Zebra
P4T/RP4T™
Mobile Printer Series
User Guide

PRELIMINARY

REVISED
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Proprietary Statement

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Product Improvements

Since continuous product improvement is a policy of Zebra Technologies Corporation, all specifications and signs are subject to change without notice.

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 or 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.

Canadian Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme á la norme NMB-003 du Canada.
"IC:" before the equipment certification number signifies that the Industry Canada technical specifications were met. It does not guarantee that the certified product will operate to the user's satisfaction.

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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Copyrights

Section Continues ▶

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.

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

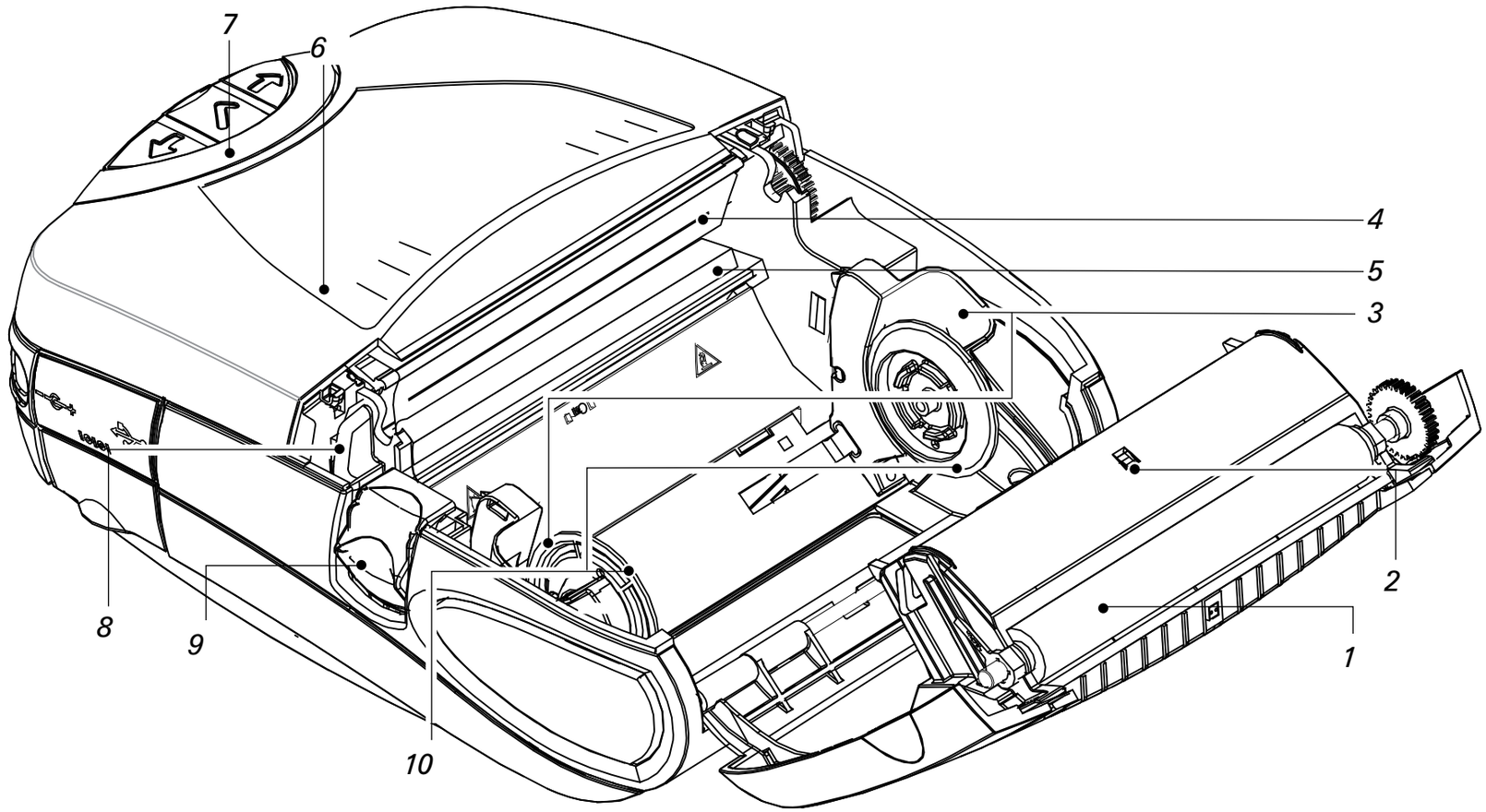
If you discover shipping damage:

- 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.

