Compact Flash (802.11b) and Bluetooth Co-located Radio Modules

The following section only applies when the CF (Compact Flash) WLAN module (FCC ID: H9PLA4137) and Bluetooth module (FCC ID: I28MD-BTC2TY4) are installed in a QL 220 Plus or 420 Plus 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 QL 220 Plus or QL 420 Plus printer with the radio module marked with both "FCC ID: H9PLA4137" and "I28MD-BTC2TY4" 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. QL 220 Plus and QL 420 Plus printers with this radio option have been SAR tested. The maximum SAR value measured for the QL 220 Plus was 0.10 W/kg averaged over 1 gram. The maximum SAR value measured for the QL 420 Plus was 0.39 W/kg averaged over 1 gram.***

European Regulatory Information for Co-located Radios

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**)

CE !

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.

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 Immunity 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

continued

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		

Belt Clip

Refer to Figure 15. All QL series printers are have a belt clip installed as a standard feature. To use: hook the clip over your belt, and ensure that the clip is securely attached to the belt. The belt clip will pivot to allow you to move freely while wearing the printer.

The retainer for the Belt Clip has a strain relief feature which can be used with the communications cable. Refer to the section on Connecting the Printer.

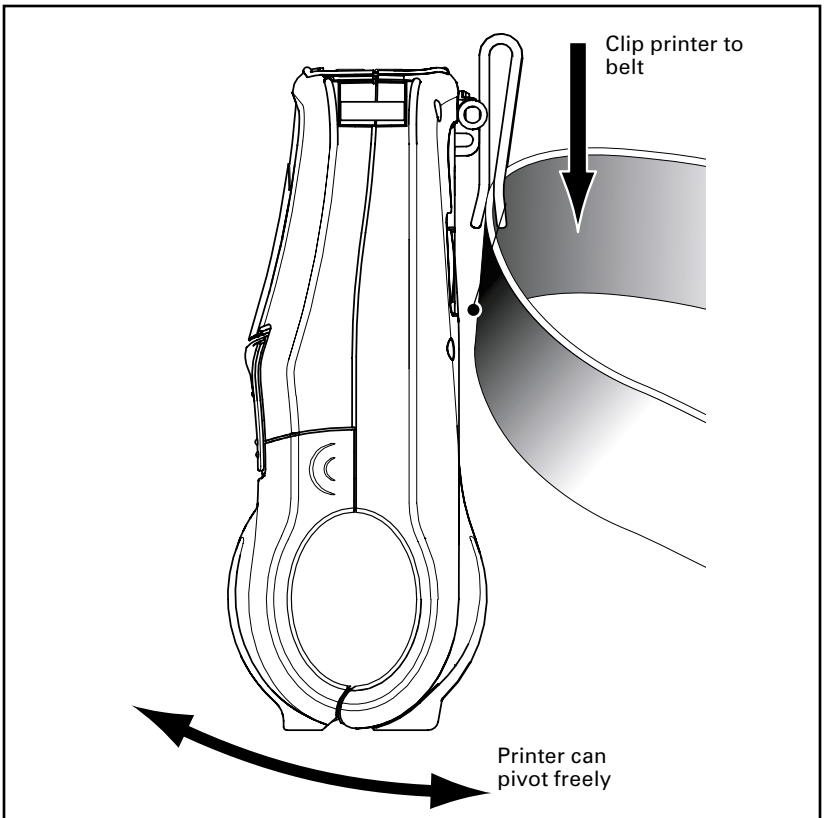


Figure 15: Using the Belt Clip

continued

Kickstand

Refer to Figure 16. The Kickstand option allows users to use the printer on a desktop. To use the optional Kickstand: Flip the Kickstand on the back of the printer open until you feel a slight detent. The printer will now sit at approximately a 30° to 45° angle on a desktop depending on the printer model.

The retainer for the Kickstand has strain relief features which can be used with the communications cable. Refer to the section on Connecting the Printer.

Caution • Do not use the printer while charging a battery with the LI72 charger.

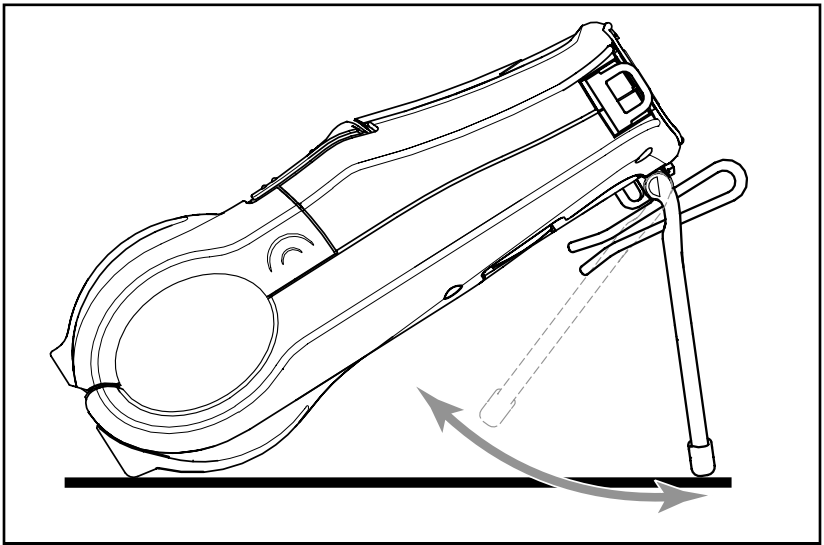


Figure 16: Using the Kickstand

Desk Stand

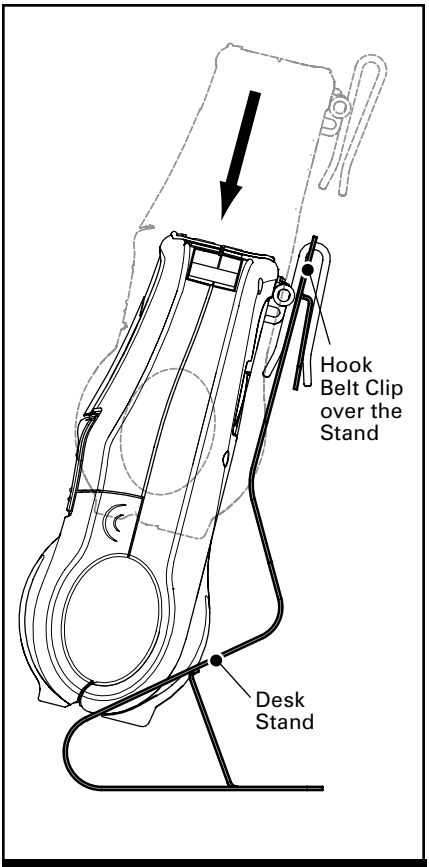


Figure 17: Using the Optional Desk Stand

Refer to Figure 17. To use the Desk Stand: Slide the printer onto the Desk Stand. The printer's belt clip will hook onto the Desk Stand as shown and retain it in place. Ensure that the clip is securely attached to the Stand and the media compartment of the printer is seated securely in the Stand.

Holes are provided to permanently attach the Desk Stand to the work surface. Charger and data I/O cables may be plugged into the printer in the usual manner.

Caution • Do not use the printer while charging a battery with the LI72 charger.

continued

Adjustable Shoulder Strap

Refer to Figure 18 if your printer is equipped for the shoulder strap option. Snap each end of the shoulder strap into the "D" rings in the top of the printer. Slide the buckle away from or towards the printer until you achieve the desired length.

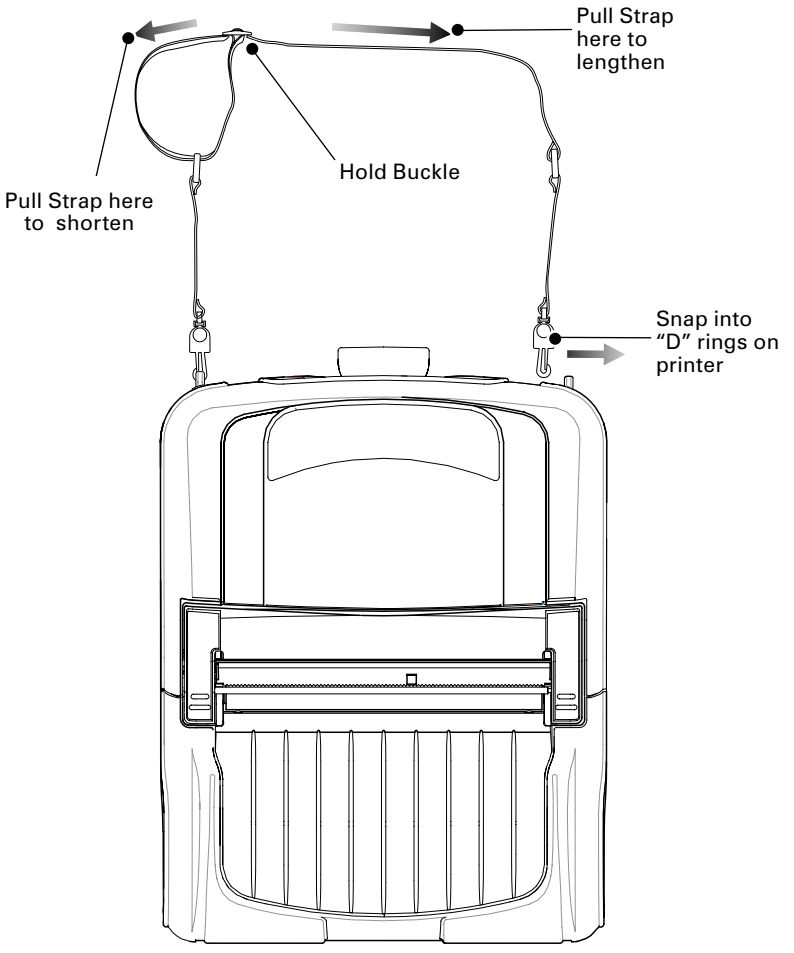


Figure 18: Using the Optional Shoulder Strap

Carrying Strap

Refer to Figures 19 and 19a. There are two varieties of carrying strap. One of them clips onto the printer's "D" rings as does the shoulder strap, and the other is secured to the printer permanently with loops in the strap secured by sleeves captured between the printer's upper and lower covers.

Either strap provides the user with a convenient and secure method of carrying the printer.

