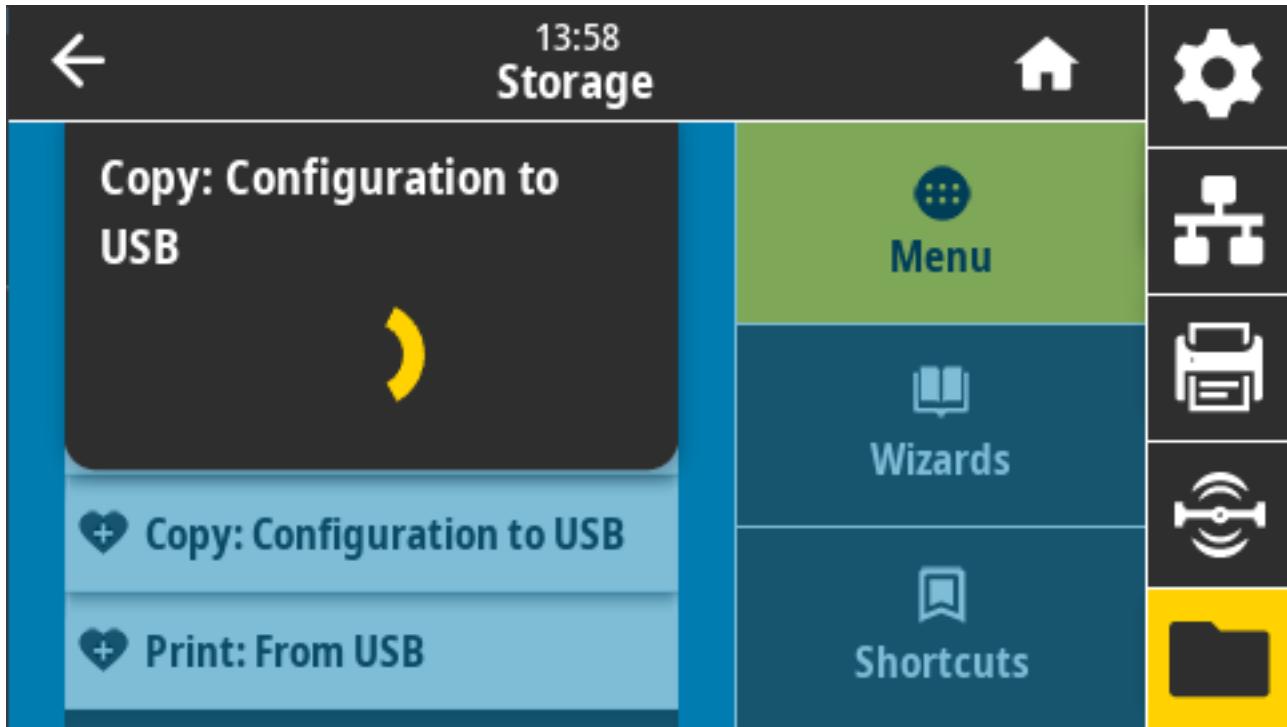
To copy files to the printer from a USB Flash drive:

1. Insert a USB flash drive into the printer's USB host port. The printer lists available files
2. Touch the box next to the desired files. Select All is also available.
3. Touch the checkmark to copy the selected files.

SGD command used: `usb.host.read_list`

## Storage > USB > Copy: Configuration to USB

Use this function to copy the printer's configuration information to a USB mass storage device, such as a USB Flash drive, that is plugged into one of the printer's USB host ports. This makes the information accessible without having to print physical labels.



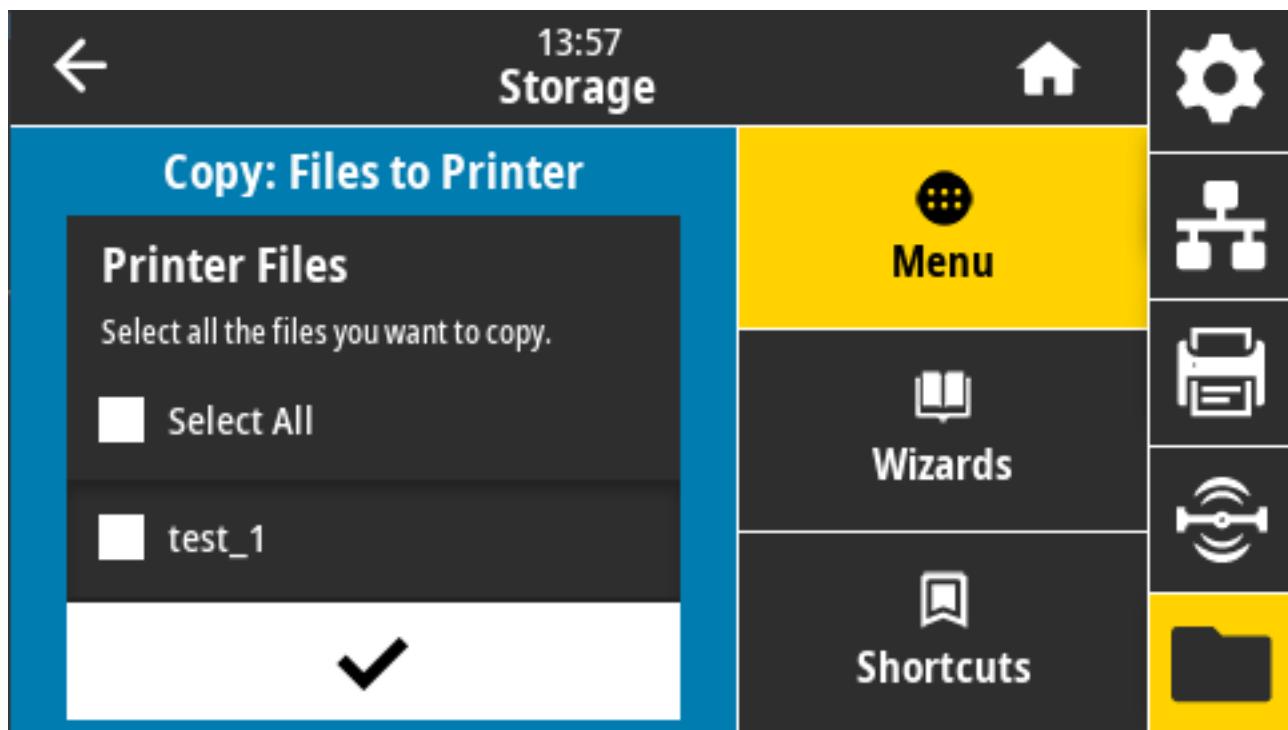
Related ZPL command(s): ^HH (returns the printer configuration information returned to the host computer)

Printer web pages:

- To view printer configuration information on your web browser: **Printer Home Page > View Printer Configuration**
- To print the configuration information on labels: **View and Modify Printer Settings > Print Listings on Label**

**Storage > USB > Print: From USB**

Select files to print from a USB Flash drive.



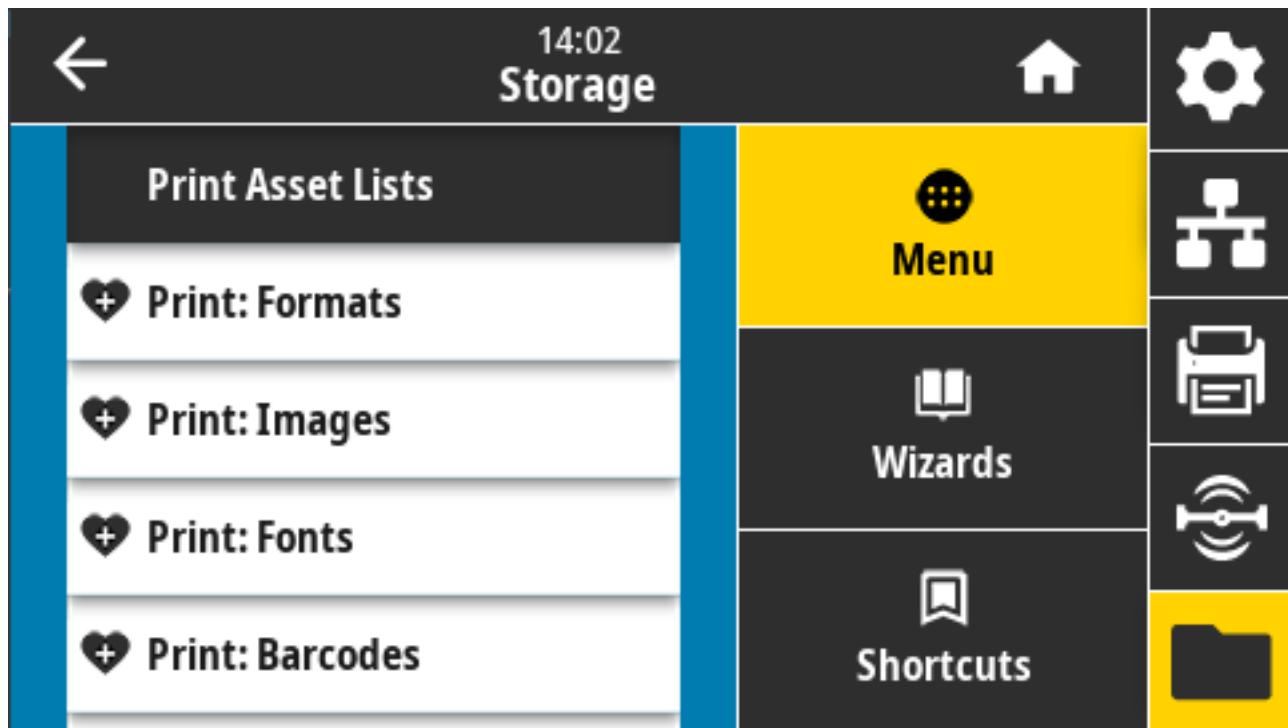
To print files from a USB Flash drive:

1. Insert a USB flash drive into the printer's USB host port. The printer lists available files
2. Touch the box next to the desired files. You can also **Select All**.
3. Touch the checkmark to copy the selected files.

SGD command used: `usb.host.read_list`

## Storage > Print Asset Lists

Print the specified information on one or more labels.



Accepted values:

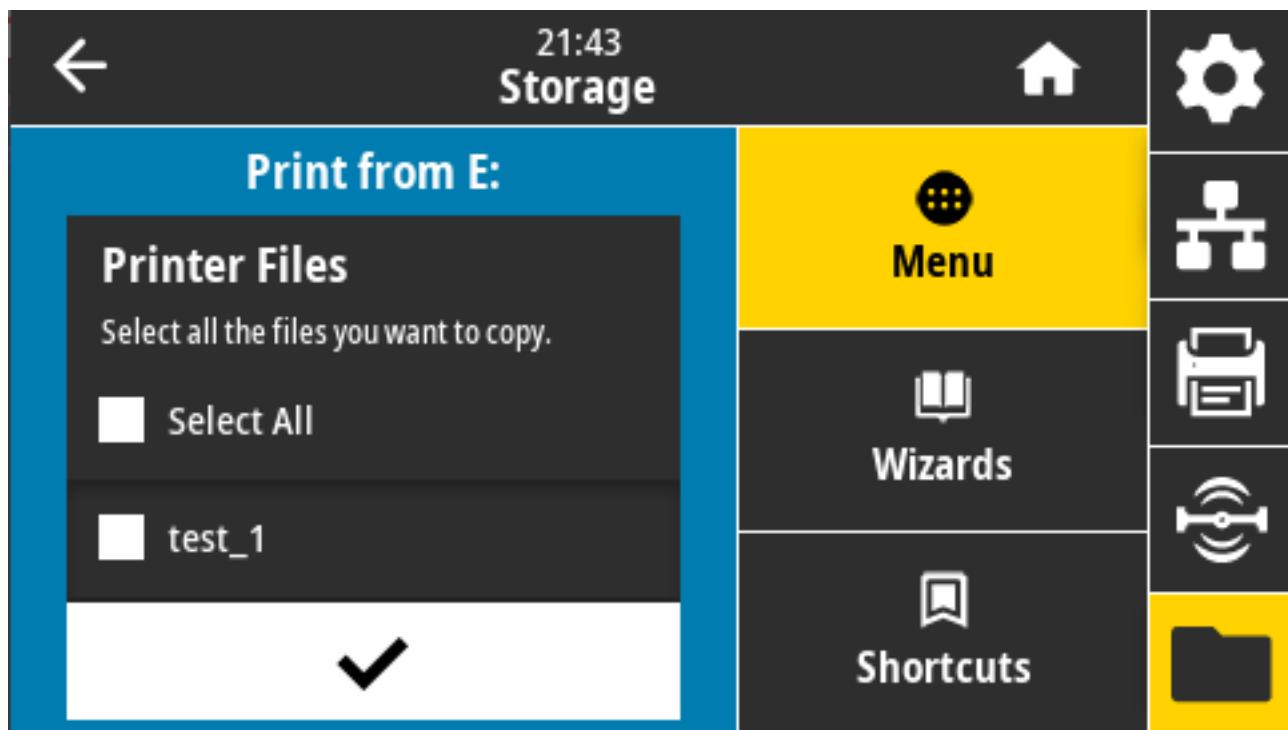
- **Formats** — Prints the available formats stored in the printer's RAM, Flash memory, or optional memory card.
- **Images** — Prints the available images stored in the printer's RAM, Flash memory, or optional memory card.
- **Fonts** — Prints the available fonts in the printer, including standard printer fonts plus any optional fonts. Fonts may be stored in RAM or Flash memory.
- **Barcodes** — Prints the available barcodes in the printer. Barcodes may be stored in RAM or Flash memory.
- **All**—Prints the previous labels plus the printer configuration label and the network configuration label

Related ZPL command(s): ^WD

Printer web page: [View and Modify Printer Settings > Print Listings on Label](#)

**Storage > USB > Print from E:**

Select files to print from files in printer E: memory.



To print files from printer E: memory:

1. Touch the box next to the desired files. You can also use **Select All**.
2. Touch the checkmark to print the selected files.

SGD command used: `usb.host.write_list`

# Setup

This section assists you in setting up and operating your printer. The setup process can be broken down into two phases: hardware setup and host system (software/driver) setup. This section covers the physical hardware setup needed to print your first label.

## Printer Setup Overview

Review this overview and prepare for the setup before you begin the physical printer setup.

- Install any printer hardware options first. See [Install Hardware Options](#) on page 61.
- Place the printer in a safe location with access to power and where you can connect interface cables or wirelessly to the system.
- Attach the printer and power supply to a grounded AC power source. See [Attaching the Printer to a Power Source](#) on page 177.
- Select and prepare media for your printer. See [Media](#) on page 371.
- Load the media. See [Loading Media](#) on page 179.
- Turn printer power ON.
- Calibrate the printer for the media. See [Running a SmartCal Media Calibration](#) on page 199.
- Print a Configuration Report to verify basic printer operation. See [Test Printing with a Configuration Report](#) on page 200.
- Turn printer power OFF.
- Choose a method to communicate to and manage your printer using a wired or wireless connection. The available wired local connection types are:
  - USB port
  - Serial port (option available for your printer)
  - Ethernet (LAN) (option available for your printer)
- Attach the printer cable to the network or host system, making sure printer power is OFF.
- Begin the second phase of printer setup, typically [Setup for Windows](#) on page 215.

## Select a Location for the Printer

The printer and media need a clean and safe area with moderate temperatures for optimal print operations

Select a location for the printer that meets these conditions:

Condition	Description
Surface	Must be solid, level, and of sufficient size and strength to hold the printer loaded with media (or in the case of fanfold media, stable and sturdy with the media placed on the surface)..
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.   <b>IMPORTANT:</b> 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 Wi-Fi 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. <ul style="list-style-type: none"> <li>Operational temperature: 40°F to 105°F (5°C to 41°C)</li> <li>Operational humidity: 10% to 90% non-condensing</li> <li>Non-operational temperature: -40°F to 140°F (-40°C to 60°C)</li> <li>Non-operational humidity: 5% to 95% non-condensing</li> </ul>

## Install Printer Options and Connectivity Modules

If your printer will use any of the following printer options, you will need to install them before you proceed with the printer setup.

- Wireless (802.11ac and Bluetooth 4.2) Module — See [Installing the Wireless Connectivity Module](#) on page 66
- Serial (RS-232 DB-9) Port Module — See [Installing the Serial Port Module](#) on page 63.
- Internal Ethernet (LAN) Module — See [Installing the Internal Ethernet \(LAN\) Module](#) on page 64.
- Label Dispenser (automatically peels the liner off the label and dispenses the label) — See [Installing the Label Dispenser](#) on page 74.

- Standard (general purpose) media cutter — See [Installing the Standard Media Cutter](#) on page 74.
- Media Roll Core Size Adapters for 38.1 mm (1.5 in.), 50.8 mm (2.0 in.), or 76.2 (3.0 in.) I.D. media cores. — For information on these adapters, see [Media Roll Core Size Adapters](#) on page 76. To install the adapters, see [Installing the Media Roll Adapters](#) on page 76.

## Attaching the Printer to a Power Source



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



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

Set up your printer so that you can handle the power cord easily if needed. Some setup and troubleshooting tasks may ask you to turn printer power OFF. When the instructions call for turning printer power OFF, separate the power cord from the power supply receptacle or AC electrical outlet to ensure that 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.



**NOTE:** The AC outlet (plug) end of the power cord varies by region.



## 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](http://zebra.com/supplies).

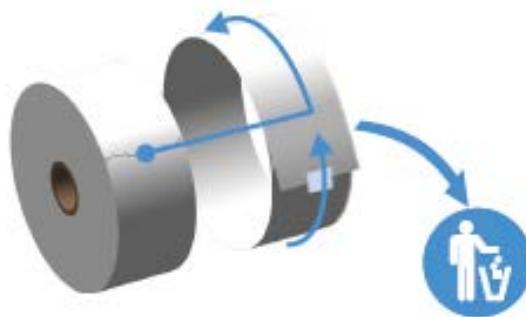
During setup, use the same media that you would use for normal printer operation. This will help you identify any setup or real-life application issues so you can address them right at the start.

## Preparing and Handling Media

Careful handling 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.

## Roll Media Types and Loading

The printers support the three basic types of media: continuous media, marked media, and label media. All three types are loaded the same way for the printer models described in this guide.

- Continuous has no marks that define print length. These are typically used for receipts.

- Marked media comes with black lines, black marks, notches, or holes that help the printer sense print length.
- Label media avails of the print sensor's ability to look through the media backing (liner) and sense the beginning and end of labels on the roll.

The printer uses two sensing methods to accommodate a wide range of media:

- Center-area transmissive sensing for continuous media and gap/web label media.
- Full-width movable (reflective) sensing for print format (length) using black marks, black lines, notches, or holes.

## Setting Media Sensing by Media type

- 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 only senses the media's characteristics. The print format's length is set by programming (driver or software) or by using length of the last stored form.
- For black mark media, the printer uses its sensor to measure the print format length, from the first black mark to the start of the next black mark .
- If using a label dispenser, load the media and proceed with [Using the Label Dispenser Option](#) on page 247.
- If using fanfold media, see [Printing on Fanfold Media](#) on page 243.

## Loading Media

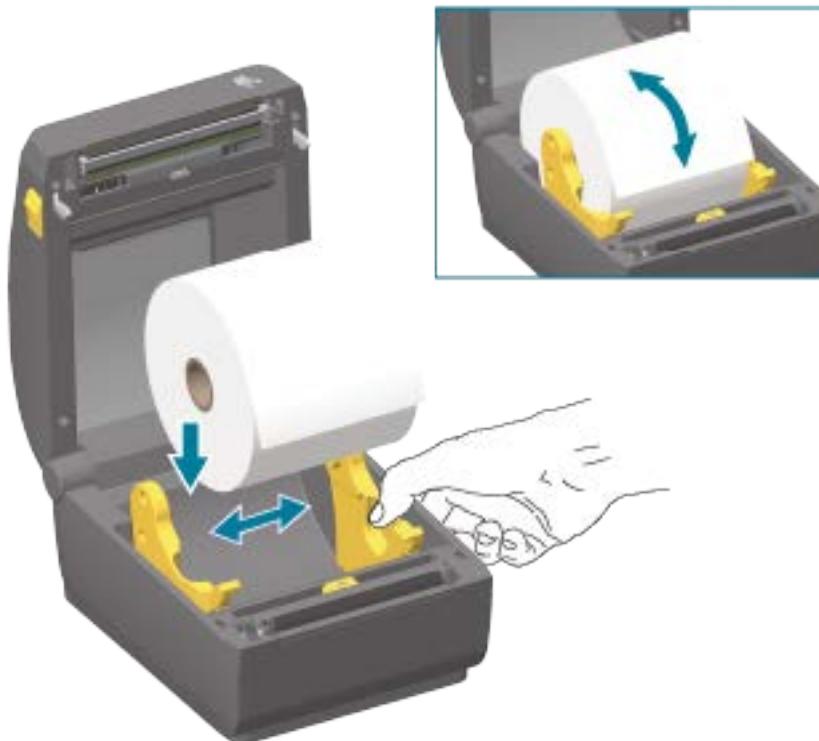
This procedure works for the Tear-Off (standard bezel), Label Dispense, and Media Cutting options that are available to use with your printer.

1. Open the printer. Pull the release latch levers toward the front of the printer.



2. Open the media roll holders. Orient the media roll so that its printing surface will face up as it passes over the platen (drive) roller. Pull the media guides open with your free hand and place the media roll on

the roll holders and release the guides. Verify the roll turns freely. The roll must not sit in the bottom of the media compartment.



3. Pull the media so that it extends out of the front of the printer.

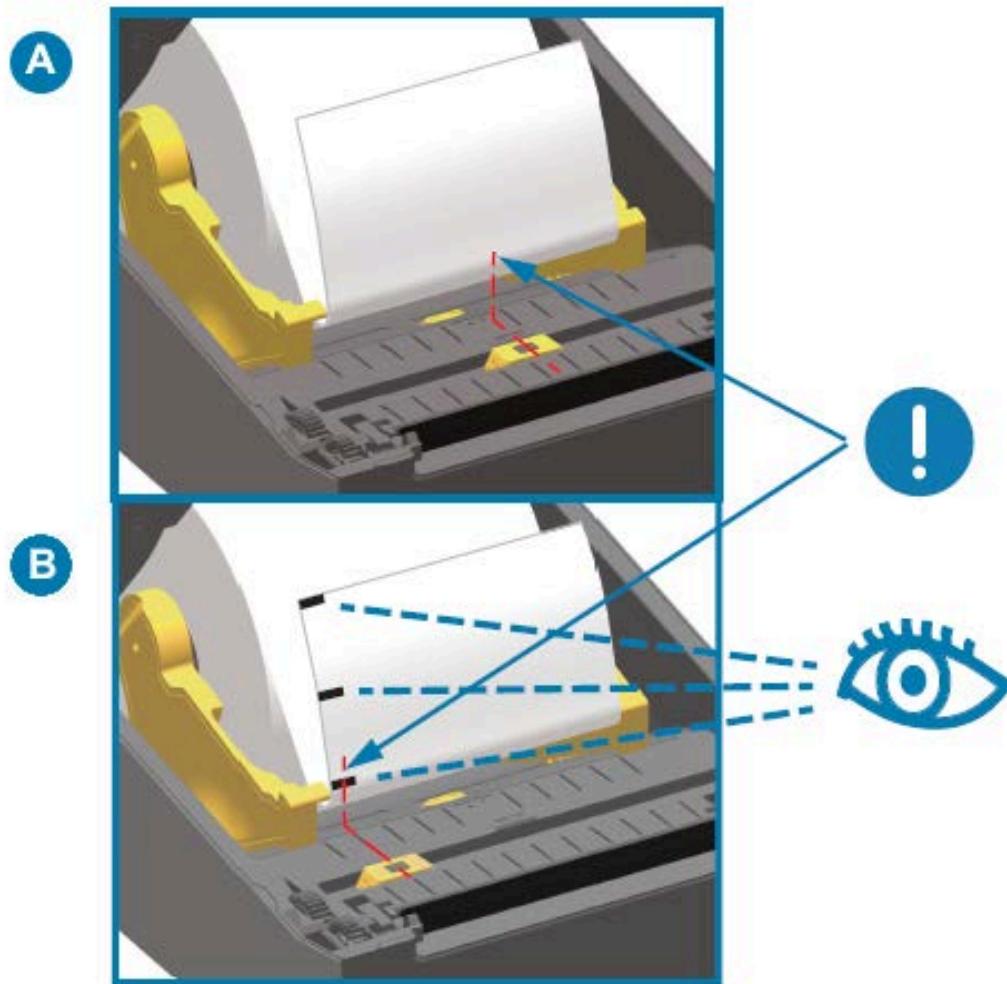


4. Push the media under both of the media guides.



5. 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.



A	Web (gap) sensing standard operating position for the sensor (default)
B	Off-center sensor position (use for black mark sensing only)

## Movable Sensor Adjustment

The movable sensor is a dual-function sensor. It provides transmissive (sees through media) and reflective media sensing. The printer can use either sensing method, but not both simultaneously.

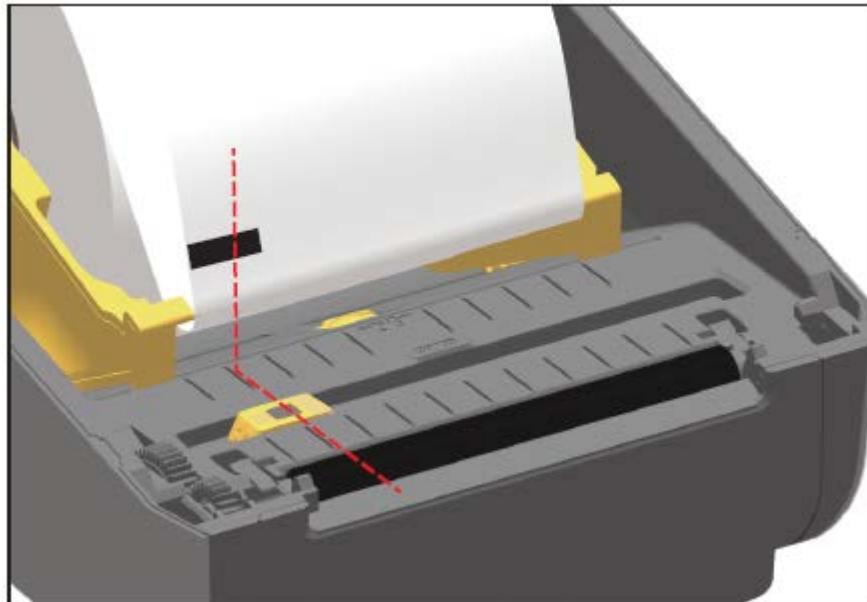
The movable sensor has a center array of sensors. This provides adjustable transmissive web (gap) sensing to positions that match legacy Zebra desktop printer sensor locations and positions in between. This also provides for use of some non-standard media variations or irregularly-shaped media.

The movable 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 black marks or notches not in the center of the media roll to avoid web/gap sensing array.

## Adjusting the Movable Sensor for Black Marks or Notches

Black mark sensing looks for non-reflective 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 located next to each other, under the sensor cover.

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, where 100% of the sensor window is aimed within the region of the black mark.



**NOTE:** When printing, the media can move from side to side  $\pm 1\text{mm}$  (due to media variations and edge damage due to handling). Notches cut into the side of the media can also become damaged.

## Adjusting the Movable Sensor for Web (Gap) Sensing

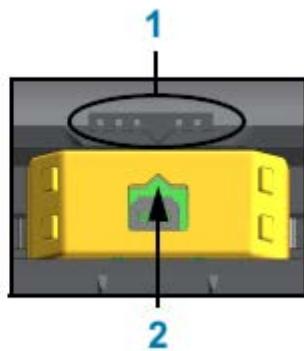
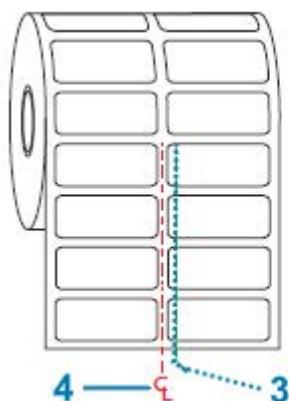
The movable sensor for web/gap sensing supports multiple positions.

The movable sensor's default position is ideal for printing on most label types.

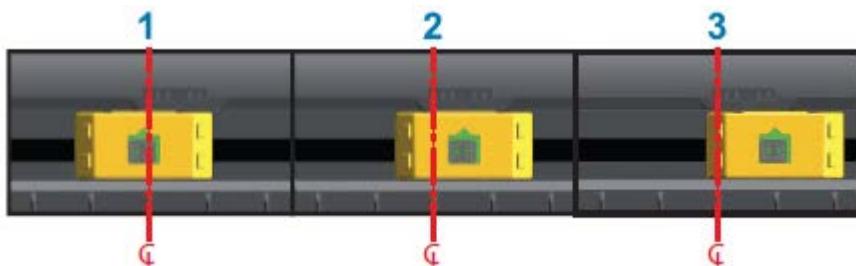
The adjustment range is from center to off-center positions. This adjustment is ideal for printing two labels side by side on a roll.

The movable sensor adjustment range covers sensor positions used by legacy Zebra printers.

Web (gap) sensing with the movable sensor only functions when the movable sensor's alignment arrow points to any position on the alignment key.



1	Alignment key
2	Alignment arrow (default position)
3	Default gap sensing position
4	Center line



1	Center-aligned sensing position
2	Default sensing position
3	Maximum right sensing position

The following are Zebra printer fixed sensor position relative to a ZD Series printer:

- Default — Zebra models G-Series fixed-position sensors: LP/TLP 2842, LP/TLP 2844, and LP/TLP 2042
- Center aligned — Zebra model LP/TLP 2742

## Loading Roll Media for Cutter Models

If your printer has the optional cutter module installed, use these instructions to continue loading the 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.



You may need to calibrate your printer for the media. See [Running a SmartCal Media Calibration](#) on page 199. The printer's sensors must adjust to sense the label, the liner, and the distance between labels to operate properly.

However, you do not have to recalibrate the printer's media sensors when you are loading the media with the same physical specifications (size, label type) and vendor/batch. If this is the case, just press **FEED** (Advance) to ready the new media for printing.

## Thermal Transfer Roll Ribbon Loading

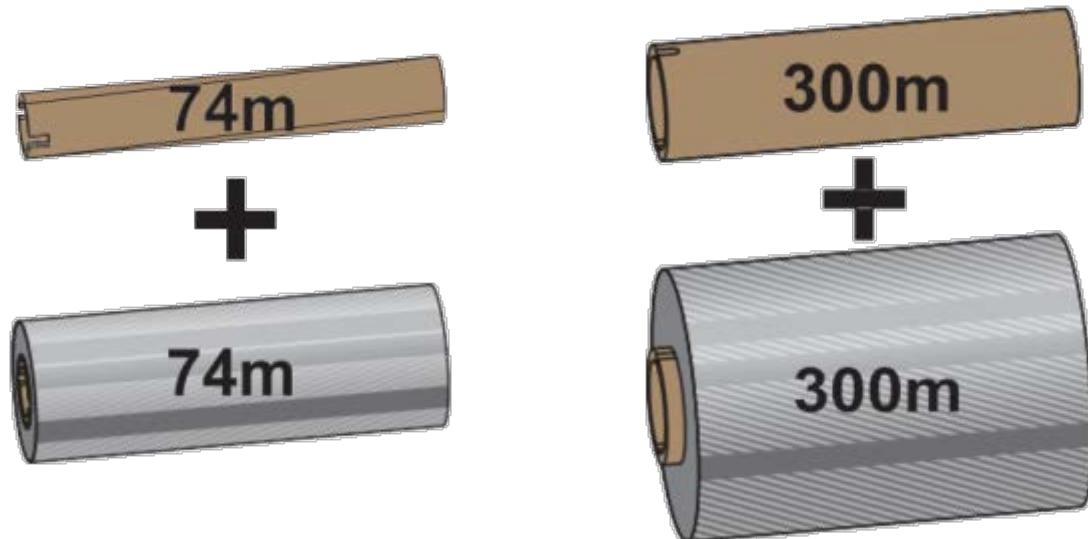
Thermal transfer printers have a flexible ribbon system that supports 74-meter and 300-meter ribbons manufactured by Zebra. Your printer ships with 300-meter ribbon adapters to support non-Zebra ribbon rolls.

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 371.
- 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
- 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.



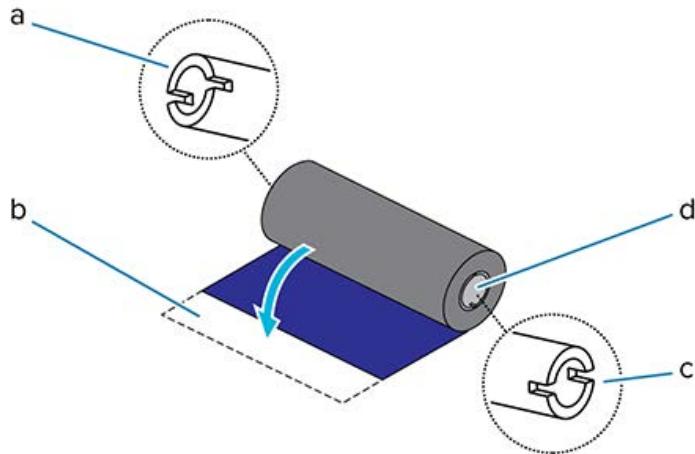
**IMPORTANT:** DO NOT use ribbon cores that have damaged notches (rounded, frayed, smashed, etc.) The core notches must be square to lock the core onto the spindle. Otherwise, the core may slip and cause ribbon wrinkle, poor end-of-ribbon sensing, or other intermittent failures.

## Loading Zebra Transfer Roll Ribbon

Be sure to complete the preparatory steps described here before you 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 [Loading Non-Zebra 300-Meter Transfer Ribbon](#) on page 191.)



