



Zebra® R4Mplus™
Industrial/Commercial Printer

User Guide



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Table of Contents

Proprietary Statement	vii
Product Improvements	vii
FCC Compliance Statement	vii
FCC Radiation Exposure Statement	viii
Canadian DOC Compliance Statement	viii
Liability Disclaimer	viii
Limitation of Liability	viii
Copyrights	viii
Declaration of Conformity	ix
Warranty Information	xi
Printer Products	xi
Printer Software and Firmware License Agreement	xiii
Preface	xix
Contacts	xx
Support	xx
About this Document	xxi
Document Conventions	xxii
Related Documents	xxiv
Chapter 1 • Introduction	1
External View	2
Front Panel	3
LCD Display Settings	4
Print Modes	5
Printer Media Compartment	6

Chapter 2 • Printer Setup	7
Before You Begin	8
Unpack and Inspect the Printer.	9
Report Damage.	9
Storage	9
Select a Site for the Printer.	10
Select a Surface	10
Provide Proper Operating Conditions	10
Allow Proper Space.	10
Provide a Data Source	10
Connect the Printer to a Power Source	11
Power Cord Specifications	11
Select a Communication Interface	13
Cable Requirements	14
Types of Media	15
Non-Continuous Web Media.	16
Continuous Media.	16
RFID “Smart” Labels.	17
Ribbon	18
When to Use Ribbon.	18
Ribbon Width	18
Coated Side of Ribbon	18
Chapter 3 • Printer Operation	21
Front Panel	22
Front Panel Keys	23
Front Panel Lights.	24
Load Roll Media	25
Tear-Off Mode.	25
Peel-Off Mode.	27
Liner Take-Up Mode	29
Rewind/Peel-Off Mode	31
Rewind Mode	33
Adjust Media Alignment for Rewind Option	35
Load Fanfold Media	36
Load the Ribbon	38
Remove the Ribbon	39
Calibrate the Printer	40
Auto Calibration	40
Manual Calibration	40
Print a Configuration Label.	41
Adjust Printhead Pressure	43

Install Memory Card	44
Chapter 4 • Configuration	45
Overview	46
Enter Configuration Mode	46
Exit Configuration Mode	46
Change Password-Protected Parameters	47
Basic Configuration	48
Configuration and Calibration LCD Displays	51
Chapter 5 • RFID Guidelines	71
Overview	72
Transponder Placement	72
ZPL II Commands for RFID	73
^WT	74
^RT	76
^HV	78
^RS	79
Sample of RFID Programming	83
Chapter 6 • Routine Care and Adjustments	85
Cleaning Procedures	86
Clean the Exterior	86
Clean the Interior	87
Clean the Sensors	88
Clean the Rewind Option	89
Clean the Peel-Off Assembly	90
Lubrication	90
Fuse Replacement	91
Chapter 7 • Troubleshooting	93
LCD Error Conditions and Warnings	94
Print Quality Problems	97
Calibration Problems	98
Communication Problems	99
Printer Diagnostics	100
Power-On Self Test	100
CANCEL Self Test	101
PAUSE Self Test	102
FEED Self Test	103
Communication Diagnostics Test	104
RFID Test	105
Loading Factory Defaults	106



Appendix A • Data Connections 107

 Serial Data Port. 108

 Hardware Control Signal Descriptions 108

 RS-232 Serial Data Port 108

 Parallel Data Port 112

 Parallel Cabling Requirements 112

 Parallel Port Interconnections 112

Appendix B • Specifications 113

 General Specifications 114

 Printing Specifications. 115

 Media Specifications 116

 Ribbon Specifications 117

 Printer Options 118

 Zebra Programming Language (ZPL II) Features. 119

 Supported Bar Codes 119

Index 121

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<u>Printhead</u>	<u>Warranty Period</u>
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Preface

The Preface discusses the topics and illustrates standards that are used throughout this guide.

Contents

Contacts	xx
Support	xx
About this Document	xxi
Document Conventions	xxii
Related Documents	xxiv

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US Phone Number: +1 847.913.2259

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About this Document

The User Guide contains the following chapters:

Table 1 • User Guide Contents

Title	Content Description
<i>Introduction</i>	This chapter shows the operational controls and location of major components needed in the loading of media and ribbon.
<i>Printer Setup</i>	The chapter provides the tasks that you must complete and the issues that you must consider before you load and configure your printer.
<i>Printer Operation</i>	This chapter provides instructions for loading media, loading ribbon, and basic printer operation.
<i>Configuration</i>	This chapter discusses detailed configuration settings and instructs you how to view or change parameters through the front panel.
<i>RFID Guidelines</i>	This chapter provides an overview of how RFID works and the ZPL commands used to create RFID labels.
<i>Routine Care and Adjustments</i>	This chapter discusses printer cleaning and minor adjustments.
<i>Troubleshooting</i>	This chapter discusses typical problems and their probable solutions.
<i>Data Connections</i>	This appendix provides details about the serial port and parallel port data connections.
<i>Specifications</i>	This appendix contains specifications for the R4Mplus printer.

Document Conventions

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

About this Chapter: This section lists and describes each main section of the chapter, including the initial page number of that section. These sections primarily serve as hyperlink components for the Adobe Acrobat .pdf version of this guide.

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

Command Line Examples: All command line examples appear in `Courier` font. For example, you would type the following to get to the **Post-Install scripts in the bin directory**: `Ztools`

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

Caution, Important, Note, and Example: These types of paragraphs are defined in the following examples:



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

Caution • Advises you that failure to take or avoid a specified action could result in loss of data or hardware damage.



Important • Provides information that is essential to the completion of a task.

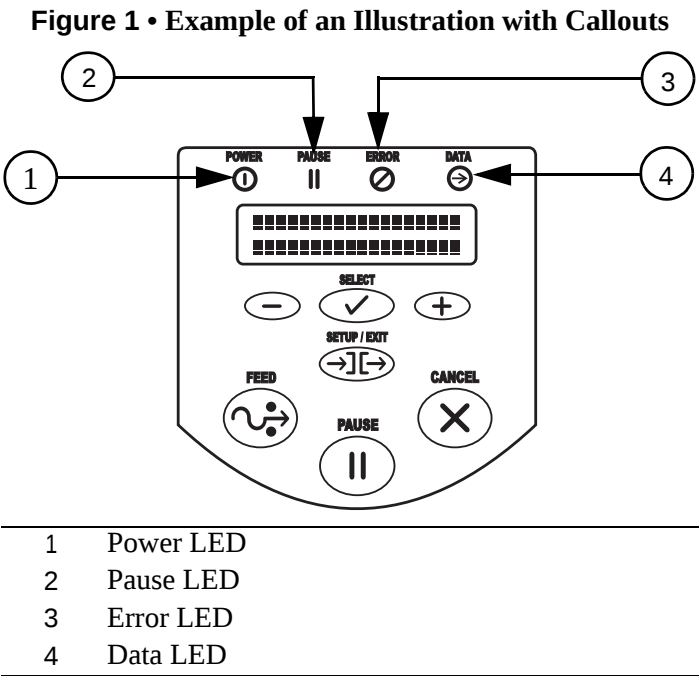


Note • Indicates neutral or positive information that emphasizes or supplements important points of the main text.



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 illustration. See [Figure 1](#).



Related Documents

In addition to this user guide, the following documents might be helpful references:

- The *ZPL II Programming Guide Volume I and Volume II* (Zebra part number 45540L) details how to create the perfect label format for your application. The guide explains how the optional ZBI™ extends the power of ZPL II by allowing custom programs to be written that operate within the printer, directly interfacing with bar code scanners, keyboard display devices, etc. The guide also contains information about the enhanced operating system features of your printer. There are three ways to obtain this guide: on the accessory CD-ROM (supplied with the printer), on our web site (www.zebra.com), or by ordering printed manuals from your distributor.
- The *PrintServer II User and Reference Guide* (Zebra part number 45537L) explains how you can quickly set up your printer on an IP network and experience ZebraLink, our revolutionary real-time connectivity and control solution for Zebra printers (optional ZebraNet PrintServer II required).
- The *Z4Mplus and Z6Mplus Maintenance Manual* (Zebra part number 13358L) contains the information you need to maintain your printer.



Note • This maintenance manual applies to the R4Mplus, but the RFID components are not included.

CHAPTER 1

Introduction

This chapter shows the operational controls and location of major components needed in the loading of media and ribbon.

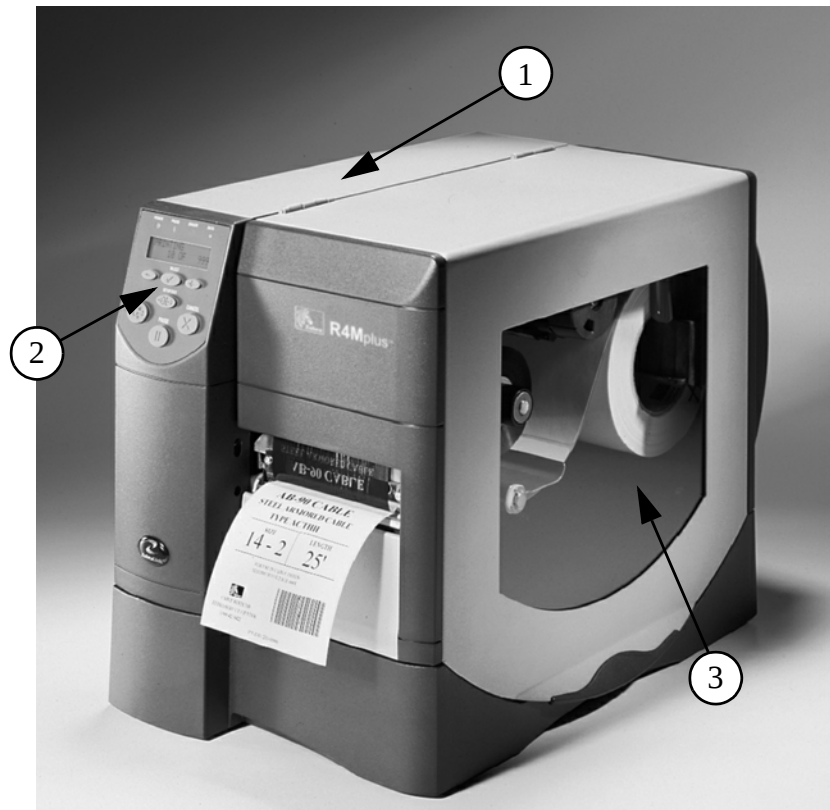
Contents

External View	2
Front Panel	3
LCD Display Settings	4
Print Modes	5
Printer Media Compartment	6

External View

Figure 1 shows the outside of the printer.

Figure 1 • External View

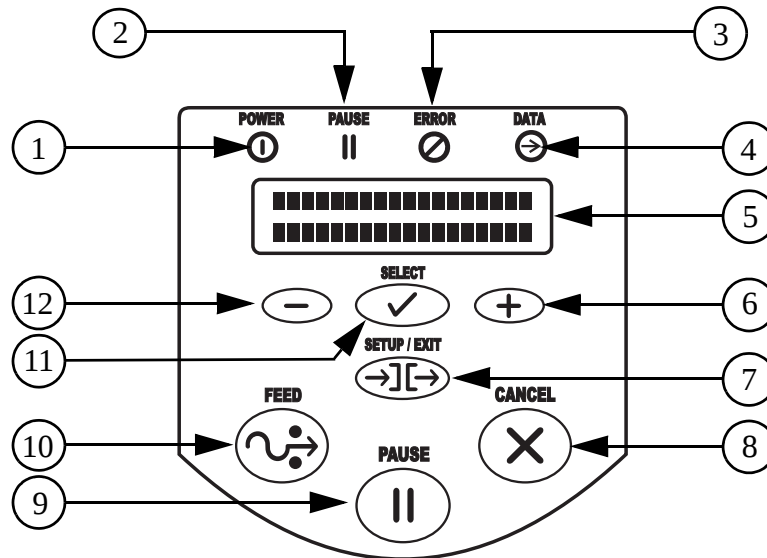


-
- | | |
|---|-------------------|
| 1 | Electronics cover |
| 2 | Front panel |
| 3 | Media door |
-

Front Panel

The front panel keys and lights are shown in [Figure 2](#).

Figure 2 • Front Panel Controls and LEDs



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

LCD Display Settings

[Table 1](#) shows front panel LCD display settings that you may wish to adjust and what they mean. Refer to [Basic Configuration on page 48](#) for more detailed information on each setting.

Table 1 • Front Panel LCD Display Settings

LCD Display	Meaning/Available Settings
☆☆☆☆☆☆ ☆☆☆☆☆	Ready to print labels or to configure the printer. All printer self-tests have been performed successfully.
☆☆☆☆☆☆☆☆	The larger the number, the darker the print. The range is 0 to 30, with a default setting of 10.
☆☆☆☆ ☆☆☆☆☆	The print speed is given in inches per second. The larger the number, the faster the label prints.
☆☆☆☆ ☆☆☆	Establishes the position of the media over the tear-off bar after printing.
☆☆☆☆ ☆☆☆	Tear-Off (default setting), Peel-Off, Cutter, Rewind. For more details, see Table 2 .
☆☆☆☆☆☆ ☆☆☆	Non-continuous (default setting), Continuous
☆☆☆☆☆☆ ☆☆☆	Web (default setting), Mark
☆☆☆☆ ☆☆☆☆☆	Thermal transfer (default setting using a ribbon), Direct thermal (no ribbon)

Print Modes

You can view the current print mode on the LCD on the front panel of the printer. Refer to [Configuration and Calibration LCD Displays on page 51](#) for more detailed information. Print modes should match the media and printer options chosen. Print mode choices are listed in [Table 2](#).

