Zebra®

Xi4™

User Guide

© 2009 ZIH Corp. The copyrights in this manual and the software and/or firmware in the printer described therein are owned by ZIH Corp. Unauthorized reproduction of this manual or the software and/or firmware in the printer may result in imprisonment of up to one year and fines of up to $10,000 (17 U.S.C.506). Copyright violators may be subject to civil liability.

This product may contain ZPL®, ZPL II®, and ZebraLink™ programs; Element Energy Equalizer® Circuit; E3®; and Monotype Imaging fonts. Software © ZIH Corp. All rights reserved worldwide.

ZebraLink and all product names and numbers are trademarks, and Zebra, the Zebra logo, ZPL, ZPL II, Element Energy Equalizer Circuit, and E3 Circuit are registered trademarks of ZIH Corp. All rights reserved worldwide.

All other brand names, product names, or trademarks belong to their respective holders. For additional trademark information, please see “Trademarks” on the product CD.

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

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

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

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

Part Number: P1009874-001

Declaration of Conformity

We have determined that the Zebra printers identified as the

Xi4™ Series

110Xi4™, 140Xi4™, 170Xi4™, 220Xi4™

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.

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 could void the user's authority to operate the equipment. To ensure compliance, this printer must be used with Shielded Communication Cables.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum 20 cm between the radiator and your body. This transmitter must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.

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.

Contents

Declaration of Conformity 3

Compliance Information 4

About This Document 9

Who Should Use This Document 10
How This Document Is Organized 10
Contacts 11
Document Conventions. 12

1 • Introduction 15

External View 16
Control Panel 17

2 • Printer Setup 19

Before You Begin 20
Handling the Printer 21
Unpack and Inspect the Printer 21
Store the Printer 21
Ship the Printer 21
Select a Site for the Printer 22
Select a Surface 22
Provide Proper Operating Conditions 22
Allow Proper Space 22
Provide a Data Source 22
Provide a Power Source 22
Select a Data Communication Interface 23
Data Cables and Wireless Cards 24
Connect the Printer to the Computer or Network 24

Connect the Printer to a Power Source 27
Power Cord Specifications 28
Types of Media 29
Ribbon Overview. 31
When to Use Ribbon. 31
Coated Side of Ribbon 31

3 • Operations 33

Print Modes and Printer Options. 34
Print Mode Descriptions and Printer Requirements 34
Media Paths 35
Prepare the Media for Loading 37
Load Media in Tear-Off Mode 41
Load Media in Peel-Off Mode 45
Load Media in Cutter Mode. 52
Load Media in Rewind Mode 57
Remove Media Liner from the Rewind or Peel Spindle 64
Load Media in Rewind Mode (with Cutter Option) 66
Load Ribbon 74
Remove Used Ribbon. 79
Calibrate the Printer 81
Adjust Media Sensors. 83
Upper Media Sensor—Inside Half of Media 83
Upper Media Sensor—Outside Half of Media. 85
Lower Media Sensor. 87
Adjust Printhead Pressure and Toggle Position 88
Toggle Position Adjustment 88
Printhead Pressure Adjustment 89

4 • Configuration 93

Setup Mode. 94
Enter and Use Setup Mode 94
Exit Setup Mode 95
Change Password-Protected Parameters 96
Default Password Value 96
Disable the Password Protection Feature 96
Print a Configuration Label 97
Print a Network Configuration Label 98
Standard Control Panel Parameters 99
Additional Control Panel Parameters 121

5 • Routine Maintenance 123

Replacing Printer Components 124
Ordering Replacement Parts 124
Recycling Printer Components 124
Lubrication 124
Cleaning Schedule and Procedures 125
Clean the Exterior 125
Clean the Media Compartment 125
Clean the Printhead and Platen Roller 126
Clean the Sensors 129
Clean the Snap Plate 132
Clean the Cutter 133
Replace the Fuse 134

6 • Troubleshooting 137

Troubleshooting Checklists 138
LCD Error Messages 139
Print Quality Problems 143
Calibration Problems 147
Communications Problems 148
Ribbon Problems 149
Miscellaneous Printer Problems 150
Printer Diagnostics 152
Power-On Self Test 152
CANCEL Self Test 153
PAUSE Self Test 154
FEED Self Test 155
FEED and PAUSE Self Test 158
Communications Diagnostics Test 159
Sensor Profile 160

7 • Specifications 161

Features 162
Standard Features 162
Print Modes 162
Zebra Programming Language (ZPL) 162
Bar Codes 163
General Specifications 164
Physical Specifications 164
Electrical Specifications 164
Environmental Conditions for Operation and Storage 164

Print Specifications by Model 165
110Xi4 165
140Xi4, 170Xi4, and 220Xi4 166
Ribbon Specifications 167
140Xi4, 170Xi4, and 220Xi4 167
Media Specifications 168
110Xi4 168
140Xi4, 170Xi4, and 220Xi4 Printers 170

End User License Agreement 173

Glossary 179

Index 183

About This Document

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

Contents

Who Should Use This Document 10
How This Document Is Organized 10
Contacts 11
Document Conventions 12

Who Should Use This Document

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

How This Document Is Organized

The User Guide is set up as follows:

Section	Description
Introduction on page 15	This section provides a high-level overview of the printer and its components.
Printer Setup on page 19	This section provides the tasks that you must complete and the issues that you must consider before you load and configure your printer.
Operations on page 33	This section provides the procedures for loading and calibrating the printer.
Configuration on page 93	This section describes the control panel parameters that are used to configure the printer for operation.
Routine Maintenance on page 123	This section provides routine cleaning and maintenance procedures.
Troubleshooting on page 137	This section provides information about errors that you might need to troubleshoot. Assorted diagnostic tests are included.
Specifications on page 161	This section provides the features of and specifications for this printer.
Glossary on page 179	The glossary provides a list of common terms.

Contacts

Technical Support via the Internet is available 24 hours per day, 365 days per year.

Web Site: www.zebra.com
E-mail Back Technical Library:
E-mail address: emb@zebra.com
Subject line: Emaillist
Self Service Knowledge Base: www.zebra.com/knowledgebase
Online Case Registration: www.zebra.com/techrequest

Which Department Do You Need?	The Americas	Europe, Africa, Middle East, India	Asia Pacific
Regional Headquarters	Zebra Technologies International, LLC 333 Corporate Woods Parkway Vernon Hills, IL 60061-3109 U.S.A. T: +1 847 793 2600 Toll-free +1 800 423 0422 F: +1 847 913 8766	Zebra Technologies Europe Limited Dukes Meadow Millboard Road Bourne End Buckinghamshire, SL8 5XF United Kingdom T: +44 (0) 1628 556000 F: +44 (0) 1628 556001	Zebra Technologies Asia Pacific Pte. Ltd. 120 Robinson Road #06-01 Parakou Building Singapore 068913 T: + 65 6858 0722 F: +65 6885 0838
Technical Support For questions on the operation of Zebra equipment and software, please call your distributor. For additional assistance, contact us. *Please have your model and serial numbers available.*	T: +1 877 ASK ZEBRA (275 9327) F: +1 847 913 2578 Hardware: ts1@zebra.com Software: ts3@zebra.com *Kiosk printers:* T: +1 866 322 5202 E: kiosksupport@zebra.com	T: +44 (0) 1628 556039 F: +44 (0) 1628 556003 E: Tseurope@zebra.com	T: +65 6858 0722 F: +65 6885 0838 E: *China:* tschina@zebra.com *All other areas:* tsasiapacific@zebra.com
Repair Service Department For back-to-base service and repair.	T: +1 877 ASK ZEBRA (275 9327) F: +1 847 821 1797 E: repair@zebra.com To request a repair in the U.S., go to www.zebra.com/repair	T: +44 (0) 1772 693069 F: +44 (0) 1772 693046 New requests: ukrma@zebra.com Status updates: repairupdate@zebra.com	T: +65 6858 0722 F: +65 6885 0838 E: *China:* tschina@zebra.com *All other areas:* tsasiapacific@zebra.com
Technical Training Department For Zebra product training courses.	T: +1 847 793 6868 T: +1 847 793 6864 F: +1 847 913 2578 E: ttamerica@zebra.com	T: +44 (0) 1628 556000 F: +44 (0) 1628 556001 E: Eurtraining@zebra.com	T: + 65 6858 0722 F: +65 6885 0838 E: *China:* tschina@zebra.com *All other areas:* tsasiapacific@zebra.com
Inquiry Department For product literature and distributor and dealer information.	T: +1 877 ASK ZEBRA (275 9327) E: inquiry4@zebra.com	T: +44 (0) 1628 556037 F: +44 (0) 1628 556005 E: mseurope@zebra.com	E: *China:* GCmarketing@zebra.com *All other areas:* APACChannelmarketing@zebra.com
Customer Service Department (US) ***Internal Sales Department (UK)*** For printers, parts, media, and ribbon, please call your distributor or contact us.	T: +1 877 ASK ZEBRA (275 9327) E: clientcare@zebra.com	T: +44 (0) 1628 556032 F: +44 (0) 1628 556001 E: cseurope@zebra.com	T: +65 6858 0722 F: +65 6885 0836 E: *China*: order-csr@zebra.com *All other areas:* csasiapacific@zebra.com

Key: T: Telephone
F: Facsimile
E: E-mail

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

Caution • Warns you of the potential for electrostatic discharge.

Caution • Warns you of a potential electric shock situation.

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

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

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

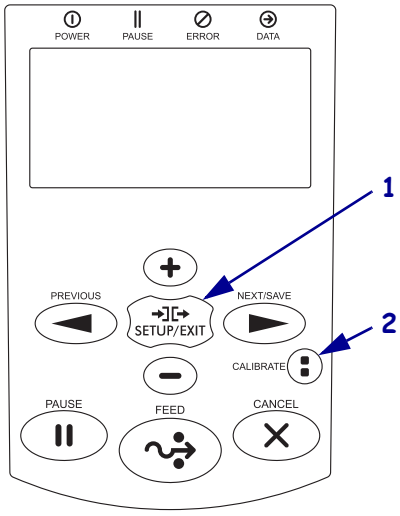
Important • Advises you of information that is essential to complete a task.

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.

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



1	SETUP/EXIT button
2	CALIBRATE button

Notes •

1 Introduction

This section provides a high-level overview of the printer and its components.

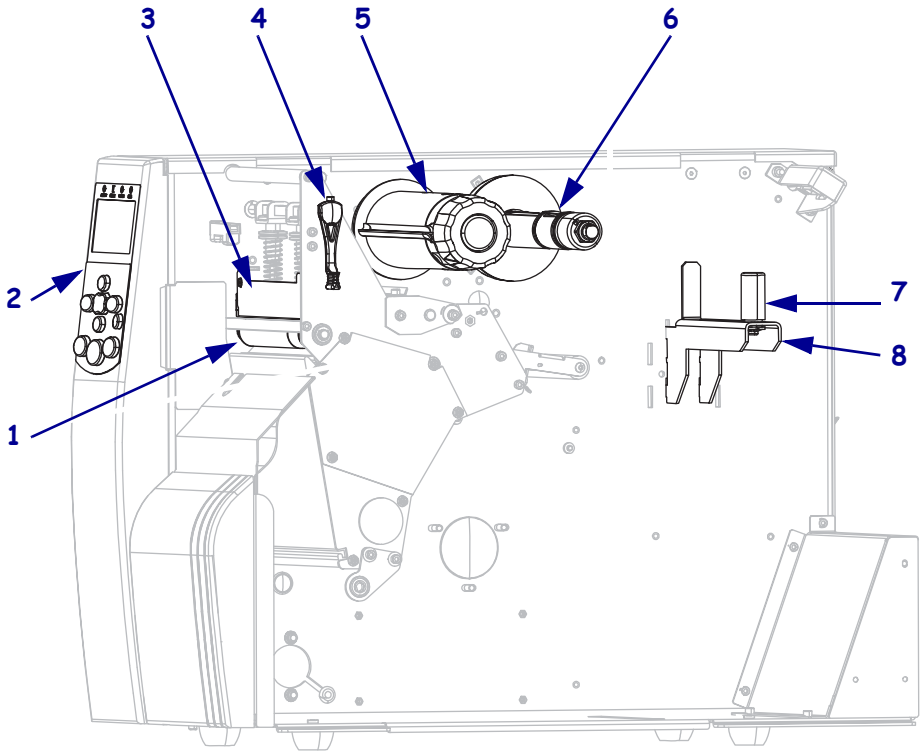
Contents

External View 16
Control Panel 17

External View

Figure 2 shows the components inside the media compartment of your printer. Depending on printer model and the installed options, your printer may look slightly different. Familiarize yourself with these components before continuing with the printer setup procedure.