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)

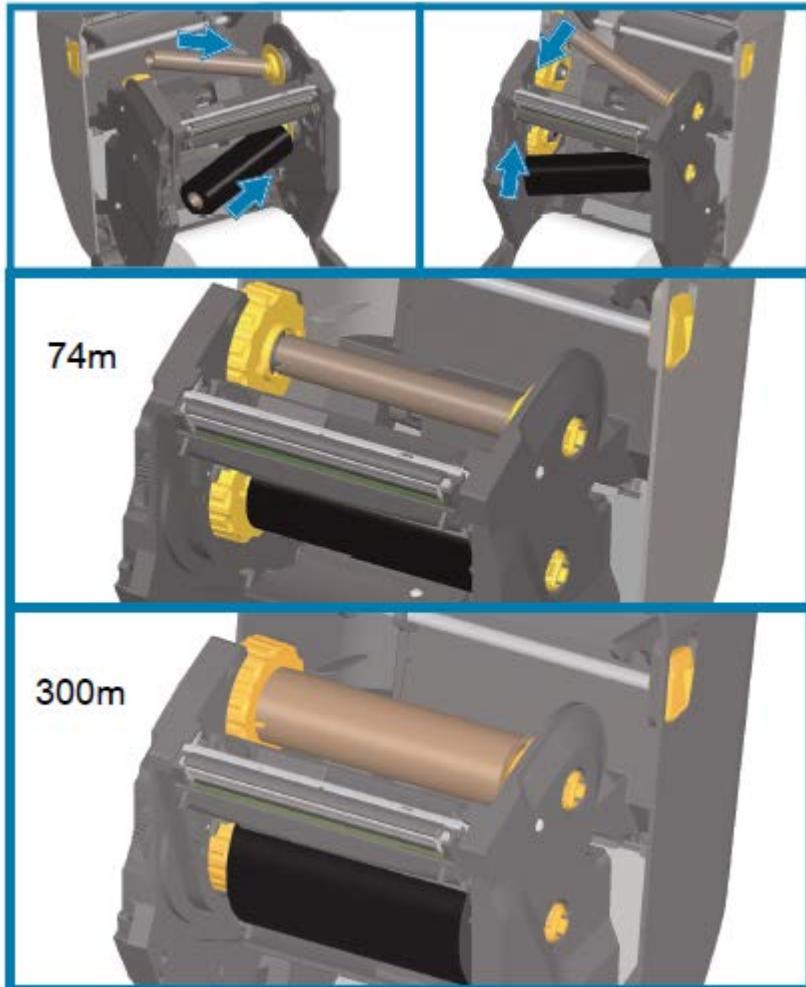
1. With the printer open, place an empty ribbon core on printer's take-up spindles.



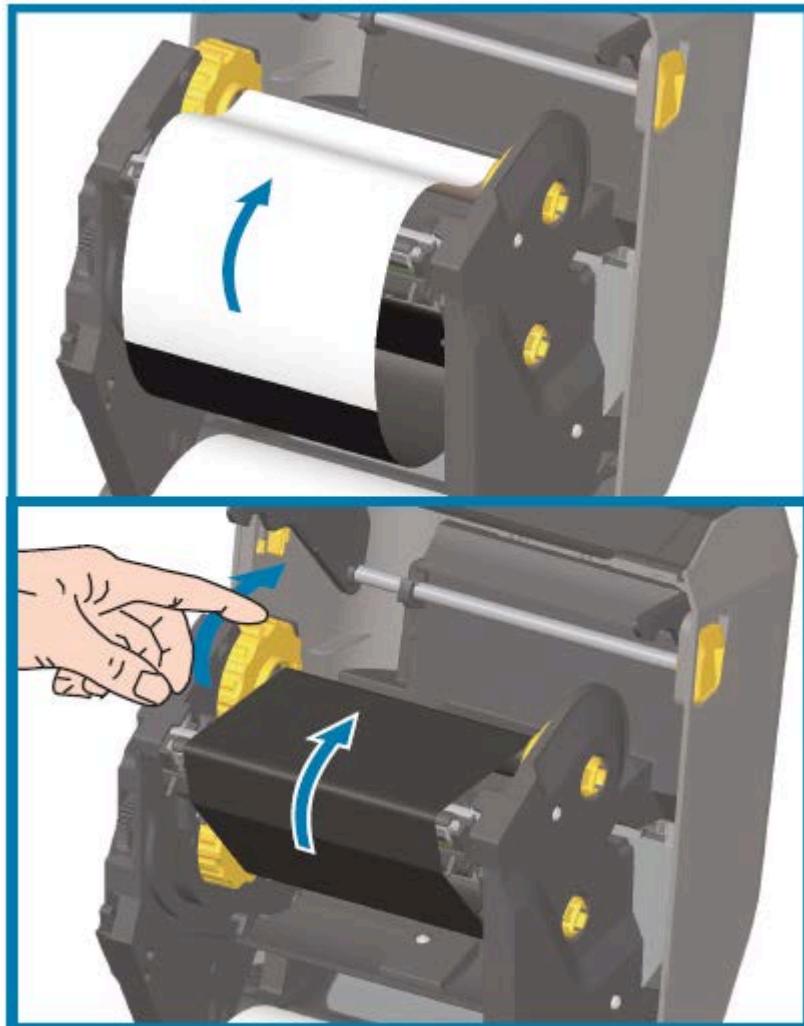
**NOTE:** You can find your first ribbon take-up core in the packing box. Subsequently, use the empty supply core from the supply spindle for the next roll of ribbon.

2. Push the right side of the empty core onto the spring-loaded spindle (right side), aligning the core with the center of the left-side spindle's hub. Then rotate the core until the notches align and lock.

3. Place a new ribbon roll on printer's lower ribbon supply spindle. Push it onto the right spindle and lock the left side on to the left supply spindle.



4. 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.



5. Turn the ribbon take-up hub with the top moving toward rear to remove slack from the ribbon. Rotate the hub to finish aligning the take-up ribbon position to the ribbon supply roll. The ribbon leader should be completely covered by the ribbon.
6. Verify that media is loaded correctly and is ready for printing, then close the printer cover.
7. If printer power is ON, press **FEED** to advance the media a minimum of 20 cm (8 in.) to straighten the ribbon and remove any slack and ribbon wrinkle and align the ribbon on the spindles.
8. Change the print mode setting from DIRECT THERMAL to THERMAL TRANSFER using the printer driver, the application software, or printer programming commands.



**NOTE:** The printer cannot print in Direct Thermal mode and with direct thermal media loaded when ribbon is also loaded. Attempting to print in Direct Thermal mode with ribbon loaded generates a ribbon-in print error.

When controlling printer operations using ZPL programming...

Refer to the Media Type ZPL II command **^MT** and, follow the instructions, in the ZPL Programming Guide.

8. Change the print mode setting from DIRECT THERMAL to THERMAL TRANSFER using the printer driver, the application software, or printer programming commands.



**NOTE:** The printer cannot print in Direct Thermal mode and with direct thermal media loaded when ribbon is also loaded. Attempting to print in Direct Thermal mode with ribbon loaded generates a ribbon-in print error.

When controlling printer operations using ZPL programming...	Refer to the Media Type ZPL II command <code>^MT</code> and, follow the instructions, in the ZPL Programming Guide.
When controlling printer operations using EPL Page Mode...	Refer to the Options EPL command <code>O</code> , and follow the instructions, in the EPL Page Mode Programmer's Guide.

9. To verify the mode change from Direct Thermal printing to Thermal Transfer printing, print a configuration report. For instructions on printing this report, see [Printing the Printer and Network Configuration Reports \(CANCEL Self Test\)](#) on page 324.

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

## 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 as follows:

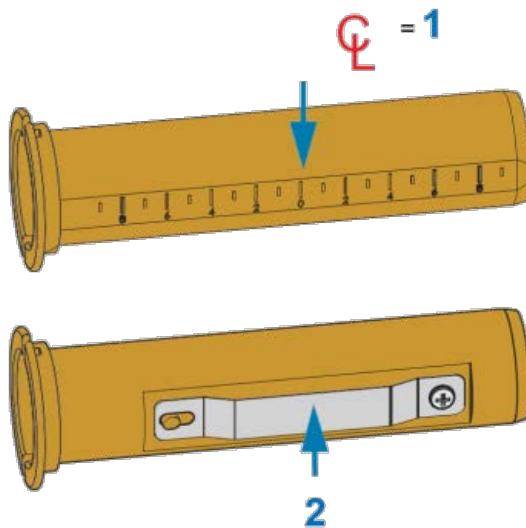
Inside core diameter (I.D.)	25.4 mm (1.0 in., with a range of 1.004 in. to 1.016 in.)
Inside core material	Fiberboard (hard materials such as plastic cores may NOT function correctly)
Ribbon width range	33 mm to 110 mm (1.3 in. to 4.3 in.)
Ribbon's maximum outer diameter (O.D.)	66 mm (2.6 in.)



**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. They scale, as measured from the printer's center-line, when mounted in the printer.



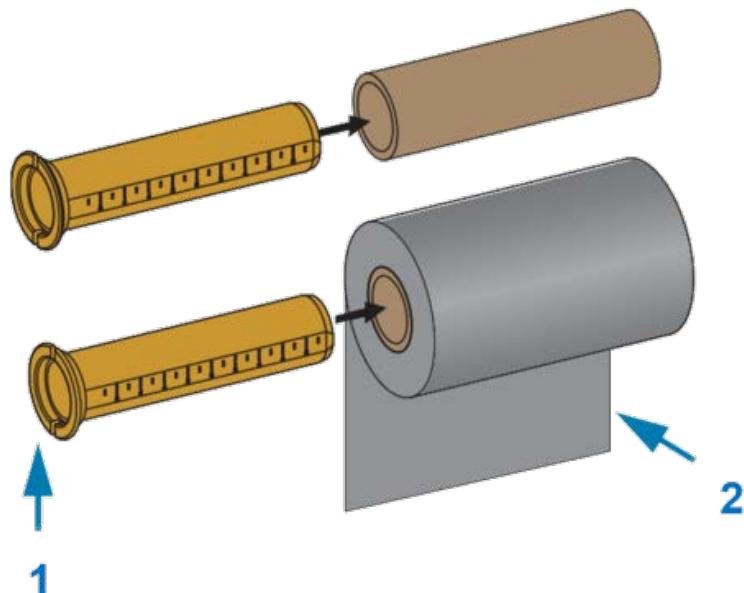
1	Center line
2	Core lock spring

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 adapter's center line.



**NOTE:** An empty Zebra ribbon core may be used instead of the ribbon-core 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

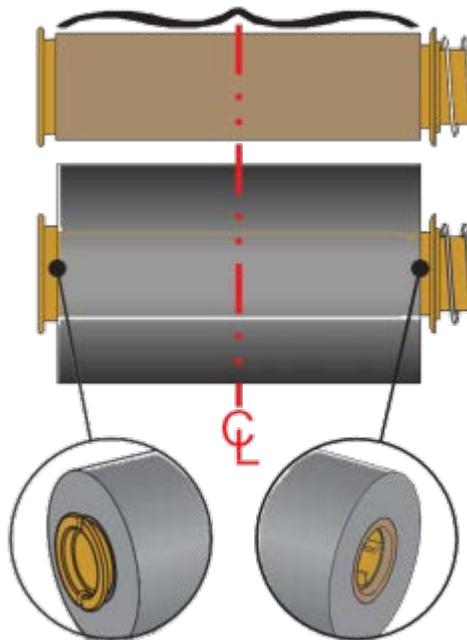


**NOTE:**

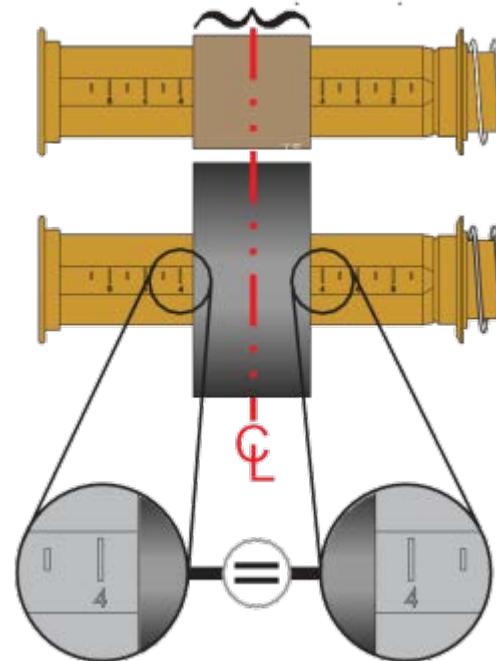
The maximum roll width of 110 mm (4.3 in.) does NOT require centering.

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.)

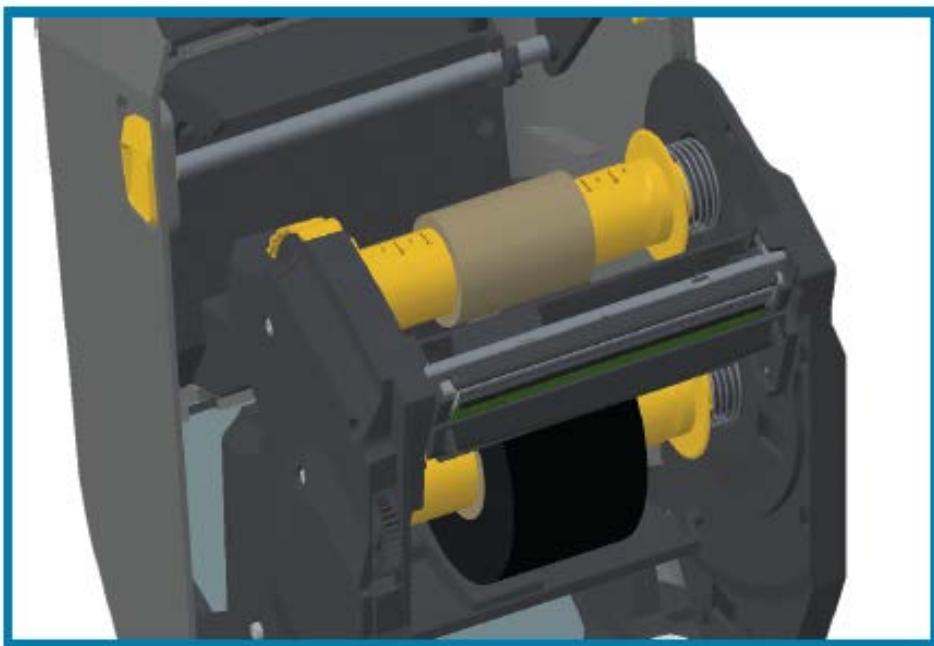
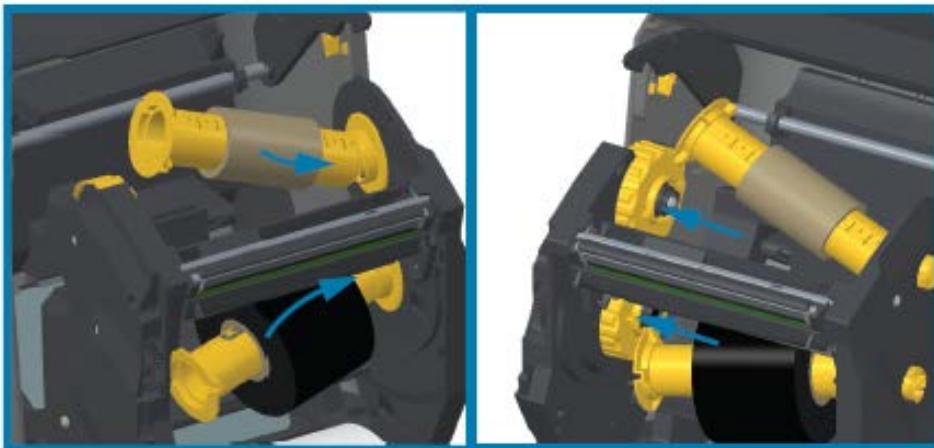


Width = 33 mm (1.3 in.)

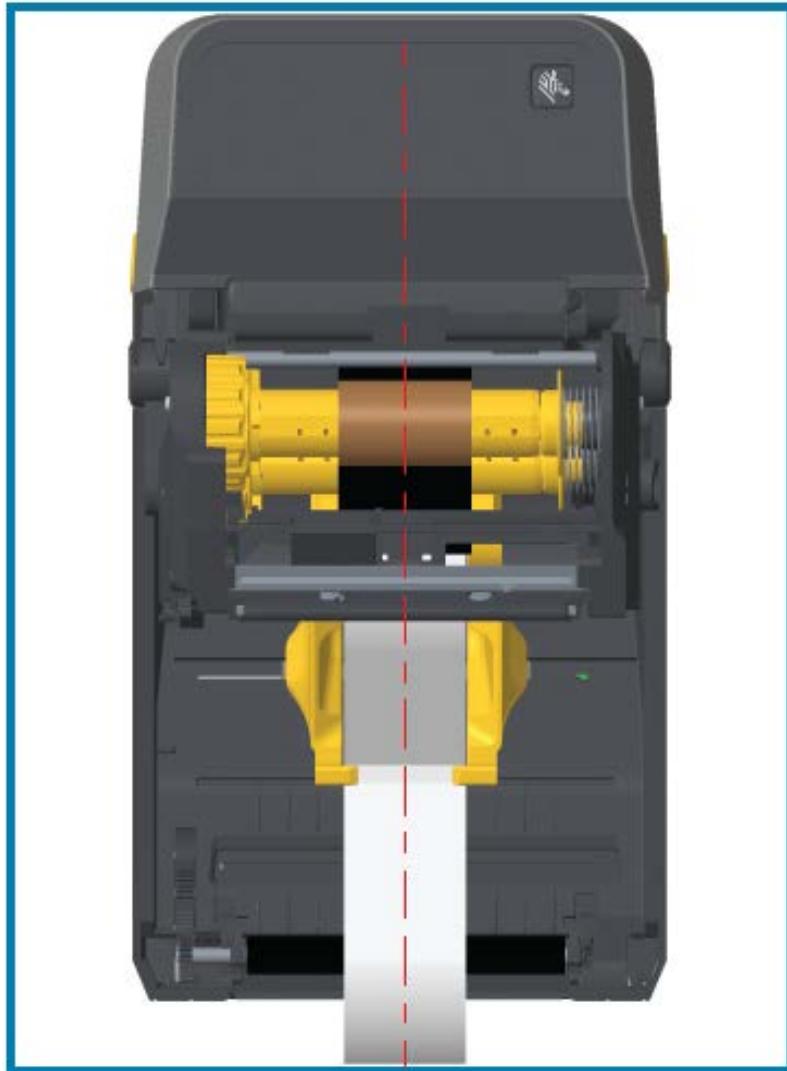


3. Place the adapter with an empty core on the take-up spindles and the adapter with the ribbon roll on the lower supply spindles. The right side of the core adapter fits on the cone-tip on each of the spring-loaded right-side spindles. Continue pushing the adapter onto right-side spindle and swing

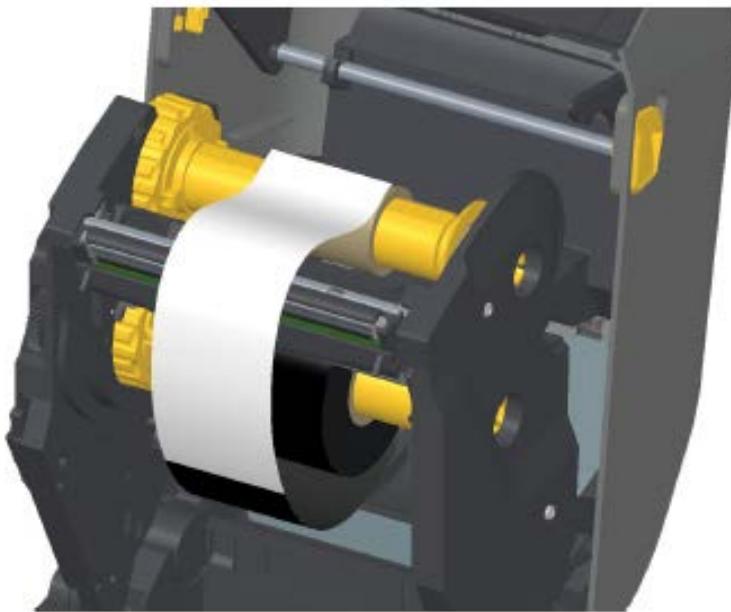
the adapter onto the left-side spindle hubs. Rotate the adapters and hubs until the notches on the adapters flange align and lock on the left spindles' hub spokes.



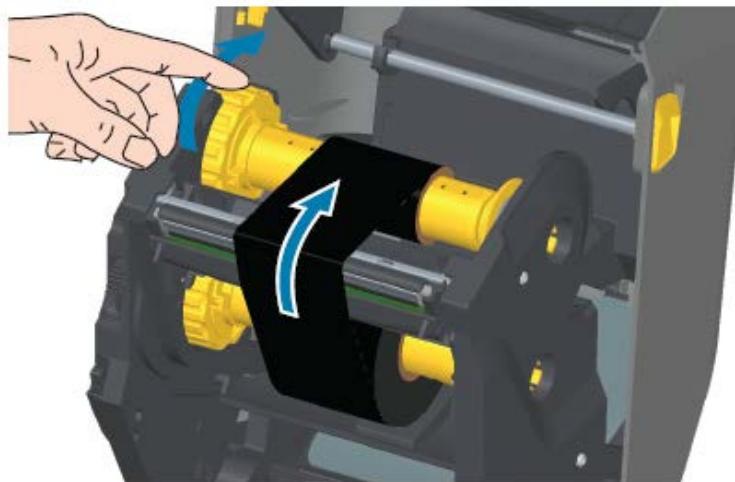
4. While the ribbon and empty cores were being installed during the previous steps, they may have been bumped off center.
- Verify that the ribbon roll and empty core are aligned to the center of the media (labels, paper, tags, etc.). Use the center line scales on the ribbon core adapter as a guide to return them to the proper positions.
  - If you have not yet checked if the ribbon is wide enough the for the media in use, do so now. To protect the printhead, the ribbon must be wider than the media (where the width includes the label liner or backing).



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 properly and is ready for printing, 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.

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



**NOTE:** The printer cannot print in Direct Thermal mode and with direct thermal media loaded when ribbon is also loaded. Attempting to print in Direct Thermal mode with ribbon loaded generates a ribbon-in print error.

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).

10. To verify the mode change from Direct Thermal printing to Thermal Transfer printing, print a configuration report. For instructions on printing this report, see [Printing the Printer and Network Configuration Reports \(CANCEL Self Test\)](#) on page 324.

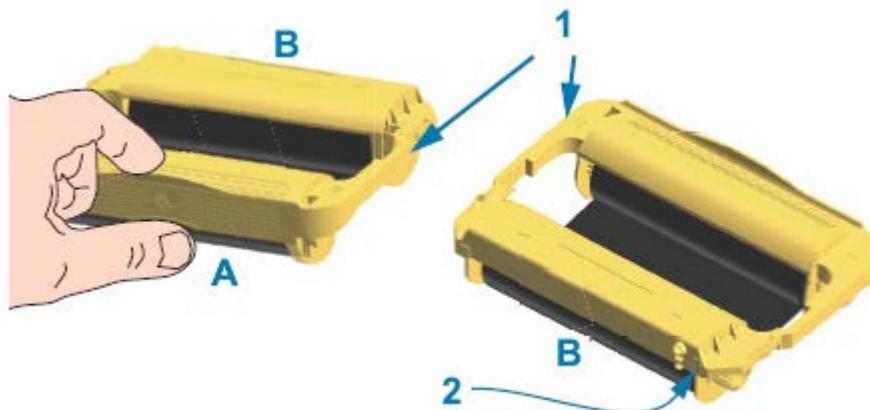
The PRINT METHOD on the printer configuration status report should read THERMAL-TRANS.

## Loading the Ribbon Cartridge (ZD421 ribbon cartridge printers only)

The printer uses a transfer ribbon cartridge for thermal transfer printing. This procedure involves sliding the cartridge into the ribbon transport and then closing the printer. The printer automatically reads the information about the cartridge that is stored on the cartridge.

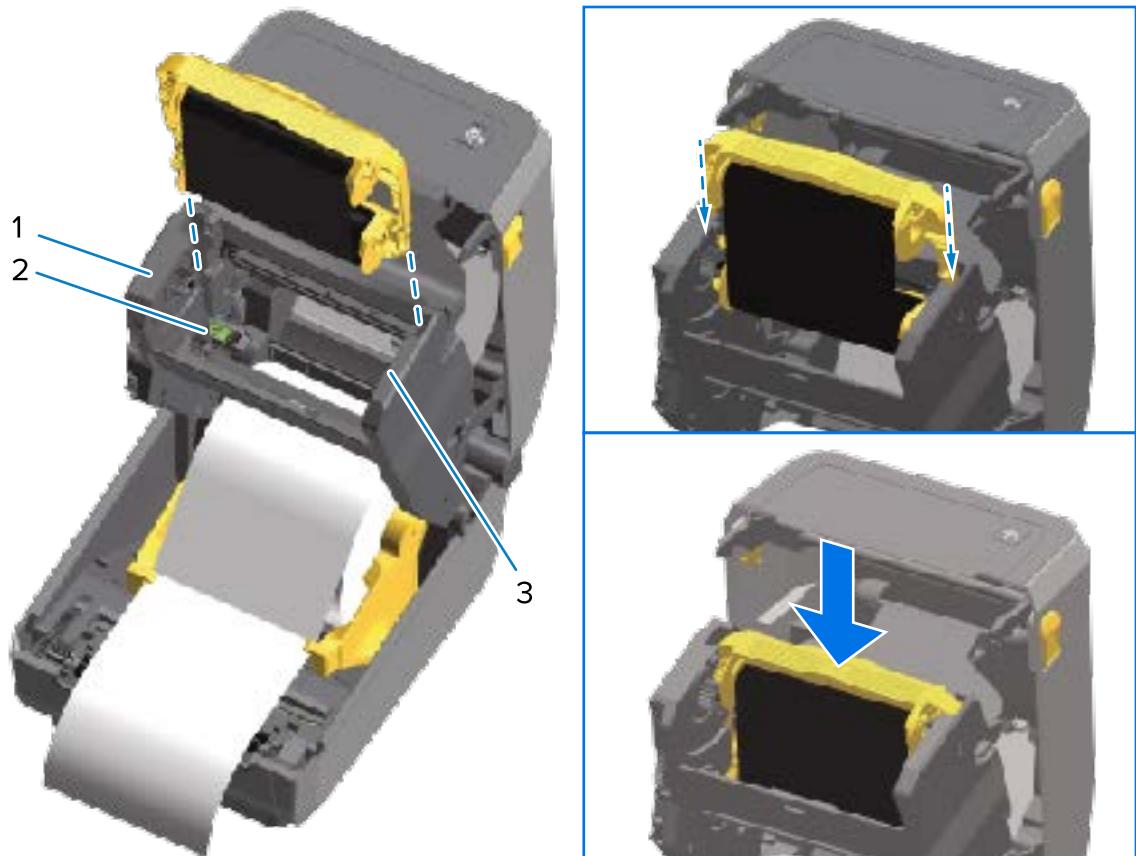


**NOTE:** Only Genuine Zebra Ribbon Cartridges are supported.



1	Cartridge guide rails	A	Hold the ribbon cartridge here.
2	Cartridge information smart chip	B	Insert this end of the cartridge

1. Open the printer and insert the ribbon cartridge into the ribbon cartridge slot on the ribbon transport in your printer.



1	Front of ribbon transport
2	Smart chip reader
3	Cartridge guides

2. Push until the cartridge is nearly flush to the front of the ribbon transport.

You will hear and feel the cartridge lock into place.

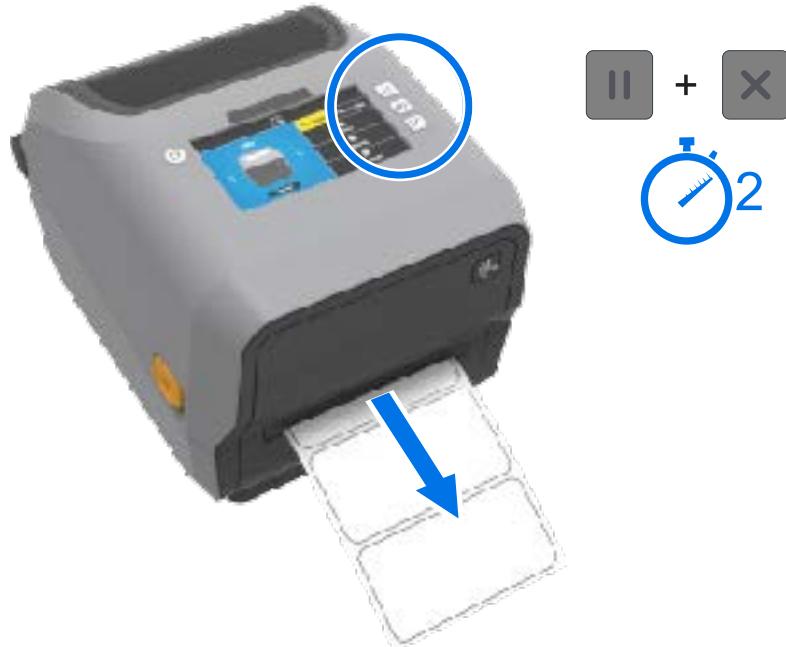
## Running a SmartCal Media Calibration

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 for printing.

1. Make sure media is loaded (and also ribbon if you are using thermal transfer mode) properly in the printer and the top cover of the printer is closed.
2. Press **POWER** to turn printer power on and wait until the printer is in the Ready state .

The STATUS Indicator lights solid green

3. Press and hold **PAUSE** and **CANCEL** simultaneously for two seconds, then release.



The printer feeds and measures a few labels and adjusts media sensing levels. When it completes measuring, the **STATUS** indicator lights solid Green.



**NOTE:** After initial calibration to a specific media, additional calibrations are not necessary for newly-loaded media as long as it is of the same type as the prior media used (media type, vendor, batch, size, etc.). The printer automatically measures the newly-loaded media and adjusts for any small changes in its characteristics when printing.

After you load a roll of new media from the same batch, you can simply press **FEED** (Advance) once or twice to synchronize the labels and get the media set for printing.



**NOTE:** If the printer should fail to recognize and correctly calibrate to the media, see [Manually Calibrating Media](#) on page 336.

## Test Printing with a Configuration Report

Before connecting the printer to a computer, make sure that the printer is in working order by printing a configuration report.

The information in the configuration reports may come in handy during 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 enters ready state (the **STATUS** indicator lights solid green), press and hold **FEED** and **CANCEL** simultaneously for two seconds, then release.

The printer and network configuration reports print. When the printer stops printing the reports, the **STATUS** indicator turns solid green.



If you cannot get these reports to print, see [Troubleshooting](#) on page 311.

## Detecting and Recovering from a Media-Out Condition

When you run out of media, your printer reports a Media Out condition. The STATUS Indicator flashes red and the SUPPLIES indicator light up red. This is part of the normal media usage cycle.



To recovery from a Media Out condition:

1. Open the printer.



**NOTE:** During the Media Out alert condition, the media is usually at the end of the roll 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.

If you are installing more of the same media...	Load the new media and press <b>FEED</b> (Advance) one time to resume printing.
If the new media you have loaded is NOT the same as the prior media used with this printer (different size or length, or from a different vendor or batch)...	Load the new media and use the SmartCal procedure to calibrate the printer to the new media to ensure optimal print results.



**NOTE:** If you load media of a different size (length or width), you will usually need to change the programmed media dimensions or the active label format by adjusting the printer settings using the menu or through printer programming commands..



**IMPORTANT:** At times a label may be missing somewhere in the middle of your roll of labels instead of at the end of the media roll. This may cause the printer to issue a Media Out alert. To recover from this alert 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 resynchronizes the label position and readies to continue printing.

## Detecting and Recovering from a Ribbon-Out Condition

When the printer runs out of ribbon, it alerts you of the condition. This is part of the normal printing cycle. Use these steps to replace the ribbon and continue printing.



1. Open the printer.



**NOTE:** Typically, in the ribbon-out-condition, the reflective ribbon—which the printer uses to detect an end-of-ribbon condition—is exposed on the underside of the ribbon cartridge or ribbon roll. The front ribbon/top roll is also full.

2. Remove the used ribbon roll or ribbon cartridge from the take-up spindles and dispose of it properly. Keep the empty ribbon core (roll) so you can use it to load the new ribbon roll.
3. Load a new ribbon roll (or insert a new ribbon cartridge if the printer is a ribbon cartridge model).
4. Press **FEED** (Advance) once to resume printing.

## Connecting Your Printer to a Computer

Use these steps to connect your printer to a computer.

**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. For cable requirements, see [Interface Cable Requirements](#) on page 205, [Universal Serial Bus \(USB\) Interface](#) on page 341, and [Universal Serial Bus \(USB\) Interface](#) on page 341.
- RS232 Serial — Standard on ZD621 printers, and field upgrade option on ZD421 printers. See [Serial Port Interface](#) on page 342.
- Ethernet / LAN — Standard on ZD621 printers, and field upgrade option on ZD421 printers. See [Interface Cable Requirements](#) on page 205 and [Ethernet \(LAN, RJ-45\)](#) on page 206 for cable requirements.
- Internal Wi-Fi (802.11ac) and Bluetooth Classic 4.1 (3.0 Compatible) — Factory-installed option. See [Wi-Fi and Bluetooth Classic Wireless Connectivity Option](#) on page 208.



**NOTE:** Zebra ZD Series printers which are equipped with the Wi-Fi connectivity option have support for Bluetooth Low Energy (low-speed connection). You can configure them using Zebra Setup Utilities installed 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 the product information links listed in [About this Guide](#).