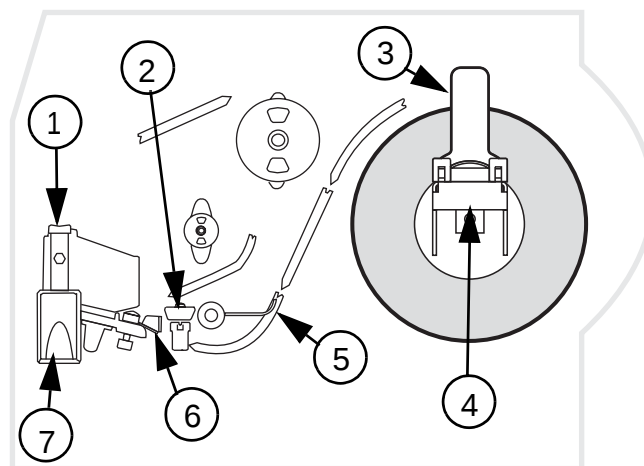
Table 2• Print Mode Options

Mode	Printer Option	Action
Tear-Off Mode (Default setting)	Use for most applications.	Each label or strip of labels can be torn off after printing.
Peel-Off Mode	Use only if printer has the peel option.	Liner material is peeled away from the label as it is printed. After the printed label is removed the next label prints.
Cutter Mode	Use only if printer has a cutter option.	Printer automatically cuts the label after it is printed.
Rewind Mode	Use only if printer has the rewind option.	The media and/or liner are rewound onto a core as they are printed.

Printer Media Compartment

Figure 3 shows a simplified view of your printer. Depending on installed options, your printer may look slightly different.

Figure 3 • Media Compartment



-
- | | |
|---|----------------------|
| 1 | Printhead Assembly |
| 2 | Transmissive Sensor |
| 3 | Label Supply Guide |
| 4 | Label Supply Hanger |
| 5 | Dancer |
| 6 | Label Guide |
| 7 | Printhead Open Lever |
-

CHAPTER 2

Printer Setup

The chapter 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	8
Unpack and Inspect the Printer	9
Report Damage	9
Storage	9
Select a Site for the Printer	10
Select a Surface	10
Provide Proper Operating Conditions	10
Allow Proper Space	10
Provide a Data Source	10
Connect the Printer to a Power Source	11
Power Cord Specifications	11
Select a Communication Interface	13
Types of Media	15
Non-Continuous Web Media	16
Continuous Media	16
RFID “Smart” Labels	17
Ribbon	18

Before You Begin

Review this checklist, and resolve any issues before you begin setting up your printer. When you are ready, continue with [Printer Operation on page 21](#).

- ❑ **Unpack and Inspect** Have you unpacked the printer and inspected it for damage? If you have not, see [Unpack and Inspect the Printer on page 9](#).
- ❑ **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 10](#).
- ❑ **Attach Power Cord** Do you have the correct power cord for your printer? If you are unsure, see [Power Cord Specifications on page 11](#). To attach the power cord and connect the printer to a power source, see [Connect the Printer to a Power Source on page 11](#).
- ❑ **Connect to a Data Source** Have you determined how the printer will be connected to a data source (usually a computer)? For more information, see [Select a Communication Interface on page 13](#).
- ❑ **Select Media** Do you have the correct media for your application? If you are unsure, see [Types of Media on page 15](#).
- ❑ **Select Ribbon** Do you need to use ribbon, and is the appropriate ribbon available, if needed? If you are unsure, see [Ribbon on page 18](#).

Unpack and Inspect the Printer

- Check all exterior surfaces.
- Raise the media door, and inspect the media compartment.
- Save the carton and all packing material in case the printer needs to be shipped. Contact your authorized Zebra reseller for instructions.
- 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 [Connect the Printer to a Power Source on page 11](#).



Electric Shock Caution • For personnel and equipment safety, always use a three-prong plug with an earth-ground connection to the AC power source.

Report Damage

If you discover shipping damage:

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



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

- Keep the carton and all packing material for inspection.
- Notify your local Zebra reseller.

Storage

If you are not placing the printer into operation immediately, repackage it using the original packing materials. The printer may be stored under the following conditions:

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

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

Because the printer was designed and is fabricated as an industrial-type unit, it functions satisfactorily in a location that conforms to specified environmental and electrical conditions, including a warehouse or factory floor. For more information on the required conditions, see [General Specifications on page 114](#).

[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.



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 Communication Interface on page 13](#).

Connect the Printer to a Power Source



Electric Shock 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 (located on the rear of the printer) to the Off (O) position.
2. Plug the power cord into the mating connector on the rear of the printer.
3. Plug the other end of the power cord into the power source.

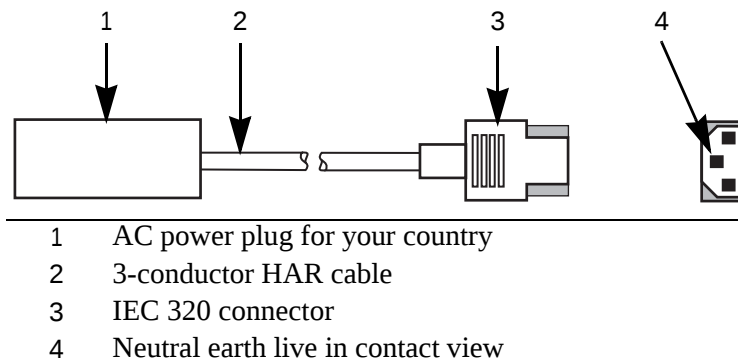
Power Cord Specifications

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

Your power cord must meet these standards:

- The overall length must be less than 9.8 ft. (3.0 m).
- It must be rated for at least 5A, 250 VAC.
- The chassis ground (earth) **must** be connected to ensure safety and reduce electromagnetic interference. The ground connection is handled by the third wire (earth) in the power cord as shown in [Figure 4](#).

Figure 4 • Power Cord Specifications

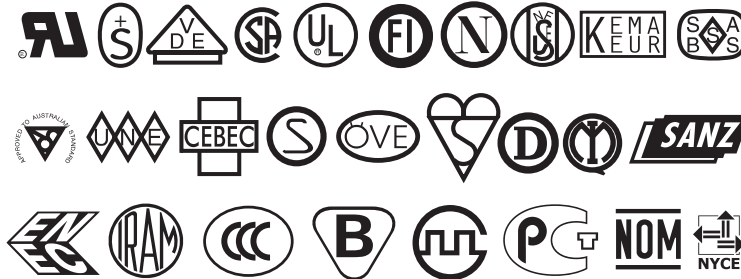


Printer Setup

Connect the Printer to a Power Source

- The AC power plug and IEC 320 connector must bear the certification mark of at least one of the known international safety organizations shown in [Figure 5](#).

Figure 5 • International Safety Organization Marks



Select a Communication Interface

The way that you connect your printer to a data source depends on the communication options installed in the printer.

Standard interfaces: the RS-232 DB-9 serial data port and the IEEE 1284 compliant bidirectional parallel port. For further information, see [Data Connections on page 107](#).

Optional interfaces:

- Socket Card for PCMCIA cards. For further information on PCMCIA cards, see [Install Memory Card on page 44](#).

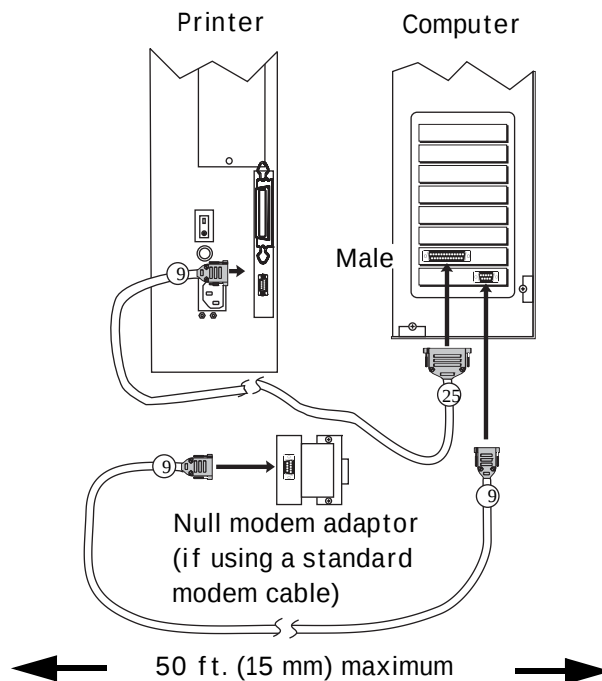
Optional Print Servers:

- ZebraNet external PrintServer II (PSII)
- PSII internal PrintServer (factory installed only)
Enables the printer to be connected to 10Base-T Ethernet networks.

For further information on PrintServer II, see the *PrintServer II User and Reference Guide* (Zebra part number 45537L).

Serial Port Communicating using a serial data port (see [Figure 6](#)) requires choosing the baud rate, number of data bits, stop bits, parity, and handshake (default settings are 9600 baud, 8 data bits, 1 stop bit, no parity, and XON/XOFF). Parity only applies to data transmitted by the printer since the parity of received data is ignored. See [Serial Data Port on page 108](#) to configure the communication parameters. The values selected must be the same as those used by the host equipment connected to the printer.

Figure 6 • Communicating Using a Serial Data Port

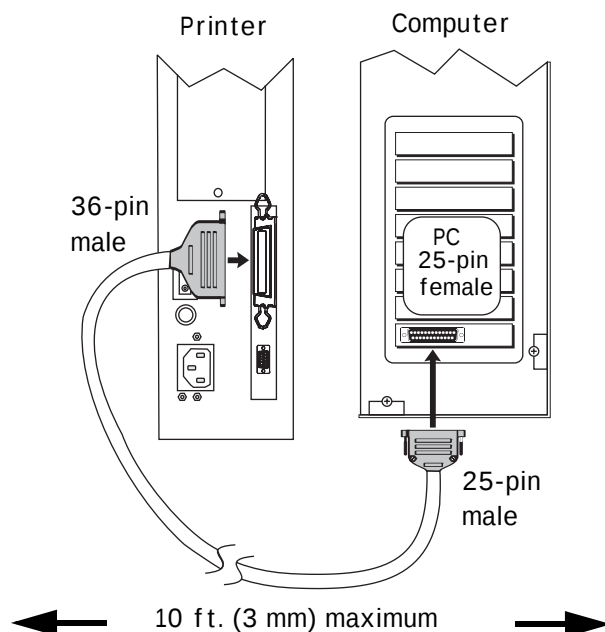


Printer Setup

Select a Communication Interface

Parallel Port Communicating using the parallel port (see [Figure 7](#)) does not require special settings. The serial settings do not affect the parallel port. Refer to [Parallel Data Port on page 112](#) for further information.

Figure 7 • Communicating Using a Parallel Port



Cable Requirements

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

To minimize electrical noise pickup in the cable:

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



Note • Zebra printers comply with FCC Rules and Regulations, Part 15 for Class B Equipment using fully shielded, 6.5 ft (2 m) data cables. Use of unshielded cables may increase radiation above the Class B limits.

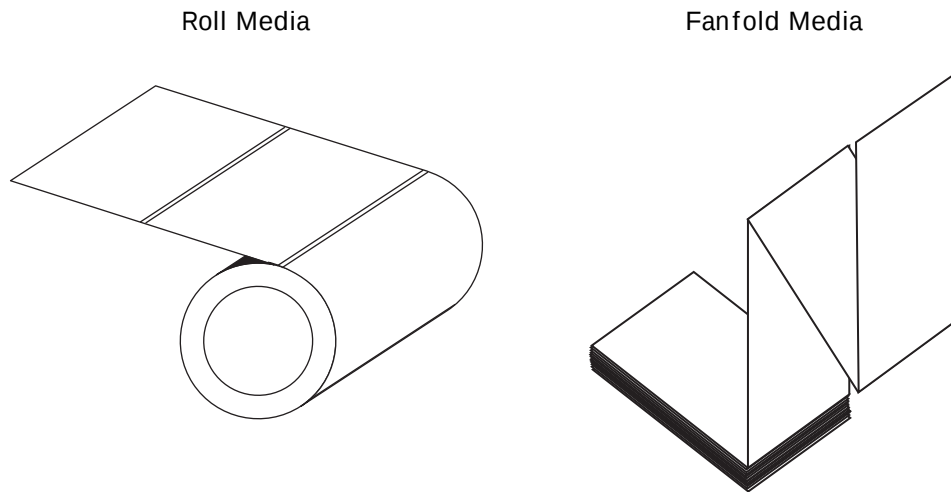


Note • RS-422 and RS-485 applications should use twisted shielded pairs as recommended in the TIA/EIA-485 Specification.

