



## **Z4Mplus/Z6Mplus**

Industrial/Commercial Printer

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# **User Guide**

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# Declaration of Conformity

I have determined that the Zebra printers identified as the

ZM™ Series

Z4M, Z6M, Z4M*plus*, Z6M*plus*, R4M*plus*

manufactured by:

**Zebra Technologies Corporation**

333 Corporate Woods Parkway

Vernon Hills, Illinois 60061-3109 U.S.A.

Have been shown to comply with the applicable technical standards of the FCC

**For Home, Office, Commercial, and Industrial use**

If no unauthorized change is made in the equipment,  
and if the equipment is properly maintained and operated.

A handwritten signature in black ink, appearing to read "M. Charles T. Suro". The signature is written in a cursive style and is positioned above a horizontal line.

## Compliance Information

### FCC Compliance Statement

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

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

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

### FCC Radiation Exposure Statement (for printers with RFID encoders)

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### Canadian DOC Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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# About This Document

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## Who Should Use This Document

This User Guide is intended for use by any person who needs to operate or troubleshoot problems with the printer.

## How This Document Is Organized

The User Guide is set up as follows:

<b>Section</b>	<b>Description</b>
<i>Introduction on page 15</i>	This section shows the operational controls and location of major components used when loading media and ribbon.
<i>Printer Setup on page 21</i>	This section provides the tasks that you must complete and the issues that you must consider before you load and configure your printer.
<i>Operations on page 35</i>	This section provides the procedures for loading and calibrating the printer.
<i>Configuration on page 75</i>	This section describes the control panel parameters that are used to configure the printer for operation.
<i>Routine Maintenance on page 105</i>	This section provides routine cleaning and maintenance procedures.
<i>Troubleshooting on page 119</i>	This section provides information about errors that you might need to troubleshoot. Assorted diagnostic tests are included.
<i>Data Ports on page 139</i>	This section describes the standard communication ports available to connect the printer to your computer or network.
<i>Specifications on page 147</i>	This section provides the features of and specifications for the printer.

## Contacts

You can contact Zebra Technologies Corporation at the following.

### Web Site

<http://www.zebra.com>

Technical Support via the Internet is available 24 hours per day, 365 days per year. Go to <http://www.zebra.com/support>.

### The Americas

Regional Headquarters	Technical Support	Customer Service Dept.
Zebra Technologies International, LLC 333 Corporate Woods Parkway Vernon Hills, Illinois 60061.3109 U.S.A T: +1 847 793 2600 Toll-free +1 800 423 0422 F: +1 847 913 8766	T: +1 877 ASK ZEBRA (275 9327) F: +1 847 913 2578 Hardware: ts1@zebra.com Software: ts3@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +1 877 ASK ZEBRA (275 9327) E: clientcare@zebra.com

### Europe, Africa, Middle East, and India

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### Asia Pacific

Regional Headquarters	Technical Support	Customer Service
Zebra Technologies Asia Pacific, LLC 120 Robinson Road #06-01 Parakou Building Singapore 068913 T: +65 6858 0722 F: +65 6885 0838	T: +65 6858 0722 F: +65 6885 0838 E: China: tschina@zebra.com All other areas: tsasiapacific@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +65 6858 0722 F: +65 6858 0836

## Document Conventions

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

**Alternate Color** (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in .pdf format, you can click the cross-reference ([blue text](#)) to jump directly to its location.

**LCD Display Examples** Text from a printer's Liquid Crystal Display (LCD) appears in **Bubbledot ICG** font.

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

**Files and Directories** File names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

### Icons Used



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**Caution** • Warns you of the potential for electrostatic discharge.

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**Caution** • Warns you of a potential electric shock situation.

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

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

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**Caution** • (No icon) Advises you that failure to take or avoid a specific action could result in physical harm to the hardware.

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



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



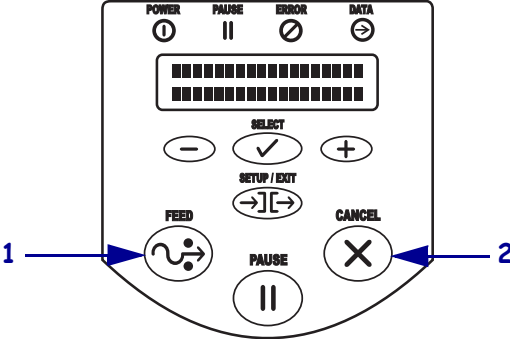
**Example** • Provides an example, often a scenario, to better clarify a section of text.



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

**Illustration Callouts** Callouts are used when an illustration contains information that needs to be labeled and described. A table that contains the labels and descriptions follows the graphic. [Figure 1](#) provides an example.

**Figure 1 • Sample Figure with Callouts**



<b>1</b>	FEED button
<b>2</b>	CANCEL button



**Notes •** \_\_\_\_\_

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# Introduction

This section shows the operational controls and location of major components used when loading media and ribbon.

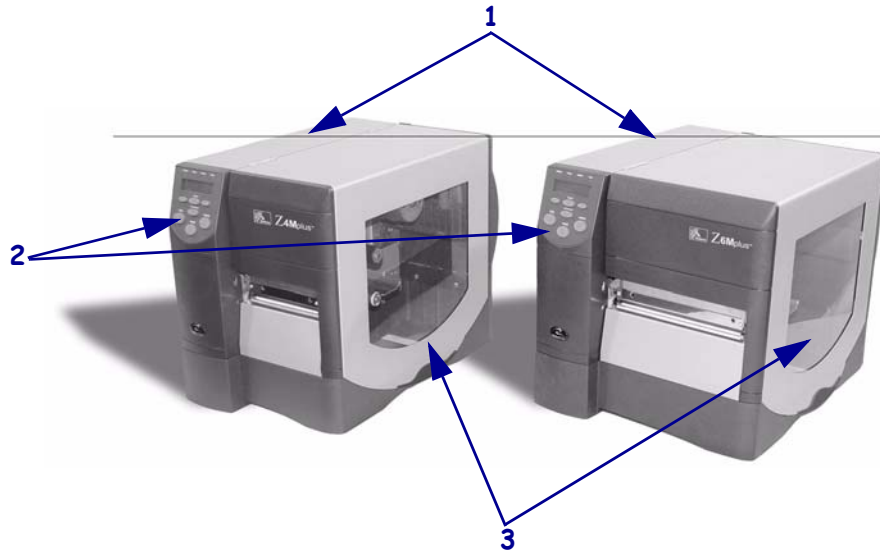
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## External View

Figure 2 shows the outside of the printer.

Figure 2 • External View



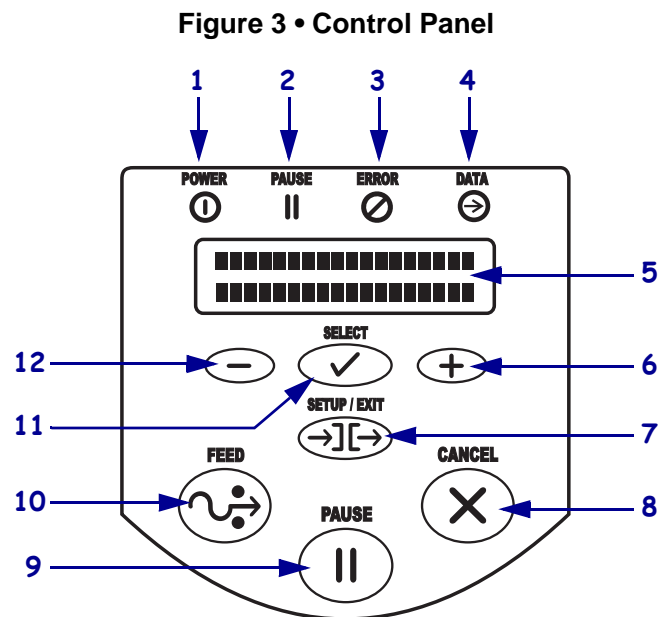
1	Electronics cover
2	Control panel
3	Media door



## Control Panel

The control panel display shows the printer's operating status and allows you to change settings as needed to work with your media and label formats.

The control panel buttons and lights are shown in [Figure 3](#). Descriptions for each are located in [Table 1](#) and [Table 2](#).



1	Power LED
2	Pause LED
3	Error LED
4	Data LED
5	LCD
6	PLUS (+) button
7	SETUP/EXIT button
8	CANCEL button
9	PAUSE button
10	FEED button
11	SELECT button
12	MINUS (-) button

## Control Panel Buttons

Table 1 • Control Panel Buttons

Button	Function
FEED	Forces the printer to feed one blank label each time the button is pressed. <ul style="list-style-type: none"> <li>• Printer not printing: one blank label immediately feeds.</li> <li>• Printing: one blank label feeds after the current batch of labels is complete.</li> </ul>
PAUSE	Starts and stops the printing process. <ul style="list-style-type: none"> <li>• Printer not printing: no printing occurs. (Press PAUSE again to resume printing.)</li> <li>• Printing: printing stops after the current label is complete.</li> </ul>
CANCEL	Cancels print jobs when in the pause mode. <ul style="list-style-type: none"> <li>• Printer not printing: the next stored label format does not print.</li> <li>• Printing: current label completes printing, and the next label format is cancelled.</li> </ul> Press and hold for several seconds to cancel all print jobs in memory.
SETUP/EXIT	Enters and exits the configuration mode.
SELECT	Toggles the function of PLUS (+) and MINUS (-) between the Scroll and Change Modes. <ul style="list-style-type: none"> <li>• Press once to use PLUS (+) and MINUS (-) to change the values of the selection.</li> <li>• Press again to use PLUS (+) and MINUS (-) to scroll through the menu items.</li> </ul>
PLUS (+) (scroll mode)	Scrolls to the next selection.
PLUS (+) (change mode)	<ul style="list-style-type: none"> <li>• Increases the value.</li> <li>• Answers yes.</li> <li>• Prints a label (when applicable).</li> </ul>
MINUS (-) (scroll mode)	Scrolls to the previous selection.
MINUS (-) (change mode)	<ul style="list-style-type: none"> <li>• Decreases the value.</li> <li>• Selects the digit you wish to change.</li> <li>• Answers no.</li> </ul>

## Control Panel Lights

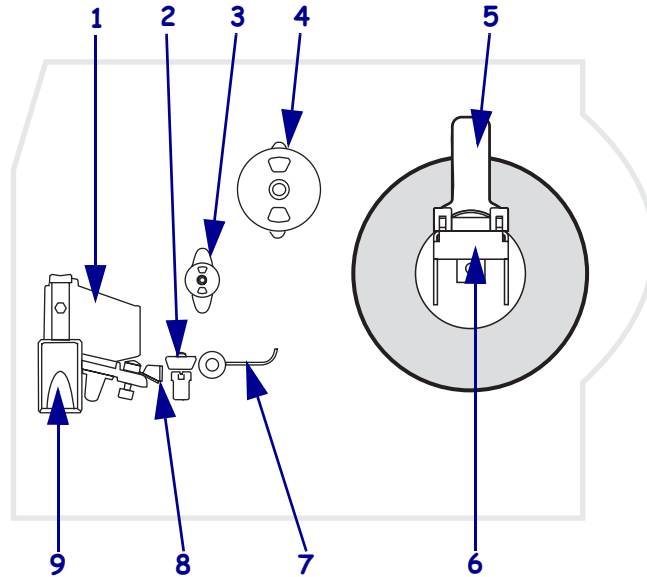
**Table 2 • Control Panel Lights**

Light	Status	Indication
POWER	Off	The printer is off, or no power is applied.
	On	The printer is on.
PAUSE	Off	Normal printer operation.
	On	The printer has stopped all printing operations.
	Flashing	The Pause light flashes when initializing FLASH or PCMCIA memory and in Peel-Off Mode when the label is available.
ERROR	Off	Normal printer operation (no errors).
	Slow flashing	<b>RIBBON IN</b> warning, <b>HEAD UNDER TEMP</b> warning, or <b>HEAD OVER TEMP</b> error.
	Fast flashing	<b>HEAD OPEN</b> error.
	On	<b>MEDIA OUT</b> error
DATA	Off	Normal printer operation (no data being received or processed).
	One flash	<b>CANCEL</b> was pressed and a format is successfully cancelled.
	Slow flashing	The printer cannot accept more data from the host.
	Fast flashing	The printer is receiving data.
	On	A partial format has been received and no subsequent data activity.

## Printer Media Compartment

Figure 4 shows a simplified view of your printer. Depending on installed options, your printer may look slightly different.

Figure 4 • Media Compartment



1	Printhead assembly
2	Transmissive sensor
3	Ribbon supply spindle
4	Ribbon take-up spindle
5	Label supply guide
6	Label supply hanger
7	Dancer
8	Label guide
9	Printhead open lever




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# Printer Setup

This section provides the tasks that you must complete and the issues that you must consider before you load and configure your printer.

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## Before You Begin

Review this checklist, and resolve any issues before you set up or use your printer.

- Unpack and Inspect the Printer** Have you unpacked the printer and inspected it for damage? If you have not, see [Unpack and Inspect the Printer on page 23](#).
- Select a Site** Have you selected an appropriate location for the printer? If you have not, see [Select a Site for the Printer on page 24](#).
- Attach a Power Cord** Do you have the correct power cord for your printer? If you are unsure, see [Power Cord Specifications on page 30](#). To attach the power cord and connect the printer to a power source, see [Connect the Printer to a Power Source on page 29](#).
- Connect to a Data Source** Have you determined how the printer will connect to a data source (usually a computer)? For more information, see [Select a Data Communication Interface on page 25](#).
- Select Media** Do you have the correct media for your application? If you are unsure, see [Types of Media on page 31](#).
- Select Ribbon** Do you need to use ribbon, and is the appropriate ribbon available, if needed? If you are unsure, see [Ribbon Overview on page 33](#).

## Handling the Printer

This section describes how to handle your printer.

### Unpack and Inspect the Printer

When you receive the printer, immediately unpack it and inspect for shipping damage.

- Save all packing materials.
- Check all exterior surfaces for damage.
- Raise the media door, and inspect the media compartment for damage to components.

If you discover shipping damage upon inspection:

- Immediately notify the shipping company and file a damage report.
- Keep all packaging material for shipping company inspection.
- Notify your authorized Zebra reseller.



**Important** • Zebra Technologies Corporation is not responsible for any damage incurred during the shipment of the equipment and will not repair this damage under warranty.

### Store the Printer

If you are not placing the printer into immediate operation, repackage it using the original packing materials. You may store the printer under the following conditions:

- Temperature: –40°F to 140°F (–40°C to 60°C)
- Relative humidity: 5% to 85%, non-condensing

### Ship the Printer

- Turn off (O) the printer, and disconnect all cables.
- Remove any media, ribbon, or loose objects from the printer interior.
- Close the printhead.
- Carefully pack the printer into the original container or a suitable alternate container to avoid damage during transit. A shipping container can be purchased from Zebra if the original packaging has been lost or destroyed.

## Select a Site for the Printer

Consider the following when selecting an appropriate location for your printer.

### Select a Surface

Select a solid, level surface of sufficient size and strength to accommodate the printer and other equipment (such as a computer), if necessary. The choices include a table, countertop, desk, or cart.

### Provide Proper Operating Conditions

This printer is designed to function in a wide range of environmental and electrical conditions, including a warehouse or factory floor. For more information on the required conditions, see [General Specifications on page 148](#).

[Table 3](#) shows the temperature and relative humidity requirements for the printer when it is operating.

**Table 3 • Operating Temperature and Humidity**

Mode	Temperature	Relative Humidity
Thermal Transfer	41° to 104°F (5° to 40°C)	20 to 85% non-condensing
Direct Thermal	32° to 104°F (0° to 40°C)	20 to 85% non-condensing

### Allow Proper Space

The printer should have enough space around it for you to be able to open the media door. To allow for proper ventilation and cooling, leave open space on all sides of the printer.



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**Caution •** Do not place any padding or cushioning material behind or under the printer because this restricts air flow and could cause the printer to overheat.

---

### Provide a Data Source

If the printer will be located away from the data source, the selected site must provide the appropriate connections to that data source. For more information on the types of communication interfaces, see [Select a Data Communication Interface on page 25](#).

### Provide a Power Source

Place the printer within a short distance of a power outlet that is easily accessible.



## Select a Data Communication Interface

Table 4 provides basic information about data communication interfaces that you can use to connect your printer to a computer. You may send label formats to the printer through any data communication interface that is available. Select an interface that is supported by both your printer and your computer or your Local Area Network (LAN).

**Table 4 • Characteristics of the Data Communication Interfaces**

Interface	Standard or Optional on Printer	Characteristics
RS-232 Serial	Standard	<ul style="list-style-type: none"> <li>• Maximum cable length of 50 ft (15.24 m).</li> <li>• You may need to change printer parameters to match the host computer.</li> <li>• You need to use a null-modem adaptor to connect to the printer if using a standard modem cable.</li> </ul>
IEEE 1284 Bidirectional Parallel	Standard	<ul style="list-style-type: none"> <li>• Maximum cable length of 10 ft (3 m).</li> <li>• Recommended cable length of 6 ft (1.83 m).</li> <li>• An Ethernet print server takes up or covers this port on the printer.</li> <li>• No printer parameter changes required to match the host computer.</li> </ul>
USB	Standard	<ul style="list-style-type: none"> <li>• Maximum cable length of 16.4 ft (5 m).</li> <li>• No printer parameter changes required to match the host computer.</li> </ul>
Internal wired Ethernet print server	Optional	<ul style="list-style-type: none"> <li>• Can print to the printer from any computer on your LAN.</li> <li>• Can communicate with the printer through the printer's web pages.</li> <li>• Computer must be equipped with an Ethernet board.</li> <li>• The printer must be configured to use your LAN.</li> </ul>
Wireless Ethernet print server (available as a special order on Z4Mplus printers only)	Optional	<ul style="list-style-type: none"> <li>• Can print to the printer from any computer on your Wireless Local Area Network (WLAN).</li> <li>• Can communicate with the printer through the printer's web pages.</li> <li>• Computer must be equipped with an Ethernet board.</li> <li>• The printer must be configured to use your WLAN.</li> </ul>

## Data Cables and Wireless Cards

You must supply all data cables or wireless cards for your application.

**Data Cables** Ethernet cables do not require shielding, but all other data cables must be fully shielded and fitted with metal or metallized connector shells. Unshielded data cables may increase radiated emissions above the regulated limits.

To minimize electrical noise pickup in the cable:

- Keep data cables as short as possible.
- Do not bundle the data cables tightly with the power cords.
- Do not tie the data cables to power wire conduits.

**Wireless Cards** For supported wireless cards, refer to the *ZebraNet Wireless Print Server and Wireless Plus Print Server User Guide*. A copy of the manual is available at <http://www.zebra.com/manuals> or on the user CD that came with your printer.

## Connect the Printer to the Computer or Network

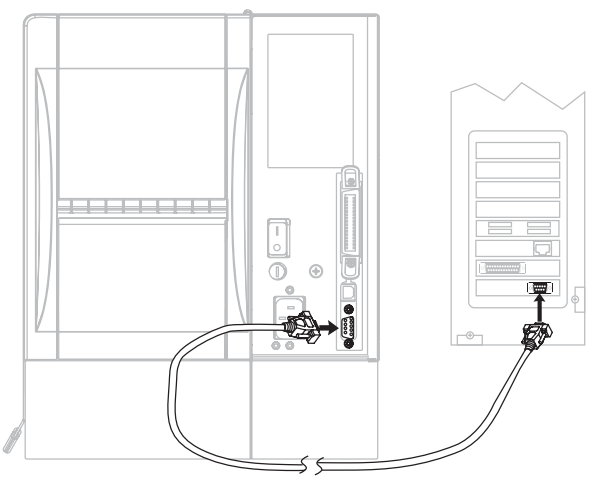
Table 5 shows how to connect the different types of data cables to your printer and computer. The connectors on the back of your computer may be in different locations than on the sample computer shown in this section.

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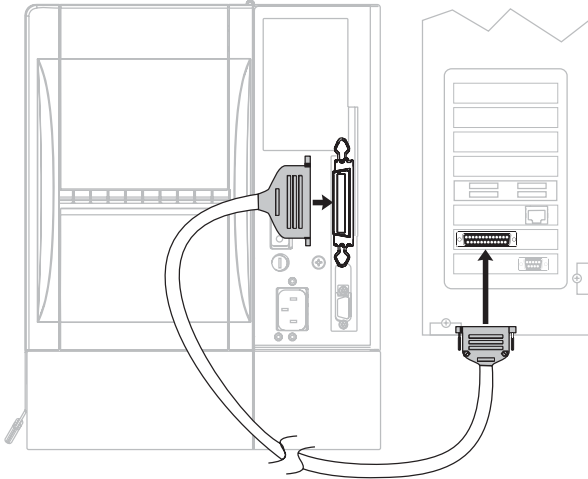
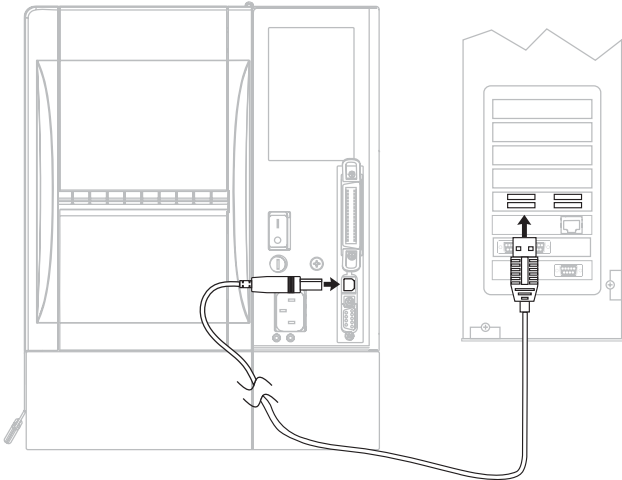
**Caution** • Ensure that the printer power is off (O) before connecting data communications cables. Connecting a data communications cable while the power is on (I) may damage the printer.

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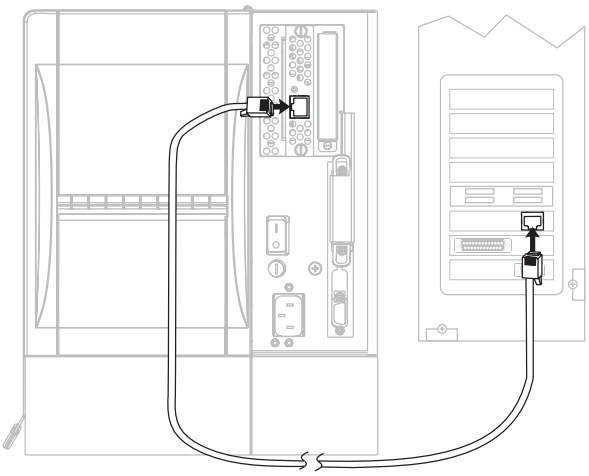
Table 5 • Connecting the Printer to a Computer or Network

Interface	Connection and Configuration
RS-232 Serial	<p>The baud rate, number of data and stop bits, the parity, and the XON/XOFF or DTR control must match those of the host computer. See <a href="#">Control Panel Parameters on page 81</a> to view or change these parameters.</p> 

**Table 5 • Connecting the Printer to a Computer or Network (Continued)**

Interface	Connection and Configuration
IEEE 1284 Bidirectional Parallel	<p>No additional configuration is necessary. An Ethernet print server takes up or covers this port on the printer.</p>  <p>The diagram illustrates the connection of an IEEE 1284 Bidirectional Parallel cable. On the left, the printer's rear panel shows the IEEE 1284 parallel port. On the right, the Ethernet print server's rear panel shows the IEEE 1284 parallel port. A cable is connected between the two ports, with an arrow indicating the connection direction.</p>
USB	<p>No additional configuration is necessary.</p> <p><b>Caution •</b> Be careful not to plug the USB cable into the wired Ethernet print server connector on the printer because doing so will damage the connector.</p>  <p>The diagram illustrates the connection of a USB cable. On the left, the printer's rear panel shows the USB port. On the right, the Ethernet print server's rear panel shows the USB port. A cable is connected between the two ports, with an arrow indicating the connection direction.</p>

**Table 5 • Connecting the Printer to a Computer or Network (Continued)**

Interface	Connection and Configuration
Internal wired Ethernet print server	<p>Refer to the <i>ZebraNet 10/100 Print Server User and Reference Guide</i> for configuration instructions. A copy of this manual is available at <a href="http://www.zebra.com/manuals">http://www.zebra.com/manuals</a> or on the user CD that came with your printer.</p> 
Wireless Ethernet print server	<p>Refer to the <i>ZebraNet Wireless Print Server and Wireless Plus Print Server User Guide</i> for configuration instructions. A copy of this manual is available at <a href="http://www.zebra.com/manuals">http://www.zebra.com/manuals</a> or on the user CD that came with your printer.</p>

## Connect the Printer to a Power Source

The AC power cord must have a three-prong female connector on one end that plugs into the mating AC power connector at the rear of the printer. If a power cable was not included with your printer, refer to *Power Cord Specifications* on page 30.

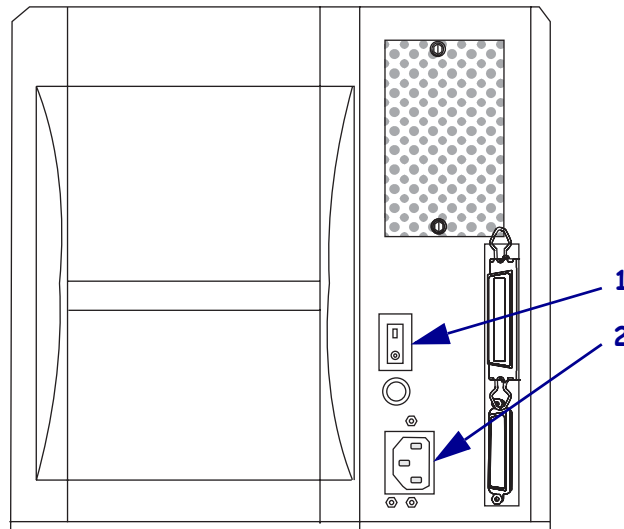


**Caution** • For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific three-conductor grounded plug configuration.

### To connect the printer to a power source, complete these steps:

1. Turn the printer power switch to the Off (O) position.
2. Refer to [Figure 5](#). Plug the power cord into the AC power connector on the rear of the printer.
3. Plug the other end of the power cord into a power outlet near the printer.

**Figure 5 • Power Connection**



<b>1</b>	Power switch
<b>2</b>	AC power connector

## Power Cord Specifications

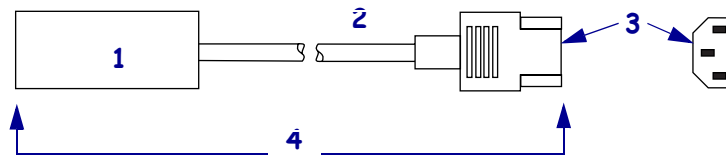


**Caution** • For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific, three-conductor grounded plug configuration.

Depending on how your printer was ordered, a power cord may or may not be included. If one is not included or if the one included is not suitable for your requirements, refer to the following guidelines:

- The overall cord length must be less than 9.8 ft. (3.0 m).
- The cord must be rated for at least 10 A, 250 V.
- The chassis ground (earth) **must** be connected to ensure safety and reduce electromagnetic interference. The third wire in the power cord grounds the connection (Figure 6).

Figure 6 • Power Cord Specifications



<b>1</b>	AC power plug for your country—This should bear the certification mark of at least one of the known international safety organizations (Figure 7).
<b>2</b>	3-conductor HAR cable or other cable approved for your country.
<b>3</b>	IEC 320 connector—This should bear the certification mark of at least one of the known international safety organizations (Figure 7).
<b>4</b>	Length ≤ 9.8 ft. (3 m). Rating 10 Amp, 250 VAC.

Figure 7 • International Safety Organization Certifications



## Types of Media

The printer can use various types of media (Table 6). Zebra strongly recommends the use of Zebra-brand supplies for continuous high-quality printing. A wide range of paper, polypropylene, polyester, and vinyl stock has been specifically engineered to enhance the printing capabilities of the printer and to prevent premature printhead wear.

