



Zebra® Z4Mplus/Z6Mplus™
Industrial/Commercial Printer

User Guide



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Customer Order # 13163L

Manufacturer Part # 13163LB Rev. 3

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Proprietary Statement



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Product Improvements

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

FCC Compliance Statement

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

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

This equipment has been tested and found to comply with the limits for Class B Digital Devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the product manuals, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, the user is encouraged to do one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Proprietary Statement

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

Canadian DOC Compliance Statement

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

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

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

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Declaration of Conformity

I have determined that the Zebra printers identified as the

Z4Mplus/Z6Mplus™-series

manufactured by:

Zebra Technologies Corporation
333 Corporate Woods Parkway
Vernon Hills, Illinois 60061-3109 U.S.A.

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

For Home, Office, Commercial, and Industrial use

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

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

Warranty Information



Effective December 30, 2002

All new Zebra products are warranted by the manufacturer to be free from defect in material and workmanship.

Printers and Related Hardware Products

Proof of purchase or shipment date is required to validate the warranty period. The warranty becomes void if the equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

Products returned must be packaged in the original or comparable packing and shipping container. In the event equipment is not so packaged, or if shipping damage is evident, it will not be accepted for service under warranty. Surface transportation charges for return to customers in the continental United States is paid by Zebra. Otherwise, Zebra pays CPT (carriage paid to) nearest airport; customer pays customs, duties, taxes, and freight from airport to destination. If Zebra determines that the product returned for warranty service or replacement is not defective as herein defined, the customer will pay all handling and transportation costs.

Printers

All printers (excluding printheads) are warranted against defect in material or workmanship for twelve (12) months from the purchase date.

Printheads

Since printhead wear is part of normal operation, the original printhead is covered by a limited warranty as indicated below. Warranty period begins on purchase date.

| Printhead | Warranty Period |
|---|-----------------|
| Bar code label and receipt printer printheads | 6 months |
| Plastic card printer printheads | 12 months |

To qualify for this warranty, the printhead must be returned to the factory or to an authorized service center. Customers are not required to purchase Genuine Zebra Supplies (media and/or ribbons) for warranty qualification.

However, if it is determined that the use of inappropriate or inferior supplies has caused any defect in the printhead for which a warranty claim is made, the user is responsible for Zebra's labor and material charges required to repair the defect. The warranty becomes void if the printhead is physically worn or damaged; also if it is determined that failure to follow the preventive maintenance schedule listed in the User Guide has caused defect in the thermal printhead for which a warranty claim is made.

Related Hardware Items

Products are warranted to be free of defects in material and workmanship from the date of purchase according to this chart:

| Product | Warranty Period |
|-------------------------------------|-----------------|
| Accessories | 1 month |
| Batteries | 3 months |
| Cables | 1 month |
| Chargers/Power Supplies | 1 year |
| Hardware Keys | 1 year |
| Keyboard Display Units | 6 months |
| Parts | 3 months |
| Pocket Eye [®] | 1 year |
| Software | 1 month |
| ZebraNet [®] Print Servers | 3 years |

Defective product must be returned to Zebra for evaluation. In the event of notification of defect within the warranty period, Zebra will replace the defective item provided there had not been damage resulting from user abuse, modification, improper installation or use, or damage in shipping or by accident or neglect.

Supplies Products

Supplies are warranted to be free from defect in material and workmanship for a period of six (6) months for media and twelve (12) months for ribbon from the date of shipment by Zebra. This is provided the user has complied with storage guidelines, handling, and usage of the supplies in Zebra printers.

Zebra's sole obligation under these warranties is to furnish parts and labor for the repair or possible replacement of products found to be defective in material or workmanship during the warranty period. Zebra may in its discretion issue a credit for any such defective products in such amount as it deems reasonable.

Repair Services

Zebra repairs are warranted against defects in material and workmanship for 90 days from the date of repair by Zebra. This excludes printheads, which are warranted separately. This warranty does not cover normal wear and tear. This warranty becomes void if the item is modified, improperly installed or used, or damaged by accident, neglect, or abuse.

Warranty Exclusions & Conditions Statement

The warranties given above are the only warranties given to you. No other warranties, express or implied, are given. Zebra does not make any *implied warranty of merchantability or fitness for a particular purpose* in connection with its sale of products or services. While Zebra's desire is to be responsive to your specific needs and questions, Zebra does not assume responsibility for any specific application to which any Products are applied, including, but not limited to, compatibility with other equipment. All statements, technical information, or recommendations relating to Zebra Products are based on tests believed to be reliable, but do not constitute a guaranty or warranty.

Zebra's maximum liability for warranty claims is limited to the invoice price of the Product claimed defective. Zebra does not assume responsibility for delays in replacement or repair of products. Zebra shall not under any circumstances whatsoever be liable to you or any other party for loss or profits, lost data, diminution of goodwill, or any other special or consequential damages whatsoever with respect to any warranty claim made by you. Specifically for software, Zebra is not liable for any incidental or consequential damages caused by abuse or misapplication of the software or by its use in violation of the U.S. copyright law or international treaty. No salesperson, representative, or agent of Zebra is authorized to make any guaranty, warranty, or representation that contradicts the foregoing. Any waiver, alteration, addition, or modification to the foregoing warranties must be in writing and signed by an executive officer of Zebra to be valid.



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Preface



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

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Contacts

You can contact Zebra Technologies Corporation, USA at any of the following:

Visit us at: <http://www.zebra.com>

Our Mailing Address:

Zebra Technologies Corporation

333 Corporate Woods Parkway

Vernon Hills, Illinois 60061.3109 U.S.A

Telephone: +1 847.634.6700

Facsimile: +1 847.913.8766

Zebra Technologies Europe Limited

Zebra House

The Valley Centre, Gordon Road

High Wycombe

Buckinghamshire HP13 6EQ, UK

Telephone: +44 (0)1494 472872

Facsimile: +44 (0)1494 450103

Support

You can contact Zebra support at any of the following:

Web address: www.zebra.com/SS/service_support.htm



Note • The Web address is case-sensitive.

US Phone Number: +1 847.913.2259

UK/International Phone Number: +44 (0) 1494 768289

Document Conventions

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

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

Command Line Examples All command line examples appear in Courier New 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.

Cautions, Important, Note, and Example



Electrostatic Discharge Caution • Warns you of the potential for electrostatic discharge.



Electric Shock Caution • Warns you of a potential electric shock situation.



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



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

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



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



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



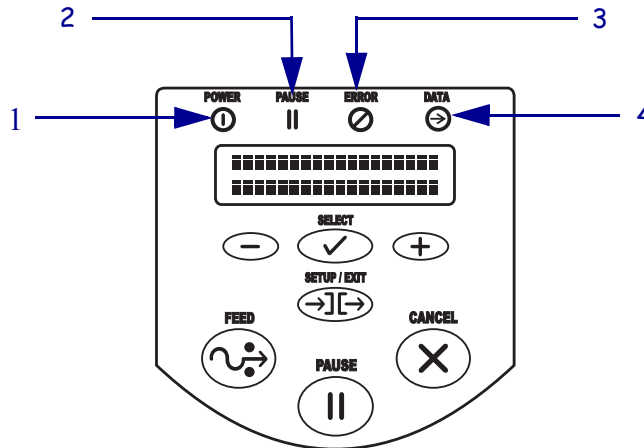
Example • Provides an example, often a scenario, to better clarify a section of text.



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

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

Figure 1 • Example of an Illustration with Callouts



| | |
|---|-----------|
| 1 | Power LED |
| 2 | Pause LED |
| 3 | Error LED |
| 4 | Data LED |

Related Documents

The following documents might be helpful references:

- *ZPL II® Programming Guide Volume I* (part number 45541L) and *Volume II* (part number 45542L).
- *ZebraNet® Wireless Print Server User Guide* (part number 13422L)
- *ZebraNet 10/100 Print Server User and Reference Guide* (part number 47619L-001)
- *ZebraNet PrintServer II™ Installation and User Guide* (part number 45537L).
- The *Z4Mplus and Z6Mplus Maintenance Manual* (Zebra part number 13358L) contains the information you need to maintain your printer.



Introduction

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

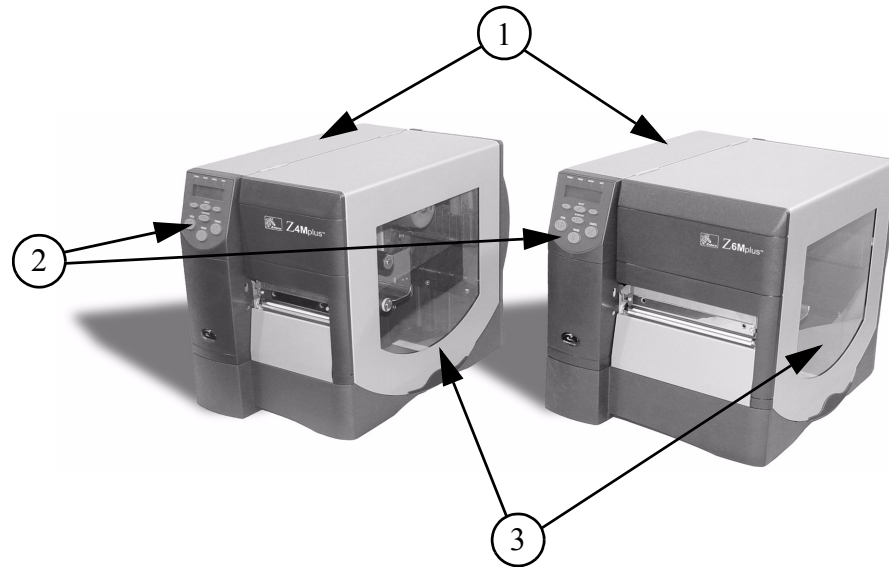
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External View

Figure 2 shows the outside of the printer.

Figure 2 • External View

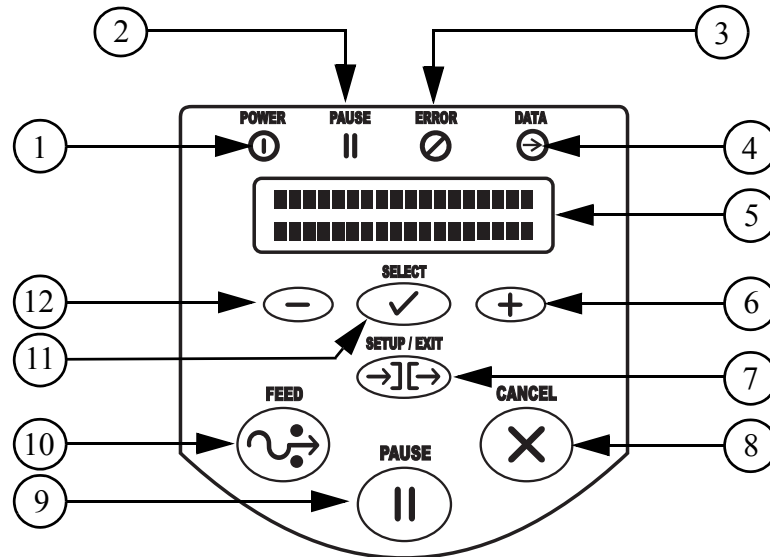


| | |
|----------|-------------------|
| 1 | Electronics cover |
| 2 | Front panel |
| 3 | Media door |

Front Panel

The front panel keys and lights are shown in [Figure 3](#).

Figure 3 • 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 53 for more detailed information on each setting.

Table 1 • Front Panel LCD Display Settings

| LCD Display | Meaning/Available Settings |
|---------------|---|
| PRINTER READY | Ready to print labels or to configure the printer. All printer self-tests have been performed successfully. |
| DARKNESS | The larger the number, the darker the print. The range is 0 to 30, with a default setting of 10. |
| PRINT SPEED | The print speed is given in inches per second. The larger the number, the faster the label prints. |
| TEAR OFF | Establishes the position of the media over the tear-off bar after printing. |
| PRINT MODE | Tear-Off (default setting), Peel-Off, Cutter, Rewind. For more details, see Table 2. |
| MEDIA TYPE | Non-continuous (default setting), Continuous |
| SENSOR TYPE | Web (default setting), Mark |
| SENSOR SELECT | Auto Select (default setting), Reflective, Transmissive |
| PRINT METHOD | 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 57 for more detailed information. Print modes should match the media and printer options chosen. Print mode choices are listed in Table 2.

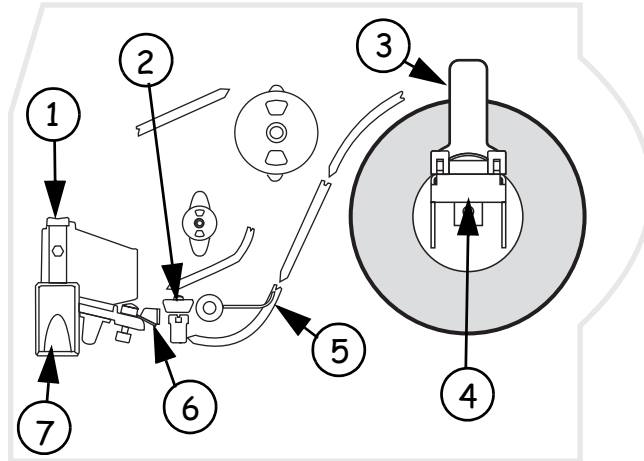
Table 2 • Print Mode Options

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

Figure 4 • Media Compartment



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



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.

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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 17](#).

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.

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 110](#).

[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.

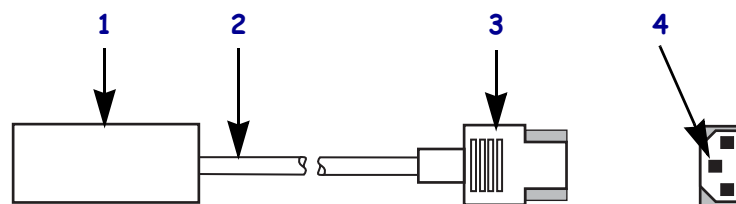
Power Cord Specifications

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 5](#).

Figure 5 • Power Cord Specifications



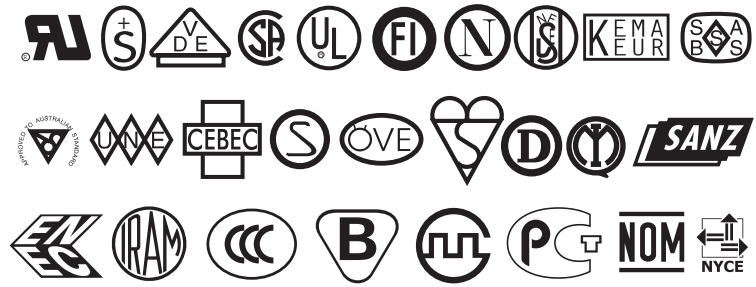
- | | |
|----------|------------------------------------|
| 1 | AC power plug for your country |
| 2 | 3-conductor HAR cable |
| 3 | IEC 320 connector |
| 4 | Neutral earth live in contact view |

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 6](#).

Figure 6 • 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.

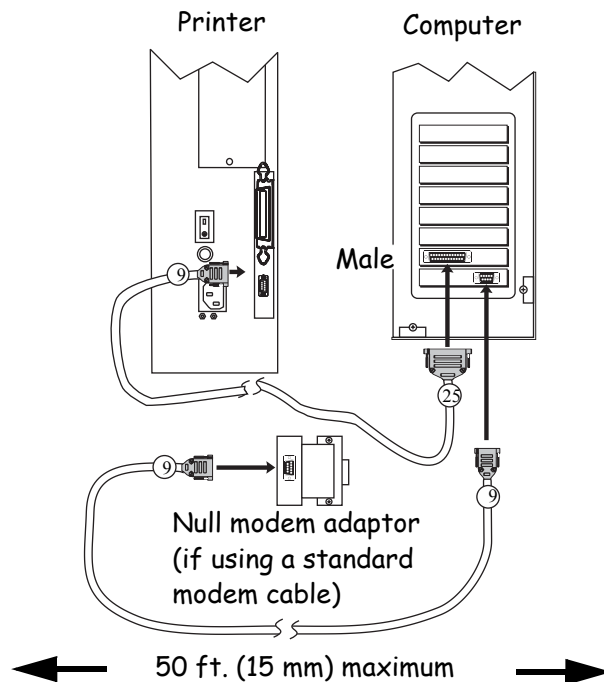
Standard interfaces: The RS-232 DB-9 serial data port and the IEEE 1284 compliant bidirectional parallel port. For further information, see [Data Connections on page 101](#).