Section Continues

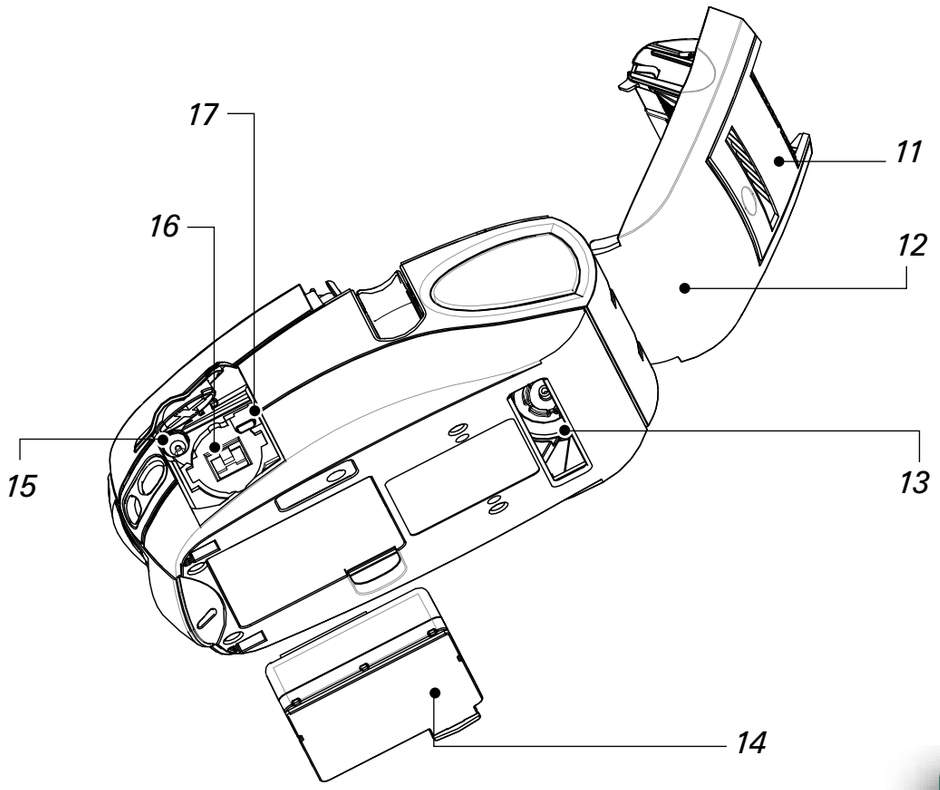
P4T/RP4T Overview

Figure 1: P4T/RP4T Illustrated



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*

Figure 1a: P4T/RP4T Bottom View



Section Continues

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 readible 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 loose 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.

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

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.

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 accidently 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

Section Continues

Approved Chargers

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

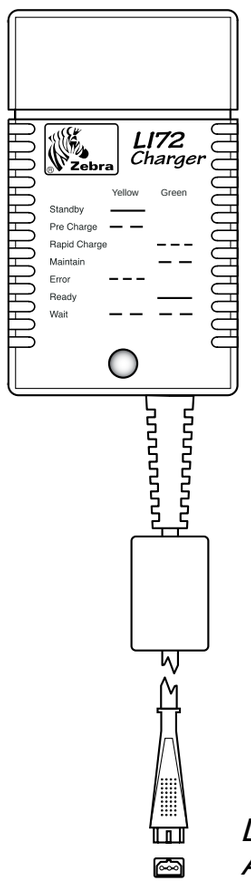
Use of chargers not approved by Zebra specifically for use with the P4T Series will void the warranty and could cause damage to the printer or the battery pack. Zebra is not responsible for any damage to equipment caused by the improper use of unauthorized equipment.