**Table 6 • Types of Media**

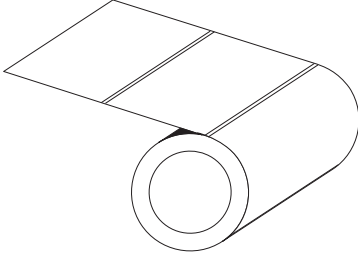
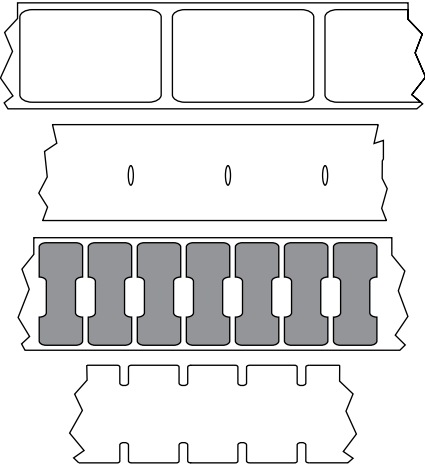
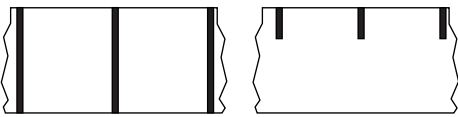
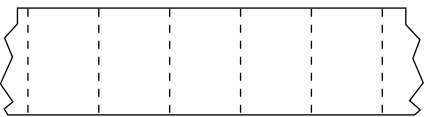
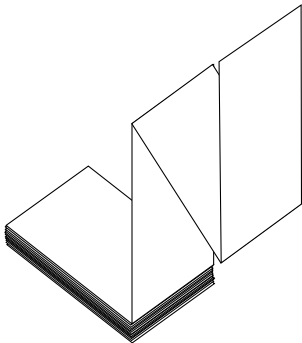
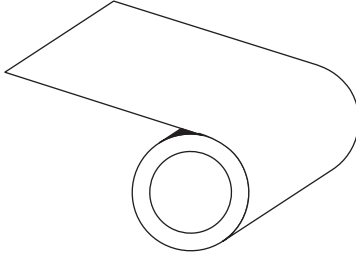
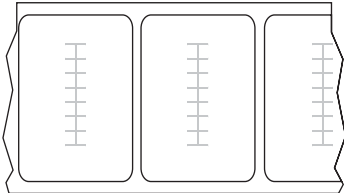

Media Type	How It Looks	Description
<p><b>Non-Continuous Roll Media</b></p>		<p>Roll media is wound on a 3-in. (76-mm) core. Labels have adhesive backing that sticks them to a liner, and they are separated by gaps, holes, notches, or black marks. Tags are separated by perforations.</p> <p><b>Figure 8 • Non-Continuous Web Media</b></p>  <p><b>Figure 9 • Black Mark Media</b></p>  <p><b>Figure 10 • Tag Stock</b></p> 

Table 6 • Types of Media (Continued)

Media Type	How It Looks	Description
<p><b>Non-Continuous Fanfold Media</b></p>		<p>Fanfold media is folded in a zigzag pattern. Fanfold media can have the same label divisions as non-continuous roll media. The divisions would fall on or near the folds.</p>
<p><b>Continuous Roll Media</b></p>		<p>Continuous media is wound on a core and is without gaps, holes, notches, or black marks. This allows the image to be printed anywhere on the label. With continuous media, use the transmissive sensor so the printer can detect when the media runs out.</p>
<p><b>RFID “Smart” Media</b> (for use only with printers that have an RFID reader/encoder installed)</p>		<p>Radio frequency identification (RFID) “smart” labels are made from the same materials and adhesives as non-RFID labels. Each label has an RFID transponder, made of a chip and an antenna, embedded between the label and the liner (sometimes called an “inlay”). The shape of the transponder varies by manufacturer and is visible through the label.</p> <p>All “smart” labels have memory that can be read, and many have memory that can be encoded.</p> <p> <b>Important</b> • Transponder placement within a label depends on the transponder type and the printer model. Make sure that you are using the correct “smart” media for your printer.</p>



## Ribbon Overview



**Note** • This section applies only to printers that have the Thermal Transfer option installed.

Ribbon is a thin film that is coated on one side with wax, resin, or wax resin, which is transferred to the media during the thermal transfer process. The media determines whether you need to use ribbon and how wide the ribbon must be.

When ribbon is used, it must be as wide as or wider than the media being used. If the ribbon is narrower than the media, areas of the printhead are unprotected and subject to premature wear.

### When to Use Ribbon

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

**To perform a label scratch test, complete these steps:**

1. Scratch the print surface of the media rapidly with your fingernail.
2. Did a black mark appear on the media?

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

### Coated Side of Ribbon

Ribbon can be wound with the coated side on the inside or outside (Figure 11). This printer can only use ribbon that is coated on the outside. If you are unsure which side of a particular roll of ribbon is coated, perform an adhesive test or a ribbon scratch test to determine which side is coated.

**Figure 11 • Ribbon Coated on Outside or Inside**



## Adhesive Test

If you have labels available, perform the adhesive test to determine which side of a ribbon is coated. This method works well for ribbon that is already installed.

### To perform an adhesive test, complete these steps:

1. Peel a label from its liner.
2. Press a corner of the sticky side of the label to the outer surface of the roll of ribbon.
3. Peel the label off of the ribbon.
4. Observe the results. Did flakes or particles of ink from the ribbon adhere to the label?

If ink from the ribbon...	Then...
Adhered to the label	The ribbon is coated on the <b>outer</b> surface.
Did not adhere to the label	The ribbon is coated on the <b>inner</b> surface and cannot be used in this printer. To verify this, repeat the test on the other surface of the roll of ribbon.

## Ribbon Scratch Test

Perform the ribbon scratch test when labels are unavailable.

### To perform a ribbon scratch test, complete these steps:

1. Unroll a short length of ribbon.
2. Place the unrolled section of ribbon on a piece of paper with the outer surface of the ribbon in contact with the paper.
3. Scratch the inner surface of the unrolled ribbon with your fingernail.
4. Lift the ribbon from the paper.
5. Observe the results. Did the ribbon leave a mark on the paper?

If the ribbon...	Then...
Left a mark on the paper	The ribbon is coated on the <b>outer</b> surface.
Did not leave a mark on the paper	The ribbon is coated on the <b>inner</b> surface and cannot be used in this printer. To verify this, repeat the test on the other surface of the roll of ribbon.




---

# Operations

This section provides the procedures for loading and calibrating the printer.



**Note** • Complete the tasks and resolve the issues in [Printer Setup on page 21](#) before operating the printer.

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## Media Loading Overview

The printer can print on roll or fanfold media and use different print modes for label removal.

### Print Modes

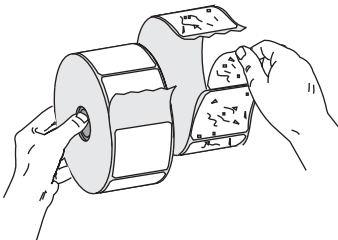
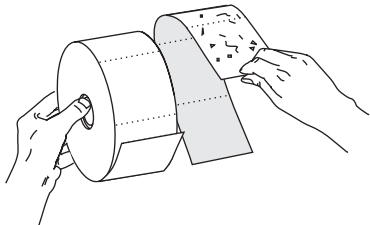
The methods for loading media for each print mode follow in this section. Use a print mode that matches the media being used and the printer options available (Table 7). For more information on the types of media, see *Types of Media* on page 31.

**Table 7 • Print Mode Options**

Mode	When to Use	Printer Action
Tear-Off (default setting)	Use for most applications. See <i>Load Media in Tear-Off Mode</i> on page 39.	Each label or strip of labels can be torn off after printing.
Peel-Off	Use only if printer has the Peel-Off or Liner Take-Up option. See <i>Load Media in Peel-Off Mode or Liner Take-Up Mode</i> on page 42.	The liner is peeled away from the label during printing. When the printed label is removed, the next label prints.
Cutter	Use only if printer has a cutter option. See <i>Load Media in Cutter Mode</i> on page 48.	The printer automatically cuts the label after it is printed.
Rewind	Use only if printer has the Rewind option. See <i>Load Media in Rewind Mode</i> on page 52.	The media and/or liner are rewound onto a core as they are printed.

### Start a Roll of Media

Exposed media may become dirty when handled or stored. To start a roll of media, remove and discard one full revolution of labels or tags and any liner.

Labels	Tag Stock
<p>Remove all labels that are held by adhesives or tape.</p> 	<p>Detach all exposed tags.</p> 

## Insert Media into the Printer

This section shows how to insert roll or fanfold media into the printer. Fanfold media is loaded the same way as roll media, except the media is stored outside of the printer. See [Figure 12 on page 39](#) for an illustration.



**Note** • Depending on the media hanger that came with your printer, the size of the media core that can be used may vary. See [Media Specifications on page 151](#) for the core sizes that your printer supports.

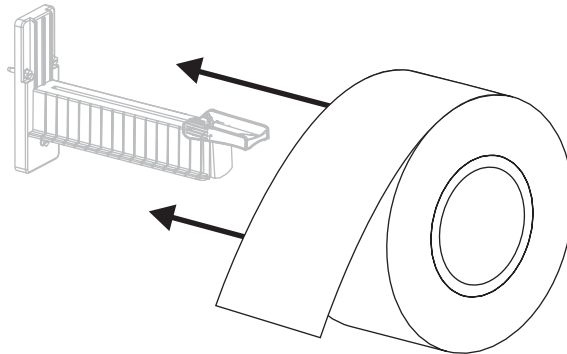
### Roll Media

**To insert roll media, complete these steps:**

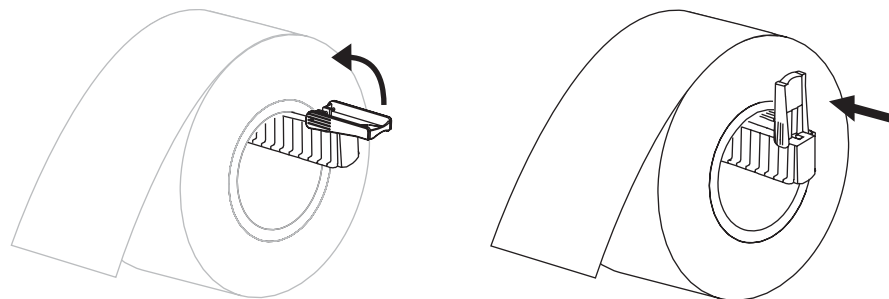
1. Flip down the media supply guide.



2. Place the roll of media on the media supply hanger. Push the roll as far back as it will go.



3. Flip up the media supply guide, and then slide it in until it touches, but does not restrict, the edge of the roll.

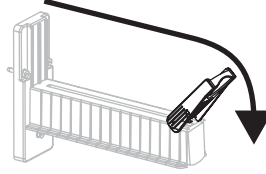


4. Continue with the media loading procedure for the desired print mode.

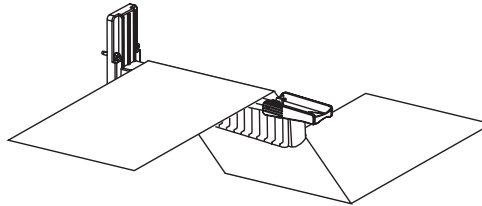
## Fanfold Media

**To insert fanfold media, complete these steps:**

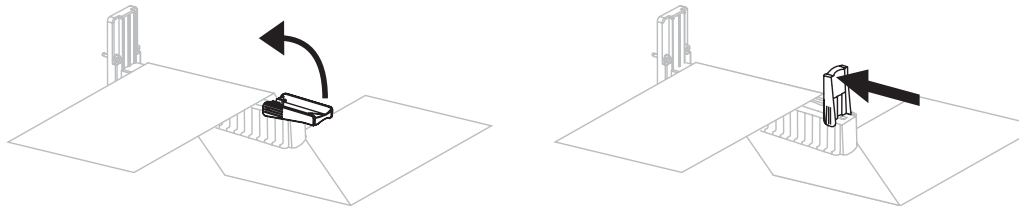
1. Flip down the media supply guide.



2. Thread the fanfold media through the bottom or rear access slot.
3. Drape the media over the media supply hanger.



4. Flip up the media supply guide, and then slide it in until it touches, but does not restrict, the edge of the media.

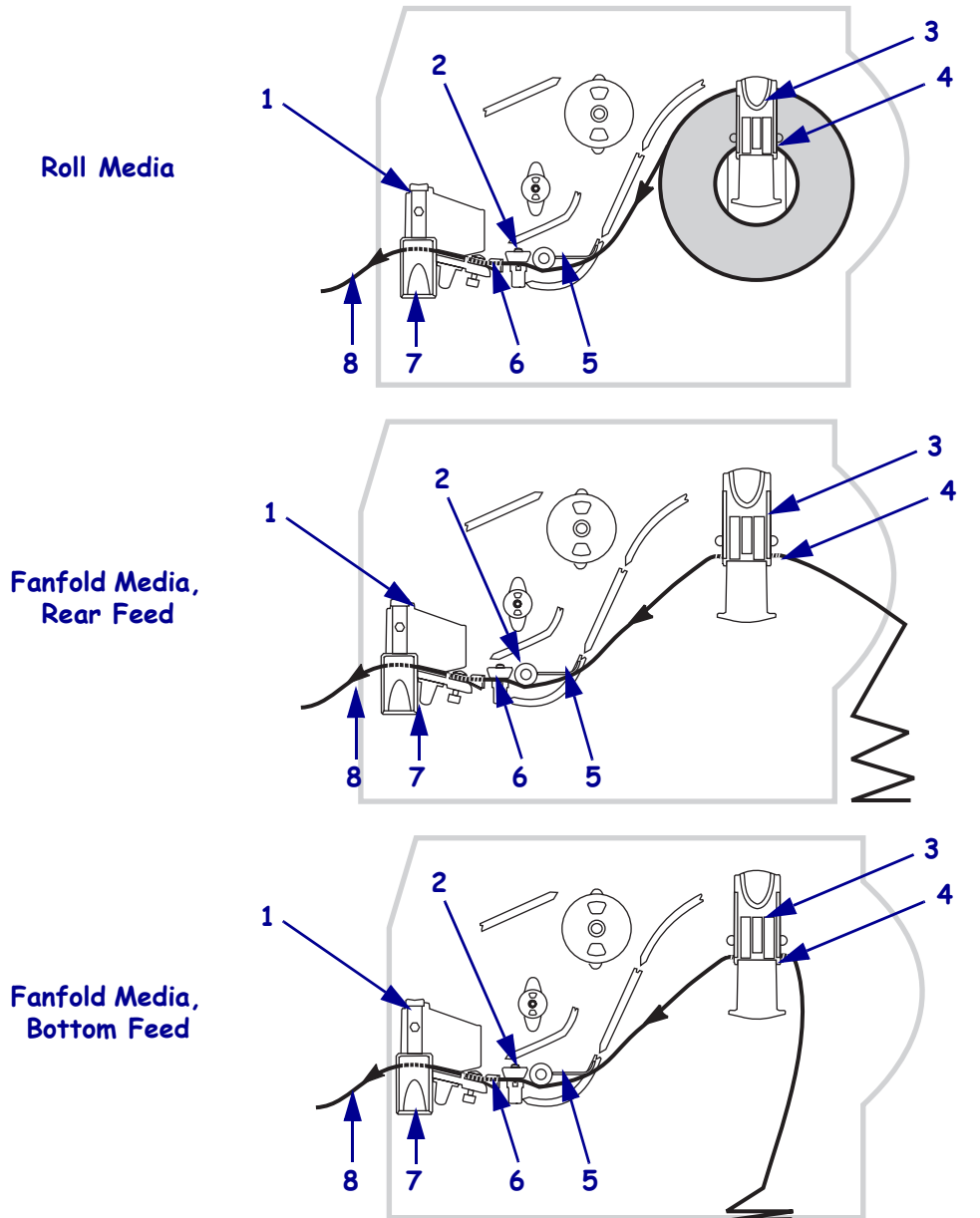


5. Continue with the media loading procedure for the desired print mode.

## Load Media in Tear-Off Mode

Figure 12 shows roll and fanfold media loaded in Tear-Off mode, which is the default print mode. The instructions in this section apply to all printers, including those that have the peel-off, cutter, and rewind options.

Figure 12 • Tear-Off Mode



1	Printhead assembly	5	Dancer
2	Transmissive sensor	6	Media guide
3	Media supply guide	7	Printhead release latch
4	Media supply hanger	8	Printed label

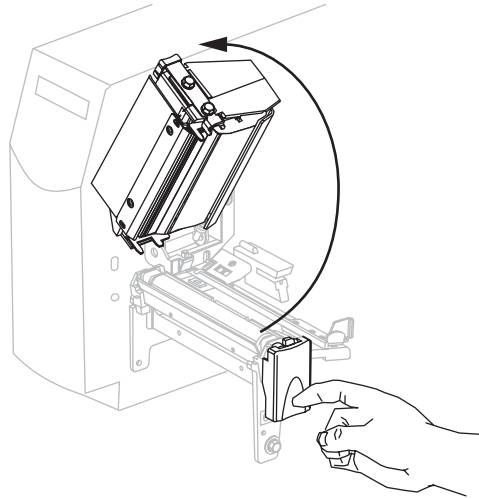
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**Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead. You are not required to turn off the printer power when working near an open printhead, but Zebra recommends it as a precaution. If you turn off the power, you will lose all temporary settings, such as label formats, and you must reload them before you resume printing.

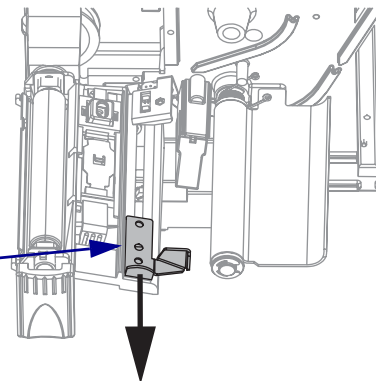
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**To load media in Tear-Off Mode, complete these steps:**

1. Set the printer to Tear-Off mode. See [Select Print Mode on page 83](#) for instructions.
2. Insert media into the printer. See [Insert Media into the Printer on page 37](#) for instructions.
3. Press the printhead release latch to open the printhead assembly. Lift the printhead until it latches open.

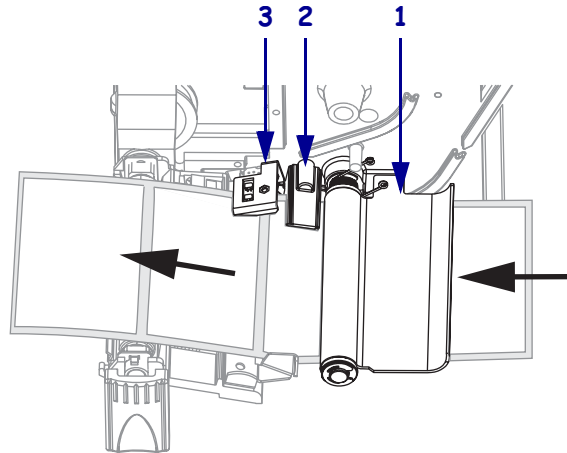


4. Slide out the media guide.

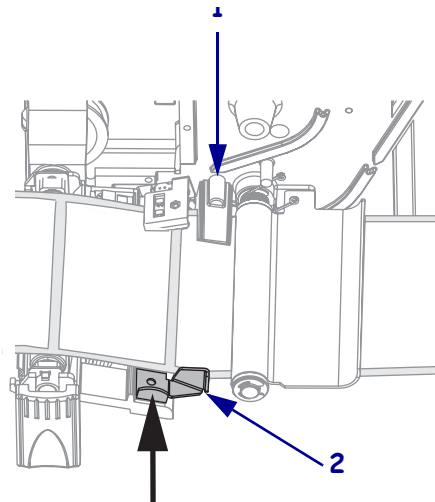




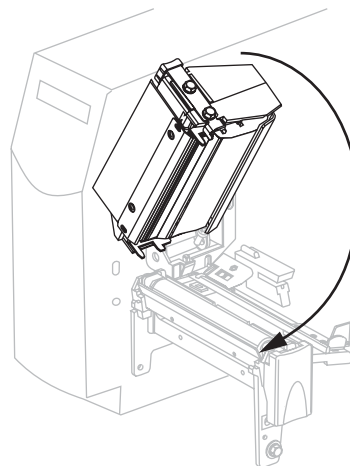
5. Feed the media under the dancer assembly (1), through the slot in the transmissive sensor (2—standard transmissive sensor shown), and under the ribbon sensor (3).



6. Push the media to the back of the transmissive sensor (1). Slide in the media guide (2) until it just touches the edge of the media.



7. Close the printhead assembly.



8. If the printer is paused (the Pause light is blinking), press PAUSE to enable printing.

## Load Media in Peel-Off Mode or Liner Take-Up Mode

This section applies only if the Peel-Off option or the Liner Take-Up option is installed (Figure 13).



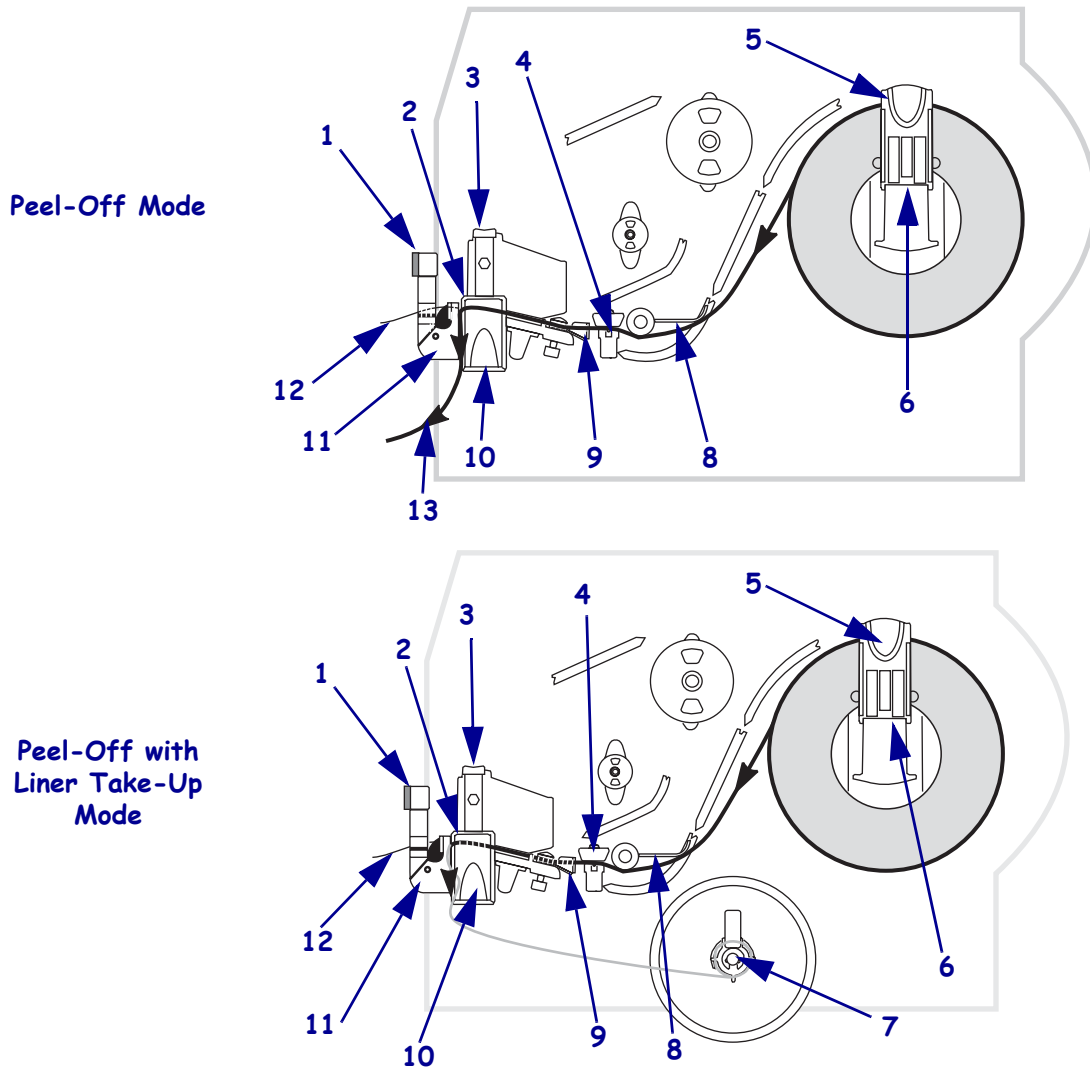
**Note** • The Liner Take-Up option is not available on the Z6Mplus printer.

The peel assembly consists of several spring-loaded rollers to ensure the proper roller pressure. Use the peel release lever and your right hand to open and close the peel assembly. Doing this will keep your fingers away from the rollers.



**Caution** • Do not use your left hand to assist in closing the peel assembly. The top edge of the peel roller/assembly could pinch your fingers.

Figure 13 • Peel-Off and Peel-Off with Liner Take-Up Modes



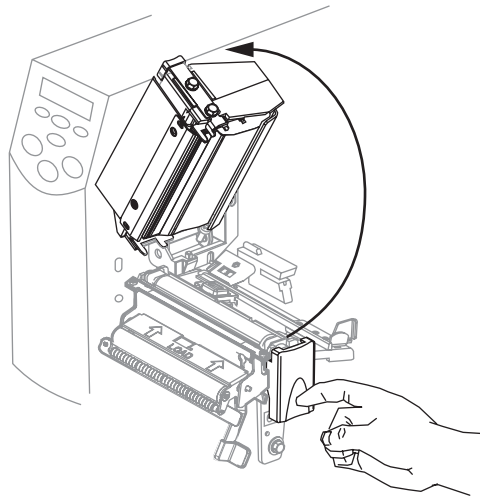
<b>1</b>	Peel lever
<b>2</b>	Tear-off/peel-off bar
<b>3</b>	Printhead assembly
<b>4</b>	Transmissive sensor
<b>5</b>	Media supply guide
<b>6</b>	Media supply hanger
<b>7</b>	Liner take-up spindle

<b>8</b>	Dancer
<b>9</b>	Media guide
<b>10</b>	Printhead release latch
<b>11</b>	Peel assembly
<b>12</b>	Label
<b>13</b>	Label liner

**Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead. You are not required to turn off the printer power when working near an open printhead, but Zebra recommends it as a precaution. If you turn off the power, you will lose all temporary settings, such as label formats, and you must reload them before you resume printing.

**To load media in Peel-Off or in Peel-Off with Liner Take-Up mode, complete these steps:**

1. Set the printer to Peel-Off mode. See [Select Print Mode on page 83](#) for instructions.
2. Insert media into the printer. See [Insert Media into the Printer on page 37](#) for instructions.
3. Press the printhead release latch to open the printhead assembly.

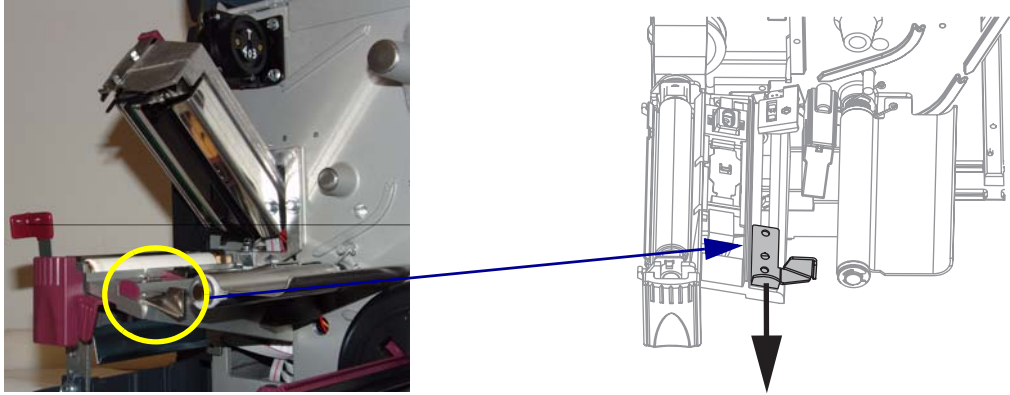


4. Lift the printhead until it latches open.

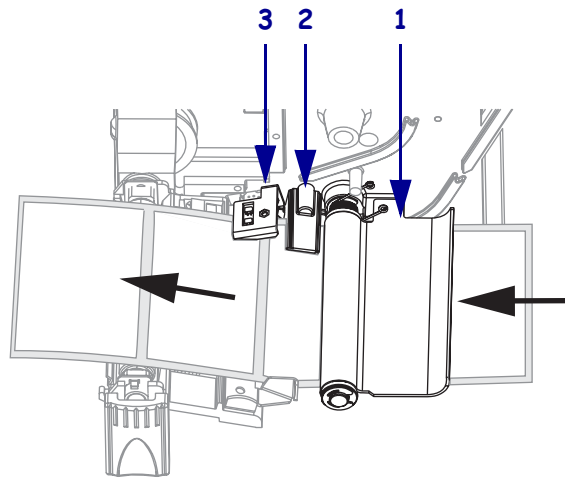
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### Load Media in Peel-Off Mode or Liner Take-Up Mode

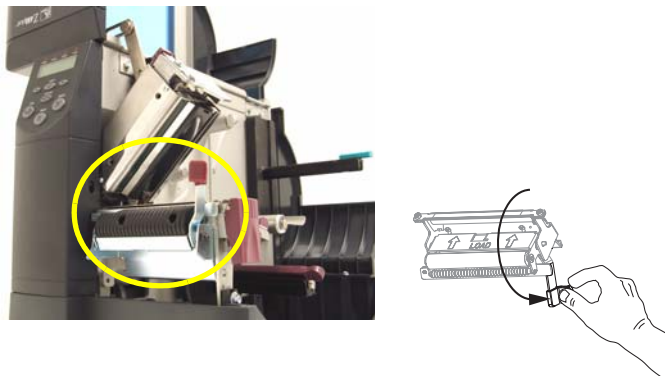
5. Slide out the media guide.



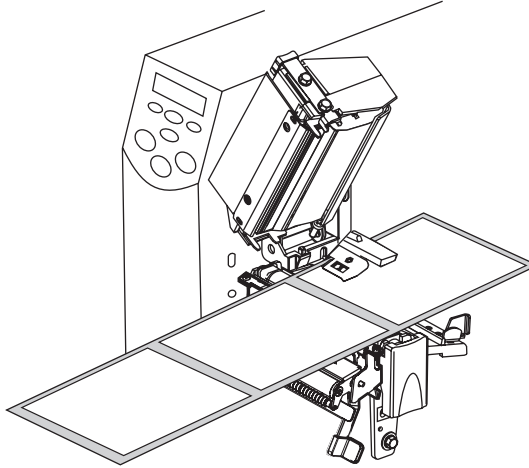
6. Feed the media under the dancer assembly (1), through the slot in the transmissive sensor (2—standard transmissive sensor shown), and under the ribbon sensor (3).