Types of Media

Your printer is capable of using various types of media. These include continuous roll and fanfold media (Figure 8) that may be labels or card stock and that may have optional perforations or registration holes. The media also may have a radio frequency identification (RFID) chip and antenna inlay embedded in it (sometimes called “smart” labels). The following sections contain descriptions of the various types of media approved for use in your printer.

Figure 8 • Roll and Fanfold Media



We strongly recommend 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 ensure against premature printhead wear.



Note • Because print quality is affected by media and ribbon, printing speeds, and printer operating modes, it is very important to run tests for your applications.

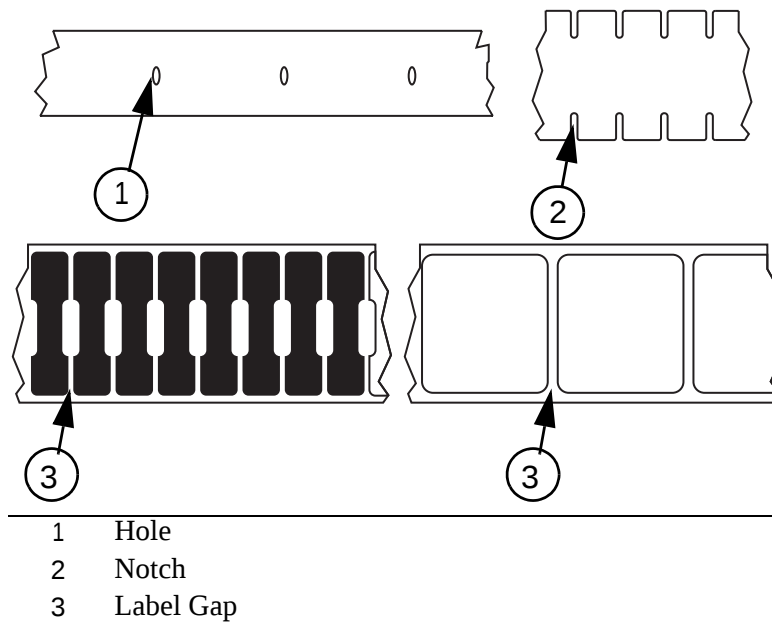
Non-Continuous Web Media

Non-continuous web media refers to individual labels that are separated by a gap, notch, or hole (Figure 9). When you look at the media, you can tell where one label ends and the next one begins.



Important • Printhead life may be reduced by abrasion from exposed paper fibers when using perforated media.

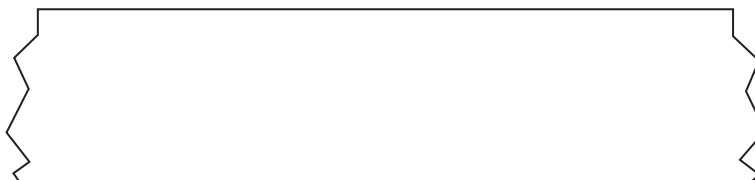
Figure 9 • Non-Continuous Web Media



Continuous Media

Continuous media (Figure 10) is one uninterrupted roll of material without gaps, holes, notches, or black marks. This allows the image to be printed anywhere on the label. The individual labels can be cut apart or stored in a roll for later use.

Figure 10 • Continuous Media



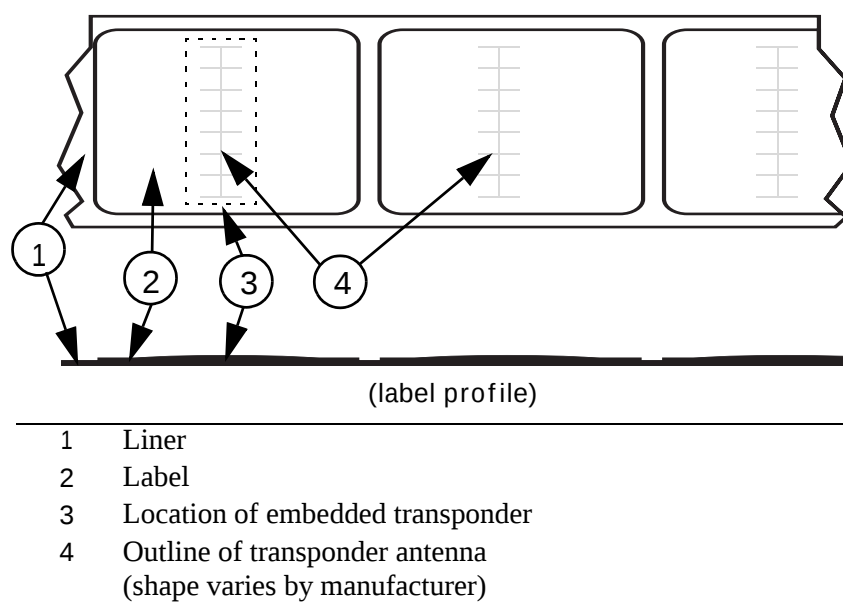
RFID “Smart” Labels

“Smart” labels are usually made from two components: media and an embedded RFID transponder ([Figure 11](#)). For more information about reading and encoding RFID tags, see [RFID Guidelines on page 71](#).

- The media (usually a label with a UHF transponder embedded between the label and liner) is usually comprised of synthetic- or paper-based material that can be printed upon using direct thermal or thermal transfer printing techniques. The media is typically made from the same materials and adhesives that a non-RFID barcode printer would use.
- The UHF transponder, which is sometimes called the RFID tag, is usually comprised of an antenna that is bonded to an integrated circuit (IC) chip. If you hold a “smart” label up to the light, you can see the transponder’s antenna embedded within the label, and you can feel a bump in the label where the IC chip is located.

The IC chip contains the RF circuit, coders, decoders, and memory. At a minimum, “smart” labels have memory that can be read, while the vast majority also have memory that can be encoded by the user as well. For more information about encoding “smart” labels, see [ZPL II Commands for RFID on page 73](#).

Figure 11 • RFID “Smart” Labels



Ribbon

Ribbon is a thin film that is coated on one side with wax 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 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 label, perform a media scratch test.

To perform a label scratch test, complete these steps:

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

If a black mark...	Then...
Does not appear on the media	The media is thermal transfer. A ribbon is required with this type of media.
Appears on the media	The media is direct thermal. No ribbon is required for this type of media.

Ribbon Width

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. Though it is not required, ribbon may be used with direct thermal media to help protect the printhead from abrasion with the media.

Coated Side of Ribbon

Ribbon can be wound with the coated side on the inside or outside (see [Figure 12](#) and [Figure 13](#)), which affects how it will be loaded in the printer. This printer can only use ribbon that is coated on the outside. If you do not know which side is coated on of a particular roll of ribbon, perform a ribbon scratch test.

Figure 12 • Ribbon Coated on Outside



Figure 13 • Ribbon Coated on Inside



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 outside surface of the ribbon in contact with the paper.
3. Scratch the surface of the unrolled ribbon with your fingernail.
4. Lift the ribbon from the paper.
5. 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 side that was in contact with the paper.
Did not leave a mark on the paper	The ribbon is likely coated on the side that you scratched. a. Flip the ribbon over on the paper. b. Repeat the test by scratching on the side that was previously in contact with the paper. c. Observe the results again. The ribbon should have left a mark on the paper. If not, repeat the test, starting with the first side again. You may need to scratch the surface of the ribbon harder.

CHAPTER 3

Printer Operation

This chapter provides instructions for loading media, loading ribbon, and basic printer operation.

Contents

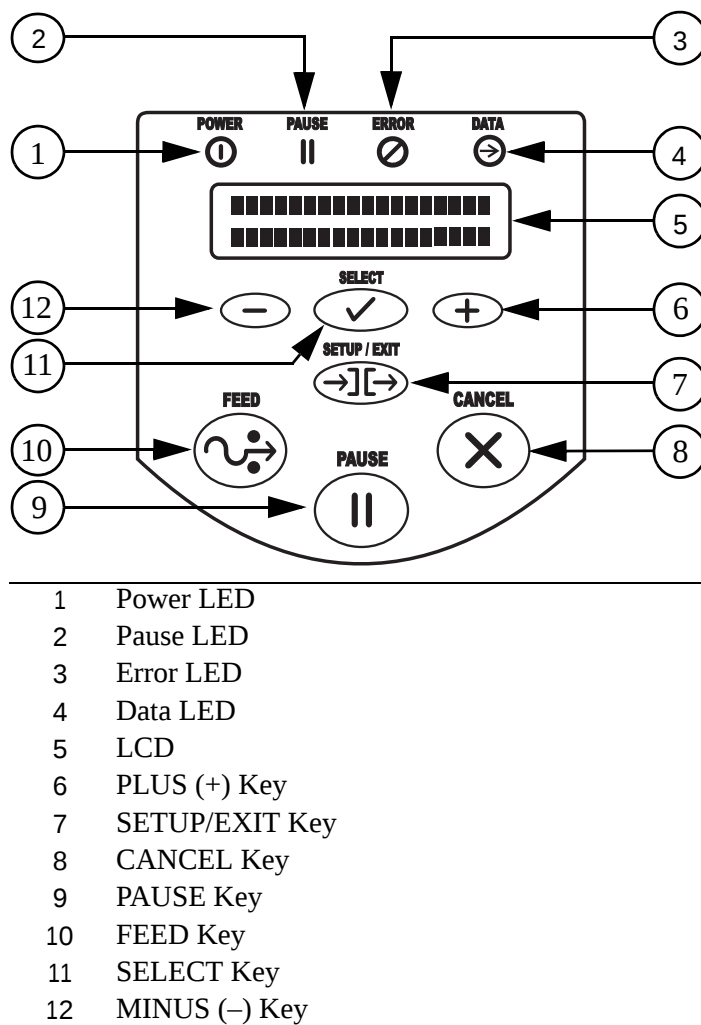
Front Panel	22
Front Panel Keys	23
Front Panel Lights	24
Load Roll Media	25
Tear-Off Mode	25
.	26
Liner Take-Up Mode	29
Rewind/Peel-Off Mode	31
Rewind Mode	33
Adjust Media Alignment for Rewind Option	35
Load Fanfold Media	36
Load the Ribbon	38
Remove the Ribbon	39
Calibrate the Printer	40
Auto Calibration	40
Manual Calibration	40
Print a Configuration Label	41
Adjust Printhead Pressure	43
Install Memory Card	44

Front Panel

The front 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 front panel keys and lights are shown in [Figure 14](#). Descriptions for each are located in [Table 4](#) and [Table 5](#).

Figure 14 • Front Panel



Front Panel Keys

Table 4 • Front Panel Keys

Key	Function
FEED	Forces the printer to feed one blank label each time the key is pressed. Printer not printing: one blank label immediately feeds. Printing: one blank label feeds after the current batch of labels is complete.
PAUSE	Starts and stops the printing process. Printer not printing: no printing occurs. (Press PAUSE again to resume printing.) Printing: printing stops after the current label is complete.
CANCEL	Cancels print jobs when in the pause mode. Printer not printing: the next stored label format does not print. Printing: current label completes printing and the next label format is cancelled. 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. Press once to use PLUS (+) and MINUS (–) to change the values of the selection. Press again to use PLUS (+) and MINUS (–) to scroll through the menu items.
PLUS (+) (scroll mode)	Scrolls to the next selection.
PLUS (+) (change mode)	Increases the value. Answers yes. Prints a label (when applicable).
MINUS (–) (scroll mode)	Scrolls to the previous selection.
MINUS (–) (change mode)	Decreases the value. Selects the digit you wish to change. Answers no.

Front Panel Lights

Table 5 • Front 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	RIBBON IN warning, HEAD UNDER TEMP warning, or HEAD OVER TEMP error.
	Fast flashing	HEAD OPEN error.
	On	PAPER OUT or RIBBON OUT errors.
DATA	Off	Normal printer operation (no data being received or processed).
	One flash	CANCEL is pressed and a format is successfully cancelled.
	Slow flashing	The printer is unable to 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.



Load Roll Media

Tear-Off Mode

Tear-Off Mode is the default mode. The printer is set to this mode in the factory.

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

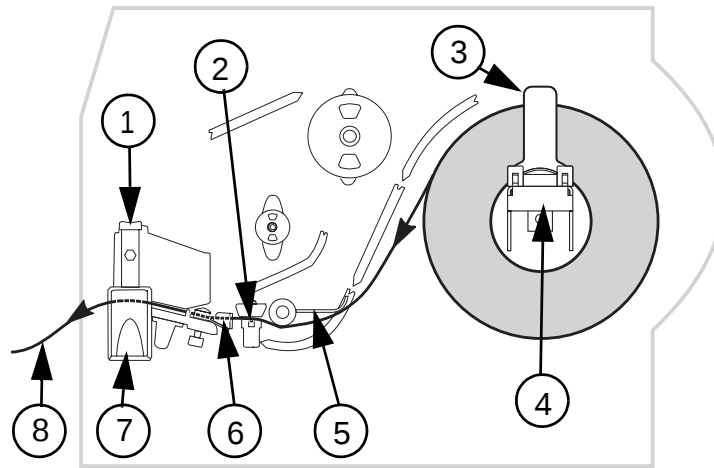


1. Press the printhead open lever. The printhead assembly springs up.

Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

2. Flip down the media supply guide.
3. Slide out the media guide as far from the printer frame as possible.
4. Place the roll of media on the media supply hanger and orient the media properly.
5. Flip up the media supply guide.
6. Slide in the media supply guide until it touches, but does not restrict, the edge of the roll.
7. Feed the media under the dancer, through the slot in the transmissive sensor, under the ribbon sensor, and out the front of the printer.
8. Ensure the media is against the back of the transmissive sensor. Slide in the media guide until it touches, but does not restrict, the edge of the label.
9. Close the printhead assembly.
10. The printer is paused (the Pause light is on), press **PAUSE** to enable printing.