**2.** Switch printer power OFF.

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

**4.** Run Zebra Setup Utilities (ZSU) from your central device. See [Running the Printer Installation Wizard](#) on page 219.

The central device may be a Windows PC or laptop running the operating systems listed in [Setup for Windows](#) on page 215, 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](http://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 B Equipment, using fully-shielded data cables. Use of unshielded cables may increase radiated emissions above the Class B limits.

## USB Interface

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

When using a USB cable, verify that the cable or cable packaging bears the "Certified USB™" mark (see below) to guarantee USB 2.0 compliance.



## Serial Interface

The printer uses a Null Modem (cross-over) cable for DTE communications. The required cable must have a nine-pin D-type (DB-9P) male connector on one end which plugs into the mating (DB-9S) serial port located on the back of the printer. The other end of this signal interface cable connects to a serial port on the host computer. See Interface Connector Wiring in this guide for pinout information.

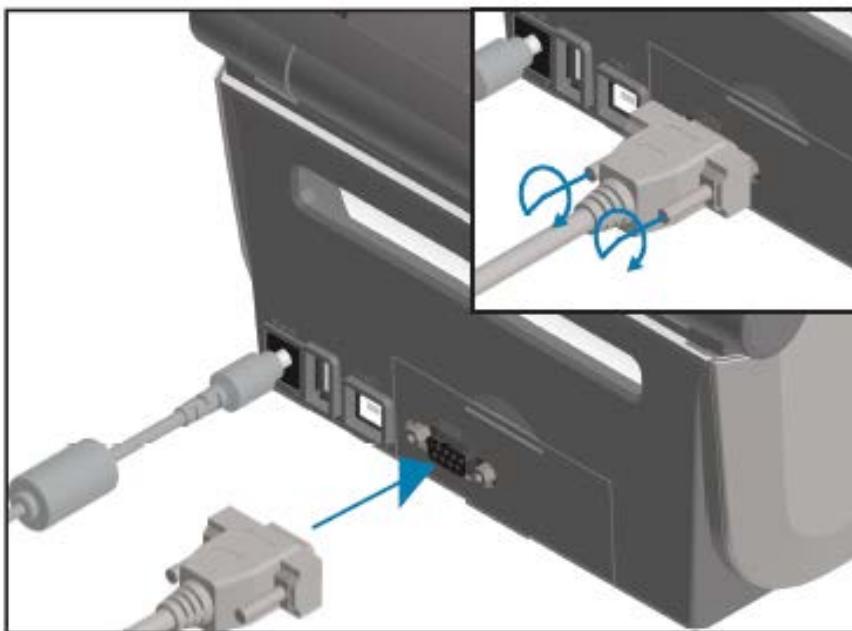
The serial port communication settings between the printer and host (typically a PC) must match for reliable communication. The Bits per second (or Baud rate) and Flow control are the most common settings that get changed.

Serial communications between the printer and the host computer can be set by:

- ZPL ^SC command.
- resetting the printer to its default printer configuration.

Factory defaults for serial communication settings are:

- 9600 baud
- 8 bit word length
- NO parity
- 1 stop bit
- XON/XOFF
- 'Software' data flow control in Windows-based host systems



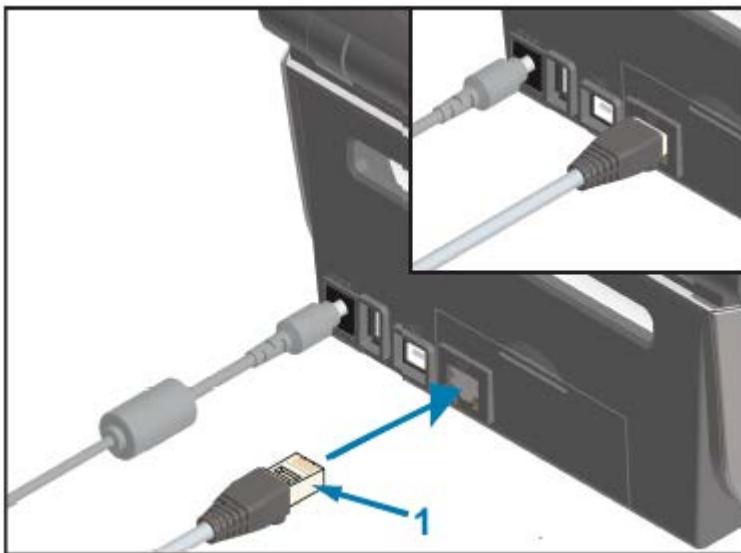
**IMPORTANT:** Do not use RS-232 cable adapter dongles (DTE<=>DCE) with this printer. Some dongles can interfere with the operation of USB host port devices at printer power-up.

### 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.



1	Ethernet cable (RJ-45 connector)
---	----------------------------------



**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 status / activity indicators. These indicators are partially visible to provide interface status at the connector.

The printer has user interface also has indicator lights. These lights display printer network operation status. See [Meaning of the Indicator Light Patterns](#) on page 53 for more details.

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 222 and [Configuring the Printer Using Bluetooth](#) on page 232.

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](http://zebra.com).

## Update Printer Firmware to Finish Option Installations

It is recommended that you always update the printer's firmware with the latest version for optimal printer performance.

For instructions on how to update printer firmware, see [Updating Printer Firmware](#) on page 310. See [About This Guide](#) on page 13 for links to printer support pages for your specific Link-OS printer model and firmware updates for your printer model(s).

## 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.

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.

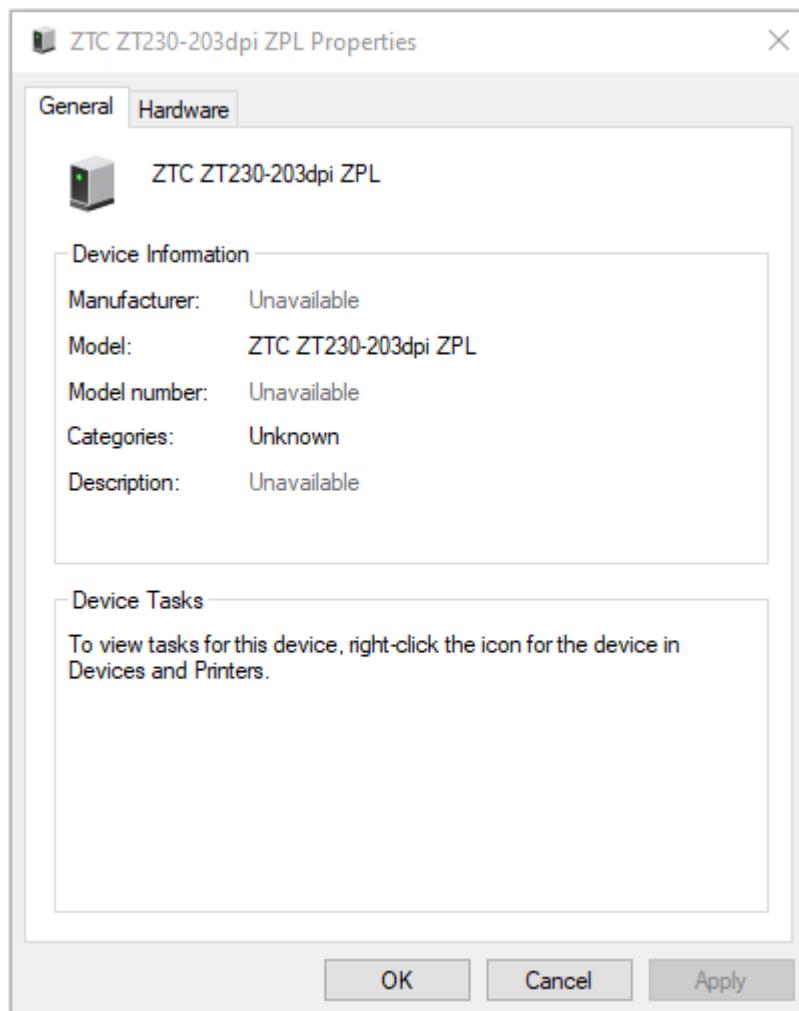
▼ [Unspecified \(1\)](#) -



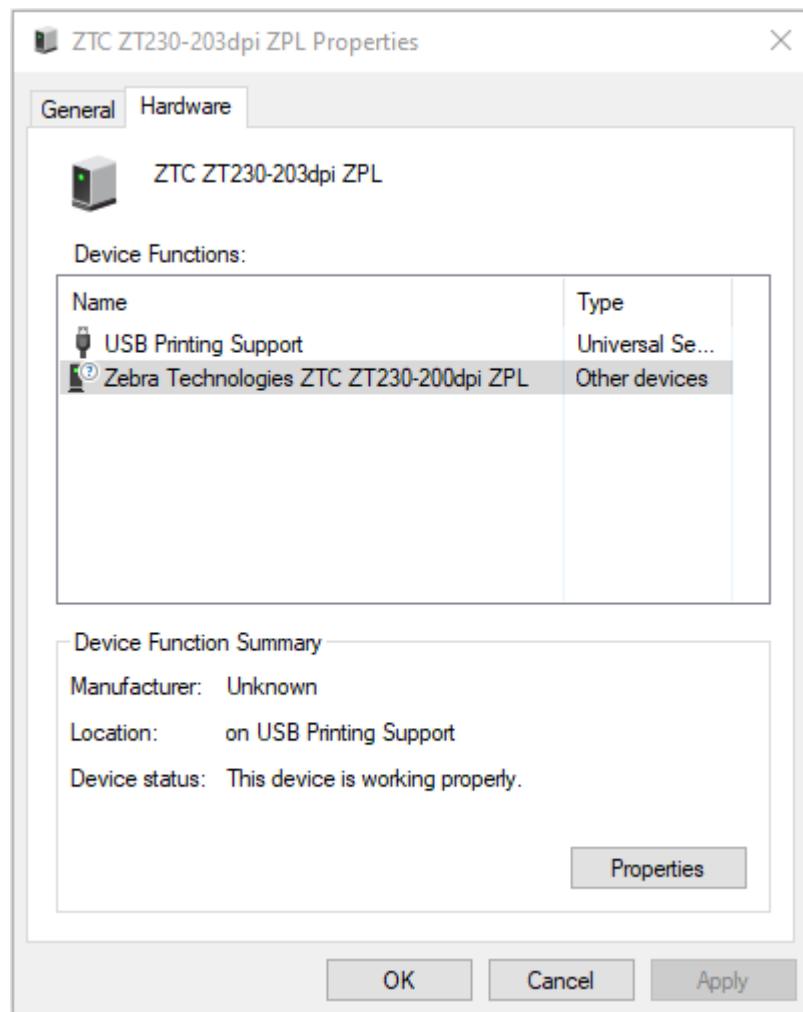
ZTC  
ZT230-203dpi  
ZPL

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

The properties for the device display.

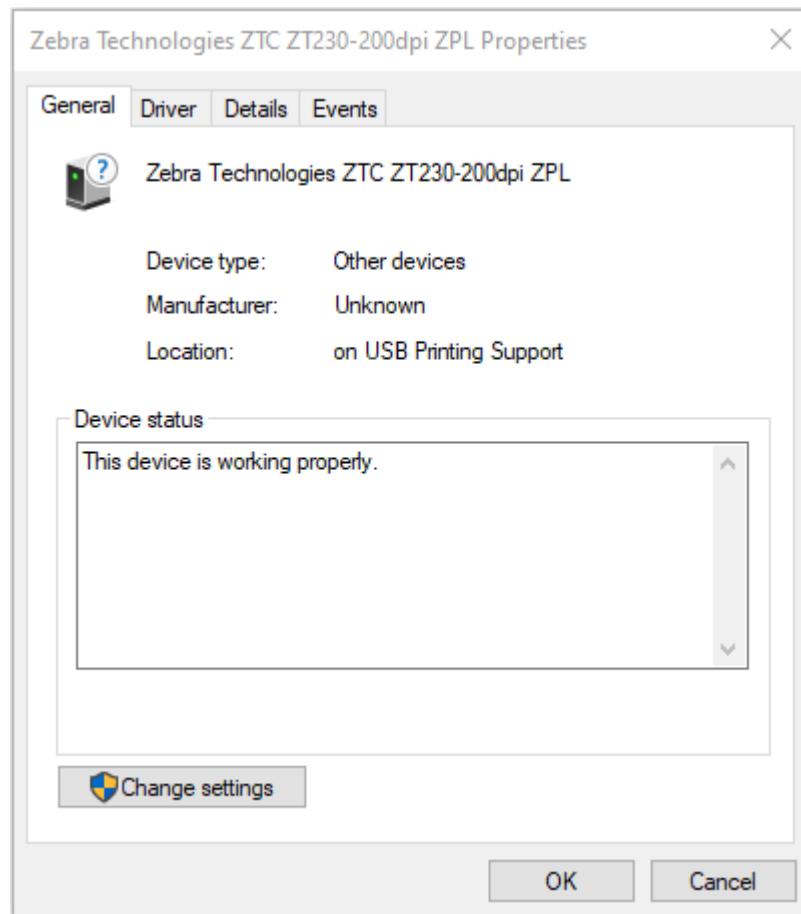


4. Click the **Hardware** tab.

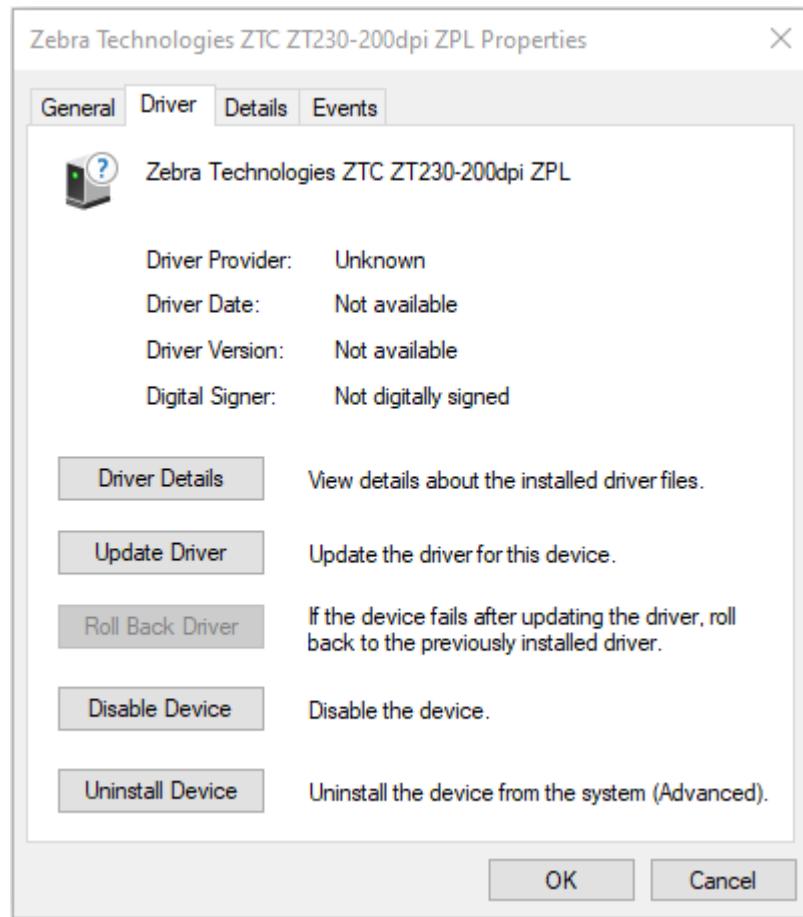


5. Select the printer in the **Device Functions** list, and then click **Properties**.

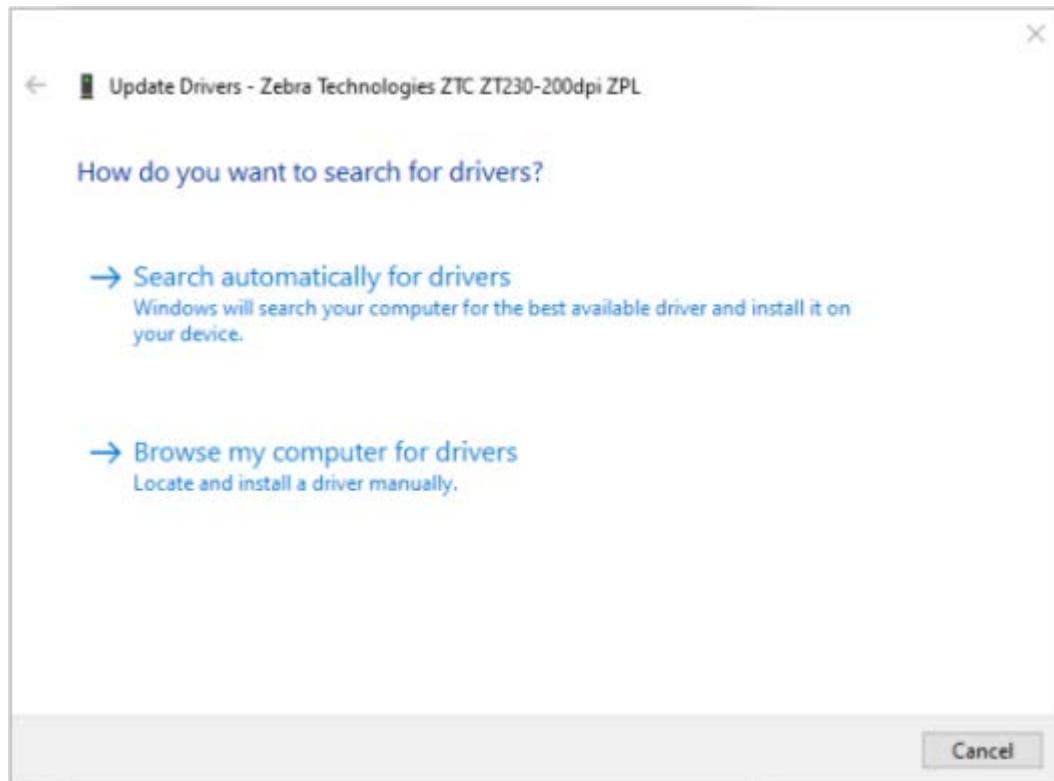
The properties display.



6. Click **Change settings** and then click the **Driver** tab.

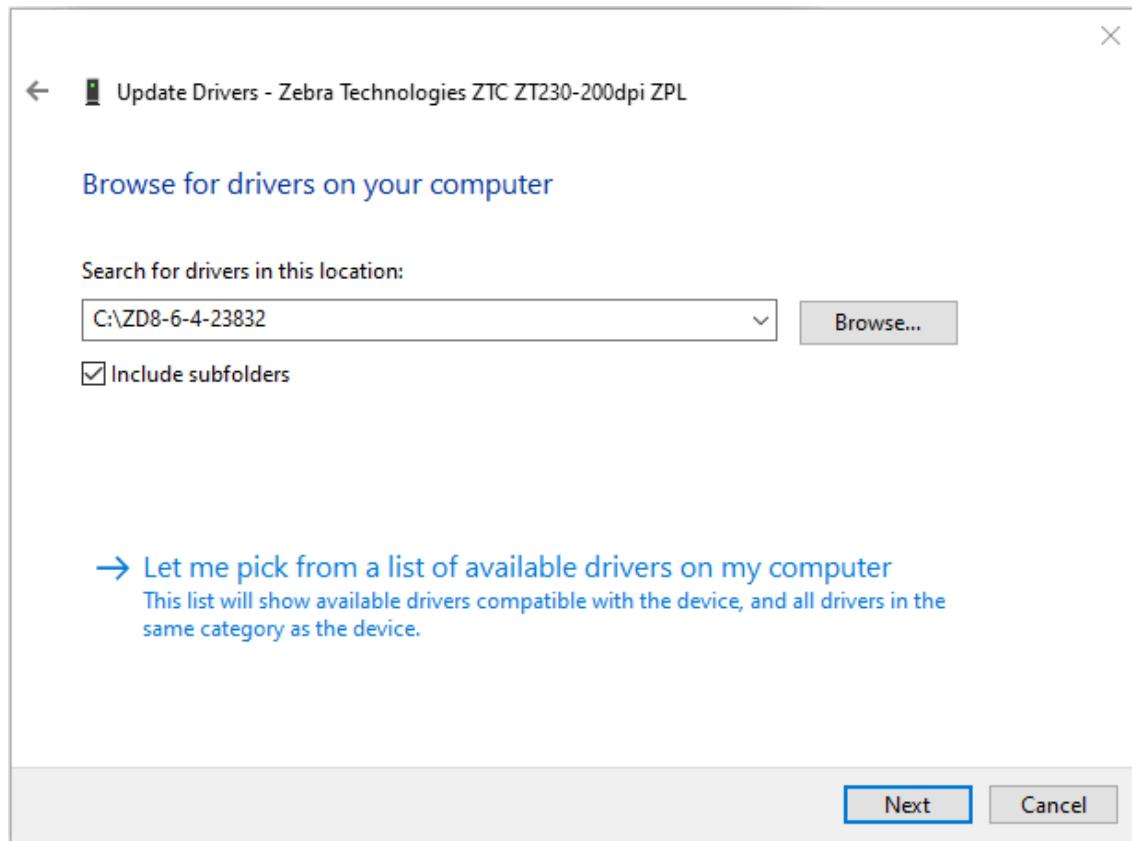


7. Click **Update Driver**.



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

The section helps you setup 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 222 and [Configuring the Printer Using Bluetooth](#) on page 232.

1. Download the Zebra Setup Utilities (ZSU) from one of the printer information pages listed in [About This Guide](#) on page 13.
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. When the installation wizard instructs you to do so, turn printer power ON.
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 set up properly. See how to output a test print in [After Your Printer is Connected](#) on page 239.



**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 208.

## 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: a Windows PC, an Android device, or an Apple 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 208.



**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 205.
  - For USB cable requirements and information on basic USB connectivity, see [USB Interface](#) on page 205.
  - For Ethernet cable specifications and information on basic Ethernet connectivity, see [Ethernet \(LAN, RJ-45\)](#) on page 206.
  - 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](http://zebra.com).
1. Navigate to [zebra.com/drivers](http://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.



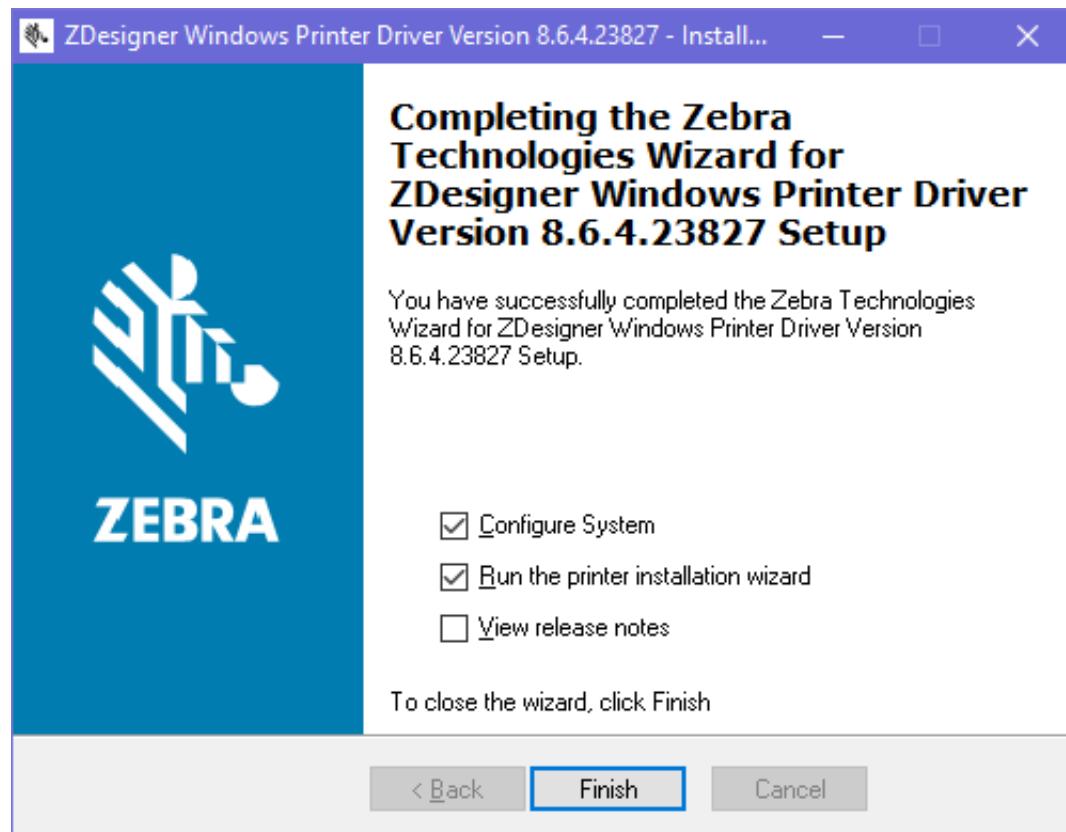
**IMPORTANT:** Do NOT turn printer power on until you are instructed to do so by the Setup Wizard.

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.

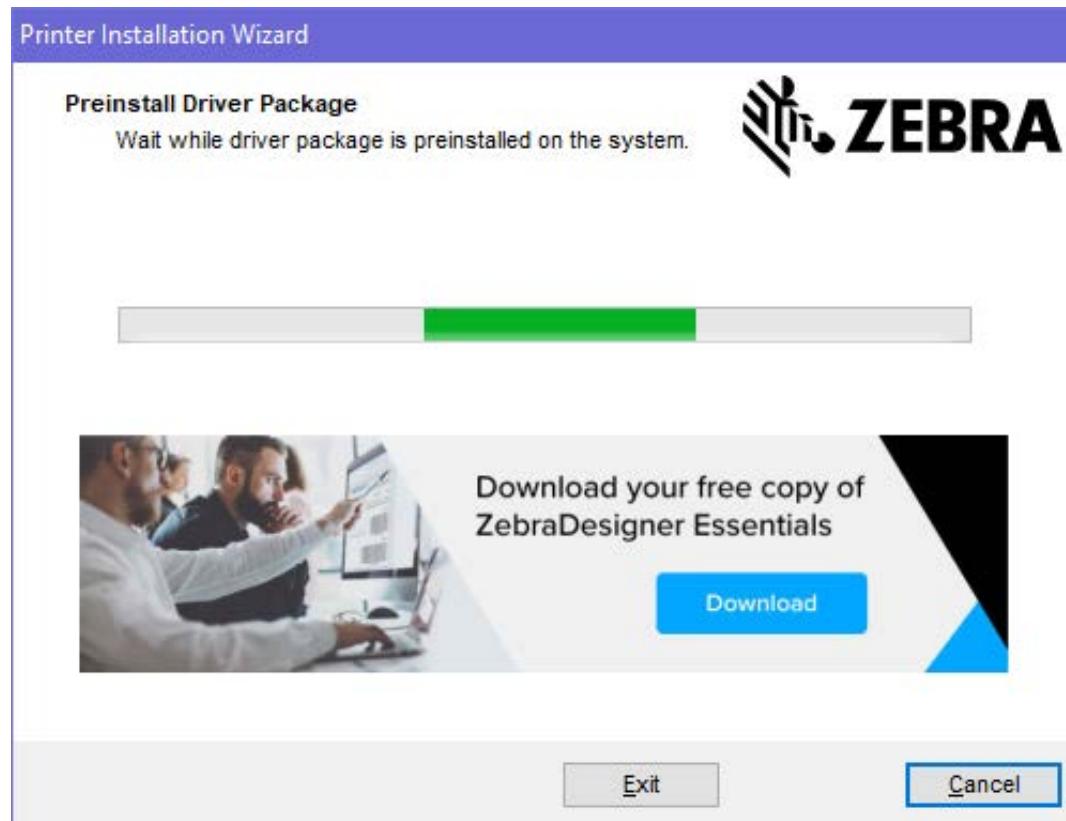


**NOTE:** When setup is complete, you may select to add the drivers to your system (Configure System) or elect to add specific printers in a later step.



**8. Select **Configure System** and click **Finish**.**

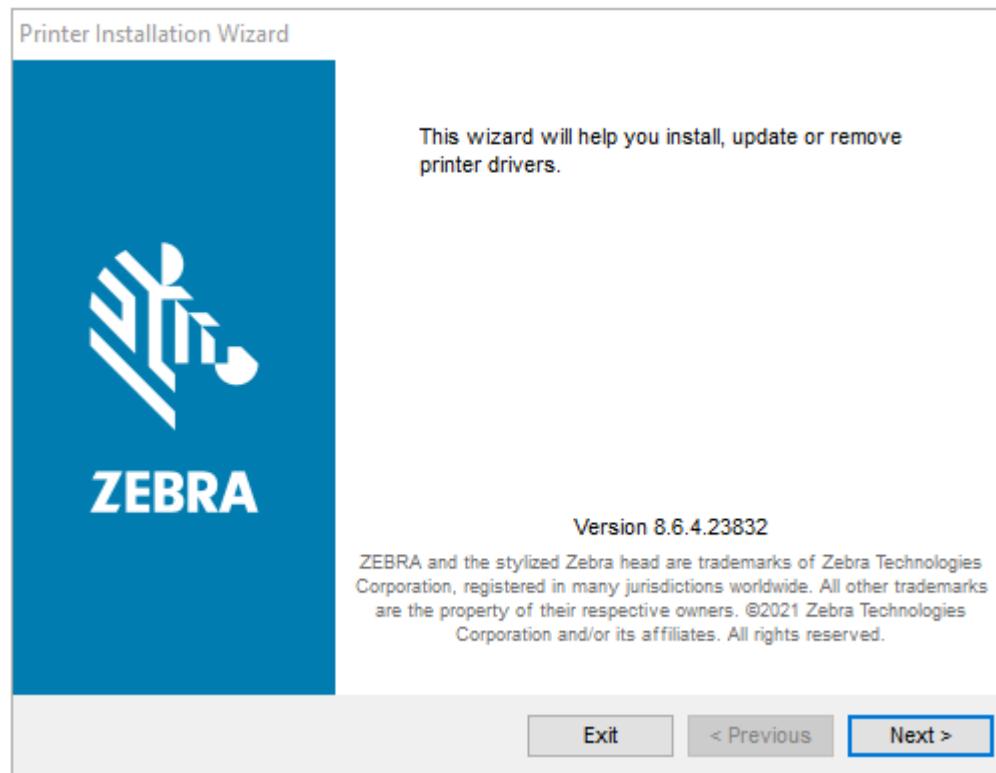
The Printer Installation Wizard installs the drivers.



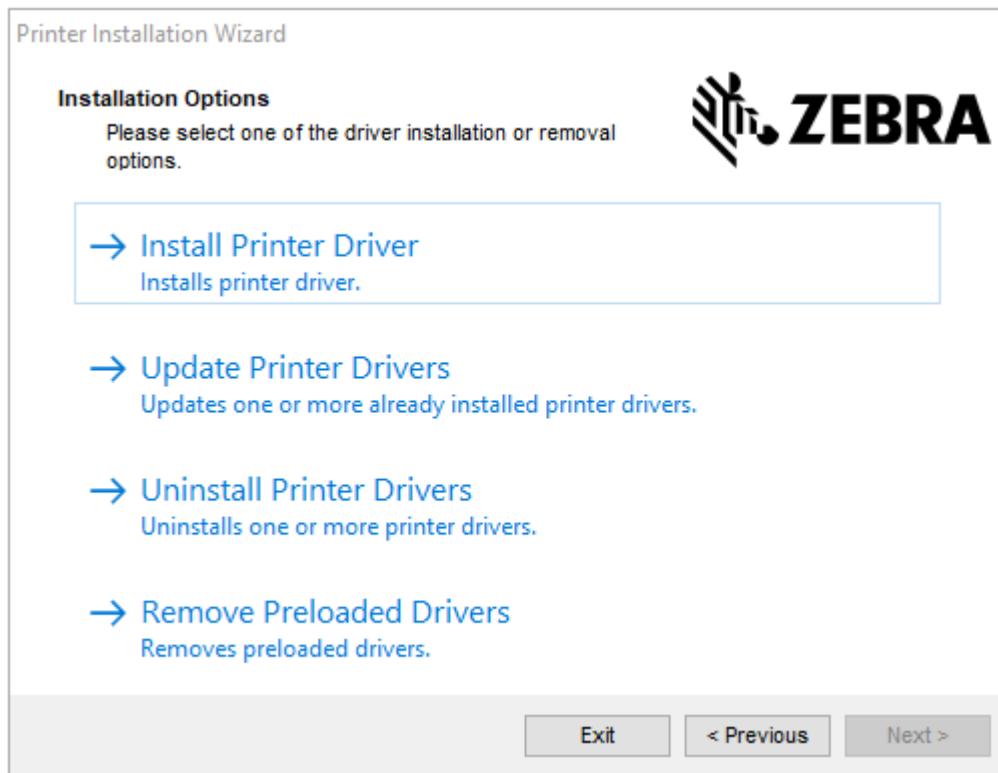
## Running the Printer Installation Wizard

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

The Printer Driver Wizard displays.