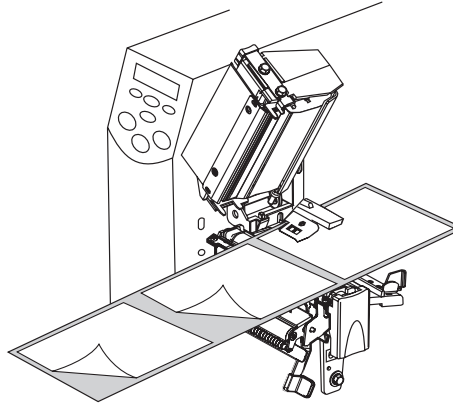
7. Push down the peel-off mechanism release lever to open the peel assembly.



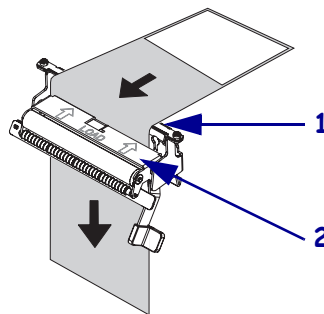
8. Pull approximately 18 in. (500 mm) of media through the front of the printer.



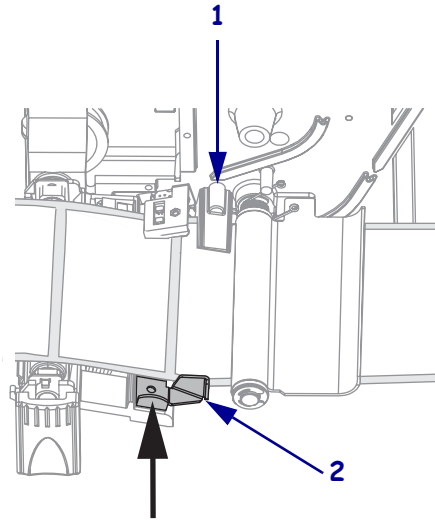
9. Remove the exposed labels so that only the liner remains.



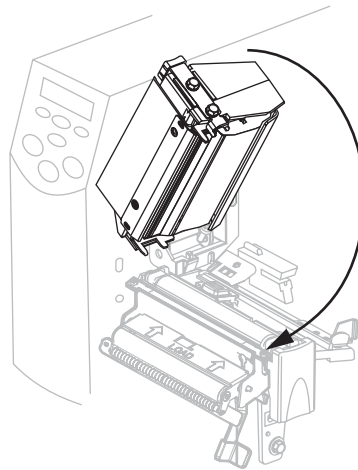
10. Feed the liner over the tear-off/peel-off bar (1) and behind the peel assembly (2). Make sure that the end of the liner falls outside of the printer.



11. Push the media to the back of the transmissive sensor (1). Slide in the media guide (2) until it just touches the edge of the media.

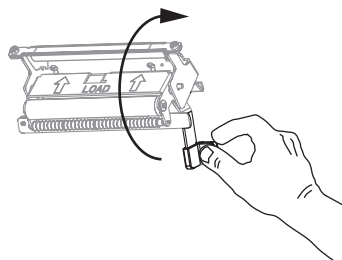


12. Close the printhead assembly.

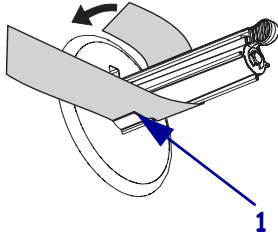


13. **Caution** • Use the peel release lever and your right hand to close the peel assembly. Do not use your left hand to assist in closing. The top edge of the peel roller/assembly could pinch your fingers.

Close the peel assembly using the peel-off mechanism release lever.



14. In which mode do you wish to operate?

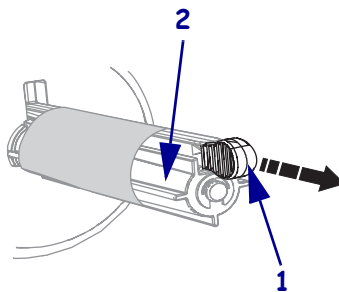
To operate in...	Then...
Peel-Off mode	If the printer is paused (the pause light is on), press PAUSE to enable printing. Peeling starts automatically.
Liner Take-Up mode	<ol style="list-style-type: none"> <li>Slide the liner into the slot in the liner take-up spindle (1). Ensure that the liner is resting against the back plate of the spindle assembly.</li> </ol>  <ol style="list-style-type: none"> <li>Turn the spindle assembly counterclockwise a few times to snug the liner.</li> <li>If the printer is paused (the pause light is on), press PAUSE to enable printing. Peeling starts automatically.</li> </ol>

## Remove Liner in Peel-Off with Liner Take-up Mode

To remove liner when in Peel-Off with Liner Take-Up mode, complete these steps:

- See Figure 14. Pull the liner slide tab (1) toward you until it stops about a third of the way down the liner take-up spindle (2).

Figure 14 • Removing Liner from Liner Take-up Spindle



- Slide the liner from the take-up spindle.

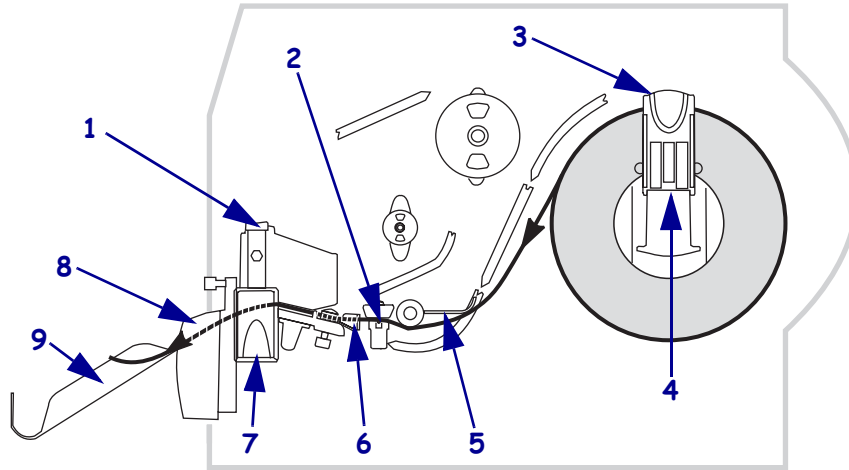


**Note** • The liner slide moves back in place after the liner is removed.

## Load Media in Cutter Mode

This section applies only if the Cutter Mode is installed (Figure 15).

Figure 15 • Cutter Mode



1	Printhead assembly
2	Transmissive sensor
3	Media supply guide
4	Media supply hanger
5	Dancer
6	Media guide
7	Printhead release latch
8	Cutter module
9	Catch tray

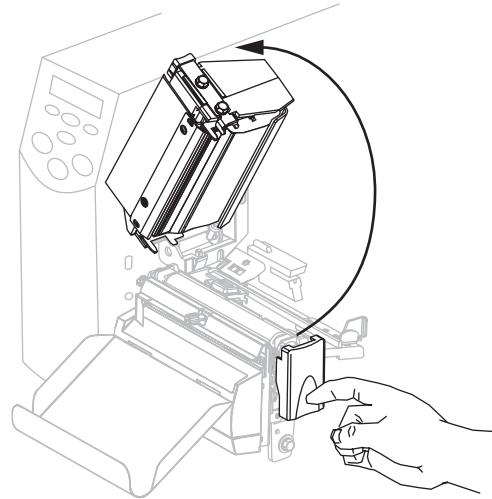
**Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead. You are not required to turn off the printer power when working near an open printhead, but Zebra recommends it as a precaution. If you turn off the power, you will lose all temporary settings, such as label formats, and you must reload them before you resume printing.

### To load media in Cutter-Off Mode, complete these steps:

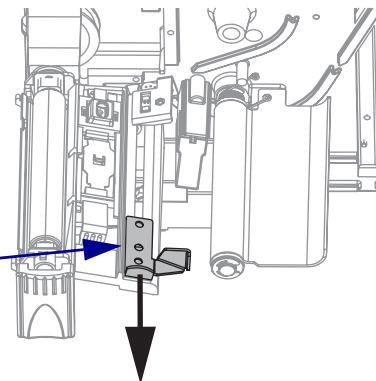
1. Set the printer to Cutter mode. See [Select Print Mode on page 83](#) for instructions.
2. Insert media into the printer. See [Insert Media into the Printer on page 37](#) for instructions.



3. Press the printhead release latch to open the printhead assembly.



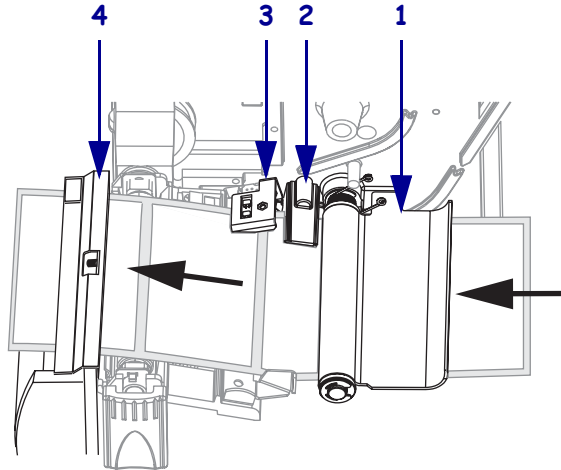
4. Lift the printhead until it latches open.
5. Slide out the media guide.



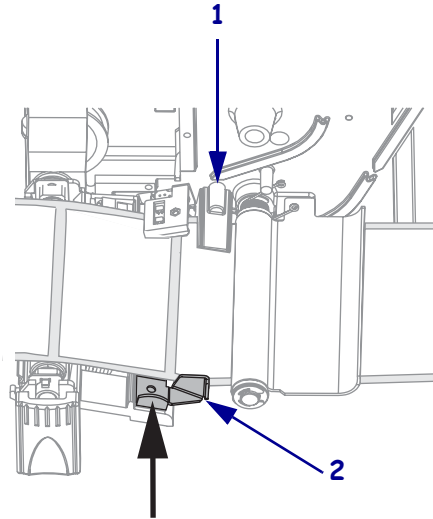


6. **Caution** • The cutter blade is sharp. Do not touch or rub the blade with your fingers.

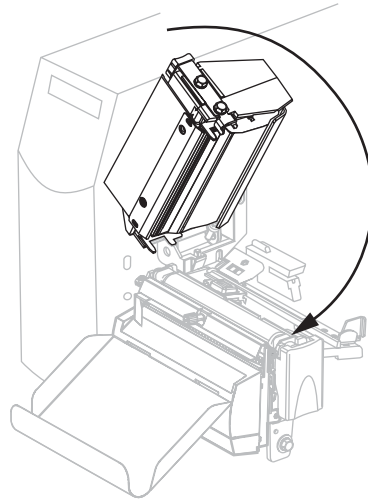
Feed the media under the dancer assembly (1), through the slot in the transmissive sensor (2—standard transmissive sensor shown), under the ribbon sensor (3), and through the cutter (4).



7. Push the media to the back of the transmissive sensor (1). Slide in the media guide (2) until it just touches the edge of the media.



8. Close the printhead assembly.

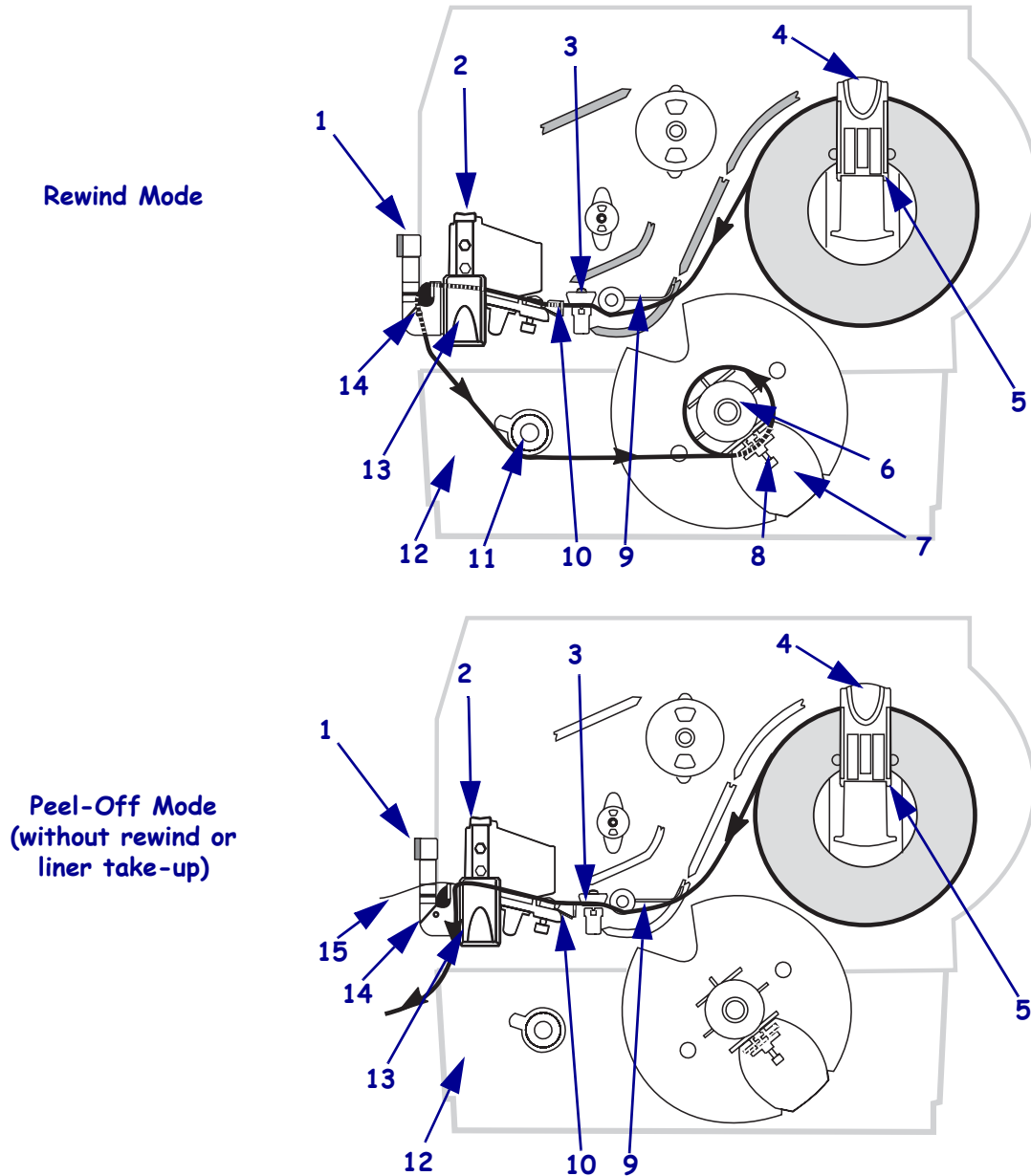


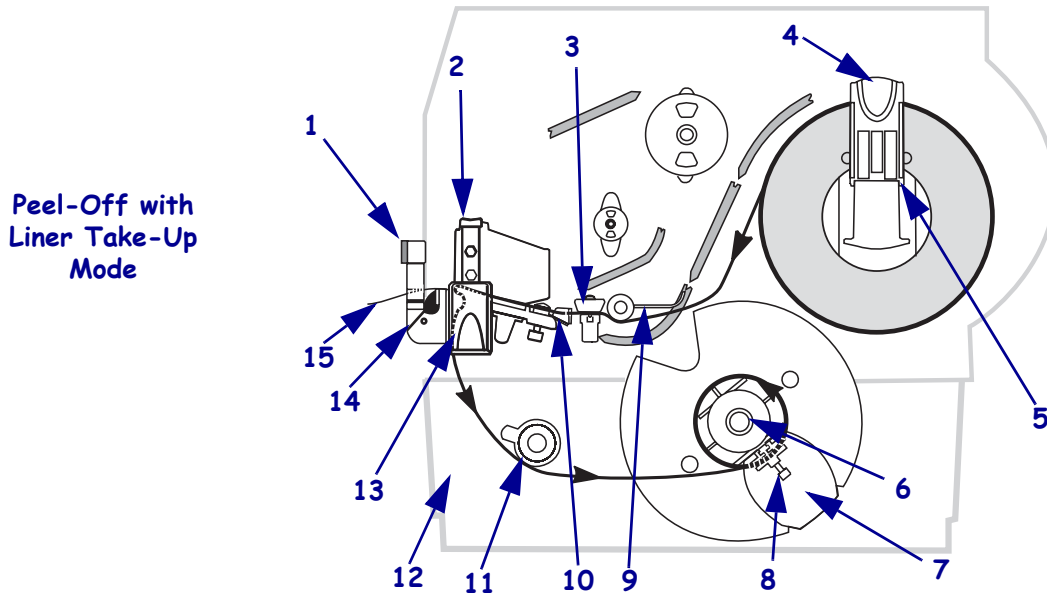
9. If the printer is paused (the Pause light is on), press PAUSE to enable printing.

## Load Media in Rewind Mode

This section applies only if the Rewind option is installed (Figure 16). Follow the instructions in this section to load media in Rewind mode or in Peel-Off with Liner Take-Up mode in a printer with the rewind option.

Figure 16 • Rewind Mode and Peel-Off with Liner Take-Up Mode





1	Peel lever
2	Printhead assembly
3	Transmissive sensor
4	Media supply guide
5	Media supply hanger
6	Rewind spindle
7	Rewind media guide
8	Thumbscrew

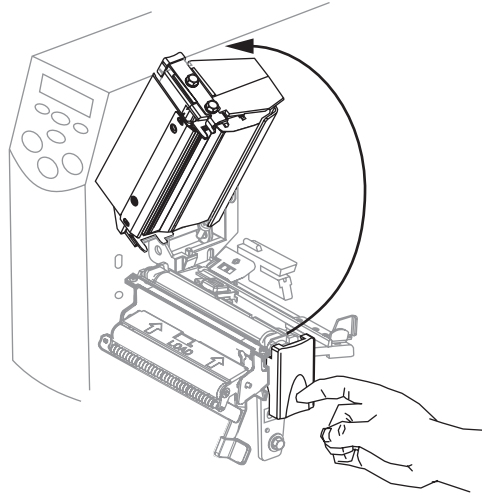
9	Dancer
10	Media guide
11	Media alignment spindle
12	Rewind base assembly
13	Printhead release latch
14	Peel assembly
15	Label

**Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead. You are not required to turn off the printer power when working near an open printhead, but Zebra recommends it as a precaution. If you turn off the power, you will lose all temporary settings, such as label formats, and you must reload them before you resume printing.

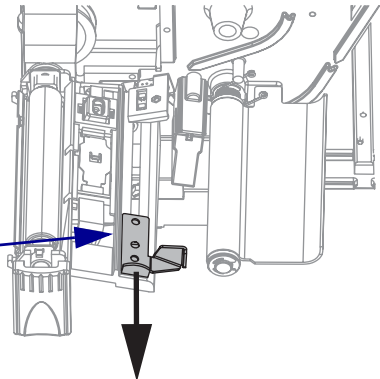
**To load media in a printer that has the Rewind option, complete these steps:**

1. Set the printer to Rewind mode. See [Select Print Mode on page 83](#) for instructions.
2. Insert media in the printer. See [Insert Media into the Printer on page 37](#) for instructions.

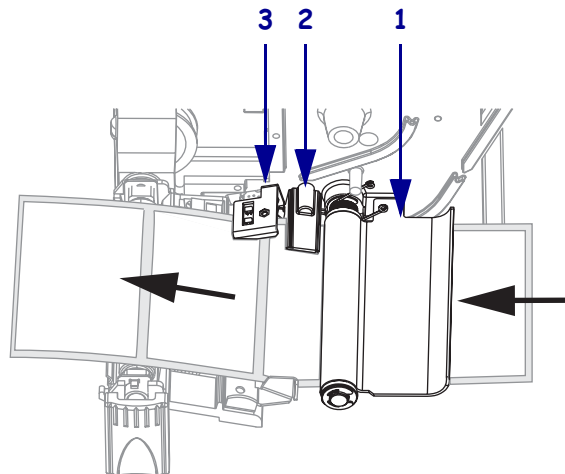
3. Press the printhead release latch to open the printhead assembly.



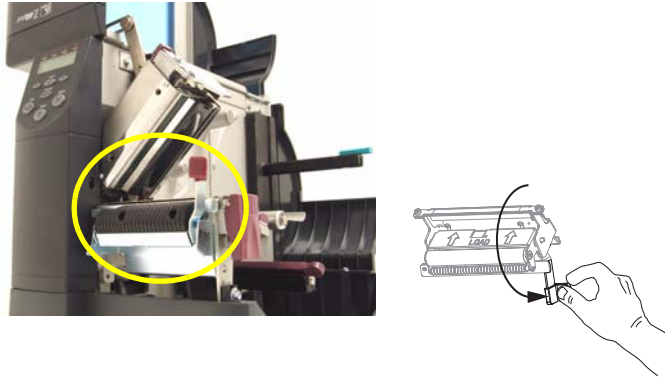
4. Lift the printhead until it latches open.
5. Slide out the media guide.



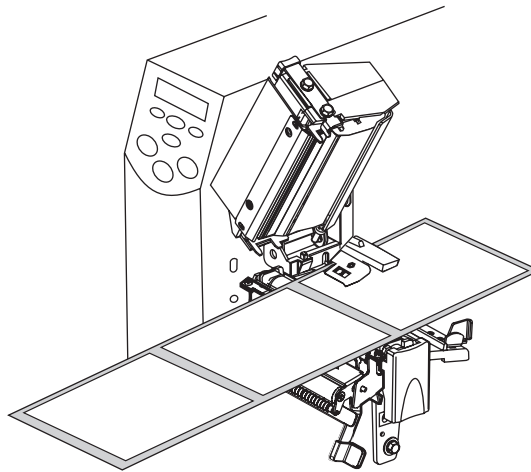
6. Feed the media under the dancer assembly (1), through the slot in the transmissive sensor (2—standard transmissive sensor shown), and under the ribbon sensor (3).



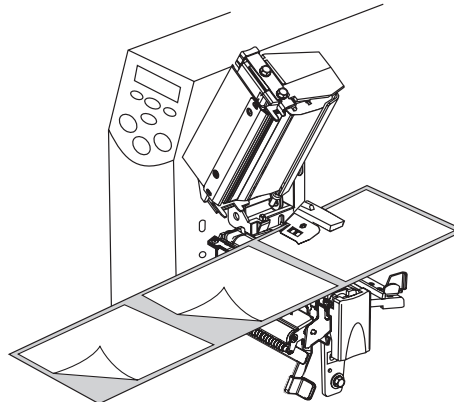
7. Push down the peel-off mechanism release lever to open the peel assembly.



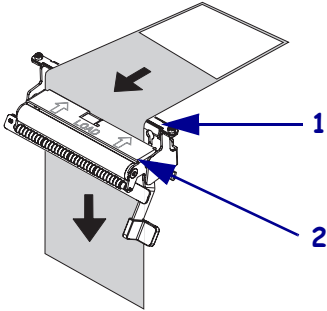
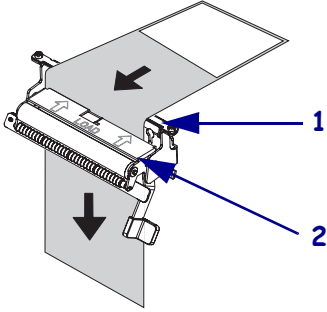
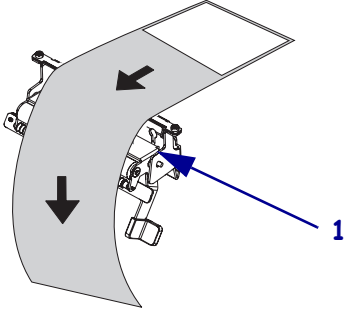
8. Pull approximately 18 in. (500 mm) of media through the front of the printer.



9. Remove the exposed labels so that only the liner remains.

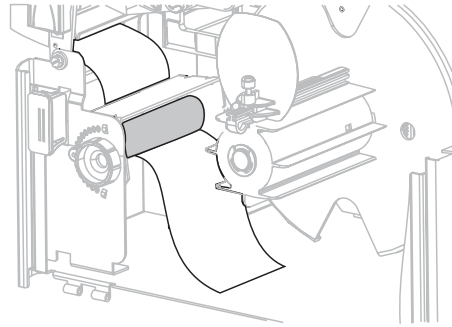


10. In which mode do you wish to operate?

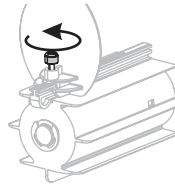
To operate in...	Then...				
<p><b>Peel-Off mode (without rewind or liner take-up)</b></p>	<p>1. Feed the liner over the tear-off/peel-off bar and behind the peel assembly. Make sure that the end of the liner falls outside of the printer.</p>  <table border="1" data-bbox="906 772 1239 850"> <tr> <td><b>1</b></td> <td>Tear-off/peel-off bar</td> </tr> <tr> <td><b>2</b></td> <td>Peel assembly</td> </tr> </table> <p>2. Continue with <a href="#">step 18</a> on <a href="#">page 59</a>.</p>	<b>1</b>	Tear-off/peel-off bar	<b>2</b>	Peel assembly
<b>1</b>	Tear-off/peel-off bar				
<b>2</b>	Peel assembly				
<p><b>Peel with Liner Take-Up mode</b></p>	<p>1. Feed the liner over the tear-off/peel-off bar (<b>1</b>) and behind the peel assembly (<b>2</b>).</p>  <p>2. Continue with the next step.</p>				
<p><b>Rewind mode</b></p>	<p>1. Feed the liner over the peel assembly (<b>1</b>).</p>  <p>2. Continue with the next step.</p>				



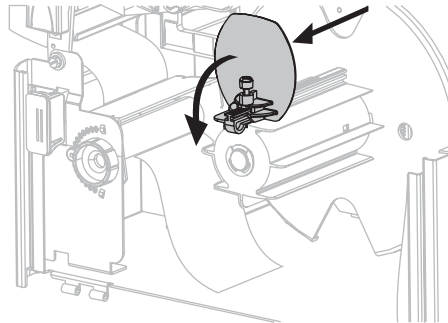
11. Feed the liner under the media alignment roller.



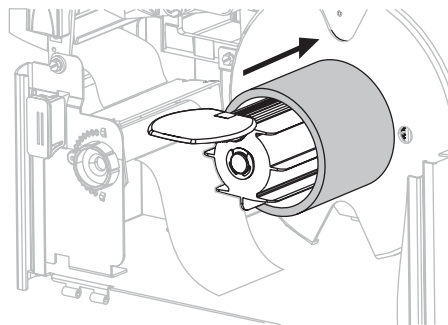
12. Loosen the thumbscrew on the rewind media guide.



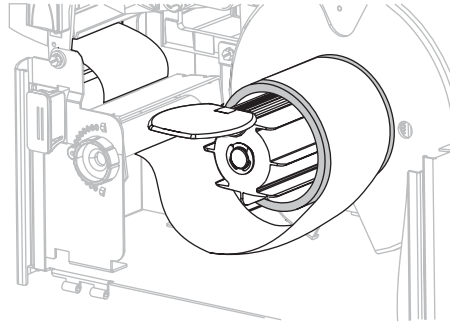
13. Slide the rewind media guide all the way out, and then fold it down.



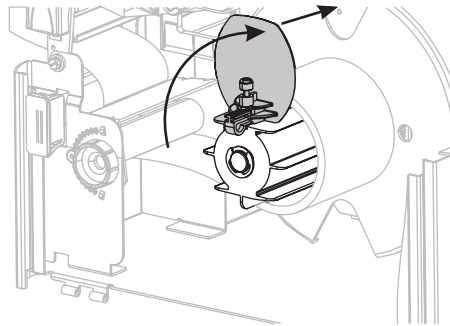
14. Slide an empty core onto the rewind spindle.



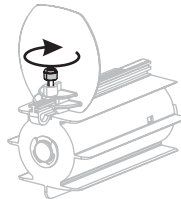
15. Wrap the liner around the core and turn the rewind spindle counterclockwise to wind up the excess liner. The liner must be attached to the rewind spindle for the printer to operate properly. Ensure that the edge of the liner is flush against the backplate of the rewind spindle.



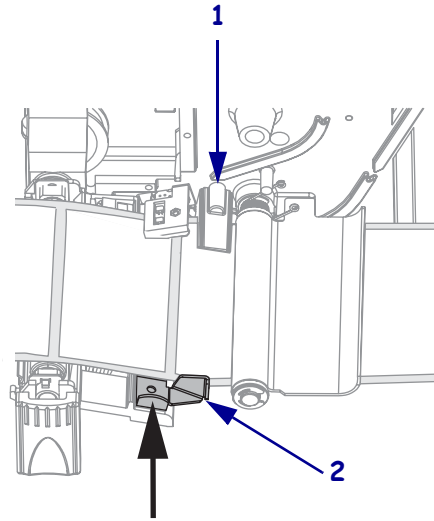
16. Fold up the rewind media guide, and then slide it in until it touches the liner.



17. Tighten the thumbscrew on the rewind media guide.



18. Push the media to the back of the transmissive sensor (1). Slide in the media guide (2) until it just touches the edge of the media.

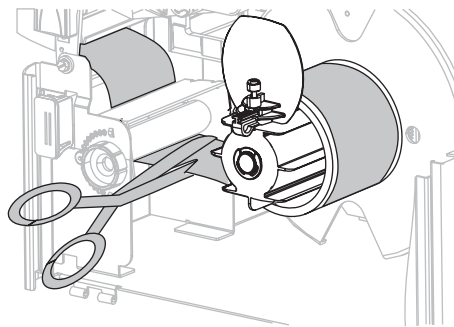


19. Close the printhead assembly.
20. Close the peel assembly using the peel lever.
21. If the printer is paused (the pause light is on), press PAUSE to enable printing. Peeling starts automatically.