Figure 15 • Tear-Off Mode



-
- | | |
|---|----------------------|
| 1 | Printhead Assembly |
| 2 | Transmissive Sensor |
| 3 | Label Supply Guide |
| 4 | Label Supply Hanger |
| 5 | Dancer |
| 6 | Label Guide |
| 7 | Printhead Open Lever |
| 8 | Printed Label |
-

Peel-Off Mode

This setting works only with the Peel-Off Option installed on the printer. [Figure 16](#) shows the printer with the Peel-Off Option.

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



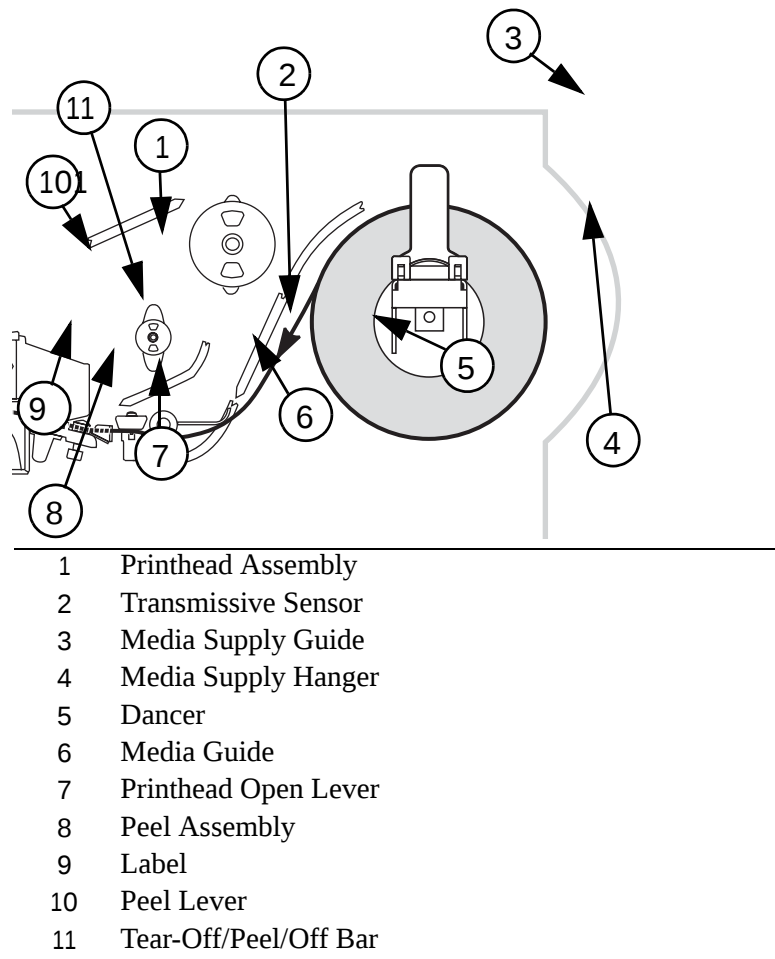
1. Press the printhead open lever. The printhead assembly springs up.

Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

2. Flip down the media supply guide.
3. Slide the media guide as far from the printer main frame as possible.
4. Place a roll of media onto the media supply hanger as shown.
5. Flip up the media supply guide.
6. Slide in the media supply guide until it just touches, but does not restrict, the edge of the media.
7. Feed the media under the dancer, through the slot in the transmissive sensor, under the ribbon sensor, and through the Peel Assembly.
8. Pull approximately 12 in. (30 mm) of media through the front of the printer.
9. Ensure the media is against the rear of the transmissive sensor. Slide in the media guide until it just touches, but does not restrict, the edge of the media.
10. Pull down the peel lever to open the peel assembly.
11. Feed the liner over the tear-off/peel-off bar and behind the peel assembly.
12. Close the printhead assembly.
13. Close the peel assembly using the peel lever.
14. The printer is paused (the Pause light is on), press **PAUSE** to enable printing.

Peeling starts automatically. Press **FEED** to test.

Figure 16 • Peel-Off Mode



Liner Take-Up Mode

The Liner Take-up option must be installed to use this mode. See [Figure 18](#).

To load media in Liner Take-Up Mode, complete these steps:

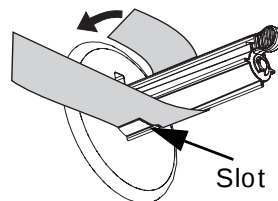
1. Press the printhead open lever. The printhead assembly springs up.



Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

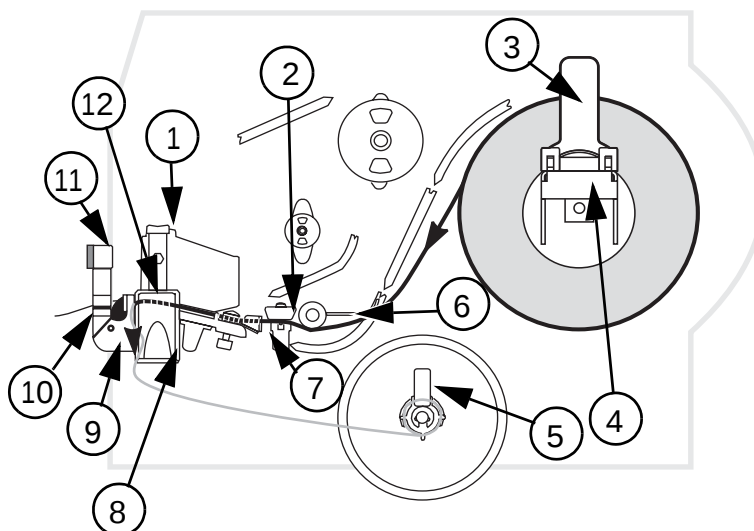
2. Flip down the media supply guide.
3. Slide the media guide as far from the main frame as possible.
4. Place a roll of media onto the media supply hanger as shown.
5. Flip up the media supply guide.
6. Slide in the media supply guide until it just touches, but does not restrict, the edge of the media.
7. Feed the media under the dancer, through the slot in the transmissive sensor, and under the ribbon sensor.
8. Pull approximately 18 in. (500 mm) of media through the front of the printer.
9. Remove the labels from the exposed media until only liner remains.
10. Ensure that the media is against the back of the transmissive sensor. Slide in the media guide until it just touches, but does not restrict, the edge of the media.
11. Pull down the peel lever to open the peel assembly.
12. Feed the media over the tear-off/peel-off bar and behind the peel assembly.
13. Close the printhead assembly.
14. Close the peel assembly.
15. Slide the liner into the slot (see [Figure 17](#)) in the spindle of the liner take-up. Ensure that the liner is resting against the back plate of the spindle assembly.

Figure 17 • Liner Take-Up Spindle



16. Turn the spindle assembly counterclockwise a few times to snug the liner.
17. If the printer is paused (the pause light is on), press **PAUSE** to enable printing. Peeling starts automatically. Press **FEED** to test.

Figure 18 • Liner Take-Up Mode

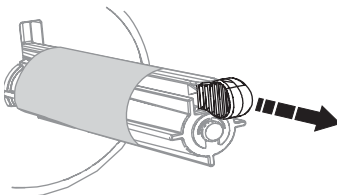


-
- | | |
|----|-----------------------|
| 1 | Printhead Assembly |
| 2 | Transmissive Sensor |
| 3 | Label Supply Guide |
| 4 | Label Supply Hanger |
| 5 | Liner Take-Up |
| 6 | Dancer |
| 7 | Label Guide |
| 8 | Printhead Open Lever |
| 9 | Peel Assembly |
| 10 | Label |
| 11 | Peel Lever |
| 12 | Tear-Off/Peel-Off Bar |
-

Liner Removal

1. Pull the liner slide toward you (see inset) until it stops (about a third of the way down the liner take-up spindle).

Figure 19 • Removing Liner from Liner Take-Up Spindle



2. Slide the liner from the take-up spindle.



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

Rewind/Peel-Off Mode

The Rewind option must be installed to use this mode. The option is shown in [Figure 20](#).

To load media in Rewind/Peel-Off Mode, complete these steps:

1. Press the printhead open lever. The printhead assembly springs up.



Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

2. Flip down the media supply guide.
3. Slide the media guide as far from the main frame as possible.
4. Place the roll of labels on the media supply hanger as shown.
5. Flip up the media supply guide.
6. Slide in the media supply guide until it just touches, but does not restrict, the edge of the media.
7. Feed the labels under the dancer, through the slot in the transmissive sensor, and under the ribbon sensor.
8. Pull approximately 36 in. (900 mm) of label through the front of the printer.
9. Remove the labels from the first 18 in. (450 mm) of media.
10. Ensure the media is against the back of the transmissive sensor. Slide in the media guide until it touches, but does not restrict, the edge of the media.
11. Pull down the peel lever to open the peel assembly.
12. Feed the media over the tear-off/peel-off bar, and through the slot in the peel assembly.
13. Loosen the thumbscrew and slide out the rewind media guide to the end of the take-up spindle.
14. Slide an empty core onto the take-up spindle; wrap the liner around the core and turn the take-up spindle counterclockwise to wind up the excess liner.

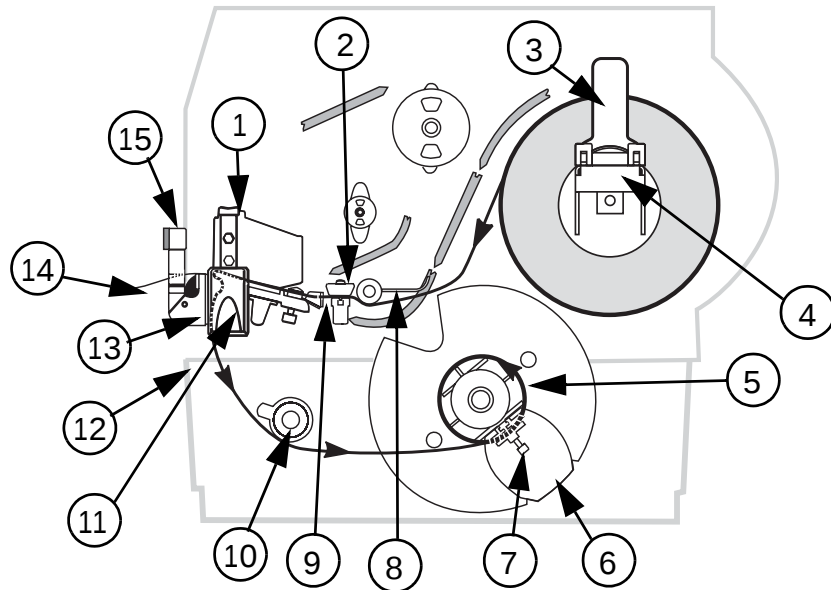


Note • The liner must be attached to the take-up spindle for the printer to operate properly. Ensure the edge of the liner is flush against the backplate of the take-up spindle.

15. Slide the rewind media guide against the liner and tighten the thumbscrew.
16. Close the printhead assembly.
17. Close the peel assembly using the peel lever.
18. If the printer is paused (the Pause light is on), press **PAUSE** to enable printing.

Peeling starts automatically. Press **FEED** to test.

Figure 20 • Rewind/Peel Mode



-
- | | |
|----|-------------------------|
| 1 | Printhead Assembly |
| 2 | Transmissive Sensor |
| 3 | Label Supply Guide |
| 4 | Label Supply Hanger |
| 5 | Rewind Spindle |
| 6 | Rewind Label Guide |
| 7 | Thumbscrew |
| 8 | Dancer |
| 9 | Label Guide |
| 10 | Media Alignment Spindle |
| 11 | Printhead Open Lever |
| 12 | Peel Assembly |
| 13 | Label |
| 14 | Rewind Base Assembly |
| 15 | Peel Lever |
-

Liner Removal

To remove 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 in the 12 o'clock position.
3. Loosen the thumbscrew and slide the rewind media guide to the end of the take-up spindle.
4. Slide the core with the liner from the take-up spindle.

Rewind Mode

The Rewind option must be installed to use this mode. The option is shown in [Figure 21](#).