Optional Print Servers:

- ZebraNet Wireless Print Server. For more information on this option, see the ZebraNet Wireless Print Server User Guide (Zebra part number 13422L-001).
- ZebraNet 10/100 Print Server (10/100 PS). For more information on 10/100 PS, see the *ZebraNet 10/100 Print Server User and Reference Guide* (Zebra part number 47619L-001).
- ZebraNet PrintServer II (PSII). For more information on PSII, see the *PrintServer II User and Reference Guide* (Zebra part number 45537L).

Serial Port Communicating using a serial data port (see [Figure 7](#)) 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 102](#) to configure the communication parameters. The values selected must be the same as those used by the host equipment connected to the printer.

Figure 7 • Communicating Using a Serial Data Port

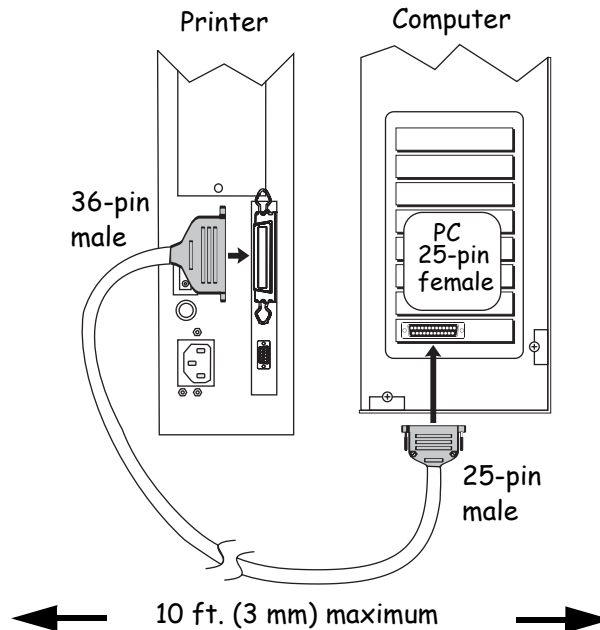


Printer Setup

Select a Communication Interface

Parallel Port Communicating using the parallel port (see [Figure 8](#)) does not require special settings. The serial settings do not affect the parallel port. Refer to [Parallel Data Port on page 107](#) for further information.

Figure 8 • 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.

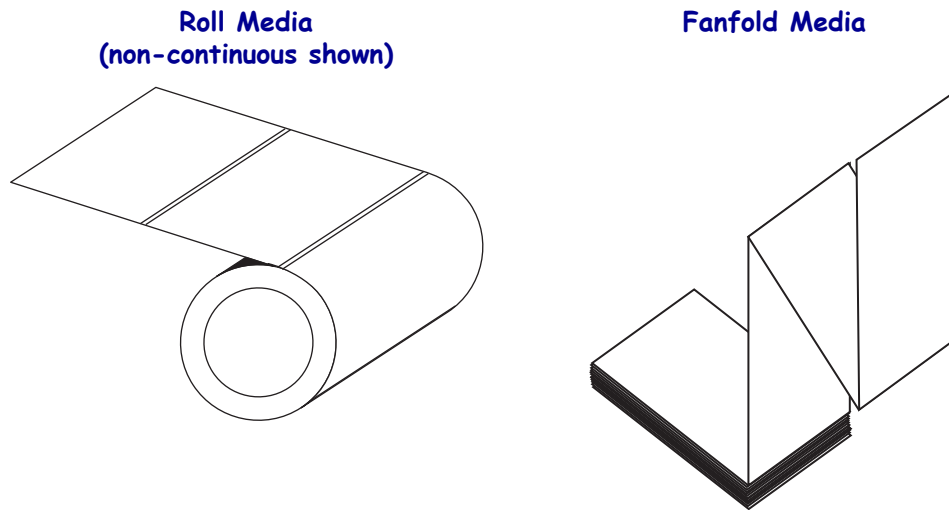


Note • RS-422 and RS-485 applications should use twisted shielded pairs as recommended in the TIA/EIA-485 Specification.

Types of Media

Your printer is capable of using various forms of media. These include roll and fanfold media (Figure 9) that may be labels or card stock and that may have optional perforations, black marks, or registration holes. The following sections contain descriptions of the various types of media approved for use in your printer.

Figure 9 • Roll and Fanfold Media



Selecting 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.



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

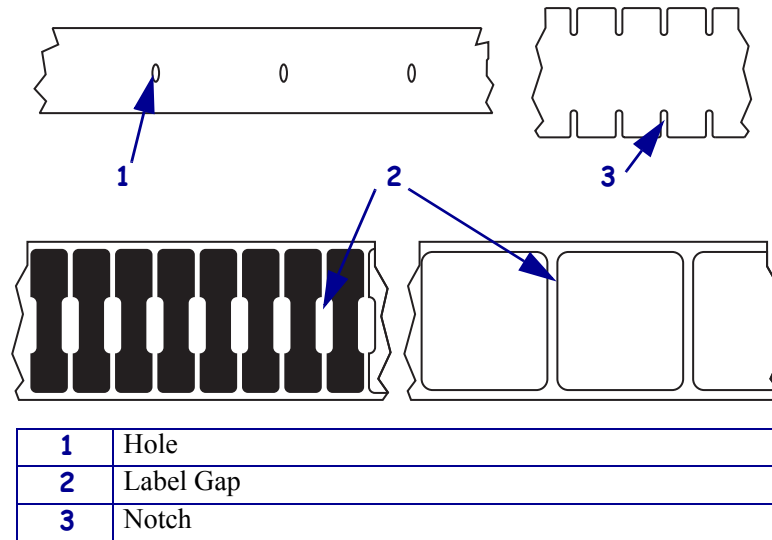
- printing at high speeds
- cutting or peeling the media
- the use of extremely thin, small, synthetic, or coated labels

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

Non-Continuous Media

Non-continuous web media refers to individual labels that are separated by a gap, notch, or hole (Figure 10). When you look at the media, you can tell where one label ends and the next one begins.

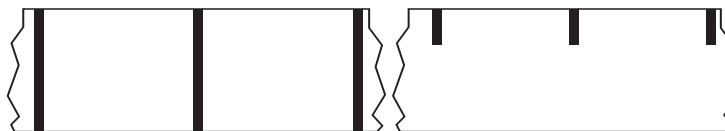
Figure 10 • Non-Continuous Web Media



Important • When using media that has holes or notches, position the sensor directly over a hole or notch.

Non-continuous black mark media has black marks printed on the back, which indicate the start and end of each label. Figure 11 shows a sample of non-continuous black mark media.

Figure 11 • Non-Continuous Black Mark Media



Continuous Media

Continuous media (Figure 12) 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 12 • Continuous Media



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 media, 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, though ribbon may be used to help protect the printhead from abrasion with the 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.

Coated Side of Ribbon

Ribbon can be wound with the coated side on the inside or outside (see [Figure 13](#)), which affects how the ribbon will be loaded in the printer. If you are unsure which side of a particular roll of ribbon is coated, perform an adhesive test or a ribbon scratch test to determine which side is coated.

Figure 13 • Ribbon Coated on Outside or Inside



Adhesive Test

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

To perform an adhesive test, complete these steps:

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

| If ink from the ribbon... | Then... |
|----------------------------------|----------------|
|----------------------------------|----------------|

| | |
|-----------------------------|--|
| Adhered to the label | The ribbon is coated on the outer surface. |
| Did not adhere to the label | <p>The ribbon is likely coated on the inner surface.</p> <ol style="list-style-type: none">a. Press a corner of the sticky side of the label to the inner surface of the roll of ribbon.b. Peel the label off of the ribbon.c. Observe the results again. The ink from the ribbon should have adhered to the label. If the ink did not stick either time, repeat the adhesive test with a stickier adhesive, or perform the ribbon scratch test. |

Ribbon Scratch Test

If you do not have labels available, perform the ribbon scratch test. This method works best if the ribbon is not installed.

To perform a ribbon scratch test, complete these steps:

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

5. Observe the results. Did the ribbon leave a mark on the paper?

| If the ribbon... | Then... |
|-----------------------------------|--|
| Left a mark on the paper | The ribbon is coated on the outer surface. |
| Did not leave a mark on the paper | <p>The ribbon is likely coated on the inner surface.</p> <ol style="list-style-type: none"> <li data-bbox="740 392 1414 455">a. Flip the ribbon over on the paper so the inner side of the ribbon comes in contact with the paper. <li data-bbox="740 466 1373 529">b. Scratch the outer surface of the unrolled ribbon with your fingernail. <li data-bbox="740 539 1130 571">c. Lift the ribbon from the paper. <li data-bbox="740 581 1414 703">d. 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. |



Printer Operation

If you have completed the tasks and resolved the issues in the checklist in *Before You Begin* on page 8, follow the instructions in this chapter to load and calibrate your printer and to print configuration labels.

Contents

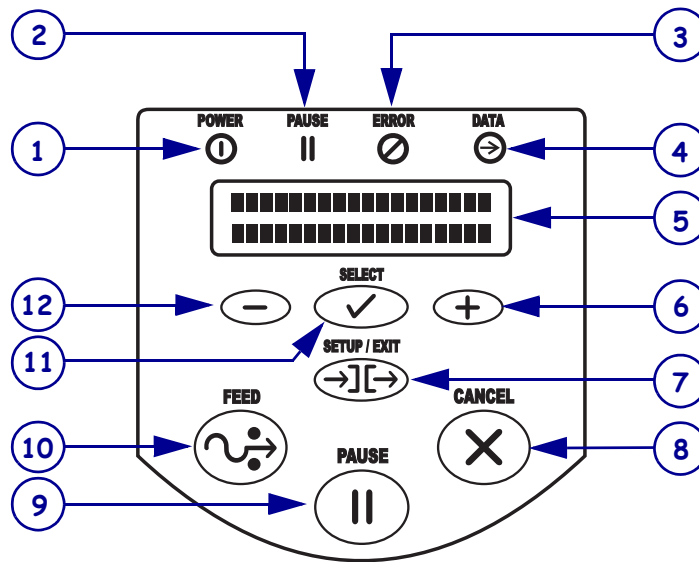
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Front Panel

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



| | |
|-----------|----------------|
| 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 |

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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Increases the value. Answers yes. Prints a label (when applicable). |
| MINUS (-) (scroll mode) | Scrolls to the previous selection. |
| MINUS (-) (change mode) | <ul style="list-style-type: none"> Decreases the value. Selects the digit you wish to change. Answers no. |

Front Panel Lights

Table 5 • Front Panel Lights

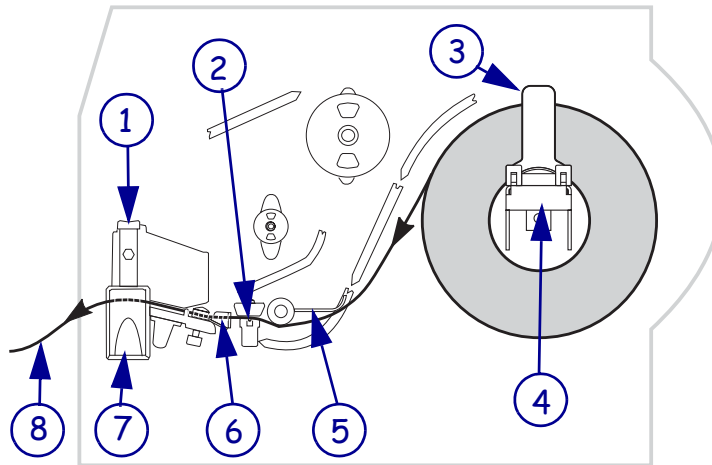
| Light | Status | Indication |
|-------|---------------|--|
| POWER | Off | The printer is off or no power is applied. |
| | On | The printer is on. |
| PAUSE | Off | Normal printer operation. |
| | On | The printer has stopped all printing operations. |
| | Flashing | The Pause light flashes when initializing 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, RIBBON OUT, or CUTTER JAM 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. The option is shown in [Figure 15](#).

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 |

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.

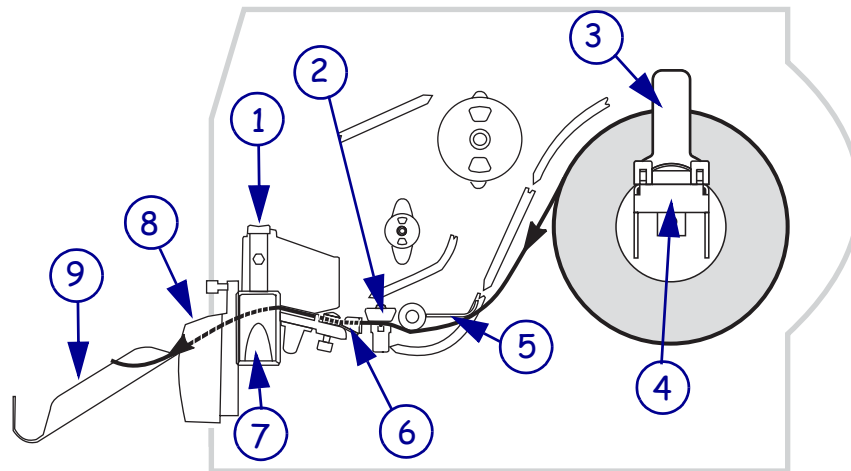
2. Flip down the media supply guide.
3. Slide out the media guide as far from the printer frame as possible.
4. Place the roll of media on the media supply hanger and orient the media properly.
5. Flip up the media supply guide.
6. Slide in the media supply guide until it touches, but does not restrict, 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.

Cutter Mode

Cutter Mode requires that the cutter be installed. The option is shown in [Figure 16](#).

Figure 16 • Cutter 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 | Cutter Module |
| 9 | Catch Tray |

To load media in Cutter-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 through the cutter module.



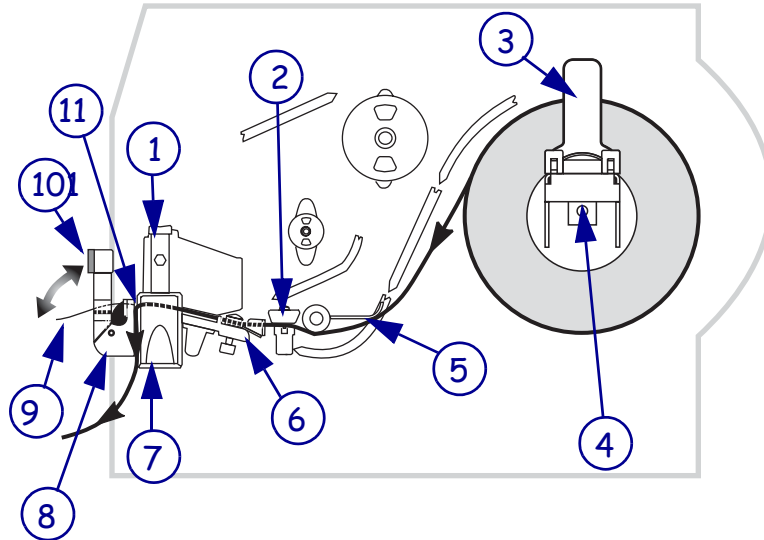
Caution • The cutter blade is sharp. Do not touch or rub the blade with your fingers.

8. Ensure that the media is against the back of the transmissive sensor. Then, slide in the media guide until it touches, but does not restrict, the edge of the media.
9. Close the printhead assembly.
10. If the printer is paused (the Pause light is on), press **PAUSE** to enable printing.

Peel-Off Mode

This setting works only with the Peel-Off Option installed on the printer. Figure 17 shows the printer with the Peel-Off Option.

Figure 17 • Peel-Off Mode



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

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.