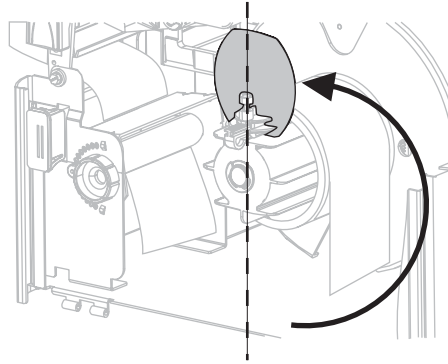
## Remove Printed Labels or Liner from the Rewind Spindle

To remove printed labels or liner from the rewind spindle, complete these steps:

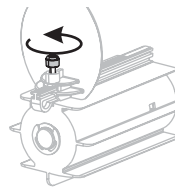
1. Cut the liner between the media alignment spindle and the rewind spindle.



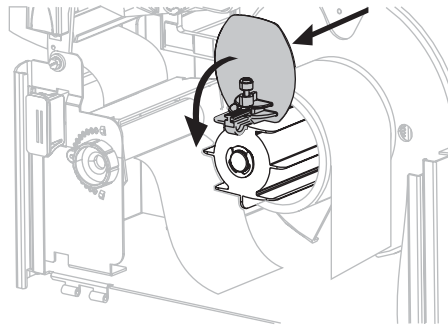
2. Rotate the take-up spindle counterclockwise until the rewind media guide is fully upright.



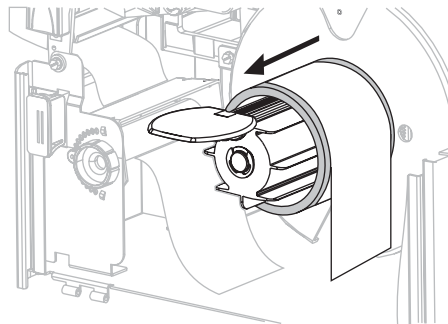
3. Loosen the thumbscrew on the rewind media guide.



4. Slide the rewind media guide all the way out, and then fold it down.



5. Slide the core with the liner from the take-up spindle.



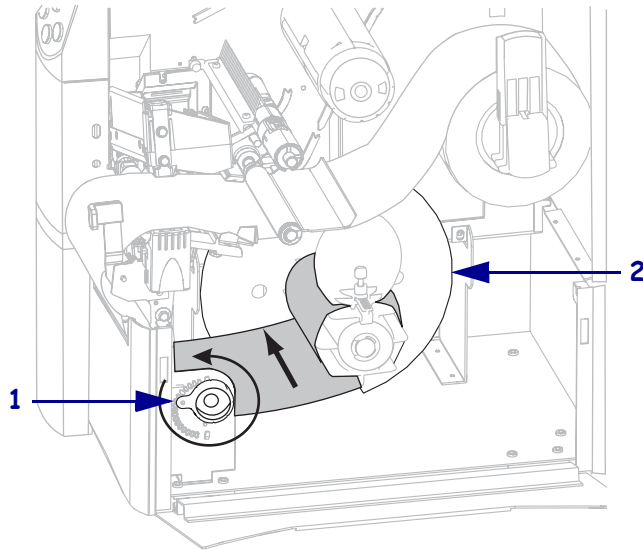
## Adjust Media Alignment for Rewind Option

The instructions below apply only if the printer has a Rewind option. The liner should be installed flush against the backplate of the rewind spindle to prevent the media/backing from winding too loosely.

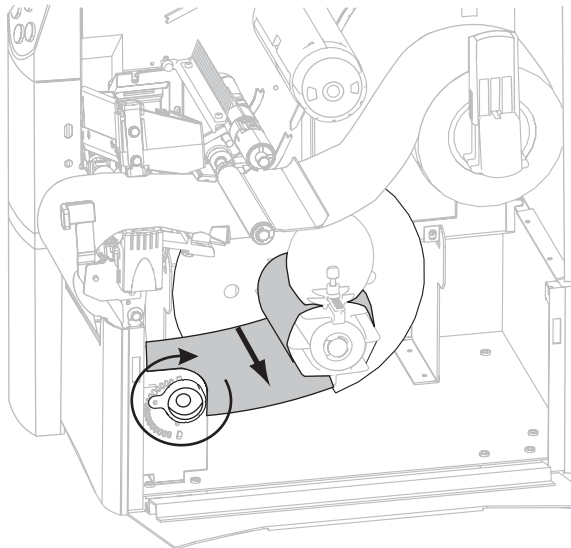
Perform the adjustments in the order given. Do only what is needed to solve the problem.

**To adjust the media alignment for printers with the Rewind option, complete these steps:**

1. Turn the adjustment dial (1) clockwise to move the media toward the backplate (2).



2. Turn the adjustment dial (1) counter clockwise to move the media away from the backplate (2).



## Load Ribbon



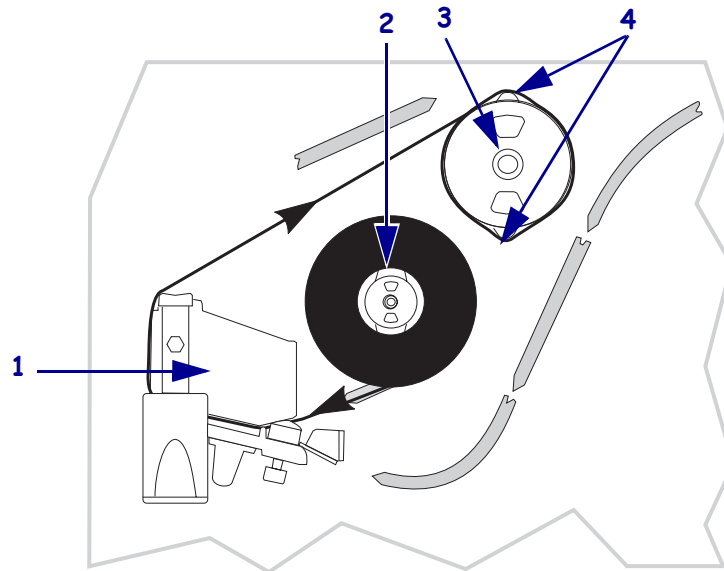
**Note** • This section applies only to printers that have the Thermal Transfer option installed.

The ribbon supply spindle in your printer is a dual-tension variety. Most applications require the spindle to be in the normal position. The low tension position is recommended only when a narrow ribbon is used or if normal tension hampers the ribbon movement.



**Note** • Always use ribbon that is wider than the media to protect the printhead from wear. For direct thermal printing, do not load ribbon in the printer.

Figure 17 • Ribbon Path



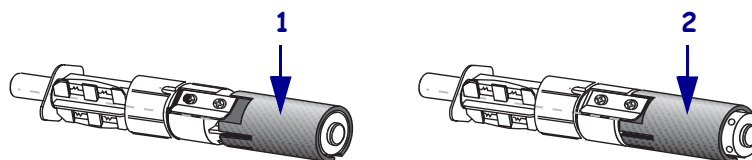
1	Printhead assembly
2	Ribbon supply spindle
3	Ribbon take-up spindle
4	Tension blades

**Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead. You are not required to turn off the printer power when working near an open printhead, but Zebra recommends it as a precaution. If you turn off the power, you will lose all temporary settings, such as label formats, and you must reload them before you resume printing.

### To load ribbon, complete these steps:

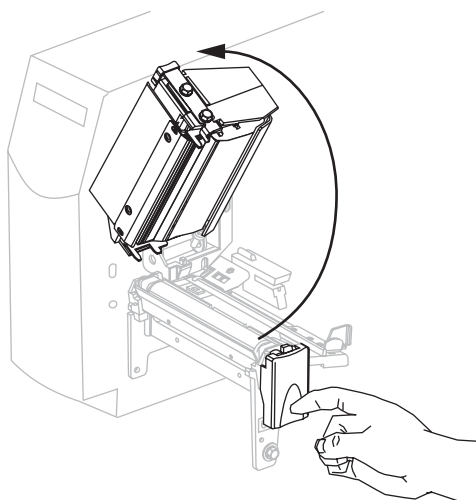
1. Set the ribbon supply spindle for normal or low tension.
  - To place the ribbon supply spindle in the **normal position**, firmly pull out the spindle end cap until it extends and clicks in place, as shown in [Figure 18](#). Use this setting for most applications.
  - To place the ribbon supply spindle in the **low-tension position**, firmly push in the end cap until it retracts and clicks in place, as shown in [Figure 18](#). Use this setting when using a narrow ribbon or if normal tension hampers ribbon movement.

**Figure 18 • Ribbon Spindle—Normal and Low Tension**

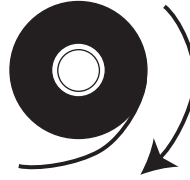


<b>1</b>	Normal Position (Spindle End Cap Extended)
<b>2</b>	Low-Tension Position (Spindle End Cap Retracted)

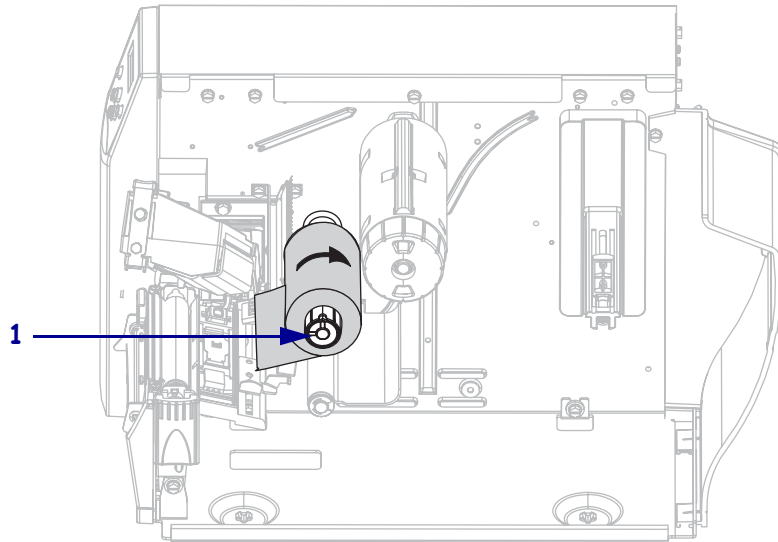
2. Press the printhead release latch to open the printhead assembly. Lift the printhead until it latches open.



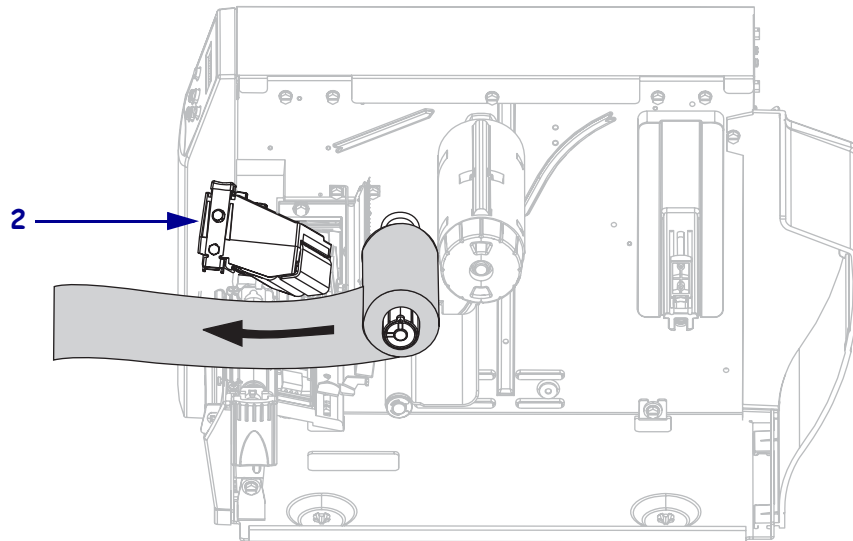
3. Orient the ribbon with the loose end unrolling clockwise.



4. Place the ribbon roll onto the ribbon supply spindle (1) and push it all the way back.

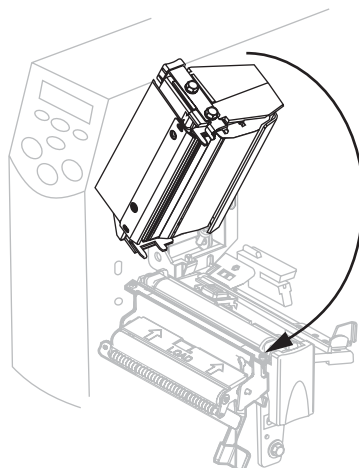


5. Pull the end of the ribbon under the printhead assembly (2) and out the front of the printer.

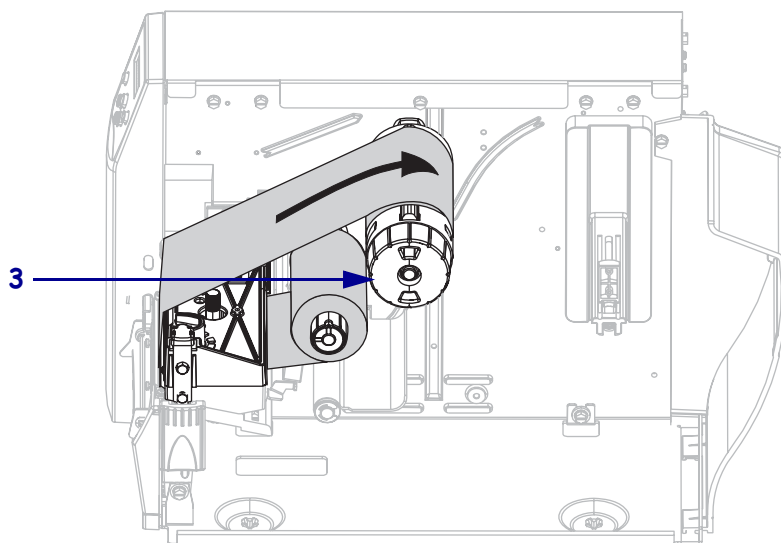




6. Close the printhead assembly.



7. Wind the ribbon clockwise onto the ribbon take-up spindle (3).



## Remove Used Ribbon

Remove used ribbon from the printer after the ribbon runs out or when switching from thermal transfer mode to direct thermal mode.

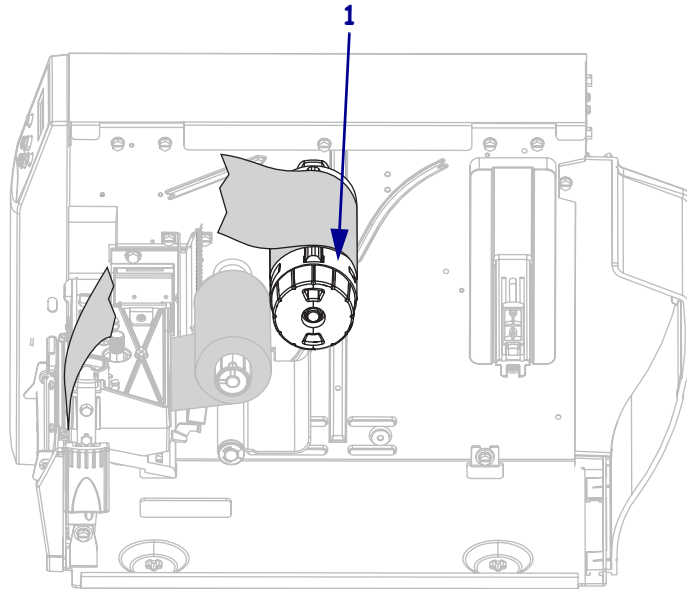
**To remove used ribbon, complete these steps:**

1. If the ribbon has not run out, cut or break it before the ribbon take-up spindle (1).

---

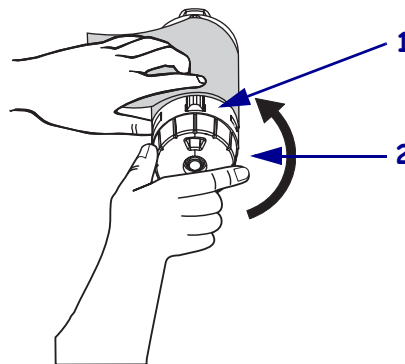
**Caution** • Do not cut the ribbon directly on the ribbon take-up spindle. Doing so may damage the spindle.

---

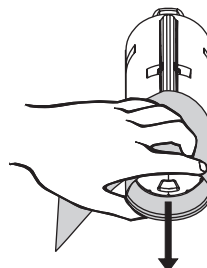


2. To loosen the ribbon, squeeze the ribbon against the ribbon take-up spindle tension blades (1). At the same time, turn the ribbon take-up spindle release knob counterclockwise (2).

The tension blades collapse into the ribbon take-up spindle, loosening the ribbon.



3. Slide the ribbon off of the ribbon take-up spindle.



# Calibrate the Printer

## Auto Calibration

By default, the printer automatically calibrates on power up or when the printhead is closed. During auto calibration, the printer determines the label length and sensor settings.

The results of the auto calibration are stored in the printer's memory and are retained even if printer power is removed. These parameters remain in effect until the next calibration is performed.



**Note** • If the control panel settings for **MEDIA POWER UP** or **HEAD CLOSE** are set to **LENGTH, NO MOTION,** or **FEED**, the printer starts printing without auto calibrating. See [Select Media Power-Up Option on page 98](#) or [Select Head Close Option on page 99](#).

## Manual Calibration

Perform a media and ribbon sensor calibration to reset the sensitivity of the sensors so the media and ribbon are detected more accurately. If you change the type of ribbon or media, your printer may operate better if you perform this calibration.

For instructions, refer to [Calibrate Media and Ribbon Sensor Sensitivity on page 92](#).

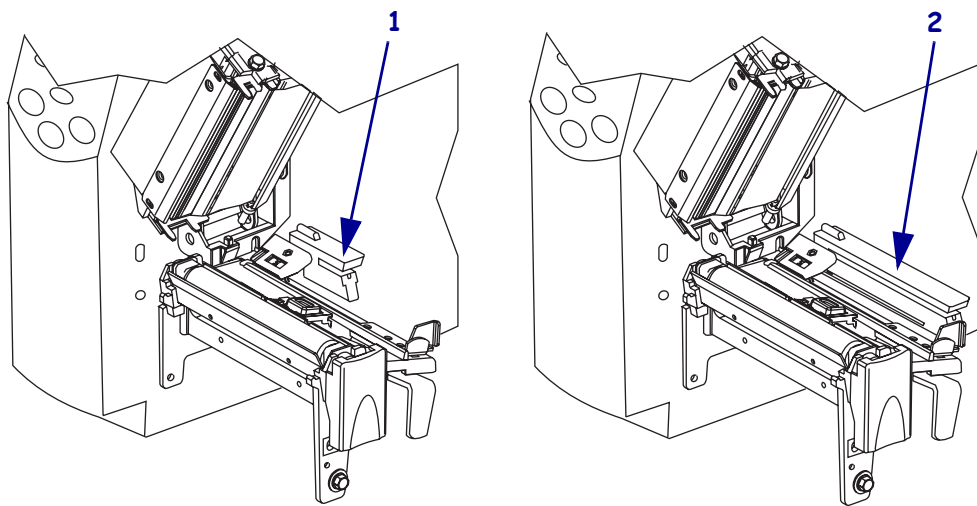
## Position the Media Sensors

This printer uses two types of media sensors: transmissive and reflective.

### Select or Position the Transmissive Sensor

The standard transmissive sensor ([Figure 19](#)) is in a fixed position and enabled from the control panel. An adjustable transmissive sensor, which is available as an option for the Z4Mplus or Z6Mplus, can be adjusted for optimal print performance. For more information about the operation of this sensor, see [Select a Sensor on page 84](#).

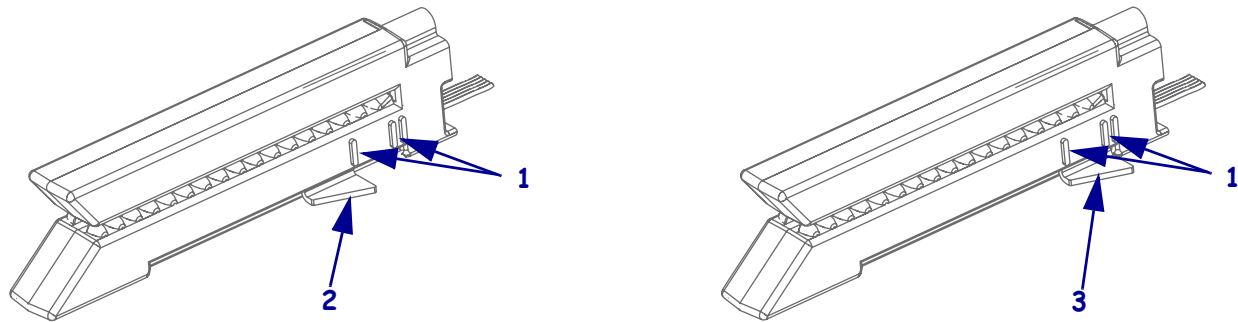
**Figure 19 • Standard and Adjustable Transmissive Sensors**



<b>1</b>	Standard Transmissive Sensor
<b>2</b>	Adjustable Transmissive Sensor (optional)

The lower section of the adjustable transmissive sensor has two white vertical positioning marks and a movable adjustment tab pointer ([Figure 20](#)).

**Figure 20 • Transmissive Sensor with Adjustment Tab Pointer**



<b>1</b>	Positioning marks
<b>2</b>	Adjustment tab pointer (outer position)
<b>3</b>	Adjustment tab pointer (inner position)

**To adjust the transmissive sensor, complete these steps:**

1. Press the printhead open lever to release the printhead assembly.
2. See [Figure 19](#). Locate the transmissive sensor.
3. Locate the white adjustment tab pointer on the back of the transmissive sensor.
4. What type of media are you using?

<b>If you are using...</b>	<b>Then...</b>
Non-continuous media with notched edges	Move the adjustment tab pointer to the inner positioning mark. The point of the tab should align with the mark.
Non-continuous media without notched edges	Move the adjustment tab to the outer positioning mark. The point of the tab should align with the mark.
Continuous media	Move the adjustment tab to the outer positioning mark. The point of the tab should align with the mark.

5. Ensure the media and ribbon are properly positioned.
6. Close the printhead assembly.

## Adjust the Reflective Sensor

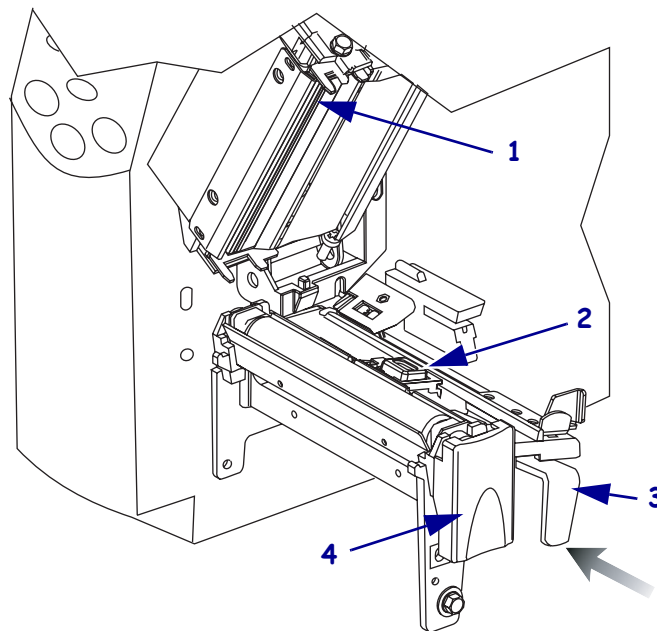
The reflective sensor is compatible with most types of media. With non-continuous media, the reflective sensor detects the start-of-label indicator (the notch, hole, black mark, or gap between die-cut labels). With both continuous media and non-continuous media, the sensor detects an out-of-paper condition. If you have difficulties with calibration while using this sensor, use the transmissive sensor (see [Select or Position the Transmissive Sensor on page 68](#)).

Position the reflective sensor in the following way:

- directly under the notch, hole, or black mark with these types of labels
- anywhere along the width of the media if there is a gap between labels
- anywhere under the media for continuous media

The glow of the red light through the media may help you accurately position the sensor.

**Figure 21 • Adjusting the Reflective Sensor**



<b>1</b>	Printhead assembly
<b>2</b>	Reflective sensor
<b>3</b>	Reflective sensor positioning lever
<b>4</b>	Printhead release latch

**To adjust the reflective sensor, complete these steps:**

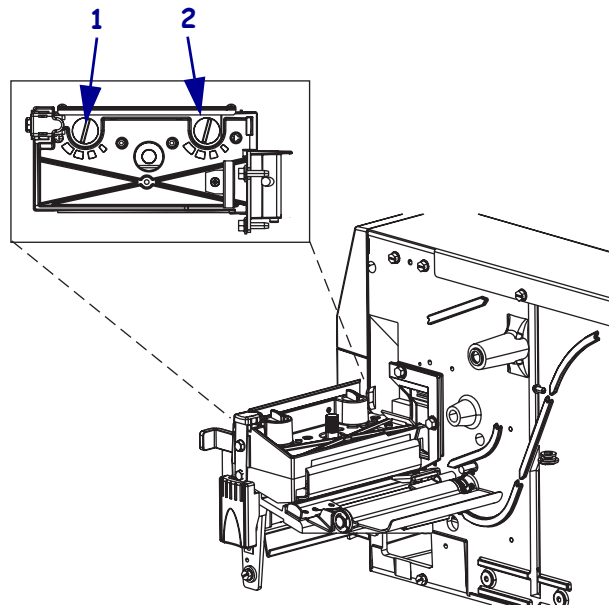
1. See [Figure 21](#). Press the printhead release latch.
2. Lift the printhead until it latches open.
3. Locate the reflective sensor positioning lever.
4. Move the reflective sensor positioning lever across the width of the media until the reflective sensor aligns with the gap or notch.
5. Close the printhead assembly.

## Adjust Printhead Pressure

You may need to adjust printhead pressure if printing is too light on one side or if you use thick media.

See [Figure 22](#). The Z4Mplus pressure adjustment dials have four possible settings designated by blocks of increasing size embossed on the print mechanism. The smallest block (fully counterclockwise) is considered position 1, and the largest block (fully clockwise) is considered position 4. For the Z6Mplus, the dials have seven settings instead of four.

**Figure 22 • Printhead Pressure Adjustment Dials**



<b>1</b>	Outside dial
<b>2</b>	Inside dial

### To set printhead pressure, complete these steps:

1. Use [Table 8](#) or [Table 9](#) to select the initial dial settings for your media, depending on which printer you have.

**Table 8 • Z4Mplus Printhead Pressure**

Media Width	Inside Dial	Outside Dial
1 in. (25.4 mm)	3	1
2 in. (51 mm)	4	1
3 in. (76 mm)	3	2
3.5 in. and up (89 mm and up)	3	3



**Table 9 • Z6Mplus Printhead Pressure**

<b>Media Width</b>	<b>Inside Dial</b>	<b>Outside Dial</b>
2 in. (50 mm)	6	1
3 in. (75 mm)	6	2
4 in. (100 mm)	7	3
5 in. (125 mm)	7	4
5.5 in. and up (140 mm and up)	6	6

2. If necessary, adjust the pressure adjustment dials as follows:

<b>If the media...</b>	<b>Then...</b>
Requires higher pressure to print well	Increase both dials one position.
Shifts left while printing	Increase the outside dial setting one position, or decrease the inside dial setting one position.
Shifts right while printing	Increase the inside dial setting one position, or decrease the outside dial setting one position.
Prints too lightly on the left side of the label.	Increase the inside dial setting one position.
Prints too lightly on the right side of the label.	Increase the outside dial setting one position.

## Install Memory Card

The printer can use Type I or Type II compliant Personal Computer Memory Card International Association (PCMCIA) cards.



**Caution** • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.

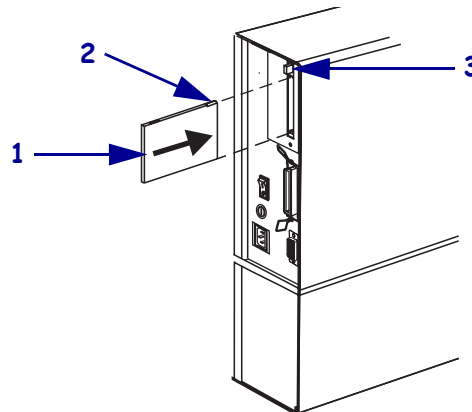


**Note** • The PCMCIA card is hot-swappable. It can be installed while the printer is On (I).

### To install the PCMCIA memory card, complete these steps:

1. Remove the PCMCIA card shield from the rear of the printer.
2. Insert the PCMCIA card, with the notch UP, into the card slot as shown (see [Figure 23](#)). Insert the card far enough to cause the eject button to pop out.

**Figure 23 • Installing the PCMCIA Card**



1	PCMCIA card
2	Notch
3	Card eject button

3. Reinstall the PCMCIA card shield over the PCMCIA card and card slot.

The printer is now ready to operate with the additional memory or font option.



**Note** • Initialization of the PCMCIA card may take a few minutes; the PAUSE LED flashes while the card initializes. If the card is already initialized, the PAUSE LED flashes only once or twice. To verify that the card has successfully initialized, print a configuration label and review it to see if the new memory card information is listed.



---

# Configuration

This section describes the control panel parameters that are used to configure the printer for operation.