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



LI72 Charger
AT17696-tab

The LI72 Charger

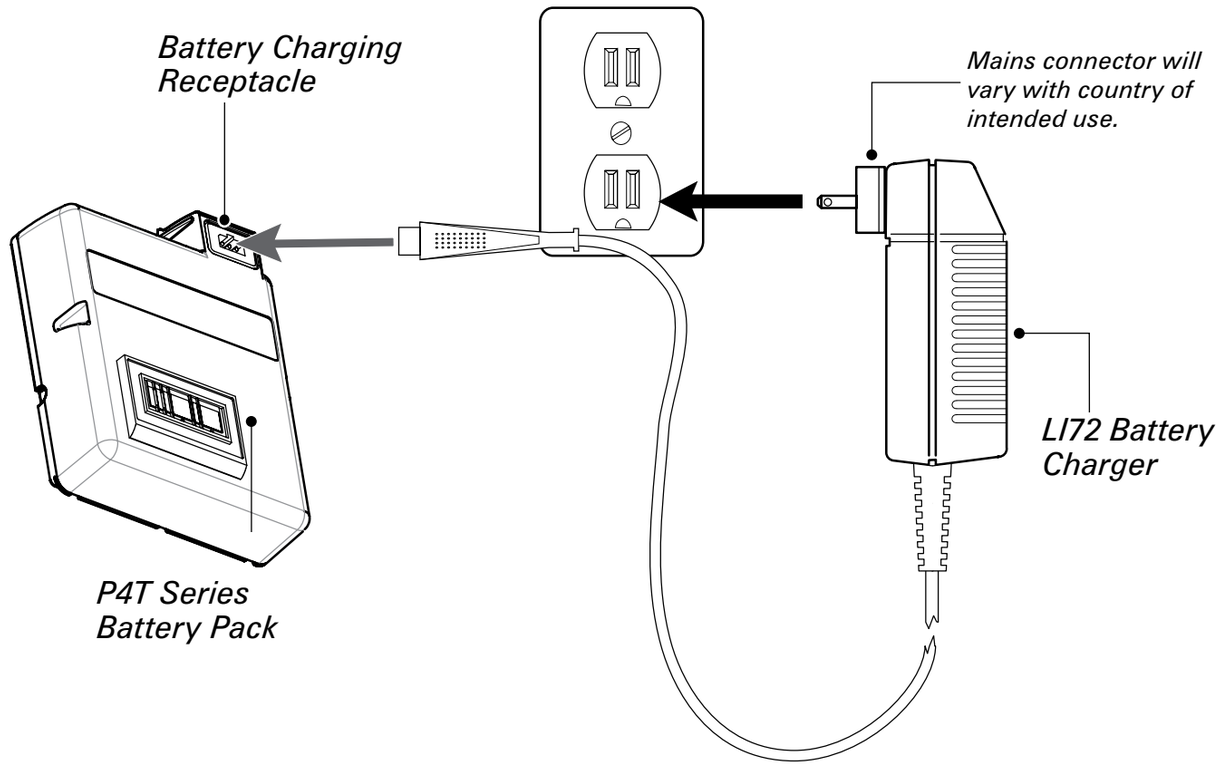
LI72 charger is a wall mounted fast charger with a universal 110 to 230, 50-60 Hz. VAC input. Multiple AC plug configurations comply with most international standards. This charger is intended for use with the P4T Series printers which are equipped with Lithium Ion (Li-ion) batteries.

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.

Section Continues

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.

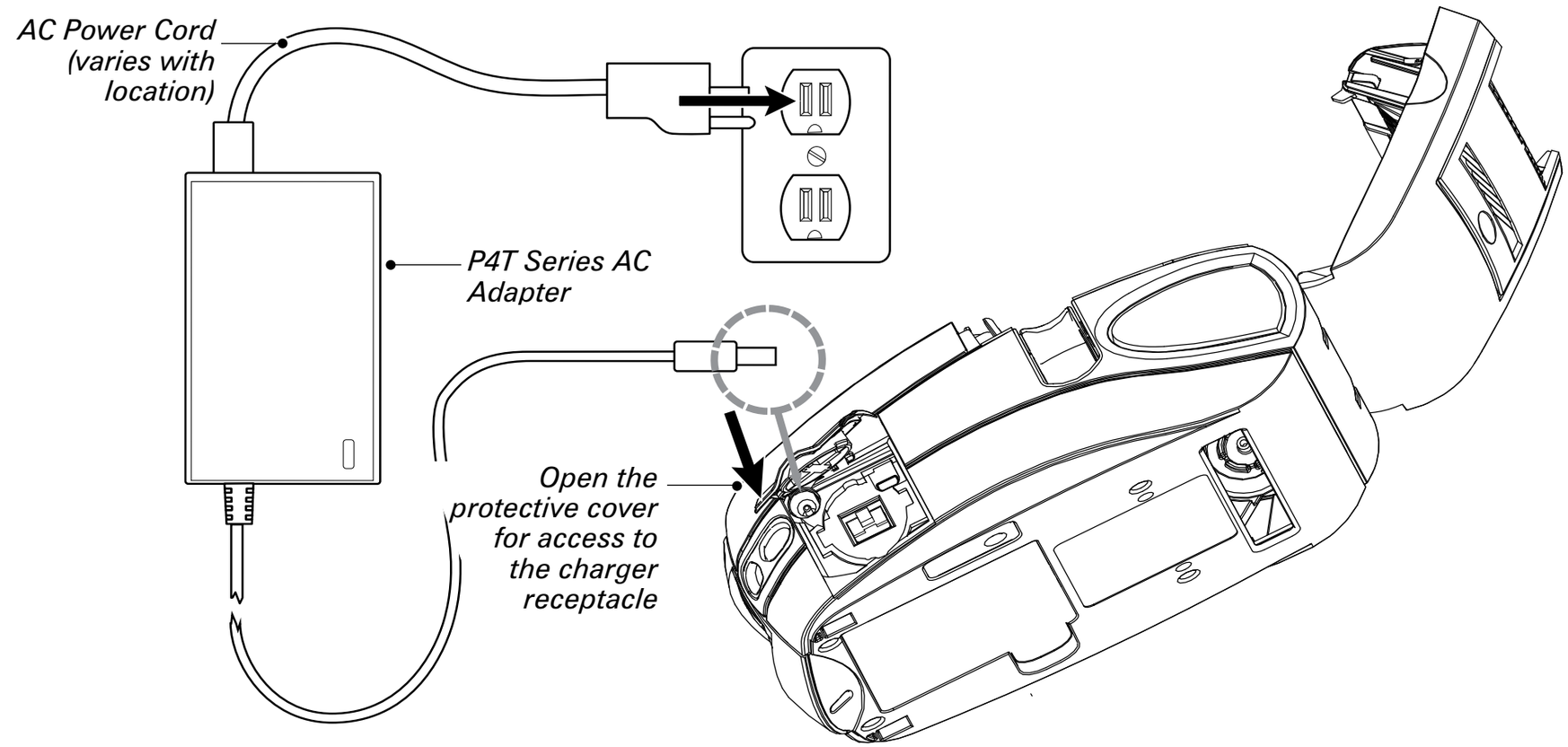
Indicator	Charger Function	Charger Status
Steady yellow indicator	Standby	AC power on; no battery being charged
Slow (1 Hz) flashing yellow indicator	Pre-Charge	Charger is applying trickle charge current (5% of maximum) to bring a cold battery temperature up to 0°C before starting a full charge cycle
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.