Figure 2 • Printer Components



1	Platen roller	5	Ribbon take-up spindle
2	Control panel	6	Ribbon supply spindle
3	Printhead assembly	7	Media supply guide
4	Printhead-open lever	8	Media supply hanger*

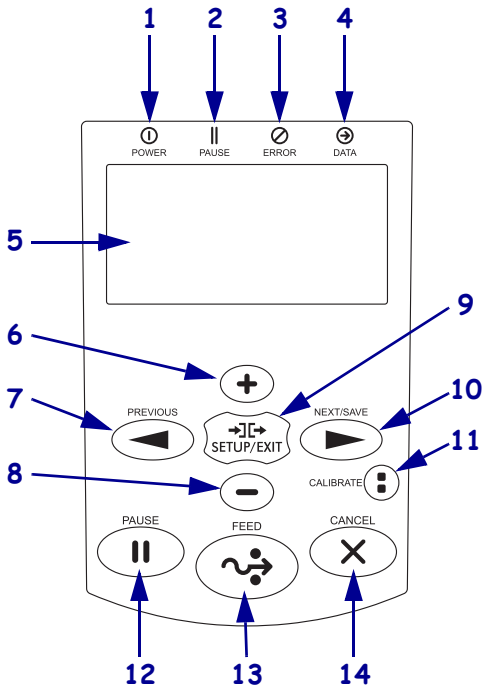
* The media hanger varies by model. The 110Xi4 media hanger is shown.

Control Panel

All controls and indicators for the printer are located on the control panel (Figure 3).

- The **control panel Liquid Crystal Display (LCD)** shows the operating status and printer parameters.
- The **control panel buttons** are used to control the printer operations and to set parameters.
- The **control panel lights (LEDs)** show the printer's operating status or indicate which control panel buttons are active.

Figure 3 • Location of Control Panel Buttons and Lights



1	Power light	On when the printer is on.	
2	PAUSE light	On when the printer is paused.	
3	Error light	Off	Normal operation—no printer errors.
		Blinking	A printer error exists. Check the LCD for more information.
4	Data light	Off	Normal operation. No data being received or processed.
		On	The printer is processing data or is printing. No data is being received.
		Blinking quickly	The printer is receiving data from or sending status information to the host computer.

5	LCD	The control panel LCD functions differently in different printer modes. • In **Operating mode**, the LCD displays the printer's status, sometimes in conjunction with a control panel light. • In **Pause mode**, the printer stops printing temporarily. • In **Setup mode**, you can use the control panel LCD to view or modify printer parameters (see *Standard Control Panel Parameters* on page 99). • In **Error mode**, the LCD may display an alert or error message (see *LCD Error Messages* on page 139).
6	PLUS (+)	Changes the parameter values. Common uses are to increase a value, to answer "yes," to scroll through choices, or to change values while entering the printer password.
7	PREVIOUS	When in Setup mode, scrolls the LCD to the previous parameter. Press and hold to scroll quickly.
8	MINUS (-)	Changes the parameter values. Common uses are to decrease a value, to answer "no," to scroll through choices, or to change the cursor position while entering the printer password.
9	SETUP/EXIT	Enters and exits Setup mode.
10	NEXT/SAVE	• When in Setup mode, scrolls the LCD to the next parameter. Press and hold to scroll quickly. • When exiting Setup mode, saves any changes that you made in the configuration and calibration sequence.
11	CALIBRATE	Calibrates the printer for the following: • Media length • Media type (continuous or non-continuous) • Print method (direct thermal or thermal transfer) • Sensor values
12	PAUSE	Starts or stops printer operation, or removes error messages and clears the LCD. • If the printer is idle, it enters Pause mode immediately. • If the printer is printing, the label is completed before the printer pauses.
13	FEED	Forces the printer to feed one blank label each time the button is pressed. • If the printer is idle or paused, the label is fed immediately. • If the printer is printing, the label is fed after printing finishes.
14	CANCEL	Cancels print jobs when the printer is paused. Pressing CANCEL once has these effects: • Cancels the label format that is currently printing. • If no label format is printing, the next one to be printed is canceled. • If no label formats are waiting to be printed, CANCEL is ignored. Pressing and holding CANCEL clears the printer's entire label format memory,. When the formats are cleared, the DATA light turns off.

2

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.

Contents

Before You Begin 20
Handling the Printer 21
Unpack and Inspect the Printer 21
Store the Printer 21
Ship the Printer 21
Select a Site for the Printer 22
Select a Surface 22
Provide Proper Operating Conditions 22
Allow Proper Space 22
Provide a Data Source 22
Provide a Power Source 22
Select a Data Communication Interface 23
Data Cables and Wireless Cards 24
Connect the Printer to the Computer or Network 24
Connect the Printer to a Power Source 27
Power Cord Specifications 28
Types of Media 29
Ribbon Overview 31
When to Use Ribbon 31
Coated Side of Ribbon 31

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 21.
- ❑ **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 22.
- ❑ **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 23.
- ❑ **Attach a Power Cord** Do you have the correct power cord for your printer? If you are unsure, see *Power Cord Specifications* on page 28. To attach the power cord and connect the printer to a power source, see *Connect the Printer to a Power Source* on page 27.
- ❑ **Select Media** Do you have the correct media for your application? If you are unsure, see *Types of Media* on page 29.
- ❑ **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 31.

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 conditions shown in Table 1.

Table 1 • Storage Temperature and Humidity

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

Ship the Printer

If you must 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. For the printer's weight and dimensions, see *General Specifications* on page 164.

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 164.

Table 2 shows the temperature and relative humidity requirements for the printer when it is operating.

Table 2 • Operating Temperature and Humidity

Mode	Temperature	Relative Humidity
Thermal Transfer	40° to 105°F (5° to 40°C)	20 to 85% non-condensing.
Direct Thermal	32° to 105°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.

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 (such as a computer), the selected site must provide the appropriate connections to that data source. For more information on the types of communication interfaces and their limitations, see *Select a Data Communication Interface* on page 23.

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 3 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 3 • Characteristics of the Data Communication Interfaces

Interface	Standard or Optional on Printer	Characteristics
RS-232 Serial	Standard	• Maximum cable length of 50 ft (15.24 m). • You may need to change printer parameters to match the host computer. • You need to use a null-modem adaptor to connect to the printer if using a standard modem cable.
IEEE 1284 Bidirectional Parallel	Standard	• Maximum cable length of 10 ft (3 m). • Recommended cable length of 6 ft (1.83 m). • An Ethernet print server (if installed) takes up or covers this port on the printer. • No printer parameter changes required to match the host computer.
USB	Standard	• Maximum cable length of 16.4 ft (5 m). • No printer parameter changes required to match the host computer.
Internal wired Ethernet print server	Optional	• Can print to the printer from any computer on your LAN. • Can communicate with the printer through the printer's web pages when in ZPL mode. • Computer must be equipped with an Ethernet board. • The printer must be configured to use your LAN.
Wireless Ethernet print server	Optional	• Can print to the printer from any computer on your Wireless Local Area Network (WLAN). • Can communicate with the printer through the printer's web pages when in ZPL mode. • The printer must be configured to use your WLAN.

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 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 4 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.

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.

Table 4 • Connecting the Printer to a Computer or Network

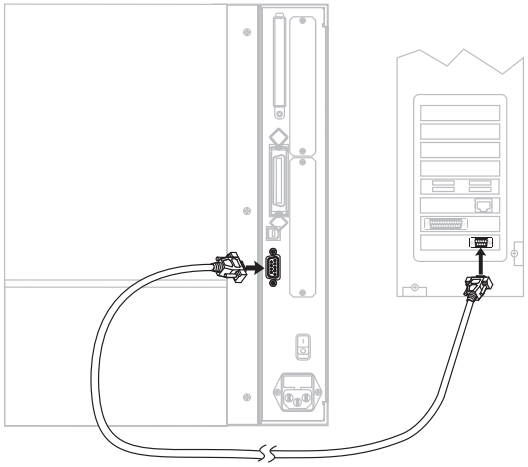
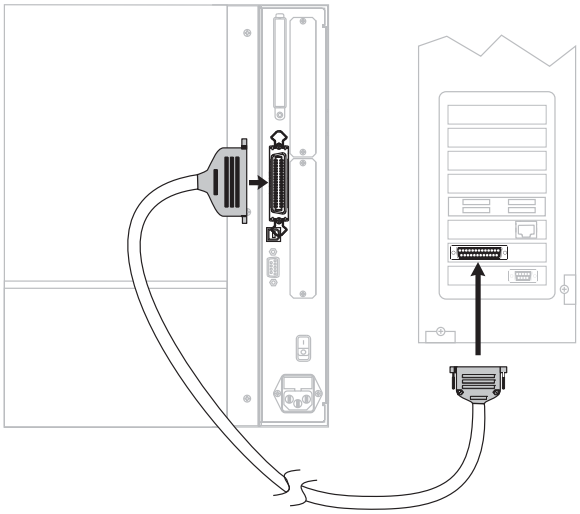
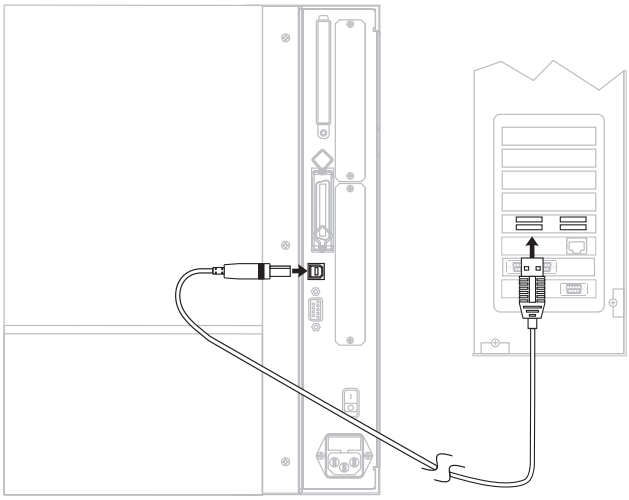
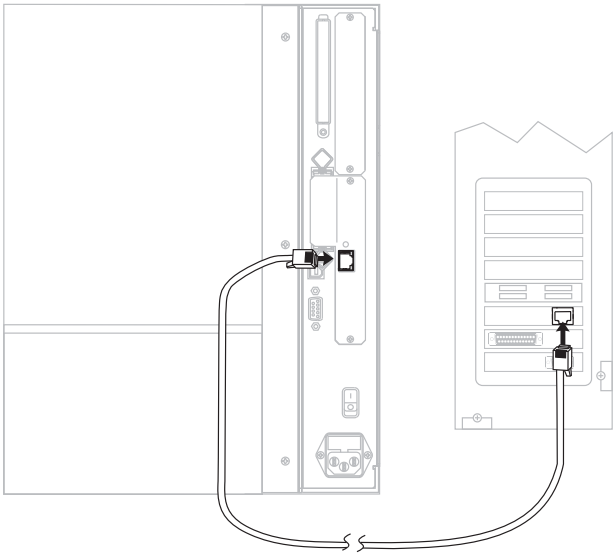
Interface	Connection and Configuration
RS-232 Serial	The baud rate, number of data and stop bits, the parity, and the XON/XOFF or DTR control must match those of the host computer. See *Standard Control Panel Parameters* on page 99 to view or change these parameters. 
IEEE 1284 Bidirectional Parallel	No additional configuration is necessary. An Ethernet print server (if installed) takes up or covers this port on the printer. 