## Contents

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## Setup Mode

After you have installed the media and ribbon and the Power-On Self Test (POST) is complete, the control panel displays **PRINTER READY**. You may now set printer parameters for your application using the control panel display and the buttons directly below it. If it becomes necessary to restore the initial printer defaults, see [FEED and PAUSE Self Test on page 138](#).



**Important** • Certain printing conditions may require that you adjust printing parameters, such as print speed, darkness, or print mode. These conditions include (but are not limited to):

- printing at high speeds
- peeling the media
- the use of extremely thin, small, synthetic, or coated labels

Because these and other factors affect print quality, run tests to determine the best combination of printer settings and media for your application. A poor match may limit print quality or print rate, or the printer may not function properly in the desired print mode.



**Note** • If the printer is operating on an IP network, you can change the printer's parameters in these additional ways:

- with ZebraLink™ WebView (ZebraNet® 10/100 PrintServer or ZebraNet Wireless Print Server required). For information, see the appropriate print server user guide.
- with the SetWLAN configuration utility (ZebraNet Wireless Print Server required). For information, see the *ZebraNet Wireless Print Server User Guide*.

## Enter Setup Mode

**To enter Setup Mode, complete these steps:**


1. Press SETUP/EXIT.
2. Press PLUS (+) or MINUS (–) to scroll through the parameters.
3. Press SELECT to select and deselect the parameters.

## Exit Setup Mode

To leave Setup mode, complete these steps:

1. Press SETUP/EXIT.  
The LCD displays **SAVE CHANGES**.
2. Press PLUS (+) or MINUS (-) to display the save options (Table 10).

**Table 10 • Save Options When Leaving Setup Mode**

LCD	Description
PERMANENT	Stores values in the printer even when power is turned off.
TEMPORARY	Saves the changes until power is turned off.
CANCEL	Cancels all changes made since you entered Setup mode, except for changes made to the darkness and tear-off settings, which go into effect as soon as they are made.
LOAD DEFAULTS	Restores all parameters other than the network settings back to the factory defaults. Use care when loading defaults because you will need to reload all settings that you changed manually.  <b>Note</b> • Loading factory defaults causes the printer to auto-calibrate.
LOAD LAST SAVE	Loads values from the last permanent save.
DEFAULT NET	Restores the wired and wireless network settings back to factory defaults.

3. Press SETUP/EXIT to select the displayed choice.  
When the configuration and calibration sequence is done, **PRINTER READY** displays.

## Change Password-Protected Parameters

Certain parameters, including the communication parameters, are password-protected by factory default.

---

**Caution** • Do not change password-protected parameters unless you have a complete understanding of the parameters' functions. If the parameters are set incorrectly, the printer may function unpredictably.

---

The first time that you attempt to change a password-protected parameter, the printer displays **ENTER PASSWORD**. Before you can change the parameter, you must enter the four-digit numeric password. After you have entered the password correctly, you do not have to enter it again unless you leave Setup mode by pressing SETUP/EXIT or by turning Off (O) the printer.

### To enter a password for a password-protected parameter, complete these steps:

1. At the password prompt, use the left oval to change the selected digit position.
2. When you have selected the digit that you wish to change, use the right oval to increase the selected digit value. Repeat these two steps for each digit of the password.
3. After entering the password, press NEXT.

The parameter you selected to change is displayed. If the password was entered correctly, you can change the value.

## Default Password Value

The default password value is **1234**. The password can be changed using the ^KP (Define Password) ZPL II instruction or through ZebraLink™ WebView (ZebraNet® PrintServer II, 10/100 Print Server, or Wireless Print Server required).

## Disable the Password Protection Feature

You can disable the password protection feature so that it no longer prompts you for a password by setting the password to **0000** via the ^KP ZPL/ZPL II command. To re-enable the password-protection feature, send the ZPL/ZPL II command ^KPx, where x can be any number from 1 to 9999.

## Print a Configuration Label

A configuration label lists the printer settings that are stored in configuration memory. After you load the media and ribbon (if necessary), print a configuration label as a record of your printer's current settings. Keep the label to use when troubleshooting printing problems.

### To print a configuration label, complete these steps:

1. On the control panel, press SETUP/EXIT.
2. Press NEXT or PREVIOUS to scroll through the parameters until you reach **LIST SETUP**.
3. Press the right oval to confirm printing.

A configuration label prints (Figure 24).

Figure 24 • Configuration Label

PRINTER CONFIGURATION	
Zebra Technologies	
ZTC Z4MPlus-200 dpi	
+19.....	DARKNESS
2 IPS.....	PRINT SPEED
+000.....	TEAR OFF
TEAR OFF.....	PRINT MODE
NON-CONTINUOUS.....	MEDIA TYPE
WEB.....	SENSOR TYPE
AUTO SELECT.....	SENSOR SELECT
THERMAL-TRANS.....	PRINT METHOD
062 4/8 MM.....	PRINT WIDTH
1220.....	LABEL LENGTH
39.0IN 988MM.....	MAXIMUM LENGTH
BIDIRECTIONAL.....	PARALLEL COMM.
RS232.....	SERIAL COMM.
9600.....	BAUD
8 BITS.....	DATA BITS
NONE.....	PARITY
XON/XOFF.....	HOST HANDSHAKE
NONE.....	PROTOCOL
000.....	NETWORK ID
NORMAL MODE.....	COMMUNICATIONS
<~> 7EH.....	CONTROL PREFIX
<^> 5EH.....	FORMAT PREFIX
<.> 2CH.....	DELIMITER CHAR
ZPL II.....	ZPL MODE
CALIBRATION.....	MEDIA POWER UP
CALIBRATION.....	HEAD CLOSE
DEFAULT.....	BACKFEED
+000.....	LABEL TOP
+0000.....	LEFT POSITION
020.....	WEB S.
068.....	MEDIA S.
072.....	RIBBON S.
100.....	TAKE LABEL
035.....	MEDIA LED
119.....	RIBBON LED
+10.....	LCD ADJUST
DPSWFXM.....	MODES ENABLED
.....	MODES DISABLED
832 8/MM FULL.....	RESOLUTION
V60.13.0.9 <-.....	FIRMWARE
V30 79087 57.....	HARDWARE ID
CUSTOMIZED.....	CONFIGURATION
NONE.....A:	COMPACT FLASH
3584k.....R:	RAM
NONE.....B:	MEMORY CARD
2048k.....E:	ONBOARD FLASH
NONE.....	FORMAT CONVERT
*** UNKNOWN.....	P30 INTERFACE
NONE.....	OPTION
FW VERSION.....	IDLE DISPLAY
12/14/04.....	RTC DATE
16:18.....	RTC TIME
SELECTED ITEMS.....	PASSWORD LEVEL
GL 45591.04MS050212.79000.04.VH2....	

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## Print a Network Configuration Label

If you are using a print server, you can print a network configuration label after the printer is connected to the network.

### To print a network configuration label, complete these steps:

1. On the control panel, press SETUP/EXIT.
2. Press NEXT or PREVIOUS to scroll through the parameters until you reach **LIST NETWORK**.
3. Press the right oval to confirm printing.

A network configuration label prints (Figure 25). An asterisk designates whether the wired or wireless print server is active. If no wireless print server is installed, the wireless portion of the label does not print.

Figure 25 • Network Configuration Label (With a Wireless Print Server Installed)

Network Configuration	
Zebra Technologies PRINTER MODEL XXXdpi USER-DEFINED TEXT	
NO.....	WIRED PS CHECK?
Printer.....	LOAD LAN FROM?
Wired	
ALL.....	IP PROTOCOL
000.000.000.000.....	IP ADDRESS
000.000.000.000.....	SUBNET MASK
000.000.000.000.....	DEFAULT GATEWAY
000.000.000.000.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
0300.....	TIMEOUT VALUE
0000.....	ARP INTERVAL
9100.....	BASE RAW PORT
Wireless*	
ALL.....	IP PROTOCOL
010.003.015.089.....	IP ADDRESS
255.255.255.000.....	SUBNET MASK
010.003.015.001.....	DEFAULT GATEWAY
010.003.001.015.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
0300.....	TIMEOUT VALUE
0000.....	ARP INTERVAL
9100.....	BASE RAW PORT
YES.....	CARD INSERTED
015FH.....	CARD MFG ID
000AH.....	CARD PRODUCT ID
000e83df3bc?.....	MAC ADDRESS
YES.....	DRIVER INSTALLED
INFRASTRUCTURE.....	OPERATING MODE
vh-CTC-PRD.....	ESSID
100.....	TX POWER
0N.....	1 Mb/s
0N.....	2 Mb/s
0N.....	5.5 Mb/s
0N.....	11 Mb/s
11 Mb/s.....	CURRENT TX RATE
DIVERSITY.....	RECEIVE ANTENNA
DIVERSITY.....	XMIT ANTENNA
OPEN.....	AUTH. TYPE
OFF.....	LEAP MODE
128-bit.....	ENCRYPTION MODE
1.....	ENCRYPT. INDEX
020.....	POOR SIGNAL
LONG.....	PREAMBLE
YES.....	ASSOCIATED

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## Control Panel Parameters

Use the LCD on the control panel to view and adjust printer settings.

### How to View or Modify Parameters

While viewing parameters, press PLUS (+) to continue to the next parameter, or press MINUS (-) to return to the previous parameter in the cycle. Press SELECT when you wish to modify a parameter or view its options. When a parameter is changed, an asterisk (\*) appears in the upper left corner of the display to indicate that the value is different from the one currently active in the printer.



**Note** • Your label preparation software or the printer driver may override adjustments made through the control panel. Refer to the software or driver documentation for more information.

### Additional Parameters

Additional parameters appear in the following situations:

- When a wired print server is installed in the printer. For more information, see the appropriate manual: the *ZebraNet 10/100 Print Server User and Reference Guide* or the *PrintServer II User and Reference Guide*.
- When a wireless print server is installed in the printer (available as a special order on Z4Mplus printers only). For more information, see the *ZebraNet Wireless Print Server and Wireless Plus Print Server User Guide*

Copies of these manuals are available at <http://www.zebra.com/manuals> or on the user CD that came with your printer.

### Standard Printer Parameters

[Table 11](#) shows parameters in the order in which they are displayed when you press PLUS (+) after entering Setup mode.

Table 11 • Printer Parameters (Page 1 of 22)




Parameter	Action/Explanation
	<p><b>Adjust Print Darkness</b></p> <p>Darkness (burn duration) settings depend on a variety of factors, including ribbon type, media type, and the condition of the printhead. You may adjust the darkness for consistent high-quality printing.</p> <p> <b>Important</b> • Set the darkness to the lowest setting that provides good print quality. If the darkness is set too high, the ink may smear, the ribbon may burn through, or the printhead may wear prematurely.</p> <p>If printing is too light or if there are voids in printed areas, increase the darkness. If printing is too dark or if there is spreading or bleeding of printed areas, decrease the darkness.</p> <p>The <a href="#">FEED Self Test on page 134</a> can be used to determine the best darkness setting. You may want to adjust darkness while performing the <a href="#">PAUSE Self Test on page 133</a>. Because the darkness setting takes effect immediately, you can see the results on labels that are currently printing. Darkness settings also may be changed by the driver or software settings.</p> <p><b>Default:</b> +10 <b>Range:</b> 0 to 30</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to increase darkness.</li> <li>3. Press MINUS (-) to decrease darkness.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
	<p><b>Adjust Print Speed</b></p> <p>Adjusts the speed for printing a label (given in inches per second). Slower print speeds typically yield better print quality. Print speed changes take effect upon exiting Setup mode.</p> <p><b>Default:</b> 2 IPS <b>Range:</b> 2 to 10 IPS</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to increase the value.</li> <li>3. Press MINUS (-) to decrease the value.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

Table 11 • Printer Parameters (Page 2 of 22)

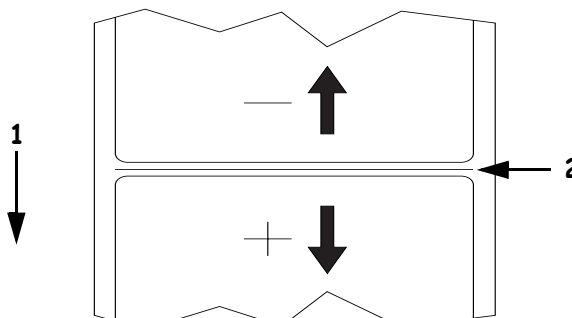
Parameter	Action/Explanation				
<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     TEAR OFF      +000                      - ■■■■■      +                 </div>	<p><b>Adjust the Tear-Off Position</b></p> <p>This parameter establishes the position of the media over the tear-off/peel-off bar after printing.</p> <p>See <a href="#">Figure 26</a>. Higher numbers move the media out (the tear line moves closer to the leading edge of the next label), and lower numbers move the media in (the tear line moves closer to the edge of the label just printed).</p> <div style="text-align: center;"> <p><b>Figure 26 • Tear-Off Position Adjustment</b></p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><b>1</b></td> <td>Media direction</td> </tr> <tr> <td style="text-align: center;"><b>2</b></td> <td>Factory-set tear line location at position 00</td> </tr> </table> </div> <p><b>Default:</b> +0  <b>Range:</b> -120 to +120</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to increase the value. Each press adjusts the tear-off position by four dot rows.</li> <li>3. Press MINUS (-) to decrease the value. Each press adjusts the tear-off position by four dot rows.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>	<b>1</b>	Media direction	<b>2</b>	Factory-set tear line location at position 00
<b>1</b>	Media direction				
<b>2</b>	Factory-set tear line location at position 00				
<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     PRINT MODE                      -TEAR-OFF      +                 </div>	<p><b>Select Print Mode</b></p> <p>Print mode settings tell the printer the method of media delivery that you wish to use. Make sure that your printer can support the selected option.</p> <p><b>Default:</b> TEAR-OFF  <b>Selections:</b> TEAR-OFF, PEEL-OFF, CUTTER, REWIND</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>				

Table 11 • Printer Parameters (Page 3 of 22)

Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 2px;">           MEDIA TYPE -NON-CONTINUOUS +         </div>	<p><b>Set Media Type</b></p> <p>This parameter tells the printer the type of media that you are using (see <i>Types of Media</i> on page 31 for more information). Selecting continuous media requires that you include a label length instruction in your label format (^Lxxxxx if you are using ZPL or ZPL II).</p> <p>When non-continuous media is selected, the printer feeds media to calculate label length (the distance between two recognized registration points of the inter-label gap, webbing, or alignment notch or hole).</p> <p><b>Default:</b> NON-CONTINUOUS</p> <p><b>Selections:</b> CONTINUOUS, NON-CONTINUOUS</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to toggle between the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 2px;">           SENSOR TYPE -WEB +         </div>	<p><b>Set the Sensor Type</b></p> <p>This parameter tells the printer whether you are using media with a web (gap/space between labels, notch, or hole) to indicate the separations between labels or if you are using media with a black mark printed on the back. If your media does not have black marks for registration on the back, leave your printer at the default (WEB).</p> <p><b>Default:</b> WEB</p> <p><b>Selections:</b> WEB, MARK</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to toggle between the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 2px;">           SENSOR SELECT -AUTO SELECT +         </div>	<p><b>Select a Sensor</b></p> <p>This parameter tells the printer the sensor that you wish to use. AUTO SELECT is compatible with most types of media. Select the reflective sensor with continuous media or with non-continuous black mark media; select the transmissive sensor if you are using non-continuous web media.</p> <p><b>Default:</b> AUTO SELECT</p> <p><b>Selections:</b> AUTO SELECT, REFLECTIVE, TRANSMISSIVE</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the choices.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

Table 11 • Printer Parameters (Page 4 of 22)



Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 2px;">                     PRINT METHOD -THERMAL-TRANS. +                 </div>	<p><b>Select Print Method</b></p> <p>The print method parameter tells the printer the method of printing that you wish to use: direct thermal (no ribbon) or thermal transfer (using thermal transfer media and ribbon).</p> <p><b>Default:</b> THERMAL TRANSFER</p> <p><b>Selections:</b> THERMAL TRANSFER, DIRECT THERMAL</p> <p> <b>Note</b> • Selecting direct thermal when using thermal transfer media and ribbon creates an error condition, but printing continues.</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to toggle between the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 2px;">                     PRINT WIDTH - 104 0/8 MM +                 </div>	<p><b>Set Print Width</b></p> <p>Determines the printable area across the width of the label given the resolution of the printer.</p> <p><b>Default:</b> 104 0/8 MM</p> <p> <b>Note</b> • Setting the width too narrow can result in portions of the label not being printed on the media. Setting the width too wide wastes formatting memory and can cause printing off the label and on the platen roller. This setting can affect the horizontal position of the label format if the image was inverted using the ^POI ZPL II command.</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move the cursor.</li> <li>3. Press PLUS (+) to increase the value of the digit.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol> <p><b>To change the unit of measurement:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) until the unit of measurement is active.</li> <li>3. Press PLUS (+) to toggle to a different unit of measure (mm, inches, or dots).</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

Table 11 • Printer Parameters (Page 5 of 22)

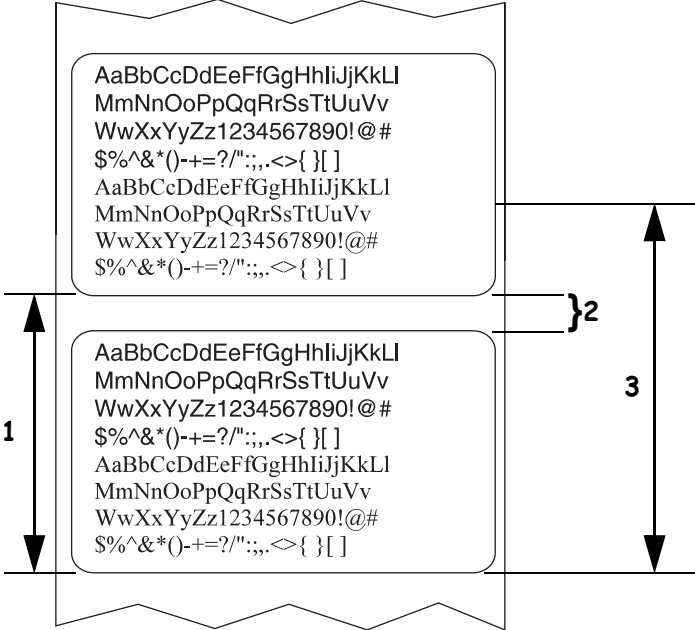
Parameter	Action/Explanation						
<div style="border: 1px solid black; padding: 5px;"> <b>MAXIMUM LENGTH</b>                      -39.0 IN      988 MM                 </div>	<p><b>Set Maximum Label Length</b></p> <p>This parameter is used during the media portion of the calibration process. Always set maximum label length to a value that is at least 1.0 in. (25.4 mm) greater than the actual label length (Figure 27). If the value is set to a smaller value than the label length, the printer assumes that continuous media is loaded, and the printer cannot calibrate.</p> <p>For example, if the label length is 5.0 inches (126 mm) including the interlabel gap, set the parameter for 6.0 inches (152 mm). If the label length is 7.5 inches (190 mm), set the parameter for 9.0 inches (229 mm).</p>						
<p><b>Figure 27 • Label Length</b></p>  <table border="1" data-bbox="654 1390 1344 1535"> <tr> <td style="text-align: center;"><b>1</b></td> <td>Label length (including interlabel gap)</td> </tr> <tr> <td style="text-align: center;"><b>2</b></td> <td>Interlabel gap</td> </tr> <tr> <td style="text-align: center;"><b>3</b></td> <td>Set maximum label length to approximately this value</td> </tr> </table>		<b>1</b>	Label length (including interlabel gap)	<b>2</b>	Interlabel gap	<b>3</b>	Set maximum label length to approximately this value
<b>1</b>	Label length (including interlabel gap)						
<b>2</b>	Interlabel gap						
<b>3</b>	Set maximum label length to approximately this value						
<p><b>Default:</b> 39.0 inches (988 mm).</p> <p><b>Range:</b> Values are adjustable in one-inch (25.4 mm) increments.</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to increase the value.</li> <li>3. Press MINUS (-) to decrease the value.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>							

Table 11 • Printer Parameters (Page 6 of 22)

Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>LIST FONTS</b>  <span style="float: right;"><b>PRINT</b></span> </div>	<p><b>List Fonts</b>            This option prints a label that lists the available fonts in the printer, including standard printer fonts plus any optional fonts. Fonts may be stored in RAM, Flash memory, optional PCMCIA font cards, or Compact Flash cards.</p> <p><b>To print a list of the available fonts:</b></p> <ol style="list-style-type: none"> <li>1. Press <b>SELECT</b> to select the parameter.</li> <li>2. Press <b>PLUS (+)</b> to select <b>PRINT</b>.</li> <li>3. Press <b>SELECT</b> to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>LIST BAR CODES</b>  <span style="float: right;"><b>PRINT</b></span> </div>	<p><b>List Bar Codes</b>            This option prints a label that lists the available bar codes in the printer. Bar codes may be stored in RAM, Flash memory, optional PCMCIA cards, or Compact Flash cards.</p> <p><b>To print a list of the available bar codes:</b></p> <ol style="list-style-type: none"> <li>1. Press <b>SELECT</b> to select the parameter.</li> <li>2. Press <b>PLUS (+)</b> to select <b>PRINT</b>.</li> <li>3. Press <b>SELECT</b> to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>LIST IMAGES</b>  <span style="float: right;"><b>PRINT</b></span> </div>	<p><b>List Images</b>            This option prints a label that lists the available images stored in the printer's RAM, Flash memory, optional memory card, PCMCIA cards, or Compact Flash cards.</p> <p><b>To print a list of the available images:</b></p> <ol style="list-style-type: none"> <li>1. Press <b>SELECT</b> to select the parameter.</li> <li>2. Press <b>PLUS (+)</b> to select <b>PRINT</b>.</li> <li>3. Press <b>SELECT</b> to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <b>LIST FORMATS</b>  <span style="float: right;"><b>PRINT</b></span> </div>	<p><b>List Formats</b>            This option prints a label that lists the available formats stored in the printer's RAM, Flash memory, optional EPROM, or optional memory card.</p> <p><b>To print a list of the available formats:</b></p> <ol style="list-style-type: none"> <li>1. Press <b>SELECT</b> to select the parameter.</li> <li>2. Press <b>PLUS (+)</b> to select <b>PRINT</b>.</li> <li>3. Press <b>SELECT</b> to accept any changes and deselect the parameter.</li> </ol>

Table 11 • Printer Parameters (Page 7 of 22)

Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>LIST SETUP PRINT</p> </div>	<p><b>List Setup</b> This option prints a configuration label (see <a href="#">Figure 24 on page 79</a>), which lists the current printer configuration.</p> <p><b>To print a configuration label:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to select <b>PRINT</b>.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>LIST NETWORK PRINT</p> </div>	<p><b>List Network Settings</b> This option prints a network configuration label (see <a href="#">Figure 25 on page 80</a>), which lists the settings for any print server that is installed.</p> <p><b>To print a network configuration label:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to select <b>PRINT</b>.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>LIST ALL PRINT</p> </div>	<p><b>List All</b> This option prints labels that list the available fonts, bar codes, images, formats, and the current printer and network configurations.</p> <p><b>To print labels for all settings:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to select <b>PRINT</b>.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>



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Parameter	Action/Explanation
<div style="border: 2px solid black; padding: 5px; width: fit-content;"> <b>FORMAT CARD:</b>  <b>A:</b>                      <b>B:</b> </div>	<p><b>Format Memory Card</b></p> <p>This option erases all previously stored information from the optional PCMCIA card or Compact Flash card.</p> <p><b>Caution</b> • This option completely erases the selected card.</p> <p><b>To format a memory card:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to select <b>A:</b> or PLUS (+) to select <b>B:</b> .                      If your printer is set to require a password, you are prompted to enter the password.</li> <li>3. Enter the password. For instructions, see <a href="#">Change Password-Protected Parameters on page 78</a>.</li> <li>4. Press the appropriate button again to select the desired card.                      The display shows <b>ARE YOU SURE?</b>.</li> <li>5. Do you wish to continue?                             <ul style="list-style-type: none"> <li>• Press MINUS (-) to select <b>NO</b> to cancel the request and return to <b>FORMAT CARD</b> prompt.</li> <li>• Press PLUS (+) to select <b>YES</b> and begin initialization.                                      When initialization is complete, the printer automatically exits Setup mode, and the control panel displays <b>PRINTER READY</b>. If you exit Setup mode while initialization is still in process, the control panel display flashes between the phrases <b>CHECKING B: MEMORY</b> and <b>PRINTER IDLE</b>.</li> </ul> </li> </ol> <p> <b>Note</b> • Depending on the amount of memory in the memory card, initialization may take up to 5 minutes to complete.</p> <ol style="list-style-type: none"> <li>6. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>INIT FLASH MEM.</b>  <b>YES</b> </div>	<p><b>Initialize Flash Memory</b>            This option erases all previously stored information from Flash memory.  <b>Caution</b> • This option completely erases the Flash memory.</p> <p><b>To initialize Flash memory:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to select <b>YES</b>.              If your printer is set to require a password, you are prompted to enter the password.</li> <li>3. Enter the password. For instructions, see <i>Change Password-Protected Parameters on page 78</i>.              The display shows <b>INITIALIZE FLASH?</b></li> <li>4. Press PLUS (+) to select <b>YES</b>.              The display shows <b>ARE YOU SURE?</b></li> <li>5. Do you wish to continue?               <ul style="list-style-type: none"> <li>• Press MINUS (-) to select <b>NO</b> to cancel the request and return to the <b>INITIALIZE FLASH</b> prompt.</li> <li>• Press PLUS (+) to select <b>YES</b> and begin initialization.                  When initialization is complete, the printer automatically exits Setup mode, and the control panel displays <b>PRINTER READY</b>. If you exit Setup mode while initialization is still in process, the control panel display flashes between the phrases <b>CHECKING E: MEMORY</b> and <b>PRINTER IDLE</b>.</li> </ul> </li> </ol> <p> <b>Note</b> • Depending on the amount of free FLASH memory, initialization may take up to 1 minute to complete.</p> <ol style="list-style-type: none"> <li>6. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation								
<b>SENSOR PROFILE PRINT</b>	<p><b>Print Sensor Profile</b></p> <p>The sensor profile may be used to troubleshoot registration problems that may be caused when the media sensor detects preprinted areas on the media or if it experiences difficulty in determining web location.</p> <p>Figure 28 shows a sensor profile. If the sensitivity of the media and/or ribbon sensors must be adjusted, use <i>Calibrate Media and Ribbon Sensor Sensitivity</i> on page 92 to adjust sensor sensitivity.</p> <div style="text-align: center;"> <p><b>Figure 28 • Sensor Profile</b></p> <table border="1" style="margin: 10px auto;"> <caption>Approximate Sensor Profile Data</caption> <thead> <tr> <th>Sensor Type</th> <th>Sensitivity Level</th> </tr> </thead> <tbody> <tr> <td>RIBBON</td> <td>0.85</td> </tr> <tr> <td>MEDIA</td> <td>0.20</td> </tr> <tr> <td>WEB</td> <td>0.55</td> </tr> </tbody> </table> </div> <p><b>To print a sensor profile:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to start this standard calibration procedure and print a media sensor profile.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>	Sensor Type	Sensitivity Level	RIBBON	0.85	MEDIA	0.20	WEB	0.55
Sensor Type	Sensitivity Level								
RIBBON	0.85								
MEDIA	0.20								
WEB	0.55								