Section Continues

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:

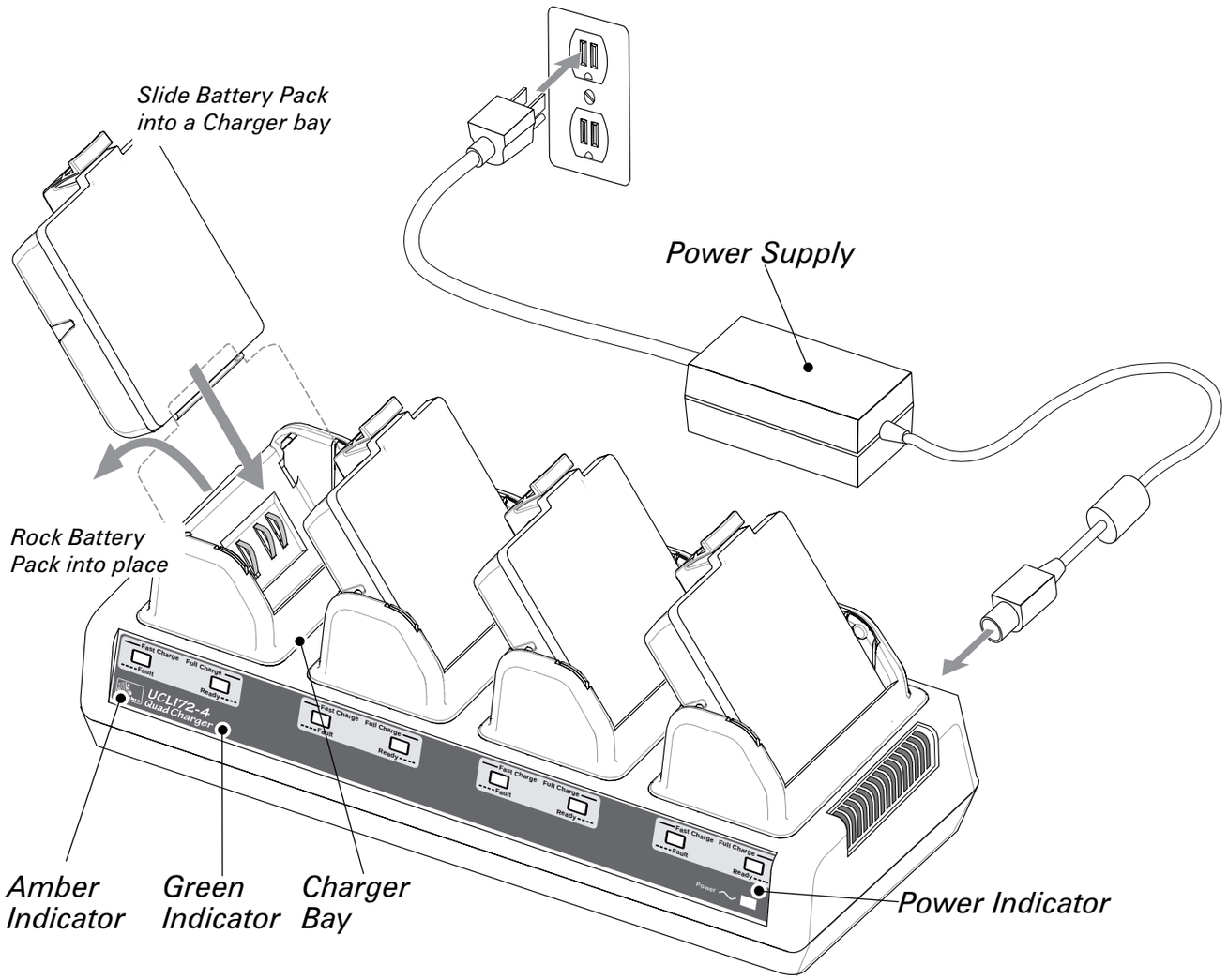
Printer Status	Charging Status	Printer LCD	Power Button Operation
Off	Off	Off	Pressing turns printer On
On	Off	Normal display operation	Pressing turns printer Off
On	On	Normal display operation, plus battery icon will cycle through level bars. Charging will continue as required..	Pressing switches printer 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.