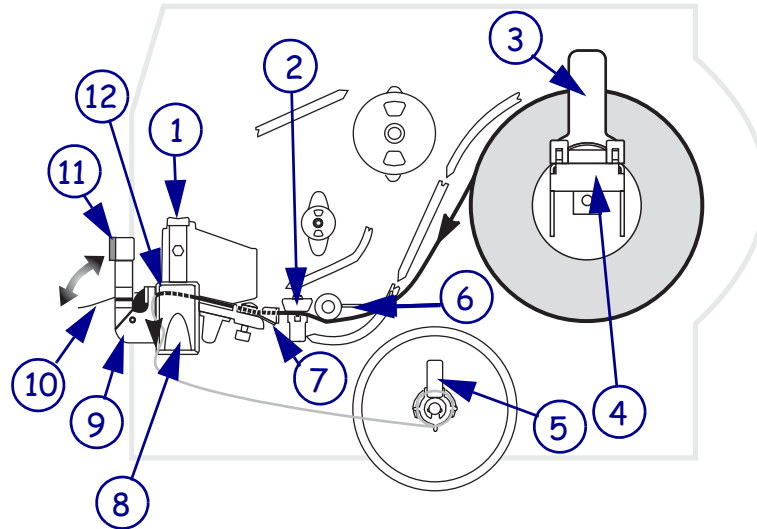
Liner Take-Up Mode

The Liner Take-up option must be installed to use this mode. The option is shown in Figure 18.



Note • This option is available on the Z4Mplus printer only

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 |

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

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

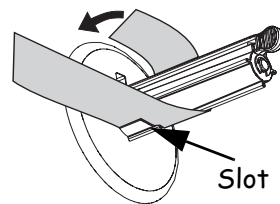


Caution • Ensure that the printhead is fully open and engaged in the upright position. If you fail to latch the printhead, it could fall on your hand during the procedure.

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 19](#)) in the spindle of the liner take-up. Ensure that the liner is resting against the back plate of the spindle assembly.

Figure 19 • Liner Take-Up Spindle

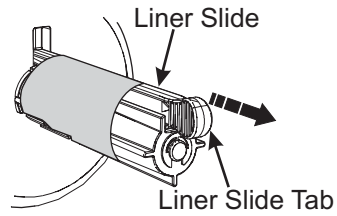


16. Turn the spindle assembly counterclockwise a few times to snug the liner.
17. If the printer is paused (the pause light is on), press **PAUSE** to enable printing. Peeling starts automatically. Press **FEED** to test.

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 20 • Removing Liner from Liner Take-Up Spindle



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

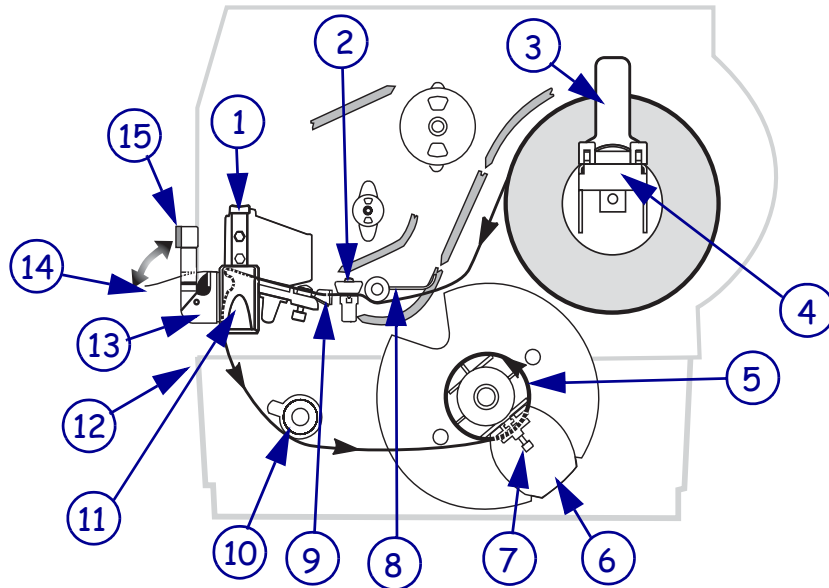


Note • The liner slide moves back in place after the liner is removed.

Rewind/Peel-Off Mode

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

Figure 21 • 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 |

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.

Liner Removal

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

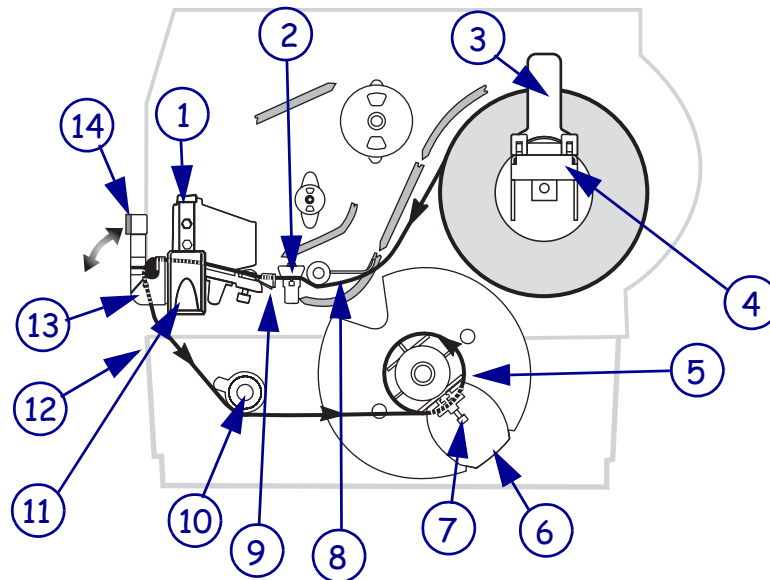
1. Cut the liner between the media alignment spindle and the rewind spindle.
2. Rotate the take-up spindle counterclockwise until the rewind media guide is in the 12 o'clock position.
3. Loosen the thumbscrew and slide the rewind media guide to the end of the take-up spindle.
4. Slide the core with the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

Figure 22 •

Rewind Mode

The Rewind option must be installed to use this mode. The option is shown in [Figure 23](#).

Figure 23 • 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 |

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.

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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.

Media Removal

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

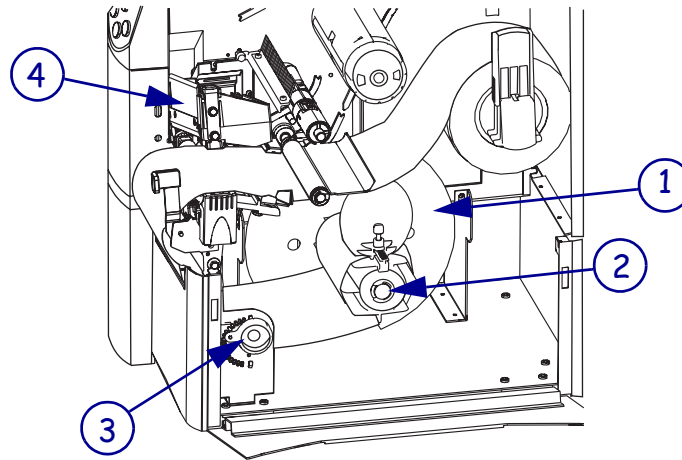
1. Cut the media between the media alignment spindle and the rewind spindle.
2. Rotate the take-up spindle counterclockwise until the rewind media guide is in the 12 o'clock position.
3. Loosen the thumbscrew and slide out the rewind media guide to the end of the take-up spindle.
4. Slide the core with 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 24](#).

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

Figure 24 • Rewind Option Adjustment Dial



| | |
|---|--------------------------|
| 1 | Rewind Spindle Backplate |
| 2 | Rewind Spindle |
| 3 | Adjustment Dial |
| 4 | Printhead Assembly |

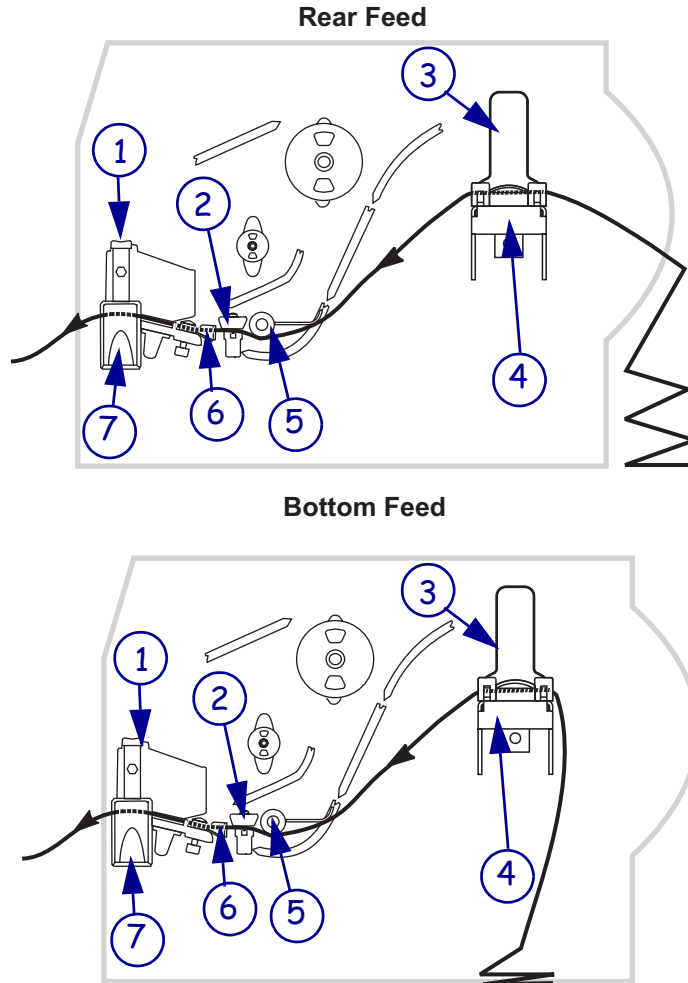
To adjust the Media Alignment for Rewind Mode, complete these steps:

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.

Load Fanfold Media

Fanfold media feeds through either the bottom or rear access slot. See [Figure 25](#).

Figure 25 • 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 |

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**.

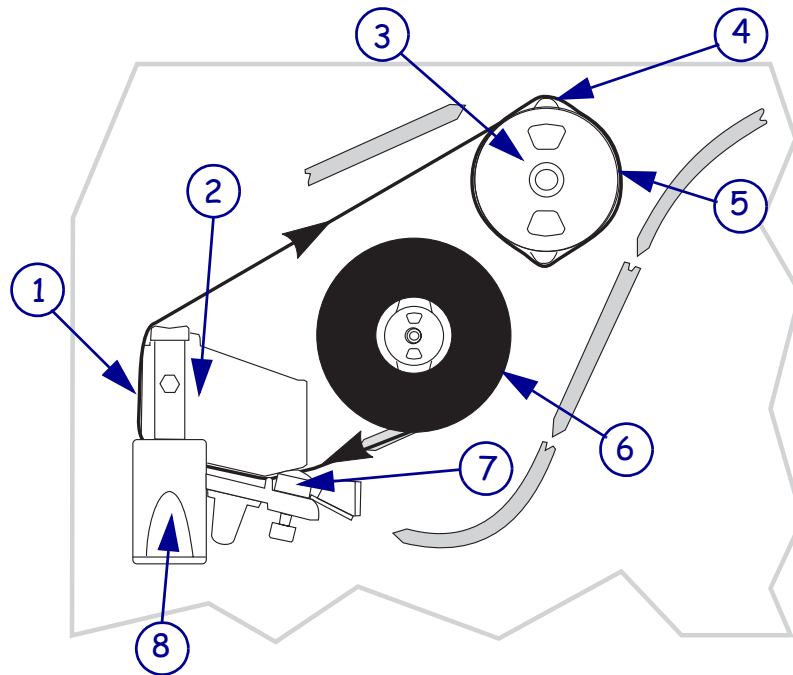
Load the Ribbon

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 if 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.

Figure 26 • Ribbon Path

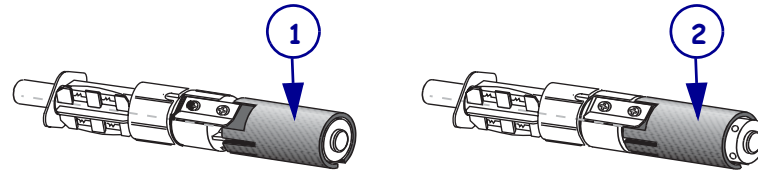


| | |
|---|------------------------|
| 1 | Strip Plate |
| 2 | Printhead Assembly |
| 3 | Release Knob |
| 4 | Tension Blades |
| 5 | Ribbon Take-Up Spindle |
| 6 | Ribbon Supply Spindle |
| 7 | Ribbon Sensor |
| 8 | Printhead Open Lever |

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 27](#).
 - 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 27](#).

Figure 27 • Ribbon Spindle—Normal and Low Tension



-
- 1 Normal Position (Spindle End Cap Extended)
 - 2 Low-Tension Position (Spindle End Cap Retracted)
-

2. See Figure 26. 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.

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 Z4Mplus and Z6Mplus automatically calibrate 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 settings 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 63.

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 3, 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 labels shown in [Figure 28](#)).

Figure 28 • Sample Configuration Labels

| PRINTER CONFIGURATION | | PRINTER CONFIGURATION | |
|--|----------------|--|----------------|
| Zebra Technologies ZTC Z6Mplus - 300dpi | | Zebra Technologies ZTC Z4Mplus - 200dpi | |
| +14..... | DARKNESS | +14..... | DARKNESS |
| 2 IPS..... | PRINT SPEED | 2 IPS..... | PRINT SPEED |
| +000..... | TEAR OFF | +000..... | TEAR OFF |
| TEAR OFF..... | PRINT MODE | TEAR OFF..... | PRINT MODE |
| NON-CONTINUOUS..... | MEDIA TYPE | CONTINUOUS..... | MEDIA TYPE |
| WEB..... | SENSOR TYPE | WEB..... | SENSOR TYPE |
| AUTO SELECT..... | SENSOR SELECT | AUTO SELECT..... | SENSOR SELECT |
| THERMAL-TRANS..... | PRINT METHOD | THERMAL-TRANS..... | PRINT METHOD |
| 168 00/12 MM..... | PRINT WIDTH | 104 0/8 MM..... | PRINT WIDTH |
| 1222..... | LABEL LENGTH | 1300..... | LABEL LENGTH |
| 39.0IN 988MM..... | MAXIMUM LENGTH | 39.0IN 988MM..... | MAXIMUM LENGTH |
| BIDIRECTIONAL..... | PARALLEL COMM. | BIDIRECTIONAL..... | PARALLEL COMM. |
| RS232..... | SERIAL COMM. | RS232..... | SERIAL COMM. |
| 9600..... | BAUD | 57600..... | BAUD |
| 8 BITS..... | DATA BITS | 8 BITS..... | DATA BITS |
| NONE..... | PARITY | NONE..... | PARITY |
| XON/XOFF..... | HOST HANDSHAKE | XON/XOFF..... | HOST HANDSHAKE |
| NONE..... | PROTOCOL | NONE..... | PROTOCOL |
| 000..... | NETWORK ID | 000..... | NETWORK ID |
| NORMAL MODE..... | COMMUNICATIONS | NORMAL MODE..... | COMMUNICATIONS |
| <~> 7EH..... | CONTROL PREFIX | <~> 7EH..... | CONTROL PREFIX |
| <^> 5EH..... | FORMAT PREFIX | <^> 5EH..... | FORMAT PREFIX |
| <,> 2CH..... | DELIMITER CHAR | <,> 2CH..... | DELIMITER CHAR |
| ZPL II..... | ZPL MODE | ZPL II..... | ZPL MODE |
| CALIBRATION..... | MEDIA POWER UP | CALIBRATION..... | MEDIA POWER UP |
| CALIBRATION..... | HEAD CLOSE | CALIBRATION..... | HEAD CLOSE |
| DEFAULT..... | BACKFEED | DEFAULT..... | BACKFEED |
| -040..... | LABEL TOP | +0000..... | LABEL TOP |
| +0000..... | LEFT POSITION | 072..... | WEB S. |
| 016..... | WEB S. | 072..... | MEDIA S. |
| 064..... | MEDIA S. | 073..... | RIBBON S. |
| 071..... | RIBBON S. | 066..... | TAKE LABEL |
| 061..... | TAKE LABEL | 007..... | MEDIA LED |
| 017..... | MEDIA LED | 000..... | RIBBON LED |
| 132..... | RIBBON LED | +10..... | LCD ADJUST |
| +10..... | LCD ADJUST | DPSWFXM..... | MODES ENABLED |
| DPSWFXM..... | MODES ENABLED | DPSWFXM..... | MODES DISABLED |
| 1984 12/MM FULL..... | RESOLUTION | 832 8/MM FULL..... | RESOLUTION |
| V44.12.4 <-..... | FIRMWARE | V44.12.4 <-..... | FIRMWARE |
| V22.0.0.54..... | HARDWARE ID | V23.0.0.54..... | HARDWARE ID |
| CUSTOMIZED..... | CONFIGURATION | CUSTOMIZED..... | CONFIGURATION |
| 3584k.....R: | RAM | NONE.....A: | COMPACT FLASH |
| 3584k.....R: | RAM | 3584k.....R: | RAM |
| 2560k.....E: | ONBOARD FLASH | NONE.....B: | MEMORY CARD |
| NONE.....E: | ONBOARD FLASH | 0512k.....E: | ONBOARD FLASH |
| NONE..... | FORMAT CONVERT | NONE..... | FORMAT CONVERT |
| 000 DISPLAY..... | P30 INTERFACE | 000 DISPLAY..... | P30 INTERFACE |
| VALUE PEEL REWIND..... | OPTION | LINER TAKEUP..... | OPTION |
| FW VERSION..... | IDLE DISPLAY | FW VERSION..... | IDLE DISPLAY |
| 02/13/01..... | RTC DATE | 01/13/97..... | RTC DATE |
| 08:25..... | RTC TIME | 07:13..... | RTC TIME |
| NONE..... | ZEBRA NET II | NONE..... | ZEBRA NET II |
| AV31890.03JDR050114.33008.01.VH1 | | | |

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4. Did the configuration label print correctly?

| If the label... | Then... |
|--|---|
| Printed correctly | 1. Go to Configuration on page 49 . |
| Did not print or is aligned improperly | 1. Review the following items in the order shown. Do only as many steps as needed to solve the printing problem. <ul style="list-style-type: none">• 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 17. 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 38.• Configure the printer according to the directions given in Basic Configuration on page 53.• Check the position of the media sensor and move if necessary. Follow the directions in Position the Label Sensor on page 84. |

Print a Network Configuration Label

If you are using a print server, you can print a network configuration label after the printer is hooked to the network. A network configuration label lists the settings for the wired ZebraNet PrintServer II (PSII) and the ZebraNet Wireless Print Server (if installed).