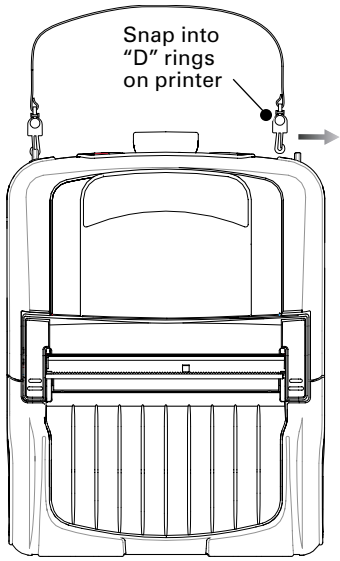


Figure 19: Detachable Carrying Strap

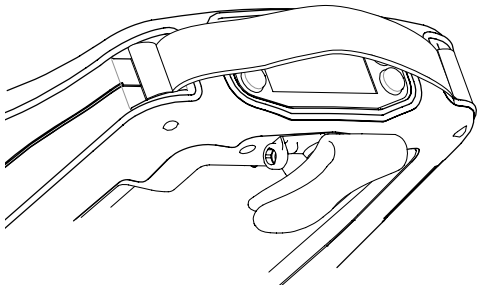


Figure 19a: Permanent Carrying Strap

Extending Battery Life

- Never expose the battery to direct sunlight or temperatures over 104° F (40° C).
- Do not charge the battery when the temperature exceeds 113° F (45° C).
- Always use a Zebra charger designed specifically for Lithium-Ion batteries. Use of any other kind of charger may damage the battery.
- 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 pre-printed label.
- Choose the correct print darkness, and print speed for your media.
- Use software handshaking (XON/XOFF) whenever possible.
- Select Tear-Off mode whenever possible (Peel-Off mode uses more power).
- If your printer has the optional LCD display, use the display backlight only when necessary. Turn it off whenever it is not needed.
- Remove the battery if the printer 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. It can only be recharged a finite number of times before it must be replaced. Always dispose of batteries properly. Refer to Appendix D for more information on battery disposal.
- Don't print while the Model LI 72 Wall Charger is plugged into the unit. Unreliable battery charging can result.

General Cleaning Instructions

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

Always turn the printer off before performing any cleaning procedures.

Use care when working near the tear bar. The edges are very sharp.

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

Only use the cleaning pen supplied with the printer or a cotton swab saturated with alcohol for cleaning the printhead.

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

continued

QL 220 Cleaning		
Area	**Method**	**Interval**
Printhead (Figure 20)	Use the supplied cleaning pen or 70% isopropyl alcohol on a cotton swab 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) Linerless media requires more frequent cleaning
Platen Roller (Figure 20)	Rotate the platen roller and clean it thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	
Linerless Platen Roller (Figure 20a)	Units with linerless platens: Rotate platen & clean bearing points only. *Avoid use of alcohol on the surface of linerless platens!*	
Peel bar (Figure 20)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	As needed
Scraper (Linerless units only) Figure 20a	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton	Every five rolls of media (or more often, if needed)
Tear bar (Figure 20)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	As needed
Exterior	Water-dampened cloth	
Interior (Figure 20)	Brush/air blow. Ensure the Bar Sensor, Gap Sensor and Label Present Sensor windows are free of dust.	
Interior (Figure 20a)	Units with linerless platens: Clean inside surfaces of Media supports & Media Support Disks with the supplied cleaning pen or 70% isopropyl alcohol on a cotton swab.	After every five rolls of media (or more often, if needed)

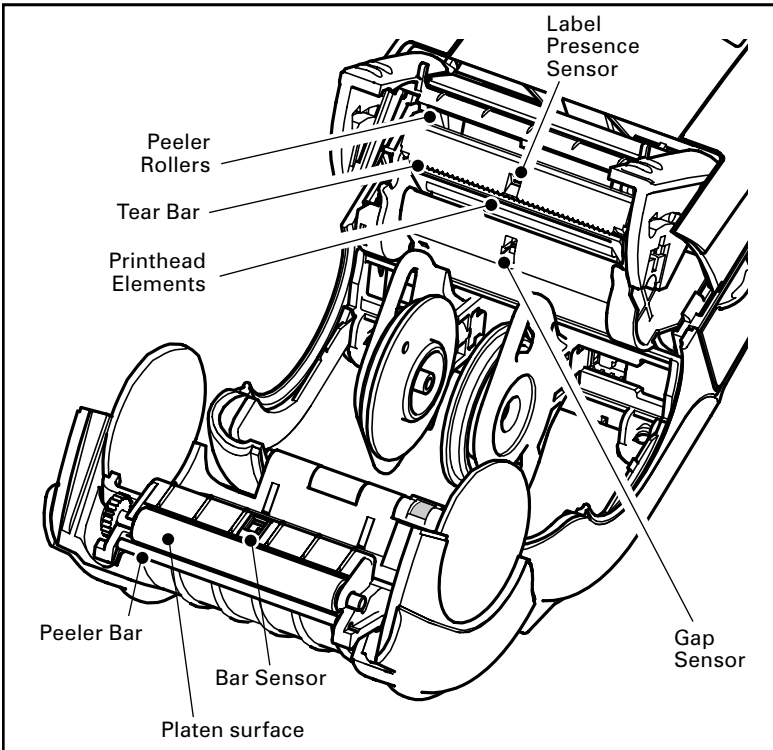


Figure 20: Cleaning the QL 220

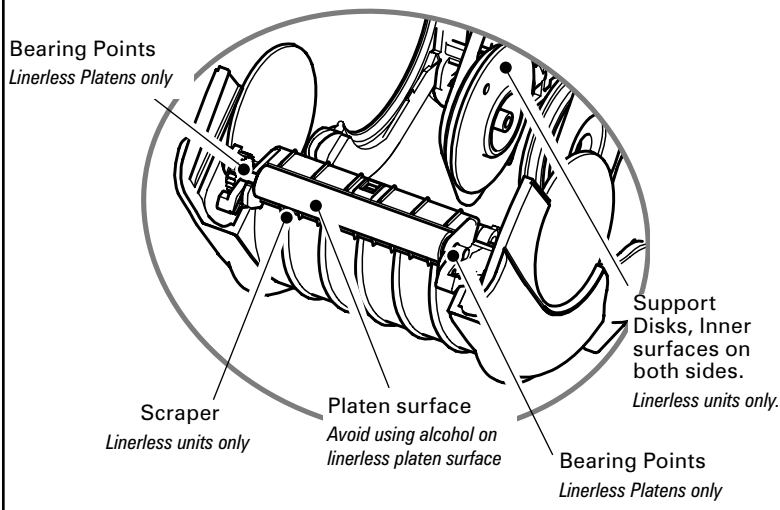


Figure 20a: Cleaning the Linerless QL 220

continued

QL 320 Cleaning		
Area	**Method**	**Interval**
Printhead (Figure 21)	Use the supplied cleaning pen or 70% isopropyl alcohol on a cotton swab 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) Linerless media requires more frequent cleaning
Platen Roller (Figure 21)	Rotate the platen roller and clean it thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	
	Units with linerless platens: Rotate platen & clean bearing points only. *Avoid use of alcohol on the surface of linerless platens!*	
Peel bar (Figure 21)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	As needed
Scraper, Linerless units only (Figure 21)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	After every five rolls of media (or more often, if needed)
Tear bar (Figure 21)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	As needed
Exterior	Water-dampened cloth	
Interior (Figure 21)	Brush/air blow. Ensure the Bar Sensor, Gap Sensor and Label Present Sensor windows are free of dust.	
	Units with linerless platens: Clean inside surfaces of media disks & peeler bar rollers with the supplied cleaning pen or 70% isopropyl alcohol on a cotton swab.	After every five rolls of media (or more often, if needed)

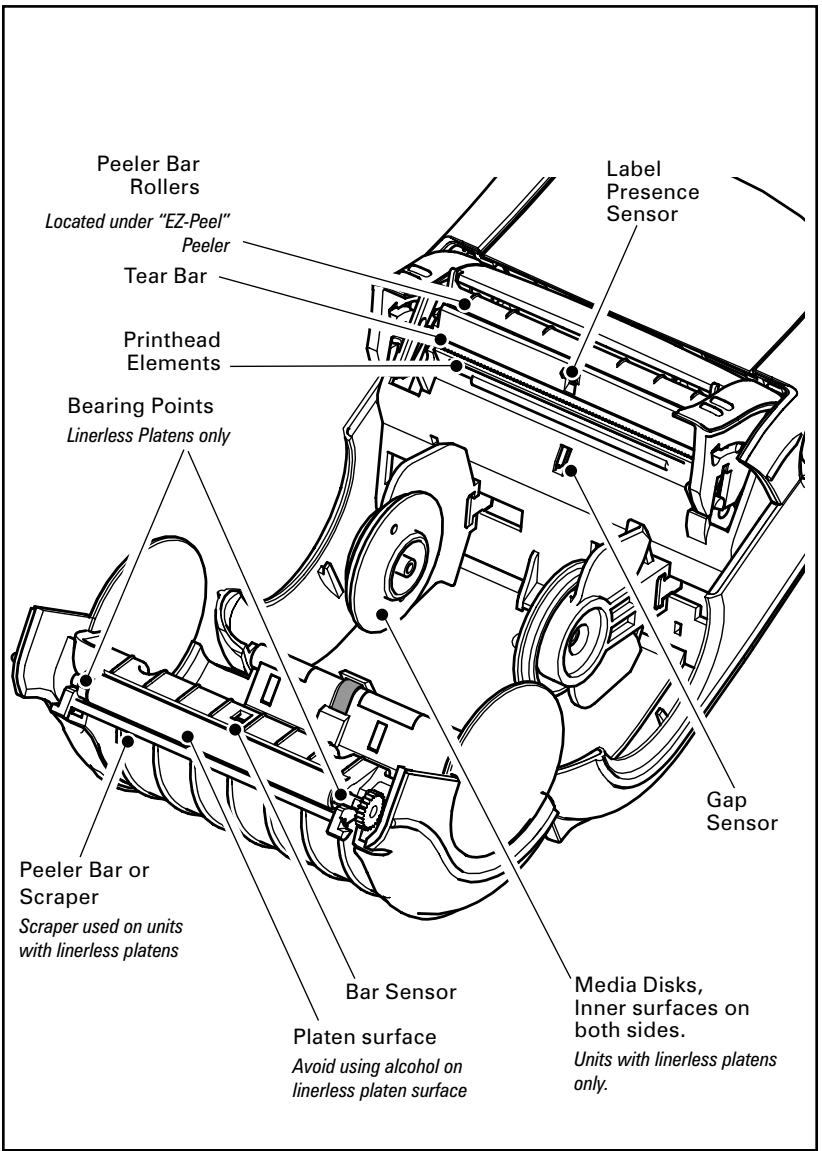


Figure 21: Cleaning the QL 320

continued

QL 420 Cleaning		
Area	**Method**	**Interval**
Printhead (Figure 22)	Use the supplied cleaning pen or 70% isopropyl alcohol on a cotton swab 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) Linerless media requires more frequent cleaning
Platen Roller (Figure 22)	Rotate the platen roller and clean it thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	
	Units with linerless platens: Rotate platen & clean bearing points only. *Avoid use of alcohol on the surface of linerless platens!*	
Peel bar (Figure 22)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	As needed
Scraper, Linerless units only (Figure 22)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton	After every five rolls of media (or more often, if needed)
Tear bar (Figure 22)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	As needed
Exterior	Water-dampened cloth	
Interior (Figure 22)	Brush/air blow. Ensure the Bar Sensor, Gap Sensor and Label Present Sensor windows are free of dust.	
	Units with linerless platens: Clean inside surfaces of edge guides & media rollers with the supplied cleaning pen or 70% isopropyl alcohol on a cotton swab.	After every five rolls of media (or more often, if needed)
Media Rollers (Figure 22)	Clean thoroughly with the cleaning pen or 70% isopropyl alcohol and a cotton swab.	
	Units with linerless platens: Rotate media rollers & clean bearing points only. *Avoid use of alcohol on the surface of the media rollers!*	