Section Continues ▶

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.

Section Continues

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.

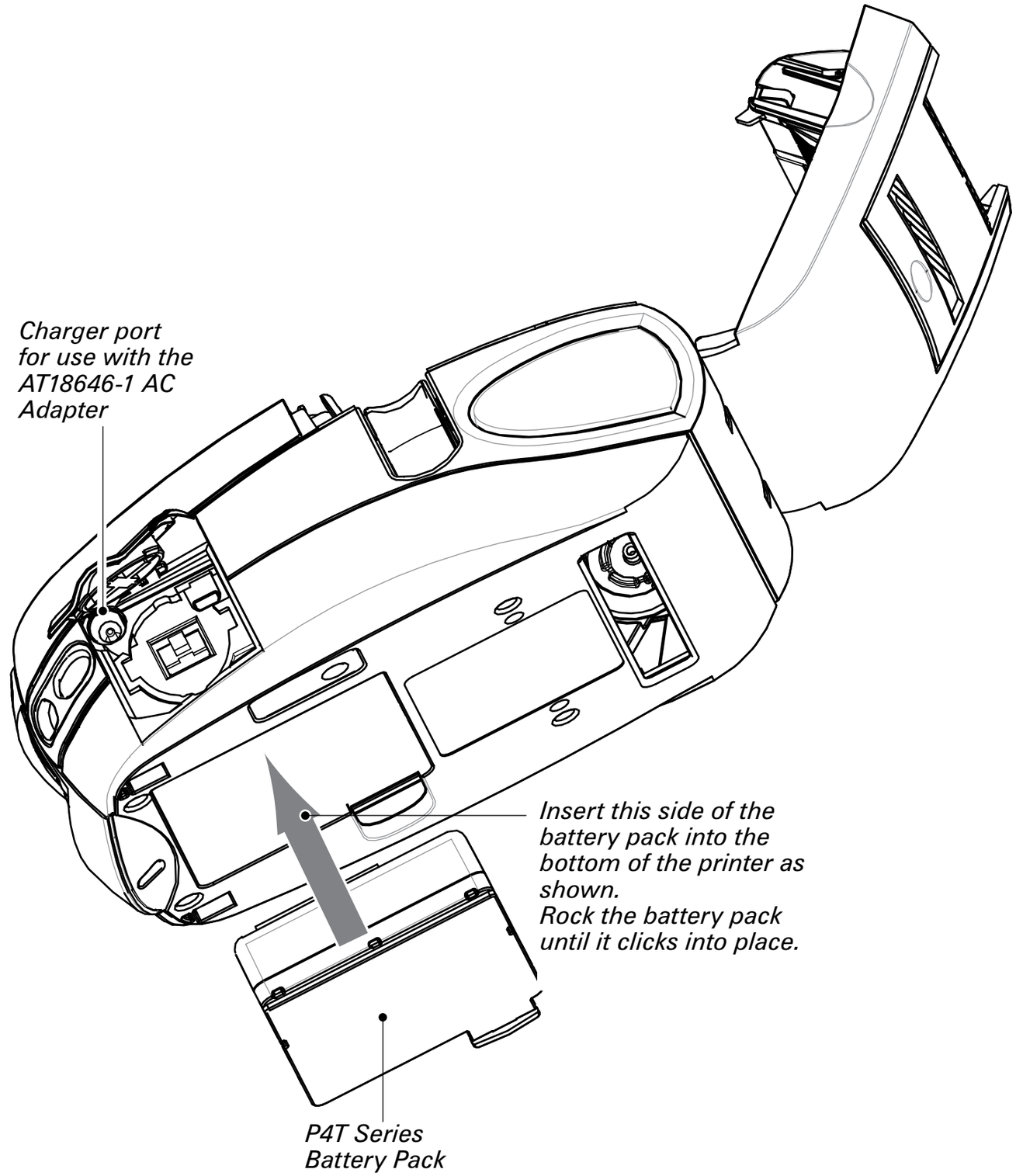
If you are using an LI72 single charger or the LI72-4 Quad Charger, you must charge the battery prior to installing it in the printer.