To print a network configuration label, complete these steps:

1. From the front panel, press **SETUP/EXIT**.
2. Scroll through the parameters until you reach **LIST NETWORK**.
3. Confirm printing.

A network configuration label prints (Figure 29).

Figure 29 • Network Configuration Label

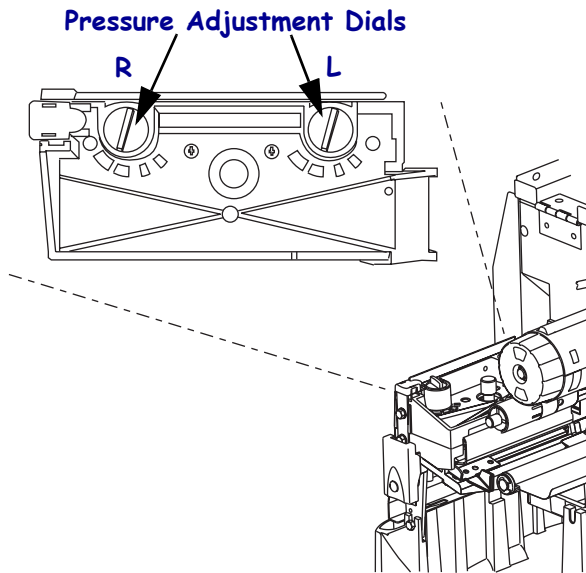
| Network Configuration | |
|--|------------------|
| Zebra Technologies ZTC Z4MPlus-200dpi | |
| Wired | |
| ALL..... | IP PROTOCOL |
| 000.000.000.000..... | IP ADDRESS |
| 000.000.000.000..... | SUBNET MASK |
| 000.000.000.000..... | DEFAULT GATEWAY |
| 000.000.000.000..... | WINS SERVER IP |
| YES..... | TIMEOUT CHECKING |
| 0000..... | TIMEOUT VALUE |
| 0000..... | ARP INTERVAL |
| 9100..... | BASE RAW PORT |
| Wireless | |
| ALL..... | IP PROTOCOL |
| 192.168.001.176..... | IP ADDRESS |
| 255.255.255.000..... | SUBNET MASK |
| 192.168.001.001..... | DEFAULT GATEWAY |
| 000.000.000.000..... | WINS SERVER IP |
| YES..... | TIMEOUT CHECKING |
| 0000..... | TIMEOUT VALUE |
| 0000..... | ARP INTERVAL |
| 9100..... | BASE RAW PORT |
| | DHCP OPTION 61 |
| YES..... | CARD INSERTED |
| 014DH..... | CARD MFG ID |
| 0001H..... | CARD PRODUCT ID |
| 00a0f83b383e..... | MAC ADDRESS |
| YES..... | DRIVER INSTALLED |
| INFRASTRUCTURE..... | OPERATING MODE |
| 125..... | ESSID |
| 100..... | TX POWER |
| ON..... | 1 Mb/s |
| ON..... | 2 Mb/s |
| ON..... | 5.5 Mb/s |
| ON..... | 11 Mb/s |
| 11 Mb/s..... | CURRENT TX RATE |
| DIVERSITY..... | RECEIVE ANTENNA |
| DIVERSITY..... | XMIT ANTENNA |
| OPEN..... | AUTH. TYPE |
| OFF..... | ENCRYPTION MODE |
| 1..... | ENCRYPT. INDEX |
| 020..... | PODR SIGNAL |
| LONG..... | PREAMBLE |
| YES..... | ASSOCIATED |
| 2004-04-19 15:45:38 | TIME STAMP |

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Adjust Printhead Pressure

See [Figure 30](#). This adjustment may be necessary if printing is too light on one side or if thick media is used.

Figure 30 • Printhead Pressure Adjustment Dials



The pressure adjustment dials for the Z4Mplus 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. The same is true for the Z6Mplus, except it has seven positions.

Set Printhead Pressure

Depending on which printer you have, use [Table 6](#) or [Table 7](#) 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 • Z4Mplus 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 |

Table 7 • Z6Mplus Printhead Pressure

| Media Width | Left Dial | Right Dial |
|--------------------------------|------------------|-------------------|
| 2 in. (50 mm) | 6 | 1 |
| 3 in. (75 mm) | 6 | 2 |
| 4 in. (100 mm) | 7 | 3 |
| 5 in. (125 mm) | 7 | 4 |
| 5.5 in. and up (140 mm and up) | 6 | 6 |

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.

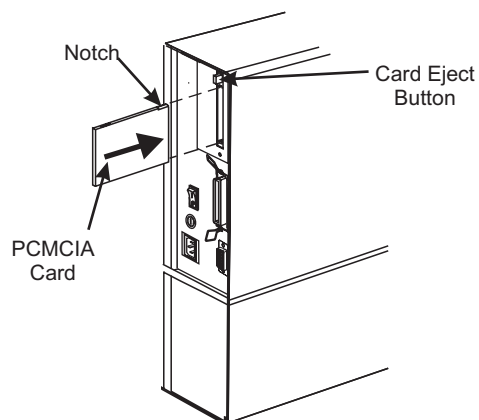


Note • The PCMCIA card is hot-swappable. It can be installed while the printer is On (I).

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 31](#)). Insert the card far enough to cause the eject button to pop out.

Figure 31 • Installing the PCMCIA Card



3. Reinstall the PCMCIA card shield over the PCMCIA card and card slot.
The printer is now ready to operate with the additional memory or font option.



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



Configuration

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

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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 95 for more information), the front panel displays **PRINTER READY**. Use the front panel display and the four keys directly below it to set printer parameters for your application.



Note • Printers that are operating on an IP network can be quickly configured in the following ways:

- with the ZebraLink™ WebView (ZebraNet® PrintServer II required). For information, see the *ZebraNet Networking: PrintServer II Installation and User Guide*.
- with the SetWLAN configuration utility (ZebraNet Wireless Print Server required). For information, see the *ZebraNet Wireless Print Server User 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 **SAVE CHANGES** display appears.
2. Press **PLUS (+)** or **MINUS (-)** to scroll through the choices ([Table 8](#)):

Table 8 • Save Options When Leaving Setup Mode

| LCD Display | Description |
|----------------|--|
| PERMANENT | Permanently saves the changes. Values are stored in the printer even when power is turned off. |
| TEMPORARY | Saves the changes until you change them again or until power is turned off. |
| CANCEL | Cancels all changes from the time you pressed SETUP/EXIT except the darkness and tear-off settings (if they were changed). |
| LOAD DEFAULTS | Sets all parameters other than the network settings back to the factory defaults. To see the factory default values, see Configuration and Calibration LCD Displays on page 57 . Note • Loading factory defaults causes the printer to auto-calibrate. |
| LOAD LAST SAVE | Loads values from the last permanent save. |
| DEFAULT NET | Sets the wired and wireless network settings back to factory defaults. |

3. Press **SELECT** to select the displayed choice.
4. 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.



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

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

Password-Protect All Parameters You have the option of making all parameters password protected. Refer to the Password Level parameter for details.

Disable Password You can disable the password protection feature to no longer prompt for a password by setting the password to $\emptyset\emptyset\emptyset\emptyset$ via the \wedge KP \emptyset ZPL/ZPL II command. To reenable the password-protection feature, send the ZPL/ZPL II command \wedge KPx, where x can be any number that is one to four digits in length, except \emptyset (zero).

To enter a password, complete these steps:

1. From the front panel, enter a four-digit password at the **ENTER PASSWORD** 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.

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 3 on page 3](#) to familiarize yourself with the front panel controls.

Refer to [Configuration and Calibration LCD Displays on page 57](#) 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**.
DARKNESS displays.

Adjust Darkness

2. Is the printed image too dark or too light? Or does the ribbon stick to the media?

| If... | Then... |
|-------|---|
| No | <ol style="list-style-type: none"> 1. Press PLUS (+) to move to the next option: PRINT SPEED. 2. Continue with Adjust Image Crispness and Print Speed. |
| Yes | <ol style="list-style-type: none"> 1. Press SELECT. 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. 3. Press SELECT to accept the change. 4. Press PLUS (+) to move to the next option. PRINT SPEED displays. 5. Continue with Adjust Image Crispness and Print Speed. |

Adjust Image Crispness and Print Speed

3. Is the printed image crisp?

| If... | Then... |
|-------|---|
| Yes | <ol style="list-style-type: none"> 1. Press PLUS (+) to move to the next option: TEAR-OFF. 2. Continue with Adjust Tear-Off Position. |
| No | <p>Slow down the print speed by completing the following steps. Print speed is given in inches per second (ips).</p> <ol style="list-style-type: none"> 1. Press SELECT. 2. Press PLUS (+) to increase the speed or MINUS (-) to decrease the speed. 3. Press SELECT to accept the changes. 4. Press PLUS (+) to move to the next option. TEAR OFF 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... | Then... |
|------------|---|
| Yes | <ol style="list-style-type: none"> 1. Press PLUS (+) to move to the next option: PRINT MODE. 2. Continue with <i>Select Print Mode</i>. |
| No | <ol style="list-style-type: none"> 1. Continue with <i>Step 5</i>. |

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

| If... | Then... |
|------------|--|
| Yes | <ol style="list-style-type: none"> 1. Press PLUS (+) to move to the next option: PRINT MODE. 2. Continue with <i>Select Print Mode</i>. |
| No | <ol style="list-style-type: none"> 1. Press SELECT. 2. Press PLUS (+) to move the label forward or MINUS (-) to move the label backward. Repeat this until the label lines up correctly. 3. Press SELECT to accept the changes. 4. Press PLUS (+) to move to the next option. PRINT MODE displays. Continue with <i>Select Print Mode</i>. |

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... | Then... |
|------------|---|
| Yes | <ol style="list-style-type: none"> 1. Press PLUS (+) to move to the next option: MEDIA TYPE. 2. Continue with <i>Select Media Type</i>. |
| No | <p>Review the media and the printer options, then complete the following steps:</p> <ol style="list-style-type: none"> 1. Press SELECT. 2. Press PLUS (+) or MINUS (-) to scroll through the setting options. Stop at the setting that matches your printer options (Tear-Off, Peel-Off, Cutter, or Rewind). 3. Press SELECT to accept the change. 4. Press PLUS (+) to move to the next option. MEDIA TYPE displays. Continue with <i>Select Media Type</i>. |

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... | Then... |
|-------|--|
| Yes | <ol style="list-style-type: none"> 1. Press PLUS (+) to move to the next option: <code>SENSOR TYPE</code>. 2. Continue with Select Sensor Type. |
| No | <ol style="list-style-type: none"> 1. Press SELECT. 2. Press PLUS (+) or MINUS (-) to scroll through the setting options. Stop at the setting that matches your printer options (Continuous or Noncontinuous). 3. Press SELECT to accept the change. 4. Press PLUS (+) to move to the next option. <code>SENSOR TYPE</code> displays. Continue with Select Sensor Type. |

Select Sensor Type

Web sensor is used with most labels, unless the label liner has black marks on the back. For more information on black mark labels, see [Non-Continuous Media on page 16](#).

8. Does your liner have black marks?

| If... | Then... |
|-------|---|
| No | <ol style="list-style-type: none"> 1. Press PLUS (+) to move to the next option: <code>SENSOR SELECT</code>. 2. Continue with Sensor Select. |
| Yes | <ol style="list-style-type: none"> 1. Press SELECT. 2. Press PLUS (+) or MINUS (-) to scroll through the setting options. Stop at the setting that matches your printer options (Web or Mark). 3. Press SELECT to accept the change. 4. Press PLUS (+) to move to the next option. <code>SENSOR SELECT</code> displays. Continue with Sensor Select. |

Sensor Select

Auto Select is the default setting. Do not make any changes.

9. Press **PLUS (+)** to move to the next option.
`PRINT METHOD` 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.

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

| If... | Then... |
|------------|--|
| Yes | 1. Continue with <i>Save Changes and Exit</i> . |
| No | 1. Press SELECT . 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). 3. Press SELECT to accept the change. 4. Continue with <i>Save Changes and Exit</i> . |

Save Changes and Exit

11. Press **SETUP/EXIT** to leave the front panel menu.
SAVE CHANGES PERMANENT displays. For other save options, see [Exit Configuration Mode on page 51](#).
12. Press **SETUP/EXIT** again.
SAVING PERMANENT displays. One or more labels may feed out, depending on your settings. The LCD displays PRINTER READY.

Configuration and Calibration LCD Displays

Table 9 shows 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. Table 10 on page 72 shows the front panel parameters that display when an optional print server is installed.

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 53 for information on changing just the basic print settings.