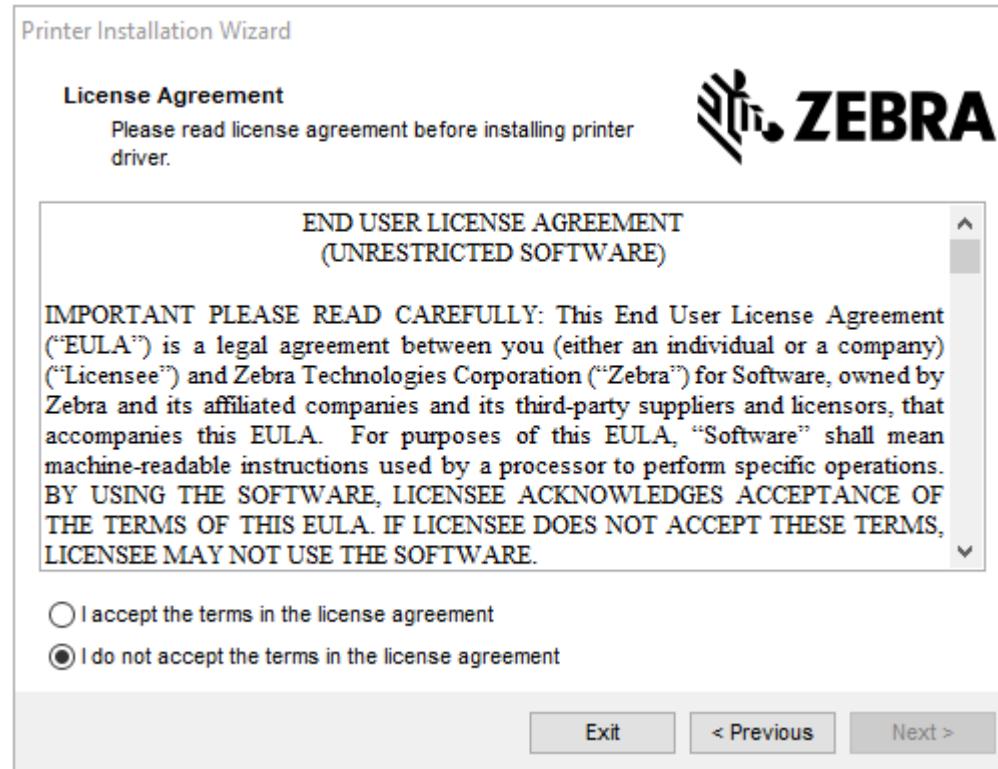


2. Click **Next**.

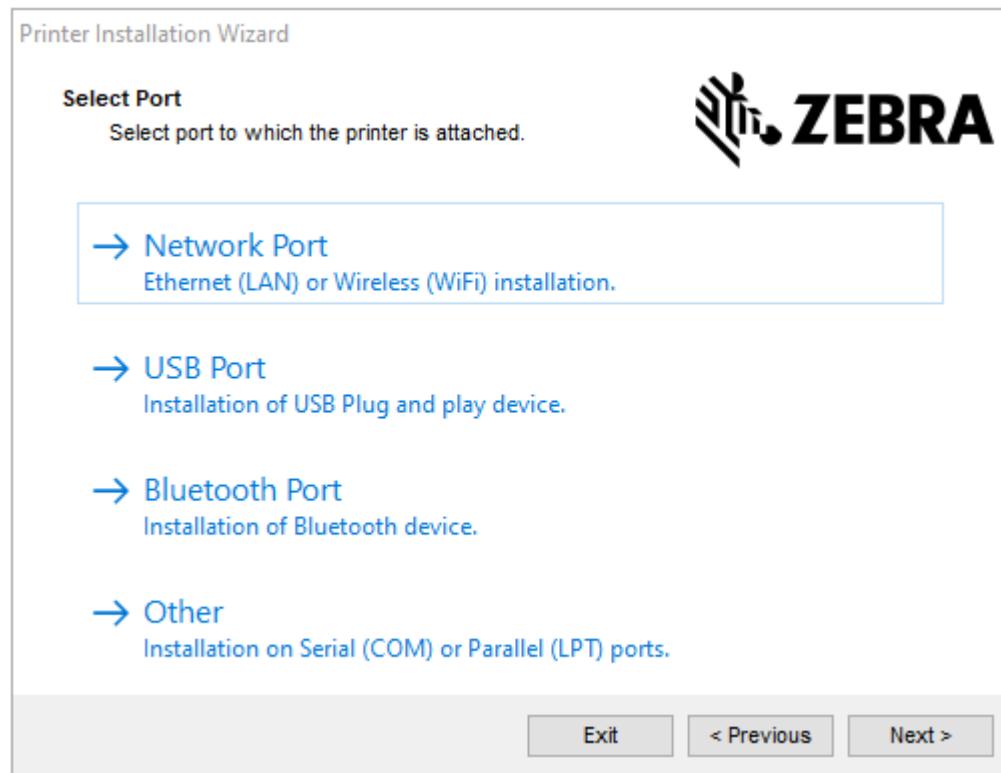


**3. Click **Install Printer Driver**.**

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: To install 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: To install 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: To install printers with a Bluetooth connection.
- Other: For installation on another type of cable, such as 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. For instructions on printing a label, see [Printing the Printer and Network Configuration Reports \(CANCEL Self Test\)](#) on page 324.

## 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](http://zebra.com).

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

Using the Connectivity Wizard (covered in this guide)	<p>When run, the wizard writes a ZPL script to enable your PC to communicate with your printer over Wi-Fi.</p> <p>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:</p> <ul style="list-style-type: none"> <li>• 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).</li> <li>• You can resend the file to the printer at a future time if the printer's network settings were restored to their factory defaults.</li> </ul>
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.
 <b>NOTE:</b> * 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](http://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](http://zebra.com/software) and install it on your computer.

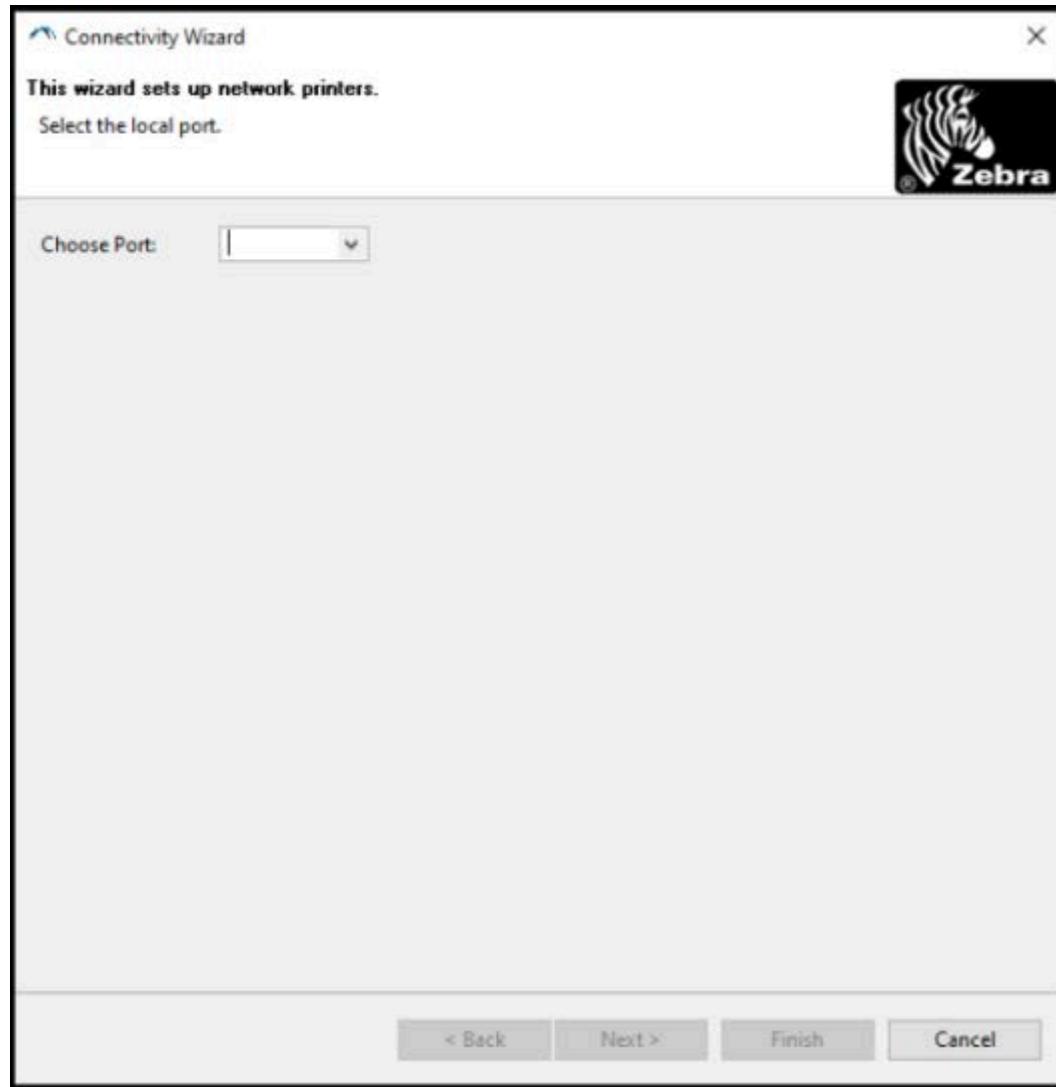


**NOTE:** You will need ZebraNet Bridge Enterprise version 1.2.5 or later to configure the printer.

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.

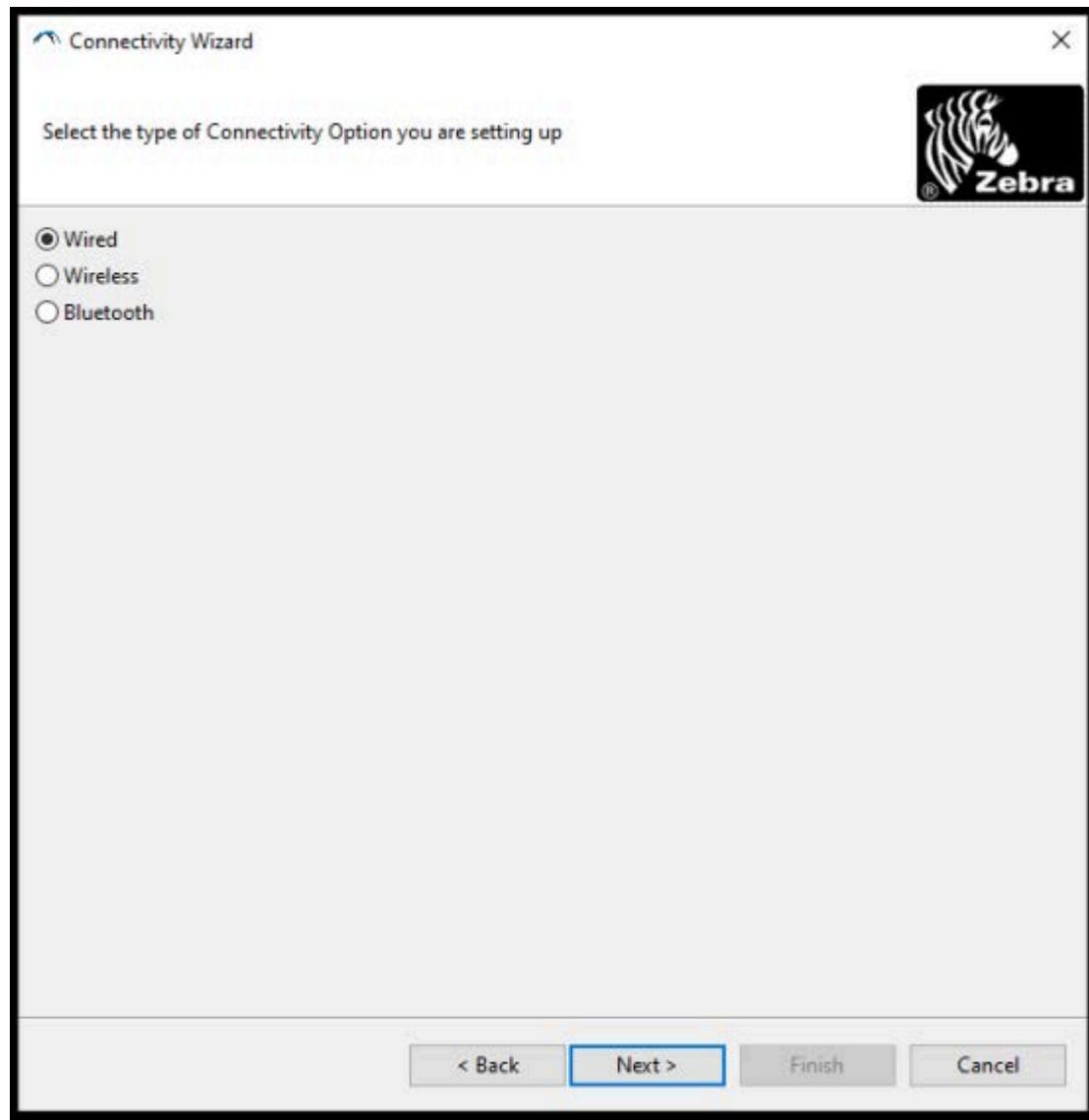


4. From the **Choose Port** list, select the port to which your printer is connected.

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

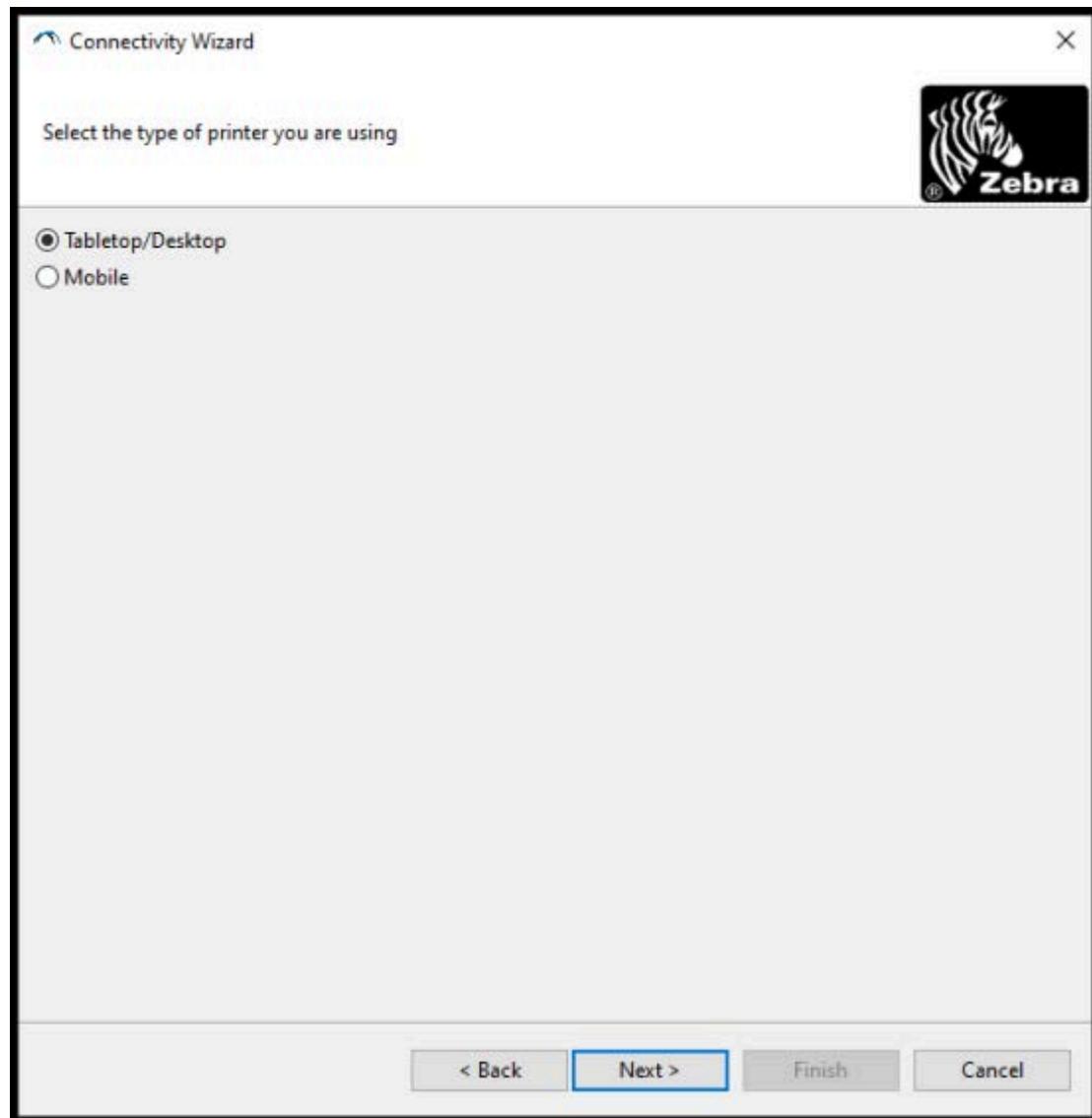
5. Click **Next**.

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**.

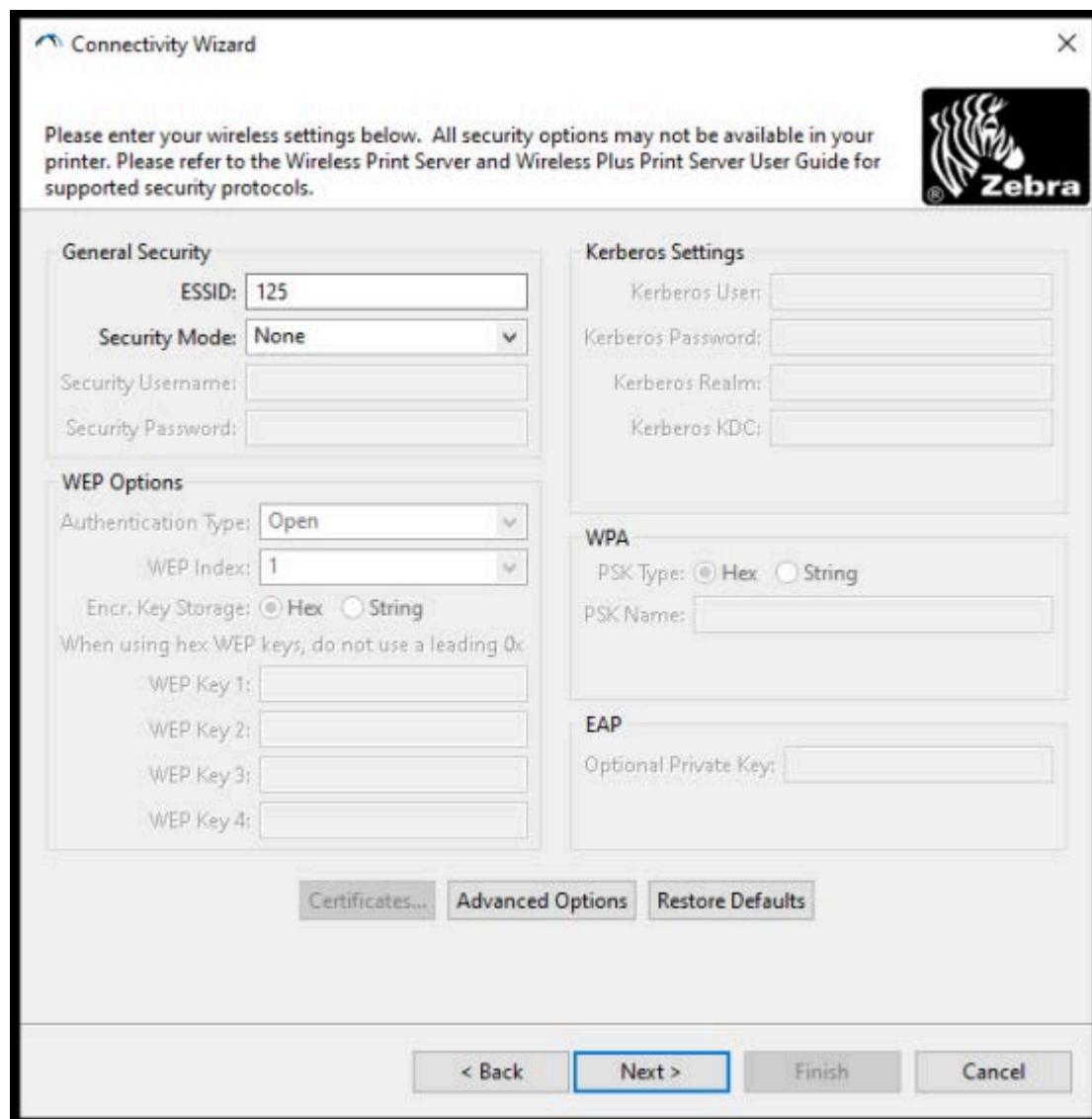
The wizard prompts asks you to enter the wireless IP details.



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

If you chose <b>DHCP</b> ...	Click <b>Next</b> and proceed to the next step in this procedure.
If you chose <b>Static</b> ...	Enter the <b>IP Address</b> , Default Gateway, and Subnet Mask for the wireless print server and click <b>Next</b> . 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.

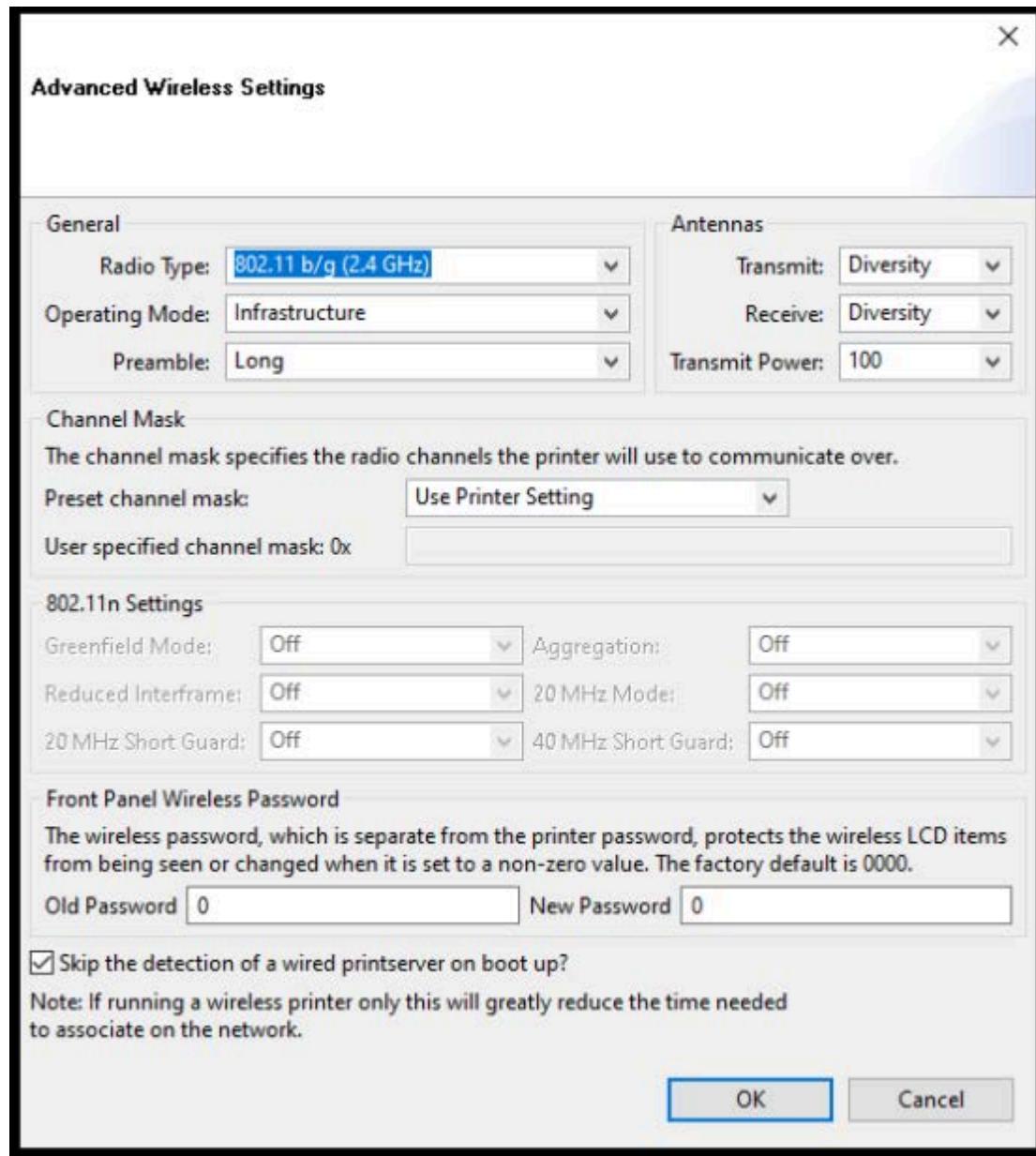
10. From the **Security Mode** dropdown, select the appropriate mode. Depending on the option you choose, complete the additional steps listed below the option you decide to use, before moving on to the next step in this procedure.

If you select...	Perform these additional steps, then proceed to the next step in this procedure.
<b>None</b> (no security protocol)	Skip this step.
<b>WEP 40-Bit or WEP 128-Bit</b>	<p>In the WEP Options section of the window, enter the following values:</p> <ul style="list-style-type: none"> <li>• Authentication Type</li> <li>• WEP Index</li> <li>• Encryption Key Storage</li> <li>• WEP Keys</li> </ul>
<b>EAP-TLS, EAP-TTLS, EAP-FAST, or WPA-EAP-TLS</b>	In the EAP section, if necessary, enter an <b>Optional Private Key</b> .
<b>PEAP, LEAP, WPA-EAP-TTLS, WPA-PEAP, or WPA-LEAP</b>	In the General Security section, enter the <b>Security Username</b> and <b>Password</b> .
<b>WPA-PSK</b>	In the WPA section, select the <b>PSK Type</b> , and enter the <b>PSK Name</b> .
<b>WPA-EAP-FAST</b>	<p>In the General Security section, enter the <b>Security Username</b> and <b>Password</b>.</p> <p>In the EAP section, if needed, enter an <b>Optional Private Key</b>.</p>
<b>KERBEROS</b>	<p>Under Kerberos Settings, enter values for <b>Kerberos User</b>, <b>Kerberos Password</b>, <b>Kerberos Realm</b>, and <b>Kerberos KDC</b>.</p> <p> <b>NOTE:</b> KERBEROS is NOT supported on Internal Wireless Plus print servers or radio cards.</p>

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 223. 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](http://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.



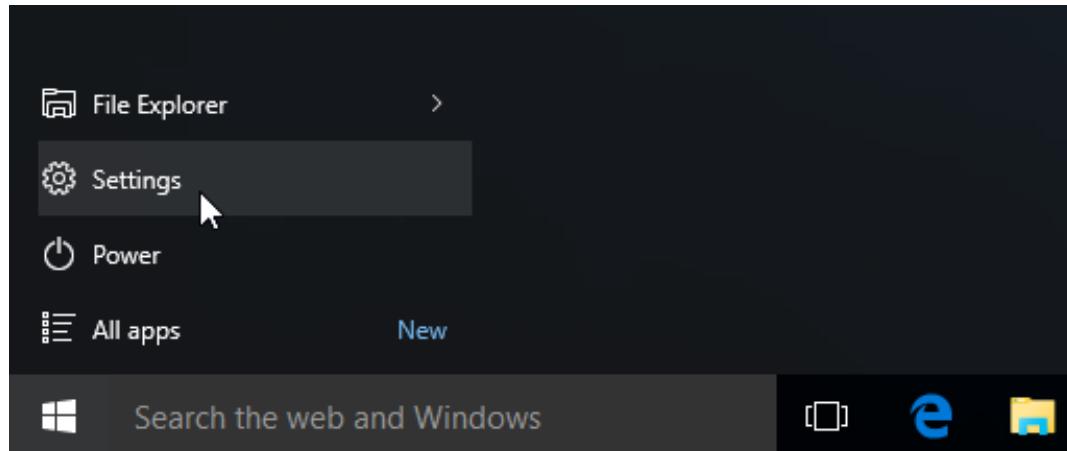
**NOTE:** Your Windows device may need a Bluetooth adapter to connect to a Bluetooth device. Check with your Windows device user guide for details.

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.

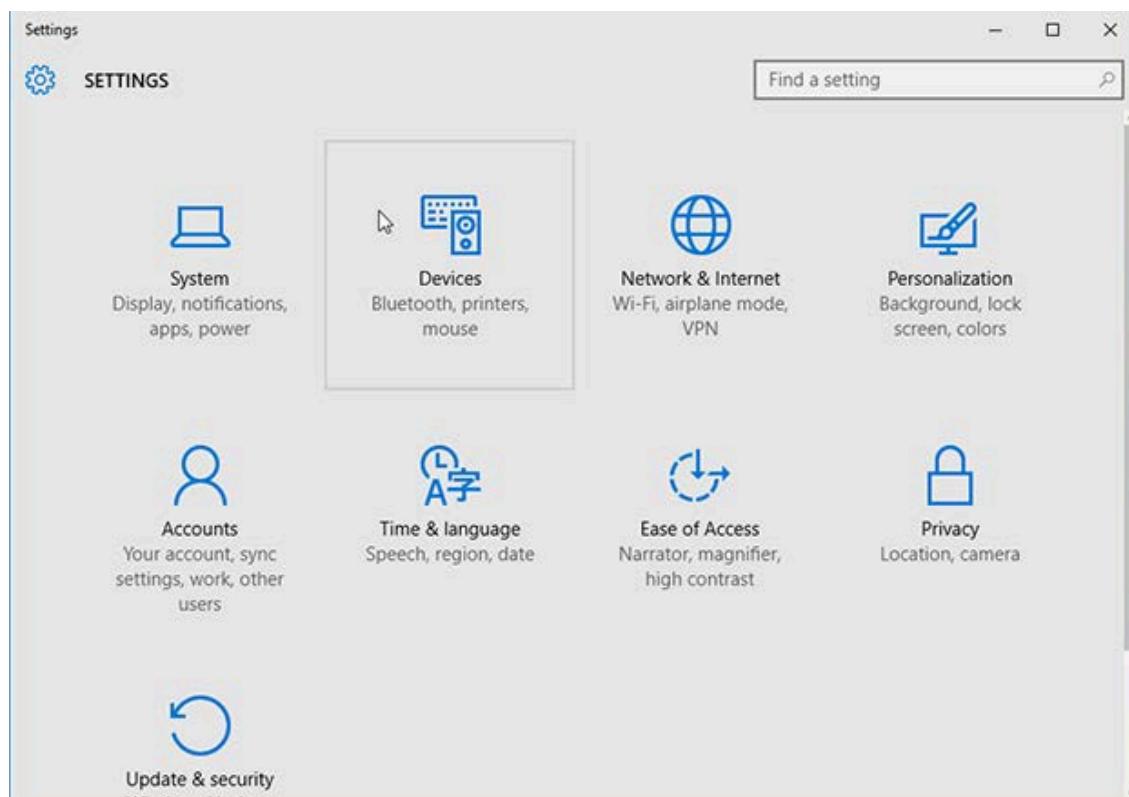
You may need to access **Bluetooth Devices** under Windows **Settings** and activate SPP for the 'device' (the Bluetooth-capable printer you are setting up).

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**.



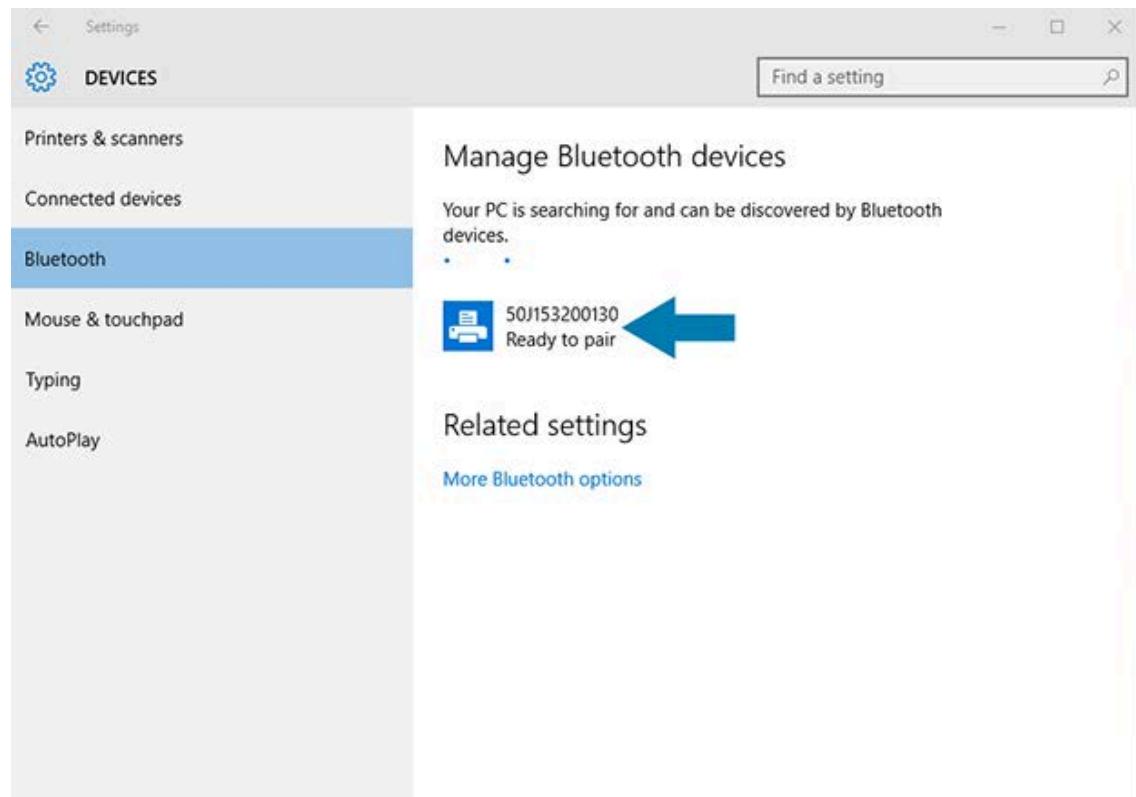
2. Click **Devices**.