- .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



Section Continues

Load the Media

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

Figure 7.1 Opening the Media Cover

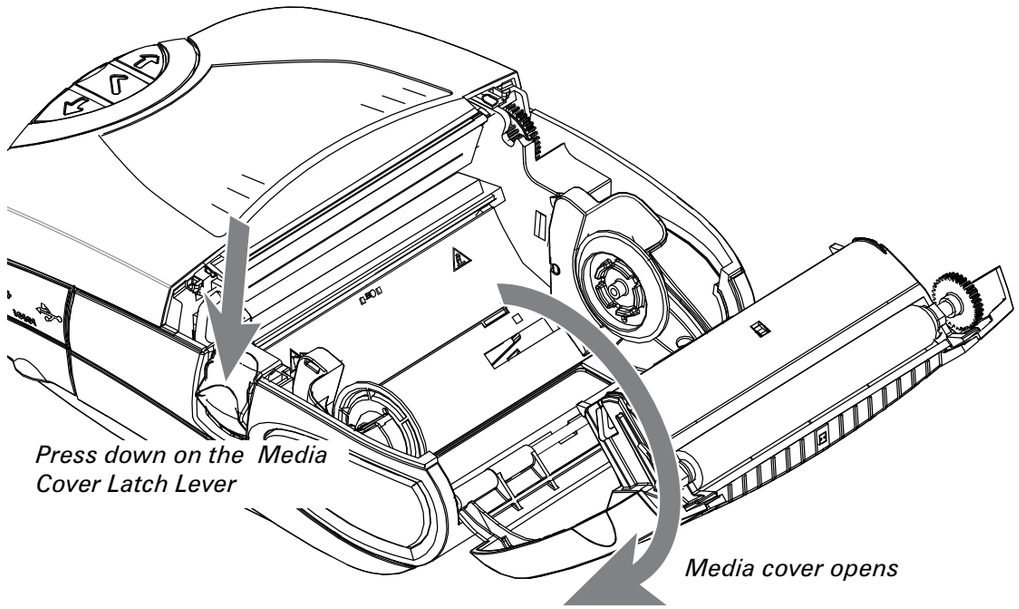
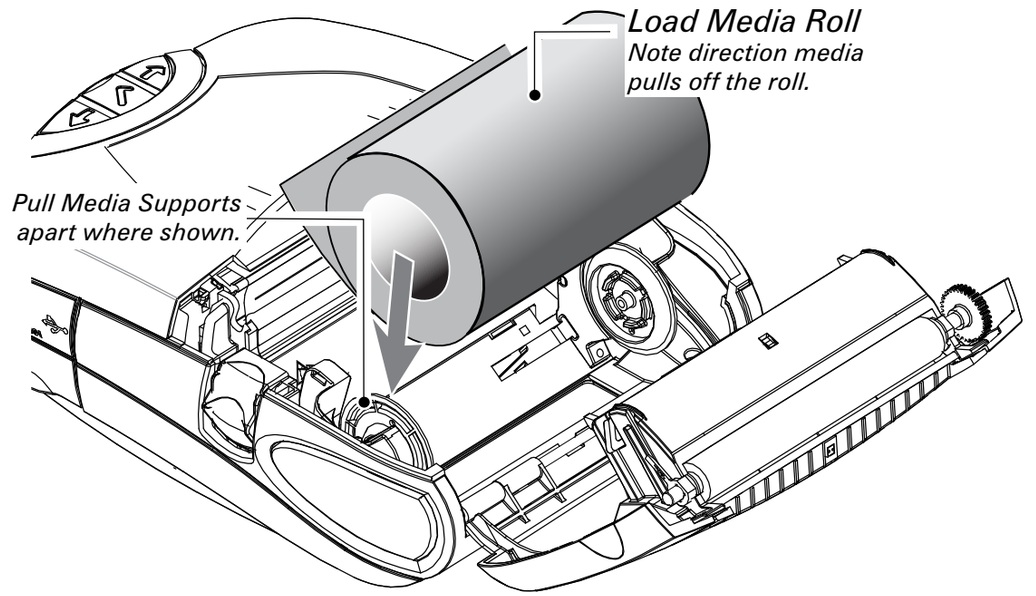


Figure 7.2 Loading the Media



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.