Table 9 • Printer Parameters and Other LCD Displays (Sheet 1 of 15)

| Parameter | Action/Explanation |
|-------------|---|
| DARKNESS | <p>Adjusting Print Darkness</p> <p>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.</p> <p>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 <i>FEED Self Test</i> on page 98.</p> <p>You may want to adjust the printer's darkness while performing the <i>PAUSE Self Test</i> on page 97. Because the darkness setting takes effect immediately, you can see the results on labels that are currently printing during the test.</p> <p>Default: +10 Range: 0 to +30</p> <ol style="list-style-type: none"> 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. |
| PRINT SPEED | <p>Adjusting Print Speed</p> <p>Speed is measured in inches per second (ips).</p> <p>Default: 2 ips</p> <ol style="list-style-type: none"> 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 9 • Printer Parameters and Other LCD Displays (Sheet 2 of 15)

| Parameter | Action/Explanation |
|------------------|--|
| TEAR OFF | <p>Adjusting the Tear-Off Position</p> <p>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.</p> <p>Default: +0</p> <p>Range: –120 to +120</p> <ol style="list-style-type: none"> 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. |
| PRINT MODE | <p>Selecting Print Mode</p> <p>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.</p> <p>Default: Tear-off</p> <p>Selections: Tear-off, cutter, peel-off, rewind</p> <ol style="list-style-type: none"> 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 TYPE | <p>Setting Media Type</p> <p>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).</p> <p>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).</p> <p>Default: Non-Continuous</p> <p>Selections: Non-Continuous, Continuous</p> <ol style="list-style-type: none"> 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. |
| SENSOR TYPE | <p>Setting the Sensor Type</p> <p>This parameter tells the printer whether you are using media with a web (gap or space between labels, notch, or hole) to indicate the separation between labels or if you are using media with a black mark printed on the back. If your media does not have black marks on the back, leave your printer at the default setting (web).</p> <p>Default: Web</p> <p>Selections: Web, mark</p> <ol style="list-style-type: none"> 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 9 • Printer Parameters and Other LCD Displays (Sheet 3 of 15)

| Parameter | Action/Explanation |
|---------------|---|
| SENSOR SELECT | <p>Selecting Sensor</p> <p>This parameter tells the printer the sensor that you wish to use. Auto Select is compatible with most types of media. However, if you encounter difficulties with calibration, see Types of Media on page 15 to help you choose the appropriate sensor for your media. Select the reflective sensor with either continuous or non-continuous black mark media; choose the transmissive sensor if you are using noncontinuous web media.</p> <p>Default: Auto select</p> <p>Selections: Auto select, reflective, transmissive</p> <ol style="list-style-type: none"> 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. |
| PRINT METHOD | <p>Selecting Print Method</p> <p>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).</p> <p>Selecting direct thermal when using thermal transfer media and ribbon creates a warning condition, but printing continues.</p> <p>Default: Thermal transfer</p> <p>Selections: Thermal transfer, direct thermal</p> <ol style="list-style-type: none"> 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. |
| PRINT WIDTH | <p>Setting Print Width</p> <p>Print width determines the printable area across the width of the label.</p> <p>Default, Range: The default and range of acceptable values may vary depending on what printer you have. See Printing Specifications on page 111 for further information about the ranges available for your model.</p> <ol style="list-style-type: none"> 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. |

Table 9 • Printer Parameters and Other LCD Displays (Sheet 4 of 15)

| Parameter | Action/Explanation |
|------------------|--|
| MAXIMUM LENGTH | <p>Setting Maximum Length</p> <p>Always set the value to at least 1 in. (25.4 mm) longer than the longest label to be used in the printer.</p> <p>Default: 39 in. (991 mm) for non-continuous material</p> <ol style="list-style-type: none"> 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. |
| LIST FONTS | <p>List Fonts</p> <p>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.</p> <ol style="list-style-type: none"> 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 | <p>List Bar Codes</p> <p>This selection is used to print a label that lists all of the bar codes currently available in the printer.</p> <ol style="list-style-type: none"> 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 | <p>List Images</p> <p>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.</p> <ol style="list-style-type: none"> 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 | <p>List Formats</p> <p>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.</p> <ol style="list-style-type: none"> 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 | <p>List Setup</p> <p>This selection is used to print a configuration label, which lists the current printer configuration information. (Same label as Figure 40 on page 96.)</p> <ol style="list-style-type: none"> 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a configuration label. 3. Press SELECT to deselect the parameter. |

Table 9 • Printer Parameters and Other LCD Displays (Sheet 5 of 15)

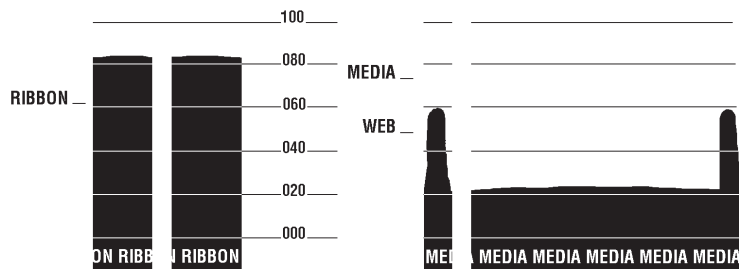
| Parameter | Action/Explanation |
|-------------------------------|--|
| LIST NETWORK | <p>List Network Settings</p> <p>This selection is used to print a network configuration label, which lists the settings for the wired ZebraNet PrintServer II (PSII) and the ZebraNet Wireless Print Server (if installed). (Same label as Figure 29 on page 45.)</p> <ol style="list-style-type: none"> 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a network configuration label. 3. Press SELECT to deselect the parameter. |
| LIST ALL | <p>List All Settings</p> <ol style="list-style-type: none"> 1. Press SELECT to select the parameter. 2. Press PLUS (+) to print a label listing all of the available fonts, bar codes, images, formats, the current printer configuration, and the current network settings. 3. Press SELECT to deselect the parameter. |
| FORMAT CARD A B | <p>Initialize Memory Card</p> <p>Caution • Perform this operation only when it is necessary to erase all previously stored information from the optional memory card.</p> <ol style="list-style-type: none"> 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 ARE YOU SURE?. 4. Press MINUS (–) to select NO and cancel the request. The INITIALIZE CARD prompt is displayed. OR Press PLUS (+) to select YES and begin initialization. FORMATTING CARD displays. Depending on the amount of memory in the memory card, initialization may take up to three minutes to complete. When formatting is complete, FORMAT CARD displays. 5. Press SELECT to continue with the next prompt. |

Table 9 • Printer Parameters and Other LCD Displays (Sheet 6 of 15)

| Parameter | Action/Explanation |
|----------------|---|
| INIT FLASH MEM | <p>Initialize Flash Memory</p> <p>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.</p> <ol style="list-style-type: none"> 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 INITIALIZE FLASH?. Press PLUS (+) to select YES. The front panel LCD asks ARE YOU SURE?. Press MINUS (–) to select NO and cancel the request. The INITIALIZE FLASH prompt is displayed. or Press PLUS (+) to select YES 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 CHECKING E: MEMORY and PRINTER IDLE. When initialization is complete, the printer automatically exits the configuration mode and the front panel displays PRINTER READY. Press SELECT to continue with the next prompt. |

| | |
|----------------|--|
| SENSOR PROFILE | <p>Sensor Profile</p> <p>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.</p> |
|----------------|--|

Figure 32 • Media Sensor Profile



- Press SELECT to select the parameter.
- Press PLUS (+) to print a media sensor profile.
- Press SELECT to deselect the parameter.

Table 9 • Printer Parameters and Other LCD Displays (Sheet 7 of 15)

| Parameter | Action/Explanation |
|------------------|---|
| MEDIA AND RIBBON | <p>Media and Ribbon Sensor Calibration (Manual Calibration)</p> <p>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.</p> <ol style="list-style-type: none"> 1. Press SELECT to display CALIBRATE. 2. Press PLUS (+) to start the calibration procedure. LOAD BACKING 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 (-). REMOVE RIBBON 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 (-). CALIBRATING PLEASE WAIT 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. RELOAD ALL 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. MEDIA AND RIBBON 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 62. 12. Press SELECT to deselect the parameter. |

Table 9 • Printer Parameters and Other LCD Displays (Sheet 8 of 15)

| Parameter | Action/Explanation |
|---|---|
| <p>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.</p> | |
| PARALLEL COMM. | <p>Setting Parallel Communications Note • Unidirectional will not support ZebraNet two-way communications. Default: BIDIRECTIONAL Selections: BIDIRECTIONAL, UNIDIRECTIONAL</p> <ol style="list-style-type: none"> 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. |
| SERIAL COMM | <p>Setting Serial Communications Select the communications port that matches the one being used by the host computer. Default: RS232 Selections: RS232, RS422/485, RS485MULTIDROP</p> <ol style="list-style-type: none"> 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. |
| BAUD | <p>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</p> <ol style="list-style-type: none"> 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. |
| DATA BITS | <p>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 • This parameter must be set to 8 BITS to use Code Page 850. Default: 8 BITS Selections: 7 BITS, 8 BITS</p> <ol style="list-style-type: none"> 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. |

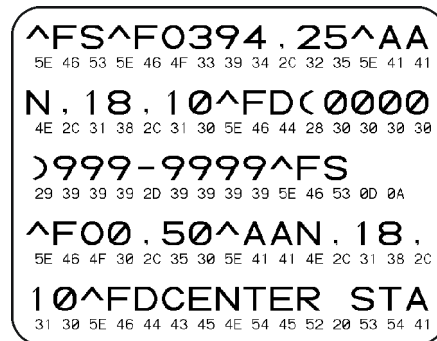
Table 9 • Printer Parameters and Other LCD Displays (Sheet 9 of 15)

| Parameter | Action/Explanation |
|-------------------|---|
| PARITY | <p>Setting Parity</p> <p>The parity of the printer must match the parity of the host computer for accurate communications to take place. Select the parity that matches the one being used by the host computer.</p> <p>Default: NONE</p> <p>Selections: NONE, ODD, EVEN</p> <ol style="list-style-type: none"> 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. |
| HOST HANDSHAKE | <p>Setting Host Handshake</p> <p>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.</p> <p>Default: XON/XOFF</p> <p>Selections: XON/XOFF, DSR/DTR, RTS/CTS</p> <ol style="list-style-type: none"> 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. |
| PROTOCOL | <p>Setting Protocol</p> <p>Protocol is a type of error checking system. Depending on the selection, an indicator may be sent from the printer to the host computer signifying that data has been received. Select the protocol that is requested by the host computer. Further details on protocol can be found in the <i>ZPL II Programming Guide Volume I</i>.</p> <p>Default: NONE</p> <p>Selections: NONE, ZEBRA, ACK_NAK</p> <p>ZEBRA is the same as ACK_NAK except that ZEBRA response messages are sequenced. If ZEBRA is selected, set the host handshake protocol to DSR/DTR.</p> <ol style="list-style-type: none"> 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. |
| NETWORK ID | <p>Setting Network ID</p> <p>Network ID is used to assign a unique number to a printer used in an RS-422/RS-485 network, which 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.</p> <p>Default: 000</p> <p>Range: 000 to 999</p> <ol style="list-style-type: none"> 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 9 • Printer Parameters and Other LCD Displays (Sheet 10 of 15)

| Parameter | Action/Explanation |
|----------------|---|
| COMMUNICATIONS | <p>Setting Communication Diagnostics Mode</p> <p>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 33.</p> |

Figure 33 • 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 59](#) for more information.

Table 9 • Printer Parameters and Other LCD Displays (Sheet 11 of 15)

| Parameter | 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 | <p>Control Prefix Character</p> <p>The printer looks for this 2-digit hex character to indicate the start of a ZPL/ZPL II control instruction.</p> <p>Default: 7E (tilde - displayed as a black square)</p> <p>Range: 00 to FF</p> <ol style="list-style-type: none"> 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 | <p>Format Prefix Character</p> <p>The printer looks for this 2-digit hex character to indicate the start of a ZPL/ZPL II format instruction.</p> <p>Default: 5E (caret)</p> <p>Range: 00 to FF</p> <ol style="list-style-type: none"> 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 CHAR | <p>Delimiter Character</p> <p>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.</p> <p>Default: 2C (comma)</p> <p>Range: 00 to FF</p> <ol style="list-style-type: none"> 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 9 • Printer Parameters and Other LCD Displays (Sheet 12 of 15)

| Parameter | Action/Explanation |
|------------------|---|
| ZPL MODE | <p>Selecting ZPL Mode</p> <p>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.</p> <p>Default: ZPL II</p> <p>Selections: ZPL II, ZPL</p> <ol style="list-style-type: none"> 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 | <p>Media Power Up</p> <p>Establishes the action of the media when the printer is turned on.</p> <p>Default: CALIBRATION</p> <p>Selections:</p> <ul style="list-style-type: none"> • 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. <ol style="list-style-type: none"> 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 | <p>Head Close</p> <p>Determines the action of the media after the printhead has been opened and then closed.</p> <p>Default: Calibration</p> <p>Selections:</p> <ul style="list-style-type: none"> • 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. <ol style="list-style-type: none"> 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 9 • Printer Parameters and Other LCD Displays (Sheet 13 of 15)

| Parameter | Action/Explanation |
|---------------|--|
| BACKFEED | <p>Backfeed Sequence</p> <p>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>).</p> <p>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.</p> <p>Default: Default (90%)</p> <p>Selections: Default, after, before, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, off</p> <ol style="list-style-type: none"> 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. |
| LABEL TOP | <p>Adjusting Label Top Position</p> <p>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).</p> <p>Default: +0</p> <p>Range: –120 to +120 dot rows</p> <ol style="list-style-type: none"> 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. |
| LEFT POSITION | <p>Adjusting Left Position</p> <p>This parameter establishes how far from the left edge of a label the format begins to print by adjusting horizontal positioning on the label. Positive numbers adjust the printing to the left by the number of dots selected; negative numbers shift printing to the right.</p> <p>Default: 0000</p> <p>Range: –9999 to +9999</p> <ol style="list-style-type: none"> 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. |

Table 9 • Printer Parameters and Other LCD Displays (Sheet 14 of 15)

| Parameter | Action/Explanation |
|--|---|
| WEB S. MEDIA S. RIBBON S. TAKE LABEL MEDIA LED RIBBON LED | <p>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.</p> <p>Press PLUS (+) repeatedly to skip these parameters.</p> |
| LCD ADJUST | <p>LCD Display Adjustment</p> <p>This parameter allows you to adjust the brightness of your display if your display is difficult to read.</p> <p>Range: 0 to 19</p> <ol style="list-style-type: none"> 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. |
| FORMAT CONVERT | <p>Format Convert</p> <p>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.</p> <p>Example: If your original formats were written for a 150 dpi printer and your new printer is 300 dpi, you would choose 150→300.</p> <p>Default: None</p> <p>Selections: None, 150→300, 150→600, 200→600, 300→600</p> <ol style="list-style-type: none"> 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 | <p>Idle Display</p> <p>If a real-time clock (RTC) is installed, this parameter selects the LCD options for the RTC.</p> <p>Default: FW Version</p> <p>Selections: FW Version, MM/DD/YY 24HR, MM/DD/YY 12HR, DD/MM/YY 24HR, DD/MM/YY 12HR</p> <ol style="list-style-type: none"> 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 | <p>RTC Date</p> <p>If the RTC is installed, this parameter allows changing of the date.</p> <ol style="list-style-type: none"> 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 9 • Printer Parameters and Other LCD Displays (Sheet 15 of 15)

| Parameter | Action/Explanation |
|-----------------------------|---|
| RTC TIME | <p>RTC Time If the RTC is installed, this parameter allows changing of time.</p> <ol style="list-style-type: none"> 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. |
| PASSWORD LEVEL ¹ | <p>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.</p> <p>Default: Selected items Selections: Selected items, all items</p> <ol style="list-style-type: none"> 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. |
| LANGUAGE | <p>Selecting the Display Language This parameter allows you to change the language used on the front panel display.</p> <p>Default: English Selections: English, Spanish, French, German, Italian, Norwegian, Portuguese, Swedish, Danish, Spanish2, Dutch, Finnish, Japan</p> <ol style="list-style-type: none"> 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. |

¹ Appears when a ZebraNet wired or wireless print server is installed.

ZebraNet® Wired and Wireless Print Server LCD Displays

The menu options shown in [Table 10](#) display only if you have the ZebraNet PrintServer II, 10/100 PrintServer, or Wireless Print Server installed.

Table 10 • Print Server LCD Displays

| LCD | Explanation |
|------------------------------|--|
| IP PROTOCOL ¹ | <p>IP Protocol</p> <p>Allows either the user (permanent) or the server (dynamic) to select the IP address. If a dynamic option is chosen, this selection determines the method(s) by which the print server (wired or wireless) receives the IP address from the server.</p> <ul style="list-style-type: none"> • Press the right or left oval to display other choices. <p>Default: ALL</p> <p>Selections: ALL, GLEANING ONLY, RARP, BOOTP, DHCP, DHCP AND BOOTP, PERMANENT</p> <p>Note • Use of GLEANING ONLY is not recommended when the Wireless Print Server is installed.</p> |
| IP ADDRESS ¹ | <p>IP Address</p> <p>This parameter allows you to select the IP address if PERMANENT was chosen in IP PROTOCOL. (If a dynamic option was chosen, the user cannot select the address.)</p> <ol style="list-style-type: none"> 1. Press the left oval to move to the next digit position. 2. Press the right oval to increase the value of the digit. |
| SUBNET MASK ¹ | <p>Subnet Mask</p> <p>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.</p> <ol style="list-style-type: none"> 1. Press the left oval to move to the next digit position. 2. Press the right oval to increase the value of the digit. |
| DEFAULT GATEWAY ¹ | <p>Default Gateway</p> <p>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.</p> <ol style="list-style-type: none"> 1. Press the left oval to move to the next digit position. 2. Press the right oval to increase the value of the digit. |
| MAC ADDRESS ^{2,3} | <p>MAC Address</p> <p>This parameter cannot be changed through the front panel.</p> |
| ESSID ^{2,3} | <p>ESSID</p> <p>This parameter cannot be changed through the front panel.</p> |

- 1 These parameters appear after the system recognizes the existence of a ZebraNet print server (wired or wireless). After the print server is recognized, all zeroes (000.000.000.000) will display until the printer obtains an IP address or defaults to address 192.168.254.254.
- 2 Appears only when the ZebraNet Wireless Print Server is installed.
- 3 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.
- 4 This parameter appears 1) when no wireless card is inserted or 2) when the wireless card is associated to the WLAN and the card supports LEAP.