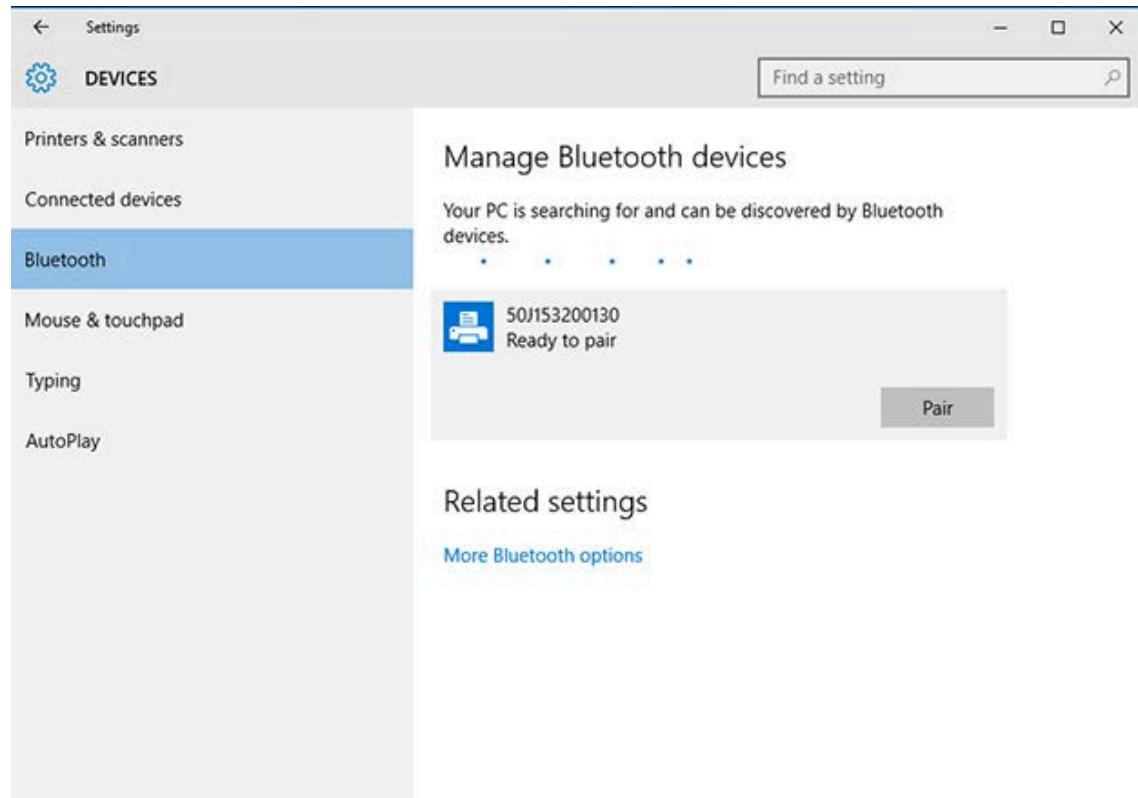
**3. Click **Bluetooth**.**

**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.



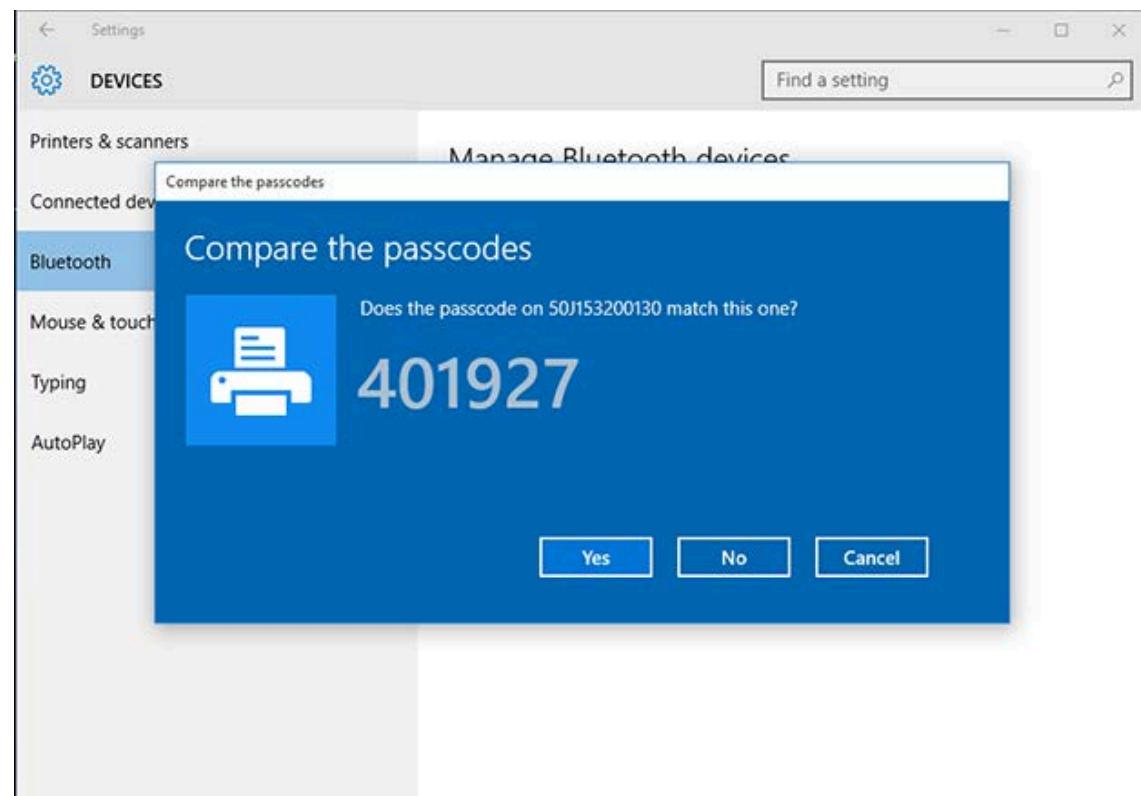
4. Click the printer icon, then click **Pair**.



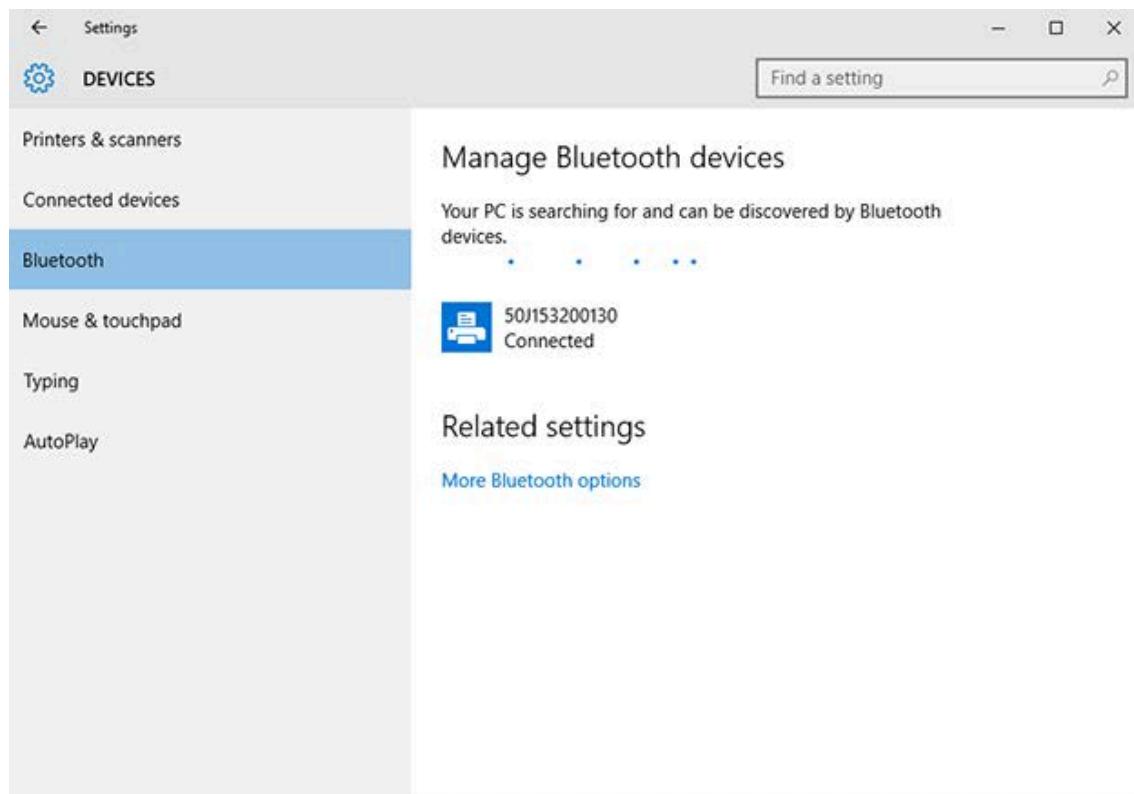
The printer prints a passcode.

## Setup for Windows

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

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

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 Ethernet printer connected to a network (LAN / WLAN) using either an MS-DOS command from the command prompt or selecting **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.

## 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 <a href="#">Printing the Printer and Network Configuration Reports (CANCEL Self Test)</a> on page 324.
For information on interpreting the configuration report and the associated programming command and command states identified in the report...	For information on how to interpret the configuration report and the associated programming command and command states listed in the report, see <a href="#">Managing the ZPL Printer Configuration</a> on page 376.

## Select a Print Mode or Collection Method

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](http://zebra.com/support).

Your printer supports these print modes:

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 (if you have the Label Dispenser option installed)	The printer peels the label from the liner while printing. It pauses to print the next label until the current one is removed.
Cutter (if you have the Cutter option which is factory-installed)	The printer cuts each label after it is printed.

To set the printer to use an available print mode:

- Access the setting for Collection Method. See [Print > Label Position > Collection Method](#) on page 143.
- Use the `^MM` command described in the ZPL Programming Guide. This guide is available for download from [zebra.com/manuals](http://zebra.com/manuals).

## Adjusting the 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.

You can set print quality using the **Configure Print Quality** wizard in Zebra Setup Utilities.

Print a print quality report using FEED self-test to print a range of labels that help you identify print darkness and print speed settings to optimize general print quality and barcode quality. For instructions on printing this report, see [Printing a Print Quality Report \(FEED Self Test\)](#) on page 327.

Before adjusting any settings, verify the printer's media settings by printing a printer configuration report. See [Printing the Printer and Network Configuration Reports \(CANCEL Self Test\)](#) on page 324.

- To adjust the print darkness (or density) setting, use one of these methods:
  - Use the Set Darkness (~SD) ZPL command. For details, see the ZPL Programming Guide which you can download from [zebra.com/manuals](http://zebra.com/manuals).
  - Try a [Manual Print Darkness Adjustment](#) on page 338.
- To adjust the print speed, use one of these methods:
  - application software such as ZebraDesigner which is available for download from [zebra.com/zebradesigner](http://zebra.com/zebradesigner).
  - The ZPL Print Rate (^PR) command. For details, see the ZPL Programming Guide which you can download from [zebra.com/manuals](http://zebra.com/manuals).



**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.

3. To reduce the maximum distance for automatic media type detection and sensing, use the ZPL Maximum Label Length command (^ML).

The minimum distance should be no less than twice the longest label to be printed. If the largest label being printed is 2 inches by 6 inches, the maximum label (media) length detection distance can be reduced from the default distance of 39 inches to 12 inches.

## Adjusting the 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 previous print job.

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

- Windows printer driver
- application software such as ZebraDesigner which can be downloaded from [zebra.com](http://zebra.com)
- ZPL programming Print Width (^PW) command. See the ZPL Programming Guide available from [zebra.com/manuals](http://zebra.com/manuals) for details.)
- For instructions on adjusting the width, see [Manual Print Width Adjustment](#) on page 337.

## 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.

## Printing on Fanfold Media

Use this procedure to print on fanfold media.

Fanfold media enters the printer from the back and exits through the front of the printer during the print job.

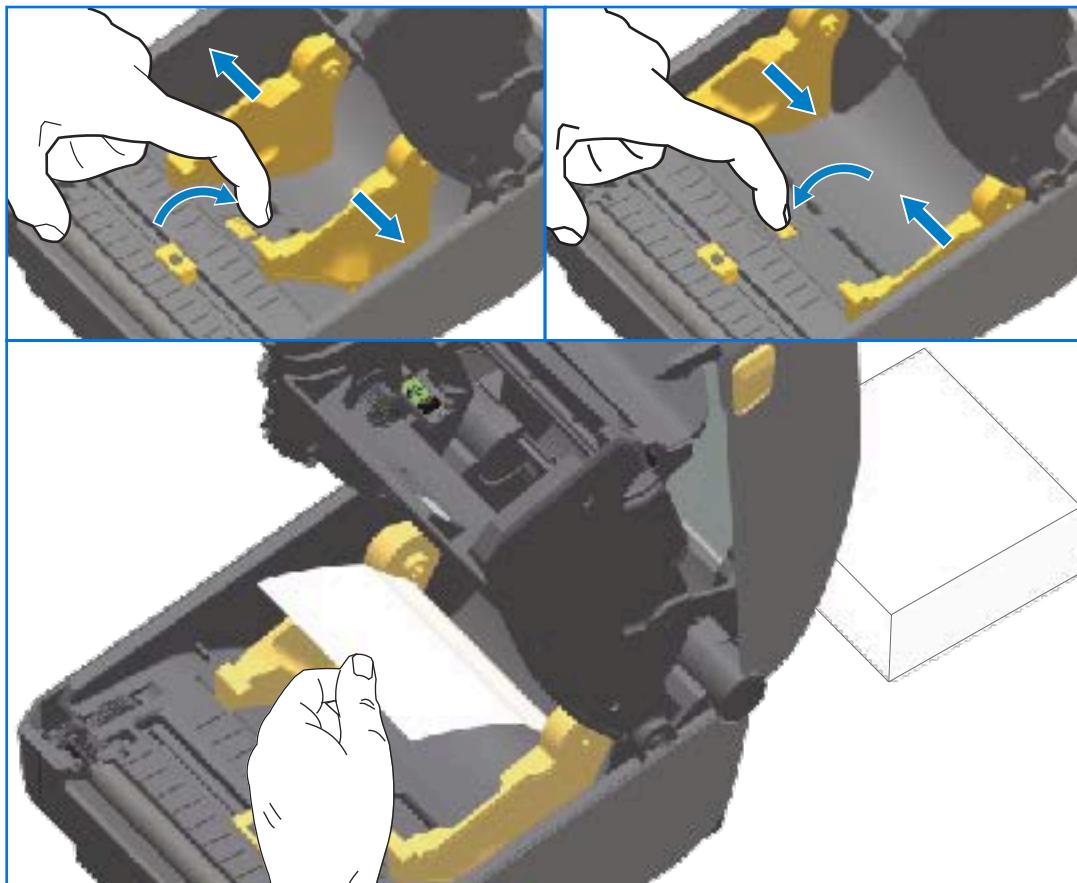


1. Remove media from the printer.
2. If you have thermal transfer printers and it has a fanfold cover installed, remove the cover.
3. Open the top cover of your printer.

4. For ZD621 printers and the ZD421 Cartridge printer, adjust the media guide stop position with the gold thumb wheel.

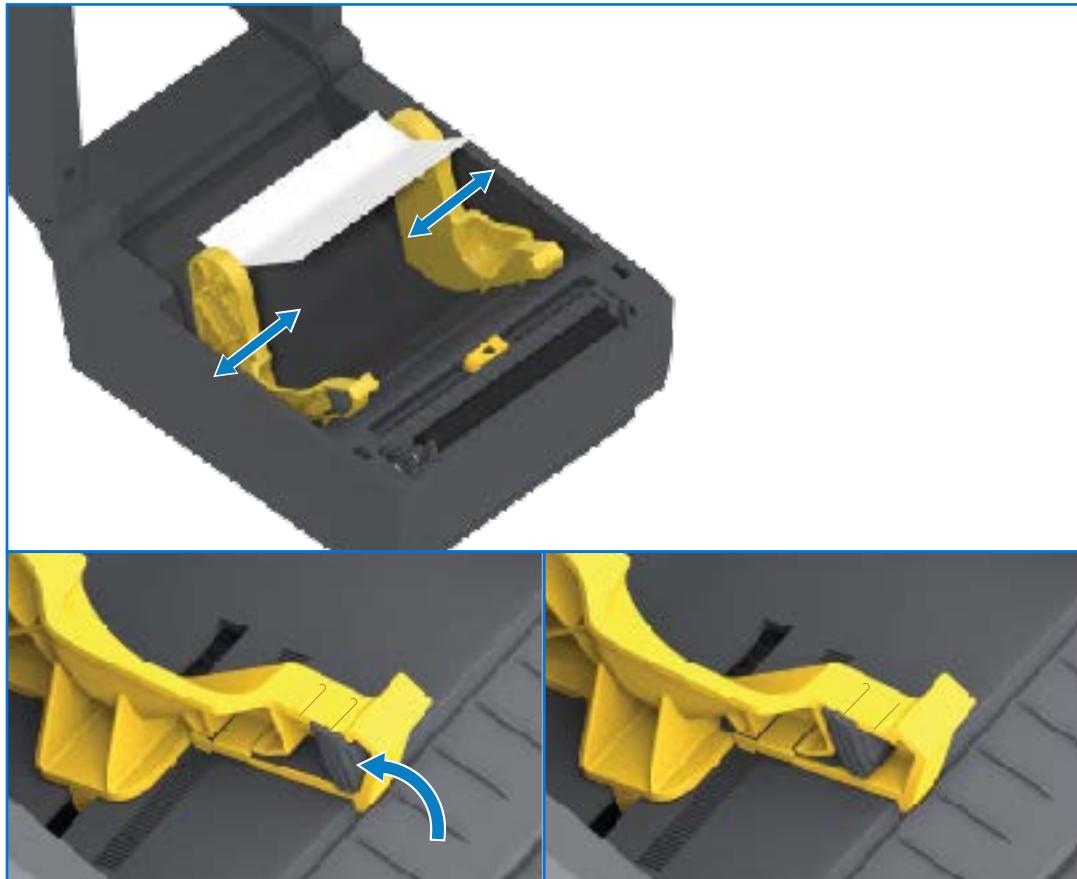
a) Use a piece of the fanfold media to set the stop position.

b) To make the space between the guides wider, rotate the wheel away from you. To make the space narrower, rotate the wheel toward you.



5. For non-cartridge ZD421 printers—Adjust the media guide stop position with the slide lock on the left side media guide.

- a) Use a piece of the fanfold media to set the stop position.
- b) Push the gray lock down towards the base of the media roll holder to secure the roll in position.
- c) Rotate the wheel toward you to make the space between the media guides narrower.



6. Insert the media through the slot at the rear of the printer, and place the media between the media guide and roll holders.



7. Close the top cover.



**IMPORTANT:** The media guide stop position may need further adjustment if, after printing or after pressing **FEED** 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 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.

- 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

The label dispenser option allows you to print a label and have the backing material (liner/web) automatically removed before the label is dispensed. If you are printing multiple labels and the printer has been programmed appropriately, the printer prints and dispenses the next label after you remove an already printed and dispensed, peeled label.

To use label dispense mode, use the Windows printer driver—or the Configure Printer Settings wizard in Zebra Setup Utilities—to set the printer's Media Handling setting to Peel-Off.

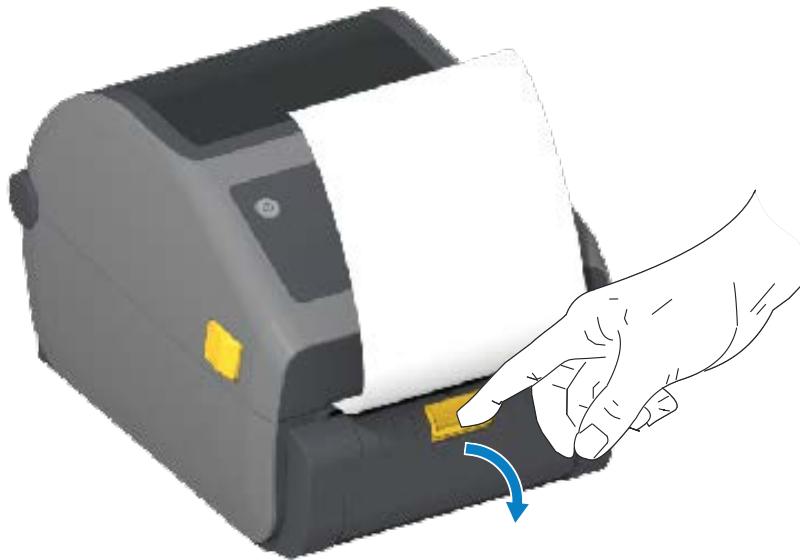
You can also configure the printer to dispense labels by sending it programming commands. If using ZPL, use these command sequences:

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

1. Load the labels into the printer. Close the printer and press **FEED** until a minimum of 100 mm (4 in.) of exposed labels exit the printer. Leave the labels on the liner.



2. Lift the liner over the top of the printer, then open the door by pulling the gold latch in the center of dispenser door away from the printer.



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



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



5. Press and release **FEED** (Advance) one or more times until a label is presented for removal.



6. During the print job, the printer will peel off the backing and present a single label. Take the label from the printer to allow the printer to print the next label.



**NOTE:** If you did not activate the label-taken sensor—using printer programming commands—to detect the removal of the dispensed (peeled) label, the printed labels will stack and may bind the mechanism.

## Using the Linerless Options

The Linerless Media Tear-Off and Cutter options operate much like the standard media printers. These options include an additional sensor to detect when a printed and presented label is taken from the printer.

Linerless printers require special cleaning processes to maximize the platen (drive) roller and special non-stick surfaces in the printer and media path areas.

The Linerless printing option allows you to print a multi-label format/form that stops between each label. Removing the dispensed (peeled) label triggers the printer to print and dispense the next label until all labels have been printed.

To use dispense mode, set MEDIA HANDLING to PEEL-OFF in the printer driver or with the Zebra Setup Utilities using the Configure Printer Settings wizard.

Alternatively, send the appropriate ZPL programming commands to the printer. When programming in ZPL, you can use the command sequences shown below to configure the printer to use the dispenser option:

- ^XA ^MMP ^XZ
- ^XA ^JUS ^XZ

For details, see the ZPL Programming Guide available for download from [zebra.com/manuals](http://zebra.com/manuals).

## Linerless Printing

Linerless media loads the same as models with the standard tear-off bezel or the general factory-installed cutter options.

For information on loading the media, see [Loading Media](#) on page 179 and [Loading Roll Media for Cutter Models](#) on page 185.

- Media Reloading — Clean the printhead and inspect the media path and platen roller for build up of adhesive and debris. Remove particles with the adhesive side of your linerless media. Lightly touch the media path and platen roller with the label to lift particles off the exposed area of the platen roller and the media path areas. For more information, see the Linerless Platen (Drive) Roller entry in the [Recommended Cleaning Schedule](#) on page 271.
- Do not remove new media from its protective wrapping until you are ready to place it in the printer. Setting the roll on its side will pick up contaminants and may stick to surfaces.



**IMPORTANT:** The platen roller can accumulate adhesive on the outer edges of the roller. After using many rolls of media, these rings of adhesive may dislodge as the printer is used routinely. These particle clumps can transfer to other areas. Clean the platen as needed to remove this build-up, using the instructions in the Maintenance section of this guide.

## 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](http://zebra.com/software).

## Ribbon Cartridge Programming Commands

The Ribbon Cartridge printer available with this Zebra printer series offers several Set-Get-Do (SGD) programming commands to support the use of the ribbon cartridge.

See the ZPL Programmer's Guide for more details on SGD commands and, in particular, SGD ribbon cartridge commands. The guide can be downloaded from [zebra.com/manuals](http://zebra.com/manuals).

The following are examples of SGD ribbon cartridge commands.

```
! U1 getvar "device.feature.ribbon_cartridge"
! U1 getvar "ribbon.cartridge.part_number"
! U1 getvar "ribbon.cartridge.authenticated"
! U1 getvar "ribbon.cartridge.length_remaining"
! U1 getvar "ribbon.cartridge.serial_number"
! U1 getvar "ribbon.cartridge.width"
! U1 getvar "ribbon.cartridge.type"
! U1 getvar "ribbon.cartridge.length"
! U1 getvar "ribbon.cartridge.inserted"
```

```
ribbon.ribbon_low.warning : 50 , Choices: off,5,10,15,25,50,75,100
! U1 getvar "ribbon"
```

```
! U1 getvar "ribbon.ribbon_low.warning"
! U1 setvar "ribbon.ribbon_low.warning" "75"
! U1 setvar "ribbon.ribbon_low.warning" "off"
```

You can use Zebra Setup Utilities to send commands and receive status from the printer using the [Open Communication With Printer](#) feature.

## Printing with the Attached Battery Base and Battery Option

Printer operating procedures change slightly when using the battery. Power connections and power loss scenarios necessitate the differences in operation. The battery is designed to maximize battery life, maintain print quality, and have simple operation.

- When you connect the printer's external power supply to the battery, it 'wakes up' and determines if it needs charging (charge level below 90%).
- The battery will not start charging until the battery's charge drops below 90% charge. This charging design extends your battery's life.
- After the battery begins charging, the battery will charge to 100% capacity and then enter Sleep Mode.
- The printer receives external power that passes through the battery circuitry to the printer. The battery does not charge when the printer is printing or moving media.
- The battery uses only a very minimal power during Sleep Mode to maximize the available charge that it stores.
- It takes about two hours to charge a fully-discharged battery.

## Uninterrupted Power Supply (UPS) Mode

In UPS mode, the printer receives external power which passes through the battery circuitry to the printer.

1. Press **Battery Control** to 'wake up' the battery and check the battery has charge.

After 60 seconds, the battery enters sleep mode. In this mode, the battery uses loss of external power as a cue to wake up and supply the printer with power.

2. Turn printer power OFF and ON as you normally would. The printer does not require the battery be manually turned on to operate when it in UPS mode.

## Battery Mode

In this mode, the printer is powered solely by the battery.

1. Press **Battery Control** on the attached battery to wake up the battery and check if the battery has sufficient charge. After 60 seconds, the battery goes to sleep if the printer is OFF.
2. Turn printer power ON.
3. Use the printer as you normally would.
4. Check the battery charge status when needed by pressing **Battery Control**.
5. Change or charge your battery when the last battery charge level indicator is flashing.



**NOTE:** Print operation may be interrupted if the battery charge is used up and the printer turns off.

## 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](http://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	<p>Send the printer the <code>^WD</code> ZPL command to the printer. See the ZPL Programming Guide for details.</p> <p>In ZPL:</p> <ul style="list-style-type: none"> <li>• The bitmap fonts in the various printer memory areas are identifiable by the <code>.FNT</code> file extension.</li> <li>• The scalable fonts are identified with the <code>.TTF</code>, <code>.TTE</code> or <code>.OTF</code> file extensions. (EPL does not support these fonts.)</li> </ul>

## 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](http://zebra.com):

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

## EPL Line Mode – Direct Thermal Printers only

Your direct thermal printer supports Line Mode printing. EPL Line Mode printing is designed to be command compatible with EPL1 programming language.

Line Mode printing is ideal for basic retail (also referred to as point of sale or POS), shipping, inventory, work flow control, and general labeling. EPL printers with Line Mode are versatile printers than can print a wide range media and barcodes.

Line mode printing only prints single lines the height of the largest element present in the line of text and data – barcode, text, a logo or simple vertical lines. Line mode has many limitations due to the single line of print: no fine element placement, no overlapping elements, and no horizontal (ladder) barcodes.

- To enter Line Mode printer operation, send the printer the EPL `OEPL1` command. See the EPL Programming Guide (Page Mode) or the EPL Line Mode Programming Guide for details.
- Exit Line Mode printer operation by sending the printer the `escOEPL2` line mode command. See the EPL Line Mode Programming Guide for details.
- When Line Mode is active, ZPL and EPL (EPL2) Page Mode programming is processed as Line Mode programming and data.
- When default ZPL and EPL (EPL2) Page Mode are active, Line Mode programming is processed as ZPL and/or EPL programming and data.

You can determine and verify the printer programming mode (that the printer is set to) by printing a printer configuration report.

## ZD621 Locking Printer Option

The locking printer option is available only as a healthcare model.

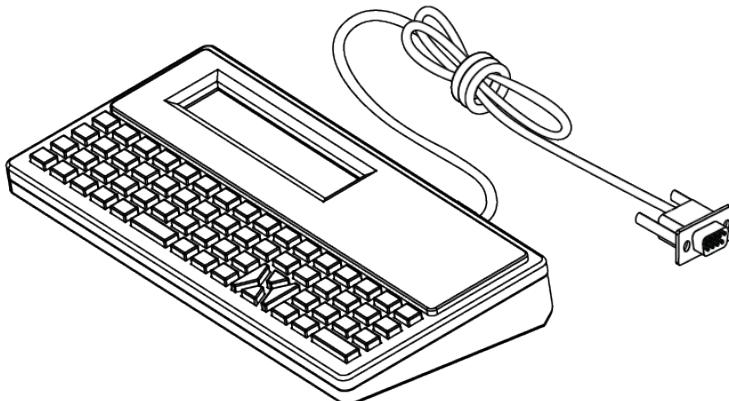
The following features are built into the locking printer:

- Lock and key access to the printer's media compartment.
  - Metal locking mechanism built into the printer.
  - Precision fabricated metal parts for repeatable movement.
  - The locking mechanism comes with two keys.
- Supports industry recognized Kensington lock slot that allows you to lock printer to any immovable object such as a desk.
- For added security, includes a permanently-sealed media window (not serviceable).
- The **FEED** button is disabled on the locking printer models. This is to prevent users from manually advancing media when the printer is locked. The **FEED** button will always boot up in **FEED** disabled mode.
- Supports only media that can be loaded within the printer. This model is not recommended if you need to you fanfold media for printing.

For an illustration of the locking printer features, see [ZD621 Direct Thermal Locking Printer Feature \(Healthcare Models Only\)](#) on page 45.

## Zebra Keyboard Display Unit (ZKDU) – Printer Accessory

The ZKDU is a small terminal unit that interfaces with the printer to enable ease of access to EPL or ZPL label forms stored in the printer.



The ZKDU is used for the following functions:

- List label forms stored in the printer
- Retrieve label forms stored in the printer
- Input variable data
- Printing labels
- Switching between EPL and ZPL to support dual-format printer language format/form types. These forms can be stored and printed in late model Zebra label printers.



**NOTE:** The ZKDU is strictly a terminal unit. It does not store data and cannot be used to change printer or printing parameters.

## Zebra Basic Interpreter (ZBI)

Customize and enhance your printer using the ZBI 2.0 programming language. ZBI 2.0 allows Zebra printers to run applications and take input from scales, scanners and other peripherals without a PC or network connection. ZBI 2.0 works with the ZPL printer command language so that printers can understand non-ZPL data streams and convert them into labels. That means the Zebra printer can create barcodes and text from input received, non-ZPL label formats, sensors, keyboards, and peripherals. Printers can also be programmed to interact with PC-based database applications to retrieve information for use on printed labels.

- ZBI 2.0 can be activated by ordering a ZBI 2.0 Key Kit, or activated by purchasing a key from [zebra.com](http://zebra.com).
- Use the ZBI Key Manager (also known as ZDownloader utility) to apply the key.
- An intuitive ZBI-Developer is used to create, test and distribute ZBI 2.0 applications. The built-in virtual printer allows you to quickly create, test and prepare programs for use.

ZBI-Developer is available on the Zebra web site at [zebra.com/software](http://zebra.com/software). Look for Zebra Basic Interpreter 2.0.

## Setting the Power Failure Recovery Mode Jumper

The printer can be configured to restart itself unattended and unaided after a power failure by setting it to this mode.



**NOTE:** Power Failure Recovery Mode is available ONLY on printers with a printer connectivity module installed.

The printer connectivity modules have a power failure recovery jumper. The jumper is set to OFF by default. By setting the jumper to ON, you can make the printer automatically Power ON when it is plugged into an active AC power source (meaning printer power is ON).



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

1. Disconnect the DC power plug and any interface connectors from the rear of the printer.
2. Remove the module access door and connectivity module. See [Removing Printer Connectivity Modules](#) on page 65 which includes instructions for ZD421 printers.



**NOTE:** The module removal steps for ZD621 printers is similar to that for ZD421 printers.

3. Move the AUTO (Power Failure Recovery Mode) jumper from the OFF position to the ON position.
4. Reinstall the connectivity module and module access door. See [Installing the Internal Ethernet \(LAN\) Module](#) on page 64 or [Installing the Serial Port Module](#) on page 63.



**NOTE:** The procedures for the connectivity module installation are the same for the ZD621 printers as they are for the ZD421 printers.

5. Reconnect the printer DC power plug and interface cables to the printer.

# USB Host Port and Link-OS Usage Examples

This section has information on using the printer's USB Host port along with Link-OS features and apps (applications). Try these example tasks in the sequence provided, so you develop a good understanding of how to use the USB Host Port.

## USB Host

The USB host port allows you to connect USB devices—such as a keyboard, scanner, or USB flash (memory) drive—to the printer.

Uses for the USB Host are as follows:

- Firmware updates
- File transfers and management
- A port for low power USB data entry devices (keyboards, scales, scanners, and other wedge devices).



1	USB host port
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**IMPORTANT:** The USB Flash drive must be formatted using the FAT file system. Filenames can be 1 to 16 alphanumeric characters (A, a, B, b, C, c, ..., 0, 1, 2, 3, ...) only. Use only ASCII characters. Do NOT use Asian characters, Cyrillic characters, or accented characters in filenames. Some functions may not work properly if there are underscores in a filename. Use periods instead.

## Using a USB Host for Firmware Updates

The USB host port allows you to connect an USB Flash drive to the printer to perform firmware updates.

Zebra "mirror" functions enable you to easily accomplish important printer management tasks.

For example, you can update the printer firmware by downloading the latest version from [zebra.com](http://zebra.com), copying the files to a USB Flash drive (of up to a 1 TB storage capacity), connecting the USB drive to the printer, and uploading them to printer memory.

See the printer ZPL Programming Guide for information on the Mirror and Set-Get-Do (usb.mirror) SGD commands.

## Files for Completing the Exercises

Most of the files you need to complete the exercises in these section are available from zebra.com as a .ZIP file located [here](#) on the Zebra website. Download this archive file and extract its contents on your central device (host computer).

