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Zebra
P4T/RP4T™
Mobile Printer Series
User Guide

PRELIMINARY

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Product Improvements

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FCC Compliance Statement

This device complies with part 15 of the FCC 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.

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

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

WARNING: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this device shall be used in accordance with the operating conditions and instructions listed in this manual. Note that there are several radio options available with this printer. Additional regulatory information is contained in later sections devoted to each radio individually.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance. Changes or modifications to this unit not expressly approved by Zebra Technologies Corporation could void the user's authority to operate this equipment.

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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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Agency Approvals and Regulatory Information

- FCC part 15
- NOM-ETL (Mexico)
- EN55022:1998 Class B European Electromagnetic Radiation Standard
- Canadian STD RSS-210
- EN60950: 2000 Safety Standard
- C-Tick (Australia)

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Document Conventions

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



Caution • Warns you of the potential for electrostatic discharge.



Caution • Warns you of a potential electric shock situation.



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



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

Caution • 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.

Text in this format will jump to the appropriate section in the manual.

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Introduction to the P4T Series

Thank you for choosing one of our Zebra P4T Series Mobile Printers. The P4T Series consists of two models. The **P4T** can print on direct thermal or thermal transfer media. The **RP4T** can print on direct or thermal transfer media and also encode special RFID media.

Because these printers are made by Zebra Technologies, you're assured of world-class support for all of your bar code printers, software, and supplies.

- This User's Guide gives you the information you'll need to operate and maintain both the P4T and RP4T models.
- P4T Series printers use the CPCL programming language. To create and print receipts and labels using the CPCL language, refer to our Label Vista™ label creation program or the Mobile Printing Systems CPCL Programming Manual which are both available on our Web site at: www.zebra.com/manuals.
- P4T Series printer software also includes interpreters for the ZPL II® programming language (up to Version 30.8.4). Manuals for the ZPL label design programming language are also available on our Web site. Refer to [Appendix "F"](#) of this manual for more information on accessing and downloading manuals and other user information.



Always refer to the Important Safety Information data sheet shipped with each printer and the Technical Bulletin shipped with each battery pack. These documents detail procedures to ensure maximum reliability and safety while using this printer.

Unpacking and Inspection

Inspect the printer for possible shipping damage:

- Check all exterior surfaces for damage.
- Open the media cover (refer to "Loading the Media" in the Printer Preparation section) and inspect the media compartment for damage.

In case return shipping is required, save the carton and all packing material.

Reporting Damage

If you discover shipping damage:

- Immediately notify and file a damage report with the shipping company. Zebra Technologies Corporation is not responsible for any damage incurred during shipment of the printer and will not cover the repair of this damage under its warranty policy.
- Keep the carton and all packing material for inspection.
- Notify your authorized Zebra re-seller.

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P4T/RP4T Overview

Figure 1: P4T/RP4T Illustrated

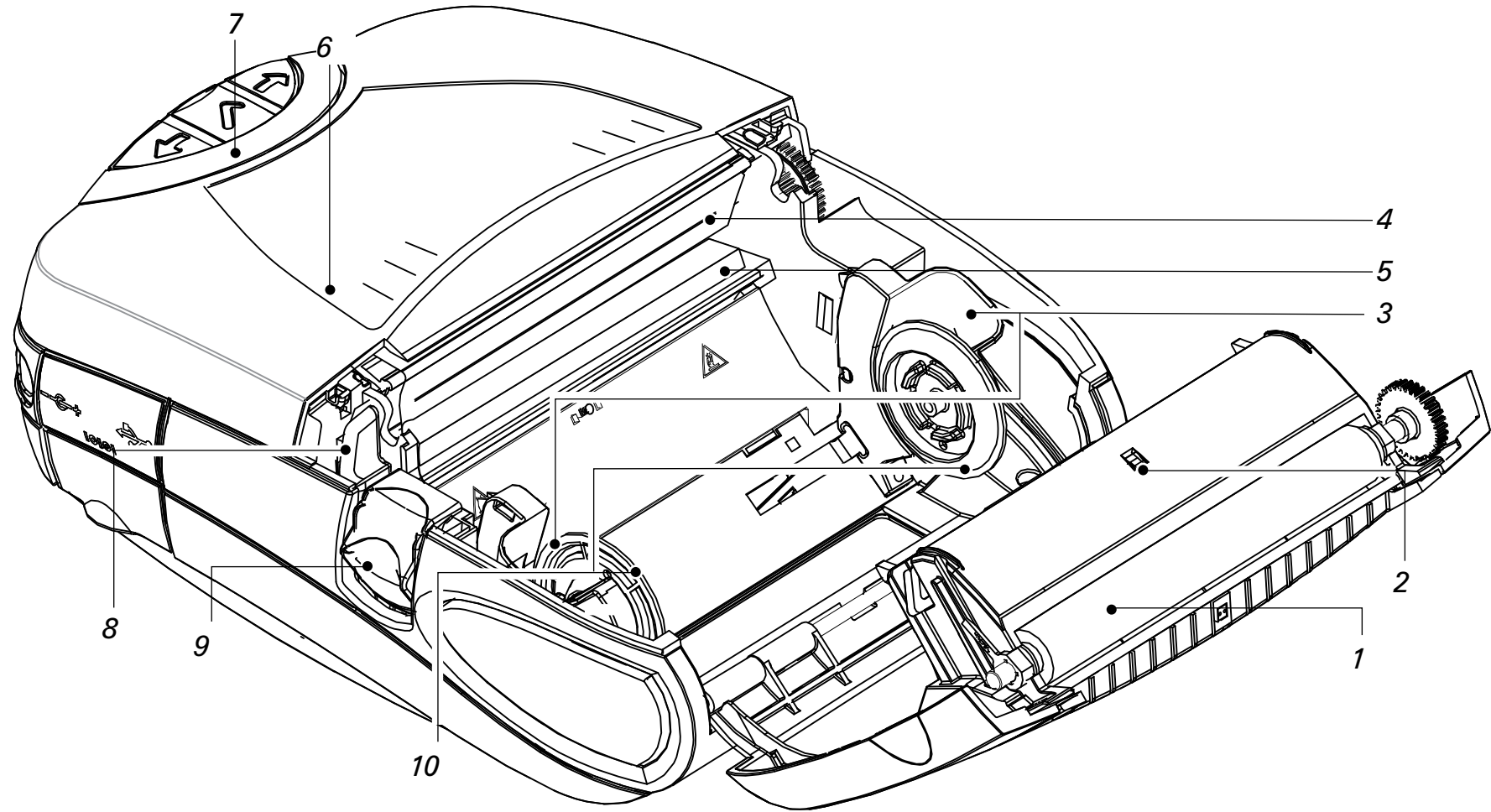
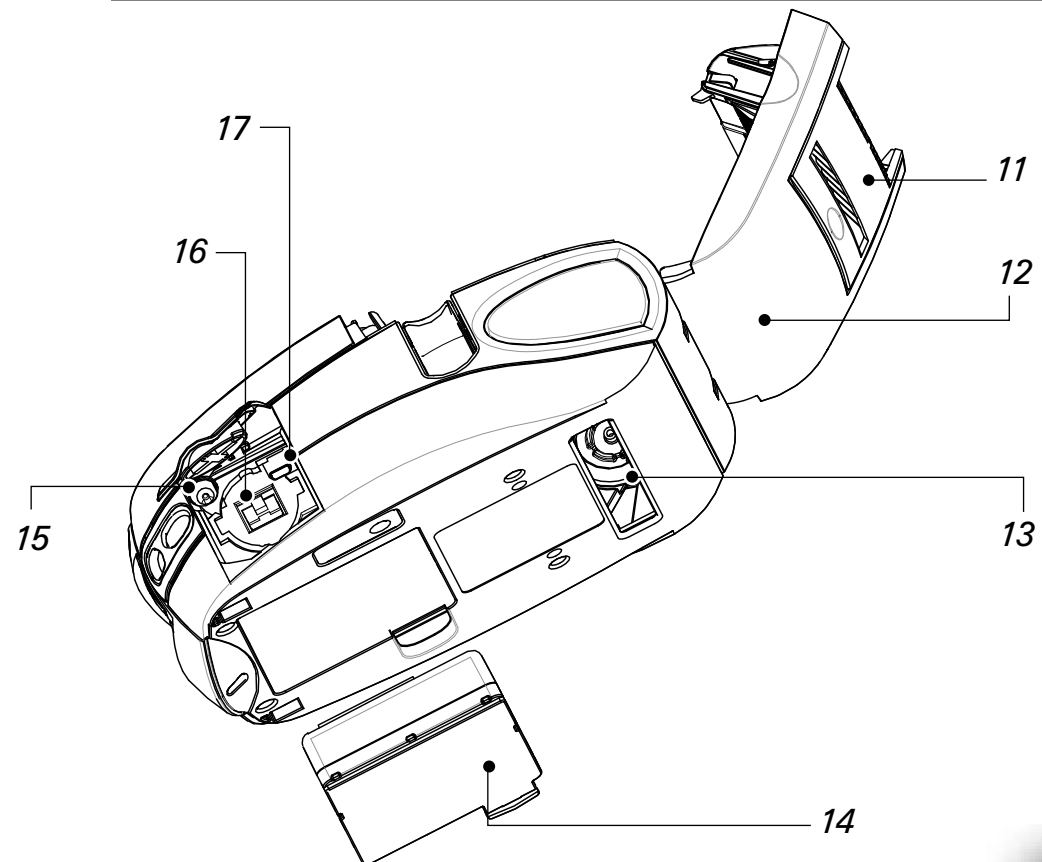


Figure 1a: P4T/RP4T Bottom View



1. *Platen Roller*
2. *Bar Sensor*
3. *Media Support*
4. *Printhead*
5. *RFID Reader/Encoder (RP4T only)*
6. *Ribbon Cartridge Cover*
7. *Control Panel*
8. *Ribbon Cartridge Cover Latch*
9. *Media Cover Latch*
10. *Media Support Disks*
11. *Label Peeler*
12. *Media Cover*
13. *External Media Access (optional)*
14. *Battery*
15. *Battery Charging Receptacle*
16. *RS232 Communications Port*
17. *USB Port*

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P4T Series Technology

The P4T Series introduces several new technologies to the Zebra Mobile Printer product line.

Smart Battery

The P4T Series battery pack contains electronics which allow the printer to monitor its operating parameters. Among these are the battery's charge state, the number of charge cycles it has undergone, and its date of manufacture. Using these parameters, the P4T Series' software can monitor the battery's condition and alert the user when to recharge, re-condition or remove the battery from service.



Use of any battery pack other than the one manufactured by Zebra specifically for use with P4T Series printers will not be able to use the diagnostic features of the Zebra Smart Battery and will not work with the printer.

Printing Technology

The P4T Series uses two methods to print human readable text, graphics and barcodes: Direct Thermal, and Thermal Transfer ***Direct Thermal***

Direct thermal printing uses heat to cause a chemical reaction on specially treated media. This reaction creates a dark mark wherever a heated element on the printhead comes in contact with the media. Since the printing elements are arranged very densely at 203 d.p.i. (dots per inch) or 8 dots per mm, highly legible characters and graphic elements may be created a row at a time as the media is advanced past the printhead. This technology has the advantage of simplicity, as there is no requirement for consumable supplies such as ink or toner. However, since the media is sensitive to heat, it will gradually lose legibility over long periods of time, especially if exposed to environments with relatively high temperatures.

Thermal Transfer

Thermal transfer printing uses the same basic technology as direct thermal, except that the printhead elements react with a transfer film which passes between the printhead and the media. The printing process fuses the thermal transfer material to the media being printed and creates characters and graphic images that are very dark, and more permanent than those created by direct thermal printing. Offsetting this advantage is the extra cost of the thermal transfer film and printing speeds slower than those required for direct thermal printing.

For ease of installation, P4T Series thermal transfer film is supplied as a cartridge. Typically a thermal transfer film cartridge will be able to print two rolls of media before needing replacement. This ratio may vary considerably based on the amount of label stock per roll.

RFID (Radio Frequency Identification)

A P4T Series printer equipped with an RFID encoder allows it to encode information on special label media using radio frequencies in addition to using conventional thermal transfer technology. These printers are identified as RP4T printers.

RFID encoded information can be retrieved using an RFID scanner from a distance of inches to several yards from an encoded label. Zebra's implementation of RFID follows accepted industry standards. As an example, the RP4T verifies the information encoded on the label media after it is transmitted and voids the label if the data is incorrect. More information concerning RFID may be found in Zebra's [RFID Programming Manual](#), available for download on Zebra's Web site.

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Printer Preparation

Battery Safety

The Battery Packs used on Zebra Mobile Printers contain a great deal of energy and can cause personal injury or start a fire if used improperly or carelessly. Please observe the following safety practices:



Caution • Avoid accidental short circuiting of any battery. Allowing battery terminals to contact conductive material will create a short circuit which could cause burns and other injuries or could start a fire.



Caution • Batteries can explode or catch fire if improperly charged or exposed to high temperatures or fire. Do not disassemble, crush or expose batteries to water.

Caution • Use of any charger not approved specifically by Zebra for use with its batteries could cause damage to the battery pack or the printer and will void the warranty.



Read carefully and always observe the safety guidelines for Li-ion batteries provided with each Battery Pack.

Charger Safety



Caution Do not place a charger in locations where liquids or metallic objects may be dropped on the charger or, in the case of the UCLI72-4 Quad Charger, into the charging bays.



Warning Use care in locating any of the approved P4T Series single chargers, the AC Adapter or the UCLI72-4 Quad Charger. Do not block the ventilating slots on the top and bottom covers. Ensure that the Charger is plugged into a power source which won't accidentally be turned off if you will be charging batteries overnight.



Required Regulatory Text for Argentina

Only certified adaptors with the following electrical characteristics shall be used. The use of different adaptors could damage the device, present hazards to the user and declare the correspondent guaranty void.

LI72: Input ratings: 100-240 VAC 50/60Hz 200mA., Class 2

Output ratings: 8.4 VDC, 800 mA

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Approved Chargers

The following table lists battery chargers approved for use with the P4T Series Printer.