Table 4 • Connecting the Printer to a Computer or Network (Continued)

Interface	Connection and Configuration
USB	No additional configuration is necessary. **Caution •** 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. 
Internal wired Ethernet print server	Refer to the *ZebraNet 10/100 Print Server User and Reference Guide* for configuration instructions. A copy of this manual is available at http://www.zebra.com/manuals or on the user CD that came with your printer. **Note •** To use this connection, you may need to remove a factory-installed plug that is designed to keep someone from accidentally plugging a USB connector into this port. 
Wireless Ethernet print server	Refer to the *ZebraNet Wireless User Guide* for configuration instructions. A copy of this manual is available at http://www.zebra.com/manuals or on the user CD that came with your printer.

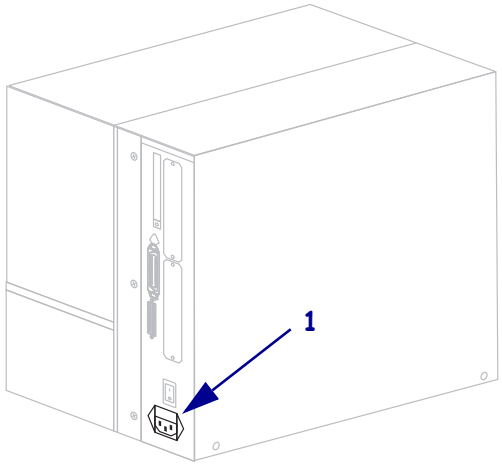
Connect the Printer to a Power Source

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 28.

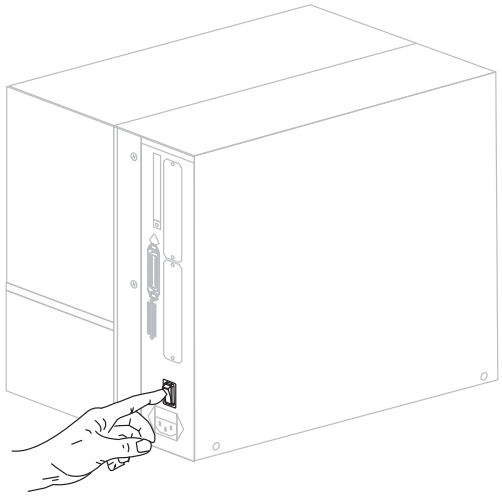
Caution • For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific three-conductor grounded plug configuration.

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

1. Toggle the printer power switch to the off (**O**) position.
2. Plug the power cord into the AC power connector (**1**) on the rear of the printer.



3. Plug the other end of the power cord into a power outlet near the printer.
4. Turn on (**I**) the printer.



The control panel LCD and lights activate, indicating that the printer is booting up.

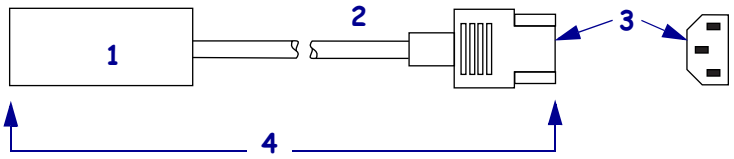
Power Cord Specifications

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, see Figure 4 and refer to the following guidelines:

- The overall cord length must be less than 9.8 ft. (3 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.

Figure 4 • Power Cord Specifications



1	AC power plug for your country—This should bear the certification mark of at least one of the known international safety organizations (Figure 5).
2	3-conductor HAR cable or other cable approved for your country.
3	IEC 320 connector—This should bear the certification mark of at least one of the known international safety organizations (Figure 5).
4	Length ≤ 9.8 ft. (3 m). Rating 10 Amp, 250 VAC.

Figure 5 • International Safety Organization Certifications

Types of Media

Important •

Your printer can use various types of media:

- *Standard media*—Most standard media uses an adhesive backing that sticks individual labels or a continuous length of labels to a liner.
- *Tag stock*—Tags are usually made from a heavy paper. Tag stock does not have adhesive or a liner, and it is typically perforated between tags.
- *Radio frequency identification (RFID) "smart" media*—RFID media can be used in a printer that is equipped with an RFID reader/encoder. RFID labels are made from the same materials and adhesives as non-RFID labels. Each label has an RFID transponder (sometimes called an "inlay"), made of a chip and an antenna, embedded between the label and the liner. The shape of the transponder varies by manufacturer and is visible through the label. All "smart" labels have memory that can be read, and many have memory that can be encoded.

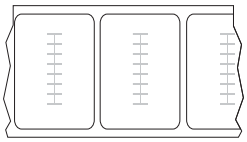
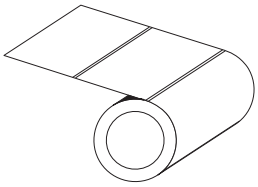
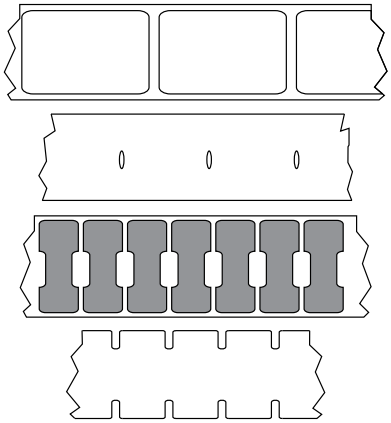
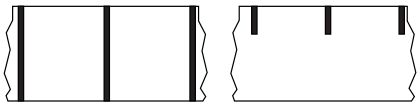
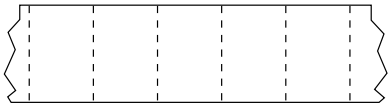
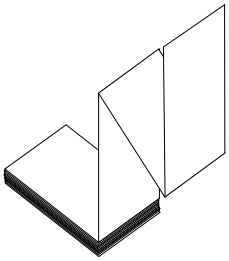
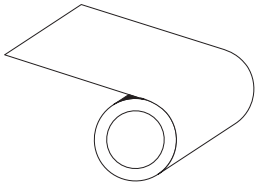


Table 5 describes roll and fanfold media. Roll media is loaded into the printer while fanfold media may be located inside or outside of the printer.

Table 5 • Roll and Fanfold Media

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

Ribbon Overview

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 media 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	**Thermal transfer**. A ribbon is required.
Appears on the media	**Direct thermal**. No ribbon is required.

Coated Side of Ribbon

Ribbon can be wound with the coated side on the inside or outside (Figure 6). 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 6 • 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 outside and can be used in this printer.
Did not adhere to the label	The ribbon is coated on the **inside** 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?

3 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 19 before operating the printer.

Contents

Print Modes and Printer Options 34
Print Mode Descriptions and Printer Requirements 34
Media Paths 35
Prepare the Media for Loading 37
Load Media in Tear-Off Mode 41
Load Media in Peel-Off Mode 45
Load Media in Cutter Mode 52
Load Media in Rewind Mode 57
Remove Media Liner from the Rewind or Peel Spindle 64
Load Media in Rewind Mode (with Cutter Option) 66
Load Ribbon 74
Remove Used Ribbon 79
Calibrate the Printer 81
Adjust Media Sensors 83
Upper Media Sensor—Inside Half of Media 83
Upper Media Sensor—Outside Half of Media 85
Lower Media Sensor 87
Adjust Printhead Pressure and Toggle Position 88
Toggle Position Adjustment 88
Printhead Pressure Adjustment 89

Print Modes and Printer Options

The printer can use different print modes and options for label removal (Table 6). Use a print mode that matches the media being used and the printer options available. For more information on the types of media, see *Types of Media* on page 29. To select a print mode, see *Select Print Mode* on page 101.

Print Mode Descriptions and Printer Requirements

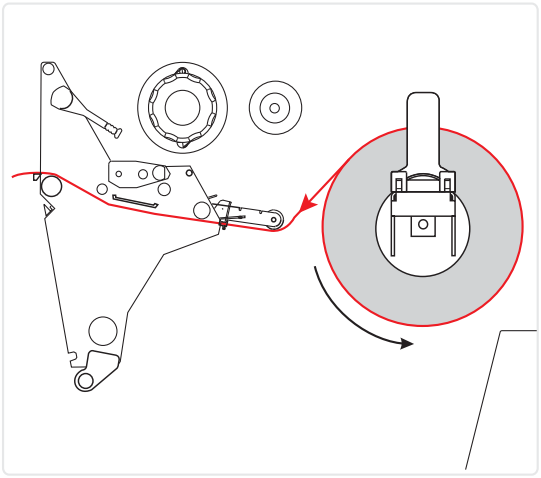
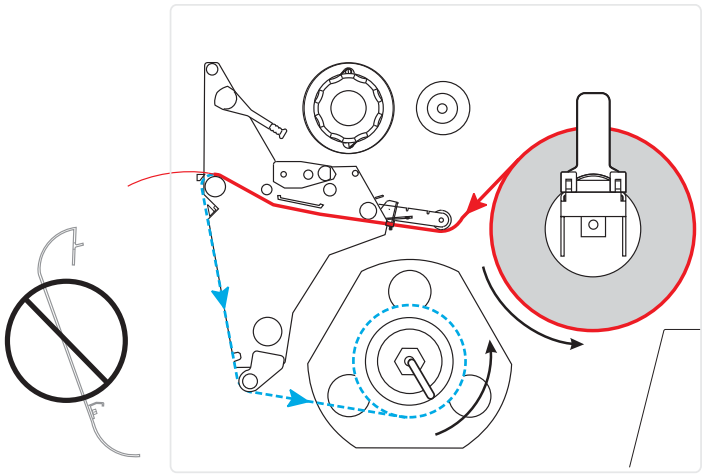
Table 6 • Print Modes and Printer Options

Print Mode	When to Use/Printer Options Required	Printer Actions
Tear-Off (default setting)	Use for most applications. This mode can be used with any printer options and most media types.	The printer prints label formats as it receives them. The printer operator can tear off the printed labels any time after they print.
Peel-Off	Use only if the printer has the Peel-Off or Rewind option.	The printer peels the label from the liner during printing and then pauses until the label is removed. The backing is wound on the rewind spindle, but the rewind plate is not used.
Cutter	Use if the printer has a cutter option when you want the labels to be cut apart.	The printer prints a label and then cuts it free.
Delayed Cut	Use if the printer has a cutter option when you want the printer to cut the labels apart at a signal.	The printer prints a label, pauses, and cuts the label when it receives the ~JK (delayed cut) ZPL command.
Applicator	Use only if the printer is used with a machine that applies labels.	The printer prints a label when it receives a signal from the applicator.
Rewind	Use if the printer has the Rewind option and you want the labels to rewind onto a core.	The printer prints without pausing between labels. The media is wound onto a core after printing. The rewind plate is used. If your printer has a cutter, the media is threaded through the cutter, but the labels are not cut.