Table 10 • Print Server LCD Displays (Continued)

| LCD | Explanation |
|---------------------------------|---|
| AUTH. TYPE ^{2,3} | <p>Authentication Type Default: OPEN Selections: OPEN, SHARED</p> |
| LEAP MODE ^{3,4} | <p>An encryption method that is available with some wireless cards. Set the LEAP user name and password through the printer web pages. <i>Accepted Values:</i> ON, OFF <i>Default Value:</i> OFF</p> |
| ENCRYPTION MODE ^{2,3} | <p>Encryption Mode Default: OFF Selections: OFF, 40-BIT, 128-BIT</p> |
| ENCRYPTION INDEX ^{2,3} | <p>Encryption Index Default: 1 Selections: 1, 2, 3, 4</p> |
| RESET NETWORK ^{1,3} | <p>Reset Network This option resets the wireless card and the print server when the wireless option is running. Selecting this option has no effect when the wireless option is not running, when there is no card inserted, or when the wireless password is anything other than the default (zero).</p> <ol style="list-style-type: none"> Press the right oval to select YES. The LCD prompts ARE YOU SURE?. <ul style="list-style-type: none"> Press the left oval to select NO to cancel the request. Press the right oval to select YES and reset the network. |

1 These parameters appear after the system recognizes the existence of a ZebraNet print server (wired or wireless). After the print server is recognized, all zeroes (000.000.000.000) will display until the printer obtains an IP address or defaults to address 192.168.254.254.

2 Appears only when the ZebraNet Wireless Print Server is installed.

3 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

4 This parameter appears 1) when no wireless card is inserted or 2) when the wireless card is associated to the WLAN and the card supports LEAP.



Routine Care and Adjustments

This chapter discusses printer cleaning and minor adjustments.

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Cleaning Procedures

Specific cleaning procedures are provided on the following pages. [Table 11](#) shows a recommended cleaning schedule.

Table 11 • Recommended Cleaning Schedule

| Area | Method | Interval | |
|--|---|---|---|
| Printhead | Solvent* | Direct Thermal Mode: After every roll of media (or 500 feet of fanfold media). | |
| Platen roller | Solvent* | | |
| Media sensors | Air blow | Thermal Transfer Mode: After every roll of ribbon or three rolls of media. | |
| Ribbon sensor | Air blow | | |
| Media path | Solvent* | These intervals are intended as guidelines only. You may have to clean more often, depending upon your application and media. | |
| Ribbon path | Solvent* | | |
| Pinch roller. (Optional peel-off option required. Refer to Clean the Peel-Off Assembly on page 81.) | Solvent* | | |
| Cutter Module | If cutting continuous, pressure-sensitive media | Solvent* | After every roll of media (or more often, depending upon your application and media). |
| | If cutting tag stock or label liner material | Solvent* and air blow | After every two or three rolls of media. |
| Tear-off/peel-off bar | Solvent* | Once a month. | |
| Take label sensor | Air blow | Once every six months. | |
| * Zebra recommends using the Preventive Maintenance Kit, Part Number 47362 or a solution of 90% Isopropyl and 10% deionized water) | | | |



Note • Zebra Technologies Corporation will not be responsible for damage caused by the use of cleaning fluids on the Z4Mplus/Z6Mplus printer.

Clean the Exterior

The exterior surfaces of the printer may be cleaned with a lint-free cloth. Do not use harsh or abrasive cleaning agents or solvents. If necessary, a mild detergent or desktop cleaner may be used sparingly.

Clean the Interior

Remove any accumulated dirt and lint from the interior of the printer using a soft bristle brush or vacuum cleaner.

Clean the Printhead and Platen Roller

You can minimize printhead wear and maintain print quality with regular preventive measures.

Over time, the movement of media/ribbon across the printhead wears through the protective ceramic coating, exposing and eventually damaging the print elements (dots). In order to avoid abrasion:

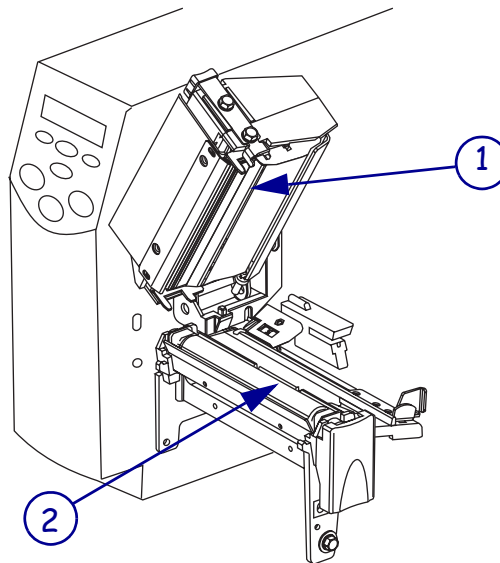
- Clean your printhead frequently and use well-lubricated thermal transfer ribbons with packagings optimized to reduce friction.
- Minimize printhead pressure and burn temperature settings by optimizing the balance between the two.
- Ensure that the thermal transfer ribbon is as wide or wider than the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

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



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

Figure 34 • Cleaning the Printhead and Platen Roller



| | |
|---|--------------------|
| 1 | Printhead Assembly |
| 2 | Platen Roller |

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

1. Refer to [Figure 34](#). Open the printhead assembly.



Caution • Ensure that the printhead is fully open and engaged in the up position. If the printhead is not latched in the up position, it could fall on your hand during the procedure.

2. Remove the media and ribbon.
3. Use the Preventive Maintenance Kit (Zebra part number 47362) or a solution of 90% Isopropyl alcohol and 10% deionized water and swab. Wipe along the print elements from end to end. The print elements are on the brown strip just behind the chrome strip on the printhead. Allow the solvent to evaporate.
4. Manually rotate the platen roller and clean thoroughly with solvent and a pad.
5. Brush or vacuum any accumulated paper lint and dust away from the media and ribbon paths.
6. Reload media or ribbon, and close the printhead assembly.

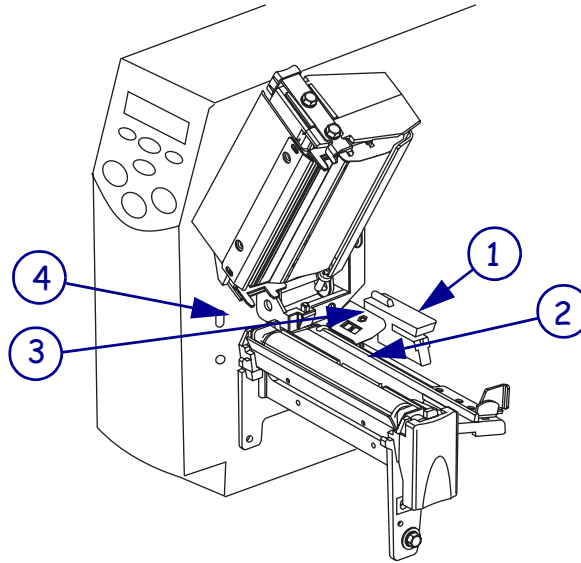


Note • If performing this procedure does not improve print quality, try cleaning the printhead with *Save-A-Printhead* cleaning film. This specially coated material removes contamination buildup without damaging the printhead. Call your authorized Zebra reseller for more information.

Clean the Sensors

Brush or vacuum any accumulated paper lint and dust away from the printer sensors. Refer to [Figure 35](#). The reflective sensor, transmissive sensor, and ribbon sensor should be cleaned on a regular basis to ensure proper operation of the printer. For printers with the peel-off, liner take-up, and/or rewind option(s) installed, clean the take label sensor as well.

Figure 35 • Cleaning the Sensors

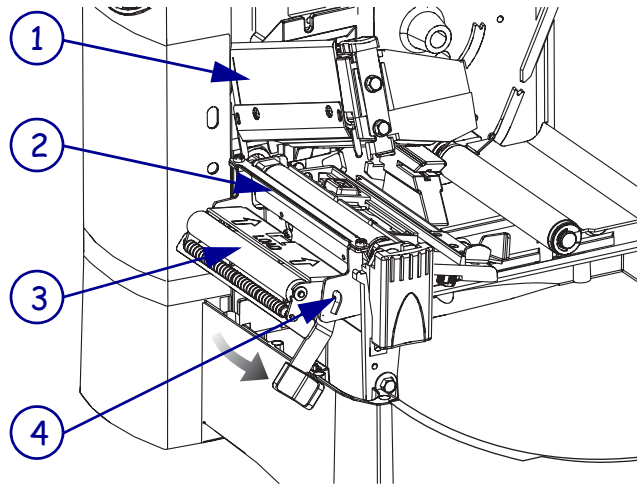


| | |
|----------|---------------------|
| 1 | Transmissive Sensor |
| 2 | Reflective Sensor |
| 3 | Ribbon Sensor |
| 4 | Take-Label Sensor |

Clean the Rewind Option

The Rewind option is required. Refer to [Figure 36](#) and perform the following procedure if adhesive buildup begins to affect peel performance.

Figure 36 • Cleaning the Rewind Option



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

To clean the Rewind option, complete these steps:

1. Open the printhead assembly.



Caution • Ensure that the printhead is fully open and engaged in the up position. If the printhead is not latched in the up position, it could fall on your hand during the procedure.

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



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

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

Clean the Peel-Off Assembly

The Peel-Off option is required.

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

1. Open the printhead assembly.



Caution • Ensure that the printhead is fully open and engaged in the up position. If the printhead is not latched in the up position, it could fall on your hand during the procedure.

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



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

5. Manually rotate the pinch roller and clean thoroughly with solvent and a swab.
6. Close the peel assembly.



Note • When cleaning the tear-off/peel-off bar or the pinch roller, remove excess solvent with a pad to ensure the solvent has dried before printing.

7. Close the printhead assembly.

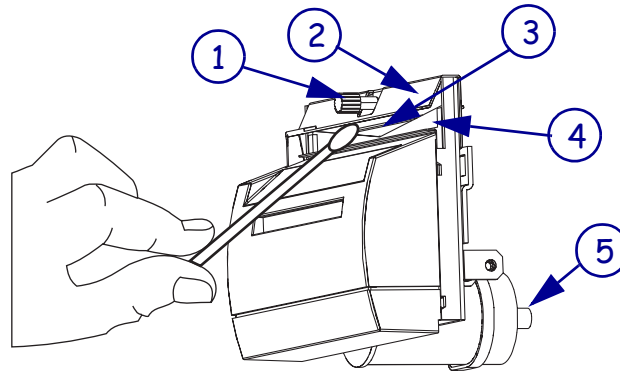
Clean the Cutter Module

Cutter option required.



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

Figure 37 • Cleaning the Cutter Module



| | |
|---|----------------------------|
| 1 | Thumbscrew and Lock Washer |
| 2 | Cutter Shield |
| 3 | Upper Cutter Blade |
| 4 | Lower Cutter Blade |

To clean the cutter module, complete these steps:

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



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

2. See [Figure 37](#). Using the Preventive Maintenance Kit (Zebra part number 47362) or a solution of 90% Isopropyl and 10% deionized water and swab, wipe along the upper cutter blade. Allow the solvent to evaporate.
3. To expose the lower cutter blade, turn the cutter motor thumbnut counterclockwise until you see the V-shaped lower cutter blade.
4. Using the Preventive Maintenance Kit (Zebra part number 47362) or a solution of 90% Isopropyl and 10% deionized water and swab, wipe along the lower cutter blade. Allow the solvent to evaporate.
5. Replace the cutter shield.
6. When you have finished cleaning the cutter module, plug in and turn on the printer. The lower cutter blade returns to its correct operating position.
7. If the cutter continues to perform unsatisfactorily, contact an authorized service technician.

Lubrication

No lubrication is needed for this printer.

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

Fuse Replacement

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



Electric Shock Caution • Before replacing the fuse, turn off the AC power switch, and unplug the AC power cord.

To replace the fuse, complete these steps:

1. To replace the fuse, insert the tip of a flat blade screwdriver into the slot in the end of the fuse holder end cap.
2. Press in slightly on the end cap and turn the screwdriver slightly counter clockwise. This disengages the end cap from the fuse holder and permits removal of the fuse.
3. To install a new fuse, remove the old fuse and insert the new fuse into the fuse holder.
4. Push the end cap in slightly, then insert the tip of a flat blade screwdriver into the slot in the end cap and turn clockwise to engage it.

Position the Label Sensor

There are two media sensors in this printer: reflective and transmissive.

Adjust the Reflective Sensor

The reflective sensor detects the start-of-label indicator (the notch, hole, black mark, or gap between die-cut labels).

The reflective sensor must be positioned:

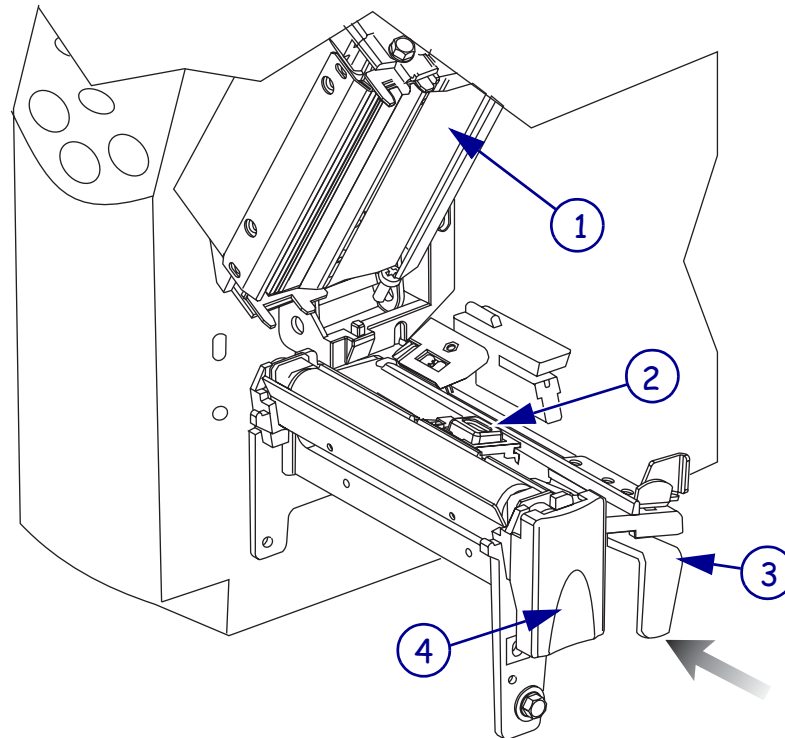
- directly under the notch, hole, or black mark
- anywhere along the width of the media if there is a gap between labels

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



Note • If you are using continuous media, position the reflective sensor anywhere under the media to detect an out-of-paper condition. The reflective sensor is compatible with most types of media. If you have difficulties with calibration, use the transmissive sensor. See [Select the Transmissive Sensor](#) on page 86.