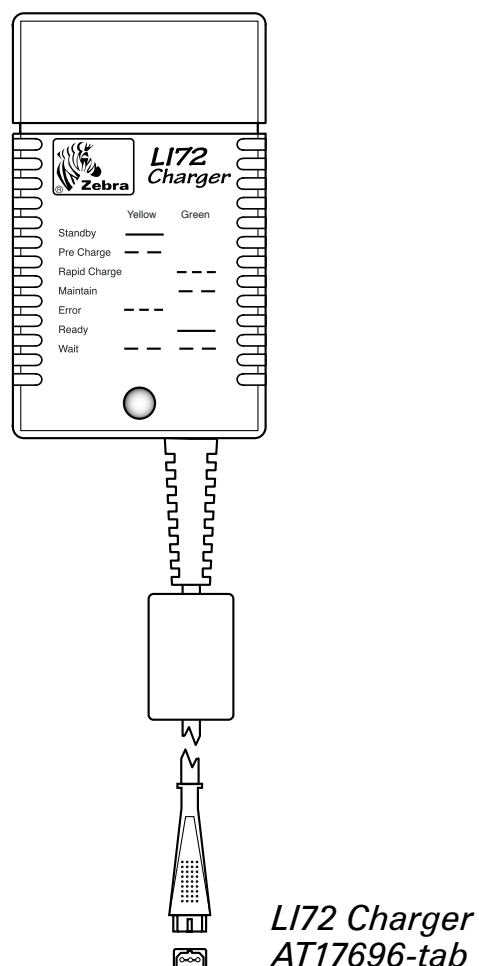
Use of chargers not approved by Zebra specifically for use with the P4T Series will void the warranty and could cause damage to the printer or the battery pack. Zebra is not responsible for any damage to equipment caused by the improper use of unauthorized equipment.

Description	Part no	Notes.
LI72 single charger)	AT17696-xx ¹	Must be used with battery removed from printer
AC Adapter/US Line Cord	AK18913-002	Must be used with battery installed in printer
UCLI72-4 Quad Charger	AC18177-xx ¹	Must be used with battery removed from printer

1. Full part number is determined by the AC mains adapter appropriate for the region of intended use. Consult your Zebra sales representative or the factory for the appropriate part number.

Single Battery Charger

Figure 2: LI72 Single Charger



The LI72 Charger

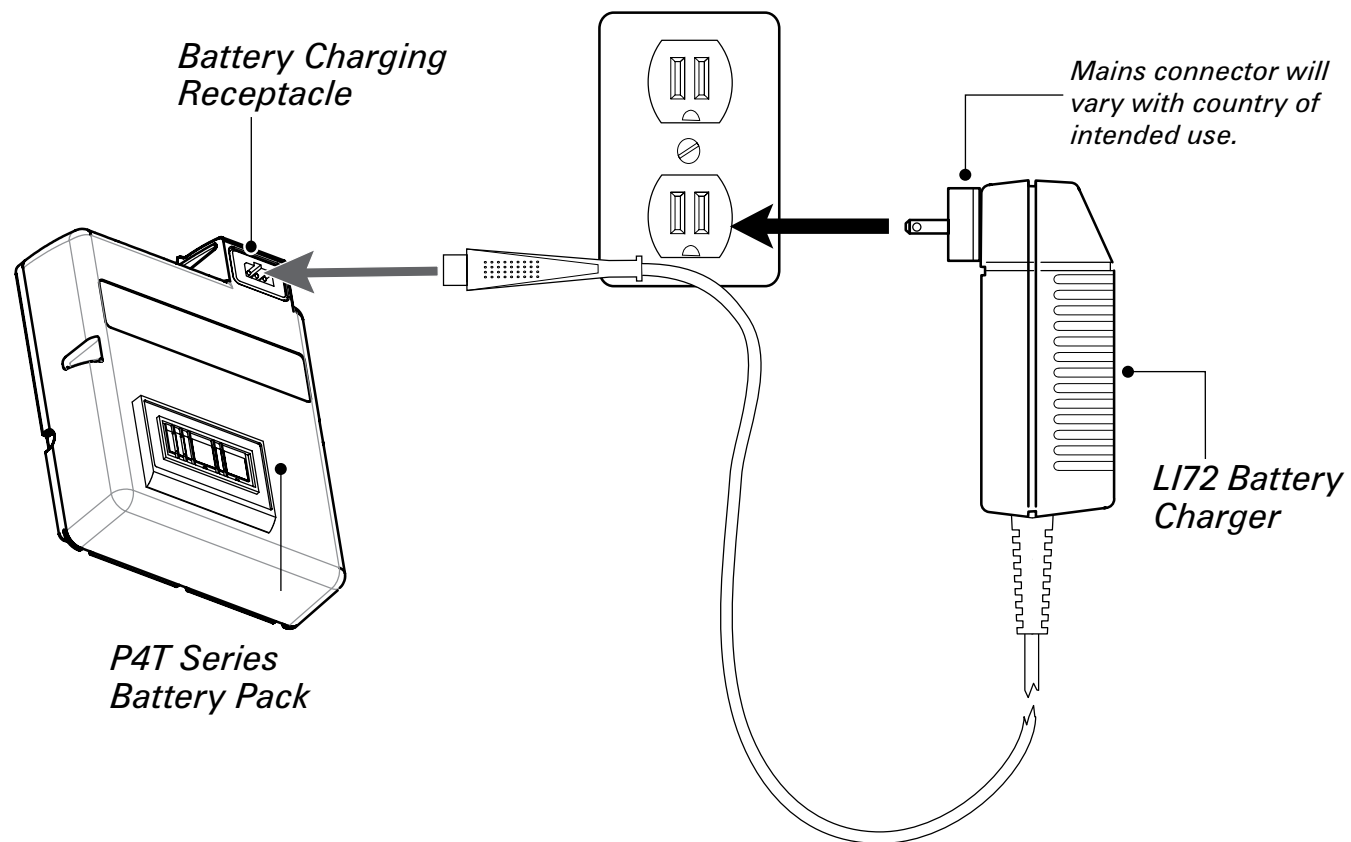
LI72 charger is a wall mounted fast charger with a universal 110 to 230, 50-60 Hz. VAC input. Multiple AC plug configurations comply with most international standards. This charger is intended for use with the P4T Series printers which are equipped with Lithium Ion (Li-ion) batteries.

Full part numbers are determined by the AC mains connectors. Consult Zebra or your authorized re-seller for full part number information.

The LI72 will charge a battery pack as fast as its charge level will allow, and then switch over to a maintenance charge to keep the charge at its maximum.

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Figure 3: Charging the P4T Series Battery with the LI72



Charging Battery Packs with the AT17696-xx LI72 Single Charger

Plug the LI72 into the appropriate AC wall receptacle, then insert the charge cable into the battery pack charger jack. The yellow/green charge indicator LED will indicate the status of the charger as per the following table.

Indicator	Charger Function	Charger Status
Steady yellow indicator	Standby	AC power on; no battery being charged
Slow (1 Hz) flashing yellow indicator	Pre-Charge	Charger is applying trickle charge current (5% of maximum) to bring a cold battery temperature up to 0°C before starting a full charge cycle
Fast (4 Hz) flashing green indicator	Rapid Charge	Charger is applying the maximum charge rate to the battery
Slow (1 Hz) flashing green indicator	Maintain	Charger is in trickle charge mode (10% of nominal charge value).
Fast (4 Hz) flashing yellow indicator	Error	The battery may have an internal short, or its charge monitoring circuitry may be malfunctioning. The battery pack should not be used any further.
Steady green indicator	Ready	No charge is being applied to the battery
Slow (1 Hz) flashing alternate yellow and green indicator	Wait	Battery temperature is too hot. Charging will not begin until battery temperature reaches 45°C.

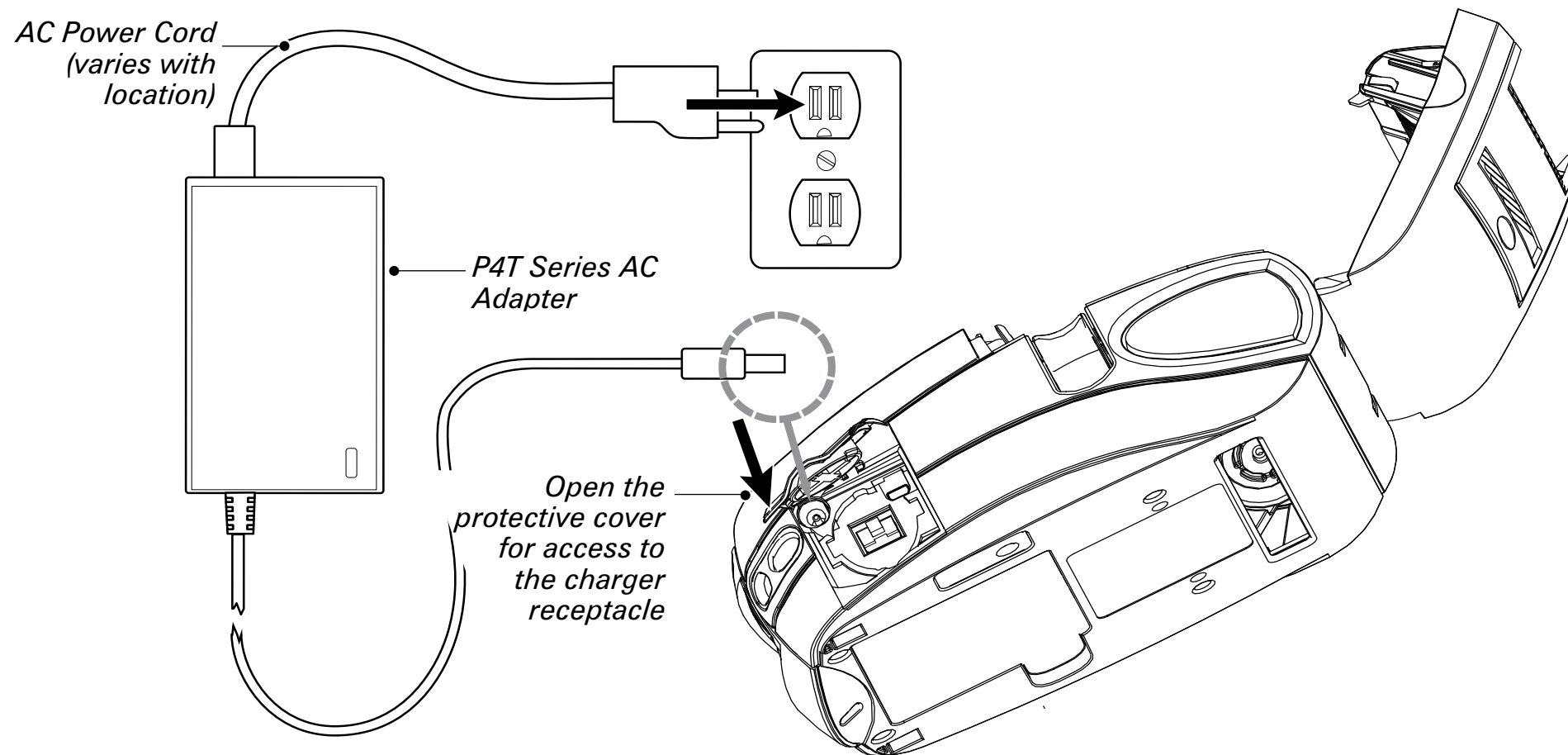


Notes: The battery pack must be removed from the printer when using the AT17696-xx LI72 Single Charger. Charging will cease three (3) hours after the charger has entered the "Maintain" mode.

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Charging the P4T Series Battery with the AT18646-1 AC Adapter

Figure 4: Charging the P4T Series Battery with the AC Adapter





- Open the protective cover on the P4T Series printer to expose the charger jack and the communication ports.
- Plug the barrel plug from the AT18646-1 AC adapter into the charger jack on the printer.
- Connect the appropriate AC power cord for your location to the adapter and then plug the power cord into an AC receptacle.

The following table details how the AC Adapter and P4T Series printers interact:

Printer Status	Charging Status	Printer LCD	Power Button Operation
Off	Off	Off	Pressing turns printer On
On	Off	Normal display operation	Pressing turns printer Off
On	On	Normal display operation, plus battery icon will cycle through level bars. Charging will continue as required..	Pressing switches printer to limited operation: only battery charging & LCD functional
Off	On	Battery icon will cycle through level bars. Printer turns off at end of charge cycle.	Pressing turns printer On. Printer will run normally

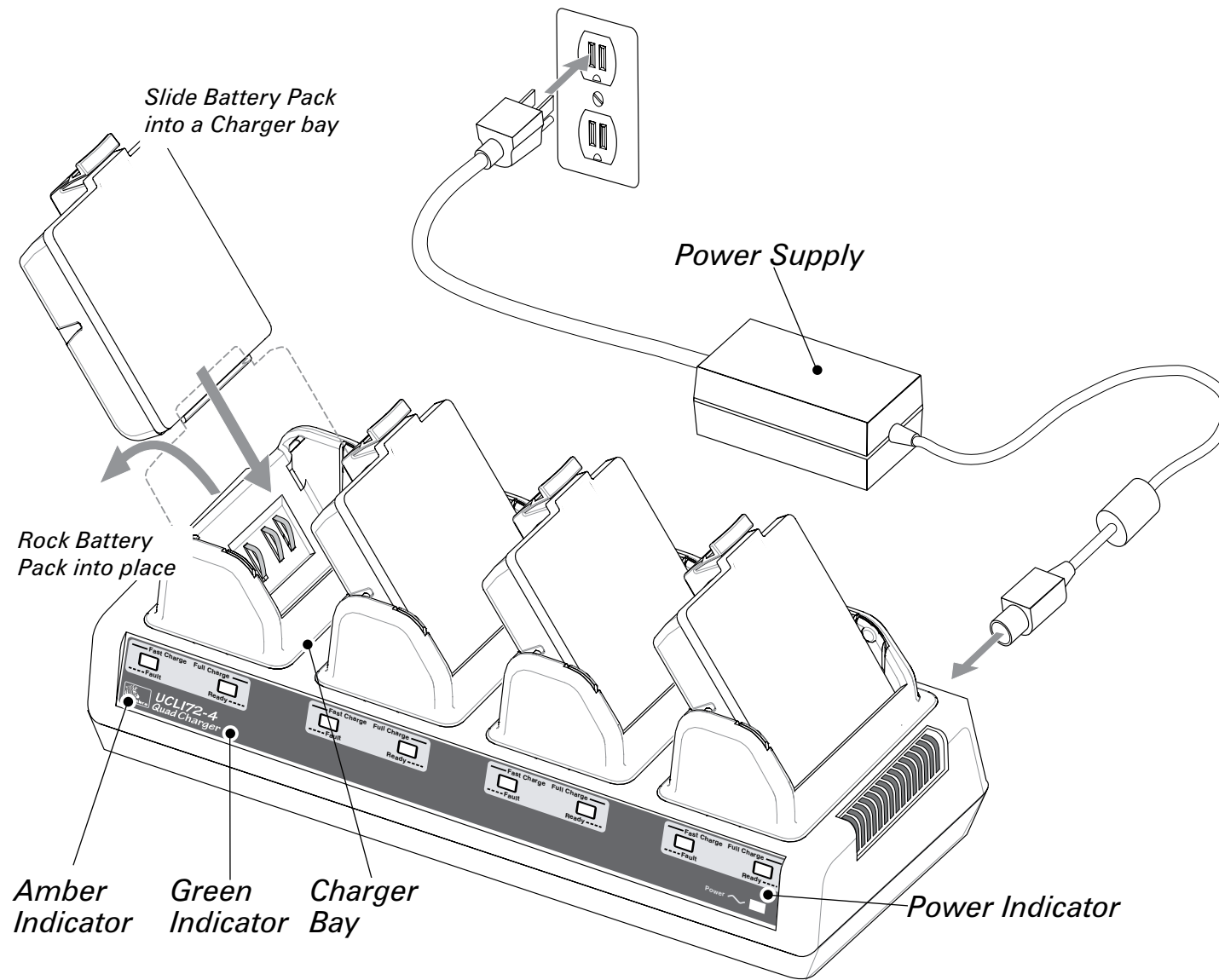


Note: If the battery is out of its safe charging temperature range (either too hot or too cold) the printer will display the following: "Charging will resume when battery is in the range 0-40 degrees C (32-104 degrees F)" and the battery icon will alternately flash  and . Once the battery reaches a safe charging temperature, normal charging will automatically resume.