Media Paths

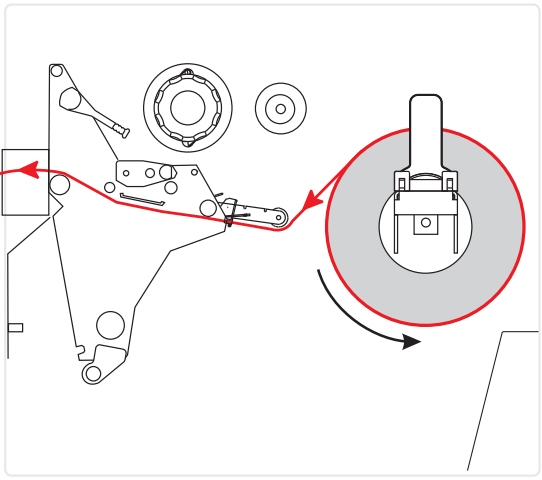
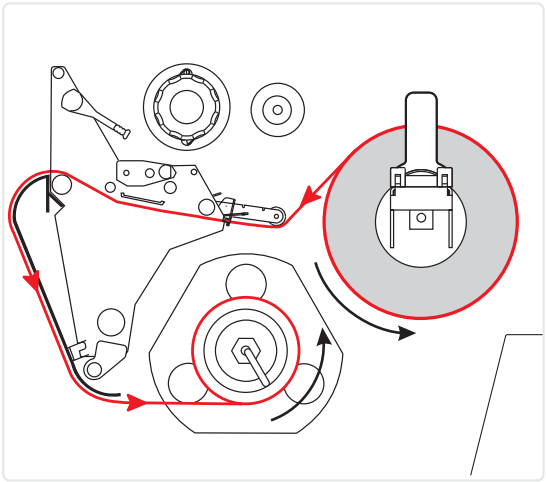
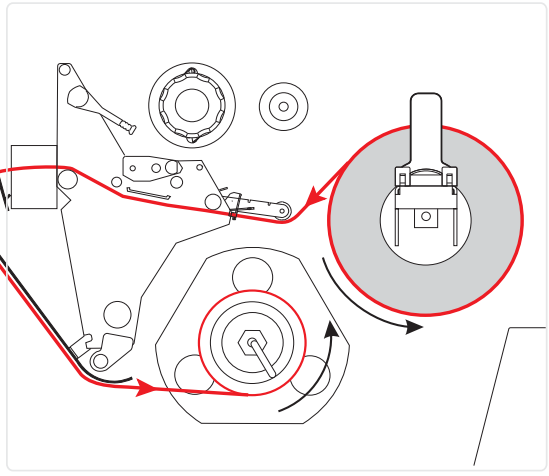
Table 7 shows the media paths for print mode and printer option combinations using roll media. Fanfold media uses the same print modes and printer options as roll media. RFID printers can use all of these printer options and have the same media paths.

Table 7 • Media Paths for Print Modes with Various Printer Options

Print Mode	Printer Option	Media Path
Tear-Off	Printers with any printer options can use Tear-Off mode	
Peel-Off or Applicator	Rewind (shown) or Peel (not shown)	

Red solid lines = media, Blue dotted lines = backing only

Table 7 • Media Paths for Print Modes with Various Printer Options (Continued)

Print Mode	Printer Option	Media Path
Cutter	Cutter	
Rewind	Rewind (without Cutter option)	
Rewind	Rewind (with Cutter option)	

Red solid lines = media, Blue dotted lines = backing only

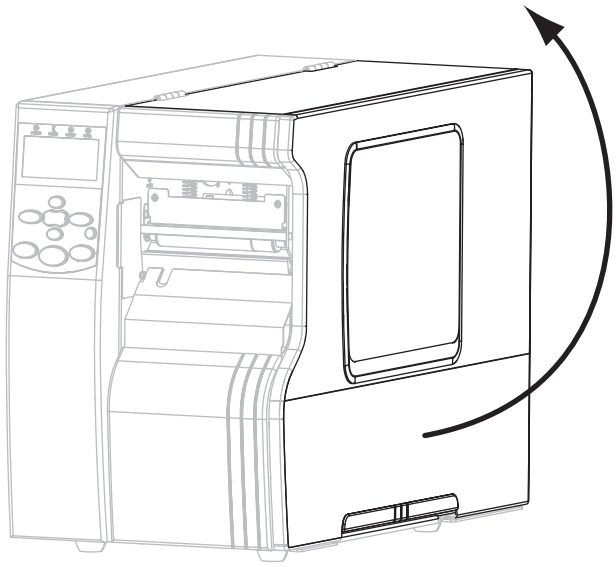
Prepare the Media for Loading

You can use roll media or fanfold media in your printer. Roll media hangs on and is loaded from the media supply hanger. Fanfold media is stored away from or in the bottom of the printer and can drape across the media supply hanger.

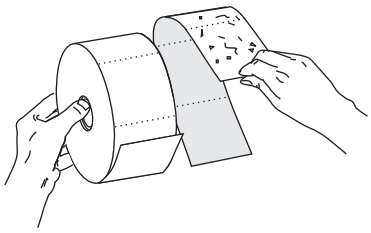
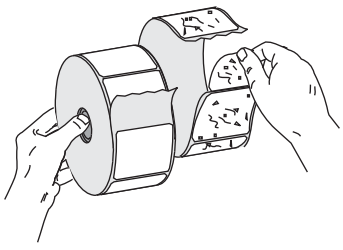
Roll Media

To place roll media on the media supply hanger, complete these steps:

1. Raise the media door.



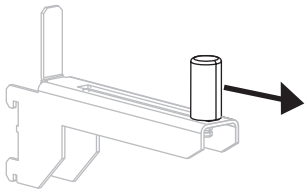
2. Remove and discard any tags or labels that are dirty or that are held by adhesives or tape.

Tag Stock	Labels
	

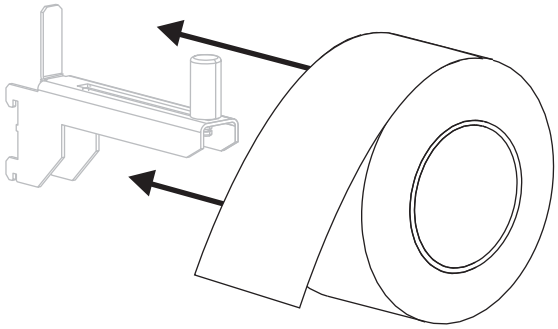
3. Insert the media into the printer.

110Xi4

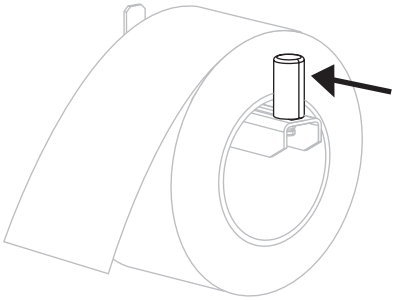
a. Pull out the media supply guide as far as it goes.



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

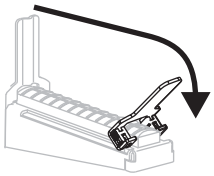


c. Slide in the media supply guide until it touches the edge of the roll.

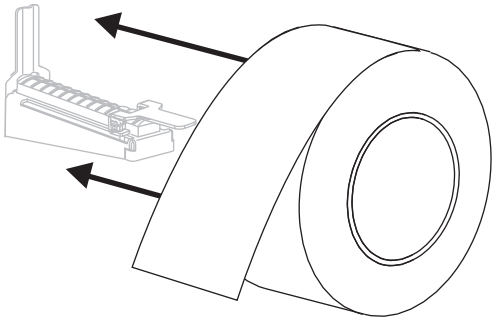


Other Xi4 Models

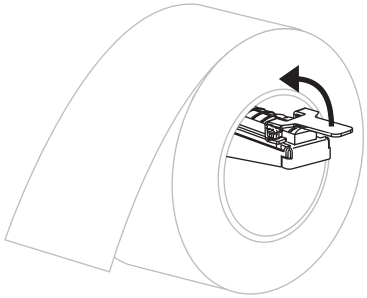
a. Slide out and flip down the media supply guide.



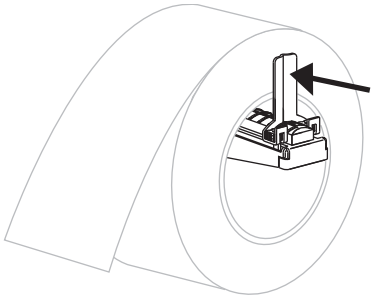
b. Place the roll of media on the media supply hanger. Push the roll back as far as it will go.



c. Flip up the media supply guide.



d. Slide in the media supply guide until it touches the edge of the roll.



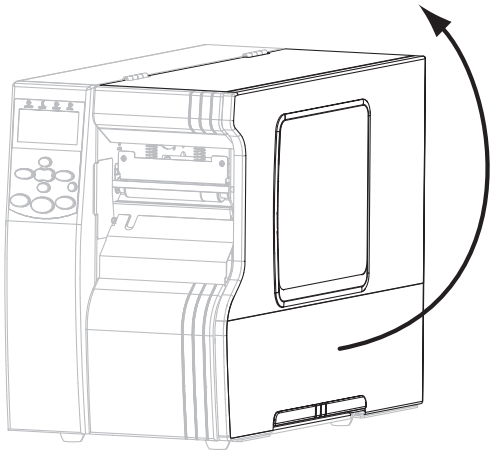
4. Continue with the media loading procedure for the desired print mode.

Fanfold Media

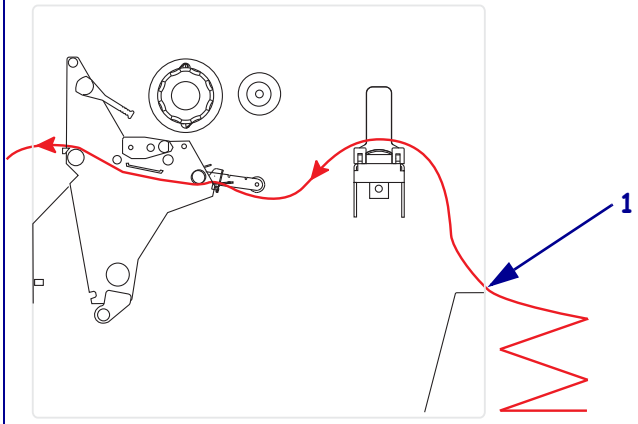
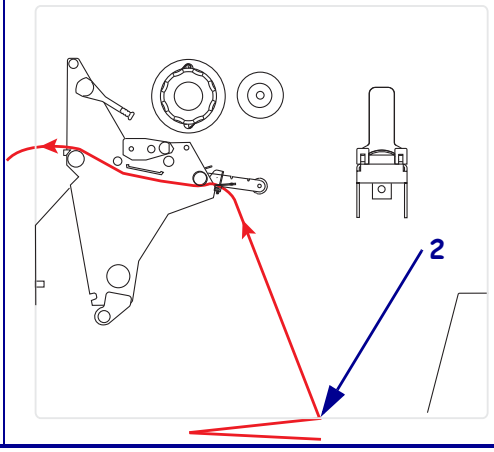
You can store fanfold media behind the printer (rear feed) or under the printer (bottom feed). Using the media supply hanger is optional.

To load fanfold media, complete these steps:

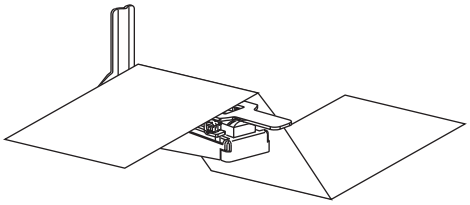
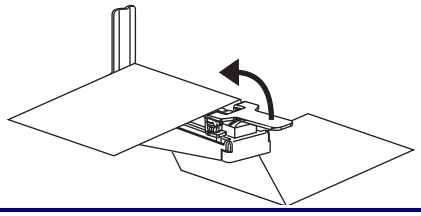
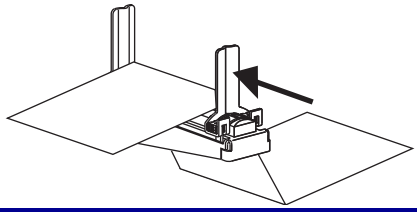
1. Raise the media door.