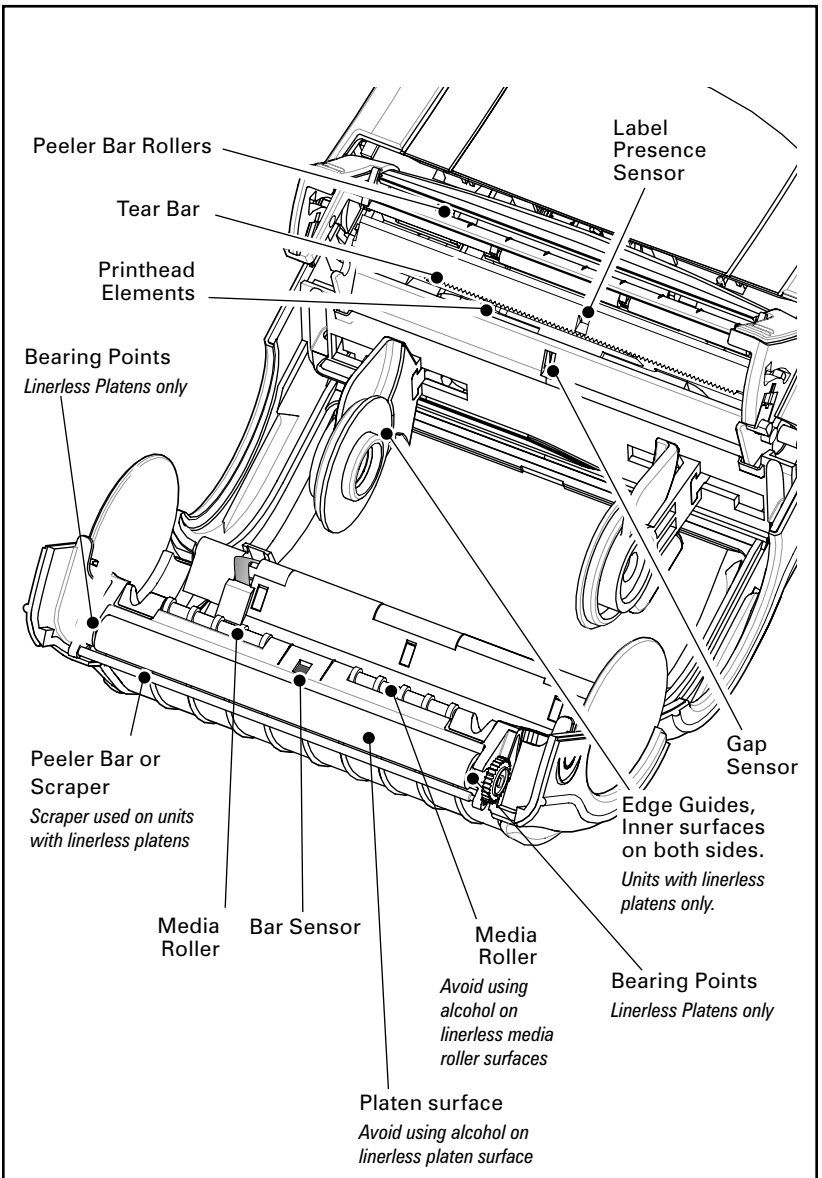


Figure 22: Cleaning the QL 420

Troubleshooting

Standard Control Panel

If the printer is not functioning properly, refer to the chart below to find the state of the two LEDs on the Control Panel. Then refer to the Troubleshooting topic referenced in the chart to resolve the problem.

Green LED	Yellow LED	Indication	Ref. to Topic
Steady	Off	Normal Operation, and/or RF Link established	n/a
Off	Off	Power Off	1
Fast Blink	Off	No RF Link	6, 11
Slow Blink	Off	Low Battery	3, 6, 7
Steady	Steady	Out of media, or Media Cover not closed	9, 11
Steady	Fast Blink	Normal RF activity	8
Steady	Fast Blink, Beeper Sounds	No application	8

Optional LCD Control Panel

The top of the display shows several icons which indicate various printer functions. Check the indicator status, then refer to the Troubleshooting topic referenced in the chart to resolve the problem.

Status Icon	Condition	Indication	Ref. to Topic
	Steady	Bluetooth Link established	n/a
	Flashing	Data transmission via Bluetooth	n/a
	Off	No Bluetooth link	6
	Steady	RF Link established	n/a
	Off	No RF Link	6
	Flashing	Low Battery	3, 6, 7
	Flashing	Head latch not closed	9, 11
	Flashing	Indicates printing activity	n/a
	Flashing	Printer is receiving a file	8
	Flashing	Out of media	9, 11
Blank Screen	n/a	No application	1,13

Troubleshooting Topics

1. No power

- Check that battery is installed properly.
- Recharge or replace battery as necessary. Always dispose of batteries properly. Refer to Appendix D for more information on proper battery disposal.

2. Media does not feed:

- Be sure print head is closed and latched.
- Check spindle holding media for any binding.
- If unit is equipped with label presence sensor: Ensure most recently printed label is removed. Also ensure label sensor is not blocked.

3. Poor or faded print or  flashing:

- Clean print head.
- Check battery and recharge or replace as necessary. Always dispose of batteries properly. Refer to Appendix D for more information on proper battery disposal.
- Check quality of media.

4. Partial or missing print:

- Check media alignment
- Clean print head.
- Ensure printhead is properly closed and latched.

5. Garbled print:

- Check baud rate.

6. No print:

- Check baud rate.
- Replace battery. Always dispose of batteries properly. Refer to Appendix D for more information on proper battery disposal.
- Check cable to terminal.
- Establish RF Link (Wireless units only) and/or restore LAN associativity (Printers with WLAN radios only).
- Invalid label format or command structure — put printer in Communications Diagnostic (Hex Dump) Mode to diagnose problem.

7. Reduced battery charge life

- Check battery date code — if battery is one to two years old, short charge life may be due to normal aging.
- Recondition battery.
- Replace battery. Always dispose of batteries properly.

continued

Refer to Appendix D for more information on proper battery disposal.

8. Yellow error light or ✉ flashing:

- No application or application corrupted: reload program.
- If using wireless communications: flashing indicator is normal while data is being transmitted or received.

9. Yellow error light always on, ❑ or 🔒 flashing:

- Check that media is loaded and that the print head is closed and securely latched.

10. Skips labels:

- Check media for top of form sense mark or label gap.
- Check that the maximum print field has not been exceeded on label.
- Ensure bar or gap sensor is not blocked or malfunctioning

11. Communication error:

- Check media is loaded, head is closed and error light is off.
- Check baud rate.
- Replace cable to terminal.

12. Label jam:

- Open head release latch and media cover.
- Generously apply alcohol to printer in area of jammed label.

13. Blank LCD screen (only for units with optional LCD control panel)

- No application loaded or application corrupted: reload program.

Troubleshooting Tests

Printing a Configuration Label

To print out a listing of the printer's current configuration follow these steps:

1. Turn the printer off. Load the media compartment with journal media (media with no black bars printed on the back)
2. Press and hold the Feed Button.
3. Press and release the Power button and keep the Feed button pressed. When printing starts, release the Feed button.

Refer to Figures 23 and 24 for sample configuration printouts.

Communications Diagnostics

If there is a problem transferring data between the computer and the printer, try putting the printer in the Communications Diagnostics Mode (also referred to as the "DUMP" mode). The printer will print the ASCII characters and their text representation (or the period '.', if not a printable character) for any data received from the host computer

To enter Communications Diagnostics Mode:

1. Print a configuration label as described above.
2. At the end of 2nd diagnostics report, the printer will print: "Press FEED key to enter DUMP mode".
3. Press the FEED key. The printer will print: "Entering DUMP mode".

Note • If the FEED key is not pressed within 3 seconds, the printer will print "DUMP mode not entered" and will resume normal operation.

4. At this point, the printer is in DUMP mode and will print the ASCII hex codes of any data sent to it, and their text representation (or "." if not a printable character).

Additionally, a file with a ".dmp" extension containing the ASCII information will be created and stored in the printer's memory. It can be viewed, "cloned" or deleted using the Label Vista application. (Refer the Label Vista documentation for more information.)

continued

To terminate the Communications Diagnostics Mode and return the printer to normal operations:

1. Turn the printer OFF.
2. Wait 5 seconds.
3. Turn the printer ON.

Calling Technical Support

If the printer fails to print the configuration label, or you encounter problems not covered in the Troubleshooting Guide, contact Zebra Technical Support. Technical Support addresses and phone numbers for your area can be found in Appendix D of this manual. You will need to supply the following information:

- Model number and type (e.g. QL 420)
- Unit serial number (Found on the large label on the back of the printer, also found in the configuration label printout. Refer to Figures 23 and 24)
- Product Configuration Code (PCC) (15 digit number found on the small label on the back of the unit)