Where possible, the contents of the files are shown in this section. Contents of files that include coded content—which cannot be viewed either as text or as an image—are not shown.

### File 1: ZEBRA.BMP



### File 2: SAMPLELABEL.TXT

```
^XA
^FO100,75^XGE:zebra.bmp^FS
^FO100,475^A0N,50,50^FDMirror from USB Completed^FS
^XZ
```

This simple label format prints the Zebra logo and a line of text at the end of the mirroring exercise.

### File 3: LOGO.ZPL

Uses the Zebra logo bitmap file.

**File 4: USBSTOREDFILE.ZPL**

```
CT~~CD,~CC^~CT~  
^XA~TA012~JSN^LT0^LH0,0^JMA^PR4,4~SD15^LRN^CI0^XZ  
~DG000.GRF,07680,024,,[image data]  
^XA  
^LS0  
^SL0  
^BY3,3,91^FT35,250^BCN,,Y,N^FC%,{,#^FD%d/%m/%Y^FS  
^FT608,325^XG000.GRF,1,1^FS  
^FT26,75^A0N,28,28^FH\^FDThis label was printed from a format stored^FS  
^FT26,125^A0N,28,28^FH\^FDOn a USB Flash Memory drive. ^FS  
^BY3,3,90^FT33,425^BCN,,Y,N  
^FD>:Zebra Technologies^FS  
^PQ1,0,1,Y^XZ  
^XA^ID000.GRF^FS^XZ
```

This label format prints an image and text. This file will be stored on the USB memory device at the root level so that it can be printed.

**File 5: VLS\_BONKGRF.ZPL****File 6: VLS\_EIFFEL.ZPL****File 7: KEYBOARDINPUT.ZPL**

```
^XA  
^CI28  
^BY2,3,91^FT38,184^BCN,,Y,N^FC%,{,#^FD%d/%m/%Y^FS  
^FO385,75^XGE:zebra.bmp^FS  
^FT40,70^A0N,28,28^FH\^FDThis label was printed using a keyboard input.  
^FS  
^FT35,260^A0N,28,28^FH\^FDThis label was printed by:^FS  
^FT33,319^A0N,28,28^FN1"Enter Name"^FS  
^XZ
```

This label format, used for the USB keyboard input exercise, does the following:

- Creates a barcode with the current date, based on your Real-Time Clock (RTC) setting. (RTC may not be present in the printer version you purchased).
- Prints the Zebra logo graphic.
- Prints fixed text.
- Prints text entered with the keyboard by a user.

**File 8: SMARTDEVINPUT.ZPL**

```
^XA  
^CI28  
^BY2,3,91^FT38,184^BCN,,Y,N^FC%,{,#^FD%d/%m/%Y^FS  
^FO385,75^XGE:zebra.bmp^FS  
^FT40,70^A0N,28,28^FH\^FDThis label was printed using a smart device input.  
^FS
```

```
^FT35,260^A0N,28,28^FH\^FDThis label was printed by:^FS
^FT33,319^A0N,28,28^FN1"Enter Name"^FS^XZ
```

The same label format as the previous label, only with different text printing. This format is used for the smart device input exercise.

## Exercise 1: Copy Files to a USB Flash Drive and Perform USB Mirror

1. On your USB flash drive, create the following:

- A folder called `Zebra`
- In that folder, three subfolders:
  - `appl`
  - `commands`
  - `files`

2. In the `/appl` folder, place a copy of the latest firmware for your printer.



**NOTE:** Avoid underscores in the filenames. Some functions may NOT work properly if there are underscores. Use periods instead.

3. In the `/files` folder, place the following file: `ZEBRA.BMP`
4. In the `/commands` folder, place the following files: `SAMPLELABEL.TXT` and `LOGO.ZPL`.
5. Insert the USB flash drive into a USB host port situated on the front of your printer.
6. Observe the user interface and wait for the following:
  - If the firmware on the USB flash drive is different than what is on the printer, the firmware downloads to the printer. The printer then restarts and prints a printer configuration label. (If there is no firmware on the USB flash drive or if the firmware version is the same, the printer skips this action.)
  - The printer downloads the files in the `/files` folder and briefly shows on the display and, in case of printers that have a Color Touch display, the names of the files that are downloading to the printer from the USB drive.
  - The printer executes any files you added to the `/commands` folder.
  - The printer restarts, then displays the message `MIRROR PROCESSING FINISHED`.
7. Remove the USB Flash drive from the printer.

Exercise 1: Information for Advanced Operators

See the ZPL Programming Guide for more information about these commands.

Enable/disable mirroring:

```
! U1 setvar "usb.mirror.enable" "value" - Values: "on" or "off"
```

Enable/disable automatic mirroring that occurs when a USB Flash drive is inserted into the USB host port:

```
! U1 setvar "usb.mirror.auto" "value" - Values: "on" or "off"
```

Mirror operation retry number — Specify the number of times that the mirror operation will be repeated if it fails:

```
! U1 setvar "usb.mirror.error_retry" "value" – Values: 0 to 65535
```

Change file path from USB — Reprogram the file location the printer searches to retrieve files from the USB memory during mirror operations.

```
! U1 setvar "usb.mirror.appl_path" "new_path" – Default: "zebra/appl"
```

Change file path to USB — Reprogram the file location the printer places files into USB memory during mirror operations:

```
! U1 setvar "usb.mirror.path" "path" – Default: "zebra"
```

Enable/disable the USB host port:

```
! U1 setvar "usb.host.lock_out" "value" – Values: "on" or "off"
```

## Exercise 2: Print a Label Format from a USB Flash Drive

The Print USB File option allows you to print files from a USB mass storage device, such as a USB Flash drive.

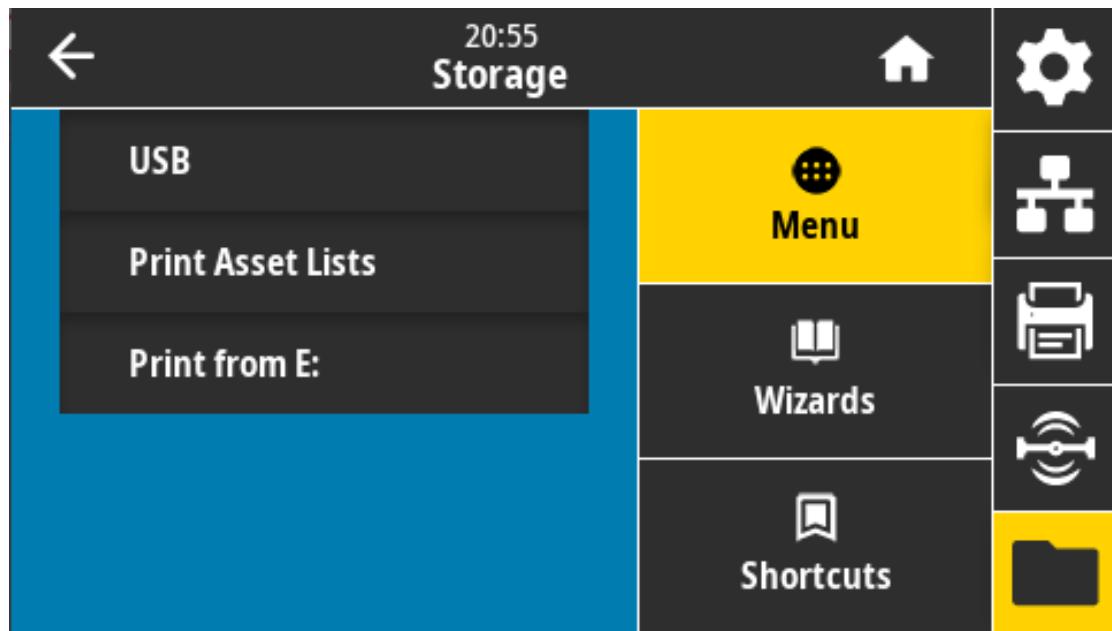
The files must be printable (.ZPL and .XML) and they must be located at the root level of the USB drive, not placed within a directory.

**1.** Copy the following files to your USB Flash drive:

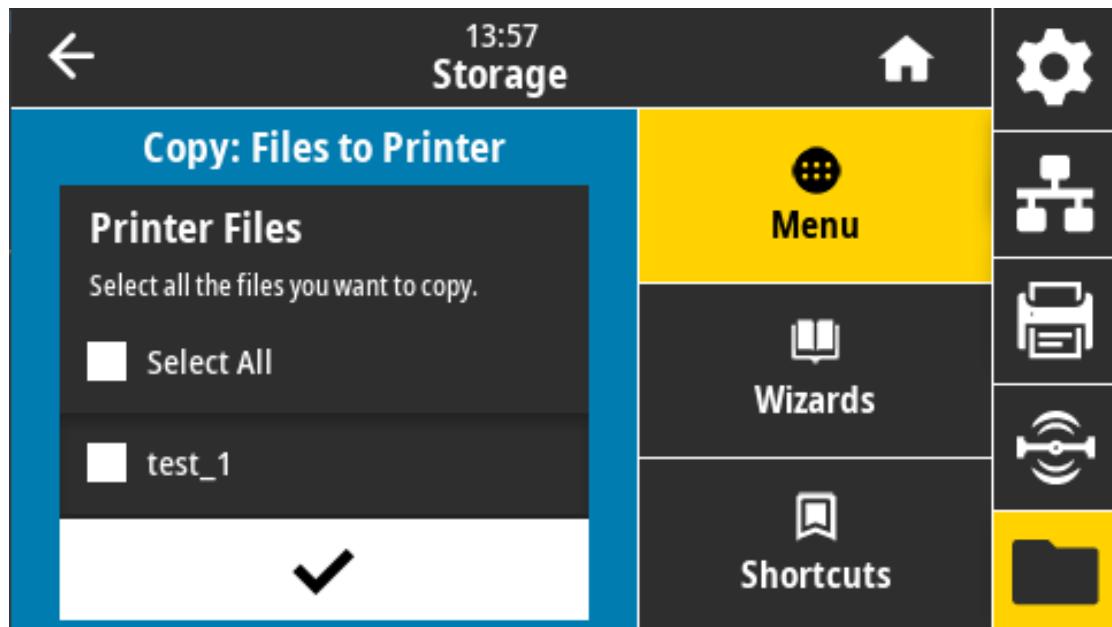
- File 4: USBSTOREDFILE.ZPL
- File 5: VLS\_BONKGRF.ZPL
- File 6: VLS\_EIFFEL.ZPL

**2.** Insert the USB Flash drive into a USB host port on the front of your printer.

3. From the printer's display, touch **Menu** > **Storage** on the printer's Home screen.



4. Touch and select **Menu** > **Storage** > **USB** > **Print: From USB**. The printer lists the available files.
5. Touch the box next to the desired files. You also have the option to **Select All**.

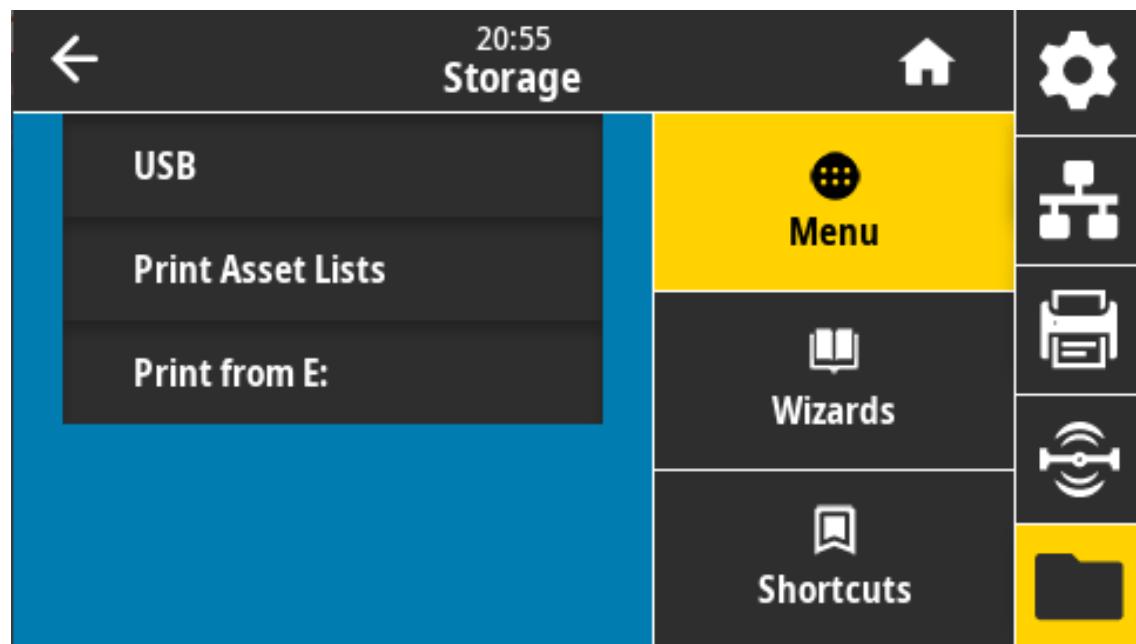


6. Touch the checkmark to print the selected files.
7. Remove the USB Flash drive from the printer.

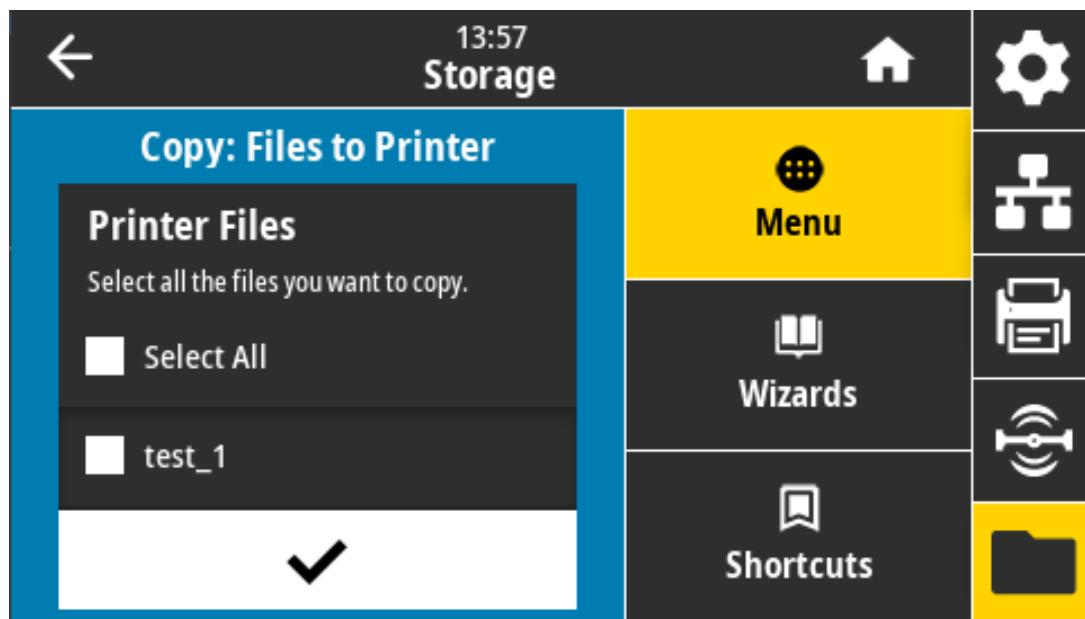
## Exercise 3: Copy Files to/from a USB Flash Drive

The Copy USB File option allows you to copy files from a USB mass storage device to the printer's Flash memory E: drive.

1. Copy the files listed below to the root directory of your USB Flash drive. (The files should not be placed in a subfolder.)
  - File 7: KEYBOARDINPUT.ZPL
  - File 8: SMARTDEVINPUT.ZPL
2. Insert the USB Flash drive into a USB host port on the front of your printer.
3. On the printer's display, touch **Menu** on the printer's Home screen.



4. Touch **Menu** > **Storage** > **USB** > **Copy: Files to Printer**.



The printer lists available files.

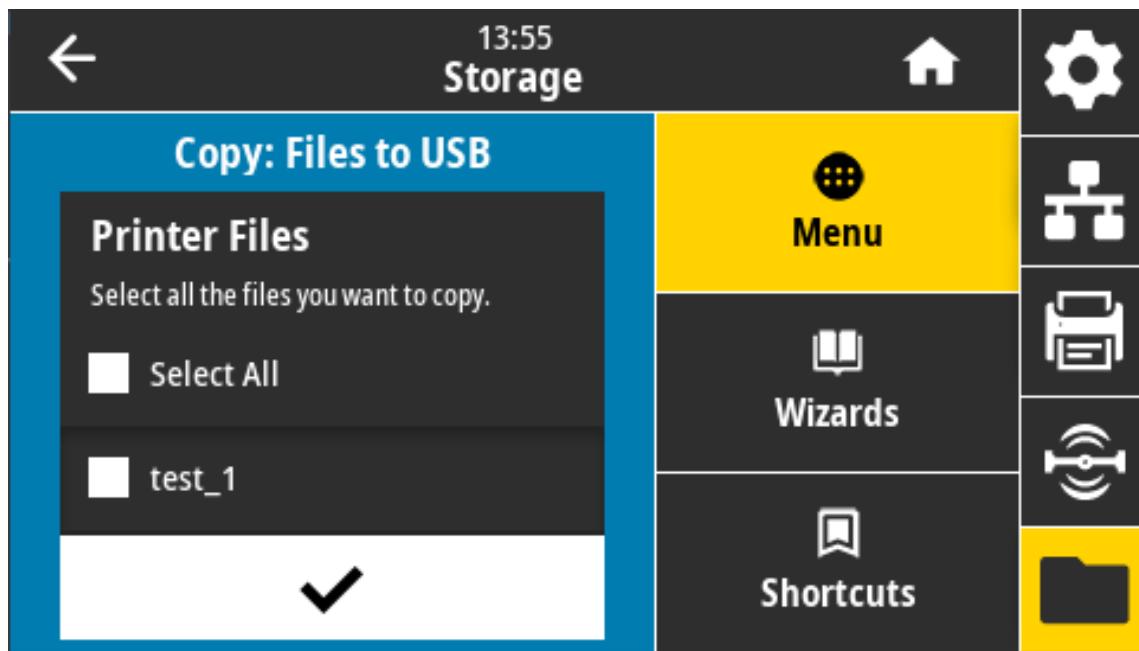
5. Touch the box next to the files you want to copy. You can also **Select All**.

6. Touch the checkmark to copy the selected files.

7. Remove the USB Flash drive from the USB host port.

The printer stores the file in E: memory.

8. You can now copy files from the printer to a USB Flash drive using the **Menu** > **Storage** > **USB** > **Copy: Files to USB**.



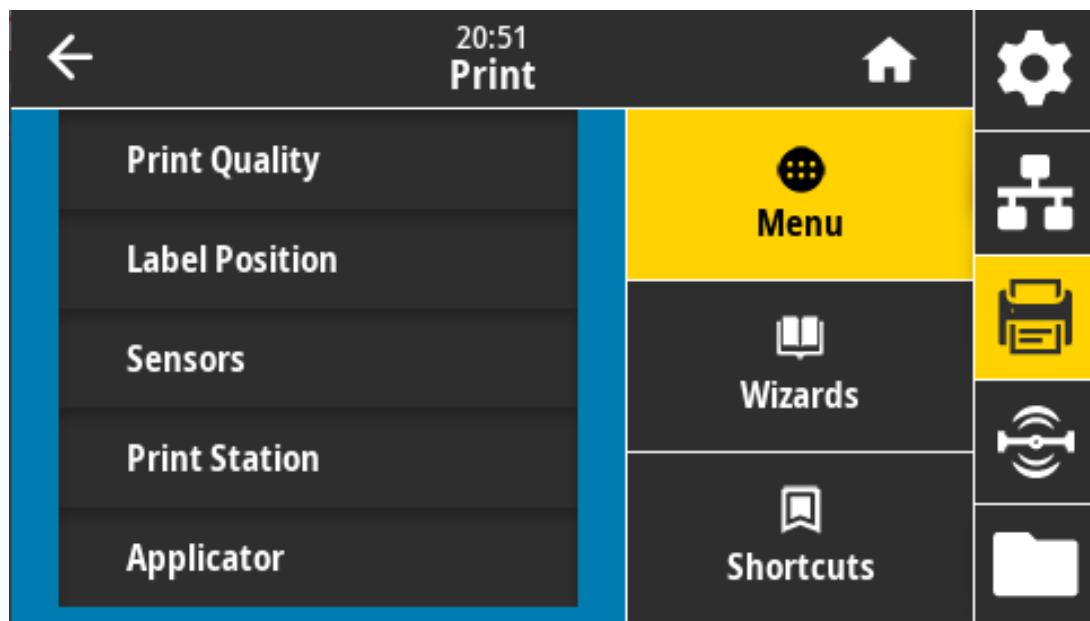
The **Select All** option is available to copy all files stored in the printer to the USB Flash drive. Any file with the .ZPL extension that is copied to the USB drive is post-processed so that its contents can be sent to a printer for normal execution.

## Exercise 4: Enter Data for a Stored File with a USB Keyboard and Print a Label

The Print Station feature allows you to use a USB Human Interface Device (HID) — such as a keyboard or a barcode scanner — to enter ^FN field data into a \*.ZPL template file.

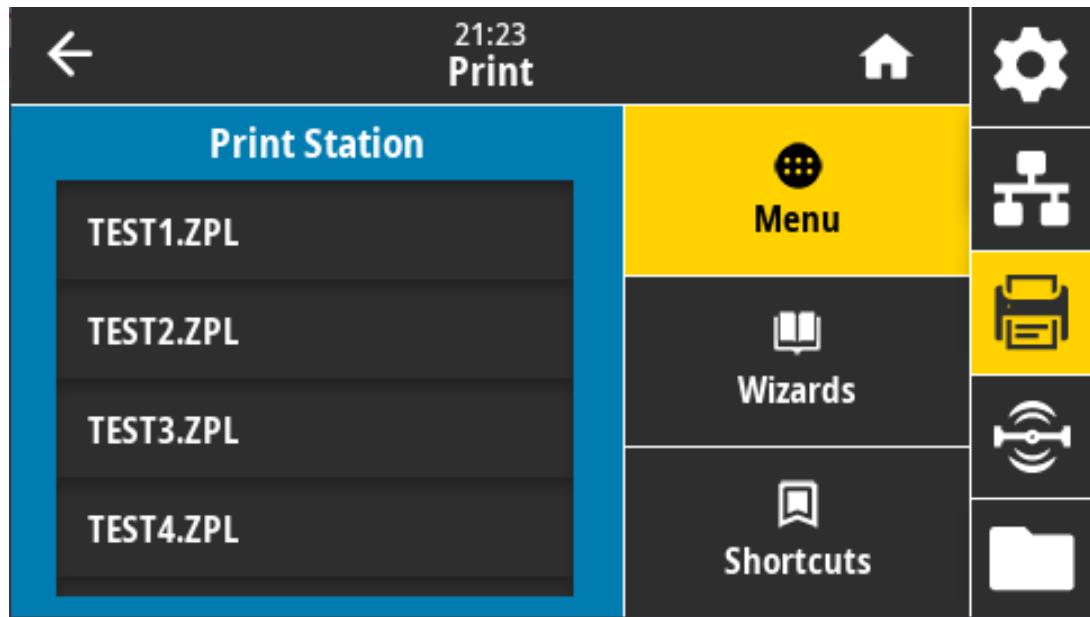
1. After performing the previous exercise, plug a USB keyboard into a USB host port located on the front of your printer.

2. Touch **Menu > Print**.



The Print screen displays.

3. Touch **Menu > Print > Print Station**.



The printer loads any executable files and processes them. The available files are listed.

**4.** Select the file KEYBOARDINPUT.ZPL.

The printer accesses the file and prompts you for the information in the ^FN fields in the file. In this case, it prompts you for your name.

**5.** Using the external keyboard, type your name and press **ENTER**.

The printer prompts you for the number of labels to print.

**6.** Using the external keyboard, specify the desired quantity of labels and press **ENTER**.

The specified number of labels is printed, with your name in the appropriate fields.

## Using the USB Host Port and Near Field Communication (NFC) Capabilities

The Zebra Print Touch feature allows you to touch an Android-based, NFC-enabled device (such as a smart phone or tablet) to the printer's NFC logo to pair the device to the printer. You can use this feature to supply information for which you are prompted and then print a label using that information.



**IMPORTANT:** Some devices may not support NFC communication with the printer until you change their settings. If you encounter difficulties, consult your service provider or your smart device manufacturer for more information.

**Figure 7** Print Touch Location (Passive NFC)



## Exercise 5: Enter Data for a Stored File with a Smart Device and Print a Label



**NOTE:** The steps in this exercise may vary somewhat based on your smart device, on your service provider, or on whether you already have the free Zebra Utilities app installed on your smart device.

Refer to the Zebra Bluetooth User Guide for specific instructions for configuring your printer to use a Bluetooth interface. A copy of this manual is available at [zebra.com/manuals](http://zebra.com/manuals).

1. If you do not have the Zebra Utilities app installed on your device, go to the app store for your device, search for the Zebra Utilities app, and install it.
2. Pair your smart device with the printer by holding the smart device next to the **Zebra Print Touch** icon on your printer.
  - a) If necessary, access the Bluetooth information about your printer using your smart device. For instructions, refer to the manufacturer documentation made available for your device.
  - b) If necessary, select the Zebra printer's serial number to pair it with the device.
  - c) After your smart device is detected by the printer, the printer may prompt you to accept or reject the pairing. If necessary, press **ACCEPT**. Some smart devices will pair with the printer without this prompt.
3. Start the Zebra Utilities app on your device.

The Zebra Utilities main menu displays.



4. Perform these steps if you have an Apple device: If not, skip to the next step.
  - a) Tap **Settings** (  ) in the lower right corner.
  - b) Change the setting for **Get Labels From Printer** to **ON**.
  - c) Tap **Done**.
  - d) Tap **Files**.

The smart device gets data from the printer and displays it. This retrieval process may take a minute or more to complete.
5. Scroll through the formats shown and select **E:SMARTDEVINPUT.ZPL**.

Based on the **^FN** field in the label format, the smart device prompts you for your name.

6. Enter your name at the prompt.
7. If desired, change the quantity of labels to print.
8. Tap **Print** to print the label.

# Maintenance

This section provides routine cleaning and maintenance procedures. It is recommended that you procure supplies designed to work with your printer from [zebra.com/supplies](http://zebra.com/supplies).

## 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](http://zebra.com/supplies).

Printhead cleaning pens	For routine printhead cleaning.
99.7% min. pure isopropyl alcohol	Use a labeled alcohol dispenser.   <b>NOTE:</b> 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	 <b>CAUTION—PRODUCT DAMAGE:</b> 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.
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**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

Cleaning is a routine part of printer maintenance. Be sure to clean your printer and its components using the schedule listed here.

Component / Area	Recommendations
Printhead	Clean the printhead after printing every five rolls of media printed. See <a href="#">Cleaning the Printhead</a> on page 272.
Standard platen (drive) roller	<p>As needed to improve print quality. Platen rollers can slip causing print image distortion and in worst case scenarios not move the media (labels, receipts, tags, etc.) Use the detailed instructions in this Maintenance section to clean and, if necessary, replace the platen.</p> <p>Standard platen rollers come in two colors, black (203 dpi) and gray (300 dpi).</p>
Linerless Platen (Drive) Roller	<p>The linerless platen normally does not require cleaning. The adhesive side of the media picks up particles as you print. Clean if you observe a build-up of particles on the platen roller.</p> <p>The platen roller can accumulate adhesive on the outer edges of the roller. After using many rolls of media, these 'rings' of adhesive can get dislodged when using the printer. These particle clumps can then get transferred to other areas in the printer, most importantly, the printhead. To remove adhesive particles, use the adhesive side of a piece of linerless media to gently press and remove the particles from the platen roller. See the instructions in this Maintenance section for information on cleaning and replacing the platen.</p> <p>If the linerless media is sticking and binding in the printer, the silicon non-stick coating may have been used up. In this case, the linerless platen normally needs to be replaced.</p> <p>Linerless platen rollers come in two colors, reddish-brown (203 dpi) and brown (300 dpi).</p> <p> <b>CAUTION:</b> Cleaning the roller with solutions or rubbing the delicate surface of this type of roller will permanently damage or shorten the usable life of the linerless platen.</p>
Media path	Clean thoroughly as needed with fiber-free cleaning swabs and cloths moistened with 99.7% pure isopropyl alcohol. Let the alcohol evaporate completely. See <a href="#">Cleaning the Media Path</a> on page 276.

Component / Area	Recommendations
Interior	<p>Clean as needed using a soft cloth, brush or compressed air to wipe or blow dust and particles out of the printer.</p> <p>Use 99.7% pure isopropyl alcohol and a fiber-free cleaning cloth to dissolve contaminants like oils and grime.</p>
Exterior	<p>Clean as needed using a soft cloth, brush, or compressed air to wipe or blow dust and particles out of the printer.</p> <p>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.</p> <p>The latest healthcare printer models now include ultraviolet (UV) and disinfectant-ready plastics for hospital and other similar environments. The printer user interface controls are sealed so they can be cleaned with the rest of the printer's exterior. See the Guide To Disinfecting and Cleaning Zebra Healthcare Printers on the Zebra website at <a href="http://zebra.com/support">zebra.com/support</a> for the latest information on tested and approved cleaning materials and cleaning methods.</p>
Label dispenser option	<p>Clean as needed to improve label dispenser operations.</p> <p>For details on operating the dispenser, see <a href="#">Cleaning the Label Dispenser Option</a> on page 280.</p>
Cutter option	<p>The cutter is not a user-serviceable component.</p> <p>Do NOT clean inside the cutter opening or blade mechanism.</p> <p>Use the exterior cleaning procedure to clean the cutter bezel (housing).</p> <p>For cleaning and maintenance of this option, call a service technician.</p> <p> <b>CAUTION:</b> 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.</p> <p> <b>IMPORTANT:</b> The blade has a special coating to resist adhesives and wear. Cleaning it may ruin the blade.</p> <p> <b>IMPORTANT:</b> Use the recommended cleaning supplies listed in this guide. Using unapproved tools, cotton swabs, solvents (including alcohol), etc. may damage or shorten the cutter's usable life or cause the cutter to bind.</p>

## Cleaning the Printhead

For optimal print operations, clean the printhead each time you load a new roll of media.

Always use a new cleaning pen on the printhead. Old, used cleaning pens carry contaminants from previous use that may damage the printhead.



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



**CAUTION—ESD:** Observe static-safe procedures when working with the printhead or the electronic components under the top cover. 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.

## Cleaning the Printhead – ZD421/ZD621 Direct Thermal Printers

Zebra recommends that you clean the printhead when you load a new roll of media.

1. Rub the cleaning pen across the dark area of the printhead. Clean from the middle to the outside, to move adhesive transferred from the edges of media out and away from the media path.



2. Wait one minute before you close the printer to allow the wet areas to dry fully.

## Cleaning the Printhead – ZD421/ZD621 Thermal Transfer Printers

Clean the printhead each time you load a new roll of media.

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, to move adhesive transferred from the edges of media to the outside of media path.



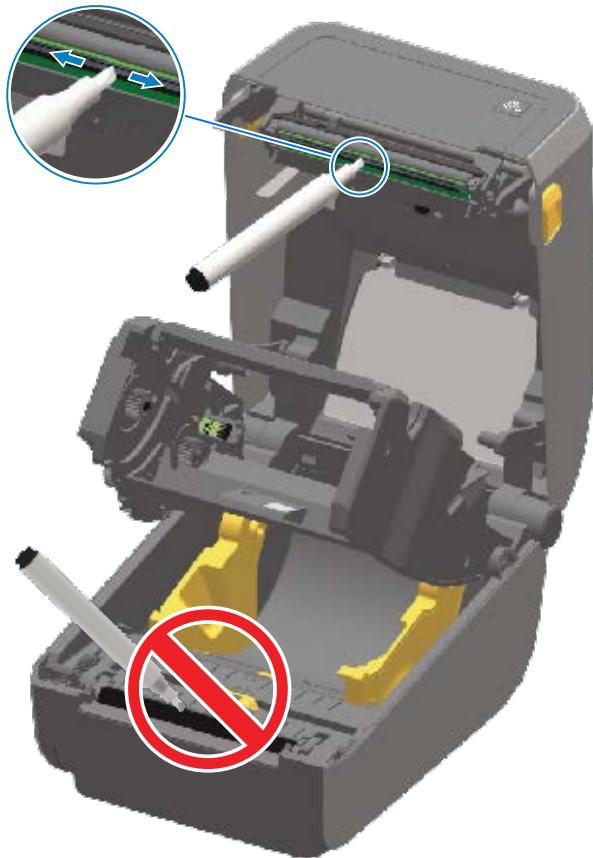
3. Wait one minute before closing the printer or loading ribbon to allow all components to dry.

### Cleaning the Printhead – ZD421 Ribbon Cartridge Printers

Zebra recommends that you clean the printhead when you load a new roll of media.

1. Pull the two release arms out to release the ribbon drive transport. For instructions on how to access the printhead, see [Accessing the Printhead of the ZD421 Ribbon Cartridge Printer](#) on page 35.
2. Lift the printhead actuator arm up to access the printhead.

3. Rub the cleaning pen across the dark area of the printhead. Make sure you clean from the middle to the outside. This moves adhesive transferred from the outer edges of media away from and outside the media path.



4. Wait one minute for the surface of the printhead to dry.
  5. Release the printhead actuator arm, then push the ribbon drive transport into the printhead actuator arm.
- The release arms snap into place, relinking the ribbon drive transport to the top cover and the printhead actuator arm.

## Cleaning the Media Path

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 the media path surfaces.

Lightly moisten the swab or cloth with 99.7% pure medical-grade alcohol.