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Parameter	Action/Explanation
<div style="border: 2px solid black; padding: 5px; text-align: center;"> <b>MEDIA AND RIBBON CALIBRATE</b> </div>	<p><b>Calibrate Media and Ribbon Sensor Sensitivity</b> Use this procedure to adjust sensitivity of media and ribbon sensors.</p> <p> <b>Important</b> • Follow this procedure exactly as presented. All of the steps must be performed even if only one of the sensors requires adjustment. You may press MINUS (-) at any step in this procedure to cancel the process.</p> <p><b>To perform a media and ribbon sensor calibration:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press SELECT and then PLUS (+) to start the calibration procedure. The <b>LOAD BACKING</b> prompt displays.</li> <li>3. Open the printhead.</li> <li>4. Remove approximately 8 in. (203 mm) of labels from the backing, and pull the media into the printer so that only the backing is between the media sensors.</li> <li>5. Leave the printhead open.</li> <li>6. Press PLUS (+) to continue. The <b>REMOVE RIBBON</b> prompt displays.</li> <li>7. Remove the ribbon (if used).</li> <li>8. Close the printhead.</li> <li>9. Press PLUS (+) to continue. The message <b>CALIBRATING PLEASE WAIT</b> displays. The printer adjusts the scale (gain) of the signals that it receives from the media and ribbon sensors based on the specific media and ribbon combination being used. On the sensor profile, this essentially corresponds to moving the peak of the graph up or down to optimize the readings for your application. When calibration is complete, <b>RELOAD ALL</b> displays.</li> <li>10. Open the printhead and pull the media forward until a label is positioned under the media sensor.</li> <li>11. Reload the ribbon (if used).</li> <li>12. Close the printhead.</li> <li>13. Press PLUS (+) to continue. The printer performs an auto-calibration. During this process, the printer checks the readings for the media and ribbon based on the new scale established, determines the label length, and determines the print mode. To see the new readings on the new scale, print a sensor profile.</li> <li>14. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<b>PARALLEL COMM.</b> <b>-BIDIRECTIONAL</b> +	<p><b>Set Parallel Communications</b></p> <p>Select the communications port that matches the one being used by the host computer.</p> <p><b>Default:</b> BIDIRECTIONAL</p> <p><b>Selections:</b> BIDIRECTIONAL, UNIDIRECTIONAL</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<b>SERIAL COMM</b> <b>-RS232</b> +	<p><b>Set Serial Communications</b></p> <p>Select the communications port that matches the one being used by the host computer.</p> <p> <b>Important</b> • Do not change this parameter from the default. The printer supports only RS-232. This parameter will be eliminated in a future version of the firmware.</p> <p><b>Default:</b> RS232</p> <p><b>Selections:</b> RS232, RS422/485, RS485 MULTIDROP</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<b>BAUD</b> <b>-9600</b> +	<p><b>Set Baud</b></p> <p>The baud setting of the printer must match the baud setting of the host computer for accurate communications to take place. Select the value that matches the one being used by the host computer.</p> <p><b>Default:</b> 9600</p> <p><b>Selections:</b> 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px;">           DATA BITS - 8 BITS         </div>	<p><b>Set Data Bits</b></p> <p>The data bits of the printer must match the data bits of the host computer for accurate communications to take place. Set the data bits to match the setting being used by the host computer.</p> <p> <b>Note</b> • Code Page 850 requires the data bits to be set to 8 bits. See the <i>ZPL II Programming Guide</i> for more information.</p> <p><b>Default:</b> 8 BITS <b>Selections:</b> 7 BITS, 8 BITS</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to toggle between the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px;">           PARITY - NONE +         </div>	<p><b>Set Parity</b></p> <p>The parity of the printer must match the parity of the host computer for accurate communications to take place. Select the parity that matches the one being used by the host computer.</p> <p><b>Default:</b> NONE <b>Selections:</b> EVEN, ODD, NONE</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px;">           HOST HANDSHAKE - XON/XOFF +         </div>	<p><b>Set Host Handshake</b></p> <p>The handshake protocol of the printer must match the handshake protocol of the host computer for communication to take place. Select the handshake protocol that matches the one being used by the host computer.</p> <p><b>Default:</b> XON/XOFF <b>Selections:</b> XON/XOFF, DTR/DSR, RTS/CTS</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 2px;">           PROTOCOL            -        NONE        +         </div>	<p><b>Set Protocol</b></p> <p>Protocol is a type of error checking system. Depending on the selection, an indicator may be sent from the printer to the host computer signifying that data has been received. Select the protocol that is requested by the host computer. Further details on protocol can be found in the <i>ZPL II Programming Guide</i>.</p> <p><b>Default:</b> NONE</p> <p><b>Selections:</b> NONE, ZEBRA, ACK_NAK</p> <p> <b>Note • ZEBRA</b> is the same as <b>ACK_NAK</b>, except that <b>ZEBRA</b> response messages are sequenced. If <b>ZEBRA</b> is selected, the printer must use <b>DTR/DSR</b> for host handshake protocol.</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 2px;">           NETWORK ID            -        000        +         </div>	<p><b>Set Network ID</b></p> <p>Network ID is used to assign a unique number to a printer. This gives the host computer the means to address a specific printer. This does not affect TCP/IP or IPX networks.</p> <p><b>Default:</b> 000</p> <p><b>Range:</b> 000 to 999</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move to the next digit position.</li> <li>3. Press PLUS (+) to increase the value of the digit.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 2px;">           COMMUNICATIONS            - NORMAL MODE      +         </div>	<p><b>Set Communications Mode</b></p> <p>The communication diagnostics mode is a troubleshooting tool for checking the interconnection between the printer and the host computer. When <b>DIAGNOSTICS</b> is selected, all data sent from the host computer to the printer prints as straight ASCII characters, with the hex value below the ASCII text. The printer prints all characters received, including control codes, like CR (carriage return). A sample printout is shown in <a href="#">Communications Diagnostics Test on page 138</a>.</p> <p>Notes on diagnostic printouts are defined as follows:</p> <ul style="list-style-type: none"> <li>• FE indicates a framing error.</li> <li>• OE indicates an overrun error.</li> <li>• PE indicates a parity error.</li> <li>• NE indicates noise.</li> </ul> <p><b>Default:</b> NORMAL MODE  <b>Selections:</b> NORMAL MODE, DIAGNOSTICS</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to toggle between the options.</li> <li>3. For any errors, check that your communication parameters are correct.</li> <li>4. Set the print width equal to or less than the label width used for the test. See <a href="#">Set Print Width on page 85</a> for more information.</li> <li>5. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 2px;">           CONTROL PREFIX            -      &lt; 7EH      +         </div>	<p><b>Set Control Prefix Character</b></p> <p>The printer looks for this two-digit hex character to indicate the start of a ZPL/ZPL II control instruction. The “H” that is displayed indicates Hexadecimal and is not part of the value.</p> <p> <b>Note</b> • Do not use the same hex value for the control, format, and delimiter character. The printer must see different characters to work properly.</p> <p><b>Default:</b> 7E (tilde—displayed as a black square)  <b>Range:</b> 00 to FF</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move to the next digit position.</li> <li>3. Press PLUS (+) to increase the value of the digit.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>



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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px;">                     FORMAT PREFIX                      -     &lt;^&gt;5EH     +                 </div>	<p><b>Set Format Prefix Character</b></p> <p>The format prefix is a two-digit hex value used as a parameter place marker in ZPL/ZPL II format instructions. The “H” that is displayed indicates Hexadecimal and is not part of the value. The printer looks for this hex character to indicate the start of a ZPL/ZPL II format instruction. See the <i>ZPL II Programming Guide Volume I</i> for more information.</p> <p> <b>Note</b> • Do not use the same hex value for the control, format, and delimiter character. The printer must see different characters to work properly.</p> <p><b>Default:</b> 5E (caret)  <b>Range:</b> 00 to FF</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move to the next digit position.</li> <li>3. Press PLUS (+) to increase the value of the digit.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px;">                     DELIMITER CHAR                      -     &lt;,&gt;2CH     +                 </div>	<p><b>Set Delimiter Character</b></p> <p>The delimiter character is a two-digit hex value used as a parameter place marker in ZPL/ZPL II format instructions. See the <i>ZPL II Programming Guide Volume I</i> for more information.</p> <p> <b>Note</b> • Do not use the same hex value for the control, format, and delimiter character. The printer must see different characters to work properly.</p> <p><b>Default:</b> 2C (comma)  <b>Range:</b> 00 to FF</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move to the next digit position.</li> <li>3. Press PLUS (+) to increase the value of the digit.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px;">                     ZPL MODE                      -      ZPL II      +                 </div>	<p><b>Select ZPL Mode</b></p> <p>The printer remains in the selected mode until it is changed by this parameter or by using a ZPL/ZPL II command. The printer accepts label formats written in either ZPL or ZPL II, eliminating the need to rewrite any ZPL formats that already exist. See the <i>ZPL II Programming Guide</i> for more information on the differences between ZPL and ZPL II.</p> <p><b>Default:</b> ZPL II</p> <p><b>Selections:</b> ZPL II, ZPL</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to toggle between the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px;">                     MEDIA POWER UP                      -      CALIBRATION      +                 </div>	<p><b>Select Media Power-Up Option</b></p> <p>This parameter sets the action of the media when you turn on the printer.</p> <p><b>Default:</b> CALIBRATION</p> <p><b>Selections:</b> FEED, CALIBRATION, LENGTH, and NO MOTION</p> <ul style="list-style-type: none"> <li>• <b>Feed</b>—feeds the labels to the first registration point.</li> <li>• <b>Calibration</b>—determines the length of the label and adjusts the sensor settings.</li> <li>• <b>Length</b>—In continuous mode, feeds the last stored label length. In noncontinuous mode, calibrates based on the maximum label length setting (see <a href="#">Set Maximum Label Length on page 86</a>).</li> <li>• <b>No Motion</b>—the media does not move. You must press FEED to cause the printer to resynch to the start of the next label.</li> </ul> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     HEAD CLOSE - CALIBRATION      +                 </div>	<p><b>Select Head Close Option</b></p> <p>This parameter sets the action of the media when you close the printhead.</p> <p><b>Default:</b> CALIBRATION</p> <p><b>Selections:</b> FEED, CALIBRATION, LENGTH, and NO MOTION</p> <ul style="list-style-type: none"> <li>• <b>Feed</b>—feeds the labels to the first registration point.</li> <li>• <b>Calibration</b>—determines the length of the label and adjusts the sensor settings.</li> <li>• <b>Length</b>—In continuous mode, feeds the last stored label length. In noncontinuous mode, calibrates based on the maximum label length setting (see <a href="#">Set Maximum Label Length on page 86</a>).</li> <li>• <b>No Motion</b>—the media does not move. You must press FEED to cause the printer to resynch to the start of the next label.</li> </ul> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; width: fit-content;">                     BACKFEED -      DEFAULT      +                 </div>	<p><b>Select Backfeed Sequence</b></p> <p>This parameter sets when label backfeed occurs after a label is removed in some print modes. It has no effect in Rewind mode. This setting is superseded by ~JS when received as part of a label format (see <i>ZPL II Programming Guide Volume I</i>).</p> <p><b>Default:</b> DEFAULT (90%)</p> <p><b>Selections:</b> DEFAULT, AFTER, BEFORE, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, OFF</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
	<p><b>Adjust Label Top Position</b></p> <p>This parameter adjusts the print position vertically on the label. Positive numbers adjust the label top position farther down the label (away from the printhead); negative numbers adjust the position up the label (toward the printhead). The displayed value represents dots.</p> <p><b>Default:</b> +000 <b>Range:</b> -120 to +120 dots</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to increase the value.</li> <li>3. Press MINUS (-) to decrease the value.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
	<p><b>Adjust Left Position</b></p> <p>This parameter establishes how far from the left edge of a label the format begins to print by adjusting horizontal positioning on the label. Positive numbers adjust the printing away from the main frame by the number of dots selected; negative numbers shift printing toward the main frame. The displayed value represents dots.</p> <p><b>Default:</b> 0000 <b>Range:</b> -9999 to +9999 dots</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move the cursor.</li> <li>3. Press PLUS (+) to change between +/- and to increase the value of the digit.</li> <li>4. For a negative value, enter the value before changing to the minus sign.</li> <li>5. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

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Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">                     WEB S.            073                      - ■■■■■■■■            +                 </div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">                     MEDIA S.        075                      - ■■■■■■■■            +                 </div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">                     RIBBON S.       071                      - ■■■■■■■■            +                 </div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">                     TAKE LABEL                      - ■■■■■■■■            +                 </div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">                     MEDIA LED      082                      - ■                      +                 </div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">                     RIBBON LED    008                      - ■                      +                 </div>	<p>These parameters are automatically set during the calibration procedure and should be changed only by a qualified service technician. Refer to the <i>ZPL II Programming Guide</i> for information on these parameters.</p> <p><b>To skip these parameters:</b></p> <ol style="list-style-type: none"> <li>1. Press PLUS (+) repeatedly.</li> </ol>
<div style="border: 1px solid black; padding: 2px;">                     LCD ADJUST    +10                      - ■                      +                 </div>	<p><b>Adjust LCD Display</b></p> <p>This parameter allows you to adjust the brightness of your LCD if it is difficult to read.</p> <p><b>Default:</b> 10</p> <p><b>Range:</b> 00 to 19</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) to increase the value (increase brightness).</li> <li>3. Press MINUS (-) to decrease the value (reduce brightness).</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 2px;">                     FORMAT CONVERT                      - NONE                    +                 </div>	<p><b>Select Format Convert</b></p> <p>Selects the bitmap scaling factor. The first number is the original dots per inch (dpi) value; the second, the dpi to which you would like to scale.</p> <p><b>Default:</b> NONE</p> <p><b>Selections:</b> NONE, 150 → 300, 150 → 600, 200 → 600, 300 → 600</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

Table 11 • Printer Parameters (Page 21 of 22)



Parameter	Action/Explanation
<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     IDLE DISPLAY - FW VERSION      +                 </div>	<p><b>Select Idle Display</b> This parameter selects the LCD options for the real-time clock.</p> <p> <b>Note</b> • If the default value is not selected, pressing PLUS (+) or MINUS (-) briefly displays the firmware version of the printer.</p> <p><b>Default:</b> FIRMWARE VERSION <b>Selections:</b> MM/DD/YY (24 HOUR), MM/DD/YY (12 HOUR), DD/MM/YY (24 HOUR), DD/MM/YY (12 HOUR), FW VERSION</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     RTC DATE - 01/31/01      +                 </div>	<p><b>Set RTC Date</b> This parameter allows you to set the date following the convention selected in <b>IDLE DISPLAY</b>.</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move to the next digit position.</li> <li>3. Press PLUS (+) to change the value of the digit.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     RTC TIME - 14:55      +                 </div>	<p><b>Set RTC Time</b> This parameter allows you to set the time following the convention selected in <b>IDLE DISPLAY</b>.</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press MINUS (-) to move to the next digit position.</li> <li>3. Press PLUS (+) to change the value of the digit.</li> <li>4. Press SELECT to accept any changes and deselect the parameter.</li> </ol>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">                     PASSWORD LEVEL - SELECTED ITEMS      +                 </div>	<p><b>Specify Password Level</b> This parameter allows you to select whether certain factory-selected menu items or all menu items are password protected.</p> <p><b>Default:</b> SELECTED ITEMS <b>Selections:</b> SELECTED ITEMS, ALL ITEMS</p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to toggle between the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>

Table 11 • Printer Parameters (Page 22 of 22)

Parameter	Action/Explanation
 <p>The screenshot shows a rectangular LCD display with a black border. At the top, the word "LANGUAGE" is displayed in all caps. Below it, the word "ENGLISH" is displayed in all caps, flanked by left and right arrow symbols. The entire display is enclosed in a thick black border.</p>	<p><b>Select the Display Language</b> This parameter changes the language displayed on the LCD. <b>Default:</b> ENGLISH <b>Selections:</b> ENGLISH, SPANISH, FRENCH, GERMAN, ITALIAN, NORWEGIAN, PORTUGUESE, SWEDISH, DANISH, SPANISH 2, DUTCH, FINNISH, JAPAN</p> <p><b>To change the value shown:</b></p> <ol style="list-style-type: none"> <li>1. Press SELECT to select the parameter.</li> <li>2. Press PLUS (+) or MINUS (-) to scroll through the options.</li> <li>3. Press SELECT to accept any changes and deselect the parameter.</li> </ol>








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# Routine Maintenance

This section provides routine cleaning and maintenance procedures.

## Contents

Replacing Printer Components .....	106
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## Replacing Printer Components

Some printer components, such as the printhead and platen roller, may wear out over time and can be replaced easily. Regular cleaning may extend the life of some of these components. See [Cleaning Procedures on page 107](#) for the recommended cleaning intervals.

### Ordering Replacement Parts

For optimal printing quality and proper printer performance across our product line, Zebra strongly recommends the use of genuine Zebra™ supplies as part of the total solution.

Contact your authorized Zebra reseller for part ordering information, or see [Contacts on page 11](#) for contact addresses and telephone numbers.

### Recycling Printer Components



The majority of this printer's components are recyclable. The printer's main logic board includes a battery that you should dispose of properly.

Do not dispose of any printer components in unsorted municipal waste. Please dispose of the battery according to your local regulations, and recycle the other printer components according to your local standards. For more information, see <http://www.zebra.com/environment>.

## Lubrication

No lubrication is needed for this printer.

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**Caution** • Some commercially available lubricants will damage the finish and the mechanical parts if used on this printer.

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## Cleaning Procedures



**Important** • Zebra is not responsible for damage caused by the use of cleaning fluids on this printer.

Specific cleaning procedures are provided on the following pages. [Table 12](#) shows the recommended cleaning schedule.

**Table 12 • Recommended Cleaning Schedule**

Area		Method	Interval
Printhead		Solvent*	<b>Direct Thermal Mode:</b> After every roll of media (or 500 feet of fanfold media).
Platen roller		Solvent*	
Media sensors		Air blow	<b>Thermal Transfer Mode:</b> After every roll of ribbon or three rolls of media.
Ribbon sensor		Air blow	
Media path		Solvent*	These intervals are intended as guidelines only. You may have to clean more often, depending upon your application and media.
Ribbon path		Solvent*	
Pinch roller. (part of Peel-Off option)		Solvent*	
Cutter module	If cutting continuous, pressure-sensitive media	Solvent*	
	If cutting tag stock or label liner material	Solvent* and air blow	After every two or three rolls of media.
Tear-off/peel-off bar		Solvent*	Once a month.
Take-label sensor		Air blow	Once every six months.

\* Zebra recommends using Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl and 10% deionized water)

### Clean the Exterior

You may clean the exterior surfaces of the printer with a lint-free cloth and a small amount of a mild detergent, if necessary. Do not use harsh or abrasive cleaning agents or solvents.

## Clean the Printhead and Platen Roller

You can minimize printhead wear and maintain print quality with regular preventive measures. Over time, the movement of media or ribbon across the printhead wears through the protective ceramic coating, exposing and eventually damaging the print elements (dots). To avoid abrasion:

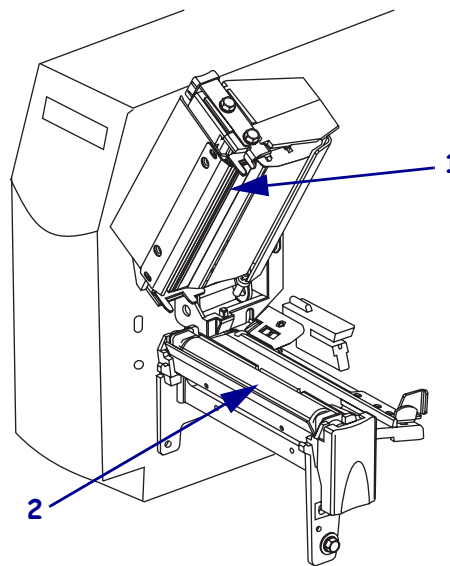
- Clean the printhead frequently, and use well-lubricated thermal transfer ribbons with backings optimized to reduce friction.
- Minimize printhead pressure and burn temperature settings by optimizing the balance between the two.
- Ensure that the thermal transfer ribbon is as wide or wider than the label media to prevent exposing the elements to the more abrasive label material.

For best results, clean the printhead after changing every roll of ribbon. Inconsistent print quality, such as voids in the bar code or graphics, may indicate a dirty printhead.



**Note** • The printer can remain on while you are cleaning the printhead. In this way, all label formats, images, and all temporary parameter settings stored in the printer's internal memory are saved. In addition, keep the peel engaged while cleaning the platen roller (media must be unloaded to do this) to reduce the risk of bending the tear-off/peel-off bar.

Figure 29 • Cleaning the Printhead and Platen Roller



1	Printhead assembly
2	Platen roller

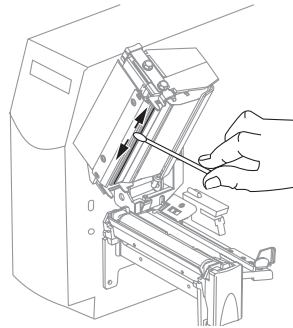


**Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

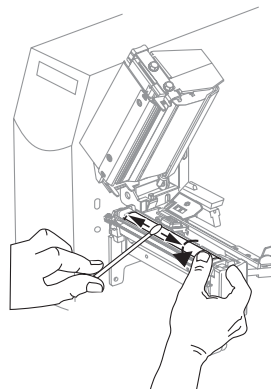
**Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead. You are not required to turn off the printer power when working near an open printhead, but Zebra recommends it as a precaution. If you turn off the power, you will lose all temporary settings, such as label formats, and you must reload them before you resume printing.

**To clean the printhead and platen roller, complete these steps:**

1. Open the printhead assembly.
2. Remove the media and ribbon.
3. Using the swab from the Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl alcohol and 10% deionized water and a cotton swab, wipe along the brown strip on the printhead assembly from end to end. Allow the solvent to evaporate.



4. While manually rotating the platen roller, clean it thoroughly with the swab. Allow the solvent to evaporate.



5. Reload media and ribbon, and close the printhead assembly.



**Note** • If performing this procedure does not improve print quality, try cleaning the printhead with *Save-A-Printhead* cleaning film. This specially coated material removes contamination buildup without damaging the printhead. Call your authorized Zebra reseller for more information.

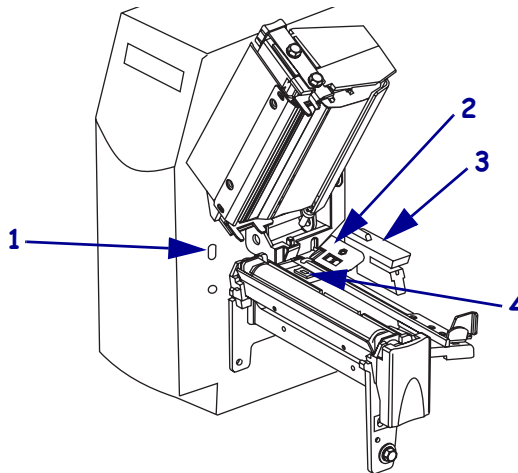
## Clean the Media Compartment and Sensors

**Caution** • While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead. You are not required to turn off the printer power when working near an open printhead, but Zebra recommends it as a precaution. If you turn off the power, you will lose all temporary settings, such as label formats, and you must reload them before you resume printing.

### To clean the media compartment and sensors, complete these steps:

1. Brush or vacuum any accumulated paper lint and dust away from the media and ribbon paths.
2. Brush or vacuum any paper lint and dust away from the sensors (see [Figure 30](#)).

Figure 30 • Cleaning the Sensors

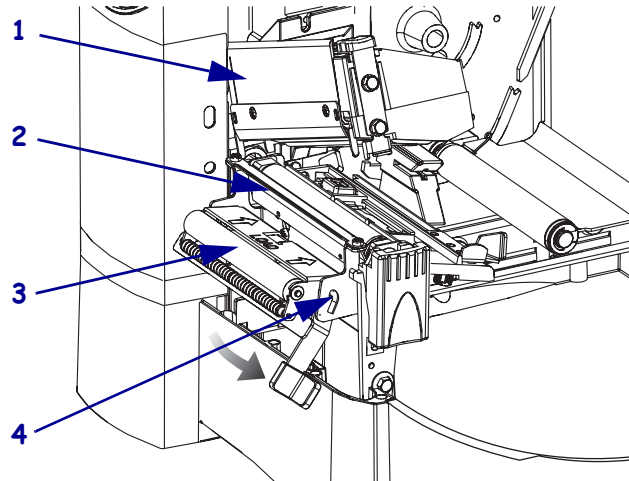


1	Take-label sensor
2	Ribbon sensor
3	Transmissive sensor
4	Reflective sensor

## Clean the Rewind Option

The Rewind option is required. Refer to [Figure 31](#) and perform the following procedure if adhesive buildup begins to affect peel performance.

**Figure 31 • Cleaning the Rewind Option**



1	Printhead Assembly
2	Tear-Off/Peel-Off Bar
3	Pinch Roller
4	Peel Assembly

### To clean the Rewind option, complete these steps:

1. Open the printhead assembly.
2. Close the peel assembly to prevent bending the tear-off/peel-off bar during cleaning.
3. Use the Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl alcohol and 10% deionized water and a cotton swab to remove excess adhesive from the tear-off/peel-off bar. Allow the solvent to evaporate.



**Note** • Apply minimum force when cleaning the tear-off/peel-off bar. Excessive force can bend the tear-off/peel-off bar, which can have a negative effect on peel performance.

4. Open the peel assembly by pivoting the module toward you.
5. Manually rotate the pinch roller and clean thoroughly with solvent and a swab. Allow the solvent to evaporate.
6. Close the peel assembly.
7. Close the printhead assembly.

## Clean the Peel-Off Assembly

The Peel-Off option is required.

The Peel assembly consists of several spring-loaded rollers to ensure the proper roller pressure. Use the peel release lever and your right hand to open and close the Peel assembly. Doing this will keep your fingers away from the rollers.



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**Caution** • Do not use your left hand to assist in closing the Peel assembly. The top edge of the Peel roller/assembly could pinch your fingers.

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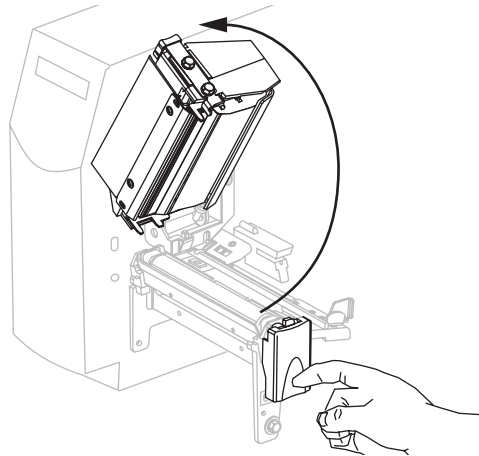
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**Caution** • The printhead may be hot and could cause severe burns. Allow the printhead to cool.

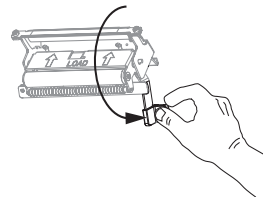
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### If adhesive buildup affects peel-off performance, complete these steps:

1. Press the printhead release latch to open the printhead assembly.



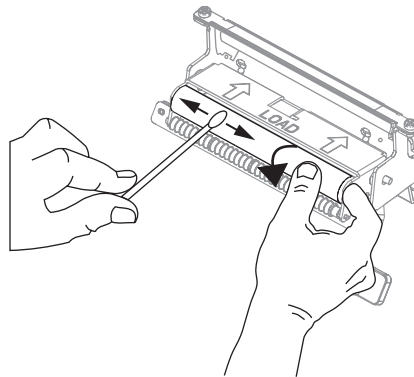
2. Lift the printhead until it latches open.
3. Open the peel assembly by pivoting the module toward you.



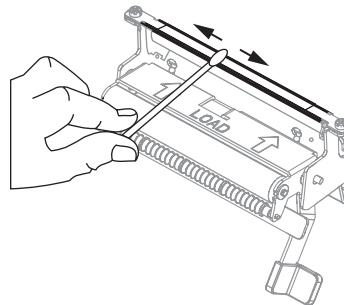
4. Remove any media backing to expose the pinch roller.



5. While manually rotating the pinch roller, clean it thoroughly with the swab from the Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl alcohol and 10% deionized water and a cotton swab. Allow the solvent to evaporate.

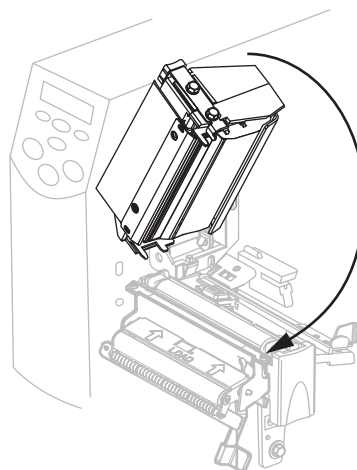


6. Use the swab to remove excess adhesive from the tear-off/peel-off bar. Allow the solvent to evaporate.



**Important** • Apply minimum force when cleaning the tear-off/peel-off bar. Excessive force can cause the tear-off/peel-off bar to bend, which could have a negative effect on peel performance.

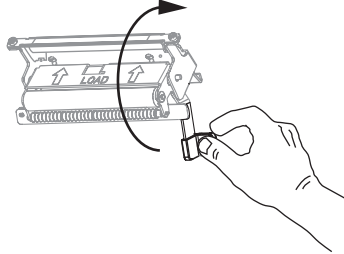
7. Close the printhead assembly.





- 
8. **Caution** • Use the peel release lever and your right hand to close the peel assembly. Do not use your left hand to assist in closing. The top edge of the peel roller/assembly could pinch your fingers.
- 

Close the peel assembly using the peel-off mechanism release lever.



9. Close the media door.  
The printer is ready to operate.

## Clean the Cutter Module

If the cutter is not cutting the labels cleanly or if it jams with labels, clean the cutter.



**Caution** • For personnel safety, always power off and unplug the printer before performing this procedure.

### To clean the cutter module, complete these steps:

1. Turn the printer Off (O), and unplug the printer from its power source.

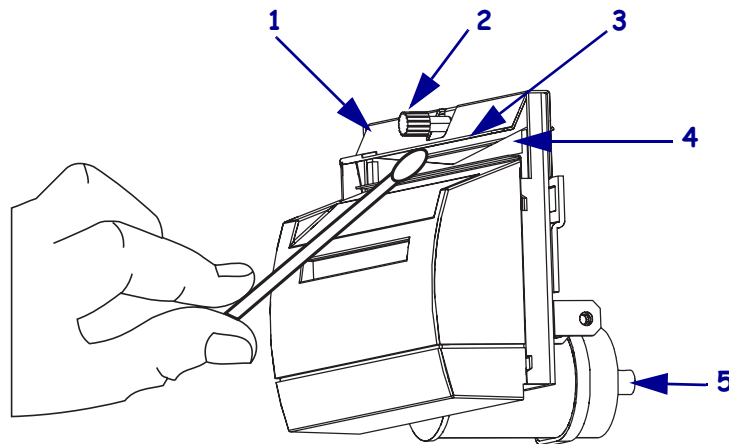


2. **Caution** • The cutter blade is sharp. Do not touch or rub the blade with your fingers.

Remove the cutter shield by removing the cutter shield thumbscrew and lock washer.

3. See [Figure 32](#). Using the Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl and 10% deionized water and swab, wipe along the upper cutting surface. Allow the solvent to evaporate.

**Figure 32 • Cleaning the Cutter Module**



<b>1</b>	Cutter shield
<b>2</b>	Cutter shield thumbscrew and lock washer
<b>3</b>	Upper cutting surface
<b>4</b>	Cutter blade
<b>5</b>	Cutter motor thumbscrew

4. To expose the V-shaped cutter blade, turn the cutter motor thumbscrew counterclockwise to lower the blade.
5. Using the Preventive Maintenance Kit (part number 47362) or a solution of 90% Isopropyl and 10% deionized water and swab, wipe along the cutter blade. Allow the solvent to evaporate.