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Charging the P4T Series Battery with the UCLI72-4 Quad Charger

Figure 5- UCLI72-4 Quad Charger



The UCLI72-4 Quad Charger is designed to charge up to four battery packs simultaneously. Charging times are as follows:

Battery Status	Charging Time
80% charged	2.5 Hrs.
Full charge	5 Hrs.

- Ensure that the charger has been installed properly per the Quad Charger instruction manual. Ensure that the power indicator on the front panel is on.
 - Remove any protective shrink-wrap and labels from all battery packs prior to first use. Plug a battery pack into any one of the four charging bays as shown opposite in Figure __, noting the orientation of the battery pack.
 - Slide the battery pack into the charging bay until it stops.
 - Rock the battery pack back until it snaps into place.

The amber indicator directly under the battery being charged will turn on if the battery is properly inserted.

The indicators under each battery will allow you to monitor the charging process per the table below:

Amber	Green	Battery Status
On	Off	Charging
On	Flashing	80% charged (O.K. to use)
Off	On	Completely Charged
Flashing	Off	Faulty Battery

! **Important** • A fault condition (flashing amber indicator) is caused by a problem with the battery pack. The charger may indicate a fault because the battery is too hot or too cold to charge reliably. Try to charge the battery again when it returns to the room's ambient temperature. If the amber indicator starts flashing on the second charging attempt, the battery should be discarded. Always dispose of batteries in a proper manner. Refer to Appendix E of this manual.

📖 **Notes:** For more information regarding the installation and use of the UCLI72-4 Quad Charger refer to the instructions included with the product.

The UCLI72-4 Quad Charger has a safety feature which stops charging a battery after six hours regardless of its charge state.

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Installing the P4T Series Battery Pack



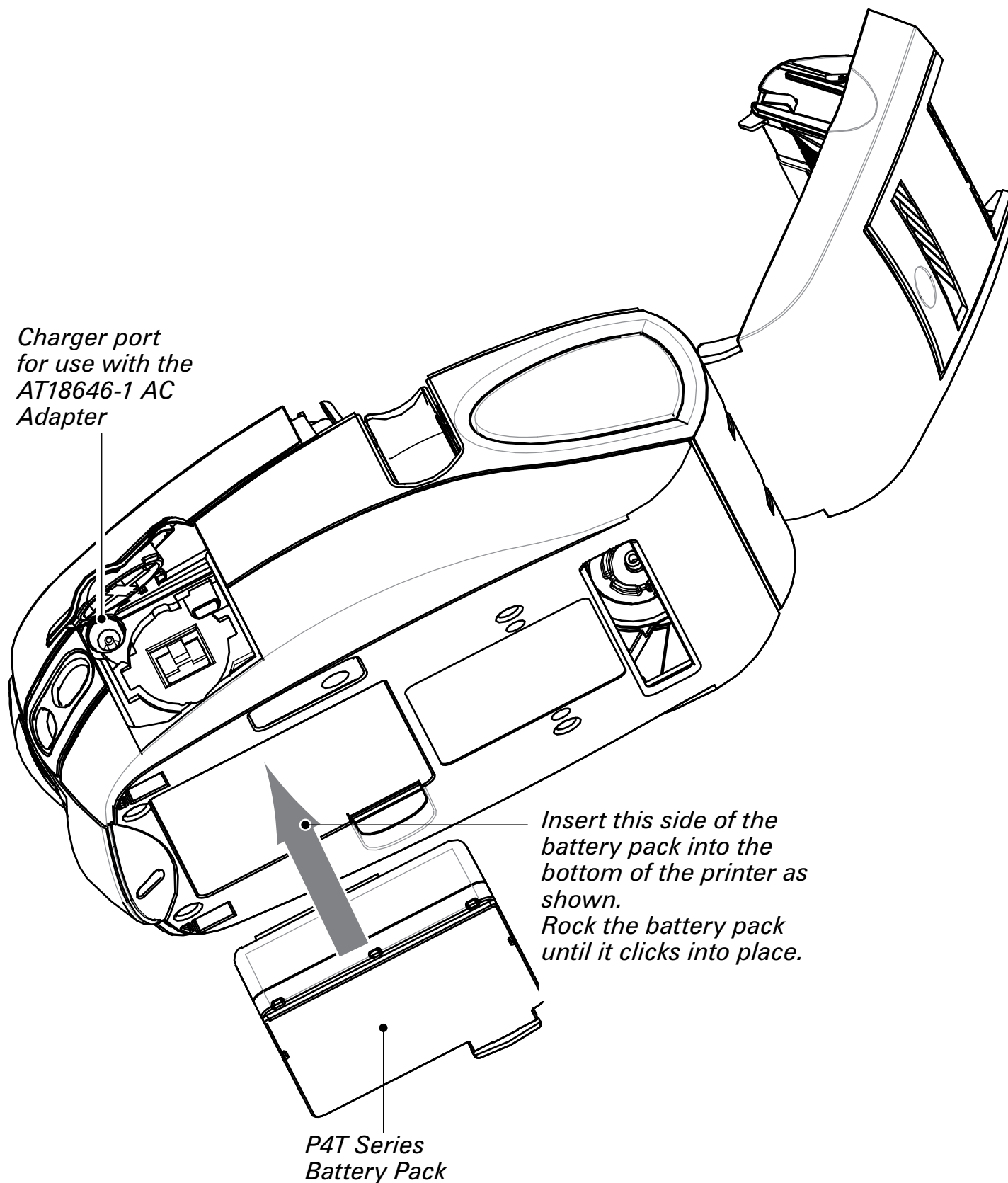
Important • New battery packs are shipped uncharged. Remove any protective shrink-wrap and labels from a new battery pack prior to use. Additional battery packs may be ordered using Zebra p/n AK18913-001.

If you are using an LI72 single charger or the LI72-4 Quad Charger, you must charge the battery prior to installing it in the printer.

- Insert the battery pack into the printer as shown in Figure 6 .
- Rock the battery pack into the printer as shown until it locks in place. If you are using the AC adapter, you should allow the battery pack to charge completely prior to using it for the first time.

When a new battery pack is first installed, the Control Panel indicators may briefly turn on and then go off, indicating the battery is not fully charged. Refer to the [Charging the Battery](#) and [Operator Controls](#) topics in this manual.

Figure 6: Installing the P4T Series Battery Pack

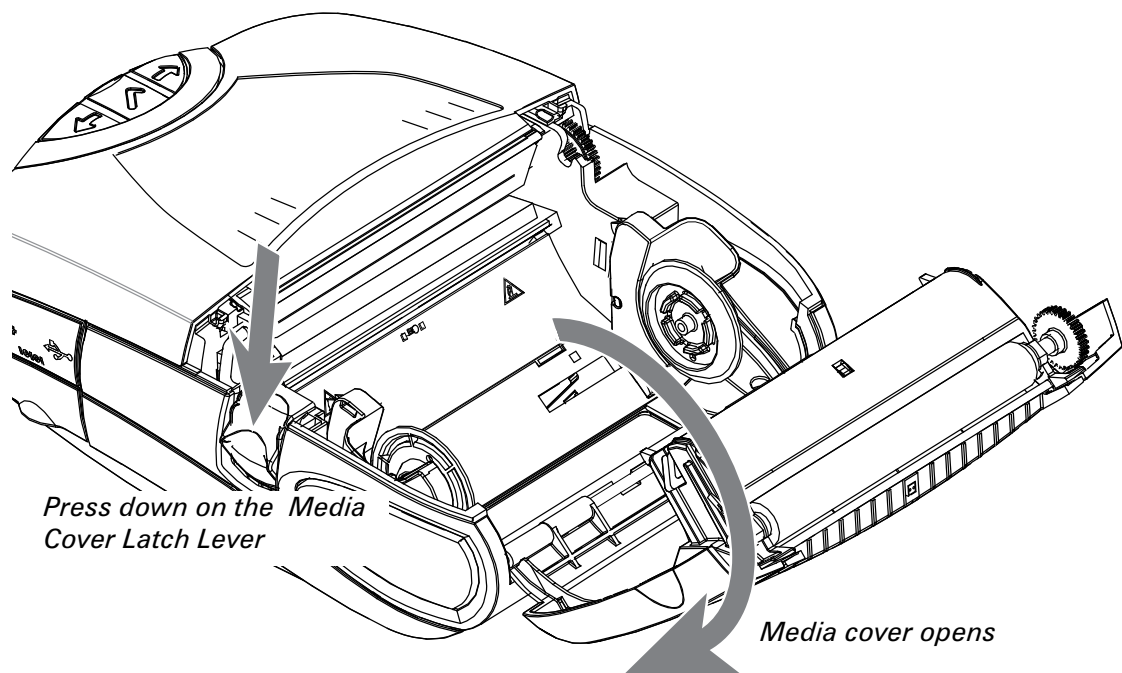


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Load the Media

P4T series printers are designed to print either continuous (journal) media or label stock.

Figure 7.1 Opening the Media Cover

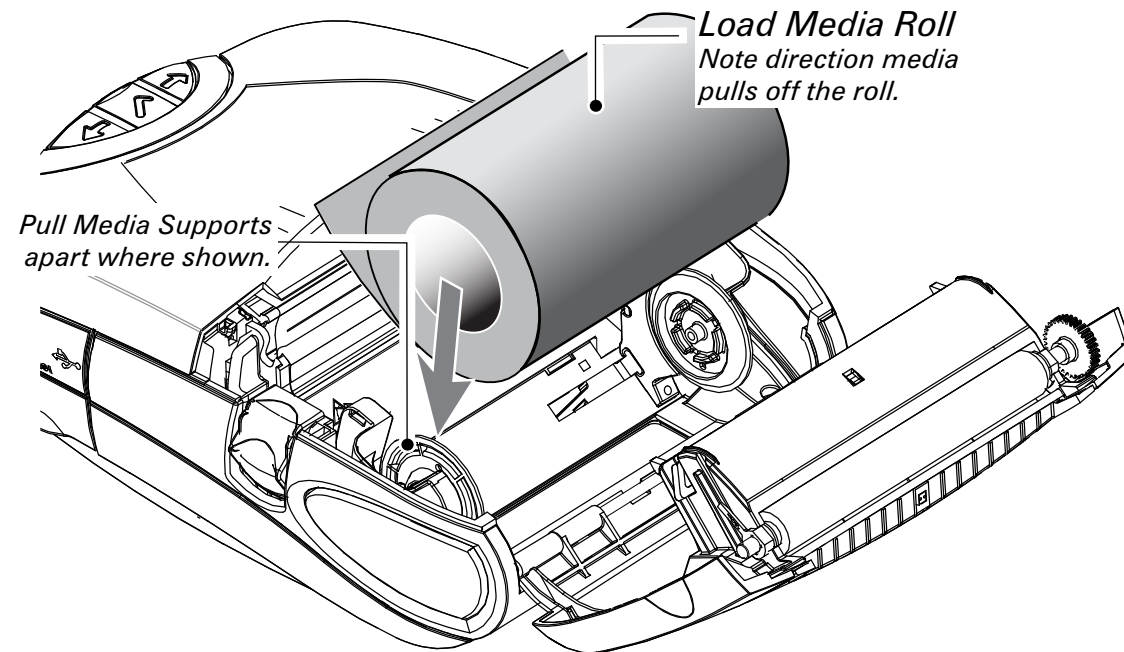


1. Open the Media Cover

Refer to Figure 7.1.

- Press the latch release button on the side of the printer as shown at "1" below. The media cover will open automatically
- Rotate the Media Cover back completely as shown exposing the media compartment and the adjustable media supports.

Figure 7.2 Loading the Media



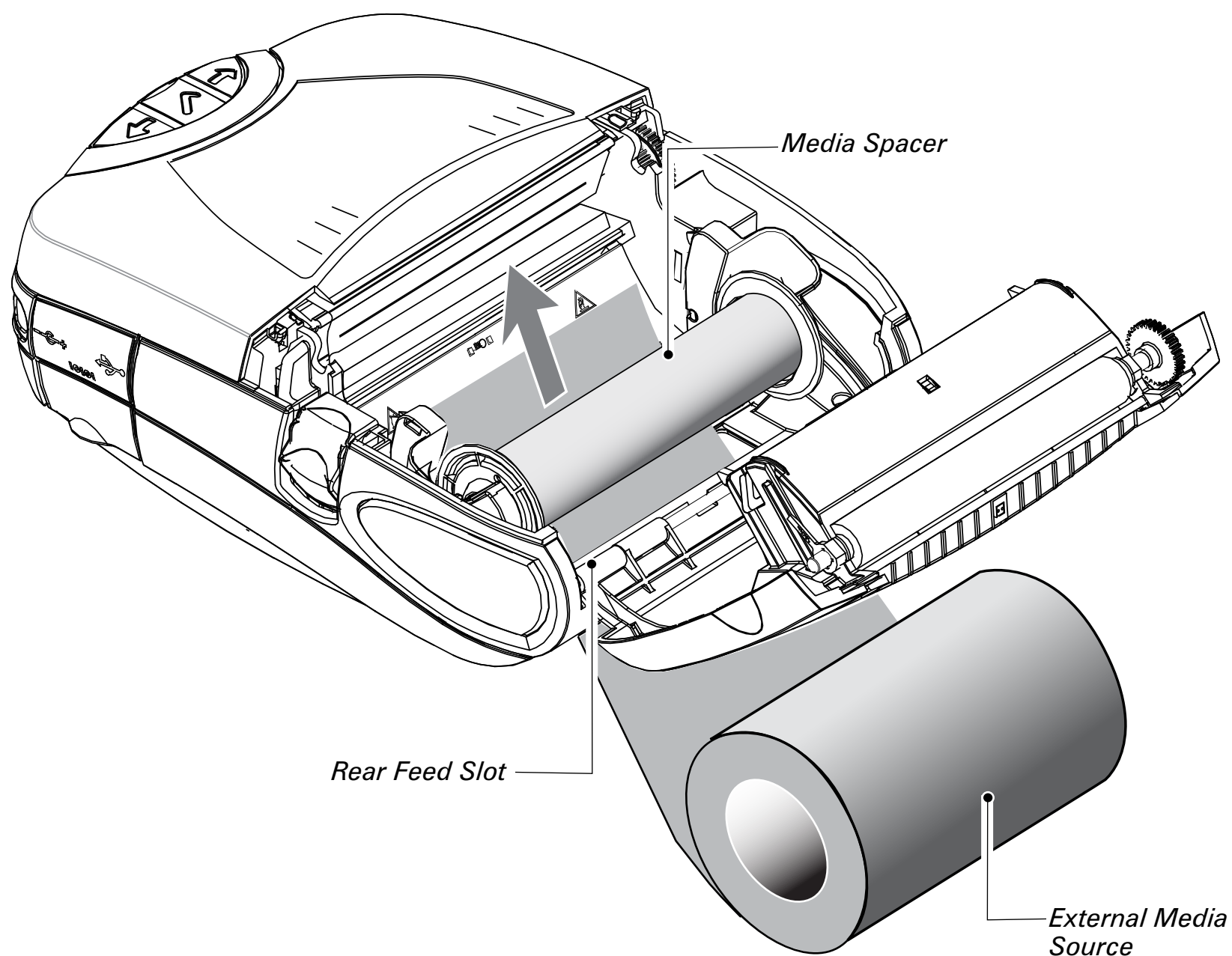
2. Loading Media From An Internal Supply

Refer to Figure 7.2.