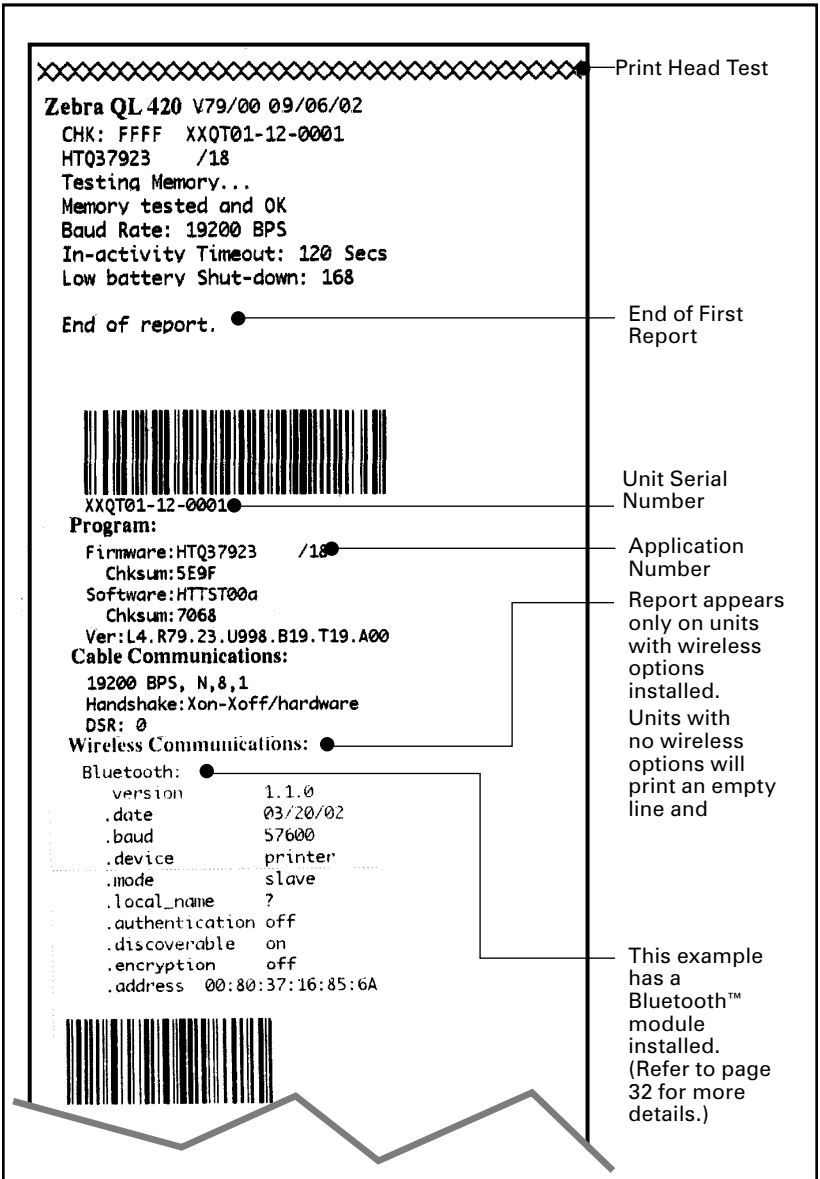


Figure 23: Configuration Label Example (QL 420 illustrated)

continued

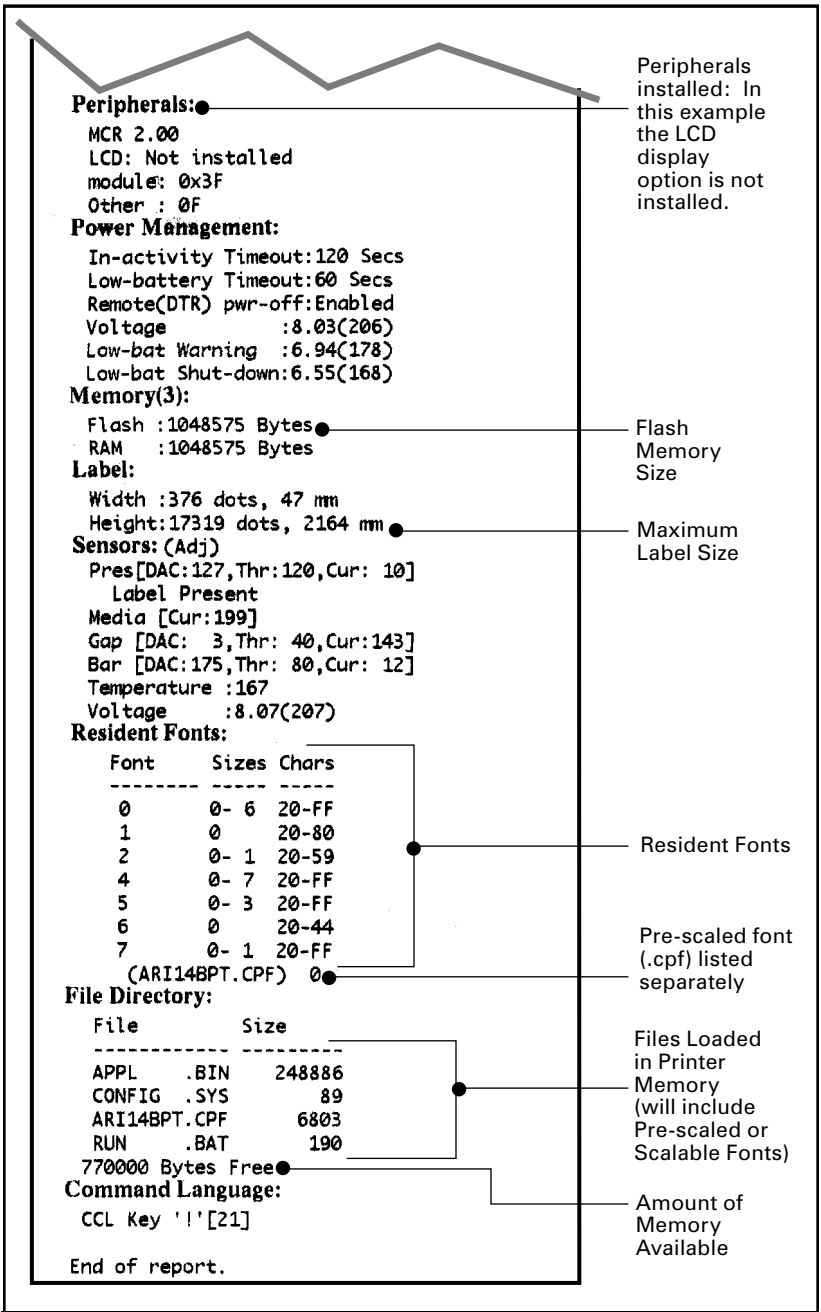


Figure 23a: Configuration Label Example (continued)