6. Replace the cutter shield.
7. Plug the printer into its power source, and then turn On (I) the printer.  
The lower cutter blade returns to its correct operating position.
8. If the cutter continues to perform unsatisfactorily, contact an authorized service technician.

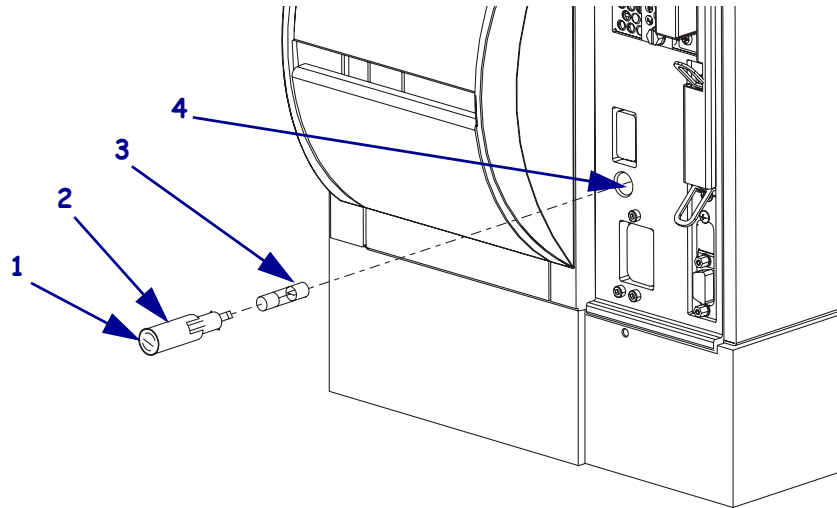
## Fuse Replacement

A user-replaceable AC power fuse is located just below the AC power switch at the rear of the printer. The replacement fuse is a 5 × 20 mm fast-blow style rated at 5 Amp/250 VAC.



**Caution** • Turn Off (O) the printer and disconnect it from the power source before performing the following maintenance.

Figure 33 • Replacing the Fuse



1	Slot
2	Fuse holder
3	Fuse
4	Fuse socket

### To replace the fuse, complete these steps:

1. See [Figure 33](#). Insert the tip of a flat blade screwdriver into the slot in the end of the fuse holder.
2. Turn the screwdriver counterclockwise until the fuse holder disengages from fuse socket.
3. Remove the fuse holder from the fuse socket.
4. Remove the old fuse from the fuse holder.
5. Insert a new, compatible fuse into the fuse holder.
6. Place the fuse holder into the fuse socket.
7. Insert the tip of a flat blade screwdriver into the slot in the end of the fuse holder.
8. With the screwdriver, press in gently, and then turn the screwdriver clockwise until the fuse holder engages.



**Notes •** \_\_\_\_\_

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# Troubleshooting

This section provides information about errors that you might need to troubleshoot. Assorted diagnostic tests are included.

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## Troubleshooting Checklists

### If an error condition exists with the printer, review this checklist:

- Is there an error message on the LCD? If yes, see [LCD Error Messages](#) on page 121.
- Are noncontinuous labels being treated as continuous labels? If yes, see [Calibrate Media and Ribbon Sensor Sensitivity](#) on page 92.
- Is the CHECK RIBBON light on when ribbon is loaded properly, or are noncontinuous labels being treated as continuous labels? If yes, see [Calibrate Media and Ribbon Sensor Sensitivity](#) on page 92.
- Are you experiencing problems with print quality? If yes, see [Print Quality Problems](#) on page 124.
- Are you experiencing communications problems? If yes, see [Communications Problems](#) on page 128.

### If the labels are not printing or advancing correctly, review this checklist:

- Are you using the correct type of labels? Review the types of label in [Types of Media](#) on page 31.
- Are you using a label that is narrower than the maximum print width? See [Set Print Width](#) on page 85.
- Review the label- and ribbon-loading illustrations in [Media Loading Overview](#) on page 36 and [Load Ribbon](#) on page 62.
- Does the printhead need to be adjusted? See [Adjust Printhead Pressure](#) on page 72 for more information.
- Do the sensors need to be calibrated? See [Calibrate Media and Ribbon Sensor Sensitivity](#) on page 92 for more information.

### If none of the above suggestions correct the problem, review this checklist:

- Perform one or more of the self-tests given in [Printer Diagnostics](#) on page 131. Use the results to help identify the problem.
- If you are still having problems, see [Contacts](#) on page 11 for customer support information.



## LCD Error Messages

The LCD displays messages when there is an error. See [Table 13](#) for LCD errors, the possible causes, and the recommended solutions.

**Table 13 • LCD Error Messages**

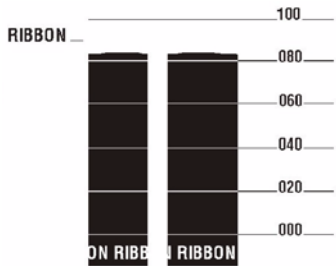
LCD Display/ Printer Condition	Possible Cause	Recommended Solution
<div style="border: 2px solid black; padding: 5px; text-align: center; width: fit-content; margin-bottom: 10px;"> <b>ERROR CONDITION RIBBON OUT</b> </div> <p>The printer stops; RIBBON light ON, ERROR light flashes.</p>	<p>In thermal transfer mode, ribbon is not loaded or incorrectly loaded.</p>	<p>Load ribbon correctly. See <a href="#">Load Ribbon on page 62</a>.</p>
	<p>In thermal transfer mode, the ribbon sensor is not detecting ribbon that is loaded incorrectly.</p>	<ol style="list-style-type: none"> <li>1. Load ribbon correctly. See <a href="#">Load Ribbon on page 62</a>. Make sure that the ribbon is over the ribbon sensor.</li> <li>2. Calibrate the sensors. See <a href="#">Calibrate Media and Ribbon Sensor Sensitivity on page 92</a>.</li> </ol>
	<p>In thermal transfer mode, media is blocking the ribbon sensor.</p>	<ol style="list-style-type: none"> <li>1. Load media correctly. See <a href="#">Media Loading Overview on page 36</a>.</li> <li>2. Calibrate the sensors. See <a href="#">Calibrate Media and Ribbon Sensor Sensitivity on page 92</a>.</li> </ol>
	<p>In thermal transfer mode, the printer did not detect the ribbon even though it is loaded correctly.</p>	<ol style="list-style-type: none"> <li>1. Print a sensor profile. See <a href="#">Print Sensor Profile on page 91</a>. The ribbon out threshold (marked by the word RIBBON) is likely too high, above the black area that indicates where the ribbon is detected. <div style="text-align: center; margin: 10px 0;">  </div> </li> <li>2. Calibrate the sensors or load printer defaults. See <a href="#">Calibrate Media and Ribbon Sensor Sensitivity on page 92</a> or <a href="#">LOAD DEFAULTS on page 77</a>.</li> </ol>
	<p>If you are using direct thermal media, the printer is waiting for ribbon to be loaded because it is incorrectly set for thermal transfer mode.</p>	<p>Set the printer for Direct Thermal mode. See <a href="#">Select Print Method on page 85</a>.</p>

Table 13 • LCD Error Messages (Continued)





LCD Display/ Printer Condition	Possible Cause	Recommended Solution
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>WARNING RIBBON IN</b> </div> <p>RIBBON light ON, ERROR light flashes.</p>	Ribbon is loaded, but the printer is set for direct thermal mode.	<p>Ribbon is not required with direct thermal media. If you are using direct thermal media, remove ribbon unless you are using it to protect the printhead. This error message will not affect printing.</p> <p>If you are using thermal transfer media, which requires ribbon, set the printer for Thermal Transfer mode. See <i>Select Print Method</i> on page 85.</p>
	Media is not loaded or is loaded incorrectly.	Load media correctly. See <i>Media Loading Overview</i> on page 36.
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>ERROR CONDITION PAPER OUT</b> </div> <p>The printer stops; MEDIA light ON, ERROR light flashes.</p>	Misaligned media sensor.	Check position of the media sensor.
	The printer is set for noncontinuous media, but continuous media is loaded.	Install proper media type, or reset printer for current media type and perform calibration.
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>ERROR CONDITION HEAD OPEN</b> </div> <p>The printer stops and the ERROR light flashes.</p>	The printhead is not fully closed.	Close printhead completely.
	The head open sensor is not working properly.	Call a service technician.
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>WARNING HEAD TOO HOT</b> </div> <p>The printer stops and the ERROR light flashes.</p>	 <b>Caution</b> • The printhead may be hot enough to cause severe burns. Allow the printhead to cool.	
	The printhead is over temperature.	Allow the printer to cool. Printing automatically resumes when the printhead elements cool to an acceptable operating temperature.

Table 13 • LCD Error Messages (Continued)

LCD Display/ Printer Condition	Possible Cause	Recommended Solution
<div style="border: 2px solid black; padding: 5px; text-align: center;"> <b>WARNING HEAD COLD</b> </div> <p>The printer stops and the ERROR light flashes.</p>	 <p><b>Caution</b> • An improperly connected printhead data or power cable can cause this error message. The printhead may be hot enough to cause severe burns. Allow the printhead to cool.</p>	
	<p>The printhead is under temperature.</p>	<p>Continue printing while the printhead reaches the correct operating temperature. If the error remains, the environment may be too cold for proper printing. Relocate the printer to a warmer area.</p>
	<p>The printhead data cable is not properly connected.</p>	 <p><b>Caution</b> • Turn off (O) the printer before performing this procedure. Failure to do so can damage the printhead.</p> <ol style="list-style-type: none"> <li>1. Turn Off (O) the printer.</li> <li>2. Disconnect and reconnect the data cable to the printhead.</li> <li>3. Ensure that the cable connector is fully inserted into the printhead connector.</li> <li>4. Turn on (I) the printer.</li> </ol>
<div style="border: 2px solid black; padding: 5px; text-align: center;"> <b>ERROR CONDITION CUTTER JAM</b> </div>	 <p><b>Caution</b> • The cutter blade is sharp. Do not touch or rub the blade with your fingers.</p>	
	<p>Cutter blade is in the media path.</p>	<p>Turn off the print engine power and unplug the printer. Inspect the cutter module for debris and clean as needed following the cleaning instructions in <a href="#">Clean the Cutter Module on page 115</a>.</p>
<div style="border: 2px solid black; padding: 5px; text-align: center;"> <b>OUT OF MEMORY (function)</b> </div>	<p>There is not enough memory to perform the function specified on the second line of the error message.</p>	<p>Ensure that sufficient DRAM exists for the label length, downloaded fonts/graphics, and images.</p>
		<p>Ensure that the device, such as FLASH memory or PCMCIA card, is installed and not write protected or full.</p>
		<p>Ensure that the data is not directed to a device that is not installed or available.</p>
		<p>Refer to the <i>Maintenance Manual</i> for more information about the specified function.</p>

## Print Quality Problems

Table 14 identifies problems with print quality, the possible causes, and the recommended solutions.


**Table 14 • Print Quality Problems**

Problem	Possible Cause	Recommended Solution
<b>General print quality issues</b>	The printer is set at the incorrect print speed.	For optimal print quality, set the print speed to the lowest possible setting for your application via control panel, the driver, or the software. See <a href="#">Adjust Print Speed on page 82</a> . You may wish to perform the <a href="#">FEED Self Test on page 134</a> .
	You are using an incorrect combination of labels and ribbon for your application.	<ol style="list-style-type: none"> <li>1. Switch to a different type of media or ribbon to try to find a compatible combination.</li> <li>2. If necessary, consult your authorized Zebra reseller or distributor for information and advice.</li> </ol>
	The printer is set at an incorrect darkness level.	For optimal print quality, set the darkness to the lowest possible setting for your application via the control panel, the driver, or the software. See <a href="#">Adjust Print Darkness on page 82</a> . You may wish to perform the <a href="#">FEED Self Test on page 134</a> to determine the ideal darkness setting.
	The printhead is dirty.	See <a href="#">Clean the Printhead and Platen Roller on page 108</a> .
<b>Wrinkled ribbon</b>	Ribbon fed through the machine incorrectly.	See <a href="#">Load Ribbon on page 62</a> .
	Incorrect burn temperature.	Set the darkness to the lowest possible setting for good print quality. See <a href="#">Adjust Print Darkness on page 82</a> .
	Incorrect or uneven pressure.	Set the pressure to the minimum needed for good print quality. See <a href="#">Adjust Printhead Pressure on page 72</a> .
	Media not feeding properly; “walking” from side to side.	Make sure that media is snug by adjusting the media guide, or call a service technician.
	The strip plate needs adjusting.	Call a service technician.
	The printhead needs vertical adjustment.	Call a service technician.
	The printhead and platen roller need to be realigned.	Call a service technician.
<b>Long tracks of missing print on several labels</b>	Print element damaged.	Call a service technician.
	Wrinkled ribbon.	See wrinkled ribbon causes and solutions in this table.

**Table 14 • Print Quality Problems (Continued)**

<b>Problem</b>	<b>Possible Cause</b>	<b>Recommended Solution</b>
<b>Fine, angular gray lines on blank labels</b>	Wrinkled ribbon.	See wrinkled ribbon causes and solutions in this table.
<b>Printing too light or too dark over the entire label</b>	Media or ribbon is not designed for high-speed operation.	Replace supplies with those recommended for high-speed operation.
	You are using an incorrect combination of labels and ribbon for your application.	<ol style="list-style-type: none"> <li>1. Switch to a different type of media or ribbon to try to find a compatible combination.</li> <li>2. If necessary, consult your authorized Zebra reseller or distributor for information and advice.</li> </ol>
	You are using ribbon with direct thermal media.	<p>Direct thermal media does not require ribbon. To check if you are using direct thermal media, perform the label scratch test in <i>When to Use Ribbon</i> on page 33.</p> <p>If you are using ribbon intentionally with direct thermal media, increase the darkness level, but note that high darkness levels may decrease printhead life. You may wish to perform the <i>FEED Self Test</i> on page 134 to determine the ideal darkness setting.</p>
	Incorrect or uneven printhead pressure.	Set the pressure to the minimum needed. See <i>Adjust Printhead Pressure</i> on page 72.
<b>Smudge marks on labels</b>	Media or ribbon is not designed for high-speed operation.	Replace supplies with those recommended for high-speed operation.
<b>Misregistration/skips labels</b>	The printer is not calibrated.	Recalibrate the printer.
	Media sensor is not positioned correctly.	Perform media sensor position adjustment.
	Improper label format.	Use correct label format.
<b>Misregistration and misprint of one to three labels</b>	The platen roller is dirty.	See <i>Clean the Printhead and Platen Roller</i> on page 108.
	Media sensor is not positioned correctly.	Place media sensor in proper position.
	Media does not meet specifications.	Use media that meets specifications.

**Table 14 • Print Quality Problems (Continued)**

<b>Problem</b>	<b>Possible Cause</b>	<b>Recommended Solution</b>
<b>Vertical drift in top-of-form position</b>	Normal tolerances of mechanical parts and printer modes.   <b>Note</b> • A vertical drift of ± 4 to 6 dot rows (approximately 0.5 mm) is within normal tolerances.	1. Calibrate the printer. 2. Adjust the label top position setting. See <a href="#">Adjust Label Top Position on page 100</a> .
	The printer is out of calibration.	Recalibrate the printer.
	The platen roller is dirty.	See <a href="#">Clean the Printhead and Platen Roller on page 108</a> .
<b>Vertical image or label drift</b>	The printer is using noncontinuous labels but is configured in continuous mode.	Configure the printer for non-continuous and run calibration routine, if necessary.
	Incorrectly positioned media sensor.	Ensure the media sensor is properly positioned to read a single/consistent interlabel gap.
	Improperly calibrated media sensor.	See <a href="#">Calibrate Media and Ribbon Sensor Sensitivity on page 92</a> .
	The platen roller is dirty.	Clean the platen roller. See <a href="#">Clean the Printhead and Platen Roller on page 108</a> .
	Improper printhead pressure settings (toggles).	Adjust the printhead pressure to ensure proper functionality.
	Improperly loaded ribbon or media.	Verify that the printer is loaded properly.
	Incompatible media.	Ensure that the interlabel gaps or notches are 2 to 4 mm and consistently placed. Media must not exceed minimum specifications for mode of operation.
<b>The bar code printed on a label does not scan.</b>	The bar code is not within specifications because the print is too light or too dark.	Perform the <a href="#">FEED Self Test on page 134</a> . Adjust the darkness or print speed settings as necessary.
	Not enough blank space around the bar code.	Leave at least 1/8 in. (3.2 mm) between the bar code and other printed areas on the label and between the bar code and the edge of the label.

## Calibration Problems

Table 15 identifies problems with calibration, the possible causes, and the recommended solutions.

**Table 15 • Calibration Problems**

<b>Problem</b>	<b>Possible Cause</b>	<b>Recommended Solution</b>
Loss of printing registration on labels. Excessive vertical drift in top-of-form registration.	Improperly positioned media guides.	Ensure that the media guides are properly positioned.
	Media type set incorrectly.	Set the printer for the correct media type (non-continuous or continuous). See <i>Set Media Type</i> on page 84.
	Incorrect sensor being used for the media type.	Manually select the correct sensor to use. See <i>Select a Sensor</i> on page 84.
	Media loaded incorrectly or media sensor positioned improperly.	Reload the media and ensure that the sensor in use is properly positioned (see <i>Position the Media Sensors</i> on page 68).
Auto Calibrate failed.	Dirty platen roller.	Clean the platen roller according to the instructions in <i>Clean the Printhead and Platen Roller</i> on page 108.
	Improperly loaded media or ribbon.	Ensure that media and ribbon are loaded correctly.
	The sensors could not detect the media or ribbon.	Manually calibrate the printer (see <i>Calibrate Media and Ribbon Sensor Sensitivity</i> on page 92).
	Sensors dirty or improperly positioned.	Ensure that the sensors are clean and properly positioned.

## Communications Problems

Table 16 identifies problems with communications, the possible causes, and the recommended solutions.

**Table 16 • Communications Problems**

Problem	Possible Cause	Recommended Solution
<p><b>A label format was sent to the printer but was not recognized. The DATA light does not flash.</b></p>	<p>The communication parameters are incorrect.</p>	<p>Check the printer driver or software communications settings (if applicable).</p>
		<p>If you are using serial communication, check the serial port setting in the control panel menu. See <a href="#">Set Serial Communications on page 93</a>.</p>
		<p>If you are using serial communication, make sure you are using the correct communication cable. See <a href="#">Select a Data Communication Interface on page 25</a> for basic cabling information.</p>
		<p>Using the control panel controls, check the protocol setting. It should be set to <b>NONE</b>. See <a href="#">Set Protocol on page 95</a>.</p>
		<p>If a driver is used, check the driver communication settings for your connection.</p>
<p><b>A label format was sent to the printer. Several labels print, then the printer skips, misplaces, misses, or distorts the image on the label.</b></p>	<p>The serial communication settings are incorrect.</p>	<p>Ensure that the flow control settings match.</p>
		<p>Check the communication cable length. See <a href="#">Select a Data Communication Interface on page 25</a> for requirements.</p>
		<p>Check the printer driver or software communications settings (if applicable).</p>
<p><b>A label format was sent to the printer but was not recognized. The DATA light flashes but no printing occurs.</b></p>	<p>The prefix and delimiter characters set in the printer do not match the ones in the label format.</p>	<p>Verify the prefix and delimiter characters. See <a href="#">Set Format Prefix Character on page 97</a> and <a href="#">Set Delimiter Character on page 97</a> for the requirements.</p>
	<p>Incorrect data is being sent to the printer.</p>	<p>Ensure that ZPL II is being used.</p>
		<p>Check the communication settings on the computer. Ensure that they match the printer settings.</p>
		<p>If the problem continues, check the ZPL II format for changed ^CC, ^CT, and ^CD.</p>



## Miscellaneous Printer Problems

Table 17 identifies miscellaneous problems with the printer, the possible causes, and the recommended solutions.

**Table 17 • Miscellaneous Printer Problems**

Problem	Possible Cause	Recommended Solution
<b>The LCD displays a language that I cannot read</b>	The language parameter was changed through the control panel or a ZPL command.	<ol style="list-style-type: none"> <li>1. Press <b>SETUP/EXIT</b> to enter configuration mode.</li> <li>2. Press <b>MINUS (-)</b>. The printer displays the <b>LANGUAGE</b> parameter in the current language. Even if you cannot recognize the characters displayed, you can still scroll to another language.</li> <li>3. Press <b>SELECT</b> to select the parameter.</li> <li>4. Press <b>PLUS (+)</b> or <b>MINUS (-)</b> to scroll through the choices.</li> <li>5. Press <b>SETUP/EXIT</b>. The LCD displays <b>SAVE CHANGES</b> in the original language.</li> <li>6. Press <b>SETUP/EXIT</b> again to exit configuration mode and save the changes (if the language does not change, you may need to scroll to a different save option by pressing <b>PLUS (+)</b> or <b>MINUS (-)</b> in the previous step).</li> <li>7. Repeat this process, if necessary, until you reach the desired language.</li> </ol>
<b>The LCD is missing characters or parts of characters</b>	The LCD may need replacing.	Call a service technician.
<b>Changes in parameter settings did not take effect</b>	Parameters are set incorrectly.	<ol style="list-style-type: none"> <li>1. Set parameters and save permanently.</li> <li>2. Turn the printer power Off (O) and then On (I).</li> </ol>
	A ZPL command turned off the ability to change the parameter.	Refer to the <i>ZPL Programming Guide</i> , or call a service technician.
	A ZPL command changed the parameter back to the previous setting.	Refer to the <i>ZPL Programming Guide</i> , or call a service technician.
	If the problem continues, there may be a problem with the main logic board.	Call a service technician.

**Table 17 • Miscellaneous Printer Problems (Continued)**

<b>Problem</b>	<b>Possible Cause</b>	<b>Recommended Solution</b>
<b>The printer fails to calibrate or detect the top of the label.</b>	The printer was not calibrated for the label being used.	Perform the calibration procedure in <i>Calibrate Media and Ribbon Sensor Sensitivity</i> on page 92.
	The printer is configured for continuous media.	Set the media type to noncontinuous media. See <i>Set Media Type</i> on page 84.
	The driver or software configuration is not set correctly.	Driver or software settings produce ZPL commands that can overwrite the printer configuration. Check the driver or software media-related setting.
<b>Non-continuous labels are being treated as continuous labels.</b>	The printer is configured for continuous media.	Set the media type to noncontinuous media. See <i>Set Media Type</i> on page 84.
	The printer was not calibrated for the media being used.	Perform the calibration procedure in <i>Calibrate Media and Ribbon Sensor Sensitivity</i> on page 92.
<b>All lights are on, but nothing displays on the LCD, and the printer locks up.</b>	Internal electronic or firmware failure.	Call a service technician.
<b>The printer locks up while running the Power-On Self Test.</b>	Main logic board failure.	Call a service technician.

## Printer Diagnostics

Self tests and other diagnostics provide specific information about the condition of the printer. The self tests produce sample printouts and provide specific information that helps determine the operating conditions for the printer. The most commonly used are the Power-On and the CANCEL self tests.



**Important** • Use full-width media when performing self tests. If your media is not wide enough, the test labels may print on the platen roller. To prevent this from happening, check the print width using [Set Print Width on page 85](#), and ensure that the width is correct for the media that you are using.

Each self test is enabled by pressing a specific control panel key or combination of keys while turning the power On (I). Keep the key(s) pressed until the first indicator light turns off. The selected self test automatically starts at the end of the Power-On Self Test.



**Note** •

- When performing these self tests, do not send data to the printer from the host.
- If your media is shorter than the label to be printed, the test label continues on the next label.
- When canceling a self test prior to its actual completion, always reset the printer by turning the printer power Off (O) and then On (I).

### Power-On Self Test

A Power-On Self Test (POST) is performed each time the printer is turned On (I). During this test, the control panel lights (LEDs) turn on and off to ensure proper operation. At the end of this self test, only the POWER LED remains lit. When the Power-On Self Test is complete, the media is advanced to the proper position.

**To initiate the Power-On Self Test, complete these steps:**

1. Turn On (I) the printer using the power switch located to the side of the control panel.  
 The POWER LED illuminates. The other control panel LEDs and the LCD monitor the progress and indicate the results of the individual tests. All messages during the POST display in English; however, if the test fails, the resulting messages cycle through the international languages as well.

## CANCEL Self Test

The CANCEL self test prints a configuration label (Figure 34).

### To perform the CANCEL Self Test, complete these steps:

1. Turn Off (O) the printer.
2. Press and hold CANCEL while turning the printer On (I). Hold CANCEL until the first control panel light turns off.  
A printer configuration label prints (Figure 34).

Figure 34 • Configuration Label

PRINTER CONFIGURATION	
Zebra Technologies ZTC Z4MPlus-200 dpi	
+19.....	DARKNESS
2 IPS.....	PRINT SPEED
+000.....	TEAR OFF
TEAR OFF.....	PRINT MODE
NON-CONTINUOUS.....	MEDIA TYPE
WEB.....	SENSOR TYPE
AUTO SELECT.....	SENSOR SELECT
THERMAL-TRANS.....	PRINT METHOD
062 4/8 MM.....	PRINT WIDTH
1220.....	LABEL LENGTH
39.0IN 988MM.....	MAXIMUM LENGTH
BIDIRECTIONAL.....	PARALLEL COMM.
RS232.....	SERIAL COMM.
9600.....	BAUD
8 BITS.....	DATA BITS
NONE.....	PARITY
XON/XOFF.....	HOST HANDSHAKE
NONE.....	PROTOCOL
000.....	NETWORK ID
NORMAL MODE.....	COMMUNICATIONS
<~> 7EH.....	CONTROL PREFIX
<^> 5EH.....	FORMAT PREFIX
<.> 2CH.....	DELIMITER CHAR
ZPL II.....	ZPL MODE
CALIBRATION.....	MEDIA POWER UP
CALIBRATION.....	HEAD CLOSE
DEFAULT.....	BACKFEED
+000.....	LABEL TOP
+0000.....	LEFT POSITION
020.....	WEB S.
068.....	MEDIA S.
072.....	RIBBON S.
100.....	TAKE LABEL
035.....	MEDIA LED
119.....	RIBBON LED
+10.....	LCD ADJUST
DPSWFXM.....	MODES ENABLED
.....	MODES DISABLED
832 8/MM FULL.....	RESOLUTION
V60.13.0.9 <-.....	FIRMWARE
V30 79087 57.....	HARDWARE ID
CUSTOMIZED.....	CONFIGURATION
NONE.....A:	COMPACT FLASH
3584k.....R:	RAM
NONE.....B:	MEMORY CARD
2048k.....E:	ONBOARD FLASH
NONE.....	FORMAT CONVERT
*** UNKNOWN.....	P30 INTERFACE
NONE.....	OPTION
FW VERSION.....	IDLE DISPLAY
12/14/04.....	RTC DATE
16:18.....	RTC TIME
SELECTED ITEMS.....	PASSWORD LEVEL
GL 45591.04MS050212.79000.04.VH2....	

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## PAUSE Self Test

This self test can be used to provide the test labels required when making adjustments to the printer's mechanical assemblies or to determine if any printhead elements are not working. Figure 35 shows a sample printout.

### To perform a PAUSE self test, complete these steps:

1. Turn Off (O) the printer.
2. Press and hold PAUSE while turning the power On (I). Hold PAUSE until the first control panel light turns off.
  - The initial self test prints 15 labels at the printer's slowest speed, and then automatically pauses the printer. Each time PAUSE is pressed, an additional 15 labels print. Figure 35 shows a sample of the labels.

Figure 35 • PAUSE Test Label



- While the printer is paused, pressing CANCEL alters the self test. Each time PAUSE is pressed, 15 labels print at 6 in. (152 mm) per second.
- While the printer is paused, pressing CANCEL again alters the self test a second time. Each time PAUSE is pressed, 50 labels print at the printer's slowest speed
- While the printer is paused, pressing CANCEL again alters the self test a third time. Each time PAUSE is pressed, 50 labels print at 6 in. (152 mm) per second.
- While the printer is paused, pressing CANCEL again alters the self test a fourth time. Each time PAUSE is pressed, 15 labels print at the printer's maximum speed.
- To exit this self test at any time, press and hold CANCEL.

## FEED Self Test

Different types of media may require different darkness settings. This section contains a simple but effective method for determining the ideal darkness for printing bar codes that are within specifications.

During the FEED self test, labels are printed at different darkness settings at two different print speeds. The relative darkness and the print speed are printed on each label. The bar codes on these labels may be ANSI-graded to check print quality.

The darkness value starts at three settings lower than the printer's current darkness value (relative darkness of -3) and increase until the darkness is three settings higher than the current darkness value (relative darkness of +3).

The speed at which labels are printed during this print quality test depend on the dot density of the printhead.

- 300 dpi printers: 7 labels are printed at the 2 ips and 8 ips print speeds.
- 203 dpi printers: 7 labels are printed at the 2 ips and 12 ips print speeds.

### To perform a FEED self test, complete these steps:

1. Print a configuration label to show the printer's current settings.
2. Turn Off (O) the printer.
3. Press and hold FEED while turning the power On (I). Hold FEED until the first control panel light turns off.

The printer prints a series of labels (Figure 36) at various speeds and at darkness settings higher and lower than the darkness value shown on the configuration label.