Figure 38 • Adjusting the Reflective Sensor



| | |
|---|----------------------|
| 1 | Printhead Assembly |
| 2 | Reflective Sensor |
| 3 | Adjustment Lever |
| 4 | Printhead Open Lever |

To adjust the reflective sensor, complete these steps:



1. See [Figure 38](#). Open the printhead assembly by pressing the printhead open lever.

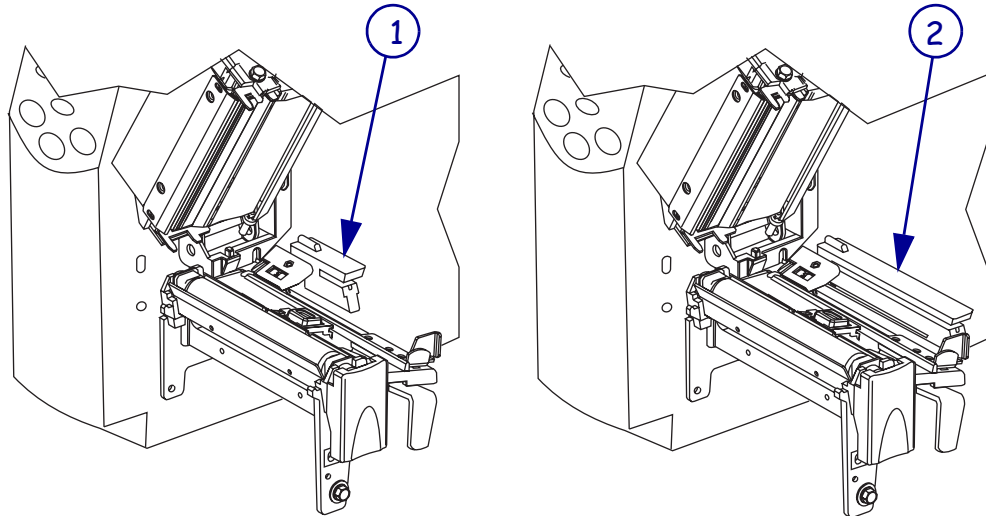
Caution • Ensure that the printhead is fully open and engaged in the up position. If the printhead is not latched in the up position, it could fall on your hand during the procedure.

2. Locate the reflective sensor positioning lever.
3. Move the reflective sensor positioning lever across the width of the media until the reflective sensor aligns with the gap or notch. The glow of the red light assists in the proper placement of the reflective sensor.
4. Close the printhead assembly.

Select the Transmissive Sensor

The standard transmissive sensor is in a fixed position and enabled from the front panel. For more detailed information, see [Selecting Sensor](#) on page 59.

Figure 39 • Location of Transmissive Sensors



| | |
|----------|---|
| 1 | Standard Transmissive Sensor |
| 2 | Adjustable Transmissive Sensor (optional) |



Troubleshooting

This chapter discusses typical problems and their probable solutions.

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LCD Error Conditions and Warnings

The LCD displays error condition messages and warnings if the printer detects a problem. The messages, along with their causes and solutions, are listed in [Table 12](#).

Table 12 • Error Conditions and Warnings

| Error | Potential Problem | Recommended Solution |
|--------------|---|--|
| RIBBON OUT | In thermal transfer mode, the ribbon is not loaded <i>or</i> loaded incorrectly. | Load the ribbon correctly. See Load the Ribbon on page 40 . |
| | In thermal transfer mode, the ribbon sensor is not sensing correctly loaded ribbon. | Perform the media and ribbon sensor calibration (see Media and Ribbon Sensor Calibration (Manual Calibration) on page 63). |
| RIBBON IN | In direct thermal mode, when ribbon is not used: | Remove the ribbon and set the printer to direct thermal mode. See Selecting Print Method on page 59 . |
| | | Ensure that the printer driver or software settings are correctly set. |
| PAPER OUT | The media is not loaded <i>or</i> loaded incorrectly. | Reload the media. See Load Roll Media on page 25 . |
| | The media sensor is not positioned properly. | Check the position of the reflective sensor. See Position the Label Sensor on page 84 . |
| | The printer is set for non-continuous media, but continuous media is loaded. | Either load the correct media or set the printer for the correct media type via the front panel. |
| | | Ensure that the printer driver or software settings are correctly set. |
| | | Calibrate the printer (see Media and Ribbon Sensor Calibration (Manual Calibration) on page 63). |
| | The incorrect media sensor is being used. | Via the front panel, locate the SENSOR SELECT menu item (see Selecting Sensor on page 59) and manually select the correct sensing method. |

Table 12 • Error Conditions and Warnings (Continued)




| Error | Potential Problem | Recommended Solution |
|-----------------|--|---|
| HEAD OPEN | The printhead is not fully closed. | Close the printhead. |
| | The ribbon is loaded incorrectly; it is covering the head open sensor. | Correctly align the ribbon with the guide mark on the strip plate before closing the printhead assembly. See <i>Position the Label Sensor on page 84</i> . |
| | Print method is incorrectly set. | Via the front panel, locate the PRINT METHOD menu item and select thermal transfer mode. See <i>Selecting Print Method on page 59</i> . Ensure that the printer driver and/or software settings are correctly set. |
| | The ribbon is loaded. | Remove the ribbon and set the printer to direct thermal mode. See <i>Selecting Print Method on page 59</i> . Ensure that the printer driver and/or software settings are correctly set. |
| HEAD OVER TEMP |  Caution • The printhead is hot and can cause severe burns. Allow the printhead to cool. | |
| | | The printhead is over temperature. Allow the printer to cool. Printing automatically resumes when the printhead elements cool to an acceptable operating temperature. |
| HEAD UNDER TEMP |  Caution • An improperly connected printhead data or power cable can cause this error message. The printhead can still be hot enough to cause severe burns. Allow the printhead to cool. | |
| | | The printhead is under temperature. Continue printing while the printhead reaches the correct operating temperature. The environment may be too cold for proper printing. Relocate the printer to a warmer area. |
| CUTTER JAM |  Caution • The cutter blade is sharp. Do not touch or rub the blade with your fingers. | |
| | | Cutter blade is in the media path. Turn off the printer power and unplug the printer. Inspect the cutter module for debris and clean as needed following the cleaning instructions in <i>Clean the Cutter Module on page 82</i>. |

Table 12 • Error Conditions and Warnings (Continued)

| Error | Potential Problem | Recommended Solution |
|----------------|--|--|
| OUT OF MEMORY* | *There is not enough memory to perform the function shown on the second line of the error message. | Insufficient DRAM for the label length, downloaded fonts/graphics, and images. Ensure that the device, such as FLASH memory or PCMCIA card, is installed and not write protected or full. Ensure that the data is not directed to a device that is not installed or available. |

Print Quality Problems

Table 13 • Print Quality Problems and Solutions

| Issue | Potential Problem | Recommended Solution |
|---|---|---|
| General print quality issues | You are using an incorrect media and ribbon combination for your application. | Consult your authorized reseller/distributor for information and advice. |
| | The printer is set at an excessive print speed to achieve optimal quality. | For optimal print quality, set the print speed to a lower setting via ZPL II, the driver, the software, or the front panel. |
| | The printer is set at an excessive darkness level to achieve optimal quality. | For optimal print quality, set the darkness level to a lower setting via the front panel, the driver, or the software. |
| | The printhead is dirty. | Clean the printhead according to the instructions in <i>Clean the Printhead and Platen Roller</i> on page 77. |
| | There is light printing (or no printing) on the left or right side of the label <i>or</i> the printed image is not sharp. | The pressure adjustment dials need to be adjusted. Follow the printhead pressure adjustment instructions on <i>Set Printhead Pressure</i> on page 46. |
| Gray lines on blank labels with no consistent pattern | The printhead is dirty. | Clean the printhead according to the instructions in <i>Clean the Printhead and Platen Roller</i> on page 77. |
| Light, consistent vertical lines running through all labels | The printhead or platen roller is dirty. | Clean the printhead, platen roller, or both according to the instructions in <i>Clean the Printhead and Platen Roller</i> on page 77. |
| Intermittent creases on the left and right edges of the label | There is too much pressure on the printhead. | Reduce the printhead pressure. See <i>Set Printhead Pressure</i> on page 46. |
| Wrinkled ribbon | The ribbon is not loaded correctly. | Load the ribbon correctly. See <i>Load the Ribbon</i> on page 40. |
| | The darkness setting is incorrect. | Set the darkness to the lowest possible setting for good print quality. See <i>DARKNESS</i> on page 57. |
| | Incorrect printhead pressure or balance. | Set the pressure to the minimum required for good print quality. See <i>Set Printhead Pressure</i> on page 46. |
| | The media is not feeding correctly. It is walking from side to side. | Make sure that the media guide and media supply guide touch the edge of the media. |

Calibration Problems

Table 14 • Calibration Problems and Solutions

| Problem | Recommended Solution |
|---|---|
| Loss of printing registration on labels.Excessive vertical drift in top-of-form registration. | Ensure that the media guides are properly positioned. |
| | Set the printer for the correct media type. See <i>MEDIA TYPE</i> on page 58. |
| | Adjust the reflective sensor position. See <i>Adjust the Reflective Sensor</i> on page 84. |
| | Via the front panel, locate the SENSOR SELECT menu item (see <i>SENSOR SELECT</i> on page 59) and manually select the correct sensing method. |
| | Reload the media. Check the reflective sensor position (see <i>Adjust the Reflective Sensor</i> on page 84). |
| Auto Calibrate failed. | Clean the platen roller according to the instructions in <i>Clean the Printhead and Platen Roller</i> on page 77. |
| | Perform a manual calibration (see <i>Media and Ribbon Sensor Calibration (Manual Calibration)</i> on page 63). |
| | Reload the media and ensure that the reflective sensor is properly positioned (see <i>Adjust the Reflective Sensor</i> on page 84). |

Communication Problems

Table 15 • Communication Problems and Solutions

| Issue | Potential Problem | Recommended Solution |
|---|---|--|
| The printer does not respond to print requests. The DATA light does not flash. | Loose or improperly connected cable. | Make sure that the communication cable is connected properly. |
| | The communication parameters are incorrect. | Check the printer driver or software communications settings. |
| | | Confirm that you are using the correct communication cable. See Cable Requirements on page 14 . |
| | | Via the front panel, check the protocol setting. It should be set to the default None. See Setting Protocol on page 65 . |
| Several labels print, then the printer skips, misplaces, misses, or distorts the image on the label after a label is sent to the printer. | The host is set to EPP parallel communications. | Change the settings on the computer host to standard parallel communications. |
| | The serial communication settings are incorrect. | Standard RS-232 cables are appropriate for lengths under 50 ft. (15.2 m); RS-422 and RS-485 cables allow serial transmission up to 4000 ft. (1.2 km). Check cable length and shielding, and confirm the appropriate RS-232, RS-422, or RS-485 setting is being used. |
| | | Check the printer driver or software communications settings. |
| A label format was sent to the printer but not recognized. The DATA light flashes but no printing occurs. | The prefix and delimiter characters set in the printer do not match the ones in the label format. | Verify the prefix and delimiter characters. See Selecting Prefix and Delimiter Characters (next three parameters) on page 67 . |
| | Incorrect data is being sent to the printer. | Check the communication settings on the computer. Ensure that they match the printer settings. |

Miscellaneous

Table 16 • Miscellaneous Problems and Solutions

| Issue | Recommended Solution |
|---|---|
| The printer is displaying a language that I cannot read. | <ol style="list-style-type: none">1. Press SETUP/EXIT to enter configuration mode.2. Press MINUS (-). The printer displays the LANGUAGE parameter in the current language. Even if you cannot recognize the characters in the current language, you can still scroll to another one.3. Use PLUS (+) or MINUS (-) to select another language.4. Press SETUP/EXIT twice to exit configuration mode and save the changes (if the language does not change, you need to scroll to a different save option by pressing SELECT).5. Reenter configuration mode and press MINUS (-) to see which language is displayed.6. Repeat this process, if necessary, until you reach the desired language. |

Printer Diagnostics

These self tests produce sample printouts and provide specific information that help determine the operating conditions for the printer.

Each self test is enabled by pressing a specific front panel key or combination of keys while turning the printer On (**I**). Press the key(s) until the DATA light turns off (approximately five seconds). When the Power-On Self Test is complete, the selected self test starts automatically.



Note • Keep the following in mind while performing self tests:

- When performing self tests, avoid sending a label format to the printer. In the case of a remote host, disconnect all data interface cables from the printer.
- When cancelling a self test prior to its actual completion, always turn the printer Off (**O**) and then back On (**I**) to reset the printer.
- When performing these self tests while in the Peel-Off Mode, you must remove the labels as they become available.
- If your media is not wide enough or long enough, unexpected or undesired results may occur. Ensure that your print width is set correctly for the media you are using before you run any self tests, otherwise the test may print on the platen roller. See [PRINT WIDTH on page 59](#) for information on setting the print width.

Power-On Self Test

A Power-On Self Test (POST) is performed automatically each time the printer is turned on. During this test sequence, the front panel lights and liquid crystal display (LCD) monitor the progress of the POST. If the printer fails any of these tests, the word FAILED is display. If this occurs, notify an authorized Zebra reseller.

CANCEL Self Test

This self test prints a listing of the configuration parameters currently stored in the printer's memory. See [Figure 40](#). Depending on the options ordered, your label may look different.

Figure 40 • Sample Configuration Labels

| 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 |
| <^> 5EH | 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 |
| 079 | 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 : 00.00.8a | RFID VERSION |
| ePC Class 1 | RFID TAG TYPE |
| GL12472.03JDR060127.79000.1.VH1 | |

FIRMWARE IN THIS PRINTER IS COPYRIGHTED

The configuration shown on the label may be changed either temporarily (for specific label formats or ribbon and label stock) or permanently (by saving the new parameters in memory). See [Basic Configuration on page 53](#) for further information about the configuration procedure.

To perform the CANCEL Self Test, complete these steps:

1. Turn the printer Off (O).
2. Press and hold CANCEL while turning On (I) the printer.
3. Release CANCEL after the DATA light turns off (approximately five seconds).

PAUSE Self Test

This self test can be used to provide the test labels required when making adjustments to the printer's mechanical assemblies or parameter settings. See the sample printout in [Figure 41](#).

Figure 41 • PAUSE Test Label



To perform the PAUSE Self Test, complete these steps:

1. Turn the printer Off (**O**).
2. Press and hold **PAUSE** while turning On (**I**) the printer.
3. Release **PAUSE** after the **DATA** light turns off (approximately five seconds).
The printer prints 15 labels at 2 in. (51 mm) per second, then automatically pauses. If **PAUSE** is pressed, an additional 15 labels print.
4. Press **CANCEL** while the printer is paused to alter the self test, then press **PAUSE**.
The printer prints 15 labels at 6 in. (152 mm) per second, then automatically pauses.
5. Press **CANCEL** again while the printer is paused to alter the self test again, then press **PAUSE**.
The printer prints 50 labels at 2 in. (51 mm) per second, then automatically pauses.
6. Press **CANCEL** again while the printer is paused to alter the self test a third time, then press **PAUSE**.
The printer prints 50 labels at 6 in. (152 mm) per second, then automatically pauses.
7. Press **CANCEL** again while the printer is paused to alter the self test a fourth time, then press **PAUSE**.
The printer prints 15 labels at the printer's maximum speed.
8. To exit this self test at any time, press and hold **CANCEL**.

FEED and PAUSE Self Test

Performing this self test temporarily resets the printer configuration to the factory default values. These values are active only until power is turned off unless you save them permanently in memory.

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

1. Turn Off (O) the printer.
2. Press and hold FEED and PAUSE while turning the power On (I). Hold FEED and PAUSE until the DATA light turns off.
No labels print at the end of this test.

Communication Diagnostics Test

This test is controlled from the front panel display (see [Setting Communication Diagnostics Mode on page 66](#)). A typical printout from this test is shown in [Figure 43](#). Turn the printer Off (O) to exit this self test.



Note • This label prints upside-down.

Figure 43 • Communication Diagnostics Test Printout

```

^FS^F0394 , 25^AA
5E 46 53 5E 46 4F 33 39 34 2C 32 35 5E 41 41
N , 18 , 10^FD(0000
4E 2C 31 38 2C 31 30 5E 46 44 28 30 30 30 30
)999-9999^FS
29 39 39 39 2D 39 39 39 39 5E 46 53 0D 0A
^F00 , 50^AAN , 18 ,
5E 46 4F 30 2C 35 30 5E 41 41 4E 2C 31 38 2C
10^FDCENTER STA
31 30 5E 46 44 43 45 4E 54 45 52 20 53 54 41
  
```

Loading Factory Defaults

Use care when loading defaults. You will need to reload all settings that you changed manually.

To load the factory defaults, complete these steps:

1. Press **SETUP/EXIT** two times.
2. Use **PLUS (+)** or **MINUS (-)** to scroll through the **SAVE CHANGES** choices.
3. When **LOAD DEFAULTS** displays, press **SETUP/EXIT**.



Data Connections

This appendix provides details about the serial port and parallel port data connections.