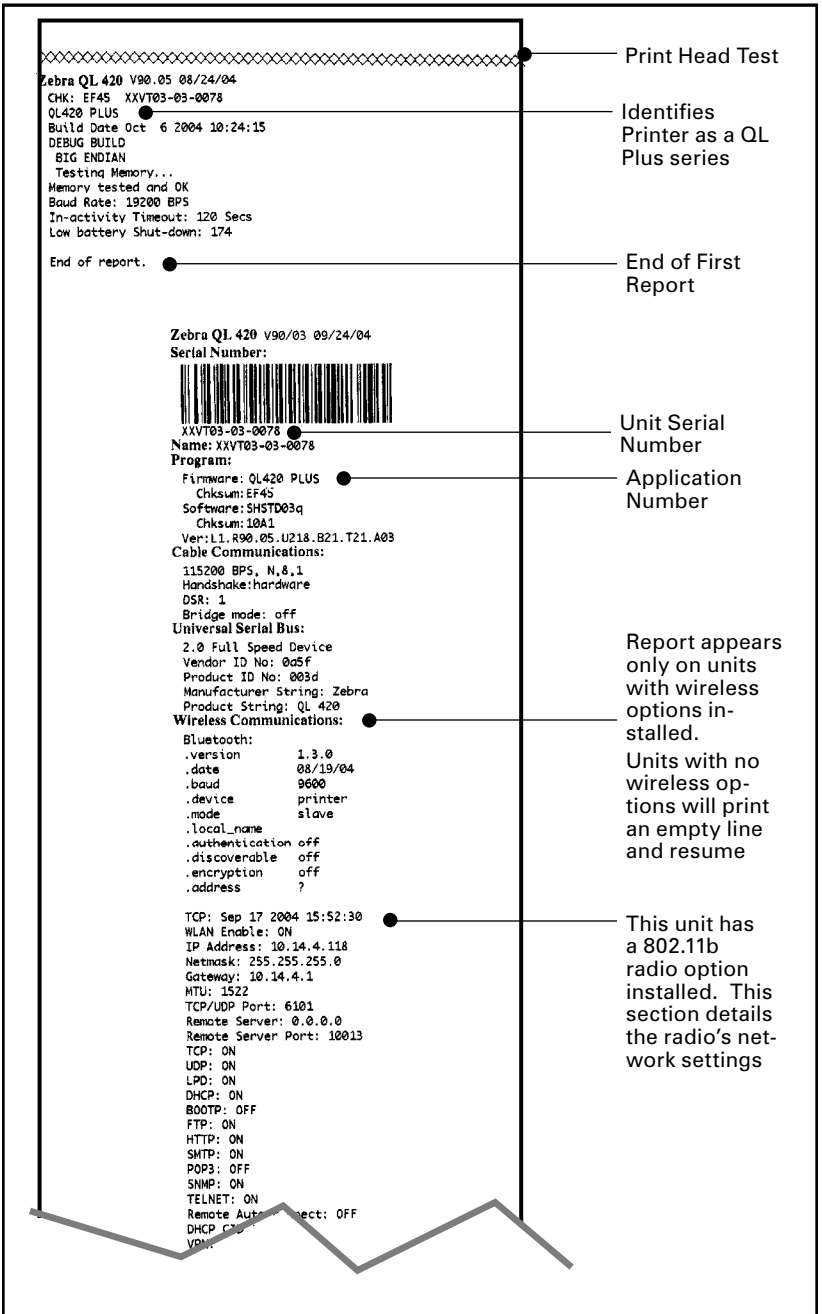


Figure 24: QL Plus Configuration Label Example

continued

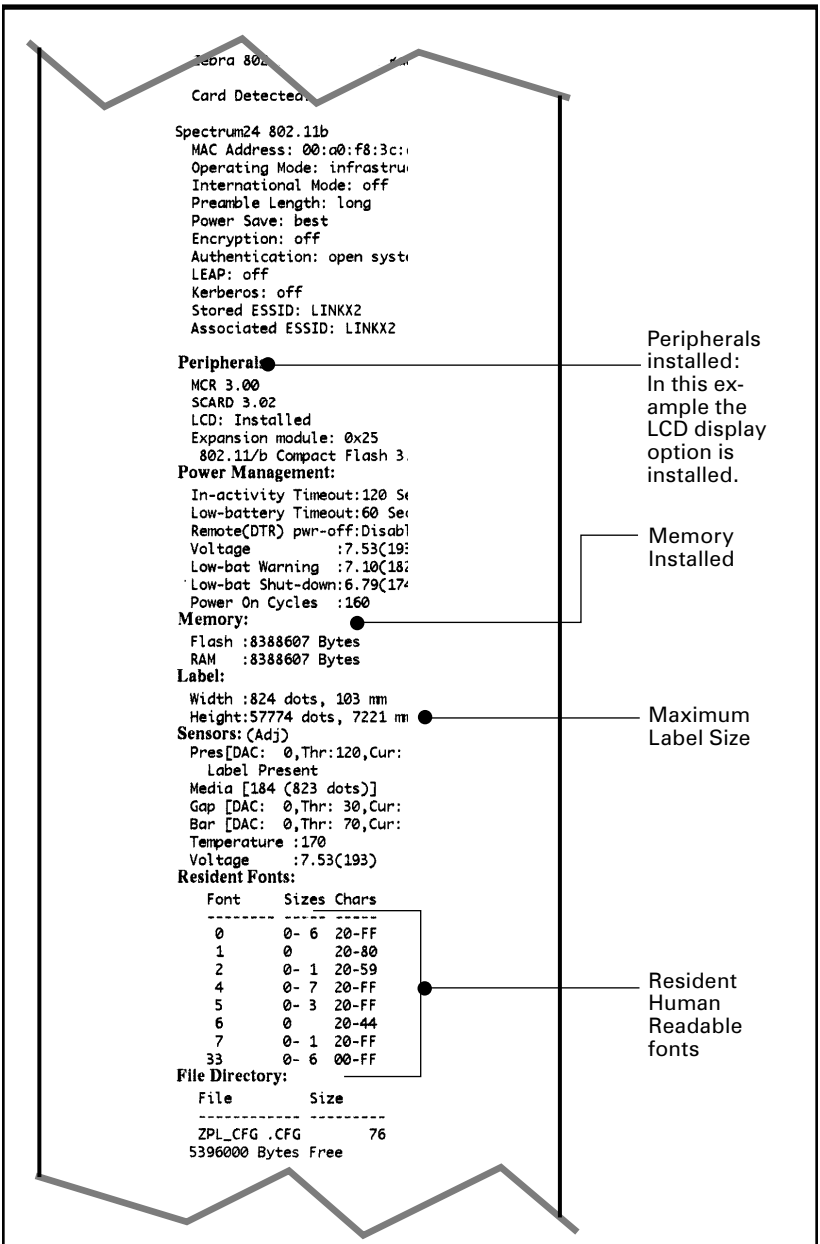


Figure 24a: QL Plus Configuration Label Example (continued)

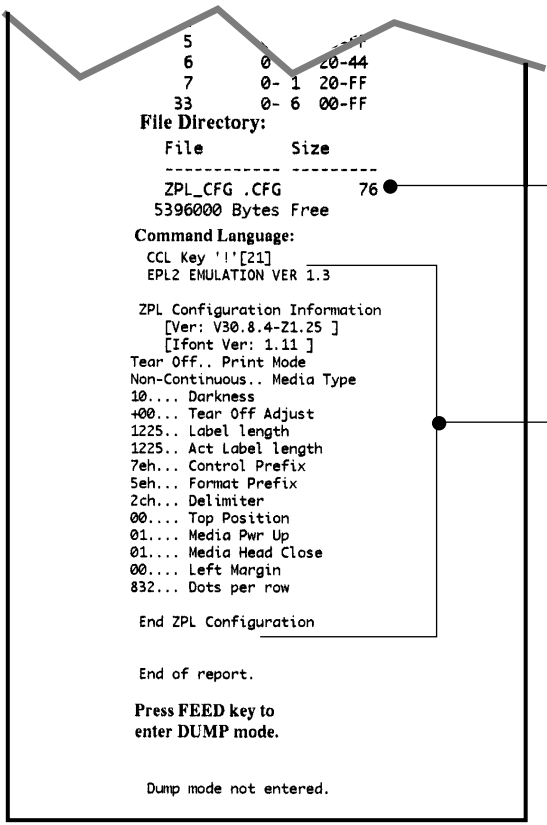


Figure 24b: QL Plus Configuration Label Example (continued)

Specifications

Note.- Printer specifications are subject to change without notice.

Printing Specifications

	QL 220/220 Plus	QL 320/320 Plus	QL 420/420 Plus
Print Width	Up to 1.89 in. (48 mm)	Up to 2.9 in. (71.2 mm)	Up to 4.09 in. (103.8 mm)
Print Speed	3" per second (76.2 mm/second)	4" per second (101.6 mm/second)	3" per second (76.2 mm/second)
Distance from Print Element to Top of Form	.445 in. (11.3 mm) 89 dots	.571 in. (14.5 mm) 116 dots	.571 in. (14.5 mm) 116 dots
Print Head Life, calculated	1,964,160 in. (50 Km) nominal		
Print Density	203 dots/inch (8 dots/mm)		

Memory and Communications Specifications

QL series Flash Memory RAM Memory	 1 MB Flash (standard); 2 MB flash (optional) 1MB RAM (standard); 2 MB RAM (optional)
QL Plus series Flash Memory RAM Memory	 4 MB flash (standard) 8 MB RAM (standard)
Standard Communications (all models)	RS-232 serial port (8 Pin circular DIN connector) Configurable Baud rate (from 9600 to 57.6 Kbps), parity and data bits. Software (X-ON/X-OFF) or hardware (DTR/STR) communication handshake protocols.
QL Plus series only	USB 2.0 Full Speed Interface (12 Mbps)
Optional Wireless Communications (all models)	Infrared wireless link meets IrDA 1.1 communications specifications 2,400 to 115,200 Baud rate
	Bluetooth compatible 2.4 GHz SRRF link
	Optional wireless LAN capabilities comply with 802.11 and 802.11b protocols

Label Specifications

	QL 220/220 Plus	QL 320/ 320 Plus	QL 420/420 Plus
Label or Tag Width	.75 in. to 2.12 in. (16 to 53.8 mm)	1.5 in. to 3.1 in. (38.1 to 78.4 mm)	2 in. to 4.1 in. (50.8 to 104.1 mm)
Max. Label/ Tag Length (w/std. memory)	20 in. (508 mm)	16 in. (406.4 mm)	20 in. (508 mm)
Inter-label Gap.	0.08 in. to 0.16 in. (.12 in. preferred) (2 mm to 4 mm [3 mm preferred])		
Label Thickness	.0025 in to .0065 in (.064 mm to .165 mm)		
Tag Thickness	.0060 in. (.152 mm) maximum		
Max. Label Roll dia.	2.20 (55.8 mm) O.D.	2.63 in. (66.8 mm) O.D.	
Label Inner Core	0.75 in. (19 mm) minimum dia; 1.38 in. (35.05 mm) minimum dia for linerless media (QL 420 accepts linerless media on 0.75 in. cores.)		
Black Mark Dimensions	The reflective media black marks should extend past the centerline of the roll.		
Media Requirements	Minimum mark width: 0.5 in. (12.7 mm) perpendicular to edge of media, centered within the width of the roll. Mark length: 0.094 in. (2.4 mm) parallel to edge of media		

Use Zebra brand direct thermal media that is outside wound. Media may be reflective (black mark) sensing, or transmissive (gap) sensing, die-cut, continuous, or linerless. QL 420 models will accept fanfold media if used with an external media supply.

For die-cut labels, use only full auto dies.

continued

Font and Bar Code Specifications for QL Series

Fonts Available	Five resident scalable and rotatable fonts available from 12-48 pt. Downloadable pre-scaled fonts via Label Vista software. Optional international character sets
Linear Bar Codes Available	Codabar UCC/EAN 128 Code 39 Code 93 EAN 8/JAN 8, 2 and 5 digit extensions EAN 13/JAN 13, 2 and 5 digit extensions Interleaved 2 of 5 MSI/Plessey FIM/POSTNET UPC-A, 2 and 5 digit extensions UPC E, 2 and 5 digit extensions
2-D Bar Codes Available	MaxiCode PDF 417
Rotation Angles	0°, 90°, 180°, and 270°

Font and Bar Code Specifications for QL Plus Series

Fonts Available	Standard Fonts: 25 bit-mapped fonts; 1 scalable font (CG Trimvirate Bold Condensed*) Downloadable optional bit-mapped & scalable fonts via Label Vista software. Optional International character sets: Chinese 16 x 16 (trad), 16 x 16 (simplified), 24 x 24 (simplified); Japanese 16 x 16, 24 x 24; Hebrew/Arabic *contains UFST from Agfa Monotype Corporation
Linear Bar Codes Available	Same as QL series, plus: EAN-8 Composite EAN-13 Composite UPCA Composite UPCE Composite
2-D Bar Codes Available	Same as QL series, plus: Datamatrix (using ZPL emulation) RSS: RSS-14 Truncated RSS-14 Stacked RSS-14 Stacked Omnidirectional RSS Limited RSS Expanded
Rotation Angles	0°, 90°, 180°, and 270°

Communications Ports

RS-232C

Pin#	Signal Name	Type	Description
1	RXD	input	Receive Data
2	TXD	output	Transmit Data
3	CTS	input	Clear To Send from host
4	RTS	output	Request To Send set high when printer is ready to accept a command or data
5	GND		Ground
6	NC		No Connect
7	DSR	input	Data Set Ready low to high transition turns printer on, high to low transition turns printer off (if enabled)
8	DTR	output	Data Terminal Ready set high when printer is on. Set to battery voltage for “S” versions(compatible with Symbol™ PIM)

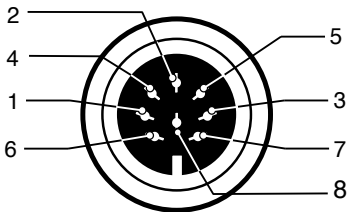


Figure 25: RS-232C Communications Port (8 pin Circular DIN)

continued

USB (QL Plus Series only)

Pin#	Signal Name	Type	Description
1	VBUS	-	USB Bus Power
2	USB -	bi-directional	I/O signals
3	USB +	bi-directional	I/O signals
4	USB_ID	-	Identifies A/B connector
5	Return		Ground

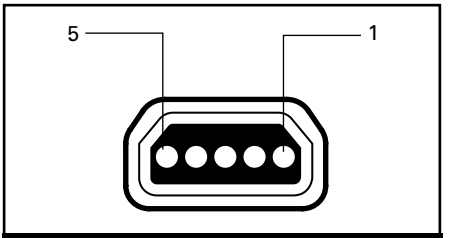


Figure 26: USB Communications Port (QL Plus Series only)

Physical, Environmental and Electrical Specifications

	QL 220/220 Plus	QL 320/320 Plus	QL 420/420 Plus
Weight w/ battery,excluding media & wireless options.	1.1 lbs. (.50 kg.)	1.65 lbs. (.75 kg.)	2.0 lbs. (.9 kg.)
Temperature	Operating : 5° to 122° F (-15° to 50° C)		
	Storage: -13° to 158° F (-25° to 70° C) Range		
Relative Humidity	Operating: 10% to 80% (non-condensing)		
	Storage: 10% to 90% (non-condensing)		
Battery	Lithium-Ion, 7.4 VDC (nominal); 2 AHr.		Lithium-Ion, 7.4 VDC (nominal); 4 AHr
Intrusion Protection (IP) Rating	14		