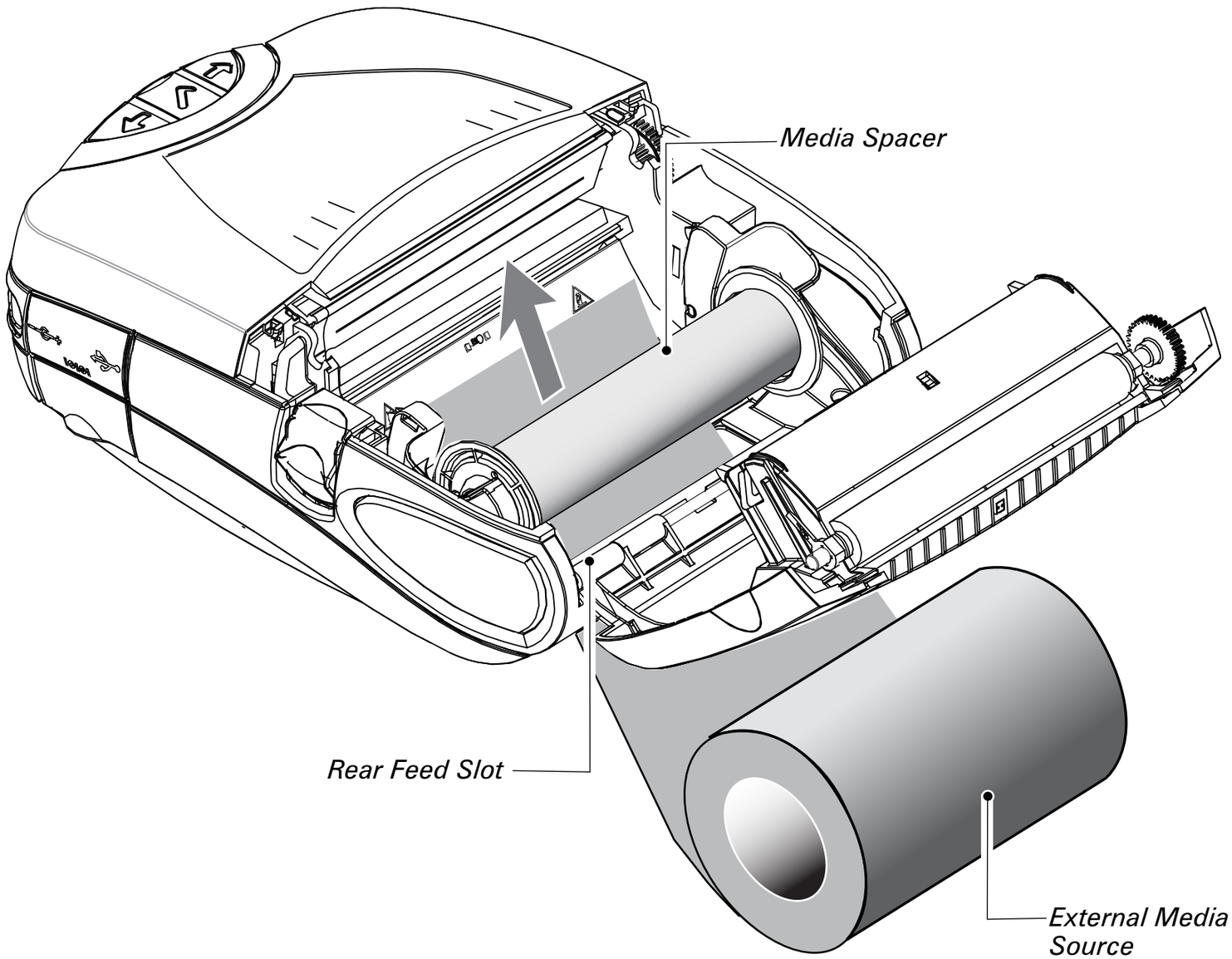
2. Loading Media From An Internal Supply

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.