- Pull the media supports apart as shown.
- Insert the roll of media between them, and let the media supports close. Ensure that the media pulls off the core in the direction shown in Figures 7.2 and 7.4. The supports will center the media roll within the media compartment, and the media roll should be able to spin freely on the supports.

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Figure 7.3- Loading Media From An External Supply



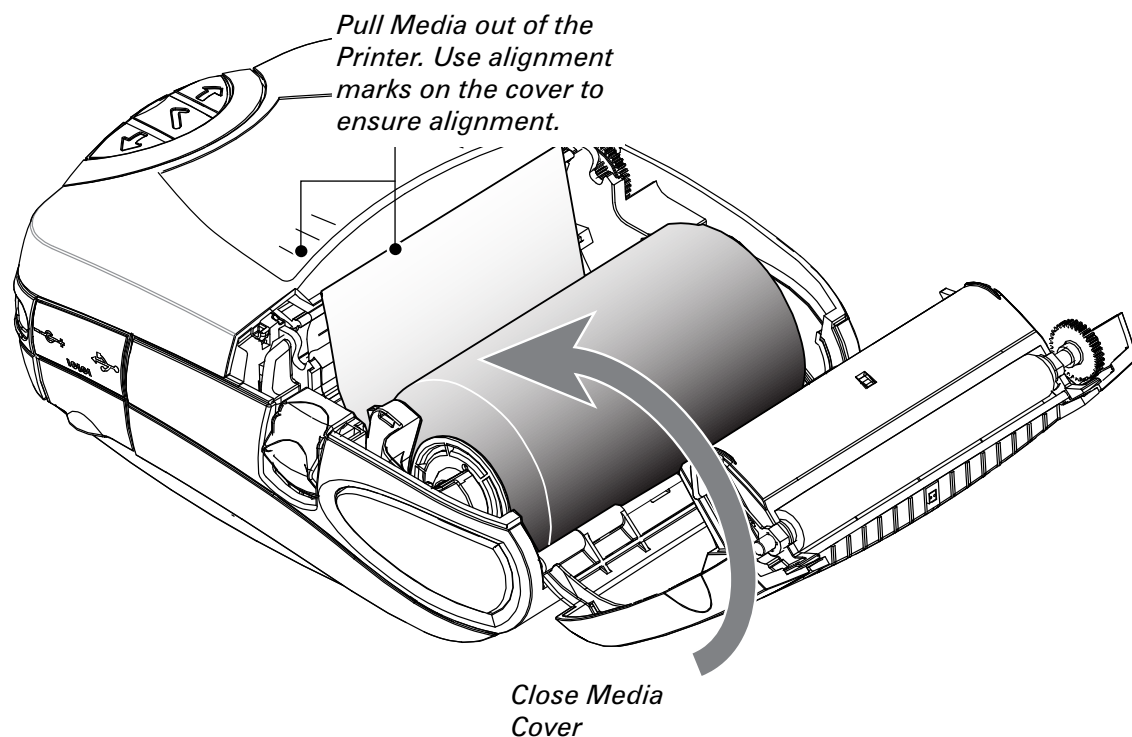
3. Loading Media From An External Supply

Refer to Figure 7.3. A P4T Series printer configured with the External Media option has a loading slot in the rear of the media compartment allowing you to use 4.0 in. (101.6 mm) wide fanfold or roll media from an external supply. The external supply must be designed such that it does not exert excessive drag as media is fed through the printer, which could result in distorted printing.

- Pull the media supports apart, insert a Media Spacer (Zebra part number BA16625-1) between them, and let the media supports close.
- Insert the media from the external supply through the rear feed slot, between the media guides and up through the media compartment as shown. Make sure the side of the media you will be printing on faces the printhead.

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Figure 7.4-Close the Media Cover

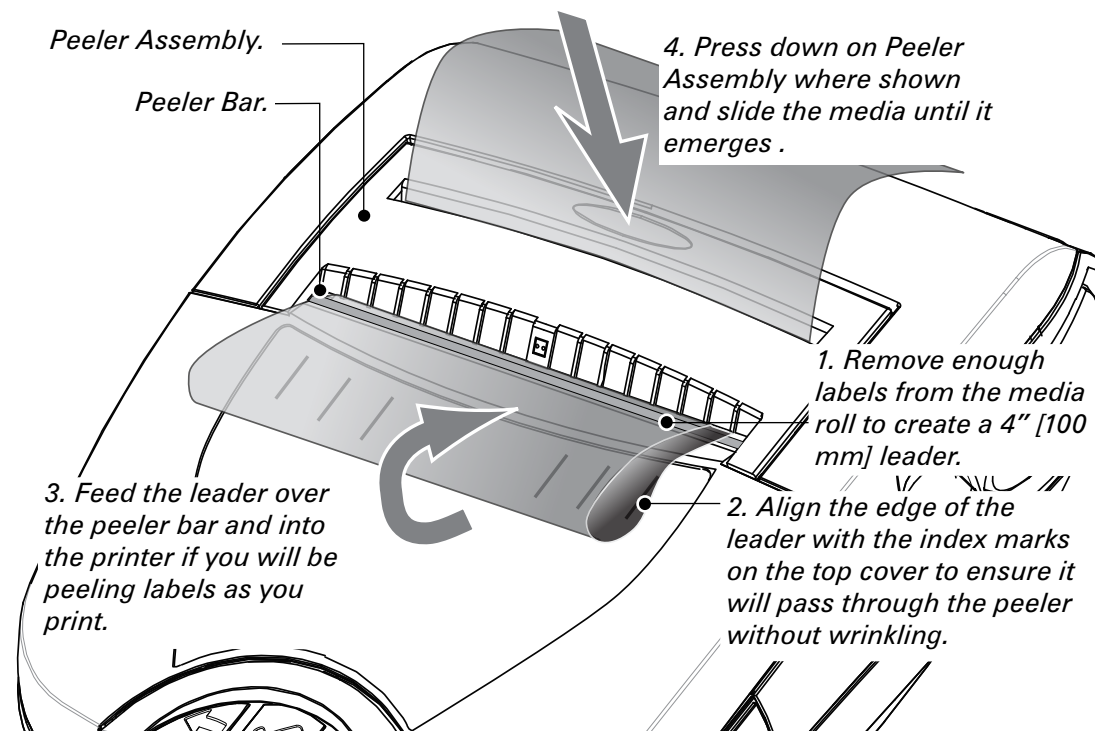


4. Close the Media Cover:

Refer to Figure 7.4.

- Pull the media out of the printer as shown at “1.”
- Close the media cover as shown at “2”, ensuring that it latches securely into place.
- Turn the printer on or press the Feed button if the printer is already on.
- The printer will advance a short strip of media and will then be ready for printing.

Figure 7.5- Insert Media into Peeler



5. Using the Label Peeler

Optional Step for label stock only

Refer to Figure 7.5.

The label peeler feature allows automatic separation of the printed label from its backing.

- 1.If you wish to use the label peeling feature, remove enough labels from the media roll to create a leader approximately 4” [100 mm.] long.
 2. Align the media as it emerges from the printhead with the index marks on the top cover to ensure it will pass through the peeler assembly without wrinkling.
 2. Feed the leader you created in step 1 over the peeler bar and into the peeler assembly.
 - 3 Push on the peeler assembly where shown in Figure 6.5. Insert the leader into the label peeler as shown and push on the media roll until it emerges from the slot at the rear of the peeler assembly.
- Turn the printer on or press the Feed button if the printer is already on.
 - The printer will advance a short strip of media and will then be ready for printing.

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Adjusting The Media Support Disks

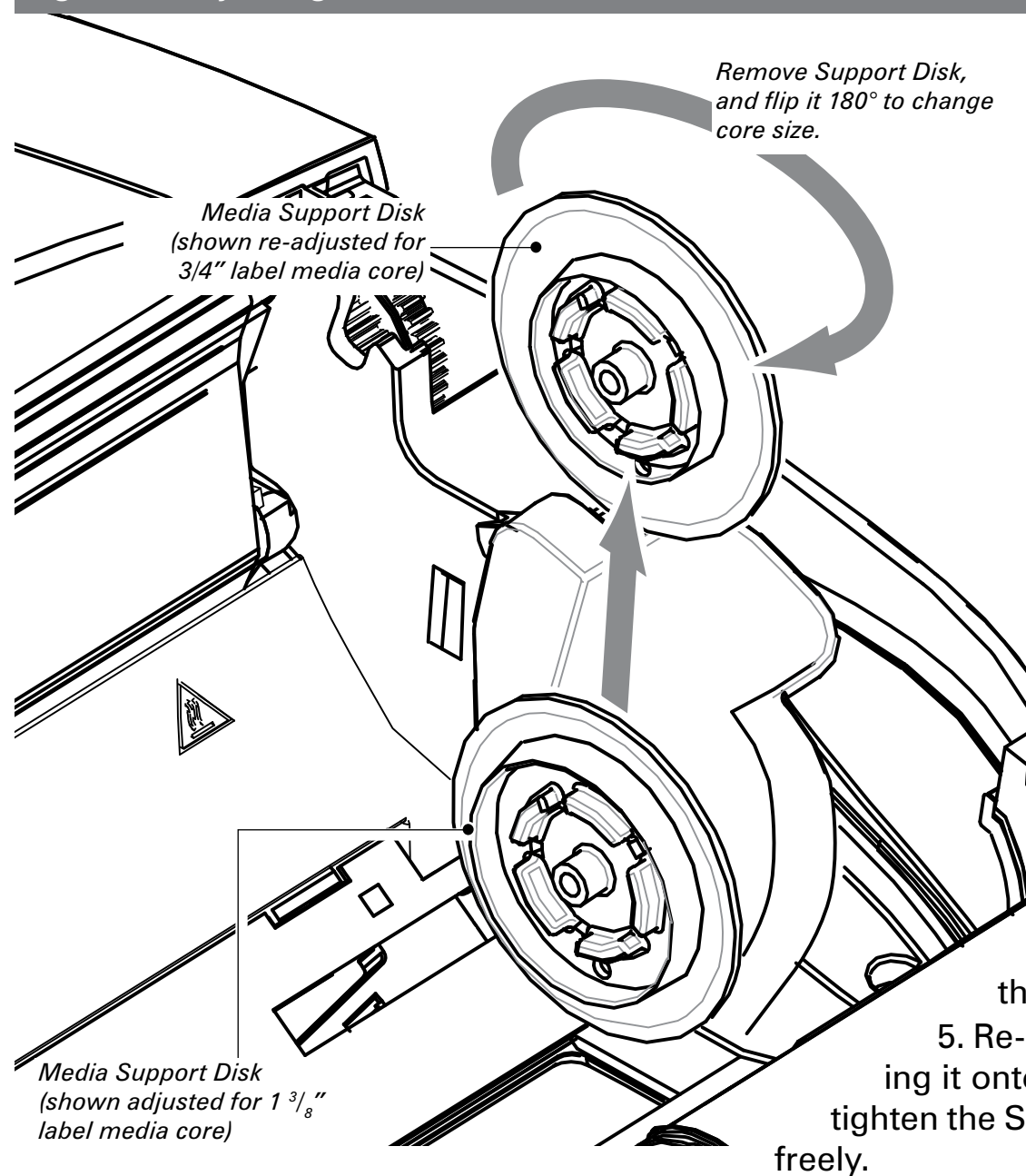
Media Core Size

Media supplied for the P4T Series printers will have two possible core sizes, depending on the media type. Journal media and most label media is supplied with a 0.75" [19.1 mm] diameter core to maximize the amount of media contained on a roll.

P4T printer media supports are set at the factory for 0.75" diameter media cores.

RP4T printers (equipped with the RFID encoder) are configured for media with 1.38" [35.05 mm] diameter cores since RFID media cannot be wound around a small diameter core without both degrading its ability to feed properly past the printhead and causing possible damage to the embedded RFID circuitry.

Figure 8- Adjusting the Media Core Diameter



Changing The Media Support Core Diameter Size

It may become necessary to change the media core size in the field to allow use of different media.

The media support disks are designed for both sizes of media cores, and they can be adjusted by removing them, flipping their position and re-securing them to the printer.

1. Open the Media Cover and remove any label media.
2. Use Phillips head screwdriver with a long blade to keep the screw attaching the Support Disk to the printer from turning.
3. Rotate the Support Disk while keeping the attachment screw from turning, and remove it.
4. Flip the Media Support Disk so that the desired core diameter ridge faces towards the inside of the printer. Please refer to Figure 8.
5. Re-secure the Support Disk by tightening it onto the attaching screw. Do not over tighten the Support Disk. It must be able to spin freely.

Repeat this procedure on the other Support Disk.

! Always ensure that both Support Disks are adjusted for the same size media core.

Replace the Media Support Disks if they have been adjusted for different core sizes more than 5 (five) times.