To load media in Rewind Mode, complete these steps:

1. Press the printhead open lever. The printhead assembly springs up.



Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

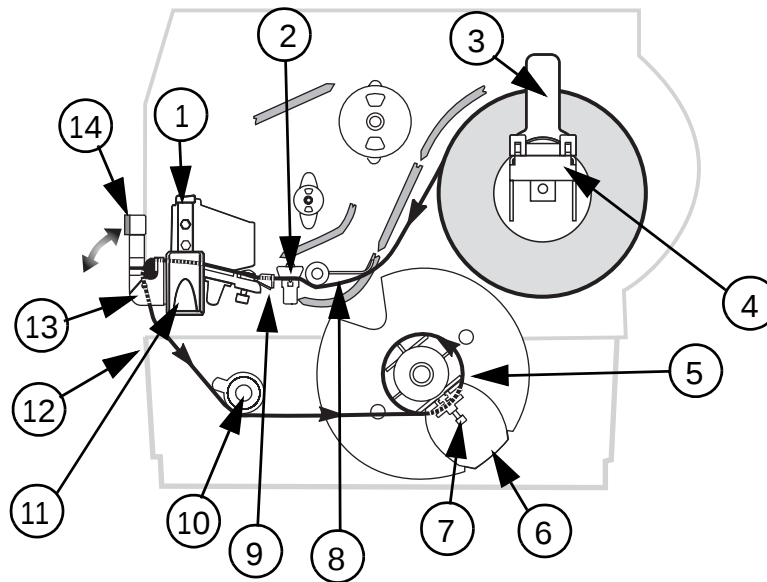
2. Flip down the media supply guide.
3. Slide the media guide as far from the main frame as possible.
4. Place a roll of media on the media supply hanger as shown.
5. Flip up the media supply guide.
6. Slide in the media supply guide until it just touches, but does not restrict, the edge of the media.
7. Feed the media under the dancer, through the slot in the transmissive sensor, and under the ribbon sensor.
8. Pull approximately 36 in. (900 mm) of media through the front of the printer.
9. Remove the labels from the first 18 in. (450 mm) of media.
10. Ensure the media is against the back of the transmissive sensor. Slide in the media guide until it just touches, but does not restrict, the edge of the media.
11. Feed the media over the peel assembly and through the rewind base assembly.
12. Loosen the thumbscrew and slide out the rewind media guide to the end of the take-up spindle.
13. Slide an empty core onto the take-up spindle; wrap the media liner around the core, and turn the take-up spindle counterclockwise to wind up the excess material.



Note • The liner must be attached to the take-up spindle for the printer to operate properly. Ensure that the edge of the liner is flush against the backplate of the take-up spindle.

14. Slide the rewind media guide against the media, and tighten the thumbscrew.
15. Close the printhead assembly.
16. If the printer is paused (the Pause light is on), press **PAUSE** to enable printing.

Figure 21 • Rewind Mode



1	Printhead Assembly
2	Transmissive Sensor
3	Label Supply Guide
4	Label Supply Hanger
5	Rewind Spindle
6	Rewind Label Guide
7	Thumbscrew
8	Dancer
9	Label Guide
10	Media Alignment Spindle
11	Printhead Open Lever
12	Rewind Base Assembly
13	Peel Assembly
14	Peel Lever

Media Removal

To remove printed media from the rewind spindle, complete these steps:

1. Cut the media between the media alignment spindle and the rewind spindle.
2. Rotate the take-up spindle counterclockwise until the rewind media guide is in the 12 o'clock position.
3. Loosen the thumbscrew and slide out the rewind media guide to the end of the take-up spindle.
4. Slide the core with the roll of media from the take-up spindle.

Adjust Media Alignment for Rewind Option

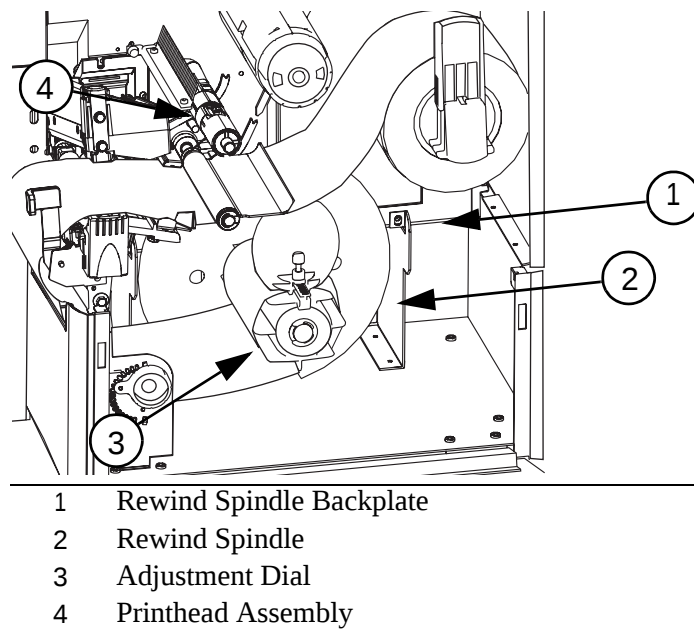
The instructions below apply only if the printer has a Rewind option. The liner should be installed flush against the backplate of the rewind spindle to prevent the media/backing from winding too loosely. See [Figure 22](#).

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

To adjust the Media Alignment for Rewind Mode, complete these steps:

1. Turn the adjustment dial clockwise to move the media toward the mainframe.
2. Turn the dial counter clockwise to move the media away from the mainframe.

Figure 22 • Rewind Option Adjustment Dial



Load Fanfold Media

Fanfold media feeds through either the bottom or rear access slot. See [Figure 23](#).

To load fanfold media, complete these steps:

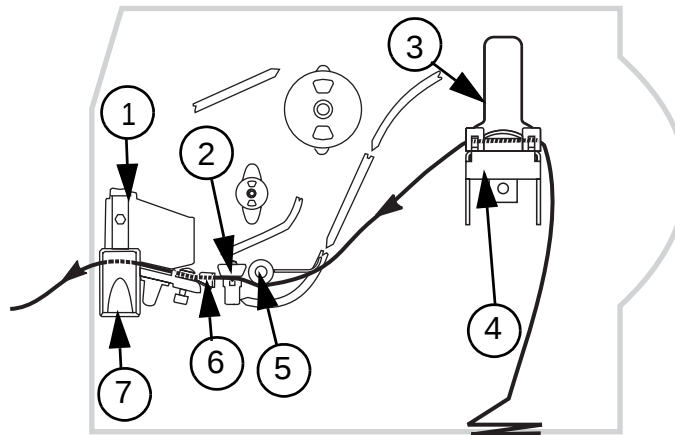
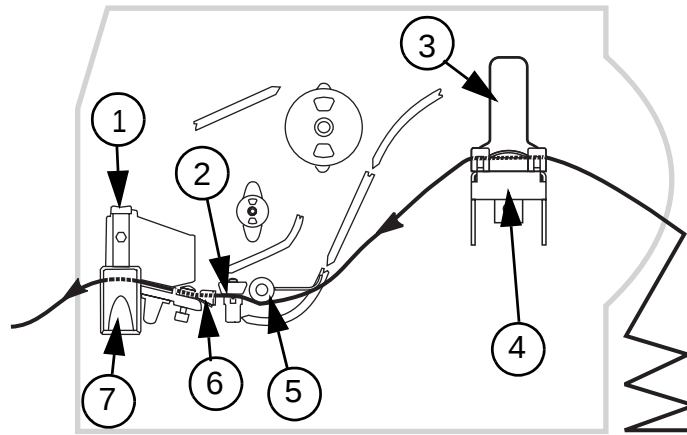


1. Press the printhead open lever. The printhead assembly springs up.

Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

2. Flip down the media supply guide.
3. Slide the media guide as far from the main frame as possible.
4. Pass the fanfold media over the media supply hanger.
5. Flip up the media supply guide. Slide in the media supply guide until it just touches, but does not restrict, the edge of the media.
6. Thread the media under the dancer, through the slot in the transmissive sensor, under the ribbon sensor, and out the front of the printer.
7. Ensure the media is against the back of the transmissive sensor. Then, slide in the media guide until it just touches, but does not restrict, the edge of the media.
8. Close the printhead assembly.
9. Press **PAUSE**.

Figure 23 • Loading Fanfold Media



-
- | | |
|---|----------------------|
| 1 | Printhead Assembly |
| 2 | Transmissive Sensor |
| 3 | Label Supply Guide |
| 4 | Label Supply Hanger |
| 5 | Dancer |
| 6 | Label Guide |
| 7 | Printhead Open Lever |
-

Load the Ribbon

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 wide ribbon is used or normal tension hampers the ribbon movement.

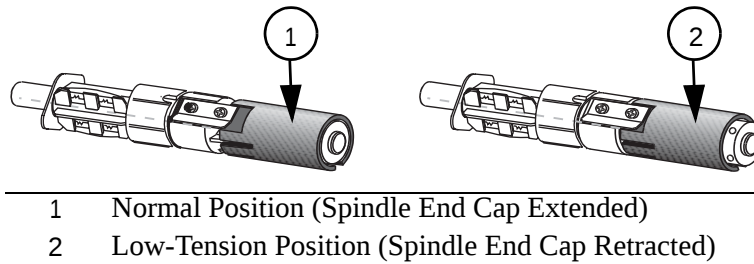


Note • Always use ribbon that is wider than the media. The smooth liner of the ribbon protects the printhead from wear. For direct thermal printing, do **not** load ribbon in the printer.

To load ribbon, complete these steps:

1. Set the spindle for normal or low tension.
 - To place the spindle in the **normal position**, firmly pull out the spindle end cap until it extends and clicks in place, as shown in [Figure 24](#).
 - To place the spindle in the **low-tension position**, firmly push in the end cap until it retracts and clicks in place, as shown in [Figure 24](#).

Figure 24 • Ribbon Spindle—Normal and Low Tension



2. See [Figure 25](#). Press the printhead open lever.

The printhead assembly springs up.

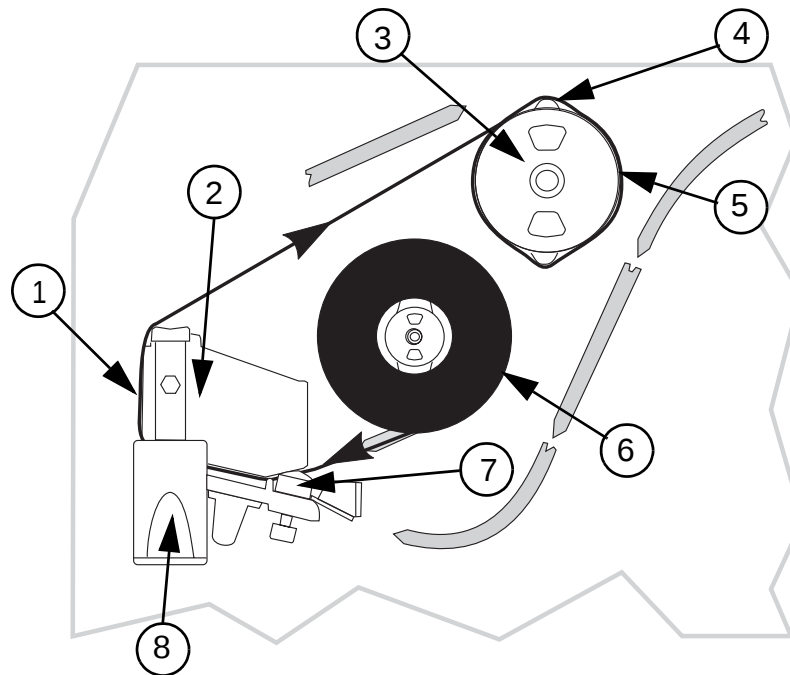


Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

3. Orient the ribbon as shown. Push the ribbon roll completely onto the ribbon supply spindle.
4. Pull the end of the ribbon over the ribbon sensor, under the printhead assembly, and out the front of the printer.
5. Hold the ribbon snug and free of wrinkles and in line with the guide mark near the left edge of the strip plate. Close the printhead assembly.
6. Wind the ribbon clockwise onto the ribbon take-up spindle.



Figure 25 • Ribbon Path



-
- | | |
|---|------------------------|
| 1 | Strip Plate |
| 2 | Printhead Assembly |
| 3 | Release Knob |
| 4 | Tension Blades |
| 5 | Ribbon Take-Up Spindle |
| 6 | Ribbon Supply Spindle |
| 7 | Ribbon Sensor |
| 8 | Printhead Open Lever |
-

Remove the Ribbon

To remove used ribbon, complete these steps:

1. If the ribbon has not run out, break it between the strip plate and the ribbon take-up spindle.

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

2. While turning the ribbon take-up spindle release knob counterclockwise, squeeze the ribbon against the ribbon take-up spindle tension blades.
3. When the tension blades collapse into the ribbon take-up spindle, hold the release knob and rotate the spent ribbon toward the rear of the printer. Then, slide the ribbon off the ribbon take-up spindle.

Calibrate the Printer

Auto Calibration

The R4Mplus automatically calibrates on power up. During auto calibration, the printer determines the label length and sensor settings.

Auto calibration occurs when the printer is turned on and each time the printer recovers from an error condition. To clear an error, open and close the printhead assembly and then press **PAUSE**. The printer begins auto calibration when all errors have been cleared.

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 front panel setting for MEDIA POWER UP or HEAD CLOSE are set to LENGTH, NO MOTION, or FEED, the printer starts printing without auto calibrating.

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 this calibration is performed.

For instructions, refer to [Media and Ribbon Sensor Calibration \(Manual Calibration\)](#) on page 58.