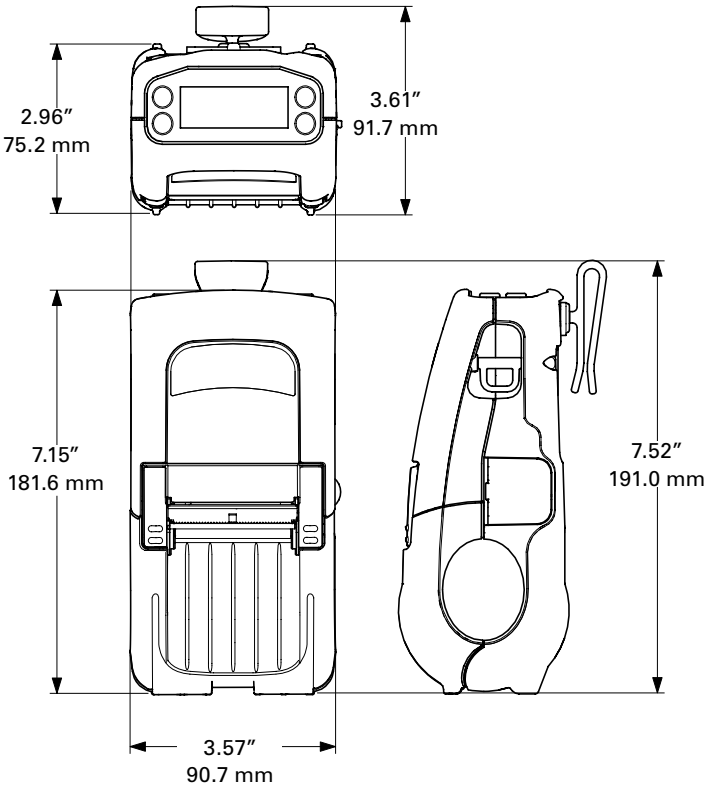


Figure 27: QL 220/ QL 220 Plus Overall Dimensions

continued

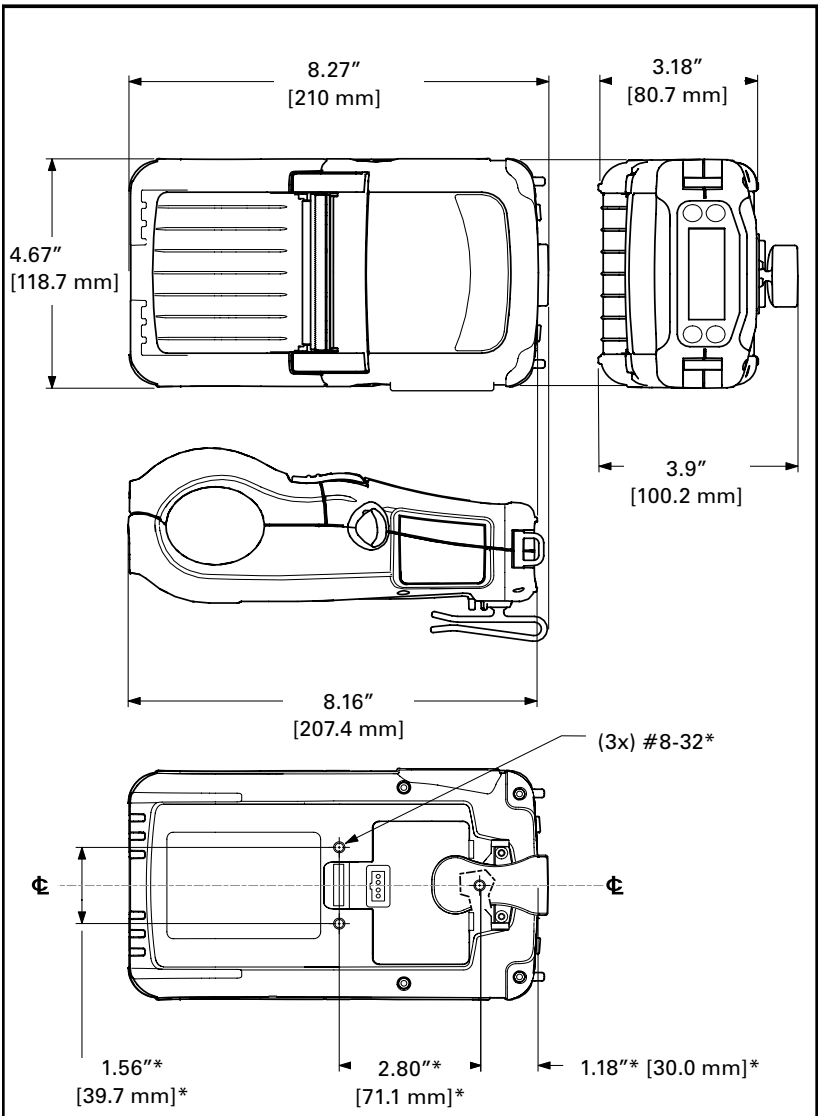


Figure 28: QL 320/ QL 320 Plus Overall Dimensions

1. QL 320 Plus is illustrated. Dimensions with an asterisk (*) are for QL 320 Plus only; all other dimensions are identical for both QL 320 models.

2. Belt Clip must be removed to use all three mounting holes on the bottom of the QL 320 Plus.

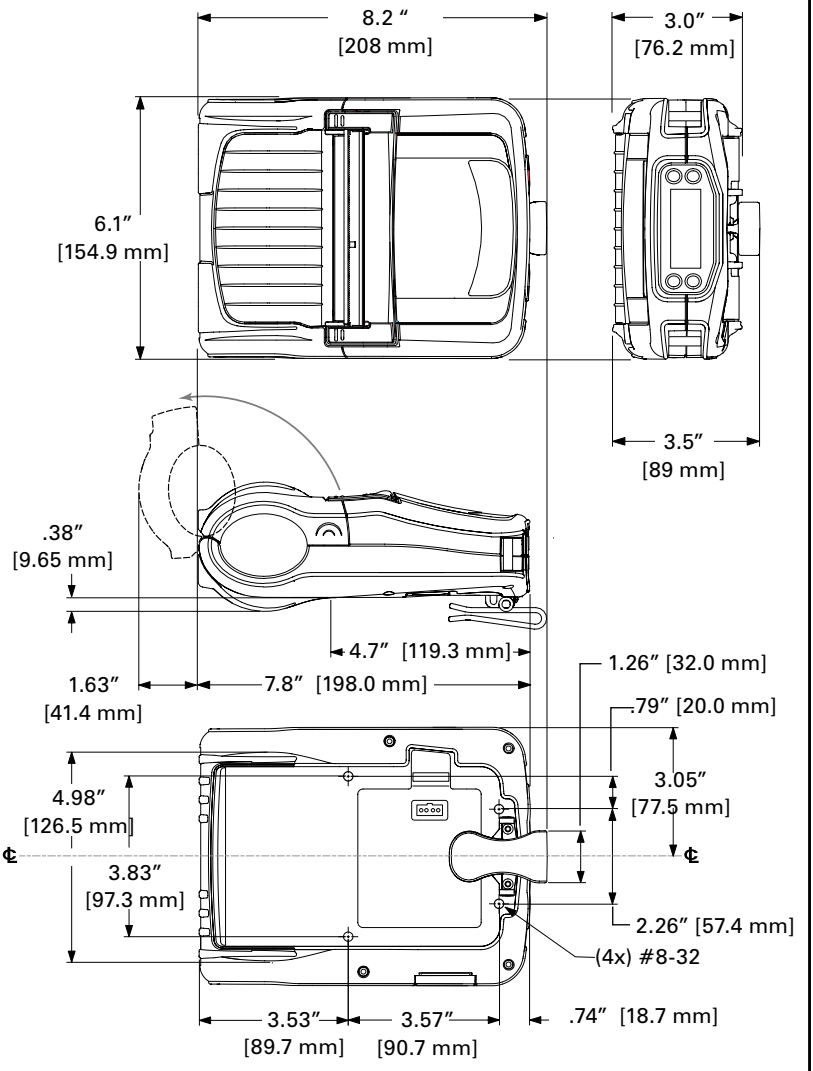


Figure 29: QL 420/ QL 420 Plus Overall Dimensions

continued

QL Series Accessories

Description	QL 220/ 220 Plus	QL 320/ 320 Plus	QL 420/ 420 Plus
Adjustable shoulder strap	•	•	•
Carrying Strap	•	•	•
Protective soft case	•	•	•
Extra battery packs	•	•	•
Desk Stand	•	•	•
Kickstand	•	•	•
Handi-Mount articulated arm and mounting plate			•
Model MM Q4 Vehicular Mount w/ external fanfold media storage			•
Model RCLI-DC Mobile Chargers DC-DC run/charge units (input ranges from 12 to 60 VDC)	•	•	•
Model RCLI-AC Charger- AC run/charge unit (100 to 240 VAC input)	•	•	•
Model LI 72- Single Battery Charger 120-230 VAC	•	•	•
Model UCLI72-4 Quad Battery Charger 100-240 VAC	•	•	•
Battery Eliminator (A.C. Run and Charge)	•	•	•

Refer to Appendix A for information on Data I/O Cables

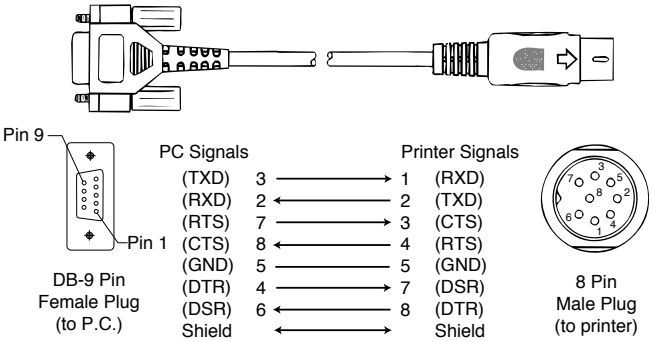
For more details on available accessories, contact your authorized Zebra re-seller.

Appendix A

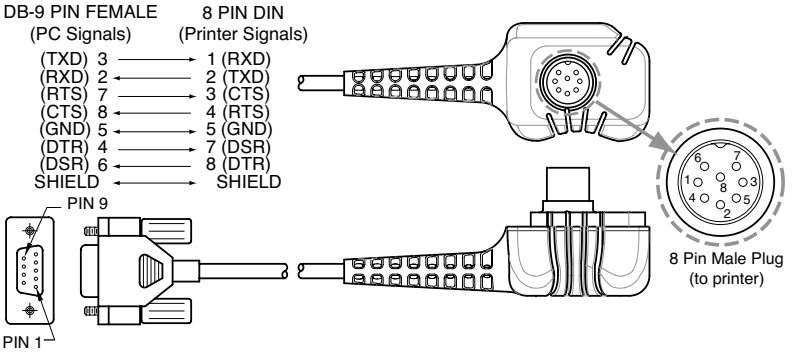
Interface Cables

RS232 Cables

Part Number ´BL11757-000; 8-Pin DIN to 9-Pin DB PC Cable (For Use With a Personal Computer)
This part is also available as a coiled cable under Part Number BL15063-1.