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Load the Ribbon Cartridge

Figure 9.1-Open the Printer Covers

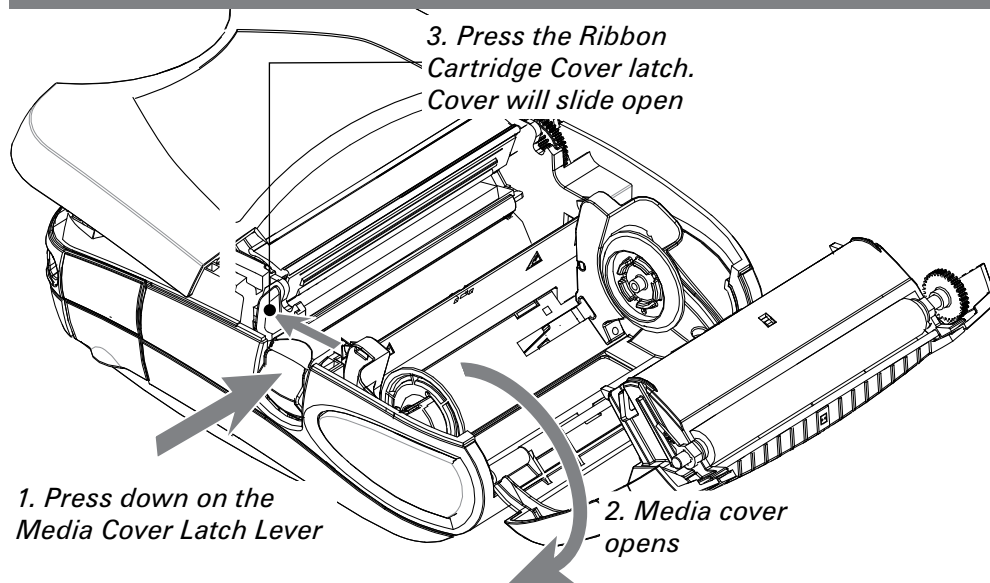


Figure 9.2-Load the Ribbon Cartridge

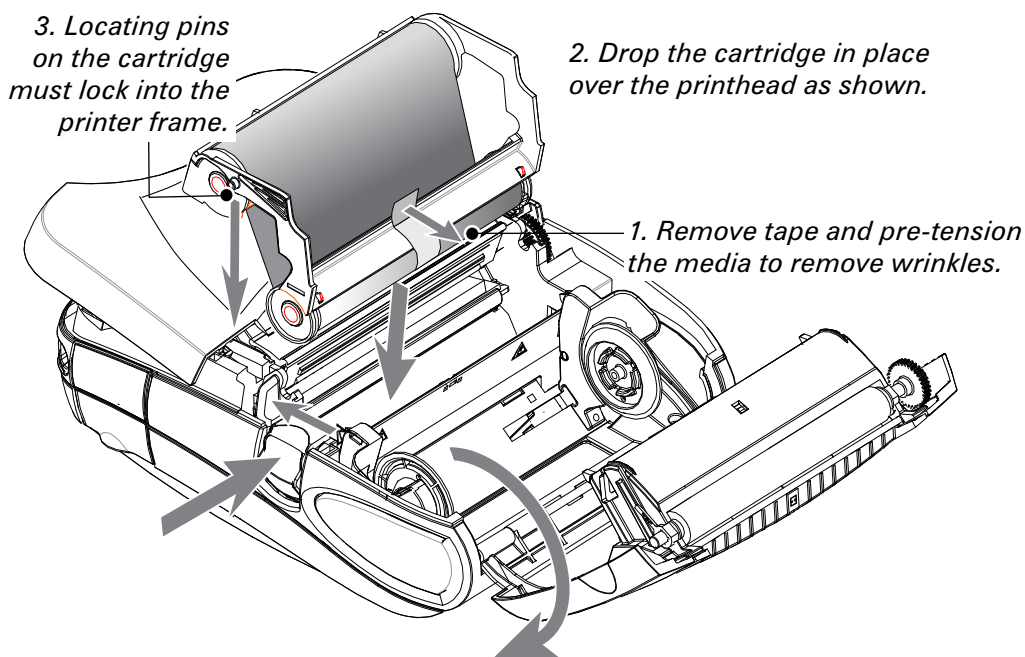
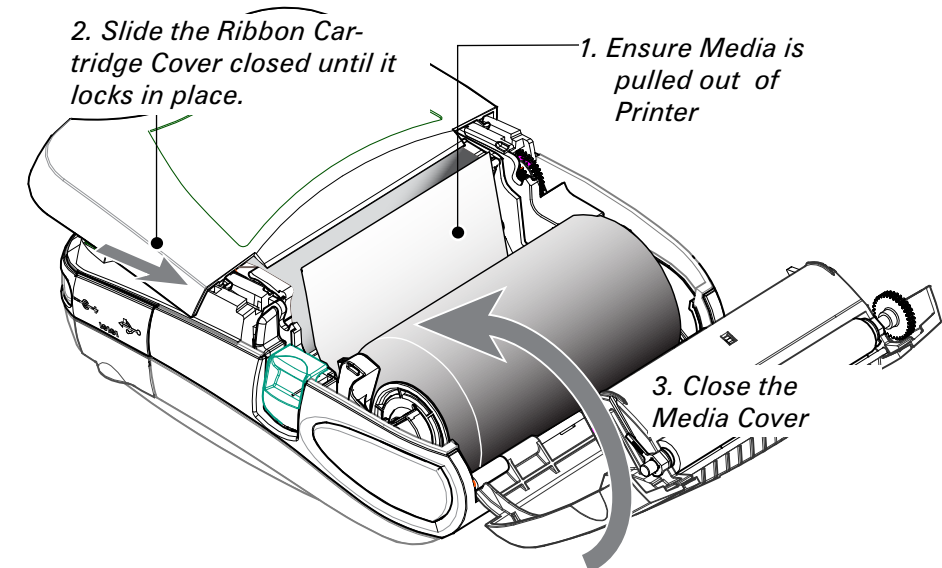


Figure 9.3-Close the Printer Covers



If you are using media that requires Thermal Transfer media, perform this step. If you are using journal stock, or media that uses direct thermal technology to print labels, omit this step.

1. Open the Printer Covers

Refer to Figure 9.1.

- Press the latch release button on the side of the printer as shown at "1" in figure 9.1. The media cover will open automatically
- Press on the Ribbon Cartridge Cover latch. The cover will slide open.

2. Load the Ribbon Cartridge.

Refer to Figure 9.2.

Select the correct Thermal Transfer cartridge for the media you will be using. Consult a Zebra sales representative for information regarding proper media selection for your application.

- Remove the tape holding the transfer ribbon in place.
- Pre-tension the transfer ribbon to remove wrinkles by turning the take-up roll until the media is stretched flat between the two rolls of the Ribbon Cartridge cartridge.
- Drop the appropriate cartridge in place. The locating pins on either side of the cartridge must be secured in the printer frame.



The Ribbon Cartridges are protected by a security device which verifies compatibility with P4T Series printers. Use of third party cartridges will cause the printer to malfunction, and will void the factory warranty.

3. Close the Printer Covers

Refer to Figure 9.3.

- If you have not done so, load label media into the printer as detailed previously, ensuring that the media has been pulled out of the printer past the printhead.
- Slide the Ribbon Cartridge cover closed until it latches in place.



Always close the Ribbon Cartridge cover before closing the media cover.

- Close the media cover and ensure it latches in place.

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Printer Controls Operator Controls

The printer control panel has buttons for the power on/off and media feed functions and a display which provides information regarding printer functions and application prompts. Two navigation keys provide easy selection of menu options.

The “Scroll Forward” button allows scrolling through the various options and settings. The “Scroll Back” button allows scrolling back through previously viewed menus. Pressing the “Select” button selects the currently highlighted option or function.

The status icons at the top of the screen indicate the state of various printer functions per the table below. Refer to the [Troubleshooting](#) section for more information on the printer status icons.








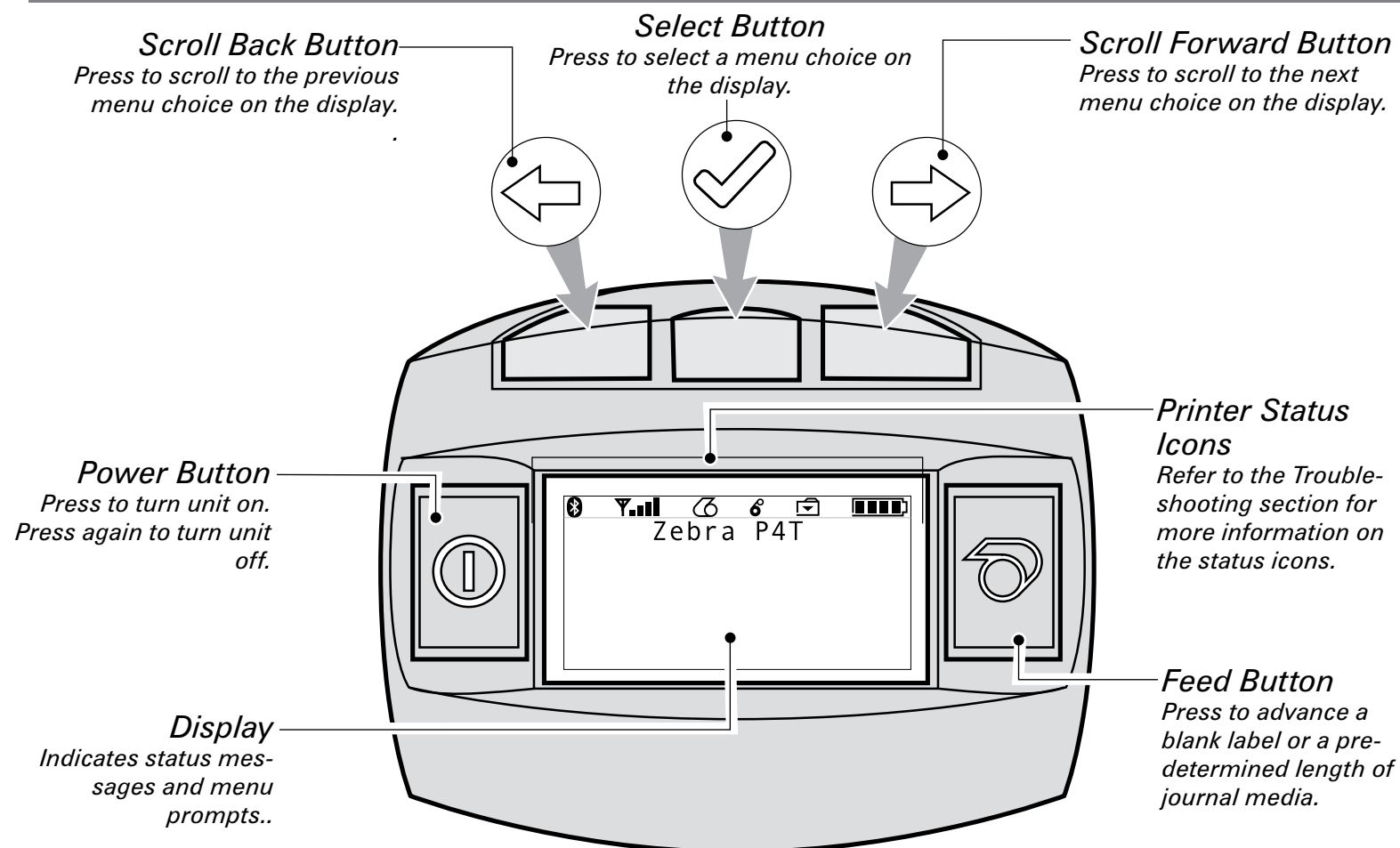
	Indicates a Bluetooth connection is established. This icon is functional only on P4T Series printers with a Bluetooth wireless option installed.
	Indicates that the printer is associated with a wireless Local Area Network (LAN) using an 802.11b/g compliant radio. This icon is functional only on a P4T Series printer with a WLAN wireless option installed.
	A flashing icon indicates that the printer does not detect any label media. This could indicate an out of media condition, or improperly loaded media.
	A flashing icon indicates that the thermal transfer film is depleted.
	A flashing icon indicates that data is being transferred to the printer.
	A flashing outside element of the battery icon indicates low charge status. You should suspend any printing operations and recharge or replace the Battery Pack as soon as is convenient.
	Cycling charge level elements within the battery icon indicate the P4T Series battery is being charged by the AC Adapter. Refer to Charger section of this manual.

Figure 10 -P4T Series Printer Controls & LCD Icons



If the printer displays: “Please Recondition the Battery” and beeps five times, the user should recondition the battery to return it to optimal operation. To recondition the battery, charge the battery fully overnight and then use the printer until the printer shuts down due to a low battery condition. Charge the battery again until it is fully charged. At that point the battery will be reconditioned. If the battery is not reconditioned properly the indicated battery charge level will indicate that there is more charge remaining in the battery pack than is actually available. Reconditioning performed as prompted by the printer will ensure accurate capacity indication throughout the serviceable life of the battery.

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Programmable LCD Settings

In addition to the status icons, the LCD on the control panel can display many of the printer's settings and functions as text as determined by the printer's application. Applications can be written to allow the user to view and /or modify these settings using the scroll and select keys on the display. Refer to the following tables for a partial set of printer features that can be programmed to display on the LCD.

The LCD has a backlighting option which allows viewing of the screen in a dark environment, or provides better contrast in a very bright environment. Use of the display backlight will decrease the time the printer will run between charges. Refer to the section "Extending Battery Life" for more information.

Extended LCD Functions

Function	Default setting	Scroll & Select Options
Sensor Type	Bar	<ul style="list-style-type: none"> • Bar • Gap
Baud Rate	19200	<ul style="list-style-type: none"> • 9600 • 19200 • 32400 • 57600 • 115200
Data Bits	8	<ul style="list-style-type: none"> • 7 • 8
Parity	N (none)	<ul style="list-style-type: none"> • E (Even) • N (None) • O (Odd)
LCD Contrast	8	<ul style="list-style-type: none"> • Increase (15max.) • Decrease (15 max.)
No-activity Timeout	120 sec.	<ul style="list-style-type: none"> • Decrease (0 min.)² • Increase (120 max.)
Audio Volume	3	<ul style="list-style-type: none"> • 1 – Low • 2 – Medium • 3 - High
Media Type	Journal	<ul style="list-style-type: none"> • Journal • Label
LCD Backlight ³	Momentary On	<ul style="list-style-type: none"> • Momentary On w/ time delay • Off
Factory Reset (Resets all to factory set values)	No	<ul style="list-style-type: none"> • No • Yes

NOTES:

1: LCD menu options are under specific application control. Not all options may be available in your printer's application.

2: A No-activity timeout value of "0" means the printer will remain on until powered off by the operator.

3: LCD Backlight turns on when any key other than FEED is pressed.