Print a Configuration Label

Print a configuration label to test the printer setup. Do this when the printer is first installed, or when the printer cannot properly detect the top of the label.

To print a configuration label, complete these steps:

1. Turn the printer power Off (O).
2. Press and hold **CANCEL** while turning the printer On (I). See [Figure 2, Front Panel Controls and LEDs](#), on page 3.
3. Release **CANCEL** after the DATA light turns off (approximately five seconds).

A configuration label prints showing the printer's currently stored parameters (similar to the label shown in [Figure 26](#)).

4. Did the configuration label print correctly?
 - If **yes**, go to [Configuration](#) on page 45.
 - If the configuration label did not print or if the labels are aligned improperly, review the following items in the order shown. Do only as many steps as needed to solve the printing problem.
 - Review [Types of Media](#) on page 15 to make sure that you have the correct type of media for your application.
 - Review [Ribbon](#) on page 18. If you are using direct thermal media, you do not need to use ribbon. If you are using thermal media, ribbon is required for printing.
 - Review [Load Roll Media](#) on page 25 or [Load Fanfold Media](#) on page 36.
 - Configure the printer according to the directions given in [Basic Configuration](#) on page 48.

Figure 26 • Sample Configuration Label

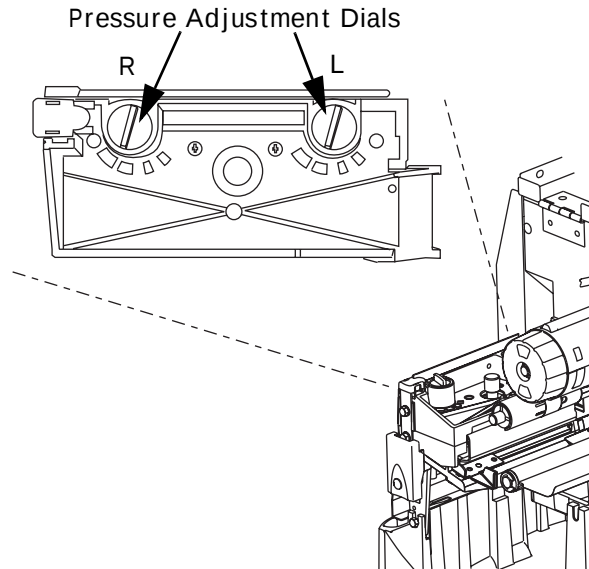
PRINTER CONFIGURATION	
Zebra Technologies	
ZTC R4MPlus-200 dpi	
+27.....	DARKNESS
2 IPS.....	PRINT SPEED
+000.....	TEAR OFF
TEAR OFF.....	PRINT MODE
NON-CONTINUOUS.....	MEDIA TYPE
THERMAL-TRANS.....	PRINT METHOD
104 0/8 MM.....	PRINT WIDTH
1242.....	LABEL LENGTH
39.0IN 989MM.....	MAXIMUM LENGTH
BIDIRECTIONAL.....	PARALLEL COMM.
RS232.....	SERIAL COMM.
115200.....	BAUD
8 BITS.....	DATA BITS
NONE.....	PARITY
XON/XOFF.....	HOST HANDSHAKE
NONE.....	PROTOCOL
000.....	NETWORK ID
NORMAL MODE.....	COMMUNICATIONS
<~> 7EH.....	CONTROL PREFIX
<^> SEH.....	FORMAT PREFIX
<.> 2CH.....	DELIMITER CHAR
ZPL II.....	ZPL MODE
NO MOTION.....	MEDIA POWER UP
NO MOTION.....	HEAD CLOSE
DEFAULT.....	BACKFEED
+000.....	LABEL TOP
+0000.....	LEFT POSITION
039.....	WEB S.
078.....	MEDIA S.
068.....	RIBBON S.
029.....	TAKE LABEL
035.....	MEDIA LED
104.....	RIBBON LED
+10.....	LCD ADJUST
DPSWFXM.....	MODES ENABLED
.....	MODES DISABLED
832 8/MM FULL.....	RESOLUTION
SP920C <-.....	FIRMWARE
V23.0.0.54.....	HARDWARE ID
CUSTOMIZED.....	CONFIGURATION
3584k.....	RAM
0512k.....	ONBOARD FLASH
NONE.....	FORMAT CONVERT
000 DISPLAY.....	P30 INTERFACE
NONE.....	OPTION
FW VERSION.....	IDLE DISPLAY
15/27/00.....	RTC DATE
00:00.....	RTC TIME
NONE.....	ZEBRA NET II
Alien : 00.00.88...	RFID VERSION
ePC Class 1.....	RFID TAG TYPE
GL12472.03DR060127.79000.1.VH1.....	

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Adjust Printhead Pressure

See [Figure 27](#). This adjustment may be necessary if printing is too light on one side or if thick media is used.

Figure 27 • Printhead Pressure Adjustment Dials



The pressure adjustment dials for the R4Mplus each 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.

Set Printhead Pressure

Depending on which printer you have, use [Table 6](#) to select the initial dial settings for your media.

Some media types require higher pressure to print well. For these media, increase both dials one position. If the media tends to shift to the left while printing, increase the right dial setting one position or decrease the left dial setting one position. If the media tends to shift to the right while printing, increase the left dial setting one position or decrease the right dial setting one position.

Table 6 • R4Mplus Printhead Pressure

Media Width	Left Dial	Right 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

Install Memory Card

The printer can use Type I or Type II compliant PCMCIA memory cards.



Electrostatic Discharge 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:

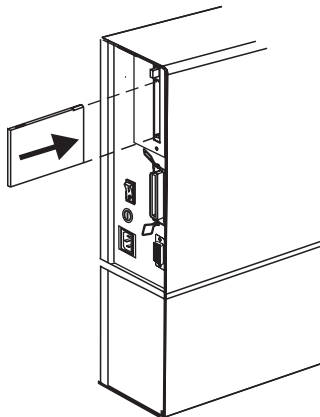
1. Remove the PCMCIA card shield from the rear of the printer.
2. Insert the PCMCIA card, with the notch UP, into the card slot as shown (see [Figure 28](#)). Insert the card far enough to cause the eject button to pop out.
3. Reinstall the PCMCIA card shield over the PCMCIA card and card slot.

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.

Figure 28 • Installing the PCMCIA Card



CHAPTER 4

Configuration

This chapter discusses detailed configuration settings and instructs you how to view or change parameters through the front panel.

Contents

Overview	46
Enter Configuration Mode	46
Exit Configuration Mode	46
Change Password-Protected Parameters	47
Basic Configuration	48
Configuration and Calibration LCD Displays	51

Overview

After you have installed the media and ribbon and the Power-On Self Test (POST) is complete (see [Power-On Self Test on page 100](#) for more information), the front panel displays ✱✱✱✱✱✱✱✱. Use the front panel display and the four keys directly below it to set printer parameters for your application.



Note • Printers operating on an IP network can be quickly configured using ZebraNet View (optional ZebraNet PrintServer II required). For more information, see the *PrintServer II User and Reference Guide*.

Enter Configuration Mode

To enter configuration mode, complete these steps:

1. From the front panel, press **SETUP/EXIT**:
2. Press **PLUS (+)** or **MINUS (-)** to scroll to the setting you wish to change.
3. Press **SELECT** to toggle the functionality of **PLUS (+)** and **MINUS (-)** keys.
4. Press **PLUS (+)** or **MINUS (-)** to increase or decrease the value, answer yes or no, print a label, or select the digit you wish to change.



Note • An asterisk (*) in the upper left-hand corner of the display indicates that the value displayed is different than the currently stored value.

5. Press **SELECT** again to use **PLUS (+)** and **MINUS (-)** to scroll to the desired menu item.

Exit Configuration Mode

You can leave configuration mode at any time.

To exit configuration mode, complete these steps:

1. From the front panel, press **SETUP/EXIT**.

The ✱✱✱✱ ✱✱✱✱✱✱ display appears. Press **PLUS (+)** or **MINUS (-)** to display other choices.

- ✱✱✱✱✱✱✱✱ — Permanently saves the changes. Values are stored in the printer even when power is turned off. This is the default selection.
- ✱✱✱✱✱✱✱✱ — Saves the changes until you change them again or until power is turned off.
- ✱✱✱✱✱ — Cancels all changes from the time you pressed SETUP/EXIT, except for darkness and tear-off settings (if they were changed).
- ✱✱✱ ✱✱✱✱✱✱✱ — Loads factory defaults.
- ✱✱✱ ✱✱✱ ✱✱✱ — Loads values from the last permanent save.

2. Press **SELECT** to select the displayed choice.
3. Press **SETUP/EXIT** to save your choice.

Change Password-Protected Parameters

Certain parameters are password-protected by factory default. If you press **SELECT** when a password-protected parameter is displayed on the front panel, the printer prompts you for a password. If you do not know the password, press **SETUP/EXIT** to leave the prompt. You will not be allowed to modify the parameter without entering the password.

The default password is **1234**. You can change the password using the **^KP** (Define Password) ZPL II command.

Password-Protect All Parameters You have the option of making all parameters password protected. Refer to [Password Level on page 69](#) for details.

Disable Password You can disable the password protection feature to no longer prompt you for a password by setting the password to **0000** via the **^KP0** ZPL/ZPL II command. To reenable the password-protection feature, send the ZPL/ZPL II command **^KPx**, where **x** can be any number that is one to four digits in length, except **0**.

To enter a password, complete these steps:

1. From the front panel, enter a four-digit password at the **◆◆◆◆ ◆◆◆◆◆◆** prompt.
MINUS (-) changes the selected digit position. **PLUS (+)** increases value of the selected digit.
2. After entering the password, press **SELECT**.

The parameter that you selected is displayed, and the value may be modified if the password was entered correctly.



Note • After you enter the password correctly, you do not have to enter it again until you leave and reenter the configuration mode.

Basic Configuration

If your labels are not printing correctly, the configuration may need to be changed because the printer defaults may not reflect the options that you need. Media, ribbon, darkness, print mode, media type, sensor type, and print method all affect the way the printer is configured. This section covers how to change these basic configuration options for your printer through the printer's front panel. Review [Figure 2 on page 3](#) to familiarize yourself with the front panel controls.

Refer to [Configuration and Calibration LCD Displays on page 51](#) for more detailed information on all of the configuration options available on your printer.

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

To perform basic a configuration, complete these steps:

1. Enter the configuration mode by pressing **SETUP/EXIT**.

◆◆◆◆◆◆◆◆ displays.

Adjust Darkness

2. Is the printed image too dark or too light? Or does the ribbon stick to the media?
 - If **no**, press **PLUS (+)** to move to the next option: ◆◆◆◆◆◆◆◆ ◆◆◆◆◆◆◆◆. Continue with [Adjust Image Crispness and Print Speed](#).
 - If **yes**, complete the following steps:
 - 2.1. Press **SELECT**.
 - 2.2. If the labels moved forward, but the print is light or there is no print, press **PLUS (+)** to increase the darkness. If the print is too dark, or the ribbon sticks to the media, press **MINUS (-)** to decrease the darkness.
 - 2.3. Press **SELECT** to accept the change.
 - 2.4. Press **PLUS (+)** to move to the next option.
◆◆◆◆◆◆◆◆ ◆◆◆◆◆◆◆◆ displays. Continue with [Adjust Image Crispness and Print Speed](#).

Adjust Image Crispness and Print Speed

3. Is the printed image crisp?
 - If **yes**, press **PLUS (+)** to move to the next option: ◆◆◆◆◆◆◆◆ ◆◆◆◆◆◆◆◆. Continue with [Adjust Tear-Off Position](#).
 - If the print is dark enough but the image is not crisp, slow down the print speed by completing the following steps. Print speed is given in inches per second (ips).
 - 3.1. Press **SELECT**.
 - 3.2. Press **PLUS (+)** to increase the speed or **MINUS (-)** to decrease the speed.
 - 3.3. Press **SELECT** to accept the changes.
 - 3.4. Press **PLUS (+)** to move to the next option.
◆◆◆◆◆◆◆◆ ◆◆◆◆◆◆◆◆ displays. Continue with [Adjust Tear-Off Position](#).

Adjust Tear-Off Position

The Tear-Off position defines the position of the label on the tear-off bar. When working with non-continuous labels, the inter-label gap should be on the tear bar. This setting does not apply to continuous media.

4. Are you using continuous media?

- If **yes**, press **PLUS (+)** to move to the next option: . Continue with [Select Print Mode](#).
- If **no**, continue with [Step 5](#).

5. Does the inter-label gap line up on the tear bar?

- If **yes**, press **PLUS (+)** to move to the next option: . Continue with [Select Print Mode](#).
- If **no**, complete the following steps:
 - 5.1.** Press **SELECT**.
 - 5.2.** Press **PLUS (+)** to move the label forward or **MINUS (-)** to move the label backward. Repeat this until the label lines up correctly.
 - 5.3.** Press **SELECT** to accept the changes.
 - 5.4.** Press **PLUS (+)** to move to the next option.
 displays. Continue with [Select Print Mode](#).

Select Print Mode

When the wrong Print Mode is selected, the top of the label is not found by the printer. Examples of common problems include when the gaps between noncontinuous labels do not line up on the tear bar or when continuous media is not being cut at the right interval.