2. Thread the fanfold media through the rear access slot (**1**) or the bottom access slot (**2**).

If using...	Then use this access slot...
Rear feed (shown using the media supply hanger)	
Bottom feed (shown without using the media supply hanger)	

3. Do you wish to use the media supply hanger?

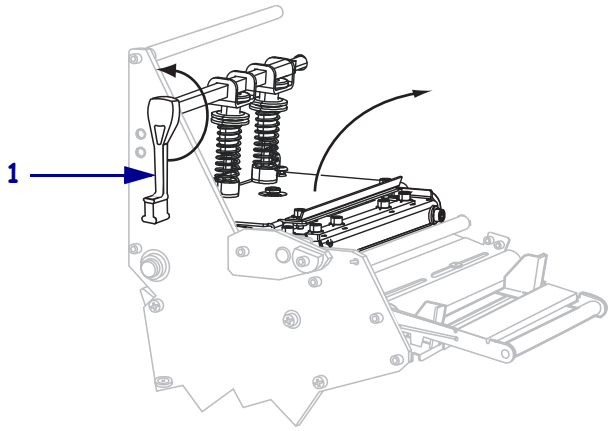
If…	Then…
No	Continue with the media loading procedure for the desired print mode.
Yes	**a.** Slide out and flip down the media supply guide. **b.** Drape the media over the media supply hanger.  **4.** Flip up the media supply guide, and then slide it in until it touches the edge of the media.  

Load Media in Tear-Off Mode

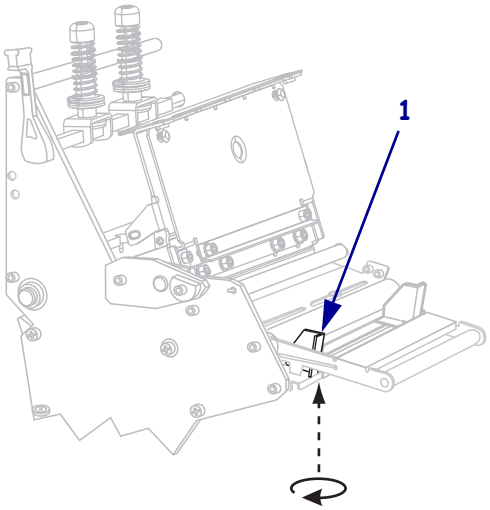
Follow these instructions to operate the printer in Tear-Off mode.

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.

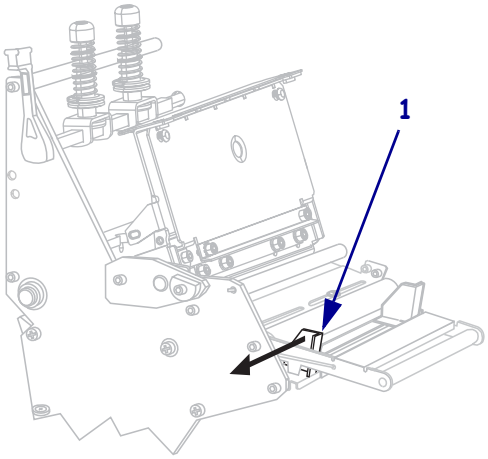
1. Set the printer to Tear-Off mode. See *Select Print Mode* on page 101 for instructions.
2. Insert media into the printer. See *Prepare the Media for Loading* on page 37 for instructions.
3. Open the printhead assembly by rotating the printhead-open lever (**1**) counter-clockwise.



4. Loosen the thumb screw (not visible from this angle) that is located on the bottom of the outer media guide (**1**).

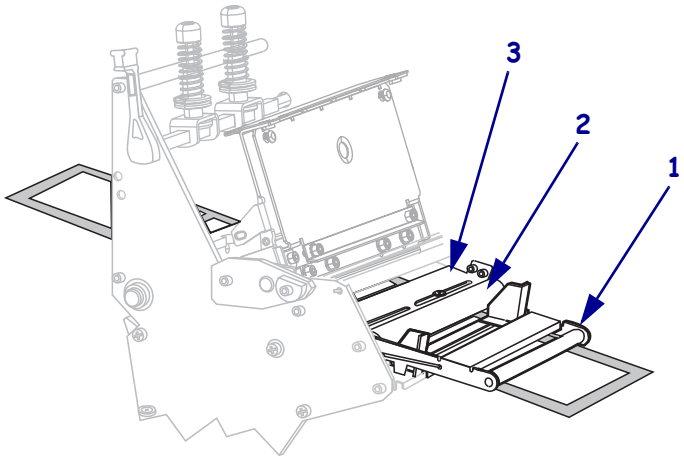


5. Slide the outer media guide (**1**) all the way out.

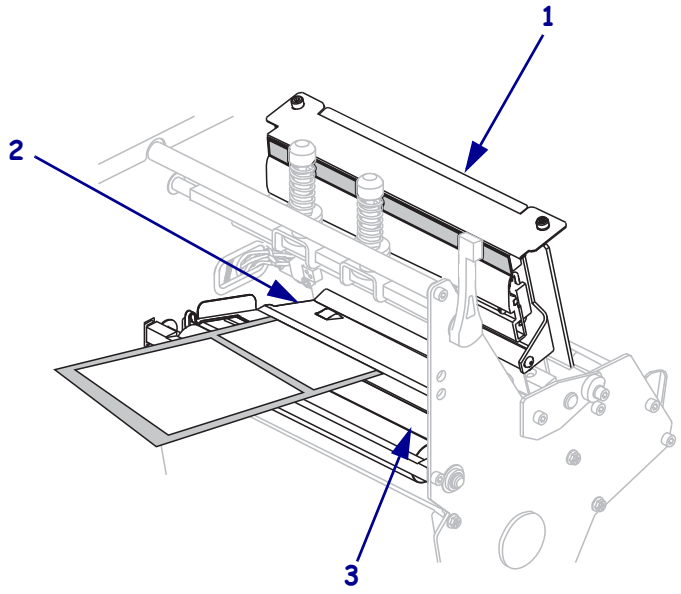


6. If your printer includes a media dancer assembly (**1**), thread the media under the media dancer assembly roller. For all printers, thread the media under the media guide roller (**2**) and then the upper media sensor (**3**).

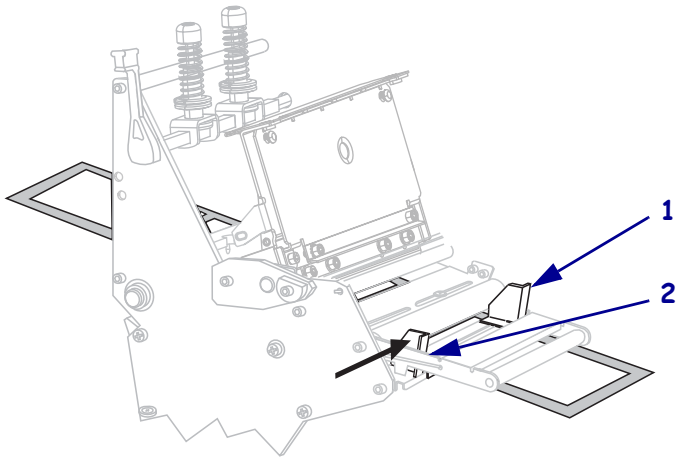
Important • Make sure that you thread the media under these components. If you thread the media over the them, the media obstructs the ribbon sensor and causes a false `RIBBON OUT` error.



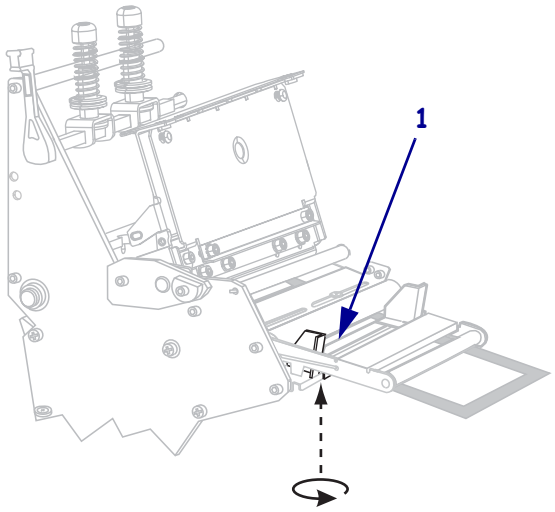
7. Push the media forward until it passes under the printhead assembly (**1**), under the snap plate (**2**), and then over the platen roller (**3**).



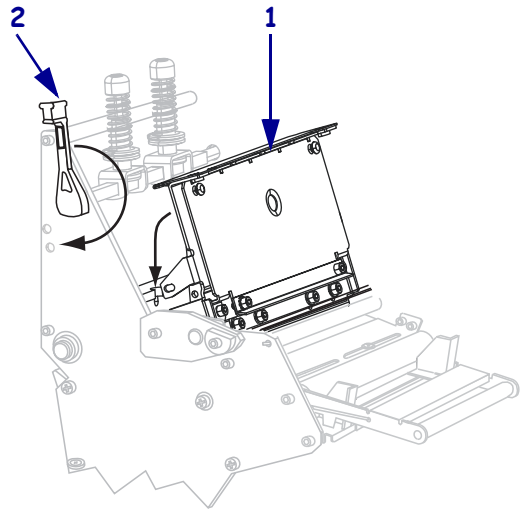
8. Align the media with the inner media guide (**1**). Slide in the outer media guide (**2**) until it just touches the edge of the media.



9. Tighten the thumb screw (not visible from this angle) that is located on the bottom of the outer media guide (**1**).



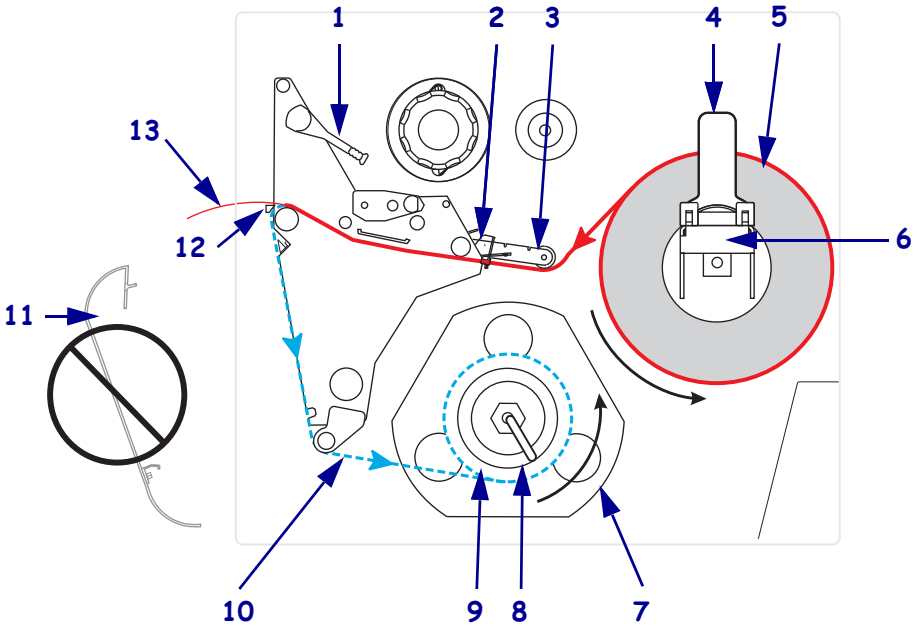
10. Push down the printhead assembly (**1**), and then rotate the printhead-open lever (**2**) clockwise until it locks into place.



Load Media in Peel-Off Mode

Peel-Off mode (Figure 7) advances one label at a time. The printer does not print another label until the first label is removed. The TAKE LABEL light flashes until the label is removed. The backing is wound on the rewind spindle, but the rewind plate is not used.