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Display Functions Not Controlled from the Keypad

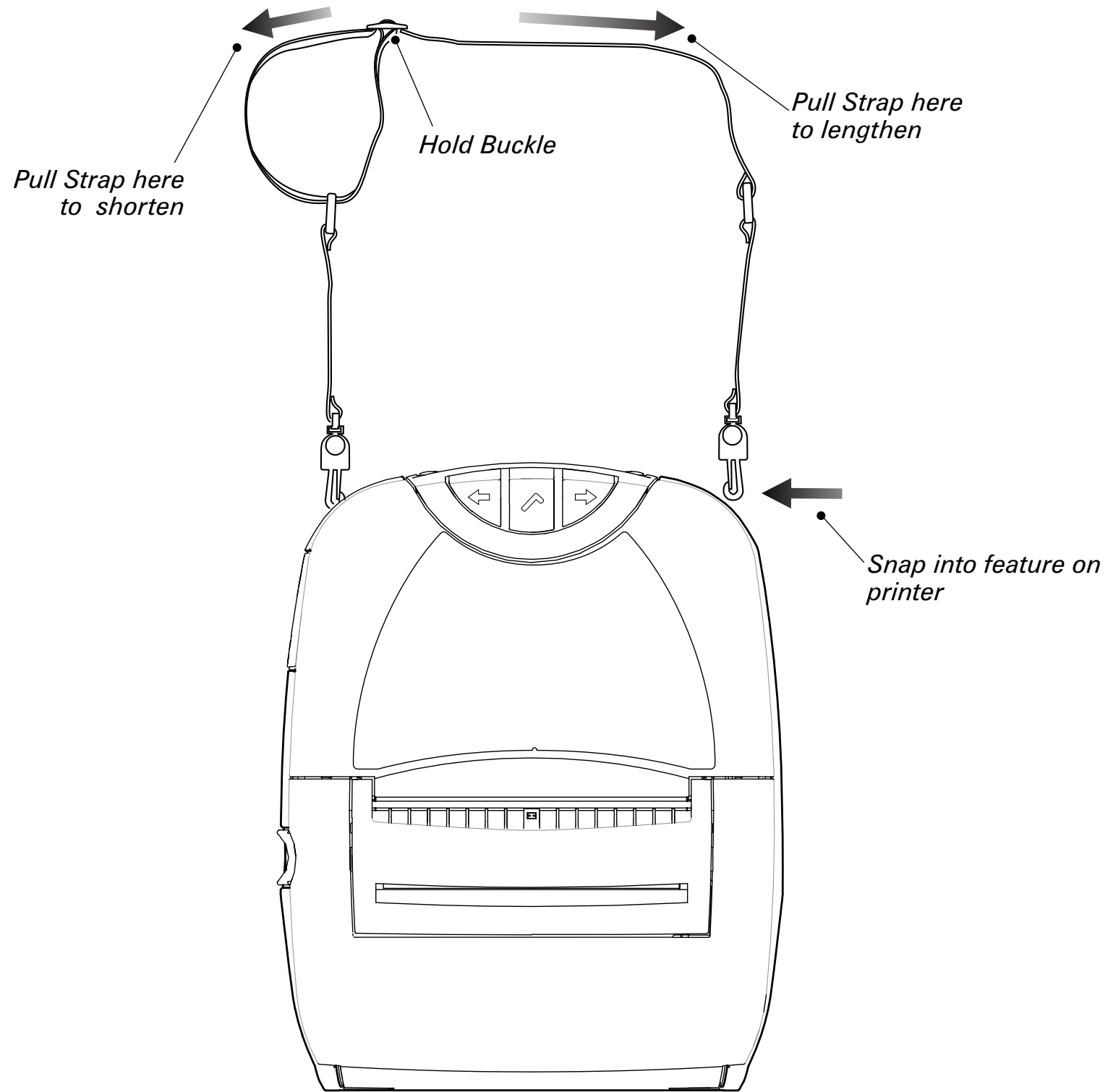
While the parameters in this table can appear on the display they can be set only by using a PC running Zebra's Label Vista label creation program and a data cable link to the printer.

Function	Default setting	Scroll & Select Options
WLAN ID	Factory Set Value	N/A
Tear-off Position (Top of Form)	00	<ul style="list-style-type: none"> • Increase (max. = +10) • Decrease (min. = -120)
Network & RF Settings		<ul style="list-style-type: none"> • All protocols On • Protocols On or Off individually
Bridge Mode	Off	<ul style="list-style-type: none"> • Off • On
DTR/VBUS-Power Off	Off	<ul style="list-style-type: none"> • On • Off
Present-at	000	<ul style="list-style-type: none"> • Increase (max. = +120) • Decrease (min. = 000)
Bluetooth parameters	n/a	Displays current Bluetooth operating parameters
802.11g operating parameters	n/a	Displays current 802.11g WLAN parameters
Media Type	Journal	<ul style="list-style-type: none"> • Journal • Label

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Adjustable Shoulder Strap

Figure 11- Shoulder Strap



Refer to figure above. Snap each end of the shoulder strap into the retaining features on top of the printer. Hold the buckle and adjust the strap as shown until you achieve the desired length.

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Connecting the Printer

The printer must establish communications with a host device which sends the data to be printed. Communications occur in three basic ways:

- By a cable between the printer and its host terminal using either RS232C or USB protocols
- By means of a Bluetooth short-range radio frequency link
- By means of a wireless LAN (Local Area Network) per 802.11b/g specifications

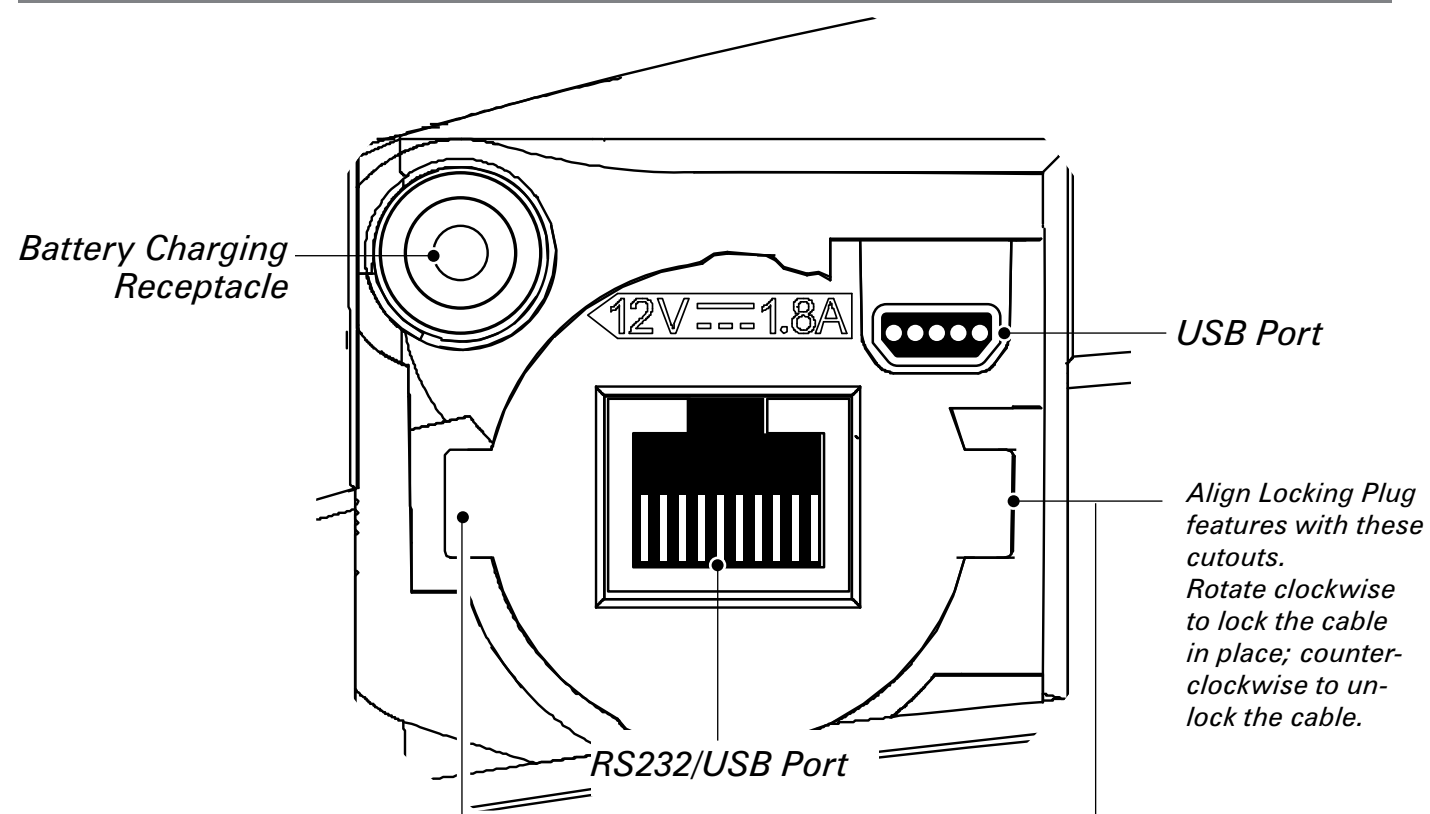
Cable Communications

Caution • *The printer should be turned off before connecting or disconnecting any communications cable.*



Note • *All P4T series printers can communicate by cable; the specific cable used with your printer can vary with the host terminal.*

Figure 13: P4T Series Communication Ports



Serial (RS232C) or USB Port

The 10-pin modular connector on your communications cable plugs into the combination RS232C/USB communications port on the side of the printer. Signals and pin assignments for both communications ports are in the Specifications section of this manual.

The protocol used with this port is determined by the communications cable you are using. Refer to Appendix A for more information on the communications cables offered with the P4T Series.

Plug the connector into the RS232 port and ensure its locking device has clicked into position.

The other end of the cable must be plugged into the host terminal as shown in Figure 14, or to a serial port on a computer as shown in Figure 15.

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USB

P4T Series Printers also have a USB type B port located directly above and to the right of the RS232C port. (Refer to Figure 13)
 The USB port is configured with the USB Open HCI interface driver allowing it to communicate with Windows® based devices. USB drivers are included in the Zebra Universal Driver which can be downloaded from www.zebra.com. Other terminals or communications devices may require the installation of special drivers to use the USB connection. Consult your Zebra re-seller or the factory for further details.

Figure 14- Connecting to a Terminal

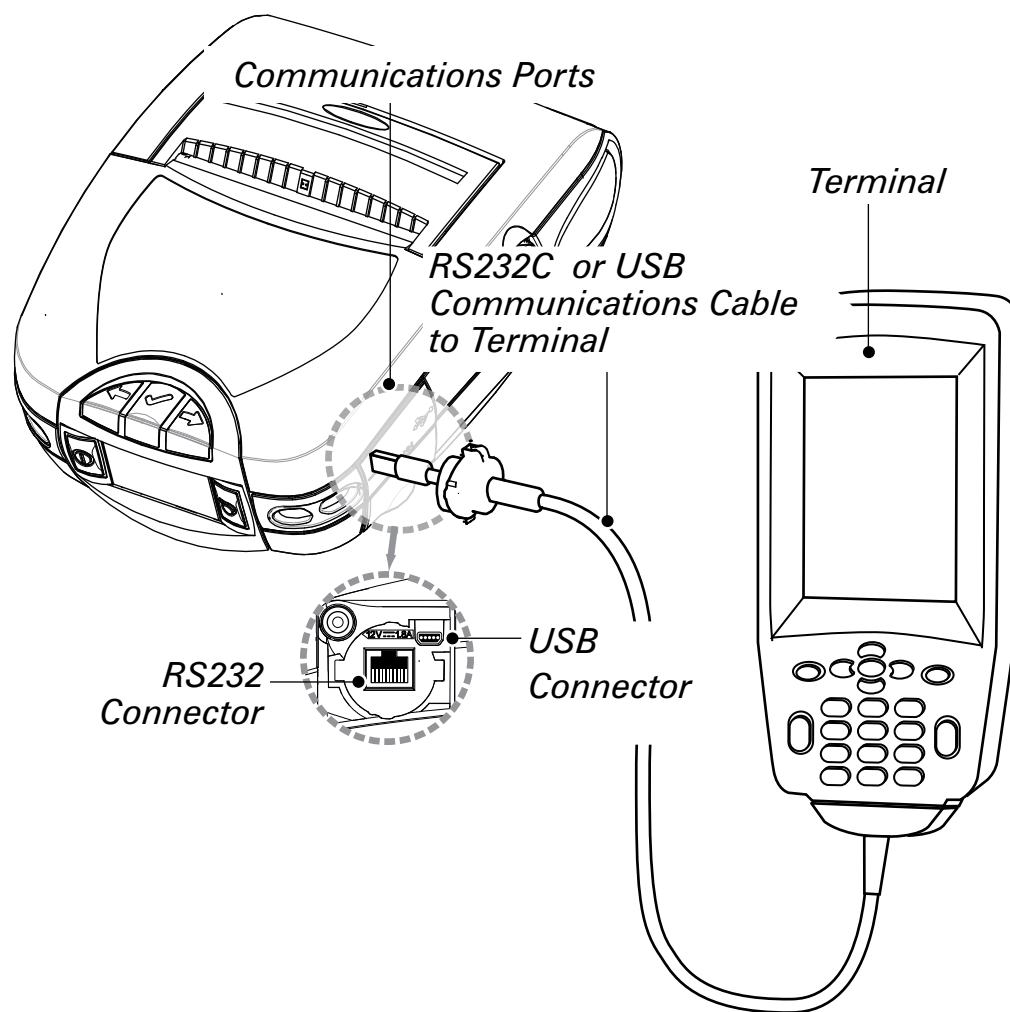
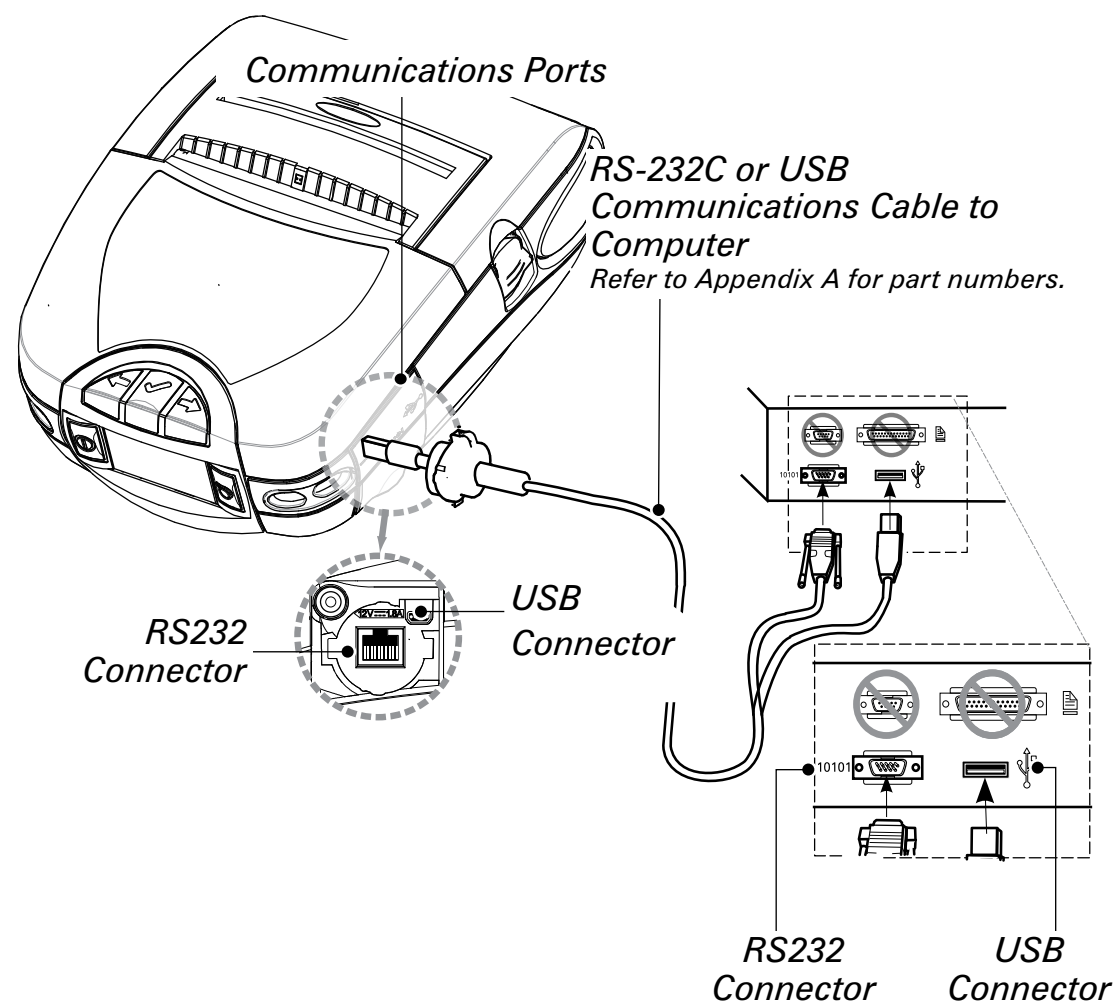