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



**IMPORTANT:** Do NOT clean the printhead, movable sensor, or platen as part of this process.

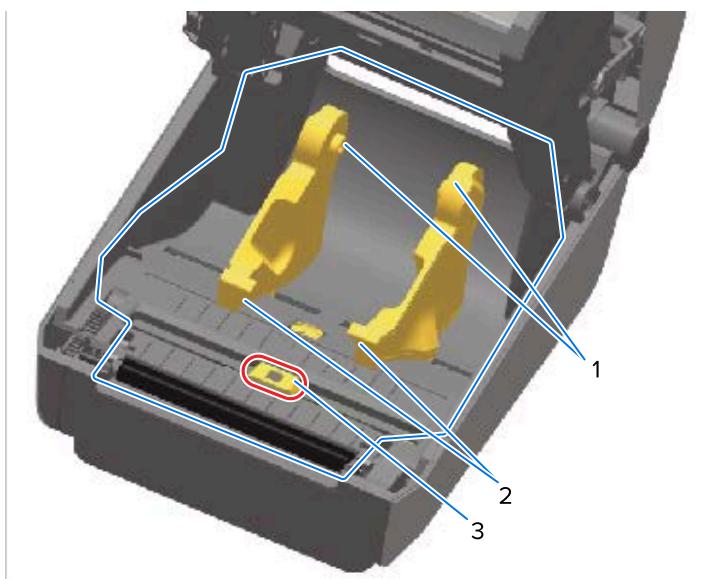
### Cleaning the Media Path – Lower Half of ZD421/ZD621 Printers

The lower half of all printer models covered in this guide get cleaned the same way, as described in this procedure.



**IMPORTANT:** Do NOT clean the printhead, sensors, or platen as part of this process.

1. Wipe the inside surfaces of the roll holders and the underside of the media guides with either wipes or cleaning swabs lightly moistened with 99.7% pure isopropyl alcohol. Use extra alcohol if necessary to soak accumulated debris for removal.
2. Wipe the inside surfaces of the roll holders and the underside of the media guides with a swab.



1	Media roll holders
2	Media guides
3	Sensor (do NOT clean)



**NOTE:** Use a clean swab for each cleaning. Discard all used cleaning swabs.

3. Wipe the movable sensor slide channel (but NOT the sensor itself). Move the sensor gently as needed to get to all areas.
4. Wait one minute before closing the printer to allow time for all cleaned areas to dry thoroughly.

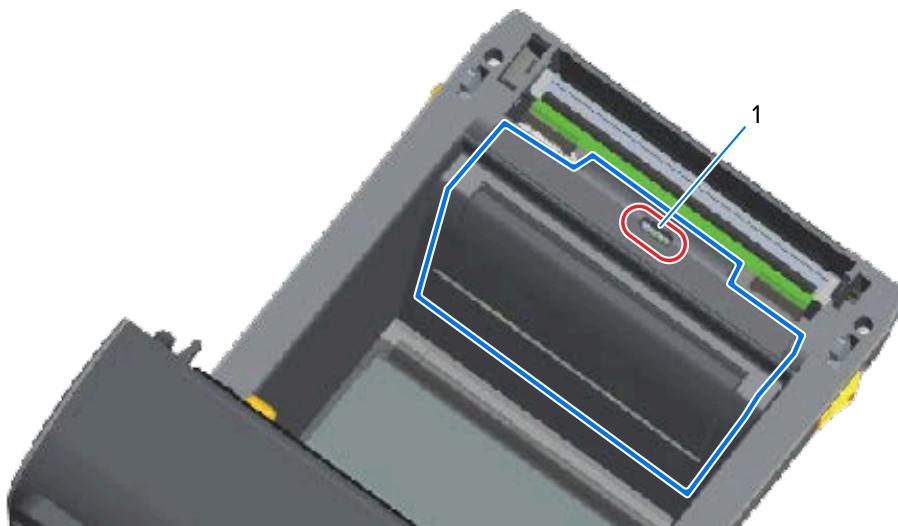
### Cleaning the Media Path – Upper Half of ZD421/ZD621 Direct Thermal Printers

See [Cleaning the Media Path](#) on page 276 for information on the cleaning solution and swabs or cloth to use to clean the media path.

Use a clean swab or lint-free cloth lightly moistened with 99.7% pure isopropyl alcohol to wipe the areas (outlined in blue in the figure below) to remove adhesive and other contaminants.



**NOTE:** Do NOT clean the sensor array.

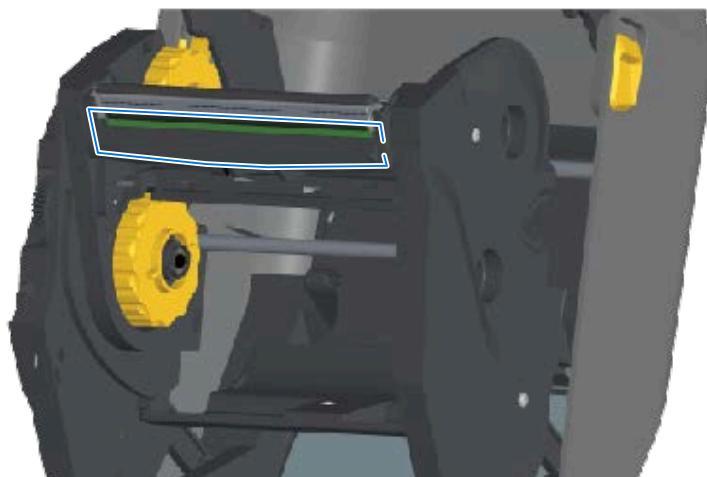


1	Sensor (do NOT clean)
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### Cleaning the Media Path – Upper Half of ZD421/ZD621 Thermal Transfer Printers

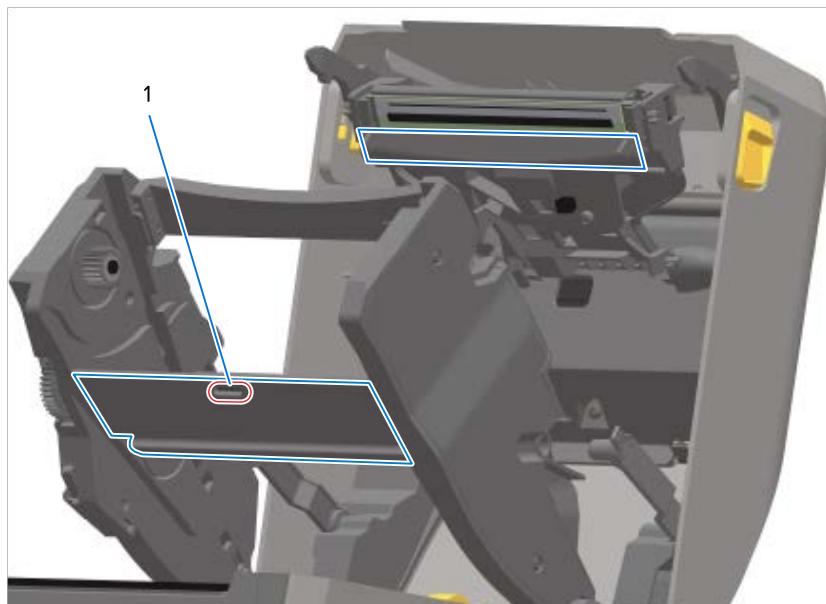
See [Cleaning the Media Path](#) on page 276 for information on the cleaning solution and swabs or cloth to use to clean this path.

Use a clean swab or lint-free cloth lightly-moistened with 99.7% pure isopropyl alcohol solution to wipe the area (outlined in the figure below), near the printhead and on the front of the printer's ribbon carriage.



### Cleaning the Media Path – Upper Half of ZD421 Thermal Transfer Ribbon Cartridge Printers

1. Pull the two release arms out to release the ribbon drive transport. For instructions on how to access the printhead, see [Accessing the Printhead of the ZD421 Ribbon Cartridge Printer](#) on page 35.
2. Wipe the areas (outlined in blue in the figure) which are below the printhead actuator arm and the ribbon drive transport.



1

Sensor (do NOT clean)

3. Release the printhead actuator arm, then push the ribbon drive transport into the printhead actuator arm.

The release arms snap into place, relinking the ribbon drive transport to the top cover and the printhead actuator arm.

## Cleaning the Cutter Option

This is a continuation of cleaning the media path for either option (if installed).



**IMPORTANT:** Clean only the plastic media path surfaces, and not the internal cutter blades or cutter mechanism. 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 which may be damaged if cleaned.

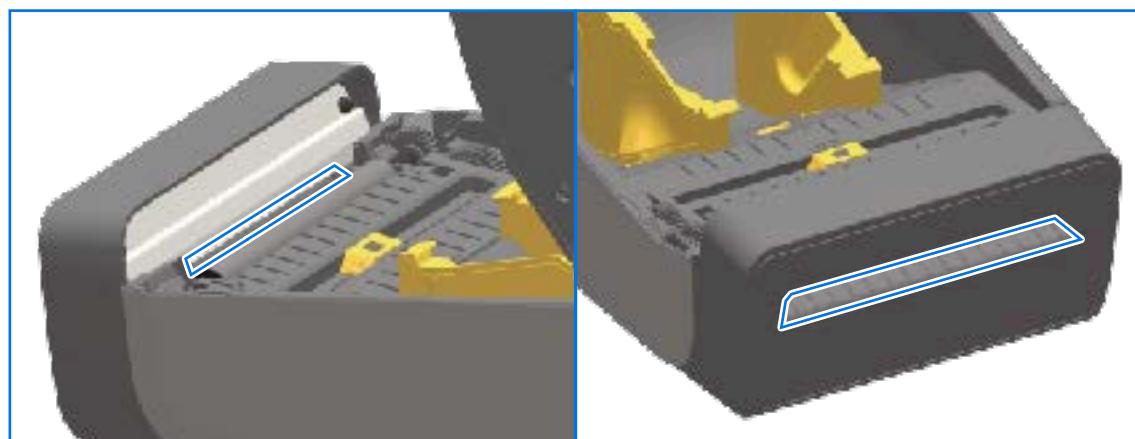


**CAUTION:** There are no operator serviceable parts in the cutter unit. Never remove the cutter cover (bezel), or attempt to insert objects or fingers into the cutter mechanism.



**CAUTION:** Using un-approved tools, cotton swabs, solvents (including alcohol), etc. all may damage or shorten the cutter's usable life or cause the cutter to jam.

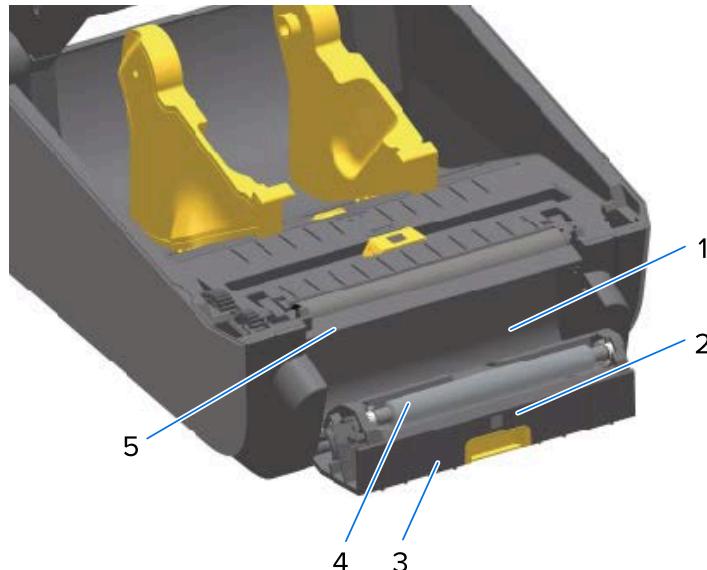
1. Use a clean swab or lint-free cloth lightly-moistened with 99.7% pure isopropyl alcohol to wipe the ridges and the plastic surfaces of the media entry on the inside and the exit slot on the outside of the cutter. Clean inside the areas outlined in the figure shown.
2. Repeat as necessary to remove any adhesive or contaminant residue and allow to dry.



## Cleaning the Label Dispenser Option

For the cleaning supplies to use to clean the label dispenser, see [Cleaning Supplies](#) on page 270.

1. Open the door and clean the peel bar, the inner surfaces, and the ridges on the door using a clean swab or lint-free cloth lightly moistened with 99% pure isopropyl alcohol.
2. Rotate the roller and wipe its surfaces.
3. Discard the swab or cloth.
4. Use a new swab or cloth to remove any diluted residue.
5. Clean the sensor window thoroughly until it is 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 and must be cleaned periodically.

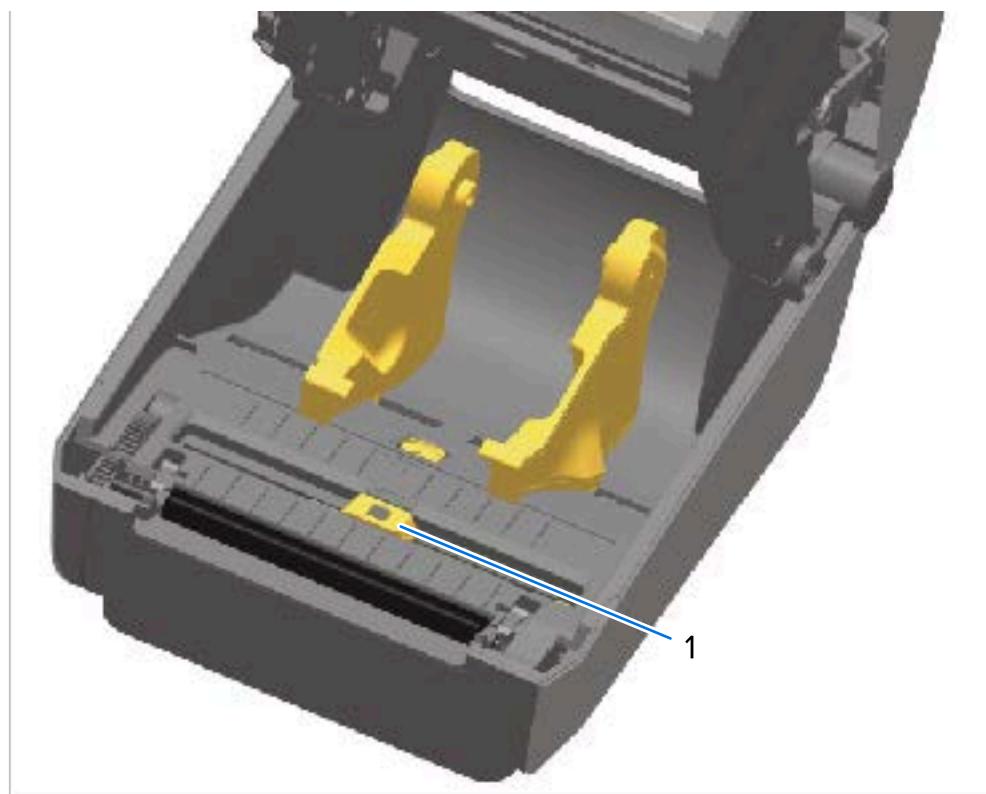


**NOTE:** Do NOT use an air compressor to remove dust. The action of air compressors tends to add moisture, fine grit, and lubricant which can contaminate your printer.

### Cleaning the Sensor – Lower Half of the ZD421/ZD621 Printers

The lower half of all ZD621/ZD421 model printers are all cleaned the same way. Use this procedure to clean the sensor window.

1. Clean the window of the movable sensor by gently brushing away dust or using a can of compressed air. If necessary, use a dry swab to brush away dust.

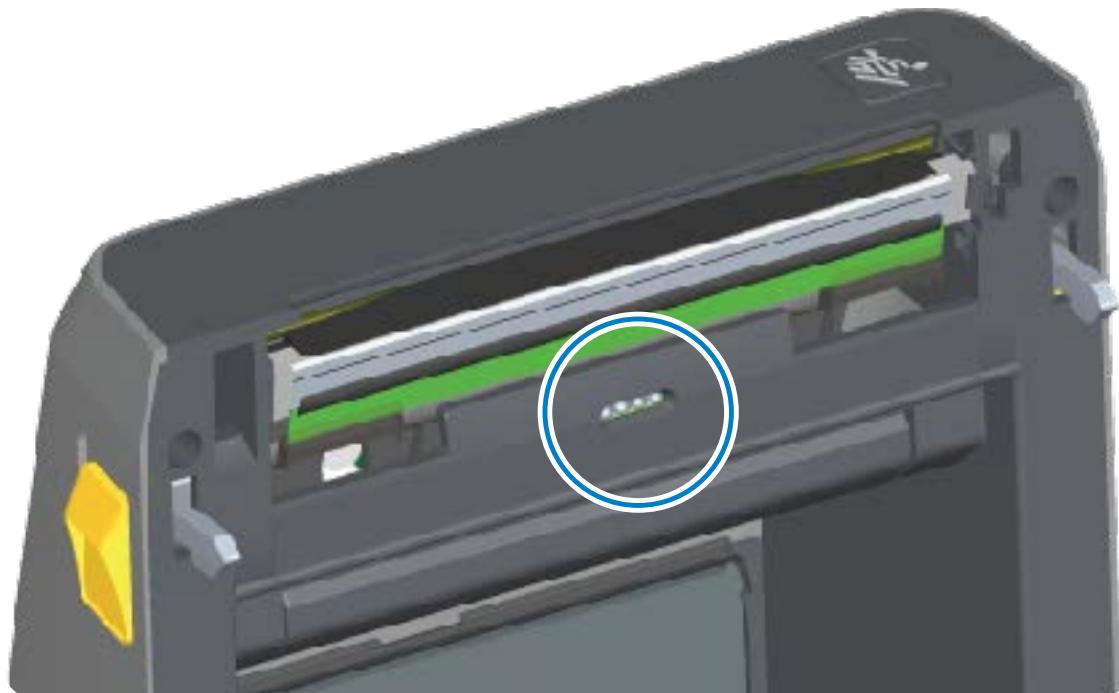


1	Movable sensor (black mark and lower web/gap)
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2. If adhesives or other contaminants remain, use a swab moistened with 99.7% pure isopropyl alcohol to break them up. Discard the used swab(s).
3. Use a dry swab to remove any residue that may be left from the first cleaning.
4. Repeat the preceding steps as required until all residue and streaks are removed from the sensor.

**Cleaning the Sensor – Upper Half of ZD421/ZD621 Direct Thermal Printers**

1. Spray the upper web (gap) array sensor below the printhead with a can of compressed air. If necessary, use a swab moistened with 99.7% pure isopropyl alcohol to break up adhesive or other non-dust contaminants.
2. Discard the used swab.
3. Use a clean dry swab to remove any residue that may be left from the first cleaning.

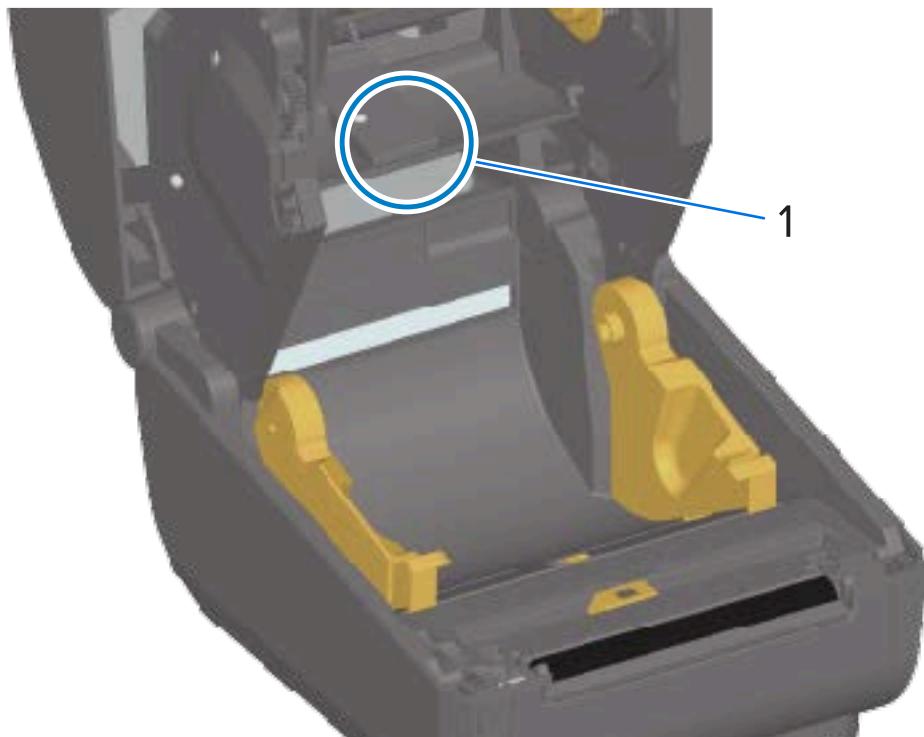


**Cleaning the Sensor – Upper Half of the ZD421/ZD621 Thermal Transfer Printers**

1. Use a can of compressed air to spray the upper web (gap) array sensor located below the printhead.



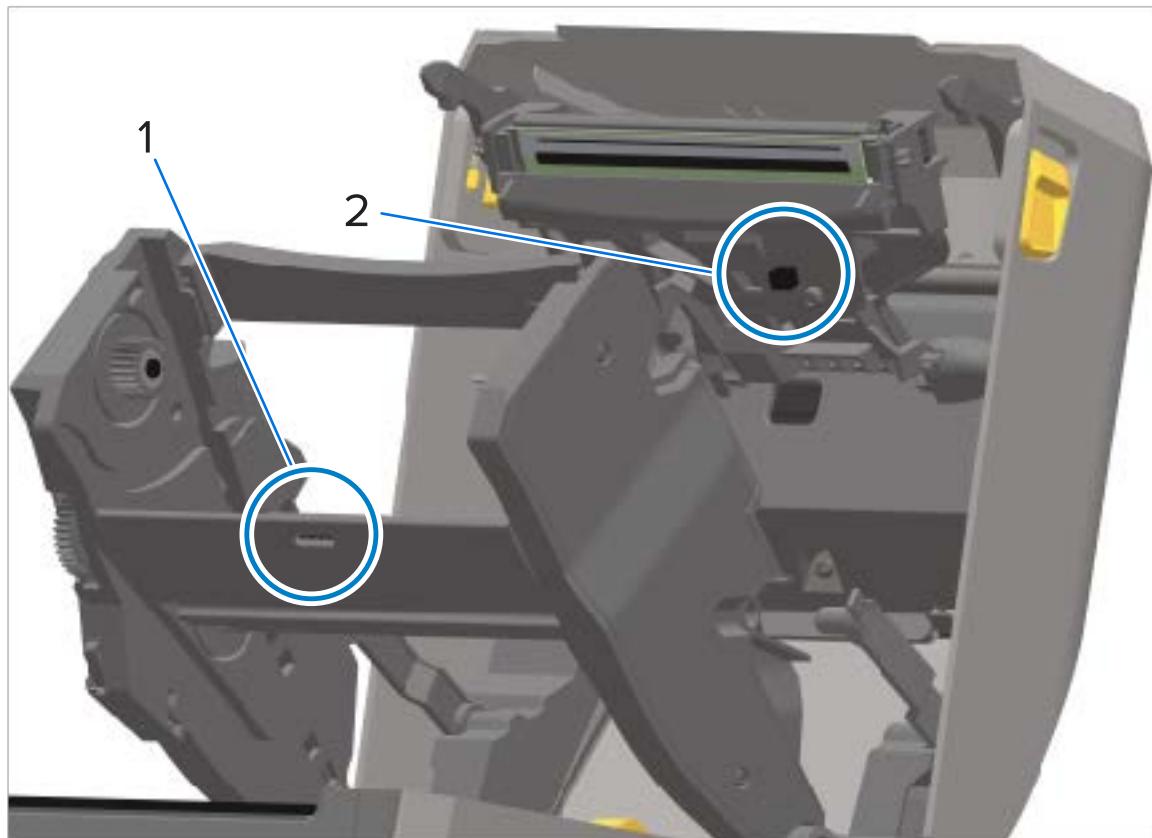
**IMPORTANT:** If the entire sensor needs a complete cleaning (which is a very rare occurrence), a service technician should perform the cleaning.



2. Close the printer cover when done.

## Cleaning the Sensor – Upper Half of the ZD421 Ribbon Cartridge Printers

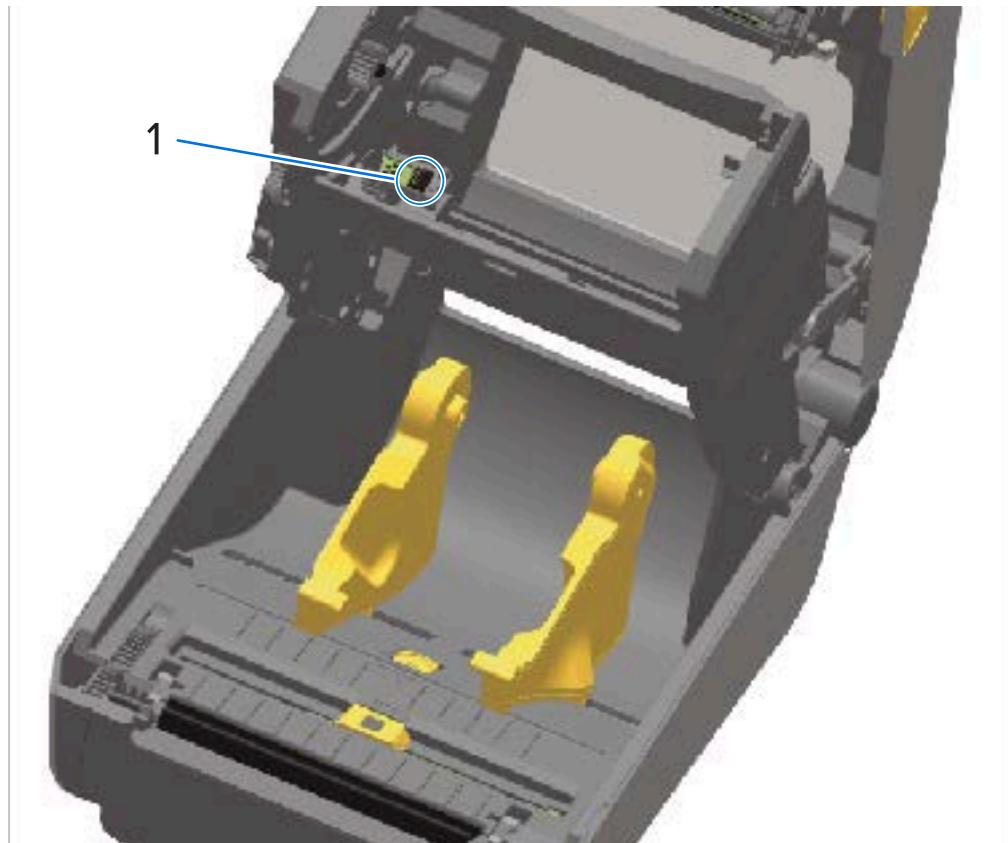
1. Pull the two release arms out to release the ribbon drive transport. For instructions on how to access the printhead, see [Accessing the Printhead of the ZD421 Ribbon Cartridge Printer](#) on page 35.
2. Swing the printhead actuator arm up until it touches the printer's top cover. Hold the actuator arm in this position for access to the area below the printhead.
3. Spray the upper web (gap) array sensor under the ribbon drive transport and the ribbon-out sensor on the underside of the printhead actuator arm with a can of compressed air. If necessary, use an alcohol-moistened swab to break up any accumulated debris.
4. Use a dry swab to remove any residue that may be left from the first cleaning.



1	Upper web (gap) array
2	Ribbon-out sensor

5. If the cartridges are not being detected, you may need to clean the ribbon cartridge sensor interface pins. Clean the pins using a clean swab or lint-free cloth lightly moistened with 99.7% pure isopropyl alcohol, using a gentle wiping motion from right to left.

**CAUTION:** Up and down motions may damage the pins. Wipe gently, ONLY left to right.



1	Ribbon cartridge sensor contact pins
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## Cleaning and Replacing the Platen

The platen is the print surface and drive roller for your media. Clean the platen (and 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.



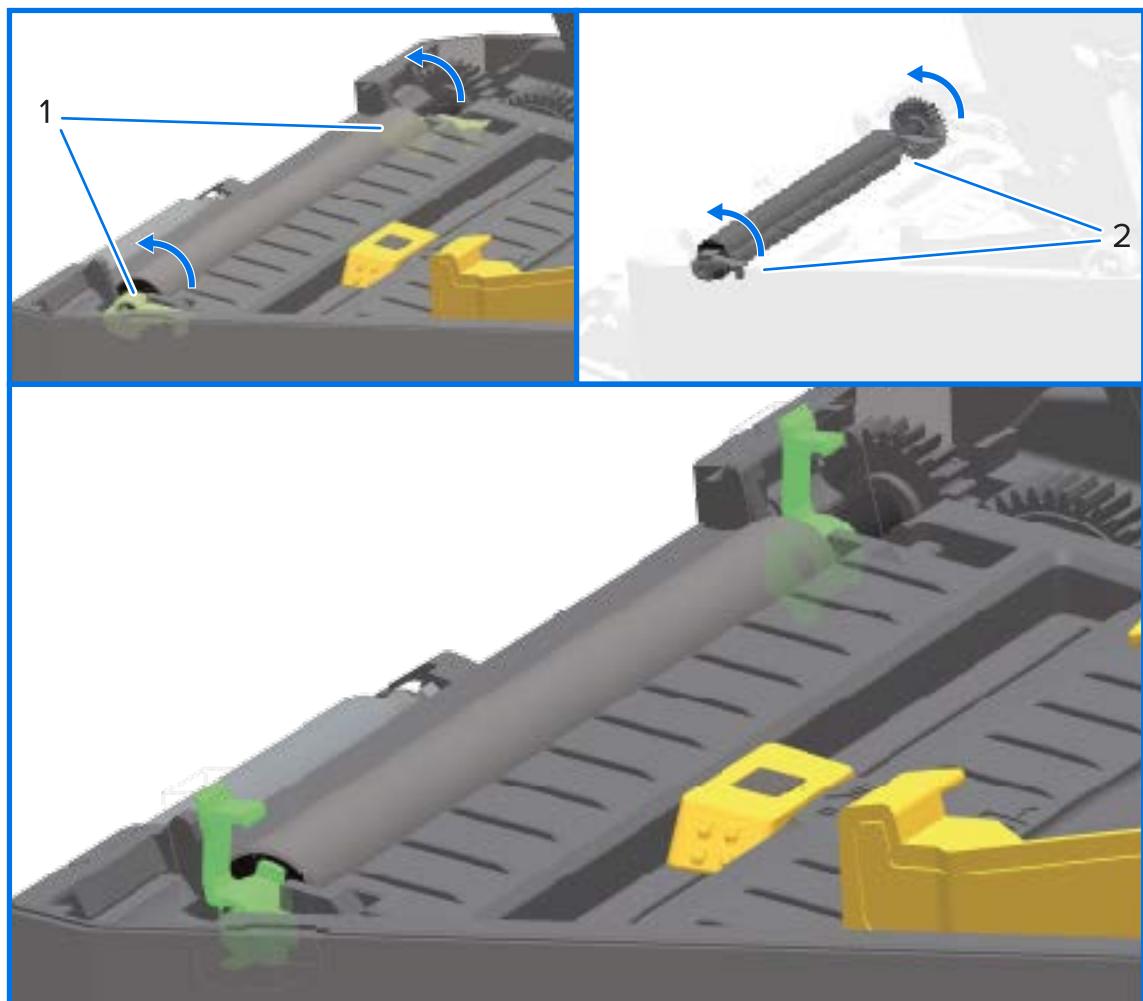
**IMPORTANT:** Contaminants on the platen roller can damage the printhead or cause the media to slip or stick when printing. Adhesive, dirt, general dust, oils and other contaminants should be cleaned PROMPTLY off the platen.



**CAUTION:** When cleaning Linerless Platens, do NOT wash or scrub. Washing or scrubbing may damage the platen. Remove adhesive particles ONLY using the adhesive side of linerless media. Lightly touch the platen roller with a linerless label to lift particles off the exposed area of the platen roller and the media path areas.

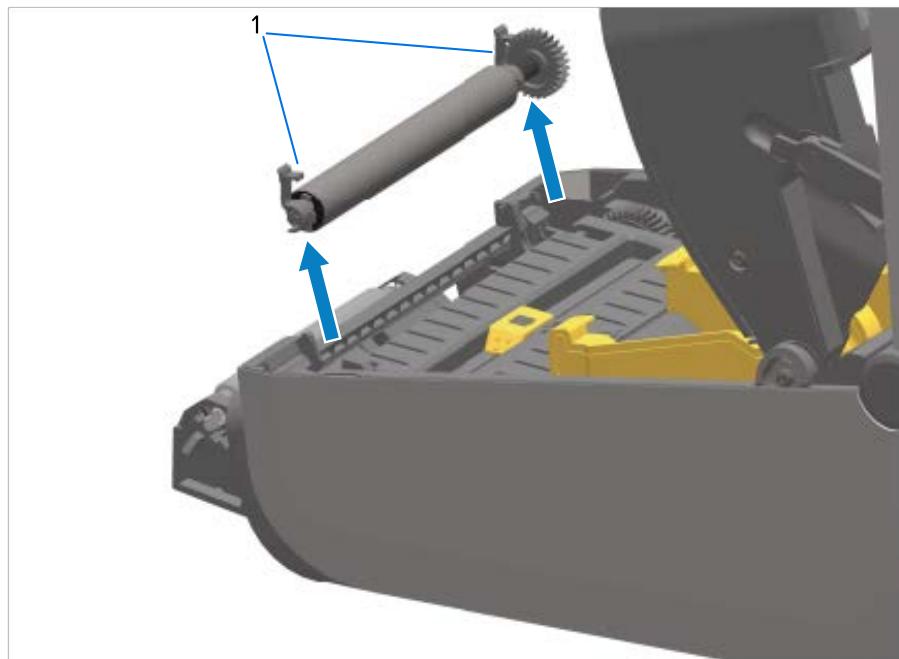
The platen can be cleaned with a fiber and lint free swab (such as a Texpad swab) or a lint-free, clean, damp cloth very lightly moistened with 99.7% pure. medical-grade isopropyl alcohol.