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Serial Data Port

Hardware Control Signal Descriptions

For all RS-232 input and output signals, the Z4Mplus and Z6Mplus printers follow both the Electronics Industries Association (EIA) RS-232 and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 standard signal level specifications.

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



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

Request to send (RTS) is a control signal from the printer that is connected to the clear to send (CTS) input at the host computer. RTS is always active (positive voltage) when the printer is on.

RS-232 Serial Data Port

The connection for this standard interface is made through the female DB-9 connector on the rear panel. A DB-9 to DB-25 interface module is required for all RS-232 connections through a DB-25 cable (see [RS-232 Interconnections Using a DB-25 Cable on page 105](#) for details).

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

[Table 17](#) shows the pin configuration and function of the rear panel serial data connector on the printer.

Table 17 • Serial Data Connector Pin Configuration

| Pin Number | Name | Description |
|------------|---------|---|
| 1 | — | Not connected |
| 2 | RXD | Receive data—data input to printer |
| 3 | TXD | Transmit data—data output from printer |
| 4 | DTR | Data terminal ready—output from printer |
| 5 | SG | Signal ground |
| 6 | DSR | Data set ready—input to printer |
| 7 | RTS | Request to send—output from printer |
| 8 | CTS | Clear to send—input to printer |
| *9 | +5 V DC | +5 VDC |

* This pin is also available as a +5 VDC power source at 750 mA. To enable this capability, a jumper on the computer's main logic board needs to be installed on JP1, pins 2 and 3.

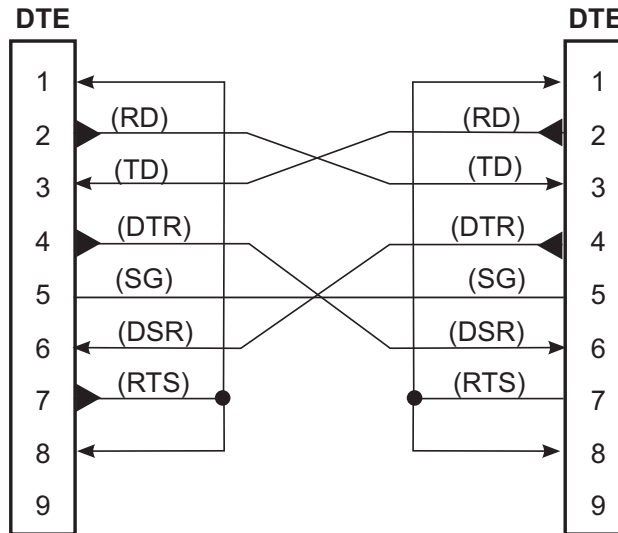


Note • An interface module is required for RS-422/RS-485 interface support (see [RS-422/RS-485 Interconnections on page 106](#)).

RS-232 Interface Connections

The printer is configured as Data Terminal Equipment (DTE). [Figure 44](#) shows the internal connections of the printer's RS-232 connector.

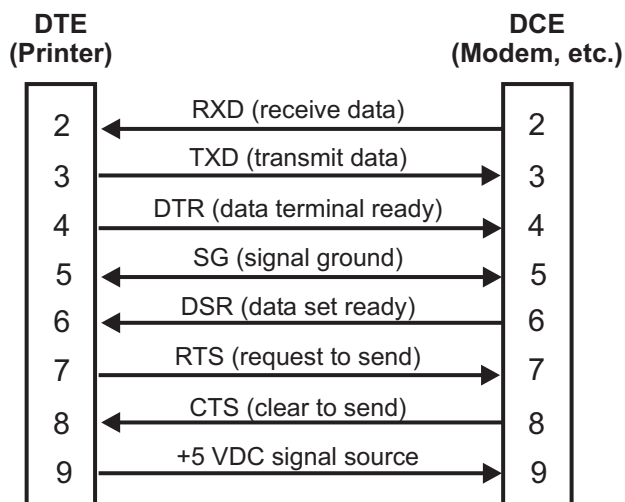
Figure 44 • RS-232 Internal Connections



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

When the printer is connected via its RS-232 interface to Data Communication Equipment (DCE) such as a modem, use a standard RS-232 (straight-through) interface cable. [Figure 45](#) illustrates the connections required for this cable.

Figure 45 • RS-232 to DCE Internal Connections



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

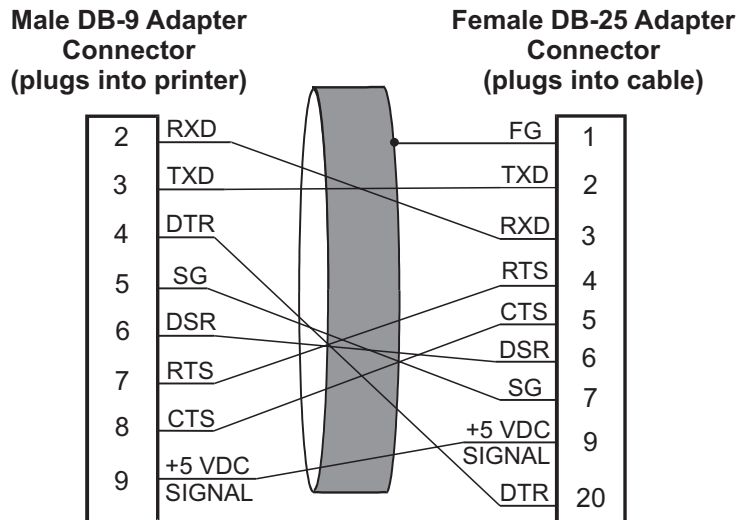
RS-232 Interconnections Using a DB-25 Cable

To connect the printer's RS-232 DB-9 interface to a DB-25 connector, an interface adapter is required (Zebra part number 33138). A generic DB-25 adapter may also be used, however, the +5 VDC signal source would not be passed through. Figure 46 shows the connections required for the DB-9 to DB-25 interface.



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

Figure 46 • DB-9 to DB-25 Internal Connections



Note • Pin 1 of DB-9 connector is unused and unterminated.

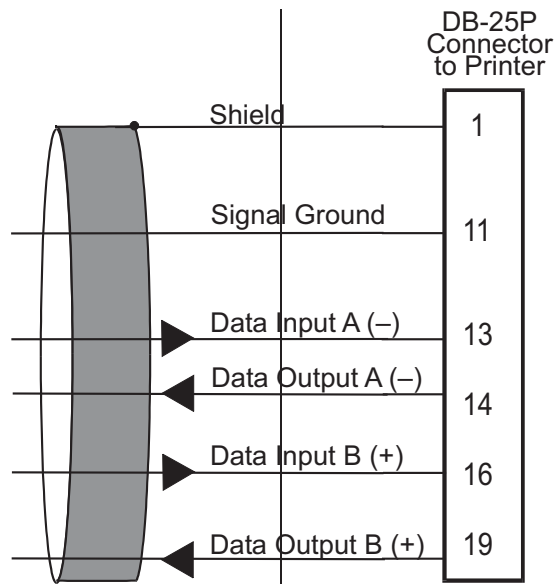
RS-422/RS-485 Interconnections



Note • A jumper on the computer's main logic board needs to be installed on JP1, Pins 2 and 3, for the RS-422/RS-485 interface adapter to function properly.

To connect the printer's RS-232 DB-9 interface to a host computer through an RS-422 or an RS-485 interface, an interface adapter is required (Zebra part number 33130). [Figure 47](#) shows the required cable wiring for interconnecting to the interface adapter's DB-25 female connector.

Figure 47 • RS-422 and RS-485 Adapter Internal Connections



Parallel Data Port

The 8-bit parallel data interface supports IEEE 1284 bidirectional parallel communications in nibble mode. The parallel interface provides a means of communication that is typically faster than the previously mentioned serial interface methods. In this method, the bits of data that make up a character are sent all at one time over several wires in the cable, one bit per wire.

Parallel Cabling Requirements

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

Parallel Port Interconnections

Table 18 shows the pin configuration and function of a standard computer-to-printer parallel cable.

Table 18 • Parallel Cable Pin Configuration

| 36-Pin Connectors | Description |
|-------------------|--|
| 1 | nStrobe/HostClk |
| 2 to 9 | Data Bits 1 to 8 |
| 10 | nACK/PtrClk |
| 11 | Busy/PtrBusy |
| 12 | PError/ACKDataReq |
| 13 | Select/Xflag |
| 14 | nAutoFd/HostBusy |
| 15 | Not used |
| 16 and 17 | Ground |
| 18 | +5V @ 750 mA The maximum current draw may be limited by option configuration. |
| 19 to 30 | Ground |
| 31 | nInit |
| 32 | nFault/NDataAvail |
| 33 and 34 | Not used |
| 35 | +5V through a 1.8K Ω Resistor |
| 36 | NSelectin/1284 active |



Specifications

This appendix contains specifications for the Z4Mplus and Z6Mplus printers.

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General Specifications

Table 19 • Z4Mplus and Z6Mplus General Specifications

| General Specifications | | Z4Mplus | | Z6Mplus | |
|--------------------------|-----------|--|--------------|----------------------------|--------------|
| Height | | 13.3 in. | 338 mm | 13.3 in. | 338 mm |
| Width | | 10.9 in. | 277 mm | 13.4 in. | 341 mm |
| Depth | | 18.7 in. | 475 mm | 18.7 in. | 475 mm |
| Weight (without options) | | 32.4 lbs. | 14.7 kg | 34.7 lbs. | 16 kg |
| Electrical | | 90-265 VAC, 48-62 Hz, 5 Amps (fused) | | | |
| Agency Approvals | | UL 1950, CISPR 22 (class B), CSA 22.2 No. 950-95, IEC60950, EN60950, EN500824, EN55022 (class B), EN55024, EN61000-3-2, -3-3. Complies with FCC Class B and Canadian Doc Class A rules. Carries the CE mark of compliance. Product markings: cULus, CE Marking, FCC-B, ICES-003, VCCI, C-Tick, NOM, IRAM, CCC, GOST-R, BSMI. | | | |
| Temperature | Operating | 40° to 104°F | 5° to 40°C | 40° to 104°F | 5° to 40° C |
| | Storage | -40° to 140°F | -40° to 60°C | -40° to 140°F | -40° to 60°C |
| Relative Humidity | Operating | 20% to 85%, non-condensing | | 20% to 85%, non-condensing | |
| | Storage | 5% to 85%, non-condensing | | 5% to 85%, non-condensing | |
| Communication Interface | | RS-232/CCITT V.24 serial data interface; 110 to 115000 baud, parity, bits/character, 7 or 8 data bit, and XON-XOFF, RTS/CTS or DTR/DSR handshake protocol required. 750mA at 5V from pin 9. 8-bit parallel data interface; supports IEEE 1284 bi-directional parallel, ECP and nibble mode compliant. Error detection CRC protocol. | | | |
| Memory | | 8 MB DRAM memory (3.5 MB user available) 2 MB flash memory | | | |

Printing Specifications

Table 20 • Z4Mplus and Z6Mplus Printing Specifications

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

Thin film printhead with energy control

Media Specifications

Table 21 • Z4Mplus and Z6Mplus Media Specifications

| Media Specifications | | Z4Mplus | | Z6Mplus | | |
|---|-----------------|------------------|---|-------------------|--|-------------------|
| Label length | Minimum | Tear-off | 0.5 in. | 13 mm | 0.5 in. | 13 mm |
| | | Peel-off | 1 in. | 25.4 mm | 1 in. | 25.4 mm |
| | Maximum | Rewind | 0.5 in. | 13 mm | 0.5 in. | 13 mm |
| | | Cutter | 1 in. | 25.4 mm | 1.5 in. | 38.1 mm |
| | | | 39 in. | 991 mm | 39 in. | 991 mm |
| Label width | Minimum | | 1 in. | 25.4 mm | 2 in. | 51 mm |
| | Maximum | Tear/Cutter | 4.5 in. | 114 mm | 7.0 in. | 178 mm |
| | | Peel/Rewind | 4.25 in. | 108 mm | 6.75 in. | 171 mm |
| Total thickness (includes liner, if any) | Minimum | | 0.0023 in. | 0.058 mm | 0.0023 in. | 0.058 mm |
| | Maximum | | 0.010 in. | 0.25 mm | 0.010 in. | 0.25 mm |
| Core size | | | 3 in. | 76 mm | 3 in. | 76 mm |
| Maximum roll diameter | | | 8 in. | 203 mm | 8 in. | 203 mm |
| Inter-label gap | Minimum | | 0.079 in. | 2 mm | 0.079 in. | 2 mm |
| | Preferred | | 0.118 in. | 3 mm | 0.118 in. | 3 mm |
| | Maximum | | 0.157 in. | 4 mm | 0.157 in. | 4 mm |
| Ticket/tag notch size (width x length) | | | 0.236 in. × 0.12 in. | 6 mm × 3 mm | 0.236 in. × 0.12 in. | 6 mm × 3 mm |
| Hole diameter | | | 0.125 in. | 3 mm | 0.125 in. | 3 mm |
| Notch or hole position (Centered from inner media edge) | Minimum | | 0.15 in. | 3.8 mm | 0.15 in. | 3.8 |
| | Maximum | | 2.25 in. | 57 mm | 3.5 in. | 90 mm |
| Black mark dimensions | Vertical length | | 0.98 in. to 0.453 in. | 2.5 to 11.5 mm | 0.98 in. to 0.453 in. | 2.5 to 11.5 mm |
| | | Horizontal width | > 0.37 in. | ≥ 9.5 mm | ≥ 0.37 in. | ≥ 9.5 mm |
| | Location | | Within 0.40 in. (1 mm) of inside media edge | | | |
| | | | May also be centered from 0.23 to 2.25 in. (5.84 to 57 mm) from the media inner edge | | May also be centered from 0.23 to 3.5 in. (5.84 to 90 mm) from the media inner edge | |
| Density, in Optical Density Units (UDO) | | | > 1.0 ODU | | | |
| Maximum media density | | | ≤ 0.5 ODU | | | |
| Transmissive Sensor | Fixed | | 7/16 in. (11 mm) from inside edge | | | |

Ribbon Specifications

Table 22 • Z4Mplus and Z6Mplus Ribbon Specifications

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

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

Printer Options

Table 23 • Z4Mplus and Z6Mplus Options

| Option | Z4Mplus | Z6Mplus |
|--|----------------|----------------|
| Cutter | X | X |
| Peel-off | X | X |
| Liner take-up | X | Not available |
| PCMCIA card socket (supports Zebra Rapid Flash and ATA formats) | X | X |
| Linear Memory Card (Zebra Rapid Flash) 8MB and 32MB | X | X |
| Compact Flash 32MB, 64MB, 128MB, and 256MB | X | X |
| 300 dpi printhead | X | X |
| Rewind | X | X |
| Adjustable transmissive sensor | X | Not available |
| External PrintServer | X | X |
| Internal PrintServer | X | X |

Zebra Programming Language (ZPL II) Features

- Downloadable graphics (with data compression)
- Bit image data transfer and printing, mixed text/graphics
- Format inversion
- Mirror image printing
- Four-position field rotation
(0°, 90°, 180°, 270°)
- Slew command
- Programmable quantity with print pause
- Communicates in printable ASCII characters
- Controlled via mainframe, mini, PC, portable data terminal
- In-Spec OCR-A and OCR-B
- UPC/EAN
(nominal 100% magnification 6 dots/mm printheads only)
- Serialized fields

Supported Bar Codes

Table 24 • Supported Bar Codes

| Z4M/Z6Mplus Bar Code Features | |
|--|--|
| Code 11 | LOGMARS |
| Code 39 (supports ratios of 2:1 to 3:1) | Plessey |
| Code 49 (2-dimensional bar code) | EAN-8, EAN-13, EAN EXTENSIONS |
| Code 93 | UPC-A, UPC-E, UPC EXTENSIONS |
| Code 128 (supports serialization in all subsets and UCC case codes) | MSI |
| Codabar (supports ratios of 2:1 to 3:1) | PDF-417 (2-dimensional bar code) |
| Codablock | Micro-PDF-417 |
| Interleaved 2 of 5 (supports ratios of 2:1 to 3:1; modulus 10 check digit) | POSTNET |
| Industrial 2 of 5 | MaxiCode |
| Standard 2 of 5 | Datamatrix |
| QR Code | Check digit calculation where applicable |

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Customer Order # 13163LB
Manufacturer Part # 13163LB Rev. 3