Figure 7 • Media Loaded in Peel-Off Mode



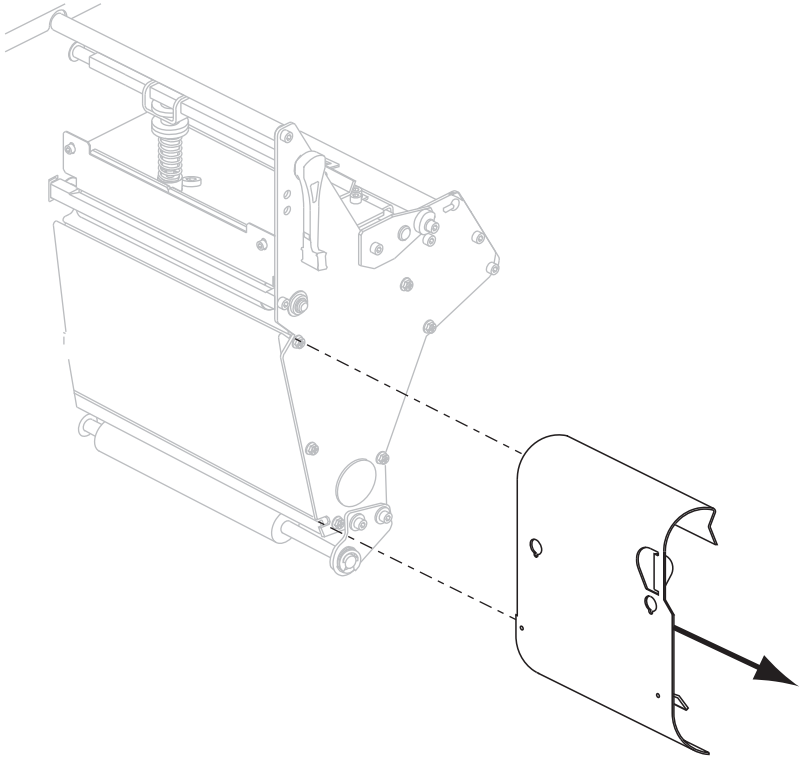
1	Printhead-open lever
2	Media guide
3	Media guide roller
4	Media supply guide
5	Media
6	Media supply hanger
7	Guide plate
8	Spindle hook
9	Rewind spindle
10	Label backing
11	Rewind plate (removed)*
12	Tear-off bar
13	Printed label

* In new printers, remove the protective plastic covering from the rewind plate before using.

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.

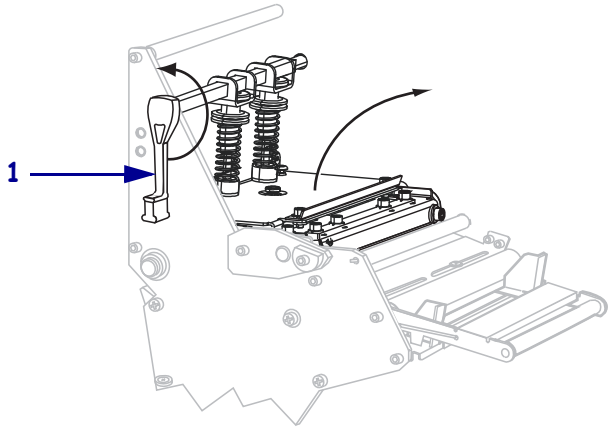
To set up the printer in Peel-Off mode, complete these steps:

1. Remove the rewind plate (if installed) from the front of the printer. Store it on the two mounting screws on the inside of the printer base.

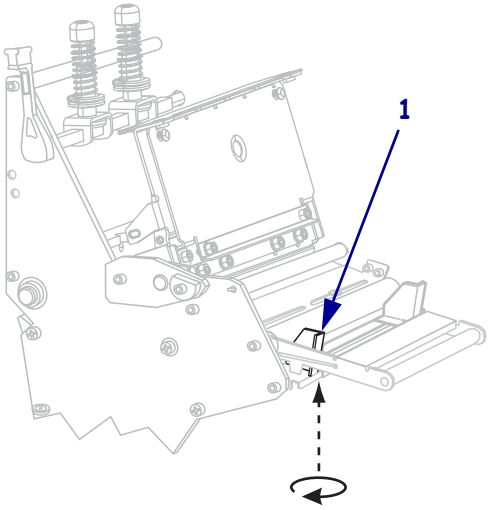


2. Set the printer to Peel-Off mode. See *Select Print Mode* on page 101 for instructions.
3. Insert media into the printer. See *Prepare the Media for Loading* on page 37 for instructions.

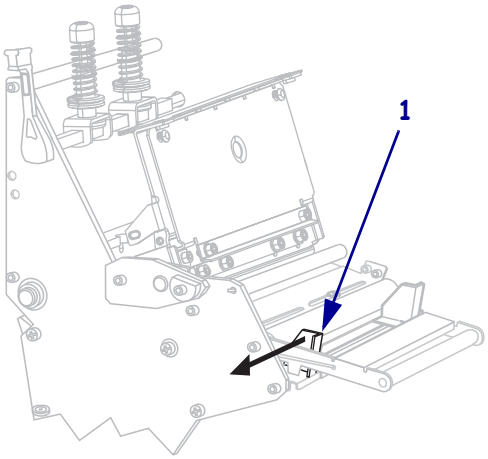
4. Open the printhead assembly by rotating the printhead-open lever (**1**) counter-clockwise.



5. Loosen the thumb screw (not visible from this angle) that is located on the bottom of the outer media guide (**1**).

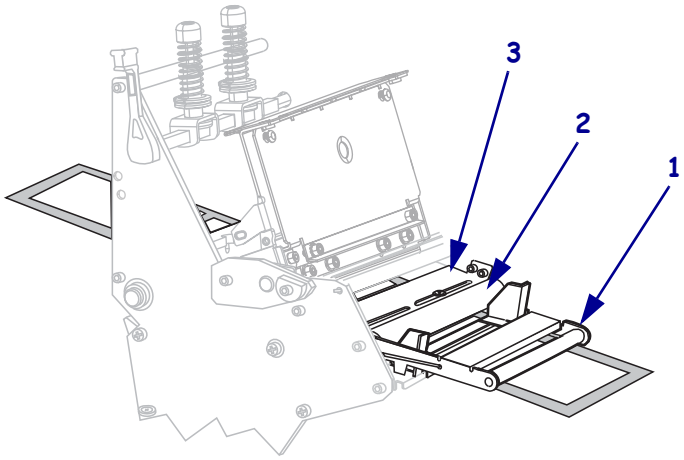


6. Slide the outer media guide (**1**) all the way out.

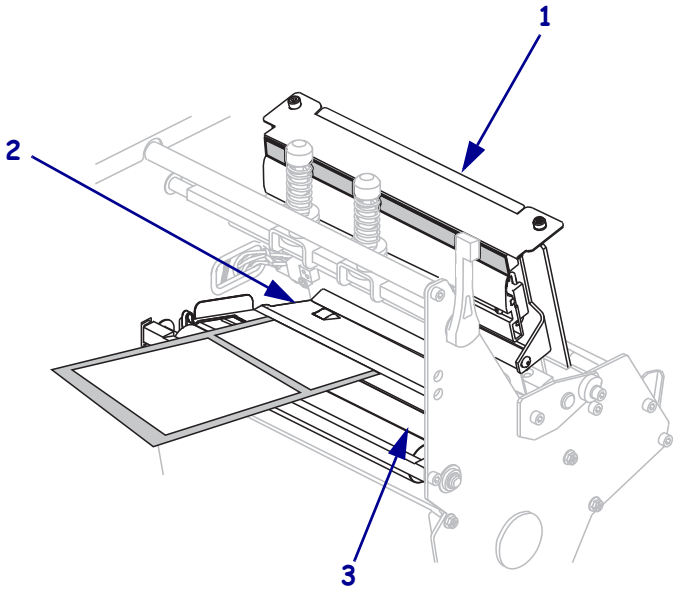


7. If your printer includes a media dancer assembly (**1**), thread the media under the media dancer assembly roller. For all printers, thread the media under the media guide roller (**2**) and then the upper media sensor (**3**).

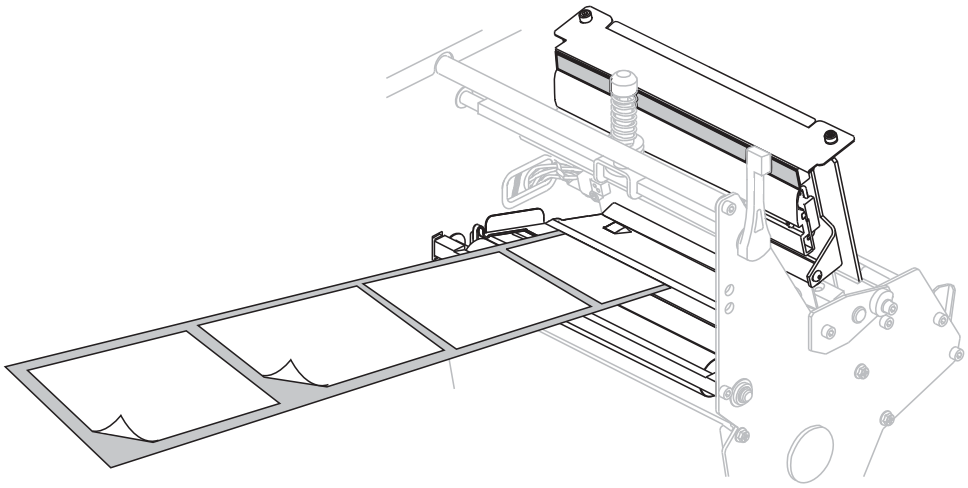
   Important • Make sure that you thread the media under these components. If you thread the media over the them, the media obstructs the ribbon sensor and causes a false `RIBBON OUT` error.



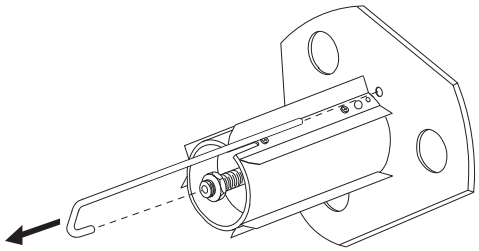
8. Push the media forward until it passes under the printhead assembly (**1**), under the snap plate (**2**), and then over the platen roller (**3**).



9. Extend approximately 36 in. (920 mm) of media out of the printer. Remove and discard the labels from this exposed media.



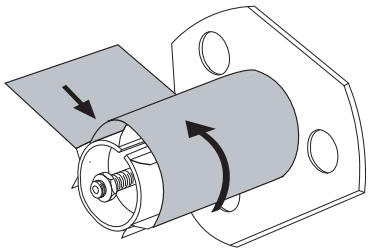
10. Remove the hook from the rewind spindle.



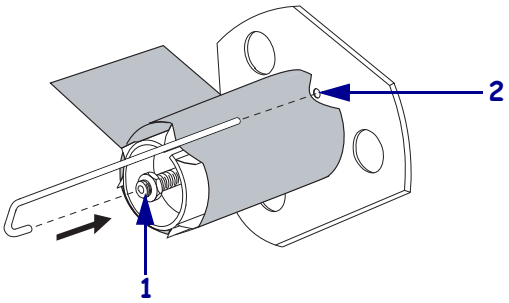
11. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.

Note • A core is not required.

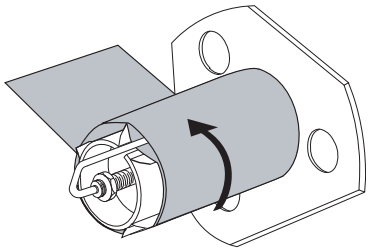
12. Wind the media liner counterclockwise around the rewind spindle.



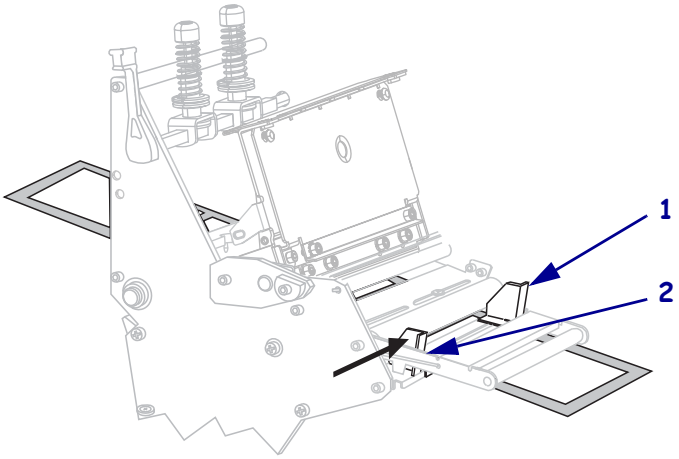
a. Reinstall the hook. Insert the short end of the hook into the hole in the center of the adjusting nut (**1**). Insert the long end of the hook into the small hole on the guide plate (**2**).