1. Open the cover (and if a label dispenser is installed. the dispenser door).
2. Remove media from platen area.
3. Pull the platen-bearing latch release tabs on the right and left sides towards the front of the printer and rotate them up.



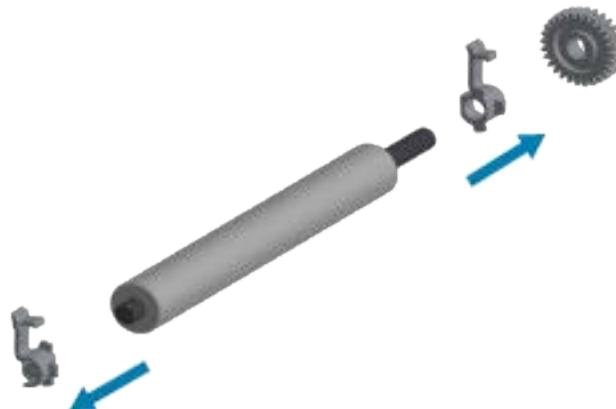
1	Platen bearings
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4. Lift the platen out of the printer's bottom frame.



1	Platen bearings
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5. Slide the gear and the two bearings off the shaft of the platen roller.



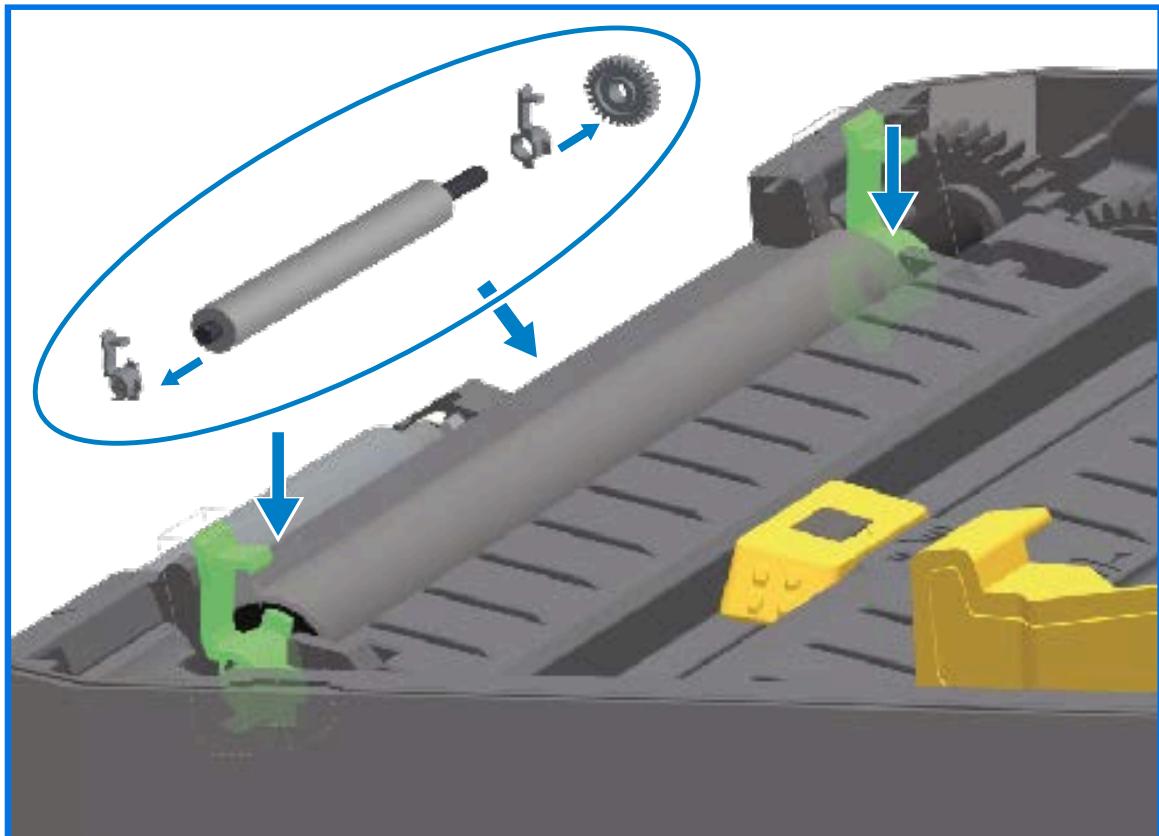
6. To clean a regular platen, use alcohol moistened swab or lint-free cloth very lightly moistened with 99.7% pure, medical-grade isopropyl alcohol using the steps below.



**IMPORTANT:** To clean a linerless platen, instead of using the substeps below, use ONLY the adhesive side of a piece of linerless media to gently lift the particles from the platen

roller. The surface of a linerless platen may be damaged if it is washed or rubbed with a cleaning solution.

- a) Clean from the center out. Discard the used swab or cloth.
  - b) Repeat this process until all of the roller surface has been cleaned.
  - c) If there has been heavy adhesive build-up or label jam, repeat with a new swab to remove residual contaminants. (Adhesives and oils, for example, may be thinned by the initial cleaning but not completely removed.)
7. Make sure the bearings and drive gear are on the shaft of the platen roller.



8. Align the platen with the gear to the left and lower it into the printer's bottom frame.
9. 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.
10. Allow the printer to dry for one minute before closing the dispenser door and the media cover, and before loading labels.

## Replacing the Printhead

Review these printhead removal/installation steps before you proceed to replace the printhead.



**CAUTION:** Prepare your work area by protecting against static discharge. Your work area must be static-safe. You must use a properly grounded conductive cushioned mat to hold the printer and use a conductive wrist strap to protect yourself.

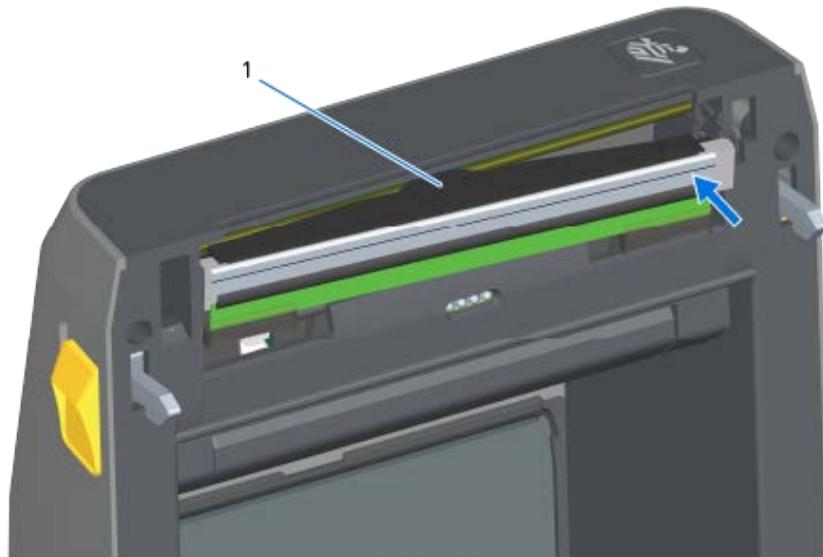


**CAUTION:** Unplug the printer from the power supply and allow the printer to cool to prevent injuries or damage to printer circuitry.

### Replacing the Printhead – ZD421/ZD621 Direct Thermal Printer Models

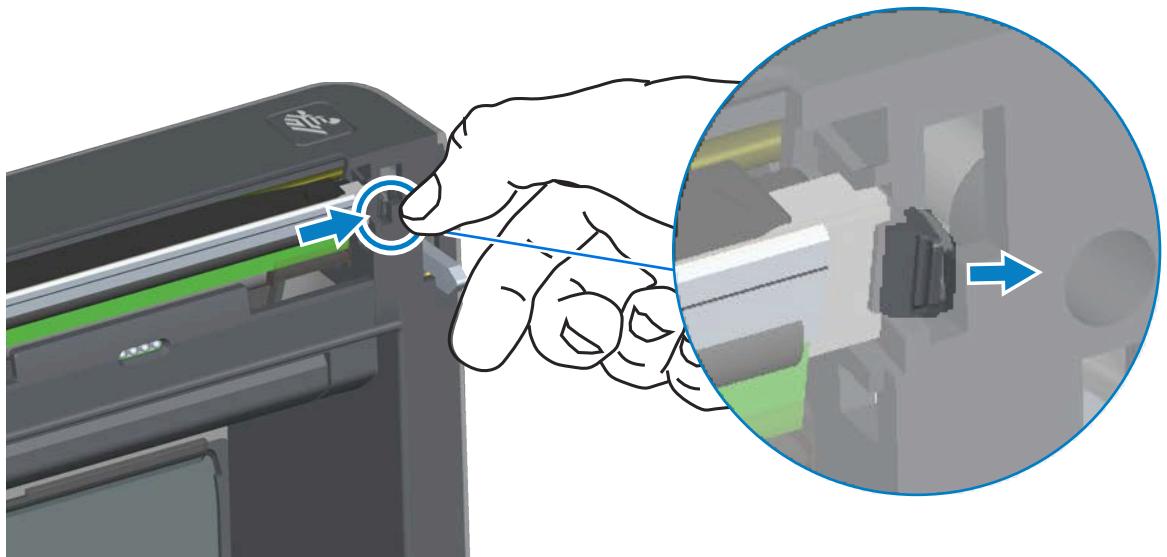
1. Use these steps to remove the printhead:

- a) Turn printer power OFF.
- b) Open the printer cover.

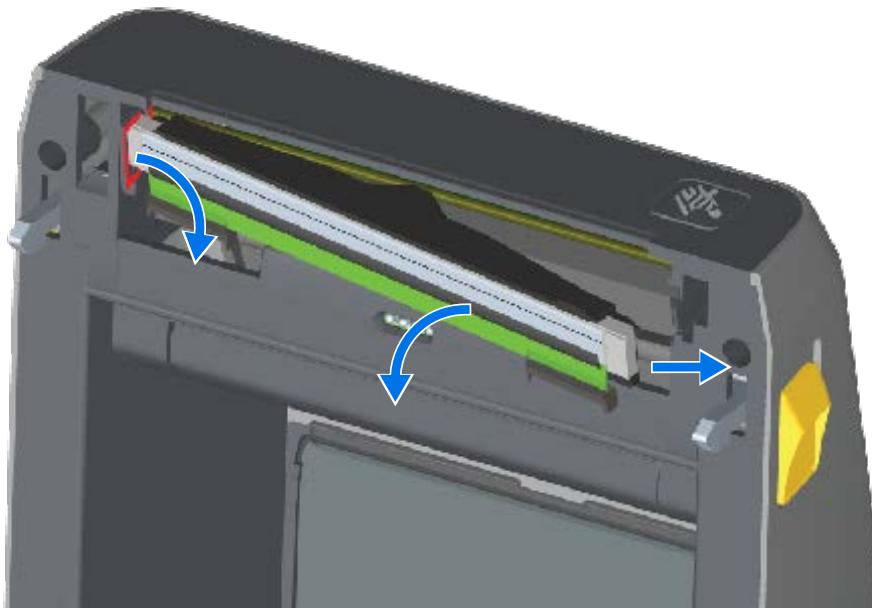


1	Printhead
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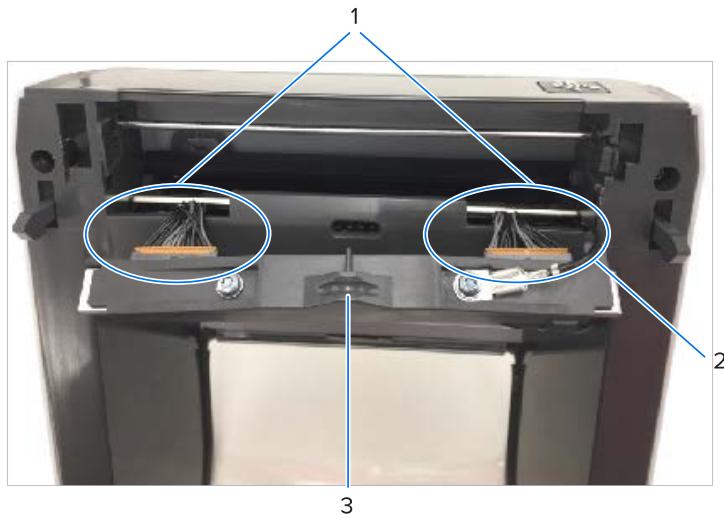
- c) Push the printhead release latch away from the printhead. The right side of printhead releases.



- d) Swing the loose, right side of the printhead out of the printer. Pull it out and to the right a little to get the left side of the printhead clear.
- e) Pull the printhead out and free of the top cover to gain access to its attached cables on the backside of the printhead. In the figure that follows, the red outline indicates the printhead retainer slot which is on the left side as you face the open printer.



- f) Gently but firmly pull the two printhead cable bundle connectors off the printhead. Then pull the ground wire off the printhead.



1	Connectors
2	Printhead ground wire
3	Printhead assembly

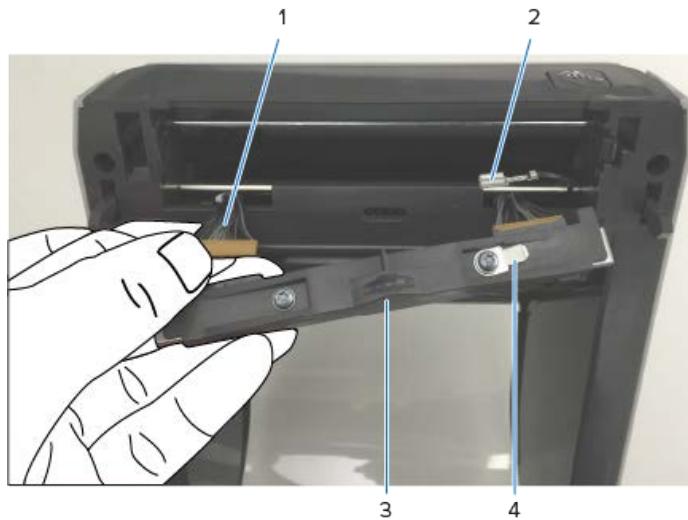
2. To replace the printhead:

- a) Push the right-side printhead cable connector into the printhead.



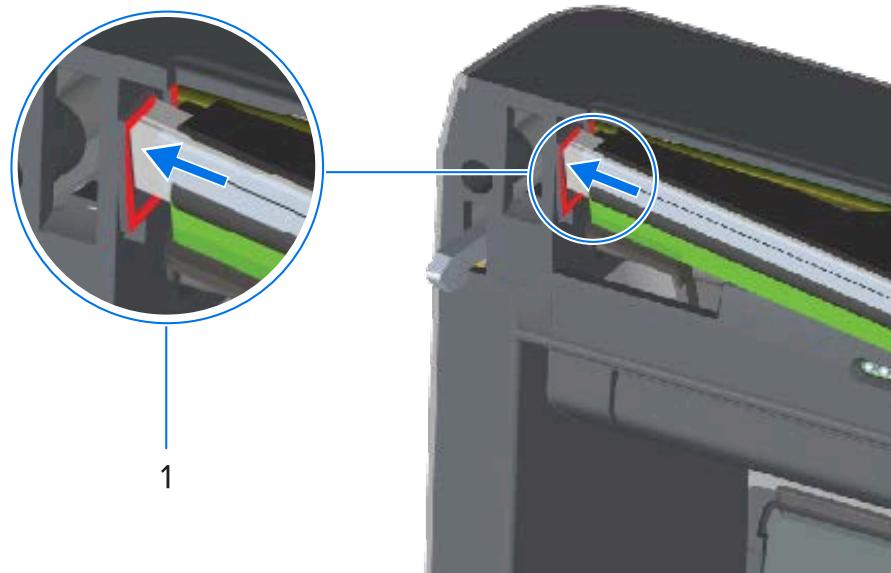
**NOTE:** The connector is keyed to only insert one way.

- b)** Attach the ground wire to the printhead's ground tab.
- c)** Push the left-side printhead cable connector onto the printhead.



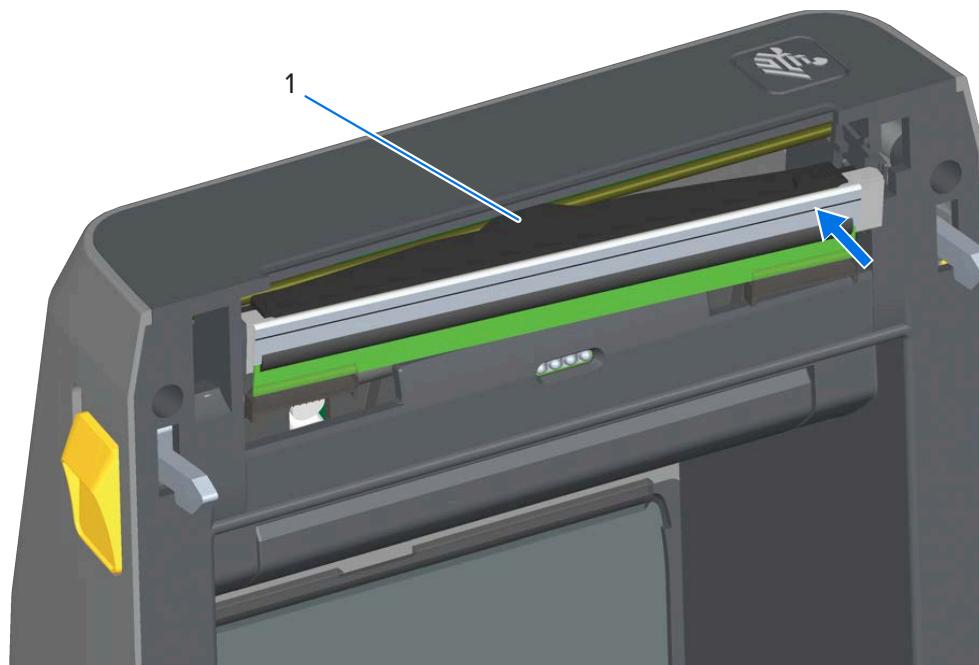
1	Connector with key
2	Printhead ground wire
3	Printhead ground tab
4	Spring wire notch

- d) Insert the left side of the printhead assembly into the recessed slot (highlighted in red) on the left side of the printer.



1	Slot
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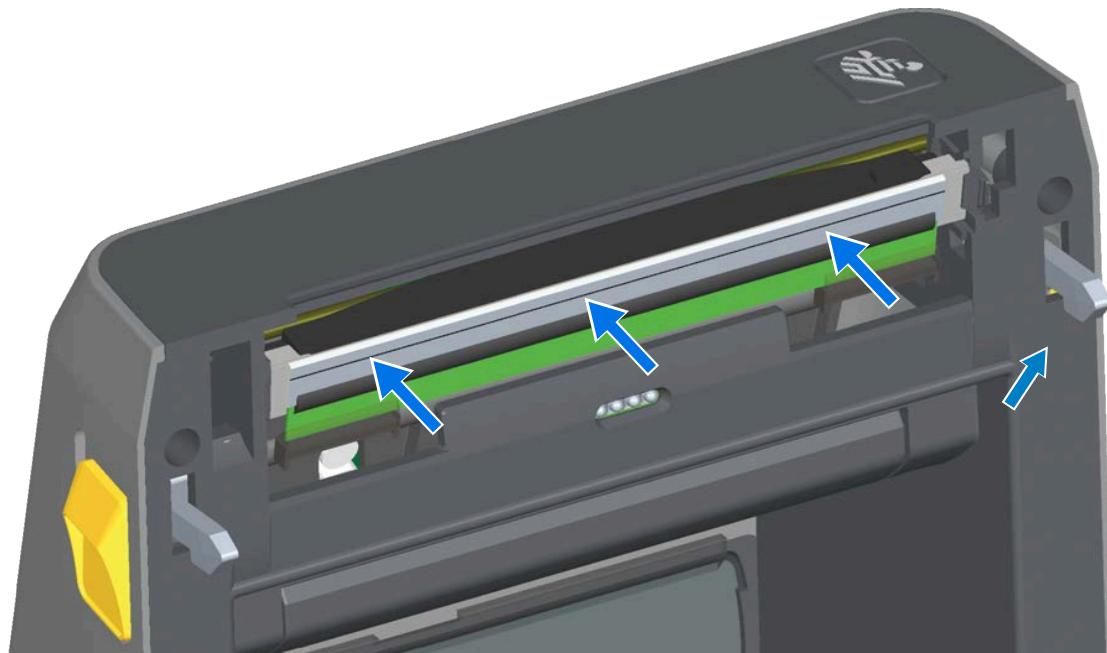
- e) Align the spring wire notch on the backside of the printhead to the spring wire. Push the right side of the printhead into the printer until the latch locks the right side of the printhead into the printer.



1

Spring wire in notch

- f) Verify that the printhead moves up and down freely when pressure is applied and remains locked when released.

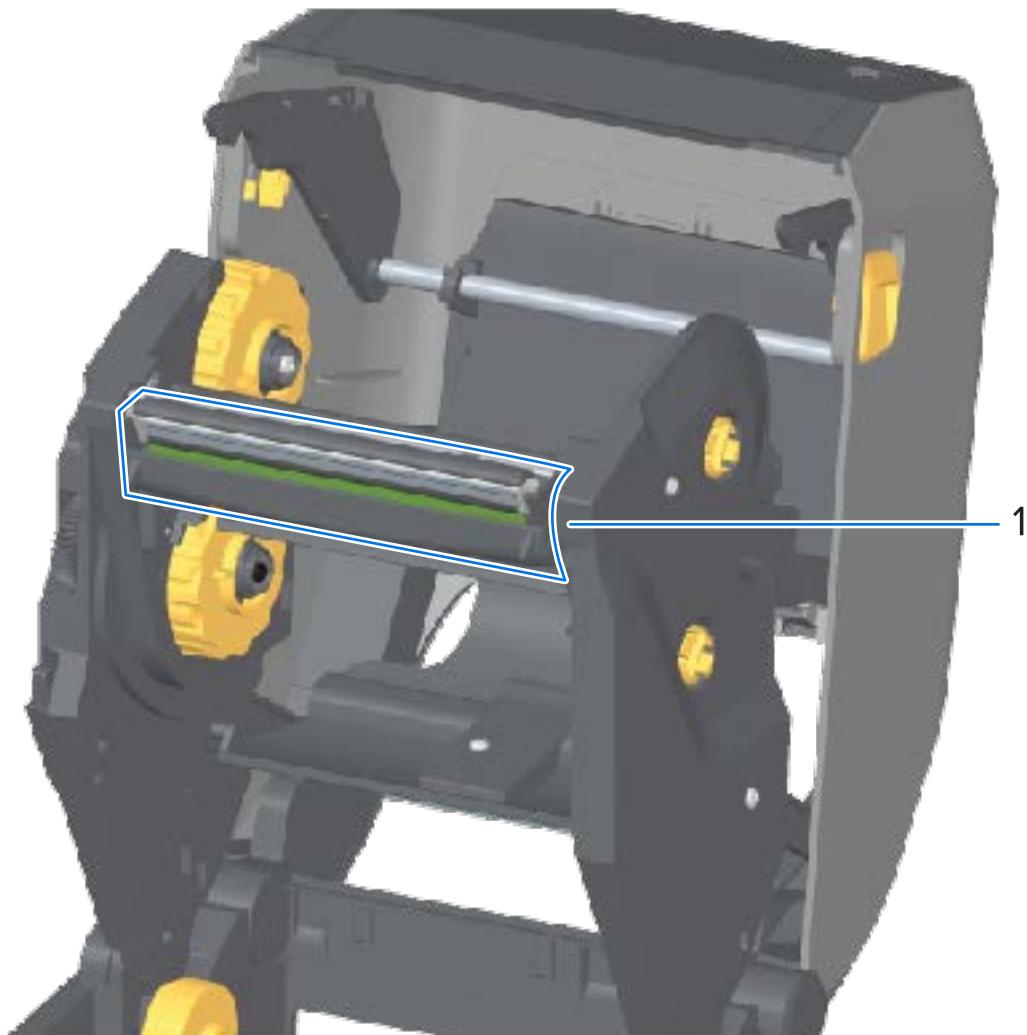


- g) Clean the printhead. Use a new pen to wipe body oils (fingerprints) and debris of the printhead. Clean from the center of the printhead to the outside. See the detailed instructions for cleaning the printhead in the Maintenance section of this guide.

3. Reload media, plug in the power cord (if removed), turn printer power ON, and print a configuration report to ensure proper function. See [Test Printing with a Configuration Report](#) on page 200.

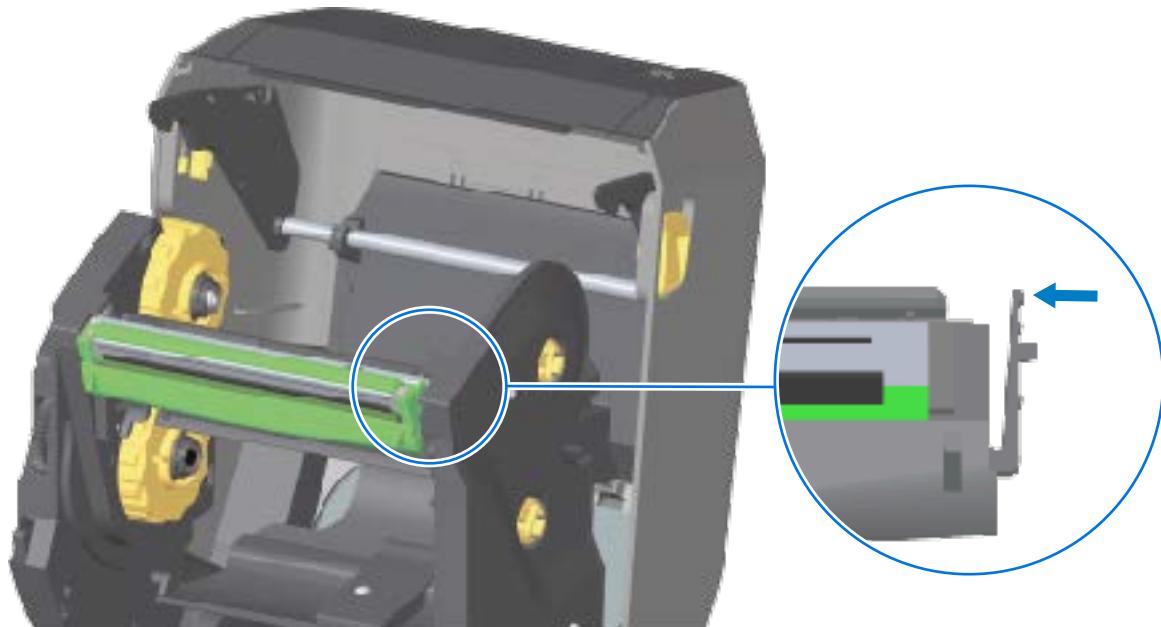
### Replacing the Printhead – ZD421/ZD621 Thermal Transfer Ribbon Roll Printer Models

1. Use these steps to remove the printhead:
  - a) Turn printer power OFF and open the printer.



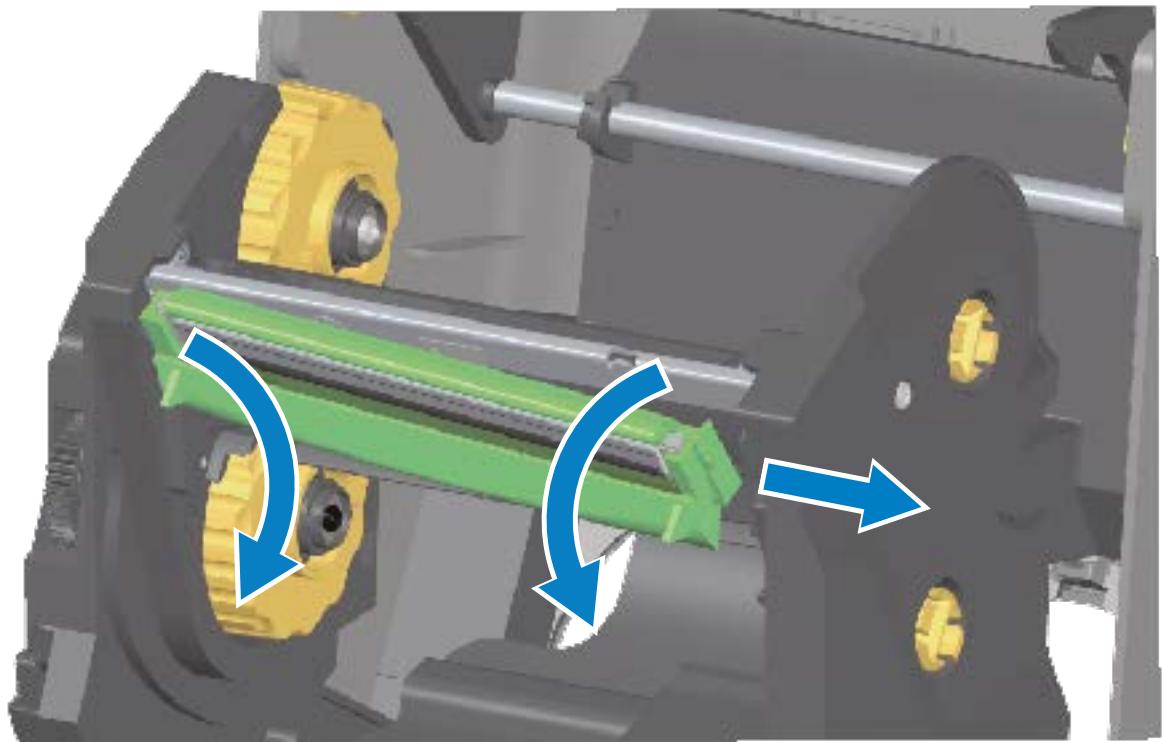
1	Printhead
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- b)** Push the printhead release latch toward the printhead (shown in green for visibility in the following figure).

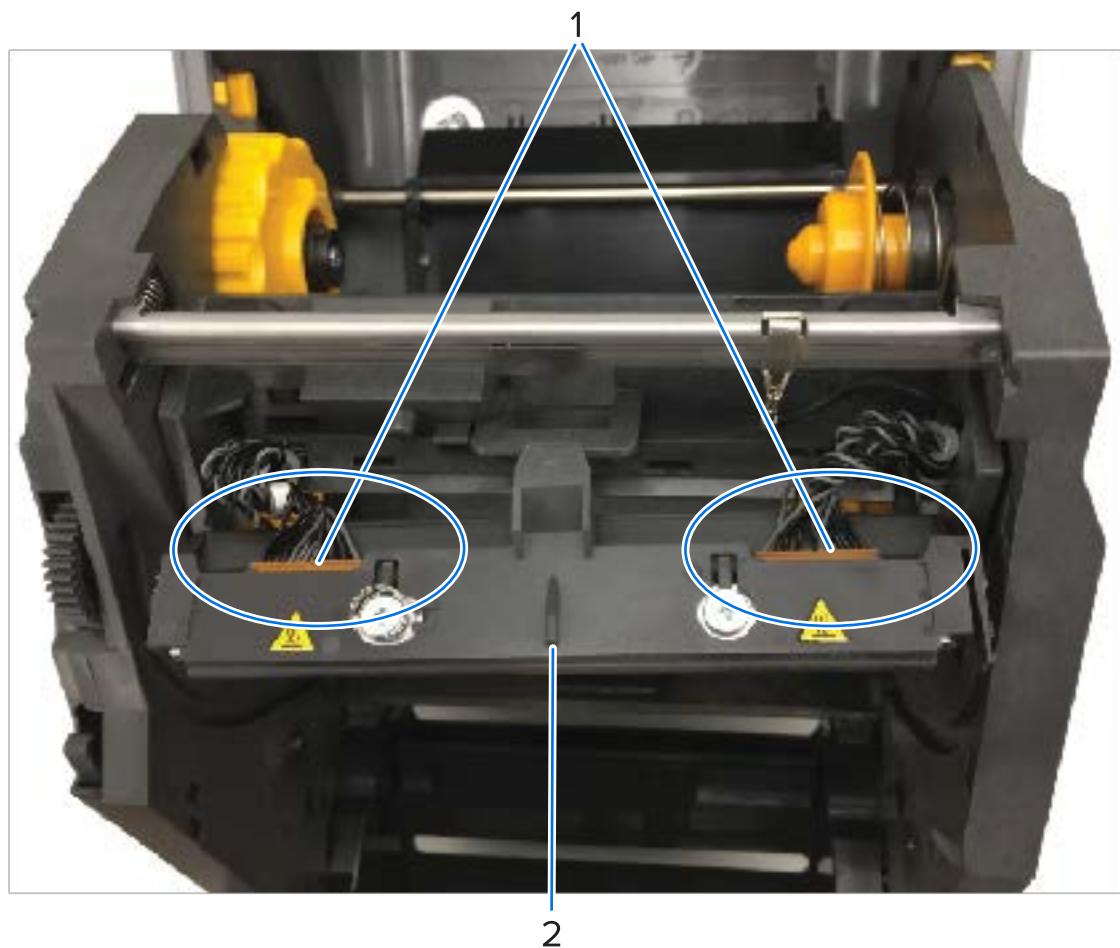


The right side of the printhead releases down and away from the printhead actuator arm.

- c) Swing the loose right side of the printhead out of the printer. Pull it to the right a little to get the left side of the printhead clear. Pull the printhead down and free of the ribbon carriage to gain access to its attached cables.



- d) Gently but firmly pull the two printhead cable bundle connectors off of the printhead.



1	Connectors
2	Printhead assembly