Figure 15- Connecting to a PC

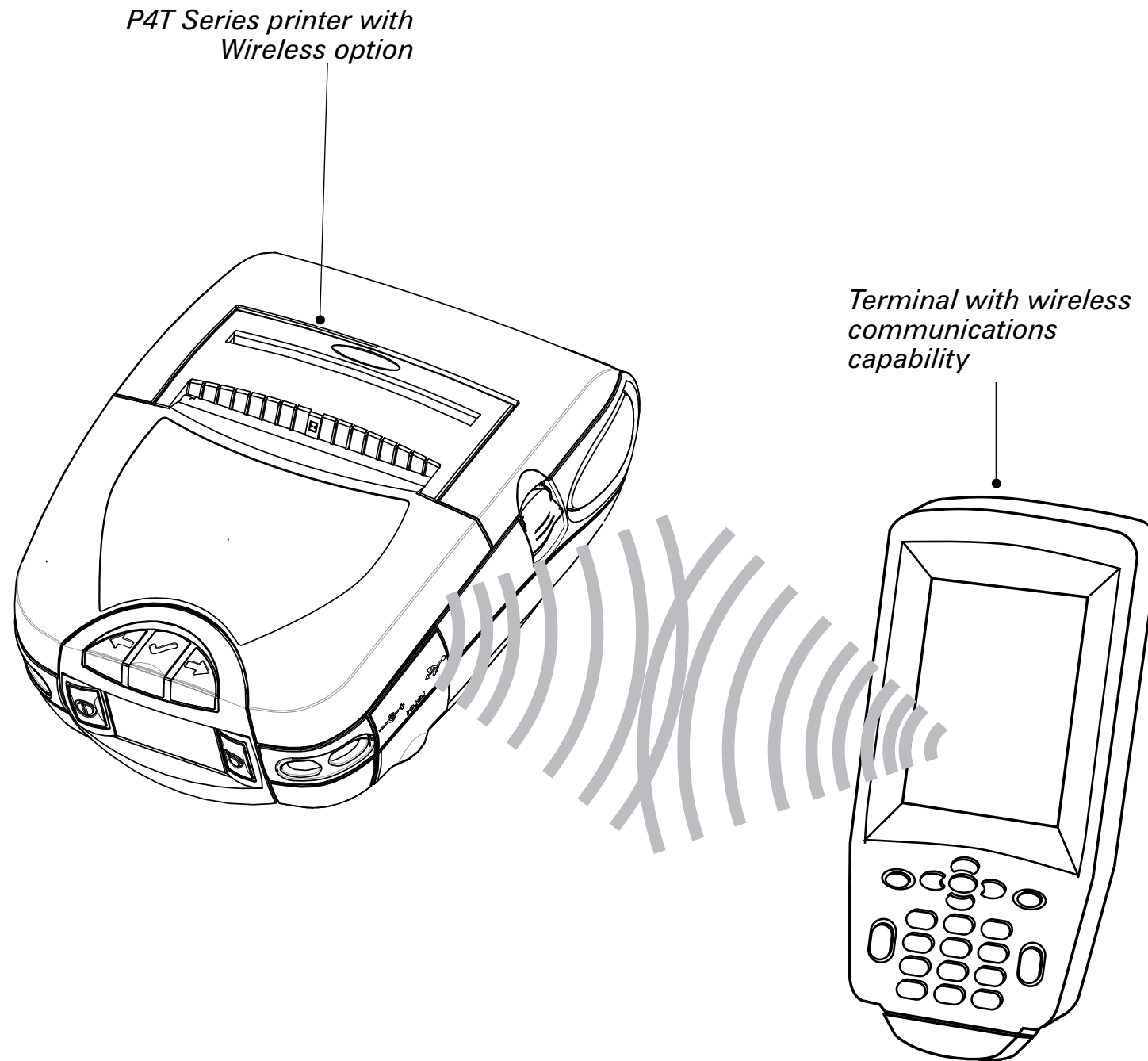


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Connect the Printer by Radio

If your P4T Series printer has a radio option, you can connect wirelessly to either a terminal or a wireless network (WLAN.) Refer to the Mobile Printer Wireless Configuration Guide available on the product CD or at www.zebra.com/manuals for help on setting up wireless communications with your printer.

Figure 16- Connecting Wirelessly to a Terminal



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Wireless Communications

Wireless Communications with Bluetooth®

“Bluetooth” is a worldwide standard for the exchange of data between two devices via radio frequencies. Bluetooth radios are relatively low powered to help prevent interference with other devices running at similar radio frequencies. This limits the range of a Bluetooth device to about 10 meters (about 32 feet).

Both the printer and the device it communicates with must follow the Bluetooth standard.

Bluetooth Networking Overview

Each Bluetooth enabled P4T series printer has a unique Bluetooth Device Address (BDA) loaded into its radio module when manufactured.

Bluetooth software is always running in the background, ready to respond to connection requests. One device (known as the master or the client) must request a connection with another. The second device (the slave or the server) then accepts or rejects the connection. A Bluetooth enabled P4T series printer will normally act as a slave creating a miniature network with the terminal sometimes referred to as a “piconet.”

For the most part, communications using Bluetooth are initiated and processed without any operator intervention.

P4T Series printers can be equipped with both a Bluetooth and an 802.11b/g radio, allowing communications with both Bluetooth enabled devices and a Wireless Local Area Network (WLAN) (see discussion below).

Wireless Local Area Network Overview

P4T Series printers can be equipped with several radio options which use the industry standard 802.11b or g WLAN protocols.

- P4T Series Wireless Network Printers with the Zebra 802.11b/g WLAN radio module can be identified by the Product Configuration Code (PCC) on the serial number label on the back of the printer. Printers with this option will have a “K” as the seventh character of the PCC Code. Printers with this option may also be identified by the FCC ID: **TBD** on printers built for the North American region.
- P4T printers with both an 802.11b/g WLAN radio and a Bluetooth radio running in the same unit are considered to be dual radio devices. Printers with this option will have an “A” as the seventh character of the PCC Code.



RP4T model printers cannot be configured with the 802.11g/Bluetooth dual radio option.

Dual radio equipped P4T units will have a Bluetooth radio FCC ID “**T.B.D.**” and 802.11b Compact flash radio FCC ID “**T.B.D.**”. The FCC ID numbers and other regulatory information for both radios are also located on the serial number label of printers built for the North American region.



Refer to Appendix D of this manual for more information on locating the Product Configuration Code.

Printers equipped with either of the 802.11b/g radio options allow wireless communication as a node within a WLAN and its wireless capabilities allow communications from any point within the WLAN’s perimeter. P4T printers equipped with the dual Bluetooth/802.11b/g WLAN radio configuration can be linked to both a WLAN and a Bluetooth network simultaneously.

Methods of establishing communications to P4T Series printers will vary with each LAN application. General information on establishing WLAN communications can be found in either the “CPCL Programmers Manual” or the “Quick Start Guide for Mobile Wireless Printers” both available on-line at the Zebra Web site www.zebra.com/manuals. More information and LAN configuration utilities may also be found in Zebra’s Label Vista™ program (version 2.8 and later). The latest version of Label Vista may be downloaded from Zebra’s Web site.

Setting Up the Software

P4T Series printers use Zebra’s CPCL Programming language which was designed for mobile printing applications. CPCL is fully described in the “CPCL Programmers Manual”, available on-line at the Zebra Web site.

You can also use Label Vista™, Zebra’s Windows based label creation program which uses a graphical interface to create and edit labels in the CPCL language.

All P4T Series printers support an interpreter for the ZPL II programming language. RP4T printers (with RFID encoding/reading capabilities) use the ZPL programming language’s extensive set of RFID commands.

If you plan to use ZPL II, refer to the appropriate Programming Guides available on-line from Zebra’s Web site.


If you have a printer with wireless capabilities, you can refer to the “Wireless Configuration Guide.” also available on the Zebra web site.


If you choose to use a third party label preparation system, follow the installation instructions included in the package.

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Radio Regulatory Information

Bluetooth ZBR4 Radio

 **Caution • Exposure to Radio Frequency Radiation.**
The radiated output power of this internal Bluetooth radio is far below the FCC radio frequency exposure limits. The internal Bluetooth radio operates within guidelines found in radio frequency safety standards and recommendations. Do not use the printer in an unauthorized manner.


 **Note • The following section only applies when the TBD-ZBR4 Bluetooth Radio (TBD) is installed in a P4T Series printer. Unless specified elsewhere in this manual, the antenna used for this transmitter must not be co-located or must not operate in conjunction with any other antenna.**

European Regulatory Information for the TBD-ZBR4 Bluetooth Radio

This device is intended for use in all EU and EFTA member states.
 Europe – EU Declaration of Conformity
 This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of compliance with the R&TTE Directive 1999/5/EC:


- EN 60950: 2000 Safety of Information Technology Equipment
- EN 300 328-2 V1.4.1 (2003-04) Technical requirements for spread-spectrum radio equipment
- EN 301 489-1/-17 V1.4.1/1.2.1 (2002-08) EMC requirements for spread-spectrum radio equipment.


This device is a 2.4 GHz wireless LAN transceiver, intended for indoor home and office use in all EU and EFTA member states.

	Important Notice: This device is a portable RF printer intended for commercial and industrial use in all EU and EFTA member states.
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WLAN Module Using 802.11b/g Radio

The following section only applies when the 802.11b/g WLAN module (FCC ID: TBD) is installed in a P4T Series printer. Other than conditions specified elsewhere in this manual, only one of the radio options can be installed in the printer at one time and the antenna used for these transmitters must not be co-located or must not operate in conjunction with any other antenna.
 P4T Series models have the FCC ID number on a label on the back of the unit.



 **Caution • Use of a P4T Series printer with the radio module marked with FCC ID: TBD meets the FCC requirements for radio frequency (RF) radiation exposure in the standard body worn configuration with no minimum separation. In this configuration, which applies whether the belt clip or shoulder strap is used, the face of the printer from which paper is transported is facing away from the user's body. The standard configuration must always be used when the printer is body worn.**

 **The P4T Series printer with this radio option has been SAR tested. The maximum SAR value measured is: TBD W/Kg (1g average)**

European Regulatory Information for this Radio

AT	BE	CY	CZ	DK
EE	FI	FR	DE	GR
HU	IE	IT	LV	LT
LU	MT	NL	PL	PT
SK	SI	ES	SE	GB

Note: -Member states in the EU with restrictive use for this device are crossed out!
 This device is also authorized for use in all EFTA member states (CH, IS, LI, NO)

 0336 	Important Notice: This device is a portable RF printer intended for commercial and industrial use in all EU and EFTA member states except in France where restrictive use applies
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Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of compliance with the R&TTE Directive 1999/5/EC:

- EN55022:1998
- European Emissions Standard
 - EN 60950: 2000
- Safety of Information Technology Equipment
 - EN 300 328-2 V1.2.1 (2001-12)
- Technical requirements for spread-spectrum radio equipment
 - EN 301 489-17 V1.2.1 (2002-08)

EMC requirements for spread-spectrum radio equipment.

This device is a 2.4 GHz wireless LAN transceiver, intended for indoor home and office use in all EU and EFTA member states, except in France where restrictive use applies.

The use of this frequency band in France is subject to restrictions. You may only use channels 10 and 11 (2457 and 2462 MHz) on French territory, except in those French departments as listed in the table below where channels 1-13 (2412-2472 MHz) may be used. For more information see <http://www.anfr.fr/> and/or <http://www.art-telecom.fr>

01	Ain	36	Indre	69	Rhone
02	Aisne	37	Indre et Loire	70	Haute Saone
03	Allier	39	Jura	71	Saone et Loire
05	Hautes Alpes	41	Loir et Cher	72	Sarthe
08	Ardennes	42	Loire	75	Paris
09	Ariege	45	Loiret	77	Seine et Marne
10	Aube	50	Manche	78	Yvelines
11	Aude	54	Meurthe et Moselle	79	Deux Sievres
12	Aveyron	55	Meuse	82	Tarn et Garonne
16	Charente	57	Moselle	84	Vaucluse
19	Correze	58	Nievre	86	Vienne
2A	Corse Sud	59	Nord	88	Vosges
2B	Haute Corse	60	Oise	89	Yonne
21	Cote d'Or	61	Orne	90	Territoire de Belfort
24	Dordogne	63	Puy de Dome	91	Essonne
25	Doubs	64	Pyrenees Atlantique	92	Hauts de Seine
26	Drome	65	Hautes Pyrenees	93	Seine St Denis
27	Eure	66	Pyrenees Orientales	94	Val de Marne
32	Gers	67	Bas Rhin		
35	Ille et Vilaine	68	Haute Rhin		

Republic of China Regulatory Information for the 802.11b/g Radio

經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾現象時,應立即停用,並改善至無干擾時方得繼續使用。前項合法通信,指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

According to “Administrative Regulations on Low Power Radio Waves Radiated Devices” Without permission granted by the DGT, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to a approved low power radio-frequency devices. The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved. The said legal communications means radio communications is operated in compliance with the Telecommunications Act.

The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

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802.11b/g and Bluetooth Co-located Radio Modules

The following section only applies when the CF (Compact Flash) WLAN module (With FCC ID: **TBD**) and Bluetooth module (FCC ID: **TBD**) are installed in a P4T printer. This co-located radio configuration has demonstrated compliance to FCC regulations. The FCC ID numbers are on the serial number label on the back of the printer and can be read with the module installed.