6. Do the labels line up or cut correctly?

If **yes**, press **PLUS (+)** to move to the next option: . Continue with [Select Media Type](#).

If **no**, review the media and the printer options, then complete the following steps:

- 6.1.** Press **SELECT**.
- 6.2.** Press **PLUS (+)** or **MINUS (-)** to scroll through the setting options. Stop at the setting that matches your printer options (Tear-Off, Peel-Off, or Rewind).
- 6.3.** Press **SELECT** to accept the change.
- 6.4.** Press **PLUS (+)** to move to the next option.
 displays. Continue with [Select Media Type](#).

Select Media Type

For examples of non-continuous and continuous media, see [Types of Media on page 15](#).

7. Does the media type on the display match the type of media that you are using?

- If **yes**, press **PLUS (+)** to move to the next option: . Continue with [Select Print Method](#).
- If your label media does not match the Media Type, complete the following steps:
 - 7.1.** Press **SELECT**.

7.2. Press **PLUS (+)** or **MINUS (-)** to scroll through the setting options. Stop at the setting that matches your printer options (Continuous or Noncontinuous).

7.3. Press **SELECT** to accept the change.

7.4. Press **PLUS (+)** to move to the next option.

✧✧✧✧ ✧✧✧✧✧✧ displays. Continue with [Select Print Method](#).

Select Print Method

The two choices for print method are thermal transfer and direct thermal transfer. You can find out if a label is thermal transfer or direct thermal transfer by scratching it with your fingernail. If your nail leaves a black mark, the media is direct thermal. If it does not leave a mark, the media is thermal transfer.

- Use Thermal Transfer if you are using ribbon with your label material.
- Use Direct Thermal if you are not using ribbon. Direct thermal label media has ink embedded in the label material that is brought out by the heat of the printhead.

8. Does the Print Method setting match your media type?

- If **yes**, continue with [Save Changes and Exit](#).
- If **no**, complete the following steps:

8.1. Press **SELECT**.

8.2. Press **PLUS (+)** or **MINUS (-)** to scroll through the setting options. Stop at the setting that matches your printer options (Thermal Transfer or Direct Thermal).

8.3. Press **SELECT** to accept the change.

Save Changes and Exit

9. Press **SETUP/EXIT** to leave the front panel menu.

✧✧✧✧ ✧✧✧✧✧✧ ✧✧✧✧✧✧✧✧ displays. For other save options, see [Exit Configuration Mode on page 46](#).

10. Press **SETUP/EXIT** again.

✧✧✧✧✧ ✧✧✧✧✧✧✧✧✧ displays. One or more labels may feed out, depending on your settings. The LCD displays ✧✧✧✧✧✧ ✧✧✧✧✧.

Configuration and Calibration LCD Displays

Table 7 covers all of the configuration options for your printer. Parameters are shown in the order in which they are displayed when you press PLUS (+) after entering the setup mode. Throughout this process, press PLUS (+) to continue to the next parameter, or press MINUS (–) to return to the previous parameter in the cycle. Refer to [Basic Configuration on page 48](#) for information on changing just the basic print settings.

Table 7 • Printer Parameters and Other LCD Displays (Page 1 of 20)

Parameter/LCD Display	Action/Explanation
◆☆☆◆◆◆	Adjusting Print Darkness Set the darkness to the lowest setting that provides good print quality. Darkness set too high may cause ink to smear or the printer may burn through the ribbon. Darkness settings are dependent upon a variety of factors, including ribbon type, media, and the condition of the printhead. You may adjust the darkness for consistent high-quality printing. Darkness settings also may be changed by the driver or software settings. To determine if your print darkness setting is optimal, perform the FEED Self Test on page 103. You may want to adjust the printer's darkness while performing the PAUSE Self Test on page 102. Because the darkness setting takes effect immediately, you can see the results on labels that are currently printing during the test. Default: +10 Range: 0 to +30 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase darkness if printing is too light or if there are voids in printed areas. 3. Press MINUS (–) to decrease darkness if printing is too dark or if there is spreading or bleeding of printed areas. 4. Press SELECT to accept any changes and deselect the parameter.
☆☆☆☆ ◆◆◆◆	Adjusting Print Speed Speed is measured in inches per second (ips). Default: 2 ips 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase print speed. 3. Press MINUS (–) to decrease print speed. 4. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 2 of 20)

Parameter/LCD Display	Action/Explanation
*♦♦♦ ♦♦♦	Adjusting the Tear-Off Position This parameter establishes the position of the media over the tear-off/peel-off bar after printing. The label and liner can be torn off or cut between labels. Default: +0 Range: –120 to +120 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value. Each press adjusts the tear-off position by four dot rows. 3. Press MINUS (–) to decrease the value. 4. Press SELECT to accept any changes and deselect the parameter.
♦♦♦♦ ♦♦♦♦	Selecting Print Mode Print mode settings tell the printer the method of media delivery that you wish to use. Be sure to select a print mode that your hardware configuration supports as some selections displayed are for optional printer features. Default: Tear-off Selections: Tear-off, cutter, peel-off, rewind 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
♦♦♦♦♦ ♦♦♦♦	Setting Media Type This parameter tells the printer the type of media you are using. Selecting continuous media requires that you include a label length instruction in your label format (^LLxxxx if you are using ZPL or ZPL II). When non-continuous media is selected, the printer feeds media to calculate label length (the distance between two detections of the inter-label gap, webbing, or alignment notch or hole). Default: Non-Continuous Selections: Non-Continuous, Continuous 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 3 of 20)

Parameter/LCD Display	Action/Explanation
☆☆☆☆ ★☆☆☆	Selecting Print Method The print method parameter tells the printer the method of printing you wish to use: direct thermal (no ribbon) or thermal transfer (using thermal transfer media and ribbon). Selecting direct thermal when using thermal transfer media and ribbon creates a warning condition, but printing continues. Default: Thermal transfer Selections: Thermal transfer, direct thermal 1. Press SELECT to select the parameter. 2. Press PLUS (+) for the next value. 3. Press MINUS (–) for the previous value. 4. Press SELECT to accept any changes and deselect the parameter.
☆☆☆☆ ★☆☆☆	Setting Print Width Print width determines the printable area across the width of the label. Default, Range: The default and range of acceptable values may vary depending on what printer you have. See Printing Specifications on page 115 for further information about the ranges available for your model. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. To change the unit of measurement, press MINUS (–) until the unit of measurement is active, then press PLUS (+) to toggle to a different unit of measure (inches, mm, or dots). 5. Press SELECT to accept any changes and deselect the parameter.
☆☆☆☆★ ★☆☆☆☆	Setting Maximum Length Always set the value to at least 1 in. (25.4 mm) longer than the longest label to be used in the printer. Default: 39 in. (991 mm) for non-continuous material 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value 3. Press MINUS (–) to decrease the value. 4. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 4 of 20)

Parameter/LCD Display	Action/Explanation
★!*** ◆★★★★	List Fonts This selection is used to print a label that lists all of the fonts currently available in the printer, including standard printer fonts plus any optional fonts. Fonts may be stored in RAM, FLASH memory, font EPROMs, or font cards. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a label listing all of the available fonts. 3. Press SELECT to deselect the parameter.
★!*** ✚☆☆ ✚★☆☆	List Bar Codes This selection is used to print a label that lists all of the bar codes currently available in the printer. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a label listing all of the available bar codes. 3. Press SELECT to deselect the parameter.
★!*** !★☆☆	List Images This selection is used to print a label that lists all of the images currently stored in the printer's RAM, FLASH memory, optional EPROM, or optional memory card. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a label listing all of the available images. 3. Press SELECT to deselect the parameter.
★!*** ◆★★★★☆	List Formats This selection is used to print a label that lists all of the formats currently stored in the printer's RAM, FLASH memory, optional EPROM, or optional memory card. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a label listing all of the available formats. 3. Press SELECT to deselect the parameter.
★!*** *☆☆☆	List Setup This selection is used to print a label that lists the current printer configuration information. (Same label as CANCEL Self Test on page 101.) 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a label listing the current printer configuration. 3. Press SELECT to deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 5 of 20)

Parameter/LCD Display	Action/Explanation
★!★★ ☆★★	List All This selection is used to print a label that lists the five previous selections, as described. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a label listing all of the available fonts, bar codes, images, formats, and the current printer configuration. 3. Press SELECT to deselect the parameter.
◆★★★☆☆ ☆☆☆ ☆ +	Initialize Memory Card Caution • Perform this operation only when it is necessary to erase all previously stored information from the optional memory card. Press PLUS (+) to bypass this function. 1. Press SELECT to select the parameter. - If your printer is set to require a password, you are prompted to enter the password. 2. Enter the password, then press SELECT. 3. Press the PLUS (+) to select B memory (PCMCIA card) or press MINUS (–) to select the A memory (internal compact flash). - The front panel LCD asks ☆☆☆ ★★* **☆☆†. 4. Press MINUS (–) to select ★□ and cancel the request. The !★!★!☆★!★☆☆ ☆☆☆ prompt is displayed. or Press PLUS (+) to select ★☆☆ and begin initialization. ◆★★★☆☆★☆☆ ☆☆☆ displays. Depending on the amount of memory in the memory card, initialization may take up to three minutes to complete. When formatting is complete, ◆★★★☆☆ ☆☆☆ displays. 5. Press SELECT to continue with the next prompt.



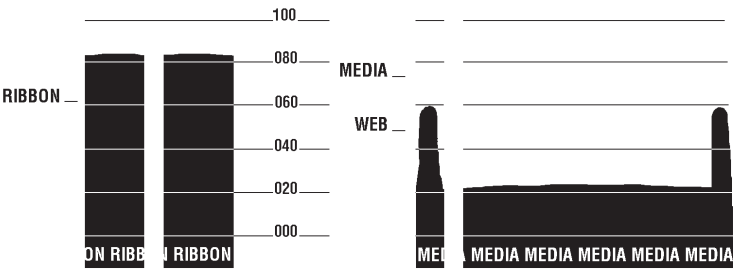
Table 7 • Printer Parameters and Other LCD Displays (Page 6 of 20)

Parameter/LCD Display	Action/Explanation
!★!★ ◆★☆★ ★◆★	Initialize Flash Memory Caution • Perform this operation only when it is necessary to erase all previously stored information from the FLASH memory. Press PLUS (+) to bypass this function. - Press SELECT to select the parameter. If your printer is set to require a password, you are prompted to enter the password. - Enter the password, then press SELECT. - Press PLUS (+) to select YES. The display asks !★!★!☆★!◆◆ ◆★☆★★†. - Press PLUS (+) to select ★◆★. The front panel LCD asks ☆◆◆ ★★* ★★◆◆†. - Press MINUS (–) to select ★★ and cancel the request. The !★!★!☆★!◆◆ ◆★☆★ prompt is displayed. or Press PLUS (+) to select ★◆★ and begin initialization. Depending on the amount of free FLASH memory, initialization may take up to one minute to complete. - Press SETUP/EXIT followed by SELECT. If initialization is still in process, the front panel display flashes back and forth between the phrases ◆◆◆◆!☆★◆ ◆! ★◆★★★* and !★!★★◆◆ ◆◆★◆. When initialization is complete, the printer automatically exits the configuration mode and the front panel displays !★!★★◆◆ ◆◆◆◆★. - Press SELECT to continue with the next prompt.

Table 7 • Printer Parameters and Other LCD Displays (Page 7 of 20)

Parameter/LCD Display	Action/Explanation
*♦♦♦♦♦ ♦♦♦♦♦♦	Sensor Profile The media sensor profile may be used to troubleshoot registration problems that may be caused when the media sensor detects preprinted areas on the media or experiences difficulty in determining web location. If the sensitivity of the media and/or ribbon sensors MUST be adjusted, use the manual calibration procedure.