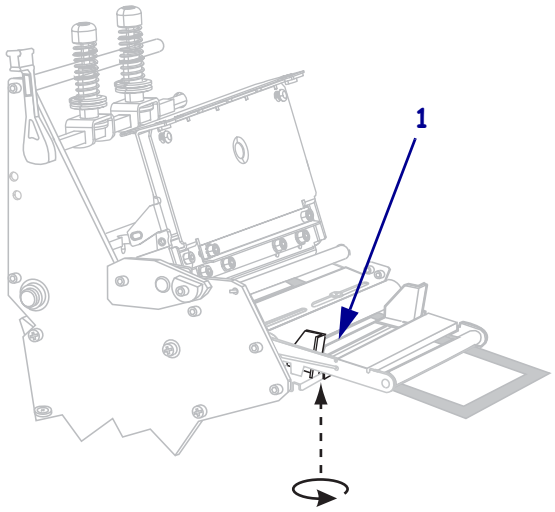
b. Rotate the spindle counterclockwise several turns to wind the media liner over the hook and remove any slack.



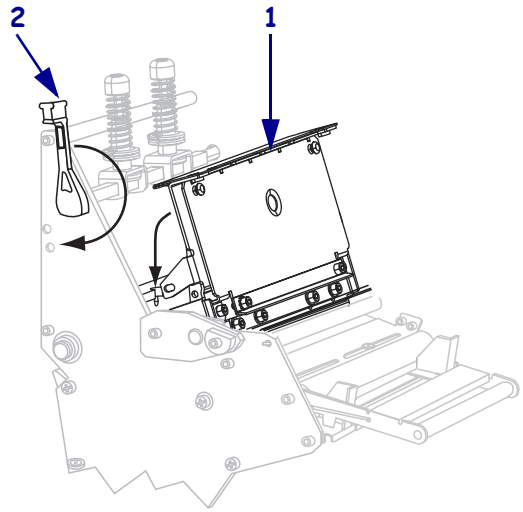
13. Align the media with the inner media guide (**1**). Slide in the outer media guide (**2**) until it just touches the edge of the media.



14. Tighten the thumb screw (not visible from this angle) that is located on the bottom of the outer media guide (**1**).



15. Push down the printhead assembly (**1**), and then rotate the printhead-open lever (**2**) clockwise until it locks into place.



The backing winds on the rewind spindle or core.

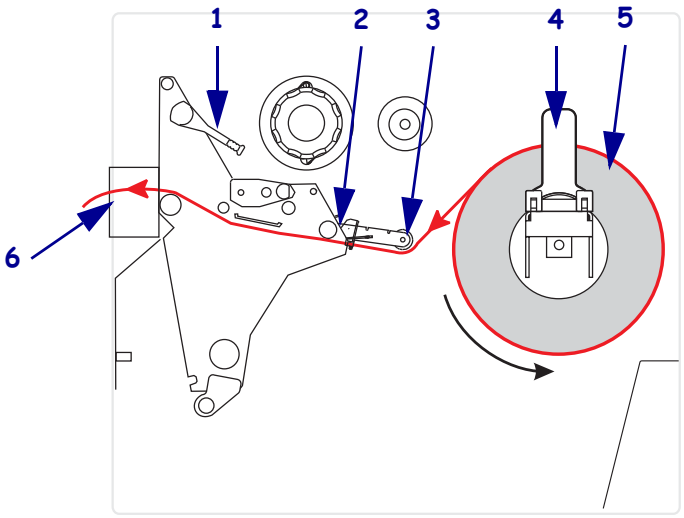
16. For instructions for removing the backing from the rewind spindle, see *Remove Media Liner from the Rewind or Peel Spindle* on page 64.

Load Media in Cutter Mode

A cutter is a rotating knife with a self-sharpening blade that is attached to the front of the printer. The cutter is used to cut individual labels as they are printed.

Figure 8 shows the printer loaded with labels in Cutter mode.

Figure 8 • Media Loaded in Cutter Mode



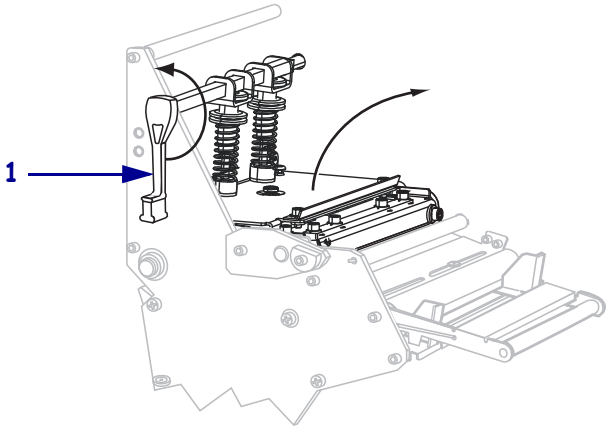
1	Printhead-open lever
2	Media guide
3	Media guide roller
4	Media supply guide
5	Media
6	Cutter

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.

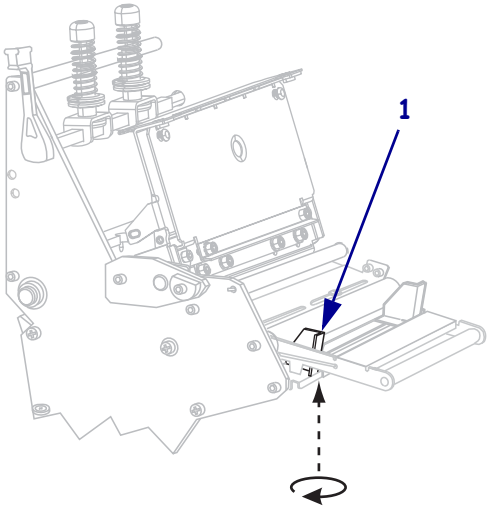
To set up the printer in Cutter mode, complete these steps:

1. Set the printer to Cutter mode. See *Select Print Mode* on page 101 for instructions.
2. Insert media into the printer. See *Prepare the Media for Loading* on page 37 for instructions.

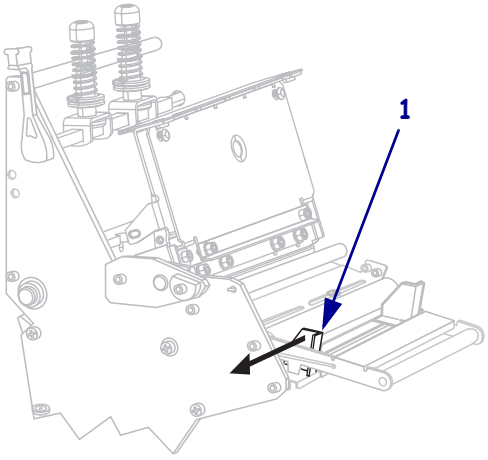
3. Open the printhead assembly by rotating the printhead-open lever (**1**) counter-clockwise.



4. Loosen the thumb screw (not visible from this angle) that is located on the bottom of the outer media guide (**1**).

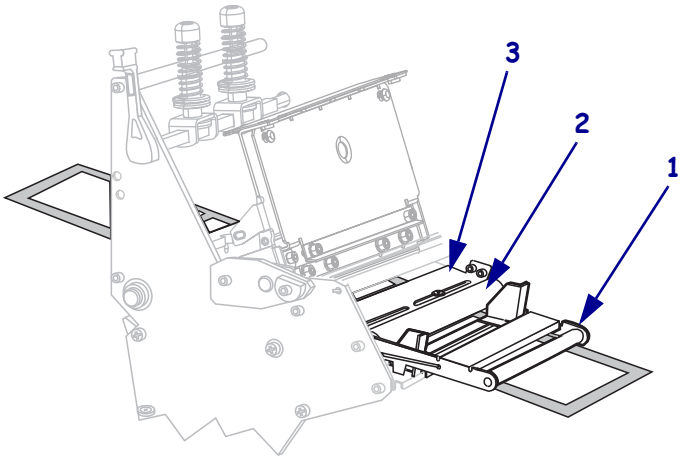


5. Slide the outer media guide (**1**) all the way out.



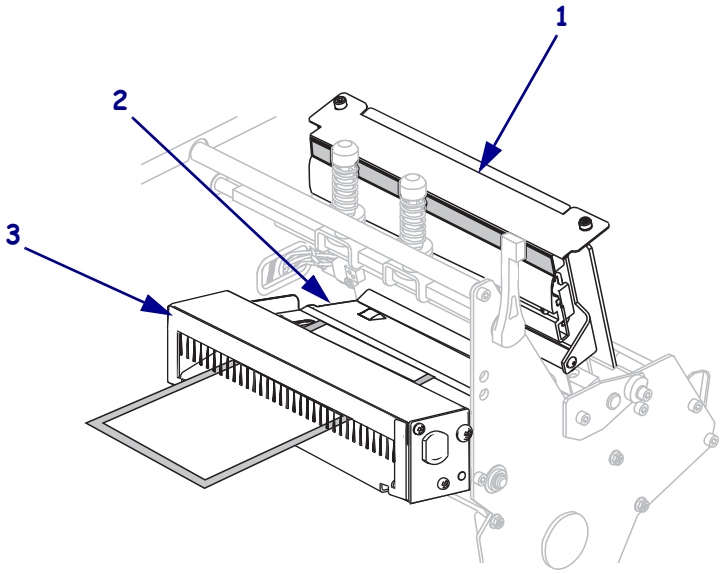
6. If your printer includes a media dancer assembly (**1**), thread the media under the media dancer assembly roller. For all printers, thread the media under the media guide roller (**2**) and then the upper media sensor (**3**).

Important • Make sure that you thread the media under these components. If you thread the media over the them, the media obstructs the ribbon sensor and causes a false `RIBBON OUT` error.

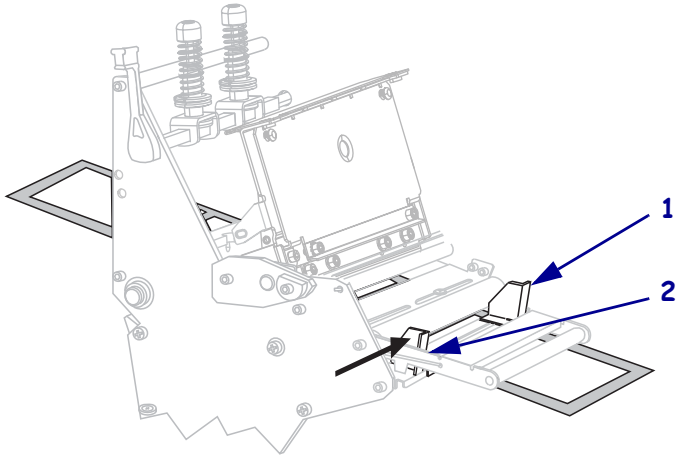


7. **Caution** • The cutter blade is sharp. Do not touch or rub the blade with your fingers.

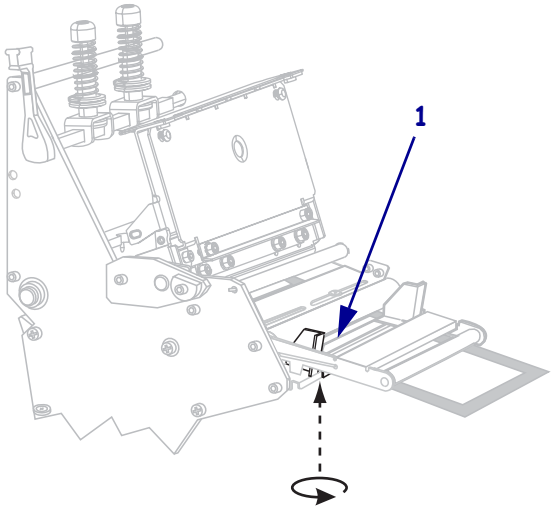
Thread the media forward until it passes under the printhead assembly (**1**), under the snap plate (**2**), and through the cutter assembly (**3**).