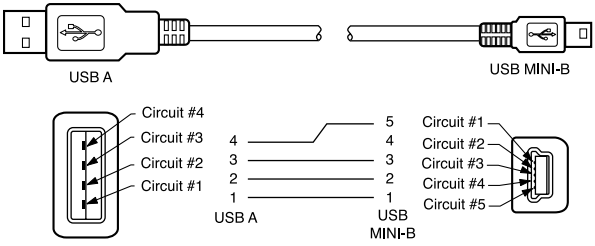


Part Number BL16555-1 (Molded Right Angle DIN Housing to 9-Pin DB)



USB Cable (QL Plus Series only)

Part Number AT17010-1; USB A to USB Mini B Cable



Appendix A

INTERFACE CABLES

Terminal	Cable Part Number	Cord Lgth/Type	Terminal Connector	Printer Connector	Notes
COMPSEE					
Apex II, III	BL12093-3	8' Coiled	MOD 10	8 Pin DIN	
COMPAQ (IPAQ)					
H3100, H3600, H3700	BL16386-1	4' straight	Foxconn 12 pin	8 Pin DIN	
H3800	BL16470-1	4' straight	Foxconn 22 pin	8 Pin DIN	
HANDHELD PRODUCTS					
7500, 7506	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	
LXE					
MX1,MX3	BL17757-000	6'/Straight	9 Pin DB	8 Pin DIN	
1380,1390,1590	BL17757-000	6'/Straight	9 Pin DB	8 Pin DIN	
2325	BL12093-1	8'/Coiled	RJ45	8 Pin DIN	Power On/Off (+5V)
MISCELLANEOUS					
	BL16302-00	6'/straight	unterminated	8Pin DIN	
	BL16830-00	6'/straight	unterminated	8Pin DIN rt. angle	
	BL16900-00	8'/coiled	unterminated	8Pin DIN rt. angle	
	BL16713-1	1'/ straight	1/4" phone jack/DEX	8Pin DIN rt. angle	
NORAND/INTERMEC					
RT1100/1700 Series	BL11537-1	8' /Coiled	6 Pin MinDIN	8 Pin DIN Over-molded	
	BL11537-2	12'/Coiled	6 Pin MiniDIN	8 Pin DIN Over-molded	
	BL13309-1	8' /Coiled	6 Pin Mini DIN	8Pin DIN	Auto ON/OFF
RT1700 Series	BL12804-1	8' /Coiled	6 Pin MiniDIN	8 Pin DIN -Locking	
	BL13298-1	8' /Coiled	6 Pin MiniDIN	8 Pin DIN Over-molded	Auto ON/OFF
RT5900 Series	BL12803-1	8' /Coiled	15 Pin D-Sub	8 Pin DIN	
6400	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	
242X	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	w/optical link adapter Intermec #
064021					
243X	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	
	BL11537-1	8'/coiled	6 pin Mini DIN	8 pin DIN	no auto power
	BL11537-2	12'/coiled	6 pin Mini DIN	8 pin DIN	

INTERFACE CABLES (continued)

Terminal	Cable Part Number	Cord Lgth/Type	Terminal Connector	Printer Connector	Notes
502X	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	w/ intermed serial adapter
6110	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	w/ serial pod
6640,665x,	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	
248x	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	COM1
5055	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	Auto Power (DTR)
PSC					
Falcon 310,315	BL12093	8'/coiled	MOD 10	8 Pin DIN	Auto Power (+5V)
320, 325	CL16894-1	8'/coiled	MOD 10	8 Pin DIN rt. angle	Auto Power (+5V)
PT2000, TopGun	BL13285-1	8' coiled	DB15	8 Pin DIN	
Falcon 510,515, 625,665	BL11757-000	6'/Straight	9 Pin DB	8 Pin DIN	Auto Power (DTR)
SYMBOL/TELXON					
FMT 1000, 3000	BL11757-000	6' /Straight	9 Pin DB Fem.	8 Pin DIN	Auto Power (DTR)
PDT3300 Series	BL11391-000	8' /Coiled	DB25 male	8 Pin DIN	Auto Power (DTR)
	BL12093-2	8' coiled	MOD 10	8 Pin DIN	Auto Power (+5V)
	CL16894-1	8'/coiled	MOD 10	8 Pin DIN rt. angle	Auto Power (+5V)
PDT3100, 3200, 3500	BL12093-1	8' /Coiled	MOD 10	8 Pin DIN	Auto Power(+5V)
6100	BL10293-2	8' /Coiled	MOD 10	8 Pin DIN	Auto Power(DTR)
SPT1700, 1800	BL15483-1	9' /Coiled	Clip-on	8 Pin DIN	
	BL15483-3	9' /Coiled	Clip-on	8 Pin DIN	Auto Power Pin 1 (+5 V)
PPT2700, 2800	BL15482-1	9' /Coiled	Cradle	8 Pin DIN	Power On/Off (DTR Line)
PDT3100, 3200	CL16694-1	8'/coiled	MOD 10	8 Pin DIN rt. angle	Auto Power(+5 V)
3500,6100	BL12093-1	8'/coiled	MOD 10	8 Pin DIN	Auto Power (+5V)
	BL12093-2	8'/coiled	MOD 10	8 Pin DIN	Auto Power (DTR)
	CL16894-1	8'/coiled	MOD 10	8 Pin DIN rt. angle	Auto Power (+5V)
	CL16894-2	8'/coiled	MOD 10	8 Pin DIN rt. angle	Auto Power (DTR)
PDT3800, 6800	CC11371-3	6' /Coiled	PIM LPT	8 Pin DIN	
	CC11371-14	6' / Coiled	PIM COM	8 Pin DIN	
	CC11371-15	6' / Coiled	PIM COM	8 Pin DIN	Auto Power (DTR)

INTERFACE CABLES (continued)

Terminal	Cable Part Number	Cord Lgth/Type	Terminal Connector	Printer Connector	Notes
PDT8100	BL1656-1	8'/ coiled	clip on	8 Pin DIN	Auto Power (DTR)
LRT/LDT3800 & 6800 Series	CC11371-14	6' / Coiled	PIM LPT	8 Pin DIN	"S" Printers Only
LRT/LDT3800 & 6800 Series	CC11371-15	6' / Coiled	PIM Optical	8 Pin DIN	"S" Printers Only
PTC960X PTC960L, 960SL	BL11122-1 CC17711-1	8' /Coiled n/a	MOD 8 Micro DB-15	8 Pin DIN	Auto Power (DTR) Adapter for BL11122-1
960RL, 960M, 1134 2134, 2234	CP74005	8'/Coiled	Micro DB-15	8 Pin DIN	BL11122-1 & CC13711-1 (Kit)
PTC 510, 610, 710 860, 912	CL11314-000	8' /Coiled	DB25F	8 Pin DIN	Auto Power (DTR)
PTC 860IM, 870IM	BL13237-1	6' /Straight	Fischer-11	8 Pin DIN	Auto Power (DTR)
PTC1124, 2124	BL11757-000	6'/Straight	DB-9M	8 Pin DIN	uses serial pod
PTC1184	CL12628-1	8'/ Coiled	Mini DIN-8F	8 Pin DIN	
PTC1194	BL11757-000	6'/Straight	DB-9M	8 Pin DIN	Auto-power (DTR)
VRC 3900	CL11314-000	8'/Coiled	DB-25F	8 Pin DIN	Auto Power (DTR)
VRC4000,5000	BL11757-000	6'/Straight	DB-9M	8 Pin DIN	Auto Power (DTR)
VRC 69XX	BL16014-1	10'/Straight	Fischer-16	8 Pin DIN	
VRV7900,8900	CL16840-1	6' straight	Ampenol 7	8 Pin DIN rt. angle	No Auto-power
TEKLOGIC					
7025	BL13285-1	8'/Coiled	DB-15M	8 Pin DIN	
7030	BL13285-2	8'/Coiled	Honda-36M	8 Pin DIN	Auto Power (7.5V)
7035	BL16469-1	8'/Coiled	Honda-28M	8 Pin DIN	Auto Power (7.5V)
8255, 8260	BL16469-1	8'/Coiled	Honda-28M	8 Pin DIN	Auto Power (12V)
8510	BL11757-000	6'/Straight	DB-9M	8 Pin DIN	Auto-power (DTR)
UNITECH					
PT-500, 700, 805, 815	BL11757-000	6'/Straight	DB-9M	8 Pin DIN	Auto-power (DTR)

Appendix B

Media Supplies

To insure maximum printer life and consistent print quality and performance for your individual application, it is recommended that only media produced by Zebra be used. Advantages include:

- Consistent quality and reliability of media products.
- Large range of stocked and standard formats.
- In-house custom format design service.
- Large production capacity which services the needs of many large and small media consumers including major retail chains world wide.
- Media products that meet or exceed industry standards.

For more information call Zebra Technologies Corporation at +1.866.230.9495 (U.S., Canada and Mexico) and ask to speak to a Media Sales Representative.

Appendix C

Maintenance Supplies

In addition to using quality media provided by Zebra, it is recommended that the printer be cleaned as prescribed in the maintenance section. The following items are available for this purpose:

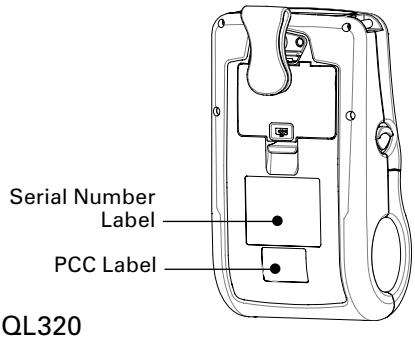
- Cleaning Pen (10 pack), Reorder No. AN11209-1
- Cleaning Kit with Cleaning Pen, and Cotton Swabs, Reorder No. AT702-1

Appendix D

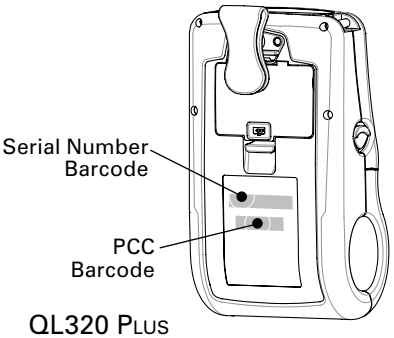
Product Support

When calling with a specific problem regarding your printer, please have the following information on hand:

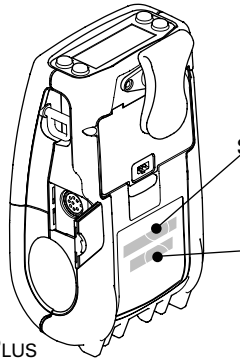
- Model number/type (e.g. QL 420)
- Unit serial number
- Product Configuration Code (PCC)