Section Continues

Figure 7.3- Loading Media From An External Supply



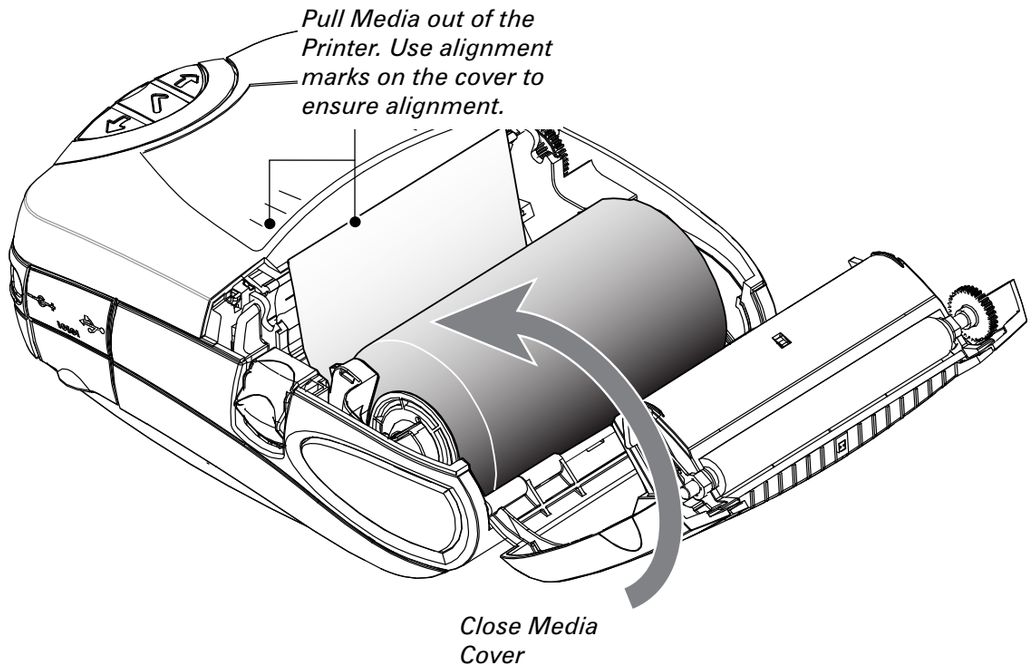
3. Loading Media From An External Supply

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.

Section Continues

Figure 7.4-Close the Media Cover

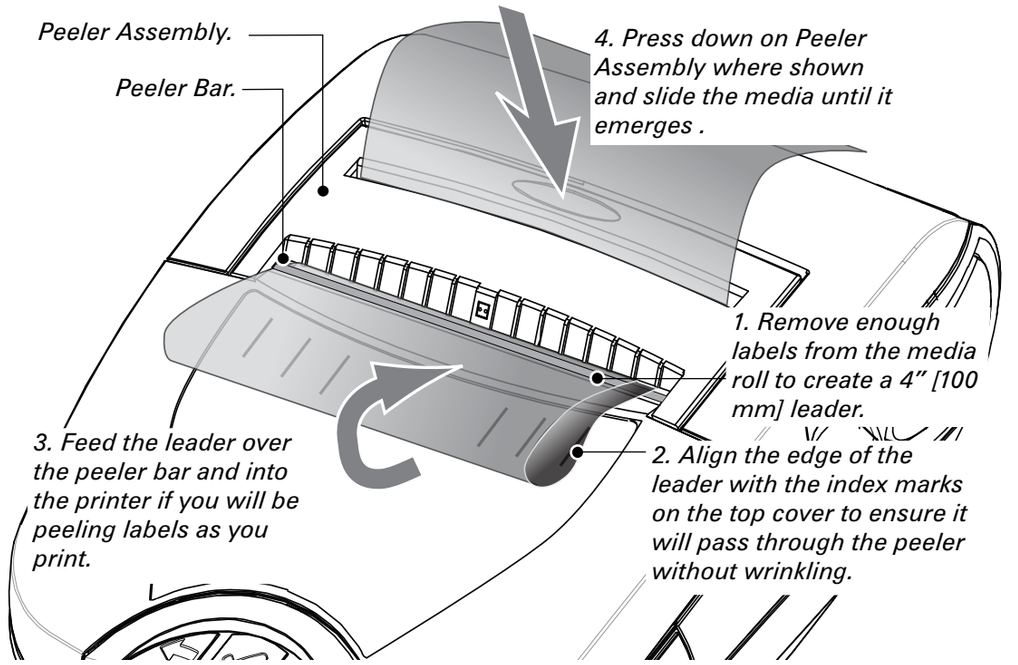


4. Close the Media Cover:

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.

Section Continues