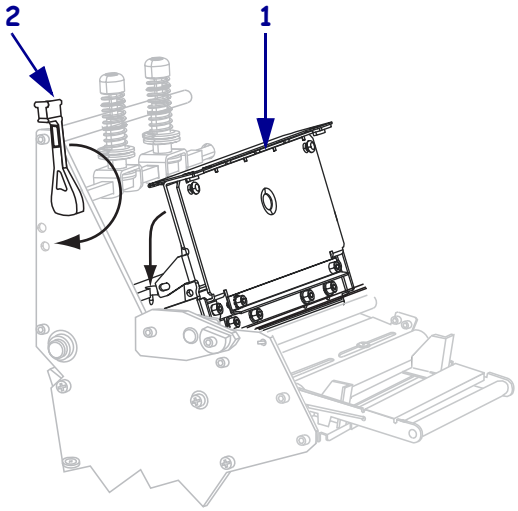
8. Align the media with the inner media guide (**1**). Slide in the outer media guide (**2**) until it just touches the edge of the media.



9. Tighten the thumb screw (not visible from this angle) that is located on the bottom of the outer media guide (**1**).



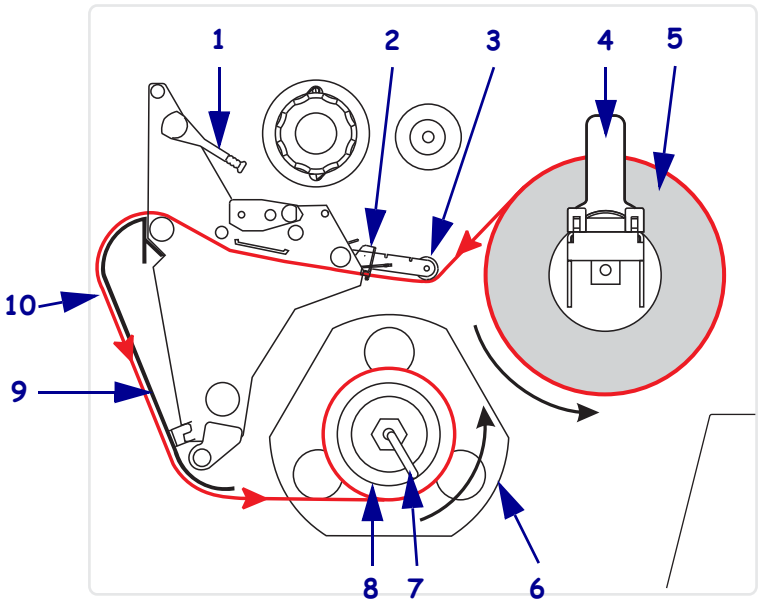
10. Push down the printhead assembly (**1**), and then rotate the printhead-open lever (**2**) clockwise until it locks into place.



Load Media in Rewind Mode

Rewind mode (Figure 9) allows the media to be wound on a core after printing. This section shows how to load media for Rewind mode in printers that do not have a Cutter option.

Figure 9 • Media Loaded in Rewind Mode



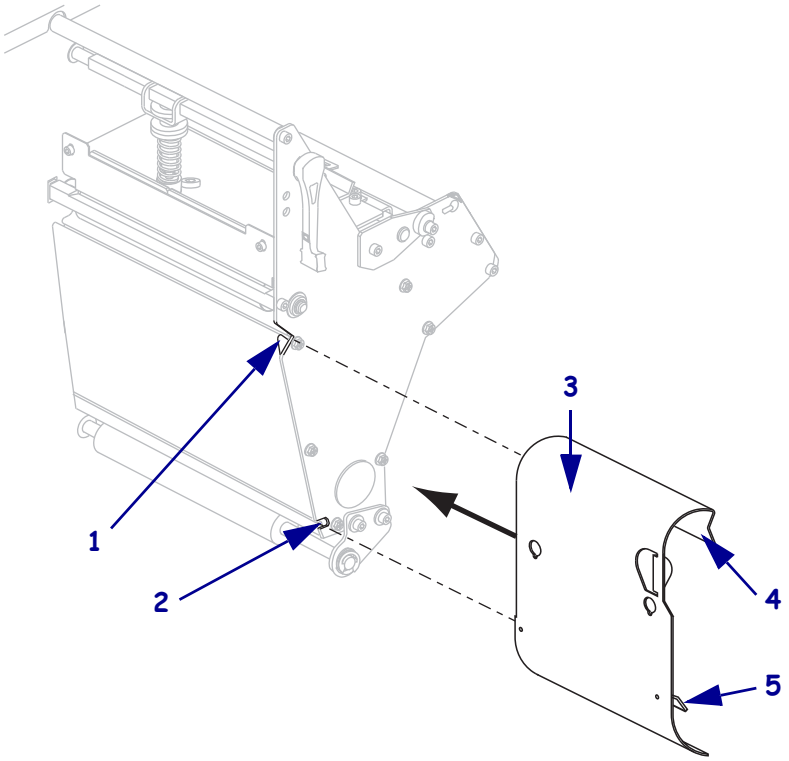
1	Printhead-open lever
2	Media guide
3	Media guide roller
4	Media supply guide
5	Labels
6	Guide plate
7	Spindle hook
8	Rewind spindle
9	Rewind plate (for Rewind mode only)*
10	Printed labels

* In new printers, remove the protective plastic covering from the rewind plate before using.

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 set up the printer in Rewind mode, complete these steps:

1. Remove the rewind plate from its storage location inside the printer.
2. Position the rewind plate so that the lip on the attached hook plate points down.

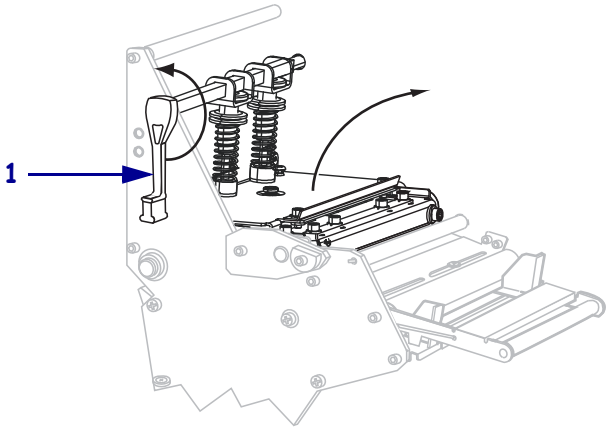


1	Upper slot
2	Lower slot
3	Rewind plate
4	Lip
5	Adjustable hook plate

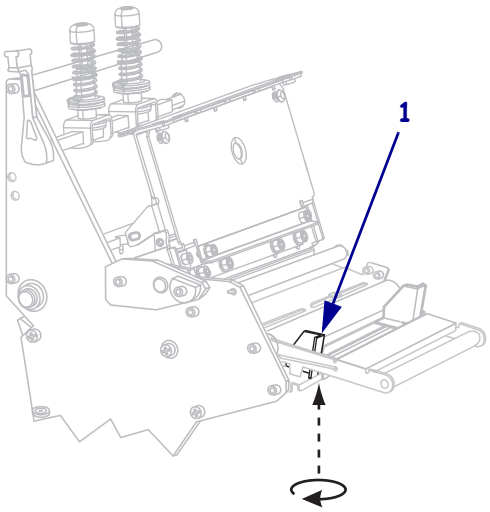
3. Insert the hook plate lip 1/2 in. (13 mm) into the lower slot in the side plate.
4. Align the upper end of the rewind plate with the matching upper slot in the side plate.
5. Slide in the rewind plate until it stops against the printer's main frame.
6. Set the printer to Rewind mode. See *Select Print Mode* on page 101 for instructions.

7. Insert media into the printer. See *Prepare the Media for Loading* on page 37 for instructions.

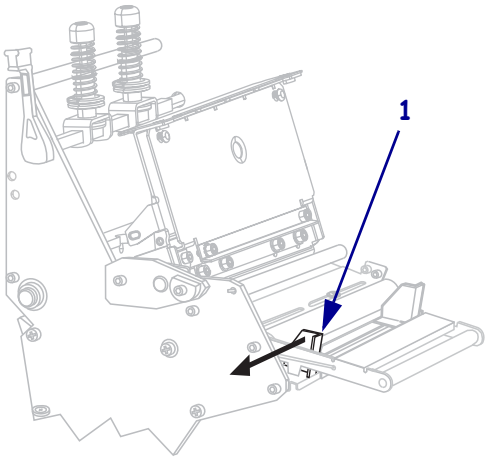
8. Open the printhead assembly by rotating the printhead-open lever (**1**) counter-clockwise.



9. Loosen the thumb screw (not visible from this angle) that is located on the bottom of the outer media guide (**1**).

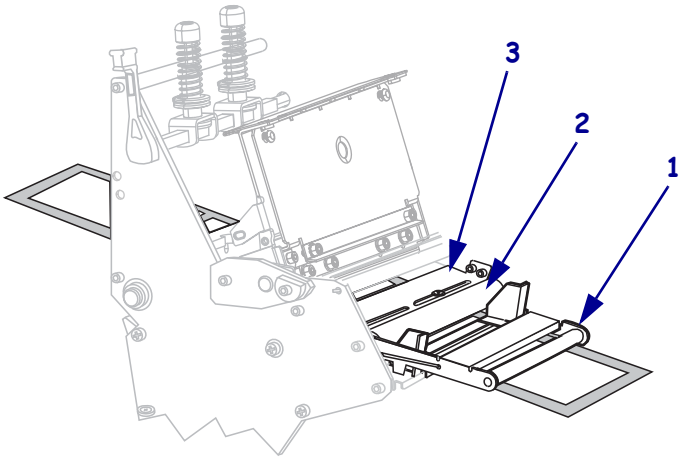
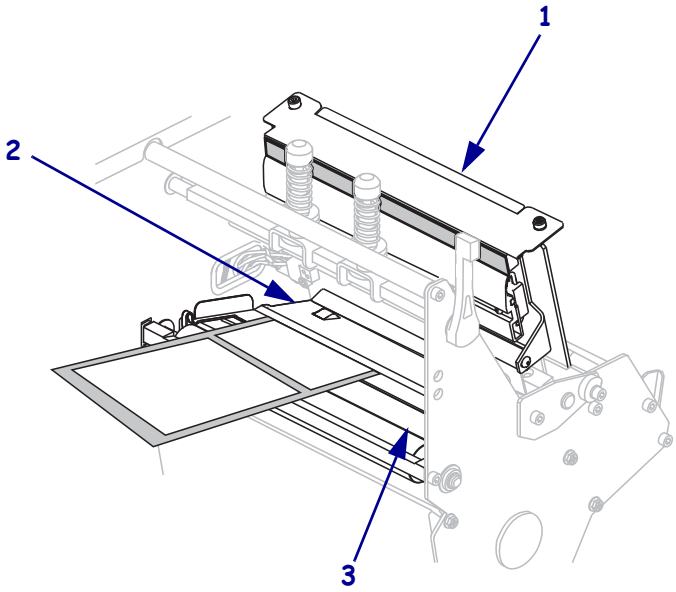


10. Slide the outer media guide (**1**) all the way out.



11. If your printer includes a media dancer assembly (**1**), thread the media under the media dancer assembly roller. For all printers, thread the media under the media guide roller (**2**) and then the upper media sensor (**3**).

Important • Make sure that you thread the media under these components. If you thread the media over the them, the media obstructs the ribbon sensor and causes a false `RIBBON OUT` error.



12. Push the media forward until it passes under the printhead assembly (**1**), under the snap plate (**2**), and then over the platen roller (**3**).