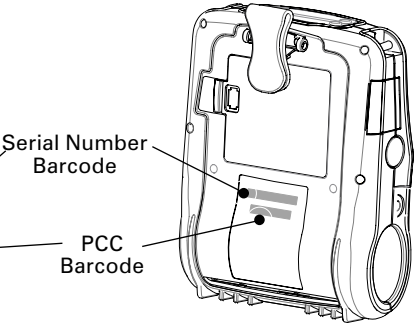
QL320



QL320 PLUS



QL 220/220 PLUS



QL 420/420 PLUS

For product support, contact Zebra Technologies at:

www.zebra.com

Zebra Technologies International, LLC
333 Corporate Woods Parkway
Vernon Hills, Illinois 60061-3109 USA
Phone: +1.847.793.2600 or
+1.800.423. 0422
Fax: +1.847.913.8766

Zebra Technologies Europe Limited
Zebra House
The Valley Centre, Gordon Road
High Wycombe
Buckinghamshire HP13 6EQ, UK
Phone: +44.1494.472872
Fax: +44.1494.450103

Zebra Technologies
Latin American Sales Office
9800 NW 41ST Street
Suite 220
Doral, Florida 33178 USA
Phone: +1.305.558.8470
Fax: +1.305.558.8485

Zebra Technologies Asia Pacific, LLC
16 New Industrial Road
05-03 Hudson TechnoCentre
Singapore 536204
Phone: +65-68580722
Fax: +65-68850838

Appendix D

Battery Disposal

The EPA certified RBRC® Battery Recycling Seal on the Lithium-Ion (Li-Ion) battery supplied with your printer indicates Zebra Technologies Corporation is voluntarily participating in an industry program to collect and recycle these batteries at the end of their useful life, when taken out of service in the United States or Canada. The RBRC program provides a convenient alternative to placing used Li-Ion batteries into the trash or the municipal waste stream, which may be illegal in your area.

Important • When the battery is worn out, insulate the terminals with tape before disposal

Please call 1-800-8-BATTERY for information on Li-Ion battery recycling and disposal bans/restrictions in your area. Zebra Technologies Corporation's involvement in this program is part of our commitment to preserving our environment and conserving our natural resources.

Outside North America, please follow local battery recycling guidelines.

Product Disposal

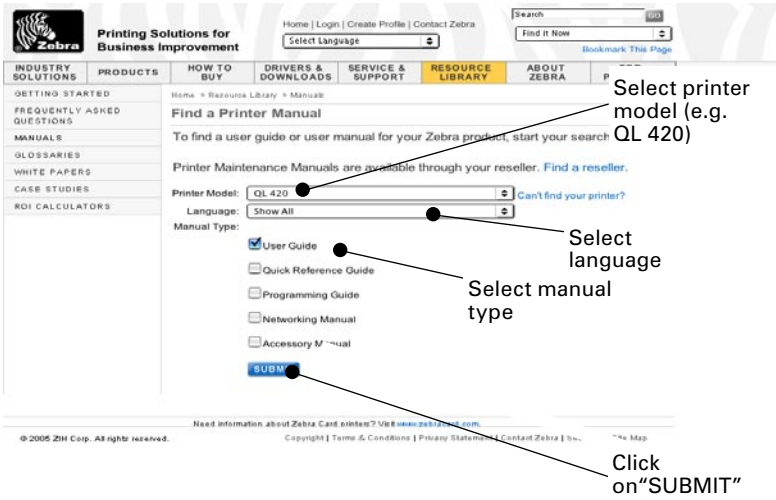
Do not dispose of this product in unsorted municipal waste. This product is recyclable. Please recycle according to your local standards. For more information, please see our web site at: *http://www.zebra.com/recycle.*

Appendix E

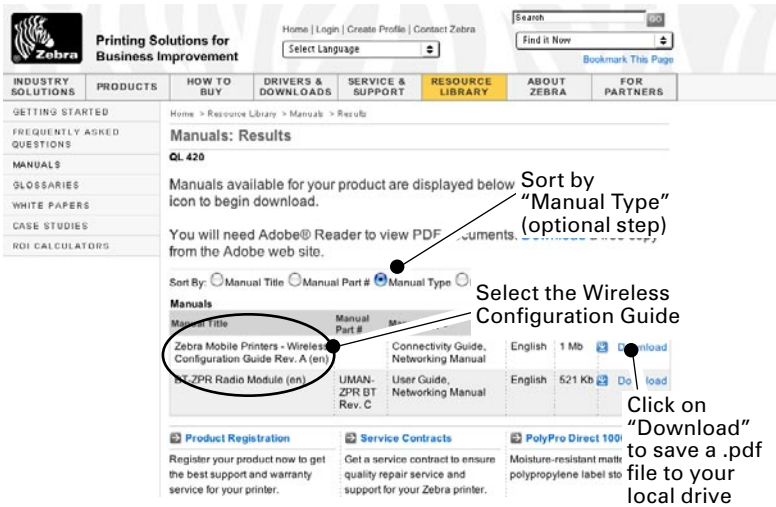
Using zebra.com

The following details using the search functions on Zebra's Web site *www.zebra.com* for finding specific documents .

Finding Manuals:
http://www.zebra.com/id/zebra/na/en/index/resource_library/manuals.html

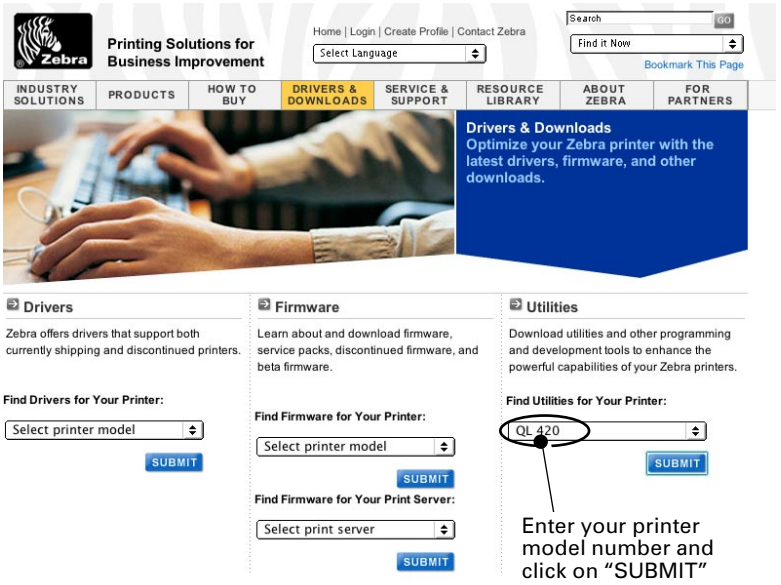


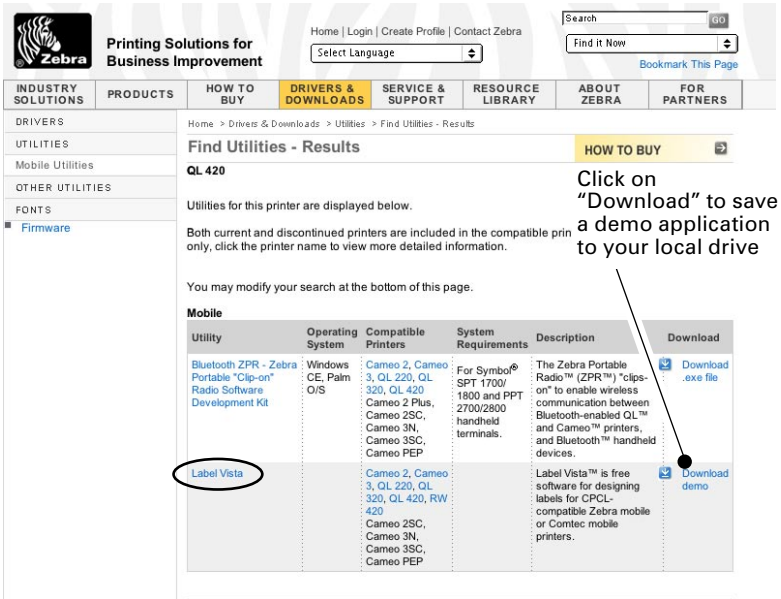
Example: FInd the Mobile Printer WIreless Configuation Guide.
Perform the above step and select as a manual type "Networking Manual"



continued

Finding the Label Vista Download page:
http://www.zebra.com/id/zebra/na/en/index/drivers_downloads.html
At the resulting window select your printer model from the pull-down menu in the “Utilities” section.





Index

Patent Numbers

This product and/or its use may be covered by one or more of the following US patents and corresponding international patents worldwide

D275,286	5,047,617	5,372,439	5,570,123	6,068,415
D347,021	5,103,461	5,373,148	5,578,810	6,095,704
D389,178	5,113,445	5,378,882	5,589,680	6,109,801
D430,199	5,140,144	5,396,053	5,612,531	6,123,471
D433,702	5,132,709	5,396,055	5,642,666	6,147,767
3,964,673	5,142,550	5,399,846	5,657,066	6,151,037
4,019,676	5,149,950	5,408,081	5,768,991	6,201,255 B1
4,044,946	5,157,687	5,410,139	5,790,162	6,231,253 B1
4,360,798	5,168,148	5,410,140	5,791,796	6,261,009
4,369,361	5,168,149	5,412,198	5,806,993	6,261,013
4,387,297	5,180,904	5,415,482	5,813,343	6,267,521
4,460,120	5,229,591	5,418,812	5,816,718	6,270,072 B1
4,496,831	5,230,088	5,420,411	5,820,279	6,285,845 B1
4,593,186	5,235,167	5,436,440	5,848,848	6,292,595
4,607,156	5,243,655	5,444,231	5,860,753	6,296,032
4,673,805	5,247,162	5,449,891	5,872,585	6,364,550
4,736,095	5,250,791	5,449,893	5,874,980	6,379,058 B1
4,758,717	5,250,792	5,468,949	5,909,233	6,409,401 B1
4,816,660	5,262,627	5,479,000	5,976,720	6,411,397 B1
4,845,350	5,267,800	5,479,002	5,978,004	6,428,227 B2
4,896,026	5,280,163	5,479,441	5,995,128	6,530,705
4,897,532	5,280,164	5,486,057	5,997,193	6,540,122
4,923,281	5,280,498	5,503,483	6,004,053	6,607,316
4,933,538	5,304,786	5,504,322	6,010,257	6,609,844
4,992,717	5,304,788	5,528,621	6,020,906	6,874,958
5,015,833	5,321,246	5,532,469	6,034,708	6,899,477Ł
5,017,765	5,335,170	5,543,610	6,036,383	
5,021,641	5,364,133	5,545,889	6,057,870	
5,029,183	5,367,151	5,552,592	6,068,415	

www.zebra.com

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Vernon Hills, Illinois 60061.3109 USA
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