Figure 29 • Media Sensor Profile



1. Press **SELECT** to select the parameter.
2. Press **PLUS (+)** to print a media sensor profile.
3. Press **SELECT** to deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 8 of 20)

Parameter/LCD Display	Action/Explanation
★♦♦♦i♦ ♦♦♦ ♦♦♦♦♦	Media and Ribbon Sensor Calibration (Manual Calibration) Performing the manual calibration procedure resets the sensitivity of the sensors to detect the media and ribbon you are using more accurately. With the sensors at their new sensitivity, the printer then performs the manual calibration. Changing the type of ribbon and/or media may require resetting the sensitivity of the media and ribbon sensors. 1. Press SELECT to display ♦♦♦♦♦♦♦♦♦♦. 2. Press PLUS (+) to start the calibration procedure. ♦♦♦♦ ♦♦♦♦♦♦♦♦ is displayed. 3. Open the printhead. 4. Remove approximately 8 in. (200 mm) of labels from the media roll, enough so that only the liner material is threaded between the media sensors when the media is loaded. 5. Press PLUS (+) to continue. To cancel the operation, press MINUS (–). ♦♦♦♦♦♦ ♦♦♦♦♦♦ is displayed. 6. Remove the ribbon (sliding it as far to the right as possible has the same effect as removing it). 7. Close the printhead. 8. Press PLUS (+) to continue. To cancel the operation, press MINUS (–). ♦♦♦♦♦♦♦♦♦♦ ♦♦♦♦♦♦♦♦ ♦♦♦ is displayed. The printer automatically adjusts the scale (gain) of the signals it receives from the media and ribbon sensors based on the specific media and ribbon combination you are using. On the sensor profile, this corresponds to moving the graph up or down to optimize the readings for your application. ♦♦♦♦♦♦ ♦♦♦ is displayed. 9. Open the printhead and pull the media forward until a label is positioned under the media sensor. 10. Move the ribbon back to its proper position. 11. Close the printhead. ♦♦♦♦♦♦ ♦♦♦ ♦♦♦♦♦♦ is displayed. Now that the scale has changed, the printer performs another calibration. During this process, the printer checks the readings for the media and ribbon based on the new scale that you established, determines the label length, and determines whether you are in Direct Thermal or Thermal Transfer Print Mode. The process is now complete. To see the new readings, print a sensor profile. See Sensor Profile on page 57. 12. Press SELECT to deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 9 of 20)

Parameter/LCD Display	Action/Explanation
Setting Communication Parameters (next nine parameters) Communication parameters must be set correctly for the printer to communicate with the host computer. These parameters make sure that the printer and host computer are speaking the same language. All communication parameters are password protected.	
***** **	Setting Parallel Communications Note • Unidirectional will not support ZebraNet two-way communications. Default: Bidirectional Selections: Bidirectional, Unidirectional 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
* ** ** ** ** ** ** **	Setting Serial Communications Select the communications port that matches the one being used by the host computer. Default: RS-232 Selections: RS-232, RS-422/485, RS-485 multidrop 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
** ** *	Setting Baud 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. Default: 9600 Selections: 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 10 of 20)

Parameter/LCD Display	Action/Explanation
◆☆☆ ◆ ☆☆	Setting Data Bits 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. Note • Must be set to 8 data bits to use Code Page 850. Default: 7-bits Selections: 7-bits, 8-bits 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
☆☆# ☆☆	Setting Parity 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. Default: None Selections: None, even, odd 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
☆☆☆☆ ☆☆☆◆☆☆◆	Setting Host Handshake The handshake protocol of the printer must match the handshake protocol of the host computer for communications to take place. Select the handshake protocol that matches the one being used by the host computer. Default: XON/XOFF Selections: XON/XOFF, DTR/DSR, RTS/CTS 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.

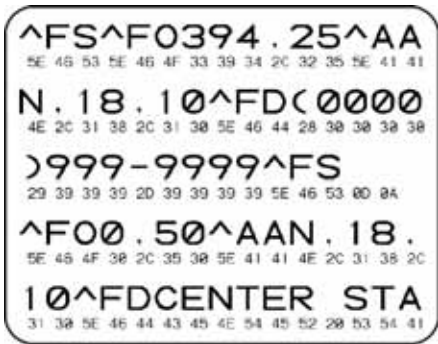
Table 7 • Printer Parameters and Other LCD Displays (Page 11 of 20)

Parameter/LCD Display	Action/Explanation
*****	Setting Protocol 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 Volume I</i>. Default: None Selections: None, Zebra, ACK_NACK Zebra is the same as ACK_NACK except that with Zebra the response messages are sequenced. If Zebra is selected, the printer must use DTR/DSR host handshake protocol. 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
*****	Setting Network ID Network ID is used to assign a unique number to a printer used in an RS-422/RS-485 network. This gives the host computer the means to address a specific printer. If the printer is used in a network, you must select a network ID number. This does not affect TCP/IP or IPX networks. Default: 000 Range: 000 to 999 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 12 of 20)

Parameter/LCD Display	Action/Explanation
*****i*****	Setting Communication Diagnostics Mode The communication diagnostics mode is a troubleshooting tool for checking the interconnection between the printer and the host computer. When “diagnostics” is selected, all data sent from the host computer to the printer is printed as straight ASCII hex characters. The printer prints all characters received, including control codes, such as CR (carriage return). A sample printout is shown in Figure 30.

Figure 30 • Communication Diagnostics Test Printout



Default: Normal mode

Selections: Normal mode, diagnostics

1. Press SELECT to select the parameter.
2. Press PLUS (+) or MINUS (–) to display other choices.
3. Press SELECT to accept any changes and deselect the parameter.
4. Turn the printer Off (O) to exit the communication diagnostics test and return to Normal mode.

Notes on diagnostic printouts

- FE indicates a framing error
- OE indicates an overrun error
- PE indicates a parity error
- NE indicates noise

For any errors, check that your communication parameters are correct. Set the print width equal to or less than the label width used for the test. See [Setting Print Width on page 53](#) for more information.

Table 7 • Printer Parameters and Other LCD Displays (Page 13 of 20)

Parameter/LCD Display	Action/Explanation
Selecting Prefix and Delimiter Characters (next three parameters)	
Prefix and delimiter characters are 2-digit hex values used within the ZPL/ZPL II formats sent to the printer. The printer uses the last prefix and delimiter characters sent to it, whether from a ZPL II instruction or from the front panel.	
Do not use the same hex value for the control, format, and delimiter characters. The printer must see different characters to function properly.	
◆★★★★ ☆◆◆◆◆	Control Prefix Character The printer looks for this 2-digit hex character to indicate the start of a ZPL/ZPL II control instruction. Default: 7E (tilde - displayed as a black square) Range: 00 to FF 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.
◆★★★★ ☆◆◆◆◆	Format Prefix Character The printer looks for this 2-digit hex character to indicate the start of a ZPL/ZPL II format instruction. Default: 5E (caret) Range: 00 to FF 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.
◆◆◆◆◆◆◆ ◆◆◆◆	Delimiter Character The delimiter character is a 2-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. Default: 2C (comma) Range: 00 to FF 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 14 of 20)

Parameter/LCD Display	Action/Explanation
*** **	Selecting ZPL Mode The printer remains in the selected mode until it is changed by this front panel instruction or by using a ZPL/ZPL II command. The printer accepts label formats written in either ZPL or ZPL II. This eliminates the need to rewrite any ZPL formats you already have. See the <i>ZPL II Programming Guide Volume II</i> for more information on the differences between ZPL and ZPL II. Default: ZPL II Selections: ZPL II, ZPL 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
*** **	Media Power Up Establishes the action of the media when the printer is turned on. Default: Calibration Selections: • Calibration: Recalibrates the media and ribbon sensors. • Length: Determines the length of the label. • No Motion: Media does not move. • Feed: Feeds the label to the first web. 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
*** **	Head Close Determines the action of the media after the printhead has been opened and then closed. Default: Calibration Selections: • Calibration: Recalibrates the media and ribbon sensors. • Length: Determines the length of the label. • No Motion: Media does not move. • Feed: Feeds the label to the first web. 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 15 of 20)

Parameter/LCD Display	Action/Explanation
✱✱✱✱✱✱✱	Backfeed Sequence This parameter establishes when and how much label backfeed occurs after a label is removed or cut in the peel-off or cutter modes. It has no effect in rewind or tear-off modes. This parameter setting can be superseded by the ~JS instruction when received as part of a label format (see the <i>ZPL II Programming Guide Volume I</i>). The difference between the value entered and 100% establishes how much backfeed occurs before the next label is printed. For example, a value of 40 means that 40% of the backfeed takes place after the label is removed or cut. The remaining 60% takes place before the next label is printed. A value of “before” means that all backfeed takes place before the next label is printed. Default: Default (90%) Selections: Default, after, before, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, off 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
✱✱✱✱ ✱✱✱	Adjusting Label Top Position The label top position adjusts the print position vertically on the label. Positive numbers adjust the label top position further down the label (away from the printhead); negative numbers adjust the position up the label (toward the printhead). Default: +0 Range: –120 to +120 dot rows 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value. The displayed value represents dots. 3. Press MINUS (–) to decrease the value. 4. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 16 of 20)

Parameter/LCD Display	Action/Explanation
★♦♦★ ★★* * ★	Adjusting Left Position 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 to the left by the number of dots selected; negative numbers shift printing to the right. Default: 0000 Range: -9999 to +9999 1. Press SELECT to select the parameter. 2. Press MINUS (–) to move to the next position. 3. Press PLUS (+) to change between +/- or to increase the value of the digit. The displayed value represents dots. For a negative value, enter the value before changing to the minus sign. 4. Press SELECT to accept any changes and deselect the parameter.
★♦+ ★ ★♦♦ ★ ★ ★ ++★ ★ ★★♦ ★♦+♦★ ★ ★♦♦ ★ ★♦♦ ★ ++★ ★♦♦	These parameters are automatically set during the calibration procedure. They should be changed only by a qualified service technician. See the <i>Maintenance Manual</i> for more information on these parameters. Press PLUS (+) repeatedly to skip these parameters.
★♦+ ★♦0***	LCD Display Adjustment This parameter allows you to adjust the brightness of your display if your display is difficult to read. Range: 00 to 19 1. Press SELECT to select the parameter. 2. Press MINUS (–) to decrease the value (reduce brightness). 3. Press PLUS (+) to increase the value (increase brightness). 4. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 17 of 20)

Parameter/LCD Display	Action/Explanation
◆★★★★ ◆★★★★	Format Convert The Format Convert setting is used when upgrading from a printer of lower resolution to a printer of higher resolution and the user does not wish to modify their formats. Example: If your original formats were written for a 150 dpi printer and your new printer is 300 dpi, you would choose 150-300. Default: None Selections: None, 150–300, 150–600, 200–600, 300–600 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
◆◆◆◆ ◆★★★★◆	Idle Display If a real-time clock (RTC) is installed, this parameter selects the LCD options for the RTC. Default: FW Version Selections: FW Version, MM/DD/YY 24HR, MM/DD/YY 12HR, DD/MM/YY 24HR, DD/MM/YY 12HR 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
◆◆◆ ◆◆◆◆	RTC Date If the RTC is installed, this parameter allows changing of the date. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.
◆◆◆ ◆◆◆◆	RTC Time If the RTC is installed, this parameter allows changing of time. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 18 of 20)

Parameter/LCD Display	Action/Explanation
⌘ *****⌘	IP Resolution Depending on the selection, allows either the user (permanent) or the server (dynamic) to select the IP address. For more information, see <i>ZebraNet Networking: PrintServer II Installation and Users Guide</i>. Default: Dynamic Selections: Dynamic, permanent 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
⌘ *****⌘	IP Protocols If dynamic was chosen in the previous parameter, this selection determines the method(s) by which the PrintServer II receives the IP address from the server. For more information, see <i>ZebraNet Networking: PrintServer II Installation and Users Guide</i>. Default: All Selections: All, gleaning only, RARP, BOOTP, DHCP, DHCP/BOOTP 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.
⌘ *****⌘	IP Address This parameter allows you to select the IP address if permanent was chosen in IP RESOLUTION. (If dynamic was chosen, the user cannot select the address.) For more information, see <i>ZebraNet Networking: PrintServer II Installation and Users Guide</i>. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.
+ ***	Subnet Mask This parameter selects the part of the IP address that is considered to be part of the local network. It can be reached without going through the default gateway. Default: Permanent (user <i>must</i> set) Selections: Dynamic (user <i>may</i> set, but server can assign), permanent 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 19 of 20)

Parameter/LCD Display	Action/Explanation
◆◆◆◆◆◆◆◆ ◆◆◆◆◆◆◆◆	Default Gateway This parameter allows you to select the IP address that the network traffic is routed through if the destination address is not part of the local network. 1. Press SELECT to select the parameter. 2. Press PLUS (+) to increase the value of the selected digit. 3. Press MINUS (–) to move to the next digit. 4. Press SELECT to accept any changes and deselect the parameter.
◆◆◆◆ ◆◆◆◆ ◆◆◆◆◆ ◆◆◆◆◆	RFID Test In both versions of this test, the printer attempts to read and write to a transponder. In the slow test, the printer also checks the reader version number. If the printer fails the test, the front panel displays an error message. 1. Place an RFID label over the reader (no movement occurs with the test). 2. Press SELECT to select the parameter. 3. Press MINUS (–) to select ◆◆◆◆◆. - OR Press PLUS (+) to select ◆◆◆◆◆. 4. If necessary, press PLUS (+) to select ◆◆◆◆◆◆◆◆◆◆. 5. Press SELECT to deselect the parameter.
◆◆◆◆ ◆◆◆◆ ◆◆◆◆◆◆◆◆	RFID Error Status If an error condition exists, a message may be displayed here.
◆◆◆◆◆◆◆◆◆◆ ◆◆◆◆◆◆◆◆	Password Level This parameter allows you to select whether certain Zebra-selected menu items (selected items) or all menu items (all items) are password protected. Default: Selected items Selections: Selected items, all items 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.

Table 7 • Printer Parameters and Other LCD Displays (Page 20 of 20)

Parameter/LCD Display	Action/Explanation
★☆☆◆*◆◆◆	Selecting the Display Language This parameter allows you to change the language used on the front panel display. Default: English Selections: English, Spanish, French, German, Italian, Norwegian, Portuguese, Swedish, Danish, Spanish 2, Dutch, Finnish, Japanese 1. Press SELECT to select the parameter. 2. Press PLUS (+) or MINUS (–) to display other choices. 3. Press SELECT to accept any changes and deselect the parameter.

* ZebraNet PrintServer II External or Internal option required