Caution • Use of a P4T printer with the radio module marked with both “FCC ID: **TBD” and “**TBD**” meets the FCC requirements for radio frequency (RF) radiation exposure in the standard body worn configuration with no minimum separation. In this configuration, which applies whether the belt clip or shoulder strap is used, the face of the printer from which paper is transported is facing away from the user’s body. The standard configuration must always be used when the printer is body worn.**



P4T printers with this radio option have been SAR tested. The maximum SAR value measured was **TBD W/kg averaged over 1 gram.**

European Regulatory Information for the Compact Flash 802.11b Radio and Bluetooth Co-located Radio Modules

AT	BE	CY	CZ	DK
EE	FI	FR	DE	GR
HU	IE	IT	LV	LT
LU	MT	NL	PL	PT
SK	SI	ES	SE	GB

Note: -Member states in the EU with restrictive use for this device are crossed out!
This device is also authorized for use in all EFTA member states (**CH, IS, LI, NO**)

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of compliance with the R&TTE Directive 1999/5/EC:

- EN 60950: 2000

Safety of Information Technology Equipment

- EN 300 328-2 V1.2.1 (2001-12)

Technical requirements for spread-spectrum radio equipment

- EN 301 489-17 V1.2.1 (2002-08)

EMC requirements for spread-spectrum radio equipment.

This device is a 2.4 GHz wireless LAN transceiver, intended for indoor home and office use in all EU and EFTA member states, except in France where restrictive use applies.

The use of this frequency band in France is subject to restrictions. You may only use channels 10 and 11 (2457 and 2462 MHz) on French territory, except in those French departments as listed in the table below where channels 1-13 (2412-2472 MHz) may be used. For more information see <http://www.anfr.fr/> and/or <http://www.art-telecom.fr>

01	Ain	36	Indre	69	Rhone
02	Aisne	37	Indre et Loire	70	Haute Saone
03	Allier	39	Jura	71	Saone et Loire
05	Hautes Alpes	41	Loir et Cher	72	Sarthe
08	Ardennes	42	Loire	75	Paris
09	Ariege	45	Loiret	77	Seine et Marne
10	Aube	50	Manche	78	Yvelines
11	Aude	54	Meurthe et Moselle	79	Deux Sievres
12	Aveyron	55	Meuse	82	Tarn et Garonne
16	Charente	57	Moselle	84	Vaucluse
19	Correze	58	Nievre	86	Vienne
2A	Corse Sud	59	Nord	88	Vosges
2B	Haute Corse	60	Oise	89	Yonne
21	Cote d’Or	61	Orne	90	Territoire de Belfort
24	Dordogne	63	Puy de Dome	91	Essonne
25	Doubs	64	Pyrenees Atlantique	92	Hauts de Seine
26	Drome	65	Hautes Pyrenees	93	Seine St Denis
27	Eure	66	Pyrenees Orientales	94	Val de Marne
32	Gers	67	Bas Rhin		
35	Ille et Vilaine	68	Haute Rhin		

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RFID Encoder

The following section only applies when the RFID encoder is installed in an RP4T printer. The RFID encoder may be installed in conjunction with either the Bluetooth or 802.11g radio options detailed previously, but may not be installed with the Bluetooth/802.11g dual radio option.

P4T Series printers will have the fifth character of the Product Configuration Code (PCC) per the following table:

RFID option	PCC digit "4"	Printer Model
No RFID	0	P4T
US	1	RP4T
EU	2	RP4T
Japan	3	RP4T
China	4	RP4T
Korea	5	RP4T

Units built for the North American region will also have the (FCC ID: **TBD**) on a label on the back of the unit.



Caution • Use of a RP4T printer with the RFID Encoder marked with FCC ID: **TBD meets the FCC requirements for radio frequency (RF) radiation exposure in the standard body worn configuration with no minimum separation. In this configuration the face of the printer from which paper is transported is facing away from the user's body. The standard configuration must always be used when the printer is body worn.**



The RP4T printer with this radio option has been SAR tested. The maximum SAR value measured is: **TBD W/Kg (1g average)**

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Model RP4T RFID Encoder



The information in this section is provided for your convenience only and is subject to change. Go to <http://www.epcglobalinc.org> for the latest EPC information.

The RP4T printer is equipped with an RFID encoder/reader, which is integrated into the printer's printhead assembly. The RP4T encodes (writes) information on ultra-thin UHF RFID transponders that are embedded in "smart" labels, tickets, and tags. The printer encodes the information; verifies proper encoding; and prints bar codes, graphics, and/or text on the label's surface. The RP4T printer uses Zebra's extensive set of RFID commands running under ZPL programming language emulation.

The RFID transponder is sometimes called the RFID tag or an inlay. The transponder is usually made of an antenna that is bonded to an integrated circuit (IC) chip. The IC chip contains the RF circuit, coders, decoders, and memory. If you hold an RFID label up to the light, you can see the transponder's antenna, and you can feel a bump in the label where the IC chip is located.

The RP4T can encode and verify EPC (Electronic Product Code) Generation 2 Class 1 UHF passive RFID tags, in addition to printing human readable text and conventional 1 and 2-D barcode information on Zebra supplied RFID thermal transfer media.

EPC is a product numbering standard that can be used to identify a variety of items by using RFID technology. EPC Generation 2 tags offer advantages over other tag types. The tag identification (TID) memory in a Generation 2 tag includes the chip manufacturer and model number information, which can be used to identify which optional features are present on the tag. These optional features include those for data content and security.

Gen 2 tags typically have a 96-bit EPC identifier, which is different from the 64-bit identifiers common in early EPC tags. The 96-bit EPC code links to an online database, providing a secure way of sharing product-specific information along the supply chain.

Gen 2 tags also support much larger data structures. The size of user memory available (if any) varies by the model and manufacturer of the tag.



Print quality will be reduced when attempting to print over the transponder portion of an RFID label. It is recommended that RFID label layouts should not allow printing over the RFID transponder portion of a label.

Generation 2 Class 1 UHF Passive Tags Supported By The P4T

- Alien Squiggle*
- Avery Dennison*
- Raflatac Onetenna*
- Omron Wave*

Encoding and printing of an RFID label usually are completed on the first try, but some failures may occur. If you experience consistent encoding failures, it may signal a problem with the RFID tags, your label formats, or with the transponder placement.

If an RFID tag cannot be encoded, "VOID" will be printed on the label. The printer then attempts to read/encode "n" labels before the next format is attempted, where "n" is specified by the ZPL programming language "**^RS**" command. Acceptable values of "n" are 1 to 10 and the default is 3. After printing the defined number of voided RFID labels, printer will go into an error mode. The printer response to an error is defined by the RFID Setup command and will allow:

1. No Action (Label format causing the error is dropped)
2. Notification to the Host of the details of the error (Label format causing the error is dropped).

The user has control of where on the label the VOID is printed.

More information on the "**^RS**" command may be found in Zebra's RFID Programming Guide available on the corporate Web site.

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Preventive Maintenance

Extending Battery Life

- Avoid exposing the battery to direct sunlight or temperatures over 104 °F (40 °C).
- Always use a Zebra charger designed specifically for Lithium-Ion batteries. Use of any other kind of charger may damage the battery.

Caution • Do not print while an LI72 Single Charger is plugged into the unit. Unreliable battery charging can result.

- Use the correct media for your printing requirements. An authorized Zebra re-seller can help you determine the optimum media for your application.
- If you print the same text or graphic on every label, consider using a preprinted label.
- Choose the correct print darkness and print speed for your media.
- RP4T printers (with the RFID encoder/reader): adjust the encoder settings to use the minimum power required for the RFID media in use.
- Use software handshaking (XON/XOFF) whenever possible.
- Use the LCD display backlight only when necessary. Turn it off whenever it is not needed.

- Remove the battery from the printer if it won't be used for a day or more and you're not performing a maintenance charge.
- Consider purchasing an extra battery.
- Remember that any rechargeable battery will lose its ability to maintain a charge over time and can be recharged only a finite number of times before it must be replaced. The "Smart Battery" feature of the P4T Series monitors the battery pack's condition and will prompt you when a battery pack is nearing the end of its useful life.

 **Always dispose of used batteries properly. Refer to Appendix E for more information on proper battery disposal.**

- When the printer displays "Please Recondition The Battery" and beeps five times, the user should recondition the battery to return it to optimal capacity. Refer to the [Operator Controls](#) section of this manual for information in reconditioning the battery.

General Cleaning Instructions

 **Caution • Always turn the printer off before cleaning.**

 **To avoid possible personal injury or damage to the printer, never insert any pointed or sharp objects into the printer.**

 **Use care when working near the Tear Bar. The edges are very sharp.**

 **Caution • The printhead can become very hot after prolonged printing. Allow it to cool off before attempting any cleaning procedures.**

Caution • Use only cleaning agents specified in the P4T Series cleaning instructions. Zebra Technologies Corporation will not be responsible for damage caused by any other cleaning materials used on this printer.

Clean the printer with either the cleaning pen supplied with the printer or a cotton swab saturated with alcohol.

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P4T Series Cleaning

⚠ Caution • To avoid possible personal injury or damage to the printer never insert sharp or pointed objects into the printer mechanism.

Figure 17.1- P4T Series Cleaning

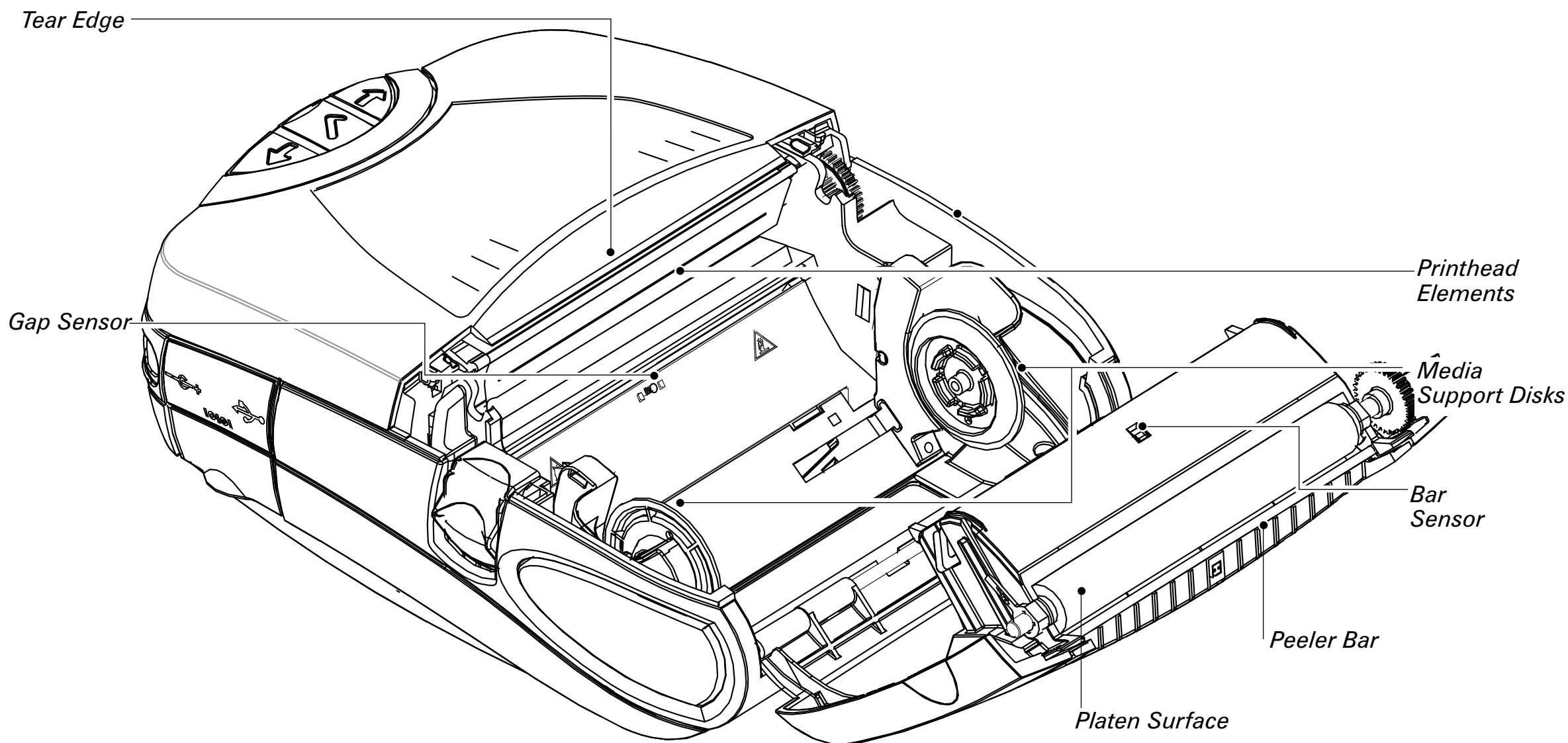
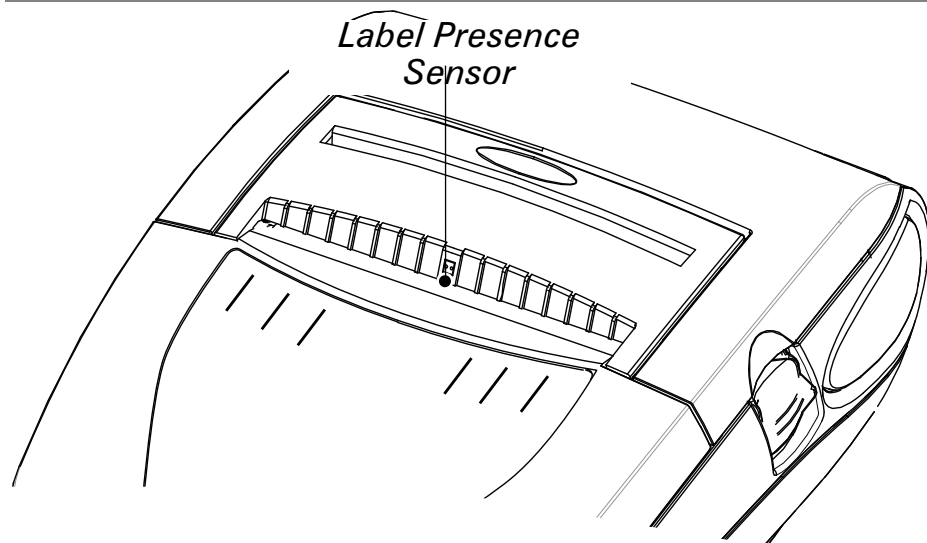


Figure 17.2- Cleaning the P4T Series Peeler Assembly



Area	Cleaning Method	Interval
Printhead Elements	Use the supplied cleaning pen to clean the print elements from end to end (the print elements are located in the thin gray line on the printhead).	After every five rolls of media (or more often, if needed)
Platen Surface	Rotate the platen roller and clean it thoroughly with the cleaning pen.	
Peeler Bar	Clean thoroughly with the cleaning pen.	As needed
Tear Edge		
Exterior	Wipe with water-dampened cloth	
Interior	Brush/air blow. Ensure the Bar Sensor, Gap Sensor and Label Present Sensor windows and the Media Support Disks are free of dust.	