Figure 37 • Bar Code Darkness Comparison

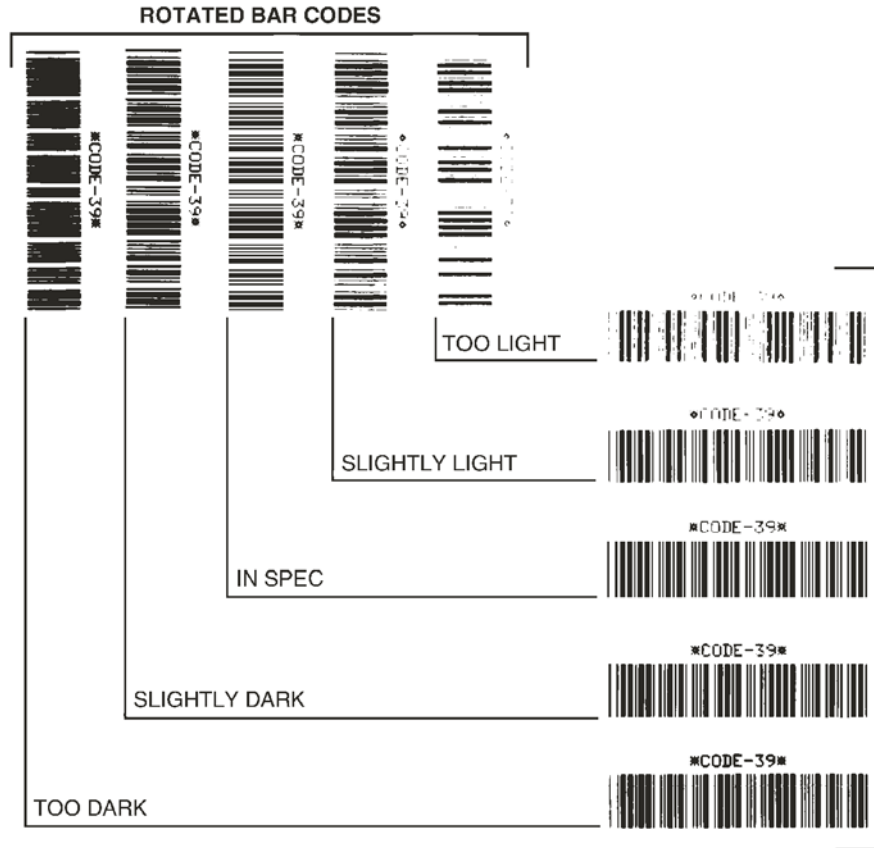


Table 18 • Judging Bar Code Quality

Print Quality	Description
<b>Too dark</b>	<p>Labels that are too dark are fairly obvious. They may be readable but not “in-spec.”</p> <ul style="list-style-type: none"> <li>• The normal bar code bars increase in size.</li> <li>• The openings in small alphanumeric characters may fill in with ink.</li> <li>• Rotated bar code bars and spaces run together.</li> </ul>
<b>Slightly dark</b>	<p>Slightly dark labels are not as obvious.</p> <ul style="list-style-type: none"> <li>• The normal bar code will be “in-spec.”</li> <li>• Small character alpha numerics will be bold and could be slightly filled in.</li> <li>• The rotated bar code spaces are small when compared to the “in-spec” code, possibly making the code unreadable.</li> </ul>



**Table 18 • Judging Bar Code Quality (Continued)**

Print Quality	Description
<b>“In-spec”</b>	<p>The “in-spec” bar code can only be confirmed by a verifier, but it should exhibit some visible characteristics.</p> <ul style="list-style-type: none"> <li>• The normal bar code will have complete, even bars and clear, distinct spaces.</li> <li>• The rotated bar code will have complete, even bars and clear, distinct spaces. Although it may not look as good as a slightly dark bar code, the bar code will be “in-spec.”</li> <li>• In both normal and rotated styles, small alphanumeric characters look complete.</li> </ul>
<b>Slightly light</b>	<p>Slightly light labels are, in some cases, preferred to slightly dark ones for “in-spec” bar codes.</p> <ul style="list-style-type: none"> <li>• Both normal and rotated bar codes will be in spec, but small alphanumeric characters may not be complete.</li> </ul>
<b>Too light</b>	<p>Labels that are too light are obvious.</p> <ul style="list-style-type: none"> <li>• Both normal and rotated bar codes have incomplete bars and spaces.</li> <li>• Small alphanumeric characters are unreadable.</li> </ul>

5. Note the relative darkness value and the print speed printed on the best test label.
6. Add or subtract the relative darkness value from the darkness value specified on the configuration label. The resulting numeric value (0 to 30) is the best darkness value for that specific label/ribbon combination and print speed.
7. If necessary, change the darkness value to the darkness value on the best test label. See [Adjust Print Darkness on page 82](#).
8. If necessary, change the print speed to the same speed as on the best test label. See [Adjust Print Speed on page 82](#).

## FEED and PAUSE Self Test

Performing this self test temporarily resets the printer configuration to the factory default values. These values are active only until power is turned off unless you save them permanently in memory. If the factory default values are permanently saved, a media calibration procedure must be performed.

### To perform a FEED and PAUSE self test, complete these steps:

1. Turn Off (O) the printer.
2. Press and hold FEED and PAUSE while turning the power On (I).
3. Hold FEED and PAUSE until the first control panel light turns off.

The printer configuration is temporarily reset to the factory default values. No labels print at the end of this test.

## Communications Diagnostics Test

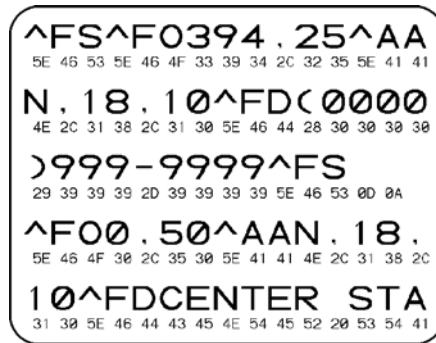
Do not perform the following test until all configuration and calibration parameters have been set. For configuration information, see [Control Panel Parameters on page 81](#).

This test is controlled from the control panel LCD display. See [Set Communications Mode on page 96](#). [Figure 38](#) shows a typical printout from this test. Turn the printer power Off (O) and then back On (I) to exit this self test and return to normal operation.



**Note** • This test label prints upside-down.

**Figure 38 • Communications Diagnostics Test Label**





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# Data Ports

This section describes the standard communication ports available to connect the printer to your computer or network.

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## Parallel Data Port

The parallel data interface supports IEEE 1284 bidirectional parallel communications in nibble mode. The parallel interface provides a means of communication that typically is faster than the serial interface methods. In this method, the bits of data that make up a character are sent all at one time over several wires in the cable, one bit per wire.

When communicating via the parallel port, the values selected on the printer must be the same as those used by the host equipment connected to the printer. Port selection for status information is determined by the channel sending the request. The parallel port can be set for bidirectional or unidirectional communication. The default setting is bidirectional.

### Parallel Cabling Requirements

See [Select a Data Communication Interface on page 25](#) for basic cabling information.

A standard 36-pin parallel connector is available on the back of the printer for connection to the data source. An IEEE-1284 compatible bidirectional parallel data cable is required when this communication method is used. The required cable must have a standard 36-pin parallel connector on one end that is plugged into the mating connector located at the rear of the printer. The other end of the cable connects to the printer connector at the host computer. Port selection for status information is determined each time the printer is turned on.

### Parallel Port Interconnections

[Table 19](#) shows the pin configuration and function of a standard computer-to-printer parallel cable.

**Table 19 • Parallel Cable Pin Configuration**

36-Pin Connectors	Description
1	nStrobe/HostClk
2–9	Data Bits 1–8
10	nACK/PtrClk
11	Busy/PtrBusy
12	PError/ACKDataReq
13	Select/Xflag
14	nAutoFd/HostBusy
15	Not used
16, 17	Ground
18	+5 V at 750 mA The maximum current draw may be limited by option configuration.
19–30	Ground

Table 19 • Parallel Cable Pin Configuration (Continued)

36-Pin Connectors	Description
31	nInit
32	nFault/NDataAvail
33, 34	Not used
35	+5 V through a 1.8 K $\Omega$ Resistor
36	NSelectin/1284 active

## Serial Data Port

See [Select a Data Communication Interface on page 25](#) for basic cabling information.

To communicate using the serial data port of the printer, you must choose the number of data bits, parity, and handshaking. Parity applies only to data transmitted by the printer because the parity of received data is ignored.

The values selected must be the same as those used by the host equipment connected to the printer. Default printer settings are 9600 baud, 8 data bits, no parity, and XON/XOFF. The printer will accept any host setting for stop bits.

## Hardware Control Signal Descriptions

For all RS-232 input and output signals, the printer follows both the Electronics Industries Association (EIA) RS-232 and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 standard signal level specifications.

When DTR/DSR handshaking is selected, the Data Terminal Ready (DTR) control signal output from the printer controls when the host computer may send data. DTR ACTIVE (positive voltage) permits the host to send data. When the printer places DTR in the INACTIVE (negative voltage) state, the host must not send data.



**Note** • When XON/XOFF handshaking is selected, data flow is controlled by the ASCII Control Codes DC1 (XON) and DC3 (XOFF). The DTR Control lead has no effect.

Request To Send (RTS) is a control signal from the printer that is connected to the Clear To Send (CTS) input at the host computer.

## Pin Configuration

Connect the serial data cable to the female DB-9 connector on the back of the printer. For all RS-232 connections through a DB-25 cable, use a DB-9 to DB-25 interface module (see [DB-9 to DB-25 Connections](#) on page 145).



**Note** • Adapters are available from Zebra Technologies LLC.

- RS-422/RS-485 adapter, Zebra part number 33114M
- RS-232 DB-9 to DB-25 adapter, Zebra part number 33109M

[Table 20](#) shows the pin configuration of the serial data connector.

**Table 20 • Serial Connector Pin Configuration**

Pin No.	Name	Description
1	+5 VDC	Connected to Pin 9
2	RXD	Receive data—data input to printer
3	TXD	Transmit data—data output from printer
4	DTR	Data terminal ready—output from printer
5	SG	Signal ground
6	DSR	Data set ready—input to printer
7	RTS	Request to send—output from printer
8	CTS	Clear to send—input to printer
9	+5 VDC	+5 VDC at 750 mA (connected to Pin 1) The maximum current draw may be limited by option configuration.

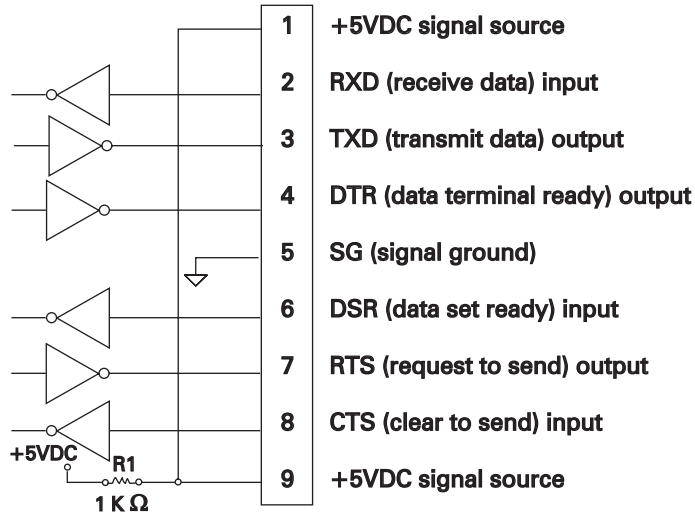
## RS-232 Interface Connections

The printer is configured as Data Terminal Equipment (DTE). [Figure 39](#) shows the internal connections of the printer's RS-232 connector.



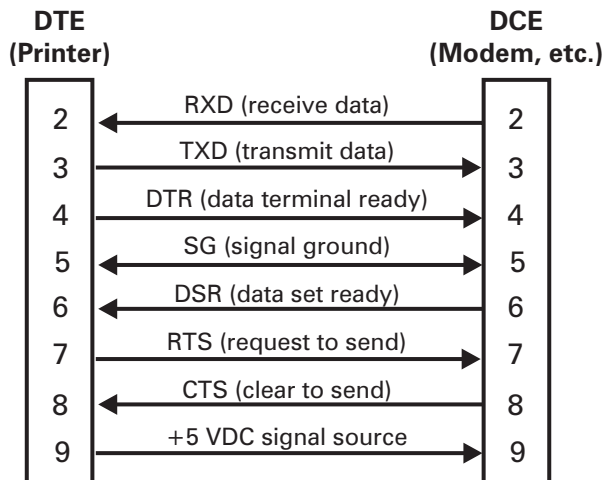
**Note** • Use a null modem (crossover) cable to connect the printer to a computer or any other DTE device.

**Figure 39 • RS-232 DB9 MLB Connections**



When the printer is connected via its RS-232 interface to Data Communication Equipment (DCE) such as a modem, use a standard RS-232 (straight-through) interface cable. [Figure 40](#) illustrates the connections required for this cable.

**Figure 40 • RS-232 to DCE Cable Connectors**



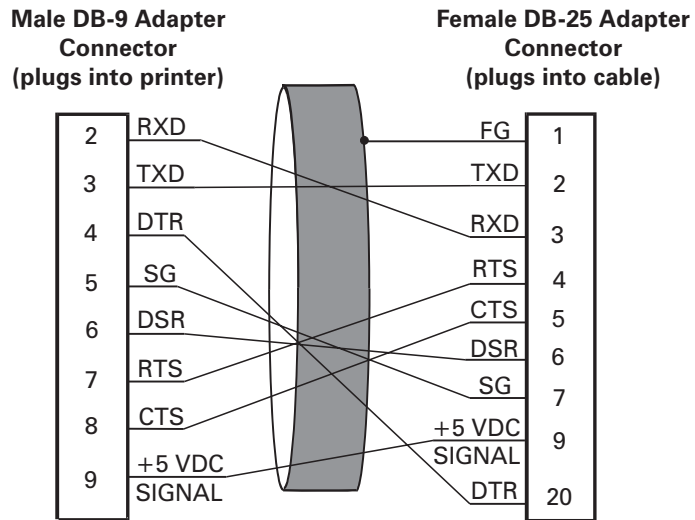
**NOTE:** Pin 1 is unused and unterminated at the printer.



## DB-9 to DB-25 Connections

To connect the printer's RS-232 DB-9 interface to a DB-25 connector, an interface adapter is required (Zebra part number 33109M). A generic DB-25 adapter can be used, although the +5 VDC signal source would not be passed through the adapter. Figure 41 shows the connections required for the DB-9 to DB-25 interface.

Figure 41 • DB-9 to DB-25 Cable Connections

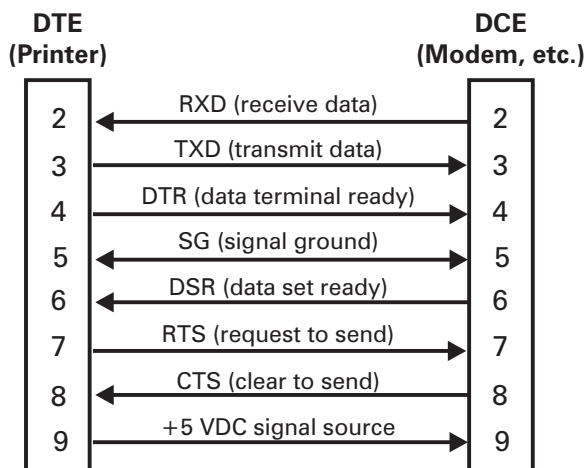


NOTE: Pin 1 of DB-9 connector is unused and unterminated.

## Modem Connection

When the printer is connected via its RS-232 interface to Data Communication Equipment (DCE) such as a modem, use a standard RS-232 (straight-through) interface cable. Figure 42 shows the connections required for this cable.

Figure 42 • RS-232 Cable Connections



NOTE: Pin 1 is unused and unterminated at the printer.



**Notes •** \_\_\_\_\_

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# Specifications

This section provides the features of and specifications for the printer.

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## General Specifications

General Specifications		Z4Mplus		Z6Mplus	
Height		13.3 in.	338 mm	13.3 in.	338 mm
Width		10.9 in.	277 mm	13.4 in.	341 mm
Depth		18.7 in.	475 mm	18.7 in.	475 mm
Weight (without options)		32.4 lbs.	14.7 kg	34.7 lbs.	16 kg
Electrical		90-265 VAC, 47-63 Hz, 5 Amps (fused)		90-265 VAC, 47-63 Hz, 5 Amps (fused)	
Temperature	Operating	40° to 104°F	5° to 40°C	40° to 104°F	5° to 40° C
	Storage	-40° to 140°F	-40° to 60°C	-40° to 140°F	-40° to 60°C
Relative Humidity	Operating	20% to 85%, non-condensing		20% to 85%, non-condensing	
	Storage	5% to 85%, non-condensing		5% to 85%, non-condensing	
Communication Interface		RS-232/CCITT V.24 serial data interface; 110 to 115000 baud, parity, bits/character, 7 or 8 data bit, and XON-XOFF, RTS/CTS or DTR/DSR handshake protocol required. 750mA at 5V from pin 9. 8-bit parallel data interface; supports IEEE 1284 bi-directional parallel, ECP and nibble mode compliant. Error detection CRC protocol.			
Memory		8 MB DRAM memory (3.5 MB user available) 2 MB flash memory			

## Agency Approvals

<b>Agency Approvals</b>	<ul style="list-style-type: none"> <li>• IEC 60950-1</li> <li>• EN55022 Class B</li> <li>• EN55024</li> <li>• EN61000-3-2,3</li> </ul>
<b>Product Markings</b>	<ul style="list-style-type: none"> <li>• cULus</li> <li>• CE Marking</li> <li>• FCC-B</li> <li>• ICES-003</li> <li>• VCCI</li> <li>• C-Tick</li> <li>• NOM</li> <li>• CCC</li> <li>• GOST-R</li> <li>• BSMI</li> <li>• S-Mark (Argentina)</li> <li>• MIC</li> <li>• ZIK</li> </ul>

## Printing Specifications

Printing Specifications		Z4Mplus		Z6Mplus	
Print resolution		203 dots/inch	8 dots/mm	203 dots/inch	8 dots/mm
		300 dots/inch	12 dots/mm	300 dots/inch	12 dots/mm
Dot size (width x length)	203 dpi	0.00492 in. x 0.00492 in.	0.125 mm x 0.125 mm	0.00492 in. x 0.00492 in.	0.125 mm x 0.125 mm
	300 dpi	0.0033 in. x 0.0039 in.	0.084 mm x 0.099 mm	0.0033 in. x 0.0039 in.	0.084 mm x 0.099 mm
Maximum print width	203 dpi	4.09 in.	104 mm	6.6 in.	168 mm
	300 dpi	4.1 in.	106 mm		
Minimum print length		1 dot row		1 dot row	
Maximum print length	203 dots/inch	105 in.	2667 mm	65 in.	1651 mm
	300 dots/inch	45 in.	1143 mm	29 in.	737 mm
Bar code modulus (X) dimension	203 dots/inch	5 mil to 50 mil		5 mil to 50 mil	
	300 dots/inch	3.3 mil to 33 mil		3.3 mil to 33 mil	
Programmable constant print speeds	203 dots/inch	Per second: 7 in. 8 in. 9 in. 10 in.	Per second: 178 mm 203 mm 229 mm 254 mm	Per second: 7 in. 8 in. 9 in. 10 in.	Per second: 178 mm 203 mm 229 mm 254 mm
	300 dots/inch	Per second: 2 in. 3 in. 4 in. 5 in. 6 in.	Per second: 51 mm 76 mm 102 mm 127 mm 152 mm	Per second: 2 in. 3 in. 4 in. 5 in. 6 in.	Per second: 51 mm 76 mm 102 mm 127 mm 152 mm

Thin film printhead with energy control

## Media Specifications

Media Specifications			Z4Mplus		Z6Mplus	
Label length	Minimum	Tear-off	0.5 in.*	13 mm*	0.5 in.	13 mm
		Peel-off	1 in.*	25.4 mm*	1 in.	25.4 mm
		Rewind	0.5 in.*	13 mm*	0.5 in.	13 mm
		Cutter	1 in.*	25.4 mm*	1.5 in.	38.1 mm
		RFID “smart” labels	Varies for each transponder type		N/A. RFID is not available for the Z6Mplus.	
	Maximum	Tear/Cutter/Peel/Rewind	39 in.	991 mm	39 in.	991 mm
	RFID “smart” labels	Varies for each transponder type		N/A. RFID is not available for the Z6Mplus.		
Label width	Minimum	Tear/Cutter/Peel/Rewind	1 in.*	25.4 mm*	2 in.	51 mm
		RFID “smart” labels	Varies for each transponder type		N/A. RFID is not available for the Z6Mplus.	
	Maximum	Tear/Cutter	4.5 in.	114 mm	7.0 in.	178 mm
		Peel/Rewind	4.25 in.	108 mm	6.75 in.	171 mm
		RFID “smart” labels	Same as for non-RFID label removal methods		N/A. RFID is not available for the Z6Mplus.	
Total thickness (includes liner, if any)	Minimum	0.0023 in.	0.058 mm	0.0023 in.	0.058 mm	
	Maximum	0.010 in.	0.25 mm	0.010 in.	0.25 mm	
Core size		3 in.	76 mm	3 in.	76 mm	
Maximum roll diameter		8 in.	203 mm	8 in.	203 mm	
Inter-label gap	Minimum	0.079 in.*	2 mm*	0.079 in.*	2 mm*	
	Preferred	0.118 in.*	3 mm*	0.118 in.	3 mm*	
	Maximum	0.157 in.*	4 mm*	0.157 in.*	4 mm*	
	RFID “smart” labels	Varies for each transponder type		N/A. RFID is not available for the Z6Mplus.		
Ticket/tag notch size (width x length)		0.236 in. × 0.12 in.	6 mm × 3 mm	0.236 in. × 0.12 in.	6 mm × 3 mm	
Hole diameter		0.125 in.	3 mm	0.125 in.	3 mm	
Notch or hole position (Centered from inner media edge)	Minimum	0.15 in.	3.8 mm	0.15 in.	3.8	
	Maximum	2.25 in.	57 mm	3.5 in.	90 mm	

\* Does not apply to RFID “smart” labels.

Media Specifications		Z4Mplus		Z6Mplus	
Black mark dimensions	Vertical length	0.98 in. to 0.453 in.	2.5 to 11.5 mm	0.98 in. to 0.453 in.	2.5 to 11.5 mm
	Horizontal width	> 0.37 in.	≥ 9.5 mm	≥ 0.37 in.	≥ 9.5 mm
	Location	Within 0.40 in. (1 mm) of inside media edge		Within 0.40 in. (1 mm) of inside media edge	
		May also be centered from 0.23 to 2.25 in. (5.84 to 57 mm) from the media inner edge		May also be centered from 0.23 to 3.5 in. (5.84 to 90 mm) from the media inner edge	
Density, in Optical Density Units (ODU)		> 1.0 ODU			
Maximum media density		≤ 0.5 ODU			
Transmissive Sensor	Fixed	7/16 in. (11 mm) from inside edge			

\* Does not apply to RFID “smart” labels.



## Ribbon Specifications



**Note** • This section applies only to printers that have the Thermal Transfer option installed.

Ribbon must be wound with the coated side out.

Ribbon Specifications		Z4Mplus		Z6Mplus	
Ribbon width (Zebra recommends using ribbon at least as wide as the media to protect the printhead from wear.)	Minimum	>2 in.*	51 mm*	>2 in.	51 mm
	Maximum	4.3 in.	109 mm	6.9 in.	174 mm
Standard lengths	2:1 media to ribbon roll ratio	984 ft.	300 m	984 ft.	300 m
	3:1 media to ribbon roll ratio	1476 ft.	450 m	1476 ft.	450 m
Ribbon core inside diameter		1 in.	25.4 mm	1 in.	25.4 mm

\* The narrowest width tested and approved for this printer is 2 in. (51 mm). You may be able to use narrower ribbon, as long as the ribbon is wider than the media being used. To use a ribbon narrower than 2 in. (51 mm), test the ribbon's performance with your media to assure that you get the desired results.

## Printer Options

Option	Z4Mplus	Z6Mplus
Cutter	X	X
Peel-off	X	X
Liner take-up	X	Not available
PCMCIA card socket (supports linear Flash memory and ATA formats)	X	X
Linear Flash memory card 8 MB, 16 MB, and 32 MB	X	X
Compact Flash 32 MB, 64 MB, 128 MB, and 256 MB	X	X
300 dpi printhead	X	X
Rewind	X	X
Adjustable transmissive sensor	X	X
External print server (10/100 or 10base-T)	X	X
Internal print server (10base-T)	X	X
Wireless print server	X	X

## ZPL II Features

ZPL II Features	
• Bit image data transfer and printing, mixed text/graphics	• Mirror-image printing
• Communicates in printable ASCII characters	• Object copying between memory areas (RAM, memory card, and internal Flash)
• Controlled via mainframe, mini-computer, PC, portable data terminal	• Programmable quantity with print, pause, and cut control
• Data compression	• Serialized fields
• Downloadable graphics, scalable and bitmap fonts, and label formats	• Slew command
• Error-checking protocol	• Status message to host upon request
• Format inversion	• UPC/EAN
• Four-position field rotation (0°, 90°, 180°, 270°)	• User-programmable password
• In-Spec OCR-A and OCR-B	

## Supported Bar Codes

Bar Codes and Features	
• Codabar (supports ratios of 2:1 to 3:1)	• MaxiCode
• Codablock	• Micro-PDF
• Code 11	• MSI
• Code 128 (supports serialization in all subsets and UCC case codes) Check digit calculation where applicable.	• PDF-417 (2-dimensional bar code)
• Code 39 (supports ratios of 2:1 to 3:1)	• PLANET code
• Code 49 (2-dimensional bar code)	• Plessey
• Code 93	• POSTNET
• Datamatrix	• QR code
• EAN-8, EAN-13, EAN EXTENSIONS	• RSS code
• Industrial 2 of 5	• Standard 2 of 5
• Interleaved 2 of 5 (supports ratios of 2:1 to 3:1; modulus 10 check digit)	• TLC 39
• ISBT-128	• UPC-A, UPC-E, UPC EXTENSIONS
• LOGMARS	• UPC/EAN



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# End User License Agreement



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**15. Governing Law.** To the maximum extent permitted by law, the laws of the State of Illinois, U.S.A., without reference to its conflict of laws provisions, will apply to this Agreement. You irrevocably agree to submit to the exclusive jurisdiction and venue of the state or federal courts in the State of Illinois in the event of any litigation involving this Agreement or the Software. You agree that you shall not assert any claim that you are not subject to the jurisdiction of such courts, that the venue is improper, that the forum is inconvenient or any similar objection, claim or argument. Zebra may, in its sole discretion, choose to resolve any controversy or dispute between you and Zebra concerning this Agreement, or the existence, validity, breach or termination thereof, whether during or after the term by binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association ("AAA"), as modified or supplemented under this Section 15, by providing notice to you. In the event that Zebra provides such notice, you hereby waive any right to institute a court or other dispute resolution proceeding with respect to such controversy or dispute and acknowledge arbitration in accordance with this Section 15 as the sole and exclusive means of resolving such controversy or dispute. The arbitration proceeding will take place in Chicago, Illinois and be conducted in the English language. The arbitration panel will consist of 3 arbitrators, one arbitrator appointed by each party and a third neutral arbitrator appointed by the two arbitrators designated by the parties. Any communication



between a party and any arbitrator will be directed to the AAA for transmittal to the arbitrator. The parties expressly agree that the arbitrators will be empowered to, at either party's request, grant injunctive relief. The arbitral award will be the exclusive remedy of the parties for all claims, counterclaims, issues or accountings presented or pleaded to the arbitrators. Judgment upon the arbitral award may be entered in any court that has jurisdiction thereof. Any additional costs, fees or expenses incurred in enforcing the arbitral award will be charged against the party that resists its enforcement. Nothing in this Section will prevent Zebra from seeking interim injunctive relief against you or filing an action against you to collect unpaid and past due amounts in any court of competent jurisdiction.

**16. Injunctive Relief.** You acknowledge that, in the event you breach any provision of this Agreement, Zebra will not have an adequate remedy in money or damages. Zebra shall therefore be entitled to obtain an injunction against such breach from any court of competent jurisdiction immediately upon request without posting bond. Zebra's right to obtain injunctive relief shall not limit its right to seek further remedies.

**17. Entire Agreement.** This Agreement constitutes the entire understanding and agreement of the parties and supersedes any and all prior or contemporaneous representations, understandings and agreements between the parties with respect to the subject matter of this Agreement. If any provision of this Agreement is held invalid, the remainder of this Agreement shall continue in full force and effect.

**18. Assignment.** You may not assign this Agreement or any of your rights or obligations hereunder (by operation of law or otherwise) without the prior written consent of Zebra. Zebra may assign this Agreement and its rights and obligations without your consent. Subject to the foregoing, this Agreement shall be binding upon and inure to the benefit of the parties to it and their respective legal representatives, successors and permitted assigns.

**19. Modification.** No modification of this Agreement shall be binding unless it is in writing and is signed by an authorized representative of the party against whom enforcement of the modification is sought.

**20. Waiver.** The failure by a party to exercise any right hereunder shall not operate as a waiver of such party's right to exercise such right or any other right in the future.

**21. QUESTIONS.** Should you have any questions, or if you desire to contact Zebra for any reason, please contact the Zebra subsidiary serving your country, or write:

Zebra Technologies International, LLC  
333 Corporate Woods Parkway  
Vernon Hills, Illinois 60061

**Effective February 2006.**



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